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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

January 1, 1985 Volume 1050 Number 1

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

CONSOLIDATED LISTING OF OFFICIAL GAZETTE NOTICES RE PATENT AND TRADEMARK OFFICE PRACTICES AND PROCEDURES

PATENT NOTICES

The following is a compilation of the more important notices and rule changes which have been published in the Official Gazette from July 1, 1964, through December 31, 1984. These notices and rule changes are currently in effect unless otherwise noted.

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INFORMATION AND CORRESPONDENCE

(1) Official Patent Office Mailing Address Remains Washington, D.C.

The official mailing address for all communications sent to the Patent Office remains:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Any telegrams sent to the Patent Office must also bear the above identical address.

The physical location of the Patent Office is 2021 Jefferson Davis Highway, Arlington, Virginia. This address must not be used when addressing mail to the Patent Office.

No reference to Crystal Plaza, Virginia, should be made in the address of *any* communication intended for delivery to the Patent Office by the Post Office Department or Western Union.

Compliance with this instruction will help prevent any unnecessary delay in the delivery of mail, telegrams, etc.

C. A. KALK,
Feb. 20, 1969. *Director of Administration.*

(Office name change per Public Law 93-596, Jan. 2, 1975)

[860 O.G. 662]

(2) Group Number on all Communications Going to the Examining Groups

Applicants and their attorneys or agents are reminded that the Group number should be typed on amendments and other communications relating to matters handled in the examining groups in order to expedite the processing of mail. The number of the Group should be placed on right-hand side, opposite the serial number or name of the applicant.

This reminder does not apply to notices and reasons of appeal to the United States Court of Appeals for the Federal Circuit. These communications should be sent to the Solicitor at the address below:

Solicitor
Box 8
U.S. Patent and Trademark Office
Washington, D.C. 20231

Attention to these details will improve the efficiency and reduce the time necessary to process incoming mail.

THERESA A. BRELSFORD,
Nov. 23, 1983. *Assistant Commissioner for Administration.*

[1037 OG 25]

(3) Mailing of Papers to the PTO in Patent Interference Proceedings

Effective immediately, attorneys and agents are requested to address all papers mailed to the Patent and Trademark Office in connection with an interference proceeding, and any patent or application involved in an interference proceeding, as follows:

BOX INTERFERENCE
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Use of this address will considerably assist the Board in its administration of patent interference proceedings.

DONALD J. QUIGG,
Nov. 28, 1983. *Deputy Commissioner of Patents and Trademarks.*

[1037 OG 25]

(4) Identification for Application Correspondence

The Office is continuing to experience difficulty in matching incoming papers with the corresponding application files. This applies especially to responses to Office Actions, powers of attorney, changes of address, status letters, requests for extensions of time, and petitions.

A very necessary part of a complete identification of a pending application is the three-digit Group or Art Unit number, e.g., 110 or 111. Frequently, the Group Art Unit number is entirely omitted, or there are errors in this number. In the latter situation the error often occurs as a result of the case having been reassigned within the Office, and the communication is directed to an Examining Group other than that indicated in the most recent Office Action.

Where the Group Art Unit number is entirely omitted, the routine operations of the Application Branch must be interrupted solely for the purpose of determining the location of the application so that the communication can be properly routed. Under these circumstances the efficiency of the Application Branch is impaired and the incoming paper is delayed in reaching its proper destination. Where such papers are not essential to compliance with a statutory period or time limit for response, they may be returned for completion to identify the location of the files.

To assist the Office in expediting its business, it is requested that ALL papers relating to a pending application include the following information:

1. Serial number (checked for accuracy),

2. Group Art Unit number (copied from filing receipt or most recent Office Action),
3. Filing date,
4. Name of the Examiner who prepared the most recent Office Action.
5. Title of the invention.

To further reduce the burden on Application Branch and the Examining Groups, it is also requested that the submission of additional or supplemental papers on a newly filed application be deferred until a filing receipt has been received. In the same vein, it would be appreciated if the filing of additional papers, relating to an allowed application were deferred until a notice of allowance (POL-85) was received.

If the above suggestions are adopted the processing of both new and allowed applications could proceed more efficiently and promptly through the Patent Office.

RICHARD A. WAHL,
Mar. 5, 1971. *Assistant Commissioner.*

[885 O.G. 2]

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(5) Identifying Application Correspondence With Issue Batch Number

Applicants or their attorney or agent can facilitate matching incoming papers with the corresponding application file by indicating the Issue Batch Number on all papers filed in the Office after receiving the Notice of Allowance and before the time the Issue Fee Receipt is received.

The Issue Batch Number is printed on the Notice of Allowance form in Box 4 in the lower left-hand corner below the address. The Issue Batch Number consists of a capital letter followed by two digits, for example; "A03," "D18," "F42," "J79." Any lower case letters before the Issue Batch Number should be ignored since they are the typist's initials. Use of the Issue Batch Numbers is important since the allowed applications are filed by these numbers.

Any paper filed after receiving the Issue Fee Receipt should include the indicated patent number rather than the Issue Batch Number. At this time in the processing, the Issue Batch Number is no longer useful since the application has been removed from the batch at the time the patent number was assigned.

RICHARD J. SHAKMAN,
Jan. 16, 1976. *Assistant Commissioner for Administration.*

[943 O.G. 519]

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(6) Hand Delivery of Papers

The notices of November 10, 1969 (869 O.G. 345) and September 8, 1970 (879 O.G. 667), regarding "Hand Delivery of Papers," are superseded and the practice indicated below is hereby made effective.

Any paper which relates to a pending application may be personally delivered to an Examining Group. However, the Examining Group will accept the paper only if: (1) the paper is accompanied by some form of receipt which can be handed back to the person delivering the paper; and (2) the Examining Group being asked to receive the paper is responsible for acting on the paper.

The receipt may take the form of a duplicate copy of such paper or a card identifying the paper. The identifying data on the card should be so complete as to leave no uncertainty as to the paper filed. For example, the card should contain the applicant's name(s), Serial No., filing date and a description of the paper being filed. If more than one paper is being filed for the same application, the card should contain a description of each paper or item.

Under this procedure, the paper and receipt will be date stamped with the Group date stamp. The receipt will be handed back to the person hand delivering the paper. The paper will be correlated with the application and made an official paper in the file, thereby avoiding the necessity of processing and forwarding the paper to the Examining Group via the Mail Room.

The Examining Group will accept and date stamp a paper even though the paper is accompanied by a check or the paper contains an authorization to charge a Deposit Account. However, in such an instance, the paper will be hand carried by Group personnel to the Office of Finance for processing and then made an official paper in the file.

WILLIAM FELDMAN,
Jan. 29, 1974. *Deputy Assistant Commissioner for Patents.*

[919 O.G. 1070]

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(7) Post Card Receipt Reminder

Applicants and their attorneys or agents are reminded of the provision in Section 717.01(a) (now Section 503) of the Manual of Patent Examining Procedure relating to the use of post cards as "receipts" of papers filed in the Patent Office.

If a receipt for any paper filed in the Patent Office is desired, it may be had by enclosing with the paper a self-addressed post card identifying the paper. The Patent Office will stamp the receipt date on the card and place it in the outgoing mail.

The identifying data on the card should be so complete as to match the paper with the application or other document to which it is to be associated. For example, the document should be identified by the applicant's name(s), Serial No., filing date, appeal number, interference number, etc., and the paper should be identified by specifying the type thereof, viz, affidavit, amendment, appeal, application papers, brief, drawings, fees, motions, supplemental oath or declaration, petition, etc.

When papers for more than one document are filed under a single cover a return post card should be attached to the paper for *each* document for which a receipt is desired.

RICHARD A. WAHL,
Nov. 21, 1968. *Assistant Commissioner.*

[857 O.G. 667]

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(8) Acknowledgement of Receipt of a Patent or Trademark Application

When early notification of the serial number of newly filed application papers is desired, a *stamped, self-adressed post card* should be submitted with each application. Immediately after the mail has been opened in the Patent and Trademark Office, the post card will be stamped with both the receipt date and the serial number, and then returned to the addressee.

Within recent months, hundreds of cards could not be successfully returned because of insufficient postage or incomplete or nonexistent forwarding addresses. Accurate and complete addresses, including ZIP codes, are necessary to ensure prompt acknowledgement of the receipt of patent and trademark applications.

To assist in easy identification once the post card has been returned, it is suggested that the post card include applicant's names and title of invention.

When more than one set of application papers is filed under one cover, a return post card should be attached to each set of papers for which a receipt is desired.

THERESA A. BRELSFORD,
July 19, 1982. *Acting Assistat Commissioner for Administration.*

[1021 O.G. 96]

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(9) Status Inquiries

In an effort to sharply reduce the volume and need for status inquiries, the past policy that diligence must be established by making timely status requests in connection with petitions to revive is hereby discontinued.

When an application has been abandoned for an excessive period before the filing of a petition to revive, an appropriate terminal disclaimer may be required. It should also be recognized that a petition to revive must be accompanied by the proposed response unless it has been previously filed (Rule 137). Also, under Rule 113, "Response to a final rejection or action must include cancellation of, or appeal from the rejection of, each claim so rejected and, if any claim stands allowed, compliance with any requirement or objection as to form."

New Applications

Current examining procedures now provide for the routine mailing from the Examining Groups of Form POL-327 in *every* case of allowance of an application except where an Examiner's Amendment is promptly mailed. Thus, the separate mailing of a Form POL-327 or an Examiner's Amendment in addition to a formal Notice of Allowance (POL-85) in all allowed cases would seem to obviate the need for status inquiries even as a precautionary measure where the applicant may believe his new application may have been passed to issue on the first examination. However, as an exception, a status inquiry would be appropriate where a Notice of Allowance is not received within three months from receipt of either a Form POL-327 or an Examiner's Amendment.

Current examining procedures also aim to minimize the spread in dates among the various examiner dockets of each Art Unit and Group with respect to actions on new applications. Accordingly, the dates of the "oldest new applications" appearing in the *Official Gazette* are fairly reliable guides as to the expected time frames of when the Examiners reach the cases for action.

Therefore, it should be rarely necessary to query the status of a new application.

Amended Applications

Amended cases are expected to be taken up by the examiner and an action completed within two months of the amendment date. Accordingly, a status inquiry is not in order after response by the attorney until five or six months have elapsed with no response from the Patent Office. A post card receipt for responses to Office actions, adequately and specifically identifying the papers filed, will be considered *prima facie* proof of receipt of such papers. Where such proof indicates the timely filing of a response, the submission of a copy of the post card with a copy of the response will ordinarily obviate the need for a petition to revive. Proof of receipt of a timely response to a final action will obviate the need for a petition to revive only if the response was in compliance with Rule 113.

In General

It is expected that this new policy will result in sharply reducing the number of status inquiries and permit the time now spent on them to be used in increasing Patent Office efficiency in other more essential areas.

Such status inquiries as may be still necessary may be more expeditiously processed by the Patent Office if each inquiry includes the application Serial Number, filing date, name of the applicant, name of the Examiner who prepared the most recent Office action, and Group Art Unit (taken from the most recent Office communication) in addition to the last known status of the application, and is accompanied by a stamped return-addressed envelope. Telephone inquiries regarding the status of applications should be directed to the group clerical personnel and not to the examiners. Inasmuch as the official records and applications are located in the clerical section of the Examining Groups, the clerical personnel can readily provide status information without consulting the examiners.

Status replies will be made by the Patent Office clerical support force and will only indicate whether the application is awaiting action by the Examiner or the applicant's response to an Office action. In the latter instance the mailing date of the Office action will also be given.

The Notices of Dec. 5, 1969 (869 O.G. 1031) and Sept. 22, 1965 (819 O.G. 444) are hereby superseded.

Nov. 24, 1971. RICHARD A. WAHL,
Assistant Commissioner of Patents.

[893 O.G. 810]

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(10) **Change of Address**

There recently has been an increased incidence in the number of applications suffering from disruptions in communications stemming from failure to notify the Patent and Trademark Office of a change of address on the part of applicant's representative (attorney or agent of record) in each application wherein he holds an active power of attorney. Applications have become abandoned as a result of an Office action being mailed to the old, uncorrected address and thereby failing to reach the representative at his new address sufficiently early to permit him to file a timely response. Accordingly, the requirement set out below is published as a reminder and is designed to ameliorate this problem.

Where an attorney or agent of record (or applicant, if he is prosecuting his application pro se) changes his correspondence address, he is responsible for promptly notifying the Patent and Trademark Office of his new correspondence address (including ZIP code number). A separate notification must be filed in *each application* for which he is intended to receive communications from the Office. The notification should also include his telephone number.

While the notification need take no particular form, it should be provided in a manner calling attention to the fact that a change of address is being made. Thus, the mere inclusion, in a paper being filed for another purpose, of an address different from the previously provided correspondence address, without mention of the fact that an address change is being made, would not ordinarily be recognized or deemed as instructions to change the address on the file record.

It is emphasized that the above-delineated responsibility is *additional* to the separate obligation (see 37 CFR 1.347) of a registered attorney or agent to notify the Attorney's Roster of any change of his address for entry on the register, which must be done in a letter separate from any notice or change of address filed in individual applications. That obligation continues without change.

The degree of care exercised in adhering to the foregoing requirement for notification of change of address in each concerned application will be a factor for consideration in deciding petitions filed under 37 CFR 1.137 to revive applications which have become abandoned because of a failure to timely receive an Office action addressed to the old address. In such instances, the showing of the cause of unavoidable delay must include an adequate showing that a timely notification of the change of address was filed in the concerned application, in a manner reasonably calculated to call attention to the fact that it was a change of address. If no such notification was made, or was made belatedly, the showing must include an adequate explanation of that failure or delay. A showing that notification was made on a paper filed in the Patent and Trademark Office listing *plural* applications as being affected will not be considered a proper notification.

May 28, 1975. WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

[935 O.G. 1352]

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(11) **Change of Address or Practitioner in a Plurality of Patent Applications**

Change of Address

This notice is supplemental to the Notice of May 28, 1975, 935 O.G. 1352.

In those instances where a change in the correspondence address of a registered attorney or agent is necessary in a plurality of applications, and the number of applications is such as to cause undue hardship, the notification filed in each application may be a reproduction of a properly executed, original notification. The original notice may be sent to the Office of the Solicitor as notification to the Attorney's Roster of the change of address, or may be filed in one of the applications affected, provided that the notice includes an authorization for the public to inspect and copy the original notice in the event one of the applications containing a copy matures into a patent and the application containing the original paper is either pending or has become abandoned. The copies submitted in each affected application must identify where the original paper is located. Otherwise, the practice governing the filing of notifications of change of address remains the same.

Powers of Attorney

In the event of a need to file a change in the power of attorney in a plurality of applications of a common assignee or inventive entity, and the number of applications is such as to cause undue hardship, a single, original paper may be used provided that a reproduction of this original paper is supplied in each of the affected applications. The copy of the original paper must identify in which application the original paper is located and authorize the public to inspect and copy the original paper in the event one of the applications containing a copy matures into a patent and the application containing the original paper is pending or has become abandoned. The procedures and usual prerequisites for the filing of grants and/or revocations or power of attorney otherwise remain the same.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Sept. 9, 1976.

[951 O.G. 454]

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(12) **Express Mail**

This notice is in response to a number of inquiries received in the Patent and Trademark Office regarding the notice on Express Mail of February 11, 1975, published in the *Official Gazette* of March 11, 1975 (932 O.G. 340).

There are two types of Express Mail delivery offered by the U.S. Postal Service—"Post Office to Addressee" and "Post Office to Post Office." The only type of service which can be used for Express Mail directed to the Patent and Trademark Office is "Post Office to Addressee." This service provides for delivery to one of our employees in Room 1627, Department of Commerce Building, Washington, D.C., no later than 3:00 p.m. of the next workday following its deposit before 5:00 p.m. at any postal facility with an Express Mail window.

The only address that should be used for Express Mail sent to the Patent and Trademark Office is:

"Commissioner of Patents and Trademarks
Washington, D.C. 20231."

"Post Office to Post Office" Express Mail *does not* provide for delivery but instead is retained at the postal facility of the addressee for pickup. The Postal Service *does not* notify the addressee that this type of Express Mail has been received and is awaiting pickup. If not picked up, this mail is held for 15 days and then returned to the sender.

Therefore, since the Patent and Trademark Office does not have resources for picking up any mail, including Express Mail, the "Post Office to Post Office" Express Mail will not reach the Patent and Trademark Office.

WILLIAM I. MERKIN,
Acting Assistant Commissioner for Administration.

May 15, 1975.

[936 O.G. 1554]

(13) **Certificate of Mailing Procedures**

On November 1, 1976, the Patent and Trademark Office instituted the Certificate of Mailing Procedure by promulgating 37 CFR 1.8 in an attempt to reduce the number of problems resulting from late receipt of responses due to mail delays. This notice was published in the *Official Gazette* on October 26, 1976 (951 O.G. 1342 and TM 210). Guidelines relative to this procedure were published in the *Official Gazette* on November 16, 1976 (952 O.G. 918 and TM 174).

Although the new procedure has gained wide acceptance, it has not been entirely without problems. One major problem involves the correlation of the certification with the appropriate papers when presented on a separate sheet. In order to curtail this problem and other minor ones, the guidelines published on November 16, 1976, are superseded by the following guidelines. They are applicable to responses in both patent and trademark matters, as permitted by 37 CFR 1.8.

Guidelines

A) The certification requires a signature. Specifically, if the certification appears on a paper that requires a signature, two signatures are required, one for the paper and one for the certification. Although not specifically required by 37 CFR 1.8, it is preferred that the certificate be signed by the applicant, assignee, or registered practitioner.

B) When possible, the certification should appear on a portion of the paper being submitted. However, if there is insufficient space to make the certification on the same paper, such as in the case of the patent issue fee transmittal form PTO-85, the certification should be on a separate sheet securely attached to the paper.

C) When the certification is presented on a separate sheet, the sheet must (1) be signed and (2) fully identify and be securely attached to the paper it accompanies. The required identification should include the serial number and filing date of the application as well as the type of paper being filed, e.g., responses to rejection or refusal, Notice of Appeal, etc. An unsigned certification will not be considered acceptable.

Moreover, without the proper identifying data, a certification presented on a separate sheet will not be considered acceptable if there is any question or doubt concerning the connection between the sheet and the paper filed.

If the sheet should become detached from the paper and thereafter not associated with the appropriate file, evidence that this sheet was received in the Office can be supported by submitting a copy of a post card receipt specifically identifying this sheet and the paper and by submitting a copy of the sheet as originally mailed. Attention is directed to the notice of November 21, 1968 published in the *Official Gazette* (857 O.G. 667) relative to the use of post cards as receipts.

D) In situations wherein the correspondence includes papers for more than one application (e.g., a single envelope containing separate papers responding to Office actions in different applications) or papers for various parts of the Office (e.g., a patent issue fee transmittal form PTO-85 and an assignment), each paper must have its own certification as a part thereof or attached thereto.

E) In situations wherein the correspondence includes several papers directed to the same application (e.g., a proposed response under 37 CFR 1.116 and a Notice of Appeal), each paper should have its own certification as a part thereof or attached thereto.

Use of Stamped Certification

Some practitioners are placing the certification language on the first page of a paper with an inked stamp. Such a practice is encouraged because the certification is not only readily visible but also forms an integral part of the paper. An example of a preferred stamp is:

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Com-

missioner of Patents and Trademarks, Washington, D.C. 20231, on _____
(Date of Deposit)

_____
Name of applicant, assignee, or
Registered Representative

_____
Signature

_____
Date of Signature

Interpretations

The phrase "prior to expiration of the set period" in 37 CFR 1.8(a) includes the last day of the set period, which last day may be the "next succeeding secular or business day" as set out in 35 U.S.C. 21. Also, the filing of a 37 CFR 3.54 form to effect a filing under 37 CFR 1.60 is considered the filing of an application and is, therefore, excluded from the Certificate of Mailing Procedure.

C. MARSHALL DANN,
Aug. 30, 1977. *Commissioner of Patents and Trademarks.*

[962 O.G. 20]

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(14) **Change in Legal Holidays**

The Commissioner's Notice of December 2, 1970, "Change in Legal Holidays" is hereby rescinded, in view of Public Law 94-97, September 18, 1975, 89 Stat. 479, which amended the listing of legal public holidays in 5 USC §6103 by changing the Veterans Day holiday from the fourth Monday in October to November 11 of each year. Section 6103, as amended, reads as follows:

(a) The following are legal public holidays:
New Years Day, January 1.
Washington's Birthday, the third Monday in February.
Memorial Day, the last Monday in May.
Independence Day, July 4.
Labor Day, the first Monday in September.
Columbus Day, the second Monday in October.
Veterans Day, November 11.
Thanksgiving Day, the fourth Thursday in November.
Christmas Day, December 25.

Each of the holidays enumerated will constitute "a holiday within the District of Columbia," as referred to in Section 21, Title 35, United States Code.

Attention is called to the fact that the above listing of holidays in 5 USC §6103, as amended, should be followed, rather than the listing appearing on page 69 of the June 1979 Patent Laws pamphlet which does not reflect the noted amendment.

LUTRELLE F. PARKER,
Sept. 25, 1979. *Acting Commissioner, U.S. Patent and Trademark Office.*

Editorial Note: Sec. 6103(c) states that January 20 of each fourth year after 1965, Inauguration Day, is also a legal public holiday.

[987 O.G. 30]

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(15) **Change in Drafting Practice**

Effective Apr. 12, 1982, the Patent and Trademark Office is terminating its drawing correction service.

In order to effect any changes in the drawings, applicants will be responsible for submitting either new drawings or having the drawings corrected by a bonded commercial draftsman, at applicant's expense, in the manner specified below. The new practice will permit applicants to delay correction of drawings in almost all cases until after the Notice of Allowance is mailed.

The initial list of bonded commercial draftsmen appears below. This list will be expanded as more commercial draftsmen are bonded. Applicants will, at least initially, be supplied with a current list of the bonded draftsmen with all Office actions requiring a drawing change.

The following is a letter which will be supplied, at least initially, to applicants in all Office actions requiring a drawing change. This letter explains the procedures for accomplishing the above, sets forth the time period within which the drawings must be corrected, and lists all of the currently bonded commercial draftsmen.

U.S.Department of Commerce, Patent and Trademark Office

Attachment to Paper Number
Serial No.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

1. Correction of Informalities (Draftsman's objections on PTO-948)

In order to correct any informalities in the drawings, applicants *MUST* comply with options (a) or (b) below. Failure to do so will result in *ABANDONMENT* of the application.

a) File new drawings with the changes incorporated therein. Applicant may delay filing the new drawings until the application is allowed by the examiner. If delayed, the new drawings *MUST* be filed within the *THREE MONTH* statutory period set for payment of the base issue fee in the "NOTICE OF ALLOWANCE AND BASE ISSUE FEE DUE" (PTOL-85). Also, if delayed, the drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsman and which indicates the following in the upper right hand corner:

Date of the Notice of Allowance
Issue Batch Number
Serial Number

b) Request a commercial bonded drafting firm (see list below) to make the necessary corrections.

A BONDED DRAFTSMAN MUST BE *AUTHORIZED, THE CORRECTIONS EXECUTED AND THE CORRECTED DRAWINGS RETURNED TO THE OFFICE* DURING THE THREE MONTH STATUTORY PERIOD SET FOR PAYMENT OF THE BASE ISSUE FEE IN THE "NOTICE OF ALLOWANCE AND BASE ISSUE FEE DUE" (PTOL-85). NOTE THAT THE STATUTE DOES NOT PERMIT EXTENSION OF THE THREE MONTH PERIOD SET TO PAY THE BASE ISSUE FEE.

2. Corrections other than Informalities Noted by the Draftsman on the PTO-948

All changes to the drawings, other than informalities noted by the Draftsman, *MUST* be made in the same manner as above except that, if delayed option (a) is selected, normally, a sketch of the changes to be incoroprated into the new drawings *MUST* be approved by the examiner before the application will be allowed. If option (b) is selected, normally, applicants must submit, in duplicate, a separate paper containing a sketch of the proposed changes before the application will be allowed. No changes will be permitted to be made, other than correction of informalities, unless the examiner has approved the proposed changes.

3. Listing of Bonded Draftsmen

Graphe-Tech
11301 Rockville Pike
Kensington, Md. 20895
(301) 881-9400

Ultra Graphics, Inc.
Suite 300
3720 Farragut Ave.
Kensington, Md. 20795
(301) 946-1343

Mantech International Corp.
Alexandria, Va. 22314
(703) 838-5793

National Graphic Center
205 W. Jefferson St.
Falls Church, Va. 22046
(703) 533-8700

Kirby Li
2900 South Eads St.
Arlington, Va. 22202
(703) 684-7600

2121 Eisenhower Ave.
4th Fl.
Alexandria, Va. 22301
(703) 548-3879

Ord-Marine Engineering
10315 Kensington Pky.
Kensington, Md. 20895
(301) 949-3282

Patent Reproduction Co.
26 "N" St., S.E.
Washington, D.C. 20003
(202) 488-7096

Mil-R Production
2107 Mt. Vernon Ave.
Quinn Pat. Drwg. Service
Co.
2021 Crystal Plaza Dr.
Arlington, Va. 22202
(703) 521-1650

Technical Illustrator
1911 Jeff. Davis Hwy.
Suite 600-CM1
P.O. Box 2627
Arlington, Va. 22202
(703) 920-8900

IT IS SUGGESTED THAT APPLICANTS DETACH THIS LETTER FROM THE OFFICE ACTION AND ATTACH IT TO THE FRONT OF APPLICANT'S FILE AS A REMINDER THAT, IN ORDER TO AVOID ABANDONMENT, A BONDED DRAFTSMAN MUST BE *AUTHORIZED, THE CORRECTIONS EXECUTED AND THE CORRECTED DRAWINGS RETURNED TO THE OFFICE*, OR NEW DRAWINGS SUBMITTED, DURING THE THREE MONTH STATUTORY PERIOD SET FOR PAYMENT OF THE BASE ISSUE FEE. NOTE THAT THE STATUTE DOES NOT PERMIT EXTENSION OF THE THREE MONTH PERIOD SET TO PAY THE BASE ISSUE FEE.

Currently there is a large backlog of applications pending before the Office draftsmen. Applicants whose applications are part of this backlog are strongly encouraged to have the necessary drawing corrections made by one of the bonded commercial draftsmen to expedite the issuance of their applications. If there has been authorization to charge a deposit account for these corrections, the authorization will not be processed. If a fee has been paid with cash, a refund will be processed.

The requirement of 37 CFR §§1.85, 1.86(b) and 1.123(a), specifying that drawings, or corrections to the drawings, may or must be made by the Office, is hereby waived.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Mar. 16, 1982.

[1017 O.G. 4]

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(16) Discontinuation of Drawing Comparison Fee

The Patent and Trademark Office no longer requires a $10 (ten dollar) comparison fee payment with the submission of formal sheets of drawings to replace originally filed informal drawings. Accordingly, no fee should be submitted, and all existing requirements for a drawing comparison fee are hereby rescinded.

THERESA A. BRELSFORD,
Acting Assistant Commissioner for Administration.

June 9, 1982.

[1020 O.G. 10]

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(17) New Patent Drawing Correction Procedures

Drawings charged out from the Patent and Trademark Office, for the purpose of making changes or corrections, will be released from the Drafting Branch after the mailing of the Notice of Allowance. Most drawings should be available for charge out one week to ten days after the Notice of Allowance mail date. The major exception to this procedure will be when the examiner requires that drafting corrections be made prior to the Notice of Allowance issuance. We anticipate that this exception requirement will occur only for Design applications being appealed.

Unless a duplicate copy of the Drafting Letter has been filed by the attorney/applicant, the Office will not normally provide the commercial bonded draftsman with copies of either examiner approved drawing correction letters or a copy of the Patent and Trademark Office draftsman's noted informalities. It is the applicant's responsibility to provide copies of the necessary drawing corrections and the noted informalities. When drawings are borrowed from the Office draftsman, the serial number, batch number, and Notice of Allowance mailing date should be identified.

If for any reason a corrected and/or substitute drawing is not acceptable, a letter will be sent to the attorney/applicant. A bonded commercial draftsman must present a copy of this letter in order to borrow the unacceptable drawings.

THERESA A. BRELSFORD,
Acting Assistant Commissioner for Administration.

June 28, 1982.

[1020 O.G. 18]

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(18) Listing of Bonded Draftsman

The following listing of bonded draftsman supersedes the listing published on Apr. 6, 1982, at 1017 O.G. 4:

A. J. Davis (Drafting)
1755 S. Jefferson Davis Hwy.
Crystal Sq. 5, Suite 403
Arlington, Va. 22202
(703) 521-5940

American Future Design Co.
P.O. Box 365
1400 Ramsey Dr.
Mayo, Md. 21106
(301) 261-4975

Robert W. Busch
2001 Jefferson Davis Hwy.
Suite 1008
Arlington, Va. 22202
(703) 920-7302

Anthony L. Costantino
12006 Lafayette Ct.
Silver Spring, Md. 20902
(301) 942-0645

Fleit & Jacobson
1217 E St., N.W.
Washington, D.C. 20004
(202) 638-6666

John A. Haigh
9513 Brunett Ave.
Silver Spring, Md. 20901
(301) 588-6739

John Hopkins University
John Hopkins Rd.
Laurel, Md. 20707
(301) 953-7100

Ellsworth G. Jackson
101 Rittenhouse St., N.E.
Washington, D.C. 20011
(202) 726-0908

Keithley Patent Drafting Services
2001 Jefferson Davis Hwy.
Suite 1203
Arlington, Va. 22202
(703) 521-5210

Kirby Lithographic Co.
2900 S. Eads St.
Arlington, Va. 22202
(703) 684-7600

Kostolnik Associates
2575 S. Shirlington Rd.
Arlington, Va. 22202
(703) 920-8155

Robert MacCollum
Patent Drafting Service
1911 Jefferson Davis Hwy.
Suite 700
Arlington, Va. 22202
(703) 521-1115

Mason, Fenwick and Lawrence
1730 Rhode Island Ave., N.W.
Washington, D.C. 20236
(202) 293-2010

Mil-R Production
5906 King James Dr.
Alexandria, Va. 22301
(703) 548-3879

Gerald M. Murphy
P.O. Box 2098
2001 Jefferson Davis Hwy.
Arlington, Va. 22202
(703) 521-1500

Naval Surface Weapon Center
White Oak/Silver Spring, Md. 20910

Patent Reproduction Co.
26 N St., S.E.
Washington, D.C. 20003
(202) 488-7096

Quality Patent Printing
P.O. Box 2404
556 S. 22nd St.
Arlington, Va. 22202
(703) 892-2612

Quinn Patent Drawing Service Co.
2021 Crystal Plz. Dr.
Arlington, Va. 22202
(703) 521-1650

Thomas & Saenz
650 S. Grand Ave., #614
Los Angeles, Calif. 90017
(213) 627-5161

Phillip Sweet
1755 S. Jefferson Davis Hwy.
Crystal Sq. 5, Suite 400
Arlington, Va. 22202
(703) 521-5940

Robert D. Tunney
600 Roosebelt Blvd., #102
Falls Church, Va. 22044
(703) 533-2148

Ultra Graphic, Inc.
3720 Farragut Ave.
Suite 300
Kensington, Md. 20795
(301) 946-1343

Mar. 7, 1984.

THERESA A. BRELSFORD
Assistant Commissioner
for Administration.

[1041 O.G. 11]

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(19) Regulations for the Use of the Facilities of the Patent and Trademark Office

Revision of Regulations

Agency: Patent and Trademark Office, Commerce.
Action: Notice.

Summary: The Patent and Trademark Office gives notice of a revision of its "Regulations for the Public Use of Records in the Public Search Room for Patents of the Patent and Trademark Office," published in the Federal Register of July 14, 1976, 41 FR 29009. The regulations published in the Federal Register of July 14, 1976, are limited to the use of the Public Search Room for Patents. The revision is intended to allow public use of other Patent and Trademark Office record facilities with minimum risk to the security of Patent and Trademark Office personnel and government property.

Effective Date: June 26, 1979.

For Further Information Contact: Bradford R. Huther, Deputy Assistant Commissioner for Administration, Patent and Trademark Office, Washington, D.C. 20231, 703-557-2290.

Supplementary Information: This revision is an extension of the present regulations, published in the Federal Register of July 14, 1976, 41 FR 29009, to allow public use of Patent Examining Group Facilities and the Scientific Library under conditions which are as nearly as possible the same as those which apply to the Public Search Room for Patents.

All persons seeking use of the Public Search Room for Patents and/or the Patent Examining Group Facilities must obtain a User Pass. The guards at the entrances to the Public Search Room for Patents can direct prospective users to the pass issuance desk. User Passes will be issued to persons not under prohibition from using the facilities who agree to abide by the regulations of the Public Search Room for Patents and the Patent Examining Group Facilities.

The use of the Group facilities for search purposes by members of the public is strictly limited to the search of materials not available in the Public Search Room for Patents or the Scientific Library and when it does not conflict with the regular business of Patent and Trademark personnel and only between the hours of 8:45 a.m. and 4:45 p.m. on regular business days.

The Public Search Room for Patents is open 8:00 a.m.–8:00 p.m., Monday through Friday except on legal holidays. The hours of the Record Room are 8:00 a.m.–5:00 p.m. on the days the Public Search Room for Patents is open.

The revised regulations appear below:

Regulations

Regulations for members of the public using the facilities of the U.S. Patent and Trademark Office, including but not limited to the Public Search Room for Patents.

The Public Search Room for Patents is defined as that area comprising the foyers of the lobbies of Buildings 3 and 4 of Crystal Plaza; the offices; Microfilm Center; restrooms and telephone areas off these foyers; the stacks; Record Room public reception area; study and copier areas between the foyers; and the Mezzanine.

The facilities of the Patent Examining Groups are defined as those areas in Buildings 3, 34 and 4 of Crystal Plaza designating Examining Groups.

With the respect to the Group Facilities, authorized personnel under these Regulations, include Supervisory Patent Examiners and Examining Group Directors.

The Scientific Library is located on the second floor of Building 34 of Crystal Plaza.

To maintain and protect the patents and related records located in the Public Search Room for Patents and the Patent Examining Group Facilities, it is necessary to establish and to enforce certain rules and regulations pertaining to the use thereof. Under applicable statutes and regulations, including 40 U.S.C. 486(c); 41 CFR Subpart 101-20.3; and appropriate Sections of Department Organization Orders 30-3A and 30-3B of the Department of Commerce, the regulations appearing below are established for those using the facilities of the Patent and Trademark Office.

These regulations supersede all previous regulations on the subject.

1. All persons using the facilities of the Patent and Trademark Office are subject to the regulations governing conduct on property under the charge and control of the General Services Administration which appear in 41 CFR Subpart 101-20.3 [41 CFR §§101-20.300 through 101-20.314].
2. All posted Official Notices are to be complied with.
3. Smoking is not permitted except in designated areas.
4. No food or beverages in any form are to be consumed except in designated areas.
5. Loud talking, use of radios, and any other forms of activity which may disturb other members of the public and/or Patent and Trademark Office personnel are forbidden.
6. Children brought into the Patent and Trademark Office must not be allowed to disturb others.
7. Users of the facilities may not give the Patent and Trademark Office as a mailing address or otherwise

suggest that mail may be received at the Patent and Trademark Office; nor may correspondence be conducted on official Patent and Trademark Office stationery.

8. Messages shall not be affixed to walls, desks, phone booths, or other public property, except designated mess
9. Patent records and any other property of the Patent and Trademark Office shall not be removed from their normal location without permission from an authorized official; nor shall such records or property be mutilated. Authorization will not be given to remove from any Group Facility, U.S. patents or any other material readily available through the Scientific Library.
10. The use of equipment such as reproducing machines, typewriters and photographic equipment is prohibited without prior permission from an authorized official. Relative to the Public Search Room, the use of dictation equipment is prohibited except in designated areas. Whenever permission is obtained, the use of such equipment must not conflict with Regulation 5.
11. In the Public Search Room for Patents, library trucks or carts are to be used for transporting bundles only. The trucks or carts are not to be used for storage while making searches.
12. In the Public Search Room for Patents, patents temporarily removed from bundles for any purpose must be returned to the proper place in the appropriate bundle.
13. In the Public Search Room for Patents, all bundles of patents must be promptly and properly replaced in the stacks by the user.
14. The reserving of seats and/or working areas is prohibited.
15. Users of the Public Search Room for Patents are not permitted to use Patent and Trademark Office facilities beyond the Public Search Room for Patents after 5:00 p.m.
16. The front portion of the Public Search Room for patents, i.e., that portion facing Crystal Plaza Drive and having a high ceiling shall not be occupied by users after 6:00 p.m.
17. A valid User Pass must be worn and visible at all times when Patent and Trademark Office facilities are being used. In addition, all persons holding User Passes must register with the designated representative in each Examining Group where they search and must sign a log (sign-in, sign-out sheet) indicating time-in, time-out, name, User Pass number, class(es) and subclass(es) users after 6:00 p.m.
18. User Passes are nontransferable and must be surrendered to authorized Patent and Trademark personnel upon request for cause.
19. Packages, briefcases or other personal effects brought into the Public Search Room for Patents or the Group Facilities are subject to search by authorized Patent and Trademark Office personnel upon request.
20. All packages, briefcases or other personal effects brought into the Group Search Rooms must be removed when leaving the Group Search Room areas.
21. Patents and other documents must not be removed from the Group patent shoes for any reason other than for cursory study thereof while kept in close proximity with the shoe and must not be moved out of their normal sequence.
22. All patent shoes must be promptly replaced in their proper location in the shoe cases.
23. All textbooks, journals and the like must be returned to their proper location.
24. All persons using the facilities of the Patent and Trademark Office are to refrain from engaging in any conduct which (1) is criminal in nature or (2) which causes or appears to cause an employee of the Patent and Trademark Office to violate the conflicts of interest regulations of the Department of Commerce [15 CFR §§0.735-1 through 0.735-41].
25. All verbal requests for compliance with these regulations or other posted Patent and Trademark Office Notices pertaining to activity in the Public Search Room for Patents and the Group Facilities, when made by authorized Patent and Trademark Office personnel, must be promptly complied with.

These regulations will be enforced in accordance with the Procedures for Enforcement published in the Federal Register of May 17, 1978, 43 FR 21345 (970 O.G. 114, published May 30, 1978).

Persons violating these regulations may be denied the use of the facilities in the Public Search Room for Patents and the Patent Examining Group Facilities and may further be subjected to prosecution under the Criminal Code. Additionally, the name of any person violating these regulations who is registered to practice before the Patent and Trademark Office may be forwarded to the Solicitor for appropriate action under 37 CFR 1.348.

These Regulations have been instituted in order to maintain high quality and completeness of patent files and to provide, an orderly environment for exploring, or studying in depth, the wealth of scientific and technological information contained in United States Patents. Although the Regulations may cause some inconvenience, the understanding and cooperation of users will insure that, for future users, the knowledge contained in United States Patents will be available in an environment conducive to study in the Public Search Room for Patents and the Patent Examining Group Facilities.

June 20, 1979.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

[984 O.G. 26]

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(20) **Regulations Relating to the Use of Patent and Trademark Office Records Facilities**

Establishment of Enforcement Procedures

Agency: Patent and Trademark Office, Commerce.
Action: Notice.
Summary: The Patent and Trademark Office is adopting procedures for enforcing existing regulations governing the use of the Public Search Room for Patents and the Patent Examining Group Search Facilities by members of the public. Enforcement of the existing regulations is necessary, and is intended by these procedures, to carry out the commitment of the Office to the public to promote an atmosphere conducive to research and maintain the integrity of the files in the Public Search Room for Patents and in the Examining Group Search Facilities.
Effective Date: 6-30-78.
For Further Information Contact: Bradford R. Huther, Deputy Assistant Commissioner for Administration, Patent and Trademark Office, Washington, D.C. 20231, (703) 557-2290.
Supplementary Information: The procedures will apply in enforcing the regulations for the public use of records of the Public Search Room for Patents and the Patent Examining Group Search Facilities. The regulations of the Public Search Room for Patents were published in the Federal Register for July 14, 1976, 41 F.R. 29009, and incorporated in a Search Room User Agreement entered into by each person who is issued a User Pass. Regulations for Users of the Patent Examining Group Search Facilities were established under Rule 2 of the regulations of the Public Search Room for Patents and were published in the OFFICIAL GAZETTE of March 22, 1977, 956 O.G. 1118. The procedures appear below.

PROCEDURES FOR ENFORCEMENT OF THE REGULATIONS FOR THE PUBLIC USE OF RECORDS IN THE PUBLIC SEARCH ROOM FOR PATENTS AND THE PATENT EXAMINING GROUP SEARCH FACILITIES

Under applicable statutes and regulations, including 40 U.S.C. 486(c); 41 CFR 101-20.3; and appropriate sec-

tions of Department Organization Orders 30-3A and 30-3B of the Department of Commerce, the procedures appearing below are established.

Violation Involving the Security System

1. *Unauthorized removal of government property.*

(a) The Public Search Room for Patents is equipped with a security system designed to sound an alarm when an attempt to remove government property from the Public Search Room is detected. Each alarm signal triggered by a person passing through an exit to the Public Search Room will be investigated by security guards stationed at the Public Search Room exits. The person involved will be required to stop and allow the security guards to determine the cause of the alarm. If non-government property is the cause for the alarm, the person will be allowed to proceed without further delay. If unauthorized possession of government property is found to be the cause of the alarm, the person in whose possession the property is found will be advised that a violation has occurred and will be required to surrender the property to the Manager of the Public Search Room. An oral explanation for the possession of such property will be requested by the Manager.

(b) The Manager of the Public Search Room will immediately report each incident involving unauthorized possession of government property to the Deputy Assistant Commissioner for Administration by telephone, and if requested submit a written report, together with the government property and User Pass involved to the Deputy Assistant Commissioner for Administration.

(3) If it shall appear to the Deputy Assistant Commissioner for Administration that unauthorized possession of government property, detected by the security system, was inadvertent or otherwise unintentional, no further action will be taken. Otherwise, the Deputy Assistant Commissioner for Administration will request the person involved to show cause in writing why his or her User Pass should not be suspended or revoked pursuant to the terms of the Search Room User Agreement. A written decision will be rendered by the Deputy Assistant Commissioner for Administration after consideration of any timely submitted response.

Other Violations of the Public Search Room Regulations

2. *All other violations of the Public Search Room Regulations.*

(a) Each observed or reported violation will be investigated by the Manager of the Public Search Room. If a violation has occurred and is not denied, the person involved will be verbally requested by the Manager to comply with the regulations. If the person involved denies that a violation has occurred, or refuses to comply with a verbal request of the Manager to comply with the regulations, or violates the regulations after having agreed to comply with them, the person will be required to surrender his or her User Pass to the Manager of the Public Search Room.

(b) The Manager of the Public Search Room will submit a written report of each violation, and the User Pass, if surrendered, to the Deputy Assistant Commissioner for Administration.

(c) If the Deputy Assistant Commissioner for Administration is satisfied that a reported violation was inadvertent or otherwise unintentional, the User Pass, if surrendered, will be returned and no furt er action will be taken. In all other cases, the Deputy Assistant Commissioner for Administration will request the person involved to show cause in writing why his or her User Pass should not be suspended or revoked pursuant to the terms of the Search Room User Agreement. A written decision will be rendered by the Deputy Assistant Commissioner for Administration after consideration of any timely submitted response.

Violations of the Patent Examining Group Search Facilities Regulations

3. *Violations of the Regulations for Users of the Patent Examining Group Search Facilities.*

(a) Each observed or reported violation will be investigated by Authorized Official. If a violation has occurred, and is not denied, the person involved will be verbally requested to comply with the regulations. If the person involved denies that a violation has occurred, or refuses to comply with a verbal request to comply with regulations, or violates the regulations after having agreed to comply with them, the person involved will be required to surrender his or her User Pass to the Authorized Official.

(b) The Authorized Official will submit a written report of each violation, and the User Pass, if surrendered, to the Deputy Assistant Commissioner for Patents.

(c) If the Deputy Assistant Commissioner for Patents is satisfied that violation was inadvertent or otherwise unintentional, the User Pass, if surrendered, will be returned and no further action will be taken. In all other cases, the Deputy Assistant Commissioner for Patents will request the person involved to show cause in writing why his or her User Pass should not be suspended or revoked. A written decision will be rendered by the Deputy Assistant Commissioner for Patents after consideration of any timely submitted response.

Penalties

4. *Factors to be Considered in Assessing Penalties.*

(a) Penalties will be determined on a case-by-case basis. A record of penalties imposed for given violations will be kept and made available to the public upon request.

(b) Due weight may be given to prior violations of the regulations in assessing whether any given violation is willful, deliberate or intentional.

(c) Prior violations of the regulations will be considered in determining any specific penalty to be imposed. Depending upon the circumstances, the penalty for a first offense may range from an oral or written warning to a 60-day suspension of the User Pass. For a second offense, the penalty may be a suspension of from 5 days to 1 year. For a third offense, the penalty may range from a 30-day suspension to revocation of the User Pass.

General Provisions

5. *Use of Search Facilities During Suspension or After Revocation of User Pass.*

No individual will be permitted to use the Public Search Room for Patents or the Patent Examining Group Search Facilities while his or her User Pass is suspended or revoked.

6. *Temporary User Pass.*

Any person whose User Pass was surrendered, but not suspended or revoked, may be issued a temporary User Pass which shall be valid until the User Pass is returned or a decision is rendered pursuant to paragraph 1(c), 2(c), 3(c).

7. *Absence of the Deputy Assistant Commissioner for Administration.*

In the absence of the Deputy Assistant Commissioner for Administration, the Director of the Office of Patent and Trademark Services will carry out the functions and responsibilities assigned to the Deputy Assistant Commissioner for Administration in paragraph 1(b) and (c) and 2(b) and (c).

8. *Absence of the Manager of the Public Search Room.*

In the absence of the Manager of the Public Search Room, the Acting Manager will carry out the duties and responsibilities assigned to the Manager in paragraphs 1(a), 1(b), 2(a) and 2(b).

9. *Assistance.*

The Manager of the Public Search Room and the Authorized Official may, when necessary request the Security Officer of the Patent and Trademark Office or the GSA to provide assistance in carrying out their function in paragraphs 1(a), 2(a), and 3(a).

10. *Petitions.*

A decision rendered by the Deputy Assistant Commissioner for Administration, the Director of the Office of Patent and Trademark Services, or the Deputy Assistant Commissioner for Patents may be reviewed on petition to the Commissioner.

LUTRELLE F. PARKER,
May 5, 1978. *Acting Commissioner of Patents and Trademarks.*

[970 O.G. 114]

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(21) **Revised Regulations and Procedures for Visitors to the Patent and Trademark Office**

Effective Oct. 1, 1982, all visitors to the Patent and Trademark Office (PTO) will be required to obtain and display a visitor pass while using PTO facilities. Passes will be available in building CP3, Room 1A01.

The current User Agreement will be replaced by the following Regulations for Visitors to the PTO:

These regulations are established for members of the public using the facilities of the PTO and will be enforced by designated officials of the PTO.

All persons using the facilities of the PTO are subject to regulations governing conduct on property under the charge and control of the General Services Administration which appear in 41 CFR Subpart 101-20.3 (41 CFR §§101-20.300 through 101-20.314).

Packages, briefcases and other personal effects brought into the PTO are subject to search by authorized personnel for reasonable cause.

All persons must comply with posted Official Notices.

User Passes

1. Individuals visiting any area of the PTO must obtain and display a valid, non-transferable User Pass at all times while on the premises.
2. Permanent User Passes may be obtained from the Manager of the Patent Public Search Room. The first User Pass is issued at no charge. Duplicate or replacement User Passes will be provided at a cost of $5.00 per Pass. Temporary User Passes may be obtained at no cost and are valid through the expiration date stamped thereon.
3. Permanent and Temporary User Passes must be surrendered to authorized PTO officials upon request for cause.

Use of Search Areas

4. When searching in a patent examining organization, visitors must register with the designated representative and sign a log indicating time entering and leaving the area, User Pass number, and class(es) and subclass(es) searched.
5. Documents removed from the files must be promptly returned to their proper location after use. No documents may be removed from the area in which they were obtained without specific authorization from a Group Director or a Supervisory Patent Examiner.
6. Use of Patent Examining Group search areas is strictly limited to searching materials unavailable in the Patent Public Search Room or the Scientific Library. Examining Group search areas may be used only when such use does not conflict with the regular business of the organization.
7. Trademark registrations may not be removed from the secured bundles in the registered file. Photocopying from bound volumes of trademarks is prohibited.

Prohibitions

8. Smoking and consumption of food or beverages in other than designated areas.
9. Loud talking or any conduct which is disruptive to others.
10. Use of radios, typewriters, photographic equipment, dictation equipment, and like items without permission from a designated official of the PTO.
11. Improper use, mutilation, destruction or removal of patent or trademark records or government property.
12. Reserving seats or work areas.
13. Affixing messages to walls, telephone booths or other government property, except designated message boards.
14. Use of the PTO as a mailing address, and use of PTO stationery.

Hours of Operations

15. Use of PTO facilities is limited to the following hours on regular business days:

Patent Public Search Room, High Ceiling Area	8:00 am–6:00 pm
Low Ceiling Area and Mezzanine	8:00 am–8:00 pm
Trademark Search Library	8:00 am–5:30 pm
Scientific Library, Assignment Search Room, Microfilm Center, Patent Examining Organizations, and all other public access areas of the PTO	8:45 am–4:45 pm

THERESA A. BRELSFORD,
Sept. 8, 1982. *Acting Assistant Commissioner for Administration.*

[1023 O.G. 3]

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(22) **Unlawful Removal of Labels**

We have found a large number of security labels, torn from Search Room patent copies, in stack areas of the Public Search Room. We remind persons removing security labels or otherwise mutilating Search Room patent copies, or removing Search Room patent copies from the Search Room without authorization, that such acts are criminal offenses punishable by fine, imprisonment or both.

You should be aware that engaging in such acts violates the prohibition against "the willful destruction of or damage to property; the theft of property." 41 Code of Federal Regulations §101-20.303. Violations are punishable by "a fine of not more than $50 or imprisonment of not more than 30 days, or both." 41 Code of Federal Regulations §101-20.315.

You should also be aware that engaging in such acts subjects you to punishment under the following criminal provision in Title 18 U.S. Code, §2071:

> (a) Whoever willfully and unlawfully conceals, removes, mutilates, obliterates, or destroys, or attempts to do so, or, with intent to do so takes and carries away any record, proceeding, map, book, paper, document or other thing * * * shall be fined not more than $2,000 or imprisoned not more than three years, or both.
>
> (b) Whoever, having custody of any such record, proceeding, map, book, document, paper, or other thing, willfully and unlawfully conceals, removes, mutilates, obliterates, falsifies, or destroys the same, shall be fined not more than $2,000 or imprisoned not more than three years, or both; and shall forfeit his office and be disqualified from holding any office under the United States.

UNLESS THE REMOVAL OF SECURITY LABELS FROM SEARCH ROOM PATENT COPIES

CEASES, THE OFFICE WILL TAKE APPROPRIATE ACTION, SUCH AS EXERCISING ITS AUTHORITY UNDER 41 CODE OF FEDERAL REGULATIONS§101-20.301 TO INSPECT PACKAGES, BRIEFCASES AND OTHER CONTAINERS BROUGHT INTO, WHILE ON, OR BEING REMOVED FROM THE SEARCH ROOM.

GERALD J. MOSSINMar. 28, 1983.
Commissioner of Patents and Trademarks.

[1029 OG 136]

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(23) **Out-of-Town Request for Files**

Delays are being experienced in receiving files ordered from the Federal Records Center in Suitland, Md. Therefore, more time must be allowed when out-of-town requestors are ordering patented files or abandoned or registered trademark files in advance of their arrival in the area. Until recently, a five-day notice was sufficient to obtain a file located in the Federal Records Center. Now we are suggesting that ten days be allowed when ordering Suitland files. A 24-hour notice is still normally adequate when the file is located in the PTO File Repository in Crystal City. Out-of-town requests for files should be directed to Ms. Jacqueline Waldo on (703) 557-2977. Requestors will be notified by phone, prior to planned arrival date, whether or not the requested file will be available.

THERESA A. BRELSFORD,
July 10, 1984 *Assistant Commissioner for Administration.*

[1045 O.G. 3]

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(24) **Use of Certificate of Correction Forms**

The purpose of this notice is, to once again, remind patentees and their attorneys and agents to submit the text of any correction under 37 CFR 1.322 and 1.323 on the Certificate of Correction form, PTO-1050, which is available free of charge from the Patent and Trademark Office. The presentation of all corrections on this form permits its use as camera copy for prompt, direct offset printing of the Certificate of Correction.

Instructions for use of Form PTO-1050 are printed on the top portion thereof, and are also set forth, in further detail, in Section 1402.02 of the Manual of Patent Examining Procedures. It is especially important that the typing be clean and clear. Both thin, light type and heavy, smudged type should be avoided. Changes and corrections are preferably made by use of white opaque correction fluid.

The typing should be within the borders printed on the form and a two-inch blank space should be left at the bottom of the last page of the form for the placement of the signature of the Attesting Officer.

Both sheets of the printed form should be forwarded to the Office. The copies should be stapled together only at the upper left-hand margin at the indicated location.

Copies of form PTO-1050 may be obtained, as needed, from either the Correspondence and Mail Division in Building 2, or from the receptionist in the lobby of Building 3, Crystal Plaza, Arlington, Va.

RICHARD J. SHAKMAN,
May 10, 1977. *Assistant Commissioner for Administration.*

[959 O.G. 3]

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(25) **ARS Patent Culture Collection Initiation of Fees**

As a result of recent policy changes, the ARS Culture Collection (NRRL) henceforth will charge a user fee for deposit and distribution of microbial cultures maintained in conjunction with U.S. and foreign patent applications. User fees apply to patent cultures only; as it has in the past, the ARS Culture Collection will continue to exchange other microbial germplasm with the scientific community without charge. The fee schedule will apply to all patent cultures deposited after Sept. 30, 1983. A fee of $500.00 will be charged for each strain, payable at the time of deposit. A $20.00 fee will be charged for the distribution of all released patent cultures that have been deposited after Sept. 30, 1983. There will be no charge for distribution of patent cultures already on deposit or for others received before this date. Checks, in U.S. dollars, should be made payable to the Agricultural Research Service, USDA. USDA laboratories and designated cooperators will be exempt from fee assessment. The types of microorganisms accepted by the ARS Culture Collection are the same as announced in the past and include industrially important bacteria, yeasts, molds, and *Actinomycetales*. Viruses and highly pathogenic or especially fastidious microorganisms are not accepted. Further information on types of microorganisms accepted and conditions for deposit may be obtained by contacting A. J. Lyons, Curator, ARS Patent Culture Collection, Northern Regional Research Center, USDA-ARS-NCR, 1815 N. University St., Peoria, Ill. 61604 (Tel. 309/685-4011).

[1033 OG 26]

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(26) **Notice to Subscribers**

The Patent and Trademark Office announces a change in the point of contact for subscribers who have not been receiving all of their copies of the Official Gazette, Manual of Patent Examining Procedures Revisions, Annual Indices, or other patent and trademark publications. All correspondence and inquiries concerning subscription services including requests for reinstatement or renewal of subscriptions should be directed to:

Mr. Michael F. DiMario
Assistant Public Printer
Superintendent of Documents (SD)
U.S. Government Printing Office
Washington, D.C. 20401

Furthermore, the Superintendent of Documents advises that expiration notices are sent out approximately three months before the expiration date. However, subscribers should not rely on this schedule. If a notice is not received within two months of the expiration date, the subscriber should renew the subscription with the Superintendent of Documents. Attach a label from the envelope in which the publication is received, together with a check covering the amount of the subscription. If a deposit account with the Superintendent of Documents is to be used, include the deposit account number with the renewal.

This notice is effective with the publication date and supersedes the notice published on this subject in 969 O.G. 2, dated Mar. 14, 1978.

THERESA A. BRELSFORD,
Aug. 3, 1984. *Assistant Commissioner for Administration.*

[1045 O.G. 28]

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(27) **Subscription Pricing Information**

The subscription prices on the following publications have been changed as indicated below:

Title: Official Gazette, Patent Section	
First-class domestic mailing	$375.00
Fourth-class domestic mailing	270.00
Fourth-class foreign mailing	337.50
Single copies each, domestic	13.00
Single copies each, foreign	16.25

Back copies will not be furnished.

This change is effective with Government Periodicals and Subscription Services Price List 36, dated Summer, 1984.

Foreign first-class mailing rates will be furnished upon request. Direct all inquiries and subscription requests to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Checks for subscription orders should be made payable to the Superintendent of Documents. If a Deposit Account with the Superintendent of Documents is to be used, please include the Deposit Account Number with the order.

THERESA A. BRELSFORD,
Sept. 11, 1984. *Assistant Commissioner for Administration.*

[1047 O.G. 11]

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(28) **Subscription Pricing Information**

The annual subscription prices on the following publication have been changed as indicated below:

Title: Patent and Trademark Office Notices

First-class domestic mailing	$ 71.00
First-class foreign mailing	not available
Third-class domestic mailing	57.00
Third-class foreign mailing	71.25

This change is effective with Government Periodicals and Subscription Services Price List 36, dated Summer 1984.

Direct all inquiries and subscription requests to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Checks for subscription orders should be made payable to the Superintendent of Documents. If a Deposit Account with the Superintendent of Documents is to be used, please include the Deposit Account Number with the order.

THERESA A. BRELSFORD,
May 7, 1984. *Assistant Commissioner for Administration.*

[1042 O.G. 58]

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(29) **Rules Service Company Address Change**

The Patent and Trademark Office has been notified of a change in the address and telephone number of the Rules Service Company which publishes a looseleaf Rules of Practice in Patent and Trademark Cases with a revision service. The new address and telephone numbers are:

Rules Service Company
4341 Montgomery Avenue
Bethesda, Maryland 20014
(301) 656-4660

SIDNEY A. DIAMOND,
Apr. 7, 1980. *Commissioner of Patents and Trademarks.*

[994 O.G. 10]

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(30) **Defensive Publication Program**

A change in the numbering system of Defensive Publication documents will be implemented, effective with the issue of November 4, 1980.

The numbering system will be as follows:

T XXXX XX

Sequential Document Number

Official Gazette Volume Number

Document Category. "T" denotes Technical Disclosure

The numbering system as announced in 869 O.G. 687 remains in effect for the issues of December 16, 1969 through October 1980.

RICHARD J. SHAKMAN,
Sept. 2, 1980. *Assistant Commissioner for Administration.*

[998 O.G. 38]

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(31) **Patent and Trademark Office Services**

The Patent and Trademark Office is making every effort to utilize its resources as effectively and efficiently as possible. However, delays in some services are being experienced. To improve services, the PTO is taking the following steps:

Beginning with the issue of January 1, 1980, the original formal drawing which is supplied by the patent applicant and is 8 1/2 by 14 inches (21.0 by 29.7 cm.) is being stored within the patented file in the Patent Search Division. This is a change from the earlier practice under which the drawing is stored in a separate location from the patent file wrappers. The new procedure will simplify obtaining the complete patented file. This procedure will be used for a three month trial period and then reevaluated for its effectiveness.

Effective December 3, 1979, sale of tokens and maintenance of all token operated photocopy and microfilm reader-printer equipment throughout the Patent and Trademark Office are being performed by a private contractor, T S Info Systems, Inc. (TSI). Improved quality and timeliness of copy service to the public are anticipated.

All token sales are made between the hours of 8:30 A.M. and 5:00 P.M. at the token sales booth in the Record Room located in Building CP-4. When purchasing tokens by check, please make the check payable to "TSI" rather than "Commissioner of Patents and Trademarks." Tokens will not be sold at the cashier's window in CP2.

Effective February 1, 1980, charges for tokens to PTO customer deposit accounts will no longer be accepted.

Effective immediately, no requests for new patent or trademark drawings will be accepted by the Patent and Trademark Office. New drawings will be prepared only for requests already received. All currently available drafting time and facilities are required to correct the backlog of drawings needing correction prior to issue. When this backlog has been eliminated, a notice will be issued to that effect and new drawings can again be prepared for the public.

Effective immediately, three additional special mail room boxes will be established in the PTO:

Box 4 will be used for all mail for the Office of Legislation and International Affairs.

Box 5 will be used for documents which are related to trademarks and for which *no fee* is required at the time of filing; e.g., amendments to applications and requests for extensions of time to file an opposition. For mail directed to the Trademark Trial and Appeal Board, put "Attention TTAB" on the envelope in addition to "Box 5."

Box 7 will be used for reissue applications which are involved in litigation and any subsequently filed papers for these applications.

Mail appropriately addressed will be sorted and forwarded on a more timely basis.

Applicants and other users of the PTO services can assist in improving the efficiency of office by doing the following:

Use the following special PTO box numbers for forwarding particular types of mail. The boxes should be used only for the specified purpose.

Box 2—Replenishment of funds in deposit accounts.

Box 4—Mail for the Office of Legislation and International Affairs.

Box 5—"No fee" mail related to trademarks.

Box 7—Reissue applications for patents involved in litigation and any subsequently filed papers for these applications.

Box 8—All papers for the Office of the Solicitor.

Box 9—Coupon orders for U.S. patent and trademark copies.

Box 10—Orders for certified copies of patent and trademark applications.

Box PCT—Mail related to applications filed under the Patent Cooperation Treaty.

Only that material for which the special box was established should be enclosed.

The special box numbers have been established to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Therefore, if any documents other than the specified type identified for each box are addressed to that box, they will be delayed in reaching the appropriate area for which they were intended.

Envelopes should be addressed:

Box _____
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Consider the fact that some PTO services are experiencing delays, and allow sufficient lead time for services requested of the Office. Where possible, urgent items which require no fee should be hand delivered to the appropriate area.

Minimize the number of inquiries to the PTO regarding acknowledgment of receipt of applications, fee papers, orders for patent copies, etc.

Include a self addressed return post card with newly filed applications. The serial number assigned the application will be stamped on the post card, which will constitute the means by which the application can be identified.

Use commercial services for preparation of new patent and trademark application drawings.

On all papers which are filed in patent and trademark applications and are being sent to an examining group, include the appropriate identifying data, such as examining group number, examiner's name, and the number of the application paper to which the response is directed. The paper should also identify the type of document being presented (e.g., response to Office action #___, amendment, etc.). The name and telephone number of the individual representing the applicant also should appear on all papers.

These steps have been devised in an effort to minimize delays in services. We solicit the help and cooperation of the public.

Jan. 4, 1980. SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

[990 O.G. 184]

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(32) Service of Court Papers on the Commissioner of Patents and Trademarks

Those having occasion to serve papers associated with court proceedings by mail are reminded that a special mailing address has been established to provide prompt forwarding to the Office of the Solicitor. The use of this address will ensure that the papers will not be delayed in dispatch. In court proceedings in which the Commissioner is a party, the notices of appeal to the U.S. Court of Appeals for the Federal Circuit and all service copies of papers filed in courts should be addressed:

Solicitor
Box 8
U.S. Patent and Trademark Office
Washington, D.C. 20231

Service copies of briefs and papers hand-carried to the Mail Room of the Patent and Trademark Office should likewise be addressed as shown above.

Sept. 10, 1982. Joseph Nakamura,
Solicitor.

[1023 O.G. 3]

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(33) Automated Search Experiments

The United States Patent and Trademark Office (PTO) intends to carry out research and evaluation projects dealing with automated full-text searching of U.S. Patents.

To further this objective, the PTO has entered into an agreement with Mead Data Central to provide the PTO access to and support for the use of the LEXIS full-text system. Using that system, the PTO will test and evaluate the effectiveness of searching the full text of over 50,000 U.S. patents. As part of this experiment, the PTO will furnish to Mead Data Central a special compilation of tapes from an extensive library of computer tapes containing the full text of U.S. patents from 1970 to the present.

The PTO would welcome multiple experiments using the same or similar techniques and/or technology as Mead Data Central, and thus, the PTO is willing to enter into the same agreement, or a similar agreement on mutually agreeable terms, with any other responsible party, within 18 months from the date of this notice.

Additional information regarding this matter may be obtained from:

Donald P. Stein, Director
Office of Search Systems
U.S. Patent & Trademark Office
Washington, D.C. 20231
TEL: 703-557-3763

Aug. 3, 1981. GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[1010 O.G. 3]

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(34) Sale of Copies of Reexamination Requests

Copies of reexamination requests, all cited references, and the file wrapper and contents of the patent file for which reexamination is requested are available at a charge of $0.30 per page. Orders for such copies must indicate the control number assigned the reexamination request. Orders should be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: Customer Services Division.

July 31, 1981. GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[1010 O.G. 4]

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(35) Electronic Patent Data Dissemination Guidelines

Introduction

The U.S. Patent and Trademark Office (PTO) has undertaken a program to fully automate its operations. As a result of the automation, new forms of patent data will be created and new techniques will become available to facilitate the end use of one of the largest technical information resources of the nation, the files of U.S. and foreign patents. To fulfill its mission to disseminate such information and to aid in the management of the electronic information resources, the PTO has formulated the following general principles and guidelines regarding electronic, digital patent data dissemination and distribution.

To the extent that formal regulations will be necessary to carry out these guidelines, separate formal rulemaking procedures will be undertaken. The purpose of this notice is to inform the public as early as possible of the PTO's present policies in automating its patent operations.

The public is urged to consider and submit comments on these guidelines. Please address comments to:

J. Howard Bryant
Administrator for Automation
U.S. Patent and Trademark Office
Washington, D.C. 20231

Background

In response to P.L. 96the PTO prepared and submitted to Congress on Dec. 13, 1982, its plan for the complete automation of its operations by 1990. The mandate to develop the plan stemmed from the recognition that problems of increasing magnitude threaten the effectiveness of the U.S. patent system. These problems relate to the increasing difficulty of maintaining the integrity of the all-paper hand-file and retrieval search files on which patent examination depends. Surveys indicate that at any one time, about seven percent of the search files are missing or misfiled. The process of matching the 20,000 documents of correspondence and other items that arrive in the PTO daily to the 240,000 pending patent applications is prone to a high rate of error. The already enormous data base in the patent examining search files alone — more than 25,000,000 documents — is projected to double by the end of the century. The solution to these problems is the application of computer technology to the functions of the PTO. The automation plan was developed around the concept of an essentially paperless office, using computer processable, electronic data bases to replace the existing paper files. Data will be converted to computer processable form from applications and patent search files using a variety of technical methods — optical character recognition, digital facsimile scanning, and word processing. Once the electronic data base is created, patent examiners and other PTO personnel will use it to perform searches, conduct examinations, and prepare office actions. A specially configured electronic workstation will be used to support these functions. The electronic data base also will provide the data to print the *Official Gazette* and to make copies of patents for sale to the public.

Automation is being accomplished in three stages, beginning with the installation of a proof-of-concept system to prove and refine the application of the technology to the patent process. Once proven, the test installation will be expanded in the second stage to support all of the internal functions of the PTO. In the third stage, public access to patent information will be expanded, and electronic interconnections between cooperating foreign patent offices will be established.

Considerable progress has been made in implementing the automation plan. A $300 million contract has been awarded to the Planning Research Corp., teamed with the Chemical Abstracts Service (a not-for-profit arm of the American Chemical Society) to provide computer software and equipment, together with supporting services, for an Automated Patent System (APS). Installation of the Automated Patent System for Stage 1 will begin late in 1984 and its evaluation will be completed in the summer of 1985. Part of the electronic data base — the text of patents from 1970 to the present — is available as a by-product of patent printing. Two pending procurement actions will provide for the conversion into computer processable form of the remainder of the backfile of U.S. patents and all future applications. Agreements have been reached with the European and Japanese Patent Offices to exchange electronic patent data bases. In brief, the most significant initial steps leading to the automation of the PTO have been carried out as planned.

As a result of the automation program, the PTO plans to create or obtain and maintain the following electronic data bases in its Automated Patent System(APS):

1. All U.S. patents, patent application files, and releated patent data such as bibliographic, classification, status, and ownership information;
2. A comprehensive collection of foreign patent documents and related patent data such as bibliographic and classification information, captured by the PTO or obtained through exchanges with other patent offices, intergovernmental organizations, or other entities.
3. A collection of selected non-patent technical literature.

These data bases will be accessed using electronic workstations with dual, high-resolution displays, and software that provides the capability to use index and full text search techniques. These search techniques include the ability to search according to the current U.S. Patent Classification System, and an international patent classification system. The patent examiners will also be provided with access to selected commercial search data bases using their electronic workstations.

The PTO considered several approaches to the dissemination of patent data, and adopted the following general principles and guidelines.

I. Dissemination Goals and Objectives

It is the goal of the PTO to achieve effective, widespread dissemination of patent information to all segments of the U.S. public.

A. This will be accomplished directly by providing electronic data base search and retrieval services in public search facilities located in the PTO and other locations which may be established by the Government. To the extent technically feasible and economically viable, services also will be provided in cooperation with Patent Depository Libraries (PDLs), under provisions of 35 U.S.C. 13. PDLs are Federal, state and local government or non-commercial university libraries designated by the PTO to offer public, nonprofit access to patent collections.
B. The PTO will pursue its dissemination goal indirectly by encouraging the private sector to offer commercial patent search and retrieval services outside the public search facilities and PDLs. The PTO will seek to avoid competition with private sector firms in providing such services to the public.

II. Direct Dissemination to the Public

A. The PTO will seek to provide the following in the public search facilities:
   1. Electronic access to all the capabilities of the Automated Patent System (APS) that will be available to patent examiners, excluding pending and abandoned applications not accessible under 35 U.S.C. 122, at user fee rates based on the marginal cost of providing the access; and
   2. Access at commercial rates, to commercial data bases that are available to the patent examiners.
B. To the extent that it is technically feasible and economically viable, the PTO will seek to provide in the PDLs access to the capabilities of the Automated Patent System, excluding pending and abandoned applications not accessible under 35 U.S.C. 122, at user fee rates based on the marginal cost of providing those services.

III. Distribution to Commercial Data Base Vendors

The PTO will pursue its dissemination goals indirectly by making its electronic patent data available to commercial data base vendors that provide commercial search and retrieval services to the public. The PTO will provide its data to such commercial data base vendors under the following conditions:

A. All U.S. patent data created by the PTO will be made available in bulk form, that is on magnetic tape or another suitable medium.
B. In general, the PTO will not distribute the data received from another patent office but will seek to have contractual arrangements established directly between the other patent office and the commercial data base vendor. The PTO will not act as a service agent or representative of another office unless there is a special need that cannot be met otherwise.
C. Fees charged to commercial data base vendors for bulk U.S. patent data will be based on the marginal

cost of providing such distribution services plus a fair market value charge for the data, as set by the PTO.

D. Normally, arrangements with commercial data base vendors will be non-exclusive. Bulk resale of PTO data by commercial data base vendors will be prohibited by the terms of the bulk sale agreement.

IV. Exchange of International Data

International electronic patent data exchanges between the PTO and other patent offices will be made when deemed to be advantageous. Dissemination of data obtained through data exchanges will be based on the following guideline: all data obtained by exchanges from other patent offices will be obtained under agreements that will permit the data to be incorporated into the Automated Patent System (APS). If the data cannot be incorporated into the Automated Patent System (APS), it will be governed by these guidelines as they apply to commercial data bases.

June 8, 1984. GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[1044 O.G. 11]

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(36) **Computer Aided Search for Class 364 Subclasses 200 and 900**

In 1975 the Patent and Trademark Office installed an experimental computer search system for searching the computer and digital data processing system arts classified in Class 364/200 and 900. This system, known as Computer Controlled Microform Search System (CCMSS), functioned until 1983 when it could no longer be kept operational.

A new computer aided search system, Online Searching and Computer Aided Retrieval (OSCAR), has been installed and is available to the public. The new system possesses features similar to the previous system in that each subclass is searchable using a topic index list of approximately 400 terms, which may be combined with Boolean logic into a search question. The user is able to view from 5 to 12 pages of documents meeting the search strategy under computer control of a microfilm viewer.

OSCAR has been put on line with a small sample data base of approximately 375 patent documents in each subclass. Patent dates of these documents range from early 1981 to the present. It is expected that in the very near future the entire data base for these subclasses will be available on OSCAR. In the meantime, the existing backup system will continue to be available.

Terminals are available for public use in Crystal Plz. 2, Rm. 5C-22. Patent and Trademark Office personnel will be available to assist the user in terminal operation. Reservations for using the terminals may be made by calling 703-557-3651 during normal business hours.

July 16, 1984. EARL LEVY,
Director, Group 230
Patent and Trademark Office.

[1045 O.G. 29]

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(37) **Availability of Concordances Between the United States Patent Classification and the International Patent Classification**

The Patent and Trademark Office announces that the 4th Edition of the Concordance which relates the U.S. Patent Classification (as revised to Apr. 9, 1979) to the Third Edition of the International Patent Classification, is now again available for sale by the U.S. Government Printing Office. Inquiries should be directed to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402
(Stock Number 003-004-00562-9) (Cost $6.50)

Also, a Reverse Concordance, which is the opposite of the above mentioned Concordance, is now available which relates the International Patent Classification to the U.S. Patent Classification. This Reverse Concordance will not be published, but is now available for loan to interested parties for copying at their own expense.

The loan copy, which consists of 517 pages, may be obtained by contacting:

Office of International Patent Classification
Crystal Square, Bldg. 4, Room 108
c/o Commissioner of Patents and Trademarks
Washington, D.C. 20231
Tel.: (703) 557-3756

Nov. 17, 1981. RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

[1013 O.G. 36]

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(38) **Simultaneous Issue of Patents**

Applicants and their attorneys who desire the simultaneous issue of allowed applications must submit the request to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attention: Office of Publications
CP-2, Room 5C26

The request must contain the following information about *each* allowed application for which simultaneous issue is requested:

(1) serial number
(2) filing date
(3) name(s) of inventor(s)
(4) title of invention
(5) date of allowance

Separate copies of the request must accompany *each* Issue Fee Transmittal (PTO-85b).

Questions concerning this practice may be directed to Mr. Stanley J. Bania, Director, Office of Publications, Area Code (703) 557-3794.

Aug. 25, 1978. RICHARD J. SHAKMAN,
Assistant Commissioner for Administration.

[974 O.G. 16]

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(39) **Notice of Restructuring and Move of Patent Examining Corps**

The Patent Examining Corps is being restructured and moved to meet the needs of the public, changing technology and workload requirements.

The restructuring and move include three major aspects. The first major aspect involves hiring a large number of new examiners and a rebalancing of the Examining Corps to more accurately reflect anticipated workloads and better associate related arts. To this end, the five existing chemical groups will be rearranged into four chemical groups, i.e., Groups 110, 120, 130, and 150. In addition, a new electrical Group 260 will be assembled from components drawn from the other electrical groups.

The second aspect of current efforts involves the creation of twelve (12) additional art units to provide appropriate supervision for the enlarged Examining Corps. These new art units have been distributed throughout the Groups as dictated by anticipated supervisory workloads.

The third aspect involves the physical relocation of many persons and search files as Examining Group 150 moves into additional space on two floors in Bldg. 2 in Crystal Plz.

It is expected that the relocation and other changes will begin about Mar. 19, 1984, and end by May 1, 1984. The Groups will then be located as shown in the table at the end of this notice.

The efforts described above will result in many examiners being moved to new rooms and some reassigned to

different groups and art units. Many pending applications will be assigned to new groups and art units. The Office will do everything practical to minimize the adverse impact of all this change. However, problems and a certain amount of confusion will undoubtedly occur. To help the public cope with these changes, the following guidance is offered

1. Examining Corps personnel can be reached on the telephone by calling their last known number (e.g., the number shown on the last Office action). The answering receptionist will be provided with a directory of phone numbers which will be updated daily. The caller will be informed of or transferred, if possible, to the new number.
2. Persons who are not successful in reaching an Office employee by telephone should call our information number (703)557-3080 for the latest telephone number of the employee.
3. To determine the current Group or art unit assignment or other pertinent information concerning a patent application (for those entitled to such information) call any telephone associated with the Group to which the application was assigned. The answering receptionist—once assured of the caller's identity and/or entitlement—will provide the current art unit assignment or the other pertinent information concerning the application as shown on the PALM system.
4. Once the new art unit assignment of an application is known, all correspondence involving that application should identify the new art unit. However, all correspondence addressed to the art unit shown on the most recent communication from the Office will be routed to the correct destination.
5. A current directory will be posted periodically in or near the Public Search Room.
6. After the relocations and other changes are completed, new Group and art unit telephone and room numbers will be published in the Official Gazette.
7. Persons delivering papers, arriving for interviews or visiting the Examining Corps after Mar. 19, 1984, should consult the directory posted near the Public Search Room for the current location of the organization and person they are visiting.

(See Table on pages 172-173)

[1040 O.G. 14]

RECORDS AND FILES

(40) Assignee Names

Effective April 1, 1976, only the first appearing name of an assignee will be printed on the patent where multiple names for the *same* party are identified on the Base Issue Fee Transmittal form, POL-85b. Such multiple names may occur when both a legal name and an "also known as" or "doing business as" name is also included. This printing practice will not, however, affect the existing practice of recording assignments with the Office in the Assignment Division. The assignee entry on form POL-85b should still be completed to indicate the assignment data as recorded in the Office. For example, the assignment filed in the Office and therefore the POL-85b assignee entry might read "Smith Company doing business as (d.b.a.) Jones Company." The assignee entry on the printed patent will read "Smith Company."

For purposes of compiling and publishing the 1976 Annual Index of Patentees, this change will be retroactive to patents issuing on January 6, 1976.

RICHARD J. SHAKMAN,
Dec. 17, 1975. *Assistant Commissioner for Administration.*

[942 O.G. 186]

(41) Submission of Uniform Assignee Names on the Issue Fee Payment Form PTOL-85b

The Patent and Trademark Office is experiencing problems when computer-sorting assignee names for the Patentee Index because of the non-uniform use of the names of certain companies and corporations on the issue fee payment form PTOL-85b. The use of different spellings or nomenclature for the same company requires the Office to expend time and effort to determine whether the various name forms are in fact for the same company. If such inconsistencies are not corrected, patents to the same company will appear in different locations in the Patentee Index. An example of inconsistent use is "ABC Company, Ltd." and "ABC Co., Limited."

Therefore, persons who list assignee names on issue fee payment form PTOL-85b should ensure that the same company name form is used for all patents issuing to a particular company.

RICHARD J. SHAKMAN,
Nov. 17, 1977. *Assistant Commissioner for Administration.*

[965 O.G. 8]

(42) Assignments Affecting Applications of Joint Inventors

Over the past several years, the Assignment Branch of the Patent and Trademark Office has been charging a single fee for recording the assignment of a patent or patent application of joint inventors when separate assignment documents are executed by the joint inventors and then filed together for recording.

This practice is in error because it conflicts with 37 CFR 1.21 Miscellaneous Fees and Charges (h) Recording of Documents which states:

(1) For recording each assignment, agreement or other paper relating to the property in a patent or applications . . . . . $20.00.

Effective Nov. 1, 1984, the Assignment Branch will charge in accordance with the above regulation, the fee of $20.00 for each assignment document of the joint inventors which relates to the patent or patent applications.

THERESA A. BRELSFORD,
Oct. 1, 1984. *Assistant Commissioner for Administration.*

[1047 O.G. 49]

(43) Title of Invention Carried on Office Records

The Patent and Trademark Office is experiencing an increased incidence in the number of newly filed applications in which the title of the invention is inconsistent within the papers. This has resulted in applicants requesting correction of the official filing receipt in many instances to indicate the title preferred by applicants.

Hereafter, whenever the title of the invention appears inconsistent within the papers of a newly filed application for patent, the records of the Office will carry the title as indicated on the first page of the specification and no corrected filing receipt will be issued to indicate another title. Note that 37 CFR 1.72(a) indicates that the title of the invention should appear as a heading on the first page of the specification.

It should also be noted that applicant may amend the title under 37 CFR 1.115 if any changes are subsequently desired before issuance of a patent.

BRADFORD R. HUTHER,
Aug. 31, 1977. *Acting Assistant Commissioner for Administration.*

[962 O.G. 23]

(44) Notice to Patent Owners and Parties Responsible for Paying Maintenance Fees Concerning Fee Address and Payor Number

37 CFR 1.363, effective Nov. 1, 1984, provides for a "fee address" to be entered in the Office patent file records for use in all correspondence relating to maintenance fees. The "fee address" is in addition to the "cor-

respondence address" under 37 CFR 1.33 which will continue to be used for all reexamination and interference purposes. If no separate "fee address" is specified, the "correspondence address" will also be used for maintenance fee correspondence.

In order to simplify changes in address by patent owners having several patents, and data input by the Patent and Trademark Office, a "payor number" will be assigned to each "fee address" when a "fee address" is presented to the Office in a patent or earlier upon request. A request for a "payor number" before a maintenance fee is paid or due will permit a patent owner to request that the "fee address" or "payor number" be recorded in the Office records of the patents owned on which maintenance fees are due so that all notices relating to maintenance fees will be sent to the "fee address".

The Patent and Trademark Office has established a procedure for assigning a "payor number" upon request by a patent owner or a party responsible for paying maintenance fees. Such a party may be, for example, the finance office of a corporation or of a separate organization specializing in maintenance fee payments. Under the procedure, a patent owner or other party may request a "payor number" for a particular "fee address" by writing to: Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231. Each request for a "payor number" should include:

— the "fee address" to be used by the Office, and
— the telephone number of the fee addressee to be used to resolve problems.

After receipt of a "payor number", it may be used to indicate to the Patent and Trademark Office the "fee address" to be used in particular patents on which maintenance fees will become due and in applications in which issue fees have been or are being paid. Any request for entry of a "payor number" or "fee address" in the Office records of a patent, however, must be signed by the patent owner or his or her attorney or agent of record.

After a "payor number" has been assigned, it should be used in all future maintenance fee payments and related correspondence. However, where a "payor number" has not been previously entered in the Office records for a patent, the mere indication of a "payor number" at the time of payment of the maintenance fee, without the signature of the patent owner or the owner's attorney or agent of record, will not serve to make the "payor number" of record in the Office for that patent.

THERESA A. BRELSFORD,
Oct. 19, 1984. *Assistant Commissioner for Administration.*

[1048 O.G. 48]

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(45) New System To Monitor Patent Applications

During this summer the Patent and Trademark Office will begin implementation of a new office-wide computer system, the Patent Application Locator and Monitor System (PALM 3), for monitoring the location and status of pending patent applications. The system will also have the ability to print data on certain form letters such as the Notice of Allowance, using computer-controlled printers located in the Examining Groups. This will permit the Notice of Allowance to be printed and mailed by the Groups shortly after the Examiner has decided that an application is in condition for allowance. Under the new system, the Notice of Allowance will be mailed prior to completion of final issue revision by the Group clerical staff. In those applications where an Examiner's Amendment is required, it will normally be mailed as an attachment to the Notice of Allowance.

When existing printing backlogs have been eliminated, this accelerated mailing should reduce the time between allowance by the examiner and issuance of the patent grant in most cases. The nature and/or extent of the revisions or processing requirements subsequent to mailing of the Notice of Allowance may result in little or no reduction in the time required for the printing of a few patents. In addition, it is possible that, as a result of this additional processing, withdrawal or correction of the Notice for a given application may be required. For instance, prosecution might be reopened as a result of the Quality Review Program. In situations where the Base Issue Fee has been paid and the Notice of Allowance is subsequently withdrawn, the applicant may request that a refund be made or that the fee be credited to a Deposit Account.

Applicants will continue to receive a three part Notice of Allowance packet, but, as a result of automated printing, the Notice will be produced in a slightly revised format. This new format will have the following application data printed thereon:

—Serial Number
—Filing Date
—Total Claims Allowed
—Date of Mailing
—Examiner Name and Group Art Unit
—First Named Applicant
—Title of the Invention
—Base Issue Fee Due (Utility Applications Only)
—Attorney's Docket Number
—Class and Subclass Where Issued

Copy (a) of the new Notice of Allowance will be used as applicant's record copy in the current manner. Copy (b) will continue to be used as a transmittal for the fee with copy (c) required when a charge to a deposit account is authorized. The new version of copy (c) will also have a section to notify the Office of a change in an inventor's address. Note that this address change need not be signed by the inventor. This procedure eliminates the need for the separate Inventor's Address Change form (PTOL-231) now in use.

One other change to current practice will also be implemented as a result of the new system. Beginning with patents issuing in the late fall of this year, advance orders for patent copies will only be sent to the correspondence address of record in the application. This practice will permit computer generation of mailing labels for the orders and thereby eliminate the need for the separate, pink Advance Order form (PTO-721) now in use. Requests for advance orders will now be made in a special section of copy (b) of the Notice of Allowance. During the transition from the old order method to the new, it will be necessary to send some advance orders to the correspondence address of record in the application rather than some other address as has been requested on an earlier submitted Advance Order Form.

While the major impacts on the public will be limited to those discussed above, one other minor matter should be mentioned. It is anticipated that, due to the absence of data in the master data base, some information occasionally may not be printed on the Notice of Allowance or on other form correspondence. However, this does not necessarily mean that a corrected Notice or form letter is required. Furthermore, since the data base is not used for printing of the patent grant, the missing information should appear on the final issued patent if it is in the application file wrapper. This problem is expected to diminish as the implementation of the system proceeds and the data base becomes more complete. The cooperation of applicants and their representatives during this system implementation is sincerely appreciated by the Patent and Trademark Office.

SIDNEY A. DIAMOND,
June 16, 1980. *Commissioner of Patents and Trademarks.*

[997 O.G. 9]

FEES AND PAYMENT OF MONEY

(46) DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Parts 1 and 2
Revision of Patent and Trademark Fees

Agency: Patent and Trademark Office, Commerce
Action: Final Rule.

Summary: The Patent and Trademark Office is amending the rules of practice in patent and trademark cases to establish fee related procedures and fees in amounts which would comply with the requirements of either Public Law 96-517 or H.R. 6260, dependent upon which is effective on Oct. 1, 1982. This action is necessary at this time in view of the requirements to establish fees and procedures contained in Public Law 96-517 and the requirements which would also be present under H.R. 6260 enacted as a Public Law. This final rule is being issued in two sections with the first section relating to patent fees and the second section relating to trademark fees. This final rule is also being issued in alternative form so that the proper fees and procedures will become effective on Oct. 1, 1982, under either Public Law 96-517 or the Public Law which results from enactment of H.R. 6260. Thus, if Public Law 96-517 remains fully effective on Oct. 1, 1982, the rule changes contained herein which are common to Public Law 96-517 and H.R. 6260, as well as those specific to Public Law 96-517, contained in Alternative A of each section, will become effective. Upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, the rule changes contained herein which are common to Public Law 96-517 and H.R. 6260, as well as those specific to H.R. 6260, contained in Alternative B of each section, will become effective. Thus, the intended effect of this action is to adopt rules which will be effective on Oct. 1, 1982, establishing patent and trademark fees and procedures regardless of whether Public Law 96-517 remains fully effective or whether H.R. 6260 has been enacted.

Effective Date: Oct. 1, 1982. However, prior to Oct. 1, 1982, the Department of Commerce will publish a document confirming the amendments under either Alternative A or Alternative B set forth herein depending upon enactment of H.R. 6260 as a Public Law.

For Further Information Contact: As to the patent rules contact R. Franklin Burnett by telephone at (703) 557-3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Room 3-11A13, Washington, D.C. 20231.

For Further Information Contact: As to the trademark rules contact Miss Maude Williams by telephone at (703) 557-2222 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Miss Maude Williams, Room 3-11C17, Washington, D.C. 20231.

Supplementary Information:

SECTION I—REVISION OF PATENT FEES

Background

A notice of proposed rulemaking was published in the *Federal Register* on June 28, 1982, at 47 FR 28042-28063 and in the *Official Gazette* on June 29, 1982, at 1019 O.G. 57-120. An oral hearing was held on July 9, 1982. Fourteen written letters and statements were submitted. Five persons testified at the oral hearing. Full consideration has been given to all of the letters, statements, and testimony.

Objectives of Rule Changes

These rule changes are designed primarily to implement the Patent and Trademark Office fees which are provided for by Public Law 96-517, or which would be set in, or provided for by, the Public Law resulting from H.R. 6260.

Public Law 96-517

Public Law 96-517 presently requires that fees be established by the Commissioner for the processing of patent applications from filing through issuance or abandonment, for maintaining a patent in force, and for providing all other services and materials related to patents. Public Law 96-517 requires that by Oct. 1, 1982, fees for the processing of patent applications, other than design patents, be set by the Commissioner to recover in aggregate 25 per centum of the estimated average cost to the Office of such processing. Similarly, fees for processing design patents are to be set to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. By Oct. 1, 1982, fees for all other services or materials related to patents are to be set to recover the estimated average cost to the Office of performing the service or furnishing the material.

Public Law 96-517 also requires that fees be set for maintaining all patents filed on or after Dec. 12, 1980, other than design patents, in force. It also requires that maintenance fees must recover 25 per centum of the estimated cost to the Office of processing patent applications, other than design patent applications, by the fifteenth fiscal year following Dec. 12, 1980. Under Public Law 96-517, the maintenance fees are due 3½, 7½, and 11½ years after grant of the patent.

Public Law 96-517 is presently effective and this rule change is designed to implement the fee provisions of that law if it remains fully effective on Oct. 1, 1982. The changes which will become effective on Oct. 1, 1982, under Public Law 96-517 (without enactment of H.R. 6260) are (1) the rule changes common to Public Law 96-517 and H.R. 6260, and (2) the rule changes under only Public Law 96-517, which appear in Alternative A.

H.R. 6260

On June 8, 1982, the House of Representatives passed H.R. 6260. H.R. 6260 would establish a number of statutory fees which the Commissioner is required to charge. Among the more significant of these are fees for filing a patent application, issuing, and maintaining a patent in force. The fees for filing a patent application and issuing a patent would be set forth in §41(a) of Title 35, United States Code, as proposed to be amended by H.R. 6260. Certain other fees, such as appeal fees, the fee for filing a disclaimer, and fees for filing petitions seeking to revive an abandoned application and for extensions of time, would also be set in §41(a) of Title 35, United States Code. Section 41(b) of Title 35, United States Code, as proposed to be amended by H.R. 6260, would set forth the fees for maintaining a patent in force. These fees would be due 3½, 7½, and 11½ years after grant of the patent or within a grace period of six months thereafter. Section 41(c) of Title 35, United States Code, as proposed to be amended by H.R. 6260, would provide for the acceptance of maintenance fees after the statutory grace period under certain conditions and with certain effects.

H.R. 6260 would also provide for the reduction by 50 per centum in the fees paid under §41(a) and (b) of Title 35, United States Code, by independent inventors, small business concerns, and nonprofit organizations, who meet the definitions established, and to be established therefor.

Section 41(d) of Title 35, Untied States Code, as proposed to be amended by H.R. 6260, would also provide that the Commissioner establish fees for all other processing, services, or materials related to patents which are not covered in §41(a)–(c) of Title 35, United States Code, to recover the estimated average cost to the Office of the processing, services, or materials.

The changes which will become effective on Oct. 1, 1982, *upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982*, are (1) the rule changes common to Public Law 96-517 and H.R. 6260, and (2) the rule changes under H.R. 6260, which appear in Alternative B. H.R. 6260 includes other provisions which would be the subject of other proposals for rulemaking.

DISCUSSION OF SIGNIFICANT CHANGES

This rulemaking places into the appropriate sections of Title 37, Code of Federal Regulations, the various fees which are due on filing, during the pendency of a patent application, or during the term of a patent. A number of significant changes are made in order to implement either Public Law 96-517 or H.R. 6260.

Under H.R. 6260, and Alternative B of this rule making, fees under §41(a) and (b) of Title 35, United States Code, would be reduced by 50 per centum for independent inventors, small business concerns, and nonprofit organizations. H.R. 6260 would give the Commis-

sioner authority to establish regulations defining independent inventors and nonprofit organizations. H.R. 6260 defines small business concerns by reference to §3 of the Small Business Act and regulations established by the Small Business Administration. This rulemaking, in Alternative B, implements the fee system which would be established by H.R. 6260 and lists all applicable fees.

* * * * *

Another significant change relates to fees established under Public Law 96-517 and which would be established by H.R. 6260 for petitions for extensions of time to take actions required by the Commissioner in an application. H.R. 6260 would establish a fee of $50 for filing a petition for a first one-month extension of time, an additional fee of $100 for filing a petition for a second one-month extension of time which would expire two months after the end of the time period set for taking action, and an additional fee of $200 for filing a petition for a third one-month extension of time which would expire three months after the end of the time period set for taking action. A fourth one-month extension with an additional fee of $200 could be requested if additional time was available under the statute. Under H.R. 6260, the Commissioner would have authority to issue regulations providing when, within any maximum time period permitted by statute, petitions for extensions of time, and the required fee therefor, may be filed. The Commissioner would also not be precluded by H.R. 6260 from waiving the fee for filing a petition for an extension of time where the Office extends the period due to equity considerations or sufficient cause. This rulemaking implements the extension of time provisions of H.R. 6260 by permitting applicants in the majority of situations to file the petition for an extension of time and the fee at the time of and along with the filing of the response for which a non-statutory or shortened statutory time period has been set. This will reduce the amount of paperwork involved and should significantly reduce the expenses of applicants and the Office since resources now devoted to the separate processing of petitions for extensions of time will no longer be required to be expended thereon. The fees are set to provide a proper control on the number of extensions of time given. The same procedures relating to extensions of time which would be established under Alternative B and H.R. 6260 will also be established under Alternative A and Public Law 96-517. Thus, whether the rules are effective on Oct. 1, 1982, under Public Law 96-517 and Alternative A, or under H.R. 6260 and Alternative B, the same procedures for obtaining extensions of time will be in effect with the only differences being in the amount of the fees.

Another significant change relates to the implementation of the fee for revival of an unintentionally abandoned application which would be authorized under H.R. 6260. H.R. 6260 would establish two different fees for filing petitions with different standards to revive abandoned patent applications. The same two fees would be applicable to petitions to accept the delayed payment of the fee for issuing a patent. Under H.R. 6260, a fee of $50 is established in §1.17(l) for filing a petition for revival under §§133 or 151 of Title 35, United States Code, in accordance with standards presently in effect where the delay resulting in the abandonment, or the delay in payment of the issue fee, was unavoidable. Under H.R. 6260, a fee of $500 is established in §1.17(m) for filing each petition for revival, or for acceptance of the delayed payment of an issue fee, where the abandonment or the failure to pay the issue fee was unintentional. A mere statement that abandonment was unintentional plus the $500 fee is all that is required in this case for this purpose. Under H.R. 6260 and this rulemaking an applicant would have a choice of which petition and fee to file seeking revival depending on the circumstances involved. The changes discussed in this paragraph cannot be made effective without enactment of H.R. 6260 as a Public Law.

The rulemaking also provides for fees for filing certain petitions which have, in some cases, heretofore, been decided without a charge. These fees are established under Public Law 96-517 and are provided for by the amendment of §41(d) of Title 35, United States Code, which would be introduced by H.R. 6260. Under §41 of Title 35, United States Code, as amended by Public Law 96-517 or as it would be amended by H.R. 6260, fees are authorized for the processing of various petitions desiring certain actions to be taken regarding patent applications, for the recording of assignments, for reexamination of patents, and for the processing of international applications under the Patent Cooperation Treaty. In general, fees are not being required for those petitions which are supervisory in nature. For example, where applicants are petitioning from an allegedly improper action of the examiner, it is felt that such petitions should be processed and decided without charge since they are not asking for any special privilege but are attempting to correct an allegedly incorrect Office holding. The changes discussed in this paragraph will be in effect on Oct. 1, 1982, whether the rules become effective under Public Law 96-517 and Alternative A, or under H.R. 6260 and Alternative B.

Many of the fees currently set forth in §1.21 are being increased to reflect the cost of currently performing that service.

DISCUSSION OF SPECIFIC SECTIONS CHANGED

The sections changed are grouped in this proposal under three different categories. Those changes which are common to Public Law 96-517 and H.R. 6260 appear first and are numbered 1–54. Those changes which relate only to Public Law 96-517 appear as Alternative A and are numbered 55–62. Those changes which are dependent upon enactment of H.R. 6260 appear as Alternative B and are numbered 63–71. The changes common to Public Law 96-517 and H.R. 6260 will become effective on Oct. 1, 1982, whether or not H.R. 6260 is enacted as a Public Law.

* * * * *

Upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, Alternative B will become effective on Oct. 1, 1982, in which case Alternative A will not become effective.

Rule Changes Common To Public Law 96-517 and H.R. 6260

The following sections are changed, effective Oct. 1, 1982, under either Public Law 96-517 or H.R. 6260:

Section 1.11 is amended to change the reference for the reexamination request fee to §1.20(c).

Section 1.12 is amended to break the section into four paragraphs. Paragraph (a) maintains current practice but adds specific reference to §1.19(a)(5) which sets the cost of copies.

Paragraph (b) maintains current wording except for inserting "patent" after "abandoned" and changing "his" to "applicant's". Paragraph (c) includes new language relating to obtaining copies of assignment records not open to the public. Access can be obtained only with the applicant's permission or by petition with fee to the Commissioner for such access in particular situations. No change in the showing required by petition to obtain access is intended by this amendment. Paragraph (d) contains present language except for reference to the specific rule which sets forth the charge for time consumed in making assignment searches.

New paragraph (e) of §1.14, sets forth the two ways in which access can be obtained to patent applications which are not open to the public. The two ways are (1) by petitioning and paying the petition fee and approval of the Commissioner of such petition and (2) by obtaining written approval from the applicant.

New §1.19 provides fees for copies of various documents supplied by the Office. The fees have been grouped into 5 paragraphs. New paragraph (a) provides fees for uncertified copies. Subparagraphs (a)(1) and (2) indicate the prices of printed patent copies. Subparagraph (a)(3) provides a single fee for a copy of an application, as filed, for each 50 pages, or fraction thereof. This practice should make it much easier to determine the amount of the required fee. Subparagraph

(a)(4) sets a single fee for a copy of each 100 pages, or fraction thereof, of a patent file wrapper. Subparagraph (a)(5) provides for a charge of 30 cents per page for copies of Office records other than those covered by subparagraphs (a)(1) through (4). Subparagraph (a)(6) provides a fee for a microfiche copy of a microfiche.

Paragraph (b) of §1.19 sets fees for certified copies of Office documents. Subparagraph (b)(1) sets a fee for certifying Office records. Subparagraph (b)(2) provides a single fee for searching assignment records, preparing an abstract of the title and certification thereof. Subparagraph (b)(3) provides a fee for comparing copies not prepared by the Office prior to certification in order to provide basis for certification. Paragraph 1.19(c) sets the fees for subscribing to all of the patents issued annually in particular subclasses. This charge is in addition to the normal copy charge under §1.19(a)(1) and (2). Paragraph 1.19(d) sets the fee for providing patent copies to libraries under 35 U.S.C. 13. Paragraph 1.19(e) provides fees for lists of United States patents in particular subclasses.

Section 1.21 is amended to contain those miscellaneous fees which do not relate to the topics covered in §§1.16–1.20. All of the fees in §1.21 are established under the authority given the Commissioner by 35 U.S.C. 41(d) as amended by Public Law 96-517 or as proposed in H.R. 6260. Paragraph 1.21(a) establishes fees for admission to the examination for registration to practice, registration, reinstatement and issuance of certificates of good standing of patent attorneys and agents. Subparagraph 1.21(b)(1) sets forth the fee for establishing and reinstating deposit accounts, while subparagraph 1.21(b)(2) sets forth the fee due when the balance at the end of each month is below $40. Paragraph 1.21(c) sets the fee for filing a disclosure document. Paragraph 1.21(d) sets the fee for renting a delivery box. Paragraph 1.21(e) sets the fee for an international-type search report. Although all national applications now receive what is known as an international-type search, if a report thereof is desired in addition to an Office action, the fee set in §1.21(e) is required. Paragraph 1.21(f) sets a fee for searching Office records for purposes not otherwise specified. Paragraph 1.21(g) sets the fee for tokens for copying machines. Paragraph 1.21(h) sets the fee for recording assignments, agreements, and other documents. Paragraph 1.21(i) sets forth the fee for publishing a notice of availability of a patent for licensing or sale in the *Official Gazette*. Paragraph 1.21(j) sets the fee for the Office providing a duplicate or replacement of a permanent Office user pass. Paragraph 1.21(k) indicates that the Commissioner may specify charges for items and services not otherwise specified at a level to recover the actual cost of providing such an item or service by the Office.

Section 1.24 is revised so that the denomination of coupons sold by the Office will be in more convenient amounts.

Section 1.25 is amended to provide, in paragraph (a), a reference to the fee for establishing a deposit account and a service charge if the end of the month balance is below $40.00. Paragraph (b) is amended by revising the present sentence to refer to post-issuance fees and by adding a second sentence which would specifically provide in the regulations for the possibility of an applicant giving a general authorization to charge any fee due under§§1.16–1.18 in a particular application to a deposit account during the entire pendency of the application. This general authorization would not apply after the patent issues, e.g., to maintenance fees. The last sentence of paragraph (b) permits fees during reexamination to be charged to a deposit account by filing an authorization with the request for reexamination.

Section 1.26 is amended to provide in paragraph (a) that a withdrawal of a request for an oral hearing will not entitle appellant to a refund. Paragraph 1.26(a) raises the amount which will not be refunded without specific request from fifty cents to one dollar. Paragraph (b) relating to refunds of international search fees during subsequent examination of a national application is deleted since such refunds are now covered by reductions in the appropriate fees paid under §1.445 rather than solely by direct refunds. Paragraph (c) is amended to bring the spelling of "requester" into conformance with that used in other sections of the regulations.

Section 1.45 is amended to provide in paragraphs (b) and (c) for a petition and petition fee to be filed to correct misjoinder of inventorship situations in pending applications. The fee will cover the additional time required by the Office to process such applications.

Section 1.47 is amended to provide for petitions and fees for filing applications signed by less than all inventors, or a person not the inventor.

Section 1.51 is amended to refer to the filing fees in new §1.16 and to add a new paragraph (c) indicating that applicants may file authorizations to charge fees required under any of §§1.16–1.18 to deposit accounts.

Section 1.52 is amended to add a reference in paragraph (a) to new paragraph (d). New paragraph (d) provides in the rules for filing an application in a language other than English if a verified English translation and fee under §1.17(k) are timely submitted.

Section 1.55 is amended in paragraph (b) to require a petition and fee for processing priority papers submitted after the issue fee is paid.

Section 1.75 is amended to add a reference to §1.16 and a sentence referring to the fee for multiple dependent claims set forth in §1.16(d).

Section 1.85 is amended to delete the sentence relating to mounting of informal drawings.

Section 1.86 is removed to delete the reference to the Office draftsman making drawings since such service is no longer available.

Section 1.102 is amended by revising paragraph (a) and adding new paragraphs (c) and (d). Revised paragraph (a) refers to paragraph (b) and added paragraphs (c) and (d). Paragraph (c) requires a petition but no fee where the basis for the petition to make special is the applicant's age or health or the impact of the invention on improving the environment or conservation of energy. Paragraph (d) requires a petition and the fee set forth in §1.17(i) for petitions to make special on grounds other than those above.

Section 1.103 is amended in paragraph (a) to provide for filing a petition and the fee set forth in §1.17(i) for a suspension of action except that no fee would be required where the reason for the suspension is the fault of the Patent and Trademark Office. Paragraph (b) is amended to clearly indicate that suspensions are directed to actions by the Office and not responses by the applicant.

Section 1.104, paragraph (d) is amended to change the fee reference to correspond to §1.21(e).

Section 1.134 is added to indicate that unless applicant is notified of any non-statutory or shortened statutory period in an Office action, a maximum period for response of six months is allowed.

Section 1.135 is amended to provide that if no response is filed within the time set in the Office action under §1.134 or as it may be extended under §1.136, the application will be abandoned unless an Office action indicates that another consequence, such as disclaimer, will take place. Paragraph (b) is amended to include a reference to paragraph (a). Paragraph (c) is amended to add that applicant's reply must be a bona fide attempt to respond as well as to advance the case to final action in order for applicant to be given an opportunity to supply any omission.

Section 1.136 is amended to revise the title and provide for two distinct procedures to extend the period for action or response in particular situations. The procedure which is available for use in a particular situation will depend upon the circumstances. Paragraph 1.136(a) permits an applicant to file a petition for extension of time and a fee as in §1.17(a), (b), (c), or (d) up to four months after the end of the time period set to take action except (1) where prohibited by statute, (2) in interference proceedings, or (3) where applicant has been notified otherwise in an Office action. The petition and fee

can be filed prior to or with the response. The filing of the petition and fee will extend the time period to take action up to four months dependent on the amount of the fee paid except in those circumstances noted above. Paragraph 1.136(a) will effectively reduce the amount of paperwork required by applicants and the Office since the extension will be effective upon filing of the petition and payment of the appropriate fee and without acknowledgment or action by the Office and since the petition and fee can be filed with the response. Paragraph (b) provides for requests for extensions of time upon a showing of sufficient cause when the procedure of paragraph (a) is not available. Although the petition and fee procedure of §1.136(a) will normally be available within 4 months after a set period for response has expired, an extension request for cause under §1.136(b) must be filed during the set period for response. The sentence in paragraph (b) relating to who may grant an extension under paragraph (b) is eliminated thereby providing additional flexibility to designate persons to act on requests under paragraph (b). Extensions of time in interference proceedings are governed by §1.245.

Section 1.165, paragraph (b) is amended to delete therefrom the last sentence which refers to a fee for mounting copies. Since little or no need has been found for this provision in the rules, it is deleted.

Section 1.171, as amended, adds a reference to §1.19 (b)(2) which sets forth the fee for title reports.

Section 1.177 is amended to require a petition and fee as set forth in §1.17(i) where it is desired that divisions of a reissue issue on different dates.

Section 1.181 is amended to indicate in paragraph (d) that if a petition to the Commissioner is filed under the provisions of a section which requires a petition fee and the required fee is not paid, the petition will be dismissed. The amendment to paragraph (g) deletes the reference to §1.183.

Section 1.182 is amended to add a sentence requiring any petition filed under this section to be accompanied by the petition fee set forth in §1.17(h).

Section 1.183 is amended to specifically refer to the inherent authority of the Commissioner to suspend or waive the rules at the Commissioner's initiative. The amendment also indicates the Commissioner's authority to designate others to act for the Commissioner in appropriate circumstances. The rule language also requires the payment of the petition fee set forth in §1.17(h) if a petition to suspend or waive the rules is filed.

Section 1.191 is amended to change the fee reference for filing a notice of appeal to §1.17(e) and delete the word "primary" since some actions which are subject to appeal are not made by a "primary" examiner.

Section 1.192, paragraph (a), is amended to refer to the fee for filing an appeal brief set forth in §1.17(f). The present language requiring a showing of sufficient cause for extensions of time for filing the brief and an indication that an oral hearing is desired at the time of filing the brief are removed from paragraph 1.192(a). Under the amendment to paragraph 1.192(a), the provisions of §1.136 will apply to extensions of time for filing the brief. The time for requesting an oral hearing is now set in §1.194(b).

Section 1.194 is amended to revise paragraphs (b) and (c) to refer to the fee for oral hearing in §1.17(g) and to indicate in paragraph (b) that any request for an oral hearing must be made within one month after the mailing date of the examiner's answer.

Section 1.197, paragraph (b), is amended to modify the last sentence relating to extensions of time to make the provisions of §1.136 applicable thereto. Paragraph 1.197(b) is also amended to limit requests for rehearing, reconsideration or modification of a Board decision to one. This will not significantly change present practice since such requests are now required to be filed within thirty days from the date of the original decision.

Section 1.231, paragraph (a)(1), is amended to change the reference to the fee for filing a request for reexamination to §1.20(c).

Sections 1.245 and 1.246 are amended to indicate that the provisions of §1.136 do not apply to time periods in interferences.

Section 1.263 is amended to add a reference to the fee for filing a disclaimer contained in §1.20(d).

New section 1.268 is added to provide a rule relating to the filing of interference settlement agreements. The rule generally follows 35 U.S.C. 135(c) and provides for filing of petitions and fees in paragraphs 1.268(b) and (c).

Section 1.292, paragraph (a), is amended to require the payment of the fee set forth in §1.17(j) with any petition for the institution of public use proceedings.

Section 1.304, paragraph (a), is amended to provide for extension of the time period for filing an appeal or civil action to be subject to the provisions of §1.136 and refer to the Court of Appeals for the Federal Circuit rather than to the Court of Customs and Patent Appeals.

Section 1.311 is amended to designate the present section as paragraph (a) and revise it in several ways. Paragraph (a) indicates that the notice of allowance will be sent to the correspondence address as indicated under §1.33. The issue fee (§1.18) is indicated as being due 3 months from the date of mailing of the notice of allowance. Paragraph 1.311(b) permits an authorization to be filed either before or after the mailing of the notice of allowance to charge the issue fee to a deposit account.

Section 1.312 is amended to divide the section into two paragraphs and require a petition and payment of the fee under §1.17(i) for any amendment filed after payment of the issue fee.

Section 1.313 is amended to provide in paragraph (a) clear basis for the Office withdrawing applications from issue on its own initiative or upon petition by applicant accompanied by the petition fee set forth in §1.17(i). Any accompanying amendment must comply with the requirements of §1.312. Paragraph (b) clarifies when an application will be withdrawn from issue after assignment of the issue date and patent number.

Section 1.314 is amended to revise the wording to eliminate reference to a portion of the issue fee and adds reference to the possibility that an application in which the issue fee was paid can be withdrawn from issue under§1.313 or the issuance thereof deferred pursuant to a petition by the applicant and the payment of the petition fee under §1.17(i).

Section 1.321 is amended to include references in both paragraphs (a) and (b) to the statutory disclaimer fee in §1.20(d) and delete the reference to §1.21.

Section 1.324 is amended to include reference to the fee in §1.20(b) and change the word "application" to "petition".

Section 1.331, paragraph (a), is amended to add a new sentence which gives the citation of the fee for recording assignments and to indicate that instruments recorded on the Government register under Part 7 of Title 37, Code of Federal Regulations, do not require payment of such fee.

Section 1.332 is amended to refer to the fee in §1.21 (h) for recording an assignment.

Section 1.334 is amended to divide the rule into three paragraphs and also require an address of the assignee so that correspondence can be directed to the assignee if required. New paragraph (c) provides for filing a petition and the fee set in §1.17(i) seeking to have the patent issue to the assignee where such assignment has not been recorded at the time the issue fee is paid.

Section 1.341, paragraph (h), is amended to refer to the fee set forth in §1.21(a)(2) for registration of an attorney or agent.

Section 1.347 is amended to add a sentence referring to the fee set forth in §1.21(a)(3) for reinstatement of an attorney or agent.

Section 1.445 is amended to increase the PCT transmittal fee and search fee to a level needed to cover the cost of performing the required functions. Paragraph 1.445(a)(2) is also amended to provide, in effect, for a reduction in the international search fee due to the United States Patent and Trademark Office as an International Searching Authority where a corresponding United States national application with fee has been filed. In ad-

dition, paragraph 1.445(a)(4) is amended to credit the national fee required under §1.16(a)–(d) where an international search fee has been paid on the corresponding international application to the United States as an International Searching Authority. Where the amount of the credit is in excess of that required for the national fee a request for a refund of the excess under §1.446(b) may be filed at the time of paying the national fee. The supplemental search fee for inventions in addition to the first, where lack of unity of invention has been found, is reduced since the present fee is more than is required to cover the costs. The national fee amount is the same as the national application filing fees in §1.16(a)–(d).

Section 1.446(b) is revised to permit a refund of a portion of the search fee to the extent set forth in §1.445(a)(4), if such refund is requested at the time of paying the national fee.

Section 1.451 is amended in paragraph (b) to revise the citation of the fees for a certified copy.

Section 1.510 is amended to cite the section which sets forth the fee for requesting reexamination. There is no change in the amount of this fee.

* * * * *

Alternative B—Rule Changes Under H.R. 6260

The following sections will become effective on Oct. 1, 1982, upon enactment of H.R. 6260 as a Public Law prior to that date:

Section 1.16 in Alternative B establishes in the regulations those statutory fees which would be charged by the Commissioner for filing patent applications under H.R. 6260. Section 1.16 also includes additional filing fees set in 35 U.S.C. 41(a)(1) to cover the cost of examining complexities presented by certain applications, e.g., applications containing more than a specified number of claims and any application containing a multiple dependent claim. Section 1.16 also provides that fees will be charged when the number of claims is increased above the specified number or when a multiple dependent claim is first presented, whether on filing or at a later point in processing.

Under 35 U.S.C. 41(a) as it would be amended by H.R. 6260, the filing fee for an original patent, except in design or plant cases, is $300. In addition, on filing or on presentation at any other time, $30 is due for each claim in independent form which is in excess of three, $10 is due for each claim (whether independent or dependent) which is in excess of twenty, and $100 is due for each application containing a multiple dependent claim. The latter fee is a one-time charge per application due the first time a multiple dependent claim is presented for examination. For the purpose of computing fees, a multiple dependent claim as referred to in §112 of Title 35, United States Code, or any claim depending therefrom, is considered as separate dependent claims in accordance with the number of claims to which reference is made.

The fees in §1.16 are reduced by 50 per centum for applications filed by small entities, i.e., independent inventors, nonprofit organizations and small business concerns, in accordance with H.R. 6260. Therefore, two fees are listed under each paragraph.

New§1.16 relates to application filing fees. Paragraph (a) sets a basic filing fee of $300 which will be required in all original patent applications. The term "original" as used in the regulations means "non-reissue". An "original" application can be a first filing, a division, a continuation, or a continuation-in-part application. Paragraph 1.16(b) provides for an additional fee of $30 for each independent claim in excess of 3 in an original application. New paragraph 1.16(c) provides for an additional fee of $10 for each claim in excess of 20, whether independent or dependent. A multiple dependent claim is considered to be that number of claims to which direct reference is made. Also, any claim which refers to a multiple dependent claim is considered for fee calculation purposes to be the number of claims to which direct reference is made in the multiple dependent claim. Paragraph 1.16(d) provides for a new fee of $100 in each application which contains one or more multiple dependent claims. The note following paragraph 1.16(d) is intended to clearly indicate that the applicant, attorney, or agent may pay any additional fees required under paragraphs (b), (c) and (d) of §1.16, or cancel such claims without payment of such additional fees, either at the time of filing or by the time a response is due to any notice of fee deficiency mailed by the Office. If the fees are not paid or the claims cancelled by the end of the period set for response to the notice of fee deficiency, the application will be held abandoned. New paragraph 1.16(e) establishes the amount of the surcharge for filing the basic filing fee or oath or declaration on a date later than the filing date of the application. This fee is being established at this time, but will only be made effective when the statutory authority for the late filing of the fee or the oath or declaration becomes effective under 35 U.S.C. 111, as it would be amended by H.R. 6260. New paragraph 1.16(f) provides for a filing fee of $125.00 for a design application.

Paragraphs 1.16(g) and (h) incorporate into the regulations the filing fees for plant and reissue applications.

Paragraphs 1.16(i) and (j) set forth the additional claim fees required in reissue applications based on claims in excess of those in the original patent.

New §1.17 relates to patent application processing fees which are normally due during the time a patent application is pending. New paragraphs (a), (b), (c) and (d) provide for the payment of an extension fee for obtaining an automatic extension of time upon filing a petition as provided for in §1.136(a). The extension fee can be paid during the period for which an extension of time to respond is desired, or after the original period for response has expired, provided that any maximum statutory period which may apply has not expired. The fees set forth in §1.17 are the total fees required under §1.136(a) for the periods indicated and any extension fee previously paid to extend a particular period is credited toward the total extension fee required. Paragraph (e) sets forth the fee for filing a notice of appeal to the Board of Appeals. Paragraph (f) sets forth the fee for filing an appeal brief for appellant. Paragraph (g) provides for a new fee for requesting an oral hearing before the Board of Appeals. Paragraphs (h) and (i) set forth fees which will be required with petitions to the Commissioner under those sections of the regulations which specifically indicate that such petition fees are required. The amount of the fees are set at two levels based on the degree of complexity of the petitions in order to recover the estimated average cost to the Office of processing the petitions. Paragraph (j) provides for a fee to be paid with any petition for institution of a public use proceeding to cover the estimated average cost of such a proceeding. Paragraph (k) sets forth a new fee for processing an application filed with a non-English language specification. The fee will cover the additional processing costs involved in such applications. New paragraph (l) incorporates into the regulations the fee which will be charged for filing a petition to revive or to accept late payment of the issue fee where the delay was unavoidable. New paragraph (m) incorporates into the regulations the fee which will be established in 35 U.S.C. 41(a)7, as amended by H.R. 6260, to be charged for a petition for the revival of an unintentionally abandoned application for patent or for the unintentionally delayed payment of an issue fee.

Since paragraphs 1.17(h), (i), (j) and (k) are established under the authority given the Commissioner under 35 U.S.C. 41(d) as it would be amended by H.R. 6260, only one level of fee is set. H.R. 6260 only provides for the reduction of fees charged to small entities of those fees established in 35 U.S.C. 41(a) and (b).

New §1.18 sets the amount of the issue fees specified by H.R. 6260. New paragraph (a) establishes an issue fee of $500.00 for all original and reissue patents except for designs and plants. New paragraph (b) sets the amount of the issue fee for a design patent. New paragraph (c) sets forth the issue fee for a plant patent. All fees in §1.18 will be reduced by 50 per centum for small entities.

New §1.20 sets fees for various post-issuance functions performed by the Office. New paragraph (a) sets forth a fee for providing a certificate of correction of an applicant's mistake. New paragraph (b) sets a fee to accompany a petition to correct inventorship in a paten
§1.324. New paragraph (c) transfers the $1,500.00 fee for requesting reexamination from present §1.21(x) to this new section. New paragraph (d) provides for a fee for filing a disclaimer under §1.321. Maintenance fees required by Public Law 96-517 and which would be set in H.R. 6260 are placed in this section. Specific maintenance fees, which are required by Public Law 96-517, for those patents resulting from applications filed on and after Dec. 12, 1980 and up to the date of enactment of H.R. 6260 are being established at this time in paragraphs 1.20(e)–(g). New paragraphs 1.20(h)–(j) incorporate into the regulations the maintenance fees which would be provided in 35 U.S.C. 41(b) by H.R. 6260. The fees in paragraphs 1.20(a)–(c) are only set at one level because they are established under 35 U.S.C. 41(d). The fees in paragraphs 1.20(e)–(g) are only set at one level because they are established under Public Law 96-517 and are not subject to reduction for small entities. The details implementing the payment of maintenance fees are not being established at this time.

Section 1.66 is amended to provide for the use of an apostille of a foreign official to attest to oaths or affirmations made in foreign countries in accordance with 35 U.S.C. 115 and 261, as amended by H.R. 6260.

Section 1.137, as amended, designates the existing section as part of paragraph (a), adds a reference to the new fee under §1.17(l) for a petition for revival where the delay which resulted in abandonment was unavoidable, indicates that the petition must be promptly filed, and states when the showing that the delay was unavoidable must be verified. New paragraph 1.137(b) provides for filing a statement and a fee under §1.17(m) for revival of an application which was unintentionally abandoned, and also indicates when such petitions can be filed. Paragraph (c) requires that any petition for revival under paragraph (a) of §1.137 be promptly filed and that a terminal disclaimer, equivalent to the period of abandonment of the application, be filed with any petition under paragraph (a) filed more than six months after the date of abandonment.

Section 1.155 is amended to refer in paragraph (a) to §1.18(b) which sets forth the issue fee for a design application. Paragraph 1.155(b), as amended, includes a reference to the fee for delayed payment of the issue fee set forth in §1.71(l) where the delay in payment was unavoidable, indicates that the petition must be promptly filed, and states when showings that the delay was unavoidable must be verified. New paragraph 1.155(c) provides for acceptance of the late payment of the issue fee where the delay was unintentional upon petition and payment of the fee set forth in §1.17(m). New paragraph 1.155(c) also indicates when such petitions can be filed. Paragraph 1.155(d) is added to require a terminal disclaimer equivalent to the period of abandonment of the application where petition under paragraph (b) of §1.155 is not filed within six months of the date of abandonment.

Section 1.316 is amended to implement the statutory provisions of 35 U.S.C 41(a) with regard to petition fees for revival of applications abandoned for failure to pay the issue fee. Paragraph (b) is amended to provide for petitions for revival with the fee in §1.17(l) where the delay in payment was unavoidable, to indicate that the petition must be promptly filed, and to state when showings that the delay was unavoidable must be verified. Paragraph (c) is added to provide for petitions for revival with the fee in §1.17(m) where the delay was unintentional. New paragraph (c) also indicates when such petitions can be filed. Paragraph (d) is added to require a terminal disclaimer equivalent to the period of abandonment of the application where a petition under paragraph (b) of §1.316 is not filed within six months of the date of abandonment.

Section 1.317 is amended to implement the statutory provisions of 35 U.S.C. 41(a) with regard to petition fees for patents lapsed for failure to pay the remaining balance of the issue fee. Paragraph (a) is amended to show that it applies only to patents in which the issue fee was paid prior to Oct. 1, 1982. Issue fees paid on or after that date will be in accordance with §1.18. Paragraph (b) is amended to provide for petitions with the fee in §1.17(l) where the delay in payment was unavoidable, to indicate that the petition must be promptly filed, and to state when showings that the delay was unavoidable must be verified. Paragraph (c) is added to provide for petitions with the fee in §1.17 (m) where the delay was unintentional. New paragraph (c) also indicates when such petitions can be filed. Paragraph (d) is added to require a terminal disclaimer equivalent to the period of lapse of the patent where a petition under paragraph (b) of §1.317 is not filed within six months of the date of lapse.

RESPONSE TO COMMENTS ON THE RULES

Specific comments were received on a number of the sections. All of the comments, including the written comments and the oral testimony, were considered in adopting the changes set forth herein.

Written comments were received from three patent law groups and eleven individuals. The three patent law groups were (1) the American Patent Law Association whose membership includes several thousand lawyers involved in the practice of law before the U.S. Patent and Trademark Office; (2) the Patent, Trademark and Copyright Section of the Virginia State Bar; and (3) the Patent, Trademark and Copyright Law Section of The Bar Association of the District of Columbia.

Oral comments were presented at the hearing on behalf of two patent law groups and by 3 individuals on their own behalf.

These comments appear below along with responses thereto.

Comments received relating to §§1.9, 1.27 and 1.28 and the forms of Part 3 are not discussed in substance in this rule change since additional time for submitting written comments is provided until Aug. 13, 1982. All comments presented to these rules will be discussed in a later rule promulgation.

Comment:

One person argued that it is unreasonable to require fees to lengthen a shortened statutory period.

Reply:

A shortened statutory time is provided for by statute. The shortened period helps reduce patent pendency time and speed the disclosure of technology and information about patent rights. Many applicants can reply within the present three month shortened period which has been in effect for over fifteen years. The fee for extending the time provides a positive method for applicants to obtain an extension of time while still expediting the prosecution of their applications.

Comment:

Another person commented that H.R. 6260 should be rejected in that the fee levels are too high.

Reply:

The consideration of the merits of H.R. 6260 is not before the Office in this rule change.

Comment:

Three patent bar groups and two individuals presented comments relating to the effect of the new extension of time fees in §1.17 and the effect thereof on the current practice of granting an automatic one-month extension of time if a timely first response to a final rejection is filed by the applicant.

Reply:

The Office plans to terminate the automatic one-month extension of time practice on Oct. 1, 1982. It is felt that the extensions of time which are readily available under §§1.17 and 1.136 will meet the needs of applicants. The amount of the fees required to obtain an ex-

tension will be the same for periods of response before and after final rejection.

Comment:

One suggestion was made to permit the filing of an appeal without the appeal fee where the Office has not acted on a timely response after final rejection by applicant.

Reply:

Such a procedure is not possible under the provisions of H.R. 6260 since it calls for the appeal fee "On filing an appeal" in §41(a)6.

Comment:

Two comments were received requesting that the rules be changed to make the due date for paying the fee for an oral hearing on appeal after the examiner's answer on appeal.

Reply:

A change in the rules has been made to provide that the fee for an oral hearing is due no later than one month after the date of mailing of the examiner's answer.

Comment:

Two comments were received requesting that no charge for revival of an abandoned application be made where the abandonment resulted from the non-receipt of an Office action by the applicant.

Reply:

It is present Office practice to remail any Office action which is not received at applicant's correspondence address and start anew the response period. This procedure will continue in the future under the revised rules.

Comment:

Three patent bar groups and two individuals indicated that the proposed deletion of the refund provisions due to PCT search reports in §1.26(b) and §1.446(b) would make the cost of filing under the Patent Cooperation Treaty prohibitively high and does not recognize the benefit of an earlier search on a corresponding application.

Reply:

In view of these comments, proposed §1.445(a) (2) and (4) and §1.446(b) have been amended to provide a credit of $250 where there is a corresponding application.

Comment:

One individual requested that the multiple dependent claim practice set forth in §1.75(c) be changed to permit one multiple dependent claim to refer to another multiple dependent claim as permitted under European practice.

Reply:

This suggestion cannot be adopted since it is contrary to 35 U.S.C. 112 and cannot therefore be changed by rule.

Comment:

One suggestion was made to change "official" to "Office" in §1.135(b).

Reply:

The suggestion has been adopted.

Comment:

One suggestion was made to allow refund of the oral hearing fee if an oral hearing is not held.

Reply:

This suggestion was not adopted since such refund is not appropriate in view of the fact that the fee is stated to be "for requesting an oral hearing" and not the actual conduct thereof.

Comment:

Three patent bar groups raised the question as to whether an applicant would be permitted to revive an unintentionally abandoned application under §1.137(b) after having been unsuccessful in the unavoidable approach under §1.137(a) and suggested that this be made clear when the proposed rules are promulgated.

Reply:

Yes, an applicant under certain conditions could use §1.137(b) after having been unsuccessful in the unavoidable approach under §1.137(a).

Comment:

Several comments related to the possibility of reviving applications unintentionally abandoned up to 15 years ago.

Reply:

In view of the comments received, §1.137(b) is being implemented to provide only for the revival of applications which were unintentionally abandoned for a reasonable but limited period of time. This should create no substantial problems in regard to intervening rights situations. It would permit some greater flexibility than that originally proposed but should have no significant effect on the current case backlog, pendency or number of interferences pending.

Comment:

One comment was received pointing out that the availability of an "unintentional abandonment" revival under §1.137(b) should not result in stricter holdings in "unavoidable abandonment" revival petitions under §1.137(a).

Reply:

The Office plans to continue to use the current criteria used to decide petitions to revive applications unavoidably abandoned.

Comment:

One written comment questioned whether the Commissioner has statutory authority to revive unintentionally abandoned applications.

Reply:

If Congress did not intend the Commissioner to have such authority there would have been no reason to establish fees in §41(a)7 in H.R. 6260. The legislative history of H.R. 6260, House Report No. 97-542 (Committee on the Judiciary), also makes the Congressional intent clear. The provisions in H.R. 6260 relating to unintentional abandonment are substantive in addition to setting the fee.

Comment:

One letter questioned what is intended by the statement in §1.137(b) that the Commissioner may require additional information where there is a question whether the abandonment was unintentional.

Reply:

Additional information would be required only where there is an indication that the abandonment was intentional, for example, where an express abandonment has been filed. The record should be clear how such an express abandonment was unintentional if the petition is to be granted.

Comment:

One comment raised the question as to whether in a petition to revive on grounds that the delay was unavoidable under §1.137(a), it would be sufficient that a registered attorney's statement be submitted which merely recites facts as related to him or her by another.

Reply:

Statements must be made, where possible, by the person having direct personal knowledge of the facts. No change in the "showing" required or the persons making them is intended in such petitions. The rule merely clarifies that a statement by a registered attorney or agent need not be in the form of an oath or declaration.

Comment:

One comment suggested that §1.317 be changed to provide for the situation where there was a lapse in a patent due to the unintentional delay in paying a balance of issue fee due.

Reply:

Section 1.317 has now been changed to provide for this lapse situation.

Comment:

Three patent bar groups and one individual indicated that a full credit of the amount equal to the international search fee be made where both a U.S. national and international seach are made by the United States Patent and Trademark Office.

Reply:

While a complete credit is not considered proper in view of additional processing work (including searching) required in the second application, a credit of $250 has been provided in revising §1.445(a) (2) and (4).

Comment:

One person commented that the term "patent" should be inserted after "abandoned" in §1.12(b).

Reply:

The suggestion has been adopted.

DISCUSSION OF SIGNIFICANT DIFFERENCES BETWEEN PROPOSED AND FINAL RULES

A number of other changes which have been made as a result of the comments received and further review of the proposed rulemaking are identified below.

Implementation of the changes to §1.9, new §§1.27 and 1.28, and the deletion of Part 3 are being deferred for further comments by Aug. 13, 1982. See the discussion below.

Subparagraph (a) (5) of §1.19 has been changed from that proposed by referring to subparagraphs (1) through (4) rather than (3) and (4) in order to clarify that copies of patents cannot be ordered at the rate set in subparagraph (a) (5). Instead, copies of patents must be ordered under paragraphs (a) (1) and (2) of §1.19.

Section 1.24 has been changed from that proposed to provide for the sale of 40-cent coupons. Coupons in this denomination may be useful in view of the charge of forty cents for a printed copy of a registered mark in §2.6(m) of Alternative A of the trademark rules.

Sections 1.137, 1.155 and 1.316 have been changed from that proposed in Alternative B to further specify the conditions under which unintentionally abandoned applications can be revived.

Sections 1.192 and 1.194 have been changed from that proposed so as to allow a request for an oral hearing and the payment of the required fee therefor to be made one month after the date of the examiner's answer. Previously, appellant was required to indicate a desire for an oral hearing at the time of filing the brief. The sections will now permit appellant to consider the examiner's answer before deciding whether to request an oral hearing and pay the required fee.

Section 1.317 has been changed in Alternative B to provide for the situation where there was a lapse in a patent due to the unintentional delay in paying a balance of issue fee due.

Section 1.445(a) (2) and (4) have been changed from that proposed to provide for a reduction in the international search fee where there has been a corresponding United States national application and a credit to the national fee where an international search fee has been paid in a corresponding international application and the international search has been made by the United States Patent and Trademark Office.

Section 1.446(b) has been changed from that proposed to permit a refund of a portion of the search fee to the extent set forth in §1.445(a) (4), if such refund is requested at the time of paying the national fee.

IMPLEMENTATION OF PATENT FEE REVISION

The effective date of the patent fee revisions contained in this rulemaking is Oct. 1, 1982.

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The changes which will become effective on Oct. 1, 1982, upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, are (1) the rule changes common to Public Law 96-517 and H.R. 6260, and (2) the rule changes under H.R. 6260, which appear in Alternative B. The rule changes common to Public Law 96-517 and H.R. 6260 will become effective on Oct. 1, 1982, whether or not H.R. 6260 is enacted as a Public Law prior to Oct. 1, 1982.

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Upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, the rule changes in Alternative B will become effective on Oct. 1, 1982, in which case the rule changes in Alternative A will not become effective on Oct. 1, 1982.

Any fee which is due and payable on or after Oct. 1, 1982, must be paid in the amount and in accordance with the procedures contained in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing under §1.8 will be considered to be the date of receipt in the Office. In order to ensure clarity in the implementation a discussion of the implementation of specific sections is set forth below:

IMPLEMENTATION OF SPECIFIC SECTIONS

The various sections will be implemented in the manner set forth below:

§1.16 National application filing fees.

Any national patent application filing fees paid on or after Oct. 1, 1982, must be paid in the amounts set forth in this section. Any additional fees which become due under §1.16 in pending applications on or after Oct. 1, 1982, or which have not been paid prior to Oct. 1, 1982, must be paid in the amounts set forth in this section even though the application was filed prior to Oct. 1, 1982. For example, if an application filed prior to Oct. 1, 1982, is amended on or after Oct. 1, 1982, to include a multiple dependent claim for the first time, the fee set forth in §1.16(d) must be paid.

The surcharge in §1.16(e) of Alternative B is being established at this time, but will only be made effective when the statutory authority for the late filing of the fee or the oath or declaration becomes effective under 35 U.S.C. 111, as it would be amended by H.R. 6260. The statutory authority for the late filing of the fee or the oath or declaration becomes effective six months after enactment of H.R. 6260 as a Public Law.

§1.17 Patent application processing fees.

Any patent application processing fees paid on or after Oct. 1, 1982, must be paid in the amounts set forth in this section.

The extension fees which must accompany a petition for an extension of time become effective on Oct. 1, 1982, and apply to any application for which the period for responding, i.e., taking action, expires on Oct. 1, 1982, or thereafter. If a response or action by the applicant was due before Oct. 1, 1982, and was not filed timely or an extension of time until Oct. 1, 1982, or thereafter, was not obtained, then §1.136(a) cannot be used to obtain an extension. *Any response or action required before Oct. 1, 1982, cannot have its time extended by using §1.136(a).* If one or more previous extenions have been granted prior to Oct. 1, 1982, extending the time for taking action unitl Oct. 1, 1982, or thereafter, the fees which are due for additional extensions under §1.136(a) will be as set forth in §1.17(a)-(d) under either Alternative A or B.

• • • • •

The previous practice of extending the shortened statutory period an additional month upon the filing of a timely first response to a final rejection is being discontinued effective with any first response to a final rejection filed on or after Oct. 1, 1982. Applicants can obtain additional time for response after that date by paying the appropriate fee for the same. An object of the previous practice, as expressed in §714.13 of the Manual of Patent Examining Procedure, was to obviate the necessity for appeal or filing a continuing application merely to gain

time to consider the examiner's position in reply to a response timely filed after final rejection. Under §1.136(a) the object of the previous practice can be achieved without continuing the previous practice. Thus, under §1.136(a) an applicant can file a timely first response to a final rejection within the initial period without having to file an appeal or a continuing application if the examiner's response is not received prior to the expiration of the initial period for response. If the timely first response places the application in condition for allowance no additional response and no extension fee from applicant is required. If the examiner's advisory action indicates the timely first response did not place the application in condition for allowance the applicant may then consider the examiner's position to determine whether further prosecution is desirable. If further prosecution is not desired the application can be abandoned without further response or expense. If further prosecution is desired, the applicant can petition and pay the necessary fee to extend the time to the extent appropriate up to the maximum permitted by statute. The availability of this flexibility under §1.136(a) eliminates the necessity for the previous practice. Further, under H.R. 6260 extensions of time would be granted in most instances by virtue of the payment of fees rather than without fees as in the previous practice. The elimination of the previous practice after final rejection is thus consistent with the letter and spirit of H.R. 6260.

After an applicant has petitioned and paid the extension fees of $550 for response within the fourth month pursuant to §1.136(a), any further extensions which are permitted under the statute must be obtained under §1.136(b).

A petition for extension of time under §1.136(a) may incorporate by reference a previously filed response without including an additional copy of the response in circumstances where the response was received late and the petition is filed to extend the time so that the response will be considered timely.

The appeal fees set forth in §1.17(e)–(g) are due for notices of appeal or briefs filed, or requests for oral hearings filed, on or after Oct. 1, 1982. If more than one appeal occurs in an application, the fees are due for each notice of appeal, each brief, and each request filed for an oral hearing as long as a decision on the merits by the Board of Appeals resulted from the first notice of appeal, brief, and request for an oral hearing. If the examiner reopens prosecution in the application after appeal and prior to the decision by the Board of Appeals then the fee for the notice of appeal, brief, and request for an oral hearing will apply to a later appeal which does result in a decision by the Board of Appeals. No refund of any appeal fees is permitted since such are due on filing or on requesting an oral hearing. No fee is required for a reply brief.

The fees for petitions set forth in §1.17(h)–(j) and (l) apply to any such petition filed on or after Oct. 1, 1982. The fee set forth in §1.17(m) of Alternative B would apply, with enactment of H.R. 6260 prior to Oct. 1, 1982, to petitions (1) for revival of an unintentionally abandoned application or (2) for the unintentionally delayed payment of the fee for issuing a patent. Section 1.137(b) of Alternative B would apply to applications unintentionally abandoned by failure to prosecute, e.g., failure to respond to an Office action. Sections 1.155(c) and 1.316(c) of Alternative B would apply to applications in which the payment of the fee for issuing a patent is unintentionally delayed. These sections would be implemented, with enactment of H.R. 6260 prior to Oct. 1, 1982, by making them effective as to any applications which would be covered by the literal language of the sections. In addition, and for a transition period between Oct. 1, 1982, and Dec. 31, 1982, a petition to revive an unintentionally abandoned application would be granted if (i) the application received a decision on a petition to revive the application on or after Oct. 1, 1981, and before July 30, 1982, or (ii) a petition was filed or renewed on or after Oct. 1, 1981, and before July 30, 1982, provided in the case of both (i) and (ii) that a petition to revive was filed within one year of the date of abandonment. The dates in question were chosen so as to permit this remedial provision to be given as wide an application as possible to benefit applicants whose applications have previously been unintentionally abandoned, but who could not meet the previous requirements for a showing that the delay resulting in the abandonment was unavoidable. The dates were also chosen to prevent an applicant whose application has been abandoned for an unduly long period from attempting to take advantage of this new provision, possibly to the detriment of individuals or companies who had begun to make, use, or sell the subject matter of the application after the date of abandonment of the application. By using these dates the possibility of reviving the application of an applicant who has, in effect, abandoned the invention under 35 U.S.C. 102(c) is minimized. Implementing these sections in the manner set forth would be appropriate and proper in view of the legislative history of H.R. 6260, contained in House Report No. 97-542 (Committee on the Judiciary), which indicates that the Commissioner can establish time limits within which petitions to revive or to accept late payment of issue fees can be filed. Thus, it is entirely proper to limit such petitions in the manner set forth in order to prevent abuses from occurring. To ensure that abuses do not occur, §§1.137(b), 1.155(c), 1.316(c), and 1.317(c) specifically indicate that waivers of the time periods involved will not be considered via petitions under §1.183.

The fee set forth in §1.17(k) is required for any application filed on or after Oct. 1, 1982, with a specification in a non-English language.

§1.18 Patent issue fees.

Any patent issue fee paid on or after Oct. 1, 1982, must be paid in the amounts set forth in this section even if the notice of allowance was mailed prior to Oct. 1, 1982, and indicates different amounts due. If the issue fee is paid prior to Oct. 1, 1982, any balance of issue fee due must be paid in accordance with §1.317.

§1.19 Document supply fees.

The document supply fees set forth in this section will apply to all orders and requests received by the Patent and Trademark Office on or after Oct. 1, 1982.

§1.20 Post-issuance fees.

The post-issuance fees set forth in §1.20(a)–(d) apply to any petitions, requests, or actions filed on or after Oct. 1, 1982. The amounts of the maintenance fees are included in §1.20.

Maintenance fees will be required for any patent actually applied for on or after Dec. 12, 1980, whether or not the patent is entitled to the benefit of an earlier filing date under 35 U.S.C. 120 or a right of priority under 35 U.S.C. 119. For reissue patents, the controlling date would be the filing date of the original patent. For example, maintenance fees would only be required where the application for the original patent was filed on or after Dec. 12, 1980. As to patents resulting from international applications filed under the Patent Cooperation Treaty, maintenance fees will be required on all patents resulting from international applications having PCT filing dates on or after Dec. 12, 1980.

The details implementing payment of the maintenance fees are not being established at this time since such fees will not be due for some time and additional consideration of the problems thereof is required.

§1.21 Miscellaneous fees and charges.

The miscellaneous fees and charges set forth in this section will apply to all orders and requests received by the Patent and Trademark Office on or after Oct. 1, 1982.

§1.445 International application filing and processing fees.

Any international application filing and processing fees paid on or after Oct. 1, 1982, must be paid in the amounts set forth in this section.

Implementation Of Certain Sections Deferred For Further Comments

In view of the comments and the recommendations received at the hearing on July 9, 1982, the period for written comments on §1.9(c), (d), (e), and (f), and on §§ 1.27 and 1.28, has been extended until Aug. 13, 1982 (see 47 FR 32458, July 27, 1982). Comments received at the hearing on July 9, 1982, expressed the view that there is no necessity to publish final rules on §1.9(c), (d), (e), and (f), and on §§1.27 and 1.28, by August 2, 1982, and that further time for consideration and comment was necessary. Persons commenting stated a belief that the pressure of time does not apply to §§1.27 and 1.28 as it does apply to the fee rulemaking. Accordingly, the period for written comments on these sections is extended until Aug. 13, 1982. After receiving written comments by Aug. 13, 1982, the changes to §1.9 and proposed §§1.27 and 1.28 will be adopted as final rules with such modifications as are found to be appropriate after review of the comments. These rule changes, with any appropriate modifications thereof, must become effective on Oct. 1, 1982, with enactment of H.R. 6260 prior to Oct. 1, 1982. Accordingly, adoption of the changes to §1.9 and new §§1.27 and 1.28 is being deferred at this time to permit additional written comments by Aug. 13, 1982. However, these rule changes will be adopted, with any appropriate modifications, as soon as possible after receipt of the additional written comments. No additional proposal will be published and no additional hearing will be held prior to adoption of final rules on the changes to §1.9 and on new §§1.27 and 1.28.

As a result of additional comments presented during the hearing on the proposed trademark fees, the period for written comments on the deletion of Part 3 was also extended until Aug. 13, 1982, to provide an additional opportunity for interested persons to comment on this proposed change. Since it is not essential that this deletion be published by Aug. 2, 1982, it is appropriate to extend the period for comments. No additional proposal will be published and no additional hearing will be held prior to a decision on whether or not to delete Part 3 as proposed.

SECTION II—REVISION OF TRADEMARK FEES

Background

A notice of proposed rulemaking was published in the *Federal Register* on June 28, 1982, at 47 FR 28063–28065 and in the *Official Gazette* on June 29, 1982, at 1019 TMOG 110–119. An oral hearing was held on July 9, 1982. Three written letters and statements were submitted. Three persons testified at the oral hearing. Full consideration has been given to all of the letters, statements, and testimony.

Objectives of Rule Changes

These amendments establish fees for the filing and processing of an application for the registration of a trademark or other mark, and for providing all other services and materials relating to trademarks and other marks.

Public Law 96–517

Public Law 96–517 authorizes the Commissioner to establish fees for the filing and processing of an application for the registration of a trademark or other mark, and for providing all other services and materials relating to trademarks and other marks. Public Law 96–517 requires that by Oct. 1, 1982, fees for the filing and processing of an application for the registration of a trademark or other mark be set to recover in the aggregate 50 percent of the estimated average cost to the Office of such processing. Also by Oct. 1, 1982, fees for providing all other services and materials relating to trademarks and other marks are to be set to recover the estimated average cost to the Office of performing the service or furnishing the material.

H.R. 6260

On June 8, 1982, the House of Representatives passed H.R. 6260. This bill would amend the fee provisions to be implemented on Oct. 1, 1982. H.R. 6260 would repeal the provisions in Public Law 96–517 requiring that filing and processing fees be set to recover in the aggregate 50 percent of the estimated average cost of such processing to the Office, and that fees for providing all other services and materials relating to trademarks and other marks be set to recover the estimated average cost to the Office of performing the service or furnishing the material. In passing H.R. 6260, the House of Representatives recommended a fee schedule to the Commissioner for fiscal year 1983. The fees set in Alternative B adopt the House recommendation.

This rule change, therefore, is also designed in the alternative to implement the fee provisions as they would be amended by H.R. 6260. The rule change contains changes which are common to Public Law 96–517 and H.R. 6260, as well as alternative rule changes which are specific to Public Law 96–517 (Alternative A) and to H.R. 6260 (Alternative B).

DISCUSSION OF SIGNIFICANT CHANGES

This rulemaking places into the appropriate sections of Title 37, Code of Federal Regulations, the various fees which are due on filing, during the pendency of a trademark application, or during the life of a registration.

Rule changes for implementing provisions of Public Law 96–517 or H.R. 6260 other than the fee provisions have not been included. Rule changes for implementing provisions other than the fee provisions will be published in a later rulemaking proposal.

DISCUSSION OF SPECIFIC SECTIONS CHANGED

The sections changed are grouped in this document under three different categories. Those changes which are common to Public Law 96–517 and H.R. 6260 appear first and are numbered 72–76. The change which relates only to Public Law 96–517 appears as Alternative A and is numbered 77. The change which is dependent upon enactment of H.R. 6260 appears as Alternative B and is numbered 78. The changes common to Public Law 96–517 and H.R. 6260 will become effective on Oct. 1, 1982, whether or not H.R. 6260 is enacted as a Public Law. * * * * * Upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, Alternative B will become effective on Oct. 1, 1982, in which case Alternative A will not become effective.

The specific rules for which changes are made are §§2.6, 2.85, 2.101, 2.146, 2.162 and 2.167.

Rule Changes Common to Public Law 96–517 and H.R. 6260

Section 2.85, paragraph (e), is amended to delete reference to late filed fees for oppositions and affidavits. The manner in which such fees shall be handled is described in the pertinent sections for affidavits and oppositions.

Section 2.101, paragraph (c), is amended to delete the reference to a service charge which will no longer be charged for late-filed fees for oppositions.

Section 2.146, paragraph (b), is amended to add a fee for filing a petition to the Commissioner. Paragraph (f) of this section which indicates that no fee is required is deleted.

Section 2.162, paragraph (d), is amended to remove the reference to a service charge for late-filed fees on §8 affidavits.

Section 2.167, paragraph (g), is added to establish procedures relating to the fee for affidavits under §15, 15 U.S.C. 1065, and to state the Office's action when no fee or an insufficient fee is filed.

* * * * *

Alternative B—Rule Change Only Under H.R. 6260

Section 2.6 is revised to establish the fees recommended by the House of Representatives under H.R. 6260 for filing and processing applications for the registration of trademarks or other marks and for providing services and materials relating to trademarks or other marks. The $10 fee recommended by the House for certified copies

appears in paragraphs (n) and (o) as a fee of $6.50 for a copy of a registered mark showing title and/or status and a fee of $3.50 for certification.

RESPONSE TO COMMENTS ON THE RULES

Specific comments were received on several of the sections. All of the comments included in the written submissions and the oral testimony were considered in adopting the changes set forth herein.

Written comments were received from three individuals. Oral comments were presented at the hearing on behalf of a patent and trademark law group, the American Patent Law Association, and an organization of trademark owners and lawyers, the United States Trademark Association. One individual spoke on behalf of a law firm and expanded upon the points raised in his previously submitted written comments.

These comments appear below along with responses thereto, where appropriate.

Comment: The representative of the trademark association spoke favorably about the proposal presented. The organization opposed 100% recovery of trademark costs from user fees. It was felt that such an approach reflected a misconception that trademarks benefit only their owners and not consumers and the economy as a whole. The speaker solicited the assistance of the Patent and Trademark Office in altering this viewpoint.

Comment: The representative of the bar group questioned the fairness of the Office in establishing the fees under Alternative B. It appeared that the Office had accepted the USTA proposals only where they were higher. In all cases where the USTA recommendations were lower than those proposed, the difference was split. The filing fee was singled out as the most unfair fee.

Reply: In Alternative B, the rules adopt the fee levels recommended by the House Committee on the Judiciary in House Report No. 97-542. The Report recognizes that the Office needs to recover a certain amount of fee income over the next three years. The application filing fee is expected to furnish more than 60% of the estimated annual income. It could not be reduced further without endangering operations. The reduction from $200.00 to $175.00 per class was covered to a large extent by higher fees for other services.

Comment: The philosophy of H.R. 6260 is to recover no more than 100%. Final fees should recover this level and no more.

Reply: Projecting processing costs three years in advance can never be absolutely accurate. The Office must have sufficient funds to process anticipated workloads under the fees set during fiscal years 1983–1985 when costs are expected to be somewhat higher than present costs.

Comment: One suggestion involved retaining Part 4 of 37 CFR, at least for the present. Occasional users of the registration system find it to be a readily available reference. Certain information in the forms is available from no other source. The speaker believed the time pressures to implement the fee changes precluded proper consideration of the merits of Part 4.

Reply: The period for comment on deletion of Part 4 has been extended to August 13, 1982 to allow for additional public comment and internal consideration.

Comment: The suggestion was made that references to affidavits and oppositions should be eliminated from § 2.85(e) as the handling of late filed fees for these items is already covered directly in §§2.101(c), 2.162(d) and 2.167(g).

Reply: This suggestion was implemented.

Comment: A suggestion was made that §§2.101(c), 2.162(d) and 2.167(g) dealing with oppositions and affidavits under Section 8 and Section 15 be amended to require payment of all late filed fees within the time period specified in the notification by the Office.

Reply: All of the sections state that the affidavit or opposition "will not be refused if the required fee(s) . . . are filed in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office." This language is considered sufficient to require payment of all fees or have the opposition, affidavit or declaration refused.

Comment: One suggestion was made to either cite §2.6 in all sections being changed relative to fees or to cite it in none.

Reply: Citations of §2.6 have been added to §2.101(c) and §2.146(b) to conform to §2.162(d) and §2.167(g).

Comment: It was suggested that the fee for a combined section 8 and 15 affidavit needed to be specified in the rules.

Reply: Section 2.6 has been changed to provide this combined fee.

DISCUSSION OF SIGNIFICANT DIFFERENCES BETWEEN PROPOSED AND FINAL RULES

A number of changes which were made as a result of the comments received and further review of the proposed rulemaking are identified below.

Deletion of Part 4 has been deferred for further comments by Aug. 13, 1982 (see 47 FR 32458, July 27, 1982). As elimination of Part 4 is not essential to the setting of fees, and does not have to be in place 60 days before implementation, it was decided to ask for further public comment.

Section 2.85(e) has been revised to eliminate the references to oppositions and affidavits. Because the handling of late filed fees for these items is specified elsewhere, these references in §2.85(e) were redundant and confusing.

Both alternatives of §2.6 have been revised to add a fee for a combined affidavit under sections 8 and 15 of the Act. In order to prevent possible confusion by users of the Trademark system, it was included separately.

IMPLEMENTATION OF TRADEMARK FEE REVISION

The effective date of the trademark fee revisions contained in this rulemaking is Oct. 1, 1982.

* * * * *

The changes which will become effective on October 1, 1982, upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, are (1) the rule changes common to Public Law 96-517 and H.R. 6260, and (2) the rule changes under H.R. 6260, which appear in Alternative B. The rule changes common to Public Law 96-517 and H.R. 6260 will become effective on Oct. 1, 1982, whether or not H.R. 6260 is enacted as a Public Law prior to Oct. 1, 1982.

* * * * *

Upon enactment of H.R. 6260 as a Public Law prior to October 1, 1982, the rule changes in Alternative B will become effective on Oct. 1, 1982, in which case the rule changes in Alternative A will not become effective on Oct. 1, 1982.

Any fee which is due and payable on or after Oct. 1, 1982, must be paid in the amount and in accordance with the procedures contained in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing under §1.8 will be considered to be the date of receipt in the Office. In order to ensure clarity in the implementation a discussion of the implementation of Section 2.6 is set forth below:

IMPLEMENTATION OF SECTION 2.6

Fees set forth in Section 2.6 must be paid in the amounts set forth in this section on or after Oct. 1, 1982. Any additional fees which become due under §2.6 in pending applications on or after Oct. 1, 1982, or which have not been paid prior to Oct. 1, 1982, must be paid in the amounts set forth in this section even though the application was filed prior to Oct. 1, 1982. For example, if an application filed prior to Oct. 1, 1982, is amended on

or after Oct. 1, 1982, to include additional classes, the fee set forth in §2.6(a) must be paid per class added.

IMPLEMENTATION OF CERTAIN SECTIONS DEFERRED FOR FURTHER COMMENTS

As a result of additional comments presented during the hearing on the proposed trademark fees, the period for written comments on the deletion of Part 4 has also been extended until August 13, 1982, to provide an additional opportunity for interested persons to comment on this proposed change (see 47 FR 32458, July 27, 1982). Since it is not essential that this deletion be published by Aug. 2, 1982, it is appropriate to extend the period for comments. No additional proposal will be published and no additional hearing will be held prior to a decision on whether or not to delete Part 4 as proposed.

OTHER CONSIDERATIONS RELATING TO PATENT AND TRADEMARK FEE REVISIONS

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Public Law 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et. seq.*).

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96-354) for several reasons. Public Law 96-517 and H.R. 6260 have both taken into consideration the impact they may have on small entities. The fees under Public Law 96-517 are set to recover 50% of patent and trademark processing costs rather than full costs and generally the rate of increase in the fees is less than that of inflation since the last increase in fees in 1965. Further, the rules implementing Public Law 96-517 take into consideration small entities by setting a lower patent filing fee than issue fee to recover the required level of patent processing costs. The lower filing fee permits a small entity to file a patent application for a relatively low cost and not have to pay the higher balance of fees required to achieve Public Law 96-517 recovery levels until examination is complete and it is known that a patent will issue. Under H.R. 6260 and this rulemaking, small entities would be able to pay reduced fees for filing patent applications and for the issuance and maintenance in force of patents. In general, the rule change will also expedite proceedings before the Patent and Trademark Office, changing existing procedures where they can be simplified.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*, since no significant additional record keeping or reporting requirements are placed upon the public. In fact, some paperwork, especially that related to requests for extensions of time, will be reduced.

List of Subjects in 37 CFR Parts 1 and 2

Administrative practice and procedure, Courts, Inventions and patents, Lawyers, Nonprofit organizations, Small businesses, Trademarks.

AMENDMENT OF REGULATIONS

For the reasons indicated above and pursuant to the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, and under Sections 31 and 41 of the Trademark Act of July 5, 1946, 15 U.S.C. §§1113, and 1123, Parts 1 and 2 of Title 37, Code of Federal Regulations, are amended as set forth below.

July 14, 1982.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

* * * * *

[Note: H.R. 6260 became Public Law 97-247 on Aug. 27, 1982. Rules that became effective Oct. 1, 1982 are those rules common to Public Law 96-517 and H.R. 6260 and those set forth in Alternative B. The adopted rules are reproduced in the notice entitled "Revision of Patent and Trademark Fees Confirmation," published at 1022 O.G. 21, which is reprinted immediately following this notice.]

[1021 O.G. 19]

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Department of Commerce
Patent and Trademark Office
37 CFR Parts 1 and 2
[Docket No. 2714-129]
Revision of Patent and Trademark Fees Confirmation

Agency: Patent and Trademark Office, Commerce.

Action: Confirmation of rules.

Summary: This document confirms certain rule changes for patent and trademark fees and fee-related procedures which take effect on Oct. 1, 1982. These rule changes implement H.R. 6260 which was enacted as Public Law 97-247 on Aug. 27, 1982.

Effective Date: Oct. 1, 1982.

For Further Information Contact: As to the patent rules contact: R. Franklin Burnett, by telephone at (703) 557-3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Rm 3-11A13, Washington, D.C. 20231.

As to the trademark rules contact: Miss Maude Williams, by telephone at (703) 557-2222 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Miss Maude Williams, Rm. 3-11C17, Washington, D.C. 20231.

Supplementary Information: The Patent and Trademark Office is required by law to publish a notice in the Federal Register of its fees at least 60 days before the effective date thereof (35 U.S.C. 41(g)). Thus, on July 30, 1982 a final rule document was published at 47 FR 33086 setting forth rule changes for patent and trademark fees and procedures which take effect on Oct. 1, 1982. The document was based on the public law in effect at that time, Public Law 96-517, and on H.R. 6260, which was then pending but is now Public Law 97-247. The final rule document published on July 30, 1982, in the Federal Register sets out—

(1) rules that are common to both Pub. L. 96-517 and H.R. 6260 (now Pub. L. 97-247);
(2) Alternative A which contains rule changes implementing Pub. L. 96-517 alone; and
(3) Alternative B which contains rule changes implementing H.R. 6260 (now Pub. L. 97-247).

H.R. 6260 was enacted as Public Law 97-247 on Aug. 27, 1982, and the Patent and Trademark Office hereby confirms that the rule changes common to both Pub. L. 96-517 and H.R. 6260 and Alternative B are those which go into effect on Oct. 1, 1982. The rules under Alternative A are hereby withdrawn. Additional rule changes required by Public Law 97-247 will be made the subject of separate rulemakings.

List of Subjects in 37 CFR Parts 1 and 2

Administrative practice and procedure, Courts, Inventions and patents, Lawyers, Nonprofit organizations, Small businesses, Trademarks.

Amendment of Regulations

For the reasons set out in the preamble, 37 CFR Parts 1 and 2 are confirmed as being amended by the final rule published on July 30, 1982 at 47 FR 33086 as set forth below.

Sept. 14, 1982.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

1. The rule changes made in Alternative A relating to patents which begin at 47 FR 33107 and in Alternative A relating to trademarks which begin at 47 FR 33112 are hereby withdrawn.

2. Confirmed as effective Oct. 1, 1982 are the rule changes published July 30, 1982 common to Public Law 96-517 and H.R. 6260 (now Public Law 97-247) and Alternatives B. The rule changes relating to patents common to Public Law 96-517 and H.R. 6260 (now Public Law 97-247) were published on July 30, 1982 at 47 FR 33099. The rule changes relating to patents under Alternative B were published at 47 FR 33108. The rule changes relating to trademarks common to Public Law 96-517 and H.R. 6260 (now Public Law 97-247) were published on July 30, 1982 at 47 FR 33111. The rule changes relating to trademarks under Alternative B were published at 47 FR 33112. Corrections to the July 30, 1982 publication were published on Aug. 4 and 5, 1982 at 47 FR 33688 and 33959.

(Text of adopted rules appears in 37 CFR, revised July 1, 1983.)

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Department of Commerce
Patent and Trademark Office
37 CFR Parts 1, 3 and 4
[Docket No. 2827-167]

Revision of Patent and Trademark Fees

Agency: Patent and Trademark Office, Commerce

Action: Final Rule.

Summary: The Patent and Trademark Office is amending the rules of practice in patent and trademark cases to establish procedures for the payment of fees under §41 (a) and (b) of Title 35, United States Code, which are reduced by 50 per centum for independent inventors and nonprofit organizations as required by the public law resulting from H.R. 6260. This action is necessary at this time in order that the procedures for paying the reduced fees will be effective on Oct. 1, 1982, the effective date of the changes in the amounts of Patent and Trademark Office fees established by the public law resulting from H.R. 6260. This final rule also deletes Parts 3 and 4 which contain outdated sample forms and corrects a reference to a section which appears in §1.451.

Effective Date: Oct. 1, 1982.

For Further Information Contact: As to the patent rules contact R. Franklin Burnett by telephone at (703) 557-3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Room 3-11A13, Washington, D.C. 20231.

As to the trademark rules contact Miss Maude Williams by telephone at (703) 557-2222 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Miss Maude Williams, Room 3-11C17, Washington, D.C. 20231

Supplementary Information: Notices of proposed rulemaking relating to the revision of patent and trademark fees were published in the *Federal Register* on June 28, 1982, at 47 FR 28042-28065 and in the *Official Gazette* on June 29, 1982, at 1019 O.G. 57-120. Oral hearings were held on July 9, 1982. Full consideration has been given to all of the letters, statements, and testimony received at the time. A final rule on "Revision of Patent and Trademark Fees" was published on July 30, 1982 at 47 FR 33086-33112 with corrections in the printing thereof being published on Aug. 4, 1982, at 47 FR 33688 and Aug. 5, 1982, at 47 FR 33959. The final rule was also published in the Official Gazette on Aug. 10, 1982, at 1021 O.G. 19-94. In view of comments received at the hearings, additional time for comment on the rules covered by this change was given until Aug. 13, 1982. The notice extending the time for comment was published on July 27, 1982 at 47 FR 32458.

This final rule is being adopted as soon as possible after the enactment of the public law resulting from H.R. 6260. The Patent and Trademark Office has determined that the requirement of 5 U.S.C. 553 (d) for publication not less than 30 days before its effective date does not apply to this final rule since it will reduce patent fees for independent inventors and nonprofit organizations.

Objectives of Rule Changes

These rule changes are designed to implement the Patent and Trademark Office fees and procedures which are provided for by the public law resulting from H.R. 6260.

Public Law Resulting From H.R. 6260

The public law resulting from H.R. 6260 provides that funds available under the act "shall be used to reduce by 50 per centum the payment of fees under section 41 (a) and (b) of Title 35, United States Code" by independent inventors, small business concerns, and nonprofit organizations. The public law resulting from H.R. 6260 gives the Commissioner authority to establish regulations defining independent inventors and nonprofit organizations. The public law resulting from H.R. 6260 defines small business concerns by reference to §3 of the Small Business Act and regulations established by the Small Business Administration. This rulemaking establishes regulations defining independent inventors and nonprofit organizations. The Small Business Administration is establishing the definition of a small business concern for the purpose of paying reduced fees under the public law resulting from H.R. 6260. This rulemaking also establishes the procedures which will be followed by independent inventors and nonprofit organizations when paying the reduced fees.The procedures to be followed by small business concerns when paying the reduced fees will be established in a separate final rule.

Discussion of Specific Sections

The following sections are changed by this final rule, effective Oct. 1, 1982:

Section 1.9, as amended, adds paragraphs (c), (e), and (f) which define "independent inventor" and "nonprofit organizations" as used in Title 37, Code of Federal Regulations, Chapter I. Each of these along with "small business concern" is identified as a "small entity" for purposes of paying fees which are set under §41 (a) and (b) of Title 35, United States Code, as amended by the public law resulting from H.R. 6260. Paragraph (d) of §1.9 relates to the definition of small business concern which is being established by the Small Business Administration. Accordingly, proposed paragraph 1.9(d) is not being promulgated at this time.

The public law resulting from H.R. 6260 authorizes the Commissioner to establish regulations defining independent inventors and nonprofit organizations. Section 1.9(c) defines an independent inventor as any inventor who (1) has not assigned, granted, conveyed, or licensed, and (2) is under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not likewise be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization. Once an individual sole inventor, or one of several joint inventors, has assigned, granted, conveyed, or licensed, or comes under an obligation to assign, grant, convey, or license, any rights to the invention to anyone who could not likewise obtain status as a small entity, the inventor(s) will no longer be entitled to pay fees in the amounts established for an independent inventor (§1.9(c)). Section 1.9 (c) will permit an individual inventor to make an assignment, grant, conveyance, or license of partial rights in the invention to another individual or individuals who could qualify as an independent inventor or inventors if they had made the invention. In addition,§1.9 (c) will permit an individual inventor to make an assignment, grant, conveyance, or license of partial rights in the invention to a small business concern or nonprofit organization. Under the circumstances described in the previous two sentences the individual inventor could still qualify as an independent inventor. However, if the independent inventor assigned, granted,

conveyed, or licensed, or came under an obligation to assign, grant, convey, or license, any rights to the invention to any individual or organization which could not qualify as a small entity (§1.9 (f)), then the inventor would no longer qualify as an independent inventor.

Proposed section 1.9 (d) relating to the definition of a small business concern is not being promulgated at this time.

Section 1.9(e) defines a nonprofit organization by utilizing and broadening the definition contained in 35 U.S.C. 201 (i). The term "university or other institution of higher education" as used in §1.9 (e) means an educational institution which (1) admits as regular students only persons having a certificate of graduation from a school providing secondary education, or the recognized equivalent of such a certificate, (2) is legally authorized within the jurisdiction in which it operates to provide a program of education beyond secondary education, (3) provides an educational program for which it awards a bachelor's degree or provides not less than a two-year program which is acceptable for full credit toward such a degree, (4) is a public or other nonprofit institution, and (5) is accredited by a nationally recognized accrediting agency or association. The definition of "university or other institution of higher education" as set forth herein essentially follows the definition of "institution of higher education" contained in 20 U.S.C. 1141(a). Institutions which are strictly research facilities, manufacturing facilities, service organizations, etc., are not intended to be included within the term "other institution of higher education" even though such institutions may perform an educational function or publish the results of their work.

Section 1.9(f) identifies an independent inventor, a small business concern, or a nonprofit organization as a "small entity" for purposes of paying fees set under §41 (a) and (b) of Title 35, United States Code, as amended by the public law resulting from H.R. 6260. Fees established under §41 (c) or (d) of Title 35, United States Code, will not be reduced for small entities since such a reduction is not permitted or authorized by the public law resulting from H.R. 6260. Paragraphs (c), (e), and (f) of §1.9 should be read together with §§1.27 and 1.28 which deal with establishing status as a small entity and the effect thereof.

New §1.27 provides in paragraph (a) that any person seeking to establish as a small entity, as defined in §1.9 (f) for the purpose of paying reduced fees, must file a statement to that small entity. Paragraph 1.27(b) provides specifically for inventors filing statements claiming status as independent inventors. Paragraph 1.27 (c) relating to claiming status as a small business concern is not being promulgated at this time, but will be subject of a separate final rule. Paragraph 1.27 (d) provides for claiming status as a nonprofit organization. Under §1.27, as long as all of the rights remain in small entities, the fees established for a small entity can be paid. This includes circumstances where the rights were divided between an independent inventor, a small business concern and a nonprofit organization or any combination thereof.

New §1.28 provides guidance as to the effect of failure to establish, or notify the Office of any change from, small entity status. Paragraph 1.28 (a) provides that once status as a small entity has been established in an application or patent, without the filing of a further verified statement pursuant to §1.27, unless the Office is notified of a change in status. Under paragraph 1.28 (a), status as a small entity in one application or patent does not affect any other application or patent except in applications filed under §1.60 where a reference is made to a verified statement in a parent application. Paragraph 1.28 (b) requires that notification of any change in status resulting in loss of entitlement to small entity status be filed in the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. Section 1.28 also provides guidance as to the effect of improperly establishing status as a small entity. The intent of the reduced fees for small entities is to soften the impact of the fee increases under §41(a) and (b) of Title 35, United States Code, as such sections are amended by the public law resulting from H.R. 6260, upon those who are least able to absorb the increased fees without overall damage to their ability to participate in the patent system through the filing, issuing and maintaining of patents. Accordingly, any attempt to improperly establish status as a small entity will be viewed as a serious matter by the office and paragraph 1.28(d) indicates that any attempt to fraudulently establish status as a small entity or pay fees as a small entity will be considered as a fraud practiced or attempted on the Office. In addition, improperly and through gross negligence establishing status as a small entity or paying fees as a small entity will be considered as a fraud practiced or attempted on the Office. Normally, the Office will not question a claim to status as a small entity. However, if the Office must resolve such an issue in a question arising before it, the Office will look to the actual or practical status ot the individual or oganization claiming status as a small entity rather than the professed or apparent status.

Section 1.451, paragraph (b), is amended to correct a reference to another section of the regulations.

Parts 3 and 4 are removed to eliminate all of the patent and trademark forms from the Code of Federal Regulations. The Patent and Trademark Office has prepared a booklet entitled "Patent and Trademark Forms Booklet" which is available for sale to the public from the Superintendent of Documents and which includes full size copies of substantially all the forms in the Code of Federal Regulations in view of the difficulty of keeping such forms is not mandatory.

Discussion of Significant Differences Between Proposed and Final Rules

A number of changes which have been made to §§1.9, 1.27 and 1.28 as a result of the comments received and further review of the proposed rulemaking are identified below.

Paragraph (c) of §1.9 has been changed from that proposed to simplify the definition by removing the words "including (i) the right to make, use, or sell the invention, and (ii) the right to exclude others from making, using, or selling the invention". No change in substance is intended by removing these words since the phrase "any rights in the invention" obviously is inclusive of all rights regardless of how they are, or would be, transferred. The words "or otherwise" have also been removed to simplify the definition without a change in substance.

Paragraph (d) of §1.9 is not being promulgated by this rule change.

Paragraph (e) of §1.9 is changed from that proposed by adding the words "located in any country" in item (e) (1) to clarify the fact that a university or other institution of higher education can qualify regardless of location. Paragraph (e) is also changed from that proposed by adding an item (4) to clarify that a nonprofit organization if it could qualify as a nonprofit organization under item (2) or (3) of paragraph (e) "if it were located in this country." Thus, under paragraph (e) of §1.9 nonprofit organizations will be treated the same for purposes of paying fees regardless of location.

Paragraph (a) of §1.27 has been changed from that proposed by substituting the words "any fee paid as a small entity". This change is intended to clarify the fact that a verified statement is not required with every fee.

Paragraph (b) of §1.27 has been changed from that proposed to clarify who is to file the verified statement. The verified statement for a small business concern or nonprofit organization is to be filed by "the owner of the small business concern, or an official of the small business concern or nonprofit organization empowered to act on behalf of the small business concern or nonprofit organization . . ." The term "official" as used in paragraph (b) is intended to include any officer, employee, or part-owner empowered to act on behalf of a small business concern or nonprofit organization.For example, an officer or employee of a corporation empowered to

act for the corporation by its board of directors would be qualified to sign such a verified statement.

Paragraph (c) of §1.27 relating to claiming status as a small business concern is not being promulgated at this time, but will be the subject of a separate final rule.

Paragraph (d) of §1.27 has been changed from that proposed in the same manner as paragraph (b) of §1.27 has also been changed from that proposed by adding a reference to §1.9 (e)(4).

Paragraph (a) of §1.28 has been changed from that proposed by adding the words "or patent" in the first and third sentences since the failure to establish status as a small entity could occur in a patent as well as in an application. An exception to the requirement for a verified statement has also been inserted into paragraph (a) of §1.28 for applications filed under §1.60 where the status as a small entity has been established in a parent application and is still proper. Under this change in paragraph (a) of proposed §1.28, the application filed under §1.60 "must include a reference to a verified statement in a parent application if status as a small entity is still proper and desired."

Paragraph (b) of §1.28 has been completely rewritten from that proposed to remove the requirement that the notification of a change in status resulting in loss of entitlement to small entity status must be filed prior to paying the next fee due. Instead, paraggraph (b) of §1.28 provides that after establishment of small entity status, "fees as a small entity may thereafter be paid in that application or patent without regard to a change in status until the issue is due or any maintenance fee is due." Paragraph (b) of §1.28 is also changed from that proposed by removing the sentence stating that payment of any fee as a small entity serves "as a representation that such payment as a small entity is proper at the time the payment is made." This change does not sanction the payment of improper fees, but is no longer necessary in view of another change in paragraph (b) which specifically provides that notification of any change in status resulting in loss of entitlement to small entity status "must be filed in the application or patent prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate pursuant to §1.9." The effect of the changes to paragraph (b) of §1.28 is to permit status to be established and then checked only (1) at the payment of the issue fee and (2) at the time of payment of each maintenance fee. This means that only four checks are required during the pendency and term of a patent after initial establishment of small entity status if such establishment was prior to payment of the issue fee. The last sentence of paragraph (b) has been changed from that proposed by inserting the words "of change in status" after "notification" for clarity.

Paragraph (c) of §1.28 has been changed from that proposed to require a verified statement explaining how the error in good faith occurred only in situations where the error occurred. This change from paragraph (c) as proposed will reduce paperwork and will provide a three-month grace period to correct errors with no explanations required for correction during that three-month period. The change has also been made to alleviate concerns about paragraph (d) of §1.28 which is being adopted as proposed.

Response to Comments on the Patent Rules

Specific comments were received on a number of the sections. All of the comments, including the oral testimony and the written comments, were considered in adopting the changes set forth herein.

Written comments on the patent rules and forms affected by this final rule were received from three patent law groups and thirteen individuals. The three patent law groups were (1) the American Patent Law Association; (2) the Patent, Trademark, and Copyright Section of the Virginia State Bar; and (3) the Patent, Trademark and Copyright Law Section of the Bar Association of the District of Columbia.

Oral comments were presented at the hearing on behalf of two patent law groups.

The comments appear below along with replies thereto.

Comment:

One comment suggested that the definition of "independent inventor" be simplified.

Reply:

The definition of "independent inventor" has been simplified without a change in substance by removing the words "including (i) the right to make, use, or sell the invention, and (ii) the right to exclude others from making, using, or selling the invention."

Comment:

One comment suggested that there is no need to include any more than a simplified statement that a "nonprofit organization includes a university or other institution of higher education"

Reply:

The suggestion has not been adopted since it is the intent of the rules to delireate as clearly as possible what organizations can qualify as nonprofit organizations without having to expend undue resources deciding each request on a case-by-case basis.

Comment:

One comment suggested that §1.9(e) discriminates against foreigners and thus violates the principle of national equality set forth in the Stockholm text of the Paris Convention for the Protection of Industrial Property.

Reply:

Section 1.9(e), as promulgated, defines a nonprofit organization in such a way that it is clear that foreigners are not excluded.

Comment:

One comment questioned whether or not government organizations can qualify as nonprofit organizations and more specifically, whether or not a government research facility can qualify under the broad definition of a nonprofit scientific or educational organization. Another comment recommended that §1.9(e) be expanded to include the U.S. Government in the definition of a "nonprofit organization."

Reply:

Government organizations as such, whether domestic or foreign, cannot qualify as nonprofit organizations as defined in §1.9(e). Section 1.9(e) was based upon 35 U.S.C. 201(i), as established by Public Law 96-517. The limitation to "an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)(3)) and exempt from taxation under section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a))" would by its nature exclude the U.S. government and its agencies and facilities, including research facilities and government corporations. State and foreign governments and governmental agencies and facilities would be similarly excluded. Section 1.9(e) is not intended to include within the definition of a nonprofit organization government organizations of any kind located in any country. A university or other institution of higher education located in any country would qualify, however, as a "nonprofit organization" under §1.9(e) even though it has some government affiliation since such institutions are specifically included.

Comment:

One comment was directed to, and opposed, Public Law 96-517 and H.R. 6260 rather than the specific provisions of §§1.9, 1.27 and 1.28 on the ground that the concept of a self-supporting agency is ill-conceived, shortsighted and wrong.

Reply:

Public Law 96-517 and H.R. 6260 are not issues for consideration in this rule change.

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Comment:

One comment asserted that the imposition of different fees depending upon the status of an applicant is unwise, unworkable, and will not "improve the efficiency of the Patent Office", while another comment urged the Office to "disavow the proposal for a two-tier fee system and adopt a different approach to assuring that patent and trademark fees are set so that individual inventors and small businesses can continue to obtain the protection of the patent and trademark system." Another comment supported the two-tier fee system, particularly as related to universities.

Reply:

The imposition of different fees is a legislative mandate imposed by the public law resulting from H.R. 6260 and is not an issue for consideration in this rule change.

Comment:

Four comments expressed concern that small entity status is required to be confirmed each time a fee as a small entity is paid. Alternative procedures which involve (1) confirming status at the time of filing and at the time the issue fee is paid, or (2) allowing a statement of status to hold for a period of time were recommended.

Reply:

The last sentence in §1.27(a) states that "[s]uch a verified statement need only be filed once in an application or patent and remains in effect until changed." It was not intended that such statements would be required each time a fee is paid. In order to clarify §1.27(a), the first sentence has been changed to require the statement prior to or with the first fee paid as a small entity. Thereafter, notice is only required where a change in status occurs. In addition, §1.28(b) has been rewritten to provide that "[o]nce status as a small entity has been established in an application or patent, fees as a small entity may thereafter be paid in that application or patent without regard to a change in status until the issue fee is due or any maintenance fee is due."

Comment:

One comment suggested that a paragraph 1.27(e) be added which would require confirmation of small entity status at the time of paying the patent issue fee and each maintenance fee and that this be done by a statement which designates the applicant's small entity status as of the close of the last fiscal year next preceding the date of the statement.

Reply:

The suggested paragraph has not been added. However, paragraph (b) of §1.29 has been completely rewritten to permit status to be established and then checked only (1) at the payment of the issue fee and (2) at the time of payment of each maintenance fee. Instead of requiring papers to be filed confirming status as suggested in the comment, the rules as adopted require that "[n]otification of any change in status resulting in loss of entitlement to small entity status must be filed in the application or patent prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate pursuant to §1.9." Paragraph (b) of §1.28, as promulgated, is considered preferable to the suggested paragraph (e) of §1.27 since it will eliminate the filing of a confirming statement where there has been no change in status as a small entity. This reduces unnecessary paperwork.

Comment:

One comment suggested that verified statements of small entity status need not be filed in Rule 60 applications.

Reply:

The suggestion was adopted and is reflected by the change in §1.28(a). In such applications, it will be sufficient to include a reference to a verified statement establishing small entity status in a parent application if status as a small entity is still proper and desired.

Comment:

One comment suggested that proposed paragraph 1.28(b) be amended by inserting the words "believed to be" after "small entity is" in the second sentence.

Reply:

Paragraph (b) of §1.28 as promulgated does not contain the sentence to which the suggestion is directed.

Comment:

One comment suggested that paragraph (c) of §1.28 be amended by deleting the word "verified" so that a statement explaining how an error in good faith occurred can be made "on the basis of information and belief."

Reply:

The suggestion has not been adopted. However, paragraph (c) of §1.28 as promulgated permits the correction of errors without a verified statement if the correction is accomplished within three months after the date the error occurred.

Comment:

Three comments expressed concern about the provision dealing with fraud on the Patent and Trademark Office because of some questionable act in connection with paying fees as a small entity and indicated that some persons have raised a question as to the Office's authority to designate the payment of a lesser fee as fraud. The comments suggested that proposed §1.28 be withdrawn and turned over to an ad hoc group of Patent and Trademark Office officials and practitioners for immediate examination and timely comment.

Reply:

The period for comments was extended until Aug. 13, 1982, as an alternative to, and in response to, the suggestion that §1.28 be withdrawn and turned over to an ad hoc committee. The extended period for comments has now expired and all comments which have been received have been carefully considered. In response to the statement that some persons have raised a question regarding the Office's authority to designate payment of a lesser fee as fraud, no authority has been cited which would establish or suggest that the Office does not have the authority to adopt this section. Paragraph (d) of §1.28 has been strictly limited to those situations in which there is an attempt to fraudulently establish entity, or improperly and through gross negligence establish status or pay fees as a small entity. Paragraph (d) of § 1.28 is clearly within the rule-making authority provided to the Commissioner pursuant to 35 U.S.C. 6 to protect the integrity of the system established by the public law resulting from H.R. 6260, whereby fees are reduced for small entities. In order to alleviate the concerns expressed about paragraph (d) of §1.28, paragraph (c) of §1.28 has been changed from that proposed to require a verified statement explaining how the error in good faith occurred only in situations where the error is not corrected within three months of the date on which the error occurred. This three-month grace period to correct errors with no explanations required for correction during that three-month period should reduce the concern about paragraph (d) of §1.28.

Comment:

One comment by an attorney (1) objected to and requested removal of the second sentence of §1.28(d) because he has to rely on the information provided by the client and does not have the facilities to check the reliability of information the client provides relating to the client's status as a small entity, and (2) raised the question as to how much investigation any attorney or other individual must make in order to avoid being guilty of "gross negligence" under §1.28(d).

Reply:

The rules do not authorize an attorney to sign a verified statement establishing status as a small entity on be-

half of a client. The client has to sign the verified statement. Paragraph (b) of §1.27 requires that any verified statement filed on behalf of an independent inventor must be signed by the independent inventor except as provided in §§1.42, 1.43, or 1.47. Paragraph (d) of §1.27 requires that any verified statement filed on behalf of a nonprofit organization must be signed by an official of the nonprofit organization empowered to act on behalf of the organization. The intent of paragraphs (b) and (d) of §1.27 is that the verified statement be signed by the person in the best position to know the facts as to whether or not status as a small entity can be properly established. Insofar as the attorney's irresponsibilities and duty to investigate are concerned, these do not differ from those presently owed the Office under §§1.56, 1.346, and 1.555.

Comment:

One comment suggested that paragraph (d) of §1.28 be replaced by a provision under which a "stiff fine" would be assessed against "a wrongdoer who has not paid fees in good faith."

Reply:

The suggestion has not been adopted. Assessing a fine as the only penalty against "a wrongdoer who has not paid fees in good faith" might tend to encourage the payment of incorrect fees on the theory that it is unlikely that such a matter would be brought to the attention of the Office.

Comment:

Three comments opposed the proposed deletion of Part 3 for the reasons that (1) it is useful to have an up-to-date set of forms and (2) there does not seem to be a pressing need to delete the forms.

Reply:

The Patent and Trademark Office has prepared a booklet entitled "Patent and Trademark Forms Booklet" which includes full size copies of substantially all of the forms in Part 3. Since the forms currently in Part 3 are not "up-to-date" as was suggested in the comment, no present need is seen to maintain Part 3.

Response to Comments on the Trademark Rules

Specific comments were received on the proposed deletions of Part 4. All of the comments included in the written submissions and the oral testimony were considered.

Written comments were received from four individuals. Oral comments restating previously submitted written comments on Part 4 were presented by one individual on behalf of his law firm.

These comments appear below along with replies thereto.

Comment:

One comment stated that there are rules in Part 4 which are not set forth elsewhere. Such guidelines and information include, among others, the types of commerce on which an application may be based and a requirement for the use of bond paper for typed drawings.

Reply:

Part 4 does not really carry the effect of rules because the forms are not mandatory, but are merely illustrative. The information referred to by this individual can be found elsewhere, such as in the Trademark Manual of Examining Procedure. Furthermore, despite the fact that the forms do not carry the force of rules, any correction or modification to them requires the cumbersome and time-consuming processes that are associated with a rules change.

Comment:

Several comments reflected the opinion that some attorneys, particularly those who do not specialize in trademark matters, may rely on the forms that appear in Part 4. It was believed that these individuals may not have or be aware of the compilation of forms identified as the "Patent and Trademark Office Forms Booklet." In the absence of such forms in Part 4, these individuals may devise their own application formats. Such a practice would result in increased informalities which, in turn, would result in unnecessary correspondence and delayed prosecution. In addition, the commenters believed that the number of written and oral inquiries to the Office of the Director of the Trademark Examining Operation would increase dramatically.

Reply:

The Office of the Director of the Trademark Examining Operation currently has a general information telephone line to answer inquiries and to accept requests for trademark application forms and related literature. While the Office of the Director indicates the availability of the forms booklet to many callers, copies of the appropriate trademark application form are sent to those individuals who request them. It is more likely that an individual who is unaware of the trademark application form would call the Office of the Director to request an application form than create one for the particular purpose.

Comment:

One individual, aware of the Office's plans for automation of the trademark program, saw the present deletion of the forms to be inappropriate. This individual felt that the deletion of the forms at this point would signal to the user community that the Office no longer had any interest in receiving applications in any particular format. To take such a position within a year or two of the introduction of a rigidly standardized application format was, in the opinion of this commenter, unwise. The adoption of a machine-readable application form would require greater, rather than diminished, reliance on a prescribed format.

Reply:

Within the next year or two, the Office will begin experimenting with the use of optical character recognition (OCR) equipment to automate the current data capture processes. Trademark application formats that are compatible with this equipment are likely to require special sizing and printing and, as such, are not acceptable for reduced size printing in the Code of Federal Regulations. If the existing forms were to be maintained in Part 4, they would remain available for use by applicants. As a result, the implementation of the new standardized application formats would be made more difficult.

Comment:

One commenter believed that since the next reprinting of Volume 37 of the Code of Federal Regulations will be in July, 1983, there is no pressing need to eliminate Part 4 at this time. This individual felt that users of the trademark registration system should be given additional opportunity to consider the significance of removing Part 4.

Reply:

Only four comments have been received on the deletion of Part 4. The elimination of Part 4 at this time will guarantee that the forms do not appear in the 1983 reprinting of the CFR. Of course, they will appear in the 1982 version of the CFR booklet and will be available until the new edition is published. In this matter, future access to these forms will be limited and those requiring help may contact the Office and receive the proper trademark forms.

Implementation of §§1.9, 1.27, and 1.28

Status as a small entity can be established in any application or patent for which a fee is due on or after Oct. 1, 1982, and in which small entity status is available and desired.

Other Considerations Relating to Patent and Trademark Fee Revisions

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conversation of energy resources.

This rule change is in conformity with the require-

ments of the Regulatory Flexibility Act (Public Law 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et. seq.*).

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L 96-354) for several reasons. The public law resulting from H.R. 6260 has taken into consideration the impact the increase in fees may have on small entities. Under the public law resulting from H.R. 6260 and this rulemaking, small entities will be able to pay reduced fees for filing patent applications and for the issuance and maintenance in force of patents. In general, the rule change will also expedite proceedings before the Patent and Trademark Office, changing existing procedures where they can be simplified.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse ju effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*, since no significant additional record keeping or reporting requirements are place upon the public.

List of Subjects in 37 CFR Parts 1, 3 and 4

Administrative practice and procedure, Colleges and universities, Courts, Fraud, Inventions and patents, Nonprofit organizations, Small businesses, Trademarks.

(Text of adopted rules appears in 37 CFR, revised July 1, 1983.)

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Aug. 26, 1982.

[1022 OG 29]

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(49) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 1
[Docket No. 2909-187]
Revision of Patent and Trademark Fees

Agency: Patent and Trademark Office, Commerce

Action: Final rule.

Summary: The Patent and Trademark Office is amending the rules of practice in patent and trademark cases to establish a definition and procedures for the payment of fees under section 41(a) and (b) of Title 35, United States Code, by small business concerns as required by Pub. L. 97-247. This action adopts the definition of a "small business concern" for purposes of paying patent fees established by the Small Business Administration and is necessary at this time in order that the procedures for paying reduced fees will be effective on Oct. 1, 1982, the effective date of the changes in the amounts of Patent and Trademark Office fees established by Pub. L. 97-247.

Effective Date: Oct. 1, 1982

For Further Information Contact: R. Franklin Burnett by telephone at (703) 557-3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Room 3-11A13, Washington, D.C. 20231.

Supplementary Information: A notice of proposed rulemaking was published in the Federal Register on June 28, 1982, at 47 FR 28042-28063 and in the *Official Gazette* on June 29, 1982, at 1019 O.G. 57-120. Oral hearings were held on July 9, 1982. Full consideration has been given to all of the letters, statements, and testimony received at the time. A final rule on "Revision of Patent and Trademark Fees" was published on July 30, 1982 at 47 FR 33086-33112 with corrections in the printing thereof being published on Aug. 4, 1982, at 47 FR 33688 and on Aug. 5, 1982 at 47 FR 33959. The final rule was also published in the *Official Gazette* on Aug. 10, 1982, at 1021 O.G. 19-94. In view of comments received at the hearings, additional time for comment on certain rules, including those covered by this change, was given until Aug. 13, 1982. The notice extending the time for comment was published on July 27, 1982 at 47 FR 32458. A final rule relating to definitions of "independent inventor" and "nonprofit organizations" was published on Sept. 10, 1982 at 47 FR 40134-40140.

Objectives of Rule Changes

These rule changes are designed to implement the Patent and Trademark Office fees and procedures which are provided for by Pub. L. 97-247.

Public Law 97-247

Pub. L. 97-247, signed Aug. 27, 1982, provides that funds available under the act "shall be used to reduce by 50 per centum the payment of fees under section 41(a) and (b) of title 35, United States Code" by independent inventors, small business concerns, and nonprofit organizations. The Commissioner has established regulations defining independent inventors and nonprofit organizations. Pub. L. 97-247 defines small business concerns by reference to Section 3 of the Small Business Act and regulations established by the Small Business Administration. The Small Business Administration has now established the definition of a small business concern for the purpose of paying reduced fees under Pub. L. 97-247. That definition is hereby incorporated into the patent rules of practice in §1.9(d). This rulemaking also establishes the procedures which will be followed by small business concerns when paying the reduced fees.

Discussion of Specific Sections

The following sections are changed by this final rule, effective Oct. 1, 1982:

Section 1.9, as amended, adds paragraph (d) which defines small business concern as used in Title 37, Code of Federal Regulations, Chapter I. A small business concern is identified as a "small entity" for purposes of paying fees which are set under section 41(a) and (b) of Title 35, United States Code, as amended by Pub. L. 97-247.

Section 1.9(d) defines a small business concern by reference to and incorporation of §121.3-18 of Title 13, Code of Federal Regulations. A small business concern is defined therein as any business concern (1) whose number of employees, including those of its affiliates, does not exceed 500 persons and (2) which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section. The section further defines affiliates of concerns and defines also the terms "employees" and "number of employees." Concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees a business concern has is determined by counting the number of persons of the concern and its affiliates employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern and of its affiliates. The number of employees is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year. Business concerns located in any country which meet the small business definition and which comply with the applicable procedures can qualify as a "small business concern". Under the definition, a small business concern would no longer qualify as a small business concern if any rights were assigned to any individual or concern which could not qualify as a small entity pursuant to §1.9(f), or if the concern came under an obligation to assign any rights to

any individual or concern which could not qualify as a small entity.

Section 1.9(d) also incorporates paragraph (b) of 13 CFR 121.3–18 which provides for appeals to the Small Business Administration from Patent and Trademark Office adverse initial size determinations.

Paragraph 1.27(c) provides for claiming status as a small business concern. Any person seeking to establish status as a small entity, for the purpose of paying reduced fees, must file a statement to that effect prior to or with the payment of the first fee paid as a small entity. Under §1.27, as long as all of the rights remain in small entities, the fees established for a small entity can be paid. This includes circumstances where the rights were divided between an independent inventor, a small business concern and a nonprofit organization or any combination thereof.

A number of changes which have been made to §§1.9 and 1.27 as a result of the comments received and further review of the proposed rulemaking are identified below.

Paragraph (d) of §1.9 has been changed from that proposed so as to incorporate into §1.9(d), the definition established by the Small Business Administration in §121.3 -18 of Title 13, Code of Federal Regulations. The definition differs from that proposed in specifying the number of employees constituting a small business concern and specifying that the concern must be one which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license any rights in the invention to any person or concern which could not be classified as an independent inventor, small business concern, or nonprofit organization.

Paragraph (c) of §1.27 has been changed from that proposed to clarify who is to file the verified statement. The verified statement for a small business concern is to be signed by "the owner or an official of the small business concern empowered to act on behalf of the concern." The term "official" as used in paragraph (c) is intended to include any officer, employee, or part-owner empowered to act on behalf of a small business concern. For example, an officer or employee of a corporation empowered to act for the corporation by its board of directors would be qualified to sign such a verified statement.

Response to Comments on the Patent Rules

Specific comments were received on a number of the sections. All of the comments, including the oral testimony and the written comments, were considered in adopting the changes set forth herein.

Written comments on the rules affected by this final rule were received from three patent law groups and a number of individuals. The three patent law groups were (1) the American Patent Law Association; (2) the Patent, Trademark, and Copyright Section of the Virginia State Bar; and (3) the Patent, Trademark and Copyright Law Section of the Bar Association of the District of Columbia.

Oral comments were presented at the hearing on behalf of two patent law groups.

The comments appear below along with replies thereto.

Comment

Two comments urged that in view of the "exceedingly complex" definitions of a "small business" in 13 CFR 121.3, the patent system and those associated with it would be best served by setting forth clear guidelines as to whether or not a business qualifies as a small business without reference to the Small Business Act and without incorporation by reference of "the too many pages of SBA regulatory definition."

Reply

Pub. L. 97–247 specifically refers to section 3 of the Small Business Act and regulations established by the Small Business Administration for determining whether or not a business concern qualifies as a small business concern. Pub. L. 97–247 therefore does not permit the establishment of guidelines without reference to the Small Business Act and regulations established by the Small Business Administration. Section 1.9(d), however, does incorporate the definition as established in §121.3–18 of Title 13, Code of Federal Regulations. This will enable persons to utilize §1.9(d) without also referring to a copy of Title 13, CFR.

Comment

One comment argued that §1.27 should be corrected or clarified to indicate that a small business concern would be entitled to the 50 percent fee reduction even though it may grant a non-exclusive or even an exclusive license to some non-small entity.

Reply

The suggestion has not been adopted. Section 1.27 requires that the concern qualify as a small business concern as defined in §1.9(d). Section 1.9(d) defines a small business concern by incorporating 13 CFR 121.3–18, which in turn defines a small business concern as one not exceeding a particular size "which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section." The intent of both 13 CFR 121.3–18 and 37 CFR 1.9(d) and 1.27(c) is to limit the payment of reduced fees under section 41 (a) and (b) of Title 35, United States Code, to those situations in which all of the rights in the invention are owned by small entities, i.e., independent inventors, small business concerns, or nonprofit organizations. To do otherwise would be clearly contrary to the intended purpose of the legislation which contains no indication that fees are to be reduced in circumstances where rights are owned by non-small entities. Adopting the suggestion might, for example, permit a non-small entity to transfer patent rights to a small business concern which would pay the reduced fees and grant an exclusive license to the non-small entity.

Comment

One comment suggested that the specific Small Business Administration regulations which are applicable be specified in §1.9(d).

Reply

The definition of a small business concern as established by the Small Business Administration is now incorporated into §1.9(d).

Implementation of §§1.9 and 1.27

Status as a small entity can be established in any application or patent for which a fee is due on or after October 1, 1982, and in which the individual inventor, small business concern, or nonprofit organization meets the qualifications established for small entity status.

Other Considerations Relating to Patent and Trademark Fee Revisions

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et seq.*).

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96–354) for several reasons. Pub. L. 97–247 has taken into consideration the impact the increase in fees may have on small entities. Under Pub. L. 97–247 and this rulemaking, small entities will be able to pay reduced fees for filing patent applications and for the issuance and maintenance in force of patents.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Or-

der 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no significant additional record keeping or reporting requirements are placed upon the public.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Inventions and patents, Small businesses.

Amendment of Regulations

For the reasons indicated above and pursuant to the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, and Pub. L. 97-247, Part 1 of Title 37, Code of Federal Regulations, is amended as set forth below.

PART 1—RULES OF PRACTICE IN PATENT CASES

1. Section 1.9 is amended by adding a new paragraph (d) to read as follows:

§1.9 Definitions.

* * * * *

(d) A small business concern as used in this chapter means any business concern as defined by the Small Business Administration in 13 CFR 121.3-18, published on September 30, 1982 at 47 FR 43273. For the convenience of the users of these regulations, that definition states:

§121.3-18 Definition of small business for paying reduced patent fees under Title 35, U.S. Code

(a) Pursuant to Pub. L. 97-247, a small business concern for purposes of paying reduced fees under 35 U.S. Code 41 (a) and (b) to the Patent and Trademark Office means any business concern (1) whose number of employees, including those of its affiliates, does not exceed 500 persons and (2) which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section. For the purpose of this section concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees of the business concern is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year. Employees are those persons employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern.

(b) If the Patent and Trademark Office determines that a concern is not eligible as a small business concern within this section, the concern shall have a right to appeal that determination to the Small Business Administration. The Patent and Trademark Office shall transmit its written decision and the pertinent size determination file to the SBA in the event of such adverse determination and size appeal. Such appeals by concerns should be submitted to the SBA at 1441 L Street, NW., Washington, D.C. 20416 (Attention: SBA Office of General Counsel). The appeal should state the basis upon which it is claimed that the Patent and Trademark Office initial size determination on the concern was in error; and the facts and arguments supporting the concern's claimed status as a small business concern under this section.

2. Section 1.27 is amended by adding a new paragraph (c) to read as follows:

§Statement of status as small entity.

* * * * *

(c) Any verified statement filed pursuant to paragraph (a) of this section on behalf of a small business concern must (1) be signed by the owner or an official of the small business concern empowered to act on behalf of the concern; (2) aver that the concern qualifies as a small business concern as defined in §1.9(d); and (3) aver that exclusive rights to the invention have been conveyed to and remain with the small business concern, or if the rights are not exclusive, that all other rights belong to small entities as defined in §1.9. Where the rights of the small business concern as a small entity are not exclusive, a verified statement must also be filed by the other small entities having rights averring to their status as such.

Sept. 23, 1982. GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[FR Doc.82-26941 Filed 9-29-82; 8:45 am]
BILLING CODE 3610-16-M

SMALL BUSINESS ADMINISTRATION

13 CFR Part 121

Definition of Small Business for Paying Reduced Patent Fees Under Title 35, United States Code

Agency: Small Business Administration.

Action: Final rule.

Summary: The Small Business Administration in conjunction with the Patent and Trademark Office is establishing a definition of small business for the purpose of paying patent fees under section 41 (a) and (b) of Title 35, United States Code, which are reduced by 50 per centum for small business concerns as required by Pub. L. 97-247. The definition would be implemented by the Patent and Trademark Office, which has recently published its regulations on the fee reduction procedures (47 FR 40134, Sept. 10, 1982).

Effective Date: Oct. 1, 1982.

For Further Information Contact:
R. Franklin Burnett (703) 557-3054.
Harvey Bronstein (202) 653-6373.

Supplementary Information: Pub. L. 97-247 provides that funds available under the Act to the Patent and Trademark Office "shall be used to reduce by 50 per centum the payment of fees under Section 41 (a) and (b) of Title 35, United States Code, by small business concerns as defined in Section 3 of the Small Business Act and by regulations established by the Small Business Administration."

A notice of proposed rulemaking relating to the definition of a small business was published in the **Federal Register** on Aug. 31, 1982 (47 FR 38331). The regulation being issued is the same as that which was proposed. In order to be a small business, the number of employees of the concern, including those of its affiliates, may not exceed 500 persons. Concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees of a business concern is determined by counting the number of persons of the concern and its affiliates employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern and of its affiliates. The number of employees is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year.

The definition also requires a small business for this purpose to be one "which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section."

Discussion of Comments

One comment from the American Patent Law Associ-

ation, whose membership includes several thousand lawyers involved in the practice of law before the U.S. Patent and Trademark Office, expressed "no comment regarding the definition" and expressed "[t]hanks for all that's been done toward a hopefully workable definition." The remaining comments were from individual patent attorneys rather than comments on behalf of any organization.

Two comments raised questions about the intended scope of the term "license." It was suggested that clarification is needed as to what is included within the scope of the term. One comment suggested that, "[a]t the very least, the record should reflect that the definition is not intended to reach implied licenses to use and resell patented articles purchased from a small business." The comment is correct insofar as it suggests that such "implied licenses" are not intended to be included within the scope of the term. Likewise, an order by the applicant to a firm to build a proto-type machine or product for the applicant's own use is not considered to constitute a license for purposes of the definition.

Another suggestion was that the regulation be reworded to deny small business status where revenue above a certain dollar amount was received from licensing rights under the invention to a concern which could not qualify as a small entity. It was also suggested that the term "exclusive license of any of the rights in the invention" be used instead of the term "license." The latter two suggestions have not been adopted. Adoption of these suggestions would cause the regulation to become more complicated, and does not appear necessary to aid small concerns in accord with the purposes of the legislation. In addition, it could substantially broaden the number of concerns which could qualify with a resulting excessive loss of revenue to the Patent and Trademark Office. It is not seen likely that the restriction on licensing would unduly or adversely affect the ability of the small business concern to participate in the patent system.

Another comment which was made related to a firm which is a subsidiary of a university or other nonprofit organization. The suggestion was made that the number of employees of the university or other nonprofit affiliate be excluded from consideration in determining whether or not the business concern qualifies as a small business concern. The suggestion has not been adopted since the situation raised is already treated under the definition of nonprofit organization established by the Patent and Trademark Office on Sept. 10, 1982, at 47 FR 40134–40140. Under that Patent and Trademark Office regulation, a wholly owned subsidiary of a nonprofit or university is considered a part of the university or nonprofit and thus is already eligible for the fee reduction.

One comment suggested that the regulation contain language specifying that concerns meeting its requirements are also independently owned and operated and not dominant in their field of operation under the Small Business Act. It is not necessary to include this language since this regulation already contains an affiliation test for this purpose; and it is generally unlikely that a small concern would be found to be dominant. The legislative history of the Small Business Act indicates that "The mere fact that a small business makes a particular product or item and is dominant in its field with respect to the particular product or item is not intended to disqualify it from the benefits of this Act * * * "(House Report 494, 83rd Congress, 1st Session 1953). SBA Size Appeals Board precedents have consistently stated that dominance under the Act and the SBA regulations is not viewed in narrow industry subdivisions. It, therefore, does not appear that concerns defined as small business under this provision would be dominant within the meaning of the Small Business Act.

Another comment suggested that foreign concerns should not be eligible as small business under this provision. Since this patent legislation was enacted by the Congress with knowledge of the Paris Convention for the Protection of Industrial Property, there is no indication that Congress intended that foreign small business not be eligible for the fee reduction. It is the view of the Patent and Trademark Office that excluding foreign small concerns would violate U.S. treaties in the patent area.

This comment also questioned whether the Patent and Trademark Office should make initial size determinations, or whether they could more appropriately be made by SBA. Since the fee reduction procedure is part of the patent application and of other Patent and Trademark Office actions and may involve Patent law questions, it would be administratively infeasible to have initial size determinations made by the SBA. The Patent and Trademark Office recently issued regulations (Sept. 10, 1982, 47 FR 40134) which set forth the fee reduction procedures.

Other Considerations Relating to the Rulemaking

Environmental, energy, and other considerations: The rule will not have a significant impact on the quality of the human environment or the conservation of energy resources.

Small business concerns will be benefited by the rule. The proposed rule will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354). Public Law 97–247 has taken into consideration the impact it may have on small entities and has reduced the fees, therefore, by 50 per centum.

The Small Business Administration has determined that this rule is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no significant additional record keeping or reporting requirements are placed upon the public.

List of Subjects in 13 CFR Part 121

Small businesses, Inventions and patents.

PART 121—SMALL BUSINESS SIZE STANDARDS

Accordingly, pursuant to Section 3 of the Small Business Act and Pub. L. 97–247, Part 121 of Title 13 of the Code of Federal Regulations is amended by adding §121.3–18 to read as follows:

§121.3–18 Definition of small business for paying reduced patent fees under Title 35, U.S. Code.

(a) Pursuant to Pub. L. 97–247, a small business concern for purposes of paying reduced fees under 35 U.S. Code 41 (a) and (b) to the Patent and Trademark Office means any business concern (1) whose number of employees, including those of its affiliates, does not exceed 500 persons and (2) which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section. For the purpose of this section concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees of the business concern is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year. Employees are those persons employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern.

(b) If the Patent and Trademark Office determines that a concern is not eligible as a small business concern within this section, the concern shall have a right to ap-

peal that determination to the Small Business Administration. The Patent and Trademark Office shall transmit its written decision and the pertinent size determination file to the SBA in the event of such adverse determination and size appeal. Such appeals by concerns should be sSBA at 1441 L Street, NW., Washington, D.C. 20416 (Attention: SBA Office of General Counsel). The appeal should state the basis upon which it is claimed that the Patent and Trademark Office initial size determination on the concern was in error and the facts and arguments supporting the concern's claimed status as a small business concern under this section.

ROBERT B. WEBBER,
Sept. 23, 1982. *Acting Administrator.*

[FR Doc. 82-20940 Filed 9-29-82; 8:45 am]
BILLING CODE 8025-01-M

[1023 O.G. 23]

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(50) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 1
[Docket No. 31-201-229]
Revision of Patent Practice

Agency: Patent and Trademark Office, Commerce

Action: Final Rule.

Summary: The Patent and Trademark Office is amending the rules of practice in patent cases, Part 1 of 37 CFR, to clarify the practice under certain sections of Public Law 97-247 of 1982 and to make certain other changes and clarifications in practice which have been found desirable after some experience. The rulemaking changes the practice under §§1.27 and 1.28 with regard to subsequently establishing small entity status and qualifying for a refund of fees paid in full. The changes in other rules clarify and improve the practice in certain areas.

Effective Date: Apr. 1, 1984

For Further Information Contact: R. Franklin Burnett by telephone at (703) 557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: This rule change is designed primarily to 1) clarify the small entity status of independent inventors, small business concerns and nonprofit organizations having funding agreements with a federal governmental agency as defined in 35 U.S.C. 202(c) (4); 2) rewrite §1.28 to provide a system for obtaining a refund of a portion of a fee paid in full when small entity status is established within two months of the date of such payment; 3) provide that a separate statement establishing small entity status is not required in an application filed under §1.62 when such status has been established in the parent application; and 4) modify certain other rules to clarify practice.

New §1.21(1) establishes a fee for processing and retaining any application which is abandoned for failing to complete the application pursuant to §1.53(d). This new paragraph, as well as the changes to §§1.53 and 1.78, indicate that in order to obtain benefit of a prior U.S. application, either the basic filing fee or the processing and retention fee of §1.21(1) must be paid. Section 1.53(d) further establishes that the application will be disposed of if the required fee is not paid within a set period. Section 1.56(b) requires submission of copies of foreign patent documents, non-patent publications, or other non-patent items of information disclosed pursuant to the duty to disclose. New §1.191(d) clarifies that §1.136 applies in patent applications and that §1.550(c) applies in reexamination proceedings to all time periods set forth in §§1.191-1.194, 1.196 and 1.197.

Discussion of Specific Rules and Significant Differences Between Proposed and Final Rules: Section 1.5, paragraph (a) is amended to remove a reference to §1.55, which is no longer appropriate and to clarify how letters to the Office are to be identified.

Section 1.6 is amended as proposed to clarify the manner in which letters and papers, including fees, filed in accordance with §1.10 by "Express Mail" are date stamped when received in the Patent and Trademark Office. Such letters and papers, which comply with §1.10, will be stamped with the date of deposit as "Express Mail" with the United States Postal Service unless the date of deposit is a Saturday, Sunday or federal holiday within the District of Columbia, in which case the date stamped will be the next succeeding day which is not a Saturday, Sunday, or a federal holiday within the District of Columbia. No papers are received in the Patent and Trademark Office on Saturdays, Sundays, or federal holidays within the District of Columbia.

Section 1.10, paragraphs (a) and (c), are amended to clarify that papers deposited as "Express Mail" on a Saturday, Sunday, or a federal holiday within the District of Columbia will be stamped with the date of the next succeeding day which is not a Saturday, Sunday, or a federal holiday within the District of Columbia. A cross reference to §1.6(a) has also been added to the rule. This change was not contained in the notice of proposed rulemaking but is being made to avoid confusion and to ensure that the Office's practice in date-stamping of papers is clearly understood. The change was suggested by a comment received on the proposed rules.

Section 1.14 is amended as proposed to revise paragraph (b) to clarify that only complete patent applications as defined in §1.51(a) which become abandoned will be retained for a period of twenty years from the filing date. Incomplete applications will be retained as provided in §§1.21 and 1.53.

Section 1.19, paragraph (b)(3), is amended as proposed to clarify that only copies made from Office records, but not prepared by the Office, will be compared with the original prior to certification of the copies. The Office will not compare copies made from some other copy or record with Office records for purposes of certification. The stated charge of ten cents per page would not be sufficient to make a word-by-word comparison. The requirements of the public appear to still be served by limiting the use of the comparison fee to Office records.

Section 1.21 is amended as proposed to revise paragraph (b) (2) and establish a new paragraph (1). The change in paragraph (b) (2) is in accord with the change in §1.25 (a). New paragraph (1) provides a fee for processing and retaining any application which is abandoned pursuant to §1.53(d). Such applications have received a filing date pursuant to 35 U.S.C. 111 but have been abandoned for failure to complete the application by filing the oath or declaration, filing fee or surcharge (§1.16(e)). The fee covers the handling, filming, processing, data input and storage required to retain an application. The fee is not due in any application in which the basic filing fee was paid.

Section 1.25 is amended as proposed to revise paragraph (a) to set the minimum deposit for a deposit account at $1000 and to clarify that an amount sufficient to cover all fees as well as services, copies, etc., requested must always be on deposit. This minimum amount is considered necessary and proper in view of the substantial increase in the amounts of fees being charged to deposit accounts and the processing costs of handling overdrawn accounts. Paragraph (b) clarifies that fees may be charged against a deposit account only where sufficient funds are on deposit to cover the entire amount of the fees. Paragraph (b) also clarifies that an authorization to charge a fee to a deposit account will not be considered payment on the date the authorization to charge is effective as to that fee unless sufficient funds are present in the account to cover the fee.

Section 1.27 is amended as proposed to revise paragraphs (b), (c) and (d) to provide clearly that an independent inventor, small business concern, or nonprofit organization, which is otherwise qualified as a small entity for purposes of paying reduced patent fees under 37 CFR 1.9 and 1.27, is not disqualified therefrom because of a license to a federal agency pursuant to 35 U.S.C. 202(c) (4). Section 1.27 is amended to state that such a license does not constitute a license or a conveyance of

rights which would preclude qualifying for small entity status. The amendment is necessary for clarification and to avoid frustrating the intent of Public Law 97-247 and Public Law 96-517 when taken together.

The text of Title 35, United States Code, §202(c) (4) reads as follows:

> §202. Disposition of rights
>
> (c) Each funding agreement with a small business firm or nonprofit organization shall contain appropriate provisions to effectuate the following:
>
> * * * * *
>
> (4) With respect to any invention in which the contractor elects rights, the Federal agency shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States any subject invention throughout the world, and may, if provided in the funding agreement, have additional rights to sublicense any foreign government or international organization pursuant to any existing or future treaty or agreement.

Section 1.28 is amended as proposed to revise paragraph (a) to clarify that a separate verified statement is not required to be filed in a file wrapper continuing application filed pursuant to §1.62, if status as a small entity has been established in the parent application and is still proper. Section 1.28(a) also permits a refund of a fee timely paid in the full amount if within two months of the date of the full timely payment: (1) small entity status is properly established, and (2) a refund is requested. Under §1.28(a), no request for a refund filed later than two months after the date on which a full fee has been paid will be entertained even if additional time is sought to file the request. The two-month period referred to in §1.28(a) is not a period for response under §1.136 and cannot be extended. Section 1.28(a) provides for, in somewhat modified form, the practice presently in effect pursuant to a waiver of §1.28 published at 1023 O.G. 77 on Oct. 26, 1982 and extended at 1027 O.G. 115 on Feb. 15, 1983. The revised refund procedures in §1.28(a) will apply to any fees timely paid in full on or after the effective date of the final rule. The refund procedures set forth in the Patent and Trademark Office *Official Gazette* Notice entitled "Filing of Verified Statements Claiming Small Entity Status" published at 1023 O.G. 77 on October 26, 1982, and the *Official Gazette* Notice entitled "Requirement for Filing Verified Statements Claiming Small Entity Status" published at 1027 O.G. 115 on Feb. 15, 1983, continue in effect until the effective date of the final rule.

Section 1.52(d) is amended as proposed to clarify that the verified English translation of a non-English language application and the fee set forth in §1.17(k) can be filed with the application or within such time as may be set by the Office.

Section 1.53, paragraphs (b) and (d), are amended to clarify in paragraph (b) that the application for patent must be filed in the name of the actual inventor or inventors by giving all their names as required by §1.41. Paragraph 1.53(d) states that if a correspondence address is provided, notice will be provided to that address where the appropriate filing fee or oath or declaration does not accompany the application. Paragraph 1.53(d) also provides that if the required filing fee is not paid, or the processing and retention fee is not paid, within one year of the date of mailing of notification pursuant to paragraph 1.53(d) or within one year from the filing date if no correspondence address is included in the application, the application will be disposed of. The paragraph further indicates that no copies will be provided or certified by the Office of an application which has been disposed of or in which neither the basic filing fee nor the processing fee has been paid. Finally, paragraph 1.53(d) specifies that if no correspondence address is included in the application, applicant will have two months from the filing date to file the fee, oath or declaration and to pay the surcharge set forth in §1.16(e) in order to prevent abandonment of the application.

Section 1.55, paragraph (b), is amended as proposed to correct an error in referring to paragraph (a) of this section.

Section 1.56 is amended as proposed to revise paragraph (b) and add a new paragraph (j). Paragraph 1.56(b) requires that a copy of each foreign patent document, non-patent publication, or other non-patent item of information in written form being disclosed pursuant to §1.56 accompany such disclosures unless the copy is not in the possession of the person making the disclosure. In such a situation, a statement to that effect is required. Paragraph 1.56(b) also adds "or her" to refer to both genders. New paragraph 1.56(j) states that applicant will be notified if a copy or statement required pursuant to §1.56(b) is not submitted and that applicant will be given a time period within which to file the copy or a statement that the copy is not in the possession of the person making the disclosure. Such a time period would be extendable under §1.136. Failure to respond in a proper and timely manner would result in abandonment of the application.

Section 1.59 is amended as proposed to clarify that the Office will furnish copies of papers received in the Office at the usual cost only if the basic filing fee or the processing and retention fee has been paid.

Section 1.60 is amended to break the section into paragraph (a) and new paragraph (b). Paragraph (a) adds a reference to amended §1.78(a) to clarify the conditions under which continuation or divisional applications may be filed. New paragraph 1.60(b) provides that the signing of the oath or declaration can be omitted if the prior application was complete as set forth in §1.51(a). New paragraph 1.60(b) also requires that a true copy of the prior complete application be filed. The final rule also clarifies that the copy of the oath or declaration filed must show the applicant's signature or contain an indication it was signed. Paragraph 1.60(b) also provides that only amendments reducing the number of claims or adding a reference to the prior application will be entered before calculating the filing fee and granting the filing date.

Section 1.62 is amended as proposed to revise paragraphs (a) and (d). Paragraph 1.62(a) provides that the file wrapper continuing procedure is applicable only to prior complete applications under §1.51(a). Paragraph 1.62(d) clarifies that the filing fee referred to is the basic filing fee.

Section 1.78 is amended as proposed to change the title to more explicitly define the contents of the section. Paragraph 1.78(a) specifies that in order for an application to claim the benefit of a prior filed copending national application, the prior application must be complete as set forth in §1.51(a) or be entitled to a filing date as set forth in §1.53(b) and include the basic filing fee set forth in §1.16, or be entitled to a filing date as set forth in §1.53(b) and have paid the processing and retention fee set forth in §1.21(l) within the time period set forth in §1.53(d).

Section 1.121 is amended as proposed to revise paragraph (e) to specify how amendments to the description and claims are to be made in reissue applications.

Section 1.123 is amended as proposed to clarify that the sketch showing proposed amendments to the drawing with its cover letter should be a separate paper.

Section 1.135 is amended as proposed to remove paragraph (d) since it is not necessary in view of the ability to obtain extensions of time under §1.136(a) by petition and payment of fee.

Section 1.136 is amended as proposed to clarify in paragraphs (a) and (b) that the extension of time practice under this section does not apply in interference proceedings or in reexamination proceedings. Extension of time practice in interference proceedings, including extension of time for appeal or civil action (§1.304), is subject to §1.245. Extension of time practice in reexamination proceedings, including extension of time for appeal or civil action (§1.304), is subject to §1.550(c).

Section 1.191 is amended as proposed to add a new paragraph (d) to provide that the time periods for appeal

and review set forth in §§1.191-1.194, 1.196 and 1.197 are subject to the provisions of §1.136 for patent applications or §1.550(c) for reexamination proceedings.

Section 1.192 is amended as proposed to revise paragraph (a) to delete the reference to §1.136 since it is provided for in new §1.191(d).

Section 1.197 is amended as proposed to revise paragraph (b) to delete the reference to §1.136 since it is provided for in new §1.191(d).

Section 1.304 is amended as proposed to clarify that extensions of time periods set forth therein are subject to the provisions of §1.245 for interferences or §1.550(c) where reexamination proceedings are involved rather than to §1.136 which applies in all other cases.

Section 1.550 is amended as proposed to revise paragraph (c) to clarify that the time for taking any action, including appeal, by a patent owner in a reexamination proceeding is governed solely by this section.

Section 1.555 is amended to revise paragraphs (a) and (b). In paragraph 1.555(a) "prior art" statement has been changed to "information disclosure" statement to conform to the language of §1.98. Paragraph 1.555(b) requires that disclosures pursuant to this paragraph be accompanied by a copy of each foreign patent document or non-patent printed publication which is being disclosed and which is in the possession of the person making the disclosure.

Responses to Comments on the Rules

Specific comments were received on a number of the sections. Thirty-five letters presenting written comments were received. No oral testimony was presented at the public hearing conducted on Oct. 18, 1983. All of the comments were considered in adopting the changes set forth herein. Comments appear below with responses thereto.

Comments from Associations

Comment:

The American Patent Law Association commented that they were in full accord with most of the proposed changes. They submitted comments and suggestions from some members. The Patent, Trademark and Copyright Section of the American Bar Association did not render an official section position on the proposed rule changes but polled its members and found the majority of the member responding either to favor the proposed rule changes or to view them as acceptable. They also submitted comments and suggestions from some members. The United States Trademark Association commented on the proposed rules concerning deposit accounts.

Reply:

The efforts and input of these organizations are appreciated. Specific comments and suggestions from individual members of the organizations are covered below.

Comments from Individuals

Comment:

One comment was received that the proposed amendment to §1.6 was unnecessary and possibly improper.

Reply:

The amendment to §1.6 has been adopted as proposed. The amended rule sets out the Patent and Trademark Office practice which has been in effect. No papers are stamped as having arrived in the Office on Saturday, Sunday, or a federal holiday within the District of Columbia no matter how the papers are filed. Article 4, C(3) of the Paris Convention says that the period of priority shall be extended until the first following working day "when the Office is not open for the filing of applications in the country where protection is claimed". To accept papers through use of "Express Mail" or some other way on Saturdays, Sundays or federal holidays within the District of Columbia would raise the possibility that the Office would be viewed as open for the filing of papers on such days and thereby remove the current ability to file a priority claiming application on the first working day if the priority year ended on a non-working day. The final rule avoids this implication.

Comment:

One comment indicated that the change to §1.6 should not be applied retroactively to papers filed before the clarifying language was placed in the rule.

Reply:

Any such fact situation will be reviewed through the normal petition procedure.

Comment:

One comment suggested that §1.10 be amended rather than §1.6 with regard to papers deposited as "Express Mail" on a Saturday, Sunday, or federal holiday within the District of Columbia.

Reply:

This comment has been adopted in that both §§1.6 and 1.10 have been amended to avoid any possible confusion.

Comment:

One comment suggested that §1.19(b) (3) be changed to permit the Office to certify material not copied from the records of the Office when reproduction of Office records is not feasible or possible.

Reply:

This comment has not been adopted. The Office will only certify that material is a copy of an Office record if, in fact, the material was reproduced from the Office record.

Comment:

One person commented that the $100 processing and retention fee under §1.21 was excessive and unnecessary.

Reply:

The fee is considered proper and necessary in view of the cost to the Office in handling, filming, processing and storage required to retain an application which has a filing date but in which no basic filing fee has been paid. If this expense is not covered by the applicant, it must be recovered from other sources.

Comment:

Twenty-seven comments were received on the proposal to amend §1.25 to raise to $1000 the minimum balance required in a deposit account. The amount is also referred to in §1.21(b) (2). These comments generally suggested that the $1000 amount was too high for account holders who did not use their accounts for charges other than small fees such as for patent copies. Several comments received acknowledged that the minimum balance for deposit accounts should be raised and suggested various amounts less than the proposed $1000. Several comments suggested a separate account category for persons who do not use their accounts for other than small fees. Two comments suggested that the Office accept credit cards for payment of fees.

Reply:

These comments and suggestions have not been adopted. The fees for filing, processing and issuing of patent and trademark applications have increased so as to make the present $40 minimum balance for deposit accounts totally inadequate. A number of persons objecting to the $1000 minimum balance acknowledged that they used their deposit accounts as a safeguard against failure to calculate or to submit proper fees by a check. An account with a very low balance obviously cannot be effective as a safeguard when a patent filing fee is $300 and a patent issue fee is $500. Dealing with overdrawn accounts causes administrative problems for the Patent and Trademark Office. An authorization to charge an account without sufficient funds to cover a charge will not be effective as payment and may result in loss of rights to an applicant. Also, unnecessary expense will be incurred by an applicant if an insufficient balance in an account results in abandonment of an application and the necessity of filing a petition to revive under 37 CFR 1.137(b) with the requisite $500 fee. Experience has shown that many single practitioners and small firms have failed to have sufficient funds in their

accounts when needed. The increase of the minimum balance in deposit accounts to $1000 is seen to be necessary and proper. A failure to raise the minimum balance in deposit accounts to $1000 would serve as an incorrect indication that the Patent and Trademark Office views a minimum balance of less than $1000 as acceptable. If it is not possible for a small firm or individual to maintain a minimum balance of $1000, the deposit account could still be retained and used by paying the service charge set forth in §1.21(b) (2) for any month in which the balance at the end of the month is below $1000. The use of credit cards is not considered viable since legislation would be required to do so.

Comment:

Two comments were received suggesting that a license to a federal agency in an invention made by a federal employee should not preclude the employee from qualifying as a small entity and that §1.27 should be amended to cover this situation.

Reply:

These comments have not been adopted. Such an amendment was not proposed and the public has not had an opportunity to comment on it.

Comment:

One comment suggested that the time for filing a verified statement claiming small entity status to obtain a refund of a filing fee pursuant to §1.28 should run from the date of mailing of the filing receipt due to difficulty in identifying the new application before the filing receipt is received. Three persons suggested that the period for establishing small entity status and requesting a refund should be three months rather than two months as proposed.

Reply:

These comments have not been adopted. An application may be identified before the filing receipt is issued in a number of ways including title, inventor's name, filing date and attorney docket number. Also, a postcard may be included with filing of the application to learn the application serial number. The two month period for obtaining a refund is seen to be adequate since the small entity practice is no longer new and the public has had time to become familiar with it. It allows sufficient time to have a small entity statement executed and sent to the Patent and Trademark Office.

Comment:

One comment suggested that it should be made clear that an application filed in a foreign language (§1.52(d)) without including a signed oath or declaration can receive a filing date under the provisions of §1.53(b).

Reply:

The regulations permit and this reply makes it clear that an application filed in a language other than English can receive a filing date by complying with §1.53(b).

Comment:

Three comments were received suggesting that the proposed language not be added to §1.53(b). One comment alleged that the requirement to name the inventors upon filing a patent application is not required or even authorized by statute.

Reply:

35 U.S.C. 111 says that application for patent "shall be made, or authorized to be made, by the inventor". The rules of practice (§1.41(a)) contain the same requirement. The amendment to §1.53(b) is only clarifying the rules by also placing the requirement in that section. Further, United States patent practice has long required that the inventors be named at the time of filing.

Comment:

One person commented that the language of §1.53(d) should be changed to reflect that only one of the filing fee or processing and retention fee must be paid to prevent the application being disposed of.

Reply:

The language of the rule is seen to be unambiguous in this regard.

Comment:

One person commented that the language of §1.53(d) should be changed to establish a time within which the processing and retention fee may be paid to prevent the application being disposed of when no correspondence address has been provided.

Reply:

The suggestion has been adopted.

Comment:

One person suggested that §1.56(b) which states that copies of disclosed documents must be filed is inconsistent with §1.56(j) which provides that such copies must be filed unless they are not in the possession of the person making the disclosure.

Reply:

The language of §1.56(b) has been modified to clarify this point.

Comment:

Three persons commented that the requirement of § 1.56(b) that copies of disclosed documents be supplied was an unnecessary burden. One person commented similarly on the requirement of §1.555 that copies of disclosed documents be supplied. Another person suggested that the proposed amendment to §1.56(b) would require submission of a complete document even if only a small portion were relevant.

Reply:

The Office agrees with another person who commented that the "requirement that disclosers in application and reexamination proceedings provide copies of disclosed documents which they have is fair and reasonable and should aid the Examiner in making an informed as possible decision in any given proceeding". The portion of a document required to be submitted under §1.56(b) is the portion which is material to the examination of the application under §1.56(a).

Comment:

One person commented that the proposed amendment to §1.78(a) would appear to require that a petition for correction of inventorship under §1.48 be filed in a parent application as well as in the continuing application in which the inventorship was corrected.

Reply:

The amendment to §1.78 does not change the practice regarding the filing of petitions under §1.48.

Comment:

One person commented that §1.123 is unclear as amended in not referring to the paper requesting that amendments to the drawing be made.

Reply:

The Patent and Trademark Office no longer makes amendments to the drawings. Applicants must submit new drawings with the changes or use bonded draftsmen to make the amendments. A paper requesting that the Office make the amendments is therefore inappropriate.

Comment:

Four persons commented that §1.135(d) should not be deleted since they thought it desirable to be able to ratify unsigned papers without paying any fee.

Reply:

The statute and rules now provide for obtaining extensions of time through simple petition and payment of fee and for revival through a simple statement that the abandonment was unintentional and the payment of a fee. Further, a filing date can now be obtained on filing an application without the oath or declaration. The handling of unsigned papers by the Patent and Trademark Office causes administrative problems and expense to the Office and delays the processing of applications. The emergency-type situations involving loss of rights which the previous practice was intended to cover have been substantially eliminated by the changes in the law and rules.

Comment:

One person commented that §1.191(d) was undecipherable in that it refers to a number of other rules.

Reply:

This section was intended to serve as a point of summarization for the applicable extension of time rules in appeals before the Board of Appeals. The section is seen to adequately serve that purpose.

Comment:

One person commented that the final sentence of §1.555(b) needs clarification.

Reply:

This sentence was not changed by the proposed rules and is seen to be clear as written.

Comment:

One person commented that proposed §1.555(b) requires copies and does not make any exceptions or qualifications on this requirement.

Reply:

The language of §1.555(b) has been clarified to require filing of a copy of each foreign patent document or nonpatent printed publication which is being disclosed and which is in the possession of the person making the disclosure.

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*

The General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96-354). Public Laws 96-517 and 97-247 have both taken into consideration the impact they may have on small entities.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*, since no significant additional record keeping or reporting requirements are placed upon the public. In fact, some paperwork, especially that related to filing of small entity statements in applications filed under §1.62 will be reduced.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations (government agencies), Conflict of interests, Courts, Inventions and patents, Lawyers.

Notice is hereby given that, pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6 and Public Law 97-247, the Patent and Trademark Office is amending Title 37 of the Code of Federal Regulations as set forth below.

37 CFR, Part 1, is amended as follows:

1. Section 1.5 is amended by revising paragraph (a) to read as follows:

§1.5 Identification of application, patent or registration.

(a) When a letter concerns an application for patent, it should state the name of the applicant, the title of the invention, the serial number or international application number of the application, the date of filing the same, and, if known, the group art unit or other unit within the Patent and Trademark Office responsible for considering the letter and the name of the examiner or other person to which it has been assigned.

* * * * *

2. Section 1.6 is amended by revising paragraph (a) to read as follows:

§1.6 Receipt of letters and papers.

(a) Letters and other papers received in the Patent and Trademark Office are stamped with the date of receipt except where such letters and papers are filed in accordance with §1.10. Any such letters and papers filed in accordance with §1.10 will be stamped with the date of deposit as "Express Mail" with the United States Postal Service unless the date of deposit is a Saturday, Sunday, or federal holiday within the District of Columbia in which case the date stamped will be the next succeeding day which is not a Saturday, Sunday, or federal holiday within the District of Columbia. No papers are received in the Patent and Trademark Office on Saturdays, Sundays or federal holidays within the District of Columbia.

* * * * *

3. Section 1.10 is amended by revising paragraphs (a) and (c) to read as follows:

§1.10 Filing of papers and fees by "Express Mail" with certificate.

(a) Any paper or fee to be filed in the Patent and Trademark Office can be filed utilizing the "Express Mail Post Office to Addressee" service of the United States Postal Service and be considered as having been filed in the Office on the date the paper or fee is shown to have been deposited as "Express Mail" with the United States Postal Service unless the date of deposit is a Saturday, Sunday, or federal holiday within the District of Columbia. See §1.6(a).

* * * * *

(c) The Patent and Trademark Office will accept the certificate of mailing by "Express Mail" and accord the paper or fee the certificate date under 35 U.S.C. 21(a) (unless the certificate date is a Saturday, Sunday, or federal holiday within the District of Columbia—see §1.6(a)) without further proof of the date on which the mailing by "Express Mail" occurred unless a question is present regarding the date of mailing. If more than a reasonable time has elapsed between the certificate date and the Patent and Trademark Office receipt date or if other questions regarding the date of mailing are present, the person mailing the paper or fee may be required to file a copy of the "Express Mail" receipt showing the actual date of mailing and a statement from the person who mailed the paper or fee averring to the fact that the mailing occurred on the date certified. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

4. Section 1.14 is amended by revising paragraph (b) to read as follows:

§1.14 Patent applications preserved in secrecy.

* * * * *

(b) Except as provided in §1.11(b) abandoned applications are likewise not open to public inspection, except that if an application referred to in a U.S. patent, or in an application which is open to inspection pursuant to §1.139, is abandoned and is available, it may be inspected or copies obtained by any person on written request, without notice to the applicant. Complete applications (§1.51(a)) which are abandoned may be destroyed after 20 years from their filing date, except those to which particular attention has been called and which have been marked for preservation. Abandoned applications will not be returned.

* * * * *

5. Section 1.19 is amended by revising paragraph (b) (3) to read as follows:

§1.19 Document supply fees.

* * * * *

(b) * * *

(3) For comparing copies, made from Patent and Trademark Office records but not prepared by the Patent and Trademark Office, with the original, prior to certification of the copies, per page $0.10

* * * * *

6. Section 1.21 is amended by revising paragraph (b)(2) and by adding a new paragraph (l) to read as follows:

§1.21 Miscellaneous fees and charges.

* * * * *

(b) * * *

(2) Service charge for each month when the balance at the end of the month is below $1000 ..... $2.00

* * * * *

(l) For processing and retaining any application abandoned pursuant to §1.53(d) unless the required basic filing fee has been paid ..... $100.00.

7. Section 1.25 is revised to read as follows:

§1.25 Deposit accounts.

(a) For the convenience of attorneys, agents, and the general public in paying any fees due, in ordering services offered by the Office, copies of records, etc., deposit accounts may be established in the Patent and Trademark Office upon payment of the fee for establishing a deposit account (§1.21(b)(1)). A minimum deposit of $1000 or more, depending on the activity of the individual account, is required. At the close of each month's business, a statement will be rendered. A remittance must be made promptly upon receipt of the statement to cover the value of items or services charged to the account and thus restore the account to its established normal deposit value. An amount sufficient to cover all fees, services, copies, etc., requested must always be on deposit. A service charge (§1.21(b)(2)) will be assessed for each month that the balance at the end of the month is below $1000.

(b) Filing, issue, appeal, international-type search report, international application processing, petition, and post-issuance fees may be charged against these accounts if sufficient funds are on deposit to cover such fees. A general authorization to charge all fees, or only certain fees, set forth in §§1.16 to 1.18 to a deposit account containing sufficient funds may be filed in an individual application, either for the entire pendency of the application or with respect to a particular paper filed. An authorization to charge to a deposit account the fee for a request for reexamination pursuant to §1.510 and any other fees required in a reexamination proceeding in a patent may also be filed with the request for reexamination. An authorization to charge a fee to a deposit account will not be considered payment of the fee on the date the authorization to charge the fee is effective as to the particular fee to be charged unless sufficient funds are present in the account to cover the fee.

8. Section 1.27 is amended by revising paragraphs (b), (c) and (d) to read as follows:

§1.27 Statement of status as small entity.

* * * * *

(b) Any verified statement filed pursuant to paragraph (a) of this section on behalf of an independent inventor must be signed by the independent inventor except as provided in §§1.42, 1.43, or 1.47 of this part, and must aver that the inventor qualifies as an independent inventor in accordance with §1.9(c) of this part. Where there are joint inventors in an application, each inventor must file a verified statement establishing status as an independent inventor in order to qualify as a small entity. Where any rights have been assigned, granted, conveyed, or licensed, or there is an obligation to assign, grant, convey, or license, any rights to a small business concern, a nonprofit organization, or any other individual, a verified statement must be filed by the individual, the owner of the small business concern, or an official of the small business concern or nonprofit organization empowered to act on behalf of the small business concern or nonprofit organization averring to their status. For purposes of a verified statement under this paragraph, a license to a federal agency resulting from a funding agreement with that agency pursuant to 35 U.S.C. 202(c)(4) does not constitute a license as set forth in §1.9 of this part.

(c) Any verified statement filed pursuant to paragraph (a) of this section on behalf of a small business concern must (1) be signed by the owner or an official of the small business concern empowered to act on behalf of the concern; (2) aver that the concern qualifies as a small business concern as defined in §1.9(d); and (3) aver that exclusive rights to the invention have been conveyed to and remain with the small business concern, or if the rights are not exclusive, that all other rights belong to small entities as defined in §1.9. Where the rights of the small business concern as a small entity are not exclusive, a verified statement must also be filed by the other small entities having rights averring to their status as such. For purposes of a verified statement under this paragraph, a license to a federal agency resulting from a funding agreement with that agency pursuant to 35 U.S.C. 202(c)(4) does not constitute a license as set forth in §1.9 of this part.

(d) Any verified statement filed pursuant to paragraph (a) of this section on behalf of a nonprofit organization must (1) be signed by an official of the nonprofit organization empowered to act on behalf of the organization; (2) aver that the organization qualifies as a nonprofit organization as defined in §1.9(e) of this part specifying under which one of §1.9(e)(1), (e)(2), (e)(3), or (e)(4) of this part the organization qualifies; and (3) aver that exclusive rights to the invention have been conveyed to and remain with the organization or if the rights are not exclusive, that all other rights belong to small entities as defined in §1.9 of this part. Where the rights of the nonprofit organization as a small entity are not exclusive, a verified statement must also be filed by the other small entities having rights averring to their status as such. For purposes of a verified statement under this paragraph, a license to a federal agency resulting from a funding agreement with that agency pursuant to 35 U.S.C. 202(c)(4) does not constitute a conveyance of rights as set forth in this paragraph.

9. Section 1.28 is amended by revising paragraph (a) to read as follows:

§1.28 Effect on fees of failure to establish status, or change status, as a small entity.

(a) The failure to establish status as a small entity (§§1.9(f) and 1.27 of this part) in any application or patent prior to paying, or at the time of paying, any fee precludes payment of the fee in the amount established for small entities. A refund pursuant to §1.26 of this part, based on establishment of small entity status, of a portion of fees timely paid in full prior to establishing status as a small entity may only be obtained if a verified statement under §1.27 and a request for a refund of the excess amount are filed within two months of the date of the timely payment of the full fee. The two-month time period is not extendable under §1.136. Status as a small entity is waived for any fee by the failure to establish the status prior to paying, at the time of paying, or within two months of the date of payment of, the fee. Status as a small entity must be specifically established by a verified statement filed in each application or patent in which the status is available and desired, except those applications filed under §1.60 or §1.62 of this part where the status as a small entity has been established in a parent application and is still proper. Once status as a small entity has been established in an application or patent, the status remains in that application or patent without the filing of a further verified statement pursuant to §1.27 of this part unless the Office is notified of a

change in status. Status as a small entity in one application or patent does not affect any other application or patent, including applications or patents which are directly or indirectly dependent upon the application or patent in which the status has been established, except those filed under §1.60 or §1.62 of this part. Applications filed under §1.60 or §1.62 of this part must include a reference to a verified statement in a parent application if status as a small entity is still proper and desired.

* * * * *

10. Section 1.52 is amended by revising paragraph (d) to read as follows:

§1.52 Language, paper, writing, margins.

* * * * *

(d) An application may be filed in a language other than English. A verified English translation of the non-English language application and the fee set forth in §1.17(k) are required to be filed with the application or within such time as may be set by the Office.

11. Section 1.53 is amended by revising paragraphs (b) and (d) to read as follows:

§1.53 Serial number, filing date, and completion of application.

* * * * *

(b) The filing date of an application for patent is the date on which (1) a specification containing a description pursuant to §1.71 and at least one claim pursuant to §1.75, and (2) any drawing required by §1.81(a), are filed in the Patent and Trademark Office in the name of the actual inventor or inventors as required by §1.41. No new matter may be introduced into an application after its filing date (§1.118).

* * * * *

(d) If the application which has been accorded a filing date pursuant to paragraph (b) of this section does not include the appropriate filing fee or an oath or declaration by the applicant, applicant will be so notified, if a correspondence address has been provided, and given a period of time within which to file the fee, oath, or declaration and to pay the surcharge as set forth in §1.16(e) in order to prevent abandonment of the application. If the required filing fee is not timely paid, or if the processing and retention fee set forth in §1.21(l) is not paid within one year of the date of mailing of the notification required by this paragraph, the application will be disposed of. No copies will be provided or certified by the Office of an application which has been disposed of or in which neither the required basic filing fee nor the processing and retention fee has been paid. The notification pursuant to this paragraph may be made simultaneously with any notification pursuant to paragraph (c) of this section. If no correspondence address is included in the application, applicant has two months from the filing date to file the fee, oath or declaration and to pay the surcharge as set forth in §1.16(e) in order to prevent abandonment of the application or one year from the filing date to pay the processing and retention fee set forth in §1.21(l) to prevent disposal of the application.

* * * * *

12. Section 1.55 is amended by revising paragraph (b) to read as follows:

§1.55 Claim for foreign priority.

* * * * *

(b) An applicant may under certain circumstances claim priority on the basis of an application for an inventor's certificate in a country granting both inventor's certificates and patents. When an applicant wishes to claim the right of priority as to a claim or claims of the application on the basis of an application for an inventor's certificate in such a country under 35 U.S.C. 119, last paragraph (as amended July 28, 1972), the applicant or his or her attorney or agent, when submitting a claim for such right as specified in paragraph (a) of this section, shall include an affidavit or declaration including a specific statement that, upon an investigation, he or she has satisfied himself or herself that to the best of his or her knowledge the applicant, when filing his or her application for the inventor's certificate, had the option to file an application either for a patent or an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority.

13. Section 1.56 is amended by revising paragraph (b) and by adding a new paragraph (j) to read as follows:

§1.56 Duty of disclosure; fraud; striking or rejection of applications.

* * * * *

(b) Disclosures pursuant to this section must be accompanied by a copy of each foreign patent document, non-patent publication, or other non-patent item of information in written form which is being disclosed or by a statement that the copy is not in the possession of the person making the disclosure and may be made to the Office through an attorney or agent having responsibility for the preparation or prosecution of the application or through an inventor who is acting in his or her own behalf. Disclosure to such an attorney, agent or inventor shall satisfy the duty, with respect to the information disclosed, of any other individual. Such an attorney, agent or inventor has no duty to transmit information which is not material to the examination of the application.

* * * * *

(j) If any disclosure pursuant to this section does not include a copy of each foreign patent document, non-patent publication, or other non-patent item of information in written form which is being disclosed or a statement that a copy thereof is not in the possession of the person making the disclosure, applicant will be so notified and given a period of time within which to file the copy or a statement that a copy is not in the possession of the person making the disclosure. The time period set may be extended under §1.136.

14. Section 1.59 is revised to read as follows:

§1.59 Papers of application with filing date not to be returned.

Papers in an application which has received a filing date pursuant to §1.53 will not be returned for any purpose whatever. If applicants have not preserved copies of the papers, the Office will furnish copies at the usual cost of any application in which either the required basic filing fee (§1.16) or the processing and retention fee (§1.21(l)) has been paid.

15. Section 1.60 is revised to read as follows:

§1.60 Continuation or divisional application for invention disclosed in a prior application.

(a) A continuation or divisional application (filed under the conditions specified in 35 U.S.C. 120 or 121 and §1.78(a)), which discloses and claims only subject matter disclosed in a prior application may be filed as a separate application before the patenting or abandonment of or termination of proceedings on the prior application.

(b) An applicant may omit signing of the oath or declaration in a continuation or divisional application if (1) the prior application was a complete application as set forth in §1.51(a) and (2) applicant files a true copy of the prior complete application as filed including the specification (including claims), drawings, oath or declaration showing the applicant's signature or an indication it was signed, and any amendments referred to in the oath or declaration filed to complete the prior application. The copy of the prior application must be accompanied by a statement that the application papers filed are a true copy of the prior application and that no amendments referred to in the oath or declaration filed to complete the prior application introduced new matter therein. Such statement must be by the applicant or applicant's attorney or agent and must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. Only amendments reducing the number of claims or adding a reference to the

prior application (§1.78(a)) will be entered before calculating the filing fee and granting the filing date.

16. Section 1.62 is amended by revising paragraphs (a) and (d) to read as follows:

§1.62 File wrapper continuing procedure.

(a) A continuation, continuation-in-part, or divisional application, which uses the specification, drawings and oath or declaration from a prior complete application (§1.51(a)) to be abandoned, may be filed before the payment of the issue fee, abandonment of, or termination of proceedings on the prior application. The filing date of an application filed under this section is the date on which a request is filed for an application under this section including identification of the Serial Number, filing date, and applicant's name of the prior complete application.

* * * * *

(d) If an application which has been accorded a filing date pursuant to paragraph (a) of this section does not include the appropriate basic filing fee pursuant to paragraph (b) of this section, or an oath or declaration by the applicant in the case of a continuation-in-part application pursuant to paragraph (c) of this section, applicant will be so notified and given a period of time within which to file the fee, oath, or declaration and to pay the surcharge as set forth in §1.16(e) in order to prevent abandonment of the application. The notification pursuant to this paragraph may be made simultaneously with any notification of a defect pursuant to paragraph (a) of this section.

* * * * *

17. Section 1.78 is amended by revising the title and paragraph (a) to read as follows:

§1.78 Claiming benefit of earlier filing date and cross-references to other applications.

(a) An application may claim an invention disclosed in the same applicant's prior filed copending national application or international application designating the United States of America. In order for an application to claim the benefit of a prior filed copending national application, the prior application must be (1) complete as set forth in §1.51, or (2) entitled to a filing date as set forth in §1.53(b) and include the basic filing fee set forth in §1.16; or (3) entitled to a filing date as set forth in §1.53(b) and have paid therein the processing and retention fee set forth in §1.21(1) within the time period set forth in §1.53(d). Any application claiming the benefit of a prior filed copending national or international application must contain or be amended to contain in the first sentence of the specification following the title a reference to such prior application, identifying it by serial number and filing date or international application number and international filing date and indicating the relationship of the applications. Cross-references to other related applications may be made when appropriate. (See §1.14(b)).

* * * * *

18. Section 1.121 is amended by revising paragraph (e) to read as follows:

§1.121 Manner of making amendments.

* * * * *

(e) In reissue applications, both the descriptive portion and the claims are to be amended by either (1) submitting a copy of a portion of the description or an entire claim with all matter to be deleted from the patent being placed between brackets and all matter to be added to the patent being underlined, or (2) indicating the exact word or words to be stricken out or inserted and the precise point where the deletion or insertion is to be made. Any word or words to be inserted must be underlined. See §1.173.

* * * * *

19. Section 1.123 is revised to read as follows:

§1.123 Amendments to the drawing.

No change in the drawing may be made except by permission of the Office. Permissible changes in the construction shown in any drawing may be made only by bonded draftsmen, at applicant's expense, or by the submission of substitute drawings by applicant. A sketch in permanent ink showing proposed changes, to become part of the record, must be filed for approval by the examiner and should be a separate paper.

20. Section 1.135 is amended by removing paragraph (d).

21. Section 1.136 is revised to read as follows:

§1.136 Filing of timely responses with petition and fee for extension of time and extensions of time for cause.

(a) If an applicant is required to respond within a non-statutory or shortened statutory time period, applicant may respond up to four months after the time period set if a petition for an extension of time and the fee set in §1.17 are filed prior to or with the response, unless (1) applicant is notified otherwise in an Office action or (2) the application is involved in an interference declared pursuant to §1.207 . The date on which the response, the petition, and the fee have been filed is the date of the response and also the date for purposes of determining the period of extension and the corresponding amount of the fee. The expiration of the time period is determined by the amount of the fee paid. In no case may an applicant respond later than the maximum time period set by statute, or be granted an extension of time under paragraph (b) of this section when the provisions of this paragraph are available. See §1.245 for extension of time in interference proceedings and §1.550(c) for extension of time in reexamination proceedings.

(b) When a response with petition and fee for extension of time cannot be filed pursuant to paragraph (a) of this section, the time for response will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the applicant is due, but in no case will the mere filing of the request effect any extension. In no case can any extension carry the date on which response to an Office action is due beyond the maximum time period set by statute or be granted when the provisions of paragraph (a) of this section are available. See §1.245 for extension of time in interference proceedings and §1.550(c) for extension of time in reexamination proceedings.

22. Section 1.191 is amended by adding a new paragraph (d) to read as follows:

§1.191 Appeal to Board of Appeals.

* * * * *

(d) The time periods set forth in §§1.191 through 1.194, 1.196 and 1.197 are subject to the provisions of §1.136 for patent applications or §1.550(c) for reexamination proceedings.

23. Section 1.192 is amended by revising paragraph (a) to read as follows:

§1.192 Appellant's brief.

(a) The appellant shall, within 2 months from the date of the notice of appeal under §1.191 in an application, reissue application, or patent under reexamination, or within the time allowed for response to the action appealed from, if such time is later, file a brief in triplicate. The brief must be accompanied by the requisite fee set forth in §1.17(f) and must set forth the authorities and arguments on which the appellant will rely to maintain the appeal. The brief must include a concise explanation of the invention which should refer to the drawing by reference characters, and a copy of the claims involved.

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24. Section 1.197 is amended by revising paragraph (b) to read as follows:

§1.197 Action following decision.

* * * * *

(b) A single request for rehearing or reconsideration, or modification of the decision, may be made if filed within thirty days from the date of the original decision, unless that decision is so modified as to become, in effect, a new decision, and the Board of Appeals so states.

* * * * *

25. Section 1.304 is amended by revising paragraph (a) to read as follows:

§1.304 Time for appeal or civil action.

(a) The time for filing the notice and reasons of appeal to the U.S. Court of Appeals for the Federal Circuit (§1.302) or for commencing a civil action (§1.303) is sixty days from the date of the decision of the Board of Appeals or the Board of Patent Interferences. If a request for rehearing or reconsideration, or modification of the decision, is filed within the time provided pursuant to §1.197(b) or §1.256(b), the time for filing an appeal or commencing a civil action shall expire at the end of the sixty-day period or thirty days after action on the request, whichever is later. The time periods set forth herein are subject to the provisions of §1.136 or §1.550(c) as to decisions of the Board of Appeals, or §1.245 as to decisions of the Board of Patent Interferences.

* * * * *

26. Section 1.550 is amended by revising paragraph (c) to read as follows:

§1.550 Conduct of reexamination proceedings.

* * * * *

(c) The time for taking any action by a patent owner in a reexamination proceeding will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the patent owner is due, but in no case will the mere filing of the request effect any extension.

* * * * *

27. Section 1.555 is amended by revising paragraphs (a) and (b) to read as follows:

§1.555 Duty of disclosure in reexamination proceedings.

(a) A duty of candor and good faith toward the Patent and Trademark Office rests on the patent owner, on each attorney or agent who represents the patent owner, and on every other individual who is substantively involved on behalf of the patent owner in a reexamination proceeding. All such individuals who are aware, or become aware, of patents or printed publications material to the reexamination which have not been previously made of record in the patent file must bring such patents or printed publications to the attention of the Office. An information disclosure statement, preferably in accordance with §1.98, should be filed wihin two months of the date of the order for reexamination, or as soon thereafter as possible in order to bring such patents or printed publications to the attention of the Office.

(b) Disclosures pursuant to this section must be accompanied by a copy of each foreign patent document or non-patent printed publication which is being disclosed or by a statement that the copy is not in the possession of the person making the disclosure and may be made to the Office through an attorney or agent having responsibility on behalf of the patent owner for the reexamination proceeding or through a patent owner acting in his or her own behalf. Disclosure to such an attorney, agent or patent owner shall satisfy the duty of any other individual. Such an attorney, agent or patent owner has no duty to transmit information which is not material to the reexamination.

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GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Nov. 30, 1983.

[1038 O.G. 275]

(51) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 1
[Docket No. 40442-49092]

Final Rules for Patent Maintenance Fees

Agency: Patent and Trademark Office, Commerce

Action: Notice of final rulemaking

Summary: The Patent and Trademark Office is amending the rules of practice in patent cases, Part I of Title 37, Code of Federal Regulations, to provide rules and procedures for the payment of patent maintenance fees. Public Law 96-517, enacted on Dec. 12, 1980 and Public Law 97-247, enacted on Aug. 27, 1982, provided for the payment of maintenance fees at intervals of 3½, 7½ and 11½ years from the date of grant of the patent for maintaining in force an original patent, a reissue patent of an invention, and under Public Law 96-517, a plant patent and reissues thereof. The changes provide specific rules and procedures which will assist patentees in avoiding the inadvertent expiration of a patent for failure to pay the appropriate maintenance fee.

Effective Date: Nov. 1, 1984

For Further Information Contact: R. Franklin Burnett by telephone at (703) 557-3054 or by mail to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: This rule change is designed primarily to 1) establish a set of rules and procedures for the payment of patent maintenance fees; and 2) effect the provisions of Public Laws 96-517 and 97-247 with respect to payment of maintenance fees. The proposed rules were published on Apr. 24, 1984, in Vol. 49 of the *Federal Register*, pages 17692 through 17698; and on May 8, 1984, at Vol. 1042 of the *Official Gazette*, pages 22 through 38. A public hearing was held on the proposed rule changes on June 26, 1984.

A public briefing on the Office's maintenance fee payment plans was announced at 49 *Federal Register* 2806 on Jan. 23, 1984, and at 1038 *Official Gazette* 293 on Jan. 31, 1984. The public briefing was held on Feb. 22, 1984.

Discussion of Specific Rules

Section 1.1., is amended as proposed to add a new paragraph (d) to provide a "Box M. Fee" in the Patent and Trademark Office to which all maintenance fee correspondence and payments should be directed. Changes in small entity status in patents and changes in the "fee address" under §1.363, as well as payments of maintenance fees should be directed to "Box M. Fee".

Section 1.9, paragraph (d) is amended as proposed to make a change in citation and title of the rule of the Small Business Administration which relates to the small business size standard for paying reduced patent fees. This change was published in the Federal Register as a final rule on Feb. 9, 1984 at 49 Fed. Reg. 5024-5048. The wording of the rule itself was not changed. This change is made to bring the wording of title 37, Code of Federal Regulations into conformance with title 13, Code of Federal Regulations.

Section 1.17, is amended as proposed to establish in paragraph (h) a fee of $120 for review of a decision refusing to accept and record payment of a maintenance fee filed prior to the expiration of a patent. Paragraph (h) of §1.17 is also amended to establish a fee of $120 for reconsideration of a decision on petition refusing to accept the delayed payment of a maintenance fee in an expired patent.

Section 1.19, is amended as proposed to add new paragraphs (f) and (g). New paragraph (f) provides for a $10.00 fee for a microfiche copy of a patent file wrapper record. Microfiche copies of these patent files have recently become available for patents issued after Jan. 1, 1984. No fee had previously been set by rule for this service. This fee is not directly related to maintenance fees but is set at this time for convenience. New paragraph (g) establishes a $3.00 fee for providing an uncertified statement indicating either the status of payment of

maintenance fees due on a patent or the expiration of a patent. This charge does not apply to any receipt normally provided to the fee addressee as a result of the payment of a maintenance fee, but does apply in any other instance when written evidence of the status of payment of maintenance fees on a patent is requested, whether by the patentee or a member of the public.

Section 1.20, is amended as proposed to add new paragraphs (k), (l) and (m). New paragraph (k) provides for a $100.00 surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982. Since Public Law 96-517 did not provide for small entities, the surcharge amount of $100 applies to all such patents. New paragraph (l) provides for a $100 surcharge for patentees other than a small entity and a $50 surcharge for small entity patentees when paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant based on an application filed on or after Aug. 27, 1982. This surcharge of $100 is subject to a 50% reduction for small entities pursuant to Public Law 97-247. New paragraph (m) provides for a $500 surcharge for accepting payment of a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee. This $500 surcharge applies only under Public Law 97-247 where the patent is based on an application filed on or after Aug. 27, 1982 and where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable. The requirement that the delay be "unavoidable" is the same as that for reviving an abandoned application under 35 U.S.C. 133. However, the amount of evidence required will depend upon when the showing that the delay was "unavoidable" is made. This surcharge does not apply to patents based on applications filed prior to Aug. 27, 1982 since acceptance of a maintenance fee after expiration of a patent for non-timely payment is not possible under Public Law 96-517. Since this surcharge is provided for under 35 U.S.C. 41(c), it is not subject to a 50% reduction for small entities. The surcharge in paragraph (m) is not in addition to the surcharge in paragraph (l), but is in lieu thereof.

Section 1.33 is amended as proposed to add a new paragraph (d) which allows a "correspondence address" or change thereto to be filed during the enforceable life of the patent. The "correspondence address" will be used in correspondence relating to maintenance fees unless a separate "fee address" has been specified. Paragraph (d) also includes a reference to §1.363 relating to the "fee address" to be used for maintenance fee purposes.

New §1.362 is added to provide for times for payment of maintenance fees. New paragraph (a) sets forth the requirement that maintenance fees as set forth in §1.20(e)-(j) must be paid in order to maintain a patent in force if the application maturing into a patent was filed on or after Dec. 12, 1980 and is subject to the payment of maintenance fees. The maintenance fee amounts set in §1.20(e)-(g) are subject to adjustment in accordance with the provisions of Public Law 96-517. The maintenance fee amounts set in §1.20(h)-(j) are subject to adjustment in accordance with the provisions of Public Law 97-247 on Oct. 1, 1985, and every third year thereafter, to reflect fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Other patent fees are also subject to similar adjustments.

New paragraph (b) of §1.362 stipulates that no maintenance fees are due for plant patents if the plant patent application was filed on or after Aug. 27, 1982 or for any design patents. Maintenance fees are not required for a reissue patent if the patent being reissued did not require maintenance fees. New paragraph (c) defines the pertinent application filing dates for purposes of determining whether maintenance fees are applicable. Paragraph (c) (1) establishes that for national applications not claiming benefit of an earlier application, the actual United States filing date controls. Paragraph (c) (2) establishes that for national applications claiming benefit of an earlier foreign application under 35 U.S.C. 119, the United States filing date controls. Paragraph (c) (3) provides that for continuing national applications claiming benefit of a prior application under 35 U.S.C. 120, the actual United States filing date of the continuing application is the controlling date. Paragraph (c) (4) provides that for a reissue application, the United States filing date of the application which matured into the original patent upon which the reissue application is based will control. Paragraph (c) (5) establishes that for an international application which has entered the United States as a Designated Office under 35 U.S.C. 371, the international filing date granted under Article 11(1) of the Patent Cooperation Treaty controls. This is consistent with 35 U.S.C. 363.

Paragraph (d) of new §1.362 sets forth the time periods when maintenance fees can be paid without a surcharge. Those periods, referred to generally as the "window period," are the six-month periods preceding each due date, i.e., 3 years through 3 years and six months, 7 years through 7 years and six months, and 11 years through 11 years and six months after grant of the patent. The "due dates" are defined in 35 U.S.C. 41(b). A maintenance fee paid on the last day of a window period can be paid without surcharge. The last day of a window period is the same date (anniversary date) the patent was granted 3 years and six months, 7 years and six months, or 11 years and six months after grant of the patent. Paragraph (d) has been modified from the proposal to add "and" between items (2) and (3) and change the comma at the end of the paragraph to a period.

Paragraph (e) of new §1.362 sets forth the grace periods during which maintenance fees, under either Public Law 96-517 or Public Law 97-247, may be paid with the surcharge under §1.20(k) or (l). The grace periods are the six-month periods immediately following each due date, i.e., after 3 years and six months and up to 4 years, after 7 years and six months and up to 8 years, and after 11 years and six months and up to 12 years after grant of the patent. A maintenance fee may be paid with the surcharge on the same date (anniversary date) the patent was granted in the 4th, 8th, or 12th year after grant to prevent the patent from expiring.

Paragraph (f) of new §1.362 specifies that where the last day for paying a maintenance fee falls on a Saturday, Sunday, or a federal holiday within the District of Columbia, the maintenance fee may be paid on the next succeeding day which is not a Saturday, Sunday, or federal holiday. For example, if the "window period" provided by paragraph (d) for paying a maintenance fee without surcharge ended on a Saturday, Sunday, or a federal holiday within the District of Columbia, the maintenance fee can be paid without surcharge on the next succeeding day which is not a Saturday, Sunday, or federal holiday. Likewise, if the grace period provided by paragraph (e) for paying a maintenance fee with surcharge ended on a Saturday, Sunday, or a federal holiday within the District of Columbia, the maintenance fee could be paid with surcharge on the next succeeding day which is not a Saturday, Sunday, or federal holiday. In the latter situation, the failure to pay the maintenance fee and surcharge on the next succeeding day which is not a Saturday, Sunday, or federal holiday will result in the patent expiring on a date (4, 8, or 12 years after the date of grant) earlier than the last date on which the maintenance fee and surcharge could be paid. This situation results from the provisions of 35 U.S.C. 21, but those provisions do not extend the expiration date of the patent if the maintenance fee and any required surcharge are not paid when required. For example, if the grace period ended on Saturday, the maintenance fee and surcharge could be paid on the next succeeding business day, e.g. Monday, but the patent will have expired at midnight on Saturday if the maintenance fee and sur-

charge were not paid on the following Monday. Paragraph (f) has been modified from the proposal to explicitly refer to "any necessary surcharge" for clarity since the ability to pay on the next succeeding day which is not a Saturday, Sunday, or federal holiday within the District of Columbia applies to the maintenance fee, including any necessary surcharge.

Paragraph (g) of new §1.362 establishes that if the proper fees are not received within the time period specified in paragraphs (d), (e), or (f) the patent expires at the end of the grace period set forth in paragraph (e). Paragraph (g) also specifies that a patent which expires for the failure to pay the maintenance fee will expire at the end of the same date (anniversary date) the patent was granted in the 4th, 8th, or 12th year after grant.

New §1.363 is added as proposed to provide for a "fee address" for maintenance fee purposes. New paragraph (a) specifies that the correspondence address used during prosecution of the application will be used unless 1) a "fee address" is provided for maintenance fee purposes when submitting the issue fee, 2) a correspondence address change for all purposes is filed after payment of the issue fee, or 3) a "fee address" or a change in the "fee address" is filed after payment of the issue fee.

Paragraph (b) of new §1.363 specifies that an assignment does not result in a change of address for maintenance fee purposes. Due to the possible expiration of a patent for failure to timely pay the appropriate maintenance fee, patentees should ensure that the Patent and Trademark Office is properly notified of the proper "fee address" to which all maintenance fee communications are to be directed. Under both Public Law 96-517 and Public Law 97-247 the burden is on the patentee to timely pay maintenance fees. The Patent and Trademark Office will attempt to assist patentees through appropriate courtesy notices. However, the failure to receive one or more notices will not relieve the patentee of the obligation to timely pay the appropriate maintenance fee to prevent the patent from expiring by operation of law if the maintenance fee is not paid. Section 1.363 does not provide for maintenance fee correspondence to be directed to more than one address.

New §1.366 is added to establish the guidelines and procedures for submission of maintenance fees, including any necessary surcharges. New paragraph (a) states that the patentee may pay maintenance fees and any necessary surcharges or any person or organization may pay maintenance fees and any necessary surcharges on behalf of the patentee without filing in the Patent and Trademark Office evidence of authorization by the patentee to pay maintenance fees. This will enable patentees to pay the maintenance fees and any necessary surcharges themselves or authorize some person or organization to pay maintenance fees and any necessary surcharges on their behalf. No verification of the authority to pay maintenance fees and any necessary surcharges in a particular patent will be made by the Patent and Trademark Office. While anyone may pay the maintenance fees and any necessary surcharges on a patent, any Patent and Trademark Office notices relating to maintenance fees will be mailed to the "fee address" set forth in §1.363. Paragraph (a) has been modified from the proposal to explicitly refer to "any necessary surcharges" for clarity.

Paragraph (b) of new §1.366 specifies that a maintenance fee and any necessary surcharge for a patent must be submitted in the amount due on the date the maintenance fee and any necessary surcharge are paid, and at the proper time, i.e., within the periods set forth in §1.362. Paragraph (b) has been modified from the proposal by changing "proper amount" to "amount due on the date the maintenance fee and any necessary surcharge are paid." This change results from adoption of a suggestion that a maintenance fee payment made during the window period should not require adjustment if the maintenance fees are thereafter increased to reflect increases in the Consumer Price Index. Under paragraph (b) as adopted herein, if the amount of the maintenance fee is correct on the date it is paid and credited to the patent, a later change in the maintenance fees to reflect changes in the Consumer Price Index will not require a modification in the amount paid. However, in order for the maintenance fee to be considered paid it must be submitted in accordance with §1.366. Paragraph (b) has also been modified from the proposal to explicitly refer to §1.362(f) for purposes of clarity where the last day for paying a maintenance fee with or without a surcharge falls on a Saturday, Sunday, or a federal holiday within the District of Columbia. In such circumstances, the fee with any necessary surcharge may be paid on the next succeeding day which is not a Saturday, Sunday, or federal holiday. The maintenance fee and any necessary surcharge may be paid in the manner set forth in §1.23, i.e., it should be in United States specie, Treasury notes, national bank notes, post office money orders, or by certified check. As indicated in §1.23, if the maintenance fee payment is sent in any other form, the Office may delay or cancel the credit until collection is made. For example, a personal or other uncertified check drawn on a United States bank which is not immediately negotiable, e.g., because of lack of signature or insufficient funds, will not constitute payment of a maintenance fee. However, a personal check drawn on a United States bank can be used if it is immediately negotiable. Any remittance from foreign countries must be payable and immediately negotiable in the United States for the full amount of the maintenance fee required.

Paragraph (b) of new §1.366 also provides that maintenance fees may be paid by an authorization to charge a deposit account established pursuant to §1.25. The authorization to charge the deposit account must be submitted within the periods set forth in §1.362 and must be limited to maintenance fees payable on the date of submission. The authorization to charge the deposit account can not, under paragraph (b), be submitted prior to the third, seventh, or eleventh year after the grant of the patent. If an authorization to charge a deposit account were submitted to pay the maintenance fee due at three years and six months after grant, a new authorization to charge a deposit account or other form of payment will have to be submitted at the appropriate time for each of the maintenance fees due at 7 years and six months and 11 years and six months. Paragraph (b) also specifies that any payment or authorization filed at any time other than that set forth in §1.362(d), (e) or (f) will not serve as a payment of the maintenance fee, except insofar as a delayed payment of the maintenance fee is accepted by the Commissioner pursuant to §1.378. Paragraph (b) also specifies that a payment of less than the required amount, a payment in a manner other than that set forth in §1.23, or the filing of an authorization to charge a deposit account having insufficient funds, will not constitute payment of a maintenance fee on a patent. The authorization is required to authorize the immediate charging of the fee to the deposit account. An authorization would be improper if it only authorized the fee to be charged at a later date, e.g., on the last possible day of payment without surcharge. Such an authorization would not serve as payment of the maintenance fee. Any payment which fails to result in the entire proper amount of the maintenance fee being present on the due date will not constitute payment of the maintenance fee. Paragraph (b) also specifies that the certificate of mailing procedures of §1.8 or the mailing by "Express Mail" provisions of §1.10 may be utilized in paying maintenance fees. The specific requirements of either §1.8 or §1.10 must be fully complied with if either is used.

Paragraph (c) of new §1.366 establishes the data necessary and desired when submitting maintenance fee payments and any necessary surcharges. New paragraph (c) specifies that maintenance fee payments and any necessary surcharges must include at least the 1) patent number and 2) United States application serial number. Paragraph (c) has been modified from the proposal to explicitly refer to "any necessary surcharges" for clarity since the identifying information must also be supplied when submitting surcharges. The wording of §1.366(c) has also been changed from the proposal to clarify that the required application serial number is that of the ap-

plication upon which the patent issued. This change from the proposal makes clear that the serial number required to be submitted is not that of a prior parent application but rather, the actual application which matured into the patent for which maintenance fees are to be paid. If the maintenance fee is being paid on a reissue patent, the serial number required is that of the reissue application. Since this required information will be used as a cross-check to ensure that the maintenance fee is properly credited, the application serial number must correspond to the patent which issued therefrom. If less than the required information is submitted, the Office will not credit the payment. Additionally, if notice is required that the proper identifying data has not been submitted, it would result in requiring the payment of a surcharge if the necessary data is submitted after the "window period" closes. If the required information is not submitted until after the end of the grace period, the patent would have expired because of the failure to properly identify the patent to which the maintenance fee payment is to be credited prior to the expiration of the grace period. The patentee in such a circumstance could proceed under §1.378, if appropriate, or could file a petition under §1.377 within the period set therein seeking to have the maintenance fee accepted as timely even though all of the proper identifying data was not present prior to the expiration of the grace period.

Paragraph (d) of new §1.366 specifies that the following information should also be submitted for each patent on which a maintenance fee or surcharge is paid: 1) whether it is the 3½, 7½, or 11½ year fee, 2) whether small entity status is being changed or claimed with the payment, 3) the amount of the maintenance fee and any surcharge being submitted, 4) any assigned payor number, 5) patent issue date and 6) United States application filing date. Paragraph (d) has been modified from the proposal to explicitly refer to "any necessary surcharges" for clarity. Paragraph (d) has also been changed from the proposal to emphasize that when the payment is being made on a reissue patent the required patent number and application serial number are those of the reissue patent and reissue application. Where the payment is a maintenance fee and any necessary surcharge on a reissue patent, in addition to the information requested for all payments, paragraph (d) as adopted herein also requests certain identifying data relating to the original patent, i.e., original patent number, original patent issue date, and original United States application filing date. The reason for requesting the original patent number, original patent issue date, and original United States application filing date is that the original filing and issue dates are the dates which control if and when maintenance fees must be paid to prevent the reissue patent from expiring. The reference to a payor number has been added. A payor number will be assigned to each "fee address" in order to facilitate data input and subsequent changes in the location of the "fee address." Details of the "payor number" system will be announced to the public in a future *Official Gazette* notice. Although the submission of the information requested in paragraph (d) is not mandatory, it would expedite the processing of the maintenance fee payments.

The final rule thus requires less mandatory information, i.e., the patent number and U.S. application serial number, than would have been required by the proposed rule. The required information is considered to be the least that is required to make a cross-check and thus assure that the maintenance fee is being credited to the proper patent. The patent issue date and the application filing date, which were included in the proposed rule as mandatory information, are included in the final rule as desirable, but not mandatory, information The effect of this change is that an error in either the patent issue date or the application filing date, or both, by the person paying the maintenance fee would not result in a refusal to accept the maintenance fee and to credit the payment thereof to the patent, if the patent number and United States application serial number were correct, i.e., in agreement. However, if any error included either the patent number or the United States application serial number such that they were not in agreement the payment would not be accepted and credited until correction was made. The date of the correction would be the date the maintenance fee payment is credited as being made.

Paragraph (e) of new §1.366 specifies that maintenance fee payments and any surcharges relating thereto must be submitted separate from any other payments for fees or charges, whether submitted in the manner set forth in §1.23 or by an authorization to charge a deposit account. Maintenance fee payments and surcharge payments relating thereto which are co-mingled with payments for other fees or charges, e.g., application filing fees, issue fees, petition fees, document supply fees, etc., will not be accepted. The maintenance fees require processing by a separate area of the Office and are not processed in the same manner as other fees and charges. Maintenance fees for a number of patents can be submitted together in one submission and one payment. Paragraph (e) specifies that if maintenance fee payments for more than one patent are submitted together, they should be submitted on as few sheets as possible, listing the patent numbers in increasing patent number order. If the payment submitted, which can be made as a single payment, is insufficient to cover the maintenance fees and any surcharges for all the listed patents, the payment will be applied in the order the patents are listed. In such a circumstance where the fees are insufficient, the maintenance fee and any surcharge for one or more of the last listed patents will not be paid.

Paragraph (f) of new §1.366 serves as a reminder to patentees of the necessity to check for the loss of small entity status prior to paying each maintenance fee on a patent. This is already a requirement of §1.28(b). Paragraph (f) provides that notification of any change in status resulting in loss of entitlement to small entity status must be filed in a patent prior to paying, or at the time of paying, the earliest maintenance fee due after the date on which status as a small entity is no longer appropriate. If status as a small entity has been previously established by filing a statement and such status is checked and is found to be proper, no notification is required. It is not necessary to file new verified statements claiming small entity status at this point if the status as a small entity has been established and is still proper even if rights have been transferred to a small entity who has not previously filed a verified statement. The requirement is to notify the Patent and Trademark Office of the loss of entitlement and to pay the maintenance fee in the proper amount for other than a small entity where appropriate. The refund provisions of §1.28(a) for later submitted small entity statements will apply to maintenance fees.

Paragraph (g) of new §1.366 provides that maintenance fees and surcharges relating thereto will not be refunded except in accordance with §§1.26 and 1.28(a). A patentee cannot obtain a refund of a maintenance fee which was due and payable on the patent. Any duplicate payment will be refunded to the fee address.

New §1.377 is added as proposed to provide a mechanism for review of a decision refusing to accept and record payment of a maintenance fee filed prior to the expiration of a patent. Paragraph (a) of new §1.377 specifies that a patentee who is dissatisfied with the refusal of the Patent and Trademark Office to accept and record a maintenance fee which was filed prior to the expiration of the patent may petition the Commissioner to accept and record the maintenance fee. This petition may be used, for example, in situations where an error is present in the identifying data required by §1.366(c) with the maintenance fee payment, i.e., either the patent number or the application serial number are incorrect. A petition under §1.377 would not be appropriate where there is a complete failure to include at least one correct mandatory identifier as required by §1.366(c) for the patent since no evidence would be present as to the patent on which the maintenance fee was intended to be paid. If the maintenance fee payment with an incorrect mandatory identifier was made near the end of the grace period, the patent might expire since the Office would not

credit the fee to a patent. For patents based on applications filed between Dec. 12, 1980 and Aug. 27, 1982, there is no provision for acceptance of a maintenance fee after the grace period such as in §1.378 and so the filing of a petition under §1.377 would provide an avenue for seeking relief. A petition under §1.377 would not be appropriate where the patentee paid a maintenance fee on one patent when the patentee intended to pay the maintenance fee on a different patent but through error identified the wrong patent by patent number and application serial number. Likewise, a petition under §1.377 would not be appropriate where the entire maintenance fee payment, including any necessary surcharge, was not filed prior to expiration of the patent.

Paragraph (b) of new §1.377 specifies that any petition under new §1.377 must be filed within 2 months of the action complained of, or within such other time as may be set in the action complained of. The petition must be accompanied by the petition fee of $120 provided for in the amendment to §1.17(h). Paragraph (b) also provides that the petition may include a request that the petition fee be refunded if the refusal to accept and record the maintenance fee is determined to have resulted from an error by the Patent and Trademark Office.

Paragraph (c) of new §1.377 specifies that any petition filed under the section must comply with the requirements of paragraph (b) of §1.181 and must be signed by an attorney or agent registered to practice before the Patent and Trademark Office, or by the patentee, the assignee, or other party in interest. A person or organization whose only responsibility insofar as the patent is concerned is the payment of a maintenance fee is not a party in interest for purposes of paragraph (c) of §1.377. The petition must be in the form of a verified statement if made by a person not registered to practice before the Patent and Trademark Office. If the petition is signed by a person not registered to practice before the Patent and Trademark Office, the petition must include the authority of the person signing the petition as patentee, assignee, or other party in interest.

New §1.378 is added as proposed to establish the procedure for acceptance of the delayed payment of a maintenance fee in an expired patent in order to reinstate that patent. This procedure is only available under Public Law 97-247 where the application on which the patent is based was filed on or after Aug. 27, 1982. If the maintenance fee is due under Public Law 96-517, i.e., the application on which the patent is based was filed on or after Dec. 12, 1980, and before Aug. 27, 1982, the delayed payment of the maintenance fee is not provided for by statute and cannot be accepted after expiration of the patent, and the patent cannot be reinstated.

Paragraph (a) of new §1.378 provides that the Commissioner may accept the payment of any maintenance fee due on a patent based on an application filed on or after Aug. 27, 1982, after expiration of the patent if, upon petition, the delay in payment of the maintenance fee is shown to the satisfaction of the Commissioner to have been unavoidable. The surcharge set forth in §1.20(m) must be paid as a condition of accepting payment of the maintenance fee. No separate petition fee is required for this petition. If the Commissioner accepts payment of the maintenance fee upon petition, the patent shall be considered as not having expired, but will be subject to the intervening rights provisions of 35 U.S.C. 41(c) (2).

Paragraph (b) of new §1.378 specifies the requirements of a petition for acceptance of the delayed payment of a maintenance fee filed within six months of the expiration of the patent. Under paragraph (b), the petition must include the required maintenance fee set forth in §1.20(h)-(j); the surcharge set forth in §1.20(m); and a showing that the delay was unavoidable since reasonable care was taken to ensure that the maintenance fee would be paid timely. The showing must enumerate the steps taken to ensure timely payment of the maintenance fee. In view of the requirement to enumerate the steps taken to ensure timely payment of the maintenance fee, an argument that the patentee was ignorant of the requirement to pay maintenance fees will not constitute a showing of unavoidable delay. Evidence that despite reasonable care on behalf of the patentee and/or the patentee's agents, and reasonable steps to ensure timely payment, the maintenance fee was unavoidably not paid, could be submitted in support of an argument that the delay in payment was unavoidable. For example, an error in a docketing system could possibly result in a finding that a delay in payment was unavoidable if it were shown that reasonable care was exercised in designing and operating the system and if it were shown that the patentee took reasonable steps to ensure that the patent was entered into the system to ensure timely payment of the maintenance fees.

Paragraph (c) of new §1.378 specifies the requirements of a petition for acceptance of the delayed payment of a maintenance fee filed more than six months after the expiration of a patent. These requirements are much more stringent in view of the heavy burden of proof that the delay was unavoidable. The legislative history of Public Law 97-247, House Report No. 97-542 (Committee on the Judiciary), indicates that "[a]fter the expiration of a reasonable period of time, the patentee would bear a heavy burden of proof that the delay was unavoidable." The six month period provided for petition under paragraph (b) is considered to be a reasonable period of time within which to seek reinstatement of a patent which expired for failure to pay the maintenance fee. Any petition filed more than six months after expiration must meet the more stringent requirements of paragraph (c). Under paragraph (c), the petition must include the same elements as in paragraph (b) and, in addition, must demonstrate that the failure to pay the maintenance fee was unavoidable due to circumstances outside of the control of the patentee and those acting on behalf of the patentee in paying the maintenance fee. The showing in a petition under paragraph (c) must be sufficient in scope and content to meet the heavy burden of proof required to show that a delay in payment of the maintenance fee of more than six months after expiration of the patent was unavoidable. In contrast to a petition under paragraph (b), a showing in a petition under paragraph (c) of an error in a docketing system will not be sufficient to find that the delay was unavoidable. Instead, a petition filed under paragraph (c) must demonstrate that the circumstances resulting in the delay were entirely outside the control of the patentee and those acting on behalf of the patentee in paying the maintenance fee, e.g., serious efforts without success to raise the funds required to pay the maintenance fee.

Paragraph (d) of new §1.378 requires that a petition filed under §1.378 be signed by an attorney or agent registered to practice before the Patent and Trademark Office, or by the patentee, the assignee, or other party in interest. A person or organization whose only responsibility insofar as the patent is concerned is the payment of a maintenance fee is not a party in interest for purposes of paragraph (d) of §1.378. Under paragraph (d), the petition must be in the form of a verified statement if made by a person not registered to practice before the Patent and Trademark Office. If the petition is signed by a person not registered to practice before the Patent and Trademark Office, the petition must include the authority of the person signing the petition as patentee, assignee, or other party in interest.

Paragraph (e) of new §1.378 provides a mechanism for obtaining reconsideration of a decision refusing to accept a maintenance fee upon petition filed pursuant to paragraph (a). This mechanism is a petition for reconsideration which may be filed within two months of, or such other time as set in the decision refusing to accept the delayed payment of the maintenance fee. In contrast to petitions filed under paragraph (a), the petition for reconsideration filed under paragraph (e) of new §1.378 will require the separate petition fee set forth in the amendment to §1.17(h). Paragraph (e) also provides that after the decision on the petition for reconsideration, no further reconsideration or review of the matter will be

undertaken by the Commissioner. Paragraph (e) also provides for refund of the maintenance fee and the surcharge set forth in §1.20(m) if the delayed payment of the maintenance fee is not accepted. The refund will be made following the decision on the petition for reconsideration, or after the expiration of the time for filing such a petition for reconsideration, if none is filed. Paragraph (e) specifies that the fee for filing the petition for reconsideration will not be refunded unless the refusal to accept and record the maintenance fee is determined to result from an error by the Patent and Trademark Office.

Response to Comments on the Rules

Specific comments were received on a number of the proposed rule changes. Eight letters submitting written comments were received. Oral testimony was presented by two persons (one person testified on behalf of the American Intellectual Property Law Association) at the public hearing conducted on June 26, 1984. All of the written and oral comments were considered in adopting the changes set forth herein. The comments submitted appear below along with responses thereto.

Comment:

One comment suggested that the surcharge set at 37 CFR 1.20(m) for accepting a maintenance fee after expiration of the patent should be reduced from $500.00 to $50.00 and that this amount should be reduced by 50 percent for small entities.

Reply:

The suggestion has not been adopted. The surcharge set at 37 CFR 1.20(m) is considered to be appropriate in view of the importance of the relief being obtained. Before a surcharge under 37 CFR 1.20(m) is due the patent will have already expired due to the failure to pay a maintenance fee within a one-year period provided for the payment. Setting a lower amount as the surcharge would tend to denigrate the importance of the relief obtained by the acceptance of a maintenance fee after expiration of a patent. Further, a lower surcharge amount is not justified in view of the ample opportunity for payment of the maintenance fee which is presented by the one-year period in which payment can be made and the fact that the public is now on notice that maintenance fees are due and payable. Further, the Patent and Trademark Office will provide courtesy notices regarding the need to pay maintenance fees at a plurality of points in time before the patent expires. Such a notice now appears on the patent grant and presently plans are to print such a courtesy notice on the Notice of Allowance and the Issue Fee Receipt. Notices will be printed in the *Official Gazette* listing the patent number ranges of patents on which maintenance fees can be paid and a notice will be mailed to the patentee during the grace period if the maintenance fee is not paid. Therefore, relatively few patentees should fail to pay the maintenance fee before expiration of the patent due to unavoidable circumstances. The surcharge set at 37 CFR 1.20(m) is established pursuant to 35 U.S.C. 41(c) and therefore the small entity provisions of Public Law 97-247 do not apply to this fee. Also, Public Law 97-247 provides that the surcharge set at 37 CFR 1.20(m) could be in addition to any surcharge established for payment of the maintenance fee during the grace period as set at 37 CFR 1.20(1). The Patent and Trademark Office has established a separate surcharge set at 37 CFR 1.20(m) not in addition to the surcharge set at 37 CFR 1.20(1), but in lieu thereof. The amount set at 37 CFR 1.20(m) is not seen to be excessive.

Comment:

Two comments suggested that the small entity reduced fee provisions of Public Law 97-247 should have been applied to maintenance fees required under Public Law 96-517.

Reply:

The maintenance fee amounts under Public Law 96-517 set at 37 CFR 1.20(e)-(g) were previously set and are not part of the present rulemaking. It should be noted, however, that Public Law 96-517 did not provide for reduction of fees for small entities. Reductions of fees for small entities were established in Public Law 97-247 only for fees under 35 U.S.C. 41(a) and (b) thereof. The maintenance fee levels in 37 CFR 1.20(e)-(g), however, were established under 35 U.S.C. 41(c) of Public Law 96-517 rather than 35 U.S.C. 41(a) or (b) of Public Law 97-247. Therefore, the fee amounts previously set at 37 CFR 1.20(e)-(g) are not seen to be subject to reduction for small entities.

Comment:

One comment suggested that the Office permit any of the maintenance fees to be paid in advance, either at the time of paying the issue fee or during any of the window periods. Another comment suggested that the Office should accept a fee payment earlier than the window period if the fee has no possibility of being changed due to changes in the Consumer Price Index.

Reply:

These suggestions have not been adopted. The second comment listed above points out the problem with regard to the suggestion in the first comment. Public Law 97-247 provided for adjustments of the maintenance fees every third year to reflect any fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Allowing maintenance fees to be paid in advance would preclude such adjustments to these maintenance fees unless very burdensome administrative steps were implemented to require adjustments in the fee amount previously paid when the maintenance fees are adjusted at a later time. Requiring maintenance fees to be paid in a consistently time-ordered basis as in §1.362 will also be helpful administratively and for budgeting purposes. As to the second comment above, it is not seen that there would be substantial benefit to the public since the period would be short during which a maintenance fee could not change due to changes in the Consumer Price Index. Thus, the patentee would only be able to make the maintenance fee payment a short time before the period during which payment may be made pursuant to §1.362.

Comment:

Two comments suggested that a maintenance fee payment made during the window period should not require adjustment if the maintenance fees are thereafter increased to reflect increases in the Consumer Price Index.

Reply:

These comments have been adopted by an appropriate change in paragraph (b) of §1.366. Maintenance fees which are paid during the window period in the amount required on the date of payment will be accepted as proper and full payment. If the maintenance fees change after such a proper payment, no adjustment in the amount will be required or permitted. Thus, if the maintenance fee increases before the close of the window period, the patentee will not be required to make up any deficiency between the amount properly paid during the window period and the new increased fee. Likewise, if the maintenance fee decreases before the close of the window period, no refund will be permitted of part of the maintenance fee properly paid in the amount due when the payment was made. Payments must be made in the amount proper on the date of payment. For example, if payment is made during the grace period, the payment must be made in the amount then required irrespective of the amount of the maintenance fee which would have been due if payment had been made during the window period.

Comment:

Three comments were directed to the proposed requirements in §1.366(c) for data identifying the patent upon which maintenance fee payments are being made.

One comment indicated that many computer annuity systems now existing have a data base designed to accept only two identifying numbers. This comment and one other comment suggested that the patent number and issue date be required to be submitted with the maintenance fee to identify the patent number. Another comment suggested that the required identifying data be the patent number, issue date, name of the inventor and title of the invention.

Reply:

The suggested changes to the proposed rule have been adopted in part. The requirement for identifying data to uniquely identify the patent for which maintenance fees are being paid is an important one. The Patent and Trademark Office and the public must be able to determine with certainty which patents are in force and which patents have expired because the maintenance fees were not paid. The comments seem to recognize that at least two identifiers are necessary so that a cross-check can be made to avoid errors. The suggested use of the issue date with the patent number would not provide a reliable cross-check. In excess of one thousand patents usually issue on each issue date. Therefore a mistake in the last four digits in the patent number supplied with the maintenance fee payment would often not be detected by use of the issue date as a cross-check. The Patent and Trademark Office has determined that the two best identifying data units for use as a cross-check are the patent number and the application serial number. These identifiers are unique since each is specific to one patent or application and are thus required to be provided with a maintenance fee payment by the final rule. The application serial number and the patent number are both listed on the issued patent and in the *Official Gazette* and therefore should be readily available to patentees.

Comment:

One comment suggested that no petition fee should be charged for filing a petition under 37 CFR 1.377 seeking review of a decision refusing to accept and record payment of a maintenance fee filed prior to expiration of a patent. The comment further suggested that, if a fee is charged, the filing of a petition thereunder should be presumed to be a request for a return of the petition fee if it is determined that the refusal to accept and record a maintenance fee payment was due to Patent and Trademark Office error.

Reply:

The suggestion that no petition fee be charged has not been adopted. The petition fee, although required in advance, will be retained by the Patent and Trademark Office only in those instances where the refusal to accept and record the fee resulted from an error on the part of someone other than the Patent and Trademark Office. In those instances where the refusal to accept and record the fee resulted from a Patent and Trademark Office error the Office intends to refund the petition fee, either based upon the request included in the petition or upon the initiative of the Office. The reason for including a request for a refund, where appropriate, in the petition is to ensure that such request is not inadvertently overlooked. In view of the expense involved, it would be inappropriate to process a petition without a petition fee where the error necessitating the petition was made by the petitioner or someone acting on behalf of the patentee.

Comment:

One comment suggested that the term "unavoidable" should be more specifically defined in 37 CFR 1.378(b)(3) and (c)(3), if possible.

Reply:

As stated in this rulemaking, the requirement that the delay in payment of the maintenance fee be "unavoidable" is the same as that for reviving an abandoned application under 35 U.S.C. 133. This standard has been in effect for many years and should be well understood by the public. The rule is seen to be adequate as written, especially in view of the discussion in this rulemaking which includes several specific examples based on when the petition to accept the delayed payment of a maintenance fee is filed.

Comment:

One comment suggested that Public Law 97-247 should be "liberally interpreted" to permit acceptance of delayed payments of maintenance fees required under Public Law 96-517. Proposed 37 CFR 1.378 was limited to patents issuing on applications filed on or after Aug. 27, 1982, the effective date of Public Law 97-247.

Reply:

The final rule has not been changed from the proposal. The remedy suggested by the comment cannot be provided in view of the language of 35 U.S.C. 41(c)(1) which applies only to maintenance fees required by 35 U.S.C. 41(b) of Public Law 97-247. Section 17(a) of Public Law 97-247 clearly states "the maintenance fees provided for in section 3(b) of this Act shall not apply to patents applied for prior to the date of enactment of this Act."

Comment:

Several of the comments received were directed to proposed statutory changes which were said to be desirable in the area of maintenance fees.

Reply:

These comments were not suggesting that the proposed rules were not in compliance with the present statutes, but rather that the statutes themselves should be changed. These comments are beyond the scope and purpose of this rule change.

Implementation of Maintenance Fee Payment Procedures

The Patent and Trademark Office is presently developing its internal working procedures for processing maintenance fee payments and for notifying the public as to the status of maintenance fee payments on particular patents. The first maintenance fees become due early in 1985. In order to be as helpful as possible in informing the public as to the Patent and Trademark Office's current plans it is useful to outline the basic procedures the Patent and Trademark Office intends to adopt to process maintenance fees so that the interrelationship with the rules is understood. These basic procedures are subject to change as experience and circumstances dictate.

Notices by the Patent and Trademark Office

Under the statutes, the Patent and Trademark Office has no duty to notify patentees when their maintenance fees are due. It is the responsibility of the patentee to assure that the maintenance fees are paid to prevent expiration of the patent. The Patent and Trademark Office will, however, provide some notices as reminders that maintenance fees are due, but the notices, errors in the notices, or the lack of notices, will in no way relieve a patentee from the responsibility to make timely payment of each maintenance fee to prevent the patent from expiring by operation of law. The notices provided by the Patent and Trademark Office will be merely courtesy in nature and intended to aid patentees. These notices, errors in these notices, or the lack of notices, will in no way shift the burden of monitoring the time for paying maintenance fees on patents from the patentee to the Patent and Trademark Office.

Preprinted Standard Notice Wording

The patent grant currently includes a reminder that maintenance fees may be due. The Notice of Allowance and Issue Fee Receipt are presently planned to be revised to contain reminder notice wording that maintenance fees may be due.

Official Gazette Notice

A notice will appear in each issue of the *Office Gazette* which will indicate which patents have been

granted 3, 7 and 11 years earlier, that the window period has opened and that maintenance fee payments will now be accepted for these patents.

Another *Official Gazette* notice published after expiration of the grace period will indicate any patent which has expired due to non-payment of maintenance fees and any patents which have been revived under 35 U.S.C. 41(c). An annual compilation of such expirations and revivals will also be published.

Courtesy Reminder Notice

Since patentees are expected to maintain their own record systems and since most patentees are expected to pay their maintenance fees during the "window period" to prevent payment of a surcharge, the Office will not send any reminder notices to patentees at the fee address until after the grace period has begun. This will reduce and simplify the mailing of notices but still give patentees an opportunity to pay their maintenance fees with surcharge during the grace period before expiration of their patents. Such notices will be mailed to the fee address as set forth in §1.363.

Action Notices

The Office wil issue a receipt for payment of maintenance fees after entry of the maintenance fee payment. Such a receipt will provide an opportunity for the patentee to check if the Office has properly credited the payment. The original document submitted by the patentee when paying the maintenance fee will also be appropriately marked and returned to the fee address. If actual experience indicates that they are not needed, the receipt notices and/or the return of the original document may be discontinued.

The patentee will also be notified by mail at the fee address as set forth in §1.363 of any expiration or revival of the patent.

Fee Address

The patentee may provide the Patent and Trademark Office with a fee address under §1.363, which address may be different from the correspondence address under §1.33, when submitting the issue fee or in a separate later-filed paper. The fee address will be used by the Office for all correspondence directed to the patentee concerning maintenance fees. If no separate fee address is provided by the patentee under §1.363, the correspondence address under §1.33 will also be used for maintenance fee purposes.

Payment of Maintenance Fees

Transmittals of maintenance fees may be limited to a single patent or may involve several patents. If a transmittal involves several patents they should be listed in increasing numerical order. The following format is suggested for use when paying maintenance fees and any necessary surcharges. Although only the mandatory identification elements consisting of the patent number and United States application serial number, set forth in §1.366(c) are required, the items referred to in §1.366(d) should also be included to expedite processing of maintenance fees and any necessary surcharges. In addition, the indication of the fee code used by the Patent and Trademark Office would assist in proper financial crediting within the Office. It is also suggested that the telephone number of the person submitting the payment be supplied.

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or conservation of energy resources.

The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354). Public Law 97-247 has taken into consideration the impact it may have on small entities.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no siginificant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

February 22, 1987

Commissioner of Patents and Trademarks
Box M. Fee
Washington, D.C. 20231

Dear Sir:

Enclosed is a check drawn for the amount of $1,500 for the payment of the maintenance fees on the following patents.

Patent Number	Serial Number	Patent Date	Application Filing Date	Payment Year	Small Entity	Amount Paid	Surcharge	Fee Code
P.P.5,188	380,062	Feb. 7, 1984	May 20, 1981	4	—	$ 200.00	—	170
Re. 31,522	481,494	Feb. 14, 1984	April 1, 1983	4	—	$ 200.00	$100.00	170/176
*(4,374,741)	—	(Feb. 22, 1983)	(July 21, 1981)	—	—	—	—	—
4,429,419	339,620	Feb. 7, 1984	Jan. 15, 1982	4	—	$ 200.00	—	170
4,429,433	412,101	Feb. 7, 1984	Aug. 27, 1982	4	No	$ 400.00	—	173
4,429,439	458,474	Feb. 7, 1984	Jan. 17, 1983	4	Yes	$ 200.00	—	273
**4,432,000	380,681	Feb. 14, 1984	Aug. 26, 1981	4	—	$ 200.00	—	170
				Subtotals		$ 1,400.00	$100.00	
				Total Amount Paid		$1,500.00		

The Commissioner is hereby authorized to charge any deficiency in the required fee or to credit any overpayment to Account No. 12-3456.

Respectfully submitted,

John Doe
(703) 557-3054

*Note: Information from original patent is included in parenthesis for the reissue patent for which payment is being made.

**Note: Application filing Date is the PCT International Filing Date.

The maintenance fee payment information collection requirement contained in the final rules has been submitted to OMB for review under Section 3504(h) of the Paperwork Reduction Act. Comments relating to this requirement should be directed to the Office of Information and Regulatory Affairs of OMB, Attention: Desk Officer for Commerce, Patent and Trademark Office.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations (government agencies), Conflict of interests, Courts, Inventions and patents, Lawyers.

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, Pub. L. 96-517 and Pub. L. 97-247, the Patent and Trademark Office is amending Title 37 of the Code of Federal Regulations as set forth below.

Part I [Amended]

37 CFR, Part I, is amended as follows:

1. Section 1.1 is amended by adding a new paragraph (d) to read as follows:

§1.1 All communications to be addressed to Commissioner of Patents and Trademarks.

* * * * *

(d) Payments of maintenance fees in patents and other communications relating thereto should be additionally marked "Box M. Fee."

§1.9 [Amended]

2. Paragraph (d) of §1.9 is amended by changing the citation "13 CFR 121.3-18, published on Sept. 30, 1982 at 47 FR 43273." to "13 CFR 121.12." and by changing the words "§121.3-18 Definition of small business for paying reduced patent fees under Title 35, U.S. Code" to "§121.12 Small business for paying reduced patent fees."

3. Section 1.17 is amended by adding to the end of paragraph (h) the following:

§1.17 Patent application processing fees.

* * * * *

(h) * * *

- §1.377 - for review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of patent

- §1.378(e) - for reconsideration of decision on petition refusing to accept delayed payment of maintenance fee in expired patent

4. Section 1.19 is amended by adding new paragraphs (f) and (g) to read as follows:

§1.19 Document supply fees.

* * * * *

(f) Microfiche copy of patent file record $10.00

(g) Uncertified statement as to status of the payment of maintenance fees due on a patent or expiration of a patent . . . . . $ 3.00

5. Section 1.20 is amended by adding new paragraphs (k), (l), and (m) to read as follows:

§1.20 Post-issuance fees.

* * * * *

(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . $100.00

(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9 (f)) . . . . . $ 50.00

By other than a small entity $100.00

(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable $500.00

6. Section 1.33 is amended by adding a new paragraph (d) to read as follows:

§1.33 Correspondence respecting patent applications, reexamination proceedings, and other proceedings.

* * * * *

(d) A "correspondence address" or change thereto may be filed with the Patent and Trademark Office during the enforceable life of the patent. The "correspondence address" will be used in any correspondence relating to maintenance fees unless a separate "fee address" has been specified. See §1.363 for "fee address" used solely for maintenance fee purposes.

7. A new center heading and §1.362 is added to Subpart B to read as follows:

Maintenance Fees

§1.362 Time for payment of maintenance fees.

(a) Maintenance fees as set forth in §1.20(e)-(j) are required to be paid in all patents based on applications filed on or after Dec. 12, 1980, except as noted in paragraph (b) of this section, to maintain a patent in force beyond 4, 8 and 12 years after the date of grant.

(b) Maintenance fees are not required for plant patents based on applications filed on or after Aug. 27, 1982 or for any design patents. Maintenance fees are not required for a reissue patent if the patent being reissued did not require maintenance fees.

(c) The application filing dates for purposes of payment of maintenance fees are as follows:

(1) For an application not claiming benefit of an earlier application, the actual United States filing date of the application.

(2) For an application claiming benefit of an earlier foreign application under 35 U.S.C. 119, the United States filing date of the application.

(3) For a continuing (continuation, division, continuation-in-part) application claiming the benefit of a prior patent application under 35 U.S.C. 120, the actual United States filing date of the continuing application.

(4) For a reissue application, the United States filing date of the original non-reissue application on which the patent reissued is based.

(5) For an international application which has entered the United States as a Designated Office under 35 U.S.C. 371, the international filing date granted under Article 11(1) of the Patent Cooperation Treaty which is considered to be the United States filing date under 35 U.S.C. 363.

(d) Maintenance fees may be paid in patents without surcharge during the periods extending respectively from:

(1) 3 years through 3 years and 6 months after grant for the first maintenance fee,

(2) 7 years through 7 years and 6 months after grant for the second maintenance fee, and

(3) 11 years through 11 years and 6 months after grant for the third maintenance fee.

(e) Maintenance fees may be paid with the surcharge set forth in §1.20(k) or (l) during the respective grace periods after:

(1) 3 years and 6 months and through the day of the 4th anniversary of the grant for the first maintenance fee,

(2) 7 years and 6 months and through the day of the 8th anniversary of the grant for the second maintenance fee, and

(3) 11 years and 6 months and through the day of the 12th anniversary of the grant for the third maintenance fee.

(f) If the last day for paying a maintenance fee without surcharge set forth in paragraph (d) of this section, or the last day for paying a maintenance fee with sur-

charge set forth in paragraph (e) of this section, falls on a Saturday, Sunday, or a federal holiday within the District of Columbia, the maintenance fee and any necessary surcharge may be paid under paragraph (d) or paragraph (e) respectively on the next succeeding day which is not a Saturday, Sunday, or federal holiday.

(g) Unless the maintenance fee and any applicable surcharge is paid within the time periods set forth in paragraphs (d), (e) or (f) of this section, the patent will expire as of the end of the grace period set forth in paragraph (e) of this section. A patent which expires for the failure to pay the maintenance fee will expire at the end of the same date (anniversary date) the patent was granted in the 4th, 8th, or 12th year after grant.

8. A new §1.363 is added to Subpart B to read as follows:

§1.363 Fee address for maintenance fee purposes.

(a) All notices, receipts, refunds, and other communications relating to payment or refund of maintenance fees will be directed to the correspondence address used during prosecution of the application as indicated in §1.33(a) unless:

(1) a "fee address" for purposes of payment of maintenance fees is set forth when submitting the issue fee, or

(2) a change in the correspondence address for all purposes is filed after payment of the issue fee, or

(3) a "fee address" or a change in the "fee address" is filed for purposes of receiving notices, receipts and other correspondence relating to the payment of maintenance fees after the payment of the issue fee, in which instance, the latest such address will be used.

(b) An assignment of a patent application or patent does not result in a change of the "correspondence address" or "fee address" for maintenance fee purposes.

9. A new §1.366 is added to Subpart B to read as follows:

§1.366 Submission of maintenance fees.

(a) The patentee may pay maintenance fees and any necessary surcharges, or any person or organization may pay maintenance fees and any necessary surcharges on behalf of a patentee. Authorization by the patentee need not be filed in the Patent and Trademark Office to pay maintenance fees and any necessary surcharges on behalf of the patentee.

(b) A maintenance fee and any necessary surcharge submitted for a patent must be submitted in the amount due on the date the maintenance fee and any necessary surcharge are paid and may be paid in the manner set forth in §1.23 or by an authorization to charge a deposit account established pursuant to §1.25. Payment of a maintenance fee and any necessary surcharge or the authorization to charge a deposit account must be submitted within the periods set forth in §1.362(d), (e) or (f). Any payment or authorization of maintenance fees and surcharges filed at any other time will not be accepted and will not serve as a payment of the maintenance fee except insofar as a delayed payment of the maintenance fee is accepted by the Commissioner in an expired patent pursuant to a petition filed under §1.378. Any authorization to charge a deposit account must authorize the immediate charging of the maintenance fee and any necessary surcharge to the deposit account. Payment of less than the required amount, payment in a manner other than that set forth in §1.23, or the filing of an authorization to charge a deposit account having insufficient funds will not constitute payment of a maintenance fee or surcharge on a patent. The certificate of mailing procedures of either §1.8 or §1.10 may be utilized in paying maintenance fees and any necessary surcharges.

(c) In submitting maintenance fees and any necessary surcharges, identification of the patents for which maintenance fees are being paid must include the following:

(1) the patent number, and

(2) the serial number of the United States application for the patent on which the maintenance fee is being paid.

(d) Payments of maintenance fees and any surcharges should identify the fee being paid for each patent as to whether it is the 3½, 7½ or 11½ year fee, whether small entity status is being changed or claimed, the amount of the maintenance fee and any surcharge being paid, any assigned payor number, the patent issue date and the United States application filing date. If the maintenance fee and any necessary surcharge is being paid on a reissue patent, the payment must identify the reissue patent by reissue patent number and reissue application serial number as required by paragraph (c) of this section and should also include the original patent number, the original patent issue date and the original United States application filing date.

(e) Maintenance fee payments and surcharge payments relating thereto must be submitted separate from any other payments for fees or charges, whether submitted in the manner set forth in §1.23 or by an authorization to charge a deposit account. If maintenance fee and surcharge payments for more than one patent are submitted together, they should be submitted on as few sheets as possible with the patent numbers listed in increasing patent number order. If the payment submitted is insufficient to cover the maintenance fees and surcharges for all the listed patents, the payment will be applied in the order the patents are listed, beginning at the top of the listing.

(f) Notification of any change in status resulting in loss of entitlement to small entity status must be filed in a patent prior to paying, or at the time of paying, the earliest maintenance fee due after the date on which status as a small entity is no longer appropriate. See §1.28(b).

(g) Maintenance fees and surcharges relating thereto will not be refunded except in accordance with §§1.26 and 1.28(a).

10. A new §1.377 is added to Subpart B to read as follows:

§1.377 Review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of patent.

(a) Any patentee who is dissatisfied with the refusal of the Patent and Trademark Office to accept and record a maintenance fee which was filed prior to the expiration of the patent may petition the Commissioner to accept and record the maintenance fee.

(b) Any petition under this section must be filed within 2 months of the action complained of, or within such other time as may be set in the action complained of, and must be accompanied by the fee set forth in §1.17(h). The petition may include a request that the petition fee be refunded if the refusal to accept and record the maintenance fee is determined to result from an error by the Patent and Trademark Office.

(c) Any petition filed under this section must comply with the requirements of paragraph (b) of §1.181 and must be signed by an attorney or agent registered to practice before the Patent and Trademark Office, or by the patentee, the assignee, or other party in interest. Such petition must be in the form of a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

11. A new §1.378 is added to Subpart B to read as follows:

§1.378 Acceptance of delayed payment of maintenance fee in expired patent to reinstate patent based on application filed on or after Aug. 27, 1982.

(a) The Commissioner may accept the payment of any maintenance fee due on a patent based on an application filed on or after Aug. 27, 1982, after expiration of the patent if, upon petition, the delay in payment of the maintenance fee is shown to the satisfaction of the Commissioner to have been unavoidable and if the surcharge required by §1.20(m) is paid as a condition of accepting payment of the maintenance fee. If the Commissioner accepts payment of the maintenance fee upon petition, the patent shall be considered as not having expired, but

will be subject to the conditions set forth in 35 U.S.C. 41(c) (2).

(b) Any petition to accept the delayed payment of a maintenance fee filed under paragraph (a) of this section within six months of the expiration of the patent must include:

(1) the required maintenance fee set forth in §1.20(h)-(j);

(2) the surcharge set forth in §1.20(m); and

(3) a showing that the delay was unavoidable since reasonable care was taken to ensure that the maintenance fee would be paid timely. The showing must enumerate the steps taken to ensure timely payment of the maintenance fee.

(c) Any petition to accept the delayed payment of a maintenance fee filed under paragraph (a) of this section more than six months after the expiration of the patent must include:

(1) the required maintenance fee set forth in §1.20(h)-(j);

(2) the surcharge set forth in §1.20(m); and

(3) a showing that the delay was unavoidable since reasonable care was taken to ensure that the maintenance fee would be paid timely and the failure to timely pay the maintenance fee was due entirely to circumstances outside of the control of the patentee. The showing must enumerate the steps taken to ensure timely payment of the maintenance fee and the circumstances which were outside of the control of the patentee and those acting on behalf of the patentee in paying the maintenance fee. The showing must be sufficient in scope and content to meet the heavy burden of proof required to show that a delay in payment of the maintenance fee of more than six months after expiration of the patent was unavoidable.

(d) Any petition under this section must be signed by an attorney or agent registered to practice before the Patent and Trademark Office, or by the patentee, the assignee, or other party in interest. Such petition must be in the form of a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

(e) Reconsideration of a decision refusing to accept a maintenance fee upon petition filed pursuant to paragraph (a) of this section may be obtained by filing a petition for reconsideration within two months of, or such other time as set in, the decision refusing to accept the delayed payment of the maintenance fee. Any such petition for reconsideration must be accompanied by the petition fee set forth in §1.17(h). After decision on the petition for reconsideration, no further reconsideration or review of the matter will be undertaken by the Commissioner. If the delayed payment of the maintenance fee is not accepted, the maintenance fee and the surcharge set forth in §1.20(m) will be refunded following the decision on the petition for reconsideration, or after the expiration of the time for filing such a petition for reconsideration, if none is filed. The fee set forth in §1.17(h) for filing the petition for reconsideration will not be refunded unless the refusal to accept and record the maintenance fee is determined to result from an error by the Patent and Trademark Office.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

July 30, 1984.

[1046 O.G. 28]

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(52) Revision of Patent and Trademark Fees

The purpose of this notice is to remind the public of changes in patent and trademark fees, effective Oct. 1, 1982, pursuant to Public Law 97-247, enacted Aug. 27, 1982. A final rule on "Revision of Patent and Trademark Fees" was published on July 30, 1982, at 47 FR 33086-33112 with corrections in the printing thereof being published on Aug. 4, 1982, at 47 FR 33688 and on Aug. 5, 1982, at 47 FR 33959. The final rule was also published in the Patent and Trademark Office Official Gazette on Aug. 10, 1982, at 1021 O.G. 19-94. In view of the enactment of Public Law 97-247, the "Alternative A—Rule Changes Under Only Public Law 96-517" relating to both patents and trademarks will *not* become effective. Instead, the "Rule Changes Common To Public Law 96-517 and H.R. 6260" and "Alternative B—Rule Changes Under H.R. 6260" will become effective for other patents and trademarks on Oct. 1, 1982. H.R. 6260 is now Public Law 97-247.

The Patent and Trademark Office has recieved a number of questions regarding the implementation of the changes in fees. The final rule published in the Federal Register on July 30, 1982, and in the Official Gazette on Aug. 10, 1982, contains implementing instructions which should be carefully read and followed. The final rule includes in the implementing instructions the following.

> *"Any fee which is due and payable on or after Oct. 1, 1982, must be paid in the amont and in accordance with the procedures contained in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing under §1.8 will be considered to be the date of receipt in the Office."*

A "Certificate of Mailing under §1.8" is *not* "proper" for items which are specifically excluded from the provisions of §1.8. Section 1.8 of Title 37, Code of Federal Regulations, should be consulted for those items for which a Certificate of Mailing is *not* "proper." Such items include, *inter alia*, the filing of national and international applications for patent and the filing of trademark applications. Any application for patent or trademark filed, i.e., received in the Office, on or after Oct. 1, 1982, must include the fees which are effective on Oct. 1, 1982, since §1.8 does not apply to, and specifically excludes from its provisions, the filing of applications for patents and trademarks.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Sept. 14, 1982.

[1022 O.G. 59]

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(53) Filing of Verified Statements Claiming Small Entity Status

In view of the fact that the rules implementing the definition of small business concern were not published in the Federal Register until Sept. 30, 1982, any verified statement claiming small entity status will be accepted as timely filed if (1) the first fee in a patent application has been paid on or after Oct. 1, 1982, but before Feb. 27, 1983, in the amount established for a non-small entity and (2) such verified statement is filed within 3 months of the date of payment of the first fee in a patent application paid on or after Oct. 1, 1982, but before Feb. 27, 1983. If such a verified statement is timely filed within three months of the date of payment of the first fee paid on or after Oct. 1, 1982, but before Feb. 27, 1983, the statement will be treated as though it were present on the date the fee was paid. The correct amount of the fee will be determined and any excess will be refunded upon request. Section 1.28(a) of 37 CFR is waived until Feb. 27, 1983 to the extent it is inconsistent with this practice.

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

Oct. 15, 1982.

[1023 O.G. 77]

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(54) Effect on Small Entity Status of License Pursuant to 35 USC 202(c) (4)

Public Law 96-517 added a new chapter 38 to Title 35 of the United States Code entitled "Patent Rights in Inventions Made With Federal Assistance." Under the provisions of the statute, each funding agreement between a Federal agency and an individual, small business firm or nonprofit organization must provide, inter alia, that ". . . the Federal agency shall have a nonexclusive,

nontransferable, irrevocable, paid up license to practice or have practiced for or on behalf of the United States any subject invention . . ." See 35 U.S.C. 202(c) (4).

Under provisions of 37 CFR 1.9 and 1.27, an independent inventor, small business concern or nonprofit organization cannot qualify for reduced patent fees if it has assigned, granted, conveyed or licensed or is under an obligation under contract or law to assign, grant, convey or license any rights in the invention to other than an individual who could be classified as an independent inventor if that person had made the invention, a small business concern or a nonprofit organization. The Federal agencies do not qualify as nonprofit organizations for paying reduced patent fees under the rules. Applying this construction to the licensing of an invention to a Federal agency by an independent inventor, small business concern or nonprofit organization pursuant to a funding agreement under 35 U.S.C. 202(c) (4) would preclude their qualifying for paying reduced fees. This, however, would frustrate the intent of Public Law 97-247 and Public Law 96-517 when taken together.

This notice will serve as clarification that an independent inventor, small business concern or nonprofit organization, which is otherwise qualified as a small entity for purposes of paying reduced patent fees under 37 CFR 1.9 and 1.27, is not disqualified therefrom because of a license to a Federal agency pursuant to 35 U.S.C. 202(c) (4). A license to a Federal agency resulting from a funding agreement with that agency pursuant to 35 U.S.C. 202(c) (4) does not constitute a license for purposes of 37 CFR 1.9 or a transfer of rights for purposes of 37 CFR 1.27. Any other license or rights to a Federal agency will, of course, preclude qualification as a small entity for purposes of paying reduced fees.

Applicants who have previously paid fees which were not reduced for small entity status because of a license to a Federal agency pursuant to 35 U.S.C. 202(c) (4) may claim a refund by filing the proper verified statement as required by 37 CFR 1.27 and by making reference to this notice.

Jan. 14, 1983.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[1027 OG 71]

(55)

Public Law 96-517
96th Congress
An Act

Dec. 12, 1980
[H.R. 6933]
Patent and trademark laws, amendment.

To amend the patent and trademark laws.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That title 35 of the United States Code, entitled "Patents", is amended by adding after chapter 29 the following new chapter 30:

"CHAPTER 30-PRIOR ART CITATIONS TO OFFICE AND REEXAMINATION OF PATENTS

" Sec.
"301. Citation of prior art.
"302. Request for reexamination.
"303. Determination of issue by Commissioner.
"304. Reexamination order by Commissioner.
"305. Conduct of reexamination proceedings.
"306. Appeal.
"307. Certificate of patentability, unpatentability, and claim cancellation.

35 USC 301.

"§ 301. Citation of prior art

Any person at any time may cite to the Office in writing prior art consisting of patents or printed publications which that person believes to have a bearing on the patentability of any claim of a particular patent. If the person explains in writing the pertinency and manner of applying such prior art to at least one claim of the patent, the citation of such prior art and the explanation thereof will become a part of the official file of the patent. At the written request of the person citing the prior art, his or her identity will be excluded from the patent file and kept confidential.

35 USC 302.

"§ 302. Request for reexamination

"Any person at any time may file a request for reexamination by the Office of any claim of a patent on the basis of any prior art cited under the provisions of section 301 of this title. The request must be in writing and must be accompanied by payment of a reexamination fee established by the Commissioner of Patents pursuant to the provisions of section 41 of this title. The request must set forth the pertinency and manner of applying cited prior art to every claim for which reexamination is requested. Unless the requesting person is the owner of the patent, the Commissioner promptly will send a copy of the request to the owner of record of the patent.

Fee.

35 USC 303.

"§ 303. Determination of issue by Commissioner

"(a) Within three months following the filing of a request for reexamination under the provisions of section 302 of this title, the Commissioner will determine whether a substantial new question of patentability affecting any claim of the patent concerned is raised by the request, with or without consideration of other patents or printed publications. On his own initiative, and any time, the Commissioner may determine whether a substantial new question of patentability is raised by patents and publications discovered by him or cited under the provisions of section 301 of this title.

Record.

"(b) A record of the Commissioner's determination under subsection (a) of this section will be placed in the official file of the patent and a copy promptly will be given or mailed to the owner of record of the patent and to the person requesting reexamination, if any.

Refund.

"(c) A determination by the Commissioner pursuant to subsection (a) of this section that no substantial new question of patentability has been raised will be final and nonappealable. Upon such a determination, the Commissioner may refund a portion of the reexamination fee required under section 302 of this title.

"§ 304. Reexamination order by Commissioner 35 USC 304.

"If, in a determination made under the provisions of subsection 303(a) of this title, the Commissioner finds that a substantial new question of patentability affecting any claim of a patent is raised, the determination will include an order for reexamination of the patent for resolution of the question. The patent owner will be given a reasonable period, not less than two months from the date a copy of the determination is given or mailed to him, within which he may file a statement on such question, including any amendment to his patent and new claim or claims he may wish to propose, for consideration in the reexamination. If the patent owner files such a statement, he promptly will serve a copy of it on the person who has requested reexamination under the provisions of section 302 of this title. Within a period of two months from the date of service, that person may file and have considered in the reexamination a reply to any statement filed by the patent owner. That person promptly will serve on the patent owner a copy of any reply filed. Filing period.

"§ 305. Conduct of reexamination proceedings 35 USC 305.

"After the times for filing the statement and reply provided for by section 304 of this title have expired, reexamination will be conducted according to the procedures established for initial examination under the provisions of sections 132 and 133 of this title. In any reexamination proceeding under this chapter, the patent owner will be permitted to propose any amendment to his patent and a new claim or claims thereto, in order to distinguish the invention as claimed from the prior art cited under the provisions of section 301 of this title, or in response to a decision adverse to the patentability of a claim of a patent. No proposed amended or new claim enlarging the scope of a claim of the patent will be permitted in a reexamination proceeding under this chapter. All reexamination proceedings under this section, including any appeal to the Board of Appeals, will be conducted with special dispatch within the Office. 35 USC 132, 133.

"§ 306. Appeal 35 USC 306.

"The patent owner involved in a reexamination proceeding under this chapter may appeal under the provisions of section 134 of this title, and may seek court review under the provisions of sections 141 to 145 of this title, with respect to any decision adverse to the patentability of any original or proposed amended or new claim of the patent. 35 USC 134. 35 USC 141–145.

"§ 307. Certificate of patentability, unpatentability, and claim cancellation 35 USC 307.

"(a) In a reexamination proceeding under this chapter, when the time for appeal has expired or any appeal proceeding has terminated, the Commissioner will issue and publish a certificate canceling any claim of the patent finally determined to be unpatentable, confirming any claim of the patent determined to be patentable, and incorporating in the patent any proposed amended or new claim determined to be patentable.

"(b) Any proposed amended or new claim determined to be patentable and incorporated into a patent following a reexamination proceeding will have the same effect as that specified in section 252 of this title for reissued patents on the right of any person who made, purchased, or used anything patented by such proposed amended or new claim, or who made substantial preparation for the same, prior to issuance of a certificate under the provisions of subsection (a) of this section." 35 USC 252.

SEC. 2. Section 41 of title 35, United States Code, is amended to read as follows:

"§ 41. Patent fees 35 USC 41.

"(a) The Commissioner of Patents will establish fees for the processing of an application for a patent, from filing through disposition by issuance or abandonment, for maintaining a patent in force, and for providing all other services and materials related to patents. No fee will be established for maintaining a design patent in force.

"(b) By the first day of the first fiscal year beginning on or after one calendar year after enactment of this Act, fees for the actual processing of an application for a patent, other than for a design patent, from filing through dispostion by issuance or abandonment, will recover in aggregate 25 per centum of the estimated average cost to the Office of such processing. By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for the processing of an application for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 50 per centum of the estimated average cost to the Office of such processing.

" (c) By the fifteenth fiscal year following the date of enactment of this Act, fees for maintaining patents in force will recover 25 per centum of the estimated cost to the Office, for the year in which such maintenance fees are received, of the actual processing all applications for patents, other than for design patents, from filing through disposition by issuance or abandonment. Fees for maintaining a patent in force will be due three years and six months, seven years and six months, and eleven years and six months after the grant of the patent. Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an applicable maintenance fee.

"(d) By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for all other services or materials related to patents will

35 USC 13.

recover the estimated average cost to the Office of performing the service or furnishing the material. The yearly fee for providing a library specified in section 13 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be $50.

Waiver

"(e) The Commissioner may waive the payment of any fee for any service or material related to patents in connection with an occasional or incidental request made by a department or agency of the Government, or any officer thereof. The Commissioner may provide any applicant issued a notice under section 132 of this title with a copy of the specifications and drawings for all patents referred to in that notice without charge.

35 USC 132.

"(f) Fees will be adjusted by the Commissioner to achieve the levels of recovery specified in this section; however, no patent application processing fee or fee for maintaining a patent in force will be adjusted more than once every three years.

Notice.

"(g) No fee established by the Commissioner under this section will take effect prior to sixty days following notice in the Federal Register."

SEC. 3. Section 42 of title 35, United States Code, is amended to read as follows:

35 USC 42.

"§ 42. Patent and Trademark Office funding

"(a) All fees for services performed by or materials furnished by the Patent and Trademark Office will be payable to the Commissioner.

"(b) All fees paid to the Commissioner and all appropriations for defraying the costs of the activities of the Patent and Trademark Office will be credited to the Patent and Trademark Office Appropriation Account in the Treasury of the United States, the provisions of section 725e of title 31, United States Code, notwithstanding.

"(c) Revenues from fees will be available to the Commissioner of Patents to carry out, to the extent provided for in appropriation Acts, the activities of the Patent and Trademark Office.

Refund.

"(d) The Commissioner may refund any fee paid by mistake or any amount paid in excess of that required."

SEC. 4. Section 154 of title 35, United States Code, is amended by deleting the word "issue".

SEC. 5. Section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), is amended to read as follows:

"§ 31. Fees

"(a) The Commissioner of Patents will establish fees for the filing and processing of an application for the registration of a trademark or other mark and for all other services performed by and materials furnished by the Patent and Trademark Office related to trademarks and other marks. Fees will be set and adjusted by the Commissioner to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost to the Office of performing the service or furnishing the material. However, no fee for the filing or processing of an application for the registration of a trademark or other mark or for the renewal or assignment of a trademark or other mark will be adjusted more than once every three years. No fee established under this section will take effect prior to sixty days following notice in the Federal Register.

Notice.

Waiver.

"(b) The Commissioner may waive the payment of any fee for any service or material related to trademarks or other marks in connection with any occasional request made by a department or agency of the Government, or any officer thereof. The Indian Arts and Crafts Board will not be charged any fee to register Government trademarks of genuineness and quality for Indian products or for products of particular Indian tribes and groups."

Indian products, exception.

SEC. 6. (a) Title 35 of the United States Code, entitled "Patents", is amended by adding after chapter 37 the following new chapter 38:

"CHAPTER 38–PATENT RIGHTS IN INVENTIONS MADE WITH FEDERAL ASSISTANCE

"Sec.

"200. Policy and objective.
"201. Definitions.
"202. Disposition of rights.
"203. March-in rights.
"204. Preference for United States industry.
"205. Confidentiality.
"206. Uniform clauses and regulations.
"207. Domestic and foreign protection of federally owned inventions.
"208. Regulations governing Federal licensing.
"209. Restrictions on licensing of federally owned inventions.
"210. Precedence of chapter.
"211. Relationship to antitrust laws.

"§200. Policy and objective.

35 USC 200.

"It is the policy and objective of the Congress to use the patent system to promote the utilization of inventions arising from federally supported research or development; to encourage maximum participation of small business firms in federally supported research and development efforts; to promote collaboration between commercial concerns and nonprofit organizations, including universities; to ensure that inventions made by nonprofit organizations and small business firms are used in

a manner to promote free competition and enterprise; to promote the commercialization and public availability of inventions made in the United States by United States industry and labor; to ensure that the Government obtains sufficient rights in federally supported inventions to meet the needs of the Government and protect the public against nonuse or unreasonable use of inventions; and to minimize the costs of administering policies in this area.

"§201. Definitions

35 USC 201.

"As used in this chapter—

"(a) The term 'Federal agency' means any executive agency as defined in section 105 of title 5, United States Code, and the military departments as defined by section 102 of title 5, United States Code.

"(b) The term 'funding agreement' means any contract, grant, or cooperative agreement entered into between any Federal agency, other than the Tennessee Valley Authority, and any contractor for the performance of experimental, developmental, or research work funded in whole or in part by the Federal Government. Such term includes any assignment, substitution of parties, or subcontract of any type entered into for the performance of experimental, developmental, or research work under a funding agreement as herein defined.

"(c) The term 'contractor' means any person, small business firm, or nonprofit organization that is a party to a funding agreement.

"(d) The term 'invention' means any invention or discovery which is or may be patentable or otherwise protectable under this title.

"(e) The term 'subject invention' means any invention of the contractor conceived or first actually reduced to practice in the performance of work under a funding agreement.

"(f) The term 'practical application' means to manufacture in the case of a composition or product, to practice in the case of a process or method, or to operate in the case of a machine or system; and, in each case, under such conditions as to establish that the invention is being utilized and that its benefits are to the extent permitted by law or Government regulations available to the public on reasonable terms.

"(g) The term 'made' when used in relation to any invention means the conception or first actual reduction to practice of such invention.

"(h) The term 'small business firm' means a small business concern as defined at section 2 of Public Law 85-536 (15 U.S.C 632) and implementing regulations of the Administrator of the Small Business Administration.

"(i) The term 'nonprofit organization' means universities and other institutions of higher education or an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)) and exempt from taxation under section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a)) or any nonprofit scientific or educational organization qualified under a State nonprofit organization statute.

"§202. Disposition of rights

35 USC 202.

"(a) Each nonprofit organization or small business firm may, within a reasonable time after disclosure as required by paragraph (c)(1) of this section, elect to retain title to any subject invention: *Provided, however,* That a funding agreement may provide otherwise (i) when the funding agreement is for the operation of Government-owned research or production facility, (ii) in exceptional circumstances when it is determined by the agency that restriction or elimination of the right to retain title to any subject invention will better promote the policy and objectives of this chapter or (iii) when it is determined by a Government authority which is authorized by statute or Executive order to conduct foreign intelligence or counterintelligence activities that the restriction or elimination of the right to retain title to any subject invention is necessary to protect the security of such activities. The rights of the nonprofit organization or small business firm shall be subject to the provisions of paragraph (c) of this section and the other provisions of this chapter.

Funding agreement.

"(b)(1) Any determination under (ii) of paragraph (a) of this section shall be in writing and accompanied by a written statement of facts justifying the determination. A copy of each such determination and justification shall be sent to the Comptroller General of the United States within thirty days after the award of the applicable funding agreement. In the case of determinations applicable to funding agreements with small business firms copies shall also be sent to the Chief Counsel for Advocacy of the Small Business Administration.

Written determination.

Copy to

Comptroller General.

Copy to SBA.

"(2) If the Comptroller General believes that any pattern of determinations by a Federal agency is contrary to the policy and objectives of this chapter or that an agency's policies or practices are otherwise not in conformance with this chapter, the Comptroller General shall so advise the head of the agency. The head of the agency shall advise the Comptroller General in writing within one hundred and twenty days of what action, if any, the agency has taken or plans to take with respect to the matters raised by the Comptroller General.

Contrary agency determinations.

"(3) At least once each year, the Comptroller General shall transmit a report to the Committees on the Judiciary of the Senate and House of Representatives on the manner in which this chapter is being implemented by the agencies and on such other aspects of Government patent policies and practices with respect to federally funded inventions as the Comptroller General believes appropriate.

Report to congressional committees.

"(c) Each funding agreement with a small business firm or nonprofit organization shall contain appropriate provisions to effectuate the following:

funding agreement requirements.

"(1) A requirement that the contractor disclose each subject invention to the Federal agency within a reasonable time after it is made and that the Federal Government may receive title to any subject invention not reported to it within such time.

"(2) A requirement that the contractor make an election to retain title to any subject invention within a reasonable time after disclosure and that the Federal Government may receive title to any subject invention in which the contractor does not elect to retain rights or fails to elect rights within such time.

"(3) A requirement that a contractor electing rights file patent applications within reasonable times and that the Federal Government may receive title to any subject inventions in the United States or other countries in which the contractor has not filed patent applications on the subject invention within such times.

"(4) With respect to any invention in which the contractor elects rights, the Federal agency shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States any subject invention throughout the world, and may, if provided in the funding agreement, have additional rights to sublicense any foreign government or international organization pursuant to any existing or future treaty or agreement.

"(5) The right of the Federal agency to require periodic reporting on the utilization or efforts at obtaining utilization that are being made by the contractor or his licensees or assignees: *Provided,* That any such information may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under section 552 of title 5 of the United States Code.

"(6) An obligation on the part of the contractor, in the event a United States patent application is filed by or on its behalf or by any assignee of the contractor, to include within the specification of such application and any patent issuing thereon, a statement specifying that the invention was made with Government support and that the Government has certain rights in the invention.

"(7) In the case of a nonprofit organization, (A) a prohibition upon the assignment of rights to a subject invention in the United States without the approval of the Federal agency, except where such assignment is made to an organization which has as one of its primary functions the management of inventions and which is not, itself, engaged in or does not hold a substantial interest in other organizations engaged in the manufacture or sale of products or the use of processes that might utilize the invention or be in competition with embodiments of the invention (provided that such assignee shall be subject to the same provisions as the contractor); (B) a prohibition against the granting of exclusive licenses under United States Patents or Patent Applications in a subject invention by the contractor to persons other than small business firms for a period in excess of the earlier of five years from first commercial sale or use of the invention or eight years from the date of the exclusive license excepting that time before regulatory agencies necessary to obtain premarket clearance unless, on a case-by-case basis, the Federal agency approves a longer exclusive license. If exclusive field of use licenses are granted, commercial sale or use in one field of use shall not be deemed commercial sale or use as to other fields of use, and a first commercial sale or use with respect to a product of the invention shall not be deemed to end the exclusive period to different subsequent products covered by the invention; (C) a requirement that the contractor share royalties with the inventor; and (D) a requirement that the balance of any royalties or income earned by the contractor with respect to subject inventions, after payment of expenses (including payments to inventors) incidental to the administration of subject inventions, be utilized for the support of scientific research or education.

"(8) The requirements of sections 203 and 204 of this chapter.

Rights, retention.

"(d) If a contractor does not elect to retain title to a subject invention in cases subject to this section, the Federal agency may consider and after consultation with the contractor grant requests for retention of rights by the inventor subject to the provisions of this Act and regulations promulgated hereunder.

Rights, transfer or assignment.

"(e) In any case when a Federal employee is a coinventor of any invention made under a funding agreement with a nonprofit organization or small business firm, the Federal agency employing such coinventor is authorized to transfer or assign whatever rights it may acquire in the subject invention from its employee to the contractor subject to the conditions set forth in this chapter.

Third-party licensing, prohibition.

"(f)(1) No funding agreement with a small business firm or nonprofit organization shall contain a provision allowing a Federal agency to require the licensing to third parties of inventions owned by the contractor that are not subject inventions unless such provision has been approved by the head of the agency and a written justification has been signed by the head of the agency. Any such provision shall clearly state whether the licensing may be required in connection with the practice of a subject invention, a specifically identified work object, or both. The head of the agency may not delegate the authority to approve provisions or sign justifications required by this paragraph.

"(2) A Federal agency shall not require the licensing of third parties under any such provision unless the head of the agency determines that the use of the invention by others is necessary for the practice of a subject invention or for the use of a work object of the funding agreement and that such action is necessary to achieve the practical application of the subject invention or work object. Any such determination shall be on the record after an opportunity for an agency hearing. Any ac-

tion commenced for judicial review of such determination shall be brought within sixty days after notification of such determination.

"§203. March-in rights 35 USC 203.

"With respect to any subject invention in which a small business firm or nonprofit organization has acquired title under this chapter, the Federal agency under whose funding agreement the subject invention was made shall have the right, in accordance with such procedures as are provided in regulations promulgated hereunder to require the contractor, an assignee or exclusive licensee of a subject invention to grant a nonexclusive, partially exclusive, or exclusive license in any field of use to a responsible applicant or applicants, upon terms that are reasonable under the circumstances, and if the contractor, assignee, or exclusive licensee refuses such request, to grant such a license itself, if the Federal agency determines that such–

"(a) action is necessary because the contractor or assignee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the subject invention in such field of use;

"(b) action is necessary to alleviate health or safety needs which are not reasonably satisfied by the contractor, assignee, or their licensees;

"(c) action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by the contractor, assignee, or licensees; or

"(d) action is necessary because the agreement required by section 204 has not been obtained or waived or because a licensee of the exclusive right to use or sell any subject invention in the United States is in breach of its agreement obtained pursuant to section 204.

"§204. Preference for United States industry 35 USC 204.

"Notwithstanding any other provision of this chapter, no small business firm or nonprofit organization which receives title to any subject invention and no assignee of any such small business firm or nonprofit organization shall grant to any person the exclusive right to use or sell any subject invention in the United States unless such person agrees that any products embodying the subject invention or produced through the use of the subject invention will be manufactured substantially in the United States. However, in individual cases, the requirement for such an agreement may be waived by the Federal agency under whose funding agreement the invention was made upon a showing by the small business firm, nonprofit organization, or assignee that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible. Waiver.

"§205. Confidentiality 35 USC 205.

"Federal agencies are authorized to withhold from disclosure to the public information disclosing any invention in which the Federal Government owns or may own a right, title, or interest (including a nonexclusive license) for a reasonable time in order for a patent application to be filed. Furthermore, Federal agencies shall not be required to release copies of any document which is part of an application for patent filed with the United States Patent and Trademark Office or with any foreign patent office.

"§206. Uniform clauses and regulations 35 USC 206.

"The Office of Federal Procurement Policy, after receiving recommendations of the Office of Science and Technology Policy, may issue regulations which may be made applicable to Federal agencies implementing the provisions of sections 202 through 204 of this chapter and the Office of Federal Procurement Policy shall establish standard funding agreement provisions required under this chapter.

"§207. Domestic and foreign protection of federally owned inventions 35 USC 207.

"Each Federal agency is authorized to–

"(1) apply for, obtain, and maintain patents or other forms of protection in the United States and in foreign countries on inventions in which the Federal Government owns a right, title, or interest;

"(2) grant nonexclusive, exclusive, or partially exclusive licenses under federally owned patent applications, patents, or other forms of protection obtained, royalty-free or for royalties or other consideration, and on such terms and conditions, including the grant to the licensee of the right of enforcement pursuant to the provisions of chapter 29 of this title as determined appropriate in the public interest; 35 USC 281 *et seq.*

"(3) undertake all other suitable and necessary steps to protect and administer rights to federally owned inventions on behalf of the Federal Government either directly or through contract; and

"(4) transfer custody and administration, in whole or in part, to another Federal agency, of the right, title, or interest in any federally owned invention.

"§208. Regulations governing Federal licensing 35 USC 208.

"The Administrator of General Services is authorized to promulgate regulations specifying the terms and conditions upon which any federally owned invention, other than inventions owned by the Tennessee Valley Authority, may be licensed on a nonexclusive, partially exclusive, or exclusive basis.

"§209. Restrictions on licensing of federally owned inventions 35 USC 209.

"(a) No Federal agency shall grant any license under a patent or patent application on a federally owned invention unless the person requesting the license has sup- Development or marketing plan.

plied the agency with a plan for development and/or marketing of the invention, except that any such plan may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under section 552 of title 5 of the United States Code.

Manufacture in U.S.

"(b) A Federal agency shall normally grant the right to use or sell any federally owned invention in the United States only to a licensee that agrees that any products embodying the invention or produced through the use of the invention will be manufactured substantially in the United States.

"(c)(1) Each Federal agency may grant exclusive or partially exclusive licenses in any invention covered by a federally owned domestic patent or patent application only if, after public notice and opportunity for filing written objections, it is determined that–

"(A) the interests of the Federal Government and the public will best be served by the proposed license, in view of the applicant's intentions, plans, and ability to bring the invention to practical application or otherwise promote the invention's utilization by the public;

"(B) the desired practical application has not been achieved, or is not likely expeditiously to be achieved, under any nonexclusive license which has been granted, or which may be granted, on the invention,

"(C) exclusive or partially exclusive licensing is a reasonable and necessary incentive to call forth the investment of risk capital and expenditures to bring the invention to practical application or otherwise promote the invention's utilization by the public; and

"(D) the proposed terms and scope of exclusivity are not greater than reasonably necessary to provide the incentive for bringing the invention to practical application or otherwise promote the invention's utilization by the public.

Antitrust factors.

"(2) A Federal agency shall not grant such exclusive or partially exclusive license under paragraph (1) of this subsection if it determines that the grant of such license will tend substantially to lessen competition or result in undue concentration in any section of the country in any line of commerce to which the technology to be licensed relates, or to create or maintain other situations inconsistent with the antitrust laws.

Small business preference.

"(3) First preference in the exclusive or partially exclusive licensing of federally owned inventions shall go to small business firms submitting plans that are determined by the agency to be within the capabilities of the firms and equally likely, if executed, to bring the invention to practical application as any plans submitted by applicants that are not small business firms.

Antitrust factors.

"(d) After consideration of whether the interests of the Federal Government or United States industry in foreign commerce will be enhanced, any Federal agency may grant exclusive or partially exclusive licenses in any invention covered by a foreign patent application or patent, after public notice and opportunity for filing written objections, except that a Federal agency shall not grant such exclusive or partially exclusive license if it determines that the grant of such license will tend substantially to lessen competition or result in undue concentration in any section of the United States in any line of commerce to which the technology to be licensed relates, or to create or maintain other situations inconsistent with antitrust laws.

Record.

"(e) The Federal agency shall maintain a record of determinations to grant exclusive or partially exclusive licenses.

Terms and conditions.

"(f) Any grant of a license shall contain such terms and conditions as the Federal agency determines appropriate for the protection of the interests of the Federal Government and the public, including provisions for the following:

"(1) periodic reporting on the utilization or efforts at obtaining utilization that are being made by the licensee with particular reference to the plan submitted: *Provided,* That any such information may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under section 552 of title 5 of the United States Code;

"(2) the right of the Federal agency to terminate such license in whole or in part if it determines that the licensee is not executing the plan submitted with its request for a license and the licensee cannot otherwise demonstrate to the satisfaction of the Federal agency that it has taken or can be expected to take within a reasonable time, effective steps to achieve practical application of the invention;

"(3) the right of the Federal agency to terminate such license in whole or in part if the licensee is in breach of an agreement obtained pursuant to paragraph (b) of this section; and

"(4) the right of the Federal agency to terminate the license in whole or in part if the agency determines that such action is necessary to meet requirements for public use specified by Federal regulations issued after the date of the license and such requirements are not reasonably satisfied by the licensee.

35 USC 210.

"§210. Precedence of chapter

"(a) This chapter shall take precedence over any other Act which would require a disposition of rights in subject inventions of small business firms or nonprofit organizations contractors in a manner that is inconsistent with this chapter, including but not necessarily limited to the following:

"(1) section 10(a) of the Act of June 29, 1935, as added by title I of the Act of Aug. 14, 1946 (7 U.S.C. 427i(a); 60 Stat. 1085);

"(2) section 205(a) of the Act of Aug. 14, 1946 (7 U.S.C. 1624(a); 60 Stat. 1090);

"(3) section 501(c) of the Federal Mine Safety and Health Act of 1977 (30 U.S.C. 951(c); 83 Stat. 742); 91 Stat. 1320.
"(4) section 106(c) of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1395(c); 80 Stat. 721);
"(5) section 12 of the National Science Foundation Act of 1950 (42 U.S.C. 1871(a); 82 Stat. 360); 64 Stat. 154.
"(6) section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182; 68 Stat. 943); 68 Stat. 944.
"(7) section 305 of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457);
"(8) section 6 of the Coal Research Development Act of 1960 (30 U.S.C. 666; 74 Stat. 337);
"(9) section 4 of the Helium Act Amendments of 1960 (50 U.S.C. 167b; 74 Stat. 920);
"(10) section 32 of the Arms Control and Disarmament Act of 1961 (22 U.S.C. 2572; 75 Stat. 634);
"(11) subsection (e) of section 302 of the Appalachian Regional Development Act of 1965 (40 U.S.C. App. 302(e); 79 Stat. 5);
"(12) section 9 of the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5901); 88 Stat. 1878); 88 Stat. 1887. 42 USC 5908.
"(13) section 5(d) of the Consumer Product Safety Act (15 U.S.C. 2054(d); 86 Stat. 1211);
"(14) section 3 of the Act of April 5, 1944 (30 U.S.C. 323; 58 Stat. 191);
"(15) section 8001(c)(3) of the Solid Waste Disposal Act (42 U.S.C. 6981(c); 90 Stat. 2829);
"(16) section 219 of the Foreign Assistance Act of 1961 (22 U.S.C. 2179; 83 Stat. 806);
"(17) section 427(b) of the Federal Mine Health and Safety Act of 1977 (30 U.S.C. 937(b); 86 Stat. 155);
"(18) section 306(d) of the Surface Mining and Reclamation Act of 1977 (30 U.S.C. 1226(d); 91 Stat. 455);
"(19) section 21(d) of the Federal Fire Prevention and Control Act of 1974 (15 U.S.C. 2218(d); 88 Stat. 1548);
"(20) section 6(b) of the Solar Photovoltaic Energy Research Development and Demonstration Act of 1978 (42 U.S.C. 5585(b); 92 Stat. 2516);
"(21) section 12 of the Native Latex Commercialization and Economic Development Act of 1978 (7 U.S.C. 178(j); 92 Stat. 2533); and 7 USC 178j.
"(22) section 408 of the Water Resources and Development Act of 1978 (42 U.S.C. 7879; 92 Stat. 1360). 92 Stat. 1316.
The Act creating this chapter shall be construed to take precedence over any future Act unless that Act specifically cites this Act and provides that it shall take precedence over this Act.

"(b) Nothing in this chapter is intended to alter the effect of the laws cited in paragraph (a) of this section or any other laws with respect to the disposition of rights in inventions made in the performance of funding agreements with persons other than nonprofit organizations or small business firms.

"(c) Nothing in this chapter is intended to limit the authority of agencies to agree to the disposition of rights in inventions made in the performance of work under funding agreements with persons other than nonprofit organizations or small business firms in accordance with the Statement of Government Patent Policy issued on Aug. 23, 1971 (36 Fed. Reg. 16887), agency regulations, or other applicable regulations or to otherwise limit the authority of agencies to allow such persons to retain ownership of inventions. Any disposition of rights in inventions made in accordance with the Statement or implementing regulations, including any disposition occurring before enactment of this section, are hereby authorized. Rights, disposition.

"(d) Nothing in this chapter shall be construed to require the disclosure of intelligence sources or methods or to otherwise affect the authority granted to the Director of Central Intelligence by statute or Executive order for the protection of intelligence sources or methods. Disclosure.

"§211. Relationship to antitrust laws 35 USC 211.

"Nothing in this chapter shall be deemed to convey to any person immunity from civil or criminal liability, or to create any defenses to actions, under any antitrust law."

(b) The table of chapters for title 35, United States Code, is amended by adding immediately after the item relating to chapter 37 the following:

"38. Patent rights in inventions made with Federal assistance."

SEC. 7. AMENDMENTS TO OTHER ACTS.—The following Acts are amended as follows:

(a) Section 156 of the Atomic Energy Act of 1954 (42 U.S.C. 2186; 68 Stat. 947) is amended by deleting the words "held by the Commission or".

(b) The National Aeronautics and Space Act of 1958 is amended by repealing paragraph (g) of section 305 (42 U.S.C. 2457(g); 72 Stat. 436).

(c) The Federal Nonnuclear Energy Research and Development Act of 1974 is amended by repealing paragraphs (g), (h), and (i) of section 9 (42 U.S.C. 5908 (g), (h), and (i); 88 Stat. 1889–1891).

SEC. 8. (a) Sections 2, 4, and 5 of this Act will take effect upon enactment. Effective dates.

(b) Section 1 of this Act will take effect on the first day of the seventh month be- 35 USC 41 note.

ginning after its enactment and will apply to patents in force as of that date or issued thereafter.

(c) Section 3 of this Act will take effect on the first day of the first fiscal year beginning on or after one calendar year after enactment. However, until section 3 takes effect, the Commissioner may credit the Patent and Trademark Office appropriation account in the Treasury of the United States with the revenues from collected reexamination fees, which will be available to pay the costs to the Office of reexamination proceedings.

(d) Any fee in effect as of the date of enactment of this Act will remain in effect until a corresponding fee established under section 41 of title 35, United States Code, or section 1113 of title 15, United States Code, takes effect.

(e) Fees for maintaining a patent in force will not be applicable to patents applied for prior to the date of enactment of this Act.

(f) Sections 6 and 7 of this Act will take effect on the first day of the seventh month beginning after its enactment. Implementing regulations may be issued earlier.

(g) Sections 8 and 9 will take effect on the date of enactment of this Act.

Computerized data and retrieval system, report to Congress
35 USC 14 note.

SEC. 9. The Commissioner of Patents and Trademarks shall report to Congress, within two years after the effective date of this Act, a plan to identify, and if necessary develop or have developed, computerized data and retrieval systems equivalent to the latest state of the art which can be applied to all aspects of the operation of the Patent and Trademark Office, and particularly to the patent search file, the patent classification system, and the trademark search file. The report shall specify the cost of implementing the plan, how rapidly the plan can be implemented by the Patent and Trademark Office, without regard to funding which is or which may be available for this purpose in the future.

SEC. 10. (a) Section 101 of title 17 of the United States Code is amended to add at the end thereof the following new language:

"Computer program."

"A 'computer program' is a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result."

(b) Section 117 of title 17 of the United States Code is amended to read as follows:

17 USC 117.
17 USC 106.

"§117. Limitations on exclusive rights: Computer programs

"Notwithstanding the provisions of section 106, it is not an infringement for the owner of a copy of a computer program to make or authorize the making of another copy or adaptation of that computer program provided:

"(1) that such a new copy or adaptation is created as an essential step in the utilization of the computer program in conjunction with a machine and that it is used in no other manner, or

"(2) that such new copy or adaptation is for archival purposes only and that all archival copies are destroyed in the event that continued possession of the computer program should cease to be rightful.

"Any exact copies prepared in accordance with the provisions of this section may be leased, sold, or otherwise transferred, along with the copy from which such copies were prepared, only as part of the lease, sale, or other transfer of all rights in the program. Adaptations so prepared may be transferred only with the authorization of the copyright owner."

Approved Dec. 12, 1980.

LEGISLATIVE HISTORY:

HOUSE REPORTS: No. 96–1307, Pt. I (Comm. on the Judiciary) and No. 96—1307, Pt. 2 (Comm. on Government Operations).
CONGRESSIONAL RECORD, Vol. 126 (1980):
Nov. 17, considered and passed House.
Nov. 20, considered and passed Senate, amended.
Nov. 21, House concurred in Senate amendment.

(56)

Public Law 97-247
97th Congress
An Act

To authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is authorized to be appropriated for the payment of salaries and necessary expenses of the Patent and Trademark Office to become available for fiscal year 1983, $76,000,000, and in fiscal years 1984 and 1985 such sums as may be necessary as well as such additional or supplemental amounts as may be necessary, for increases in salary, pay, retirement, or other employee benefits authorized by law. Funds available under this section shall be used to reduce by 50 per centum the payment of fees under section 41 (a) and (b) of title 35, United States Code, by independent inventors and nonprofit organizations as defined in regulations established by the Commissioner of Patents and Trademarks, and by

15 USC 632.

small business concerns as defined in section 3 of the Small Business Act and by regulations established by the Small Business Administration. When so specified and the the extent provided in an appropriation Act, any amount appropriated pursuant to this section and, in addition, such fees as shall be collected pursuant to title 35, United States Code, and the Trademark Act of 1946, as amended (15 U.S.C. 1051 et seq.), may remain available without fiscal year limitation.

SEC. 2. Notwithstanding any other provision of law, there is authorized to be appropriated for the payment of salaries and expenses of the Patent and Trademark Office, $121,461,000 for the fiscal year ending September 30, 1982, and such additional or supplemental amounts as may be necessary for increases in salary, pay, retirement, or other employee benefits authorized by law.

SEC. 3. (a) Section 41(a) of title 35, United States Code, is amended to read as follows:

"(a) The Commissioner shall charge the following fees: Fees.

"1. On filing each application for an original patent, except in design or plant cases, $300; in addition, on filing or on presentation at any other time, $30 for each claim in independent form which is in excess of three, $10 for each claim (whether independent or dependent) which is in excess of twenty, and $100 for each application containing a multiple dependent claim. For the purpose of computing fees, a multiple dependent claim as referred to in section 112 of this title or any claim depending therefrom shall be considered as separate dependent claims in accordance with the number of claims to which reference is made. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner. 35 USC 112.

"2. For issuing each original or reissue patent, except in design or plant cases, $500.

"3. In design and plant cases:

"a. On filing each design application, $125.

"b. On filing each plant application, $200.

"c. On issuing each design patent, $175.

"d. On issuing each plant patent, $250.

"4. On filing each application for the reissue of a patent, $300; in addition, on filing or on presentation at any other time, $30. for each claim in independent form which is in excess of the number of independent claims of the original patent, and $10 for each claim (whether independent or dependent) which is in excess of twenty and also in excess of the number of claims of the original patent. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

"5. On filing each disclaimer, $50.

"6. On filing an appeal from the examiner to the Board of Appeals, $115; in addition, on filing a brief in support of the appeal, $115, and on requesting an oral hearing before the Board of Appeals, $100.

"7. On filing each petition for the revival of an unintentionally abondoned application for a patent or for the unintentionally delayed payment of the fee for issuing each patent, $500, unless the petition is filed under sections 133 or 151 of this title, in which case the fee shall be $50. 35 USC 133, 151.

"8. For petitions for one-month extensions of time to take actions required by the Commissioner in an application:

"a. On filing a first petition, $50.

"b. On filing a second petition, $100.

"c. On filing a third or subsequent petition, $200.".

(b) Section 41(b) of title 35, United States Code, is amended to read as follows: Maintenance fees.

"(b) The Commissioner shall charge the following fees for maintaining a patent in force:

"1. Three years and six months after grant, $400.

"2. Seven years and six months after grant, $800.

"3. Eleven years and six months after grant, $1,200.

Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an application maintenance fee. No fee will be established for maintaining a design or plant patent in force." Expiration. Surcharge.

(c) Section 41(c) of title 35, United States Code, is amended to read as follows:

"(c)(1) The Commissioner may accept the payment of any maintenance fee required by subsection (b) of this section after the six-month grace period if the delay is shown to the satisfaction of the Commissioner to have been unavoidable. The Commissioner may require the payment of a surcharge as a condition of accepting payment of any maintenance fee after the six-month grace period. If the Commissioner accepts payment of a maintenance fee after the six-month grace period, the patent shall be considered as not having expired at the end of the grace period. Maintenance fee, delayed payment. Surcharge.

"(2) No patent, the term of which has been maintained as a result of the acceptance of a payment of a maintenance fee under this subsection, shall abridge or affect the right of any person or his successors in business who made, purchased or used after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection anything protected by the patent, to continue the use of, or to sell to others to be used or sold, the specific thing so made, purchased, or used. The court before which such matter is in question may provide for the continued manufacture, use or sale of the made, purchased, or used as specified, or for the manufacture, use or sale of which substantial preparation was made after the six-

month grace period but before the acceptance of a maintenance fee under this subsection, and it may also provide for the continued practice of any process, practiced, or for the practice of which substantial preparation was made, after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection, to the extent and under such terms as the court deems equitable for the protection of investments made or business commenced after the six-month grace period but before the acceptance of a maintenance fee under the subsection."

Fees.

(d) Section 41(d) of title 35, United States Code, is amended to read as follows:

"(d) The Commissioner will establish fees for all other processing, services, or materials related to patents not specified above to recover the estimated average cost to the Office of such processing, services, or materials. The yearly fee for providing a library specified in section 113 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be $50."

35 USC 13.

Adjusted fees.

(e) Section 41(f) of title 35, United States Code, is amended to read as follows:

"(f) The fees established in subsections (a) and (b) of this section may be adjusted by the Commissioner on October 1, 1985, and every third year thereafter, to reflect any fluctuations occuring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Changes of less than 1 per centum may be ignored,".

(f) Subsection (a) of section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), is amended by deleting "Fees will be set and adjusted by the Commissioner to recover the aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost to the Office of performing the service or funished the material.".

(g) Section 42(c) of the title 35, United States Code, is amended by adding the following sentence at the end thereof: "Fees available to the Commissioner under section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), shall be used exclusively for the processing of trademark registrations and for other services and materials related to trademarks.".

SEC. 4. Section 3(a) of title 35, United States Code is amended (1) by deleting the phrase "not more than fifteen"; and (2) by inserting the phrase "appointed under section 7 of this title" immediately after the phrase "examiners-in-chief".

Applications.

SEC. 5. Section 111 of title 35, United States Code, is amended to read as follows:

"SEC. 111. Application for patent shall be made, or authorized to be made, by the inventor, except as otherwise provided in this title, in writing to the Commissioner. Such application shall include (1) a specification as prescribed by section 112 of this title; (2) a drawing as prescribed by section 113 of this title; and (3) an oath by the applicant as prescribed by section 115 of this title. The application must be accompanied by the fee required by law. The fee and oath may be submitted after the specification and any required drawing are submitted, within such period and under such conditions, including the payment of a surcharge, as may be prescribed by the Commissioner. Upon failure to submit the fee and oath within such prescribed period, the application shall be regarded as abandoned, unless it is shown to the satisfaction of the Commissioner that the delay in submitting the fee and oath was unavoidable. The filing date of an application shall be the date on which the specification and any required drawing are received in the Patent and Trademark Office.".

35 USC 112.
35 USC 113.
35 USC 115.

Filing date.

SEC. (a) Section 116 of title 35, United States Code, is amended (1) by deleting the phrase "Joint inventors" from the title and inserting in its place "Inventors"; and (2) in the third paragraph, by deleting the phrase "a person is joined in an application for patent as joint inventor through error, or a joint inventor is not included in an application through error" and inserting in its place the phrase "through error a person is named in an application for patent as the inventor, or through error an inventor is not named in an application".

(b) Section 256 of title 35, United States Code, is amended to read as follows:

"§256. Correction of named inventor

"Whenever through error a person is named in an issued patent as the inventor, or through error an inventor is not named in an issued patent and such error arose without any deceptive intention on his part, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate correcting such error.

"The error of omitting inventors or naming persons who are not inventors shall not invalidate the patent in which such error occurred if it can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Commissioner shall issue a certificate accordingly.".

SEC. 7. Section 6 of the title 35, United States Code, is amended by deleting paragraph (d) thereof.

SEC. 8. (a) Section 8(a) of the Trademark Act of 1946, as amended (15 U.S.C. 1058(a)), is amended (a) by deleting the word "still"; and (2) by inserting the phrase "in commerce" immediately after the word "use".

(b) Section 8(b) of the Trademark Act of 1946, as amended (15 U.S.C. 1058(b)), is amended (1) by deleting the word "stille"; and (2) by inserting the phrase "in commerce" immediately after the word "use".

SEC. 9. (a) Section 13 of the Trademark Act of 1946, as amended (15 U.S.C. 1063), is amended (1) by deleting the phrase "a verified" and inserting in its place the word "an"; (2) by adding the phrase "when requested prior to the expiration of an extension" immediately after the word "cause"; and (3) by deleting the fourth sentence.

(b) Section 14 of the Trademark Act of 1946, as amended (15 U.S.C. 1064), is amended by deleting the word "verified".

SEC. 10. Section 15 of the Trademark Act of 1946, as amended (15 U.S.C. 1065), is amended by deleting the phrase "the publication" and inserting in its place the word "registration".

SEC. 11. The first sentence of section 16 of the Trademark Act of 1946, as amended (15 U.S.C. 1066), is amended to read as follows: "Upon petition showing extraordinary circumstances, the Commissioner may declare that an interference exists when application is made for the registration of a mark which so resembles a mark previously registered by another, or for the registration of which another has previously made application, as to be likely when applied to the goods or when used in connection with the services of the applicant to cause confusion or mistake or to deceive.".

SEC. 12. Section 21 of title 35, United States Code, is amended–

(1) by deleting the phrase "Day for taking action falling on Saturday, Sunday, or holiday" from the title and inserting in its place the phrase "Filing date and day for taking action";

(2) by inserting the following as subsection (a):

"(a) The Commissioner may be rule prescribe that any paper or fee required to be filed in the Patent and Trademark Office will be considered filed in the Office on the date on which it was deposited with the United States Postal Service or would have been deposited with the United States Postal Service but for postal service interruptions or emergencies designated by the Commissioner.";

Filing date.

(3) by designating the existing paragraph as subsection (b); and

(4) by inserting the word "federal" in subsection (b), as designated above, immediately after the word "a".

SEC. 13. Section 6(a) of title 35, United States Code, is amended (1) by deleting the word "and", third occurrence, and inserting in its place a comma; (2) by inserting the phrase ", or exchanges of items or services" immediately after the word "programs"; and (3) by inserting the phrase "or the administration of the Patent and Trademark Office" immediately after the word "law", second occurrence.

SEC. 14. (a) Section 115 of title 35, United States Code, is amended by (1) deleting the phrase "shall be" and inserting in its place the word "is"; and (2) inserting the following immediately after the phrase "United States", third occurrence: ", or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States".

(b) Section 261 of title 35, United States Code, is amended, in the third paragraph, by inserting the following immediately after the phrase "United States", third occurrence: ", or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States".

(c) Section 11 of the Trademark Act of 1946, as amended (15 U.S.C. 1061), is amended by (1) deleting the phrase "shall be", first occurrence, and inserting in its place the word "is"; and (2) inserting the following immediately after the phrase "United States", third occurrence: ", or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States".

SEC. 15. Section 13 of title 35, United States Code, is amended by deleting "(a)9" and inserting in its place "(d)".

SEC. 16. Section 173 of title 35, United States Code, is amended to read as follows: "Patents for designs shall be granted for the term of fourteen years."

SEC. 17. (a) Sections 1, 2, 4, 7, and 13 through 15 of this Act shall take effect on the date of enactment of this Act. Sections 3 and 16 of this Act shall take effect on Oct. 1, 1982. The maintenance fees provided for in section 3(b) of this Act shall not apply to patents applied for prior to the date of enactment of this Act. Each patent applied for on or after the date of enactment of this Act shall be subject to the maintenance fees established pursuant to section 3(b) of this Act or to maintenance fees hereafter established by law, as to the amounts paid and the number and timing of the payments.

Effective dates.
35 USC 41 note.

(b)(1) Title 35, United States Code, is amended by inserting after section 293 the following new section of chapter 29:

§294. Voluntary arbitration

"(a) A contract involving a patent or any right under a patent may contain a provision requiring arbitration of any dispute relating to patent validity or infringement arising under the contract. In the absence of such a provision, the parties to an existing patent validity or infringement dispute may agree in writing to settle such dispute by arbitration. Any such provision or agreement shall be valid, irrevocable, and enforceable, except for any grounds that exist at law or in equity for revocation of a contract.

"(b) Arbitration of such disputes, awards by arbitrators and confirmation of awards shall be governed by title 9, United States Code, to the extent such title is not inconsistent with this section. In any such arbitration proceeding, the defenses provided for under section 282 of this title shall be considered by the arbitrator if raised by any party to the proceeding.

Awards.
9 USC 1 *et seq.*

35 USC 282.

"(c) An award by an arbitrator shall be final and binding between the parties to the arbitration but shall have no force or effect on any other person. The parties to an arbitration may agree that in the event a patent which is the subject matter of an award is subsequently determined to be invalid or unenforceable in a judgment rendered by a court to competent jurisdiction from which no appeal can or has been

Modification.

taken, such award may be modified by any court of competent jurisdiction upon application by any party to the arbitration. Any such modification shall govern the rights and obligations between such parties from the date of such modification.

Notices

"(d) When an award is made by an arbitrator, the patentee, his assignee or licensee shall give notice thereof in writing to the Commissioner. There shall be a separate notice prepared for each patent involved in such proceeding. Such notice shall set forth the names and addresses of the parties, the name of the inventor, and the name of the patent owner, shall designate the number of the patent, and shall contain a copy of the award. If an award is modified by a court, the party requesting such modification shall give notice of such modification to the Commissioner. The Commissioner shall, upon receipt of either notice, enter the same in the record of the prosecution of such patent. If the required notice is not filed with the Commissioner, any party to the proceeding may provide such notice to the Commissioner.

Modification

"(e) The award shall be unenforceable until the notice required by subsection (d) is received by the Commissioner."

(2) The analysis for chapter 29 of title 35 of the United States Code is amended by adding at the end the following:

"294. Voluntary arbitration.".

(c) Sections 5, 6, 8 through 12, and 17(b) of this Act shall take effect six months after enactment.

Approved Aug. 27, 1982.

LEGISLATIVE HISTORY—H.R. 6260

HOUSE REPORT No. 97-542 (Comm. on the Judiciary).

CONGRESSIONAL RECORD, Vol. 128 (1982):

June 8, considered and passed House.

Aug. 12, considered and passed Senate.

WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS, Vol. 18, No. 36 (1982):

Aug. 28, Presidential statement.

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(57) 97TH CONGRESS HOUSE OF REPRESENTATIVES REPORT
2d Session No. 97-542

PATENT AND TRADEMARK OFFICE AUTHORIZATION

May 17, 1982.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. KASTENMEIER, from the Committee on the Judiciary, submitted the following

REPORT

[To accompany H.R. 6260]

[Including cost estimate of the Congressional Budget Office]

The Committee on the Judiciary, to whom was referred the bill (H.R. 6260) to authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes, having considered the same, report favorably thereon with an amendment and recommend that the bill as amended do pass.

The amendment strikes out all after the enacting clause of the bill and inserts a new text which appears in italic type in the reported bill.

PURPOSE OF THE BILL

The purpose of H.R. 6260 is to authorize appropriations for the Patent and Trademark Office for fiscal years 1983 through 1985.

STATEMENT

The Subcommittee on Courts, Civil Liberties and the Administration of Justice previously held two days of hearings on the legislation, receiving testimony from a representative group of witnesses including the Commissioner of Patents and Trademarks, the American Bar Association Section of Patent, Trademark and Copyright Law, the American Patent Law Association, the Patent, Trademark and Copyright Section of the State Bar of Virginia, the United States Trademark Association and the General Patent Counsel of the General Electric Corporation.

H.R. 6260 reflects the recommendation of the Administration with three modifications as follows. First, the Administration proposal authorized the Commissioner of Patents and Trademarks to establish fees administratively. The subcommittee approved an amendment to set forth specific fees in the statute and limited the Commissioner's authority to raise fees. Second, the Administration recommended that user fees recover 100% of the costs of actual processing of patents and trademarks. The subcommittee amended the bill to reduce by 50% patent filing and maintenance fees for individual inventors, small businesses and not for profit institutions. The effect of the amendment is to increase by $8 million the authorized appropriation which would have been provided under the original Administra-

tion request. Third, the subcommittee adopted a recommendation of the Commissioner of Patents and Trademarks, the American Bar Association and a coalition of corporate patent counsel permitting arbitration of patent disputes.

H.R. 6260 was considered by the Full Committee on the Judiciary on May 11, 1982 and was approved as reported by the subcommittee with an amendment offered by Mr. Frank described below.

SYNOPSIS OF H.R. 6260

SECTIONS 1—3

Authorizes the Patent and Trademark Office for fiscal year 1983 at an appropriations level of $76,000,000 and for fiscal years 1984 and 1985 such sums as may be necessary. This would be augmented by additional fee income under the bill of approximately $79 million for a total budget of $155 million. In fiscal year 1982 the Patent and Trademark Office was authorized at a level of $118,961,000 of which $29,600,000 was provided through fee income. Fiscal year 1983 will be the first year in which fee income under P.L. 96-517 will be credited to the Patent and Trademark Office without being counted as part of its authorized appropriation. Had this new accounting procedure been applied to fiscal year 1982 the authorization and appropriation for the Patent and Trademark Office would have been $89 million. This constitutes the actual level of taxpayer support of the Office. Thus, H.R. 6260 authorizes the expenditure of tax revenue in fiscal 1983 to support the Patent and Trademark Office at a level $21 million lower than for fiscal 1982. H.R. 6260 proposes to double current fees as the means of making up for the difference between a lower level of taxpayer support and an increased total budget. Further, maintenance fees which were first authorized in P.L. 96-517 and which will not begin to be collected until fiscal year 1986 (Oct. 1, 1985) will also be doubled over the amounts provided for under P.L. 96-517.

The overall objective of H.R. 6260 is to provide for increased user support for the Patent and Trademark Office costs associated with the actual processing of patent applications by fiscal year 1996. The fee schedule is designed to return to the government 100% of actual costs. However, an amendment to the original Administration proposal adopted by the subcommittee would reduce by half the fees for individuals, small businesses and nonprofit inventors. At the present time less than 25% of the actual costs of processing patent applications are supported by fee revenue and under P.L. 96-517, which becomes effective on Oct. 1, 1982, this amount will gradually begin to rise but will only reach 50% of actual costs in 1996.

The amendment offered by Mr. Frank and approved by the Committee modifies that portion of Section 3 of H.R. 6260 dealing with Trademark fees. Public Law 96-517 (35 United States Code, section 31(a)) provides, "Fees will be set and adjusted by the Commissioner to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost. . .of performing the service or furnishing the material."

The Administration requested that the figure, "50 per centum", be changed to "100 per centum", thus mandating full recovery to the Treasury of all costs associated with processing trademarks.An amendment offered during subcommittee consideration of the legislation proposed to reduce fee generated revenue supporting processing of trademarks to less than the 100 per centum recovery level. The amendment was not agreed to. The author of the amendment, Mr. Frank, then proposed to amend the law to provide a statutory fee schedule which would return revenue to the Patent and Trademark Office at a level designed to recover 100 per centum of costs. However, following consultations with interested parties, Mr. Frank modified his amendment simply to repeal those portions of P.L. 96-517 which mandate a specified level of cost recovery for the processing of trademark registrations. Thus, the level of cost recovery for processing of trademark registrations will be within the discretion of the Commissioner. The Committee is aware of the concerns of users of the Trademark registration system, however, and intends to exercise vigorous oversight with respect to the Commissioner to ensure that fees remain at a reasonable level and that trademark registrations are processed in an efficient and cost effective manner. As part of this oversight, the Committee recommends the following fee structure to the Commissioner for Fiscal Year 1983.

Type of fee:	*Proposed fee*
Application filing fee per class	$175
Renewal fee	300
Late renewal	100
Section 12(c) claim	100
New certificate	100
Certificate of correction	100
Disclaimer to registration	100
Amendment to registration	100
Per class combines section 8 and 15 affidavit	200
Per class section 8 affidavit alone	100
Per class section 15 affidavit alone	100
All petitions to Commissioner	100
Cancellation opposition per class	200
TTAB appeal	100
Certified copies	10
Copies of trademarks	1
Assignments	([1])

[1] 100 plus for each mark in addition to 1.

Section 3(d) also permits the Commissioner of Patents to accept late payment of maintenance fees where it is established that the delay in payment was unavoidable.

Section 4 permits the Commissioner of Patents and Trademarks to appoint temporary examiners in chief for the Board of Patent Appeals to deal more flexibly with workload.

Section 5 permits late filing of the oath and fee accompanying submission of specifications and drawings which accompany patent claims.

Section 6 permits greater flexibility in correcting mistakes in the naming of inventors on a patent application.

Section 7 allocates funds from the Patent and Trademark Office to the Department of State to pay the financial obligations of administering the patent Cooperation Treaty.

Section 8 clarifies the Trademark law with respect to what constitutes use of a mark "in commerce".

Section 9 deletes the burdensome technical requirement that trademark oppositions be verified.

Section 10 makes the date of registration rather than the date of publication the crucial date for purposes of establishing the incontestability of a trademark. This eliminates an ambiguity in the present law.

Section 11 limits the declaration of interferences under the trademark law to situations where extraordinary circumstances exist.

Section 12 authorizes the Commissioner of the Patent and Trademark Office the flexibility to deal with problems of delay in filing due to postal service breakdowns.

Section 13 permits the Commissioner of Patents to enter into cooperative studies, programs, exchanges and similar ventures associated with the administration of the Patent Office.

Section 14 conforms U.S. Patent and Trademark Law to a recent international treaty governing diplomatic or consular legalization of documents.

Section 15 corrects a mistaken citation in P.L. 96-517.

Section 16 creates a uniform term for design patents.

Section 17 establishes the effective dates for provisions of the Act. Increased filing fees would apply to all applications made on or after the date of enactment of H.R. 6260.

Section 18 permits voluntary arbitration of patent disputes.

SECTION-BY-SECTION ANALYSIS

SECTION 1

This section authorizes appropriations for the Patent and Trademark Office for the payment of salaries and necessary expenses of the Office. For Fiscal Year 1983, this section authorizes appropriations of $76,000,000, and in fiscal years 1984 and 1985 such sums as may be necessary, as well as such additional and supplemental amounts as may be necessary to cover any increases in salary, pay, retirement, or employee benefits which may be authorized by law. Funds made available by these appropriations are to be used to reduce by 50 per centum the amount of the fees to be paid under title 35, United States Code, section 41(a) and (b) by independent inventors and nonprofit organizations as defined in regulations established by the Commissioner of Patents and Trademarks, and by small business concerns as defined in section 3 of the Small Business Act and by regulations established by the Small Business Administration.

In addition, fees collected pursuant to title 35, United States Code, and the Trademark Act of 1946, as amended (15 U.S.C. 1051 et seq.), will augment the authorized appropriation to provide the resources needed to conduct the operations of the Office for fiscal year 1983. The total resources for the Office in fiscal year 1983, that is, the amount appropriated pursuant to this section plus fees collected pursuant to the patent and trademark laws, which will be available to the Office, are estimated to be $154,934,000. The corresponding levels for fiscal year 1984 and fiscal year 1985 are estimated in the President's Budget to be $167 million and $176 million, respectively. Any additional amounts to cover increases in salary, pay, retirement, or other employee benefits which may be authorized by law will be in addition to, and will therefore increase, those program levels. Finally, any funds appropriated pursuant to this section and all fees collected, when specified in an appropriation act, will remain available without any fiscal year limitation.

SECTION 2

This section provides that, notwithstanding any other provision of law, there is authorized to be appropriated to the Patent and Trademark Office for fiscal year 1982, $121,461,000 and such additional or supplemental amounts as may be necessary for increases in salary, pay, retirement, or other employee benefits authorized by law. This section increases the amount authorized for the Patent and Trademark Office by 2.5 million over that authorized in Public law 97-35. The President is recommending a supplemental appropriation of $2,500,000 for the Patent and Trademark Office for fiscal year 1982 in order to carry out the program recommendations included in his fiscal year 1983 Budget.

SECTION 3

This section establishes certain statutory fees which are to be charged by the Commissioner and authorizes the Commissioner to establish other fees whose amounts are not specifically set. Thus, the major routine fees which are applicable to patents and patent application processing are established (e.g., filing, issuance, and maintenance fees). The Commissioner is authorized to establish fees for all other processing, services, or materials related to patents which are not specifically established by statute. The processing and service fees, which would be established at a level to recover the estimated average costs to the Office. A more specific discussion of the various provisions of this section is set forth below.

Section 3(a) amends section 41(a) of title 35 to provide the amounts of the fees for filing and issuance of patent applications. In addition, the section includes provisions for increas-

ing the filing fees due to increased complexities presented by certain applications, e.g., applications containing more than a specified number of claims and any application containing a multiple dependent claim. The section also provides that fees will be charged when the number of claims is increased above the specified number or when a multiple dependent claim is first presented, whether on filing or at a later point in processing.

Under section 41(a)1, the filing fee for an original patent, except in design or plant cases, is $300. In addition, on filing or on presentation at any other time, $30 is due for each claim in independent form which is in excess of three, $10 is due for each claim (whether independent or dependent) which is in excess of twenty, and $100 is due for each application containing a multiple dependent claim. The latter fee is a one-time charge per application due the first time a multiple dependent claim is presented for examination. For the purpose of computing fees, a multiple dependent claim as referred to in section 112 of title 35, United States Code, or any claim depending therefrom, will be considered as separate dependent claims in accordance with the number of claims to which reference is made. Under the section, errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner. This will enable the Commissioner to establish regulations whereby patent applications may correct, without prejudice, errors in payment of the additional fees, i.e., those in addition to the basic fees established.

Under section 41(a)2, the fee for issuing all original and reissue patents, except in design or plant cases, would be a uniform amount of $500. No supplemental issue fees are required.

Section 41(a)3 establishes fixed fees for filing applications for, and issuance of design and plant patents. For design patent cases, the filing fee would be $200 and the issue fee $250.

Section 41(a)4 relates to fees in reissue cases and establishes a fee of $300 for filing each application for the reissue of a patent. In addition, on filing or on presentation at any other time, $30 is due for each claim in independent form which is in excess of the number of independent claims of the original patent, and $10 is due for each claim (whether independent or dependent) which is in excess of twenty and also in excess of the number of claims of the original patent. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

Under section 41(a)5, a fee of $50 would be established for filing each disclaimer in a patent or patent application.

Section 41(a)6 establishes a fee due on filing an appeal from the examiner to the Board of Appeals of $115. In addition, a fee of $115 is due on filing a brief in support of the appeal, and a fee of $100 is due for requesting an oral hearing before the Board of Appeals.

Section 41(a)7 establishes two different fees for filing petitions with different standards to revive abandoned patent applications. The same two fees are applicable to petitions to accept the delayed payment of the fee for issuing a patent. The fees set forth in this section are due on filing the petition. Since the section provides for two alternative fees with different standards, the section would permit the applicant seeking revival or acceptance of a delayed payment of the fee for issuing a patent to choose one or the other of the fees and standards under such regulations as the Commissioner may establish. Under the section the Commissioner could establish time limits within which petitions under each of the different fees and standards can be filed. The section establishes a fee of $500 for filing each petition for revival or for acceptance of the delayed payment of an issue fee where the abandonment or the failure to pay the issue fee is unintentional. In order to prevent abuse and injury to the public the Commissioner could require a terminal disclaimer equivalent to the period of abandonment and could require applicants to act promptly after becoming aware of the abandonment. The section establishes a fee of $50 for filing a petition under sections 133 or 151 of title 35 in accordance with standards presently in effect requiring that the delay resulting in the abandonment, or the delay in payment of the issue fee, be unavoidable. Under this section a petition accompanied by either a fee of $500 or a fee of $50 would not be granted where the abandonment or the failure to pay the fee for issuing the patent was intentional as opposed to being unintentional or unaviodable. This section would permit the Commissioner to have more discretion than present law to revive abandoned applications and accept late payment of the fee for issuing a patent in appropriate circumstances.

Section 41(a)8 establishes fees for filing of petitions for extensions of time. Various time periods are set by the Office for taking actions on matters relating to patent applications. These time periods are set pursuant to statute or by regulations established by the Commissioner under the authority granted to the Commissioner by statute. This section would provide for fees for filing petitions to extend the time periods set pursuant to statute or by regulations for taking action within any limitations set by statute.

A fee of $50 is established for filing a request for a first one month extension of time, an additional fee of $100 for filing a request for a second one month extension of time which would expire two months after the end of the time period set for taking action, and an additional fee of $200 for filing a request for a third one month extension of time which would expire three months after the end of the time period set for taking action. A subsequent or fourth extension could be requested if additional time was available under the statute. In no case could a period be extended beyond the maximum time set by statute.

The Commissioner may issue regulations providing when, within any maximum period permitted by statute, petitions for extensions of time, and the required fee therefor, may be filed. This section does preclude the Commissioner from waiving the fee for filing a petition for an extension of time where the Office extends the period due to equity considerations or sufficient cause.

Section 41(b) provides that the Commissioner charge the following fees for maintaining a patent other than a design or plant patent, in force: at three years and six months after grant, $400; at seven years and six months after grant, $800; and at eleven years and six

months after grant, $1,200. Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace priod the late payment of a maintenance fee.

In order to avoid an inequitable loss of patent rights, the Commissioner is given the authority to accept payment of any maintenance fee after the six-month grace period if it is established that the delay in payment was unavoidable. It is intended that the Commissioner will issue regulations establishing guidelines for acceptance of late payment. After the expiration of a reasonable period of time, the patentee would bear a heavy burden of proof that the delay was unavoidable. A surcharge may be imposed by the Commissioner as a precondition to acceptance of a late fee. This surcharge may be in addition to any surcharge imposed for payment during the grace period.

A provision is included to protect the rights of one who began using or who took steps to begin use of a patent which expired for failure to pay a maintenance fee and which was subsequently reestablished by acceptance of the late payment. The intervening rights provision in section 41(c)(2) is similar to the intervening rights provision in 35 U.S.C. 252 concerning reissued patents.

Section 41(d) provides that the Commissioner establish fees for all other processing services, or materials related to patents not specified in section 41 at an amount calculated to recover the estimated average cost to the Office of such processing, services, or materials. Such processing and other services includes, but is not limited to, the processing of various petitions desiring certain actions to be taken regarding patent applications, recording of assignments, reexamination of patents and the processing of international applications. Fees for materials include the price of patent copies, certifications and other copying services. The yearly fee for providing a library specified in section 13 of title 35 with uncertified copies of the specifications and drawings for all patents issued in that year is set at $50.

Section 41(f) provides that the fees established in subsections (a) and (b) of section 41 may be adjusted by the Commissioner on Oct. 1, 1985, and every third year thereafter, to reflect any fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Changes of less than one per centum may be ignored by the Commissioner in making such adjustments.

Subsection (a) of section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), is being changed to grant the Commissioner discretion to establish the level of recovery of office costs related to trademarks. It is expected that the Commissioner will set the fees in a way that the filing fee will be kept as low as possible to foster use of the Federal registration system. This may require that other fees for services or materials related to trademarks recover more than their actual estimated cost in order that the Commissioner achieve in the aggregate adequate cost recovery for the entire trademark operation.

A provision is inserted in section 42(c) of title 35 in order to ensure that the tradermark fees collected are used to fund trademark operations only and not the processing of patent applications.

SECTION 4

Section 3 of title 35 is amended by deleting specific reference to the number of examiners-in-chief in the first sentence. Elimination of the upper limit on the number of permanent members of the Board of Appeals would provide greater flexibility in filling most of its personnel needs, thereby avoiding an excess of examiner details. The authority to appoint acting examiners-in-chief, however, is maintained in order that temporary fluctuations in the workload of the Board may be accommodated.

SECTION 5

Under revised section 111 of title 35, the filing date of an application would be that on which the specification and any required drawings are received by the Patent and Trademark Office. The oath or declaration and filing fee could be submitted at such later time as established by the Commissioner, without any loss of the original filing date. Under the amendment, an applicant could either file the oath or declaration (including the applicant's signature) and fee together with an application or submit them at a later time as determined by the Commissioner.

The section would also authorize the imposition of a surcharge as a condition for accepting filing of the oath of payment of the filing fee after the filing date of the application. Since an application filed without the oath or declaration would not be signed or "made" by the applicant, the amendment permits a patent attorney or agent, authorized by the applicant, to submit the specification and drawings for the purpose of obtaining a filing date. Should the applicant, however, fail to file the oath or declaration, or pay the filing fee within the time limits set by the Commissioner, the application would be regarded as having been abandoned.

SECTION 6

The third paragraph of section 116 of title 35 is amended to enlarge the possibilities for correcting misnamed inventive entities. As a consequence, correction would be permitted also in cases where the person originally named as inventor was in fact not the inventor of the subject matter contained in the application. If such error occurred without any deceptive intention on the part of the true inventor, the Commissioner would have the authority to substitute the true inventor for the erroneously named person. Although probably rarer, instances such as changes from a mistakenly identified sole inventor to a different, but actual, joint inventors, conversions from erroneously identified joint inventors to different but actual, joint inventors, and conversions from erroneously identified joint inventors to a

different, but actual, sole inventor would also be permitted. In each instance, however, the Commissioner must be assured of the presence of innocent error, without deceptive intention on the part of the true inventor or inventors, before permitting a substitution of a true inventor's name.

The ability to receive a filing date based on a specification and drawings without signature as set forth in revised section 111 of title 35, and to file the oath or declaration and pay the filing fee within such period as determined by the Commissioner is also available to joint inventors.

Section 256 of title 35, which is a companion to section 116, would be amended to similarly enlarge the possibilities for correction of misnamed inventors in issued patents.

SECTION 7

Section 6(d) of title 35, which provides for the allocation of appropriated Patent and Trademark Office funds to the Department of State for payment of United States financial obligations under the Patent Cooperation Treaty, is deleted. The Department of State has traditionally assumed responsibility for financial obligations for international agreements to which the United States adheres.

SECTION 8

Section 8(a) of the Trademark Act is amended to clarify that the continued use required to be shown in the sixth year be use "in commerce". Although it is believed by some that omission of the words "in commerce" may have been inadvertent in the 1946 Act, this section has been interpreted so that use in a foreign country, or use in intrastate commerce, is sufficient. Such interpretation is fundamentally in conflict with other requirements of the Act.

Section 8(b) of the Act is also amended to clarify that the continued use required to be shown in the sixth year be use "in commerce" . Although it is believed by some that omission of the words " in commerce" may have been inadvertent in the 1946 Act, this section has interpreted so that use in a foreign country, or use in intrastate commerce, is sufficient. Such interpretation is fundamentally in conflict with other requirements of the Act.

Section 8(b) of the Act is also amended to clarify that the continued use required to be shown in the sixth year be use "in commerce" for registrations published under section 12(c) of the Act. (This pertains to registrations issued under the Act of Mar. 3, 1881 and the Act of Feb. 20, 1905).

The word "still" has been deleted from section 8(a) and 8(b). Thus, the owner of a registration issued on the basis of a foreign registration under the provisions of section 44(e) of the Act will have to submit an affidavit to the effect that the mark is in use in commerce. Since the mark need not be used in commerce when it is registered, the requirement cannot be required to state that it is "still" in such use.

SECTION 9

Section 13 of the Trademark Act is amended to delete the requirement that an opposition be verified. The sentence which allowed an unverified application to be verified at a later date has been deleted. In addition, a phrase has been added to make it clear that any subsequent extension of time to file an opposition, beyond the first extension, must be requested before the end of the preceding extension.

Section 14 of the Trademark Act would also be amended to delete the requirement that a petition to cancel a registration be verified.

SECTION 10

Section 15 of the Trademark Act is amended to change the term "the publication" to "registration" in the first sentence. This change makes the date of registration rather than the date of publication the crucial date for purposes of incontestablility. It will also make section 15 consistent with sections 22 and 33 of the Act.

SECTION 11

Section 16 of the Trademark Act is amended to limit the declaration of interferences to those situations where a petition to the Commissioner shows that extraordinary circumstances exist, the rights of the parties can be determined adequately by the existing opposition and cancellation procedures. Additionally, if an interference is declared between an application and a registration and the applicant wins, a cancellation must still be initiated against the registration.

SECTION 12

A new subsection (a) has been added to section 21 of title 35 to authorize, but not to require, the Commissioner of Patents and Trademarks to give as the filing date of any paper or fee which is required to be filed in the Patent and Trademark Office the date on which the paper or fee was deposited with the United States Postal Service. The Commissioner may also give as the filing date of any paper or fee which was required to be filed in the Patent and Trademark Office the date it would have been deposited with the United States Postal Service but for postal service interruptions or emergencies which the Commissioner designates. The requirements governing whether any given paper or fee may be given the filing date of the day on which it was, or would have been deposited with the United States Postal Service will be set forth in regulations established by the Commissioner.

Section 21(b) of title 35 is identical to existing section 21 with two minor amendments. The word "federal" has been inserted before the phrase "holiday within the District of Columbia" to clarify the nature of the holiday.

SECTION 13

This section clarifies the authority of the Commissioner in section 6(a) of title 35 to enter into a wide range of cooperative agreements concerning the patent and trademark

laws or the administration of the Patent and Trademark Office. These agreements are in addition to the exchange of publications authorized in 35 U.S.C. 11(b) and 12. These cooperative agreements may take the form of studies, programs, exchanges, and other similar ventures. Thus, the Patent and Trademark Office could, for example, exchange patent copies, non-patent literature, tapes or services in return for goods or services of value to the Patent and Trademark Office.

SECTION 14

The amendments of 35 U.S.C. 115 and Section 11 of the Trademark Act of 1946 recognize the Hague "Convention Abolishing the Requirement of Legalization for Foreign Public Documents" which entered into force in the United States on Oct. 15, 1981. The Convention abolishes the requirement of diplomatic or consular legalization for foreign public documents which are sworn to or acknowledged by a notary public in any of the countries adhering to the Convention. For documents executed by a notary public of all other foreign countries, diplomatic or consular legalization will still be required.

The amendment of 35 U.S.C. 261 is intended to give affirmative effect to acknowledgments executed pursuant to the Hague Convention.

SECTION 15

This section corrects an incorrect citation. Public Law 96–517 amended section 41 of title 35, United States Code, in a way which eliminated 35 U.S.C. §41(a)(9). Unfortunately, section 13 of title 35, United States Code, was not amended accordingly by Public Law 96–517. This section corrects that oversight.

SECTION 16

This section sets a uniform term of fourteen years for all design patents.

SECTION 17

Sections 17(a) and (c) specify the effective dates of the Act. Section 17(a) also specifies that the maintenance fees provided for in section 3(b) of this Act will only apply to patents in which the application was filed on and after the date of enactment or to maintenance fees later established by law.

Section 17(b) adds a section to title 35 providing for the voluntary arbitration of patent disputes by the parties to the dispute. The section requires that the Commissioner be notified in writing of an award made by an arbitrator or modified by a court. Such notification will be entered in the record of the prosecution of the patent.

At present, agreements to arbitrate some aspects of disputes arising under patent licenses are enforceable by the courts; however, there have been court decisions that have disapproved arbitration of disputes concerning patent validity or infringement. In this regard, see, for example, *Zip Mfg. Co.* v. *Pep Mfg. Co.* 44 F.2d 184, 7 U.S.P.Q. 62 (D. Del. 1930) and *Beckman Instruments, Inc.* v. *Technical Developments Corp.* 433 F.2d 55, 167 U.S.P.Q. 10 (7th Cir. 1965).

Partly as a reaction to those decisions, during the 93rd Congress both the Department of Commerce and the Department of Justice endorsed a provision specifically authorizing arbitration of validity and infringement disputes. This provision, included in an omnibus patent law revision bill, S. 2504, was never enacted due tot he many controversial aspects of that legislation.

In the view of the Committee, a statutory authorization of voluntary agreements to arbitrate validity and infringement disputes would benefit both the parties to these disputes and the public.

Statutory endorsement of arbitration agreements would assure the parties that they could avail themselves of the numerous advantages of arbitration without the possibility of having to reargue the dispute in court. The advantages of arbitration are many: it is usually cheaper and faster than litigation; it can have simpler procedural and evidentiary rules; it normally minimizes hostility and is less disruptive of ongoing and future business dealings among the parties; it is often more flexible in regard to scheduling of times and places of hearings and discovery devices; and, arbitrators are frequently better versed than judges and juries in the area of trade customs and the technologies involved in these disputes.

The enforcement of voluntary arbitration provisions would serve the public in two ways. First, the availablity of arbitration with its numerous advantages will enhance the patent system and thus will encourage innovation. This view is supported by the Committee for Economic Development in their Jan. 1980 statement entitled "Stimulating Technological Progress." Secondly, arbitration could relieve some of the burdens on the overworked Federal courts. Chief Justice Burger in his speech to the American Bar Association on Jan. 24, 1982, generally endorsed the use of arbitration to reduce the judicial backlog. Also, I think it is important to note that the American Bar Association's Section on Patent, Trademark and Copyright Law has endorsed court enforcement of arbitration agreements calling for arbitration of validity and infringement.

The recommendations of the Secretary of Commerce to increase substantially patent and trademark user fees were made on the promise that such increases "will lay the groundwork for revitalizing the patent and trademark systems." The Secretary committed to three major goals: (1) to reach an average patent application pendency time of 18 months by FY 1987, (2) to issue an examiner's first action on trademark registrability in three months and disposal of an application within 13 months, and (3) to move realistically toward a fully automated Office by the 1990's. In accepting the Administration's recommendations on user fees, the Committee fully expects the Administration to live up to its end of the bargain to bring about a first-class Patent and Trademark Office. To provide an opportunity for timely and effective Committee oversight of progress toward improving the Patent and Trademark Office, the Committee directs that the Secretary of Commerce report annually to the Committee on progress toward achieving the three major

goals of the Patent and Trademark Office, as outlined above, and, in addition, promptly inform the Committee at any time it appears that any of the goals, for any reason, is viewed as not attainable.

OVERSIGHT STATEMENT

The Committee on the Judiciary has oversight responsibility over the Patent and Trademark Office in the Department of Commerce. In addition to its ongoing oversight, the Committee's Subcommittee on Courts, Civil Liberties and the Administration of Justice held an oversight hearing with respect to the Patent and Trademark Office on Mar. 4, 1981, published as Oversight Hearings Before the Subcommittee on Courts, Civil Liberties and the Administration of Justice of the Committee on the Judiciary, House of Representatives, Ninety-Seventh Congress, First Session on the Copyright Office, The U.S. Patent and Trademark Office, and the Copyright Royalty Tribunal. Serial No. 17.

The Committee expects to continue its oversight activities in this area.

STATEMENT OF THE BUDGET COMMITTEE

No statement has been received on H.R. 6260 from the House Committee on the Budget.

STATEMENT OF THE CONGRESSIONAL BUDGET OFFICE

Pursuant to clause 7, rule XIII of the Rules of the House of Representatives and section 403 of the Congressional Budget Act of 1974, the following is the cost estimate of H.R. 6260, as amended, prepared by the Congressional Budget Office.

U.S. CONGRESS
CONGRESSIONAL BUDGET OFFICE,
Washington, D.C., May 13, 1982.

Hon. PETER W. RODINO, Jr.,
Chairman, Committee on the Judiciary, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: Pursuant to Section 403 of the Congressional Budget Act of 1974, the Congressional budget Office has prepared the attached cost estimate for H.R. 6260, a bill to authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes.

Should the Committee so desire, we would be pleased to provide further details on this estimate.

Sincerely

ALICE M. RIVLIN, *Director.*

CONGRESSIONAL BUDGET OFFICE, COST ESTIMATE

1. Bill number: H.R. 6260.

2. Bill title: A bill to authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes.

3. Bill status: As ordered reported by the House Committee on the Judiciary, May 11, 1982.

Bill purpose: H.R. 6260 would authorize 1982 appropriations at a level $2.5 million above the amount already appropriated, and would provide a $76 million authorization level in 1983 to carry out the activities of the Patent and Trademark Office (PTO). In addition, such sums as may be necessary are authorized for fiscal years 1984 and 1985, plus such additional or supplemental amounts as may be necessary for increases in salary, pay, retirement, or other benefits authorized by law for each fiscal year 1983 thorugh 1985. PTO would also have available for obligation offsetting fee collections as provided for in Public Law 96–517, plus the additional fees as specified in H.R. 6260.

Assuming enactment of H.R. 6260, total PTO collections over time would result in recovery of approximately 100 percent of patent and trademark processing costs. Individuals, small businesses, and non-profit institutions would be exempt from the proposed additional fees, however, but would continue to follow the fee schedule outlined in P.L. 96–517, which assumes the ultimate recovery of approxiamtely 50 percent of all processing costs.

the President's 1982 budget includes a request for a $2.5 million supplemental for the PTO. The Administration has recommended increasing user fees to ultimately recover 100 percent of processing costs beginning in 1983, but does not provide for any exemptions to the proposed fee increases relative to current law. The effect of exemptions is to increase by approximately $8 million the authorized level of appropriations relative to the Administration's request.

In addition, the bill would make a number of other changes that are not expected to have a cost impact.

5. Cost estimate:

[By fiscal years, in millions of dollars]

	1982	1983	1984	1985	1986
Authorization level:					
Specified	2.5	76.0	....	....	....
Estimated	....	6.8	86.4	86.8	....
Subtotal	2.5	82.8	86.4	86.8	....
Total estimated outlays	2.4	61.8	82.4	82.8	5.5

Including outlays from appropriations to date for PTO, total 1982 outlays are estimated to be $121.5 million, and total 1983 outlays are estimated to be $79.8.

The costs of this bill fall within budget subfunction 376.

6. Basis of estimate: The authorization levels for PTO for 1982 and 1983 are those speci-

fied in the bill. The estimate authorization levels for 1984 and 1985 assume a level of funding sufficient to maintain a program level of $167 million and $176 million, respectively, including offsetting collections. In addition, authorization for increases in pay and other benefits of approximately $6.8 million, $7.4 million, and $7.8 million for fiscal years 1983 through 1985, respectively, were estimated based on CBO's current inflators. Outlays are based on historical spending patterns.

The estimated collections to PTO as a result of fees charged to cover the costs of processing trademarks and patents were provided by the agency, and assume the fee structure outlined in the bill. The estimated collections, under current law and under H.R. 6260, are shown in the table below.

[By fiscal years, in millions of dollars]

	1982	1983	1984	1985	1986
Estimated offsetting collections:					
Current law	....	47.8	52.7	57.7	....
Added by H.R. 6260	....	31.2	35.3	39.3	....
Total—H.R. 6260	....	79.0	88.0	97.0	....

7. Estimate comparison: None.
8. Previous CBO estimate: None.
9. Estimate prepared by: Mary B. Maginniss.
10. Estimate approved by: C. G. Nuckols (James L. Blum, Assistant Director for Budget Analysis).

COMMITTEE VOTE

The Committee on the Judiciary ordered H.R. 6260 as amended reported by a voice vote, without objection being heard, with a quorum of Members being present.

CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

In compliance with clause 3 of Rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italics, existing law in which no change is proposed is shown in roman):

TITLE 35, UNITED STATES CODE
PART 1—PATENT AND TRADEMARK OFFICE

* * * * *

CHAPTER 1—ESTABLISHMENT, OFFICERS, FUNCTIONS

* * * * *

§3. Officers and employees

(a) There shall be in the Patent and Trademark Office a Commissioner of Patents and Trademarks, a Deputy Commissioner, two Assistant Commissioners, and [not more than fifteen] examiners-in-chief *appointed under section 7 of this title.* The Deputy Commissioner, or, in the event of a vacancy in that office, the Assistant Commissioner senior in date of appointment shall fill the office of Commissioner during a vacancy in that office until the Commissioner is appointed and takes office. The Commissioner of Patents and Trademarks, the Deputy Commissioner, and the Assistant Commissioners shall be appointed by the President, by and with the advice and consent of the Senate. The Secretary of Commerce, upon the nomination of the Commissioner, in accordance with law shall appoint all other officers and employees.

* * * * *

§6. Duties of Commissioner

(a) The Commissioner, under the direction of the Secretary of Commerce, shall superintend or perform all duties required by law respecting the granting and issuing of patents and the registration of trademarks; shall have the authority to carry on studies [and] programs, *or exchanges of items or services* regarding domestic and international patent and trademark law *or the administration of the Patent and Trademark Office,* and shall have charge of property belonging to the Patent and Trademark Office. He may, subject to the approval of the Secretary of Commerce, establish regulations, not inconsistent with law, for the conduct of proceedings in the Patent and Trademark Office.

(b) The Commissioner, under the direction of the Secretary of Commerce, may, in coordination with the Department of State, carry on programs and studies cooperatively with foreign patent offices and international intergovernmental organizations, or may authorize such programs and studies to be carried on, in connection with the performance of duties stated in subsection (a) of this section.

(c) The Commissioner, under the direction of the Secretary of Commerce, may, with the concurrence of the Secretary of State, transfer funds appropriated to the Patent and Trademark Office, not to exceed $100,000 in any year, to the Department of State for the purpose of making special payments to internatinal intergovernmental organizations for studies and programs for advancing international cooperation concerning patents, trademarks, and related matters. These special payments may be in addition to any other payments or contributions to the international organization and shall not be subject to any limitations imposed by law on the amounts of such other payments or contributions by the Government of the United States.

[(d) The Commissioner, under the direction of the Secretary of Commerce, may, with the concurrence of the Secretary of State, allocate funds appropriated to the Patent Office, to the Department of State for the purpose of payment of the share on the part of

the United States to the working capital fund established under the Patent Cooperation Treaty. Contributions to cover the share on the part of the United States of any operating deficits of the International Bureau under the Patent Cooperation Treaty shall be included in the annual budget of the Patent Office and may be transferred by the Commissioner, under the direction of the Secretary of Commerce, to the Department of State for the purpose of making payments thereof to the International Bureau.]

* * * * *

§13. Copies of patents for public libraries

The Commissioner may supply printed copies of specifications and drawings of patents to public libraries in the United States which shall maintain such copies for the use of the public, at the rate for each year's issue established for this purpose in section 41 [(a)9] *(d)* of this title.

* * * * *

CHAPTER 2—PROCEEDINGS IN THE PATENT AND TRADEMARK OFFICE

* * * * *

§21. [Day for taking action falling on Saturday, Sunday, or holiday] *Filing date and day for taking action.*

(a) The Commissioner may by rule prescribe that any paper or fee required to be filed in the Patent and Trademark Office will be considered filed in the Office on the date on which it was deposited with the United States Postal Service or would have been deposited with the United States Postal Service but for postal service interruptions or emergencies designated by the Commissioner.

(b) When the day, or the last day, for taking any action or paying any fee in the United States Patent and Trademark Office falls on Saturday, Sunday, or a *Federal* holiday within the District of Columbia, the action may be taken, or the fee paid, on the next succeeding secular or business day.

* * * * *

CHAPTER 4—PATENT FEES

* * * * *

§41. Patent fees

[(a) The Commissioner of Patents will establish fees for the processing of an application for a patent, from filing through disposition by issuance or abandonment, for maintaining a patent in force, and for providing all other services and materials related to patents. No fee will be established for maintaining a design patent in force.

[(b) By the first day of the first fiscal year beginning on or after one calendar year after enactment of this Act, fees for the actual processing of an application for a patent, other than for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 25 per centum of the estimated average cost to the Office of such processing. By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for the processing of an application for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 50 per centum of the estimated average cost to the Office of such processing.

[(c) By the fifteenth fiscal year following the date of enactment of this Act, fees for maintaining patents in force will recover 25 per centum of the estimated cost to the Office, for the year in which such maintenance fees are received, of the actual processing all applications for patents, other than for design patents, from filing through disposition by issuance or abandonment. Fees for maintaining a patent in force will be due three years and six months, seven years and six months, and eleven years and six months after the grant of the patent. Unless payment of the applicable maintenance fee is received in the Patent and Tradmark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an applicable maintenance fee.

[(d) By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for all other services or materials related to patents will recover the estimated average cost to the Office of performing the service or furnishing the material. The yearly fee for providing a library specified in section 13 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be $50.]

(a) The Commissioner shall charge the following fees:

1. On filing each application for an original patent, except in design or plant cases, $300; in addition, on filing or on presentation at any other time, $30 for each claim in independent form which is in excess of three, $10 for each claim (whether independent or dependent) which is in excess of twenty, and $100 for each application containing a multiple dependent claim. For the purpose of computing fees, a multiple dependent claim as referred to in section 112 of this title or any claim depending therefrom shall be considered as separate dependent claims in accordance with the number of claims to which reference is made. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

2. For issuing each original or reissue patent, except in design or plant cases, $500.

3. In design and plant cases:

a. On filing each design application, $125.

b. On filing each plant application, $200.

c. On issuing each design patent, $175.

d. On issuing each plant patent, $250.

4. On filing each application for the reissue of a patent, $300; in addition, on filing or on presentation at any other time, $30 for each claim in independent form which is in excess of the number of independent claims of the original patent, and $10 for each claim (whether in-

dependent or dependent) which is in excess of twenty and also in excess of the number of claims of the original patent. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

5. On filing each disclaimer, $50.

6. On filing an appeal from the examiner to the Board of Appeals, $115; in addition, on filing a brief in support of the appeal, $115, and on requesting an oral hearing before the Board of Appeals, $100.

7. On filing each petition for the revival of an unintentionally abandoned application for a patent or for the unintentionally delayed payment of the fee for issuing each patent, $500, unless the petition is filed under sections 133 or 151 of this title, in which case the fee shall be $50.

8. For petitions for one-month extensions of time to take actions required by the Commissioner in an application:

a. On filing a first petition, $50.

b. On filing a second petition, $100.

c. On filing a third or subsequent petition, $200.

(b) The Commissioner shall charge the following fees for maintaining a patent in force:

1. Three years and six months after grant, $400.

2. Seven years and six months after grant, $800.

3. Eleven years and six months after grant, $1,200.

Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an applicable maintenance fee. No fee will be established for maintaining a design or plant patent in force.

(c)(1) The Commissioner may accept the payment of any maintenance fee required by subsection (b) of this section after the six-month grace period if the delay is shown to the satisfaction of the Commissioner to have been unavoidable. The Commissioner may require the payment of a surcharge as a condition of accepting payment of any maintenance fee after the six-month grace period. If the Commissioner accepts payment of a maintenance fee after the six-month grace period, the patent shall be considered as not having expired at the end of the grace period.

(2) No patent, the term of which has been maintained as a result of the acceptance of a payment of a maintenance fee under this subsection, shall abridge or affect the right of any person or his successors in business who made, purchased or used after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection anything protected by the patent, to continue the use of, or to sell to others to be used or sold, the specific thing so made, purchased, or used. The court before which such matter is in question may provide for the continued manufacture, use or sale of the thing made, purchased, or used as specified, or for the manufacture, use or sale of which substantial preparation was made after the six-month grace period but before the acceptance of a maintenance fee under this subsection, and it may also provide for the continued practice of any process, practiced, or for the practice of which substantial preparation was made, after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection, to the extent and under such terms as the court deems equitable for the protection of investments made or business commenced after the six-month grace period but before the acceptance of a maintenance fee under the subsection.

(d) The Commissioner will establish fees for all other processing, services, or materials related to patents not specified above to recover the estimated average cost to the Office of such processing, services, or materials. The yearly fee for providing a library specified in section 13 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be $50.

(3) The Commissioner may waive the payment of any fee for any service or material related to patents in connection with an occasional or incidental request made by a department or agency of the Government, or any officer thereof. The Commissioner may provide any applicant issued a notice under section 132 of this title with a copy of the specifications and drawings for all patents referred to in that notice without charge.

[(f) Fees will be adjusted by the Commissioner to achieve the levels of recovery specified in this section; however, no patent application processing fee or fee for maintaining a patent in force will be adjusted more than once every three times.]

(f) The fees established in subsection (a) and (b) of this section may be adjusted by the Commissioner on Oct. 1, 1985, and every third year thereafter, to reflect any fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Changes of less than 1 per centum may be ignored.

(g) No fee established by the Commissioner under this section will take effect prior to sixty days following notice in the Federal Register.

§42. Patent and Trademark Office funding

(a) All fees for services performed by or materials furnished by the Patent and Trademark Office will be payable to the Commissioner.

(b) All fees paid to the Commissioner and all appropriations for defraying the costs of the activities of the Patent and Trademark Office will be credited to the Patent and Trademark Office Appropriation Account in the Treasury of the United States, the provisions of section 725e of title 31, United States Code, notwithstanding.

(c) Revenues from fees will be available to the Commissioner of Patents to carry out, to the extent provided for in appropriation Acts, the activities of the Patent and Trademark Office. *Fees available to the Commissioner under section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), shall be used exclusively for the processing of trademark registrations and for other services and materials related to trademarks.*

(d) The Commissioner may refund any fee paid by mistake or any amount paid in excess of that required.

PART II—PATENTABILITY OF INVENTIONS AND GRANT OF PATENTS

* * * * *

CHAPTER 11—APPLICATION FOR PATENT

* * * * *

[§111. Application for patent

[Application for patent shall be made by the inventor, except as otherwise provided in this title, in writing to the Commissioner. Such application shall include: (1) a specification as prescribed by section 112 of this title; (2) a drawing as prescribed by section 113 of this title; and (3) an oath by the applicant as prescribed by section 115 of this title. The application must be signed by the applicant and accompanied by the fee required by law.]

SEC. 111. Application for patent shall be made, or authorized to be made, by the inventor, except as otherwise provided in this title, in writing to the Commissioner. Such application shall include (1) a specification as prescribed by section 112 of this title; (2) a drawing as prescribed by section 113 of this title; and (3) an oath by the applicant as prescribed by section 115 of this title. The application must be accompanied by the fee required by law. The fee and oath may be submitted after the specification and any required drawing are submitted, within such period and under such conditions, including the payment of a surcharge, as may be prescribed by the Commissioner. Upon failure to submit the fee and oath within such prescribed period, the application shall be regarded as abandoned, unless it is shown to the satisfaction of the Commissioner that the delay in submitting the fee and oath was unavoidable. The filing date of an application shall be the date on which the specification and any required drawing are received in the Patent and Trademark Office.

* * * * *

§115. Oath of applicant

The applicant shall make oath that he believes himself to be the original and first inventor of the process, machine, manufacture, or composition of matter, or improvement thereof, for which he solicits a patent; and shall state of what country he is a citizen. Such oath may be made before any person within the United States authorized by law to administer oaths, or when, made in a foreign country, before any diplomatic or consular office of the United States authorized to administer oaths, or before any officer having an official seal and authorized to administer oaths in the foreign country in which the applicant may be, whose authority [shall be] *is* proved by certificate of a diplomatic or consular officer of the United States, *or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States* and such oath shall be valid if it complies with the laws of the state or country where made. When the application is made as provided in this title by a person other than the inventor, the oath may be so varied in form that it can be made by him.

§116. [Joint inventors] *Inventors*

When an invention is made by two or more persons jointly, they shall apply for patent jointly and each sign the application and make the required oath, except as otherwise provided in this title.

If a joint inventor refuses to join in an application for patent or cannot be found or reached after diligent effort, the application may be made by the other inventor on behalf of himself and the omitted inventor. The Commissioner, on proof of the pertinent facts and after such notice to the omitted inventor as he prescribes, may grant a patent to the inventor making the application, subject to the same rights which the omitted inventor would have had if he had been joined. The omitted inventor may subsequently join in the application.

Whenever [a person is joined in an application for patent as joint inventor through error, or a joint inventor is not included in an application through error] *through error a person is named in an application for patent as the inventor, or through error an inventor is not named in an application,* and such error arose without any deceptive intention on his part, the Commissioner may permit the application to be amended accordingly, under such terms as he prescribes.

* * * * *

CHAPTER 16—DESIGNS

* * * * *

§173. Term of design patent

[Patents for designs may be granted for the term of three years and six months, or for seven years, or for fourteen years, as the applicant, in his application, elects.]

Patents for designs shall be granted for the term of fourteen years.

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PART III—PATENTS AND PROTECTION OF PATENT RIGHTS

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CHAPTER 25—AMENDMENT AND CORRECTION OF PATENTS

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[§256. Mis]joinder of inventor

[Whenever a patent is issued on the application of persons as joint inventors and it appears that one of such persons was not in fact a joint inventor, and that he was included as a joint inventor by error and without any deceptive intention, the Commissioner may,

on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate deleting the name of the erroneously joined person from the patent.

[Whenever a patent is issued and it appears that a person was a joint inventor, but was omitted by error and without deceptive intention on his part, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate adding his name to the patent as a joint inventor.

[The misjoinder or nonjoinder of joint inventors shall not invalidate a patent, if such error can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Commissioner shall issue a certificate accordingly.]

§256. Correction of named inventor

Whenever through error a person is named in an issued patent as the inventor, or through error an inventor is not named in an issued patent and such error arose without and deceptive intention on his part, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate correcting such error.

The error of omitting inventors or naming persons who are not inventors shall not invalidate the patent in which such error occurred if it can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Commissioner shall issue a certificate accordingly.

CHAPTER 16—OWNERSHIP AND ASSIGNMENT

* * * * *

§261. Ownership; assignment

Subject to the provisions of this title, patents shall have the attributes of personal property.

Applications for patent, patents, or any interest therein, shall be assignable in law by an instrument in writing. The applicant, patentee, or his assigns or legal representatives may in like manner grant and convey an exclusive right under his application for patent, or patents, to the whole or any specified part of the United States.

A certificate of acknowledgment under the hand and official seal of a person authorized to administer oaths within the United States, or, in a foreign country, of a diplomatic or consular officer of the United States or an officer authorized to administer oaths whose authority is proved by a certificate of a diplomatic or consular officer of the United States, *or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States,* shall be prima facie evidence of the execution of an assignment, grant or conveyance of a patent or application for patent.

An assignment, grant or conveyance shall be void as against any subsequent purchaser or mortgagee for a valuable consideration, without notice, unless it is recorded in the Patent and Trademark Office within three months from its date or prior to the date of such subsequent purchase or mortgage.

CHAPTER 29—REMEDIES FOR INFRINGEMENT OF PATENT, AND OTHER ACTIONS

Sec.
281. Remedy for infringement of patent.

* * * * *

294. Voluntary arbitration.

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§294. Voluntary arbitration

(a) A contract involving a patent or any right under a patent may contain a provision requiring arbitration of any dispute relating to patent validity or infringement arising under the contract. In the absence of such a provision, the parties to an existing patent validity or infringement dispute may agree in writing to settle such dispute by arbitration. Any such provision or agreement shall be valid, irrevocable, and enforceable, except for any grounds that exist at law or in equity for revocation of a contract.

(b) Arbitration of such disputes, awards by arbitrators and confirmation of awards shall be governed by title 9, United States Code, to the extent such title is not inconsistent with this section. In any such arbitration proceeding, the defenses provided for under section 282 of this title shall be considered by the arbitrator if raised by any party to the proceeding.

(c) An award by an arbitrator shall be final and binding between the parties to the arbitration but shall have no force or effect on any other person. The parties to an arbitration may agree that in the event a patent which is the subject matter of an award is subsequently determined to be invalid or unenforceable in a judgment rendered by a court to competent jurisdiction from which no appeal can or has been taken, such award may be modified by any court of competent jurisdiction upon application by any party to the arbitration. Any such modification shall govern the rights and obligations between such parties from the date of such modification.

(d) When an award is made by an arbitrator, the patentee, his assignee or licensee shall give notice thereof in writing to the Commissioner. There shall be a separate notice prepared for each patent involved in such proceeding. Such notice shall set forth the names and addresses of the parties, the name of the inventor, and the name of the patent owner, shall designate the number of the patent, and shall contain a copy of the award. If an award is modified by a court, the party requesting such modification shall give notice of such modification to the Com-

missioner. The Commissioner shall upon receipt of either notice, enter the same in the record of the prosecution of such patent. If the required notice is not filed with the Commissioner, any party to the proceeding may provide such notice to the Commissioner.

(e) The award shall be unenforceable until the notice required by subsection (d) is received by the Commissioner.

* * * * *

TRADEMARK ACT OF 1946

* * * * *

Sec. 8 (a). Duration of registration—Cancelation at end of 6 years unless affidavit of use filed

Each certificate of registration shall remain in force for 20 years: *Provided,* That the registration of any mark under the provisions of this Act shall be canceled by the Commissioner at the end of 6 years following its date, unless within 1 year next preceding the expiration of such 6 years the registrant shall file in the Patent and Trademark Office an affidavit showing that said mark is [still] in use *in commerce* or showing that its nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark. Special notice of the requirement for such affidavit shall be attached to each certificate of registration.

Sec. 8(b). Cancelation of republished prior registrations unless affidavit of use filed

Any registration published under the provisions of subsection (c) of section 12 of this Act shall be canceled by the Commissioner at the end of 6 years after the date of such publication unless within 1 year next preceding the expiration of such 6 years and registrant shall file in the Patent and Trademark Office an affidavit showing that said marks is [still] in use *in commerce* or showing that its nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark.

* * * * *

Sec. II. Acknowledgments and verifications

Acknowledgments and verifications required hereunder may be made before any person within the United States authorized by law to administer oaths, or, when made in a foreign country, before any diplomatic or consular officer of the United States or before any official authorized to administer oaths in the foreign country concerned whose authority [shall] *is* proved by a certificate of a diplomatic or consular officer of the United States *or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States,* and shall be valid if they comply with the laws of the state or country where made.

* * * * *

Sec. 13. Opposition to registration of marks on the Principal Register

Any person who believes that he would be damaged by the registration of a mark upon the principal register may upon payment of the required fee, file [a verified] *an* opposition in the Patent and Trademark Office, stating the grounds therefor, within thirty days after the publication under subsection (a) of section 12 of this Act of the mark sought to be registered. Upon written request prior to the expiration of the thirty-day period, the time for filing opposition shall be extended for an additional thirty days, and further extensions of time for filing opposition may be granted by the Commissioner for good cause *when requested prior to the expiration of an extension.* The Commissioner shall notify the applicant of each extension of the time for filing opposition. [An unverified opposition may be filed by a duly authorized attorney, but such opposition shall be null and void unless verified by the opposer within a reasonable time after such filing to be fixed by the Commissioner.] An opposition may be amended under such conditions as may be prescribed by the Commissioner.

SEC. 14. A [verified] petition to cancel a registration of a mark, stating the grounds relied upon, may, upon payment of the prescribed fee, be filed by any person who believes that he is or will be damaged by the registration of a mark on the principal register established by this Act, or under the Act of Mar. 3, 1881, or the Act of Feb. 20, 1905—

(a) within five years from the date of the registration of the mark under this Act; or

(b) within five years from the date of publication under section 12(c) hereof of a mark registered under the Act of Mar. 3, 1881, or the Act of Feb. 20, 1905; or

(c) at any time if the registered mark becomes the common descriptive name of an article or substance, or has been abandoned, or its registration was obtained fraudulently or contrary to the provisions of section 4 or of subsections (a), (b), or (c) of section 2 of this Act for a registration hereunder, or contrary to similar prohibitory provisions of said prior Acts for a registration thereunder, or if the registered mark is being used by, or with the permission of, the registrant so as to misrepresent the source of the goods or services in connection with which the mark is used; or

(d) at any time if the mark is registered under the Act of Mar. 3, 1881, or the Act of Feb. 20, 1905, and has not been published under the provisions of subsection (c) of section 12 of this Act; or

(e) at any time in the case of a certification mark on the ground that the registrant (1) does not control, or is not able legitimately to exercise control over, the use of such mark, or (2) engages in the production or marketing of any goods or services to which the certification mark is applied, or (3) permits the use of the certification mark for purposes other than to certify, or (4) discriminately refuses to certify or to continue to certify the goods or services of any person who maintains the standards or conditions which such mark certifies:

Provided, That the Federal Trade Commission may apply to cancel on the grounds specified in subsections (c) and (e) of this section any mark registered on the principal register established by this Act, and the prescribed fee shall not be required.

Sec. 15. Incontestability under certin conditions of right to use mark

Except on a ground for which application to cancel may be filed at any time under subsections (c) and (e) of section 14 of this Act, and except to the extent, if any, to which the use of a mark registered on the principal register infringes a valid right acquired under the law of any State or Territory by use of a mark or trade name continuing from a date prior to the date of [the publication] *registration* under this Act of such registered mark, the right of the registrant to use such registered mark in commerce for the goods or services on or in conncection with which such registered mark has been in continuous use for 5 consecutive years subsequent to the date of such registration and is still in use in commerce, shall be incontestable: *Provided,* That—

(1) there has been no final decision adverse to registrant's claim of ownership of such mark for such goods or services, or to registrant's right to register the same or to keep the same on the register ; and

(2) there is no proceeding involving said rights pending in the Patent Office or in a court and not finally disposed of; and

(3) an affidavit is filed with the Commissioner within 1 year after the expiration of any such 5-year period setting forth those goods or services stated in the registration on or in connection with which such mark has been in continuous use for such 5 consecutive years and is still in use in commerce, and the other matters specified in subsections (1) and (2) hereof; and

(4) no incontestable right shall be acquired in a mark which is the common descriptive name of any article or substance, patented or otherwise.

Subject to the conditions above specified in this section, the incontestable right with reference to a mark registered under this Act shall apply to a mark registered under the Act of Mar. 3, 1881, or the Act of Feb. 20, 1905, upon the filing of the required affidavit with the Commissioner within 1 year after the expiration of any period of 5 consecutive years after the date of publication of a mark under the provisions of subsection (c) of section 12 of this Act.

The Commissioner shall notify any registrant who files the above-prescribed affidavit of the filing thereof.

Sec. 16. Interference

[Whenever application is made for the registration of a mark which so resembles a mark previously registered by another, or for the registration of which another has previously made application, as to be likely when applied to the goods or when used in connection with the services of the applicant to cause confusion or mistake or to deceive, the Commissioner may declare that an interference exists. [*Upon petition showing extraordinary circumstances, the Commissioner may declare that an interference exists when application is made for the registration of a mark which so resembles a mark previously registered by another, or for the registration of which another has previously made application, as to be likely when applied to the goods or when used in connection with the services of the applicant to cause confusion or mistake or to decieve.* No interference shall be declared between an application and the registration of a mark the right to the use of which has become incontestable.

* * * * *

Aug. 27, 1982
[H.R. 6260]

§31. Fees

(a) The Commissioner of Patents will establish fees for the filing and processing of an application for the registration of a trademark or other mark and for all other services performed by and materials furnished by the Patent and Trademark Office related to trademarks and other marks. [Fees will be set and adjusted by the Commissioner to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost to the Office of performing the service or furnishing the material.] However, no fee for the filing or processing of an application for the registration of a trademark or other mark or for the renewal or assignment of a trademark or other mark will be adjusted more than once every three years. No fee established under this section will take effect prior to sixty days following notice in the Federal Register.

Patent and Trademark Office. Appropriation authorization.

(b) The Commissioner may waive the payment of any fee for any service or material related to trademarks or other marks in connection with an occasional request made by a department or agency of the Government, or any officer thereof. The Indian Arts and Crafts Board will not be charged any fee to register Government trademarks of genuineness and quality for Indian products or for products of particular Indian tribes and groups.

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(58)

Department of Commerce
Patent and Trademark Office

37 CFR Part 1

Rules of Practice in Patent Cases; Reexamination Proceedings

Agency: Patent and Trademark Office, Commerce.

Action: Final rule.

Summary: The Patent and Trademark Office is amending its rules of pract ice in patent cases to provide procedures for the reexamination of patents. Public Law 96-517 amended the patent act to authorize reexamination proceedings as a means for improving the quality of United States patents. The Patent and Trademark Office intends, through this amendment of its rules, to provide patent owners and the public with guidance on the procedures the Office will follow in conducting reexamination proceedings.

Date: Effective date: July 1, 1981.

For Further Information Contract: Mr. R. Franklin Burnett by telephone at [703]557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks. Washington, D.C. 20231.

Supplementary Information: This rule change relates to a procedure for reexamination of patents as provided for in Public Law 96-517, section 1 of which relates to reexamination and becomes effective on July 1, 1981.

Background

A notice of proposed rulemaking was published in the Federal Register on Jan. 13, 1981 at 46 FR 3162-3175 and in the *Official Gazette* on Feb. 17, 1981 at 1003 O.G. 36-47.

The proposed rulemaking set forth two somewhat distinct procedures directed towards determining and improving the quality and reliability of United States patents. The procedures were (1) provisions for reexamination of patents as provided for in Pub. L. 96-517, section 1 of which relates to reexamination and becomes effective on July 1, 1981, and (2) provisions for inter partes protest proceedings in a patent application between the patent applicant and a member (or members) of the public who has (have) access to the application file.

An oral hearing was held on Apr. 16, 1981. Fifty-nine written letters and statements were submitted. Nineteen persons testified at the oral hearing which resulted in 107 pages of testimony.

Discussion of General Issues Involved

After careful consideration of the comments which have been received, the part of the proposed rulemaking relating to reexamination of patents as set forth in new Chapter 30 which Pub. L. 96-517 added to Title 35 of the United States Code [35 U.S.C. 301-307] is being adopted with certain changes. The remainder of the proposal relating to inter partes protest proceedings is not being adopted.

The comments relating to the proposed rules for inter partes protest proceedings were generally mixed, with a majority of persons and associations submitting comments either opposed to these proposed rules or indicating that adoption of the proposed rules should be delayed or deferred for further study and consideration.

A number of comments were received requesting some further changes to the rules be made. The thrust of some of the suggested changes would be to remove public access to reissue applications and to limit public participation in the examination of reissue applications. The changes suggested included restoring the rules in these areas to essentially their pre-1977 form. In particular, it was suggested that §1.175 be amended to eliminate paragraph (a)(4). These changes were not a part of the published proposal and are not being adopted at this time. Their consideration and adoption would require a new notice of proposed rulemaking.

Further, since the subject matter of reissue applications is already known to the public the necessity for maintaining them in confidence is not compelling. The elimination of paragraph (a)(4) of §1.175 would not have a significant effect since less than one-fourth of the currently filed reissue applications are based solely upon the 1977 change to §1.175. Under the present circumstances, it is more appropriate to defer any consideration of such changes until this issue has been reviewed further and possibly until some experience is gained under the rules adopted herein relating to reexamination. Such experience may indicate the desirability of either retaining the 1977 change to §1.175, deleting the 1977 change, or making different changes in the rules.

The comments relating to reexamination were generally favorable with most of the comments indicating general approval of the proposed rules. Among the more often mentioned specific comments were suggestions relating to public notice of reexamination requests and/or orders. A number of comments also related to requester and/or third party participation in the reexamination proceeding and also to the scope of the proceeding.

After careful review of the comments and suggestions it has been decided to adopt the suggestions relating to the publication in the *Official Gazette* of requests for reexamination for which the fee has been paid. In addition, any reexaminations ordered at the initiative of the Commissioner will also be announced in the *Official Gazette*. The announcement will include at least the date of the request or any Commissioner initiated order, a reexamination request or order control number, the patent number, title, class and subclass, name of the inventor, name of the patent owner of record, and the examining group to which the reexamination is assigned.

The suggestions and comments relating to more participation in the reexamination proceeding by the requester and third parties have been adopted only to a limited degree. The requester will in general have only that participation provided by the rules as proposed. However, any citations under §1.501 by any person will be entered in the patent file up until the date of an order to reexamine. The essentially ex parte nature of the proceeding is believed to be in keeping with the spirit and intent of the statute even though the statute does not require ex parte proceedings. Ex parte proceedings will minimize the costs and other effects of reexamination requests on patentees, especially individuals and small businesses.

The scope of the reexamination proceeding which was originally proposed has been essentially adopted in the final rules. The suggestions that the rules be broadened to include other issues have not been adopted since the other issues would unduly complicate the proceedings, raise the expense of the proceedings and raise questions whether such issues can be considered under Pub. L. 96-517.

Discussion of the Major Specific Issues Involved

The rules relating to reexamination proceedings are directed to the procedures set forth in new Chapter 30 of Title 35 of the United States Code (35 U.S.C. 301-307). This Chapter provides for the citation of prior art in patents, filing of requests for reexamination, decisions on such requests, reexamination and appeal from reexamination decisions, and the issuance of a certificate at the termination of the reexamination proceedings. Present§§1.1, 1.5, 1.11, 1.33, 1.34, 1.36, 1.104, 1.107, 1.109, 1.111, 1.112, 1.113, 1.115, 1.116, 1.121, 1.191, 1.192, 1.196, 1.197, 1.231, 1.248, 1.301, and 1.303 are amended to provide for reexamination procedures. A new "Subpart D-Reexamination of Patents" includes new §§ 1.501, 1.510, 1.515, 1.520, 1.525, 1.530, 1.535, 1.540, 1.550, 1.552, 1.555, 1.560, 1.565, and 1.570. Paragraph (b) of §1.291, relating to prior art citations in patents, is deleted, since provisions therefor appear in §1.501.

Section 1.1, as amended, provides for communications relating to reexamination proceedings to be marked "Box Reexam" to speed internal Office mail processing. No comments were received concerning this section. The proposal has been modified to indicate that only requests should be marked "Box Reexam".

Section 1.5, as amended, provides for all letters relating to a reexamination proceeding to be identified by patent number and a reexamination request control number. No comments were received concerning this section. Section 1.5 has been modified to also include reference to the Group Art Unit and the examiner, if known.

Section 1.11, as amended, provides for all papers made of record in reexamination proceedings to be open to inspection and copying by the public. Eighteen comments were received relating to publication of a notice in the *Official Gazette*. A new paragraph (c) has been added which provides for the publication of requests with sufficient fees paid and orders initiated by the Commissioner. Proposed paragraph "c" has been adopted as paragraph "d".

Section 1.33, as amended, has a new paragraph (c) relating to which address communications for the patent owner will be sent and who may sign papers filed. Four

comments were received on this section relating to whom the mail should be addressed. One proposal, which suggested use of the current address of the attorney or agent of record, was adopted.

Section 1.34, as amended, provides for the appointment of an attorney or agent in a reexamination proceeding. Only one comment was received on this section which proposed a rule specifically allowing attorneys to file requests without identifying their clients. Since any person may request reexamination, such a rule is not felt necessary.

Section 1.36, as amended, provides for the revocation and withdrawal of powers of attorney in a reexamination proceeding. No comment was received. Section 1.36 is adopted as proposed with an additional change which added "or her" near the end.

Section 1.104, as amended, broadens the present section to also include reexamination. Three comments were received on §1.104. All comments indicated that the examiner should not make a prior art search. Although no complete new search by the examiner is required, the use of patents and printed publications in addition to those submitted by the requester is clearly indicated in 35 U.S.C. 303(a). According, §1.104 is adopted as proposed.

Section 1.107, as amended, provides for the citation of prior art by the examiner in a reexamination proceeding. The amended rule also refers to foreign published applications, as well as patents. No comments were received on this section. It is adopted as proposed.

Section 1.109, as amended, provides for the examiner to supply reasons for allowance in a reexamination proceeding if the examiner believes that the record does not make clear the reasons for allowing a claim or claims. No comments were received on this section. Except for a clarifying change in language, it is adopted as proposed.

Section 1.111, as amended, provides for replies by the patent owner in a reexamination proceeding. One comment was received which suggested a clarification. The suggestion was adopted. Other non-substantive changes have been made in the proposed section to shorten the sentences for clarity.

Section 1.112, as amended, provides for reexamination and reconsideration of the patent under reexamination after responses by the patent owner. Three comments were received on this section.

The wording has been changed as suggested to avoid any confusion between "reexamination" and "reexamine". The sentences have also been shortened for clarity.

Section 1.113, as amended, provides for a final rejection or action in a reexamination proceeding. One comment was received which pointed out a possible conflict between the amendment rights of section 305 and the final rejection of section 1.113. No problem is seen in this regard because of the provision of section 305 which states that "reexamination will be conducted according to the procedures established for initial examination." The section is adopted as proposed with the last sentence being divided into two sentences for clarity.

Section 1.115, as amended, provides for amendments by the patent owner in a reexamination proceeding. No comments were received concerning this section. The section is adopted as proposed with minor changes for clarity.

Section 1.116, as amended, provides for amendments after final action in reexamination proceedings. One comment was received which was the same as that mentioned and responded to in Section 1.113 above. The sentences have been shortened for clarity.

Section 1.121, as amended, contains a new paragraph (f) which requires a complete copy of any new or amended claim when presented during reexamination proceedings. Two persons commented on this section. One proposed side-by-side presentation of amended and original claims. The other proposed that exactly the same procedure be used as is now in effect for amending reissue claims. Neither suggestion was adopted since neither lends itself to printing only the amended claims in a certificate as easily as the procedure set forth in §1.121(f). The proposed section was revised to also provide for the amendment of the description. In addition, the last three sentences of §1.510(e) have been inserted as the last three sentences of §1.121(f) in order to provide a more complete description therein of the manner of making amendments, including the numbering of claims, the restriction on scope of the claims and the prohibition against the introduction of new matter.

Section 1.191, as amended, provides for appeal to the Board of Appeals by the patent owner from any decision adverse to patentability, in accordance with 35 U.S.C. 306. One comment was received on proposed §1.191 which urged that the requester should also be entitled to appeal. This proposal was not adopted because it is not provided for in the law and could result in harassment if permitted. The section is adopted as proposed except that "primary" contained in the existing rule is retained.

Section 1.192, as amended, provides two months from the date of the Notice of Appeal for the patent owner to file an appeal brief in a reexamination proceeding. Five comments were received relating to §1.192 which proposed that the period for filing an appeal brief in a reexamination appeal be two months as in other appeals. The proposed rule has been adopted with the suggested two month period. The sentences have been shortened for clarity.

Section 1.196 and §1.197 are being amended to refer to "appellants", which is a term which includes both applicants and patent owners.

These two sections were not published for comment, however, the issues involved were presented in proposed§§1.191 and 1.192. Paragraph (c) of §1.197 has also been rewritten for clarity.

Section 1.231(a)(1), as amended, provides for a motion that a patent claim is unpatentable in an interference proceeding where reexamination thereof has also been requested.

Three comments were received concerning §1.231. All comments related to when interference or reexamination proceedings would be suspended. Section 1.565 provides basis for such suspensions. Decisions will be made on a case by case basis, depending on the particular fact situation. The sentences in §1.231(a)(1) have been shortened and rearranged for clarity.

An amendment was proposed to delete the last two sentences of §1.247 relating to proof of service. No comments were received concerning this section but, on reconsideration, no need for such deletion is felt necessary and no change is being adopted.

Section 1.248, as amended, includes a new paragraph (b) relating to methods of serving papers and proof of service. No comments were received concerning this section. The section is adopted as proposed with minor changes for clarity and to conform to the Federal Rules of Civil Procedure.

Section 1.291, as amended, deletes paragraph (b). Former paragraph (b) dealt with the citation of prior art provisions. It was deleted since the provisions are now covered by §1.501. Five persons commented on §1.291. One comment relating to filing protests in reexamination proceedings was not adopted since such proceedings are ex parte in nature and are limited to consideration of prior art patents and printed publications cited by the public prior to the order. Two persons mentioned providing a procedure for citation of prior art by patentees. Citation of prior art by patentees is included in §1.501. The two other comments related to the content of protest proceedings, which are not part of this final rule. Section 1.291 is adopted as proposed except that the paragraph designation of (c) is not being changed.

Section 1.301, as amended, provides for appeal by the owner of a patent in reexamination proceedings to the U.S. Court of Customs and Patent Appeals. Four comments were received relating to §1.301. One person suggested the insertion of "any" as the fourth word in the section. This suggestion was adopted. The other three comments related to appeals in inter partes protest

proceedings which are not a part of this promulgation. Section 1.301 is adopted as proposed with only the above mentioned change.

Section 1.303, as amended, provides for remedy by civil action under 35 U.S.C. 145 for the owner of a patent in reexamination proceedings. No comments were received concerning this section. The changes from the proposal are the insertion of "any" as the fourth word in the section as suggested in §1.301 and the addition of, "306" to the title.

New §1.501 provides a system for citation of patents and printed publications to the Patent and Trademark Office for placement in the patent file by any person during the period of enforceability of the patent in accordance with 35 U.S.C. 301. Seventeen persons commented on §1.501. Nine comments indicated that citations should be limited to patents or printed publications. Six comments indicated that persons citing art should be required to apply it to at least one claim. Three persons held the opposite view. The final rule wording provides for citations limited to patents and printed publications where the person making the citation states the pertinency and applicability of the citation to the patent and the bearing the citation has on the patentability of at least one claim of the patent. The final rule provides that a citation made by the patent owner may include an explanation of how the claims differ from the prior art cited. Any citations which include items other than patents and printed publications will not be entered in the patent file. This does not, of course, limit in any manner the kinds and types of information which can be relied upon in protests against pending patent applications, whether such be original applications or reissue applications. Four persons stated that a separate letter requesting confidentiality should be required in cases desiring confidentiality. This provision was not considered to be necessary. One comment requested clarification of the term "period of enforceability of a patent." The meaning of this term appears to be clear since it includes any period for which recovery can be had for infringement. Under usual circumstances, this would be the term of the patent plus the six years provided by 35 U.S.C. 286. Five comments were received relating the paragraph (c) concerning service of citations on the patent owner. The wording has been clarified. A suggestion was made that prior art copies and translations of non-English documents be required. This suggestion was not adopted since such documents are not absolutely essential until a request for reexamination has been filed. However, if the person citing the patents or printed publications desires that they be considered in any subsequent reexamination proceedings, copies and any necessary English translation should be included with the citation. A proposal was also made to charge a fee to prevent harassment. This proposal was not adopted since the mere citation of prior art is not considered to constitute harassment. A suggestion was made to change the title of the section. This suggestion was adopted in slightly modified form.

New §1.510 sets forth procedures for any person to request reexamination in accordance with 35 U.S.C. 302. Paragraph (a) of new §1.510 limits the period for such request to the period of enforceability of the patent for which the request is filed and requires payment of the fee for requesting reexamination. Paragraph (b) of new §1.510 indicates what each request for reexamination must include. Paragraph (c) of new §1.510 indicates under which conditions a request for reexamination will be considered. Paragraph (d) of new §1.510 indicates the date on which the entire fee is received will be considered to be the date of the request for reexamination. Upon reconsideration of the paragraph as proposed, it was considered more appropriate to base the filing date of the request for reexamination on the receipt of the fee for requesting reexamination rather than include other matters. Proposed paragraph (d) has been amended accordingly and is adopted. Paragraph (e) of new §1.510 covers amendments which a patent owner can propose. Such amendments can accompany a request for reexamination by the patent owner. The paragraph, with changes in wording for clarity, is adopted as proposed. A new paragraph (f) was added to clarify that requests for reexamination may be filed by attorneys or agents on behalf of a requester. Nineteen persons commented on §1.510. One person inquired as to whether confidential requests would be accepted. In response thereto, §1.510 provides that any person may file a request for reexamination. That person's name will not be maintained in confidence. One suggestion was made to permit comment and rebuttal before the decision under §1.515. No need for such a procedure is seen since the only question to be considered is whether or not a substantial new question of patentability has been raised. An opportunity for comment and rebuttal is provided after the issuance of the order. One comment was received which desired provision for supplemental requests at a reduced fee. This proposal was not adopted since it is felt that all requesters should share equally in the cost. One comment was received which proposed that duplicate copies of the request be filed in the Office so that one copy would be available for public inspection at all times. This proposal was not adopted since it would appear to create more problems than it would solve. One comment was received that only "readily available" translations should be required. It is felt that if a document is considered to be sufficiently pertinent to request reexamination, that an English translation should be provided to insure complete and proper consideration. A suggestion was made relating to paragraph (b)(5) that direct service be limited to registered patent attorneys. No need for such a restriction is seen. Various other comments relating to procedures were considered but were not adopted.

New §1.515 relates to a determination as to whether the request has presented a substantial new question of patentability under 35 U.S.C. 303. Paragraph (a) of new §1.515 requires that the determination be made within 3 months of the filing date of the request. Paragraph (b) of new §1.515 refers to the refund provisions. Paragraph (c) of new §1.515 provides for review by petition to the Commissioner of any decision refusing reexamination. Seven persons commented on §1.515. Several comments were received suggesting that the term "reexamination" should be dropped before "examiner". This proposal was adopted. Several persons requested that all art cited in the patent file at the time of the order under §1.525 be considered when deciding whether a substantial new question of patentability is presented in the request. This is possible under the provision of §1.515(a) which permits "consideration of other patents or printed publications", but is not required insofar as prior art not relied upon in the request is concerned. One person suggested that "is" be changed to-affirms-in paragraph (c). This proposal has been adopted. One commentor questioned whether a right to review was available under paragraph (c) if reexamination was ordered. No right to review exists in such a case because all claims will be reviewed in view of all prior art during the reexamination under §1.550.

New §1.520 provides for reexamination at the initiative of the Commissioner under the provisions of the last sentence of paragraph (a) of 35 U.S.C. 303. Six persons commented on §1.520. One comment was received that indicated that the section did not include a reference to patents "discovered by the Commissioner" which is contained in 35 U.S.C. 303(a). This phrase has been added to the rule. A request was made that the sentence "Normally requests from outside-will not be considered." be deleted from the rule. The sentence is being retained since the rule wording provides an easy reference for Office policy. Two comments were received that indicated a desire to have any decisions not to reexamine in Commissioner initiated situations be made part of the patent file. This proposal was not adopted since the basis for not reexamining may involve many policy issues in addition to whether a substantial new question of patentability exists in the case. If all papers in such a case would be made part of a file, it may lead to conclusions

that there are no new questions of patentability when this question may not have been addressed because the reexamination was not ordered for other reasons such as little or no interest in a patent about to expire. One comment stated that the section safeguards the rights of the patentee. The language referring to the designation and delegation of authority to appropriate Patent and Trademark Office officials is deleted as unnecessary since the Commissioner's authority to designate and delegate is implicit and understood.

New §1.525 provides for ordering reexamination where a substantial new question of patentability has been found pursuant to §§1.515 or 1.520. Six comments were received relating to §1.525. One comment was made that the attorney should be able to return notices to the sender if he is unable to contact the patent owner. This topic has not been added to the rules but will be handled on a case by case basis. One comment requested that the patent owner have the option to request that the reexamination be performed by an examiner (1) other than the original examiner, or (2) other than the examiner who issued the order. Comments were also received on both sides of the question as to whether the original examiner should conduct the reexamination. In response, it would appear to be inappropriate to allow an interested party to select the examiner. Under the section, the only limitation placed on the selection of the examiner by the Office is that the same examiner whose decision was reversed on petition ordinarily will not conduct the reexamination. Paragraph (b) has been changed to provide that the notices published in the *Official Gazette* will be considered to be constructive notice.

New §1.530 relates to the statement and proposed amendments provided for in the second sentence of 35 U.S.C. 304. Amendments submitted by the patent owner cannot enlarge the scope of a claim in the patent. Amendments will not be effectively entered into the patent until the certificate under §1.570 and 35 U.S.C. 307 is issued. Nine comments were received on §1.530. Several persons felt that the patent owner should be allowed to comment before the decision under §1.515 is made. Providing for such a comment would delay the decision under §1.515 which must be made within three months following the filing date of the request. Further, no need is seen for a statement relating to whether a new question of patentability is present since the patent owner has the opportunity to address any issues of patentability only after the first Office action. One comment questioned whether paragraph (d) also related to the description. This paragraph has been amended to clarify the matter. One person questioned whether an amendment could be filed with a statement. Paragraph (b) clearly answers this question in the affirmative. Several comments requested more time than two months for the patent owner to file a statement. In reply, the law in section 304 indicates that a reasonable period of not less than two months be provided for the patent owner's statement. If the period is too short in particular situations, extensions of time can be requested. It is felt that two months should be retained in the rule in view of the "Special Dispatch" required in reexamination cases. The proposed second sentence of paragraph (b) has not been adopted since §1.525(b) now provides for the publication of notices of the filing of all requests which are accompanied by the proper fee.

New §1.535 provides for reply by the reexamination requester to the statement under §1.530 of the patent owner and for service on the patent owner of any such reply. The last sentence of proposed §1.540 has been added as the last sentence of §1.535. Five persons commented on §1.535. Four persons indicated that the requester should be given additional opportunity to comment. The reasons for the limited participation are that it is all that is required under the law, it prevents to a great degree, harassment of a patent owner, it results in a less expensive proceeding for all parties, and it results in an earlier conclusion of the proceedings.

New §1.540 relates to the consideration of statements under §1.530 and replies under §1.535. One comment was received that the phrase "may result in their being refused" was worded too loosely. In the absence of any specific suggestion, the proposed wording is considered to be adequate and is adopted as proposed. In addition, it is appropriate that the Office retain discretion as to consideration in such cases.

New §1.550 covers the basic items relating to the conduct of reexamination proceedings. These proceedings basically follow the same procedures used for examining patent applications. The patent owner will be required to serve the reexamination requester with any response by the patent owner to the Office, in order to remove the necessity of the requester having to continuously monitor the file wrapper. Fourteen persons commented on §1.550.

Several persons commented that they felt that at least some input by third parties should be permitted. Paragraph (e) has been revised to permit third party input up until the time of the order. Several comments were received that the periods for response should be extended to be similar to those in regular application Office actions. Although problems may arise in certain cases and extensions of time may be granted, it is felt that relatively short response times are necessary in order to process reexaminations with "special dispatch." A question was raised as to the effect of failure to respond to an Office action. Paragraph (d) has been amended to clarify this matter.

New §1.552 covers the scope of reexamination in a reexamination proceeding. While it is not intended that the examiners will routinely complete a new search when conducting reexamination, the examiners will be free to, and will, very likely, conduct additional searches and cite and apply additional prior patents and publications when they consider it is appropriate and beneficial to do so. Insofar as the actual reexamination is concerned, the examination as to original patent claims is only on the basis of patents or printed publications. However, narrowed amended claims or new claims limited to the original disclosure will also be examined for compliance with other sections of the statute (35 U.S.C. 112 and 132) which are necessary in order to ensure that any amended or new claims are supported, valid, and do not introduce new matter. New §1.552 also provides that questions relating to matters other than those identified in paragraphs (a) and (b) of the section would merely be noted by the examiner as being an open question in the record. Patent owners could then file a reissue application if they wish such questions to be resolved. Ten persons commented on §1.552. Several persons commented that the question of fraud should be considered in reexamination proceedings. Comments were also received that the proceedings should be limited to patents and printed publications. The rules have been written to follow the statute which speaks only to reexamination based on patents and printed publications. Mixed comments were also received concerning the retention of the second sentence of paragraph (c). The paragraph is being adopted as proposed with the addition of a reference to the fact that the examiner will note the existence of unresolved questions in an Office action. In addition, the phrase "raised or" has been deleted from paragraph (c) as unnecessary.

New §1.555 covers the duty of disclosure by a patent owner in a reexamination proceeding involving the owner's patent. Nine persons commented on §1.555. Four persons supported placing a duty of disclosure on the patent owner. One comment was received that an oath or declaration be required of the patent owner in a reexamination so as to minimize the appearance and occurrence of any fraudulent acts and to emphasize the patentee's obligation of candor. While the suggestion for an oath or declaration has not been adopted, §1.555 does place an obligation of candor on the patent owner insofar as bringing patents or printed publications to the attention of the Office is concerned. The necessity for an oath or declaration in addition to the obligation placed on the patent owner by §1.555 is not apparent at this time. Accordingly, the suggestion has not been adopted.

Two persons felt the duty of disclosure should apply to both the patent owner and requester. This proposal was not adopted since no sanction could be easily applied against the requester who violated such a rule. One person suggested broadening the duty requirements to include information in addition to patents and printed publications. Although such a practice may be desirable, no need is seen to require information under the reexamination rules which cannot be used during the reexamination. One person felt that there should be no duty of disclosure requirement in reexamination proceedings since the Office will be considering specific prior art and the presence or absence of other prior art does not seem terribly relevant. This suggestion was not adopted since the issue of patentability is not limited to the specific prior art presented and the duty to disclose is consistent with current practice under §1.56. The section is adopted as proposed except for the indication that prior art statements should be filed in accordance with §1.98. Also, the section has been divided into two sentences for clarity.

New §1.560 relates to the conduct of interviews in reexamination proceedings. Seven comments were received directed to §1.560. One comment requested elimination of interviews. This suggestion was not adopted since interviews have been found to be very helpful in resolving issues. Five comments were received which indicated that the requester should be permitted to attend all interviews. This suggestion was not adopted because of the otherwise ex parte nature of the examination. Two comments were received which indicated that interviews should be permitted before the first Office action. This suggestion was not adopted since such interviews would be held at a time when the Office has not yet taken a position on the allowability of the claims under reexamination. Section 1.560 is adopted as proposed.

New §1.565 provides for the Commissioner to determine which, if any, proceedings should be stayed, consolidated, or suspended, if concurrent proceedings involving the patent under reexamination are instituted or in progress. Four comments were received concerning§1.565. One comment pointed out the desirability of combining copending reexamination proceedings. This concept has been accepted and a new paragraph (c) has been added to cover this matter. Two comments voiced concern over the possibility of delay resulting from stayed, suspended or combined cases. Although some delay may result, it is felt that a resolution of all issues should occur at an earlier date. Decisions as to whether to delay or combine cases will be made on a case by case basis to minimize delays and to protect the interests of all parties concerned. One comment was made to allow the patent owner to comment prior to any decision to stay proceedings by the Commissioner. The desirability of such comment will be decided on a case by case basis and is not considered desirable for placement in the rules. The addition of paragraph (c) and the insertion of "is or" before "becomes" in the first sentence of paragraph (b) are the only changes from the proposed rule.

New §1.570 concerns the issuance of the reexamination certificate under 35 U.S.C. 307 after conclusion of reexamination proceedings. The certificate will cancel any patent claims determined to be unpatentable, confirm any patent claims determined to be patentable, and incorporate into the patent any amended or new claim determined to be patentable. Three commentors mentioned §1.570. Two persons questioned the statutory authority for paragraph (d). In response to the concern for statutory authority, it is the position of the Office that once all of the claims have been canceled from the patent, the patent ceases to be enforceable for any purpose. Accordingly, any pending reissue or other Office proceeding relating to a patent in which such a certificate has been issued will be terminated. This provides a degree of assurance to the public that patents with all the claims canceled via reexamination proceedings will not again be asserted. One commentor indicated that copies of the certificate should be part of subsequently sold copies of the patent. Such a practice is intended but is not being made part of the regulations.

Environmental, energy, and other consideration: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354).

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291.

[Text of adopted rules appears in 37 CFR. revised July 1, 1982.]

RENE D. TEGTMEYER,
May 12, 1981. *Acting Commissioner of Patents and Trademarks.*

ROBERT B. ELLERT,
May 15, 1981. *Acting Assistant Secretary for Productivity, Technology, and Innovation.*

[FR Doc. 81-16031 Filed 5-26-81; 8:45 am]

[1007 O.G. 30]

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(59) **Department of Commerce**
Patent and Trademark Office
37 CFR Parts 1 & 5
[Docket No. 21223–259]
Revision of Patent Procedure

Agency: Patent and Trademark Office, Commerce

Action: Final Rule.

Summary: The Patent and Trademark Office is amending the rules of practice in patent cases, Part 1 of 37 CFR, to implement the sections of Public Law 97-247 of 1982 which become effective on Feb. 27, 1983, and to make other miscellaneous changes. The other miscellaneous changes are being made to clarify and improve the rules where appropriate. The rulemaking also is amending Part 5 of 37 CFR to establish procedures for expediting the granting of a license under 35 U.S.C. 184 permitting the filing of a patent application in a foreign country.

Effective Date: Feb. 27, 1983.

For Further Information Contact: R. Franklin Burnett by telephone at (703) 557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: This rule change is designed primarily to 1) implement the changes in practice in the Patent and Trademark Office provided for in Public Law 97-247 enacted on Aug. 27, 1982; 2) clarify or rewrite certain rules; and 3) expedite the granting of licenses under 35 U.S.C. 184.

This rule change contains a number of changes in practice designed to benefit both the Patent and Trademark Office in its handling of its mission and the public the Office serves.

Certain of the changes are housekeeping in nature.

A number of final rules have already been issued to implement Public Law 97-247. A final rule on "Revision of Patent and Trademark Fees" was published on July 30, 1982 at 47 FR 33086-33112 with corrections in the printing thereof being published on Aug. 4, 1982, at 47 FR 33688 and on Aug. 5, 1982, at 47 FR 33959. The final rule was also published in the Official Gazette on Aug. 10, 1982, at 1021 O.G. 19-94. A final rule relating to definitions of "independent inventor" and "nonprofit organizations" was published on Sept. 10, 1982 at 47 FR 40134-40140 and on Sept. 21, 1982 at 1022 O.G. 29-46. A "Revision of Patent and Trademark Fees Confirmation" was published on Sept. 17, 1982 at 47 FR 41272-41283 and on Sept. 28, 1982 at 1022 O.G. 61-97. A final rule relating to the definition of "small business concern" was published on Sept. 30, 1982 at 47 FR 43272-43276 and on Oct. 19, 1982 at 1023 O.G. 23-29.

Discussion of Specific Rules and Significant Differences Between Proposed and Final Rules:

Section 1.4

Section 1.4 is amended as proposed to add a reference to Subpart D relating to citation of prior art and reexamination.

Section 1.6

Section 1.6 is amended as proposed to insert "federal" before "holidays" in paragraphs 1.6(a)-(c) in accordance with §21(b) of Title 35, United States Code, as amended by Public Law 97-247. New paragraph 1.6(d) will establish in the regulations a procedure under which papers and fees which could not be filed on a particular date because of an interruption or emergency in the United States Postal Service which is so designated by the Commissioner, may be promptly filed after the ending of such a designated interruption or emergency and be considered as having been filed on that particular date. Authority for such a practice is found in §21(a) of Title 35, United States Code, as amended by Public Law 97-247.

Section 1.7

Section 1.7 is amended as proposed to insert "federal" before "holiday" in accordance with 35 U.S.C. 21(b), as amended by Public Law 97-247.

Section 1.8

Section 1.8 is amended to remove in paragraph 1.8(a) the references to §§3.55 and 4.23, which sections were removed from the rules by the rulemaking entitled "Revision of Patent and Trademark Fees" published in the Federal Register on September 10, 1982 at 47 Fed. Reg. 40134-40140. The change in paragraph 1.8(a)(i) results from the change made in §111 of Title 35, United States Code, by Public Law 97-247. Under the revised rule, the certificate of mailing procedure would be available for filing patent oaths or declarations and filing fees. However, the certificate of mailing procedure could not be used for filing patent specifications and drawings to obtain a filing date. Such papers can be filed under new §1.10. The final rule clarifies that each paper or fee filed under §1.8 must include its own certificate of mailing. The proposed amendment to §1.8(a)(viii) referring to the Court of Appeals for the Federal Circuit rather than to the Court of Customs and Patent Appeals, has been adopted as a final rule as published on Oct. 26, 1982 at 47 FR 47380-47382 and therefore is not republished here.

Section 1.10

Section 1.10 is amended as proposed to provide a procedure for assigning the date on which any paper or fee is deposited as "Express Mail" with the United States Postal Service as the filing date of the paper or fee in the Patent and Trademark Office. Authority for the Commissioner to establish such a procedure is provided in §21(a) of Title 35, United States Code, as amended by Public Law 97-247 for any paper or fee required to be filed in the Patent and Trademark Office. This procedure covers the filing of all documents, including patent and trademark applications, and fees since they are required to be filed in the Patent and Trademark Office for processing. Questions were raised during the public hearing and in the written comments regarding the authority of the Commissioner to promulgate §1.10 insofar as it would provide for the use of "Express Mail" to file patent and trademark applications. The argument advanced was that the amendment of 35 U.S.C. 21(a) by Public Law 97-247 did not permit the Commissioner to adopt rules whereby "Express Mail" could be used to file patent and trademark applications since such applications are not papers or fees "required to be filed in the Patent and Trademark Office." It was urged that this language of 35 U.S.C. 21(a), in conjunction with amended 35 U.S.C. 111 which states that the "filing date of an application shall be the date on which the specification and any required drawing are received in the Patent and Trademark Office," prevents adoption of proposed§1.10.

The arguments presented are not supported by the legislative history or by the literal language of the statute. Section 111 of Title 35, United States Code, before and after Public Law 97-247, requires patent applications to be made "in writing to the Commissioner." This is apparent from the first sentence of 35 U.S.C. 111 which provides that "[a]pplication for patent shall be made. . .in writing to the Commissioner." Thus, one seeking a patent is "required" to make application for the same "in writing to the Commissioner." The written application clearly constitutes a "paper or fee required to be filed in the Patent and Trademark Office." Section 21(a) of Title 35, United States Code, authorizes the Commissioner to adopt rules whereby "any paper or fee required to be filed in the Patent and Trademark Office will be considered filed in the Office on the date on which it was deposited with the United States Postal Service." The authority provided by section 21(a) extends to "any paper or fee" to which the Commissioner, by an appropriate rulemaking, so extends it. The Commissioner can, therefore, by rule, establish that "any paper or fee," including a patent or trademark application, is "filed" or "received in the Patent and Trademark Office" when it is deposited with the United States Postal Service. The terms "filed" and "received" as used in 35 U.S.C. 21(a) and 111 can therefore be given the same meaning by an appropriate rulemaking by the Commissioner.

The legislative history, H.R. Rep. No. 542, 97th Cong., 2nd Sess. 8A (1982), clearly supports the interpretation set forth herein. In discussing new subsection (a) which has been added to section 21 of Title 35, United States Code, the Report emphasizes that the authority extends to "any paper or fee which is required to be filed" in the Patent and Trademark Office. The Report specifically states that the "requirements governing whether any given paper or fee may be given the filing date of the day on which it was. . .deposited with the United States Postal Service will be set forth in regulations established by the Commissioner." Clearly no restrictions were placed by the statute or the legislative history on the types of papers or fees which the Commissioner can consider as having been filed in the Patent and Trademark Office on the date of deposit with the United States Postal Service.

The new procedure, in paragraph 1.10(a), requires the use of the "Express Mail Post Office to Addressee" service of the United States Postal Service. This service provides for the use of a mailing label on which the Post Office clearly indicates the date on which it was deposited. Paragraph 1.10(b) requires (1) that the number of the "Express Mail" mailing label be placed on each paper or fee and (2) that a certificate of mailing by "Express Mail", signed by the person mailing the paper or fee, be included on each paper or fee and state the date of deposit as "Express Mail" in the United States Postal Service. The requirement that each paper or fee have the number of the "Express Mail" mailing label and the certificate of mailing by "Express Mail" included thereon is necessary so that the Patent and Trademark Office can verify when each paper or fee was filed if questions relating thereto arise. The number and certificate must be placed on each separate paper and each fee transmittal either directly on the document or by a separate paper firmly and securely attached thereto. It is not necessary that the number and certificate be placed on each page of a particular paper or fee transmittal. Merely placing the number and certificate in one prominent location on each separate paper or fee transmittal will be sufficient.

Under new paragraph 1.10(c), the Office will accord the paper or fee the date of deposit as "Express Mail" as the filing date without further proof unless a question is present regarding the date of mailing. If, however, more than a reasonable time has elapsed between the certificate date and the Patent and Trademark Office receipt date, or if other questions regarding the date of mailing are present, new paragraph 1.10(c) provides that the person mailing the paper or fee may be required to file (1) a copy of the "Express Mail" receipt showing the actual date of mailing and (2) a statement from the person who mailed the paper or fee averring to the fact that the mailing occurred on the date certified. Such statement

must be a verified statement (oath or declaration) unless made by a person registered to practice before the Patent and Trademark Office.

The certificate of mailing procedure of §1.8(a) continues to be available in addition to the proposed procedure under §1.10. The final rule (§1.10) has been changed from that proposed to allow for a reasonable time between mailing and delivery rather than only for one day since actual delivery in one day is not always provided from all areas of the country. The final rule clarifies that each paper or fee must include its own certificate of mailing by "Express Mail." This rule is being promulgated at this time so that individuals who desire to use the service may do so after the effective date.

The "Express Mail" service is seen to be preferable to other types of postal services because a readily legible mailing date is provided to both the applicant and the Patent and Trademark Office on the "Express Mail" label. Also, the labels are of uniform size and can therefore be kept on file relatively easily by the Office, if such is determined to be necessary or desirable. Registered mail and certified mail, on the other hand, provide only a postmark for the mailing date when such mail arrives in the Patent and Trademark Office and such postmarks are often illegible. Also, such mail arrives in various size envelopes which do not easily lend themselves to being filed so that the postmark may be retained. Administrative burdens including lack of certainty of mailing date and storage are considered greater for registered or certified mail than for "Express Mail." The Patent and Trademark Office will monitor closely the use of "Express Mail" by the public and may reconsider permitting the use of other forms of service provided by the United States Postal Service.

Section 1.17

Section 1.17, paragraph (h), is amended as proposed to remove the reference to §1.45 and add a reference to new §1.48 relating to the correction of inventorship in patent applications.

Section 1.22

Section 1.22 is amended to recognize that filing dates may be assigned without payment of the basic filing fee as authorized by §111 of Title 35, United States Code, as amended by Public Law 97-247. New paragraph 1.22(b) indicates that fees paid to the Office should be itemized in such a manner that the purpose for which the payment is submitted can be clearly determined by Office personnel for proper processing. The final rule includes clarification that it refers to patent and trademark fees and charges.

Section 1.24

Section 1.24 is amended as proposed to remove the reference to coupons in denominations of forty cents since coupons in this denomination are no longer necessary.

Section 1.41

Section 1.41 is amended as proposed to require in paragraph 1.14(a) that a patent be applied for in the name of the actual inventor or inventors and that the full names of the inventors be stated. Paragraph 1.41(b), as amended, clarifies the definition of the word "applicant". New paragraph 1.41(c) permits any person authorized by the applicant to file an application for patent in order to receive a filing date on behalf of the inventor or inventors, but the oath or declaration for the application must be made by all of the actual inventors in accordance with §§1.63 and 1.64. Under new paragraph 1.41(d), a showing may be required from the person initially filing an application that the filing was authorized.

Sections 1.42 and 1.43

Sections 1.42 and 1.43 are amended as proposed to remove the requirement that the legal representative sign the application papers in view of the changes in 35 U.S.C. 111, as amended by Public Law 97-247. The oath or declaration must still be signed. Several occurrences of the masculine gender in §1.42 have been removed.

Section 1.45

Section 1.45 is amended as proposed to remove present paragraphs 1.45(b) and (c) in view of new §1.48 and remove the requirement that joint inventors sign the application papers. The joint inventors are, however, still required to make the oath or declaration in accordance with new §§1.63 and 1.64.

Section 1.46

Section 1.46 is amended as proposed, with two commas being added for clarity, to permit anyone to file the application if authorized by the inventor or inventors or one of the persons mentioned in §§1.42, 1.43, or 1.47.

Section 1.47

Section 1.47 is amended as proposed to change the reference for the rule on oaths or declarations from §1.65 to §1.63.

Section 1.48

Section 1.48 adds a new section relating to correction of inventorship as authorized by §116 of Title 35, United States Code, as amended by Public Law 97-247. Under §1.48, if the correct inventor or inventors are not named in an application for patent, the application could be amended to name only the actual inventor or inventors so long as the error in the naming of the inventor or inventors occurred without any deceptive intention on the part of the actual inventor or inventors. Section 1.48 requires that the amendment be diligently made and be accompanied by (1) a petition including a statement of facts verified by the original named inventor or inventors establishing when the error without deceptive intention was discovered and how it occurred; (2) an oath or declaration by each actual inventor or inventors as required by §1.63; (3) the fee set forth in §1.17(h); and (4) the written consent of any assignee. Correction will be permitted, if diligently requested, in cases where the person originally named as inventor was in fact not the inventor of the subject matter contained in the application. If such error occurred without any deceptive intention on the part of the true inventor, the Office has the authority to substitute the true inventor for the erroneously named person. If deceptive intention was present on the part of other individuals substantively involved in the preparation or prosecution of the application their conduct will be considered and appropriate action taken under 37 CFR 1.56. Although probably rarer, instances such as changes from a mistakenly identified sole inventor to different, but actual, joint inventors; conversions from erroneously identified joint inventors to different but actual, joint inventors; and conversions from erroneously identified joint inventors to a different, but actual, sole inventor will also be permitted. In each instance, however, the Office will have to be assured of the presence of innocent error, without deceptive intention on the part of the true inventor or inventors, before permitting a substitution of a true inventor's name. The final rule language has been modified from that proposed to follow more precisely the language of the statute and the legislative history by permitting correction where the error occurred without any deceptive intention on the part of the actual inventor or inventors.

Section 1.51

Section 1.51 is amended to change the reference in paragraph (a)(2) to new §1.63 for the requirements of an oath or declaration and to change paragraph (b) with regard to the required time for filing information disclosure statements. The final rule has been modified from that proposed by eliminating the word "material" before the "information disclosure statement" and the title has been changed to substitute "a complete" for "an" to be more precise.

Section 1.52

Section 1.52 is amended as proposed to revise paragraph 1.52(c) relating to interlineations, erasures, cancellations or other alterations in application papers to specify that such changes must be made before the signing of any accompanying oath or declaration and should be dated and initialed or signed by the applicant on the same sheet of paper. Paragraph 1.52(c), as amended, prohibits making alterations in the application papers after

the signing of an oath or declaration referring to such application papers. Under paragraph 1.52(c), as amended, amendments to application papers made after the signing of an oath or declaration referring to the application papers can only be made in the manner provided by §§1.121 and 1.123-1.125.

Section 1.53

Section 1.53 is amended to revise the title to indicate that the section, as amended, relates to application serial numbers, filing dates and completion of applications. Paragraph 1.53(a) indicates that a serial number is assigned to any filed application for identification purposes, even if the application is incomplete or informal. Paragraph 1.53(b) provides that a filing date is assigned to an application as of the date a specification containing a description and claim and any required drawing are filed in the Patent and Trademark Office. Although the filing fee and oath or declaration can be submitted later, no amendments can be made to the specification or drawings which will introduce new matter. This practice is authorized by 35 U.S.C. 111 as amended by Public Law 97-247. New paragraph 1.53(c) provides for notifying applicant of any application incomplete because the specification or drawing is missing and giving the applicant a time period to correct any omission. If the omission is not corrected within the time period given, the application will be returned or otherwise disposed of and a handling fee of $50.00 will be retained from any refund of a filing fee. New paragraph 1.53(d) provides that, where a filing date has been assigned to a filed specification and drawing, the applicant will be notified and be given a period of time in which to file the missing fee, oath or declaration and to pay the surcharge due. The time period the Office plans to set is one month from the date of notification by the Patent and Trademark Office, but in no case less than two months after the date of filing of the application. New paragraph 1.53(e) indicates that a patent application will not be forwarded for examination on the merits until all required parts have been received. New paragraph 1.53(f) indicates that international applications filed under the Patent Cooperation Treaty which designate the United States of America are considered to have a United States filing date under PCT Article 11(3), except as provided in 35 U.S.C. 102(e), on the date the requirements of PCT Article 11(1)(i) to (iii) are met. Paragraphs 1.53(b) and (c) have been modified from those proposed by changing the word "received" to the word "filed." The word "receipt" in paragraph 1.53(c) has also been changed to "filing". These changes have been made to ensure that the language of §1.53 cannot be considered to conflict with the use of "Express Mail" to file patent applications and obtain a filing date as of the date of deposit as "Express Mail" with the United States Postal Service.

Section 1.54

Section 1.54 is amended as proposed to designate the existing section as paragraph (a) and add a reference to §1.53. Paragraph 1.54(b) is added to indicate that applicant will be informed of the serial number and filing date of the application.

Section 1.55

Section 1.55 is amended to limit the section to claims for foreign priority by removing paragraphs (a) and (d) and redesignating paragraphs (b) and (c) as paragraphs (a) and (b). Paragraph 1.55(a) is amended to change the reference from §1.65 to new §1.63. The final rule language includes a reference to 35 U.S.C. 172 which modifies 35 U.S.C. 119 for design patents.

Section 1.56

Section 1.56 is amended to revise paragraph (c) to remove reference to signing of the application but to add reference to signing of the oath or declaration pursuant to new §1.63. Paragraph 1.56(c) has also been modified from that proposed to break it down into four items as suggested by a comment. Under paragraph 1.56(c), an application may be stricken from the files if an oath or declaration pursuant to §1.63 is signed in blank, is signed without review of the oath or declaration by the person making the oath or declaration, or is signed without the review of the specification, including the claims, as required by §1.63(b). Paragraph 1.56(c) also provides for an application to be stricken from the files if application papers filed in the Office are altered after the signing of an oath or declaration pursuant to §1.63 referring to those application papers.

Section 1.57

Section 1.57 is removed as proposed since the requirements relating to applicant's signature to the oath or declaration of the application are adequately covered in other sections.

Section 1.59

Section 1.59 is rewritten as proposed to refer to and conform with the changes proposed in §1.53.

Section 1.60

Section 1.60 is amended to require the applicant to supply a copy of the originally signed application in all cases where the §1.60 filing procedure is used. The Office will no longer prepare copies. The Office, by a separate final rule, published at 47 F.R. 47242 on October 25, 1982, has adopted a new §1.62 to provide for the filing of a file wrapper continuing application which greatly lessens the need for the Office to continue to prepare copies under §1.60. The final rule language makes clear that the statement accompanying a true copy of the parent application must be a verified statement unless made by a person registered to practice before the Office.

Section 1.62

Section 1.62 is amended to avoid inconsistency with 35 U.S.C. 111 which becomes effective on February 27, 1983. 35 U.S.C. 111 as of that date permits filing dates to be granted to patent applications without receipt of the basic filing fee, or oath or declaration. Section 1.62 is therefore being amended to permit the granting of a filing date in accordance with §111. This amendment of §1.62 is necessary to ensure compliance with 35 U.S.C. 111. The Patent and Trademark Office finds that it would be impractical not to amend §1.62 so as to grant a filing date in accordance with 35 U.S.C. 111 and not doing so might also be construed to prevent applicants from taking advantage of the provisions of 35 U.S.C. 111 authorizing the delay in the filing of the fee and oath or declaration. If §1.62 is not amended in the manner set forth in this final rule, questions may be raised as to compliance with 35 U.S.C. 111 as it will exist effective February 27, 1983. Revised paragraph 1.62(a) indicates the minimum requirements for granting of a filing date. Paragraphs 1.62(b) and (c) cover the filing fee and oath or declaration requirements, respectively. Paragraph 1.62(d) relates to later filing of the filing fee or oath or declaration as provided for in 35 U.S.C. 111. Paragraphs 1.62(e)-(i) are identical to former paragraphs 1.62(b)-(f).

Section 1.63

Section 1.63 is added to replace

1.65 relating to the required content and execution of an oath or declaration filed as a part of a patent application and is intended to state the minimum contents thereof. An applicant may, if desired, choose to include one or more additional averments in the oath or declaration such as, for example, stating that the patent is not barred under the provisions of 35 U.S.C. 102. Paragraph 1.63(a) provides that the oath or declaration, (1) be executed in accordance with §1.66 or §1.68, (2) identify the specification to which it is directed in some definite manner such as giving the title of the invention or serial number of the application, if previously filed, (3) identify each inventor and his or her residence and country of citizenship, and (4) state whether the inventor is a sole or joint inventor of the claimed invention.

Paragraph 1.63(b) further requires the oath or declaration to state that the person signing the oath or declaration (1) has reviewed and understands the contents of the identified specification, (2) believes the named inventor is the original and the first inventor, and (3) acknowledges the duty to disclose information which is je

material. While paragraph 1.63(b) requires the person signing the oath or declaration to review and understand the specification including the claims, it is not intended to require that such person be skilled in patent law so as to grasp the legal implications of claim language and drafting. The person must recognize, however, that what is being claimed is the subject matter which that person regards as his or her invention pursuant to 35 U.S.C. 112.

Paragraph 1.63(c) requires that any application in which a claim for foreign priority is made identify in the oath or declaration the foreign application for patent or inventor's certificate on which priority is claimed, and any foreign application having a filing date before that of the application on which priority is claimed.

Paragraph 1.63(d) requires that the oath or declaration in a continuation-in-part application, which discloses and claims subject matter in addition to that disclosed in the prior copending application, state that the person making the oath or declaration acknowledges the duty to disclose material information as defined in §1.56(a) which occurred between the filing date of the parent application and the national or PCT international filing date of the continuation-in-part application. This latter requirement is not new, but is included to serve as a reminder to the person making the oath or declaration of this duty to disclose material information such as foreign patenting, publication, or public use or sale in the United States which occurred more than one year prior to the filing date of the continuation-in-part application. For example, in circumstances where the claims of the continuation-in-part application are not fully supported by the disclosure of the parent application so as to be entitled to an earlier effective filing date under 35 U.S.C. 120, the duty to disclose extends to any material information, as defined in §1.56(a) measured from the filing date of the continuation-in-part application. This would include the first foreign patenting, and any foreign patenting subsequent to the first which materially differs therefrom, of the subject matter of the parent application which occurred more than one year prior to the national or PCT international filing date of the continuation-in-part application. Any publication of the parent application, other than foreign patenting, or any public use or sale in the United States of the subject matter of the prior application, which occurred more than one year prior to the national or PCT international filing date of the continuation-in-part application, would also come within §1.56(a) in such circumstances. See *In re Ruscetta and Jenny*, 118 U.S.P.Q. 101 (C.C.P.A. 1958); *In re van Langenhoven*, 458 F. 2d 132, 173 U.S.P.Q. 426 (C.C.P.A. 1972), and *Chromalloy American Corp.* v. *Alloy Surfaces, Co., Inc.*, 339 F. Supp. 859, 173 U.S.P.Q. 295 (Del. 1972).

Section 1.64

Section 1.64 is added as proposed to clearly indicate who must sign the oath or declaration of a patent application.

Section 1.65

Section 1.65 is removed as proposed because the oath or declaration requirements set forth therein are covered by new §1.63.

Section 1.67

Section 1.67 is amended as proposed to remove all of paragraphs (a) and (b) and substitute therefor new wording. Paragraph 1.67(a) indicates that a supplemental oath or declaration meeting the requirements of new §1.63 may be required to correct deficiencies or inaccuracies present in an earlier oath or declaration. Paragraph 1.67(b) requires a supplemental oath or declaration to be filed (1) when a claim is presented embracing material not originally claimed and (2) when a subsequently filed oath or declaration under §1.53(d) refers to an amendment which includes improper new matter. Paragraph 1.67(b) also clearly states the prohibition against entry of new matter after the filing date of the application.

Section 1.69

Section 1.69, paragraph (b), is amended as proposed to change the time at which a translation of a non-English language oath or declaration which has not been supplied by the Office must be filed. The time period for filing the translation is changed to two months after notification that a translation is required. The reference to §1.65 in paragraph 1.69(b) is changed to §1.63.

Section 1.70

Section 1.70 is amended to refer to §1.63 for the requirements to be met when an oath or declaration is filed under 35 U.S.C. 371(c)(4). The wording of the title in the final rule is changed to reflect more clearly the subject matter of the rule.

Section 1.77

Section 1.77 is amended as proposed to change paragraphs (h) and (i) to refer to the abstract of the disclosure and signed oath or declaration, respectively.

Section 1.97

Section 1.97 is amended to change the title from "prior art statement" to "information disclosure statement". This change is appropriate since the designation "information disclosure statement" more accurately characterizes the nature and content of the information which may be included in such a statement. Information which is required to be submitted pursuant to §1.56 may ultimately be determined not to be "prior art," but nevertheless may be "material" pursuant to §1.56. Section 1.97 has also been modified from that proposed by eliminating the word "material" since information submitted pursuant to §1.97 may be considered to be of questionable materiality or may be determined, upon examination, not to be "material". Section 1.97 now provides that an information disclosure statement should be filed with the application or within the later of three months after the filing date of the application or two months after applicant receives the filing receipt. Paragraph 1.97(b) has been amended in recognition that applicant may choose to furnish other material information in another manner or statement. Paragraph 1.97(b) now also refers to section 1.56(a) for the definition of "material information". The amendments to paragraph 1.97(b) do not in any manner reduce the obligation to submit material information as defined in §1.56(a).

Section 1.98

Section 1.98 indicates that information disclosure statements should list prior art with all of the information which is required to print such citations on the front page of a patent. The final rule states clearly that the publication date indicated on the document should be submitted. This will not serve to preclude a showing of a different, actual publication date. Another purpose of the citation requirements in this section is to permit ready reference to the document from its citation.

Section 1.99

Section 1.99 is amended to change the title to be consistent with the amendment to §1.97.

Section 1.101

Section 1.101 is amended to indicate specifically that applications which are to have their examination advanced pursuant to §1.102 will be taken up for examination out of order by the examiner. The final rule is also modified to set out when international applications which have complied with the requirements of 35 U.S.C. 371(c) are taken up for action.

Section 1.118

Section 1.118 is amended as proposed to designate the previous section as new paragraph (a) and amend it to clearly state that no new matter may be introduced into an application and to make specific reference to §§1.53, 1.63 and 1.67. New paragraph 1.118(b) indicates how improper amendments which introduce new matter in the specification or claims will be handled by the examiner.

Section 1.123

Section 1.123 is amended to require all corrections to drawings to be made by bonded draftsmen at applicant's expense since the Office does not have sufficient draftsmen to make such corrections. Sketches of any de-

sired corrections will, however, still require approval of the examiner. The final rule makes clear that changes in the drawing may be made by submission of substitute drawings.

Section 1.125

Section 1.125 is amended to relax the prohibition against substitute specifications which are not required by the examiner. The section, however, adds the requirement that any substitute specification filed must be accompanied by a statement that the substitute specification includes no new matter. Under the section the statement must be a verified statement if made by a person not registered to practice before the Office. The final rule specifies that a substitute specification may not be accepted unless it is clear to the examiner that processing of the application would be facilitated thereby.

Section 1.131

Section 1.131 is amended as proposed to refer to the use of affidavits or declarations under the section during reexamination of a patent as long as the patent upon which the rejection is based does not claim the rejected invention. Section 1.131 cannot be used to overcome a rejection based upon a United States patent claiming the rejected invention. This is true regardless of whether the rejected claims are contained in an application being examined or a patent being reexamined. Section 1.131 is inapplicable if the same invention is being claimed by the United States patent upon which the rejection is based. Under the section as amended, the same person or persons who would make the affidavit or declaration in an application will be required to make the affidavit or declaration on behalf of the owner of the patent under reexamination.

Section 1.132

Section 1.132 is amended as proposed to refer to the use of affidavits or declarations under the section during reexamination of a patent.

Section 1.137

Section 1.137 is amended as proposed to except from the provisions of paragraph (b) those applications abandoned pursuant to §1.53(d) because the fee, oath, or declaration and the surcharge were not submitted. Section 111 of Title 35, United States Code, as amended by Public Law 97-247, requires that any delay in submission of the fee and oath be shown to be unavoidable. Thus, paragraph (b) of §1.137 permitting revival where abandonment was unintentional is inapplicable to the revival of applications which become abandoned pursuant to §1.53(d).

Section 1.141

The proposed amendments to §1.141 are withdrawn infra to permit the public to study the issues involved and make any further recommendations considered appropriate.

Section 1.153

Section 1.153 is amended to change the reference for oath and declaration requirements from §1.65 to §1.63 and to conform the language of the rule to be consistent therewith.

Section 1.154

Section 1.154 is amended as proposed to revise paragraph (e) to refer to the signed oath or declaration requirements of §1.153(b).

Section 1.162

Section 1.162 is amended as proposed to change the reference from §1.65 to §1.63.

Section 1.163

Section 1.163 is amended as proposed to change the wording of the section to clearly indicate that a signed oath or declaration is required rather than a signed specification.

Section 1.172

Section 1.172 is amended to indicate clearly that the reissue oath is signed and sworn to rather than the reissue application. The final rule has been modified from that proposed by referring to a "reissue oath" rather than to "reissue oaths".

Section 1.174

Section 1.174 is amended as proposed to remove the requirement that photoprints of original drawings be securely mounted or pasted on sheets of drawing board because paper drawings are acceptable.

Section 1.175

Section 1.175 is amended as proposed to change the reference to the oath or declaration from §1.65 to §1.63.

Sections 1.301, 1.302 and 1.303 ,2

The proposed amendments to sections 1.301, 1.302 and 1.303, referring to the Court of Appeals for the Federal Circuit rather than to the Court of Customs and Patent Appeals, have been adopted as final rules as published on Oct. 20, 1982 at 47 FR 47380-47382 and corrected on Nov. 5, 1982 at 47 FR 50142 and therefore are not republished here.

Section 1.324

Section 1.324 is amended to include wording similar to that in §1.48 for correction of inventorship in applications.

Section 1.325

Section 1.325 is amended as proposed to include reference to the reexamination procedure.

Section 1.335

Section 1.335 is added as proposed to provide a new section relating to the filing in the Patent and Trademark Office of notices of arbitration awards. Such filing is required under §294 of Title 35, United States Code, as added by Public Law 97-247. The final rule has also been modified in response to a comment to indicate that the notices of arbitration awards are intended to be placed in the patent files.

Section 1.565

The proposed amendments to §1.565 are withdrawn infra to permit the public to study the issues involved and make any further recommendations considered appropriate.

Section 5.12

Section 5.12 is amended as proposed to separate the section into two paragraphs. Paragraph (a) provides that the filing of an application for an invention made in the United States is considered to include a petition for a license for foreign filing. If a license is granted, it will be indicated on the filing receipt. If it is not granted, no indication of the denial will appear. Failure to grant a license should be considered a denial of a first petition for a license. A subsequent petition may be filed under nl § 5.12(b). Section 5.12(b) is essentially the text of §5.12 in its previous form. No rights to file a petition for license are being removed.

Withdrawal of Proposed Amendments To Sections 1.141 and 1.565.

A number of the speakers at the public hearing held on Dec. 16, 1982, urged that the amendments to §§1.141 and 1.565 be deferred or dropped pending further study. Those urging that the proposed amendments to §1.141 not be adopted at this time included speakers from the American Patent Law Association, from Committee 103 of the American Bar Associations's Patent, Trademark & Copyright Section, and from the Bar Association of the District of Columbia. The Boston Patent Law Association urged that the amendment to §1.565 be removed or held in abeyance. The American Patent Law Association indicated that more time was needed for its committees to analyze the issues in the proposed amendments to §§1.141 and 1.565.

In response to the recommendations received at the public hearing, the proposed amendments to §§1.141 and 1.565 are being withdrawn at this time to permit the public to study the issues involved and make any further recommendations considered appropriate. Pending the further study referred to by the speakers at the hearing and consideration of any recommendations resulting therefrom, the Office will continue to operate under

present §§1.141 and 1.565 as interpreted by the Manual of Patent Examining Procedure and relevant Patent and Trademark Office and judicial precedents.

Responses to Comments on the Rules

Specific comments were received on a number of the sections. All of the comments, including the written comments and the oral testimony, were considered in adopting the changes set forth herein.

Forty-eight letters presenting written comments were received and seven persons testified at the public hearing on Dec. 16, 1982.

Comments appear below along with responses thereto.

Comment:

One comment objected to inadequate notice regarding these proposed rule changes.

Reply:

The proposed rules notice was published in the Federal Register on Oct. 27, 1982. This is more than seven weeks prior to the date of the hearing and four months prior to the effective date of the final rules. Such periods are considered to be reasonable in view of the fact that the legislation requiring the rule changes was only enacted on Aug. 27, 1982 and that other rule changes were required to be implemented by Oct. 1, 1982.

Comment:

One comment proposed that "Patent and Trademark Office" should be used in the rules rather than merely "Office".

Reply:

The proposal has been adopted in the final rules in those locations where confusion may otherwise result.

Comment:

Five comments requested that promulgation of §§1.10, 1.63, 1.97, 1.141 and 1.565(e) be delayed and the period for comment extended until Mar. 30, 1983.

Reply:

Amendments to §§1.141 and 1.565 are not being promulgated at this time to provide time for further consideration and study as requested. If after study, a rule change is felt desirable, a new proposal will be issued. New §1.10 is being promulgated to make it available to applicants as it was intended in the statute. New §1.63 is being added and §1.65 deleted to reduce the formal statements required. If desired, the old oath and declaration forms may continue to be used if the statement is included that applicant "has reviewed and understands the contents of the specification, including the claims". For continuation-in-part applications, it is necessary to also include language is conformance with §1.63(d). Section 1.97 is being promulgated to remove problems relating to the time period in the current wording and to clarify the section in general.

Comment:

One person questioned why Sunday was not mentioned in §1.6(b) or (c).

Reply:

Section 1.6(b) and (c) are limited to weekdays which by definition excludes Sunday.

Comment:

Two comments were received which proposed that only a certificate of mailing procedure as in §1.8(a) be used for determining the date of deposit under 35 U.S.C. 21.

Reply:

The filing date of an application is considered to be much more critical than the filing dates of papers accepted under §1.8. The application filing date is often critical for determining if a statutory bar exists, whether foreign priority can be claimed and who is the senior party in an interference. Therefore, papers filed for purposes of receiving an application filing date should have some clear indication of the date of receipt by the United States Postal Service. Such a practice would also probably require storing all of the envelopes in the file wrapper for record purposes.

Comment:

Three comments were received which stated that private courier services should also be provided for in §1.10.

Reply:

Section 21(a) as amended by Public Law 97-247 provides for filing dates being given only when "deposited with the United States Postal Service." Although private courier services may be used to deliver papers to the Patent and Trademark Office, the actual date of receipt by the Patent and Trademark Office will be considered to be the filing date.

Comment:

A comment was received which argued that the Post Office date stamp should be stamped on the mailing label instead of having to enter the label number on each document.

Reply:

Stamping the mailing label would not add anything since the postal clerk receiving the "Express Mail" must already indicate the date and time of deposit and initial the label. A purpose of placing the label number on each paper is to permit several papers to be placed in a single envelope. The mailing labels may be retained in the Patent and Trademark Office for later verification.

Comment:

Seven comments were received that the requirement that the item be received the following day (§1.10(b)) was unnecessarily restrictive.

Reply:

Section 1.10 does not require that the item be received the next day in the Patent and Trademark Office in order to receive the date of deposit as the mailing date. The one day reference has been deleted. Further proof of mailing may be required where an unreasonable period of time is involved and supporting evidence is not otherwise available to the Patent and Trademark Office. Documents deposited with the United States Postal Service will be given a filing date which corresponds to the date of receipt indicated by the postal clerk on the "Express Mail" mailing label.

Comment:

Four comments indicated that §1.10 does not assist in placing applicants and attorneys outside the Washington area on the same footing as those in Washington.

Reply:

The main purpose of §1.10 is to implement 35 U.S.C. 21(a) in a manner which would provide for granting filing dates for papers and fees as of the date of their deposit with the United States Postal Service. Certainly these provisions using "Express Mail," together with the certificate of mailing procedure available under §1.8, will go a long way in reducing last minute deliveries to the Patent and Trademark Office by persons outside the Washington area.

Comment:

Two comments stated that the comments accompanying§1.10(c) should be clarified to explain the meaning of "more than one day."

Reply:

The final rule has been clarified.

Comment:

It was proposed by one person that the "affidavit or declaration" under §1.10(c) be waived if the statement is made by a registered attorney or agent.

Reply:

The suggestion has been adopted.

Comment:

It was indicated by one person that certified mail provides proof of mailing date under §1.10 by virtue of the Post Office stamp on the certified mail receipt card.

Reply:

The information on the certified mail receipt card is of no benefit to the Patent and Trademark Office since it is immediately returned to the sender. The Patent and

Trademark Office would not be able to retain any information which gives proof of the date of mailing.

Comment:

Three comments raised questions as to the need to make the acceptance of the "Express Mail" contingent upon the performance of the Post Office in §1.10(c).

Reply:

The acceptance of the "Express Mail" is not contingent upon "next day delivery". The reference in §1.10(c) to proof of mailing merely provides a basis for the Office requiring proof of mailing where an explanation appears to be necessary to clarify the record. Such information is expected to be required only in a few instances. The rule has also been revised to clarify this matter.

Comment:

Five persons suggested the use of registered or certified U.S. mail for obtaining filing dates under 35 U.S.C. 21.

Reply:

Registered mail does not provide any information or evidence to the Patent and Trademark Office as to the date of mailing other than the postmark, which is often unreadable. Storage of envelopes containing such postmarks is also burdensome. The deficiency of certified mail has already been discussed.

Comment:

One person questioned what treatment will be accorded a paper placed in an "Express Mail" box receptacle after the box has been cleared for the last time on a given day.

Reply:

The paper will be considered to be deposited as of the date of receipt indicated on the "Express Mail" mailing label by the Postal Service clerk.

Comment:

One person commented that he found the idea of using a declaration or affidavit to establish a date of deposit unacceptable because it exposes the integrity of the assignment of filing dates to the risk of deception.

Reply:

The use of declarations or affidavits is usually intended to help explain activities which can be supported by exhibits. For example, if the Office copy of the mailing label was not entirely readable, applicant's copy of the "Express Mail" mailing label could accompany a declaration and serve as the basis for granting a filing date.

Comment:

Three persons objected to permitting only the individual who places the correspondence in an "Express Mail" facility to execute the certificate of express mailing under§1.10(c).

Reply:

The wording of §1.10(c) differs from §1.8 because the documents which are expected to be filed under §1.10 are patent and trademark applications. The filing dates of such documents are very important and should therefore be based on personal knowledge.

Comment:

One comment was received which suggested that §1.10 be adopted with an effective date retroactive to a year earlier.

Reply:

Such an earlier date is not possible since the statutory authority for §1.10 does not come into effect until Feb. 27, 1983.

Comment:

One comment proposed designating the Patent and Trademark Office as an "Express Mail" Post Office to make lower rates available.

Reply:

Such a designation is not possible.

Comment:

One person requested that the Patent and Trademark Office publish a form of certificate of mailing by "Express Mail" suitable for purposes of §1.10(b).

Reply:

A suggested form is included in the preamble of this rule change.

Comment:

One comment proposed that §1.10(c) clearly state what evidence will be necessary and sufficient to prove a filing date by mailing.

Reply:

A specific answer cannot be given since it is dependent upon the particular fact situation and what evidence is actually available.

Comment:

Two comments questioned whether P.L. 97-247 authorized a rule such as §1.10 granting filing dates as of the mailing date.

Reply:

The question raised by this comment has been treated in the discussion of §1.10 supra.

Comment:

One comment proposed that §1.10 be corrected to read—Any paper or fee *required* to be filed—to more closely conform with 35 U.S.C. 21(a).

Reply:

No need is seen to change §1.10 as suggested since, if a patent is desired, it is "required" that each paper relating to an application be filed in the Patent and Trademark Office.

Comment:

One comment indicated that the requirement to place the "Express Mail" label number on each paper and fee is not realistic.

Reply:

The placement of the label number on each paper or fee allows later verification of the mailing dates of all different papers mailed in one envelope and is not seen to be overly burdensome.

Comment:

A question was raised as to whether the "Express Mail" label number should be placed on every page.

Reply:

The label number need not be placed on each page. It should, however, be placed on the first page of each separate document, such as, a new application, amendment, assignment, and transmittal letter for a fee, along with the certificate of mailing by "Express Mail". Although the label number may be on checks, such a practice is not required.

Comment:

A question was raised by one party as to the location within the Patent and Trademark Office of the mailing labels where papers to different applications are placed in the same envelope.

Reply:

The mailing labels from all "Express Mail" packages are expected to be removed and initially retained centrally in the Mail Room of the Patent and Trademark Office. The number on each document will allow direct access to the appropriate mailing label if any questions should arise.

Comment:

One comment suggested that §1.22(b) be amended to exclude itemization of all fees where a general authorization to charge a deposit account has been given.

Reply:

Even where fees are charged to a deposit account, it is desirable to know specifically which fees are to be paid. Therefore, the suggestion has not been adopted.

Comment:

One comment was received which suggested adding a sentence to §1.41(d) indicating that the filing of an oath or declaration executed by the applicant would constitute proof of authority to file the application.

Reply:

Such an additional sentence is not considered to be necessary since the Patent and Trademark Office does not intend to utilize the provisions of §1.41(d) unless a controversy arises.

Comment:

One comment was received which suggested the addition to the end of §1.42 of the words "except for patents granted to the assignee either of the inventor or of the legal representative of the inventor."

Reply:

No change is considered to be necessary since few, if any, problems have arisen without such additional wording in the past. The existing rule wording "upon proper intervention" also provides protection for assignees.

Comment:

One comment was received which indicated that §1.46 does not clearly authorize an assignee of a part interest to cause an application to be placed on file.

Reply:

Although §1.46 may not make this point clear, it is clear from §1.41(c).

Comment:

One comment recommended that the requirement to show diligence in correcting inventorship under §1.48 be deleted.

Reply:

It is felt that corrections of inventorship should be diligently made in patent applications. The naming of correct inventorship is necessary for the Patent and Trademark Office to make decisions on topics such as double patenting, priority claims and first inventorship.

Comment:

It was recommended in one comment that the verified statement of facts required by §1.48 "by the original named inventor or inventors" be replaced by a requirement that he or they merely assent to the statement of the facts since others may be better able to provide the best evidence.

Reply:

Since it is the original inventorship that is being changed, it is believed that all of the previously named inventors should positively indicate their agreement with the facts in the case. Affidavits by other individuals may also be supplied where such persons have direct personal knowledge of certain aspects of the case.

Comment:

One comment indicated that "it seems a reasonable presumption that if ownership is unaffected, deceptive intent is absent" in a §1.48 correction of inventorship situation and that such a presumption could be written into the rules.

Reply:

Even if applications are commonly owned, the wrong inventorship could be deceptively named to obtain rights which are only available to the same inventive entities. The report on Public Law 97-247 also states that "the commissioner must be assured of the presence of innocent error, without deceptive intention . . ." before permitting a substitution of a true inventor's name.

Comment:

One person suggested that the deceptive intent in §1.48 refer to the acts of the actual inventors rather than to both the alleged and actual inventor or inventors.

Reply:

This suggestion has been adopted in both §§1.48 and 1.324, but deceptive intention on the part of other parties is subject to review under §1.56.

Comment:

One person suggested that in §1.48, line 3 "may" be changed to—must—.

Reply:

The suggestion has not been adopted. Corrections may only be made if the conditions set forth in §1.48 are satisfied.

Comment:

Two comments objected to the insertion of "material" in §1.51(b).

Reply:

This word has been removed and does not appear in the final rule.

Comment:

One comment suggested changing "an" to—a complete—in the title of §1.51.

Reply:

This suggestion has been adopted.

Comment:

One comment indicated that §§1.52(c) and 1.56(c) seemed overly inflexible and harsh when considering minor grammatical changes.

Reply:

Although §1.56 indicates that applications "may" be stricken, rather than "must" be stricken, it is still considered important to maintain a clear line in the regulations against changes in the original applications made after the execution of the application oath or declaration. The line between grammatical changes and changes relating to the merits is frequently unclear.

Comment:

Three comments noted an apparent inconsistency between proposed §§1.10 and 1.53 as to whether §1.10 relates to the filing of patent applications.

Reply:

Section 1.10 does relate to the filing of patent applications. In order to clarify the wording, "received" in §1.53(b) has been changed to "filed".

Comment:

One comment was received suggesting that a sentence be added to §1.53(d) to indicate that PCT applicants cannot submit late filing fees, oaths or declarations under 35 U.S.C. 371.

Reply:

Such a reference in §1.53 does not appear appropriate because this section relates to "filing dates". In the PCT situation, the filing date was already granted at the time of filing the PCT international application.

Comment:

One comment was received which suggested that §1.53(a) be rewritten to indicate all applications are assigned serial numbers but not accorded filing dates.

Reply:

The proposal was not adopted since it is considered unnecessary.

Comment:

One person suggested that §1.53(b) be amended to specify that only "a specification *purporting* to contain a description and at least one claim . . ." is needed to obtain a filing date.

Reply:

No change is being made since a determination must be initially made as to whether or not a specification has been filed. In any case, sufficiency of the specification must later be checked by the examiner.

Comment:

One person indicated that the time period for filing a correction to a defect in an application is left entirely within the discretion of the Commissioner and that any setting of periods of time would be tantamount to an exercise of rulemaking authority. Section 1.53(d) should be provided with an explicit time limitation.

Reply:

No specific time period is considered to be necessary in the regulations. The Commissioner has full authority and discretion under the statute in 35 U.S.C. 111 to set periods of time. The statute does not require the Commissioner to use the rulemaking process to set time periods for response to an action or requirement by the Patent and Trademark Office in a patent application.

Comment:

Two comments were received objecting to the use of

the words "or otherwise disposed of" in §1.53(c).

Reply:

This wording has existed in §1.53(b) in the past without objection. No need is seen to depart from this wording at this time.

Comment:

One person questioned whether the change in §1.54(b) would result in return post cards not being stamped with the application serial number.

Reply:

No change is intended in the existing return post card practice.

Comment:

One comment proposed adding another sentence to §1.154(b) indicating that foreign priority claims will be acknowledged on the filing receipt.

Reply:

This proposal is not being adopted since the examiner must determine whether the statutory requirements of 35 U.S.C. 119 have been met before an acknowledgment can be sent.

Comment:

One comment suggested that the Patent and Trademark Office indicate on the filing receipt both the filing date under §1.10 and the actual date of receipt.

Reply:

The actual date of receipt can be obtained by requesting a receipt from the Postal Service. The actual date of receipt cannot be placed on the filing receipt because of current computer limitations. The suggestion is therefore not being adopted at this time.

Comment:

One comment was received indicating that it is not clear whether or not an application based on a specification and drawing, but containing no oath or declaration or filing fee, could serve as the basis for a priority claim under 35 U.S.C. 120.

Reply:

If the filed specification and drawings fully disclose the invention as required by 35 U.S.C. 112, the application may serve as a basis for a priority claim under §120 even if no oath or declaration, or no fee has been filed, as long as the continuing application is filed prior to the abandonment of the first application under §1.53(d).

Comment:

One comment suggested that §1.55(b) be removed since the requirements of the statute are fully set forth in 35 U.S.C. 119.

Reply:

Although the statutory requirements set forth basic requirements, it is felt that the more specific details of §1.55(b) provide needed guidance for applicants.

Comment:

Two persons questioned the meaning of "inspection and review" in §1.56(c) and suggested certain amendments.

Reply:

The words "inspection and" are being removed to eliminate any redundancy. The paragraph has also been broken down into four items as proposed by a comment.

Comment:

One suggestion was made that applicant be allowed to order a copy of the parent patent, with payment of fee, when filing a §1.60 application.

Reply:

Such a practice is contrary to the intent of the rule change. The problems the Patent and Trademark Office is attempting to solve by the change, which are caused by poor copies and delays in processing, would remain with such a practice.

Comment:

Two persons suggested that §1.60 be amended to drop "and claimed" from the title.

Reply:

The suggestion has been adopted.

Comment:

One person suggested that §1.60 be modified to drop the requirement for verification by affidavit when the statement is made by a registered patent attorney or agent.

Reply:

The suggestion has been adopted.

Comment:

One comment noted that there is no specific requirement in §§1.56, 1.63 or 1.98 to identify foreign applications filed more than one year prior to the U.S. filing date.

Reply:

Section 1.63(b)(3) broadly requires applicant to acknowledge the duty to disclose information material to the examination of the application. This information includes foreign patents based on applications filed more than a year prior to the filing date of the United States application and which issue before the filing date of the United States application.

Comment:

One person felt that §1.63(b)(1) will be a disaster for the patent system since the inventor may not be physically able to review and understand the invention or because the legal language format used in claims may not be understood by the inventor. Five persons argued that adoption of §1.63 would result in raising the defense that the inventor did not understand the claims in each patent infringement suit.

Reply:

The inventor is not expected to understand all the legal interpretations or limitations in a claim. The inventor is expected to recognize that what is being claimed is the subject matter which the inventor regards as his or her invention pursuant to 35 U.S.C. 112. The physical factors have to some extent existed in past practice and have been handled on a case-by-case basis where necessary. The situation outlined would exist in any signing of a legal document. The wording of §1.63 has been explained in the preamble to minimize occurrences of problems.

Comment:

One comment noted that many inventors do not know whether additional subject matter is claimed in a continuation-in-part application under §1.63(d).

Reply:

The wording in §1.63(d) is considered to be appropriate and in accordance with case law. If uncertainty exists the attorney or agent, if any, should clarify the matter and §1.63(d) should be followed.

Comment:

One person proposed that §1.63(d) be modified to explicitly require the disclosure of foreign patents granted before the filing of the continuation-in-part application.

Reply:

Section 1.63(d) has been amended to clearly indicate that material information pursuant to §1.56(a) between the filing date of the parent application and the filing date of the continuation-in-part application must be disclosed. The discussion of new §1.63 refers to material foreign patents published during this time interval.

Comment:

Two comments indicated concern with the parenthetical language in proposed §1.63(d) in that it would create severe problems.

Reply:

Paragraph (d) of §1.63 has been amended to remove such problems.

Comment:

One comment suggested adding—he or she is aware of—after information in §1.63(b)(3) and (d).

Reply:

This suggestion is not adopted since such wording is already present in §1.56(a).

Comment:

One comment suggested that §1.63(c) clarify what is intended by "the first filed foreign application," particularly in view of 35 U.S.C. 119, third paragraph.

Reply:

The rule has been amended to clarify the matter.

Comment:

One comment was received suggesting changes be made in the title and that paragraph (b) of §1.70 refer to §1.63 instead of "this section."

Reply:

The change suggested to the title has been made. The suggestion to paragraph (b) has not been made since it is considered unnecessary.

Comment:

Three comments were received which indicated that the wording of §1.97(a) would require an immediate filing of disclosure information if the filing receipt is received just before three months after filing.

Reply:

The wording of 1.97(a) has been changed to remove this problem.

Comment:

One comment was received which urged that the title of §1.97 and contents of §1.97(b) not be changed, since the proposed wording would not require filing of the closest prior art.

Reply:

The proposed changes are not intended to make any changes in the type of information which is to be submitted to the Office. The proposal has been adopted in modified form.

Comment:

One person indicated preference for the use of "prior art" in §§1.51(b), 1.97, 1.98, and 1.99 since it does not create an inferred admission that the information submitted is material. Five comments favored the removal of "prior art" from §1.97 but objected to the addition of "material".

Reply:

The rule change was proposed to answer arguments that the use of the term "prior art" implied that the information was a reference against applicant's invention. Since the majority of the comments supported modifying the rule, the use of the terms "prior art" as well as "material" are being dropped.

Comment:

Two comments were received concerning §1.98(a) suggesting that the "place of publication" be clarified or removed.

Reply:

This suggestion has not been adopted since the "place of publication" is not mandatory. It is intended to mean the city and country of publication. Also the citation of the "place of publication" is consistent with the §1.107(a) requirements.

Comment:

It was suggested by one person that §1.101 be amended to clarify when PCT international applications which have entered the national stage should be taken up for examination.

Reply:

An amendment has been made to §1.101 as suggested to clarify that they are taken up in order based on the date they have entered the national stage by compliance with the requirements of 35 U.S.C. 371(c).

Comment:

One comment was presented suggesting that the words "which are not examined on the merits" in §1.101 be removed.

Reply:

The suggestion has been adopted.

Comment:

One comment urged returning to the use of the Office draftsmen for minor corrections to reduce the burden under proposed §1.123.

Reply:

Some minor corrections may be made by the Office draftsmen on a time-available basis. However, since the Office currently has only a few draftsmen who are responsible for reviewing and approving all drawings, very little time is presently available for making corrections.

Comment:

Four suggestions were made to amend §1.123 to specifically provide for the filing of substitute drawings if corrections are required.

Reply:

These suggestions have been adopted.

Comment:

One comment was received indicating that §1.125 should indicate to whom it should be clear that acceptance of a substitute specification would facilitate processing.

Reply:

An amendment has been made to clarify that it should be clear to the examiner.

Comment:

One comment suggested removal of the last sentence of §1.137(b) to permit §1.183 petitions to be filed to waive time periods for requesting revival of unintentionally abandoned applications.

Reply:

No change in §1.137(b) is considered to be appropriate at this time since §1.137(b) only became effective on Oct. 1, 1982.

(Since changes to §1.141 are not being promulgated in this rule change, comments and replies to this section are not included.)

Comment:

One comment pointed out that the reference to a "period of twelve months" in §1.153 was indefinite.

Reply:

Section 1.153 has been amended to remove the indefiniteness.

Comment:

One comment was presented which suggested that §1.172 refer to a "reissue oath" rather than to "reissue oaths."

Reply:

This suggestion has been adopted.

Comment:

One comment suggested the insertion of "the filing of" before "each patent" in §1.335(a) and (b).

Reply:

The suggestion has been adopted.

(Since the proposed addition of a new paragraph (e) to §1.565 is not being adopted in this rule change, comments and replies to this section are not included.)

Comment:

One suggestion was made that a procedure be designed in which foreign filing licenses could be granted by return post card without losing the time required to send the filing receipts.

Reply:

It is felt that the procedure under §5.12 should be adopted at this time and be placed into operation. If after some experience additional modifications are found desirable, further changes could be made. To introduce several alternative procedures at this time is considered to be too complex and may endanger the success of the proposed procedure.

Comment:

One comment requested that the Office grant a prospective foreign filing license under §5.12 for all data and amendatory material to be filed abroad.

Reply:

Such petitions are not part of this proposed change

but this concept is being considered in a separate rule change proposal.

Comment:

One comment suggested that the Filing Receipt specifically indicate whether or not a license has been denied under §5.12.

Reply:

The proposed practice under §5.12 would indicate on the Filing Receipt when a license is granted. On other cases in which a license is not granted further review is required. A license may still be granted at a later date.

Comment:

One comment stated that it should be possible to petition at any early date for a foreign filing license as well as obtain one on the filing receipt.

Reply:

It will still be possible to petition earlier for a license under revised §5.12.

Implementation Of Patent Procedure Revisions

The effective date of the patent procedure revisions contained in this rulemaking is Feb. 27, 1983. The various sections will be implemented in the manner set forth below:

§1.10 Filing of papers and fees by "Express Mail" with certificate.

The "Guidelines under §1.10" set forth below provide guidance in implementing §1.10:

Guidelines under §1.10

A) The certification under §1.10 requires a signature of the person depositing the paper with the United States Postal Service as "Express Mail". Specifically, if the certification under §1.10 appears on a paper that requires a signature, two signatures are required, one for the paper and one for the certification under §1.10.

B) When possible, the certification under §1.10 should appear on an upper portion of the first page of the paper being submitted. However, if there is insufficient space to make the certification on the same paper, such as in the case of the patent issue fee transmittal form PTO-85, the certification should be on a separate sheet securely attached to the paper.

C) When the certification is presented on a separate sheet, that sheet must (1) be signed and (2) fully identify and be securely attached to the paper or fee it accompanies. The required identification should include the serial number and filing date of the application as well as the type of paper being filed, e.g., complete application, specification and drawings, responses to rejection or refusal, notice of appeal, etc. If the serial number of the application is not known, the identification should include at least the name of the inventor(s) and the title of the invention. An unsigned certification will not be considered acceptable.

Moreover, without the proper identifying data, a certification presented on a separate sheet will not be considered acceptable if there is any question or doubt concerning the connection between the sheet and the paper filed.

D) In situations wherein the correspondence includes papers for more than one application e.g., a single envelope containing separate applications or papers for various parts of the Patent and Trademark Office, each paper must have its own certification and the "Express Mail" label number as part thereof or attached thereto.

E) In situations wherein the correspondence includes several papers directed to the same application (e.g., a proposed response under 37 CFR 1.116 and a notice of appeal), each paper should also have its own certification as a part thereof or attached thereto.

F) Practitioners may place the certification language on the first page of a paper with an inked stamp. Such a practice is encouraged because the certification is not only readily visible but also forms an integral part of the paper. An example of a preferred stamp is:

"Express Mail" mailing label number _____
Date of Deposit _____

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

_____
(Typed or printed name of person mailing paper or fee)

_____
(Signature of person mailing paper or fee)

§1.48 Correction of inventorship.

Any patent application pending on or after Feb. 27, 1983, is subject to the provisions of this section.

§1.53 Serial number, filing date, and completion of application.

The provisions of this section apply to any patent application filed on or after Feb. 27, 1983.

§1.63 Oath or declaration.

The provisions of §1.63 will become effective on Feb. 27, 1983, and will apply to any oath or declaration filed on or after that date. However, in order to provide a smooth transition from the old oath or declaration requirements to the new, the Office will continue to accept between Feb. 27, 1983, and June 30, 1983, any oath or declaration in compliance with §1.65 as it existed immediately prior to Feb. 27, 1983, so long as that oath or declaration is attached to and was executed as a part of an application to be filed in the Patent and Trademark Office.

Effective July 1, 1983, all oaths or declarations filed under §1.51(a)(2) as a part of a patent application must fully comply with §1.63.

A suggested format for a declaration is set forth below:

Declaration For Patent Application

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

_____.

the specification of which

(check one) ☐ is attached hereto.
☐ was filed on _____ as Application Serial No. _____ and was amended on _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

			Priority Claimed	
(Number)	(Country)	(Day/Month/Year Filed)	☐ Yes	☐ No
(Number)	(Country)	(Day/Month/Year Filed)	☐ Yes	☐ No

(Number)	(Country)	(Day/Month/Year Filed)	☐ Yes	☐ No

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or first inventor _____
Inventor's signature _____
Date
Residence _____
Citizenship _____
Post Office Address _____ _____
Full name of second joint inventor, if any _____
Second Inventor's signature _____
Date
Residence _____
Citizenship _____
Post Office Address _____ _____

(Supply similar information and signature for third and subsequent joint inventors.)

The declaration form set forth above is specifically designed for use where the specification is attached to the form and the specification and declaration are filed at one time, and also where the declaration form is filed after the specification and drawings in accordance with §1.53. The form can be used where foreign priority is claimed under 35 U.S.C. 119 and where the benefit of one or more United States applications is claimed under 35 U.S.C. 120. Appropriate modifications can be made in the form so long as compliance with the rules is maintained. For example, if the form is being used as a supplemental declaration form which is being submitted after numerous amendments the form might appropriately be modified by changing the words "was amended on" to "with amendments through."

§1.335 Filing of notice of arbitration awards.

The written notices required by this section should be directed to the attention of the Office of the Solicitor, which Office will be responsible for processing of such notices.

Other Considerations

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change is in conformity with the requirements of the Regulatory Flexibility Act. (Pub. L. 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*

The rule change will not have a significant averse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96-354) for several reasons. Public Law 97-247 has taken into consideration the impact it may have on small entities. In general, the rule change will also expedite proceedings before the Patent and Trademark Office, changing existing procedures where they can be simplified.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*, since no significant additional record keeping or reporting requirements are placed upon the public. In fact, some paperwork, especially that related to foreign filing license petitions, will be reduced.

List of Subjects in 37 CFR Parts 1 and 5

Administrative practice and procedure, Courts, Inventions and patents.

Notice is hereby given that, pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6 and Public Law 97-247, the Patent and Trademark Office is amending Title 37 of the Code of Federal Regulations as set forth below.

37 CFR, Parts 1 and 5, are amended as follows:

1. Section 1.4 is amended by revising paragraph (a) to read as follows:

§1.4 Nature of correspondence.

(a) Correspondence with the Patent and Trademark Office comprises: (1) correspondence relating to services and facilities of the Office, such as general inquiries, requests for publications supplied by the Office, orders for printed copies of patents or trademark registrations, orders for copies of records, transmission of assignments for recording, and the like, and (2) correspondence in and relating to a particular application or other proceeding in the Office. See particularly the rules relating to the filing, processing, or other proceedings of national applications in Subpart B, §§1.31 to 1.352; of international applications in Subpart C, §§1.401 to 1.482; of reexamination of patents in Subpart D, §§1.501 to 1.570; and of trademark applications, §§2.11 to 2.189.

* * * * *

2. Section 1.6 is revised to read as follows:

§1.6 Receipt of letters and papers.

(a) Letters and other papers received in the Patent and Trademark Office are stamped with the date of receipt. No papers are received in the Patent and Trademark Office on Saturdays, Sundays or federal holidays within the District of Columbia.

(b) Mail placed in the Patent and Trademark Office pouch up to midnight on weekdays, excepting Saturdays and federal holidays, by the post office at Washington, D. C., serving the Patent and Trademark Office, is considered as having been received in the Patent and Trademark Office on the day it was so placed in the pouch.

(c) In addition to being mailed or delivered by hand during office hours, letters and other papers may be deposited up to midnight in a box provided at the guard's desk at the lobby of building 3 of the Patent and Trademark Office at Crystal Plaza, Arlington, Virginia and at the main entrance (14th Street) of the Department of Commerce Building, Washington, D. C., on weekdays except Saturdays and federal holidays, and all papers deposited therein are considered as received in the Patent and Trademark Office on the day of deposit.

(d) If interruptions or emergencies in the United States Postal Service which have been so designated by the Commissioner occur, the Patent and Trademark Office will consider as filed on a particular date in the Office any paper or fee which is (1) promptly filed after the ending of the designated interruption or emergency and (2) accompanied by a statement indicating that such paper or fee would have been filed on that particular date if it were not for the designated interruption or emergency in the United States Postal Service. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

3. Section 1.7 is revised to read as follows:

§1.7 Times for taking action: Expiration on Saturday, Sunday or federal holiday.

Whenever periods of time are specified in this part in days, calendar days are intended. When the day, or the last day fixed by statute or by or under this part for taking any action or paying any fee in the Patent and Trademark Office falls on Saturday, Sunday, or on a federal holiday within the District of Columbia, the action may be taken, or the fee paid, on the next succeeding day which is not a Saturday, Sunday, or a federal holiday. See §1.304 for time for appeal or for commencing civil action.

4. Section 1.8 is amended by revising the introductory text of paragraph (a) and paragraph (a)(1), (a)(2) introductory text, and (a)(2)(i) to read as follows:

§1.8 Certificate of mailing.

(a) Except in the cases enumerated below, papers and fees required to be filed in the Patent and Trademark Office within a set period of time will be considered as being timely filed if: (1) they are addressed to the Commissioner of Patents and Trademarks, Washington, D. C. 20231, and deposited with the U.S. Postal Service with sufficient postage as first class mail prior to expiration of the set period, and (2) they also include a certificate for each paper or fee stating the date of deposit. The person signing the certificate should have reasonable basis to expect that the correspondence would be mailed on or before the date indicated. The actual date of receipt of the paper or fee will be used for all other purposes. This procedure does not apply to the following:

(i) The filing of a national patent application specification and drawing or other papers for the purpose of obtaining an application filing date;

* * * * *

5. A new section 1.10 is added to read as follows:

§1.10 Filing of papers and fees by "Express Mail" with certificate.

(a) Any paper or fee to be filed in the Patent and Trademark Office can be filed utilizing the "Express Mail Post Office to Addressee" service of the United States Postal Service and be considered as having been filed in the Office on the date the paper or fee is shown to have been deposited as "Express Mail" with the United States Postal Service.

(b) Any paper or fee filed by "Express Mail" must have the number of the "Express Mail" mailing label placed thereon prior to mailing, be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and any such paper or fee must also include a certificate of mailing by "Express Mail" which states the date of mailing by "Express Mail" and is signed by the person mailing the paper or fee.

(c) The Patent and Trademark Office will accept the certificate of mailing by "Express Mail" and accord the paper or fee the certificate date under 35 U.S.C. 21(a) without further proof of the date on which the mailing by "Express Mail" occurred unless a question is present regarding the date of mailing. If more than a reasonable time has elapsed between the certificate date and the Patent and Trademark Office receipt date or if other questions regarding the date of mailing are present, the person mailing the paper or fee may be required to file a copy of the "Express Mail" receipt showing the actual date of mailing and a statement from the person who mailed the paper or fee averring to the fact that the mailing occurred on the date certified. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

6. Section 1.17 is amended by revising paragraph (h) to read as follows:

§1.17 Patent application processing fees.

* * * * *

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph—$120.00

—§1.47—for filing by other than all the inventors or a person not the inventor
—§1.48—for correction of inventorship
—§1.182–for decision on questions not specifically provided for
—§1.183–to suspend the rules
—§1.268–for late filing of interference settlement agreement

* * * * *

7. Section 1.22 is revised to read as follows:

§1.22 Fees payable in advance.

(a) Patent and trademark fees and charges payable to the Patent and Trademark Office are required to be paid in advance, that is, at the time of requesting any action by the Office for which a fee or charge is payable with the exception that under §1.53 applications for patent may be assigned a filing date without payment of the basic filing fee.

(b) All patent and trademark fees paid to the Patent and Trademark Office should be itemized in each individual application, patent or other proceeding in such a manner that it is clear for which purpose the fees are paid.

8. Section 1.24 is revised to read as follows:

§1.24 Coupons.

Coupons in denominations of one dollar are sold by the Patent and Trademark Office for the convenience of regular purchasers of U.S. patents and trademark registrations; these coupons may not be used for any other purpose. The one dollar coupons are sold individually and in books of 50 with stubs for record for $50. These coupons are good until used; they may be transferred but cannot be redeemed.

9. Section 1.41 is revised to read as follows:

§1.41 Applicant for patent.

(a) A patent must be applied for in the name of the actual inventor or inventors. Full names must be stated, including the family name and at least one given name without abbreviation together with any other given name or initial.

(b) Unless the contrary is indicated the word "applicant" when used in these sections refers to the inventor or joint inventors who are applying for a patent, or to the person mentioned in §§1.42, 1.43, or 1.47 who is applying for a patent in place of the inventor.

(c) Any person authorized by the applicant may file an application for patent on behalf of the inventor or inventors, but an oath or declaration for the application (§1.63) can only be made in accordance with §1.64.

(d) A showing may be required from the person filing the application that the filing was authorized where such authorization comes into question.

10. Section 1.42 is revised to read as follows:

§1.42 When the inventor is dead.

In case of the death of the inventor, the legal representative (executor, administrator, etc.) of the deceased inventor may make the necessary oath or declaration, and apply for and obtain the patent. Where the inventor dies during the time intervening between the filing of the application and the granting of a patent thereon, the

letters patent may be issued to the legal representative upon proper intervention.

11. Section 1.43 is revised to read as follows:

§1.43 When the inventor is insane or legally incapacitated.

In case an inventor is insane or otherwise legally incapacitated, the legal representative (guardian, conservator, etc.) of such inventor may make the necessary oath or declaration, and apply for and obtain the patent.

12. Section 1.45 is amended by removing paragraphs (b) and (c) and the designation (a) to the first paragraph and by revising the text to read as follows:

§1.45 Joint inventors.

Joint inventors must apply for a patent jointly and each must make the required oath or declaration: neither of them alone, nor less than the entire number, can apply for a patent for an invention invented by them jointly, except as provided in §1.47.

13. Section 1.46 is revised to read as follows:

§1.46 Assigned inventions and patents.

In case the whole or a part interest in the invention or in the patent to be issued is assigned, the application must still be made or authorized to be made, and an oath or declaration signed, by the inventor or one of the persons mentioned in §§1.42, 1.43, or 1.47. However, the patent may be issued to the assignee or jointly to the inventor and the assignee as provided in §1.334.

14. Section 1.47 is revised to read as follows:

§1.47 Filing when an inventor refuses to sign or cannot be reached.

(a) If a joint inventor refuses to join in an application for patent or cannot be found or reached after diligent effort, the application may be made by the other inventor on behalf of himself or herself and the omitted inventor. The oath or declaration in such an application must be accompanied by a petition including proof of the pertinent facts and by the required fee (§1.17(h)) and must state the last known address of the omitted inventor. The Patent and Trademark Office shall forward notice of the filing of the application to the omitted inventor at said address. Should such notice be returned to the Office undelivered, or should the address of the omitted inventor be unknown, notice of the filing of the application shall be published in the *Official Gazette*. The omitted inventor may subsequently join in the application on filing an oath or declaration of the character required by §1.63. A patent may be granted to the inventor making the application, upon a showing satisfactory to the Commissioner, subject to the same rights which the omitted inventor would have had if he or she had been joined.

(b) Whenever an inventor refuses to execute an application for patent, or cannot be found or reached after diligent effort, a person to whom the inventor has assigned or agreed in writing to assign the invention or who otherwise shows sufficient proprietary interest in the matter justifying such action may make application for patent on behalf of and as agent for the inventor. The oath or declaration in such an application must be accompanied by a petition including proof of the pertinent facts and a showing that such action is necessary to preserve the rights of the parties or to prevent irreparable damage, and by the required fee (§1.17(h)) and must state the last known address of the inventor. The assignment, written agreement to assign or other evidence of proprietary interest, or a verified copy thereof, must be filed in the Patent and Trademark Office. The Office shall forward notice of the filing of the application to the inventor at the address stated in the application. Should such notice be returned to the Office undelivered, or should the address of the inventor be unknown, notice of the filing of the application shall be published in the *Official Gazette*. The inventor may subsequently join in the application on filing an oath or declaration of the character required by §1.63. A patent may be granted to the inventor upon a showing satisfactory to the Commissioner.

15. A new section 1.48 is added to read as follows:

§1.48 Correction of inventorship.

If the correct inventor or inventors are not named in an application for patent through error without any deceptive intention on the part of the actual inventor or inventors, the application may be amended to name only the actual inventor or inventors. Such amendment must be diligently made and must be accompanied by (1) a petition including a statement of facts verified by the original named inventor or inventors establishing when the error without deceptive intention was discovered and how it occurred; (2) an oath or declaration by each actual inventor or inventors as required by §1.63; (3) the fee set forth in §1.17(h); and (4) the written consent of any assignee.

16. Section 1.51 is amended by revising paragraphs 1.51(a)(2) and (b) to read as follows:

§1.51 General requisites of a complete application.

(a) * * * * *

(2) An oath or declaration, see §§1.63 and 1.68.

* * * * *

(b) Applicants are encouraged to file an information disclosure statement. See §§1.97 through 1.99.

17. Section 1.52 is amended by revising paragraph (c) to read as follows:

§1.52 Language, paper, writing, margins.

* * * * *

(c) Any interlineation, erasure, cancellation or other alteration of the application papers filed must be made before the signing of any accompanying oath or declaration pursuant to §1.63 referring to those application papers and should be dated and initialed or signed by the applicant on the same sheet of paper. No such alterations in the application papers are permissible after the signing of an oath or declaration referring to those application papers (§1.56(c)). After the signing of the oath or declaration referring to the application papers, amendments may only be made in the manner provided by §§1.121 and 1.123–1.125.

* * * * *

18. Section 1.53 is revised to read as follows:

§1.53 Serial number, filing date, and completion of application.

(a) Any application for a patent received in the Patent and Trademark Office will be assigned a serial number for identification purposes.

(b) The filing date of an application for patent is the date on which (1) a specification containing a description pursuant to §1.71 and at least one claim pursuant to §1.75, and (2) any drawing required by §1.81(a), are filed in the Patent and Trademark Office. No new matter may be introduced into an application after its filing date (§1.118).

(c) If any application is filed without the specification or drawing required by paragraph (b) of this section, applicant will be so notified and given a time period within which to submit the omitted specification or drawing in order to obtain a filing date as of the date of filing of such submission. If the omission is not corrected within the time period set, the application will be returned or otherwise disposed of; the fee, if submitted, will be refunded less a $50.00 handling fee.

(d) If an application which has been accorded a filing date pursuant to paragraph (b) of this section does not include the appropriate filing fee or an oath or declaration by the applicant, applicant will be so notified and given a period of time within which to file the fee, oath, or declaration and to pay the surcharge as set forth in §1.16(e) in order to prevent abandonment of the application. The notification pursuant to this paragraph may be made simultaneously with any notification pursuant to paragraph (c) of this section.

(e) An application for a patent will not be placed upon the files for examination until all its required parts,

complying with the rules relating thereto, are received, except that certain minor informalities may be waived subject to subsequent correction whenever required.

(f) The filing date of an international application designating the United States of America shall be treated as the filing date in the United States of America under PCT Article 11(3), except as provided in 35 U.S.C. 102(e).

19. Section 1.54 is revised to read as follows:

§1.54 Parts of application to be filed together; filing receipt.

(a) It is desirable that all parts of the complete application be deposited in the Office together; otherwise a letter must accompany each part, accurately and clearly connecting it with the other parts of the application. See §1.53 with regard to completion of an application.

(b) Applicant will be informed of the application serial number and filing date by a filing receipt.

20. Section 1.55 is revised to read as follows:

§1.55 Claim for foreign priority.

(a) An applicant may claim the benefit of the filing date of a prior foreign application under the conditions specified in 35 U.S.C. 119 and 172. The claim to priority need be in no special form and may be made by the attorney or agent if the foreign application is referred to in the oath or declaration as required by §1.63. The claim for priority and the certified copy of the foreign application specified in the second paragraph of 35 U.S.C. 119 must be filed in the case of interference (§1.224); when necessary to overcome the date of a reference relied upon by the examiner; or when specifically required by the examiner; and in all other cases they must be filed not later than the date the issue fee is paid. If the papers filed are not in the English language, a translation need not be filed except in the three particular instances specified in the preceding sentence, in which event a sworn translation or a translation certified as accurate by a sworn or official translator must be filed. If the priority papers are submitted after the date the issue fee is paid, they must be accompanied by a petition requesting their entry and the fee set forth in §1.17(i).

(b) An applicant may under certain circumstances claim priority on the basis of an application for an inventor's certificate in a country granting both inventor's certificates and patents. When an applicant wishes to claim the right of priority as to a claim or claims of the application on the basis of an application for an inventor's certificate in such a country under 35 U.S.C. 119, last paragraph (as amended July 28, 1972), the applicant or his attorney or agent, when submitting a claim for such right as specified in paragraph (b) of this section, shall include an affidavit or declaration including a specific statement that, upon an investigation, he or she has satisfied himself or herself that to the best of his or her knowledge the applicant, when filing his or her application for the inventor's certificate, had the option to file an application either for a patent or an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority.

21. Section 1.56 is amended by revising paragraph (c) to read as follows:

§1.56 Duty of disclosure; fraud; striking or rejection of applications.

* * * * *

(c) Any application may be stricken from the files if:

(1) An oath or declaration pursuant to §1.63 is signed in blank;

(2) An oath or declaration pursuant to §1.63 is signed without review thereof by the person making the oath or declaration;

(3) An oath or declaration pursuant to §1.63 is signed without review of the specification, including the claims, as required by §1.63(b);

or

(4) The application papers filed in the Office are altered after the signing of an oath or declaration pursuant to §1.63 referring to those application papers.

* * * * *

§1.57 [Removed]

22. Section 1.57 is removed.

23. Section 1.59 is revised to read as follows:

§1.59 Papers of application with filing date not to be returned.

Papers in an application which has received a filing date pursuant to §1.53 will not be returned for any purpose whatever. If applicants have not preserved copies of the papers, the Office will furnish copies at the usual cost.

24. Section §1.60 is revised to read as follows:

§1.60 Continuation or divisional application for invention disclosed in a prior application.

A continuation or divisional application (filed under the conditions specified in 35 U.S.C. 120 or 121), which discloses and claims only subject matter disclosed in a prior application may be filed as a separate application before the patenting or abandonment of or termination of proceedings on the prior application. Signing and execution of the application papers by the applicant may be omitted provided the copy is supplied by and accompanied by a statement by, the applicant or his or her attorney or agent that the application papers comprise a true copy of the prior application as filed. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. Only amendments reducing the number of claims or adding a reference to the prior application (§1.78(a)) will be entered before calculating the filing fee and granting the filing date.

25. Section §1.62 is revised to read as follows:

§1.62 File wrapper continuing procedure.

(a) A continuation, continuation-in-part, or divisional application, which uses the specification and drawings from a prior application to be abandoned, may be filed before the payment of the issue fee, abandonment of, or termination of proceedings on a prior application. The filing date of an application filed under this section is the date on which a request is filed for an application under this section including identification of the Serial Number, filing date, and applicant's name of the prior application.

(b) The filing fee for a continuation, continuation-in-part, or divisional application under this section is based on the number of claims remaining in the application after entry of any preliminary amendment and entry of any amendments under §1.116 unentered in the prior application which applicant has requested to be entered in the continuing application.

(c) In the case of a continuation-in-part application which adds and claims additional disclosure by amendment, an oath or declaration as required by §1.63 must also be filed. In a continuation or divisional application which discloses and claims only subject matter disclosed in a prior application, no additional oath or declaration is required.

(d) If an application which has been accorded a filing date pursuant to paragraph (a) of this section does not include the appropriate filing fee pursuant to paragraph (b) of this section, or an oath or declaration by the applicant in the case of a continuation-in-part application pursuant to paragraph (c) of this section, applicant will be so notified and given a period of time within which to file the fee, oath, or declaration and to pay the surcharge as set forth in §1.16(e) in order to prevent abandonment of the application. The notification pursuant to this paragraph may be made simultaneously with any notification of a defect pursuant to paragraph (a) of this section.

(e) An application filed under this section will utilize the file wrapper and contents of the prior application to constitute the new continuation, continuation-in-part, or divisional application but will be assigned a new application serial number.

(f) The filing of an application under this section will be construed to include a waiver of secrecy by the applicant under 35 U.S.C. 122 to the extent that any member of the public who is entitled under the provisions of 37 CFR 1.14 to access to, or information concerning either the prior application or any continuing application filed under the provisions of this section may be given similar access to, or similar information concerning, the other application(s) in the file wrapper.

(g) The filing of a request for a continuing application under this section will be considered to be a request to expressly abandon the prior application as of the filing date granted the continuing application.

(h) The applicant is urged to furnish the following information relating to the prior application to the best of his or her ability:

(1) Title as originally filed and as last amended;
(2) Name of applicant as originally filed and as last amended;
(3) Current correspondence address of applicant;
(4) Identification of prior foreign application and any priority claim under 35 U.S.C. 119.

(i) Envelopes containing only application papers and fees for filing under this section should be marked "Box FWC".

26. A new section 1.63 is added to read as follows:

§1.63 Oath or declaration.

(a) An oath or declaration filed under §1.51(a)(2) as a part of an application must:

(1) Be executed in accordance with either §1.66 or §1.68;
(2) Identify the specification to which it is directed;
(3) Identify each inventor and the residence and country of citizenship of each inventor; and
(4) State whether the inventor is a sole or joint inventor of the invention claimed.

(b) In addition to meeting the requirements of paragraph (a), the oath or declaration must state that the person making the oath or declaration:

(1) Has reviewed and understands the contents of the specification, including the claims, as amended by any amendment specifically referred to in the oath or declaration;
(2) Believes the named inventor or inventors to be the original and first inventor or inventors of the subject matter which is claimed and for which a patent is sought; and
(3) Acknowledges the duty to disclose information which is material to the examination of the application in accordance with §1.56(a).

(c) In addition to meeting the requirements of paragraphs (a) and (b) of this section, the oath or declaration in any application in which a claim for foreign priority is made pursuant to §1.55 must identify the foreign application for patent or inventor's certificate on which priority is claimed, and any foreign application having a filing date before that of the application on which priority is claimed, by specifying the application number, country, day, month and year of its filing.

(d) In any continuation-in-part application filed under the conditions specified in 35 U.S.C. 120 which discloses and claims subject matter in addition to that disclosed in the prior copending application, the oath or declaration must also state that the person making the oath or declaration acknowledges the duty to disclose material information as defined in §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

27. A new section 1.64 is added to read as follows:

§1.64 Person making oath or declaration.

(a) The oath or declaration must be made by all of the actual inventors except as provided for in §§1.42, 1.43, or 1.47.

(b) If the person making the oath or declaration is not the inventor (§§1.42, 1.43, or 1.47), the oath or declaration shall state the relationship of the person to the inventor and, upon information and belief, the facts which the inventor is required to state.

§1.65 [Removed]

28. Section 1.65 is removed.

29. Section 1.67 is revised to read as follows:

§1.67 Supplemental oath or declaration.

(a) A supplemental oath or declaration meeting the requirements of §1.63 may be required to be filed to correct any deficiencies or inaccuracies present in an earlier filed oath or declaration.

(b) A supplemental oath or declaration meeting the requirements of §1.63 must be filed (1) when a claim is presented for matter originally shown or described but not substantially embraced in the statement of invention or claims originally presented, and (2) when an oath or declaration submitted in accordance with §1.53(d) after the filing of the specification and any required drawings specifically and improperly refers to an amendment which includes new matter. No new matter may be introduced into an application after its filing date even if a supplemental oath or declaration is filed (§1.53(b); §1.118). In proper cases the oath or declaration here required may be made on information and belief by an applicant other than inventor.

30. Section 1.69 is amended by revising paragraph (b) to read as follows:

§1.69 Foreign language oaths and declarations.

* * * * *

(b) Unless the text of any oath or declaration in a language other than English is a form provided or approved by the Patent and Trademark Office, it must be accompanied by a verified English translation, except that in the case of an oath or declaration filed under §1.63, the translation may be filed in the Office no later than two months from the date applicant is notified to file the translation.

31. Section 1.70 is amended by revising the title and paragraph (a) to read as follows:

§1.70 Oath or declaration under 35 U.S.C. 371(c)(4).

(a) When an applicant of an international application, if the inventor, desires to enter the national stage under 35 U.S.C. 371, he or she must file an oath or declaration in accordance with §1.63.

* * * * *

32. Section 1.77 is amended by revising paragraphs (h) and (i) to read as follows:

§1.77 Arrangement of application elements.

* * * * *

(h) Abstract of the disclosure.
(i) Signed oath or declaration.

* * * * *

33. The center heading preceding §1.97 and section 1.97 are revised to read as follows:

INFORMATION DISCLOSURE STATEMENT

§1.97 Filing of information disclosure statement.

(a) As a means of complying with the duty of disclosure set forth in §1.56, applicants are encouraged to file an information disclosure statement at the time of filing the application or within the later of three months after the filing date of the application or two months after applicant receives the filing receipt. If filed separately, the disclosure statement should, in addition to the identification of the application, include the Group Art Unit to which the application is assigned as indicated on the filing receipt. The disclosure statement may either be separate from the specification or may be incorporated therein.

(b) A disclosure statement filed in accordance with paragraph (a) of this section shall not be construed as a representation that a search has been made or that no other material information as defined in §1.56(a) exists.

34. Section 1.98 is amended by revising the title and paragraph (a) to read as follows:

§1.98 Content of information disclosure statement.

(a) Any disclosure statement filed under §1.97 or §1.99 shall include: (1) A listing of patents, publications or other information and (2) a concise explanation of the relevance of each listed item. The disclosure statement shall be accompanied by a copy of each listed patent or publication or other item of information in written form or of at least the portions thereof considered by the person filing the disclosure statement to be pertinent. All United States patents listed should be identified by their patent numbers, patent dates and names of the patentees. Each foreign published application or patent should be cited by identifying the country or office which issued it, the document number and publication date indicated on the document. Each printed publication should be identified by author (if any), title of the publication, pages, date and place of publication.

* * * * *

35. Section 1.99 is revised to read as follows:

§1.99 Updating of information disclosure statement.

If prior to issuance of a patent an applicant, pursuant to his or her duty of disclosure under §1.56, wishes to bring to the attention of the Office additional patents, publications or other information not previously submitted, the additional information should be submitted to the Office with reasonable promptness. It may be included in a supplemental information disclosure statement or may be incorporated into other communications to be considered by the examiner. Any transmittal of additional information shall be accompanied by explanations of relevance and by copies in accordance with the requirements of §1.98.

36. Section 1.101 is amended by revising paragraph (a) to read as follows:

§1.101 Order of examination.

(a) Applications filed in the Patent and Trademark Office and accepted as complete applications are assigned for examination to the respective examining groups having the classes of inventions to which the applications relate. Applications shall be taken up for examination by the examiner to whom they have been assigned in the order in which they have been filed except for those applications in which examination has been advanced pursuant to §1.102 and those applications in which the Office has accepted a request for waiver of patent rights filed under §1.139. International applications which have complied with the requirements of 35 U.S.C. 371(c) will be taken up for action based on the date on which such requirements were met. However, unless a request has been filed under 35 U.S.C. 371(f), no action may be taken prior to 21 months from the priority date.

* * * * *

37. Section 1.118 is revised to read as follows:

§1.118 Amendment of disclosure.

(a) No amendment shall introduce new matter into the disclosure of an application after the filing date of the application §1.53(b)). All amendments to the specification, including the claims, and the drawings filed after the filing date of the application must conform to at least one of them as it was at the time of the filing of the application. Matter not found in either, involving a departure from or an addition to the original disclosure, cannot be added to the application after its filing date even though supported by an oath or declaration in accordance with §1.63 or §1.67 filed after the filing date of the application.

(b) If it is determined that an amendment filed after the filing date of the application introduces new matter, claims containing new matter will be rejected and deletion of the new matter in the specification and drawings will be required even if the amendment is accompanied by an oath or declaration in accordance with §1.63 or §1.67.

38. Section 1.123 is revised to read as follows:

§1.123 Amendments to the drawing.

No change in the drawing may be made except by permission of the Office. Permissible changes in the construction shown in any drawing may be made only by bonded draftsmen, at applicant's expense, or by the submission of substitute drawings by applicant. A sketch in permanent ink showing proposed changes, to become part of the record, must be filed for approval by the examiner. The paper requesting amendments to the drawing should be separate from other papers.

39. Section 1.125 is revised to read as follows:

§1.125 Substitute specification.

If the number or nature of the amendments shall render it difficult to consider the case, or to arrange the papers for printing or copying, the examiner may require the entire specification, including the claims, or any part thereof, to be rewritten. A substitute specification may not be accepted unless it has been required by the examiner or unless it is clear to the examiner that acceptance of a substitute specification would facilitate processing of the application. Any substitute specification filed must be accompanied by a statement that the substitute specification includes no new matter. Such statement must be a verified statement if made by a person not registered to practice before the Office.

40. Section 1.131 is amended by revising paragraph (a) to read as follows:

§1.131 Affidavit or declaration of prior invention to overcome cited patent or publication.

(a) When any claim of an application or a patent under reexamination is rejected on reference to a domestic patent which substantially shows or describes but does not claim the rejected invention, or on reference to a foreign patent or to a printed publication, and the applicant or the owner of the patent under reexamination shall make oath or declaration as to facts showing a completion of the invention in this country before the filing date of the application on which the domestic patent issued, or before the date of the foreign patent, or before the date of the printed publication, then the patent or publication cited shall not bar the grant of a patent to the applicant or the confirmation of the patentability of the claims of the patent, unless the date of such patent or printed publication is more than one year prior to the date on which the applicant's or patent owner's application was filed in this country.

* * * * *

41. Section 1.132 is revised to read as follows:

§1.132 Affidavits or declarations traversing grounds of rejection.

When any claim of an application or a patent under reexamination is rejected on reference to a domestic patent which substantially shows or describes but does not claim the invention, or on reference to a foreign patent, or to a printed publication, or to facts within the personal knowledge of an employee of the Office, or when rejected upon a mode or capability of operation attributed to a reference, or because the alleged invention is held to be inoperative or lacking in utility, or frivolous or injurious to public health or morals, affidavits or declarations traversing these references or objections may be received.

42. Section 1.137 is amended by revising paragraph (b) to read as follows:

§1.137 Revival of abandoned application.

* * * * *

(b) An application unintentionally abandoned for failure to prosecute, except pursuant to §1.53(d), may be revived as a pending application if the delay was unintentional. A petition to revive an unintentionally abandoned application must be filed within one year of the date on which the application became abandoned or be filed within three months of the date of the first decision on a petition to revive under paragraph (a) of this section which was filed within one year of the date of abandonment of the application. A petition to revive an unintentionally abandoned application must be accompanied by (1) a statement that the abandonment was unintentional, (2) a proposed response unless it has been previously filed, and (3) a petition fee as set forth in §1.17(m). Such statement must be a verified statement if made by a per-

son not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the abandonment was unintentional. The three month period set forth in this paragraph may be extended under the provisions of §1.136(a), but no further extensions under §1.136(b) will be granted. Petitions to the Commissioner under §1.183 to waive any time periods for requesting revival of an unintentionally abandoned application will not be considered, but will be returned to the applicant.

* * * * *

43. Section 1.153 is amended by revising paragraph (b) to read as follows:

§1.153 Title, description and claim, oath or declaration.

* * * * *

(b) The oath or declaration required of the applicant must comply with §1.63.

44. Section 1.154 is amended by revising paragraph (e) to read as follows:

§1.154 Arrangement of specification.

* * * * *

(e) Signed oath or declaration (See §1.153(b)).

45. Section 1.162 is revised to read as follows:

§1.162 Applicant, oath or declaration.

The applicant for a plant patent must be the person who has invented or discovered and asexually reproduced the new and distinct variety of plant for which a patent is sought (or as provided in §§1.42, 1.43, and 1.47). The oath or declaration required of the applicant, in addition to the averments required by §1.63, must state that he or she has asexually reproduced the plant. Where the plant is a newly found plant the oath or declaration must also state that it was found in a cultivated area.

46. Section 1.163 is amended by revising paragraph (b) to read as follows:

§1.163 Specification.

* * * * *

(b) Two copies of the specification (including the claim) must be submitted, but only one signed oath or declaration is required. The second copy of the specification may be a legible carbon copy of the original.

47. Section 1.172 is amended by revising paragraph (a) to read as follows:

§1.172 Applicants, assignees.

(a) A reissue oath must be signed and sworn to or declaration made by the inventor or inventors except as otherwise provided (see §§1.42, 1.43, 1.47), and must be accompanied by the written assent of all assignees, if any, owning an undivided interest in the patent, but a reissue oath may be made and sworn to or declaration made by the assignee of the entire interest if the application does not seek to enlarge the scope of the claims of the original patent.

* * * * *

48. Section 1.174 is amended by revising paragraph (a) to read as follows:

§1.174 Drawings.

(a) The drawings upon which the original patent was issued may be used in reissue applications if no changes whatsoever are to be made in the drawings. In such cases, when the reissue application is filed, the applicant must submit a temporary drawing which may consist of a copy of the printed drawings of the patent or a photoprint of the original drawings of the size required for original drawing.

* * * * *

49. Section 1.175 is amended by revising the introductory text of paragraph (a) to read as follows:

§1.175 Reissue oath or declaration.

(a) Applicants for reissue, in addition to complying with the requirements of §1.63, must also file with their applications a statement under oath or declaration as follows:

* * * * *

50. Section 1.324 is revised to read as follows:

§1.324 Correction of inventorship in patent.

Whenever a patent is issued and it appears that the correct inventor or inventors were not named through error without deceptive intention on the part of the actual inventor or inventors, the Commissioner may, on petition of all the parties and the assignees and satisfactory proof of the facts and payment of the fee set forth in §1.20(b), or on order of a court before which such matter is called in question, issue a certificate naming only the actual inventor or inventors.

51. Section 1.325 is revised to read as follows:

§1.325 Other mistakes not corrected.

Mistakes other than those provided for in §§1.322, 1.323, 1.324, and not affording legal grounds for reissue or for reexamination, will not be corrected after the date of the patent.

52. A new §1.335 is added to read as follows:

§1.335 Filing of notice of arbitration awards.

(a) Written notice of any award by an arbitrator pursuant to 35 U.S.C. 294 must be filed in the Patent and Trademark Office by the patentee, or the patentee's assignee or licensee. If the award involves more than one patent a separate notice must be filed for placement in the file of each patent. The notice must set forth the patent number, the names of the inventor and patent owner, and the names and addresses of the parties to the arbitration. The notice must also include a copy of the award.

(b) If an award by an arbitrator pursuant to 35 U.S.C. 294 is modified by a court, the party requesting the modification must file in the Patent and Trademark Office, a notice of the modification for placement in the file of each patent to which the modification applies. The notice must set forth the patent number, the names of the inventor and patent owner, and the names and addresses of the parties to the arbitration. The notice must also include a copy of the court's order modifying the award.

(c) Any award by an arbitrator pursuant to 35 U.S.C. 294 shall be unenforceable until any notices required by paragraph (a) or (b) of this section are filed in the Patent and Trademark Office. If any required notice is not filed by the party designated in paragraph (a) or (b) of this section, any party to the arbitration proceeding may file such a notice.

53. Section 5.12 is revised to read as follows:

§5.12 Petition for license.

(a) Filing of an application for patent for inventions made in the United States will be considered to include a petition for license under 35 U.S.C. 184 for the subject matter of the application. The filing receipt will indicate if a license is granted. If the initial automatic petition is not granted, a subsequent petition may be filed under paragraph (b) of this section.

(b) Petitions for license under 35 U.S.C. 184 should be presented in letter form and should include petitioner's address, and full instructions for delivery of the requested license when it is to be delivered to other than the petitioner.

Dec. 23, 1982.

GERALD J. MOSSINGHOFF,
Commissioner of
Patents and Trademarks.

[1027 OG 9]

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(60) **Deposit Accounts—Statutory Fee Charges**

Beginning on May 1, 1966, and until further notice, statutory fees, including filing fees for patent, design, and trademark applications, issue fees, appeal fees and opposition, cancellation and petition fees may be charged against the deposit accounts provided for by Rule 25(a) of the Rules of Practice in patent cases. During this period the prohibition of Rule 25(b) against such charges will be suspended.

In view of the facts that these fees are indispensable parts of the actions to which they relate and that the charging of a fee against an account which does not contain sufficient funds to cover it cannot be regarded as a payment of the fee, it is evident that the overdrawing of a deposit account may result in the loss of a vital date and may also impose a substantial burden on the Patent Office in making appropriate correction of its records. It is, therefore, necessary that effective steps be taken to avoid such overdrafts, as follows:

Checks of all accounts will be made periodically, and if any account is found to have been overdrawn, it will be immediately removed from the active accounts and no further drafts on it will be honored. Prompt payment of the outstanding balance will be required and the depositor or his attorney may be called on for an itemized statement identifying all statutory fees charged against the account during the period in question in order that it may be ascertained whether any previously granted date should be withdrawn.

It is emphasized that the success of the procedure outlined above depends upon the maintenance of a sufficient balance in deposit accounts at all times to meet any charges made against them. The Office must, therefore, strictly refuse to permit any depositor who has once overdrawn his account to maintain such an account in the future and in the event that any substantial number of overdrafts occurs it may be necessary to reestablish the prohibition of Rule 25(b) against charging statutory fees against deposit accounts.

Accordingly, effective May 1, 1966, the requirement of Rule 25(a) that an amount sufficient to cover all charges made against an account must always be on deposit will be strictly enforced, regardless of whether any fee is included in such charges and where this requirement is not complied with the account involved will be removed from the active accounts.

EDWARD J. BRENNER,
Feb. 23, 1966. *Commissioner.*

[824 O.G. 1200]

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(61) **Request for Refunds**

In order to expedite the processing of refunds for payment of fees by actual mistake or in excess of the designated fees, attorneys and applicants requesting refunds should direct their correspondence to the attention of the "Refund Section, Accounting Division, Office of Finance." This procedure should be followed whether the request is for a refund check or for a credit to the deposit account. The problems of misrouting the request for a refund in the Patent and Trademark Office would be alleviated and the payment of refunds accelerated.

BRADFORD R. HUTHER,
Assistant Commissioner for Finance & Planning.

[1024 O.G. 59 (11-23-82)]

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(62) **Deposit Account Authorizations**

The rules of practice were amended effective Oct. 1, 1982, at 37 CFR 1.25(b) to state that: "A general authorization to charge all fees, or only certain fees, set forth in §§1.16 to 1.18 to a deposit account may be filed in an individual application, either for the entire pendency of the application or with respect to a particular paper filed." A general authorization would not apply to document supply fees under §1.19, such as those required for certified copies; to post-issuance fees under §1.20, such as those required for maintenance fees; or to miscellaneous fees and charges under §1.21, such as assignment recording fees.

Many applications filed prior to Oct. 1, 1982, contain broad language authorizing *any* additional fees which might have been due to be charged to a deposit account. The Patent and Trademark Office does not interpret such broad authorizations, filed prior to Oct. 1, 1982, to include authorization to charge to a deposit account the issue fee or other fees in sections 1.16, 1.17 and 1.18 except those associated with the paper containing the broad authorization. However, such a broad authorization filed in an application on or after Oct. 1, 1982, will be interpreted as authorization to charge the issue fee; as well as any other fee set forth in §§1.16, 1.17 or 1.18. Fees under sections 1.19, 1.20 and 1.21 will not be charged as a result of a general authorization under section 1.25.

It is recommended that authorizations to charge fees to deposit accounts include reference to the particular fees or fee sections of the rules which applicant intends to authorize. For example, if filing and processing fees under §§1.16 and 1.17 only are intended to be included in the authorization, and not the issue fee under §1.18, the authorization could read: "The Commissioner is hereby authorized to charge any fees under 37 CFR 1.16 and 1.17 which may be required during the entire pendency of the application to Depost Account No. _____." Such an authorization would clearly exclude issue fees under 37 CFR 1.18 while including all the filing and processing fees listed in 37 CFR 1.16 and 1.17. Similarly, if it were intended to authorize the charging of fees relating only to a specific paper, the authorization could read "The Commissioner is hereby authorized to charge any fees under 37 CFR 1.16 and 1.17 which may be required by this paper to Deposit Account No. _____." Such authorizations would cover situations in which a check to cover a filing and processing fee under 37 CFR 1.16 and 1.17 was omitted or was for an amount less than the amount required.

It is extremely important that the authorization be clear and unambiguous. If applicants file authorizations which are ambiguous and which deviate from the usual forms of authorizations, the Office may not interpret the authorizations in the manner applicants intend. In such cases applicants could be subject to further expenses, petitions, etc. in order to correct fees which were not charged as intended due to an ambiguous authorization.

GERALD J. MOSSINGHOFF,
July 1, 1983. *Commissioner of Patents and Trademarks.*

[1032 OG 32]

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(63) **Notice to All Deposit Account Holders**

Beginning Oct. 7, 1983, please *mail deposit account remittances only* to:

Patent and Trademark Office
P.O. Box 70541
Chicago, Ill. 60673

To expedite credit to your deposit account and the treasury, and arrangement has been made between the Patent and Trademark Office, Treasury Department, and the First National Bank of Chicago utilizing a special "lockbox" depositary to receive deposit account remittances.

Checks should continue to be made payable to the Commissioner of Patents and Trademarks and be accompanied by *the top portion of your deposit account statement.* Submit only remittances for deposit accounts to this new address. All other correspondence should continue to be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

LEONARD L. NAHME,
Director Office of Finance.

[1035 OG 27]

APPLICATION CONTENT

(64) **Use of Metric System of Measurements in Patent Applications**

In order to minimize the necessity in the future for converting dimensions given in the English system of measurements to the metric system of measurements

when using printed patents as research and prior art search documents, all patent applicants are strongly encouraged to use either (1) only metric (S.I.) units, or (2) English units together with their metric system equivalents, when describing their inventions in the specifications of patent applications. This practice, however, is not being made mandatory at this time.

The initials S.I. stand for "Systeme International d'-Unites," the French name for the International System of Units, a modernized metric system adopted in 1960 by the International General Conference of Weights and Measures based on precise unit measurements made possible by modern technology.

This request is made as part of the long-range program for conversion to metric units currently being conducted by the Federal Government.

Publications dealing with the metric system are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 and the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

C. MARSHALL DANN,
July 1, 1974. *Commissioner of Patents.*

[924 O.G. 1104]

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(65) Filing of Non-English Language Applications

This notice is in response to inquiries regarding the filing of applications in a language other than English. The Office has received a few such applications in the past in emergency situations where the filing of a non-English language specification was the only possibility of saving a foreign priority date or preventing the running of a statutory bar. In such situations the Office practice has been to accord the application a filing date if it includes all of the component parts required by 35 U.S.C. 111, and to require applicant to submit a verified translation of the previously filed application within two months.

In view of the inquiries received, it is considered appropriate that the Office clarify and publicize its practice in this area to avoid misunderstandings.

Accordingly, beginning February 1, 1976, the Office will accord a filing date to an application meeting the requirements of 35 U.S.C. 111 even though some or all of the application papers, including the written description and the claims, is in a language other than English and hence does not comply with 37 CFR 1.52, *provided:*

(1) the oath or declaration is signed and physically attached to the specification and claims to which it refers; and

(2) the application papers are accompanied by a statement, in English, from the applicant, his attorney or agent, certifying that it has been considered necessary to file the non-English language application in order to save a foreign priority date or prevent the running of a statutory bar.

A verified English translation of the non-English language papers should either accompany the application papers or be filed in the Office no later than two months after a notice requesting the translation has been mailed by the Office.

A subsequently filed verified English translation must contain the complete identifying data for the application in order to permit prompt association with the papers initially filed. Accordingly, it is strongly recommended that the original application papers be accompanied by a cover letter and a self-addressed return post card, each containing the following identifying data in English: (*a*) applicant's name(s); (*b*) title of invention; (*c*) number of pages of specifications, claims, and sheets of drawings; (*d*) whether oath or declaration was filed and (*e*) amount and manner of paying the filing fee.

The translation must be a literal translation verified as such by the translator, and must be accompanied by a signed request from the applicant, his attorney or agent, asking that the verified English translation be used as the copy for examination purposes in the Office. If the verified English translation does not conform to idiomatic English and United States practice it should be accompanied by a preliminary amendment making the necessary changes without the introduction of new matter prohibited by 35 U.S.C. 132. In the event the verified literal translation is not timely filed in the Office the application will be regarded as abandoned.

It should be recognized that this practice is intended for emergency situations to prevent loss of valuable rights and should not be routinely used for filing applications. There are at least two reasons why this should not be used on a routine basis. First, there are obvious dangers to applicant and the public if he fails to obtain a correct literal translation. Second, the filing of a large number of applications under the procedure will create significant administrative burdens on the Office.

The practice will be closely monitored to determine whether or not it should be continued.

C. MARSHALL DANN,
Dec. 31, 1975. *Commissioner of Patents and Trademarks.*

[942 O.G. 1552]

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(66) Filing of Patent Applications Pursuant to 37 CFR 1.60

Applicants are reminded that 37 CFR 1.60 was amended effective Feb. 27, 1983 to require applicants to furnish a copy of the prior application upon filing.

Some applicants continue to request that the copy be made by the Patent and Trademark Office as was done under the practice prior to Feb. 27, 1983. Others are filing a copy of the specification of the prior application, but not a copy of the oath or declaration. The Office will no longer make such copies as part of processing the new application.

The requirements of 37 CFR 1.60 must be complied with before a filing date will be granted for the continuing application.

It should be noted that 37 CFR 1.60 has been amended effective Apr. 1, 1984 to divide the section into paragraph (a) and new paragraph (b). Paragraph (a) adds a reference to amended 37 CFR 1.78(a) to clarify the conditions under which continuation or divisional applications may be filed. New paragraph (b) requires that the prior application be complete as set forth in 37 CFR 1.51(a) in order to properly file an application under 37 CFR 1.60. A complete application under 37 CFR 1.51(a) includes a signed oath or declaration. If the prior application was not a complete application (37 CFR 1.51(a)), a continuation or divisional application cannot be filed utilizing the provisions of 37 CFR 1.60 and any continuation or divisional application must include new application papers and be filed in accordance with 37 CFR 1.53.

Paragraph (b) of 37 CFR 1.60 also requires that a true copy of the prior complete application be filed. The copy must include the specification (including claims), drawings, oath or declaration showing the applicant's signature or an indication (on the oath or declaration) that it was signed, and any amendments referred to in the oath or declaration filed to complete the prior application. The copy of the prior application must be accompanied by a statement that the application papers filed are a true copy of the prior application and that no amendments referred to in the oath or declaration filed to complete the prior application introduced new matter therein. Such statement must be by the applicant or applicant's attorney or agent and must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. See the final rulemaking published in the Jan. 4, 1984 Federal Register at 49 FR 548-556 and reprinted in the Jan. 24, 1984 Official Gazette at 1038 O.G. 275-283.

GERALD J. MOSSINGHOFF
Apr. 6, 1984. *Commissioner of Patents and Trademarks.*

[1042 O.G. 18]

(67) **Information in Oath/Declaration Necessary to Identify the Specification in Accordance with 37 CFR 1.63**

Section 1.63 of 37 CFR requires that an oath or declaration "identify the specification to which it is directed." Since filing dates are now granted on applications with the oath or declaration being filed later with a surcharge, the question has arisen as to what information must be supplied in the oath or declaration to identify the specification to which it is directed and to comply with the rule.

The declaration form suggested by the Office includes spaces for filling in the names of the inventors, title of invention, application serial number, filing date, foreign priority application information and United States priority application information. While this information should be provided, it is not essential that all of these spaces be filled in in order to adequately identify the specification in compliance with 37 CFR 1.63.

The following combinations of information supplied in an oath or declaration are acceptable as minimums for identifying a specification:

(1) name of inventor and application serial number;
(2) name of inventor, attorney docket number which was on the application as filed, and filing date of the application;
(3) name of inventor, title of invention and filing date;
(4) name of inventor, title of invention and reference to a specification which is attached to the oath or declaration at the time of execution and filed with the oath or declaration;
(5) name of inventor, title of invention and a statement by a registered attorney or agent that the application filed in the PTO is the application which the inventor executed by signing the oath or declaration.

If the oath or declaration is filed with an "attached" specification as indicated in item (4) above, it must be accompanied by a statement that the "attached" specification is a copy of the specification and any amendments thereto which were filed in the Office in order to obtain a filing date for the application. Such statement must be a verified statement if made by a person not registered to practice before the Office.

Oaths or declarations which do not meet the requirements set forth above will not be accepted as complying with 37 CFR 1.63 for completing an application. Any variance from the above guidelines will only be considered upon the filing of a petition for waiver of the rules under 37 CFR 1.183 accompanied by a petition fee (37 CFR 1.17(h)). Supplemental oaths or declarations in accordance with 37 CFR 1.67 will be required in applications in which the oaths or declarations are not completely filled in but contain sufficient information to identify the specifications to which they apply as detailed above.

Sept. 12, 1983. GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[1035 OG 3]

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(68) **Extension of Transition Period to File Oaths or Declarations in Compliance with 37 CFR 1.63**

The Federal Register of Jan. 20, 1983 indicated at 48 FR 2706 that all oaths or declarations filed on and after Feb. 27, 1983, must comply with the requirements of 37 CFR 1.63 except for the transition period as noted below.

The Office indicated that it would continue to accept any oath or declaration in compliance with 37 CFR 1.65 as it existed immediately prior to Feb. 27, 1983 during a transition period ending June 30, 1983, provided that the oath or declaration was attached to and was executed as a part of an application.

Although the Office is not required to do so, it intends to make translated declaration forms available to the public in at least the more frequently required non-English languages. Since these non-English language translations are not yet available, the transition period is extended to end on Sept. 30, 1983 rather than on June 30, 1983. During this period, the Patent and Trademark Office will continue to accept any oath or declaration in compliance with 37 CFR 1.65 as it existed immediately prior to Feb. 27, 1983, if the oath or declaration is attached to and was executed as a part of an application to be filed in the Patent and Trademark Office.

Effective Oct. 1, 1983, all oaths or declarations filed under 37 CFR 1.51(a)(2) as a part of a patent application must fully comply with 37 CFR 1.63.

May 31, 1983. DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

[1031 OG 53]

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(69) **Need for Copies of Drawings Submitted in Patent Applications**

The Patent and Trademark Office encourages applicants to submit two clear copies of the drawings, in addition to the original drawings submitted with newly filed patent applications. These copies are needed by the Patent Examining Corps during the prosecution of the case. Submission of the extra copies will allow us to reduce the processing time and costs for preparing applications for the examiners.

July 8, 1983. THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

[1033 OG 13]

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(70) **Graphical Illustrations in the Specification**

For convenience many applicants have been including graphs or other types of graphical illustrations in the text portion of the specification. These illustrations do not come within the purview of 37 C.F.R. 1.58 which permits tables and chemical and mathematical formulas in the specification in lieu of formal drawings. Frequently, these graphical illustrations do not have satisfactory reproduction characteristics. Moreover, these reproductions are generally less than satisfactory due to the fact that the illustrations are usually reduced in size in order to fit a column of the printed patent page. Accordingly, effective immediately, graphs and graphical type illustrations in the specification will be objected to under 37 C.F.R. 1.58(a) and drawings pursuant to 37 C.F.R. 1.81 will be required.

Jan. 12, 1978. WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

[967 O.G. 2]

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(71) **Multiple Dependent Claims and New Drawing Filing Requirements**

Introduction

On January 24, 1978, Public Law 94-131 (pages 108–115 of "Patent Laws," August 1976 issue) and the Patent Cooperation Treaty came into force. This public law amends the patent statute, Title 35, United States Code, by providing for procedures and requirements set forth in the Patent Cooperation Treaty. Some of these statutory amendments also effect the laws governing the processing and examination of regular United States national applications filed on and after January 24, 1978.

The amendments of the patent law which will affect *U.S. patent applications filed on and after January 24, 1978,* relate to two elements of the patent application: the claims and the drawings. With regard to claims, the amendments to 35 U.S.C. 41 and 112 provide for multiple dependent claims in accordance with PCT Rule 6.4. With regard to drawings, the amendment to 35 U.S.C. 113 changes the requirements for filing drawings in or-

der to obtain a filing date in accordance with PCT Article 7.

Purpose

This memorandum establishes in more detail the new procedures required by the amended statute. Any questions concerning these instructions may be directed to either Mary Turowski (extension 7-3776) in the administration area or Louis Maassel (extension 7-3070) in the examining area.

Revised 37 CFR sections 1.75(c), (f) and (g); and 1.81 and 1.83(c) were published in the *Official Gazette* of February 21, 1978.

Multiple Dependent Claims

Generally, a multiple dependent claim is a dependent claim which refers back in the alternative to more than one preceding independent or dependent claim.

The second paragraph of 35 U.S.C. section 112 has been revised in view of the multiple dependent claim practice introduced by the Patent Cooperation Treaty. Thus, section 112 authorizes multiple dependent claims, as long as they are in the alternative form (e.g., "A machine according to claims 3 *or* 4, further comprising . . ."). Cumulative claiming (e.g., "A machine according to claims 3 *and* 4, further comprising . . .") is *not* permitted. A multiple dependent claim may refer in the alternative to only one set of claims. A claim such as "A device as in claims 1, 2, 3 or 4, made by a process of claims 5, 6, 7 or 8" is improper. Section 112 allows reference to only a particular claim. Furthermore, a multiple dependent claim may *not* serve as a basis for any other multiple dependent claim, either directly or indirectly. These limitations help to avoid undue confusion in determining how many prior claims are actually referred to in a multiple dependent claim.

The amendment of the second paragraph of section 112 further clarifies that the limitations or elements of each claim incorporated by reference into a multiple dependent claim must be considered separately. Thus, a multiple dependent claim, as such, does not contain all the limitations of all the alternative claims to which it refers, but rather, contains in any one embodiment only those limitations of the particular claim referred to for the embodiment under consideration. Hence, a multiple dependent claim must be considered in the same manner as a plurality of single dependent claims.

Restriction Practice

For restriction purposes, each embodiment of a multiple dependent claim will be considered in the same manner as a single dependent claim. Therefore, restriction may be required between the embodiments of a multiple dependent claim. Also, some embodiments of a multiple dependent claim may be held withdrawn while other embodiments are considered on their merits.

Handling of Multiple Dependent Claims by the Application Division

The Application Division will be responsible for verifying whether multiple dependent claims filed with the application are in proper alternative form, that they depend only upon prior independent and single dependent claims and also for calculating the amount of the filing fee. A new form, PTO-1360, has been designed to be used in conjunction with the current fee calculation form PTO-875.

Handling of Multiple Dependent Claims by the Examining Group Clerical Staff

The examining group clerical staff is responsible for verifying compliance with the statute and rules of multiple dependent claims added by amendment and for calculating the amount of any additional fees required. This calculation should be performed on form PTO-1360.

If a multiple dependent claim (or claims) is added in an amendment without the proper fee, the amendment will not be entered until the fee has been received. In view of the requirements for multiple dependent claims, no amendment containing new claims or changing the dependency of claims will be entered before checking whether the paid fees cover the costs of the amended claims. The applicant, or his attorney or agent, will usually be contacted to pay the additional fee in the same manner as currently in existence for such defects. Where a letter is written in insufficient fee situations, a copy of the multiple dependent claim fee calculation form PTO-1360 will be included for applicant's information.

Handling of Dependent Claims by the Examiner

Should any multiple dependent claim be in an application filed prior to January 24, 1978 or include a claim association or claim structure that violates any of the prohibitions, the claim will be objected to as not being in proper form as required by 37 CFR 1.75 in the next Office action. Such an improper claim will not be further treated on the merits.

When referring to a singular dependent claim or a single embodiment of a multiple dependent claim, as when making a rejection, such a claim or embodiment will be referred to by using the number of all of the claims involved in that claim or embodiment, starting with the highest. For example, if claim 2 was dependent on claim 1, the notations would be 2/1. If in the same application, claim 3 was independent and claim 4 was multiple dependent on claims 2 or 3, the notations would be 4/2/1 and 4/3. Furthermore, if claim 5 depended from claim 4, the notations would be 5/4/2/1 and 5/4/3. Each of these embodiments will be treated individually. It would be possible for claim 4/2/1 to be rejected under section 102 and claim 4/3 to be indicated as avoiding the prior art and being allowable if rewritten in independent form. A number of embodiments may be grouped together if there is a common ground of rejection, but it must be clear how each embodiment is treated.

A claim, such as claim 4, will not be allowed until all embodiments covered thereby are allowable. If an embodiment of a multiple dependent claim avoids the art while other embodiments are rejected over prior art, a statement will be made that that embodiment avoids the art and would be allowed if rewritten in separate dependent or independent form. Wording similar to the following may be used:

> "Embodiment ____ would be allowable if rewritten as a proper dependent or independent claim which contains only the limitations of this embodiment."

Calculation of Fees When Multiple Dependent Claims are Presented, Use of Form PTO–1360

To assist in the computation of the fees for multiple dependent claims, a separate "Multiple Dependent Claim Fee Calculation Sheet," form PTO-1360, has been designed for use with the current "Patent Application Fee Determination Record," form PTO-875. Form PTO-1360 will be placed in the file wrapper by the Application Division where multiple dependent claims are in the application as filed. If multiple dependent claims are not included upon filing, but are later added by amendment, the examining group clerical staff will place the form in the file wrapper. If there are multiple dependent claims in the application, the total number of independent and dependent claims for fee purposes will be calculated on form PTO-1360 and the total number of claims and number of independent claims will then be placed on form PTO-875 for final fee calculation purposes.

If at least $65 is included with the application on filing, but the total fee is insufficient, a "Notice of Insufficient Fee," form PTO-1094, is placed in the file wrapper by the Application Division as is currently done. The notice will be mailed by the examining group in accordance with established procedures.

Calculating Fees for Multiple Dependent Claims Proper Multiple Dependent Claims

Amended section 41(a) of title 35, U.S.C., provides that claims in multiple dependent form cannot

be considered as single dependent claims for the purpose of calculating fees. Thus, a multiple dependent claim would be considered to be that number of dependent claims to which it refers. Any proper claim depending directly or indirectly from a multiple dependent claim would also be considered as the same number of dependent claims as referred to in the multiple dependent claim from which it depends.

Improper Multiple Dependent Claim

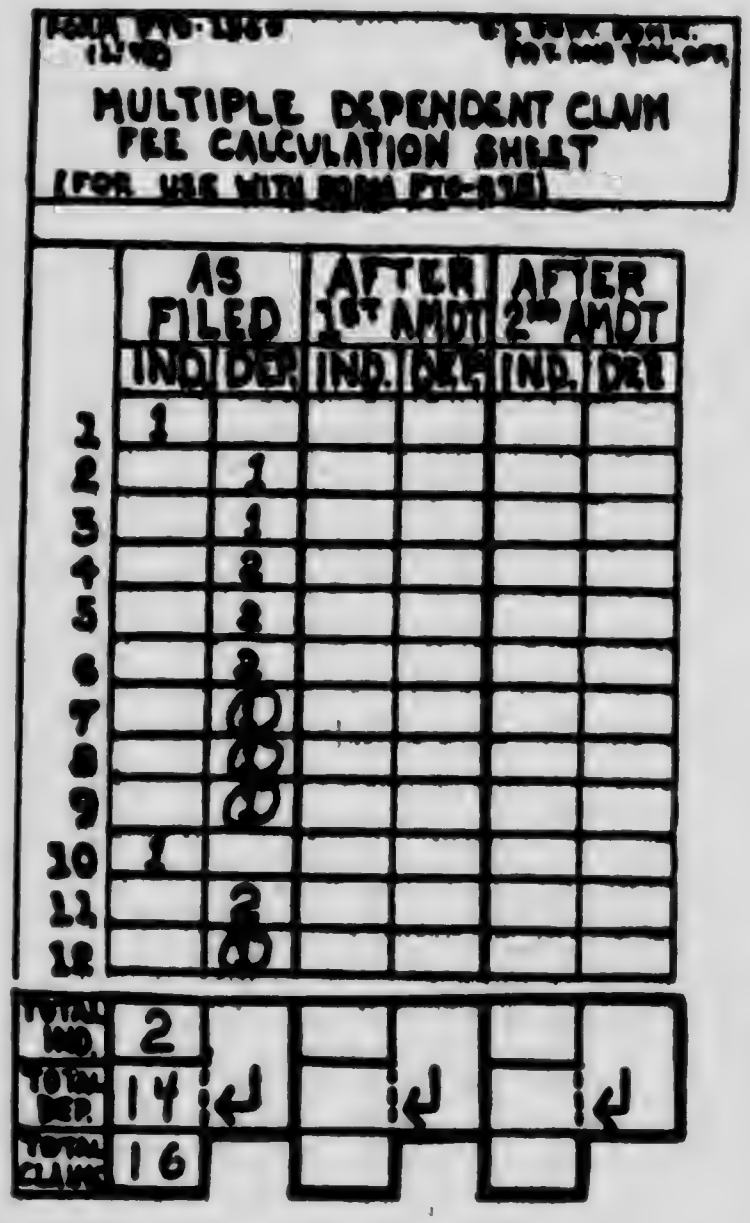
If any multiple dependent claim is improper, Application Division may indicate that fact by placing an encircled numeral "1" in the "Dep. Claims" column of form PTO-1360. The fee for any improper multiple dependent claim, whether it is defective for not being in the alternative form or for being directly or indirectly dependent on a prior multiple dependent claim, will only be one, since only an objection to the form of such a claim will normally be made.

This procedure also greatly simplifies the calculation of fees. Any claim depending from an improper multiple dependent claim will also be considered to be improper and be counted as one dependent claim.

FEE CALCULATION EXAMPLE

Claim Number

1 Independent
2 Dependent on claim 1
3 Dependent on claim 2
4 Dependent on claim 2 or 3
5 Dependent on claim 4
6 Dependent on claim 5
7 Dependent on claim 1 or 4
8 Dependent on claim 1 or 5
9 Dependent on claim 8
10 Independent
11 Dependent on claim 1 or 10
12 Dependent on claim 1 and 10



Comments on Fee Calculation Example

Claim 1.–This is an independent claim; therefore, a numeral "1" is placed opposite claim number 1 in the "Ind." column.

Claim 2.–Since this is a claim dependent on a single independent claim, a numeral "1" is placed opposite claim number 2 in the "Dep." column.

Claim 3.–Claim 3 is also a single dependent claim, so a numeral "1" is placed in the "Dep." column.

Claim 4.–Claim 4 is a proper multiple dependent claim. It refers directly to two claims in the alternative, namely, claims 2 or 3. Therefore, a numeral "2" to indicate direct reference to two claims is placed in the "Dep." column opposite claim number 4.

Claim 5.–This claim is a singularly dependent claim depending from a multiple dependent claim. For fee calculation purposes, such a claim is counted as being that number of claims to which direct reference is made in the multiple dependent claim which it depends. In this case, the multiple dependent claim number 4 it depends from counts as 2 claims; therefore, claim 5 also counts as 2 claims. Accordingly, a numeral "2" is placed opposite claim number 5 in the "Dep." column.

Claim 6.–Claim 6 depends indirectly from a multiple dependent claim 4. Since claim 4 counts as 2 claims, claim 6 also counts as 2 dependent claims. Consequently, a numeral "2" is placed in the "Dep." column after claim 6.

Claim 7.–This claim is a multiple dependent claim since it refers to claims 1 or 4. However, as can be seen by looking at the "2" in the "Dep." column opposite claim 4, claim 7 directly depends from a multiple dependent claim. This practice is improper under 35 U.S.C. 112 and Rule 1.75(c). Following the procedure for calculating fees for improper multiple dependent claims, a numeral "1" is placed in the "Dep." column with a circle drawn around it to alert the examiner that the claim is improper.

Claim 8.–This claim is a multiple dependent claim since it refers to claims 1 or 5. However, since claim 5 depends from multiple dependent claim 4, claim 8 indirectly depends from multiple dependent claim 4 through claim 5. This practice is improper. See MULTIPLE DEPENDENT CLAIMS, paragraph 2, above. Consequently, a numeral "1" is placed in the dependent claim column with a circle drawn around it.

Claim 9.–Claim 9 is improper since it depends from an improper claim. If the base claim is in error, this error cannot be corrected by adding additional claims depending therefrom. Therefore, a numeral "1" with a circle around it is placed in the "Dep." column.

Claim 10.–Here again we have an independent claim which is always indicated with a numeral "1" in the "Ind." column opposite the claim number.

Claim 11.–This claim refers to two independent claims in the alternative. A numeral "2" is therefore placed in the "Dep." column opposite claim 11.

Claim 12.–Claim 12 is a dependent claim which refers to two claims in the conjunctive ("1 *and* 10") rather than in the alternative ("1 *or* 10"). This form is improper under 35 U.S.C. 112 and Rule 1.75(c). Accordingly, since claim 12 is improper, an encircled numeral "1" is placed in the "Dep." column opposite claim 12.

Calculation of Filing Fee

After the numbers of "Ind." and "Dep." claims are noted on form PTO-1360, each column is added. In this example., there are 2 independent claims and 14 dependent claims or a total of 16 claims. The number of independent and total claims can then be placed on form PTO-875 and the fee calculated. In this example, the total number of claims 16 minus 10 leaves 6, which is multiplied by $2 for an additional total claim fee of $12. The total number of independent claims in the example is 2,

which minus 1 is 1, which times the $10 rate is $10. The total filing fee is therefore $65 + $12 + $10, or total of $87.

Drawing Requirements

Revised 35 U.S.C. 113 relaxes the previous requirements for submission of drawings on filing under certain conditions. The first sentence of 35 U.S.C. 113 does require a drawing to be submitted upon filing where such drawing is necessary for the understanding of the invention. In this situation the lack of a drawing renders the application incomplete and as such, the application cannot be given a filing date until the drawing is received. The second sentence of 35 U.S.C. 113 deals with the situation wherein a drawing is not necessary for the understanding of the invention but the case admits of illustration and no drawing was submitted on filing. The lack of the drawing in this situation does not render the application incomplete but rather is treated much in the same manner as an informality. The examiner should require such drawings in almost all such instances. Such drawings could be required during the processing of the application but do not have to be furnished at the time the application is filed. The applicant is allowed at least two months from the date of the letter requiring drawings to submit them.

Handling of Drawing Requirements Under the First Sentence of 35 U.S.C. 113

Under the revised provisions the Application Division examiner will continue to make the initial decision in all new applications as to whether a drawing is "necessary" under the first sentence of 35 U.S.C. 113.

If during examination an examiner feels that a filing date should not have been granted in an application because it does not contain drawings, the matter will be brought to the attention of the Supervisory Primary Examiner (SPE) for review. If the SPE decides that drawings are required to understand the subject matter of the invention, the SPE will return the application to the Application Division with a memorandum requesting cancellation of the filing date and identifying the subject matter required to be illustrated.

Handling of Drawing Requirements Under the Second Sentence of 35 U.S.C. 113

35 U.S.C. 113 also deals with the situation wherein the drawing is not necessary for the understanding of the invention, but the subject matter admits of illustration by a drawing and the applicant has not furnished a drawing. The lack of the drawing in this situation does not render the application incomplete but rather is treated as an informality. A filing date will be accorded with the original presentation of the papers, despite the absence of drawings. In these situations, a drawing or further illustration will normally be required by the examiner. This may be done either prior to examination in a separate letter or in the first Office action and may be handled in much the same manner as informal photocopy drawings are presently handled. The examiner should require drawings where appropriate as early as possible, since the possession of the drawing at that time would facilitate the examination process. A letter requiring drawings may contain wording similar to the following:

> "The examiner has decided that the subject matter of this applicaton admits of illustration by a drawing and that a drawing would facilitate the understanding of the subject matter disclosed. (Continue with a specific mention of those items of which drawings are desired.) Applicant is required to furnish a drawing under 37 CFR 1.81. (Incorporate in Office action or set two-month period for response.)"

The applicant will be given at least two months from the date of such requirement to submit drawings. If the requirement for drawings is included in an Office action, the time for supplying the drawings will be the same as the time of response to the Office action. Upon receipt of the drawing within the period set, the examiner will check the drawings for new matter. If new matter is included, the drawing will not be entered. It will be objected to as containing new matter. A new drawing without such new matter may be required if the examiner still feels a drawing is needed under 37 CFR 1.81 or 1.83. The examiner's decision would be reviewable by petition to the Commissioner under Rule 1.181. The decision on such a petition would be handled by the Group Director. If a drawing is not timely received in response to a letter from the examiner which requires a drawing, the application becomes abandoned for failure to respond.

Feb. 8, 1978. RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

[968 O.G. 7]

Use of Symbol "Ø" in Patent Applications

The Greek letter Phi has long been used as a symbol in equations in all technical disciplines. It further has special uses which include the indication of an electrical phase or clocking signal as well as an angular measurement. The recognized symbols for the upper and lower case Greek Phi characters, however, do not appear on most typewriters. This apparently has led to the use of a symbol composed by first striking a zero key and then backspacing and striking the "cancel" or "slash" key to result in "Ø" which is an approximation of accepted symbols for the Greek character Phi. In other instances the symbol is composed using the upper or lower case letter "0" with the "cancel" or "slash" superimposed thereon by backspacing or is simply handwritten in a variety of styles. These expedients result in confusion because of the variety of type sizes and styles available on modern typewriters.

In recent years, the growth of data processing has seen the increasing use of this symbol ("Ø") as the standard representation of zero. The "slashed" or "cancelled zero" is used to indicate zero and avoid confusion with the upper case letter "O" in both text and drawings.

Thus, when the symbol "Ø" in one of its many variations, as discussed above, appears in patent applications being prepared for printing, confusion as to the intended meaning of the symbol arises. Those (such as examiners, attorneys, and applicants) working in the art can usually determine the intended meaning of this symbol because of their knowledge of the subject matter involved, but editors preparing these applications for printing have no such specialized knowledge and confusion arises as to which symbol to print. The result, at the very least, is delay until the intended meaning of the symbol can be ascertained.

Since the Office does not have the resources to conduct a technical editorial review of each application before printing, and in order to eliminate the problem of printing delays associated with the usage of these symbols, any questions about the intended symbol will be resolved by the editorial staff of the Office of Publications by printing the symbol "Ø" whenever that symbol is used by the applicant. Any Certificate of Correction necessitated by the above practice will be at the patentee's expense (37 CFR 1.323) because the intended symbol was not accurately presented by the Greek upper or lower case Phi letters (I, 0) in the patent application.

Dec. 20, 1978. RICHARD J. SHAKMAN,
Assistant Commissioner for Administration.

[978 O.G. 152]

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(73) **U.S. Accession to Hague Convention Abolishing the Requirement of Legalization for Foreign Public Documents**

On Oct. 15, 1981, the Hague "Convention Abolishing the Requirement of Legalization for Foreign Public

Documents" entered into force between the United States and twenty-eight foreign countries that are parties to the Convention. The Convention applies to any document submitted to the United States Patent and Trademark Office for filing or recording, which is sworn to or acknowledged by a notary public in any one of the member countries. The Convention abolishes the certification of the authority of the notary public in a member country by a diplomatic or consular officer of the United States and substitutes certification by a special certificate, or apostille, executed by an officer of the member country. Accordingly, the Office will accept for filing or recording a document sworn to or acknowledged before a notary public in a member country if the document bears, or has appended to it, an apostille certifying the notary's authority. The requirement for a diplomatic or consular certificate, specified in 37 CFR 1.66 and note 1 of 37 CFR 3.45, will not apply to a document sworn to or acknowledged before a notary public in a member country if an apostille is used.

The member countries that are parties to the Convention are:

Austria	Italy	Spain
Bahamas	Japan	Suriname
Belgium	Lesotho	Swaziland
Botswana	Liechtenstein	Switzerland
Cyprus	Luxembourg	Tonga
Fiji	Malawi	U.K. of Great Britain and N. Ireland
France	Malta	
Germany, Fed. Rep. of	Mauritius	United States
Hungary	Netherlands	Yugoslavia
Israel	Portugal	
	Seychelles	

The Convention prescribes the following form for the apostille:

Model of certificate

The certificate will be in the form of a square with sides at least 9 centimetres long

APOSTILLE
(Convention de La Haye du Oct. 5, 1961)

1. Country: .....
This public document
2. has been signed by .....
3. acting in the capacity of .....
4. bears the seal/stamp of .....

Certified

5. at ..... 6. the .....
7. by .....
8. No. .....
9. Seal/stamp: 10. Signature:

.....

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Nov. 5, 1981.

[1013 O.G. 3]

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(74) Simulated or Predicted Tests or Examples

In order to provide for uniform practice before the Patent and Trademark Office, the following clarification of current Office practice relating to simulated or predicted tests or examples is being set forth. This notice specifies the Office policy which is currently in effect and is considered to have been in effect in the past in this area. The wording of the MPEP provisions prior to this amendment went further than was intended. The amended sections below spell out more clearly the Office's position from the start.

The following wording will be substituted in revision number 8 for that presently in paragraph D of section 608.01(p) of the Manual of Patent Examining Procedure.

MPEP §608.01(p)

"D. Simulated or Predicted Test Results or Prophetic Examples

Simulated or predicted test results and prophetical examples (paper examples) are permitted in patent applications. Working examples correspond to work actually performed and may describe tests which have actually been conducted and results that were achieved. Paper examples describe the manner and process of making an embodiment of the invention which has not actually been conducted. Paper examples should not be represented as work actually done. No results should be represented as actual results unless they have actually been achieved. Paper examples should not be described using the past tense."

The first and last paragraphs of MPEP section 707.07(1) are being deleted.

DONALD J. QUIGG,
Deputy Commissioner of Patents and Trademarks.

Apr. 15, 1982.

[1018 O.G. 27]

EXAMINATION OF APPLICATIONS

(75) Examination of Claims For Patentability Under 35 U.S.C. 103

The purpose of this notice is to inform the public of the current Patent and Trademark Office policy concerning determinations of obviousness under 35 U.S.C. 103 in view of the recent Supreme Court decision in *Sakraida* v. *Ag Pro*, 189 USPQ 449 (1976).

The following text is a copy of a memorandum issued to all patent examining personnel relative to this topic. "A clarification of the policy of the Patent and Trademark Office in the examination of claims for patentability under 35 U.S.C. 103 seems in order at this time in view of the Supreme Court's decision in *Sakraida* v. *Ag Pro*, 189 USPQ 449 (decided April 20, 1976) which is similar to the Court's earlier decision in *Anderson's-Black Rock, Inc.* v. *Pavement Salvage Co.*, 163 USPQ 673 (decided December 8, 1969). "Office policy has consistently been to follow *Graham* v. *John Deere Co.*, 148 USPQ 4559 (decided February 21, 1966) in the consideration and determination of obviousness under 35 U.S.C. 103. The three factual inquiries enunciated therein as a background for determining obviousness are as follows:

1. Determination of the scope and content of the prior art;
2. Ascertaining the differences between the prior art and the claims in issue; and
3. Resolving the level of ordinary skill in the pertinent art.

"Attention is directed to MPEP Section 706 for a more complete discussion of the application of the Graham test. "The Supreme Court reaffirmed and relied upon the Graham three-pronged test in its consideration and determination of obviousness in the fact situations presented in both the Ag Pro and Black Rock decisions. In each case, the Court went on to discuss whether the claimed combinations produced a 'new or different function' and 'a synergistic result,' but clearly decided whether the claimed inventions were unobvious 'on the basis of the three-way test in Graham. Nowhere in its decisions in those cases does the Court state that the 'new or different function' and 'synergistic result' tests supersede a finding of unobviousness or obviousness under the Graham test. "Accordingly, examiners should continue to apply the test for patentability under 35 U.S.C. 103 set forth in Graham. It should be noted that the Supreme Court's application of the Graham test to

the fact circumstances in Ag Pro is somewhat stringent, as it was in Black Rock."

C. MARSHALL DANN,
July 8, 1976. *Commissioner of Patents & Trademarks.*

[949 O.G. 3]

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(76) **Claims Copied From Patents**

Applicants and their attorneys or agents are reminded of the requirement of Rule 205(b) (37 CFR 1.205(b)) of the Rules of Practice that "Where an applicant presents a claim copied or substantially copied from a patent, he must, at the time he presents the claim, identify the patent, give the number of the patented claim, and specifically apply the terms of the copied claim to his own disclosure, unless the claim is copied in response to a suggestion by the Office."

The requirement of Rule 205(b) (37 CFR 1.205(b)) applies to claims copied in an application at the time of filing as well as to claims copied in an amendment to a pending application. If an applicant, attorney, or agent presents a claim copied or substantially copied from a patent without complying with Rule 205(b) (37 CFR 1.205(b)) the examiner may be led into making an action different from what he would have made had he been in possession of all the facts. Therefore, failure to comply with Rule 205(b) (37 CFR 1.205(b)), when submitting a claim copied from a patent, may result in the issuance of an Order To Show Cause why the application should not be stricken from the files of the Patent Office. If a satisfactory answer is not filed within the period set in the Order it may be necessary to strike the application under Rule 56 (37 CFR 1.56).

This reminder is being published to emphasize to applicants and their attorneys or agents the importance of complying with the requirement of Rule 205(b) (37 CFR 1.205(b)) at the time the claim is copied.

WILLIAM FELDMAN,
Apr. 10, 1974. *Acting Assistant Commissioner for Patents.*

[922 O.G. 442]

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(77) **Translations of Foreign Language References**

Frequently, Office actions cite references that are in a foreign language. In the event a translation of the entire text or portion of the text of the reference is readily available in the examiners' search files, a copy of the translation will normally be included with the Office action. However, applicants are cautioned that the inclusion of a translation with a foreign language reference should not be construed to mean that the examiner used or relied on the translation, or that it is accurate or an official translation made by the Patent and Trademark Office.

While this service may be infrequent, it could be increased by the submission of translations by the applicant to the Office. Accordingly, it is requested that translations of foreign language references be transmitted to the Office, and in particular be transmitted with the response to the Office action or in a separate envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231. In addition, it would be of great assistance to the Office in filing the translation, if the translation carried the following: 1. an identification of the foreign language reference and, where possible. 2. its location in the examiners' search files (e.g. location should be known if reference was cited in Office action). If indentifying information is not available, the incoming translation should carry the name "Scientific Library" thereon so that it can be processed by the Library.

WILLIAM FELDMAN,
Oct. 26, 1977. *Deputy Assistant Commissioner for Patents.*

[964 O.G. 24]

(78) **Restriction Between Inventions**

The practice set out in the notice of June 20, 1968 (852 O.G. 509) is hereby revised as follows.

Under the statute an application may properly be required to be restricted to one of two or more claimed inventions only if they are able to support separate patents and they are either independent or distinct.

If it is demonstrated that two or more claimed inventions have no disclosed relationship ("independent"), restriction should be required, and it is not necessary to further show that the claimed inventions are distinct. If it is demonstrated that two or more claimed inventions have a disclosed relationship ("dependent"), then a showing of distinctness is required to substantiate a restriction requirement.

Where inventions are neither independent nor distinct, one from the other, or they are not sufficiently different to support more than one patent, their joinder in a single application must be permitted.

Every requirement to restrict has two aspects, (1) the reasons (as distinguished from the mere statement of conclusion) why the inventions *as claimed* are either independent or distinct, and (2) the reasons for insisting upon restriction therebetween.

In order to support a requirement to restrict between combination and subcombination inventions, two-way distinctness must be demonstrated.

If it can be shown that a combination, as claimed (1) does not require the particulars of the subcombination as claimed for patentability, and (2) the subcombination can be shown to have utility either by itself or in other and different relations, the inventions are distinct. When these factors cannot be shown, such inventions are not distinct.

Two or more claimed subcombinations, disclosed as usable together in a single combination, and which can be shown to be separately usable, are usually distinct from each other.

In applications claiming inventions in different statutory categories only one-way distinctness is needed to support a restriction requirement. For example, in applications containing claims to both process and apparatus, distinctness may be shown if (1) the process as claimed can be practiced by hand or by another materially different apparatus, or (2) the apparatus as claimed can be used to practice another and materially different process.

As in the notice of May 1, 1974 concerning Markush-Type claims (922 O.G. 1016), if the search and examination of an entire application can be made without serious burden, the examiner is encouraged to examine it on the merits, even though it includes claims to distinct or independent inventions.

WILLIAM FELDMAN,
Apr. 9, 1975. *Deputy Assistant Commissioner for Patents.*

[934 O.G. 450]

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(79) **Restriction Policy and Practice**

The purpose of this notice is to inform the public of the results of the survey that was conducted on restriction requirements made under 35 U.S.C. 121 in the Patent Examining Groups and to report clarifications that have been implemented as a result of a review of restriction policy and practice.

The survey involved about 320 patent applications in which a restriction only Office action had been prepared by an examiner in the period between July—Sept. 1983. The selection of applications was proportioned among Groups according to the volume of restriction requirements during the period. The statistics collected (Appendix A) and the definitions (Appendix B) for each item on the survey form are provided at the end of this notice.

Some of the significant findings of the survey include:

- 19% (61/320) of the requirements surveyed were not reasonable based on a review of the record

- 35% (88/249) of the requirements surveyed (not involving an election of species) were not supported by any reasons, or contained reasons which were clearly inapplicable to the facts
- 41% (53/128) of the actions following an election and traverse did not address the arguments contained in the traverse
- 91% (48/53) of a sample of 53 applications surveyed —the attorney or agent of record had no record of receiving a telephone call requesting an oral election

In response to the results of this survey, existing guidelines in Chapter 800 of the Manual of Patent Examining Procedure (MPEP) have been reviewed with each examiner and supervisor in the Patent Examining Corps in order to promote uniformity of practice and compliance with existing guidelines. A follow-up survey will be conducted in early 1985. In addition, as a result of a review of our existing policy and guidelines, the following clarifications have been made:

(1) Telephone Practice (MPEP 812.01) -

Except in those cases where the requirement for restriction is complex, the application is being prosecuted by the applicant pro se, or the examiner knows from past experience that an election will not be made by phone, the examiner should make a telephone call to the attorney or agent of record and request an oral election in accordance with MPEP 812.01, first paragraph.

If an election cannot, or will not, be made orally at the time of the call or within a reasonable time thereafter, generally three working days, the Office action requiring the election in writing should contain the following sentence

"A telephone call was made to (name of attorney or agent) on (date) to request an oral election to the above restriction requirement, but did not result in an election being made."

(2) Multiple Inventions In A Continuing Application

Where claims to multiple inventions within the meaning of 35 U.S.C. 121 are presented in a continuing application (continuation, division, continuation-in-part including those which may be filed under 37 CFR 1.60 or 1.62), the examiner should make (or repeat) an appropriate requirement for restriction and require an election by the applicant UNLESS

(1) the applicant acknowledges the previous requirement in the parent application and clearly indicates which invention is to be prosecuted if the requirement is repeated. The examiner should make any proper requirement for restriction in the first Office action, state how applicant has indicated an election (e.g. statement in a preliminary amendment or transmittal letter), and include an action on the merits on the claims of the elected invention;

or

(2) the application is a continuation, but not a division or CIP filed as a File Wrapper Continuation (FWC) under 37 CFR 1.62. The examiner should assume that the requirement and election made in the parent application carries over unless otherwise indicated by applicant. The exmainer's first action should include a repetition of the restriction requirement made in the parent application to the extent it is still applicable in the continuation and an indication that prosecution is being continued on the invention elected and prosecuted by applicant in the parent application.

The policy and practice of making requirements final and seeking review by way of petition (37 CFR 1.144) remains unchanged in a continuing application, whether a requirement for election was first made in the parent and renewed in the continuation application or was made for the first time in the continuation application.

(3) Product, Process of Making, Process of Using (MPEP 806.05(i))

Practice in this situation is being amended to conform to Rule 13.2(i) of the Patent Cooperation Treaty (PCT) so that a three way requirement can be required only where the process of making is not "specially adapted" to make the product (i.e. the requirements of MPEP 806.05(f) are met). Otherwise, the process of using must be joined with the claims directed to the product and the process of making the product even though a showing of distinctness between the product and process of using the product (MPEP 806.05(h)) could be made. A determination of the patentability of the product need not be made prior to making a requirement for restriction.

The Manual of Patent Examining Procedure will be revised to reflect these clarifications in the next revision.

Aug. 1, 1984.

GERALD MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[1046 O.G. 2]

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(80) Revised Practice Re Markush-Type Claims

This notice deals with Markush-type generic claims which include a plurality of alternatively usable substances or members. In most cases, a recitation by enumeration is used because there is no appropriate or true generic language. In many cases, the Markush-type claims include independent and distinct inventions. This is true where two or more of the members are so unrelated and diverse that a prior art reference anticipating the claim with respect to one of the members would not render the claim obvious under 35 U.S.C. 103 with respect to the other member(s).

In applications containing claims of that nature, the Examiner may require a provisional election of a single species prior to examination on the merits. The provisional election will be given effect in the event that the Markush-type claim will be examined fully with respect to the elected species and further to the extent necessary to determine patentability. Should the Markush-type claim be found not allowable, examination will be limited to the Markush-type claim and claims to the elected species, with claims drawn to species patentably distinct from the elected species held withdrawn from further consideration.

As an example, in the case of an application with a Markush-type claim drawn to the compound C-R, wherein R is a radical selected from the group consisting of A, B, C, D, and E, the Examiner may require a provisional election of a single species, CA, CB, CC, CD, or CE. The Markush-type claim would then be examined fully with respect to the elected species and any species considered to be clearly unpatentable over the elected species. If on examination the elected species is found to be anticipated or rendered obvious by prior art, the Markush-type claim and claims to the elected species shall be rejected, and claims to the non-elected species would be held withdrawn from further consideration. As in the prevailing practice, a second action on the rejected claims would be made final.

On the other hand, should no prior art be found that anticipates or renders obvious the elected species, the search of the Markush-type claim will be extended. If prior art is then found that anticipates or renders obvious the Markush-type claim with respect to a *non-elected species*, the Markush-type claim shall be rejected and claims to the non-elected species held withdrawn from further consideration. The prior art search, however, will not be extended unnecessarily to cover all non-elected species. Should applicant, in response to this rejection of the Markush-type claim, overcome the rejection, as by amending the Markush-type claim to exclude the species anticipated or rendered obvious by the prior art, the amended Markush-type claim will be re-examined. The prior art search will be extended to the extent necessary to determine patentability of the Markush-type claim. In the event prior art is found during the re-examination that anticipates or renders obvious the

amended Markush-type claim, the claim will be rejected and the action made final. Amendments submitted after the final rejection further restricting the scope of the claim will not be entered.

If the members of the Markush group are sufficiently few in number or so closely related that a search and examination of the entire claim can be made without serious burden, the Examiner is encouraged to examine all claims on the merits, even though they are directed to independent and distinct inventions. In such a case, the Examiner will not follow the above procedure and will not require restriction.

This notice supersedes the practice set out in 922 O.G. 1016. dated May 1, 1974.

Although the above practice is now in effect, a rule change proposal is also being considered to provide for prosecution of multiple inventions in a single patent application by submission of additional fees.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

Oct. 23, 1978.

[976 O.G. 128]

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(81) Revised Procedures for Recording Searches and Considerations of Certain Prior Art

In order to provide a more complete, accurate and uniform record of what has been searched and considered by the examiner for each application the Patent and Trademark Office has established revised procedures for recording search data in the application file. Such a record is of importance to anyone evaluating the strength and validity of a patent, particularly if the patent is involved in litigation. These new procedures will also facilitate the printing of certain search data on patents.

Under the revised procedures, searches are separated into two categories and listed, as appropriate, in either the "SEARCHED" box or a newly added "SEARCH NOTES" box on the file jacket.

Until file jackets can be reprinted to include a second search data box, all file jackets for new applications will have the "SEARCH NOTES" box stamped therein by the Mail Room. If additional space is required, entries will be continued on the outside right flap of the file jacket.

The revised procedures will apply to all new applications in which the first search is made after April 1, 1977 and do not affect the manner in which references are listed on the form PTO-892. "Notice of References Cited." Appropriate changes in the Manual of Patent Examining Procedure will be made.

A. "SEARCHED" Box Entries

Search entries made here, except those for search updates (see item A. 3 below), will be printed under "Field of Search" on the patent front page. Therefore, the following searches will be recorded in the "SEARCHED" box by the examiner along with the date and the examiner's initials, according to the following guidelines:

1. *A complete search of a subclass*, including all United States and foreign patent documents and other publications placed therein. The complete classification (class and subclass) will be recorded.
2. *A limited search of a subclass*, for example, a search that is restricted to an identifiable portion of the patent documents placed therein. If, however, only the publications in a subclass are searched, such an entry is to be made under "SEARCH NOTES" rather than under "SEARCHED." (See item B, 4 below.)
   The class and subclass, followed by the information defining the portion of the subclass searched in parenthesis, will be recorded.
3. *An update of a search previously made.*
   This search entry will be recorded in a manner to indicate clearly which of the previously recorded searches have been updated, followed by the expression "(updated)." Search update, entries, although recorded in the "SEARCHED" box, will not be printed.
   When a search made in a parent application is updated during the examination of a continuing application, those searches updated, followed by "(updated from parent S.N. _____)" will be recorded. If the parent has been patented, the patent number "Pat. N. _____" instead of serial number in the above phrase will be recorded.
4. *A mechanized search* of a file of documents in a specific art, conducted by using key terms to retrieve documents. The name of the mechanized search system as it appears in the following list will be recorded along with the expression "MS File" to indicate mechanized search file.

Mechanized Search Systems

Termatrex Systems:
- Automatic Fuel Controls
- Boots & Shoes
- Chemical Testing
- Combined Fasteners
- Electrical Contact Materials
- Surface Bonding Using Critical Metal

Edge-Notched Card System:
- Fluid Devices

Punch Card Systems:
- Electrolysis
- Organometallics
- Steroids

Computer Controlled Microfiche Search Systems (CCMSS):
- A-D Convertors
- Digital Data Processing Systems
- Special Purpose Digital Processing Systems

When a search with a Termatrex or Edge-Notched card system is conducted, the examiner will complete form PTO-1041 in two copies, recording all queries searched, even those which yield only nonrelevant documents. All documents returned by the system in response to a query which are not actually reviewed will have an "X" drawn through their associated access and patent numbers. When conducting a search with a Punched Card system, the examiner will place in the application file the Code Sheet on which the terms searched have been marked along with the machine tape listing the documents retrieved. Any document not actually reviewed will have an "X" drawn through that document's number on the listing.

When conducting a search with the CCMSS search systems, the machine-produced search report, which lists the terms and tagged documents, will be placed in the application file on the right flap of the file jacket. Any tagged document not actually reviewed will have an "X" drawn through that document number on the search report.

B. "SEARCH NOTES" Box Entries

Entries made in the "SEARCH NOTES" box are of equal importance to those placed in the "SEARCHED" box; however, these entries will not be printed on any resulting patent. They are intended to complete the application file record of areas and/or documents considered by the examiner in the search. The examiner will record the following searches in the "SEARCH NOTES" box and in the manner indicated, with each search dated and initialled:

1. *A cursory search*, or scanning, of a subclass, i.e., a search usually made to determine if the documents classified there are relevant. The classification will be recorded, followed by "(Cursory)."
2. *A consultation* with other examiners to determine if relevant search fields exist in their areas of expertise. The class and subclass discussed, if not actually

searched, will be recorded, followed by "(consulted)." This entry may also include the name of the examiner consulted and the art unit.

3. *A search of a publication* not located within the classified patent file, e.g., a library search, a text book search, a Chemical Abstracts search, etc. The following data will be recorded for each type of literature search:

   a. *Abstracting publications*, such as Chemical Abstracts or the Engineering Index—the name of the publication, the list of terms consulted in the index and the period covered will be recorded.

   b. *Periodicals*—The title and period or volumes covered, as appropriate will be recorded.

   c. *Books*—The title and author, edition or date, as appropriate, will be recorded.

   d. *Other types of literature* not specifically mentioned above (i.e., catalogs, manufacturer's literature, private collections, etc.).

   Unless the search is a cursory or browsing one, data as necessary to provide unique identification of material searched will be recorded. Specific materials cited by the examiner will not be recorded again here.

   e. *Computer search in Scientific Library*—An on-line computerized literature searching service which uses key terms and index terms to locate relevant publications in many large bibliographic data bases is available to examiners in the Scientific Library of the Patent and Trademark Office. A member of the library staff is assigned to assist examiners in selecting key terms and to program the search.

   There are two on-line search systems: The Lockheed Information Systems and the SDC Search Service.

   These search systems include many data bases.

   A copy of the search printout will be made and placed in the application file, attached to the right flap of the file jacket.

   The examiner will also indicate which publications were reviewed by initialling and dating the copy of the printout in the left margin adjacent to each reviewed publication. If only an abstract of a document was reviewed, the note of "ck'ed abst." will be made next to the initials and date. If the complete document was reviewed, the note "ck'ed doc." will be placed with the initials and date.

4. A search of only the *publications in a subclass.* The class and subclass followed by "(publications only)" will be recorded.

5. *A review of art cited in a parent application* or in an original patent, as required for all continuing and reissue applications, or a review of art cited in related applications or patents mentioned within the specification, such as those included to provide background of the invention. The serial number of a parent application that is still Pending or abandoned, followed by "refs. checked" or "refs. ck'ed" will be recorded. If for any reason not all of the references are checked because they are not available or clearly not relevant, such exceptions will be noted. The patent number of a parent or related application that was patented or of an original patent now being reissued will be recorded along with the expressions "refs. checked" or "refs. ck'ed."

C. Not Recorded

The following data will not be recorded in either of the search boxes, but will be noted in the application file as indicated below.

1. *Citations of prior art by applicants conforming to Rule 98 and the practice thereunder.*
   In each instance where all prior art referred to in a paper placed in the application file is considered, the examiner will place the notation "all ck'ed" and his or her initials adjacent to the citation.

2. *Citations of prior art by applicants not conforming to Rule 98 and the practice thereunder.*
   In each instance where an examiner considers, but does not cite on form PTO-892, specific prior art referred to in a paper placed in the application file, the examiner will place a notation adjacent to the reference. If all the references referred to in such a paper are reviewed, the examiner will place the notation "all ck'ed" and his or her initials adjacent the citation. If included in the specification, the examiner will write his or her initials adjacent to any reference(s) checked and enter "checked" or "ck'ed" in the left margin opposite the initials. If presented in a separate paper or in the remarks of an amendment, the examiner's initials and "checked" or "ck'ed" will be entered adjacent to the citation(s) or wherever possible to indicate clearly those checked.

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

Feb. 22, 1977.

[956 O.G. 1546]

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(82) **Prior Art Cited by Applicants**

Effective immediately, applicants are encouraged to use new form PTO-1449, "List of Prior Art Cited by Applicant," when preparing a prior art statement under 37 CFR 1.97-1.99. A copy of the form is included herewith from which suitable reproductions can be made. This form, which will enable applicants to provide the PTO with a uniform listing of prior art citation, supersedes form PTO-3.72.

While the filing of prior art statements is voluntary, the procedure is governed by the guidelines of Section 609 of the Manual of Patent Examining Procedure and 37 CFR 1.97 through 1.99. To be considered a proper prior art statement, form PTO-1449 shall be accompanied by an explanation of relevance of each listed item, a copy of each listed patent or publication or other item of information and a translation of the pertinent portions of foreign documents (if an existing translation is readily available to the applicant), and should be submitted in a timely manner as set out in MPEP Sec. 609.

Examiners will consider all prior art citations submitted in conformance with 37 CFR 1.98 and MPEP Sec. 609 and place their initials adjacent the citations in the boxes provided on the form. Examiners will also initial citations not in conformance with the guidelines which may have been considered. A reference may be considered by the examiner for any reason whether or not the citation is in full conformance with the guidelines. A line will be drawn through a citation if it is not in conformance with the guidelines and has not been considered. A copy of the submitted form, as reviewed by the examiner, will be returned to the applicant with the next communication. The original of the form will be entered into the application file.

Each citation initialed by the examiner will be printed on the issued patent in the same manner as prior art cited by the examiner on form PTO-892.

The reference designations "AA," "AB," etc. (referring to applicant's reference A, Applicant's reference B, etc.) will be used by the examiner in the same manner as examiner's reference designations "A," "B," "C," etc. on Office Action Form PTO-1142.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Aug. 15, 1980.

[998 O.G. 8]

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(83) **Express Abandonments**

Experience over the past several months has indicated the need to clarify and re-emphasize existing practice regarding express abandonments submitted under 37 CFR 1.138

Since 1966, when Rule 138 was revised, it is no longer

required that the applicant and the assignee of record, if any, sign an express abandonment. The revised rule indicates that a patent application may be expressly abandoned by an attorney or agent of record. Therefore, prior to signing a declaration of express abandonment of a patent application, it is imperative that the attorney or agent of record exercise every precaution in ascertaining that the abandonment of the application is in accordance with the desires and best interests of the applicant. Moreover, special care should be taken to insure that the appropriate application from a group of related applications is correctly identified in the letter of abandonment.

A declaration of abandonment signed by the applicant or his attorney or agent of record becomes effective when an appropriate official of the Office takes action in recognition of the declaration. When so recognized, the date of abandonment may be the date of recognition or a different date if so specified in the declaration itself. For example, where a continuing application is filed with a request to abandon the prior application as of the filing date accorded the continuing application, the date of the abandonment of the prior application will be in accordance with the request once it is recognized.

Action in recognition of an express abandonment may take the form of an acknowledgement by the examiner or the Patent Issue Division of the receipt of the express abandonment, indicating that it is in compliance with 37 CFR 1.138 (see Section 711.01 MPEP).Alternatively, recognition may be no more than the transfer of drawings to a new application pursuant to instructions which include a request to abandon the application containing the drawings to be transferred (see 37 CFR 1.60 and Section 608.02(i) MPEP).

It is suggested that divisional applications being submitted under 37 CFR 1.60 be reviewed before filing to ascertain whether the prior application should be abandoned. Recent experience reveals that some divisional applications are being filed under 37 CFR 1.60 with requests to transfer the drawings from, and abandon, the prior application. Following the recognition of the abandonment, the attorney or agent signing the request informs the Office that the request was made by mistake for any one of a number of reasons. Care should be exercised in situations such as these as the Office looks on express abandonments as acts of deliberation, intentionally performed.

Another common situation involves the submission of an express abandonment following the allowance of an application The express abandonment may not be recognized unless it is actually received by appropriate officials in time to act before the date of issue. In those cases, once a patent number and issue date have been assigned to the application, it is considered too late to act on the express abandonment unless a petition under Rule 313(b) or Rule 183 is granted (see Section 711.01 of MPEP).

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Apr. 7, 1975.

[934 O.G. 2]

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(84) **Notice of Abandonment for Failure to Prosecute Application**

Effective immediately the Patent Examining Corps will mail a communication, concerning all applications becoming abandoned in the Corps for failure to prosecute, to the correspondence address of record.

The communication to be mailed will merely comprise a copy of the first page of the Office action, to which applicant failed to properly respond, the copy including stamped language thereon indicating that the application has become abandoned and the date that the copy was mailed. The language stamped on the copy will be as follows: APPLICATION HAS BECOME ABANDONED. THIS NOTICE MAILED: _____ In no case will the mere failure to receive a notice of abandonment affect the status of an abandoned application.

This new procedure should enable applicants to take appropriate and diligent action to reinstate an application inadvertently abandoned for failure to timely respond to an official communication. In most cases, a petition to revive under 37 CFR 1.137 will be the appropriate remedy. It may be that a response to the Office action was mailed to the Office with a certificate of mailing declaration as a part thereof (notice of October 26, 1976: 951 O.G. 1342) but was not received in the Office. In this instance, adequate relief may be available by means of a petition to withdraw the holding of abandonment.

In any instance, if action is not taken promptly after receiving the notice of abandonment, appropriate relief may not be granted.

If a lack of diligent action is predicated on the contention that neither the Office action nor the notice of abandonment was received, one may presume that there is a problem with the correspondence address of record. Accordingly, your attention is directed to recent notices of May 28, 1975, and September 9, 1976, dealing with changes of address (935 O.G. 1352 and 951 O.G. 454). In essence, it is imperative that a paper notifying the Office of a change of address be filed promptly in *each* application in which the correspondence address is to be changed.

If an application is abandoned or a patent lapsed for an excessive time a terminal disclaimer may be required. A terminal disclaimer may also be required where the holding of abandonment or lapse is withdrawn but a determination is made that action attempting to correct the problem should have been taken in a more diligent manner.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

May 9, 1977.

[959 O.G. 24]

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(85) **Requirement for a Response Under 37 CFR 1.136 and 1.137 Where a Continuing Application is Being Filed.**

This notice is intended to clarify the requirements for a response as required by 37 CFR 1.136 or 1.137 in situations involving a petition for extension of time or a petition to revive an abandoned application for the purpose of filing a continuing application.

In those instances where an extension of time or a revival of an abandoned application is sought solely for the purpose of filing a continuing application under 35 U.S.C. 120 and where the prior application is to be abandoned in favor of the continuing application, the filing of a response as required by 37 CFR 1.111, 1.113, 1.192 or other regulation is considered to be an unnecessary expenditure of resources by the applicant. Accordingly, in these situations, the Patent and Trademark Office will accept the filing of a continuing application as a response under 37 CFR 1.136 or 1.137.

To facilitate processing by the Office, any such petition for extension of time or petition to revive should specifically refer to the filing of a continuing application and also include an express abandonment of the prior application conditioned upon the granting of the petition and the granting of a filing date to the continuing application.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

May 13, 1983.

[1031 OG 11]

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(86) **Procedure for Handling Amendments under 37 CFR 1.116**

On Oct. 1, 1982, pursuant to Public Law 97-247, the Patent and Trademark Office discontinued the previous

practice in patent applications of extending without fee the shortened statutory period for response to a final rejection upon the filing of a timely first response to a final rejection (37 CFR 1.116). Since Oct. 1, 1982, applicants are able to obtain additional time for a first or subsequent response to a final rejection by petitioning and paying the appropriate fee under 37 CFR 1.136(a), provided the additional time does not exceed the six month statutory period.

In order to continue to encourage the early filing of any first response after a final rejection and to take care of any situations in which the examiner does not timely respond to a first response after final rejection which is filed early in the period for response, the Office is changing the manner in which the period for response is set on any final rejection mailed after Feb. 27, 1983.

Under the changed procedure, if an applicant initially responds within two months from the date of mailing of any final rejection setting a three-month shortened statutory period for response and the Office does not mail an advisory action until after the end of the three-month shortened statutory period, the period for response for purposes of determining the amount of any extension fee will be the date on which the Office mails the advisory action advising applicant of the status of the application, but in no event can the period extend beyond six months from the date of the final rejection. This procedure will apply only to a first response to a final rejection and will be implemented by including the following language in each final rejection mailed after Feb. 27, 1983:

> A shortened statutory period for response to this final action is set to expire three months from the date of this action. In the event a first response is filed within two months of the mailing date of this final action and the advisory action is not mailed until after the end of the three-month shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for response expire later than six months from the date of this final action.

For example, if applicant initially responds within two months from the date of mailing of a final rejection and the examiner mails an advisory action before the end of three months from the date of mailing of the final rejection, the shortened statutory period will expire at the end of three months from the date of mailing of the final rejection. In such a case, any extension fee would then be calculated from the end of the three-month period. If the examiner, however, does not mail an advisory action until after the end of three months, the shortened statutory period will expire on the date the examiner mails the advisory action and any extension fee may be calculated from that date.

Statutory periods set in Office actions mailed before Feb. 28, 1983, will not be effected by this change in procedure.

Jan. 14, 1983. GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[1027 OG 71]

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(87) New Procedures for Recordation of Interviews

This notice establishes within the Patent and Trademark Office additional general procedures for the recordation of interviews. Proposed procedures were published in the Official Gazette of June 28, 1977 (959 O.G. 36) for comment from interested members of the public by August 10, 1977. Fifteen written comments were received the majority of which were favorable to the proposed procedures. Careful consideration has been given to the comments and the procedures are being adopted with a few changes.

Under present practice it is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability as set forth in section 713.04 of the Manual of Patent Examining Procedure (MPEP). This practice is continued and further amplified as set forth below.

Recent surveys have indicated that the substance of many interviews has not been made of record or the text thereof is incomplete as to substantive matters. In some cases, the substance of an interview may be presented as arguments in a subsequent response filed by the applicant but without any indication that they had been presented at the interview. In order to help insure a better record of examiner-applicant interviews in application files, the following new procedures are adopted to become effective for interviews conducted on and after January 1, 1978. Appropriate changes will be made in the Manual of Patent Examining Procedure (MPEP).

Examiners will complete a two-sheet carbon interleaf Interview Summary Form for each interview held where a matter of substance has been discussed by checking the appropriate boxes and filling in the blanks in neat handwritten form. Discussions regarding only procedural matters, directed solely to restriction requirements (for which interview recordation is otherwise provided for in Section 812.01 of the MPEP), or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below.

The Interview Summary Form shall be given an appropriate paper number, placed in the file and listed on the "Contents" list on the file wrapper. The docket and serial register cards will not be updated to reflect this interview. In a personal interview, the duplicate copy of the Form will be removed and given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephonic interview, the copy will be mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner before an allowance is not likely or if other circumstances dictate, the Form will be mailed promptly after the telephonic interview rather than with the next official communication. The original of the completed Form will be made of record and placed in the right hand flap of the file.

The Form provides for recordation of the following information:

—Serial Number of the application
—Name of applicant
—Name of examiner
—Date of interview
—Type of interview (personal or telephone)
—Name of participant(s) (applicant, attorney or agent, etc.)
—An indication whether or not an exhibit was shown or a demonstration conducted
—An identification of the claims discussed
—An identification of the specific prior art discussed
—An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). (Agreements as to allowability are tentative and do not restrict further action by the examiner to the contrary.)
—The signature of the examiner who conducted the interview
—Names of other Patent and Trademark Office personnel present.

The Form also contains a statement reminding the applicant of his responsibility to record the substance of the interview.

It is desirable that the examiner orally remind the applicant of his obligation to record the substance of the interview in each case unless both applicant and examiner agree that the examiner will record same. Where the examiner agrees to record the substance of the inter-

view, or when it is adequately recorded on the Form or in an attachment to the Form, the examiner will check a box at the bottom of the Form informing the applicant that he need not supplement the Form by submitting a separate record of the substance of the interview.

It should be noted, however, that the Interview Summary Form will not be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview:

The complete and proper recordation of the substance of any interview should include at least the following applicable items:

1) A brief description of the nature of any exhibit shown or any demonstration conducted.
2) an identification of the claims discussed.
3) an identification of specific prior art discussed.
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the examiner.
5) a brief identification of the general thrust of the principal arguments presented to the examiner. The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he feels were or might be persuasive to the examiner.
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete or accurate, the examiner will take appropriate action as set forth in MPEP Section 713.04. If the record is complete and accurate, the examiner should place the indication "Interview record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

C. MARSHALL DANN,
Aug. 30, 1977. *Commissioner of Patents and Trademarks.*

[962 O.G. 21]

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(88) Statements Filed Under Atomic Energy Act And NASA Act

Attention is called to the provisions of section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182) and section 305(c) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457). These statutes provide that the title to inventions useful in the production or utilization of special nuclear material or atomic energy, made or conceived in the course of or under any contract, subcontract, or arrangement entered into with or for the benefit of the Atomic Energy Commission, and any invention made in the performance of any work under any contract of the National Aeronautics and Space Administration, shall be vested in the United States. They also provide that no patent may be granted for any invention useful in the production or utilization of special nuclear material or atomic energy, or which in the opinion of the Commissioner has significant utility in the conduct of aeronautical or space activities, unless the applicant files with his application or within 30 days after request therefor by the Commissioner, a statement under oath setting forth (*a*) the full facts in regard to the making or conception of the invention, and (*b*) the situation with regard to the contractual relationships involving the Commission or the Administration. Careful attention should be given the exact wording of the requirements of whichever of these sections is pertinent in order to assure that all of the requirements are met. Since the duty of requiring the statements is placed by law on the Commissioner of Patents, it is incumbent on the Commissioner to determine whether the statements are timely filed and sufficient in substance to comply. Since these laws do not provide for any extension of the 30-day period or for reviving an applicaton which has become abandoned for failure to file a proper statement, it is important that such statements be timely filed and that they do so comply in order to avoid loss of valuable patent rights.

The "full facts" involved in the conception and making of an invention should include those which are unique to that invention. The use of form paragraphs or printed forms which set forth only broad generalized statements of fact is not ordinarily regarded as meeting the requirements of these statutes.

This office has construed the word "applicant" in both of these statutes to mean the inventor or joint inventors in person. Accordingly, in the ordinary situation, the statements must be signed by the inventor or joint inventors, if available. This construction is consistent with the fact that no other person could normally be more knowledgeable of the "full facts concerning the circumstances under which such invention was made," (42 U.S.C. 2457) or, "full facts surrounding the making or conception of the invention or discovery" (42 U.S.C. 2182).

In instances where an applicant does not have firsthand knowledge whether the invention involved work under any contract, subcontract, or arrangement with or for the benefit of the Atomic Energy Commission, or had any relationship to any work under any contract of the National Aeronautics and Space Administration, and includes in his statement information of this nature derived from others, his statement should identify the source of his information. Alternatively, the statement by the applicant could be accompanied by a supplemental declaration or oath, as to the contractual matters, by the assignee or other person, e.g., an employee thereof, who has the requisite knowledge.

Where an applicant is deceased or incompetent, or where it is shown to the satisfaction of this Office that he refuses to furnish a statement or cannot be reached after diligent efforts, declarations or statements under oath setting forth the information required by the statutes may be accepted from an officer or employee of the assignee who has sufficient knowledge of the facts. The offer of such substitute statements should be based on the actual unavailability of or refusal by the applicant, rather than mere inconvenience. Where it is shown that one of joint inventors is deceased or unavailable, a statement by all of the other joint inventor(s) may be accepted.

WILLIAM FELDMAN,
Aug. 13, 1973. *Deputy Assistant Commissioner for Patents.*

[914 O.G. 2]

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(89) Extension of Time Limit

This notice is intended to clarify certain misunderstandings and indicates the treatment given to requests for an extension of time in a situation where applicant has been given a time limit to complete an otherwise incomplete but bona fide attempt to respond to the previous Office action and advance the case to final action.

According to 37 CFR 1.135(c) when the applicant has filed a response to an examiner's action but consideration of some matter or compliance with some requirement has been inadvertently omitted, an opportunity to explain and supply the omission may be given before the question of abandonment is considered. According to the M.P.E.P., Section 710.02(c), the examiner may give applicant one month or the remainder of the period for response, whichever is longer, to complete the response. Neither the regulation nor the M.P.E.P. indicate that

this time can be extended.

Under the regulation, the missing matter or lack of compliance must be considered by the examiner as being "inadvertently omitted." Once an inadvertent omission is brought to the attention of the applicant, the question of inadvertence no longer exists. Therefore, any further time to complete the response would not be appropriate under 37 CFR 1.135(c). Accordingly, no extension of time will henceforth be granted in these situations.

WILLIAM FELDMAN,
Nov. 28, 1977. *Deputy Assistant Commissioner for Patents.*

[965 O.G. 14]

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(90) TITLE 37—PATENTS, TRADEMARKS AND COPYRIGHTS

Chapter 1—Patent and Trademark Office, Department of Commerce

Part 1—Rules of Practice in Patent Cases

Patent Examining and Appeal Procedures

On October 4, 1976 notice was given in the Federal Register (41 FR 43729) of a proposal to amend sixteen sections of Title 37 of the Code of Federal Regulations relating to patent examining and appeal procedures. Interested persons were invited to comment on the proposal by December 7, 1976. One hundred seventy-five written letters and statements were submitted. A hearing was held in Arlington, Virginia on December 7, 1976 at which 21 persons testified orally. Careful consideration has been given to all comments received and the proposal is being adopted with certain changes.

The regulations adopted involve all sections that were proposed to be revised, amended or added—namely, §§1.11, 1.14, 1.52, 1.56, 1.65, 1.69, 1.97, 1.98, 1.99, 1.109, 1.175, 1.194, 1.196, 1.291, 1.292, and 1.346. Amendments also are being made in two sections which were not included in the published proposal—§§1.51 and 1.176. Since amendments to these sections are closely related to the substance of matters notice and public comment on these amendments are deemed unnecessary.

In addition, amendments are being adopted which were published for comment in two earlier, much less extensive proposals that concerned availability of certain files for public inspection. A notice of a proposed amendment to §1.14(b) was published on June 4, 1974 (39 FR 19786). A notice of a proposed amendment to §1.11(a) was published on September 17, 1974 (39 FR 33376). No negative comments were submitted with respect to either of these proposals and both are being adopted without change.

The text of the rules will be reproduced in the Patent and Trademark Office **Official Gazette** in about a month with additions indicated by arrows and deletions indicated by brackets to help readers identify the changes. A transcript of the hearing, the letters and written statements received, and a summary and analysis of the comments are available for public inspection in Room 11E10 of Crystal Plaza Building 3, 2021 Jefferson Davis Highway, Arlington, Virginia.

Purpose of Rules

The purpose of the rules that are being adopted is to improve the quality and reliability of issued patents by strengthening patent examining and appeal procedures. It is desirable that patents be as dependable as possible, so as to enhance the incentives provided by the patent system to make inventions, to invest in research and development, to put new or improved products on the market, and to disclose inventions that otherwise would be kept as trade secrets. It is believed that the rules being adopted will help to maintain strong patent incentives.

The rules afford patent owners an opportunity, through the filing of a reissue application, to obtain a ruling from an examiner on the pertinence of additional prior art after a patent has been issued. The rules also broaden the public's opportunity for participation in the patent examining process, consistent with the limitations of statute, the protection of trade secrets, and the need to avoid making it unduly expensive to obtain a patent.

The rules set forth the duty of candor and good faith which applicants have to the Patent and Trademark Office and encourage them to provide information about the prior art in a way that will make it more useful to examiners. A provision for foreign language oaths by individuals who do not understand English is intended to make them more aware of their representations and of their obligations.

Under the rules more Patent and Trademark Office decisions that could have important precedent value will be available to the public, and some additional files will be available for inspection. Proceedings before the Board of Appeals are modified to help avoid the issuance of invalid patents. The rules encourage examiners to see that persons inspecting the file history of issued patents will be able to tell why the case was allowed.

Reissue Applications

Amended §1.175 permits a patent owner to have new prior art considered by the Office by way of a reissue application without making any changes in the claims or specification. It is adopted with no change from the proposal. The requirement for an oath or declaration alleging that the reissue applicant believes "the original patent to be wholly or partly inoperative or invalid. . . ." is dispensed within §1.175(a) (1) unless the applicant believes that to be the case. Section 1.175(a) (4) recognizes that reissues may be filed to have the patentability of the original patent considered in view of prior art or other information relevant to patentability which was not previously considered by the Office.

Thus, a patentee may file a reissue if he believes his patent is valid over prior art not previously considered by the Office but would like to have a reexamination. The procedure may be used at any time during the life of a patent. During litigation, a federal court may, if it chooses, stay proceedings to permit new art to be considered by the Office.

If a reissue application is filed as a result of new prior art with no changes in the claims or specification and the examiner finds the claims patentable over the new art, the application will be rejected as lacking statutory basis for a reissue, since 35 USC 251 does not authorize reissue of a patent unless it is deemed wholly or partly inoperative or invalid. However, the record of prosecution of the reissue will indicate that the prior art has been considered by the examiner.

A substantial majority of the comments received favored amended §1.175 as a means for improving the reliability of patents and avoiding unnecessary litigation costs. The negative comments generally questioned the statutory authority of the Commissioner to adopt this section. Authority for §1.175 is believed to exist in 35 U.S.C. 6, which is the Commissioner's rulemaking authority, and in 35 U.S.C. 251. The latter section of the statute requires that the patent be deemed wholly or partly inoperative or invalid before a reissue may be granted, but does not require such a belief by the patentee before a reissue application may be filed. The case law does not suggest that the approach of new §1.175(a)(4) is inconsistent with 35 U.S.C. 251.[1] Inasmuch as 35 U.S.C. 251 is a remedial provision,[2] it is believed that a liberal interpretation is justified and that adequate authority exists for the amended section.

Amended §1.11(b) opens all reissue applications to inspection by the general public. Section 1.11(b) also provides for announcement of the filings of reissue applications in the *Official Gazette*. This announcement will

[1]See *In re Clark*, 522 F.2d 623, 187 USPQ 209 (CCPA 1975), at footnote 4 where the court declined to decide whether it is proper to seek reissue merely to disclose uncited prior art. See also *In re Altenpohl*, 500 F.2d 1151, 183 USPQ 38 (CCPA 1974)

[2]See *In re Oda*, 443 F.2d 1200, 170 USPQ 268 (CCPA 1971).

give interested members of the public an opportunity to submit to the examiner information pertinent to patentability of the reissue application. The announcement will include at least the filing date, reissue application and original patent numbers, title, class and subclass, name of the inventor, name of the owner of record, name of the attorney or agent of record, and examining group to which the reissue application is assigned. Section 1.11(b) is amended from the proposal to so indicate. Reissue applications already on file on the effective date of the section will not be automatically open to inspection and will not be announced in the *Official Gazette*. However, a liberal policy will be followed in granting petitions for access to individual applications already on file.

In order that members of the public may have time to review the reissue application and submit pertinent information to the Office before the examiner's action, §1.176 is amended to provide that reissue applications will not be acted on sooner than two months after the *Official Gazette* announcement of filing.

A substantial majority of the comments received favored adoption of §1.11(b). The only opposition was based upon a suggestion that no statutory authority exists. However, since reissue applications contain no new disclosure, and therefore no trade secrets or confidential information, they are considered to present a "special circumstance" within the meaning of 35 U.S.C. 122.

The insertion of "all" as the fifth word of the first sentence of §1.11(b) is for clarity. The word "furnished" is changed to "obtained" in §1.11 for clarity.

Protests and Public Use Proceedings

Amended §§1.291 and 1.292 give greater recognition to the value of written protests and public use petitions in avoiding the issuance of invalid patents.

A substantial majority of the comments favored these sections and viewed them as improving the quality of issued patents. Entry of protests has been upheld in court.[3]

Section 1.291(a) provides that public protests against pending applications will be entered in the application file and will, if they meet stated requirements, be considered by the examiner. To guarantee consideration by the examiner, protests must be accompanied by copies of prior art documents relied upon, although protests without copies will not necessarily be ignored. This is similar to the requirement of new §1.98 that copies of patents and publications accompany prior art statements. Section 1.291 does not contemplate permitting a protester to participate as a party in further proceedings. In the case of applications available to the public, such as reissue applications, the protester may file papers rebutting statements made by the applicant. The examiner at his discretion may request a protester to submit additional written information or may provide extra time for comments by a protester to be filed.

To ensure consideration by the examiner, all protests must be timely submitted. Protests will generally be considered timely submitted, if they are filed before final rejection or allowance of the application by the examiner. The consideration given to protests filed after final rejection or allowance of the application by the examiner will depend upon the relevance of the prior art documents submitted and the point in time at which they are submitted. Obviously, if the prior art documents anticipate or clearly render obvious one or more claims they will not knowingly be ignored. It must be recognized, however, that the likelihood of consideration by the examiner decreases as the patent date approaches. Accordingly, protests must be filed early in order to ensure their consideration.

The first sentence of §1.291(a) is deleted as unnecessary. Section 1.291(a) also is changed from the proposal to make clear that it applies to pending applications and that all protests will be referred to the examiner having charge of the subject matter involved.

[3] *International Paper Co.* v. *Fibreboard Corp.*, 63 F.R.D. 88, 181 USPQ 740 (D. Del. 1974).

Section 1.291(b) incorporates the existing Office policy of permitting persons to submit prior art citations or copies of prior art after a patent has been granted. The section is changed from the proposal by the addition of the words "any papers related thereto" to recognize that statements as to the pertinence of prior art may be submitted. Both the citations and the related papers are to be entered without comments. The material submitted is not examined by the Office but is available to members of the public inspecting Office records.

Some suggestions were received for major modifications of §1.291. It was suggested that an advisory opinion of the examiner be placed in the patent file when protests were received after issuance of the patent. Several persons supported a suggestion for examiners to state whether a "new issue" was raised by prior art cited by a protester. Another suggestion was that a procedure similar to that used in the recent Trial Voluntary Protest Programs[4] be adopted on a continuing basis. These suggestions were carefully considered, but are not adopted. The suggestions extend substantially beyond §1.291 as proposed, and their benefits do not appear sufficient to justify the added cost at this time.

Materials submitted to the Office under §§1.291 and 1.292 are to be served upon the applicant, patentee, attorney or agent when possible. The term "patentee" is used in its ordinary sense as defined in 35 USC 100(d). If service is not possible, materials are to be submitted in duplicate so that the Office can attempt to send the duplicate copy. The proposal is changed by adding the words "with the Office" after "filed" in §§1.291(c) and 1.292(b) for clarity.

In §1.292, the requirement that petitioner bear the Office's expenses in conducting the public use proceeding is deleted. Section 1.292 is also amended to ensure that the existence of public use proceedings is recorded in the application file wrapper. Notice of a petition for a public use proceeding will be entered in the file in lieu of the petition itself when the petition and the accompanying papers are too bulky to accompany the file. Any public use papers not physically entered in the file will be publicly available whenever the application file wrapper is available.

Duty of Disclosure

Amended §1.56 defines the duty to disclose information to the Office and the criteria for striking an application when that duty is violated. The wording of the section is changed in several respects from the proposal, but the purpose and general scope are the same as in the proposal. The section codifies the existing Office policy on fraud and inequitable conduct, which is believed consistent with the prevailing case law in the federal courts. The expanded wording of the section is intended to be helpful to individuals who are not expert in the judicially developed doctrines concerning fraud. The section should have a stabilizing effect on future decisions in the Office and may afford guidance to courts as well.

A majority of comments received favored §1.56 as proposed or with modifications. Persons opposed expressed concern over the imprecise definition of the duty of disclosure and the possibility that the proposal would substantially increase the burden on patent applicants. Some stated that there would be increased litigation as a result of the proposal. Several suggestions were received on better ways to define the individuals who should disclose information and the kinds of information that should be disclosed.

The first sentence of §1.56(a) is changed from the proposal by adding the word "substantively," so that individuals having a duty of disclosure are limited to those who are "substantively involved in the preparation or prosecution of the application." This change is intended to make clear that the duty does not extend to typists, clerks, and similar personnel who assist with an application. This phrase, when taken with the last sentence of

[4] 923 O.G. 2; 930 O.G. 1454; 938 O.G. 945.

§1.56(a), is believed to provide an adequate indication of the individuals who are covered by the duty of disclosure. The word "with" is inserted in the first sentence of §1.56(a) before "the assignee" and before "anyone to whom there is an obligation to assign" to make clearer that the duty applies only to individuals, not to organizations.

Numerous comments concerned the term "relevance" that was used in the proposal. In response to the comments, language is substituted in §1.56 and related sections which is believed to establish a clearer standard for determining whether information need be disclosed to the Office. "Relevant" is replaced by "material" because the latter term connotes something more than a trivial relationship. It appears to be more commonly used in court opinions. In addition, the third sentence of §1.56, which defines materiality, is rewritten. The sentence now states that information is material "where there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent." The sentence paraphrases the definition of materiality used by the Supreme Court in its recent decision in *TSC Industries* v. *Northway*.[5] Although in that case the court was concerned with rules promulgated by the Securities and Exchange Commission, the Court's articulation of materiality is believed consistent with the prevailing concept that has been applied by lower courts in recent patent cases.

The definition of materiality in §1.56 will have to be interpreted in the context of patent law rather than securities law. Principles followed by courts in securities cases should not be translated to patent cases automatically. It is noteworthy, however, that in formulating the definition of materiality in *TSC Industries* the Supreme Court considered some of the same matters over which concern was expressed in the public comments on proposed§1.56. The court noted that the standard of materiality should not be so low that persons would be "subjected to liability for insignificant omissions or misstatements," or so low that the fear of liability would cause management "simply to bury the shareholder in an avalanche of trivial information—a result that is hardly conducive to informed decision making."[6]

Although the third sentence of §1.56(a) refers to decisions of an examiner, it is intended that the duty of disclosure would apply in the same manner in the less common instances where the official making a decision on a patent application is someone other than an examiner—e.g., a member of the Board of Patent Interferences or the Board of Appeals. This is implicit in the duty "of candor and good faith" toward the Office that is specified in the first sentence of §1.56(a).

Comments and questions were received concerning the term "information" used in the second and third sentences of §1.56(a) and elsewhere. It means all of the kinds of information required to be disclosed under current case law. In addition to prior art patents and publications, it includes information on prior public uses, sales, and the like. It is not believed practicable to define information in the text of the rule at this time. However, the rule is not intended to require disclosure of information favorable to patentability—e.g., evidence of commercial success of the invention. Neither is it meant to require disclosure of information concerning the level of skill in the art for purposes of determining obviousness.

Several comments were received concerning the duty to disclose information the patent applicant regards as confidential, including information the applicant has received from another party under an injunction of secrecy. This problem has existed prior to amendment of §1.56. The Patent and Trademark Office, of course, keeps information disclosed by applicants confidential until a patent is issued. It has been suggested that the Office should develop a mechanism for continuing to hold information in confidence after issuance of a patent if in the judgment of the examiner the information is not material to the examination of the application. The feasibility of offering a rule for public comment on this topic at a later date will be considered.

New §1.56(b) is added to make clear that information may be disclosed to the Office through an attorney or agent of record or through a pro se inventor, and that other individuals may satisfy their duty of disclosure to the Office by disclosing information to such an attorney, agent or inventor. Information that is not material need not be passed along to the Office.

Proposed sections 1.56 (b) and (c) have been revised and shortened and appear at §§1.56 (c) and (d). The proposal was criticized for leaving it open to the Office to apply a different standard of materiality from the one set forth in §1.56.[7] Section 1.56(d) as adopted states that an application "shall" be stricken when the criteria set forth are met. Thus §1.56(d) as adopted establishes a single standard for striking applications.

The term "inequitable conduct" is dropped from §1.56(d) as covering too great a spectrum of conduct to be subject to mandatory striking. Inequitable conduct that is equivalent to fraud is intended to come within the definition of fraud. The Court of Customs and Patent Appeals already has interpreted "fraud" in existing §1.56 to encompass conduct of this sort.[8] Moreover, §1.56(d) as adopted calls for striking an application either for fraud or for a violation of the duty of disclosure.

In §1.56(d) "bad faith" is substituted for the term "deliberate" that was used in the proposal. This change is to make clear than an intent to deceive (or gross negligence equivalent to such an intent) must be shown before an application will be stricken. Bad faith is not present if information is withheld as a result of an error in judgment or inadvertence.

Several comments concerned whether attorneys and agents could represent their clients' interests and at the same time comply with §1.56. Similar comments were directed to §§1.97 to 1.99. It is of course in the interest of the client to have a valid patent and this cannot be obtained without disclosure of known material facts. It is not inconsistent for an attorney or agent to fulfill his duty of candor and good faith to the Office and to act as an advocate for his client. The submission of information under §1.56 does not preclude the submission of arguments that such information does not render the subject matter of the application unpatentable.

In §1.65 a new third sentence is added to require the patent applicant to acknowledge the duty of disclosure. The language is changed from the proposal to be consistent with changes made in §1.56. To allow time for the Office and applicants to revise printed oath and declaration forms now in use, the mandatory acknowledgement of the duty of disclosure in amended §1.65 does not become effective until January 1, 1978. Applicants at their option may include the new language in oaths and declarations filed prior to the effective date. The Office will publish a separate notice in the Federal Register adding a sentence acknowledging the duty of disclosure to appropriate forms in 37 CFR Part 3, "Forms for Patent Cases."

The word "statement" is deleted from the title of §1.65 to avoid confusion with the prior art statement of §1.97 through 1.99.

Amended §1.346 emphasizes that there must be a reasonable basis to support every allegation of improper conduct made by a registered practitioner in any Office proceeding. The language that was proposed is clarified in the section as adopted. Although §1.346 is limited to papers filed in Office proceedings, the amendment to

[5]426 U.S.—, 48 L. Ed. 2d 757, 96 S. Ct. 2126, 44 U.S.L.W. 4852, decided June 14, 1976.

[6]426 U.S. at—, 48 L.Ed. 2d at 765, 96 S. Ct. at 2132, 44 U.S.L.W. at 4855.

[7]See discussion accompanying proposed rules in Federal Register of Oct. 4, 1976, page 43731, first sentence.

[8]*Norton* v. *Curtiss*, 433 F. 2d 779, 792, 167 USPQ 532, 543 (CCPA 1970).

§1.346 is not intended to imply that disciplinary action never will be taken against a registered practitioner under §1.348 for a groundless allegation of improper conduct in a court proceeding.

Prior Art Statement

New §§1.97, 1.98 and 1.99 deal with prior art statements and provide a mechanism by which patent applicants may comply with the duty of disclosure provided in §1.56. The sections have been substantially changed from the proposal, in response to comments received.

Unlike the corresponding part of the proposal, the sections as adopted are not mandatory, though applicants are strongly encouraged to follow the procedures described in them. Applications will be examined whether or not a prior art statement is filed and whether it complies with the rules or is defective. It is nevertheless believed that applicants will find that the use of prior art statements complying fully with the requirements of §§1.97 through 1.99 will be the best way to satisfy the duty of disclosure. The Patent and Trademark Office cannot assure that prior art disclosed in other ways will be considered by the examiner.

Sections 1.97 through 1.99 do not prescribe the content of what materials should be submitted in the prior art statement; this is for the applicant and the attorney or agent to decide in the light of the duty of disclosure expressed in §1.56. The only criterion contained in §§1.97 through 1.99 as to content of the art cited is in §1.97(b). This subsection indicates that the statement will be construed as a representation that the prior are listed includes what the submitter considers to be the closest art of which he is aware. The submitter need not decide which particular items of prior art are the closest or identify any items as such; the representation is simply that he is not withholding known prior art which he considers closer than that which is submitted. Section 1.97(b) makes clear that the prior art statement is not representation that a search has been made or that no better art exists.

In §1.97(a) the time for filing the prior art statement is extended from the two months of the original proposal to three months. In most cases prior art submitted within three months will be available to the examiner before he takes up the case for action, though it will be helpful if citations are made as promptly as possible.

Section 1.98 lists the elements of the prior art statement: a listing of the art, a concise explanation of the relevance of each listed item, and copies of the art or the pertinent portions thereof.

The prior art statement resembles somewhat the "patentability statement" of the proposal and the "patentability brief" proposed elsewhere.[9] The name has been changed to reflect a change in the requirements of §1.98(a). Unlike the proposed version of this paragraph, which called for an explanation of why the claimed invention is believed patentable over the cited art, the paragraph as adopted calls only for a concise explanation of the relevance of each listed item. This may be nothing more than identification of the particular figure or paragraph of the patent or publication which has some relation to the claimed invention. It might be a simple statement pointing to similarities between the item of prior art and the claimed invention. It is permissible but not necessary to discuss differences between the prior art and the claims. It is thought that the explanation of relevance will be essentially as useful to the examiner as the formerly proposed explanation of patentability, and should be significantly less burdensome for the applicant to prepare.

Section 1.98 requires a copy of each patent or publication cited, including U.S. patents, to accompany the prior art statement. Several comments questioned the need for burdening the applicant to supply copies of materials that are present in the Office's files. However, substantial time and effort often is needed to locate a document in the Office's files. Since the person submitting the prior art statement generally has available a copy of the item being cited, it is believed that expense and effort can be minimized by having that person supply the copy in all cases. Consideration has been given to proposals to allow the applicant to submit an order for copies of the patents along with his statement instead of actually submitting copies. This will be further studied, but to date no way has been found to assure that the copies will be available to the examiner by the first action unless the applicant submits them with the prior art statement.

Other changes to §§1.97 through 1.99 from the proposal eliminate unnecessary language and clarify the requirements.

A notice published in 1974[10] contained guidelines for the citation of prior art by applicants. Many of those guidelines are repeated or superseded by §§1.97 through 1.99. In order to allow applicants, attorneys and agents time to adjust their procedures to comply with the requirements for prior art statements, the effective date of §§1.97 through 1.99 will be July 1, 1977. Until these new sections become effective, applicants should continue to follow the 1974 guidelines. Issuance of a revised notice, to take effect July 1, 1977, is under study.

A survey conducted by the Office in 1976 concludes that many applicants have not been citing prior art to the Office.[11] It is hoped that with the duty of disclosure expressly set forth in §1.56, applicants will perceive that it is to their advantage to use the procedures of §§1.97 through 1.99.

Section 1.51 is amended by designating the existing rule as §1.51(a) and adding new §1.51(b) which contains a reference to §§1.97 through 1.99.

Foreign Language Oaths

Amended §1.52 and new §1.69 are adopted as proposed.

Section 1.69 requires that oaths and declarations be in a language which is understood by the individual making the oath or declaration, i.e., a language which the individual comprehends. If the individual comprehends the English language, he must use it. If the individual cannot comprehend the English language, any oath or declaration must be in a language which the individual can comprehend. If an individual uses a language other than English for an oath or declaration, the oath or declaration must include a statement that the individual understands the content of any documents to which the oath or declaration relates. If the documents are in a language the individual cannot comprehend, the documents may be explained to him so that he is able to understand them.

The Office will provide approved translations for as many of the oath or declaration forms which appear in Part 3 of Title 37 of the Code of Federal Regulations as practicable, and in as many languages as practicable, probably using a side-by-side English/foreign language format. The availability of the foreign language forms will be announced in the *Official Gazette* at a later date.

The change in §1.52, providing for an exception to the requirement that oaths and declarations be in the English language, is necessitated by the adoption of §1.69.

Although very few persons opposed §§1.52 and 1.69, several suggested that the philosophy behind the change be extended to the specification, requiring the specification to be in a language which the applicant understands, accompanied by an English translation. This suggestion was not considered feasible because of the obvious burdens on the applicant and the danger to the

[9]E.g., Federal Register of Sept. 9, 1968, 34 FR 14176, 866 O.G. 1402 S. 2255, 94th Congress, §131(b).

[10]Notice of Aug. 12, 1974, 926 O.G.2.

[11]BNA's Patent. Trademark and Copyright Journal, No. 301, Oct. 28, 1976, page D-1.

applicant and the public if the translation is not literally correct. Also, if a large number of applications were filed in a foreign language, there would be significant administrative burdens on the Office. Attention is directed to the Manual of Patent Examining Procedure. §608.1, which permits non-English language applications to be filed in certain limited circumstances.

Other suggested modifications of the proposed rule included: (1) using an English language oath or declaration with one additional clause in a language understood by the person making the oath or declaration, the clause stating that the person understands all the documents to which the oath or declaration relates; and (2) extending the two month grace period for filling an English translation of an oath or declaration filed under §1.65.

After due consideration, suggestion (1) was believed not to accomplish the objectives of the rule as well as the adopted rule. Suggestion (2) would cause unsatisfactory delays in the initial processing of applications.

Decisions and Files Made Public

Section 1.14(d) makes more explicit the conditions under which significant decisions of the Patent and Trademark Office will be made available to the public, and includes reference to decisions of the Board of Patent Interferences, in addition to decisions of the Board of Appeals and the Commissioner.

A large majority of the comments received were favorable. Several commentators felt that more decisions would be made available as a result of the proposed section and that it would assist in publicizing aspects of Office procedure which may not have been available previously.

Some negative comments were based on the view that the Freedom of Information Act[12] required all decisions of the Office to be made publicly available. A greater number of those opposing the proposed section, however, felt that applicants should have an absolute right to have their applications maintained in confidence and that no information should be made public without specific authorization from them. One commentator felt that rulemaking on this subject should be deferred until currently pending litigation[13] under the Freedom of Information Act was finally resolved.

The section as adopted is applicable to decisions deemed by the Commissioner to involve an interpretation of patent laws or regulations that would be of significant precedent value, where such decisions are contained in either pending or abandoned applications or in interference files not otherwise open to the public. It is applicable whether or not the decision is a final decision of the Patent and Trademark Office.

The parenthetical phrase in the first sentence of the proposed section, which cited other provisions of the rules under which decisions are open to public inspection, is deleted as unnecessary and possibly confusing. Also, in view of several comments received, the period of time during which an applicant or party in interest may object to having a decision made public is extended from one month to two months. At least twenty days is given to request reconsideration and seek court review before a decision is made public over an objection.

Section 1.14(d) is considered to place a duty on the Patent and Trademark Office to identify significant decisions and to take the steps necessary to inform the public of such decisions, by publication of such decisions, in whole or in part. It is anticipated, however, that no more than a few dozen decisions per year will be deemed of sufficient importance to warrant publication under the authority of this section.

Amended §1.14(b) allows public inspection of abandoned applications referred to in defensive publications. The comments received on the proposed amendment on this topic in 1974 expressed no opposition and the proposal is adopted without change.

The amendment is intended to encourage use of the defensive publication program provided under §1.139. The objective of that program is to make available to the public the technical disclosure of applications in which the owner prefers to publish an abstract in lieu of obtaining an examination. Existing §§1.11(b) and 1.139 open the complete defensive publication application to inspection by the general public upon publication of the abstract. With the amendment, an abandoned application referred to in a defensive publication application will likewise be open to public inspection, avoiding any need to repeat its contents in the defensive publication application. Thus, public availability of the applications involved should be of benefit both to the applicant and the public.

A suggestion was made that the section be extended still further to include abandoned applications referred to in foreign patents. This suggestion, however, goes too far beyond the proposal that was published and has too uncertain an impact to be adopted at this time.

Amended §1.11(a) provides earlier access to the file of an interference which involved a patent or an application on which a patent has issued. All comments that were submitted on the 1974 proposal on this topic were favorable and two commentators felt the proposal should be extended further. The proposal is being adopted without change.

Under present practice, access to the file of an interference is not permitted until judicial review of the decision of the Board of Patent Interferences has been exhausted. The amended section allows access to the file after final decision of the Board of Patent Interferences if that decision is an award of priority as to all parties. It is believed that such earlier access will be of benefit to members of the public by making available information relevant to the issuance of the patent whether or not the interference decision is still being adjudicated.

Patent Appeals

Section 1.194 clarifies the circumstances in which oral hearings should be requested, provides for oral arguments by or on behalf of examiners in certain appeals and reduces the time permitted for oral arguments.

Comments relating to this section were favorable by a very substantial majority, although there were several reservations to the effect that §1.194(a) tended to discourage or downgrade oral arguments. Participation by examiners was considered to be desirable not only from the standpoint of improving the overall presentation of the argument, particularly in complex cases, but also for the educational and experience benefits to the examiners themselves.

The only opposition to the section was based on the feeling that oral hearings would be discouraged. The rule is intended to discourage oral hearings only to the same extent as the Office's 1975 Official Gazette notice on the subject.[14] Section 1.194(a) indicates that oral hearings should not be requested as a matter of course in every appeal, but only in those circumstances where the appellant feels that such a hearing will be of material assistance to the proper presentation of the appeal. The section expressly provides that equal consideration will be accorded in deciding all appeals, whether or not an oral hearing is held.

In appeals where the appellant has requested an oral hearing §1.194(b) provides for oral argument by, or on behalf of, the primary examiner, if such argument is considered to be helpful by either the primary examiner or the Board. This provision incorporates the present practice of permitting examiners to present an oral argument before the Board.[15] It gives the Board additional discretionary authority to request presentation of an oral

[12]5 USC 552.

[13]*Irons v. Gottschalk*; Slip Opinion, No. 74-1365 (D.C. Cir., Oct. 21, 1976).

[14]See notice of Mar. 20, 1975, 933 O.G. 1010.

[15]MPEP, §1209.

argument by, or on behalf of the examiner to ensure that all issues are fully and accurately presented.

Section 1.194(c) provides, as does existing §1.194, that appeals will be assigned for consideration and decision without an oral hearing where none has been requested by the appellant. Where an oral hearing has been requested, a day of hearing will be set, and both appellant and the primary examiner will be notified. A provision for notice to the examiner is added to the proposed version. Additionally, §1.194(c) reflects the present practice of limiting oral argument on behalf of the appellant to twenty minutes.[16] The time permitted for argument by the examiner has been shortened from twenty minutes, as proposed, to fifteen minutes. The examiner, unlike the appellant, will not ordinarily need time to present the facts of the case or for rebuttal.

In any appeal where oral argument is to be presented by, or on behalf of, the primary examiner, the appellant will be given due notice of that fact.

Proposed §1.196(b) would have authorized the Board of Appeals to reject allowed claims, in cases before it, whenever the Board had knowledge of grounds for so doing.

While a majority of those commenting on this section favored in principle the concept of allowing the Board to have this right, significant concern was voiced that there was no statutory authority for the Board to actually reject allowed claims. Further, the question of proper authority for judicial review of such action by the Board was a matter of concern. Other reasons advanced in opposition to the section were that applicants would be inhibited from appealing by the risk of having allowed claims rejected and that the proposal would create a higher presumption of validity in cases reviewed by the Board. A significant number commented that it would be more appropriate for the Board to remand the case to the primary examiner for consideration of the grounds raised by the Board. This would afford the applicant an opportunity to demonstrate the patentability of the claims and would remove any question as to statutory authority.

In view of the comments received, existing §1.196(b) will not be modified, but a new §1.196(d) is added providing express authority for the Board of Appeals to include, in its decision, a statement of any grounds for rejecting any allowed claim that it believes should be considered by the primary examiner. Section 1.196(d) provides that the Board may remand the case to the examiner for such consideration, and that the applicant shall have an opportunity to respond to the grounds set forth by the Board prior to consideration, by the examiner. If the previously allowed claims are rejected by the examiner, the rejection may be appealed to the Board.

The new section further provides that a decision of the Board which includes a remand will not be considered as a final decision in the case, but that the Board, following conclusion of the proceedings before the primary examiner, will either adopt its earlier decision as final or will render a new decision based on all appealed claims, as it considers appropriate. In either case, final action by the Board will give rise to the existing alternatives available to an appellant following a decision by the Board.

In situations where the primary examiner concludes after consideration of all the evidence and argument that the remanded claims should be allowed, the new rule dealing with reasons for allowance (§1.109) provides an appropriate mechanism for him to explain, on the record, his reasoning for coming to this conclusion, notwithstanding the grounds set forth by the Board in its statement.

Promulgation of new §1.196(d) does not affect the Board's existing authority to remand a case to the primary examiner without rendering a decision in appropriate circumstances. Section 1.196(d) is not intended as an instruction to the Board to reexamine every allowed claim in every appealed application. It is, rather, intended to give the Board express authority to act when it becomes apparent, during the consideration of rejected claims, that one or more allowed claims may be subject to rejection on either the same or on different grounds from those applied against the rejected claims.

[16]See notice of Mar. 20, 1975, 933 O.G. 1010.

Reasons for Allowance

New §1.109 is intended to emphasize and formalize the examiner's authority to state his reasoning for allowing a claim or claims. The authority is discretionary with the examiner and is only to be used when the record does not otherwise reveal the reasons for allowance.

A majority of the comments received favored the rule as proposed because it would tend to provide courts and others who were reviewing the patent with a clearer record. Those who opposed the rule most often gave the reason that the examiner might fail to state all the reasons or the strongest reasons why a claim was allowed, which could place unnecessary limitations on the claims or create an estoppel in subsequent litigation or licensing.

To help insure that the examiner's statement of his reasoning in allowing a claim will not unnecessarily limit the claims or create an estoppel, a final sentence is added to the proposal which states that failure of the applicant to comment upon or rebut the examiner's reasoning "shall not give rise to any implication that the applicant agrees with or acquiesces in the reasoning of the examiner."

Several commenters suggested that stricter enforcement of §§1.111 and 1.133 would eliminate the need for a new rule concerning reasons for allowance. Situations exist, however, where a statement of reasons for allowance could be helpful, for example when an examiner withdraws a rejection for reasons not suggested by the applicant; when an applicant submits several arguments for allowing a claim and the examiner finds not all of them persuasive: when an examiner allows a claim on the first Office action after citing very close prior art: and when the examiner allows a claim after remand from the Board of Appeals (see new §1.196(d)).

The first sentence of the proposed rule is changed to define more precisely the circumstances in which an examiner's statement is appropriate, as well as to define more precisely the content of the statement. The statement will include the examiner's "reasoning." The examiner may state his reasoning whenever he "believes that the record of the prosecution as a whole does not make clear his reasons for allowing a claim or claims."

Several persons commented that the rule should provide a procedure for appeal from the examiner's statement of his reasoning. The rule does permit applicants to comment upon the examiner's reasoning. If the applicant does not wish to comment, he may reserve for a later proceeding, without prejudice, any rebuttal. [Text of adopted rules appears in 37 CFR, revised 7-1-77]

Effective Date. These amendments become effective on March 1, 1977, except for §§1.51, 1.97, 1.98, and 1.99 which become effective on July 1, 1977, and §§1.65 and 1.69 which become effective on January 1, 1978.

Jan. 18, 1977. C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Jan. 19, 1977. **Betsy Ancker-Johnson, Ph.D.**
Assistant Secretary for Science and Technology.

[955 O.G. 1054]

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(91) **Guidelines for Implementation of Recently Revised Rules**

Recently a number of rules relating to Patent Examining and Appeal procedures were revised. The new rules were published in the Federal Register at 42 F.R. 5588 on January 28, 1977, and in the *Official Gazette* at 955

O.G. 1054 on February 22, 1977. The following guidelines are being published to describe the procedures which are being followed in implementing 37 CFR sections 1.11, 1.97-1.99, 1.109, 1.194, 1.291 and 1.292.

Files Open to the Public

Section 1.11(b) is applicable only to those reissue applications filed on or after March 1, 1977. Those reissue applications already on file will not be automatically open to inspection but a liberal policy will be followed by the Office of the Solicitor in granting petitions for access to such applications.

(Note.—These sections as changed will be incorporated into the Manual text in Rev. 3 of the Manual.)

For those reissue applications filed on or after March 1, 1977, the following procedure will be observed:

1) The filing of reissue applications will be announced in the *Official Gazette* and will include certain identifying data as specified in section 1.11(b). Any member of the general public may request access to a particular reissue application filed after March 1, 1977. Since no record of such request is intended to be kept, an oral request will suffice.
2) The reissue application files will be maintained in the examining groups and inspection thereof will be supervised by group personnel. Although no general limit is placed on the amount of time spent reviewing the files, the Office may impose limitation, if necessary, e.g., where the application is actively being processed.
3) Where the reissue application has left the examining group for administrative processing, requests for access should be directed to the appropriate supervisory personnel in the Division or Branch where the application is currently located.
4) Requests for copies of papers in the reissue application file must be in writing addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 and may be either mailed or delivered to the Office mailroom. The price for copies made by the Office is thirty cents per page.

Prior Art Statements

This notice supersedes the notices of August 12, 1974 (926 O.G. 2) and May 19, 1975 (935 O.G. 902) relating to citations of prior art. Although new sections 1.97 through 1.99 are not effective until July 1, 1977, and are not mandatory upon applicants, they provide an ideal mechanism for complying with the duty of disclosure under 37 CFR 1.56. The statements should be submitted in accordance with the following guidelines:

1) Prior art statements should be submitted at the time of filing the application or within three months thereafter and may be separate from the specification or incorporated therein. The statement shall serve as a representation that the person preparing it has included therein what he believes to be the closest prior art of which he is aware and shall not be construed as a representation that no better art exists or that a search has been made. If the first action in the application is received prior to three months after filing of the application and no prior art statement has been submitted, the prior art statement may be submitted with the response to the first action and be considered timely.
2) The statement shall include a listing of the patents, publications or other information which the preparer of the statement wishes to cite and a concise explanation of the relevance of each listed item. Copies of the pertinent portions of all listed documents shall be supplied along with the statement, both when incorporated into the specification and when filed separately. If two or more patents or publications considered material are substantially identical, a copy of a representative one shall be included with the statement and others may merely be listed with an indication of which are considered to be substantially identical.
3) A translation of the pertinent portions of foreign language patents or publications considered material should be transmitted if an existing translation is readily available to the applicant. It will be sufficient, however, to transmit an equivalent English language patent or publication so long as it is identified as an equivalent.

   Where the applicant has submitted copies of prior art in accordance with these guidelines in a prior application, reference to the prior application and the submission therein will be sufficient for the continuing application as far as the copies are concerned. As far as the statement per se is concerned, the relevance of the prior art to the claimed subject matter must be indicated if it differs from its relevance as explained in the prior application.
4) If prior to the issuance of a patent an applicant pursuant to his duty of disclosure under 37 CFR 1.56, wishes to bring to the attention of the Office additional patents, publications or other information not previously submitted, the additional information should be submitted to the Office with reasonable promptness. It may be included in a supplemental prior art statement or may be incorporated into other communications to be considered by the examiner. Any transmittal of additional information shall be accompanied by explanations of relevance and by copies in accordance with the requirements aforementioned. The transmittal should include a statement explaining why the prior art was not earlier submitted.

While the Patent and Trademark Office will not knowingly ignore any prior art which might anticipate or suggest the claimed invention, no assurance can be given that cited art or other information not submitted in accordance with these guidelines will be considered by the examiner.

After the claims have been indicated as allowable by the examiner, e.g., by the mailing of an Ex parte Quayle action, a notice of allowability (PTOL—327), an examiner's amendment (PTOL—37), or a Notice of Allowance (PTOL—85), any citations submitted will be placed in the file. Since prosecution has ended, however, such submissions will not ordinarily be considered by the examiner unless the citation is accompanied by:

(*a*) A proposed amendment cancelling or further restricting at least one independent claim and narrowing the scope of protection sought;
(*b*) A timely affidavit under 37 CFR 1.131 with respect to the material cited; or
(*c*) A statement by the applicant or his attorney or agent that, in the judgment of the person making the statement, the prior art or other information cited raises a serious question as to the patentability of the claimed subject matter, or is closer prior art than that of record.

If the material is submitted after the base issue fee has been paid, it must also be accompanied by a petition under 37 CFR 1.183 requesting a waiver of 37 CFR 1.312. Such petition, if granted, would result in review of the art by the examiner and possible entry of the amendment.

In each instance where an examiner considers, but does not cite on form PTO—892, specific prior art referred to in a paper placed in the application file, the examiner will place a notation adjacent to the reference according to the following:

> If included in the specification, the examiner will write his or her initials adjacent to any references checked and enter "checked" in the left margin opposite the initials. If presented in a separate paper or in the remarks of an amendment, the examiner's initials and "checked" will be entered adjacent to the citations or wherever possible to indicate clearly those checked.

Reasons for Allowance

One of the primary purposes of the change in Section 1.109 is to improve the quality and reliability of issued patents by providing a complete file history which should clearly reflect, as much as is reasonably possible, the reasons why the application was allowed. Such information facilitates evaluation of the scope and strength of a patent by the patentee and the public and may help avoid or simplify litigation of a patent.

The practice of stating the reasons for allowance is not new and the rule merely formalizes the examiner's existing authority to do so and provides applicants an opportunity to comment upon any such statement of the examiner.

When the examiner determines that it is necessary or desirable, a "Statement of Reasons for Allowance" will be prepared. The "Statement" will usually be an attachment to either a notice of allowability (PTOL—327) or Examiner's Amendment (PTOL—37). Any comments considered necessary by applicant must be submitted no later than the issue fee and should preferably *accompany* the issue fee. Submission with the issue fee avoids any delay in the processing of the application and avoids the necessity to associate the comments with the application while it is in issue except at the time the file must be pulled to record the payment of the issue fee. Such comments will be entered in the application file by the Allowed Files Branch with an appropriate notation on the "contents" list of the file wrapper, but will not be reviewed by the examiner.

Oral Hearings Before Board of Appeals

Section 1.194 clarifies the circumstances in which oral hearings should be requested and provides for oral arguments by, or on behalf of, primary examiners in certain appeals.

Under Section 1.194, the following procedures will be in effect:

1) In accordance with Section 1.192, appellants who desire an oral hearing must request the same at the time of filing the appeal brief.
2) If appellant has requested an oral hearing and the primary examiner intends to present an oral argument, the last paragraph of the examiner's answer will indicate this intention.
3) Notice of the oral hearing will be given to the appellant and, at the same time, to the primary examiner in those cases in which the primary examiner has indicated an intention to present an oral argument.
4) After an oral hearing has been confirmed and the date set as provided in Section 1.194(c), the application file will be delivered to the examiner via the appropriate Group Director at least one week prior to the date of the hearing for those cases in which the examiner is expected to be present at the hearing. In those cases where the Board requests the presentation of an oral argument by, or on behalf of, the primary examiner, the appellant will be so notified. The Board's request for an oral argument may, where appropriate, indicate specific points or questions to which the argument should be particularly directed. The application file will be returned to the Board before the hearing.
5) In those appeals in which an oral hearing has been confirmed and either the primary examiner or the Board has indicated a desire for oral argument, such oral argument may be presented whether or not appellant appears.

Protests and Public Use Proceedings

Amended sections 1.291 and 1.292 give greater recognition to the value of written protests and public use petitions and are intended as an aid in avoiding the issuance of invalid patents.

Under sections 1.291 (b) and (c) and 1.292(b), the following procedures will be observed:

1) Only in those instances where it has not been possible to serve protest papers upon the applicant, attorney or agent, should duplicates of the papers submitted be provided. In this case the appropriate examining group will attempt to get the duplicate copy to the applicant, attorney or agent. However, every effort should be made by the protester to effect service.
2) Citations of prior art and any papers related thereto may be entered in the file after a patent has been granted by submitting them to the attention of the Record Room, where they will be entered without comment by the Office. If after diligent effort it has not been possible to serve the prior art citations and related papers on the patentee, his attorney or agent, duplicate copies should be submitted in which case the Record Room will attempt to get the duplicate copy to the owner of record.
3) When public use petitions and accompanying papers are submitted they, or a notice in lieu thereof, will be entered in the application file. Duplicate copies should be submitted only when, after diligent effort, it has not been possible for petitioner to serve a copy of the petition on the applicant, his attorney or agent in which case the Office of the Solicitor will attempt to get the duplicate copy to the applicant, his attorney or agent.
4) To ensure consideration by the examiner, protests should be timely submitted, i.e., before final rejection or allowance. Consideration of protests filed after final rejection or allowance will depend upon the relevance of the prior art documents and the point in time at which they are submitted. Documents which clearly anticipate or render obvious one or more claims will not knowingly be ignored. If protests are not timely submitted or if they fail to comply with section 1.291(a) as to the submission of a copy of each prior art document relied upon, they will be acknowledged and referred to the examiner having charge of the subject matter involved for entry in the application file and such consideration as seems warranted.

In each instance where an examiner considers but does not cite on form PTO—892 specific prior art referred to in a protest, the examiner will place a notation in the protest paper adjacent to the reference which will include his or her initials and the term "checked."

Additional future guidelines as to protest procedures may be developed after gaining experience with the new practice.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Mar. 18, 1977.

[957 O.G. 11]

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(92) Further Guidelines Relating to 37 CFR 1.175 and 1.291, as Amended Effective March 1, 1977

The experience with the above revised rules since their effective date has indicated the desirability of further guidelines relating to the manner in which they are to be implemented. The following guidelines are supplemental to those which have already been provided in the publication of the rules in the Federal Register of January 28, 1977 (42 F.R. 5588) (955 O.G. 1054, February 22, 1977), and in the earlier Guidelines published at 957 O.G. 11 on April 12, 1977. Copies of the latter two *Official Gazette* publications appear as items 59 and 60 of the current "Consolidated Listing of Recent Official Gazette Notices" published at 966 O.G. 22–32. The present guidelines are also supplemental to the appropriate sections of the Manual of Patent Examining Procedure, e.g., Sections 1401–1401.12 relating to reissue, and Section 1309.02 relating to protests. Sections 721 and 721.01 of the MPEP contain guidelines to be followed if either a reissue or other application, or a protest relative to any application, raises questions of "fraud" or "violation of the duty of disclosure." Accordingly, the above-noted materials should be consulted in addition to these further guidelines, which are in themselves not intended to com-

pletely treat the subjects involved. For the most part, the guidelines herein merely identify and clarify existing requirements and practices. The Patent and Trademark Office has a general study underway of the procedures for handling reissue applications and protests which may result in future modifications in these guidelines.

Section 1.175(a)(4) of the revised rules recognizes that reissues may be filed to have the patentability of the original patent, without changes therein, considered in view of prior art or other information relevant to patentability which was not previously considered by the Office.

The experience to date reveals the need to clarify what should be filed by the applicant in order to seek the reexamination contemplated by sub-section (a)(4) and also the type and content of the examination which the examiner will give to applications filed under sub-section (a)(4).

First, sub-section (a)(4) does *not* contemplate, or permit, the filing of a reissue application without an oath or declaration. To the contrary, an oath or declaration is required, and such oath or declaration *must* comply with each of sub-sections (a)(4), (a)(5), and (a)(6). Thus, under sub-section (a)(4) the oath or declaration must particularly specify the "prior art or other information relevant to patentability, not previously considered by the Office," which the reissue applicant considers "might cause the examiner to deem the original patent wholly or partly inoperative or invalid." The reissue oath or declaration must also request, under sub-section (a)(4), that "if the examiner so deems, the applicant be permitted to amend the patent and be granted a reissue patent."

Under sub-section (a)(5), the reissue oath or declaration, including those filed under sub-section (a)(4), must particularly specify "the errors or what might be deemed to be errors relied upon, and how they arose or occurred." This sub-section has two specific requirements, *both of which must be complied with* in, or by, the reissue oath or declaration. Thus, insofar as (a)(4) reissue oaths or declarations are concerned, the oath or declaration must particularly specify "what might be deemed to be errors." For example, if the reissue applicant is seeking reexamination in view of particular prior art or other information, the reissue oath or declaration must point out "what might be deemed to be errors" in patentability in view of such prior art or other information. More specifically, the oath or declaration, in appropriate circumstances, might state that some or all claims might be deemed to be too broad and invalid in view of references X and Y which were not of record in the patented files. Usually, a general statement will suffice. But where appropriate, such as where the pertinence of the new references X and Y are not evident, more specificify about "what might be deemed to be errors" should be provided. Of course, the reissue applicant does *not* have to, and presumably does *not*, agree that "errors" exist. However, the reissue applicant does have to, in the reissue oath or declaration of the sub-section (a)(4) type, particularly specify "what might be deemed to be errors relied upon."

In addition to specifying "what might be deemed to be errors relied upon," sub-section (a)(5) also requires "particularly specifying" "how they arose or occurred." This means, of course, that the reissue oath or declaration must specify the manner in which that which "might be deemed to be errors" "arose or occurred." For example, if the (a)(4) reissue is being filed for reexamination in view of prior art or other information, the reissue oath or declaration must indicate when and the manner in which the reissue applicant became aware of the possible error in the patent, e.g., third party allegation, discovery of prior art or other information subsequent to issuance of patent, knowledge of prior art or other information before issuance of patent with significance being brought out after issuance by third party, through allegations made in litigation involving the patent, etc. It is particularly important that the reissue oath or declaration adequately specify how "what might be deemed to be errors" arose or occurred. If the reissue oath or declaration does not particularly specify "how," i.e., the manner in which any possible errors arose or occurred, the Office will be unable to adequately evaluate reissue applicant's statement in compliance with (a)(6) that the "errors, if any, arose 'without any deceptive intention' on the part of the applicant."

Sub-section (a)(6) specifically requires that the reissue oath or declaration, including those filed under sub-section (a)(4), contain the averment that the "errors, if any, arose 'without any deceptive intention' on the part of the applicant." This requirement must not be overlooked in filing since the requirement for an absence of "deceptive intention" is a necessary part of any reissue application, including those of the (a)(4) type.

The significance and importance of sub-sections (a)(5) and (a)(6) must not be overlooked or minimized insofar as reissue oaths or declarations are concerned, including those filed under sub-section (a)(4). These sub-sections, to a large extent, enable the Office to make its determination required by statute that any error is "without any deceptive intention."

In addition to meeting the requirements of Sections 1.175 (a)(4)–(a)(6) insofar as the reissue oath or declaration is concerned, the reissue applicant, at the time of filing the reissue application, including the (a)(4) type reissue application, must also be aware of the requirements of 37 CFR 1.56, as revised effective March 1, 1977. Reissue applicants may, of course, utilize new Sections 1.97–1.99 to comply with the duty of disclosure required by Section 1.56. While Section 1.97(a) provides for filing of the prior art statement within three months of the filing of the application, reissue applicants are encouraged to file the prior art statement at the time of filing the application in order that such prior art statements will be availale to the public during the two-month period provided by Section 1.176.

In situations in which the patent for which reexamination is being sought is, or has been, involved in litigation, which raised a question material to examination of the reissue application, such as the validity of the patent, or any allegation of fraud, the existence of such litigation must be brought to the attention of the Office at the time of, or shortly after, filing the application, either in the reissue oath or declaration, or in a separate paper, preferably accompanying the application as filed. Litigation begun after filing of the reissue application also should be promptly brought to the attention of the Office. The details and documents from the litigation, insofar as they are "material to the examination" of the reissue application as defined in 37 CFR 1.56(a), should accompany the application as filed, or be submitted as promptly thereafter as possible. For example, the defenses raised against validity of the patent, or charging fraud or inequitable conduct in the litigation, would normally be "material to the examination" of the reissue application. It would, in most situations, be appropriate to bring such defenses to the attention of the Office by filing in the reissue application a copy of the Court papers raising such defenses. As a minimum, the applicant should call the attention of the Office to the litigation, the existence and nature of any allegations relating to validity and/or "fraud" relating to the original patent, and the nature of litigation materials relating to these issues. Enough information should be submitted to clearly inform the Office of the nature of these issues so that the Office can intelligently evaluate the need for asking for further materials in the litigation. Thus, the existence of supporting materials which may substantiate allegations of invalidity or "fraud" should, at least, be fully described, or submitted. The Office is *not*, of course, interested in receiving voluminous litigation materials which are *not* relevant to the Office's consideration of the reissue application. The status of the litigation should be updated in the reissue application as soon as significant events happen in the litigation.

The Examination of Reissue Applications, Including Those Filed Under 37 CFR 1.175(a)(4)

The examination of reissue applications, including

those filed under sub-section (a)(4), will be in accordance with Sections 1401–1401.12, M.P.E.P. Attention is particularly directed to Section 1401.09, M.P.E.P. which refers to the two aspects of reissue examination, i.e., examination in the same manner as an original application and examination for compliance with the reissue statute and rules. The purpose of the present guidelines is to supplement those presently in existence and to emphasize certain points, particularly as they relate to reissue applications filed under sub-section (a)(4).

When examining the reissue application the examiner will consider whether or not applicant, in the reissue oath or declaration, has complied with each of the requirements of 37 CFR 1.175. For example, in all reissue applications, the reissue oath or declaration must comply with the requirements of the first sentence of 37 CFR 1.65. When the reissue application is other than the (a)(4) type, the reissue oath or declaration must comply with the appropriate sub-sections (a)(1) to (a)(3) and sub-sections (a)(5) and (a)(6). When the reissue application is filed under sub-section (a)(4), the reissue oath or declaration must also comply with sub-sections (a)(5) and (a)(6). Thus, all reissue applications must comply with sub-sections (a)(5) and (a)(6). If the examination reveals a lack of compliance with any requirement of Section 1.175, e.g., the requirements of sub-sections (a)(5) and/or (a)(6), a rejection will be made on the basis that the reissue oath or declaration is insufficient. See Section 1401.08, M.P.E.P. Under no circumstances will any reissue application be passed for issue without full compliance with 37 CFR 1.175.

Applications filed under sub-section (a)(4) will not, of course, be passed for issue without amendment, but will be rejected as lacking statutory basis for a reissue if *there are no other grounds for rejection*, since 35 U.S.C. 251 does not authorize reissue of a patent unless the patent is deemed wholly or partly inoperative or invalid. If a reissue filed under sub-section (a)(4) is subsequently amended thereby converting it into an application under sub-sections (a)(1) to (a)(3), *a supplemental reissue oath or declaration must be filed containing the appropriate averments*, If such a proper supplemental oath or declaration is not filed, a rejection will be made on the basis that the reissue oath or declaration is insufficient. The supplemental oath or declaration insures compliance with 35 U.S.C. 251 by providing appropriate averments relating to actual errors rather than possible errors.

If the examiner becomes aware of litigation involving the patent sought to be reissued during examination of the reissue application, and applicant has not made the details regarding that litigation of record in the reissue application, the examiner, in the next office action, will inquire regarding the same. The following paragraph may be used for such an inquiry:

> "It has come to the attention of the examiner that the patent sought to be reissued by this application (is) (has been) involved in litigation. Any documents and/or materials, including the defenses raised against validity, or against enforceability because of fraud or inequitable conduct, which would be material to the examination of this reissue application are required to be made of record in response hereto. See 37 CFR 1.175(b)."

If the additional details of the litigation appear to be material to examination of the reissue application, the examiner may make such additional inquiries as necessary and appropriate under 37 CFR 1.175(b).

However, any application which indicates the existence of *a question* of "fraud" or "violation of the duty of disclosure" will be forwarded to the Office of the Assistant Commissioner for Patents pursuant to Section 721.01, M.P.E.P., as soon as the existence of *such question* is appreciated. For example, any reissue application which seeks reexamination in view of material prior art or other information known before issuance of the patent to a person having a duty under 37 CFR 1.56(a) must be forwarded under Section 721.01, M.P.E.P., to the Assistant Commissioner via the Group Director.

The Filing of Protests Under 37 CFR 1.291

The amendments to Section 1.291 reflected the increased value the Office places on appropriate written protests as an aid in avoiding the issuance of invalid patents. The present supplemental guidelines are in addition to those previously published and referred to above.

The nature of the protest, and the timeliness of its submission, are important factors in determining the consideration which is given the protest, and by whom it is considered. Insofar as the question of timeliness is concerned, the original publication of the rules at 955 O.G. 1054, the earlier Guidelines published at 957 O.G. 11, and Section 1309.02, M.P.E.P. adequately treat this question. Protests should obviously be submitted as early in the examination process as possible in order to be of maximum benefit to the Office in its examination of the application involved.

If the protest is being filed with regard to a reissue application, the protest should be filed within the two-month period following announcement of the filing of the reissue application in the Offical Gazette, if it is at all possible to do so. If, for some reason, the protest of the reissue application cannot be filed within the two-month period provided by 37 CFR 1.176, the protest can be submitted at a later time, but protestor must be aware that reissue applications are "special" and a later filed protest may be received after action by the examiner, if submitted later than the two months provided by 37 CFR 1.176. In the event a protest is intended against a reissue application, but cannot be submitted within the two months provided following the O.G. announcement, the protestor can request an additional specified period within which to file the protest, explaining why the additional time is necessary and the nature of the protest intended. A copy of any such request for additional time to protest a reissue application beyond the two months provided must be served on the reissue applicant. The request for additional time should be directed to the appropriate Group Director. The requests for additional time beyond the two months provided will be *critically reviewed as to demonstrated need* before being granted since the delay of examination of a reissue application of another party is being requested. Accordingly, the requests should be made *only where necessary, for the minimum period required* and with a justification establishing the necessity for the extension.

Any protest filed alleging "fraud" or "violation of the duty of disclosure" should be directed to the attention of the Assistant Commissioner for Patents, Building 3, Room 11A–13. Protests based on grounds other than "fraud" or "violation of the duty of disclosure" should be directed to the attention of the Director of the particular examining group in which the application is pending. If the protestor is unable to specifically identify the application to which the protest is directed, but, nevertheless, believes such an application to be pending, the protest should be directed to the attention of the Assistant Commissioner for Patents, Building 3, Room 11A-13, along with as much identifying data for the application as is available.

As indicated in the earlier publications, e.g., Section 1309.02, M.P.E.P., every effort should be made by a protestor to effect service of the protest upon the attorney or agent of applicant who is of record or upon the applicant. The protest filed in the Office should reflect that service has been made. Only in those instances where service is not possible should the protest be filed in duplicate in order that the Office can attempt service. Of course, the copy served upon applicant or applicant's attorney or agent should be accompanied by a copy of each prior art or other document relied upon in the same manner as required by Section 1.291(a) for the Office copy.

The Examiner's Consideration of Protests

Protests other than those alleging "fraud" or "violation of the duty of disclosure" will be received by, or forwarded to, the Group Director of the examining

group where the application is, or may be, pending and then referred to the appropriate examiner. If it is then, or later, discovered that a question of "fraud" or "violation of the duty of disclosure" exists, the application and the protest, will be forwarded to the Office of the Assistant Commissioner for Patents pursuant to Section 721.01, M.P.E.P.

If no allegations or questions of "fraud" or "violation of the duty of disclosure" are found to exist, the examiner will consider the protest and report the results of the consideration to the Group Director. If the protest has been timely submitted, i.e., before final rejection or allowance, the examiner will consider each of the prior art or other documents submitted. At least those prior art documents which the examiner relies on in rejecting claims will be made of record by means of form PTO—892. If the examiner does not cite all of the prior art or other documents of form PTO—892, the examiner will place a notation in the protest paper adjacent to the reference to the documents which will include the examiner's initials and the term "checked."

If the protest is filed after final rejection or allowance of the application, the consideration by the examiner will depend upon the relevance of the prior art documents submitted and the point in time at which they are submitted. Documents which clearly anticipate or render obvious one or more claims will not be knowingly ignored. Prosecution of the application will be reopened where necessary. However, protestor must be aware that the likelihood of consideration by the Examiner decreases as the patent issue date approaches. Accordingly, protests must be filed early in order to ensure their consideration.

If the protest is not accompanied by a copy of each prior art or other document relied upon as required by Section 1.291(a), the protestor cannot be assured that the examiner will consider the missing document. However, if the examiner does so, the examiner will either cite the document on form PTO—892 or place a notation in the protest paper adjacent to the reference to the document which will include the examiner's initials and the term "checked."

If, upon considering the protest or any submissions subsequent thereto, the examiner considers it desirable to obtain applicant's comments on the protest before further action, the examiner will offer applicant an opportunity to file comments within a set period, usually two months.

The following suggested format can be used to offer applicant an opportunity to file comments on the protest:

> "A protest against the issuance of a patent based on this application has been filed under 37 CFR 1.291 on . . . . and a copy (has been indicated as having been served on applicant) (is attached hereto). Any comments or response applicant desires to file before consideration of the protest must be filed by . . . ."

Section 1.291(a) indicates that protests are acknowledged and this acknowledgement will normally be made by the particular office to which the protest is ultimately directed for consideration. Protests alleging "fraud" or "violation of the duty of disclosure" will normally be acknowledged by the Office of the Assistant Commissioner for Patents. Other protests, i.e., those not alleging "fraud" or "violation of the duty of disclosure" will normally be acknowledged by the Group Director of the examining group where the application is, or may be, pending.

If the protest involves an application to which the protestor has access, e.g., a reissue application filed after March 1, 1977, or one in which protestor has been formally granted access, then protestor may monitor the proceedings and file such additional papers as protestor considers appropriate. If protestor has access to the application, protestor may request the Office to supply protestor with copies of Office actions or other documents mailed by the Office. Such a request should be directed to the particular area in which the application is pending, e.g., Office of Assistant Commissioner for Patents, or Director of the particular examining group. The request should explain why protestor needs the copies in question and should indicate an intent on protestor's part to assist the Office in its examination by supplying relevant comments. Normally, the Office will send copies of Office actions to protestors where the protestor indicates an intent to review actions and, if appropriate, comment to the Office on them. However, since protestor has no right to copies of the Office actions or other documents, the granting or denying of such requests will be within the sole discretion of, and for the convenience of the Office.

If the protestor has access to the application, the examiner may communicate with the protestor *in writing* to seek clarification and/or additional information if the examiner considers such clarification and/or additional information necessary to properly consider the protest. The following suggested format can be used by the examiner to seek clarification and/or additional information from a protestor having access to an application:

> "The protest, as filed_____, has been noted. However, clarification and/or additional information is desired. In particular [Examiner explains] any submission of the requested information should be made within ONE MONTH of the date of this letter and the submission must indicate service on applicant."

While the examiner should not normally need clarification and/or additional information from the protestor where the grounds involve only published prior art, e.g., patents, periodicals, etc., under some circumstances it may be necessary for the examiner to seek such clarification and/or additional information. For example, if the date of a reference is in question, or some question of public use is involved, and the information being sought is within the knowledge or control of the protestor, the examiner may find it necessary to communicate with the protestor to obtain the same.

Where the examiner feels that a protestor with access to an application can contribute significantly to the examination process, the protestor may be given a specific period, normally one month, within which to comment on responses submitted by patent applicants to Office actions. Such a comment period should only be provided where it would appear to be of benefit to the examination process and only with the approval of a Supervisory Primary Examiner. Where an applicant agrees to such participation by a protestor or where a Court has suspended litigation for consideration of a related application by the Patent and Trademark Office with an expression of its desire for such protestor participation, it should be more liberally granted.

Where a protestor requests permission to participate in any interview between an applicant and the examiner or requests on its own behalf to have an interview with the examiner, the request should be referred to the Office of the Assistant Commissioner for Patents for action. Normally, protestor participation in interviews with examiners will not be allowed unless special justifying circumstances exist. Where authorized, participation by the protestor in an interview will be according to conditions set down by the Patent and Trademark Office. Normally, any transcript of the interview, if authorized, will be at the expense of the party or parties requesting it and will be arranged by such party or parties. Where Office actions are being sent to a protestor or where a protestor is present for an interview, a copy of the Interview Summary Form and other records made of the interview will be provided to the protestor. Where protestor's participate in an interview, they may submit their own record of the interview which will be made of record in the file.

Interviews relating to a patent application with a protestor will not be permitted without the applicant present.

A protestor with access to an application appealed to the Board of Appeals who intends to file comments or a brief in opposition to appellant's brief should file an indi-

cation of such intention within one month after the notice of appeal is filed and serve a copy of the same upon appellant. The indication of intention should state that protestor agrees to file such comments or brief in triplicate, within one month after appellant's brief is filed, and also agrees to serve a copy of the comments or brief upon appellant. If such an indication is not filed and served, or the protestor's comments or brief is not timely filed in triplicate and served, no assurance is given that the Examiner will consider the protestor's comments or brief during the preparation of the Examiner's Answer.

A protestor who participates by the filing of comments or a brief in opposition to appellant's brief may also request, at the time of filing the comments or brief, to appear at any oral hearing. If a protestor does not file such comments or brief, the protestor cannot be present at any oral hearing. If a protestor does file such a request, the Board of Appeals, in its discretion, will decide whether or not the issues on appeal are such that protestor's participation at the hearing would be helpful. The Board of Appeals will notify protestor whether or not the request to appear at the hearing is granted and, if granted, how much time will be permitted. Of course, if appellant does not request an oral hearing, or provides timely notification to the Board and protestor that appellant will not appear, protestor will not be heard.

A copy of any examiner's letter or communication to a protestor will be mailed to applicant at the same time it is mailed to the protestor. While the examiner may communicate *in writing* with a protestor having access to the application, the examiner will *not* communicate orally and protestor must refrain from oral communications with the examiner except to ask purely procedural questions which have no relation to the substance of the protest or the merits of the application, unless specifically authorized *in writing* by the Assistant Commissioner for Patents.

Where the handling of a protest or the handling of a reissue application involved in related litigation requires an inordinately larger than normal amount of work on the part of an examiner and where otherwise warranted, Supervisory Primary Examiners may authorize the use of non-examining time for handling some or all of the examination.

The above guidelines are intended to make clearer the policies of the Patent and Trademark Office in respect to the handling of reissue applications, protests and "fraud" questions. The Office is especially interested in seeing that the consideration of reissue applications and protests is thorough and fair. It is interested in seeing that protestors have an opportunity to participate in the proceedings in the Office to the extent that such participation is helpful and appropriate in each case. It is also greatly interested in the completeness and accuracy of the file record, including indications whether or not prior art references and information mentioned in the record have been reviewed by the examiner.

The present guidelines which will be incorporated into the M.P.E.P. as soon as possible, when considered in conjunction with those previously issued and the M.P.E.P., should answer many of the questions being raised about the revised rules.

DONALD W. BANNER,
Nov. 13, 1978. *Commissioner of Patents & Trademarks.*

[977 O.G. 11]

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(93) Expedited Processing of Reissue Applications and Applications Having Issues of Fraud or Failure to Comply With The Duty of Disclosure

The Patent and Trademark Office has been experiencing increasing delays in the examination of reissue applications and other applications in which charges or questions of fraud or failure to comply with the duty of disclosure have been raised or are apparent on the record. Consideration of these charges involves considerable expenditures of resources and time. They also tend to delay prompt consideration on the merits in view of the prior art, etc. Considerable duplication of effort and expenditures of resources and time also may occur when the Office considers applications in circumstances where the same issues are concurrently being considered in Court.

Deferral of Fraud Issues

Effective immediately, the Office is instituting a policy of delaying consideration of issues of fraud or failure to comply with the duty of disclosure in any application until all other issues are settled.

Accordingly, under this procedure, applications having issues of fraud or failure to comply with the duty of disclosure will continue to be referred to the Office of the Assistant Commissioner for Patents, but will then be promptly returned, along with any appropriate examining instructions, to the Director of the Examining Group for immediate action by the Examiner. Decisions on Petitions to Strike applications pursuant to 37 CFR 1.56(d) will be deferred pending resolution of the patentability issues before the Examiner. Any such Petitions to Strike filed after the Office of the Assistant Commissioner has initially reviewed the application and returned it for immediate action will be acknowledged by the Examining Group Director and action on the Petition will be deferred pending completion of the patentability issues before the Examiner. Examiners will note in their Office actions the existence of issues of fraud or failure to comply with the duty of disclosure without commenting on the substance of such issues and will indicate that the issues will be considered after all other matters have been disposed of. Matters other than fraud or failure to comply with the duty of disclosure raised in a Petition to Strike, e.g., patentability in light of a reference, will be treated by the Examiner or other appropriate official. Petitions relating to procedural matters involving the examination of the applications, e.g., requests for protestor participation in interviews, will be decided by the appropriate Examining Group Director. Applications which have been referred to the Office of the Assistant Commissioner and which are required to be returned thereto before allowance or after abandonment of the application will have a notation placed on the face of the application file by the Office of the Assistant Commissioner requiring such return.

Suspension of Action Where There is Concurrent Litigation

In order to avoid duplication of effort, actions in applications in which there is an indication of concurrent litigation will be suspended automatically unless and until it is evident to the examiner, or the applicant indicates, that: (1) a stay of the litigation is in effect; (2) the litigation has been terminated; (3) there are no significant overlapping issues between the application and the litigation; or (4) it is applicant's desire that the application be examined at that time.

Expedited Examination of Reissues

All reissue applications, except those under suspension because of litigation, will be taken up for action ahead of other "special" applications; this means that all issues not deferred will be treated and responded to *immediately*. Furthermore, reissue applications involved in "stayed litigation" will be taken up for action in advance of other reissue applications.

Insofar as reissue applications for patents in litigation are concerned, the Office is presently considering modifications to the rules to provide for their examination within the two-month waiting period now provided by Section 1.176. Until appropriate modifications are made to the rules, the Office will entertain petitions under 37 CFR 1.183 to waive the delay period of 37 CFR 1.176. In addition, the Office is presently considering requiring the prompt disclosure of the existence of litigation related to a pending application.

Time monitoring systems are being put into effect which will closely monitor the time used by applicants,

protestors, and examiners in processing reissue applications of patents involved in litigation in which the court has stayed further action.

Applicants in reissue applications involved in litigation which has been stayed, dismissed, etc. for consideration by the Patent and Trademark Office will normally be given one month to respond to Office actions in those situations where the Office determines that the reissue applicant can readily prepare a response in such time. This one month period may be extended upon a showing of clear justification. Of course, up to three months may be set for response if the Examiner determines such a period is justified.

Applicants and protestors submitting papers for entry in reissue applications of patents involved in litigation are requested to mark the outside envelope and the top right hand portion of the paper with the words "*REISSUE LITIGATION*" and with the unit of the PTO in which the reissue application is located—e.g., Assistant Commissioner for Patents, Board of Appeals or Examining Group. The notations preferably should be written in a bright color with a felt point marker. Papers marked "*REISSUE LITIGATION*" will be given special attention. Also, the PTO will place a prominent notation on the application file to indicate the existence of litigation.

The purpose of these changes is to reduce the time between filing and final action insofar as possible while still giving all parties sufficient time to be heard. This notice is supplemental to, and in some respects modifies, the earlier published notices on this subject and particularly the notice published at 977 O.G. 11 on December 12, 1978.

June 5, 1979. DONALD W. BANNER,
Commissioner of Patents and Trademarks.

[983 O.G. 24]

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(94) **Prior Art Cited by Patent Offices in Other Countries**

Section 1.56 of Title 37 of the Code of Federal Regulations requires patent applicants and others associated with the prosecution of a patent application before the U.S. Patent and Trademark Office to call to the Office's attention information which is material to examination. Where related or corresponding patent applications have been filed in other countries, prior art may be cited by the Patent Offices of those other countries in connection with the examination of the applications filed there. Where prior art is cited by those other Patent Offices while the U.S. application is pending, citations which are material to examination in this country and known to any of the individuals covered by Section 1.56 must be called to the attention of this Office. Attorneys and agents are reminded of their obligations in this respect.

It is suggested, of course, that such prior art be cited to the U.S. Patent and Trademark Office in a prior art statement which complies with the provisions of Section 1.97–1.99 of 37 CFR.

Apr. 23, 1979. DONALD W. BANNER,
Commissioner of Patents and Trademarks.

[982 O.G. 36]

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(95) **Extensions of Time in Reexamination Proceedings**

This notice is intended to clarify extension of time practice as it relates to reexamination proceedings, and supplement the provisions of Section 2265 of the Manual of Patent Examining Procedure (MPEP).

The provisions of 37 CFR 1.136(a) and (b) are *NOT* applicable to reexamination proceedings under any circumstances . Public Law 97-247 amended 35 U.S.C. 41 to authorize the Commissioner to charge fees for extensions of time to take action in an "application". A reexamination proceeding does not involve an "application". 37 CFR 1.136 authorizes extensions of the time period only in an application in which an applicant must respond or take action. There is neither an "application", nor an "applicant" involved in a reexamination proceeding.

Requests for an extension of time to file a patent owner's statement under 37 CFR 1.530 or respond to any Office action in a reexamination proceeding must be filed under 37 CFR 1.550(c). These requests for an extension of time will be granted only for sufficient cause and must be filed on or before the day on which action by the patent owner is due. In no case will mere filing of a request for extension of time automatically effect any extension. Although the appeal provisions of 37 CFR 1.192(a), 1.197(b), and 1.304(a) set time periods applicable to reexamination as well as application proceedings, they also include a further proviso making these time periods subject to the extension provisions of 37 CFR 1.136. However, for the reasons set forth above, the extension provisions of 37 CFR 1.136 are limited to application proceedings and do not apply to reexamination proceedings. Therefore, any request for an extension of time in a reexamination proceeding to file a brief or reply brief, a request for reconsideration or rehearing, or a notice and reasons of appeal to the U.S. Court of Appeals for the Federal Circuit or for commencing a civil action, will be considered under the provisions of 37 CFR 1.550(c). The regulations setting a time period in which any of these actions must be taken set a time for reply within the meaning of 37 CFR 1.550(b), which time can be extended under 37 CFR 1.550(c).

The extension-of-time practice in reexamination proceedings in which a final Office action has been mailed continues to be reflected in MPEP Section 2265. That is, the after-final practice in reexamination proceedings did not change Oct. 1, 1982, and the automatic extension of time policy for response to a final rejection and associated practice are still in effect in reexamination proceedings.

Extensions of time for a requester of a reexamination, who is not the patent owner, are available only in rare circumstances. A request for an extension of the time period to file a petition from the denial of a request for reexamination can only be entertained by filing a petition under 37 CFR 1.183 with appropriate fee to waive the time provisions of 37 CFR 1.515(c). No extensions will be permitted to the two-month time for filing a reply by the requester under 37 CFR 1.535. This two-month period is set by statute (35 U.S.C. 304) and cannot be extended.

Feb. 17, 1983. GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[1028 OG 18]

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(96) **Clarification of Reexamination Practice and Change in Reexamination Certificate Wording**

I. *Clarification of Reexamination Practice.*

This notice is intended to clarify the options open to the patent owner *in a reexamination proceeding* when an allowable dependent claim depends from a rejected or cancelled *patent* claim.

A. *Leave dependent claim in dependent form.*

It is unnecessary in a reexamination proceeding to rewrite an allowable dependent patent claim in independent form when the dependent patent claim depends from a rejected or cancelled *patent* claim. The allowable dependent patent claim may remain in the printed format as it appears in the patent even though the patent claim upon which it is dependent is cancelled. Since the original patent claim numbers are not changed in a reexamination proceeding the content of the cancelled base patent claim would remain in the printed patent and would be available to be read as a part of the allowed dependent patent claim.

If a new claim (a claim other than a claim appearing in

the patent) has been later cancelled, a claim which depends thereon will be rejected as incomplete and must be rewritten. New claims which depend from a rejected or cancelled patent claim do not have to be rewritten.

If the patent owner elects to leave a dependent claim (original or new) in dependent form when the independent patent claim is rejected or cancelled, the reexamination certificate would indicate (1) that the patentability of an allowed unamended dependent patent claim "is confirmed" or (2) that a new dependent claim is "determined to be patentable". The independent patent claim (cancelled or rejected at the time of the issuance of the reexamination certificate) would be indicated as "cancelled". Note that if the dependent patent claim which is left in dependent form is amended (e.g., correction of a misspelled word) the certificate would indicate the claim "to be patentable as amended". The independent patent claim is considered to be incorporated by reference in the dependent claim even though the independent claim is cancelled from the patent by the certificate.

B. *Combine claims into independent claim.*

It is also permissible for the patent owner to amend either the dependent or independent patent claim to incorporate the subject matter of the other. If the patent owner elects to rewrite one of the dependent or independent claims to include the subject matter of the other and cancel the other claim, the rewritten claim would be indicated on the certificate as being "patentable as amended". The other claim which was cancelled would be indicated on the certificate as "cancelled".

C. *Present new claim and cancel patent claims.*

It is also permissible for the patent owner to present a new claim incorporating the subject matter of the independent and dependent patent claims and cancel the independent and dependent patent claims. In this case the certificate would indicate "new claim ___ is added and determined to be patentable". The cancelled independent and dependent patent claims would be indicated as "cancelled".

NOTE: This Practice Applies Only to Reexamination and Does Not Change Current Practice Relating to Original and Reissue Applications

II. *Change in Reexamination Certificate Wording.*

The Office is also modifying the language of reexamination certificates directed to claims that are cancelled (for any reason) by dropping the language "having been finally determined to be unpatentable" since the existing language may not be accurate in all cases and since the patent and reexamination files are open to the public and the record speaks for itself. The certificate will merely state such a claim "is cancelled". This change will be effective with the July 17, 1984, Official Gazette issue.

DONALD J. QUIGG,
Deputy Commissioner of Patent and Trademarks.

June 14, 1984.

[1044 O.G. 11]

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(97) Priority Claims Based on Inventors Certificates

Pursuant to the provisions of 35 U.S.C. 119, last paragraph (as amended July 28, 1972), 37 CFR 1.55(c) requires that when an applicant wishes to claim a right of priority on the basis of an application for an inventor's certificate, ". . . the applicant or his attorney or agent, when submitting a claim for such right . . . shall include an affidavit or declaration including a specific statement that, upon an investigation, he has satisfied himself that to the best of his knowledge the applicant, when filing his application for the inventor's certificate, had the option to file an application either for a patent or for an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority."

As such, it has been and remains the position of the Patent and Trademark Office that, in accordance with 35 U.S.C. 119, application for inventors' certificates shall give rise to a right of priority only when the country in which they are filed gives to applicants, at their discretion, the right to apply, on the same invention, either for a patent or for an inventor's certificate. The affidavit or declaration specified under 37 CFR 1.55(c) is only required for the purpose of ascertaining whether, in the country where the application for an inventor's certificate originated, this option generally existed for applicants with respect to the particular subject matter of the invention involved. The requirements of 35 U.S.C. 119 and 37 CFR 1.55(c) are not intended, however, to probe into the eligibility of the particular applicant to exercise the option in the particular priority application involved.

It is recognized that certain countries that grant inventors' certificates also provide by law that their own nationals who are employed in state enterprises may only receive inventors' certificates and not patents on inventions made in connection with their employment. This will not impair their right to be granted priority in the United States based on the filing of the inventor's certificate.

Accordingly, affidavits or declarations filed pursuant to 37 CFR 1.55(c) need only show that in the country in which the original inventor's certificate was filed, applicants generally have the right to apply at their own option either for a patent or an inventor's certificate as to the particular subject matter of the invention.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Aug. 17, 1977.

[962 O.G. 14]

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(98) Requirements for Priority Documents, Priority Based on Application for Industrial Design

In the Federal Republic of Germany, an application for protection of an industrial design may be accompanied by either a model or a drawing. It is understood that German residents file such applications with their local judicial authority ("Amtsgericht") rather than with the German Patent Office in Munich.

Questions have been raised in this connection as to:

(1) What sort of priority document under 35 U.S.C. 119 is required when the original filing has comprised a model rather than a drawing, and

(2) Whether it is necessary where the original filing was with a local judicial authority to obtain also a certificate from the national patent office.

As to the first question, the Patent and Trademark Office will receive under 35 U.S.C. 119, as evidence of an earlier filed design application which included the deposit of a model, drawings or acceptable photographs of the deposited model faithfully reproducing the design embodied therein together with other required information, certified by an official of the court or office with which the application was originally filed.

No additional certification by the national patent office will be required. Article 4D(3) of the Paris Convention refers to certification ". . . by the authority which received such application . . ." so the reference in 35 U.S.C. 119 to "patent office" will be construed to extend also to the authority in charge of the design register.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Aug. 15, 1977.

[962 O.G. 14]

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(99) Right of Priority (35 U.S.C. 119) Based on a Foreign Application Filed Under a Bilateral or Multilateral Treaty

Under Article 4A of the Paris Convention for the Protection of Industrial Property (21 UST 1583; 24 UST 2140; TIAS 6923, 7727; 852 O.G. 511) a right of priority may be based either on an application filed under the national law of a foreign country adhering to the Convention or on a foreign application filed under a bilateral or

multilateral treaty concluded between two or more such countries. Examples of such treaties are the Hague Agreement Concerning the International Deposit of Industrial Designs, the Benelux Designs Convention, and the Libreville Agreement of September 13, 1962, relating to the creation of an African and Malagasy Industrial Property Office. The Convention on the Grant of European Patents and the Patent Cooperation Treaty will be further examples of such treaties once they enter into force.

The Priority Claim

In claiming priority of a foreign application previously filed under such a treaty, certain information must be supplied to the Patent and Trademark Office. In addition to the application number and the date of the filing of the application, the following information is required: (1) the name of the treaty under which the application was filed, (2) the name of at least one country other than the United States in which the application has the effect of, or is equivalent to, a regular national application, and (3) the name and location of the national or intergovernmental authority which received such application.

Certification of the Priority Papers

Section 119 of Title 35 of the United States Code requires the applicant to furnish a certified copy of priority papers. Certification by the authority empowered under a bilateral or multilateral treaty to receive applications which give rise to a right of priority under Article 4A(2) of the Paris Convention will be deemed to satisfy the certification requirement.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Aug. 9, 1977.

[962 O.G. 2]

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(100) **Abstract of the Disclosure**

This notice is intended to announce a change in the examining practice concerning review of the abstract for compliance with the guidelines set forth in MPEP 608.01(b).

At present, the examiner is instructed to review the abstract for compliance with the guidelines when passing the case to issue, making any necessary revisions by examiner's amendment. This policy has led to the necessity for many changes by the examiner which could have and should have been made at an earlier point in the prosecution. For example, abstracts in excess of the 250 word limit require cancellation and/or rewriting of portions thereof. This 250 word limit is strictly enforced since it represents a requirement of the printing process and the printed patent format designed to present a maximum amount of information concerning a patent on a single page.

Effective immediately, examiners are to require correction of the abstract at the earliest point in the prosecution that non-compliance with the guidelines is detected. Applicants are expected to observe the guidelines in drafting the abstract and correct any defect that is identified in an Office action. Applicants are encouraged to make the necessary corrections not only to relieve the examiner of this burden, but also to help avoid any potential conflict with respect to altering the scope of the enabling disclosure. In this regard, it should be noted that the abstract of the disclosure has been interpreted to be a part of the specification for the purposes of compliance with paragraph 1 of 35 USC 112. *In re Armbruster,* 512 F2d 676, 185 USPQ 152 (CCPA 1975). However, although it is preferable for applicant to make any necessary changes, the examiner will retain the authority and responsibility for reviewing, editing and revising the abstract of the disclosure at the time of allowance of the application to assure compliance with the guidelines.

Section 608.01(b) of the Manual of Patent Examining Procedures will be amended appropriately.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Dec. 30, 1977.

[967 O.G. 2]

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(101) Supplemental Guidelines for The Implementation of 37 CFR 1.109—Reasons for Allowance

A recent review of recorded statements of reasons for allowance indicates the need for a better understanding regarding implementation of new Rule 109 (37 CFR 1.109).

These guidelines are supplemental to those published in the **Official Gazette** at 957 O.G. 11 on April 12, 1977 and amplified in Section 1302.14 MPEP, Rev. 52, April 1977.

In determining whether reasons for allowance should be recorded the primary consideration lies in the first sentence of the Rule.

> "If the examiner believes that the record of the prosecution *as a whole* does not make clear his reasons for allowing a claim or claims, the examiner may set forth such reasoning." (Emphasis added.)

In most cases the examiner's actions and the applicant's response make evident the reasons for allowance, satisfying the "record as a whole" proviso of the rule. This is particularly true when applicant fully complies with 37 CFR 1.111(b) and (c), 37 CFR 1.119 and 37 CFR 1.133(b). Thus where the examiner's actions clearly point out the reasons for rejection and the applicant's response explicitly represents reasons why claims are patentable over the reference, the reasons for allowance are in all probability evident from the record and no statement should be necessary. Conversely, where the record is not explicit as to reasons, but allowance is in order, then a logical extension of 37 CFR 1.111, 1.119 and 1.133 would dictate that the examiner should make reasons of record and such reasons should be specific.

Where specific reasons are recorded by the examiner, care must be taken to insure that such reasons are accurate, precise and do not place unwarranted interpretations, whether broad or narrow, upon the claims. The examiner should keep in mind the possible misinterpretations of his statement that may be made and its possible estoppel effects. Each statement should include at least: (1) the major difference in the claims not found in the prior art of record, and (2) the reasons why that difference is considered to define patentably over the prior art if either of these reasons for allowance is not clear in the record. The statement is not intended to necessarily state all the reasons for allowance or all the details why claims are allowed and should not be written to specifically or impliedly state that all the reasons for allowance are set forth.

Under the rule, the examiner must make a judgement of the individual record to determine whether or not reasons for allowance should be set out in that record. These guidelines, then, are intended to aid the examiner in making that judgement. They comprise illustrative examples as to applicability and appropriate content. They are not intended to be exhaustive.

Examples of When It Is Likely That a Statement Should Be Added to the Record

1. Claims are allowed on the basis of one (or some) of a number of arguments and/or affidavits presented and a statement is necessary to identify which of these were persuasive, for example:
   a. When the arguments are presented in an appeal brief.
   b. When the arguments are presented in an ordinary response with or without amendment of claims.
   c. When both an affidavit under 37 CFR 1.131 and arguments under 102 and 103 are presented.
2. First action issue:
   a. Of non-continuing application wherein claims are

very close to cited prior art and differences have not been discussed elsewhere.

b. Of continuing applications wherein reasons for allowance are not apparent from the record in the parent case or clear from preliminary filled matters.

3. Withdrawal of a rejection for reasons not suggested by applicant, for example:

a. As a result of an appeal conference.

b. When applicant's arguments have been misdirected or are not persuasive alone and the Examiner comes to realize that more cogent argument is available.

c. When claims are amended to avoid a rejection under 35 USC 102 but arguments (if any) fail to address the question of obviousness.

4. Allowance after remand from the Board of Appeals.

5. Allowance coincident with the citation of newly found references that are very close to the claims, but claims are considered patentable thereover:

a. When reference is found and cited (but not argued) by applicant.

b. When reference is found and cited by Examiner.

6. Where the reasons for allowance *are* of record but in the Examiner's judgement, are unclear (e.g. spread throughout the file history) so that an unreasonable effort would be required to collect them.

7. Allowance based on claim interpretation which might not be readily apparent, for example:

a. Article claims in which method limitations impart patentability.

b. Method claims in which article limitations impart patentability.

c. Claim is so drafted that "non-analogous" art is not applicable.

d. Preamble or functional language "breathes life" into claim.

Examples of Statements of Suitable Content

1. The primary reason for allowance of the claims is the inclusion of .03 to .05 percent nickel in all the claims. Applicant's second affidavit, in example 5 shows unexpected results from this restricted range.
2. During two telephonic interviews with applicant's attorney, Mr.—on 5/6 and 5/10/77, the Examiner stated that Applicant's remarks about the placement of the primary teaching's grid member were persuasive, but he pointed out that applicant did not claim the member as being within the reactor. Thus, an amendment doing such was agreed to.
3. The instant application is deemed to be directed to an unobvious improvement over the invention patented in Pat. No. 3,953.224. The improvement comprises baffle means *12* whose effective length in the extraction tower may be varied so as to optimize and to control the extraction process.
4. Upon reconsideration, this application has been awarded the effective filing date of S.N. _____. Thus the rejection under 35 USC 102(d) and 103 over Belgian Patent No. 757,246 is withdrawn.
5. The specific limitation as to the pressure used during compression was agreed to during the telephone interview with applicant's attorney. During said interview, it was noted that applicants contended in their amendment that a process of the combined applied teachings could not result in a successful article within the amended pressure range. The Examiner agreed to rely on this statement (see page 3, bottom, of applicant's amendment), and the case was allowed.
6. In the Examiner's opinion, it would not be obvious to a person of ordinary skill in the art first to eliminate one of top members 4, second to eliminate plate 3, third to attach remaining member 4 directly to tube 2 and finally to substitute this modified handle for the handle 20 of Nania (see Fig. 1) especially in view of applicant's use of term "consisting."

Examples of Statements That Are Not Suitable as to Content

1. The 3 roll press couple has an upper roll 36 which is swingably adjustable to vary the pressure selectively against either of the two lower rolls. (Note: The significance of this statement may not be clear if no further explanation is given.)
2. The main reasons for allowance of these claims are applicant's remarks in the appeal brief and an agreement reached in the appeals conference.
3. The instant composition is a precursor in the manufacture of melamine resins. A thorough search of the prior art did not bring forth any compositions which corresponds to the instant compositions. The Examiner in the art also did not know of any art which could be used against the instant composition.
4. Claims 1-6 have been allowed because they are believed to be both novel and unobvious.

The examiner should *not* include in his statement any matter which does not relate directly to the reasons for allowance. For example:

5. Claims 1 and 2 are allowed because they are patentable over the prior art. If applicants are aware of better art than that which has been cited, they are required to call such to the attention of the Examiner.
6. The reference Jones discloses and claims an invention similar to applicant's. However, a comparison of the claims, as set forth below, demonstrates the conclusion that the inventions are non-interfering.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Jan. 24, 1978.

[968 O.G. 6]

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(102) **Practice/Re: New Grounds of Rejection After Appeal Brief Has Been Filed**

A new practice has been implemented in the Patent Examining Corps to promote uniformity and adherence to guidelines in situations where a new ground of rejection is made in an Office action after an appeal brief has been filed. Under this practice Supervisory Patent Examiner approval is required for any new ground of rejection made after the filing of an Appeal Brief. This requirement extends to new grounds of rejection made either in an examiner's answer or in an Office action reopening prosecution. Evidence of that approval should appear on applicant's copy of the Office action or answer as well as the record copy. Consultation with or approval by the Group Director is no longer required in these situations.

This new practice does not alter the existing guidelines for reopening prosecution (MPEP) 706.7(e) or for making a new ground of rejection in an examiner's answer (MPEP 1208.01). Appropriate modification will be made to applicable Sections of the Manual of Patent Examining Procedure in a future revision.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

[970 O.G. 94 (5-23-78)]

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(103) **Commercial Success and Other Considerations Bearing on Obviousness**

In order to clarify Office practice relative to considerations of commercial success and other items bearing on obviousness, the following changes are made in the Manual of Patent Examing Procedure.

In section 716, subsection 4, change the sub-title and first paragraph to read as follows:

4. *Commercial Success and Other Considerations Bearing on Obviousness*

Affidavits or declarations submitting evidence of commercial success, long-felt but unsolved needs, failure

of others, etc., must be considered by the Examiner in determining the issue of obviousness of claims for patent-ability under 35 U.S.C. 103. Such evidence might be utilized to give light to circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or unobviousness, such evidence may have relevancy, *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966) ; *In re Palmer*, 172 USPQ 126, 451 F.2d 1100 (CCPA 1971) ; *In re Fielder and Underwood*, 176 USPQ 300, 471 F.2d 640 (CCPA 1973). The *Graham* v. *John Deere* pronouncements on the relevance of commercial success, etc. to a determination of obviousness were not negated in *Sakraida* v. *Ag Pro*,425 U.S. 273, 189 USPQ 449 (1976) or *Andersons Black Rock, Inc.* v. *Pavement Salvage Co., Inc.*, 396 U.S. 57, 163 USPQ 673 (1969), where reliance was placed upon *A & P Tea Co.* v. *Supermarket Corp.*, 340 U.S. 147 87 USPQ 303 (1950). See *Dann* v. *Johnston*, 425 U.S. 219, 189 USPQ 257 (1976), at 261, footnote 4.

The weight attached to evidence of commercial success, etc. by the Examiner will depend upon its materiality to the issue of obviousness and the amount and nature of the evidence. Note the great reliance apparently placed on this type of evidence by the Supreme Court in upholding the patent in *United States* v. *Adams*, 383 U.S. 39, 148 USPQ 479 (1966).

Evidence of commercial success, etc. must be commensurate in scope with the scope of the claims [*In re Tiffin*, 448 F.2d. 791. 171 USPQ 294 (1971)]. Further in considering evidence of commercial success, care should be taken to evaluate to the extent possible from the evidence submitted, whether the commercial success alleged is directly derived from the invention claimed, in a marketplace where the consumer is free to choose on the basis of objective principles, and that such success is *not* the result of heavy promotion or advertising, shift in advertising consumption by purchasers normally tied to applicant or assignee, or other business events extraneous to the merits of the claimed invention, etc. [*In re Mageli, et al.* 176 USPQ 305, (CCPA 1973)]; [*In re Noznick, et al*, 178 USPQ 43, (CCPA 1973)].

Similarly in considering evidence of longfelt but unsolved needs and failure of others, care should be taken to determine whether such failures were due to lack of interest or appreciation of an invention's potential or marketability rather than want of technical know-how [*Scully Signal Co.* v. *Electronics Corp. of America*, 196 USPQ 657 (1st Cir. 1977)].

In section 716, subsection 4, add the following as the last paragraph:

If, after evaluating the evidence, the examiner is still not convinced that the claimed invention is patentable, his action should include a simple statement to that effect, identifying the reason(s) (e.g., evidence of commercial success not convincing, the commercial success not related to the technology, etc.).

RENE D. TEGTMEYER,
July 10, 1978. *Assistant Commissioner for Patents.*

[973 O.G. 34]

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(104) **Handling of Dependent Claims by the Examiner**

Effective immediately, the following practice will be followed by patent examiners when making reference to a dependent claim—either singular or multiple. The new practice is intended to simplify and streamline our current practice (MPEP 608.01(n), Revision 55, January 1978) which experience indicates was unnecessarily burdensome in many cases.

1. When identifying a singular dependent claim which does not include a reference to a multiple dependent claim, either directly or indirectly, reference should be made only to the number of the dependent claim.
2. When identifying the embodiments included within a multiple dependent claim, or a singular dependent claim which includes a reference to a multiple dependent claim, either directly or indirectly, each embodiment should be identified by using the number of the claims involved, starting with the highest, *to the extent necessary* to specifically identify each embodiment.
3. When all embodiments included within a multiple dependent claim or a singular dependent claim which includes a reference to a multiple dependent claim, either directly or indirectly, are subject to a common rejection, objection or requirement, reference may be made only to the number of the dependent claim.

The following table illustrates the intended differences between current and the revised practice where each embodiment of each claim must be treated on an individual basis:

Claim Number	Claim Dependency	Identification: Current Practice	Identification: Revised Practice
1	Independent	1	1
2	Depends from 1	2/1	2
3	Depends from 2	3/2/1	3
4	Depends from 2 or 3	4/2/1	4/2
		4/3/2/1	4/3
5	Depends from 3	5/3/2/1	5
6	Depends from 2, 3 or 5	6/2/1	6/2
		6/3/2/1	6/3
		6/5/3/2/1	6/5
7	Depends from 6	7/6/2/1	7/6/2
		7/6/3/2/1	7/6/3
		7/6/5/3/2/1	7/6/5

When all embodiments in a multiple dependent claim situation (claims 4, 6 and 7 above) are subject to a common rejection, objection or requirement, reference may be made only to the number of the individual dependent claim. For example, if 4/2 and 4/3 were subject to a common ground of rejection, reference should be made only to claim 4 in the statement of that rejection.

The provisions of 35 USC 132 require that each Office action make it explicitly clear what rejection, objection and/or requirement is applied to each claim embodiment.

WILLIAM FELDMAN,
Oct. 17, 1978. *Deputy Assistant Commissioner.*

[976 O.G. 128]

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(105) **Microorganisms—Patentable Subject Matter**

The decision of the Supreme Court in *Diamond* v. *Chakrabarty* (206 U.S.P.Q. 193) held that microorganisms produced by genetic engineering are not excluded from patent protection by 35 U.S.C. §101. It is clear from the Supreme Court decision that the question of whether or not an invention embraces living matter is irrelevant to the issue of patentability.

Accordingly, the Patent and Trademark Office is now examining patent applications including claims to microorganisms which had been under suspension. Assuming that the products involved were the result of human intervention and were not products of nature, such claims will not be rejected under 35 U.S.C. §101 as directed to unpatentable subject matter.

SIDNEY A. DIAMOND,
July 29, 1980. *Commissioner of Patents and Trademarks.*

[997 O.G. 24]

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(106) **Department of Commerce**
Patent and Trademark Office

Designation of International Depository Authorities under the Budapest Treaty

The Budapest Treaty and the International Recognition of the Deposit of Microorganisms for the Purposes

of Patent Procedure came into force on Aug. 19, 1980 with respect to the United States, Bulgaria, France, Hungary, and Japan. A copy of the Treaty was published in the *Official Gazette* on Aug. 23, 1977 (961 O.G. 21-26).

This Treaty authorizes each State for which the Treaty is in effect to designate a depository on its territory to serve as an international depository authority. More than one depository may be designated. Each such depository will be authorized to receive and store deposits, and dispense samples thereof, in compliance with the Treaty and the patent laws of each State adhering thereto. The Treaty is open for adherence by any member State of the Paris Union for the Protection of Industrial Property.

The Commissioner of Patents and Trademarks hereby solicits requests from private and public depositories located in the United States to serve as international depository authorities. Requests should be addressed to: Sidney A. Diamond, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Each request must explain and, to the extent practicable, provide evidence of the depository's capacity to meet the obligations of the Treaty. Such request must also include an offer by the depository to assume the cost of transferring deposits made under the Treaty to another international depository authority in the event of default of any of its Treaty obligations. The availability of funds for such transfer, if needed, must be available through a bond, special reserve fund, escrow or other means judged suitable by the Commissioner.

Requests will be promptly evaluated by the Commissioner of Patents and Trademarks, and each requesting depository promptly notified of the decision reached. Questions or inquiries concerning this notice may be addressed to the Office of Legislation and International Affairs, at the following address: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231. The telephone number of the Office of Legislation and International Affairs is (703) 557-3065.

The World Intellectual Property Organization, in Geneva, Switzerland, the Secretariat for the Paris Union, has provided a memorandum explaining the role and obligations of international depository authorities. This memorandum is reproduced below for the guidance of depositories in requesting recognition as an international depository authority.

MEMORANDUM

For the purposes of prospective international depositary authorities under the Budapest Treaty

Introduction

1. This memorandum contains informations for the benefit of any depositary institutions (culture collections) that may wish to become "international depositary authorities" under the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure (done at Budapest on Apr. 28, 1977). Its brevity is such that it cannot be exhaustive. Any interested person requiring full information should refer to the relevant provisions of the Budapest Treaty and the Regulations under it (any reference hereinafter to an "Article" or to a "Rule" is a reference to an Article of the Budapest Treaty or to a Rule of the Regulations under it).

Objectives of the Budapest Treaty

2. Disclosure of the invention is a generally recognized requirement for the grant of patents (for the purposes of this memorandum, the word "patent" also covers other titles of protection, such as inventors' certificates). Normally, an invention is disclosed by means of a written description. Where an invention involves the use of a microorganism that is not available to the public, such a description is not sufficient for disclosure, since the invention could not be used by a person skilled in the art. That is why in the patent procedure of an increasing number of countries it is necessary not only to file a written description but also to deposit, with a depositary institution, a sample of the microorganism. When protection for the invention is sought in several countries, the complex and costly procedures of the deposit of the microorganism might have to be repeated in each of those countries. The objective of the Budapest Treaty is precisely to obviate such multiple deposits: under the Treaty a single deposit with one "international depositary authority" is sufficient for the purposes of patent procedure before the industrial property offices of all Contracting States, and of inter-governmental organizations granting regional patents which have declared that they recognize the effects of the Treaty (Articles 3(1)(a) and 9(1)(a)).

General Remarks on International Depositary Authorities

3. "International depositary authorities" are depositary institutions that have acquired the status of international depositary authorities. To obtain this status, a depositary institution has to be located on the territory of a Contracting State or of a member State of one of the organizations referred to in the preceding paragraph, and has to benefit from "assurances" furnished by that Contracting State or organization to the effect that the institution complies and will continue to comply with the requirements referred to in paragraph 5 below (Article 6(1)). The action for acquiring this status is taken by the State or organization concerned (Article 7 and Rule 3). There is nothing to prevent it from making more than one depositary institution acquire such status: it is therefore possible for there to be several international depositary authorities located on the territory of one and the same State.

4. An international depositary authority can lose its status either entirely (in which case "termination of status" is spoken of) or partly, in other words in respect of certain types of microorganisms only (in which case "limitation of status" is spoken of). Loss of the status occurs if the State or organization whose action brought about the acquisition of the status denounces the Treaty or withdraws the declaration of recognition of the effects of the Treaty (in which case the loss of status can only be total), or if the State or organization withdraws its assurances regarding the international depositary authority, or again by virtue of a decision of the Assembly of Contracting States taken at the request of another Contracting State or another organization (Articles 8, 9(4) and 17(4); Rule 4).

Requirements Which Have to be Met by International Depositary Authorities

5. The requirements referred to in paragraph 3 above which a depositary institution has to meet in order to become a depositary authority are the following (Article 6(2) and Rule 2):

(a) The institution has to have a continuous existence. It has to be impartial and objective—which means among other things that it has to be free of any dependence on interests that are liable to prejudice the disinterested performance of its functions—and it has to be available, for the deposit of microorganisms, to any depositor under the same conditions. These requirements, which in fact seem self-evident, are designed to give the public in general and depositors in particular fundamental guarantees of reliability as to the smooth operation of the system. On the other hand, the legal status of the institution is irrelevant: it may be either public or private.

(b) The institution has to have the necessary staff and facilities to perform its scientific and administrative tasks, which consist among other things in:

(i) accepting for deposit any or certain kinds of microorganisms;

(ii) examining the viability of the microorganisms deposited with it and issuing a receipt to the depositor and any required viability statement (see paragraphs 7 and 8 below);

(iii) storing the deposited microorganism for at least 30 years (Rule 9(1)) in such a way as to keep them viable and uncontaminated;

(iv) providing for sufficient safety measures to minimize the risk of losing the deposited microorganisms;

(v) complying with respect to the microorganisms deposited under the Treaty with the requirement of secrecy which means giving no information to anyone on the question whether a microorganism has been thus deposited and giving no information to anyone (except to a person who is entitled to a sample—see paragraph 10 below) on any microorganism thus deposited (Rule 9(2));

(vi) furnishing, rapidly and in an appropriate manner, samples of the deposited microorganisms to all those who are entitled to such samples (see paragraph 10 below).

Handling of Microorganism Deposits by the International Depositary Authority

6. *Reception of the microorganism.* The international depositary authority may require that the microorganism be deposited in an appropriate form and quantity, and that it be accompanied by a form established by that authority. In such a case, the said authority has to communicate its requirements (and any amendments to them) to the International Bureau in order that the latter may communicate them to all the depositors concerned (Rules 6.3 and 13.2(b)(v)). When it receives the microorganism, the international depository authority notes the date of receipt of the deposit and gives it an accession number (Rule 7.3(iii) and (v)). It issues a receipt to the depositor attesting the receipt and acceptance of the deposit (Rule 7). The model of the international form for the receipt, the use of which will be mandatory, will be established by the Director General of WIPO and communicated to all international depositary authorities.

7. *Viability test.* The international depositary authority promptly tests the viability of the microorganism; it also undertakes viability tests at reasonable intervals, depending on the kind of microorganism and its possible storage conditions, or at any time, if necessary for technical reasons or at the request of the depositor (Rule 10.1)

8. *Viability statement.* The international depositary authority issues a statement concerning the viability of the microorganism to the depositor or to any person receiving a sample of the microorganism (see paragraph 10 below) (Rule 10.2). The model of the international form for the viability statement, the use of which is mandatory, will be established by the Director General of WIPO and communicated to all international depositary authorities.

9. *Storage of the microorganism.* The international depositary authority stores the microorganism for a period of at least 30 years after the date of its deposit, or until five years have elapsed without its having received a request for a sample, the period expiring later being applicable (Rule 9.1). It complies with the requirement of secrecy at all times (see paragraph 5(v) above). Where it cannot furnish samples of the deposited microorganism for any reason, it notifies the depositor of the fact, indicating the reason and informing him that he is entitled to make a new deposit (Article 4).

10. *Furnishing of samples.* The Regulations contain detailed provisions specifying who is entitled to receive samples of the microorganism, and when (Rule 11). The depositor himself is entitled to receive a sample at any time. He may authorize third parties to have samples furnished to them, whereupon the third parties receive a sample on presentation of their authorizations. Any industrial property office to which the Treaty applies may receive a sample on request if it needs the microorganism for the purposes of a patent procedure. Any other person may obtain a sample on request if an industrial property office to which the Treaty applies certifies that, under the applicable law, that person has a right to a sample of the microorganism concerned; the Regulations specify in detail the certification procedure. The use of a form (whose contents will be established by the Assembly and communicated by the International Bureau to all international depositary authorities) is mandatory for the request and certification. There is an alternative procedure wherey the industrial property office from time to time communicates to international depositary authorities lists of the accession numbers given to the deposit of the microorganisms referred to in the patents granted and published by it; the effect of this communication is to authorize those authorities to furnish samples of the microorganisms to anyone. It should be stressed that it follows from the foregoing that the international depositary never has to decide itself whether it has the right to furnish a sample since it only does so if it has the authorization of the depositor or of an industrial property office. The international depositary authority furnishes the sample in a container marked with the accession number given to the deposit and accompanied by a copy of the receipt for the deposit. It notifies the depositor of the furnishing of the sample.

11. *Communication of the scientific description and/or proposed taxonomic designation.* If the depositor has indicated a scientific description and/or proposed a taxonomic designation of the deposited microorganism, the international depositary authority must communicate it, on request, to any person entitled to receive a sample of the said microorganism (Rule 7.6).

12. *Fees.* For the procedure under the Treaty and the Regulations, the international depositary authority has the right to charge a fee in certain cases (specified in Rule 12.1). The two main fees are the fee for the storage of the microorganism (which is a single fee for the entire period of storage) and the fee for the furnishing of a sample (the furnishing of samples to industrial property offices is free of charge, however). The international depositary authority fixes the amounts of fees at its discretion, but they must not vary on account of the nationality or residence of the persons who have to pay them.

July 14, 1978.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

[999 O.G. 2]

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(107) **Entry Into Force of the Budapest Treaty**

The Patent and Trademark Office announces the entry into force on Aug. 19, 1980 of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure with respect to the United States, Hungary, Bulgaria, France and Japan. A copy of the Treaty was published in the Official Gazette on Aug. 23, 1977 (961 O.G. 21-36).

Following entry into force of the Treaty, each state adhering or acceding thereto will be authorized to nominate depositories on its territory to serve as international depository authorities. Upon compliance with certain procedural steps set forth in the Treaty, each such depository will be designated an international depository authority.

No depository in the United States or elsewhere has yet been nominated or designated to serve as an international depository authority. It is expected, however, that some depositories will shortly be designated both in the United States and other States adhering to the Treaty. Public notice will be provided of the designation of each international depository authority and its requirements for patent deposits.

An application for a patent in any adhering States involving the action of a microorganism, for which a deposit is required, may make the required deposit in any international depository authority. The fact and date of making the deposit will be recognized for all patent purposes in each State adhering to the Treaty. No further deposit will be required for national patent processing or enforcement, provided a deposit is properly made under the provisions of the Treaty.

An application for a United States patent will not be required to proceed under the provisions of the Budapest Treaty, however. Such an applicant may rely instead on a deposit made in any depository meeting the requirements set forth in *In re Argoudelis, et al.*, 168 USPQ 99 (CCPA, 1970) and reprinted in section 608.01(p), Manual of Patent Examining Procedure.

Questions or information regarding the Budapest Treaty may be directed to the Office of Legislation and International Affairs, at the following address: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231. The telephone number of the Office of Legislation and International Affairs is (703) 557-3065.

SIDNEY A. DIAMOND,
July 14, 1980. *Commissioner of Patents and Trademarks.*

JORDAN J. BARUCH,
July 16, 1980. *Assistant Secretary for Productivity, Technology and Innovation.*

[997 O.G. 10]

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(108) **Department of Commerce**
Patent and Trademark Office
Recognition of United States Depository as an International Depository Authority Under the Budapest Treaty

As provided in Article 7 of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, the United States announces recognition of the American Type Culture Collection, Rockville, Md., as an international depository authority. The communication of the Director General of the World Intellectual Property Organization according this recognition as of Jan. 31, 1981 follows:

SIDNEY A. DIAMOND,
Dec. 30, 1980. *Commissioner of Patents and Trademarks.*

BUDAPEST Notification No. 11

BUDAPEST TREATY ON THE INTERNATIONAL RECOGNITION OF THE DEPOSIT OF MICROORGANISMS FOR THE PURPOSES OF PATENT PROCEDURE

Communication of the United States of America Relating to the Acquisition of the Status of International Depositary Authority by the American Type Culture Collection

The Director General of the World Intellectual Property Organization (WIPO) presents his compliments to the Minister for Foreign Affairs and has the honor to notify him of the receipt, on Nov. 17, 1980, of a written communication from the Government of the United States of America, relating to the American Type Culture Collection, indicating that the said depositary institution is located on the territory of the United States of America and including a declaration of assurances to the effect that the said institution complies and will continue to comply with the requirements concerning the acquisition of the status of international depositary authority as specified in Article 6(2) of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, done at Budapest on Apr. 28, 1977.

The American Type Culture Collection will acquire the status of international depositary authority under the said Treaty as from Jan. 31, 1981, the date of publication of the said communication in the Jan. 1981 issue of *Industrial Property/La Propriete industrielle* (see Article 7(2) of the said Treaty).

Dec. 3, 1980.

[1002 O.G. 116]

(109) **Department of Commerce**
Patent and Trademark Office
Recognition of United States Depository as an International Depository Authority Under the Budapest Treaty

As provided in Article 7 of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, the United States announces recognition of the Agricultural Research Culture Collection, Peoria, Ill., as an international depository authority. The communication of the Director General of the World Intellectual Property Organization according this recognition as of Jan. 31, 1981 follows:

SIDNEY A. DIAMOND,
Dec. 30, 1980. *Commissioner of Patents and Trademarks.*

BUDAPEST Notification No. 12

BUDAPEST TREATY ON THE INTERNATIONAL RECOGNITION OF THE DEPOSIT OF MICROORGANISMS FOR THE PURPOSES OF PATENT PROCEDURE

Communication of the United States of America Relating to the Acquisition of the Status of International Depositary Authority by the Agricultural Research Culture Collection

The Director General of the World Intellectual Property Organization (WIPO) presents his compliments to the Minister for Foreign Affairs and has the honor to notify him of the receipt, on Dec. 2, 1980, of a written communication from the Government of the United States of America, relating to the Agricultural Research Culture Collection, indicating that the said depositary institution is located on the territory of the United States of America and including a declaration of assurances to the effect that the said institution complies and will continue to comply with the requirements concerning the acquisition of the status of international depositary authority as specified in Article 6(2) of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, done at Budapest on Apr. 28, 1977.

The Agricultural Research Culture Collection will acquire the status of international depositary authority under the said Treaty as from Jan. 31, 1981, the date of publication of the said communication in the Jan. 1981 issue of *Industrial Property/La Propriete industrielle* (see Article 7(2) of the said Treaty).

Dec. 8, 1980.

[1002 O.G. 116]

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(110) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 1
[Docket No. 21001-201]
File Wrapper Continuing Application Procedure

Agency: Patent and Trademark Office, Commerce.
Action: Final rule.

Summary: The Patent and Trademark Office is amending the rules of practice in patent cases to provide a new procedure for filing continuation, continuation-in-part, and divisional patent applications. This procedure is being provided to simplify filing and processing of continuation, continuation-in-part and divisional patent applications which have heretofore required a new set of application papers. By using the application which is to be abandoned, the procedure will eliminate many of the problems currently involved in preparing and processsing such continuing patent application papers.

Effective Date: Feb. 27, 1983.

For Further Information Contact: Mr. Louis O. Maassel by telephone at (703) 557-3070, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: The Patent and Trademark Office is amending the rules of practice for patent cases to permit an applicant to file a continuation or division of a pending patent application by simply filing a request therefore and paying the necessary application filing fee. To file a continuation-in-part application, an amendment adding the additional subject matter and an oath or declaration relating thereto is also required.

The "file wrapper continuing" (FWC) procedure is incorporated in the rules by adding a new §1.62. Under this simplified procedure, any continuing application such as a continuation, continuation-in-part, or divisional application may be filed by using the papers in the copending prior application, which application will become automatically expressly abandoned. Under the FWC procedure, a new serial number is assigned and the specification, drawings and other papers in the parent application file wrapper are used as the papers in the continuing application. Changes in inventorship may be made. The "file wrapper continuing" (FWC) procedure is available for utility, design, plant, and reissue applications to the full extent that continuing applications can now be filed in such applications. Use of the FWC procedure will automatically result in express abandonment of the prior application as of the date that the continuation, continuation-in-part, or divisional application is filed.

The FWC procedure could be used for any continuation, continuation-in-part or divisional application provided the applicant wishes the copending prior application to become abandoned. If a divisional application is desired without abandonment of the parent application, the procedure under §1.60 should be used. Applicant also has the option of filing new application papers with a reexecuted oath or declaration.

Background

The notice of proposed rulemaking was published in the Federal Register on Nov. 7, 1980 at 45 FR 73965 and in the Official Gazette on Dec. 9, 1980 at 1003 O.G. 9. An oral hearing was held on Feb. 4, 1981.

Discussion of Major Issue Involved

A continuation or divisional application is an application in which the disclosure is identical to an earlier application. However, the claims may be changed. Continuation applications are often filed in situations where the applicant feels that the issue of patentability has not been satisfactorily resolved before the examiner and the application is not in condition for an appeal from the final rejection to the Board of Appeals. Divisional applications are filed voluntarily or as a result of a requirement for restriction by the examiner in a prior application. Continuation-in-part applications are filed where additional subject matter is added and claimed in the application. Under 35 U.S.C. 120 of the patent law, a continuation, continuation-in-part or divisional application may be filed during the pendency of the prior application and the benefit of the filing date of the prior application for the subject matter disclosed therein may be obtained.

The practice under §1.60 has resulted in a number of problems, especially difficulties in obtaining good-quality copies of prior applications. In addition, the practice involves unnecessary handling and processing delays.

Under new §1.62, the specification, claims and drawings, and any amendments in the prior application are made available for use in the continuation, continuation-in-part, or divisional application. A new filing fee is required in accordance with 35 U.S.C. 41 and 37 CFR 1.16. The only other statutory requirement under 35 U.S.C. 111 is a signed oath or declaration. Since a continuation or divisional application cannot contain new matter, the oath or declaration filed in the prior application would supply all the information required under the statute and rules to have a complete application and to obtain a filing date. Accordingly, the previously-filed oath or declaration will be considered to be the oath or declaration of the §1.62 continuation or division. However, if a continuation-in-part application is being filed, or a correction of inventorship is being made, then a new oath or declaration must be signed and filed by the applicant.

The original disclosure of an application filed under §1.62 will be the original parent application as executed by the inventor(s). However, the filing fee will be based on the claims in the §1.62 application after entry of any unentered amendments under §1.116 in the prior application and any preliminary amendment which may accompany the FWC request and filing fee. The Certificate of Mailing Procedure under 37 CFR 1.8 will not apply to filing a request for a "File Wrapper Continuing" application since the filing of such a request is considered to be a filing of application papers for the purpose of obtaining an application filing date (37 CFR 1.8(a)(i)).

The applicant may file a signed FWC request and the regular filing fee under §1.16 and other necessary papers with the Patent and Trademark Office, either by mail addressed to "Box FWC" or in person with the mail room. An individual check or deposit account authorization should accompany each FWC application, since combined checks delay processing.

The Correspondence and Mail Division will sort out all "Box FWC" envelopes upon receipt and deliver them to a reader for prompt special handling. The reader would apply the "Mail Room" date stamp and mark the categories of the fees. The papers for each FWC application would be assigned a regular national serial number and be placed in a "Jumbo" size file wrapper. The Special Handling Branch will review the FWC request for accuracy and completeness and assign the filing date if everything appears to be in order. Problems will be handled, insofar as possible, by calling the applicant or attorney by telephone. There will be no need for any processing of the FWC application by the Classification or Examination Branches of Application Division since there are no papers to be examined and the FWC application will be routed to the group assigned the prior application. When the FWC application file wrapper is received in the examining group, the parent application will be promptly obtained and processed by a clerical staff member.

All of the correspondence from the Office in a FWC application will refer to the FWC application serial number and filing date and will be processed in the same manner as any other continuation, continuation-in-part or divisional application. The first action final rejection procedures set forth in §706.07(b) of the Manual of Patent Examining Procedure will also apply to FWC applications filed under §1.62.

The PALM III system will supply information to authorized persons as to the location of the parent application file wrapper and will tie the parent application number to the FWC application number.

The provisions of §1.62 provide that if any application in the file wrapper is available to the public that all applications in the file wrapper will be available to the public.

Some of the anticipated benefits of the new §1.62 procedure are the following:

For the Applicant

1. Formal requirements will be minimal.

2. A more prompt first action in the continuing application should be received in view of reduced processing time. The Application Division can process promptly all §1.62 applications with minimal effort. In the examining groups, the applications will be given high priority for processing purposes.

3. Amendments made to the specification, drawings and claims of the prior application will carry over into the §1.62 continuing application and will not need to be resubmitted in the continuing application.

For the Public

1. The pendency of a series of applications should be reduced since the time delay before examination and issuance of a continuing application filed under the §1.62 procedure would be reduced.

2. The entire record of prosecution could be in one file wrapper under the §1.62 procedure, even if several continuing applications are filed. This will result in easier access by the public to a series of applications if a patent is later issued.

For the Patent and Trademark Office

1. The workload of reviewing and processing new application papers in the Application Division will be reduced.

2. The examining group clerks will not be required to again enter amendments made in the prior application.

3. Less storage space will be required under §1.62 since there will be fewer papers to store.

4. The prior application file history and references cited therein will be readily available to the examiner under§1.62 and will not need to be ordered from abandoned files.

5. The Office will not be required to prepare a copy of the prior application file under the §1.62 procedure.

Discussion of Comments Received

After careful consideration of the comments which have been received, the proposed rulemaking relating to file wrapper continuing application procedure is being adopted with certain changes. A total of 23 comment letters were received. Six of these letters were received from patent law organizations. Two persons presented oral comments at the hearing. The comments of 6 letters supported the proposed rulemaking without further suggestions for change. Only one letter opposed the proposal.

Seven of the letters urged adoption of a procedure whereby an applicant could pay a fee to have a final rejection withdrawn so that prosecution could be extended in an application rather than filing a continuing application. This suggestion was not adopted for several reasons. Such a procedure could not be used for filing of continuation-in-part applications, the average pendency of applications in the Office would be extended, and significant problems in internal record systems would be created.

A number of comments were received which presented specific suggestions to proposed §1.62. Four letters commented that the requirement of proposed §1.62(a)(4) to supply information as to title, applicant, correspondence address, etc. in order to file under §1.62 could easily lead to filing errors.

In final §1.62(a)(3) only the serial number, filing date and applicant's name of the prior application are required. The filing of information relating to the title, applicant's name, etc. is however urged in paragraph (e) of final §1.62 and is needed to prepare Office records and the filing receipt.

One comment letter was received which indicated that a specific reference should be made to unentered amendments filed under 37 CFR 1.116. Such a reference has been added to paragraph (a)(2) of §1.62.

Two letters objected to the requirement in proposed §1.62(a)(2) that a new set of claims be presented. This requirement has been deleted from final §1.62.

A number of general comments were also presented relating to §1.62. One comment argued that the proposed practice would encourage abuse by examiners of the second action final rejection practice. In response to this argument, it is felt that the proposed procedure would not create any new problems.

One comment indicated that problems involving access to the file wrapper may arise. It is felt, however, that access problems should not arise in view of paragraph (c) of final §1.62 which relates to waiver of secrecy. The current PALM III computer record system is capable of indicating the location of both the prior and continuing applications.

One comment was received relating to proposed §1.138 which indicated that the reference to §1.60 was confusing. The reference to §1.60 has been deleted in final§1.138.

New §1.62 sets forth the requirements of the file wrapper continuing procedure.

Section §1.138 is amended so that a registered attorney or agent could, without being of record, file a §1.62 application and expressly abandon a pending prior application. Such an action would not affect applicant's rights to any great extent since the prior application would only be expressly abandoned if a filing date was granted to a continuing application.

Other Considerations

Environmental, Energy, and Other Considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980(44 U.S.C. 3501 et seq.).

The rule change will not have a significant adverse economic impact on a substantial number of small entities because it adds no burdens and does simplify filing procedures (Regulatory Flexibility Act, Pub. L. 96–354).

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq., since no significant additional record keeping or reporting requirements are placed upon the public. In fact, some paperwork, especially that related to preparing application papers and amendments, will be reduced.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Inventions and patents, Lawyers.

(Text of adopted rules appears in 37 CFR, revised July 1, 1983.)

Sept. 30, 1982. GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[FR Doc. 82-29283 Filed 10-23-82: 8:45 am]
BILLING CODE 3510-16-M

[1024 O.G. 59]

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(111)

Department of Commerce
Patent and Trademark Office
37 CFR Part 1
Reissue, Reexamination, Protest and Examination Procedures in Patent Cases

Agency: Patent and Trademark Office, Commerce.

Action: Final rule.

Summary: The Patent and Trademark Office is amending the rules of practice in patent cases (1) to eliminate consideration of the so-called "no defect" reissue applications, (2) to limit the participation by protestors during the examination of patent applications, (3) to reject and permit appeal to the Board of Appeals for failure to comply with the duty of disclosure rather than striking applications without appeal rights, and (4) to clarify the interface between patent application examination and patent reexamination in certain areas. These changes are intended to (1) reduce the prosecution costs of patent applicants, and (2) permit some of the Patent and Trademark Office resources now devoted to consideration of

the so-called "no defect" reissue applications, and to extensive participation by protestors during application examination, to be directed toward reduction of the backlog of pending patent applications. The changes are also intended to provide for review by the Board of Appeals of duty of disclosure issues which arise during patent application examination. The rule changes are further intended to clarify the interface between the duty of disclosure during patent application examination and the duty of disclosure during patent reexamination, as well as the treatment of concurrent reissue and reexamination proceedings on the same patent.

Effective Date: July 1, 1982.

For Further Information Contact: Mr. R. Franklin Burnett by telephone at (703) 557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks. Washington, D.C. 20231.

Supplementary Information:

Background

A notice of proposed rulemaking was published in the Federal Register on Nov. 10, 1981, at 46 FR 55666-55672 and in the Official Gazette on Dec. 8, 1981, at 1013 O.G. 19-25. An oral hearing was held on Feb. 4, 1982. Forty-two written letters and statements were submitted. Fourteen persons testified at the oral hearing which resulted in 113 pages of testimony. Consideration was also given to the comments presented at the oral hearing on Apr. 16, 1981, relating to the proposed rules for implementing patent reexamination.

Objectives of Rule Change

The rule change is designed to adopt and implement suggestions from members of the public for changes in patent examination practice considered desirable in light of the implementation of statutory patent reexamination, contained in Public Law 96-517. Many of the persons who commented in writing and at the hearing held on Apr. 16, 1981, on the proposed rules for implementing patent reexamination favored modification of patent examination rules as amended herein. This rule change is designed to implement the suggestions received and, in particular, to reduce the prosecution costs of patent applicants by limiting the amount of participation by protestors during the patent application examination process.

The rule change also seeks to reduce the amount of time required by the Patent and Trademark Office to examine protested applications by limiting protestor participation. The technical expertise of the Patent and Trademark Office will continue to be available to make determinations of patentability on the basis of prior art and related facts on an ex parte basis. However, the patent examiners in the Office are not trained as hearing examiners and have no substantial experience in handling inter partes matters. Under the rule change, protestor participation will be limited to the filing of papers in opposition to the grant of a patent with no Office communications to the protestor resulting therefrom beyond an acknowledgment of receipt of a protest or petition to strike in reissue applications. The opportunity to comment on Office actions and applicants' responses is eliminated. The rule change also intends to accomplish these purposes by eliminating the consideration of reissue applications not initially presented to correct defects pursuant to 35 U.S.C. 251.

The rule change is also designed to provide for review by the Board of Appeals of duty of disclosure issues which arise during patent application examination. This is accomplished by amending §1.56(d) to provide that the claims in an application be rejected if upon examination pursuant to 35 U.S.C. 131 and 132 it is found that applicant is not "entitled to a patent under the law" because of fraud or a violation of the duty of disclosure. The rejection would be made under the same conditions and circumstances previously used to strike an application, i.e., "clear and convincing evidence" of fraud or any violation of the duty of disclosure through bad faith or gross negligence. The statute, 35 U.S.C. 131, provides for examination of an application "and if on such examination it appears that the applicant is entitled to a patent under the law, the Commissioner shall issue a patent * * *" Section 132 of Title 35, United States Code, makes provision for the rejection of a claim for a patent as a result of the examination directed by 35 U.S.C. 131. While questions of fraud and violations of the duty of disclosure have historically been dealt with by the Commissioner through the mechanism of striking the affected application, there is no statutory requirement that the Commissioner act in that manner. Clearly the Commissioner can choose how, and by whom, the examination directed by 35 U.S.C. 131 can be made. 35 U.S.C. 132 authorizes a rejection in those circumstances where applicant is not "entitled to a patent under the law." The rule change simply modifies the mechanism and procedures which the Commissioner will use where the applicant is not "entitled to a patent under the law" because of failures to comply with §1.56(d).

The rule change is also designed to clarify the interface between patent application examination and patent reexamination in certain areas. The two areas involved are duty of disclosure and concurrent proceedings involving a patent under reexamination and for which a reissue application has been filed.

Sections 1.56, 1.106, 1.175, 1.193, 1.291, 1.555, 1.565, and 1.570 are amended to accomplish the purpose indicated above.

Discussion of Specific Rules

Access and Publication of Reissue Applications

The changes proposed in §1.11 are not being adopted since only one of the twenty-two comments favored the changes.

The publication of notices of the filing of reissues and provisions for public access to reissues will therefore continue as at present. Such publication eliminates the need for interested members of the public to periodically monitor the patent files to determine if a reissue application has been filed.

Amendments to §1.56

A large majority of the comments supported the amendments to §1.56. A number of comments questioned the advisability of having relatively inexperienced or non-attorney examiners handle questions of fraud or violation of the duty of disclosure. In response thereto, the amendments to the rule do not require that such questions be handled by the examiner who examines the application for questions of obviousness, enablement, etc. The Office presently plans to have questions of possible fraud or violation of the duty of disclosure examined by examiners with legal training assigned to the Office of the Assistant Commissioner for Patents. Several comments suggested that the provisions for striking an application pursuant to existing paragraph (c) of §1.56 are inconsistent with the rejection for fraud or violation of the duty of disclosure contemplated in the amendment to paragraph (d). In response thereto, it is pointed out that paragraph (c) of §1.56 makes striking of the application discretionary with the Commissioner. It is thus more appropriate to retain this authority to strike the application in appropriate circumstances rather than to make it subject to a rejection. No inconsistency is seen between the different routes under paragraphs (c) and (d) of §1.56. Several comments were received indicating concern about the possible delay of a decision by the Board of Appeals pending consideration of a fraud or duty of disclosure question. In response to these concerns, it is pointed out that less time overall will be required by having the Board of Appeals consider the matter once rather than in a series of separate decisions. Further, expense to the applicant will be minimized by one appeal rather than two. The amendments to §1.56 are adopted as proposed except for some clarifying changes in paragraph (g).

Section 1.56 is amended by revising the title and para-

graph (d), and by adding new paragraphs (e) through (i). The revision to the title and paragraph (d) provides for the rejection of claims upon examination pursuant to 35 U.S.C. 131 and 132 on the ground that applicant is not entitled to a patent under the law if it is established by clear and convincing evidence (1) that any fraud was practiced or attempted on the Office in connection with the application, or in connection with any previous application upon which the application relies, or (2) that there was any violation of the duty of disclosure through bad faith or gross negligence in connection with the application, or in connection with any previous application upon which the application relies. Under amended paragraph (d), any rejection which would be made would include all the claims in the application.

The standards to be used in rejecting the claims under paragraph (d) as amended, would be the same as those utilized by the Commissioner in striking applications pursuant to present paragraph (d), i.e., clear and convincing evidence of fraud or any violation of the duty of disclosure through bad faith or gross negligence. Consistent with present practice, the revision of paragraph (d) looks to fraud or a violation of the duty of disclosure through bad faith or gross negligence with relation to the application under consideration or any previous application upon which the application relies.

The phrase "in connection with the application" is construed in the same manner as in the present unamended paragraph (d). For purposes of this section, a reexamination proceeding on a patent would be considered as being "in connection with the application" insofar as consideration of any subsequent reissue application is concerned. The phrase also includes within its scope the mere refiling of the subject matter of an application in another application without relying in the second application upon the first application. Thus, an appropriate rejection upon examination pursuant to 35 U.S.C. 131 and 132 based on conduct or actions proscribed by §1.56(d) could not be avoided merely by refiling the subject matter of the application in a second or subsequent application which did not rely upon the earlier application. The phrase "in connection with any previous application upon which the application relies" is intended to include all applications upon which the application under consideration relies, either directly or indirectly. For example, an application to reissue a patent obviously relies upon the application which resulted in the patent sought to be reissued. Likewise, continuation applications, continuation-in-part applications, and divisional applications also rely upon one or more parent applications.

New paragraph (e) of §1.56 normally delays the examination of an application for compliance with paragraph (d) of §1.56 until such time as (1) all other matters are resolved, or (2) appellant's reply brief pursuant to §1.193(b) has been received and the application is otherwise ready for consideration by the Board of Appeals, at which time the appeal will be suspended for examination pursuant to paragraph (d) of this section. Present plans are to have this examination on the question of fraud or violation of the duty of disclosure conducted by examiners with legal training assigned to the Office of the Assistant Commissioner for Patents. Paragraph (e), as added, would thus permit the resolution of issues arising under §1.56(d) to be delayed until consideration of such issues is necessary and appropriate. The practice under new paragraph (e) is generally consistent with present practice under paragraph (d) which normally delays the substantive resolution of fraud and duty of disclosure issues until other issues have been resolved in favor of applicant. Under new paragraph (e) an appeal would be suspended for examination pursuant to amended paragraph (d) of §1.56 once appellant's reply brief pursuant to §1.193(b) has been received and the application is otherwise ready for consideration by the Board of Appeals. If no questions of possible violation of §1.56 are raised or evident on the record before the examiner, no examination for compliance with paragraph (d) of §1.56 will be undertaken. New paragraph (e) provides for the reopening of prosecution of the application to the extent necessary to conduct the examination pursuant to amended paragraph (d) of §1.56 including any appeal pursuant to §1.191. New paragraph (e) also indicates that where an appeal has already been filed based on a rejection on other grounds, any further rejection under amended paragraph (d) will be treated in accordance with amended §1.193(c).

New paragraph (f) continues the present long standing practice whereby any member of the public can file a petition to strike an application from the files pursuant to paragraph (c) of §1.56. Such petitions are currently being filed without specific mention in §1.56. Under revised§1.56 petitions to strike an application for a violation of §1.56 are limited to violations of paragraph (c), with any violations of paragraph (d) being subject matter for rejection under paragraph (d). New paragraph (f) requires that any such petition alleging a violation of paragraph (c) which is entered in the application file must: (1) Be timely filed, (2) specifically identify the application to which the petition is directed, and (3) be served on the applicant or be filed with the Office in duplicate in the event service is not possible. New paragraph (f) does not specifically limit a "timely petition" to any particular point in the examination of the application. Such petitions will generally be considered "timely" if they are filed before final rejection or allowance of the application by the examiner. Whether or not a petition filed after final rejection or allowance of the application by the examiner is considered "timely" will depend upon the circumstances and the point in the prosecution at which the petition is submitted.

New paragraph (f) requires that the petition specifically identify the application to which the petition is directed. While an identification by application serial number is not essential, the identification must include enough specificity that the Office can determine with certainty the application to which the petition is directed. Paragraph (f) requires service of the petition on the applicant, or a duplicate copy in the event service is not possible, before the petition will be entered. While the Office might, in some circumstances, reproduce and serve a petition on the applicant, a member of the public would have no assurance that this would be done and, under paragraph (f), could not rely upon the Office doing so. Paragraph (f) also requires that any petition filed by an attorney or agent comply with §1.346.

New paragraph (g) of §1.56 assures a member of the public that a petition to strike an application for violation of paragraph (c) of §1.56 which meets the requirements of paragraph (f) will be considered by the Office. Language has been added to conform to additional language in §1.291(c). The Office will send petitioner an acknowledgment of the entry of a petition to strike in a reissue application file. However, the Office will not communicate with the member of the public filing such a petition in non-reissue applications, except for the return of any self-addressed postcard which was enclosed which merely acknowledges receipt of the petition. The member of the public filing the petition will not be permitted to contact the Office as to the disposition, or status, of the petition, or to participate in any Office proceedings relating to the petition. No further papers will be acknowledged or considered unless they raise new issues which could not have been earlier presented and thereby constitute a new proper petition. Mere arguments relating to the Office's decision on the petition or applicant's response to the petition would not qualify as a new proper petition. The disposition of the petition, once one has been filed, will, under paragraph (g), be an ex parte matter between the Office and the applicant. Paragraph (g) provides for communication by the Office with the applicant regarding a petition to strike the application which has been entered in the application file. Under new paragraph (g) the applicant could be required by the Office to respond to the petition. Any such response would be ex parte and would not be served on the member of the public filing the petition.

New paragraph (h) of §1.56 provides that any member

of the public may seek to have the claims in an application rejected pursuant to the amended paragraph (d) of §1.56 by filing a timely protest in accordance with §1.291. New paragraph (h) also requires that any such protest filed by an attorney or agent seeking a rejection of claims pursuant to amended paragraph (d) of §1.56 must be in compliance with §1.346. One comment suggested that the last sentence of paragraph (h) is redundant since §1.346 applies without any specific mention. After careful consideration of the comment the sentence is being retained in order to emphasize and remind attorneys and agents of the obligations imposed by §1.346.

New paragraph (i) provides for the Office requiring the applicant to supply information pursuant to paragraph (a) of §1.56 in order for the Office to decide any issues relating to paragraphs (c) and (d) of §1.56, whether or not such issues arise as a result of a petition or a protest, or arise from other sources, e.g., an examiner discovering the issue while studying the application file. Any requirements for information under new paragraph (i) will be ex parte in nature between the Office and the applicant. The ex parte nature of the requirements for information under new paragraph (i) differs from past practice under which information was required, or requested, from applicant and one or more petitioners or protestors in some cases.

Rejection of Claims

Five comments were submitted relating to new paragraph (c) of §1.106. Two of the comments favored the paragraph as written and three recommended modification or clarification of the paragraph to ensure that it is not inconsistent with *In re Ruff, et al.*, 45 CCPA 1037, 118 USPQ 340 (CCPA 1958), and subsequent decisions. No modification or clarification of the paragraph is considered necessary since the intent of the paragraph was not to change current practice, but was merely to emphasize the importance placed on admissions and to make §1.106 more closely reflect current practice, which includes practice following *In re Ruff, et al.*, and subsequent decisions. The amendments to §1.106 are adopted as proposed.

Section 1.106 is amended to include a new paragraph (c) which emphasizes the importance placed on admissions by the applicant or the patent owner in a reexamination proceeding insofar as matters affecting patentability are concerned. Paragraph (c) includes a reference to the use of rejections based upon facts within the knowledge of the examiner as provided in §1.107. Paragraph (c) does not constitute a change in practice, but does result in §1.106 more closely reflecting current practice.

Reissue Oath or Declaration

Ten persons commented on §1.175. Four comments were received in support of the proposed change. Three of these favorable comments were from patent law groups. Of the six comments received opposing the change, two were from patent law groups. Eleven comments received at the Apr. 16, 1981, hearing on reexamination argued for retraction of the "Dann Amendments" which included §1.175(a)(4). Four comments at the Apr. 16, 1981, hearing favored retaining the "Dann Amendments". The arguments supporting the change were generally that paragraph (a)(4) was not necessary in view of the new reexamination procedure. The arguments opposing the deletion were generally that an inter partes practice before the Office is desirable from the standpoint of the judiciary and for a complete resolution of issues. After careful consideration of all of the arguments and the resources available in the Patent and Trademark Office, it is felt that the practice under paragraph (a)(4) of §1.175 should be discontinued and paragraph (a)(4) should be cancelled.

The numbering of paragraphs (a)(5) and (6) is not being changed. Proposed paragraph 1.175(a)(6) is being adopted as new paragraph 1.175(a)(7). The proposed wording is otherwise being adopted without change.

Amended §1.175 eliminates paragraph (a)(4). Under paragraph (a)(4), the Office gave advisory opinions on patentability over additional prior art without any changes in the patent claims. The courts have generally refused to give preclusive effect to these advisory opinions. See *PIC, Inc.* v. *Prescon Corp.*, 485 F. Supp. 1302, 205 USPQ 228 (D. Del. 1980), and *Rohm and Haas Co.* v. *Mobil Oil Corp.*, 525 F. Supp. 1298, 212 USPQ 354 (D. Del. 1981). Accordingly, in view of the implementation of patent reexamination pursuant to Pub. L. 96-517 it is appropriate to discontinue the advisory opinions provided pursuant to §1.175(a)(4). Under amended §1.175 an applicant for reissue of a patent will be required to file with the reissue application a statement under oath or declaration specifically averring a defect in the patent, e.g., "a defective specification or drawing," or an excess or insufficiency in the claims. Amended §1.175 also requires, in paragraphs (a)(5) and (a)(6), that applicant specify "errors" as opposed to "what might be deemed to be errors." Amended §1.175 effectively eliminates Office consideration of the merits of "no defect" reissue applications since any such "no defect" reissue applications filed after July 1, 1982, the effective date of the changes to §1.175, will not be examined as to questions of patentability. In addition, §1.175(a)(7) has been added to parallel the provisions in §1.65 requiring the same acknowledgment of the duty of disclosure in the oath or declaration of reissue applications as in the case of non-reissue applications.

Delay in Examination of Reissue Applications

Six comments were received relative to the proposed changes in §1.176. One comment supported, and five comments opposed, deleting the two month waiting period before action could be taken by an examiner in a reissue application. The opposing comments favored retaining the two month period to provide an opportunity for interested parties to submit information relating to the examination of a reissue application after notice of the filing thereof has been published in the Official Gazette. Since the notices under §1.11 will continue to be published, no need is seen to change §1.176. The proposed change is therefore not adopted.

Examiner's Answer

Only one comment was made relating to the proposed addition of paragraph (c) to §1.193. It suggested including a minimum time period for response in the rule. This suggestion was not adopted because in some circumstances it may be appropriate to set a shorter or a longer period for the reply brief. The amendments to §1.193 are adopted as proposed.

Paragraph (c) adds to §1.193 a provision that any decision rejecting claims pursuant to §1.56(d) in an application already on appeal from a rejection based on other grounds shall constitute a supplemental examiner's answer introducing a new ground of rejection and removing the suspension of the appeal introduced pursuant to §1.56(e). Prior to entering any such supplemental examiner's answer under paragaph (c), the Office may require information from applicant pursuant to paragraph (i) of §1.56. Under paragraph (c) of §1.193, the appellant may file a reply to the supplemental examiner's answer. Paragraph (c) provides that the appellant's reply to the supplemental examiner's answer will be considered and responded to as necessary with appellant being provided with an additional month, or such other time as may be set, within which to reply to any such response from the Office. After introduction of a supplemental examiner's answer pursuant to paragraph (c) and any replies and response thereto, the application will be forwarded to the Board of Appeals for consideration.

Protests by the Public Against Pending Applications

Fifteen persons commented on the proposed amendment of §1.291. Two persons suggested that protests be acknowledged by more than the return of a self-addressed postcard. The suggestion has been adopted to the extent of providing for an acknowledgment of the entry of a protest in a reissue application file to be sent to the member of the public filing the protest. The sug-

gestion has not been adopted insofar as original applications are concerned since these applications are generally required to be kept in confidence under 35 U.S.C. 122. Further, the use of return postcards is an established method of receiving acknowledgment from the Office that a paper has been filed. By merely returning the postcard to a protestor in an application for an original patent and directing Office initiated communications solely to applicant, the amount of Office resources required will be minimized.

Several persons commented that the protest proceeding should be more inter partes. The weight of the comments received at the hearings held on Apr. 16, 1981, and Feb. 4, 1982, and in writing, favored ex parte proceedings. To ensure that the proceedings are essentially ex parte, a sentence is being added to paragraph (c) of § 1.291, indicating that active participation by a member of public ends with the filing of the protest. To retain the inter partes nature of the protest would be contrary to the majority of the comments received and to one of the major purposes of the rule change, i.e., to reduce the amount of time spent by the Office in examining protested applications. The amendments to paragraphs (a) and (b) of §1.291 are adopted as proposed and paragraph (c) is being revised as indicated above.

Amended §1.291 continues to permit protests by the public against pending original and reissue applications. The protest may include any grounds which the member of the public filing the protest believes to be applicable.

Amended paragraph (a) of §1.291 provides for entry of a protest in the application file if the protest specifically identifies the application, is timely submitted, and is either served upon the applicant in accordance with §1.248, or filed with the Office in duplicate, in the event service is not possible. The comments made above in the discussion of new paragraph (f) of §1.56 regarding the timeliness of the filing or submission, specific identification of the application, and service on the applicant, are also applicable to the amendments of paragraph (a) of §1.291. The requirement that the Office acknowledge the filing of a protest is deleted from paragraph (a), but is covered in paragraph (c).

New paragraph (b) of §1.291 assures members of the public that a protest will be considered by the Office if (1) it specifically identifies the application to which it is directed; (2) it is timely submitted; (3) it is properly served upon the applicant in accordance with §1.248, or is filed with the Office the duplicate in the event service is not possible; (4) it includes a listing of the patents, publications or other information relied upon and a concise explanation of the relevance of each listed item; (5) it includes a copy of each listed patent or publication or other item of information in written form, or at least the pertinent portions thereof; and (6) it includes an English language translation of all the necessary and pertinent parts of any non-English language document relied upon. It is considered desirable that §1.291 advise members of the public as to the contents which should be included in any protest since there will be no Office communications directed to the member of the public submitting the protest under paragraph (c). Thus, under paragraph (c) members of the public will not be given an opportunity to complete any protest which is incomplete. Amended paragraph (c) provides for the acknowledgment of the entry of a protest in a reissue application file.

Amended paragraph (c) of §1.291 provides that a member of the public filing a protest in an application for an original patent will not receive any communications from the Office relating to the protest, other than the return of a self-addressed postcard acknowledging receipt of the protest. Amended paragraph (c) of §1.291 does not permit the member of the public filing the protest, or any other member of the public, to contact the Office as to the disposition, or status, of the protest or to participate in any Office proceedings relating to the protest. The disposition of the protest, once it has been filed will, under paragraph (c), be an ex parte matter between the Office and the applicant. However, applications which are open to the public may be inspected pursuant to §1.11.

Amended paragraph (c) provides for the Office to communicate with the applicant regarding any protest entered in the application file. Under paragraph (c), the applicant could be required by the Office to respond to the protest. Any response would be ex parte and would not be served on the member of the public filing the protest. Paragraph (c) provides for the Office to require applicant to supply information pursuant to pargraph (a) of §1.56 in order for the Office to decide any issues raised by the protest. Requirements for information under paragraph (c) will be ex parte in nature between the Office and the applicant. The ex parte nature of the requirements for information under paragraph (c) differs from past practice under which information could be required, or requested, from applicant and one or more protestors. Under amended paragraph (c), the active participation of the protestor ends with the filing of the protest and no further submission on behalf of the protestor will be acknowledged or considered unless such submission raises new issues which could not have been earlier presented, and thereby constitutes a new protest. Mere arguments relating to an Office action or an applicant's response would not qualify as a new protest.

Duty of Disclosure in Reexamination Proceedings

Only two comments were received relative to proposed§1.555. One comment argued that the Office should never ignore a violation of the duty of disclosure or leave it hanging. In response thereto, neither the statute nor the presently existing reexamination rules provide for reexamination on grounds other than those based on patents or printed publications. The second comment questioned whether a patent owner has a duty to cite new prior art after a request but prior to an order to reexamine. No further clarification of the section is necessary since §1.555(a) specifies when the patent owner should file a prior art statement in a reexamination proceeding. The amendments to §1.555 are adopted as proposed.

Amended §1.555 makes the duty of disclosure in reexamination proceedings more consistent with the duty of disclosure in patent applications. Paragraph (a) of §1.555 specifies that a duty of candor and good faith toward the Patent and Trademark Office rests on the patent owner or involved employees of the patent owner, on each attorney or agent who represents the patent owner, and on every other individual who is substantively involved on behalf of the patent owner in a reexamination proceeding. This rule is consistent with the duty set forth in §1.56(a) insofar as patent applications are concerned, except that in paragraph (a) of §1.555 the patent owner is specified rather than the inventor as set forth in paragraph (a) of §1.56. This does not, however, impose the responsibility for compliance with the duty of disclosure on a corporate entity or organization but leaves the responsibility with involved individuals in the corporation or other organization. Paragraph (a) of §1.555 places a requirement on the individuals identified to bring to the attention of the Office patents or printed publications material to the reexamination which have not been previously made of record in the patent file and specifies how that should be accomplished.

Amended paragraph (b) of §1.555 essentially parallels existing paragraph (b) of §1.56 and makes similar provisions applicable to disclosures in reexamination proceedings.

Amended paragraph (c) of §1.555 provides that the duties of candor, good faith, and disclosure required in paragraph (a) of §1.555 have not been complied with if any fraud was practiced or attempted on the Office or there was any violation of the duty of disclosure through bad faith or gross negligence by, or on behalf of, the patent owner in the reexamination proceeding. The language of paragraph (c) refers to fraud or violation of the duty of disclosure in the reexamination proceeding since such conduct during the pendency of applications is covered by §1.56.

Amended paragraph (d) of §1.555 affirms that the responsibility for compliance with §1.555 rests upon the individuals identified in paragraph (a). Paragraph (d) also provides that no evaluation will be made in the reexamination proceeding by the Office as to compliance with §1.555. Paragraph (d) of §1.555 also provides that questions of compliance with §1.555 which are discovered during a reexamination proceeding will be noted as unresolved questions in accordance with present §1.552(c). Paragraph (d) will not preclude the patent owner from filing a reissue application to have questions of candor, good faith, and duty of disclosure considered and resolved, including such questions which arise during a reexamination proceeding, so long as the requirements of 35 U.S.C. 251 have been met. Paragraph (d) does not preclude suspension or disbarment proceedings under present §1.348 based upon conduct during a reexamination proceeding.

Concurrent Office Proceedings

Four comments were received on §1.565. One comment proposed adding a sentence at the end of paragraph (b) of §1.565 reflecting that reexamination would only be stayed in extraordinary situations. This suggestion has not been adopted since it is considered inappropriate to attempt to further define by rule the circumstances under which a stay of the reexamination may be appropriate. Two comments were received raising questions as to the treatment, during a merged reissue and reexamination proceeding, of broader claims which are present therein because of a reissue application which contained broadened claims. No clarification or change is necessary since the broadened claims are properly in the merged proceeding during the period it is merged. Such broader claims which are present in both the reissue and reexamination files during the pendency of the merged proceeding will be treated in accordance with the reissue statute and case law during the pendency of the merged proceeding. If the merged proceeding ceases to exist because of the abandonment of the reissue application, the claims in the reexamination file, including any broadened claims, will be examined in accordance with the reexamination statute and rules. Finally, one comment did not agree with merging reissue and reexamination proceedings because the merger is not seen to produce cost savings or other salutary results. One of the reasons for the merged proceedings is to ensure that claims of differing scope and inconsistent responses are not presented at the same time in different proceedings in the same patent. Moreover, since the proceedings are concurrent rather than sequential, a significant savings in resources and overall pendency time may be realized by merging in many cases.

The amendment to §1.565 clarifies the proposed language of paragraph (b), eliminates from paragraph (b) the last two sentences relating to the treatment of concurrent reexamination and reissue proceedings, and adds a new paragraph (d) relating to this subject. The clarification in paragraph (b) is intended to avoid misinterpretations relating to stay determinations where concurrent litigation or reissue applications are involved.

Under new paragraph (d), which is consistent with the practice presently in effect under paragraph (b), if a reissue application and a reexamination proceeding on which an order pursuant to present §1.525 has been mailed are pending concurrently on a patent, a decision will normally be made to merge the two proceedings or to stay one of the proceedings. New paragraph (d) also provides that where merger of a reissue application and a reexamination proceeding is ordered, the merged examination will be conducted in accordance with present §§1.171–1.179. The examiner, in examining the merged proceeding, will apply the reissue statute and case law, in addition to applicable provisions of §§1.171–1.179, to the merged proceeding. This is appropriate in view of the fact that the statutory provisions for reissue applications and reissue application examination include, *inter alia*, provisions equivalent to 35 U.S.C. 305 relating to the conduct of reexamination proceedings. New paragraph (d) of §1.565 makes clear that the patent owner must place and maintain the same claims in the reissue application and the reexamination proceeding during the pendency of the merged proceeding. Under new paragraph (d) of §1.565 the examiner's actions and any responses by the patent owner in a merged proceeding will apply to both the reissue application and the reexamination proceeding and will be physically entered into both files. New paragraph (d) also provides that any reexamination proceeding merged with a reissue application shall be terminated by the grant of the reissued patent. The amendments to §1.565 are adopted with the changes or clarification indicated in paragraph (b).

Reexamination Certificate

Section 1.570, as amended, revises paragraph (e) to refer to new paragraph (d) of §1.565 rather than paragraph (b) in order to reflect the changes in §1.565.

No comments were received concerning the section and it is adopted without change.

Interim Procedures on Applications Pending on Effective Date

On July 1, 1982, the revised procedures of §§1.56(d) and 1.193(c) will apply to any applications then pending which have not been the subject of a final Office decision on questions of fraud or violation of the duty of disclosure. Any petition to strike an application from the files or any protest against a pending application filed prior to July 1, 1982, will be governed by the rules in effect prior to that date. Any applications filed under §1.175(a)(4) prior to July 1, 1982, will be examined until the application is amended and a reissue patent issues thereon or the application becomes abandoned. For a discussion of the interim practice in effect prior to July 1, 1982, see 1013 O.G. 18–19.

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354).

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291.

List of Subjects in 37 CRF Part 1

Administrative practice and procedure, Courts, Freedom of information, Inventions and patents, Lawyers.

Amendment of Regulations

(Text of adopted rules appear in 37 CFR, revised July 1, 1983.)

Apr. 6, 1982.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[FR Doc. 82-13613 Filed 5-18-82; 8:45 am]
BILLING CODE 3510-16-M

[1019 O.G. 37]

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(112) **Interim Reissue, Reexamination, Protest, And Examination Procedures In Patent Cases Pending Proposed Revision of 37 CFR §§1.11, 1.56, 1.106, 1.175, 1.176, 1.193, 1.291, 1.555, 1.565, and 1.570.**

This notice sets forth, in general, the practice the Office intends to follow pending a final determination on the "Notice of proposed rulemaking" published in the Federal Register on November 10, 1981, at 46 F.R. 55666–55672. The "Notice of proposed rulemaking" is also being published in this issue of the Official Gazette.

Practice Relating To §1.11

Any reissue application which is presently open to inspection by the general public pursuant to present §1.11(b), and any reissue application filed before the effective date of a change in the rule, will continue to be open to inspection by the general public. No restriction

of access to those reissue applications is contemplated at this time, either during their pendency before the Office, or after an abandonment of the reissue application. The filing of reissue applications will continue to be announced in the Official Gazette pending revision of §1.11(b).

Practice Relating To §1.56

Any issues arising under §1.56(d) prior to the effective date of a change in paragraph (d) will continue to be handled in accordance with paragraph (d) as it presently exists. If paragraph (d) is amended as proposed, the Office presently intends to apply the revised procedures to any applications then pending which have not been the subject of a final Office decision on questions of "fraud" or violation of the duty of disclosure.

Any petitions to strike applications from the files which have been filed prior to the date of publication of this Notice in the Official Gazette will continue to be treated in accordance with the practices in effect prior to this Official Gazette Notice via the appropriate sections of the Manual of Patent Examining Procedure.

Any petition to strike an application from the files which is filed after the date of publication of this Notice will be considered in accordance with the procedure set forth in the "Notice of proposed rulemaking" insofar as participation by the petitioner is concerned. Since the provisions of 37 CFR 1.56 now in effect do not guarantee a member of the public the right to participate fully in Office consideration of petitions to strike applications, it is considered appropriate and proper to restrict participation on behalf of a petitioner as set forth in the "Notice of proposed rulemaking" while such proposed rulemaking is pending. At this time the degree of participation is solely at the discretion of the Commissioner and the Commissioner is hereby acting in his discretion to restrict such participation. Accordingly, any petition to strike an application from the files which is filed after the date of publication of this Notice must include a self-addressed postcard specifically identifying the petition and the application to which the petition is directed if an acknowledgement of the filing of the petition is desired. A member of the public filing a petition to strike an application after the date of publication of this Notice will not receive any communications from the Office relating to the petition, other than the return of a self-addressed postcard which the Office will stamp and return in order to acknowledge receipt of the petition. All Office communications will be conducted with the applicant in accordance with the procedures set forth in the proposed rulemaking, which procedures are those currently in effect.

Practice Relating To §1.106

No interim practice is necessary regarding this proposed revision since it would not constitute a change in practice, but would merely make §1.106 more closely reflect current practice.

Practice Relating To §1.175

Any applications filed under §1.175(a)(4) prior to the effective date of any change in the rule will be examined until the application is amended and a reissue patent issues thereon or the application becomes abandoned.

Practice Relating To §1.176

The examination of any applications filed prior to the effective date of any change in the rule will continue to be delayed for two months after the announcement of the filing in the Official Gazette, except where the delay period is waived by a decision on a petition under 37 CFR 1.183.

Practice Relating To §1.193(c)

No interim practice is necessary regarding this proposed revision since the practice of rejecting claims pursuant to §1.56(d) will not be adopted prior to the effective date of a change in paragraph (d).

Practice Relating To §1.291

Any protest against a pending application which is filed after the date of publication of this Notice in the Official Gazette will be treated essentially in accordance with the procedures set forth in the "Notice of proposed rulemaking." Any protests which have been filed prior to the date of publication of this Notice in the Official Gazette will continue to be treated in accordance with the practices in effect prior to this Official Gazette Notice via the appropriate sections of the Manual of Patent Examining Procedure. Since the provisions of 37 CFR 1.291 now in effect do not guarantee a member of the public the right to participate fully in Office consideration of protests filed under §1.291, it is considered appropriate and proper to restrict participation on behalf of a protestor essentially as set forth in the "Notice of proposed rulemaking" while such proposed rulemaking is pending. At this time the degree of participation is solely at the discretion of the Commissioner and the Commissioner is hereby acting in his discretion to restrict such participation. Accordingly, any protest filed after the date of publication of this Notice will be acknowledged as set forth in present §1.291 on a self-addressed postcard which protestor is hereby advised to include with the protest. The self-addressed postcard must specifically identify the protest and the application to which the protest is directed, to the extent such identifying data for the application is known. A member of the public filing a protest against a pending application after the date of publication of this Notice will receive no communication from the Office relating to the protest, other than the self-addressed postcard which the Office will stamp and return in order to acknowledge receipt of the protest as set forth in present §1.291(a). All Office communications will be conducted with the applicant in accordance with the procedures set forth in the proposed rulemaking, which procedures are those currently in effect. Pending adoption of the proposed rulemaking the Office will consider protests which comply with present §1.291(a) even though the protest does not include all the items enumerated in proposed new paragraph (b) of §1.291.

Practice Relating To §1.555

No interim practice is necessary regarding this proposed revision since it merely makes §1.555 more closely parallel §1.56 and more specifically defines the responsibility of a patent owner in a reexamination proceeding.

Practice Relating To §1.565

No interim practice is necessary regarding this proposed revision since it merely clarifies, but does not change, present practice.

Practice Relating To §1.570

No interim practice is necessary since this proposed revision merely reflects the paragraph change proposed in §1.565.

CONCLUSION

The present interim procedures will be in effect until further notice and pending a final determination on the proposed rulemaking.

DONALD J. QUIGG,
Nov. 16, 1981. *Deputy Commissioner of Patents & Trademarks.*

[1013 O.G. 18]

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(113)

Department of Commerce
Patent and Trademark Office
37 CFR Parts 1 and 5
[Docket No. 40227-18]
Revision of Foreign Filing License Procedure

Agency: Patent and Trademark Office, Commerce.

Action: Final rule.

Summary: The Patent and Trademark Office is amending the rules of practice in patent cases, Parts 1 and 5 of 37 CFR, to establish a streamlined procedure for granting licenses for foreign filing. The changes simplify the obtaining of licenses for filing foreign patent applications

and for filing amendments, modifications, and supplements in foreign patent applications. Under the revised rules (1) the export, but not actual filing, of technical data to a foreign country for purposes related to the filing and prosecution of a patent application may be done either under appropriate export agencies' rules or by a license issued by the Commissioner of Patents and Trademarks, (2) certain licenses issued by the Commissioner for filing foreign patent applications include a license to file amendments, modifications, and supplements, containing additional matter in foreign applications, (3) specific contents of a petition for retroactive license are established and (4) fees are set for expedited handling of requests for foreign filing licenses and for certain petitions. These changes will result in reduced work for both patent applicants and the Patent and Trademark Office and at the same time strengthen national security protections.

Effective Date: June 1, 1984.

For Further Information Contact: Kenneth L. Cage by telephone at (703) 557-2877 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: This rule change is designed primarily to simplify and expedite the granting of licenses under 35 U.S.C. 184. It contains a number of changes in practice designed to benefit both the Patent and Trademark Office in its handling of its mission and the public the Office serves. Notice of proposed rulemaking was published May 23, 1983, at 48 FR 23144 and corrected June 7, 1983, at 48 FR 26319.

Discussion of Specific Rules

Secton 5.11(a) has been substantially restructured and modified from the proposal. Under §5.11(a), a license from the Commissioner of Patents and Trademarks is always needed for the act of filing a patent application in a foreign patent office unless the six-month period has passed or the invention was not made in the United States.

Amended §5.11 (b) and (c) would clarify in the regulations that the export of technical data to a foreign country may be done under appropriate export agencies' rules controlling the export of technical data—Department of State (22 CFR Parts 121-130); Department of Commerce, International Trade Administration Office (15 CFR Part 379); or the Department of Energy (10 CFR Part 810)—or by license from the Commissioner. Compliance with the appropriate export agencies' rules or the license from the Commissioner is required before *exporting* technical data in the form of a patent application or data in any form if related to preparing, filing, and prosecuting a patent application in a foreign country, if the United States application has not been on file for six months at the time of export, or no application has been filed in the United States. It is optional from whom approval for export is obtained. In fact, for certain technical data being exported to certain countries, a specific request for a license or approval from any of the export agencies would not be necessary. However, a single license from the Commissioner would cover both export and filing and avoid any question whether a specific license or approval is required from any of the export agencies. Approval from the appropriate export agencies for export would require a separate additional license from the Commissioner for the filing of the foreign patent application. The rule changes will make the rules more closely conform with the regulations of other agencies which deal with the export of technical data to a foreign country.

The definition of export in these regulations will be controlled by the definition of export in the appropriate regulations of the export agencies having jurisdiction over the export of technical data related to the patent application. (15 CFR 379.1, 22 CFR 125.03 and 10 CFR 810.7).

The requirement of complying with the rules of the export agencies or the Commissioner before exporting an application to a foreign country is not intended to change long-standing Patent and Trademark Office interpretation of 35 U.S.C. 184 or in any way interpret the language in 35 U.S.C. 184 "file or cause or authorize to be filed" as requiring a license before technical data related to the filing or prosecution of an application is exported to a foreign country, such as to a foreign attorney or agent or corporation for review or revision for later filing. It does, however, reflect the delegations the Commissioner has received from other agencies and which are referenced in §§5.18, 5.19 and new §5.20 and clarifies that a patent applicant must be licensed for export of technical data abroad for purposes related to the preparation, filing or possible filing and prosecution of a foreign patent application either by appropriate export agencies or by the Commission. The language "related to the preparation, filing or possible filing and prosecution of a foreign patent application" in §5.11(b) is used rather than "support a patent application" as used in §5.18 or "foreign filing" as used in §5.19 to make clearer that the latter two phrases include the export of technical data in the form of explanations or possible claim language or the like sent to a foreign agent or other person in relation to a foreign patent application. However, a license from the Commissioner would not substitute for approvals required by appropriate export agencies if technical data is exported for purposes not related to the filing or possible filing and prosecution of a foreign patent application. For example, a license from the Commissioner would not cover export of technical data in a U.S. patent application to a foreign research laboratory to support a research project.

Further, the rule is intended to reflect that every exportation of technical data related to filing or possible filing or prosecution within six months of a United States filing without a license from the Commissioner is prohibited unless the applicant complies with the rules of the appropriate export agencies. For example, where an application has been exported to a foreign agent with an authorization to file a foreign patent application, the export of the application may be under a general license from the International Trade Administration of the Department of Commerce. A license from the Commissioner is always necessary for the actual filing of the foreign patent application. In another example, where a validated license is needed under 15 CFR Part 379 to export technical data in the form of a patent application, applicants will need to obtain an International Trade Administration license or obtain a Commissioner's license prior to the act of export. Under either example, a license from the Commissioner is required before the application is filed in a foreign patent office. In the latter example, a single license from the Commissioner will permit both export and filing of the application.

This rule is promulgated under the authority of 35 U.S.C. 6 and delegations to the Commissioner by regulation (15 CFR 370.10(j), 22 CFR 125.04, and 10 CFR 810.7) or otherwise under the Export Administration Act of 1979, as amended, the Arms Export Control Act, as amended, the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978. Authority for this rule also exists under 35 U.S.C. 188.

The amended rule assures adequate protection of sensitive material under Title 35, United States Code and provides regulatory consistency with the Arms Export Control Act, as amended, the Export Administration Act, as amended, the Atomic Energy Act of 1954, as amended, the Nuclear Non-Proliferation Act of 1978, and their implementing regulations. The sanctions which apply for failure to obtain a license from either the Commissioner or the appropriate export agencies prior to export are the sanctions specified in the export acts. The sanctions which apply for failure to obtain a license from the Commissioner prior to the filing of a foreign application are the sanctions specified in Title 35, United States Code.

Section 5.11(d), proposed as §5.11(b), states that appli-

cations under secrecy order under §5.2 cannot be exported to an international agency or filed in a foreign country except in accordance with §5.5.

Section 5.11(e), proposed as §5.11(c), states that a license pursuant to paragraph (a) is not required where the invention was not made in the United States, or the United States application was on file for six months without a secrecy order being issued.

Section 5.11(f), proposed as §5.11(d), states that a license for foreign filing may be revoked at any time upon written notice. Similarly, an authorization for foreign filing resulting from the passage of six months from the filing of a United States patent application may be revoked by the imposition of a secrecy order. The revocation is effective as of the date of the notice and is not intended to be applicable to any prior acts by applicants relying in good faith on the grant of a license.

The language of §§5.12(b), 5.13, and 5.14 have been clarified from the proposal to reflect that the §1.17(h) requirement for a fee is for the expedited handling of a license. No fee is required for a routine, non-expedited request for a foreign filing license.

Section 5.15 has been changed from the form proposed. Amended §5.15 defines licenses for foreign export and filing of two different scopes. The §5.15(a) scope license, the grant of which is indicated on the filing receipt in accordance with §5.12(a) published at 48 FR 2696. (Jan. 20, 1983) and 1027 OG 9 (Feb. 1, 1983), permits the subsequent export and filing of technical data for purposes related to the preparation, filing or possible filing and prosecution of the foreign application and of any amendments or modifications to the application in a foreign country, even if "additional subject matter" were introduced; provided the additional subject matter does not change the general nature of the subject matter disclosed and does not pertain to certain categories of potentially sensitive material which are set forth in §5.15(a)(4).

The phrase "change the general nature of the subject matter disclosed" is intended to cover situations where the additional subject matter so alters the character of the disclosure that national security review is appropriate. This phrase is intended to permit a broad range of amendments, modifications and supplements, including additional subject matter. The following examples are intended to further clarify the meaning of the language "general nature of the subject matter disclosed" in §5.15(a):

Example 1—The physical data on a named compound. If a licensed disclosure gives the name and structure of a compound, the general nature of the subject matter disclosed includes physical data such as boiling point, melting point or specific gravity of the compound. If a name of a compound is disclosed, the structure of the compound is also within the general nature. If the licensed disclosure deals with the hardness of a claimed alloy, the disclosure of tensile strength is within the general nature.

Example 2—A known specie of a known genus. If the genus "lower alkyl" is disclosed, the inclusion of the species "methyl" is within the general nature, as would be homologs and isomers of that genus.

Example 3—Comparison data of the disclosed compound to data on prior art compounds. If the licensed disclosure contains a disclosure of the compounds of a pesticide invention, and pesticidal activities, the comparison of pesticidal data of a known compound representing the closest prior art is within the general nature.

Example 4—A specific optimum temperature within a specified temperature range. If a licensed disclosure has a range of 0°C to 120°C, the disclosure of an optimum temperature of 100°C is within the general nature.

Example 5—Activity data on compounds of the invention. If activity data on 30 of 50 named compounds is disclosed, the disclosure of activity data on other named compounds of the invention is within the general nature.

Example 6—Additional subject matter and utilities. If a licensed disclosure describes a chemical herbicide for weed control, the disclosure of chemical warfare uses or human toxic properties (other than to demonstrate safety or absence of such toxicity) *is not* within the general nature. If a licensed disclosure describes an analog computer for microwave telephone transmission, the addition of a cryptographic encoding or decoding device and utility *is not* within the general nature. If a licensed disclosure describes a battery power source for a satellite, the addition or substitution of a nuclear isotopic power source *is* within the general nature, but would be within the control of §5.15(a)(4)(ii).

A §5.15(b) scope license is limited to the original subject matter disclosed at the time the license was granted and does not cover "additional subject matter" as the phrase is currently interpreted (*In re Gaertner*, 202 USPQ 714 (CCPA 1979)).

Under §5.15(c), a license with the scope of §5.15(a) could also be granted pursuant to a §5.13 or §5.14 petition. If granted, the §5.15(a) scope of license will be indicated on the license grant. For instance, under §5.15(c) an applicant who filed a United States patent application before Feb. 27, 1983, when the filing receipt license practice became effective could request a §5.15(a) scope license which, if granted, will cover the subsequent filing of amendments, modifications or supplements, including additional matter in a corresponding foreign patent application. The licenses under §§5.12(b), 5.13, and 5.14 are normally limited in scope to the original subject matter disclosed at the time the license was granted unless a license of the §5.15(a) scope is indicated on the license grant. If a petition for a license under §5.12(b) is granted prior to the grant of the §5.12(a) filing receipt license, the former would merge into the latter and would be considered a §5.12(a) license for the purpose of §5.15.

A new §5.20, not included in the proposal, sets forth the specific authority of the Commissioner to license foreign filing, possible filing or prosecution of a patent application in a foreign country under 35 U.S.C. 184 regarding unclassified activities in foreign atomic energy programs. This change only reflects the existing relationship between 37 CFR 5.11 and 10 CFR §810.7 and alerts patent applicants in this technology to the Commissioner's authority. The term "sensitive nuclear technology" used in paragraph (b) of §5.20 is defined in 10 CFR §810.3(q).

A new §5.25, proposed initially as §5.20 and modified, sets forth in the regulations the requirements to be met for the granting of a retroactive license. The requirements include (1) a list of the foreign countries in which the patent application material was filed; (2) the date(s) of filing of the foreign application(s); (3) an oath or declaration which (i) states that the subject matter filed is not subject to a secrecy order under 35 U.S.C. 181, (ii) makes a showing of diligence in attempting to obtain the license upon discovery of the error, and (iii) makes a showing of facts which support a conclusion of inadvertence; and (4) includes the required fee. The section also provides in paragraph (b) for review from a denial of a petition for a retroactive license. The section further provides in paragraph (c) that the granting of a retroactive license pursuant to §5.25 does not excuse any violation of regulations of the export agencies which may have occurred because of the failure to obtain an appropriate license prior to export.

Sections 5.21, 5.22 and 5.23 have been redesignated to become §§5.31, 5.32 and 5.33, respectively.

Significant Differences Between Proposed and Final Rules

Section 1.17

Section 1.17(h) is amended to include a specific reference to §5.25 petitions for retroactive licenses for which the petition fee is charged, rather than having the present retroactive license fee under §1.182 petitions. The fee for §5.12(b) licenses is new and applies only where expedited handling of these license requests is sought. This fee for expedited handling is also referred to in §§5.13 and 5.14. Section 5.15(c) provides for a fee for changing the scope of a license.

Section 5.1

The proposed amendment to §5.1 is not being adopted and is withdrawn.

Section 5.11

Section 5.11 is amended to control the *export* of technical data in the form of an application or data in any form if related to preparing, filing, or prosecuting a patent application in a foreign country, if the United States application has not been on file for at least six months prior to the date of transmittal, or if no application has been filed in the United States. Export approvals, if required, may be provided by appropriate export agencies—Department of State; Department of Commerce, International Trade Administration or Department of Energy—or by the Commissioner. This will enable the Patent and Trademark Office and the export agencies to better reflect and exercise the export control functions set forth in the Arms Export Control Act, as amended, the Export Administration Act of 1979, as amended, the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978, respectively.

Under these Acts, the export of technical data is the activity to be controlled. The final rule differs from the proposed rule in that the Patent and Trademark Office will not be the sole export control authority over technical data in the form of an application, or data in any form, if related to preparing, filing, or prosecuting a patent application. Applications will have the option to obtain necessary export approvals either (1) from appropriate export agencies or (2) from the Commissioner. The Commissioner will continue to be the sole licensing authority for the act of filing an application in a foreign patent office.

Paragraphs (a), (b), and (c) of §5.11 control export activity by requiring either an export agency approval or a Commissioner's license for export of technical data in connection with foreign filing of an application and to that extent implement the Arms Export Control Act, the Export Administration Act, the Atomic Energy Act and the Nuclear Non-Proliferation Act. If a license is obtained from the Commissioner under §5.12, §5.13 or §5.14, no separate approval for the export of technical data to a foreign country in connection with a patent application is required from the export agencies.

It is emphasized that the scope of the Commissioner's license is limited to exporting and filing technical data in the form of an application, or in any form, if related to preparing, filing and prosecuting a patent application or for consideration of the filing of a patent application in a foreign country. A Commissioner's license does not authorize selling or using technical data in a foreign country or exporting data for other purposes. These latter acts continue to require separate approvals from the appropriate export agencies.

Also, the export of technical data in any form to a foreign country for purposes other than related to filing or supporting the filing of a patent application is not controlled by Title 35, U.S.C. or the regulations in Part 5. The exportation of data to a foreign country in such cases would be subject only to other laws and regulations such as the export and arms control regulations. Approval for the export of such technical data for purposes related to filing, possible filing, or supporting the filing of a patent application will be available from the appropriate export agencies or the Commissioner. On the other hand, the Commissioner will be the sole licensing authority for the act of filing the application in a foreign patent office.

Section 5.11(d), proposed as §5.11(b), states that an application cannot be exported to a foreign country when the corresponding United States application is under secrecy order except under §5.5

Section 5.11(e), proposed as §5.11(c), states that no license is required if the invention was not made in the United States, or the application was on file in the United States at least six months and is not under a secrecy order issued under §5.2

Section 5.11(f), proposed as §5.11(d), states that any license for foreign filing may be revoked at any time by written notification. It has been amended to further clarify that revocation also applies to authorizations resulting from the passage of six months from the filing date of a United States patent application when a secrecy order is imposed.

Section 5.12

Section 5.12(b) is clarified from the proposal to specify that the fee is for expedited handling of a petition under §1.17(h).

Section 5.13

Section 5.13 is clarified from the proposal to specify that the fee is for expedited handling of a petition under §1.17(h).

Section 5.14

Section 5.14(a) is clarified from the proposal to specify that the fee is for expedited handling of a petition under §1.17(h).

The other changes in §5.14 make grammatical corrections and do not alter the intent of the section.

Section 5.15

Section 5.15(a) broadens the scope of licenses granted under §5.12(a). Section 5.15(a), as proposed, is changed to clarify the scope of a §5.15(a) license and delete certain of the exclusions originally proposed. This license permits exporting technical data to and filing corresponding subject matter in an application in any foreign country. The license also permits amendments, modifications, and supplements, including divisions, changes or supporting matter consisting of the illustration, exemplification, comparison, or explanation of subject matter disclosed in the application, to be exported and filed in any foreign country. This license includes additional matter which does not change the general nature of subject matter disclosed and does not pertain to certain prohibited subjects or areas listed on various export restriction lists established by the Department of State and the Department of Energy.

These changes also permit an applicant to take action in the prosecution of the foreign or international application and submit supporting data such as affidavits, test data or the like as long as it directly relates to the filing, possible filing or prosecution of the application and does not pertain to the prohibited subjects or areas enumerated in §5.15(a)(4). The changes in §5.15(a) obviate the problems in *In re Gaertner*, supra, by providing a license scope which covers the type of activity involved in that case.

Amended paragraph (b) of §5.15 is the same as proposed paragraph (b) except for changes for consistency.

Amended paragraph (c) of §5.15 differs from §5.15(c) as proposed by including a reference to §5.14 and specifically permitting an applicant to petition for a change of the scope of a license.

New paragraph (d) of §5.15 is similar to proposed paragraph (d) with only changes for consistency.

New paragraph (e) of §5.15 is similar to proposed paragraph (e) with only changes for consistency.

Paragraph (f) of §5.15 is similar to proposed paragraph (f) with only changes for consistency.

Paragraph (g) is adopted essentially as proposed.

Section 5.17

Section 5.17 is similar to proposed §5.17 with only consistency changes.

Section 5.20

Section 5.20, not included in the proposal, is new and clarifies the existing authority of the Commissioner under the unclassified activities in foreign atomic energy programs. Under 10 CFR 810.7, the license of the Commissioner under 37 CFR 5.11 pursuant to 35 U.S.C. 184 constitutes information available to the public and generally authorized activity.

Section 5.25

Section 5.25, proposed initially as §5.20, is new and

sets forth the requirements for petitioning for a retroactive license.

Section 5.31 and 5.32

Sections 5.21 and 5.22 are redesignated as §§5.31 and 5.32, respectively.

Section 5.33

Section 5.23 is redesignated as §5.33 and adopted as proposed.

Responses to Comments on the Rules

Specific comments were received on a number of the sections. All of the comments, including the written comments and the oral testimony were considered.

Twenty-one letters presenting written comments were received and nine persons testified at the public hearing on July 20, 1983. Comments appear below along with the responses.

Comment: One comment objected to the amendment of §5.1 to include "transmittal for" filing.

Reply: This comment has been adopted by deleting the phrase from the final rule.

Comment: Three comments requested an explanation of the conditions when a license may be revoked under §5.11(d) be clearly set forth and asked whether, if revocation occurs, past acts are valid and whether there will be compensation for damages.

Reply: The section has been revised to further clarify the conditions under which a license may be revoked. The power to revoke licenses has been expressly included in all issued licenses for a number of years. Section 5.11(d) as proposed, merely recognizes in the rule the fact that licenses can be revoked. With the advent of the filing of a U.S. application becoming a request for a foreign filing license under §5.12(a), a regulatory procedure clarifying the revocation practice was appropriate. Revocation will be effective only as of the date of revocation and prior acts predicated on the license would be in compliance with 37 CFR Part 5. The rule as proposed has been clarified to indicate that revocation may apply either to a license specifically granted by the Commissioner or to an authorization to file a foreign application resulting from the passage of six months from the filing of a United States patent application. No compensation is available for revocation of a license.

Comment: Eighteen comments requested the amendment of §5.11 to eliminate the license requirement for "transmittal for filing" and substitute the requirement for "filing" only.

Reply: The proposal has been adopted by eliminating the requirement for a license from the Commissioner prior to transmitting or exporting an application abroad. The regulations have been clarified to emphasize the requirements for the export of technical data in the form of an application. An applicant has a choice of exporting such applications under authority of either (1) the appropriate export agencies controlling the export of technical data—Department of State; Department of Commerce, International Trade Administration; or Department of Energy or (2) a license from the Commissioner. While a license from the Commissioner is required only for filing an application abroad, the provisions of §§5.18, 5.19 and 5.20 reflect the Commissioner's authority to license the export of technical data in the form of an application for purposes related to filing in addition to the foreign filing of the application in a foreign country.

Comment: Six person objected to the transmittal license requirement and argued that the Patent and Trademark Office lacks authority under 35 U.S.C. 184 to require pre-filing (transmitting) licenses. It was also argued that foreign filing licensing is not the conduct of proceedings under 35 U.S.C. 6.

Reply: The final rules do not require a license from the Commissioner for export (or transmittal). The export provisions of §5.11 are issued under 35 U.S.C. 6 and pursuant to delegations under the regulations of the export agencies.

Comment: One comment argued that the constitutional right of freedom of speech would be impaired by requiring a license for published material.

Reply: A constitutional argument of prior restraint by export licensing of the International Traffic in Arms Regulations was reviewed by the Ninth Circuit in the case of *United States* v. *Edler*, 579 F. 2d 516 (9th Cir. 1978) cert. denied 449 U.S. 1084 (1981). No prior restraint within first amendment protection was found by the Court.

Comment: One comment stated that the $120 petition license fee under §5.12(b) is too high, and a $60 fee would be more reasonable.

Reply: The license fee under §5.12(b), §5.13 and §5.14 is not applicable to routine licensing requests. It is only applicable to expedited processing of license requests which require special efforts by the Patent and Trademark Office. The $120 petition fee better reflects the costs to the Patent and Trademark Office for providing expedited handling.

Comment: One comment proposed the deletion of the last sentence of paragraph §5.14(a) since under §5.12(a) only those cases having interest from a security standpoint are refused a license.

Reply: This suggestion has not been adopted because the provision may apply to petitions filed prior to receipt of a filing receipt license where expedited handling is requested.

Comment: One comment stated that §5.15(d) appears to be redundant since it applies only to cases on file for six months and on which no secrecy order has been imposed.

Reply: Under §5.15(d), a license is not needed for cases in this category if no additional subject matter is added. This section complements §5.15(b) where a license of narrow scope is granted.

Comment: One comment raised the question whether §5.15(a) as to amendments, supplements, and modifications includes continuation-in-part applications.

Reply: Continuation-in-part applications are included within the term "amendments, supplements, and modifications." *Beckman Instruments, Inc.* v. *Coleman Instruments*, 143 USPQ 278 (7th Cir. 1964).

Comment: Two comments requested that the express language in §5.15(a)(3) be amended to state that "Technical Data" relating to articles, materials and supplies be limited to the validated license requirements of §§379.4(c) and 379.4(d) of the Export Administration Regulations and no other sections, or alternatively, that paragraph (a)(3) be deleted in its entirety.

Reply: The final rules do not include §5.15(a)(3) as proposed.

Comment: Two comments proposed that the two-tier licensing structure of §5.15(a) and §5.15(b) be amended to reflect a broad one-tier system based on §5.15(a).

Reply: The two-tier system reflects different treatment for applications within the inspection scope of 35 U.S.C. 181 and those outside of its inspection scope. Security review occurs on all applications with inspection cases having a narrow license grant, and noninspection cases having a broad license grant. This inspection case treatment is necessary for the Patent and Trademark Office to meet its responsibilities under 35 U.S.C. 184 and particularly 37 CFR 5.18, 5.19, and 5.20 where the State, Commerce and Energy Departments accept the Commissioner's licenses in lieu of their own export approval.

Comment: One comment indicated that proposed §5.15(a)(3) was of such wide scope that licenses will always be needed. The example cited was that this section would require licenses for all amendments filed in North Korea and Cuba.

Reply: The comment is correct and the provisions of §5.15(a)(3) have been deleted. The country of destination restrictions did not provide a workable mechanism for technology review under the provisions of 35 U.S.C. 181.

Comment: Three comments recommended making a §5.15(a) scope license available pursuant to a §5.14 petition where an application was filed prior to Feb. 27, 1983, or where an initial automatic §5.12(a) petition was

not granted after Feb. 27, 1983 or where the general nature of the invention changed but is still outside of the provisions of §5.15(a)(4).

Reply: This provision has been adopted to allow the Commissioner to issue broadened licenses upon a §5.14 petition in the above circumstances. New §5.15(c) allows the Commissioner to convert the scope of a license from §5.15(b) to a §5.15(a) license.

Comment: Two comments proposed the extension of a §5.15(a) license upon petition after one or more years after the United States filing date or after grant of a §5.15(b) license.

Reply: This suggestion has been adopted in §5.15(c) which will provide the mechanism by petition at any time to convert the scope of a license. This is promulgated since errors may occur in the denial of a §5.15(a) license. Also, the initial determination of the sensitive nature of technology may be altered by changes in the security classification guidelines. Procedurally, such petitions will be referred to the appropriate defense agencies for their review of the technology prior to the grant of any license.

Comment: One comment requested clarification on how and under what circumstances a §5.12(b) license granted under §5.15(c) has the same scope as a license granted under §5.12(a).

Reply: Licenses granted under §5.12(a) will have the §5.15(a) scope because the applications are not within the inspection scope of a 35 U.S.C. 181 referred to the defense agencies for security review. Under §5.15(c), applications which are not referred to defense agencies pursuant to petitions under §§5.12, 5.13 and 5.14 will have a license of the scope of §5.15(a).

Comment: Three comments suggested an amendment to proposed §5.20(4) to delete the "inadvertence" standard and substitute "through error without deceptive intent."

Reply: Inadvertence is a statutory standard which cannot be altered by rulemaking. Further, judge-made law has determined the metes and bounds of this term which further proscribes the rulemaking authority of the Commissioner. In *Barr Rubber Products Co.* v. *Sun Rubber Co.*, 149 USPQ 204, 209 (S.D.N.Y., 1966) inadvertence was defined as "lack of care or attentiveness: inattention" or "an effect of inattention: a result of carelessness; an oversight, mistake, or fault from negligence."

Inadvertence signifies want of attention, and an action which is deliberately taken with full knowledge of the law and facts is not inadvertent. *In re Application of Nov. 22, 1952,* 153 USPQ 410, 411 (Asst. Commr. 1967).

Implementation of Patent Procedure Revisions

The various sections will be implemented by the Commissioner on the effective date of the rules by the acceptance of petitions under the various sections. The broadened license scope of §5.15(a) will apply as of the effective date of these rules to all cases having filing receipt licenses under §5.12(a) which became effective on Feb. 27, 1983. The provisions of this broad license do not apply to acts of export or filing which occurred prior to the effective date of these rules. No other action will be required by an applicant to receive the benefits of this change.

Other Considerations

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The Acting General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354) for several reasons. Under this rulemaking, small entities would be able to obtain licenses without filing separate requests therefor. In general, the rule change will also expedite proceedings before the Patent and Trademark Office, simplifying existing procedures where possible.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increases in cost or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

Paperwork Reduction Act. The collection of information requirement of this rule is included in a PTO request for approval pending before the OMB. Upon assignment of a control number by OMB, we will publish an appropriate amendment of the affected rules.

List of Subjects

37 CFR Part 1

Administrative practice and procedure, Courts, Freedom of Information, Inventions and patents, Lawyers, Small businesses.

37 CFR Part 5

Classified information, Foreign relations, Inventions and patents.

Notice is hereby given that, pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, 41 and 181-188 and by delegations to the Commissioner by regulation (15 CFR 370.10(j), 22 CFR 125.04, and 10 CFR 810.7) or otherwise under the Export Administration Act of 1979, as amended, the Arms Export Control Act, as amended, the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978, the Patent and Trademark Office is amending Parts 1 and 5 of Title 37 of the Code of Federal Regulations as set forth below:

PART 1—[AMENDED]

1. Section 1.17 is amended by revising paragraph (h) to read as follows:

§1.17 Patent application processing fees.

* * * * *

(h) For filing a petition to the Commissioner under a section of Part 1 or 5 listed below which refers to this paragraph $120.00
—§1.47—for filing by other than all the inventors or a person not the inventor
—§1.48—for correction of inventorship
—§1.182—for decision on questions not specifically provided for
—§1.183—to suspend the rules
—§1.268—for late filing of interference settlement agreement
—§§5.12, 5.13 & 5.14—for expedited handling of foreign filing license
—§5.15—for changing the scope of a license
—§5.25—for retroactive license

2. The table of contents and heading for Part 5 are revised to read as follows:

PART 5—SECRECY OF CERTAIN INVENTIONS AND LICENSES TO EXPORT AND FILE APPLICATIONS IN FOREIGN COUNTRIES

Secrecy Orders

Sec.
5.1 Defense inspection of certain applications.
5.2 Secrecy order.
5.3 Prosecution of application under secrecy orders; withholding patent.
5.4 Petition for rescission of secrecy order.
5.5 Permit to disclose or modification of secrecy order.
5.6 General and group permits.
5.7 Compensation.
5.8 Appeal to Secretary.

Licenses for Foreign Exporting and Filing

5.11 License for filing in a foreign country an applica-

tion on an invention made in the United States or for transmitting international application.
5.12 Petition for license.
5.13 Petition for license; no corresponding application.
5.14 Petition for license; corresponding U.S. application.
5.15 Scope of license.
5.16 Effect of secrecy order.
5.17 Who may use license.
5.18 Arms, ammunition, and implements of war.
5.19 Export of technical data.
5.20 Export of technical data relating to sensitive nuclear technology.
5.25 Petition for retroactive license.

General
5.31 Effect of modification, rescission or license.
5.32 Papers in English language.
5.33 Correspondence.

Authority: 35 U.S.C. 6, 41, 181–188 and the Export Administration Act of 1979, as amended, the Arms Export Control Act, as amended, the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978, and the delegations in the regulations under these acts to the Commissioner (15 CFR 370.10(j), 22 CFR 125.04, and 10 CFR 810.7).

3. The center heading preceding §5.11 and the text of §5.11 are revised to read as follows:

Licenses for Foreign Exporting and Filing

§5.11 License for filing in a foreign country an application on an invention made in the United States or for transmitting an international application.

(a) A license from the Commissioner of Patents and Trademarks under 35 U.S.C. 184 is required before filing any application for patent or for the registration of a utility model, industrial design, or model, in a foreign patent office or any foreign patent agency or any international agency other than the United States Receiving Office, if:

(1) An application on the invention has been on file in the United States less than six months prior to the date on which the application is to be filed, or

(2) No application on the invention has been filed in the United States.

(b) The license from the Commissioner of Patents and Trademarks referred to in paragraph (a) would also authorize the export of technical data abroad for purposes related to the preparation, filing or possible filing and prosecution of a foreign patent application without separately complying with the regulations contained in 22 CFR Parts 121–130 (International Traffic in Arms Regulations of the Department of State), 15 CFR Part 379 (Regulations of the Office of Export Administration, Department of Commerce) and 10 CFR Part 810 (Foreign Atomic Energy Programs of the Department of Energy).

(c) Where technical data in the form of a patent application, or in any form is being exported for purposes related to the preparation, filing or possible filing and prosecution of a foreign patent application, without the license from the Commissioner of Patents and Trademarks referred to in paragraphs (a) or (b) of this section, or on an invention not made in the United States, the export regulations contained in 22 CFR Parts 121–130 (International Traffic in Arms Regulations of the Department of State), 15 CFR Part 379 (Regulations of Office of Export Administration, International Trade Administration, Department of Commerce) and 10 CFR Part 810 (Foreign Atomic Energy Programs of the Department of Energy) must be complied with unless a license is not required because a United States application was on file at the time of export for at least six months without a secrecy order under §5.2 being placed thereon. The term "exported" means export as it is defined in 22 CFR Parts 121–130, 15 CFR Part 379 and 10 CFR Part 810.

(d) If a secrecy order has been issued under §5.2, an application cannot be exported to, or filed in, a foreign country (including an international agency in a foreign country), except in accordance with §5.5.

(e) No license pursuant to paragraph (a) of this section is required if:

(1) The invention was not made in the United States, or

(2) The United States application is not subject to a secrecy order under §5.2, and was filed at least six months prior to the date on which the application is filed in a foreign country.

(f) A license pursuant to paragraph (a) of this section can be revoked at any time upon written notification by the Patent and Trademark Office. An authorization to file a foreign patent application resulting from the passage of six months from the date of filing of a United States patent application may be revoked by the imposition of a secrecy order.

4. Section 5.12 is amended by revising paragraph (b) to read as follows:

§5.12 Petition for license.

* * * * *

(b) Petitions for license should be presented in letter form and must include the required fee (§1.17(h)), if expedited handling of the petition is also sought, the petitioner's address, and full instructions for delivery of the requested license when it is to be delivered to other than the petitioner.

5. Section 5.13 is revised to read as follows:

§5.13 Petition for license; no corresponding application.

If no corresponding national or international application has been filed in the United States, the petition for license under §5.12(b) must be accompanied by the required fee (§1.17(h)), if expedited handling of the petition is also sought, and a legible copy of the material upon which a license is desired. This copy will be retained as a measure of the license granted. For assistance in the identification of the subject matter of each license so issued, it is suggested that the petition be submitted in duplicate and provide a title and other description of the material. The duplicate copy of the petition will be returned with the license or other action on the petition.

6. Section 5.14 is amended by revising paragraphs (a) and (c) to read as follows:

§5.14 Petition for license; corresponding U.S. application.

(a) When there is a corresponding United States application on file, a petition for license under §5.12(b) must include the required fee (§1.17(h)), if expedited handling of the petition is also sought, and must identify this application by serial number, filing date, inventor, and title, but a copy of the material upon which the license is desired is not required. The subject matter licensed will be measured by the disclosure of the United States application. Where the title is not descriptive, and the subject matter is clearly of no interest from a security standpoint, time may be saved by a short statement in the petition as to the nature of the invention.

* * * * *

(c) When the application to be filed or exported abroad contains matter not disclosed in the United States application or applications, including the case where the combining of two or more United States applications introduces subject matter not disclosed in any of them, a copy of the application as it is to be filed in the foreign country or international application which is to be transmitted to a foreign international or national agency for filing in the Receiving Office, must be furnished with the petition. If however, all new matter in the foreign or international application to be filed is readily identifiable, the new matter may be submitted in detail and the remainder by reference to the pertinent United States application or applications.

7. Section 5.15 is revised to read as follows:

§5.15 Scope of license.

(a) Grant of a license under §5.12(a) authorizes the export and filing of an application in a foreign country

or the transmitting of an international application to any foreign patent agency or international patent agency when the subject matter of the foreign or international application corresponds to that of the domestic application. This license includes authority

(1) To export and file all duplicate and formal papers to the foreign country or international agencies;

(2) To make amendments, modifications and supplements, including divisions, changes or supporting matter consisting of the illustration, exemplification, comparison, or explanation of subject matter disclosed in the application;

(3) To take any action in the prosecution of the foreign or international application; and

(4) To add subject matter or take any action under paragraphs (a) (1)–(3) of this section which does not change the general nature of the subject matter disclosed at the time of filing, unless the subject matter added involves technical data pertaining to:

(i) Defense services or articles designated in the United States Munitions List applicable at the time of foreign filing, the unlicensed exportation of which is prohibited pursuant to the Arms Export Control Act, as amended, and 22 CFR Parts 121–130; or

(ii) Restricted Data, sensitive nuclear technology or technology useful in the production or utilization of special nuclear material or atomic energy, the dissemination of which is subject to restrictions of the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978, as implemented by the regulations for Unclassified Activities in Foreign Atomic Energy Programs, 10 CFR Part 810, in effect at the time of foreign filing.

(b) Grant of a license under §5.12(b) authorizes the export and filing of an application in a foreign country or the transmitting of an international application to any foreign patent agency or international patent agency. Further, this license includes authority to forward all duplicate and formal papers to the foreign patent agency or international patent agency and to make amendments, modifications or supplements to and take any action in the prosecution of the foreign or international application, provided subject matter additional to that covered by the license is not involved.

(c) A license granted under §5.12(b) pursuant to §5.13 or §5.14 shall have the scope indicated in paragraph (a) of this section, if it is so specified in the license. A petition, accompanied by the required fee (§1.17(h)), may also be filed to change a license having the scope indicated in paragraph (b) of this section to a license having the scope indicated in paragraph (a) of this section. The change in the scope of a license will be as of the date of the grant of the change in scope.

(d) In those cases in which no license is required to file the foreign application or transmit the international application, no license is required to file papers in connection with the prosecution of the foreign or international application not involving the disclosure of additional subject matter.

(e) Any paper filed abroad or transmitted to an international patent agency following the filing of a foreign or international application which changes the general nature of the subject matter disclosed at the time of filing or which involves the disclosure of subject matter listed in paragraphs (a)(4) (i) or (ii) of this section must be separately licensed in the same manner as a foreign or international application. Further, if no license has been granted under §5.12(a) on filing the corresponding United States application, any paper filed abroad or with an international patent agency which involves the disclosure of additional subject matter must be licensed in the same manner as a foreign or international application.

(f) Licenses separately granted in connection with two or more United States applications may be exercised by combining or dividing the disclosures, as desired, provided:

(1) Subject matter which changes the general nature of the subject matter disclosed at the time of filing or which involves subject matter listed in paragraphs (a)(4) (i) or (ii) of this section is not introduced and,

(2) In the case where at least one of the licenses was obtained under §5.12(b), additional subject matter is not introduced.

(g) A license does not apply to acts done before the license was granted. See §5.25 for petitions for retroactive licenses.

8. Section 5.17 is revised to read as follows:

§5.17 Who may use license.

Licenses may be used by anyone interested in the export, foreign filing, or international transmittal for or on behalf of the inventor or the inventor's assigns.

9. A new §5.20 is added to read as follows:

§5.20 Export of technical data relating to sensitive nuclear technology.

(a) Under regulations (10 CFR 810.7) established by the United States Department of Energy, an application filed in accordance with the regulations (37 CFR 5.11–5.33) of the United States Patent and Trademark Office and eligible for foreign filing under 35 U.S.C. 184, is considered to be information available to the public in published form and a generally authorized activity for the purposes of the Department of Energy regulations.

(b) Inquiries concerning the export of sensitive nuclear technology other than related to the filing or prosecution of a foreign patent application should be made to the Attention: Secretary, United States Department of Energy, Office of International Security Affairs, Washington, D.C. 20858.

§5.21 [Redesignated as §5.31]

10. Section 5.21 is redesignated as §5.31.

§5.22 [Redesignated as §5.32]

11. Section 5.22 is redesignated as §5.32.

12. A new §5.25 is added to read as follows:

§5.25 Petition for retroactive license.

(a) A petition of retroactive license under 35 U.S.C. 184 shall be presented in accordance with §5.13 or §5.14, and shall include:

(1) A listing of the foreign countries in which the patent application material was filed,

(2) The dates on which the material was filed,

(3) A verified statement containing:

(i) An averment that the subject matter in question was not under a secrecy order at the time it was filed abroad, and that it is not currently under a secrecy order.

(ii) A showing that the license has been diligently sought after discovery of the proscribed foreign filing, and

(iii) An explanation of why the material was inadvertently filed abroad without the required license under §5.11 first having been obtained, and

(4) The required fee (§1.17(h)).

The above explanation must include a showing of facts rather than a mere allegation of inadvertence. The showing of facts should include statements by those persons having personal knowledge of the acts regarding filing in a foreign country and should be accompanied by copies of any necessary supporting documents such as letters of transmittal or instructions for filing. The acts which are alleged to constitute inadvertence should cover the period from the time of filing until actual filing of the petition under this section.

(b) If a petition for a retroactive license is denied, a time period of not less than thirty days shall be set, during which the petition may be renewed. Failure to renew the petition within the set time period will result in a final denial of the petition. A final denial of a petition stands unless a petition is filed under §1.181 within two months of the date of the denial. If the petition for a retroactive license is denied with respect to the invention of a pending application and no petition under §1.181 has been filed, a final rejection of the application under 35 U.S.C. §185 will be made.

(c) The granting of a retroactive license does not excuse any violation of the export regulations contained in 22 CFR Parts 121–130 (International Traffic in Arms Regulations of the Department of State), 15 CFR Part 379 (Regulations of Office of Export Administration, International Trade Administration, Department of Commerce) and 10 CFR Part 810 (Foreign Atomic Energy Programs of the Department of Energy) which may have occurred because of the failure to obtain an appropriate license prior to export.

13. Section 5.23 is redesignated as §5.33 and revised to read as follows:

§5.33 Correspondence.

All correspondence in connection with this part, including petitions, should be addressed to "Commissioner of Patents and Trademarks (Attention Licensing and Review), Washington, D.C. 20231."

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Feb. 24, 1984.

[FR Doc. 84-8884 Filed 4-3-84; 8:45 am]
BILLING CODE 3510-16-M

[1042 O.G. 3]

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(114)

Department of Commerce
Patent and Trademark Office
37 CFR Parts 1 and 5
[Docket No. 40227-18]
Revision of Foreign Filing License Procedure

Agency: Patent and Trademark Office, Commerce

Action: Final rule: Change of effective date

Summary: The Patent and Trademark Office amended the rules of practice in patent cases, Parts 1 and 5 of 37 CFR, to establish a streamlined procedure for granting licenses for foreign filing by publishing a notice in the Federal Register on Apr. 4, 1984, at 49 Fed. Reg. 13456–13463. The notice set an effective date of June 1, 1984. However, title 35, United States Code, section 41(g) provides that "No fee established by the Commissioner under this section will take effect prior to sixty days following notice in the Federal Register." Since these rules establish fees and the effective date of the rules was slightly less than 60 days after the publication of the final rule change in the Federal Register, it is necessary to set a later effective date.

Date: The effective date of the rule change published at 49 Fed. Reg. 13456–13463 is changed to June 4, 1984.

For further information contact: Kenneth L. Cage by telephone at (703) 557-2877 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Apr. 30, 1984.

[1042 O.G. 58]

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(115)

Guidelines for Extension of Patent Term Under 35 U.S.C. 156

This notice is intended to establish initial guidelines for patent owners who are seeking extensions of patent terms pursuant to newly enacted 35 U.S.C. 156. These guidelines will be effective until further notice. Section 156 of Title 35, United States Code, provides that a patent owner seeking an extension of the term of a patent pursuant to its provisions must submit an application to the Commissioner of Patents and Trademarks (hereinafter Commissioner) within a certain defined period of time. Section 156 specifies certain components the application is to contain, including "such patent or other information as the Commissioner may require." See 35 U.S.C. 156(d) (1) (E). Section 156(d) (4) also provides that "[a] n application for the extension of the term of a patent is subject to the disclosure requirements prescribed by the Commissioner." Section 156(h) provides that the "Commissioner may establish such fees as the Commissioner determines appropriate to cover the costs to the Office of receiving and acting upon applications under this section." The purpose of this notice is to provide the guidelines which a patent owner or its agent should use in deciding whether to submit an application for the extension of the term of a patent to the Patent and Trademark Office and in actually making the submission of such an application. This notice is divided into a number of sections set forth below which treat various determinations which have to be made by a patent owner or its agent prior to submission of an application and further includes guidelines as to the actual content of an application for extension of the term of a patent.

A patent owner or its agent should use the guidelines in the various sections set forth below in determining whether a patent is subject to, and meets the conditions for, extension of its term. If so, the patent owner or its agent should also use the guidelines set forth below in preparing and filing an application for extension of the patent term. If any application for extension of the term of a patent is filed in accordance with 35 U.S.C. 156 before the date on which this notice is published in the Official Gazette and is not in compliance with the requirements of this notice, applicant will be notified of the deficiencies in the application and will be given a period of time within which to correct the deficiencies.

Guidelines

§A. *Patents subject to extension of the patent term.*

(a) Any patent which claims a product as defined in paragraph (b) of this section, or a method of using such a product, or a method of manufacturing such a product, is subject to being extended in accordance with 35 U.S.C. 156.

(b) The term "product" referred to in paragraph (a) of this section means (1) a human drug product or (2) any medical device, food additive, or color additive subject to regulation under the Federal Food, Drug, and Cosmetic Act. The term "human drug product" means the active ingredient of a new drug, antibiotic drug, or human biological product (as those terms are used in the Federal Food, Drug, and Cosmetic Act and the Public Health Service Act) including any salt or ester of the active ingredient, as a single entity or in combination with another active ingredient.

§B. *Conditions for extension of term of a patent.*

The term of a patent may be extended if:

(a) the patent claims a product or a method of using or manufacturing a product as defined in §A of this notice;
(b) the term of the patent has never been previously extended except for any interim extension issued pursuant to 35 U.S.C. 156(e) (2);
(c) an application for extension is submitted pursuant to §D of this notice;
(d) the product has been subject to a regulatory review period as defined in 35 U.S.C. 156(g) and by the Secretary of Health and Human Services before its commercial marketing or use;
(e) the product has received permission for commercial marketing or use and (i) the application is submitted within the sixty day period beginning on the date the product first received permission for commercial marketing or used under the provision of law under which the applicable regulatory review period occurred, or (ii) in the case of a patent claiming a method of manufacturing the product which primarily uses recombinant DNA technology in the manufacture of the product, the application for extension is submitted within the sixty day period beginning on the date of the first permitted commercial marketing or use of a product manufactured under the process claimed in the patent;
(f) the term of the patent has not expired before the submission of an application pursuant to §D of this notice; and

(g) no other patent has been extended for the same regulatory review period for the product.

§C. *Applicant for extension of patent term.*

Any application for extension of a patent term must be submitted by the owner of record of the patent or its agent and must comply with the requirements of §D of this notice.

§D. *Application for extension of the term of a patent.*

(a) An application for extension of the term of a patent must be made in writing to the Commissioner of Patents and Trademarks. The filing date of an application for extension of the term of a patent is the date on which the complete application for extension and a duplicate of the papers thereof, certified as such, are received in the Patentand Trademark Office or filed pursuant to the provisions of 37 CFR 1.10. The provisions of 37 CFR 1.8 should not be used to file an application for the extension of the term of a patent.

(b) A complete application for the extension of the term of a patent comprises:

(1) a complete identification of the approved product as by appropriate chemical and physical structure or characteristics;

(2) a complete identification of the Federal statute including the applicable provision of law under which the regulatory review occurred;

(3) an identification of the date on which the product received permission for commercial marketing or use under the provision of law under which the applicable regulatory review period occurred;

(4) a statement that the application is being submitted within the sixty day period permitted for submission and an identification of the date of the last day on which the application could be submitted;

(5) a complete identification of the patent for which an extension is being sought by the name of the inventor, the patent number, and the date of issue;

(6) a copy of the patent for which an extension is being sought, including the entire specification (including claims) and drawings, in the form of a cut-up copy of the original patent with only a single column of the printed patent securely mounted or reproduced in permanent form on one side of a separate paper;

(7) a copy of any disclaimer, certificate of correction, receipt of maintenance fee payment, or reexamination certificate issued in the patent;

(8) a statement that the patent claims the approved product or a method of using or manufacturing the approved product, and a showing which lists each applicable patent claim and demonstrates the manner in which each applicable patent claim reads on the approved product or a method of using or manufacturing the approved product;

(9) the relevant dates and information pursuant to 35 U.S.C. 156(g) in order to enable the Secretary of Health and Human Services to determine the applicable regulatory review period;

(10) a brief description of the activities undertaken by the applicant during the applicable regulatory review period with respect to the approved product and the significant dates applicable to such activities;

(11) a statement that in the opinion of the applicant the patent is eligible for the extension and a statement as to the length of extension claimed, including how the length of extension was determined;

(12) a statement that applicant acknowledges a duty to disclose to the Commissioner of Patents and Trademarks and the Secretary of Health and Human Services any information which is material to any determinations to be made relative to the application for extension; and

(13) the prescribed fee for receiving and acting upon the application for extension (see §F of this notice) and an oath or declaration as set forth in paragraph (c) of this section.

(c) Any application for extension of the term of a patent submitted pursuant to paragraphs (a) and (b) of this section must include an oath or declaration signed by the owner of record of the patent or its agent which specifically identifies the application papers and the patent for which an extension is sought and avers that the person signing the oath or declaration:

(1) has reviewed and understands the contents of the application being submitted pursuant to this section;

(2) believes the patent is subject to extension pursuant to §A of this notice;

(3) believes an extension of the length claimed is fully justified under 35 U.S.C. 156; and

(4) believes the patent for which the extension is being sought meets the conditions for extension of the term of a patent as set forth in §B of this notice.

(d) If any application for extension of the term of a patent submitted pursuant to this section is held to be incomplete, applicant may seek to have that holding reviewed by filing a petition pursuant to 37 CFR 1.182 within such time as may be set, or if no time is set, within one month of the date on which the application was held incomplete.

§E. *Interim extension of the term of a patent.*

An applicant who has filed an application for extension pursuant to §D of this notice may request one or more interim extensions for periods of up to one year pending a final determination on the application. Any such request should be filed at least three months prior to the expiration date of the patent. The Commissioner may issue interim extensions for periods of up to one year until a final determination is made without a request by the applicant. In no event will the interim extensions granted under this section be longer than the maximum period of extension to which the applicant would be eligible.

§F. *Fee for receiving and acting on an application for extension of the term of a patent.*

Pursuant to 35 U.S.C. 156(h) the Commissioner has determined that a fee of $750.00 is appropriate to cover the costs to the Patent and Trademark Office of receiving and acting upon applications for extension of the term of a patent filed pursuant to 35 U.S.C. 156. The fee should accompany the application when filed. If a fee in a different amount is adopted in Title 37 of the Code of Federal Regulations, applicant will be refunded any excess or required to submit any deficiency.

§G. *Address for application for extension of the term of a patent and communications relating thereto.*

All applications for extension of the term of a patent and any communcations relating thereto intended for the Patent and Trademark Office should be addressed to the Commissioner of Patents and Trademarks, Box Patent Ext., Washington, D.C. 20231. When appropriate, the communication should also be marked to the attention of a particular individual.

§H. *For further information contact:*

R. Franklin Burnett by telephone at (703) 557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Summary

The initial guidelines set forth above are considered to be appropriate and authorized by 35 U.S.C. 156. They will provide appropriate guidance to patent owners and their agents pending appropriate changes which will be made in Title 37 of the Code of Federal Regulations.

DONALD J. QUIGG,

Sept. 25, 1984. *Acting Commissioner of Patents and Trademarks.*

[1047 O.G. 16]

(116)

Guidelines for the Submission of Applications for Interim Protection of Mask Works Under 17 U.S.C. 914

Chapter 9 of Title 17 of the United States Code, the Semiconductor Chip Protection Act of 1984, establishes a new form of intellectual property protection for mask works that are fixed in semiconductor chips. Mask works are defined as a "series of related images, however fixed or encoded" that represent the three-dimensional patterns in the layers of a semiconductor chip. This chapter provides a 10 year term of protection for original mask works measured from their date of registration on first commercial exploitation anywhere in the world. Mask works must be registered in the United States Copyright Office within two years' of first commercial exploitation to maintain this protection.

This chapter denies protection to foreign owners of mask works unless the works are first commercially exploited in the United States. It is contemplated that foreign countries will eventually obtain full protection by concluding treaties or enacting chip protection legislation. In order to encourage steps toward a regime of internatonal comity in mask work protection, Section 914(a) provides that the Secretary of Commerce may extend the privilege of interim protection under the Semiconductor Chip Act to nationals of foreign nations under certain conditions. These are: (1) that the foreign nation in question is making progress (either by treaty negotiation or legislative enactment) toward a regime of mask work protection generally similar to that under the Act; (2) that its nationals and persons controlled by them (such as subsidiaries or affiliated companies) are not engaging and have not in the recent past engaged in chip piracy or the sale of products containing infringing semiconductor components; and (3) that entry of the Secretary's order would promote the purposes of the Act and of achieving international comity toward mask work protection.

This notice establishes initial guidelines that specify the content and procedures for the submission of petitions for the Secretary of Commerce to issue or to terminate an Order extending the privilege of making interim registrations for mask works pursuant to chapter 9 of Title 17 of the United States Code. The Assistant Secretary of Commerce and Commissioner of Patents and Trademarks has been delegated the responsibility to receive petitions, conduct proceedings, make findings, and issue or terminate Orders. These guidelines set forth, in accordance with the statutory provisions, the persons eligible to initiate such proceedings, the procedures to be followed, and the information required to be submitted so that the Commissioner can make the determination required by the statute.

A. DEFINITIONS

As used in these guidelines:

(a) "Commissioner" means the Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.

(b) "Interim registration" means a registration of a mask work with the Register of Copyrights by a foreign national, domiciliary or sovereign authority made pursuant to an Order issued under these guidelines.

(c) "Order" means an action by the Commissioner issuing or terminating an Order extending to foreign nationals, domiciliaries and sovereign authorities the privilege of making interim registrations for mask works pursuant to Chapter 9 of title 17, U.S.C.

(d) "Petition" means a request that the Commissioner issue or terminate an Order extending to foreign nationals, domiciliaries and sovereign authorities the privilege of making interim registrations or mask works pursuant to Chapter 9 of title 17, U.S.C.

(e) "Proceeding" means a proceeding to issue or to terminate an Order extending to foreign nationals, domiciliaries and sovereign authorities the privilege of making interim registrations for mask works pursuant to Chapter 9, of title 17, U.S.C.

(f) "Secretary" means the Secretary of Commerce.

B. Effective Date of Guidelines

These guidelines shall come into force on the date of signature of H.R. 6163 by the President.

C. Initiation of Proceedings

(a) The Commissioner may initiate proceedings under these guidelines on his own motion or as directed by the Secretary.

(b) The Commissioner shall initiate proceedings under these guidelines upon receipt of a petition.

D. Submission of Petitions

(a) Petitions may be submitted at any time, however the effective date of any Order shall not precede the coming into force of Chapter 9 of 17 U.S.C.

(b) Petitions shall be submitted to the Commissioner for review and evaluation.

E. Content of Petitions

(a) Any petition requesting that the Commissioner issue an Order extending the privilege of making interim registration under Chapter 9 of 17 U.S.C. must include:

(1) A statement of the foreign governmental agency in charge of developing legislation or negotiating a treaty for the protection of mask works in a manner generally similar to the provisions of Chapter 9 of 17 U.S.C.: (i) that it is making good-faith efforts and reasonable progress toward developing and enacting such legislation or toward entering into such a treaty, and (ii) providing substantive information regarding the entity in the foreign nation to whom the responsibility has been delegated and the procedures that will be followed including any expected target dates for action.

(2) A statement by the appropriate foreign government or foreign governmental agency, including such supporting evidence as may be available, that neither that nation or persons controlled by them are engaged in the misappropriation, or unauthorized distribution or commercial exploitation of mask works.

(3) Information from the party submitting the petition that provides evidence of the progress or the actual efforts undertaken by the foreign nation. Such information should include:

(i) Copies of bills introduced in the foreign legislature;

(ii) Copies of legislative proposals by responsible agencies;

(iii) Records of international proceedings or negotiations showing efforts toward developing an appropriate treaty;

(iv) Reports of governmental or private sector commissions studying and making recommendations on appropriate measures to protect mask works in semiconductor chip products;

(v) Correspondence between private sector organizations and responsible governmental organizations; and

(vi) Any other material including executive proclamations, resolutions or regulations that would support the claim of good-faith efforts and the absence of misappropriations or the absence of unauthorized distribution or commercial exploitation of mask works.

(b) All materials furnished must be in the English language or provided with a certified English translation.

F. Proceeding

(a) A proceeding shall be initiated by the publication of a notice in the Federal Register providing interested parties with an opportunity to submit relevant comments.

(b) Based upon comments received or a review of any petition submitted, the Commissioner, at his discretion, may hold a hearing to permit interested parties and the petitioner to present additional information.

(c) The Commissioner shall review the petition, evaluate the evidence submitted, consider the results of any hearing conducted during the course of the proceeding, and issue or terminate an Order.

(d) If the Commissioner refuses to issue an Order the petitioner may, within 30 days and upon the submission of additional evidence, request reconsideration. If 30 days pass and no request for reconsideration is received, the refusal to issue an Order shall be considered final.

(e) The Commissioner may issue an Order that is valid for a period of up to three years. The Commissioner, in making a determination on the duration of the proposed Order, will be guided by the strength and weight of the evidence submitted.

G. Duration of Orders

(a) Orders shall endure for the period specified in accordance with Section F(e) above, but in no case longer than three years from the effective date of Chapter 9 of 17 U.S.C. in accordance with 17 U.S.C. 914(d)(l)(e) unless the authority of the Secretary is extended in accordance with 17 U.S.C. 914(f) (2).

(b) Orders shall be terminated if:

(1) The Commissioner finds after a proceeding under Section F above that the conditions upon which the Order was based no longer exist, or

(2) Mask works of nationals, domicilaries, and sovereign authorities of that foreign nation or mask works first commercially exploited in that nation become eligible for protection under: (i) a Presidential proclamation issued in accordance with 17 U.S.C. 902(a) (2), or (ii) that nation's own law for the protection of such works so long as that nation is a party to a treaty protecting such works to which the United States is also a party.

H. Mailing Address

(a) Petitions, requests for reconsideration, and all correspondence submitted pursuant to these guidelines shall be addressed to:
Commissioner of Patents and Trademarks
Box 4
Washington, D.C. 20231

(b) For further information contact:
Assistant Commissioner for External Affairs
703/557-3065
Mail inquiries should be directed to the same address indicated above to his attention.

SUMMARY

The initial guidelines set forth above are considered to be appropriate to implement Title 17 U.S.C. 914. They will become effective on the date of signature of H.R. 6163 by the President. They will provide appropriate guidance to mask work owners and their agents pending the issuance of regulations.

RENE D. TEGTMEYER
Nov. 1, 1984. *Acting Commissioner of Patents and Trademarks.*

[1048 O.G. 30]

MISCELLANEOUS

(117) Hearings Before the Board of Appeals

In recent years the backlog of cases awaiting decision by the Board of Appeals has grown substantially. The average time elapsing between filing of the examiner's answer and final disposition is now roughly 17 months. Intensive effort by the Board and greater use of acting examiners-in-chief have been successful in raising the number of dispositions, but at the same time the number of appeals continues to grow. Thus in the first six months of 1974, the Board disposed of 1,193 appeals but received 1,915; in the last half of the year the Board disposed of 1,993 appeals but received 2,179.

In this connection it will be helpful if applicants and attorneys will dispense with oral hearings except where unusual circumstances are present which make a hearing important to the decision. Appeals submitted on brief receive just as careful consideration as those in which oral argument is presented, nor are any implications drawn as to the merits of the appeal from failure to request a hearing. It has been the Board's experience that in the ordinary case the hearing is not of great value in arriving at the ultimate decision.

Appellants are also encouraged to review cases where a hearing has already been requested, with a view to withdrawing the request if it is not necessary. It is particularly important that the Board be given timely notice whenever circumstances prevent the applicant or his representative from appearing at a scheduled hearing.

Rule 194 (37 CFR 1.194) limits oral argument to thirty minutes unless otherwise ordered by the Board. It has been the Board's experience, however, that effective arguments can be presented in less than thirty minutes in most cases. Effective immediately the Board will be informing appellants in the notices of hearing mailed to them that oral argument will be limited to *twenty minutes* unless otherwise ordered before the hearing begins.

The assistance of the public will be appreciated.

C. MARSHALL DANN,
Mar. 20, 1975. *Commissioner of Patents and Trademarks.*

[933 O.G. 1010]

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(118) Access to Interference Settlement Agreements by Government Agencies

Under the provisions of 35 U.S.C. §135(c), a party to an interference filing a copy of a settlement agreement may request that the copy be kept separate from the file of the interference, and made available only to Government agencies on written request, or to any person on a showing of good cause.

In order to provide the parties with a record of the inspection of such agreements by Government agencies, a representative of an agency will henceforth be required to present a written request, similar to the following, for each interference in which the inspection and/or copying of the agreement(s) is desired:

Date:_____

To: Clerk, Board of Patent Interferences

Pursuant to the provisions of 35 U.S.C. 135(c), please permit .....
the bearer(s) of this letter, to [ ] inspect and/or [ ] copy the settlement agreement(s) filed in Interference No. .....
The information gained from such inspection and/or copying will be kept in confidence and will not be disclosed to any other person except for official investigative or law enforcement purposes.

.....
Name, Title

.....
Agency

The request will be placed in the folder containing the copy of the agreement, where it may be inspected by the parties or their authorized representatives.

This procedure will be applicable only to inspection or copying by the representatives of Government agencies, since no person other than a representative of a Government agency, or of a party, will be granted access to a copy of an interference settlement agreement which is kept separate from the interference file except by way of a petition for access thereto, see M.P.E.P. §1002.02(k), item 2, and the parties to the interference

are normally provided with copies of any such petition.

June 5, 1978. LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

[972 O.G. 2]

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(119) Accessibility of Non-Final Discovery Opinions and Orders Issued by the Board of Patent Interferences

A number of inquiries have been received from the patent bar and other interested persons relating to discovery practice under 37 C.F.R. §1.287 before the Board of Patent Interferences. The inquiries indicate a need for making available to the public non-final Board opinions, including concurring and dissenting opinions, as well as orders, made in the adjudication of discovery matters before the Board. While non-final opinions need not be made available to the public [5 U.S.C. §552(a)(2)], in order to satisfy the need, copies of non-final opinions issued by the Board will be kept in a file in the Service Branch of the Board in the U.S. Patent and Trademark Office (Crystal Plaza, Building 6, Eleventh Floor, Room 1116, Arlington, Virginia). Opinions in the file may be reviewed by the public during normal business hours (8:30 A.M. to 5:00 P.M.). Copies of opinions may be made by the public on reproducing equipment in the Service Branch with tokens at a cost of $0.15 per page or copies may be ordered at a cost of $0.30 per page [37 C.F.R. 1.21(b)].

In view of the provisions of 35 U.S.C. §122 and 37 C.F.R. §1.11(a), a consent will be obtained by the Office from all parties in an interference before an opinion issued in connection with the interference is placed in the file if the interference file is not otherwise available to the public. Preliminary indications are that the parties and their counsel generally consent.

In order to obtain optimum dissemination of the information contained in the file, opinions placed therein will be indexed according to specific topics. Copies of the index will be updated from time to time as the need occurs. Specific questions relating to the index and file may be directed to the Patent Interference Examiners.

The initial index is as follows:

Index

1.00 Discovery in general [37 C.F.R. §1.287]
- 1.10 Requests and service under §1.287(a)
- 1.20 Requests under §1.287(b)
- 1.30 Motions for additional discovery under §1.287(c)
  - 1.31 Related to derivation
  - 1.32 Related to abandonment, suppression, and concealment
  - 1.33 Related to inequitable conduct
  - 1.34 Other
- 1.40 Motions under §1.287(d)(1)
- 1.50 Action under §1.287(d)(2)
- 1.60 Agreements under §1.287(e)

Mar. 5, 1976 C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

[944 O.G. 2098]

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(120) Extensions of Time and Filing of Papers in Interferences

A recent sample of the interferences declared during fiscal years 1971–1975 has shown that since the 1950–1959 period there has been an increase of 27 days in the approximately one and one-half year pendency time of the average interference. This increase has occurred in spite of the Commissioner's notice of April 24, 1964, 802 O.G. 601, and an extensive revision of the interference rules in 1965.

While the failure to achieve any reduction in average interference pendency time may in part be attributable to the adoption in 1971 of 37 CFR 1.287(a)(2), which provides for the setting of additional time periods for purposes of discovery, it appears that a considerable reduction would result if the parties were to adhere to the times originally set by the Office, rather than seeking extensions of those times. Accordingly, stipulations or motions for extensions of time under 37 CFR 1.245 will not henceforth be approved or granted, respectively, unless accompanied by a detailed showing of facts sufficient to establish that the action for which the extension is sought could not have been or cannot be taken or completed during the time previously set therefor, and that the entire extension appears necessary for the taking or completion of that action. Since the Office favors the amicable settlement of interferences, the foregoing requirement will be liberally applied in the case of a first request for extension of time for the purpose of negotiating settlement.

Another factor which adversely affects the pendency time of the average interference is the number of papers filed. While parties are certainly entitled to exercise their rights in filing papers provided for by the rules, many papers are also filed that are not provided for by the rules, such as replies to replies to oppositions to motions under 37 CFR 1.231, and replies to oppositions to motions or petitions under 37 CFR 1.243 or 1.244. These unprovided-for papers appear to be generally unnecessary, cause a considerable increase in the size of the interference files, and delay determination of the motions or petitions to which they relate. Therefore, in the future papers filed in interference proceedings will be given no consideration unless they are specifically provided for by the rules. In this regard, particular attention is directed to 37 CFR 1.228, 1.231(b), 1.237, 1.243 and 1.244.

Nov. 9, 1976. C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

[953 O.G. 2]

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(121) Petitions in Interference Cases From Decisions of The Board on Motions for Additional Discovery Under 37 CFR 1.287(c)

Notwithstanding the clear statement in the last sentence of 37 CFR 1.287(c), parties in interference cases continue to seek review by the Commissioner of decisions of the Board of Patent Interferences on motions for additional discovery under 37 CFR 1.287(c). Review of such a decision can be had along with judicial review of a decision on the question of priority. *Cochran* v. *Kresock*, 530 F.2d 385, 188 USPQ 553 (CCPA 1976); *Comstock* v. *Kroekel*, 200 USPQ 548 (Comm'r. Pat. 1978). Accordingly, parties in interference cases are reminded that a petition to the Commissioner should not be filed for the purpose of seeking review of an interlocutory decision of the Board granting or denying a motion for additional discovery under 37 CFR 1.287(c). See also *Fenstermacher* v. *Daugherty*, 189 USPQ 536 (Comm'r. Pat. 1975) and *Sheehan* v. *Doyle*, 202 USPQ 783 (Comm'r. Pat. 1978). The filing of such a petition only serves to delay the ultimate disposition of interferences on the merits. The filing of a paper for the mere purpose of delay is not permitted by the rules. 37 CFR 1.346. The Board of Patent Interferences will no longer grant a stay of proceedings pending disposition of a petition to the Commissioner seeking review of a decision of the Board on a motion for additional discovery under 37 CFR 1.287(c).

Apr. 17, 1980. SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

[994 O.G. 28]

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(122) Petitions in Interference Cases to Strike Applications for Alleged Violations of 37 CFR §1.56

Not infrequently a party in an interference will file a petition requesting the Commissioner to enter an order

under 37 CFR §1.56(d) striking from the files a patent application involved in an interference. The issues raised by such a petition have been determined to be ancillary to priority within the meaning of 37 CFR §1.258(a). See e.g., *Norton* v. *Curtiss*, 57 CCPA 1384, 433 F. 2d 779, 167 USPQ 532 (1970); *Langer* v. *Kaufman*, 59 CCPA 1261, 465 F. 2d 915, 175 USPQ 172 (1972). Hence, the issues may be considered by the Board of Patent Interferences at final hearing if properly and timely presented.

The normal disposition of a petition to strike an application involved in an interference is to dismiss the petition, without prejudice to renewal following termination of the interference. Such a disposition allows the parties to develop the issues before the Board of Patent Interferences. If the party filing the petition ultimately prevails in the interference, further action on the petition may be unnecessary. Should action on the petition be necessary, the Commissioner has the benefit of the view of the Board of Patent Interferences on the issues.

Under present practice, the Board of Patent Interferences generally will hold a petition to strike an application involved in an interference until the time for opposition has expired. The file is then forwarded to the Commissioner, where the petition is normally disposed of as indicated in the preceding paragraph. This practice is time consuming and needlessly delays the interference. In order to prevent such delays, in the future the Patent Interference Examiner is authorized to enter an order dismissing a petition to strike an application involved in an interference, without prejudice to renewal of the petition after termination of the interference. The petition should be dismissed immediately upon receipt, without suspension of the interference.

Petitions to strike an application not involved in an interference will continue to be handled in the Office of the Assistant Commissioner for Patents in the manner previously announced.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Aug. 11, 1980.

[998 O.G. 8]

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(123) **Commissioner's Notice**
Practice under 37 CFR §1.225(b)

When a junior party to an interference is placed under an order to show cause why judgment should not be entered pursuant to 37 CFR §1.225 and requests final hearing to contest an ancillary matter, either the junior or senior party may file a motion for permission to take testimony pursuant to 37 CFR §1.225(b) and the last sentence of 37 CFR §1.251(b). However, some uncertainty has arisen as to when the motion must be filed and what it must contain.

Motion by the Junior Party

When a junior party is placed under an order to show cause and the junior party desired a testimony period, the motion for permission to take testimony should be filed preferably before the time set for responding to the order to show cause. The motion will be considered timely, however, if filed no later than twenty (20) days after the Board of Patent Interferences enters an order setting final hearing.

There are instances where the requested testimony relates to priority. For example, the junior party may occasionally desire to take testimony to establish prior inventive acts alleged in a preliminary statement even though those acts are subsequent to the senior party's effective filing date. This situation arises when (1) the junior party's preliminary statement dates fall between the filing date of the senior party's involved application and the filing date of a prior application accorded to the senior party, (2) the junior party has unsuccessfully contended in a motion under 37 CFR §1.231 that the senior party should not be accorded benefit of the prior application, and (3) the junior party has requested final hearing to review the examiner's adverse decision on the motion.

When the requested testimony includes priority testimony, the motion to take testimony may be *pro forma, viz.*, a simple request that a testimony period be set to obtain priority evidence. Normally, however, when a junior party seeks to take testimony under 37 CFR §1.225(b), the proposed testimony relates solely to ancillary matters. When the requested testimony relates solely to ancillary matters, the motion must comply with the provisions of 37 CFR §1.225(b)—a showing of good cause must be submitted and a *pro forma* request would not be sufficient. See generally Rivise & Caesar, *Interference Law and Practice*, Vol. III, §§376–377 (1947).

Motion by the Senior Party

There are occasions when a senior party may desire a testimony period even if the junior party does not request a testimony period. See e.g., *Lorenian v. Winstead*, 127 USPQ 501 (Bd.Int. 1959). When a senior party desires a testimony period, the motion for permission to take testimony should be filed promptly after the Board of Patent Interferences enters an order setting final hearing, but in no event later than twenty (20) days after entry of such order. A senior party should take into account the fact that a junior party will begin preparation of a brief for final hearing after receiving notice of the briefing schedule. Therefore, a senior party should not be permitted to let a junior party expend unnecessary energy preparing a brief for final hearing if the senior party plans to move to take testimony.

As in the case of a junior party, a request to take testimony relating to priority may be *pro forma*. A request to take testimony limited to ancillary matters must comply with 37 CFR §1.225(b). See 37 CFR 1.251(b), last sentence.

RENE D. TEGTMEYER,
Acting Commissioner of Patents and Trademarks.

June 15, 1981.

[1008 O.G. 9]

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(124) **Disclosure Document Program**

This notice consolidates and supersedes the notices of Mar. 26, 1969 (862 O.G. 1) and Aug. 11, 1970 (878 O.G. 1) relating to the Patent Office Disclosure Document Program. Under this program the Patent Office accepts and preserves, for a period of two years, papers referred to as "Disclosure Documents." These papers may be used as evidence of the dates of conception of inventions.

The Program

A paper disclosing an invention and signed by the inventor or inventors may be forwarded to the Patent Office by the inventor (or by any one of the inventors when there are joint inventors), by the owner of the invention, or by the attorney or agent of the inventor(s) or owner. It will be retained for two years and then be destroyed unless it is referred to in a separate letter in a related patent application within said two years.

A Disclosure Document is not a patent application and the date of its receipt in the Patent Office will not become the effective filing date of any patent application subsequently filed. However, like patent applications, these documents will be kept in confidence by the Patent Office. If patent protection is desired, a patent application should be filed as soon as possible.

This program does not diminish the value of conventional witnessed and notarized records as evidence of conception of an invention, but it should provide a more credible form of evidence than that provided by the popular practice of mailing a disclosure to oneself or another person by registered mail. The program is made available as a service to those persons desiring to use it.

Content of Disclosure Document

Although there are no restrictions as to content and claims are not necessary, the benefits afforded by a Dis-

closure Document will depend directly upon the adequacy of the disclosure. Therefore, it is strongly urged that the document contain a clear and complete explanation of the manner and process of making and using the invention in sufficient detail to enable a person having ordinary knowledge in the field of the invention to make and use the invention. When the nature of the invention permits, a drawing or sketch should be included. The use or utility of the invention should be described, especially in chemical inventions.

The Disclosure Document must be limited to written matter or drawings on paper or other thin, flexible material, such as linen or plastic drafting material, having dimensions or being folded to dimensions not to exceed 8 1/2 by 13 inches. Photographs also are acceptable. Each page should be numbered. Text and drawings should be sufficiently dark to permit reproduction with commonly used office copying machines.

A $10 fee is charged for filing a Disclosure Document. Payment must accompany the Disclosure Document when it is submitted to the Patent Office.

In addition to the $10 fee, the Disclosure Document must be accompanied by a stamped, self-addressed envelope and a separate paper in duplicate, signed by the inventor, stating that he is the inventor and requesting that the material be received for processing under the Disclosure Document Program. The papers will be stamped by the Patent Office with an identifying number and date of receipt, and the duplicate request will be returned in the self-addressed envelope together with a warning notice indicating that the Disclosure Document may be relied upon only as evidence and that a patent application should be diligently filed if patent protection is desired. The inventor's request may take the following form:

"The undersigned, being the inventor of the disclosed invention, requests that the enclosed papers be accepted under the Disclosure Document Program, and that they be preserved for a period of two years."

Retention

The Disclosure Document will be preserved in the Patent Office for two years after its receipt and will then be destroyed unless it is referred to in a separate letter in a related patent application filed within the two-year period. The Disclosure Document must be referred to in the separate letter by title, number, and date of receipt. Acknowledgment of receipt of such letters will be made in the next official communication or in separate letter from the Patent Office. Unless it is desired to have the Patent Office retain the Disclosure Document beyond the two-year period, it is not required that it be referred to in a patent application.

Warning as to Limitations

The two-year retention period should not be considered to be a "grace period" during which the inventor can wait to file his patent application without possible loss of benefits. It should be recognized that in establishing priority of invention an affidavit or testimony referring to a Disclosure Document must usually also establish diligence in completing the invention or in filing the patent application since the filing of the Disclosure Document.

Inventors are also reminded that any public use or sale in the United States, or publication of the invention anywhere in the world, more than one year prior to the filing of a patent application on that invention will prohibit the granting of a patent on that invention.

If the inventor is not familiar with what is considered to be "diligence in completing the invention" or "reduction to practice" under the patent law, or if he has other questions about patent matters, the Patent Office advises him to consult an attorney or agent registered to practice before the Patent Office. Patent attorneys and agents may be found in the telephone directories of most major cities. Also, many large cities have associations of patent attorneys which may be consulted.

RICHARD A. WAHL,
Jan. 4, 1971. *Assistant Commissioner of Patents.*

[883 O.G. 3]

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(125) **Suspension of Action Under 37 CFR 1.103 and Under 37 CFR 1.212**

The purpose of this notice is to clarify existing Office practice with respect to suspension of action. "Suspension of action" under 37 CFR 1.103 applies only to the situation where action is to be taken *by the Examiner.* In other words, action cannot be suspended in an application which contains an outstanding Office action awaiting response by the applicant.

Under 37 CFR 1.212, upon declaration of an interference, ex parte prosecution of an application is suspended and any outstanding Office actions are considered as withdrawn by operation of the rule. *Ex parte Peterson,* USPQ 119 (Commissioner of Patents, 1941). Upon termination of the interference, the Examiner will reinstate the action treated as withdrawn by operation of 37 CFR 1.212 and set a statutory period for response. The formats set forth in MPEP 1109.01 and MPEP 1109.02 may be followed.

Careful adherence to the distinction set forth above will prevent any question of abandonment from arising in connection with cases in which suspension of prosecution has occurred.

WILLIAM FELDMAN,
Mar. 7, 1978. *Deputy Assistant Commissioner for Patents.*

[969 O.G. 8]

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(126) **POSTAL SERVICE EMERGENCY CONTINGENCY PLAN**

The U.S. Patent and Trademark Office is establishing the following contingency plan for filing any paper or paying any fee in the Office in the event of an emergency caused by any major interruption in the mail service in the United States. Upon determination by the Commissioner of Patents and Trademarks that such an emergency exists, a notice activating the plan will be issued by the Commissioner. The activating notice will be published in the Wall Street Journal and made available in a special recorded telephone message at area code 703, 557-3158. Also, certain publications, patent bar groups, and other organizations closely associated with the patent system, will be notified. Termination of the program will be similarly announced. Where the postal emergency is not nationwide, the Commissioner will designate the areas of the United States in which the procedures outlined below will be in effect.

U.S. Department of Commerce District Offices (formerly referred to as Department of Commerce Field Offices) will be designated on an emergency basis, as receiving stations for filing papers and paying fees in the U.S. Patent and Trademark Office.

Upon determination that an emergency exists, the following procedures may be followed: All papers and fees should be enclosed in a sealed envelope addressed to the Patent and Trademark Office and deposited in one of the District Offices. Such papers will be considered as received in the U.S. Patent and Trademark Office on the day of deposit. The District Office will date stamp each envelope and the accompanying receipt card which completely identifies the deposited papers. The receipt card will be returned to the depositor. Applicants or their representatives should assure the legibility of the date stamp.

District Office deposits should be limited to checks in payment of issue fees, new application papers wherein

priority dates or statutory bars may be involved, amendments where the six month statutory period for response is about to expire, trademark oppositions, Section 8 affidavits, trademark renewals, and to other papers for which the patent and trademark statutes do not provide a remedy for failure to obtain a particular date.

Where papers originate from overseas, it is suggested that the papers be mailed to a registered agent in Canada, with a request that the papers be forwarded by courier to the nearest District Office in the United States.

In regard to pending applications, if the time for taking any action or paying any fee expires during the period that the Commissioner declares to be an emergency, the time will be extended until one month after the end of the emergency period, provided that such extension does not exceed the maximum period for response provided for in the statutes.

Since this extension of time will be automatic, there will be no record in the individual files to indicate that a response filed during the extended period is in fact timely. In order to provide a complete record, applicants or their representatives should file a paper referring to this notice in each case in which a response is filed during the extended period.

The addresses of the Department of Commerce District Offices, subject to subsequent changes, are as follows:

ALBUQUERQUE, N.M., 87101, Room 316, U.S. Courthouse (505) 766-2386.
ANCHORAGE, 99501, 632 Sixth Ave., Hill Bldg., Suite 412 (907) 265-4597.
ATLANTA, 30309, Suite 523, 1401 Peachtree St., NE. (404) 526-6000.
BALTIMORE, 21202, 415 U.S. Customhouse, Gay and Lombard Sts. (301) 962-3560.
BIRMINGHAM, ALA., 35205, Suite 200-201, 908 S. 20th St. (205) 325-3327.
BOSTON, 02116, 10th Floor, 441 Stuart St. (617) 223-2312.
BUFFALO, N.Y., 14202, Room 1312, Federal Bldg., 111 W. Huron St. (716) 842-3208.
CHARLESTON, W. VA., 25301, 3000 New Federal Office Bldg., 500 Quarrier St. (304) 343-6181, Ext. 375.
CHEYENNE, WYO., 82001, 6022 O'Mahoney Federal Center, 2120 Capitol Ave. (307) 788-2151.
CHICAGO, 60603, Room 1406, Mid-Continental Plaza Bldg., 55 E. Monroe St. (312) 353-4450.
CINCINNATI, 45202, 8028 Federal Office Bldg., 550 Main St. (515) 684-2944.
CLEVELAND, 44114, Room 600, 666 Euclid Ave. (216) 522-4750.
COLUMBIA, S.C., 29204, Forest Center, 2611 Forest Dr. (803) 765-5345.
DALLAS, 75202, Room 3E7, 1100 Commerce St. (214) 749-1515.
DENVER, 80202, Room 161, New Custom House, 19th and Stout Sts. (303) 837-3246.
DES MOINES, IOWA, 50309, 609 Federal Bldg., 210 Walnut St. (515) 284-4222.
DETROIT, 48226, 445 Federal Bldg. (313) 226-3650.
GREENSBORO, N.C., 27402, 203 Federal Bldg., W. Market St., P.O. Box 1950. (919) 275-9111, Ext. 345.
HARTFORD, CONN., 06103, Room 610-B, Federal Office Bldg., 450 Main St. (203) 244-3530.
HONOLULU, 96813, 286 Alexander Young Bldg., 1015 Bishop St. (808) 546-8694.
HOUSTON, 77002, 201 Fannin, 1017 Federal Office Bldg. (713) 226-4231.
INDIANAPOLIS, 46204, 355 Federal Office Bldg., 46 E. Ohio St. (317) 269-6214.
KANSAS CITY, MO., 64106, Room 1840, 601 E. 12th St. (816) 374-3142.
LOS ANGELES, 90024, 11201 Federal Bldg., 11000 Wilshire Blvd. (213) 824-7591.
MEMPHIS, 38103, Room 710, 147 Jefferson Ave. (901) 534-3213.
MIAMI, 33130, Rm. 821, City National Bank Bldg., 25 W. Flagler St. (305) 350-5267.
MILWAUKEE, 53203, Straus Bldg., 238 W. Wisconsin Ave. (414) 224-3473.
MINNEAPOLIS, 55401, 306 Federal Bldg., 110 S. Fourth St. (612) 725-2133.
NEW ORLEANS, 70130, Room 432, International Trade Mart, 2 Canal St. (504) 589-6546.
NEW YORK, 10007, 41st Floor, Federal Office Bldg., 26 Federal Plaza, Foley Sq. (212) 264-0634.
NEWARK, N.J., 07102, Gateway Bldg., (4th Floor) (201) 645-6214.
PHILADELPHIA, 19106, 9448 Federal Bldg., 600 Arch St. (215) 597-2850.
PHOENIX, ARIZ., 85004, 508 Greater Arizona Savings Bldg., 112 N. Central Ave. (602) 261-3285.
PITTSBURGH, 15222, 431 Federal Bldg., 1000 Liberty Ave. (412) 644-2850.
PORTLAND, ORE., 97205, 921 SW. Washington St., Suite 521, Pittock Block. (503) 221-3001.
RENO, NEV., 89502, 2028 Federal Bldg., 300 Booth St. (702) 784-5203.
RICHMOND, VA., 23240, 8010 Federal Bldg., 400 N. 8th St. (804) 782-2246.
ST. LOUIS, 63105, Chromalloy Bldg., 120 S. Central Ave. (314) 622-4243.
SALT LAKE CITY, 84111, 1201 Federal Bldg., 125 S. State St. (801) 524-5116.
SAN FRANCISCO, 94102, Federal Bldg., Box 36013, 450 Golden Gate Ave., (415) 556-5860.
SAN JUAN, P.R., 00902, Room 100, Post Office Bldg., (809) 723-4640.
SAVANNAH, 31402, 235 U.S. Courthouse and Post Office Bldg., 125-29 Bull St. (912) 232-4204.
SEATTLE, 98109, 706 Lake Union Bldg., 1700 Westlake Ave. North (206) 442-5615.

July 18, 1975.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

[937 O.G. 386]

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(127)

Examiner Testimony

As stated in Section 1701 of the Manual of Patent Examining Procedure, patent examiners are forbidden to testify as patent experts or to express opinions, in testimony or otherwise, as to the invalidity of any issued patent. Patent examiners have, in connection with litigation involving patent validity, been called to testify on factual matters. In those cases, the practice has been to permit the examiner to testify only upon the issuance of a subpoena.

Henceforth, patent examiners will be permitted to testify on deposition in patent suits, without the need for a subpoena, provided the following conditions are satisfied:

1. The party proposing to take the testimony will state in writing, that the questions to be asked of the examiner will be phrased to comply with the permissible scope of inquiry as outlined in the protective orders contained in the Court opinions in *In re Mayewsky*, 162 USPQ 86, 89 and *Shaffer Tool Works* v. *Joy Manufacturing Co.*, 167 USPQ 170, 171: ". . . the scope of the oral depositions of the patent examiners is hereby limited to matters of fact and must not go into hypothetical or speculative areas or the bases, reasons, mental processes, analyses, or conclusions of the patent examiners in acting upon the patent applications maturing into the patent [in suit]." 167 USPQ 171.
2. That in addition to complying with the requirements of Rule 30 of the Federal Rules of Civil Procedure, the party taking the testimony will agree to give notice of the taking of the deposition of the patent examiner to the Solicitor, at least thirty days prior to the date on which the taking of the deposition is desired.
3. That the party taking the deposition arrange with the Solicitor to notice the deposition at a place convenient to the Patent Office.

If the party desiring to take the testimony of the examiner does not agree to the conditions enumerated, the Patent Office will not permit the examiner to be deposed without a subpoena and compliance with the procedure set forth in Section 7.02, Department of Commerce Administrative Order 205-12, June 29, 1967 as amended April 10, 1970. That section states:

> In any case where it is sought by subpoena, order or other compulsory process or other demand of a court or other authority (hereinafter referred to as a "demand") to require the production or disclosure of any record in the files of the Department of Commerce or other information acquired by an officer or employee of the Department as a part of the performance of his official duties or because of his official status, the matter shall be immediately referred for determination to the appropriate official described in subsection 4.01 of this order. If such official has discretion with respect to disclosure and he determines that it would be improper to comply with the demand, or if he has no discretion with respect to disclosure, the matter shall be promptly referred to the Secretary of Commerce for final determination. Unless and until the Secretary determines that the records or information should be produced, the officer or employee who appears in answer to the demand shall inform the court or other authority (*a*) that the section 7 of this order prohibits the officer or employee from producing or disclosing the records or other information demanded without the prior approval of the Secretary of Commerce, and (*b*) that the demand has been, or is being, as the case may be, referred for the prompt consideration of the Secretary. The officer or employee shall also provide the court or other authority with a copy of the regulations prescribed in this section 7 of this order, and shall respectfully request the court or other authority to stay the demand pending the receipt of instructions or directions from the Secretary of Commerce concerning the demand.

ROBERT GOTTSCHALK,
Mar. 13, 1972. *Commissioner of Patents.*

[897 O.G. 762]

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(128) **No Change in Foreign Filing License Requirements**

It should be noted that the change to 37 CFR 5.19 deleting the requirement to obtain an export license for filing a patent application in a foreign country does not in any way alter the provisions of 35 U.S.C. 184. 35 U.S.C. 184 requires that a foreign filing license be obtained from the Patent and Trademark Office before any patent application, based on an invention made in the United States, is filed abroad unless a corresponding application has been on file in the USPTO for over six months.

Further information may be obtained by contacting Mr. T. H. Tubbesing at 703-557-2897, or Mr. Edward Drazdowsky at 703-557-2167.

WILLIAM FELDMAN,
Nov. 24, 1980. *Acting Assistant Commissioner, for Patents.*

[1001 O.G. 28]

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(129) **Department of Commerce**

Patent and Trademark Office

United States Adherence to the International Union for the Protection of New Varieties of Plants (UPOV)

On Nov. 12, 1980, the United States deposited its instrument of acceptance of the 1978 text of the UPOV Convention. The United States was the second State to adhere to this text, New Zealand having earlier done so.

The UPOV Convention will take effect with respect to the United States and the other adherents to the 1978 text upon a total of five adherences, three of which must be by present member States (States adhering to the 1961 text of the Convention). We expect at least three present member States to adhere shortly and the 1978 text to take effect, therefore, during 1981.

The United States deposited its instrument of acceptance on the basis of the legal protection offered for asexually reproduced plants under the plant patent law (35 U.S.C. 161-164). Accordingly, the Convention will apply only to asexually reproduced plants protected under this law. Steps are now being taken, however, by the Plant Variety Protection Office of the Department of Agriculture to conform the implementation of the Plant Variety Protection Act (7 U.S.C. 2321 et seq.) to the Convention's requirements. When this is done, the United States will notify the UPOV Secretariat that the Convention is also applicable in the United States to sexually reproduced plants protected under that Act.

Questions concerning the UPOV Convention may be directed to the Office of Legislation and International Affairs of the Patent and Trademark Office. This Office may be addressed as follows: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231. The Office's telephone number is (703) 557-3065.

SIDNEY A. DIAMOND,
Dec. 16, 1980. *Commissioner of Patents and Trademarks.*

[1002 O.G. 102]

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(130) **Taking Effect in the United States of the International Convention for the Protection of New Varieties of Plants**

The International Convention for the Protection of New Varieties of Plants (the UPOV Convention) will take effect in the United States on Nov. 8, 1981. It will apply to all applications for the patenting of plants under the provisions of Title 35, United States Code, which are filed on or after Nov. 8, 1981. The actual filing date will govern in determining whether the Convention will apply to an application, even though the application may be entitled to an earlier effective date under section 119 or 120 of Title 35, United States Code.

In addition to the United States, the UPOV Convention will be in effect as of Nov. 8, 1981, in the following fourteen States: Belgium, Denmark, Federal Republic of Germany, France, Ireland, Israel, Italy, Netherlands, New Zealand, Republic of South Africa, Spain, Sweden, Switzerland, and the United Kingdom.

No changes in the patent law are needed to implement the UPOV Convention in the United States. An applicant for a plant patent will be required, however, to submit for registration a variety name for the plant to be patented. Registration is required by Article 13 of the UPOV Convention.

Registrability shall be determined in accordance with the International Code of Nomenclature for Cultivated Plants (1980). As an interim procedure pending the promulgation of an appropriate rule, inclusion of the variety name in the application will be accepted as a submission of the name for registration. No plant patent as a result of an application filed on or after Nov. 8, 1981, shall be issued without the registration of a variety name. Questions concerning this variety naming requirement or the UPOV Convention may be addressed to:

Mr. Michael K. Kirk, Director
Office of Legislation and
International Affairs
Box 4
U.S. Patent and Trademark Office
Washington, D.C. 20231

Mr. Kirk's telephone number is (703) 557-3065.

GERALD J. MOSSINGHOFF,
Oct. 15, 1981. *Commissioner of Patents and Trademarks.*

[1011 O.G. 27]

(131) **Policy Regarding Exchange Agreements Under the Authority of 35 USC Section 6(a)**

Background

The Patent and Trademark Office (PTO), by virtue of Section 6(a) of Title 35, United States Code, is empowered to enter into exchange agreements with other organizations to further the use of patent and trademark information, and to facilitate the use and availability of that information. In recognition of these objectives, the PTO establishes the following guidelines and principles which shall apply when evaluating and entering into exchange agreements with other public, private, domestic and foreign agencies, firms and companies.

Nature of Exchange Agreements

Exchange agreements by the PTO will generally be for the purpose of (1) acquiring goods and services which will assist the PTO in accomplishing its mission and achieving its goals; (2) reducing the cost to the government of processing activities associated with the examination of applications for patent and trademark registration; (3) fostering the dissemination of information contained in patent and trademark documents; and (4) furthering the general goal of automating patent and trademark examination processes.

In exchange agreements, the PTO and the industrial or commercial concerns will share in the cost and risks of the endeavor. Terms and conditions of each agreement, including the business arrangements, are negotiable within the limits of prevailing statutes and regulations and will be commensurate with the risks, involvement, and investment of the parties to the agreements. The PTO's intent is to offer as much latitude as practical in the agreement.

Each agreement will be negotiated on a case-by-case basis. Agreements will vary in size, complexity, scope and the nature of the materials, services, and/or products being exchanged by the parties. All exchange agreements will be subject to the availability of funds.

Incentives

Incentives provided by the PTO for the purpose of entering into exchange agreements may include, but are not limited to (1) providing copies of PTO documents; (2) providing computer processable data obtained from patents, trademark applications, trademark registrations, and other data sources developed by the PTO; (3) providing government furnished equipment necessary for the other party to fulfill the agreement; and (4) entering into joint programs where each party funds its own participation.

Considerations

The factors to be considered by the PTO prior to entering into an exchange agreement or providing incentives shall include, but will not be limited to the following considerations: (1) public or social need for the product(s) of the agreement; (2) enhanced dissemination of technological information; (3) benefits accruing to the public or the U.S. Government from the endeavor; (4) the desirability of private sector involvement in PTO programs; (5) the merit of the research, development or application proposed; (6) the degree of risk and financial participation by the other party; (7) the amount of proprietary data or other information to be furnished by the concern; (8) the rights in data to be granted to the PTO and the concern as a result of their contributions; (9) the willingness and ability of the concern to market and sell any resulting new or enhanced products on a reasonable basis; and (10) the impact of PTO sponsorship upon a given industry or area of commercial endeavor.

Administration

The Administrator for Automation is delegated the authority to enter into negotiations. The Commissioner of Patents and Trademarks will approve exchange agreements on behalf of the PTO. Before proceeding into comprehensive evaluation of a joint endeavor, a preliminary assessment will be made of the merits of the offer. Exchange agreement proposals which are too sketchy or ill-defined to (1) establish the merit in the basic idea, (2) establish that the proposal is in accordance with PTO program objectives, or (3) establish that the proposing organization is willing to make significant contribution to the endeavor, will not be evaluated in depth and will be treated as correspondence or advertising. This preliminary assessment will be conducted by the Administrator for Automation or his or her designee to determine if the proposal warrants further consideration. If this determination is positive and if the parties agree to proceed with a joint endeavor, the Administrator for Automation will enter into detailed discussions and negotiations with the offeror regarding the technical and business aspects of the offer. Upon reaching a mutually satisfactory arrangement, the agreement will be submitted to the Commissioner of Patents and Trademarks for approval. Administration of the exchange agreement program will be performed by the Administrator for Automation.

Due to resource limitations and the necessity for diversity in the program, only one offer will normally be accepted for a given PTO incentive. If substantially similar offers are received within any 45-day period, they will be evaluated and/or negotiated together. The offer which provides the best total consideration for the Government will be accepted. Special consideration shall be given to small and minority businesses, as appropriate.

May 3, 1983.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[1030 OG 49]

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(132) **Qualifications for Admission to the Examination for Registration to Practice Before the Patent and Trademark Office**

37 CFR 1.341(c) provides in pertinent part, "No person will be admitted to practice and registered unless he shall . . . establish to the satisfaction of the Commissioner that he is of good moral character and good repute and *** possessed of the legal and scientific and technical qualifications necessary to enable him to render applicants for patents valuable service ***. In order that the Commissioner may determine whether the person *** has the qualifications specified, satisfactory proof of good moral character and repute, and of sufficient basic training in scientific and technical matters must be submitted ***."

All persons requesting application forms are routinely furnished with a circular entitled "General Requirements For Admission To The Examination For Registration To Practice Before The Patent and Trademark Office". The circular contains a list of the subjects in which a person must have a bachelor's degree or the equivalency thereof in scientific and technical training to meet registration qualifications. It is strongly recommended that persons who do not have a bachelor's degree in one of those subjects comply with the instructions in the paragraph following the list to show their scientific and technical qualifications. If it is intended to rely on courses in computer science, no more than 3 semester hours of courses in computer programming will be accepted as providing part of the required basic training in scientific and technical matters. Computer science courses oriented away from the physical sciences or engineering, e.g., toward accounting or business, will not be accepted as providing any of the requisite basic training in scientific and technical matters.

Many applications for admission to an examination are filed on or just prior to the announced closing date for doing so, and these applications are frequently disapproved because the person does not furnish a satisfactory showing of his or her qualifications. For instance, persons with a bachelor's degree in a subject other than one of those listed in the circular frequently do not follow instructions in the circular and do not furnish both their transcripts and official course descriptions.

Other persons list charges brought against them requiring further showings to overcome doubts raised by the charges about their character and reputation. Still others who failed one section of the examination three times do not furnish a satisfactory showing of sufficient additional legal training to pass the examination.

The Office of Enrollment and Discipline evaluates each application for admission to the examination on an individual basis as soon as practical after receipt in that office. Thereafter, notification is promptly mailed to each person whose application has been disapproved.

The Office of Personnel Management (OPM — formerly Civil Service Commission), which administers the examination, requires that it receive correct data from the Patent and Trademark Office identifying the locale of the examination and the number of persons to be tested well ahead of the examination date. *To afford adequate time to present a satisfactory supplemental showing to gain admission to the examination for which application is being made, it is recommended that all persons file their applications early, preferably at least two months before the closing date.*

All supplemental showings of qualifications and all applications filed after the announced closing date to apply for admission to an examination will be considered only in connection with the person's admission to the next succeeding examination. Admission to an examination given on a particular date is available only to persons who have filed a completed application form, a $75.00 admission fee, and a satisfactory showing of qualifications on or before the closing date for applying for admission to the examination. Examinations are given in Apr. and Oct. each year, and the respective closing dates for applying for admission to the examinations are the preceding Jan. 31 and July 31.

Sept. 18, 1984.

WILLIAM FELDMAN,
Director of Enrollment and Discipline.

[1047 O.G. 35]

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(133) **Patent Cooperation Treaty (PCT) Update**

Accession to the Patent Cooperation Treaty (PCT) by the Sudan and by Bulgaria, and Lisiting of PCT Member Countries.

The Patent and Trademark Office has received notification from the World Intellectual Property Organization (WIPO) that the Sudan deposited its instrument of

Listing of PCT Member Countries

	Country	Ratification or Accession	Date of Ratification or Accession	Date from which Country may be Desiganted
(1)	Central African Republic*	Accession	15 September 1971	01 June 1978
(2)	Senegal*	Ratification	08 March 1972	01 June 1978
(3)	Madagascar	Ratification	27 March 1972	01 June 1978
(4)	Malawi	Accession	16 May 1972	01 June 1978
(5)	Cameroon*	Accession	March 1973	01 June 1978
(6)	Chad*	Accession	12 February 1974	01 June 1978
(7)	Togo*	Ratification	28 January 1975	01 June 1978
(8)	Gabon*	Accession	06 March 1975	01 June 1978
(9)	United States of America	Ratification	26 November 1975	01 June 1978
(10)	Germany, Federal Reublic of**	Ratification	19 July 1976	01 June 1978
(11)	Congo*	Accession	08 August 1977	01 June 1978
(12)	Switzerland**	Ratification	14 September 1977	01 June 1978
(13)	United Kingdom**	Ratification	24 October 1977	01 June 1978
(14)	France**	Ratification	25 November 1977	01 June 1978
(15)	Soviet Union	Ratification	29 December 1977	01 June 1978
(16)	Brazil	Ratification	09 January 1978	01 June 1978
(17)	Luxembourg**	Ratification	31 January 1978	01 June 1978
(18)	Sweden**	Ratification	17 February 1978	01 June 1978
(19)	Japan	Ratification	01 July 1978	01 October 1978
(20)	Denmark	Ratification	01 September 1978	01 December 1978
(21)	Austria**	Ratification	23 January 1979	23 April 1979
(22)	Monaco	Ratification	22 March 1979	22 June 1978
(23)	Netherlands**	Ratification	10 April 1979	10 July 1979
(24)	Romania	Accession	23 April 1979	23 July 1979
(25)	Norway	Ratification	01 October 1979	01 January 1980
(26)	Liechtenstein**	Accession	19 December 1979	19 March 1980
(27)	Australia	Accession	31 December 1979	31 March 1980
(28)	Hungary	Ratification	27 March 1980	27 June 1980
(29)	Democratic People's Republic of Korea (North Korea)	Accession	08 April 1980	08 July 1980
(30)	Finland	Ratification	01 July 1980	01 October 1980
(31)	Belgium**	Ratification	14 September 1982	14 December 1981
(32)	Sri Lanka	Accession	26 November 1981	27 February 1982
(33)	Mauritania*	Accession	13 January 1983	13 April 1983
(34)	Sudan	Accession	16 January 1984	16 April 1984
(35)	Bulgaria	Accession	21 February 1984	21 May 1984

* Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI member countries. A designation of any country is an indication that all OAPI countries have been designated. Note: Only one designation fee is due regardless of the number of OAPI member countries designated.

** Members of European Patent Convention (EPC) regional patent system. Either national patents or European patents for member countries are available through PCT, except for France and Belgium, for which only European patents are available if PCT is used. Note: Only one PCT designation fee is due if European regional patent protection is sought for one, several or all EPC member countries.

accession to the PCT on 16 Jan. 1984, and that Bulgaria deposited its instrument of accession to the PCT on 21 Feb. 1984. Therefore, according to PCT Article 63(2), the Sudan may be designated in international applications filed on and after 16 Apr. 1984; Bulgaria may be designated in international applications filed on and after 21 May 1984.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks

Apr. 13, 1984.

[1042 O.G. 45]

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(134)

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1042 O.G. 2 on May 15, 1984.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced in the *Official Gazette* at 1039 O.G. 142 on Feb. 21, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Apr. 13, 1984.

[1042 O.G. 44]

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(135) **Reduction of European Search Fee for PCT Cases**

The following letter dated December 21, 1979 from Dr. J. B. Van Benthem, the President of the European Patent Office, was received by the Commissioner of Patents and Trademarks and is being published to provide the information to applicants using the Patent Cooperation Treaty (PCT). The effect of the decision of the Administration Council of the European Patent Organization is to reduce the search fee required by the European Patent Office by 20% if the application was filed under the PCT and was searched by the United States Patent and Trademark Office acting as an International Searching Authority.

The letter and accompanying annex are reproduced below.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

"Dear Mr. Diamond:

Pursuant to Article 157, paragraph 3, EPC, the Administrative Council of the European Patent Organization is entitled to decide under what conditions and to what extent:

a) the supplementary European search report under Article 157, paragraph 2a, EPC is to be dispensed with

b) the search fee as provided for in Article 157, paragraph 2b, EPC is to be reduced.

Up to the present, the Administrative Council of the EPO has taken decisions in regard to Article 157, paragraph 3, in respect of international applications for which the international search report has been drawn up by the following Offices: the European Patent Office, the Swedish Patent Office, the Austrian Patent Office, the United States Patent and Trademark Office, the Japanese Patent Office and the USSR State Committee for Inventions and Discoveries.

The decisions concerning the Swedish and Austrian Patent Offices are based on the agreements concluded between these Offices and the EPO pursuant to Section III, paragraph 2 and Section IV, paragraph 2 of the Protocol on the Centralisation of the European Patent System, which is an integral part of the EPC. These agreements prescribe that the searches to be carried out by these Offices are to meet the same criteria and be of the same standard as applied at the EPO.

For these reasons the Administrative Council has decided that in respect of Sweden and Austria the supplementary European search report under Article 157, paragraph 2a, EPC is to be dispensed with and a search fee as provided for in Article 157, paragraph 2b, EPC shall not be charged.

As far as those States are concerned which are not members of the European Patent Organization, the Administrative Council of the EPO decided on 14 September 1979, that the search fee provided for in Article 157, paragraph 2b, EPC, shall be reduced by one-fifth in the case of international applications on which an international search report has been drawn up by the United States Patent and Trademark Office, the Japanese Patent Office or the USSR State Committee for Inventions and Discoveries. This reduction reflects the economy expected to be made in drawing up the supplementary European search report according to EPO standards.

Annexed you will find a copy of the Decision of 14 Sept. 1979. It applies to all international applications filed since 1 June 1979.

Yours sincerely,

J. B. Van Benthem.
(President)."

ANNEX

The Administrative Council of the European Patent Organization

Having regard to the European Patent Convention (hereinafter called "the Convention"), and in particular Article 157, paragraph 3, thereof, Has decided as follows:

Article 1

The search fee provided for in Article 157, paragraph 2(b), of the Convention shall be reduced by one fifth in the case of international applications on which an international search report has been drawn up by the United States Patent and Trademark Office, the Japanese Patent Office or the USSR State Committee for Inventions and Discoveries.

Article 2

This decision shall enter into force on 14 September 1979. It shall apply to all international applications filed since 1 June 1978.

Done at Berlin, 14 Sept. 1979.

For the Administrative Council
The Chairman,
G. VIANES.

END OF ANNEX

[992 O.G. 2]

(136) Change in Search Fee for the European Patent Office as International Searching Authority

The International Bureau has informed the U.S. Patent and Trademark Office that, due to a more favorable exchange rate for the US dollar, the International Search Fee for the European Patent Office as International Searching Authority will decrease from $670 to $620 for United States applicants. The reduced Search Fee becomes effective on Feb. 14, 1984.

Other PCT fees remain unchanged as follows:

Transmittal fee	$ 125.00
Search fee for the U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Prior corresponding U.S. national application filed	250.00
Basic Fee (first 30 pages)	295.00
Basic Supplemental Fee (each page over 30)	6.00
Designation fee (each country or region)	70.00

Jan. 30, 1984.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[1039 O.G. 142]

Addition to Section 39
Notice of Restructuring and move of Patent Examine Corps.

Group	Director	Location	New Art Unit	New Art Unit Comprises Examiners Primarily From Following Original Art Unit(s)	New Art Unit Responsible For All Or Parts Of The Following Classes
110	D. Talbert	CP-9	111	111	75, 148, 266, 420, 428
			112	112	204, 252
			113	113	252, 423
			114	114	29, 148, 136, 429
			116	116	208, 252 ,260, 585
			118	113, 124	44, 71, 106, 252, 501
120	C. E. Van Horn	CP2-9	121	121	260, 542, 544, 546, 548, 549
			122	122	260, 542, 544, 546, 548, 568
			123	123	260, 424, 536, 549
			124	124	44, 252, 260, 556, 564, 568, 570
			125	125	
			260, 424		9,8
			126	126	260, 518, 560, 562, 564, 568
			127	174	424, 435
			128	174	424, 426, 435, 436
			129	121, 122, 126	71, 260, 544, 546, 548, 549
130	R. White	CP3-8	131	161	156, 252
			132	172	127, 426
			133	173,	62, 65, 134, 159, 202, 203
			134	172, 173	23, 156, 210, 422, 436
			135	177	55, 209, 261
			136	176	210
			137	147	264
			138	147	48, 156, 196, 201, 202, 249, 425
150	J. O. Thomas	CP2-11	151	142	204, 260, 521, 523, 524, 525, 527, 528
			152	162	118, 148, 427
			153	143	260, 521, 523, 524, 527, 528
			154	164	282, 428
			155	144	260, 520, 521, 523, 524, 525, 526, 528, 536
			156	166	428, 430
			157	144, 147, 166	8, 51, 106, 252, 433, 585
210	S. Engle	CP4-9	211	211	84, 181, 235, 352, 354, 355, 350, 361
			212	212	310, 320, 322, 323, 363
			213	213	219, 338
			214	216	200, 307, 314, 361, 373
			215	217	174, 336, 355, 361
			216	212, 216	177, 335, 337, 346
			217	217	84, 187, 290, 318, 368
220	K. Cage	CP4-10	221	221	42, 89, 102, 114, 184, 244, 362, 367, 376
			222	222	178, 179, 181, 310, 315, 330, 332, 340, 343, 356, 358, 367, 375, 376, 434, 435
			223	223	44, 60, 75, 86, 136, 148, 149, 204, 252, 260, 264, 362, 419, 422, 423, 424, 427, 428, 436, 568
230	E. Levy	CP4-11	232	232, 236	340, 364
			233	235	235, 360
			234	232, 237	235, 340, 364
			235	235	179, 358, 360, 369
			236	236	364
			237	237	364, 381
240	G. Forlenza	CP4-7	241	241	150, 190, 206, 215, 217, 220, 229, 383
			242	242	8, 15, 68, 99, 100, 226, 366, 494
			243	243	134, 138, 141, 200, 224
			245	245	57, 87, 242, 254, 308, 384, 464
			246	246	33, 73, 116, 277, 353, 374, 369
			247	353	2, 12, 19, 26, 28, 36, 38, 66, 69, 112, 128, 139, 223, 289

250	S. Matthews	CP4–8	251	251, 254, 255	343, 350, 356, 372
			252	252, 254, 256	329, 330, 331, 332, 333, 334
			253	253	357
			254	254	307, 328, 377
			255	255	250, 356
			256	256	250, 378
			257	257	350, 351
260	S. Kunin	CP4–5	261	214	178, 179, 358, 381
			262	231	358
			263	233	370, 375, 455
			264	234	340, 367
			265	244	73
			266	251	313, 315, 328, 382
			267	252	324
			268	234, 244	73, 340, 367
290	K. Cage	CP4–11	291	291	Design
			292	292	Design
310	B. Gray	CP3–5	311	311	133, 186, 187, 194, 221, 222, 258, 278
			312	312	104, 105, 152, 191, 209, 213, 238, 246, 291, 293, 295, 296, 301, 305, 410
			313	313	169, 193, 239, 294, 406
			314	314	188, 267, 271, 303
			315	315	114, 212, 244, 440, 441
			316	316	180, 280
			317	317	198, 298, 414
320	S. Zaharna	CP3–6	321	321	10, 29, 59, 72, 82, 140, 142, 144, 407, 413
			322	322	29, 279, 339, 408, 409
			323	323	7, 29, 51, 76, 81, 125, 145, 157, 254, 269
			324	324	16, 30, 83, 173, 225, 234
			325	325	43, 164, 228, 445
			326	326	29, 79, 147, 163, 241, 300
			327	327	17, 53, 227, 281, 282, 282, 402, 412, 493
330	R. Aegerter	CP3–4	331	331	27, 46, 47, 63, 111, 124, 135, 168, 171, 172, 231, 272
			332	332	3, 124, 128, 131, 132, 272, 401
			333	333	6, 40, 54, 56, 109, 119, 130, 232, 433
			334	334	273, 434
			335	335	128
			336	336	128
			337	337	37, 101, 199, 276, 400
340	D. Stocking	CP4–3	341	341	60, 91, 92, 415, 416
			342	342	123
			343	343	60, 91, 417, 418
			344	344	34, 62, 98, 110, 122, 236, 237, 432
			345	345	126, 431
			346	346	60, 123, 160
			347	347	137, 251
350	A. Smith	CP3–3	351	351	256, 285, 403, 405
			352	171, 352	74, 185, 192
			354	354	52
			355	355	160, 182, 211, 248
			356	356	14, 166, 175, 299, 404, 474
			357	357	24, 49, 108, 297, 312
			358	358	5, 70, 74, 109, 292, 411

Any questions concerning the Corps restructuring should be addressed to Edward E. Kubasiewicz at (703)557-4281.

PLEASE NOTE: PERSONS WHO ARE NOT SUCCESSFUL IN REACHING AN OFFICE EMPLOYEE BY TELEPHONE SHOULD CALL OUR INFORMATION NUMBER (703)557-3080 FOR THE LATEST TELEPHONE NUMBER OF THAT EMPLOYEE.

Rene D. Tegtmeyer

Rene D. Tegtmeyer
Assistant Commissioner for Patents

2/24/84
Date

(137)

TRADEMARK LEGISLATIVE PROPOSALS
TRADEMARK REGISTRATION TREATY

At the conclusion of the Vienna Diplomatic Conference on industrial property, the Trademark Registration Treaty was signed on June 12, 1973 for the United States. This Treaty is designed to simplify the procedures for obtaining international registration of trademarks for United States companies doing business abroad.

The Treaty was unanimously adopted at the final plenary session. In addition to the United States, the United Kingdom, the Federal Republic of Germany, Italy, Portugal, Hungary, San Marino and Monaco also signed. Some forty-six countries were represented at the Conference. In their closing statements most of the other delegations present indicated their hope to sign before the end of the year. The Treaty remains open for signature through Dec. 31, 1973. The Treaty will enter into force six months after five States have deposited their instruments of ratification or accession.

The negotiations at Vienna represent the climax of the work of several committees of experts and working groups which have met at Geneva since 1970 with the assistance of the World Intellectual Property Organization (WIPO). The U.S. delegation to the Vienna Conference was composed of officials from the Department of State, the U.S. Patent Office and advisors from the private sector. Previous versions of the proposed Treaty were published on Feb. 22, 1972; Sept. 19, 1972; and Feb. 20, 1973, in the Official Gazette *of the U.S. Patent Office. Published in this issue is the complete text of the Trademark Registration Treaty and its Regulations, as adopted by the Conference. For convenience, in addition to the text of the Articles and Regulations as adopted there is included a table of contents at the end of each section.*

Additional copies of this material are available upon request to the Commissioner of Patents.

June 22, 1973.

ROBERT GOTTSCHALK,
Commissioner of Patents.

TRADEMARK REGISTRATION TREATY

Adopted at Vienna, June 12, 1973

INTRODUCTORY PROVISIONS

Article 1

Establishment of a Union

The States party to this Treaty (hereinafter called "the Contracting States") constitute a Union for the international registration of marks.

Article 2

Abbreviated Expressions

For the purposes of this Treaty and the Regulations and unless expressly stated otherwise:

(i) "international registration" means a registration effected under this Treaty by the International Bureau in the International Register of Marks;

(ii) "international application" means an application filed for international registration;

(iii) "applicant" means the natural person who or legal entity which files the international application;

(iv) "owner of the international registration" means the natural person or the legal entity in whose name the international registration stands in respect of all or fewer than all the designated States and in respect of all or some only of the goods and/or services listed in that registration;

(v) "mark" means both a trademark and a service mark; it also includes a collective mark within the meaning of Article 7*bis* of the Stockholm (1967) Act of the Paris Convertion for the Protection of Industrial Property and a certification mark whether or not such certification mark is a collective mark within the said meaning;

(vi) "national mark" means a mark registered by a government authority of a Contracting State having the power to grant registrations with effect in that State; references to a *national mark* shall not be construed as references also to regional marks;

(vii) "regional mark" means a mark registered by an intergovernmental authority other than the International Bureau having the power to grant registrations with effect in more than one State;

(viii) references to any *final* decision or *final* refusal shall be construed as references to a decision or refusal against which there is no remedy, or against which all remedies have been exhausted, or where the time limit for asking for a remedy against the refusal or decision has expired;

(ix) references to any *publication by the International Bureau* shall be construed as references to publications effected in the official Gazette of that Bureau;

(x) references to the *date of the publication* of the international registration or to the *date of the publication* of the recording of the later designation shall be construed as references to the date of that issue of the official Gazette of the International Bureau in which the international registration or the recording of the later designation, as the case may be, has been published;

(xi) references to any *recording by the International Bureau* shall be construed as references to recordings made in the International Register of Marks;

(xii) "designated State" means any Contracting State in which the applicant or the owner of the international registration desires that such registration produce the effects provided for in this Treaty and which has been identified for that purpose in the international application or any request for the recording of later designations;

(xiii) "national Office" means the government authority of a Contracting State entrusted with the registration of marks; references to a *national Office* shall be construed as referring also to any intergovernmental authority which several States have entrusted with the task of registering regional marks, provided that at least one of those States is a Contracting State, and provided that such authority has been empowered to assume the obligations and exercise the powers which this Treaty and the Regulations provide for in respect of national Offices;

(xiv) "national register of marks" means the register of marks kept by a national Office in which national and/or regional marks are registered;

(xv) "designated Office" means the national Office of the designated State;

(xvi) references to *national law* shall be construed as references to the national law of a Contracting State and, where a regional mark is involved, to the regional treaty providing for the registration of regional marks;

(xvii) "Madrid Agreement" means the Madrid Agreement Concerning the International Registration of Marks;

(xviii) "Union" means the Union referred to in Article 1;

(xix) "Assembly" means the Assembly of the Union;

(xx) "Organization" means the World Intellectual Property Organization;

(xxi) "International Bureau" means the International Bureau of the Organization and, as long as it subsists, the United International Bureau for the Protection of Intellectual Property (BIRPI); and where any provision refers to the receiving of documents, or of payments,

by the International Bureau, it also includes any agency of that Bureau established under Article 32(2)(a)(ix);

(xxii) "Director General" means the Director General of the Organization;

(xxiii) "International Classification" means the classification established under the Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks;

(xxiv) "Regulations" means the Regulations referred to in Article 35.

CHAPTER I: SUBSTANTIVE PROVISIONS

Article 3

International Register of Marks

(1) [*International Registrations*] The International Bureau shall register marks in the International Register of Marks according to the provisions of this Treaty and the Regulations.

(2) [*International Applications*] International registrations shall be effected in the basis of international applications.

Article 4

Right To File International Applications and To Own International Registrations

(1) [*Entitlement*] (a) Any resident or national of a Contracting State may file international applications and may own international registrations.

(b) If there are several applicants, they shall have the right to file an international application only if all of them are residents of nationals of Contracting States.

(c) If there are several owners of an international registration, they shall have the right to own such a registration only if all of them are residents or nationals of Contracting States.

(2) [*Natural Persons*] (a) Any natural person shall be regarded as a resident of a Contracting State if:

(i) according to the national law of that State, he is a resident of that State, or

(ii) he has a real and effective industrial or commercial establishment in that State.

(b) Any natural person shall be regarded as a national of a Contracting State if, according to the national law of that State, he has the nationality of that State.

(3) [*Legal Entities*] (a) Any legal entity shall be regarded as a resident of a Contracting State if it has a real and effective industrial or commercial establishment in that State.

(b) Any legal entity shall be regarded as a national of a Contracting State if it is constituted according to the national law of that State.

(4) [*Different Residence and Nationality*] If the State of the residence and the State of the nationality of the applicant or owner of the international registration are different, and only one of those States is a Contracting State, the Contracting State alone shall be considered for the purposes of this Treaty and the Regulations.

(5) [*Certain Associations*] Where under the national law of any Contracting State an association of natural persons or legal entities may own marks notwithstanding the fact that it is not a legal entity, it shall be entitled to file international applications and to own international registrations, provided it is a resident or national of that State within the meaning of paragraph (3).

(6) [*Domestic Filing*] (a) The national law of any Contracting State may provide that, where the applicant is both a resident and a national of that State, an international application may be filed only if the mark that is the subject of the international application is, at the time of the filing of that application, the subject of an application for registration, in the name of the said applicant, in the national register of marks of that State in respect of at least those goods and/or services listed in the international application.

(b) Subparagraph (a) shall not apply where, at the time of the filing of the international application, the mark that is the subject of the international application is already registered in the name of the applicant in the national register of marks of the said State in respect of the said goods and/or services.

Article 5

The International Application

(1)(a) [*Mandatory Contents*] The international application shall contain, as specified in this Treaty and the Regulations:

(i) an indication that it is filed under this Treaty,

(ii) indications concerning the applicant's identity, residence, nationality, and address,

(iii) a reproduction of the mark,

(iv) a list of goods and/or services in which the terms are grouped under the applicable classes of the International Classification and in which each term is comprehensible, permits classification in one class only of that Classification, and, as far as possible, is one that appears in the alphabetical list of goods and/or services of the said Classification,

(v) the identification of the designated State or States,

(vi) in respect of any designated State in which the effects provided for in this Treaty are available either as if the mark had been applied for and registered as a national mark or as if the mark had been applied for and registered as a regional mark, an indication of the choice between the two,

(vii) in respect of any designated State in which the effects provided for in this Treaty are desired as for a collective mark or a certification mark, an indication to that effect.

(b) [*Optional Contents*] The international application may contain a declaration, as provided in the Regulations, claiming the priority of one or more earlier applications filed in or for any country party to the Paris Convention for the Protection of Industrial Property. Furthermore, the international application may contain such additional indications as are provided for in other provisions of this Treaty and in the Regulations.

(c) [*Language, Form, Signature, Fees*] The international application shall be in a prescribed language and in the prescribed form, shall be signed as provided in the Regulations, and shall be subject to the payment of the prescribed fees.

(2) [*Filing With International Bureau*] International applications shall be filed direct with the International Bureau.

(3) [*Filing Through National Office*] (a) Notwithstanding paragraph (2) but subject to subparagraph (c), the national law of any Contracting State may provide that international applications of residents of that State may be filed through the intermediary of the national Office of the said State.

(b) Where the international application is filed through the intermediary of a national Office competent under subparagraph (a), that Office shall indicate on the international application the date on which it received that application and shall promptly transmit the same to the International Bureau, as provided in the Regulations.

(c) Any Contracting State on whose territory an agency of the International Bureau, established under Article 32(2)(a)(ix), is functioning shall, at least for the time such agency functions, suspend the application of any provision of its national law referred to in subparagraph (a) and Article 6(3)(a).

Article 6

Later Designation

(1) [*Possibility of Later Designation*] Any Contracting

State not designated in the international application or whose designation has ceased to have the effects provided for in Article 11 may be designated by the applicant or, once the international registration has been effected, by the owner of the international registration, as provided in the Regulations ("later designation").

(2)(a) [*Mandatory Contents; Filing With International Bureau*] Any later designation shall be the subject of a request for the recording of later designations. Several States may be designated in the same request. The request shall be filed direct with the International Bureau and shall contain, as specified in the Regulations:

(i) an indication that it is for the recording of later designations under this Treaty,

(ii) indications concerning the identity, residence, nationality and address of the applicant or, where the international registration has already been effected, of the owner of the international registration,

(iii) the identification of the international application or, where the international registration has already been effected, of such registration,

(iv) the identification of the later designated State or States,

(v) in respect of any later designated State in which the effects provided for in this Treaty are available either as if the mark has been applied for and registered as a national mark or as if the mark had been applied for and registered as a regional mark, an indication of the choice between the two,

(vi) in respect of any later designated State in which the effects provided for in this Treaty are desired as for a collective mark or a certification mark, an indication to that effect.

(b) [*Optional Contents*] The request may contain a declaration, as provided in the Regulations, claiming the priority of one or more earlier applications filed in or for any country party to the Paris Convention for the Protection of Industrial Property. Furthermore, the request may contain in respect of any State designated therein a list of goods and/or services, provided that, if that list is different from the list of goods and/or services included in the international registration as published or, if the international registration has not yet been published, from the list of goods and/or services included in the international application after any limitation under Article 7(4), it shall conform with the formal concept of limitation as defined in the Regulations. Finally, the request may contain such additional indications as are provided for in other provisions of this Treaty and in the Regulations.

(c) [*Language, Form, Signature, Fees*] The request shall be in a prescribed language and in the prescribed form, shall be signed as provided in the Regulations, and shall be subject to the payment of the prescribed fees.

(3) [*Filing Through National Office*] (a) Notwithstanding paragraph (2)(a) but subject to Article 5(3)(c), the national law of any Contracting State may provide that requests for the recording of later designations by residents of that State may be filed through the intermediary of the national Office of the said State.

(b) Where the request for the recording of later designations is filed through the intermediary of a national Office competent under subparagraph (a), that Office shall indicate on the request the date on which it received that request and shall promptly transmit the same to the International Bureau, as provided in the Regulations.

Article 7

International Registration or Declining of the International Application

(1) [*No Defects*] Subject to paragraphs (2) to (5), the International Bureau shall promptly effect the international registration as applied for, and the date under which such registration shall be effected ("international registration date") shall be the date on which the international application was received by the International Bureau or, in the case of an international application filed through the intermediary of a national Office under Article 5(3), the date on which it was received by that Office provided that the said application is received by the International Bureau before the expiration of 45 days from that date. The International Bureau shall issue to the owner of the international registration a certificate of international registration.

(2) [*Defects Which Necessarily Entail a Later Registration Date*] (a) Where the International Bureau finds any of the following defects, that is to say, where:

(i) the international application does not contain an indication that it is filed under this Treaty,

(ii) the international application is in a language other than one of the prescribed languages,

(iii) the international application contains no indications concerning the residence or nationality of the applicant or only such indications as do not permit the conclusion that he has the right to file international applications,

(iv) the international application contains no indications concerning the applicant's identity and address or only such indications as do not permit him to be identified and reached by mail,

(v) the international application does not include the reproduction of the mark,

(vi) the international application does not contain a list of goods and/or services,

(vii) the international application does not designate any Contracting State,

(viii) no fees have been received by the International Bureau on or before the date on which the international application is received by the Bureau or, where the international application is filed through the intermediary of a national Office under Article 5(3), no fees have been received by the International Bureau within 45 days from the date on which that Office received the international application,

(ix) the amount of the fees received by the International Bureau by the date referred to in item (viii) does not attain the amount ("minimum amount") fixed in the Regulations, it shall invite the applicant to correct the defect; however, where the defect referred to in item (iv) makes it unlikely for the invitation to reach the applicant, the International Bureau is not required to send such invitation.

(b) If the defect is not corrected within three months from the date on which the International Bureau received the international application, the International Bureau shall decline that application.

(c) If the defect is corrected within the time limit referred to in subparagraph (b) and unless the international application is declined under paragraph (3)(b), the International Bureau shall effect the international registration, and the international registration date shall be the date on which that Bureau received the required correction or the prescribed amount of the fees, unless a later date is applicable under paragraph (3)(d).

(3) [*Defects Which Do Not Necessarily Entail a Later Registration Date*] (a) Where the International Bureau finds any of the following defects, that is to say, where:

(i) the amount of the fees received by the International Bureau by the date referred to in paragraph (2)(a)(viii) is less than the amount prescribed but attains the minimum amount,

(ii) the international application does not contain, in respect of any designated State to which Article 5(1)(a)(vi) applies, the indication of the choice referred to in the said provision,

(iii) the international application is not signed, it shall invite the applicant to correct the defect.

(b) If the defect is not corrected within three months from the date on which the International Bureau received the international application, the International Bureau shall decline that application or, if the only defect which is not corrected within the said time limit is

the defect referred to in subparagraph (a)(ii), the International Bureau shall decline to record the State concerned as a designated State.

(c) If the defect is corrected before the expiration of one month from the date of the invitation referred to in subparagraph (a) and unless the international application is declined under subparagraph (b) or paragraph (2)(b), the International Bureau shall effect the international registration, and the international registration date shall be the date referred to in paragraph (1), unless a later date is applicable under paragraph (2)(c).

(d) If the defect is corrected later than at the expiration of one month from the date of the invitation referred to in subparagraph (a) but earlier than at the expiration of three months from the date on which the International Bureau received the international application, and unless the international application is declined under paragraph (2)(b), the International Bureau shall effect the international registration, and the international registration date shall be the date on which that Bureau received the required correction or payment, unless a later date is applicable under paragraph (2)(c).

(4) [*Classification Causing Increase in Fees*] (a) Where the International Bureau finds that, by classifying any of the terms appearing in the list of goods and/or services in or also in a class or classes of the International Classification in which such term was not classified in the international application as filed, the amount of the fees required is higher than if that term had not been so classified, the invitation referred to in paragraph (2)(a) or (3)(a) shall contain appropriate explanations and shall indicate that the applicant may limit the list of goods and/or services.

(b) If, within three months from the date on which the International Bureau received the international application, it receives from the applicant a statement which limits the list of goods and/or services in conformity with the formal concept of limitation as defined in the Regulations, the International Bureau shall modify the list of goods and/or services accordingly and, if such modification entails a change in the prescribed amount of the fees, such change shall be taken into account by the International Bureau in determining that amount and in applying paragraph (2)(b), (2)(c), (3)(b), (3)(c), or 3(d), as the case may be.

(5) [*Details*] (a) The Regulations shall provide for the details of the procedure under paragraphs (1) to (4).

(b) Failure to send or receive any invitation referred to in paragraphs (2) to (4), or any delay in dispatching or receiving it, or any error therein, shall not extend the time limits fixed in those paragraphs and shall not affect any obligation to decline the international application.

(c) Where the international application is declined, the International Bureau shall reimburse to the applicant such amounts as are specified in the Regulations.

(6) [*Defects Peculiar to Filings Through National Offices*] Where the international application filed through the intermediary of a national Office under Article 5(3):

(i) does not indicate that the applicant is a resident of the State through the intermediary of whose national Office the international application was filed, or

(ii) does not contain a statement by the said national Office indicating the date on which that Office received the international application, or

(iii) contains the said statement indicating a date which precedes by more than 45 days the date on which the International Bureau received the international application, that application shall be treated as if it had been filed direct with the International Bureau on the date it reached that Bureau.

Article 8

Recording or Declining of Later Designations

(1) [*No Defects*] Subject to paragraph (2), the International Bureau shall promptly effect the recording of any later designation as requested, and the date under which such recording shall be effected ("recording date of the later designation") shall be the date on which the request for the recording of the later designation was received by the International Bureau or, in the case of a request filed through the intermediary of a national Office under Article 6(3), the date on which it was received by that Office, provided that the said request is received by the International Bureau before the expiration of 45 days from that date. The International Bureau shall issue to the owner of the international registration a certificate of the recording of the later designation.

(2) [*Defects*] (a) The provisions of Article 7(2) to (6) shall apply, *mutatis mutandis*, to the recording of later designations and declining of requests for the recording of later designations, provided that, once the international registration has been effected, any reference to the applicant shall be considered a reference to the owner of the international registration.

(b) Notwithstanding subparagraph (a), items (v) and (vi) of Article 7(2)(a) shall be considered to have been replaced by the following:

"(v) the request does not identify the international application or, once the international has been effected, such registration."

(c) Notwithstanding subparagraph (a), Article 7(3)(a) shall be considered to have been completed by the following:

"(iv) any list of goods and/or services contained in the request does not conform with the requirements of Article 6(2)(b), second sentence."

Article 9

Avoiding the Effects of Declining

(1) [*Requesting Redress Through Designated Office*] Where the International Bureau has declined the international application or a request for the recording of later designation, the applicant or the owner of the international registration may, within two months from the date of the notification of the declining, file with the national Office of any State designated in the declined international application or declined request:

(i) a petition for the purpose of requesting the International Bureau to proceed, in respect of that State, where the international application was declined, with the international registration and the recording of the designation of the said State or, where the request for the recording of the later designation was declined, with the recording of the designation of that State, or

(ii) an application for the registration, in the national register of marks ("national application"), of the mark that is the subject of the declined international application or declined request, in respect of all or some of the goods and/or services indicated in the said international application or the said request, such application complying with all the requirements of the national law of the said State for the filing of applications for the registration of marks in the national register of marks.

(2) [*Decision on the Request*] If the national Office or any other competent authority of the said State finds that the declining, by the International Bureau, of the international application or of the request for the recording of the later designation of that State was unjustified under this Treaty or the Regulations, or that the declining was based on the fact that there was a delay in meeting a time limit which must be excused by virtue of Article 29(1), then:

(i) where a petition has been filed under paragraph (1)(i), the said national Office shall request the International Bureau to proceed as provided in that paragraph, and the International Bureau shall proceed as requested, and the international registration date or the recording date of the later designation shall be the same as if the declining had not taken place,

(ii) where a national application has been filed under

paragraph (1)(ii), that application shall, provided it complies with all the requirements of the national law of the said State for the filing of applications for the registration of marks in the national register of marks, be treated as if it had been filed on the date which would have been the international registration date or the recording date of the later designation had the declining not taken place.

(3) [*Recording of the Petition for Redress*] The applicant or the owner of the international registration who files a petition under paragraph (1)(i) shall, at the time of filing the petition, transmit a copy of that petition to the International Bureau. If the petition relates to a mark which is already registered in the International Register of Marks, the International Bureau shall, as provided in the Regulations, record and publish the fact that it has received a copy of such petition; otherwise it shall keep the said copy in its files.

Article 10

Publication and Notification

(1) [*Publication*] International registrations and recordings of later designations shall be promptly published by the International Bureau, as provided in the Regulations.

(2) [*Notification*] International registrations and recordings of later designations shall be promptly notified by the International Bureau to the national Offices of each designated State, as provided in the Regulations.

Article 11

Effects of International Registration and of Recording of Later Designation

(1) [*National Application Effect*] The international registration of a mark and the recording of any later designation, published and notified as provided in Article 10, shall have the same effect in each designated State as if an application for the registration of the mark in the national register of marks had been filed with the national Office of that State on the international registration date or on the recording date of the later designation, as the case may be.

(2) [*National Registration Effect*] Furthermore, the said international registration and recording shall, subject to Articles 12 and 13, have the same effect in each designated State as if the mark had been registered in the national register of marks of that State; such effect shall come into existence in any designated State:

(i) where no refusal or notice that a refusal may eventually be pronounced ("notice of possible refusal") has been notified by the national Office of that State within the time limit fixed in Article 12(2)(a)(i), at the expiration of the said time limit or on such earlier date as may be prescribed by the national law of that State,

(ii) where a refusal or a notice of possible refusal has been notified by the national Office of that State within the time limit fixed in Article 12(2)(a)(i), if and when, and to the extent to which, the refusal is reversed by a final decision or the final decision taken in the proceedings referred to in the notice of possible refusal results in acceptance of the effect provided for in this paragraph,

and shall be deemed to have started as of the international registration date or the recording date of the later designation, as the case may be.

(3) [*Several National Registers*] Where, in any designated State, there is more than one national register of marks or the national register of marks has several parts, the reference in paragraphs (1) and (2) to the national register of marks shall be construed as a reference to that national register or that part of the national register which affords the highest degree of protection, unless another register or part of the register is indicated in the international application or the request for the recording of the later designation. In the case of such indication, the reference in paragraphs (1) and (2) to the national register of marks shall be construed as a reference to the register or part of the register so indicated.

Article 12

Refusal of the Effects Provided for in Article 11

(1) [*Grounds of Refusal*] Subject to paragraph (2) and Articles 19, 21(3) and 22(3), the effects provided for in Article 11 may, in respect of any designated State, be refused by the competent authorities of that State:

(i) on the same grounds and to the same extent as those in respect of which applications for the registration of marks in the national register of marks may be refused under the national law of the said State, provided that such grounds are not incompatible with this Treaty and the Regulations or the most recent provisions of the Paris Convention for the Protection of Industrial Property by which that State is bound, and provided that Article 6*quinquies* of the Stockholm (1967) Act of the said Convention shall apply also to marks registered under this Treaty, the international registration taking the place, for the purposes of the said Article 6 *quinquies*, of registration in the country of origin,

(ii) on the ground that the owner of the international registration is not entitled to own international registrations or that the applicant was not entitled to file international applications.

(2) [*Time Limit and Other conditions*] (a) Any refusal under paragraph (i) shall be effective only:

(i) if the refusal or notice of possible refusal is notified, as provided in the Regulations, by the national Office of the designated State to the International Bureau so that the latter receives it within 15 months or, in the case of a certification mark, 18 months from the date of the publication of the international registration, or, in the case of a later designation, of the publication of the recording of the later designation of such State, and

(ii) in the case of a refusal, if the grounds for the refusal are specified, and provided, where such refusal is not final, that the grounds given in the final decision of refusal include at least one of the grounds specified in the said refusal and the final decision is or is also based on at least one of the grounds specified in the said refusal,

(iii) in the case of a notice of possible refusal followed by a refusal, if the notice specifies, as provided in the Regulations, the grounds on which a refusal may eventually be pronounced, and provided that the grounds given in the final decision of refusal include at least one of the grounds specified in the said notice and the final decision is or is also based on at least one of the grounds specified in the said notice.

(b) The proviso of subparagraph (a)(ii) and the proviso of subparagraph (a)(iii) shall not apply where the final decision is that of a court or other independent review authority.

(c) Subparagraph (a) shall not apply where the refusal is based on lack of compliance with the requirements of the national law of the designated State permitted by Article 19(3).

(3) [*Remedies*] The owner of the international registration shall, with reasonable time limits, have in any designated State the same remedies against any decision of refusal and the same procedural and substantive rights in connection with any intended refusal, whether ex officio or based on the opposition of a third party, as have applicants who apply for the registration of marks in the national register of marks of the State in question.

(4) [*Procedural Details*] (a) The International Bureau shall record any notification received under paragraph (2)(a) and publish a corresponding notice.

(b) Where the decision of refusal is final, the national Office of the designated State shall notify the International Bureau accordingly, and that Bureau shall record the final decision, cancel the designation of that State, or, in a case where the final decision relates to some

only of the goods and/or services listed, cancel in respect of the said State those goods and/or services to which the said decision relates, and publish such cancellation.

(c) Where a refusal which is not final or a notice of possible refusal has been notified under paragraph (2)(a) and the final decision results in acceptance of the effect referred to in Article 11(2), the national Office of the designated State shall notify the International Bureau accordingly, and the International Bureau shall record the notification received and publish a corresponding notice.

(d) The details of the procedures referred to in subparagraphs (a) to (c) are provided in the Regulations.

Article 13

Cancellation of the Effect Acquired Under Article 11(2)

(1) [*Grounds of Cancellation*] Subject to Article 19, the effect acquired under Article 11(2) may, in respect of any designated State, be cancelled by the competent authorities of that State:

(i) on the same grounds, to the same extent and subject to the same procedure as those in respect of which registrations of marks in the national register of marks may be cancelled under the national law of the said State, provided that such grounds and such procedure are not incompatible with this Treaty and the Regulations or the most recent provisions of the Paris Convention for the Protection of Industrial Property by which that State is bound, and provided that Article 6 *quinquies* of the Stockholm (1967) Act of the Paris Convention for the Protection of Industrial Property shall apply also to marks registered under this Treaty, the international registration taking the place, for the purposes of the said Article 6*quinquies*, of registration in the country of origin,

(ii) on the ground that the owner of the international registration is not entitled to own international registrations or that the applicant was not entitled to file international applications.

(2) [*Defense and Remedies*] The competent authorities of the designated State shall give, with reasonable advance notice, an opportunity to the owner of the international registration to defend his rights in any cancellation proceeding and such owner shall have the same remedies against any decision of cancellation as have owners of marks registered in the national register of marks of the said State.

(3) [*Procedural Details*] If the decision of cancellation is final, the national Office of the designated State shall notify the International Bureau accordingly, and that Bureau shall record that decision, cancel the designation of the said State or, in a case where the cancellation relates to some only of the goods and/or services listed, cancel—in respect of that State—those goods and/or services to which the said decision relates, and publish such cancellation.

Article 14

Change in the Ownership of the International Registration

(1)(a) [*Total or Partial Change; Request; Recording*] Where the ownership of any international registration changes so that the new owner has become the owner in respect of all or fewer than all of the designated States and in respect of all or some only of the goods and/or services, the change in ownership shall, on request, subject to paragraph (2), be recorded by the International Bureau.

(b) [*Details of the Request*] The request shall contain, as provided in the Regulations:

(i) an indication to the effect that the recording by the international Bureau of a change in ownership is requested,

(ii) the international registration number of the international registration,

(iii) indications concerning the name, residence, nationality and address of the new owner,

(iv) the identification of those of the designated States in respect of which the new owner has acquired ownership and the identification, in respect of each of those States, of those of the goods and/or services for which the new owner has acquired ownership.

(c) [*Signature*] The request shall be signed by the person who, pursuant to the change in ownership, ceases to own the international registration in respect of all or fewer than all of the designated States and in respect of all or some only of the goods and/or services ("earlier owner") or, where the earlier owner is unable to sign, by the new owner, provided that if it is signed by the new owner the request shall also contain an appropriate attestation, as provided in the Regulations, by the national Office of the Contracting State of which the earlier owner was, at the time of the change of ownership, a national or, if at that time the earlier owner was not a national of a Contracting State, by the national Office of the Contracting State, of which, at the said time, the earlier owner was a resident.

(d) [*Fee; Publication; Notification*] The request shall be subject to the payment of a fee to the International Bureau, and the recording shall be published by that Bureau and notified by it to the earlier owner and the new owner and to the interested designated Offices, as provided in the Regulations.

(2) [*Declining of Request*] (a) In any of the following cases, the International Bureau shall decline the request and shall notify accordingly the person who has signed it:

(i) Where the request does not contain the indication referred to in paragraph (1)(b)(i),

(ii) where the request does not contain the number referred to in paragraph (1)(b)(ii),

(iii) where the request contains no indications concerning the residence or nationality of the new owner, or only such indications as do not permit the conclusion that he is entitled to own international registrations,

(iv) where the request contains no indications concerning the identity and address of the person who has signed it or only such indications as do not permit him to be identified and reached by mail,

(v) where the request does not identify any designated State in respect of which the new owner has acquired ownership,

(vi) where the request does not identify, as provided in the Regulations, any goods and/or services in respect of each of the designated States for which the new owner has acquired ownership,

(vii) where the request is not signed and, if it is signed by the new owner, where it does not contain the attestation, as provided in the Regulations, referred to in paragraph (1)(c),

(viii) where the prescribed fee has not been received.

(b) Where the request has the defect referred to in subparagraph (a)(iv) to the extent that it makes it unlikely for the notification referred to in subparagraph (a) to reach the person who signed the request, the International Bureau is not required to send such a notification.

(3) [*Effect*] Subject to paragraph (4), any recording effected under paragraph (1) shall, from the date of such recording, have the same effect as if it had been effected in the national register of marks, or any other related register, of each of the designated States to which the request relates.

(4)(a) [*Denial of Effect: Grounds*] The competent authorities of any designated State may, as far as that State is concerned, deny the effect referred to in paragraph (3) on grounds which, according to its national law, do not allow of changes in ownership or on the ground that the new owner is not entitled to own international registrations.

(b) [*Denial of Effect: Evidence*] The national law of any Contracting State may provide that the effect referred to in paragraph (3) may, as far as such State is

concerned, be denied if, within three months from the date of the publication referred to in paragraph (1)(d) or, where that national law provides for a longer period, within that period, evidence is not adduced before its national Office which satisfies the conditions of the national law as regards changes in ownership. Any national Office may collect the fee prescribed by its national law in connection with the examination of the said evidence adduced before it.

(c) [*Denial of Effect: Notification by Designated State; Recording, Notification, Publication*] Where the competent authorities of any designated State deny the effect referred to in paragraph (3), the national Office of that State shall promptly notify the International Bureau accordingly, and that Bureau shall record the denial and effect the corresponding notifications and publication. The details of the procedure are provided in the Regulations.

(5) [*Switchover to National Register Where an Owner Cannot Own International Registrations*] Where there is a change in ownership other than by contract between the earlier owner and the new owner, and where the new owner is a person who is not entitled to file international applications but is entitled under the national law of any designated State to file applications for the registration of marks in the national register of marks of that State, the new owner may file an application for the registration, in the said national register, of the mark which is registered, and in respect of all or some of the goods and/or services which are listed, in the International Register of Marks in respect of that State. If, within two years from the change in ownership and prior to six months after the expiration of the initial term of the international registration or the then running term of renewal, as the case may be, the new owner files such an application, that application shall be treated in the said State as if it had been filed at the time when the designation of that State took effect.

Article 15

Change in the Name of the Owner of the International Registration

(1) [*Recording*] Where the owner of the international registration changes his name, such change in the name of the owner shall, on his request, be recorded by the International Bureau.

(2) [*Request*] (a) Any request may relate to several international registrations of the same owner.

(b) The request shall contain, as provided in the Regulations:

(i) an indication to the effect that the recording by the International Bureau of a change in the name of the owner of the international registration is requested,
(ii) a declaration to the effect that the change in name does not amount to a change in the ownership of the international registration,
(iii) the international registration number of the international registration,
(iv) an indication of the former name and of the new name of the owner of the international registration.

(c) The request shall be signed with the new name of the owner of the international registration.

(d) The request shall be subject to the payment of a fee to the International Bureau.

(3) [*Publication, Notification, Copies of Documents*] The recording shall be published by the International Bureau and shall be notified to the designated Offices, as provided in the Regulations.

(4) [*Declining of Request*] In any of the following cases, the International Bureau shall decline the request and shall notify accordingly the owner:

(i) where the request does not contain the indications referred to in paragraph (2)(b),
(ii) where the request is not signed as provided in paragraph (2)(c),
(iii) where the prescribed fee has not been received.

(5) [*Effect*] Subject to paragraph (6), any recording effected under paragraph (1) shall, from the date of such recording, have the same effect as if it had been effected in the national register of marks, or any other related register, of each of the designated States.

(6)(a) [*Denial of Effect: Evidence*] The national law of any Contracting State may provide that the effect referred to in paragraph (5) may, as far as such State is concerned, be denied if, within three months from the date of the publication referred to in paragraph (3)(a) or, where that national law provides for a longer period, within that period, evidence is not adduced before its national Office which proves that the national person or legal entity designated by the former name and the new name is the same.

(b) [*Denial of Effect: Notification by Designated State; Recording, Notification, Publication*] Where the competent authorities of any designated State deny the effect referred to in paragraph (5), the national Office of that State shall promptly notify the International bureau accordingly, and that bureau shall record the denial and effect the corresponding notifications and publication. The details of the procedure are provided in the Regulations.

Article 16

Limitation of the List of Goods and/or Services

(1) [*Request; Recording*] On the request of the owner of the international registration, the International Bureau shall record, in respect of any designated State, any limitation of the list of goods and/or services which conforms with the formal concept of limitation as defined in the Regulations.

(2) [*Fees; Publication and Notification*] The request for recording shall be subject to the payment of a fee to the International Bureau, and the recording shall be published by that Bureau and notified to all the interested designated States, as provided in the Regulations.

(3) [*Declining of the Request*] The International Bureau shall decline the recording of any change in the list of goods and/or services which does not conform with the said formal concept of limitation or other requirements of the request, and shall notify the owner of the International Registration accordingly, as provided in the Regulations.

(4) [*Effect*] Subject to paragraph (5), any recording effected under paragraph (1) shall, from the date of such recording, have the same effect as if it had been effected in the national register of marks of each of the designated States to which the request relates.

(5)(a) [*Limitation on the Invitation of the Designated Office*] If the national Office or other competent authority of a designated State finds that the limitation requested by the owner of the international registration in respect of that State but declined by the International Bureau is, in fact, a limitation in the sense that the terms proposed in the request relate only to goods and/or services which are covered by the terms appearing in the international registration, the national Office of that State, upon petition by the owner, shall, as provided in the Regulations, invite the International Bureau to record the limitation in respect of that State.

(b) [*Reinstatement of the List of Goods and/or Services on the Invitation of the Designated Office*] If the national Office or other competent authority of a designated State finds that the limitation requested by the owner of the international registration and recorded by the International Bureau is, in fact, not a limitation in the sense indicated in subparagraph (a), the national Office of that State may, as provided in the Regulations and after having heard the owner, invite the International Bureau to reinstate, in respect of that State, wholly or in part, the list of goods and/or services as it was prior to the limitation in question.

(c) [*Procedural Details*] The International Bureau shall proceed as invited and effect, as provided in the Regulations, the corresponding recording, publication and notifications.

Article 17

Term and Renewal of the International Registration

(1) [*Initial Term*] The initial term of any international registration shall be ten years from the international registration date.

(2) [*Renewal*] (a) Any international registration may be renewed in respect of any designated State by its owner for terms of ten years.

(b) Renewal shall prolong the effects provided for in Article 11 in each designated State for the term of the renewal.

(c) Each term of renewal shall start on the day following the day on which the initial term of the international registration or the term of the last renewal expires.

(3)(a) [*Demand*] Renewal shall be the subject of a demand presented to the International Bureau as provided in the Regulations, and shall be subject to the payment of fees, as provided in the Regulations. The demand shall not be presented and the fees shall not be paid earlier than six months before, or later than six months after, the starting date of the term of renewal. If the demand is presented or the fees are received after the starting date of the term of renewal, renewal shall be subject to the payment of an additional fee ("renewal surcharge"), as provided in the Regulations, which shall be paid before the expiration of six months after the starting date of the term of renewal.

(b) [*Publication*] The International Bureau shall record and publish the renewal and shall notify each designated Office accordingly, as provided in the Regulations.

Article 18

Fees

(1) [*Fees Belonging to the International Bureau*] (a) The International Bureau shall be entitled to fees in connection with the filing of each international application, request for recording of later designations, demand for renewal, and such other operations and services as are subject, according to this Treaty or the Regulations, to the payment of fees.

(b) The Regulations fix the amounts of the fees referred to in subparagraph (a).

(2) [*Fees Belonging to the Contracting States*] Each Contracting State shall be entitled to fees ("State fees") in connection with each designation and each renewal concerning it. The State fees shall be either "individual" or "standard," according to the choice of the Contracting State. The choice shall be exercised and applied as provided in the Regulations and shall apply to all designations and renewals concerning the Contracting State.

(3) [*Individual State Fees*] (a) Subject to subparagraphs (b) to (f), the amounts of individual State fees applicable to any State shall be determined by such State.

(b) The amounts of the individual State fees shall be communicated by the national Office of the Contracting State to the International Bureau in the currency and within the time limits specified in the Regulations. They shall remain applicable for the periods specified in the Regulations.

(c) The amounts of the individual State fees may vary only according to the number of classes to which the goods and/or services listed in respect of that State belong under the International Classification and according to whether the mark is or is not a collective mark or a certification mark.

(d) Any individual State fee shall belong to the designated State in respect of which it was paid and shall be transferred to its national Office as provided in the Regulations.

(e) The amount of the individual State fee to which the Contracting State is entitled in connection with each designation concerning it ("individual State designation fee") shall not exceed the total amount of any filing, class, examination, registration and publication fees which that State prescribes in connection with an application for registration in the national register of marks.

(f) The amount of the individual State fee to which the Contracting State is entitled in connection with each renewal concerning it ("individual State renewal fee") shall not exceed the amount of the renewal fee which that State prescribes for the renewal of a registration in the national register of marks, provided that, if the latter amount relates to a period which is longer or shorter than ten years, the said limit shall be proportionately reduced or proportionately increased, as the case may be.

(4) [*Standard State Fees*] (a) The amounts of the standard State designation fee and of the standard State renewal fee shall be fixed in the Regulations.

(b) The standard State fees shall belong to the States which have chosen standard State fees. The total amount of such fees collected by the International Bureau for any given calendar year shall be distributed and transferred in the course of the following year to the national Offices of the Contracting States to which the standard State fees apply in proportion to the number of designations and renewals concerning each of them, provided that the number resulting for each Office shall be first multiplied by the coefficient, as fixed in the Regulations, based on the extent of the examination which the national law provides.

(5) [*Other Details Concerning Fees*] The Regulations give further details concerning fees and provide for the total or partial reimbursement of certain fees in certain circumstances.

Article 19

Certain National Requirements

(1) [*Fees*] Subject to Article 14(4)(b), no national Office of any designated State shall, unless acting as an independent review authority, require the payment of any fee by the applicant or the owner of the international registration in connection with the obtaining and renewing of the effects, in the said State, of international applications, international registrations, and recordings concerning such applications and registrations.

(2) [*Number of Classes and of Goods and/or Services*] No designated State may refuse or cancel the effects provided for in Article 11 merely on the grounds that its national law allows the registration of marks only in respect of a limited number of classes or a limited number of goods and/or services.

(3)(a) [*Actual Use*] The national law of any Contracting State may impose the same conditions as are applicable to marks whose registration is applied for or which are registered in the national register of marks in that State in respect of any requirement that the owner of an international registration use the mark in that State or in any other place, provided that such State shall not refuse under Article 12, cancel under Article 13, or otherwise fail to accord the effects of the international registration as defined in Article 11, on the ground that the mark has not been used at any time prior to the expiration of three years counted from the international registration date or the recording date of the later designation, as the case may be. However, the national law of any Contracting State may provide that any action for infringement based upon an international registration may be started only after the owner of such international registration has commenced the continuing use of the mark in the said State and that any remedy resulting from such action shall relate only to the period after such use has commenced.

(b) [*Actual Use: Continued*] Where, at the expiration of the three-year time limit referred to in subparagraph (a), the final decision referred to in Article 11(2)(ii) has not been made, the said time limit shall be extended until the expiration of one year counted from the date on which the effect provided for in Article 11(2) does, in fact, come into existence, provided that in no case shall any Contracting State be required to extend the said three-year time limit by more than two years. This subparagraph shall not apply to any Contracting State whose national law does not permit of such extension.

Any such State shall notify the International Bureau of the provisions of its national law in this regard at the time it deposits its instrument of ratification or accession. Each Contracting State shall notify the International Bureau whenever its national law changes in regard to this subparagraph.

(c) [*Actual Use: Continued*] Where prior to the international registration date or the recording date of the later designation, as the case may be, the mark has been registered, in the name of the person who is the owner of the international registration, in the national register of marks of any designated State, or has been the subject on the part of the said person of an application for registration in that register, the proviso of subparagraph (a) and the first sentence of subparagraph (b) shall not apply to the extent that the said registration or application relates to the same goods and/or services as are listed in respect of such State in the international registration. However, where the application for registration in the national register was filed less than three years before the international registration date or the recording date of the later designation, as the case may be, the proviso of subparagraph (a) shall apply, but only during the period between such date and the expiration of the third year counted from the date on which the said application was filed. Where the three-year time limit is extended under subparagraph (b), the preceding sentence shall be applied accordingly. The present subparagraph shall also apply where the earlier registration is one effected in the international register under the Madrid Agreement or the present Treaty.

(d) [*Declaration of Actual Use*] Where one of the conditions of the national law of the designated State referred to in subparagraph (a) consists of a requirement, general in the sense that it is applicable to all marks registered in the national register of marks of that State, that a declaration stating that the mark is or is still in use in that State must be filed with its national Office at certain points in time or in connection with each renewal or other specific event ("routine declaration"), such declaration may, in the form prescribed by the national law of that State or in the form prescribed in the Regulations, be filed with the International Bureau and shall have the same effect as if it had been filed with the national Office of that State on the date on which it was received by the International Bureau. Such declaration shall be promptly forwarded by the International Bureau to the said national Office. The said effect shall not be denied on the ground that the declaration was not accompanied by any required supporting evidence, or that the evidence accompanying it was insufficient, without the said national Office's giving the owner of the international registration an opportunity to adduce or complete before it any required evidence within not less than three months after having notified the said owner or his duly appointed representative that evidence or additional evidence is required. The present subparagraph shall not apply in inter partes and other proceedings in which the requirement is not a general one in the sense indicated above ("ad hoc requirement").

(e) [*Declaration of Actual Use: Continued*] No requirement referred to in subparagraph (d) shall be applicable prior to the expiration of the time limit under the proviso of subparagraph (a), subject, where applicable, to subparagraph (b), or subparagraph (c).

(4) [*Declaration of Intent To Use the Mark*] (a) Any Contracting State may apply its national law requiring that applicants file a declaration with its national Office to the effect that they intend to use the mark, provided that such requirement shall be considered to have been complied with if a declaration in the form specified in the Regulations to the effect that the applicant or the owner of an international registration intends to use the mark in that State is contained in the international application or request for the recording of the later designation, as the case may be.

(b) The International Bureau shall, as provided in the Regulations, notify the national Office of any designated State in respect of which a declaration under subparagraph (a) was filed with that Bureau of such declaration.

(5) [*Provisions Common to Paragraphs (3) and (4)*] Whenever paragraphs (3) and (4) refer to use of the mark by the applicant or the owner of the international registration, use by a person whose use, under the applicable national law, inures to the benefit of the applicant or the owner shall be sufficient for invoking the benefits provided for in the said paragraphs.

(6) [*Collective Marks and Certification Marks*] Any Contracting State may apply its national law requiring that where the mark is a collective mark or a certification mark the owner thereof must adduce before its national Office certain supporting documents and other evidence, including in particular the bylaws of the association or other entity owning such mark and the rules concerning the control exercised over the use of such mark.

(7) [*Representation*] No designated State shall require that the applicant or the owner of the international registration be represented by any natural person or legal entity located in that State or that, for the purpose of serving notices on such applicant or owner, an address in that State be indicated, except where, in respect of or based on the mark which is the subject of the international application or the international registration, the applicant or owner institutes or defends a proceeding before the national authorities of the said State.

(8) [*Service of Certain Notifications*] (a) The national law of any Contracting State may provide that proceedings before a national authority, including a court, in that State may, for the cancellation in that State pursuant to Article 13 of the effect provided for in Article 11(2), and for no other matter, validly be commenced against the owner of the international registration by means of service of a notification addressed to him at the International Bureau.

(b) The International Bureau shall promptly forward the said notification to the owner of the international registration by registered airmail accompanied by a postal receipt form (*avis de reception, Ruckschein*).

(c) Promptly upon return to the International Bureau of the receipt form, that Bureau shall send to the party instituting the proceeding a copy, certified by that Bureau, of the said receipt form.

(d) If the receipt form showing receipt by the said owner is not received by the Internal Bureau within one month from the date of its having mailed the notification, the International Bureau shall promptly publish the notification.

(e) Any national law referred to in subparagraph (a) shall provide for a reasonable time limit for the owner of the international registration to respond to the notification and defend his rights in the proceedings. This time limit shall not be less than three months from the date of the notification.

(9) [*Certain Associations*] Article 4(5) shall be without prejudice to the application of the national law in any designated State. However, no such State shall refuse or cancel the effects provided for in Article 11 on the ground that the applicant or the owner of the international registration is an association of the kind referred to in Article 4(5) if, within two months from the date of an invitation addressed to it by the designated Office, the said association files with that Office a list of the names and addresses of all the natural persons or legal entities who or which comprise it, together with a declaration that its members are engaged in a joint enterprise. The said State may, in such a case, consider the said persons or entities as the owners of the international registration standing in the name of the said association.

(10) [*Certification of Documents Issued by the International Bureau*] Where any document issued by the International Bureau bears the seal of that Bureau and the signature of the Director General or a person acting on his behalf, no authority of any Contracting State shall require authentication, legalization or any other certification of such document, seal or signature, by any other person or authority.

Article 20

Recordings Effected by National Offices

(1) [*Notification of the International Bureau*] The national Office of any Contracting State which effects any recording in its own register of marks or in any other related register in respect of matters that may be recorded in the International Register of Marks with regard to any mark which is registered in the International Register of Marks and for which that State is a designated State shall, at the time of effecting such recording and as provided in the Regulations, notify the International Bureau of the said recording unless the recording has been effected pursuant to a notification by the International Bureau to that national Office.

(2) [*Annotation and Publication by the International Bureau*] The International Bureau shall, as provided in the Regulations, make the appropriate annotation in the International Register of Marks and publish a notice concerning such annotation.

(3) [*Lack of Annotation and Publication*] (a) Until the said annotation and publication are effected, any recording referred to in pargraph (1) shall not be effective in respect of any third party unless such third party was actually aware of the subject matter of the said recording.

(b) Notwithstanding subparagraph (a), the national law of any Contracting State may provide that recordings in its own register referred to in paragraph (1) shall be effective in respect of the residents of that State even before the annotation and publication referred to in subparagraph (a) are effected.

Article 21

Preservation of Rights Acquired Through National Registration

(1) [*Rights Preserved*] If, at the international registration date or the recording date of the later designation, as the case may be, the owner of the international registration of a mark owns, in any designated State, a registration of the same mark in the national register of marks ("national registration"), his rights under this Treaty shall be deemed to include in respect of that State all rights, particularly any priority right, existing under the national registration, and, subject to paragraph (4), shall be deemed to continue to include them even where the national registration subsequently expires. The foregoing provision shall apply to the extent that the goods and/or services referred to in respect of the said State in the international registration are, in fact, covered by the list of goods and/or services referred to in the said national registration.

(2) [*Procedural Details*] The applicant or the owner of the international registration of a mark may, as provided in the Regulations, make a declaration stating that he owns national registrations of the same mark in certain designated States and identifying such registrations. The declaration may be included in the international application or the request for the recording of later designations or it may be filed separately. It shall, as provided in the regulations, be accompanied by a certified copy of each national registration referred to in the declaration. The International Bureau shall record and publish the declaration and shall notify the interested designated Offices accordingly, as provided in the Regulations. Those Offices shall refer to the declaration in their respective national registers of marks in connection with the said national registrations.

(3) [*Immunity Against Refusal*] (a) Where a declaration under paragraph (2) has been notified to the designated Office and the conditions referred to in paragraph (1) are complied with, and to the extent that they are complied with, the effects provided for in Article 11 may not, subject to subparagraph (b), be refused under Article 12.

(b) Where, in any designated State, there is more than one national register of marks or the national register of marks has several parts and the national registration referred to in paragraph (1) exists in a national register or a part of that register which affords less than the highest degree of protection, subparagraph (a) shall apply only if the declaration under paragraph (2) relates to a registration in the same national register or in the same part of that register.

(4) [*Expiration of the National Registration*] Where the national registration referred to in paragraph (1) expires, the rights under this Treaty shall be deemed to continue to include the rights which existed under the said national registration only where a declaration referred to in paragraph (2) has been filed not later than within one year from the expiration of the said national registration.

Article 22

Preservation of Rights Acquired Through International Registration Under the Madrid Agreement

(1) [*Rights Preserved*] If, at the international registration date or the recording date of the later designation, as the case may be, the owner of the international registration of a mark effected under this Treaty owns, in respect of any designated State, an international registration of the same mark effected under the Madrid Agreement ("Madrid Registration"), his rights under this Treaty shall be deemed to include in respect of that State all rights, particularly any priority right, existing under the Madrid registration and, subject to paragraph (4), shall be deemed to continue to include them even where the Madrid registration subsequently expires. The foregoing provision shall apply to the extent that the goods and/or services referred to in respect of the said State in the international registration under this Treaty are, in fact, covered by the list of goods and/or services referred to in respect of the said State in the Madrid registration.

(2) [*Procedural Details*] The applicant seeking the international registration of a mark under this Treaty, or the owner of the international registration of a mark under this Treaty, may, as provided in the Regulations, make a declaration stating that he owns a Madrid registration of the same mark in respect of certain designated States and identifying such registration. The declaration may be included in the international application or the request for the recording of later designations or it may be filed separately. The International Bureau shall record and publish the declaration, as provided in the Regulations.

(3) [*Immunity Against Refusal*] Where a declaration under paragraph (2) has been notified to the designated Office and the conditions referred to in paragraph (1) are complied with, and to the extent that they are complied with, the effects provided for in Article 11 may not be refused under Article 12, unless protection under the Madrid Agreement has been refused or as long as refusal under that Agreement is still possible.

(4) [*Expiration of the Madrid Registration*] Where the Madrid registration referred to in paragraph (1) expires, the rights under this Treaty shall be deemed to continue to include the rights which existed under the Madrid Agreement only where a declaration referred to in paragraph (2) has been filed not later than within one year from the expiration of the said Madrid registration.

Article 23

Preservation of the Right to Use the Madrid Agreement

Where any natural person or legal entity has the right to seek international registration under the Madrid Agreement or to renew his or its international registration under that Agreement, such right shall not be affected by this Treaty in any Contracting State party also to the Madrid Agreement.

Article 24

National Registrations Based on International Registrations

(1) [*Preservation of Rights Acquired Through Interna-*

tional Registration] The owner of the international registration of a mark having the effect provided for in Article 11(2) in any Contracting State may, at any time and with reference to such international registration, apply for the registration of the same mark in the national register of marks of that State, and such national registration shall, provided the requirements of the national law are complied with, be granted in that State, and the rights of the said owner under such national registration shall be deemed to include all rights, particularly any priority right, existing under the said international registration in the said State, even where the international registration subsequently expires in respect of that State. The foregoing provision shall apply to the extent that the goods and/or services listed in the said application are in fact covered by the list of goods and/or services referred to in the said international registration in respect of the said State.

(2) [*Procedural Details*] Until the expiration of the effect referred to in paragraph (a), Article 20(1) and (2) shall apply also in connection with any national registration effected under that paragraph.

Article 25

Regional Marks

(1) [*Designation Having the Effect of an Application for a Regional Mark*] (a) Where the residents or nationals of all Contracting States are given the right under a treaty providing for the registration of regional marks ("regional treaty") to file applications and obtain registrations under such regional treaty by way of this Treaty, any Contracting State party to such regional treaty may declare, as provided in the Regulations, that its designation under the Treaty shall have the same effect as if the mark had been applied for a regional mark effective in that State.

(b) Where the international application is for a regional mark and, under the regional treaty, the applicant cannot limit his application to some only of the States party to that treaty, designation of one or more of those States shall be treated as designation of all the States party to that treaty, and withdrawal of the designation, or renunciation of the recording of the designation, or cancellation of the designation for any other reason of any such State shall have the effect of withdrawal, renunciation or cancellation with respect to the designation of all such States.

(2) [*Fees*]Where the use of this Treaty results in effects under a regional treaty. Article 18(2) to (5) shall apply *mutatis mutandis* and subject to the following provisions:

(i) The beneficiary of the fees referred to in Article 18(2) shall be the intergovernmental authority administering the regional treaty.

(ii) The choice referred to in Article 18(2) shall be exercised by the intergovernmental authority administering the regional treaty.

(iii) Where, under a regional treaty, fees vary according to the number of the States to which the effect of the regional registration extends, the amounts of individual fees may vary not only according to Article 18(3)(c) but also according to the number of the designated States party to the said regional treaty, provided that the total amount referred to in Article 18(3)(e) and the amount of the renewal fee referred to in Article 18 (3)(f) shall be that of the fees prescribed in the regional treaty with respect to as many States as are designated States.

Article 26

Representation Before the International Bureau

(1) [*Possibility of Representation*] Applicants and owners of international registrations may, as provided in the Regulations, be represented before the International Bureau by any natural person or legal entity empowered by them to that effect (hereinafter referred to as "the duly appointed representative").

(2) [*Effect of Appointment*] Any invitation, notification or other communication addressed by the Internationl Bureau to the duly appointed representative shall have the same effect as if it had been addressed to the applicant or the owner of the international registration. Any application, request, demand, declaration or other document whose signature by the applicant or the owner of the international registration is required in proceedings before the International Bureau, except the document appointing the representative or revoking his appointment, may be signed by his duly appointed representative, and any communication from the duly appointed representative to the International Bureau shall have the same effect as if it had been effected by the applicant or the owner of the international registration.

(3) [*Several Applicants or Owners*] (a) Where there are several applicants, they shall appoint a common representative. In the absence of such appointment, the applicant first named in the international application shall be considered the duly appointed representative of all the applicants.

(b) Where there are several owners of the international registration, they shall appoint a common representative. In the absence of such appointment, the natural person or legal entity first named among the said owners in the International Register of Marks shall be considered the duly appointed representative of all the owners of the international registration.

(c) Subparagraph (b) shall not apply to the extent that the owners own the international registration in respect of different designated States, or in respect of different goods and/or services, or in respect of different States and different goods and/or services.

Article 27

Conditions for and Effect of Priority Claim Contained in the International Application or in the Request for the Recording of Later Designations

The conditions for and the effect of any priority claimed in the international application or in the request for the recording of later designations shall be as provided for in respect of marks in Article 4 of the Stockholm (1967) Act of the Paris Convention for the Protection of Industrial Property.

Article 28

International Application as Possible Basis of Priority Claim

(1) [*Basis of Claim*] Any international application which is regular shall be equivalent to a regular national filing within the meaning of Article 4 of the Stockholm (1967) Act of the Paris Convention for the Protection of Industrial Property and shall be recognized as the basis of a priority claim as provided for in that Act.

(2) [*Criterion of "Regular" International Application*]. For the purposes of paragraph (1), an international application shall be regarded as regular if it is adequate to establish the date on which it was filed with the International Bureau or, where it was filed through the intermediary of a national office, with that Office.

Article 29

Delay in Meeting Time Limits

(1) [*Delays That Must Be Excused by Contracting States*] Subject to paragraph (3), any Contracting State shall, as far as that State is concerned, excuse, for reasons admitted under its national law, any delay in meeting any time limit fixed in this Treaty or the Regulations.

(2) [*Delays That May Be Excused by Contracting States*] Subject to paragraph (3), any Contracting State may, as far as that State is concerned, excuse, for reasons other than those admitted under its national law, any delay in

meeting any time limit fixed in this Treaty or the Regulations.

(3) [*Delays That Cannot Be Excused*] Paragraphs (1) and (2) shall not apply to any delay in meeting any time limit provided for in Article 7(1), Article 7(6)(iii), Article 8(1) and Article 12(2)(a)(i).

(4) [*International Bureau*] The International Bureau shall not excuse delays by applicants, owners of international registrations or national Offices in meeting any time limit fixed in this Treaty and the Regulations.

Article 30

Correction of Errors of the International Bureau

(1) [*Petition for Redress*] Subject to Article 9, where, in the opinion of the applicant or the owner of the international registration, the International Bureau has, in applying the provisions of this Treaty and the Regulations, made an error which may affect the interests of such applicant or owner in respect of any designated State, the said applicant or owner may, within the time limit fixed in the Regulations, filed with the national Office of such State a petition for the purpose of requesting the International Bureau to correct the error in respect of said State.

(2) [*Redress*] If the national Office or any other competent authority of the said State finds that the International Bureau has in fact made the error which is the subject of the petition, the said national Office shall request the International Bureau to correct that error in respect of that State and the International Bureau shall proceed as requested.

(3) [*Procedure*] The applicant or the owner of the international registration who files a petition under paragraph (1) shall, at the time of filing the petition, transmit a copy of that petition to the International Bureau. If the petition relates to a mark which is already registered in the International Register of Marks, the International Bureau shall, as provided in the Regulations, record and publish the fact that it received a copy of such petition; otherwise it shall keep the said copy in its files.

(4) [*Procedure: Continued*] Where the correction requires a corresponding modification of the International Register of Marks, the International Bureau shall modify that Register accordingly. Furthermore, where the correction affects any information which has been the subject of a publication by the International Bureau, that Bureau shall publish the correction.

Article 31

Notification of Owner of International Registration

Any matter recorded by the International Bureau in respect of an international registration shall be the subject of a corresponding notification to the owner of the international registration. Details may be provided in the Regulations.

CHAPTER II: ADMINISTRATIVE PROVISIONS

Article 32

Assembly

(1) [*Composition*] (a) The Assembly shall consist of the Contracting States.

(b) The Government of each Contracting State shall be represented by one delegate, who may be assisted by alternate delegates, advisors, and experts.

(2) [*Tasks*] (a) The Assembly shall:

(i) deal with all matters concerning the maintenance and development of the Union and the implementation of this Treaty;

(ii) excercise such rights and perform such tasks as are specially conferred upon it or assigned to it under this Treaty;

(iii) give directions to the Director General concerning the preparation for revision conferences;

(iv) review and approve the reports and activities of the Director General concerning the Union, and give him all necessary instructions concerning matters within the competence of the Union;

(v) determine the program and adopt the budget of the Union, and approve its final accounts;

(vi) adopt the financial regulations of the Union;

(vii) establish such committees and working groups as it deems appropriate to facilitate the work of the Union and of its organs;

(viii) determine which States other than Contracting States and which intergovernmental and international non-governmental organizations shall be admitted to its meetings as observers;

(ix) decide upon the establishment of any agency of the International Bureau in any place outside Geneva (Switzerland) for the purpose of receiving documents and payments under this Treaty and the Regulations with the same effect as if they had been received by the International Bureau in Geneva;

(x) take any other appropriate action designed to further the objectives of the Union and perform such other functions as are appropriate under this Treaty.

(b) With respect to matters which are of interest also to other Unions administered by the Organization, the Assembly shall make its decisions after having heard the advice of the Coordination Committee of the Organization.

(3) [*Representation*] A delegate may represent, and vote in the name of, one State only.

(4) [*Vote*] Each Contracting State shall have one vote.

(5) [*Quorum*] (a) One-half of the Contracting States shall constitute a quorum.

(b) In the absence of the quorum, the Assembly may make decisions but, with the exception of decisions concerning its own procedure, all such decisions shall take effect only if the quorum and the required majority are attained through voting by correspondence as provided in the Regulations.

(6) [*Majority*] (a) Subject to Article 34(5)(f), Article 35(2)(b) and (c), and Article 38(2)(b), the decisions of the Assembly shall require a majority of the votes cast.

(b) Abstentions shall not be considered as votes.

(7) [*Sessions*] (a) The Assembly shall meet once in every calendar year in ordinary session upon convocation by the Director General, preferably during the same period and at the same place as the Coordination Committee of the Organization.

(b) The Assembly shall meet in extraordinary session upon convocation by the Director General, either on the Director General's own initiative or at the request of one-fourth of the Contracting States.

(8) [*Rules of Procedure*] The Assembly shall adopt its own rules of procedure.

Article 33

International Bureau

(1) [*Tasks*] The International Bureau shall:

(i) Perform the administrative tasks concerning the Union; in particular, it shall perform such tasks as are specially assigned to it under this Treaty or by the Assembly;

(ii) provide the secretariat of revision conferences, of the Assembly, of the committees and working groups established by the Assembly, and of any other meeting convened by the Director General and dealing with matters of concern to the Union.

(2) [*Director General*] The Director General shall be the chief executive of the Union and shall represent the Union.

(3) [*Meetings Other Than Sessions of the Assembly*] The Director General shall convene any committee and working group established by the Assembly and all other meetings dealing with matters of concern to the Union.

(4) [*Role of International Bureau in the Assembly and Other Meetings*] (a) The Director General and any staff member designated by him shall participate, without the

right to vote, in all meetings of the Assembly, the committees and working groups established by the Assembly, and any other meeting convened by the Director General and dealing with matters of concern to the Union.

(b) The Director General or a staff member designated by him shall be ex officio secretary of the Assembly, and of the committees, working groups and other meetings referred to in subparagraph (a).

(5) [*Revision Conferences*] (a) The Director General shall, in accordance with the directions of the Assembly, make the preparations for revision conferences.

(b) The Director General may consult with intergovernmental and international non-governmental organizations concerning the said preparations.

(c) The Director General and persons designated by him shall take part, without the right to vote, in the discussions at revision conferences.

(d) The Director General or a staff member designated by him shall be ex officio secretary of any revision conference.

(6) [*Assistance by National Offices*] The Regulations may specify the services that national Offices shall render in order to assist the International Bureau in carrying out its tasks under this Treaty.

Article 34
Finances

(1) [*Budget*] (a) The Union shall have a budget.

(b) The budget of the Union shall include the income and expenses proper to the Union, its contribution to the budget of expenses common to the Unions, and any sum made available to the budget of the Conference of the Organization.

(c) Expenses not attributable exclusively to the Union but also to one or more other Unions administered by the Organization shall be considered as expenses common to the Unions. The share of the Union in such common expenses shall be in proportion to the interest the Union has in them.

(2) [*Coordination with Other Budgets*] The budget of the Union shall be established with due regard to the requirements of coordination with the budgets of the other Unions administered by the Organization.

(3) [*Sources of Income*] The budget of the Union shall be financed from the following sources:

(i) fees and other charges due for services rendered by the International Bureau in relation to the Union;
(ii) sale of, or royalties on, the publications of the International Bureau concerning the Union;
(iii) gifts, bequests, and subventions;
(iv) rents, interests, and other miscellaneous income.

(4)(a) [*Self-Supporting Financing*] The amounts of fees and charges due to the International Bureau and the prices of its publications shall be so fixed that they should, under normal circumstances, be sufficient to cover the expenses of the International Bureau connected with the administration of this Treaty.

(b) [Continuation of Budget; Reserve Fund] If the budget is not adopted before the beginning of a new financial period, it shall be at the same level as the budget of the previous year, as provided in the financial regulations. If the income exceeds the expenses, the difference shall be credited to a reserve fund.

(5) [*Working Capital Fund*] (a) The Union shall have a working capital fund which shall be constituted by a single payment made by each Contracting State. If the fund becomes insufficient, the Assembly shall arrange to increase it. If part of the fund is no longer needed, it shall be reimbursed.

(b) The amount of the initial payment of each Contracting State to the said fund or of its participation shall be proportionate to the number of international applications which, among the total number of such applications, it is estimated that its residents will file. The participations of all Contracting States in the fund may be revised from time to time by the Assembly to make them correspond to the number of international applications actually filed by the residents of the various States since the date of the initial payments or the last such revision.

(c) The proportion and the terms of payment shall be fixed by the Assembly on the proposal of the Director General and after it has heard the advice of the Coordination Committee of the Organization.

(d) If loans from the reserve fund permit the constitution of a working capital fund that is sufficient, the Assembly may suspend the application of subparagraphs (a), (b) and (c).

(e) Any reimbursement under subparagraph (a) shall be proportionate to the amounts paid by each Contracting State, taking into account the dates at which they were paid.

(f) Any decision under subparagraphs (a) to (d) shall require two-thirds of the votes cast.

(c) [*Advances by Host Country*] (a) In the headquarters agreement concluded with the State on the territory of which the Organization has its headquarters, it shall be provied that, whenever the working capital fund is insufficient, such State shall grant advances. The amount of those advances and the conditions on which they are granted shall be the subject of separate agreements, in each case, between such State and the Organization. As long as it remains under the obligation to grant advances, such State shall have an ex officio seat in the Assembly if it is not a Contracting State.

(b) The State referred to in subparagraph (a) and the Organization shall each have the right to denounce the obligation to grant advances, by written notification. Denunciation shall take effect three years after the end of the year in which it has been notified.

(7) [*Auditing of Accounts*] The auditing of the accounts shall be effected by one or more of the contracting States or by external auditors, as provided in the financial regulations. They shall be designated, with their agreement, by the Assembly.

Article 35
Regulations

(1) [*Adoption of Regulations*] The Regulations adopted at the same time as this Treaty are annexed to this Treaty.

(2) [*Amending the Regulations*] The Assembly may amend the Regulations. Amendments may consist also of new provisions added to the Regulations concerning:

(i) matters in respect of which this Treaty expressly refers to the Regulations or expressly provides that they are or shall be prescribed,
(ii) any administrative requirements, matters or procedures,
(iii) any details useful in the implementation of this Treaty.

(b) Subject to subparagraphs (c) and (d), the amendment of the Regulations shall require two-thirds of the votes cast.

(c) The amendment of any provision of the Regulations affecting the amount of the fees referred to in Article 18(2), as well as the distribution among the national Offices and the transfer to them of such fees, shall require three-fourths of the votes cast. Where the amendment relates to fees referred to in Article 18(2) but those fees are fees to which only some of the Contracting States are entitled, only the Contracting States entitled thereto shall, for the purposes of the quorum, be considered Contracting States, and only they shall have the right to vote.

(d) The amendment of any provisions of the Regulations concerning declarations of intent to use the mark and declarations of actual use of the mark shall require that it be accepted by a majority of two-thirds of the votes cast and that no Contracting State whose national law allows or requires the filing of such declarations vote against the proposed amendment.

(3) [*Conflict Between the Treaty and the Regulations*] In

the case of conflict between the provisions of this Treaty and those of the Regulations, the former shall prevail.

Article 36
Search Service

(1) [*Tasks*] The International Bureau shall maintain a Service whose task shall be to search for anticipations among marks registered under this Treaty, and, to the extent authorized by the Assembly, other marks as well.

(2) [*Fees; Availability*] Searches shall be made on request and shall be subject to the payment of fees fixed under the Regulations. The Service shall be at the disposal of any Government, national Office, other legal entity, or natural person.

(3) [*Self-Supporting Financing*] The amounts of the fees referred to in paragraph (2) shall be so fixed that they should be sufficient to cover the expenses of the International Bureau connected with the Service.

CHAPTER III: REVISION AND AMENDMENT

Article 37
Revision of the Treaty

(1) [*Revision Conferences*] This Treaty may be revised from time to time by conferences of the Contracting States.

(2) [*Convocation*] The convocation of any revision conference shall be decided by the Assembly.

(3) [*Provisions That Can Be Amended Also by the Assembly*] The provisions referred to in Article 38(1)(a) may be amended either by a revision conference or according to Article 38.

Article 38
Amendment of Certain Provisions of the Treaty

(1) [*Proposals*] (a) Proposals for the amendment of the length of any time limit fixed in Chapter I of this Treaty, other than those referred to in Articles 12(2) and 19(3), or for any amendment to Articles 32(5) and (7), 33, 34 and 36, may be initiated by any Contracting State or by the Director General.

(b) Such proposals shall be communicated by the Director General to the Contracting States at least six months in advance of their consideration by the Assembly.

(2) [*Adoption*] (a) Amendments to the provisions referred to in paragraph (1) shall be adopted by the Assembly.

(b) Adoption shall require three-fourths of the votes cast, provided that adoption of any amendment of the length of the time limit fixed in Articles 7(1), 7(3)(c), 7(6)(iii) and 8(1) shall require that no Contracting State vote against the proposed amendment.

(3) [*Entry Into Force*] Any amendment to the provisions referred to in paragraph (1) shall enter into force one month after written notifications of acceptance, effected in accordance with their respective constitutional processes, have been received by the Director General from three-fourths of the Contracting States members of the Assembly at the time the Assembly adopted the amendment.

(b) Any amendment to the said Articles thus accepted shall bind all the Contracting States which were Contracting States at the time the amendment was adopted by the Assembly, provided that any amendment increasing the financial obligations of the said Contracting States shall bind only those which have notified their acceptance of such amendment.

(c) Any amendment which has been accepted and which has entered into force in accordance with subparagraph (a) shall bind all States which become Contracting States after the date on which the amendment was adopted by the Assembly.

CHAPTER IV: FINAL PROVISIONS

Article 39
Becoming Party to the Treaty

(1) [*Ratification, Accession*] Any State member of the International Union for the Protection of Industrial Property may become party to this Treaty by:

(i) signature followed by the deposit of an instrument of ratification, or
(ii) deposit of an instrument of accession.

(2) [*Deposit of Instrument*] Instruments of ratification or accession shall be deposited with the Director General.

(3) [*Reference to Other States*] (a) Any instrument of ratification or accession may be accompanied by a declaration to the effect that it shall be considered to have been deposited only when another State, or either one of two other States, or both of two other States, specified by name, shall have deposited instruments of ratification or accession. The instrument of ratification or accession of any State having made such a declaration shall be considered to have been deposited

(i) on the day on which the specified State, or one of the two specified States, or the second specified State, as the case may be, deposits its instrument of ratification or accession,
(ii) where the instrument of ratification or accession of any specified State itself is accompanied by a declaration concerning other States, on the day on which the instrument of ratification or accession of the said specified State is to be considered to have been deposited.

(b) Any declaration made under subparagraph (a) may be withdrawn at any time or, if it was made in respect of two States, may be limited to one of them. The instrument of ratification or accession of any State withdrawing its declaration shall be considered to have been deposited on the day on which the withdrawal is notified to the Director General, whereas the instrument of ratification or accession of any State limiting its declaration shall be considered to have been deposited on the day on which the remaining State deposits its instrument of ratification of accession. If the instrument of ratification or accession of the remaining State has already been deposited, the instrument of ratification or accession of the State limiting its declaration shall be considered to have been deposited on the day on which the limitation is notified to the Director General.

(4) [*Certain Territories*] (a) The provisions of Article 24 of the Stockholm (1967) Act of the Paris Convention for the Protection of Industrial Property shall apply to this Treaty.

(b) Subparagraph (a) shall in no way be understood as implying the recognition or tacit acceptance by a Contracting State of the factual situation concerning a territory to which this Treaty is made applicable by another Contracting State by virtue of the said subparagraph.

Article 40
Transitional Provisions

(1) [*Declaration by Certain Developing Countries*] Any State party to the Paris Convention for the Protection of Industrial Property but not party to this Treaty which, in conformity with the established practice of the General Assembly of the United Nations, is regarded as a developing country may make a declaration addressed to the Director General stating that it wishes to avail itself of the right provided for in paragraph (2) and that it intends to become party to this Treaty at the latest within two years from the date on which that right, according to the applicable provisions of paragraphs (5) to (8), ceases to be effective in respect of that State.

(2) [*Effect of Declaration*] Residents and nationals of any State having made a declaration according to paragraph (1) shall, notwithstanding Article 4(1), have the right to file international applications and to own international registrations under this Treaty.

(3) [*Time of Filing Declaration*] The declaration referred to in paragraph (1) shall be filed with the Director General at any time before June 12, 1978.

(4) [*Commencement of Effect*] If filed before the entry into force of this Treaty according to Article 41(1), the declaration referred to in paragraph (3) shall become effective on the date of the said entry into force. If filed after such entry into force, the said declaration shall become effective three months after the date of its filing.

(5) [*Expiration of Effect*] Subject to paragraphs (6) to (8), the right provided for in paragraph (2) shall be effective until the expiration of whichever of the following two periods expires later:

(i) a period of ten years from the date (June 12, 1973) of the signature of this Treaty,

(ii) a period of five years from the entry into force of this Treaty according to Article 41(1).

(6) [*Possible Prolongation of Effect*] (a) The period referred to in paragraph (5) may be prolonged twice for periods of five years each by decisions of the Special Conference as defined in subparagraph (b) in respect of those States having made the declaration referred to in paragraph (1) whose residents or nationals have filed an average of not more than two hundred international applications per year during the three consecutive years, as defined in subparagraph (d).

(b) The Special Conference shall consist of the States which, at the time it meets, are Contracting States and those States having made a declaration under paragraph (1) which fulfill, in respect of the number of international applications, the conditions set forth in subparagraph (a).

(c) The decision of the Special Conference shall require a simple majority of the votes cast. The said Conference shall meet upon convocation by the Director General during the year preceding the year in which:

(i) the period referred to in paragraph (5) expires, and
(ii) the first five-year period referred to in subparagraph (a) expires if prolongation for that period had been decided.

(d) The three consecutive years referred to in subparagraph (a) shall, in respect of each of the two possible decisions, be the fourth, third and second calendar years before the year in which the decision is made.

(7) [*Possible Further Prolongation of Effect*] The Assembly, in exceptional cases and upon request, may decide to prolong for two further periods of five years each the application of the right under paragraph (2) in respect of any State which, at the time the decision is made, benefits from the said right and which is then regarded as one of the least developed among the developing countries.

(8) [*Termination of Effect for Special Reasons*] Notwithstanding paragraphs (4) to (7), the right provided for in paragraph (2) shall cease to exist on the last day of the calender year which follows the year in which any State having made a declaration under paragraph (1):

(i) ceases to be regarded as a developing country in conformity with the established practice of the General Assembly of the United Nations, or
(ii) denounces the Paris Convention for the Protection of Industrial Property.

Article 41

Entry Into Force of the Treaty

(1) [Initial Entry Into Force] This Treaty shall enter into force six months after five States have deposited their instruments of ratification or accession.

(2) [*States Not Covered by the Initial Entry Into Force*] Any State which is not among those referred to in paragraph (1) shall become bound by this Treaty three months after the date on which it has deposited its instrument of ratification or accession.

Article 42

Reservations to the Treaty

Subject to Article 46(2), no reservations to this Treaty are permitted.

Article 43

Denunciation of the Treaty

(1) [*Notification*] Any contracting State may denounce this Treaty by notification addressed to the Director General.

(2) [*Effective Date*] Denunciation shall take effect one year after the day on which the Director General has received the notification.

(3) [*Moratorium on Denunciation*] The right of denouncing this Treaty provided for in paragraph (1) shall not be exercised by any Contracting State before the expiration of five years from the date on which it becomes bound by this Treaty.

(4) [*Continuation of the Effects of the Treaty*] (a) The effects of this Treaty on any mark enjoying the benefits of this Treaty on the day preceding the day on which the denunciation by any Contracting State takes effect shall continue in that State until the expiration of the initial or renewal term which was running on that date.

(b) Where the right to own the international registration of a mark is based on the owner's being a resident or national of the Contracting State referred to in subparagraph (a), the benefits of this Treaty shall, in all designated States, continue until the day on which the period referred to in subparagraph (a) expires in respect of that mark.

Article 44

Signature and Languages of the Treaty

(1) [*Original Texts*] This Treaty shall be signed in a single original in the English and French languages, both texts being equally authentic.

(2) [*Official Texts*] Official texts shall be established by the Director General, after consultation with the interested Governments, in the German, Italian, Japanese, Portuguese, Russian and Spanish languages, and such other languages as the Assembly may designate.

(3) [*Time Limit for Signature*] This Treaty shall remain open for signature at Vienna until December 31, 1973.

Article 45

Depositary Functions

(1) [*Deposit of the Original Texts*] The original of this Treaty, when no longer open for signature, shall be deposited with the Director General.

(2) [*Certified Copies*] The Director General shall transmit two copies, certified by him, of this Treaty to the Governments of the States party to the Paris Convention for the Protection of Industrial Property and, on request, to the Government of any other State.

(3) [*Registration of the Treaty*] The Director General shall register this Treaty with the Secretariat of the United Nations.

(4) [*Amendments*] The Director General shall transmit two copies, certified by him, of any amendment to this Treaty to the Governments of the Contracting States and, on request, to the Government of any other State.

Article 46

Settlement of Disputes

(1) [*International Court of Justice*] Any dispute between two or more Contracting States concerning the interpretation or application of this Treaty or the Regulations, not settled by negotiation, may, by any one of the States concerned, be brought before the Internation-

al Court of Justice by application in conformity with the Statute of the Court, unless the States concerned agree on some other method of settlement. The Contracting State bringing the dispute before the Court shall inform the International Bureau; the International Bureau shall bring the matter to the attention of the other Contracting States.

(2) [*Reservation*] Each Contracting State may, at the time it signs this Treaty or deposits its instrument of ratification or accession, declare by notification deposited with the Director General that it does not consider itself bound by paragraph (1). With regard to any dispute between any Contracting State having made such a declaration and any other Contracting State, paragraph (1) shall not apply.

(3) [*Withdrawal of Reservation*] Any Contracting State having made a declaration in accordance with paragraph (2) may, at any time, withdraw its declaration by notification addressed to the Director General.

Article 47

Notifications

The Director General shall notify the Governments of the States party to the Paris Convention for the Protection of Industrial Property of:

(i) signatures under Article 44;
(ii) deposits of instruments of ratification or accession under Article 39(2) and of any declaration accompanying them under Article 39(3)(a) and any withdrawal or limitation of such declarations made under Article 39(3)(b);
(iii) the date of entry into force of this Treaty under Article 41(1) and any amendment under Article 38(3)(a);
(iv) denunciations received under Article 43;
(v) declarations received under Articles 40(1) and 46(2) and (3).

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UNDER THE TRADEMARK REGISTRATION TREATY

Rule 1

Abbreviated Expressions

1.1 *"Treaty"*

In these Regulations, the word "Treaty" means the Trademark Registration Treaty.

1.2 *"Chapter" and "Article"*

In these Regulations, the words "Chapter" and "Article" refer to the specified Chapter or Article of the Treaty.

1.3 *"Associations"*

In these Regulations, references to legal entities where such references concern them in their capacity of applicants or owners of international registrations shall be construed as referenees also to associations referred to in Article 4(5).

1.4 *"Gazette"*

In these Regulations, the word "Gazette" means the official Gazette of the International Bureau referred to in Article 2(ix).

1.5 *"Table of Fees"*

In these Regulations, the words "Table of Fees" mean the table of fees annexed hereto.

RULES CONCERNING CHAPTER I

Rule 2

Representation Before The International Bureau

2.1 *Number of Duly Appointed Representatives*

(a) The applicant and the owner of the international registration may appoint only one representative.

(b) Where several natural persons or legal entities have been indicated as representatives by the applicant or the owner of the international registration, the natural person or legal entity first mentioned in the document in which they are indicated shall be regarded as the only duly appointed representative.

(c) Where the representative is a partnership or firm composed of attorneys or patent or trademark agents, it shall be regarded as one representative.

2.2 *Form of Appointment*

(a) A representative shall be regarded as a "duly appointed representative" if his appointment complies with the prescriptions of paragraphs (b) to (e).

(b) The appointment of any representative shall require:

(i) that his name appear as that of a representative in the international application and that such application bear the signature of the applicant, or

(ii) that a separate power of attorney (i.e., a document appointing the representative), signed by the applicant or the owner of the international registration, be filed with the International Bureau.

(c) Where there are several applicants or owners of the international registration, the document containing or constituting the appointment of their common representative shall be signed by all of them.

(d) Any document containing or constituting the appointment of a representative shall indicate his name and his address. Where the representative is a natural person, his name shall be indicated by his family name and given name(s), the family name being indicated before the given name(s). Where the representative is a legal entity or a partnership or firm of attorneys or patent or trademark agents, "name" shall mean the complete name of the legal entity or partnership or firm. The address of the representative shall be indicated in the same manner as that provided for in respect of the applicant in Rule 5.2(c).

(e) The document containing or constituting the appointment shall contain no words which, contrary to Article 26(2), would limit the powers of the representative, in particular by indicating a time limit or event after which the appointment would expire, by excluding certain matters from the powers of the representative, or by specifying some only of the powers which any representative has under the said Article.

(f) Where the appointment does not comply with the requirements referred to in paragraphs (b) to (e), it shall be treated by the International Bureau as if it had not been made, and the applicant or the owner of the international registration as well as the natural person, the legal entity, the partnership or firm which was indicated as the representative in the purported appointment shall be informed of this fact by the International Bureau.

(g) The Administrative Instructions shall provide recommended wording for the appointment.

2.3 *Revocation or Renunciation of Appointment*

(a) The appointment of any representative may be revoked at any time by the natural person who or legal entity which has appointed that representative. The revocation shall be effective even if only one of the natural persons who or legal entities which have appointed the representative revokes the appointment.

(b) Revocation shall require a written document signed by the natural person or the legal entity referred to in the preceding paragraph. It shall be effective, as far as the International Bureau is concerned, as from the date of the receipt of the said document by that Bureau.

(c) The appointment of a representative as provided in Rule 2.2 shall be regarded as the revocation of any earlier appointment of any other representative. The appointment shall preferably indicate the name of the other earlier appointed representative.

(d) Any representative may renounce his appointment through a notification signed by him and addressed to the International Bureau.

2.4 *General Powers of Attorney*

The appointment of a representative in a separate power of attorney (i.e., a document appointing the representative) may be general in the sense that it relates to more than one international application and more than one international registration in respect of the same natural person or legal entity. The identification of such applications and registrations, as well as other details in respect of such general power of attorney and of its revocation or renunciation, shall be provided in the Administrative Instructions. The Administrative Instructions may provide for a fee payable in connection with the filing of general powers of attorney.

2.5 *Substitute Representative*

(a) The appointment of the presentative referred to in Rule 2.2(b) may indicate also one or more natural persons as substitute representatives.

(b) For the purposes of the second sentence of Article 26(2), substitute representatives shall be considered as representatives.

(c) The appointment of any substitute representative may be revoked at any time by the natural person who or legal entity which has appointed the representative or by the representative. Revocation shall require a written document signed by the said natural person, legal entity or representative. It shall be effective, as far as the International Bureau is concerned, as from the date of the receipt of the said document by that Bureau.

Rule 3

3.1 *International Register of Marks*
Contents of the International Register

The International Register of Marks shall contain, in espect of each mark registered therein:

(i) all the indications that must or may be furnished un-

der the Treaty or these Regulations, and that have in fact been furnished, to the International Bureau, and, where relevant, the date on which such indications were received by that Bureau,

(ii) the amount of all fees received and the date or dates on which they were received by the International Bureau,

(iii) the number and date of the international registration and the numbers, if any, and the dates of all recordings relating to that registration.

3.2 *Keeping of the International Register*

The administrative Instructions shall regulate the establishment of the International Register of Marks, and, subject to the Treaty and these Regulations, shall specify the form in which it shall be kept and the procedure which the International Bureau shall follow for inscribing recordings therein and for preserving it from loss or other damage.

Rule 4

4.1 *Applicant*
The Same Applicant for All Designated States

(a) The applicant shall be the same for the purposes of all the designated States.

(b) Where the international application, as filed, does not indicate the same applicant for the purposes of all the designated States, that application shall be treated as if only the state first mentioned therein, and any other State for the purposes of which the same applicant is indicated as for the said first-mentioned state, had been designated.

Rule 5

Mandatory Contents of the International Application

5.1 *Indication that the International Application is Filed Under the Treaty*

The indication referred to in Article 5(1)(a)(i) shall be worded as follows: "The undersigned requests that the mark herein reproduced be registered in the International Register of Marks established under the Trademark Registration Treaty"; or it shall consist of a statement to the same effect.

5.2 *Indications Concerning the Applicant*

(a) The applicant's identity shall be indicated by his name. If the applicant is a natural person, his name shall be indicated by his family name and given name(s), the family name being indicated before the given name(s). If the applicant is a legal entity, its name shall be indicated by the full, official designation of the said entity.

(b) The applicant's residence and nationality shall be indicated by the name(s) of the State(s) of which he is a resident and of which he is a national.

(c) The applicant's address shall be indicated in such a way as to satisfy the customary requirements for prompt postal delivery at the indicated address and shall, in any case, consist of all the relevant administrative units up to, and including, the house number, if any. Where the national law of the designated State does not require the indication of the house number, failure to indicate such number shall have no effect in that State. Any telegraphic and teletype address and telephone number that the applicant may have should preferably be indicated. For each applicant, only one address shall be indicated; if several addresses are indicated, only the one first mentioned in the international application shall be considered.

5.3 *Reproduction of the Mark; Color; Transliteration*

(a) Where the mark consists only of letters of the Latin alphabet, Arabic or Roman numerals, and punctuation signs usual in connection with the Latin alphabet, and the applicant does not wish to claim any special graphic feature, the mark may be reproduced, for example by typing the letters, numerals and signs, on the sheet itself on which the international application appears. The use of small letters and capital letters shall be permitted, and shall be followed in the publications of the International Bureau.

(b) In cases other than that referred to above, the mark shall be reproduced on a sheet of paper of A4 size (29.7 cm x 21 cm.), separate from the sheet on which the text of the international application appears, and shall be attached to the latter sheet. The reproduction of the mark itself on the separate sheet shall not occupy a space larger than 10 centimeters horizontally and 10 centimeters vertically. The reproduction of the mark on the separate sheet shall be of a quality admitting of direct reproduction by photography and printing processes. The separate sheet shall indicate the name and address of the applicant.

(c) Where color is claimed, the international application shall contain a statement to that effect and shall be accompanied by

(i) either a reproduction of the mark in color in one copy satisfying the requirements set forth in paragraph (b),

(ii) or a reproduction of the mark in color in the number of copies fixed in the Administrative Instructions and a reproduction of the mark in black and white in one copy containing a description of the colors in words and signs as specified in the Adminstrative Instructions, all copies satisfying the requirements set forth in paragraph (b).

(d) Where the mark or a certain part of it is three-dimensional, the international application and the separate sheet containing the reproduction of the three-dimensional feature shall contain an indication to that effect.

(e) Where the mark is intended to be used, or also to be used, as a sound mark, the international application and any separate sheet containing the reproduction of the mark shall contain an indication to that effect.

(f) Where the mark consists of or contains matter in script other than Latin script or numbers expressed in forms other than Arabic or Roman, the international application shall also contain a transliteration of such matter in Latin script and Arabic numerals; the transliteration shall follow the English pronunciation if the international application is in English, and the French pronunciation if it is in French. If the International Bureau finds that such transliteration is incorrect or is missing and it is equipped to effect itself the said transliteration, it shall do so. In the latter case, however, it shall notify the applicant of its transliteration and invite him to make comments on it within one month from the date of the notification, and shall not proceed with the international registration before the expiration of the said period of one month.

5.4 *List of Goods and/or Services*

(a) Each of the groups of terms pertaining to the same class of the International Classification shall be preceded by an indication of the number of the class, and the various groups shall follow in the numerical order of the corresponding classes.

(b) If, in the list of goods and/or services contained in the international application as filed, the terms are not or not properly grouped as provided in Article 5(1)(a)(iv), the International Bureau shall, after having notified the applicant of its intention to do so and allowing him one month from the date of the notification to react to such notification, classify each term as required and constitute the required groups. If any of the terms does not permit classification in one class only of the International Classification, it shall be classified in each of the applicable classes.

(c) If the International Bureau finds that any term is incomprehensible, it shall notify the applicant of its finding and allow him one month from the date of the notification to submit either arguments to the effect that the term is comprehensible or a request that the incomprehensible term be deleted. If, on the basis of the said ar

guments or other considerations, the International Bureau finds that the term is comprehensible, it shall treat it according to its comprehended meaning. Otherwise it shall delete it ex officio.

(d) The list of goods and/or services shall be the same for the purposes of all States designated in the international application as filed or as limited under Article 7(4)(b). Where the international application as filed or as limited under Article 7(4)(b) indicates different goods and/or services in respect of different designated States, that application shall be treated as if only the State first mentioned therein, and any other States for the purposes of which the same list of goods and/or services is indicated as for the said first-mentioned State, had been designated.

5.5 *Identification of States*

(a) Identification of any State shall consist in writing its name in the international application in a manner sufficiently clear for the purposes of identification.

(b) The identification of any designated State which is not a Contracting State shall be treated as if such State had not been identified.

5.6 *Choice Between National and Regional Marks*

(a) The availability of any choice referred to in Article 5(1)(a)(vi) shall be notified by the interested Contracting State to the International Bureau, and that Bureau shall publish a corresponding announcement.

(b) The choice referred to in Article 5(1)(a)(vi) shall be indicated by the words "national mark desired" or "regional mark desired," respectively, or by other words to that effect, appearing next to the name of the designated State to which the choice applies.

5.7 *Collective Marks and Certification Marks*

The indication referred to in Article 5(1)(a)(vii) shall consist of the words "collective mark desired" or "certification mark desired," respectively, or other words to that effect, appearing next to the name of the designated State to which the indication applies.

5.8 *Application Filed Through the Intermediary of a National Office*

(a) The indication referred to in Article 5(3)(b) shall be worded as follows: "The . . . [1] certifies that the present international application was filed with it on . . . [2]."

[1] Indicate the name of the national Office. [2] Indicate the date.

(b) The national Office of any Contracting State whose national law provides that international applications of residents of that State may be filed through the intermediary of the national Office of the said State shall, at least once a week, send to the International Bureau a note containing the following indications concerning each of the international applications filed with it since the sending of the last such note.

(i) the name of the applicant,
(ii) a reproduction of the mark,
(iii) the date on which the international application was filed with that Office,
(iv) the date on which the international application was mailed to the International Bureau.

(c) The notes referred to in paragraph (b) shall be numbered consecutively.

(d) If the International Bureau does not receive any of the international applications listed in any note within 15 days from the date on which it received such note, it shall inform the national Office accordingly.

Rule 6

Optional Contents of the International Application

6.1 *Naming of a Representative*

The international application may indicate a representative.

6.2 *Claiming of Priority*

(a) The declaration referred to in Article 5(1)(b) shall consist of a statement to the effect that the priority of an earlier application is claimed and shall indicate:

(i) where the earlier application is an application filed for the registration of a mark in the register of marks of a given country, the country in which it was filed; where the earlier application is an international application filed under the Treaty, a State designated therein; where the earlier application is an application for a regional mark, the authority with which it was filed and a State for which it was filed;
(ii) the date on which the earlier application was filed;
(iii) the number allotted to the earlier application.

(b) If the declaration does not indicate the country or State, and the date, referred to in paragraph (a)(i) and (ii), the International Bureau shall treat the declaration as if it has not been made.

(c) If the application number referred to in paragraph (a)(iii) is not indicated in the declaration but is furnished by the applicant or the owner of the international registration to the International Bureau prior to the expiration of the 10th month from the filing date of the said application, it shall be considered to have been included in the declaration and shall be published by the International Bureau.

6.3 *Declaration of Intent To Use the Mark*

(a) Any declaration made under Article 19(4)(a) shall consist of the following statement:

> "The undersigned applicant declares that (he) (it) intends to use the mark which is the subject of this international application himself (itself) and/or by and through persons whose use inures to his (its) benefit in commerce with and/or on the territory of . . . [1] on and/or in connection with the goods and/or services listed in this international application."

[1] If the declaration relates to all the States designated in the international application, insert "each of the States designated in this application"; otherwise, indicate those of the States designated in respect of which the declaration is made.

(b) It shall depend on the national law of each designated State whether any declaration to the same effect as but worded differently than in paragraph (a) shall produce the effect provided for in Article 19(4)(a) in that State.

6.4 *Declaration of Actual Use*

In respect of any designated State, the following statement, signed by the applicant, may be made and attached to the international application:

> "The undersigned applicant declares that the following mark . . . [1] which is the subject of the international application to which this declaration is attached is now in use by and through . . . [2] in commerce with and/or on the territory of . . . [3] on
> or in connection with the following goods and/or services listed in respect of such State . . . [4]; that such use commenced on . . . [5]; and that the mode and manner in which the mark is used is:
>
> on labels or tags affixed to and/or containers for the goods, as evidenced by the attached specimen(s) or facsimile(s) [6];
> on displays which are associated with the goods, as evidenced by the attached specimen(s) or facsimile(s) [6];
> in the case of services, in advertising of such services, as evidenced by the attached specimen(s) or facsimile(s) [6];
> other [7]."

[1] Reproduce the mark. [2] Insert "the undersigned applicant" and/or, if applicable, the name and address of

the person or persons whose use of the mark inures to the benefit of the applicant in the State. [3] Insert name of State. [4] Insert "all" or indicate the particular goods and/or services on or in connection with which the mark is used. [5] Insert the date of commencement of the continuing use of the mark, including, where different dates are applicable to different goods and/or services, the particular goods and/or services to which each such date relates. [6] The inclusion of specimens or facsimiles may be dispensed with where the declaration is made in respect of a State whose national law does not require that specimens or facsimiles be attached to routine declarations of actual use. [7] Recite sufficient facts in addition to, or in lieu of, checking one or more of the above boxes as to sales or advertising, or both, to show that the mark is in current use.

6.5 *Declarations Under Articles 21(2) and 22(2)*

(a) Any declaration under Article 21(2), where included in the international application, shall:

(i) specify the designated State or States in respect of which it is made,
(ii) contain the statement that the applicant owns a national registration or national registrations of the same mark in the said State or States,
(iii) indicate, in respect of each such national registration, its number.

(b) Any declaration under Article 22(2), where included in the international application, shall:

(i) specify the designated State or States in respect of which it is made,
(ii) contain the statement that the applicant owns a Madrid registration of the same mark in respect of the said State or States,
(iii) indicate the relevant registration number under the Madrid Agreement.

6.6 *Option Under Article 11(3)*

The indication referred to in Article 11(3) shall be effected by identifying the appropriate national register or the appropriate part of the national register (for example, "Supplemental Register" or "Part B Register").

6.7 *Trade or Business of the Applicant*

The applicant may indicate in the international application the trade or business in which he is engaged.

6.8 *Translation of the Mark*

If the mark consists of or contains one or more words which can be translated into the language of the international application, that application may contain such translation.

Rule 7

Languages

7.1 *Language of the International Application*

The international application shall be in the English or in the French language.

7.2 *Language of the Request for Recording of Later Designations*

The request for the recording of any later designation shall be in the same language as that in which the international application was filed.

7.3 *Language of Registrations, Recordings, Annotations and Communications*

(a) Registrations, recordings and annotations by the International Bureau shall be in the same language as that in which the international application was filed.

(b) Any notification or other communication addressed by the International Bureau to the applicant or the owner of the international registration and any request, demand, declaration or other communication addressed by the applicant or the owner of the international registration to the International Bureau shall be in the same language as that in which the international application was filed.

(c) Notification by the national Offices to the International Bureau, and letters of other written communications from the national Offices to the International Bureau, shall be in the English or in the French language, it being understood that copies of papers filed by a third party in the case of an opposition proceeding attached to any notice of possible refusal and any copy referred to in Rule 20.3(a)(iii) shall be in the language in which such papers or copy were filed with the national Office.

(d) Letters from the International Bureau to any national Office shall be in English or French according to the wish of the national Office; any matter in such letters quoted from the International Register of Marks shall be in the language in which such matter appears in that Register.

(e) Where the International Bureau is under the obligation to forward to the applicant or the owner of the international registration any of the communications referred to in paragraph (c), it shall forward them in the language in which it received them.

Rule 8

Form of the International Application

8.1 *Printed Forms*

(a) The international application shall be made on the printed form referred to in paragraph (b) or on a paper identical, for all practical purposes, with that form as to size, content and layout.

(b) The International Bureau shall furnish free of charge, on request, to prospective applicants, attorneys, patent or trademark agents, and to the national Offices, printed forms for international applications. Such forms shall be established in the English language, in the French language, and in both of those languages.

(c) The form shall be filled in preferably by typewriter and shall be easily legible.

8.2 *Copies; Signature*

(a) Subject to Rule 5.3(c)(ii), the international application, including the reproduction of the mark and any attachments, shall be filed in one copy.

(b) The international application shall be signed by the applicant.

8.3 *No Additional Matter*

(a) The international application shall not contain any matter, and shall not be accompanied by any document, other than those prescribed or permitted by the Treaty or these Regulations.

(b) If the international application contains matter other than that prescribed or permitted, the International Bureau shall delete it ex officio; and if the international application is accompanied by any document other than those prescribed or permitted, the International Bureau shall treat such document as if it had not been transmitted to it and shall return the said document to the applicant.

Rule 9

Fees Payable With the Filing of the International Application

9.1 *International Application Fee and State Designation Fees*

(a) The fees payable with the international application shall be:

(i) an "international application fee," and, where Rule 5.3(c)(i) applies, a color reproduction fee,
(ii) in respect of each designated State, the individual State designation fee or the standard State designation fee, as the case may be.

(b) The amounts of the international application fee,

the color reproduction fee and the standard State designation fee are indicated in the Table of Fees.

(c) The amounts of the individual State designation fees concerning the various Contracting States shall be published by the International Bureau each year in the month of August. The amounts so published shall be applicable as the individual State designation fees from Jan. 1 to Dec. 31 of the year following the year in which they are published.

Rule 10

Mandatory Contents of the Request for the Recording of Later Designations

10.1 *Indication that the Request is for the Recording of Later Designations*

The indication referred to in Article 6(2)(a)(i) shall be worded as follows: "The undersigned applicant/owner of the international registration identified herein requests the recording in the International Register of Marks of the following later designations made under the Trademark Registration Treaty"; or it shall consist of a statement to the same effect.

10.2 *Indications Concerning the Applicant or the Owner of the International Registration*

Rule 5.2 shall apply, *mutatis mutandis*, in the case of Article 6(2)(a)(ii).

10.3 *Identification of the International Application or International Registration*

(a) The international application shall be identified by a copy of the same and, where it was filed direct with the International Bureau, the date on which it was filed with or mailed to the International Bureau or, where it was filed through the intermediary of a national Office, the name of that Office and the date on which it was received by or mailed to the said Office.

(b) The international registration shall be identified by its international registration number and date.

10.4 *Identification of the Later Designated States*

Rule 5.5 shall apply, *mutatis mutandis*, in the case of Article 6(2)(a)(iv).

10.5 *Indication of the Choice Between National Mark and Regional Mark*

The choice referred to in Article 6(2)(a)(v) shall be indicated by the words "national mark desired" or "regional mark desired," respectively, or by other words to that effect, appearing next to the name of the designated State to which the choice applies.

10.6 *Collective Marks and Certification Marks*

The indication referred to in Article 6(2)(a)(vi) shall consist of the words "collective mark desired" or "certification mark desired," respectively, or other words to that effect, appearing next to the name of the designated State to which the indication applies.

10.7 *Requests Filed Through the Intermediary of a National Office*

(a) The indication referred to in Article 6(3)(b) shall be worded as follows: "The . . . [1] certifies that the present request was filled with it on . . . [2] ". [1] Indicate the name of the national Office. [2] Indicate the date.

(b) The national Office of any Contracting State whose national law provides that requests for the recording of later designations by residents of that State may be filed through the intermediary of the national Office of the said State shall, at least once a week, send to the International Bureau a note containing the following indications concerning each of the requests filed with it since the sending of the last such note:

(i) the name of the applicant or the owner of the international registration,

(ii) the international registration number and date to which the request refers or, where such number and date are not available, the reproduction of the mark, together with, where the international application was filed through the intermediary of the national Office, the date on which it was so received by such Office and the date on which it was mailed to the International Bureau or, where the international application was filed direct with the International Bureau, the date on which it was so filed or the date on which it was mailed to the International Bureau,

(iii) the date on which the request was filed with that Office,

(iv) the date on which the request was mailed to the International Bureau.

(c) The notes referred to in paragraph (b) shall be numbered consecutively. Where since the sending of the last note no requests have been filed with the national Office, the note shall state that fact.

(d) If the International Bureau does not receive any of the requests listed in any note within 15 days from the date on which it received such note, it shall inform the national Office accordingly.

Rule 11

Optional Contents of the Request for the Recording of Later Designations

11.1 *Claiming of Priority*

Rule 6.2 shall apply also to the declaration referred to in Article 6(2)(b).

11.2 *Declaration of Intent To Use*

(a) Any declaration made under Article 19(4)(a) shall consist of the following statement:

> "The undersigned applicant/owner of the international registration declares that he (it) intends to use the mark which is the subject of the international application/international registration to which this request relates himself (itself) and/or by and through persons whos use inures to his (its) benefit in commerce with and/or on the territory of . . . [1] on and/or in connection with the goods and/or services listed in this request."

[1] If the declaration relates to all the States designated in the request, insert "each of the States designated in this request"; otherwise, indicate those of the States designated in the request in respect of which the declaration is made.

(b) It shall depend on the national law of each designated State whether any declaration to the same effect as but worded differently than in paragraph (a) shall produce the effect provided for in Article 19(4)(a) in that State.

11.3 *Declaration of Actual Use*

In respect of any State designated in the request for recording of later designations, a statement, signed by the applicant or the owner of the international registration and whose form shall be the same as that appearing in Rule 6.4 or Rule 26.3, as the case may be, may be made and attached to the request.

11.4 *Declarations Under Articles 21(2) and 22(2)*

Rule 6.5 shall apply, *mutatis mutandis*, to any declaration under Articles 21(2) or 22(2), where such declaration is included in the request for the recording of later designations.

11.5 *List of Goods and/or Services*

The formal concept of limitation referred to in Article 6(2)(b), second sentence, is defined in Rule 24.2

11.6 *Option Under Article 11(3)*

The indication referred to in Article 11(3) shall be effected by identifying the appropriate national register or the appropriate part of the national register (for example, "Supplemental Register" or "Part B Register").

Rule 12

Form of the Request for the Recording of Later Designations

12.1 *Printed Forms*

(a) The request for the recording of later designations shall be made on the printed form referred to in paragraph (b) or on a paper identical, for all practical purposes, with that form as to size, content and layout.

(b) The international Bureau shall furnish free of charge, on request, to applicants, owners of international registrations, attorneys, patent or trademark agents, and to the national Offices, printed forms for requests for the recording of later designations. Such forms shall be established in the English language, in the French language, and in both of those languages.

(c) The form shall be filled in preferably by typewriter and shall be easily legible.

12.2 *Copies; Signature*

(a) The request for the recording of later designations and any attachments thereto shall be filed in one copy.

(b) The request shall be signed by the applicant or the owner of the international registration.

12.3 *No Additional Matter*

Rule 8.3 shall also apply to requests for the recording of later designations.

Rule 13

Fees Payable With the Request for the Recording of Later Designations

13.1 *International Later Designation Fee and State Designation Fees*

(a) The fees payable with the request for the recording of the later designation of any Contracting State shall be the following:

(i) an "international later designation fee," and, where Rule 5.3(c)(i) applies, a color reproduction fee,

(ii) in respect of each later designated State indicated in the request, the individual State designation fee or the standard State designation fee, as the case may be.

(b) The amounts of the international later designation fee, the standard State designation fee and the color reproduction fee are indicated in the Table of Fees.

Rule 14

Defects in the International Application

14.1 *Minimum Amount Under Article 7*

The minimum amount referred to in Article 7(2)(a)(ix) and (3)(a)(i) shall be an amount equivalent to the amount of the international application fee referred to in Rule 9.1(a(i).

14.2 *Notification, and Reimbursement of Certain Fees, Under Article 7(5)*

(a) Where the International Bureau declines the international application, it shall notify the applicant accordingly and shall state the grounds for declining. It shall reimburse to the applicant all fees received from him except an amount equivalent to the international application fee referred to in Rule 9.1(a)(i).

(b) Where the International Bureau declines to record a State as a designated State either on the ground referred to in Article 7(3)(b) or on the ground that the said State is not a Contracting State, it shall reimburse to the applicant any fee received from him in respect of the attempted designation of that State.

14.3 *Notification of the National Office*

Where the international application is treated as provided for in Article 7(6), the International Bureau shall inform accordingly the national Office through the intermediary of which the application was filed.

Rule 15

Defects in the Request for the Recording of later Designations

15.1 *Application of Rule 14*

Rule 14 shall apply, *mutatis mutandis*, in respect of Article 8, provided that the amount referred to in Rules 14.1 and 14.2(a) shall be an amount equivalent to the amount of the international later designation fee referred to in Rule 13.1(a)(i).

Rule 16

Procedure Where Avoiding the Effects of Declining Is Sought

16.1 *Recording and Publication Under Article 9(3)*

(a) The fact of having received a copy of a petition under Article 9(1)(i) shall, where the petition relates to a mark which is already registered in the International Register of Marks, be recorded by recording the subject of the petition, the name of the national Office to which it appears to be addressed, and the date on which the said copy was received.

(b) The publication under Article 9(3) shall contain the international registration number of the mark, the name of the State to whose national Office the petition appears to have been addressed, and the date on which the copy of the petition was received by the International Bureau.

16.2 *Information Available to National Offices*

On the request of the applicant or the owner of the international registration, or of the interested national Office, the International Bureau shall send to that Office a copy of the file of the declined international application or declined request for the recording of later designations, together with a memorandum setting out the grounds for and the various steps leading to the declining of the said application or request.

16.3 *Information Furnished by the National Office*

Any request by a national Office referred to in Article 9(2)(i) shall indicate the grounds on which it is based.

Rule 17

Certificates

17.1 *Certificates of International Registration and Certificates of Recording of Later Designations*

(a) The certificates referred to in Articles 7(1) and 8(1) shall be issued in the name of the International Bureau and shall be signed by the Director General or an officer of the International Bureau authorized to do so by the Director General.

(b) Any such certificate shall consist of a facsimile of the publication of the international registration or of the publication of the recording of the later designations, as the case may be, and a statement to the effect that the said registration or recording reproduced in the certificate has been effected in the International Register of Marks.

(c) The certificate shall be promptly sent to the owner of the international registration.

Rule 18

Publication of International Registrations and Recordings of later Designations

18.1 *Contents of Publication of International Registrations*

(a) The publication of any international registration shall contain:

(i) the name and address of the owner of the internation-

al registration, together with any indication of his trade or business and, if he bases his right to file international applications on his residence in, or his nationality of, a State other than that in which he has his address, the name of the State of his residence or nationality, as the case may be.

(ii) the reproduction of the mark, together with any indication under Rule 5.3(d) or (e) and any transliteration and translation; where color is claimed, the reproduction shall be in color if Rule 5.3(c)(i) applies, and it shall be in black and white and shall be accompanied by a description of the colors in words and signs if Rule 5.3(c)(ii) applies,

(iii) the list of goods and/or services,

(iv) the names of the designated States and, where applicable, after the name of each such State, an indication concerning the choice referred to in Rule 5.6 and the indication referred to in Rule 5.7,

(v) the international registration date,

(vi) the international registration number,

(vii) where the priority of one or more earlier applications is claimed, the date of filing and the number (if available) of such applications, the name of the country or countries in which or for which they were filed, and, where applicable, an indication that the application was filed under this Treaty or, where it was for a regional mark, an indication of the authority with which it was filed.

(vii) any indication under Article 11(3),

(ix) any declaration under Articles 21(2) and 22(2),

(x) the particulars concerning the representative, as provided in Rule 39.2(a).

(b) Where, in respect of any designated State, the international registration is effected pursuant to Article 9(2) (i), this fact shall be indicated in the publication.

(c) The Administrative Instructions shall provide for the composition and allocation of international registration numbers.

18.2 *Contents of Publication of Recordings of later Designations*

(a) The publication of any recording of a later designation shall contain:

(i) *mutatis mutandis*, the same elements as those referred to in Rule 18.1(a),

(ii) the international later designation number,

(iii) the date of the recording of the later designation.

(b) Where the recording of any later designation is effected pursuant to Article 9(2)(i), this fact shall be indicated in the publication.

The Administrative Instructions shall provide for the composition and allocation of international later designation numbers.

(d) Where the recording of any later designation was effected sufficiently prior to the date of publication of the international registration to be practical to do so, the publication of the recording of the later designation shall be consolidated with the publication of the international registration.

Rule 19

Notification of International Registrations and Recordings of later Designations

19.1 *Form of Notification*

The notification referred to in Article 10(2) shall be effected separately for each national Office and shall consist of:

(i) a list of the international registration numbers and the international later designation numbers of the international registrations and recordings of later designations in which the State of the said Office has been designated,

(ii) reprints made of the publication by the International Bureau of each international registration and of each recording of later designations referred to in the said list,

(iii) a copy of the international application or the request for the recording of later designations if it contains a declaration made under Article 19(4)(a).

(iv) a copy of any declaration made under Rules 6.4 or 11.3,

(v) where Rule 5.3(c)(ii) applies, the reproduction in color of the mark in the number of copies specified in the Administrative Instructions, provided that such Instructions shall enable each Office to require at least six copies.

19.2 *Time of Notification*

The notification shall be effected on the same day as that on which the issue of the Gazette is published that contains the matter from which the reprints referred to in Rule 19.1(ii) are made.

Rule 20

Refusals; Notices of Possible Refusal

20.1 *Notifying the International Bureau; Grounds*

(a) Any notification under Article 12(2)(a) shall be sent in one copy, preferably on a form furnished free of charge by the International Bureau to the national Office of each contracting State. The notification shall, in any case, contain:

(i) the international registration number of the international registration, or the international later designation number of the later designation, as the case may be, to which the refusal or the notice of possible refusal relates,

(ii) the name of the owner of the international registration,

(iii) an indication of the mark in the cases and the manner provided for in paragraph (b),

(iv) an indication as to whether the notification is that of a refusal or of a notice of possible refusal,

(v) where it relates to some only of the goods and/or services listed, identification of those to which it relates,

(vi) the grounds referred to in Article 12(2)(a)(ii) and (iii), together with a reproduction of any mark cited in the notification and not reproduced therein and a copy of the list of goods and/or services (in the original language) pertaining to such mark, and when the notice of possible refusal specifies the grounds by reference to the opposition of a third party, a copy of any document filed by the opposing party in which the said grounds are specified, together with a reproduction of any mark cited in the said document and not reproduced therein and a copy of the list of goods and/or services pertaining to such mark; where the grounds specified by the national Office in the notice of possible refusal do not include the grounds or some of the grounds invoked in the document filed by the opposing party and transmitted together with the said notice by the national Office, all the grounds contained in the said document shall be considered as having been specified by the national Office,

(vii) an indication as to whether any remedy is available, and if so with which authority it has to be sought and within what time limit.

(b) The cases and the manner referred to in paragraph (a)(iii) and in Rules 2.1.(a)(ii) and 28.1(c)(ii) shall be as follows:

(i) where the mark consists of letters of the Latin alphabet, Arabic or Roman numerals, and punctuation signs usual in connection with the Latin alphabet, without any special graphic features and without also containing figurative elements, the indication shall consist of the letters, numerals and signs,

(ii) where item (i), above, does not apply, the indication shall consist of a reproduction of the mark.

(c) The form referred to in paragraph (a) shall be pre-

pared separately for each Contracting State, in collaboration with its national Office. It shall list the more common of the grounds for refusal with a reference to the pertinent provisions of the national law so that, wherever possible, such grounds may be specified by marking the applicable items of the list. The form shall contain a space reserved for specifying any other grounds and for other possible indications.

20.2 *Notifying the Owner of the International Registration; Publication*

(a) The notification under Article 31, of the recording effected under Article 12(4)(a) shall be sent to the owner of the international registration promptly after the receipt of the notification referred to in Article 12(2)(a); it shall indicate the date on which the notification made under Article 12(2)(a) was received by the International Bureau and shall include a copy thereof.

(b) The publication of the recording effected under Article 12(4)(a) shall be effected promptly and shall contain:

(i) the international registration number of the international registration, or the international later designation number of the later designation, as the case may be, to which the refusal or the notice of possible refusal relates, and the name of the owner of the international registration,

(ii) the name of the State whose national Office transmitted the notification,

(iii) a statement to the effect that a notification uner Article 12(2)(a) was received.

20.3 *Notification and Recording of Final Decisions of Refusal; Cancellation of the designation, and Publication of the Cancellation*

(a) The notification by the national Office under Article (12)(4)(b) shall be effected promptly after the date on which the date on which the decision of refusal becomes final and shall contain:

(i) an indication that it relates to a final decision of refusal,

(ii) the indications referred to in Rule 20.1(a)(i),

(iii) where the decision is that of a court; a copy of the final decision, or, where the decision is not that of a court, the grounds given in the final decision, preferably in the same manner as that indicated in Rule 20.1(c),

(iv) where the notification relates to some only of the goods and/or services listed, identification of those to which it relates,

(v) the name of the authority which pronounced the decision, the number, if any, and the date of such decision,

(vi) the date on which the decision became final.

(b) The notification by the International Bureau under Article 12(4)(b) shall be effected as soon as possible and shall include a copy of the notification referred to in paragraph (a), as well as the name of the State whose authorities have pronounced the final decision and an indication of the date of the receipt of such notification by the International Bureau.

(c) The details of the recording referred to in Article 12(4)(b) shall be provided in the Administrative Instructions.

(d) The publication referred to in Article 12(4)(b) shall be effected promptly and shall consist of the indications contained in the notification referred to in paragraph (a)(i) and (iv) to (vi), above, as well as the name of the State whose authorities have pronounced the final decision and the name of the owner of the international registration.

20.4 *Notification and Publication Where Final Decision Results in Acceptance of the Effect Provided for in Article 11(2)*

(a) The notification under Article 12(4)(c) shall be effected promptly after the final disposal of the case and shall consist of a statement to the effect that the notice of possible refusal or the refusal is withdrawn, the indications referred to in Rule 20.1(a)(i), the number, if any, and the date of the decision, and the date on which the decision became final.

(b) The publication referred to in Article 12(4)(c) shall be effected promptly and shall consist of the elements referred to in paragraph (a), as well as the name of the State whose authorities have pronounced the final decision and the name of the owner of the international registration.

20.5 *Belated Notifications*

If any notification referred to in Article 12(2)(a) is received by the International Bureau after the expiration of the time limit fixed in that provision, the International Bureau shall inform accordingly the national Office which effected the notification, treat such notification as if it had not been effected, inform the owner of the international registration that the notification it received is belated, and send to the owner a copy thereof.

Rule 21

Final Decisions of Cancellation

21.1 *Notification and Recording of Final Decisions of Cancellation; Cancellation of the Designation, and Publication of the Cancellation*

(a) The notification referred to in Article 13(3) shall be effected promptly after date on which the decision of cancellation becomes final and shall contain:

(i) the international registration number of the international registration, or the international later designation number of the later designation, as the case may be, to which the final decision of cancellation relates,

(ii) an indication of the mark in the cases and the manner provided for in Rule 20.1(b),

(iii) where the final decision relates to some only of the goods and/or services listed, identification of those to which it relates,

(iv) the name of the authority which pronounced the final decision,

(v) the number, if any, and the date of such decision,

(vi) the date on which the decision became final.

(b) The details of the recording referred to in Article 13(3) shall be provided in the Administrative Instructions.

(c) The publication referred to in Article 13(3) shall be effected promptly and shall consist of the indications contained in the notification referred to in paragraph (a), as well as the name of the State whose authorities have pronounced the final decision of cancellation and the name of the owner of the international registration.

Rule 22

Changes in Ownership

22.1 *Request for Recording of Change in Ownership*

(a) The indication referred to in Article 14(1)(b)(i) shall preferably be worded as follows: "The undersigned requests that the following change in ownership concerning the international registration identifed herein be recorded."

(b) Rule 5.2 shall apply, *mutatis mutandis*, to the indications concerning the new owner referred to in Article 14(1)(b)(iii).

(c) The designated States referred to in Article 1491)(b)(iv) shall be identified by their names in a manner sufficiently clear for the purpose, provided that where the request relates to all the States designated in the existing international registration, they may be identified by a statement to that effect.

(d) The goods and/or sevices referred to in Article 14(1)(b)(iv) shall be identified as follows:

(i) where the request relates to all of the designated States and all of the goods and/or services listed in re-

spect of each of those States, by a statement to that effect,

(ii) where the request relates to all of the designated States and the list of goods and/or services, while being the same for each, is more limited than in the international registration, by a new list and by a statement to the effect that it applies to all of the designated States,

(iii) in all other cases, in respect of those States for which the list of goods and/or services is the same as in the existing international registration, by a statement to that effect, and, in respect of those States for which the list of goods and/or services is more limited than the list of goods and/or services in the existing international registration, by a new list.

(e) The attestation referred to in Article 14(1)(c) shall be worded as follows:

"According to evidence produced before this Office, . . . [1] appears to be the successor in title of . . [2] to the extent described in the present request, and the conditions referred to in Article 14(1)(c) of the Trademark Registration Treaty appear to be fulfilled. This attestation is given for the sole purpose of allowing the change of ownership to be recorded in the International Register of Marks."

[1] Insert the name of the new owner. [2] Insert the name of the earlier owner.

(f) The attestation shall be dated and shall bear the stamp or seal of the national Office and the signature of an official thereof.

(g) the amount of the fee referred to in Article 14 (1)(d) is indicated in the Table of Fees.

(h) The request may contain an indication of the trade or business in which the new owner is engaged.

22.2 *Publication Where the Change in Ownership is Total*

(a) Where the change in ownership concerns all the designated States and all the goods and/or services, the publication referred to in Article 14(1)(d) shall contain:

(i) an indication that the change in ownership concerns all the designated States and all the goods and/or services,

(ii) the name and address of the new owner together with the indication, if any was given by him, of his trade or business and, if he bases his right to own international registrations on his residence in, or his nationality of, a State other than that in which he has his address, the name of the State of his residence or nationality, as the case may be,

(iii) the name of the earlier owner,

(iv) the date on which the International Bureau received the request,

(v) a reference to all the prior publications concerning the international registration except those which have been superseded by later publications in respect of that registration.

(b) The publication shall be effected under the number of the international registration, and, where applicable, the numbers of later designations to which it refers, followed by such further indications as the Administrative Instructions shll provide.

22.3 *Publication Where the Change in Ownership is Partial*

(a) Where the change in ownership concerns fewer than all of the designated States and/or some only of the goods and/or services, the publication referred to in Article 14(1)(d) shall contain two parts, one concerning the new owner, the other the earlier owner.

(b) The part concerning the new owner shall contain:

(i) an indication that the publication is effected pursuant to a request for the recording of a change in ownership,

(ii) the date on which the International Bureau recieved the request,

(iii) the number under which the part concerning the earlier owner is published,

(iv) the name and address of the new owner together with the indication, if any was given by him, of his trade or business and, if he bases his right to own international registrations on his residence in, or his nationality of, a State other than that in which he has his address, the name of the State of his residence or nationality, as the case may be,

(v) all the indications which, prior to the date referred to in item (ii), were published in respect to the international registration and which have not been superseded by later publications in respect of that registration, except those indications which solely concern designated States and goods and/or services in respect to which ownership is retained by the earlier owner.

(c) The part concerning the earlier owner shall contain:

(i) an indication that the publication concerns an existing international registration and contains those elements of that registration which, after the recording of the change in ownership concerning that registration, continue to concern the earlier owner,

(ii) the number under which the part concerning the new owner in published,

(iii) the date on which the International Bureau received the request,

(iv) all the indications which, prior to the date referred to in item (iii), were published in respect of the international registration and have not been superseded by later publications in respect of that registration, except those indications which, because of the change in ownership, no longer concern the earlier owner.

(d) Each part shall have an number and possibly also an appropriately worded heading. The Administrative Instructions shall provide the details of such numbers and headings.

22.4 *Notification of Recording of Changes*

(a) The notifications referred to in Article 14(1)(d) shall be effected by sending reprints of the publication referred to in Rules 22.2 and 22.3.

(b) The transmittal to designated Offices of the reprints referred to in paragraph (a) shall be accompanied by a list of the numbers referred to in Rules 22.2(b) and 22.3(d) relating to recordings concerning the designated State to which the list is addressed. Rule 19.2 shall apply, *mutatis mutandis*.

22.5 *Notification of Declining of the Recording*

The notification referred to in Article 14(2)(a) shall be effected by letter. The letter shall state the grounds for declining.

22.6 *Denial*

(a) The notification by the national Office referred to in Article 14(4)(c) shall:

(i) refer to the fact of the denial,

(ii) identify the authority that pronounced the denial and the date on which it was pronounced,

(iii) indicate the relevant number or numbers referred to in Rule 22.2(b) and 22.3(d),

(iv) contain a brief indication of the grounds for the denial.

(b) The recording and the publication referred to in Article 14(4)(c) shall contain:

(i) the elements referred to in paragraph (a),

(ii) the date on which the International Bureau received the notification referred to in paragraph (a),

(iii) a reference to the publication of the recording effected under Article 14(1)(d).

(c) The notification by the International Bureau referred to in Article 14(4)(c) shall be sent to the earlier and the new owners and to the national Office which notified the denial.

Rule 23

Changes in the Name of the Owner of the International Registration

23.1 *Request for Recording of Change in the Name*

(a) The indication and declaration referred to in Article 15(2)(b)(i) and (ii) shall preferably be worded as follows: "The undersigned requests that the following change in the name of the owner of the international registration(s) identified herein be recorded. He declares that this change in his name does not amount to change in ownership."

(b) Rules 5.2(a) shall apply, *mutatis mutandis*, to the indication of both the former and the new names of the owner of the international registration.

(c) The amount of the fee referred to in Article 15(2)(d) is indicated in the Table of Fees.

23.2 *Publication*

(a) The publication referred to in Article 15(3) shall contain:

(i) an indication to the effect that it concerns a change in the name of the owner of the international registration,
(ii) the former name of the owner,
(iii) the new name of the owner,
(iv) the international registration number of the international registration in respect of which the recording has been effected,
(v) the date on which the International Bureau received the request,
(vi) a reference to all the prior publications concerning the international registration except those which have been superseded by later publication in respect of the international registration conerned.

(b) The publication shall be effected under the number of the international registration, and, where applicable, the numbers of later designations to which it refers, followed by such further indications as the Administrative Instructions shall provide.

23.3 *Notification of Recording*

(a) The notifications referred to in Article 15(3) shall be effected by sending reprints of the publication referred to in Rule 23.2

(b) The transmittal to designated Offices of the reprints referred to in paragraph (a) shall be accompanied by a list of the numbers referred to in Rule 23.2(b) relating to recordings concerning the designated State to whose national Office the list is addressed. Rule 19.2 shall apply, *mutatis mutandis*.

23.4 *Notification of Declining the Recording*

The notification referred to in Article 15(4) shall be effected by letter. The letter shall state the grounds for declining.

23.5 *Denial*

(a) The notification by the national Office referred to in Article 15(6)(b) shall:

(i) refer to the fact of the denial,
(ii) identify the authority which pronounced the denial and the date on which it was pronounced,
(iii) indicate the relevant number or numbers referred to in Rule 23.2(b),
(iv) contain a brief indication of the grounds for the denial.

(b) The recording and the publication referred to in Article 15(6)(b) shall contain:

(i) the elements referred to in paragraph (a),
(ii) the date on which the International Bureau received the notification referred to in paragraph (a),
(iii) a reference to the publication of the recording effected under Article 15(3).

(c) The notification by the International Bureau referred to in Article 15(6)(b) shall be sent to the owner of the international registration and to the national Office which notified the denial.

Rule 24

Recording of Limitations of the List of Goods and/or Services

24.1 *Request for Recording of Limitation of the List*

(a) The request for recording referred to in Article 16(1) shall indicate its purpose and contain:

(i) the name of the owner of the international registration,
(ii) the international registration number,
(iii) the desired limitation of the list of goods and/or services,
(iv) where the request relates to fewer than all the designated States, identification of those States to which it relates,
(v) where the request relates to one only of the designated States and, while not conforming with the formal concept of limitation ad defined in Rule 24.2(a) and (b), it conforms with a decision of the national Office or other competent authority of such State concerning the international registration, a copy of such decision and, if the decision is in a language other than English or French, a translation of such decision.

(b) The request shall be signed by the owner of the international registration.

(c) The amount of the fee referred to in Article 16(2) is indicated in the Table of Fees.

(d) Where any term which is the subject of the request appears under more than one class of the International Classification and the request does not identify the class or classes to which it relates, such request shall be treated as if it related to the term under each of the classes under which it appears.

24.2 *Formal Concept of Limitation*

(a) Subject to paragraph (c), any request under Article 16(1) shall be regarded as conforming with the formal concept of limitation if it is presented in any of the following forms:

(i) it asks for the deletion of one or more terms in the list of goods and/or services,
(ii) it asks for the insertion of one or more words, linked to the existing term by words (such as "except") which, from the point of view of syntax, make it clear that the inserted word or words are meant to be excluded from the existing term (for example, *milk products* (existing term) *except* (linking word) *condensed milk* (inserted words)),
(iii) it asks for the insertion of one or more words linked to the existing term by words (such as "provided that") which, from the point of view of syntax, make it clear that the inserted words are covered by the existing term (for example, *pineapples* (inserted word) *provided that they are* (linking words) *canned fruits* (existing term)).

(b) Unless the limitation is presented in one of the forms described in paragraph (a), it shall not, subject to paragraph (c), be regarded as conforming with the formal concept of limitation, however clear it may be that, in the ordinary sense of the word, there is a limitation (for example, replacing the term "milk products" by "condensed milk").

(c) For the purposes of Rule 24.1(a)(v), any change in the list of goods and/or services decided upon by the national Office or other competent authority concerned shall be deemed to conform with the formal concept of limitation.

24.3 *Recording, Publication, and Notification, of Limitation of the List*

(a) If the request complies with the prescribed requirements, the International Bureau shall record the in-

dications referred to in Rule 24.1(a)(i) to (iv) and the date on which the request was received.

(b) Where the request is based on a decision referred to in Rule 24.1(a)(v), this fact, together with the following particulars, shall also be recorded:

(i) the name of the authority which pronounced the decision,
(ii) the number, if any, and the date of such decision.

(c) The publication and the notification referred to in Article 16(2) shall contain the indications referred to in Rule 24.1(a)(i) to (iv), the indications referred to in paragaph (b) and the date of the recording.

24.4 *Declining the Recording of Limitation of the List*

If the request does not comply with the prescribed requirements, the International Bureau shall decline the recording of the limitation and shall notify the owner of the international registration accordingly. The notification shall include the grounds for declining.

24.5 *Invitation to Record Limitation of the List; Recording, Publication and Notification*

(a) The invitation by the national Office referred to in Article 16(5)(a) or (b) shall:

(i) indicate the relevant international registration number and date,
(ii) indicate the name of the owner of the international registration,
(iii) refer to the declining of the request of the owner or to the recording of the limitation by the International Bureau, as the case may be,
(iv) indicate the finding of the national Office or other competent authority together with a brief indication of its grounds,
(v) where the finding is contained in a decision, indentify the authority which pronounced the decision and the date on which it was pronounced,
(vi) where, under Article 16(5)(b), the limitation is found to be a limitation only in part, specify the extent to which it is found to be a limitation.

(b) The recording and the publication referred to in Article 16(5)(c) shall contain:

(i) the elements referred to in paragraph (a),
(ii) the date on which the International Bureau received the invitation referred to in paragraph (a),
(iii) a reference to the publication of the recording, if any, effected under Article 16(1).

(c) The notifications by the International Bureau referred to in Article 16(5)(c) shall be sent to the national Office which sent the invitation.

Rule 25
Renewal

25.1 *Reminder by the International Bureau*

The International Bureau shall send a letter to the owner of the international registration before the expiration of the term, initial or renewal (as the case may be), which is in effect, reminding him that such term is about to expire. Further details concerning the contents of the reminder shall be provided in the Administrative instructions. The reminder shall be set at least 6 months before the expiration date. Failure to send or receive the reminder, or the fact of sending or receiving it outside the said period, or any error in the remainder, shall not affect the expiration date.

25.2 *Demand for Renewal*

(a) Any demand for renewal may exclude any of the designated States.

(b) Any demand for renewal may exclude in respect of any of the designated States all the goods and/or services appearing in the international registration under a given class or under given classes of the International Classification.

(c) The demand for renewal referred to in Article 17(3)(a) shall preferably be made on a printed from furnished free of charge by the International Bureau together with the remainder referred to in Rule 25.1. The demand shall, in any case, indicate its purpose and contain:

(i) the name and address of the owner of the international registration,
(ii) the international registration number,
(iii) where the demand contains any exclusion under paragraphs (a) or (b), the identification of the state or State and/or the class or classes referred to in paragraph (b).

(d) Where the demand contains any exclusion under paragraphs (a) or (b), it shall be signed by the owner of the international registration.

(e) The demand for renewal shall not be combined with any other request; in particular, it shall not contain a request for recording a later designation, a request for recording a change in ownership, or, subject to paragraph (b), a request for recording a limitation in the list of goods and/or services.

(f) Rule 8.3 shall also apply to demands for renewal, provided that any declaration under Article 19(3)(d) may be filed at the same time as the demand for renewal.

25.3 *International Renewal Fee and State Renewal Fees*

(a) The fees payable under Article 17(3)(a) shall be the following:

(i) an "international renewal fee," and, where Rule 5.3(c)(i) applies, a color reproduction fee, as well as, where applicable, the "renewal surcharge" referred to in Article 17(3)(a),
(ii) in respect to each designated State to which the demand relates the individual State renewal fee or the standard State renewal fee, as the case may be.

(b) The amounts of the international renewal fee, the color reproduction fee, the renewal surcharge and the standard State renewal fee are indicated in the Table of Fees.

(c) The amounts of the individual State renewal fees concerning the various Contracting States shall be published by the International Bureau each year in the month of Aug. The amounts so published shall be applicable as the individual State renewal fees from Jan. 1 to Dec. 31 of the year following the year in which they are published.

25.4 *Imperfect Demands*

(a) Where, within the time limits fixed in Article 17(3)(a), the International Bureau receives:

(i) a demand which does not conform with the requirements or Rule 25.2, or
(ii) a demand but no payment or insufficient payment to cover the renewal fees and any surcharge that is due, or
(iii) money which appears to be intended to cover fees connected with renewal but not demand,

it shall, whenever practicable, promptly invite the owner of the international registration to present a correct demand, to pay or complete the renewal fees and any surcharge that is due, or to present a demand, as the case may be. The invitation shall indicate the applicable time limits.

(b) Failure to send or receive the invitation referred to in paragraph (a), or any delay in dispatching or receiving such invitation, or any error in the invitation, shall not prolong the time limits fixed in Article 17(3)(a).

25.5 *Recording, Publication, and Notification*

(a) Where the demand is presented and the fees are paid as prescribed, the International Bureau shall record the renewal and shall publish the elements, as specified in paragraph (b), of the international registration as it

stands on the first day of the term of renewal, together with an indication both of the fact that the publication is that of a renewal and of the date on which the renewal shall expire.

(b) The elements referred to in paragraph (a) shall be the following:

(i) the name and address of the owner of the international registration, together with the indication, if any was given by him, of his trade or business and, if he bases his right to own international registrations on his residence in, or his nationality of, a State other than that in which he has his address, the name of the State of his residence or nationality, as the case may be,

(ii) the reproduction of the mark, together with any indication under Rule 5.3(d) or (e) and any transliteration and translation; where color is claimed, the reproduction shall be in color if Rule 5.3(c)(i) applies, and it shall be in black and white and shall be accompanied by a description of the colors in words and signs if Rule 5.3(c)(ii) applies,

(iii) the list of goods and/or services, provided that, where the list of goods and/or services differs in respect of different designated States, the publication shall contain appropriate indications in order to show which goods and/or services relate to which designated State,

(iv) the names of the designated States and, where applicable, after the name of each such State, and indication concerning the choice referred to in Rule 5.6 and the indication referred to in Rule 5.7,

(v) where, in respect of any designated State, a refusal or notice of possible refusal was notified and no final decision resulting in the cancellation of the designation or in the acceptance of the effect referred to in Article 11(2) has been notified, an indication that a refusal or notice of possible refusal was notified, together with the date of the receipt by the International Bureau of the notification of the refusal or notice of possible refusal,

(vi) the international registration number,

(vii) any international later designation number,

(viii) where the priority of one or more earlier applications was claimed, a statement that such claim has been made,

(ix) a reference to any indication under Article 11(3),

(x) a reference to any declaration under Articles 21(2) and 22(2),

(xi) particulars concerning the representative, as provided in Rule 39.2(a).

(c) Any indication which, at some time prior to the first day of the term of renewal, has been part of the international registration but which, before that day, has been cancelled or superseded shall not be included in the publication referred to in paragraph (a).

(d) The notification under Article 31 shall be effected by sending to the owner of the international registration a reprint of the publication of the renewal referred to in paragraph (a).

(e) The International Bureau shall notify each designated Office of the renewal by sending it:

(i) a reprint of the publication referred to in paragraph (a), and

(ii) where Rule 5.3(c)(ii) applies, the reproduction of the mark in the number of copies specified in the Administrative Instructions, provided that such Instructions shall enable each national Office to require at least six copies.

25.6 *Declining the Demand*

(a) Where the limits fixed in Article 17(3)(a) are not respected or where the demand does not conform with the requirements of Rule 25.2 or the fees (including, where applicable, any surcharge) are not paid as prescribed, the International Bureau shall decline the demand and shall notify the owner of the international registration by letter. The letter shall state the grounds for declining.

(b) The International Bureau shall not decline any demand before the expiration of 6 months after the starting date of the term of renewal.

25.7 *Reimbursement of Certain Fees*

Where, under Rule 25.6(a), the International Bureau declines the demand, it shall reimburse to the owner of the international registration all fees received from him except an amount equivalent to the international renewal fee referred to in Rule 25.3(a)(i).

25.8 *Recording of Lack of Demand*

Where, by the expiration of 6 months after the starting date of the term of renewal, no demand for renewal is presented to the International Bureau in respect of any or all of the designated States, such fact shall be recorded by the International Bureau.

25.9 *Publication of Lists of International Registrations Not Renewed*

The International Bureau shall publish, at intervals specified in the Administrative Instructions, a list of the international registration numbers of those international registrations which, having become due for renewal, have been renewed in respect of none of the designated States.

Rule 26

Declarations of Actual Use

26.1 *Information on Requirement Concerning Routine Declarations of Actual Use*

The national Office of any Contracting State whose national law requires the filing of rountine declarations referred to in the first sentence of Article 19(3)(d) shall in form the International Bureau of such requirement and of any changes therein. Such information shall, in particular, indicate the time limits within which such declarations must be filed according to the national law and state whether the attachment of specimens or facsimiles to routine declarations of actual use is required by the national law. Any information received shall be published promptly upon receipt. Furthermore, the International Bureau shall republish in Aug. of each year all the information received and still applicable at the time of the republication in respect of all the States concerned.

26.2 *National Forms*

The national Office of any Contracting State referred to in Rule 26.1 shall supply free of charge to the International Bureau in reasonable quantities declaration forms, in the form prescribed by the national law of that State, for the purposes of making declarations referred to in Article 19(3)(d). The International Bureau shall furnish such forms free of charge to interested persons.

26.3 *International Form*

(a) Where the declaration referred to in Article 19(3)(d) is not made on a national form according to Rule 26.2, it shall be made on a form ("international form") consisting of the following statement and shall be signed by the owner of the international registration:

"The undersigned owner of the international registration declares that he (it) is the owner of the international registration which was effected under No. . . . , as shown by recordings in the International Register of Marks, in respect of . . . [1] on . . . [2] ; that the mark which is the subject of the international registration herein identified is now in use by and through . . . [3] in commerce with and/or on the territory of the said State on or in connection with the following goods and/or services listed in respect of such State: . . . [4] ; that such use commenced on . . . [5] ; and that the mode or manner in which the mark is used is:

on labels or tags affixed to and/or containers

for the goods, as evidenced by the attached specimen(s) or facsimile(s) [6] ;
on displays which are associated with the goods, as evidenced by the attached specimen(s) or facsimile(s) [6] ;
in the case of services in advertising of such services, as evidenced by the attached specimen(s) or facsimile(s) [6] ;
other [7] ."

[1] Insert name of State. [2] Insert international registration date or, if applicable, recording date of the later designation of such State. [3] Insert "the undersigned owner" and/or, if applicable, the name and address of the person or persons whose use of the mark inures to the benefit of the owner in the State. [4] Insert "all" or indicate the particular goods and/or services on or in connection with which the mark is used. [5] Insert the date of commencement of the continuing use of the mark, including, where different dates are applicable to different goods and/or services, the particular goods and/or services to which each such date relates. [6] The inclusion of specimens or facsimiles may be dispensed with where the declaration is made in respect of a State whose national law does not require that specimens or fascimiles be attached to routine declarations of actual use. [7] Recite sufficient facts in addition to, or in lieu of, checking one or more of the above boxes as to sales or advertising, or both, to show that the mark is in current use.

(b) The International Bureau shall furnish such forms free of charge to interested persons.

(c) The inclusion of specimens or facsimiles may be dispensed with where the declaration is made in respect of a State whose national law does not require that specimens or facsimiles be attached to routine declarations of actual use.

(d) The specimens referred to in paragraph (a) shall, in the case of a mark for goods, be duplicates of the actually used labels, tags, or containers, or the displays associated therewith, or portions thereof, when made of suitable material and capable of being arranged flat and of a size not larger than the declaration. When, owing to the mode of applying or affixing the mark to the goods or to the manner of its use on the goods, such specimens cannot be furnished, suitable photographs or other acceptable reproductions, not larger than the declaration, which clearly and legibly show the mark and all matter used in connection therewith, shall be furnished. In the case of marks for services, specimens or facsimiles, as specified above, of the mark as used in the sale or advertising of the services shall be furnished unless impossible because of the nature of the mark or the manner in which it is used, in which event some other acceptable reproductions shall be furnished.

(e) It shall depend on the national law of each Contracting State whether any declaration to the same effect as but worded differently than in paragraph (a) shall produce the same effect.

Rule 27

Declarations Concerning Earlier National or Madrid Registrations

27.1 *Separately Filed Declarations*

(a) Any separately filed declaration under Article 21(2) shall:

(i) specify the designated State or States in respect of which it is made,
(ii) contain the statement that the owner of the international registration owned a national registration or national registrations in the said State or States on the international registration date or the international later designation date, as the case may be,
(iii) indicate, in respect of each such national registration, its number,
(iv) indicate the international registration number of the international registration to which it relates.

(b) Any separately filed declaration under Article 22(2) shall:

(i) specify the designated State or States in respect of which it is made,
(ii) contain the statement that the owner of the international registration owned a registration under the Madrid Agreement in respect of the said State or States on the international registration date or the international later designation date, as the case may be,
(iii) indicate the number of the relevant Madrid registration,
(iv) indicate the international registration number of the international registration to which it relates.

27.2 *Certification of National Registrations*

The certification of the copy of any national registration referred to in Article 21(2) shall be in the English or French language, shall be signed by a person authorized by the national Office to effect certifications and shall indicate the date to which the certification refers. That date shall be the international registration date or the international later designation date, as the case may be, or, where the certification is made before international registration or recording of the later designation is effected, the date on which the certification is effected. In the latter case, the national Office effecting the certification shall, on the request of the International Bureau presented once the said registration or recording is effected by it, indicate to that Bureau any change which might have occurred in respect of the national registration between the date to which the certification referred and the international registration date or the recording date of the later designation, as the case may be.

27.3 *Defects*

(a) The International Bureau shall promptly notify the applicant or the owner of the international registration of any defect in the declaration made under Article 21(2) or Article 22(2), including the absence of the certified copy referred to in Article 21(2) and any defect in the certification thereof as provided in Rule 27.2.

(b) As long as any defect referred to in paragraph (a) is not corrected, the International Bureau shall treat the declaration as if it had not been made.

27.4 *Publication; Notification*

(a) Unless effected by virtue of Rule 18.1(a)(ix) or Rule 18.2(a)(i), the publication of any declaration under Article 21(2) or Article 22(2) shall indicate:

(i) the fact that the publication relates to a declaration made under Article 21(2) or 22(2), as the case may be,
(ii) the State or States in respect of which the declaration was made and the numbers of the relevant national or Madrid registrations,
(iii) the international registration number of the international registration to which the declaration relates,
(iv) the name of the owner of the international registration.

(b) Unless effected by virtue of Rule 19.1, the notification of any declaration under Article 21(2) or 22(2) shall consist of an indication that the declaration made under Article 21(2) or 22(2), as the case may be, was recorded by the International Bureau and shall be accompanied by a copy of the declaration.

Rule 28

Transmittal of Documents to the International Bureau

28.1 *Place and Mode of Transmittal*

(a) International applications, requests, demands, notifications and any other documents intended for filing, notification or other communication to the International Bureau shall be deposited with the competent service of that Bureau during the office hours fixed in the Administrative Instructions, or mailed to that Bureau.

(b) Where any document is transmitted to the International Bureau in response to an invitation by that Bureau

bearing a reference number, the document shall indicate such reference number.

(c) Where paragraph (b) does not apply, any document transmitted to the International Bureau shall:

(i) where it relates to an international application, be accompanied by a copy of such application,

(ii) where it relates to an international registration, indicate, by its international registration number, the international registration to which it relates; it may also contain an indication of the mark as provided for in Rule 20.1(b).

(d) Paragraph (c) shall not apply in those cases where these Regulations contain specific provisions on the identification of the international application or registration to which any document transmitted to the International Bureau relates.

28.2 *Date of Receipt of Documents*

Any document received by the International Bureau through deposit or mail shall be considered to have been received on the day on which it is actually received by that Bureau, provided that, when it is actually received after office hours, or on a day when the Bureau is closed for business, it shall be considered to have been received on the next subsequent day on which the Bureau is open for business.

Rule 29

Signature

29.1 Legal Entity

(a) Where any document submitted to the International Bureau is signed by a legal entity, the name of the legal entity shall be indicated in the place reserved for signature and shall be accompanied by the signature of the natural person or persons entitled to sign for such legal entity according to the national law of the State under whose law the legal entity was established.

(b) Paragraph (a) shall apply, *mutatis mutandis*, to partnership or firms composed of attorneys or patent or trademark agents but which are not legal entities.

29.2 *Exemption from Certification*

No signature provided for under the Treaty or these Regulations shall require authentication, legalization or other certification.

Rule 30

Calendar; Computation of Time Limits

30.1 *Calendar*

The International Bureau, national Offices, applicants and owners of international registrations shall, for the purposes of the Treaty and these Regulations, express any date in terms of the Christian era and the Gregorian calendar.

30.2 *Periods Expressed in Years, Months, or Days*

(a) When a period is expressed as one year or a certain number of years, computation shall start on the day following the day on which the relevant event occurred, and the period shall expire in the relevant subsequent year in the month having the same name and on the day having the same number as the month and the day on which the said event occurred, provided that if the relevant subsequent month has no day with the same number the period shall expire on the last day of that month.

(b) When a period is expressed as one month or a certain number of months, computation shall start on the day following the day on which the relevant event occurred, and the period shall expire in the relevant subsequent month on the day which has the same number as the day on which the said event occurred, provided that if the relevant subsequent month has no day with the same number the period shall expire on the last day of that month.

(c) When a period is expressed as a certain number of days, computation shall start on the day following the day on which the relevant occurred, and the period shall expire on the day on which the last day of the count has been reached.

30.3 *Local Dates*

(a) The date which is taken into consideration as the starting date of the computation of any period shall be the date which prevails in the locality at the time when the relevant event occurred.

(b) The date on which any period expires shall be the date which prevails in the locality in which the required document is filed or the required fee is paid.

30.4 *Expiration on a Non-Working Day*

If the expiration of any period during which any document or fee must reach the International Bureau or any of its agenices falls on a day on which such Bureau or agency is not open for business, or on which ordinary mail is not delivered in Geneva or the locality in which the agency is situated, the period shall expire on the next subsequent day on which neither of the said two circumstances obtains.

Rule 31

Payment of Fees

31.1 *Payment to the International Bureau*

All fees due under the Treaty and these Regulations shall be payable to the International Bureau.

31.2 *Applicable Fee Schedule*

The fees payable shall be:

(i) where they concern an international application or a request for the recording of a later designation, the fees in force on the date the international application or the request for the recording of the later designation is received by the International Bureau or, where the application or request has been filed through the intermediary of a national Office under Article 5(3), on the date on which it was received by that Office,

(ii) where they concern a demand for renewal, the fees in force on the date which precedes by 6 months the starting date of the term of renewal.

31.3 *Currency*

(a) Subject to paragraph (b), all fees due under the Treaty and these Regulations shall be payable in Swiss currency.

(b) Where the International Bureau has agencies, the Administrative Instructions may, under specified conditions, allow exceptions to paragraph (a).

31.4 *Deposit Accounts*

(a) Any natural person or legal entity may open a deposit account with the International Bureau or any or its agencies.

(b) The details concerning deposit accounts shall be provided in the Administrative Instructions.

31.5 *Indication of the Mode of Payment*

(a) Unless the payment is made in cash to the cashier of the International Bureau, the international application, and any request, demand, or other document, filed with the International Bureau in connection with any international registration, subject to the payment of any fee, shall indicate:

(i) the name and address, as provided in Rule 5.2(a) and (c), of the natural person or legal entity making the payment, unless the payment is made by a cheque attached to the document,

(ii) the mode of payment, which may be by an authorization to debit the amount of the fee to the deposit account of such person or entity, or by transfer to a bank account or to the postal cheque account of the International Bureau, or by cheque. The Administra-

tive Instructions shall provide the details, in particular those governing the kind of cheques that shall be accepted in payment.

(b) Where the payment is made pursuant to an authorization to debit the amount of the fee to a deposit account, the authorization shall specify the transaction to which it relates unless there is a general authorization to debit to a specified deposit account any fee concerning a certain applicant, owner of an international registration, or duly appointed representative.

(c) Where the payment is made by transfer to a bank account or to the postal cheque account of the International Bureau, or by a cheque not attached to the international application, request, demand, or other document, the notification of the transfer or the cheque (or paper accompanying it) shall identify the transaction to which the payment relates, in the manner to be provided for in the Administrative Instructions.

31.6 *Effective Date of Payment*

Any payment shall be considered to have been received by the International Bureau on the date indicated hereinbelow:

(i) if the payment is made in cash to the cashier of the International Bureau, on the date on which such payment is made,

(ii) if the payment is made by debiting a deposit account with the International Bureau pursuant to a general authorization to debit, on the date on which the international application, the request for the recording of later designation, the demand for renewal or other document entailing the obligation to pay fees is received by the International Bureau, or in the case of a specific authorization to debit, on the date on which the specific authorization is recieved by the International Bureau,

(iii) if the payment is made by transfer to a bank account or to the postal cheque account of the International Bureau, on the date on which such account is credited,

(iv) if the payment is made by cheque, on the date on which the cheque is received by the International Bureau, provided that it is honored upon presentation to the bank on which the cheque is drawn.

Rule 32

Withdrawals and Renunciations

32.1 *Withdrawal of the International Application or Request for Recording of Later Designation*

(a) Any withdrawal of an international application shall be treated as such by the International Bureau if the communication of withdrawal reaches it before preparations for publication have been completed.

(b) Any withdrawal of a request for the recording of later designation shall be treated as such by the International Bureau if the communication of withdrawal reaches it before preparations for publication have been completed.

32.2 *Renunciation of the International Registration or of Certain Designations*

(a) The owner of the international registration may, at any time, renounce the international registration or the recording of the designation of any designated State.

(b) Renunciation of the recording of all designated States shall be treated as renunciation of the international registration.

32.3 *Procedure*

(a) Withdrawals and renunciations referred to in Rules 32.1 and 32.2 shall be effected in a written communication addressed to the International Bureau and signed by the applicant or the owner of the international registration, as the case may be. The International Bureau shall acknowledge receipt of this communication.

(b) In the case of any withdrawals, the International Bureau shall reimburse to the applicant or the owner of the international registration any State designation fee which it received from him in connection with any State affected by the withdrawal.

(c) The International Bureau shall record and publish renunciations, and shall notify interested designated Offices thereof. The details shall be provided in the Administrative Instructions.

Rule 33

33.1 *Choice Between Individual and Standard State Fees Initial Choice*

Any Contracting State shall choose between individual and standard State fees in a written declaration addressed to the International Bureau at the same time as it deposits its instrument of ratification or accession. If it chooses individual State fees, the declaration shall also indicate the amounts of those individual State fees in Swiss francs. The choice of the Contracting State shall become effective and the amounts indicated shall be applicable from the date on which such State becomes bound by the Treaty. Where the Contracting State fails to indicate its choice at the prescribed time, or where it chooses individual State fees but fails to indicate their amounts in Swiss francs, it shall be considered to have chosen standard States fees.

33.2 *Change in Choice*

Any Contracting State may at any time indicate, in a written declaration addressed to the International Bureau, that it wishes to choose standard State fees instead of individual State fees or vice versa, provided that, in the latter case, the declaration shall indicate also the amounts of the individual State fees. The change in choice shall apply from Jan. 1 of that calendar year which commences at the expiration fat least 6 months after the date on which the International Bureau received the declaration. If the desired change is for individual State fees but the declaration fails to indicate their amounts in Swiss francs, the declaration shall be treated as if it had not been made.

Rule 34

34.1 *Change in the Amounts of Individual State Fees Communication; Effective Date*

Any change in the amounts of individual State fees, expressed in Swiss francs, shall be communicated in writing by the interested national Office to the International Bureau. The amounts so communicated shall be applicable as from Jan. 1 of that calendar year which commences at the expiration of at least 6 months after the date on which the International Bureau receives the communication.

Rule 35

35.1 *State Fees Individual State Fees*

(a) The International Bureau shall in every calendar year transfer to any interested designated Office the fees referred to in Article 18(3)(d) that are collected in respect of international registrations, recordings of requests for later designations, and recordings of renewals, effected in the preceding calendar year.

(b) Further details shall be provided in the Administrative Instructions.

35.2 *Standard State Fees*

(a) The coefficient referred to in Article 18(4)(b) shall be:

(i) 2, if the national law provides only for examination of "absolute grounds of nullity,"

(ii) 3, if the national law provides for examination as to whether there is conflict with another mark ("relative

grounds of nullity") and if such examination is carried out only where there is third-party opposition,

(iii) 4, if the national law provides for examination of relative grounds of nullity ex officio and without third-party opposition,

(iv) 5, if the national law provides for examination of relative grounds of nullity ex officio followed by the possibility of third-party opposition.

(b) Further details shall be provided in the Administrative Instructions.

Rule 36

36.1 *Fees Belonging to the International Bureau*
Fees Belonging to the International Bureau

All fees and charges collected under the Treaty, these Regulations and the Administrative Instructions, except those referred to in Article 18(2), shall belong to the International Bureau.

Rule 37

Recordings Effected by National Offices

37.1 *Notification*

The notification by the national Office provided for in Article 20(1) shall be made on a form furnished by the International Bureau and the details of which are provided in the Administrative Instructions.

37.2 *Annotation and Publication*

The Administrative Instructions shall provide for the extent to which annotations of any changes notified under Article 20(2) shall be made in the International Register of Marks and shall be published by the International Bureau, provided that such annotation and such publication shall at least indicate the international registration number of the mark, the State which it concerns, the date on which it was received, and its subject matter.

Rule 38

38.1 *Changes in Addresses*
Recording and Publication

(a) The International Bureau shall, on request, record and publish, free of charge, any change in the address of the owner of the international registration or his representative.

(b) The request shall be signed.

Rule 39

39.1 *Recording and Publication Concerning Representatives Recording*

(a) Where a representative is appointed, the appointment shall be recorded.

(b) Where the appointment of a representative is revoked or renounced, the revocation or the renunciation shall be recorded.

39.2 *Publication*

(a) Where a representative is appointed, his appointment, including his name and address, shall be published.

(b) Where the appointment of a representative is revoked or renounced, the revocation or the renunciation shall be published unless, at the time the publication could be effected, the appointment of another representative is published.

Rule 40

40.1 *The Gazette*
Contents and Title of the Gazette

(a) All matters which, according to the Treaty or these Regulations, the International Bureau is obliged to publish shall be published in a periodical entitled "International Marks Gazette/*Gazette internationale des marques*".

(b) The Administrative Instructions may provide for the inclusion of other matters in the Gazette.

40.2 *Frequency of Issue of the Gazette*

The Gazette shall be issued once a week.

40.3 *Languages of the Gazette*

(a) The Gazette shall be issued in a bilingual (English and French) edition.

(b) The Administrative Instructions shall identify those portions which require translation and those portions which do not require translation.

(c) Matters which can be easily understood even if not translated (for example, the names of the designated States), or which are indicated by signs or abbreviations (for example, "Ren." for "Renewal/*Renouvellement*") to which the keys shall be published in each issue, need not be translated. The details shall be provided in the Administrative Instructions.

(d) Matters not falling within the scope of paragraph (c) (for example, the lists of goods and/or services) shall always be published in both languages. The publication shall indicate which is the original language. Translations shall be prepared by the International Bureau. In case of any divergence between the original and the translation, all legal effects shall be governed by the original.

40.4 *Sale of the Gazette*

The subscription and other sale prices of the Gazette shall be fixed in the Administrative Instructions.

40.5 *Copies of the Gazette for National Offices*

(a) Before July 1 of each year each national Office shall notify the International Bureau of the number of copies of the Gazette which it wishes to receive in the next subsequent year.

(b) The International Bureau shall make the requested number of copies available to the national Office:

(i) free of charge, up to the same number as the number of units corresponding to the class chosen under the Paris Convention for the Protection of Industrial Property by the Contracting State of which the said Office is the national Office,

(ii) at half of the ordinary subscription or sale price, for copies in excess of the said number.

(c) Copies given free of charge or sold under paragraph (b) shall be for the internal use of the national Office which has requested them.

40.6 *Errors in Publications*

(a) Any error in the Gazette may be rectified by the International Bureau through publication of an appropriate corrigendum.

(b) Any national Office and any interested person may call any error in the Gazette to the attention of the International Bureau.

40.7 *Further Details*

Further details concerning the Gazette may be provided in the Administrative Instructions.

Rule 41

41.1 *Copies and Other Information Available to the Public*
Copies and Information Concerning International Applications and International Registrations

(a) Any person may obtain from the international Bureau, against payment of a fee whose amount shall be fixed in the Administrative Instructions, certified or uncertified copies or extracts of the international registration or of any document in the file of any international application or international registration. Each copy or extract shall reflect the situation of the international registration or of the file, or parts of such registration or

file, on a specific date; such date shall be indicated in the said copy or extract.

(b) On request and against payment of a fee whose amount shall be fixed in the Administrative Instructions, any person may obtain from the International Bureau oral or written information, or information by telecopier devices, on any fact appearing in any document in the file of any international application or international registration.

(c) Notwithstanding paragraphs (a) and (b), the Administrative Instructions may waive the obligation to pay any fee where the work or the expense connected with the furnishing of a copy, extract, or information is minimal.

Rule 42

42.1 *Regional Marks*
Declaration Under Article 25(1)(a)

(a) The declaration referred to in Article 25(1)(a) shall be in writing and shall be addressed to the International Bureau. It shall be effective as from the date or event specified in the declaration, provided that it shall not become effective prior to the expiration of 2 months from the receipt of the declaration by the International Bureau.

(b) The declaration shall be promptly published by the International Bureau.

42.2 *Fees*

Rules 9, 13, 25.3, 33 and 34 shall apply *mutatis mutandis*, in the case referred to in Article 25(2).

Rule 43

43.1 *Procedure Where Correction of Errors of the International Bureau is Sought*
Time Limit Under Article 30

The time limit referred to in Article 30(1) shall be:

(i) where the alleged error may be discovered on the basis of a notification sent by the International Bureau to the applicant or the owner of the international registration, 2 months from the date of such notification,

(ii) where item (i) does not apply and the alleged error may be discovered on the basis of a publication of the International Bureau, 2 months from the date of such publication,

(iii) where neither item (i) nor item (ii) applies, the time limit provided for in the national law.

43.2 *Application of Rule 16*

Rule 16 shall apply, *mutatis mutandis*, in respect of Article 30.

RULES CONCERNING CHAPTER II

Rule 44

44.1 *Expenses of Delegations*
Expenses Borne by Governments

The expenses of each delegation participating in any session of the Assembly and in any committee, working group or other meeting dealing with matters of concern to the Union shall be borne by the Government which has appointed it.

Rule 45

45.1 *Absence of Quorum in the Assembly*
Voting by Correspondence

(a) In the case provided for in Article 32(5)(b), the International Bureau shall communicate any decision of the Assembly (other than decisions relating to the Assembly's own procedure) to the Contracting States which were not represented when the decision was made and shall invite them to express in writing their vote or abstention within a period of 3 months from the date of the communication.

(b) If, at the expiration of the said period, the number of Contracting States having thus expressed their vote or abstention attains the number of Contracting States which was lacking for attaining the quorum when the decision was made, that decision shall take effect provided that at the same time the required majority still obtains.

Rule 46

46.1 *Administrative Instructions*
Establishment of Administrative Instructions; Matters Governed by Them

(a) The Director General shall establish Administrative Instructions. He may modify them. They shall deal with matters in respect of which these Regulations expressly refer to such Instructions and with details in respect of the application of these Regulations.

(b) Before establishing the Administrative Instruction and before modifying any provision thereof which affects national Offices, the Director General shall communicate to the interested Offices the text of the intended provisions and shall invite the said Offices to notify him of any observations they might wish to make.

(c) All forms of interest to applicants and owners of international registrations shall be included in the Administrative Instructions.

46.2 *Control by the Assembly*

The Assembly may invite the Director General to modify any provision of the Administrative Instructions, and the Director General shall proceed accordingly.

46.3 *Publication and Effective Date*

(a) The Administrative Instructions and any modification thereof shall be published in the Gazette.

(b) Each publication shall specify the date on which the published provisions become effective. The date need not be the same for all the provisions provided that no provision may be declared effective prior to the expiration of a period of one month after the publication date of that issue of the Gazette in which it was published.

46.4 *Conflict with the Treaty and the Regulations*

In the case of conflict between any provision of the Administrative Instructions and any provision of the Treaty or of these Regulations, the latter shall prevail.

ANNEX TO THE REGULATIONS

Table of Fees

The fees marked by an asterisk apply to the States which have chosen the standard State fee system (see Articles 18(2) and (4)). Where, either because of the choice exercised by the applicant or the owner of the international registration under Article 5(1)(a)(vi) or 6(2)(a)(v), or because only a regional mark is available, the designation of one or more States party to a regional treaty has the same effect as if an application for the registration of the mark in the regional register of marks had been filed, the fees marked by an asterisk shall be payable once even if the regional registration effect extends to more than one State party to the regional treaty.

	Kind of Fee	*Amount in Swiss francs*
1.	*Application*	
1.1	International Application Fee (Rule 9.1(a)(i)): irrespective of the number of designated States and of the numbers of classes	400
1.2	*Standard State Designation Fee (Rule 9.1(a)(ii): for each designated State to which the Standard Fee System applies . .	130
1.3	Color Reproduction Fee (Rule 9.1(a)(i)) . . .	100

2.	*Later Designation*	
2.1	International Later Designation Fee (Rule 13.1 (a)(i)): irrespective of the number of designated States and of the number of classes	100
2.2	*Standard State Designation Fee (Rule 13.1(a)(ii)): for each designated State to which the Standard Fee System applies	[1]30
2.3	Color Reproduction Fee (Rule 13.1(a)(ii)):	100
3.	*Change in Ownership*	
3.1	Request for Recording Change in Ownership Fee (Rule 22.1(g))	100
4.	*Change in the Name of the Owner—Request for Recording Change in the Name of the Owner (Rule 23.1(c)):*	
4.1	Where the request relates to one international registration	100
4.2	Where the request relates to more than one international registration	[2]50
5.	*Limitation of List of Goods and/or Services*	
5.1	Request for Recording of Limitation of the List of Goods and/or Services Fee (Rule 24.1(c))	100
6.	*Renewal*	
6.1	International Renewal Fee (Rule 25.3(a)(i)): irrespective of the number of designated States and of the number of classes	400
6.2	Renewal Surcharge (Rule 25.3(a)(i)): irrespective of the number of designated States and of the number of classes	200
6.3	*Standard State Renewal Fee (Rule 25.3(a)(ii)): for each designated State to which the Standard Fee System applies	[1]30
6.4	Color Reproduction Fee (Rule 25.3(a)(i))	100

[1] Multiplied by the number of classes.

[2] For each of the international registrations to which it relates.

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TRADEMARK REGISTRATION TREATY
Implementing Legislation

On September 3, 1975 the Trademark Registration Treaty (TRT), signed at Vienna, Austria, on June 12, 1973, was transmitted by the President to the Senate of the United States with a view to receiving its advice and consent to ratification. Legislation designed to implement the TRT has been prepared by the Patent and Trademark Office in the Department of Commerce.

Following a suggestion by the General Accounting Office, the Patent and Trademark Office is planning a survey of a random sample of United States trademark owners who would have a direct interest in the TRT and in the changes required in United States trademark law. In order to provide the interested public with the information on which the sampled companies will base their responses, the complete draft legislation, including Summary, Statement of Purpose and Need and Sectional Analysis is reproduced below. A copy of the survey questionnaire will be published in a future issue of the OFFICIAL GAZETTE.

The text of the TRT was reproduced in the OFFICIAL GAZETTE *of July 24, 1973. Some post conference documents, including a history of the Treaty, were reproduced in the* OFFICIAL GAZETTE *of Feb. 11, 1974. The report of the United States delegation to the Vienna Conference was reproduced in the* OFFICIAL GAZETTE *of Feb. 11, 1975. Additional copies of the material reproduced below as well as the previous* OFFICIAL GAZETTE *publications are available upon request to the Commissioner of Patents and Trademarks.*

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

July 11, 1978.

SUMMARY

In 1973, the United States and thirteen other countries signed the Trademark Registration Treaty. This Treaty was transmitted to the Senate on September 3, 1975, with a view to advice and consent to receiving its ratification.

The Trademark Registration Treaty will establish an international trademark filing arrangement, through which persons and companies residing in one of the member States can more easily register trademarks (including service marks, and collective and certification marks) and maintain these property rights in all of the member States. Since the Treaty is not self-executing, the instrument of United States ratification will not be deposited until the necessary implementing legislation is enacted.

The proposed implementing legislation effects the necessary changes in the trademark statutes and provides to persons filing domestic applications the same benefits in the United States as those accorded under the Treaty. The implementing legislation would not come into force until the Treaty enters into force. Entry into force requires the deposit of instruments of ratification or accession by five States.

STATEMENT OF PURPOSE AND NEED

The enclosed bill would amend the Trademark Act of 1946 (60 Stat. 427, as Amended, 15 U.S.C. 1051 et seq.) to implement the Trademark Registration Treaty and make certain of its benefits available to persons filing national applications for United States trademark registration.

First, the bill would implement the Trademark Registration Treaty (TRT), an agreement adopted on June 12, 1973, by the Vienna Diplomatic Conference on Industrial Property to facilitate the protection of trademarks used or intended to be used in international commerce. This Treaty was signed by the United States and was transmitted by the President to the Senate of the United States on September 3, 1975, with a view to receiving its advice and consent to ratification.

Ratification of the Treaty and its implementation by this bill would enable United States nationals and residents to avail themselves of the advantages offered by the Treaty when it has entered into force with respect to the United States. In addition to the procedural implementing provisions, the bill would effect certain changes in the Trademark Act of 1946 (60 Stat. 427, as Amended, 15 U.S.C. 1051 et seq.) that are required to be made in order to comply with certain conditions and requirements of the Trademark Registration Treaty. These changes would not come into effect until the entry into force of the Treaty.

Second, the bill also makes modifications in the present law to provide to United States nationals and residents the same benefits when filing national applications for trademark registration in the United States Patent and Trademark Office as would be available to such applicants in the United States if filing under the Treaty.

Purpose of Trademark Registration Treaty

The Trademark Registration Treaty has as its primary purpose the establishment of a trademark filing arrangement through which persons and companies residing in one of the member States can more easily register trademarks (including service marks, and collective and certification marks) and maintain these property rights in all of the member States. Separate actions in approximately 150 jurisdictions (i.e. States, possessions, territories, etc.) are now required by United States companies in order to extend the protection of a trademark throughout the world. The complexity and high cost of establishing and protecting trademarks in international markets through the diverse national laws and procedures is a serious problem for businessmen seeking to further their commercial objectives by the sale of trademarked products across national boundaries. However, if trademark protection in potential foreign markets is not secured promptly, the unprotected mark is frequently appropriated by a "pirate" or may even be coincidentally adopted by another.

The entry into force of the Trademark Registration Treaty would help alleviate these problems by establishing an alternative international registration procedure through which the effects of national trademark registration in member countries could be secured, maintained and renewed on a central international register of marks. With a few exceptions, the effects of international registration in each participating State would remain subject to the substantive requirements of the national laws of such State.

History of Treaty Development

The Trademark Registration Treaty is the culmination of continuous efforts, since 1965, by the United States, to participate in an acceptable international arrangement to facilitate the protection of trademarks in international commerce. Consideration was first given to the possibility of United States adherence to the Madrid Agreement for the International Registration of Marks, a special arrangement under the Paris Convention for the Protection of Industrial Property. The Madrid Agreement, in force since 1891, has long operated successfully among twenty-three countries, principally European.

By 1968, it became apparent that there was substantial U.S. private sector opposition to adherence to the Madrid Agreement in its present form, largely because of certain of its features which, it was argued, would be contrary to the interests of United States firms.

From 1968 to 1970, there were efforts to revise the Madrid Agreement to correct these alleged deficiencies, but these efforts were not successful. However, whereas there was opposition to our adherence to the Madrid Agreement, interested private groups continued to urge United States participation in an acceptable trademark registration treaty.

In September, 1970, a United States sponsored resolu-

tion to develop a new trademark registration treaty was adopted unanimously by the competent administrative organs of the Paris Convention. After several drafts and examinations by three Committees of Experts and several Consultants' groups, a final draft was considered at a diplomatic conference held in Vienna, Austria, from May 17 to June 12, 1973. Fifty States and thirty-one international organizations (governmental and non-governmental) were represented at the conference. On June 12, 1973, the Trademark Registration Treaty was signed by eight countries, including the United States, and remained open for signature until Dec. 31, 1973, by which date a total of fourteen countries had become signatories. The Treaty will enter into force six months after five States have deposited their instruments of ratification or accession. To date, none of the signatory States has ratified the Treaty. Four States (Congo, Gabon, Togo, and Upper Volta) have deposited instruments of accession.

Main Features of Treaty

The Trademark Registration Treaty will establish a multilateral trademark filing arrangement for residents or nationals of its member countries, which provides easier procedures for securing, administering and maintaining national trademark registration effects in other countries by filing a single international application, securing a single international registration and maintaining a record of such rights on a central international register. International registration amounts to central recording of a "bundle of national rights" rather than a separate property right.

With some exceptions (as noted below), the substantive aspects of rights are regulated by each member State according to its national law. The main features of the Treaty are as follows:

1. A national or resident of a member State may file directly with the International Bureau of the World Intellectual Property Organization an international application designating the States in which protection of the trademark is desired. Any number of States, including the applicant's home State, may be designated.

2. The international application may claim the priority (Paris Convention "right of priority") of an earlier first application to register the same trademark.

3. The application is subject to an international fee plus a fee for each designated State (not higher than 100% of the total fees for national registration).

4. After a brief examination as to formal requirements, the trademark is registered by the International Bureau. The details of the international registration are promptly published in English and French in an international gazette and communicated to each of the designated States.

5. Unless refused by a designated State, the international registration is accorded the same legal effect as if the same trademark were registered nationally in that State. The time limit for the initial notice of refusal, including all reasons or possible reasons for refusal, is fifteen months from the date of the international publication. The reasons for refusal cannot be different from those applicable to national applications.

6. If initially refused by any designated State, the owner is notified of the refusal and is guaranteed the same procedural rights of re-examination and/or remedies available in the case of refusals of national trademark applications. Further proceedings are not subject to any Treaty time limits, and are carried out directly between the owner and the concerned national office.

7. The effects of an international registration may be cancelled in any designated State according to the national law of that State. The effect of cancellation is limited to the State in which the legal action for cancellation was brought.

8. An international registration may be renewed at ten year intervals by a single renewal application filed with the International Bureau.

9. States not originally designated may be added later by requesting the recording of later designations of the new States.

10. Assignments, changes of name, limitations of the goods and/or services, etc. may be recorded by filing a single international request, with the same legal effect as if recorded in the national registers.

11. Non-use of the trademark during an initial period of three years counted from the filing date cannot result in refusal or cancellation by any State. However, any State may require that the owner declare his intention to use the trademark in that State and may further provide in its law that no action for infringement may be commenced until the continuing use of the trademark in that State has started and that any remedy (e.g. damages or profits) may relate only to the period after use has commenced.

The benefits of the Treaty will be available only to nationals or residents of member countries. As to such persons, the Treaty may be used to secure protection in a few countries, or in many, depending upon the extent of the commercial interests.

The Treaty provides that the contracting States shall constitute a Union for the international registration of marks. The provisions for administration of the Union are similar to those established for the Patent Cooperation Treaty, which was transmitted to the Senate on Sept. 12, 1972, and was favorably acted on by that body on Oct. 30, 1973.

The Regulations annexed to the Treaty provide rules concerning administrative requirements and procedures and details useful in implementation of the Articles.

Interest of Other Countries

In addition to the United States, the signatories of the TRT include a number of major trading countries (e.g. Federal Republic of Germany, United Kingdom, Italy, Sweden, Austria). Others are awaiting developments in the United States, which furnished primary impetus to the negotiations. In particular, the interest of most Western European countries is contingent upon United States ratification, primarily because of the existence of the Madrid Agreement. The Trademark Registration Treaty is more modern than the Madrid Agreement, has more advantages for trademark owners and eliminates features which have long inhibited the territorial growth of the Madrid system. However, the position of the Madrid Agreement members is dependent upon the interest of major countries outside that Union in the new arrangement. Of these, the United States is clearly the most important. However, Japan, United Kingdom, Canada, and the Scandinavian group are among other countries outside the Madrid Union which are known to be seriously considering participating in the TRT arrangement, or, failing that, in some other multilateral agreement, such as Madrid.

Main Advantages

The main advantages of the Treaty are the simplified procedures provided in order to secure national registration effects, to maintain the rights thereby acquired, and to continue these rights by renewal. Other benefits are the time limits for national refusal notifications and the limitations on national use requirements.

The Treaty will not be a panacea for all trademark problems. It will establish what is essentially a multilateral trademark filing arrangement, reserving (except for a few points) the substantive aspects of rights to regulation on a country-by-country basis under the national law of each country. However, by limiting participation to States having previously adhered to the Paris Convention for the Protection of Industrial Property, it as-

similates or applies the norms and standards of trademark protection law which have been agreed to by the eighty-seven member countries of that Union over the almost 100 years of its existence. The fact that its filing, maintenance and administrative procedures are independent of national procedures means that a framework for future development of international substantive standards and further rationalization of procedures is provided. Also, since trademark piracy is best dealt with preemptively by prompt filing and diligent maintenance practices, the Treaty attacks this problem directly by facilitating the filing and maintenance procedures.

Even the short range objectives and benefits will not be immediately realized upon United States ratification. Five States must ratify before the Treaty enters into force. To date, only eighteen out of the eighty-seven potential member States have taken positive steps (i.e. fourteen signatories and four adherents). The benefits of simplified filing and maintenance will accrue in proportion to the number of member States.

Effect on U.S. System—Cost

As the Treaty matures in terms of the number of participating States, one of its effects will probably be an increase of foreign origin filings in this country (present foreign origin filings are less than 10% of total filings). It is fundamental that the benefits of simplification accrue in both directions. To the extent that any increased filings reflect existing commercial rights, this result would be consistent with a fundamental purpose of the federal trademark registration system, i.e. the central recording of marks in which rights may exist. Because registration is not mandatory in order to secure rights in a trademark in the United States (and this would not change under the Treaty), the U.S. system is designed to encourage federal registration, in order to provide centralized information to those searching for and selecting new marks for new products or services to be sold in commerce. Part of the increase, as explained later, may result from permitting the filing and registration of marks based on an intent to use as an alternative to actual use.

Since the intent to use amendments to be effected by the bill will not come into force until the date of entry into force of the Treaty, none of the financial consequences will accrue until after that date. It is assumed that entry into force will occur promptly after United States ratification, if not before that date. Assuming action by the 95th Congress, increased incremental costs and manpower requirements of the Patent and Trademark Office have been estimated as shown in the following chart.

for the assessment of country designation fees (paid centrally) at a level equal to the fees for national registration, any increased operational costs of the Patent and Trademark Office due to increased filings will be offset to the same extent as under the national system. The above cost estimate does not reflect these partially offsetting fees.

Additional cost factors, too remote for attempting to estimate at this time, involve contributions to the World Intellectual Property Organization (WIPO) which will serve as the International Bureau under the Treaty. Article 34(5) of the Treaty establishes a working capital fund, constituted by a single payment made by each contracting State. Based on the experience in the case of other treaties administered by WIPO, it is believed that consideration of any working capital fund would be deferred, at least, until several years after the Treaty enters into force. The amount of the initial payment of each contracting State to this fund is computed with due regard to the number of international applications which are filed by residents of that State. Thus, a direct relationship exists between the amount of the payment by the United States and the use of the TRT by U.S. companies.

In starting up for operations under the TRT, the International Bureau will have to establish a budget financed from fees and charges for services rendered by the International Bureau, from sales of publications and other miscellaneous income. While the Madrid Agreement, also administered by WIPO, has operated at a profit for many years, and the TRT is designed to be self-supporting under normal circumstances (Article 34(4)), the possibility of deficits cannot be ruled out altogether. Deficits would be covered out of the working capital fund, which fund would then be reimbursed by the States. Deficits are not expected to be of any significant magnitude. Contributions to the working capital fund would be the responsibility of the Department of State.

Effect on U.S. Trademark Law

Participation in the international system will require that our national trademark law be amended in a number of respects. The most fundamental change is one which would permit the securing of a national registration in the United States based on intention to use the trademark applied for, and provide for an initial period of 3 years during which nonuse of the mark could not be a basis for refusing or cancelling such registration. Consistent with the Treaty, the proposed legislation provides that infringement actions in the courts would continue to be contingent upon the commencement of use, however.

As explained by the President in forwarding the Trea-

ESTIMATED COSTS INCURRED BY RATIFICATION OF TRT AND ENACTMENT OF RELATED LEGISLATION[1]

[Dollar Amounts in Thousands]

	FY 1979		Adjustment for FY 1980		Total FY 1980		Adjustment for FY 1981		Total FY 1981	
	M.Y.	Dollar	M.Y.	Dollar	M.Y.	Dollar	M.Y.	Dollar	M.Y.	Dollar
Operational printing[2]	...	581.9	.....	(+68.7)	....	650.6	.....	(+54.8)	....	705.4
Operational, other[3]	21.7	420.3	(+11.6)	(+252.6)	33.3	672.9	(+7.4)	(+176.1)	40.7	849.0
Start-up[4]	3.0	109.8	(−2.0)	(−73.4)	1.0	36.4	(−1.0)	(−31.5)	....	[5]4.9
	24.7	1,112.0	.....	.....	34.3	1,359.9	.....	.....	40.7	1,559.3

[1] These estimated costs will be partially offset by fees to the same extent as under our national system.
[2] Assumes additional publication of all applications will be required (see discussion of Sections 9 and 10 of bill in the Sectional Analysis).
[3] Includes supervisory, professional and clerical personnel, and mail.
[4] Includes Legislation and International staff, Organization and Systems, and all travel.
[5] Only travel remains.

An important caveat is that many of the assumptions on which the above estimates are based are, at this point, very speculative. Also, since the Treaty provides

ty to the Senate for its advice and consent, there is a sharp difference of opinion among interested persons, firms and associations in the United States as to the desirability of making this change, and, to a lesser extent, other less significant changes, required by the Treaty, in our national law.

The essence of the change in United States law is that it would move us from the strict use approach (today held to only by the United States, and a few other countries, e.g. Republic of Philippines, Panama) to the middle position, i.e. a use or intention to use system similar in principle to that of the British. The change is believed to be more consistent with the legitimate needs of businessmen, especially where international trade is contemplated.

Intention To Use Legislation

In fact, legislation permitting the filing of a trademark application based on an intent to use was widely supported in the private sector and, in the 91st Congress, identical House and Senate bills, substantially the same as the earlier Senate bills, were introduced at the request of the Administration (S. 3110, McClellan; H.R. 14050 Kastenmeier). This legislation was not reintroduced in the 93rd and 94th Congresses, however, since it was known at an early stage in the Treaty negotiations that the use requirements of the United States would be affected.

The support of intention to use legislation in the United States had its foundation in domestic concerns. Under present law actual use of a mark is a prerequisite to the filing of an application for registration. Thus, every applicant for federal registration, in addition to other requirements, must specify in his application the date of first use of the mark and the date of first use in commerce over which Congress has control (usually interstate commerce).

As applied to the adoption of new trademarks, the requirement of establishing use of a mark prior to applying for its registration is unrealistic since the time interval between clearance and adoption of a trademark and use of commercial quantities varies from several months to several years depending upon the products involved. Typically, before a consumer product is marketed commercially, there is considerable time and effort expended in the developmental effects. After having undertaken the effort and expense of creating and planning the promotion of a new mark, however, the businessman may find that the mark is not registrable because of conflict with another mark or some other reason. These problems led to the drafting and introduction of intent to use legislation.

Canada, in 1954, after careful study, adopted a system permitting applications for registration on the basis of an owner's proposed use. The Canadian system is favorably regarded by businessmen, as are the intention to use systems of many other nations. Approximately one-half of the trademark applications filed today in Canada are based on proposed use, rather than actual use, evidencing the usefulness and acceptability of the system.

Differences Between Previous Intention To Use Legislation and the Treaty

Although similar in terms of their substantive effect, the "intent to use" amendments previously proposed in this country do not satisfy the requirements of the Treaty. There are two basic differences:

(1) The time period under the Treaty during which use may not be required cannot be less than 3 years, counted from the filing date.

Under the "intent to use" bills, the time period was flexible, depending upon the length of time consumed by the examination, i.e. 90 days, counted from the date of allowance of the application by the examiner (a shorter period if the application were opposed). Although entirely dependent upon pendency experience of the Patent and Trademark Office, the period of permitted non-use of most of the applied for marks under those bills would have been in the approximate range of one to two years, counted from the filing date.

Whereas the Treaty permits the "reserving" of a mark for an initial 3 years, more entended "reserving" may be precluded under Article 19(3) and this is done in the proposed implementing legislation. Thus, the 3 year period cannot be extended except for extraordinary reasons. The fact that an application is still pending at the date of expiration of the 3 years may *not* be accepted as a reason for extension. The use requirements after 3 years are the same as under present law.

(2) Under the Treaty, the national *registration* effect of an international registration may not, for the initial three year period, be refused or cancelled on the ground of non-use. However, any country may provide that the right to sue for infringement of the registered mark (even during the three years) is subject to the condition of use, i.e. no right to sue until after continuous use has commenced; and that any remedy may relate only to the period after use has commenced.

Under the "intent to use" bills, an application could be filed, and priority secured, based on intent to use, without actual use, but the *registration* would not issue until a declaration demonstrating actual use had been filed and accepted.

The implementing legislation takes into account the above differences, as the Treaty requires. Also, in all respects, the benefits to applicants from the 3 year use moratorium are accorded to United States residents filing regular nationals applications in the United States as well as to those applicants filing under the Treaty.

A BILL

To amend the Act entitled "An Act to provide for the registration and protection of trademarks used in commerce, to carry out the provisions of international conventions, and for other purposes," approved July 5, 1946, as amended.

Be it enacted by the Senate and the House of Representatives of the United States of America in Congress assembled, that, in order to carry out the provisions of the Trademark Registration Treaty and extend its benefits to citizens and residents of the United States pursuant to the authority of Congress to regulate commerce within its control, section 1 of the Act entitled "An Act to provide for the registration and protection of trademarks used in commerce, to carry out the provisions of international conventions, and for other purposes," approved July 5, 1946 (60 Stat. 427), as amended, is amended to read as follows:

"(a) Any person who is the owner of a trademark which is used or intended to be used in commerce may register that trademark on the principal register hereby established, subject to the conditions and requirements of this Act.

"(b) Application by a person described in section 1(a) to register a trademark on the principal register may be made:

(1) By paying in the Patent and Trademark Office the filing fee and filing in such Office—

(A) A written application, in such form as may be prescribed by the Commissioner, signed by the applicant or by a duly appointed representative of the applicant, specifying the applicant's domicile and citizenship and the particular goods in connection with which the trademark is used or intended to be used in commerce;

(B) A drawing of the trademark;

(C) Except where the declaration under section 1(c) is filed together with the application, a declaration

of the applicant's intention to use the trademark in commerce in connection with the goods specified in the application;

and by complying with such rules or regulations, not inconsistent with law, as may be prescribed by the Commissioner; or

(2) By designating the United States in an international registration, or in the recording of any later designation in an international registration, published and notified to the Patent and Trademark Office in conformity with the Trademark Registration Treaty: *Provided,* That—

(A) the person applying was entitled to file international applications, is entitled to own international registrations, and is the Owner of the international registration of the trademark sought to be registered under this Act; and

(B) a declaration of such person's intention to use the trademark in commerce in connection with the goods specified in the international registration is notified to the Patent and Trademark Office in conformity with the said Treaty.

"A person whose international application, or request for the recording of later designation, designating the United States, has been declined by the International Bureau may apply to register the same trademark under paragraph (1) of this subsection. If the application under paragraph (1) is filed in the Patent and Trademark Office prior to the expiration of two months, counted from the date of the notification by the International Bureau of its declining of the corresponding international application or request, and if the Commissioner determines that such declining was not justified, the application shall be treated as if it had been filed on the date which would have been the international registration date or the recording date of the later designation had the declining not taken place.

"(c)(1) The applicant of an application for registration under this Act, or the registrant of a registration issued on the basis of such application, shall file in the Patent and Trademark Office, in such form as may be prescribed by the Commissioner, a declaration stating that the trademark is in use in commerce and that such use commenced on or prior to the date of expiration of three years counted from the filing date of the application, and specifying the date of his first use of the trademark, the date of his first use of the trademark in commerce, those of the particular goods identified in the registration, or, if the registration has not been issued, in the application for registration, in connection with which the trademark is used, and the mode or manner in which the trademark is used in connection with such gooda. The declaration shall be signed by the registrant or his duly appointed representative, or, if the registration has not been issued, by the applicant or his duly appointed representative, and it shall be accompanied by such number of specimens or facsimiles of the trademark as actually used as may be prescribed by the Commissioner. Where the declaration concerns an application filed under, or registration issued pursuant to, section 1(b)(2), it may, in such form as may be prescribed by the Commissioner or in the form prescribed by the Trademark Registration Treaty, be filed with the International Bureau, with the same effect as if it had been filed in the Patent and Trademark Office on the date on which it was received by the International Bureau.

(2) The declaration under paragraph (1) of this subsection may be filed together with the application to which it pertains, or later: *Provided,* That unless such declaration has been filed prior to the expiration of four years, counted from the filing date, the Commissioner shall cancel the registration, if issued, or refuse the application for registration, if pending. If the declaration is accepted in respect of fewer than all of the goods stated in the registration or identified in the application, the application or registration shall be limited by the Commissioner to those of the particular goods specified in the declaration in connection with which the mark is in use in commerce.

(3) If an application for registration is pending after the expiration of the three-year period referred to in paragraph (1) of this subsection, or if a registration is relied upon in an opposition or cancellation proceeding under this Act which was filed, or which is pending, after the expiration of such period, the Commissioner may require that the declaration under this subsection in respect of such application or registration be filed within such earlier period as he may prescribe: *Provided,* That such earlier period shall not expire earlier than 2 months, counted from the date of a notice mailed to the applicant or registrant.

(4) If a person who applied for registration of a trademark under this Act, or any successor, assignee or related company of such applicant, shall subsequently apply for registration under this Act of the same or a substantially equivalent trademark on or prior to the date of expiration of five years from the filing date of the said earlier application in respect of all or fewer than all of the goods recited in the said earlier application, the three-year period referred to in paragraph (1) of this subsection shall, in respect of those of the goods which are the same, be counted from the filing date of the said earlier application, or if there were more than one such earlier application, from the filing date of the earliest of them: *Provided,* That this paragraph shall not be applicable if a declaration of use conforming to the requirements of this subsection is filed together with the said subsequently filed application.

(5) Upon a satisfactory showing by the applicant or registrant that his failure to commence use of the mark in commerce on or prior to the date of expiration of the three-year period referred to in paragraph (1) of this subsection was due to extraordinary circumstances which excuse such failure and was not due to any intention to abandon the mark, the Commissioner may extend the date of expiration of the said period and of the time limit for filing the declaration under this subsection: *Provided,* That the said expiration dates may not be extended for the reason that the application for registration was pending after the date of expiration of the said three-year period.

(6) The Commissioner shall notify the applicant or registrant who files the above prescribed declaration of his acceptance or refusal thereof and, if a refusal, the reasons therefor.

"(d) In any application in respect of which the declaration under section 1(c) has been filed, the applicant may claim concurrent use. If concurrent use is claimed, the applicant shall state exceptions to his claim of exclusive use, in which he shall specify, to the extent of his knowledge, any concurrent use by others, the goods in connection with which and the areas in which each concurrent use exists, the periods of each use, and the goods and area for which the applicant desires registration.

"(e) If the applicant is not domiciled in the United States he shall designate by a written document filed in the Patent and Trademark Office the name and address of some person resident in the United States on whom may be served notices or process in proceedings affecting the trademark. Such notices or process may be served upon the person so designated by leaving with him or mailing to him a copy thereof at the address specified in the last designation so filed. Unless filed with the application, the document designating such person shall be filed on or prior to the date on which the applicant, or the registrant of any registration issued on the basis of such application, replies to any communication by the examiner, or otherwise institutes or defends any proceeding under this Act, relating to such application or registration. Until such person has been designated, or if the person so desig-

nated cannot be found at the address given in the last designation, such notices or process may be served upon the Commissioner."

Sec. 2 The first sentence of section 3 of such Act is amended by striking out "used in commerce".

Sec. 3 The first sentence of section 4 of such Act is amended by striking out "used in commerce" and by inserting, following "exercising", the words "or intending to exercise".

Sec. 4 Section 5 of such Act is amended by inserting, following "used" (first occurrence), the words, "or is intended to be used,"; and by inserting, following "use" (both occurrences), the words "or intention to use".

Sec. 5(a) The second sentence of section 7(a) of such Act is amended by inserting, following "date" (third occurrence), the words "of issue"; by striking out "date on which the application for registration was received in the Patent and Trademark Office" and inserting in lieu thereof the words "filing date"; and by changing the period at the end of the sentence to a colon and adding the following proviso:

"*Provided,* That if the declaration under section 1(c) has not been filed, this fact shall be indicated in lieu of the dates of first use of the mark."

(b) A new sentence is added to section 7(a) of such Act reading as follows: "The Commissioner shall cause a notice concerning the issuance of the registration to be published in the Official Gazette of the Patent and Trademark Office."

(c) Section 7(b) of such Act is amended to read as follows:

"Subject to any conditions and limitations stated therein, a certificate of registration of a mark upon the principal register provided by this Act shall be prima facie evidence of the validity of the registration, of the registrant's ownership of the mark, and of the right of the registrant to prevent registration under this Act by any other person, except a lawful concurrent user, of the mark either in the identical form as reproduced in the registration, or in such near resemblance thereto as to be likely, when applied to the goods or services of such other person, to cause confusion or to cause mistake, or to deceive."

(d) Section 7(d) of such Act is amended by inserting, preceding the first sentence of such subsection, "(1)" and by adding, at the end thereof, the following new paragraphs:

"(2) The registrant of any registration under this Act may limit the goods and/or services specified in his registration by filing an application, in such form as may be prescribed by the Commissioner, for the recording of such limitation or, in the case of a registration issued on the basis of an application under section 1(b)(2), or renewed pursuant to section 9(b)(2), by filing at the International Bureau a request for the recording of a limitation, in respect of the United States, of the goods and/or services of the international registration on the basis of which such registration was issued. The Commissioner shall refuse to record any limitation requested by the registrant if its effect would be to enlarge the scope of the goods and/or services beyond that of the goods and/or services specified in the registration. The recording by the International Bureau of a limitation of the goods and/or services, in respect of the United States, of an international registration shall, unless refused by the Commissioner, have the same effect as if such limitation had been entered in the records of the Patent and Trademark Office on the same date of such recording."

"(3) Where the Commissioner has limited the goods and/or services of any registration pursuant to the provisions of paragraph (2) of this subsection, or sections 1(c)(2), 8(a)(2), or 9(c)(2) of this Act, appropriate entry of such limitation shall be made in the records of the Patent and Trademark Office and, if requested by the registrant, upon the certificate of registration or, if such copy is lost or destroyed, upon a certified copy thereof."

(e) Section 7 of such Act is amended by adding, after subsection 7(g), the following new subsection:

"(h)(1) Appropriate entry shall be made in the records of the Patent and Trademark Office of any recording notified to it by the International Bureau in respect of a registration issued on the basis of an application under section 1(b)(2), or renewed pursuant to section 9(b)(2), unless the effect of such recording has been refused in conformity with the provisions of this Act or of the Trademark Registration Treaty.

(2) The Commissioner shall notify the International Bureau as provided in the Trademark Registration Treaty before making any entry, other than as specified in paragraph (1) of this subsection, in the records of the Patent and Trademark Office in respect of a registration issued on the basis of an application under section 1(b)(2), or renewed pursuant to section 9(b)(2), and the entry in such records shall not be made until the corresponding entry has been annotated and published by the International Bureau as provided in the said Treaty."

Sec. 6 Section 8(a) of such Act is amended to read as follows:

"(1) The initial term of a registration under this Act shall be 10 years counted from the filing date:

Provided, That the registration of any mark under the provisions of this Act shall be cancelled by the Commissioner at the end of 6 years counted from its date of issue, unless, within 1 year next preceding the expiration of such 6 year period, the registrant shall file in the Patent and Trademark Office, in such form as may be prescribed by the Commissioner, an affidavit or declaration showing that the mark is still in use in commerce. Special notice of the requirement for such affidavit or declaration shall be attached to each certificate of registration. Where the affidavit or declaration concerns a registration issued pursuant to section 1(b)(2), it may, in the form prescribed herein, or in the form prescribed by the Trademark Registration Treaty, be filed with the International Bureau, with the same effect as if it had been filed in the Patent and Trademark Office on the same date as the date on which it was received by the International Bureau.

(2) If the affidavit or declaration of use under paragraph (1) of this subsection is accepted in respect of fewer than all of the goods and/or services stated in the registration, the registration shall be limited by the Commissioner to those of the particular goods and/or services specified in the affidavit or declaration in connection with which the mark is still in use in commerce.

(3) Upon a satisfactory showing by the registrant that his nonuse of the mark in commerce is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark, the Commissioner may extend the time for filing the affidavit or declaration under this section."

Sec. 7 Section 9 of such Act is amended to read as follows:

"(a) The owner of a mark which is still in use in commerce may renew his registration of that mark for periods of ten years from the end of each expiring period of the registration, subject to the conditions and requirements of this Act.

"(b) Renewal of a registration by a person described in section 9(a) may be effected:

(1) By paying in the Patent and Trademark Office the prescribed fee and filing in such Office—

(A) within the six months next preceding the date of expiration of the period for which the registration was issued or renewed, an application for renewal: or

(B) prior to the expiration of six months counted from the date of expiration of the period for which the registration was issued or renewed, an application for late renewal, on payment of the additional fee herein prescribed;

and by complying with such rules or regulations, not inconsistent with law, as may be prescribed by the Commissioner; or

(2) By the renewal of an international registration in respect of which the United States is a designated State, published and notified to the Patent and Trademark Office in conformity with the Trademark Registration Treaty, *Provided:* That the person applying is entitled to own international registrations and is the Owner of the international registration of the mark sought to be renewed under this Act.

If the Commissioner refuses an application for renewal of a registration filed under paragraph (1), he shall notify the registrant of his refusal and the reasons therefor. The provisions of section 1(e) shall be applicable to any person not domiciled in the United States who applies for or effects the renewal of a registration under this Act.

"(c)(1) The registrant of a registration renewed under this Act shall file in the Patent and Trademark Office, in such form as may be prescribed by the Commissioner, a declaration stating that the mark is still in use in commerce, and specifying those of the particular goods and/or services identified in the registration on or in connection with which the mark is so used. The declaration shall be signed by the registrant or by his duly appointed representative, and shall be accompanied by a specimen or facsimile showing current use of the mark. Where the renewal is effected pursuant to section 9(b)(2), the declaration may, in the form prescribed herein, or in the form prescribed by the Trademark Registration Treaty, be filed with the International Bureau, with the same effect as if it had been filed in the Patent and Trademark Office on the date on which it was received by the International Bureau.

(2) The declaration under paragraph (1) of this subsection may be filed together with the application for renewal under section 9(b)(1), or, in the case of a renewal effected pursuant to section 9(b)(2), with the demand for renewal of the corresponding international registration filed with the International Bureau, or later: *Provided,* That unless such declaration has been filed prior to the expiration of six months, counted from the starting date of the term of renewal, the Commissioner shall cancel the registration. If the declaration is accepted in respect of fewer than all of the goods and/or services stated in the registration, the registration shall be limited by the Commissioner to those of the particular goods specified in the declaration in connection with which the mark is still in use in commerce.

(3) Upon a satisfactory showing by the registrant that his nonuse of the mark in commerce is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark, the Commissioner may extend the time for filing the declaration under this section.

(4) The Commissioner shall notify the registrant who files the above prescribed declaration of his acceptance or refusal thereof and, if a refusal, the reasons therefor."

Sec. 8(a) Section 10 of such Act is amended by inserting, preceding the first sentence of such section, "(a)(1)", by striking out "(d)" in the last sentence and inserting in lieu thereof "(e)", and by adding at the end of such section the following new paragraphs:

"(2) A change in the ownership of a registration or application for registration under this Act may be recorded in the Patent and Trademark Office in such form as may be prescribed by the Commissioner, or, in the case of an application filed or registration issued pursuant to section 1(b)(2), or renewed pursuant to section 9(b)(2), by recording the change in Ownership, in respect of the United States, of the international registration on the basis of which such application was filed or such registration was issued. The recording by the International Bureau of a change in the Ownership, in respect of the United States, of an international registration shall, if valid, have the same effect as if such change had been entered in the records of the Patent and Trademark Office on the same date as the date of such international recording.

"(3) The recording of a change in ownership pursuant to paragraph (2) which is the result of an assignment of the registered or applied for mark shall, as of the date of such recording, be accorded the same effects as those which are accorded to the recording of such assignment: *Provided,* That within three months from the date of notice of such recording, mailed to the person who applied therefor, or, where the recording is effected by the International Bureau, from the date of publication of such international recording, instruments of assignment conforming to the requirements of paragraph (1) have been recorded in the Patent and Trademark Office.

"(4) Any person, not entitled to file international applications, who has, nevertheless, become the owner of an application filed or registration issued pursuant to section 1(b)(2), or renewed pursuant to section 9(b)(2), other than as a result of a contract between him and the previous applicant or registrant, may file an application for registration of the same mark under section 1(b)(1). If the application under section 1(b)(1) is filed by such person in the Patent and Trademark Office within two years from the said change in ownership and prior to six months after the expiration of the initial term, or of the then running term of renewal, of the international registration on which such application or registration is based, it shall, in respect of those of the goods and/or services which are the same, be treated as if it had been filed on the same date as the date on which the designation of the United States in such corresponding international registration took effect: *Provided,* That such application under section 1(b)(1) conforms to all of the requirements of this Act."

(b) Section 10 of such Act is amended by adding the following subsections:

"(b) Instruments evidencing changes in the name of the applicant or registrant may be recorded in the Patent and Trademark Office, in such form as may be prescribed by the Commissioner, or, in the case of a registration issued on the basis of an application filed under section 1(b)(2), or renewed pursuant to section 9(b)(2), by recording the change in the name of the Owner of the international registration on the basis of which such registration was issued. The recording by the International Bureau of a change in the name of the Owner of an international registration, in which the United States is a designated State, shall, if valid, have the same effect as if it had been entered in the records of the Patent and Trademark Office on the same date as the date of such recording.

"(c) Where at any time, as a result of a final decision in any proceeding under this Act, it is determined that a recording made under this section is void or that such recording was made contrary to the requirements of the Act, the Commissioner shall, upon request of any interested party, cause an appropriate correction to be entered in the records of the Patent and Trademark Office. If such recording was effected on the basis of a recording in respect of an international registration, the Commissioner shall, if appropriate, deny the effect of such international recording and notify the International Bureau accordingly, as prescribed in the Trademark Registration Treaty."

Sec. 9 Section 12(a) of such Act is amended to read as follows:

"Upon the filing of an application for registration, the Commissioner shall refer the application to the examiner in charge of the registration of marks, who shall cause an examination to be made. Unless the application has been previously withdrawn or abandoned, the mark shall be published in the OFFICIAL GAZETTE of the Patent and Trademark Office at such time as the Commissioner shall prescribe, not later than 12 months, counted from the filing date of the application. In the case of an applicant claiming concurrent use, or in the case of an application to be placed in an interference as provided for in section 16 of this Act, the mark may be published subject to the determination of the rights of the parties to such proceedings."

Sec. 10 Section 12(b) of such Act is amended by striking out "6" in two places and inserting, in lieu thereof "3" and by adding at the end thereof:

"Except for the failure of an applicant to comply with the requirements of section 1(c), no mark shall be refused registration for a reason which has not been indicated in a communication given or mailed to the applicant on or prior to 12 months, counted from the filing date: *Provided*, That this limitation shall not apply to any refusal determined by the Trademark Trial and Appeal Board or by a court."

Sec. 11 The second sentence of section 13 of such Act is amended by changing the period at the end of this sentence to a colon and adding a proviso and a new third sentence reading as follows:

"*Provided*, That such time shall in no event be extended to a date which is later than 14 months, counted from the filing date of the application for registration in respect of which the extension of time for filing opposition is requested. An opposition may be filed by a duly authorized attorney of the opposer."

Sec. 12 Section 14 of such Act is amended by inserting, following "person" the words, "or by a duly authorized attorney of any person"; by inserting, following "date" in clause (a), the words "of issue", and by inserting, following "thereunder" , in clause (c), the following words:

"or, in the case of a registration issued on the basis of an application under section 1(b)(2), or renewed pursuant to section 9(b)(2), on the ground that the registrant was not entitled to own international registrations,".

Sec. 13 The first sentence of section 15 of such Act is amended by inserting, following the third occurrence of "date", the words "of issue".

Sec. 14 The first sentence of section 16 of such Act is amended by inserting, following "may" the words, "prior to the publication under section 12(a) of such mark,".

Sec. 15 Section 17 of such Act is amended by inserting, between the first and second sentences thereof:

"Where an interference, opposition to registration or concurrent user proceeding concerns an application for registration under this Act of a mark, the entitlement to registration of which has not been finally determined by the examiner in charge of the registration of marks or, as a result of an appeal from a final refusal of the examiner, by the Trademark Trial and Appeal Board or a court, the Commissioner may, with notice to all parties, defer the commencement of such proceeding until such final determination has been made."

Sec. 16 The first sentence of paragraph (1) of section 21(a) of such Act is amended by inserting, following "affidavit", the words "or declaration"; and by striking out "section 8" and inserting in lieu thereof "section 8. 1(c). or 9(c)".

Sec. 17 Section 22 of such Act is amended by inserting, at the beginning of the sentence, "Issuance of a" and by changing the "R" in "Registration" to "r".

Sec. 18 Section 23 of such Act is amended by inserting, following "commerce" in the second sentence of such section, "or are intended to be used in commerce,"; by striking out in the second sentence of such section "for the year preceding the filing of the application"; by inserting between the second and third sentences of such section: "An application for the registration of a mark shall be treated as an application under this section only if the application or, in the case of an application pursuant to section 1(b)(2), if the international registration or recording of later designation which is the basis for such application, contains an indication to this effect."; and by striking out in its entirety the last sentence of such section.

Sec. 19(a) The second sentence of section 24 of such Act is amended by inserting, preceding "may," the words, "or his duly authorized attorney," and by striking out the word "verified".

(b) The fourth sentence of section 24 of such Act is amended by inserting, following "used", the words, "following the date of expiration of the period referred to in section 1(c)(1),".

Sec. 20 The second sentence of section 30 of such Act is amended to read as follows:

"When the goods and/or services specified in an application fall within a plurality of classes, a fee equalling the sum of the fees for filing an application in each class shall be paid, and the Commissioner may issue a single certificate of registration for such mark."

Sec. 21(a) Subsection (a) of section 31 of such Act is amended by striking out paragraph (3) of such subsection, by appropriately renumbering the remaining paragraphs; and by inserting, following "mark" in newly renumbered clause (6) (old paragraph (7)), "change in the name of the registrant,".

(b) Section 31 of such Act is amended by adding, after subsection 31(c), the following new subsection:

"(d) The fees specified in paragraphs (1) and (2) of subsection (a) shall, in the case of applications pursuant to section 1(b)(2) and renewals pursuant to section 9(b)(2), be deemed to be substituted for, respectively, by the individual State fees and the individual State renewal fees applicable to designations of and renewals concerning the United States pursuant to the Trademark Registration Treaty. The Commissioner shall communicate to the International Bureau the amounts of such individual State fee and individual State renewal fee and such amounts shall be the same, respectively, as the amounts of the fees specified in paragraphs (1) and (2) of subsection (a)."

Sec. 22 Section 32(1) of such Act is amended by adding at the end of such section the following sentence:

"No action under this section may be started by the registrant of a registration issued under this Act until the declaration under section 1(c) in respect of the mark which is the subject of such registration has been filed in the Patent and Trademark Office and accepted by the Commissioner."

Sec. 23(a) Section 33(a) of such Act is amended by inserting following "registration" (second occurrence), the words, "and in respect of which the mark is stated to be in use in commerce in the registration, or in the declaration under section 1(c) which has been filed in the Patent and Trademark Office and accepted by the Commissioner,"

(b) Paragraph (5) of section 33(b) of such Act is amended by inserting, preceding "registration" the words "the date of issue of the".

(c) Section 33 of such Act is amended by adding, after subsection 33(b), a new subsection reading as follows:

"(c) For the purpose of determining priority of rights in any proceeding under this Act, an application for registration of a mark which has not been withdrawn or abandoned or a registration issued on the basis of such application, shall, from and after its filing date,

be accorded the same effect as if the applicant, or the registrant, had commenced use of the mark in commerce on the said filing date, without derogation, however, of any earlier priority based on use of the mark commenced earlier than the said filing date or of any right of priority to which the applicant of registrant may be entitled pursuant to second 44(d) of this Act."

Sec. 24 Section 35 of such Act is amended by adding at the end of such section the following sentence:

"Any remedy under this section shall relate only to the period after the registrant commenced the continuing use of the mark in commerce."

Sec. 25 Section 44(a) of such Act is amended by inserting, preceding the first sentence of such subsection, "(1)" and by adding, at the end thereof, the following new paragraphs:

"(2) The Commissioner shall keep a register of international registrations designating the United States which have been published and notified to the Patent and Trademark Office in conformity with the Trademark Registration Treaty, including renewals thereof and recordings related thereto, and shall be authorized to accord and refuse effects, communicate notifications, make attestations, decide petitions, determine the amounts of and receive payments of fees, and perform all other acts prescribed by the said Treaty, subject to the requirements thereof.

"(3) Where the time limit for a notification to the International Bureau prescribed by the Trademark Registration Treaty is stated in terms of the date of receipt of such notification by the International Bureau, such notification shall be transmitted by Registered Mail no later than 14 days prior to the expiration of the time limit and, except where an agency of the said Bureau, established pursuant to the said Treaty, is operating within the United States, shall be transmitted to that bureau via Air Mail.

"(4) A mark subject of an application under section 1(b)(2) in respect of which no notification of refusal or possible refusal was received by the International Bureau within the time limit fixed in Article 12(2)(a)(i) of the Trademark Registration Treaty shall be automatically entitled to registration under this Act on the same register as the one for which such application was made. Upon request by the applicant of such an application and unless the registration has been previously issued, the Commissioner shall issue the registration to which such applicant is entitled under this paragraph and the date of issue of such registration shall be the date of the OFFICIAL GAZETTE next preceding the date of expiration of the said time limit. Registration of a mark under the provisions of this paragraph shall be without prejudice to the right of any person to petition to cancel such registration under section 14 of this Act for any reason, including one which was referred to in a refusal made pursuant to section 12(b) or in an opposition filed pursuant to section 13, the notification of which was not received by the International Bureau or which was not received by such Bureau within the said time limit. If a registration is issued pursuant to this paragraph in respect of a mark, the registration of which had been opposed in a timely filed opposition, the Commissioner shall notify the opposer in such opposition and shall, upon request of such opposer received within 30 days from the date of such notice, direct the Trademark Trial and Appeal Board to determine and decide the rights of registration as if the opposition to registration had been filed as an application to cancel the said registration on the date of issue of such registration.

"(5) Failure by the applicant of an international application or by the Owner of an international registration to act within prescribed time limits in connection with requirements pertaining to an international application, international registration or later designation designating the United States, or to any recording related thereto, may be excused upon a showing satisfactory to the Commissioner of unavoidable delay, to the extent not precluded by the Trademark Registration Treaty or by this Act."

Sec. 26 Section 44(c) of such Act is amended by striking out the first sentence of such section; and by striking out the heading, preceding the second sentence, "Country of origin defined."

Sec. 27 Section 44(d) of such Act is amended to read as follows:

"An application for registration of a mark under sections 1, 2, 3, 4 or 23 of this Act filed by a person described in paragraph (b) of this section who has previously duly filed an application for registration of the same mark in one of the countries described in paragraph (b), or a regular international application in respect of the same mark designating at least one country other than the United States, shall be accorded the same force and effect as would be accorded to the same application if filed under this Act on the same date on which such application was first filed in such foreign country, or on which such international application was first filed with the International Bureau: *Provided*, That—

(1) The application under this Act is filed within 6 months from the date on which the application was first filed in the foreign country or on which the international application was first filed with the International Bureau;

(2) The rights acquired by third parties before the date of the filing of the first application in the foreign country or of the first international application shall in no way be affected by a registration obtained on an application filed under this subsection (d);

(3) Nothing in this subsection (d) shall entitle the owner of a registration granted under this section to sue for acts committed prior to the date on which such registrant has commenced the continuing use of the mark in commerce.

In like manner and subject to the same conditions and requirements, the right provided in this section may be based upon a subsequent regularly filed foreign application or subsequent regular international application, instead of the first filed foreign application: *Provided*, That any foreign application or international application filed prior to such subsequent application or international application has been withdrawn, abandoned, or otherwise disposed of, without having been laid open to public inspection and without leaving any rights outstanding, and has not served, nor thereafter shall serve, as a basis for claiming a right of priority."

Sec. 28(a) The paragraphs headed "Trademark," "Service Mark," "Certification Mark," "Collective Mark" and "Intent of Act" in section 45 of such Act are amended by inserting, following each occurrence of "used", the words "or intended to be used".

(b) Clause (a) of the paragraph in section 45 of such Act headed "Abandonment of Mark" is amended to read as follows:

"(a) when its use has not commenced and there is no intent to commence use or when its use has been discontinued with intent not to resume. Lack of intent to commence or intent not to resume may be inferred from the circumstances. If use of a mark has been discontinued, its nonuse for two consecutive years shall be prima facie abandonment."

(c) Section 45 of such Act is amended by adding the following paragraphs:

"Filing date. The filing date of an application for registration under section 1(b)(1) shall be the date on which all of the elements prescribed by the Commissioner as minimum elements for according a filing date have been received in the Patent and Trademark Office. The filing date of an application

for registration under section 1(b)(2) shall be the same date as the international registration date of the international registration or, if applicable, the recording date of the later designation, on the basis of which such application is filed."

"*Date of issue. The date of issue of a registration under this Act is the date of the issue of* OFFICIAL GAZETTE of the Patent and Trademark Office in which the notice concerning the issuance of the registration appears."

"*Trademark Registration Treaty.* The term "Trademark Registration Treaty" means the Treaty so entitled, done at Vienna, Austria, on June 12, 1973, including the Regulations under the said Treaty."

"*International application, international registration, request for the recording of later designation, recording of later designation, International Bureau, regular international application, individual State fee, individual State renewal fee.* The terms "international application", "international registration", "request for the recording of later designation", "recording of later designation", "International Bureau", "regular international application", "individual State fee" and "individual State renewal fee" are to be taken in the sense indicated by the Trademark Registration Treaty."

"*Owner, Ownership.* The terms "Owner" and "Ownership" are to be taken in the sense indicated by the Trademark Registration Treaty where they appear in this Act in capitalized form."

"*Owner of a trademark.* The term "owner of a trademark" means a person who is using, or who has an intention to use, a trademark in commerce: *Provided,* That no other person, except a lawful concurrent user, has the right to use, and is using or has previously declared, in an application filed under this Act which has not been withdrawn or abandoned, his intention to use, such mark in commerce either in the identical form thereof or in such near resemblance thereto as to be likely, when applied to the goods of such other person, to cause confusion, or to cause mistake, or to deceive."

Sec. 29(a) This Act shall come into force on the same date as the entry into force of the Trademark Registration Treaty with respect to the United States. It shall apply to applications for registration of marks filed in the Patent and Trademark Office on or after such date, even though entitled to an earlier effective filing date, and to registrations issued on the basis of such applications; to international applications and later designations designating the United States filed with the International Bureau on or after such date, even though entitled to an earlier effective filing date, and to international registrations accorded effects in the United States on the basis of such international applications and later designations; and to proceedings under the Trademark Act of 1946, as amended, commenced on or after such date.

(b) Except as otherwise hereafter provided, applications for registration of marks on file in the Patent and Trademark Office on the date this Act comes into force, registrations issued on the basis of such applications, and proceedings under the Trademark Act of 1946, as amended, which are pending on such date, shall be governed by the provisions of the Trademark Act of 1946, as amended, in effect immediately prior to such date.

(c) Except as otherwise provided hereafter in this section, all registrations under the Trademark Act of 1946, as amended, or under the previous Acts specified in section 46(b) of such Act, existing on the date this Act comes into force shall be governed by the Trademark Act of 1946, as amended, in effect immediately prior to such date.

(d) The provisions of section 9 of the Trademark Act of 1946, as amended, as amended by this Act, shall apply to all registrations under such Act and under the previous Acts specified in section 46(b), whether issued or applied for before, on, or after the date this Act comes into force: *Provided,* that the amendments to such section by this Act shall not apply to the renewal of any registration for any period which started on a date which is earlier than six months after such date.

(e) The amendment by this Act, of the Trademark Act of 1946, as amended, shall not affect any rights or liabilities existing under such Act in effect immediately prior to the date this Act comes into force.

SECTIONAL ANALYSIS

Section 1 of the bill amends section 1 of the Trademark Act of 1946, as amended (hereinafter referred to as Trademark Act)[1] in a number of respects. The preamble makes it clear that the commerce clause as well as the treaty power is invoked to support the amendments. Section 1 of the amended Trademark Act is divided into five subsections, each of which is separately discussed below:

Section 1(a) *Entitlement to registration of a trademark.* Entitlement to registration is changed from present law in one fundamental respect. This is that intention to use, as well as actual use of, a trademark is a valid basis for ownership and registration. The other conditions are essentially the same as under present law.

The applicant must be a "person", as defined in section 45. The definition of "person" has not been changed.

As under the present statute, the applicant must be the "owner" of the trademark sought to be registered. The concept of ownership is modified as necessary to be consistent with the new alternative basis of rights. Also, rather than being part of the verified statement, the definition of "owner of a trademark" is in section 45.

The term "owner" is defined, as under present law, in respect of the absence of a superior right in any other person. What is new is that a claim of ownership is defeated not only by the superior right of a prior *user* of the same of a similar mark but also by the superior right of one who has a prior *intention to use* such a mark. However, the latter right can defeat the claim of ownership *only* it the intention to use has been previously declared in an application filed under the Act which has not been withdrawn or abandoned. Accordingly, while a person acquires (absent a superior right) an ownership right by reason of his intention to use a trademark, the right in that case is inchoate and is accorded no protection under the statute and no priority until it has been fixed in an application filed under the Act in which the intention to use is declared. Thus, filing the application is critical to a claim of ownership by intention to use and except, of course, where the Paris Convention "right of priority" (i.e. section 44(d)) is invoked, the filing date is the earliest date on which such a person can rely in a priority contest. (See Section 23(c)).

Finally, the use or intended use must be in commerce. The definition of "commerce" is not changed. The outside parameters of "intended use in commerce" are left to interpretation just as has been the case with "use in commerce" under the present statute, and the principles that would be applied in such interpretation are essentially the same.

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[1] Public Law 489, 79th Congress, approved July 5, 1946; 60 Stat. 427. Amendments have been effected by the following public laws.

P.L. 710, 81st Cong., 64 [Stat. 459, 8-17-50.
P.L. 593, 82nd Cong., 66 Stat. 792, 7-19-52.
P.L. 609, 85th Cong., 72 Stat. 540, 8-8-58.
P.L. 333, 87th Cong., 75 Stat. 748, 10-3-61.
P.L. 772, 87th Cong., 76 Stat. 769, 10-9-62.
P.L. 89-83, 89th Cong., 79 Stat. 260, 7-24-65.
P.L. 93-596, 93rd Cong., 88 Stat. 1949, 1-2-75.
P.L. 93-600, 93rd Cong., 88 Stat. 1955, 1-2-75.

Section 1(b) *Procedure for applying to register a trademark.* Under the amended Act, there are two basic procedures for securing the registration of a trademark, i.e. by filing an application in the Patent and Trademark Office (section 1(b)(1)) and by designating the United States in an international registration pursuant to the Trademark Registration Treaty[2] (section 1(b)(2)). Except for the place where the application is filed and the fee is paid, the substantive requirements applicable to the alternative procedures are essentially the same.

Section 1(b)(1) *Domestic procedure.* In order to achieve harmonization of domestic and international procedures, the following changes are made in the national application procedures.

1. The application may be signed by a representative, duly appointed by the applicant, as an alternative to signing by the applicant himself. The same benefit is provided to applicants filing under the Trademark Registration Treaty (Article 26).

2. Consistent with the requirements of the Trademark Registration Treaty and modern practice in regard to the filing of statements with federal agencies the verification of ownership requirement has been eliminated.

Of course, the criminal provisions of 18 U.S.C. 1001 would remain applicable to a statement made in a trademark application irrespective of whether such statement is verified.

3. The applicant need not allege use of the mark in his application. The Trademark Registration Treaty prohibits such a requirement (Article 19(3)(a)) for the owners of international registrations; consequently, the same benefit is accorded to persons filing regular national applications. Substituted for this requirement is the declaration of intention to use the mark in commerce, which *is* permitted by the Treaty (Article 19(4)). Consistent with this change, specimens or facsimiles of the mark as actually used need not be submitted with the application.

It should be noted that required allegations and exhibits relating to actual use according to the present statute are retained in section 1(c). It should also be noted here that the applicant *may* file the section 1(c) declaration together with his application (section 1(c)(2)), if the mark is already in use in commerce. In such case, the declaration of intention to use is obviously superfluous and need not be made.

Section 1(b)(2) *International procedure.*

This paragraph states the requirements which must be satisfied in order to secure the effect of a United States application, i.e. the effect required by the Trademark Registration Treaty (Article 11(1)).

The provisions of Article 19(4) of the Treaty, requiring a declaration of intention to use, are also implemented, corresponding to the same requirement in section 1(b)(1)(C) for domestic applicants.

Finally, a special requirement as to entitlement of a foreign applicant to use the Trademark Registration Treaty (Article 4) has been added since the International Bureau will only examine this question formally, leaving it to the designated States to examine it as to substance. Thus, non-entitlement of a foreign applicant to use the Treaty procedure is a ground for refusal (Article 12(1)(ii)) or cancellation (Article 13(1)(ii)) in addition to the grounds applicable under the national law.

The final two sections of section 1(b) implement part of Article 9 of the Treaty whereunder the improper declining of an international application or later designation request by the International Bureau can be rectified by filing a regular domestic application within 2 months from the notice of the declining.

Section 1(c) *Declaration of use.*

Section 1(c) calls for a declaration of use showing that use of the mark commenced on or prior to the date of expiration of three years, counted from the filing date.

Paragraph (1) requires the declaration to contain essentially the same information as that required by present section 1.

Paragraph (2) prescribes a time limit of four years, counted from the filing date, within which the declaration may be filed, and indicates the consequences of failure to file an acceptable declaration.

Paragraph (3) authorizes the Commissioner to require the earlier filing of a declaration when important relative to an issue in any Office proceeding, provided that the three-year period has expired.

Paragraph (4) prevents abuse of the intention to use provisions by a person filing successive applications for the same, or a substantially equivalent, mark by providing that, unless there is a gap of at least two years between the expiration of the nonuse moratorium of the earlier case and the date of filing of the later case, the three-year period in the later case is measured from the filing date of the earlier case. Any subsequent application which is accompanied by a declaration of use is excluded from the special provisions.

Paragraph (5) provides for an extension of the time limits when due to extraordinary circumstances nonuse is excusable. The proviso expressly states, however, that the mere pendency of the application for registration as of the expiration of the three-year period shall not justify an extension, making it clear that Article 19(3)(b) of the Trademark Registration Treaty does not apply in the United States.

Paragraph (6) requires the Commissioner to give notice regarding acceptance or refusal of a declaration.

Section 1(d) *Special requirement for concurrent use applications.*

This provision, unchanged from present law, is placed in a separate subsection because its applicability is limited to applications wherein the section 1(c) declaration of use has been filed.

Section 1(e) *Special requirement for applicants not domiciled in United States.*

This subsection requires all applicants not domiciled in the United States to designate an agent for service on or prior to the institution or defense of a proceeding under this Act. Before a local agent for service has been designated, service may be made upon the Commissioner.

Sections 2 and 3 of the bill amend sections 3 and 4 of the Trademark Act so that service marks and collective and certification marks may be registered based on either use or intention to use.

Section 4 of the bill amends section 5 of the Trademark Act to provide that the intended use by a related company inures to the benefit of the registrant or applicant.

Section 5(a) of the bill amends section 7(a) of the Trademark Act to take into account the fact that registrations issued on the basis of intent applications would not, if the declaration of use has not been filed, contain any data concerning use of the mark. In such cases, the fact that the declaration has not been filed would be indicated in the registration in lieu of the indications as to use. Also, the term "date of the registration" has been deleted, the significant dates under the amended statute being the "filing date" and the "date of issue."

Section 5(b) amends section 7(a) by requiring a notice of registration to be published in the OFFICIAL GAZETTE in support of the definition of "date of issue" in section 45.

Section 5(c) amends section 7(b) of the Trademark Act by deleting the presumption of the registrant's exclusive right to use the registered mark in commerce on the goods specified in the registration. One reason is that this presumption in the present statute is repeated in section 33(a).

The other reason is that this presumption, as it pertains

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[2]Done at Vienna, Austria, June 12, 1973. This is the Treaty which was transmitted by the President to the Senate for advice and consent to ratification on Sept. 3, 1975. *Congressional Record Sept. 3, 1975, S. 15139.*

to infringement actions, must be limited to be consistent with the limitation on the right even to file an infringement action prior to the commencement of use (see Section 23(a)).

Deletion of the "exclusive right to use" presumption from section 7(b) leaves a gap in the statute, however, the bringing of Patent and Trademark Office proceedings, i.e. oppositions and cancellations is not subject to the above mentioned limitation. The exclusive right to use presumption has served in such proceedings as the basis of the ruling that a registrant is entitled to rely solely upon his registration on the principal register as prima facie evidence of his right to exclude any other person from securing a registration under the Act of a confusing mark. Therefore, a presumption as to this right has been added.

Section 5(d) of the bill amends section 7(d) by adding two new paragraphs which provided domestic and international procedures, consistent with present law and with the Treaty, for amending a registration in respect of the specification of goods and/or services.

Section 5(e) of the bill amends section 7 by adding a new subsection, section 7(h), providing for appropriate notification, consistent with Article 20 of the Treaty, with respect to entries concerning registration based on international registrations.

Section 6 of the bill amends section 8(a) of the Trademark Act by changing the term of a registration from 20 to 10 years and the date from which the terms is measured from the registration date to the filing date. These changes correspond the term of domestic registrations to that of registrations secured under the Trademark Registration Treaty. The shorter term also facilitates the clearing from the register of unused marks.

The section is also amended to require that the use declared in the affidavit or declaration set forth in the proviso, i.e. the present section 8 affidavit, be use "in commerce".

Finally, the section is amended to permit, consistent with the requirement in the Treaty (Article 19(3)(d)), that such affidavit or declaration requirements be capable of being fulfilled in the case of an international registration by filing with the International Bureau.

Section 7 of the bill amends section 9 of the Trademark Act to set forth domestic and international procedures for renewal and to provide equivalent treatment, as to substantive requirements, of international and domestic registrants. Thus, as in the case of an application for registration, the renewal application may be signed by a representative, duly appointed by the registrant.

Two changes are made in the statute which conform to the Treaty, as follows:

1. The term of renewal is 10 years rather than 20, consistent with the Treaty (Article 17).
2. The time period, counted from the expiration date of the expiring term, in which a late renewal application can be filed is increased from three months to six months, corresponding to Article 17(3)(a).

Section 9(c) requires a declaration of use which requirement is applicable to all renewed registrations. Other than the three additional months in which to declare use of the mark, the only difference from present law is that the consequence of failure to satisfy the requirement is cancellation of the registration rather than refusal to renew.

Section 8(a) of the bill amends section 10 of the Trademark Act in several minor respects. Except for a technical change, the present provision for recording of assignments (section 10) is not changed.

Three new paragraphs have been added to the assignment section. The first two of these (i.e. 10(a)(2) and 10(a)(3)) implement Article 14 of the Treaty, under which a change in the ownership of an international registration may be recorded, by adding equivalent procedures to the national law. Thus, any applicant or registrant may record the fact that a new person has become the owner of an application filed or registration issued under the Act by complying with certain basic formalities. Paragraph (3) provides that if this step is taken within the period specified in paragraph (1) and it is followed up by the recording of instruments of assignment conforming to the requirements of paragraph (1), the constructive notice effect of recording an assignment in the Office will accrue.

The third additional paragraph (i.e. 10(a)(4)) is a special provision, implementing Article 14(5), for the benefit of one who, although not entitled to file under the Treaty, becomes the owner of an international registration by operation of law (e.g. by inheritance). Such a person may, subject to special requirements, rectify this defect by filing a regular national application.

Section 8(b) of the bill amends section 10 of the Trademark Act by adding two new provisions. The first of these (Section 10(b)) adds a new procedure, consistent with Article 15 of the Treaty, for recording a change in the name of the registrant.

Subsection (c) is added to clarify the procedure where a recording is void. Recordings under subsections (a) and (b) may later be determined to be void or contrary to law in another proceeding (cancellation, infringement action, etc.) under the Act. A specific provision has been added to clarify the fact that the Commissioner has the authority to correct the records and to provide a basis for denial of any international recording which formed the basis of the national entry.

Section 9 of the bill amends section 12(a) of the Trademark Act to provide for a "cut off" in the length of the ex parte examination of twelve months counted from the filing date of the application. Under amended section 12(a) all applications, the examination of which has not been completed, would have to be published for opposition purposes no later than 12 months from the filing date.

The reason for 12 months as the "cut off" is that the time required to effect publiction, to receive oppositions (including delays in processing oppositions received on the last day), and to communicate, in the case of international registrations, all grounds of refusal or possible refusal to the International Bureau, must be taken into account in order to meet the deadlines prescribed by the Treaty (see Article 12).

It should be noted that the exact schedule for publication is left to determination by the Commissioner. There are, at least, two possibilities: (1) publication, promptly after filing, of all applications; and (2) publication (of allowed cases) after completion of the ex parte examination (as at present), or (of all still pending cases) at the expiration of 12 months, whichever event is the earlier to occur.

Section 10 of the bill amends section 12(b) of the Trademark Act by reducing the period of time in which to reply to an Office communication concerning the application from six to three months and by providing a time limitation applicable to notifying the applicant of grounds raised during the ex parte examination. The reduction of response time should make it possible for the Office to complete the ex parte examinaion of most applications within the 12 months period of amended section 12(a).

The cut off is the same as the one in amended section 12(a), i.e. 12 months, counted from the filing date. The examination need not be completed within the 12 months as the Treaty requirement is only that all grounds be communicated within that period. Also, the limitation would not apply to a new ground of refusal based on a decision of the Trademark Trail and Appeal Board or of a court.

Section 11 of the bill amends section 13 of the Trademark Act by providing for a time limit of 14 months for receiving oppositions. The 14 month time limitation ties in with the amendment to section 12(a) of the Act, providing equivalence of treatment of domestic and Treaty applicants. Section 13 is also amended to provide that an

attorney may file an opposition on behalf of the opposer.

Section 12 of the bill amends section 14 of the Trademark Act in two respects, conforming this section to amended section 13, and a minor change in terminology ("date of issue").

Section 13 of the bill amends section 15 of the Trademark Act by a minor change in terminology ("date of issue").

Section 14 of the bill amends section 16 of the Trademark Act by providing specifically that an interference may be declared as to any particular application for registration of a mark only prior to the publication for opposition of that mark. While this is no different than current practice, the change in the statute seemed desirable. Since the declaration of an interference would constitute a ground of possible refusal under the Trademark Registration Treaty, such ground would have to be notified to the International Bureau within the prescribed time limit. By requiring the declaration of the interferences prior to the date of publication, the section is subject to the same time limitation as in amended section 12(a), i.e. 12 months from the filing date.

Section 15 of the bill amends section 17 of the Trademark Act by providing discretionary authority to the Commissioner to defer the commencement of certain inter partes proceedings where the ex parte examination of a concerned application is not complete.

Section 16 of the bill amends section 21 of the Trademark Act by providing for an appeal from a refusal to accept a declaration pursuant to sections 1(c) and 9(c), as is now provided in the case of refusal of a section 8 affidavit.

Section 17 of the bill makes a language change in section 22 of the Trademark Act, consistent with the change from "date of registration" to "date of issue". Thus, constructive notice begins with publications of issuance of the registration (date of issue), no different in substance than under present law.

Section 18 of the bill amends section 23 of the Trademark Act by eliminating the requirements and provisions relating to use in the first and fourth paragraphs. Also, provision is made for treatment of applications as being under this section only where the application or the international registration (or recording of later designation) so indicates. The specific reference implements Article 11(3) which requires this treatment in the case of international registrations.

Section 19(a) of the bill amends section 24 of the Trademark Act by deleting the requirement that a petition to cancel a registration on the Supplemental Register be verified (consistent with amended section 14).

Section 19(b) of the bill amends section 24 of the Trademark Act by limiting the authority to cancel a registration on the Supplemental Register for nonuse, consistent with the use moratorium of the Treaty.

Section 20 of the bill amends section 30 of the Trademark Act in minor respects to remove an incidental reference to use of a mark that is inconsistent with amended section 1.

Section 21(a) of the bill amends section 31 of the Trademark Act by deleting the requirement of a fee for the filing of a section 8 affidavit. Since a section 8 fee cannot be assessed against a registration issued on the basis of an international registration (Article 19(1)), it is deleted in order to provide equivalence between domestic and Treaty applicants as to fees payable to the United States.

Section 21(b) of the bill amends section 31 of the Trademark Act by adding new subsection (d) whereby the filing and renewal fees are deemed to be substituted for by the corresponding fees set forth in the Treaty, where the international procedure is followed. This provision also obligates the Commissioner to fix the Treaty fees at the same amounts as the national fees.

Section 22 of the bill amends section 32(1) of the Trademark Act by providing that no infringement action may be started under the Act until the declaration of use of the mark in commerce has been filed in the Patent and Trademark Office and accepted by the Commissioner. This change implements the last sentence of Article 19(3)(a). Examination of the declaration could be accelerated if the registrant faced an impending infringement situation.

Section 23(a) of the bill amends section 33(a) of the Trademark Act so that the presumption of exclusive right to use the mark would apply as a rule of evidence only as to those goods and/or services in respect of which the mark is stated to be in use in commerce either in the registration itself or in the declaration under section 1(c).

Section 23(b) makes some minor changes in the language of section 33(b).

Section 23(c) amends section 33 of the Trademark Act by adding a new subsection (c) to define priority of rights accorded to applications or registrations based on an intention to use the mark. Under new subsection (c), the priority of an intent applicant or registrant would be *the same as if* he had commenced use of the mark in commerce on the filing date, unless, of course, he had an earlier priority based on use or based on the Paris Convention priority provisions of section 44(d) of the Act.

Section 24 of the bill amends section 35 of the Trademark Act in order to implement the last sentence of Article 19(3)(a) so that the remedies of profits and damages cannot date back prior to the date of commencement of use.

Section 25 of the bill renumbers present section 44(a) of the Trademark Act as section 44(a)(1) and adds to it some special provisions relating to the Trademark Registration Treaty.

Paragraph (2) authorizes the Commissioner to keep a register of international registrations designating the United States.

Paragraph (2) also contains a broad implementing provision, authorizing the Commissioner to take various actions prescribed by the Treaty. While all of the essential Treaty provisions parallel to provisions concerning domestic applications and registrations have been specifically implemented, a large number of Treaty provisions remain which solely concern the international procedures.

Paragraph (3) prescribes a precedure for communicating notifications where the deadline is stated in terms of the date of receipt by the International Bureau, most importantly the notification of refusal or possible refusal under Article 12(2)(a)(i).

Paragraph (4) implements Article 11(2)(i) of the Treaty providing for automatic registration as of the date of expiration of the time limit fixed in Article 12(2)(a)(i) where no notification of refusal or possible refusal has been received by the International Bureau.

Pargraph (5) implements Article 29 of the Treaty whereby certain delays in meeting the time limits fixed in the Treaty must be waived and others may be waived. There are some specific exceptions in the Treaty which is the reason for the last clause in this pargraph.

Section 26 of the bill amends section 44(c) of the Trademark Act by deleting the first sentence of this subsection. Since a person can secure a registration based on an intention to use the mark in commerce, the sentence is inconsistent with the amended Act. However, the sentence is no longer necessary. Under the amended Act all applicants would be required to declare use or an intention to use in commerce, whether or not the mark is also registered in the country of origin.

Section 27 of the bill deletes present subsection 44(d) of the Trademark Act and substitutes therefor a subsection providing that a right of priority may be based on a first international application as well as a first national application. Paragraph (2) of present subsection (d) is not continued. Waiver of use in commerce is no longer nec-

cessary since an application need not allege use under the amended Act. Old pargraph (4) (new paragraph (3)) of the subsection is amended to be consistent with the first sentence of section 44(c).

Section 28(a) of the bill amends the definitions, in section 45 of the Trademark Act, of the terms "trademark," "service mark," "certification mark," "collective mark" and "Intent of Act" by adding the phrase, "or intended to be used" in appropriate places consistent with the new basis for securing registrations.

Section 28(b) of the bill amends the definition, in section 45 of the Trademark Act, of "abandonment" to provide for abandonment of a mark applied for based on an intention to use where no use is commenced and there was never any intention to commence use. The two year prima facie abanodnment provision is amended to make it clear that it applies only where use of a mark is discontinued.

Section 28(c) of the bill amends section 45 of the Trademark Act by adding the following new definitions:

(1) "Filing date" is defined because of its significance in respect of priority of rights in the case of an application or registration based on the intention to use;
(2) "Date of issue" is defined;
(3) "Trademark Registration Treaty" is defined;
(4) Various terms used in respect of the Trademark Registration Treaty are referenced to the Trademark Registration Treaty definitions;
(5) The terms "Owner" and "Ownership," used in capitalized form are referenced to the Trademark Registration Treaty.

This was done in order to distinguish these references from other references in the statute to "owner" or "ownership" which refer to the owner, or ownership, of a mark.

Finally, the term "owner of a trademark" is defined. The reason for this definition is discussed under Section 1, infra.

Section 29 of the bill prescribes the implementation of the various changes effected by the bill. The effective date of the Act coincides with the entry into force of the Treaty with respect to the United States. Appropriate provisions specify the controlling law which is applicable before, or on or after, the effective date.

TRADEMARK RULES, PROPOSALS AND COMMENTS

(139)

Department of Commerce
Patent and Trademark Office
37 CFR Part 2

[Docket No. 2816-134]

Trademark Applications, Filing Dates

Agency: Patent and Trademark Office, Commerce.

Action: Final rule.

Summary: This document amends the rules of practice in trademark cases. The amendments are needed to reduce both the special handling required to process and control applications not entitled to a filing date and the delays such handling imposes on other applications. The amendments clarify the requirements for an application and allow the Office to return applications that fail to meet these requirements. The amendments also define with greater specificity the nature of the drawing and specimens which must accompany an application in order for it to be entitled to a filing date.

Effective Date: Oct. 4, 1982.

For Further Information Contact: Alan B. Davidson by telephone at (703) 557-3916, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: A notice of proposed rulemaking concerning the amendment of 37 CFR 2.21, 2.52, 2.54, and 2.57 and the deletion of §2.55 was published in the Federal Register on Oct. 7, 1981 (46 FR 49602). Interested parties were requested to submit written ten comments on or before Jan. 5, 1982. Comments were received from thirteen individuals and organizations and were given careful consideration.

One commenter suggested that the final sentence of §2.54, providing for correction of drawings by the Office, should not be deleted. The individual reasoned that minor alterations are more expeditiously handled by sending the drawing to the Office draftsman rather than returning it to the applicant. The administrative overhead of such a procedure was thought to be more costly than the correction process. This suggestion has not been adopted. Under the existing practice, simple deletions from drawings are made by Examiners and clerical personnel using gummed labels and opaque correction fluid. Due to the lack of facilities, drawings have not been sent to the Drafting Branch for correction for two years.

One commenter questioned whether the proposed revision of paragraph (d) of §2.52 required a date of first use for applications filed under the provisions of Section 44 of the Lanham Act. The revision was not intended to extend the use date requirement to such applications. Paragraph (d) has been reworded to eliminate any possible confusion.

Three commenters expressed unequivocal support for the proposed amendments. While two other commenters found them to be beneficial both to the Office and to applicants, they expressed some concern as to how the new practice will be implemented. One asked about the availability of proof of the initial date of filing should the papers be improperly returned by the Office. The other directed attention to the possibility that a self-addressed postcard, often submitted by an applicant, would be sent back bearing a mail date stamp and a serial number, and the application papers would be returned subsequently as incomplete.

The procedures that have been developed to implement the proposed changes should eliminate both of these concerns. All papers which constitute an application will be date stamped in the Mail Room prior to a review of their completeness. If an application fails to meet the requirements for receiving a filing date, a second stamp will be added to indicate that the papers are informal. A notation will also be placed on the application to indicate the nature of the omission that resulted in denying a filing date. Should the initial determination prove to be erroneous, reinstating the filing date should be a simple matter. Only applications deemed to be sufficient to receive a filing date will reach the processing stage at which a serial number is assigned and the postcard returned. Hence, there should be no instances in which the papers are returned but the self-addressed postcard indicates they are accepted.

One commenter recommended further revisions to §§2.21(a)(6) and 2.52(d). The individual thought an application based on Sections 44(d) or 44(e) of the Lanham Act should be required to include complete information on the foreign application or registration claimed. In addition, the country of origin, the application or registration number, and relevant dates were suggested as required components of the heading of the drawing. These recommendations have not been adopted. Such information, while helpful, is not essential to the initial examination of an application. Much of the information is available from the certification or certified copy of the foreign registration that must accompany the application papers. While placing Section 44 information on the drawing may be of some convenience, it is not needed in order to perform a normal search. The principal area of concern to commenters involved the revisions of §§ 2.52(d) and 2.21(a)(6) which make the heading on the drawing a requirement for receiving a filing date. The six commenters who addressed themselves to this issue believed the changes placed form over substance and imposed a penalty too severe for a strictly administrative problem. They believed that the potential impact of the new procedure on applicants' substantive rights far

outweighed the current inconvenience to the Office. Alternative proposals were advanced for eliminating the problem of clerks interrupting classification work to add or complete headings on drawings. One called for imposing a penalty fee for applications with incomplete drawings. Another would require the Office to hold such applications for a reasonable time while the applicant corrected the deficiency. The original filing date would be awarded once compliance was achieved. One suggestion would allow an application to receive a filing date upon substantial compliance with the drawing requirements.

A survey conducted by the Patent and Trademark Office recently showed additional processing was required to add or complete the headings on the drawings in 14% of all applications. This means remedial action is necessary for approximately 8500 applications annually. Each time an application clerk is required to add or complete the heading on a drawing, processing of other applications is slowed. As a result, the mailing of filing receipts and the filing of copies of the application drawings in the Trademark Search Library cannot be accomplished in the most timely manner.

Inadequate preparation of drawings affects the public as well as the Office. Users of the Trademark Search Room need certain basic information about each new mark in order to identify marks likely to cause confusion with other pending and registered marks. Unless this information is displayed on the drawings, the searcher must attempt to locate the application files, the only alternative source of the information.

The imposition of penalty fees or the establishment of a grace period for correcting deficiencies would not eliminate the potential difficulties for Search Library users. If drawings without complete headings were held pending correction, the search copies of all application drawings received by the Office on a given day would not be filed at the same time in the Search Library. The potential impact on a party making a search could be severe should a conflicting mark bearing a filing date a month or more old appear after a search that should have revealed it has been conducted. For these reasons, the suggestions were not adopted.

One commenter explicitly stated, and others implied, a fear of overzealous enforcement of the amended rules. The Office will make every effort to interpret the rules sensibly. The Office will make every effort to interpret the rules sensibly. For instance, an application will not be denied a filing date because of the absence of a zip code or other non-critical part of an address. No letter-by-letter comparison of an applicant's name appearing on the drawing and in the application will be made. Detailed procedures and guidelines for the Office's clerical personnel should ensure a reasonable and evenhanded approach. The implementation of the rules will be monitored carefully for the first several months.

Environmental and Other Considerations

This rule changes will not have any significant impact on the quality of the human environment or the conservation of energy resources.

These rule changes will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*) The rule changes will clarify application requirements, simplify existing procedures, and expedite procedings before the Patent and Trademark Office.

The Patent and Trademark Office has determined that these rule changes do not constitute major rules as defined in Section 1(b) of Executive Order 12291 (45 FR 13193), since they would benefit trademark applicants and reduce the burdens on the Office.

These rule changes will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no significant additional record keeping or reporting requirements are placed on the public.

List of Subjects in 37 CFR Part 2

Administrative practice and procedure, Trademarks.

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Amendment to Regulations

In consideration of the comments received and pursuant to the authority of the Commissioner of Patents and Trademarks under 15 U.S.C. 1123, Part 2 of Title 37, Code of Federal Regulations is amended as set forth below.

1. Section 2.21 is revised to read as follows:

§2.21 Requirements for receiving a filing date.

(a) Materials submitted as an application for registration of a mark will not be accorded a filing date as an application until all of the following elements are received:

(1) Name of the applicant;

(2) A name and address to which communications can be directed;

(3) A drawing of the mark sought to be registered containing the information required by paragraph (d) of §2.52;

(4) An identification of goods or services;

(5) At least one specimen or facsimile of the mark as actually used;

(6) A date of first use of the mark in commerce, or a certification or certified copy of a foreign registration if the application is based on such foreign registration pursuant to section 44(e) of the Trademark Act, or a claim of the benefit of a prior foreign application in accordance with section 44(d) of the Act;

(7) The required filing fee for at least one class of goods or services. Compliance with one or more of the rules relating to the elements specified above may be required before the application is further processed.

(b) The filing date of the application is the date on which all of the elements set forth in paragraph (a) of this section are received in the Patent and Trademark Office.

(c) If the papers and fee submitted as an application do not satisfy all of the requirements specified in paragraph (a) of this section, the papers will not be considered to constitute an application and will not be given a filing date. The Patent and Trademark Office will return the papers and any fee submitted therewith to the person who submitted the papers. The Office will notify the person to whom the papers are returned of the defect or defects which prevented their being considered to be an application.

2. Section 2.52 is amended by revising paragraph (d) to read as follows:

§2.52 Requirement for drawings.

* * * * *

(d) *Heading.* Across the top of the drawing, beginning one inch (2.5 cm.) from the top edge and not exceeding one fourth of the sheet, there must be placed a heading, listing in separate lines, applicant's complete name, applicant's post office address, the dates of first use of the mark and first use of the mark in commerce (except for an application filed under section 44 of the Trademark Act), and the goods or services recited in the application or a typical item of the goods or services if a number of items are recited in the application. This heading should be typewritten.

* * * * *

3. Section 2.54 is revised to read as follows:

§2.54 Informal drawings.

A drawing not in conformity with §2.51 or paragraphs (a), (b), (c), or (e) of §2.52 or §2.53 may be accepted for purpose of examination, but the drawing must be corrected or a new one furnished, as required, before that mark can be published or the application allowed.

§2.55 [Removed]

4. Section 2.55 is removed.

5. Section 2.57 is revised to read as follows:

§2.57 Facsimiles.

(a) When, due to the mode of applying or affixing the trademark to the goods, or to the manner of using the mark on the goods, or to the nature of the mark, specimens as above stated cannot be furnished, five copies of a suitable photograph or other acceptable reproduction, not to exceed 8-1/2 inches (21.6 cm.) wide and 13 inches (33.0 cm.) long, and clearly and legibly showing the mark and all matter used in connection therewith, shall be furnished.

(b) A purported facsimile which is merely a reproduction of the drawing submitted to comply with §2.51 will not be considered to be a facsimile depicting the mark as actually used on or in connection with the goods or in connection with the services.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Aug. 13, 1982.

[FR Doc. 82-24158 Filed 9-1-82; 8:45 am]
BILLING CODE 3510-16-M

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(140)

Department of Commerce
Patent and Trademark Office
37 CFR Part 2
[Docket No. 30120-11]

Trademark Oppositions; Petitions To Cancel and Affidavits or Declarations Under Section 8 of the Trademark Act

Agency: Patent and Trademark Office, Commerce.

Action: Final rule.

Summary: The Patent and Trademark Office is amending the rules of practice in trademark cases to eliminate the requirement for verification of oppositions and petitions to cancel; to require that additional requests for extension of time to oppose be filed prior to the expiration of an extension; to require that affidavits or declarations filed under Section 8 of the Trademark Act show use of the mark in commerce; and to clarify and revise certain other procedures for oppositions and petitions to cancel. The amendments are necessary to implement certain trademark provisions of Pub. L. 97-247, enacted Aug. 27, 1982, which provisions are effective six months after the date of enactment, and to revise and codify existing practices so as to assist the orderly and prompt resolution of the issues.

Effective Date: Feb. 27, 1983.

For Further Information Contact: As to the rules relating to oppositions and petitions to cancel, Ms. Janet Rice by telephone at (703) 557-3551 or by mail addressed to the Commissioner of Patents and Trademarks. Attention: Ms. Janet Rice, Crystal Sq. 5, Suite 1008, Washington, D.C. 20231. As to the rules relating to affidavits or declarations under Section 8, contact Ms. Paula Hairston by telephone at (703) 557-3882 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Ms. Paula Hairston, Room CP2-3C-06, Washington, D.C. 20231.

Supplementary Information: Amendments to rules 2.101, 2.102, 1.103, 2.111, and 2.112, among others, were proposed in a rulemaking notice published in the Federal Register on June 29, 1982, at 47 FR 28324, the Patent and Trademark Office Official Gazette of July 27, 1982, at 1020 O.G. 25, and Vol. 24 of BNA's Patent, Trademark & Copyright Journal (July 1, 1982) at p. 236. The purpose of these proposed amendments was to revise and codify existing practices. One of the proposed amendments (not adopted herein) was to interchange rules 2.101 and 2.102. Interested parties were requested to submit written comments on or before Oct. 4, 1982. An oral hearing was held on the same date. Written comments relating to proposed rules 2.101, 2.102, 2.103, 2.111, and 2.112 were submitted by four organizations and one individual. Three persons testified at the oral hearing.

Two of the individuals testified in behalf of organizations which also submitted written comments. Each of the two testified that the organization which he represented approved of the proposed amendments except as indicated in the organization's written comments. The third individual testified concerning the history and purpose of the proposed amendments and expressed his approval of them.

However, further changes to several of these proposed rules, as well as amendments to other trademark rules, were required in order to implement certain trademark provisions of intervening Pub. L. 97-247 enacted Aug. 27, 1982. The text of the law is published in the Patent and Trademark Office Official Gazette of Oct. 26, 1982, at 1023 O.G. 31.

Provisions of Pub. L. 97-247 relating to trademark fees were implemented by trademark fee rule changes which were published in the Federal Register on July 30, 1982 at 47 FR 33086 and which took effect on Oct. 1, 1982. That final rule document was based on the public law in effect at that time, Pub. L. 96-517, and on H.R. 6260, which was then pending but is now Pub. L. 97-247. As a result of the fee rule changes, which were subsequently confirmed in a document published in the Federal Register on Sept. 17, 1982 at 47 FR 41272, further changes to rule 2.101 (identified in the June 29, 1982 notice as 2.102) were required.

Additional changes to rules 2.101 (identified in the June 29, 1982 notice as 2.102), 2.103 and 2.111, as well as changes to rules 2.161 and 2.162, were required in order to implement the provisions of Sections 8 and 9 of Public Law 97-247. Section 8 of the new law amends Section 8 of the Trademark Act of 1946 (15 U.S.C. 1058) to require that an affidavit or declaration filed under Section 8 show use of the mark in commerce. Section 9(a) amends Section 13 of the Trademark Act (15 U.S.C. 1063) to eliminate the requirement for verification of oppositions (thus permitting a party's attorney to sign an opposition before the Trademark Trial and Appeal Board), and to require that additional requests for extension of time to oppose be filed prior to the expiration of the extension. Section 9(b) amends Section 14 of the Trademark Act (15 U.S.C. 1064) to eliminate the requirement for verification of petitions to cancel (thus permitting a party's attorney to sign petitions to cancel before the Trademark Trial and Appeal Board). The provisions of Sections 8 and 9 of the new law which are implemented by the rules amended in the present notice are effective Feb. 27, 1983.

The proposed changes to rules 2.101 (identified in the June 29, 1982 notice as 2.102), 2.103, 2.111, 2.161, and 2.162 required as a result of the enactment of Pub. L. 97-247 were published in the Federal Register on Nov. 24, 1982 at 47 FR 53054. In that notice, as in the June 29, 1982; notice, rules 2.101 and 2.102 were interchanged, and it was indicated in the notice that although rules 2.102 (identified in the notice as 2.101) and 2.112, as proposed in the June 29, 1982, notice, already included the necessary changes called for by Pub. L. 97-247 and thus were not being republished, further comments on the two proposed rules would be entertained. Interested parties were requested to submit written comments on or before Jan. 7, 1983. Comments were received from one organization.

Other provisions of Pub. L. 97-247 relevant to trademark cases either require no changes in Part 2 of Title 37 CFR or require changes in Part 1 which were proposed in a separate notice.

Sections 10, 11, and 14(c) of the new law amend the Trademark Act but require no changes in the trademark rules of practice. Section 10 amends Section 15 of the Trademark Act (15 U.S.C. 1065) relating to incontestability of registered marks. Under the amended section, a registered mark does not acquire incontestability if its use infringes a valid right acquired under the law of any state or territory by use of a mark or trade name continuing from a date prior to the date of registration. Before the section was amended, the date was the date of publication. Section 11 amends Section 16 of the Act (15 U.S.C. 1066) to correspond to the current practice relat-

ing to interferences. The amended section states that an interference will be declared only upon petition to the Commissioner showing extraordinary circumstances. Section 14(c) amends Section 11 of the Act (15 U.S.C. 1061) relating to acknowledgements and verifications. An official authorized to administer oaths in a foreign country may prove such authority by apostille if the foreign country accords like effect to apostilles of designated officials in the United States.

Section 12 of the new law affects practice in both patent and trademark cases. Amendments to the rules in Part 1 which apply to both patent and trademark cases were proposed in a separate notice published in the Federal Register on Oct. 27, 1982 at 47 FR 47744.

In summary, this notice of final rulemaking is based upon the notices of proposed rulemaking published in the Federal Register on June 29, 1982, at 47 FR 28324 and on Nov. 24, 1982 at 47 FR 53054.

Discussion of Specific Sections Changed

The rules which are being amended are discussed below. (The designation § is used in The Code of Federal Regulations to denominate a rule; lettered subdivisions ("(a)", "(b)", etc.) are subsections of rules; numbered subdivisions ("(1)", "(2)", etc.) are paragraphs within sections or subsections.)

It was proposed in the notice of June 29, 1982, that former §§2.101 and 2.102 be interchanged. That proposal has not been adopted in the amended rules. Further §2.101, as amended, eliminates the requirement for verification of oppositions.

Section 2.101(a), as amended, states when an opposition proceeding is commenced, which is important for the application of §2.135.

Section 2.101(b), as amended, indicates that an opposition should be addressed to the Trademark Trial and Appeal Board, which helps to route mail within the PTO.

Section 2.101(c), as amended, requires that an opposition be filed within thirty days after publication of the application or prior to the expiration of a granted extension of time for filing an opposition.

Section 2.101(d)(1) requires the payment of the statutory fee for an opposition, and provides for the late payment of opposition fee or fees, when a notice of opposition is not accompanied by at least one full fee to oppose one class by one person, if the required fee(s) is submitted to the Patent and Trademark Office within the time limit set in the notification of the defect by the Office. This section incorporates the substance of, and replaces, §2.101(c) which was adopted effective Oct. 1, 1982, 47 FR 33086 at 33111.

Section 2.101(d) (2) and (3) provide, where the fees that are submitted are insufficient for the number of classes being opposed and/or for the number of persons joined as party opposer, an opportunity for submission of the required fees or specification of the class or classes opposed and/or of the party opposers, and provides for the allocation of the insufficient fees if no such specification is made.

Sections 2.102(a) and (b), as amended, repeat, with revisions to clarify the provisions, former §2.102(a).

Section 2.102(c) requires that a notice of opposition be filed within thirty days after publication of the application or prior to expiration of a granted extension of time for filing a notice opposition, and provides that extensions of time to file an opposition aggregating more than 120 days will not be granted except upon (1) the written consent of applicant, or (2) a written request by the potential opposer which states that applicant has consented to the request and which includes proof of service upon applicant, or (3) a showing of extraordinary circumstances.

Section 2.102(d) provides that a request to extend the time for filing a notice of opposition should be submitted in triplicate. This section codifies an existing practice which expedites notification of the Board's action on a request for an extension of time.

Section 2.103 is removed. Since §2.101, as amended, eliminates the requirement for verification of an opposition and allows the attorney to sign an opposition without need for subsequent confirmation, §2.103 is unnecessary.

Sections 2.111 and 2.112, as amended, eliminate the requirement for verification of petitions for cancellation. It was proposed in the notice of June 29, 1982 that the requirement for verification of a petition for cancellation be deleted from §2.112 and be placed in §2.111. The requirement is not included in either section, as amended.

Section 2.111(a) states when a cancellation proceeding is commenced, which is important for the application of §2.134.

Section 2.111(b) incorporates most of the provisions of former §2.111 and also indicates that a petition for cancellation should be addressed to the TTAB, which helps to route mail within the PTO.

Section 2.111(c) states the requirement for the payment of the fee(s) due upon filing a petition for cancellation; provides, where the fees that are submitted are insufficient for the number of classes sought to be cancelled and/or for the number of persons joined as party petitioners, an opportunity for submission of the required fees (provided that the five-year period, if applicable, has not expired) or specification of the class or classes sought to be cancelled and/or of the party petitioners; provides for the allocation of the insufficient fees if no such specification is made; and states that the filing date of a petition for cancellation is the date of receipt in the Patent and Trademark Office of the petition with the required fee, and that if the amount of the fee filed with the petition is sufficient for at least one named party petitioner and one class of goods or services but is less than the required amount because multiple party petitioners and/or multiple classes in the registration for which cancellation is sought are involved, and the required additional amount of the fee is filed within the time limit set in the notification of the defect by the Office, the filing date of the petition with respect to the additional party petitioners and/or classes is the date of receipt in the Patent and Trademark Office of the additional fees.

Section 2.112(a) incorporates that part of former §2.112 which described the contents of a petition for cancellation, except that the requirement for verification has been removed.

Section 2.112(b) states the conditions for filing a consolidated petition for cancellation of different registrations owned by the same party.

Section 2.161, as amended, requires that an affidavit or declaration filed under Section 8 of the Trademark Act of 1946 show that the mark is in use in commerce.

Sections 2.162(e), (f) and (g), as amended, require that the affidavit or declaration filed under Section 8 of the Trademark Act of 1946 state that the mark is in use in commerce, and specify the nature of such commerce. The latter requirement is consistent with §2.33(viii) of the trademark rule which requires that the application for trademark registration specify the nature of the commerce in which the mark is used.

Response to Comments on the Rules

All of the comments received in response to the notices of proposed rulemaking published in the Federal Register on June 29, 1982, and Nov. 24, 1982, have been given careful consideration, and a number of the suggested modifications have been adopted. The comments and responses appear below.

Comment: One organization opposed the proposal to reverse the order of §§2.101 and 2.102, asserting that a change in the location of §2.101 would be likely to cause confusion, and that the more logical order is to first explain the substance of filing an opposition and then explain how to obtain an extension of time in which to act.

Response: To minimize confusion in view of the numerous recent rule changes and proposed rule changes, the proposal to reverse the order of §§2.101 and 2.102 has been withdrawn.

Comment: One organization noted that in §§2.101 and

2.102, as proposed, the term "opposition", when used to refer to the complaint in an opposition proceeding, has been changed to "notice of opposition". The organization expressed its belief that there is no reason for reverting to the phrase "notice of opposition" except tradition, and that that phrase is confusingly similar to the phrase "notification of opposition".

Response: The proposal to change "opposition" to "notice of opposition" in certain instances has not been adopted.

Comment: Two organizations suggested that §2.101(d) (identified as §2.102(e) and as 2.102(d) in the notices of proposed rulemaking of June 29, 1982, and Nov. 24, 1982, respectively), which deals with insufficient opposition fees and provides for the allocation of the fees submitted, be revised to give opposer(s) an opportunity to select the opposer(s) and/or classes to which the submitted fees apply. One of these organizations suggested that the opposer also be given an opportunity to submit the proper fee(s). Similar comments were made with respect to §2.111(c) (identified in the June 29, 1982 notice as §2.111(d)), which deals with insufficient cancellation fees.

Response: Where the fees submitted are insufficient for each named party opposer or petitioner for each class sought to be opposed or cancelled, it is in fact the practice of the Board to give the opposer(s) or petitioner(s) an opportunity to either submit the proper fees or to select the opposer(s) or petitioner(s) and/or classes to which the submitted fees apply. Accordingly, the sections have been changed to reflect this practice. See also, with respect to insufficient cancellation fees, §2.85(e).

Comment: One member of one of the organizations suggested that the subsections identified as §2.102 (e) and (f) in the notice of proposed rulemaking of June 29, 1982, and as §2.102 (d) and (e) in the notice of proposed rulemaking of Nov. 24, 1982, be consolidated into a single subsection so that all of the provisions concerning insufficient opposition fees will appear in the same subsection. Another organization suggested that these and certain other portions of the rules dealing with fees be moved to §2.6 or a new §2.7.

Response: The suggestion concerning consolidation has been adopted, and the two subsections in question have been consolidated into the single subsection now identified as §2.101(d). Inasmuch as it is believed that the most logical and effective location for these provisions is §2.101, the suggestion that they be moved to §2.6 or a new §2.7 has not been adopted.

Comment: One individual suggested that §2.101(a) (identified as §2.102(a) in the notices of proposed rulemaking) and §2.111(a) be modified by inserting the word "properly" before the word "executed" in order to make it clear that an opposition or cancellation proceeding is not commenced until a properly verified complaint has been filed.

Response: In view of the elimination of the requirement for verification of oppositions and petitions for cancellation, this suggestion is moot.

Comment: One organization suggested, with respect to the phrase "or other person authorized to represent the potential opposer" which appears in §2.102(a) (identified as §2.101(a) in the June 29, 1982 notice of proposed rulemaking), that the type of authorization intended here be explained by inserting a cross reference to §2.12 (b) and (c) and §2.17(b), the sections entitled "Persons who may practice before the Patent and Trademark Office in trademark cases" and "Recognition for representation", respectively.

Response: The subsection has been modified as suggested.

Comment: One organization stated, with respect to §2.102(b) (identified in the June 29, 1982 notice of proposed rulemaking as §2.101(b)), that it agreed with "the PTO's proposed amendment in paragraph (b) regarding 'privity'," but believed that "the intent should be mentioned in the legislative history of the rules."

Response: The substance of §2.102(b), as amended, is identical to the latter portion of former §2.102(a). That is, the amendment is not substantive in nature but rather involves a slight improvement in the wording of the subsection. The provision concerning privity was added by an earlier amendment effective Feb. 1, 1976. The legislative history of that rule change may be found in the notice of proposed rulemaking published in the **Federal Register** on Feb. 11, 1975 at 40 FR 6363 and in the notice of final rulemaking published in the **Federal Register** at 41 FR 756.

Comment: One organization suggested that the phrase "under this section" be deleted from the subsection identified as §2.101(c) in the June 29, 1982 notice of proposed rulemaking (§2.102(c), as amended) so that extensions can be granted without requiring a showing of good cause following an extension which is not made under this section, as, for example, after a blanket extension published in the Official Gazette.

Response: The suggestion has been adopted.

Comment: Two organizations and some of the members of the "cognizant committee" of a third organization commented, with respect to the subsection identified in the June 29, 1982 notice as §2.101(c) (§2.102(c), as amended), that the requirement that a potential opposer seeking an extension of time beyond 120 days based upon the consent of applicant must furnish applicant's consent in writing is unduly harsh and that the potential opposer should be permitted to rely upon applicant's oral consent.

Response: Rule 2.102(c), as amended, permits the potential opposer to rely upon applicant's oral consent provided that the request to extend is accompanied by proof of service upon applicant or its authorized representative. Although proof of service of papers filed in connection with an inter partes proceeding before the Board upon the other parties to the proceeding is required after the proceeding commences, it is not normally required prior to that time. However, where a request for extension of time to oppose beyond 120 days is based upon potential opposer's assertion that applicant has given its oral consent thereto, the requirement for proof of service is necessary in order to provide applicant written confirmation of its oral consent.

Comment: Another portion of the "cognizant committee" of the organization referred to in the comment above suggested, with respect to the same subsection, that either the language regarding written stipulation be deleted or that the word "or" before the phrase "upon a showing of extraordinary circumstances" be changed to "and", thereby making a showing of extraordinary circumstances an essential requirement for any extension of time to oppose beyond 120 days.

Response: It is advantageous both to the Office and to the parties to a potential opposition if the conflict between the parties can be settled without resort to an opposition proceeding. It is believed that the changes suggested by this portion of the committee are unduly restrictive and would cause oppositions to be filed in cases where they might otherwise be avoided. Accordingly, the proposed changes have not been made. It should be noted in this regard that even when a request for extension of time beyond 120 days is based upon the written or oral consent of the applicant, good cause must still be shown for the requested extension. Thus the potential for abuse of the extension of time process which would exist if there were no requirement for a showing of good cause is avoided in §2.102(c) as amended.

Comment: One organization questioned the provisions in §2.111 for the payment of late fees in connection with a petition for cancellation as being possibly inconsistent with §14 of the Trademark Act of 1946, which states that the "petition * * * may, upon payment of the prescribed fee, be filed * * *"; noted that there is the possibility that the five-year period of §14 would pass between the filing of the petition and the payment of the fee as to one or more classes; and suggested that a petition to cancel should not be effective as to any class or

person until the fee for that class is paid and the filing is complete.

Response: While it has been held, because of the power granted to the Commissioner by §13 of the Trademark Act of 1946 to extend the time for filing a notice of opposition and to fix a time within which an unverified opposition may be verified, that the payment of the required fee is not jurisdictional in the case of an opposition (See: Marzall v. Libby, McNeill & Libby, 89 USPQ 10 (D.C. Cir. 1951), and Colgate-Palmolive Co. v. Brenner, 148 USPQ 535 (S.D.N.Y. 1965)), the Court of Customs and Patent Appeals has held, in The Williamson-Dickie Manufacturing Co. v. Mann Overall Co., Inc., 149 USPQ 518 (CCPA 1966), that the payment of the required fee for a petition for cancellation is a juriadictional requirement without which a petition has not been filed in compliance with §14 of the statute. Cf. §9 of the Trademark Act of 1946 (which, like §14, contains no provision granting the Commissioner the power to extend the time for filing), §2.183(b) of the Trademark Rules of Practice, and In re Michaels Stern & Co., Inc., 199 USPQ 382 (Comr. 1978). Further, when multiple classes are combined in a single application or registration, the combined application or registration is regarded as though it were a group of individual applications which have been physically assembled within a single file wrapper bearing a single serial or registration number, and each of these individual applications or registrations must stand or fall on its own merits in pre-registration and post-registration ex parte and inter partes proceedings, so that if an opposition or petition for cancellation is filed with respect to more than one of the classes in the combined application or registration, there are effectively multiple separate proceedings, each of which must be determined on its own facts and merits. See, for example: Federated Foods, Inc. v. Fort Howard Paper Co., 192 USPQ 24 (CCPA 1974), and In re Bombardier Limited, 204 USPQ 943 (Comr. 1979). Similarly, when multiple persons are named in a complaint as party opposers or petitioners, each must show that it would be damaged by the issuance or continued existence of the registration in question, so that if two different persons, for example, are joined as party petitioners, there are effectively two different cancellation proceedings, each of which must be determined on its own merits. It follows from the foregoing that when a petition for cancellation involves multiple classes and/or party petitioners, the required fee is jurisdictional with respect to each class and/or party petitioner, that is, that the petition for cancellation is not effective as to any class or person until the fee for that class or person has been received by the Office; and that if the five-year period of §14 of the Trademark Act of 1946 expires between the filing of the petition and the payment of the fee as to one or more classes or party petitioners, the petition as those classes or party petitioners can be entertained by the Trademark Trial and Appeal Board only to the extent that the petition is based upon the provisions of §14 (c), (d) or (e) or §24 of the statute or seeks cancellation of a registration issued under the Act of 1920. Accordingly, §2.111(a) has been revised to state that a cancellation proceeding is commenced by the timely filing of a petition for cancellation, together with the required fee, in the Patent and Trademark Office; the last sentence of subsection (b) has been revised to indicate that in those cases where the five-year limitation is applicable, both the petition and the required fee must be filed within the five-year period; in subdivisions (1) and (2) of subsection (c) (identified in the notice of proposed rulemaking of June 29, 1982, as subsection (d)), the provision of an opportunity to submit additional fees is limited, if the five-year period is applicable, to those cases in which the period has not expired; and a new subdivision (3) has been added to subsection (c) stating that the filing date of a petition for cancellation is the date of receipt in the Patent and Trademark Office of the petition together with the required fee, and that if the amount of the fee filed with the petition is sufficient for at least one named party petitioner and one class of goods or services but is less than the required amount because multiple party petitioners and/or multiple classes in the registration for which cancellation is sought are involved, and the required additional amount of the fee is filed within the time limit set in the notification of the defect by the Office, the filing date of the petition with respect to the additional party petitioners and/or classes is the date of receipt in the Patent and Trademark Office of the additional fees.

Comment: One organization suggested that a cross reference to §2.6 be added to §2.111(c)(1) (identified in the June 29, 1982, notice of proposed rulemaking as §2.111(d)(1)) along with the reference to §2.85(e).

Response: A cross reference to §2.6 has been added to §2.111(c)(1), along with the reference to §2.85(e).

Comment: One organization objected to §2.162(e) to the extent that it requires that a statement of use in commerce "must be supported by evidence which shows that the mark is in use in commerce * * *," and recommended that the words "in commerce" be deleted from the quoted phrase. The organization indicated that while it did not object to the requirement of use in commerce, nor to the requirement of a showing that the mark is in use, it did object to a requirement of a showing that the mark is in use in commerce since such a showing could not be accomplished by a mere specimen but would also require invoices or the like.

Response: The subsection has been modified as suggested.

Environmental, Energy, and Other Considerations

The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354). The rule change includes no additional or increased fees. Substantive rights to use valuable trademarks are not adversely affected. The rule change serves to implement the required trademark provisions of Pub. L. 97-247.

The rule change does not impose a record keeping or reporting burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. No additional information is required from the public. No additional records are required to be maintained by the Patent and Trademark Office because there are no additional fees or proceedings to monitor.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant, adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States based enterprises to compete with foreign based enterprises in domestic or export markets.

List of Subjects in 37 CFR Part 2

Administrative practice and procedure, Courts, Lawyers, Trademarks.

Amendment of Regulations

After consideration of the comments received and pursuant to the authority contained in 15 U.S.C. 1123, Part 2 of Title 37 of the Code of Federal Regulations is amended as set forth below.

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

1. Section 2.101 is revised to read as follows:

§2.101 Filing an opposition.

(a) An opposition proceeding is commenced by the filing of an opposition in the Patent and Trademark Office.

(b) Any person who believes that he would be damaged by the registration of a mark on the Principle Register may oppose the same by filing an opposition, which

should be addressed to the Trademark Trial and Appeal Board.

(c) The opposition must be filed within thirty days after publication (§2.80) of the application being opposed or within an extension of time (§2.102) for filing an opposition.

(d)(1) The opposition must be accompanied by the required fee for each party joined as opposer for each class in the application for which registration is opposed (see §2.6(1)). If no fee, or a fee insufficient to pay for one person to oppose the registration of a mark in at least one class, is submitted within thirty days after publication of the mark to be opposed or within an extension of time for filing an opposition, the opposition will not be refused if the required fee(s) is submitted to the Patent and Trademark Office within the time limit set in the notification of this defect by the Office.

(2) If the fees submitted are sufficient to pay for one person to oppose registration in at least one class but are insufficient for an opposition against all of the classes in the application, and the particular class or classes against which the opposition is filed are not specified, the Office will issue a written notice allowing opposer until a set time in which to submit the required fee(s) or to specify the class or classes opposed. If the required fee(s) is not submitted, or the specification made, within the time set in the notice, the opposition will be presumed to be against the class or classes in ascending order, beginning with the lowest numbered class and including the number of classes in the application for which the fees submitted are sufficient to pay the fee due for each class.

(3) If persons are joined as party opposers, and the fees submitted are sufficient to pay for one person to oppose registration in at least one class but are insufficient for each named party opposer, the Office will issue a written notice allowing the named party opposers until a set time in which to submit the required fee(s) or to specify the opposer(s) to which the submitted fees apply. If the required fee(s) is not submitted, or the specification made, within the time set in the notice, the first named party will be presumed to be the party opposer and additional parties will be deemed to be party opposers to the extent that the fees submitted are sufficient to pay the fee due for each party opposer. If persons are joined as party opposers against the registration of a mark in more than one class, the fees submitted are insufficient, and no specification of opposers and classes is made within the time set in the written notice issued by the Office, the fees submitted will be applied first on behalf of the first-named opposer against as many of the classes in the application as the submitted fees are sufficient to pay, and any excess will be applied on behalf of the second-named party to the opposition against the classes in the application in ascending order.

2. Section 2.102 is revised to read as follows:

§2.102 Extension of time for filing an opposition.

(a) Any person who believes that he would be damaged by the registration of a mark on the Principal Register may file a written request to extend the time for filing an opposition. The written request may be signed by the potential opposer or by an attorney at law or other person authorized, in accordance with §2.12 (b) and (c) and §2.17(b), to represent the potential opposer.

(b) The written request to extend the time for filing an opposition must identify the potential opposer with reasonable certainty. Any opposition filed during an extension of time should be in the name of the person to whom the extension was granted, but an opposition may be accepted if the person in whose name the extension was requested was misidentified through mistake or if the opposition is filed in the name of a person in privity with the person who requested and was granted the extension of time.

(c) The written request to extend the time for filing an opposition must be filed in the Patent and Trademark Office before the expiration of thirty days from the date of publication or within any extension of time previously granted, should specify the period of extension desired, and should be addressed to the Trademark Trial and Appeal Board. A first extension of time for not more than thirty days will be granted upon request. Further extensions of time may be granted by the Board for good cause. In addition, extensions of time to file an opposition aggregating more than 120 days from the date of publication of the application will not be granted except upon (1) a written consent or stipulation signed by the applicant or its authorized representative, or (2) a written request by the potential opposer or its authorized representative stating that the applicant or its authorized representative has consented to the request, and including proof of service on the applicant or its authorized representative, or (3) a showing of extraordinary circumstances, it being considered that a potential opposer has an adequate alternative remedy by a petition for cancellation.

(d) Every request to extend the time for filing a notice of opposition should be submitted in triplicate (original plus two copies).

§2.103 [Removed]

3. Section 2.103 is removed.

4. Section 2.111 is revised to read as follows:

§2.111 Filing petition for cancellation.

(a) A cancellation proceeding is commenced by the timely filing of a petition for cancellation, together with the required fee, in the Patent and Trademark Office.

(b) Any person who believes that he is or will be damaged by a registration may file a petition, which should be addressed to the Trademark Trial and Appeal Board, to cancel the registration in its entirety or for each class in the registration specified in the petition. The petition may be filed at any time in the case of registrations on the Supplemental Register or under the Act of 1920, or registrations under the Act of 1881 or the Act of 1905, which have not been published under §12(c) of the Act of 1946, or on any ground specified in §14 (c) or (e) of the Act of 1946. In all other cases the petition and the required fee must be filed within five years from the date of registration of the mark under the Act of 1946 or from the date of publication under §12(c) of the Act of 1946.

(c)(1) The petition must be accompanied by the required fee for each class in the registration for which cancellation is sought (see §§2.6(1) and 2.85(e)). If the fees submitted are insufficient for a cancellation against all of the classes in the registration, and the particular class or classes against which the cancellation is filed are not specified, the Office will issue a written notice allowing petitioner until a set time in which to submit the required fee(s) (provided that the five-year period, if applicable, has not expired) or to specify the class or classes sought to be cancelled. If the required fee(s) is not submitted, or the specification made, within the time set in the notice, the cancellation will be presumed to be against the class or classes in ascending order, beginning with the lowest numbered class, and including the number of classes in the registration for which the fees submitted are sufficient to pay the fee due for each class.

(2) If persons are joined as party petitioners, each must submit a fee for each class for which cancellation is sought. If the fees submitted are insufficient for each named party petitioner, the Office will issue a written notice allowing the named party petitioners until a set time in which to submit the required fee(s) (provided that the five-year period, if applicable, has not expired) or to specify the petitioner(s) to which the submitted fees apply. If the required fee(s) is not submitted, or the specification made, within the time set in the notice, the first named party will be presumed to be the party petitioner and additional parties will be deemed to be party petitioners to the extent that the fees submitted are sufficient to pay the fee due for each party petitioner. If persons are joined as party petitioners against a registration sought to be cancelled in more than one class, the fees submitted are insufficient, and no specification of parties and classes is made within the time set in the written no-

tice issued by the Office, the fees submitted will be applied first on behalf of the first-named petitioner against as many of the classes in the registration as the submitted fees are sufficient to pay, and any excess will be applied on behalf of the second-named party to the petition against the classes in the registration in ascending order.

(3) The filing date of the petition is the date of receipt in the Patent and Trademark Office of the petition together with the required fee. If the amount of the fee filed with the petition is sufficient to pay for at least one person to petition to cancel one class of goods or services but is less than the required amount because multiple party petitioners and/or multiple classes in the registration for which cancellation is sought are involved, and the required additional amount of the fee is filed within the time limit set in the notification of the defect by the Office, the filing date of the petition with respect to the additional party petitioners and/or classes is the date of receipt in the Patent and Trademark Office of the additional fees.

5. Section 2.112 is revised to read as follows:

§2.112 Contents of petition for cancellation.

(a) The petition to cancel must set forth a short and plain statement showing how the petitioner is or will be damaged by the registration, state the grounds for cancellation, and indicate the respondent party to whom notification shall be sent. A duplicate copy of the petition, including exhibits, shall be filed with the petition.

(b) Petitions to cancel different registrations owned by the same party may be joined in a consolidated petition when appropriate, but the required fee must be included for each party joined as petitioner for each class sought to be cancelled in each registration against which the petition to cancel is filed.

6. Section 2.161 is revised to read as follows:

§2.161 Cancellation for failure to file affidavit or declaration during sixth year.

Any registration under the provisions of the Act of 1946 and any registration published under the provisions of section 12(c) of the Act (§2.153) shall be cancelled as to any class in the registration at the end of six years following the date of registration or the date of such publication, unless within one year next preceding the expiration of such six years the registrant shall file in the Patent and Trademark Office an affidavit or declaration in accordance with §2.20 showing that said mark is in use in commerce as to such class or showing that its nonuse as to such class is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark.

7. Section 2.162 is amended by revising paragraphs (e), (f) and (g) to read:

§2.162 Requirements for affidavit or declaration during sixth year.

* * * * *

(e) State that the registered mark is in use in commerce and specify the nature of such commerce (except under paragraph (f) of this section). The statement must be supported by evidence which shows that the mark is in use, and normally such evidence consists of a specimen or a facsimile specimen which is currently in use, or a statement of facts concerning use. The supporting evidence should be submitted with the affidavit or declaration, but if it is not or if the evidence submitted is found to be deficient, the evidence, or further evidence, may be submitted and considered even though filed after the sixth year has expired;

(f) If the registered mark is not in use in commerce, recite facts to show that nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark. If the facts recited are found not to be sufficient, further evidence or explanation may be submitted and considered even though filed after the sixth year has expired; and

(g) Contain the statement of use in commerce or statement as to nonuse and appropriate evidence, as required in paragraphs (e) and (f) of this section, for each class to which the affidavit or delcaration pertains in this registration.

(Secs. 8 and 9, Pub. L. 97-247 (96 Stat. 320))

Jan. 19, 1983.

DONALD J. QUIGG,
Deputy Commissioner of Patents and Trademarks.

[FR Doc. 83-2550 Filed 1-27-83; 8:45 am]
BILLING CODE 3510-16-M

[1027 TMOG 129]

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(141)

Department Of Commerce
Patent and Trademark Office
37 CFR Part 2
(Docket No. 30428-69)
Trademar Applications and Examination Proceedings; Trademark Interference, Concurrent Use, Opposition and Cancellation Proceedings; Trademark Post-Registration Proceedings

Agency: Patent and Trademark Office, Commerce.

Action: Final rule.

Summary: The Patent and Trademark Office is amending the rules of practice in trademark cases to clarify and revise procedures for the examination of applications; appeals from final refusals of registration; the institution and/or conduct of trademark interference, concurrent use, opposition and cancellation proceedings; the examination of affidavits or declarations under section 8 of the Trademark Act of 1946; amendments to registrations under section 7 (d) of the Trademark Act; and petitions to the Commissioner. The procedures revise or codify existing practices, or simplify procedures, or establish periods of time, to assist the orderly and prompt resolution of issues.

Effective Date: June 22, 1983.

For Further Information Contact: Miss Janet E. Rice by telephone at (703) 557-3551 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Miss Janet E. Rice, Crystal Square 5, Suite 1008, Washington, D.C. 20231.

Supplementary Information: Amendments to §§2.20, 2.27, 2.63, 2.64, 2.65, 2.72, 2.81, 2.96, 2.98, 2.99, 2.101, 2.102, 2.103, 2.104, 2.105, 2.106, 2.107, 2.111, 2.112, 2.113, 2.115, 2.116, 2.117, 2.120, 2.121, 2.122, 2.123, 2.124, 2.125, 2.127, 2.128, 2.129, 2.131, 2.132, 2.134, 2.135, 2.142, 2.146, 2.165, 2.173, 2.184, and 2.186 and the removal of §§2.88, 2.94, 2.95, 2.97, 2.126, 2.147, and 2.148 were proposed in a rulemaking notice published in the **Federal Register** on June 29, 1982, at 47 FR 28324, the Patent and Trademark Office *Official Gazette* of July 27, 1982, at 1020 O.G. 25, and Vol. 24 of *BNA's Patent, Trademark & Copyright Journal* (July 1, 1982) at p. 236. The purpose of these proposed amendments was to revise and codify existing practices. One of the proposed amendments (subsequently not adopted) was to interchange§§2.101 and 2.102. Interested parties were requested to submit written comments on or before Oct. 4, 1982. An oral hearing was held on the same date. Written comments were submitted by four organizations and four individuals. Three persons testified at the oral hearing. Two of the individuals testified in behalf of organizations which also submitted written comments. Each of the two testified that the organization which he represented approved of the proposed amendments except as indicated in the organization's written comments. The third individual testified concerning the history and purpose of the proposed amendments and expressed his approval of them.

However, further changes to several of these proposed rules, as well as amendments to other trademark rules, were required in order to implement certain trademark provisions of intervening Pub. L. 97-247 enacted Aug. 27, 1982. The text of the law is published in the Patent and Trademark Office *Official Gazette* of Oct. 26, 1982, at 1023 O.G. 31.

Provisions of Pub. L. 97-247 relating to trademark fees were implemented by trademark fee rule changes which were published in the **Federal Register** on July 30, 1982 at 47 FR 33086 and which took effect on Oct. 1, 1982. That final rule document was based alternatively on the law in effect at that time, Pub. L. 96-517, and on H.R. 6260, which was then pending but is now Pub. L. 97-247. As a result of the fee rule changes, which were based on Pub. L. 97-247 and subsequently confirmed in a document published in the **Federal Register** on Sept. 17, 1982 at 47 FR 41282, further changes to §2.101 [identified in the June 29, 1982 notice as §2.102] were required.

Additional changes to §2.101 [identified in the June 29, 1982 notice as §2.102] and §2.111, the removal of §2.103, and changes to §§2.161 and 2.162 were required in order to implement the provisions of Sections 8 and 9 of Pub. L.97-247. Section 8 of the new law amends Section 8 of the Trademark Act of 1946 (15 U.S.C. 1058) to require that an affidavit or declaration filed under Section 8 show use of the mark in commerce. Section 9(a) amends Section 13 of the Trademark Act (15 U.S.C. 1063) to eliminate the requirement for verification of oppositions (thus permitting a party's attorney to sign an opposition before the Trademark Trial and Appeal Board), and to require that additional requests for extension of time to oppose be filed prior to the expiration of the extension. Section 9(b) amends Section 14 of the Trademark Act (15 U.S.C. 1064) to eliminate the requirement for verification of petitions to cancel (thus permitting a party's attorney to sign petitions to cancel before the Trademark Trial and Appeal Board). The provisions of Sections 8 and 9 of the new law became effective Feb. 27, 1983.

The additional proposed changes to §1.101 (identified in the June 29, 1982 notice as §2.102) and §2.111, the changes to §§2.161 and 2.162, and the proposed removal of §2.103, all required as a result of the enactment of Pub. L. 97-247, were published in the **Federal Register** on Nov. 24, 1982 at 47 FR 53054. In that notice, as in the June 29, 1982 notice, §§2.101 and 2.102 were interchanged, and it was indicated in the notice that although§2.102 [identified in the notice as §2.101] and §2.112, as proposed in the June 29, 1982 notice, already included the necessary changes called for by Pub. L. 97-247 and thus were not being republished, further comments on the two proposed rules would be entertained. Interested parties were requested to submit written comments on or before Jan. 7, 1983. Comments were received from one organization.

In a notice of final rulemaking published in the **Federal Register** on Jan. 28, 1983 at 48 FR 3972, and in the *Official Gazette* of Feb. 22, 1983 at 1027 O.G. 129, §2.103 was removed, and §§2.101, 2.102, 2.111, 2.112, 2.161, and 2.162 were amended, to incorporate changes adoped both as a result of the notice of proposed rulemaking of June 29, 1982 (to revise and codify existing practices) and as a result of the notice of proposed rulemaking of Nov. 24, 1982 (to implement the provisions of Sections 8 and 9 of Pub. L. 97-247). All of the comments relating to §§2.101, 2.102, 2.103, 2.111, 2.112, 2.161, and 2.162 which were received in response to the two notices of proposed rulemaking were discussed in that final rule notice and the rule changes adopted therein became effective on Feb. 27, 1983.

Accordingly, this final rule notice does not include a discussion of the comments relating to §§2.101, 2.102, 2.103, 2.111, and 2.112 which were received in response to the June 29, 1982 notice of proposed rulemaking.

Discussion of Specific Sections Changed:

The rules which are being amended are discussed below. (The designation § is used in The Code of Federal Regulations to denominate a rule. If internal division of a section is necessary, it is divided into paragraphs designated as follows: "a", "b", etc. at the first level; "1", "2", etc. at the second level; "i", "ii", etc. at the third level; "A", "B", etc. at the fourth level; "*1*", "*2*", etc. at the fifth level; and "*i*", "*ii*", etc. at the sixth level.)

In this preamble to the rulemaking, "Patent and Trademark Office" is abbreviated as "PTO" and "Trademark Trial and Appeal Board" is abbreviated as "TTAB".

Section 2.20 was proposed to be amended by the addition of a new paragraph (b) to codify the practice whereby a nonofficer of a corporation or association who is authorized to sign a notice of opposition or petition for cancellation may verify the pleading by a declaration in lieu of an oath or affirmation. Inasmuch as the requirement for verification has been eliminated (See Pub. L. 97-247, enacted Aug. 27, 1982 and the final rule notice published in the **Federal Register** on Jan. 28, 1983 at 48 FR 3972), this proposal is withdrawn as moot.

Section 2.27(e) is added to permit the PTO to retain in confidence, not available for public inspection, anything filed under seal pursuant to a protective order [see amended §§2.120(f) and 2.125(e)]. Conforming amendments are made in paragraphs (b) and (d) of §2.27.

Section 2.63 is clarified and designated as paragraph (a).

Section 2.63(b) is added to codify the practice of allowing an applicant to petition to the Commissioner for relief from either an examiner's repeated but nonfinal formal requirement which is appropriate for petition to the Commissioner or a final action which is limited to subject matter which is appropriate for petition to the Commissioner. The paragraph also requires that a petition be timely and sets a time limit for action after denial of a petition. See amended §2.146(b) for a description of nonpetitionable subject matter and amended §2.146(d) for the time limit (sixty days) for a petition. The final text includes a phrase that was not included in the proposed paragraph, namely, the phrase "and the subject matter of the requirement is appropriate for petition to the Commissioner" which now appears in the clause "(1) the requirement is repeated, but the examiner's action is not made final, and the subject matter of the requirement is appropriate for petition to the Commissioner;". The phrase has been added in order to further clarify the intent of the paragraph and is not considered to result in a material alteration thereof.

Section 2.64 is designated as paragraph (a) and revised to agree with the provision in §2.63(b) permitting petitions to the Commissioner concerning some requirements which have been made final.

Section 2.64(b) is added to clarify the existing practice of replying to requests for reconsideration after final action, and to permit entry of amendments accompanying such requests if they comply with the Act of 1946 and the rules of practice in trademark cases.

Section 2.65 is designated as paragraph (a) and amended by the addition of a sentence to provide that a timely and proper petition under §2.63(b) avoids the abandonment of an application. A new paragraph (b) permits the examiner to allow an applicant additional time to explain and supply an inadvertent omission which would otherwise have resulted in the application being held abandoned. The final text of (b) includes a phrase that was not included in the paragraph as proposed, namely, the phrase "filed within the six-month response period" which now appears in the clause beginning "When action by the applicant filed within the six-month response period is a bona fide attempt to advance the examination of the application * * *." The phrase has been added in order to further clarify the intent of the paragraph and is not considered to result in a material alteration thereof.

Section 2.72 is revised so that the standard for amendment of a mark in an application now is the same in terms as the standard for amendment of a registered mark set forth in section 7(d) of the Act of 1946.

Section 2.72 was proposed to be further revised to allow non-material changes in the drawing to be supported by specimens which were not necessarily in use at the time the original application was filed. However, upon further consideration, it appears that the proposed revision might result in so many amendments to marks as to constitute a burden on the Patent and Trademark

Office. Accordingly, this part of the proposal is withdrawn.

Section 2.81 is revised to clarify the language of the section. Proposed §2.81 has been slightly reworded herein so as to further improve the clarity of the section.

Section 2.88 is deleted because requests to consolidate applications are very rare and the procedure is unworkable. See Official Gazette notice of July 29, 1981, 1009 TMOG 17.

Section 2.94 is deleted because interferences are declared only upon petition [see §2.91], which assumes proper review before an interference is declared, and existing §2.94 is unnecessary.

Section 2.95 is deleted because the deletion of §2.94 makes §2.95 unnecessary.

Section 2.96 is amended to codify existing practice on the issues determinable in an interference and the order of the parties and burden of proof. The amended rule states who is the junior party if two applications have the same filing date but different dates of execution. The third and fourth sentences of proposed §2.96 have been reworded herein so as to improve the clarity of the section.

Section 2.97 is deleted because it is unnecessary in view of the codification in §2.96.

Section 2.98 is amended to make the rule consistent with existing §2.91.

Section 2.99 is reorganized and amended to describe the concurrent use application procedure in greater detail. Paragraph (a) of the amended rule provides that an application for a concurrent use registration will be examined in the same manner as other applications for registration.

Paragraphs (b) and (c) and paragraph (d)(1) of §2.99 describe the procedure to be used to institute a concurrent use proceeding.

Paragraphs (d)(2) and (3) of §2.99 codify existing practice on who must file an answer to a notice of institution of a concurrent use proceeding and the effect of not filing an answer.

Section 2.99(e) codifies existing practice on the order of the parties and the burden of proof and states who is the junior party if two applications have the same filing date but different dates of execution. A person specified as an excepted user but who has not filed an application is stated to be a senior party to every party that has an application involved in the proceeding because a party without an application is seeking no relief and therefore has no burden of proving entitlement to relief.

Section 2.99(f) provides for the issuance of a concurrent use registration upon the basis for a court's determination of the rights of the parties to use their marks in commerce, without the institution of a proceeding by the TTAB, when all of the conditions specified in the rule are fulfilled. The first clause in paragraph (f), which, as proposed, read "when a concurrent use registration is sought on the basis of a court's determination of the rights of the parties to use the marks in commerce, * * *", has been modified herein to read "When a concurrent use registration is sought on the basis that a court of competent jurisdiction has finally determined that the parties are entitled to use the same or similar marks in commerce, * * *." The modified clause closely follows the language of that portion of section 2(d) of the Act of 1946 upon which the rule is based. The modification has been made in order to clarify the subsection and is not considered to result in a material alteration thereof.

Section 2.99(g) codifies existing law that registrations and applications to register on the Supplemental Register and registrations under the Act of 1920 are not subject to concurrent use registration proceedings and implements section 26 of the Act of 1946, which provides, inter alia, that applications for and registrations on the Supplemental Register shall not be subject to section 17 of the Act, which is the statutory authority for a concurrent use registration proceeding (cf. existing §2.91(b)).

Section 2.104 is amended to clarify existing §2.104.

Section 2.105 is amended to clarify existing §2.105 and codify the practice thereunder.

Section 2.106(c) is amended to codify the practice under existing §2.106(c) that, after an answer is filed, an opposition may be withdrawn without prejudice only with the written consent of the applicant.

Section 2.107 is amended to codify the practice under existing §2.107 whereby any pleading, including the answer, may be amended.

Section 2.113 is amended to clarify existing §2.113, which described the procedure for notifying a registrant of the filing of a proper petition for cancellation of his registration. The amended section includes cross-references to §§2.111 and 2.112 (amended effective Feb. 27, 1983), which pertain to the "filing" of and proper form for a petition for cancellation, and to §2.118, which pertains to undelivered Office notices.

Section 2.115 is amended to codify the practice under existing §2.115 whereby any pleading, including the answer, may be amended.

Section 2.116(b) is amended to clarify the language and intent of existing §2.116(b).

Section 2.116(c) is amended to clarify existing §2.116(c). Any complaint filed by a party in an interference or concurrent use proceeding would be a petition for cancellation, and the position of the parties in the consolidated proceeding will be set by the TTAB as required.

Section 2.117 is amended by designating the present section as paragraph (a) and adding two new paragraphs, (b) and (c). Section 2.117 as proposed contained four subsections. Proposed paragraph (b) is withdrawn and proposed paragraphs (c) and (d) are redesignated (b) and (c).

Section 2.117(b) codifies existing practice as to determination of a potentially dispositive motion when the question of suspension of proceedings is raised.

Section 2.117(c) permits a party to move, or parties to stipulate, for suspension, which usually occurs when negotiations for settlement are undertaken and the parties want proceedings suspended for that purpose.

Section 2.120 is amended in several respects, commencing with a reorganization of the rule to state how discovery may be taken, then how discovery may be compelled, then how admissions may be requested and the sufficiency of admissions or objections to requests therefor may be tested, and then how the results of discovery may be used in a proceeding.

Section 2.120(a) clarifies the language of the introductory paragraph of existing §2.120.

Section 2.120(b) clarifies existing §2.120(a)(1) and codifies the practice thereunder, and is made applicable to domestic parties.

Section 2.120(c)(1) restates in modified form the provisions of existing §2.120(a)(2), and in addition, permits oral discovery depositions in foreign countries on motion for good cause or by stipulation of the parties.

Section 2.120(c)(2) provides for oral discovery depositions within the United States of foreign parties or their officers, etc. if they will be in the United States during a discovery period.

Section 2.120(d) makes specific provision for requests for production and codifies the practice for this kind of discovery.

Section 2.120(e) clarifies existing §2.120(c)(1) and codifies the practice on motions to compel discovery.

Section 2.120(f) adds provisions pertaining to protective orders during discovery.

Section 2.120(g) clarifies existing §2.120(c)(2) and further codifies the practice on sanctions for failing to obey orders pertaining to discovery.

Section 2.120(h) adds to the discovery rules provisions pertaining to requests for admissions and codifies the practice pertaining to requests for admissions.

Section 2.120(i) codifies the practice on the use of telephone and pre-trial conferences to resolve disputes.

Section 2.120(j) clarifies existing §2.120(a)(3) relating to the use of discovery depositions, and codifies and re-

vises the practice on the filing with the TTAB of matter obtained during discovery and the use thereof at trial.

Section 2.121 clarifies existing §2.121 and codifies the practice thereunder.

Section 2.122 consolidates in one section the rules governing the introduction and admission of certain types of evidence in inter partes proceedings before the TTAB.

Section 2.122(a) identifies the sources of the law of evidence to be applied in inter partes proceedings.

Section 2.122(b)(1) clarifies the language and codifies the practice under existing §2.122(a).

Paragraph (b)(2) and paragraph (c) of §2.122 clarify existing §2.126 and codify the practice under that section.

Section 2.122(d)(1) incorporates all of the substance of existing §2.122(b) relating to the introduction in evidence of a plaintiff's pleaded registration with the complaint, except that the provision permitting the submission of an order for status and title copies of a pleaded registration with the complaint has been eliminated.

Section 2.122(d)(2) provides for the introduction in evidence of a registration owned by a party to a proceeding during the taking of testimony or by the filing of a notice of reliance on the registration, together with status and title copies thereof, during that party's testimony period.

Section 2.122(e) [identified in the notice of proposed rulemaking as §2.122(c)(1)] clarifies and adds to the provisions of existing §2.122(c) relating to printed publications and official records. Section 2.122(e) requires that an official record or copy thereof offered under the rule be an authentic record or copy pursuant to the Federal Rules of Evidence and also requires that, when a copy of a relevant portion of a printed publication is offered, the copy include the title page and any other page needed to show the place and date of publication, the name and address of the publisher, and the name of the author or the editor, which information is intended to enable the party against whom the evidence is offered to identify what it is. In the proposed and final rules, a new phrase, namely, "among members of the public or that segment of the public which is relevant under an issue in a proceeding", has been added to the opening clause of existing §2.122(c), so that that clause now reads "Printed publications, such as books and periodicals, available to the general public in libraries or of general circulation among members of the public or that segment of the public which is relevant under an issue in a proceeding". The phrase was added so that it would be clear that a trade journal, for example, is a printed publication of the type contemplated by the rule notwithstanding the fact that it may be circulated only among members of the trade rather than among members of the general public; the addition is not to be construed as an indication that an individual company's promotional literature, product booklets, annual reports, etc., are admissible under this section. Cf. Glamorene Products Corporation v. Earl Grissmer Company, Inc., 203 USPQ 1090 (TTAB 1979); Litton Industries, Inc. v. Litroniz, Inc., 188 USPQ 407 (TTAB 1975); and Minnesota Mining and Manufacturing Company v. Stryker Corporation, 179 USPQ 433 (TTAB 1973).

Section 2.122(f) clarifies existing §2.122(d) and codifies the practice thereunder.

Section 2.123 is amended by revising paragraphs (a), (e)(3), (j), and (k) thereof.

Section 2.123(a)(1) provides that testimony may be taken by depositions upon oral questions or upon written questions and further provides that if a party serves a notice of taking a testimonial deposition upon written questions, any adverse party may move to have the deposition taken upon oral questions if the witness, even though he may be a foreign party or a person who usually resides in a foreign country, is, or at the time of the deposition will be, in the United States or any territory under the control and jurisdiction of the United States.

Section 2.123(a)(2) provides that testimony in a foreign country is ordinarily to be taken by a deposition upon written questions but that the party against whom a testimonial deposition will be taken may move for good cause shown to have it taken by oral questions in a foreign country, and further provides that the parties may stipulate to have testimony taken by an oral deposition in a foreign country.

Section 2.123(e)(3) codifies the practice that a party who did not receive a proper notice of the taking of a deposition with respect to any witness may cross-examine that witness under protest while preserving his right to move to strike the whole of the testimony of that witness.

Section 2.123(j) is revised to provide that Rule 32(d)(1), (2), and (3) (A) and (B) of the Federal Rules of Civil Procedure shall apply to errors and irregularities in depositions; that notice will not be taken of merely formal or technical objections which shall not appear to have wrought a substantial injury to the party raising them; and that in case of such injury it must be made to appear that the objection was raised at the time specified in the aforesaid rule.

Section 2.123(k) is revised to provide that objections to the competency of a witness or to the competency, relevancy, or materiality of testimony must be raised at the time required by Rule 32(d)(3)(A) of the Federal Rules of Civil Procedure, and that such objections will not be considered until final hearing.

Section 2.124 sets out the procedure to be followed in taking a discovery deposition or a testimonial deposition upon written questions.

Section 2.124(a) provides that a deposition upon written questions may be taken before any of the persons described in Rule 28 of the Federal Rules of Civil Procedure.

Section 2.124(b)(1) provides for the kind of notice which must be served by a party desiring to take a testimonial deposition upon written questions and further provides that a copy of the notice, without the questions, must be filed with the TTAB.

Section 2.124(b)(2) provides for the kind of notice which must be served by a party desiring to take a discovery deposition upon written questions and further provides that a copy of the notice, without the questions, must be filed with the TTAB. This paragraph also provides that, if the name of the person to be deposed is not known to the party who will take the deposition, a general description sufficient to identify the class or group to whom the prospective witness belongs shall be stated in the notice and the party to be deposed shall designate one or more discovery witnesses.

Section 2.124(c) requires that every notice of deposition upon written questions name or describe by title the officer before whom the deposition will be taken.

Section 2.124(d)(1) specifies the procedure and timetable for serving the questions, objections, and substitute questions for a deposition upon written questions.

Section 2.124(d)(2) provides that the TTAB may reset the times specified in §2.124(d)(1) and, when a testimonial deposition is to be taken upon written questions, shall suspend or reschedule other proceedings in the matter to allow for the completion of the deposition.

Section 2.124(e) provides the procedure for sending the notice and questions to the officer designated in the notice, the taking of the deposition, and the certification and mailing of the transcript to the party who took the deposition.

Section 2.124(f) provides for the service of copies of the transcript and exhibits, states that the party who took the deposition is responsible for the correctness of the transcript, permits the use of a discovery deposition as provided by §2.120(j), and provides for the filing with the TTAB of a testimonial deposition, a copy thereof, and the exhibits.

Section 2.124(g) states that objections to questions and answers may be considered at final hearing.

Section 2.125(a) provides for the service of a transcript of an oral testimonial deposition and the exhibits, and, in respect of that requirement, continues the rule of existing §2.125(a).

Section 2.125(b) makes the party who took a deposi-

tion responsible for its correctness and for serving the adverse party with a corrected transcript or corrected pages.

Section 2.125(c) continues the requirement of existing §2.125(a) that a certified transcript and the exhibits be filed promptly with the TTAB and further provides that notice of filing be served on the adverse party and that a copy of the notice be filed with the TTAB. The requirement for the filing of a copy of the transcript (in addition to the certified transcript), which appeared both in existing §2.125(a) and in proposed §2.125(c), has not been retained in the final rule since the TTAB does not really need the copy and the printing of it is an unnecessary expense for parties involved in proceedings before the TTAB.

Section 2.125(d) continues the requirements of existing §2.125(b).

Section 2.125(e) provides that the TTAB, on motion, may order that any part of a deposition transcript or exhibits that directly disclose a trade secret or other confidential research, development, or commercial information may be filed under seal and kept confidential and provides for sanctions for failure to comply with the order.

Section 2.126 is deleted because the substance of the existing section has been shifted to §2.122(b)(2) and (c).

Paragraphs (a), (b), and (c) of §2.127 clarify, and codify the practice under, existing paragraphs (a), (b), and (c) of that section.

Section 2.127(d) codifies the practice with respect to suspending all matters in a case not germane to a potentially dispositive motion until the determination thereof.

Section 2.128(a)(1) clarifies existing §2.128(a) except that the rule requiring copies of a brief is shifted to final §2.128(b).

Section 2.128(a)(2) codifies the practice of having the TTAB set the briefing schedule by order when proceedings are consolidated, or when there is a counterclaim, or when more than two parties are involved.

Section 2.128(a)(3) contains a new provision enabling the TTAB to enter judgment against a plaintiff who fails to file a brief at final hearing and also fails to respond to an order to show cause why such judgment should not be entered against him or files a response indicating that he has lost interest in the case.

Section 2.128(b) clarifies and codifies the practice under the last sentence of existing §2.128(a) and existing §2.128(b).

Section 2.129(a) clarifies and codifies the practice under existing §2.128(c) and existing §2.129(a).

Section 2.129(b) clarifies existing §2.129(b).

Section 2.129(c) clarifies existing §2.129(c), from which the language referring to a decision on a motion which is finally dispositive of a case has been deleted because any requests for reconsideration or modification of a decision issued on a motion would be made under final §2.127(b).

Section 2.131 clarifies and codifies the practice under existing §2.131. The effect is to eliminate the dichotomy between inter partes and ex partes issues and to provide for the determination by the TTAB of all issues that have been expressly pleaded by the parties or tried by their express or implied consent and to reserve for remand to the examiner for reexamination only issues neither pleaded nor tried but which appear to make the mark of an applicant unregistrable.

Section 2.132(a) changes the practice under existing §2.132(a) by eliminating the step of having the TTAB issue an order to the plaintiff to show cause why judgment should not be entered against him. Under amended §2.132(a), the plaintiff will have fifteen days from the date of service of the defendant's motion for dismissal within which to show cause why judgment should not be rendered against the plaintiff.

Section 2.132(b) clarifies existing §2.132(b).

Section 2.134(a) codifies the practice under existing §2.134 that the written consent of the adverse party is required to avoid judgment against a cancellation respondent who applies to cancel his registration under section 7(d) of the Act of 1946 while the registration is involved in a proceeding.

Section 2.134(b) provides that, after the commencement of a cancellation proceeding, if it comes to the attention of the TTAB that a respondent (registrant) has permitted his registration to be cancelled under section 8 of the Act of 1946 or has failed to renew his registration under section 9 of the Act, an order may be issued allowing respondent until a set time in which to show cause why the resulting demise of the registration should not be deemed to be the equivalent of a cancellation of the registration by request of the repondent without the written consent of the adverse party and should not result in entry of judgment against the respondent; and that, in the absence of a showing of good and sufficient cause, judgment may be entered against respondent. Section 2.134(b) is added to avoid situations where a respondent in a cancellation proceeding may moot the case and avoid judgment because of the fortuitous circumstance that his registration happens to reach its sixth anniversary or twentieth anniversary while a proceeding is pending and the respondent exploits this situation by simply failing to file an affidavit under section 8 of the Act or a renewal application under section 9 of the Act.

Section 2.135 codifies the practice under existing §2.135, which is parallel to the practice under existing §2.134 and final §2.134(a), that the written consent of the adverse party is required to avoid judgment against an applicant who abandons his application or mark while the application is involved in an opposition, concurrent use or interference proceeding. It should be noted that existing §2.135 begins, "If, in a proceeding, an applicant * * *", but that the section as proposed referred only to "an opposition proceeding". The narrowing of the application of the rule in the section as proposed was an inadvertent error. In order to correct the error, the proposal to revise the section to include only a reference to an opposition proceeding is withdrawn. The wording of the beginning of final §2.135, namely, "After commencement of an opposition, concurrent use, or interference proceeding, if the applicant * * *", is legally equivalent to the beginning of existing §2.135.

Section 2.142(a) clarifies existing §2.142(a).

Section 2.142(b) requires the examiner to file with the TTAB a brief answering the appellant's brief and requires the examiner to file the brief within sixty days after appellant's brief is sent to the examiner by the TTAB. Section 2.142(b) as proposed required that the examiner's brief (referred to therein as a "statement") answer "every point in" the appellant's brief, whereas existing §2.142(b) requires only that the examiner furnish a written statement "In answer to" appellant's brief. Upon further consideration, the proposal to modify §2.142(b) to require that the examiner's brief answer "every point in" the appellant's brief is withdrawn since it is likely to result in briefs which are unduly lengthy. An appellant's brief may contain points which are so insignificant, immaterial, etc. as to require no response.

Section 2.142(c) codifies the practice that all requirements made by the examiner and not the subject of appeal shall be complied with prior to the filing of an appeal.

Section 2.142(d) provides that the record in the application should be complete prior to the filing of an appeal, states that the TTAB will ordinarily not consider additional evidence filed with the TTAB by the appellant or by the examiner after an appeal is filed, and provides that either the appellant or the examiner may request the TTAB to suspend the appeal and remand the application for further examination if the appellant or the examiner desires to introduce additional evidence.

Section 2.142(e)(1) amends existing §2.142(c), and codifies the practice under the existing rule, by changing the due date for a request for an oral hearing on an appeal from the date when the appellant's brief is filed to a date ten days after the due date for a reply brief.

Section 2.142(e)(2) requires the examiner to present an oral argument if an oral argument is requested by the appellant.

Section 2.142(e)(3) allots twenty minutes to the appellant for oral argument and ten minutes to the examiner for oral argument.

Section 2.142(f) provides for situations where, during an appeal, it appears to the TTAB that an issue not previously raised may render the mark of the appellant unregistrable, that is, when something on the face of the record on appeal indicates that a question concerning the registrability of the mark may exist but has not been considered. The paragraph provides the procedure to be followed by the TTAB, the Examiner, and the appellant when the TTAB suspends an appeal and remands an application on the TTAB's own initiative. The paragraph as amended includes certain words, namely, "to be completed", appearing in the phrase "and remand the application to the examiner for further examination to be completed within thirty days", which were not included in the paragraph as proposed. The words have been added in order to further clarify the intent of the paragraph and are not considered to result in a material alteration thereof. Further, for the reason indicated in connection with §2.142(b), the words "every point in" have been omitted from §2.142(f)(4).

Section 2.146 collects in one section the rules on petitions to the Commissioner in existing §§2.146, 2.147, and part of §2.148. For this reason existing §2.147 is removed. In the notice of proposed rulemaking, it was also proposed that existing §2.148 be deleted. The reason for the proposal was a belief that the entire substance of §2.148 was incorporated in proposed §2.146(a)(5), which provides that petition may be taken to the Commissioner in any extraordinary situation, when justice requires and no other party is injured thereby, to request a suspension or waiver of any requirement of the rules not being a requirement of the Act of 1946. However, existing §2.148 provides that in an extraordinary situation, when justice requires and no other party is injured thereby, any requirement of the rules not being a requirement of the statute may be suspended or waived by the Commissioner. That rule is not limited to waiver petition but rather also encompasses waiver upon the Commissioner's own initiative. Inasmuch as the entire substance of existing §2.148 is not incorporated in proposed and final §2.146(a)(5), the proposal to remove §2.148 is withdrawn.

Section 2.146(a) reflects the change in §2.63(b) permitting petitions concerning some requirements which have been made final.

Section 2.146(b) delineates classes of questions which are not considered to be appropriate subject matter for petitions to the Commissioner. These questions are substantive issues of registrability of marks and are considered to be appropriate for appeal to the TTAB. Section 2.146(b) as proposed read "Questions arising under Sections 2, 3, 4, 5, 6 and 23 of the Trademark Act during the ex parte prosecution of applications are not considered to be appropriate subject matter for petitions to the Commissioner", whereas paragraph (b) as adopted herein reads "Questions of substance arising during the ex parte prosecution applications, including, but not limited to, questions arising of under Sections 2, 3, 4, 5, 6 and 23 of the Act of 1946, are not considered to be appropriate subject matter for petitions to the Commissioner." The wording of the paragraph has been modified for purposes of clarification, and such modification is not considered to result in a material alteration of the paragraph.

Section 2.146(c) specifies the contents of a petition of the Commissioner, and in this respect clarifies requirements previously included in §2.146(b).

Section 2.146(d) specifies the time limit for filing a petition on any matter not otherwise specifically provided for. In proposed §2.146(d), an attempt was made to list the matters otherwise specifically provided for. However, several matters were inadvertently omitted. In order to ensure that the rule is correct, the list has been omitted from the final rule.

Section 2.146(e) provides time limits and specifies the procedure for a petition to the Commissioner from the denial of a request for an extension of time to file an opposition or from an interlocutory order of the TTAB. Section 2.146(e)(1) contains a new requirement that a petition from the denial of a request for an extension of time to oppose must be served on the applicant or his attorney and provides for a response by the applicant to the petition.

Section 2.146(f) clarifies a provision previously included in §2.146(c).

Section 2.146(g) clarifies and codifies the practice previously under §2.146(d) and, in addition, makes §2.146 consistent with §§2.63(b) and 2.65, as adopted herein.

Section 2.146(h) codifies the practice previously under §2.146(e) whereby authority to act on classes of petitions, in addition to any particular petition, may be delegated.

Paragraphs (a), (b), and (c) of §2.165 specify the procedure when the affidavit or declaration filed under section 8 of the Act of 1946 is refused. The steps to be taken by the registrant to request reconsideration and to petition to the Commissioner and the time limits for such requests and petitions are stated.

Section 2.165(d) states that a petition to the Commissioner for review of the action refusing the affidavit or declaration under section 8 of the Act of 1946 shall be a condition precedent to an appeal to or action for review by any court. This implements section 21 (a)(1) and (b)(1) of the Act, which provides, inter alia, that a registrant who has filed an affidavit under section 8 of the Act who is dissatisfied with the decision of the Commissioner may appeal to the U.S. Court of Appeals for the Federal Circuit or may have remedy by a civil action.

Section 2.173(b) clarifies the circumstances in which an amendment of the identification of goods or services of a registration is permitted. The rule states that an identification of goods or services can be restricted or can be otherwise changed in ways that would not require republication of the mark.

Paragraphs (a), (b), and (c) of §2.184 specify procedures and time limits for relief when an application for renewal of the registration under section 9 of the Act of 1946 is refused, in parallel with final §2.165.

Section 2.184(d) is parallel to final §2.165(d) and has the same statutory basis.

Section 2.186 clarifies and codifies the practice under existing §2.186 that action with respect to an assigned application or registration may be taken by the assignee provided that the assignment has been recorded.

Response to Comments on the Rules

The written comments and oral testimony offered in response to the notice of proposed rulemaking published in the **Federal Register** on June 29, 1982 have been given careful consideration, and a substantial number of the suggested modifications have been adopted. The comments and responses (except those pertaining to §§2.101, 2.102, 2.103, 2.111, and 2.112, which were included in the final rule notice published in the **Federal Register** on Jan. 28, 1983 at 48 FR 3972) appear below:

Comment: In response to the proposal to amend §2.20 by adding a new paragraph (b) to codify a particular practice relating to the verification of oppositions and petitions for cancellation, one organization noted that the question of verification of oppositions and petitions for cancellation appeared to be moot in view of Pub. L. 97-247; indicated its belief, with respect to the phrase "person who is authorized to sign" in proposed §2.20(b), that the rules pertaining to oppositions and petitions for cancellation should be amended to require that when an opposition or petition for cancellation is signed on behalf of a corporation or an association by a person who is authorized to sign the document but who is not an officer, the person must represent that he has such authority; and submitted its proposal for a substitute §2.20 (modeled on the corresponding patent rule, §1.68) which is broader in scope than present §2.20.

Response: Inasmuch as Pub. L. 97-247 has amended the Trademark Act of 1946 so as to eliminate the requirement for verification of oppositions and petitions

for cancellation, the proposal to amend §2.20 by adding a new paragraph (b) relating to verification of oppositions and petitions for cancellation has been withdrawn. The other two suggestions involve substantive rule changes which are outside the scope of the proposed rule changes as published and hence cannot be adopted without affording members of the public an opportunity to comment thereon. However, these suggestions will be considered in connection with any future proposals to amend the rules in question. In this regard, it should be noted that when an opposition or petition for cancellation is signed by a person whose authority to sign is not apparent, it is the practice of the Trademark Trial and Appeal Board to inquire as to that person's authority to sign.

Comment: One organization suggested that the word "Anything" be substituted in proposed §2.27(e) for the phrase "Any documents, tangible things, answer to interrogatories, or all or any part of any discovery or testimonial deposition transcripts" because the attempt to list all of the types of things subjected to the rule might invite disputes as to whether particular items are covered. The same organization suggested that the following sentence be added to paragraph (e): "When possible, only confidential portions of filings with the Board shall be filed under seal."

Response: The paragraph has been modified as suggested.

Comment: One organization and three members of another organization suggested that proposed §2.64(b), which concerns requests for reconsideration after final action by the examiner, be modified to require that any request for reconsideration filed within three months of the final action be responded to by the examining attorney before the time for appeal.

Response: The six-month period for appealing from a final refusal of registration, or for complying with a requirement which has been made final, or for petitioning the Commissioner [if permitted by §2.63(b)] with respect to such a requirement, is statutory, and the Patent and Trademark Office cannot guarantee that any request for reconsideration filed within three months of the final action will be responded to by the examining attorney before the time for appeal. However, the paragraph has been modified to provide that normally the examiner will reply to a request for reconsideration before the end of the six-month period if the request is filed within three months after the date of the final action.

Comment: Two organizations expressed disapproval of the final sentence of proposed §2.64(b), which reads: "Amendments accompanying requests for reconsideration after final action will be entered if they place the application in condition for publication or in better form for appeal." The organizations criticized this provision as being unduly restrictive and vague, and suggested that the subsection be modified to permit any amendment that complies to the Trademark Act of 1946 and the Rules of Practice in Trademark Cases.

Response: The paragraph has been modified as suggested.

Comment: One organization suggested that proposed §2.65(a), which includes a reference to proposed §2.63(b), be modified to include also a reference to proposed §2.146, for the asserted reason that if reference is made to other sections of the rules, the reference should include all the most pertinent rules.

Response: The Paragraph has been modified as suggested.

Comment: Two organizations urged with respect to proposed §2.65(b) (which concerns the filing of an incomplete response to an examiner's action), that the word "may" in the clause "opportunity to explain and supply the omission may be given before the question of abandonment is considered" be changed to "shall".

Response: The suggestion has not been adopted. A requirement that an opportunity to explain and supply an omission be given in every case would result in a significant increase in the work load of the Trademark Examining Operation and hence an undue burden upon the Patent and Trademark Office. Accordingly, the word "may" has been retained in the final paragraph so as to leave the Trademark Examining Attorney with the descretion to determine whether such an opportunity should be given, depending upon the nature of the omission. The final paragraph parallels corresponding patent §1.135(c).

Comment: One member of one of the organizations commented that as a result of the proposed revision of §2.72 (which would allow non-material changes in the drawing of a mark to be supported by specimens which were not necessarily in use at the time the original application was filed), an applicant might amend its mark sought to be registered in order to overcome a reference under section 2(d) of the Trademark Act of 1946.

Response: The proposed revision might well have the result suggested in the comment, and an amendment for such a purpose would not be wrong, in and of itself. However, upon further consideration it appears that the proposed revision might result in so many amendments to marks as to constitute a burden upon the Patent and Trademark Office. Accordingly, the proposal to revise §2.72 in the manner described above is withdrawn. A second proposal to change the last sentence of §2.72 from "Amendments may not be made if the nature of the mark is changed thereby." to "Amendments may not be made if the character of the mark is materially altered.", so that the standard for amendment will be the same as the standard for amendment of registered marks (see section 7(d) of the Act of 1946), is adopted.

Comment: One organization commented, with respect to proposed §2.81, that there is a typographical error in the first line of the section, namely, that "with" should be "within." Another organization noted certain errors in the corrections to proposed §2.121(b)(1) and (c) published in the Federal Register at 47 FR 32955.

Response: The noted errors were made in printing. They do not appear in the original text of the notice of proposed rulemaking which was prepared and retained by the Patent and Trademark Office.

Comment: One individual, one organization, and one member of another organization expressed their belief that the second sentence in proposed §2.99(a) (which states, "The examiner may require an applicant for registration as a concurrent user to make a prima facie showing that the applicant is entitled to a concurrent use registration") is too vague to be of help in drafting a concurrent use application, and suggested that this portion of the paragraph either be deleted or made more specific.

Response: Upon further consideration, it appears that the subject matter of this portion of the subsection should be developed either through decisional law or in the Trademark Manual of Examining Procedure. Accordingly, the sentence has been deleted.

Comment: Proposed §2.99(f) lists the conditions which must be met when an applicant seeks to obtain a concurrent use registration under the provisions of section 2(d) of the Act of 1946 based on a court decree, without the necessity of a concurrent use proceeding in the Patent and Trademark Office. One organization urged that the fifth condition (which states: "the excepted use specified in the concurrent use application does not involve a registration") be deleted for the reason that it is vague and, in any event, inappropriate where the registration involved was otherwise before the court.

Response: When the excepted use specified in a concurrent use application based on a court decree involves an unrestricted registration, a concurrent use registration proceeding must be instituted in order that the Trademark Trial and Appeal Board may restrict the registration in accordance with the court decree. In such cases, the concurrent use registration proceeding does not go forward to trial but rather is terminated on the basis of the court decree immediately after institution of the proceeding. However, if the registration has been restricted by the Commissioner in accordance with the court decree, and the other conditions listed in paragraph (f) have been met, there is ordinarily no need for a concur-

rent use registration proceeding. Accordingly, paragraph (f) has been modified to read: "the excepted use specified in the concurrent use application does not involve a registration, or any involved registration has been restricted by the Commissioner in accordance with the court decree."

Comment: One organization noted that in §§2.104 and 2.105, as proposed, the term "opposition", when used to refer to the complaint in an opposition proceeding, has been changed to "notice of opposition". The organization expressed its belief that there is no reason for reverting to the phrase "notice of opposition" except tradition, and that that phrase is confusingly similar to the phrase "notification of opposition".

Response: The proposal to change "opposition" to "notice of opposition" in certain instances has not been adopted.

Comment: One organization commented that proposed §2.113 should be modified to indicate that the effective filing date of a petition for cancellation will be the date that the statutory requirements, including payment of the required fee(s), are satisfied. The organization indicated that it was concerned here and elsewhere (see comment and response pertaining to §2.111 in the final rule notice published in the **Federal Register** on Jan. 28, 1983 at 48 FR 3972) about cases in which an incomplete filing is made within five years of the date of registration and not perfected until the five-year period of section 14(a) of the Act of 1946 has passed. The organization also suggested that the section be modified to include a cross-reference to existing §2.118, which pertains to undelivered notifications.

Response: The section has been modified to include a cross-reference to §2.118. Additionally, the first clause in the section, which as proposed read "When a petition for cancellation has been filed in proper form and the correct fee(s) have been submitted,", has been modified by the inclusion of a cross-reference to §§2.111 and 2.112 and by the deletion of the words "and the correct fee(s) have been submitted,", so that the modified clause reads "When a petition for cancellation has been filed in proper form (see §§2.111 and 2.112),". Section 2.111, as amended effective Feb. 27, 1983 (see the final rule notice published in the **Federal Register** on Jan. 28, 1983 at 47 FR 3972) provides in effect that the filing date of a petition for cancellation with respect to each named party petitioner and each class sought to be cancelled is the date of receipt in the Patent and Trademark Office of the petition together with the required fee for that party petitioner and class, and that is those cases where the five-year limitation of sections 14 (a) and (b) of the Acts of 1946 is applicable, the petition and required fee(s) must be filed prior to the expiration of the five-year period. Section 2.112, as amended effective Feb. 27, 1983, pertains to the proper form for a petition for cancellation.

Comment: One organization stated, with respect to proposed §2.117(b), that it failed to appreciate the necessity for requiring that issue be joined in both the civil action and the proceeding in the Patent and Trademark Office before the Trademark Trial and Appeal Board will consider suspension of the Board proceeding pending the outcome of the civil action. The organization also noted that the retained paragraph of §2.117 needs a paragraph reference, i.e., "(a)".

Response: The retained paragraph of §2.117 has designated been "a". Insofar as proposed paragraph (b) is concerned, it is not in fact the practice of the Board to require that issue be joined in the civil action before suspension of the Board proceeding will be considered [see Tokaido v. Honda Associates, Inc., 179 USPQ (TTAB 1973)]. Moreover, while it may not be possible in some cases to determine whether a civil action is likely to be determinative of a proceeding before the Board until an answer has been filed in one or both proceedings, in other cases it is feasible and advantangeous to suspend prior to answer. Accordingly, proposed §2.117(b) has been withdrawn, and proposed paragraphs (c) and (d) have been redesignated (b) and (c).

Comment: One organization suggested that suspension be considered automatic upon the showing of the institution of a civil action between the parties provided that the party in the position of plaintiff in the Board proceeding has neither commenced taking testimony nor filed any evidence in such proceeding.

Response: It is the normal practice of the Board to suspend under the circumstances outlined in the comment if it appears that the civil action may be dispositive of the proceeding before the Board. However, even under these circumstances there are times when it may be desirable to go forward with the Board proceeding, as, for example, when the civil court has a large backlog or suspends its own action pending the final determination of the Board proceeding. Accordingly, it is believed that the matter of suspension should be left to the discretion of the Board, and the suggested amendment has not been adopted.

Comment: With respect to §2.117(b) [identified in the notice of proposed rulemaking as §2.117(c)], which as proposed reads "Whenever there is pending, at the time when the question of the suspension of proceedings is raised, a motion which is potentially dispositive of the case, the motion will be decided before the question of suspension will be considered.", one organization and two members of another organization suggested that the phrase "the motion will be decided" be changed to "the motion may be decided", so that the Board will have the discretion to either suspend or rule in such a case, and will not be compelled to determine the motion before it if, for example, a similar motion is pending in the civil action.

Response: The paragraph has been modified in accordance with this suggestion.

Comment: Four members of one organization objected to proposed §2.120(c)(2) (which provides in effect that whenever a foreign party or its officers, etc., is or will be in the United States during a discovery period, such party may be deposed in the United States by oral examination upon notice by the party seeking discovery.) The reason given for the objection was that the foreign officer could be seriously inconvenienced because of the proposed rule, which invites abuse.

Response: While it is true that a foreign officer who is traveling in the United States on other business might find it inconvenient to have his oral discovery deposition taken, it is equally true that there are instances in which it is inconvenient for a domestic officer to have his oral deposition taken. Further, there can be no doubt that the oral deposition is a far better discovery device than the deposition upon written questions. It is believed that the advantages offered by the oral deposition outweigh the disadvantage of possible inconvenience. Accordingly, proposed §2.120(c)(2) is being adopted herein as a final rule.

Comment: With respect to proposed §2.120(d), which provides for the production of documents, in response to a request for production of documents, at the place where the documents are usually kept, or where the parties agree, or where and in the manner which the Trademark Trial and Appeal Board, upon motion, orders, one individual suggested that the paragraph be modified to require that the party upon which the request is served respond to the request by sending copies of all documents requested to the party making the request.

Response: The purpose of §2.120(d) is to permit the Board, upon motion, to order that a party produce requested documents by photocopying and mailing them to the requesting party at the latter's expense. However, inasmuch as there are cases in which some other manner of production is more appropriate or feasible, the manner of production is a matter which is better left to the discretion of the Board. Accordingly, the suggestion has not been adopted.

Comment: One individual suggested that proposed §2.120(e), which concerns motions to compel discovery, be modified to provide that if counsel for the parties reach an agreement relating to a disputed discovery mat-

ter, a motion may be brought to enforce the agreement.

Response: Inasmuch as it is not the function of the Board to enforce agreements between parties, this suggestion has not been adopted. However, a party may always argue the existence of such an agreement as a factor bearing on the merits of a motion to compel discovery.

Comment: With respect to proposed §2.120(i) (which provides, in essence, that the Board may at its discretion request that the parties come to its offices for a pre-trial conference when pre-trial questions or issues have been so complex that their resolution by correspondence or telephone conference is not practical), one individual, noting that the paragraph provides for a pre-trial conference at the Board's option and discretion, suggested that the paragraph be modified to indicate that such a conference may also be requested by a party to a proceeding but that the Board be left with the discretion to grant the request. The same individual also suggested that the paragraph, which as proposed contains only a passing reference to a "telephone conference", be broken into two parts, the first being devoted to the telphone conference (with provision therefor at the option of the Board or at the request of a party to a proceeding, but again leaving the Board with discretion to grant the request), and the second being devoted to the pre-trial conference. The individual expressed his belief that attorneys should be made aware of the telephone conference procedure since it can be very useful to them as well as to the Board.

Response: The paragraph has been modified as suggested to include two paragraphs and to provide that the Board may utilize the telephone and pre-trial conference procedures either upon its own initiative or upon request made by one or both of the parties. Although neither of the new paragraphs contains the words "at its discretion," both contain the words "the Board may," which clearly indicate that the utilization of these procedures is a matter which is left to the discretion of the Board.

Comment: A number of comments were received with respect to proposed §2.120(j), which pertains to the use of discovery depositions, admissions, or answers to interrogatories. Two organizations noted that proposed §2.120(j)(2) (which incorporates the "fairness exception" of Rule 32(a)(4) of the Federal Rules of Civil Procedure ("F.R.C.P.") apparently limits the use of discovery depositions only to the inquiring party, while Rule 32(a)(4) F.R.C.P. allows the use of the deposition for any purpose by either party once the adverse party has relied upon any part of it. These organizations recommended that the paragraph be modified to follow Rule 32(a)(4) F.R.C.P. One organization objected to proposed §2.120(j)(3) (which permits the introduction into evidence on motion of the discovery deposition of a non-party under certain circumstances provided that the motion is filed promptly after the circumstances claimed to justify use of the deposition become known) on the ground that the timing requirement for the motion is unnecessary and unduly restrictive and that the better practice would be to let the motion be filed at the time of the purported offer of the deposition into evidence. Another organization recommended that consideration be given to permitting much greater use of non-party discovery depositions than permitted by proposed §2.120(j)(3), or at least that the burden imposed by the last of the listed instances in which such depositions may be introduced into evidence, namely, "upon a showing of extraordinary circumstances and necessity in the interest of justice", should be lessened. Three members of one organization commented that any party, not just the deposing party, should be able to make a discovery deposition of record if its use at trial is permitted by Rule 32 F.R.C.P. Finally, one individual noted that proposed §2.120(j), which permits only the inquiring party to introduce a discovery deposition into evidence (unless the "fairness exception" applies), conflicts with Rule 32(a)(2) F.R.C.P., which provides that a deposition of a party "may be used by an adverse party for any purpose", and with Rule 32(a)(3) F.R.C.P., which provides that the deposition of "a witness, whether or not a party, may be used by any party for any purpose" in the limited circumstances corresponding to those set forth in proposed §2.120(j)(3) (except for the 100-mile exception, which is not applicable to proceedings before the Trademark Trial and Appeal Board). This individual submitted a suggested alternative text for §2.120(j) which conforms to Rule 32(a) F.R.C.P. by (a) eliminating the restriction in proposed §2.120(j)(1) and (2) that only the inquiring party may offer a discovery deposition in evidence, and (b) broadening proposed §2.120(j)(2) to cover any "witness, whether or not a party". In the suggested text, paragraphs (1)–(3) of proposed §2.120(j) are also reorganzied and rearranged for clarity.

Response: The text suggested by the individual has been adopted with certain modifications in order to resolve the conflicts and objections noted by this individual and others, as outlined above. In the final paragraph, the text of §2.120(j)(1) follows the text of Rule 32(a)(2) F.R.C.P. The text of the discovery deposition "fairness exception", which appears in final §2.120(j)(4), is essentially the same as the text of Rule 32(a)(4) F.R.C.P. The provision relating to the introduction into evidence, by order of the Board upon motion, of the discovery deposition of a non-party under certain circumstances [which appears in final §2.120(j)(2)] has been broadened to permit the introduction, by order of the Board upon motion, of the discovery deposition of a witness, whether or not a party, by any party under the stated circumstances. The final such circumstance, which in the proposed paragraph read "upon a showing of extraordinary circumstances and necessity in the interest of justice", has been modified to read "upon a showing that such exceptional circumstances exist as to make it desirable, in the interest of justice, to allow the deposition to be used," which closely follows the wording of Rule 32(a)(3) F.R.C.P. The timing requirement for a motion filed under the paragraph has been changed from "filed promptly after the circumstances claimed to justify use of the deposition became known" to "filed at the time of the purported offer of the deposition in evidence" for all such motions except those based upon a claim of exceptional circumstances. In the latter instance, the proposed timing requirement, namely, "filed promptly after the circumstances claimed to justify use of the deposition became known", has been retained in the final rule for two reasons; first, to provide an adverse party with the best possible opportunity to investigate the claim of exceptional circumstances, and second, so that in those cases where the circumstances become known prior to the taking of the deposition, the motion will be filed, and hence can be determined, before the deposition is taken. Finally, in order to make it clear that once a discovery deposition, or a part thereof, or an answer to an interrogatory, or an admission, has been properly made of record by one party, it may be referred to by any party for any purpose permitted by the Federal Rules of Evidence, a provision to that effect, identified as paragraph (j)(7), has been included in the final paragraph.

Comment: With respect to proposed §2.122(c)(2) (which provides that a registration owned by a party to a proceeding may be made of record by that party by filing a notice of reliance accompanied by a certified copy of the registration showing current status and title), two organizations and three members of another organization objected to the requirement for certification of the status and title copies as being unnecessary, expensive, and unduly harsh. One of these organizations, noting that proposed §2.122 is modified to eliminate the practice set forth in existing §2.122(b) (which provides that a registration of an opposer or petitioner pleaded in an opposition or petition to cancel will be received in evidence and made part of the record if two copies showing status and title of the registration or an order for such copies accompany the opposition or petition), expressed its belief that, accepting the Patent and Trademark Office's position that the practice set forth in existing §2.122(b) has caused delays and problems for

the Office, still there is no reason for requiring that the status and title copies of the registration be certified when made of record, pursuant to proposed §2.120(c)(2), by the filing of a notice of reliance during the testimony period of the party filing the notice.

Response: The proposal to require that status and title copies of registrations also be certified has not been adopted herein. Further, since the only part of existing §2.122(b) which caused trouble was the provision involving the submission of an *order* for status and title copies with the complaint, the proposal to modify existing §2.122 by eliminating that provision is adopted herein, but the proposal to eliminate the provision involving the submission of actual status and title copies with the complaint is withdrawn. Hence, final §2.122 provides, in paragraph (d)(1), that a registration of the opposer or petitioner pleaded in an opposition or petition to cancel will be received in evidence and made part of the record if the opposition or petition is accompanied by two copies of the registration prepared and issued by the Patent and Trademark Office showing both the current status of and current title to the registration.

Comment: One organization suggested that the word "competent" should be inserted before the word "evidence" in two (unspecified) places in proposed §2.122(b)(2) and in one place in proposed §2.122(b)(3), and that the first clause in proposed §2.122(c)(2) be changed from "A registration owned by any party to a proceeding may be made of record in the proceeding by that party by filing a notice of reliance," to "A registration owned by any party to a proceeding may be made of record in the proceeding by that party by appropriate identification and introduction during the proper testimony period or by filing a notice of reliance,". The same organization also submitted a suggested plan for reorganizing proposed §2.122 and for giving each paragraph therein a heading. Three members of another organization expressed their agreement with these suggestions.

Response: The suggested plan for reorganization and for headings has been adopted herein with certain minor modifications necessitated by the response to the foregoing comment (e.g., the comment concerning the introduction of registrations in evidence).

The word "competent" has been inserted before the word "evidence" only once in final §2.122(b)(2) and not at all in final §2.122(c) [identified in the notice of proposed rulemaking as §2.122(b)(3)]. The clauses in these paragraphs were the word "competent" might have been, but was not, inserted before the word "evidence" read "The allegation in an application for registration, or in a registration, of a date of use is not evidence on behalf of the applicant or registrant;"; "Specimens in the file of an application for registration, or in the file of a registrant, are not evidence on behalf of the applicant or registrant * * *"; and "An exhibit attached to a pleading is not evidence on behalf of the party to whose pleading the exhibit is attached * * *" The reason why the word "competent" was not inserted in these instances is that in each one the matter in question is not evidence *on behalf of the named party* at all (although specimens, or the allegation of a date of use, for example, may be used as evidence against an applicant or registrant, e.g., as an admission against interest).

Finally, the first clause in proposed §2.122(c)(2) [identified herein as §2.122(d)(2)] has been modified to read "A registration owned by any party to a proceeding may be made of record in the proceeding by that party by appropriate identification and introduction during the taking of testimony or by filing a notice of reliance."There is a slight difference between the clause as adopted and the clause as suggested by the organization (the organization's suggested wording "during the proper testimony period" has been changed to "during the taking of testimony"). The change in the wording was made so that it would be clear that this portion refers to identification and introduction during the taking of testimony as distinguished from identification and introduction by notice of reliance. This change is not to be construed as an indication that such identification and introduction does not have to be made "during the proper testimony period"; with the deception of status and title copies of a plaintiff's pleaded registration submitted with the complaint, any evidence which a party offers on the case must be offered during the proper testimony period.

Comment: With respect to proposed §2.123(a)(1) (which provides, inter alia, that if a party serves notice of the taking of a testimonial deposition upon written questions of a witness within the United States, any adverse party may, within fifteen days from the date of service of the notice, file a motion with the Trademark Trial and Appeal Board, for good cause, for an order that the deposition be taken by oral examination), one individual, noting that the procedure for taking testimony by written questions is unsatisfactory and often frustrating, suggested that the paragraph be changed to require that a party seeking to utilize this procedure (in lieu of an oral examination) file a motion requesting, for good cause shown, permission to by-pass the oral examination of its witness, that is, that the burden of filing a motion and showing good cause be shifted to the party who wants to take testimony upon written questions.

Response: If the burden of filing the motion were shifted in the manner suggested, the Trademark Trial and Appeal Board would have to rule on a motion in every case where a party desires to take testimony by written questions. Under the rule as proposed, the Board would have to rule on a motion only in those cases where one party desires to take testimony by written questions and the adverse party objects to the use of this procedure in lieu of an oral depositon. Often, the adverse party does not object. Moreover, Rule 31 F.R.C.P., which provides for the use of depositions upon written questions in federal district courts, does not require that a party who wishes to use this procedure file a motion requesting permission to do so. Accordingly, this suggestion has not been adopted.

Comment: Two organizations commented that proposed paragraphs (j) and (k) of §2.123, which relate to the raising of objections to testimony depositions taken in inter partes proceedings, appear to be inconsistent and unclear as to the timing of objections. Both organizations suggested that the paragraphs be modified to rely upon the pertinent portion of the Federal Rules of Civil Procedure, namely, Rule 32(d)(3). Similarly, one individual commented that proposed paragraph (k) is ambiguous as to the timing of an objection to testimony based upon lack of competency of the witness.

Response: In order to improve their consistency and clarity, the paragraphs have been modified as suggested. It should be noted that the result of the modification of paragraph (j) is that if a party fails to attend the taking of a deposition, he thereby waives any objection which under Rule 32(d)(3)(A) and (B) F.R.C.P. is deemed to be waived if not made at the taking of the deposition. This is a significant change from existing §2.123(j), which permits the raising of formal or technical objections as soon as a party becomes aware of them, e.g., in the case of a party who did not attend the taking of a deposition, at the time when such party receives a copy of a transcript of the deposition.

Comment: With respect to the same paragraphs, one individual suggested that the Trademark Trial and Appeal Board entertain and determine, prior to the briefing period, motions to strike testimony, so that parties to a proceeding before the Board will know exactly what is in the record when they write their briefs.

Response: The adoption of this suggestion would put an intolerable burden on the Board because the Board would have to read testimony depositions both at the time of determination of a motion to strike them and again at final hearing. It is the longstanding policy of the Board not to read trial testimony taken in a proceeding before it, or to examine other evidence offered by the parties in support of their respective cases, until final hearing,. See, for example: *Curtice-Burns, Inc.* v. *Northwest Sanitation Products, Inc.*, 182 USPQ 572 (Comr.

1974), and *Clairol Inc.* v. *Holland Hall Products, Inc.*, 161 USPQ 616 (TTAB 1969). Accordingly, the suggestion has not been adopted.

Comment: With respect to proposed §2.124(d)(2) (which provides in part that when one or more testimonial depositions are to be taken upon written questions, the Trademark Trial and Appeal Board may suspend or reschedule other proceedings in the matter to allow for the orderly completion of the depositions upon written questions), one individual expressed his belief that when the Board receives notice that a deposition is to be taken upon written questions, it should immediately suspend proceedings for a sixty-day period to allow for the completion of the deposition, thereby avoiding unnecessary motions to extend the trial periods.

Response: The paragraph has been modified to provide that in such situations the Board "shall" suspend or reschedule other proceedings in the matter to allow for the orderly completion of the deposition. The length of the suspension has been left to the discretion of the Board since the time required to complete the taking of a deposition upon written questions varies according to the place where the witness is located.

Comment: One organization, noting that the words "the letter" in proposed §2.124(e) have no antecedent and hence create an unnecessary ambiguity, suggested that the words "the notice and of all of the questions mailed" be substituted therefor. With respect to the statement in proposed §2.124(f) that it is the responsibility of the party who takes a deposition upon written questions to assure that the transcript is correct, the same organization suggested that the paragraph be modified to include a cross-reference to proposed §2.125(b), which specifies procedures for correcting transcripts.

Response: The paragraphs have been modified as suggested.

Comment: With respect to proposed §§2.27(e), 2.120(f), and 2.125(e), which relate to the provision, in inter partes proceedings before the Trademark Trial and Appeal Board, of certain types of discovery information, and the submission of certain types of trial evidence, under protective order, one individual commented that the proposed rules would appear to permit parties to keep virtually all relevant information confidential from the public at large.

Response: Under the rules as proposed and adopted, only trade secrets and confidential information are held under seal and kept confidential by the Board. Very little of the evidence offered in inter partes proceedings before the Trademark Trial and Appeal Board is of this nature.

Comment: Two organizations objected to proposed §2.128(a)(3) (which provides in essence that when a party fails to file a brief on the case, the Trademark Trial and Appeal Board may treat such failure as a concession of the case) on the grounds that the proposed rule is unduly harsh; that it constitutes an abrogation of the Board's responsibility to decide cases on the record before it, regardless of the absence of briefs; that the granting or denial of a registration with its evidentiary presumptions is too important an issue to be decided on the basis of a presumed concession; and that a party who fails to file a brief should at least be given an opportunity to show cause why judgment should not be entered against him for such failure. Similarly, one member of another organization believes that the proposed rule would encourage the filing of spurious oppositions in cases where the opposer feels that the applicant may not be in a position to afford the legal fees required for preparing a brief.

Response: For the reasons indicated in the comments, proposed §2.128(a)(3) has been modified to refer only to the party in the position of plaintiff, and proposed §2.128(a)(1) has been modified to make it clear that the filing of a brief on the case is not mandatory for the party in the position of defendant. Further, the primary purpose of proposed §2.128(a)(3) was to save the Board the burden of determining cases of the merits in instances where the parties have settled, but have failed to inform the Board thereof, or where one party, particularly the plaintiff, has lost interest in the case. It is not the intention of the Board to enter judgment against a plaintiff for failure to file a brief on the case if the plaintiff still desires to obtain a determination of the case on the merits. Accordingly, proposed §2.128(a)(3) has been modified herein to provide an opportunity for the plaintiff who fails to file a main brief on the case to show cause why such failure should not be treated as a concession of the case. Additionally, the paragraph has been modified to indicate that judgment may be entered against a plaintiff for failure to file a main brief only if plaintiff fails to file a response to the order to show cause or files a response indicating that he has lost interest in the case.

Comment: One organization, noting that proposed §2.128(b) permits briefs to be filed on legal or letter size paper, suggested that since the federal courts now permit only the use of letter size paper, consideration should be given to requiring that briefs and all other formal papers filed in the Patent and Trademark Office by on letter size paper only. With respect to the same paragraph, one individual recommended, because of the different paper sizes permitted under the rule, that the rule be modified to specify the number of words that a brief can contain or, alternatively, to specify separately the number of pages permitted for briefs written on each size of paper. The same individual suggested that it should be made clear that the permitted number of pages in a brief does not include pages containing the index and the alphabetical list of cases.

Response: The paragraph has been modified to require that briefs be submitted on letter size paper. As to what is included within the specified page limitations, the paragraph as proposed and adopted states in part that "no brief shall contain more that fifty pages *of argument* and, in the case of a reply brief, *the entire brief* shall not exceed twenty-five pages" (emphasis added). It is believed that the paragraph as written clearly indicates that the fifty-page limitation for a main brief applies only to the length of the argument and does not include the index and case list pages, but that the twenty-five page limitation for a reply brief applies to the entire brief, e.g., argument, index, case list, and all. Accordingly, no further modification has been made.

Comment: With respect to proposed §2.134(b) (which provides that if the respondent in a cancellation proceeding permits his involved registration to be cancelled under section 8 of the Act of 1946 or fails to renew the registration under section 9 of the Act of 1946, such cancellation or failure to renew shall be deemed to be the equivalent of a cancellation by request of respondent without the consent of the adverse party and shall result in entry of judgment against respondent), two organizations commented that the judgment entered against a respondent under the proposed paragraph would have a res judicata effect; that the entry of such a judgment would be unduly harsh where the cancellation or expiration was the result of an inadvertence or mistake; and that, at a minimum, a respondent should be allowed to "show cause" why such a judgment should be entered. Similarly one individual commented that in such situations, a respondent whose use of its registered mark has in fact been discontinued should be put in a position whereby it can terminate the dispute with prejudice only as to the ground of abandonment.

Response: The paragraph has been modified to provide an opportunity for the respondent in such situation to "show cause" why judgment should not be entered against it. If respondent submits a showing that the cancellation or expiration was the result of an inadvertence or mistake, judgment will not be entered against it. If respondent submits a showing that the cancellation or expiration was occasioned by the fact that its registered mark had been abondoned and that such abandonment was not made for purposes of avoiding the proceeding but rather was the result, for example, of a two-year period of nonuse which commenced well before respondent learned of the existence of the proceeding, judg-

ment will be entered against it only and specifically on the ground of abandonment.

Comment: Apparently with respect to proposed §2.135 (which provides that after the commencement of an opposition proceeding, if applicant files a written abandonment of the application or of the mark without the written consent of every adverse party, judgment shall be entered against the applicant), one individual expressed his belief that if an applicant involved in an opposition were allowed to abandon its mark or application without the consent of the opposer without incurring entry of judgment against itself, more applicants would abandon, thus saving money for the Patent and Trademark Office.

Response: The purpose of §2.135 is to prevent an applicant involved in an opposition from abandoning its opposed application and then refiling, thus putting opposer (and the Patent and Trademark Office) to the expense of multiple proceedings. A rule to the contrary would be inequitable. Accordingly, §2.135 has not been modified in the manner suggested by this comment.

Comment: One individual questioned the necessity for the requirement in proposed §2.142(e)(2) that if the appellant in an ex parte proceeding requests an oral argument, the examiner who issued a refusal of registration or a requirement from which an appeal is taken, or in lieu thereof another examiner from the same examining division as designated by the supervisory attorney thereof, shall present an oral argument.

Response: The purpose of the requirement is to ensure that the examining attorney will be present at the oral hearing to respond to any new arguments raised by appellant and to answer any questions which the members of the panel assigned to hear the case may have. The examining attorney's oral argument need not be lengthy; if he (she) has nothing to add to what he (she) has already said in his (her) appeal brief, he (she) may simply say so.

Comment: With respect to the last sentence of proposed§2.165(a) (which states in essence that the certificate of mailing procedure provided by §1.8 does not apply to affidavits or declarations filed under section 8 (a) or (b) of the Act), one organization expressed its belief that the sentence should be deleted in light of H.R. 6260.

Response: H.R. 6260, which was enacted on Aug. 27, 1982 as Pub. L.97-247, amended 35 U.S.C. 21 to include a provision that the Commissioner may by rule prescribe that any paper or fee required to be filed in the Patent and Trademark Office will be considered filed in the Office on the date on which it was deposited with the United States Postal Service or would have been deposited with the United States Postal Service but for postal service interruptions or emergencies designated by the Commissioner. As a result thereof, a new section, §1.10, effective Feb. 27, 1983, has been added, by final rule notice published in the **Federal Register** on Jan. 20, 1983 at 48 FR 2696, to Part I of Title 37 CFR. The new section provides a procedure for assigning the date on which any paper or fee is deposited as "Express Mail" with the United States Postal Service as the filing date of the paper or fee in the Patent and Trademark Office. Inasmuch as this new section applies to "any paper or fee", it applies to affidavits or declarations filed under section 8 (a) or (b) of the Act of 1946. However, the §1.8 certificate of mailing procedure has not been eliminated, and that section still specifically provides that the procedure outlined therein does not apply to affidavits filed under section 8 (a) or (b) of the Act. In view thereof, the last sentence of §2.165(a) has been amended by the addition of a final clause, namely, "but the certificate of mailing by 'Express Mail' procedure provided by §1.10 does apply thereto."

Comment: One organization has submitted suggestions for changes to rules not involved herein.

Response: The suggested changes cannot be adopted without affording members of the public an opportunity to comment thereon. However, these suggestions will be considered in connection with any future proposals to amend the rules in question.

Environmental, energy and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. '96-354). The rule change includes no additional or increased fees. Substantive rights to use valuable trademarks are not adversely affected.

The rule change does not impose a record keeping or reporting burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. No additional information is required from the public. No additional records are required to be maintained by the Patent and Trademark Office because there are no additional fees or proceedings to monitor.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increases in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant, adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States based enterprises to compete with foreign based enterprises in domestic or export markets.

List of Subjects in 37 CFR Part 2

Administrative practice and procedures, Courts, Lawyers, Trademarks

Amendments of Regulations

After consideration of the comments received and pursuant to the authority contained in 15 U.S.C. 1123, Part 2 of Title 37 of the Code of Federal Regulations is amended as set forth below.

PART 2-RULES OF PRACTICE IN TRADEMARK CASES

1. Section 2.27 is amended by revising paragraphs (b) and (d) and adding paragraph (e) to read as follows:

§2.27 Pending trademark application index; access to applications.

* * * * *

(b) Except as provided in paragraph (e) of this section, access to the file of a particular pending application will be permitted prior to publication under §2.60 upon written request.

* * * * *

(d) Except as provided in paragraph (e) of this section, after a mark has been registered, or published for opposition, the file of the application and all proceedings relating thereto are available for public inspection and copies of the papers may be furnished upon paying the fee therefor.

(e) Anything ordered to be filed under seal pursuant to a protective order issued or made by any court or by the Trademark Trial and Appeal Board in any proceeding involving an application or a registration shall be kept confidential and shall not be made available for public inspection or copying unless otherwise ordered by the court or the Board, or unless the party protected by the order voluntarily discloses the matter subject thereto. When possible, only confidential portions of filing with the Board shall be filed under seal.

2. Section 2.63 is revised to read as follows:

§2.63 Reexamination.

(a) After response by the applicant, the application will be reexamined or reconsidered. If registration is again refused or any formal requirement(s) is repeated, but the examiner's action is not stated to be final, the applicant may respond again.

(b) After reexamination the applicant may respond by filing a timely petition to the Commissioner for relief from a formal requirement if: (1) The requirement is re-

peated, but the examiner's action is not made final, and the subject matter of the requirement is appropriate for petition to the Commissioner (see §2.146(b)); or (2) the examiner's action is made final and such action is limited to subject matter appropriate for petition to the Commissioner. If the petition is denied, the applicant shall have until six months from the date of the Office action which repeated the requirement or made it final or thirty days from the date of the decision on the petition, whichever date is later, to comply with the requirement. A formal requirement which is the subject of a petition decided by the Commissioner may not subsequently be the subject of an appeal to the Trademark Trial and Appeal Board.

3. Section 2.64 is revised to read as follows:

§2.64 Final Action.

(a) On the first or any subsequent reexamination or reconsideration the refusal of the registration or the insistence upon a requirement may be stated to be final, whereupon applicant's response is limited to an appeal, or to a compliance with any requirement, or to a petition to the Commissioner if permitted by §2.63(b).

(b) During the period between a final action and expiration of the time for filing an appeal, the applicant may request the examiner to reconsider the final action. The filing of a request for reconsideration will not extend the time for filing an appeal or petitioning the Commissioner, but normally the examiner will reply to a request for reconsideration before the end of the six-month period if the request is filed within three months after the date of the final action. Amendments accompanying requests for reconsideration after final action will be entered if they comply with the rules of practice in trademark cases and the Act of 1946.

4. Section 2.65 is revised to read as follows:

§2.65 Abandonment.

(a) If an applicant fails to respond, or to respond completely, within six months after the date an action is mailed, the application shall be deemed to have been abandoned. A timely petition to the Commissioner pursuant to §§2.63(b) and 2.146 is a response which avoids abandonment of an application.

(b) When action by the applicant filed within the six-month response period is a bona fide attempt to advance the examination of the application and is substantially a complete response to the examiner's action, but consideration of some matter or compliance with some requirement has been inadvertently omitted, opportunity to explain and supply the omission may be given before the question of abandonment is considered.

5. Section 2.72 is revised to read as follows:

§2.72 Amendments to description or drawing of the mark.

Amendments to the description or drawing of the mark may be permitted only if warranted by the specimens (or facsimilies) as originally filed, or supported by additional specimens (or facsimilies) and a supplemental affidavit or declaration in accordance with §2.20 alleging that the mark shown in the amended drawing was in actual use prior to the filing date of the application. Amendments may not be made if the character of the mark is materially altered.

6. Section 2.81 is revised to read as follows:

§2.81 Allowance of application.

If no opposition is filed within the time permitted or all oppositions filed are dismissed, and if no interference is declared and no concurrent use proceeding is instituted, the application will be prepared for issuance of the certificate of registration as provided in §2.151.

§2.88 [Removed]

7. Section 2.88 is removed.

§2.94 [Removed]

8. Section 2.94 is removed.

§2.95 [Removed]

9. Section 2.95 is removed.

10. Section 2.96 is revised to read as follows:

§2.96 Issue; burden of proof.

The issue in an interference between applications is normally priority of use, but the rights of the parties to registration may also be determined. The party whose application involved in the interference has the latest filing date is the junior party and has the burden of proof. When there are more than two parties to an interference, a party shall be a junior to and shall have the burden of proof as against every other party whose application involved in the interference has an earlier filing date. If the involved applications of any parties have the same filing date, the application with the latest date of execution will be deemed to have the latest filing date and that applicant will be the junior party. The issue in an interference between an application and a registration shall be the same, but in the event the final decision is adverse to the registrant, a registration to the applicant will not be authorized so long as the interfering registration remains on the register.

§2.97 [Removed]

11. Section 2.97 is removed.

12. Section 2.98 is revised to read as follows:

§2.98 Adding party to interference.

A party may be added to an interference only upon petition to the Commissioner by that party. If an application which is or might be the subject of a petition for addition to an interference is not added, the examiner may suspend action on the application pending termination of the interference proceeding.

13. Section 2.99 is revised to read as follows:

§2.99 Application to register as concurrent user.

(a) An application for registration as a lawful concurrent user will be examined in the same manner as other applications for registration.

(b) When it is determined that the mark is ready for publication, the applicant may be required to furnish as many copies of this application, specimens and drawing as may be necessary for the preparation of notices for each applicant, registrant or user specified as a concurrent user in the application for registration.

(c) Upon receipt of the copies required by paragraph (b) of this section, the examiner shall forward the application for concurrent use registration for publication in the Official Gazette as provided by §2.80. If no opposition is filed, or if all oppositions that are filed are dismissed or withdrawn, the Trademark Trial and Appeal Board shall prepare a notice for the applicant for concurrent use registration and for each applicant, registrant or user specified as a concurrent user in the application. The notices for the specified parties shall state the name and address of the applicant and of the applicant's attorney or other authorized representative, if any, together with the serial number and filing date of the application.

(d)(1) The notices shall be sent to each applicant, in care of his attorney or other authorized representative, if any, to each user, and to each registrant. A copy of the application shall be forwarded with the notice to each party specified in the application.

(2) An answer to the notice is not required in the case of an applicant or registrant whose application or registration is specified as a concurrent user in the application, but a statement, if desired, may be filed within forty days after the mailing of the notice; in the case of any other party specified as a concurrent user in the application, and answer must be filed within forty days after the mailing of the notice.

(3) If an answer, when required, is not filed, judgment will be entered precluding the specified user from claiming any right more extensive than that acknowl-

edged in the application(s) for concurrent use registration, but the applicant(s) will remain with the burden of proving entitlement to registration(s).

(e) The applicant for a concurrent use registration has the burden of proving entitlement thereto. If there are two or more applications for concurrent use registration involved in a proceeding, the party whose application has the latest filing date is the junior party. A party whose application has a filing date between the filing dates of the earliest involved application and the latest involved application is a junior party to every party whose involved application has an earlier filing date. If any applications have the same filing date, the application with the latest date of execution will be deemed to have the latest filing date and that applicant will be the junior party. A person specified as an excepted user in a concurrent use application but who has not filed an application shall be considered a party senior to every party that has an application involved in the proceeding.

(f) When a concurrent use registration is sought on the basis that a court of competent jurisdiction has finally determined that the parties are entitled to use the same or similar marks in commerce, a concurrent use registration proceeding will not be instituted if all of the following conditions are fulfilled:

(1) The applicant is entitled to registration subject only to the concurrent lawful use of a party to the court proceeding; and

(2) The court decree specifies the rights of the parties; and

(3) A true copy of the court decree is submitted to the examiner; and

(4) The concurrent use application complies fully and exactly with the court decree; and

(5) The excepted use specified in the concurrent use application does not involve a registration, or any involved registration has been restricted by the Commissioner in accordance with the court decree.

If any of the conditions specified in this paragraph is not satisfied, a concurrent use registration proceeding shall be prepared and instituted as provided in paragraphs (a) throught (e) of this section.

(g) Registrations and applications to register on the Supplemental Register and registrations under the Act of 1920 are not subject to concurrent use registration proceedings.

14. Section 2.104 is revised to read as follows:

§2.104 Contents of opposition.

The opposition must set forth a short and plain statement showing how the opposer would be damaged by the registration of the opposed mark and state the grounds for opposition. A duplicate copy of the opposition, including exhibits, shall be filed with the opposition.

15. Section 2.105 is revised to read as follows:

§2.105 Notification of opposition proceeding(s).

When an opposition in proper form has been filed and the correct fee(s) have been submitted, a notification shall be prepared by the Trademark Trial and Appeal Board, which shall identify the title and number of the proceeding and the application involved and shall designate a time, not less than thirty days from the mailing date of the notification, within which an answer must be filed. A copy of the notification shall be forwarded to the attorney or other authorized representative of the opposer, if any, or to the opposer. The duplicate copy of the opposition and exhibits shall be forwarded with a copy of the notification to the attorney or other authorized representative of the applicant, if any, or to the applicant.

16. Section 2.106 is amended by revising paragraph (c) to read as follows:

§2.106 Answer.

* * * * *

(c) The opposition may be withdrawn without prejudice before the answer is filed. After the answer is filed, the opposition may not be withdrawn without prejudice except with the written consent of the applicant.

17. Section 2.107 is revised to read as follows:

§2.107 Amendment of pleadings in an opposition proceeding.

Pleadings in an opposition proceeding may be amended in the same manner and to the same extent as in a civil action in a United States district court.

18. Section 2.113 is revised to read as follows:

§2.113 Notification of cancellation proceeding.

(a) When a petition for cancellation has been filed in proper form (see §§2.111 and 2.112), a notification shall be prepared by the Trademark Trial and Appeal Board, which shall identify the title and number of the proceeding and the registration or registrations involved and shall designate a time, not less than thirty days from the mailing date of the notification, within which an answer must be filed. A copy of the notification shall be forwarded to the attorney or other authorized representative of the petitioner, if any, or to the petitioner. The duplicate copy of the petition for cancellation and exhibits shall be forwarded with a copy of the notification to the respondent (see §2.118). If the petition is found to be defective as to form, the party filing the petition shall be so advised and allowed a reasonable time for correcting the informality.

19. Section 2.115 is revised to read as follows:

§2.115 Amendment of pleadings in a cancellation proceeding.

Pleadings in a cancellation proceeding may be amended in the same manner and to the same extent as in a civil action in a United States district court.

20. Section 2.116 is amended by revising paragraphs (b) and (c) to read as follows:

§2.116 Rules of Procedure.

* * * * *

(b) The opposer in an opposition proceeding or the petitioner in a cancellation proceeding shall be in the position of plaintiff, and the applicant in an opposition proceeding or the respondent in a cancellation proceeding shall be in the position of defendant. A party that is a junior party in an interference proceeding or in a concurrent use registration proceeding shall be in the position of plaintiff against every party that is senior, and the party that is a senior party in an interference proceeding or in a concurrent use registration proceeding shall be defendant against every party that is junior.

(c) The opposition or the petition for cancellation and the answer correspond to the complaint and answer in a court proceeding.

21. Section 2.117 is revised to read as follows:

§2.117 Suspension of proceedings.

(a) Whenever it shall come to the attention of the Trademark Trial and Appeal Board that parties to a pending case are engaged in a civil action which may be dispositive of the case, proceedings before the Board may be suspended until termination of the civil action.

(b) Whenever there is pending, at the time when the question of the suspension of proceedings is raised, a motion which is potentially dispositive of the case, the motion may be decided before the question of suspension is considered.

(c) Proceedings may also be suspended, for good cause, upon motion or a stipulation of the parties approved by the Board.

22. Section 2.120 is revised to read as follows:

§2.120 Discovery.

(a) *In general.* The provisions of the Federal Rules of Civil Procedure relating to discovery shall apply in opposition, cancellation, interference and concurrent use registration proceedings except as otherwise provided in this section. The Trademark Trial and Appeal Board will specify the closing date for the taking of discovery.

(b) *Discovery deposition within the United States.* The deposition of a natural person shall be taken in the Federal judicial district where the person resides or is regularly employed or at any place on which the parties agree by stipulation. The responsibility rests wholly with the party taking discovery to secure the attendance of a proposed deponent other than a party or anyone who, at the time set for the taking of the deposition, is an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or Rule 31(a) of the Federal Rules of Civil Procedure. See 35 U.S.C. 24.

(c) *Discovery deposition in foreign countries.* (1) The discovery deposition of a natural person residing in a foreign country who is a party or who, at the time set for the taking of the deposition, is an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or Rule 31(a) of the Federal Rules of Civil Procedure, shall, if taken in a foreign country, be taken in the manner prescribed by §2.124 unless the Trademark Trial and Appeal Board, upon motion for good cause, orders or the parties stipulate, that the deposition be taken by oral examination.

(2) Whenever a foreign party is or will be, during a time set for discovery, present within the United States or any territory which is under the control and jurisdiction of the United States, such party may be deposed by oral examination upon notice by the party seeking discovery. Whenever a foreign party has or will have, during a time set for discovery, an officer, director, managing agent, or other person who consents to testify on its behalf, present within the United States or any territory which is under the control and jurisdiction of the United States, such officer, director, managing agent, or other person who consents to testify in its behalf may be deposed by oral examination upon notice by the party seeking discovery. The party seeking discovery may have one or more officers, directors, managing agents, or other persons who consent to testify on behalf of the adverse party, designated under Rule 30(b)(6) of the Federal Rules of Civil Procedure. The deposition of a person under this paragraph shall be taken in the Federal judicial district where the witness resides or is regularly employed, or, if the witness neither resides nor is regularly employed in a Federal judicial district, where the witness is at the time of the deposition. This paragraph does not preclude the taking of a discovery deposition of a foreign party by any other procedure provided by paragraph (c)(1) of this section.

(d) *Request for production.* The production of documents and things under the provisions of Rule 34 of the Federal Rules of Civil Procedure will be made at the place where the documents and things are usually kept, or where the parties agree, or where and in the manner which the Trademark Trial and Appeal Board, upon motion, orders.

(e) *Motion for an order to compel discovery.* If a party fails to designate a person pursuant to Rule 30(b)(6) or Rule 31(a) of the Federal Rules of Civil Procedure, or if a party, or such designated person, or an officer, director or managing agent of a party fails to attend a deposition or fails to answer any question propounded in a discovery deposition, or any interrogatory, or fails to produce and permit the inspection and copying of any document or thing, the party seeking discovery may file a motion before the Trademark Trial and Appeal Board for an order to compel a designation, or attendance at a deposition, or an answer, or production and an opportunity to inspect and copy. The motion shall include a copy of the request for designation or of the relevant portion of the discovery deposition; or a copy of the interrogatory with any answer or objection that was made; or a copy of the request for production, any proffer of production or objection to production in response to the request, and a list and brief description of the documents or things that were not produced for inspection and copying. The motion must be supported by a written statement from the moving party that such party or the attorney therefor has made a good faith effort, by conference or correspondence, to resolve with the other party or the attorney therefor the issues presented in the motion and has been unable to reach agreement. If issues raised in the motion are subsequently resolved by agreement of the parties, the moving party should inform the Board in writing of the issues in the motion which no longer require adjudication.

(f) *Motion for a protective order.* Upon motion by a party from whom discovery is sought, and for good cause, the Trademark Trial and Appeal Board may make any order which justice requires to protect a party from annoyance, embarrassment, oppression, or undue burden or expense, including one or more of the types of orders provided by clauses (1) through (8), inclusive, of Rule 26(c) of the Federal Rules of Civil Procedure. If the motion for a protective order is denied in whole or in part, the Board may, on such conditions (other than an award of expenses to the party prevailing on the motion) as are just, order that any party provide or permit discovery.

(g) *Failure to comply with order.* If a party fails to comply with an order of the Trademark Trial and Appeal Board relating to discovery, including a protective order, the Board may make any appropriate order, including any of the orders provided in Rule 37(b)(2) of the Federal Rules of Civil Procedure, except that the Board does not have authority to hold any person in contempt or to award any expenses to any party. The Board may impose against a party any of the sanctions provided by this subsection in the event that said party or any attorney, agent, or designated witness of that party fails to comply with a protective order made pursuant to Rule 26(c) of the Federal Rules of Civil Procedure.

(h) *Request for admissions.* Requests for admissions shall be governed by Rule 36 of the Federal Rules of Civil Procedure except that the Trademark Trial and Appeal Board does not have authority to award any expenses to any party. A motion by a party to determine the sufficiency of an answer or objection to a request made by that party for an admission shall include a copy of the request for admission and any exhibits thereto and of the answer or objection. The motion must be supported by a written statement from the moving party that such party or the attorney therefor has made a good faith effort, by conference or correspondence, to resolve with the other party or the attorney therefor the issues presented in the motion and has been unable to reach agreement. If issues raised in the motion are subsequently resolved by agreement of the parties, the moving party should inform the Board in writing of the issues in the motion which no longer require adjudication.

(i) *Telephone and pre-trial conferences.* (1) Whenever it appears to the Trademark Trial and Appeal Board that a motion filed in an inter partes proceeding is of such nature that its resolution by correspondence is not practical, the Board may, upon its own initiative or upon request made by one or both of the parties, resolve the motion by telephone conference.

(2) Whenever it appears to the Trademark Trial and Appeal Board that questions or issues arising during the interlocutory phase of an inter partes proceeding have become so complex that their resolution by correspondence or telephone conference is not practical and that resolution would be likely to be facilitated by a conference in person of the parties or their attorneys with a Member or Attorney-Examiner of the Board, the Board may, upon its own initiative or upon motion made by one or both of the parties, request that the parties or their attorneys, under circumstances which will not result in undue hardship for any party, meet with the Board at its offices for a pre-trial conference.

(j) *Use of discovery deposition, admission, or answer to interrogatory.* (1) The discovery deposition of a party or

of anyone who at the time of taking the deposition was on officer, director or managing agent of a party, or a person designated by a party pursuant to Rule 30(b)(6) or Rule 31(a) of the Federal Rules of Civil Procedure, may be offered in evidence by an adverse party.

(2) Except as provided in paragraph (j)(1) of this section, the discovery deposition of a witness, whether or not a party, shall not be offered in evidence unless the person whose deposition was taken is, during the testimony period of the party offering the deposition, dead; or out of the United States (unless it appears that the absence of the witness was procured by the party offering the deposition); or unable to testify because of age, illness, infirmity, or imprisonment; or cannot be served with a subpoena to compel attendance at a testimonial deposition; or there is a stipulation by the parties; or upon a showing that such exceptional circumstances exist as to make it desirable, in the interest of justice, to allow the deposition to be used. The use of a discovery deposition by any party under this paragraph will be allowed only by stipulation of the parties approved by the Trademark Trial and Appeal Board, or by order of the Board on motion, which shall be filed at the time of the purported offer of the deposition in evidence, unless the motion is based upon a claim that such exceptional circumstances exist as to make it desirable, in the interest of justice, to allow the deposition to be used, in which case the motion shall be filed promptly after the circumstances claimed to justify use of the deposition became known.

(3) A discovery deposition, an answer to an interrogatory, or an admission to a request for admission, which may be offered in evidence under the provisions of paragraph (j) of this section may be made of record in the case by filing the deposition or any part thereof with any exhibit to the part that is filed, or a copy of the interrogatory and answer thereto with any exhibit made part of the answer, or a copy of the request for admission and any exhibit thereto and the admission (or a statement that the party from whom an admission was requested failed to respond thereto), together with a notice of reliance. The notice of reliance and the material submitted thereunder should be filed during the testimony period of the party who files the notice of reliance. An objection made at a discovery deposition by a party answering a question subject to the objection will be considered at final hearing.

(4) If only part of a discovery deposition is submitted and made part of the record by a party, an adverse party may introduce under a notice of reliance any other part of the deposition which should in fairness be considered so as to make not misleading what was offered by the submitting party.

(5) An answer to an interrogatory, or an admission to a request for admission, may be submitted and made part of the record by only the inquiring party except that, if fewer than all of the answers to interrogatories, or fewer than all of the admissions, are offered in evidence by the inquiring party, the responding party may introduce under a notice of reliance any other answers to interrogatories, or any other admissions, which should in fairness be considered so as to make not misleading what was offered by the inquiring party.

(6) Paragraph (j) of this section will not be interpreted to preclude the reading or the use of a discovery deposition, or answer to an interrogatory, or admission as part of the examination or cross-examination of any witness during the testimony period of any party.

(7) When a discovery deposition, or a part thereof, or an answer to an interrogatory, or an admission, has been made of record by one party in accordance with the provisions of paragraph (j)(3) of this section, it may be referred to by any party for purpose permitted by the Federal Rules of Evidence.

(8) Interrogatories, requests for production, requests for admissions, and materials or depositions obtained during the discovery period should not be filed with the Board except when submitted with a motion to compel discovery, or in support of or response to a motion for summary judgment, or under a notice of reliance during a party's testimony period.

23. Section 2.121 is revised to read as follow:

§2.121 Assignment of times for taking testimony.

(a)(1) The Trademark Trial and Appeal Board will issue a trial order assigning to each party the time for taking testimony. No testimony shall be taken except during the times assigned, unless by stipulation of the parties approved by the Board, or, upon motion, by order of the Board. Testimony periods may be rescheduled by stipulation of the parties approved by the Board, or upon motion granted by the Board, or by order of the Board. The resetting of the closing date for discovery will result in the rescheduling of the testimony periods without action by any party.

(2) The initial trial order will be mailed by the Board after issue is joined.

(b)(1) The Trademark Trial and Appeal Board will schedule a testimony period for the plaintiff to present its case in chief, a testimony period for the defendant to present its case and to meet the case of the plaintiff, and a testimony period for the plaintiff to present evidence in rebuttal.

(2) When there is a counterclaim, or when proceedings have been consolidated and one party is in the position of plaintiff in one of the involved proceedings and in the position of defendant in another of the involved proceedings, or when there is an interference or a concurrent use registration proceeding involving more than two parties, the Board will schedule testimony periods so that each party in the position of plaintiff will have a period for presenting its case in chief against each party in the position of defendant, each party in the position of defendant will have a period for presenting its case and meeting the case of each plaintiff, and each party in the position of plaintiff will have a period for presenting evidence in rebuttal.

(c) A testimony period which is solely for rebuttal will be set for fifteen days. All other testimony periods will be set for thirty days. The periods may be extended by stipulation of the parties approved by the Trademark Trial and Appeal Board, or upon motion granted by the Board, or by order of the Board.

(d) When parties stipulate to the rescheduling of testimony periods or to the rescheduling of the closing date for discovery and the rescheduling of testimony periods, a stipulation presented in the form used in a trial order, signed by the parties, or a motion in said form signed by one party and including a statement that every other party has agreed thereto, and submitted in one original plus as many photocopies as there are parties, will, if approved, be so stamped, signed, and dated, and the copies will be promptly returned to the parties.

24. Section 2.122 is revised to read as follows:

§2.122 Matters in evidence.

(a) *Rules of evidence.* The rules of evidence for proceedings before the Trademark Trial and Appeal Board are the Federal Rules of Evidence, the relevant provisions of the Federal Rules of Civil Procedure, the relevant provisions of Title 28 of the United States Code, and the provisions of this Part of Title 37 of the Code of Federal Regulations.

(b) *Application files.* (1) The file of each application or registration specified in a declaration of interference, of each application or registration specified in the notice of a concurrent use registration proceeding, of the application against which a notice of opposition is filed, or of each registration against which a petition or counterclaim for cancellation is filed forms part of the record of the proceeding without any action by the parties and reference may be made to the file for any relevant and competent purpose.

(2) The allegation in an application for registration, or in a registration, of a date of use is not evidence on behalf of the applicant or registrant; a date of use of a mark must be established by competent evidence. Speci-

mens in the file of an application for registration, or in the file of a registration, are not evidence on behalf of the applicant or registrant unless identified and introduced in evidence as exhibits during the period for the taking of testimony.

(c) *Exhibits to pleadings.* Except as provided in paragraph (d)(1) of this section, an exhibit attached to a pleading is not evidence on behalf of the party to whose pleading the exhibit is attached unless identified and introduced in evidence as an exhibit during the period for the taking of testimony.

(d) *Registrations.* (1) A registration of the opposer or petitioner pleaded in an opposition or petition to cancel will be received in evidence and made part of the record if the opposition or petition is accompanied by two copies of the registration prepared and issued by the Patent and Trademark Office showing both the current status of and current title to the registration. For the cost of a copy of a registration showing status and title, see §2.6(n).

(2) A registration owned by any party to a proceeding may be made of record in the proceeding by that party by appropriate identification and introduction during the taking of testimony or by filing a notice of reliance, which shall be accompanied by a copy of the registration prepared and issued by the Patent and Trademark Office showing both the current status of and current title to the registration. The notice of reliance shall be filed during the testimony period of the party that files the notice.

(e) *Printed publications and official records.* Printed publications, such as books and periodicals, available to the general public in libraries or of general circulation among members of the public or that segment of the public which is relevant under an issue in a proceeding, and official records, if the publication or official record is competent evidence and relevant to an issue, may be introduced in evidence by filing a notice of reliance on the material being offered, which notice shall specify the printed publication or the official record and the pages to be read, indicate generally the relevance of the material being offered, and be accompanied by the official record or a copy thereof whose authenticity is established under the Federal Rules of Evidence, or by the printed publication or a copy of the relevant portion thereof, including the title page and any other page needed to show the place and date of publication, the name and address of the publisher, and the name of the author or the editor. A copy of an official record of the Patent and Trademark Office need not be certified to be offered in evidence. The notice of reliance shall be filed during the testimony period of the party that files the notice.

(f) *Testimony from other proceedings.* By order of the Trademark Trial and Appeal Board, on motion, testimony taken in another proceeding, or testimony taken in a suit or action in a court, between the same parties or those in privity may be used in a proceeding, so far as relevant and material, subject, however, to the right of any adverse party to recall or demand the recall for examination or cross-examination of any witness whose prior testimony has been offered and to rebut the testimony.

25. Section 2.123 is amended by revising paragraphs (a), (e)(3), (j) and (k) to read as follows:

§2.123 Trial testimony in inter partes cases.

(a)(1) The testimony of witnesses in inter partes cases may be taken by depositions upon oral examination as provided by this section or by depositions upon written questions as provided by §2.124. If a party serves notice of the taking of a testimonial deposition upon written questions of a witness who is, or will be at the time of the deposition, present within the United States or any territory which is under the control and jurisdiction of the United States, any adverse party may, within fifteen days from the date of service of the notice, file a motion with the Trademark Trial and Appeal Board, for good cause, for an order that the deposition be taken by oral examination.

(2) A testimonial deposition taken in a foreign country shall be taken by deposition upon written questions as provided by §2.124, unless the Board, upon motion for good cause, orders that the deposition be taken by oral examination, or the parties so stipulate.

* * * * *

(e) *Examination of witnesses.* * * *

(3) Every adverse party shall have full opportunity to cross-examine each witness. If the notice of examination of witnesses which is served pursuant to paragraph (c) of this section is improper or inadequate with respect to any witness, an adverse party may cross-examine that witness under protest while reserving the right to object to the receipt of the testimony in evidence. Promptly after the testimony is completed, the adverse party, if he wishes to preserve the objection, shall move to strike the testimony from the record, which motion will be decided on the basis of all of the relevant circumstances. A motion to strike the testimony of a witness for lack of proper or adequate notice of examination must request the exclusion of the entire testimony of that witness and not only a part of that testimony.

* * * * *

(j) *Effect of errors and irregularities in depositions:* Rule 32(d) (1), (2), and (3) (A) and (B) of the Federal Rules of Civil Procedure shall apply to errors and irregularities in depositions. Notice will not be taken of merely formal or technical objections which shall not appear to have wrought a substantial injury to the party raising them; and in case of such injury it must be made to appear that the objection was raised at the time specified in said rule.

(k) *Objections to admissibility.* Subject to the provisions of paragraph (j) of this section, objection may be made to receiving in evidence any deposition, or part thereof, or any other evidence, for any reason which would require the exclusion of the evidence from consideration. Objections to the competency of a witness or to the competency, relevancy, or materiality of testimony must be raised at the time specified in Rule 32(d)(3)(A) of the Federal Rules of Civil Procedure. Such objections will not be considered until final hearing.

26. Section 2.124 is revised to read as follows:

§2.124 Depositions upon written questions.

(a) A deposition upon written questions may be taken before any person before whom depositions may be taken as provided by Rule 28 of the Federal Rules of Civil Procedure.

(b)(1) A party desiring to take a testimonial deposition upon written questions shall serve notice thereof upon each adverse party within ten days from the opening date of the testimony period of the party who serves the notice. The notice shall state the name and address of the witness. A copy of the notice, but not copies of the questions, shall be filed with the Trademark Trial and Appeal Board.

(2) A party desiring to take a discovery deposition upon written questions shall serve notice thereof upon each adverse party and shall file a copy of the notice, but not copies of the questions, with the Board. The notice shall state the name and address, if known, of the person whose deposition is to be taken. If the name of the person is not known, a general description sufficient to identify him or the particular class or group to which he belongs shall be stated in the notice, and the party from whom the discovery deposition is to be taken shall designate one or more persons to be deposed in the same manner as is provided by Rule 30(b)(6) of the Federal Rules of Civil Procedure.

(c) Every notice given under the provisions of paragraph (b) of this section shall be accompanied by the name or descriptive title of the officer before whom the deposition is to be taken.

(d)(1) Every notice served on any adverse party under the provisions of paragraph (b) of this section shall be accompanied by the written questions to be propounded on behalf of the party who proposes to take the deposition. Within twenty days from the date of service of the notice, any adverse party may serve cross questions upon the party who proposes to take the deposition; any party who serves cross questions shall also serve every other adverse party. Within ten days from the date of service of the cross questions, the party who proposes to take the deposition may serve redirect questions on every adverse party. Within ten days from the date of service of the redirect questions, any party who served cross questions may serve recross questions upon the party who proposes to take the deposition; any party who serves recross questions shall also serve every other adverse party. Written objections to questions may be served on a party propounding questions; any party who objects shall serve a copy of the objections on every other adverse party. In response to objections, substitute questions may be served on the objecting party within ten days of the date of service of the objections; substitute questions shall be served on every other adverse party.

(2) Upon motion for good cause by any party, or upon its own initiative, the Trademark Trial and Appeal Board may extend any of the time periods provided by paragraph (d)(1) of this section. Upon receipt of written notice that one or more testimonial depositions are to be taken upon written questions, the Trademark Trial and Appeal Board shall suspend or reschedule other proceedings in the matter to allow for the orderly completion of the depositions upon written questions.

(e) Within ten days after the last date when questions, objections, or substitute questions may be served, the party who proposes to take the deposition shall mail a copy of the notice and copies of all the questions to the officer designated in the notice; a copy of the notice and of all the questions mailed to the officer shall be served on every adverse party. The officer designated in the notice shall take the testimony of the witness in response to the questions and shall record each answer immediately after the corresponding question. The officer shall then certify the transcript and mail the transcript and exhibits to the party who took the deposition.

(f) The party who took the deposition shall promptly serve a copy of the transcript, copies of documentary exhibits, and duplicates or photographs of physical exhibits on every adverse party. It is the responsibility of the party who takes the deposition to assure that the transcript is correct (see §2.125(b)). If the deposition is a discovery deposition, it may be made of record as provided by §2.120(j). If the deposition is a testimonial deposition, the original, together with copies of documentary exhibits and duplicates or photographs of physical exhibits, shall be filed promptly with the Trademark Trial and Appeal Board.

(g) Objections to questions and answers in depositions upon written questions may be considered at final hearing.

27. Section 2.125 is revised to read as follows:

§2.125 Filing and service of testimony.

(a) One copy of the transcript of testimony taken in accordance with §2.123, together with copies of documentary exhibits and duplicates or photographs of physical exhibits, shall be served on each adverse party within thirty days after completion of the taking of that testimony.

(b) The party who takes testimony is responsible for having all typographical errors in the transcript and all errors of arrangement, indexing and form of the transcript corrected, on notice to each adverse party, prior to the filing of one certified transcript with the Trademark Trial and Appeal Board. The party who takes testimony is responsible for serving on each adverse party one copy of the corrected transcript or, if reasonably feasible, corrected pages to be inserted into the transcript previously served.

(c) One certified transcript and exhibits shall be filed promptly with the Trademark Trial and Appeal Board. Notice of such filing shall be served on each adverse party and a copy of each notice shall be filed with the Board.

(d) Each transcript shall comply with §2.123(g) with respect to arrangement, indexing and form.

(e) Upon motion by any party, for good cause, the Trademark Trial and Appeal Board may order that any part of a deposition transcript or any exhibits that directly disclose any trade secret or other confidential research, development, or commercial information may be filed under seal and kept confidential under the provisions of §2.27(e). If any party or any attorney or agent of a party fails to comply with an order made under this paragraph, the Board may impose any of the sanctions authorized by §2.120(g).

§2.126 [Removed]

28. Section 2.126 is removed.

29. Section 2.127 is revised to read as follows:

§2.127 Motions

(a) Every motion shall be made in writing, shall contain a full statement of the grounds, and shall embody or be accompanied by a brief. A brief in response to a motion shall be filed within fifteen days from the date of service of the motion unless another time is specified by the Trademark Trial and Appeal Board or the time is extended by order of the Board on motion for good cause. When a party fails to file a brief in response to a motion, the Board may treat the motion as conceded. An oral hearing will not be held on a motion except on order by the Board.

(b) Any request for reconsideration or modification of an order or decision issued on a motion must be filed within thirty days from the date thereof. A brief in response must be filed within fifteen days from the date of service of the request.

(c) Interlocutory motions, requests, and other matters not actually or potentially dispositive of a proceeding may be acted upon by a single Member of the Trademark Trial and Appeal Board or by an Attorney-Examiner of the Board to whom authority so to act has been delegated.

(d) When any party files a motion to dismiss, or a motion for judgment on the pleadings, or a motion for summary judgment, or any other motion which is potentially dispositive of a proceeding, the case will be suspended by the Trademark Trial and Appeal Board with respect to all matters not germane to the motion and no party should file any paper which is not germane to the motion. If the case is not disposed of as a result of the motion, proceedings will be resumed pursuant to an order of the Board when the motion is decided.

30. Section 2.128 is revised to read as follows:

§2.128 Briefs at final hearing.

(a)(1) The brief of the party in the position of plaintiff shall be due not later than sixty days after the date set for the close of rebuttal testimony. The brief of the party in the position of defendant, if filed, shall be not later than thirty days after the due date of the first brief. A reply brief by the party in the position of plaintiff, if filed, shall be due not later than fifteen days after the due date of the defendant's brief.

(2) When there is a counterclaim, or when proceedings have been consolidated and one party is in the position of plaintiff in one of the involved proceedings and in the position of defendant in another of the involved proceedings, or when there is an interference or a concurrent use registration proceeding involving more than two parties, the Trademark Trial and Appeal Board will set the due dates for the filing of the main brief, and the answering brief, and the rebuttal brief by the parties.

(3) When a party in the position of plaintiff fails to file

a main brief, an order may be issued allowing plaintiff until a set time, not less than fifteen days, in which to show cause why the Board should not treat such failure as a concession of the case. If plaintiff fails to file a response to the order, or files a response indicating that he has lost interest in the case, judgment may be entered against plaintiff.

(b) Briefs shall be submitted in typewritten or printed form, double spaced, on letter size paper. Without leave of the Trademark Trial and Appeal Board, no brief shall contain more than fifty pages of argument and, in the case of a reply brief, the entire brief shall not exceed twenty-five pages. Each brief shall contain an alphabetical index of cases cited therein. One original and two legible copies, on good quality paper, of each brief shall be filed.

31. Section 2.129 is revised to read as follows:

§2.129 Oral argument; reconsideration.

(a) If a party desires to have an oral argument at final hearing, the party shall request such argument by a separate notice filed not later than ten days after the due date for the filing of the last reply brief in the proceeding. Oral arguments will be heard by three Members of the Trademark Trial and Appeal Board at the time specified in the notice of hearing. If any party appears at the specified time, that party will be heard. If the Board is prevented from hearing the case at the specified time, a new hearing date will be set. Unless otherwise permitted, oral arguments in an inter partes case will be limited to thirty minutes for each party. A party in the position of plaintiff may reserve part of the time allowed for oral argument to present a rebuttal argument.

(b) The date or time of a hearing may be reset, so far as is convenient and proper, to meet the wishes of the parties and their attorneys or other authorized representatives.

(c) Any request for rehearing or reconsideration or modification of a decision issued after final hearing must be filed within thirty days from the date of the decision. A brief in response must be filed within fifteen days from the date of service of the request. The times specified may be extended by order of the Trademark Trial and Appeal Board on motion for good cause.

32. Section 2.131 is revised to read as follows:

§2.131 Remand after decision in inter partes proceeding.

If, during an inter partes proceeding, facts are disclosed which appear to render the mark of an applicant unregistrable, but such matter has not been tried under the pleadings as filed by the parties or as they might be deemed to be amended under Rule 15(b) of the Federal Rules of Civil Procedure to conform to the evidence, the Trademark Trial and Appeal Board, in lieu of determining the matter in the decision on the proceeding, may refer the application to the examiner for reexamination in the event the applicant ultimately prevails in the inter partes proceeding. Upon receiving the application, the examiner shall withhold registration pending reexamination of the application in the light of the reference by the Board. If, upon reexamination, the examiner finally refuses registration to the applicant, an appeal may be taken as provided by §§2.141 and 2.142.

33. Section 2.132 is revised to read as follows:

§2.132 Involuntary dismissal for failure to take testimony.

(a) If the time for taking testimony by any party in the position of plaintiff has expired and that party has not taken testimony or offered any other evidence, any party in the position of defendant may, without waiving the right to offer evidence in the event the motion is denied, move for dismissal on the ground of the failure of the plaintiff to prosecute. The party in the position of plaintiff shall have fifteen days from the date of service of the motion to show cause why judgment should not be rendered against him. In the absence of a showing of good and sufficient cause, judgment may be rendered against the party in the position of plaintiff. If the motion is denied, testimony periods will be reset for the party in the position of defendant and for rebuttal.

(b) If no evidence other than a copy or copies of Patent and Trademark Office records is offered by any party in the position of plaintiff, any party in the position of defendant may, without waiving the right to offer evidence in the event the motion is denied, move for dismissal on the ground that upon the law and the facts the party in the position of plaintiff has shown no right to relief. The party in the position of plaintiff shall have fifteen days from the date of service of the motion to file a brief in response to the motion. The Trademark Trial and Appeal Board may render judgment against the party in the position of plaintiff, or the Board may decline to render judgment until all of the evidence is in the record. If judgment is not rendered, testimony periods will be reset for the party in the position of defendant and for rebuttal.

(c) Any motion filed under paragraph (a) or (b) of this section must be filed before the opening of the testimony period of the moving party.

34. Section 2.134 is revised to read as follows:

§2.134 Surrender or voluntary cancellation of registration.

(a) After the commencement of a cancellation proceeding, if the respondent applies for cancellation of the involved registration under section 7(d) of the Act of 1946 without the written consent of every adverse party, judgment shall be entered against the respondent.

(b) After the commencement of a cancellation proceeding, if it comes to the attention of the Trademark Trial and Appeal Board that the respondent has permitted his involved registration to be cancelled under section 8 of the Act of 1946 or has failed to renew his involved registration under section 9 of the Act of 1946, an order may be issued allowing respondent until a set time, not less than fifteen days, in which to show cause why such cancellation or failure to renew should not be deemed to be the equivalent of a cancellation by request of respondent without the consent of the adverse party and should not result in entry of judgment against respondent as provided by paragraph (a) of this section. In the absence of a showing of good and sufficient cause, judgment may be entered against respondent as provided by paragraph (a) of this section.

35. Section 2.135 is revised to read as follows:

§2.135 Abandonment of application or mark.

After the commencement of an opposition, concurrent use, or interference proceeding, if the applicant files a written abandonment of the application or of the mark without the written consent of every adverse party, judgment shall be entered against the applicant.

36. Section 2.142 is proposed to be revised to read as follows:

§2.142 Time and manner of ex parte appeals.

(a) Any appeal filed under the provisions of §2.141 must be filed within six months from the date of final refusal or the date of the action from which the appeal is taken. An appeal is taken by filing a notice of appeal and paying the appeal fee.

(b) The brief of appellant shall be filed within sixty days from the date of appeal. If the brief is not filed within the time allowed, the appeal may be dismissed. The examiner shall, within sixty days after the brief of appellant is sent to the examiner, file with the Trademark Trial and Appeal Board a written brief answering the brief of appellant and shall mail a copy of the brief to the appellant. The appellant may file a reply brief within twenty days from the date of mailing of the brief of the examiner.

(c) All requirements made by the examiner and not the subject of appeal shall be complied with prior to the filing of an appeal.

(d) The record in the application should be complete prior to the filing of an appeal. The Trademark Trial

and Appeal Board will ordinarily not consider additional evidence filed with the Board by the appellant or by the examiner after the appeal is filed. After an appeal is filed, if the appellant or the examiner desires to introduce additional evidence, the appellant or the examiner may request the Board to suspend the appeal and to remand the application for further examination.

(e)(1) If the appellant desires an oral hearing, a request therefor should be made by a separate notice filed not later than ten days after the due date for a reply brief. Oral argument will be heard by three Members of the Trademark Trial and Appeal Board at the time specified in the notice of hearing, which may be reset if the Board is prevented from hearing the argument at the specified time or, so far as is convenient and proper, to meet the wish of the appellant or his attorney or other authorized representative.

(2) If the appellant requests an oral argument, the examiner who issued the refusal of registration or the requirement from which the appeal is taken, or in lieu thereof another examiner from the same examining division as designated by the supervisory attorney thereof, shall present an oral argument. If no request for an oral hearing is made by the appellant, the appeal will be decided on the record and briefs.

(3) Oral argument will be limited to twenty minutes by the appellant and ten minutes by the examiner. The appellant may reserve part of the time allowed for oral argument to present a rebuttal argument.

(f)(1) If, during an appeal from a refusal of registration, it appears to the Trademark Trial and Appeal Board that an issue not previously raised may render the mark of the appellant unregistrable, the Board may suspend the appeal and remand the application to the examiner for further examination to be completed within thirty days.

(2) If the further examination does not result in an additional ground for refusal of registration, the examiner shall promptly return the application to the Board, for resumption of the appeal, with a written statement that further examination did not result in an additional ground for refusal of registration.

(3) If the further examination does result in an additional ground for refusal of registration, the examiner and appellant shall proceed as provided by §§2.61, 2.62, 2.63 and 2.64. If the ground for refusal is made final, the examiner shall return the application to the Board, which shall thereupon issue an order allowing the appellant sixty days from the date of the order to file a supplemental brief limited to the additional ground for the refusal of registration. If the supplemental brief is not filed by the appellant within the time allowed, the appeal may be dismissed.

(4) If the supplemental brief of the appellant is filed, the examiner shall, within sixty days after the supplemental brief of the appellant is sent to the examiner, file with the Board a written brief answering the supplemental brief of appellant and shall mail a copy of the brief to the appellant. The appellant may file a reply brief within twenty days from the date of mailing of the brief of the examiner.

(5) If an oral hearing on the appeal had been requested prior to the remand of the application but not yet held, an oral hearing will be set and heard as provided in paragraph (e) of this section. If an oral hearing had been held prior to the remand or had not been previously requested by the appellant, an oral hearing may be requested by the appellant by a separate notice filed not later than ten days after the due date for a reply brief on the additional ground for refusal of registration. If the appellant files a request for an oral hearing, one will be set and heard as provided in paragraph (e) of this section.

(g) An application which has been considered and decided on appeal will not be reopened except for the entry of a disclaimer under section 6 of the Act of 1946 or upon order of the Commissioner, but a petition to the Commissioner to reopen an application will be considered only upon a showing of sufficient cause for consideration of any matter not already adjudicated.

37. Section 2.146 is revised to read as follows:

§2.146 Petitions to the Commissioner.

(a) Petition may be taken to the Commissioner: (1) From any repeated or final formal requirement of the examiner in the ex parte prosecution of an application if permitted by §2.63(b); (2) in any case for which the Act of 1946, or Title 35 of the United States Code, or this Part of Title 37 of the Code of Federal Regulations specifies that the matter is to be determined directly or reviewed by the Commissioner; (3) to invoke the supervisory authority of the Commissioner in appropriate circumstances; (4) in any case not specifically defined and provided for by this part of Title 37 of the Code of Federal Regulations; (5) in an extraordinary situation, when justice requires and no other party is injured thereby, to request a suspension or waiver of any requirement of the rules not being a requirement of the Act of 1946.

(b) Questions of substance arising during the ex parte prosecution of applications, including, but not limited to, questions arising under sections 2, 3, 4, 5, 6 and 23 of the Act of 1946, are not considered to be appropriate subject matter for petitions to the Commissioner.

(c) Every petition to the Commissioner shall include a statement of the facts relevant to the petition, the points to be reviewed, the action or relief that is requested, and the requisite fee (see §2.6). Any brief in support of the petition shall be embodied in or accompany the petition. When facts are to be proved in ex parte cases (as in a petition to revive an abandoned application), the proof in the form of affidavits or declarations in accordance with §2.20, and any exhibits, shall accompany the petition.

(d) A petition on any matter not otherwise specifically provided for shall be filed within sixty days from the date of mailing of the action from which relief is requested.

(e)(1) A petition from the denial of a request for an extension of time to file a notice opposition shall be filed within fifteen days from the date of mailing of the denial of the request and shall be served on the attorney or other authorized representative of the applicant, if any, or on the applicant. Proof of service of the petition shall be made as provided by §2.119(a). The applicant may file a response within fifteen days from the date of service of the petition and shall serve a copy of the response on the petitioner, with proof of service as provided by §2.119(a). No further paper relating to the petition shall be filed.

(2) A petition from an interlocutory order of the Trademark Trial and Appeal Board shall be filed within thirty days after the date of mailing of the order from which relief is requested. Any brief in response to the petition shall be filed, with any supporting exhibits, within fifteen days from the date of service of the petition. Petitions and responses to petitions, and any papers accompanying a petition or response, under this subsection shall be served on every adverse party pursuant to §2.119(a).

(f) An oral hearing will not be held on a petition except when considered necessary by the Commissioner.

(g) The mere filing of a petition to the Commissioner will not act as a stay in any appeal or inter partes proceeding that is pending before the Trademark Trial and Appeal Board nor stay the period for replying to an Office action in an application except when a stay is specifically requested and is granted or when §§2.63(b) and 2.65 are applicable to an ex parte application.

(h) Authority to act on petitions, or on any petition, may be delegated by the Commissioner.

§2.147 [Removed]

38. Section 2.147 is removed.

39. Section 2.165 is revised to read as follows:

§2.165 Reconsideration of affidavit or declaration.

(a)(1) If the affidavit or declaration filed pursuant to

§2.162 is insufficient or defective, the affidavit or declaration will be refused and the registrant will be notified of the reason. Reconsideration of the refusal may be requested within six months from the date of the mailing of the action. The request for reconsideration must state the grounds for the request. A supplemental or substitute affidavit or declaration required by section 8 of the Act of 1946 cannot be considered unless it is filed before the expiration of six years from the date of the registration or from the date of publication under section 12(c) of the Act. The certificate of mailing procedure provided by §1.8 does not apply to affidavits or declarations or to supplemental or substitute affidavits or declarations filed under section 8 (a) or (b) of the Act, but the certificate of mailing by "Express Mail" procedure provided by §1.10 does apply thereto.

(2) A request for reconsideration shall be a condition precedent to a petition to the Commissioner to review the refusal of the affidavit or declaration unless the first action refusing the affidavit or declaration directs the registrant to petition the Commissioner for relief, in which event the petition must be filed within six months from the date of mailing of the action.

(b) If the refusal of the affidavit or declaration is adhered to, the registrant may petition the Commissioner to review the action under §2.146(a)(2). The petition to the Commissioner requesting review of the action adhering to the refusal of the affidavit or declaration must be filed within six months from the date of mailing of the action which denied reconsideration.

(c) The decision of the Commissioner on the petition will constitute the final action of the Patent and Trademark Office. If there is no petition to the Commissioner, the Commissioner will notify the registrant of the refusal of the affidavit or declaration after the expiration of six years from the date of registration or from the date of publication under section 12(c) of the Act of 1946, and such notice will constitute the final action of the Office.

(d) A petition to the Commissioner for review of the action shall be a condition precedent to an appeal to or action for review by any court.

40. Section 2.173 is amended by revising paragraph (b) to read as follows:

§2.173 Amendment; disclaimer in part.

* * * * *

(b) No amendment in the identification of goods or services in a registration will be permitted except to restrict the identification or otherwise to change it in ways that would not require republication of the mark. No amendment seeking the elimination of a disclaimer will be permitted.

* * * * *

41. Section 2.184 is revised to read as follows:

§2.184 Refusal of renewal.

(a) If the application for renewal is incomplete or defective, the renewal will be refused. The application may be completed or amended in response to a refusal, subject to the provisions of §2.183. If a response to a refusal of renewal is not filed within six months from the date of mailing of the action, the application for renewal will be considered abandoned. A request to reconsider a refusal of renewal shall be a condition precedent to a petition to the Commissioner to review the refusal of renewal.

(b) If the refusal of renewal is adhered to, the registrant may petition the Commissioner to review the action under §2.146(a)(2). The petition to the Commissioner requesting review of the action adhering to the refusal of the renewal must be filed within six months from the date of mailing of the action which adhered to the refusal. If a timely petition to the Commissioner is not filed, the application for renewal will be considered abandoned.

(c) The decision of the Commissioner on the petition will constitute the final action of the Patent and Trademark Office.

(d) A petition to the Commissioner for review of the action shall be a condition precedent to an appeal to or action for review by any court.

42. Section 2.186 is revised to read as follows:

§2.186 Action may be taken by assignee of record.

Any action with respect to an assigned application or registration which may or must be taken by a registrant or applicant may be taken by the assignee provided that the assignment has been recorded.

Apr. 28, 1983.

DONALD J. QUIGG,
Deputy Commissioner of Patents and Trademarks.

[FR Doc. 83-13500 Filed 5-20-83; 8:45 am]
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[1031 TMOG 12]

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(142)

Department of Commerce
Patent and Trademark Office
37 CFR Part 2
Docket No. 40557-4057
Miscellaneous Amendments of Trademark Rules

Agency: Patent and Trademark Office, Commerce.

Action: Proposed rulemaking.

Summary: The Patent and Trademark Office proposes amendments to the rules of practice in trademark cases to correct two cross-references and a spelling error; to bring §§2.104 and 2.112(a) into conformity with §§13 and 14 of the Trademark Act; to make §2.114(c), which relates to the withdrawal of a petition for cancellation, consistent with corresponding §2.106(c), which relates to the withdrawal of an opposition; and to specify that the Trademark Trial and Appeal Board may, in its discretion, grant a §2.132(a) motion even if the motion was filed after the opening of the testimony period of the moving party.

Date: Written comments by July 18, 1984.

Address: Address written comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231. Written comments will be available for public inspection in Room 11E10 of Bldg. 3, Crystal Plz., 2021 Jefferson Davis Hwy., Arlington, Va.

For Further Information Contact: Miss Janet E. Rice by telephone at (703) 557-3551 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Miss Janet E. Rice, Crystal Sq. 5, Suite 1008, Washington, D.C. 20231.

Supplementary Information: Several of therules of practice in trademark cases were amended, effective Feb. 27, 1983, by a final rule notice published in the *Federal Register* on Jan. 28, 1983 at 48 FR 3972 and in the *Official Gazette* of Feb. 22, 1983 at 1027 O.G. 129. A substantial number of other rules of practice in trademark cases were amended, effective June 22, 1983, by a final rule notice published in the *Federal Register* on May 23, 1983 at 48 FR 23122 and in the *Official Gazette* of June 21, 1983 at 1031 O.G. 13. As a result of these rule amendments, three further rule amendments of a "housekeeping" nature are now necessary. First, because the rule amendments included changes in some section numbers and in the location of some provisions, the cross-reference portions of §§2.1 and 2.145(d) (1) need to be corrected. Second, §2.101(b), as amended effective Feb. 27, 1983, contains a spelling error which needs to be corrected. Third, §2.114(c), which relates to the withdrawal of a petition for cancellation, needs to be amended so that it will be consistent with §2.106(c), as amended effective June 22, 1983, which relates to the withdrawal of an opposition.

Additionally, §2.104 (which lists the content requirements for an opposition) and §2.112(a) (which lists the content requirements for a petition for cancellation) are proposed to be amended to bring them into conformity with §§13 and 14 of the Trademark Act. These amendments are proposed as a result of a comment contained in the recent case of *Selva & Sons, Inc.* v. *Nina Footwear, Inc.*, 705 F.2d 1316, 217 USPQ 641 (CAFC 1983). The

comment, which appears in footnote 6 at page 648, reads as follows:

> 37 CFR 2.112 commands that a petition for cancellation "set forth a short and plain statement showing how the petitioner is or will be damaged by the registration." This directive is not, however, reflective of 15 USC 1064, which states that a petition to cancel the registration of a mark may be filed "by any person who *believes* that he is or will be damaged by the registration." (Emphasis ours.) Nor is it consistent with recent case law, discussed infra.

Finally, §2.132, as amended effective June 22, 1983, permits any party in the position of defendant to file a motion to dismiss for failure to take testimony where plaintiff has either (1) failed to take testimony or offer any other evidence (§2,132(a)) or (2) offered no evidence other than copies of Patent and Trademark Office records and such evidence is insufficient to show that upon the law and the facts plaintiff is entitled to relief (§2.132(b)). Paragraph (c) of the section, adopted effective June 22, 1983, provides that any motion filed under paragraph (a) or (b) must be filed before the opening of the testimony period of the moving party. However, in those cases where a plaintiff's testimony period has expired and plaintiff has in fact failed to take testimony or offer any other evidence in his behalf, it is in the interests of justice and judicial economy to grant a motion to dismiss under §2.132(a) even if the motion was not filed until after the opening of the defendant's testimony period. Accordingly, the Patent and Trademark Office proposes to amend Rule 2.132(c) to specify that the Trademark Trial and Appeal Board may grant such a motion even if the motion was not filed until after the opening of the testimony period of the moving party.

Discussion of Specific Sections Changed:

The rules for which amendments are proposed are discussed below. [The designation § is used in the Code of Federal Regulations to denominate a rule. If internal division of a section is necessary, it is divided into paragraphs designated as follows: "a", "b", etc. at the first level; "1", "2", etc. at the second level; and "i", "ii", etc. at the third level.]

Section 2.1 provides in part that §§1.1 to 1.26 of Part I of Title 37 of the Code of Federal Regulations are applicable to trademark cases except such parts thereof which specifically refer to patents and except §1.22 to the extent that it is inconsistent with §§2.85(e), 2.101(c) or 2.162(d). The provisions which formerly appeared in §2.101(c) now appear, in modified form, in §2.101(d), as amended effective Feb. 27, 1983. Further, the provisions contained in §2.111(c), adopted effective Feb. 27, 1983, serve to amplify that part of §2.85(e) which relates to petitions for cancellation. Accordingly, it is proposed to amend the cross-reference portion of §2.1 by changing "§2.101(c)" to "§2.101(d)" and by adding a cross-reference to §2.111(c).

Section 2.101(b) is proposed to be amended by changing the spelling of the word "Principle" to "Principal".

Section 2.104 is proposed to be amended by deleting the requirement that the opposition "set forth a short and plain statement showing how the opposer would be damaged by the registration of the opposed mark" and substituting therefor a requirement that the opposition "set forth a short and plain statement showing why the opposer believes he would be damaged by the registration of the opposed mark." The proposed substitute requirement is in conformity with Section 13 of the Trademark Act, which states that any person "who believes that he would be damaged by the registration of a mark upon the principal register" may file an opposition in the Patent and Trademark Office.

Section 2.112(a) is proposed to be amended by deleting the requirement that the petition to cancel "set fortha short and plain statement showing how the petitioner is or will be damaged by the registration" and substituting therefor a requirement that the petition to cancel "set forth a short and plain statement showing why the petitioner believes he is or will be damaged by the registration." The proposed substitute requirement is in conformity with Section 14 of the Trademark Act, which states that a petition to cancel the registration of a mark may be filed "by any person who believes that he is or will be damaged by the registration."

Section 2.114(c), which now provides in part that after an answer to a petition for cancellation is filed the petition may not be withdrawn without prejudice except with the consent of the registrant, is proposed to be amended to require the *written* consent of the registrant. The proposed requirement is in conformity both with the existing practice under §2.114(c) and with §2.106(c), which, as amended effective June 22, 1983, provides in part that after the answer to an opposition is filed, the opposition may not be withdrawn without prejudice except with the written consent of applicant.

Section 2.132(c), which now provides that any motion filed under paragraph (a) or (b) of the section must be filed before the opening of the testimony period of the moving party, is proposed to be amended to specify that the Trademark Trial and Appeal Board may in its discretion grant a motion filed under paragraph (a) even if the motion was filed afterthe opening of the testimony period of the moving party.

Section 2.145(d) (1), which governs the time for filing an appeal to the U.S. Court of Appeals for the Federal Circuit or for commencing a civil action, now provides in part that if a request for rehearing or reconsideration or modification of the decision is filed within the time specified in §2.129(c) or §2.144, or within any extension of time granted thereunder, the time for filing an appeal or commencing a civil action shall expire at the end of the sixty day period or thirty days after action on the request, whichever is later. Prior to June 22, 1983, §2.129(c) governed the filing of any request for rehearing or reconsideration or modification of a decision of the Trademark Trial and Appeal Board, including a decision on a motion which is finally dispositive of a case. However, under the trademark rules as amended effective June 22, 1983, a request for rehearing or reconsideration or modification of a decision issued after final hearing is governed by §2.129(c), but a request for rehearing, etc., of a decision on a motion which is finally dispositive of a case is governed by §2.127(b). Accordingly, §2.145(d) (1) is proposed to be amended to include a cross-reference to §2.127(b).

Environmental, energy, and other considerations: The proposed rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The proposed rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Public Law 96-354). The rule change includes no additional or increased fees. Substantive rights to use valuable trademarks are not adversely affected.

This proposed rule change does not contain a collection of information requirement under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant, adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States based enterprises to compete with foreign based enterprises in domestic or export markets.

List of Subject Terms in 37 CFR Part 2:

Administrative practice and procedures, Courts, Lawyers, Trademarks.

Notice is hereby given that pursuant to the authority contained in Section 41 of the Trademark Act of July 5, 1946, as amended, the Patent and Trademark Office proposes to amend Part 2 of Title 37 of the Code of Federal Regulations by amending §§2.1, 2.101, 2.104, 2.112,

2.114, 2.132,and 2.145 as set forth below. Additions are indicated by arrows and deletions by brackets.

Part 2—Rules of Practice in Trademark Cases

1. Section 2.1 is proposed to berevised to read as follows:

§2.1 Sections of Part 1 applicable.

Sections 1.1 to 1.26 of this chapter are applicable to trademark cases except such parts thereof which specifically refer to patents and except §1.22 to the extent that it is inconsistent with §§2.85(e), ► 2.101(d), ◄ [2.101(c) or] ► 2.111(c) or ◄ §2.162(d). Other sections of Part 1 incorporated by reference or referred to in particular sections of this part are also applicable to trademark cases.

2. Section 2.101 is proposed to be amended by revising paragraph (b) to read as follows:

§2.101 Filing an opposition.

* * * * *

(b) Any person who believes that he would be damaged by the registration of a mark on the ► Principal ◄ [Principle] Register may oppose the same by filing an opposition which should be addressed to the Trademark Trial and Appeal Board.

* * * * *

3. Section 2.104 is proposed to be revised to read as follows:

§2.104 Contents of opposition.

The opposition must set forth a short and plain statement showing ► why the opposer believes he ◄ [how the opposer] would be damaged by the registration of the opposed mark and state the grounds for opposition. A duplicate copy of the opposition, including exhibits, shall be filed with the opposition.

4. Section 2.112 is proposed to be amended by revising paragraph (a) to read as follows:

§2.112 Contents of petition for cancellation.

(a) The petition to cancel must set forth a short and plain statement showing ► why the petitioner believes he ◄ [how the petitioner] is or will be damaged by the registration, state the grounds for cancellation, and indicate the respondent party to whom notification shall be sent. A duplicate copy of the petition, including exhibits, shall be filed with the petition.

* * * * *

5. Section 2.114 is proposed to be amended by revising paragraph (c) to read as follows:

§2.114 Answer.

* * * * *

(c) The petition for cancellation may be withdrawn without prejudice before the answer is filed. After the answer is filed ►, ◄ the petition may not be withdrawn without prejudice except with the ► written ◄ consent of the registrant.

6. Section 2.132 is proposed to be amended by revising paragraph (c) to read as follows:

§2.132 Involuntary dismissal for failure to take testimony.

* * * * *

(c) ► A ◄ [Any] motion filed under paragraph (a) or (b) of this section must be filed before the opening of the testimony period of the moving party ►, ◄ [.] ► except that the Trademark Trial and Appeal Board may in its discretion grant a motion under paragraph (a) even if the motion was filed after the opening of the testimony period of the moving party. ◄

7. Section 2.145 is proposed to be amended by revising paragraph (d) (1) to read as follows:

§2.145 Appeal to court and civil action.

* * * * *

(d) Time for appeal or civil action. (1) The time for filing the notice of appeal to the U.S. Court of Appeals for the Federal Circuit (paragraph (b) of this section), or for commencing a civil action (paragraph (c) of this section), is sixty days from the date of the decision of the Trademark Trial and Appeal Board or the Commissioner, as the case may be. If a request for rehearing or reconsideration[,] or modification of the decision [,] is filed within the time specified in ► §§2.127(b), ◄ [§] 2.129(c) or [§] 2.144, or within any extension of time granted thereunder, the time for filing an appeal or commencing a civil action shall expire at the end of the sixty day period or thirty days after action on the request, whichever is later. The sixty and thirty day periods may be extended by the Commissioner upon a showing of sufficient cause.

* * * * *

May 3, 1984. GERALD D. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

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(143)

Department of Commerce
Patent and Trademark Office
37 CFR Part 2
Docket No. 40785–4085
Trademark Automated Search System Fees

Agency: Patent and Trademark Office, Commerce

Action: Notice of proposed rulemaking

Summary: The Patent and Trademark Office proposes to amend the rules of practice in part 2 of Title 37, Code of Federal Regulations, to set forth charges that will be made to users of a new automated trademark search system. Public Law 96-517, enacted on Dec. 12, 1980 and Public Law 97-247, enacted on Aug. 27, 1982, authorized the Commissioner to establish fees for all services related to trademarks. In compliance with Section 9 of Public Law 96-517, the Patent and Trademark Office prepared and submitted to the Congress on Dec. 12, 1982, an automation master plan. The first stage of this plan called for the automation of trademark operations. The proposed rule changes are intended to establish a basis for the charges for use of the automated systems. Comments on the proposed changes are solicited.

Dates: Comments must be submitted on or before Sept. 5, 1984. A public hearing will be held on Sept. 5, 1984, at 9:30 a.m. Requests to present oral testimony should be received on or before Aug. 28, 1984.

Addresses: Address written comments and requests to present oral testimony to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: J. Howard Bryant, Administrator for Automation, Room CP6–1108. The hearing will be held in Rm. 11C10 on the 11th floor of Bldg. 3, Crystal Plz., located at 2021 Jefferson Davis Hwy., Arlington, Va.. Written comments and a transcript of the public hearing will be available for public inspection in Room 11E10 of Bldg. 3, Crystal Plz. at 2021 Jefferson Davis Hwy., Arlington, Va..

For Further Information Contact: J. Howard Bryant by telephone at (703) 557–6000 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: The proposed rule change is designed to establish new fees for the use of an automated trademark search system and the methods of fee collection.

Background: As part of the PTO plan to automate trademark operations, three interrelated systems have been developed:

TRAM (Trademark Reporting and Monitoring) stores and maintains a complete file of trademark application and registration information including status and location data. The data base maintained by TRAM will become the official trademark register, ultimately replacing bound paper volumes that have previously served this purpose.

T-SEARCH (Trademark Search) maintains a data

base of basic trademark application and registration information, consisting of textual data, digital facsimiles of figurative marks, and certain indexes to aid in searching the data base. T-SEARCH will provide a variety of automated capabilities for searching the data base and retrieving the textual and figurative information.

T-CAR (Trademark Computer Assisted Retrieval) uses microfilm cassettes and provides automated serial or registration number indexes to enable retrieval and printing of images of trademark case papers or documents.

In developing the data to be used with these systems, the PTO executed agreements with three private firms that will have created computer processable data bases —text, digitized facsimiles, and design codes (indexes)— at their own expense in exchange for rights to use certain of the data for their own purposes. The original agreement provided that their contributed data could not be used by the public with the T-SEARCH system except in a manner comparable and equivalent to the manner in which the current paper files are used. These agreements have now been renegotiated to allow the public to use all the capabilities of T-SEARCH. To gain this access for the public, the PTO agreed to collect and pay a royalty to these firms as repayment for their investment in the data bases. These arrangements are described below.

Levels of T-SEARCH Capability: The PTO will provide the public with access to two levels of capability using T-SEARCH:

The FULL SYSTEM capability will allow unrestricted access to all T-SEARCH data and will permit use of phonetic search programs, Boolean logic operators, and all design descriptor codes. The FULL SYSTEM capabilities are those used by PTO trademark examiners.

The BASIC SYSTEM or more limited level will provide capabilities "comparable and equivalent" to present manual, paper file searching in the PTO Search Library. A subset of the design descriptor codes, considered to be better than the current design file in level of detail, will also be provided.

For the use of the FULL SYSTEM capabilities, the PTO will collect a royalty of $30.00 per hour of terminal session time, prorated for actual time used, to be distributed among the private firms on the basis of a formula that has been mutually agreed upon by all the parties. The royalty was based on the estimated value of the investment by these firms in the creation of the data, compounded at a rate of ten percent annually to take into account the time value of money. When the full value of the data provided by these firms has been paid, no further royalty will be paid. While the payout period was projected over a 10-year period, the payout could occur at any time that the principal investment cost has been paid.

User charges for the BASIC SYSTEM were calculated on the marginal cost of providing the public services. Marginal costs included additional equipment, space, personnel, and similar costs attributable to the public search services, but did not include the cose of T-SEARCH development which was required for use by PTO examiners. The estimated cost of the BASIC SYSTEM was determined to be $40.00 per hour of terminal session time, prorated for actual time used.

The proposed charge for the public users of the FULL SYSTEM will be the cost of the BASIC SYSTEM plus the cost of the royalty payment, for a total of $70.00 per hour of terminal session time, prorated for actual time used. All payments for use of either level of T-SEARCH capabilities will be made in advance through deposit accounts or daily prepayments to cover the anticipated costs. Imbalances between daily prepayments and actual accrued costs will be refunded to the user. T-SEARCH results, consisting of inquiries submitted for the search, application and registration data, and figurative marks, may be viewed in an electronic display and printed. In addition to the charge for the use of T-SEARCH terminals, there will be a charge of twenty cents for each page requested to be printed.

T-SEARCH Fees: Public users of T-SEARCH will have four options for paying for search services and related printing:

1. Deposit Accounts
   The standard PTO deposit account system (see 37 CFR 1.25) may be used. A one-time authorization to charge the deposit account for T-SEARCH fees will be necessary.
2. Case Deposits
   Upon submission of cash, the amount will be credited to a working account in the T-SEARCH system. Ten minutes prior to the depletion of the cash deposit during the search process, the use will be given a warning signal or message. If the funds are depleted before the session is voluntarily terminated by the user, the terminal display will be automatically turned-off. The system will complete the transactions in process, including the last search inquiry, and then automatically terminate the session. The user can pay the additional amount due (terminal session time used to complete the search in process plus the cost of pages printed), to receive the printed results of the search. If the cash deposit is not depleted before the session is terminated by the user, the cash balance will be refunded.
3. Deposits by Check of a Specific Amount
   The same procedure discussed under item 2. above may be used by depositing a specific amount by check. On completion of the session, the user may substitue a new check for the amount actually due to replace the original deposit check. Alternatively, if a refund is due, the refund check will be mailed.
4. Unspecified Amount Check Deposit
   The user may submit a signed check with the amount left blank, to be filled-in at the completion of the session.

For options 2. and 3. above, a minimum of $40 must be deposited.

Some terminals will be available for reservation for specific blocks of time. Reservations must be paid for in full in advance. The process will be the same as the process for cash or checks for specific amount except that the cost of the full block of time will be charged regardless of the actual time used.

The TRAM and T-CAR systems will continue to be available to the public at no cost, other than the cost of twenty cents for each printed or copied page that is requested or made by the user.

When the automated systems have been fully proven, the PTO intends to discontinue maintenance and ultimately to dispose of the paper search file. However, a public hearing will be held before a final decision is reached about the dispostion of the paper file.

Discussion of Impact

The proposed rule change will have a significant impact on the quality of the human environment or conservation of energy resources.

The proposed rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change would not have an adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, P.L. 96–374), since it makes an on-line, fully automated system available to the public at lower rates than can be obtained commercially— $40 an hour for the comparable and equivalent capabilities, and $70 an hour for the full system capabilities. The most comparable commercial systems cost $85 or more for each hour of use.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries,

federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of the United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change does not contain a collection of information requirement for the purpose of the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

List of Subjects in 37 CFR Part 2:

Administrative practice and procedure, Courts, Lawyers, Trademarks

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by 15 U.S.C. 1113 and 1123, Pub. L. 96-517 and Pub. L. 97-247, the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations as set forth below.

Part 2 - (Amended)

It is proposed to amend 37 CFR Part 2 as follows with additions indicated by arrows.

1. Section 2.6 is proposed to be amended by adding new paragraphs (u) and (v) to read as follows:

§2.6 Trademark fees

* * * * *

►(u) Marginal cost, paid in advance, for each hour of terminal session time using the BASIC T-SEARCH SYSTEM capabilities, prorated for the actual time used $40.00

(v) Royalty paid in advance, for use of data provided to the PTO by private firms, for each hour of terminal session time on the FULL T-SEARCH SYSTEM, prorated for the actual time used (additional to the BASIC T-SEARCH SYSTEM capabilities in (u) above) $30.00◄

July 17, 1984.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[1045 TMOG 15]

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(144)

Department of Commerce
Patent and Trademark Office
37 CFR Part 2
[Docket No. 40671-4071]
Trademark Applications

Agency: Patent and Trademark Office, Commerce.

Action: Proposed rulemaking.

Summary: Patent and Trademark Office proposes amendments to the rules of practice in trademark cases to revise and clarify the requirements for drawings and to revise the filing date requirements for an application for registration of a mark. The amendments also revise the requirements for specimens submitted in connection with applications for service marks not used in printed or written form. The proposed amendments are needed to reduce the computer system storage space required for drawings; to insure that all applications which are filed can be searched under the automated search system; to insure that drawings can be faithfully reproduced by photocomposition techniques; and to codify the existing practice in accepting audio cassette tape recordings as specimens in connection with sound mark applications.

Dates: Written comments by Oct. 30, 1984.

Addresses: Address written comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231; Attn: Ellen J. Seeherman. Written comments will be available for public inspection in Rm. 11E10 of Bl Plz., 2021 Jefferson Davis Hwy., Arlington, Va.

For Further Information Contact: Ellen J. Seeherman by telephone at (703) 557-7464 or by mail marked to her attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: The Patent and Trademark Office is considering amendments to the rules of practice in trademark cases to amend the requirements for receiving a filing date for an application for registration of a mark and to amend the requirements for submissions of drawings and for sound mark specimens.

The specific rules for which amendments are proposed are §§2.21, 2.52 and 2.58. In addition, it is proposed to remove §2.54.

Section 2.21 is proposed to be amended by revising paragraph (a)(3). The amendment will require that a drawing meet all of the requirements of §2.52 if the application is to be accorded a filing date. If a drawing does not meet the requirements of satisfactory reproduction characteristics and size, the application will be denied a filing date and, under the provisions of §2.21(c), will be returned to the person who submitted the application. At present, a drawing not meeting the requirements of §2.52 is accepted for examination, but must be corrected before publication or allowance. However, with automated searching informal drawings will not be reproducible on a computer terminal display screen, and will therefore be unavailable for searching until a corrected drawing is submitted many months later. This will seriously compromise the integrity of trademark searches and will adversely affect applicants and the public.

Section 2.52 is proposed to be amended by revising paragraphs (a), (b), (c) and (e) to emphasize the characteristics essential to satisfactory reproduction of drawings.

Paragraph (a) of §2.52, as proposed, reiterates that all lines and letters must be black, and clarifies that this requirement applies to shading. This will insure that the drawing will be suitable for printing and for viewing on the display screen.

Paragraph (b) of §2.52, as proposed, clarifies the type of paper which must be used for the drawing .

Paragraph (c) of §2.52 is proposed to be amended to limit the size of the mark as depicted on the drawing sheet to 4 inches (10.3 cm) in height and 4 inches (10.3 cm) in width, with 2.5 inches (6.1 cm) in height and width the preferable size. At present, marks which exceed these sizes must be reduced for printing purposes and for display on a computer terminal. This may result in a loss of clarity. If details, such as color lining, which are part of the mark will be precluded by the size limitation, it is proposed that a verbal description be inserted in the application instead.

Paragraph (e) of §2.52, as proposed, amends the depiction of the color chart to indicate that larger spaces between lines are preferred for color linings. Reducing the density of the color lining will improve the clarity of the marks when they are reproduced.

Section 2.54 is proposed to be removed since proposed §2.21 will make this section unnecessary.

Section 2.58, paragraph (b), is proposed to be amended to allow tape cassette recordings rather than disc recordings to be submitted as specimens for service marks not used in printed or written form. This codifies the present practice. In view of this proposed amendment, paragraph (b) is also proposed to be amended by eliminating the provision that the Office will arrange to have disc recordings made from any type of recording the applicant submits.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The General Counsel of the Department of Com-

merce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96-354) since any additional burden would be minimal and not disproportionate in effect.

This rule contains no new information collection requirement for the purpose of the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. The existing application requirements referenced in this rule have been approved by OMB (Approval No. 0651-0009).

List of Subject in 37 CFR Part 2

Administrative practice and procedures, Courts, Lawyers, Trademarks.

Notice is hereby given that pursuant to the Commissioner's authority under Section 41 of the Trademark Act of July 5, 1946, as amended, 15 U.S.C. 1123, and section 6 of the Act of July 19, 1952, as amended, 35 U.S.C. 6, the Patent and Trademark Office proposes to amend Part 2 of Title 37 of the Code of Federal Regulations as set forth below.

In the text of the proposed amendments, additions are indicated by arrows and deletions are indicated by brackets.

It is proposed to amend 37 CFR, Part 2 as follows:

1. Section 2.21 is proposed to be amended by revising paragraph (a) to read as follows:

§2.21 Requirements for receiving a filing date.

(a) Materials submitted as an application for registration of a mark will not be accorded a filing date as an application until all of the following elements are received:

(1) Name of the applicant;

(2) A name and address to which communications can be directed;

(3) A drawing of the mark sought to be registered [containing the information required by paragraph (d)] ►meeting all the requirements ◄ of §2.52;

(4) An identification of goods or services;

(5) At least one specimen or facsimile of the mark as actually used;

(6) A date of first use of the mark in commerce, or a certification or certified copy of a foreign registration if the application is based on such foreign registration pursuant to section 44(e) of the Trademark Act, or a claim of the benefit of a prior foreign application in accordance with section 44(d) of the Act;

(7) The required filing fee for at least one class of goods or services. Compliance with one or more of the rules relating to the elements specified above may be required before the application is further processed.

* * * * *

2. Section 2.52 is proposed to be revised to read as follows:

§2.52 Requirements for drawings.

(a) *Character of drawing.* All drawings, except as otherwise provided, must be made with the pen or by a process which will ►provide high definition upon ◄ [give them satisfactory] reproduction [characteristics]. A photolithographic reproduction or printer's proof copy may be used if otherwise suitable. Every line and letter ►, including color lining and lines used for shading ◄ must be black. [This direction applies to all lines, however fine, and to shading.] All lines must be clean, sharp, and solid, and [they] must not be [too] fine or crowded. [Surface shading, when used, should be open.] ►Gray tones or tints may not be used for surface shading or any other purpose.◄ The requirements of this paragraph are not necessary in the case of drawing permitted and filed in accordance with paragraph (d) of §2.51.

(b) *Paper and ink.* The drawing must be made upon ►paper which is flexible, strong, smooth, nonshiny, ◄ [pure] white and durable [paper, the surface of which is calendered and smooth]. A good grade of bond paper is suitable ►; however, water marks should not be prominent◄. India ink [alone] ►or its equivalent in quality ◄ must be used for pen drawings to secure perfectly black solid lines. The use of white pigment to cover lines is not acceptable.

(c) *Size of paper and margins.* The size of the sheet on which a drawing is made must be 8 to 8½ inches (20.3 to 21.6 cm.) wide and 11 inches (27.9 cm.) long. One of the shorter sides of the sheet should be regarded as its top. ►It is preferable that the drawing be 2.5 inches (6.1 cm.) high and/or wide, but in no case may it be larger than 4 inches (10.3 cm.) high and 4 inches (10.3 cm.) wide. If the amount of detail in the mark precludes a reduction to this size, such detail may be verbally described in the body of the application. ◄ [When the figure is longer than the width of the sheet, the sheet should be turned on its side with the top at the right. The size of the mark must be such as to leave] ►There must be ◄ a margin of at least 1 inch (2.5 cm.)on the sides and bottom of the paper and at least 1 inch (2.5 cm.) between ►the drawing ◄ [it] and the heading.

(d) *Heading.* Across the top of the drawing, beginning one inch (2.5 cm.) from the top edge and not exceeding one fourth of the sheet, there must be placed a heading, listing in separate lines, applicant's complete name, applicant's post office address, the dates of first use of the mark and first use of the mark in commerce (except for an application filed under section 44 of the Trademark Act), and the goods or services recited in the application or a typical item of the goods or services if a number of items are recited in the application. This heading should be typewritten.

(3) *Linings for color.* Where color is a feature of a mark, the color or colors employed may be designated by means of conventional linings as shown in the following color chart:



3. Section 2.54 is proposed to be removed.

[**§2.54 Informal Drawings.**

A drawing not in conformity with §2.51 or paragraphs (a), (b), (c), or (e) of §2.52 or §2.53 may be accepted for purpose of examination, but the drawing must be corrected or a new one furnished, as required, before that mark can be published or the application allowed.]

4. Section 2.58 is proposed to be amended by revising paragraph (b) to read as follows:

§2.58 Specimens or facsimiles in the case of a service mark.

* * * * *

(b) In the case of service marks not used in printed or written form, three [single face, unbreakable, disc] ►audio cassette tape ◄ recordings will be accepted. [The speed at which the recordings are to be played must be specified thereon. If facilities are not available to the applicant to furnish recordings of the required type, the Patent and Trademark Office may arrange to have made, upon request, and at applicant's expense, the necessary disc recordings from any type of recording the applicant submits.]

DONALD J. QUIGG,

June 12, 1984.

Deputy Commissioner of Patents and Trademarks.

[FR Doc. 84-20251 Filed 7-31-84; 8:45 am]
BILLING CODE 3510-16-M

[1046 TMOG 24]

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(145)

Department of Commerce
Patent and Trademark Office
37 CFR Part 2
[Docket No. 40785-4085]

Trademark Automated Search System Fees; Extension of Comment Period

Agency: Patent and Trademark Office, Commerce.

Action: Notice of proposed rulemaking; extension of comment period.

Summary: On Aug. 7, 1984, the Patent and Trademark Office published in the Federal Register a Notice of Proposed Rulemaking to establish fees to be charged to users of a new automated trademark search system. See 49 FR 31460. The Notice provided that comments must be submitted on or before Sept. 5, 1984. Requests to extend the comment period have been received. In response to those requests, the comment period is being extended.

Dates: Comments must be received by Sept. 25, 1984.

Address: Address written comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: J. Howard Bryant, Administrator for Automation, Rm. CP6-1108.

For Further Information Contact: J. Howard Bryant by telephone at (703) 557-6000 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

GERALD J. MOSSINGHOFF,

Sept. 5, 1984.

Commissioner of Patents and Trademarks.

(1046 TMOG 24)

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(146)

Department of Commerce
Patent and Trademark Office
37 CFR Parts 1, 2, and 10
Docket No. _____

Practice before the Patent and Trademark Office

Agency: Patent and Trademark Office, Commerce

Action: Notice of Proposed Rulemaking

Summary: In Aug. 1983, the Patent and Trademark Office (PTO) proposed amendments to the rules governing standards of conduct and disciplinary proceedings for attorneys and agents who practice before the PTO. Two hearings were held. After reviewing written comments and oral presentations at the hearings, the PTO decided to withdraw, and not adopt, the rules as then proposed. In Mar. 1984, an advance notice of proposed rulemaking was published. Comments were received. This notice of proposed rulemaking sets forth changes that the PTO is proposing to the rules governing admission to practice before the PTO, standards of conduct for those representing applicants and others before the PTO, and conduct of disciplinary proceedings. Interested individuals are invited to comment on the proposed rules.

Dates: Comments must be submitted on or before Oct. 2, 1984. A public hearing will be held on Oct. 10, 1984, at 9:30 A.M.; request to present oral testimony at the hearing should be received on or before Oct. 2, 1984.

Address: Address written comments to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231 marked to the attention of Fred E. McKelvey.

The hearing will be held in the Commissioner's Conference Rm., 11th Floor, Crystal Plz. Bldg. 3, Rm. 11-C-10, 2021 Jefferson Davis Hwy., Arlington, Va. Written comments and a transcript of the public hearing will be available for public inspection in Rm. 12B10, Crystal Gateway II, 1225 Jefferson Davis Hwy., Arlington, Va.

For Further Information Contact: Fred E. McKelvey by telephone at (703) 557-4025 (if no answer, message may be left at 703-557-4103) or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: Attorneys and agents practice before the Patent and Trademark Office (PTO) in patent cases. 35 U.S.C. 31. Attorneys also practice before the PTO in trademark and other non-patent cases. 5 U.S.C. 500 (b). A limited number of agents also practice before the PTO in trademark cases under rules in force prior to Jan. 1, 1957.

A notice of proposed rulemaking for attorney and agent conduct and disciplinary procedure was published on Aug. 11, 1983 in the Federal Register, 48 F.R. 36478, and on Sept. 20, 1983 in the *Official Gazette*, 1034 O.G. 39, 1034 TMOG 33. A notice extending the comment period and setting a second hearing was published on Oct. 5, 1983 in the Federal Register, 48 F.R. 45424, and on Oct. 18, 1983, in the *Official Gazette*, 1035 O.G. 19, 1035 TMOG 17. The PTO decided to withdraw, and not adopt, the rules proposed in the Federal Register notice of Aug. 11, 1983. There were numerous objections to the proposed rules and the public indicated that a longer period for study and review of a code of conduct and disciplinary procedures was necessary.

An advance notice of proposed rulemaking setting out revised rules being considered for standards of conduct and disciplinary proceedings was published on Mar. 16, 1984, in the Federal Register, 49 F.R. 10012, and on Apr. 10, 1984, in the *Official Gazette*, 1041 O.G. 15, 1041 TMOG 13. Numerous organizations and individuals filed comments in response to the advance notice.

This notice of proposed rulemaking sets out rules being proposed in three areas:

(1) Rules governing practice of attorneys and agents before the PTO in patent, trademark, and other non-patent cases (§§10.2 through 10.19);

(2) Rules setting out a PTO Code of Professional Responsibility (§§10.20 through 10.112); and

(3) Rules governing (a) investigation of possible violations of the PTO Code of Professional Responsibility and (b) disciplinary proceedings to reprimand, suspend, or exclude (disbar) individuals practicing before the PTO who, after notice and opportunity for a hearing, are found to have violated a disciplinary rule of the PTO Code of Professional Responsibility (§§10.130 through 10.170).

Familiarity with the advance notice is assumed. Changes in the text of the rules proposed in this notice from the text of the rules published for comment in the advance notice are discussed.

The comments received in response to the advance notice are analyzed.

Tables 1, 2, and 3 are included in this notice to assist readers in correlating present rules with the proposed rules and to find the principal source for the proposed rules. An indication in Tables 1, 2, or 3 that a section is "new" means that a corresponding section does not currently appear in Title 37 of the Code of Federal Regulations.

Table 1 shows the principal sources of the proposed rules which relate to (1) admission to practice of attorneys and agents in patent cases and (2) practice in trademark and other non-patent cases.

Table 2 shows the principal sources of the proposed rules for the PTO Code of Professional Responsibility.

Table 3 shows the principal sources of the proposed rules for disciplinary proceedings.

Other sources for, and rationale in support of, the proposed rules were set and discussed in the Supplementary Remarks of the advance notice. 49 F.R. 10012–10022.

Changes in Text of Advance Notice: Several changes have been made in the text of the rules being proposed from the text of the rules which were published for comment in the advance notice. Those changes are discussed below.

Section 1.21(a) is proposed to be revised by adding a requirement for a $60.00 fee for seeking review of a decision of the Director of Enrollment and Discipline under proposed §10.2(c) and for requesting regrading of an examination under proposed §10.7(c). No specific fee was set out in the advance notice.

The preamble to proposed §10.1 is being changed by adding a provision which makes clear the PTO's intent to limit Subpart 10 solely to the practice of patent, trademark, and other law before the PTO. The preamble is also being changed to indicate that Subpart 10 shall *not* be construed to preempt the authority of any State to maintain control over the practice of law within its borders, *except* to the extent necessary for the PTO to accomplish its federal objectives. These changes are being made to make clear that the PTO intends to regulate only conduct related or relevant to the practice of law before the PTO. See *Sperry* v. *Florida ex rel. Florida Bar*, 373 U.S. 379, 402 (1963).

The definition of "practitioner" has been changed in proposed §10.1(r). The amendment defines a practitioner as an individual registered to practice before the PTO in patent cases or an individual qualified under 5 U.S.C. 500(b) or otherwise to practice before the PTO in trademark and other non-patent cases. This definition is necessary in order to give a proper meaning to other proposed sections, e.g., proposed §§10.48 and 10.49. The original definition was confined to individuals who actually practice before the PTO in trademark and other non-patent cases. The definition was intended to limit the regulatory effect of PTO rules to those who in fact practice before the PTO. An amendment made to the preamble of proposed §10.1, however, makes clear the intent of the PTO to limit its regulation of attorneys and agents only to the extent necessary for the PTO to accomplish its federal objectives.

Proposed §10.2(a) is being changed to require that the Director shall be an active member in good standing of the bar of a State.

Proposed §10.2(c) has been changed by deleting the last sentence which appeared in the text of the advance notice and read as follows: "The Commissioner may delegate to appropriate Office employees the determination of a petition under this section."

Several changes have been made to proposed §10.4 in response to comments received. In proposed §10.4(a), the Committee on Discipline will consist of at least three employees of the PTO, none of whom reports directly or indirectly to the Director or the Solicitor. Each member of the Committee on Discipline would be a member in good standing of the bar of a State. Proposed §10.40(b) would prohibit the Director, and employee under the direction of the Director, or an associate solicitor or assistant solicitor from participating in deciding a disciplinary proceeding. Related changes have also been made to proposed §10.14(b) which would provide that the Commissioner shall designate at least two associate solicitors in the Office of the Solicitor of the PTO to act as counsel for the Director in prosecuting disciplinary cases. In prosecuting disciplinary cases, the designated associate solicitors shall not involve the Solicitor or Deputy Solicitor. The purpose for this non-involvement is to leave the Solicitor and Deputy Solicitor insulated from the investigation and prosecution phases of a disciplinary case in order that they shall be available as counsel to the Commissioner in deciding disciplinary cases.

The word "applicants" in the first sentence of §10.14(c) immediately prior to the word "provided" is being changed to "applications" to correct a typographical error.

The reference in proposed §10.15 to "§10.156(b)" has been changed to "Subchapter" inasmuch as suspension or exclusion can occur under various proposed sections, such as §§10.133(b), 10.154(a), and 10.156(b).

In §10.22, the word "court" is being added after "State" in both sections (a) and (b) to clarify the fact that membership in the bar of a State court is what is intended in proposed §10.22.

Proposed §10.23(c)(8) has been changed to alter the conditions under which a practitioner must forward correspondence he or she receives on behalf of a client or former client. As proposed, §10.23(c)(8) would require a practitioner to forward to a client or former client, or to timely notify the PTO of an inability to so forward, correspondence received from the PTO or an opponent in an *inter partes* case when the correspondence (1) could have a significant effect on a matter pending before the Office, (2) is received by the practitioner on behalf of a client or former client, and (3) is correspondence which a reasonable practitioner would believe under the circumstances should be forwarded to the client or former client.

The language "knows, or should have reasonably known" in proposed §10.23(c)(17) has been changed to "knows, or has been advised by the Office" in response to a comment.

Paragraph (c) of §10.31 of the advance notice is being replaced by two new paragraphs (c) and (d). The change is necessary to permit non-lawyers authorized to practice in trademark cases before Jan. 1, 1957, to hold themselves out as authorized to so practice. See e.g. *Holmgren* v. *Watson*, 110 USPQ 174 (D.D.C. 1956) and proposed §10.14(b). Paragrph (c) of proposed §10.31 covers this situation. Paragraph (d) of §10.31 precludes a non-lawyer from holding himself or herself as being an attorney or lawyer. It also precludes a non-lawyer from holding himself or herself out as authorized to practice before the Office in non-patent and trademark cases, e.g., representing a respondent in a disciplinary case or representing a party in an *inter partes* disqualification proceeding.

Paragraph (b) of proposed §10.32 as it appeared in the advance notice has been deleted. Paragraphs (c) and (d) have been redesignated as paragraphs (b) and (c), respectively. As it appeared in the advance notice, paragraph (b) would have required practitioners to preserve for two years copies and recordings of advertisements. While no comment criticized the new recordkeeping requirement of proposed §10.32(b), the PTO nevertheless believes, consistent with the policy of the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, that the recordkeeping requirements which proposed §10.32 would have imposed are not necessary. Practitioners may, however, wish to voluntarily maintain copies and recordings of any advertising inasmuch as the copy or recording would be the best evidence of the content of the advertisement.

Proposed §10.34 is being changed to add in paragraph (b) the language "except that any practitioner who was registered prior to Nov. 15, 1938, may refer to himself or herself as a 'patent attorney.' " This change is needed to continue the PTO practice of permitting all individu-

als registered prior to Nov. 15, 1938, to refer to themselves as patent attorneys. See McCrady, *Patent Office Practice*, pp. 454 and 459 (4th Ed. 1959).

In proposed §10.40(a), the language "his or her client, allowing time for employment of" has been added. This language is needed to conform proposed §10.40(a) to DR 2-110(A)(2) of the Code of Professional Responsibility of the American Bar Association (1980). The language of proposed §10.40(c)(1)(vi) has been changed pursuant to a suggestion received in a comment. Proposed §10.40(c)(1)(vi) now reads "has failed to pay one or more bills rendered by the practitioner for an unreasonable period of time or has failed to honor an agreement to pay a retainer in advance of the performance of legal services."

In proposed §10.57(d), the language "practitioner's employee's associates" appearing in the advance notice has been corrected to read "practitioner's employees, associates". This change corrects a typographical error.

The text of proposed §10.64(a) has been changed to permit a practitioner to acquire a proprietary interest in the subject matter of a patent proceeding before the PTO. As originally proposed, acquisition of such an interest would have been prohibited. The text of proposed §10.64(a) is now consistent with Informal Opinion No. 280 of the American Bar Association which states: "A lawyer may acquire an interest in a patent for his [or her] fee."

Paragraph (b) of proposed §10.65 as it appeared in the advance notice has been deleted in response to a suggestion in a comment.

Subparagraphs (1) and (2) of proposed §10.68 (c) as set out in the advance notice have been deleted in response to comments received.

Subparagraph (7) of proposed §10.85(a)(7) as it appeared in the advance notice has been deleted and subparagraphs (8) and (9) have been renumbered as (7) and (8) respectively.

In proposed §10.85(b)(1), the language "except when the information is protected as privileged communication" which appeared in the text of the advance notice is being deleted in view of comments which were received.

The word "controlling" has been inserted before "legal authority" in proposed §10.89(b)(1) to make clear that only controlling legal authority need be cited.

Proposed §10.93(b)(2) has been changed to correct an incorrect reference to "practitioner" with "the adverse party." "Counselor" has been changed to "counsel or" in proposed §10.93(b)(3).

Paragraph (b) of §10.133 in the advance notice has been re-written and replaced with proposed paragraphs (b), (c), and (d). Paragraph (c) as it appeared in the advance notice is now paragraph (e). The changes are being made to provide for resignation from practice before the Office and that the Commissioner be authorized to enter an order excluding a practitioner "on consent" when a resignation is filed during the pendency of an investigation under proposed §10.131 or after charges have been filed under proposed §§10.132(b) and 10.134. The changes are being made pursuant to a comment which is discussed later in this notice.

In proposed §10.134(a)(2) the word "alleged" has been inserted before "violations" in response to a suggestion.

Pursuant to a suggestion in a comment, the word "of" has been inserted after "period" in the second sentence of proposed §10.135(c).

The language "any new matter" in proposed §10.136(e) has been changed to "any affirmative defense" in response to a suggestion in a comment.

The language "facts of law" in §10.139(b)(7) has been changed to "facts or law" in response to two comments.

Changes have been made to proposed §10.140(b). See the discussion above under the changes to proposed §10.4(b).

Proposed §10.141 as set out in the advance notice has been changed by adding a paragraph (c) to provide that the administrative law judge (ALJ) or the Director may provide for filing papers and other matter by hand or by "Express Mail."

In response to a suggestion in a comment, "or" has been added after the semicolon at the end of paragraphs (a)(1), (a)(2), and (c)(1) of proposed §10.142.

Three changes have been made to proposed §10.144(c) in response to a suggestion made in a comment: (1) "A hearing in a disciplinary proceeding" has been changed to "A hearing under this section"; (2) "and subject to 10.159(c)" has been added after "If a disciplinary proceeding results in disciplinary action against a practitioner"; and ", including any settlement agreement," has been added after "the record of the entire disciplinary proceeding".

In response to a comment, proposed §10.149 has been added and sets out the burden of proof for the Director and the respondent. The Director must prove his or her case by a preponderance of evidence. A respondent must prove any affirmative defense by a preponderance of evidence.

In response to two comments, proposed §10.150(c) is being changed to make clear that objection to evidence and rulings on the objections will be part of the record.

The language "to the" has been inserted after "shall transmit a copy to the representative of the Director and" in proposed §10.154(a). This change is being made pursuant to a suggestion received in a comment. The word "reprimand" has been inserted after "the administrative law judge shall explain the reason for any penalty of" in proposed §10.154(b). This change is also made in response to a comment.

Paragraph (c) has been added to proposed §10.155 to permit reopening of disciplinary proceedings. The change is being made in response to a comment.

The fifth sentence of proposed §10.156(a) has been changed to read: "The Commissioner shall transmit a copy of the final decision to the Director and to the respondent." This change is being made in response to a comment.

The reference to Local Rule 1-26 of the U.S. District Court for the District of Columbia has been corrected in proposed §10.157(a).

A paragraph (b) has been added to proposed §10.157 to make explicit the authority of the Commissioner to grant a stay of a final decision pending judicial review under 35 U.S.C. 32.

Proposed §10.158(b)(1) has been amended to read: "Within 30 days of entry of the order of suspension or exclusion, notify all bars of which he or she is a member and all clients of the practitioner in separate written communications of the suspension or exclusion and shall file a copy of each written communication with the Director." This change has been made in response to two separate comments addressing different issues.

The language "the practitioner" in the second sentence of proposed §10.159(b) has been changed to "any practitioner" in response to a suggestion.

Section 10.170 is being added to expressly authorize the Commissioner to suspend or waive requirements of Part 10 in extraordinary situations when justice requires. The term "Commissioner" in proposed §10.170 is intended to mean the Commissioner, the Deputy Commissioner, or an Assistant Commissioner appointed under 35 U.S.C. 3. Section 10.170 would not permit the routine filing of petitions seeking suspension or waiver of a rule. For example, §10.170 would not contemplate the filing of a petition to enlarge the type of discovery authorized by the rules or to interfere with the ALJ's conduct of disciplinary proceedings except in truly extraordinary situations. It is contemplated that if §10.170 is adopted that there would be relatively few, if any, circumstances in which it would be appropriate to suspend or waive a provision of Part 10.

Response to and Analysis of Comments: Thirty-one (31) written comments were timely received in response to the advance notice. The comments have been analyzed. Some suggestions made in comments have been adopted and others have been rejected. A detailed analysis of the timely received comments follows. Some comments were received on July 9, 1984, but were not properly

addressed to Box 8 as requested in the advance notice. As a result, these comments did not reach appropriate PTO officials for timely consideration. These comments, as well as comments received on or after July 10, 1984, will be considered as comments received in response to this notice and will be analyzed in connection with any rules which may be issued based on this notice.

Several comments were received which suggested that the rules as set out in the advance notice purport to regulate attorney conduct beyond that necessary or proper for administration of federal programs by the PTO. It is not, and has never been, the intention of the PTO to regulate conduct except to the extent necessary for the accomplishment of federal objectives. Thus, only that conduct which is relevant to the practice of patent, trademark, or other law *before the PTO* is what the PTO seeks to regulate. The preamble of proposed §10.1 has been amended to indicate that Subpart 10 governs solely the practice of patent, trademark, and other law before the PTO. As noted in the preamble to proposed §10.1, "[n]othing in this subpart shall be construed to preempt the authority of each State to maintain control over the practice of law within its borders, except to the extent necessary for the Patent and Trademark Office to accomplish its federal objectives." See *Sperry* v. *Florida ex rel. Florida Bar*, 373 U.S. 379, 402 (1963). See also *Michigan Canners and Freezers Ass'n.* v. *Agricultural Marketing and Bargaining Board*, 104 S.Ct. 2518, 2523 (1984) (State Law is preempted when it stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress) and *Fidelity Federal Savings and Loan Ass'n.* v. *de la Cuesta*, 102 S.Ct. 3014, 3022 (1982)(federal regulations have no less pre-emptive effect than federal statutes).

One comment suggested that the definition of application in proposed §10.1(b) include papers relating to a request for or a reexamination of a patent. This suggestion is not being adopted. Reexaminations fall with the definition of proceedings before the Office in Proposed §10.1(s).

One comment suggested that the definition of "attorney" in §10.1(c) be changed to require an attorney to be in good standing in the "venue" of his or her "office." The suggestion in the comment would exclude from the definition of "attorney" an individual in good standing in State A, but living in State B and excluded in State B. The suggestion has not been adopted inasmuch as it is believed to be in conflict with the provisions of 5 U.S.C. 500(b).

One comment suggested that the Commissioner should not delegate to other PTO employees for decision petitions from the Director under §10.2. This suggestion is being adopted and the last sentence of proposed §10.2(c) as it appeared in the advance notice is being deleted. It is contemplated that petitions seeking review of a decision of the Director will be decided by the Commissioner, the Deputy Commissioner, or one of the two Assistant Commissioners appointed pursuant to 35 U.S.C. 3. These employees would, of course, be able to obtain legal advice from the Solicitor or Deputy Solicitor.

One comment suggested that the definition of "law firm" in proposed §10.1(k) be extended to corporate legal departments. This suggestion is not being adopted. It is not readily apparent from the comment why the definition of law firm should be expanded as suggested.

One comment suggested that the Director should be a member in good standing of the bar of a State. This suggestion is being adopted and proposed §10.2(a) will require any Director to be an active member in good standing of the bar of a State or the District of Columbia.

Two comments were received with respect to proposed §10.4 which indicated that the Director and associate solicitors should not be members of the Committee on Discipline. The PTO believes that these comments have merit. Accordingly, it is proposed to create a Committee on Discipline composed of at least three employees of the PTO who do not report to either the Director or the Solicitor and who are members of the bar in good standing of a State. The Committee on Discipline would determine whether there is probable cause for the Director to file charges. See proposed §§10.4(b) and 10.132. Related changes are also being made in proposed §10.140. The same comment suggested that the proposed rules do not articulate a separation of functions between the investigation (done by the Director) and prosecution (done by an associate solicitor) on the one hand and the decision making function (done by the Commissioner with advice as necessary from the Solicitor or Deputy Solicitor) on the other hand. The PTO believes this comment also has merit. Accordingly, proposed §10.140(b) has been changed to make clear that the Commissioner will designate two associate solicitors in the Office of the Solicitor to act as representative for the Director in disciplinary proceedings. In prosecuting disciplinary proceedings, the designated associate solicitors shall not involve the Solicitor and Deputy Solicitor. The purpose of insulating the Solicitor and Deputy Solicitor from the designated associate solicitors handling disciplinary cases is to maintain a clear line of distinction between the investigative/prosecutorial function and the deciding function. The designated associate solicitors would report directly to the Director insofar as their disciplinary prosecutorial functions are concerned. The Solicitor and Deputy Solicitor would be available to act as legal counsel to the Commissioner in deciding appeals from decisions of an ALJ and would not be responsible in any manner for supervising the designated associate solicitors in the performance of their disciplinary/prosecutorial functions.

One comment suggested that individuals be appointed to the Committee on Discipline who are not employees of the Department of Commerce. The comment recognized that such an appointment would create difficulties in view of 35 U.S.C. 122. The PTO had given specific consideration to appointing practitioners to the Committee on Discipline prior to issuance of the advance notice. The idea was rejected for two reasons. Problems under 35 U.S.C. 122 make such an appointment difficult. Administrative delays would take place because it would be more difficult to arrange times for the Committee to meet. Another comment recognized the administrative difficulty in having a "committee" of more than one individual. By having the Committee on Discipline composed of PTO employees, there would be minimal administrative problems in arranging for and holding meetings of the Committee. Accordingly, the PTO proposes to adhere to its prior view that members of the Committee on Discipline should be PTO employees.

Another comment suggested, in effect, that the PTO should consider and adopt the general procedures set out in the Standards for Lawyer Discipline and Disability Proceedings of the American Bar Association (1979). The "Standards" were considered prior to issuance of the advance notice. After considering the Standards then, and reconsidering the Standards in view of the comments received, the PTO has decided not to propose the "Standards."

One comment suggested that every attorney be required to designate under §10.5 the "venue" of his or her office. The rationale in support of the comment suggested that an attorney disbarred in State A, but in good standing in State B, should not be registered as an attorney if he or she resides in State A. The suggestion is not being adopted, because of administrative problems which would be raised with determining "venue" in those cases where an attorney has offices in two states and spends considerable time in both offices. Attorneys who are members of multi-state law firms might also have difficulty selecting an appropriate "venue." Moreover, it is believed that introduction of a "venue" concept might lead to lack of uniform treatment of patent and trademark attorneys in view of the provisions of 5 U.S.C. 500(b) relating to practice of non-patent law before the PTO.

One comment suggested that §10.6 should be changed to permit a non-citizen registered under paragraph (a)

to remain registered even if the non-citizen ceases to reside in the United States. The suggestion is not being adopted. The registration of non-citizens residing in a foreign country is presently governed by 37 CFR §1.341(e) and under the proposed rules would be governed by §10.6(c). There is no known legal requirement or other public policy which compels or makes desirable the registration or continued registration of non-citizens residing in a foreign country other than under the conditions specified in proposed §10.6(c).

One comment suggested that after the word "Office" in proposed §10.6(b) that the following be inserted: "only in patent matters." The purpose of the suggestion was to make clear that patent agents are authorized to practice only in patent cases. The definition of "registration" in proposed §10.1(u) limits "registration" of patent agents in accordance with the suggestion.

One comment suggested that the requirement of proposed §10.7(a)(2)(i) that an individual seeking registration establish to the satisfaction of the Director that he or she is of good moral character should be deleted. According to the comment, moral character "does not concern patent practice and, hence, should be outside the scope of the rules for the Office." The contrary is readily apparent from 35 U.S.C. 31 which states that the Commissioner may require applicants for registration "to show that they are of good moral character and reputation . . . "

One comment agreed that limited recognition under proposed §10.9 is justified in certain cases. The comment went on to suggest that limited recognition may be appropriate in a re-examination proceeding when the patent sought to be re-examined is also involved in litigation is being handled by a non-registered attorney. Whether limited recognition would be granted under these circumstances would depend on the particular facts involved.

One comment suggested that a definition be included in proposed §10.1 for the term "firm" which appears in proposed §10.14(e). This suggestion is not being adopted. The term "firm" currently appears in 37 CFR §2.12(e) and has not created any known problems in the PTO's administration of the trademark statute. The comment expressed a belief that "firm" includes "partnership." The term has been given a broad construction in the past and would continue to be given a broad construction under proposed §10.14(e). The term would include, among other things, a partnership.

Two comments suggested that a non-attorney should not be permitted to represent a firm, corporation, or association. One comment accurately pointed out that a non-lawyer may not represent a juristic entity before the U.S. Court of Appeals for the Federal Circuit. *Richdel, Inc.* v. *Sunspool Corp.*, 699 F.2d 1366, 217 USPQ 8 (Fed. Cir. 1983). Inasmuch as prosecution of trademark matters by non-attorneys (those qualified prior to Jan. 1, 1957) has not created any undue administrative problems to date, the suggestion is not being adopted and it will be proposed to permit non-attorneys to continue to represent firms, corporations, and associations as set forth in proposed §10.14(e).

One comment suggested that proposed §10.14(e) would not permit an individual to represent himself or herself in a trademark case. Any individual is entitled to represent himself or herself in any patent, trademark, or other case before the PTO. Proposed §10.14(e) relates to "practice" before the PTO. The comment suggests that proposed §10.14(c) limit recognition of foreigners to practice in *ex parte* cases only. This suggestion is not being adopted. No reason was given in the comments as to why a foreigner, otherwise qualified to practice in trademark cases, should be restricted to *ex parte* cases.

While the PTO did not receive any comments concerning proposed §10.18, it should be noted that under the rules being proposed an attorney would be required to personally sign papers he or she files in the PTO. In the past, there has been some confusion as to whether someone other than the practitioner may sign a paper on his or her behalf and whether a stamp of a facsimile of the practitioner's signature may be used. Proposed §10.18 is intended to clarify the requirement of a personal signature. Thus, under proposed §10.18, a practitioner's secretary could not properly sign a paper to be filed in the PTO on behalf of an attorney. Likewise, an associate of an attorney could not properly sign on behalf of the attorney—the associate would sign his or her own name to the paper. Under proposed §10.18 a stamp of a facsimile of an attorney's signature would not be acceptable. Compare *Ex parte Minehan,* 1908 Dec. Comm'r. Pat. 137 (Comm'r Pat. 1908).

One comment suggested that the PTO had not justified its authority to establish its own Code of Professional Responsibility and that, in any event, the PTO should incorporate by reference the Model Rules of Professional Conduct of the American Bar Association (1983). The Commissioner has authority to establish regulations governing the conduct of those practicing law before the PTO. See 35 U.S.C. 31. See also 35 U.S.C. 6. Inasmuch as the PTO has authority to establish a PTO Code of Professional Responsibility, it may elect to set the Code out in the Code of Federal Regulations or it may —as it has in the past—incorporate a code of conduct by reference. 37 CFR §§1.344 and 2.13. Many comments have encouraged the PTO to set out its Code of Professional Responsibility in the CFR. The proposed PTO Code of Professional Responsibility is based primarily on the Model Code of Professional Responsibility of the American Bar Association (1980). While the comment urged that the Model Rules of Professional Conduct be adopted as the standard, this suggestion is not being adopted because it has not been established that the Model Rules are the standard of conduct throughout the States.

One comment suggested that the word "court" be added in proposed §10.22 after "State" in both sections (a) and (b). This suggestion has been adopted in order to clarify that membership in the bar of a State court is what is intended.

One comment, which is not being adopted, suggested that "knowingly or recklessly" be inserted in proposed §10.22(a) before "made.". When one makes a "false" statement or "deliberately" fails to disclose a material fact, one does so knowingly or recklessly. Accordingly, the suggested change is unnecessary.

One comment suggested that proposed §10.22(b) "which subjects a practitioner to disciplinary sanction for furthering the application for registration of membership of another who is not qualified in a bar, administrative agency or the like should be shown and explained." Any practitioner who furthers the application of another to any bar knowing the other not to be qualified demonstrates that the practitioner is not capable of objectively representing those who have business before the Office. Moreover, any such practitioner would have shown himself or herself to be "disreputable" within the meaning of 35 U.S.C. 32.

Some comments were received which suggested that the PTO should not adopt a provision which defines misconduct engaging in illegal conduct involving moral turpitude. See proposed §10.23(b)(3). The PTO is not adopting this suggestion. The Patent Statute provides that the Commissioner may suspend or exclude practitioners who are shown to be disreputable or who engage in gross misconduct. 35 U.S.C. 32. Some states continue to provide for disciplinary action for attorneys who engage in illegal conduct involving moral turpitude. To the extent that illegal conduct involving moral turpitude is disreputable or gross misconduct, no cogent reason has been represented why the Commissioner should not be able to take appropriate disciplinary action based on that conduct. For the most part, individuals and organizations making the suggestion not to adopt a provision which defines misconduct as including illegal conduct involving moral turpitude also urged that the Model Rules of Professional Conduct of the American Bar Association (1983) be adopted as the PTO Code of Professional Responsibility. It was argued that adoption of the Model Rules would make the PTO Code of Professional

Responsibility consistent with the State codes. Those making the suggestion, however, failed to demonstrate that the States have uniformly adopted the Model Rules or that they are likely to do so. Virginia, for example, in 1984 declined to adopt the Model Rules. Accordingly, the PTO is proposing to adopt a PTO Code of Professional Responsibility which is modeled for the most part on the Code of Professional Responsibility of the American Bar Association (1980).

One comment suggested that all reference to "moral turpitude" be deleted from proposed §10.23. This suggestion is not being adopted. Contrary to the argument in the comment, the PTO believes that there are situations where moral turpitude may be related to the characteristics needed for an individual to practice before the PTO. While it is not always easy to articulate the relationship, nevertheless it does exist. For example, a practitioner convicted of rape is not the type of practitioner which should properly represent women. See e.g., *In re Robertson*, 429 A.2d 345 (D.C.App. 1982). Each disciplinary case will have to be handled on the basis of its own facts. Accordingly, the references to "moral turpitude" are not being deleted from proposed §10.23.

Several comments suggested that scienter or knowledge be made a requirement for violation of the various provisions of proposed §10.23(c). These comments have been reviewed along with the provisions of proposed §10.23(c). It is concluded that the language of the various paragraphs of proposed §10.23(c) inherently require scienter or knowledge or that scienter or knowledge is irrelevant.

One comment suggested that proposed §10.23(c)(5) be amended to make clear that suspension or exclusion from a State bar for failure to pay bar dues not be a basis for suspension before the Office. While no change will be made to proposed §10.23(c)(5) in response to the comment, it seems obvious that failure to pay State bar dues is not a basis for suspension or exclusion before the PTO because failure to pay the dues has no relationship to the federal objectives which the PTO seeks to accomplish.

Three comments were received addressing proposed §10.23(c)(8). One comment suggested that in addition to clients and former clients, the rule should cover correspondence received on behalf of a former partner or former associated attorney. This suggestion is being rejected inasmuch as the PTO believes that the principal thrust to which the rules should be directed is the practitioner-client relationship. The proposed rules do not purport to solve problems which may arise between former partners and associates. Normally, that is a matter left to state law. One comment suggested that subparagraphs (i) and (ii) of §10.23(c)(8) were not relevant. This comment has been adopted and the proposed section has been revised. Two comments suggested that §10.23(c)(8) as proposed required the forwarding to clients of miscellaneous papers which a client might not normally wish to receive. These two comments are considered to have merit. The PTO recognizes that a practitioner may receive papers which need not, and should not necessarily, be forwarded to a client. On the other hand, the PTO has experienced cases where a practitioner did not forward to a client a paper received from the PTO when the client should have been notified of the decision rendered by the paper. In one case, the client lost his right to appeal a final decision of the Board of Patent Interferences. The precise facts were these. After receiving an adverse decision on priority, the client without informing his retained counsel, ("first" practitioner), sought the advice of a "second" practitioner. The second practitioner, sought an extension of time to file a request for reconsideration. See 37 CFR §1.34(b). The request was denied by the board and was mailed to the first practitioner at the address of record in the interference file. See 37 CFR §1.33(a). The first practitioner assumed that the second practitioner knew of the denial and did not notify the client of the denial. Under proposed §10.23(c)(8), the first practitioner would have been obligated to forward the denial to the client because the denial (1) obviously has a significant effect on a matter pending before the PTO, (2) was received on behalf of a client, and (3) was correspondence which a reasonable attorney under the circumstances would have forwarded to a client. Having not made the request for an extension of time, the first practitioner would reasonably presume that someone filed the request and should know that the client needs to know the request has been denied.

One comment suggested that proposed §10.23(c)(9) would include as misconduct the use of a certificate of mailing on an item excluded under 37 CFR §1.8(a)(2)(ix). The comment further suggests that proposed§10.23(c)(9) be limited to use of "false declarations" of a date of mailing. The suggestion is not being adopted, because §10.23(c)(9) is limited to those instances wherein a practitioner "knowingly" misuses a certificate of mailing. An innocent use of a certificate of mailing on a paper excluded by §1.8 is not "knowingly" misusing a certificate of mailing.

One comment suggested that proposed §10.23(c)(12) is in conflict with Standard 8.3 of the Standards for Lawyer Discipline and Disability Proceedings of the American Bar Association (1979). As noted above, the PTO has not proposed to adopt those standards. The comment goes on to suggest that 29 of 54 disciplinary jurisdictions provide for immunity for complainants. Proposed§10.23(c)(12) is limited to practitioners who file complaints and is designed to prevent the filing of a frivolous complaint by one practitioner against another.

One comment suggested that §10.23(c)(17) is not appropriate. The commentator apparently believes that if the various conditions set out in §10.23(c)(17) exist, the practitioner must cease representing the inventor. The commentator did not understand the purpose behind the proposed section. When the conditions mentioned in §10.23(c)(17) exist, there is a potential conflict of interest between the inventor and the practitioner. This conflict of interest was recognized in *Lefkowitz* v. *Lawrence Peska Associates, Inc.*, 393 N.Y.S.2d 650, 652 (Sup. Ct. N.Y. 1977)(attorneys who receive business regularly from an invention developer might not always act in the best interests of the inventors as opposed to the interests of the invention developer). Proposed §10.23(c)(17) would not require a practitioner to cease working for an inventor. It would require the practitioner to advise the inventor of certain facts and permit the inventor to determine, after being advised of any possible conflict, whether the practitioner should continue to represent the inventor or a joint venture consisting of the inventor and the invention promoter.

One comment suggested that the "knows, or should have reasonably known" standard in proposed §10.23(c)(17) of the advance notice is too stringent. Upon consideration, the PTO is inclined to agree with the comment. The "should have reasonably known" was originally intended to cover situations where the PTO has advised a practitioner of specific facts. Accordingly, an amendment to conform proposed §10.23(c)(17) to the original intent has been made. The language proposed reads: "knows, or has been advised by the Office."

One comment made the following statement: "Since under" proposed §10.23(c)(18) "an unreasonable allegation of fraud constitutes an act of misconduct, would an allegation of fraud, which is considered by a tribunal to be completely meritless, constitute a violation?" The finding by a tribunal, such as the U.S. Court of Appeals for the Federal Circuit, that an allegation of fraud is frivolous could result in an investigation by the Director. The holding of the tribunal normally would not be "considered conclusive," where the practitioner was not party before the tribunal. Hence, the practitioner would not have had an opportunity to present his or her views or to defend against the allegation. At best, the holding of the tribunal would constitute *stare decisis*. It could be predicted, however, that if the ultimate record before the ALJ is essentially the same as the record before the tribunal then the likelihood of finding a disciplinary violation is very high.

One comment suggested that proposed §10.23(d) should not appear in the rules. According to the comment, proposed §10.23(d) would establish "a negligence standard as a basis of misconduct" and ignores the basic advocacy role of the practitioner and his duty to a client. The suggestion is not being adopted. Proposed §10.23(d) is designed to advise practitioners that they cannot act with reckless indifference to whether a representation is true or false and that "deceitful statements of half-truths" shall be deemed actual fraud. The proposed rule is nothing more than a statement of what evidence might support a charge of fraud against the attorney. The standard articulated in the proposed rule exists in criminal law. See *United States* v. *Beecroft*, 608 F.2d 753, 757 (9th Cir. 1979) wherein the court says: "[o]ne who acts with reckless indifference to whether a representation is true or false is chargeable with knowledge of its falsity. Deceitful statements of half-truths or the concealment of material facts is actual fraud under the statute" (footnotes omitted).

Four comments were received which argued that proposed §10.24 should not appear in the rules. One comment argued that it might be difficult to determine whether another practitioner had violated a disciplinary rule. The comment went on to submit "that the rules of the State bars adequately already cover this area." The rules of the various State bars do not govern proceedings before the PTO and would not cover non-lawyers who practice before the PTO. Moreover, proposed § 10.24 is identical to the current rules (37 CFR §1.344 and DR 1-103 of the Code of Professional Responsibility of the American Bar Association (1970)) and the 1980 Code of Professional Responsibility of the American Bar Association.

The second comment also voiced objection to proposed §10.24 and argued that "[a] practitioner should be under a duty not to engage in unlawful conduct, but he or she should not be under a duty to 'turn in' his [or her] associates or partners." The comment did not articulate a reason why a practitioner should not be under a duty to "turn in" his or her associates or partners. If an associate or partner is engaging in unprofessional conduct and does not cease such conduct when it is called to his or her attention, there is no known reason why the rules should not require a practitioner to notify the PTO of the conduct of the associate or partner. Compare 18 U.S.C. 4 relating to concealment of knowledge of the actual commission of a felony.

One comment suggested that proposed §10.30 amounts to slavery. Proposed §10.30 is a "Canon." A similar Canon exists in the current rules (37 CFR §1.344 and Canon 2 of the Code of Professional Responsibility of the American Bar Association (1970)). There are similar canons in states. See e.g., Canon 2 of the Virginia Code of Professional Responsibility (1984). A "canon" is defined in proposed §10.20 as a statement of an axiomatic norm expressing in general terms the standards of professional conduct expected of practitioners in their relationships with the public, the legal system, and the legal profession. Proposed §§10.31 through 10.40 set forth the proposed mandatory conduct which would be expected of practitioners under proposed §10.30.

Three comments suggested that a change be made in proposed §10.31(c) to permit non-lawyers authorized to practice before the PTO in trademark cases to hold themselves out as authorized to do so. The comments are being adopted and an appropriate change has been made to proposed §10.31(c). Paragraph (c) of the advance notice is replaced with paragraphs (c) and (d) as set out herein. Paragraph (c) of proposed §10.31 permits a practitioner authorized to practice in trademark cases to hold himself or herself out as authorized to so practice. Paragraph (d) of proposed §10.31 precludes a nonlawyer from holding himself or herself out as authorized to practice in non-patent and trademark cases, e.g., representing a respondent in a disciplinary case or representing a party in an *inter partes* disqualification proceeding.

One comment was received which suggested that proposed §§10.31, 10.32, and 10.33 "incorporate a requirement that a practitioner be prohibited from issuing communications which were [are ?] false, fraudulent, or misleading." This suggestion is not being adopted inasmuch as it is believed proposed §10.31(a) prohibits such communications. Compare 35 U.S.C. 32.

One comment suggested that proposed §10.33 be rewritten to completely conform to Rule 7.3 of the Model Rules of Professional Conduct of the American Bar Association (1983). Proposed §10.33 is based partly on Rule 7.3, but contains the additional language "under circumstances evidencing undue influence, intimidation, or overreaching." Proposed §10.33 is designed to prohibit so-called "ambulance chasing." In *Ohralik* v. *Ohio State Bar Ass'n.*, 436 U.S. 447 (1978), the Supreme Court held that a state could lawfully regulate ambulence chasing. In its opinion, the Supreme Court said:

> "We need not discuss or evaluate each of these interests in detail as appellant has conceded that the State has a legitimate and indeed 'compelling' interest in preventing those aspects of solicitation that involve fraud, undue influence, intimidation, overreaching, and other forms of 'vexatious conduct.' We agree that protection of the public from these aspects of solicitation is a legitimate and important state interest."

436 U.S. at 462. The additional language appearing in proposed §10.33 is designed to limit the application of proposed §10.33 to those situations in which the PTO has a legitimate interest. See also 35 U.S.C. 32 and proposed §10.31(a). Accordingly, the change suggested in the comment is not being adopted.

One comment suggested that proposed §10.34 should make clear that a practitioner registered prior to November 15, 1938, may call himself or herself a "patent attorney." This suggestion is being adopted by adding to paragraph (b) an appropriate exception. All individuals registered prior to November 15, 1938, "were registered as attorneys, whether they were attorneys at law or not, and such registrations have not been changed." McCrady, *Patent Office Practice*, pp. 454 and 459 (4th Ed. 1959). By adopting the suggestion, the proposed rules will reflect current practice.

Two comments were received which indicated that proposed §10.37 would forbid what one comment referred to as "the extremely common practice of 'farming out' work." Proposed §10.37 does not change current pratice. See 37 CFR §1.344 and DR 2-107 of the Code of Professional Responsibility of the American Bar Association (1970). Accordingly, if there is a "common practice" of farming out legal service, the practice is contrary to 37 CFR §1.344. Neither individual suggested that farming out occurs without knowledge by the client. Upon consideration of the comments, it has been decided not to change the text of proposed §10.37. Accordingly, if proposed §10.37 is adopted, "farming out" of legal service could be done ethically only under the conditions specified in §10.37. The present view of the PTO is that clients retain practitioners on an individual or firm basis and that a client ought to know who is doing legal service on its behalf. It should be noted that proposed §10.37 covers only "legal services." It does not cover non-legal services such as searching for patents or trademark registrations, preparing patent or trademark application drawings, obtaining copies of documents, etc.

Eight comments were received with respect to proposed §10.40. One comment suggested that the language "his or her client, allowing time for employment of" be inserted after "giving due notice to." The suggested change has been adopted. A second comment suggested that the language of proposed §10.40(c)(1)(vi) be changed to read: "has failed to pay one or more bills rendered by the petitioner for an unreasonable period of time or has failed to honor an agreement to pay a retainer in advance of the performance of services." The suggested change is being adopted with two minor modifications: the word "practitioner" is being used in place of "petitioners" and the word "legal" is being inserted in

front of "services." Proposed §10.40 as it appeared in the advance notice would have required that a practitioner establish that the client deliberately disregarded an agreement or obligation to the practitioner concerning expenses or fees. This would have required proof of a fact which really has nothing to do with the heart of the matter. Whether the failure to pay was "deliberate" in the sense that the client has the money but chooses not to pay it really should not be relevant. What the practitioner should be required to establish is that, for whatever reason, the client has failed to pay his or her bills or has failed to pay an advance which the client agreed to pay prior to the performance of legal services.

Several comments suggested that under proposed §10.40 a practitioner would have to state his reason for wanting to withdraw and that the practitioner might have to reveal that his or her client is engaged in unlawful activity. Under proposed §10.40, a practitioner would normally not have to reveal practitioner/client secrets in support of a petition to withdraw, but a practitioner is obligated to disclose "[t]he intention of a client to commit a crime and the information necessary to prevent the crime." See proposed §10.57(c)(3). A fourth comment was concerned that when a practitioner and a client cannot agree on the merits of a client's case and/or a proposed amendment whether the disagreement has to be stated on the record. Under proposed §10.40, only the fact (but not the nature) of the disagreement need be stated as a basis for petitioning to withdraw. A fifth comment suggested that there is no need for a petition to withdraw "when there is already a substitute attorney." The comment did not define a "substitute attorney." If a power of attorney is revoked (37 CFR §1.36) when a "substitute attorney" is appointed, a petition to withdraw is not necessary. If a revocation is not filed, any attorney of record continues to be an attorney of record until the power is revoked or the attorney withdraws. The suggestion made in the fifth comment is not being adopted.

One comment was concerned with timing of a decision on a petition to withdraw and suggested that a time be given for the PTO to act. It was further suggested that if the PTO fails to act within a specified time, that failure to act is to be construed as approval of the petition. This suggestion is not being adopted. In patent cases, it is presently contemplated that action will be taken by the Director in the Examining Group in which the patent application is pending or by the Chairman of the Board of Patent Inteferences, if the application is involved in an interference. In trademark cases, it is presently contemplated that a decision on a petition to withdraw would be made by the Director, if an application is pending before a trademark attorney (examiner), or by the Chairman of the Trademark Trial and Appeal Board in those cases where the application is before the board on an ex parte appeal or for *inter partes* proceedings.

One comment suggested that proposed §10.40 does not address the situation where an attorney resigns as member of a corporate legal department. Under current practice (37 CFR §1.36) and proposed §10.40, leave to withdraw would ordinarily be granted to any practitioner who resigns as a member of a corporate patent and/or trademark legal department.

One comment suggested that proposed §10.48 would not permit a registered patent attorney and a general lawyer to share legal fees even when the patent attorney and general lawyer are members of the same firm. Two comments suggested that proposed §10.49 would not permit formation of partnership between a patent attorney and a general attorney. It was not the intent of the rules published in the advance notice to prevent such sharing of legal fees or to preclude formation of such partnerships. In view of the changed definition of "practitioner" in proposed §10.1(r), the concerns expressed in the three comments should no longer exist. See also the change made to the preamble of proposed §10.1. Another comment suggested that proposed §10.49 would make it impossible for a patent attorney and a suspended or excluded practitioner to remain partners. This would be true if the suspended or excluded practitioner continues to practice law before the Office. If the suspended or excluded practitioner does not practice law before the PTO, then no problem is foreseen. As pointed out in discussing the comments concerning proposed §10.158, however, when a partner is suspended or excluded from practice before the PTO, business may not be able to continue as usual.

One comment suggested that the reporting requirements of proposed §10.57 may be different than those imposed by the Code of Professional Responsibility of a given State. This may be true. However, the reporting requirements of the States are not uniform. It follows that the PTO cannot propose a rule which will be consistent with rules in all States.

One comment suggested that proposed §10.62 should specifically authorize a registered patent practitioner to testify concerning attorney diligence in patent cases. This suggestion is not to be adoped. However, it should be clear that in most cases, the exception of proposed §10.62 (b)(3) would apply. As pointed out in the advance notice, however, the weight to be given testimony by a practitioner on behalf of his or her client would be determined on a case-by-case basis. *Wilder* v. *Snyder*, 201 USPQ 927, 934 (Bd.Pat.Int. 1979). The same comment suggested that permission by a client should be made the basis for permitting a practitioner to testify. This suggestion is not being adopted. Virtually all clients would give permission and such permission would not obviate the rationale behind the rule.

Three comments were received which suggested that a patent attorney or agent should be able to acquire a proprietary interest in the subject matter of a patent proceeding before the PTO. There are inventors who would not be able to apply for a patent and secure the assistance of a registered practitioner unless the practitioner may take an interest in the patent as part or all of his or her fee. The text of proposed §10.64(a) is being changed to permit a practitioner to acquire an interest in a patent case. Acquiring an interest in trademark and other non-patent cases would continue to be prohibited. Proposed §10.64(a) is now consistent with Informal Opinion No. 280 of the American Bar Association which states: "A lawyer may acquire an interest in a patent for his [or her] fee." Newly proposed §10.64(a)(3) would not change PTO policy which prohibits a practitioner from obtaining a proprietary interest for the sole purpose of obtaining a filing date under 37 CFR §1.47(b). See *Manual of Patent Examining Procedure*, §409.03(f)(5th Ed. Aug. 1983).

Two comments questioned the need for proposed §10.65(b) as it appeared in the advance notice. In response to these comments, it has been decided to delete paragraph (b) from proposed §10.65.

One comment suggested that Rules 5.1 and 5.2 of the Model Rules of Professional Conduct of the American Bar Association (1983) "are more in tune [than proposed §10.66(a)] with the present day practice of law." It is said that the ABA rules "account for supervisory relationships found in law firms and in corporate legal departments." Proposed §10.66(d) permits the Director or the Commissioner to authorize the creation of "Chinese Walls." In determining whether a "Chinese Wall" can, or should, be erected, the Commissioner should be free to take into account all factors. Compare *Plus Products* v. *Con-Stan Industries, Inc.*, 221 USPQ 1071 (Comm'r.Pat. 1984) and *Sunkist Growers, Inc.* v. *The Benjamin Ansehl Co.*, 221 USPQ 1077 (Comm'r.Pat. 1984).

Two comments were received which indicated, in the words of one comment, that "[u]nder many local jurisdictions, it is permissible for a non-lawyer to own stock in a professional corporation or to be a director or officer thereof." Accordingly, subparagraphs (1) and (2) of proposed §10.68(c) as they appeared in the advance notice have been deleted. Paragraph (c) of proposed §10.68(c) has been revised to limit its application to those situations where the non-practitioner has the right

to direct or control the professional judgment of the practitioner. The ownership of professional corporations or associations and the directors and officers thereof are matters which are deemed better left to state law.

One comment was received with respect to proposed §10.85(a)(7) as it appeared in the advance notice. Section 10.85(a)(7) as it appeared in the advance notice has been deleted as being unnecessary. See Fedders, 56 Notre Dame Law. 5, 59-60 (1980).

Several comments were received discussing proposed §10.85(b)(1). Some comments suggested the entire subparagraph should be deleted. Others suggested it should be strengthened. It has been decided to delete from the text of §10.85(b)(1) as it appeared in the advance notice the language "except when the information is protected as a privileged communication." This amendment was suggested by the Statewide Grievance Committee of Connecticut and the Patent, Trademark, and Copyright Section of the Indiana State Bar Association.

Three comments relative to proposed §10.87 were received. All three pointed out a mispelling of the word "advice." One comment questioned whether a practitioner could tell a party who refuses to retain counsel that "I don't think you have a leg to stand on." Proposed §10.87 covers those cases in which the party is represented by counsel. If a party refuses to retain counsel, then a practitioner may deal with that party as he would with a lawyer for that party. In response to another comment, proposed §10.87 would not preclude a practitioner from recommending direct negotiations between the parties, without counsel present, or from having the private investigators make appropriate field investigations in the marketplace, e.g., to determine likelihood of confusion.

Several comments were received with respect to proposed §10.89. One comment, which is being adopted, suggested that "controlling" be inserted before "legal authority" in proposed §10.89(b)(1). This suggestion is being adopted because the PTO believes that a practitioner should be required to cite only controlling authority. The practitioner, of course, will assume the obligation of determining among known precedents which may be a controlling precedent. One comment suggested that failure to cite controlling authority "should be viewed as a disciplinary violation only under the most grievous circumstances." Failure to cite known controlling authority to the PTO can be a serious matter, particularly in *ex parte* patent and trademark cases. Recently, the Ninth Circuit had occasion to comment on failure of counsel to cite what the court felt was known controlling authority. *Southern Pacific Transportation Co.* v. *Public Utilities Commission of the State of California,* 716 F.2d. 1285, 1291 (9th Cir. 1983). Suffice it to say here, any decision to bring disciplinary action based on an alleged violation of proposed §10.89(b)(1) will depend on the precise facts. Another comment suggested that proposed §10.89(b)(2) "appears to be contrary to the practice of filing anonymous requests for reexamination and anonymous protests." There is no conflict because the identify of a client filing such requests for reexamination and protests is "irrelevant" as a matter of law. See e.g., 35 U.S.C. 301; 37 CFR §1.501.

One comment suggested that proposed §10.89(c)(2) "would have a chilling effect on a practitioner who is attempting to determine what is relevant in the course of discovery and/or who is attempting to impeach a witness." Paragraph (c)(2) is based on DR 7-106(c)(2) of the Code of Professional Responsibility of the American Bar Association (1970), which is currently applicable to practitioners, including trademark practitioners. There is no evidence that the current rule has any chilling effect. Hence, no change is being made in proposed §10.89(c)(2).

One comment suggested that proposed §10.89(c)(3) might preclude asking on cross-examination a question along the lines: "I understand Mr. Doe that you previously were convicted of perjury." Suffice it to say, proposed §10.89(c)(3) would not prohibit such a question.

In response to suggested changes, proposed §10.93(b)(2) has been changed to correct an incorrect reference to "practitioner" with "the adverse party," and "counselor" in proposed §10.89(b)(3) has been changed to "counsel or" to correct a typographical error. One comment suggested a provision be added to the proposed rules to authorize certain conferences with the interlocutory examiners at the Board of Patent Interferences and the Trademark Trial and Appeal Board. This suggestion is not being adopted. Such a provision is not necessary, because (1) interlocutory examiners routinely handle questions regarding procedure and will not entertain improper questions and (2) interlocutory examiners can insist that all parties participate, e.g., through a telephone conference call.

One comment suggested that the language "under circumstances where the practitioner knows or it is obvious that such action is not in the public interest" in proposed §10.101(a)(1) be deleted or that some indication be given of what it means. It is believed that proposed paragraph (a)(1) is sufficiently clear without further definition. The paragraph merely restates the current rules. See 37 CFR §1.344 and DR 8-101(a)(1) of the Code of Professional Responsibility of the American Bar Association (1970).

Two comments were received with respect to proposed §10.112. Neither comment was fully understood. A response to the comments has been mailed to the individuals who submitted the comments and it is hoped that each individual will file additional comments in response to this notice. Any additional comments will be addressed in any notice promulgating rules which may be issued based on this notice.

Several comments on proposed §10.130 were received. One comment suggested that "who is guilty of gross misconduct" be deleted because "gross misconduct" is "undefined". The suggestion its not being adopted, because "gross misconduct" is a basis for suspension or exclusion in 35 U.S.C. 32. There have been cases where a practitioner has been disciplined for engaging in "gross misconduct." See *In re Wedderburn,* 1897 Dec. Comm'r. Pat. 77, 117 (Comm'r. Pat. 1897), particulaly headnotes 15 and 26. Another comment suggested deletion of the word "disreputable" from proposed §10.130. According to the comment, disreputable conduct "does not have anything to do with the concerns of the" PTO. Congress has indicated otherwise, because it has specifically authorized the Commissioner to suspend or exclude those who are shown to be disreputable. 35 U.S.C. 32. The Secretary of the Treasury has the same authority to suspend or exclude those who practice before the Internal Revenue Service. See 31 U.S.C. 1026. Accordingly, the suggestion is not being adopted.

Proposed §10.130(b) would provide that petitions to disqualify counsel in *inter partes* proceedings (i.e., patent interferences and contested cases before the Trademark Trial and Appeal Board) would not be governed by proposed§§10.130 through 10.170. One comment suggested that proposed §10.130(b) is inconsistent with proposed §§10.24 and 10.85 which require that certain ethical violations be reported to the PTO. There is no inconsistency between proposed §10.130 and §§10.24 and 10.85 when all three sections are read in *pari materia.* When a petition for disqualification is proper in an *inter partes* case, a petition to disqualify should be filed and no further report to the PTO is necessary.

Two comments were received discussing proposed §10.131. One comment suggested that the Director should receive a complaint from a non-practitioner only if it is "received as a public record." This suggestion is not being adopted. The investigative stage of disciplinary proceedings has been, and would continue to be, a non-public proceeding. While any practitioner may reveal to the public any complaint filed against him or her, the PTO believes that it is desirable to make a disciplinary proceeding public only when the proceeding results in a finding that a practitioner has been guilty of a violation of the PTO Code of Professional Responsibili-

ty. See *Snider* v. *Mossinghoff*, Civil Action No. 82-2903 (D.D.C. Sept. 14, 1983) (request for material related to investigation of possible patent attorney misconduct was properly denied under FOIA where attorney has not been disciplined). Another comment suggested that the Director require non-practitioners to submit complaints in the form of an affidavit or declaration. Proposed §10.131(c) is presently permissive. The suggestion is not being adopted, because there is not always a need for an affidavit. For example, disciplinary action may be based solely on PTO records. There would be no reason to require a non-practitioner to make affidavit as to the content of PTO records.

One comment was received which addressed the possibility that proposed §§10.132, 10.140, 10.155, and 10.156 as set out in the advance notice did not provide for sufficient separation of the investigative/prosecutorial functions on the one hand from the deciding functions on the other hand. Proposed §10.140 has been changed in response to this comment. The comment is addressed on the merits under the discussion above in connection with proposed §10.4.

One comment was received which suggested that proposed §10.133(b) be changed to provide for resignation from practice before the Office and that the Commissioner be authorized to enter an order excluding a practitioner "on consent." The suggestion is being adopted. In accordance with the suggestion, a practitioner would be permitted to resign and be excluded "on consent" by filing an affidavit stating that (1) the resignation is freely and voluntarily proferred, (2) the practitioner is not acting under duress or coersion from the PTO, (3) the practitioner is fully aware of the implications of filing the resignation, and (4) the practitioner is aware of (a) a pending investigation or (b) charges arising from a complaint alleging that the practitioner is guilty of a violation of the PTO Code of Professional Responsibility. The comment contains the following statement, with which the PTO is in full accord:

> "This proposal is similar to a practice in New York and one recommended by the ABA Special Committee on Evaluation of Disciplinary Enforcement. The resignation 'on consent' serves two functions. First, it distinguishes resignations filed in the face of a pending investigation or pending charges from those filed for other reasons. *Gresham* v. *Superior Court*, 44 Cal. App. 2d 644, 112 P.2d 965 (1941). Second it informs other jurisdictions that the exclusion involved matters which may warrent their own disciplinary action. *Nolan* v. *Brawley*, 244 N.E. 2d 918 (Ind. 1969)."

One comment suggested that "alleged" be inserted before "violations" in proposed §10.134(a)(2). The suggestion is being adopted.

Two comments were received with respect to proposed §10.135(c). One comment suggested addition of "of" after "period." This suggestion is being adopted. A second comment suggested that the period for answering an inquiry under proposed §10.135(c) should be set at a minimum of 30 days. The proposed rules provide that the Director may set a period of not less than 15 days. This suggestion is not being adopted. The period of time to be set by the Director may vary depending on the location of, and the circumstances surrounding, the need for the inquiry. An attorney located in Washington, D. C. can adequately respond within 15 days. On the other hand, an attorney located on the West coast may need more time for response in view of the distance involved.

Two comments with respect to proposed §10.136 were received. One comment suggested that after "thirty days" the phase "after service" be inserted. According to the comment, the thirty- day limitation should explicitly run from a defined event. The suggestion is not being adopted, because it is contemplated that under proposed §10.136(a) a specific date will be set out in the complaint indicating the date on or before which an answer must be filed. For example, a complaint filed on Feburary 1 might indicate that "an answer is due on or before March 15." Hence, there is no need to set the thirty- day period to run from service. Another comment suggested that the language "any new matter" in proposed §10.136(e) was not definite. "Any new matter" was intended to mean any affirmative defense. Proposed §10.136(e) as it appears in this notice uses the language "any affirmative defense" in place of "any new matter."

Two comments were received which argued that approval of an ALJ should not be necessary prior to issuing a subpoena under 35 U.S.C. 24. The comments have been considered, but the suggestions made therein are not being adopted. One comment argues that "[r]equiring the granting of leave by the administrative law judge to take depositions will create many problems." On the contrary, the PTO believes that prior ALJ approval will minimize problems and will prevent (1) unwarranted issuance of subpoenas to obtain evidence which the ALJ would not consider in any instance and (2) unnecessary work on the part of federal courts. The comment states that "[i]f the administrative law judge refuses to give permission to take certain depositions, the result may very well be a long drawn-out proceeding based upon a claim by the respondent that the denial of leave by the administrative law judge was an abuse of discretion." The same argument can be made for every interlocutory order entered by an ALJ. Moreover, as in the case of a refusal by a district judge to permit a deposition, the decision by an ALJ refusing to permit a deposition may be subject to review before the Commissioner and thereafter under 35 U.S.C. 32.

The PTO agrees with the comment to the extent that it argues that "[t]he respondent [or the Director] should be permitted to . . . take whatever depositions are appropriate." The PTO disagrees with the comment, however, as to how "appropriate" is to be determined. The PTO believes that the ALJ, on motion of the respondent or Director, should make the decision of whether a subpoena should issue. The other comment suggested that "[t]he general rule governing the issuance of subpoenas in [federal] litigation should be followed." For reasons advanced above, the PTO does not presently accept this suggestion.

Four comments regarding proposed §10.139 were received. Two comments pointed out that "facts of law" in paragraph (b)(7) should be "facts or law." An appropriate change has been made. One comment suggested that the Federal Rules of Evidence should be made applicable to PTO disciplinary proceedings. This comment is discussed in connection with the comments filed with respect to §10.150. One comment suggested that the rules as proposed in the advance notice did not provide for making a record of objections to evidence and rulings on those objections. The comment argues that due process problems may be created. A change to proposed §10.150 makes clear that objections to evidence and rulings on objections will be part of the record. Another comment argued that certain stays of proceedings should be permitted. According to the argument, "[a] stay for the resolution of collateral litigation relating to allegations of misconduct would prevent the use of disciplinary proceedings as a vehicle for discovery not otherwise available in the collateral litigation." The comment does not specify what is meant by "collateral litigation." If the comment refers to allegations of fraud on the PTO by a practitioner raised in a patent infringement action, it is (and would continue to be) the *general* policy of the PTO to wait until termination of the infringement action before proceeding with disciplinary proceedings. See e.g., *Kingsland* v. *Dorsey*, 338 U.S. 318 (1949).

One comment suggested that proposed §10.141 be changed to provide that the ALJ or the Director "may provide for filing by hand or by U. S. Express Mail" papers required to be filed in disciplinary proceedings. This suggestion is being adopted. In addition to papers, proposed §10.141(c) will provide for filing papers "and other matter."

Three comments were received which discussed proposed §10.144(c). One comment pointed out that pro-

posed §10.144(c), which provided that if a disciplinary proceeding results in disciplinary action against a practitioner, the record of the entire disciplinary proceeding will be available for public inspection, was not consistent with proposed §10.159(c), which provided that the Commissioner could order a disciplinary proceeding to be kept confidential. The added language "and subject to §10.159(c)" in proposed §10.144(c) obviates the inconsistency. It should be pointed out that the instances in which a disciplinary proceeding resulting in discipline can be ordered kept confidential will be rare. Before a file in a disciplinary proceeding may be kept confidential, a practitioner would have to demonstrate that the records in the disciplinary file fall within an exemption to the Freedom of Information Act, 5 U.S.C. 552(b). One comment asked whether settlement agreements would be made available. The language "including any settlement agreement" has been added to proposed §10.144(c) in response to the comment. One comment felt that the language "disciplinary proceeding" should be defined. The PTO has viewed the disciplinary proceeding to include the complaint and all papers filed thereafter. The PTO will continue to regard disciplinary proceedings as beginning with the filing of a complaint. Another comment suggested that keeping the record of a disciplinary proceeding closed until disciplinary action occurs is inconsistent with Standard 8.25 of the Standards for Lawyer Discipline and Disability Proceedings of the American Bar Association (1979). The PTO has not adopted Standard 8.25. Moreover, the provisions of 35 U.S.C. 122 impose different requirements on the PTO which are not necessarily applicable to the States. A third comment suggested that the rules should provide for delaying opening of the record in a disciplinary proceeding until "collateral litigation involving allegations of the misconduct" is completed. This suggestion is not being adopted. Once a practitioner has been reprimanded, suspended or excluded by the PTO, the public is entitled to know that such action has been taken. The comment failed to state any compelling reason why the public should be precluded from knowing about disciplinary action pending resolution of some private controversy which may involve the same or similar issue.

Several comments suggested that the burden of proof in disciplinary proceedings should be specified in the rules. Some comments further suggested that the burden should be by clear and convincing evidence. The suggestion to include a rule stating the burden of proof is being adopted. Proposed §10.149 specifies that the Director shall prove his or her case by a preponderance of evidence and that a respondent shall prove any affirmative defense by a preponderance of evidence. The preponderance test has been adopted in view of *Steadman* v. *Securities and Exchange Commission,* 450 U.S. 91 (1981) and *Charlton* v. *Federal Trade Commission,* 543 F.2d 903 (D.C.Cir. 1976) which approve the use of agencies of the preponderance test. To establish a fact by preponderance of evidence means to prove that the fact is more likely so that not so. In other words, a preponderance of the evidence in a case means such evidence as, when considered and compared with that opposed to it, has more convincing force, and produces in the mind of the trier of facts that what is sought to be provided is more likely true than not true. Devitt, *Federal Jury Practice and Instructions,* §71.01 (2d Ed. 1970).

Two comments were received which suggested that objections to evidence and rulings on objections should be made part of the record. These comments are believed to have merit and have been adopted. An appropriate change to proposed §10.150(e) makes clear that objections to evidence and rulings on objections become part of the record. Several comments suggested that the PTO adopt the Federal Rules of Evidence as the rules applicable to disciplinary proceedings. The PTO pointed out in the advance notice (49 Federal Register 10020, col. 2 (Mar. 16, 1984)) that adjudications, such as a disciplinary proceeding, are not controlled by the Federal Rules of Evidence. See e.g., *Klinestiver* v. *Drug Enforcement Administration,* 606 F.2d 1128, 1130 (D.C. Cir. 1979). No comment has suggested authority which would authorize the PTO to use the Federal Rules of Evidence in disciplinary proceedings. The controlling law is set out in 5 U.S.C. 556(d) which provides in part: "Any oral or documentary evidence may be received, but the agency as a matter of policy shall provide for the exclusion of irrelevant, immaterial, or unduly repetitious evidence. A sanction may not be imposed or rule or order issued except on consideration of the whole record or those parts thereof cited by a party and supported by and in accordance with the reliable, probative, and substantial evidence." It appears to be the concern of some of the comments that the Administrative Procedure Act does not articulate an appropriate standard of evidence and that hearsay may be admitted. Suffice it to say that many adjudications occur daily under the Administrative Procedure Act, including disciplinary proceedings. The following language appearing in an opinion of the Eleventh Circuit in *TRW-United Greenfield Division* v. *National Labor Relations Board,* 716 F.2d 1391, 1394 (11th Cir. 1983), may be helpful:

> "At the hearing the ALJ refused to allow five additional employees to testify that other employees told them that such a statement had been made. TRW contends it was denied a full and fair hearing by the exclusion of this testimony. The general rule is that administrative tribunals are not bound by the strict rules of evidence governing jury trials. *Opp Cotton Mills, Inc.* v. *Administrator of Wage & Hour Div.,* 312 U.S. 126, 155, 61 S.Ct. 524, 537, 85 L.Ed. 624 (1971). Thus, the admission of testimony which would be deemed incompetent in judicial proceedings would not invalidate the administrative order. *Tagg Bros. & Moorhead* v. *United States,* 280 U.S. 420, 422, 50 S.Ct. 220, 225, 74 L.Ed. 524 (1930). But this assurance of a desired flexibility in administrative procedure does not go so far as to justify orders without a basis in evidence having rational probative force. Mere uncorroborated hearsay or rumor does not constitute substantial evidence. *Consolidated Edison Co.* v. *N.L.R.B.,* 305 U.S. 197, 230, 59 S.Ct. 206, 217, 83 L.Ed. 126 (1938). Therefore, the hearsay testimony of other employees would not have amounted to substantial evidence sufficient to support a finding for the company. We find that TRW was not denied a full and fair hearing by the judge's refusal to admit hearsay testimony."

See also *Steadman* v. *Securities and Exchange Commission,* 450 U.S. 91, 98 n. 17 (1981).

One comment argued that the Federal Rules of Evidence should apply in disciplinary cases, because the PTO is proposing to use the Federal Rules of Evidence in interference cases. See proposed 37 CFR §1.671(c) as set out in 49 Federal Register 3768, 3798 (January 30, 1984). Unlike disciplinary proceedings, interference proceedings are not governed by the Administrative Procedure Act. Thus, while 5 U.S.C. §556(d) applies to disciplinary proceedings, it does not apply to interference cases. Another comment argued that the rules of evidence in the jurisdiction in which a practitioner is located should govern PTO disciplinary proceedings. Such a provision would make it exceedingly difficult for an ALJ to rule on evidence and might make proof of a violation or proof of an affirmative defense turn on the jurisdiction where a practitioner resides. The standards for federal conduct and the evidence used to prove or defend against allegations of misconduct involving federal matters should be uniform throughout the United States. Accordingly, the argument in this comment is not being adopted.

Two comments argued that approval of the ALJ should not be required prior to taking a deposition under proposed §10.151(a). One of the two comments further argued that depositions should be taken by a respondent pursuant to the Federal Rules of Civil Procedure. The PTO is not adopting the suggestion made in these comments. The PTO believes that the taking of depositions should be left to the sound discretion of the ALJ upon motion made by the party wishing to

take the deposition. Practice under the Federal Rules of Civil Procedure leaves too much control over the litigation to the parties, whereas the procedure being proposed in §10.151 leaves the ALJ in full control of the proceedings. The procedure proposed in §10.151(b) is similar to that used by the Internal Revenue Service in disciplinary proceedings under 31 U.S.C. 1026. See also 31 CFR §10.67.

Three comments regarding proposed §10.152 were received. One comment suggested that "administrative representatives" be defined. The PTO believes that the term does not need to be defined in the rules per se, but will explain the term herein for the benefit of further comment. Administrative representatives would include any PTO employee who investigates or prosecutes a disciplinary matter. The term also includes the Director, his investigative staff, and his prosecutorial staff. Two comments suggested that discovery should be commensurate with discovery authorized by the Federal Rules of Civil Procedure. The PTO is not adopting this suggestion because discovery under the Federal Rules of Civil Procedure is expensive and does not permit an ALJ to control proceedings to the extent necessary to conclude proceedings with reasonable dispatch. Discovery is not required as a matter of due process as set out in the advance notice. 49 Federal Register 10020 (March 16, 1984). No compelling rationale has been presented to date which would cause the PTO to change its views presented in the advance notice. The PTO is receptive to further comment in response to this notice. One comment suggested that awarding costs could be a meaningful way of preventing discovery abuse. The PTO, however, has no statutory authority to award costs. While costs and attorney fees might be awarded to a prevailing respondent, there would be no authority to require a respondent who abuses discovery to pay costs.

Two changes have been made to proposed §10.154 in response to comments. The changes are discussed above. One change is editorial in nature. The other would require the ALJ to explain the reasons for any "reprimand" as well as for any suspension or exclusion. The suggestion is being adopted, because the rationale for penalties will form the basis of *stare decisis*. Indeed, one of the principal reasons for having the ALJ articulate reasons in support of penalties is to avoid the situation existing today where various penalties have been handed out, but no rationale in support of the penalties has been articulated. The lack of articulated rationale has made it more difficult to prosecute, defend, and settle disciplinary proceedings.

One comment suggested that the rules provide no vehicle for reopening disciplinary proceedings. While the PTO believes that the Commissioner has inherent authority to reopen disciplinary proceedings upon a proper showing, paragraph (c) is being added to proposed §10.155 to make explicit the authority of the Commissioner to "grant new trials." The standard is the same as that set forth in 37 CFR §1.184. Thus, the granting of a request to reopen a disciplinary proceeding will be controlled by the principles which govern the granting of new trials. Compare Rule 59 and 60 of the Federal Rules of Civil Procedure. One comment asks who will determine whether an appeal should be taken on behalf of the Director. The answer is that the Director will make that decision. In deciding to appeal to the Commissioner, the Director would not have to seek or obtain approval of the Committe on Discipline. One comment expressed the view that there might be an apperance of impropriety if appeals are to be filed with the Director since he is a party. The proposed practice is believed to be the easiest administrative manner for handling appeals. The proposed practice is similar to that which occurs with the Director of Practice of the Internal Revenue Service (31 CFR §10.71). It has presented no problem to the IRS. Accordingly, the PTO will continue to propose filing appeals in the Office of the Director. The PTO solicits further comment on this matter.

One comment voiced an objection to the Commissioner forwarding his or her decision to the Director who would in turn forward a copy of the decision to the respondent. The fifth sentence of proposed §10.156(a) has been changed to state that the Commissioner will forward a copy of the final decision to both the director and to the resondent.

Two comments were received which suggested that a stay should be automatically entered whenever a practitioner seeks judicial review of a final decision of the Commissioner. The PTO believes that stays should be entered in the discretion of the Commissioner. Accordingly, the suggestion is being adopted to the extent that a paragraph (b) has been added to proposed §10.157 to give the Commissioner discretion to enter stay orders. Whether a stay would be entered would depend on the particular facts. For example, it is unlikely that any stay would be entered where the practitioner has been found guilty of a violation of the PTO Code of Professional Responsibility *and* is presently incarcerated.

Three comments were received which addressed proposed §10.158. This section is designed to set out, for the first time, the restrictions on suspended or excluded practitioners. The present intent of the PTO is to effect the maximum lawful isolation of a suspended or excluded practitioner from the practice of law before the PTO. The PTO is attempting to do so through §10.158. One comment suggested that a suspended or excluded practitioner should be required to notify the bars of which he or she is a member of the fact of the PTO suspension or exclusion. The PTO believes this comment has merit. The language "bars of which he or she is a member" would include the bar of a State and the bar of a federal court, such as the Supreme Court, the United States Court of Appeals for the Federal Circuit, and any other federal court bar in which the suspended or excluded practitioner is a member. One comment believed that the firm of a suspended or excluded practitioner would have to give up its clients when the practitioner is suspended or excluded. That was not the intent of proposed §10.158. Nevertheless, proposed §10.158(b)(1) has been changed to make clear that a suspended or excluded practitioner must notify his or her clients. The clients of other members of the firm would not have to be notified. The same comment felt that the PTO was attempting to preclude a suspended or excluded practitioner from appearing before State courts. Such was not, and is not, the intent of the PTO. See the preamble to proposed §10.1. One comment suggested insertion of the words "by a final decision" after the word "Office" in proposed §10.158(a) and (b). This suggestion is not being adopted. The provisions of proposed §10.158 would apply unless a stay is granted by the Commissioner under proposed §10.157(b). The same comment suggested eliminating the word "law" or "legal" from subparagraphs (b)(3), (b)(5), (b)(6), and (b)(7). This suggestion is not being adopted. The comment would apparently have the Commissioner exlude from any contact with the PTO a practitioner who is suspended or excluded. The PTO does not belive the Commissioner has authority to do so. For example, a suspended or excluded practitioner could deliver a paper to the PTO. Hence, what the PTO proposes to do is prevent a suspended or exluded practitioner from practicing law before the Office or from rendering *legal* services to those having immediate, actual, or prospective business before the PTO. The comment went on to suggest that paragraphs (c) and (d) should be deleted, arguing that a suspended or excluded practitioner should not be permitted to do what is authorized in the paragraphs. The PTO perceives that suspended and excluded practitioners are entitled—like other citizens—to do certain things. Proposed §10.158 sets out what a suspended or excluded practitioner may do without running the risk of being denied readmission after a suspension. The comment failed to address the holdings of the various cases cited in the advance notice, 49 Federal Register at 10021, second and third columns. One comment discussed proposed §10.158 extensively. The comment has been considered in its entirety, but none of the suggestions made therein are being adopted. The comment argued that "in

any way" in proposed §10.158(c) might prevent a suspended partner from buying paper for the firm. Such is not the intent of the proposed rule inasmuch as it merely prevents a suspended or excluded practitioner from aiding another in the *practice of law* before the Office. The comment states that it would be impossible for a suspended or excluded practitioner to avoid discussions with clients and witnesses. The PTO does not agree. If the comment were correct, disqualification of all members of a firm would occur every time an associate is disqualified. However, "Chinese Walls" can be erected. The point is, when a practitioner is suspended or excluded and the practitioner is a member of a firm, the firm will have to decide whether to retain the suspended or excluded practitioner with appropriate insulation from PTO clients or whether to effect a separation. The comment also argued that the PTO was attempting to preclude a suspended or excluded practitioner from practicing State law. As pointed out above, such is not the case. The comment states that when a partner of a firm is suspended or excluded there are many contractual and economic ties between the partners which will make compliance with proposed §10.158 difficult. The PTO appreciates the difficulty which may in fact result. However, such is the fate of a firm in which a member is suspended or disbarred. Similar contractual and economic ties are disrupted when a State disbars a member of a firm. The argument is also made that a contract may prevent a firm or professional corporation from making a partner or majority stockholder an employee. What happens when a State bar suspends such a partner or majority stockholder? Fortunately, most partnerships and professional corporations do not encounter a need to deal with some of the difficult issues raised in the comment. However, when a suspension or exclusion occurs, business cannot be permitted to go on as usual. Those who are suspended cannot represent others, directly or indirectly, in their patent, trademark, and other legal business before the PTO.

One comment suggested that "the practitioner" in the second sentence of proposed §10.159(b) be changed to "any practitioner." The suggestion is being adopted. Another comment suggested that proposed §10.159(a) should be amended to insert after "be" the language "or have been." The suggestion is not being adopted in view of the change to proposed §10.158(b)(1).

With respect to proposed §10.160(d) one comment made the following statement: "That's no punishment! In this situation, it would seen to me that the period of actual suspension should be at least significantly greater than the initial period which the suspended practitioner failed to honor." Proposed §10.160(d) is believed to give the Director discretion in considering an application for readmission by a suspended or excluded practitioner and to take into account any activity in which a suspended or excluded practitioner may have engaged. If a suspended or excluded practitioner has violated proposed §10.158, he or she will not be readmitted until an appropriate suspension or exclusion has taken place. If the Director is of the opinion that a longer suspension is in order, he may deny the application for readmission and the suspended or excluded practitioner may seek review to the Commissioner under proposed §10.2(c).

Table 1
Principal Source of Sections 10.2 through 10.19

Sec.	
10.2(a)	New
10.2(b)(1)	New, but see 37 CFR 1.341(i) (1983)
10.2(b)(2)	New, but see 37 CFR 1.348(a) (1983)
10.2(c)	New, but see 37 CFR 1.341(i) (1983)
10.3	37 CFR 1.341(i) (1983)
10.4(a)	New
10.4(b)	New, but see 37 CFR 1.348(a) (1983)
10.4(c)	New
10.5	37 CFR 1.341 (1983)
10.6(a)	37 CFR 1.341(a) (1983)
10.6(b)	37 CFR 1.341(b) (1983)
10.6(c)	37 CFR 1.341(e) (1983)
10.6(d)	37 CFR 1.341(f) (1983)
10.6(e)	37 CFR 1.341(g) (1983)
10.7(a), (b)	37 CFR 1.341(c) (1983)
10.7(c)	New
10.8	37 CFR 1.341(h) (1983)
10.9(a)	37 CFR 1.342(1983)
10.9(b)	New
10.10	37 CFR 1.343 (1983)
10.11	37 CFR 1.347 (1983)
10.12	[reserved]
10.13	[reserved]
10.14	5 USC 500(b) and 37 CFR 2.12 (1983)
10.15	35 USC 32; 5 USC 500(d)(2); 37 CFR 1.343 (1983); and 37 CFR 2.12(f) (1983)
10.16	[reserved]
10.17	[reserved]
10.18(a)	37 CFR 1.346 (1983) and 37 CFR 2.15 (1983), see also Rule 11, FRCP
10.18(b)	35 USC 32 & Rule 11, FRCP
10.19	[reserved]

Table 2
Principal Source of Sections of 10.20 through 10.112, the PTO Code of Professional Responsibility

Abbreviations:
FRCP means Federal Rules of Civil Procedure
MCPR means Model Code of Professional Responsibility of the ABA (1980)
MRPC means Model Rules of Professional Conduct of the ABA (1983)
VCPR means the Virginia Code of Professional Responsibility (1984)

Sec.	
10.20	Preamble to MCPR (1980)
10.21	MCPR Canon 1 (1980)
10.22	MCPR DR 1-101 (1980)
10.23(a)	35 U.S.C. 32
10.23(b)(1)	35 U.S.C. 32 and MCPR DR 1-102(A)(1) (1980)
10.23(b)(2)–(6)	MCPR DR 1-102(A)(2)-(6) (1980)
10.23(c)(1)–(14)	PTO created
10.23(c)(15)	Rule 11, FRCP
10.23(c)(16)–(18)	PTO created
10.23(d)	*U.S.* v. *Beecroft*, 608 F.2d 753 (9th Cir. 1979)
10.24	MCPR 1-103 (1980)
10.25 through 10.29	(reserved)
10.30	MCPR Canon 2 (1980)
10.31(a)	35 U.S.C. 32
10.31(b)	5 U.S.C. 501
10.31(c)	37 CFR 1.345(c) (1983)
10.31(d)	Newly created
10.32	MRPC Rule 7.2 (1983)
10.33	MRPC Rule 7.3 (1983)
10.34	MRPC Rule 7.4 (1983)
10.35(a)	5 U.S.C. 501 and MRPC Rule 7.5 (1983)
10.35(b)	MRPC Rule 7.5 (1983)
10.36	MCPR DR 2-106 (1980)
10.37	MCPR DR 2-107 (1980)
10.38	MCPR DR 2-108 (1980)
10.39	MCPR DR 2-109 (1980)
10.40	MCPR DR 2-110 (1980)
10.41 through 10.45	(reserved)
10.46	MCPR Canon 3 (1980)
10.47(a), (c)	MCPR DR 3-101 (1980)

Table 2 *continued*

10.47(b)	New (but see e.g., *Crawford* v. *State Bar of California*, 7 Cal. Rptr. 746, 355 P.2d 490 (Cal. 1960))
10.48	MCPR DR 3-102 (1980)
10.49	MCPR DR 3-103 (1980)
10.50 through 10.55	(reserved)
10.56	MCPR Canon 4 (1980)
10.57	MCPR DR 4-101 (1980)
10.58 through 10.60	(reserved)
10.61	MCPR Canon 5 (1980)
10.62	MCPR DR 5-101 (1980)
10.63	MCPR DR 5-102 (1980)
10.64	MCPR DR 5-103 (1980)
10.65	MCPR DR 5-104 (1980)
10.66	MCPR DR 5-105 (1980)
10.67	MCPR DR 5-106 (1980)
10.68	MCPR DR 5-107 (1980)
10.69 through 10.75	(reserved)
10.76	MCPR Canon 6 (1980)
10.77	MCPR DR 6-101 (1980)
10.78	MCPR DR 6-102 (1980)
10.79 through 10.82	(reserved)
10.83	MCPR Canon 7 (1980)
10.84	MCPR DR 7-101 (1980)
10.85	MCPR DR 7-102 (1980)
10.86	(reserved)
10.87	MCPR DR 7-104 (1980)
10.88	MCPR DR 7-105 (1980)
10.89	MCPR DR 7-106 (1980)
10.90	(reserved)
10.91	(reserved)
10.92	MCPR DR 7-109 (1980)
10.93	VCPR DR 7-109 (1984)
10.94 through 10.99	(reserved)
10.100	MCPR Canon 8 (1980)
10.101(a)	MCPR DR 8-101 (1980)
10.101(b)	37 CFR 1.341(f) (1983) and 41 Op. Att'y Gen. 21 (1949), *reprinted in* 1949 Dec. Comm'r. Pat. 1
10.102	MCPR DR 8-102 (1980)
10.103	MCPR DR 8-103 (1980)
10.104 through 10.109	(reserved)
10.110	MCPR Canon 9 (1980)
10.111	MCPR DR 9-101 (1980)
10.112	MCPR DR 9-102 (1980)
10.139(c)	New
10.139(d)	New
10.139(e)	New
10.140(a)	5 USC 500(b)
10.140(b)	New
10.141	New
10.142	New
10.143	New
10.144	New
10.145	New
10.146-10.148	[reserved]
10.149	New, see *Steadman* v. *SEC*, 450 U.S. 91 (1981)
10.150(a)	5 USC 556(d)
10.150(b)	37 CFR 1.348(d)(3) (1983)
10.150(c)	New
10.150(d)	New
10.150(e)	New
10.151	37 CFR 1.348(d)(3) (1983)
10.152	New, see *Silverman* v. *CFTC*, 549 F.2d 28 (7th Cir. 1977)
10.153	New, but see 5 USC 557(c)
10.154	See 5 USC 557(b) and 35 USC 32
10.155	New
10.156	New
10.157	35 USC 32, Local Rule 1-26 (D.D.C.)
10.158	New
10.159	New
10.160	New
10.161	New
10.162-10.169	[reserved]
10.170	New, but see 37 CFR 1.183

Table 3
Principal Source of Sections 10.130 through 10.161

Section	*Source*
10.130	35 U.S.C. 32
10.131 (a)	New, but see 37 CFR 1.348(a)
10.131(b)	MCPR DR 1-103 (1980)
10.131(c)	New
10.132(a), (c)	New
10.132(b)	New, but see 37 CFR 1.348(b) (1983)
10.133	New
10.134	37 CFR 1.348(b) (1983)
10.135(a)(1)	New
10.135(a)(2)	37 CFR 1.348(b) (1983)
10.135(a)(3)	New
10.135(b)	New
10.135(c)	New
10.135(d)	5 USC 500(f)
10.136(a)	37 CFR 1.348(c) (1983)
10.136(b)	New
10.136(c)	37 CFR 1.348(c) (1983)
10.136(d)	37 CFR 1.348(c) (1983)
10.136(e)	New
10.137	37 CFR 1.348(c) (1983)
10.138	New
10.139(a)	5 USC 3105
10.139(b)	5 USC 556(c)

Other Considerations: The proposed rules will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The proposed rules are in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354) and Executive Order 12291.

The General Counsel of the Department of Commerce has certified to the Small Business Administration that the proposed rules will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354). The proposed rules would regulate the conduct of attorneys and agents who represent individuals and juristic entities before the Patent and Trademark Office and, if adopted, the proposed rules would not be expected to result in an increase of fees charged by attorneys and agents to entities, including small entities.

The Patent and Trademark Office has determined that the proposed rules are not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of the United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The registration information reporting requirements contained in the proposed rules, have been approved by the Office of Management and Budget, OMB Control No. 0651-0010.

The collection of information requirement for preserving client records, and identity of client' funds and property, contained in the proposed rules, is being submitted to OMB for review under Section 3504(h) of the Paperwork Reduction Act. Direct comments relating to this requirement to the Office of Information and Regulatory Affairs of OMB, Attention: Desk Officer for Commerce, Patent and Trademark Office. List of Subjects in 37 CFR Parts 1, 2, and 10

Administrative practice and procedure, Authority delegations, Conflict of interests, Courts, Inventions and patents, Trademarks, Lawyers.

Notice is hereby given that, pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, 31 and 41, the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations as set forth bellow:

It is proposed to amend 37 CFR, Chapter 1, as follows wherein deletions are indicated by brackets and additions by arrows:

Part 1—Rules of Practice in Patent Cases

1. Section 1.8 is proposed to be amended by adding to paragraph (a) a new subparagraph (xii) to read as follows:

§1.8 Certificate of mailing.

(a) * * *

(xii) Papers filed in connection with a disciplinary proceeding under Part 10 of this Subchapter.

Section 1.21 is proposed to be amended by adding to paragraph (a) two new paragraphs (5) and (6) to read as follows:

§1.21 Miscellaneous fees and charges.

(a) * * *

(5) For review of a decision of the Director of Enrollment and Discipline under §10.2(c) 60.00

(6) For requesting regrading of an examination under §19.7(c) $60.00

3. Section 1.31 is proposed to be revised to read as follows:

§1.31 Applicants may be represented by [an] ►a registered◄ attorney or agent.

An applicant for patent may file and prosecute his ► or her ◄ own case, or he ►or she ◄ may be represented by [an] ►a registered ◄ attorney ►, ◄ [or] agent, ►or other individual ◄ authorized to practice before the Patent and Trademark Office in patent cses. ►See § §10.6 and 10.9 of this Subchapter. ◄The Patent and Trademark Office cannot aid in the selection of [an] ►a registered◄ attorney or agent.

4. Section 1.34 is proposed to be amended by revising paragraph (a) as follows:

§1.34 Recognition of representation.

(a) When a registered attorney or agent acting in a representative capacity appears in person or signs a paper in practice before the Patent and Trademark Office in a patent case, his or her personal appearance or signature shall constitute a representation to the Patent and Trademark Office that under the provisions of this [part] ►Subchapter◄ and the law, he or she is authorized to represent the particular party in whose behalf he or she acts. In filing such a paper, the ►registered◄ attorney or agent should specify his or her registration number with his or her signature. Further proof of authority to act in a representative capacity may be required.

* * * * *

5. The center heading preceding §1.341 is proposed to be deleted.

6. Sections 1.341 through 1.348 are proposed to be deleted.

Part 2—Rules of Practice in Trademark Cases

7. Section 2.11 is proposed to be revised to read as follows:

§2.11 Applicants may be represented by an attorney.

The owner of a trademark may file and prosecute his ►or her◄ own application for registration of such trademark, or he ►or she◄ may be represented by an attorney or other [person] ►individual◄ authorized to practice in trademark cases ►under §10.14 of this Subchapter◄. The Patent and Trademark Office cannot aid in the selection of an attorney or other representative.

8. Sections 2.12 through 2.16 are proposed to be deleted.

9. Section 2.17 is proposed to be amended by revising paragraph (a) as follows:

§2.17 Recognition for representation.

(a) When an attorney [at law] ►as defined in §10.1(c) of this Subchapter◄ acting in a representative capacity appears in person or signs a paper in practice before the Patent and Trademark Office in a trademark case, his ► or her◄ personal appearance or signature shall constitute a representation to the Patent and Trademark Office that ►,◄ under the provisions of [these rules] ►§10.14 ◄ and the law ►,◄ he ►or she◄ is authorized [, and qualified under §2.12(a),] particular party in whose behalf he ►or she◄ acts. Further proof of authority to act in a representative capacity may be required.

* * * * *

10. Section 2.19 is proposed to be revised to read as follows:

§2.19 Revocation of power of attorney or of other authorization to represent ►,withdrawal◄.

►(a)◄ Authority to represent an applicant or a party to a proceeding may be revoked at any stage in the proceedings of a case upon notification to the Commissioner; and when it is so revoked, the Office will communicate directly with the applicant or party to the proceeding or with such other qualified person as may be authorized. The Patent and Trademark Office will notify the person affected of the revocation of his ►or her◄ authorization.

►(b) An individual authorized to represent an applicant or party in a trademark case may withdraw upon application to and approval by the Commissioner.◄

11. The following Part 10 is proposed to be added:

Part 10—Representation of others before the Patent and Trademark Office

Sec.

10.1	Definitions.
10.2	Director of Enrollment and Discipline.
10.3	Committee on Enrollment.
10.4	Committee on Discipline.
10.5	Register of attorneys and agents in patent cases.
10.6	Registration of attorneys and agents.
10.7	Requirements for registration.
10.8	Oath and registration fee.
10.9	Limited recognition in patent cases.
10.10	Individuals not registered or recognized to practice in patent cases.
10.11	Removing names from the register.
10.12-10.13	[reserved].
10.14	Individuals who may practice before the Office in trademark and other non-patent cases.
10.15	Refusal to recognize a practitioner.
10.16-10.17	[reserved].
10.18	Signature and certificate of practitioner.
10.19	[reserved].
10.20	Canons and Disciplinary Rules.
10.21	Canon 1.
10.22	Maintaining integrity and competence of the legal profession.
10.23	Misconduct.
10.24	Disclosure of information to authorities.
10.25-10.29	[reserved].
10.30	Canon 2.
10.31	Communications concerning a practitioner's services.
10.32	Advertising.
10.33	Direct contact with prospective clients.
10.34	Communication of fields of practice.
10.35	Firm names and letterheads.
10.36	Fees for legal services.
10.37	Division of fees among practitioners.
10.38	Agreements restricting the practice of a practitioner.
10.39	Acceptance of employment.
10.40	Withdrawal from employment.
10.41-10.45	[reserved].

10.46 Canon 3.
10.47 Aiding unauthorized practice of law.
10.48 Sharing legal fees.
10.49 Forming a partnership with a non-practitioner.
10.50-10.55 [reserved].
10.56 Canon 4.
10.57 Preservation of confidence and secrets of a client.
10.58 -10.60 [reserved].
10.61 Canon 5.
10.62 Refusing employment when the interest of the practitioner may impair the practitioner's independent professional judgment.
10.63 Withdrawal when the practitioner becomes a witness.
10.64 Avoiding acquisition of interest in litigation or proceeding before the Office.
10.65 Limiting business relations with a client.
10.66 Refusing to accept or continue employment if the interests of another client may impair the independent professional judgment of the practitioner.
10.67 Settling similar claims of clients.
10.68 Avoiding influence by others than the client.
10.69-10.75 [reserved].
10.76 Canon 6.
10.77 Failing to act competently.
10.78 Limiting liability to client.
[reserved]. 10.79-10.82
10.83 Canon 7.
10.84 Representing a client zealously.
10.85 Representing a client within the bounds of the law.
10.86 [reserved].
10.87 Communicating with one of adverse interest.
10.88 Threatening criminal prosecution.
10.89 Conduct in proceedings.
10.90-10.91 [reserved].
10.92 Contact with witnesses.
10.93 Contact with officials.
10.94-10.99 [reserved].
10.100 Canon 8.
10.101 Action as a public official.
10.102 Statements concerning officials.
10.103 Practitioner candidate for judicial office.
10.104-10.109 [reserved].
10.110 Canon 9.
10.111 Avoiding even the appearance of impropriety.
10.111 Preserving identity of funds and property of client.
10.113-10.129 [reserved].
10.130 Reprimand, suspension or exclusion.
10.131 Investigations.
10.132 Initiating a disciplinary proceeding; reference to an administrative law judge.
10.133 Conference between Director and practitioner; resignation.
10.134 Complaint.
10.135 Service of complaint.
10.136 Answer to complaint.
10.137 Supplemental complaint.
10.138 Contested case.
10.139 Administrative law judge; appointment; responsibilities; review of interlocutory orders; stays.
10.140 Representative for Director of respondent.
10.141 Filing of papers.
10.142 Service of papers.
10.143 Motions.
10.144 Hearings.
10.145 Proof; variance; amendment of pleadings.
10.146-10.148 [reserved].
10.149 Burden of proof.
10.150 Evidence.
10.151 Depositions.
10.152 Discovery.
10.153 Proposed findings and conclusions; post-hearing memorandum.
10.154 Initial decision of administrative law judge.
10.155 Appeal to the Commissioner.
10.156 Decision of the Commissioner.
10.157 Review of Commissioner's final decision.
10.158 Suspended or excluded practitioner.
10.159 Notice of suspension or exclusion.
10.160 Petition for reinstatement.
10.161 Savings clause.
10.162-10.169 [reserved].
10.170 Suspension of rules.

Authority: 5 U.S.C. 500, 35 U.S.C. 6, 31, 32

Part 10 —Representation of others before the Patent and Trademark Office

§10.1 Definitions

This part governs solely the practice of patent, trademark, and other law before the Patent and Trademark Office. Nothing in this subpart shall be construed to preempt the authority of each State to maintain control over the practice of law within its borders, except to the extent necessary for the Patent and Trademark Office to accomplish its federal objectives. Unless otherwise clear from the context, the following definitions apply to this part:

(a) "Affidavit" means affidavit, declaration under 35 U.S.C. 25 (see §1.68 and §2.20 of this Subchapter), or statutory declaration under 28 U.S.C. 1746.

(b) "Application" includes an application for a design, plant, or utility patent, an application to reissue any patent, and an application to register a trademark.

(c) "Attorney" or "lawyer" means an individual who is a member in good standing of the bar of any United States court or the highest court of any State. A "non-lawyer" is a person who is not an attorney or lawyer.

(d) "Canon" is defined in §10.20(a).

(e) "Confidence" is defined in §10.57(a).

(f) "Differing interests" include every interest that may adversely affect either the judgment or the loyalty of a practitioner to a client, whether it be a conflicting, inconsistent, diverse, or other interest.

(g) "Director" means the Director of Enrollment and Discipline.

(h) "Disciplinary Rule" is defined in §10.20(b).

(i) "Employee of a tribunal" includes all employees of courts, the Office, and other adjudicatory bodies.

(j) "Giving information" within the meaning of §10.23(c)(2) includes making (1) a written statement or representation or (2) an oral statement or representation.

(k) "Law firm" includes a professional legal corporation or a partnership.

(l) "Legal counsel" means practitioner.

(m) "Legal profession" includes the individuals who are lawfully engaged in practice of patent, trademark, and other law before the Office.

(n) "Legal service" means any legal service which may lawfully be performed by a practitioner before the Office.

(o) "Legal System" includes the Office and courts and adjudicatory bodies which review matters on which the Office has acted.

(p) "Office" means Patent and Trademark Office.

(q) "Person" includes a corporation, an association, a trust, a partnership, and any other organization or legal entity.

(r) "Practitioner" means (1) an attorney or agent registered to practice before the Office in patent cases or (2) an individual authorized under 5 U.S.C. 500(b) or otherwise as provided by this Subchapter, to practice before the Office in trademark cases or other non-patent cases. A "suspended or excluded practitioner" is a practitioner who is suspended or excluded under §10.156. A "non-practitioner" is an individual who is not a practitioner.

(s) A "proceeding before the Office" includes an application, a reexamination, a protest, a public use proceeding, a patent interference, an *inter partes* trademark proceeding, or any other proceeding which is pending before the Office.

(t) "Professional legal corporation" means a corporation, authorized by law to practice law for profit.

(u) "Registration" means registration to practice before the Office in patent cases.

(v) "Respondent" is defined in §10.134(a)(1).

(w) "Secret" is defined in §10.57(a).

(x) "Solicit" is defined in §10.33.

(y) "State" includes the District of Columbia, Puerto Rico, and other federal territories and possessions.

(z) "Tribunal" includes courts, the Office, and other adjudicatory bodies.

(aa) "United States" means the United States of America, its territories and possessions.

§10.2 Director of Enrollment and Discipline.

(a) *Appointment.* The Commissioner shall appoint a Director of Enrollment and Discipline. In the event of the absence of the Director or a vacancy in the office of the Director, the Commissioner may designate an employee of the Office to serve as acting Director of Enrollment and Discipline. The Director and any acting Director shall be an active member in good standing of the bar of a State.

(b) *Duties.* The Director shall:

(1) Receive and act upon applications for registration, prepare and grade the examination provided for in §10.7(b), maintain the register, and perform such other duties in connection with enrollment and recognition of attorneys and agents as may be necessary.

(2) Conduct investigations into possible violations by practitioners of Disciplinary Rules, with the consent of the Committee on Discipline initiate disciplinary proceedings under §10.132(b), and perform such other duties in connection with investigations and disciplinary proceedings as may be necessary.

(c) *Review of Director's decision.* Any final decision of the Director refusing to register an individual under §10.6, recognize an individual under §§10.9 or 10.14(c), or reinstate a suspended or excluded petitioner under §10.160, may be reviewed by petition to the Commissioner upon payment of the fee set forth in §1.21(a)(5). A petition filed more than 30 days after the date of the decision of the Director may be dismissed as untimely. Any petition shall contain (1) a statement of the facts involved and the points to be reviewed and (2) the action requested. Briefs or memoranda, if any, in support of the petition shall accompany or be embodied therein. The petition will be decided on the basis of the record made before the Director and no new evidence will be considered by the Commissioner in deciding the petition. Copies of documents already of record before the Director shall not be submitted with the petition. An oral hearing on the petition will not be granted except when considered necessary by the Commissioner.

(OMB Control No. 0651-0010).

§10.3 Committee on Enrollment.

(a) The Commissioner may establish a Committee on Enrollment composed of one or more employees of the Office

(b) The Committee on Enrollment shall, as necessary, advise the Director in connection with the Director's duties under §10.2(b)(1).

§10.4 Committee on Discipline.

(a) The Commissioner shall appoint a Committee on Discipline. The Committee on Discipline shall consist of the at least three employees of the Office, none of whom reports directly or indirectly to the Director or the Solicitor. Each member of the Committee on Discipline shall be a member in good standing of the bar of a State.

(b) The Committee on Discipline shall meet at the request of the Director and after reviewing evidence presented by the Director shall, by majority vote, determine whether there is probable cause to bring charges under §10.132 against a practitioner. When charges are brought against a practitioner, no member of the Committee on Discipline, employee under the direction of the Director, or associate solicitor or assistant solicitor in the Office of the Solicitor shall participate in rendering a decision on the charges.

(c) No discovery shall be authorized of, and no member of the Committee on Discipline shall be required to testify about, deliberations of the Committee on Discipline.

Individuals Entitled to Practice Before the Patent and Trademark Office Office

§10.5 Register of attorneys and agents in patent cases.

A register of attorneys and agents is kept in the Office on which are entered the names of all individuals recognized as entitled to represent applicants before the Office in the preparation and prosecution of applications for patent. Registration in the Office under the provisions of this part shall only entitle the individuals registered to practice before the Office in patent cases.

§10.6 Registration of attorneys and agents.

(a) *Attorneys.* Any citizen of the United States who is an attorney and who fulfills the requirements of this part may be registered as a patent attorney to practice before the Office. When appropriate, any alien who is an attorney, who lawfully resides in the United States, and who fulfills the requirements of this part may be registered as a patent attorney to practice before the Office, *provided:* registration is not inconsistent with the terms upon which the alien was admitted to, and resides in, the United States and *further provided:* the alien may remain registered only (1) if the alien continues to lawfully reside in the United States and registration does not become inconsistent with the terms upon which the alien continues to lawfully reside in the United States or (2) if the alien ceases to reside in the United States, the alien is qualified to be registered under paragraph (c) of this section. See also §10.9(b).

(b) *Agents.* Any citizen of the United States who is not an attorney and who fulfills the requirements of this part may be registered as a patent agent to practice before the Office. When appropriate, any alien who is not an attorney, who lawfully resides in the United States, and who fulfills the requirements of this part may be registered as a patent agent to practice before the Office, *provided:* registration is not inconsistent with the terms upon which the alien was admitted to, and resides in, the United States, and *further provided*: the alien may remain registered only (1) if the alien continues to lawfully reside in the United States and registration does not become inconsistent with the terms upon which the alien continues to lawfully reside in the United States or (2) if the alien ceases to reside in the United States, the alien is qualified to be registered under paragraph (c) of this section. See also §10.9(b).

Note: All individuals registered prior to November 15, 1938, were registered as attorneys, whether they were attorneys or not, and such registrations have not been changed.

(c) *Foreigners.* Any foreigner not a resident of the United States who shall file proof to the satisfaction of the Director that he or she is registered and in good standing before the patent office of the country in which he or she resides and practices and who is possessed of the qualifications stated in §10.7, may be registered as a patent agent to practice before the Office for the limited purpose of presenting and prosecuting patent applica-

tions of applicants located in such country, *provided*: the patent office of such country allows substantially reciprocal privileges to those admitted to practice before the United States Patent and Trademark Office. Registration as a patent agent under this paragraph shall continue only during the period that the conditions specified in this paragraph obtain.

(d) *Government employees.* Any officer or employee of the United States who is disqualified by statute (18 U.S.C. 203, 205) from practicing as an attorney or agent in proceedings or other matters before Government departments or agencies, may not be registered to practice before the Office. If any registered attorney or agent becomes an officer or employee of the United States who is disqualified by statute from practicing as an attorney or agent in proceedings and other matters before Government departments or agencies, his or her name shall be endorsed as inactive on the register during the period of any employment by the United States. An officer or employee of the United States whose official duties require the preparation and prosecution of applications for patent and who fulfills the requirements of this part may be registered to practice before the Office to the extent necessary to carry out his or her official duties. A written statement describing the official duties of the officer or employee and signed on behalf of the agency employing the officer or employee may be required by the Director.

(e) *Former Office employees.* No individual who has served in the Office will be registered after termination of his or her services, nor if registered before such service, be reinstated, unless he or she signs a written statement indicating that he or she has read 18 U.S.C. 207. No individual who has served in the patent examining corps of the Office will be registered after termination of his or her services, nor if registered before such service, be reinstated, unless he or she signs a written undertaking (1) not to prosecute or aid in any manner in the prosecution of any patent application pending in any patent examining group during his or her period of service therein and (2) not to prepare or prosecute or to assist in any manner in the preparation or prosecution of any patent application of another (i) assigned to such group for examination and (ii) filed within two years after the date he or she left such group, without written authorization of the Director. Associated and related classes in other patent examining groups may be required to be included in the undertaking or designated classes may be excluded from the undertaking. When an application for registration or reinstatement is made after resignation from the Office, the applicant will not be registered or reinstated if he or she has prepared or prosecuted or assisted in the preparation or prosecution of any any patent application as indicated in this paragraph.

(OMB Control No. 0651-0010)

§10.7 Requirements for registration.

(a) No individual will be registered to practice before the Office unless he or she shall:

(1) apply to the Commissioner in writing on a form supplied by the Director and furnish all requested information and material and

(2) establish to the satisfaction of the Director that he or she is:

(i) of good moral character and repute;

(ii) possessed of the legal, scientific, and technical qualifications necessary to enable him or her to render applicants for patents valuable service; and

(iii) is otherwise competent to advise and assist applicants for patents in the presentation and prosecution of their applications before the Office.

(b) In order that the Director may determine whether an individual seeking to have his or her name placed upon the register has the qualifications specified in paragraph (a) of this section, satisfactory proof of good moral character and repute and of sufficient basic training in scientific and technical matters must be submitted to the Director.

Except as provided in this paragraph, each applicant for registration must take and pass an examination which is held from time to time. Each application for admission to take the examination for registration must be accompanied by the fee set forth in §1.21(a)(1) of this Subchapter. The taking of an examination may be waived in the case of any individual who has actively served for at least four years in the examining corps of the Office. The examination will not be administered as a mere academic exercise.

(c) Within two months from the date an applicant is notified that he or she failed an examination, the applicant may request regrading of the examination upon payment of the fee set forth in §1.21(a)(6). Any applicant requesting regrading shall particularly point out the errors which the applicant believed occurred in the grading of his or her examination.

(OMB Control No. 0651-0010).

§10.8 Oath and registration fee.

Before an individual may have his or her name entered on the register of attorneys and agents, the individual must, after his or her application is approved, subscribe and swear to an oath or make a declaration prescribed by the Commissioner and pay the registration fee set forth in §1.21(a)(2) of this Subchapter.

(OMB Control No. 0651-0010)

§10.9 Limited recognition in patent cases.

(a) Any individual not registered under §10.6 may, upon a showing of circumstances which render it necessary or justifiable, be given limited recognition by the Director to prosecute as attorney or agent a specified application or specified applications, but limited recognition under this paragraph shall not extend further than the application or applications specified.

(b) When registration of an alien under paragraphs (a) or (b) of §10.6 is not appropriate, the alien may be given limited recognition as may be appropriate under paragraph (a) of this section.

§10.10 Individuals not registered or recognized to practice in patent cases.

Only practitioners who are registered under §10.6 or individuals given limited recognition under §10.9 will be permitted to prosecute patent applications of others before the Office.

§10.11 Removing names from the register.

(a) Registered attorneys and agents shall notify the Director of any change of address. Any notification to the Director of any change of address shall be separate from any notice of change of address filed in individual applications.

(b) A letter may be addressed to any individual on the register, at the address of which separate notice was last received by the Director, for the purpose of ascertaining whether such individual desires to remain on the register. The name of any individual failing to reply and give any information requested by the Director within a time limit specified will be removed from the register and the names of individuals so removed will be published in the *Official Gazette*. The name of any individual so removed may be reinstated on the register as may be appropriate and upon payment of the fee set forth in §1.21(a)(3) of this Subchapter.

(OMB Control No. 0651-0010)

§§10.12-10.13 [reserved].

§10.14 Individuals who may practice before the Office in trademark and other non-patent cases.

(a) *Attorneys.* Any individual who is an attorney may represent others before the Office in trademark and other non-patent cases. An attorney is not required to apply for registration or recognition to practice before the Office in trademark and other non-patent cases.

(b) *Non-lawyers.* Individuals who are not attorneys are not recognized to practice before the Office in trademark and other non-patent cases, except that individuals not attorneys who were recognized to practice before

the Office in trademark cases under this chapter prior to January 1, 1957, will be recognized as agents to continue practice before the Office in trademark cases.

(c) *Foreigners.* Any foreigner not a resident of the United States who shall prove to the satisfaction of the Director that he or she is registered and in good standing before the patent or trademark office of the country in which he or she resides and practices, may be recognized for the limited purpose of representing applicants located in such country before the Office in the presentation and prosecution of trademark applications, *provided*: the patent and trademark office of such country allows substantially reciprocal privileges to those permitted to practice in trademark cases before the United States Patent and Trademark Office. Recognition under this paragraph shall continue only during the period that the conditions specified in this paragraph obtain.

(d) Recognition of any individual under this section shall not be construed as sanctioning or authorizing the performance of any act regarded in the jurisdiction where performed as the unauthorized practice of law.

(e) No individual other than those specified in paragraphs (a), (b), and (c) of this section will be permitted to practice before the Office in trademark cases. Any individual may appear in a trademark or other non-patent case in his or her own behalf. Any individual may appear in a trademark, case for (1) a firm of which he or she is a member or (2) a corporation or association of which he or she is an officer and which he or she is authorized to represent, if such firm, corporation, or association is a party to a trademark proceeding pending before the Office.

§10.15 Refusal to recognize a practitioner.

Any practitioner authorized to appear before the Office may be suspended or excluded in accordance with the provisions of this part. Any practitioner who is suspended or excluded under this subpart or removed under §10.11(b) shall not be entitled to practice before the Office.

§§10.16-10.17 [reserved].

§10.18 Signature and certificate of practitioner.

(a) Every paper filed by a practitioner representing an applicant or party to a proceeding in the Office must bear the signature of, and be personally signed by, such practitioner except those papers which are required to be signed by the applicant or party. The signature of practitioner to a paper filed by him or her, constitutes a certificate that:

(1) the paper has been read;

(2) the paper's filing is authorized;

(3) to the best of his or her knowledge,

information, and belief, there is good ground to support the paper, including any allegations of improper conduct contained or alleged therein; and

(4) it is not interposed for delay.

(b) Any practitioner knowingly violating the provisions of this section is subject to disciplinary action. See §10.23(c)(15).

§[10.19 reserved].

Patent and Trademark Office Code of Professional Responsibility

§10.20 Canons and Disciplinary Rules.

(a) Canons are set out in §§10.21, 10.30, 10.46, 10.56, 10.61, 10.76, 10.83, 10.100, and 10.110. Canons are statements of axiomatic norms, expressing in general terms the standards of professional conduct expected of practitioners in their relationships with the public, with the legal system, and with the legal profession.

(b) Disciplinary Rules are set out in §§10.22-10.24, 10.31-10.40, 10.47-10.57, 10.62-10.68, 10.77, 10.78, 10.84, 10.85, 10.87-10.89, 10.92, 10.93, 10.101-10.103, 10.111, and 10.112. Disciplinary Rules are mandatory in character and state the minimum level of conduct below which no practitioner can fall without being subjected to disciplinary action.

§10.21 Canon 1.

A practitioner should assist in maintaining the integrity and competence of the legal profession.

§10.22 Maintaining integrity and competence of the legal profession.

(a) A practitioner is subject to discipline if the practitioner has made a materially false statement in, or if the practitioner has deliberately failed to disclose a material fact requested in connection with, the practitioner's application for registration or membership in the bar of any United States court or any State court or his or her authority to otherwise practice before the Office in trademark and other non-patent cases.

(b) A practitioner shall not further the application for registration or membership in the bar of any United States court, State court, or administrative agency of another person known by the practitioner to be unqualified in respect to character, education, or other relevant attribute.

§10.23 Misconduct.

(a) A practitioner shall not engage in disreputable or gross misconduct.

(b) A practitioner shall not:

(1) Violate a Disciplinary Rule.

(2) Circumvent a Disciplinary Rule through actions of another.

(3) Engage in illegal conduct involving moral turpitude.

(4) Engage in conduct involving dishonesty, fraud, deceit, or misrepresentation.

(5) Engage in conduct that is prejudicial to the administration of justice.

(6) Engage in any other conduct that adversely reflects on the practitioner's fitness to practice before the Office.

(c) Conduct which constitutes a violation of paragraphs (a) and (b) of this section includes, but is not limited to:

(1) Conviction of a criminal offense involving moral turpitude, dishonesty, or breach of trust.

(2) Knowingly giving false or misleading information or knowingly participating in a material way in giving false or misleading information, to:

(i) A client in connection with any immediate, prospective, or pending business before the Office.

(ii) The Office or any employee of the Office.

(3) Misappropriation of, or failure to properly or timely remit, funds received by a practitioner or the practitioner's firm from a client to pay a fee which the client is required by law to pay to the Office.

(4) Directly or indirectly improperly influencing, attempting to improperly influence, offering or agreeing to improperly influence, or attempting to offer or agree to improperly influence an official action of any employee of the Office by:

(i) use of threats, false accusations, duress, or coercion,

(ii) an offer of any special inducement or promise of advantage, or

(iii) bestowing of any gift, favor, or thing of value.

(5) Suspension or disbarment from practice as an attorney or agent by any duly constituted authority of a State or the United States or, in the case of a practitioner who resides in a foreign country or is registered under §10.6(c), suspension or disbarment as an attorney or agent by any duly constituted authority of:

(i) a State,

(ii) the United States, or

(iii) the country in which the practitioner resides.

(6) Knowingly aiding or abetting a practitioner, suspended or excluded from practice before the Office in engaging in unauthorized practice before the Office under §10.158.

(7) Knowingly withholding from the Office information identifying a patent or application of another from which one or more claims have been copied.

(8) Failing to forward, or failing to timely notify the

Office of an inability to forward, to a client or former client correspondence received from the Office or the client's or former client's opponent in an *inter partes* proceeding before the Office when the correspondence (i) could have a significant effect on a matter pending before the Office, (ii) is received by the practitioner on behalf of a client or former client and (iii) is correspondence which a reasonable practitioner would believe under the circumstances should be forwarded to the client or former client.

(9) Knowingly misusing a certificate of mailing under §1.8 of this Subchapter or a certificate of "Express Mail" under §1.10 of this Subchapter.

(10) Violating the duty of candor or good faith requirements of §1.56(a) of this Subchapter.

(11) Knowingly filing, or causing to be filed, an application which is subject to being stricken under §1.56(c) of this Subchapter.

(12) In the absence of information sufficient to establish a reasonable belief in the existence of probable cause that a practitioner is in violation of, or has violated, a Disciplinary Rule, causing a disciplinary investigation to be made, or a disciplinary proceeding to be brought, against the practitioner by a court, a state, or an administrative agency.

(13) Knowingly preparing or prosecuting a patent application in violation of an undertaking signed under §10.6(e).

(14) Knowingly failing to advise the Director in writing of any change which would preclude continued registration under §10.6.

(15) Knowingly signing a paper filed in the Office in violation of the provisions of §10.18 or including scandalous or indecent matter in a paper filed in the Office.

(16) Willfully refusing to reveal or report knowledge or evidence to the Director contrary to §10.24 or paragraph (b) of §10.131.

(17) Representing before the Office in a patent case either a joint venture comprising an inventor and an invention developer or an inventor referred to the registered practitioner by an invention developer when (i) the registered practitioner knows, or has been advised by the Office, that a formal complaint filed by a federal or state agency, based on any violation of any law relating to securities, unfair methods of competition, unfair or deceptive acts or practices, mail fraud, or other civil or criminal conduct, is pending before a federal or state court or federal or state agency, or has been resolved unfavorably by such court or agency, against the invention developer in connection with invention development services and (ii) the registered practitioner fails to fully advise the inventor of the existence of the pending complaint or unfavorable resolution thereof prior to undertaking or continuing representation of the joint venture or inventor. "Invention developer" means any person, and any agent, employee, officer, partner, or independent contractor thereof, who is not a registered practitioner and who advertises invention development services in media of general circulation or who enters into contracts for invention development services with customers as a result of such advertisement. "Invention development services" means acts of invention development required or promised to be performed, or actually performed, or both, by an invention developer for a customer.

"Invention development" means the evaluation, perfection, marketing, brokering, or promotion of an invention on behalf of a customer by an invention developer, including a patent search, preparation of a patent application, or any other act done by an invention developer for consideration toward the end of procuring or attempting to procure a license, buyer, or patent for an invention. "Customer" means any individual who has made an invention and who enters into a contract for invention development services with an invention developer with respect to the invention by which the inventor becomes obligated to pay the invention developer less than $5,000 (not to include any additional sums which the invention developer is to receive as a result of successful development of the invention). "Contract for invention development services" means a contract for invention development services with an invention developer with respect to an invention made by a customer by which the inventor becomes obligated to pay the invention developer less that $5,000 (not to include any additional sums which the invention developer is to receive as a result of successful development of the invention).

(18) In the absence of information sufficient to establish a reasonable belief that fraud or inequitable conduct has occurred, alleging before a tribunal that anyone has committed a fraud on the Office or engaged in inequitable conduct in a proceeding before the Office.

(d) A practitioner who acts with reckless indifference to whether a representation is true or false is chargeable with knowledge of its falsity. Deceitful statements of half-truths or concealment of material facts shall be deemed actual fraud within the meaning of this part.

§10.24 Disclosure of information to authorities.

(a) A practitioner possessing unprivileged knowledge of a violation of a Disciplinary Rule shall report such knowledge to the Director.

(b) A practitioner possessing unprivileged knowledge or evidence concerning another practitioner, employee of the Office, or a judge shall reveal fully such knowledge or evidence upon proper request of a tribunal or other authority empowered to investigate or act upon the conduct of practitioners, employees of the Office, or judges.

(OBM Approval pending)

§§10.25-10.29 [reserved].

§10.30 Canon 2.

A practitioner should assist the legal profession in fulfilling its duty to make legal counsel available.

§10.31 Communications concerning a practitioner's services.

(a) No practitioner shall with respect to any prospective business before the Office, by word, circular, letter, or advertising, with intent to defraud in any manner, deceive, mislead, or threaten any prospective applicant or other person having immediate or prospective business before the Office.

(b) A practitioner may not use the name of a Member of either House of Congress or of an individual in the service of the United States in advertising the practitioner's practice before the Office.

(c) Unless authorized under §10.14(b), a non-lawyer practitioner shall not hold himself or herself out as authorized to practice before the Office in trademark cases.

(d) Unless a practitioner is an attorney, the practitioner shall not hold himself or herself out:

(i) to be an attorney or lawyer or

(ii) as authorized to practice before the Office in nonpatent and trademark cases.

§10.32 Advertising.

(a) Subject to §10.31, a practitioner may advertise services through public media, including a telephone directory, legal directory, newspaper, or other periodical, radio, or television, or through written communications not involving solicitation as defined by §10.33.

(b) A practitioner shall not give anything of value to a person for recommending the practitioner's services, except that a practitioner may pay the reasonable cost of advertising or written communication permitted by this section and may pay the usual charges of a not-for-profit lawyer referral service or other legal service organization.

(c) Any communication made pursuant to this section shall include the name of at least one practitioner responsible for its content.

§10.33 Direct contact with prospective clients.

A practitioner may not solicit professional employment from a prospective client with whom the practitioner has no family or prior professional relationship, by

mail, in-person or otherwise, when a significant motive for the practitioner's doing so is the practitioner's pecuniary gain under circumstances evidencing undue influence, intimidation, or overreaching. The term "solicit" includes contact in person, by telephone or telegraph, by letter or other writing, or by other communication directed to a specific recipient, but does not include letters addressed or advertising circulars distributed generally to persons not specifically known to need legal services of the kind provided by the practitioner in a particular matter, but who are so situated that they might in general find such services useful.

§10.34 Communication of fields of practice.

A registered practitioner may state or imply that the practitioner is a specialist as follows:

(a) A registered practitioner who is an attorney may use the designation "Patents," "Patent Attorney," "Patent Lawyer," "Registered Patent Attorney," or a substantially similar designation.

(b) A registered practitioner who is not an attorney may use the designation "Patents," "Patent Agent," "Registered Patent Agent," or a substantially similar designation, except that any practitioner who was registered prior to Nov. 15, 1938, may refer to himself or herself as a "patent attorney."

§10.35 Firm names and letterheads.

(a) A practitioner shall not use a firm name, letterhead, or other professional designation that violates §10.31. A trade name may be used by a practitioner in private practice if it does not imply a current connection with a government agency or with a public or charitable legal services organization and is not otherwise in violation of §10.31.

(b) Practitioners may state or imply that they practice in a partnership or other organization only when that is the fact.

§10.36 Fees for legal services.

(a) A practitioner shall not enter into an agreement for, charge, or collect an illegal or clearly excessive fee.

(b) A fee is clearly excessive when, after a review of the facts, a practitioner of ordinary prudence would be left with a definite and firm conviction that the fee is in excess of a reasonable fee. Factors to be considered as guides in determining the reasonableness of a fee include the following:

(1) The time and labor required, the novelty and difficulty of the questions involved, and the skill requisite to perform the legal service properly.

(2) The likelihood, if apparent to the client, that the acceptance of the particular employment will preclude other employment by the practitioner.

(3) The fee customarily charged in the locality for similar legal services.

(4) The amount involved and the results obtained.

(5) The time limitations imposed by the client or by the circumstances.

(6) The nature and length of the professional relationship with the client.

(7) The experience, reputation, and ability of the practitioner or practitioners performing the services.

(8) Whether the fee is fixed or contingent.

§10.37 Division of fees among practitioners.

(a) A practitioner shall not divide a fee for legal services with another practitioner who is not a partner in or associate of the practitioner's law firm or law office, unless:

(1) The client consents to employment of the other practitioner after a full disclosure that a division of fees will be made.

(2) The division is made in proportion to the services performed and responsibility assumed by each.

(3) The total fee of the practitioners does not clearly exceed reasonable compensation for all legal services rendered to the client.

(b) This section does not prohibit payment to a former partner or associate pursuant to a separation or retirement agreement.

§10.38 Agreements restricting the practice of a practitioner.

(a) A practitioner shall not be a party to or participate in a partnership or employment agreement with another practitioner that restricts the right of a practitioner to practice before the Office after the termination of a relationship created by the agreement, except as a condition to payment of retirement benefits.

(b) In connection with the settlement of a controversy or suit, a practitioner shall not enter into an agreement that restricts the practitioner's right to practice before the Office.

§10.39 Acceptance of employment.

A practitioner shall not accept employment on behalf of a person if the practitioner knows or it is obvious that such person wishes to:

(a) Bring a legal action or commence a proceeding before the Office, or conduct a defense, or assert a position in litigation or any proceeding pending before the Office, or otherwise have steps taken for the person, merely for the purpose or harassing or maliciously injuring any other person.

(b) Present a claim or defense in litigation or any proceeding before the Office that is not warranted under existing law, unless it can be supported by good faith argument for an extension, modification, or reversal of existing law.

§10.40 Withdrawal from employment.

(a) A practitioner shall not withdraw from employment in a proceeding before the Office without permission from the Office (see §§1.36, and 2.19 of this Subchapter). In any event, a practitioner shall not withdraw from employment until the practitioner has taken reasonable steps to avoid foreseeable prejudice to the rights of the client, including giving due notice to his or her client, allowing time for employment of another practitioner, delivering to the client all papers and property to which the client is entitled, and complying with applicable laws and rules. A practitioner who withdraws from employment shall refund promptly any part of a fee paid in advance that has not been earned.

(b) *Mandatory withdrawal.* A practitioner representing a client before the Office shall withdraw from employment if:

(1) the practitioner knows or it is obvious that the client is bringing a legal action, commencing a proceeding before the Office, conducting a defense, or asserting a position in litigation or any proceeding pending before the Office, or is otherwise having steps taken for the client, merely for the purpose of harassing or maliciously injuring any person;

(2) the practitioner knows or it is obvious that the practitioner's continued employment will result in violation of a Disciplinary Rule;

(3) the practitioner's mental or physical condition renders it unreasonably difficult for the practitioner to carry out the employment effectively; or

(4) the practitioner is discharged by the client.

(c) *Permissive withdrawal.* If paragraph (b) of this section is not applicable, a practitioner may not request permission to withdraw in matters pending before the Office, and may not withdraw in other matters, unless such request or such withdrawal is because:

(1) the petitioner's client:

(i) insists upon presenting a claim or defense that is not warranted under existing law and cannot be supported by good faith argument for an extension, modification, or reversal of existing law;

(ii) personally seeks to pursue an illegal course of conduct;

(iii) insists that the practitioner pursue a course of conduct that is illegal or that is prohibited under a Disciplinary Rule.

(iv) by other conduct renders it unreasonably difficult for the practitioner to carry out the employment effectively;

(v) insists, in a matter not pending before a tribunal,

that the practitioner engage in conduct that is contrary to the judgement and advice of the practitioner but not prohibited under the Disciplinary Rule; or

(vi) has failed to pay one or more bills rendered by the practitioner for an unreasonable period of time or has failed to honor an agreement to pay a retainer in advance of the performance of legal services.

(2) the practitioner's continued employment is likely to result in a violation of a Disciplinary Rule;

(3) the practitioner's inability to work with co-counsel indicates that the best interests of the client likely will be served by withdrawal;

(4) the practitioner's mental or physical condition renders it difficult for the practitioner to carry out the employment effectively;

(5) the practitioner's client knowingly and freely assents to termination of the employment; or

(6) the practitioner believes in good faith, in a proceeding pending before the Office, that the Office will find the existence of other good cause for withdrawal.

§§10.41-10.45 [reserved].

§10.46 Canon 3.

A practitioner should assist in preventing the unauthorized practice of law.

§10.47 Aiding unauthorized practice of law.

(a) A practitioner shall not aid a non-practitioner in the unauthorized practice of law before the Office.

(b) A practitioner shall not aid a suspended or excluded practitioner in the practice of law before the Office.

(c) A practitioner shall not aid a non-lawyer in the unauthorized practice of law.

§10.48 Sharing legal fees.

A practitioner or a firm or practitioners shall not share legal fees with a non-practitioner except that:

(a) An agreement by a practitioner with the practitioner's firm, partner, or associate may provide for the payment of money, over a reasonable period of time after the practitioner's death, to the practitioner's estate or to one or more specified persons.

(b) A practitioner who undertakes to complete unfinished legal business of a deceased practitioner may pay to the estate of the decease practitioner that proportion of the total compensation which fairly represents the services rendered by the deceased practitioner.

(c) A practitioner or firm of practitioner's may include non-practitioner employees in a compensation or retirement plan, even though the plan is based in whole or in part on a profit-sharing arrangement, providing such plan does not circumvent another Disciplinary Rule.

§10.49 Forming a partnership with a non-practitioner.

A practitioner shall not form a partnership with a non-practitioner if any of the activities of the partnership consist of the practice of patent, trademark, or other law before the Office.

§§10.50-10.55 [reserved].

§10.56 Canon 4.

A practitioner should preserve the confidences and secrets of a client.

§10.57 Preservation of confidences and secrets of a client.

(a) "Confidence" refers to information protected by the attorney-client or agent-client privilege under applicable law. "Secret" refers to other information gained in the professional relationship that the client has requested be held inviolate or the disclosure of which would be embarrassing or would be likely to be detrimental to the client.

(b) Except when permitted under paragraph (c) of this section, a practitioner shall not knowingly:

(1) Reveal a confidence or secret of a client.

(2) Use a confidence or secret of a client to the disadvantage of the client.

(3) Use a confidence or secret of a client for the advantage of the practitioner or of a third person, unless the client consents after full disclosure.

(c) A practitioner may reveal:

(1) Confidences or secrets with the consent of the client affected but only after a full disclosure to the client.

(2) Confidences or secrets when permitted under Disciplinary Rules or required by law or court order.

(3) The intention of a client to commit a crime and the information necessary to prevent the crime.

(4) Confidences or secrets necessary to establish or collect the practitioner's fee or to defend the practitioner or the practitioner's employees or associates against an accusation of wrongful conduct.

(d) A practitioner shall exercise reasonable care to prevent the practitioner's employees, associates, and others whose services are utilized by the practitioner from disclosing or using confidences or secrets of a client, except that a practitioner may reveal the information allowed by paragraph (c) of this section through an employee.

§§10.58-10.60 [reserved].

§10.61 Canon 5.

A practitioner should exercise indepedent professional judgment on behalf of a client.

§10.62 Refusing employment when the interest of the practitioner may impair the practitioner's independent professional judgment.

(a) Except with the consent of a client after full disclosure, a practitioner shall not accept employment if the exercise of the practitioner's professional judgment on behalf of the client will be or reasonably may be affected by the practitioner's own financial, business, property, or personal interests.

(b) A practitioner shall not accept employment in contemplated or pending litigation or a proceeding in the Office if the practitioner knows or it is obvious that the practitioner or another practitioner in the practitioner's firm ought to sign an affidavit to be filed in the Office or be called as a witness, except that the practitioner may undertake the employment and the pracitioner or another practitioner in the practitioner's firm may testify:

(1) If the testimony will relate solely to an uncontested matter.

(2) If the testimony will relate solely to a matter of formality and there is no reason to believe that substantial evidence will be offered in opposition to the testimony.

(3) If the testimony will relate solely to the nature and value of legal services rendered in the case by the practitioner or the practitioner's firm to the client.

(4) As to any matter, if refusal would work a substantial hardship on the client because of the distinctive value of the practitioner or the practitioner's firm as counsel in the particular case.

§10.63 Withdrawal when the practitioner becomes a witness.

(a) If, after undertaking employment in contemplated or pending litigation or a proceeding in the Office, a practitioner learns or it is obvious that the practitioner or another practitioner in the practitioner's firm ought to sign an affidavit to be filed in the Office or be called as a witness on behalf of a practitioner's client, the practitioner shall withdraw from the conduct of the trial or proceeding and the practitioner's firm, if any, shall not continue representation in the trial or proceeding, except that the practitioner may continue the representation and the practitioner or another practitioner in the practitioner's firm may testify in the circumstances enumerated in paragraphs (1) through (4) of §10.62(b).

(b) If, after undertaking employment in contemplated or pending litigation or a proceeding in the Office, a practitioner learns or it is obvious that the practitioner or another practitioner in the practitioner's firm may be asked to sign an affidavit to be filed in the Office or be called as a witness other than on behalf of the practitioner's client, the practitioner may continue the representation until it is apparent that the practitioner's affidavit or testimony is or may be prejudicial to the practitioner's client.

§10.64 Avoiding acquisition of interest in litigation or proceeding before the Office.

(a) A practitioner shall not acquire a proprietary interest in the subject matter of a proceeding before the Office which the practitioner is conducting for a client, except that the practitioner may:

(1) Acquire a lien granted by law to secure the practitioner's fee or expenses; or

(2) Contract with a client for a reasonable contingent fee; or

(3) In a patent case, take an interest in the patent as part or all of his or her fee.

(b) While representing a client in connection with a contemplated or pending proceeding before the Office, a practitioner shall not advance or guarantee financial assistance to a client, except that a practitioner may advance or guarantee the expenses of going forward in a proceeding before the Office including fees required by law to be paid to the Office, expenses of investigation, expenses of medical examination, and costs of obtaining and presenting evidence, provided the client remains ultimately liable for such expenses.

§10.65 Limiting business relations with a client.

A practitioner shall not enter into a business transaction with a client if they have differing interests therein and if the client expects the practitioner to exercise professional judgment therein for the protection of the client, unless the client has consented after full disclosure.

§10.66 Refusing to accept or continue employment if the interests of another client may impair the independent professional judgment of the practitioner.

(a) A practitioner shall decline proffered employment if the exercise of the practitioner's independent professional judgment in behalf of a client will be or is likely to be adversely affected by the acceptance of the proffered employment, or if it would be likely to involve the practitioner in representing differing interests, except to the extent permitted under paragraph (c) of this section.

(b) A practitioner shall not continue multiple employment if the exercise of the practitioner's independent professional judgment in behalf of a client will be or is likely to be adversely affected by the practitioner's representation of another client, or if it would be likely to involve the practitioner in representing differing interests, except to the extent permitted under paragraph (c) of this section.

(c) In the situations covered by paragraphs (a) and (b) of this section a practitioner may represent multiple clients if it is obvious that the practitioner can adequately represent the interest of each and if each consents to the representation after full disclosure of the possible effect of such representation on the exercise of the practitioner's independent professional judgment on behalf of each.

(d) If a practitioner is required to decline employment or to withdraw from employment under a Disciplinary Rule, no partner, or associate, or any other practitioner affiliated with the practitioner or the practitioner's firm, may accept or continue such employement unless otherwise ordered by the Director or Commissioner.

§10.67 Settling similar claims of clients.

A practitioner who represents two or more clients shall not make or participate in the making of an aggregate settlement of the claims of or against the practitioner's clients, unless each client has consented to the settlement after being advised of the existence and nature of all the claims involved in the proposed settlement, of the total amount of the settlement, and of the participation of each person in the settlement.

§10.68 Avoiding influence by others than the client.

(a) Except with the consent of the practitioner's client after full disclosure, a practitioner shall not:

(1) Accept compensation from one other than the practitioner's client for the practitioner's legal services to or for the client.

(2) Accept from one other than the practitioner's client any thing of value related to the practitioner's representation of or the practitioner's employment by the client.

(b) A practitioner shall not permit a person who recommends, employs, or pays the practitioner to render legal services for another to direct or regulate the practitioner's professional judgment in rendering such legal services.

(c) A practitioner shall not practice with or in the form of a professional corporation or association authorized to practice law for a profit, if a non-practitioner has the right to direct or control the professional judgment of a practitioner.

§§10.69-10.75 [reserved]

§10.76 Canon 6.

A practitioner should represent a client competently

§10.77 Failing to act competently.

A practitioner shall not:

(a) Handle a legal matter which the practitioner knows or should know that the practitioner is not competent to handle, without associating with the practitioner another practitioner who is competent to handle it.

(b) Handle a legal matter without preparation adequate in the circumstances.

(c) Neglect a legal matter entrusted to the practitioner.

§10.78 Limiting liability to client.

A practitioner shall not attempt to exonerate himself or herself from, or limit his or her liability to, a client for his or her personal malpractice.

§§10.79-10.82 [reserved].

§10.83 Canon 7.

A practitioner should represent a client zealously within the bounds of the law.

§10.84 Representing a client zealously.

(a) A practitioner shall not intentionally:

(1) Fail to seek the lawful objectives of a client through reasonably available means permitted by law and the Disciplinary Rules, except as provided by paragraph (b) of this section. A practitioner does not violate the provisions of this section, however, by acceding to reasonable requests of opposing counsel which do not prejudice the rights of the client, by being punctual in fulfilling all professional commitments, by avoiding offensive tactics, or by treating with courtesy and consideration all persons involved in the legal process.

(2) Fail to carry out a contract of employment entered into with a client for professional services, but a practitioner may withdraw as permitted under §§10.40, 10.63, and 10.66.

(3) Prejudice or damage a client during the course of a professional relationship, except as required under §10.85.

(b) In representation of a client, a practitioner may:

(1) Where permissible, exercise professional judgment to waive or fail to assert a right or position of the client.

(2) Refuse to aid or participate in conduct that the practitioner believes to be unlawful, even through there is some support for an argument that the conduct is legal.

§10.85 Representing a client within the bounds of the law.

(a) In representation of a client, a practitioner shall not:

(1) Initiate or defend any proceeding in the Office, assert a position, conduct a defense, delay a trial or proceeding in the Office, or take other action on behalf of the practitioner's client when the practitioner knows or when it is obvious that such action would serve merely to harass or maliciously injure another.

(2) Knowingly advance a claim or defense that is unwarranted under existing law, except that a practitioner may advance such claim or defense if it can be supported by good faith argument for an extension, modification, or reversal of existing law.

(3) Conceal or knowingly fail to disclose that which the practitioner is required by law to reveal.

(4) Knowingly use perjured testimony or false evidence.

(5) Knowingly make a false statement or law or fact.

(6) Participate in the creation or preservation of evidence when the practitioner knows or it is obvious that the evidence is false.

(7) Counsel or assist a client in conduct that the practitioner knows to be illegal or fraudulent.

(8) Knowingly engage in other illegal conduct or conduct contrary to a Disciplinary Rule.

(b) A practitioner who receives information clearly establishing that:

(1) A client has, in the course of the representation, perpetrated a fraud upon a person or tribunal shall promptly call upon the client to rectify the same, and if the client refuses or is unable to do so the practitioner shall reveal the fraud to the affected person or tribunal.

(2) A person other than a client has perpetrated a fraud upon a tribunal shall promptly reveal the fraud to the tribunal.

§10.87 Communicating with one of adverse interest.

During the course of representation of a client, a practitioner shall not:

(a) Communicate or cause another to communicate on the subject of the representation with a party the practitioner knows to be represented by another practitioner in that matter unless the practitioner has the prior consent of the other practitioner representing such other party or is authorized by law to do so.

(b) Give advice to a person who is not represented by a practitioner other than the advice to secure counsel, if the interests of such person are or have a reasonable possibility of being in conflict with the interests of the practitioner's client.

§10.88 Threatening criminal prosecution.

A practitioner shall not present, participate in presenting, or threaten to present criminal charges solely to obtain an advantage in any prospective or pending proceeding before the Office.

§10.89 Conduct in proceedings.

(a) A practitioner shall not disregard or advise a client to disregard any provision of this Subchapter or a decision of the Office made in the course of a proceeding before the Office, but the practitioner may take appropriate steps in good faith to test the validity of such provision or decision.

(b) In presenting a matter to the Office, a practitioner shall disclose:

(1) Controlling legal authority known to the practitioner to be directly adverse to the position of the client and which is not disclosed by opposing counsel or an employee of the Office.

(2) Unless privileged or irrelevant, the identities of the client the practitioner represents and of the persons who employed the practitioner.

(c) In appearing in a professional capacity before a tribunal, a practitioner shall not:

(1) State or allude to any matter that the practitioner has no reasonable basis to believe is relevant to the case or that will not be supported by admissible evidence.

(2) Ask any question that the practitioner has no reasonable basis to believe is relevant to the case and that is intended to degrade a witness or other person.

(3) Assert the practitioner's personal knowledge of the facts in issue, except when testifying as a witness.

(4) Assert the practitioner's personal opinion as to the justness of a cause, as to the credibility of a witness, as to the culpability of a civil litigant, or as to guilt or innocence of an accused; but the practitioner may argue, on the practitioner's analysis of the evidence, for any position or conclusion with respect to the matters stated herein.

(5) Fail to comply with known customs of courtesy or practice of the Office without giving to opposing counsel timely notice of the practitioner's intent not to comply.

(6) Engage in undignified or discourteous conduct which is degrading to a tribunal.

(7) Intentionally or habitually violate any provision of this Subchapter or established rule of evidence.

§10.90-10.91 [reserved].

§10.92 Contact with witnesses.

(a) A practitioner shall not suppress any evidence that the practitioner or the practitioner's client has a legal obligation to reveal or produce.

(b) A practitioner shall not advise or cause a person to be secreted or to leave the jurisdiction of a tribunal for the purpose of making the person unavailable as a witness therein.

(c) A practitioner shall not pay, offer to pay, or acquiesce in the payment of compensation to a witness contingent upon the content of the witness' affidavit, testimony or the outcome of the case. But a practitioner may advance, guarantee, or acquiesce in the payment of:

(1) Expenses reasonably incurred by a witness in attending, testifying, or making an affidavit.

(2) Reasonable compensation to a witness for the witness' loss of time in attending, testifying, or making an affidavit.

(3) A reasonable fee for the professional services of an expert witness.

§10.93 Contact with officials.

(a) A practitioner shall not give or lend anything of value to a judge, official, or employee of a tribunal under circumstance which might give the appearance that the gift or loan is made to influence official action.

(b) In an adversary proceeding, including any *inter partes* proceeding in the Office, a practitioner shall not communicate, or cause another to communicate, as to the merits of the cause with a judge, official, or Office employee before whom the proceeding is pending, except:

(1) In the course of official proceedings in the cause.

(2) In writing if the practitioner promptly delivers a copy of the writing to opposing counsel or to the adverse party if the adverse party is not represented by a practitioner.

(3) Orally upon adequate notice to opposing counsel or to the adverse party if the adverse party is not represented by a practitioner.

(4) As otherwise authorized by law.

§§10.94-10.99 [reserved].

§10.100 Canon 8.

A practitioner should assist in improving the legal system.

§10.101 Action as a public official.

(a) A practitioner who holds public office shall not:

(1) Use the practitioner's public position to obtain, or attempt to obtain, a special advantage in legislative matters for the practitioner or for a client under circumstances where the practitioner knows or it is obvious that such action is not in the public interest.

(2) Use the practitioner's public position to influence, or attempt to influence, a tribunal to act in favor of the practitioner or of a client.

(3) Accept any thing of value from any person when the practitioner knows or it is obvious that the offer is for the purpose of influencing the practitioner's action as a public official.

(b) A practitioner who is an officer or employee of the United States shall not practice before the Office in patent cases except as provided in §10.6(d).

§10.102 Statements concerning officials.

(a) A practitioner shall not knowingly make false statements of fact concerning the qualifications of a candidate for election or appointment to a judicial office or to a position in the Office.

(b) A practitioner shall not knowingly make false accusations against a judge, other adjudicatory officer, or employee of the Office.

§10.103 Practitioner candidate for judicial office.

A practitioner who is a candidate for judicial office shall comply with applicable provisions of law.

§10.104-10.109 [reserved].

§10.110 Canon 9.

A practitioner should avoid even the appearance of professional impropriety.

§10.111 Avoiding even the appearance of impropriety.

(a) A practitioner shall not accept private employment in a matter upon the merits of which he or she has acted in a judicial capacity.

(b) A practitioner shall not accept private employment in a matter in which he or she had personal responsibility while a public employee.

(c) A practitioner shall not state or imply that the practitioner is able to influence improperly or upon irrelevant grounds any tribunal, legislative body, or public official.

§10.112 Preserving identity of funds and property of client.

(a) All funds of clients paid to a practitioner or a practitioner's firm, other than advances for costs and expenses, shall be deposited in one or more identifiable bank accounts maintained:

(1) in the case of a practitioner whose office is located in the United States, in the State in which the practitioner's office is situated or

(2) in the case of a practitioner having an office in a foreign country or registered under §10.6(c) in the United States or the foreign country.

(b) No funds belonging to the practitioner or the practitioner's firm shall be deposited in the bank accounts required by paragraph (a) of this section except as follows:

(1) Funds reasonably sufficient to pay bank charges may be deposited therein.

(2) Funds belonging in part to a client and in part presently or potentially to the practitioner or the practitioner's firm must be deposited therein, but the portion belonging to the practitioner or the practitioner's firm may be withdrawn when due unless the right of the practitioner or the practitioner's firm to receive it is disputed by the client, in which event the disputed portion shall not be withdrawn until the dispute is finally resolved.

(c) A practitioner shall:

(1) Promptly notify a client of the receipt of the client's funds, securities, or other properties.

(2) Identify and label securities and properties of a client promptly upon receipt and place them in a safe deposit box or other place of safekeeping as soon as practicable.

(3) Maintain complete records of all funds, securities, and other properties of a client coming into the possession of the practitioner and render appropriate accounts to the client regarding the funds, securities, or other properties.

(4) Promptly pay or deliver to the client as requested by a client the funds, securities, or other properties in the possession of the practitioner which the client is entitled to receive.

(OMB approval pending)

§§10.113-10.129 [reserved].

Disciplinary Proceedings

§10.130 Reprimand, suspension or exclusion.

(a) The Commissioner may, after notice and opportunity for a hearing, (a) reprimand or (b) suspend or exclude, either generally or in any particular case, any individual, attorney, or agent shown to be incompetent or disreputable, who is guilty of gross misconduct, or who violates a Disciplinary Rule.

(b) Petitions to disqualify a practitioner in *ex parte* or *inter partes* cases in the Office are not governed by §§10.130 through 10.170 and will be handled on a case-by-case basis under such conditions as the Commissioner deems appropriate.

§10.131 Investigations.

(a) The Director is authorized to investigate possible violations of Disciplinary Rules by practitioners. See §10.2(b)(2). The investigation shall be such as to determine whether there is probable cause to believe that a violation of a Disciplinary Rule by a practitioner has occurred.

(b) Practitioners shall report and reveal to the Director any knowledge or evidence required by §10.24. A practitioner shall cooperate with the Director is connection with any investigation under paragraph (a) of this section and with officials of the Office in connection with any disciplinary proceeding instituted under §10.132(b).

(c) Any non-practitioner possessing knowledge or information concerning a violation of a Disciplinary Rule by a practitioner may report the violation to the Director. The Director may require that report be presented in the form of an affidavit.

§10.132 Initiating a disciplinary proceeding; reference to an administrative law judge.

(a) If after conducting an investigation under §10.131(a) the Director is of the opinion that there is probable cause to believe that a practitioner has violated a Disciplinary Rule, the Director shall, after complying where necessary with the provisions of 5 U.S.C. 558(c), call a meeting of the Committee on Discipline. The Committee on Discipline shall then determine as specified in §10.4(b) whether a disciplinary proceeding shall be instituted under paragraph (b) of this section.

(b) If the Committee on Discipline determines that probable cause exists to believe that a practitioner has violated a Disciplinary Rule, the Director shall institute a disciplinary proceeding by filing a complaint under §10.134. The complaint shall be filed in the Office of the Director. A disciplinary proceeding may result in:

(1) a reprimand or

(2) suspension or exclusion of a practitioner from practice before the Office.

(c) Upon the filing of a complaint under §10.134, the Commissioner will refer the disciplinary proceeding to an administrative law judge.

§10.133 Conference between Director and practitioner; resignation.

(a) *General.* The Director may confer with a practitioner concerning possible violations by the practitioner of a Disciplinary Rule whether or not a disciplinary proceeding has been instituted.

(b) *Resignation.* Any practitioner who is the subject of an investigation under §10.131 or against whom a complaint has been filed under §§10.132(b) and 10.134 may resign from practice before the Office by submitting his or her resignation by filing with the Director an affidavit stating his or her desire to resign. The affidavit shall state that:

(1) the resignation is freely and voluntarily proferred;

(2) the practitioner is not acting under duress or coersion from the Office;

(3) the practitioner is fully aware of the implications of filing the resignation;

(4) the practitioner is aware (i) of a pending investigation of (ii) or charges arising from the complaint alleging that he or she is guilty of a violation of the Patent and Trademark Office Code of Professional Responsibility, the nature of which shall be set forth by the practitioner to the satisfaction of the Director;

(5) the practitioner acknowledges the material facts on which the complaint is based are true; and

(6) the resignation is being submitted because the practitioner could not successfully defend himself or herself against (i) charges predicated on the violation under investigation or (ii) charges set out in the complaint filed against him or her.

(c) When an affidavit under paragraph (b) of this section is received while an investigation is pending, the Commissioner shall enter an order excluding the practitioner "on consent." When an affidavit under paragraph

(b) of this section is received after a complaint has been filed, the Director shall notify the administrative law judge. The administrative law judge shall enter an order transferring the disciplinary proceeding to the Commissioner and the Commissioner shall enter an order excluding the practitioner "on consent."

(d) Any practitioner who resigns from practice before the Office under this section and who intends to reapply for admission to practice before the Office must comply with the provisions of §10.158.

(e) *Settlement.* Before or after a complaint is filed under §10.134, a settlement conference may occur between the Director and a practitioner for the purpose of settling any disciplinary matter. If an offer of settlement is made by the Director or the practitioner and is not accepted by the other, no reference to the offer of settlement or its refusal shall be admissible in evidence in the disciplinary proceeding unless both the Director and the practitioner agree in writing.

§10.134 Complaint.

(a) A complaint instituting a disciplinary proceeding shall:

(1) Name the practitioner, who may then be referred to as the "respondent."

(2) Give a plain and concise description of the alleged violations of the Disciplinary Rules by the practitioner.

(3) State the place and time for filing an answer by the respondent.

(4) State that a decision by default may be entered against the respondent if an answer is not timely filed.

(5) Be signed by the Director.

(b) A complaint will be deemed sufficient if it fairly informs the respondent of any violation of the Disciplinary Rules which form the basis for the disciplinary proceeding so that the respondent is able to adequately prepare a defense.

§10.135 Service of complaint.

(a) A complaint may be served on a respondent in any of the following methods:

(1) By handing a copy of the complaint personally to the respondent, in which case the individual handing the complaint to the respondent shall file an affidavit with the Director indicating the time and place the complaint was handed to the respondent.

(2) By mailing a copy of the complaint by "Express Mail" or first-class mail to:

(i) a registered practitioner at the address for which separate notice was last received by the Committee on Enrollment or

(ii) a non-registered practitioner at the last address for the respondent known to the Director.

(3) By any method mutually agreeable to the Director and the respondent.

(b) If a complaint served by mail under paragraph (a)(2) of this secton is returned by the U.S. Postal Service, the Director shall mail a second copy of the complaint to the respondent. If the second copy of the complaint is also returned by the U.S. Postal Service, the Director shall serve the respondent by publishing an appropriate notice in the *Official Gazette* for four consecutive weeks, in which case the time for answer shall be at least thirty days from the fourth publication of the notice.

(c) If a respondent is a registered practitioner, the Director may serve simultaneously with the complaint a letter under §10.11(b). The Director may require the respondent to answer the §10.11(b) letter within a period of not less than 15 days. An answer to the §10.11(b) letter shall constitute proof of service. If the respondent fails to answer the §10.11(b) letter, his or her name will be removed from the register as provided by §10.11(b).

(d) If the respondent is represented by an attorney under §10.140(a), a copy of the complaint shall also be served on the attorney.

§10.136 Answer to complaint.

(a) *Time for answer.* An answer to a complaint shall be filed within a time set in the complaint which shall be not less than thirty days.

(b) *With whom filed.* The answer shall be filed in writing with the administrative law judge. The time for filing an answer may be extended once for a period of no more than thirty days by the administrative law judge upon a showing of good cause provided a motion requesting an extension of time is filed within thirty days after the date the complaint is filed by the Director. A copy of the answer shall be served on the Director.

(c) *Content.* The respondent shall include in the answer a statement of the facts which constitute the grounds of defense and shall specifically admit or deny each allegation set forth in the complaint. The respondent shall not deny a material allegation in the complaint which the respondent knows to be true or state that respondent is without sufficient information to form a belief as to the truth of an allegation when in fact the respondent possesses that information. The respondent shall also state affirmatively special matters of defense.

(d) *Failure to deny allegations in complaint.* Every allegation in the complaint which is not denied by a respondent in the answer is deemed to be admitted and may be considered proven. No further evidence in respect of that allegation need be received by the administrative law judge at any hearing. Failure to timely file an answer will constitute an admission of the allegations in the complaint.

(e) *Reply by Director.* No reply to an answer is required by the Director and any affirmative defense in the answer shall be deemed to be denied. The Director may, however, file a reply if he or she chooses or if ordered by the administrative law judge.

§10.137 Supplemental complaint.

False statements in an answer may be made the basis of a supplemental complaint.

§10.138 Contested case.

Upon the filing of an answer by the respondent, a disciplinary proceeding shall be regarded as a contested case within the meaning of 35 U.S.C. 24. Evidence obtained by a subpoena issued under 35 U.S.C. 24 shall not be admitted into the record or considered unless leave to proceed under 35 U.S.C. 24 was previously authorized by the administrative law judge.

§10.139 Administrative law judge; appointment; responsibilities; review of interlocutory orders; stays.

(a) *Appointment.* An administrative law judge, appointed under 5 U.S.C. 3105, shall conduct disciplinary proceedings as provided by this part.

(b) *Responsibilities.* The administrative law judge shall have authority to:

(1) Administer oaths and affirmations;

(2) Make rulings upon motions and other requests;

(3) Rule upon offers of proof, receive relevant evidence, and examine witnesses;

(4) Authorize the taking of a deposition of a witness in lieu of personal appearance of the witness before the administrative law judge;

(5) Determine the time and place of any hearing and regulate its course and conduct;

(6) Hold or provide for the holding of conferences to settle or simplify the issues;

(7) Receive and consider oral or written arguments on facts or law;

(8) Adopt procedures and modify procedures from time to time as occasion requires for the orderly disposition of proceedings;

(9) Make initial decisions under §10.154; and

(10) Perform acts and take measures as necessary to promote the efficient and timely conduct of any disciplinary proceeding.

(c) *Time for making initial decision.* The administrative law judge shall set times and exercise control over a disciplinary proceeding such that an initial decision under §10.154 is normally issued within six months of the date a complaint is filed. The administrative law judge may,

however, issue an initial decision more than six months after a complaint is filed if in his or her opinion there exist unusual circumstances which preclude issuance of an initial decision within six months of the filing of the complaint.

(d) *Review of interlocutory orders.* An interlocutory order of an administrative law judge will not be reviewed by the Commissioner except:

(1) When the administrative law judge shall be of the opinion (i) that the interlocutory order involves a controlling question of procedure or law as to which there is a substantial ground for a difference of opinion and (ii) that an immediate decision by the Commissioner may materially advance the ultimate termination of the disciplinary proceeding or

(2) Is an extraordinary situation where justice requires review.

(e) *Stays pending review of interlocutory order.* If the Director or a respondent seek review of an interlocutory order of an administrative law judge under paragraph (b)(2) of this section, any time period set for taking action by the administrative law judge shall not be stayed unless ordered by the Commissioner or the administrative law judge.

§10.140 Representative for Director or respondent.

(a) A respondent may be represented before the Office in connection with an investigation or disciplinary proceeding by an attorney. The attorney shall file a written declaration that he or she is an attorney within the meaning of §10.1(c) and shall state:

(1) The address to which the attorney wants correspondence related to the investigation or disciplinary proceeding sent and

(2) A telephone number where the attorney may be reached during normal business hours.

(b) The Commissioner shall designate at least two associate solicitors in the Office of the Solicitor to act as representative for the Director in disciplinay proceedings. In prosecuting disciplinary proceedings, the designated associate solicitors shall not involve the Solicitor or the Deputy Solicitor. The Solicitor and the Deputy Solicitor shall remain insulated from the investigation and prosecution of all disciplinary proceedings in order that they shall be available as counsel to the commissioner in deciding disciplinary proceedings.

§10.141 Filing of papers.

(a) The provisions of §1.8 of this Subchapter do not apply to disciplinary proceedings.

(b) All papers filed after the complaint and prior to entry of an initial decision by the administrative law judge shall be filed with the administrative law judge at an address or place designated by the administrative law judge. All papers filed after entry of an initial decision by the administrative law judge shall be filed with the Director. The Director shall promptly forward to the Commissioner any paper which requires action under this part by the Commissioner.

(c) The administrative law judge or the Director may provide for filing papers and other matter by hand or by "Express Mail."

§10.142 Service of papers.

(a) All papers other than a complaint shall be served on a respondent represented by an attorney by:

(1) Delivering a copy of the paper to the office of the attorney; or

(2) Mailing a copy of the paper by first-class mail or "Express Mail" to the attorney at the address provided by the attorney under §10.140 (a)(1); or

(3) Any other method mutually agreeable to the attorney and a representative for the Director.

(b) All papers other than a complaint shall be served on a respondent who is not represented by an attorney by:

(1) Delivering a copy of the paper to the respondent; or

(2) Mailing a copy of the paper by first-class mail or "Express Mail" to the respondent at the address to which a complaint may be served or such other address as may be designated in writing by the respondent; or

(3) Any other method mutually agreeable to the respondent and a representative of the Director.

(c) A respondent shall serve on the representative for the Director one copy of each paper filed with the administrative law judge or the Director. A paper may be served on the representative for the Director by:

(1) Delivering a copy of the paper to the representative; or

(2) Mailing a copy of the paper by first-class mail or "Express Mail" to an address designated in writing by the representative; or

(3) Any other method mutually agreeable to the respondent and the representative.

(d) Each paper filed in a disciplinary proceeding shall contain therein a certificate of service indicating:

(1) The date on which service was made and

(2) The method by which service was made.

(e) The administrative law judge or the Commissioner may require that a paper be served by hand or by "Express Mail."

(f) Service by mail is completed when the paper mailed in the United States is placed into the custody of the U.S. Postal Service.

§10.143 Motions.

Motions may be filed with the administrative law judge. The administrative law judge will determine on a case-by-case basis the time period for response to a motion and whether replies to responses will be authorized. No motion shall be filed with the administrative law judge unless such motion is supported by a written statement by the moving party that the moving party or attorney for the moving party has conferred with the opposing party or attorney for the opposing party in an effort in good faith to resolve by agreement the issues raised by the motion and has been unable to reach agreement. If issues raised by a motion are resolved by the parties prior to a decision on the motion by the administrative law judge, the parties shall promptly notify the administrative law judge.

§10.144 Hearings.

(a) The administrative law judge shall preside at hearings in disciplinary proceedings. Hearings will be stenographically recorded and transcribed and the testimony of witnesses will be received under oath or affirmation. The administrative law judge shall conduct hearings in accordance with 5 U.S.C. 556. A copy of the transcript of the hearing shall become part of the record. A copy of the transcript shall be provided to the Director and the respondent at the expense of the Office.

(b) If the respondent to a disciplinary proceeding fails to appear at the hearing after a notice of hearing has been given by the administrative law judge, the administrative law judge may deem the respondent to have waived the right to a hearing and may proceed with the hearing in the absence of the respondent.

(c) A hearing under this section will not be open to the public except that the Director may grant a request by a respondent to open his or her hearing to the public and make the record of the disciplinary proceeding available for public inspection, *provided* agreement is reached in advance to exclude from public disclosure information which is privileged or confidential under applicable laws or regulations. If a disciplinary proceeding results in disciplinary action against a practitioner, and subject to §10.159 (c), the record of the entire disciplinary proceeding, including any settlement agreement, will be available for public inspection.

§10.145 Proof; variance; amendment of pleadings.

In case of a variance between the evidence and the allegations in a complaint, answer, or reply, if any, the administrative law judge may order or authorize amendment of the complaint, answer, or reply to conform to the evidence. Any party who would otherwise be prejudiced by the amendment will be given reasonable opportunity to meet the allegations in the complaint, answer,

or reply, as amended, and the administrative law judge shall make findings on any issure presented by the complaint, answer, or reply as amended.

§§10.146-10.148 [reserved].

§10.149 Burden of Proof.

In a disciplinary proceeding, the Director shall have the burden of proving his or her case by a preponderance of evidence and a respondent shall have the burden of proving any affirmative defense by a preponderance of evidence.

§10.150 Evidence.

(a) *Rules of evidence.* The rules of evidence prevailing in courts of law and equity are not controlling in hearings in disciplinary proceedings. However, the administrative law judge shall exclude evidence which is irrelevant, immaterial, or unduly repetitious.

(b) *Depositions.* Depositions of witnesses taken pursuant to §10.151 may be admitted as evidence.

(c) *Government documents.* Official documents, records, and papers of the Office are admissible without extrinsic evidence of authenticity. These documents, records and papers may be evidenced by a copy certified as correct by an employee of the Office.

(d) *Exhibits.* If any document, record, or other paper is introduced in evidence as an exhibit, the administrative law judge may authorize the withdrawal of the exhibit subject to any conditions the administrative law judge deems appropriate.

(e) *Objections.* Objections to evidence will be in short form, stating the grounds of objection. Objections and rulings on objections will be a part of the record. No exception to the ruling is necessary to preserve the rights of the parties.

§10.151 Depositions.

(a) Depositions for use at the hearing in lieu of personal appearance of a witness before the administrative law judge may be taken by respondent or the Director upon a showing of good cause and with the approval of, and under such conditions as may be deemed appropriate by, the administrative law judge. Depositions may be taken upon oral or written questions, upon not less than ten days written notice to the other party, before any officer authorized to administer an oath or affirmation in the place where the deposition is to be taken. The requirement of ten days notice may be waived by the parties and depositions may then be taken of a witness and at a time and place mutually agreed to by the parties. When a deposition is taken upon written questions, copies of the written questions will be served upon the other party with the notice and copies of any written cross-questions will be served by hand or "Express Mail" within five days of the date of the taking of the deposition unless the parties mutually agree otherwise. A party on whose behalf a deposition is taken shall file a copy of a transcript of the deposition signed by a court reporter with the administrative law judge and shall serve one copy upon the opposing party. Expenses for a court reporter and preparing, serving, and filing depositions shall be borne by the party at whose instance the deposition is taken.

(b) When the Director and the respondent agree in writing, a deposition of any witness who will appear voluntarily may be taken under such terms and conditions as may be mutually agreeable to the Director and the respondent. The deposition shall not be filed with the administrative law judge and may not be admitted in evidence before the administrative law judge unless he or she orders the deposition admitted in evidence. The admissibility of the deposition shall lie within the discretion of the administrative law judge who may reject the deposition on any reasonable basis including the fact that demeanor is involved and that the witness should have been called to appear personally before the administrative law judge.

§10.152 Discovery.

Discovery shall not be authorized except as follows:

(a) The administrative law judge may require parties to file and serve, prior to any hearing, a pre-hearing statement which contains:

(1) A list (together with a copy) of all proposed exhibits to be used in connection with a party's case-in-chief,

(2) A list of proposed witnesses,

(3) The identity of government employees who have investigated the case, and

(4) Copies of memoranda reflecting respondent's own statements to administrative representatives:

(b) After a witness testifies for a party, if the opposing party requests, the party may be required to produce, prior to cross-examination, any written statement made by the witness.

§10.153 Proposed findings and conclusions; post hearing memorandum.

Except in cases when the respondent has failed to answer the complaint, the administrative law judge, prior to making an initial decision, shall afford the parties a reasonable opportunity to submit proposed findings and conclusions and a post-hearing memorandum in support of the proposed findings and conclusions.

§10.154 Initial decision of administrative law judge.

(a) The administrative law judge shall make an initial decision in the case. The decision will include (a) a statement of findings and conclusions, as well as the reasons or basis therefor with appropriate references to the record, upon all the material issues of fact, law, or discretion presented on the record, and (b) an order of suspension or exclusion from practice, an order of reprimand, or an order dismissing the complaint. The administrative law judge shall file the decision with the Director and shall transmit a copy to the representative of the Director and to the respondent. In the absence of an appeal to the Commissioner, the decision of the administrative law judge will, without further proceedings, become the decision of the Commissioner of Patents and Trademarks thirty (30) days from the date of the decision of the administrative law judge.

(b) The initial decision of the administrative law judge shall explain the reason for any penalty of reprimand, suspension or exclusion. In determining any penalty, the following should normally be considered:

(1) The public interest;

(2) The seriousness of the violation of the Disciplinary Rule;

(3) The deterrent effects deemed necessary; and

(4) The integrity of the legal profession.

§10.155 Appeal to the Commissioner.

(a) Within thirty (30) days from the date of the initial decision of the administrative law judge under §10.154, either party may appeal to the Commissioner. An appeal by the respondent will be filed with the Director in duplicate and will include exceptions to the decisions of the administrative law judge and supporting reasons for those exceptions. If the Director files the appeal, the Director shall serve a copy of the appeal on the respondent. Within thirty (30) days after receipt of an appeal or copy thereof, the other party may file a reply brief in duplicate with the Director. If the Director files the reply brief, the Director shall serve a copy of the reply brief on the respondent. Upon the filing of an appeal and a reply brief, if any, the Director shall transmit the entire record to the Commissioner.

(b) The appeal will be decided by the Commissioner on the record made before the administrative law judge.

(c) The Commissioner may order reopening of the disciplinary proceeding in accordance with the principles which govern the granting of new trials. Any request to reopen a disciplinary proceeding on the basis of newly discovered evidence must demonstrate that the newly discovered evidence could not have been discovered by due diligence.

§10.156 Decision of the Commissioner.

(a) An appeal from an initial decision of the administrative law judge shall be decided by the Commissioner.

The Commissioner may affirm, reverse, or modify the initial decision or remand the matter to the administrative law judge for such further proceedings as the Commissioner may deem appropriate. Entry of a decision by the Commissioner is a final agency action in a disciplinary proceeding. In making a final decision, the Commissioner shall review the record or those portions of the record as may be cited by the parties in order to limit the issues. The Commissioner shall transmit a copy of the final decision to the Director and to the respondent.

(b) A final decision of the Commissioner may dismiss a disciplinary proceeding, reprimand a practitioner, or may suspend or exclude the practitioner from practice before the Office.

§10.157 Review of Commissioner's final decision.

(a) Review of the Commissioner's final decision in a disciplinary case may be had by a petition filed in the United States District Court for the District of Columbia. See 35 U.S.C. 32 and Local Rule 1-26 of the United States District Court for the District of Columbia.

(b) The Commissioner may stay a final decision pending a review of the Commissioner's final decision.

§10.158 Suspended or excluded practitioner.

(a) A practitioner who is suspended or excluded from practice before the Office under §10.156(b) shall not engage in unauthorized practice of patent, trademark and other non-patent law before the Office.

(b) Unless otherwise ordered by the Commissioner, any practitioner who is suspended or excluded from practice before the Office under §10.156(b) shall:

(1) Within 30 days of entry of the order of suspension or exclusion, notify all bars of which he or she is a member and all clients of the practitioner in separate written communications of the suspension or exclusion and shall file a copy of each written communication with the Director.

(2) Within 30 days of entry of the order of suspension or exclusion, surrender a client's active case files to (i) the client or (ii) another practitioner designated by the client.

(3) Not hold himself or herself out as authorized to practice law before the Office.

(4) Promptly take any necessary and appropriate steps to remove from any telephone, legal, or other directory any advertisement, statement, or representation which would reasonably suggest that the practitioner is authorized to practice patent, trademark or other non-patent law before the Office, and within 30 days of taking those steps, file with the Director an affidavit describing the precise nature of the steps taken.

(5) Not advertise the practitioner's availability or ability to perform or render legal services for any person having immediate, prospective, or pending business before the Office.

(6) Not render legal advice or services to any person having immediate, prospective, or pending business before the Office as to that business.

(7) Promptly take steps to change any sign identifying a practitioner's or the practitioner's firm's office and the practitioner's or the practitioner's firm's stationary to delete therefrom any advertisement, statement, or representation which would reasonably suggest that the practitioner is authorized to practice law before the Office.

(8) Within 30 days, return to any client any unearned funds, including any unearned retainer fee, and any securities and property of the client.

(c) A practitioner who is suspended or excluded from practice before the Office and who aides another practitioner in any way in the other practitioner's practice of law before the Office, may, under the direct supervision of the other practitioner, act as a para-legal for the other practitioner or perform other services for the other practitioner which are normally performed by lay-persons, *provided*: (1) the practitioner who is suspended or excluded is (i) a salaried employee of the other practitioner or the other practitioner's law firm and (ii) does not share profits with the other practitioner or the other practitioner's law firm; (2) the other practitioner assumes full professional responsibility to any client and the Office for any work performed by the suspended or excluded practitioner for the other practitioner; (3) the suspended or excluded practitioner, in connection with any immediate, prospective, or pending business before the Office, does not (i) communicate directly in writing, orally, or otherwise with a client of the other practitioner, (ii) render any legal advice, or any legal services, to a client of the other practitioner, or (iii) meet in person or in the presence of the other practitioner, with any client of the other practitioner or the other practitioner' s law firm or any witness or potential witness which the other practitioner or the other practitioner's law firm may or intends to call as a witness in any proceeding before the Office. The term "witness" includes individuals who will testify orally in a proceeding before, or sign an affidavit or any other document to be filed in, the Office.

(d) When a suspended or excluded practitioner acts as a para-legal or performs services under paragraph (c) of this section, the suspended or excluded practitioner shall not thereafter be reinstated to practice before the Office unless:

(1) The suspended or excluded practitioner shall have filed with the Director an affidavit which (i) explains in detail the precise nature of all para-legal or other services performed by the suspended or excluded practitioner and (ii) shows by clear and convincing evidence that the suspended or excluded practitioner has complied with the provisions of this section and all Disciplinary Rules, and

(2) The other practitioner shall have filed with the Director a written statement which (i) shows that the other practitioner has read the affidavit required by subparagraph (d)(1) of this section and that the other practitioner believes every statement in the affidavit to be true, and (ii) states why the other practitioner believes that the suspended or excluded practitioner has complied with paragraph (c) of this section.

§10.159 Notice of suspension or exclusion.

(a) Upon issuance of a final decision reprimanding a practitioner or suspending or excluding a practitioner from practice before the Office, the Director shall give notice of the final decision to appropriate employees of the Office and to interested departments, agencies, and courts of the United States. The Director shall also give notice to appropriate authorities of any State in which a practitioner is known to be a member of the bar.

(b) The Director shall cause to be published in the *Official Gazette* the name of any practitioner suspended or excluded from practice. Unless otherwise ordered by the Commissioner, the Director shall publish in the *Official Gazette* the name of any practitioner reprimanded by the Commissioner.

(c) The Director shall maintain records, which shall be available for public inspection, of every disciplinary proceeding where a practitioner is reprimanded, suspended, or excluded unless the Commissioner orders that the proceeding be kept confidential.

§10.160 Petition for reinstatement.

(a) A petition for reinstatement of a practitioner suspended for a period of less than five years will not be considered until the period of suspension has passed.

(b) A petition for reinstatement of a practitioner excluded from practice will not be considered until five years after the effective date of the exclusion.

(c) A practitioner who has been suspended or excluded may file a petition for reinstatement. The Director may grant a petition for reinstatement if the Director is satisfied that the suspended or excluded practitioner will conduct himself or herself in accordance with the regulations of this part and that granting a petition for reinstatement is not contrary to the public interest. As a condition to reinstatement, the Director may require a suspended or excluded practitioner to:

(1) Meet the requirements of §10.7, including taking and passing an examination under §10.7(b), and

(2) Pay all or a portion of the costs and expenses, not

to exceed $1,500, of the disciplinary proceeding which lead to suspension or exclusion.

(d) Any suspended or excluded practitioner who has violated the provisions of §10.158 during his or her period of suspension or exclusion shall not be entitled to reinstatement until such time as the Director is satisfied that a period of suspension equal in time to that ordered by the Commissioner or exclusion for five years has passed during which the suspended or excluded practitioner has complied with the provisions of §10.158.

(e) Proceedings on any petition for reinstatement shall be open to the public. Before reinstating any suspended or excluded practitioner, the Director shall publish in the *Official Gazette* a notice of the suspended or excluded practitioner' s petition for reinstatement and shall permit the public a reasonable opportunity to comment or submit evidence with respect to the petition for reinstatement.

§10.161 Savings clause.

(a) A disciplinary proceeding based on conduct engaged in prior to the effective date of these regulations may be instituted subsequent to such effective date, if such conduct would continue to justify suspension or exclusion under the provisions of this part.

(b) No practitioner shall be subject to a disciplinary proceeding under this part based on conduct engaged in before the effective date hereof if such conduct would not have been subject to disciplinary action before such effective date.

§10.162-10.169 [reserved].

§10.170 Suspension of rules.

(a) In an extraordinary situation, when justice requires, any requirement of the regulations of this part which is not a requirement of the statutes may be suspended or waived by the Commissioner or the Commissioner's designee, *sua sponte*, or on petition of any party, including the Director or the Director's representative, subject to such other requirements as may be imposed.

(b) Any petition under this section will not stay a disciplinary proceeding unless ordered by the Commissioner or an administrative law judge.

GERALD J. MOSSINGHOFF,
July 24, 1984. *Commissioner of Patents and Trademarks.*

TRADEMARK TRIAL AND APPEAL BOARD

(147) Request for Extension of Time in which to Oppose

The Patent Office is adopting a new procedure to be used when filing a request for an extension of time in which to oppose under Section 13 of the Trademark Act and Rule 2.102, Trademark Rules of Practice. All requests for extension of time should be submitted in triplicate. The Patent Office will stamp each copy of the request with the action taken and send a copy to the requester and the applicant. The third copy will be entered in the file.

The purpose of this new procedure is to expedite the handling of extensions of time by eliminating the preparation of a formal notice of the disposition of the request. Further, this procedure will provide the applicant with additional information concerning the potential opposition.

WILLIAM E. SCHUYLER, Jr.,
June 16, 1971. *Commissioner of Patents.*

Published in 36 F.R. 13232; July 16, 1971

[889 O.G. TM 3]

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(148) Realignment of Patent Office Handling of Opposition Papers

In order to increase efficiency in processing papers, all activities connected with the handling of oppositions have been transferred from the Trademark Examining Operation to the Trademark Trial and Appeal Board. As a result of the transfer, requests for extension of time to oppose and matters pertinent thereto are now received and processed by the staff of the Trademark Trial and Appeal Board rather than by the staff of the Office of the Director of the Trademark Examining Operation.

No substantial change in procedure in the handling of papers relative to oppositions and extensions of time is contemplated by this realignment of duties in the Patent Office. Reasonable requests for extensions of time to oppose will continue to be granted with liberality particularly if there is no protest by another party and if the parties are negotiating or otherwise exploring bases for settlement, and fees for both verified and unverified oppositions will continue to be required to be filed within the time prescribed for opposing.

RENE D. TEGTMEYER,
Nov. 14, 1974. *Assistant Commissioner for Trademarks.*

[929 O.G. TM 62]

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(149) Conference of Parties in Trademark Inter Partes Proceedings

Under the inter partes rules of procedure in trademark cases effective July 1, 1972 (898 O.G. TM 170, May 16, 1972), the interlocutory phases of trademark inter partes proceedings are becoming increasingly involved, and the experience of the Trademark Trial and Appeal Board has been that the difficulties in such proceedings can frequently be resolved more satisfactorily and quickly by conference in person than by correspondence or telephone. Therefore, effective immediately, the following practice is being adopted:

Whenever it appears to the Trademark Trial and Appeal Board that questions or issues arising during the interlocutory phase of a trademark inter partes proceeding have become so complex that their resolution by correspondence or telephone is not practical and would be likely to be facilitated by conference in person of the parties and/or their attorneys with a member or members of the Trademark Trial and Appeal Board, the Board may at its discretion suggest that the parties and/or their attorneys, under circumstances which will not result in undue hardship for any party, meet with the Board at its offices in Crystal Plaza, Arlington, Va., to discuss the resolution of difficulties.

C. MARSHALL DANN,
Feb. 3, 1975. *Commissioner of Patents and Trademarks.*

[932 O.G. TM 2]

TRADEMARK APPLICATION EXAMINATION AND CONTENT

(150) Interviews Involving Trademark Application

Interviews frequently result in a better understanding of the issues involved, shorten the prosecution and facilitate disposal of applications.

Interviews for discussion of registrability of the mark of a pending application will not be had before the first official Office action thereon and ordinarily not before filing the first response. Arrangements for an interview should be made in advance so that the Examiner may review the case and be familiar with the details involved.

Interviews on Friday will no longer be prohibited as a matter of policy but all interviews should be set at a time satisfactory to all parties concerned.

A memorandum summarizing the conclusions reached at the interview should be prepared by the Examiner and placed in the application file. The memorandum will be retained in the application file until the prosecution is completed. Such procedure will not, however, relieve the applicant of the responsibility of complying with the requirements of Trademark Rule 2.62.

HORACE B. FAY, JR.,
July 6, 1964. *Assistant Commissioner.*

This supersedes the notice of Feb. 10, 1958. 728 O.G. (TM 1)

[804 O.G. TM 147]

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(151) **Petition to Make Trademark Applications Special**

The practice of expediting the prosecution of new trademark applications on request of the applicant (accelerated prosecution) was rescinded, effective Aug. 1, 1971 (36 F.R. 13231, July 16, 1971; 825 O.G. 2). This action was taken after a careful study of the practice, including a recommendation of the Public Advisory Committee for Trademark Affairs that the Patent Office terminate accelerated prosecution of trademark applications. The study considered both the effect of the procedure on the workload of the Trademark Operations and the broader interest of examining trademark applications in an order which is equitable to all applicants.

Since the termination of this practice, the Office has experienced some increase in the number of petitions requesting the Commissioner to invoke his supervisory authority pursuant to Rule 2.146 in order to advance the examination of applications out of their regular order. This was to be expected since applicants who might have been able to show special circumstances entitling them to advanced examination could previously achieve this special treatment without resorting to a petition. However, some of the petitions now being received are not considered sufficient to justify the extraordinary relief of invoking the supervisory authority of the Commissioner for the purpose of advancing the applications out of their regular order.

In particular, a number of such petitions have been based on the ground that the applicant is about to embark on an advertising campaign or to commit advertising or promotional expenditures in which the mark applied for is material. Such a ground is not considered to constitute appropriate circumstances justifying the advancement of the application out of its regular turn and the petitions based on such ground have been and will continue to be denied. The principal reason for the denial is that these circumstances are applicable to a substantial portion of the trademark applications filed in the Patent Office. The supervisory authority of the Commissioner should be exercised only where an extraordinary reason for such action has been disclosed. See *Anderson & Dyer* v. *Lewry*, 89 O.G. 1861, 1899 C.D. 230, and *Wilputte* v. *Van Ackeren*, 103 USPQ 235. Thus, the extraordinary remedy of invoking the supervisory authority of the Commissioner is not considered appropriate under these circumstances.

In the interest of equitable treatment of all applicants, the policy of the Office in granting such petitions will be restricted to those cases in which particular and very special circumstances exist, such as a demonstrable possibility of loss of substantial rights, rather than circumstances which would be equally applicable to a large number of other applicants for trademark registration.

ROBERT GOTTSCHALK,
Mar. 13, 1972. *Commissioner of Patents.*

[897 O.G. TM 2]

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(152) **Standardized Disclaimers**

Beginning with the Nov. 9, 1982 issue of the *Official Gazette*, disclaimers in marks published for opposition and in those registered on the Supplemental Register will be printed in a standardized form, regardless of the text submitted. Certificates of registration for marks issued on the Supplemental Register will also contain the standardized disclaimer as of that date. Certificates of registration for marks issued on the Principal Register will contain the uniform statement beginning Feb. 1, 1983. The disclaimed matter will be taken from the disclaimer of record and inserted into a standardized disclaimer for printing and data base purposes. The new disclaimer text will take the following form:

No claim is made to the exclusive right to use _____, apart from the mark as shown.

MARGARET M. LAURENCE,
Aug. 30, 1982. *Assistant Commissioner for Trademarks.*

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(153) **Bulky Specimens in Trademark Cases**

When an application containing bulky specimens is received, it will be given a filing date; but before it is forwarded to the Examiner, a letter will be sent to the applicant requiring new specimens in conformance with Rule 2.56. If the new specimens are not received within six months from the date of the letter, the application will be abandoned. The letter will also note that the "bulky specimens" received by the Office will be held for pick-up by the applicant for 30 days from the date of the letter, and will then be destroyed.

This practice is being instituted to alleviate the increased storage difficulties posed by bulky specimens. As always, however, an Examiner has the discretion to request additional information in the form of bulky specimens during examination under Trademark Rule 2.61(b). In the case of International Class 16, at least one complete issue of a publication will still be required. Also in the situation where the mark is a configuration of the goods, or a configuration of the container of the goods, then one actual container may be required. The other four specimens should be facsimiles as described in Trademark Rule 2.57. All applicants are reminded that bulky specimens which are not picked up within 30 days of notification will be destroyed and that specimens having intrinsic value should not be filed.

The inconsistent provisions of the previous O.G. Notice concerning bulky specimens [900 T.M.O.G. 176 (July 25, 1972], are hereby repealed.

The new procedure will be put into effect on Apr. 1, 1979.

DONALD W. BANNER,
Feb. 28, 1979. Commissioner of Patents and Trademarks.

[980 TMOG 17]

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(154) **Trademark Examining Procedure for Amended Applications; Reporting Oldest Dates of Amended Trademark Applications**

Effective immediately, the order in which amendments to trademark applications are examined is changed. Previously, Examiners have usually acted on amended cases in order of filing date of the application which the amendment concerned, i.e., amended cases with the oldest filing date were examined first. Under the new procedure, amended cases will normally be examined in the order in which the amendment or other response is received, i.e., amendments that are received first will normally be examined first.

Effective with this issue of the *Official Gazette* (Trademark Section) in order to reflect more accurately the condition of division dockets, the column reporting the date of the oldest amended application in each division has been changed to indicate the date of receipt of the oldest filed amendment. Under this new method of reporting the oldest date of receipt of a filed amendment upon which no action has been taken by an Examiner will be indicated for each division of the Trademark Examining Operation.

RENE D. TEGTMEYER,
July 15, 1971. *Assistant Commissioner.*

[889 O.G. TM 6]

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(155) **Title 37—Patents, Trademarks, and Copyrights**

Chapter I—Patent Office, Department of Commerce

Parts 2 and 6—Rules of Practice in Trademark Cases

International Trademark Classification

A proposal was published at 37 F.R. 6404 to revise §6.1 of the Rules of Practice in Trademark Cases. The Patent Office proposed to establish the "International Classification of Goods and Services to Which Trademarks Are Applied" (the subject of the "Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks" of 1957, as revised at Stockholm on July 14, 1967) as the primary classification of goods and services for registration of trademarks and service marks. Pursuant to the Notice, written comments have been received, and a public hearing was held on June 14, 1972. Full consideration has been given to all matter presented, and changes in the text of the original proposal have been made in view thereof. It has been determined that adoption of the international classification system is desirable.

The Patent Office has studied the international classification and, since Mar. 5, 1968, has indicated the appropriate international class in all publications and on all issued registrations and renewals as a subsidiary classification. Based on this experience and the comments received, it is now believed that adoption of the international schedule as the primary classification system is desirable. The international system is easier to administer because of fewer classes of goods and the availability of an alphabetical listing of goods and services.

The Nice Agreement provides for an International Committee of Experts whose objective is to keep the classification current. The classification of specific goods and services is set forth in the Alphabetical List entitled "International Classification of Goods and Services to Which Trademarks Are Applied" (published by the World Intellectual Property Organization). In addition, the International Trademark Classification List contains the names of the classes setting forth the basic contents of each class. The Alphabetical List also comprises explanatory notes which serve as guidelines for determining the appropriate international class for a specific product or service.

The alphabetical listing within the International Trademark Classification Manual is currently used by the Office as a guideline for determining the degree of particularity of identification of goods. See "Identification of Goods and Services in Trademark Applications," 36 F.R. 13232; July 16, 1971.

Applications for registrations filed on or after Sept. 1, 1973, and registrations issuing thereon, will be classified according to the international classification set forth in the new §6.1. Accordingly, the international classification is adopted under Section 30 of the Trademark Act of all purposes under the statute and rules; and, therefore, will be the criterion for determining, inter alia, fees.

Applications for the registration of marks filed on or before Aug. 31, 1973, appeals or petitions to revive or oppositions filed in connection with said applications, and affidavits, renewals and petitions for cancellation filed in connection with registrations issuing thereon, will continue to be processed under the classification system existing at the time the mark was registered.

All applications which are published and registrations which are issued will carry both the appropriate international classification and existing U.S. classification number.

An insufficient fee, in connection with an appeal or opposition on any application or in connection with an affidavit or renewal filed in connection with any registration, will not render the same unacceptable, if the proper fee is submitted within a time limit set forth in a notification of the defect, providing the proper fee for at least one class has been originally submitted within the applicable time limit. This will be the case even if the full fee is not received within the sixth year in the case of an affidavit filed under Section 8 or before the end of the twentieth year, including the grace period, in the case of renewal applications, or within the six-month statutory response period in the case of an appeal, or within the thirty-day opposition period, or any extension thereof in the case of the filing of an opposition.

The existing classification system will continue to be used for searching registered and pending marks until all documents in the search file are organized on the basis of the international system of classification. Until this changeover is effected, the U.S. class designation will continue to be printed on all published applications and registrations issued under the existing or the international classification system to facilitate searching on the basis of the existing U.S. system of classification.

Until all applications filed on or before Aug. 31, 1973, have been disposed of, the trademark sections of the *Official Gazette*, which are organized by class, will include two sections: one for applications published or registrations issued on the basis of applications filed on or before Aug. 31, 1973, organized by class according to the U.S. schedule of classes; the other section for applications published or registrations issued on the basis of applications filed on or after Sept. 1, 1973, organized by class according to the new international schedule.

Certification marks and collective membership marks will continue to be classified as set forth in redesignated §§6.3 and 6.4.

Efforts will be made to have the International Trademark Classification List printed by the Government Printing Office or otherwise assure the availability of the List from local sources. Notification will appear in the *Official Gazette* when the List is available from local sources of the Government Printing Office.

The English edition of the "International Classification of Goods and Services to Which Trademarks Are Applied" can presently be ordered from:

Sales Branch, The Patent Office, Block C
Station Square House, St. Mary Cray
Orpington, Kent, England

Certain modifications and additions to the international trademark classification have been published as supplements and are also available from the British Office. In addition, and inasmuch as the World Intellectual Property Organization (WIPO) has issued the List in several languages, it is anticipated that an English version will be published by that organization.

We have been advised by the Patent Office of the United Kingdom that the only acceptable methods of payment for the International Trademark Classification List are by International Postal Money Order or by banker's draft payable in sterling and drawn on a bank in the United Kingdom.

* * * * *

May 14, 1973.

ROBERT GOTTSCHALK,
Commissioner of Patents.

BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

Published in 38 F.R. 41681, June 4, 1973

[911 O.G. TM 210]

(Note: Rule 2.85 (Classification schedules) was revised and Rule 6.1 (International schedule of classes of goods and services) was established as of September 1, 1973 by this notice; prior U.S. schedule of classes was redesignated as Rule 6.2.)

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(156) **Trademark Office Actions**

Effective Applicants or their attorneys will be provided with only one carbon copy of any office action, and the mailing of an additional carbon copy will be discontinued.

This change is consistent with the current practice in the patent examining operations and should result in greater efficiency in the preparation and mailing of office actions.

Feb. 7, 1972.

ROBERT GOTTSCHALK,
Commissioner of Patents.

[895 O.G. TM 238]

(157) **Wording In Verification or Declaration of Trademark Application**

Applicants and attorneys are requested to use the following wording in the part of the verification or declaration of the trademark application which indicates the signer's belief that the mark applied for does not resemble another person's mark:

> —that no other person, firm, corporation, or association, to the best of his knowledge and belief, has the right to use such mark in commerce either in the identical form thereof or in such near resemblance thereto *as to be likely, when applied to the goods of such other person, to cause confusion, or cause mistake, or to deceive:*—

The wording emphasized conforms to the p language of both Sections 1(a)(1) and 2(d) of the Trademark Act of 1946.

Some applicants and attorneys, instead of using the wording emphasized above, are still using the now obsolete wording "as might be calculated to deceive" which was promulgated in the forms under the Trademark Act of 1905 and inadvertently continued by the Act of 1946 up to October 1962 in Section 1(a)(1) and in the forms connected with the Act. Section 1(a)(1) of the 1946 Act was amended by Act of October 9, 1962 (Public Law 772, 87th Congress, 76 Stat. 769) to conform it to the language of Section 2(d) of the 1946 Act, since the language of Section 2(d) reflects the thinking at the time the 1946 Act was written. The wording of the trademark forms for the 1946 Act has also been amended appropriately.

It is desirable that proper wording be used. However, since the differences in wording referred to above are considered to be differences of form rather than of substance. Examiners will not require new verifications or declarations. When the obsolete wording is observed and a letter is to be written for other reasons, Examiners will at that time call attention to the fact that the wording is obsolete and should be modified in applications in the future.

RENE D. TEGTMEYER,
Assistant Commissioner for Trademarks.

Mar. 25, 1974.

[921 O.G. TM 186]

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(158) **Consolidated Certificates Under Trademark Rule 2.88**

Trademark Rule 2.88 provides as follows:

Applications may be consolidated.

a. When several applications have been filed by the same applicant for registration on the same register of a mark shown in identical form on the drawings for goods and/or services in different classes and each of the applications has been allowed, a single certificate based on such applications may be issued. A request for the issuance of a consolidated certificate must be made of record in each of the applications involved prior to the allowance of any of the applications.

b. The issuance of any original certificate may be suspended upon request of the applicant for a period not exceeding 6 months, to permit such consolidation.

The resulting certificate of registration is known as a consolidated certificate.

Because Rule 2.88 is seldom invoked and because the issuance of consolidated certificates entails undue administrative effort, the Patent and Trademark Office will soon be publishing for comment a proposal to eliminate the rule.

In the meantime, any applicant seeking registration of a single mark for more than one class of goods and/or services is encouraged to use the multiple-class application procedure set forth in Trademark Rule 2.87, rather than the consolidated application procedure set forth in Trademark Rule 2.88.

MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

July 29, 1981.

[1009 O.G. 17]

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(159) **Trademark "Revivals" and "Reinstatements"**

It would be of great assistance to the Office if the heading or caption of "Petitions to Revive" or "Requests for Reinstatement" of abandoned trademark applications carried the following identifying data:

1. Address Paper to the Attention of:
   Office of Director, Trademark Examining Operation
2. Serial Number
3. Mark
4. Applicant's Name
5. A title indicating the nature of the paper

Use of this heading for "Petitions to Revive" or "Requests for Reinstatement" of abandoned trademark applications will help ensure that the papers are promptly routed to the proper Office, which will prevent needless delay in its consideration.

MARK M. NEWMAN,
Director, Trademark Examining Operation.

Aug. 13, 1984.

[1046 TMOG 13]

TRADEMARK POST REGISTRATION

(160) **Trademark Rule 2.165 Requirement Where A Section 8 Affidavit Or Declaration Is Held Insufficient**

Several recent Petitions to the Commissioner have indicated a failure on the part of registrants and their attorneys to follow the requirements of Trademark Rule 2.165. Therefore, reviewing certain basic elements of this rule is considered timely so as to alert registrants and attorneys to technical errors which might lead to the cancellation of a valuable trademark registration.

Part (*a*) of Rule 2.165 indicates that the examiner will notify the registrant when an affidavit or declaration of use under Section 8 of the Statute is insufficient and the reasons therefor. When the registrant wishes the examiner to reconsider the affidavit or declaration, or when the registrant has taken additional steps to rectify the deficiencies and desires to have the examiner reconsider the affidavit or declaration in light of those steps, the request for reconsideration must be submitted within 6 months of the date of mailing of the notice of insufficiency.

Note, however, that a supplemental or substitute affidavit or declaration required by Section 8 cannot be considered unless it is received before the expiration of the six year anniversary of the registration. Consequently, registrants should file their affidavits as early as possible during the sixth year following registration.

There are situations where correcting the deficiency in the affidavit or declaration requires recording an assignment with the Assignment Division of this Office. If the recording cannot be completed within 6 months, the registrant must at least respond to the examiner's notice of insufficiency within that period. The response must indicate the steps being taken to correct the deficiency. The examiner can then allow the registrant additional time or suspend action depending on the circumstances. Registrants must always observe the "six month response" period whenever responding to the examiner from an adverse action.

Part (*b*) of Rule 2.165 permits a registrant to request the Commissioner to review the action of the examiner when he is dissatisfied with that action. Review by the Commissioner should be sought only where it is believed that the examiner has erred in his action. In other words, the Commissioner's role is to review the correctness of the examiner's action and not to serve as an alter ego of the examiner before whom the registrant may seek to correct deficiencies.

When review by the Commissioner has been sought, the decision on that request constitutes the final action of the Patent and Trademark Office. If no review by the Commissioner is sought and if no request for reconsideration of an examiner's action is timely filed, the Commissioner will notify the registrant of the deficiency in the affidavit or declaration after the sixth year has expired. Such notice is never mailed prior to the expiration of the sixth year following registration nor until a reasonable time has elapsed following a six month period from the last action mailed by this Office. This notice constitutes the final action of the Patent and Trademark Office in those cases where the Commissioner's review has not been sought. Once this notice has been mailed, it is too late (under the Rules of Practice) to request the Commissioner to review the action of the examiner. Review would only be proper if an affiant could show circumstances sufficient to suspend the finality element of Rule 2.165(b) pursuant to Rule 2.148.

Registrants will be held to strict compliance with Rule 2.165 as it has been briefed above. Therefore, parties are urged to respond fully as soon as possible after an action is received from the examiner.

BERNARD A. MEANY,
Assistant Commissioner for Trademarks.

Dec. 12, 1977.

[966 TMOG 80]

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(161) **Renewal Applications and Section 8 Affidavits**

There has been a noticeable increase in the number of petitions requesting provisional acceptance of defectively executed Section 8 Affidavits and Renewal Applications under 35 U.S.C. §26, the most common problem being a lack of notarization or a Rule 2.20 declaration. Often, such petitions are necessitated by the failure of registration owners to file the documents early enough to leave time in which to correshould they prove defective.

Section 8 Affidavits may be filed beginning with the fifth anniversary of the registration. The period for filing expires on the sixth anniversary of the registration. The period for filing Renewal Applications begins six months before the twentieth anniversary of the registration and extends three months beyond the expiration of the twenty year term. While the Post Registration Division may allow up to six months to respond to a notice of defect, it may not allow corrective action beyond the period for filing established by the Trademark Act. It is therefore in the registrant's best interest to file such documents as close to the opening date as possible to allow time for correction, if necessary. Provisional acceptance under 35 U.S.C. §26 has been, and will continue to be, given narrow application. Registrants should not rely on 35 U.S.C. §26 as a means of acquiring an extension of time.

We have also become aware of many delays caused by defects in the chain of title. Registrants are encouraged to keep Patent and Trademark Office assignment records current with regard to ownership of registrations.

The filing of Post Registration documents at the earliest date and maintenance of assignment records will help to avoid the cancellation or expiration of registrations of trademarks currently in use, and will result in a savings of time and expense for both the registrant and the Patent and Trademark Office.

MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Apr. 19, 1983.

[1030 TMOG 37]

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(162) **Late-Filed Renewal Fees**

Sections 9 and 31 of the Lanham Act (15 U.S.C. §§1095 and 1113) require that an additional five dollar ($5.00) fee be submitted by a registrant who files a renewal application during the three-month period following expiration of its registration. The language of the statute requires that this additional fee be submitted within the three-month grace period. A number of registrants who have failed to submit the additional fee within the prescribed period have petitioned the Commissioner to allow their renewal applications. The Commissioner has granted petitions of this kind where the registrant or its attorney maintained a Patent and Trademark Office deposit account which contained, on the date the renewal application was filed, sufficient funds to cover the additional fee. Specifically, the Commissioner has exercised discretion under Trademark Rules 2.146(a)(3) and 2.147 to deem the authorizations to charge the deposit accounts to have taken place at the time the registrants filed their renewal applications, even though the authorizations were not confirmed until a later date. This Office policy was established by the Commissioner's decision in *In re Ralston Purina Co.*, 191 USPQ 154 (Comr. Pats. 1976).

The policy established by the *Ralston Purina* decision is being changed. Henceforth, the Commissioner will no longer exercise discretion to charge deposit accounts *nunc pro tunc* for trademark renewal application fees. To allow an authorization to charge a deposit account to relate back to a date on which no actual authorization existed is, in effect, to allow late payment. It is inequitable to permit those registrants who have deposit accounts (or those whose attorneys have such accounts) to make late payment of renewal fees, while those without deposit accounts may not.

Petitions relying on *Ralston Purina* will, after the date of this notice, be denied, unless the events that gave rise to those petitions occurred before publication of this notice.

MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Feb. 20, 1981.

[1004 O.G. 29]

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(163) **Trademark Examining Operation**

Effective Dec. 1, 1983, all requests presented to the Patent and Trademark Office under the provisions of Section 7 of the trademark statute (15 U.S.C. 1057) will be considered by the Post Registration Section of the Trademark Examining Operation.

Necessary telephone inquiries concerning procedure or status should be directed to 703-557-1986.

MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Dec. 2, 1983.

[1038 TMOG 256]

TRADEMARK INFORMATION AND CORRESPONDENCE

(164) **Powers of Attorney in Registered Trademark Files**

On and after Feb. 1, 1967, communications advising of changes in the powers of attorney for registered trademarks will be placed in the registration files, but will not be acknowledged by the Patent Office. The information will thus be available to those who inspect the files, but since these powers of attorney do not directly concern the Patent Office, acknowledgments are not believed to be necessary.

C.M. WENDT,
Director.

Jan. 30, 1967.

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(165) **Initial Processing of Application**

On Feb. 1, 1972, the operations of the Trademark Application Section of the Patent Office will be reorganized. The purpose of the reorganization is to provide

the public and applicants with more current information concerning newly filed applications.

The prompt initial processing of trademark applications is necessary in order to fulfill one of the main Patent Office functions, that of producing a record, accessible to the public, of new trademark activity to facilitate the clearance of new marks for use, determine the registrability of proposed marks, and avoid conflicts with the rights of others. In order to maintain a record of marks applied for which reflects the most current information available to the Office concerning them, the early processing of drawings in order to have them placed in the search room is considered as a first priority. The processing of these drawings includes the assignment of serial numbers, initial classification, duplication of the drawing and the forwarding of copies of the drawing to the search room. Other functions which are necessary in the processing of applications, such as the processing and mailing of filing receipts, are secondary to the processing of drawings.

In past years, there have been delays in processing applications and forwarding application drawings to the search room. These delays have varied from several weeks to several months. In view of the importance, both to applicants and the public, of recording essential information concerning newly filed applications as quickly as possible, a reorganization of the workflow in the Application Section is being effected.

There is no change in the processing of applications through the mail room and finance branch to the Application Section. However, under the new plan, upon receipt in the Trademark Application Section, all applications will be stamped with a serial number, and the drawing of the mark will be reproduced immediately and placed in the search file. This processing will occur as soon as the application files reach the Application Section. Such procedures as determining whether or not an application will receive a filing date, preparation of the file jackets, and mailing of the filing receipt will take place at a later time.

Applicants who wish to be notified promptly of the date their papers were received in the office and their serial number, may send two self-addressed postcards with their application papers. The mail room will stamp both postcards with the date of receipt and return one to the applicant; the second postcard will be stamped with the serial number and forwarded to the applicant from the Application Section. The postcards should contain the applicant's name and the trademark which is the subject of the application. When more than one set of application papers are forwarded under one cover, postcards should be attached to each set of papers for which a receipt is desired.

Under the new system of processing application papers, your particular attention is directed to the following changes as compared to the present procedure.

1. Application drawings will be placed in the public search file prior to the mailing of the filing receipt.

2. By using the postcard system described above, applicants will be notified sooner of the date of receipt of their papers and the serial number of their application. Applicants are encouraged to use the postcard system.

3. Additional papers sent in by the applicant or attorney should be identified by serial number, thereby enabling the office to process these papers quickly.

4. When an application is accompanied by a petition to the Commissioner under §2.146, the petition will not be considered until processing by the Application Section is complete.

Effective date. The procedure outlined in this notice will become effective Feb. 1, 1972.

RICHARD A. WAHL,
Acting Commissioner of Patents.

Jan. 11, 1972.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

Published in 37 F.R. 942; Jan. 21, 1972

[895 O.G. TM 193]

(166) Dissemination Of Trademark Information

In order to clarify the policy regarding Trademark Examiners giving out Trademark information to the general public, the following directive has been promulgated:

Trademark Examiners are reminded that they may only be responsive to questions regarding applications pending before them. All other questions regarding Trademark matters must be directed to the Director of the Trademark Examining Operation, 703-557-3268.

BERNARD A. MEANY,
Assistant Commissioner for Trademarks.

Feb. 15, 1978.

[968 TMOG 9]

(167) Trademarks—Status Inquiries

In order to expedite the handling of inquiries regarding the status of both new and amended applications, the Patent Office has adopted a new procedure. Henceforth, status inquiries should be filed in duplicate and should identify by title and date the last paper known by the applicant to have been filed to the case. Each inquiry should be accompanied by a self-addressed, stamped envelope. The original inquiry will be entered in the file and the duplicate will be marked with a response and returned to the applicant. The date when the next office action can be expected will not be given unless specifically requested.

Status letters have been used by applicants to establish diligence in support of a later petition to revive should the application become abandoned. Under current practice, attorneys have frequently submitted status letters as a matter of course for such purposes. This has proved burdensome both to attorneys and the Patent Office. Until further notice, in new applications, the applicant will be considered to have exercised diligence in connection with a petition to revive an application abandoned for failure to respond to the initial office action if inquiry as to the status of the application is received by the Patent Office within either one of the two following periods, whichever expires later:

a. Eighteen months from the filing date of the application, or

b. A reasonable period after the *Official Gazette* (Trademarks) indicates that the filing date of the oldest new case awaiting action in the Division to which the application is assigned is more recent than the filing date of the application.

For amended cases, the applicant will be considered to have exercised diligence if inquiries as to the status of the application are received by the Patent Office within either one of the two following periods, whichever expires later:

a. Eighteen months after filing a response to the examiner's last received action, or

b. A reasonable period after the *Official Gazette* (Trademarks) indicates that the date of the oldest amendment filed that is awaiting action in the Division to which the application is assigned is more recent than the date of filing the last amendment to the application.

It should be noted as an exception to the above that status inquiries are totally unnecessary during period(s) of time when an application is suspended pursuant to 37 CFR 2.67.

Applicants are urged not to file status inquires within the first year after filing due to the current backlog of new applications.

ROBERT GOTTSCHALK,
Acting Commissioner of Patents.

July 28, 1971.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

July 30, 1971.

[FR. Doc. 71-11532 Filed 8-10-71; 8:48 am]

Published in 36 F.R. 14771, Aug. 11, 1971

[890 O.G. TM 5]

(168) **Requests for Information on Status of Trademark Registrations**

The purpose of this notice is to explain the circumstances in which the Trademark Examining Operation can respond to written and telephone requests for information about the status of trademark registrations. Only limited information can be provided by telephone.

I. Orders for "Status" Copies

The most reliable means of obtaining status information concerning a registration is a written order for a "status" copy of the registration. Status copies show whether affidavits have been filed under Sections 8 and 15, whether the registration has been renewed or cancelled, and whether certain other actions have been taken with respect to the registration. The charge for copies of registrations showing status and/or title, if not certified, is $6.50, effective Oct. 1, 1982. The charge for a certified copy showing status and/or title is $10.00 effective the same date.

II. Telephone Information Available from the Search Library

If the caller has the registration number, he or she may leave a request for status information on an automatic answering machine in the Trademark Search Library (Search Room) at 703-557-3282. The Search Library staff will call back with the information requested within one working day. Callers are asked to limit their requests to two registration numbers per day.

The Search Library staff is not permitted to make "searches" to determine if particular marks are in the Office's search files. Neither is the staff able to supply information as to the ownership or assignment of registrations, or to read over the telephone lengthy passages of a registration, such as the identification of goods or services.

III. Telephone Information on Receipt of Section 8 and 15 Affidavits and Renewal Applications

The Post Registration Section can be reached by calling 703-557-2923. The staff of this section can advise only on whether an affidavit or a renewal application has or has not been received. Inquiries as to whether affidavits and renewals have been accepted should be directed to the Search Library.

Sept. 15, 1982. MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

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(169) **Hand Delivery of Trademark Papers**

Trademark papers which are not accompanied by fees or by authorization to charge a deposit account, may be filed by hand in the Trademark Docket Section or in the Incoming Mail Section of the Mail and Correspondence Division. However, to avoid confusion concerning money matters, when papers which are accompanied by fees or by authorization to charge a deposit account are filed by hand, they should be delivered only to the window in the Incoming Mail Section of the Mail and Correspondence Division where personnel can immediately refer the money or the charge to the Cashier. Trademark Examiners should not be requested to receive papers for filing (either with or without fees) since there is no convenient procedure by which the Examiners can transmit such papers to proper locations.

If a receipt is desired from the Trademark Docket Section, it may take the form of a duplicate copy of the paper or of a card identifying the paper and the application. The receipt will be date-stamped at the same time as the paper and handed back to the person delivering the paper. If a receipt is desired from the Incoming Mail Section, a card should be used. The card will be date-stamped and handed back to the person delivering the paper.

When a card is used for receipt, it should contain sufficient information to identify the paper and the application clearly, such as applicant's name, the serial number and filing date of the application, the mark, and the title or a description of the paper being filed.

In the discretion of the Assistant Commissioner for Trademarks, or of the Director of the Trademark Examining Operation, or of the Trademark Trial and Appeal Board, papers appropriate for those Offices (such as petitions or briefs) may be filed by hand in such Offices.

The procedure set forth in the notice entitled "Hand-Delivery of Papers" in the *Official Gazette* of February 26, 1974 (919 O.G. TM 180) pertains to papers for patent applications. The designation "Examining Group" used in that notice relates to the patent examining area of the Patent Office. (The equivalent designation in the trademark examining area is "Examining Division.")

Aug. 21, 1974. RENE D. TEGTMEYER,
Assistant Commissioner for Trademarks.

[926 O.G. TM 132]

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(170) **Mail Delays and Petitions to Revive (Trademarks)**

Since applications that become abandoned unintentionally present burdens to both the Patent office and the applicant, a simplified procedure has been devised to alleviate these burdens when the abandonment results from a delay in the mails. This procedure (which is similar to the procedure adopted for patent applications at 910 O.G. 402 and 910 O.G. TM 76) provides for an automatic petition to revive.

When a trademark communication which falls within the circumstances enumerated below is mailed to the Patent Office more than three full days prior to the due date, a conditional petition may be attached to the communication. If the communication is received in the Patent Office after the due date and the application becomes abandoned, the conditional petition will become effective, subject to the following requirements. The petition must include (1) an authorization to charge a deposit account for any required fees, including the petition fee, and (2) an oath or declaration signed by the person mailing the communication and also signed by the applicant or his attorney stating that the communication and petition were either placed in the United States mail as first class or air mail or placed in the mail outside the United States as air mail. Since mail handled in this manner may reasonably be expected to reach the Patent Office by the due date, any mail delays beyond such time will be considered to constitute unavoidable delay and sufficient cause to grant a petition to revive (Section 12(b) of the Trademark Act of 1946).

The circumstances under which this procedure may be used are those where the communication, if timely filed, (1) would be a proper and complete response to an action or request by the Patent Office, and (2) would stop a period for response from continuing to run. Accordingly, this procedure would be appropriate for:

1. A response to a non-final Office action.
2. A response to a final Office action which places the application in condition for publication or issue.
3. A notice of appeal and requisite fee.
4. An appeal brief.

A suggested declaration form for the petition is shown below:

Applicant:
Serial No.: Petition to Revive
Date Filed:
Mark:

I hereby declare that the attached communication is being deposited in ( ) the United States mail as first class or air mail, or ( ) the mail outside the United States as air mail, in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on _____, which date is more than three full days prior to the due date, at _____, by _____.
(Location) (Name of individual)

In the event that such communication is not timely filed in the Patent Office, it is requested that this paper be treated as a petition to revive and that the delay in prosecution be held unavoidable.

The petition fee is authorized to be charged to Deposit Account No. _____ in the name of _____.

The undersigned declares further that all statements made herein of his own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or document or any registration resulting therefrom.

Date: (Signature of applicant or applicant's attorney)
And
Date: (Signature of person mailing, if other than the above)

Normal petition practices are not affected in those situations where this procedure is either not elected or not appropriate, nor does this procedure bar the granting of a petition in different fact situations where justified.

RENE D. TEGTMEYER,
Mar. 21, 1974. *Assistant Commissioner for Trademarks.*

[921 O.G. TM 126]

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(171) **Transmittals for Use of Deposit Accounts**

When statutory fees are to be charged to a deposit account, the processing of the application can be facilitated by submitting the applicant's transmittal letter or other correspondence specifying the account to be charged in triplicate. Submission of these documents in triplicate will eliminate the need for the Mail Room to photocopy the document and thereby reduce the processing time of incoming mail.

THERESA A. BRELSFORD,
Nov. 21, 1983. Assistant Commissioner for Administration.

[1037 TMOG 15]

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(172) **Helpful Hints From The PTO**

- *Data To Be Included on Patent and Trademark Papers Filed In The PTO In Response To Office Actions*—Perhaps the greatest cause of delay and wasted time in the support sections of the PTO is in trying to match papers bearing incorrect or incomplete data with applications. Because some Trademark Papers are not clearly identified as pertaining to Trademark applications, they are frequently misrouted to the Patent Examining Groups.

On all papers related to *Patent* applications, type the word "PATENT" in the upper right-hand corner of the document. Also, please include the correct serial number, filing date, inventor's name, and title of the invention. Additionally, include the examiner's name, and group art unit number or other identifying data found on the most recent letter from the PTO. (37 CFR 1.1(a)).

However, please note that an organizational restructuring of the Patent Examining Corps has resulted in many applications being reassigned to new Groups and Art Units. Your attention is directed to the NOTICE OF CHANGES IN THE PATENT EXAMINING CORPS that appeared in the OFFICIAL GAZETTE on June 26, 1984, (1043 OG 23), which identifies the Group Art Unit of each examiner (1043 OG 40 through 1043 OG 67). Letters mailed from the Groups after Apr. 15, 1984, should reflect the current identifying data.

For all papers related to *Trademark* applications, type the word "TRADEMARK" in the upper right-hand corner of the document. Also, please set forth the applicant's name, correct serial number (including the series number which currently is "73"), filing date, law office, examining attorney and mark.

Documents for which no fee is required at the time of filing (e.g., amendments to applications and requests for extensions of time to file an opposition) continue to be addressed:

Box 5
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Mail directed to the Trademark Trial and Appeal Board should have mark "Attention: TTAB" on the envelope in additon to "Box 5."

- *Mailing Responses To The PTO*—In general, it would eliminate or greatly reduce processing steps by the PTO support staff, and will avoid interruption of the examiner's work, if a few simple, general rules were followed in regard to mailing of the responses to the PTO:

1. After a Patent or Trademark application is filed, please avoid filing additional papers (other than those requesting a filing receipt or those required by the Office) until the filing receipt or return post card identifying the Serial Number and Patent Examining Group Art Unit or Trademark Law Office has been received.
2. In *Patent* applications, requests for extensions of time, changes of address, proposed drawing corrections, and petitions are sometimes incorporated in the remarks section or at the beginning of papers entitled "Amendment" or "Response." In *Trademark* applications, change of address and powers of attorney are sometimes incorporated in the remarks section or at the beginning of papers entitled "Amendment" or "Response". Please present such items in separate papers, appropriately titled, since they are all handled by different personnel (37 CFR 1.4(c)). However, please include a statement in the amendment/response describing the paper being filed.
3. Where a supplemental or preliminary amendment is found necessary in *Patent* or *Trademark* applications, please telephone the examiner and request that the examiner delay action for a certain time in order to avoid crossing in the mails of the amendment and the Office action.
4. File *Patent* and *Trademark* documents which have no particular time or sequence requirement, with materials submitted in response to the statutory or regulatory requirements. Examples are certified copies of foreign documents to support priority and formal drawings in Patent applications or changes in Power of Attorney or Mailing Address following first action.
5. If a disclosure statement is to be filed before an Office action, file it when the application is filed. Some Group Art Units have greatly reduced the pendency to first action. Hence, many examiners are taking up new applications before an information statement is matched with the application.

THERESA A. BRELSFORD,
July 10, 1984. *Assistant Commissioner for Administration.*

(1044 TMOG 44)

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(173) **Helpful Hints From The PTO**

- *Amendments After Final for Patent Applications*—Amendments under 37 C.F.R. 1.116 would be greatly expedited if they were headlined with the title "AMENDMENT after final rejection," with that title underlined in red. This would facilitate ready identification of these amendments by the PTO support staff and expedite docketing and delivery to the

examiner for special treatment. In many cases this would avoid the necessity for extensions of time and/or filing unnecessary notices of appeal.

- *Extensions of Time for Patent Applications*—An extension of time under 37 C.F.R. 1.136(a) is not permitted in the following instances:
  1. Where an applicant is so notified in an Office action as, for example, in a Reissue application involving a litigated patent;
  2. Where the application is involved in an interference declared pursuant to 37 C.F.R. 1.207. See 37 C.F.R. 1.245 for provisions governing extensions of time in interference proceedings;
  3. In reexamination proceedings. See 37 C.F.R. 1.550(c) for extensions of time in reexamination proceedings; and
  4. In PCT international applications. In PCT applications, the only extensions permitted are for corrections of PCT Article 14 defects in international applications before the Receiving Office.
- *Data To Be Included On Patent and Trademark Papers Filed In The PTO In Response To Office Actions*—Perhaps the greatest cause of delay and wasted time in the support sections of the PTO is in trying to match papers bearing incorrect or incomplete data with applications. Because some trademark papers are not clearly identified as pertaining to trademark applications, they are frequently misrouted to the patent examining group. On all papers related to *patent* applications, type the word "PATENT" in the upper right-hand corner of the document. Also, please include the correct serial number, filing date, inventor's name, and title of the invention. Additionally, include the examiner's name, and group art unit number or other identifying data found on the most recent letter from the PTO. (37 CFR 1.1(a)). However, please note that an organizational [restructuring of the Patent Examining Corps has resulted in many applications being reassigned to new Groups and Art Units. Your attention is directed to the NOTICE OF CHANGES IN THE PATENT EXAMINING CORPS that appeared in the OFFICIAL GAZETTE on June 26, 1984, (1043 OG 23), which identifies the Group Art Unit of each examiner (1043 OG 40 through 1043 OG 67). Letters mailed from the Groups after Apr. 15, 1984, should reflect the current identifying data.

For all papers related to *trademark* applications, type the word "TRADEMARK" in the upper right-hand corner of the document. Also, please set forth the applicant's name, correct serial number (including series number which currently is "73"), filing date, law office, examining attorney and mark.

Trademark documents for which no fee is required at the time of filing (e.g., amendments to applications and requests for extensions of time to file an opposition) should continue to be addressed:

Box 5
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Mail directed to the Trademark Trial and Appeal Board should have "Attention TTAB" on the envelope in addition to "Box 5".

Sept. 4, 1984. THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

(1046 TMOG 40)

TRADEMARK PUBLICATIONS

(174) Change in Official Gazette Entry to Show Cancellation of Fewer Than All Classes in a Multiple Class Registration

Effective with the *Official Gazette* issue of December 16, 1980, there will be a change in the *Official Gazette* listing entitled "Trademark Registrations Cancelled." Beginning with that issue, "Trademark Registrations Cancelled" will list:

(1) single class registrations cancelled;
(2) multiple class registrations cancelled in all classes;
(3) multiple class registrations cancelled in fewer than all classes.

For every entry in the listing, the specific classes cancelled will be included in parentheses, next to the registration number and mark.

For a single class registration and for a multiple class registration in which every class has been cancelled, the class number(s) shown in parentheses will represent every class to which the registration applied.

For a multiple class registration in which fewer than all classes have been cancelled, the *Official Gazette* entry will include the word "only" following the notation of classes in parentheses, for example: (Int. Cls. 12 and 20, only). In this example, the addition of the word "only" would indicate that there are classes in the registration in addition to Classes 12 and 20, but only Classes 12 and 20 have been cancelled.

Oct. 29, 1980. MARGARET M. LAURENCE,
Assistant Commissioner, for Trademarks.

[1000 TM 21]

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(175) Change in Format for Publishing Trademarks for Opposition

Section 30 of the Trademark Act of 1946 as amended by Public Law 772, 87th Congress, approved October 9, 1962, 76 Stat. 769, provides for the filing of a combined application for the registration of a trademark in more than one class.

The present practice of publishing the mark with pertinent data under each class in which registration is sought results in needless duplication.

Beginning with the issue of November 3, 1964, "Marks Published for Opposition" will be divided into two sections. In Section 1, all marks presented in combined applications for registration in more than one class will be published with only one reproduction of each mark.

The reproduction of the mark will be followed by the class numbers and titles, and under each class will appear the description of the goods in connection with which the trademark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

Trademarks presented in applications for registration in a single class will be published, as in the past, in class order, in Section 2.

The same procedure will be followed in the notice of the issuance of registrations on the Supplemental Register.

Sept. 18, 1964. EDWIN L. REYNOLDS,
First Assistant Commissioner.

[807 O.G. TM 51]

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(176) Changes in Format for Publishing Trademarks for Opposition

Because of the adoption of the International classification of goods and services by the United States as of September 1, 1973 (see *Official Gazette* of June 26, 1973, 911 O.G. TM 210), it is necessary to change the arrangement in the *Official Gazette* of the marks published for opposition.

Beginning with the issue of May 7, 1974, the section of the *Official Gazette* entitled "Marks Published for Opposition" will be divided into four sections instead of the present two sections. (For the preceding change from one to two sections, see *Official Gazette* of October 13, 1964, 807 O.G. TM 51.) Sections 1 and 2 will be according to international classification and will contain marks in applications filed on or after September 1, 1973, and Sections 3 and 4 will be according to prior United States classification and will contain marks in applications filed on or before August 31, 1973.

In Section 1, all marks presented in combined applications filed on or after September 1, 1973 for registration in more than one international class will be published with only one reproduction of each mark. The reproduction of the mark will be followed by the international class numbers, and under each class will appear the goods or services in connection with which the mark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

In Section 2, all marks presented in applications filed on or after September 1, 1973 for registration in a single class will be published in international class order.

In Section 3, all marks presented in combined applications filed on or before August 31, 1973 for registration in more than one prior United States class will be published with only one reproduction of each mark. The reproduction of the mark will be followed by the prior United States class numbers and titles, and under each class will appear the goods or services in connection with which the mark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

In section 4, all marks presented in applications filed on or before August 31, 1973 for registration in a single class will be published in the prior United States class order.

The following explanation will appear under the heading "Marks Published for Opposition":

> The following marks are published in compliance with section 12(a) of the Trademark Act of 1946. Applications for the registration of marks in more than one class have been filed as provided in section 30 of said act as amended by Public Law 772, 87th Congress, approved Oct. 9, 1962, 76 Stat. 769. Opposition under Section 13 may be filed within thirty days of the date of this publication. See Rules 2.101 to 2.105.
>
> A separate fee of twenty-five dollars for opposing each mark in each class must accompany the opposition.

Sections 1 through 4 will appear immediately after the above explanation, the sections being designated as follows:

Section 1. International classification—Application in more than one class
Section 2. International classification—Application in one class
Section 3. Prior United States classification—Application in more than one class
Section 4. Prior United States classification—Application in one class

The same procedure of dividing into four sections will be followed in the notice of the issuance of registrations on the Supplemental Register.

RENE D. TEGTMEYER,
Assistant Commissioner for Trademarks.

Mar. 22, 1974.

[921 O.G. TM 122]

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(177) **Separation of the Patent and Trademark Sections of the Official Gazette**

Effective February 2, 1971, the *Official Gazette* will be separated into two parts to be known as the *Patent Official Gazette and the Trademark Official Gazette.*

* * * * *

Orders for subscriptions should be addressede Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Also effective February 2, 1971, the *Official Gazette* will no longer contain "Decisions in Patent and Trademark Cases." Decisions of the type heretofore found in the "Decisions in Patent and Trademark Cases" are published by non-Federal organizations such as, for example, the Bureau of National Affairs, Inc., 1231 25th St. NW., Washington, D.C. 20037, and West Publishing Co., 50 Kellogg Blvd., St. Paul, Minn. 55102.

Finally, the "Decisions Leaflet" of the *Official Gazette* will no longer be supplied as a separate subscription item after January 26, 1971. According to present plans, however, both the *Patent Official Gazette* and the *Trademark Official Gazette* will have identical "Patent Office Notices" sections containing notices of the various types heretofore published in the Gazette decision leaflet and Trademark Section. Those notices of particular interest to Patent Office employees will be accumulated and published approximately every fourth week, and distributed separately to employees.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Dec. 29, 1970.

[882 O.G. TM 33]

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(178) **Single Copies of the Trademark Official Gazette**

Members of the public ordering single copies of the Trademark Official Gazette from the Superintendent of Documents are reminded they must specify the date of the issue being ordered.

The date of the issue in which a mark will be published for opposition is shown on The Notice of Publication form mailed to applicants approximately two weeks before the publication date. This date must be included on each single copy order.

Orders received without an issue date may be filled from current weekly stock. The Superintendent of Documents cannot check on whether a particular mark is published in the issue then in stock. If the stock is exhausted at the time the order is received, the order will be returned unfilled.

MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Mar. 3, 1981.

[1004 O.G. 36]

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(179) **Inadvertently Issued Registration Numbers**

Effective Jan. 3, 1984, a new sub-section identified as "Inadvertently Issued Registration Numbers" will exist as the last category of cancellations listed under the "Trademark Registrations Canceled" section of the *Official Gazette.*

This new sub-section will provide public notice of the cancellation of registration numbers which have been inadvertently issued by the Patent and Trademark Office.

MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Nov. 15, 1983.

[1037 TMOG 16]

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(180) **USTA Publications of Looseleaf Rules of Practice**

The United States Trademark Association has published *US Trademark Law; Rules of Practice, Forms and Federal Statutes.* The book, in looseleaf format to allow for supplements, includes the trademark Rules of Practice, sample forms, the Lanham Act and applicable provisions and cites of other statutes that deal with trademarks and the Patent and Trademark Office. In content and format, the USTA publication generally replaces the Government Printing Office looseleaf edition of the Rules of Practice which has been discontinued.

Information on ordering copies of *US Trademark Law: Rules of Practice, Forms and Federal Statutes* may be obtained from:

The United States Trademark Association
6 East 45th St.
New York, N.Y. 10017
(212) 986–5880

The Government Printing Office continues to publish the Rules of Practice as Title 37, Code of Federal Regulations, every July. Effective July 1, 1983, however, the CFR edition no longer includes forms.

Apr. 30, 1984. MARGARET M. LAURENCE,
Assistant Commissioner for Trademark.

[1042 TMOG 58]

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(181) **Availability of Patents and Trademarks Style Manual**

The latest edition of Patents and Trademarks Style Manual will be available to the patent and trademark community soon. This edition will be published as a separate supplement to the GPO Style Manual. It is the first revision since 1973, and will be available in looseleaf form. The cover of this supplement is illustrated on the following page:

Orders are now being accepted by the Superintendent of Documents. The stock number is 003-004-00606-4. Direct inquiries to:

Superintendent of Documents
U.S. Goverment Printing Office
Washington, D.C. 20402

Checks for orders should be made payable to the Superintendent of Documents. If a Deposit Account with the Superintendent of Documents is to be used, please include the Deposit Account Number with the order.

June 29, 1984. THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

[1045 TMOG 3]

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(182) **Notice to Subscribers**

The Patent and Trademark Office announces a change in the point of contact for subscribers who have not been receiving all of their copies of the Official Gazette, Manual of Patent Examining Procedures Revisions, Annual Indices, or other patent and trademark publications. All correspondence and inquiries concerning subscription services including requests for reinstatement or renewal of subscriptions should be directed to:

Mr. Michael F. DiMario
Assistant Public Printer
Superintendent ofDocuments (SD)
U.S. Government Printing Office
Washington, D.C. 20401

Furthermore, the Superintendent of Documents advises that expiration notices are sent out approximately three months before the expiration date. However, subscribers should not rely on this schedule. If a notice is not received within two months of the expiration date, the subscriber should renew the subscription with the Superintendent of Documents. Attach a label from the envelope in which the publication is received, together with a check covering the amount of the subscription. if a deposit account with the Superintendent of Documents is to be used, include the deposit account number with the renewal.

This notice is effective with the publication date and supersedes the notice published on this subject in 969 O.G. 2, dated Mar. 14, 1978.

Aug. 3, 1984. THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

[1045 TMOG 24]

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(183) **Trademark Manual of Examining Procedure Revision**

The Patent and Trademark Office announces publication of Revision 6 of the Trademark Manual of Examining Procedure. It is a complete edition. Distribution to current subscribers began Sept. 10, 1984. The manual may be ordered, on a subscription basis, from:

Mr. Michael DiMario
Assistant Public Printer
The Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20401

The cost is $24.00. Charges may be made to deposit accounts if the requestor is an account holder in good standing at the time the request is received. The deposit account number should be included with the order. Checks or money orders should be made payable to the Commissioner of Patents and Trademarks.

Sept. 13, 1984. MARGARET M. LAURENCE
Assitant Commissioner for Trademarks.

[0147 TMOG 23]

TRADEMARK MISCELLANEOUS

(184) **International Protection of Goverament Emblems and Seals**

Change of Intent

The Patent and Trademark Office, Department of Commerce, intends to forward only the 50 State seals plus one department seal for each department listed in the publication "Seals and Other Devices in Use at the Government Printing Office" ("Seals") instead of the entire publication, as indicated on page 59366 of the Federal Register of Dec. 23, 1975.

Since the publication had been printed in 1975, it was assumed that few deletions and additions would be necessary. However, the response to the above notice, along with some necessary deletions, resulted in a large number of seals in the publication requiring deletion. This rendered the publication unacceptable for submission to the World Intellectual Property Organization (WIPO).

Therefore, the Patent and Trademark Office now intends to forward only the 50 State seals along with the departmental seal denoted "No. 1" for each department listed in the "Seals" publication. If this is not the preferred departmental or State seal, the department or State involved is requested to notify the Patent and Trademark Office by Sept. 21, 1976. This notification should either specify the number of the preferred seal, as it appears in the "Seals" publication, or provide a clear, black and white photograph, suitable for reproduction, of the preferred seal. The seal must be no larger than 1 1/2 inches in diameter.

These seals will then be forwarded to WIPO for protection under Article *6ter* of the Paris Convention for the Protection of Industrial Property.

Address all correspondence to: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Aug. 18, 1976. C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Published in 41 F.R. 35741
[950 O.G. TM 114]

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(185) **Recording of "Territorial Assignments" in the Assignment Division of the Patent and Trademark Office**

It has been the practice of the Assignment Division for many years to refuse to record "territorial assignments," that is, assignments purporting to transfer rights in a trademark registration (not a concurrent use registration) for less than the entire United States. Hereinafter, such documents will be recorded as long as the

requirements of the Rules of Practice are met by the documents submitted.

The Office is not addressing the validity or effect of such documents by recording same, but is merely recognizing that such transfers may affect title to a registered mark and therefore ought to be recorded. At the time a Section 8 affidavit or declaration or an application for renewal is filed, the Examiner of Trademarks will consider the effect of such a document.

Oct. 7, 1977.

BERNARD A. MEANY,
Assistant Commissioner
for Trademarks.

[964 TMOG 8]

(186) THE RETENTION SCHEDULE FOR TRADEMARK RECORDS

As with most government agencies, the Patent and Trademark Office disposes of old files, papers and records pursuant to a specific schedule. In an effort to clarify any questions concerning the procedures for disposing of Trademark records and in response to public inquiries, the present Retention Schedule for Trademark Records and other records including trademark matters which may be of interest to the public is set forth as follows:

International Intellectual Property Activities Case Files. Project case files showing Patent and Trademark Office activity relating to problems concerning the protection of intellectual property throughout the world. Includes correspondence with private individuals, the Department of State and other countries; reports, records of international meetings concerning patents; trademarks and other matters pertaining to the protection of intellectual property throughout the world; and other materials relating to international affairs.	*PERMANENT.* Transfer to FRC 5 years after close of case. Offer to National Archives when 25 years old.
Proposed Intellectual Property Legislation Files. Documents accumulated in the preparation and processing of legislation proposed by or in the interests of the Patent and Trademark Office. Includes drafts of legislation, reports to committees on introduced legislation, and comments on legislative proposals.	*PERMANENT.* Transfer to FRC after 5 years. Offer to National Archives when 25 years old.
Trademark Adversary Proceedings Files. Consists of Trademark Opposition, Cancellation, Interference, and Concurrent-Use proceedings files.	The past schedule to destroy after 10 years is in the process of being changed. At this time, these records are not being disposed of pending the new amendment to this section.
Canceled Trademark Registration Files. Consists of original application and all related correspondence.	Destroy 2 years after the date of cancellation.
Expired Trademark Registration Files. Consists of original application and all related correspondence.	Destroy 2 years after expiration of registration.
Abandoned Trademark Application Files. Consists of original application and all related correspondence.	Destroy 2 years after date of abandonment.
Trademark Renewal Index. Index to trademark registrations that are renewed.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Indexes to Trademark Applications. Index shows applicant's name, serial number of application, filing date, name of mark description of goods, attorney's name, and final disposition of the application.	
A. Applicant's Index.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
B. Serial Index.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Proceedings Index to Trademark Adversary Proceedings. Index arranged by type of proceeding. Shows status of proceeding prior to and immediately after a decision by the Board.	Destroy 3 years after termination of the proceeding.
Trademark Adversary Proceeding Records. Card file showing records of Trademark Adversary Proceedings.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Trademarks Published in Official Gazette. Clippings of marks from *Official Gazette.*	
a. Those which have been opposed.	*Retain in agency until no longer needed for reference.*
b. All others.	*Destroy when mark is registered.*
Trademark Registrant's Index. Index to Trademark registrant's name, includes serial and registration numbers, date of registration, line of goods and other related information.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Class of Goods Index. Card index used to indicate into what class any conceivable goods may fall.	Destroy after information transferred to magnetic media.
Index to Trademark Trial and Appeal Board Cases. Record of trademark trial and appeal board cases.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Public Advisory Committee for Trademark Affairs Files.	

a. Agenda, minutes, correspondence, reports and related supporting files.	*PERMANENT.* Transfer to Federal Records when 10 years old. Offer to National Archives when 25 years old.
b. papers and reference materials.	Destroy when 10 years old or no longer needed for reference, whichever is sooner.
Seminar in Trademark practice and Procedure Files. Record set of training materials used in training trademark examiners.	*PERMANENT.* Transfer to Federal Records Center when 10 years old. Offer to National Archives when 25 years old.
Trademark Petitions Files. Petitions to the Commissioner relating to trademarks with related materials.	
a. Original Petitions in trademark case file.	Dispose of with related case file.
b. Other copies.	Destroy when 2 years old.
Trademark Protest Letters. Letters of protest to the Commissioner related to trademarks.	Destroy when no longer needed or when three years old, whichever is earlier.
International Patent and Trademark Activities Case Files. Project case files showing Patent and Trademark Office activity relating to international patent and trademark programs.	
a. Records that supplement the International Property Activities Case Files (Item 103).	*PERMANENT.* Transfer to office responsible for international affairs after case is closed.
b. Other materials.	Destroy 5 years after close of case or sooner if no longer needed.
International Intellectual Property Activities Case Files. Project case files showing Patent and Trademark Office activity relating to problems concerning the protection of intellectual property throughout the world. Includes correspondence with private individuals, the Department of State and other countries; reports; records of international meetings concerning patents; trademarks and other matters pertaining to the protection of intellectual property throughout the world; and other materials relating to international affairs.	*PERMANENT.* Transfer to FRC 5 years after close of case. Offer to National Archives when 25 years old.
Proposed Intellectual Property Legislation Files. Documents accumulated in the preparation and processing of legislation proposed by or in the interest of the Patent and Trademark Office. Includes drafts or legislation, reports to committees on introduced legislation, and comments on legislative proposals.	*PERMANENT.* Transfer to FRC after 5 years. Offer to National Archives when 25 years old.
Bulky Trademark Specimens. Trademark applications specimens which do not strictly meet the basic requirements for physical form of specimens which state:	Destroy 30 days after applicant is notified that the specimens are unacceptable, unless picked up sooner by the applicant.

1. That they be made of material suitable for being placed inside a manila file wrapper.

2. That they be capable of being arranged flat, such as being folded.

3. That they be of a size not to exceed 8 1/2 inches wide by 13 inches long. (Rule 2.56)

These requirements provide for specimens which will fit inside the application file wrapper, which is 9 × 14 inches in size and which will conveniently expand to about one inch thickness.

Specimens which do not meet the above requirements are referred to as "bulky" specimens and the Examiner must require that they be replaced by specimens of acceptable size and shape.

February 28, 1979.

[980 TMOG 16]

SAUL LEFKOWITZ,
Acting Assistant Commissioner for Trademarks.

(187) **Flexible Working Hours**

On Jan. 4, 1979 the Patent and Trademark Office is beginning a 15 month experiment with flexible working hours for its employees. Under the "flexitime" experiment many of the Office's employees will have flexibility to begin their workdays as early as 6:30 a.m. or as late as 9:30 a.m., and end their workdays between 3:00 p.m. and 6:30 p.m. Employees in every case shall of course work eight hours each day. All or most patent and trademark examiners will have flexible hours.

The public hours of the Patent and Trademark Office will continue to be 8:30 a.m. to 5:00 p.m. All units of the Office which deal directly with the public will be staffed to answer telephone calls and receive visitors during those hours. All employees will be on duty from 9:30 a.m. to 3:00 p.m. The patent public search room will continue to operate from 8:00 a.m. until 8:00 p.m. and the trademark search room from 8:00 a.m. until 5:30 p.m.

With the advent of flexible hours, it will be advisable for members of the public to make appointments in advance when they wish to interview examiners.

DONALD W. BANNER,
Dec. 13, 1978. *Commissioner of Patents and Trademarks.*

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(188) **Compressed Work Week**

The Office of Personnel Management has completed a study on compressed work schedules and has recommended that Congress enact permanent legislation authorizing use of alternative work schedules in the Federal Government. The authority for the program expires on Mar. 28, 1982.

The U.S. Patent and Trademark Office has been participating in this program, on an experimental basis, for nearly two years. Most of the Office's examiners and other employees are permitted to participate under one of two options:

1. 4/10 plan-Work ten hours four days a week and choose Monday, Wednesday, or Friday as a day off each week. The day selected can be changed only with supervisory approval.

2. 5/4-9 plan-Work nine hours for eight continuous days, eight hours on the ninth day, and choose Monday, Wednesday, or Friday as a day off once every two weeks. Again, the day off can only be changed with supervisory approval.

All employees must be on duty Tuesdays and Thursdays.

The U.S. Patent and Trademark Office is interested in considering any comments or recommendations you may have about the program in order to make the proper decision concerning the continuation, revision, or termination of alternative work schedules should the Congress enact legislation authorizing its continuation.

Please send any comments or recommendations you may have, no later than Mar. 2, 1982, to:

Commissioner of Patents and Trademarks
U.S. Patent and Trademark Office
Washington, D.C. 20231

GERALD J. MOSSINGHOFF,
Jan. 21, 1982. *Commissioner of Patents and Trademarks.*

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(189) **Public Advisory Committee for Trademark Affairs**

Reestablishment

In accordance with the provisions of the Federal Advisory Committee Act 5 U.S.C. App. (1976) and Office of Management and Budget Circular A-63 of Mar. 1974, and after consultation with GSA, it has been determined that the reestablishment of the Public Advisory Committee for Trademark Affairs is in the public interest in connection with the performance of duties imposed on the Department by law.

The Committee was first established in Sept., 1970, and its present charter expired on Jan. 10, 1979. Since its inception the purpose of the Committee has been to advise the Patent and Trademark Office concerning steps which can be taken to increase the efficiency and effectiveness of administration of the Trademark Act and to provide a continuing flow of knowledge from the private sector to the government in the field of trademarks. Approximately seventy-five per cent of the over one hundred twenty-five specific recommendations have been implemented at least in part. There is no question that the Committee has contributed greatly to the efficiency and effectiveness of the administration of the statute. In reviewing the Committee, the Secretary has sought continued effort towards this objective. The Committee's function cannot be accomplished by any organizational element or other committee of the Department.

As it was initially established, the Committee will continue to comprise the members of the Advisory Committee for Trademark Affairs of the United States Trademark Association. The membership is balanced and is under the control of the President of the Association. The Committee will continue to operate in compliance with the provisions of the Federal Advisory Committee Act.

Copies of the Committee's revised charter will be filed with appropriate committees of Congress.

Any inquiries or comments may be addressed to Patricia M. Davis, Committee Control Officer, Office of Trademark Program Control, U.S. Patent & Trademark Office; Washington, D.C. 20231; telephone (703) 557-3881.

GUY W. CHAMBERLIN,
Mar. 15, 1979. *Assistant Secretary for Administration.*

[FR Doc. 79-8929; Filed 3-22-79; 8:45 am]
[982 TMOG 14]

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(190) **Recording of Documents Affecting Title**

The Patent Office is liberalizing its policy concerning the recording of documents, other than assignments, which affect title to trademark registrations and applications. Under Rule 2.185 of the Trademark Rules of Practice, instruments affecting title to a trademark registration or application, and licenses of trademarks which are the subject of trademark registrations or applications, will be recorded even though the recording thereof may not serve as constructive notice under Section 10 of the Trademark Act of 1946, as amended (15 U.S.C. 1060).

WILLIAM E. SCHUYLER, JR.,
June 16, 1971. *Commissioner of Patents.*

Published in 36 F.R. 13231; July 16, 1971
[889 O.G. TM 2]

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(191) **Certified Copies of Trademark Applications/Registrations**

The Trademark Operation is in the process of microfilming its records and, as this proceeds, requests for certified copies of applications and, eventually, registrations, will be furnished from the microfilmed records. Such certified copies will not contain copies of the file jacket.

MARGARET M. LAURENCE,
Jan. 17, 1984. *Assistant Commissioner for Trademarks.*

[1039 TMOG 140]

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1042 O.G. 45 on May 15, 1984.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced in the *Official Gazette* at 1039 O.G. 142 on Feb. 21, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Apr. 13, 1984.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Dec. 29, 1981 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,307,470 through 4,308,621

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f))	$ 200.00
By other than a small entity	$ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f))	$ 50.00
By other than a small entity	$ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

3,895,098, Re. S.N. 659,573, Filed Sept. 12, 1984, Cl. 423/351, METHOD AND COMPOSITION FOR GENERATING NITROGEN GAS, John F. Pietz, Owner of Record: *Talley Industries, Inc., Mesa, Ariz.*, Attorney or Agent: Stanton T. Lawrence, et al., Ex. Gp.: 113

4,030,259, Re. S.N. 651,229, Filed Sept. 17, 1984, Cl. 052/221, METHOD FOR FORMING WIRING CHANNELS IN A CONCRETE FLOOR, Gershon Meckler, Owner of Record: *Gershon Meckler Associates*, Attorney or Agent: Donald R. Fraser, et al., Ex. Gp.: 354

4,128,269, Re. S.N. 668,641, Filed Nov. 5, 1984, Cl. 296/23, TELESCOPING ROOM FOR TRAVEL TRAILERS, John C. May, Owner of Record: *John C. May, Concordia, Mo.*, Attorney or Agent: Malcolm A. Litman, et al., Ex. Gp.: 312

4,134,534, Re. S.N. 665,296, Filed Oct. 26, 1984, Cl. 229/52B, CARTON WITH INTEGRAL CARRYING HANDLE, Raymond G. Scott, et al., Owner of Record: *Champion International Corp., Stamford, Conn.*, Attorney or Agent: Evelyn M. Sommer, et al., Ex. Gp.: 241

4,291,794, Re. S.N. 643,235, Filed Aug. 22, 1984, Cl. 192/107.4, POWER TRANSMISSION AND ENERGY ABSORBING SYSTEMS, Dieter W. Bauer, Owner of Record: *B. F. Goodrich Co., New York, N.Y.,* Attorney or Agent: James E. Brunton, Ex. Gp.: 352

4,308,024, Re. S.N. 657,441, Filed Oct. 3, 1984, Cl. 8/137, FABRIC SOFTENING COMPOSITION, Martin A. Wells, Owner of Record: *Lever Brothers Co., New York, N.Y.,* Attorney or Agent: Frank S. Scheck, et al., Ex. Gp.: 157

4,332,464, Re. S.N. 614,191, Filed May 25, 1984, Cl. 355/014, INTERACTIVE USER-MACHINE INTERFACE METHOD AND APPARATUS FOR COPIER/DUPLICATOR, Michael V. Bartulis, et al., Owner of Record: *Xerox Corp., Stamford, Conn.,* Attorney or Agent: Ronald Zibelli, et al., Ex. Gp.: 215

4,333,125, Re. S.N. 616,509, Filed June 1, 1984, Cl. 361/257, COMBUSTION INITIATION SYSTEM, George H. Hensley, et al., Owner of Record: *Inventor,* Attorney or Agent: Thomas K. Ziegler, Ex. Gp.: 211

4,347,242, Re. S.N. 644,696, Filed Aug. 27, 1984, Cl. 424/177, HYPOCALCAEMIC PEPTIDES AND PROCESS FOR THEIR MANUFACTURE, Robert Neher, et al., Owner of Record: *Ciba Corp., Summit, N.J.,* Attorney or Agent: Karl F. Jorda, et al., Ex. Gp.: 123

4,348,407, Re. S.N. 668,452, Filed Nov. 5, 1984, Cl. 424/300, ORALLY ACTIVE TOLCICLATE, Anthony R. Imondi, Owner of Record: *Adria Laboratories, Inc., Columbus, Ohio,* Attorney or Agent: Marion C. Staves, Ex. Gp.: 125

4,351,887, Re. S.N. 653,823, Filed Sept. 24, 1984, Cl. 428/594, FOLDABLE METALLIC GAUZE PACK AND SEGMENT, David C. Bishop, et al., Owner of Record: *Johnson, Matthey & Co., Ltd., London, England,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 111

4,353,931, Re. S.N. 659,290, Filed Oct. 10, 1984, Cl. 426/483, METHOD OF HULLING PISTACHIO NUTS, Joseph Volk, Sr., Owner of Record: *Benjamin Volk, Gilroy, Calif.,* Attorney or Agent: Richard A. Brown, Ex. Gp.: 172

4,356,770, Re. S.N. 666,870, Filed Oct. 31, 1984, Cl. 102/384, OVERFLYING MUNITIONS DEVICE AND SYSTEM, John V. Atanasoff, et al., Owner of Record: *Auco Corp., Cincinnati, Ohio,* Attorney or Agent: Abraham Ogman, et al., Ex. Gp.: 221

4,357,112, Re. S.N. 666,270, Filed Oct. 29, 1984, Cl. 366/279, BEATER, William L. Davis, Owner of Record: *Inventor,* Attorney or Agent: Calvin E. Thorpe, et al., Ex. Gp.: 242

4,359,598, Re. S.N. 671,100, Filed Nov. 13, 1984, Cl. 174/40R, OVERHEAD ELECTRIC TRANSMISSION SYSTEMS, Phillip Dey, et al., Owner of Record: *BICC Ltd., London, England,* Attorney or Agent: Hugh A. Chapin, et al., Ex. Gp.: 215

4,359,631, Re. S.N. 671,705, Filed Nov. 15, 1984, Cl. 235/381, SELF-SERVICE TERMINAL, Lawrence B. Lockwood, et al., Owner of Record: *Lawrence B. Lockwood,* Attorney or Agent: Henri J. A. Charmasson, et al., Ex. Gp.: 233

4,368,941, Re. S.N. 646,237, Filed Aug. 31, 1984, Cl. 339/183, ELECTRICAL JACK FRAME, Ronald G. Martin, Owner of Record: *Magnetic Controls Co., Minneapolis, Minn.,* Attorney or Agent: John D. Gould, et al., Ex. Gp.: 322

4,385,395, Re. S.N. 668,497, Filed Nov. 5, 1984, Cl. 375/110, BIT CLOCK REPRODUCING CIRCUIT, Masato Tanaka, et al., Owner of Record: *Sony Corp., Tokyo, Japan,* Attorney or Agent: James van Santen, et al., Ex. Gp.: 233

4,386,887, Re. S.N. 663,467, Filed Oct. 18, 1984, Cl. 416/190, CONTINUOUS HARMONIC SHROUDING, Ralph J. Ortolano, Owner of Record: *Southern California Edison Co., Rosemead, Calif.,* Attorney or Agent: Jeffrey G. Sheldon, et al., Ex. Gp.: 341

4,388,961, Re. S.N. 657,541, Filed Oct. 3, 1984, Cl. 181/119, VARIABLE CYLINDER HYDRAULIC VIBRATOR AND CONTROL SYSTEM, Delbert W. Fair, Owner of Record: *Conoco, Inc., Ponca City, Okla.,* Attorney or Agent: William J. Miller, et al., Ex. Gp.: 222

4,396,179, Re. S.N. 667,713, Filed Nov. 2, 1984, Cl. 266/220, DEVICE FOR INTRODUCING GAS INTO MOLTEN METAL, Michael D. Labate, Owner of Record: *Inventor,* Attorney or Agent: Webster B. Harpman, Ex. Gp.: 111

4,409,122, Re. S.N. 669,709, Filed Nov. 6, 1984, Cl. 502, CATALYST REACTIVATION, Engelina C. Kleuskens, et al, Owner of Record: *Stamicarbon, B.V., The Netherlands,* Attorney or Agent: Paul N. Kokulis, et al., Ex. Gp.: 116

4,415,054, Re. S.N. 668,658, Filed Nov. 6, 1984, Cl. 180/79.1, STEERING GEAR, Gilbert H. Drutchas, Owner of Record: *TRW, Inc., Cleveland, Ohio,* Attorney or Agent: J. Herman Yount, Jr., et al., Ex. Gp.: 316

4,416,508, Re. S.N. 670,801, Filed Nov. 13, 1984, Cl. 350/96.230, OVERHEAD ELECTRIC AND OPTICAL TRANSMISSION CABLES, Phillip Dey, et al., Owner of Record: *BICC Public Ltd. Co.,* Attorney or Agent: Hugh A. Chapin, et al., Ex. Gp.: 266

4,421,645, Re. S.N. 671,427, Filed Nov. 14, 1984, Cl. 210/260, COMPACT UNIVERSAL DRUM FILTER SETTLER, John L. Creps, et al., Owner of Record: *Henry Filters, Inc., Bowling Green, Ohio,* Attorney or Agent: H. P. Settle, Ex. Gp.: 136

4,453,542, Re. S.N. 638,068, Filed Aug. 6, 1984, Cl. 128/200.21, VORTEX-GENERATING MEDICAL PRODUCTS, Nathaniel Hughes, Owner of Record: *Vortran Corp.,* Attorney or Agent: C. Russell Hale, et al., Ex. Gp.: 335

4,457,900, Re. S.N. 669,576, Filed Nov. 8, 1984, Cl. 423/339, SILICIC ACID FOR THE FILTRATION OF BEVERAGES, PARTICULARLY BEER, Gerhard Steenken, Owner of Record: *Akzona, Inc., Asheville, N.C.,* Attorney or Agent: Jack H. Hall, Ex. Gp.: 113

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Issues This Publication.

National Inventors Expo

The Patent and Trademark Office, the National Council of Patent Law Associations and the National Inventors Hall of Fame Foundation, Inc., will sponsor the Thirteenth Annual National Inventors Expo in the Public Search Room on Saturday, Feb. 9, 1985 from 1:00 p.m. to 5:00 p.m. and Sunday, Feb. 10, 1985 from 10:00 a.m. to 5:00 p.m. The public is invited to view the exhibits on these days. Inventors will be inducted into the National Inventors Hall of Fame on Sunday, Feb. 10 at 2:00 p.m.

In order to assemble the exhibits it will be necessary to close the Search Room on Friday, Feb. 8, 1985 at 5:00 p.m. The removal of all personal property from the Search Room would be appreciated.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Dec. 18, 1984.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of any of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before Feb. 7, 1985:

Macera, John S., Moffat & Co., P.O. Box 2088, Station D, Ottawa, Canada K1P 5W3
Magil, Herbert, 29 Colony Rd., W. Hartford, Conn. 06117
Marmor, Alfred C., 7604 Quintana Ct., Bethesda, Md. 20817
Naismith, Robert S., Hirons, Rogers & Scott, 277 Lakeshore Rd. East, Oakville, Ont., Canada L6J 419
Newman, Mark M., 1603 S St., N.W., Washington, D.C. 20009

WILLIAM FELDMAN,
Director, Office of Enrollment and Discipline.

Dec. 5, 1984.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Lawrence Bernstein, Westbury, N.Y., Reg. No. 1,191,019, for the mark "CLEANITE", Canc. No. 14,280.

Udico Electric Co., assignee by mesne assignment and change of name from Faraday Electric Corp., Canton, Mich., Reg. No. 414,758, for the mark "BROIL-MASTER", Canc. No. 14,330.

Finness Paper Products Co., by change of name from K and K Products Co., Washington, D.C., Reg. No. 533,704, for the mark "FINNESS SANITIZED" and design, Canc. No. 14,377.

Arthur Jay Co., Inc., Columbus, Ind., Reg. No. 886,783, for the mark "MISS A. J.", Canc. No. 14,382.

Barry and I, Inc., Los Angeles, Calif., Reg. No, 1,160,111, for the mark "BARRY AND I", Canc. No. 14,456.

ERMA S. BROWN,
Deputy Clerk of the Trademark Trial and Appeal Board.

For MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

PATENT NOTICES

Certificates of Correction for the Week of Jan. 1, 1985

3,743,428	4,426,145	4,441,992	4,456,699
4,161,601	4,426,462	4,442,706	4,456,864
4,275,183	4,428,182	4,443,356	4,457,101
4,284,177	4,428,340	4,443,720	4,457,311
4,293,715	4,428,687	4,443,749	4,457,351
4,330,592	4,429,382	4,445,204	4,458,179
4,359,545	4,430,516	4,445,484	4,458,967
4,367,377	4,430,856	4,445,637	4,459,580
4,371,260	4,431,312	4,446,201	4,460,003
4,371,361	4,432,089	4,447,720	4,460,170
4,371,701	4,432,464	4,447,957	4,461,505
4,376,595	4,432,956	4,447,970	4,461,946
4,380,116	4,435,190	4,448,844	4,462,638
4,383,315	4,435,456	4,449,174	4,462,664
4,384,906	4,436,065	4,450,405	4,462,751
4,402,294	4,437,385	4,452,571	4,462,898
4,405,405	4,438,091	4,452,680	4,463,036
4,405,495	4,438,101	4,452,791	4,464,910
4,407,749	4,438,143	4,453,550	4,465,512
4,410,569	4,438,467	4,453,650	4,465,976
4,413,207	4,438,586	4,454,272	4,466,024
4,416,903	4,438,660	4,455,494	4,468,830
4,418,185	4,440,090	4,455,995	

Disclaimers

3,471,476.—*Ernst Gaeumann,* deceased, late of Zurich, Switzerland, by *Tino Gaeumann,* legal representative, Zurich, Switzerland, *Vladimir Prelog,* Zurich, *Hans Bickel,* Binningen, and *Ernst Vischer,* Basel, Switzerland. TRIHYDROXAMIC ACIDS. Patent dated Oct. 7, 1969. Disclaimer filed Oct. 22, 1984, by the assignee, *Ciba-Geigy Corp.*

Hereby enters this disclaimer to claims 1–3 and 8–10 of said patent.

3,953,566.—*Robert W. Gore,* Newark, Del. PROCESS FOR PRODUCING POROUS PRODUCTS. Patent dated Apr. 27, 1976. Disclaimer filed Apr. 25, 1984, by the assignee, *Gore Enterprise Holdings, Inc.*

Hereby enters this disclaimer to claims 1 and 17 of said patent.

3,982,003.—*John Richard Mitchell,* East Leake; *Keith Buckley,* Melton Mowbray; and *Ian Edward Burrows,* Gaddesby, England. GELLING AND THICKENING AGENTS. Patent dated Sept. 21, 1976. Disclaimer filed Oct. 29, 1984, by the assignee, *Mars G. B. Ltd.*

The term of this patent subsequent to Aug. 3, 1993, has been disclaimed.

4,276,329.—*Ramesh C. Vasishth,* Danville, Calif.; and *Dodwell P. deSilva,* Vancouver, Canada. WOOD TREATMENT PROCESS AND PRODUCT THEREOF. Patent dated June 30, 1981. Disclaimer filed Nov. 5, 1984, by the assignee, *Envirosol Systems International, Ltd.*

Hereby enters this disclaimer to claims 1–23 of said patent.

4,306,317.—*Michel Joseph,* Saverne, France. COMPETITION SWIMSUIT FOR WOMEN. Patent dated Dec. 22, 1981. Disclaimer filed May 19, 1983, by the assignee, *Adidas Fabrique de Chaussures de Sport.*

The term of this patent subsequent to June 30, 1995, has been disclaimed.

Dedication

3,784,742.—*Donald Burnham,* Bletchley; *Samuel Walter Honeyball,* Aylesbury; *Archer Michael Spooner,* Henley; and *Daniel Richard Lobb,* Farnborough, England. GROUND-BASED FLIGHT SIMULATING APPARATUS. Patent dated Jan. 8, 1973. Dedication filed Oct. 23, 1984, by the assignee, *Redifon Ltd.*

Hereby dedicates to the Public the entire term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 579-5001
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis-Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: University of Massachusetts Library	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 1, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	8-20-81
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	9-29-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	3-14-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	8-14-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—B. R. GRAY, Director	5-18-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	8-28-74
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	2-22-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	9-29-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	2-22-82
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	5-01-82
DESIGN, GROUP 290—K. L. CAGE, Director	4-30-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—(Vacant)	8-01-80
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	6-04-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	9-27-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	7-09-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	9-07-82

Expiration of patents: The patents within the range of numbers indicated below expire during December 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,355,744 to 3,360,799, inclusive

Plant Patents ..... Numbers 2,781 to 2,783 inclusive

REEXAMINATIONS

JANUARY 1, 1985

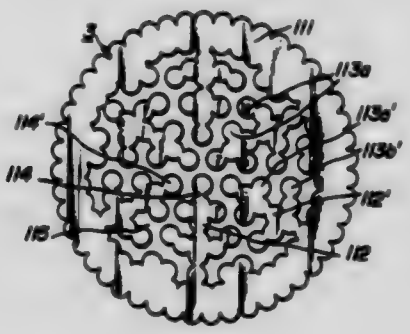
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 Re. 30,659 (292nd)

PEN POINTS FOR WRITING INSTRUMENTS

Nobuyuki Otake, Tokyo; Kozo Ando, Chiba; Hironobu Hori, Higashi-Kana, and Ykinori Sato, Tokyo, all of Japan, assignors to Tokyo Boshi Kabushiki Kaisha, Japan

Reexamination Request No. 90/000,386, Jun. 1, 1983.
Reexamination Certificate for Reissue Patent Re. 30,659, issued Jun. 30, 1981, Ser. No. 123,508, Feb. 22, 1980.
Original No. 4,076,428, dated Feb. 28, 1978, Ser. No. 684,677, May 10, 1976.
Claims priority, application Japan, May 15, 1975, 50-56693
Int. Cl.[3] B43K *7/00, 1/06*
U.S. Cl. 401—209



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–16, 18–26 and 28–30 is confirmed.

Claims 17, 27 and 31 are cancelled.

1. In pen point for writing instruments which is a rod-shaped wick formed by uniting molten synthetic resin monofilaments, wherein radially curved narrow slots extend toward the center of the wick from an outer periphery portion (ring portion) in the cross-section and the radial narrow slots are defined by a plurality of segments projected from the ring portion, an improvement comprises that the rod-shaped wick is provided in the cross-section with curved narrow slots extending not only in the substantially radial direction toward the center from the inside of the ring portion but also in the other directions,

said narrow slots are defined by the components of the pen point consisting of the ring portion forming the outer periphery of the rod-shaped wick, a plurality of trunk portions or trunk portions and stem segments which are projected inwardly from the inner periphery of the ring and partition the inner space of the ring and a plurality of branch portions, which are branched and projected from every trunk and additionally partition the remainder of the above described space,

said components of the trunks, the trunks and stems and branches are adjacently arranged so that the top portions, the end portions and the sides of these components are not connected with one another and that these components constitute 2–6 fold axis symmetry wherein the center axis of the ring is the rotary axis,

every component of the ring, the trunks, the stems and the branches has at least one size and shape,

every trunk provided with branches form at least one of standing tree-formed projections in the inside of the ring,

the trunks or the stems of the number corresponding to the fold number of the above described fold axis symmetry are opposed at the center portion to form a center passage,

every side of the narrow slots is formed by connection of circular arcs of a large number of monofilaments, which constitute the elementary components and

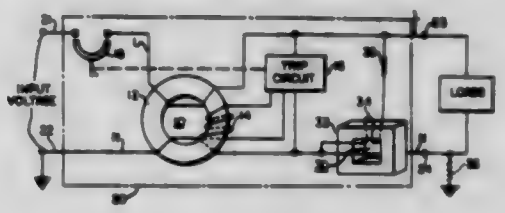
said center passage and the narrow slots extend from one end to the other end of the pen point.

B1 3,959,693 (293rd)

GROUND FAULT INTERRUPTER APPARATUS WITH MEANS PROTECTING AGAINST A GROUNDED NEUTRAL CONDITION

Kenneth R. Coley, Fairfield, and John J. Miesenik, Shelton, both of Conn., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Reexamination Request No. 90/000,188, Apr. 8, 1982.
Reexamination Certificate for Patent No. 3,959,693, issued May 25, 1976, Ser. No. 368,915, Jun. 11, 1973.
Continuation of Ser. No. 218,771, Jan. 18, 1972,.
Int. Cl.[3] H02H *3/347*
U.S. Cl. 361—45



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–9 are cancelled.

[1. Ground fault interrupter apparatus comprising: a differential current transformer including a magnetic core, a plurality of primary windings on said core, each being one of the line and neutral conductors of an A.C. electrical distribution system, a secondary sensing winding on said core for sensing current unbalance between said primary windings; means responsive to a predetermined sensing signal to open said line conductors; an additional transformer comprising a second magnetic core, a primary winding on said second magnetic core comprising a conductor connected between said line and neutral conductors, a secondary winding on said additional transformer comprising said neutral conductor of said power system, said core being saturated during a part of each half cycle of an A.C. wave presented by an external power system on said line and neutral conductors.]

B1 4,092,181 (294th)

METHOD OF IMPARTING A FINE GRAIN STRUCTURE TO ALUMINUM ALLOYS HAVING PRECIPITATING CONSTITUENTS

Neil E. Paton, and C. Howard Hamilton, both of Thousand Oaks, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Reexamination Request No. 90/000,494, Jan. 30, 1984.
Reexamination Certificate for Patent No. 4,092,181, issued May 30, 1978, Ser. No. 790,207, Apr. 25, 1977.
Int. Cl.[3] C22F *1/04*
U.S. Cl. 148—12.7 A

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

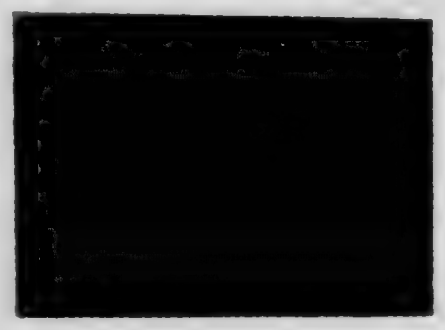
The patentability of claims 7-9 and 11-13 is confirmed.

Claims 1 and 10 are determined to be patentable as amended.

Claims 2-6, dependent on an amended claim, are determined to be patentable.

New claims 14-20 are added and determined to be patentable.

1. A method of imparting a fine grain structure to an aluminum alloy having a precipitating constituent, comprising:
providing an aluminum alloy having a precipitating constituent;
heating said alloy to a solid solution temperature to dissolve at least some of said precipitating constituent in said alloy;



cooling said alloy to a temperature below said solution temperature;
heating said alloy to an overaging temperature above the precipitation hardening temperature for said alloy but below said solution treating temperature to overage said alloy;
plastically deforming said alloy at a temperature equal to or below said overaging temperature a sufficient amount to provide lattice strain for recrystallization; and
heating said alloy to a recrystallization temperature *and holding at said recrystallization temperature for about 1-4 hours*, whereby precipitates formed during said step of heating to overage said alloy form nuclei for the recrystallization and controlled growth of a fine grain structure *without using a high temperature plastic deformation or homogenization step after said step of heating to a recrystallization temperature.*

B1 4,108,029 (295th)
CUT-OFF DIE SET

Alexander Borzym, Dearborn, Mich., assignor to Alpha Industries, Inc., Detroit, Mich.

Reexamination Request No. 90/000,410, Jun. 23, 1983.
Reexamination Certificate for Patent No. 4,108,029, issued Aug. 22, 1978, Ser. No. 799,205, May 23, 1977.
Int. Cl.[3] B26D *1/56, 3/16*
U.S. Cl. 83—54

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

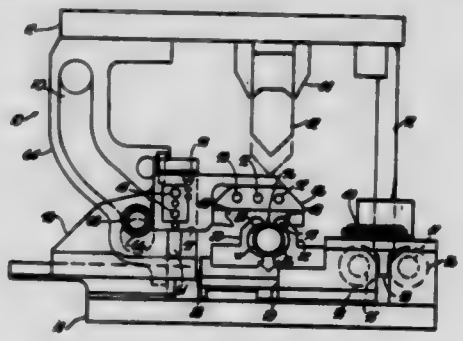
Claim 12 was previously disclaimed.

Claim 4 is cancelled.

Claims 1, 2, 5 and 13 are determined to be patentable as amended.

Claims 3, 6-11 and 14-16, dependent on an amended claim, are determined to be patentable.

1. A cut-off die set for use in an elongated stock cut-off apparatus of the type including a ram mechanism for operating said cut-off die set, said die set comprising:
an upper die shoe;
a lower die shoe;
guide means interconnecting the upper and lower shoes for reciprocal motion therebetween;
clamping means [adapted to be operated by said ram mechanism] *comprising a pair of clamping jaws on said lower shoe; cam means depending from said upper shoe for directly and positively actuating said jaws as a result of motion of said upper shoe relative to said lower shoe for* clamping said die set to said stock;



a main cut-off blade, [and means operated by said ram mechanism causing said main cut-off blade to move] *carried by said upper shoe* to sever said stock after said clamping means clamps said die set to said stock;
notching means for notching said stock periphery prior to said severing by said main cut-off blade at the point on said stock at which said severing is initiated, said notching means including:
a notching blade, *slide* means [producing notching of said stock by] *for reciprocally* drawing said notching blade *from an initial position through a notching stroke* across said stock prior to said severing of said stock by said main cut-off blade *and returning* [means repositioning] said notching blade [in] *to* said initial position *through the same path as the notching stroke and normally without change in attitude* after said main cut-off blade has severed said stock at said notching point, [whereby said notching end return strokes of said notching blade occur before and after respectively of said severing movement of said main cut-off blade] *and means mechanically connecting said slide means to said upper shoe for positively driving the slide means only in the notching stroke direction as the upper shoe descends towards said lower shoe and for positively driving the slide means only in the return direction as the upper shoe ascends reciprocally away from said lower shoe.*

DEFENSIVE PUBLICATIONS

PUBLISHED JANUARY 1, 1985

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T105,001

ADSORBABLE ALKYNYL SUBSTITUTED HETEROCYCLIC QUATERNARY AMMONIUM SALTS AND APPLICATIONS THEREOF TO SILVER HALIDE PHOTOGRAPHY

Richard L. Parton; Wilbur S. Gaugh, and Karl E. Wiegers, all of Kodak Park Div., Rochester, N.Y. 14650

Division of Ser. No. 503,470, Jun. 13, 1983,. This application Feb. 27, 1984, Ser. No. 584,280

Int. Cl.[3] G03C *5/54, 1/485;* C07D *233/54, 215/38*

U.S. Cl. 430—217

No Drawing. 82 Pages Specification

The use of thioamido and alkynyl substituted heterocyclic ammonium salts in producing images in silver halide photographic elements is disclosed. The thioamido and alkynyl substituted heterocyclic ammonium salts can be incorporated in photographic silver halide emulsions. The thioamido substituent is capable of promoting adsorption of these salts to silver halide grain surfaces. In negative working surface latent image forming emulsions the thioamido and alkynyl substituted heterocyclic ammonium salts permit higher speeds to be achieved. In direct positive internal latent image forming emulsions nucleation activity and improved incubation stability can be achieved.

T105,002

EROSION PROCESS FOR GENERATION OF OFFSET MASTERS

Ari Aviram, 265 Prince Ct., Yorktown Heights, N.Y. 10598; John G. Cahill, Box 29A, Rte. 2, Richmond, Vt. 05477; Peter S. Hauge, 382 Alden Rd., Yorktown Heights, N.Y. 10598, and Keith S. Pennington, Londonderry La., Somers, N.Y. 10589

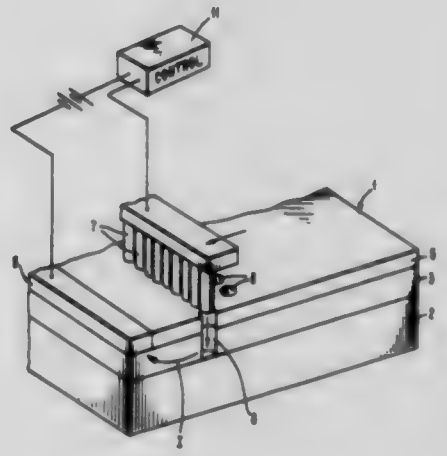
Continuation of Ser. No. 324,495, Nov. 24, 1981, abandoned, which is a continuation of Ser. No. 103,965, Dec. 17, 1979, abandoned. This application Apr. 20, 1984, Ser. No. 588,472

Int. Cl.[3] B41N *1/08*

U.S. Cl. 101—459

1 Sheets Drawing. 17 Pages Specification

An improved lithographic printing plate includes a substrate layer of a nonconducting, hydrophobic polyester, an intermediate film of conducting, hydrophilic material such as aluminum and a top protective film of relatively hard hydrophilic dielectric material, such as aluminum oxide. A printing image is formed in the lithographic printing plate by an electroerosion process wherein erosion electrodes are pulsed with voltage to break down the dielectric in areas adjacent to the erosion electrodes and to evaporate or otherwise remove corresponding portions of the conducting film, thereby creating holes that extend through the dielectric and conducting films and that expose portions of the surface of the underlying hydrophobic substrate.



REISSUES

JANUARY 1, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,783

METHOD AND APPARATUS FOR CONTROLLING YARN PLUG LENGTH

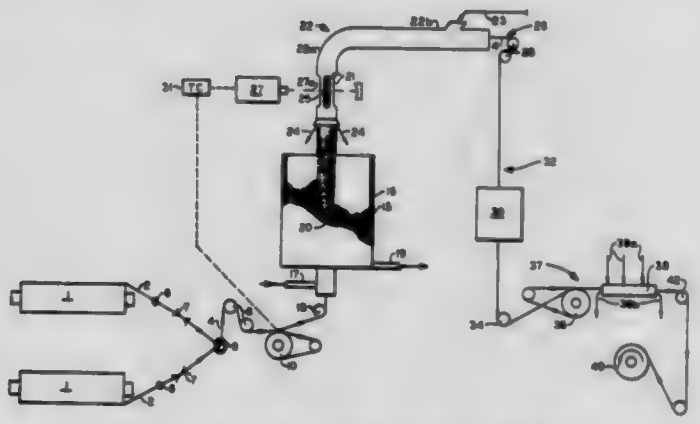
David E. Borenstein, and Richard C. Newton, both of Greenville, S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Original No. 3,977,058, dated Aug. 31, 1976, Ser. No. 559,158, Mar. 17, 1975. Division of Ser. No. 363,480, May 24, 1973, Pat. No. 3,886,636. Application for reissue Sep. 27, 1977, Ser. No. 837,233

Int. Cl.[3] D02G *1/20*

U.S. Cl. 28—221

7 Claims



1. A method for controlling a yarn plug length in a crimping zone which comprises:

feeding a yarn to a heating zone *comprising a first heated roll*, thereafter feeding the yarn to a yarn crimping zone and producing a yarn plug therein;

monitoring the length of said yarn plug produced in said crimping zone;

increasing the temperature of the yarn in said heating zone *by increasing the temperature of the first heated roll* if the plug length is too long;

decreasing the temperature of the yarn in said heating zone *by decreasing the temperature of the heated roll* if the plug is too short.

Re. 31,784

RAILWAY TRUCK BOLSTER FRICTION ASSEMBLY

Donald Wiebe, Sewickley, Pa., assignor to A. Stucki Company, Pittsburgh, Pa.

Original No. 4,230,040, dated Oct. 28, 1980, Ser. No. 953,012, Oct. 20, 1978. Application for reissue Oct. 26, 1982, Ser. No. 436,926

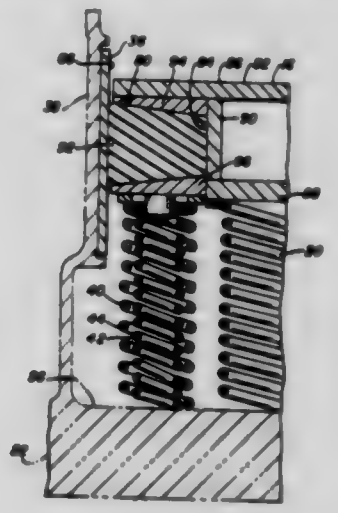
Claims priority, application South Africa, May 25, 1979, 79/2557; Canada, May 28, 1979, 328479; Australia, Aug. 8, 1979, 49710/79

Int. Cl.[3] B60F *3/00*

U.S. Cl. 105—197 DB

17 Claims

13. A railway truck bolster friction assembly adapted to be retained within a pocket of an elongated truck bolster member which extends between spaced elongated side frame members of a railway truck vehicle comprising: elastomeric means having a first portion with surfaces thereof adapted to frictionally engage adjacent surfaces of such a pocket and a second portion with a surface thereof adapted to frictionally engage an adjacent column guide surface of a respective one of such side frame members; said second portion being spaced transversely from said first portion such that when said surfaces of said first portion engage such adjacent surfaces of a pocket said second portion extends outwardly from the pocket; and said elastomeric means being deformable in shear to simultaneously frictionally engage such surfaces of a pocket at such a column guide surface engagements without slipping during initial relative movements of such a bolster member with respect to such a respective one of such side frame members until such deformation in shear reaches a given magnitude.



Re. 31,785

BREATHING VALVE ASSEMBLY WITH DIAPHRAGM CONTROL OF THE EXHAUST PORTS

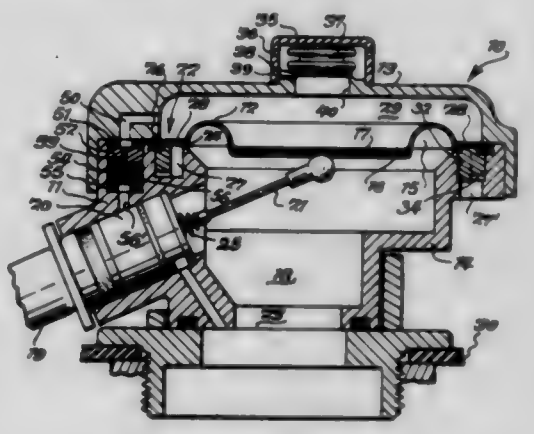
Loyal G. Netteland, Holland, N.Y., assignor to Figgie International, Inc., Willoughby, Ohio

Original No. 4,253,455, dated Mar. 3, 1981, Ser. No. 931,537, Aug. 7, 1978. Application for reissue Dec. 20, 1982, Ser. No. 451,287

Int. Cl.[3] A62B *7/04*

U.S. Cl. 128—204.26

14 Claims



1. In a breathing apparatus *capable of operating in the pressure demand mode and* having a hollow casing with an opening in one wall thereof, a flexible diaphragm *having a relatively thin annular portion, the diaphragm being* secured at its periphery relative to said casing and having internal and external surfaces *subject to fluid pressure and* positioned across said opening, said diaphragm forming a chamber in conjunction with said casing and being movable in response to variations in differential pressure across said diaphragm, a breathing fluid *supply, an* inlet *valve connecting said fluid supply* to said chamber, means for opening said inlet *valve* responsive to movement of said diaphragm inwardly of said chamber upon a reduction of pressure within said chamber, *a breathing port from said chamber adapted to be connected to a user,* a fluid outlet from said chamber, [and] means for opening said outlet when *the* pressure within said chamber exceeds the *pressure bearing upon the external surface by a relatively constant* predetermined [relative

pressure] *overpressure, and pressure maintaining means capable of maintaining the fluid pressure bearing upon the external surface of said diaphragm at a relatively constant pressure while the inlet and outlet are sequentially opened and closed;* the improvement wherein said means for opening *said outlet* comprises arranging said diaphragm and said outlet so that *the relatively thin annular portion of* said diaphragm [itself] normally closes said outlet and maintains said outlet closed until the chamber pressure [exceeds a predetermined value] *attains said overpressure* whereupon movement of said diaphragm outwardly of said chamber opens said outlet to vent fluid from said chamber, *together with supporting means adjacent said outlet for supporting the relatively thin annular portion of said diaphragm so that the effective area of the internal and external surface of said diaphragm subject to differential pressure remains in a substantially constant ratio as said diaphragm opens said outlet whereby the overpressure necessary to open said diaphragm remains substantially constant even though the flow rate and pressure may vary.*

Re. 31,786

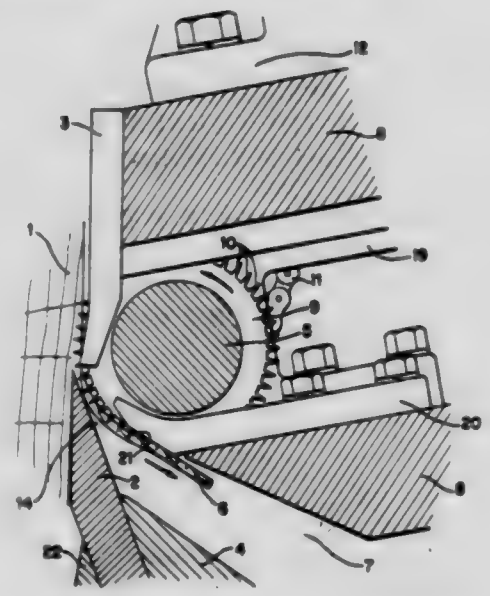
VENEER LATHE

Katsuji Hasegawa, Nagoya, Japan, assignor to Meinan Machinery Works, Inc., Obbu, Japan

Original No. 4,269,243, dated May 26, 1981, Ser. No. 924,891, Jul. 17, 1978. Application for reissue May 23, 1983, Ser. No. 496,855

Int. Cl.³ B27L *5/02*

U.S. Cl. 144—213 17 Claims



1. A veneer lathe comprising: [means for rotatably supporting a log by means of a spindle at its axial ends] *means for supporting a log rotatably about its axis by means of a spindle*, and said means being connected to a first drive mechanism for rotating said log;

a knife, having a knife edge, adapted to be oriented in a tangential relation to said log, with said knife edge being substantially near a point of tangency, and extending along the log's axial length;

at least one drive roller provided slightly ahead of said knife edge in a facing relation to said log, and said drive roller being connected to a second drive mechanism;

a plurality of edge members mounted on said drive roller around the outer periphery thereof in a plurality of rows;

pressure means provided on at least one side of each said row for pressing said logs slightly ahead of said knife edge;

means for increasing the speed of revolution of said log supporting means in accordance with a decrease in a log's diameter; and

means for feeding the drive roller, the knife, and said pressure means toward said log such that said edge members on said drive roller come into piercing engagement with the log surface slightly ahead of said knife edge to turn said log, and said feeding means being adapted to continue the feed in accordance with the decrease in the log's diameter.

Re. 31,787

COMPOSITIONS FOR REDUCING ELUTION OF THERAPEUTIC AGENTS FROM TEETH

Robert W. H. Chang, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Original No. 4,304,766, dated Dec. 8, 1981, Ser. No. 176,680, Aug. 11, 1980. Division of Ser. No. 26,402, Apr. 2, 1979, Pat. No. 4,243,658, which is a continuation-in-part of Ser. No. 865,681, Dec. 29, 1977, abandoned. Application for reissue May 7, 1982, Ser. No. 375,888

Int. Cl.³ A61K *7/18*

U.S. Cl. 424—52 14 Claims

1. A dentifrice composition for substantially effectively coating previously fluoride-treated teeth and thereby reducing elution of said fluoride from said teeth, said composition comprising

a fluoride-containing caries prophylactic agent provided that said agent is substantially free from polyvalent metal atoms; and

at least about 0.05% by weight of an anionic water-dispersible membrane-forming material which, when applied to the surface of said previously fluoride-treated teeth in an oral environment, complexes with the calcium of said teeth and forms a substantially continuous hydrophobic barrier thereon which substantially reduces the elution of said previously applied fluoride from said teeth and which, when at equilibrium with the complex, has a formation constant in the range of about 0.5 to 8, said anionic membrane-forming material being a non-polymeric fluorinated material selected from the group

$(R_fSO_2N(R^2)R^3O)_mPX(XB)_{3-m}$

$(C_gF_{2g+1}CH_2O)_kPO(OM)_q$

R_fCOOM

R_fR^3COOM

R_fSO_2OM

R_fSO_2OY

wherein R_f is a monovalent, stable, inert, fluorinated, saturated aliphatic non-polar radical containing from about 4 to 16 carbon atoms; R^2 is selected from hydrogen and alkyl groups containing from about 2 to 3 carbon atoms; R^3 is selected from alkylene, chloro- subetituted alkylene and alkarylene groups that contain from about 1 to 10 carbon atoms; X is selected from oxygen and sulfur; B is selected from hydrogen, alkali metal, ammonium and amine groups, and alkyl, aryl, cycloalkyl, alkaryl, and aralkyl groups each containing up to 20 carbon atoms; M is selected from hydrogen, alkali metal, ammonium and amine groups; *Y is an aryl group;* m is 1 or 2; g is an integer of from 1 to 10; k is 1 or 2; and q is 3-k.

Re. 31,788

PROCESS FOR PRODUCING METALLIC NITRIDE POWDER

Tadashi Iwai; Takashi Kawahito, and Tetuso Yamada, all of Ube, Japan, assignors to Ube Industries, Inc., Yamaguchi, Japan

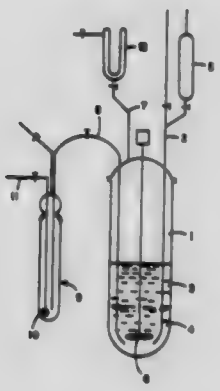
Original No. 4,196,178, dated Apr. 1, 1980, Ser. No. 27,879, Apr. 6, 1979. Application for reissue Dec. 20, 1982, Ser. No. 451,058

Int. Cl.³ C01B *21/06*

U.S. Cl. 423—290 5 Claims

1. In a process for producing metallic nitride powder wherein a metallic halide is reacted with liquid ammonia to form a metallic amide or metallic imide, the resulting metallic

amide or metallic imide is separated from the reaction mixture and the separated product is thermally decomposed in an atmosphere of nitrogen or ammonia to produce metallic nitride powder, the improvement which comprises carrying out the reaction in the presence of an organic solvent having a specific gravity higher than that of the liquid ammonia, said organic solvent and the liquid ammonia being not soluble or only slightly soluble with each other at the reaction temperature employed, by first charging liquid ammonia and the organic



solvent into a reaction [vesel] *vessel* with the organic solvent and liquid ammonia separating into two layers; an upper liquid ammonia layer and a lower organic solvent layer, and then introducing the metallic halide into the lower organic solvent layer; the so introduced metallic halide diffusing through the organic solvent layer and reacting with the liquid ammonia at the interface of the two layers to deposit metallic amide or metallic imide at said interface and form ammonium chloride which is absorbed into the liquid ammonia layer.

Re. 31,789

TELEPHONE INFORMATION DISPLAYING DEVICE

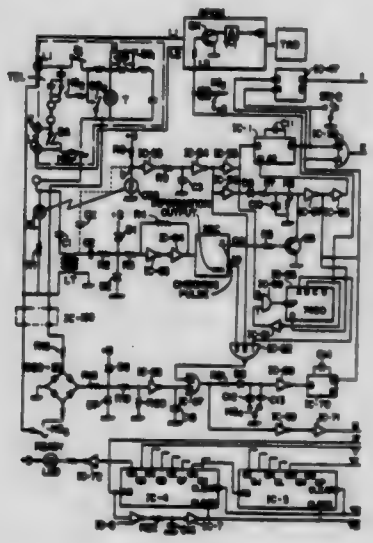
Kazuo Hashimoto, 28-2 Komazawa 2-Chome, Setagaya-ku, Tokyo To, Japan

Original No. 4,242,539, dated Dec. 30, 1980, Ser. No. 28,511, Apr. 9, 1979. Continuation-in-part of Ser. No. 794,625, May 6, 1977, abandoned. Application for reissue Dec. 28, 1982, Ser. No. 453,992

Claims priority, application Japan, May 8, 1976, 51-52435

Int. Cl.[3] H04M *15/06*

U.S. Cl. 179—5.5 13 Claims



1. A telephone set capable of receiving not only successive ringing signals from a telephone exchange but also between successive ringing signals, a coded signal representative of the incoming telephone number of a calling party and capable of generating a coded signal representative of the outgoing telephone number of a called party (Subscriber-A) who is the operator of said telephone set, which telephone set comprises:

a hook switch which is in a first position when the handset of said telephone set rests thereon (on-hook) and is in a second position when the handset is raised (off-hook);

a display device for displaying incoming and outgoing telephone numbers, said display device comprising multiposition display means (IC-2-IC-3, C9-IC32, DT-1-DT12) responsive to said coded signals, for displaying in positional order numerals represented by said coded signals;

pulse generating means operatively associated with said display means for generating a pulse in response to a minimum pause which is provided for applying each coded signal to said multiposition display means one digit by one digit in shifting function;

first circuit means (NL-CDS, LT, IRC, Q3) operatively connected to said display means and responding to ringing signals from a telephone exchange when said hook switch is in said first position, to apply a coded signal representative of the telephone number of said calling party to said multiposition display means;

second circuit means (IC-100, D20–D23) operatively connected to said display means for applying thereto a coded signal representative of the telephone number of a subscriber (Subscriber-B) which is dialed by a subscriber (Subscriber-A) who has picked up the handset of said telephone set, when said hook switch is in second position; and

third circuit means (IC-1, IC47, IC-49, etc.) operatively connected to said display means for clearing said coded signal representative of the telephone number of said calling party or said subscriber (Subscriber-B) which has been displayed on said display means, when said telephone set receives a new ringing signal.

Re. 31,790

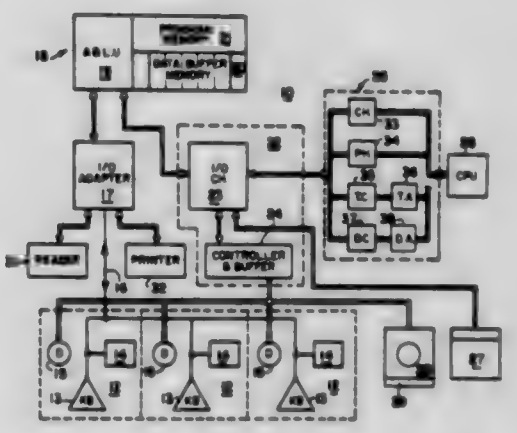
SHARED PROCESSOR DATA ENTRY SYSTEM

Richard M. Shelton, Oreland, Pa., assignor to Sperry Corporation, New York, N.Y.

Original No. 3,943,493, dated Mar. 9, 1976, Ser. No. 450,646, Mar. 13, 1974. Application for reissue Jun. 9, 1982, Ser. No. 386,841

Int. Cl.[3] G06F *15/02*

U.S. Cl. 364—200 14 Claims



12. A shared processor data entry system as set forth in claim [11] *1* wherein *said input-output control means comprises a magnetic disk controller and an input-output channel connectable to said means for supplying data to a host processing unit, said data entry system further including an auxiliary diskette reader capable of transferring data records recorded in different format from said magnetic storage device to said means for supplying data to said host processing unit through said input-output control means,* said auxiliary diskette reader further [includes] *including* a format control and [is] *being* connected directly to said input-output channel of said input-output control means.

PLANT PATENTS

GRANTED JANUARY 1, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,380

LITTLE AMIGO

Cecilia L. D. Bennett, 489 Minot Ave., Chula Vista, Calif. 92010

Filed Aug. 8, 1983, Ser. No. 521,343
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—10 1 Claim

1. A new and distinct variety of miniature rose plant named 'Little Amigo' of hardy, dwarf, bushy, much branched habit, substantially as illustrated and described, characterized by its blooms of intense Vermilion and vigorous growth habit, easy to propagate from cuttings, with flower usually borne singly or in sprays of 3 to 5 or more.

5,381

ROSE PLANT 'LITTLE CAMEO'

Robert Strahle, Carlton, Oreg., assignor to Carlton Rose Nurseries, Inc., Carlton, Oreg.

Filed Dec. 22, 1982, Ser. No. 452,090
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—18 1 Claim

1. A new and distinct variety of rose plant of the grandiflora-class, substantially as described and illustrated, obtained as a seedling from a seed parent LARA and an unnamed pollen parent, characterized by its ability to abundantly yield, long-lasting blooms having a spicy fragrance on a continuous basis in a greenhouse which maintain true color from a bud through petal drop, substantially as shown.

5,382

ALMOND TREE 'SR100'

Raymond J. Esau, 7860 Sunset Dr., Atwater, Calif. 95301

Filed Dec. 20, 1982, Ser. No. 451,554
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—30 1 Claim

1. A new and distinct variety of almond tree, substantially as illustrated and described, which blooms very heavily with reddish-pink flowers, the bloom being with the Nonpareil, and which tree is a regular and heavy bearer of medium size, oval nuts in harvest after the Nonpareil; the nuts having a minimum of pre-season drop yet shake easily and cleanly from the tree, and having good nut-in-hull retention for harvest.

5,383

AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinshaft "Optimara", Rees Haffen, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,361
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—69 1 Claim

1. A new and distinct cultivar of African violet known by the cultivar name Improved New Jersey, as described and illustrated, and strictly characterized by its uniform and vigorous growth habit; strong upright flower stems each of which carries 7–10 large single pink frilled flowers; intensive flower color which does not fade under high temperature conditions; profuse flowering, with the flowers being long lasting and non-dropping, and by its medium green leaves.

PATENTS

GRANTED JAN. 1, 1985

ERRATA

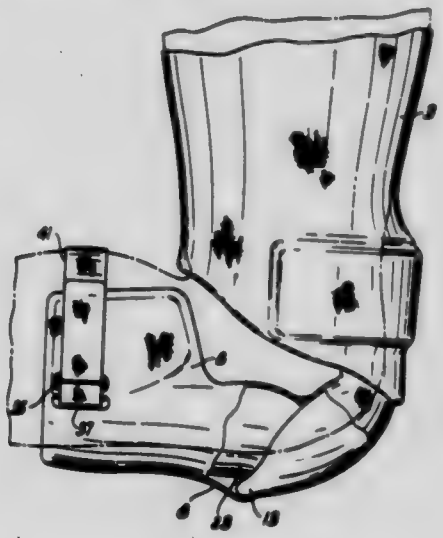
For CLASS	See PATENT NO.
446–448	4,490,939
384–471	4,491,374
040–362	4,491,434
534–677	4,491,543
534–655	4,491,544
364–562	4,491,829
383–103	4,491,959

PATENTS

GRANTED JANUARY 1, 1985

GENERAL AND MECHANICAL

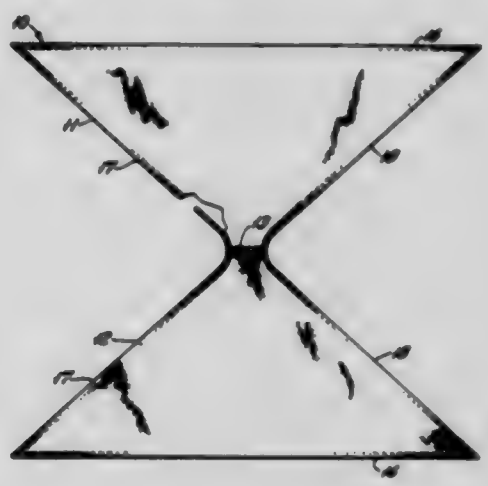
4,490,855
KNEE PAD
Harry E. Figgie, III, Pepper Pike, and Matthew P. Figgie, Willoughby, both of Ohio, assignors to Figgie International Inc., Willoughby, Ohio
Filed Jun. 10, 1983, Ser. No. 503,037
Int. Cl.[3] A41D *13/06*
U.S. Cl. 2—24 17 Claims



1. A knee pad comprising:
a flexible upper pad having upper and lower portions;
a flexible lower pad having upper and lower portions;
cover means holding the lower portion of the upper pad and the upper portion of the lower pad in overlapping relation;
means for securing the upper pad on the leg at a point above the knee; and
means for securing the lower pad on the leg at a point below the knee, the overlaping portions of the pads being adapted to cover the knee to protect it and being freely movable with respect to one another inside said cover means when the knee is flexed, said cover means being adapted to hold the pads in relatively close conformance with the knee, said pads being adapted to flex in said cover means when the knee is flexed, and said pads being sized and shaped for remaining in overlapping relation even when the knee is fully flexed thereby to provide maximum protection for the knee.

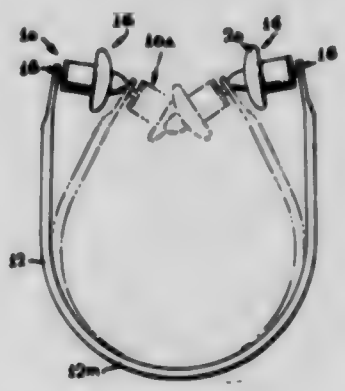
4,490,856
SWIM SUIT CONSTRUCTION
Carole Dost, 118 Madison Ave., New York, N.Y. 10016
Filed Sep. 6, 1983, Ser. No. 529,599
Int. Cl.[3] A41D *5/00*; A41B *9/00*
U.S. Cl. 2—67 2 Claims

1. In a swim suit construction including a pair of generally triangularly-shaped panels interconnection substantially at one triangular corner thereof, said panels being formed of a fabric capable of substantial stretch in either of two mutually perpendicular directions, said panels being interconnected by a short transversely extending seam to define a crotch area when said construction is worn, the improvement comprising: a pair of elongate elastic strips interconnected to the free side edges of each of said panels in said crotch area to extend on either side of said transverse seam; said strips being sewn under tension to said panel edges under approximately 10 to 15 percent elongation from unstressed conditions; whereby when said garment is worn, the normal tension applied to said panels during wearing



will place a moderate degree of tension upon the edges in said crotch area sufficient to prevent lateral curling thereof.

4,490,857
BAND EARPLUG
Howard S. Leight, 3945 Ridgemont Dr., Malibu, Calif. 90265, and Alan D. Rosen, 1243 Yale St. #8, Santa Monica, Calif. 90404
Filed Oct. 12, 1982, Ser. No. 433,735
Int. Cl.[3] A42B *1/06*
U.S. Cl. 2—209 4 Claims

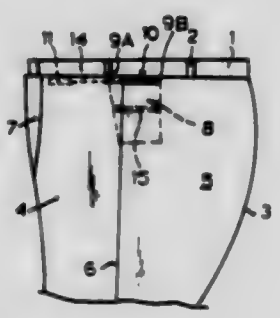


1. An ear noise protector apparatus, comprising:
a resilient head band having a pair of ear protector holders positioned to lie by the opposite ears of a person when the band lies about the person's head; and
a pair of ear protectors mounted on said holders, each protector including a cap formed of a slow recovery, resilient deformable material, and said cap having a width greater than the width of a typical human ear canal, so a portion of the cap can lie against the walls of the ear that surround the outside of the ear canal;
said slow recovery material being soft but being stiff enough that it prevents its full sound-sealing deformation against the ear walls unless an initial force of over 12 ounces is applied to the cap to deform it against the ear walls, but which retains its sound-sealing deformation so long as a predetermined sustained force which is less than 8 ounces is applied;
said band being constructed to apply said predetermined sustained force but no more than 8 ounces to said holders when the protectors thereon engage the ear, whereby a person can briefly apply a large force to seat the caps and thereafter the band holds the caps in their deformed state.

4,490,858
GARMENT WITH A POCKET FOR A PURSE OR WALLET

Benjamin Betsvier, PH. Gestelaarsstraat 11, 6981 BH Doesburg, Netherlands

Filed Sep. 21, 1981, Ser. No. 304,444
Claims priority, application Netherlands, Sep. 29, 1980, 8005383
Int. Cl.³ A41D 27/20
U.S. Cl. 2—252 11 Claims

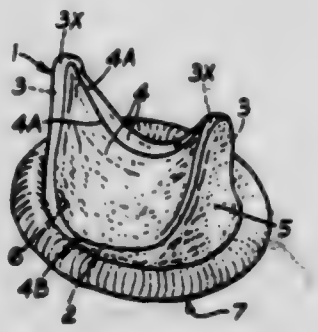


1. A garment comprising:
a pocket for carrying valuables, the pocket having an opening and a flexible edge extending along the opening, a portion of said edge being movable with respect to said garment;
a resilient element having a first portion anchored to the garment, and a second portion movable with respect to said garment; and
a coupling member having a first part connected to said second portion of said resilient element and a second part connected to a point along said portion of said edge which is movable with respect to said garment.

4,490,859
ARTIFICIAL HEART VALVES

Martin M. Black, and Philip J. Drury, both of Sheffield, England, assignors to University of Sheffield, Sheffield, England

Filed Jan. 18, 1983, Ser. No. 459,037
Claims priority, application United Kingdom, Jan. 20, 1982, 8201793
Int. Cl.³ A61F 1/22
U.S. Cl. 3—1.5 7 Claims

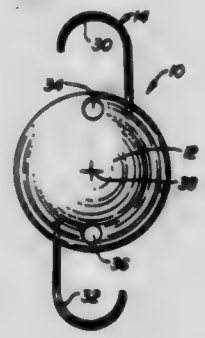


1. A bioprosthetic mitral valve replacement comprising a frame having a ring-shaped base and at least a pair of upstanding posts merging into the base by way of a continuous curve from the tip of one post to the tip of the other post, valve leaflets each having a free portion extending between the tips of the posts and a fixed portion secured and sealed to corresponding sides of the posts and the adjacent portion of the base, the valve leaflets being cut from a flat sheet of fully fixed animal tissue and the shape of each leaflet corresponding to a portion of a surface of a cone which portion is defined by the intersections on the conical surface of two parallel flat planes having peripheries on the conical surface corresponding in length respectively to the circumference of the ring-shaped base and the distance between the tips of the posts of the frame, and a third intersection on the conical surface of a curved plane concave towards the apex of the cone and intersecting the two parallel flat planes at opposite sides of the cone, the spacing of the flat planes and the curvature of the curved plane being such that the development of the curved plane on the conical surface matches in length and curvature the continuously blending curve of one arcuate portion of the ring-shaped base and the adjacent sides of the posts.

4,490,860
INTRAOCULAR LENS APPARATUS AND METHOD FOR IMPLANTATION OF SAME

E. A. Rainin, Danville, Calif., assignor to Ioptex Inc., Azusa, Calif.

Continuation-in-part of Ser. No. 340,504, Jan. 18, 1982, abandoned. This application Mar. 21, 1983, Ser. No. 477,028
Int. Cl.³ A61F 1/16, 1/24
U.S. Cl. 3—13 8 Claims

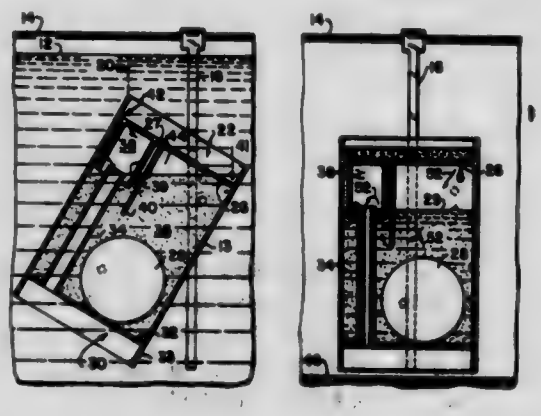


1. An intraocular lens apparatus comprising:
a. an optical lens portion;
b. means intended for holding said optical lens portion in relation to at least a part of an eye;
c. a marking appearing on the optical lens portion for indication of a specific zone of said optical lens portion, said marking comprising a material applied to said optical lens portion which is substantially non-reactive to human tissue.

4,490,861
ROTATING TOILET BOWL DISPENSER

John E. Dolan, 15 New Main St., Haverstraw, N.Y. 10927

Filed Feb. 1, 1984, Ser. No. 575,826
Int. Cl.³ E03D 9/02
U.S. Cl. 4—228 10 Claims



1. A dispenser immersible in a body of liquid in a toilet tank for dispensing cleaning solution or the like into said tank comprising
a container having a main chamber in which cleaning solution is disposed;
buoyancy enhancing means in the form of an air trap situated in the upper portion of said container;
means for rotating said container in a first direction responsive to the level of the body of liquid rising sufficiently to produce buoyancy effects on the container due to said buoyancy enhancing means;

a reservoir above said chamber for determining or defining the dose amount of cleaning solution to be dispensed, said reservoir having an opening communicating with the interior of said container adjacent one side thereof;

said reservoir being partly filled as said liquid level rises sufficiently in the tank;

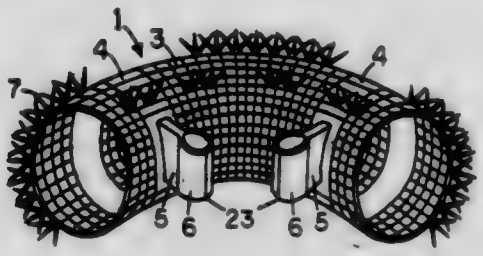
means for rotating said container in a second direction opposite to the first direction responsive to the level of the body of liquid dropping sufficiently to negate the buoyancy effects on the container, whereby said dose amount of cleaning solution is then dispensed.

4,490,862

ATTACHABLE DRAIN FILTER WITH SURFACE IRREGULARITIES TO ENTANGLE HAIR AND DEBRIS

Stella M. Vidal, 175 SW. 14th St., Apt. 3, Miami, Fla. 33130

Filed Aug. 26, 1981, Ser. No. 296,292
The portion of the term of this patent subsequent to Dec. 6, 2000, has been disclaimed.
Int. Cl.³ E03C *1/26*
U.S. Cl. 4—292 17 Claims



1. An article for preventing hair and debris from entering a drain of a bathtub, shower stall, lavatory, sink and the like having a liftable stopper and a flange, said article comprising:

a body shaped and dimensioned to be adapted to extend entirely around the lifted stopper periphery and to extend entirely around the external periphery of the drain generally covering the area between the drain periphery and the top of the lifted stopper periphery;

said body being of filamentary material defining openings for the free passage of water therethrough down into the drain;

a plurality of outward projections connected to said filamentary material above said openings and cooperating therewith, operable to entangle and hold hair and debris carried by water flowing through said openings; and

attaching means connected to and projecting radially inwardly from said body for engaging a lifted stopper below the top thereof to attach said body thereto.

4,490,863

PORTABLE HAND-HELD URINE DISPOSAL SYSTEM FOR RESIDENTIAL STRUCTURES

Grover C. Pate, P.O. Box 907, Forest Hills Subdivision, Lillington, N.C. 27546

Continuation-in-part of Ser. No. 327,428, Dec. 4, 1981, abandoned. This application Jan. 3, 1983, Ser. No. 432,793
Int. Cl.³ E03D *13/00*
U.S. Cl. 4—301 1 Claim

1. A relatively inexpensive dry urinal disposal system for use in conjunction with a public rest room facility comprising in combination:

A. a public rest room facility;

B. lavatory means disposed in said public rest room facility and including a basin for receiving water;

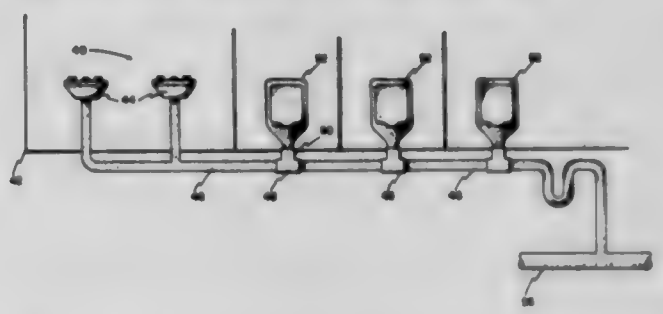
C. a drain line having a vertical section that extends downwardly from said basin of said lavatory means;

D. said drain line further including a horizontal drain line section that extends from said vertical drain line section generally horizontally adjacent said rest room facility for channeling and directing waste water from said basin of said lavatory means;

E. main sewer disposal line means connected to said generally horizontal drain line section for channeling waste water and other material passing through said drain line from said drain line and away from said public rest room facility;

F. a plurality of laterally spaced urinal adapters connected to said generally horizontally disposed drain line section extending adjacent said rest room facility;

G. each of said plurality of urinal adapters including a receiver secured around said horizontal drain line section and having an upstanding open pipe projecting upwardly from said horizontal drain line section with said upstanding open pipe including an opening therein;



H. a plurality of urinals secured to and supported by respective receivers connected and spaced along said horizontal drain line section;

I. each of said plurality of urinals including quick attach and detach means for detachably securing said respective urinal to said receivers for enabling the respective urinal to be quickly and easily attached to and detached from said generally horizontal drain line section; and

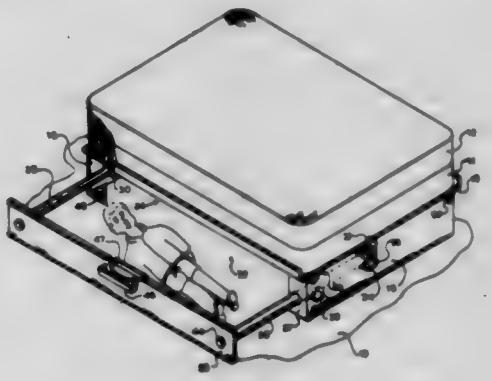
J. said quick attach and detach means including a down spout extending from each respective urinal and communicatively connected therewith with said down spout having a selected outside diameter such that said down spout will frictionally fit within the opening of said upstanding pipes of said receivers.

4,490,864

SHELTER BED

Roy W. Wicker, Jr., P.O. Box 697, Seagraves, Tex. 79359

Filed Feb. 14, 1983, Ser. No. 466,045
Int. Cl.³ A47C *19/04, 19/22;* E02D *27/34*
U.S. Cl. 5—9 R 11 Claims



1. A bed having

(a) a rigid, rectangular, horizontal deck supported above a floor by

(b) legs on the floor that are attached to the deck, thus forming

(c) a shelter space below the deck for at least one person,

(d) two bed ends,

(e) two bed sides having a length,

(f) at least one mattress on the deck;

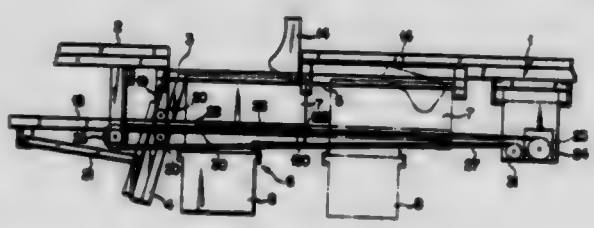
wherein the improvement comprises:
(g) two rigid, vertical end skirts on the floor at the bed ends attached to the deck,
(h) at least one rigid, vertical side skirt along the bed sides,
(j) the legs being integral with at least two of the skirts,
(k) at least one access opening between the deck and the floor substantially the length of the bed sides, and
(l) anchor means for rigidly attaching the bed to the floor,
(m) said floor including
(i) a plurality of spaced-apart joists, and
(ii) a wood subfloor on top of and attached to the joists,
(n) said anchor means including
(i) a rectangular, rigid floor plate between the wood subfloor and the bed that is substantially coextensive with the floor area of the shelter space,
(ii) anchor plates attached to the bed above the floor plate,
(iii) anchor beams below and extending across the spaced-apart joists below the bed,
(iv) bolting means for rigidly connecting
(a) the floor plate to the anchor plates, and
(b) the anchor beams to the anchor plates.

4,490,865

BED APPARATUS WITH URINAL AND AN INTEGRAL DRIVE MECHANISM

Yoshiharu Hamaguchi, Tokyo, Japan, assignor to France Bed Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1982, Ser. No. 452,713
Int. Cl.³ A61G 7/02
U.S. Cl. 5—90 12 Claims



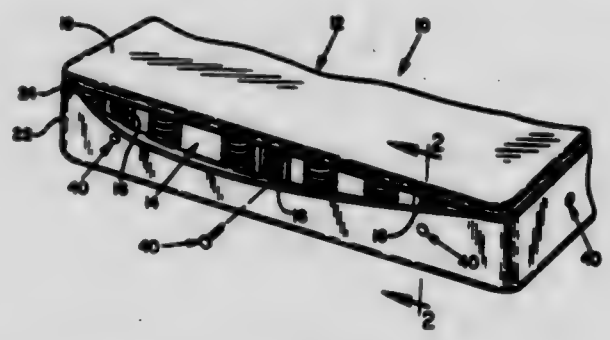
1. A bed apparatus with a urinal and an integral drive mechanism for moving the urinal between a closed, storage configuration and an open, use configuration, comprising:
a bed frame placed with a cushion unit thereon,
a cover pivotally provided at an opening formed in the cushion unit,
a urinal slidably held along the longitudinal direction of said bed frame beneath said cushion and mounted by means of a guide frame along the sliding direction thereof,
a shielding unit pivotally disposed at a top end of the urinal, normally held, in said closed configuration, in the horizontal state underneath the cushion unit, displaced from said opening, and means for urging said shielding unit toward a vertical state, and
a drive mechanism including:
a drive means fixed on one of said bed frame and said urinal,
a wire, adapted to be driven by said drive means, having two ends, and interconnecting said drive means and said urinal, so as to enable relative movement thereof,
stops disposed at respective ends of said wire,
a pair of tong pieces projecting from one of the guide frame and the urinal and adapted to engage said stops at the ends of said wire,
a tension spring disposed between the tong pieces, connected to the ends of said wire and adapted to take up any slack in said wire, and
a connecting rod connected at one end thereof to said cover and at the other end thereof to the guide frame and adapted, in response to movement of said guide frame, to pivot said cover toward the lower side of the bed frame when the urinal faces the opening, thereby uncovering the urinal for use by a person resting on said bed.

4,490,866

SYSTEM FOR MOUNTING A MATTRESS COVER TO A MATTRESS CORE

Norman C. Stanton, Portland, Oreg., assignor to Tualatin Sleep Products, Inc., Tualatin, Oreg.

Filed Dec. 6, 1982, Ser. No. 447,240
Int. Cl.³ A47C 23/00
U.S. Cl. 5—471 6 Claims



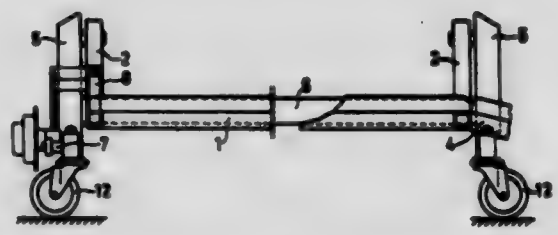
1. A system for mounting a mattress cover having top, bottom, and skirt portions, and a closable opening adjacent the skirt portion, to a mattress having a mattress core, comprising:
a plurality of spaced apart planar webs mounted to and extending along a portion of the side periphery of the mattress core, each said web connecting upper and lower portions of said mattress core; and
freely positionable fastening means, associated with each said web, having an enlarged head and a pointed extension member piercing the mattress cover skirt portion and said web, and a freely positionable engagement member engaging each said extension member, said extension member at the inner side of said web being in contact therewith to fix the position of the mattress cover with respect to said web and the mattress core to which said web is mounted.

4,490,867

BED ROCKING MECHANISM

Lars Gabrielsson, Göteborg, Sweden, assignor to Lycksele NYA Platprodukter AB, Lycksele, Sweden

Filed Dec. 21, 1982, Ser. No. 456,088
Int. Cl.³ A47C 21/00
U.S. Cl. 5—509 6 Claims



1. An apparatus for supporting a bed having leg members in such a manner as to rock or tilt the bed about the longitudinal axis thereof so that patients being supported on the bed may be turned from side to side comprising a frame means having a longitudinally extending beam means having end portions which are joined to a pair of generally perpendicularly disposed cross beams, said longitudinally extending beam means being oriented in generally parallel relationship to the longitudinal axis of the bed, a pair of spaced upstanding post means mounted to said frame means, each of said post means being oriented generally centrally along the length of said cross beams, bearing means carried by each of said post means, a rocker means pivotally supported by each of said bearing means, each of said rocker means having a pair of outwardly and downwardly extending arms having outer end portions,

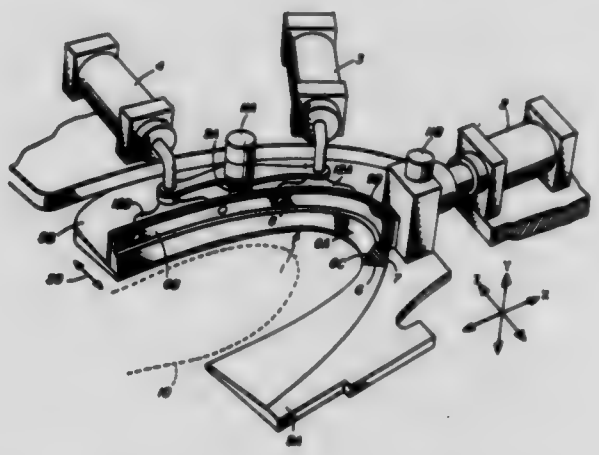
bed support means supported adjacent said outer portions of each of said arm means, said bed support means being disposed in elevated position with respect to said frame means, ramp means selectively engaged with said support means to thereby permit the bed to be urged there along into supporting engagement with said bed support means, and frame support means for supporting said frame means in an elevated position with respect to a supporting surface.

4,490,868

COMPOSITE BAND FOR A FOOTWEAR-FORMING MACHINE

Michael M. Becka, Nashua, N.H., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed Sep. 23, 1983, Ser. No. 535,090
Int. Cl.³ A43D *23/02, 23/00*
U.S. Cl. 12—14.4 9 Claims



1. For use in a footwear-forming machine a composite band for wrapping about a curvilinear portion of a footwear upper assembly comprising a footwear upper draped over a last and an innersole, that comprises:

an elastic footwear engaging member having a bight portion and a pair of legs extending outwardly from the bight portion; and

an elongated flexible metal strip secured at the outer surface of the footwear engaging member, said metal strip being deformed to form a series of at least three loops therein, which loops are spaced from one another along the elongate metal strip, at least one being located on each leg and the third at the bight portion of the footwear engaging member, each said loop being cylindrical with the cylinder axis parallel to the side of the metal strip and perpendicular to the longitudinal axis of the metal strip;

said footwear engaging member being subjected to forces during the footwear forming process that cause it to conform to said curvilinear portion of each footwear upper assembly to retain the upper position during a wiping operation in the forming process, the series of loops serving to relieve stress on the elongated metal strip during deformation.

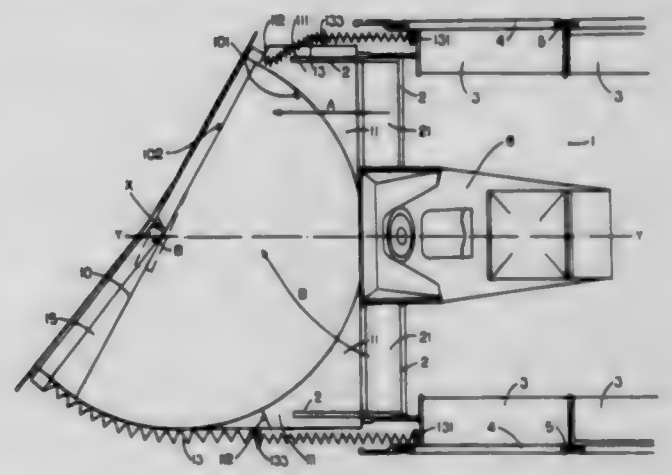
4,490,869

BOARDING INSTALLATION, ESPECIALLY FOR VEHICLES TRANSPORTING PASSENGERS BETWEEN AN AIR TERMINAL AND AN AIRCRAFT

André Morin, Parthenay, France, assignor to SOVAM, Parthenay, France

Filed Dec. 8, 1981, Ser. No. 328,652
Claims priority, application France, Dec. 15, 1980, 80 26589
Int. Cl.³ E01D *1/00*
U.S. Cl. 14—71.5 6 Claims

1. Boarding installation for vehicles transporting passengers between the platform of an air terminal and an aircraft, which installation is composed of telescopic plates and bellows elements forming a tunnel which is extended between the exit of the vehicle and the aircraft or the air terminal platform comprising a support carrying a pivoting plate and a counter-plate, the pivoting plate having the shape of half a circular disc with a rear edge in the form of an arc of a circle, the pivoting plate having a pivoting axis around the center of said circle, the counter-plate being fixed on the support, having an edge in the form of an arc of a circle of the same radius as the poviting plate and this edge of the counter plate coming in edge to edge contact against the rear edge of the plate, the pivoting support



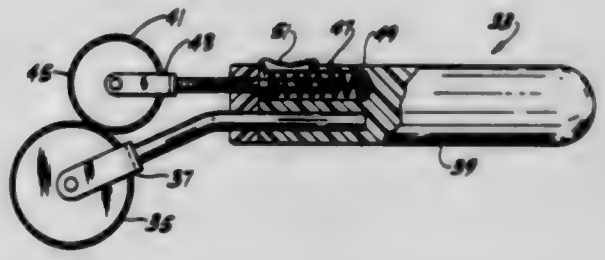
having a triangular shape with a vertex thereof resching the pivoting axis of the plate, a supplementary sector pivoting telescopically in relation to and beneath the pivoting plate through a small angle on one half of the forward edge of the pivoting plate, means for controlling the telescopic movement of the assembly between a retracted position and an extended position, means for controlling the pivoting of the pivoting plate, and means controlling the pivoting of the sector.

4,490,870

METHOD AND APPARATUS FOR CLEANING DISKS CONTAINING ENCODED INFORMATION

Stanley Taub, 465 W. Broadway, New York, N.Y. 10012

Filed Nov. 8, 1982, Ser. No. 440,072
Int. Cl.³ A47L *25/00*
U.S. Cl. 15—1.5 A 16 Claims



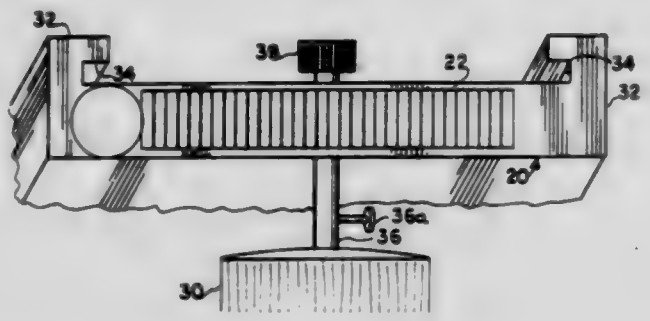
8. Apparatus for cleaning disks containing encoded information, such as phonorecords and videodiscs, comprising:

a first roller having a core and an electrostatically activatable, mechanically chargeable outer surface adapted to be rolled over a surface of the disk to be cleaned;

a handle to which the roller is secured for rotation about its axis; and

means for simultaneously cleaning and charging said first roller as it is rolled over a surface of the disk to be cleaned comprising a second roller secured to the handle for rotation about its axis in continuous rolling contact with said first roller and driven thereby, said second roller having an outer covering of pressure sensitive adhesive around the entire circumference thereof.

4,490,871
RECIPROCATING ROTARY BRUSH
Paul H. Martin, 2168 County Line Rd., Spring Hill, Fla. 33526
Filed Sep. 1, 1983, Ser. No. 528,623
Int. Cl.³ A47K 7/04; A46B 13/06
U.S. Cl. 15—21 R 5 Claims



1. An apparatus of the type designed to brush or massage a human back, comprising, in combination,

a rotatable brush member having an operative, bristles-carrying front surface, and a non-operative rear surface,

a stem means fixedly secured to said rear surface and projecting therefrom such that the respective axes of rotation of said brush member and said stem member are coincident,

a first gear member fixedly secured to said stem means so that rotation of said gear member imparts simultaneous and corresponding rotation to said brush member,

a second gear member disposed in meshing relation to said first gear member,

a gear housing member disposed in surrounding relation to said second gear member,

a plurality of bias means disposed in interconnecting relation to said second gear member and said gear housing member so that said second gear member is transiently displaceable from an equilibrium position attendant application of external forces thereagainst,

a flat guide member,

an elongate slot means formed in said guide member,

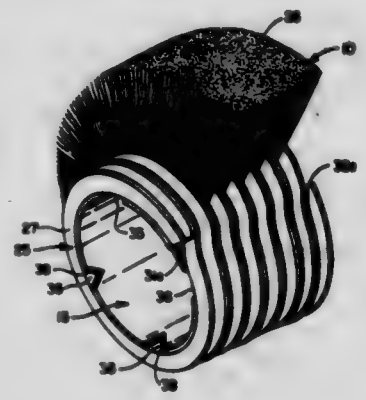
said brush member mounted with respect to said guide member such that said stem means extends through said slot means, and such that said slot means constrains said first and second gear members to be continuously engaged,

means for imparting rotation to said brush member and hence to said first gear member,

said second gear member having a longitudinal dimension substantially greater than its transverse dimension and having teeth means about its perimeter so that said first gear means and hence said brush member define a path of travel thereabout, responsive to rotation of said brush member.

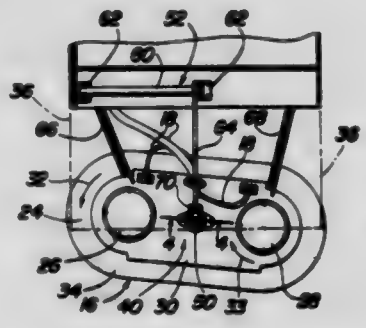
4,490,872
SPIRAL BRUSH SECTION
Arthur E. Drumm, 20042 State Rt. 4, Marysville, Ohio 43030
Continuation-in-part of Ser. No. 556,274, Nov. 20, 1983,. This application May 11, 1984, Ser. No. 609,553
Int. Cl.³ A46B 7/10
U.S. Cl. 15—182 12 Claims

1. A helical brush section for use in axially-aligned relationship to form a rotary brush comprising a tubular bristle-carrying drum, a brush strip helically wound on the drum from one end to the other with its ends at the drum ends, said strip being formed of a channel which carries radially-projecting bristles, said ends of the brush strip having the corresponding channel ends distorted inwardly substantially flush with the corresponding drum ends, said tubular support being rolled sheet metal joined at a longitudinal joint where the adjacent edges of the sheet are offset longitudinally to form opposed end helical edges and shoulders and the brush strip is helically wound thereon until its ends correspond to the shoulder and the drum



is restored by axial pressure to cylindrical form which distorts the ends of the channel substantially flush with the drum ends.

4,490,873
FLOATING-BRUSH ASSEMBLY FOR USE WITH FLOOR-SCRUBBING AND POLISHING MACHINES
Harry M. Stratton, 16119 Franciquito, La Puente, Calif. 91744
Filed Oct. 24, 1983, Ser. No. 544,798
Int. Cl.³ A47L 11/16
U.S. Cl. 15—49 R 6 Claims



1. A free-floating-brush assembly adapted for use with conventional floor-scrubbing and polishing machines, wherein the assembly comprises:

means mounted to a floor-scrubbing and polishing machine for adjusting said assembly;

a housing pivotally attached to one end of said adjusting means, so as to be freely suspended in front of said scrubbing and polishing machine;

drive means mounted on said housing;

a pair of brushes mounted in said housing and adapted to engage said floor to be scrubbed and/or polished, said brushes being rotated by said drive means;

means for angularly aligning said housing with respect to said machine and said floor, said means being connected between said machine and said housing;

swivel means centrally mounted to said housing and to said adjusting means, allowing said housing to rotate about a substantially vertical axis, whereby said assembly can adapt to any uneven floor surface.

4,490,874
BRUSH CONTROL MEANS
Ian J. Duncan, Cambridge, England, assignor to Schmidt Manufacturing & Equipment (UK) Ltd., Cambridgeshire, England
Filed Feb. 25, 1983, Ser. No. 469,589
Claims priority, application United Kingdom, Feb. 27, 1982, 8205869
Int. Cl.³ E01H 1/04
U.S. Cl. 15—87 10 Claims

1. Brush control means for controlling the operative position of at least one rotary brush of a sweeping machine for sweep-

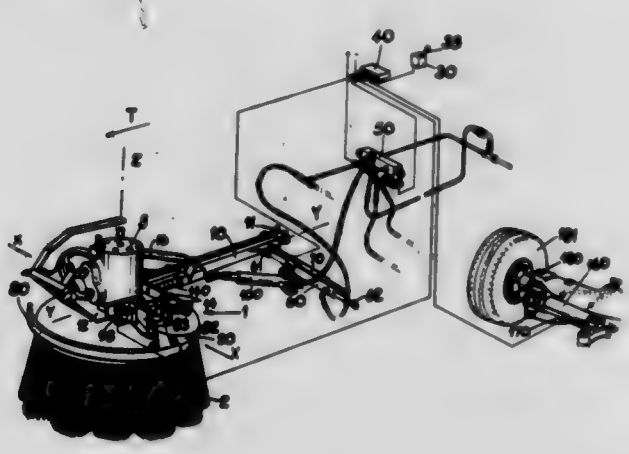
ing road, pavement and similar surfaces and wherein the brush is rotatable about a substantially vertical axis comprising

(a) a rotary brush mounting arm pivotably mountable from the machine for lateral angular movement about such pivotal mounting;

(b) an electronic control unit;

(c) machine driver's electric control means electrically connected to the electronic control unit for controlling said electronic control unit;

(d) a solenoid-operated pressurized fluid directional flow control valve in circuit with said electronic control unit for control of the operation of the valve by said electronic control unit;



(e) a fluid pressure-operated ram controlled by said valve and mechanically connected to the rotary brush mounting arm for angularly moving it laterally about its pivotal mounting; and

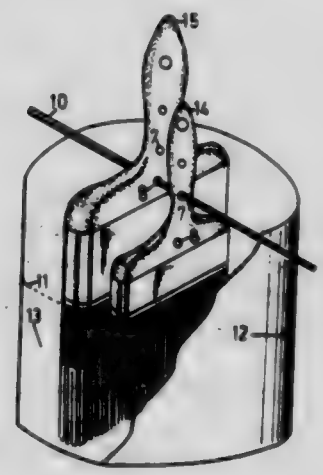
(f) a sensor electrically connected to the electronic control unit and mechanically connected to the rotary brush mounting arm so as to be responsive to the operative position of said arm as selected by machine driver's control of said electronic control unit, said sensor being arranged to effect feed back control of the electronic control unit for in turn causing the latter to control the solenoid-operated valve for holding the ram against operation and hence the rotary brush mounting arm against at least outward lateral angular movement from the said selected operative position.

4,490,875

PAINT BRUSH

James H. Granz, 5080 Woodson Dr., Mission, Kans. 66202

Filed Sep. 30, 1982, Ser. No. 431,788
Int. Cl.³ A46B 3/02
U.S. Cl. 15—143 R 1 Claim



1. A surface coating applicator comprising:

a tubular ferrule having a cluster of bristles inserted partway into one end, substantially to seal one end of said ferrule;

a hardened mass of cured, resinous cement disposed atop said cluster of bristles in firm adhesive connection with portions of said cluster of bristles in said ferrule, and an integral handle including a gripping portion extending outwardly from the other end of said ferrule;

said handle being of ridged material and having a series of vertically aligned openings that extend through said handle such that a rod may be inserted completely through a selected opening;

said openings are located at specific distances from the one end of the ferrule into which the bristle cluster is inserted, such that said rod can be used to support one or more applicators of the same or differing length and/or size in a container of solvent, such that the level of solvent only covers the clusters of bristles of each applicator up to the said end of said ferrule for proper soaking and cleaning of all clusters of bristles;

said cluster of bristles being made of two bristle sub groups being distinctly different in bristle length and bristle color;

said first bristle subgroup being longer and used for applying the surface coatings;

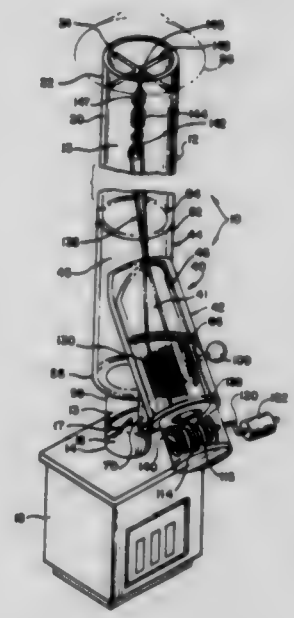
said second bristle subgroup being significantly shorter and of a contrasting color to the first bristle subgroup, so as to reduce the possibility of a painter dipping the surface coatings applicator too deeply into the coatings supply container.

4,490,876

FLUE CLEANING DEVICE

Jeffrey S. Haberl, 350 27th St., Boulder, Colo. 80303

Filed Aug. 1, 1983, Ser. No. 519,013
Int. Cl.³ F23J 3/02
U.S. Cl. 15—163 14 Claims



1. A flue cleaning device for cleaning the interior cavity of a vertically extending flue of the type which is used with a wood burning stove or the like comprising:

brush means for dislodging the residual products of combustion which is movable between a first position in a lower portion of the flue cavity and a second position within an upper portion of the flue cavity and capable of being stored in a third position in noninterfering relationship with the flue cavity;

laterally extending orifice means for storing said brush means in said third position for providing access to the interior cavity of the flue; and

brush movement means for selectively moving said brush means between said three brush positions;

wherein said laterally extending orifice means comprises:

tubular access means for providing sealed access to the interior of the flue having a first end portion attached in

sealed fluid communication with the flue at a lower portion of the flue; and

chute means movably mounted in said tubular access means for directing dislodged combustion products from the flue into said first tubular means.

4,490,877

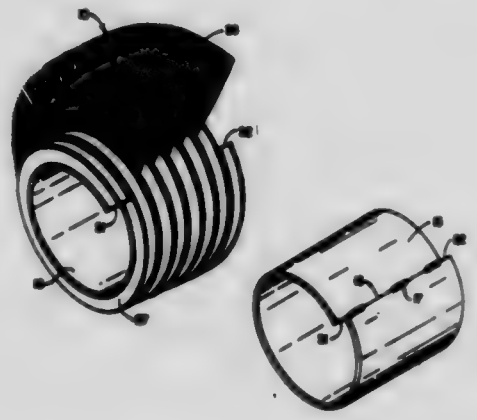
SPIRAL BRUSH SECTION

Arthur E. Drumm, 20842 State, Rte. #4, Marysville, Ohio 43040

Filed Nov. 30, 1983, Ser. No. 556,274

Int. Cl.³ A46B 7/10

U.S. Cl. 15—182 9 Claims



1. A helical brush section for use in axially-aligned relationship to form a rotary brush comprising a tubular bristle-carrying support, said support having helically extending edges at its opposed ends terminating in longitudinally extending contact shoulders for engaging adjacent similar sections, said tubular support being rolled sheet metal joined at a longitudinal joint where the adjacent edges of the sheet are offset longitudinally to form the opposed end helical edges and contact shoulders.

4,490,878

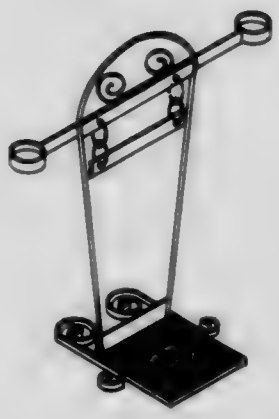
SHOE SCRAPER

Eulema G. Boggs, 403 Mariposa, Carlsbad, N. Mex. 88220

Filed Jun. 7, 1983, Ser. No. 501,842

Int. Cl.³ A47L 23/22

U.S. Cl. 15—237 1 Claim



1. A shoe scraper comprising:

a base consisting of a horizontal grate defining a scraping surface and having a frame extending around said grate;

an upright arched standard defined by spaced apart vertical leg portions connected at the upper ends thereof by an arched portion of sufficient height to be gripped by a person standing on said grate;

a scraper bar secured between the leg portions adjacent the lower ends thereof and providing a horizontal scraping edge; means for attaching said scraper bar to said grate frame such that said scraper edge extends above said grate frame;

an upper horizontal brace bar extending between said leg portions at the upper ends thereof adjacent said arched portion; and a horizontal bar means attached to said brace bar and extending beyond the ends thereof, each end of said bar means terminating in a cylindrical, ring shaped portion.

4,490,879

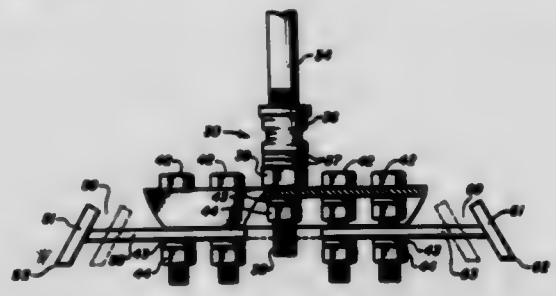
SCRAPING TOOL

Robert E. Colby, 97 Clark St., Brockton, Mass. 02402

Filed Jun. 15, 1983, Ser. No. 504,520

Int. Cl.³ F23J 3/00

U.S. Cl. 15—242 7 Claims



1. A scraping tool for removing creosote from a chimney flue, comprising:

an elongated, rigid handle;

two rigid metal blades each having a scraping edge, each of said blades being constructed of two substantially flat plates joined together in a configuration substantially T-shaped in cross-section, the plate forming the head of the T having said scraping edge formed along one elongated side thereof, said head of each T meeting the leg of the T at an acute angle on the side of the leg farthest from the scraping edge, the plate forming the leg of the T lying in a plane perpendicular to the axis of the handle when said blades are secured to the handle, and said scraping edges lying on the sides of the heads farthest from said end of said handle; and

securing means for removably securing said blades at one end of said handle, and enabling the position and distance of each scraping edge relative to the handle to be selectively adjusted.

4,490,880

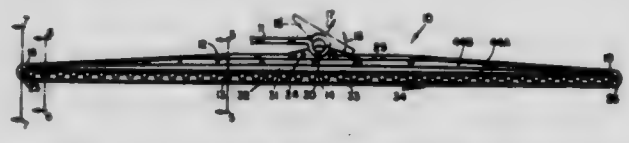
WINDSHIELD WIPER

William E. Thompson, Rte. 1, Box 89, Middletown, Ind. 47356

Filed Mar. 14, 1983, Ser. No. 475,081

Int. Cl.³ B60S 1/38

U.S. Cl. 15—250.42 24 Claims



1. A wiper insert arranged for receipt by the superstructure of a windshield wiper assembly including a cantilever spring wiper arm and superstructure, said wiper insert comprising:

a flexible wiper element including a wiper strip and a wiper strip retainer element attached to said wiper strip along the length thereof; and

a resilient force distribution member connected to said flexible wiper element and including a top facing surface and bottom facing surface, said member arranged for receipt at both its ends within said superstructure and flexible in a plane perpendicular to the wiped surface of a windshield from an unbiased configuration wherein said top facing surface is planar and said bottom facing surface is convexly curved along the length of said resilient force distribution member to a biased configuration wherein said top

facing surface is convexly curved along the length of said resilient force distribution member, said resilient force distribution member in said biased configuration being designed and arranged to uniformly distribute along the length of said wiper element the force applied by said cantilever spring wiper arm via said superstructure to said wiper element, in said unbiased configuration said bottom facing surface of said resilient force distribution member having a part-elliptical shape.

4,490,881

DUST EXHAUSTOR

Otto Schmidt, Julius-Hölder-Str. 12, 7000 Stuttgart 70, Fed. Rep. of Germany

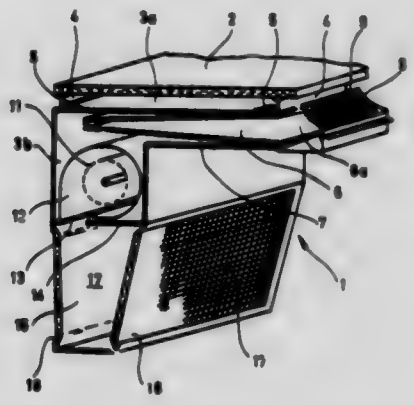
Filed Feb. 23, 1983, Ser. No. 469,110

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1982, 3206714

Int. Cl.³ A47L 5/38

U.S. Cl. 15—301

6 Claims



1. A dust exhaustor for a precision-mechanics work table, comprising a slowly running low-pressure blower which, at the suction side, communicates with a large-surface suction opening through a suction channel and, at the pressure side, feeds the sucked-in air to at least one large-surface outlet through an outlet channel, characterized in that it is designed as a ready-to-connect unit which can be fitted as a whole beneath the work top (2) of conventional work tables and for this purpose, has a substantially L-shaped housing (3), in which all the devices and assemblies which are required for the operation of the exhaustor (1) are combined, the housing (3) comprising:

(a) a leg (3*a*) which, in the installed position, is substantially horizontal and at the front end of which that is directed towards the user there is provided the suction opening (9),

(b) a leg (3*b*) which in the installed position is substantially vertical and at the external surface of which there is provided at least one outlet, filter means in at least one of said legs for removing dust from the air flowing therethrough, and

(c) a suction channel enclosed by said horizontal housing leg (3*a*), said suction channel having an inlet zone (6*a*), which extends towards the user side obliquely to the front and top.

4,490,882

UPRIGHT VACUUM CENTER

R. Leon Wells, 1649 Manor Dr., Vista, Calif. 92083

Filed Jul. 18, 1983, Ser. No. 514,551

Int. Cl.³ A47L 5/32

U.S. Cl. 15—337

9 Claims

7. An upright-type vacuum cleaner comprising:

(a) a base adapted for back-and-forth motion over the floor and having a cover threreover;

(b) a staff extending upright from hinged connection with said base to a push-pull handle and suspending therefrom an air-debris separator bag;

(c) an electric motor operably mounted in said base with a vertically-oriented rotating power shaft containing upper and lower drive ends;

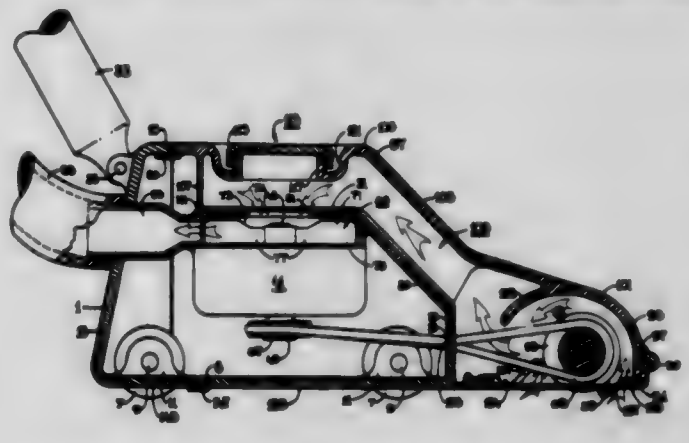
(d) floor vibrating means including:

(1) a cylindrical roller of finite length and containing a series of protuberances extending from the surface thereof and generally from one end to the other to produce vibration when rotated against the floor;

(2) support bearing means to rotatably mount said roller in said base transverse to the normal back and forth path of said base; and,

(3) drive belt means stretched between said roller and said lower power shaft drive end to rotate said roller during cleaning operation;

(e) a centrifugal air pump, positioned above said power means and connected to said upper power shaft drive end,



having inlet and outlet ports respectively for receipt of debris-laden air from the floor and discharge thereof into said air separator bag;

(f) an air duct forming, in cooperation with said base cover, an enclosed pathway from said floor vibrating means up over top of said power unit into said air pump inlet port and containing a downwardly extending baffle therein to produce a radical change in upward airflow therein; and,

(g) a receptacle in said air duct below said baffle comprising a pan, extending from around the underside edge of said roller rearward to close with said air duct, and containing an upwardly bent lip below said baffle and near said roller to aid in recovering and retaining heavy debris fragments that drop out of the debris-laden air stream prior to entry into said air pump.

4,490,883

FASTENER FOR RELEASABLY AND ADJUSTABLY CONNECTING TWO STRUCTURAL MEMBERS

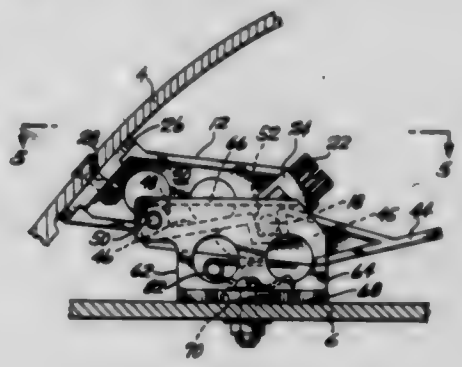
Richard F. Gauron, 26020 SE. 158th, Issaquah, Wash. 98027

Filed Sep. 7, 1982, Ser. No. 415,539

Int. Cl.³ E05D 7/04, 7/12

U.S. Cl. 16—245

31 Claims



8. A fastener for releasably and adjustably connecting two structural members, comprising:

a first body portion including journal means;

a second body portion including channel means for slidably receiving the journal means; said second body portion

comprising a base member, and a pivot member; and said pivot member having at least two positions including an open position in which portions of the base member and portions of the pivot member cooperate to define the channel means for slidably receiving the journal means, and a closed position in which the pivot member blocks portions of the channel means to prevent the journal means for sliding in the channel means;

disengageable lock means for locking the journal means in the channel means in any one of at least two lock positions to prevent the journal means from sliding in the channel means and to lock the first and second body portions together;

release means for disengaging the lock means to permit the journal means to slide from one lock position to another and the first and second body portions to move translationally with respect to each other and to permit said body portions to be disconnected from each other;

adjusting means for adjusting the translational positions of said body portions with respect to each other while the journal means remains in one of said lock positions;

means for attaching the first body portion to one of the structural members; and

means for attaching the second body portion to the other of the structural members;

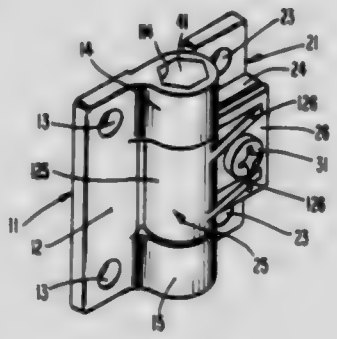
wherein the release means, when used to permit movement between said lock positions, and the adjusting means serve to allow the two structural members to be moved translationally with respect to each other without disconnecting said structural members from each other.

4,490,884

ADJUSTABLE FRICTION HINGE

James H. Vickers, Middletown, Pa., assignor to Southco, Inc., Concordville, Pa.

Filed Jan. 30, 1983, Ser. No. 509,361
Int. Cl.³ E05D *11/08*
U.S. Cl. 16—338 3 Claims



1. An adjustable friction hinge of thermoplastic material, said hinge comprising:

a first hinge leaf having first and second knuckles at spaced separation, each of said first and second knuckles having a non-circular through hole;

a second hinge leaf having a clamping knuckle adapted to be received in the spaced separation between said first and second knuckles of said first hinge leaf, said clamping knuckle having a pair of clamping extensions for adjusting the inside diameter of said clamping knuckle, each of said clamping extensions having a bolt hole therethrough, said bolt holes being in registry with each other, one of said clamping extensions having a non-circular recess therein;

a hinge pin comprising a split pin having first and second identical segments, each segment having a non-circular portion and a circular portion, the non-circular portion having a diameter larger than both the circular portions and the inside diameter of the clamping knuckle, an axial hole in each circular portion, and a connection pin press-fitted into said axial holes and connecting together said first and second segments of said hinge pin, said non-circular portions of said hinge pin being received within said spaced-apart non-circular through holes of said first and second knuckles of said first hinge leaf, said circular portions of said hinge pin being received within the adjustable inside diameter of said clamping knuckle;

an adjustment screw having a threaded shank adapted to pass through said bolt holes of said clamping extensions for adjusting the inside diameter of said clamping knuckle;

a non-circular nut of corresponding shape and size provided in said non-circular recess of said one clamping extension for receiving the threaded shank of said adjustment screw;

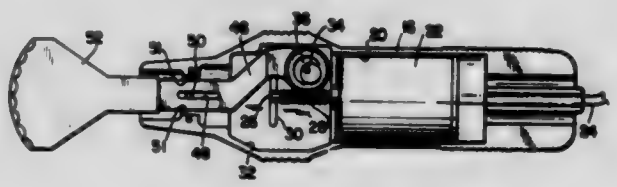
said one clamping extension having at the base of said non-circular recess an integral elevated ring encircling its bolt hole and contiguous to the periphery thereof, the material of said ring being adapted, during tightening of said adjustment screw, to be compressed by said nut and squeezed into the threads of said adjustment screw, thereby to impose sufficient drag on said screw to maintain the adjustment.

4,490,885

FISH SCALER

Metro Iskiw, 9511-75 St., Edmonton, Canada T6C 2H8, and Alex Hadican, 8502-83 Ave., Edmonton, Canada T6C 1B1

Continuation-in-part of Ser. No. 342,183, Jan. 25, 1982, Pat. No. 4,432,117. This application Jan. 24, 1984, Ser. No. 573,372
Int. Cl.³ A22C *25/02*
U.S. Cl. 17—66 9 Claims



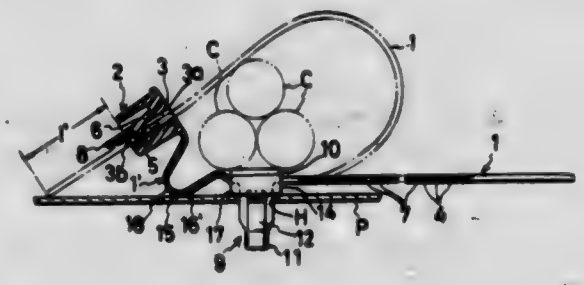
1. A fish scaler comprising a housing having a longitudinal axis; motor means in said housing; shaft means in said housing driven by said motor means; blade holder means pivotally mounted in and projecting from said housing and scaling blade means mounted on said blade holder means; transmission means in said housing and connecting said shaft means and said blade holder means for changing rotary motion of said shaft means into a generally circular motion of said scaling blade, said generally circular motion of said scaling blade having a component along said longitudinal axis and a component transverse to said longitudinal axis.

4,490,886

BINDER FOR LINES, RODS, OR TUBES

Nobuaki Omata, Hiroshima, Japan, assignor to Nifco, Inc., Yokohama, Japan

Filed Sep. 3, 1981, Ser. No. 298,869
Claims priority, application Japan, Sep. 8, 1980, 55/126578[U]
Int. Cl.³ B65D *63/00*
U.S. Cl. 24—16 PB 7 Claims



1. In a plastic binder for lines, rods or tubes, comprising in combination a binding band of the shape of a substantially planar strip having a free end at one end thereof and a buckle

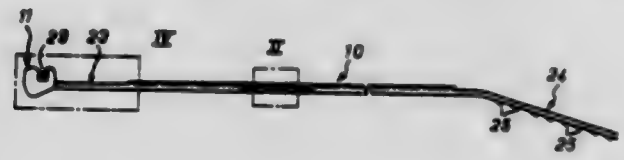
provided at the other end thereof, said buckle provided with a slit substantially perpendicular to said strip for enabling said binding band to be inserted in the direction of said free end thereof via the inlet of said slit and drawn out via the outlet of said slit, said binding band provided on one side thereof in the direction of its length with a plurality of spaced fitting recesses adapted to be brought into unreturnable engagement with a pawl provided inside said slit of the buckle, and said binding band provided intermediate of the length thereof and substantially closer to said buckle than to said free end with an engaging member for attachment to a panel and having a panel engaging portion, said binding band thereby having a relatively short portion interconnecting said buckle and said engaging member and a relatively long portion for encircling said lines, rods or tubes, the improvement wherein said plastic binder further comprises, in the relatively short portion of the band between said engaging member and said buckle, at least one pendant portion spaced from the engaging member adapted so that the lowermost portion thereof before attachment of the band to a panel extends below the plane of said band and falls below the panel engaging portion of said engaging member to engage said panel and thereby to deflect said buckle away from said panel for ready insertion of said free end through said buckle upon engagement of said engaging portion with said panel.

4,490,887

CABLE TIE

Francois Sarton, Totes, and Gérard Roby, Bihorel, both of France, assignors to Legrand, Limoges, France

Filed Sep. 22, 1982, Ser. No. 421,052
Claims priority, application France, Sep. 23, 1981, 81 17949
Int. Cl.³ B65D *63/00*
U.S. Cl. 24—16 PB 12 Claims



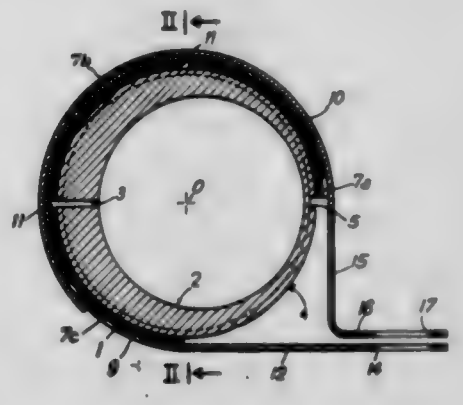
1. A cable tie of one-piece construction comprising a flexible strap having a series of transverse teeth disposed on one side of said strap and extending between the longitudinal edges thereof, and a fastening head having a passageway therethrough for receiving said strap to form a loop, said fastening head having a pawl retainingly cooperable with said teeth, said longitudinal edges of said strap being at least in part transversely oblique, and each of the corresponding lateral walls of said passageway through said fastening head having at least a portion similarly transversely oblique, said passageway including a transverse wall extending between said transversely oblique portions of said lateral walls, the improvement wherein said transversely oblique edge portions on said strap converge towards each other to the other side of said strap, said cable tie having a normal closed position wherein said strap is received in said passageway and said transversely oblique portions of said longitudinal edges of said strap are urged under the bias of said pawl against the transversely oblique portions of the lateral walls of said passageway while transverse clearance is defined between said transverse walls of said passageway and a corresponding transverse portion of said other side of said strap facing away from said transverse wall, said pawl bias forming means for producing a wedging action in the normal closed position of the cable tie.

4,490,888

CLAMPING BAND

Jean M. Levant, LeMee sur Seine, France, assignor to S.N.E.C.-M.A., Paris, France

Filed Mar. 25, 1983, Ser. No. 479,025
Claims priority, application France, Mar. 30, 1982, 82 05371
Int. Cl.³ F16L *3/12*
U.S. Cl. 24—20 R 10 Claims



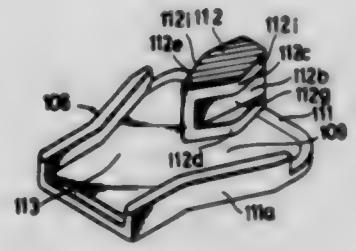
1. A clamping-band comprising:
a split inner ring having an eccentric bore;
a rigid inner collar partially surrounding said ring, said inner collar having one end forming a first securing tab;
a rigid outer collar partially surrounding said ring and inner collar, said outer collar having one end forming a second securing tab positionable in facing opposition to said first securing tab; and
facing oblong securing holes in said tabs;
wherein said ring and inner collar include means which together form a ball and socket joint between said ring and inner collar, said ball and socket joint providing rotation of said inner ring about the axis thereof and providing tilting of said axis independent of said rotation of said inner ring,
wherein said means forming said ball and socket joint comprise a spherical surface located on one of an outer surface of said ring and an inner surface of said inner collar and a cooperating surface engaging said spherical surface and located on the other of said outer surface of said ring and said inner surface of said inner collar.

4,490,889

SLIDE FASTENER ASSEMBLY

Hiroshi Yoshida, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Mar. 30, 1982, Ser. No. 363,494
Claims priority, application Japan, Apr. 9, 1981, 56-51268
Int. Cl.³ A44B *19/26*
U.S. Cl. 24—427 6 Claims



1. A slide fastener assembly, comprising:
(a) a pair of stringers having oppositely disposed rows of fastener elements secured to respective support tapes;
(b) a slider having
(1) an upper and a lower shield defining a space receptive of said fastener elements therebetween, and
(2) a diamond portion connecting said shields, and defin-

ing therewith a Y-shaped guide channel, said diamond portion having opposite sidewalls between said shields and converging toward the rear end of said slider at a first angle, for engaging only said fastener elements and an elongated longitudinal recess in at least one of said sidewalls to be spanned by the fastener elements, said recess and the other of said sidewalls defining therebetween a second angle smaller than said first angle; and

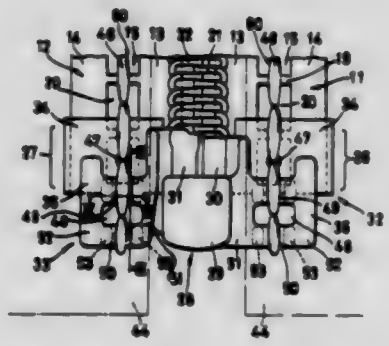
(c) at least one top end stop secured to one of said support tapes adjacent to the endmost fastener element thereof, said top end stop having an elongated central protruberance facing away from said one support tape and slidingly engageable with said diamond only in said elongated longitudinal recess.

4,490,890

SEPARABLE SLIDE FASTENER

Hiroshi Yoshida; Shunji Akeshi, both of Kurobe, and Yoshio Matsuda, Nyuzen, all of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Sep. 9, 1981, Ser. No. 300,488
Claims priority, application Japan, Sep. 10, 1980, 55-125839
Int. Cl.³ A44B *19/24*
U.S. Cl. 24—434 6 Claims



1. A separable slide fastener comprising:

(a) a pair of warp-knit stringer tapes each including a pair of longitudinal warp-knit webs spaced transversely from each other with a longitudinal wale-free region therebetween, and a connecting thread interconnecting said webs and having substantially parallel portions extending transversely across said wale-free region and spaced longitudinally at an equal interval, thereby defining a plurality of substantially rectangular openings longitudinally in and along said wale-free region;

(b) a pair of rows of coupling elements mounted on inner confronting longitudinal edges of said stringer tapes remotely from said wale-free region, respectively;

(c) a slider movable along said pair of rows of coupling elements for engaging and disengaging the latter;

(d) a separable bottom end stop comprising a box and a box pin extending therefrom, which are mounted on one of said warp-knit stringer tapes at one end thereof, and a pin mounted on the other stringer tape at one end thereof and insertable into said box; and

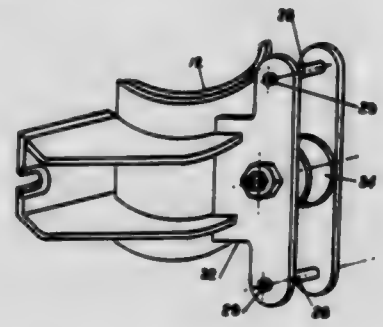
(e) a reinforcing body mounted on each of said stringer tapes at said one end thereof and adjacent to said separable end stop and including a thin member and an endmost thick member both extending transversely across said wale-free region, said thin member covering at least one of said openings defined by the endmost two of said parallel portions, and said endmost thick region having a transverse portion contiguous to said thin member in the longitudinal direction of said stringer tape and extending about a portion of said thin member and said one end of said stringer tape.

4,490,891

LINE CLAMP

Maxwell G. Begley, 632, Light St., Dianella, Western Australia 6062, and Keith Munslow-Davies, 7, Chaffers St., Morley, Western Australia 6062, both of Australia

Filed Nov. 16, 1982, Ser. No. 442,165
Claims priority, application Australia, Jun. 23, 1982, PF4556
Int. Cl.³ B65D *63/02*
U.S. Cl. 24—516 10 Claims



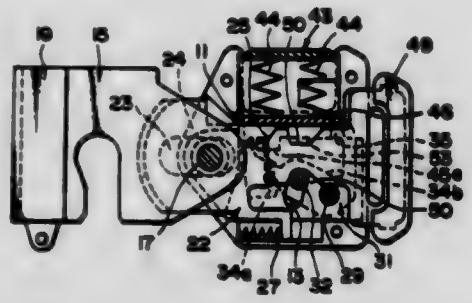
1. A line clamp comprising means for securing a member, and means for clamping the member to a line wherein the means for clamping the member to a line comprises a first clamp body portion comprising a cam mounted for partial rotation and being connected to the means for securing a member, a second clamp body portion comprising a further cam mounted for partial rotation, means being provided for detachably securing the second clamp body portion to the first clamp body portion and said cams being so located that when the first and second clamp body portions are secured together, the cams are opposed to one another and are arranged to clamp a line between them, said cams comprising working surfaces having profiles with relatively low portions flanked by relatively high portions and said line being normally clamped by the said relatively low portions.

4,490,892

BUCKLE DEVICE

Takeo Ueda, Fujisawa, Japan, assignor to NSK-Warner K.K., Tokyo, Japan

Filed Dec. 6, 1982, Ser. No. 447,933
Claims priority, application Japan, Dec. 16, 1981, 56-186288[U]
Int. Cl.³ A44B *11/26*
U.S. Cl. 24—641 6 Claims



1. A buckle device having a tongue member, a base member, a latch member mounted on said base member so as to be capable of assuming an engaging position in which said latch member is engageable with said tongue member and a non-engaging position in which said latch member is not engageable with said tongue member, said latch member having a first engaging portion and a second engaging portion, and an operating member capable of assuming an operative position in which it brings said latch member to said non-engaging position and a non-operative position in which said latch member can assume said engaging position, said operating member having a first acting portion and a second acting portion, when said latch member is in said engaging position and said operating member is being brought from said non-operative position

to said operative position, said first acting portion of said operating member being first engaged with said first engaging portion of said latch member to move said latch member by a predetermined amount from said engaging position toward said non-engaging position and subsequently, said second acting portion of said operating member being engaged with said second engaging portion of said latch member to bring said latch member to said non-engaging position.

4,490,893

FASTENING DEVICE FOR HOLDING CONSTRUCTION OR FUNCTIONAL PARTS ON COVER PLATES

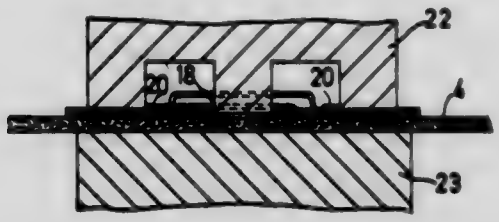
Klaus Müller, Weil-Haltingen, and Bernd Mutz, Schopfheim, both of Fed. Rep. of Germany, assignors to A. Raymond, Lorrach, Fed. Rep. of Germany

Filed Nov. 19, 1982, Ser. No. 443,147

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1981, 3146376

Int. Cl.³ A44B *17/00, 21/00*

U.S. Cl. 24—704 3 Claims



1. A fastening device for securing a construction element to a panel whereby the panel can be mounted to a surface by means of such construction element, said device comprising a holding plate spaced from the panel and adapted to receive and hold the construction element, a pair of support plates offset from said holding plate and integrally joined to opposite ends of the holding plate by connecting sidewalls, and an intermediate plate having claws on one side which can be forced into the panel to secure the intermediate plate to the panel and fastening means on the opposite side of the intermediate plate that cooperate with fastening means on the support plates to fasten the plates together, the claws on the intermediate plate being located beneath both the support plates and the holding plate of the fastening device when the plates are fastened together.

4,490,894

APPARATUS FOR ATTACHING A WITHDRAWAL CORD TO A TAMPON

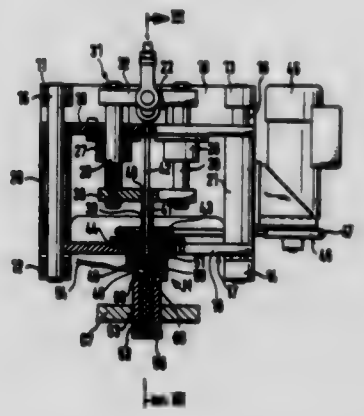
Axel Friese, Wuppertal, Fed. Rep. of Germany, assignor to Dr. Carl Hahn, G.m.b.H., Duesseldorf, Fed. Rep. of Germany

Filed Sep. 1, 1982, Ser. No. 414,093

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1981, 3134957

Int. Cl.³ A61F *13/20*

U.S. Cl. 28—120 13 Claims



1. In a device for manufacturing a tampon of the type having a withdrawal end and a withdrawal cord wound into a spiral and pressed into the withdrawal end of the tampon wherein the tampon is held in a cylindrical mold, the mold open at the withdrawal end of the tampon, with the withdrawal string extending out of the open mold; an improved means for winding the withdrawal cord into said spiral and for pressing said spiral into the withdrawal end of the tampon comprising:

a driver carriage facing the open end of the mold;

an axially extending centering mandrel affixed to the carriage and movable coaxially with respect to the mold;

an axially extending push off ram surrounding said centering mandrel and axially movable with respect to the cylindrical mold;

a driver surrounding and rotatably mounted about said push off ram, said driver having withdrawal cord gripping means;

means for moving said centering mandrel into close proximity with the end of said tampon;

means for rotating said driver about said push off ram whereby said gripping means gripe said extending withdrawal cord and winds said cord about said centering mandrel; and

means for axially moving said push off ram against said wound cord to push said cord off of said centering mandrel and press the wound cord against the withdrawal end of the tampon.

4,490,895

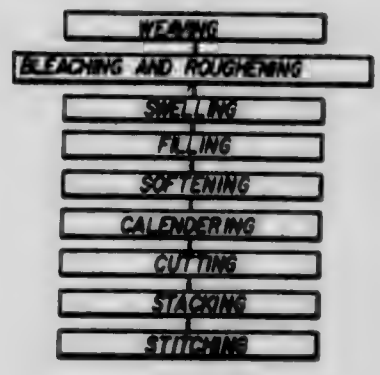
METHOD FOR PRODUCING CLEANSING AND WIPING CLOTH

P. H. Lin, 5, La. 131, Section 2, Mei Liao Rd., Kan Ching Li, Ho Mei Chen, Chang Hua Hsien, Taiwan

Filed Oct. 13, 1981, Ser. No. 310,815

Int. Cl.³ A47L *13/16*

U.S. Cl. 28—143 5 Claims



1. A method for producing a wiping cloth, comprising the following steps:

forming a cloth with low density of interwoven warp and weft yarns of 100% rayon;

bleaching the cloth, treating the cloth with dilute sulfate to make its surface somewhat rough, and dipping it in dilute base to swell it;

starching the cloth, softening it, and calendering it.

cutting the resulting cloth into pieces of proper size, stacking a plurality of such pieces, together to form multi-layered structure;

reinforcing the structure by stitching through the layers.

4,490,896

BAFFLE

William M. Small, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

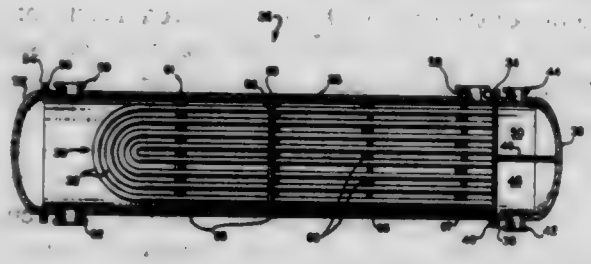
Division of Ser. No. 144,086, Apr. 28, 1980,. This application Sep. 2, 1982, Ser. No. 414,112

Int. Cl.³ B23P *15/126, 7/00*

U.S. Cl. 29—157.3 R 4 Claims

1. A method for facilitating the removal of a baffle from a shell which surrounds the baffle, said method comprising at

least partially surrounding the baffle with a ring having first surface to be positioned contiguous to the interior surfce of the



shell and a beveled surface which intersects with the first surface at an acute angle.

4,490,897

DEVICE FOR REPLACING FRONT SUSPENSION COMPONENTS IN A VEHICLE

Alf M. Ferre, 5540, Fordesfjordeu, Norway

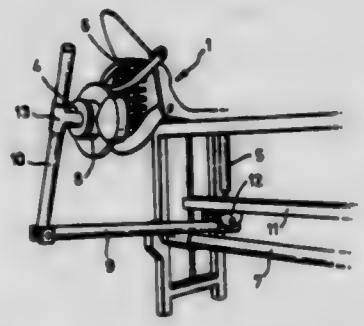
PCT No. PCT/NO82/00002, § 371 Date Sep. 23, 1982, § 102(e) Date Sep. 23, 1982, PCT Pub. No. WO82/02508, PCT Pub. Date Aug. 5, 1982

PCT Filed Jan. 29, 1982, Ser. No. 432,904

Claims priority, application Norway, Jan. 29, 1981, 810311

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—252 1 Claim



1. A device for replacing components in a front suspension of a vehicle comprising a front suspension working bench having means for affixing a front suspension traverse to the bench, a pair of lifting arms one protruding from each side of the front suspension working bench, the lifting arms being slideably secured to a longitudinal shaft in the bench and further comprising a lower arm and an upper arm pivotally connected to each other, the upper arm being arranged to be pivoted away from and in toward the bench so as to be adjustable to different front suspension traverses, the upper arm comprising a mounting plate which is adjustable in height for mounting to a wheel hub belonging to a front suspension traverse mounted in the bench, and a pressure cylinder arranged in the bench in such a way that upon actuation it is forced against the lifting arm, the mounting plate thereby being lifted to compress a spring of the front suspension components, dismantling and replacement thereby being simplified.

4,490,898

METHOD OF REPAIRING A WATER-COOLED ELECTRODE HOLDER

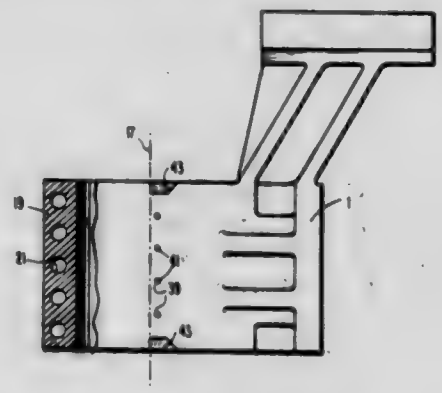
James G. Wilson, II, Huntington, and P. Fred Hammers, Barboursville, both of W. Va., assignors to Wilson Welding Company, Inc., Huntington, W. Va.

Filed Apr. 8, 1983, Ser. No. 485,461

Int. Cl.³ B23P *7/00*

U.S. Cl. 29—402.13 12 Claims

1. In a method of repairing an electrode holder of the type comprising a base and a U-shaped slab of metal having a circuitous path for cooling water therethrough in the form of a plurality of passageways within the slab, the method comprising cutting off the U-shaped slab on a substantially diametral plane, and replacing with a new portion the cut-off portion of the holder on the side of said plane opposite said base; the improvement comprising forming said new portion from a flat slab of metal, recording on a pattern the locations of said passageways on the same side of said plane as said base, transferring said locations from said pattern to one end of said flat



slab, drilling holes lengthwise through said slab at said transferred locations, bending said slab to U-shape, and securing the ends of the U-shaped slab to the base portion of the holder with the ends of said holes in communication with said passageways.

4,490,899

METHOD OF AND APPARATUS FOR REMOVING COUPLING MEMBERS FROM A SLIDE FASTENER

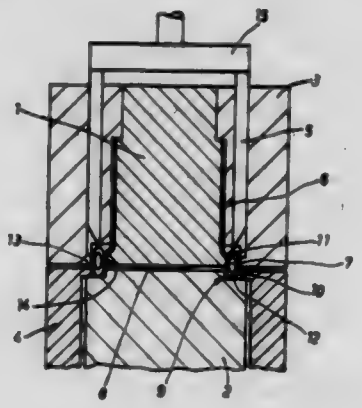
Gilbert Schelling, Richterswil, Switzerland, assignor to Hans Horlacher, Adliswil, Switzerland

Filed May 24, 1983, Ser. No. 497,592

Claims priority, application Switzerland, Jun. 4, 1982, 3474/82

Int. Cl.³ B21D *53/52*; A41H *37/06*

U.S. Cl. 29—410 2 Claims



1. A method of removing coupling members from a slide fastener having a pair of coupling member supporting bands and spirally or meander shaped coupling members located at opposite longitudinal edges of said supporting band and coupled to each other, which coupling members comprise a head section and a foot section, comprising the steps

(a) of disengaging said coupling elements from one another and of arranging said supporting bands in a substantially vertical condition and symmetrically relative to a center plane,

(b) of arranging one section of said supporting bands such that their coupling members are aligned at their foot section with the path of a cutting member,

(c) of positioning the coupling members which are to be removed relative to said cutting members,

(d) of clamping the sections of said supporting bands and of arresting the foot sections of the coupling members of said sections,

(e) of clamping the head sections of the coupling members to be removed,

(f) of cutting said foot sections in a direction extending parallel to said supporting bands, and

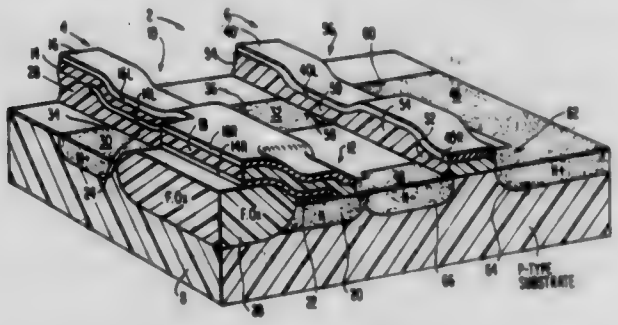
(g) of pulling off the coupling members clamped at their head sections in a direction away from said supporting members whereby a coupling member-less section is produced.

4,490,900

METHOD OF FABRICATING AN MOS MEMORY ARRAY HAVING ELECTRICALLY-PROGRAMMABLE AND ELECTRICALLY-ERASABLE STORAGE DEVICES INCORPORATED THEREIN

Te-Long Chiu, San Jose, Calif., assignor to SEEQ Technology, Inc., San Jose, Calif.

Filed Jan. 29, 1982, Ser. No. 343,848
Int. Cl.³ H01L 21/26, 29/78
U.S. Cl. 29—571 11 Claims



1. A method of constructing a tunnel dielectric for an MOS device such that charge carriers supplied by an active region in the device can be transported through said tunnel dielectric, said method comprising the steps of:

forming an oxide layer over the active region to provide said tunnel dielectric; and

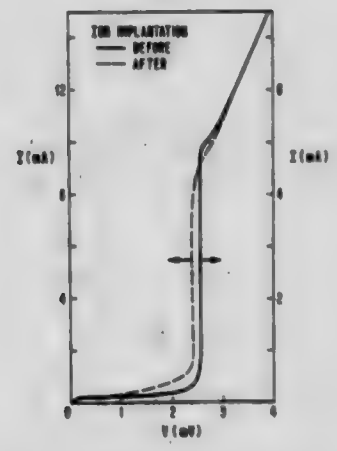
converting at least a portion of said oxide layer to an oxynitride material, said oxynitride material exhibiting a relatively low potential barrier to charge carriers tunnelling therethrough.

4,490,901

ADJUSTMENT OF JOSEPHSON JUNCTIONS BY ION IMPLANTATION

Gregory J. Clark, Katonah; Robert E. Drake, Somers, and Stanley I. Raider, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 5, 1983, Ser. No. 491,944
Int. Cl.³ H01L 39/22, 39/24, 21/265
U.S. Cl. 29—574 5 Claims



1. A method for adjusting the zero voltage Josephson current (I_o) of a tunnel junction by implanting ion including the steps of

providing first and second superconductive electrodes with a tunnel junction located between said first and second electrodes whereby tunneling current can flow therethrough between said superconductive electrodes,

measuring the voltage-current characteristics of said tunnel junction,

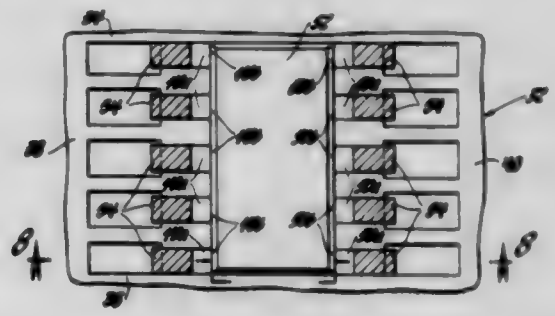
disposing said electrodes with said tunnel junction in an ion implantation structure, including an ion implantation beam, and implanting a boron ion species into said tunnel junction for trimming said zero voltage Josephson current I_o by decreasing the junction energy gap.

4,490,902

LEAD FRAME FOR MOLDED INTEGRATED CIRCUIT PACKAGE

Charles T. Eytcheson; Phillip A. Lutz, and Harold L. Fields, all of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 3, 1982, Ser. No. 414,792
Int. Cl.³ H01L 23/28, 23/48
U.S. Cl. 29—588 2 Claims



1. A method of making a semiconductor device package that includes molding a plastic body member over a semiconductor die affixed to inner free ends of a convergent pattern of finger leads of a sheet-like lead frame, the lead frame having integral dam bars transversely connecting finger leads, the improvement of providing a lead frame in which each dam bar has a cut made before the molding operation between each end and a contiguous finger lead extending from an inner facing edge of the dam bar toward but not reaching the opposite dam bar edge, positioning the lead frame in a mold having a package body molding cavity periphery adjacent the dam bar inner facing edge to minimize flash between finger leads during molding, clamping the dam bars between opposed faces on the mold, molding a package body within the cavity without producing a significant web between finger leads, and cutting the balance of each dam bar from each finger lead without encountering excessive cutting die wear due to contact with abrasive body molding material.

4,490,903

CONTACT SWITCHING DEVICE PRODUCTION METHOD

Shunichi Agatahama, Osaka, Japan, assignor to Omron Tateisi Electronics Co., Nagaokakyo, Japan

Continuation of Ser. No. 214,629, Dec. 10, 1981, Pat. No. 4,419,640. This application Jun. 3, 1982, Ser. No. 384,592
Claims priority, application Japan, Dec. 17, 1979, 54-163922; Nov. 13, 1980, 55-160426
Int. Cl.³ H01H 11/00
U.S. Cl. 29—622 4 Claims

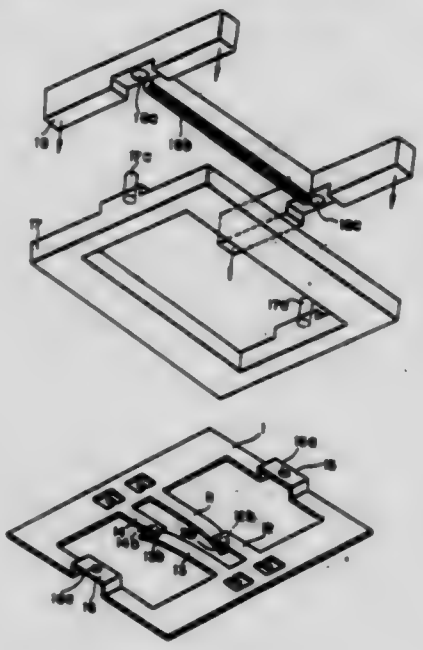
1. A method of producing a contact switching device comprising:

a step of pressing an electrically conductive metal sheet to form a lead frame having at least one relatively resilient contact member extending from one of terminal portions and a stationary contact member extending from the other terminal portion, said relatively resilient contact member and said stationary contact member being disposed in mutually opposed and spaced apart relation,

a step of bending external rim portions of said lead frame while said relatively resilient contact member is biased in such a manner that the opposed relatively resilient contact

member and stationary contact member are brought together into partially overlapping relation,

a molding step for forming an insulating base at base portions of said two terminal members, and



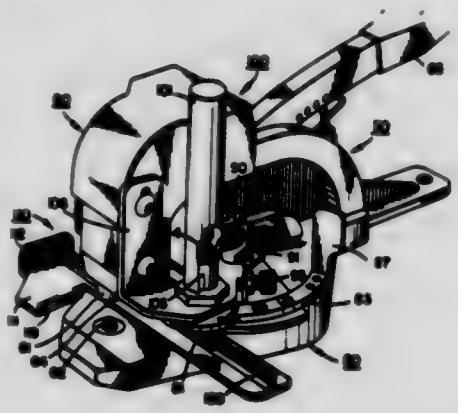
a terminal-forming step of cutting said lead frame to leave two terminal portions.

4,490,904

APPARATUS AND METHOD FOR INSTALLING ELECTRICAL CONNECTORS ON FLAT CONDUCTOR CABLE

George C. Moyher, Bridgeport, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Filed May 3, 1982, Ser. No. 373,931
Int. Cl.³ H01R *43/04*; B23P *19/00*; B65H *1/00*; B65G *1/08*
U.S. Cl. 29—864
22 Claims



1. The method of sequentially transferring cylindrical connectors from a supply of connectors at a loading station to an unloading station which includes a capture means comprising:

(a) loading a connector by moving it axially onto a connector holder located at a loading station, the connector holder being formed with a ramp and a clearance slot;

(b) transferring the holding and connector to the unloading station by movement radially with respect to the connector;

(c) axially shifting the capture means from a first location by the force applied by the ramp on the moving holding;

(d) axially shifting the capture means back to its first location whereby the connector is captured and retained by the capture means upon the arrival of the holder and connector at the unloading station;

(e) reorienting the holder as it approaches the unloading station to enable the clearance slot to clear the connector as the holder leaves the unloading station; and

(f) transferring the holder, without a connector, back to the loading station.

7. Apparatus for sequentially transferring cylindrical connectors from a loading station having a supply of connectors to an unloading station whereat the connectors may be utilized comprising:

(a) carry means mounted for movement relative to a frame;

(b) connector holding means operatively associated with said carry means and mounted for reciprocal movement along a path of movement between the loading station and the unloading station, said holding means having a pocket for the engagement and supporting of a connector moved into engagement therewith;

(c) loading means at the loading station for axially moving a connector into said pocket of said holding means at the loading station;

(d) drive means coupled to said holding means for moving said holding means and a supported connector radially from the loading station to the unloading station;

(e) connector capture means mounted at the unloading station for movement axially with respect to said holding means and a supported connector from a normal position in the path of movement of said holding means and a supported connector to a second position out of such path of movement;

(f) ramp means formed on said holding means for axially moving said capture means out of the path of movement of said holding means and connector until said holding means and connector arrive at the unloading station whereat said capture means will axially return to its normal position to preclude radial movement of a supported connector;

(g) clearance means in the form of a slot formed in said holding means for enabling the supported connector to be disengaged from said holding means as said holding means is moved along its path of movement from the unloading station back to the loading station; and

(h) control means operatively associated with and mounted for movement with respect to said holding means for rotating said holding means from a first orientation whereby said ramp means guides said capture means for axial movement to contact and retain the connector while said clearance means precludes radial movement of a supported connector with respect to said holding means as said holding means approaches the unloading station to a second orientation whereby said clearance means is positioned to enable said holding means to clear the connector retained by said capture means as said holding means moves from the unloading station back to the loading station.

4,490,905

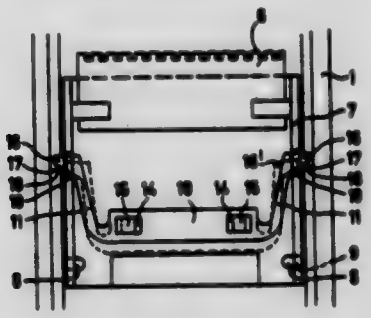
SHAVING APPARATUS

Pieter Riemersma, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 18, 1983, Ser. No. 458,797
Claims priority, application Netherlands, Feb. 9, 1982, 8200479
Int. Cl.³ B26B *19/26*
U.S. Cl. 30—34.1
2 Claims

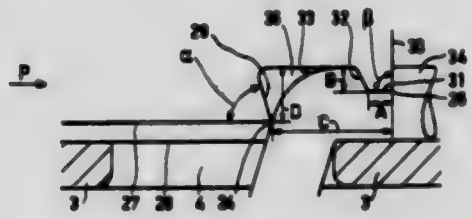
1. A shaving apparatus having a housing and including a trimmer movable relative to said housing between a latched position and an operating position; said trimmer comprising a holder, a pair of cutters arranged in said holder, a slidable actuating button associated with the holder, and a connecting element secured to said actuating button and having oppositely extending resilient arms, the distal end of each such arm being formed as a latching member engageable behind a wall portion of the housing to hold the trimmer in the latched position, each latching member having a cam surface inclined relative to the direction of movement of the actuating button and cooperative

with the holder, the latching member being disengaged from the respective wall portions of the housing to release the trim-



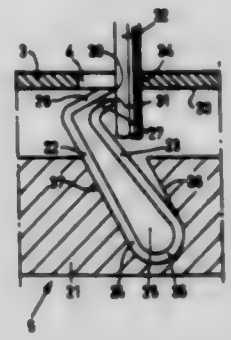
mer for movement to the operating position upon movement of the actuating button.

4,490,906
SHAVING APPARATUS
Freddy Haes, and Cornelis M. Reynhout, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 10, 1982, Ser. No. 416,721
Claims priority, application Netherlands, Sep. 11, 1981, 8104201
Int. Cl.³ B26B *19/14*
U.S. Cl. 30—34.2 1 Claim



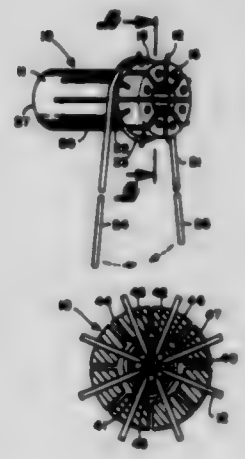
1. A shaving apparatus having a shear plate provided with hair-entry apertures and formed with an inner surface, and a cutting unit associated with and drivable relative to the shear plate; said cutting unit comprising cutting elements extending towards the shear plate, each cutting element having an end surface facing the inner surface of the shear plate and being formed with a cutting edge, and hair-pulling elements respectively associated with the cutting elements and positioned in front of said cutting elements in the direction of driving, each hair-pulling element being rigidly connected to its associated cutting element and having a first end surface portion facing the inner surface of the shear plate and being formed with a contact edge, said first end surface portion of each hair-pulling element being situated at a greater distance than the end surface of its associated cutting element from the inner surface of the shear plate, each hair-pulling element also having a second end surface portion adjoining said first end surface portion but situated at a greater distance than said first end surface portion from the inner surface of the shear plate to thereby provide a recess between the end surface of each cutting element and the first end surface portion of its associated hair-pulling element, the first and second end surface portions of each hair-pulling element and the end surface of its associated cutting element extending respectively in planes substantially parallel to the plane of the inner surface of the shear plate, and each hair-pulling element further having a front surface in the direction of driving, said front surface extending substantially perpendicularly to the inner surface of the shear plate.

4,490,907
SHAVING APPARATUS
Jan H. Benedictus, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 21, 1983, Ser. No. 487,387
Claims priority, application Netherlands, May 6, 1982, 8201848
Int. Cl.³ B26B *19/42*
U.S. Cl. 30—34.2 3 Claims



1. A shaving apparatus comprising a shear plate with apertures and a cutting unit which is drivable relative to the shear plate and comprises a body provided with cutting elements, a hair-pulling element being associated with each cutting element and preceding said cutting elements in the direction of driving, characterized in that each cutting element and associated hair-pulling element are formed by the limbs of a substantially U-section member of a sheet material.

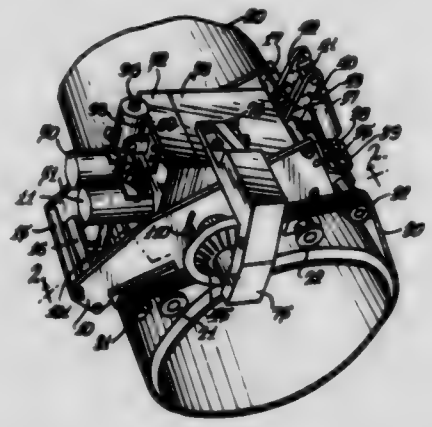
4,490,908
WIRE STRIPPER AND METHOD
John N. Tengler, Chardon, Ohio, assignor to Associated Enterprises, Inc., Painesville, Ohio
Continuation of Ser. No. 366,922, Apr. 9, 1982, abandoned. This application Jul. 26, 1984, Ser. No. 634,660
Int. Cl.³ H02G *1/12*
U.S. Cl. 30—90.4 33 Claims



1. A wire stripping apparatus for stripping insulation from a coaxial cable having an insulated centrally located conductor and a drain wire radially spaced from said central conductor and at a random circumferential location with respect thereto, said apparatus comprising a plurality of piercing means disposed in a radial array each having an innermost end portion for piercing the insulation around the central conductor, and means for moving said piercing means radially inward to pierce the insulation of the central conductor, each of said piercing means including surface means for moving the drain wire from a random circumferential location to a circumferential location between an adjacent pair of said piercing means during the radially inward movement of said piercing means.

4,490,909
TRAVELLING PIPE CUTTER
Edward H. Wachs, Lake Forest, and Horst Kweck, Lake Bluff, both of Ill., assignors to The E. H. Wachs Company, Wheeling, Ill.

Filed Nov. 26, 1982, Ser. No. 444,679
Int. Cl.³ B26B 27/00
U.S. Cl. 30—97 3 Claims

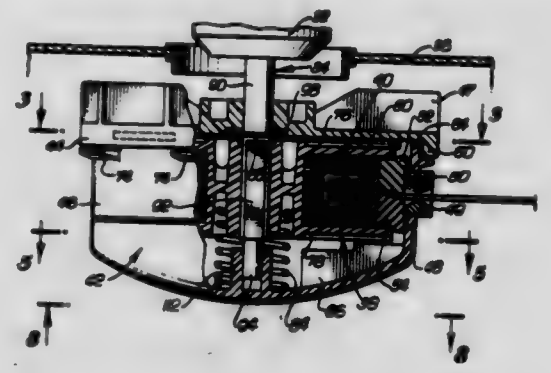


2. A travelling pipe cutter for cutting a pipe while travelling around the pipe, said cutter comprising a frame having a pair of spaced-apart interconnected frame plates and having guide rollers at both sides thereof engageable with the pipe, chain means extendable around the pipe, a pivotally mounted main gear box positioned between said frame plates, a feed drive shaft extending outwardly from both sides of the main gear box and through the adjacent frame side plate with chain drive sprockets on the ends thereof, a cutter drive shaft, extending from one side of the main gear box in spaced parallel relation with the feed drive shaft and extending beyond one frame side plate with a cutter blade on the end thereof, a change gear box connected to the main gear box, a pair of motors mounted on said change gear box each having an output shaft, change speed gearing in said change gear box connected to the output shafts of the motors and a pair of shafts extending into the main gear box, and gearing in the main gear box interconnecting said pair of shafts one to the feed drive shaft and the other to said cutter drive shaft, and means sealing said main gear box including the cutter drive shaft and the feed drive shaft relative thereto whereby oil can be held in the main gear box for cooling and lubrication said cutter further including a first elongate curved slot in one of said frame plates through which said cutter drive shaft extends, and locking means comprising an elongated coupling member extending from said main gear box, and a second elongate curved slot in said one frame plate parallel to said first elongated curved slot through which said coupling member extends and a connecting means on said coupling member for releasably engaging against said one frame plate to hold said gear boxes in a fixed position, said feed drive shaft rotating said sprockets thereby moving said pipe cutter along said chain and around said pipe.

4,490,910
CUTTING HEAD FOR STRING TRIMMER
Charles A. Mattson, Woodland Hills, and Richard J. Landy, Canoga Park, both of Calif., assignors to Allegretti & Co., Chatsworth, Calif.

Filed Jul. 21, 1982, Ser. No. 400,443
Int. Cl.³ A01D 55/18
U.S. Cl. 30—276 5 Claims

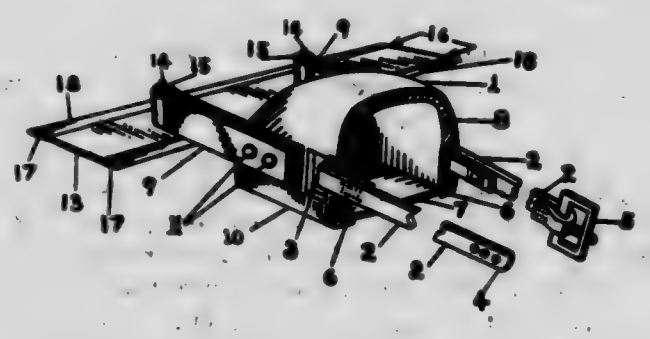
1. A string trimmer cutting head comprising:
a motor having a rotating drive shaft;
a spool having a flexible line wound thereupon, said spool engaging and being driven by said drive shaft;
a housing over said spool, said housing having a peripheral opening so that a length of said flexible line may extend outwardly from said spool through said opening, said housing being selectively lockable to said spool to rotate at the same speed as said spool, and selectively unlockable so that said spool may rotate at a higher speed than said housing to feed flexible line through said opening, wherein said housing comprises a rear plate engageable to said drive shaft and a hub engageable to said rear plate; and
means for locating said spool and said housing directly on said drive shaft, said means for locating comprising:
a cylindrical portion of said drive shaft adjacent said motor;
a central axial cylindrical surface through said rear plate, said surface having about the same diameter as that of said cylindrical portion, so that said rear plate may freely slide and rotate on said cylindrical portion;



a noncylindrical portion of said drive shaft adjacent said cylindrical portion;
a central axial noncylindrical surface through said spool, said noncylindrical surface being dimensioned to be driveably engaged by said noncylindrical portion of said drive shaft;
first means for engaging said rear plate to said shaft to hold said cylindrical surface of said rear plate on said cylindrical portion of said drive shaft; and
second means for engaging said spool to said shaft to hold said noncylindrical surface of said spool on said noncylindrical portion of said drive shaft.

4,490,911
SHOE DEWEEDER
Charles J. Schultz, 5860 Middle Fork Dr., Sparks, Nev. 89431

Filed Jan. 17, 1983, Ser. No. 439,844
Int. Cl.³ B26B 19/04; A01B 39/00, 49/02
U.S. Cl. 30—297 1 Claim



1. A deweeding implement that utilizes muscle and kinetic energy of the movement of the low limbs of the human body; that comprises a toe boot, having two laterally fastened, parallel arms, each arm fastened by two welded rivets which are in tandem, longitudinally, said arms projected forwardly to a point where a double edged cutting blade is attached, in front of, and across the toe boot, with machine screws, upwardly inserted from the bottom of the cutting blade, through holes provided, thence through apertures of the arms, thereupon, said screws are secured by accommodating nuts; the cutting blade then so secured and placed as to leave a space of one inch from front of toe boot to edge of cutting blade, nearest the

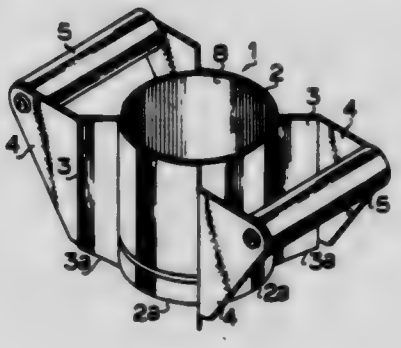
front of the toe boot, said cutting blade being rectangular in shape, having two cutting edges, one edge being one of the longer sides of the rectangle, with the second cutting edge being the other longer side of the rectangle, said cutting blade being concavo-concave in shape on its outwardly disposed areas of the two longer sides of its rectangle shape, which said convaco-concave shape allows for self sharpening of cutting blade, while implement is in use; said cutting blade being so designed as to utilize both cutting edges of said blade, by the detachability, reversibility, rotatability of the blade; and with toe boot, arms, blade assembly, all secured to user's shoe by straps drawn rearwardly from point of securement on toe boot, said point of securement being slots on each side of rear of toe boot, said straps then brought to a place behind the user's shoe, where said straps are drawn together and secured by a buckling device, with then toe boot, arms, blade assembly secured and comfortably fit, assisted by a heavy cushion pad, inside toe boot, which said pad, acting as a protective cushion, also acts as a spacer, making this invention adaptable to either a left or right shoe.

4,490,912

PINEAPPLE CUTTER

Tsugutoshi Hirano, c/o Kabushiki Kaisha, Hirano Seisakusho Kita-koiwa 3-chome 26-10, Edogawa-ku, Tokyo, Japan

Filed Jun. 7, 1983, Ser. No. 501,867
Claims priority, application Japan, Jun. 8, 1982, 57-85227[U]
Int. Cl.[3] A47J 25/00; B26B 3/00
U.S. Cl. 30—302 3 Claims



1. A pineapple cutter comprising a hollow cylinder including a circumferential portion and a lower end portion, said cylinder having a first cutter edge at the circumferential portion of the lower end portion thereof, a pair of cutter portions each having a second cutter edge secured to, forming a slight inclination to, and extending outwardly from said hollow cylinder to cut the peel of a pineapple longitudinally and a pair of handles secured to supporting plates, said supporting plates secured to, and extending from, said pair of cutter portions and said hollow cylinder.

4,490,913

LOW CONTACT FORCE POSITION SENSING PROBE

Arthur D. Via, 28424 Universal, Warren, Mich. 48092

Filed Jan. 24, 1983, Ser. No. 460,108
Int. Cl.[3] G01B 5/02, 7/02
U.S. Cl. 33—172 E 9 Claims

1. A probe for sensing the position of an object relative to a reference point comprising:

a body;

a tip adapted to contact the object;

a piston reciprocably mounted in said body for movement along an axis toward and away fron the object;

means mounting said tip on said piston and including means for allowing displacement of said tip along said axis relative to said piston, whereby said piston may continue displacement thereof along said axis toward the object after said tip has contacted the object;

means for sensing the displacement of said tip relative to said body;

means defining a fluid pressure chamber in said body bounded in part by a surface of said piston and arranged to effect movement of said piston toward the object from a retracted position to an extended position in response to the introduction of pressurized fluid into said chamber; and

biasing means within said body for normally urging said piston toward said retracted position thereof in the absence of pressurized fluid in said chamber acting on said piston.

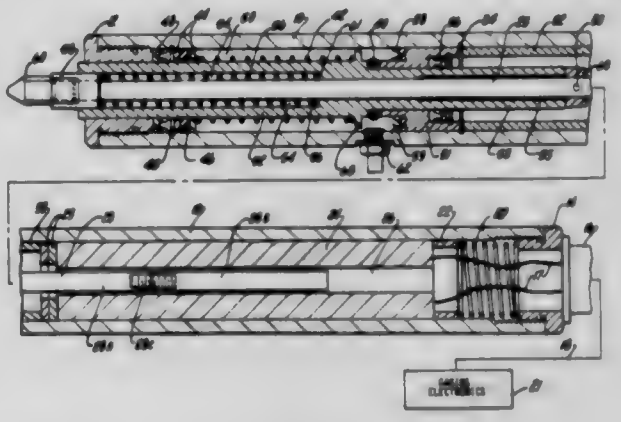
9. A probe for sensing the position of an object relative to a reference point comprising:

a body;

a tip adapted to contact the object;

a piston reciprocably mounted in said body for movement along an axis toward and away from the object;

means for mounting said tip on said piston and including means for allowing displacement of said tip along said axis



relative to said piston, whereby said piston may continue displacement thereof along said axis toward the object after said tip had contacted the object;

means for sensing displacement of said tip relative to said body;

means for displacing said piston along said axis from a retracted position to an extended position toward the object;

biasing means within said body for normally urging said piston toward said retracted position thereof;

said mounting means including a bore extending longitudinally in said piston and a shaft slideably disposed in said bore and having said tip secured to one end thereof;

said probe further including a pair of spaced apart bearings in said body;

said piston being slidably mounted in said bearings;

said probe further including means defining a fluid chamber within said body between said bearings; and

said biasing means including a spring sleeved over said piston and disposed between said fluid chamber and one of said bearings.

4,490,914

ERROR CORRECTION SYSTEM FOR POSITION MEASURING INSTRUMENTS

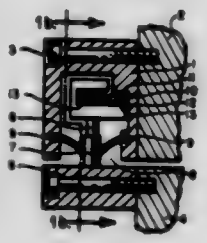
Alfons Spies, Seebruck, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

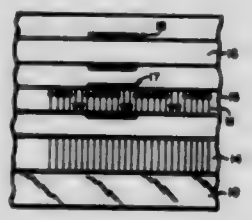
Filed Jan. 4, 1983, Ser. No. 455,604
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1982, 3201005
Int. Cl.[3] G01B 11/02
U.S. Cl. 33—125 R 22 Claims

1. In a precision measuring instrument for measuring the relative position of first and second objects, of the type comprising a measuring scale which defines a measuring division, a scanning unit adapted to scan the division and to generate at least one analog signal in response thereto, means for coupling the scale to the first object, means for coupling the scanning

unit to the second object, and an evaluating unit coupled to the scanning unit to evaluate the at least one analog signal, the improvement comprising:

at least one correction track, defined by the scale, which encodes correction information, said correction track associated with the measuring division and encoding correction information indicative of the magnitude of an error in the at least one analog signal, said error comprising at least one of measuring division errors and guidance errors;





means, included in the scanning unit, for scanning the at least one correction track and generating at least one analog correction signal in response thereto, a selected parameter of said analog correction signal indicative of the magnitude of said error in the at least one analog signal; and

means for correcting the at least one analog signal in response to the selected parameter of the at least one correction signal.

4,490,915

SEALING ELEMENT FOR ENCAPSULATED MEASURING DEVICE

Horst Burkhardt, Trachtiching, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Apr. 21, 1983, Ser. No. 487,210

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1982, 3215336

Int. Cl.³ G01B *11/02*

U.S. Cl. 33—125 R

23 Claims



1. In an encapsulated device for measuring the relative position of two objects wherein the device comprises: a housing adapted to be secured to a first object; an opening defined by the housing and extending along a measuring direction; a measuring component disposed in the housing; and a follower passing through the opening, secured to the measuring component and adapted to be secured to a second object; the improvement comprising:

a pair of sealing lips extending along the measuring direction; together covering the opening around the follower, each secured to the housing to seal the opening around the follower as the follower moves in the measuring direction along the opening, and each defining a first array of discrete regions of greater flexibility and a second array of discrete regions of lesser flexibility, such that the discrete regions of the first array are disposed in an alternating relationship with the discrete regions of the second array;

said first array of discrete regions of greater flexibility being exposed to and in fluid communication with a space located on a selected side of the housing and extending remote from the follower.

4,490,916

TEMPLATE FOR SCRIBING POLYGONS

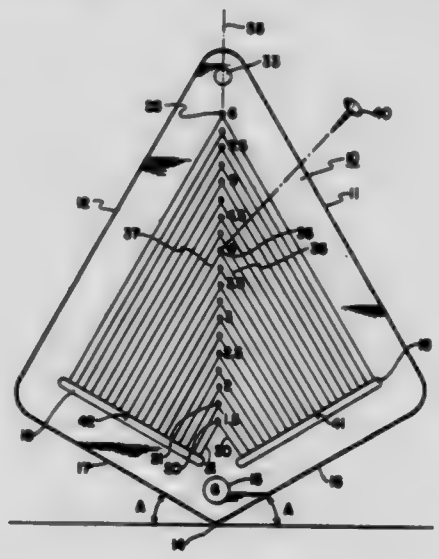
Herman D. Blum, 131 Cindy Dr., Old Bridge, N.J. 08857

Filed Jan. 17, 1983, Ser. No. 458,215

Int. Cl.³ B43L *13/00*

U.S. Cl. 33—174 B

6 Claims



1. A template for scribing polygons comprising:

a planar member having an apex at one end with a right and left side extending therefrom at the same given angle A with respect to a horizontal line, a first right slot on the surface of said member positioned above said right side and extending parallel thereto, and a second left slot positioned on the surface of said member above said left side and extending parallel thereto, said planar member having on its surface a series of indicators directed along a vertical axis emanating from said apex and positioned symmetrically between said slots to determine rotation points for said template when a pivot member is inserted at a selected one of said indicators indicative of the length of a side of said polygon to be formed, where the said given angle A is selected such that

$$A=(360°/n)$$

where n=number of sides of said polygon to be formed.

4,490,917

VEHICLE DOCKER

James T. Pilling, 762 Redding Way, Upland, Calif. 91786

Filed Dec. 27, 1982, Ser. No. 453,774

Int. Cl.³ B60R *27/00*; G01C *15/00*; B60Q *9/00*

U.S. Cl. 33—264

1 Claim

1. A vehicle parking docker, comprising:

a suspended docking indicator whereby contact between the indicator and a vehicle may be visually observed to indicate accurate docking;

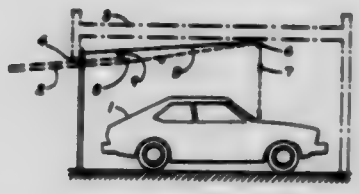
means for suspending said indicator, having two ends and providing vertical cord support for said indicator from one end;

means to support and guide cord support means;

means to attach said cord support end opposite said indicator to an overhead garage door,

a plurality of cord loops spaced apart and connected to said means for suspending said indicator, and

a plurality of hook assemblies attached to a garage enclosure member whereby any cord loop may be flexibly attached





to any said hook assembly to change the position of said docking indicator, wherein at least one said hook assembly is attached to said overhead garage door and contains a flexible post over which a cord loop may be placed when said door is opened and which will bend to release said cord loop when said door is closed.

4,490,918

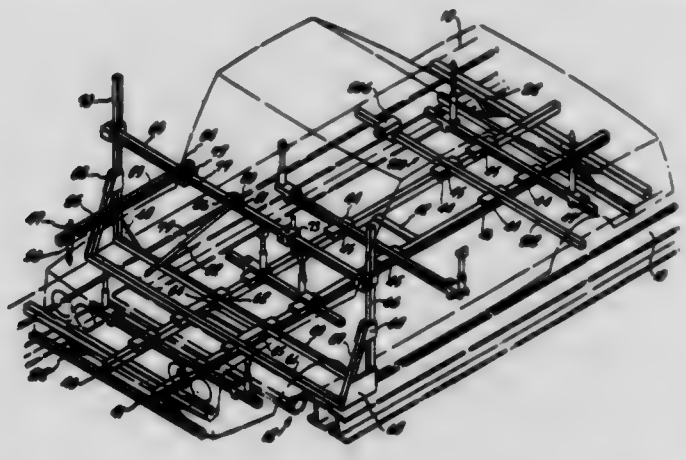
VEHICLE FRAME MEASUREMENT DEVICE

Allan H. Clausen, Lomita, Calif., assignor to Continental Custom Bridge Company, Alexandria, Minn.

Continuation of Ser. No. 431,810, Sep. 30, 1982, Pat. No. 4,442,608. This application Feb. 6, 1984, Ser. No. 576,934

Int. Cl.³ G01B 5/25

U.S. Cl. 33—288 19 Claims



1. A vehicle body-and-frame measurement apparatus for use in realigning the structure of a damaged unibody vehicle having reference points when the vehicle is supported on a straightening device, the device having a longitudinal axis and a horizontal plane, the apparatus comprising means for measuring the vehicle body-and-frame comprising:

(a) at least two elongated rails for positioning substantially parallel to the longitudinal axis of the straightening device;

(b) cross-members between the rails for holding the rails in fixed parallel relationship relative to each other;

(c) a plurality of reference members retained by the rails and means for slideably securing the reference members to the rails so that the reference members can move horizontally perpendicular to the rails;

(d) at least two vertical locators for at least one of the reference members movably retained on the respective reference members, the locators being sufficiently long to reach reference points of the vehicle;

(e) means for movably securing each vertical locator to its respective reference member;

(f) a pair of vertical uprights supported by the rails and having a vertical axis substantially perpendicular to the horizontal plane of the straightening device;

(g) a vertically adjustable horizontal bar attached to the uprights for positioning above the vehicle frame or within the passenger compartment with the windows open, substantially perpendicular to both the longitudinal axis of the straightening device and the vertical axis of the uprights;

(h) means for affixing the horizontal bar to the uprights so that the bar is vertically adjustable;

(i) at least two upper vertical locators slideably attached to the horizontal bar;

(j) a rigid tram, the tram being attached to the horizontal bar, the tram being substantially parallel to the longitudinal axis of the rails and perpendicular to the horizontal bar;

(k) means for affixing the tram to the horizontal bar so that the tram can slide along the length of the horizontal bar;

(l) a vertical locating base attached to the tram;

(m) a vertical locator held by the vertical locating base; and

(n) means for moving the vertical locator relative to the horizontal bar in a direction substantially parallel to the longitudinal axis of the straightening device.

4,490,919

LEVELING ARRANGEMENT FOR MEASURING TERRAIN POINTS

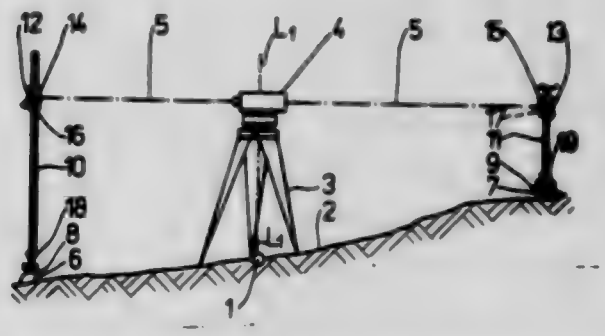
Wieland Feist, 3, Karl-Barthel-Str., 6902 JENA-Lobeda, District of Gera, and Gerhard Hüther, 36, Eugen-Diederichs-Str., 69 JENA, District of Gera, both of German Democratic Rep.

Filed Feb. 16, 1982, Ser. No. 338,676

Claims priority, application German Democratic Rep., Apr. 1, 1981, 228311

Int. Cl.³ G01C 5/00, 5/02

U.S. Cl. 33—290 3 Claims



1. A leveling arrangement for measuring the elevation of terrain points, comprising in a terrain:

an electro-optical distance measuring device emitting a measuring beam and having a vertical axis L—L,

a first deviating means and a second deviating means,

elongated mounting means for rigidly connecting

said first and said second deviating means in opposition to one another and in spaced symmetry to said vertical axis L—L at least adjacent to said distance measuring device,

said mounting means being a portion of said distance measuring device extending horizontally from both sides of said distance measuring device,

said first and said second deviating means being mounted at the respective end portions of said elongated mounting means,

a first ground mark for marking a first terrain point to be measured,

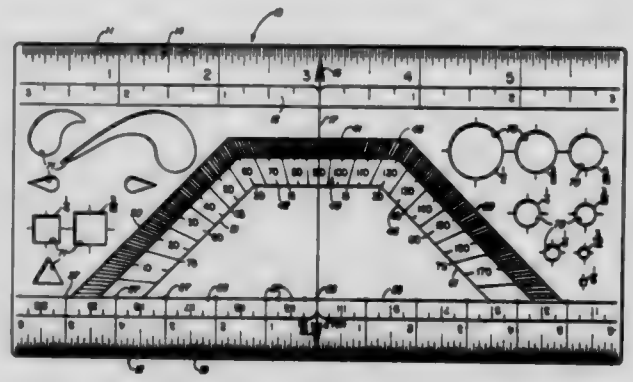
a second ground mark for marking a second terrain point to be measured,
a first reflecting means,
a second reflecting means,
a third reflecting means,
a fourth reflecting means,
said third and fourth reflecting means being associated to said first and second deviating means in optical alignment to said first and second deviating means, respectively, and to said electro-optical distance measuring device,
said third reflecting means being for directing a portion of said measuring beam in said first deviating means,
said fourth reflecting means being for directing another portion of said measuring beam to said second deviating means,
said portion and said other portion of said measuring beam being at right angles (horizontal) to said vertical axis,
said first reflecting means being mounted on said first ground mark,
said second reflecting means being mounted on said second ground mark,
said first deviating means being arranged perpendicularly above said first reflecting means,
said second deviating means being arranged perpendicularly above said second reflecting means,
said first deviating means and said second deviating means, respectively, being for deviating the horizontal portions of said measuring beam to said first and said second reflecting means, in parallel to said vertical axis L—L,
said first and said second reflecting means being for back reflecting said measuring beam in parallel to said axis L—L to said first and said second deviating means and in parallel to said portion and to said other portion to said third and said fourth reflector, and in parallel to said measuring beam to said electro-optical distance measuring device.

4,490,920
GUIDE CLAMP
Norman Griset, 380 Jennifer La., Orange, Calif. 92669
Continuation-in-part of Ser. No. 326,840, Dec. 3, 1981, Pat. No. 4,394,800. This application Jul. 11, 1983, Ser. No. 512,366
Int. Cl.[3] B43L *13/02*
U.S. Cl. 33—443 11 Claims



1. A guide clamp adapted to grip a workpiece between opposing jaw faces, comprising:
(a) a bar having guideway means along the reach thereof;
(b) a clamp jaw means at one end of the bar having a jaw face facing towards the bar and a pull means adapted to be actuated to exert a pull in a direction away from the bar;
(c) a shifting jaw carried on the guideway means, having a jaw face facing the clamp jaw and being shiftable along the bar to space the jaw faces to embrace a workpiece between them;
(d) a pull rod extended alongside the bar with one end being attached to the pull means to be pulled thereby; and
(e) a meshing lock means at the sifting jaw adapted to positively engage the pull rod by meshing with the pull rod to lock the shifting jaw to the pull rod; to normally remain disengaged as the shifting jaw is moved along the bar but to engage and lock with the pull rod whenever the shifting jaw is moved against a workpiece embraced by the jaws.

4,490,921
DRAFTING TOOL
William D. Woods, and John H. Pigman, both of Tempe, Ariz., assignors to International Design Corporation, Phoenix, Ariz.
Filed Sep. 13, 1982, Ser. No. 417,136
Int. Cl.[3] B43L *9/00*
U.S. Cl. 33—476 8 Claims



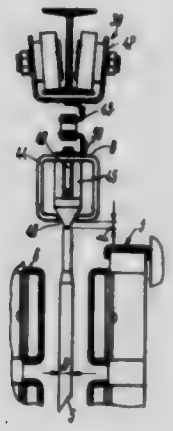
1. A drafting tool made of a rectangular piece of flat transparent material having a predetermined length and a predetermined width for use with a marking instrument including in combination:
first and second straight parallel reference edges comprising the outer edges of the length of said tool;
a protractor base line marked on said tool and spaced from and parallel to said first and second edges;
a half-scale ruler marked along at least said first straight reference edge or said base line, having a half-scale zero-point marked at the mid-point thereof, with half-scale units marked in increasing dimensions toward both ends of said first reference edge;
a centerline marked on said tool perpendicular to said reference edges and intersecting said base line and said half-scale zero-point;
a protractor marked on said tool with the origin thereof at the point where said centerline intersects said base line, said protractor being marked out on a generally trapezoidal-shaped layout, having a narrow top side parallel to said base line and extending in equal amounts from opposite sides of said centerline, first and second oblique sides converging toward one another from said base line to said top side at a first predetermined angle, and the intersection of said first and second oblique sides with the ends of said top side making a second predetermined angle with respect to the base line of said protractor as measured from the origin thereof;
a hole located at the origin of said protractor to permit the passage of the point of a pencil therethrough; and
a plurality of spaced holes through said tool aligned with predetermined marks of said half-scale ruler, said holes being dimensioned to permit the passage of the point of a pencil therethrough for drawing circles.

4,490,922

APPARATUS FOR DRYING AND CALCINATING COATED WELDING ELECTRODES WITH THE USE OF INDUCTION HEATING

Alexandr A. Gorodetsky, Grazhdansky prospekt, 128, korpus 1, kv. 48; Nikolai N. Gromov, ulitsa Esenina, 36, korpus 1, kv. 180, both of Leningrad; Vladimir L. Kuleitsky, ulitsa Zavodskaya, 20, kv. 9, Leningrad, Pargolovo; Rudolf A. Marus, ulitsa Chernyakhovskogo, 11, kv. 57, Leningrad; Solomon E. Ryskin, ulitsa B. Pushkarskaya, 3, kv. 12, Leningrad; Pavel B. Samoilov, prospekt Engelsa, 36, kv. 33, Leningrad; Alexandr N. Shamov, prospekt Engelsa, 36, kv. 42, Leningrad; Nikolai V. Sharygin, ulitsa Esenina, 36, korpus 1, kv. 181, Leningrad, and Ivan N. Kireev, ulitsa Belinskogo, 45, kv. 6, Vologodskaya oblast, Cherepovets, all of U.S.S.R.

Filed Sep. 28, 1982, Ser. No. 427,982
Int. Cl.³ F26B *3/34*
U.S. Cl. 34—1 20 Claims



1. An apparatus for drying and calcinating coated welding electrodes having a bare terminal end, using induction heating and comprising:

a slot induction heater having a substantially vertical arrangement of a slot and subdivided into several sections along the length thereof,

each of said sections of said slot induction heater incorporating top and bottom side electroconductive bus-bars and middle electroconductive bus-bars, all of said bus-bars being disposed along sides of said slot, for carrying an electric current of a substantially identical magnitude, and having different vertical widths,

said middle electroconductive bus-bars having a vertical width exceeding a vertical width of said top and bottom side electroconductive bus-bars,

said top side electroconductive bus-bars having a vertical width exceeding a vertical width of said bottom side electroconductive bus-bars,

a chain conveyor provided with inlet and outlet areas and with carrying and return runs, and intended for conveying said coated welding electrodes inside said slot of said slot induction heater along the entire length thereof,

a plurality of magnetic holders secured to said chain conveyer and intended for holding magnetically said coated welding electrodes,

said magnetic holders being secured to said chain conveyer so that during the time of said conveying of said coated welding electrodes being held by said magnetic holders inside said slot of said slot induction heater, said magnetic holders are arranged over said slot,

each of said magnetic holders representing a magnetic system incorporating a magnetic circuit and a permanent magnet having a pole piece and embraced by said magnetic circuit,

an arrangement adapted for loading said coated welding electrodes into said chain conveyer and disposed adjacent to said inlet area of said chain conveyer,

said arrangement for loading incorporating a receiving mechanism provided with inlet and outlet areas,

said receiving mechanism providing means for arranging within said inlet area thereof, said coated welding electrodes substantially in parallel with a constant spacing exceeding an outer diameter of said coated welding electrodes and delivering within said outlet area thereof, said bare terminal ends of said coated welding electrodes to said magnetic holders,

a first orientating transporter provided with carrying and return runs and disposed adjacent to said outlet area of said receiving mechanism,

said carrying run of said first orientating transporter being arranged in a helical line and designed as a descending structure for transferring said coated welding electrodes being held by said bare terminal ends by said magnetic holders to a vertical position, providing freely suspended conveyance of said coated welding electrodes inside said vertically arranged slot of said induction heater,

an arrangement for unloading said coated welding electrodes from said chain conveyer, disposed adjacent to said outlet area of said chain conveyer,

said arrangement for unloading incorporating a second orientating transporter provided with carrying and return runs and with inlet and outlet areas, and disposed adjacent to said outlet area of said chain conveyer,

said carrying run of said second orientating transporter being arranged in a helical line and designed as an ascending structure for withdrawing said coated welding electrodes being held by said bare terminal ends by said magnetic holders from a vertical position, and

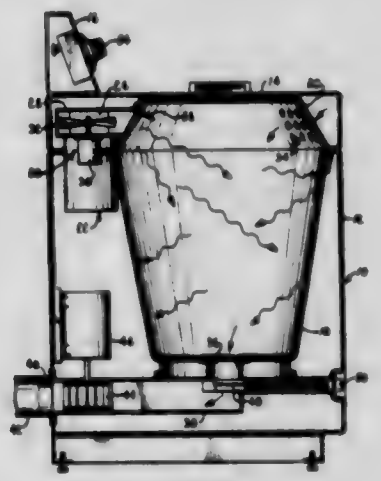
a mechanism for removing said coated welding electrodes from said magnetic holders disposed adjacent to said outlet area of said second orientating transporter.

4,490,923

MICROWAVE CLOTHES DRYER

Perry W. Thomas, 12708 12th St., Grandview, Mo. 64030

Filed Nov. 29, 1982, Ser. No. 445,005
Int. Cl.³ F26B *23/08*
U.S. Cl. 34—1 2 Claims



1. A clothes dryer comprising:

a cabinet;

a clothes container mounted in a stationary position in said cabinet for receiving damp clothes, said container having a generally frustoconical side wall which tapers from top to bottom;

means for generating electromagnetic microwave energy;

a waveguide in said cabinet for receiving the microwave energy, said waveguide having an open end which opens into said container adjacent the top thereof to guide the microwave energy into the container for application to the damp clothing therein;

a deflector located adjacent the open end of said waveguide,

said deflector inclining downwardly and inwardly into said container and being located above said open end of the waveguide to deflect the microwave energy entering the container generally downwardly and inwardly toward the clothes disposed in the container for effective application of the microwave energy to the clothes; and

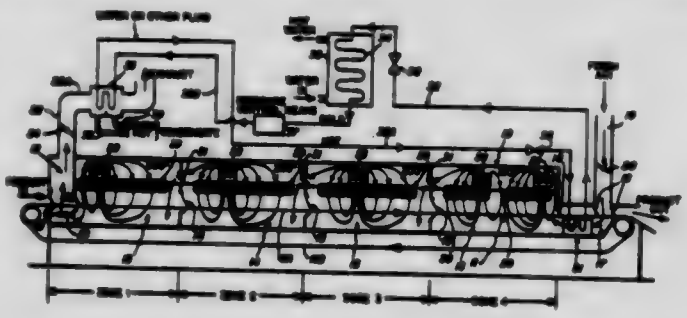
means for passing air through said container to ventilate the interior thereof and transport moisture out of the container.

4,490,924

METHOD AND APPARATUS FOR DRYING MATERIALS WHILE BEING CONVEYED

Robert D. Lambert, Tyngsborough, Mass., assignor to C. G. Sargent's Sons Corporation, Graniteville, Mass.

Filed May 28, 1982, Ser. No. 383,316
Int. Cl.³ F26B 21/10
U.S. Cl. 34—31 4 Claims



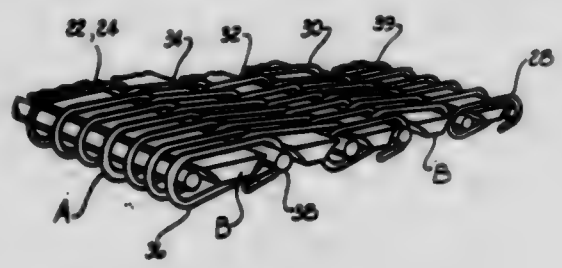
1. The method of drying material that consists in conveying the material through a drying chamber from end-to-end thereof, introducing air into the chamber adjacent the outfeed end thereof, heating the air and circulating the heated air repeatedly in contact with the material and forwardly towards the infeed end of the chamber, controlling the intake to exhaust air volume and the heating of the circulated air in a manner such that the air temperature is increased as necessary to at least prevent condensation in the material from a desired minimum adjacent said outfeed end to a desired maximum adjacent said infeed end, limiting the intake to exhaust air volume to that necessary to carry forward the moisture removed from the outfeed end material and to provide a relatively high humidity as the air temperature approached the maximum temperature necessary to provide a high level of sensible heat, heating and drying the material therewith, exhausting a regulated volume of the moisture laden air from said chamber adjacent said infeed end, and recovering heat therefrom, introducing air into the outfeed end of the dryer by preheating such air by drawing air into the chamber in heat exchanging relation to the material passing through said outfeed end and then employing recovered heat to increase the heat of the introduced air.

4,490,925

LOW PERMEABILITY SPIRAL FABRIC AND METHOD

Richard W. Smith, Greenville, S.C., assignor to Wangner Systems Corporation, Greenville, S.C.

Filed Jun. 8, 1983, Ser. No. 502,255
Int. Cl.³ F26B 13/08
U.S. Cl. 34—42 10 Claims



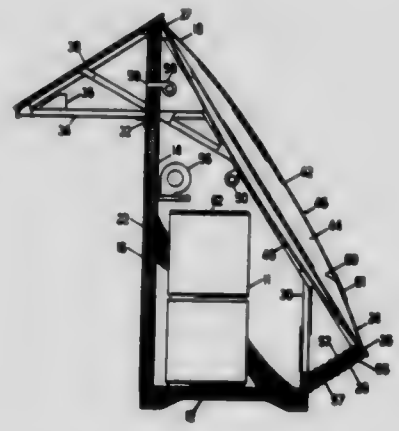
1. Apparatus for drying a web of paper material in a dryer section of a papermaking machine which includes a plurality of heated cylinders over which the web travels for drying, an endless traveling dryer belt carried about rollers and adjacent said cylinders contacting said web to hold said web against said heated cylinders for drying, said belt being of the type which comprises a non-woven fabric which includes a plurality of elongated helix means extending in a crosswise direction constructed from a polymeric material said helix means including helix loops having upper and lower runs presenting a web contacting surface for contacting said paper and curved bend portions joining said upper and lower runs, joint means received through adjoining intermeshing bend portions of adjacent helix means successively joining said helix means together in a machine direction to provide an endless dryer belt of desired dimension; an open loop space defined by said top and bottom runs of a said helix means and the intermeshing bend portions of adjoining helix means, said open loops being generally aligned cross-wise in said fabric; upper and lower pairs of corner crevice spaces created in said open loop space by said intermeshing bend portions of adjacent adjoining helix means extending therein; contoured monofilament filler means disposed between said runs in each said helix means across the width of said fabric in said cross-wise direction filling said open loop space, said monofilament filler means including a contoured portion extending laterally over said intermeshing bend portions of adjacent helix means and into at least one of said pairs of upper or lower crevice spaces to close said fabric mesh.

4,490,926

SOLAR DRYING DEVICE AND METHOD FOR DRYING

Scott Stokes, 206 Jane St., Menomonie, Wis. 53560

Filed Nov. 26, 1982, Ser. No. 444,787
Int. Cl.³ F26B 9/06
U.S. Cl. 34—76 22 Claims



1. A solar drying device for drying wet material comprising:

(a) an air filled drying chamber having walls, adapted to contain the wet material;

(b) a solar collector having walls, adapted to heat the wet material and the air contained within the drying chamber to a temperature greater than that of the ambient atmosphere; and

(c) a dehumidification system having

a dehumidification chamber having an interiorly facing surface adapted to be cooler than the air contained within the drying chamber when that air has been heated by the solar collector, the dehumidification chamber being defined at least in part by an outer panel and an inner panel, the outer panel being in contact with the ambient atmosphere, and the dehumidification chamber forming at least part of a wall of one of the drying chamber and the solar collector;

means for directing warm, moist air from the drying chamber through the dehumidification chamber so that water from the moist air may condense on the outer panel,

means for directing air from the dehumidification chamber to one of the drying chamber and the ambient atmosphere, and

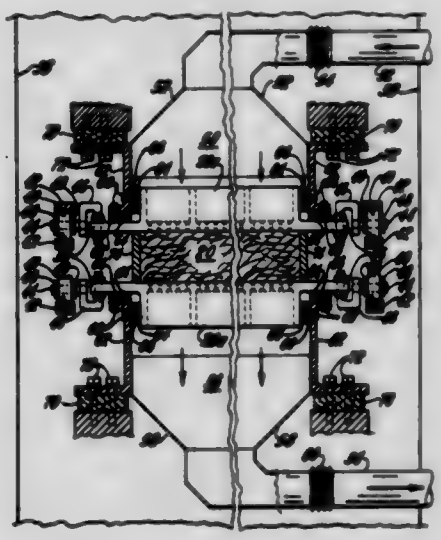
means for removing the condensed water from the dehumidification system, whereby at least one of the drying chamber and the solar collector may be thermally insulated from the ambient atmosphere in part by the dehumidification chamber.

4,490,927

APPARATUS FOR CURING FIBROUS MINERAL INSULATION MATERIAL

Ronald E. Kissell, Alexandria, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 3, 1982, Ser. No. 374,584
Int. Cl.³ F26B 13/02
U.S. Cl. 34—155 9 Claims



1. Apparatus for curing fibrous mineral insulation material comprising:

a. an oven;

b. upper and lower belts mounted for travel through said oven to carry the insulation material through said oven;

c. support means positioned within said oven for supporting said belts;

d. a supply plenum positioned on one side of said belts and adapted to direct curing gases through said belts and the insulation material;

e. an exhaust plenum positioned on the other side of said belts for receiving said curing gases, and

f. baffle means positioned within said oven and defining a curing gas flow path from said supply plenum to said exhaust plenum exclusively through said belts and the insulation material, said flow path being spaced apart from said support means to prevent any contact between said curing gases and said support means.

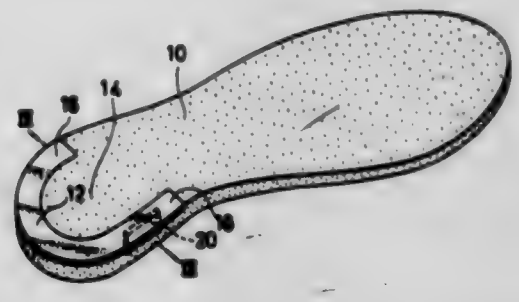
4,490,928

MID-SOLE OF A SHOE

Yukio Kawashima, Akashi, Japan, assignor to Mizuno Corporation, Osaka, Japan

Filed Jul. 22, 1983, Ser. No. 516,358
Int. Cl.³ A43B 23/08
U.S. Cl. 36—69 3 Claims

1. A mid-sole of a shoe comprising a sole body of resilient foam material, and a horseshoe-shaped rigid synthetic resin plate of a desired width having a first portion thereof longer than a second portion thereof and said plate being positioned along the periphery of the upper surface of a heel section of the sole body; said plate including at least one leg secured to said plate and extending downwardly from the under surface of the first portion of the plate a distance equal to the thickness of the



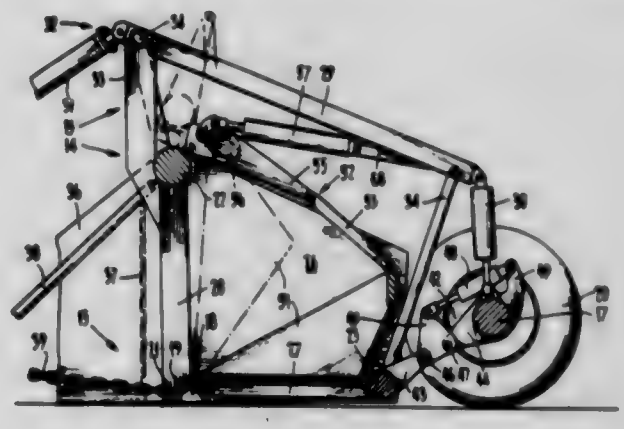
heel section, and said at least one leg being embedded in the sole body.

4,490,929

GRADING APPARATUS AND FRAMEWORK THEREFOR

Geoffrey Lucas, R.M.B. 1090, Beechworth, Victoria, Australia

Filed Mar. 1, 1983, Ser. No. 471,155
Claims priority, application Australia, Mar. 2, 1982, PF2917
Int. Cl.³ E02F 5/00
U.S. Cl. 37—129 6 Claims



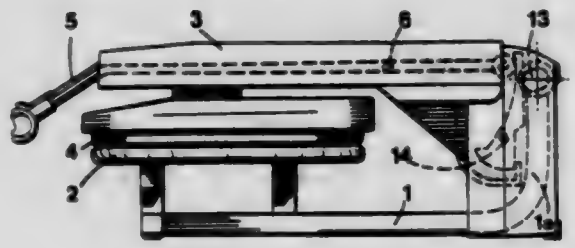
1. Land grading apparatus of the kind comprising an earth cutting blade structure mounted on a wheeled carrier intended to be towed behind a prime mover vehicle for grading operations, wherein the earth cutting blade structure comprises an earth cutting blade and an earth carrying means positioned behind the earth cutting blade, the earth cutting blade structure being in the form of an elongate structure extending transversely of the direction in which the carrier is to be towed and is incorporated in a rigid elongate framework also comprising a first elongate member spaced above the cutting blade structure in generally parallel relationship therewith, a second elongate member spaced rearwardly from the cutting blade structure with reference to the towing direction in generally parallel relationship with the cutting blade structure, and a pair of framework end structures each interconnecting the ends of the cutting blade structure and the said elongate members at a respective end of the framework, the carrier comprising a wheeled axle extending across the apparatus behind said framework and the framework being suspended from a beam extending over the midpart of the framework longitudinally of the towing direction, which beam is supported at its rear end from said axle via a fluid ram unit and is pivotally connected at its forward end to an elongate rigid member that is separate to the framework for connection to the towing vehicle, whereby, in operation of the apparatus, the framework can be raised and lowered relative to the ground by operation of the ram unit, and elongate draught elements for connection to the towing vehicle are attached to the framework in the vicinity of the cutting blade.

4,490,930

FLEXIBLE SUPPORT FOR AN IRONING PRESS HINGE

Antonio Jimenez, Meyrin, and Olindo Baruffa, Thonex, both of Switzerland, assignors to Mefina S.A., Fribourg, Switzerland

Filed Jul. 25, 1983, Ser. No. 517,231
Claims priority, application Switzerland, Aug. 16, 1982, 4887/82
Int. Cl.³ D06F 71/02
U.S. Cl. 38—32 7 Claims



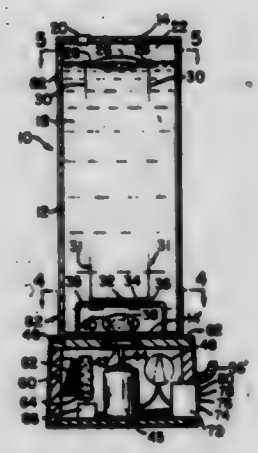
1. In an electric ironing press in which the opening and closing of the press is assured by a lever (5) hinged on the support arm (3) of a heating plate (4) at a point (6) distant from the hinge pin of the arm (3) on the support frame of an ironing board (2), said lever (5) extending beyond its hinge point (6) with the arm (3) and having at its free end rollers (9) held by a spring (10) in contact with at least one curved roller track (11), the improvement wherein said support frame (1) includes flexible abutments (1*a*), a support (12) for said roller track (11), said support resting against said abutment.

4,490,931

DISPLAY DEVICE AND METHOD

Joseph D. Floemia, G.P.O. Box 1700, New York, N.Y. 10116

Continuation-in-part of Ser. No. 330,032, Dec. 11, 1981, abandoned. This application Sep. 9, 1982, Ser. No. 416,216
Int. Cl.³ G09F 19/00
U.S. Cl. 40—406 23 Claims



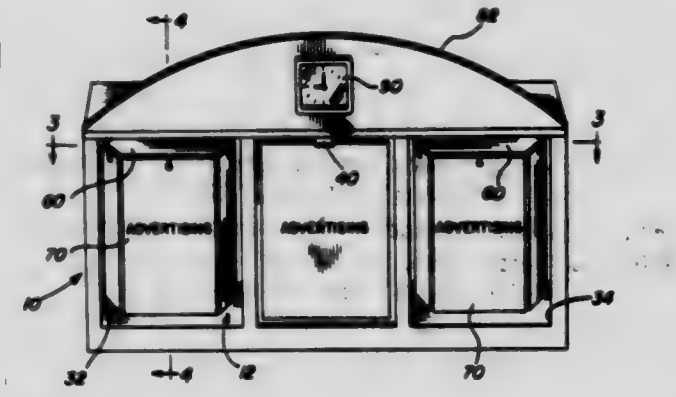
1. A display device for natural biological material comprising a transparent casing having a hollow interior, said transparent casing having vertical walls and a lower surface which define therebetween said hollow interior; a preserving liquid filling said hollow interior; at least one float means on the surface of the liquid for positioning said biological material submerged in said liquid; connecting means attached to and extending from said float means; first means in said casing the lower surface thereof for causing said liquid to rotate in said hollow interior; and second means for driving said first means; whereby biological material may be attached to said connecting means, and the motion of said liquid causes the display material to move within said liquid.

4,490,932

ADVERTISING SIGN SUPPORT

Andrew N. McIntire, 1303 SE. 22nd Ave., Mineral Wells, Tex. 76067

Filed Aug. 11, 1982, Ser. No. 407,083
Int. Cl.³ G09F 11/02
U.S. Cl. 40—473 1 Claim



1. A display device comprising a cabinet having a substantially planar front viewing area, polygonally-shaped support means rotatably mounted in said cabinet for selective positioning of respective sides of the support means in substantially coplanar registry with said viewing area, drive means connected to said support means, and means on the respective sides of said support means to removably support a plurality of display items for movement into registry with said viewing area, wherein said viewing area is a vertically disposed window, said support means including a vertically disposed shaft journaled in the cabinet, a support member mounted on the upper end portion of the shaft, said support member including a polygonal peripheral edge with a portion of the edge being disposed adjacent the viewing area, said means supporting display items including a plurality of hooks mounted in circumferentially spaced relation on said edge of the support member, a rectangular planar display panel supported from each of said hooks, the display panels conforming in width to the respective portions of the polygonal edge and being disposed in substantially contiguous relation defining an enclosed polygonal cylinder, said drive means including a motor having an output drivingly connected to the upper end of the shaft.

4,490,933

INTERNALLY ILLUMINATED DISPLAY STRUCTURE

Ludwig Endres, Gröbenzell, and Roald Nellis, Munich, both of Fed. Rep. of Germany, assignors to Patent-Treuhand-Gesellschaft für Elektrische Glühlampen GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 231,954, Feb. 6, 1981, abandoned. This application Aug. 19, 1982, Ser. No. 409,597
Claims priority, application Fed. Rep. of Germany, May 21, 1980, 3019419
Int. Cl.³ G09F 13/04
U.S. Cl. 40—564 19 Claims



1. Vehicle interior panel structure or dashboard display structure having a display surface including an indicating

panel, said structure comprising, in accordance with the invention,

a closed hollow box (1);

at least one light radiation generating lamp (3) located within said hollow box,

said box having a depth dimension (a), a width dimension (b), and a height dimension (c), in which said depth dimension is several times smaller than either of said other dimensions;

one surface defined by the width (b) times height (c) dimension forming one display surface,

all the interior wall surfaces of said box, other than the display surface, having a reflectivity, within the spectral range of the light from said light radiation generating lamp or lamps (3), of at least 80% and being light radiation reflective essentially entirely throughout their surfaces, the light distribution within said box being essentially entirely dependent on the light reflecting characteristics of the interior wall surfaces defining said box,

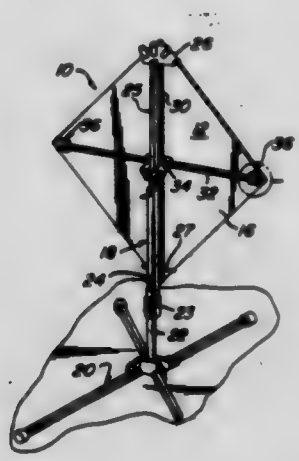
and wherein said display surface has an interior reflectivity of between 80% to 95%, and, in the direction of transmission of radiation, a radiation transmissivity of between 20% to 5% to provide at said display surface, and interiorily of said box a higher degree of reflectivity of light interiorily of said box than of transmissivity of light to and through the display surface, so that said display surface in combination with the other interior wall surfaces of the box, provides for multiple reflection of light in said box (1) to result in essentially uniform light at any two incremental areas on said display surface, regardless of the respective position of the incremental areas on said display surface with respect to said lamp, or lamps.

4,490,934

RIGID MECHANICAL CORNER POCKET FOR TENSIONING FLEXIBLE SIGNS AND SIGNAL DEVICES

Michael D. Knapp, Elmira, N.Y., assignor to Eastern Metal of Elmira, Inc., Elmira, N.Y.

Filed Mar. 14, 1983, Ser. No. 474,777
Int. Cl.³ G09F 17/00
U.S. Cl. 40—603 15 Claims



1. A signal device comprising a frame, a sign having indicia on one surface, a plurality of oppositely disposed retainers of rigid material fixed to the opposite surface of said sign, said frame including a horizontally disposed member having at its end portions mating structure extending into each retainer for supportingsaid sign, each retainer having a cavity for receiving its mating portion of said frame and a movable member for controlling entry and removal of said mating portions relative to their associated cavities.

4,490,935

PEN GUN

Joseph Flacky, 4103 NW. 19 St., Lauderhill, Fla. 33313

Continuation-in-part of Ser. No. 203,615, Nov. 3, 1980, abandoned. This application Feb. 23, 1983, Ser. No. 468,987
Int. Cl.³ F41C 9/02
U.S. Cl. 42—1 J 3 Claims



1. In combination, a writing instrument and a hand-held single shot gun, the combination comprising:

a central cylindrical body member having a passage disposed along at least a portion of its longitudinal central axis;

a first end member having a threaded end portion threadably connectable to one end of said central body member, said first end member having a firing chamber for a single shell and a barrel centrally disposed therethrough;

a second end member disposed at the other end of said central body member, said second end member slidably connected to said central body member, said second end member having a central passage disposed therethrough;

a central shaft connected within said second end member;

firing pin means disposed at one end of said central shaft;

said central shaft also disposed in said passage in said central body member;

means for tensioning said central shaft and said second end member relative to said central body member; and

a writing means disposed within said central shaft;

said second end member including an intermediate body portion and an end tip portion threadably connected to said intermediate body portion;

said intermediate body portion and said end tip portion rotatable relative to one another to expose said writing means in a first position or to hide said writing means in a second position.

4,490,936

POWERED NET HAULING BLOCK WITH TILT MECHANISM FOR NET BALANCING

Robert A. Svendsen, Seattle, Wash., assignor to Marine Construction & Design Co., Seattle, Wash.

Filed Apr. 11, 1983, Ser. No. 483,655
Int. Cl.³ A01K 73/00
U.S. Cl. 43—8 14 Claims



1. In a net hauling block comprising a grooved sheave over which the incoming net passes, a frame having sides supporting

the sheave between them for rotation about a central axis and extending transversely to said axis to help guide the net to and from the sheave and hanger means overarching the sheave and interconnecting the frame sides for suspending the block, including an elongated briding member spaced above the sheave and having a track member extending generally parallel to the sheave axis, and a block support trolley having roller means supportively engaging the track member to move lengthwise thereof so as to tilt the suspended block into varying positions related to trolley position along the bridging member; the combination wherein the bridging member includes a sector gear extending lengthwise thereof substantially parallel to said track member, and wherein the trolley carries a pinion gear engaging the sector gear and a remotely controllable reversible pinion power drive unit, and means to apply drive power to the drive unit for driving the pinion one way or the other, thereby to vary the tilt angle of the sheave.

4,490,937

INSECT ELECTROCUTION DEVICE

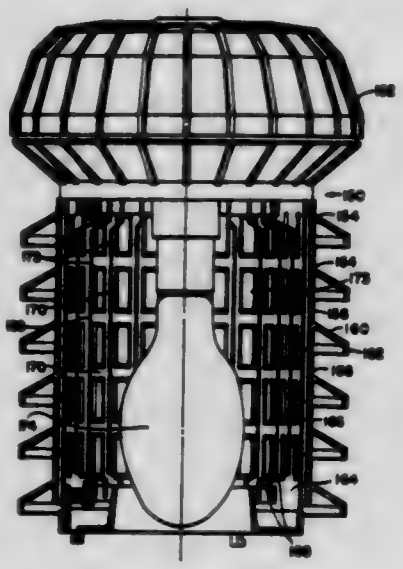
Mordechai Yavnieli, Ramat Hasharon, Israel, assignor to AMCOR Ltd., Tel Aviv, Israel

Continuation-in-part of Ser. No. 434,304, Sep. 27, 1982,. This application Jun. 30, 1983, Ser. No. 509,460

Claims priority, application Israel, Dec. 7, 1981, 64464; May 19, 1982, 65825; Nov. 29, 1982, 67364

Int. Cl.³ A01M *1/22*

U.S. Cl. 43—112 17 Claims



1. Insect electrocution apparatus comprising:

means for producing radiant energy for attracting insects; and

an insect electrocution assembly disposed about said radiant energy producing means and including:

an outer electrode comprising a generally cylindrical grid having defined thereon a plurality of apertures separated by axially disposed continuous solid strips for permitting said radiant energy to pass outwardly therethrough and to permit insects to pass inwardly therethrough;

an array of elongate, axially disposed inner electrodes disposed radially inward of said solid strips and arranged to lie other than radially inward of said apertures,

the arrangement of said inner electrodes and said solid strips defining an insect electrocution region at the radially extending gap between said inner electrodes and said solid strips which is hidden from outside view by said solid strips, and such that dead insects falling from said electrocution region remain inside said outer electrode,

the total area of the apertures in the outer electrode being relatively small as compared with the non-apertured area thereof, thereby to define an insect trap;

an outer shading grid made of an insulating material and comprising a plurality of stacked, discrete, identical ring elements, each comprising a generally cylindrical inner ring portion from which extends an inclined circumferential portion which terminates in a second outer ring portion; and

means for applying a voltage separation across said outer electrode and said array of inner electrodes sufficient to permit electrocution of insects located therebetween.

4,490,938

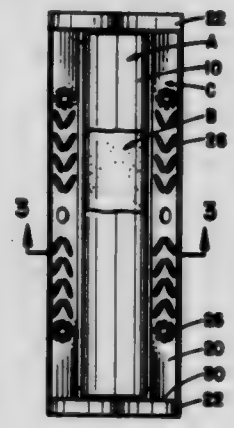
FLYTRAP

Stanley Z. Baker, 3115 Bremerton Rd., Pepper Pike, Ohio 44124

Filed Jul. 29, 1983, Ser. No. 518,412

Int. Cl.³ A01M *1/14*

U.S. Cl. 43—114 3 Claims



1. An insect trap comprised of a rigid tube having a coating of a non-drying adhesive containing an insect attracting substance on the surface thereof, and a free-standing integrally formed plastic holder for supporting said tube at each end thereof, said holder having an elongated body portion provided at its opposite ends with generally planar mounting flange portions opposed to one another and having opposed surfaces with integral retaining means extending therefrom over which said tube is self-supported at its opposite ends in a fixed position extending alongside and spaced from said body portion, said body portion surrounding a predetermined portion of the circumferential extent of said tube and having a flat planar portion extending along the length thereof, and said flanges having outwardly facing surfaces lying in planes generally perpendicular to said tube, and being appreciably larger in overall size and projecting outwardly beyond the outer contour of said tube such that planar objects adjacent the trap are prevented from contacting said adhesive coating on said tube, said flat planar portion and outwardly facing surfaces providing means for orienting said holder and said tube in horizontal and vertical positions.

4,490,939

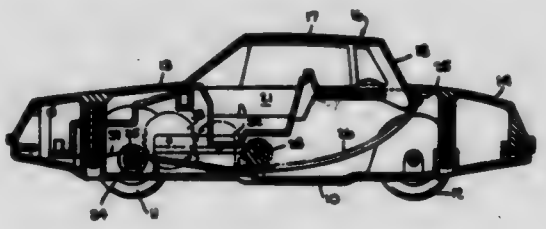
HARD TOP CONVERTIBLE TOY VEHICLE

Melvin R. Kennedy, New York, N.Y.; Dietmar Nagel, Chester, N.J., and Abraham A. Arad, Westport, Conn., assignors to Buddy L Corporation, New York, N.Y.

Filed Nov. 1, 1983, Ser. No. 547,665

Int. Cl.³ A63H *17/00*

U.S. Cl. 446—448 6 Claims



1. A toy vehicle which simulates both the appearance and

performance of a hard-top convertible, said vehicle comprising:

A. a chasis supporting a set of front and rear wheels, said front wheels being fixedly mounted on a rotatably mounted axle;

B. a body supported by and above said chassis and including a fixed windshield and a hard-top piece swingable with respect to the windshield which in its normally closed position abuts said windshield, and which when swung open and fully raised exposes a cockpit within the body; and

C. means mounted on said chasis operatively intercoupling said hard-top piece to said front wheel axle to cause said piece to swing open when the front of the body is grasped by a player and pressed down and the vehicle is pushed in the forward direction on a running surface to cause said axle to rotate, the vehicle when released by the player continuing to travel in the forward direction, said means causing the hard-top piece to resume its normally closed position when the same action is carried out by the player in the reverse direction.

4,490,940

BLOOMING PLANT IMPLANT

Albert Geiges, 3157 Mechanicsville Rd., Bensalem, Pa. 19020

Filed Jun. 8, 1983, Ser. No. 502,211
Int. Cl.³ A01G *1/06*
U.S. Cl. 47—58 12 Claims



1. A method for implanting an object within a blossom capable of blooming, said blossom having a receptacle and a plurality of petals and wherein said method comprises:

removing a plug member from said blossom so as to form a channel having a central axis, said channel leading into an interior portion of said blossom;

inserting said object through said channel such that said object lies above said receptacle and is surrounded by said petals of said blossom;

replacing said plug member within said channel, whereby upon opening of said blossom said object is revealed.

4,490,941

SPINDLE DOOR OPERATOR

Harry E. Mamach, Schaumburg, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed Aug. 13, 1981, Ser. No. 292,359
Int. Cl.³ E05F *15/10*
U.S. Cl. 49—28 4 Claims

1. A door operator for opening a door of transit vehicles and the like, comprising:

an actuator,

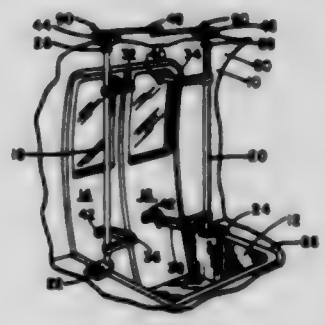
a worm drive in said actuator,

a piston reciprocally mounted in said actuator and coupled to said worm drive,

a door shaft coupled to a door mounted on a vehicle, said door shaft mechanically coupled to said worm drive wherein rectilinear motion of said piston is transmitted as rotary motion to said door shaft to open and close said door,

a cam assembly on said vehicle, including a cam,

a cam follower coupled to said door and engaging said cam



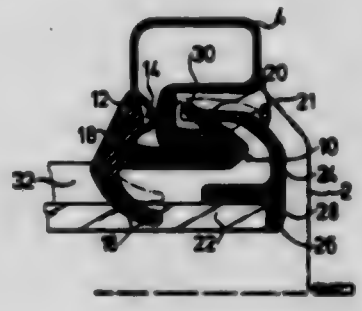
during approximately the last 80% of travel of said door during opening of said door and approximately the initial 80% of travel of said door during closing of said door.

4,490,942

WINDOW PANE, ADJUSTABLE IN HEIGHT, PARTICULARLY FOR MOTOR VEHICLES

Hans-Rudolf Arnheim, Jembke, and Hermann Warner, Treber, both of Fed. Rep. of Germany, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 6, 1983, Ser. No. 456,139
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1982, 3200322
Int. Cl.³ E05F *11/38*
U.S. Cl. 49—374 7 Claims



1. In a door for an automotive vehicle comrising a vertically adjustable window panel having side edges and which is arranged so as to be flush with adjacent body parts of the vehicle, a stationary window frame located wholly inboard of the side edge of the window and which inludes a flange which defines with the remainder of the window frame a generally vertically extending recess, a guide rail secured to said window along its interior side and being located substantially wholly inboard of the side edge of the window, said guide rail including a guide arm which extends interiorly of the window panel and longitudinally of the window panel and with said guide arm being received within said recess for vertical movement therein, sealing means secured to said flange of said window and located wholly inboard from the side edge of the window panel, said sealing means including a first deflectable sealing lip for engaging said window panel on its interior side at a location spaced further inboard than said guide rail and a second sealing strip located in said recess and engaging said guide arm, said second sealing strip being biased against said guide arm in opposition to the bias of said first sealing lip against said window panel.

4,490,943

WEATHERSTRIP FOR DOOR

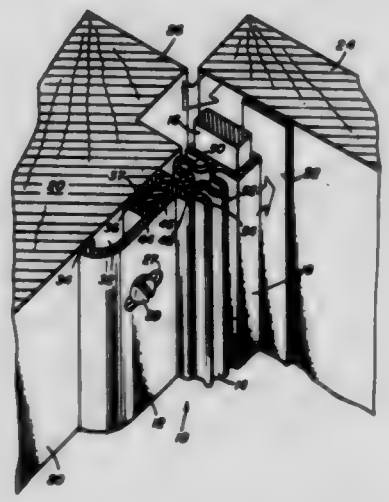
James A. McLaughlin, Dedham, Mass., assignor to Titaneal Corporation, Dedham, Mass.

Continuation-in-part of Ser. No. 291,335, Aug. 10, 1981,. This application Apr. 29, 1983, Ser. No. 490,171
Int. Cl.³ E06B *7/16*
U.S. Cl. 49—478 5 Claims

1. In a door seal apparatus of the type comprising a poly-

meric extensible, bellows-type seal means adapted to seal with a mating seal surface and a rigid mounting flange from which said bellow extends; the improvement

wherein said rigid mounting flange extends from a first sealing foot forming means to seal against a door jamb and more remote from said bellows, to a support foot member perpendicular to said sealing foot in contact with said bellows structure,



wherein said bellows member is mounted in said rigid mounting flange, and wherein said support foot member supports only that portion of a backwall of the bellows to which flexible webs of said bellow are attached, but

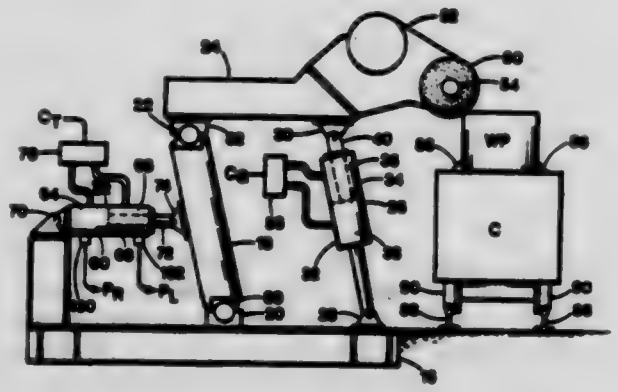
wherein said support foot member is overlapped by a portion of said backwall.

4,490,944

PRESSURE-COMPENSATED HYDRAULIC POSITIONING SYSTEM

John P. Veale, Lake Stevens, Wash., assignor to Western Gear Machinery Co., Everett, Wash.

Filed Jan. 3, 1983, Ser. No. 455,212
Int. Cl.³ B24B 49/00, 7/02
U.S. Cl. 51—35 21 Claims



1. A system for controlling the transverse position of a grinding wheel across a workpiece surface in accordance with a position command signal corresponding to a desired transverse position of said grinding wheel, said grinding wheel being moved in said transverse direction by a hydraulic actuator having a cylinder divided into first and second chambers by a piston coupled at least indirectly to said grinding wheel, said system comprising:

a position sensor measuring the transverse position of said grinding wheel and generating a position signal indicative thereof;

an error signal generator producing a position error signal indicative of the deviation of said position signal from said position command signal;

first and second pressure sensors operatively associated with said hydraulic actuator, said pressure sensors generating pressure feedback signals indicative of the pressure in the first and second chambers of said actuator;

a control signal generator receiving a signal derived from said position error signal and a signal derived from said pressure feedback signals, said control signal generator including a calculating device that determines the difference between said pressure feedback signals to generate a force signal indicative of the force exerted by said actuator in the direction of said desired position and generates a control signal corresponding to said error signal less said force signal; and

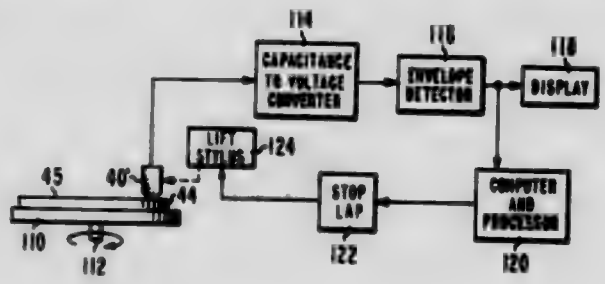
a servo valve having an electrical control input receiving said control signal, said servo valve having a fluid port communicating with at least one chamber of said actuator to cause hydraulic fluid to selectively flow into and out of said chambers responsive to said control signal, thereby transversely moving said grinding wheel.

4,490,945

STYLUS MANUFACTURING APPARATUS AND METHOD

William R. Roach, Rocky Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 23, 1983, Ser. No. 478,096
Int. Cl.³ B24B 49/00
U.S. Cl. 51—165 R 6 Claims



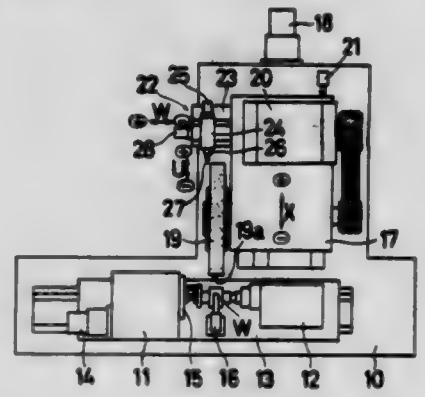
1. An article for lapping a member wherein the article comprises a spiral abrasive groove and a signal which is recorded in the article's land surface from a spiral signal track which crosses the abrasive groove and wherein the signal can be sensed by means of the member.

4,490,946

GRINDING WHEEL FEEDER IN GRINDING MACHINES

Toshio Tsujiuchi, Kariya; Takao Yoneda, Toyoake, and Norio Ohta, Okazaki, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 28, 1982, Ser. No. 453,830
Claims priority, application Japan, Jan. 21, 1982, 57-8417
Int. Cl.³ B24B 49/04
U.S. Cl. 51—165.88 3 Claims



1. A grinding wheel feeder in a grinding machine having support means for carrying a workpiece to be rotatable about a fixed workpiece axis, a wheel base rotatably carrying a grinding wheel and movable between an original position and the

fixed workpiece axis, and dressing means with a dressing tool for dressing the grinding surface of the grinding wheel, comprising:

a position register for storing first distance data on a distance between the fixed workpiece axis and the grinding surface, said position register being capable of varying the first distance data as the wheel base is moved;

a sizing device for monitoring dimensions of the workpiece as it is ground;

memory means for storing second distance data on a distance between the fixed workpiece axis and the axis of said grinding wheel when the wheel base is at the original position and radius data on the radius of the grinding wheel;

first rewriting means for rewriting the radius data stored in the memory means each time the radius of the grinding wheel is reduced by dressing;

computing means for computing a wear amount of the dressing tool based upon an actual feed amount which the wheel base is moved until a signal is issued from the sizing device;

second rewriting means for rewriting the radius data stored in said memory means based upon the wear amount computed by the computing means so that the rewritten radius data represents a current radius of the grinding wheel;

returning means for returning the wheel base to the original position in response to a return command which is given after the loss of the first distance data from the position register causes a grinding start position of the wheel base to become unknown;

subtracting means for subtracting the radius data rewritten by the first and second rewriting means from the second distance data stored in the memory means and for setting a difference between the second distance data and the radius data in the position register in response to the returning of the grinding wheel to the original position; and

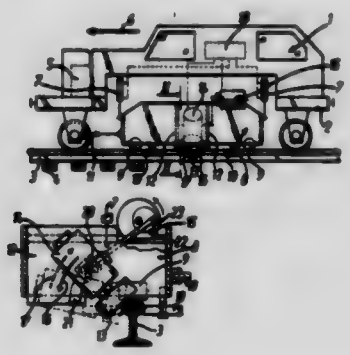
means responsive to the content of the position register for controlling feed movement of the wheel base so as to move the wheel base from the original position to the grinding start postiion.

4,490,947

MOBILE RAIL GRINDING MACHINE

Josef Theurer, Vienna, and Johann Hansmann, Klosterneuburg, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft mbH, Vienna, Austria

Filed Oct. 18, 1982, Ser. No. 434,908
Claims priority, application Austria, Dec. 7, 1981, 5251/81
Int. Cl.³ E01B *31/17*; B24B *23/00*
U.S. Cl. 51—178 4 Claims



1. A mobile machine for removing surface irregularities from a rail head of a rail of a track, the rail head having a side surface, a running surface and an arcuate corner surface connecting the side and running surfaces, which comprises

(a) a machine frame mounted on the track for continuously moving in the direction of, and along, the track,

(b) a drive for advancing the machine frame in a working movement in said direction,

(c) a vertically adjustable mounting for a tool for removing the surface irregularities, the mounting being linked to the machine frame and the tool having an end face adapted to be pressed against the rail head,

(d) means for pressing the mounting against the running surface,

(e) means for vertically and laterally guiding the mounting along the rail head,

(f) a tool head vertically and laterally adjustably arranged on the mounting and the tool being mounted on the tool head for rotation about an axis extending substantially perpendicularly to the end face of the tool, and

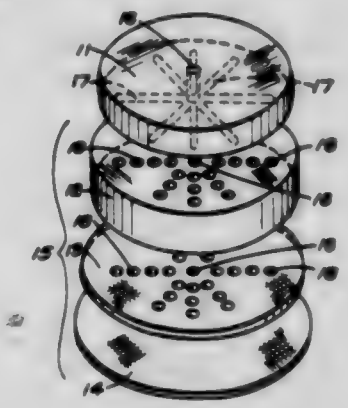
(g) a drive means for imparting to the tool head an additional, continuously reciprocating working movement superimposed upon the working movement in the direction of the track, the additional working movement extending in a plane transverse to the track and over a range extending from an end point of the arcuate corner surface at the side surface to at least one third of the periphery of the arcuate corner surface, the additional working movement enabling rapid and coarse removal of the surface irregularities.

4,490,948

POLISHING PLATE AND METHOD FOR POLISHING SURFACES

Friedrich Hanstein, Gross-Zimmern, and Peter R. Szigeti, Buettelborn, both of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jul. 6, 1982, Ser. No. 395,096
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1981, 3132028
Int. Cl.³ B24B *37/00*
U.S. Cl. 51—358 10 Claims



1. A polishing plate for polishing with liquid polishing agents containing polishing powder comprising: a rigid disk having a central polishing agent inlet opening formed therein and a lower surface having a plurality of channels formed therein communicating at one end with said inlet opening and extending radially outwardly from said inlet opening to distribute the liquid polishing agent along said lower surface; and

a compressible cover abutting the lower surface of said rigid disk and having a plurality of layers including an upper layer of soft foam adjacent the lower surface of said rigid disk, an unperforated lower layer having a textile surface structure and which contacts a surface to be polished, and a middle layer, permeable to liquid, interposed between said upper and lower layers, said compressible cover being formed so that the polishing agent can pass therethrough to the textile surface which contacts the surface to be polished.

4,490,949

BENCH TYPE SEATING MODULES

David L. Sutter, Kennebunkport; Ivan J. Furbish, Sanford; Roland C. Ferguson, Biddeford, all of Me.; Richard L. Berry, Milton Mills, N.H., and Douglas P. Barrows, Acton, Me., assignors to Hussey Manufacturing Company, North Berwick, Me.

Filed Oct. 18, 1982, Ser. No. 434,731
Int. Cl.³ E04H 3/12
U.S. Cl. 52—9 8 Claims



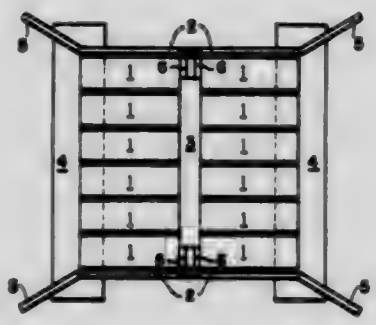
1. A molded plastic module for attachment to supporting structures for multiple seat rows, comprising a hollow base member made of molded polymeric structural foam having a bottom wall, upstanding front and rear walls, integral with said bottom wall, a first end wall integral with said bottom, front and rear walls at one end of said module, a molded seat of essentially equivalent material having front and rear slots positioned to receive the upper margins of said front and rear walls, a horizontal bead on each said front and rear walls parallel to their upper margins, a mating horizontal recess within said front and rear slots positioned to receive said beads in locking relation, and said seat mounted on said base with said beads locked into said recesses in said slots.

4,490,950

FRONT WALL OF OVERFILLED ARCHED REINFORCED CONCRETE UNDERPASSES

Werner Heierli, Eichhalde 19, 8053 Zurich, Switzerland

Filed Dec. 3, 1981, Ser. No. 327,073
Claims priority, application Switzerland, Dec. 8, 1980, 9023/80
Int. Cl.³ E04B 1/32
U.S. Cl. 52—87 10 Claims



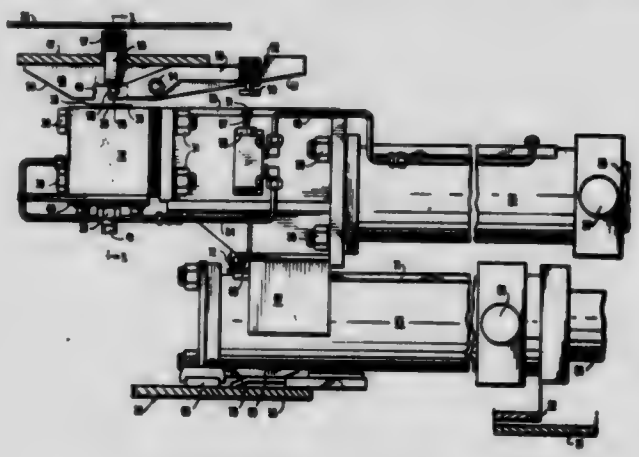
1. An overfilled reinforced concrete arch, comprising a pair of arch sections, an apex joint coupling said arch sections together at the apex of the arch, a spandrel wall which includes a pair of spandrel wall elements, a spandrel wall joint coupling said spandrel wall elements together at a location adjacent to said apex joint, and means including a tie rod embedded at one end thereof in material of said apex joint and at another end thereof in material of said spandrel wall joint for connecting said spandrel wall joint to said apex joint and further including means separating the material of said apex joint from said tie rod and extending between said embedded ends for transmitting only forces directed horizontally between said apex joint and said spandrel wall coupling joint and preventing vertically directed forces from being transmitted between the arch and said spandrel wall.

4,490,951

REMOTELY OPERABLE LATCH AND LOCKING PIN FOR A MULTI-SECTION BOOM INCLUDING A MANUAL FLY SECTION

William R. Mentzer, Shady Grove, and Vincent Bernabe, Jr., Mewville, both of Pa., assignors to Kidde, Inc., Saddle Brook, N.J.

PCT No. PCT/US82/01492, § 371 Date Oct. 22, 1982, § 102(e) Date Oct. 22, 1982, PCT Pub. No. WO83/01611, PCT Pub. Date May 11, 1983
PCT Filed Oct. 22, 1982, Ser. No. 448,893
The portion of the term of this patent subsequent to Feb. 28, 2001, has been disclaimed.
Int. Cl.³ B66C 23/06
U.S. Cl. 52—115 23 Claims



1. In a telescoping boom which includes at least an inner section (21), a mid-section (22) and a manual fly section (23), means (26) connected to at least the inner section (21) and extending into the interior of the manual fly section when retracted, a first fluid powered latching element (33) on said means (26), a second latching element (48) on the manual fly section (23) adapted to engage automatically with the first fluid powered latching element (33) responsive to extension or retraction of the manual fly section (23) relative to said means (26), an extension and retraction power means (63) connected between the telescoping mid-section (22) and inner section (21) of the boom, a locking pin (52) for the manual fly section (23) on the telescoping mid-section (22) which immediately surrounds the manual fly section, the manual fly section (23) having a coacting receiver (57) for the locking pin (52) with which the locking pin (52) engages automatically responsive to relative movement between the manual fly section (23) and the telescoping mid-section (22), and remote fluid power means (FIGS. 4 and 7) operatively connected to the first fluid powered latching element (33) and the locking pin (52) for selectively disengaging the fluid powered latching element (33) on said means (26) from the second latching element (48) while the locking pin (52) is engaged with said receiver (57) and vice-versa.

4,490,952

APPARATUS FOR ELIMINATING MOISTURE

Emanuel A. Winston, 190A Skokie Valley Rd., Highland Park, Ill. 60035

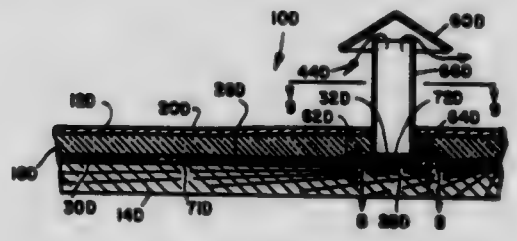
Filed Jan. 4, 1982, Ser. No. 337,017
Int. Cl.³ E04H 12/28
U.S. Cl. 52—199 10 Claims

1. An apparatus for eliminating moisture in an insulated roof system having a roof deck and insulation disposed thereon covered by a waterproof layer, the improvement comprising:

a grid of hydrophilic material disposed adjacent the insulating layer;

said grid comprising a first set of longitudinally extending hydrophilic elements;

said grid further comprising a second set of longitudinally extending hydrophilic elements disposed in a transverse relationship to said first set of hydrophilic elements enabling moisture to travel along said first and second sets of hydrophilic elements by capillary action, each of said elements of said first and said second set being enclosed within a vapor impervious shield;



first aperture means disposed in said vapor impervious shield enabling moisture to enter therein to input said grid elements;

second aperture means disposed in said vapor impervious shield to enable evaporation of moisture from said grid elements; and

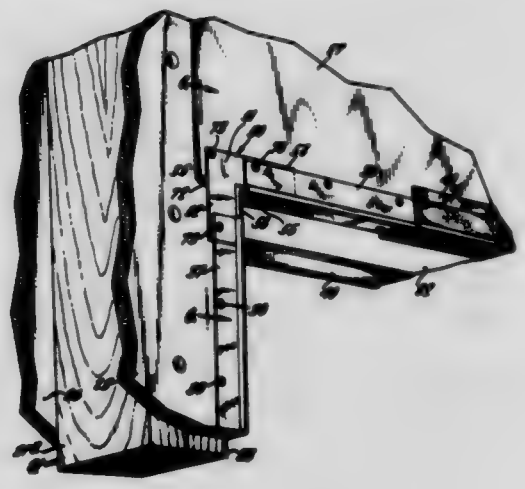
means for venting the moisture accumulated in said first and second sets of hydrophilic elements through said second aperture means enabling the moisture accumulated within said grid to flow toward said means for venting thereby reducing the moisture within the moisture prone area.

4,490,953

DRYWALL CORNER BRACKET

Michael L. Meola, 626 Raritan Ave., Atco, N.J. 08004

Filed Oct. 13, 1981, Ser. No. 310,561
Int. Cl.³ E06B *1/04*
U.S. Cl. 52—211 2 Claims



1. A bracket formed from a flat blank of metal for a corner of an arch formed by a jack and a header having thereon drywall panels affixed to the jack and header comprising:

(a) a face portion having first and second coplanar legs extending at right angles to one another;

(b) a first portion extending in a plane normal to the face portion and to the first leg; and

(c) a second portion extending in a plane normal to the second leg;

(d) said first portion and said second portion being integral with said face portion but formed by cutting and bending of the blank intermediate said first and second legs;

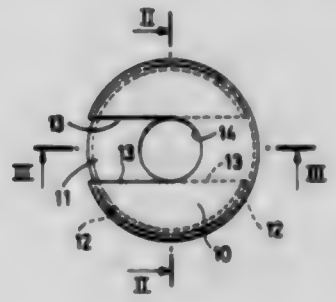
wherein the first leg and the first portion are affixed to the header, and the second leg and the second portion are affixed to the jack.

4,490,954

MASKING COVER FOR A WALL SURFACE AROUND A PIPE WHICH EMERGES THEREFROM

Alfio Crasti, Corso Brunelleschi 81, Torino, Italy

Filed Jun. 25, 1982, Ser. No. 392,012
Claims priority, application Italy, Jul. 3, 1981, 53411/81[U]
Int. Cl.³ E04F *19/00*; F16L *5/00*
U.S. Cl. 52—221 1 Claim



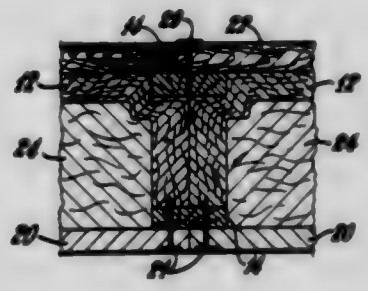
1. A masking cover for a wall surface around a pipe which emerges therefrom, characterized by comprising two circular concentric plates 10 and 11 each provided with a radial slot 13 having parallel edges which are connected together by a semicircular portion 14 having its center coinciding with that of the plates 10 and 11 and its diameter equal to the width of the slot, each plate 9 and 10 having a bent-over substantially continuous circular peripheral rim 12 of which one fits within the other with a slight interference fit when the two plates are fitted together thereby to restrain said plates 9 and 10 against movement in any direction relative to each other.

4,490,955

RESIDENTIAL WALL CONSTRUCTION

Neil A. Carter, Reynoldsburg, and Richard A. Mott, Alexandria, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jul. 23, 1982, Ser. No. 401,202
Int. Cl.³ E04C *1/04*
U.S. Cl. 52—30.14 18 Claims



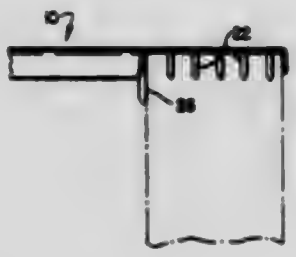
1. A wall construction comprising identically oriented elongated molded fibrous channels secured together in side-by-side relationship and pairs of elongated structural fastening strips secured to the channels, each joint between two adjacent channels having a pair of the structural fastening strips extending along the joint, one of the strips of each pair being disposed adjacent outer surfaces of bottom portions of the channels and the other of the strips of each pair being disposed adjacent free ends of leg portions of the channels, the channels being molded of glass, mineral, or slag wool with a resin binder, having a density of less than twenty pounds per cubic foot, and by themselves having insufficient bending and compression strength for use as a sole structural component of a wall, and the structural fastening strips providing additional bending and compression strength whereby the wall construction including the channels and the structural fastening strips does have sufficient bending and compression strength for use as the sole structural component of a wall.

4,490,956

TRUSS SPACER

Joaquin J. Palacio, and Carlos C. Cristobal, both of Miami, Fla., assignors to Gang-Nail Systems, Inc., Miami, Fla.

Filed Jan. 7, 1983, Ser. No. 456,342
Int. Cl.³ E04B 1/32
U.S. Cl. 52—639 4 Claims



1. A truss spacer for interconnecting and maintaining spacing between adjacent spaced apart trusses comprising:

(a) a first connecting plate disposed in a plane and having a plurality of first pairs of teeth projecting generally orthogonally from a surface of said first connecting plate, said first pairs of teeth being arranged in a single column extending along the longitudinal axis of said truss spacer;

(b) a second connecting plate disposed in the same plane as said first connecting plate and having a plurality of second pairs of teeth projecting generally orthogonally from a surface of said second connecting plate, said second pairs of teeth being arranged in a single column extending along the longitudinal axis of said truss spacer, the teeth of both said first and second connecting plates projecting in the same direction;

(c) an intermediate section having a first end and a second end, said first end being joined to the first connecting plate and the second end being joined to said second connecting plate, said intermediate section containing stiffening means for strengthening said intermediate section to resist bending of said intermediate section upon the application of a load;

(d) said intermediate section having a generally U-shape cross-section; said intermediate section including a first section disposed in the same plane as said first and second connecting plates and interconnecting said connecting plates, and second and third sections respectively joined to opposing outside edges of said first section and said second and third sections extending substantially orthogonally to said first section and projecting from said outside edges in the same direction as the teeth of said first and second connecting plates; said first, second and third sections of said intermediate section being of equal length; and

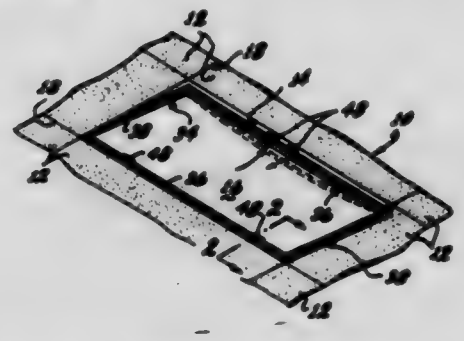
first and second spacing means respectively punched from said first and second ends of said intermediate section, said first and second spacing means projecting generally orthogonally from said intermediate section in the same direction as said teeth projecting generally orthogonally from said first and second connecting plates, said first and second spacing means being spaced apart by a distance equal to the desired distance between adjacent surfaces of spaced apart trusses to which said first and second connecting plates are adapted to be connected.

4,490,957

SUSPENDED CEILING STRUCTURES

Boyd B. Bumpus, Redondo Beach; Alex Rosenblatt, Beverly Hills, and Leonard Rosenblatt, Pacific Palisades, all of Calif., assignors to Globe Illumination, Gardena, Calif.

Continuation of Ser. No. 271,646, Jun. 8, 1981,. This application Jul. 14, 1983, Ser. No. 513,923
Int. Cl.³ E04B 5/52
U.S. Cl. 52—489 2 Claims



1. In a suspended ceiling structure having a grid of inverted T-shaped bars defining a plurality of openings located immediately adjacent to one another in a rectilinear pattern, each of said T-bars including a cross bar presenting a single lower surface and two upper surfaces and a base member extending upwardly from between said upper surfaces, said upper surfaces of said bars being located at the edges of said openings, an object located so as to cover a particular one of said openings, said object being supported on the upper surfaces of the T-bars surrounding said particular opening, in which the improvement comprises:

a rectilinear frame for concealing the lower surfaces of the T-bars surrounding said particular opening, said frame being dimensioned so as to have an upper surface located opposite and adjacent to the exposed portions of the lower surfaces of said T-bars surrounding said particular opening,

said rectilinear frame including two opposed sides of uniform cross-sectional configuration shaped so as to each include track means capable of being utilized in suspending said frame,

clip means carried by said track means at each of said sides, said clip means being only movable linearly along the lengths of said track means at said sides so as to facilitate assembly of said frame on said T-bars surrounding said particular opening,

said clip means inserted beneath said object along the upper surfaces of said T-bars surrounding said particular opening for the purpose of supporting said frame,

said clip means being shaped so as to permit said frame being inserted generally within said particular opening and at an angle relative to the T-bars surrounding said particular opening so that the clip means at one of said sides are supported by the upper surface of an adjacent T-bar and so as to permit said frame thereafter to be pivoted into a final position,

at least the side of said frame opposite said one of said sides being sufficiently resilient so as to permit temporary deformation of said frame so that the clip means on the opposite of said sides can be inserted so as to be supported on the upper surface of an adjacent T-bar,

said track means on each of said sides includes two parallel, aligned grooves suspended by an internal space, said space being open at the top of said frame, said grooves and said space being located internally of said frame, the space between said grooves being open at the top of said frame,

each of said clip means includes a bottom plate fitting within aligned grooves and a hook element extending upwardly from said frame,

said hook elements on said clip means being shaped so as to hold said sides of said frame closely adjacent to and beneath said T-bars.

4,490,958

SHEET METAL BEAM

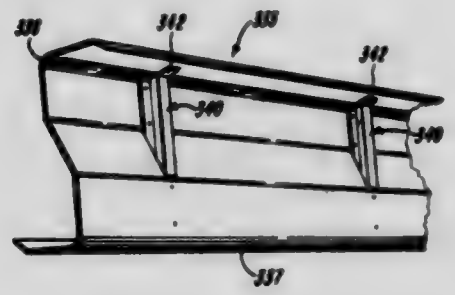
Colin F. Lowe, 5214 Sanford, Houston, Tex. 77035

Continuation-in-part of Ser. No. 217,709, Dec. 18, 1980, Pat. No. 4,409,771, which is a continuation-in-part of Ser. No. 104,286, Dec. 17, 1979, Pat. No. 4,329,824. This application Oct. 17, 1983, Ser. No. 542,775

The portion of the term of this patent subsequent to May 18, 1999, has been disclaimed.

Int. Cl.[3] E04B *1/18*

U.S. Cl. 52—634 17 Claims



1. An elongated beam adapted for use in constructing a building and having a substantially high strength/weight ratio, said beam comprising a sheet metal panel forming an upper flange portion integrally connected to a lower flange portion by a web portion, said web portion having laterally offset generally parallel sections connected by an inclined section, means defining a plurality of longitudinally spaced holes within said inclined section of said web portion, a plurality of longitudinally spaced strut members extending through corresponding said holes, and means securing said strut members to said web portion.

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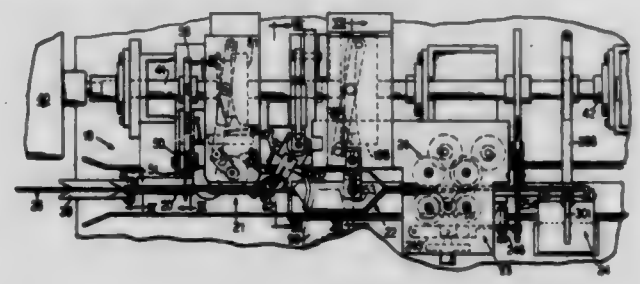
METHOD AND MECHANISM FOR FILLING BAGS

Peter Lems, Wilmette, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed Sep. 30, 1982, Ser. No. 429,617

Int. Cl.[3] B65B *9/08, 43/26*

U.S. Cl. 53—459 21 Claims



18. A method of sequentially filling bags, each having closed bottom and side edges and a reclosable upper end mouth having a pair of interlocking fastener strip profiles running laterally thereacross and laterally connected together in a chain, for use in an automatic bag filling machine, the steps comprising:

intermittently advancing said chain one bag at a time along a transport path,

conducting one fastener strip profile of each bag along said transport path relative to the other fastener strip profile to form a slight opening in the mouth of each bag adjacent a side edge thereof,

subsequently unlocking the remainder of said interlocking fastener strip profiles of each said slightly opened bag to form a full opening along each bag mouth, and

depositing fill material into each said bag through said fully opened bag mouth.

21. For use in an automatic bag filling machine particularly adapted to handle bags each having closed bottom and side edges and a reclosable upper end mouth having interlocking fastener strip profiles running laterally across opposed inner facing surfaces of said mouth of said bag, apparatus for opening said bags for filling comprising:

gripper means for laterally conducting one fastener strip profile relative to the other opposed fastener strip profile at each bag mouth to form a slight opening adjacent a side edge of said bag,

parting means for subsequently separating the remainder of said interlocking fastener strip profiles of each said slightly opened bag to form a full opening along each said bag mouth, and

separation means for transversely separating each said bag profiles to widen said full opening prior to filling.

4,490,960

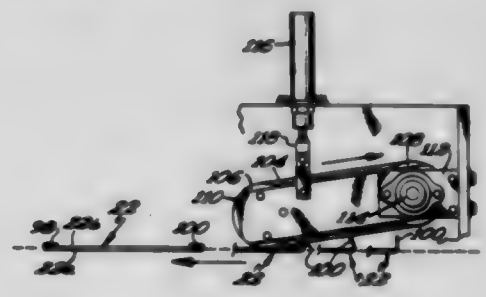
APPARATUS AND METHOD FOR CLOSING RECLOSABLE BAGS

James H. Klemesrud, New Richmond, Wis., assignor to Doboy Packaging Machinery, Inc., New Richmond, Wis.

Continuation of Ser. No. 172,411, Jul. 25, 1980, abandoned. This application Dec. 20, 1982, Ser. No. 451,354

Int. Cl.[3] B65B *51/04*

U.S. Cl. 53—135 5 Claims



1. Apparatus for closing bags with a tin tie strip for reclosing of bags after opening, comprising:

(a) conveyor means for moving open-topped bags having opposed, front and rear side walls past a series of elements arranged in a predetermined sequence to accomplish the closing of such bags;

(b) a series of said elements comprising, sequentially, in the direction of bag travel;

(1) a first glue applicator in the form of a nozzle positioned in close proximity to the path of bag travel to apply glue to the face of one side wall of a moving bag proximate the top thereof;

(2) means for feeding and applying a flexible tin tie strip from a tin tie strip supply generally horizontally across said one side wall of the bag over the glue deposited by said first applicator nozzle, with bendable lengths of said tin tie strip projecting beyond the leading and trailing edges of said one side wall of the bag, said applying means comprising a pair of cooperating feed rollers controlled to revolve continuously during bag closing operation, said feed rollers being intermittantly moved towards one another for simultaneously gripping between said feed rollers a strand of tin tie and the opposed side walls of a bag being transported by said conveyor means in substantial alignment with the location on the bag top where glue has been applied by said first applicator nozzle to thereby dispense a strip of tin tie of predetermined length and apply same by pressure from said feed rollers to said one side wall of a moving bag over said glue;

(3) a first folding device operative to fold the open top of the moving bag downwardly over the face of said one side wall and to thereby form a first fold with the tin tie strip between said first fold and said one side wall;

(4) a second glue applicator in the form of a second nozzle positioned in close proximity to the path of bag travel to apply glue to the outside, exposed surface of said first fold;

(5) a second folding device operative to fold the top of said moving bag downwardly a second time to thereby form a second fold with said surface of said first fold having said glue thereon lying against said one side wall of the bag, whereby the top of the bag is held in a double-folded, closed condition by the glue deposited from said second applicator nozzle;

(c) means movable across the path of travel of bags being transported by said conveyor means to strike the bendable length of said tin tie strip projecting beyond the leading edge of said one side wall of the bag for bending it to a position where it projects angularly with respect to said bag side walls, said movable means being mounted for rotary movement in a generally vertical plane oriented transversely to the direction of travel of said conveyor means and stationary guide means positioned beyond said movable means in the direction of bag travel at a location to be struck by said projecting leading edge tin tie length and thereby flatten it rearwardly against the other one of said opposed bag side walls; and

(d) bending means positioned beyond said stationary guide means in the direction of bag travel and movable to strike said trailing edge tin tie length and bend it to an angularly projecting position with respect to said bag side walls, and contact means including an endless belt angled inwardly toward said bags with respect to the direction of bag travel and positioned adjacent to said conveyor means beyond said movable means in the direction of bag travel in the path of said angularly projecting trailing edge tin tie length including means for driving said endless belt in a direction generally coinciding with the direction of movement of said conveyor means at a greater linear speed than said conveyor means, whereby said endless belt is operative to movably engage said angularly projecting trailing edge tin tie length and flatten it against the other one of said bag side walls;

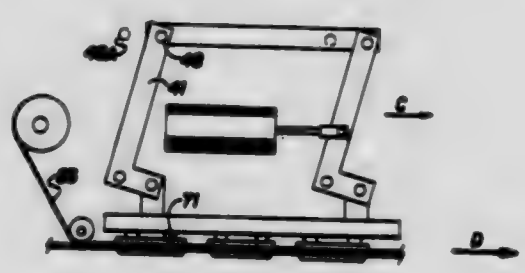
(e) means for intermittently moving said feed rollers relatively towards each other for simultaneously gripping between said feed rollers a strand of tin tie and the opposed side walls of a bag being transported by said conveyor means is substantial alignment with the location on the bag top where glue has been applied by said first applicator nozzle to thereby dispense a strip of tin tie of predetermined length from said supply and apply same by pressure from said feed rollers to said one side wall of a moving bag over said glue.

4,490,961

HEAT SEAL METHOD

Glenn F. Raque, 11107 Ainwick Ct., Louisville, Ky. 40243

Filed Jan. 7, 1982, Ser. No. 337,837
Int. Cl.³ B65B 7/16, 7/28
U.S. Cl. 53—329 7 Claims



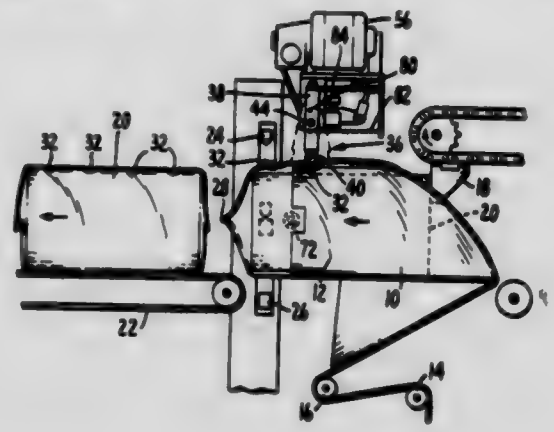
1. An apparatus for supplying and sealing a cover means to containers carried in a selected direction on a moving conveyor including a carriage assembly means located above the conveyor for movement parallel to the direction of movement of the conveyor and adapted to move in the direction of movement of the conveyor from a first position above said conveyor means at the same rate of speed as said conveyor means for a selected distance to a second position, return means to return said carriage means from said second carriage position to said first carriage position; press means carried by said carriage means including rocker arm means and pivotably connected thereto, platen means connected for movement toward and away from said conveyor means by said rocker arm means; motive means to selectively pivot said rocker arm means about said pivot means whereby said platen means is extended from said first position above said conveyor means to said second position engaging said container means carried by said conveyor means; control means to actuate said platen means from said first position to said second position when said carriage means is in said first carriage position and to move said platen means from said second to said first postion when said carriage means is in said second carriage position.

4,490,962

PLASTIC FILM WRAPPER AND SEALER APPARATUS

Rudolf R. Weis, Antioch, and Rudolph W. Schutz, Walnut Creek, both of Calif., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Aug. 11, 1983, Ser. No. 522,139
Int. Cl.³ B65B 9/06
U.S. Cl. 53—550 9 Claims



1. Apparatus for securing plastic film in position about a product, said apparatus comprising:

a curved forming plate defining an interior and having a smooth outer surface for accommodating a plastic sheet with portions of said sheet positioned in overlapping relationship;

conveyor means for conveying a product through said forming plate interior whereby said plastic sheet is disposed about the periphery of said product;

sealer means cooperating with said plate to form spaced discrete heat seals in the overlapping portions of said plastic sheet for maintaining the sheet about the periphery of said product, said sealer means including a heated sealer element; and

transport means for reciprocatably moving said sealer means whereby said sealer element remains in engagement with said overlapped sheet portions and substantially follows the path of movement thereof for a predetermined period of time as said product is conveyed through said plate interior.

4,490,963

PACKAGING MACHINE

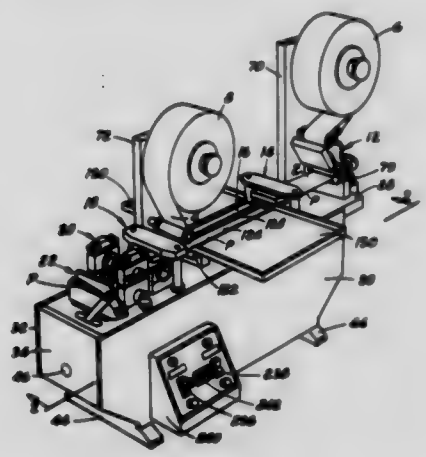
David S. Knudson, 3145 Hawthorne Blvd., St. Louis, Mo. 63104

Filed Nov. 16, 1981, Ser. No. 321,694
Int. Cl.³ B65B 5/02, 61/26
U.S. Cl. 53—559 20 Claims

1. A machine for packaging small solid objects between a carrying strip and a covering strip, said machine comprising: means on the machine defining a path along which the carrying strip moves including a track which is located intermediate the ends of the path and supports the carrying strip in a horizontal orientation; drive means for advancing the carrying

strip along the path and for also simultaneously advancing the covering strip along a portion of the path that is beyond the track, with the covering strip overlying the carrying strip along said portion of the path; forming means located along the path ahead of the track for producing pockets arranged in two rows in the carrying strip with the pockets being oriented such that they open upwardly at the track; a pair of loading trays located on opposite lateral sides of the track for supporting small solid objects generally above and to the sides of the portion of the carrying strip that passes along the track and between the trays, so that the objects on the trays can be manipulated into the pockets of the carrying strip; a divider rail located between the two trays, the divider rail being slightly above the carrying strip to prevent the carrying strip from rising upwardly off of the track and further being between the two rows of pockets in the carrying strip so as to separate the rows, whereby the objects on the one tray are manipulated into the pockets of the one row and the objects on the other tray are manipulated into the pockets of the other row; and sealing means for sealing the covering strip to the carrying strip along the areas of the two strips that surround the pockets.

7. A machine for packaging small solid objects between a carrying strip and a covering strip, at least one of which is coated with a sealant that is activated by heat, said machine comprising; means on the machine defining a path; drive means for advancing the carrying strip incrementally along the path and for also advancing the covering strip simultaneously with the carrying strip along a portion of the path, with the covering strip overlying the carrying strip along said portion of the path, the drive means including rollers which come together at a nip into which the covering and carrying strips pass in overlying relation, means for incrementally rotating the rollers to advance the strips including a spring and a displaceable chain connected to the spring such that the spring maintains the chain in tension, the chain being coupled to one of the rollers such that the chain will rotate that roller when the chain is displaced in the proper direction, and means for preventing the rollers from turning in the opposite direction, whereby the strips will only advance in one direction along the path; forming means along the path for creating upwardly opening pockets in the carrying strip; loading means along the path beyond the forming means and ahead of the portion of the path where the covering strip overlies the carrying strip for facilitating the loading of the small objects into the pockets of the carrying strip; sealing means along the portion of the path at which the covering strip overlies the carrying strip for sealing the covering strip to the carrying strip around the pockets in the carrying strip, the sealing means heating the strips sufficiently to activate the sealant and seal the two strips together in their areas surrounding the pockets; a camshaft having cams, one of which periodically displaces the chain of the drive means against the tension exerted by the spring so that the spring force is transmitted through the chain to said one cam of the camshaft where it is capable of exerting torque on the camshaft, the camshaft having another cam which operates the sealing means such that the sealing means forces the strips together during the dwell between incremental advances of the strips by the drive means; an electric motor positively coupled to the camshaft for turning the camshaft; and brake means on the motor for preventing rotation of the camshaft when the motor is de-energized, whereby any torque applied to the camshaft by the spring of the drive means will not rotate the camshaft when the motor is de-energized, so that the sealing means remains at all times perfectly synchronized with the pockets formed by the forming means.

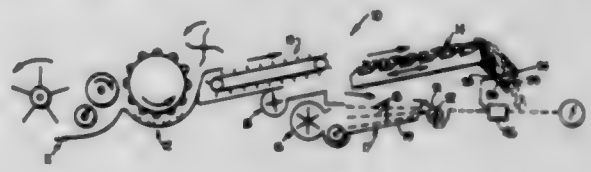


4,490,964

GRAIN LOSS INDICATOR

Kim W. Eldredge, Blyth Rd., Clare, State of South Australia, Australia

Continuation of Ser. No. 926,157, Jul. 19, 1978, abandoned. This application May 2, 1980, Ser. No. 146,364
Claims priority, application Australia, Aug. 17, 1977, PD1276
Int. Cl.³ A01D *41/00, 45/00*
U.S. Cl. 56—10.2 8 Claims



1. Grain loss indicator for indicating grain loss from a combine having harvesting means, thresher means, straw walkers, sieves, means to impart fore-and-aft movement to the straw walkers, and means to impart shaking movement to the sieves, comprising:

a sensor, means securing the sensor with respect to at least one of the sieves so as to also be subject to said shaking sieve movement, said sensor being located rearwardly of the sieves and extending across substantially the full width of the sieves so as to lie across substantially the entire path of flow of discrete material that has not passed through the sieves and is discharged over the sieves, and the portion of said sensor that is positioned to be impacted by the said discrete material being a sheet metal member,

an impact detecting transducer carried by and secured to said sensor, said transducer comprising a piezo-electric crystal, and a metal stem interconnecting said crystal to said sheet metal member, the stem being of substantially smaller size than the crystal and spacing the latter a sufficient distance from said sheet metal member to enable an accurate response to be achieved over a range of frequencies broader than that required to identify the different types of grain kernels that may impact against said sheet metal member,

electrical readout means, and

an electrical signal amplifier electrically interconnecting said transducer and said readout means.

4,490,965

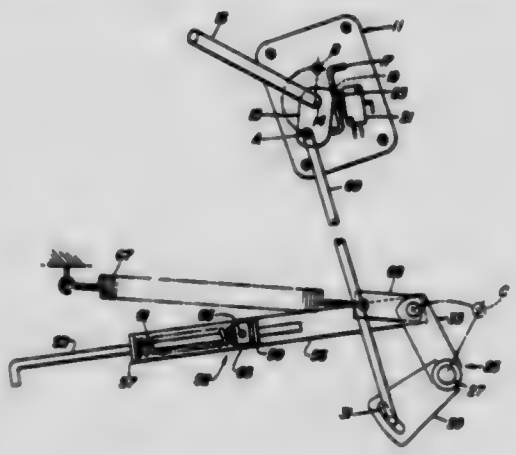
RIDING MOWER LINKAGE

Wayne R. Hutchison, Mayville, Wis., assignor to Deere & Company, Moline, Ill.

Filed Jan. 2, 1983, Ser. No. 500,466
Int. Cl.³ A01D *69/08, 75/20*
U.S. Cl. 56—11.6 2 Claims

1. In combination with a riding power vehicle having an operator's station and a power take off in endless belt driven communication with a mower deck mounted to said vehicle, said mower deck having a spindle rotatable mounted to said mower deck and in driving communication with a mower deck blade, said endless belt extending in part around said spindle and a power take of spindle, said mower deck further having a clutch arm pivotally mounted to said mower deck and a spindle rotatably mounted to said clutch arm aligned opposite a portion of said endless belt, an improved linkage system

wherein the improvement comprises: a mounting plate fixably mounted in said operator's station; a stop member fixably mounted to said mounting plate; a member pivotally mounted in said operator's station pivotally positionable to a first or second position abutting to said stop member in said position such that said member pivots over center; a lever pivotally mounted to said vehicle including a first and second lever arm, said first lever arm including a slot; a linking rod pivotally mounted to said member at one end such that said linking rod travels over center upon pivotal displacement of said member and slidably mounted in said slot such that upon initial displacement of said member, said linking rod bottoms in said slot and further displacement of said member causes said linking member to rotate said lever; means for communicating said displacement of said lever to said clutch arm such that should said member be in said first position, said clutch arm spindle is biased by said means away from said endless belt and should said member be in said second position, said clutch arm spindle is biased against said endless belt, an interlock switch fixably mounted in said vehicle's operator's station having a contact needle extending through an opening in said stop such that said contact needle is biased to close said interlock switch when said member is in said second position.

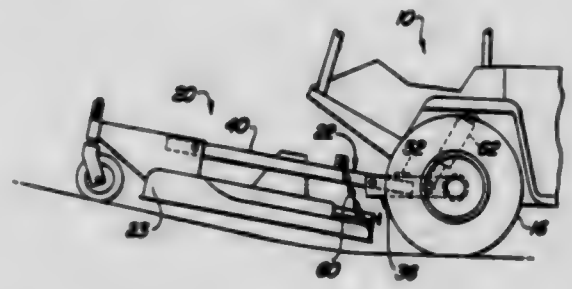


4,490,966

HITCH STRUCTURE FOR COUPLING AN IMPLEMENT TO A VEHICLE

John B. Kuhn, and Lloyd A. Wykhuis, both of Mayville, Wis., assignors to Deere & Company, Moline, Ill.

Filed Jun. 16, 1983, Ser. No. 505,044
Int. Cl.³ A01D 35/12
U.S. Cl. 56—15.9 4 Claims



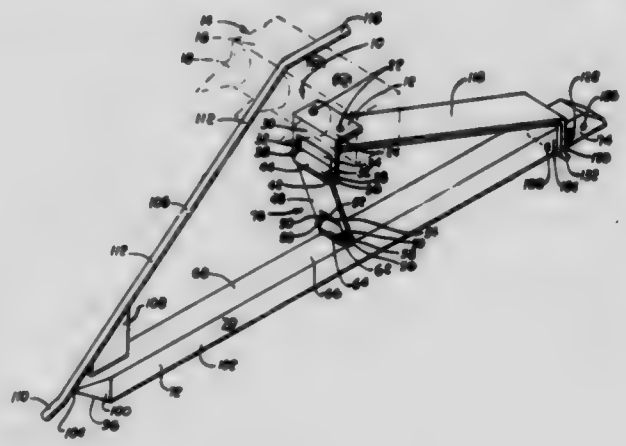
1. In an implement and vehicle combination wherein the vehicle includes a pair of transversely spaced, fore-and-aft extending lift arms each having one end pivotally connected to the vehicle and having an opposite end pivotally connected to the implement, power means coupled to the pair of arms for selectively raising and lowering the latter and wherein the implement includes ground engaging means for supporting an end of the implement remote from the vehicle and a pair of flexible members respectively coupled between the pair of lift arms and the implement for supporting an end of the latter which is adjacent the vehicle, the improvement comprising: said arms each including first and second sections pivotally interconnected with each other by a transverse pivot located between the vehicle and the implement; each second section having one end pivotally connected to the implement and having a second end projecting beyond the transverse pivot; and a stop block carried by each first section at a location above the second end and being engaged therewith when the arms are in an unflexed, normal operating position wherein the flexible member is taut and supports that end of the implement which is adjacent the vehicle; and said first sections of said arms being moveable to a lowered position wherein the flexible members are slack and the last mentioned end of the implement rests upon the ground.

4,490,967

APPARATUS FOR LIFTING CROPS

Delbert L. Mills, 1713 Sandalwood Dr., Norman, Okla. 73071

Filed Apr. 4, 1983, Ser. No. 481,826
Int. Cl.³ A01D 55/28
U.S. Cl. 56—312 30 Claims



1. An apparatus for lifting crops ahead of a crop harvesting machine, comprising:

a mounting bracket;

a pick-up bar; and

a linkage means, having an upper end pivotally connected to said mounting bracket and a lower end pivotally connected to said pick-up bar, for allowing said pick-up bar to swing rearwardly relative to said mounting bracket.

4,490,968

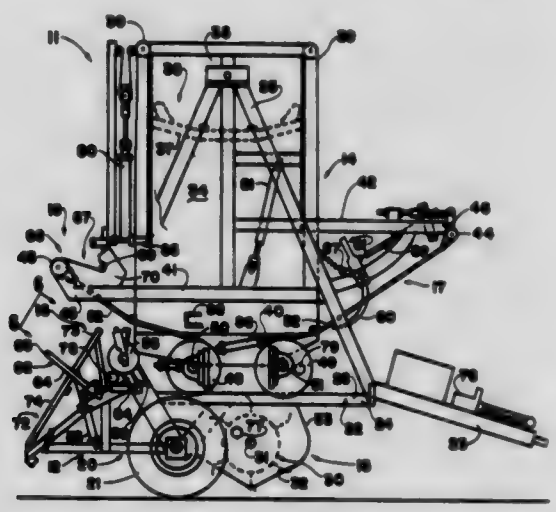
BALING APPARATUS

Jerome M. Cysewski, 2011 Harnish Blvd., P.O. Box 1998, Billings, Mont. 59103

Filed Sep. 23, 1983, Ser. No. 535,383
Int. Cl.³ A01D 39/00, 59/00, 78/14
U.S. Cl. 56—341 12 Claims

1. Baling apparatus including a support portion, a forage pickup portion, a bale forming portion, a bale tying portion, a bale discharging portion and a control portion; said support portion including a carriage section with wheel members, a base section, a pair of upstanding sections extending upwardly adjacent opposed side edges of said base section, a hitch section extending from one end of said base section; said forage pickup portion including generally cylindrical rake means disposed below said base section, said rake means being rotatably supported on a substantially horizontal shaft disposed transversely of said base section; said bale forming portion including a substantially rectangular chamber, the upper end of said chamber being pivotally connected between said upstanding sections of said support portion, bale compressing means disposed within said chamber, said compressing means including a closure member slidably disposed transversely of said chamber, said closure member being movably supported at each of its corners, pairs of arm members extending longitudinally of said base section in opposite directions from said cham-

ber adjacent the lower end thereof, a pair of said arm members remote from said hitch section being pivotally connected to said chamber, a supporting member extending between the free ends of each pair of arm members, a pair of drums rotatably carried by horizontal shafts disposed transversely of said base section, said drums being spaced from one another above said forage pickup portion, a plurality of closely spaced flexible longitudinal strips extending between each of said supporting members and the rotatable drum closest thereto, opposite ends of said longitudinal strips being affixed to said supporting member and to said drum; said bale tying portion including a plurality of knotting means movably supported on said base section adjacent the end thereof remote from said hitch section, one of said knotting means being disposed below each of the spaces between adjacent longitudinal strips, a plurality of movable arcuate needles corresponding in number to said knotting means, said needles extending from supporting means



disposed between the pair of arm members extending from said chamber toward said hitch section, said needles being disposed parallel to each other and aligned with the spaces between the longitudinal strips, twine tensioning means disposed adjacent said knotting means, said tensioning means including a rod member mounted on pivotable supports extending upwardly from said base section; said bale discharging portion including releasable retaining means mounted on said chamber adjacent the free ends of pivotable arm members, an inclined section pivotally connected to said support portion, said inclined section including an upper end disposed adjacent to said knotting means; said control portion including hydraulic drive means for said rotatable rake means and said knotting means and reversible drive means for said rotatable drums, hydraulic cylinder means for selectively changing the position of said bale compressing means, said pivotable arm members, said needle supporting means, said knotting means, said twine tensioning means, said inclined section and said retaining means.

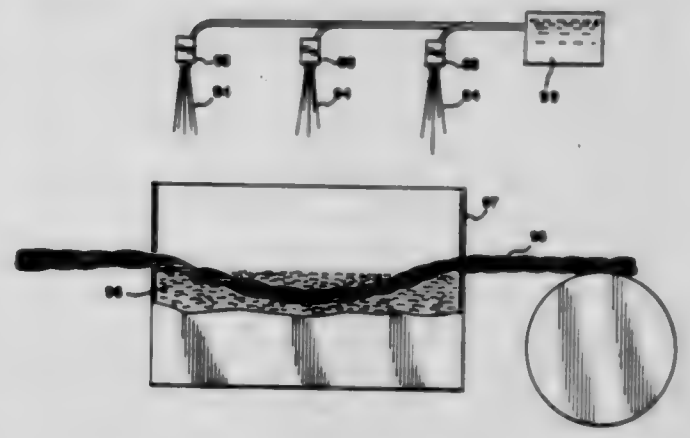
4,490,969

PLASTIC ENCAPSULATED WIRE ROPE

Neville H. Simpson; Thomas H. Doesmagen, and David E. Dirks, all of Kenosha, Wis., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Mar. 25, 1983, Ser. No. 479,000
Int. Cl.³ D07B 1/16, 7/12, 7/14
U.S. Cl. 57—217 3 Claims

1. In a method of making encapsulated wire rope including the steps of winding several lubricated multi-wire strands to form a wire rope, and extruding a heated thermoplastic thereon which extends into the interstices between the rope strands, the improvement comprising: surrounding the wire rope with a heavy fluid quenching lubricant at a temperature of 50°–100° F. (10°–38° C.) to cool the wire rope and to cause the quenching lubricant to be drawn into any openings in the



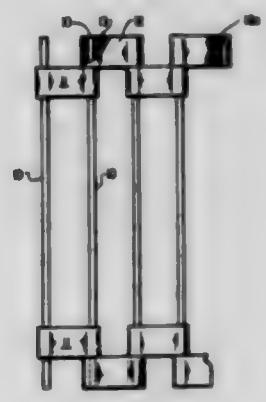
thermoplastic to further lubricate the wire rope and to seal such openings.

4,490,970

CONVEYOR LINK

Robert B. Curl, Twin Falls, Id., assignor to Superior Chain, Inc., Twin Falls, Id.

Filed Jul. 24, 1981, Ser. No. 286,657
Int. Cl.³ F16G 13/24
U.S. Cl. 59—79.1 12 Claims



1. A link for joining metal rods to form a conveyor chain of spaced metal rods, said link comprising:

an elongated body of a tough, hard, very slightly flexible elastomer;

at least a pair of spaced, parallel, substantially cylindrical cavities in said elongated body;

at least a pair of hollow metallic rod locking means tightly adhered to at least a portion of the walls of said cavities to accept the ends of a pair of rods, said rod locking means having spring means with internal cross-sectional dimensions slightly smaller than said rods so that a forced fit is achieved between said rods and said locking means.

4,490,971

METHOD FOR REGULATING THE OPERATING CYCLE IN AN EXTERNAL COMBUSTION ENGINE

Lars G. B. Hedelin, Skärsnäsvägen 5, S-182 63 Djursholm, Sweden

PCT No. PCT/SE81/00201, § 371 Date Feb. 22, 1982, § 102(e) Date Feb. 22, 1982, PCT Pub. No. WO82/00178, PCT Pub. Date Jan. 21, 1982
PCT Filed Jul. 1, 1981, Ser. No. 355,590
Claims priority, application Sweden, Jul. 2, 1980, 8004909
Int. Cl.³ F02G 3/02
U.S. Cl. 60—39.63 19 Claims

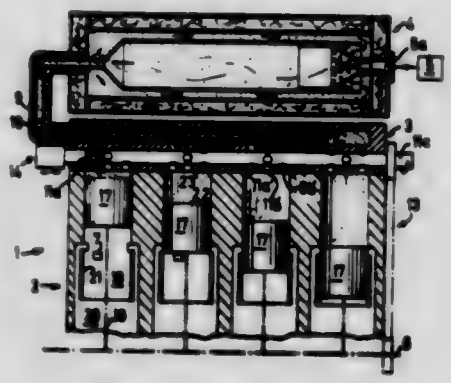
1. A method for operating a combustion engine comprising the steps of:

inducting into a working chamber an amount of air corre-

sponding to the amount required at full-load operation of the engine;

discharging from the working chamber a first part of the inducted air for retaining a second part of the inducted air in the working chamber, the second part being equal to the amount required for operation at the actual engine load;

compressing the second part of the inducted air until the compression ratio of the second part reaches a predetermined compression ratio that is constant for varying loads;



transferring the compressed air into a combustion chamber, mixing fuel with the compressed air and combusting the mixture of fuel and air in the combustion chamber to produce combustion gas;

transferring the combustion gas into the working chamber and performing work therein with the combustion gas; and

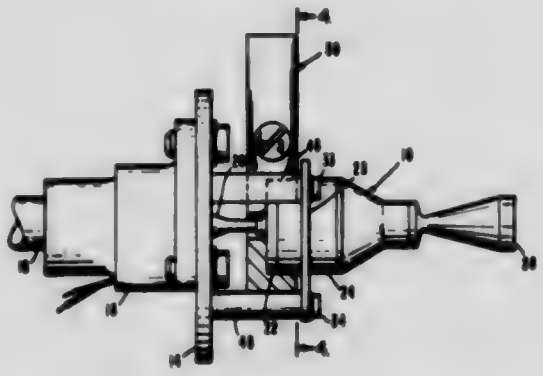
discharging the combustion gas from the working chamber.

4,490,972

HYDRAZINE THRUSTER

M. Edmund Elliot, Arcadia, and Philip A. Donatelli, Marina del Rey, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Mar. 29, 1982, Ser. No. 362,937
Int. Cl.³ F02K 1/40, 7/02
U.S. Cl. 60—39.462 12 Claims



1. A hydrazine hot gas producer comprising:

a hydrazine chamber housing for containing hydrazine dissociation catalyst therein, said chamber including an inlet portion;

an outlet structure connected to said chamber for discharging from said chamber the hot gas products of hydrazine exothermic dissociation;

hydrazine supply means connected to said inlet portion of said chamber for supplying hydrazine to be exothermically decomposed in said chamber; and

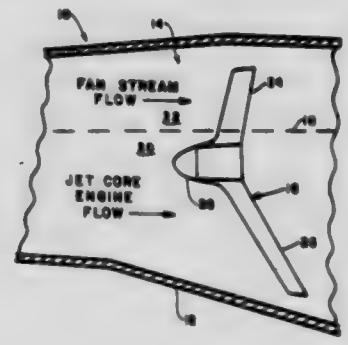
a thermal control structure connected to said inlet portion of said chamber for receiving from said inlet portion heat which is generated by exothermic decomposition of hydrazine within said chamber so that both the incoming hydrazine supplied by said hydrazine supply means and that portion of the catalyst within said inlet portion are at temperatures less than the saturation temperature for hydrazine at the pressure of said chamber.

4,490,973

FLAMEHOLDER WITH INTEGRATED AIR MIXER

James L. Kinsey, Palm Beach Gardens, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 12, 1983, Ser. No. 484,329
Int. Cl.³ F02K 3/10
U.S. Cl. 60—261 1 Claim





1. In an afterburner of a turbofan engine having a hollow casing defining a fluid flow duct and an elongated flameholder disposed in said casing across said duct for receiving at its front side a hot gas stream flow from a core engine and a cool air streem flow from a fan with droplets of augmentor fuel entrained therein, said flameholder defining a fuel combustion zone at its rear side and including a central portion disposed in said hot gas stream flow and at least one leg extending radially outward from said central portion and terminating at an outer end spaced inwardly from said casing and disposed in said cool air stream flow, an improved mixer which comprises:

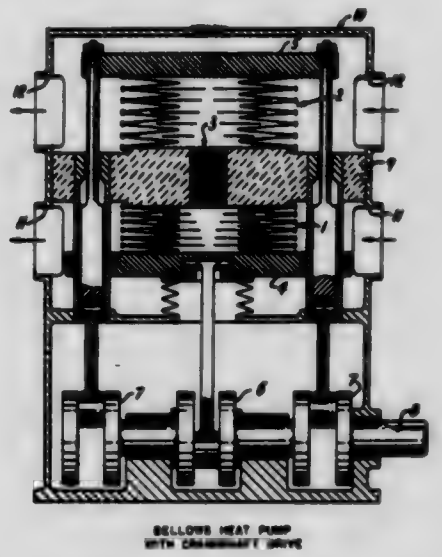
at least one small duct connected to said flameholder for capturing a small portion of said hot gas stream flow and routing the same outwardly along the flameholder, said small duct being generally L-shaped and mounted on both said central portion and leg of said flameholder, said duct defining an inlet adjacent said central portion and within said hot gas stream flow, an outlet adjacent said leg, spaced outwardly from said central portion, spaced inwardly from said casing and said outer end of said flameholder, and disposed within said cool air stream flow, and a passage closed at its sides and interconnecting said inlet and outlet for routing said small portion of said hot gas stream flow to said cool air stream flow, and

a deflector which takes the form of a plate connected to said flameholder, spaced from the small duct and disposed in the path of said small portion of said hot gas stream flow routed by said small duct, said deflector plate being mounted on said leg of said flameholder adjacent to, but spaced outwardly from, said outlet of said duct and spaced inwardly from said outer end of said flameholder and said casing for deflecting said small portion of said hot gas stream flow into the path of said cool air stream flow across said flameholder for producing a localized increase in the temperature of the air in fan stream flow adjacent said flameholder and thereby improve stability of combustion at its rear side.

4,490,974
ISOTHERMAL POSITIVE DISPLACEMENT MACHINERY

Stirling A. Colgate, Los Alamos, N. Mex., assignor to Colgate Thermodynamics Co., Princeton, N.J.

Continuation-in-part of Ser. No. 302,254, Sep. 14, 1981, abandoned. This application Sep. 8, 1982, Ser. No. 414,550
Int. Cl.³ F02G 1/04
U.S. Cl. 60—520 25 Claims



1. Isothermal positive displacement machinery having a variable volume compression-expansion chamber defined in part by an outer round flexible metal bellows-like wall having a plurality of convolutions and in further part by an end wall that is adapted to reciprocate along the axis of the outer bellows-like wall characterized in that the convolutions of the outer wall are joined in close axial spacing along inner and outer circular boundaries, the inner boundary of each convolution of the outer wall has a diameter of from about one-third to about one-tenth that of the outer boundary, and the inner boundaries of the convolutions define a zone connecting the small volumes defined between adjacent convolutions, the zone being small and in close diffusive thermal contact with the bellows-like wall to ensure that the working gas remains isothermal throughout each cycle, that during each stroke numerous heat exchanges occur between the working gas in the chamber and the bellows-like wall by both laminar and turbulent heat transfer and that heat is conducted to and through the bellows-like wall and to and from a thermal reservoir externally of the bellow-like wall.

4,490,975
SELF-PROTECTING AND CONDITIONING MEMORY METAL ACTUATOR

John R. Yaeger, Sunnyvale, and Robert K. Morgan, Pleasant Hill, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

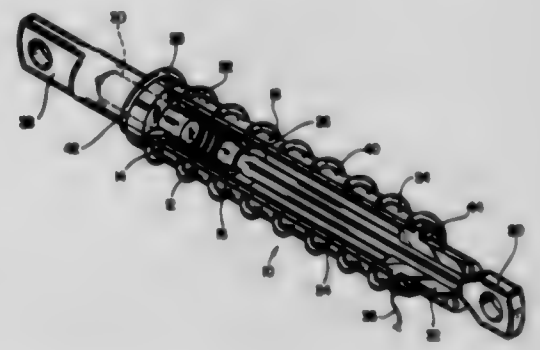
Filed Mar. 14, 1983, Ser. No. 474,931
Int. Cl.³ F03G 7/06; H01H 61/04
U.S. Cl. 60—527 8 Claims

1. A shape-memory-effect actuator comprising:

a shape-memory-alloy spring having first and second ends; a first actuator termination connected to the second end of the alloy spring;

a compensator spring having first and second ends, said compensator spring being concentrically mounted with respect to said alloy spring;

a protective support housing surrounding the alloy spring, the housing operatively inteconnecting the second end of the compensator spring to the first end of the alloy spring; said compensator spring and said alloy spring acting in series; and

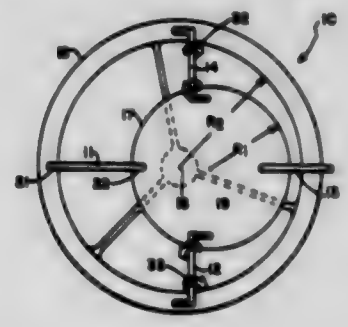


a second actuator termination connected to the first end of the compensator spring.

4,490,976
TWO-WAY SHAPE MEMORY ALLOY HEAT ENGINE

Alfred D. Johnson, 5383 Bancroft Ave., Oakland, Calif. 94601

Division of Ser. No. 308,127, Oct. 2, 1981, Pat. No. 4,435,229, which is a continuation of Ser. No. 78,891, Sep. 25, 1979, abandoned. This application Sep. 26, 1983, Ser. No. 535,908
Int. Cl.³ F03G 7/06
U.S. Cl. 60—527 3 Claims



1. A memory alloy heat engine for converting heat energy into mechanical work comprising the combination of shape memory alloy means having two-way shape memory, said alloy means having opposite ends which cyclically deform when heated above and cooled below the transition temperature of the alloy means, means for constraining the opposite ends of the alloy means so that for each cycle the alloy means is deformed torsionally first in one rotational sense during a first phase of the cycle and then is deformed torsionally in the opposite rotational sense during a second phase of the cycle, and means for heating the alloy means above the transition temperature during the first phase and for cooling the alloy means below the transition temperature during the second phase whereby torsional deformation of the alloy means produces work during both phases of the cycle.

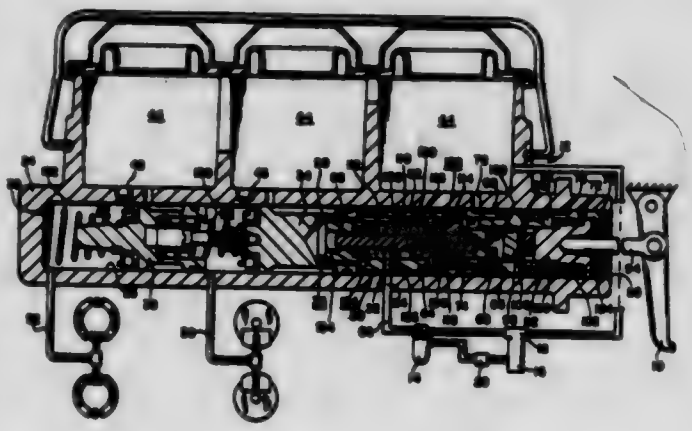
4,490,977
HYDRAULIC BRAKE BOOSTER

Keith H. Palmer, Mishawaka, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 264,511, May 18, 1981, abandoned. This application Oct. 24, 1983, Ser. No. 544,926
Int. Cl.³ B60T 13/00
U.S. Cl. 60—547.1 8 Claims

1. A hydraulic brake booster comprising a housing defining a bore communicating with a fluid reservoir, a valve assembly disposed within the bore, the bore also communicating with a source of fluid pressure and the valve assembly being operable to control communication of fluid pressure from the fluid pressure source through the housing bore, a first piston cooperating with the valve assembly to define a power chamber within the bore for receiving fluid pressure from the fluid pressure source when the valve assembly is operated, a second

piston cooperating with the first piston to define a first pressure chamber within the bore communicating with a first brake circuit, the second piston also cooperating with the housing to define a second pressure chamber within the bore communicating with a second brake circuit, the valve assembly comprising sleeve means sealingly engaging the wall of the housing bore and substantially defining a bore therein, a first valve member cooperating with the sleeve means to seal the power chamber from the fluid pressure source in a rest mode, a second valve member cooperating with the sleeve means to communicate the power chamber with the fluid reservoir in the rest mode, the first valve member cooperating with the second valve member in an apply mode during braking to close communication between the power chamber and the fluid reservoir and also to open communication between the power chamber and the fluid pressure source, the second valve member carrying a reaction disc which is exposed to the fluid pressure from the fluid pressure source in the apply mode, an input member



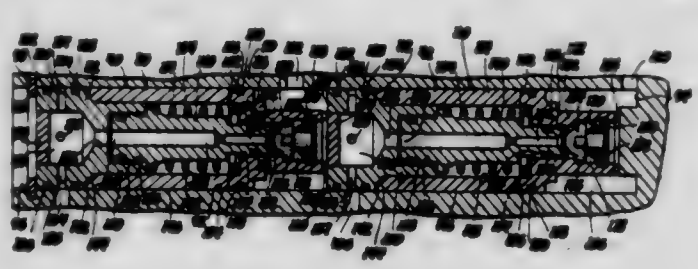
extending into the sleeve means bore at one end thereof and cooperating with the second valve member to define a cavity within the sleeve means bore, and a resilient block disposed within the cavity, the resilient block being engageable with the input member and the second valve member to provide for limited movement between the input member and the second valve member when braking is initiated, the sleeve means comprising a first cylinder at an open end of the bore and a second cylinder fastened to the first cylinder, the first and second cylinders sealingly engaging a wall of the bore, the second valve member sealingly engaging the first cylinder and cooperating with the input member to substantially define the cavity within the first cylinder, the second valve member cooperating with the first cylinder and the second cylinder to define a fluid path normally communicating the power chamber to the fluid reservoir in the rest mode, and the second valve member extending into the second cylinder to oppose the first valve member.

4,490,978

FLUID PRESSURE PROPORTIONERS

Hubert Hogg, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 6, 1982, Ser. No. 406,111
Int. Cl.³ B60T 11/06
U.S. Cl. 60—561 1 Claim



1. A fluid pressure proportioner comprising a housing having a constant diameter first bore formed therein defined by a cylindrical bore wall, a bore closed end and a bore open end;

a pressure fluid inlet formed in said housing and opening through said cylindrical bore wall into said first bore;
a pressure fluid outlet formed in said housing and opening through said cylindrical bore wall into said first bore;
and a proportioner valve assembly in said first bore arranged to permit fluid flow from said inlet through said proportioner valve assembly to said outlet and to proportion outlet fluid pressure relative to inlet fluid pressure through a predetermined inlet fluid pressure range;
said proportioner valve assembly including
a first piston secton having a second bore therethrough and a spring loaded valve seat therein permitting fluid flow thereabout through said second bore from and to said inlet, said first piston section slidably fitting in said first bore with one end engaging said bore closed end, said first piston section having a seal engaging said cylindrical bore wall preventing fluid flow between said cylindrical bore wall and said first piston section;
a second piston section cylindrically formed with an inner peripheral wall and an outer peripheral wall and end surfaces, one of said end surfaces being in abutting relation with the other end of said first piston section and the outer peripheral wall being fitted within said cylindrical bore wall in free slidable relation thereto;
a third piston section having a shouldered third bore formed therein, one end in abutting relation with and also loosely piloted within the other end surface of said second piston section, the other end in abutting relation with retaining means in said first bore and having said third bore closed, passage means transversely through said third piston section fluid connecting the third bore closed end with said outlet, and seal means between said third piston section and said cylindrical bore wall and on opposite sides of said passage means preventing fluid flow between said cylindrical bore wall and said third piston section;
and a valve member received in said second and third bores of said first and third piston sections and cooperating with said valve seat to define a proportioning valve;
and a proportioning valve spring acting on said first piston section and said valve member to urge said proportioning valve open;
said valve member having proportional end surface areas cooperating with fluid pressure thereon to obtain the desired proportioning action;
said first and second piston sections, said spring, said valve member and said third piston section being assembled within said first bore by inserting them in order and then installing said retaining means.

4,490,979

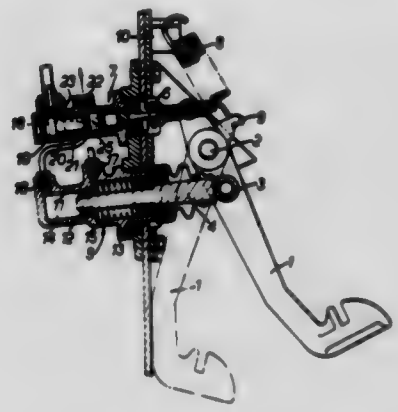
VEHICLE BRAKING SYSTEM

Desmond H. J. Reynolds, Birmingham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Aug. 30, 1982, Ser. No. 413,074
Claims priority, application United Kingdom, Oct. 27, 1981, 8132384
Int. Cl.³ F15B 7/08; B60T 13/14
U.S. Cl. 60—581 10 Claims

1. In a vehicle braking system having a pair of brake pedals, fluid operated brakes mounted on opposite sides of the vehicle, and a pair of fluid flow control devices coupled to respective pedals to be actuated thereby, said pedals being operable selectively either together to apply the brakes at both sides of the vehicle for normal retardation or separately to apply the associated brake at one side of the vehicle to assist vehicle steering, the improvement which comprises two fluid pressure sources respectively connected to the brakes on opposite sides of the vehicle, common actuating means for actuating both of said pressure sources when said pedals are operated either independently or together, and fluid reservoir means having a connection with each said pressure source through a respective one of

said flow control devices, each flow control device being actuable by the pedal coupled thereto to close said connection



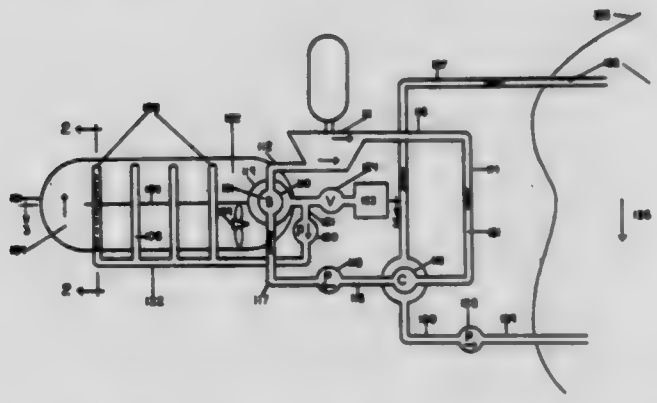
between said respective pressure source and said reservoir means.

4,490,980

GEOGRAPHICALLY POSITIONED, ENVIRONMENTAL, SOLAR HUMIDIFICATION ENERGY CONVERSION

Gene S. Kira, 7986 Amargosa Dr., Carlsbad, Calif. 92008, and Jens O. Sorensen, P.O. Box 2274, Rancho Santa Fe, Calif. 92067

Filed Mar. 8, 1983, Ser. No. 473,273
The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.
Int. Cl.³ F03G 7/02
U.S. Cl. 60—641.8 8 Claims



1. A method of geographically positioned, environmental solar humidification energy conversion comprising the steps of:

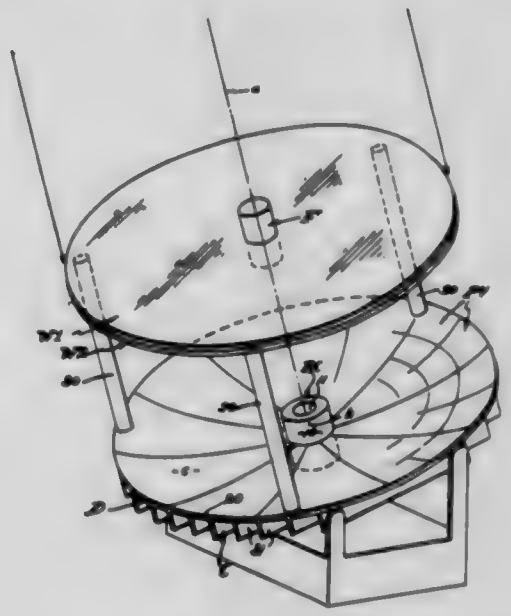
(a) providing air in a solar collector;
(b) providing water in the solar collector;
(c) combining the provided air with the provided water in the solar collector to create humid air;
(d) heating the provided air, the provided water and/or the humid air by the solar collector to create warm humid air;
(e) transporting the warm humid air to a boiler of a closed cycle power system which is positioned at an elevation above that of the solar collector;
(f) providing a working fluid in the boiler of the power system;
(g) heating the working fluid in the boiler with the transported warm humid air whereby the working fluid is pressurized and the warm humid air is cooled, whereby some water vapor condenses;
(h) converting the energy of the pressurized working fluid to produce a useful form of energy, thereby expanding the working fluid;
(i) transporting the expanded working fluid to a condenser of the closed cycle power system;
(j) cooling the transported expanded working fluid in the condenser, whereby the working fluid condenses;
(k) recycling the cooled working fluid to provide said working fluid in the boiler of the power system; and
(l) recycling the cooled air into the solar collector to provide said air in the solar collector at least partly as a result of the low density of the rising warm air moving from the solar collector to the boiler in relation to the higher density of the descending cooled air moving from the boiler to the solar collector.

4,490,981

FIXED SOLAR CONCENTRATOR-COLLECTOR-SATELITE RECEIVER AND CO-GENERATOR

Milton Meckler, 16348 Tupper St., Sepulveda, Calif. 92343

Filed Sep. 29, 1982, Ser. No. 427,736
Int. Cl.³ F03G 7/02
U.S. Cl. 60—641.15 18 Claims



1. A fixed position solar concentrator and power generator, including in combination;

a planar hologram window comprised of a transparent medium having a thickness accomodating a multiplicity of zone plate means and each recorded therein for the reception of and passage of a descrete wavelength of sunlight during a time position interval of the suns traverse and each concentrating said descrete wavelength of sunlight by diffraction along a common axis to a focal point,

and a heat absorbing power generator means to absorb the heat of insolation at the focal point and received successively from the multiplicity of concentrating holographic zone plate means as the suns time position intervals successively change during its traverse.

4,490,982

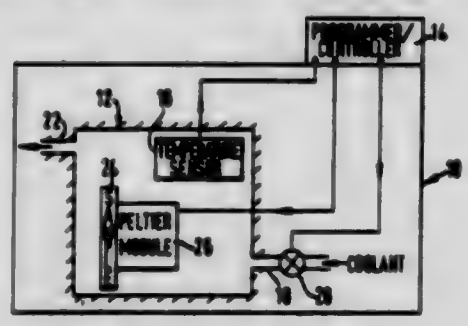
METHOD OF AND APPARATUS FOR THE CONTROLLED COOLING OF A PRODUCT

Michael J. Christmas, Worcester Park, England, assignor to Pilmer Products Limited, Sunbury-On-Thames, England

Filed Oct. 19, 1982, Ser. No. 435,308
Int. Cl.³ F25B 21/02
U.S. Cl. 62—3 22 Claims

1. A method of modifying the cooling rate of an article which comprises a container at least partially filled with contents at least partially of liquid form and constituting a finite specimen, which comprises the steps of progressively cooling the specimen as a whole down to, through and below a given critical temperature for that specimen, and at a temperature level which is close to and above said critical temperature subjecting the specimen to supplementary cooling at only a localized part of the specimen by passing an electric current

through Peltier effect means in thermal contact with only said localized part of the specimen, and triggering the initiation of



said supplementary cooling by the specimen reaching said predetermined temperature level.

4,490,983

REGENERATOR APPARATUS FOR USE IN A CRYOGENIC REFRIGERATOR

Peter E. Gifford, and Stephen D. Swift, both of Syracuse, N.Y., assignors to Cryomech Inc., Syracuse, N.Y.

Filed Sep. 29, 1983, Ser. No. 537,030
Int. Cl.³ F25B 9/00
U.S. Cl. 62—6
9 Claims



1. In a multi-stage Gifford-McMahon refrigerator having sealed displacers slidably mounted in the expansion chamber of each stage, a flow circuit for operatively connecting the expansion chamber of the first stage with the expansion chamber of the second stage that includes

a low temperature heat exchanger that forms part of the cold head of the refrigerator,

a hollow sleeve for connecting the low temperature heat exchanger to the expansion chamber of the said first stage,

a regenerator unit loosely received within the said hollow sleeve,

a locking means secured to the regenerator unit, said locking means being operable to forceably expand radially into locking engagement with the inner wall of the said sleeve to prevent the regenerator from moving inside the sleeve,

said locking means and said sleeve means being formed of material having about the same thermal coefficient of expansion whereby the locking means exerts a substantially uniform holding force against the sleeve as the co-joined members are subjected to changes in temperature, and

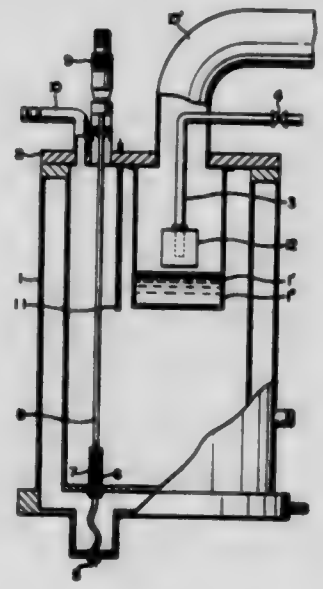
a sealing means positioned between the locking means and the regenerator unit that is deformable into sealing contact with the sleeve to prevent refrigerant from moving therebetween.

4,490,984

LOW-TEMPERATURE LIQUEFIED GAS CONSTANT OUTFLOW DEVICE

Akira Hongo, Miki; Hideki Ueda, Nagoya; Issei Nakata, Shizuoka; Eiichi Yoshida, Shimizu; Nobuyoshi Aoki, Shimizu, and Toshimitsu Suzuki, Shimizu, all of Japan, assignors to Teisan Kabushiki Kaisha and Daiwa Can Company, Limited, both of Tokyo, Japan

Filed Apr. 14, 1983, Ser. No. 485,009
Claims priority, application Japan, Apr. 22, 1982, 57-67670
Int. Cl.³ F17C 13/02
U.S. Cl. 62—49
6 Claims



1. A low-temperature liquefied gas constant outflow device comprising a heat-insulating container having an opening of the top, a cover member closing said opening of said heat-insulating container, a low-temperature liquefied gas outlet which runs through the base of said heat-insulating container, a level sensor which detects the level of low-temperature liquefied gas in said heat-insulating container, a first vaporized-gas exhaust conduit which opens from said cover member, a pressure absorbing container located with said heat-insulating container, said pressure absorbing container being closed and having an opening pierced in the lower portion thereof which serves as a low-temperature liquefied gas outlet, a low-temperature liquefied gas supply conduit and a second vaporized-gas exhaust conduit, both inserted into said pressure absorbing container through said cover member, and a check valve provided in said low-temperature liquefied gas supply conduit, which opens or closes in response to a signal from said level sensor.

4,490,985

METHOD OF DEHYDRATING NATURAL GAS

Richard E. Wells, Tulsa, Okla., assignor to General Signal Corporation, Stamford, Conn.

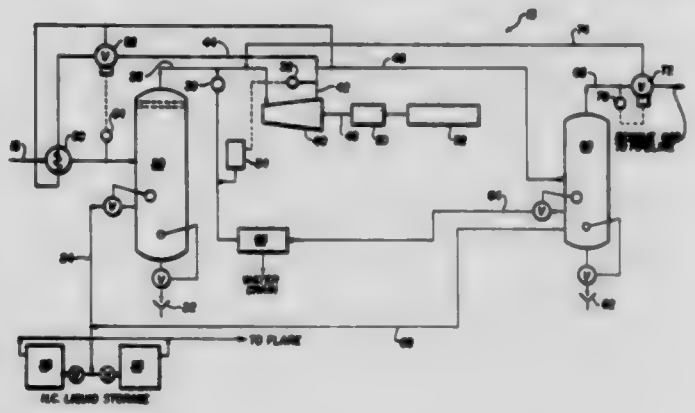
Filed Jun. 29, 1983, Ser. No. 509,138
Int. Cl.³ F25B 9/00
U.S. Cl. 62—86
14 Claims

1. A method for dehydration of well head natural gas comprising:

supplying said well head natural gas to a multi-phase inlet separation means for removing hydrocarbon liquids and liquid water therefrom;

supplying a vapor mixture of natural gas containing water vapor from said inlet separator means to turboexpander means for low temperature refrigeration by isentropic expansion to condense out said water vapor from said vapor mixture of natural gas to create a fluid, refrigerated mixture therefrom; and

supplying said refrigerated mixture of natural gas vapor and condensed water vapor to a multiphase outlet separator



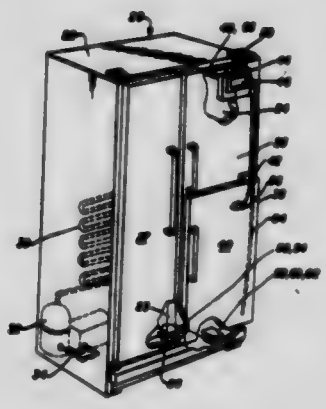
means for removing said condensed water vapor from said natural gas.

4,490,986

ELECTRONIC SENSING AND DISPLAY SYSTEM FOR A REFRIGERATOR

Stephen W. Paddock, Knight Township, Vanderburgh County, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Division of Ser. No. 255,673, Apr. 20, 1981, Pat. No. 4,387,578. This application Dec. 16, 1982, Ser. No. 450,487
Int. Cl.³ F25B 49/00
U.S. Cl. 62—127 16 Claims



1. In a refrigeration apparatus having means defining a refrigerated space and cooling means for cooling the air within said refrigerated space, a sensing and display system comprising:

display means including an electrically energizable visual indicator;

sensing means connected to said refrigeration apparatus and arranged to provide a signal indicating a predetermined operating condition of said apparatus; and,

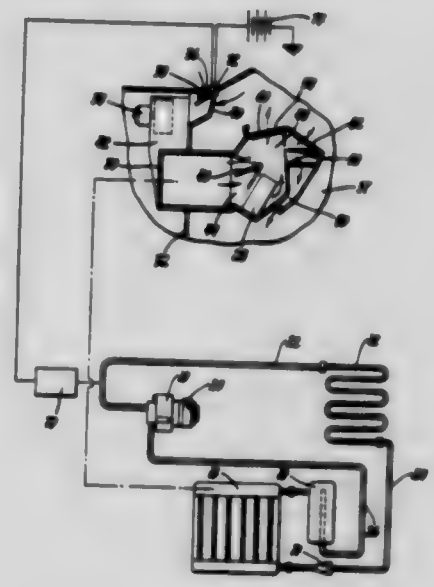
electronic signal processing means coupled to said display means and to said sensing means, said signal processing means including means operative at a first rate and responsive to said sensing means for repetitively determining in a continuous manner during an interval whether said predetermined operating condition exists and means operative at a second rate slower than said first rate for energizing said indicator to indicate that said predetermined operating condition exists.

4,490,987

VEHICLE AIR CONDITIONING SYSTEM

Gregory E. Peterson, Pontiac, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 5, 1983, Ser. No. 557,757
Int. Cl.³ F25D 17/08
U.S. Cl. 62—186 2 Claims



2. An air conditioning system for cooling and temperature regulating the variable cooling load of circulating air in a vehicle with a mixture of outside air having one wet and dry bulb temperature characteristic and recirculating inside air having another wet and dry bulb temperature characteristic which mixture has a resultant wet and dry bulb temperature characteristic and is cooled by an evaporator in a closed refrigerant circuit including a condenser and a refrigerant compressor driven by a variable speed power source to pump refrigerant from said evaporator to said condenser, said system characterized by air mixing means for circulating an air mixture to said evaporator and responsive to the pressure of the refrigerant discharged by the compressor in a feedback loop which reflects said resultant wet and dry bulb temperature characteristic and the speed of said power source to vary the relative amounts of outside and inside air in said air mixture before the air mixture is circulated to said evaporator thereby to limit the compressor discharge pressure to a predetermined level, the varying of said relative amounts of outside and inside air acting to limit said compressor discharge pressure by increasing the percentage of inside air recirculated in said air mixture thereby to decrease the temperature of said mixture as the cooling load of air circulating in the vehicle increases.

4,490,988

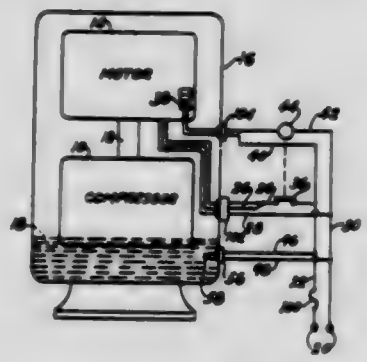
DEGRADATION SENSING AND SHUT-DOWN MEANS FOR REFRIGERATION MOTOR-COMPRESSOR UNITS

Richard E. Vogel, Cincinnati, and Benjamin Bowsky, Mainesville, both of Ohio, assignors to Emerson Electric Co., St. Louis, Mo.

Filed May 31, 1983, Ser. No. 499,321
Int. Cl.³ F25B 31/00
U.S. Cl. 62—193 2 Claims

1. In a motor-compressor unit for air-conditioning or heat pump service enclosed in a casing which includes therein an accumulation of refrigerant-oil mixture, a source of electrical power, circuit connections connecting said motor of said unit across said power source, means for sensing contamination of said mixture caused by electrically conductive particles therein comprising a pair of spaced electrodes immersed in said mixture, means for applying a voltage gradient across said electrodes and means responsive to a predetermined electrical current flow across said electrodes to break said circuit connections and shut-down said motor, and a normally open fusible switch device positioned in good heat transfer relationship

with said motor and responsive to fuse and close in responsive to a predetermined high motor temperature, a normally closed switch in said circuit connections, a relay which when energized opens said normally closed switch, and further circuit connections connecting said relay and said normally open



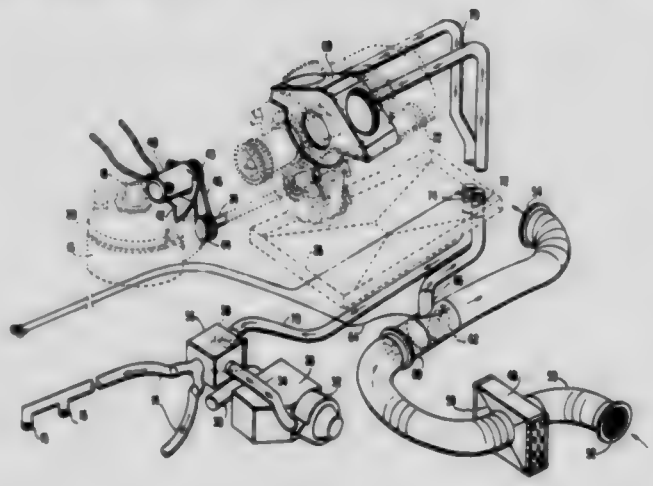
fusible switch device in series with each other and in parallel with said motor across said power source whereby either a predetermined contamination of said mixture or a predetermined high motor temperature will result in a shut-down of said motor.

4,490,989

HELICOPTER HEATING AND AIR CONDITIONING SYSTEM

Jack H. Keen, Colorado Springs, Colo., assignor to Aero Engineering Corporation, Clearwater, Fla.

Filed Feb. 16, 1982, Ser. No. 348,841
Int. Cl.[3] B60H *3/04, 3/00;* B64D *9/00, 11/00*
U.S. Cl. 62—243 1 Claim



1. In a helicopter air conditioning system for a helicopter of the type having a turbine engine with a forwardly extending drive shaft driving a transmission contained in a transmission housing which transmission in turn drives a helicopter rotor, improved means for mounting and driving an air conditioning compressor from a cylindrical hub on the end of the drive shaft, comprising;

(a) a two part split crown pulley,

(b) screw means fixedly attaching the split crown pulley to the cylindrical hub on the end of the drive shaft,

(c) a bracket mounting the compressor on the housing of the transmission,

(d) a crown pulley attached to a drive shaft for the compressor and generally aligned with the pulley on the turbine engine drive shaft,

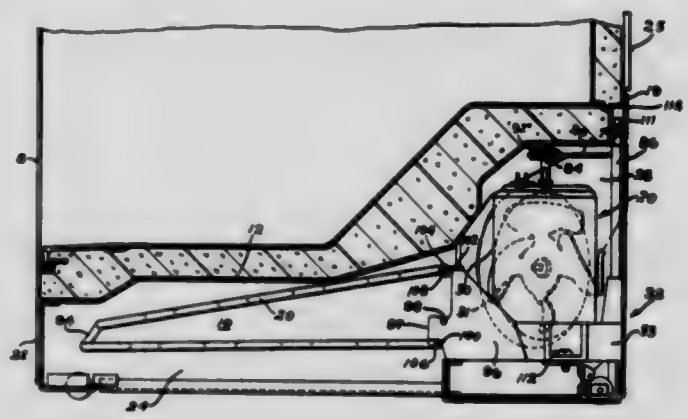
(e) a flat pulley belt having a plurality of grooves on the inner surface thereof positioned around and in contact with the crown pulleys so that the belt tends to align itself on the crowns of the pulleys even when the pulleys get out of line.

4,490,990

HIGH-SIDE REFRIGERATION SYSTEM ASSEMBLY ADAPTED TO BE MOUNTED IN A REFRIGERATOR MACHINERY COMPARTMENT

Gary L. Chastine, and Norbert P. Haag, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Dec. 29, 1983, Ser. No. 566,788
Int. Cl.[3] F25B *47/00*
U.S. Cl. 62—279 5 Claims



1. A household refrigerator including:

a cabinet having a compartment to be refrigerated in the upper portion thereof separated by an insulated partition to include a condensing unit compartment in the lower portion of said cabinet having an air inlet opening and an air outlet opening;

a unitary refrigerating apparatus arranged in said condensing unit compartment including a condenser, a compressor and a fan means for circulating air through said condensing unit compartment;

said unitary removable refrigeration apparatus comprising a support member arranged in said condenser unit compartment having a bottom wall and an upwardly extending peripheral wall having side walls and end walls defining a condensate collection area;

securing means on said support member adapted to engage locating means in said equipment compartment for positioning and securing said unitary refrigerating apparatus in said equipment compartment;

an impervious wall on said bottom wall of said support member extending upwardly to a position below the upper edge of said peripheral wall of said support member defining a condensate overflow containment area so as to allow overflow condensate from said condensate collecting area to flow into said containment area;

compressor support means including resilient means in said containment area being interposed between said compressor and said bottom wall of said support member being dimensioned for supporting said compressor in said condensate overflow containment area so that condensate in said containment area contacts said compressor whereby said overflow condensate is evaporated by the heat generated by the operation components of the compressor;

locating means adjacent opposite side wall of said peripheral wall of said support member including parallel spaced wall portions dimensioned to provide at least one pair of spaced receiving areas at a location between said compressor and one of said end walls of said peripheral wall of said support member for supporting said fan mounting wall portion for dividing said condensing unit compartment between said air inlet area and said air outlet area;

a fan supporting wall portion being removably arranged on said support member;

said condenser including at least one serpentine section folded to provide a plurality of substantially parallel spaced pairs of tube runs;

condenser support means on the edge of said support member toward said air openings being dimensioned to engage at least one of said spaced pair of said folded tube runs of

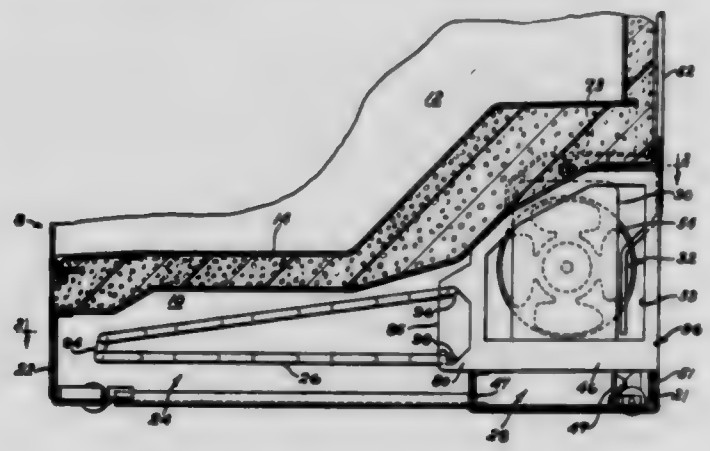
said condenser for securing said condenser in said air inlet area relative to said support member.

4,490,991

HIGH-SIDE REFRIGERATION SYSTEM ASSEMBLY ADAPTED TO BE MOUNTED IN A REFRIGERATOR MACHINERY COMPARTMENT

James R. Griffin, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 29, 1983, Ser. No. 566,890
Int. Cl.³ F25B 47/00
U.S. Cl. 62—279 8 Claims



1. A household refrigerator including:

a cabinet having a compartment to be refrigerated in the upper portion thereof separated by an insulated partition to include a high-side unit compartment in the lower portion of said cabinet having an air inlet opening and an air outlet opening;

a unitary refrigerating apparatus arranged in said condensing unit compartment including a condenser, a compressor and a fan means for circulating air through said condensing unit compartment;

said unitary removable refrigeration apparatus comprising a support member arranged in said high-side unit compartment having a bottom wall and upwardly extending peripheral side walls defining a condensate collection area;

securing means on said support member adapted to engage locating means in said high-side compartment for positioning and securing said unitary refrigerating apparatus in said high-side compartment;

an impervious wall on said bottom wall of said support member extending upwardly to a position below the upper edge of said peripheral wall of said support member defining a condensate overflow containment area so as to allow overflow condensate from said condensate collecting area to flow into said containment area;

compressor support means including resilient means interposed between said compressor and said bottom wall of said support member being dimensioned for supporting said compressor in said condensate overflow containment area so that condensate in said containment area contacts said compressor whereby said overflow condensate is evaporated by the heat generated by the operation components of the compressor;

a wall portion on said support member dividing said high-side unit compartment between said air inlet area and said air outlet area;

a fan mounted on said wall portion for circulating air between said air inlet and air outlet;

said condenser including an upper and lower serpentine tube section folded to a substantial V-shape with the apex facing said air inlet and the diverging upper and lower tube portions being adjacent said support member;

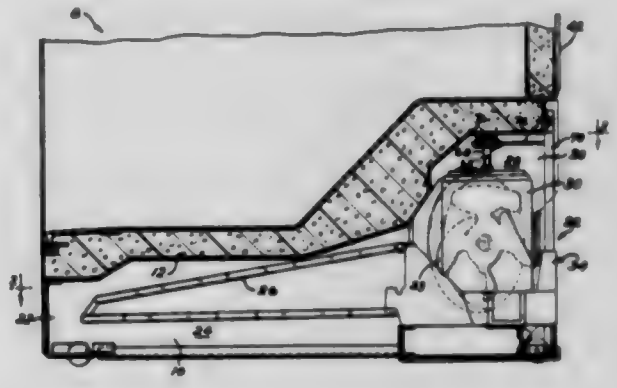
condenser support means on the edge of said support member toward said air openings being dimensioned to engage the diverging ends of said condenser for securing said condenser in said air inlet area relative to said support member.

4,490,992

HOUSEHOLD REFRIGERATOR COMPRESSOR VIBRATION ISOLATOR AND CONDENSATE COLLECTING TRAY

Gary L. Chastine, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 29, 1983, Ser. No. 566,789
Int. Cl.³ F25D 19/00
U.S. Cl. 62—295 16 Claims



9. In a refrigeration apparatus having means forming a compartment to be refrigerated and means forming an equipment compartment for housing a refrigerating apparatus forming the high-side portion of a refrigeration system including a compressor having a side wall connected by bottom and top walls and a compressor support member arranged in said equipment compartment having a bottom wall;

means mounting said compressor on said bottom wall of said support member comprising:

upwardly extending wall portions on said bottom wall defining a compressor support containment area;

a resilient compressor support member dimensioned to be received in said compressor support containment area of said support member;

said resilient compressor support member includes an outer wall portion arranged between said compressor side wall and said wall portions defining said compressor support containment area for centering said compressor in the upright position in said containment area; and an inner support area on which said compressor bottom wall rests in spaced relationship relative to said bottom wall of said support member and which carries the main weight of said compressor;

said inner support area being formed with a plurality of adjacent wall portions diverging downwardly from an upper apex portion providing spaced circumferential wall portions wherein the upper apex portions of adjacent wall portions engage the bottom wall of said compressor and the lower edge portions of said adjacent wall portions engage the bottom wall of said support member whereby movement of said compressor relative to said adjacent wall portions causes a resistance to movement of said apex portion relative to said lower edge portion to provide both torsional damping and axial damping of said compressor.

4,490,993

CONDENSING APPARATUS AND METHOD

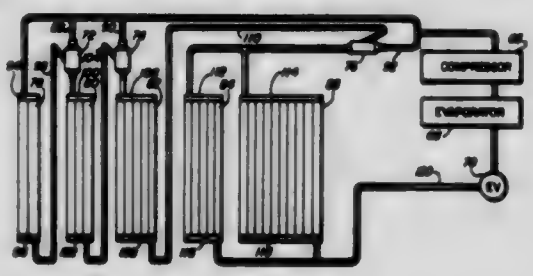
R. Marlon Larriva, 5020 E. First St., Tucson, Ariz. 85711

Filed Sep. 29, 1982, Ser. No. 427,868
Int. Cl.³ F28D 3/00
U.S. Cl. 62—304 7 Claims

1. A condensing apparatus for converting a hot vapor which is discharged at the outlet of a compressor into a cooled liquid which is supplied to a refrigeration control and then to an evaporator having an output coupled to the input of said compressor, said apparatus comprising:

a first stack of a first plurality of condensing coils having a feed header coupled to the output of said compressor for supplying hot vapor to each of said first plurality of condensing coils and having an outlet header for receiving cooled liquid from said first plurality of condensing coils;

at least a second stack of a second plurality of condensing coils having a feed header for supplying vapor to each of said second plurality of condensing coils and having an



outlet header for receiving cooled liquid from said second plurality of condensing coils; and

a vapor cooling module having first and second inputs and having an output coupled to the feed header of said second stack, said first input coupled to the output of said compressor for receiving hot vapor and said second input coupled to the outlet header of said first stack for receiving cooled liquid, said vapor cooling module for supplying a cooled vapor to the feed header of said second stack.

4,490,994

FLAT KNITTING MACHINE HAVING NEEDLE SELECTOR DEVICE

Karl Essig, Geienhofen, Fed. Rep. of Germany, assignor to H. Stoll GmbH & Co., Reutlingen, Fed. Rep. of Germany

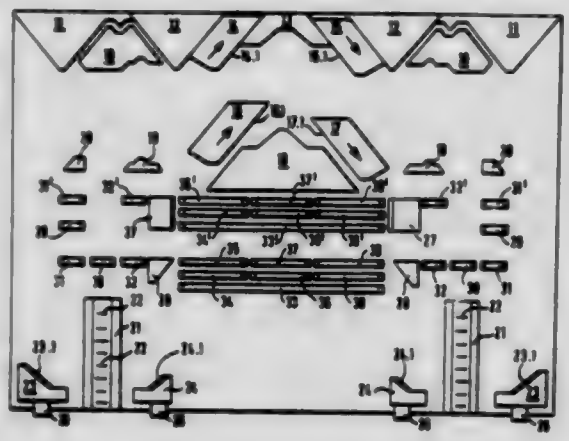
Filed Sep. 23, 1983, Ser. No. 535,254

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1982, 3237732

Int. Cl.³ D04B 7/00, 15/66

U.S. Cl. 66—75.1

9 Claims



1. Flat knitting machine comprising needle selector device, at least one needle bed accommodating longitudinally movable needles movable in slots, and at least one knitting system comprising cam parts, wherein needle bed and knitting system are movable relative to one another, each needle has associated therewith a selector jack which can be acted on by press cam parts and can be adjusted in the longitudinal direction of the needles between different positions, and each needle has a butt which can be moved out of the region of influence of cam parts which move the needle longitudinally, characterised in that in the direction of movement (62, 63) of the machine at each side of each needle selector locality (21) of the needle selector device is arranged a cam part (23, 24) for moving selected selector jacks (50) longitudinally, and both cam parts (23, 24) effect the longitudinal movement into different positions (I, II), in that each knitting system has, for the two directions of movement (62, 63), each a pair of adjustable draw-off cam parts (15, 17) of different draw-off length, the one (15) of which acts on a fixed butt (44) of the needles (42) and the other (17) on a butt (47) thereof which is movable by means of the selector jacks (50), and in that for each position (O, I, II) of the selector jacks (50), separately controllable press cam parts (33–39, 33'–39') are provided.

9. Flat knitting machine with at least one needle bed (25) with needles (42) which can be moved longitudinally in slots (40) of needle bed (25) and with at least one set of cams (10–20, 23–39) movable relative to needle bed (25), with cam parts (10–20) for the longitudinal movement of needles (42) and with a needle selector device (21/22) which is likewise movable relative to needle bed (25); each needle (42) has one fixed butt (44) and one butt (47) which can be moved transversally to the direction of needle movement out of the range of influence of the longitudinally movable cam parts (16–20) of the cam system, a selector jack (50) being associated with each needle (42), which selector jack is mounted movably in needle bed slot (40) the same as the longitudinally movable needles (42), and also is pivotable, and a selector butt (55), on which can press a selector part (22) at the selector point (21) of the needle selector device (21/22), at least one operating butt (23, 54), which can be effected by controllable press cam parts (33–35, 33'–35') of the cam system, and presents a pusher butt (52) on which, selector jack (50) being selected, one cam part (23, 24) acts on each side of selector point (21) of the needle selector device for longitudinal pushing of selector jack (5), which bring about a longitudinal movement into different positions (I, II); and the cam system for either direction of movement presenting a pair of adjustable draw-off cam parts (15, 17), which cause the different draw-off strokes of needles (42) and of which the one (15) acts on fixed butt (44) while the other (17) acts on adjustable butt (47) of needles (42), and a separately controllable press cam part (33–39, 33'–39') being provided for each position (Q, I, II) of selector jacks (50).

4,490,995

RIGHT-LEFT KNITTED PILE FABRIC

Walter R. Schmidt, Krems, Austria, assignor to Teppichfabrik Karl Eybl Gesellschaft m.b.H., Vienna, Austria

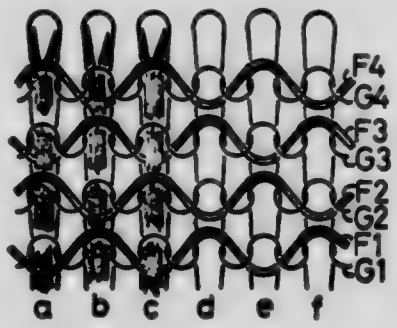
Continuation of Ser. No. 873,137, Jan. 27, 1978, abandoned. This application Jan. 26, 1983, Ser. No. 461,049

Claims priority, application Austria, Jan. 31, 1977, 599/77

Int. Cl.³ D04B 7/12

U.S. Cl. 66—191

12 Claims



1. A plain-knit pile fabric comprising at least one first fabric region of mutually interlocked first yarn loops forming courses and wales, said first fabric region including in a coursewise pattern repeat of plurality of walewise bands of pile tufts tied in said first yarn loops to form tufted zones in said first fabric region, and further including in a walewise pattern repeat a

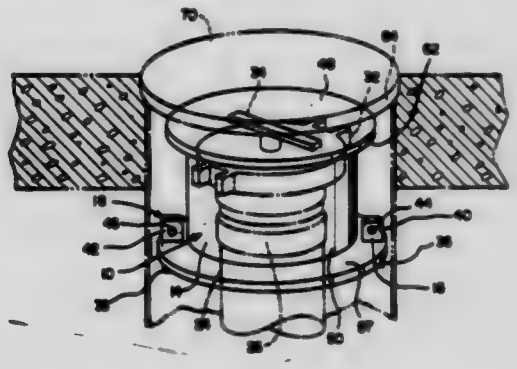
plurality of second-yarn loops forming courses of floats and tucks with alternate wales wherein the second-yarn is tied in the first-yarn needle loops of first alternate wales as a tuck loop and lies in the first-yarn needle loops of second alternate wales as a float.

4,490,996

FILL PIPE LOCK ASSEMBLY

August Milo, 478 Schiller St., Elizabeth, N.J. 07206

Filed Sep. 24, 1981, Ser. No. 305,113
Int. Cl.³ B65D *55/14*
U.S. Cl. 70—165 10 Claims



1. A fill pipe lock assembly for protecting the top of a fill pipe of the type having an adaptor fitting, comprising

floating baseplate means to loosely overfit the fill pipe below the adaptor,

the floating baseplate means being provided with an opening of diameter larger than the diameter of the fill pipe and smaller than the diameter of the adaptor,

the floating baseplate means comprising a pair of diametrically opposed hasps,

cover means in registry over the floating baseplate means and covering the top of the fill pipe,

the cover means comprising an integral cover, sidewalls and base locking means to secure the cover to the floating baseplate means,

the hasps being releaseably engaged with the said base locking means to prevent unwanted removal of the cover means,

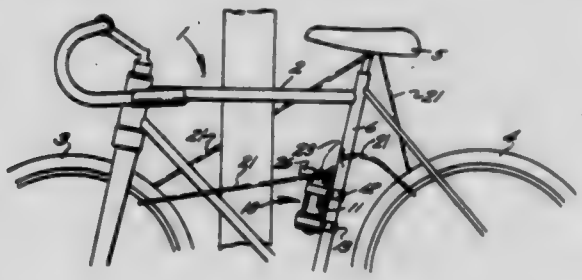
the base locking means comprising a pair of diametrically opposed openings, the hasps being insertable upwardly through the openings to receive locks thereon to prevent unauthorized removal of the cover means.

4,490,997

BICYCLE LOCKING DEVICE

Leland G. Hughes, and Jacqueline S. Hughes, both of 31929 Owl Rd., Eugene, Oreg. 97405

Filed Apr. 25, 1983, Ser. No. 488,259
Int. Cl.³ E05B *71/00*
U.S. Cl. 70—233 4 Claims



1. A bicycle locking device comprising in combination,

an elongate tubular housing defining an opening at one end,

a length of cable of the type formed with helical coils normally stowed in said housing with one cable end permanently secured to the housing, said cable terminating in a loop at its remaining end,

locking means removably engageable with said housing and said housing opening both when the cable is in a stowed position and alternately when in use and passing about a stationary object to secure the bicycle thereto, and

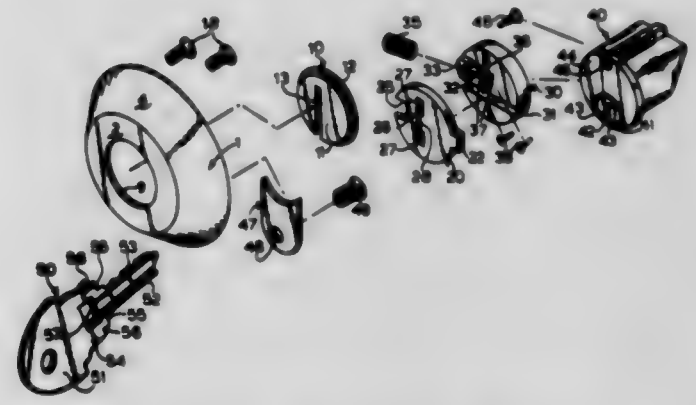
bracket means adapted to secure said housing to a bicycle frame member.

4,490,998

TAMPER-RESISTANT LOCK ASSEMBLY

John Wellekens, 41 Crescent Ave., Staten Island, N.Y. 10301

Continuation of Ser. No. 272,592, Jun. 11, 1981, abandoned. This application Aug. 23, 1983, Ser. No. 525,428
Int. Cl.³ E05B *13/04, 17/18, 19/08*
U.S. Cl. 70—419 15 Claims



1. A tamper-resistant lock assembly, comprising:

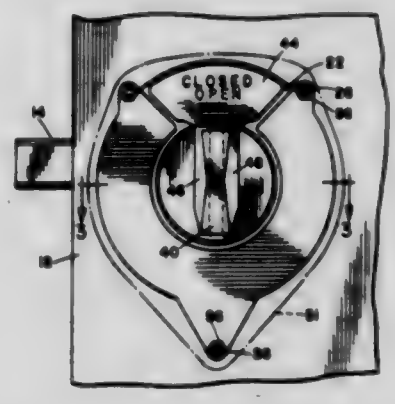
a pair of cooperating keyway guard plates, each of which has a keyway formed therethrough, said guard plates being laterally displaceable relative to one another for movement between an open position, in which said keyways thereof are substantially aligned to allow for passage of at least a portion of a key shank therethrough, and a closed position, in which the keyway of one of said guard plates is at least partially blocked by the other of said guard plates, and resilient biasing means interposed between said guard plates for normally maintaining said guard plates in said open position thereof.

4,490,999

DOOR LOCK WITH INDICATOR

Niel K. Castle, 4149 Cartagena Dr., San Diego, Calif. 92115; Derald E. Martin, 6864 Cedral Pl., Lemon Grove, Calif. 92045, and Ralph D. Martin, 8858 Haresm St., Spring Valley, Calif. 92077

Filed Sep. 27, 1982, Ser. No. 424,223
Int. Cl.³ E05B *41/00*
U.S. Cl. 70—432 5 Claims



1. A unitized door lock with indicator, said door lock having means to lock and unlock the lock for use in conventional doors in the usual manner as with a key or thumb turn comprising:

a mounting plate having stationary indicator means and

having an opening displaying the condition of the lock as either "open" or "locked";

moveable indicator means showing through an opening in the mounting plate and havig thereon indicia indicating either "open" or "locked", said moveable indicator means being activated automatically by activating means such as a key or thumb turn, whether activated from inside or outside of the door;

wherein movement of the lock actuating means in one direction indicates one condition of the lock by exposing the indicia on said stationary indicator means, and movement of the lock actuating means in mother direction indicates the other condition of the door lock by covering the indicia on the stationary indicator means;

an attachment assemby for attaching to the door lock on the inside surface of the door, said assembly including an actuating member connected to the door lock actuating means for locking and unlocking the door and for moving the moveable indicator means;

wherein the moveable door lock indicator means includes gripping means extending from the door for gripping by the user and connected to the door actuating means for locking and unlocking the door lock;

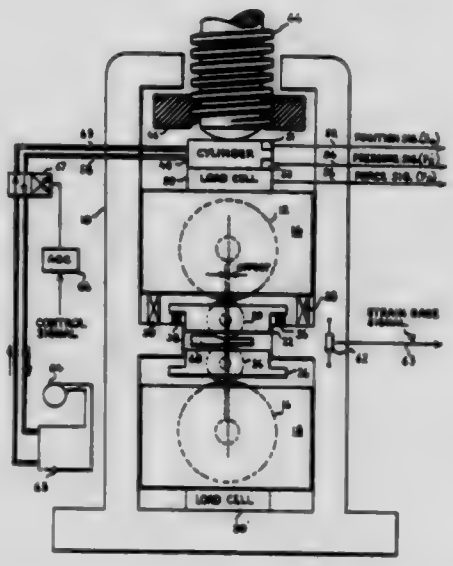
wherein the stationary indicator means and the moveable indicator means are arranged so that the moveable indicator means passes over a fixed indicator means in one direction and under it in another direction to indicate the locked condition or unlocked condition of the door lock even when the lock is in the neutral position.

4,491,000

METHOD AND APPARATUS FOR IMPROVED SENSING OF ROLL SEPARATION FORCE IN A ROLLING MILL

Paul E. Dornbusch, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed Jun. 30, 1983, Ser. No. 509,598
Int. Cl.³ B21B *37/08*
U.S. Cl. 72—8 8 Claims



1. For use in conjunction with a rolling mill stand having a housing for supporting roll elements for reducing the thickness of a workpiece passed therebetween and gap adjusting means for adjusting the gap between said roll elements, means for controlling said gap adjusting means comprising:

(a) means for producing a force signal representing the force occasioned by the presence of the workpiece between the roll elements;

(b) means for producing a strain signal representing the strain forces produced in the mill housing by the presence of the workpiece between the roll elements;

(c) means for combining said force signal and said strain signal to develop a control signal; and,

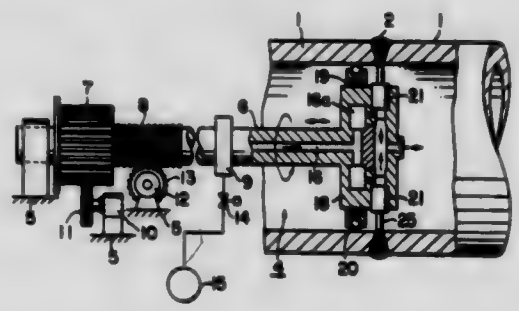
(d) gage control means responsive to said control signal for controlling said gap adjusting means.

4,491,001

APPARATUS FOR PROCESSING WELDED JOINT PARTS OF PIPES

Toshio Yoshida, Kobe, and Toshio Atsuta, Akashi, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed Dec. 21, 1982, Ser. No. 451,932
Claims priority, application Japan, Dec. 21, 1981, 56-205088
Int. Cl.³ B21D *31/06*
U.S. Cl. 72—76 6 Claims



1. An apparatus for mechanically removing residual tensile stress existing in an annular welded joint part joining the ends of unit pipes, said apparatus comprising:

a shaft mounted for rotation about an axis thereof;

a cylindrical head secured coaxially to said shaft and rotatable therewith;

a plurality of hammering means, each including a respective hammering member, mounted on said cylindrical head in a manner such that said hammer members are movable from said cylindrical head toward the inner surfaces of unit pipes when said cylindrical head is inserted therein;

motive power means for operating said hammering means to cause said hammering members to repeatedly strike the inner surfaces of the unit pipes;

driving means, coupled to said shaft, for rotating said shaft and said cylindrical head about said axis and for moving said shaft and said cylindrical head along said axis; and

bearing means in the form of ball-and-socket bearings mounted on a cylindrical outer surface of said cylindrical head for bearing on the inner surfaces of the unit pipes when said cylindrical head is inserted therein.

4,491,002

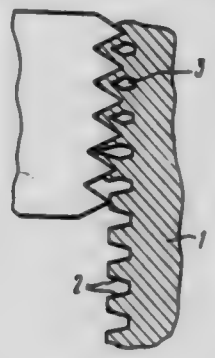
METHOD FOR FORMING ON WOREPIECE RESILIENT THREAD HAVING CLOSED HELICAL CAVITY INSIDE THE THREAD

Gennady A. Toropov, ulitsa Mironova 17, kv. 45; Stepan P. Shamenko, prospekt Geroev, 33, korpus 1, kv. 45; Rostislav P. Didyk, prospekt Karla Marxa, 20, kv. 76, and Anatoly A. Toropov, ulitsa Komsomolskaya 27, kv. 6, all of Dnepropetrovsk, U.S.S.R.

PCT No. PCT/SU80/00113, § 371 Date Feb. 18, 1982, § 102(e) Date Feb. 18, 1982, PCT Pub. No. WO82/00014, PCT Pub. Date Jan. 7, 1982
PCT Filed Jun. 26, 1980, Ser. No. 355,594
Claims priority, application U.S.S.R., Jun. 26, 1980, 8000113
Int. Cl.³ B21H *3/08*
U.S. Cl. 72—118 1 Claim

1. A method of forming a resilient thread having a closed helical cavity inside the thread on a workpiece, comprising forming a helical groove having a depth exceeding by value the depth of the roots of the thread to be obtained, the volume of the material of the workpiece, expelled in forming the helical groove, corresponding to the volume of the closed helical

cavity inside the thread being formed; and forming said resilient thread by plastic deformation of the walls of said helical



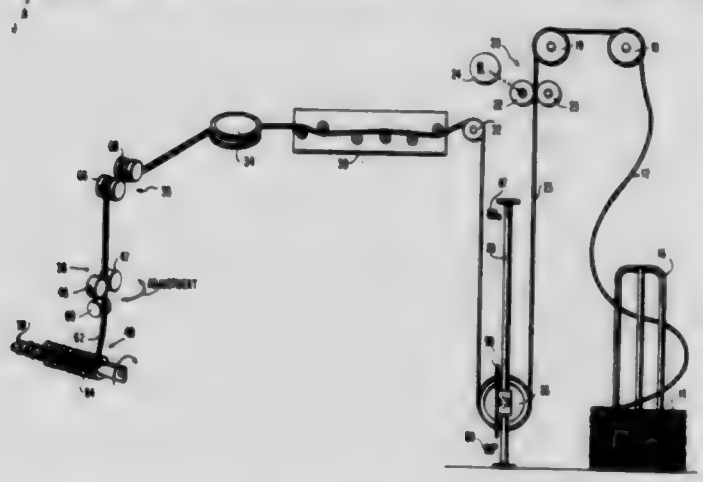
groove, wherein the closed helical cavity is disposed within the threads and below the roots of said thread.

4,491,003

FABRICATION OF HELICALLY-WOUND SPIRALS FOR METAL WIRE BELTS

George H. Mesnick, and John C. Adkins, both of Cambridge, Md., assignors to Maryland Wire Belts, Inc., Church Creek, Md.

Filed Jun. 23, 1981, Ser. No. 276,697
Int. Cl.³ B21F *35/02*
U.S. Cl. 72—137 21 Claims



1. In-line process for shaping round wire and fabricating an elongated helically-wound spiral of desired cross-sectional configuration, comprising

supplying round wire of selected gage from a continuous-length source of round wire,

providing wire shaping means including wire shaping drive means,

providing helical winding apparatus for wire including

an elongated mandrel having a winding surface of non-circular cross section and being rotatable about its longitudinal axis,

helical winding guide tooling associated with such mandrel for establishing a helical angle relationship with the mandrel longitudinal axis of rotation during winding of wire on such mandrel, and

means for rotatably driving such mandrel,

positioning such mandrel and guide tooling for helical winding of wire including presetting interrelationship of their longitudinal axes to determine lead-in angle for wire to be wound on such mandrel and location of initial contact of such wire longitudinally of such mandrel,

such wire shaping means being positioned between such source of round wire and such helical winding apparatus,

directing movement of continuous-length wire from such round wire source to such wire shaping means,

controllably driving such wire shaping means,

changing the cross-sectional configuration of such round wire in such driven wire shaping means to flatten a portion of the peripheral surface of the round wire extending linearly along the periphery of such round wire,

directing movement of such shaped wire toward the helical winding apparatus while controlling tension in such shaped wire,

preorienting such shaped wire during its movement in approaching the helical winding apparatus by turning such shaped wire about its centerline longitudinal axis to establish a predetermined axial set in the shaped wire to establish a preselected positional relationship of such flattened surface of the wire with the mandrel longitudinal axis,

such axial preorienting step being carried out without disturbing the wire lead-in angle for helical winding or contact point of the shaped wire with such mandrel,

directing such axially preoriented shaped wire toward such winding apparatus, and

helically winding such axially preoriented shaped wire with individual revolutions of such wire being wound in helical angled relationship to the axis of rotation of the mandrel such that the wire is turned about its longitudinal axis by such helical winding an amount substantially equal and opposite to the predetermined axial set established by the axially preorienting step to generate an elongated helically wound spiral comprising a plurality of individual spiral loops,

such spiral being generated in a direction parallel to the longitudinal axis of the winding mandrel with the axially preorienting step maintaining such flattened portion of the shaped wire in individual spiral loops in predetermined relationship with the mandrel longitudinal axis uniformly along such elongated finished spiral.

10. Apparatus for shaping round wire and fabricating such shaped wire into an elongated helically-wound spiral for use in the manufacture of metal wire belting, comprising in combination in a continuous line

means for delivering round wire into such continuous line from a source for supplying continuous-length round wire of preselected gage,

shaping means for shaping at least a portion of the external periphery of such round wire to deliver a shaped wire in such continuous line having a planar peripheral portion extending longitudinally of such wire,

drive means for such shaping means capable of providing at least a major portion of the work force required for shaping such round wire,

helical winding means for wire in such continuous line including

an elongated mandrel having an external winding surface of preselected non-circular cross-sectional configuration,

the elongated mandrel having a longitudinal axis, a spiral discharge longitudinal end, a work input longitudinal end, and means for connecting such work input end to a drive means for rotatably driving such elongated mandrel about its longitudinal axis,

such mandrel having a portion near its work input end for receiving wire for helical winding, and

wire guide tool means associated with such mandrel for directing wire along a helical path in angled relationship to the longitudinal axis of such mandrel to generate a spiral in the direction of the discharge end of such mandrel,

means for fixing the longitudinal relationship of such mandrel and guide tooling to establish lead-in angle for helical winding and determine longitudinal location along such mandrel for initiating helical winding,

wire handling means located between such wire shaping means and helical winding means for directing longitudinal movement of the shaped wire toward the helical winding means,

such wire handling means including

means for preorienting the shaped wire during its approach to such helical winding means,

such shaped wire preorienting means including

axial orienting means for turning such shaped wire about its centerline longitudinal axis, and

means for adjusting such axial orienting means without disturbing the lead-in angle and the longitudinal location along such mandrel for initiating helical winding.

4,491,004

APPARATUS FOR MANUFACTURING A METAL PIPE

Osmo O. Ivanoff, Satamakatu 7 A 4, SF-33200 Tampere 20, Finland

PCT No. PCT/FI81/00066, § 371 Date Apr. 16, 1982, § 102(e) Date Apr. 16, 1982, PCT Pub. No. WO82/00607, PCT Pub. Date Mar. 4, 1982

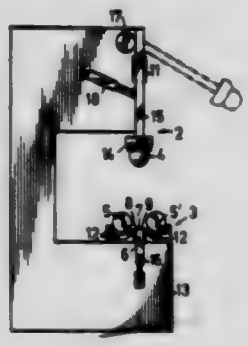
PCT Filed Aug. 18, 1981, Ser. No. 373,505

Claims priority, application Finland, Aug. 18, 1980, 802596

Int. Cl.[3] B21D *5/14*; B21C *37/08*

U.S. Cl. 72—168

2 Claims



1. An apparatus for fabricating a tubular article from a metal sheet, comprising a base, a top support mounted for movement with respect to said base, a support tool mounted on the base and comprising at least two spaced parallel rotatable support rolls, bending tool means mounted on said top support and comprising at least one bending roll disposed parallel to said support rolls, drive means for moving a metal sheet between said bending roll and said support rolls in a direction transverse to the longitudinal dimension of said rolls wherein said metal sheet is bent into tubular shape by applying a bending force through said bending roll along a longitudinal line located between said support rolls, first spring roller means supporting said bending roll from said top support, second spring roller means for mounting each of said support rolls with respect to said base, said first and second spring roller means permitting rotation of said rolls and corresponding transverse movement of said sheet, means for applying a force to said bending roll sufficient magnitude to overcome the force of said first and second spring means and provide a rigid mounting for both said support rolls and said bending roll during the bending operation to bend said sheet to form said tubular article, and actuator means for moving said bending roll into contact with the outer surface of said tubular article whereby the article is supported for rotation for subsequent processing by said support rolls and said bending roll.

4,491,005

ROLLING MILL

Tomoaki Kimura, Hitachi, and Keiji Miyakozawa, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 3, 1982, Ser. No. 384,557

Claims priority, application Japan, Jun. 3, 1981, 56/86241

Int. Cl.[3] B21B *27/10, 31/18, 29/00*

U.S. Cl. 72—201

16 Claims

1. A rolling mill comprising:

a roll housing;

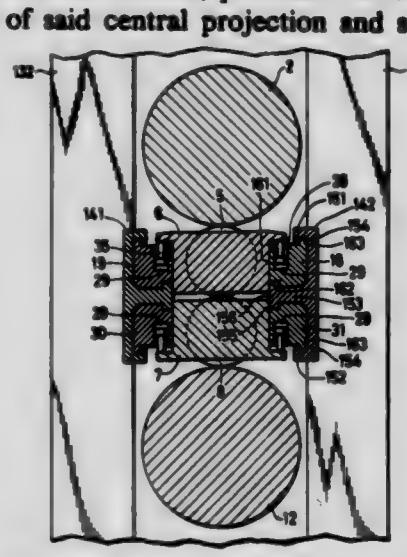
a pair of working rolls provided with metal chocks at the ends and brought into contact with a material to be rolled;

a pair of backup rolls, mounted on said roll housing by metal chocks provided at the ends for supporting the said respective working rolls;

a plurality of beams extending along the axes of said working rolls and disposed in juxtaposition with said working rolls;

a plurality of supports mounted on said roll housing at portions facing said metal chock for said working rolls for axially slidably supporting said beam, each of said supports having a central projection projecting horizontally toward said working rolls and mounting thereon said beams, said central projection having upper and lower projections at the end facing said metal chock for restricting horizontal movement of said beam;

a plurality of roll benders, provided on said beams within regions of said central projection and said roll benders



being engaged with parts of said metal chocks of said working rolls, said roll benders being disposed on said beams symmetrically with respect to said central projections so that forces applied to said beams by said benders are canceled through said central projections; and

a plurality of independent actuators disposed in adjacent relation with said beams and connected to said housing and said beams, at the side portions where driving means for said working rolls are disposed, for moving said beams in the axial direction, respectively, whereby said working rolls are moved axially through axial movement of said beams by said actuators.

4,491,006

METHOD AND APPARATUS FOR COILING STRIP BETWEEN THE ROUGHING TRAIN AND THE FINISHING TRAIN

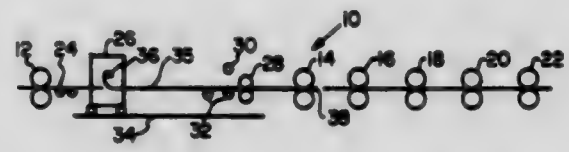
Vladimir B. Ginzburg, and John E. Thomas, both of Pittsburgh, Pa., assignors to Tippins Machinery Company, Inc., Pittsburgh, Pa.

Filed May 16, 1983, Ser. No. 494,614

Int. Cl.[3] B21B *41/00*

U.S. Cl. 72—202

11 Claims



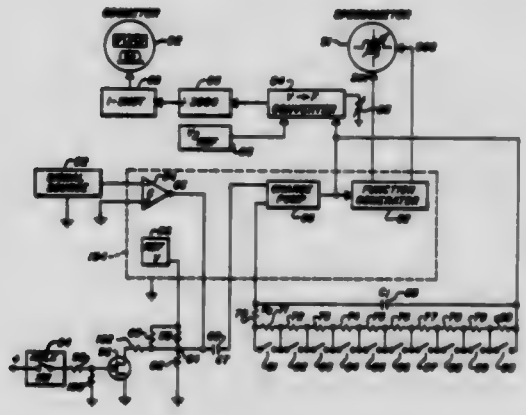
1. A method of hot rolling strip on a hot strip mill having a roughing mill including at least one roughing stand and at least one finishing stand spaced therefrom and in which a transfer bar having a head end and a tail end exits the roughing stand head end first comprising coiling the transfer bar by initiating coiling at the tail end while moving a movable coiler toward said finishing stand after it exits the roughing mill to form at least a partially formed coil and then decoiling the formed coil.

4,491,007

RANGEABLE SPEEDOMETER/ODOMETER

George J. Crowder, Jr., Contoocook, N.H., assignor to Beede Electrical Instrument Co., Inc., Penacook, N.H.

Filed Dec. 2, 1982, Ser. No. 446,222
Int. Cl.³ G01P 3/50, 21/02; G01C 22/02
U.S. Cl. 73—2 10 Claims



1. A rangeable speedometer receiving a pulse signal having a pulse rate corresponding to velocity to be measured, comprising:

pulse integrator means to produce an analog voltage output in a relationship to said pulse signal and including a selectable ranging network for changing the relationship of said pulse integrator output voltage to said pulse signal, said relationship including at least one of system nonlinearities, offsets, and distortions;

a speedometer drive circuit providing a speedometer drive signal according to said pulse integrator output signal; and

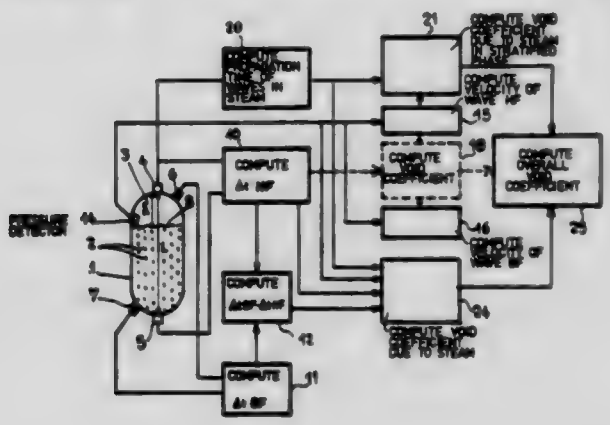
a speedometer indicator providing a visual representation according to said speedometer drive signal, wherein said ranging network includes a switch selectable network comprising a plurality of switched resistances of values in decrementing sequences, said switch selectable network being adjusted to approximate the desired ranging network according to at least one of said nonlinearities, signal distortions, and said relationship to provide accurate representation of the velocity to be measured.

4,491,008

METHOD OF ULTRASONIC MEASUREMENT OF THE RATIO OF THE VOLUME OF GAS PRESENT IN AN ENCLOSURE CONTAINING A LIQUID-GAS MIXTURE TO THE TOTAL VOLUME OF THE ENCLOSURE

Jean Marini, Marly Le Roi, and Jean-Paul Heinrich, Champs-sur-Marne, both of France, assignors to Framatome & Cie, Courbevoie, France

Filed Feb. 17, 1983, Ser. No. 467,567
Claims priority, application France, Feb. 19, 1982, 82 02750
Int. Cl.³ G01N 29/02
U.S. Cl. 73—19 5 Claims



1. A method of ultrasonic measurement of the ratio of the volume of gas present in an enclosure containing a diphase liquid-gas mixture to the total volume of the enclosure, the gas undissolved in the liquid assuming the form of a layer surmounting the liquid and/or the form of bubbles distributed in the liquid comprising:

propagating an ultrasonic wave at a first frequency along a path of low inclination with reference to a vertical section and crossing the enclosure,

propagating an ultrasonic wave at a second frequency along a path close to the path of the first wave,

measuring the propagation times of the first and of the second waves through the fluid filling the enclosure,

measuring the pressure or a physical parameter directly related to the pressure of the fluid filling the enclosure,

comparing the propagation times of the first and of the second waves,

in the case where the propagation times are identical, all the gas in the enclosure being in the form of a layer surmounting the liquid and in equilibrium therewith, the void coefficient in the enclosure is determined from the propagation velocities of the ultrasound waves in the gas and in the liquid at the relevant pressure, previously determined, and from the propagation time of the waves in the stratified fluid filling the enclosure,

in the case where the propagation times are different, at least a part of the gas being in the form of bubbles distributed in the liquid and in equilibrium therewith:

determining the presence or absence of a reflected wave from the ultrasonic waves crossing the enclosure,

in the case where a reflected wave is present, the propagation time in the gas of the wave reflected from the gas-liquid interface present in the enclosure is measured, and the void coefficient due to the layer of gas surmounting the liquid in the enclosure is determined from this propagation time and from the velocity of the ultrasounds in the gas at the relevant pressure, previously determined,

calculating the propagation velocity of at least one of the two waves at different frequencies through the fluid constituted by the liquid containing the gas bubbles,

determining from this velocity, and the relationships existing between the pressure, the frequency of the ultrasonic waves and the propagation velocity of the ultrasonic waves in the water containing the gas bubbles, the void coefficient due to the gas bubbles distributed in the liquid,

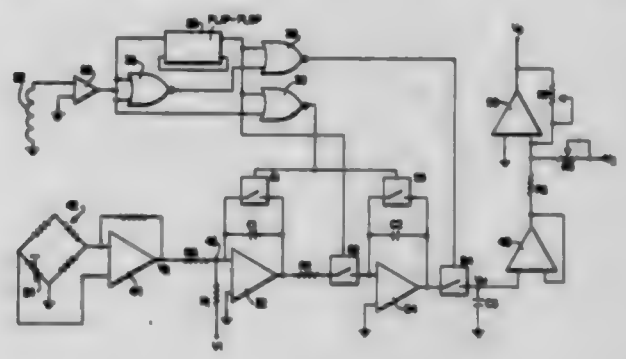
and determining the total void coefficient by adding the void coefficient due to the gas layer and the void coefficient due to the bubbles distributed in the liquid.

4,491,009

ELECTRONIC CIRCUIT FOR VIBRATING TUBE DENSIMETER

James R. Roesch, Boulder, Colo., assignor to Micro Motion, Inc., Boulder, Colo.

Filed Jan. 10, 1983, Ser. No. 503,179
Int. Cl.³ G01N 9/00
U.S. Cl. 73—32 A 8 Claims



1. An electronic circuit for measuring the density of substances flowing through a resonantly oscillating container by determining the mass of said substances, comprising:

(A) a temperature to electric transducer electrically connected to an electric signal measurement circuit means for generating an electric signal having a magnitude determined by the temperature of said container; and,

(B) a mechanical to electric transducer for generating an electrical output signal having a magnitude determined by the movement of said container, the electrical output signal of said mechanical to electric transducer being electrically connected to an electronic logic circuit means for controlling an electrical output signal of an electronic integrator circuit means so that the magnitude of the electrical output signal from said electronic integrator circuit means is determined by the square of the period of oscillation of said container;

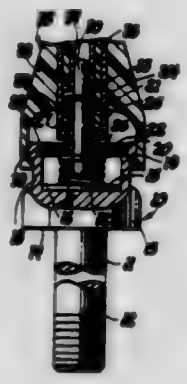
whereby the density of the substances flowing through said resonantly oscillating container is determined by measuring the magnitude of the electrical output signal from said electronic integrator circuit means when the electric signal having a magnitude determined by the temperature of said container is inputted to said electronic integrator circuit means.

4,491,010

DYNAMIC COMBUSTION CHARACTERISTIC SENSOR FOR INTERNAL COMBUSTION ENGINE

Herman F. Brandt, Birmingham, and Franklin R. Gibson, Romeo, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 20, 1983, Ser. No. 506,208
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—35 4 Claims



1. A dynamic combustion characteristic sensor for an internal combustion engine having a block and a head defining a combustion chamber therebetween and high voltage spark generating apparatus effective to initiate combustion of a combustible charge within said combustion chamber, the sensor comprising, in combination:

a headbolt comprising a theaded shank adapted for engagement with the engine block adjacent the combustion chamber and further comprising a head having a bottom peripheral surface adapted to engage the engine head with a predetermined preload force and a flat upper surface substantially normal to the shank, the head being adapted for engagement with torque generating apparatus for the achievement of said preload force;

a piezoelectric disc affixed to the upper surface of the headbolt so as to partake of flexure of the headbolt head due to combustion related strains between the engine block and engine head;

inner electrical terminal means in electrical contact with one side of the piezoelectric disc so as to provide an output electrical signal therefrom; and

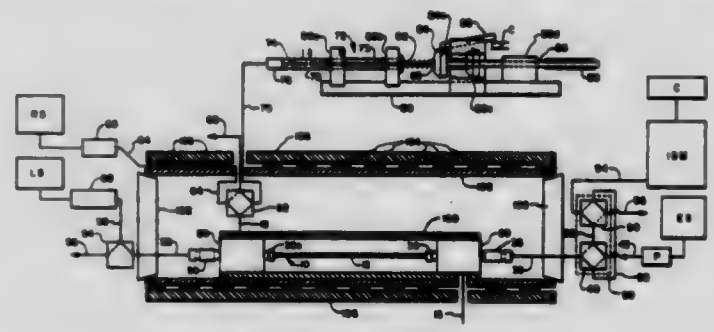
outer electrical terminal means in electrical contact with the other side of the piezoelectric disc for a ground connection thereto and forming, with said headbolt head, an electrostatic shield for said piezoelectric disc and inner electrical terminal, whereby an output signal of combustion related characteristics uncontaminated by noise from said high voltage spark generating apparatus is generated by said sensor when engaged with the engine block and head with the predetermined preload force.

4,491,011

DIALYZING INJECTION SYSTEM FOR INSTRUMENTAL DETECTION

Francis R. Nordmeyer, and Lee D. Hansen, both of Orem, Utah, assignors to Brigham Young University, Provo, Utah

Filed Jun. 11, 1982, Ser. No. 387,357
Int. Cl.³ G01N *27/28, 31/08*; B01D *13/00*
U.S. Cl. 73—61.1 C 18 Claims



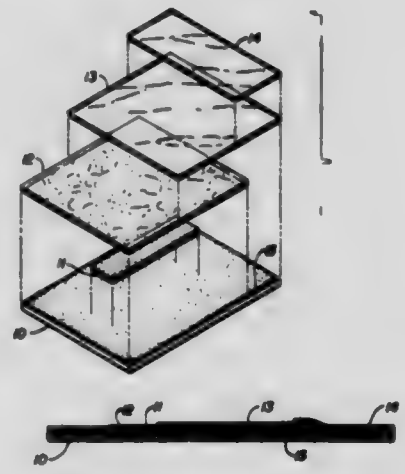
1. A method of analyzing a liquid sample by instrumental detection which comprises subjecting the sample to be analyzed, which contains undesired, unfilterable material that would interfere with the instrumental detection, to equilibrium dialysis through a cylindrical dialysis membrane from a first capillary passageway which receives the liquid sample into a second capillary passageway which receives the recipient liquid to form a liquid analyte containing that portion of the sample which passes through the dialysis membrane from the liquid containing the sample into the recipient liquid, said analyte being essentially free of such interfering material, and flowing said analyte into the instrument to subject said analyte to instrumental detection.

4,491,012

METHOD FOR MEASURING ERYTHROCYTE DEFORMABILITY

David D. Peterson, Pleasanton, Calif., assignor to Nuclepore Corp., Pleasanton, Calif.

Filed Oct. 4, 1982, Ser. No. 432,635
The portion of the term of this patent subsequent to Sep. 6, 2000, has been disclaimed.
Int. Cl.³ G01N *33/48*
U.S. Cl. 73—61.4 2 Claims



1. A method of measuring erythrocyte deformability comprising the steps of placing a sample of blood of predetermined hematocrit onto a membrane characterized by capillary shaped pores having a mean pore size in the range of 3.0 to 8.0 microns, whereby blood filters through said membrane by capillary action and onto an absorbent strip in at least partial cofa-

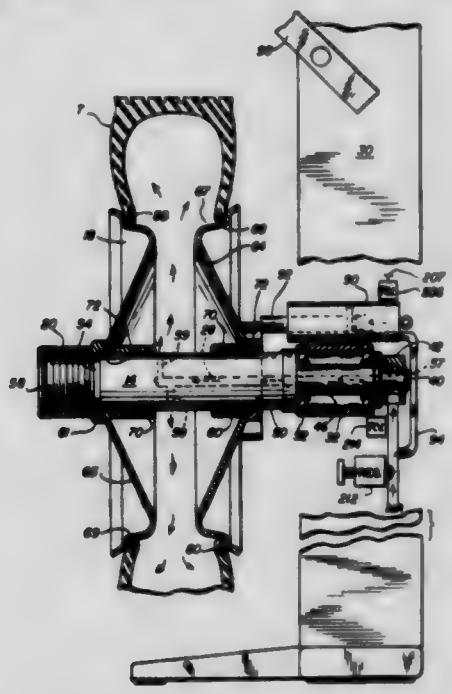
cial contact with said membrane, and flows a predetermined lateral distance along said absorbent strip, measuring the time required for the blood to traverse said predetermined lateral distance, and calculating the erythrocyte deformability from said time and said hematocrit; said membrane characterized by straight through pores substantially normal to the surface of said membrane, a pore density of $4.0\times10^5\pm15\%$ pores/cm^2, a tensile strength of at least 3000 psi, and a specific gravity in the range of 0.94 to 0.97 gm/cc.

4,491,013

APPARATUS AND METHOD FOR HIGH PRESSURE TESTING AND INSPECTION OF TIRES

Leslie M. Bubik, 421 Roselawn Ave., Toronto, Ontario, Canada

Filed Apr. 15, 1983, Ser. No. 485,231
Int. Cl.[3] G01M *17/02*; G01N *29/04*
U.S. Cl. 73—146 14 Claims



12. An apparatus for pressurizing and testing a tire having opposing beads, said apparatus comprising:

base;

means supported by said base for sealing said tire at its opposing beads;

means for introducing air into the interior of said tire to pressurize the tire;

at least one sensor means supported by said base and positioned adjacent the pressurized tire for receiving high frequency sound waves generated by air escaping from said tire; and

indicator means for transmitting an aural or visual signal upon reception of said high frequency sound waves by said sensor means, whereby the circumferential and transverse location of small air leaks in said tire may be determined.

4,491,014

BOND TESTING APPARATUS

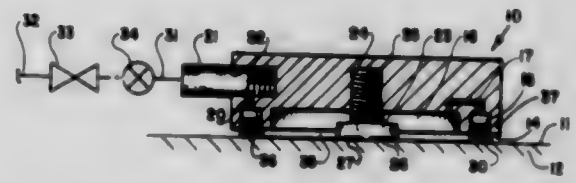
James F. N. Seiler, Jr., Frederick, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 12, 1982, Ser. No. 441,310
Int. Cl.[3] G01N *19/04, 3/10*
U.S. Cl. 73—150 A 5 Claims

1. A system for measuring the bond strength of material adhered to a substrate comprising:

a supply of fluid under pressure, a pressure responsive device in fluid communication with said supply for producing an indication of the bond strength of the material with respect to the substrate,

a piston in fluid communication with said supply and said pressure responsive device, said piston having a surface with a peripheral groove formed therein, a conduit establishing fluid communication with said supply and said pressure responsive device, said piston having a chamber formed in said surface, said chamber being formed inwardly of said peripheral groove and in fluid communication therewith,



a resilient gasket filling said peripheral groove for forming a fluid tight seal between said piston and the material to be measured, and

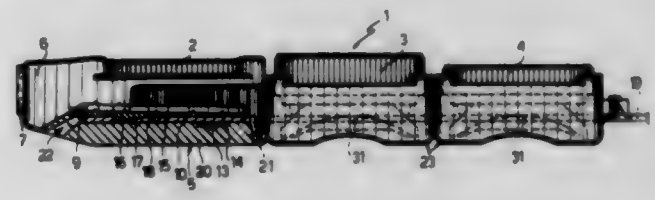
means attached to said piston for transferring fluid pressure forces to the material.

4,491,015

COMBINED INSTRUMENT SYSTEM FOR DIVERS

Emilio Allemano, Via Rosolino Pilo 4, 10143 Torino, Italy

Filed Mar. 10, 1983, Ser. No. 474,101
Claims priority, application Italy, Jul. 27, 1982, 53552/82[U]
Int. Cl.[3] G01F *23/14*; G01L *19/14*
U.S. Cl. 73—300 8 Claims



1. A combined instrument system for divers, comprising an elongate support connectable at one end to a user by a flexible attachment means, and a first and at least one second instrument connected to the said support, characterised by the fact that the said support includes a link engaged slidably through a respective seat formed on each said instrument; the said instruments being mounted in a line along the said link; the first of the said seats having a connection means to the said link to lock this latter in a movable manner into the said first seat; and locking means being provided for rigidly connecting each said second instrument to the said link.

4,491,016

METHOD AND APPARATUS FOR MEASURING THE PRESSURE OF A FLUID

Hans W. Haefner, Aichach, Fed. Rep. of Germany, assignor to Pfister GmbH, Fed. Rep. of Germany

Filed Nov. 1, 1982, Ser. No. 438,513
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1981, 3143919; Aug. 10, 1982, 3229721
Int. Cl.[3] G01F *23/18*
U.S. Cl. 73—302 28 Claims

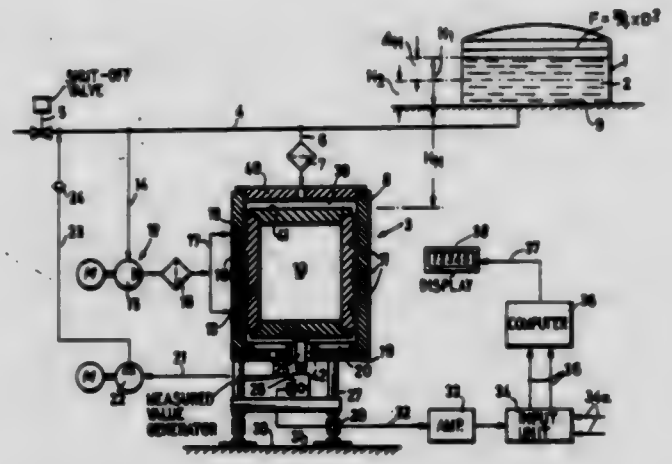
1. A method for measuring the stationary or quasi-stationary pressure of a fluid in a container comprising the steps of:

charging a piston in a cylinder with a pressure head corresponding to the pressure of said fluid;

supplying a release agent through a wall of said cylinder such that said release agent occupies a volume under pressure between said piston and said cylinder for lubrication thereof;

developing the pressure for said release agent at least equal

to said pressure of said fluid such that said piston is conducted contact-free within said cylinder; and



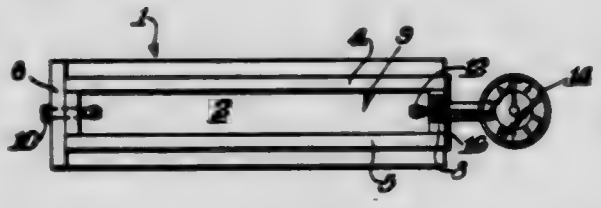
generating an electronic signal corresponding to the force exerted by said piston due to said pressure head.

4,491,017

APPARATUS FOR MEASURING DIMENSIONAL CHANGE OF MATERIALS

L. Srinivasa Iyer, Rapid City, S. Dak., assignor to South Dakota School of Mines and Technology, Rapid City, S. Dak.

Filed Mar. 1, 1982, Ser. No. 353,024
Int. Cl.³ G01B 5/00
U.S. Cl. 73—432.1 5 Claims



1. An apparatus for measuring dimensional change of a fluid or solid-fluid mixture undergoing a change to the solid state, said apparatus comprising:

(a) a bottom member comprising a flat plate;

(b) two side members having a front end and a back end and sides fixedly attached to said bottom member along one of its sides;

(c) a front member fixedly attached to said bottom member and to the front ends of each side member;

(d) a movable back member slideably disposed within said bottom and side members to form a cavity consisting of said bottom member, said members and front member;

(e) screw members attached to said front member and movable back member extending into said cavity, said screw members being capable of being embedded in said material place in said cavity; and

(f) gauge means operatively connected to said moveable back member for measuring movement of said moveable back member caused by action of said screw members in said movable back member resulting from the change in dimension of said material undergoing said change to the solid state.

4,491,018

PIG DETECTOR

Jackie D. Stringer, and Eugene L. Dobesh, both of Houston, Tex., assignors to F. H. Maloney Company, Houston, Tex.

Filed Jun. 17, 1983, Ser. No. 505,209
Int. Cl.³ H01H 35/00, 36/00
U.S. Cl. 73—432 R 10 Claims

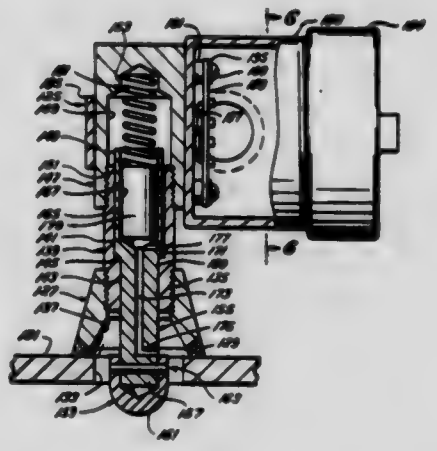
1. Apparatus for detecting a pig in a pipeline comprising:

a shield disposed over an aperture in the wall of the pipeline;

a member mounted within said shield and extending through the aperture into the pipeline;

means disposed on said member for emitting signals;

means disposed adjacent said shield for detecting said signals; and



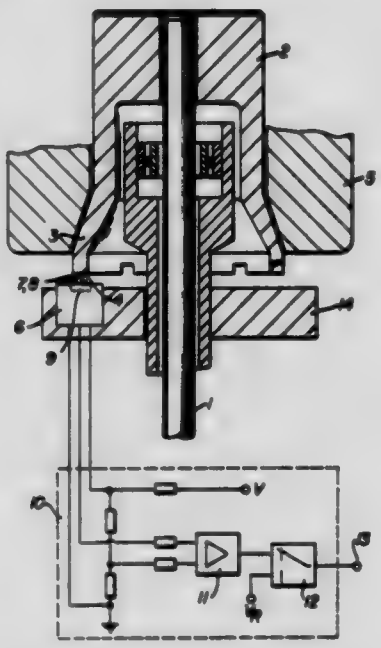
said shield preventing said detecting means from detecting said signals when no pig is in the pipeline below the aperture and permitting said detecting means to detect said signals when a pig is in the pipeline below the aperture.

4,491,019

DETECTION OF DYNAMIC UNBALANCES OF CENTRIFUGES

Gerhard Wicki, Hünenberg, and Rolf Niff, Steinhausen, both of Switzerland, assignors to Kontron Holding A.G., Zurich, Switzerland

Filed Dec. 16, 1982, Ser. No. 450,217
Claims priority, application Switzerland, Dec. 24, 1981, 8284/81
Int. Cl.³ G01M 1/16, 1/28
U.S. Cl. 73—457 11 Claims



1. An apparatus for detecting imbalance of a centrifuge comprising:

(a) a centrifuge having:

(i) a stationary portion;

(ii) a magnetic field sensor means disposed on the stationary portion;

(iii) a rotor means disposed above said stationary portion;

(iv) a rotor shaft rotatably connecting the rotor means with the stationary portion, the rotor shaft rotating with said rotor means; and

(v) an annular member fixedly attached to the rotor means for rotation therewith and having an annular end surface

positioned in a plane generally perpendicular to the longitudinal axis of the rotor shaft, said annular end surface located and disposed at a predetermined distance above the sensor means thereby forming a predetermined gap between the sensor means and the annular end surface, wherein the sensor means generates a signal when the dimension of the gap between the annular end surface and sensor means is altered due to imbalance of the centrifuge; and

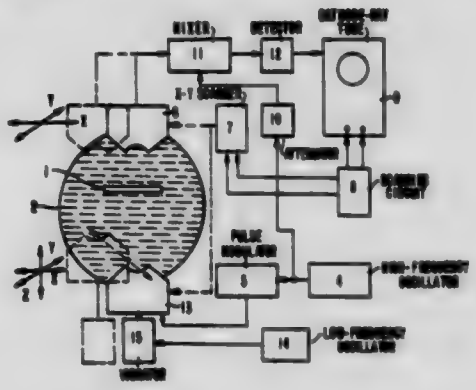
(b) electronic circuit means for processing the signal from the sensor means so as to activate an alarm signal upon imbalance of the centrifuge.

4,491,020

ULTRASONIC MICROSCOPE

Noriyoshi Chubachi, Miyagi, Japan, assignor to Keisuke Honda, Miyagi, Japan

Filed Nov. 5, 1982, Ser. No. 439,586
Claims priority, application Japan, Nov. 13, 1981, 56-182710
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—606 5 Claims



1. An ultrasonic microscope for scanning a sample disposed in a medium, comprising:

a focusing ultrasonic transmitting transducer element adapted to be coupled to said medium for generating a focused ultrasonic wave to irradiate a small portion of said sample, in response to a drive signal of ultrasonic frequency;

a focusing ultrasonic receiving transducer element adapted to be coupled to said medium for generating a received signal in response to ultrasonic waves generated by said transmitting element and propagated through said small portion of said sample;

reference signal generating means for providing a reference signal of ultrasonic frequency;

drive means responsive to said reference signal for generating said drive signal of ultrasonic frequency to drive said transmitting element;

X-Y axis scanning means for causing said focused ultrasonic wave to scan or traverse said sample in a coordinate plane substantially perpendicular to a line extending between said transmitting and receiving elements, while maintaining said elements in mutual alignment along said line;

mixer means for combining said received signal with said reference signal to produce an interference signal; and

Z axis scanning means for vibrating one of said transmitting and receiving elements along the direction of said line extending between said transmitting and receiving elements, in synchronism with the scanning of said sample by said X-Y axis scanning means,

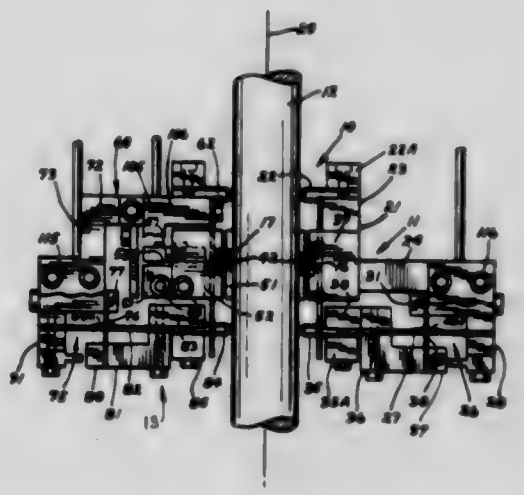
whereby said ultrasonic beam is caused to impinge upon said sample as if the radiating surface of said transmitting element is inclined with respect to said line extending between said transmitting and receiving elements, the apparent inclination of said radiating surface being variable by varying the amplitude of vibration by said Z axis scanning means relative to the amplitude of scanning by said X-Y axis scanning means.

4,491,021

AXIAL-TORSIONAL EXTENSOMETER

Harry R. Meline, Minnetonka, Minn., assignor to MTS Systems Corporation, Eden Prairie, Minn.

Filed Mar. 11, 1983, Ser. No. 474,700
Int. Cl.³ G01B *5/30*
U.S. Cl. 73—767 12 Claims



11. An extensometer assembly for measuring axial and torsional loading of an elongated specimen comprising a first extensometer adapted to be coupled to a specimen and to measure elongation of such specimen between two spaced locations along the longitudinal axis of the specimen which comprises a loading axis;

a second extensometer having means adapted to engage the same specimen on an opposite side of such specimen from the first extensometer;

a support structure connected to said first extensometer, and joined to said second extensometer without contact to a specimen on which the extensometers are mounted;

a pivot assembly coupling the second extensometer to the support structure to permit substantially unrestrained pivotal movement of the second extensometer about a pivot axis perpendicular to the loading axis and midway between the means on the second extensometer to engage the specimen; and

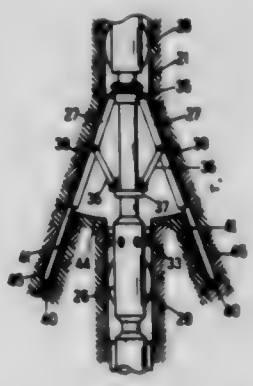
the support structure being rigid to resist deflections from loads causing movements of the first extensometer about the pivot axis and compliant to permit movement in substantially all other degrees of freedom.

4,491,022

CONE-SHAPED CORING FOR DETERMINING THE IN SITU STATE OF STRESS IN ROCK MASSES

Rodolfo V. de la Cruz, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Feb. 17, 1983, Ser. No. 467,352
Int. Cl.³ E21B *49/00*
U.S. Cl. 73—783 28 Claims



1. A method of relieving the stress on a selected segment of a borehole drilled into an earth mass comprising the steps of:

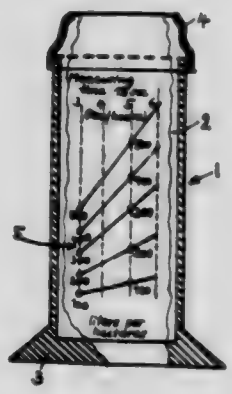
(a) cutting a cone-shaped opening which extends outwardly from the borehole and which has a generally radially extending bottom wall;
(b) cutting a conical slot in the bottom wall of the cone-shaped opening which extends outwardly from the borehole at an angle to the axis thereof, to thereby provide an element of earth mass which is relieved from the stresses imposed on the mass surrounding the borehole and which is defined between the wall of the borehole, the bottom wall of the cone-shaped opening, and the walls of the conical slot.

4,491,033

MEANS FOR CHECKING AND/OR MEASURING THE ACTUAL AMOUNT OF SPRAYED PLANT PROTECTIVE SUBSTANCES

Steffen Graef, Roter Brachweg 26, Regensburg, Fed. Rep. of Germany

Filed Oct. 28, 1981, Ser. No. 315,872
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041916
Int. Cl.³ G01F 1/00, 9/00
U.S. Cl. 73—861 11 Claims



1. A device for determining an amount of fluid substance in terms of volume per area to be discharged from a spraying machine movable at different speeds based on an actual amount of fluid substance discharged from said spraying machine during a predetermined time period, said device comprising:
a container having a top and a side for collecting fluid substance discharged from said spraying machine,
at least one scale calibrated for said predetermined time period in association with said container,
each said scale comprising markings which signify units of volume of fluid substance per area related to additional markings which designate a predetermined speed of movement of said machine,
said markings and said additional marking providing means for calculating the volume amount of fluid substance to be discharged per unit area at each said predetermined speed based on the volume amount of fluid substance discharged from said machine which is collected in said container during said predetermined time period.

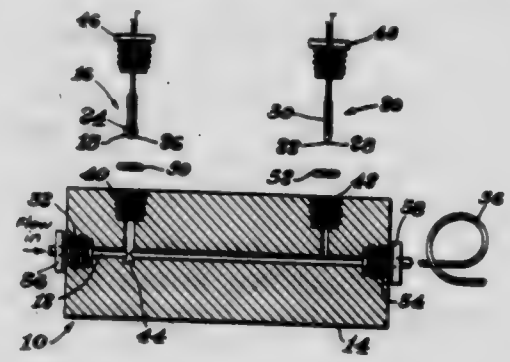
4,491,024

METHOD FOR METERING SUB-10 CC/MINUTE LIQUID FLOW

Theodore E. Miller, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 6, 1981, Ser. No. 280,400
Int. Cl.³ G01F 1/68
U.S. Cl. 73—861.05 8 Claims

1. A method for the accurate determination of volumetric liquid flow rate using a measured value (T) which is the time interval between heat pulses and which includes both a calibrated cell volume term (V_c) and a non-zero time constant term (K), the method comprising:
(a) conveying the liquid to be metered through an electronic flow cell having a predetermined calibrated cell volume (V_c) and calibrated time constant (K).
(b) inputting uniform heat pulses into the conveyed liquid and detecting the pulses downstream and wherein each detection event triggers the input of a timed heat pulse to



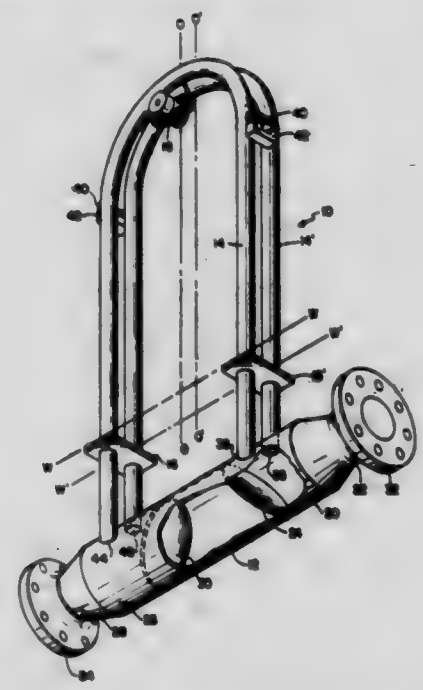
produce the condition of pulse frequency being related to volumetric liquid flow rate (f);
(c) electronically detecting the period (T) between pulses; and
(d) determining a measure of flow of the metered liquid based on the application of the relationship, $T=V_c/f+K$.

4,491,025

PARALLEL PATH CORIOLIS MASS FLOW RATE METER

James E. Smith, Boulder, and Donald R. Cage, Longmont, both of Colo., assignors to Micro Motion, Inc., Boulder, Colo.

Filed Nov. 3, 1982, Ser. No. 439,035
Int. Cl.³ G01F 1/84
U.S. Cl. 73—861.38 10 Claims



1. An apparatus for measuring the mass flow rate of a fluid, comprising:
(A) an inlet manifold and an outlet manifold;
(B) two U-shaped flow tubes which
(i) are free of pressure sensitive joints,
(ii) are mounted in an essentially parallel fashion and fixedly attached, in a fluid tight manner, at the open ends of said U-shaped flow tubes to said inlet manifold and said outlet manifold,
(iii) extend from said inlet manifold and outlet manifold in a cantilever fashion,
(iv) each have an bending axis located near said fixedly attached ends and located in the same plane as and perpendicular to the side legs of said U-shaped flow tube, and a torsion axis located in the same plane as the

side legs of said U-shaped flow tube, essentially parallel to and midway between said side legs, and perpendicular to said bending axis,

(v) have essentially equal moments of inertia and essentially equal spring constants about said bending axes, and essentially equal moments of inertia and essentially equal spring constants about said torsion axes, and

(vi) have a resonant frequency of oscillation about said torsion axes which is both different from the resonant frequency of oscillation about said bending axes, and different from the odd harmonic values of said resonant frequency of oscillation about said bending axes;

(C) means for inputting to each of said U-shaped flow tubes essentially equal amounts of fluid from an inlet plenum, formed in part by said inlet manifold so that fluid flows through said U-shaped flow tubes in an essentially parallel fashion;

(D) means for draining fluid from both of said U-shaped flow tubes through an exit plenum formed in part by said outlet manifold;

(E) means attached to said U-shaped flow tubes to sinusoidally drive said U-shaped flow tubes at the resonant frequency about said bending axes, and as the tines of a tuning fork; and,

(F) means to measure the time interval between the passage of the first side legs of each of said U-shaped flow tubes through the respective midplanes of oscillation, and the passage of the second side legs, caused by Coriolis forced deflection about said torsion axes, to pass through the respective mid-planes of oscillation at a later time;

whereby the total fluid mass flow rate passing through both of said U-shaped flow tubes is determined from the magnitude of said measured time interval.

4,491,026

LIQUID FLOW METER

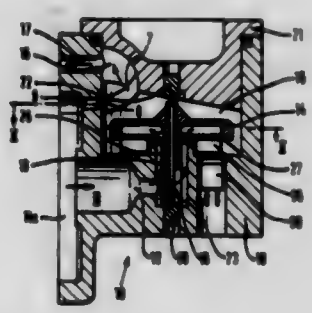
Rolf Brüntigam, Markt; Lothar Haas, Stein; Jürgen Wesemeyer, Nuremberg; Heinz-Dieter Hellmann, Grünstadt; Peter Hergt, Ludwigshafen, and Reinhard Fassel, Oberasbach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 432,997

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1981, 3139218; Jun. 9, 1982, 3221775

Int. Cl.³ G01F *1/05, 5/00*

U.S. Cl. 73—861.86 20 Claims



1. Flow meter having

a housing (10, 19, 21, 30);

a fluid flow chamber (15, 34, 41) defined in the housing; a rotor (14, 31, 40) located in the housing;

inlet means (11, 11*a*, 12; 33, 38; 42, 43) providing flow communication of fluid to the flow chamber;

outlet means (16, 17; 39, 46) providing fluid outlet flow communication from the chamber;

rotation sensing means (29, 37) sensing rotation of the rotor and positioned in the housing in rotation sensing relation with respect to the rotor;

wherein the rotor (14, 31, 40) is a hollow structure and includes

axially directed inlet means positioned about the axis of rotation (18, 32) of the rotor to introduce fluid into the rotor centrally thereof, and

circumferentially directed outlet or exit openings (24, 36, 45) are located adjacent the circumference of the rotor;

an inlet duct (13, 35, 44) is provided directing fluid into said axially directed rotor inlet means;

flow guide ribs (23) are located within said inlet duct (13) and extend longitudinally axially parallel to the axis of rotation of the rotor towards said axially directed inlet means;

and wherein the rotor is located in the fluid chamber (15, 34, 41) and surrounded thereby,

so that fluid flow will be from the inlet means, axially through the inlet duct, centrally into the rotor and out of the rotor at a position adjacent the circumference thereof, into the fluid chamber, reaction of fluid leaving the rotor through said outlet or exit openings, causing rotation of the rotor which is sensed by said sensing means.

4,491,027

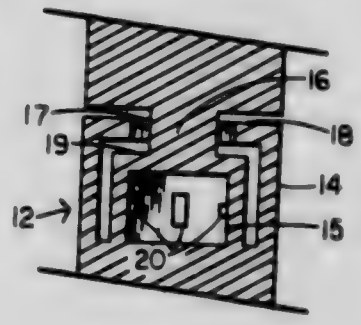
WIDE-RANGE LOAD CELL

Stanley Yalof, and Lawrence Van Doren, both of San Diego, Calif., assignors to Tetrahedron Associates, Inc., San Diego, Calif.

Filed Jan. 31, 1983, Ser. No. 462,721

Int. Cl.³ G01L *1/04, 1/18*

U.S. Cl. 73—862.52 10 Claims



10. An apparatus for measuring a wide range of forces, which comprises:

a plurality of force responsive elements of different sensitivities and different resistances to said forces;

means for oppositely applying force to said elements, said elements comprising cylinders of different dimensions concentrically engaged one within the other between said force applying means, said cylinders having opposed surfaces defining a gap in the direction of application of said forces, and the most sensitive one of said cylinders being positioned to engage said force applying means over the entire range of measurement;

said force applying means comprising means for applying force to said most sensitive cylinder in a direction tending to close said gap over the entire range of measurement and means for additionally applying force to at least one cylinder of lesser sensitivity when said most sensitive cylinder has been deformed by said force so as to close said gap, whereby the effect of said force on said most sensitive cylinder is modified and increasing forces are progressively opposed by the sequential addition of cylinders of greater resistance; and

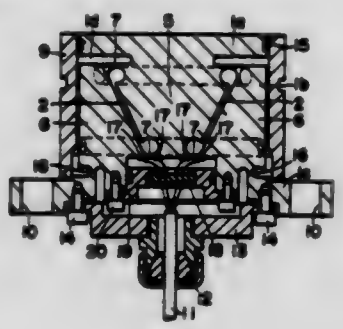
means for measuring said force over the entire range comprising means for monitoring the response of the most sensitive cylinder to said forces.

4,491,028

PRESSURE TRANSDUCER

Yotaro Hatamura, 3-12-11 Kohinata, Bunkyo-ku, Tokyo, Japan

Filed Mar. 25, 1983, Ser. No. 479,075
Claims priority, application Japan, Mar. 31, 1982, 57-52940
Int. Cl.³ G01L *1/26*
U.S. Cl. 73—862.62 13 Claims



1. A pressure transducer comprising a substantially cylindrical detection block having a first axial end a second axial end, said detection block including:

a first end pressure receiving portion connected to the remainder of said detection block at said first end, the remainder of said detection block having a cylindrical radially peripheral outer surface, two first through holes extending in one direction and two second through holes extending in another direction such that said first through holes cross said second through holes and each of said first and second through holes open at both ends thereof at said outer surface, said first and second through holes having a first side extending adjacent a first exposed surface of said detection block so as to define a first thin wall portion of said detection block between said first exposed surface and said first side of said first and second through holes, and having a second side adjacent a second exposed surface of said detection block so as to define a second thin wall portion of said detection block between said second exposed surface and said second side of said first and second through holes,

a central pressure receiving portion in the center of said detection block, said central pressure receiving portion being surrounded by said first and second holes, and

a retaining portion at the radial periphery of said detection block, said retaining portion surrounding said central pressure receiving portion,

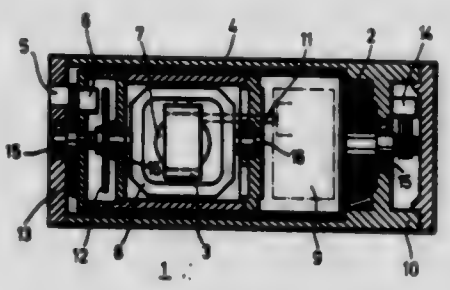
said central pressure receiving portion being connected to said retaining portion through said first and second thin wall portions.

4,491,029

POSITION GYROSCOPE

Ernst Gruber, Munich, and Wolfgang von Hoessle, Ottobrunn, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed May 7, 1982, Ser. No. 376,202
Claims priority, application Fed. Rep. of Germany, May 20, 1981, 3120022
Int. Cl.³ G01C *19/26, 19/30*
U.S. Cl. 74—5.1 4 Claims



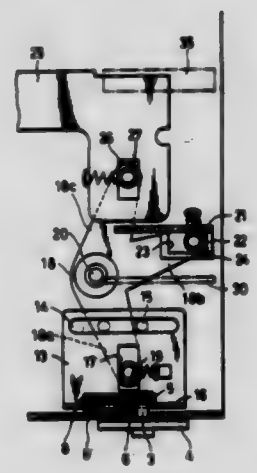
1. A position gyroscope for sensing a rolling position of a flying body, comprising housing means (10) operatively mounted in said flying body, a first rolling frame (4), first bearing means (15) for rotatably mounting said first rolling frame in said housing means (10), a second rolling frame (8), second bearing means (16) for rotatably mounting said second rolling frame (8) in said first rolling frame (4) so that the first and second rolling frames have a common coaxial rotational axis, a gimbal cage (3) operatively mounted in said second rolling frame (8), means (11) operatively positioned for unlocking and locking said gimbal cage (3) and said second rolling frame (8) against rotation, a gyro rotor (7) operatively mounted in said gimbal cage (3), first pick-up means (5, 13) operatively interposed between said housing means (10) and said first rolling frame (4) for ascertaining any relative rotation between said housing means (10) and said first rolling frame (4), second pick-up means (6, 12) operatively interposed between said first and second rolling frame (4, 8) for ascertaining any relative rotation between said first and second rolling frames (4, 8) having said common rotational axis, and drive means (2) supported in said housing means (10) and operatively connected to said first rolling frame (4) for positively driving said first rolling frame (4) in a desired rotational direction which is opposite to any rolling motion of said flying body and thus opposite to any rolling motion of said housing means (10) for compensating said rolling motion of the flying body by the counter-rotation of said first rolling frame (4), whereby said gyro rotor (7), said gimbal cage (3), and said second rolling frame (8) are free of any rolling motions during an unlocking of said gimbal cage (3) and of said second rolling frame (8).

4,491,030

LINK MECHANISM IN PUSHBUTTON-OPERATED WAVEBAND OR STATION SELECTOR

Takao Chaki, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Mar. 24, 1982, Ser. No. 361,335
Claims priority, application Japan, Mar. 31, 1981, 56-47855
Int. Cl.³ H03J *5/12*
U.S. Cl. 74—10.33 1 Claim



1. A link mechanism in a pushbutton-operated waveband or station selector, comprising:

a link member having at least three arms and pivotably disposed in said waveband or station selector;

a guide member provided on each of said arms of said link member;

a plurality of tuning members equal in number to said arms which are moved in directions different from each other inside said selector;

said tuning members each having formed therein a guide portion extending perpendicular to the moving direction of the tuning member, the guide member provided at each of the arms of said link being engaged in said guide portion formed in each of the tuning members; the angle formed between each of said link arms and the moving direction of each tuning member being other than a right angle

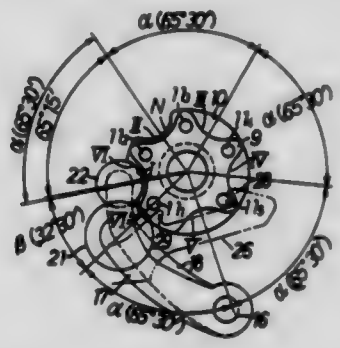
within the moving range of each of said tuning members, and in which one of said tuning members is a memory plate engaged by one of said link arms and moved in a first direction when a manual pushing operation for tuning is effected, one of said tuning members is a core slide engaged by another of said link arms and movable in a second direction non-linear to said first direction, and one of said tuning members is an idler plate engaged by a third of said link arms and movable in a third direction non-linear to said second direction.

4,491,031

SHIFT DRUM TYPE SPEED CHANGE MECHANISM FOR MOTORCYCLES

Yuzo Ooka, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 10, 1982, Ser. No. 376,392
Claims priority, application Japan, May 21, 1981, 56-77014
Int. Cl.[3] F16H *5/06*; B60K *20/02*
U.S. Cl. 74—337.5 6 Claims



1. A speed change mechanism for a transmission of a motorcycle, comprising

a shift drum;

a first cam plate fixed to said drum and having a first cam surface having a series of stopper grooves in said first cam surface with each succeeding groove in said series being spaced equiangularly from the proceding groove in said series;

a first stopper engaging said first cam surface;

a second cam plate fixed to said drum and having a second cam surface with at least one stopper groove in said second cam surface;

a second stopper engaging said second cam surface, said second stopper engaging said stopper groove in said second cam surface with said first stopper being spaced from the last stopper groove in said series by an amount equal to the equiangular spacing between stopper grooves.

4,491,032

GEAR SHIFT CONTROL LINKAGE OF TRANSMISSION

Yoshihiro Saito, Yokohama, and Komei Yazaki, Atsugi, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

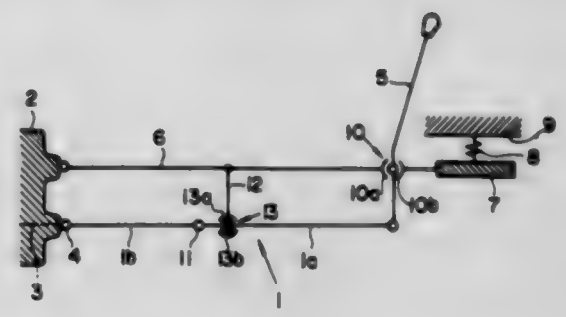
Filed Aug. 26, 1982, Ser. No. 411,848
Claims priority, application Japan, Oct. 12, 1981, 56-162342
Int. Cl.[3] G05G *9/18, 7/16*
U.S. Cl. 74—473 R 11 Claims

1. A gear shift control linkage system for a vehicular transmission, comprising:

manually operable gear shift control lever having upper and lower ends, and a fulcrum intermediate between the upper end and the lower end,

support means for supporting said control lever, said support means comprising pivot bearing means for allowing said control lever to swing on the fulcrum, and

a control rod pivotally connected at one end with the lower end of said control lever and pivotally connected at the other end iwth a striking rod of the transmission for transmitting a movement of said control lever to the transmission, said control rod comprising two parts, a first half rod on the control lever side and a second half rod on the transmission side connected together end to end by a joint,



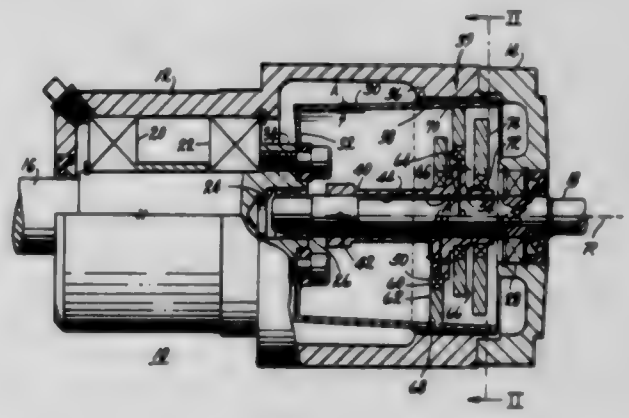
said control rod being supported rotatably and axially slidably at an intermediate portion between both ends by an arm formed in said support means.

4,491,033

DOUBLE ECCENTRIC WAVE GENERATOR ARRANGEMENT

John H. Carlson, and Carl F. Peterson, both of Danvers, Mass., assignors to USM Corporation, Farmington, Conn.

Filed Jun. 23, 1983, Ser. No. 507,015
Int. Cl.[3] F16H *1/28, 33/00*
U.S. Cl. 74—640 6 Claims



1. A strain wave gearing assembly having a toothed circular spline and a toothed flexspline, having deflection means therewithin so as to effectuate progressive engagement of said circular spline and said flexspline, said deflection means comprising:

first wave generation disc journaled on a rotatable sleeve within said flexspline;

a second wave generator disc journaled on said disc; said first and second wave generating discs being non-paralleled with respect to one another and orthogonal with said flexspline at their contacting surfaces.

4,491,034

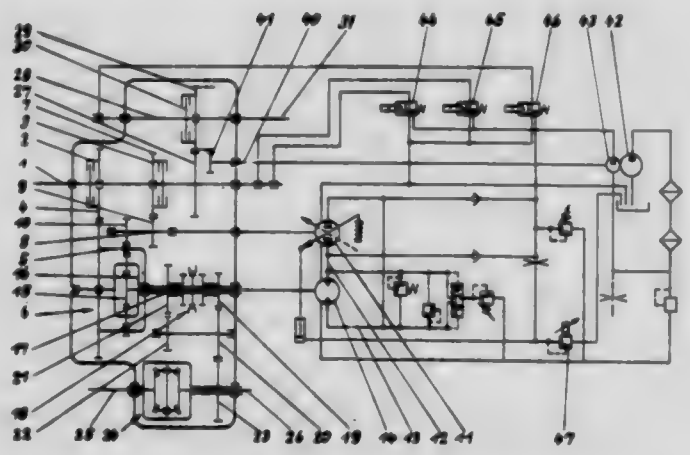
HYDRAULIC-MECHANICAL TRANSMISSION SYSTEM HAVING OUTPUT BRANCHES

Nils Fredriksen, Harsewinkel, Fed. Rep. of Germany, assignor to Claas OHG, Harsewinkel, Fed. Rep. of Germany

Continuation of Ser. No. 315,994, Oct. 28, 1981,. This application May 14, 1984, Ser. No. 610,173
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041865
Int. Cl.[3] F16H *47/04, 37/06*
U.S. Cl. 74—687 4 Claims

1. A continuously adjustable hydraulic-mechanical power transmission system comprising a mechanical part including a power input shaft; a forward gear; a reversing gear; a first clutch for connecting said forward gear to said power input shaft; a second clutch for connecting said reversing gear to said

input shaft; a reversing shaft with a gear engaging said reversing gear; a planetary gear set having an annulus formed with gears and acting as a first shaft; a cage for supporting satellite gears and acting as a second shaft, and a sun wheel in mesh with the satellite gears and acting as a third shaft; a hydraulic part including an adjustable displacement hydraulic unit and a fixed displacement hydraulic unit; the gears of said annulus being in mesh with said forward gear and with the gear of said reversing shaft to engage, in response to the actuation of one of



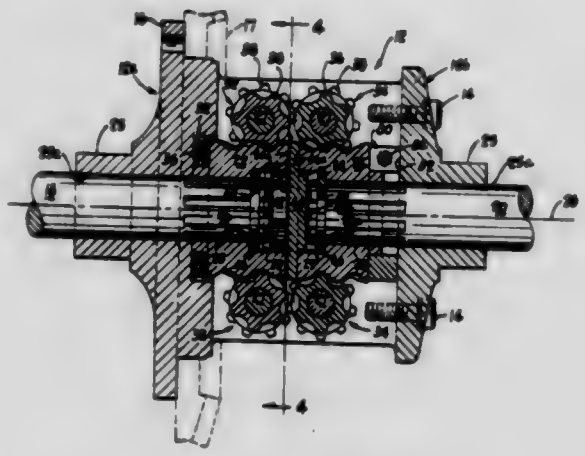
said two clutches, said first shaft with said power input shaft either via said forward gear or via said reversing shaft and reversing gear; said second shaft of the planetary gear set acting as a driven shaft, and the third shaft of the planetary gear set being directly connected to the fixed displacement hydraulic unit; and the adjustable displacement hydraulic unit being in constant mechanical connection with said reversing shaft to reverse its rotational direction in response to the actuation of one of said two clutches and being hydraulically connected to said fixed displacement hydraulic unit.

4,491,035

DIFFERENTIAL GEAR APPARATUS

Vernon E. Gleasman, Cleveland Heights, Ohio, and Keith E. Gleasman, Fairport, N.Y., assignors to The Gleason Works, Rochester, N.Y.

Filed Mar. 15, 1983, Ser. No. 475,528
Int. Cl.³ F16H *1/38*
U.S. Cl. 74—715 6 Claims



4. A method for assembling a differential of the type that includes a pair of axially adjacent side gears rotatably coupled to associated axles, each side gear defining a recess for receiving a locking element engaged with locking structure formed near ends of the axle, the method comprising the steps of:

(a) moving one of said side gears axially outwardly with respect to the inside of said differential to provide an access opening between said side gears;

(b) inserting an axle end into said differential, through said one side gear until said locking structure formed on said axle end is exposed in said access opening;

(c) engaging a locking element with said locking structure on said one axle end and with drawing said axle end to a position where said locking element is received by the recess is said one side gear;

(d) inserting another axle end into said differential, through said other side gear until its locking structure is exposed in said access opening;

(e) engaging another lock element with the locking structure on said other axle end and withdrawing said axle end until its associated locking element is received by the recess in said other side gear;

(f) positioning an axial thrust bearing arrangement in alignment with said axle ends and maintaining its position while moving said one side gear axially inwardly to an operative position; and,

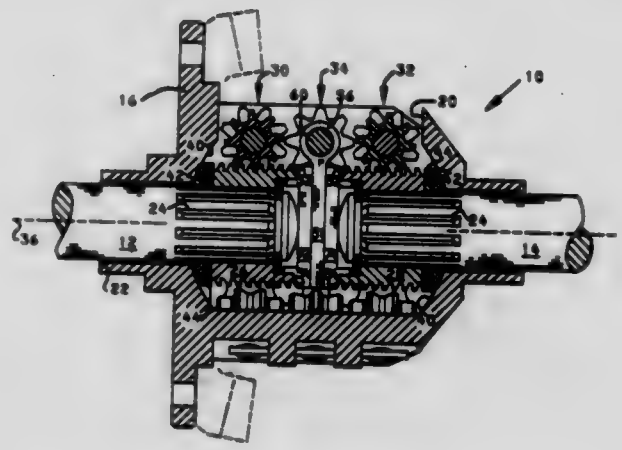
(g) installing a removable gear spacing means associated with said one side gear to maintain said one side gear in said operative position.

4,491,036

DIFFERENTIAL ASSEMBLY HAVING MEANS FOR ACCOMMODATING ANGULAR MISALIGNMENTS OF AXLE SEGMENTS

Gene A. Stritzel, Rochester, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed Mar. 15, 1983, Ser. No. 475,575
Int. Cl.³ F16H *1/38*
U.S. Cl. 74—715 6 Claims



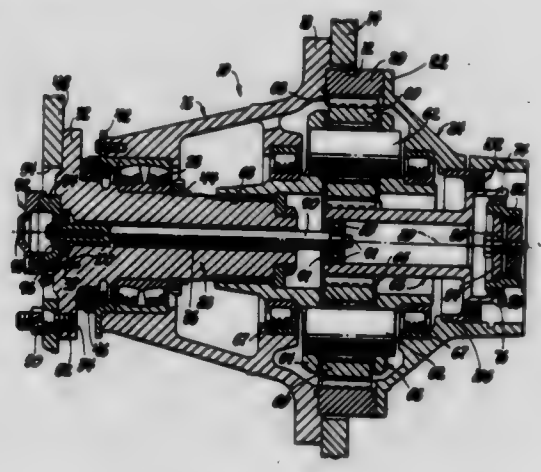
1. In a differential assemby of the type which includes a differential case having means for receiving a pair of axle ends together with a pair of worm gears coupled to said pair of axle ends for rotation therewith, and including at least one transfer gear in meshing engagement with each of said worm gears, with said transfer gears being operatively connected with each other for transferring drive between said pair of worm gears and their associated axle ends, said differential assembly being characterized by means for accommodating angular misalignments of said axle ends from a common center axis, said means comprising spherical mounting surfaces formed within said differential case for receiving spherical bearing surfaces associated with said pair of worm gears such that axle ends can be mounted in positions which are pivoted slightly out of a common axis so as to provide a camber or caster to wheels carried at outer ends of said axles, and including a spacing means which can be removably installed between said axle ends so as to define a predetermined spacing between the axle ends, said spacing means having opposed convex spherical surfaces for bearing against corresponding concave spherical surfaces formed on opposing ends of said worm gears.

4,491,037

SEAL ARRANGEMENT FOR DISENGAGEABLE REDUCTION DRIVE UNIT

Benton L. Bullock, New Palestine, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 10, 1983, Ser. No. 465,624
Int. Cl.³ F16H 3/44, 57/10, 57/00
U.S. Cl. 74—785 3 Claims



1. In a planetary reduction drive unit for transmitting torque from a transmission shaft to an output member and including an output drive shaft connected to said output member and rotatable about an axis of said unit, a planet carrier rotatable with said output drive shaft about said axis, a plurality of planet gears rotatably supported on said carrier and engaging a fixed ring gear, a sleeve shiftable along said axis between an extended position wherein a first end of said sleeve drivingly engages said transmission shaft and is supported by the latter and centered about said axis and a retracted position wherein said first end is remote from said transmission shaft and unsupported, and means forming a sun gear on said sleeve at a second end thereof engaging said planet gear in each of said extended and said retracted positions of said sleeve, said planet gears supporting said second end and centering the latter about said axis, the improvement comprising, seal means disposed between said sleeve generally adjacent said first end and a relatively stationary portion of said unit operative to seal against said sleeve in each of said extended and said retracted positions of the latter, and pilot bearing means on said relatively stationary portion adjacent said seal means and engageable on said sleeve adjacent said first end thereof when said sleeve is in said retracted position to rotatably support and center said inboard end about said axis for runout control.

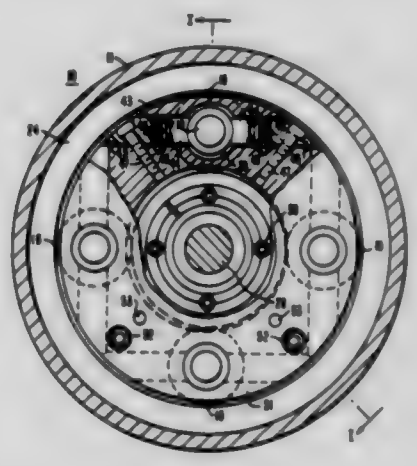
4,491,038

TRACTION ROLLER TRANSMISSION

Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed Aug. 16, 1982, Ser. No. 408,421
Int. Cl.³ F16H 13/06
U.S. Cl. 74—798 12 Claims

1. A traction roller transmission comprising: a traction ring having an inner traction race; a sun roller arranged within said traction ring and having a circumferential traction surface spaced from the race of said traction ring so as to form an annular path therebetween; a number of traction rollers disposed in said annular path and being in engagement with said traction ring race and the sun roller surface; said traction rollers being supported in a carrier disposed within said traction ring and having cavities receiving said traction rollers, at least one of said traction rollers having axially projecting shaft sections extending into openings in said carrier, said carrier having passages extending essentially normal to a plane including the axes of the carrier and the respective traction roller and intersecting the openings receiving said shaft sections; and



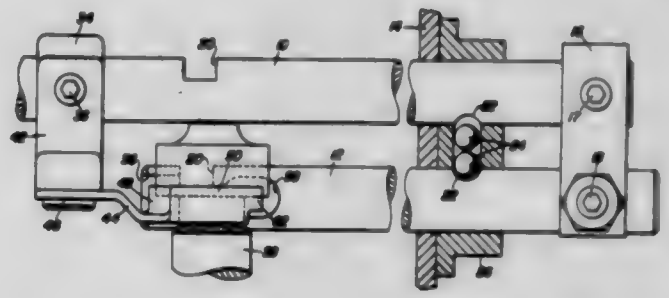
spring means disposed in said passages for resiliently supporting said traction roller.

4,491,039

SAFETY IGNITION INTERLOCK SWITCH FOR VEHICLE TRANSMISSION

Vasile Benedek, Bruhl, and Volker Hückler, Radolfzell, both of Fed. Rep. of Germany, assignors to Deere & Company, Moline, Ill.

Filed Nov. 2, 1982, Ser. No. 438,433
Claims priority, application European Pat. Off., Nov. 18, 1981, 81305451.7
Int. Cl.³ B60K 41/04
U.S. Cl. 74—850 4 Claims



1. A safety ignition interlock switch mechanism for a vehicle transmission having first and second parallel selector rods slidable with respect to a transmission housing, comprising:

a switch part;

a bracket mounted on the first rod and axially spaced from the switch part; and

a switch element carried by the bracket, the switch element comprising a lever pivoted in the bracket and having a first arm engageable with a cam track on the second rod and a second arm operatively engaging the switch part, the switch element cooperating with the cam track to move to a first position when both rods are in neutral positions and to move to a second position when either rod is out of its neutral position.

4,491,040

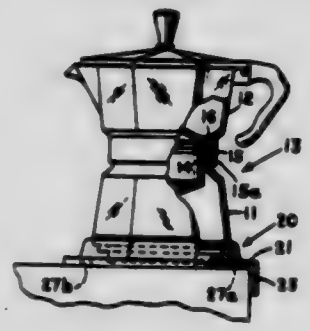
COMPOSITE HOLDER AND OPENER FOR USE WITH AN EXPRESSO COFFEEMAKER

Oscar M. Corona, 2356 W. 53rd Ter., Hialeah, Fla. 33016

Filed May 10, 1982, Ser. No. 376,426
Int. Cl.³ B67B 7/44
U.S. Cl. 81—3.1 R 8 Claims

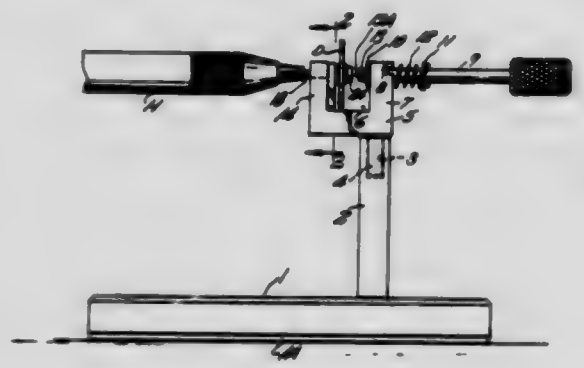
1. A composite holder and opener for expresso coffeemakers of varying sizes and for use and engagement on and adjacent to the edge of a generally planar surface comprising:

a. a planar member of predetermined thickness molded from plastic material which is heat resistant,
b. said planar member having a fixed shape including at least one side edge, and a transverse shoulder connected to said planar member on said at least one side edge,
c. said planar member having an upper face, and a lower face to engage and rest directly on the generally planar surface,



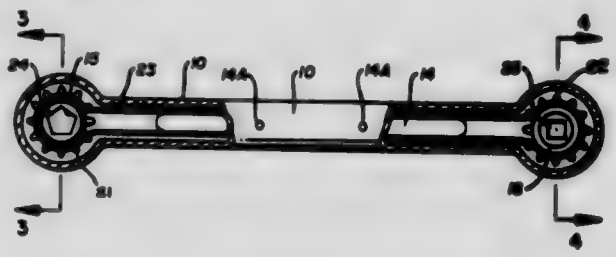
d. said transverse shoulder having a length greater than the predetermined thickness of the planar member and disposed to engage the edge of the planar surface to prevent horizontal rotation when the composite holder and opener, is placed thereon, and
e. means in said upper face shaped for sliding fit engagement with at least one of said expresso coffeemakers including, a plurality of octagonally shaped ledges of progressively enlarging diameters.

4,491,041
TOOL FOR REMOVING MANDREL MOUNTED DISKS
Jeffrey W. Eisner, 634 W. Hazel, Roseburg, Oreg. 97470
Filed Apr. 4, 1983, Ser. No. 481,992
Int. Cl.[3] B25B *17/00*
U.S. Cl. 81—55 4 Claims



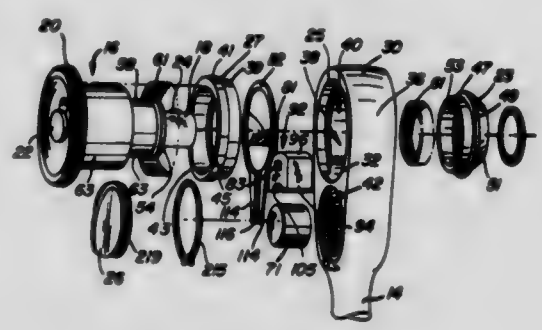
1. A tool for temporarily holding a handpiece mounted mandrel against rotation during mandrel disassembly, said tool comprising,
a base,
a holder supported by said base and defining a bite area adapted for reception of a mandrel end,
a plate on said holder having planar surfaces defining an upwardly opening recess with said surfaces adapted for abutment with flats formed on the mandrel to hold the latter against rotation,
pin means coupling said plate to said holder in a manner permitting limited rocking motion of said plate to facilitate mandrel reception, and
a screwdriver slidably mounted in said holder and adapted for axial engagement with a screw on the mandrel end to remove a mounting screw thereon preparatory to removing a disk from said mandrel.

4,491,042
POWERED WRENCH
James E. Lopochousky, 4 N. Water St., Greenville, Pa. 16125
Filed Feb. 10, 1983, Ser. No. 465,603
Int. Cl.[3] B25B *17/00*
U.S. Cl. 81—57.3 1 Claim



1. An improvement in a powered wrench having a thin, elongated body formed of a pair of joined, oppositely disposed, flat members having engaging continuous peripheral flanges, semi-circular configurations in the ends of said elongated body, sprockets rotatably mounted in said configurations and a continuous apertured belt engaged on said sprockets, the improvement comprising means for insuring the registry of said apertured belt on said sprockets while under tension, said means being a continuous apertured belt formed of flexible steel having longitudinally spaced circular openings therein and said sprockets consisting of circular discs, a plurality of circumferentially spaced frustro-conical teeth on each of said circular discs, the circular openings in said continuous flexible steel belt being of a diameter matching the largest diameter of said frustro-conical teeth, said continuous flexible steel belt extending between said end configurations in a passageway formed by said elongated body, axial openings formed in each of said sprockets and annular members on the sides of said sprockets surrounding the axial openings therein so as to journal said sprockets in said end configurations in said elongated body.

4,491,043
STEPLESS WRENCH INCLUDING QUICK RELEASE MECHANISM
John D. Dempsey, 2024 Rivermont Ave., Lynchburg, Va. 24503, and Jock D. Dempsey, Rte. 2, Box 407, Gladys, Va. 24554
Filed Mar. 10, 1981, Ser. No. 242,314
Int. Cl.[3] B25B *13/00*
U.S. Cl. 81—58 33 Claims



1. A stepless wrench comprising:
a wrench body having a cavity defined therein;
a shaft terminating at one end in a fixture-receiving portion, said shaft being mounted in said cavity for relative rotational movement in two directions, said rotational movement being about the longitudinal axis of said shaft;
a continuous, uninterrupted friction surface radially disposed about said shaft in a closed geometric pattern;
a cam shoe having a face on which are defined a first surface and a second surface;
means for movably mounting said cam shoe in said cavity;
cam positioning means for alternately placing said first surface proximate said friction surface for limiting said relative rotational movement to only one of said two directions, and for placing said second surface proximate said

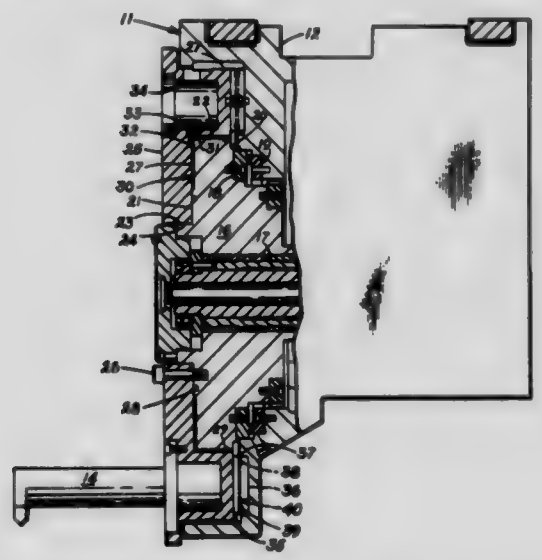
friction surface for limiting said relative rotational movement to only the other of said two directions.

4,491,044

DAMPED TOOL TURRET

Robert G. Haas, Georgetown; John R. Hasz, Fayetteville, and David B. Wood, III, West Chester, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Mar. 4, 1983, Ser. No. 472,000
Int. Cl.[3] B23B *29/28, 29/30*
U.S. Cl. 82—36 A 4 Claims



1. A damped tool turret for a machine tool, comprising:
(a) a turret housing;
(b) means for mounting said housing to a machine tool base;
(c) a spindle, rotatably journalled in said housing, said spindle having an elongate body rotatable about a central axis;
(d) an end face defined on said spindle, said end face having an outer periphery substantially larger than the periphery of said elongate spindle body;
(e) a tool support plate mounted in juxtaposition with said end face, said tool support plate having an outer periphery substantially larger than the elongate spindle body;
(f) means for rotating said end face and said tool support plate in unison with said spindle;
(g) a facial relief defined on one of said end face and said tool support plate near the outer periphery thereof, said relief disposed toward the other of said face and support;
(h) means for sealing said relief so as to create a damping chamber between said end face and said tool support plate;
(i) means for holding a tool near the outer periphery of said tool support plate;
(j) a damping medium in said damping chamber; and
(k) means for indexing said spindle to predetermined angular positions about said central axis.

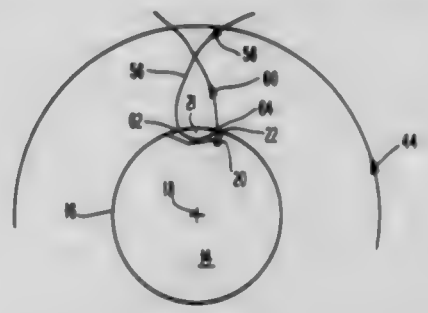
4,491,045

ROTARY CUTTER FOR THIN, FLEXIBLE WEBS

Eric S. Buhayar, Swarthmore, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Apr. 15, 1983, Ser. No. 485,565
Int. Cl.[3] B23D *25/12*
U.S. Cl. 83—341 4 Claims

1. An improved rotary scissor for cutting a flexible web, the rotary scissor comprising a rotating anvil roll, an anvil blade axially mounted at the periphery of the anvil roll, a fly knife roll rotating in synchronism with the anvil roll, a fly knife blade mounted generally in axial alignment at the periphery of the fly knife roll, the axis of the anvil roll and fly knife roll lying in the same plane and being spaced so that the locus of a cutting point on the cutting edge of the fly knife blade intersects the locus of a corresponding cutting point on the cutting edge of the anvil blade at two points, wherein the improvement comprises mounting the anvil and fly knife blades so that the flexible web traveling on the surface of the anvil roll is cut into sheets through the cooperation of the cutting edge of the



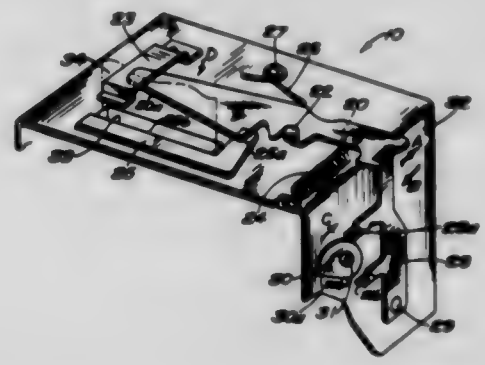
fly knife blade with the cutting edge of the anvil blade as the cutting edge of the fly knife blade is traveling away from the center axis of the anvil roll.

4,491,046

PAPER CUTTING DEVICE FOR A PRINTER

Hiroshi Hosogaya, Shiojiri, Japan, assignor to Epson Corporation, Tokyo, Japan

Filed Jun. 28, 1982, Ser. No. 393,156
Claims priority, application Japan, Jun. 29, 1981, 56-101746
Int. Cl.[3] B26D *5/16*
U.S. Cl. 83—589 8 Claims



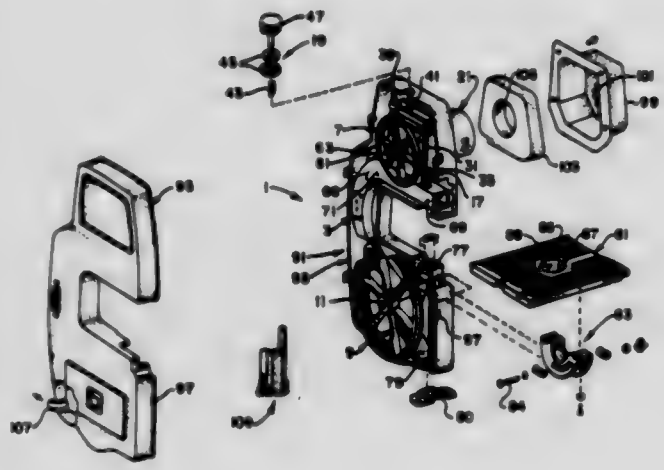
1. A paper cutting device for use in a printer for cutting off a piece of recording paper comprising a frame, a first cutter means supported on said frame, a second cutter means pivotably supported on said frame and spaced from said first cutter means when in a ready position to permit said recording paper to extend therebetween, said frame including a support member about which said second cutter means is pivotable, bias means for biasing said second cutter means against said support member and drive means for pivoting said second cutter means about said support member and towards said first cutter means whereby said recording paper is cut, said drive means including a drive lever coupled to said second cutter means, said drive lever moving said second cutter means between its first ready position where said second cutter means is spaced from said first cutter means and a second position where said second cutter means is moved over said first cutter means for cutting off said recording paper, said frame including a cam surface means rotatably supported thereon, said drive lever including first cam follower means engaging said cam surface means, said drive means acting to rotate said cam surface means against said first cam follower means so that said drive lever can move said second cutter means from its first position towards its second position, spring means coupled intermediate said frame and said second cutter means for returning said second cutter means to its first position, said drive lever including a second cam follower means, said second cam follower means engaging said cam surface means to forcibly return said second cutter

means to its first position when the force of said spring means fails to return said second cutter means to its first position.

means for selectively varying the plane of said mounting plate and thus the plane of rotation of said drive wheel.

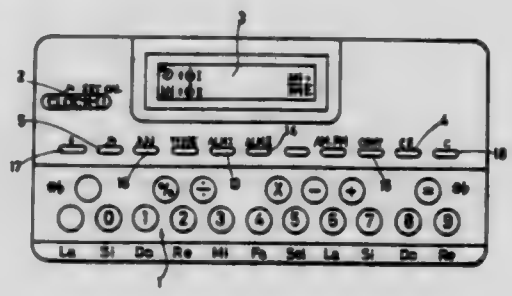
4,491,048
Patent Not Issued For This Number

4,491,047
DIRECT DRIVE BAND SAW
Joseph M. Butkiewicz; Richard B. Brundage, both of St. Louis County, Mo., and Dal M. Rawlins, Henry County, Tenn., assignors to Emerson Electric Co., St. Louis, Mo.
Filed May 28, 1982, Ser. No. 383,192
Int. Cl.³ B27B *13/02*
U.S. Cl. 83—817 4 Claims



1. In a vertical power band saw having a frame, a driven wheel and an idler wheel spaced vertically from one another and journalled relative to said frame, and an endless flexible blade entrained around said wheels with said blade having a vertical reach constituting the sawing reach of the blade and a return reach with the horizontal distance between said reaches determining, in substantial measure, the depth of the throat of said saw, said frame having means for mounting one of said blade wheels thereon for movement toward and away from the other of said blade wheels, wherein the improvement of this invention comprises: an electric motor having a shaft extending endwise therefrom, said drive wheel being affixed to said shaft and being directly driven thereby, said drive wheel being of a smaller diameter than said idler wheel with the vertical cutting reach of said blade being tangent to said drive wheel and to said idler wheel, said motor being secured to said mounting means, said mounting means comprising a pair of vertical guide rods stationarily secured relative to said frame and a generally vertically extending mounting plate slidable on said guide rods, said mounting plate having a plurality of apertures therein, said motor having a plurality of through bolts extending therethrough, said through bolts being received in said apertures in said mounting plate and being secured to said mounting plate, thereby to secure said motor to said mounting plate, said mounting plate with said motor secured thereto being movable on said guide rods toward and away from said idler wheel, said mounting means further including adjustable

4,491,049
ELECTRONIC MUSICAL INSTRUMENT
Takemi Mizuta, Osaka, and Tomohiro Inoue, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 23, 1981, Ser. No. 333,694
Claims priority, application Japan, Dec. 23, 1980, 55-184916; Dec. 23, 1980, 55-184917; Jan. 17, 1981, 56-5393; Jan. 19, 1981, 56-6778; Jan. 19, 1981, 56-6779
Int. Cl.³ G10H *7/00*
U.S. Cl. 84—1.01 8 Claims

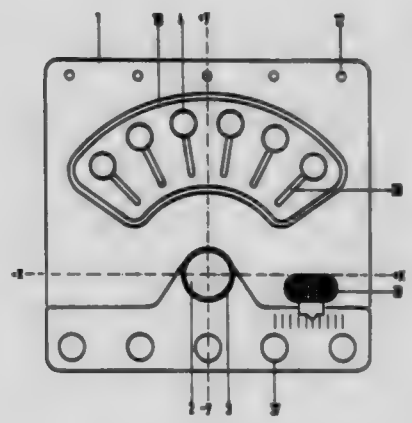


1. A combined timepiece, calculator and electronic musical instrument comprising:
key input means including time function key means for controlling said timepiece, calculation function key means for operating said calculator and musical note key means for generating musical notes, the latter comprising individual note keys;
mode selection means for selecting time, calculation and musical modes for said instrument;
memory means in said instrument for receiving and storing the respective musical notes produced by the individual note keys of said musical note key means; and
clear means comprising a clear entry key in said calculation function key means, responsive to said mode selection means in said musical mode of said instrument, actuable to amend at least one of the notes contained in said memory means.

4,491,050
FOOT-CONTROLLED MUSICAL INSTRUMENT
Rainer Franzmann, Rehlingweg 9, D-7800 Freiburg, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 284,642, Jul. 20, 1981, abandoned. This application Oct. 25, 1983, Ser. No. 545,126
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1980, 3030999
Int. Cl.³ G10H *1/00*
U.S. Cl. 84—1.01 11 Claims

1. A foot-controlled musical instrument including means for emitting sounds, a control unit comprising a support structure (1), a heel rest (2,3, 84) on which the heel portion of a player's foot or shoe may rest while the instrument is being played, said

heel rest being mounted for movement in at least one approximately horizontal direction relative to said support structure, a plurality of pedal keys (4, 83) arranged in an arc of a circle approximately concentric with said heel rest and positioned so that when said heel portion is on said heel rest, the foot may be rotated to enable the anterior portion of the foot to engage and activate any selected one of said pedal keys, and a mounting plate (19) on which said pedal keys are mounted, said mounting plate being arranged for upward and downward movement relative to said support structure, activation of said pedal keys serving to determine in part what sounds are emitted, first means responsive to movement of said heel rest in one approximately horizontal direction serving to vary one characteristic of the emitted sounds, and second means responsive to movement of said mounting plate serving to vary another characteristic of the emitted sounds.

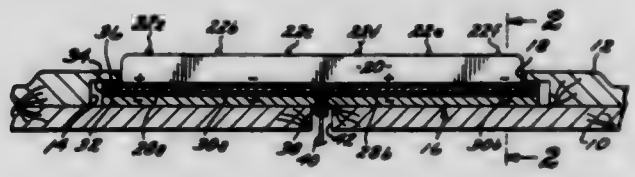


4,491,051

STRING INSTRUMENT PICKUP SYSTEM

Lester M. Barcus, 16226 Wayfarer La., Huntington Beach, Calif. 92649

Continuation-in-part of Ser. No. 399,138, Jul. 16, 1982, abandoned, which is a continuation-in-part of Ser. No. 345,044, Feb. 2, 1982, abandoned, which is a continuation of Ser. No. 123,889, Feb. 22, 1980, abandoned. This application Jan. 3, 1983, Ser. No. 455,249
Int. Cl.³ G10H 3/00
U.S. Cl. 84—1.16 14 Claims



1. In a string instrument having a body with a generally flat upper portion and a plurality of strings spaced above and arranged generally parallel to said upper portion of the body of the instrument, a pickup which comprises:

a plurality of piezoelectric transducers spaced apart from each other and located generally between said plurality of strings and said upper portion of the body of the instrument and being responsive to compressional variations directed generally normal to said upper portion of the body of the instrument, each of said piezoelectric transducers having upper and lower parallel faces, the sum of the areas of all of said upper faces comprising an area of sensitivity substantially parallel to said upper portion of the body of the instrument, and

string support means compressionally engaged between said plurality of strings and said plurality of piezoelectric transducers so as to apply compressional variations to said piezoelectric transducers in response to movements of said strings in said generally normal direction, whereby said piezoelectric transducers are sensitive to such generally normal string movements,

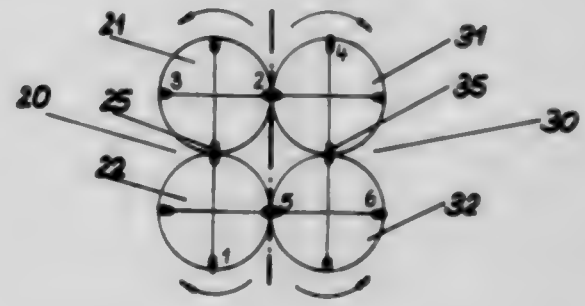
substantially half of the total area of said area of sensitivity being electrically polarized in one direction, and substantially the other half of such total area being polarized in the opposite direction for cancellation of microphonics.

4,491,052

PROCESS FOR THE MANUFACTURE OF KNOTLESSLY BRAIDED NETS

Wilfried Holm; Jürgen Kloos, and Gerhard Nitzke, all of Rostock, German Democratic Rep., assignors to Institut für Hochseefischerei und Fischverarbeitung, Rostock, German Democratic Rep.

Filed Dec. 18, 1981, Ser. No. 332,044
Claims priority, application German Democratic Rep., Mar. 25, 1981, 228563; Apr. 28, 1981, 229540; Jul. 13, 1981, 231680
Int. Cl.³ D04C 1/00, 5/00
U.S. Cl. 87—3 12 Claims



1. A method for fabricating three, four, six, or eight-threaded knotlessly braided nets according to the quadruple flyer wheel principle, comprising

(A) aligning a plurality of flyer wheels to form a braiding head,

(B) arranging two such braiding heads adjacent to one another, with a pair of flyer wheels of one braiding head adjoining a pair of flyer wheels of the adjacent braiding head,

(C) positioning bobbins upon recesses formed at discrete intervals along said flyer wheels,

(D) rotating said bobbins about said flyer wheels to diagonally pass from one flyer wheel to another flyer wheel of a braiding head in a figure-eight-shaped path, weaving a net shank, and

(E) forming a connection point between net shanks by shifting said bobbins from one braiding head to an adjacent braiding head through adjoining flyer wheels.

7. A method for fabricating three, four, six, or eight-threaded knotlessly braided nets according to the quadruple flyer wheel principle, comprising

(A) aligning a plurality of flyer wheels to form a braiding head,

(B) arranging two such braiding heads adjacent to one another, with a pair of flyer wheels of one braiding head adjoining a pair of flyer wheels of the adjacent braiding head,

(C) positioning bobbins upon recesses formed at discrete intervals along said flyer wheels, and

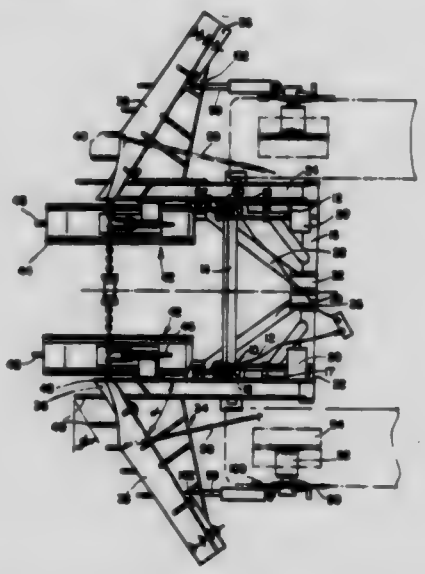
(D) rotating said bobbins about said flyer wheels to diagonally pass from one flyer wheel to another flyer wheel of a braiding head in a figure-eight-shaped path, and weaving a net shank.

4,491,053

MINE FIELD CLEARING APPARATUS MOUNTABLE ON A VEHICLE

Simcha Bar-Nefy, Omer, and Michael Tiomkin, Beersheva, both of Israel, assignors to Israel Aircraft Industries, Ltd., Lod, Israel

Filed May 28, 1982, Ser. No. 383,213
Claims priority, application Israel, Oct. 9, 1981, 64023
Int. Cl.[3] F41H *11/12*
U.S. Cl. 89—1.13 9 Claims



1. Apparatus for clearing mines for attachment to a vehicle including a vehicle tread and comprising:

an arm mountable onto a vehicle for selectable positioning;

plow means mounted onto said arm for raising and shunting aside mines and being selectably positioned in a lowered or raised orientation;

means for automatically raising said plow means from its lowered orientation to its raised orientation in response to backwards motion of said vehicle and including:

mounting means rotatably mounted onto said vehicle;

spring supporting means adapted for selective increase in length to produce a corresponding increase in spring force of the spring supporting means mounted onto said mounting means and attached to said arm; and

tooth means fixed onto said mounting means and arranged for selectable engagement with said vehicle tread;

said spring supporting means being operative when said plow means is in its lowered orientation to urge said tooth means into driven engagement with said vehicle tread whereby, during backwards movement of the vehicle, said vehicle tread causes said mounting means to rotate in a first direction, said spring supporting means being operative to increase its length as said mounting means rotates in said first direction until said mounting means reaches a first position at which the spring force of said spring supporting means is operative to raise said plow means to its raised orientation.

4,491,054

PIVOTAL PISTOL GRIP FIRING MECHANISM

Spencer J. Speer, Ontario, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Jan. 30, 1984, Ser. No. 575,085
Int. Cl.[3] F41F *3/04*
U.S. Cl. 89—1.814 5 Claims

1. A pivotal pistol grip firing mechanism for an operator-portable rocket launcher for use in aiming and firing a rocket loaded within the launcher, comprising:

means for mounting said firing mechanism on the launcher,

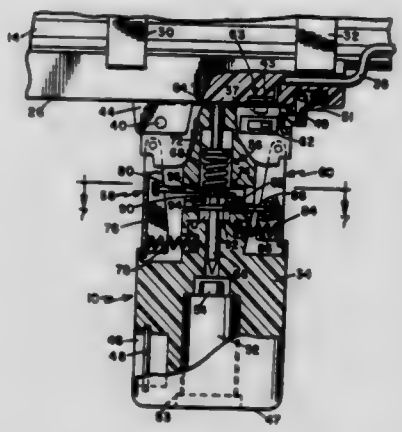
pistol grip means pivotably mountable on said mounting means between a carrying position and a firing position,

a thermal battery having a percussion primer for activation positionable in said pistol grip means for supplying electrical energy to fire the rocket,

firing means for storing energy needed to fire said percussion primer when said pistol grip means is in the firing position,

trigger means for releasing the energy stored in said firing means,

mechanical safety means for preventing release of the energy stored in said firing means unless said mechanical safety means is operated simultaneously with said trigger means,



means for transmitting said thermal battery electrical energy to the rocket within the launcher,

safety switch means in said transmission means for preventing transmission of the electrical energy to the rocket unless closed by the operator.

4,491,055

CONTROL OF CONTINUOUS RECIPROCATION OF A FLUID POWER CYLINDER

William W. Dollison, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Nov. 2, 1981, Ser. No. 317,429
Int. Cl.[3] F01L *31/02*
U.S. Cl. 91—306 13 Claims

1. A system for controlling the reciprocation of and the acceleration and deceleration of the extend and retract strokes of a double-acting fluid cylinder having opposing power ends, comprising:

means connectable with a double-acting cylinder for supplying pressurized fluid alternately to opposite cylinder ends; said fluid supplying means including a direction control shiftable between extend and retract conditions to, respectively, extend and retract the rod of the cylinder;

drive means, including a rotary hydraulic fluid motor, connected with said direction control for shifting said direction control;

control means connected with said fluid motor for operating said fluid motor including: means including a speed control valve for supplying pressurized fluid to said motor; parallel connected start and stop valves connected between said fluid motor and said supplying means for controlling the passing of passing of fluid from said supplying means to said motor;

means responsive to the extend and retract strokes of the rod acting to open and start valve when the rod is at the limit of either its extend or retract stroke, and to close said start valve during the operation of said rod between said limits;

and stop valve operator means coupled with said motor for opening and closing said stop valve in timed relation with movement of said direction control, said stop valve operator means acting to close said stop valve when said direction control means is shifted to an extend or retract condition, and to open said valve during the shifting of said direction control between said conditions.

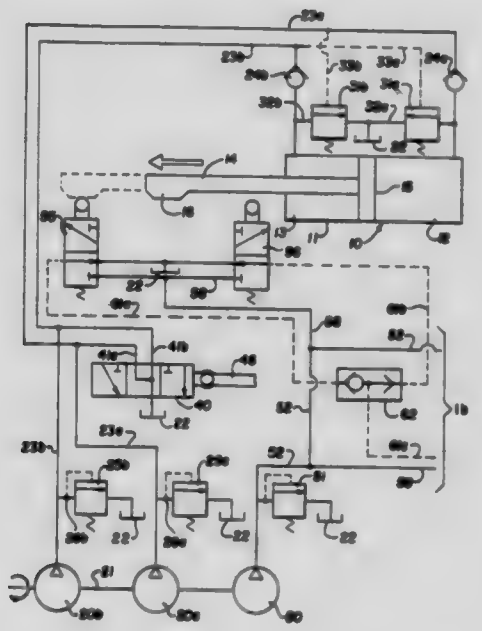
8. A method for controlling the reciprocation and the acceleration and deceleration of the extend and retract strokes of a double-acting fluid cylinder, comprising the steps:

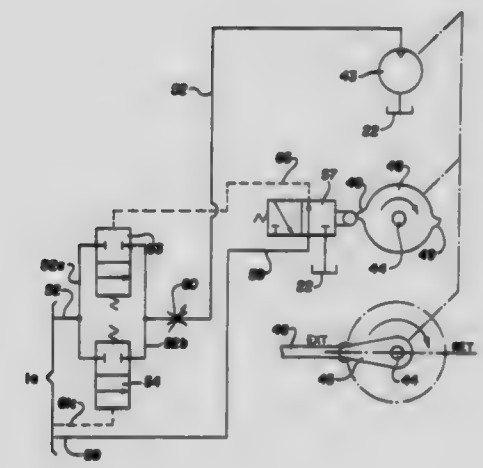
supplying pressurized fluid alternately to the opposing ends of said cylinder by means having a direction control shiftable between extend and retract conditions;

shifting said direction control at a predetermined rate and pattern by means of a fluid motor and coupled drive means;

supplying motive fluid to said fluid motor through a speed control valve from parallel connected start and stop valves;

controlling said start valve in response to the extend and retract movements of said cylinder including





opening said start valve in response to the approach of said fluid cylinder to the limit of either its extend or retract stroke, and closing said start valve in response to the operation of said fluid cylinder between said limits;

and controlling said stop valve in timed relation to the shifting of said direction control including closing said stop valve in response to said direction control being shifted fully to either its extend or retract conditions, and opening said stop valve in response to the operation of said direction control between said extend and retract conditions.

4,491,056

SUCTION PRESSURE OPERATED BOOSTER FOR AUTOMOBILE BRAKE SYSTEMS

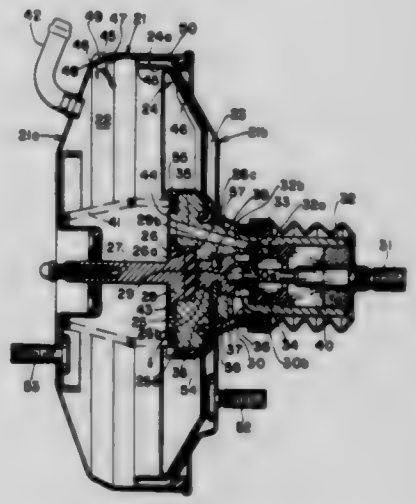
Kaoru Tsubouchi, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 19, 1983, Ser. No. 486,547

Claims priority, application Japan, Apr. 20, 1982, 57-66493; Apr. 20, 1982, 57-57922[U]; Apr. 20, 1982, 57-57923[U]; Apr. 20, 1982, 57-57924[U]

Int. Cl.³ F15B *9/10*; B60T *13/20*

U.S. Cl. 91—369 A **6 Claims**



1. A negative booster for an automobile brake system comprising housing means having an inside cavity, power piston means provided in said housing means for dividing the inside cavity of the housing means into a first chamber and a second chamber, an output rod associated with said power piston means and extending outwardly through said housing means, a control valve means carried by said power piston means for controlling communication between the first and second chambers and communication between one of the chambers and atmosphere, means for connecting the other chamber with a source of negative pressure, said power piston means including hub means made of a plastic material formed with a stepped axial hole having a large diameter hole section and a small diameter hole section which are connected together through a stepped shoulder portion, said output rod having a head axially and slidably received in the large diameter section and an annular flange extending outwardly from the head and spaced from an end surface of the hub means by a gap (δ), said gap decreasing and being eliminated during operation of said booster when said flange moves into abutting engagement with the end surface of the hub means.

4,491,057

AXIAL PISTON MACHINE HAVING DOUBLE ACTING PISTONS AND A ROTARY CONTROL VALVE

John A. Ziegler, Los Osos, Calif., assignor to Anthony D. Morris, Redwood Valley, Calif.

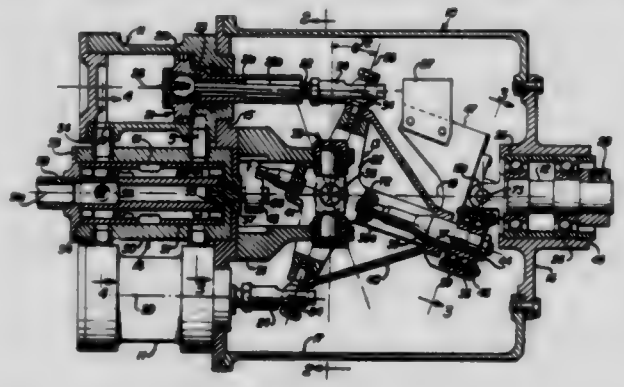
Filed Aug. 3, 1982, Ser. No. 404,797

Int. Cl.³ F01B *13/04*; F16H *23/00*

U.S. Cl. 91—503 **4 Claims**

1. In an axial piston machine having at least three double-acting cylinders, a housing mounting said cylinders in operative relation to a main axis for reciprocation of pistons within the cylinders along axes parallel to the main axis, a crankshaft mounted by the housing for rotation about said main axis, and a linkage mechanism including connecting rods connected to the pistons and means for establishing wobble plate drive points at which the connecting rods are operatively connected to the crankshaft, the improvement comprising extension of the pistons projecting from the cylinders in surrounding relation to the connecting rods, a swivel joint directly mounted within each of the pistons through which the connecting rods pivotally connect to the pistons at the drive points, and a

control valve assembly mounted in axially spaced alignment with the crankshaft radially inwardly of the cylinders, said control valve assembly including a valve body fixed to the housing, a valve rotor within the valve body rotatable about the main axis, radially extending ports establishing fluid communciation between the valve body and the cylinders on opposite axial sides of the pistons, and valve passage means in the



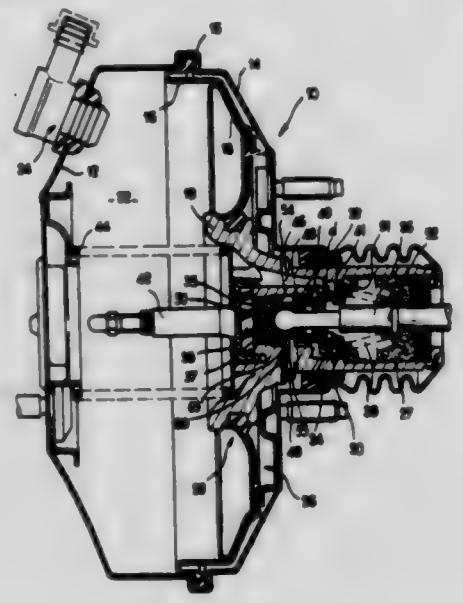
valve rotor for conducting fluid to and from the ports in response to rotation of the rotor, said valve passage means including axially spaced pressure chambers formed in the rotor in axial alignment with the ports, axial conduit means in the rotor for conducting pressurized fluid to and from the chambers, and pressure cavity means in the rotor for balancing internal hydraulic forces resulting from pressurization of the chambers.

4,491,058

STOP KEY FOR THE VALVE PLUNGER OF A POWER BRAKE SERVOMOTOR

Gérard Morin, Conde Ste Libiaire, France, assignor to Societe Anonyme DBA, Paris, France

Filed Aug. 9, 1983, Ser. No. 521,792
Claims priority, application France, Aug. 20, 1982, 82 14388
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—376 R 10 Claims



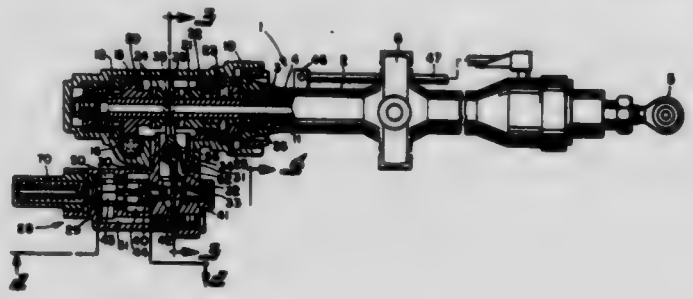
1. A stop key for a valve plunger of a brake servomotor, of the type intended to be arranged in a radial recess of a hub of a working piston of the servomotor so as to cooperate in contact engagement with a shoulder of said valve plunger sliding inside said hub, said stop key consisting of a plate component having a contoured end forming an abutment surface for said shoulder of said valve plunger, characterized in that said stop key comprises a substantially flat body portion coplanar with said abutment surface and having two parallel lateral edges folded for mounting the key securely without movement in said recess, said flat body portion formed, adjacent said contoured end, with an opening for receiving a hub axial projection in said recess.

4,491,059

FLUID ACTUATOR WITH MANUAL LOCK RELEASE AND LOCK POSITION SENSOR

Eugene J. Martin, Portage, Mich., assignor to Pneumo Corporation, Boston, Mass.

Filed Mar. 29, 1982, Ser. No. 362,644
Int. Cl.³ F01B *31/12*
U.S. Cl. 92—5 L 13 Claims



1. A fluid actuator comprising a cylinder containing a piston-rod assembly that is extendible under pressure, releasable lock means for releasably locking said piston-rod assembly against movement, and lock release means for releasing said lock means, said lock release means including a toggle lever movable in a direction to release said lock means, said toggle lever being mounted on a rotatable cross shaft for rotation therewith, and means for applying an external rotational force directly to said cross shaft to cause said toggle lever to rotate in a direction to release said lock means, said means for applying an external rotational force to said cross shaft comprising a manually rotatable external lock release lever attached to one end of said cross shaft, whereby rotation of said lock release lever causes a corresponding rotational movement of said toggle lever, said lock means including a first part axially movable into and out of locking engagement with a second part, said toggle lever being engageable with said first part during such rotational movement of said toggle lever to cause axial movement of said first part out of locking engagement with said second part.

4,491,060

CYLINDER CONNECTION

Israel Boski, Plano, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Jun. 30, 1983, Ser. No. 509,345
Int. Cl.³ F16J *10/02*
U.S. Cl. 92—128 5 Claims

1. An actuator for operating a valve comprising:

a. a cylinder, having a head with an opening in its upper end and inlet therethrough, and a body, said cylinder head and body being connected together by lugged means, means sealing said head to said body and means releasably locking said head and body connected, said means releasably locking the cylinder head and body including at least one frangible pin, installed in a hole through one of the head and body, protruding into a hole in one of a head lug and body lug of the lugged means;

b. a bonnet flange connected to the lower end of said cylinder body;

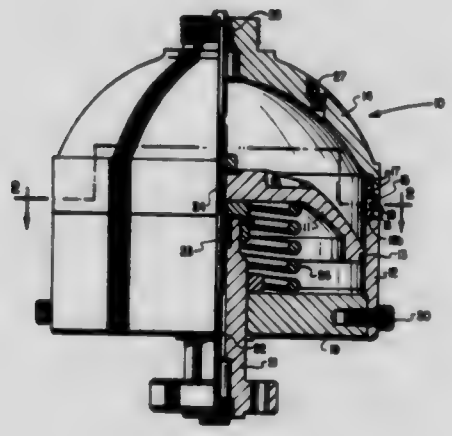
c. a bonnet, connected to said bonnet flange, the lower end thereof connectable to a valve body;

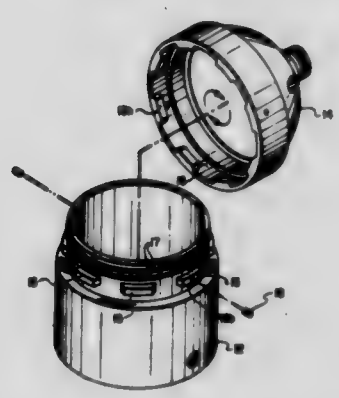
d. a piston sealably and slidably mounted in said cylinder;

e. a spring in said cylinder below said piston, upwardly biasing said piston;

f. a stem, connected through said piston and extending through said cylinder head opening, the lower end thereof connectable to a valve;

g. resilient seals slidably sealing said stem through said head; and





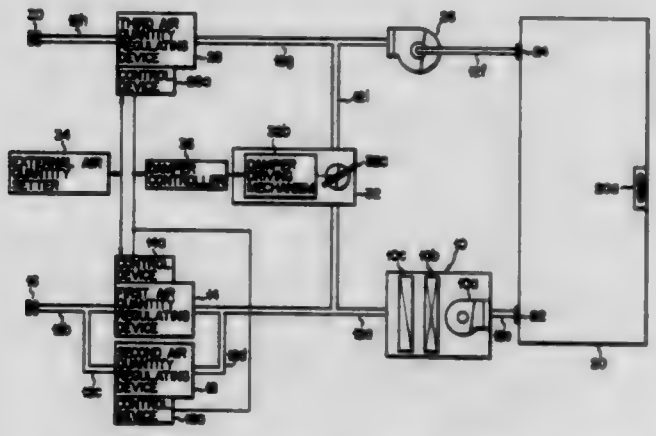
h. resilient seals slidably sealing said stem through said bonnet.

4,491,061

AIR CONDITIONING SYSTEM

Toshio Nishizawa, Kawasaki; Keiji Kamata, Yamato; Osamu Nonomura, and Yutaka Fukushi, both of Sagamihara, all of Japan, assignors to Topre Corporation, Tokyo, Japan

Filed Sep. 28, 1983, Ser. No. 536,502
Claims priority, application Japan, Sep. 6, 1983, 58-163689
Int. Cl.[3] F25B *29/00*; F24F *13/00*
U.S. Cl. 98—34.6 7 Claims



1. An air conditioning system which performs outside air intake through an outside air intake port and exhaust through an exhaust port by the use of a charging blower and a discharging blower connected to the outside air intake port and the exhaust port, respectively, by means of ducts, thereby controlling the incoming outside air quantity and exhaust air quantity, comprising:

a first air quantity regulating device for controlling the exhaust air quantity, including a first air quantity detector disposed in a first duct connecting the discharging blower and the exhaust port, for detecting the quantity of air passing through the first duct, a first throttle valve movable between a first position where the first duct is fully open and a second position where the first duct is completely closed, a first drive mechanism for driving the first throttle valve, and a first control mechanism capable of setting the maximum allowable passage air quantity and adapted to control the first drive mechanism so that the set passage air quantity becomes equal to the air quantity detected by the first air quantity detector;

a second air quantity regulating device for controlling the incoming outside air quantity, including a second air quantity detector disposed in a second duct connecting the charging blower and the outside air intake port, for detecting the quantity of air passing through the second duct, a second throttle valve movable between a first position where the second duct is fully open and a second position where the second duct is completely closed, a second drive mechanism for driving the second throttle valve, and a second control mechanism capable of setting the maximum allowable passage air quantity and adapted to control the second drive mechanism so that the set passage air quantity becomes equal to the air quantity detected by the second air quantity detector; and

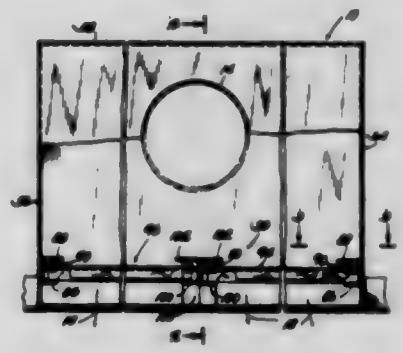
a damper unit including a damper disposed in a third duct connecting the respective middle portions of fourth and fifth ducts and movable between a third position where the third duct is fully open and a fourth position where the third duct is completely closed, said fourth duct connecting the discharging blower and the first air quantity regulating device, and said fifth duct connecting the charging blower and the second air quantity regulating device, a third drive mechanism for driving the damper, and a third control mechanism adapted to move and open the damper until the throttle valve of at least one of the air quantity regulating devices reaches the first position when neither of the throttle valves of the two air quantity regulating devices is in the first position, to move and close the damper so as to increase the passage air quantity when the air quantity detected by the air quantity detector of the air quantity regulating device whose throttle valve is in the first position is smaller than the set air quantity, and to maintain the position of the damper when said detected air quantity is equal to the set air quantity.

4,491,062

ADJUSTABLE SLOT DIFFUSER

Gordon C. Sylvester, Verona, and George E. Alexander, Madison, both of Wis., assignors to Wehr Corporation, Milwaukee, Wis.

Filed Dec. 19, 1983, Ser. No. 563,034
Int. Cl.[3] F24F *13/06*
U.S. Cl. 98—40 D 8 Claims



1. An air diffuser comprising

first and second walls disposed in spaced side-by-side relationship and cooperating to define a passage for the flow of air in one direction between said walls,

a pair of flanges extending towards each other from the downstream edges of said walls and defining an elongated outlet slot narrower than the width of said passage,

a deflector vane narrower than said passage and disposed in said passage in a plane spaced upstream from said slot and generally parallel to said flanges, said deflector vane including an inverted U-shaped central channel and flanges extending away from each other from the downstream ends of said U-shaped channel and generally parallel to said flanges defining said outlet slot, and

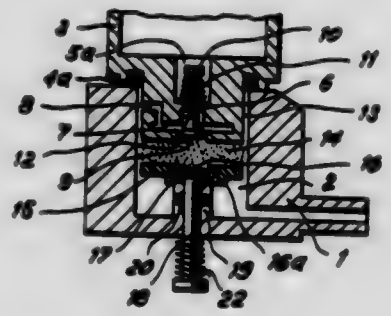
means supporting said vane in said passage for back and forth edgewise movement in said plane parallel to said flanges and between a first position in which said vane is closely adjacent to said first wall and spaced from said second wall and a second position in which said vane is closely adjacent said second wall.

4,491,063

DEVICE FOR THE WATER FEEDING AND FOR THE FILTERING OF THE COFFEE INFUSION IN COFFEE-MACHINES PARTICULARLY OF AUTOMATIC TYPE

Lucio Grossi, Maxxini St., 29, Bergamo, Italy

Filed Oct. 29, 1982, Ser. No. 437,743
Claims priority, application Italy, Nov. 4, 1981, 24844 A/81
Int. Cl.[3] A47J *31/00*
U.S. Cl. 99—289 R 3 Claims



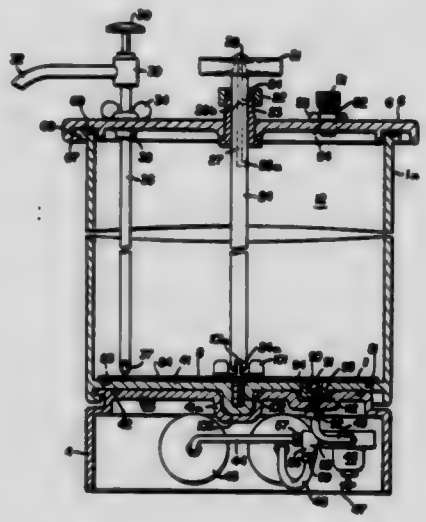
1. A device for feeding water and for filtering of a coffee infusion in coffee-machines, particularly of automatic type, which comprises a cylindrical delivering chamber for coffee powder (1, 2), a compressing piston (3) entering said cylindrical delivering chamber for compressing the coffee powder, a cylindrical shutting valve (10) sliding in the interior of the piston, the feeding of hot water under pressure to the compressed coffee powder taking place through an annular port formed between a lateral surface of the coffee powder compressing piston and a surface of the cylindrical delivering chamber as well as through a hollow space existing between a hole situated on the end of said piston and said cylindrical shutting valve, a disk (15) provided with a central opening (9), said central opening being the only opening therein and in which a shutting element (17) slides, said disk having a little smaller diameter than the inner diameter of the delivering chamber, said difference of diameter and another hollow space between said shutting element and said disk being such as to form two circular crowns open to the passing of the coffee infusion, having a total surface equivalent to the predetermined optimum surface in order to obtain the desired infusion, said filtering disk being movable axially to be lifted at the end of the coffee delivery for the ejection of the exhausted powder, the axial movement taking place together with the sliding of said shutting element in said opening in said disk so that sliding motions are produced along the walls of said opening and of said delivering cylindrical chamber for their cleaning, said disk being movable to a lowered position to allow a new bringing in of the coffee powder and the repetition of the delivering cycle.

4,491,064

HOME ICE CREAM AND SOFT DRINK MAKER WITH AUTOMATIC AIR INJECTION

Richard B. Schmidt, 2100 S. Ocean Dr., Ft. Lauderdale, Fla. 33316

Filed Apr. 14, 1983, Ser. No. 484,972
Int. Cl.[3] A23F *3/00*
U.S. Cl. 99—323.1 6 Claims



1. An apparatus for production of ice cream and/or drinks from a mixture of ingredients comprising:

container means containing a mixture of ingredients;

supply means for compressed gas;

diffusion plate means containing a plurality of small diameter holes, disposed between said supply of compressed gas and said mixture;

control means for controlling the flow of compressed pressed gas from said supply of compressed gas through said diffusion plate into said mixture; and

locking means consisting of coordinated lugs and a sealing O-ring for airtightly detachably attaching said container means to said supply means for compressed gas;

said diffusion plate means being disposed near the bottom of said container means;

said supply means for compressed gas supplying compressed gas to said mixture contained in said container means;

said container means comprising a top cover, walls, and a bottom plate, with said top cover detachably attached to said walls;

said bottom plate having an aperture leading to said diffusion plate means such that said supply means supplies compressed one through said latter aperture to said diffusion plate means and said compressed gas enters the mixture through said small diameter holes in said diffusion plate means;

said supply means including at least one canister containing compressed gas;

a further O-ring disposed between the underside of said diffusion plate means and the top surface of said bottom plate; and

a diffusion plate adjustment wing screw threadedly attached to a matching threaded hole in said bottom plate and securing said diffusion plate to said bottom plate with said diffusion plate tensioned against said further O-ring.

4,491,065

FOOD HEATING APPARATUS

Larry Poulson, 9909 Stave Lake St., Mission, Canada V2V 4J1

Filed May 6, 1982, Ser. No. 375,453
Int. Cl.[3] A47J *37/00*
U.S. Cl. 99—327 16 Claims

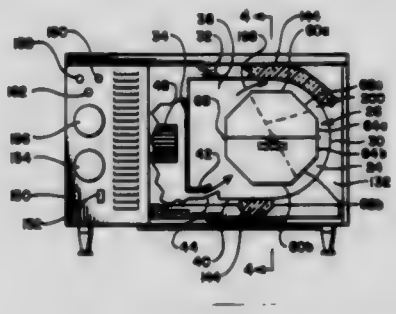
1. An oven adapted to cook a food product made up of individual food pieces, said oven comprising:

(a) a structure having chamber wall means defining a heating chamber;

(b) a perforate food container adapted to be mounted for rotation in said chamber about an axis of rotation which has a substantial horizontal component of alignment, said container having a substantially closed sidewall;

(c) drive means to rotate the container in a predetermined direction of rotation to carry a contained food product upwardly along one side of the sidewall toward a slanted position, with the food product tending to tumble downwardly in the container from said slanted position;

(d) heating means to direct a hot gaseous medium through said container to heat the contained food product; and



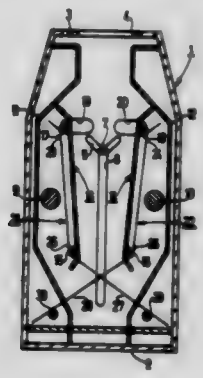
(e) said oven chamber having a front opening and a door to close said front opening, said oven further comprising a shield plate adapted to be positioned across an upper part of said oven opening, said shield plate being shaped to provide upper opening means at an upper part of said shield plate, said oven further comprising a venting system having a forward intake opening located proximate said upper opening means of the shield plate, and a venting passage to carry gaseous exhaust from said oven chamber.

4,491,066

TOASTER

Jan Juriga, and Ingo Müller, both of Klagenfurt, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 16, 1984, Ser. No. 571,255
Claims priority, application Austria, Jan. 14, 1983, 124/83
Int. Cl.[3] A47J *37/08*
U.S. Cl. 99—391 2 Claims



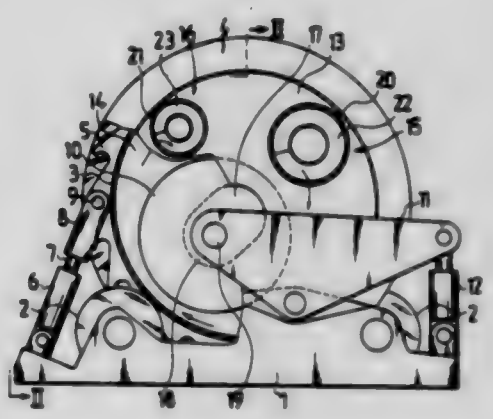
1. A toaster, which comprises a slice support movably arranged beneath an insertion slot for lowering a slice of bread into a toasting position; two retaining grids for keeping a slice in the toasting position, said grids being respectively arranged on the sides of the path of movement of the slice support and being each pivotable about a pivoting spindle near the end of the path of movement of the lowered slice support; and two seperate springs respectively having first spring portions acting on the retaining grids at locations remote from the pivoting spindles, central second spring portions coupled to the toaster, and third spring portions extending in the path of movement of the slice support; said two springs cooperating with the slice support to move the retaining grids towards the path of movement of the slice support when said support is lowered and in the opposite direction when said support is lifted, the third spring portions crossing one another in the path of movement of the slice support and having free ends acting against the toaster under spring bias.

4,491,067

BARK PRESS

Osmi Kipelläinen; Antti Kuhasalo, and Juhani Kyytsönen, all of Savonlinna, Finland, assignors to Enso-Gutzeit Oy, Helsinki, Finland

Filed May 19, 1982, Ser. No. 380,022
Claims priority, application Finland, May 22, 1981, 811578
Int. Cl.[3] B30B *3/04*
U.S. Cl. 100—121 7 Claims



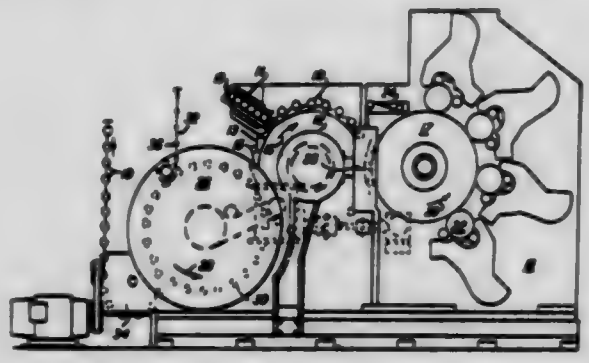
1. Improvement in a bark press comprising a frame, a pair of support rollers disposed in spaced relation and rotatably mounted on said frame, a rotatable dewatering drum having an axis of rotation, an inside and an outside circumferential surface extending around the axis of rotation with the outside circumferential surface thereof supported on said pair of support rollers, said drum having a pair of spaced ends extending transversely of the axis of rotation and closing said drum, a press roll located within said dewatering drum eccentrically of the axis of rotation of said drum and the inside circumferential surface of said drum and and the outside surface of said press roll forming a press gap therebetween, a shaft for said press roll wherein the improvement comprises said press roll and said shaft for said press roll being freely rotatable, at least one ratchet circle is carried on and extends around the outside circumferential surface of said drum, at least one first pressure cylinder located exteriorly of said drum and having a first end and a second end with said first end supported on said frame and said second end disposed in engagement with said ratchet circle for rotating said detwatering drum in a step-by-step manner, said at least one first pressure cylinder is arranged to reciprocate so that its movement in one direction effects rotation of said dewatering drum and its movement in the other direction effects its return movement, and the movement in the one direction is slower than its movement in the other return direction, said at least one ratchet circle is symmetrically located on the outside circumferential surface of said dewatering drum between the ends of said drum, a beam is pivotally mounted on said frame about a pivot axis and is located on the exterior of said drum, said beam has a first arm extending from the pivot axis of the pivotal connection to said frame to said shaft of said press roll and a second arm extending in the opposite direction, a second pressure cylinder pivotally connected to the end of said second arm of said beam spaced from the pivot axis of the pivotal connection of said beam to said frame, and said second pressure cylinder arranged to pivot said beam about the pivot axis for positioning said press roll in spaced relation relative to the inside circumferential surface of said dewatering drum for selectively varying the press gap between said press roll and the inside circumferential surface of said drum.

4,491,068

PRINT CYLINDER ASSEMBLY AND MOUNTING AND TIGHTENING APPARATUS THEREFOR

James S. Stirbis, Littleton, Colo., assignor to Adolph Coors Company, Golden, Colo.

Filed Sep. 26, 1983, Ser. No. 536,164
Int. Cl.³ B41F 17/22
U.S. Cl. 101—40 15 Claims



1. A continuous can printing machine for decorating can bodies of a preselected circumference comprising:

infeed means for feeding can bodies to be printed into the can printing machine;

pocket wheel means for radially receiving can bodies from said infeed means;

mandrel wheel means positioned in proximate, coaxial relationship with said pocket wheel means for axially receivng can bodies from said pocket wheel means;

mandrel means operably mounted on said mandrel wheel means for receiving can bodies thereon in rotatable relationship thereon, said mandrel arms being pivotally displaceable relative said mandrel wheel means for urging said can bodies into rotating contact with said blanket belt means;

blanket means for receiving ink images on a surface thereof and for transferring said ink images to can bodies carried on said mandrel arms and positioned in rotating contact with said blanket belt means;

printing cylinder assembly means for printing ink images onto said blanket means; and

ink supply means for coating said printing cylinder means with ink;

said printing cylinder assembly means comprising rotatable cylinder means having smooth cylindrical exterior surface with a circumference substantially equal to an integer multiple of the sum of the circumference of a can to be printed and the length of a space provided between a pair of said ink images printed on said blanket means, said integer multiple defining a plate number;

a plurality of printing plate means, each comprising an inwardly positioned mounting layer having a mounting surface positionable in substantially continuous contacting engagement with the exterior surface of said cylinder means and having an outwardly positioned printing layer having an image pattern portion thereon for carrying ink and for printing ink images on said planket means;

said plurality of printing plate means being equal in number to said plate number; and

printing plate attachment means for attaching said printing plate means to said cylinder means in fixed, selectively detachable relationship therewith;

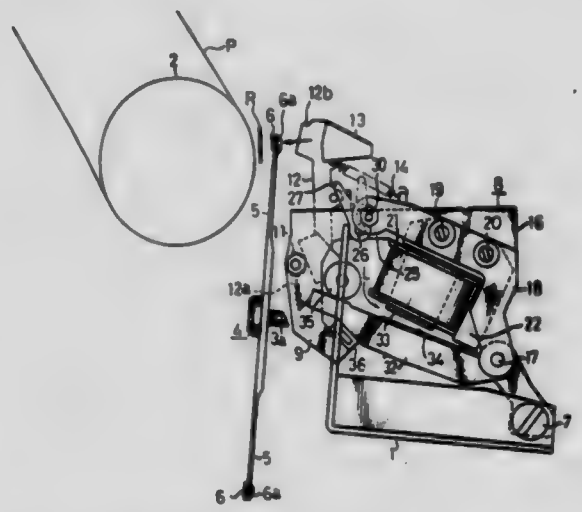
wherein said can bodies to be printed comprise a circumference of substantially 7.5 inches, and wherein said cylinder means surface and the printing plate means mounting surface comprise a smooth metal surface, and wherein the modulus of elasticity of said printing plate mounting layer is substantially 30,000,000 pounds per square inch and wherein said thickness of said mounting layer is between 0.01 inches and 0.02 inches, and wherein the circumference of said cylinder means is substantially 28 inches, wherein said plurality of printing plates comprises two printing plates, and wherein each said printing plate means has a length less than 13 inches.

4,491,069

PRINTING HAMMER DRIVER MECHANISM

Hiroshi Kawahara, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 1, 1983, Ser. No. 509,935
Claims priority, application Japan, Jul. 13, 1982, 57-106477[U]
Int. Cl.³ B41J 7/92
U.S. Cl. 101—93.03 2 Claims



1. In a printing apparatus comprising a frame, a printing element having a plurality of types thereon, a printing hammer, and a hammer driving mechanism for driving said hammer to strike a selected type positioned opposite a printing position, thereby to print said type; the improvement comprising said hammer driving mechanism comprising, in combination,

an electromagnet having a core and yoke;

an armature disposed opposite to said core;

a mounting plate rotatably supported on said frame;

said electromagnet fixed to said mounting plate and said armature rotatably supported on said frame, said armature and said core having a gap therebetween in a rest position and having no gap in a work position;

manual control lever movably disposed on said frame;

link means disposed between said control lever and said mounting plate, and under the manual operation of said control lever for determining the amount of said gap between said core and said armature, at said rest position;

said link means consisting of a cam hole formed in said control lever, with at least two positions and a pin fixed to said mounting plate, and said pin movably fitted in said cam hole so as to be disposed in any of said at least two positions upon an operation of said manual control lever for varying the position of said electromagnet and thereby the amount of said gap between said core and said armature; and

transmitting means disposed movably against said armature and connected to said hammer, for transmitting movement of said armature to said hammer whereby the amount of said gap between said core and said armature is controlled by the position of said control lever and determines the striking force of said hammer; and whereby upon energization of said electromagnet, said armature is moved from said rest position to said work position, and said transmitting means transmits the resulting movement to cause said hammer to move from said rest position to said work position and thereby strike said type, the rest position of said hammer being independent of the amount of said gap.

4,491,070

ROTARY OFFSET PRINTING MACHINE HAVING A MULTI-IMAGE RECEIVING BLANKET CYLINDER

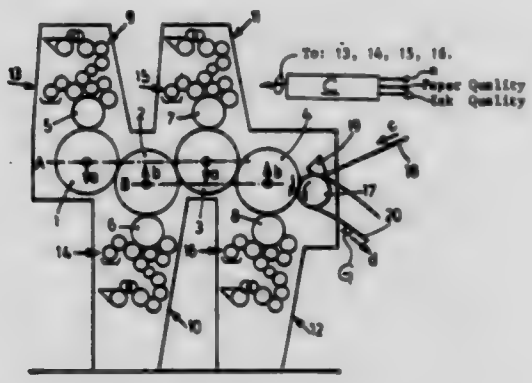
Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Jan. 24, 1983, Ser. No. 460,408

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1982, 3203948

Int. Cl.³ B41F *5/16*

U.S. Cl. 101—181 18 Claims



1. Rotary offset printing machine system having at least two printing systems, each including

a rubber blanket cylinder (1–4; 30, 31; 50–53);

a plate cylinder (5–8; 32, 33; 54–57), an inker (9–12; 34, 35; 58, 61) and a damper (13–16; 36, 37; 62–65),

and wherein, in accordance with the invention,

the blanket cylinder (e.g. 3, 31, 52) of any one of the respective systems is positioned in ink and damping liquid transferring relation with the blanket cylinder (4) of an adjacent system to transfer a partial image to be printed applied to the one blanket cylinder (3, 31, 52) by a respectively associated plate cylinder (7, 33, 56) to the adjacent, contacting blanket cylinder (4, 30, 53) of the adjacent system, which adjacent blanket cylinder additionally receives a second partial image to be printed from a respectively associated plate cylinder (8, 32, 57) so that said one blanket cylinder (3) will operate as an image

transfer cylinder to the adjacent blanket cylinder (4);

and an impression or printing cylinder (17, 38, 66, 68) is provided for contacting engagement of a printing substrate (39, 67) against said adjacent contacting blanket cylinder (4, 30, 53).

4,491,071

ARRANGEMENT FOR SECURING SKEW ADJUSTMENT OF A PLATE CYLINDER IN A SHEET-FED ROTARY PRINTING PRESS

Claus Simeth, Offenbach am Main, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

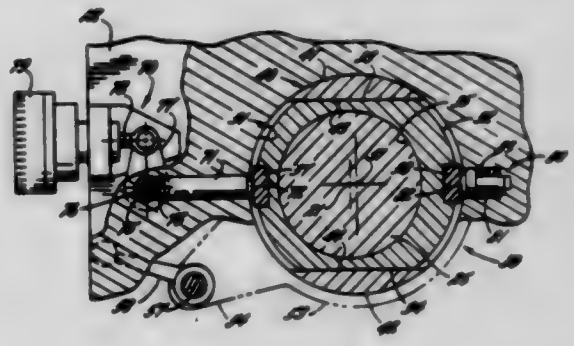
Continuation-in-part of Ser. No. 368,904, Apr. 15, 1982, abandoned. This application Apr. 5, 1983, Ser. No. 482,211

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1981, 3115141; Apr. 5, 1982, 3212633

Int. Cl.³ B41F *13/26*

U.S. Cl. 101—248 3 Claims

1. An arrangement for securing impressions plus skew adjustment of a cylinder, for example, a plate cylinder in a sheet-fed rotary printing press, relative to an adjacent cylinder comprising, in combination, a frame including side plates, first and second cooperating cylinders having their axes normally arranged in a common plane and journaled in the side plates of the frame, the first cylinder having a shaft and a bearing at one end of the shaft, a bearing assembly at the other end of the shaft, a bearing assembly at the other end occupying a cylindrical opening in the frame, said bearing assembly including a cylinder bearing telescoped over the shaft and having planar support surfaces on opposite sides thereof parallel to one another, an eccentric guide bearing having a cylindrical outer surface fitted into the cylindrical opening in the frame for relative rotational movement and having opposed parallel way surfaces substantially perpendicular to said common plane and greater in length than the planar support surfaces of said cylinder bearing for slidably receiving and supporting the cylinder bearing, first adjusting means for rotatably positioning the guide bearing, the cylindrical opening in the frame having an axis which is offset, in a direction parallel to the way surfaces,



from the axis of the guide bearing thereby causing the guide bearing to be eccentric with respect to the cylinder which it supports so that as the guide bearing is rotatably adjusted the first cylinder is moved toward and away from the second cylinder thereby to vary the degree of impression between them, and second adjusting means interposed between the cylinder bearing and the frame for positioning the cylinder bearing along the way surfaces thereby to adjustably skew the first cylinder with respect to the second.

4,491,072

PLATE HOLDER FOR PAD PRINTING MACHINES

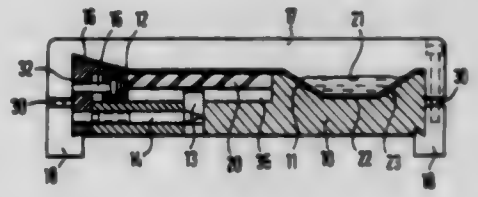
Bernd Berberich, Paradiesweg 24, D-7141 Schwieberdingen, Fed. Rep. of Germany

Filed Jul. 28, 1983, Ser. No. 518,019

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1982, 3228152

Int. Cl.³ B41F *31/00*

U.S. Cl. 101—327 17 Claims



1. Printing plate holder for pad printing machines, comprising a plate-shaped base body with an ink reservoir recessed in the upper side of the base body and extending parallel to the back, the area of the base body in front of the ink reservoir being provided with a plate receptacle which is dimensioned to accommodate the measurements of a printing plate and clamping means, characterized in that said ink reservoir (21) and said plate receptacle (35) each have the same cross section for and extend for the entire width of said base body (10), and that the width of said ink reservoir (21) and said plate receptacle (35) is adjustable to the width of any desired plate (20, 20', 20'') used by means of two clamping bars (17), the undersides of said clamping bars (17) being constructed to conform to the contours of the upper side of said base body (10) and being provided with a flexible solvent resistant sealant coating (19).

4,491,073

TRAIN SYSTEM WITH VARIABLY TILTING RAIL

Charles S. Dozer, Glendale, Calif., assignor to Charles S. Dozer Enterprises, Inc., Carlsbad, Calif.

Filed Aug. 3, 1982, Ser. No. 404,819
Int. Cl.³ B61B 3/02
U.S. Cl. 104—95 14 Claims



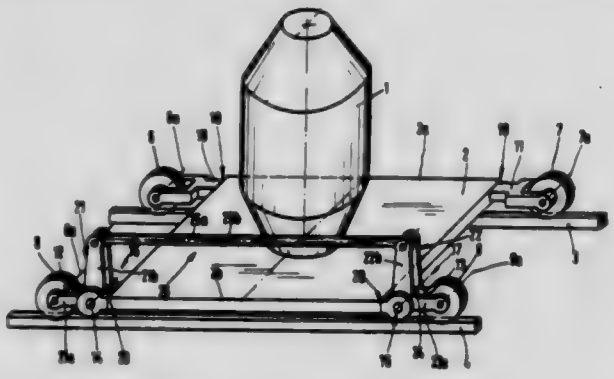
1. In a train system, the combination that comprises
(a) a train car,
(b) a support for the car adapted to be guided along a rail having variable angular tilt along its length and relative to horizontal, whereby the support assumes the tilt of the rail,
(c) a gimbal coupled between the car and support to accommodate rotation of the support relative to the car as the car travels lengthwise of and along the rail, whereby the car remains upright despite variable tilting of the rail along which the car travels,
(d) the gimbal including at least one gimbal unit having an axis in alignment with the car, the gimbal also including a ring rotatably carried by a yoke, the ring attached to the car and rotatably guided by the yoke which is carried by the support,
(e) a drive system operatively coupled to the ring to effect rotation thereof in response to progressively changing tilt of the support as the car travels along the rail, and
(f) including said rail on which the support is carried, said rail having T-shaped cross section that twists and becomes inverted along its length about a length axis defined by the rail,
(g) and including a hinge associated with the support and located between said rail and said gimbal unit axis to accommodate pivoting of the car about a transverse axis relative to the rail.

4,491,074

FORCE EQUALIZING MECHANISM FOR THE WHEELS OF HEAVY LOAD-CARRYING RAIL VEHICLES

Wilhelm Ackermann, Essen; Karlheinz Langitz, Mulheim, and Gunter Schmitz, Duisburg, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jan. 25, 1982, Ser. No. 342,419
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1981, 3103538
Int. Cl.³ B61F 5/00
U.S. Cl. 105—164 6 Claims



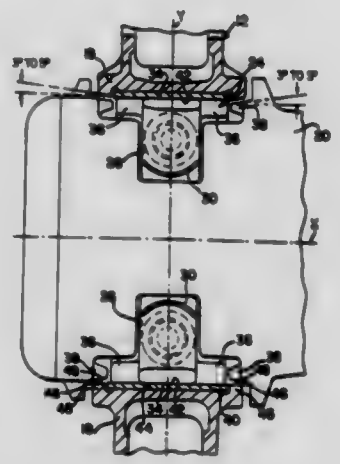
1. A rail vehicle for transporting heavy loads on parallel rail tracks comprising:
(a) a vehicle frame;
(b) a load support area, supported by said vehicle frame, for supporting said heavy loads;
(c) four wheels on individual and mechanically independent axes of rotation rotatively secured to said vehicle frame for transporting said vehicle frame on said parallel rail tracks;
(d) a first pair of said wheels, adjacent to one another, having fixed mountings on said vehicle frame, in the form of wheel forks, such that said axes of rotation of said first pair of said wheels are fixed in relative vertical movement with respect to said vehicle frame;
(e) the remaining wheels also adjacent to one another being paired and rotatively mounted to said vehicle frame by linkage joints, said linkage joints being rotatively mounted to said vehicle frame such that infinitely variable vertical movement in a limited vertical range of a first of said paired wheels due to deviations in the levelness of said rail track are automatically transmitted by a force transmitting member to provide a corresponding vertical movement of said axis of rotation of said second of said paired remaining wheels;
(f) all of said wheels having a predetermined mechanical breaking point; and
(g) said corresponding vertical movement ensuring substantially equal heavy load forces on all of said wheels and preventing the heavy load forces from exceeding said breaking point on any of said wheels.

4,491,075

SNUBBED RAILWAY CAR TRUCK

Otto W. Neumann, Itasca, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed May 14, 1982, Ser. No. 378,202
Int. Cl.³ B61F 5/24
U.S. Cl. 105—207 1 Claim



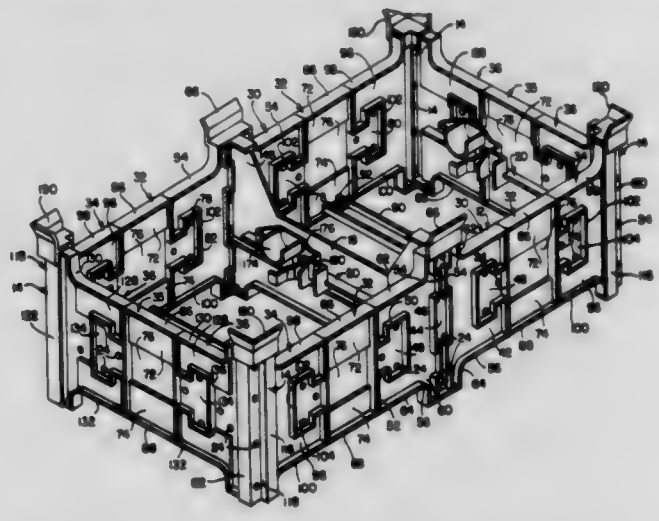
1. In a railway vehicle truck including a side frame having a bolster opening defined by a pair of longitudinally spaced upright columns, a bolster having an outer end extending through said opening and resiliently supported therein for limited vertical mounted movement and friction shoes disposed on opposite sides of said bolster and having friction faces engageable with vertically disposed planar friction surfaces on said columns, the improvement comprising: side frame lands formed along and closely adjacent to the opposite sides of each of said friction surfaces on said columns and projecting toward said bolster, planar bolster lands formed along the vertical sides of said bolster engageable in opposing relationship with respective ones of said side frame lands, said side frame lands each having a planar surface inclined at an angle of between about 3° to 5° from the planar friction surface on said column, and said bolster lands inclined substantially parallel to said inclined planar surfaces of the respective ones of said side frame lands.

4,491,076

STACKING CUBE CONSTRUCTION

David J. Forshee, Hilton Head Island, S.C., assignor to Formall Syn-Trac Systems, Inc., Madison Heights, Mich.

Continuation-in-part of Ser. No. 287,920, Jul. 29, 1981, abandoned. This application Jul. 6, 1982, Ser. No. 395,461
Int. Cl.³ B65D *19/18*
U.S. Cl. 108—53.1 47 Claims



1. In a space saving plastic stacking-type cube or rack combination for handling one or more load units more efficiently to effect a higher payload for in-plant translation or storage and truck, plane or rail car translation comprising a plurality of plastic corner posts, a pair of spaced apart parallel plastic side walls each removably connected at their longitudinal ends to a pair of said plastic corner posts, a pair of spaced apart parallel plastic end walls each removably connected at their longitudinal ends to said pairs of plastic corner posts and forming with said side walls and corner posts a rectilinear frame open at its top and bottom, and a pair of opposedly facing parallel load unit supporting and nesting members removably affixed to the inner surface of each said end wall to support and nest one or more said units therein, the improvement wherein

said plastic side walls and end walls each comprises

a plurality of plastic panel units removably secured together in a planar series in side-edge to side-edge relationship,

at least one said panel unit of said series having tabs at its lateral edges and the next adjacent panel units of said series having tab receiving sections,

said tabs being disposed upon said tab receiving sections in overlying back-to-face relationship respectively.

4,491,077

VIBRATING HEARTH BURNERS

Michael H. Petty, Newcastle upon Tyne, and Kenneth Tidd, Wokingham, both of England, assignors to Richardsons Westgarth & Co., Ltd., England

Filed Aug. 18, 1981, Ser. No. 293,896
Claims priority, application United Kingdom, Aug. 20, 1980, 8027135; Mar. 26, 1981, 8109486
Int. Cl.³ F23N *7/10, 7/16*
U.S. Cl. 110—278 10 Claims

1. A vibrating hearth burner for burning fuel comprising:

a grate having inlet and outlet ends,

said grate receiving the fuel at the inlet end thereof,

a grate assembly,

said grate assembly supporting said grate,

a housing,

said grate assembly being mounted in said housing,

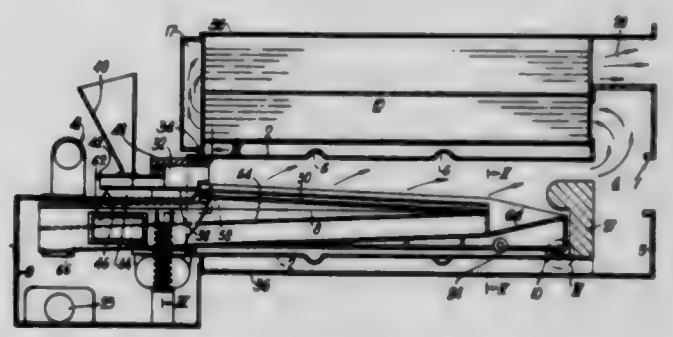
means for vibrating the grate assembly,

wherein said grate, said grate assembly and said vibrating means are designed and arranged to move the fuel from the inlet end to the outlet end of the grate as the fuel burns and discharge the ash from the outlet end of said grate,

means for decelerating said fuel and the resulting ash as said fuel and ash move from the inlet end to the outlet end of said grate,

wherein said decelerating means functions to sustain a substantial uniform layer of said fuel and ash from the inlet end to the outlet end of said grate,

wherein the decelerating means includes; (1) the grate assembly being pivotally mounted to the housing adjacent



the outlet end of said grate and, (2) the vibrating means comprising a vibrating mechanism acting on the grate assembly adjacent said inlet end of the grate,

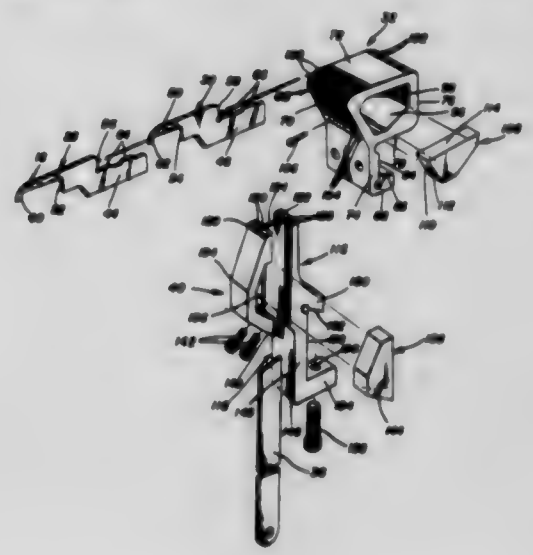
wherein the mechanism is an inertial vibrator mounted on the grate assembly, the assembly being resiliently supported in the housing at only one location along said grate assembly, said location being closer to said inlet end than to said outlet end.

4,491,078

TUFTING MACHINE HOOK AND KNIFE MOUNTING APPARATUS

Gray L. Ingram, Ooltewah, Tenn., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Aug. 18, 1983, Ser. No. 524,150
Int. Cl.³ D05C *15/00*
U.S. Cl. 112—79 R 19 Claims



1. A gauge parts mounting block for a tufting machine oscillatably carrying an elongated gauge parts mounting bar, said mounting block comprising an elongated body member, a plurality of slots formed in and spaced along said body member substantially normal to the axis of elongation thereof, each slot adapted for receiving an attaching portion of a gauge part so that a plurality of said gauge parts may be mounted in side-by-side relationship in the body member, a hollow extending longitudinally through said body member the entire length thereof, part of the attaching portion of each of said gauge parts being disposed within said hollow when said attaching portions are disposed in said slots, a plurality of clamping inserts disposed in said hollow for engagement with said attaching portions, a reference surface formed in said body member remote from the disposition of said inserts, securing means for holding said inserts in said hollow remote from said refer-

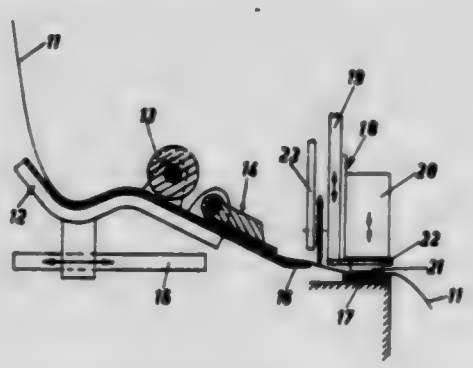
ence surface and for moving said inserts into abutment with an edge of the attaching portion of the gauge parts disposed in said hollow to force an opposite edge of said portion into abutting engagement with said reference surface, said body member having a pair of mounting reference surfaces elongated in the direction of said block for mating with corresponding surfaces of the mounting bar, and means for securing said block to said mounting bar.

4,491,079

DEVICE FOR FOLDING AND MAKING A HEM ON THE END EDGES OF A PIECE OF CLOTH, E.G. A SHEET

Pertti Gustavsson, Horred, Sweden, assignor to Akab of Sweden AB, Boras, Sweden

Filed Dec. 15, 1982, Ser. No. 450,150
Int. Cl.³ D05B 21/00, 35/02
U.S. Cl. 112—121.15 11 Claims



1. An apparature for mechanically folding and making hems along two opposite edges of a piece of cloth detachable from a roll of fabric,

a first (17) and second (38) conveyor tracks, endless, spaced apart, and parallel;

holding (39) and arresting (18) means comprising devices cooperating with said conveyor tracks and extending over the entire width of the fabric, for squeezing portions of the fabric against said conveyor tracks;

a transfer carriage (24) provided between the two conveyor tracks (17, 38) and equipped with a horizontal coiler plate (25);

said coiler plate (25) being rotatable about a horizontal axis (29) substantially 180 degrees and having rotation means operatively associated therewith;

a fabric gripper means (26) supported upon said coiler plate (25) having gripping operating means (33, 34) associated therewith, which fabric gripper means is arranged to grip a forward end edge of the fabric when it is positioned in a first position adjacent the first conveyor track (17);

whereby when said coiler plate (25) and supported gripper means is rotated to a position on the opposite side of said horizontal axis said gripped froward end edge of the fabric is conveyed to a second position wherein it is located on the second conveyor track (38); and

whereby said fabric while still engaged by said holding (39) and arresting devices (18) is conveyed by said conveyor tracks to sewing means comprising a sewing machine for each hemmed end edge.

4,491,080

SEWING MACHINE WITH EQUIPMENT FOR PRODUCING CORNER SEAMS

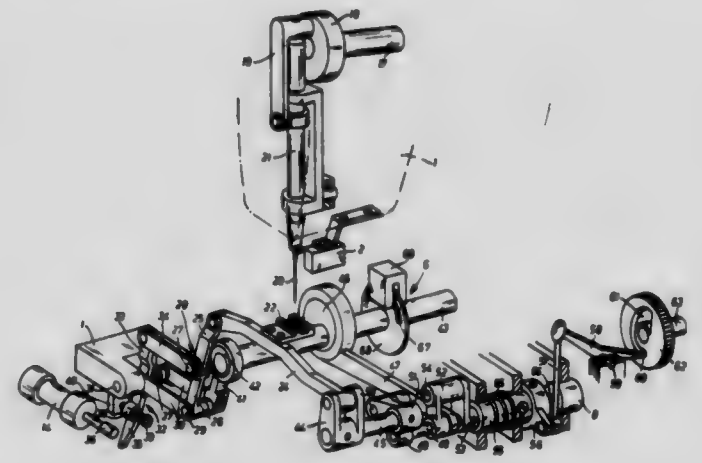
Walter Hager, Kaiserslautern, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Dec. 14, 1982, Ser. No. 449,830
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 3150141
Int. Cl.³ D05B 69/22
U.S. Cl. 112—275 18 Claims

1. In a sewing machine having a needle, drive means for driving the needle between an upper and a lower position thereof for making stitches, a feed dog for feeding a workpiece in a feeding direction for making stitches, the workpiece having at least two edges extending at an angle and meeting in a corner area, and dog moving means for moving feed dog, a device for producing corner seams comprising:

a sensor for sensing the passing of one of the workpiece edges, positioned upstream of the needle in the feeding direction;

a pulse generator operatively coupled to the drive means for delivering a plurality of counting pulses only during a movement of the feed dog in the direction to make a stitch;



feed stopping means connected to the feed dog for instantaneously stopping feeding effect of the feed dog on the workpiece in the feeding direction;

stitch stopping means for stopping the drive means in a lower position of the needle;

a setting counter connected to said feed and stitch stopping means for activation thereof upon the counting of a selected number of pulses from said pulse generator; and

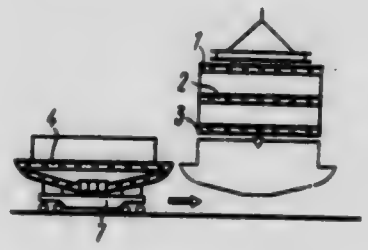
switching means connected to said sensor, said pulse generator and said setting counter, operable upon the sensing by said sensor of the passing of an edge of the workpiece to cause said setting counter to count pulses from said pulse generator.

4,491,081

METHOD FOR ASSEMBLING A COMPLETE MODULE OF MULTIDECK SHIP HULL

Jury P. Ivanov, Grazhdansky prospekt, 92/2, kv.1, Leningrad, U.S.S.R.

PCT No. PCT/SU81/00049, § 371 Date Jan. 22, 1982, § 102(e) Date Jan. 22, 1982, PCT Pub. No. WO81/03473, PCT Pub. Date Dec. 10, 1981
PCT Filed May 29, 1981, Ser. No. 346,054
Claims priority, application U.S.S.R., Jun. 4, 1980, 2926007
Int. Cl.³ B63B 3/02
U.S. Cl. 114—77 R 5 Claims



1. A method of assembling a complete module of a multideck ship hull, comprising sections of bottom, 'tween decks, upper deck and sides installed in the assembly location and joined together, wherein the method comprises the steps of installing in the assembly location the upper deck section; lifting the

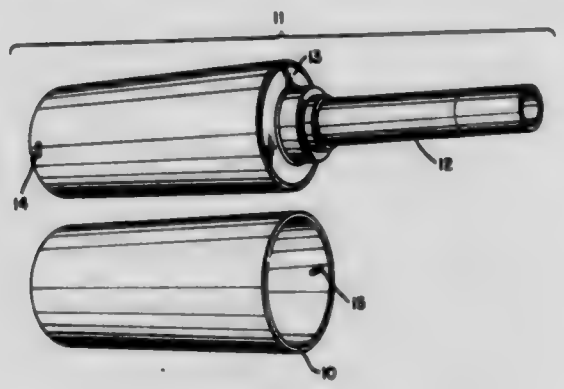
upper deck section to a height exceeding the height of a first 'tween deck; introducing the first 'tween deck under the upper deck section and joining it thereto, thereby creating an assembled portion of said complete module; for each remaining 'tween deck lifting the assembled portion of the complete module to a height exceeding the height of a next 'tween deck, introducing the 'tween deck under the assembled portion of the module and joining it thereto; after installing said upper and 'tween decks introducing and joining said bottom and side sections to said assembled portion to finish said complete module.

4,491,082

CYLINDRICAL SLEEVE APPLICATOR FOR USE IN MANUFACTURING CHEMICALLY TREATED FILAMENTS

Herbert W. Barch, Natrona Heights; George T. Salego, Brackenridge; William H. Retsch, Castle Shannon, and Rudolph Blair, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 1, 1982, Ser. No. 364,367
Int. Cl.³ B05C *1/08*
U.S. Cl. 118—234 13 Claims



1. An apparatus for applying coatings of binders and/or sizes to moving filaments, comprising:

a. a cylindrical sleeve having a capturing means located at a distal longitudinal end of the interior surface of the sleeve;

b. a rotatable means engaging the cylindrical sleeve through a capturing means located at the surface at the distal longitudinal end of the rotatable means and through the capturing means of the sleeve, where the distal end is distal from a drivable section of the engaging means, and where one of the capturing means is a pin extending from the surface and the other capturing means is adapted to receive and to hold securely for rotation the pin by having a slot extending a distance transverse to the longitudinal line of the surface in a direction opposite to that direction in which the sleeve and means are rotated and where the rotatable engaging means contacts the inner cylindrical surface of the sleeve to a degree sufficient to transfer rotational motion of the means to the sleeve, where the rotation is in the direction of the moving filaments, and

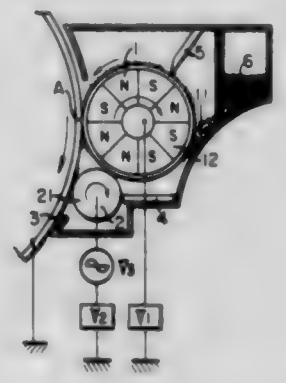
c. a receptacle having a top, back, and bottom portion, where the top and bottom portions do not meet so that an opening is formed, and where the receptacle is adapted to contain the chemical solution that is applied to the cylindrical sleeve upon rotation, and where the sleeve is on the rotatably engaging means which is horizontally disposed in the receptacle so that the peripheral surface of the sleeve occupies the opening to allow contact between the cylindrical sleeve and the textile filaments that are moving past the receptacle so that the chemical solution applied to the sleeve is transferred to the textile filaments.

4,491,083

MEANS FOR DEVELOPING AN ELECTROSTATIC LATENT IMAGE

Masahiko Itaya; Satoshi Haneda, and Makoto Tomono, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 22, 1982, Ser. No. 400,927
Claims priority, application Japan, Aug. 1, 1981, 56-12087
Int. Cl.³ G03G *15/09*
U.S. Cl. 118—657 13 Claims



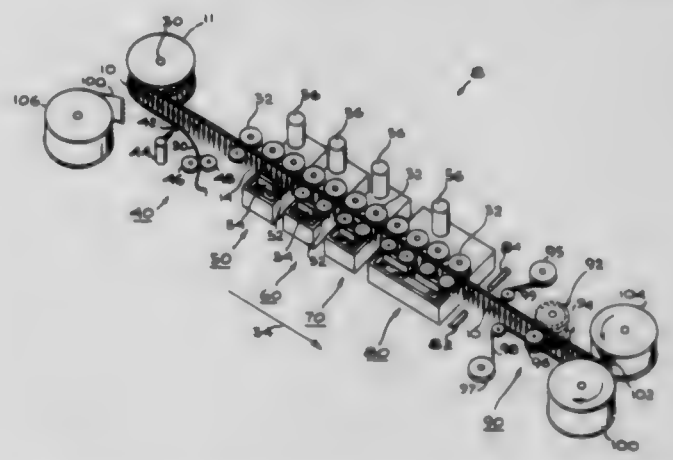
1. A developing apparatus for developing an electrostatic latent image on a charge receptor comprising a developing member for supplying toner to the electrostatic latent image on the charge receptor and an image forming means arranged in a developing direction downstream of said developing member, said image forming means including an electrode to which a voltage is applied so as to form an alternating electric field between said charge receptor and said electrode, and means for applying said voltage to said electrode.

4,491,084

APPARATUS FOR SOLDER TINNING OF COMPONENT LEADS

George C. Marshall, Jr., Claremont, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Sep. 29, 1982, Ser. No. 427,095
Int. Cl.³ B05C *11/00*
U.S. Cl. 118—683 25 Claims



1. Apparatus for solder tinning electronic component leads comprising:

means for storing a plurality of said electronic components, each of the two component leads of each component being secured to a corresponding adjacent component lead by first and second retaining means; and

means for moving said electronic components such that said leads are advanced through a sequence of processing stages of the apparatus whereby said leads are solder tinned, the first processing stage including means for removing said first retaining means from said leads to enable the soldering thereof, the second processing stage including means for cleaning said component leads, the

third processing stage including means for applying flux to the cleaned component leads and the fourth processing stage including means for applying solder to the fluxed component leads.

4,491,085

SUPPORT ARM FOR A MILK HOSE

Daniel A. Rubino, Elmhurst, Ill., assignor to Babcon Bros. Co., Oak Brook, Ill.

Filed Jul. 28, 1983, Ser. No. 517,736
Int. Cl.³ A01J 7/00, 9/08
U.S. Cl. 119—14.1 8 Claims



1. In a support for the milk hose of a milker, the support having a mounting bracket and a ball carried by the bracket for universal rotation, an improved adjustable hose carrier, comprising:

a leg secured to said ball and having a tubular section on its end; and

a hose support arm adapted to support the milk hose on one end and having its other end received in one end of said tubular section and adjustable in position with respect thereto;

wherein the other end of the tubular section extends beyond the leg and clear of the mounting bracket and ball.

4,491,086

AUTOMATIC ANIMAL FEEDING DEVICE

Wildy Croteau, Chambly, Canada, assignor to Universal Automat Corp., Chambly, Canada

Filed Jan. 23, 1984, Ser. No. 573,103
Int. Cl.³ A01K 5/02
U.S. Cl. 119—51.11 7 Claims

1. An automatic animal feeder comprising a housing defining an enclosed feed reservoir, an inlet opening for receiving feed in said reservoir, an outlet opening, a discharge screw conveyor rotatably driven by a motor, said conveyor screw being located in a cylindrical tube having an opening in a sidewall thereof, a sleeve coupling said housing outlet opening with said opening in said sidewall of said cylindrical tube housing of said conveyor screw for communicating feed in said reservoir directly on a restricted central portion of said conveyor screw whereby said conveyor screw arrests the discharge of feed when idle, an outlet pipe connected to an outlet of said cylindrical tube to discharge said feed at said remote discharge outlet of said tube when said conveyor is rotated, and automatic timer control means for operating said motor at predetermined time intervals and for predetermined time periods to thereby control the quantity of feed discharged at said remote discharge outlet during each of said time intervals.

4,491,087

ANIMAL FEEDER ESPECIALLY FOR FEEDING PIGS AND THE LIKE

William T. Herring, Sr., P.O. Box 308, New Grove, N.C. 28366

Filed Feb. 3, 1984, Ser. No. 576,722
Int. Cl.³ A01K 5/00
U.S. Cl. 119—53.5 9 Claims

1. An animal feeder apparatus, especially for feeding pigs and the like, comprising

a feed storage hopper having opposing end walls and opposing downwardly converging side walls, and bottom wall means spaced beneath said opposing side walls and defining at least one feed discharge opening therebetween,

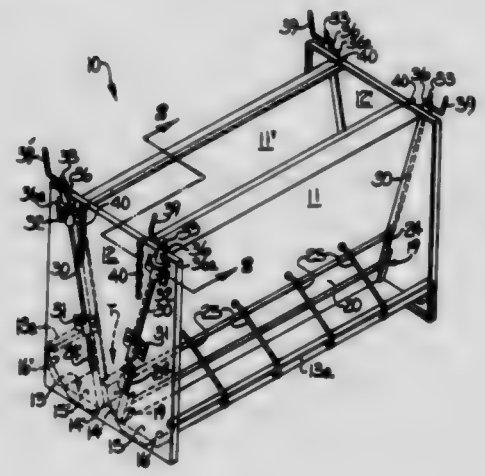
at least one pivotally mounted gate overlying the feed discharge opening, said gate being pivotally movable from a normal outer inclined position to an inner inclined position,

generally vertically positioned elongate means pivotally connected to each end of said gate for effecting said pivotal mounting of the gate,

means mounting said elongate means so as to be positioned and extend upwardly along said hopper end walls,

adjustable means connected to said pivotally mounted gate for effecting generally vertical adjustment of the gate for varying the size of the feed discharge opening and thereby varying the rate of flow of the feed therethrough, said adjustable means comprising

each of said elongate means having threaded upper end portions, and



a threaded member positioned on the threaded upper end portion of each of said elongate means and cooperating therewith for vertically adjusting said gate pivotally carried by said elongate means for varying the size of the feed discharge opening, upper portions of said hopper end walls having openings therein adjacent said threaded members and receiving portions of respective threaded members therein and cooperating therewith to serve as locking means for maintaining the gate in its desired adjusted position while permitting limited vertical movement of the gate for enhanced agitation of the feed from the storage hopper,

means connected to each of said threaded members for facilitating imparting rotation to said threaded members for effecting vertical adjustment of the gate, and

means positioned adjacent opposite ends of said pivotally mounted gate and overlapping the ends of the gate for preventing flow of feed from said storage hopper around the ends of the gate and thus preventing uncontrolled flow of feed and the wasting thereof.

4,491,088

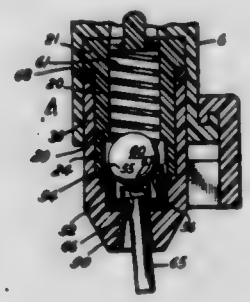
WATERING SYSTEM FOR FOWL AND SMALL ANIMALS

Eldon Hostetler, Middlebury, Ind., assignor to Ziggity Systems, Inc., Middlebury, Ind.

Continuation of Ser. No. 113,607, Jan. 21, 1980, Pat. No. 4,284,036. This application Apr. 10, 1981, Ser. No. 520,099
The portion of the term of this patent subsequent to Aug. 18, 1998, has been disclaimed.
Int. Cl.³ A01K 7/00
U.S. Cl. 119—72.5 2 Claims

1. A valve for watering fowl and animals, comprising a housing having an inlet and an outlet, an annular member in said housing defining three concentric valve seats in spaced substantially parallel planes, a valve element having a surface

portion normally seating against two of said valve seats, and an actuating pin extending through said outlet with clearance and projecting from said housing, said pin having an enlarged head normally seating on the third said valve seat, said valve element and said head normally engaging said respective valve seats of said annular member whereby said ball and head pro-



vide three seals, said head being of a size and being positioned adjacent said valve element whereby slight movement of the projecting part of said actuating pin shifts said head from seated position on said third valve seat and shifts said valve element relative to said valve seats to initiate liquid flow from said inlet to said outlet.

4,491,089

DEVICE FOR SUPPORTING ANIMALS

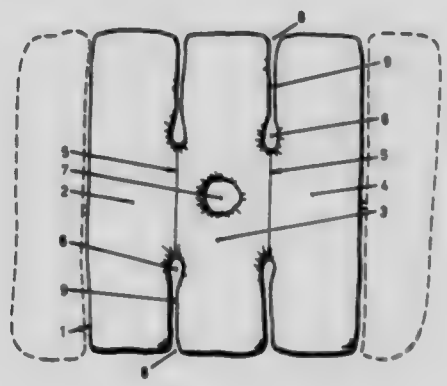
Michael F. Kelly, and William R. Kelly, both of "Lugano", Rugby via Crookwell, New South Wales, Australia (2625)

Filed Oct. 29, 1982, Ser. No. 437,818

Claims priority, application Australia, Nov. 18, 1981, PF1612; Jun. 30, 1982, PF4656

Int. Cl.³ A61D *3/00*

U.S. Cl. 119—103 5 Claims



1. A support structure of substantially parallipiped shape for raising an animal from a collapsed position to an upright position and adapted to support said animal in said upright position for an extended period of time consisting of a fluid inflatable bag means, two channels each extending longitudinally into the structure from opposite ends thereof for part of the length of the bag whereby the animal's legs may be received and the animal supported with the lower extremity of its legs clean off the ground or in a position merely resting thereon, said structure being free of any frame or other support members.

4,491,090

ANIMAL COLLAR

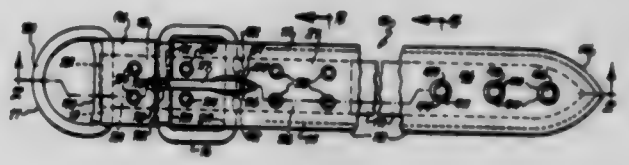
Anthony Almeida, 167 Westminster Ave., Buffalo, N.Y. 14215

Filed May 14, 1984, Ser. No. 609,716

Int. Cl.³ A01K *27/00*

U.S. Cl. 119—106 9 Claims

1. An animal collar comprising an inner elongated band of flexible leather-type material, an outer elongated band of flexible leather-type material in superposed relationship to said inner elongated band, a thin metal band sandwiched between said inner and outer elongated bands, first and second ends on said collar, a D-ring at said first end, said D-ring having an inner portion and an outer portion, said thin metal band passing around said inner portion of said D-ring and having an end portion in superposed relationship with an adjacent portion of said thin metal band, said outer portion of said D-ring extending outwardly beyond said thin metal band, buckle located intermediate said first and second ends, said buckle comprising a loop-like member having an inner portion and an outer portion with a tongue pivotally mounted on said inner portion, said thin metal band and said outer elongated band being located on one side of said inner portion of said loop-like member



and said inner elongated band being located on the opposite side of said inner portion of said loop-like member, first securing means securing said inner and outer elongated bands and said thin metal band to each other between said loop-like member and said D-ring, second securing means securing said inner and outer elongated bands and said thin metal band to each other on the opposite side of said loop-like member from said first securing means, and a plurality of holes extending through said first and second elongated bands and said thin metal band at said second end for receiving said tongue.

4,491,091

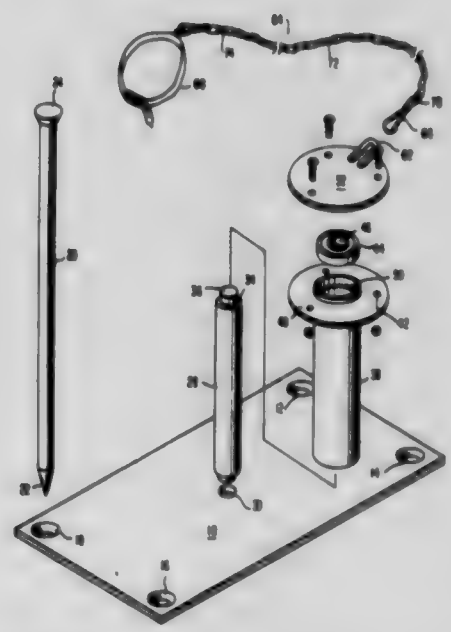
ANIMAL TETHER

Audie L. Satterfield, Rte. One, Box 43-B, Oktaha, Okla. 74450

Filed Oct. 11, 1983, Ser. No. 540,551

Int. Cl.³ A01K *3/00*

U.S. Cl. 119—117 3 Claims



1. An animal tether comprising:

an anchor plate having a plurality of apertures formed near perimeter thereof,

a plurality of stakes for reception in each of said apertures for securing said base plate to the earth's surface,

a standard extending upwardly from said base plate and having an upper surface,

a rotator member rotatably secured about said standard,

a flange extending outwardly from said rotator near the upper end of said member,

a boss extending upwardly from said standard and of a lesser diameter than said standard so as to form a ledge therewith,

an annular bearing resting on said ledge and having an inner

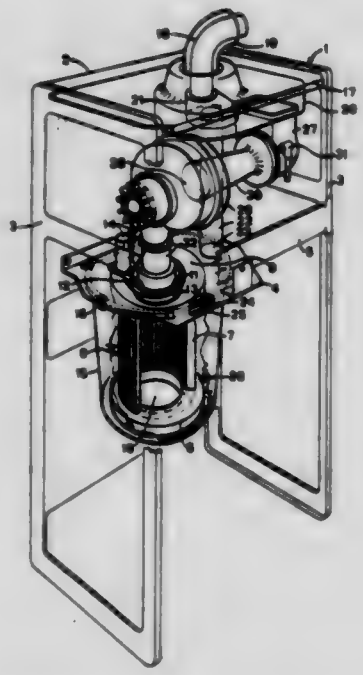
circumference about said boss and an outer diameter in engagement with the inner surface of said rotator member,
a cover plate secured to said flange over said bearing,
a hook on the upper surface on said cover plate, and
a swivel chain having first and second ends one of which is affixed to said hook.

4,491,092

SEALED FORCED-DRAFT GAS BOILER DISPOSITION

Jean-Claude Charron, Saint-Maur; Philippe Muisant, Villiers sur Marne, and Yvan Poujoulet, Champs sur Marne, all of France, assignors to Societe Anonyme Saunier Duval/Eau Chaude/Chauffage-S.D.E.C.C., Paris, France

Filed Oct. 4, 1983, Ser. No. 539,054
Claims priority, application France, Oct. 5, 1982, 82 16664
Int. Cl.³ F22B *5/02*
U.S. Cl. 122—18 15 Claims



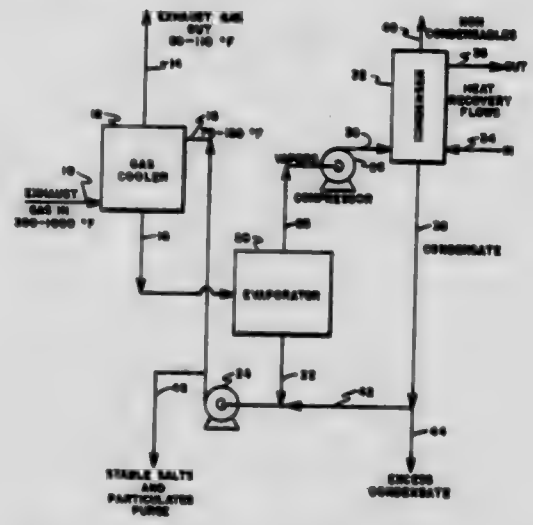
1. A sealed forced-draft household gas boiler comprising a frame having mounted interiorly thereof
a cylindrical heat exchanger, said heat exchanger including a bundle of water tubes surrounding a combustion chamber containing a burner disposed at one end, said burner being of the torch type and arranged such that its flame is directed into said combustion chamber,
a mixing chamber, for mixing air and gas,
a fresh-air inlet means for discharging air into the mixing chamber, an injector disposed for feeding gas into the mixing chamber,
fan means for blowing the air and gas mixture into the burner,
a sealed shell enveloping the heat exchanger,
a means for evacuating combustion products collected in the sealed shell,
a horizontal plate extending across the frame separating the interior of the frame into an upper portion and a lower portion, said fresh air inlet means for admitting air and said means for evacuating combustion products and said fan means being disposed above said plate,
said sealed shell being suspended from said plate and extending into the lower portion, said heat exchanger, having a central inlet opening at the level of said plate, an outlet tube connected between the fan and the inlet opening, said outlet tube being in the axis of the inlet opening,
and said shell having an outlet opening for the combustion products collected by the sealed shell traversing said plate and being located at least approximately in the axis of an evacuation pipe (18) for evacuating said combustion products exterior of the boiler.

4,491,093

ENERGY AND WATER RECOVERY FROM FLUE GASES

I. Arthur Hoekstra, 906 Woodlyn Dr. N., Cincinnati, Ohio 45230

Filed Mar. 26, 1984, Ser. No. 593,404
Int. Cl.³ F22D *1/02*
U.S. Cl. 122—420 9 Claims



1. The method of recovering energy and water from high temperature flue gases containing significant amounts of sensible heat and latent heat present as water vapor, which comprises the steps of:
(a) contacting an aqueous medium having an initial temperature lower than said high temperature with the flue gases to cool the flue gases to a temperature in the range of about 80° F. to about 110° F. which is sufficiently below the acid dew point temperature thereof to condense at least about 50% of the water vapor initially present in the flue gases;
(b) cooling the heated aqueous medium back to its initial temperature by flashing water vapor therefrom in excess of that picked up in step (a), returning the cooled aqueous medium to step (a) and supplying make-up water to the aqueous medium in amount sufficient to compensate for said excess;
(c) compressing the water vapor obtained in step (b) to increase the temperature thereof; and
(d) condensing the compressed water vapor of step (c) to recover the latent heat thereof and recovering the water so condensed.

4,491,094

VACUUM PUMP-RADIATOR FAN DRIVE SYSTEM

Hitoshi Ogawa, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP82/00322, § 371 Date Mar. 17, 1983, § 102(e) Date Mar. 17, 1983, PCT Pub. No. WO83/00667, PCT Pub. Date Mar. 3, 1983
PCT Filed Aug. 18, 1982, Ser. No. 476,962
Claims priority, application Japan, Aug. 18, 1981, 56-122893[U]
Int. Cl.³ F01P *5/04*
U.S. Cl. 123—41.49 1 Claim

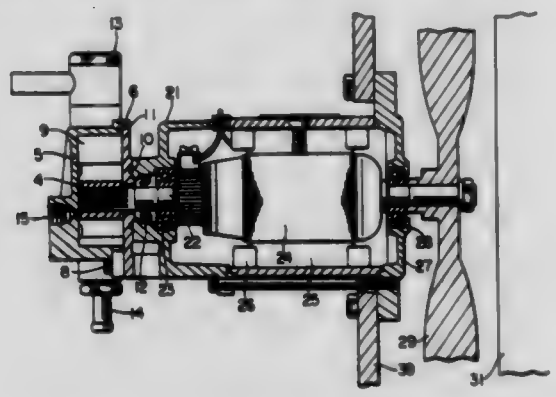
1. A radiator cooling fan and vacuum pump system for a motor vehicle comprising:
a vacuum holding means;
an electric motor having a rear bracket forming part of a motor housing and having a rotary shaft;
a fan for cooling a radiator mounted on one end of said rotary shaft;
a vacuum pump rotor mounted on the other end of said rotary shaft;
a vacuum pump housing within which said rotor is rotatably mounted and having an inner cylindrical surface eccentric from the axis ofrotation of said rotor on said rotary shaft

and having a suction port connected to said vacuum holding means and an exhaust port;

a housing closure on the end of said housing facing said motor and closing the interior of said housing and mounted on said rear bracket;

vanes slidably mounted in said rotor for sliding in diametrical directions of said rotor and having the radial outer ends in contact with the inner cylindrical surface of said housing for pumping the coolant for the engine of the motor vehicle from said suction port to said exhaust port;

motor switch means for turning said motor on and off;



coolant temperature sensing means for sensing the temperature of the coolant and connected to said motor switch means for causing said motor switch means to turn said motor or when said temperature reaches a predetermined temperature; and

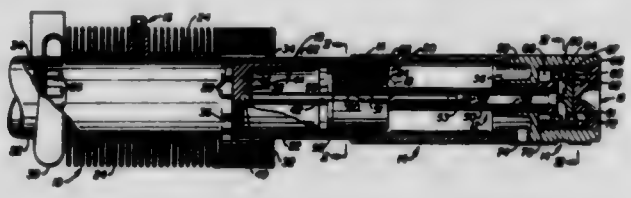
vacuum sensing means for sensing the degree of vacuum in said vacuum holding means and connected to said motor switch means for causing said motor switch means to turn said motor on when the degree of vacuum in said vacuum holding means reaches a predetermined value.

4,491,095

CYCLIC DWELL ENGINE

George L. Coad, Lafayette, Calif., assignor to Avalon Research, Oakland, Calif.

Filed Jul. 20, 1983, Ser. No. 515,390
Int. Cl.³ F02B *71/04*; F15B *15/26*
U.S. Cl. 123—46 R 14 Claims



1. A free piston internal combustion cyclic power mechanism including releasable restraining means within said mechanism to provide a variable dwell between each cycle of said free piston within said mechanism, storage means for storing the energy produced by each given cycle of said free piston mechanism, said mechanism further including means operable on said releasable restraining means for terminating (a) said variable dwell of said free piston within said mechanism and to initiating a cycle of said free piston within said mechanism when a preestablished portion of said energy stored in said storage means has been consumed.

2. In a free piston engine having a cylinder, a piston reciprocably moveable within said cylinder, and a brake means operable to restrain said piston in a desired position within said cylinder, said brake means comprising:

a collet means adapted to engage a means operated with said piston, said collet comprising a pair of members having cooperating inclined surfaces separated by moveable roller pins, one of said members being laterally biased in one direction with respect to the other of said members whereby lateral movement of said one member due to said bias is translated into radial movement through cooperation of said inclined surfaces and roller pins to force said collet into engagement with said means operated with said piston to restrain said piston in said desired position,

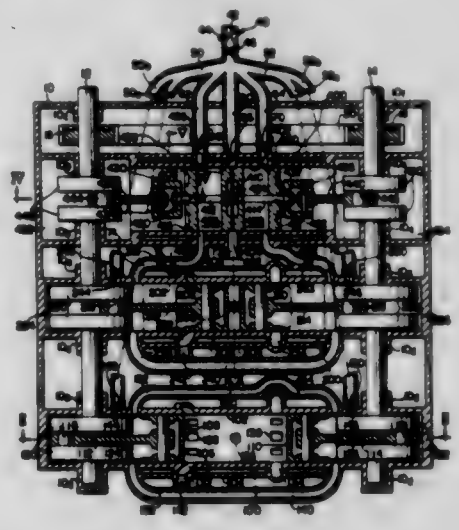
and means for moving said one member in a direction opposite to said bias to cause release of said collet from engagement with said means operated with said piston to release said restraint on said piston and to permit reciprocable movement of said piston within said cylinder.

4,491,096

TWO-STROKE CYCLE ENGINE

Masaaki Noguchi, Nagoya; Yukiyasu Tanaka, and Isao Igarashi, both of Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Mar. 6, 1979, Ser. No. 17,968
Claims priority, application Japan, Aug. 16, 1978, 53-99667
Int. Cl.³ F02B *25/08*
U.S. Cl. 123—51 B 4 Claims



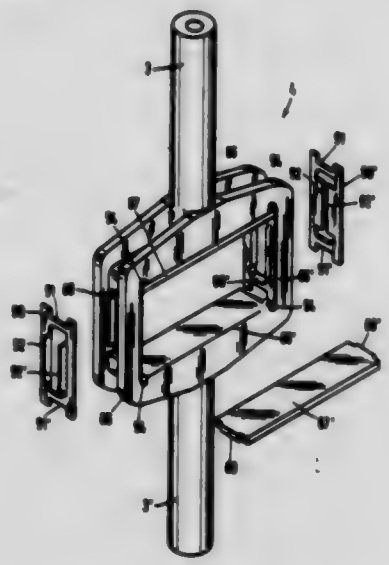
1. A two-stroke cycle engine comprising: at least two two-stroke cycle power cylinder - piston assemblies each having a power cylinder provided with scavenging ports located near one axial end thereof and exhaust ports located near the other axial end thereof so as to perform uniflow scavenging, two horizontally opposed pistons disposed in said power cylinder and two crankcases which perform crankcase compression of scavenging charge and have the same total stroke volume as that of the power cylinder - piston assembly, said two power cylinder - piston assemblies operating with a phase difference of 180° relative to each other, said scavenging ports being arranged substantially symmetrically around the central axis of each of said power cylinders so as to generate a spiral flow of scavenging charge through said power cylinder; at least one double acting pump cylinder - piston assembly which has a pump cylinder and two horizontally opposed pistons disposed in said pump cylinder and is driven by said power cylinder - piston assemblies so as to supply two separate scavenging charges to said two power cylinder - piston assemblies with a phase difference of 180° therebetween; and a pair of common crankshafts adapted to rotate in synchronization with each other, each of said power cylinder - piston assemblies and said pump cylinder - piston assembly having a pair of crank mechanisms which incorporate said pair of common crankshafts so as to operate in synchronization with each other, wherein the sum of the total stroke volume of said pump cylinder - piston assembly and that of said crankcases is larger than the total stroke volume of said power cylinder - piston assemblies, and wherein the crank radius of each of said pair of common crankshafts with respect to said pump cylinder - piston assembly is substantially smaller than that with respect to said power cylinder - piston assemblies.

4,491,097

CRANK GUIDE ASSEMBLY FOR AN INTERNAL COMBUSTION ENGINE WITH AT LEAST TWO FACING CYLINDERS

Lutz Hamann, Assling, Fed. Rep. of Germany, assignor to Ficht GmbH, Kirchseeon, Fed. Rep. of Germany

Filed May 13, 1983, Ser. No. 494,768
Claims priority, application Fed. Rep. of Germany, May 14, 1982, 3218339
Int. Cl.³ F02B 75/28
U.S. Cl. 123—56 R
8 Claims



1. Crank guide assembly for an internal combustion engine with two opposed cylinders for converting reciprocating piston movements into rotary movement with the aid of a sliding piece arranged on a crankshaft and guided in said crank guide assembly, comprising a crank guide, said crank guide defining an opening having a pair of spaced facing first sides and a pair of spaced facing second sides with each of said first sides and second sides having opposite ends and each said second side extending between one opposite end of each of said first sides, a base plate replaceably mounted in the opening in said crank guide for guiding the sliding piece and each said base plate supported on a different one of said first sides, each said base plate having opposite ends extending into juxtapositon with the opposite ends of each said second side located at the opposite ends of said first side on which said base plate is supported, each said second side having an opening located therethrough and the opening in each said second side of said crank guide defines a passageway from the opening in said crank guide for permitting the flow therethrough of fluid volumes out of the opening in said crank guide.

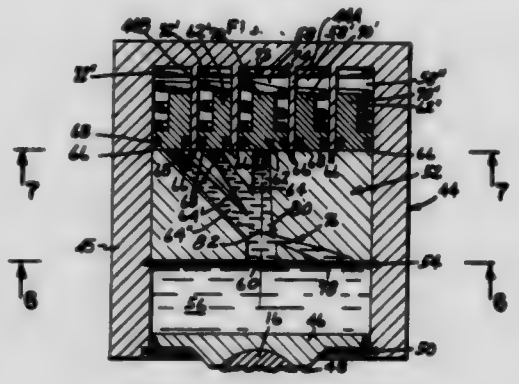
4,491,098

DEVICE FOR ALTERING CAM PROFILE

Richard D. Rotondo, 2838 Arthur St., NE., Minneapolis, Minn. 55418

Continuation-in-part of Ser. No. 205,728, Nov. 10, 1980, Pat. No. 4,392,461. This application Sep. 29, 1982, Ser. No. 427,980
The portion of the term of this patent subsequent to Jul. 12, 2000, has been disclaimed.
Int. Cl.³ F01L 1/34, 1/24
U.S. Cl. 123—90.16
28 Claims

1. A fluidic device comprising: means having a cavity, manifold means located in said cavity to define a plurality of first chambers and a second chamber, means holding the manifold means in a fixed position on the means having a cavity, said manifold means having inflow passage means, and diversion passage means obliquely intersecting the inflow passage means, said inflow passage means and diversion passage means communicating with said second chamber, and a plurality of outflow channels open to the inflow passage means and said plurality of first chambers, a fluid filling said first and second chambers, inflow passage means, diversion passage means, and outflow channels, and piston means mounted for sliding movement in the second chamber whereby when force is applied to said piston means fluid flows through the inflow passage means



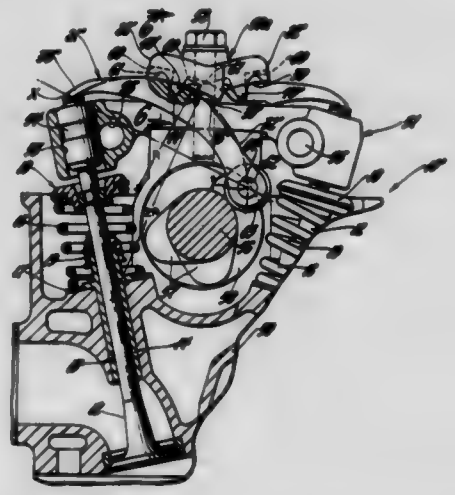
and is deflected by fluid flowing from the diversion passage means to selected outflow channels in proportion to the amount of force applied to the piston means.

4,491,099

HYPOCYCLIC ROLLING CONTACT ROCKER ARM AND PIVOT FOR AN INTERNAL COMBUSTION ENGINE

Duane J. Bonvallet, Ann Arbor, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 496,930, May 23, 1983,. This application Sep. 12, 1983, Ser. No. 531,269
Int. Cl.³ F01L 1/18
U.S. Cl. 123—90.44
4 Claims



1. A reciprocating internal combustion engine of the type having an engine block defining a cylinder with a port, a valve located for axial movement in said port and biased to a predetermined position, an overhead camshaft spaced from the valve and operable to effect reciprocation of the valve, and a rocker arm in operative engagement via a lifter with the valve and having a roller follower rotatably journaled thereon for engagement with the camshaft whereby the rocker arm is actuated in rocking movement to reciprocate said valve against said bias to open and close the port for engine operation, the improvement comprising:

fulcrum means defining a fixed rocking support intermediate the length of the rocker arm, said fulcrum means and said rocker arm defining a pair of cooperating outer and inner cylindrical bearing surface contours, respectively, carrying the reaction forces of rocker arm pivotal movement, the radius of the outer bearing surface being substantially two times the radius of the inner bearing surface, with the geometric center of the outer bearing surface being located on the operating axis of said valve, the inner bearing surface of said rocker arm being located such that an extension thereof will intersect the contact point of said rocker arm on the lifter at the axis of said valve at the free

end thereof and will intersect the axis of rotation of said roller follower; the axis of rotation of said roller follower and of said camshaft lying in a plane that extends through the geometric center of the outer bearing surface;

restrainer means to anchor the cooperating cylindrical bearing surfaces for substantially rolling action in relation to each other, said restrainer means comprising a retainer pin means associated with one of said bearing surfaces and a slot means associated with the other one of said bearing surfaces of a size to receive said pin,

whereby within the range of rocker arm oscillation said retainer pin means establishes substantially rolling contact between the cylindrical surfaces by contact with the guide surfaces of the recess.

4,491,100

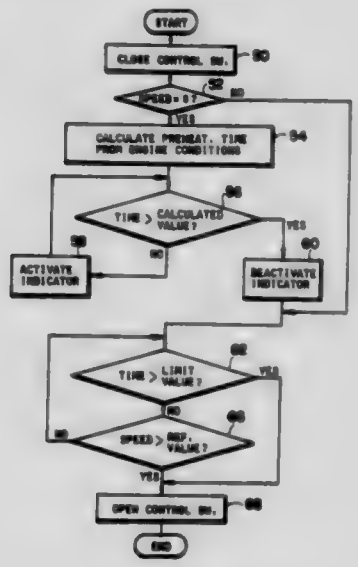
CONTROL SYSTEM FOR A GLOW PLUG OF AN INTERNAL COMBUSTION ENGINE

Seishi Yasuhara, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Apr. 29, 1983, Ser. No. 490,233

Int. Cl.³ F02P *19/02*

U.S. Cl. 123—145 A **3 Claims**



1. A control system for a glow plug of an internal combustion engine equipped with a starting motor, comprising:

(a) first means for selectively activating and deactivating the glow plug;

(b) a microcomputer system connected to the first means for controlling the first means;

(c) a DC power source electrically connected to the microcomputer system and the starting motor for supplying DC electrical power to the microcomputer system and the starting motor to activate them, the microcomputer system becoming inactive and causing the first means to deactivate the glow plug when the voltage of the DC electrical power drops below a minimum rating value; and

(d) a switch disposed in the electrical connection between the starting motor and the power source for selectively effecting and interrupting activation of the starting motor; and

(e) second means for activating the glow plug when the switch effects activation of the starting motor regardless of whether or not the voltage of the DC electrical power drops below the minimum rating value.

4,491,101

MULTIPLE HEAT-RANGE SPARK PLUG

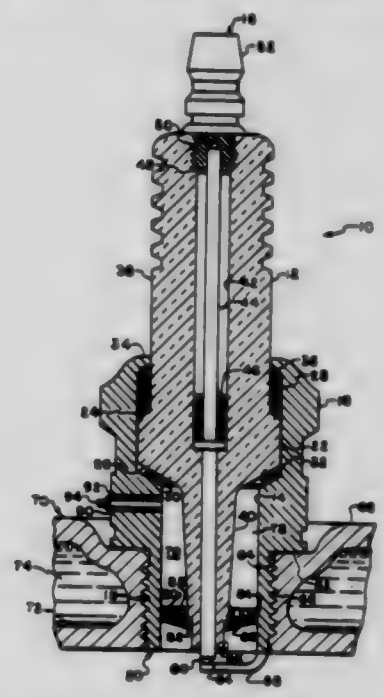
William P. Strumbos, 85 Middleville Rd., Northport, N.Y. 11768

Filed Sep. 6, 1983, Ser. No. 529,369

Int. Cl.³ H01T *13/16*

U.S. Cl. 123—169 C **16 Claims**

1. A spark plug having an outer terminal end and an inner firing end adapted to be installed in the cylinder head of an engine, said spark plug including a hollow metal shell having external threads on the inner end thereof for securing said spark plug for operation in said cylinder head, said cylinder head being furnished with cooling means providing a heat sink for said spark plug, an electrical insulating core having an inner end received in the bore of said shell and including a nose portion spaced radially inward from said shell bore, means for sealing said insulating core in a gas-tight relationship in said shell, a center electrode carried in said insulating core with the inner end of said center electrode projecting therefrom, said shell having ground electrode means disposed in a cooperative



relationship with said center electrode inner end and forming a spark gap therebetween, an electrical terminal at the outer end of said center electrode for connection into the ignition system of said engine, the improvment comprising a heat pipe disposed in good heat transfer relationship between said insulating core and said shell bore, said heat pipe being charged with a volatile working medium and being thermally non-conducting in one temperature range and thermally conducting in a second design temperature range to transfer heat from said firing end to said shell for dissipation therefrom whereby the heat range of said spark plug is controlled thereby.

4,491,102

INTAKE DEVICE OF AN INTERNAL COMBUSTION ENGINE

Mikio Nakasima, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Aug. 10, 1982, Ser. No. 406,889

Claims priority, application Japan, Aug. 19, 1981, 56-121765[U]; Aug. 20, 1981, 56-129419

Int. Cl.³ F02M *35/10*

U.S. Cl. 123—188 M **22 Claims**

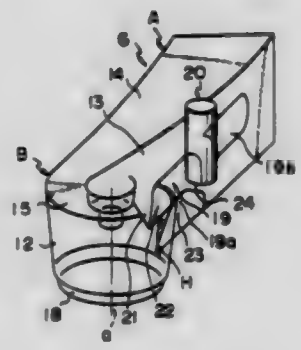
1. An intake device of an internal combustion engine comprising:

an intake valve having a valve stem;

an axially extending intake port passage having an inlet opening at one end thereof and having an outlet opening at the other end thereof, said intake port passage having a substantially cylindrically extending circumferential wall which circumferentially extends about said valve stem for defining therein a helical portion having a helix terminating portion, a first side wall which extends between said inlet opening and said circumferential wall along an axis of said intake port passage, a second side wall which extends between said inlet opening and said circumferential wall along the axis of said intake port passage and is arranged to face said first side wall, an upper wall which extends between said inlet opening and said circumferential wall

along the axis of said intake port passage, and a bottom wall which extends between said inlet opening and said circumferential wall along the axis of said intake port passage;

a separating wall projecting downwardly from said upper wall and spaced from said bottom wall, said separating wall extending along the axis of said intake port passage and being spaced from said first side wall for defining therebetween an inlet passage portion tangentially connected to said helical portion, said separating wall being



spaced from said second side wall for defining therebetween a bypass passage which interconnects said inlet passage portion to said helix terminating portion;

normally closed valve means arranged in said bypass passage and having a lower end which is spaced from said bottom wall for controlling the flow area of said bypass passage; and

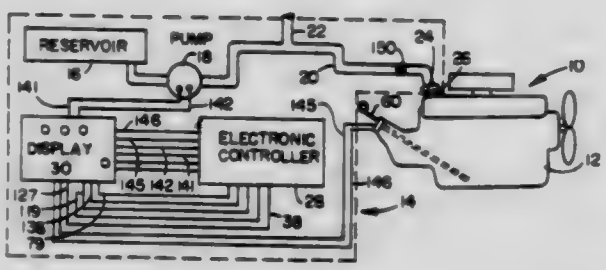
actuating means for actuating said valve means in response to the change in the operating condition of the engine to open said valve means when the engine is operating at a high speed under a heavy load.

4,491,103

AUTOMATIC ENGINE OIL LEVEL MAINTENANCE SYSTEM

Ray Deadman, 1236 W. 13th St., San Pedro, Calif. 90731

Filed Jun. 1, 1983, Ser. No. 500,142
Int. Cl.³ F01M *1/18*
U.S. Cl. 123—196 S 11 Claims



1. A lubricant level maintenance system adapted to maintain an adequate level of lubricant in the oil pan of an internal combustion engine which employs an electrical ignition system comprising:

a reservoir located externally of said engine to store a reserve supply of lubricant,

actuable lubricant feeding means coupled to said reservoir,

conduit means leading from said lubricant feeding means for communication with the engine oil pan through an existing orifice in said engine,

level sensing means, including a sensor element for positioning in an existing opening to the engine, to provide an actuating signal to said lubricant feeding means indicative of a deficiency of lubricant in said oil pan,

enabling means having an input from said electrical ignition system and including an electrical timing circuit which is automatically triggered by de-energization of said electrical ignition system to provide an output to allow said level sensing means to actuate said lubricant feeding means only at the expiration of a pre-determined time interval, and

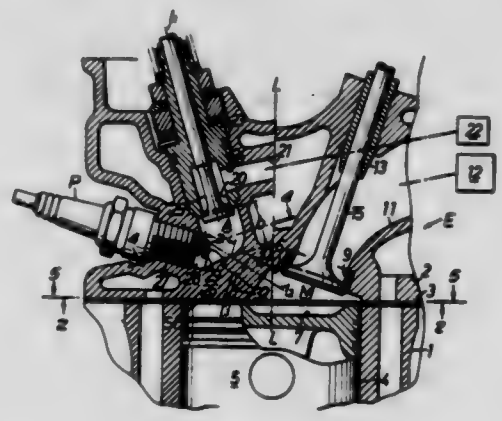
tilt sensing means coupled to said level sensing means to allow said level sensing means to actuate said lubricant feeding means only when said vehicle is level.

4,491,104

TORCH IGNITION TYPE INTERNAL COMBUSTION ENGINE

Isao Fujii; Hiroyuki Nishimura, and Masaaki Kato, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1982, Ser. No. 398,100
Claims priority, application Japan, Apr. 17, 1982, 57-64604
Int. Cl.³ F02B *19/18*
U.S. Cl. 123—291 9 Claims



1. In an internal combustion engine having a piston slidably mounted in a cylinder and cooperating with a cylinder head to form a main combustion chamber, the combination of: an auxiliary combustion chamber provided in the cylinder head and connected by a torch passage to the main combustion chamber, the piston and the cylinder head cooperating to form a squish area, a cavity in the cylinder head and a recess in the top face of the piston cooperating to form a compact portion of the main combustion chamber adjacent said squish area, two main intake valves on one side of said cavity for supplying said compact portion of the main combustion chamber with an air-fuel mixture, an exhaust valve on the other side of said cavity adjacent one of said main intake valves, the torch passage communicating with said cavity between said exhaust valve and the other of said main intake valves, a spark plug having electrodes communicating with said auxiliary combustion chamber and with the upstream, end of said torch passage, and suction conduit mean intersecting the torch passage between its ends and extending only from said squish area of the main combustion chamber to said passage whereby movement of burning air-fuel mixture through the torch passage and pressure from said squish area causes a flow of air-fuel mixture from said squish area through said suction conduit means and into the torch passage.

4,491,105

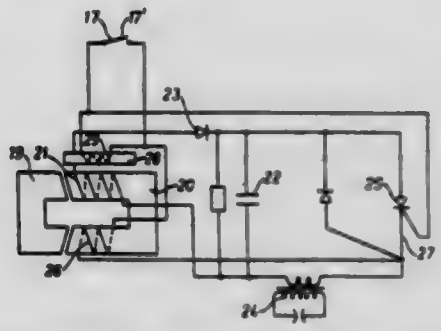
ARRANGEMENT IN AN I.C. ENGINE

Rolf A. G. Johansson, Partille, Sweden, assignor to AB Electrolux Motor Aktiebolag, Huskvarna, Sweden

Filed Mar. 21, 1983, Ser. No. 477,267
Claims priority, application Sweden, Mar. 22, 1982, 8201805
Int. Cl.³ F02P *9/00, 11/00*
U.S. Cl. 123—335 5 Claims

1. In an arrangement in an i.c. engine having a spark ignition system for the control of the r.p.m. on start of the engine the engine having a hand operated retaining member for the throttle control which in a first position is positioned to retain the throttle control in a starting position, and a hand grip positioned in an operating handle for enabling operation of the engine, said hand grip being movable into active and inactive

positions, respectively for enabling operation and disabling operation of the engine, respectively, the improvement wherein each of said retaining member and hand grip is positioned to open and keep open an electric switch connected in parallel with a regulating winding in the ignition system said regulating winding being positioned before a changing winding and a triggering winding, as seen in the direction of a movement of a magnetic field from the rotating magnet of the



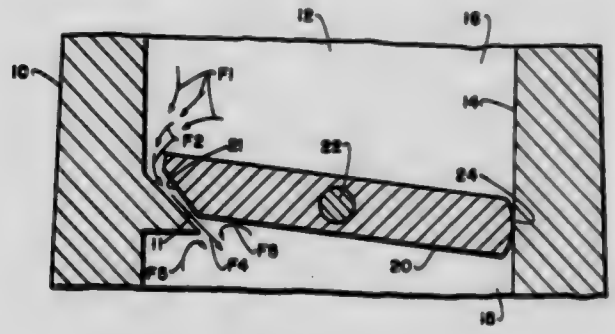
system, said regulating winding during the running of the engine above a predetermined r.p.m. in combination with the triggering winding supplying a control pulse to the ignition switch of the spark ignition system before the charging voltage has reached the value of ignition voltage for inhitibing the ignition spark, said hand grip opening and keeping open said switch when it is not positioned to enable operation of said engine, said retaining member opening and keeping open said switch in said first position.

4,491,106

THROTTLE CONFIGURATION ACHIEVING HIGH VELOCITY CHANNEL AT PARTIAL OPENING

George Q. Morris, 655 Paseo Esmeralda, Newbury Park, Calif. 91320

Continuation of Ser. No. 445,593, Nov. 29, 1982, abandoned, which is a continuation of Ser. No. 285,068, Jul. 20, 1981, abandoned. This application Jan. 4, 1984, Ser. No. 617,144
Int. Cl.³ F02D 9/08
U.S. Cl. 123—337 1 Claim



1. An apparatus for fuel and air mixing and flow modulation for supplying fuel and air to an internal combustion engine, said apparatus comprising:

throttle body means having an air inlet passageway therein;

a butterfly-type throttle valve means rotatably disposed in said air inlet passageway for regulating a fuel and air mixture flowing therethrough;

said throttle valve means having a throttle axis;

said throttle valve being adapted to rotate about said throttle axis from a position of minimum opening to a position of maximum opening to define an angle of total displacement;

a surface of said throttle valve means closely cooperating with a surface of said air inlet passageway to form between them a channel means for flowing said fuel and air mixture from said air inlet passageway upstream of said throttle valve means to said air inlet passageway downstream from said throttle valve means;

said channel means forming a channel flow stream of said fuel and air mixture flowing in said channel;

a throttle plane fixed with respect to said throttle valve;

said channel flow stream having a channel flow axis;

said channel flow axis having a point of maximum speed where the channel flow stream has a maximum speed along said channel flow axis;

said channel having a channel exit;

said channel having a channel entrance located at a point on said channel flow axis, upstream from said point of maximum speed, where channel flow stream speed is one-half of the maximum speed;

said channel having a channel length equal to a length along the channel flow axis from the channel exit to the channel entrance;

said channel having a channel width equal to the smallest distance between said surface of said throttle valve means and said surface of said air inlet passageway;

said channel length being at least equal to said channel width;

said channel flow axis having a direction at the point of maximum speed that is nonperpendicular to said throttle plane;

said throttle plane having a zero position;

said channel flow axis having a direction at the point of maximum speed that is nonperpendicular to said throttle plane at said zero position;

said channel flow stream separating from said surface of said throttle valve;

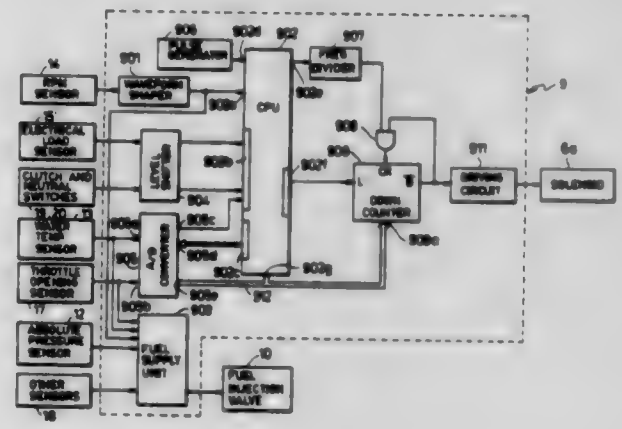
said surface of said throttle valve means cooperating with said surface of said air inlet passageway to form said channel when said throttle is in a position that is in the range of from said position of minimum opening to one-half said angle of total displacement.

4,491,107

IDLING RPM FEEDBACK CONTROL METHOD FOR INTERNAL COMBUSTION ENGINES

Shumpei Hasegawa, Niiza; Noriyuki Kishi, Itabashi, and Takashi Koumura, Iruma, all of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1983, Ser. No. 479,217
Claims priority, application Japan, Apr. 2, 1982, 57-55085
Int. Cl.³ F02D 1/04
U.S. Cl. 123—339 6 Claims



1. In a method for controlling the quantity of supplementary air being supplied to an internal combustion engine for a vehicle having wheels, said enging having:

an intake passage,

a throttle valve arranged in said intake passage,

an air passage having one end communicating with said intake passage at a location downstream of said throttle valve and another end communicating with the atmosphere, respectively,

said supplementary air being supplied to said engine through said air passage and said intake passage, and

power transmission means for transmitting torque from said engine to said wheels of said vehicle,

wherein (i) the quantity of said supplementary air is con-

trolled in a predetermined deceleration mode control manner when said engine is decelerating with said throttle valve fully closed and from the moment the engine rpm becomes lower than a first predetermined rpm until it reaches a second predetermined rpm, which is an upper limit of a desired idling rpm range and lower than said first predetermined rpm, so as to prevent a sudden drop in the engine rpm even if said power transmission means is disengaged during the deceleration of said engine, and

(ii) the quantity of said supplementary air is controlled in a feedback mode control manner responsive to the difference between the actual engine rpm and desired engine rpm once the engine rpm has reached said second predetermined rpm,

the improvement comprising the steps of:

(a) determining whether or not said power transmission means is in a state of engagement;

(b) continuing said control of the quantity of said supplementary air in said predetermined deceleration mode control manner, as long as said power transmission means is maintained in said state of engagement even after the engine rpm has reached said second predetermined rpm while said engine is controlled in said predetermined deceleration mode control manner, to thereby prevent a sudden increase in the engine rpm upon disengagement of said power transmission means after said second predetermined rpm has been reached; and

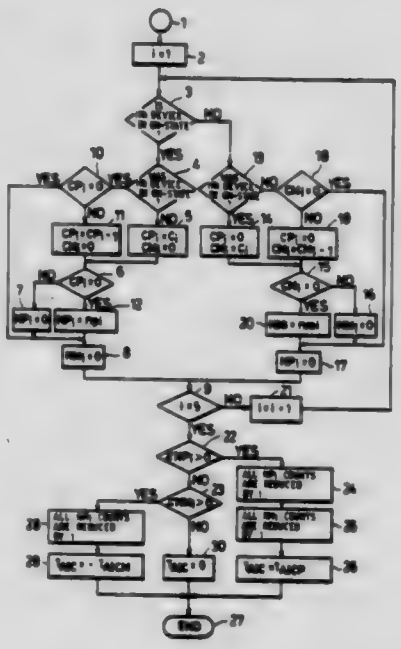
(c) starting said control of the quantity of said supplementary air in said feedback mode control manner, immediately when said power transmission means is disengaged.

4,491,108

IDLING RPM FEEDBACK CONTROL METHOD FOR INTERNAL COMBUSTION ENGINES

Shunpei Hasegawa, Niiza; Takashi Koumura, Saitama, and Toshiyuki Mizuno, Wako, all of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1983, Ser. No. 484,157
Claims priority, application Japan, Apr. 20, 1982, 57-66042
Int. Cl.³ F02D 9/02; F02M 3/00
U.S. Cl. 123—339 12 Claims



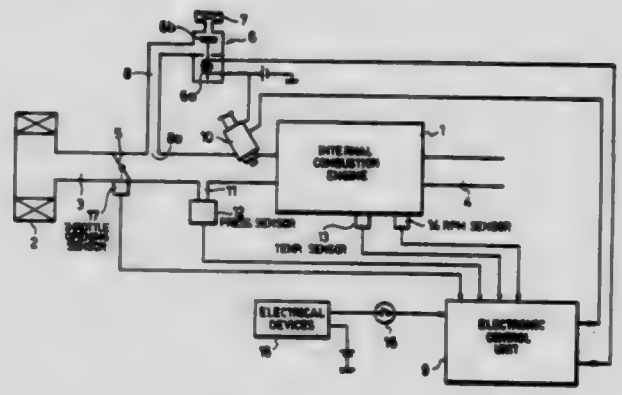
1. In a method for controlling the idling rpm of an internal combustion engine including an intake passage, a throttle valve arranged in said intake passage, an air passage having one end communicating with said intake passage at a location downstream of said throttle valve and another end with the atmosphere, respectively, at least one control valve arranged in said air passage for metering the quantity of supplementary air being supplied to said engine through said air passage, and at least one equipment disposed to create load acting on said engine, said method comprising controlling in a feedback manner said control valve in response to the difference between actual engine rpm and desired idling rpm during idling of said engine, detecting the total quantity of intake air inclusive of the supplementary air at each predetermined rotational angle of said engine, and varying the quantity of fuel being supplied to said engine in response to the resulting detected value of the intake air quantity, so as to maintain the air-fuel ratio of an air-fuel mixture being supplied to said engine at a desired value, the improvement comprising the further steps of: (a) detecting the operative state of said equipment; and (b) upon detection of a transition in the operative state of said equipment, varying the supplementary air quantity through said control valve, in response to the magnitude of load on said engine, applied by said equipment, and varying the fuel quantity in a manner such that (i) when said equipment is rendered operative, the fuel quantity is increased by a first predetermined amount at each said predetermined rotational angle of said engine a first predetermined number of times, and (ii) when said equipment is rendered inoperative, the fuel quantity is decreased by a second predetermined amount at said each predetermined rotational angle of said engine a second predetermined number of times.

4,491,109

IDLING RPM FEEDBACK CONTROL METHOD HAVING FAIL-SAFE FUNCTION FOR ABNORMALITIES IN THE FUNCTIONING OF THE THROTTLE VALVE OPENING DETECTING MEANS OF AN INTERNAL COMBUSTION ENGINE

Noriyuki Kishi, Tokyo, and Takashi Koumura, Saitama, both of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1983, Ser. No. 489,251
Claims priority, application Japan, May 7, 1982, 57-76357
Int. Cl.³ F02M 3/00
U.S. Cl. 123—339 5 Claims



1. An idling rpm feedback control method adapted to control a supplementary air quantity control means for regulating the quantity of supplementary air being supplied to an internal combustion engine having an intake passage and a throttle valve arranged therein, with means for detecting the throttle valve opening, in a feedback manner responsive to the difference between actual engine rpm and desired idling rpm, when at least one predetermined operating parameter of said engine including at least the opening value of said throttle valve satisfies a predetermined idle operating condition of the engine, the method comprising the steps of:

(1) setting beforehand an abnormal value of an output signal indicative of said opening value of said throttle valve from said throttle valve opening detecting means, said abnormal value having a value which is not yielded when said throttle valve opening detecting means is operating in a normal operating condition irrespective of an actual opening value of said throttle valve;

(2) determining whether or not said output signal indicative of said opening value of said throttle valve has said abnormal value; and

(3) supplying a maximum quantity of supplementary air to said engine by operating said supplementary air quantity

control means to an operating limit thereof, when it is determined in said step (2) that said output signal indicative of said opening value of said throttle valve has said abnormal value, said maximum quantity of supplementary air being set at a value which makes it possible for the engine to sustain operation thereof even if the engine is subjected to a maximum load thereon that can be applied to the engine at idling.

4,491,110

INTERNAL COMBUSTION ENGINE COMBUSTION CHAMBER PRESSURE SENSING APPARATUS

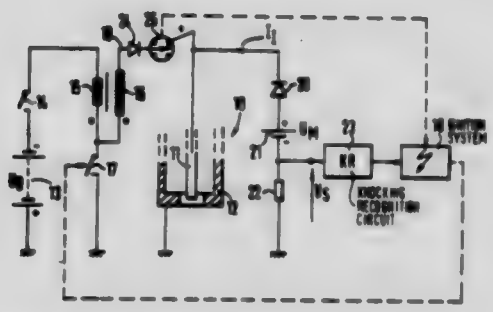
Rainer Bosse; Berward Böning, both of Vaihingen; Rudolf Nagel, Asperg, and Franz Sellmaier, Egling, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 9, 1983, Ser. No. 530,482

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1982, 3234629

Int. Cl.³ F02P *17/00*

U.S. Cl. 123—425 5 Claims



1. In combination with an internal combustion engine (ICE) having

a spark ignition circuit (13–16, 18, 19; 24, 25);

a spark plug (10) protruding into the combustion chamber of a cylinder of the engine, wherein the spark plug has a center electrode (11) and a ground or chassis electrode (12) differing in size from the center electrode;

means for sensing pressure variations in the combustion chamber upon occurrence of a combustion event including

an ion current sensing network (23);

means (21, 27) for applying a measuring voltage U_M across the electrodes of the spark plug;

connection means (20) for decoupling the sensing network from the ignition circuit of the spark plug,

the ion current sensing network sensing the ion current (I_I) after firing of the spark plug due to the measuring voltage applied to the electrodes (11, 12)

wherein, in accordance with the invention

the ignition circuit and the measuring voltage applying means apply the ignition voltage, and measuring voltage, respectively, with positive polarity to that one of the electrodes (11) which is the smaller one of the electrodes (11, 12).

4,491,111

FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES

Franz Eheim, Stuttgart, and Wilfried Böhringer, Flein, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

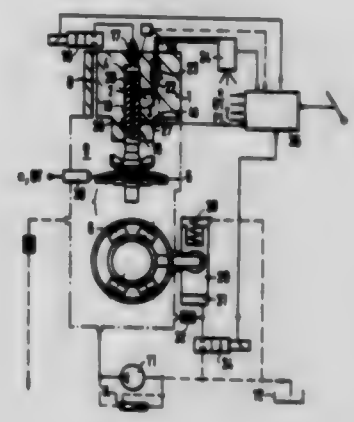
Filed Aug. 17, 1982, Ser. No. 408,977

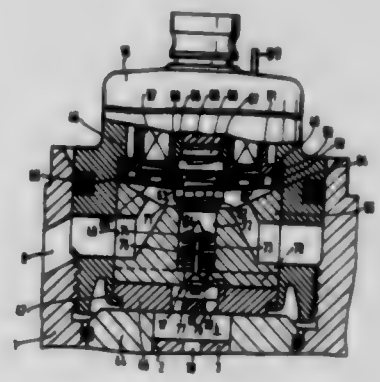
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1981, 3144361

Int. Cl.³ F02M *59/42*

U.S. Cl. 123—449 1 Claim

1. A fuel injection apparatus for internal combustion engines comprising a pump housing having at least one pump work chamber enclosed by an end plate and a pump piston movable in a bore in a bushing along a longitudinal axis of said housing, said pump work chamber being in communication via at least one fuel supply line with a fuel injection location, and during a stroke of said pump piston said pump work chamber communicating at least intermittently with a fuel inlet conduit that leads to a fuel supply source, a valve housing in said pump housing, a valve seat body in said valve housing, said valve seat body directly abuts an end face of said end plate which abuts an end face of said bushing in which said pump piston is disposed to minimize a dead volume of fuel contained in said work chamber, an axially aligned bore in said valve seat body, a first valve seat at one end of said axially aligned bore and a second valve seat at another end of said axially aligned bore, an electromagnetically actuatable metering valve disposed in said valve





housing, said metering valve having an armature and a movable valve element secured thereto coacting with said first valve seat disposed at one end of said axially aligned bore in said valve seat body, said axially aligned bore extending through said valve seat body in a direction of the pump piston and terminating at its opposite end in said second valve seat, upon excitation of said electromagnet said movable valve element being lifted from said first valve seat to open said axially aligned bore to fuel flow, and a check valve coacting with said second valve seat to allow fuel flow through said axially aligned bore only in the direction to said pump work chamber, and spring biasing means supported within said axially aligned bore biasing said check valve into bore closing engagement with said second valve seat.

4,491,112

FAILSAFE FOR AN ENGINE CONTROL

Hidetoshi Kanegae; Masaharu Asano; Seishi Yasuhara, all of Yokosuka, and Masao Nakajima, Atsugi, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 13, 1982, Ser. No. 339,155

Int. Cl.³ F02B *3/00*; F02D *1/04, 11/10*

U.S. Cl. 123—479 7 Claims

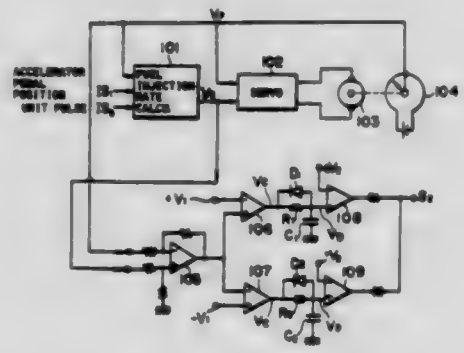
1. A failsafe system for producing a command signal for controlling a controlled device of an engine comprising:

(a) means for generating a feedback signal indicative of the state of said controlled device;

(b) a controller for controlling the state of said controlled device whereby an absolute difference in magnitude be-

tween said feedback signal and said command signal is within a predetermined range;

(c) a malfunction determining means comprising a first circuit including a first comparator for comparing a difference between said command signal and said feedback signal with a first predetermined level and for generating a first output when said command signal is greater than said feedback signal and said difference exceeds the first predetermined level, a first integrator for integrating the first output from said first comparator, and a second comparator for comparing the output of said integrator with a second predetermined level to generate a malfunction signal when the output of said first integrator exceeds the second predetermined level; and



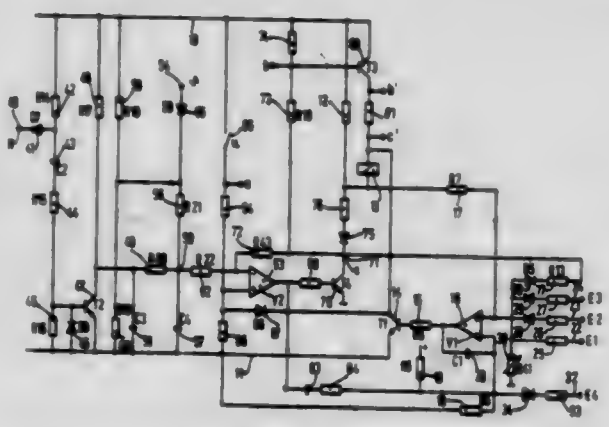
wherein said malfunction determining means further comprises a second circuit including a third comparator for comparing a difference between said command signal and said feedback signal with the first predetermined level and for generating a second output when said command signal is smaller than said feedback signal and said difference exceeds the first predetermined level, a second integrator for integrating the second output, and a fourth comparator for comparing the output of said second integrator with the second predetermined level to generate a malfunction signal when the output of said second integrator exceeds the second predetermined level.

4,491,113

CURRENT REGULATOR FOR AN ELECTROMAGNETIC CONSUMER FOR USE WITH INTERNAL COMBUSTION ENGINE CONTROL

Hermann Glaeser, Vaihingen; Eugen Joos, Löchgau; Werner Jundt, Ludwigsburg; Hans Kubach, Korntal, and Erich Singer, Benigheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 8, 1982, Ser. No. 415,952
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1982, 3214195
Int. Cl.³ F02D 5/00
U.S. Cl. 123—490 9 Claims



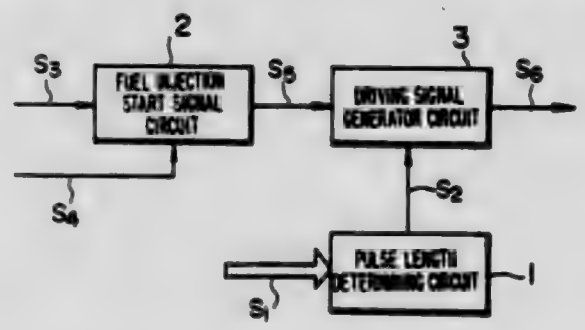
1. A current regulator for an electromagnetic consumer of an internal combustion engine control means having a measuring resistor and a current control device in series with said consumer, comprising, a differential amplifier coupled with said current control device and having at its positive input means responsive to control variables and to a signal from said measuring resistor, and at its negative input means responsive to a controllable comparison signal, and wherein said differential amplifier includes means connected thereto so as to form an integrator therewith.

4,491,114

FUEL INJECTION MEANS FOR AN INTERNAL COMBUSTION ENGINE OF AN AUTOMOBILE

Masahara Asano, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 135,351, Mar. 31, 1980, abandoned.
This application May 28, 1982, Ser. No. 383,276
Claims priority, application Japan, Apr. 2, 1979, 54-38398
Int. Cl.³ F02M 51/00
U.S. Cl. 123—492 22 Claims



1. A fuel injection control system for an internal combustion engine having a fuel injection valve responsive to a fuel injection drive signal, an engine revolution sensor, and an acceleration detector for detecting an acceleration demand, said control system comprising:

an arithmetic circuit responsive to an engine operating condition indicative signal for producing a fuel injection signal having a pulse width representative of the engine operating condition signal;

a drive signal generator responsive to said fuel injection signal for producing said fuel injection drive signal, said drive signal having a pulse width proportional to the pulse width of said fuel injection signal;

a timing signal generator for controlling and activating said drive signal generator, said timing signal generator being responsive to said engine revolution sensor to generate timing signals for activating said drive signal generator periodically and in synchronism with the revolution of the engine, said timing signal generator comprising means, responsive to a detected acceleration demand, for transiently generating an acceleration demanded timing signal for effecting a fuel injection in response to said acceleration demand, said means for transiently generating said acceleration demanded timing signal being operable to count a number of crank reference angle signals generated by said engine revolution sensor after a preceding injection drive signal, and

when the number of said crank reference angle signal counted is less than a predetermined value, to generate, in response to an acceleration demand, said acceleration demanded timing signal in response to a crank reference angle signal generated immediately subsequent to said acceleration demand and to generate subsequent timing signals in response to a predetermined count of crank reference angle signals, and

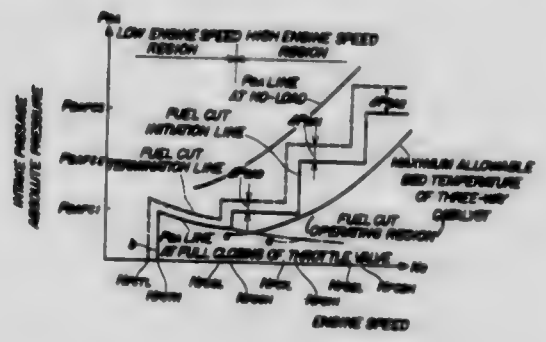
when the crank reference angle signal count is equal to or more than said predetermined value, to generate said timing signals in response to said predetermined count of crank reference angle signals.

4,491,115

METHOD FOR CONTROLLING FUEL SUPPLY TO AN INTERNAL COMBUSTION ENGINE AT DECELERATION

Yutaka Otobe, and Akihiro Yamato, both of Shiki, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 27, 1983, Ser. No. 498,954
Claims priority, application Japan, May 28, 1982, 57-90661
Int. Cl.[3] F02B *3/00*
U.S. Cl. 123—493 5 Claims



1. A method for controlling the fuel supply to an internal combustion engine having an intake passage and a throttle valve arranged therein and at least one cylinder, at deceleration thereof, comprising the steps of: (1) determining whether or not the throttle valve is in a substantially fully closed position while the engine is decelerating; and (2) interrupting the fuel supply to all of said at least one cylinder of the engine when it is determined in said step (1) that the throttle valve is in said substantially fully closed position; characterized in that: said method comprises further steps of: (3) determining whether or not the engine is operating in a predetermined low load operating region in which [is determined by] the rotational speed of the engine is higher than a predetermined speed and another engine operation parameter relating to the intake air quantity of the engine has a value less than a predetermined value, when it is determined in said step (1) that the throttle valve is in a position other than said substantially fully closed position; [(4) and] and (4) interrupting the fuel supply to the engine, when it is determined in said step (3) that the engine is operating in said predetermined low load operating region.

4,491,116

BUILT-IN HYDRAULIC AUTOMATIC DEVICE FOR ADVANCING THE INJECTION ON A DIESEL ENGINE

Rene Morin, St. Pierre de Boeuf Peluasin, France, assignor to Renault Vehicules Industriels, France

Continuation-in-part of Ser. No. 107,882, Dec. 28, 1979, Pat. No. 4,401,088. This application May 13, 1983, Ser. No. 494,586
Claims priority, application France, May 14, 1982, 82 08069
Int. Cl.[3] F02M *59/20*
U.S. Cl. 123—502 14 Claims

1. An automatic hydraulic fluid device for advancing the fuel injection pump of a diesel engine in response to engine speed, said diesel engine having a drive pinion and an injection pump having a camshaft with a first central axis, said automatic hydraulic fluid device comprising:

a hub member coaxially mounted to said camshaft of said injection pump for rotation therewith;

a first cavity in said hub member, said first cavity having a second central axis oriented perpendicularly to said first central axis and displaced therefrom a predetermined amount;

a second cavity in said hub member, said second cavity having a third central axis disposed parallel to said second central axis and displaced therefrom twice said predetermined amount and disposed diametrically opposite said second central axis relative to said first central axis;

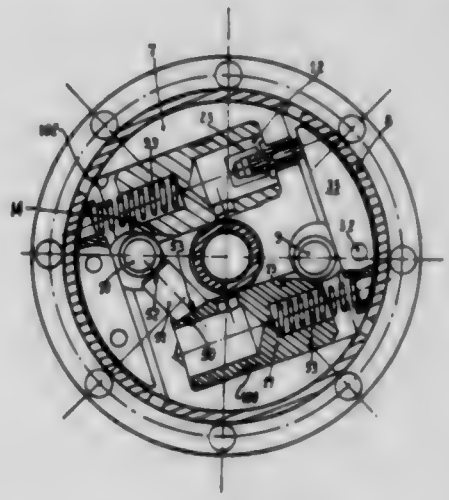
a first passage in said hub member, said first passage having an inlet and an outlet, said first passage further communicating with said first cavity;

a second passage in said hub member parallel to said first passage but disposed on the opposite side of said first central axis therefrom, said second passage having an inlet and an outlet, said second passage further communicating with said second cavity;

a casing member mounted to said drive pinion for rotation therewith;

a first roller member connected to said casing member, said first roller member having a fourth central axis oriented parallel to said first central axis and spaced away therefrom, said first roller member further being smaller than said first passage and being movably disposed therein;

a second roller member connected to said casing member, said second roller member having a fifth central axis oriented parallel to said first central axis and spaced away therefrom and disposed diametrically opposite said fourth central axis relative to said first central axis, said second



roller member further being smaller than said second passage and being movably disposed therein;

a first piston member slidably and sealingly disposed within said first cavity, said first piston member having a forward face and a rearward face opposite said forward face and further dividing said first cavity into a first pressure chamber adjacent said forward face and a second pressure chamber adjacent said rearward face;

a second piston member slidably and sealingly disposed within said second cavity, said second piston member having a forward face and a rearward face opposite said forward face and further dividing said second cavity into a third pressure chamber adjacent said forward face and a fourth pressure chamber adjacent said rearward face;

a first biasing ramp formed in the periphery of said first piston member adjacent said forward face, said first biasing ramp being disposed contiguous to said first roller member for cooperative engagement therewith, said first biasing ramp further being inclined relative to said second central axis from said forward face toward said rearward face such that as said piston member reciprocates along said second central axis, said first biasing ramp slides adjacent said first roller;

a second biasing ramp formed in the periphery of said second piston member adjacent said forward face, said second biasing ramp being disposed contiguous to said second roller member for cooperative engagement therewith, said second biasing ramp further being inclined relative to

said third central axis from said forward face toward said rearward face such that as said second piston member reciprocates along said third central axis, said second biasing ramp slides adjacent said second roller member; p1 a third cavity in said hub member, said third cavity having a sixth central axis disposed perpendicular to said first central axis and displaced therefrom, said third cavity having one end opening into said first passage and another end opening into said fourth pressure chamber;

a third piston member movably disposed in said third cavity, said third piston member having a forward face operatively engaging said first roller member and a rearward face opposite said forward face operatively engaging said second piston member;

a fourth cavity in said hub member, said fourth cavity having a seventh central axis disposed parallel to said second central axis and displaced therefrom;

an annular passage centrally located in said hub member and communicating with said fourth cavity; and

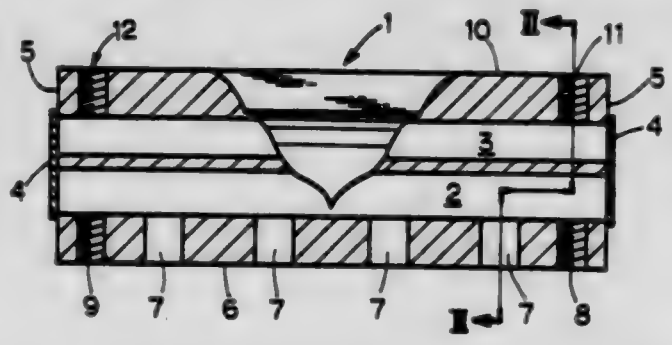
pressurization means mounted in said fourth cavity, for supplying pressurized fluid to said second pressure chamber in response to said drive pinion rotational speed such that above a predetermined rotational speed of said drive pinion the pressurized fluid in said second pressure chamber forces said first piston member to move outwardly from said first central axis towards said casing member and further the pressurized fluid in said fourth pressure chamber forces said second piston member to move outwardly from said first central axis towards said casing member, whereby said first and second biasing ramps of said first and second piston members move against said first and second roller members, respectively, to move said hub member relative to said casing member and to thereby cause angular displacement therebetween to advance said fuel injection pump of said diesel engine, said third piston member maintaining a predetermined relationship between said first and second piston members.

4,491,117

APPARATUS FOR SUPPLYING COOLED FUEL TO AN ENGINE

Hiroshi Koide, Okazaki, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Sep. 15, 1983, Ser. No. 532,481
Claims priority, application Japan, Feb. 24, 1983, 58-29986
Int. Cl.³ F02M *31/20*
U.S. Cl. 123—541 20 Claims



1. An apparatus for supplying cooled fuel into an internal combustion engine, comprising:

a fuel tank;

a fuel pump for pumping fuel from the tank to the engine;

a reservoir for a coolant;

means for supplying the coolant to the engine;

a fuel distribution tube provided in the engine, having a fuel passage permitting fuel flow therein provided by said fuel pump and a coolant passage permitting coolant flow therein, provided by said coolant supplying means, said fuel passage and coolant passage being separate but in close proximity for facilitating heat exchange between fluids in those passages, respectively, said fuel distribution tube having fuel injection valve openings therein; and

a plurality of fuel injection valves integrally communicated with said openings for injecting fuel supplied through the fuel passage into the engine,

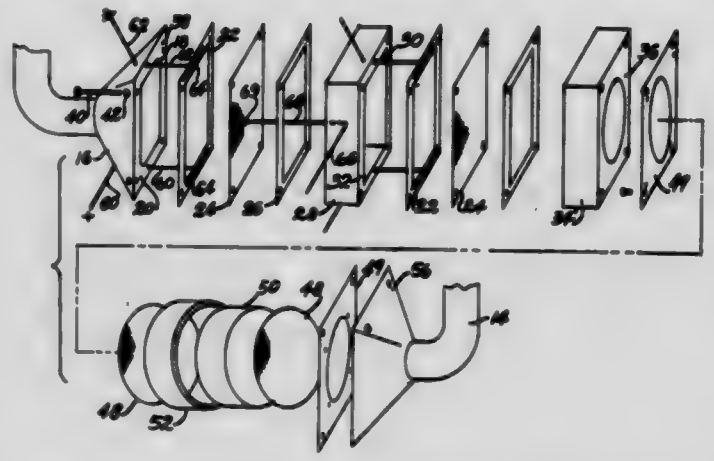
wherein the fuel supplied to the fuel injection valve is cooled by the coolant flowing in the coolant passage before being injected into the internal combustion engine.

4,491,118

FUEL MIXTURE METHOD AND APPARATUS EMPLOYING AN ELECTRICALLY HEATED SCREEN

Bobby M. Wooldridge, P.O. Box 337, Buena Vista, Ga. 31803

Filed Sep. 28, 1982, Ser. No. 426,023
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—549 10 Claims



1. In a fuel mixture system for an internal combustion engine having a fuel mixture inlet from a carburetor and a fuel mixture outlet back to the intake of an internal combustion engine:

means for supporting a foraminous member to receive the fuel mixture therethrough comprising a support element having a three dimensional support spacing frame,

opposed spaced foraminous members such as a screen supported on opposite sides of said support spacing frame and between said fuel inlet and said fuel outlet for electrical energization to heat the fuel mixture,

electrical means for energizing said foraminous members,

control means for controlling the temperature of said foraminous members,

a three-dimensional housing connecting the fuel mixture inlet to said support element,

means attaching said housing with said outlet,

a cooling unit in communication with said foraminous members,

and there being a plurality of said support elements and cooling units arranged in communication in series.

4,491,119

DIESEL OIL HEATER FOR DIESEL ENGINE

Michel Fefea, Magny les Hameaux, France, assignor to Automobiles Citroen, Neuilly and Automobiles Peugeot, Paris, both of, France

Filed May 16, 1983, Ser. No. 494,805
Claims priority, application France, May 17, 1982, 82 08872
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 5 Claims

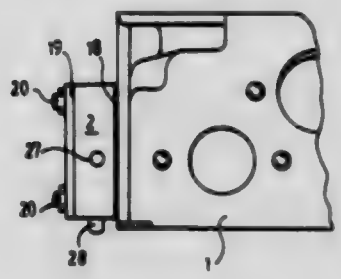
1. A Diesel engine comprising:

a cylinder block having a cylinder head formed directly with an orifice and a pair of orifices opening at said surface and defining a portion of a cooling water path for said head and the engine;

a Diesel oil heater comprising a heat-exchanger path formed with a passage and with fittings communicating with said passage for passing Diesel oil fueling said engine through said body, a water compartment in heat-exchanging rela-

tionship with said passage and a surface having at least one window communicating with said compartment; and

means for securing said body to said head with said surface



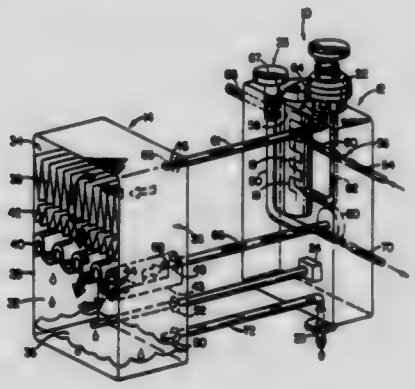
of said body in direct contact with said surface on said head whereby cooling water circulating through said head is circulated through said compartment of said body to heat Diesel oil traversing said passage.

4,491,120

FUEL CONDITIONER

David Hodgkins, Manchester, Conn., assignor to Stanadyne, Inc., Windsor, Conn.

Filed Jun. 24, 1983, Ser. No. 507,799
Int. Cl.³ F02M *31/00*; B01D *23/00*
U.S. Cl. 123—557 13 Claims



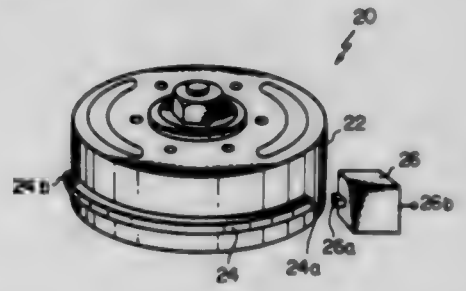
1. A fuel conditioner comprising a base having a fuel inlet passageway partially defined by a heater chamber, a thermally activated fuel heater disposed within said heater chamber and responsive to a predetermined temperature of fuel flowing through said inlet passageway, a fuel outlet passageway therein, a disposable fuel filter/water separator element having a housing defining a filter chamber including a lower portion defining a sump, a fuel inlet port communicating with an upper portion of said filter chamber, a fuel outlet port communicating with said sump, a filter assembly disposed within said filter chamber and extending thereacross, said filter assembly separating said upper portion from said lower portion and including a plurality of elements arranged in vertical series and through which fuel flow from said fuel inlet port to said fuel outlet port is constrained to pass, said elements including a primary filter element and a coalescing element, and means for releasably securing said fuel filter/water separator element to said base with said fuel inlet passageway in communication with said fuel inlet port and said fuel outlet passageway in communication with said fuel outlet port.

4,491,121

IGNITION SYSTEM FOR TWO-CYCLE ENGINE

Nobuo Miura, Wako, and Norihisa Ishii, Sakado, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 11, 1982, Ser. No. 407,140
Claims priority, application Japan, Aug. 13, 1981, 56-120745[U]; Dec. 4, 1981, 56-180620[U]
Int. Cl.³ F02P *5/00*
U.S. Cl. 123—631 6 Claims



1. An ignition system for a two-cycle engine, which comprises:

a rotational body rotatable in synchronism with the crank shaft of said engine in normal and reverse directions and having a detectable portion including a leading edge and a trailing edge and extending circumferentially on the radially outer periphery thereof;

a detector placed at a predetermined angular position with respect to the rotational axis of said crank shaft and in the proximity of the outer periphery of said rotational body, for detecting both edges of said detectable portion and for producing an electric signal having two amplitude variations corresponding to said both edges, said two amplitude variations being reverse in polarity to each other; and

an ignition pulse producing circuit connected to said detector for producing an ignition pulse in response to selected one polarity of said two amplitude variations of said electric signal, the angular position of said detector with respect to said crank shaft and the circumferential length (θ_l) of said detectable portion being so selected that said crank shaft is positioned at a crank angle which is outside of the reverse rotation allowing angular region constituted by before top dead center (BTDC) and after top dead center (ATDC) regions (θ_f, θ_r) during reverse rotation of said crank shaft;

said detector being adapted to produce said selected one polarity of the amplitude variation when it detects the trailing edge of the detectable portion under the rotation of the crank shaft in both directions, so that the ignition angle at the reverse rotation of the crank shaft is equal to and angle of ($\theta_l+\theta_l$), where the angle θ_l is an ignition angle at the normal rotation of said crank shaft and the angle of ($\theta_l+\theta_l$) is so determined to be larger than the angle of θ_r to avoid reverse rotation of the crank shaft.

4,491,122

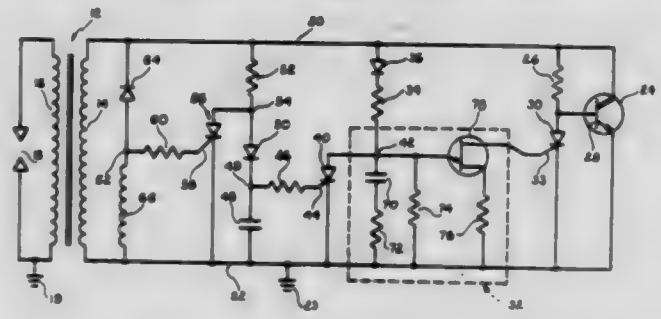
ANTI-REVERSE OPERATION OF SOLID STATE INDUCTIVE MAGNETO

Michael J. Piteo, Enfield, Conn., assignor to R. E. Phelon Company, Incorporated, East Longmeadow, Mass.

Filed Mar. 7, 1984, Ser. No. 587,162
Int. Cl.³ F02P *1/08*
U.S. Cl. 123—631 5 Claims

1. In an inductive breakerless magneto ignition system having an ignition transistor in circuit with the primary winding of an ignition coil to provide a solid state switch for primary current generated by said magneto and a control circuit responsive to a portion of the primary current for causing said transistor to be turned "off" for generation of an ignition pulse as a result of the open circuit collapse of primary current through said ignition transistor, an anti-reverse running system

for preventing ignition pulse generation in response to reverse rotation of the magneto comprising a by-pass circuit connected across said primary winding and in parallel with said control circuit to shunt said portion of the primary current from the control circuit and including an electronic switching means



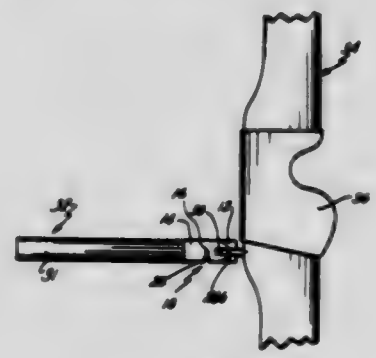
and time delay means for holding said switching means "on" for a predetermined time to shunt away from said control circuit a pulse generated by reverse magneto rotation and a voltage sensing circuit for by-passing said by-pass circuit when said magneto is rotated in the forward direction.

4,491,123

STABILIZER COUPLING

Gregory T. Wirtz, 1462 Canterbury, Muskegon, Mich. 49444

Filed Mar. 29, 1982, Ser. No. 362,904
Int. Cl.³ B23P *19/04*
U.S. Cl. 124—89 14 Claims



1. An archery bow stabilizer mounting bracket comprising:
a first member to be secured to a bow;
a second member to support a stabilizer;
means for pivotally interconnecting said first and second members about a first axis and for allowing said first and second members to shift with respect to each other along a second axis, said first and second axes being generally perpendicular to one another; and
detent means defined in part by said first and second members for selectively securing said first and second members in a detent fashion and in either a first operative position wherein said first and second members are longitudinally aligned along said second axis and a second inoperative position wherein said first and second members are angularly related upon shifting of said second member along said second axis and rotation of said second member with respect to said first member.

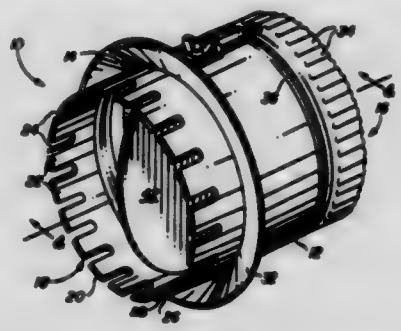
4,491,124

SELF-TAPPING DUCT FITTING

Richard J. Goettel, 8133 W. Montebello, Glendale, Ariz. 85303

Filed Jun. 1, 1982, Ser. No. 383,558
Int. Cl.³ F23L *11/00*
U.S. Cl. 126—293 10 Claims

1. A self-tapping duct fitting, comprising, in combination:
(a) a cylindrical hollow sleeve forming a pair of open ends and defining an axis extending between the ends;
(b) tapping and mounting means at a one of the open ends of said sleeve for cutting a hole into a wall for an associated duct when said sleeve is rotated about the axis defined by said sleeve and for mounting of said sleeve in the cut hole, said tapping and mounting means including a plurality of alternately arranged teeth and separating slots formed axially in said sleeve in substantially equally spaced radial increments about the one of the open ends of said sleeve with each of said slots being narrower than each of said teeth;
(c) a shield circumscribingly mounted on said sleeve in axially spaced relationship with said tapping and mounting means for sealingly engaging the exterior surface of the wall of the associated duct upon mounting of said sleeve in the hole cut by said tapping and mounting means; and
(d) said sleeve formed of a relatively thin gage deformable metal to provide each of said plurality of teeth with cutting edges and to allow said teeth to be bent over into bearing engagement with the interior surface of the wall of associated duct upon mounting of said sleeve in the hole cut by said tapping and mounting means.

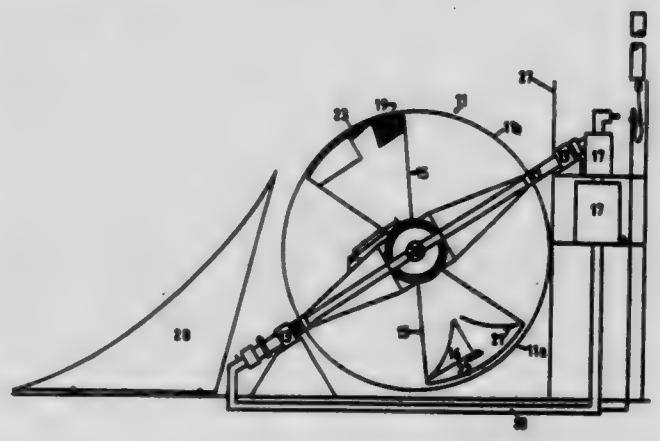


4,491,125

SOLAR COLLECTOR

Garrett M. Salisbury, 10 Waratah Ave., Dalkeith, Western Australia, Australia

PCT No. PCT/AU82/00185, § 371 Date Jun. 21, 1983, § 102(e) Date Jun. 21, 1983, PCT Pub. No. WO83/01830, PCT Pub. Date May 26, 1983
PCT Filed Nov. 12, 1982, Ser. No. 518,803
Claims priority, application Australia, Nov. 17, 1981, PF1592; Mar. 24, 1982, PF3294
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—424 11 Claims



1. A solar collector comprising a substantially reflective concave surface having its reflective face inclined to a north-south horizontal axis by an angle substantially equal to the latitude of the location of the solar collector, a caustical conical concentrator located at the focus of said reflective concave surface and having a concentrated second focus for radiation reflected onto its surface from said reflective concave surface, a heat exchanger located at the second focus, said caustical conical concentrator being mounted to a support rotatable about said second focus along a substantially north-south axis and a substantially east-west axis, reflective concentrator means mounted on said support at the opposite side of said

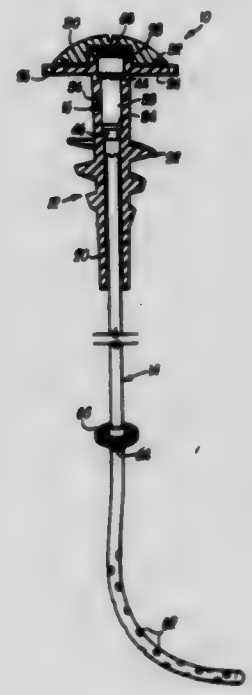
second focus from said caustical conical concentrator to shadow said caustical conical concentrator when both are in alignment with the sun, reflective concentrator means having its focus located at said second focus, and a drive means for maintaining said caustical conical concentrator and said reflective concentrator means in alignment with the sun.

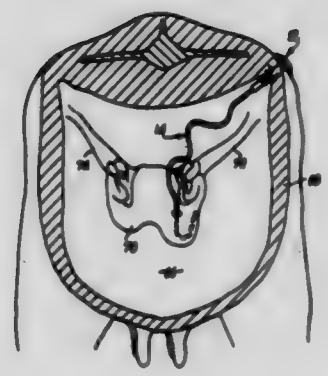
4,491,126

METHOD AND APPARATUS FOR MONITORING BODY PARTS OF ANIMALS

James S. Cullor, 128 Shasta Pl., Woodland, Calif. 95615, assignor to Wilbur D. Smith, Nevada, Mo.; James Cullor, Fort Scott, Kans.; James S. Cullor, Woodland, Calif. and Gary W. Cullor, Fort Scott, Kans.

Filed Jan. 6, 1982, Ser. No. 395,830
Int. Cl.³ A61B *19/00*; A61M *25/00*
U.S. Cl. 128—1 R 3 Claims





1. A method of growing cells in and harvesting grown cells or the secretory products thereof from the uterus of a living animal, said method comprising the steps of:

providing a tubular, fluid-conveying element;

operatively securing said element to said animal's body with the outer end of the element adjacent the exterior surface of the animal's skin;

operatively coupling an elongated, flexible, fluid-conveying conduit to, respectively, said element and said uterus,

said coupling step including the steps of initially moving said uterus to a convenient working position, making an incision in the wall of said uterus and inserting the inner end of said conduit into said uterus until an elongated, flexible innermost portion of the conduit lies within the confines of said uterus,

said conduit being of a length greater than the shortest distance between said element and said incision such that a portion of the conduit lies within the abdominal cavity of said animal exteriorly of said uterus for, in conjunction with the flexiblity of the conduit, permitting and accommodating natural uterine growth and movement as gestation proceeds;

physically attaching and interlocking said inner end of said conduit to said wall of said uterus, with said elongated, flexible innermost portion lying within the confines of said uterus, for preventing leakage of fluid from said uterus,

said attaching and interlocking step comprising the steps of providing a radially outwardly extending, suturable collar affixed to said conduit intermediate the ends thereof, and suturing said collar to the wall of said uterus;

subsequent to said attaching and interlocking step repositioning said uterus at the normal position thereof within said adominal cavity;

placing a cell line in said uterus;

thereafter incubating the cell line in said uterus and periodically and selectively withdrawing fluid from, or adding fluid to, said uterus containing said cell line by conveying said fluid through said conduit and element; and

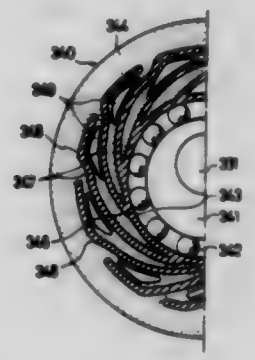
harvesting grown cells or the secretory products of said cells from said uterus.

4,491,127

MASSAGING ELEMENT

Yukio Yamamura, and Takafumi Hamabe, both of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Aug. 31, 1982, Ser. No. 413,459
Claims priority, application Japan, Nov. 5, 1981, 56-178185
Int. Cl.³ A61H *15/00*
U.S. Cl. 128—57 4 Claims

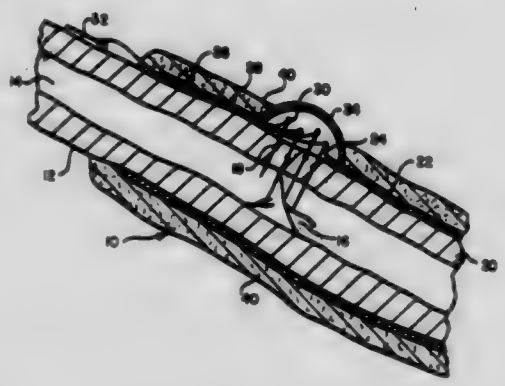


1. A massaging element of a massaging device including an outer ring mounted through an antifriction bearing concentrically around an inner ring secured eccentrically to a driven shaft and an elastic member fitted peripherally around said outer ring, wherein said elastic member of said outer ring comprising a plurality of components showing different moduli of elasticity in the direction in which a load is applied, whereby, upon a pressing massage operation for a human body, a nonlinear characteristic curve of the modulus of elasticity which thus increasing stepwise is achieved by the entire elastic member, said components of said elastic member comprise a plurality of elastic plate spring parts integral with a ring body of said outer ring and extending radially out of said body so that at least adjacent ones of said plate spring parts will partly overlap each other in the direction of said load, and a soft material layer formed at least partly between the respective plate spring parts and peripherally around the plate spring parts, said layer being smaller in modulus of elasticity than that of the plate spring parts.

4,491,128
METHOD OF MAKING A SURGICAL CAST WITH WINDOW

Paul C. Haschke, 6288 W. Roosevelt Rd., Forest Park, Ill. 60130

Filed Aug. 19, 1982, Ser. No. 409,734
Int. Cl.³ A61F 5/04
U.S. Cl. 128—91 R
2 Claims



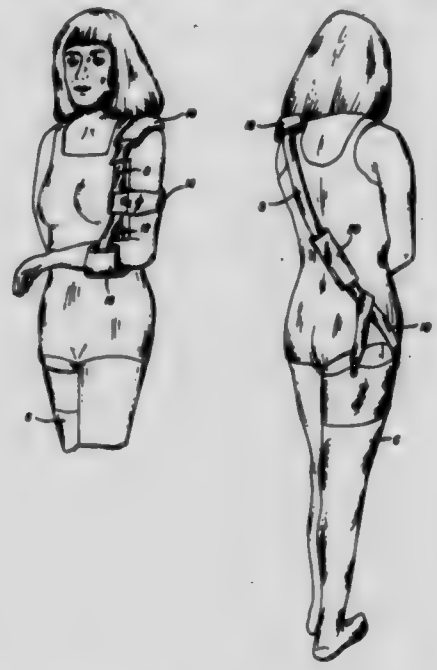
1. A method of making a cast for a body surface used in combination with a bone growth stimulator, comprising, placing a non-rigid underlayer material onto the body surface, except at a selected body surface portion such that the omission of underlayer material at the selected body surface portion defines an opening in said underlayer, selecting a window member slightly larger than said opening surrounding the opeing to enable the window member to extend across the opening to cover the opening, the surface of the window member being so formed that a substantial portion of the entire window surface projects away from the opening, and layering uncured moldable casting material onto the underlayer material and onto the periphery of said window member, and allowing the casting material to cure to form a rigid overlayer that holds the window member in position over the selected body surface portion, wherein the said body surface includes a bone fracture having pins to set the bone, the pins extending to the selected body surface portion and the bone growth stimulator has means for making electrical communication with the bone including an electrical conduit, the method further including extending the electrical conduit to the opening and connecting the conduit to the pins at said selected body surface portion, the window member and the opening in said underlayer providing an enclosed protective space for said connection, and precluding any rubbing of said cast against said pins or the conduit connection to said pins.

4,491,129
STRAPPING ASSEMBLY AND METHOD FOR THE TREATMENT OF ACROMIOCLAVICULAR SEPARATIONS

Robert C. Lockwood, Stevens Rd., Marcellus, N.Y. 13108

Filed Apr. 30, 1981, Ser. No. 259,481
Int. Cl.³ A61F 5/40
U.S. Cl. 128—94
1 Claim

1. A strapping assembly for the treatment of an acromioclavicular separation comprising a high stocking worn on the leg of the patient on the side opposite the injury, an elongated strap member, an elastic garter connecting one end of the strap member to the top of the stocking, the garter being adjustable to enable the tension on the strap member to be adjusted after the latter has been positioned on the patient, the strap member being long enough to extend upwardly from the garter diagonally across the patient's back to the shoulder on the side of the injury and then over the shoulder and downwardly to the patient's forearm on the side of the injury, the strap member haveing an adjustable closed loop at its opposite end for encircling the forearm and supporting it in sling position, and an adjustable diameter band encircling the upper arm on the side of the injury and a portion of the strap member adjacent

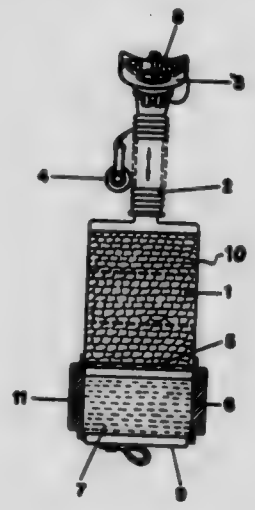


thereto, the band serving to help hold the strap member in proper position on the patient.

4,491,130
EMERGENCY RESPIRATOR

Adalbert Pasternack, Bad Schwartau, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 18, 1982, Ser. No. 442,791
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1981, 3150412
Int. Cl.³ A62B 7/08
U.S. Cl. 128—202.26
4 Claims



1. An emergency respirator for use by a person, comprising: a container having opposite open ends; a cartridge of a material in said container which acts to bind carbon dioxide and to liberate oxygen for gases passing through said container; a breathing connection connected to one open end of said container and defining a breathing passage; a mouthpiece connected to said breathing connection; a jacket having opposite open ends defining a heat storage space having one end connected to an opposite open end of said container; and a heat storage mass in said jacket; said mouthpiece being engageable in the person's mouth and expiration gases being directable during expiration through the breathing passage into the cartridge to cause a production of heat which is directed to said heat storage means, and during inspiration, inspiration gases are heated in said heat storage mass; said container having a perforated bottom in its connection to said one end of said

jacket; and a tear off lid covering the opposite end of said jacket remote from said container.

4,491,131

LASER DEVICE FOR GYNECOLOGY

Arthur Vassiliadis, Colorado Springs, Colo., assignor to Xanar, Inc., Colorado Springs, Colo.

Filed Apr. 23, 1982, Ser. No. 371,329
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—303.1 5 Claims



1. A self-contained surgical laser system for delivering laser energy to selected target sites to vaporize tissue such as in gynecological applications which comprises:

(a) a generally vertical column housing a CO_2 laser for emitting a first laser beam, a second laser of the type emitting a laser beam visible to the unaided human eye and means for optically aligning said laser beams;

(b) a stable movable base member pivotally anchoring said column, said base member including means for permitting said column to be universally pivoted relative to an axis intersecting said base member;

(c) a hollow telescopic support member supported by said column and positioned for transmitting said laser beams therethrough;

(d) means connected to said telescopic member for tilting said column relative to the location of the desired target site; and

(e) viewing means supported by said telescopic support member for aiming, microscopically viewing and delivering said laser beams from said support member to a desired target site without moving either said vertical column or said base member.

4,491,132

SHEATH AND RETRACTABLE SURGICAL TOOL COMBINATION

Jerry L. Aikins, Warsaw, Ind., assignor to Zimmer, Inc., Warsaw, Ind.

Filed Aug. 6, 1982, Ser. No. 405,843
Int. Cl.³ A61B *17/32*
U.S. Cl. 128—305 14 Claims



1. A surgical tool comprising:

(a) an elongated handle having a distal end portion and an elongated main body portion, said distal end providing a working end of the surgical tool;

(b) a protective tubular outer sheath for surrounding said elongated handle, said sheath having a distal end, a proximal end and an intermediate portion therebetween, said handle being insertable into the sheath from the distal tubular opening of the sheath, and wherein said sheath includes a stepped portion wherein said proximal end portion of the sheath has a larger diameter than the distal and intermediate portions; and

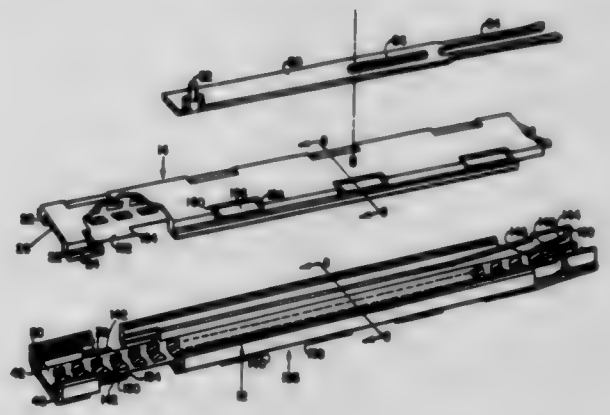
(c) an engaging means operative between the sheath and the handle, said engaging means providing a plurality of functional positions for the handle to be selectively positioned within the sheath, and wherein said engaging means interacts internally between the sheath and the handle components and includes a protrusion means on one component and an indentation means on the other component, which cooperatively engage with each other, and wherein said sheath includes a resilient cantilever spring mechanism enabling said engaging means to disengage upon application of pressure thereto and wherein said sheath further includes first and second proximal tubular portions, said first and second portions being interconnected by the cantilever spring mechanism, said spring mechanism being a thin interconnecting resilient strip, said first portion further integrally connected to the intermediate portion of the sheath and said second portion being the most proximal portion of the sheath, said disengaging occuring upon application of pressure to one of said portions.

4,491,133

FOLDING CARTRIDGE FOR A MULTIPLE CLIP APPLIER

John R. Menges, Woodbridge, and Laszlo Huebscher, New Brunswick, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Feb. 5, 1982, Ser. No. 345,975
Int. Cl.³ A61B *17/12;* B25C *5/02*
U.S. Cl. 128—326 14 Claims



1. A cartridge for a plurality of ligating clips, said cartridge comprising:

a ligating clip applier having a body portion;

a plurality of clips;

a fixed rack housing adapted for removable attachment to and operable engagement with said multiple clip applier, and including a base section, right and left sidewalls and a hinge connecting said sidewalls to said base so that said walls and said base can be fabricated flat as a unit and then said walls may be folded to form a generally U-shaped channel along which said clips may be disposed;

cooperating means on said body portion and said fixed rack housing for holding said fixed rack housing in said U-shaped channel configuration when attached to said body portion;

a U-shaped moving rack housing disposed within said U-shaped channel of said fixed rack housing sidewalls and adapted for axial reciprocation along said fixed rack housing;

cooperating guide means on said fixed rack housing and said moving rack housing for guiding said moving rack housing as it moves axially of said fixed rack housing;

axial guides on said fixed rack housing base spaced apart from said sidewalls for aligning said ligating clips therebetween.

4,491,134
HAIR REPLACEMENT APPARATUS

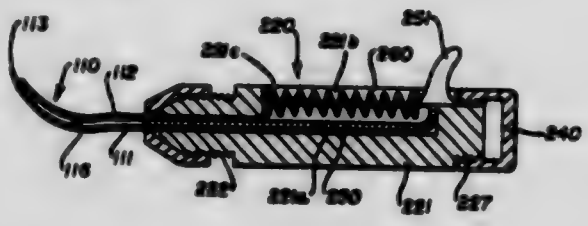
Oscar Maimin, 127 E. Wayne Ave., Akron, Ohio 44301

Continuation-in-part of Ser. No. 190,664, Sep. 25, 1980, abandoned, which is a division of Ser. No. 932,513, Aug. 10, 1978, Pat. No. 4,263,913. This application Mar. 30, 1981, Ser. No. 249,199

Int. Cl.³ A61F *1/00*

U.S. Cl. 128—330

1 Claim



1. Apparatus for implanting replacement strands of hair in a human scalp, comprising:

(A) an instrument having an elongate shank having first and second ends;

(B) an arcuate penetration portion

(1) projecting from said first end of said shank

(2) terminating in a tapered, pointed distal end, and

(3) having a strand receiving notch spaced from said distal end;

(C) a gripping handle having first and second ends;

(D) said first end of said handle being threaded;

(E) a cap having a central aperture adapted to be slid over said instrument and being threaded for releasable engagement with said first end of said handle;

(1) whereby said second end of said shank of said instrument is releasably engagable with said first end of said handle;

(F) said gripping handle having

(1) a passageway extending inwardly from said first end;

(2) an axially extending opening in one peripheral surface spaced from said first end and radially communicating with said passageway;

(3) a handle slidably received in said opening; and

(4) a flexible stylet secured to said handle and received in said passageway; and

(G) tension means received in said axially extending opening and normally urge said handle and said stylet toward said second end of said handle.

4,491,135
SURGICAL NEEDLE HOLDER

Harvey A. Klein, 1000 E. 19th St., Brooklyn, N.Y. 11230

Filed Nov. 3, 1982, Ser. No. 438,796

Int. Cl.³ A61B *17/06, 17/28*

U.S. Cl. 128—340

14 Claims



1. A needle holder for one handed operative manipulation of a curved needle having a uniform radius of curvature, said needle holder comprising two jaws having engageable surfaces, for holding said needle therebetween and a manually manipulable handle characterized in that said handle comprises a rotatable element which is rotatable, by finger rotation, about an axis of rotation, with said surfaces being substantially parallel to said axis of rotation and wherein said jaws hold said needle at a distance, from said axis to the point of said needle, substantially equal to the radius of curvature of said needle to the point thereof and whereby said jaws hold said needle in a position whereby rotation of said handle element about said axis rotates said needle and the point thereof through a circle defined by the curvature of said needle and wherein said handle comprises a stationary element with one end being adapted to be held by the palm of said hand for stability and the other end thereof being rotatably connected by connecting means to said rotatable element, said holder further comprising means for permitting rapid one hand engagement and disengagement of said needle holder with said needle.

4,491,136
DISPOSABLE CIRCUMCISION DEVICE

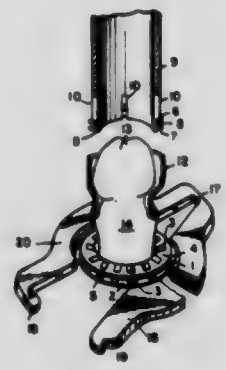
Harry H. LeVeen, 800 Poly Pl., Brooklyn, N.Y.

Continuation of Ser. No. 911,235, May 31, 1978, abandoned, which is a continuation of Ser. No. 368,369, Jun. 8, 1973, abandoned, which is a continuation-in-part of Ser. No. 338,392, Mar. 5, 1973, abandoned. This application Dec. 22, 1980, Ser. No. 218,548

Int. Cl.³ A61B *17/00*

U.S. Cl. 128—346

4 Claims



1. A circumcision device which comprises in combination a male and a female member, the male member comprised of tubular support means having imposed on the end thereof an annular grooved ring, said support means containing a means for slight flexure of the terminus on which the annular ring is mounted, the female member comprising a flexible plastic ring element capable of expansion or contraction of its internal diameter, said ring element having on its exterior face a distal rim and a proximal rim which define between them an annular groove, said ring element having a main body portion between the two rims which comprise alternating tissue grasping fingers and expansion spaces, a compression means which when applied to said distal rim and said proximal rim wedge the rims apart in an axial direction forcing the grasping fingers to expand radially outwardly and enlarge the bore of the ring element and when said compression means is removed to diminish the said bore by radially contracting the fingers of the ring element and exert compressive pressure on the tubular male member and its annular grooved ring.

4,491,137
ADAPTOR FOR ULTRASONIC TRANSDUCER PROBE

Masaharu Jingu, Ootawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 10, 1983, Ser. No. 521,825

Claims priority, application Japan, Aug. 17, 1982, 57-124405[U]

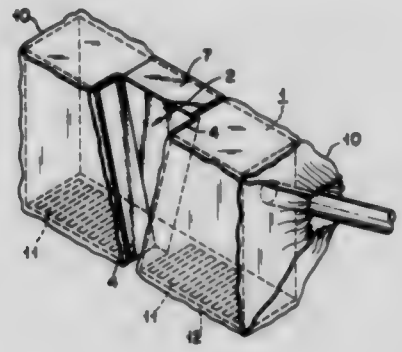
Int. Cl.³ A61B *10/00*

U.S. Cl. 128—660

9 Claims

1. An adaptor for a cannula guide type ultrasonic transducer probe which guides a cannula along a cavity of the ultrasonic transducer probe and which holds a bag covering said probe in position, said cavity being formed in one major surface of said probe and being tapered along an array of ultrasonic transducer elements so as to become wider in a direction from an application surface which has the ultrasonic transducer elements thereon to an opposite surface thereto, comprising: a

guide unit having a substantially trapezoidal back plate whose unequal sides define upper and lower ends of the back plate and a pair of side plates, said back plate having a shape complementary to the shape of a back wall of said cavity and adapted to be fitted in said cavity while said bag covers said probe to thereby allow cannula access alongside said bag when said



cannula is disposed in said quide unit, and said pair of side plates being integrally formed with said back plate along two sides thereof; and a band unit mounted such that upper and lower free ends thereof respectively extend from upper and lower ends of said back plate, said upper and lower free ends of said band unit having engaging means for securing said adaptor to said probe.

4,491,138

CIGARETTE MANUFACTURE

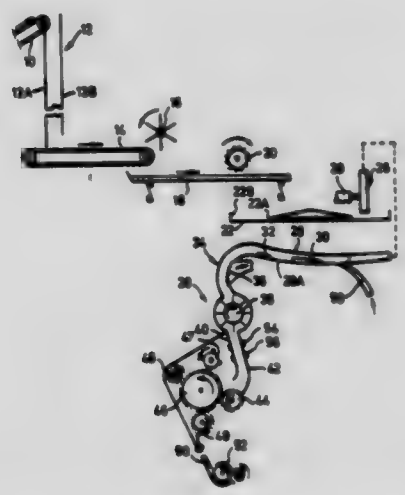
Francis A. M. Labbe, Neuilly-sur-Seine, France, assignor to Molins, PLC., London, England

Filed Jan. 12, 1983, Ser. No. 457,510

Claims priority, application United Kingdom, Jan. 13, 1982, 8200936

Int. Cl.³ A24C 5/39

U.S. Cl. 131—109 R 9 Claims



1. Apparatus for feeding tobacco pneumatically to a number of cigarette making machines, comprising means for feeding tobacco onto a circular table arranged to convey the tobacco along a circular path around the vertical central axis of the table; a number of pipes which are circumferentially spaced with respect to the table and are arranged to pick up tobacco for delivery to respective cigarette making machines; means for accumulating tobacco at each cigarette making machine, including means for detecting the quantity of accumulated tobacco; and means for moving each pipe substantially radially with respect to the table to control the rate at which tobacco is picked up from the table, such control being responsive to the means for detecting the quantity of tobacco at the respective cigarette making machine.

4,491,139

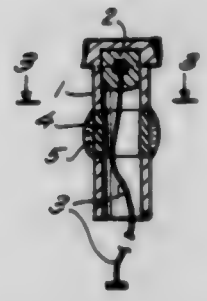
SELF-IGNITING SMOKING DEVICE

Friedrich Weinert, 219-19-131st Ave., Queens County, N.Y. 11413

Filed Mar. 17, 1982, Ser. No. 358,855

Int. Cl.³ A24D 1/08

U.S. Cl. 131—351 1 Claim



1. A cigar or cigarette in combination with a self-igniting device inserted into the end of the cigar or cigarette to be lit wherein said device comprises a tube having a central portion chemically treated with a flammable substance that will ignite upon friction; a piston inserted into the tube and frictionally fitted therein; a string with one end attached to said piston so that when the string is pulled the piston will frictionally engage said central portion so as to ignite said flammable substance; a gas filter on the outside of said tube surrounding said tube wherein said filter is a cotton filter moistened with alcohol and paraffin oil.

4,491,140

COIN HANDLING APPARATUS

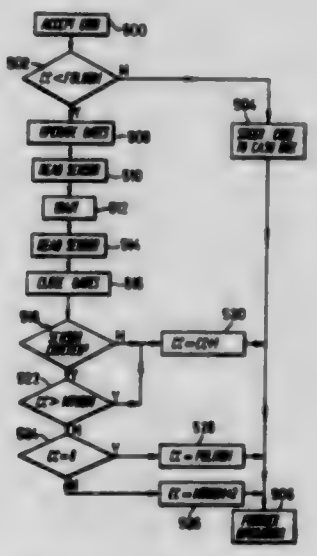
David Eglise, Windsor, and Alan J. Ruddell, Iver, both of England, assignors to Mars Incorporated, McLean, Va.

Filed Sep. 28, 1982, Ser. No. 425,531

Claims priority, application United Kingdom, Sep. 29, 1981, 8129397

Int. Cl.³ G07D 9/06

U.S. Cl. 133—8 R 36 Claims



1. Coin handling apparatus comprising:

at least one coin container;

means for selectively directing coins either to a first path leading to said container or to a second path;

means for selectively dispensing coins from said container;

a control means for controlling the directing means and the dispensing means, the control means being operable to keep a running estimated count of the coins in the container, to alter said count as coins are directed to and dispensed from the container, and to enable the directing means and the dispensing means based upon the running estimated count; and

sensing means located adjacent to the coin container for

producing an output indicative of whether or not the number of coins in the container is greater than a predetermined number, the control means being operable to modify the running estimated count in response to an alteration in the output of the sensing means.

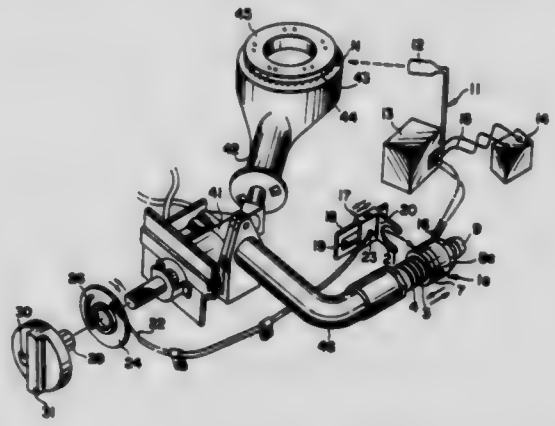
4,491,141
TENT
Lawrence C. Eppenbach, 419 Kennedy St., Juneau, Ak. 99801
Filed Mar. 1, 1983, Ser. No. 470,965
Int. Cl.[3] A45F *1/16*
U.S. Cl. 135—104 15 Claims



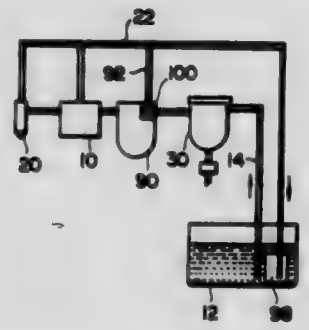
1. A tent adapted to rest on a supporting surface comprising:
a flexible porous sheet having an inner face and an outer face;
a resilient frame;
means for attaching the frame to the sheet with the frame engaging the inner face of the sheet;
means for stressing the resilient frame so that the frame can shape the sheet into an enclosure having a peripheral wall, a closed top, a base, an opening at the front, and an openable shroud for closing the opening of said enclosure and being of substantially greater length than the height of said opening whereby the shroud can close the opening and extend outwardly from the base of the enclosure;
a peripheral region of the sheet extending from the base of the enclosure to impede insects from entering the enclosure at the base; and
said opening having lower corners, said flexible sheet being folded to form a floor for the enclosure, portions of said floor being coupled to portions of the sheet adjacent the corners to stress the resilient frame whereby the floor forms at least a portion of the stressing means.

4,491,142
AUTOMATIC STOPPING DEVICE OF COMBUSTION FUEL SUPPLY
Kunio Shimizu, Tokyo, Japan, assignor to Touto Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 14, 1982, Ser. No. 418,513
Claims priority, application Japan, Jun. 15, 1982, 57-103298
Int. Cl.[3] F23D *13/46*; F16K *31/08*; F23N *5/08*
U.S. Cl. 137—65 1 Claim

1. An automatic fuel supply topping device incorporated in fuel combustion equipment including a shut-off valve and a combustor, the stopping device comprising:
a photo-sensor adapted to detect fuel combustion in the combustor by a radiation emitted from a thermosensitive luminous medium;
a sensor circuit;
a current control circuit associated with the photo-sensor and the sensor circuit, the current control circuit being adapted to output a current when the photo-sensor and the sensor circuit are exposed to the radiation emitted from the thermosensitive luminous medium;
a fluid intercepting mechanism interposed in a channel through which fuel to the combustor is supplied, the fluid intercepting mechanism including a passage, a valve body of magnetic material within the passage, a valve seat in the passage, resilient biasing means normally biasing the valve body to float off the valve seat and thereby open the passage, and a permanent magnet having a magnetic force biasing the valve body against the force of the biasing means to rest on the valve seat and thereby block the passage, the fluid intercepting mechanism assuming a first stable state when the magnetic force of the permanent magnet sufficiently overcomes the force of the resilient biasing means to urge the valve body against the valve seat and thereby block the passage, and a second stable state when the force of the resilient biasing means sufficiently overcomes the magnetic force to float the valve body off the valve seat and thereby open the passage, the change-over from the second stable state to the first stable state being achieved when the permanent magnet is driven by a resilient force of a spring towards the valve body and change-over from the first stable state to the second stable state being achieved when the permanent magnet is driven, under a magnetic force of exciting means produced as the sensor circuit receives the radiation emitted from the thermosensitive luminous medium which energizes the exciting means, away from the valve body against the resilient force of the spring.



4,491,143
FUEL SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINES
Seishi Yasuhara, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Japan
Filed Mar. 3, 1983, Ser. No. 471,853
Claims priority, application Japan, Apr. 1, 1982, 57-52279; May 24, 1982, 57-74870
Int. Cl.[3] B01D *17/02*
U.S. Cl. 137—172 16 Claims



1. A fuel supply system including a fuel supply line extending from a fuel tank to a fuel supplier for delivery of fuel to an internal combustion engine; a fuel return line for returning superfluous fuel from said fuel supplier to said fuel tank; a water separator positioned in said fuel supply line, said water separator having a chamber in which fuel and water are separated into a lower phase comprising water and an upper phase comprising fuel, said water separator chamber having a water level sensor for sensing a first level of water and a second level

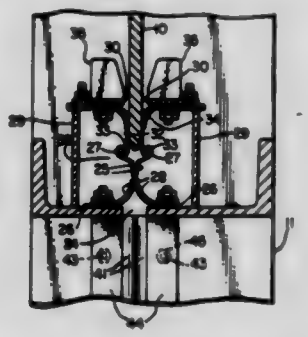
of water higher than said first water level; and control means responsive to said water level sensor for providing a warning urging a driver to drain the water in said water separator chamber when the water level in said water separator chamber increases to said first level and for interrupting communication between said water separator and said fuel supplier when the water level in said water separator chamber increases to said second level.

4,491,144

FLEXIBLE SEALS FOR SLIDING BLADE DAMPERS

Paul L. Dreyer, 608 Elm Rd., Allentown, Pa. 18104, and Russell F. Rarick, 215 E. Mifflin St., Orwigsburg, Pa. 17961

Filed Jul. 8, 1983, Ser. No. 512,013
Int. Cl.[3] F16K *3/02, 3/312*
U.S. Cl. 137—240 14 Claims



1. In a sliding blade damper comprising

a housing having a fluid flow opening therethrough and an elongated aperture in its wall;

a substantially flat blade adapted for sliding movement through the aperture between an open position, wherein the blade is withdrawn from the housing, and a closed position, wherein the blade extends through the aperture and into the housing to restrict the flow of fluid through the housing;

and means for sealing the aperture when the blade is withdrawn completely from the housing,

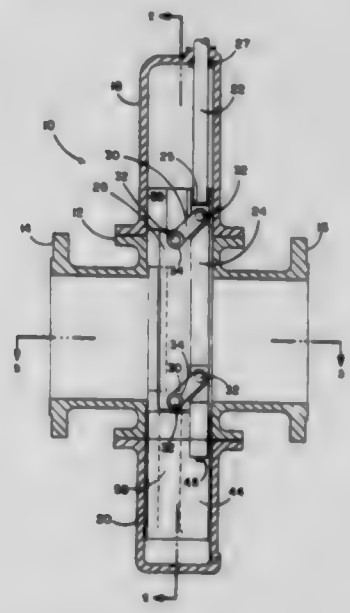
the improvement wherein the sealing means comprise (a) a first pair of opposed, flexible, elongated sealing strips, each strip's cross-section containing a curve that ends in a reverse-direction curl; each strip being fastened in sealing engagement to the housing by the long edge opposite the curled edge along a line adjacent to one of the long sides of the aperture, the curled long edge of each strip being unattached; said strips being so oriented that their unattached long edges extend outwardly from the housing with the curls opening toward one another, and the curved portions of the strips press against the opposite sides of the blade (in sealing engagement therewith) when the blade extends through the aperture, and press against one another (also in sealing engagement) when the blade is withdrawn completely from the housing; (b) an antechamber structure sealed to the housing over the blade aperture to contain any fluid that escapes past the first pair of sealing strips, said structure having an elongated aperture in it that is in registry with the blade aperture in the housing, so as to permit sliding movement of the blade through the antechamber structure as it is slid in or out of the housing; and (c) a second pair of opposed, flexible, elongated sealing strips, each second strip's cross-section containing a curve that ends in a same-direction curl; each of said second strips being fastened in sealing engagement to the antechamber structure by the long edge opposite the curled edge along a line adjacent to one of the long sides of the structure's aperture, the curled long edge of the strip being unattached; said second pair of strips being so oriented that their unattached long edges extend toward the housing with the curls opening away from one another, their curved portions press against the opposite sides of the blade (in sealing engagement therewith) when the blade extends through the aperture, and press against one another (also in sealing engagement) when the blade is withdrawn completely from the structure, and their unattached long edges are positioned inside the curls of the unattached long edges of the first pair of strips, so that when the blade is being inserted into the housing, and as the blade's leading edge is forced between the second pair of strips, causing them to spread apart, the unattached long edges of said second strips will engage the curled long edges of the first strips and push the latter away from one another, thereby facilitating the subsequent penetration by the blade between the first pair of strips as it is slid into the housing.

4,491,145

TOGGLE GATE VALVE

Kenneth R. Williams, Huntington Beach; Mark R. McClaran, Orange, and Peter D. Giacobbi, Villa Park, all of Calif., assignors to Johnston Pump/General Valve, Inc., Glendora, Calif.

Filed Aug. 23, 1982, Ser. No. 410,662
Int. Cl.[3] F16K *23/00*
U.S. Cl. 137—312 5 Claims



1. A gate valve comprising:

a valve body having axially aligned inlet and outlet ports for connection to respective upstream and downstream pipes,

upper and lower bonnets connected to said valve body on opposing sides thereof and substantially orthogonal with respect to said inlet and outlet ports to form a pressure boundary,

a trim assembly housed within said pressure boundary and having a plug and a seal plate in substantially parallel relation and interconnected by a plurality of toggle links for permitting limited relative motion therebetween,

a through-conduit connected to the lower end of said plug and an operator stem connected to the upper end of said plug,

said lower bonnet having at least one seal plate stop extending into said valve body for limiting the downward vertical travel of said seal plate,

the closed configuration of said valve having said seal plate maximally separated from said plug and being pressed against said inlet port by said toggle links, and having said through-conduit substantially within said lower bonnet,

the opened configuration of said valve having said seal plate retracted into engagement with said plug, having said seal plate and plug substantially within said upper bonnet, and having said through-conduit positioned in substantial coaxial alignment with said inlet and outlet ports,

rollers connected to said seal plate adjacent said toggle links, and guide plates connected to said valve body for limiting the motion of said rollers and said seal plate during opening and closing of said valve, and

a stem coupling and a threaded jack stem, the stem coupling

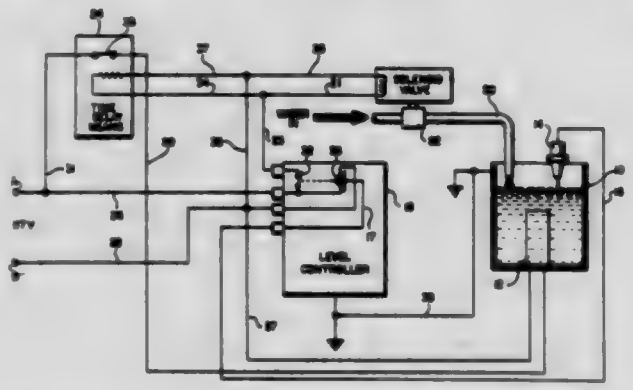
interconnecting said operator stem and said plug and supporting said jack stem in fixed rotational engagement therewith, said jack stem extending through a matching threaded hole in said plug, and means for lowering said plug and seal plate out of said valve body for inspection or repair upon removal of said lower bonnet and disconnection of said through-conduit and said stem coupling from said plug.

4,491,146

LIQUID LEVEL CONTROL

Paul Sveda, Skokie, Ill., assignor to Groen Division/Dover Corporation, Chicago, Ill.

Filed Sep. 22, 1982, Ser. No. 421,371
Int. Cl.³ F16K *49/00*
U.S. Cl. 137—341 3 Claims



1. A liquid level control system for liquid containment vessels and the like having heating means associated therewith for heating the liquid contained therein, said system comprising, in combination:

control means;

sensing means associated with said vessel for detecting the presence or absence of liquid at an established height in said vessel and for generating a control signal which is coupled to said control means;

valve means for controlling the feeding of liquid into said vessel;

delay means for controlling the operation of said heating means; said valve means and said delay means being coupled to said control means and controlled by said control means in accordance with the control signal generated by said sensing means;

the operation being such that said valve means is operated to feed liquid into said vessel when said sensing means detects the absence of liquid at the established height in said vessel and to operate said valve means to cut off the feed of liquid into said vessel when said sensing means detects the presence of liquid at the established height in said vessel, and such that said delay means is operated to cut off said heating means when said sensing means detects the absence of liquid at the established height in said vessel for an established time period.

4,491,147

FILLBOX FOR STORAGE TANK INLET

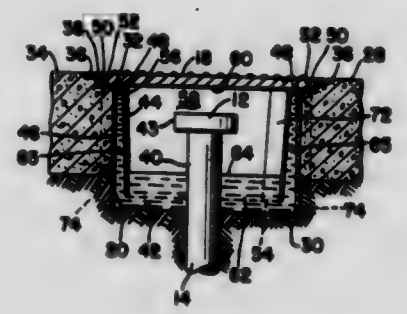
Toby Arguedoss, 21221 Running Branch Rd., Diamond Bar, Calif. 91765

Filed Sep. 1, 1982, Ser. No. 413,671
Int. Cl.³ F16L *5/00*
U.S. Cl. 137—371 17 Claims

1. A fillbox system for preventing undesirable liquid contamination of an underground inlet of a fluid storage tank by liquid accumulated above a ground level within the fillbox and below said inlet, said system including:

a fillbox cover plate adapted for closing off a fillbox upper opening and having a lower surface and an outer edge surface; and

a 360° skirt depending from said lower cover plate surface spaced inwardly from said outer edge surface, said cover plate lower surface and depending skirt being configurated and sized to cooperate with said liquid accumulated above said ground level to define a space within which to trap such a volume of air therein when positioned about



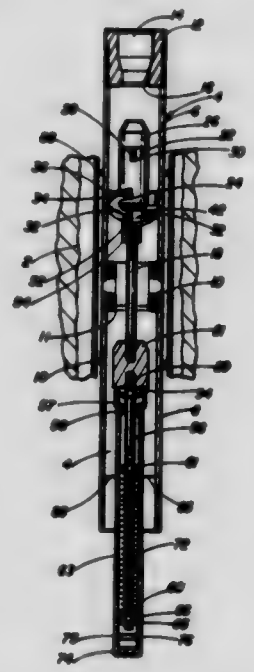
the inlet as to prevent sufficient liquid from accumulating within the fillbox above said ground level therein to overflow the inlet when said fillbox cover plate and 360° skirt are removed.

4,491,148

AUTOMATIC CHOKE VALVE

William N. Schoeffler, P. O. Box 91105, Lafayette, La. 70509

Filed Apr. 25, 1983, Ser. No. 488,437
Int. Cl.³ F16K *17/34*
U.S. Cl. 137—499 23 Claims



1. An improved automatic storm choke valve for preventing excessive fluid flow through a fluid flow conduit, comprising:

a. a valve housing mounted within said fluid flow conduit in fluidly sealing engagement thereto;

b. upper and lower valve seats fixedly mounted within said housing;

c. an upper axle mounted for reciprocal axial movement within said housing, between said upper and lower valve seats;

d. upper and lower valve members circumferentially fixedly mounted to an upper and lower ends of said upper axle respectively, whereby said upper and lower valve members are reciprocable with said upper axle for axial movement between an unseated, open position to a closed seated position, whereby said upper and lower valve members are engaged in fluidly sealing, seating engagement with said upper and lower valve seats, respectively;

e. adjustably inclined vane means pivotally attached to said upper valve member, said vane means extending obliquely to a longitudinal axis of said fluid flow conduit, thereby being responsive to fluid flow therepast to impart rotation

to said upper axle and said upper and lower valve members mounted thereto;

f. compression means mounted within said upper valve member, bearing at their lower ends on said vane means to predetermine the amount of torque applied to said vane means by holding them in the oblique position;

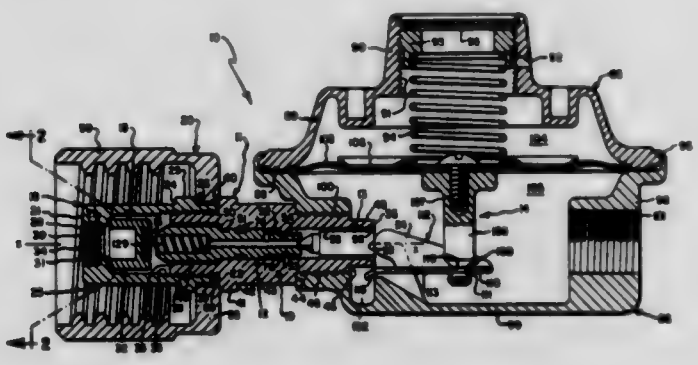
g. a pressure equilization means mounted below said lower valve member and fixedly attached thereto.

4,491,149

PRESSURE REGULATOR WITH OVER-PRESSURE SAFETY SHUT-OFF FEATURE

Joseph C. Trinkwalder, North Tonawanda, N.Y., assignor to Sherwood Selpac Corp., Lockport, N.Y.

Filed Aug. 5, 1983, Ser. No. 520,819
Int. Cl.³ F16K *31/12*
U.S. Cl. 137—505.46 5 Claims



1. A pressure regulator, comprising:

a body having a first end, a second end, a through-opening communicating said ends, and having a portion extending into said opening to form an abutment surface facing toward said body first end, said body first end being exposed to fluid at a relatively-high supply pressure, said body second end being exposed to said fluid at a relatively-low pressure-to-be-regulated;

an element arranged in said body opening and having a first end, a second end, and a through-bore communicating said ends, said element being mounted for sealed sliding movement along said body opening toward and away from said abutment surface;

a regulating poppet mounted for movement toward and away from said element second end for controlling the flow of fluid through said through-bore;

an actuator arranged to sense the magnitude of such regulated pressure and selectively operable to permit said regulating poppet to move away from said element second end when such sensed pressure is less than a predetermined pressure, to cause said regulating poppet to close said element through-bore when such sensed pressure is substantially equal to said predetermined pressure, and to exert on said element second end a force substantially proportional to the magnitude of such sensed pressure above said predetermined pressure which urges said element to move away from said abutment surface;

a seat arranged within said body opening and operative to sealingly close said element first end when said element has moved sufficiently away from said abutment surface to engage said seat; and

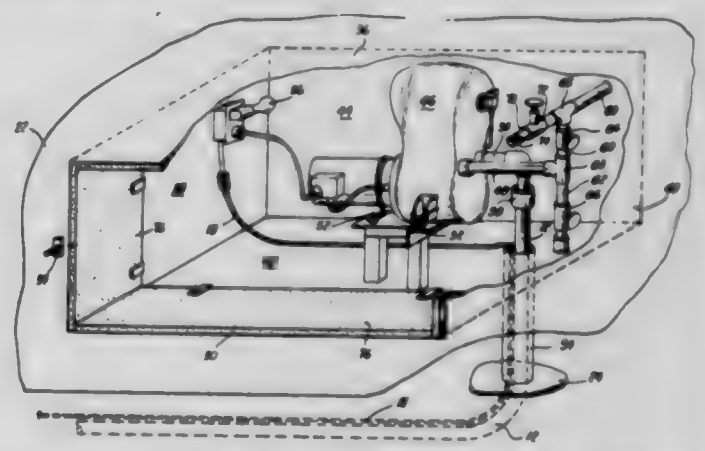
a vent passageway provided between said element and body and operable to selectively communicate said element through-bore with said regulated pressure when said regulating poppet has closed said element through-bore and when said element has been moved away from said abutment surface to engage said seat.

4,491,150

OUTDOOR WATER HOLDING AND PUMPING SYSTEM

Carroll Holman, Rte. 1, Cordell, Okla. 73632, and Arley R. Fite, Rte. 1, Box 35, Dill City, Okla. 73641

Filed Nov. 30, 1981, Ser. No. 325,987
Int. Cl.³ F16K *21/18*
U.S. Cl. 137—565 8 Claims



1. An outdoor water holding and pumping system for remote locations comprising:

a water holding tank having upper and lower portions including an interior, an exterior and a water containing surface;

a pumping housing having side walls, a bottom and a top recessed into said lower portion of said tank, said side walls, bottom and top substantially surrounded by and in relation to water in said water holding tank such that water in said tank insulates said pump housing against freezing;

a water pump disposed in said pump housing and having an inlet conduit extending through said pump housing to the interior of said tank, said inlet conduit having an inlet opening through which water in said tank is drawn by said pump, said inlet opening residing above said bottom of said pump housing such that when water in said tank falls to the level of said inlet opening, water in said tank still acts to insulate said pump housing and water in said pump against freezing; and

a door enclosing said pump within said pump housing and providing access to said pump through said door from the exterior of said tank.

4,491,151

FOUR-WAY STACKING VALVE WITH COMMON ELECTRICAL CONDUIT AND INDIVIDUAL BODY MOUNTED EXHAUST FLOW CONTROLS

James A. Neff, Bloomfield Township, Oakland County, Mich., assignor to MAC Valves, Inc., Wixom, Mich.

Division of Ser. No. 352,769, Feb. 26, 1982, Pat. No. 4,465,100.
This application Apr. 30, 1984, Ser. No. 605,068
Int. Cl.³ F15B *13/08*
U.S. Cl. 137—596.16 5 Claims

1. A plurality of stacked four-way valves wherein each four-way air valve includes a valve body with a pressurized air supply chamber, a pair of cylinder chambers and a pair of exhaust chambers, and a main valve spool axially movable between two operative positions in a valve spool bore in the valve body to control the flow of pressurized air from the air supply chamber to a selected one of said cylinder chambers while simultaneously controlling the exhaust from the other cylinder chamber to a selected one of said exhaust chambers, a top cover releasably mounted on said valve body, and means for moving the main valve spool between the two operative positions, characterized in that:

(a) in each of the four-way valves the pressurized air supply chamber is disposed centrally along the valve spool bore which is longitudinally disposed, with the cylinder chambers disposed along the valve spool bore on opposite sides of said pressurized air supply chamber and adjacent

thereto, and with the exhaust chambers disposed along the valve spool bore with one of the exhaust chambers adjacent to each one of the cylinder chambers on a side thereof opposite to the side adjacent to the air supply chamber;

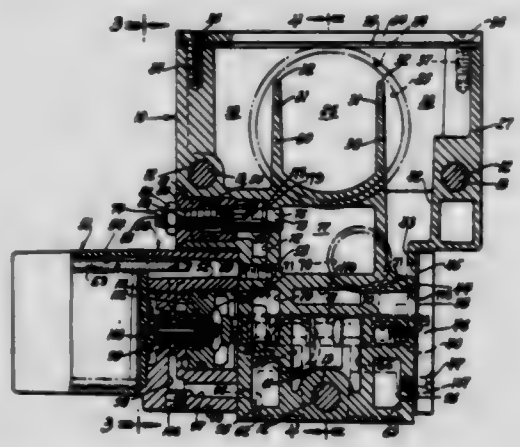
(b) in each of the four-way valves the valve body is a stacking valve body provided with a pressurized transverse air inlet port which is connected by a pressurized air inlet passage in the valve body to the pressurized air supply chamber;

(c) in each of the four-way valves the stacking valve body is provided with two cylinder ports which are connected by separate passage means to one of the cylinder chambers;

(d) in each of the four-way valves the stacking valve body is provided with a single exhaust port which is connected by a passage means to a common transverse exhaust passageway in the stacking valve body, and each of the exhaust chambers is connected to the common exhaust passageway by a separate exhaust passage;

(e) in each of the four-way valves each of said separate exhaust passages between each exhaust chamber and the common exhaust passageway includes a bore portion forming a valve seat on one end communicating with the common exhaust passageway;

(f) in each of the four-way valves an adjustable flow control valve, provided with a valve element, is operatively mounted in the valve body adjacent each of the separate exhaust passage bore portions, with the valve elements



thereof being movable into and out of the respective adjacent passage bore portions to control the flow of air exhausting from each exhaust chamber into the common exhaust passageway and out through the single exhaust port;

(g) in each of the four-way valves the stacking valve body is provided with a common electrical wire passage that extends longitudinally therethrough;

(h) in each of the four-way valves the stacking valve body is provided with an electrical wire tuck chamber on each side of the common electrical wire passage for receiving electrical lead wires from the common electrical wire passage;

(i) in each of the four-way valves each of said adjustable flow control valves is transversely disposed, and the flow control valves extend inwardly from opposite sides of the stacking valve body;

(j) the plurality of stacked valves are adjacently aligned between a pair of end plates;

(k) each pressurized air inlet passage in each of the stacking valve bodies communicates with the pressurized air inlet passage in an adjacent valve in the stack of valves;

(l) the pressurized air inlet passage in each stacking valve body adjacent an end plate communicates with a pressurized air inlet passage and port in the adjacent end plate;

(m) each of the common exhaust passageways in each stacking valve body communicates with the common exhaust passageway in an adjacent four-way valve in the stack of valves;

(n) each of the common exhaust passageways in each stacking valve body adjacent an end plate communicates with an exhaust passage and port in the adjacent end plate; and,

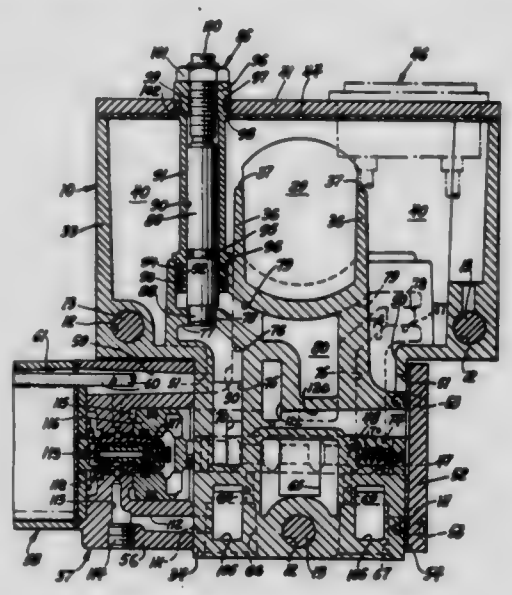
(o) releasable attachment means secures the stacked valve bodies together and to the end plates.

4,491,152

FOUR-WAY STACKING VALVE WITH COMMON ELECTRICAL CONDUIT AND BODY MOUNTED INDIVIDUAL EXHAUST FLOW CONTROLS THAT PROJECT THROUGH THE COVER

James A. Neff, Bloomfield Township, Oakland County, Mich., assignor to Mac Valves, Inc., Wixom, Mich.

Division of Ser. No. 352,768, Feb. 26, 1982, Pat. No. 4,462,427.
This application May 14, 1984, Ser. No. 610,278
Int. Cl.[3] F15B *13/08*
U.S. Cl. 137—596.16 4 Claims



1. A plurality of stacked four-way valves wherein each four-way air valve includes a valve body with a pressurized air supply chamber, a pair of cylinder chambers and a pair of exhaust chambers, and a main valve spool axially movable between two operative positions in a valve spool bore in the valve body to control the flow of pressurized air from the air supply chamber to a selected one of said cylinder chambers while simultaneously controlling the exhaust from the other cylinder chamber to a selected one of said exhaust chambers, a top cover releasably mounted on said valve body, and means for moving the main valve spool between the two operative positions, characterized in that:

(a) in each of the four-way valves the pressurized air supply chamber is disposed centrally along the valve spool bore, with the cylinder chambers disposed along the valve spool bore on opposite sides of said pressurized air supply chamber and adjacent thereto, and with the exhaust chambers disposed along the valve spool bore with one of the exhaust chambers adjacent to each one of the cylinder chambers on a side thereof opposite to the side adjacent to the pressurized air supply chamber;

(b) in each of the four-way valves the valve body is a stacking valve body and is provided with a pressurized air inlet port which is connected by a pressurized air inlet passage in the stacking valve body to the pressurized air supply chamber;

(c) in each of the four-way valves the stacking valve body is provided with two cylinder ports which are each connected by separate passage means to one of the cylinder chambers;

(d) in each of the four-way valves the stacking valve body is provided with a single exhaust port which is connected by a passage means to a common exhaust passageway in the stacking valve body, and each of the exhaust chambers is connected to the common exhaust passageway by a separate exhaust passage;

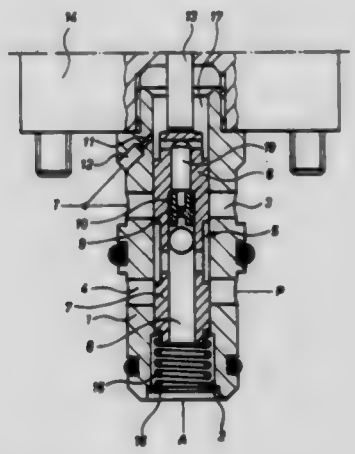
(e) in each of the four-way valves each of said separate exhaust passages between each exhaust chamber and the common exhaust passageway includes a bore portion forming a valve seat on one end communicating with the common exhaust passageway;
(f) in each of the four-way valves an adjustable flow control valve, provided with a valve element, is operatively mounted in the stacking valve body adjacent each of the separate exhaust passage bore portions and projecting through the top cover, with the valve elements thereof being movable into and out of the respective adjacent passage bore portions to control the flow of air exhausting from each exhaust chamber into the common exhaust passageway and out through the single exhaust port;
(g) in each of the four-way valves the stacking valve body is provided with a common electrical wire passage that extends longitudinally therethrough;
(h) in each of the four-way valves the stacking valve body is provided with an electrical wire tuck chamber on each side of the common electrical wire passage for receiving electrical lead wires from the common electrical wire passage;
(i) the plurality of stacked valves are adjacently aligned between a pair of end plates;
(j) each pressurized air inlet passage in each of the stacking valve bodies communicates with the pressurized air inlet passage in an adjacent valve in the stack of valves;
(k) the pressurized air inlet passage in each stacking valve body adjacent an end plate communicates with a pressurized air inlet passage and port in the adjacent end plate;
(l) each of the common exhaust passageways in each stacking valve body communicates with the common exhaust passageway in an adjacent valve in the stack of valves;
(m) each of the common exhaust passageways in each stacking valve body adjacent an end plate communicates with an exhaust passage and port in the adjacent end plate; and,
(n) releasable attachment means secures the stacked valve bodies together and to the end plates.

4,491,153

PRESSURE REDUCING VALVE

Reiner Bartholomaus, Neuendorf, Fed. Rep. of Germany, assignor to Mannesmann Rexroth GmbH, Fed. Rep. of Germany

Filed Jun. 2, 1982, Ser. No. 384,391
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1981, 3125143
Int. Cl.³ F15B *13/044*
U.S. Cl. 137—625.65 14 Claims



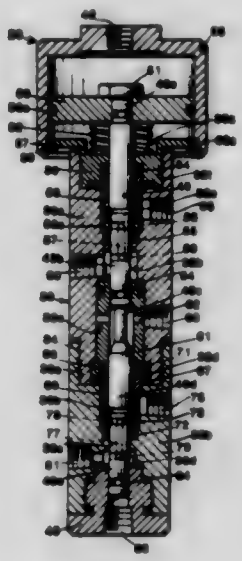
1. A pressure reducing valve, comprising:
a valve housing having an axial bore and first and second transversely extending control bores, said axial bore forming a valve chamber at one end thereof;
first means for coupling said first control bore to a supply tank;
second means for coupling said second control bore to a fluid pressure source;
a control slide axially shiftable in said axial bore of said housing, having first and second pistons controlling fluid flow through said first and second control bores, respectively, and having first and second opposite ends, said second end being located in said valve chamber;
third means for coupling said axial bore to a fluid operated load device with the fluid pressure supplied thereto acting directly on said control slide first end, and for conveying fluid pressure from the load device to said valve chamber;
a proportional electromagnet having a plunger extending through said valve chamber and contacting and applying forces to said control slide second end; and
first and second restrictors, said first restrictor providing fluid communication between said control slide ends, said second restrictor providing fluid communication between said valve chamber, said control slide second end and said first means.

4,491,154

DOUBLE ACTING PILOT VALVE

Clifford M. Peters, Longview, Tex., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed May 9, 1983, Ser. No. 492,539
Int. Cl.³ F15B *13/042*
U.S. Cl. 137—625.66 1 Claim



1. A pilot valve adapted for connection between a hydraulic fluid supply and a double acting fluid actuator of the hydraulic piston type, said pilot valve comprising:
a generally cylindrical valve body having an axial bore extending therethrough and a piston chamber housing affixed to one end of said valve body in fluid communication with the axial bore;
a valve plunger element slidably mounted in said axial bore for movement between first and second operating positions;
a piston disposed in said piston chamber housing and affixed to one end of the valve plunger element;
spring means for urging the piston and valve plunger element in a direction outwardly of said axial bore, said piston chamber housing being provided with a fluid inlet port means whereby pressurized pneumatic fluid delivered to the piston chamber through the fluid inlet port means will urge the piston and attached valve plunger element against the biasing force of said spring means to said first operating position, said valve plunger element being moved by the spring means to said second operating position when pressurized pneumatic fluid is removed from the piston chamber;
a first inlet port formed in said valve body and adapted for connection to a hydraulic fluid supply for receiving hydraulic fluid;

a first outlet port adapted for connection to a conduit for delivering hydraulic fluid to a first side of the piston in the actuator, said valve plunger element being provided with first internal passage means which in the first operating position of the valve plunger element establishes fluid communication between said first inlet port and said first outlet port for the transmission of hydraulic fluid therethrough;

first seal means located in said axial bore at a location intermediate the first inlet port and the first outlet port for sealing off communication therebetween when the valve plunger element is disposed in the second operating position;

a first bleed port formed in said valve body and adaptable for connection to a conduit communicating with a sump;

second seal means carried on said valve plunger element and positionable between the first outlet port and the first bleed port when the valve plunger element is in its first operating position for sealing off communication therebetween, said second seal means being carried by said valve plunger element to a position where it is inoperative when the valve plunger element is moved to said second operating position;

a second inlet port formed in said valve body and adapted for connection with the hydraulic fluid supply;

a second oulet port formed in said valve body adapted for connection to a conduit for delivering hydraulic fluid to the second side of the piston in said actuator;

third seal means provided on the valve plunger element and positionable between the second inlet port and said second oulet port for sealing off communication therebetween when the valve plunger element is in its first operating position;

a second bleed port formed in said valve body adapted for connection to a conduit communicating with the hydraulic sump, said valve plunger element being provided with second internal passage means which in the first operating position of the valve plunger element establishes fluid communication between the second outlet port and the second bleed port; and

fourth seal means located in said axial bore between said second outlet port and the second bleed port for sealing off communication therebetween when the valve plunger element is in the second operative position.

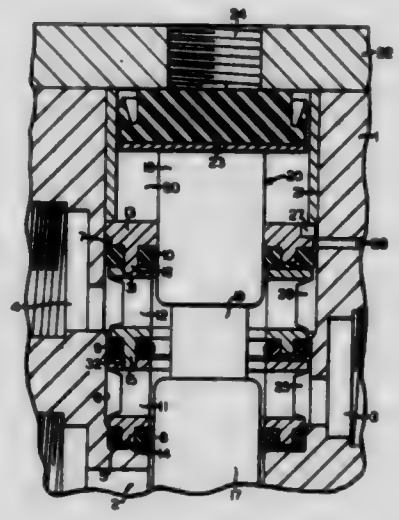
4,491,155

MULTIWAY SLIDE VALVE

Hans-Friedrich Meyer, Gehrden; Wolfgang Thiele, Hanover; Hermann Kosmalski, Hanover; Klaus Meurer, Hanover; Hans Kruppa, Barsinghausen; Helmut Göttling, Isernhagen, and Ernst-August Meyer, Algermissen, all of Fed. Rep. of Germany, assignors to WABCO Steuerungstechnik GmbH, Hanover, Fed. Rep. of Germany

Continuation of Ser. No. 315,828, Oct. 28, 1981, abandoned.
This application Feb. 9, 1984, Ser. No. 578,300
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1980, 3043871
Int. Cl.³ F15B *13/042*; F16K *11/07*
U.S. Cl. 137—625.66 10 Claims

1. A multiway slide valve having a housing which includes a cylindrical guide bore, said housing includes at least one pressure inlet port and one pressure outlet port, a preassembled unitary valve assembly formed by a plurality of sealing rings and separating spacers, adjacent ones of said plurality of separating spacers are collectively interconnected together by projections which pass through said sealing rings and mate with recesses, said plurality of sealing rings and separating spacers concurrently disposed within said cylindrical guide bore for defining a pressure chamber, a slide spool cooperates with said sealing rings for selectively establishing communication between said pressure inlet port and said pressure outlet port through said pressure chamber, and said cylindrical guide bore is graduated into sections which have different diameters



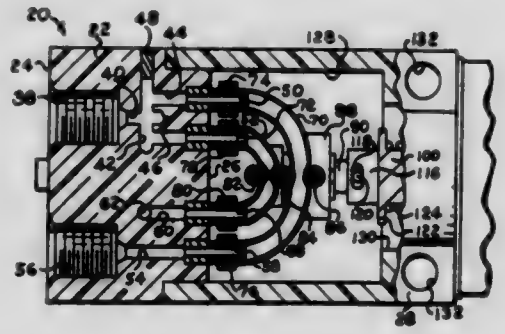
for facilitating insertion of the valve assembly and for reducing damage to the valve assembly.

4,491,156

MULTIPLE WAY PINCH VALVE

Leighton Lee, II, Guilford, Conn., assignor to The Lee Company, Westbrook, Conn.

Filed Sep. 13, 1982, Ser. No. 417,686
Int. Cl.³ F16K *7/06*
U.S. Cl. 137—870 7 Claims



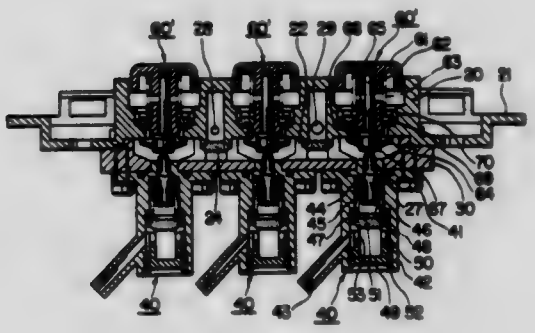
1. A valve for controlling the flow of fluid therethrough, comprising an elongated valve housing having a valve body at one longitudinal end thereof provided with a longitudinally extending entrance passage having an inlet at an outer face of said valve body and two separate outlets at an inner face thereof, said valve body including two separate, non-intersecting exit passages, each having an inlet at the inner face of said valve body and an outlet at the outer face thereof, the valve housing having a case with an open end receiving the inner face of said valve body, a pair of resilient tubes connecting said outlets of said entrance passage to said inlets of said exit passages, said tubes being arranged in juxtaposition within said valve case, a set of aligned pinch elements mounted within said case with one of the resilient tubes being located between first and second pinch elements and the other resilient tube being located between said second and third pinch elements, said first and third pinch elements being fixed and said second pinch element being shiftable relative to said first and third pinch elements to selectively pinch said tubes closed to the flow of fluid therethrough, and actuator means mounted on the valve housing for selectively shifting said second pinch element toward said first and third pinch elements to close one of said resilient tubes and open the other tube to control the fluid flow from said entrance passage to said exit passages.

4,491,157

VALVE ASSEMBLY FOR AIR BAG CONTROL

Nobuyuki Hashimoto, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 3, 1982, Ser. No. 354,375
Claims priority, application Japan, Mar. 6, 1981, 56-30252[U]; Mar. 6, 1981, 56-30253[U]
Int. Cl.³ F16K 11/14
U.S. Cl. 137—871 5 Claims



1. An air bag control valve assembly for individually inflating a plurality of air bags, comprising:

an integrally assembled body in which a pressure compartment is formed,

an inlet for connecting the pressure compartment to a source of air pressure,

a relief valve for releasing air from the pressure compartment, and

a plurality of combined check and release valve units for connecting and disconnecting the pressure compartment to each of the air bags through a communicating hole, each of said valve units being retained with a rod extending into the communicating hole so as to be guided therein, one end of the rod projecting into the pressure compartment at a closed position of said valve units, the rod having a cutout portion extending substantially from the middle of the rod up to said one end and the valve unit being spring-biased toward a normal closing position,

said relief valve and said combined check and release valve units being attached to the interior of said body,

said relief valve comprising a pushbutton projecting from the outer surface of the body, a push rod extending from the pushbutton into the pressure compartment through a hole in a wall of the body, said push rod being coaxially arranged with respect to said rod of the combined check and release valve unit and having a resilient valve element at the end thereof that extends into the pressure compartment, and spring means for urging said pushbutton and said push rod to a position which allows said relief valve to be normally closed,

a communicating passage provided adjacent to the bore which receives said push rod, the communicating passage is opened or closed by said resilient valve element to control the relief valve,

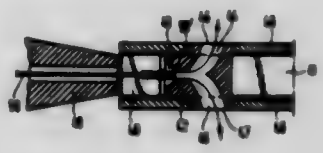
wherein when said pushbutton is pushed inwardly toward the body, said relief valve is opened as well as said combined check and release valve unit by the rod of said combined check and release valve unit being actuated to open the valve unit, whereby air enclosed within the air bag is adjustably discharged to the atmosphere through the cutout in the rod.

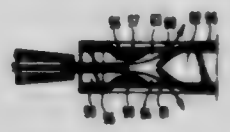
4,491,158

GRIPPER CLAMP PROJECTILE

Paul Lincke, Zell, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 5, 1983, Ser. No. 482,207
Claims priority, application Switzerland, Apr. 7, 1982, 2146/82
Int. Cl.³ D03D 47/24
U.S. Cl. 139—439 18 Claims





1. A gripper clamp projectile for a weaving machine comprising

a casing having a pair of opposed walls at least one of said walls having an orifice therein; and

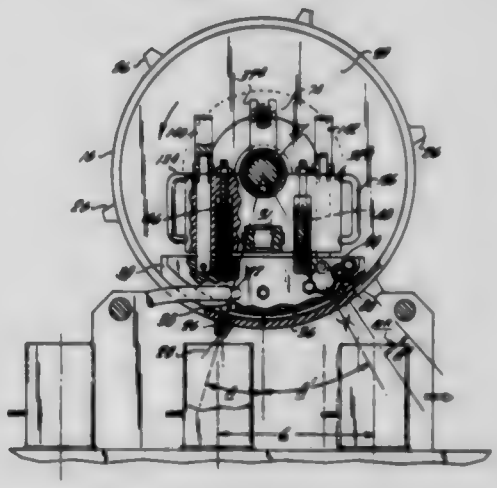
a yarn clamp disposed in said casing and having a pair of axially extending arms, each said arm having a clamping jaw at one end thereof, said arms being movable between a closed position with said clamping jaws in engagement and an open position with said clamping jaws spaced from each other and defining an air flow duct with said casing walls in communication with said orifice to conduct a flow of air therethrough.

4,491,159

HIGH SPEED LIQUID DISPENSER

John R. Colacci, Pennsauken, N.J., assignor to Campbell Soup Company, Camden, N.J.

Filed May 3, 1983, Ser. No. 491,090
Int. Cl.³ B65B 57/02, 43/42
U.S. Cl. 141—134 12 Claims



1. A system for dispensing a liquid product into uniformly spaced-apart open-topped containers moving in a train along a predetermined path, comprising:

means for moving said containers in a train along a predetermined path;

a circular band positioned above said train and rotatable about an axis normal to the portion of said path beneath it;

said band having nozzle openings extending through it and circumferentially spaced from each other about said band;

means for supplying liquid product under pressure sequentially to said nozzles as they rotate with said band, so that said nozzles sequentially eject a stream of said liquid product;

means for rotating said band in synchronization with the motion of said containers so that each nozzle opening and its associated stream of liquid product is directed toward the top opening of a particular container as it passes along said path adjacent said band; and

stream control means for initiating said stream through each of said nozzle openings when said each opening and its stream is directed at a predetermined first angle with respect to the vertical, and for terminating said last-named stream when said nozzle opening is at a predetermined second angle with respect to the vertical;

wherein said stream control means comprises a pressure shoe having a liquid-manifolding recess in its surface, sealing means extending around said recess, and means urging said shoe toward said band so that said sealing means engages said band, said recess normally being circumferentially aligned with said nozzle openings and having a circumferential length such that each of said nozzle openings first communicates with said recess when said each nozzle opening is at said first angle and terminates such communication when said nozzle opening is at said second angle;

said system also comprising means positioned adjacent said path for sensing the absence of one of said containers from said train to produce a control signal indicative of such absence; and shut-off means responsive to said control signal to move said shoe axially, out of circumferential alignment with said nozzle openings.

4,491,160

PRESSURIZED FLUID DEVICE

Ludwig Arthammer, Hambach, and Felix Wössner, Schweinfurt, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

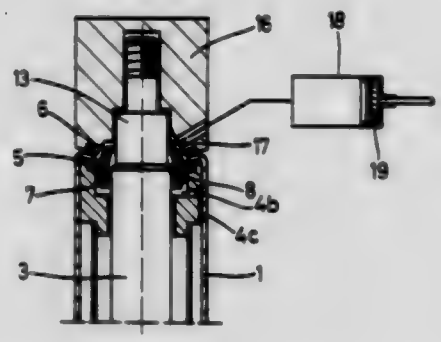
Filed May 21, 1982, Ser. No. 380,933

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1981, 3122626

Int. Cl.[3] F16F *9/06*

U.S. Cl. 141—349

22 Claims



1. In a pressurized fluid device comprising an axially extending container (1) having at least one open end and defining a cavity to be filled with pressurized fluid;

a piston rod guide and seal unit (4) located in the at least one open end of said container;

a piston rod (3) having an axis extending in the axial direction of said container and a circumferential face extending around the axis and passing through said piston rod guide and seal unit of said container and being axially movable with respect to said container between an innermost position and an outermost position;

a filling passage (10, 11, 8, 7) extending across said piston rod guide and seal unit in at least one axial position of said piston rod; the improvement comprising

(a) said piston rod guide and seal unit (4) comprising relative to the cavity in said container an axially inner and an axially outer sealing element (7, 6) with each said sealing element engageable with said circumferential face of said piston rod;

(b) said axially inner sealing element (7) acting as a check valve permitting flow of fluid into said cavity in said at least one axial position of said piston rod (3) in response to a filling pressure of the fluid outside said cavity being greater than the fluid pressure inside said cavity and preventing flow of fluid out of said cavity in said at least one axial position of said piston rod (3) in response to a fluid pressure inside said cavity being greater than atmospheric pressure outside said cavity;

(c) an intermediate chamber (8) being defined axially between said sealing elements (6, 7) around said piston rod; and

(d) in the at least one axial position of said piston rod said filling passage comprising an axially outer filling passage section (10, 11) extending across said axially outer sealing element (6) between said intermediate chamber and the exterior of said pressurized fluid device with said outer filling passage section being open at least in said at least on axial position of said piston rod (3).

4,491,161

TONER DISPENSING APPARATUS

Takashi Tamura, Higashimine, and Shun Kawata, Tokyo, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

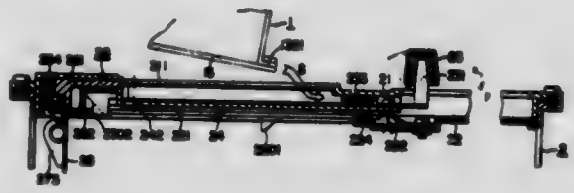
Filed Aug. 10, 1983, Ser. No. 521,940

Claims priority, application Japan, Aug. 23, 1982, 57-146439; Aug. 23, 1982, 57-146440; Aug. 23, 1982, 57-146441; Aug. 23, 1982, 57-146442; Aug. 23, 1982, 57-146443; Aug. 23, 1982, 57-146444; Aug. 23, 1982, 57-146445; Aug. 23, 1982, 57-146446

Int. Cl.[3] B65B *1/28*

U.S. Cl. 141—364

11 Claims



1. A toner dispensing apparatus comprising a toner receiving portion having an openable cover for opening and closing an opening portion of the toner receiving portion; and a toner container unit having a container, a seal member for sealing an opening portion of the container, and a slide member connected with a portion of said seal member and slidable with respect to said opening portion, said toner container unit being able to fit with said toner receiving portion, and said seal member being torn off from said opening portion when said slide member is moved in conjunction with the opening motion of said openable cover.

4,491,162

HAND HELD DUPLICATOR TOOL

Robert A. Holdahl, Hopkins, Minn., assignor to Toolmark Co., Minneapolis, Minn.

Filed Sep. 30, 1982, Ser. No. 432,021

Int. Cl.[3] B23B *3/28*

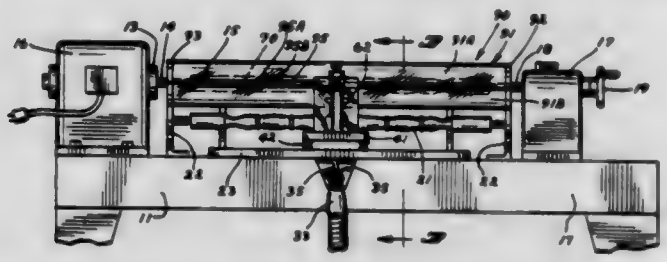
U.S. Cl. 142—7

13 Claims

1. For use in combination with a wood turning lathe havng a lathe bed provided with an upper flange and means to support and rotate a workpiece about a turning axis on the lathe bed, the improvement comprising a support including a table member adapted to be mounted on such a lathe bed, said table member having at least one lug mounted thereon adapted to hook over an inner edge of and be retained on the upper flange of such lathe bed with the table member at least partially supported on the upper flange, release latch means on the table member actuable to engage such lathe bed and pull the lug

against the edge of such upper flange for holding the table member on such upper flange, said table member having an upper surface positioned in desired orientation with respect to the turning axis, and said table member being slidably arranged for longitudinal movement along such upper flange when the release latch means are released, means to support a pattern to be duplicated adjacent to said table member at a predetermined orientation with respect to the turning axis, a pattern on said support, and a tool assembly movably supportable on the table member having a stylus for following a pattern to be duplicated and having a cutting tool thereon to engage a workpiece supported on the turning axis on such lathe bed to duplicate the configuration of the pattern on such workpiece.

8. A duplicator tool assembly for following a pattern held in a first position on a lathe bed, and for supporting a cutting tool to engage a workpiece held on such lathe bed for rotation about the workpiece axis and to duplicate the configuration of the pattern on the workpiece, said duplicator tool assembly including a support plate, a plurality of adjustable feet for supporting said plate on a work surface relative to such lathe bed adjacent the axis of rotation of a workpiece, said plate having a first end and a second end, a tool post mounted adjacent the first end, said tool post comprising a lower collar, a center tubular support shaft adjustably slidably mounted in said lower collar and a threaded shaft threaded into the upper



end of the tubular support shaft, said tool post further carrying a stylus comprising the means to follow a pattern held on such lathe, said stylus being positioned adjacent the plate, and a cutting tool mounted on said tool post above said stylus and in general vertical alignment therewith and extending outwardly beyond the first end of the plate, and a handle grip member adjacent the second end of said plate opposite from said tool post and adapted to be gripped to permit movement of the support plate.

12. For use in combination with a lathe having a lathe bed and means to support and rotate a workpiece about a turning axis, the means to support being spaced along the lathe bed, and means associated with the lathe bed for supporting a cutting tool for engaging a workpiece supported on the means to support, the improvement comprising a shield adapted to be mounted on a lathe bed and comprising a two part hinged tubular member substantially encompassing a workpiece held for rotation on the turning axis of a lathe on which the shield is mounted, said shield having a slot defined therein extendiing generally parallel to the turning axis and adapted to permit a cutting tool used with such lathe to be inserted through the slot to engage a workpiece mounted for rotation about said turning axis within the shield and at the same time permitting such tool to be moved along the workpiece and means for mounting said shield on said lathe bed.

4,491,163

METHOD AND APPARATUS FOR FELLING TREES

John Kurelek, Brantford, Canada, assignor to Koehring Canada Limited, Brantford, Canada

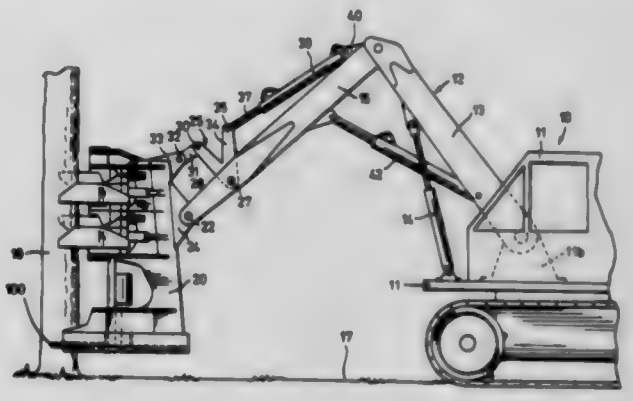
Filed Jan. 27, 1982, Ser. No. 343,359
Claims priority, application Canada, Aug. 5, 1981, 383217
Int. Cl.³ A01G 23/08
U.S. Cl. 144—336 7 Claims

1. A method of felling trees, comprising the steps:

providing a felling head on a boom, the felling head including an upper part and a lower part, the upper part including at least one brace portion adapted to contact a tree being felled, along with tree grappling means adapted to clasp a tree trunk against said brace portion, the lower part having a circular saw blade mounted thereon in a plane perpendicular to the longitudinal extent of a tree clasped between the brace portion and the grappling means, the circular saw blade having its leading edge projecting beyond the location of the brace portion by a distance such that a typical tree being felled can be cut through by the saw blade before the tree comes into contact with any other part of the felling head, including the brace portion,

cutting through a tree with the circular saw of the felling head oriented in a plane substantially perpendicular to the axis of the tree, and

after the tree has been completely cut through but before the part of the tree above the cut has been significantly displaced in translation or angulation from its position prior to the cut, clasping the tree above the cut between the said brace portion and the said tree grappling means.



2. A felling head for attachment to a boom, felling head comprising:

an upper part and a lower part,

the upper part including at least one brace portion adapted to contact a tree being felled, along with tree grappling means adapted to clasp a tree trunk against said brace portion,

the lower part having a circular saw blade mounted thereon in a plane perpendicular to the longitudinal extent of a tree clasped between the brace portion and the grappling means, the axis of the saw blade being fixed with respect to the upper and lower part, the circular saw blade having its leading edge projecting beyond the location of the brace portion by a distance at least as great as the diameter of a tree being felled so that such tree must be cut through by the saw blade before the tree can come into contact with any other part of the felling head, including the brace portion, whereby no undue bending or shear forces are applied to the tree during the cutting of the tree.

4,491,164

IMPACT DRIVEN WOOD SPLITTER

Jack Waikas, Hyde Park, and James Hosie, Staatsburg, both of N.Y., assignors to Waikas & Hosie Development Corporation, White Plains, N.Y.

Filed Sep. 7, 1982, Ser. No. 415,393
Int. Cl.³ B27L 7/00
U.S. Cl. 144—194 6 Claims

1. An impact driven wood splitter comprising:

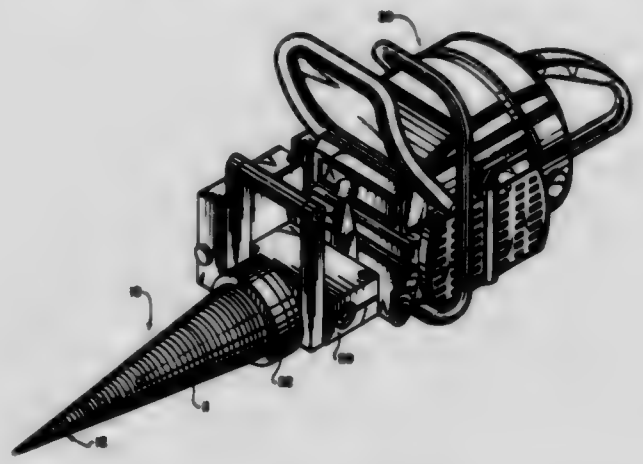
a threaded cone for engaging and splitting wood,

an impact drive unit coupled to said cone to impart rotational movement thereto,

a gear system connected to said impact drive unit, and,

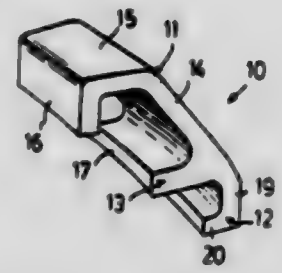
a portable power source having means coupled to the gear

system to drive said system, said cone being oriented parallel to the longitudinal axis of the power source and



wherein the impact drive unit prevents turning of the wood being split.

4,491,165
TIRE PRESSES
Daniel B. Mott, 198 The Esplanade, Burleigh Heads, Queensland 4220, Australia
Filed Sep. 20, 1982, Ser. No. 420,517
Claims priority, application Canada, Nov. 6, 1981, 389641
Int. Cl.³ B60C *25/06*
U.S. Cl. 157—1.33 3 Claims



1. A bead seat breaker tool for demounting a tire from a rim assembly having a rim with a fixed bead seat, a removable bead seat band with a peripheral flange, and first and second bead flanges, said breaker tool comprising:

(a) a first hook end of generally inverted U-shape releasably connectable to the rim during demounting,

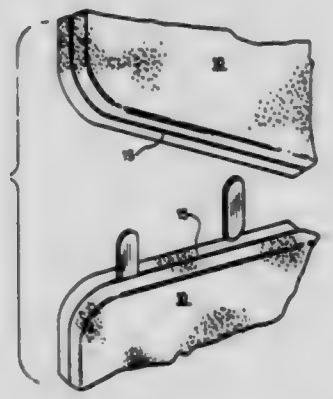
(b) a relatively short second hook end extending in the direction of said first hook end and laterally offset from said first hook end, said second hook end being adapted to releasably engage and retain the peripheral flange of the bead seat band during demounting,

(c) a central leg located between said first and second hook ends, said central leg also extending in the direction of said first hook end and being relatively short and having a free end laterally offset from that portion of the first hook end engaging said rim during demounting, and

(d) a resiliently deformable web interconnecting said first hook end and said central leg,

the free end of said central leg during the initial step of demounting being spaced slightly from said rim to provide a small clearance with the rim, the continuation of the demounting process resulting in the stripping of the tire bead from the bead seat band and the deformation of said web whereby said free end of said central leg engages the rim to clamp the breaker tool to the rim.

4,491,166
PANEL DISPLAY
Gary D. Hanna, Don Mills, Canada, assignor to G. D. Hanna Incorporated, Ontario, Canada
Continuation of Ser. No. 238,127, Feb. 25, 1981,. This application Nov. 12, 1982, Ser. No. 441,240
Claims priority, application Canada, Dec. 31, 1980, 367754
Int. Cl.³ E06B *3/12*
U.S. Cl. 160—351 3 Claims



1. A panel for use in display structures which comprises:

a first sheet member having a plurality of peripheral edges and an outer and inner surface;

a second sheet member having a plurality of peripheral edges, and an outer and an inner surface;

a first sheet of facing material mounted on said first sheet member to cover said outer surface and overlap said peripheral edges thereof and said first sheet of facing material being secured to said inner surface to provide a first inner wall portion;

a second sheet of facing material mounted on said second sheet member to cover said outer surface thereof and overlap said peripheral edges thereof and said second sheet of facing material being secured to said inner surface to provide a second inner wall portion;

said first and second sheet members being secured to one another with the first and second inner wall portions abutting each other to define a peripheral slot of predetermined depth along at least one of said edges thereof, said slot having contiguous opposed side walls where the first and second inner wall portions abut each other whereby said slot is narrower than the thickness of a connecting member insertable therein and said contiguous opposed side walls adapted to be urged apart and grasp adjacent sufaces of said connecting member when inserted therebetween.

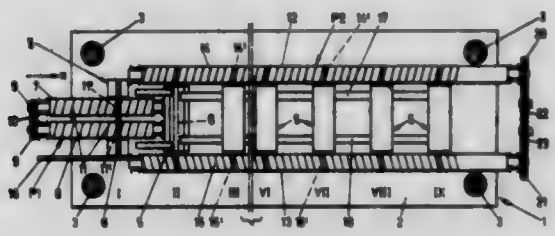
4,491,167
DEVICE FOR THE TRANSPORT OF BAR-SHAPED WORKPIECES, PARTICULARLY SEWING MACHINE NEEDLE BLANKS
Horst Lange, Aachen, Fed. Rep. of Germany, and Klaus Pavel, Eynatten, Belgium, assignors to Rhein-Nadel Maschinennadel GmbH, Aachen, Fed. Rep. of Germany
Filed Sep. 27, 1982, Ser. No. 424,669
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1982, 302920
Int. Cl.³ B21G *1/00*
U.S. Cl. 163—1 7 Claims

1. In a device for transporting bar-shaped workpieces, particularly blanks for sewing machine needles, along a transport path in which working of the workpieces occurs, wherein the workpieces are in form-locked engagement with threads of a plurality of transport spindles which extend over the length of the transport path and are transferred from spindle to spindle in the direction of the transport path, wherein over a partial section of the transport path the workpieces engage with their central position in said threads of first said spindles and over another partial section of the transport path the workpieces

engage with their end portion in said threads of another of said spindles, wherein the improvement comprises

said spindles have central sections containing lead-less sections of said threads,

said first spindles and said another spindles have respective



end sections, the latter extending in overlapping manner relative to each other such that each workpiece is thread-guided during transport in the overlapping end sections of the spindles by engagement of the central portion of the workpieces as well as by engagement of the end portion of the workpieces.

4,491,168

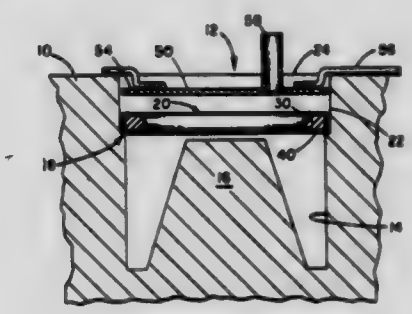
WEAR RESISTANT INSERT FOR CAST LIGHTWEIGHTED PISTONS AND METHOD OF CASTING

David J. Snee, Chardon, Ohio, assignor to Imperial Clevite Inc., Glenview, Ill.

Continuation of Ser. No. 224,838, Jan. 13, 1981, abandoned. This application May 26, 1983, Ser. No. 498,537

Int. Cl.³ B22D *19/08*

U.S. Cl. 164—98 3 Claims



1. A method of casting in a die cavity a lightweight piston with a wear resistant insert, the wear resistant insert including an annular ring having a peripheral edge and at least one frangible projection extending from the peripheral edge, the die cavity having an outer die surface, an opening, and means for supporting the annular ring in the die cavity, the method comprising:

disposing the annular ring in the die cavity with its frangible projection supported by the supporting means,

pouring a predetermined amount of molten lightweight alloy into the die cavity;

closing the die cavity opening with a punch extending into the die cavity;

applying on the lightweight alloy a force with the punch which is sufficient to break the frangible projection, whereby as the lightweight alloy shrinks during solidification the projection breaks off allowing the annular ring to move.

4,491,169

APPARATUS FOR THE CONTINUOUS CASTING OF PRODUCTS ESPECIALLY OF METALS, SUCH AS COPPER ALLOYS

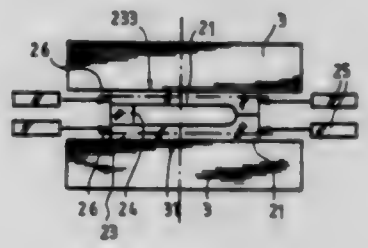
Gérard Durand-Texte, Paris, France, assignor to Etablissements Griset, Asnieres, France

Filed Oct. 28, 1982, Ser. No. 437,259

Claims priority, application France, Oct. 30, 1981, 81 20461; Oct. 5, 1982, 82 16700

Int. Cl.³ B22D *11/00*

U.S. Cl. 164—418 4 Claims



3. In apparatus for continuously casting metals such as alloys of copper, the apparatus being of the type having

(1) a graphite die providing a passage therethrough which shapes the emergent casting, the die being in at least two parts,

(2) cooling elements for conducting heat away from the die, the die being disposed between the cooling elements, and

(3) means for maintaining the die in surface to surface contact with the cooling elements to promote heat conduction from the die to the cooling elements during metal casting,

the improvement wherein

(a) each of said at least two parts of the die is a plate of uniform wall thickness,

(b) each of said cooling elements has a concave surface for making surface to surface contact with the facing surface of the die, and

(c) the means for maintaining surface to surface contact is arranged to apply compressive force to the lateral surfaces of the plate in a manner causing a component of that force to be directed toward the interface between the plate and its cooling element.

4,491,170

DUMMY BAR WAGON FOR AN INSTALLATION FOR THE CONTINUOUS CASTING OF STEEL

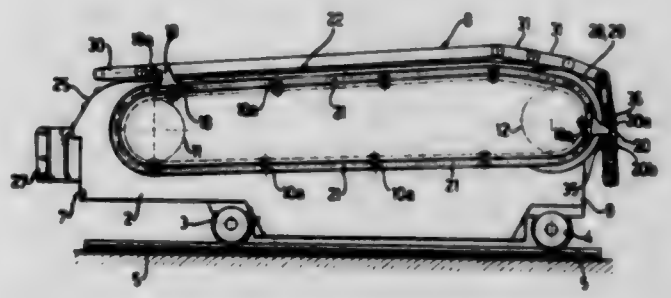
Giacinto Dal Pan, Brescia, and Giorgio Morali, Milan, both of Italy, assignors to Innse Innocenti Santeustacchio S.p.A., Brescia, Italy

Filed Apr. 6, 1982, Ser. No. 365,956

Claims priority, application Italy, Apr. 8, 1981, 20988 A-81

Int. Cl.³ B22D *11/08*

U.S. Cl. 164—426 13 Claims



4. A dummy bar wagon for an installation for the continuous casting of molten metal, comprising:

an endless chain having an upper active pass extending between a loading and an unloading end of said wagon;

a forward sprocket wheel and a rear sprocket wheel for supporting and driving said endless chain;

support means defining a plane above the active pass of said endless chain for supporting an elongate flexible dummy bar during transfer thereof from said loading end to said unloading end, said dummy bar having a head seat close to the head thereof and a tail seat close to the tail thereof;

first and second non-retractable dog-shaped carriers fixed to said chain in mutually spaced relation for engagement at successive times at said loading end with said head seat and said tail seat of said dummy bar; and

surface means for defining a curved surface having a radius of curvature greater than the radius of said rear sprocket wheel at said loading end coaxial with said rear sprocket wheel, said surface means being arranged adjacent to said support plane so as to support the dummy bar during loading thereof onto the wagon, wherein said surface means displaces said endless chain causing said second dog-shaped carrier to have a peripheral velocity at the point of engagement with said dummy bar which is greater than the velocity of said dummy bar before engagement with said second carrier to thereby increase the rate of transfer of said dummy bar to cause the dummy bar to advance beyond said first dog-shaped carrier which moves backward in said head seat to disengage said first dog-shaped carrier from said head seat.

4,491,171

REGENERATOR WITH A ROTATING REGENERATIVE HEAT EXCHANGER

Kurt Zeukner, Karlsruhe, Fed. Rep. of Germany, assignor to Firma Wilhelm Gebhardt GmbH, Waldenburg, Fed. Rep. of Germany

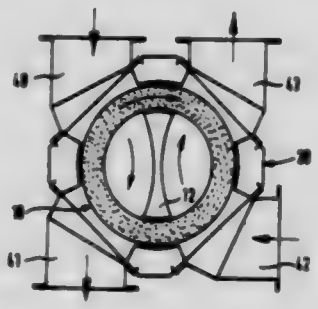
Filed Jul. 28, 1981, Ser. No. 287,629

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1980, 3028632

Int. Cl.³ F28D *19/00*

U.S. Cl. 165—7

6 Claims



1. Regenerator with a hollow cylindrical heat exchange roller turning about an axis of rotation, within a housing said heat exchange roller having a jacket of heat carrier material for flow through by a flow medium emitting heat and a flow medium receiving heat, said heat carrier material comprising lamellas arranged in the roller wall to form radial flow-through gaps, said housing having a partition wall within the roller for providing separate flow regions, said flow media passing twice through said regions by substantially radial passages through said jacket transverse to the axis of rotation of said heat exchange roller, channel stubs connected to said housing, said channel stubs being shaped so that said flow media is continuously deflected in the channel stubs in flow direction for producing substantially low flow resistance to and from the housing, said housing being fully symmetrical relative to the axis of rotation of said heat exchange roller, said housing having four channel stub which are each angularly displaced from adjacent channel stubs by 90°, each two of said channel stubs forming inflow channels and outflow channels at each side of, said stubs terminating at said jacket at separated regions, said partition wall dividing the interior of said heat exchange roller into two symmetrical regions and being comprised of walls having cylindrically shaped portions, said inflow channels and outflow channels lying on opposite ones of said regions for radially guiding flow through said heat exchange roller, said connecting stubs being shaped to guide said flout media radially onto said heat exchange roller, system channels connectable to said stubs for supplying and removing flow media, two system channels for supplying and removing one flow medium being connectable in alignment and two other system channels for guiding the other flow medium extending at right angles to one another; said system channels forming a rectangular-shaped cross with the housing exterior side, said system channels corresponding to peripheral geometry and flow cross-section of all channel stubs.

4,491,172

ENERGY STORAGE APPARATUS

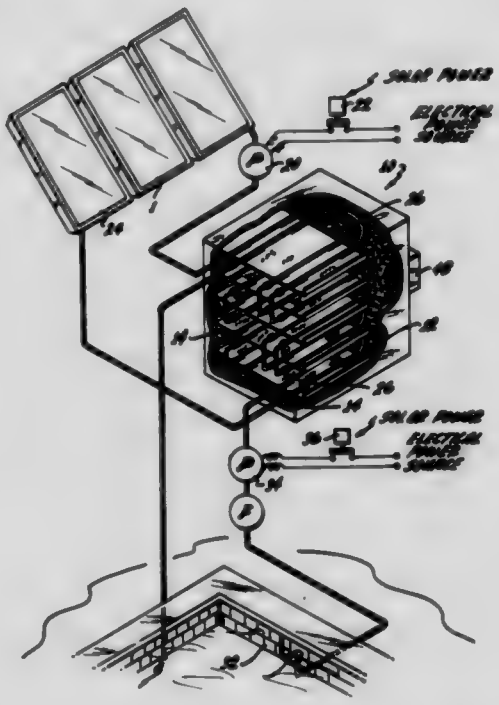
James Hitchin, Del Mar, Calif., assignor to Thermal Energy Storage, Inc., San Diego, Calif.

Filed Apr. 22, 1981, Ser. No. 256,595

Int. Cl.³ F28D *17/00, 21/00*

U.S. Cl. 165—10

10 Claims



1. In combination in apparatus for storing energy and for providing for a subsequent use of such energy as heat,

a container,

first tubes disposed in looped and spaced relationship in the container and connected to provide for the passage of a first fluid through the tubes,

means for providing for the passage of the first fluid through the first tubes at first controlled times,

second tubes disposed in looped and spaced relationship in the container and in the same planes as the first tubes and connected to provide for the passage of a second fluid through the tubes at second controlled times corresponding to the release from the container of the heat stored in the container, and

a heat storage medium disposed in the container and having properties of melting and crystallizing in a particular temperature range and of storing heat in the melted state and of releasing heat when nucleated into the crystalline state in the particular temperature range, the heat storage medium abutting the first tubes to become melted and further heated at the first controlled times and abutting the second tubes to transfer to the fluid in the second tubes the heat stored in the heat storage medium,

a plurality of connecting members each made from a heat conducting metal and each connected in the planes common to the first and second tubes, between individual ones of the first tubes and individual ones of the second tubes in the common planes.

4. In combination in apparatus for storing energy and for providing for a subsequent use of such energy,

a container,

a heat storage medium in the container, the medium having properties of melting and crystallizing in a limited temperature range and of remaining in the melted state at temperatures below the limited temperature range and of storing energy when converted to the melted state and of releasing such stored energy as heat when crystallized,

first tubes made from heat conducting material and disposed in the heat storage medium and connected to provide for the passage of a first circulating fluid through the tubes,

means for providing for the passage of the first fluid through the first tubes during the transfer of heat to the first fluid to convert the heat storage medium to the melted state and to increase its temperature above the temperature of conversion,

second tubes made from heat conducting material and disposed in the heat storage medium and connected to provide for the passage of a second circulating fluid through the tubes and

means for providing for the passage of the second fluid through the second tubes during the removal of heat from the storage medium to provide for the transfer of the heat stored in the container,

bridging members made from a heat conducting material,

the first and second tubes being disposed in spaced and nested relationship and being connected in the nested relationship by the bridging members,

the heat storage medium being an aqueous sodium thiosulfate system, and

a soluble additive material included in the medium to maintain the medium chemically basic and non-corrosive and to control various parameters of the crystals produced by the heat storage medium,

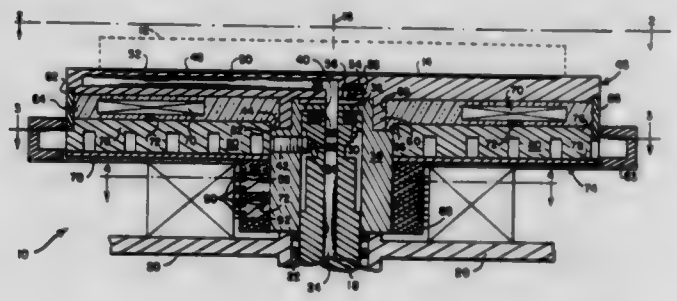
the heat storage medium being sodium thiosulfate pentahydrate and the additive being selected from a group consisting of disodium hydrogen phosphate and trisodium phosphate and their potassium and ammonium analogs.

4,491,173

ROTATABLE INSPECTION TABLE

Erhart E. Demand, Boston, Mass., assignor to Temptronic Corporation, Newton, Mass.

Filed May 28, 1982, Ser. No. 383,337
Int. Cl.³ F28F 5/00
U.S. Cl. 165—11 R 17 Claims



1. A device for supporting and holding an object in place, said device comprising, in combination:

a shaft mounted for rotation about a rotation axis;

a top plate coupled to and rotatable with said shaft and comprising a top substantially planar surface disposed normally to said axis, a bottom surface disposed opposite said top surface, and at least one aperture disposed in said top surface for providing a negative pressure vacuum so that said object can be held in place by said negative pressure vacuum on said top surface;

electrical temperature sensing means disposed in and rotatable with said top plate for providing an electrical signal as a function of the temperature of said top plate;

electrical temperature modification means responsive to said electrical signal, coupled to and rotatable with said shaft and disposed relative to said bottom surface of said top plate for maintaining the temperature of said top plate substantially at a preselected temperature;

heat sink means coupled to and rotatable with said shaft and disposed relative to said temperature modification means for drawing excess heat from said temperature modification means away from said top plate; and

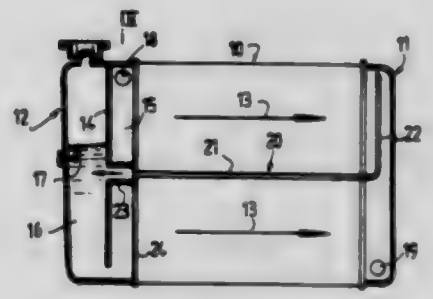
a plurality of electrically-conductive brushes mounted in a spaced-apart relation, and a plurality of electrically-conductive rings coaxially mounted with respect to said axis, each said ring being mounted in a plane normal to said axis and in electrical contact with and rotatably movable with respect to at least one of said brushes when said shaft, top plate, electrical temperature sensing means, electrical temperature modification means and said heat sink means rotate about said axis, wherein at least two of said rings are electrically coupled to said electrical temperature sensing means so that said electrical signal can be transmitted through the corresponding ones of said brushes, and at least two of said rings are electrically coupled to said temperature modification means so that electrical power can be transmitted to said temperature modification means.

4,491,174

LIQUID FLOW HEAT EXCHANGER, E.G. FOR A MOTOR VEHICLE

Denis Villeval, Maurepas, France, assignor to Valeo, Paris, France

Filed Sep. 28, 1982, Ser. No. 425,235
Claims priority, application France, Oct. 13, 1981, 81 19272
Int. Cl.³ F28D 15/00; F01P 11/02
U.S. Cl. 165—104.32 8 Claims



1. A liquid flow heat exchanger comprising:

(a) a bundle of tubes;

(b) a first water box mounted at one end of said bundle of tubes;

(c) a second water box which includes an expansion chamber and is mounted at the end of said bundle of tubes opposite said first water box; and

(d) a liquid degassing passage extending from said first water box, through the mid-portion of said bundle of tubes through said second water box to connect with said expansion chamber; wherein

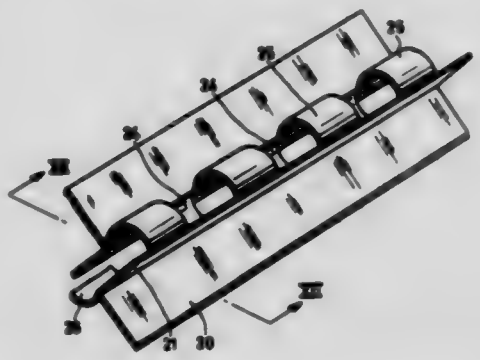
a portion of said passage which passes through said second water box is comprised by a duct which is molded in one piece with said second water box and which connects said expansion chamber with the passage portion passing through said bundle of tubes.

4,491,175

METHOD OF CONNECTING A PLATE-SHAPED ABSORBER FOR SOLAR HEAT TO A TUBULAR HEAT TRANSPORT SYSTEM

Herman Bloem, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 158,001, Jun. 9, 1980, Pat. No. 4,348,793.
This application Jun. 28, 1982, Ser. No. 393,009
Claims priority, application Netherlands, Jun. 29, 1979, 7905056
Int. Cl.³ F28F 1/20
U.S. Cl. 165—183 1 Claim



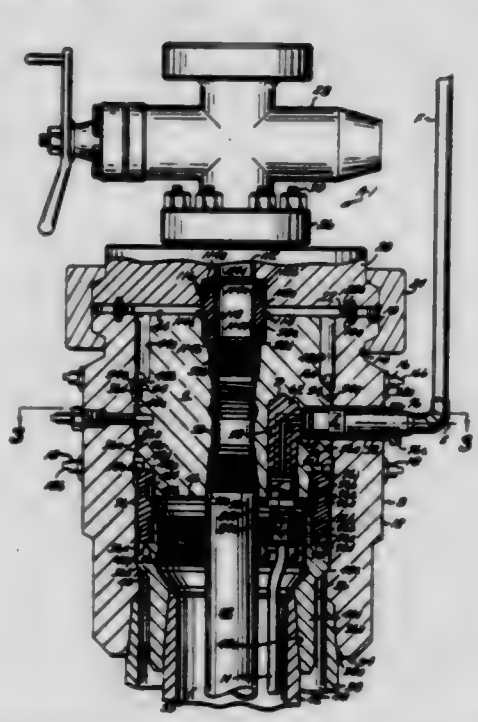
1. A solar collector comprising a straight tubular metal heat pipe having an evaporator section and a condenser section; and two elongate metal absorber plates longitudinally connected to the evaporator section and bent in an outwardly extending X-shape with respect thereto, said absorber plates being in thermally conductive contact with said evaporator section; the longitudinal connection of the two absorber plates to the evaporator section comprising spaced semi-cylindrical portions of one absorber plate and alternating oppositely disposed spaced semi-cylindrical portions of the other absorber plate mechanically pressed against said evaporator section to clamp the absorber plates thereto, the respective remainders of the two absorber plates being bent away from each other to provide the outwardly extending X-shape.

4,491,176

ELECTRIC POWER SUPPLYING WELL HEAD ASSEMBLY

Lehman T. Reed, 3505 Chester Ave., Bakersfield, Calif. 93301

Filed Oct. 1, 1982, Ser. No. 432,300
Int. Cl.³ E21B 33/03
U.S. Cl. 166—65 R 11 Claims



1. In combination with a well head situated above a bore hole in which a tubing string is situated that is connected to a downhole electric motor driven pump, said tubing string having a threaded upper end; a pressurized fluid actuated device in said bore hole; tubing that extends upwardly in said bore hole from said device, said tubing and tubing string having upper ends; an electrical conducting connector; an electrical conducting cable that extends downwardly in said bore hole from said connector to said electric motor driven pump; a first elongate electrical conducting cartridge connected to a source of electric power, said first cartridge and said connector having first and second electrical conducting engaging means thereon; an elongate tubular member in communication with a source of pressurized fluid; said well head including a generally cylindrical side wall that has first and second circumferentially spaced, transverse, bores therein and support means that extend inwardly from said side wall; a tubing hanger assembly disposed in said well head and rotatably resting on said support means, said tubing hanger assembly concurrently supporting said tubing string in a centered position in said bore hole, establishing pressurized fluid communication between said elongate tubular member and tubing, and removably supporting an electrical connection between said first electrical conducting cartridge and said connector that may be replaced while said tubing hanger remains in place in said well head, said first electrical conducting cartridge and elongate tubular member including first end portions that are disposed within said first and second transverse bores when said first electrical conducting cartridge and elongate tubular member are in first positions and extend into said well head when said first electrical conducting cartridge and elongate tubular member are moved to second positions, said tubing hanger assembly including:

a. a generally cylindrical rigid body that includes top and bottom surfaces and a side surface that extends therebetween, said body disposed in said well head and rotatably resting on said support means, a centered vertically extending passage in said body that includes a lower threaded end portion that is engaged by said threaded upper end of said tubing string, a first bore that extends downwardly in said body from said top surface to develop into a laterally offset second bore in smaller diameter, said first and second bores at a junction thereof defining a first transverse body shoulder, a first transverse passage in said body that extends from said first bore to said side surface; a third bore in said body that extends upwardly from said bottom surface to develop into a second transverse passage that is in communication with a cavity that extends inwardly from said side surface, said first bore defining threads in the upper portion thereof, said first and second transverse passages circumferentially spaced at the same angle as said first and second transverse bores and centered in a common horizontal plane therewith;

b. a second electrical conducting cartridge that includes a body of an electrical insulating material that has an upper elongate portion and a lower laterally offset portion depending therefrom said upper and lower portions defining a second horizontal body shoulder at their junction, said upper and lower portions removably and slidably disposed in said first and second bores, first and second connected electrical conducting engageable means supported by said body of electrical insulating material as to be removably engaged by said first and second engaging means when axially aligned therewith when said first body shoulder rests on said second body shoulder, with said upper portion of such length as to be situated below said threads in said first bore when said second electrical conducting cartridge is disposed, and said body of electrical insulating material being insertable into said first and second bores only when rotated to a first position in which said first electrical conducting engaging and engageable means lie in common vertical planes;

c. an externally threaded plug that removably engages said threads in said first bore, said plug when rotated in a direction to move downwardly in said first bore forcing

said second electrical conducting cartridge into abutting contact with said second body shoulder;

d. first means for securing said electrical connector to said bottom surface of said tubing hanger body in a position where said second electrical conducting engaging means engage said second electrical conducting engageable means when said body of electrical insulating material rests on said second body shoulder;

e. second means for securing said tubing to said tubing hanger body in communication with said third bore; and

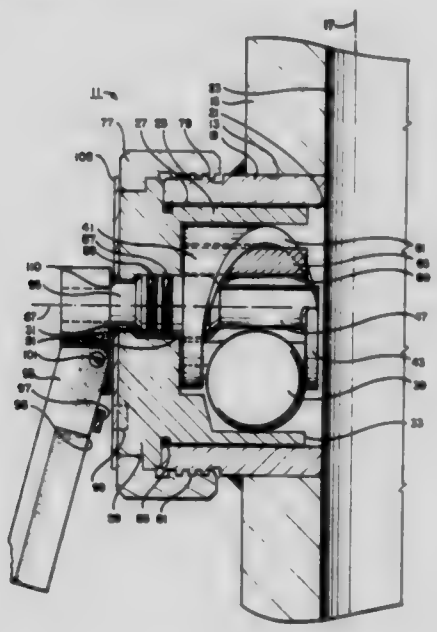
f. manually operated indexing means for rotating said tubing hanger body relative to said well head to concurrently radially align said first and second transverse bores with said first and second transverse passages to permit said first electrical conducting cartridge and elongate tubular member to be moved from said first to said second positions to establish an electrical circuit to said motor and communication between said elongate tubular member and said tubing connected to said pressurized fluid actuated device.

4,491,177

BALL DROPPING ASSEMBLY

John L. Baugh, Huntsville, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Jul. 6, 1982, Ser. No. 395,175
Int. Cl.³ E21B *23/00*
U.S. Cl. 166—75 R 2 Claims



1. A ball dropping assembly for connection in a string of pipe, comprising:

a main cylindrical body mounted on said body having an interior bore which communicates with the interior of said pipe;

a cam housing received within said main body bore, said housing having a closed end with a shaft receiving opening, an open end for communicating with the pipe interior bore, and tapered interior sidewalls having a ball receiving recess formed therein for receiving a ball;

a ball dropping can rotatably received within said cam housing, said can having a partially cut-away bottom, partially cut-away sidewalls which allow a portion of said ball in said ball receiving recess to be contained in said can, said cut-away sidewalls forming a camming surface for said ball, and a rigid shaft extending from said bottom through the interior of said can and outwardly therefrom;

retaining means for engaging said cam housing and can within said main body with said can shaft extending through said opening in said cam housing closed end, whereby rotation of said shaft rotates said can with respect to said cam housing to eject a ball from said ball receiving recess into the interior of said pipe without opening said assembly to the atmosphere; and

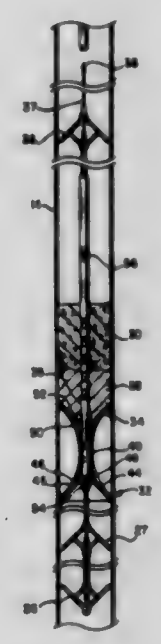
ball positioning means inside said ball dropping can which cooperate with said ball receiving recess to restrict circumferential movement of said ball about said shaft in said can while allowing axial movement of said ball parallel to the longitudinal axis of said shaft.

4,491,178

THROUGH TUBING BRIDGE PLUG

Jamie B. Terrell, and Donna K. Pratt, both of Fort Worth, Tex., assignors to Gearhart Industries, Inc., Fort Worth, Tex.

Filed Aug. 11, 1983, Ser. No. 522,129
Int. Cl.³ E21B *33/134*
U.S. Cl. 166—192 8 Claims



1. A through tubing bridge plug assembly comprising:

(a) an elongated vent tube;

(b) an upper petal basket on said vent tube having a plurality of petal leaves movable between a retracted position about said vent tube and an expanded position in which said petal leaves are in an upward facing conical configuration;

(c) a lower petal basket on said vent tube having a plurality of petal leaves movable between a retracted position about said tube and an expanded position in which said lower basket leaves are in a downward facing conical configuration;

(d) a fabric bag covering at least one of said petal baskets and extending over the inner and outer surfaces of the petal leaves thereof; and

(e) a flexible conically-shaped liner formed of an impermeable material inside said bag and interposed between the inner surfaces of said petal leaves and the conforming portion of said bag.

4,491,179

METHOD FOR OIL RECOVERY BY IN SITU EXPOLIATION DRIVE

Sylvain J. Pirson, Austin, Tex., and The American National Bank, executor, Box 2266, Austin, Tex. 78780

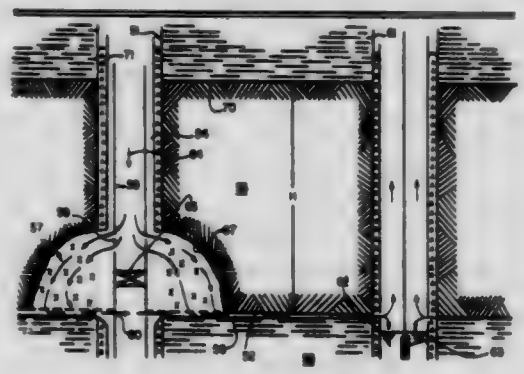
Filed Apr. 26, 1982, Ser. No. 371,926
Int. Cl.³ E21B *43/247*
U.S. Cl. 166—257 17 Claims

3. A method for recovering oil from a bed of tight reservoir rock, comprising the steps of:

forming a chamber partially filled with reservoir rock rubble in said bed; and

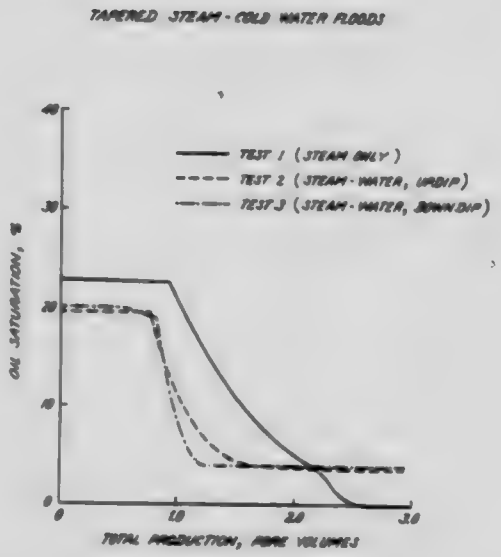
thereafter, alternately (a) combusting organic matter in the chamber while recovering oil liberated from the reservoir

rock by pyrolysis, whereby the wall of the chamber is concurrently heated by said combustion; and (b) injecting



a coolant into said chamber to spall the wall of the chamber.

4,491,180
TAPERED STEAM INJECTION PROCESS
Alfred Brown, Houston, Tex.; Henry J. Grimm, Allentown, Pa., and Alvin J. Sustek, Jr., Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.
Filed Feb. 2, 1983, Ser. No. 463,215
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—272 8 Claims



1. A method for stimulating the production of hydrocarbons from a subterranean hydrocarbon-bearing formation penetrated by an injection well and a production well, wherein the injection procedure comprises:

(a) injecting about 0.1 to about 0.6 pore volumes of steam of a relatively high quality into the formation;

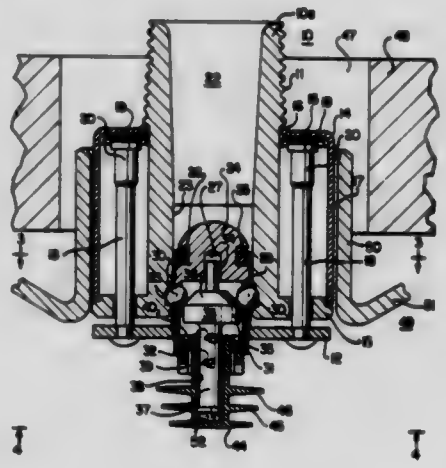
(b) after injection of the relatively high quality steam, injecting into the formation about 0.1 to about 0.6 pore volumes of steam while gradually decreasing the quality of the steam from a relatively high quality to a relatively low quality of steam; and

(c) after injection of the decreasing quality steam, injecting about 0.5 to about 2.0 pore volumes of water into the formation.

4,491,181
METHOD OF FREEING STUCK DRILL STRING USING SPOTTING FLUID
David A. Krol, Pittsburgh, Pa., assignor to Gulf Research and Development Co., Pittsburgh, Pa.
Filed Mar. 31, 1983, Ser. No. 480,877
Int. Cl.³ E21B *31/00*
U.S. Cl. 166—301 18 Claims

1. A method for freeing a drill string stuck in a well bore because of differential pressure effects, which comprises injecting a spotting fluid into said well bore in quantities sufficient to cover a section of said well bore at the zone where the drill string is stuck, said spotting fluid comprising an oily material containing a solid spotting agent, said solid spotting agent comprising at least 20 weight percent of said oily material and at least 32 pounds per barrel of said solid spotting agent, said solid spotting agent comprising substantially spherical particles having a specific gravity of at least 2.0, an average particle diameter below 212 microns, and a compressive strength of at least 5000 psi.

4,491,182
AUTOMATIC SPRINKLER
George S. Pieczykolan, North Wales, Pa., assignor to Central Sprinkler Corporation, Lansdale, Pa.
Filed Jan. 5, 1983, Ser. No. 440,539
Int. Cl.³ A62C *37/08*
U.S. Cl. 169—38 6 Claims



1. A temperature responsive sprinkler head comprising a hollow body having an interior chamber communicating with an inlet and an outlet, a valve plug reciprocal in said chamber with respect to said body and arranged to control flow of a flowable fire quenching material from said outlet, an actuator for said valve plug, a deflector plate having a notched periphery, means for releasably locking said plug in a position wherein it closes said outlet, temperature responsive means for enabling said actuator to release said locking means and then move with said deflector plate and valve plug to an open position of the valve plug wherein a flowable fire quenching material may exit from said outlet and impinge on said deflector plate, said chamber above said valve being unobstructed, said temperature responsive means being supported by a sleeve end wall at its lower end, the lower end of said sleeve having radially outwardly extending fins, the upper end of said sleeve being threadedly coupled to the threads on the lower end of said valve plug, and means biasing said valve plug and deflector plate to the open position of said valve plug.

4,491,183
RETRACTABLE IN-ROW TILLER DEVICE
Jack F. Anderson, P.O. Box 81, Marion, N. Dak. 58466, and Clayton Melrose, Oakes, N. Dak., assignors to Jack F. Anderson, Marion, N. Dak.
Filed Mar. 3, 1981, Ser. No. 240,137
Int. Cl.³ A01B *65/02*
U.S. Cl. 172—5 18 Claims

1. Retractable tiller apparatus for tilling the ground around and between objects in a row, comprising:

a first pivotal means defining a first pivotal axis;

a support means for supporting said first pivotal means;

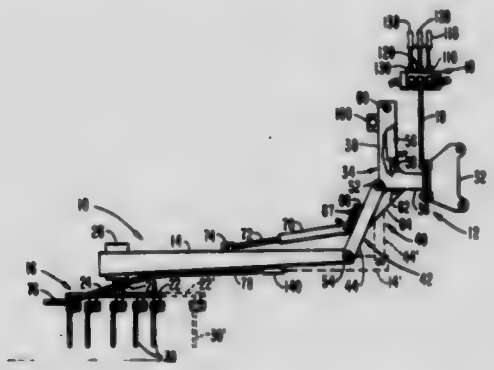
a rigid outrigger arm positioned in spaced-apart relation to said support means and having a proximal end and a distal end;

a pivotal control arm, one end of said control arm being pivotally connected to said support means to pivot about

said first pivotal axis such that said control arm pivots in a sector about said first pivotal axis in relation to said support means, and the other end of which control arm is pivotally connected to said proximal end of said outrigger arm such that said control arm and said outrigger arm are pivotal in relation to each other about a second pivot axis in parallel spaced-apart relation to said first pivot axis;

first drive means connected to said control arm for pivoting said control arm about said first pivot axis in relation to said support means;

a rotary tiller tool on said distal end of said outrigger arm, and a rotary hydraulic motor connected to said tiller tool for rotatably driving said tiller tool; and



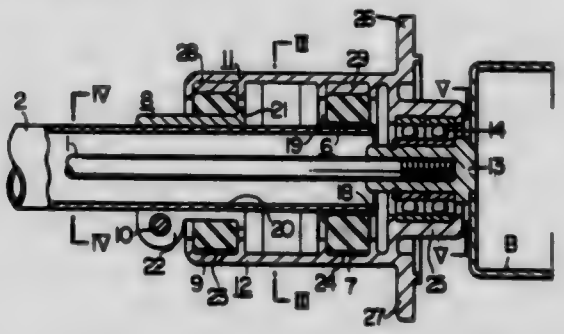
an extendable and retractable hydraulic ram, one end of which is pivotally connected to said control arm and the other end of which is pivotally connected to said outrigger arm such that extension of said hydraulic ram causes said outrigger arm to pivot downwardly about said second pivot axis, and retraction of said hydraulic ram causes said outrigger arm to pivot upwardly about said second pivot axis, said rotary hydraulic motor and said hydraulic ram being adapted for connection in parallel relation to a common hydraulic fluid circuit such that pressure exerted by hydraulic fluid in said hydraulic fluid circuit on said ram varies in proportion to the pressure required to operate said rotary hydraulic motor in driving said rotary tiller tool.

4,491,184

VIBRATION DAMPING DEVICE FOR MOWING MACHINE

Yukio Kawaharazuka, Agoo, Japan, assignor to Kioritz Corporation, Tokyo, Japan

Filed Aug. 13, 1982, Ser. No. 407,855
Claims priority, application Japan, Sep. 9, 1981, 56-133157[U]
Int. Cl.³ E21B *3/00*
U.S. Cl. 173—162 R 1 Claim



1. In a mowing machine having a handling tube (2) receiving a transmission shaft (1) operatively connected to an internal combustion engine (5),

a vibration damping interconnecting device comprising

an axially splittable outer sleeve composed of two semicylindrical halves (11,12) having flange means (26,27) connecting said outer sleeve to the internal combustion engine,

a pair of axially spaced vibration damping rings,

a first holding member (8) between said handling tube (2) and an inner peripheral surface of one of said vibration damping rings,

a second holding member (6) between said handling tube (2) and an inner peripheral surface of the other of said pair of vibration damping rings,

said first holding member (8) having a radially outward extending flange (21) against a side of said vibration damping ring (9) adjacent said first holding member (8),

said second holding member (6) having a radially outward extending flange (19) against a side of said vibration damping ring (7) adjacent said second holding member (6) and an inward extending flange positioning said handling tube (2),

a rib (28, 29) on at least one of said semicylindrical halves against the outer peripheral surface of each of said damping rings (9,7),

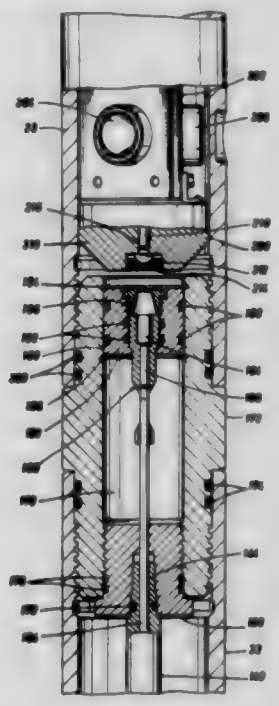
and a groove (23,24) on at least one of said semicylindrical halves along a portion of the outer peripheral surface of each of said damping rings (9,7).

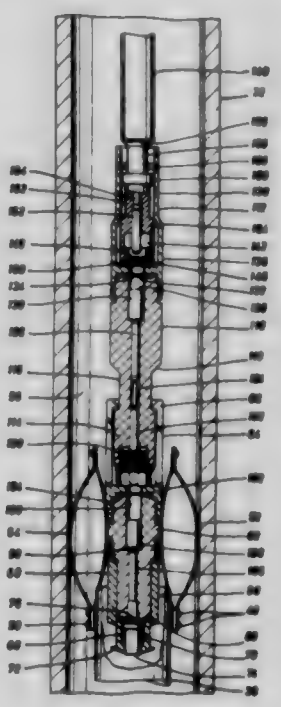
4,491,185

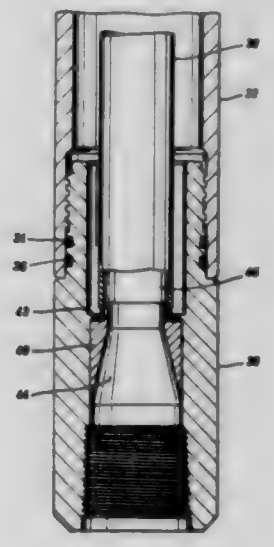
METHOD AND APPARATUS FOR PERFORATING SUBSURFACE EARTH FORMATIONS

Gerald B. McClure, 1830 Arcadia, Sugarland, Tex. 77478

Filed Jul. 25, 1983, Ser. No. 516,811
Int. Cl.³ E21B *43/11*
U.S. Cl. 175—4.56 20 Claims







1. A method for perforating subsurface earth formations surrounding a borehole, comprising the steps of:

positioning on the end of a tubing string a perforating gun and a firing head assembly within a borehole,

said firing head assembly including first and second explosive detonator assemblies mechanically and explosively serially aligned, said first detonator assembly detachably mechanically coupled to said second detonator assembly;

subsequently lowering through said tubing string a percussion firing assembly into coupling relationship within said firing head assembly; and

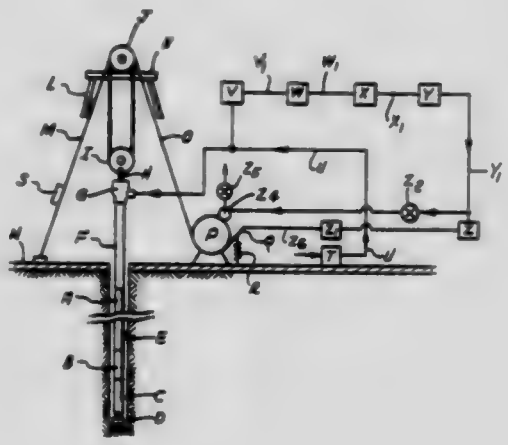
dropping an impact member through said tubing string, the collision of said impact member with said percussion firing assembly for detonating said percussion firing assembly to thereby detonate said firing head assembly and said perforating gun.

4,491,186

AUTOMATIC DRILLING PROCESS AND APPARATUS

Robert L. Alder, Garland, Tex., assignor to Smith International, Inc., Santa Ana, Calif.

Filed Nov. 16, 1982, Ser. No. 442,162
Int. Cl.³ E21B *44/00*
U.S. Cl. 175—26 14 Claims



1. An automatic in-hole motor driven drill connected in a drill string supported from the surface, said drill string containing a tachometer to sense rpm of the motor and to generate pressure pulses in the pressure of drilling fluid circulating through an input to the drill string, through the tachometer, turbine and the bit to the surface, a support for the drill string limiting the weight of the drill string imposed on the bit, comprising:

(a) means at the input for sensing the pressure and pressure pulses generated by the tachometer and for generating a signal responsive to said pressure pulses, and

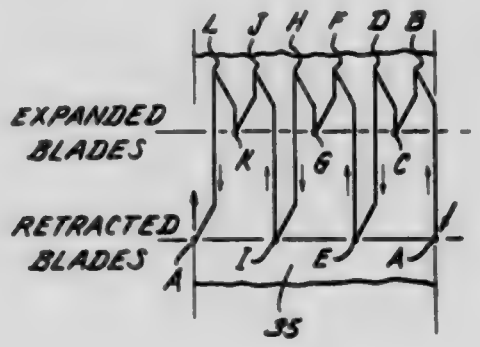
(b) support adjustment apparatus operatively connected to said means to modify the weight of the drill string on the bit responsive to said signal.

4,491,187

SURFACE CONTROLLED AUXILIARY BLADE STABILIZER

Larry R. Russell, 6025 Edgemoor, Suite C, Houston, Tex. 77081

Continuation-in-part of Ser. No. 383,481, Jun. 1, 1982, abandoned. This application Jun. 29, 1983, Ser. No. 508,814
Int. Cl.³ E21B *17/10*
U.S. Cl. 175—325 9 Claims



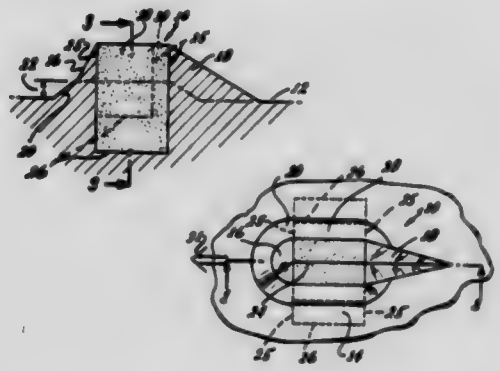
1. Surface controlled stabilizer apparatus, comprising a tubular body adapted to be connected into a drill string in a well, a piston sleeve spaced uniformly inward of said tubular body and having an outwardly protruding portion around its upper end slidably and sealingly engaged with said tubular body, a tubular cam body connected to the lower end of said piston sleeve, a tubular blade expander body connected to the lower end of said cam body, an annular space between said piston sleeve and said tubular body comprising an accumulator space, means permitting injection of a pressured fluid into said accumulator space, the pressure within said accumulator space biasing said piston sleeve, and said cam body and blade expander body connected thereto, upwardly, compression spring means also biasing said piston sleeve, cam body and blade expander body upwardly, said piston sleeve being moved downwardly by elevated internal drill string pressure sufficient to overcome said accumulator pressure and spring bias to move said piston sleeve and said connected cam body and blade expander body downwardly, said tubular body having plural circularly spaced longitudinal slots therethrough outward of said blade expander body, a stabilizer blade slidably and sealedly disposed within each said slot to be moved radially outward when said blade expander body is moved downwardly and being spring biased to move radially inward when said blade expander body is moved fully upwardly, said cam body having barrel cam groove means therearound engaged by inwardly extending pin means carried by said tubular body, said barrel cam groove having a pattern around said cam body including pin positions wherein said blade expander sleeve is moved fully downward and said stabilizer blades are expanded by said blade expander body, and including pin positions wherein said blade expander sleeve is moved partway downward and said stabilizer blades are expanded by said blade expander body and including pin positions wherein said blade expander sleeve is moved fully upward and said stabilizer blades are retracted, whereby by successive alternate increases and decreases of said drill string internal pressure said stabilizer blades may be repeatedly expanded and retracted, and may be held expanded when internal drill string pressure is decreased when said pin is in a said barrel cam groove position wherein said blade expander sleeve is moved partway downward.

4,491,188

DIAMOND CUTTING ELEMENT IN A ROTATING BIT

Richard H. Grappendorf, Riverton, Utah, assignor to Norton Christensen, Inc., Salt Lake City, Utah

Filed Mar. 7, 1983, Ser. No. 473,020
Int. Cl.³ E21B *10/46*
U.S. Cl. 175—329 15 Claims



1. A rotatable bit for use in earth boring comprising:
a matrix body member having portions forming a gage and a face,
said face including a plurality of waterways forming pad means between adjacent waterways,
each said pad means including a plurality of spaced synthetic polycrystalline diamond cutting elements mounted directly in the matrix during matrix formation,
each of said cutting elements being of a predetermined geometric shape with a cutting face and being temperature stable to at least about 1200° C.,
the said cutting elements including a portion received within the body matrix of said pad means and a portion which extends above the surface of said pad means and which is adapted to form the cutting face of said cutting element,
matrix material extending above said pad means and forming a plurality of spaced teeth, at least some of said cutting elements being positioned in said teeth,
at least some of said teeth including a trailing support contacting the rear of the associated cuttting element,
at least some of said teeth which include a trailing support also including a prepad of matrix material extending above said pad means and contacting and fully covering said cutting face of at least some of the associated cutting elements,
the length of said tooth to the rear of said cutting element being greater than the length of said prepad,
said cutting elements including side surfaces, at least a portion of the side surfaces of at least some of said cutting elements being above the pad and being at least partially exposed, and
the portion of each said cutting elements which forms the cutting face of said cutting elements extending more than 0.5 mm above the surface of the corresponding pad.

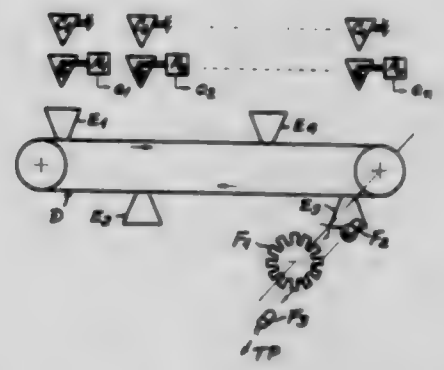
4,491,189

COMBINATORIAL WEIGHING METHOD AND APPARATUS

Masao Fukuda, Shiga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

PCT No. PCT/JP81/00319, § 371 Date Jun. 25, 1982, § 102(e) Date Jun. 25, 1982, PCT Pub. No. WO82/01769, PCT Pub. Date May 27, 1982
PCT Filed Nov. 4, 1981, Ser. No. 394,926
Int. Cl.³ G01G *9/00, 19/32, 13/00*
U.S. Cl. 177—1 6 Claims

1. A combinatorial weighing method comprising the steps of:
(a) charging a plurality of weighing hoppers with articles-to-be-weighed;
(b) producing a weight value signal representative of said articles-to-be-weighed contained in each weighing hopper;
(c) computing a best combination of said weight value signals that gives a value equal to or closest to a set value;
(d) selecting the weighing hoppers containing said best combination and successively discharging from said



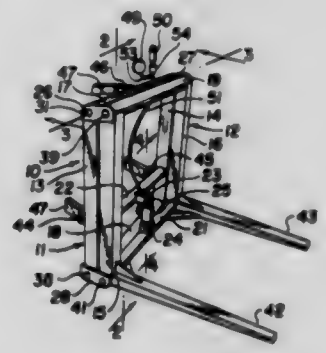
weighing hoppers the weighed articles which correspond to said best combination;
(e) recharging said discharged weighing hoppers; and
(f) repeating steps (b), (c), (d), and (e) for the remaining hoppers, omitting each of said selected weighing hoppers from step (c) for a predetermined number of cycles before permitting it to participate again.

4,491,190

WEIGHT MEASUREMENT APPARATUS

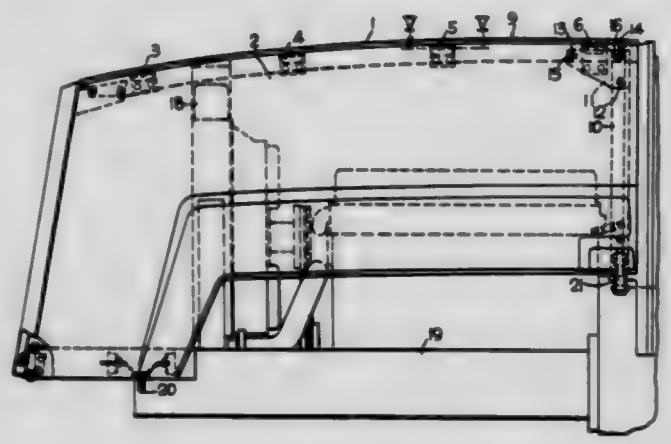
Harvey G. Mayfield, 905 Howell, Wills Point, Tex. 75169

Filed Jan. 31, 1983, Ser. No. 462,212
Int. Cl.³ G01G *19/10*
U.S. Cl. 177—139 6 Claims



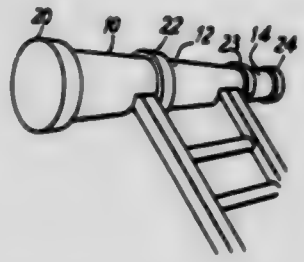
1. Weight measurement apparatus comprising: first and second frame members, said first and second frame members being linked together by a parallelogram linkage system restricting relative movement between said frame members to a planar-parallel movement in a longitidinal direction, load support means secured to said first frame member, support attachment means affixed to said second frame member, first anchor means rigidly secured to said first frame member, second anchor means rigidly secured to said second frame member, a load carrying hydraulic cylinder device connected between said first and said second anchor means, said load carrying hydraulic cylinder device having its operational axis aligned with said longitudinal direction and so limiting the longitudinal movement of each of said frames relative to the other as to be within essentially a single plane, fluid pressure indicator means associated with said load carrying hydraulic cylinder device to provide an indication of the magnitude of force exerted by said load carrying cylinder device in opposition to any longitudinal relative movement between said first and second frames.

4,491,191
ADJUSTABLE TRACTOR GRILLE SHELL
Gerald E. Steren, Greendale, Wis., assignor to Allis-Chalmers Corp., Milwaukee, Wis.
Filed Dec. 29, 1982, Ser. No. 454,198
Int. Cl.³ B62D 25/10
U.S. Cl. 180—69.2 8 Claims



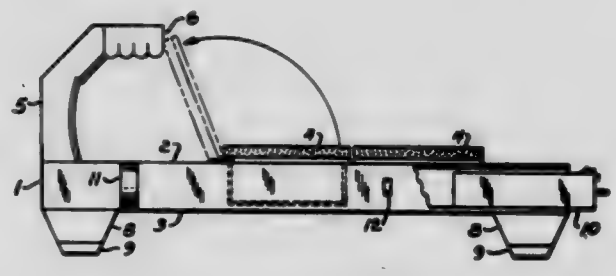
1. An engine hood on a motor vehicle comprising, a center hood panel, a side panel supported on each side of said center hood panel, a rear hood support supporting the rear end of said center hood panel, a front hood support means supporting said center hood panel, a grille means including a grille shell carrying a grille, grille fastening means connecting said grille shell with the front end of said center hood panel, grille shell adjusting means including horizontal adjusting means for adjustably positioning said center hood panel horizontally relative to said rear hood support and angular adjusting means angularly adjusting the grille shell relative to said center hood panel thereby providing adjustment between said grille shell and said center hood panel and said side panels for aligning of said panels relative to said grille shell.

4,491,192
LADDER SAFETY DEVICE
Stephen R. Skarsten, Welwyn, England, assignor to Skilten Tools Limited, Welwyn, England
PCT No. PCT/GB83/00041, § 371 Date Oct. 12, 1983, § 102(e) Date Oct. 12, 1983, PCT Pub. No. WO83/02797, PCT Pub. Date Aug. 18, 1983
PCT Filed Feb. 11, 1983, Ser. No. 545,371
Claims priority, application United Kingdom, Feb. 12, 1982, 8204119
Int. Cl.³ E06C 7/48
U.S. Cl. 182—107 5 Claims



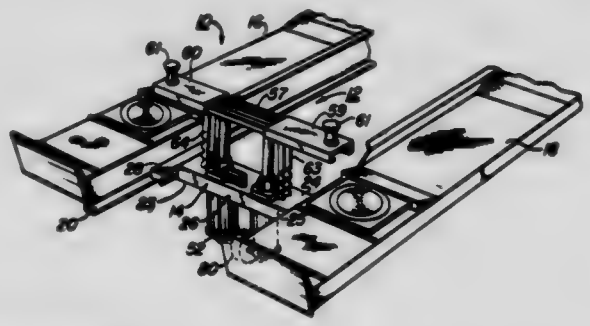
1. A ladder safety device having at least two elongate members cooperating telescopically, there being apertures formed in the members which can be brought into register on telescopic extension of the members to receive the ends of ladder uprights, so that the device may be located transversely across the top of a ladder.

4,491,193
KNEELING PLATFORM
Garry K. Moss, 21 W. 59th St., Apt. 28, Westmont, Ill. 60559
Filed Sep. 29, 1982, Ser. No. 427,642
Int. Cl.³ A47C 16/04
U.S. Cl. 182—230 6 Claims



1. A kneeling platform comprising in combination:
(a) a frame having upper and lower surfaces;
(b) a kneeling pad mounted on said upper surface;
(c) a single arcuate shaped appendage affixed at a midpoint to an edge of said frame curving above and over said upper surface, said appendage being of a size and shape to be used as a handle and conforming to a human shoulder to enable said platform to be carried against the back by hooking said appendage over a single shoulder; and
(d) feet mounted on said lower surface capable of the stable support of said platform on a supporting surface, the portion of said feet in contact with the supporting surface being of a composition having a high degree of adhesion with said supporting surface.

4,491,194
VEHICLE LIFT RACK AND JACK ASSEMBLY
Craig E. Mountz, Wadsworth, Ill., assignor to Ammco Tools, Inc., North Chicago, Ill.
Filed Nov. 22, 1982, Ser. No. 443,186
Int. Cl.³ B60S 13/00
U.S. Cl. 187—8.43 20 Claims



1. In combination,
a pair of spaced, mutually parallel runways for carrying a vehicle,
power lift means for elevating and lowering said runways relative to a floor disposed below said runways,
a pair of rails respectively carried by said runways in mutually opposed relationship,
a carriage assembly extending transversely between said runways and having trolley wheels journaled therein and resting on said rails to permit longitudinal travel of said carriage assembly along said rails,
said carriage assembly including a rigid cross-frame and a pair of trolley wheel support members disposed at the respective ends of said cross-frame,
pivot means connected between said cross-frame and said trolley wheel support members for permitting swinging movement of said cross-frame about a horizontal axis in proximity to one side of said cross-frame,
fluid operated lift jack means fixedly mounted to said cross-frame and having a cylinder portion extending from the bottom thereof, the center of gravity of said carriage assembly and said lift jack means is above said horizontal

axis when said carriage assembly is in an upright operative position,

roller means carried by said cross-frame below said lift jack means for engagement with said floor when said runways are in a lower position for swinging said cross-frame and said lift jack means into a folded-up generally horizontal position as said runways are lowered from an elevated position,

stop means carried by said carriage assembly for limiting the swinging movement of said cross-frame as said runways are elevated, and

second stop means carried by said carriage assembly and interacting between said cross-frame and at least one of said trolley wheel supports to prevent said cross-frame and said lift jack means from swinging into a position wherein said center of gravity would be below said horizontal axis.

4,491,195

ADJUSTABLE MOUNTING ARRANGEMENT FOR A ROTATABLE GUIDE MEMBER

Jan Mikkelsen, Borre, and Kjell Sorlie, Tonsberg, both of Norway, assignors to Towmotor Corporation, Mentor, Ohio

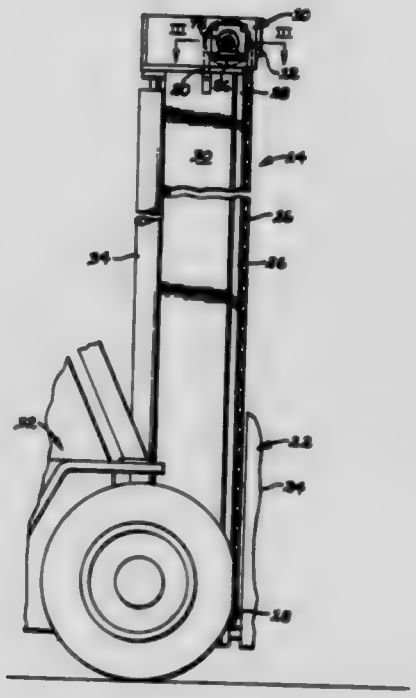
PCT No. PCT/US82/01572, § 371 Date Nov. 8, 1982, § 102(e) Date Nov. 8, 1982, PCT Pub. No. WO84/01803, PCT Pub. Date May 10, 1984

PCT Filed Nov. 9, 1982, Ser. No. 451,217

Int. Cl.³ B66B 9/20

U.S. Cl. 187—9 R

18 Claims



18. An adjustable mounting arrangement (10) for a rotatable guide member (12), comprising:

a lift mast assembly (14);

a shaft (36) having a first cylindrical end portion (38) and a cylindrical eccentric portion (42), said first end portion having a longitudinal axis (48) and said eccentric portion having a central longitudinal axis (54), said central longitudinal axis (54) being offset from said longitudinal axis (48);

a first support member (60) slidably and rotatably connecting said shaft first end portion (38) to said lift mast assembly (14);

a cam member (78) having a preselected shaped cam profile surface and being fixedly connected to the shaft first end portion (38), said cam profile surface (84) being radially spaced from the longitudinal axis (48) and circumferentially disposed about the shaft first end portion (38);

a flange (88) having a bore (94) and being connectable to the first support member (60), said bore having a profile surface (96) of substantially the same configuration as the cam profile surface (84);

a stop member (110) connected to said flange (88), said flange (88) being movable between a first position at which said stop member (110) is engaged with said cam member (78) and said cam profile surface (84) is engaged with said bore profile surface (96), and a second position at which said stop member (110) is free from engagement with said cam member (78) and said cam profile surface (84) is free from engaging said bore profile surface (96); and

means (104) for releasably connecting said flange (88) to said first support member (60).

4,491,196

TELESCOPIC BEAM

Albert Böcker, Werne, Fed. Rep. of Germany, assignor to Albert Bocker GmbH & Co. KG, Fed. Rep. of Germany

Filed Sep. 20, 1982, Ser. No. 420,409

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1981, 3137847; Sep. 23, 1981, 3137845; Sep. 23, 1981, 3137846

Int. Cl.³ B66B 9/20

U.S. Cl. 187—10

8 Claims



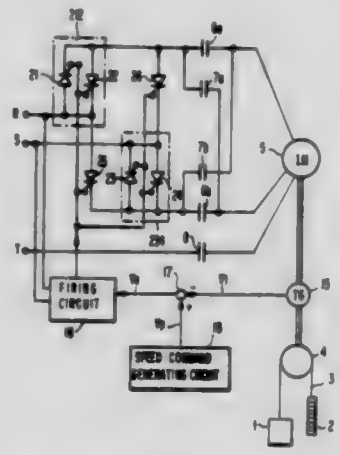
1. A telescopic beam for use as an inclined hoist, the telescopic beam comprising a plurality of telescopic members each having first and second ends, the telescopic beam having actuating means for moving the telescopic members relative to one another, and locking means for securing first and second of the telescopic members in the extended position, the actuating means including a block and tackle arrangement having a cable which passes several times around two sets of rollers positioned respectively at the second end of the first telescopic member and at the first end of the second telescopic member, the telescopic member remote from the first being hinged to the adjacent telescopic member so that the angular position of the remote telescopic member relative to said adjacent telescopic member can be fixed, wherein the adjacent ends of the remote telescopic member and said adjacent telescopic member are provided with respective guide members, each guide member being pivotally connected to its associated telescopic member by a pivot pin and being in engagement with the other telescopic member, and wherein a locking device is provided for locking the remote telescopic member at any predetermined angle to said adjacent telescopic member, the guide member of said adjacent telescopic member having a guide body provided with flanges which lie on opposite sides of the remote telescopic member, and the pivot pin of the guide member of said adjacent telescopic member being located outside the guide body and being arranged approximately in the plane of one of said flanges at the interface with the other guide member.

4,491,197

SPEED CONTROL APPARATUS FOR A.C. ELEVATOR CAR DRIVE MOTOR

Munco Nishiwaki, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1983, Ser. No. 476,941
Claims priority, application Japan, Mar. 29, 1982, 57-50518
Int. Cl.³ B66B 1/32
U.S. Cl. 187—29 R 6 Claims



1. An apparatus for controlling the speed of an elevator driven by an alternating current motor, comprising:

(a) first switching means (*6a, 6b, 7a, 7b*) for changing the direction of rotation of a three phase induction motor (5) driving an elevator car (1), said switching means being connected between first and second phases of said motor and an electrical power source,

(b) second switching means (8) connected between a third phase of said motor and said power source, and adapted to be closed during acceleration and constant speed running of said motor and opened during the deceleration thereof,

(c) a first bidirectionally conductible semiconductor switching circuit (212) connected between said first phase of said motor and said power source, and having a control input terminal,

(d) a second bidirectionally conductible semiconductor switching circuit (234) connected between said second phase of said motor and said power source, and having a control input terminal,

(e) a third unidirectionally conductible semiconductor switching circuit (25) having an anode electrode connected to a power source side of said first switching circuit, a cathode electrode connected to a motor side of said second switching circuit, and a control electrode,

(f) a fourth unidirectionally conductible semiconductor switching circuit (26) having a cathode electrode connected to a power source side of said second switching circuit, an anode electrode connected to a motor side of said first switching circuit, and a control electrode,

(g) a speed command generating circuit (16) for generating a speed reference signal for said motor, and

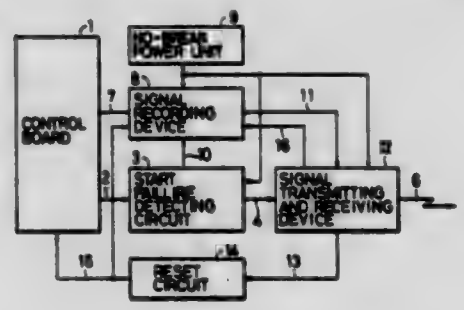
(h) a firing circuit (18) for generating firing control signals for said first, second, third and fourth switching circuits in response to said speed reference signal and a detected speed signal of said motor such that when said car is in a running mode said second switching means is closed, said first and second switching circuits are bidirectionally conductive, and said third and fourth switching circuits are non-conductive to thereby supply three phase alternating current to said motor, when said car is in a deceleration mode wherein the speed of said car is lower than a speed corresponding to said speed reference signal said second switching means is opened, said first and second switching circuits are bidirectionally conductive, and said third and fourth switching circuits are non-conductive to thereby supply single phase alternating current to said motor, and when said car is in a braking mode said second switching means is opened, said first and second switching circuits are unidirectionally conductive and said third and fourth switching circuits are conductive to supply direct current to said motor.

4,491,198

APPARATUS FOR SIGNALING ELEVATOR MALFUNCTIONS

Masahiro Noda, and Tatsuo Mizu, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed May 6, 1983, Ser. No. 492,328
Claims priority, application Japan, May 7, 1982, 57-76396
Int. Cl.³ B66B 5/02
U.S. Cl. 187—29 R 11 Claims



1. An apparatus for signaling elevator malfunctions, comprising:

(a) a control board for controlling the elevator;

(b) a start failure detecting circuit for detecting an elevator start failure based on a control signal from said control board;

(c) a signal recording device for recording an elevator operation signal from said control board and for holding recorded conditions prior and subsequent to said elevator start failure based on an output from said start failure detecting circuit;

(d) a signal transmitting and receiving device responsive to an output from said start failure detecting circuit to automatically dial a telephone number of a maintenance and service center to transmit data recorded by said signal recording device to said maintenance and service center and for receiving a restoration command from said maintenance and service center; and

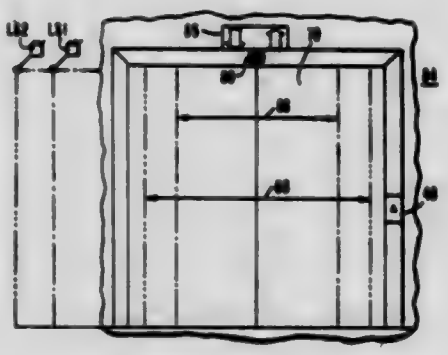
(e) a reset circuit responsive to the restoration signal received by said signal transmitting and receiving device for restoring said control board to the same condition as when a power supply therefor is first switched on.

4,491,199

ELEVATOR SYSTEM

Henry J. Shea, Rockaway Township, Morris County, and Elmer H. Sumka, Edison, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 29, 1983, Ser. No. 509,120
Int. Cl.³ B66B 13/02
U.S. Cl. 187—29 R 19 Claims



1. An elevator system in a building having a plurality of floors, comprising:

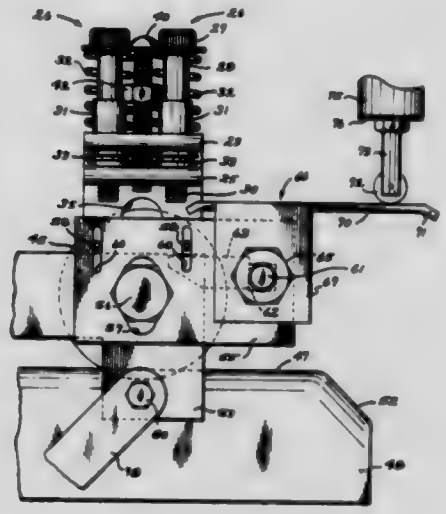
an elevator car having door means,
said elevator car being mounted for guided movement in the building to serve the floors,
means for entering calls for elevator service,
means for causing said elevator car to make a run to a predetermined target floor to serve a call for elevator service,
and door operator means for selectively operating said door means at the end of a run to permit entrance to and egress from said elevator car, with said selection including:
operating said door means from a closed position to a fully open position (A), and
operating said door means from a closed position to a predetermined partially open position (B),
said door operator means including door control means responsive to at least one parameter of the elevator system for controlling said selection.

4,491,200

LOCKING MECHANISM FOR AN ELEVATOR CAR DOOR

William I. Thompson, Brooklyn, Mich.; Mark F. Welter, Waterville, and Dean L. Jodry, Sylvania, both of Ohio, assignors to Schindler Haughton Elevator Corp., Toledo, Ohio

Filed Aug. 11, 1982, Ser. No. 407,300
Int. Cl.³ B66B *13/00*
U.S. Cl. 187—61 21 Claims



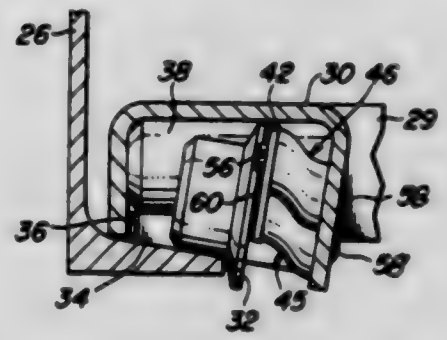
1. In an elevator car having a car door section movable between an opened position and a closed position, the elevator car being movable throughout an elevator shaft, means for preventing the car door section from being opened when the elevator car is not located at an authorized landing zone in the elevator shaft comprising:
locking mechanism means attached to and movable with the car door section, said locking mechanism means including a first member, a second member, and means for attaching said second member to said first member for limited guided movement of said second member between a first position and a second position;
means for urging said second member toward said first position;
first stop means attached to and movable with said second member;
second stop means attached to the car for selectively engaging said first stop means; and
means for moving said second member to said second position when the elevator car is located at an authorized landing zone in the elevator shaft, whereby said first stop means engages said second stop means to prevent the car door section from being opened only when said second member is in said first position.

4,491,201

TROLLEY

Craig E. Mountz, Wadsworth, Ill., assignor to Ammco Tools, Inc., North Chicago, Ill.

Filed Nov. 29, 1982, Ser. No. 445,067
Int. Cl.³ B61H *7/00*; B60S *13/00*
U.S. Cl. 188—42 5 Claims



1. In a trolley assembly for movement along a rail, the combination comprising
a frame,
brake means carried by said frame for braking engagement with said rail,
a trolley wheel support,
a trolley wheel rotatably carried by said support, and at least three elastomeric mounts connecting said trolley wheel support to said frame with said wheel resting on said rail and said brake means spaced above said rail in disengaged relationship therewith,
said elastomeric mounts each including an elastomeric member secured at one end to said support and secured at the end opposite said one end to said frame,
at least two of said mounts being displaced vertically from one other of said mounts,
whereby a downward force on said frame causes said mounts to move in shear and permit said brake means to engage said rail.

4,491,202

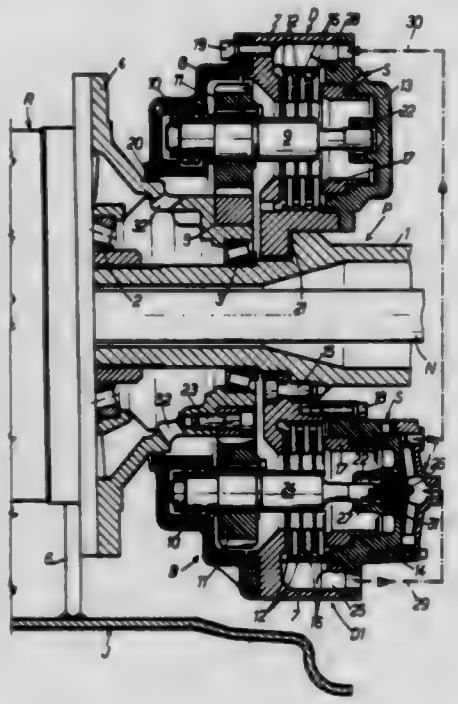
DISC BRAKE ASSEMBLY FOR VEHICLES WITH INTERCHANGEABLE BRAKE MODULES

Michel Schmitt, Fresnes, France, assignor to Lucas Industries public limited company, Birmingham, England

Filed Jul. 6, 1982, Ser. No. 395,478
Claims priority, application France, Aug. 25, 1981, 81 16207
Int. Cl.³ F16D *65/54*, *55/00*
U.S. Cl. 188—71.5 10 Claims

1. A brake assembly for a vehicle comprising a relatively stationary part, a hub comprising a mounting for a wheel journalled for rotation, and a wheel rim carried by said hub, wherein said brake comprises a plurality of angularly spaced elementary modules disposed within said wheel rim, each said module including brake-applying means wherein at least one of said modules has brake-applying means differing in construction from that of another of said brake-applying means, said construction being dependent on the braking function required and all of said brake-applying means being interchangeable with each other, each said module further comprising a housing mounted on said stationary part, a plurality of first and second interleaved discs axially slidably mounted within said housing, means keying said first discs to said housing, means coupling said second discs to said hub, and each said brake-applying means comprising means for urging said first and second discs axially into frictional engagement, each said housing comprising a casing and a cover detachably mounted on said casing, said covers corresponding in number to that of said modules, each said cover accomodating a respective brake-

applying means for a respective module, and each said cover being interchangeable with a different cover accommodating



different brake-applying means, according to the braking function required.

4,491,203

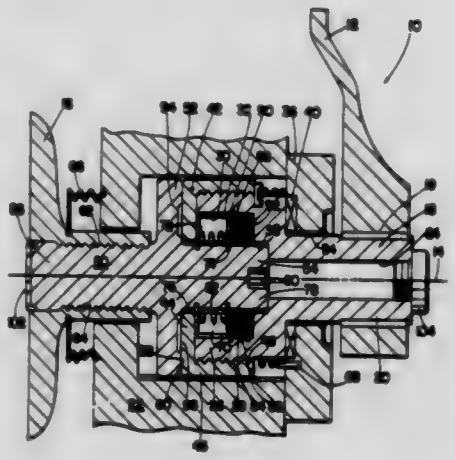
POWER SCREW DISC BRAKE WITH INTERNAL AUTOMATIC SLACK ADJUSTER

Frederick R. Monick, Chicago, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 1, 1983, Ser. No. 500,202

Int. Cl.³ F16D *55/224*

U.S. Cl. 188—71.9 **13 Claims**



1. A power screw type disc brake with an internal automatic single acting clearance sensing slack adjustor, said disc brake comprising;

a housing mountable to a support structure, said housing defining an internal cavity therein;

a power screw member mounted in said housing, said power screw member axially fixed but rotationally movable relative to said housing, said power screw member carrying a power screw thread thereon;

means to selectively rotate said power screw member about its rotational axis;

a power nut member axially moveable and rotatably fixed in said housing, said power nut member carrying a power nut thread threadably engaged with said power screw thread whereby rotation of said power screw relative to said housing in a first direction of rotation will move said power nut member in a first axial direction relative housing and rotation of said power screw member in the second direction of rotation will move said power nut member axially in a second direction relative to said housing;

a push rod member axially and rotatably moveably received in said housing, said push rod member defining a first surface thereon facing in said second axial direction for abutment with a second surface defined by said power nut member facing in said first axial direction;

means resiliently biasing said first surface into abutting contact with said second surface whereby said push rod member will move axially with said power nut member in said first axial direction and is resiliently biased to move axially with said power nut member in said second axial direction;

a pressure member received into and extending from said housing, said pressure member axially moveable but rotationally fixed relative to said housing, said pressure member defining first adjustment threads threadably engaged with second adjustment threads defined on said push rod whereby said pressure member is axially moveable with said push rod upon axial movement of said push rod relative to said housing and said pressure member is axially moveable relative to said push rod upon rotational movement of said push rod relative to said housing;

a one-way ratchet connection between said push rod and said power nut defined by ratchet teeth formed in said first and second surfaces, said ratchet connection configured to allow relative rotation of said push rod relative to said housing in the direction of rotation causing said force member to move axially outwardly relative to said push rod and configured to prevent rotation of said push rod relative to said nut in the opposite direction of rotation;

a torque limited friction clutch separate from said ratchet connection for defining a two-way driving connection between said power screw and said push rod, the maximum torque transfer capacity of said friction clutch being greater than the torque required to rotate said push rod when said force member has not caused engagement of said brake but less than the torque required to rotate said push rod when said force member has caused engagement of said brake; and

means providing a predetermined degree of lost motion between said means for rotating said power screw and said threaded connection between said force member and said push rod, said predetermined degree of lost motion corresponding to rotation of said power screw sufficient to axially move said force member an axial distance corresponding to a predetermined acceptable degree of running clearance between the brake friction members.

4,491,204

DISK BRAKE WITH RETURN, GUIDE, AND PAD-THICKNESS SENSOR SPRING

Otmar Dirauf, Pfarrweisach, and Norbert Spielmann, Ebern, both of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schäfer & Co., Schweinfurt, Fed. Rep. of Germany

Filed Mar. 2, 1982, Ser. No. 353,944

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1981, 3108113

Int. Cl.³ F16D *65/02*; G01D *21/00*

U.S. Cl. 188—73.38 **9 Claims**

1. A disk brake comprising:

a caliper housing adapted to fit over the edge of a brake disk rotatable about an axis;

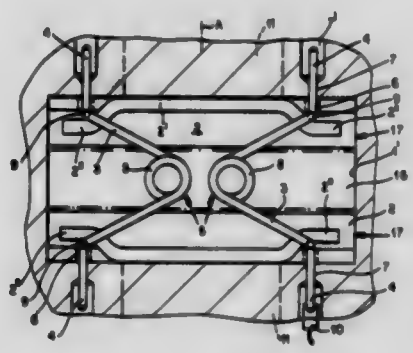
a pair of brakeshoes in said housing axially flanking said disk and each having a brake pad turned toward the respective face of said disk and a backing plate turned away therefrom and formed with a bent-in tab;

means in said housing and engaging said backing plates for urging said brakeshoes together against said disk, said backing plates being formed with respective axially throughgoing brakeshoe passages and said housing being formed with respective housing passages in line with said brakeshoe passages; and

a spring compressed axially between said brakeshoes and having

respective legs extending toward said shoes,

respective pusher portions extending from said legs, lying flatly against said backing plates, and engaged axially in one direction with the respective backing plate and axially in the opposite direction with the respective tab, and



respective guide portions extending from said pusher portions and extending axially through the respective brakeshoe passage and housing passage, whereby said pusher portions urge said brakeshoes axially apart and said guide portions guide said brakeshoes in said housing.

4,491,205

ADJUSTABLE ABUTMENTS IN DISC BRAKES

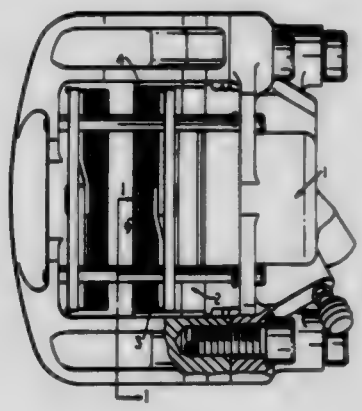
Heinrich B. Rath, Vallendar, Fed. Rep. of Germany, assignor to Lucas Industries Limited, Birmingham, England

Continuation of Ser. No. 154,799, May 30, 1980, abandoned. This application Jul. 26, 1982, Ser. No. 401,559

Claims priority, application United Kingdom, Jun. 16, 1979, 7920929

Int. Cl.³ F16D *55/224*

U.S. Cl. 188—73.39 **9 Claims**



1. A disc brake comprising a caliper and a torque taking member, a pair of separate abutment members on one side of said torque taking member to form guides for an inboard friction pad assembly, a pair of bolt means passing through said torque taking member and engaging said abutment members to clamp same against said one side of said torque taking member, pins secured by said bolt means to the side of said torque taking member opposite said abutment members for slidably connecting said caliper to said torque taking member, at least one of said abutment members and its bolt means being laterally adjustable to a certain extent relative to said torque taking member and to said other abutment member.

4,491,206

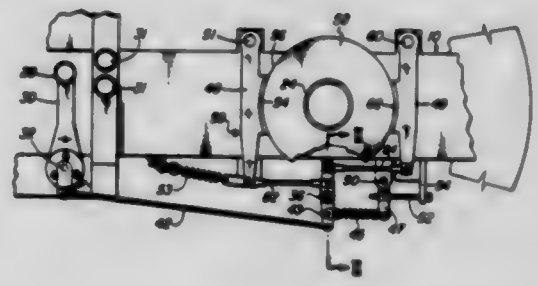
BRAKING DEVICE

Walter L. Richardson, Pointe Claire, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Feb. 28, 1983, Ser. No. 470,250

Int. Cl.³ B60T *13/04*

U.S. Cl. 188—166 **3 Claims**



1. A braking device comprising a rotatable member having a brake engaging surface and a braking means comprising:

(a) two braking members for movement into frictional contact with said surface and for release from said surface;

(b) a stop means for limiting the degree of movement of a first of the braking members away from said surface after release of said first member; and

(c) a brake release linkage comprising an operating link and two brake rods operably connected one to each braking member and pivotally connected to the link, one at each of two spaced positions on the link, a first spring means normally holding the braking members in frictional contact with the brake engaging surface and a means to cause pivotal movement of the link in a first sense and then in a second sense relative to the two spaced positions, said pivotal causation means comprising a second spring means acting against the first spring means upon application of an initial brake release load upon the operating link to cause link movement in said first sense and effect reduction and then release of the braking load by the first braking member upon said surface until the first braking member engages the stop means, the second spring means operable to hold the first braking member against the stop means during application of an additional brake release load to effect pivotal movement of said link in the second sense and effect reduction and then release of the braking load by the second braking member upon said surface.

4,491,207

FLUID CONTROL MEANS FOR VEHICLE SUSPENSION SYSTEM

Pipon Boonchanta, Bangkok, Thailand, and Edward J. Krasnicki, Skaneateles, N.Y., assignors to Lord Corporation, Erie, Pa.

Filed Jul. 15, 1983, Ser. No. 514,298

Int. Cl.³ F16F *9/50*

U.S. Cl. 188—299 **17 Claims**

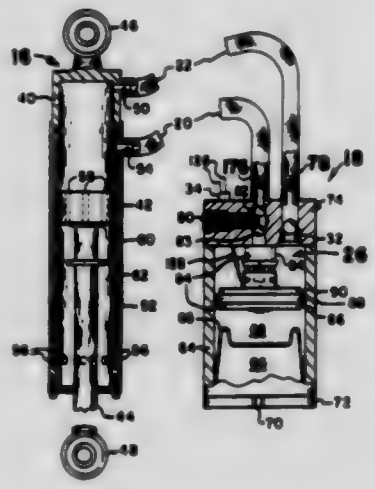
1. In a vehicle suspension system of the type including an extensible and retractable passive hydraulic damper assembly interconnecting relatively moveable vehicle components and adapted to passively attenuate motion of at least one of said components, and further including a fluid accumulator connected to said damper assembly and adapted during operation thereof to receive hydraulic fluid from and to passively supply hydraulic fluid to said assembly, the improvement comprising:

signal responsive control valve means for controlling the flow of fluid from said damper assembly to said accumulator; said control valve means including an elongate shaft-like magnetic member having a central blind passageway extending along part of the length and opening from one end thereof for receiving fluid passing from said damper assembly to said accumulator; said shaft-like member having a set of slot-like fluid outlet openings extending generally radially outwardly from said fluid passageway through the outer circumference of said member, said

openings being spaced substantially equally from one another about the circumference of said member with the major axes thereof lying within a common plane perpendicular to the central axis of said member;

an annular magnetic member encircling said first-mentioned magnetic member at a location spaced longitudinally from the section thereof having said passageway therewithin, said magnetic members being of opposite magnetic polarities and defining therebetween a narrow annular gap traversed by magnetic flux;

a tubular bobbin formed of lightweight nonmagnetic material, said bobbin encircling and being freely slidable longitudinally of said first magnetic member between first and second positions spaced along the length of said first member by a distance only slightly greater than the width of said slot-like outlet openings therein, said bobbin in said first position thereof permitting maximum flow of fluid from said outlet openings of said member and in said second position thereof retarding flow of fluid from said outlet openings;



coil means carried by and encircling an end portion of said bobbin closely received within said annular gap between said magnetic members in both of said positions of said bobbin, said bobbin being rapidly moved to and maintained in said first position thereof by the application to said coil of a first electrical command signal and being rapidly moved to and maintained in said second position thereof upon the application of said coil means of an opposite sign second command signal;

and electronic control means for monitoring movement characteristics of said vehicle components and for applying command voltage signals to said coil means continuously during operation of said system, said control means applying said first command signal to said coil means at those times when said damper would tend to amplify motion of said one of said vehicle components and at other times applying said second command signal to said coil means.

4,491,208

HYDRAULIC CONTROL SYSTEM FOR A HYDROSTATIC TRANSMISSION AND CLUTCHES

Kenneth A. Burdon, Jr., Bellevue, Wash., assignor to PACCAR Inc., Bellevue, Wash.

Filed Dec. 28, 1981, Ser. No. 334,631
Int. Cl.³ B60K *41/26*
U.S. Cl. 192—4 R 10 Claims

1. A hydraulic control system for a hydrostatic transmission, having a plurality of clutches simultaneously engaged to act as a brake, the system allowing rapid actuation of the clutches, comprising:

(a) power means for the system, including a charge pump to provide hydraulic control power for the system;

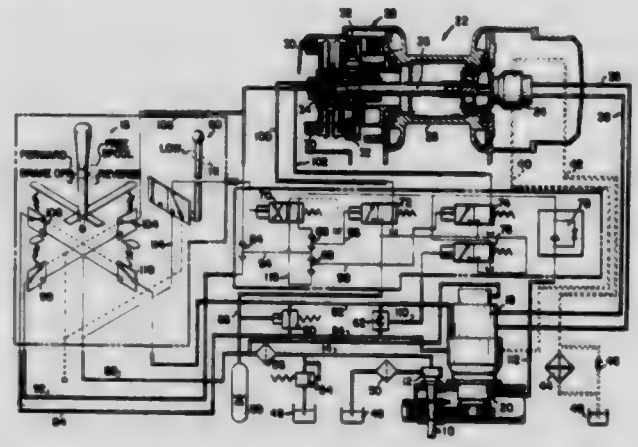
(b) a reversible drive pump, associated with the power means, for providing the hydraulic power;

(c) an input clutch for the drive pump between the power means and the drive pump to isolate the drive pump from the power means;

(d) a transmission including a high-speed clutch, a low-speed clutch, and a freespool clutch;

(e) power output means coupled to the transmission;

(f) a motor coupled between the drive pump and the transmission;



(g) means, associated with the drive pump, for hydraulically actuating the drive pump and the clutches selectively, including selections of four modes: forward, reverse, brake-off, and freespool, including a restrictor check valve means for slowing the rate at which the input clutch disengages the drive pump, ensuring that the drive pump destrokes during backdriving before the input clutch disengages; and

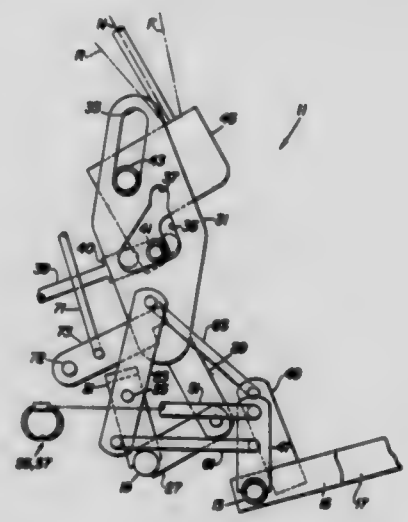
(h) means for selecting between high speed and low speed.

4,491,209

BRAKE AND TRANSMISSION INTERLOCK SYSTEM

Curtis R. Bening, Burnett, Wis., assignor to Deere & Company, Moline, Ill.

Filed Aug. 30, 1982, Ser. No. 412,464
Int. Cl.³ B60K *41/28*
U.S. Cl. 192—4 A 4 Claims



1. A vehicle brake and transmission interlock system for vehicles which employ brake assisted steering, comprising:

(a) a right brake actuation means for causing actuation of and said vehicle's braking system on the right side of the vehicle;

(b) a left brake actuation means for causing actuation of said vehicle's braking system on the left side of the vehicle;

(c) a transmission control link means for communicating with the transmission of the vehicle and responding in a predetermined manner in relationship to the output of the transmission, and being capable of altering the output of the transmission;

(d) response means in communicating with said right and left brake actuation means and said transmission control link means for responding selectively to actuation of said brake actuation means and effecting said transmission control link means such that the output of said transmission cannot exceed a predetermined amount, including:

i a shaft rotatable mounted in the vehicle;

ii a first linking member fixably mounted to said shaft;

iii a pivot link pivotably mounted to said first linking member at a point along said pivot link;

iv a second linking member fixably mounted to said shaft;

v a third linking member pivotably mounted to said second linking member;

vi a sliding cam plate fixably mounted to said third link said cam plate having a generally triangular shape opening including a neutral seat portion;

vii guide means for restricting and defining motion of said cam plate;

viii said transmission control link means including a cam pin confined in such opening of said cam plate to limit generally linear displacement of said cam pin therein;

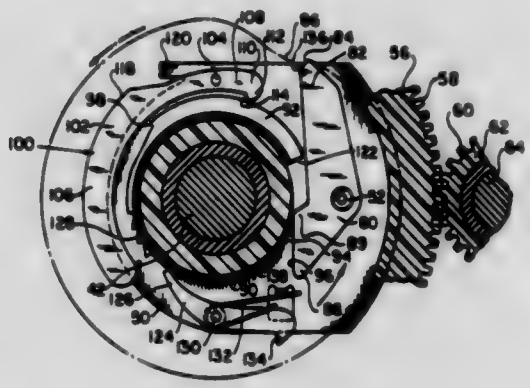
ix linkage means for communicating with said left and right brake actuation means to said pivot means such that selective actuation of said actuation means causes said pivot link to displace said cam plate such that the displacement range of said cam pin is reduced by said opening and joint actuation of said actuation mean causes said cam pin to set in said seat portion.

4,491,210

NEUTRAL PUMP-OUT FOR AUTOMATIC WASHER

Anthony Mason, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 22, 1982, Ser. No. 452,285
Int. Cl.³ D06F *37/40*; F16D *41/12*
U.S. Cl. 192—46 16 Claims



1. In a transmission:

a first drive gear mounted on a shaft for rotation,

means for rotationally driving said drive gear,

drive pawl means pivotally mounted on said drive gear for rotation therewith,

said pawl means pivotable between a first and second position,

a second gear mounted on said shaft for rotation,

engagement means associated with said drive pawl means and said second gear when said drive pawl means is in said second position for causing said pawl means to drive said second gear, and

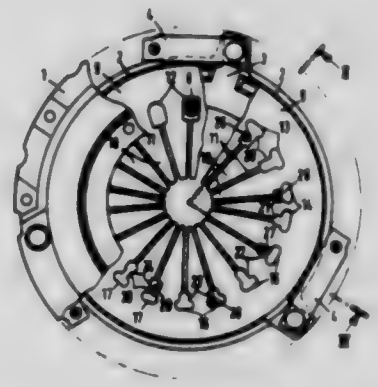
cooperating latch means and spring means provided to selectively retain said drive pawl means in said first position to operate said transmission in a neutral state and to selectively cause said pawl to pivot to said second position to operate said transmission in a driving state.

4,491,211

DIAPHRAGM SPRING FOR FRICTION CLUTCHES OR THE LIKE

Klaus Steeg, Bühl, Fed. Rep. of Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Continuation of Ser. No. 131,942, Mar. 21, 1980, abandoned.
This application Jun. 23, 1982, Ser. No. 391,461
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1979, 2911723
Int. Cl.³ F16D *13/71*
U.S. Cl. 192—89 B 14 Claims



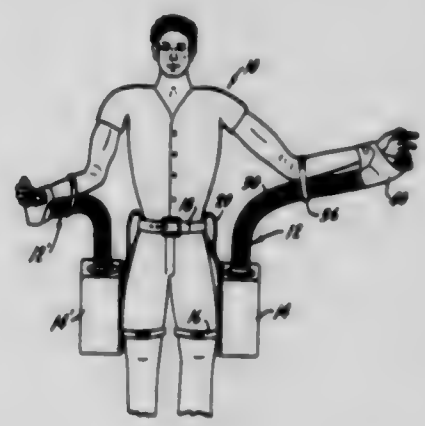
1. A friction clutch, comprising a clutch cover, a cup spring of variable conicity, said cup spring having a ring-shaped base and tongues extending therefrom and separated from each other by slots which extend outwardly and terminate in hole-like cutouts, said cup spring further having hole-like enlargements disposed inwardly of the hole-like cutouts and having a width exceeding the minimal slot width, and holding means extending axially through the cup spring and radially of the cup spring at least into said enlargements to fasten the cup spring to said clutch cover.

4,491,212

PICKER'S AID

Frank L. Gray, Jr., 4548 - 6th Pl., Gary, Ind. 46403

Filed Jul. 28, 1982, Ser. No. 402,516
Int. Cl.³ B65G *11/10*
U.S. Cl. 193—7 6 Claims



1. The improvement in a picker's aid device of the type for handling picked fruit or like items, comprising:

a funnel member having an exit opening therein,

said funnel having a rim defining an entry opening, means for securing the rim about the hand from the smallest finger to the wrist, such that the thumb and primary fingers are free to extend above the plane of the funnel rim and not tied thereto and may when extended reach above the rim, and

said entry opening being held open by support means encorporated in the funnel extending between the funnel rim and the exit opening

so that fruit or like items may be easily and naturally picked

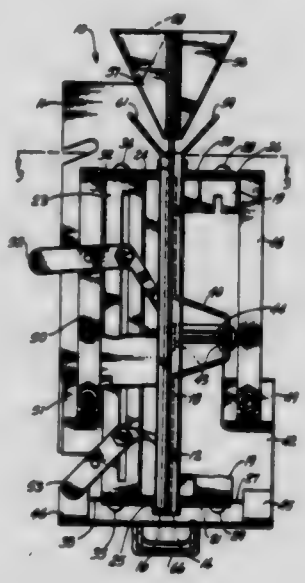
and dropped or propelled into the funnel by the hand, but the thumb and primary fingers of the hand is not materially impeded by the funnel.

4,491,213

COIN MECHANISM FOR VENDING MACHINE

Brian J. Marcroft, Norwalk, Calif., assignor to Times Mirror Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 325,724, Nov. 30, 1981, abandoned. This application Feb. 22, 1982, Ser. No. 351,136
Int. Cl.³ G07F *1/04*
U.S. Cl. 194—1 D 14 Claims



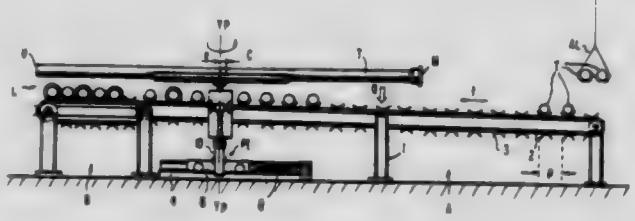
1. A coin mechanism comprising:
a stationary frame;
a pair of coin chutes pivotally mounted on the frame, the chutes pivoting open in one direction and closed in the other direction;
an actuating lever pivotally mounted on the frame such that it pivots in one direction to engage and open the chutes and pivots in the other direction to disengage the chutes;
means for spring biasing one of the chutes in the other direction to urge the one chute closed; and
a spring extending between the other chute and the actuating lever to bias the other chute in the other direction and to bias the actuating lever in the other direction.

4,491,214

METHOD AND APPARATUS FOR HANDLING CAST IRON PIPES WITH A VIEW TO THEIR BEING TURNED HEAD TO TAIL

Roger Malivoir, Pont A Mousson, and Gilbert Mayer, Nancy, both of France, assignors to Pont-a-Mousson S.A., Nancy, France

Filed Apr. 13, 1983, Ser. No. 484,670
Claims priority, application France, Apr. 16, 1982, 82 06718
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—374 10 Claims



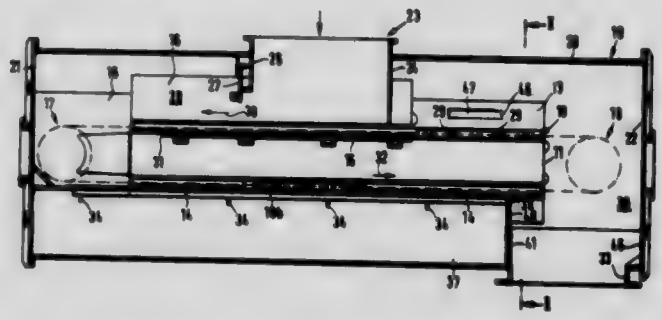
4. Apparatus for handling jointed pipes, comprising: a horizontal pipe transporter (A) with parallel endless chains (2) fitted with V-shaped pipe supports (3), said supports being spaced apart by one step, and, between said two parallel chains, turning means (PI) for turning a pipe by 180°, said turning means comprising a horizontal cradle (21) for supporting a pipe (T), means for raising said cradle from a low position beneath said transporter to a high position above said transporter and for lowering said cradle from said high position to said low position, means for turning said cradle in said high position by 180°, wherein said turning means along with said pipe raising and lowering means (10–14) and said means for rotating a pipe by 180° (16-18-22-24-27-28-29) which are interconnected, are carried by a carriage (6) and means are provided to move the carriage in translation by one step in one direction or in the opposite direction between two pipe turning positions (I and II), parallel to said chains of said transporter, whereby said turning means remains fixed when the pipe to be turned is distant from said turning means by an even number of steps and said turning means is moved by one step when the pipe to be turned is distant from the turning means by an odd number of steps.

4,491,215

PRESSURIZED EXPLOSION CONTAINING CONVEYOR

Hans J. Meyer, Ratingen, Fed. Rep. of Germany, assignor to Maschinenfabrik BESTA, Ratingen, Fed. Rep. of Germany

Filed Sep. 7, 1982, Ser. No. 415,250
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1981, 3137190
Int. Cl.³ B65G *21/00*
U.S. Cl. 198—861 8 Claims



1. A conveyor for particulate matter comprising a pressure tight outer housing; a particulate matter inlet; a conveyance path; means conveying particulate matter along said conveyance path; a particulate matter outlet; at least one dust-tight bulkhead separating a first volume from a second dust-tight volume; said first volume comprising said particulate matter inlet, said conveyance path and said particulate matter outlet; said second dust-tight volume being fully contained within said pressure tight outer housing; and, at least one burst plate disposed in said bulkhead, said burst plate allowing the rapid passage of pressure and gas between said first volume and said second dust-tight volume when the pressure difference between said first volume and said second dust-tight volume exceeds a predetermined value.

4,491,216

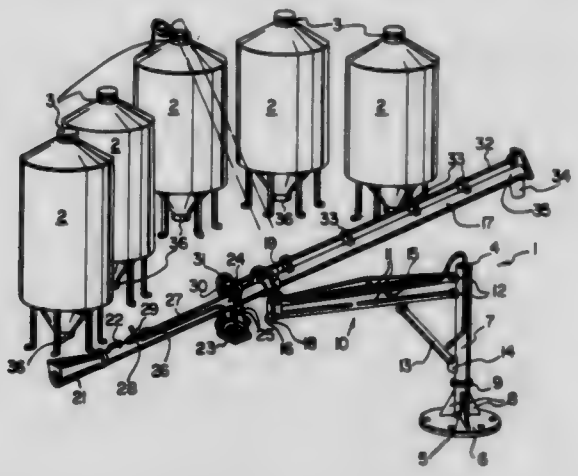
GRAIN HANDLING SYSTEM

Kenneth J. Sawby, Box 520, Maplecreek, Saskatchewan, Canada S0N 1N0

Filed Sep. 13, 1982, Ser. No. 417,782
Claims priority, application Canada, Jul. 19, 1982, 407549
Int. Cl.³ B65G *41/00*
U.S. Cl. 198—863 5 Claims

1. An apparatus for handling granular material for use in filling or emptying a plurality of receptacles from a stationary mounting position comprising a mast mounted on a support base for rotation about a first substantially vertical axis, elongated boom means connected at one end to said mast for pivotal movement about a horizontal axis, an elongated auger having an inlet and an outlet, means for connecting said auger to the other end of said mast between the inlet and the outlet of

said auger, said connecting means including a vertical pivot and a horizontal pivot whereby said auger may rotate about



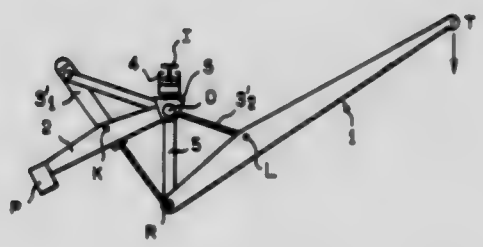
the axis of said vertical pivot and the axis of said horizontal pivot.

4,491,217

CORSAGE BAG, BLANK AND METHOD OF FORMING SAME

Erwin H. Weder, and Donald E. Weder, both of Highland, Ill., assignors to Highland Supply Corp., Highland, Ill.

Filed Feb. 16, 1982, Ser. No. 349,005
Int. Cl.³ B65D *65/16*
U.S. Cl. 206—45.33 4 Claims



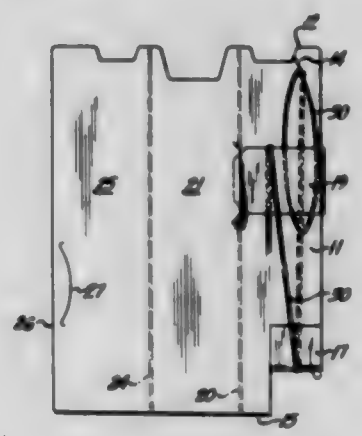
1. A bag for transport and display of a corsage or the like formed as an integral tubular member of flexible film having a closed bottom end and an open top end, front, rear and opposite side walls, the side walls being expandible, the front and side walls being transparent in order to enable viewing of the contents of the bag when same is in use, a rear wall having a field of printed indicia on the exterior surface thereof for providing an ornamental background for any contents of the bag and said printed indicia being of a nature not adversely to affect the flexibility of said rear wall, the said closed bottom end comprising an extension of said tubular member which has been folded upon itself and sealed, said top end comprising a relatively short section of said tubular member including a portion of the rear wall and adapted when an article has been placed in the bag to be folded over upon itself by the user to enclose the bag, said field of printed indicia being substantially congruent with the rear wall excluding any part of the rear wall which has been folded into said extension to form said closed bottom end and also excluding the portion of said rear wall included in said relatively short section, whereby neither the folded end of the closed bottom nor the folded top end if made by the user will include any printed indicia, and wherein the tubular member is formed from a flat rectangular blank bent upon itself and joined by a seam, there being separate areas of printed indicia spaced from respective opposite side edges of the blank which are joined, the edges being joined in an overlap with the areas of printed indicia being disposed on the exterior of the tubular member and the areas being arranged side by side so that in effect a single combined area of said printed indicia is produced thereby forming said aforementioned field, said seam being interior to said overlap and being in the rear wall of said bag and in the center of said field.

4,491,218

SINGLE SUTURE STRAND DISPENSER PACKAGE

Jorge L. Aday, Lambertville, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed Sep. 15, 1983, Ser. No. 532,633
Int. Cl.³ A61L *17/02*
U.S. Cl. 206—63.3 4 Claims



1. An elongated multi-paneled, foldable retainer for sterile sutures comprising:

(a) a suture winding panel, said panel including a slit in one shorter edge thereof for retaining sutures placed therein,

(b) a portion of the other shorter edge of said suture winding panel being foldable inwardly to reduce the length of said suture winding panel over a portion of the width of said panel whereby sutures retained in said slit may be longitudinally wound about said suture winding panel and the final wound suture disposed inwardly from the outer edges of said finally folded retainer,

(c) a suture retaining panel foldably connected to a portion of a longitudinal edge of said winding panel,

(d) first and second suture covering panels, said first suture covering panel being foldably connected to said suture winding panel, and said second suture covering panel being foldably connected to a longitudinal edge of said first suture covering panel,

(e) said first suture covering panel being shortened over at least a portion of the width of the panel at the shorter edge of said panel that is meant to overlie the shorter edge of the suture winding panel containing said slit whereby a portion of the suture is exposed in the final folded retainer,

(f) a slit in the edge connecting said suture winding panel and said first suture covering panel for interlocking the free end of said suture retaining panel to said edge, thereby holding the wound sutures in place,

(g) a curved slit adjacent the free longitudinal edge of said second suture covering panel to engage the folded edge of the first suture covering panel and the suture winding panel to lock the retainer in its folded position.

4,491,219

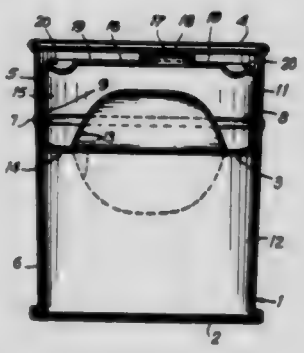
CONTAINER FOR TWO-COMPONENT SYSTEMS

Hans Lutz, Stuttgart, Fed. Rep. of Germany, assignor to Lechler Chemie GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 11, 1982, Ser. No. 357,165
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1981, 3111733; Jan. 15, 1982, 3201035
Int. Cl.³ B65D *21/02*
U.S. Cl. 206—216 19 Claims

1. A container adaptable to the common, but separate, storage and shipment of two different chemical materials, said

container comprising a first bucket shaped outer container having a bottom, an open top and being formed of metal for accommodation of a first material, and a cover for closing said open top of the outer container, said outer container having a side wall including a peripheral outwardly extending external bead spaced from said cover and defining an internal circumferential cavity in said side wall, and a second inner container, removably disposed within said outer container, for accommodation of a second material, said inner container being formed of a plastic material and having top and bottom walls and means on said inner container for holding said inner container in the outer container and for forming a seal therebetween including at least one peripheral retaining means projecting outwardly therefrom between said top and bottom walls for resilient engagement in said circumferential cavity defined by said peripheral external bead of said outer container when said inner container is completely disposed within an upper part of said outer container said retaining means cooperating with said peripheral external bead to define the primary support for the inner container in the outer container, resist inward movement



of said inner container beyond a position at which said retaining means is engaged with the bead in the cavity and resiliently but releasably resisting upward movement of said inner container toward said open top from said position, said bead and retaining means being located such that when said retaining means engages said bead the top wall of the inner container is spaced from and located below the cover of the outer container, said top wall of said inner container having holding means thereof for use in removing and inserting said inner container in the outer container and a closable aperture therein; said inner container having an external peripheral configuration in plan which is generally complementary to the internal peripheral configuration in plan of the outer container; said bottom wall of the inner container and the bottom wall of the outer container being spaced from one another when said retaining means is engaged in said bead to define a chamber in the outer container for holding a different material from material in the inner container whereby material in said chamber is prevented from moving upwardly in the outer container around the inner container by said means for sealing.

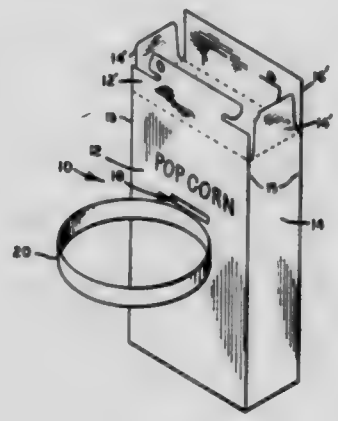
4,491,220

CONTAINER FOR HOLDING POPCORN AND A DRINK CUP

Gilbert P. Davis, 825 McArthur Blvd., Warner Robins, Ga. 31093

Filed Mar. 2, 1984, Ser. No. 585,425
Int. Cl.[3] B65D *3/28, 23/12*
U.S. Cl. 206—217 12 Claims

5. In combination, a container for holding popcorn and a drink cup, said container comprising a box in which a supply of popcorn can be contained, said box having four upstanding walls and a floor with one of said walls being formed with a slot, cup holding means mounted to said box one wall between said slot and said floor, and a cup having an upper outwardly protruding lip in which a drink can be contained held in said



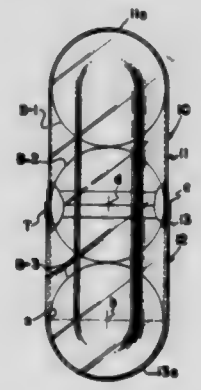
cup holding means beside said box one wall with the cup lip located above said band and projecting into said slot.

4,491,221

CONVERTIBLE THREE BALL TO TWO BALL GOLF BALL CARRYING CONTAINER

Bernhardt L. Lange, 1403 Glendale St., Saginaw, Mich.

Filed Jun. 24, 1983, Ser. No. 507,594
Int. Cl.[3] B65D *85/00, 85/58*
U.S. Cl. 206—315.9 4 Claims



1. A convertible three ball to two ball golf ball container with Golf Association approved diameter balls comprising:

a. a first thin-walled axially extending cylindrical tube open at one end and closed at the other, the closed end having a semi-spherical configuration sized to closely accommodate a golf ball and the tube otherwise having a body portion of an internal diameter to closely accommodate the diameter of a golf ball, and a length of more than one and one-half times the ball diameter;

b. an axially shorter second thin-walled axially extending cylindrical tube open at one end and closed at the other, the closed end having a semi-spherical configuration also sized to closely accommodate a golf ball and the tube otherwise having a body portion of an internal diameter to closely accommodate a golf ball, and a length of at least one and one-half times the ball diameter; the open end of one of said tubes being telescoped over the open end of the other of said tubes;

c. three golf balls in endwisely abutting relation within said tubes substantially in contact with one another and the respective closed ends of the tubes;

d. the first tube being circumferentially scored to weaken it and provide a tear-away surface defining a tear-away portion near its open end, at a location such that the open end of the tube which is telescoped over the other tube extends to at least radially align substantially with the center of the golf ball in the closed end of the other tube to obtain full circumferential frictional purchase with the maximum girth of the ball, when the said tear-away por-

tion is removed and the first and second tubes are telescopically compressed to closely accommodate two balls in abutting relation;

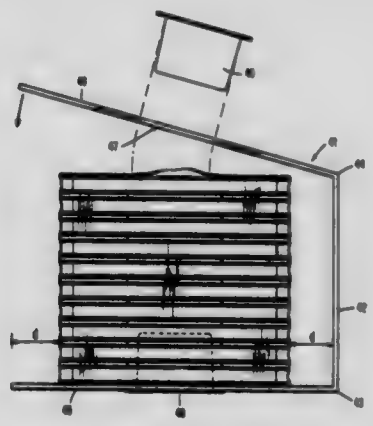
e. the open end of the second tube overlying a radial place perpendicular to the tubes passing through the center of the middle ball to obtain full circumferential purchase with the maximum girth of the middle ball.

4,491,222

REEL PACKAGE

Carl M. Gaccetta, Denver, and Terry J. Lutz, Boulder County, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 18, 1983, Ser. No. 514,998
Int. Cl.³ B65D *85/66, 85/671*
U.S. Cl. 206—394 11 Claims



1. A magnetic tape reel package, comprising:

a plurality (N) of magnetic tape reels, each having a pair of spaced, flat, disk-shaped flanges which are joined together at a central hub; said hub having a drive-mounting opening for use in mounting the reel to a tape-using device; and a length of magnetic tape wound about said hub and occupying the space between said flanges; a plurality (N−1) of single piece stacking rings, one of which is positioned between each of said reels, each of said stacking rings including a flat spacing ring, extending parallel to said reel flanges, and operable to space the flanges of adjacent reels, each of said stacking rings also having two hollow bosses extending from opposite sides of said spacing ring and snugly fitted into the mounting opening of adjacent reels; to thereby form a first unitary assembly of N axially-aligned reels;

a length of stretch-wrap material wound axially about said first unitary assembly, to form a second unitary assembly; said stretch-wrap material being of a width such that the opposite axial borders of said material overlap the hubs of the two reels occupying the end axial positions of said first unitary assembly;

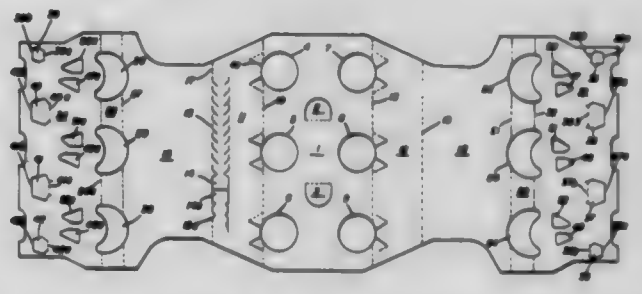
a support member having a base panel equal in length to the axial length of said first unitary assembly, and having two spaced, upstanding end panels, each of which includes an opening generally similar in shape and diameter to said mounting opening, but being spaced from said panel by a distance greater than the radius of a reel flange; and a pair of end plugs mounted in the end panel openings of said support member, capturing said borders of said stretch-wrap material, and being mounted in the mounting openings of the reels occupying the end axial positions of said second unitary assembly, to thereby form a third unitary assembly which is substantially sealed.

4,491,223

WRAPAROUND ARTICLE CARRIER WITH ADJUSTABLE GIRTH

James R. Oliff, Austell, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Apr. 5, 1984, Ser. No. 597,078
Int. Cl.³ B65D *71/00, 85/62*
U.S. Cl. 206—434 7 Claims



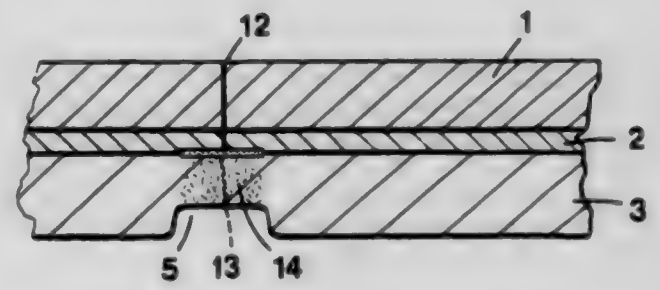
1. In an article carrier of the wraparound type formed from a blank of generally rectangular configuration and having lap panels at its ends which are overlapped and secured together in flat face contacting relation in alternate relative positions of long and short overlaps to form tubular structures of different girths respectively, an improved interlocking means comprising a combination locking and retaining tab struck from each of said lap panels and defining a locking edge in each lap panel which is disposed at the swing end of the associated combination tab, one of said combination tabs being longer from its base to its swing end than the corresponding dimension of the other combination tab so that locking movement of said one combination tab from an outer overlapping position of the associated lap panel through the aperture defined by the other of said combination tabs causes the base of said one combination tab to engage the locking edge defined by the other combination tab to establish a predetermined girth for the carrier and so that locking movement of said other combination tab from an outer overlapping position of the associated lap panel through the aperture defined by said one of said combination tabs causes the base of said other combination tab to engage the locking edge defined by said one combination tab to establish a girth for the carrier which is different from said predetermined girth.

4,491,224

WELDABLE TEAR-OFF CAPPING FILM FOR SEALING PACKAGES

Laszlo S. Horvath, Geneva, Switzerland, assignor to C O D Inter Techniques SA, Geneva, Switzerland

Filed Oct. 22, 1982, Ser. No. 435,920
Claims priority, application Switzerland, Mar. 5, 1982, 1339/82
Int. Cl.³ B65D *35/16*
U.S. Cl. 206—484 9 Claims



1. A frangible package cover comprising:

(a) an outside film;

(b) a thermoplastic adhesive layer on an inside surface of the outside film,

(c) the thermoplastic adhesive layer and the outside film having a rupture line extending completely through said

thermoplastic adhesive layer and outside film, the rupture line being spaced from the outside perimeter of the outside film and the thermoplastic adhesive layer; and

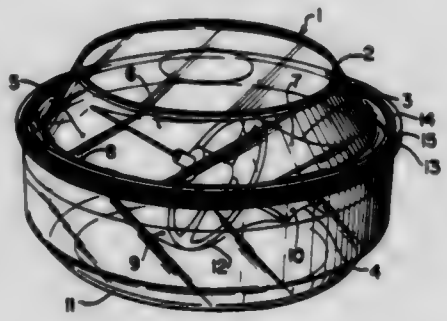
(d) and inside, plastic film secured to the outside film via the thermoplastic adhesive layer and having an uncut weakened zone extending directly below or adjacent substantially the entire rupture line, whereby the weakened zone of the inside film is torn as the outside film is pulled apart along the rupture line.

4,491,225

SHOCK CUSHIONING PACKAGE

Frédéric Baillod, La-Chaux-de-Fonds, Switzerland, assignor to SRP, Inc., Greer, S.C.

Filed Mar. 8, 1983, Ser. No. 473,346
Int. Cl.[3] B65D *85/30, 81/10*
U.S. Cl. 206—583 20 Claims



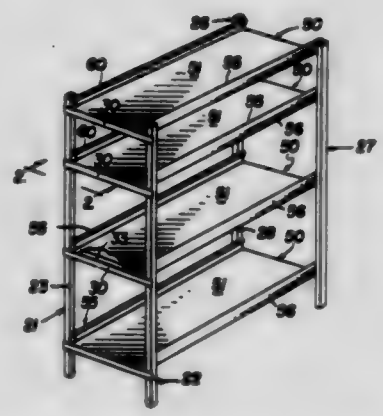
1. A package comprising a pair of concave mating portions and an elastic membrane secured in elastic tension to the periphery of the mouth of each of said mating portions, said tension being such as to permit the positioning between said membranes of articles to be contained in said package, said package being a fluid dampening device in which dampening results from restricted gas flow with said membranes acting as a damped compound spring protecting articles positioned therebetween from mechanical shock and vibration.

4,491,226

DISPLAY SHELF

Howard J. Marschak, 865 W. North Ave., Chicago, Ill. 60622

Filed Jun. 10, 1982, Ser. No. 386,889
Int. Cl.[3] A47F *5/00*
U.S. Cl. 211—186 11 Claims



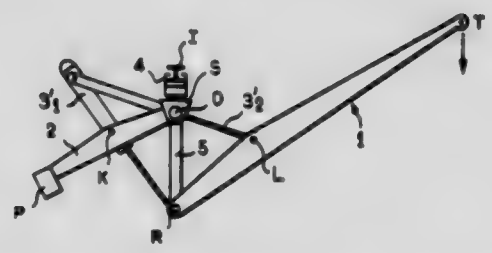
1. A display comprising at least two uprights each having an inwardly facing flat face portion, a horizontal beam mounted between the pair of uprights extending generally perpendicularly between the flat face portions of said uprights, an upstanding tab extending from near each end of said horizontal beam adjacent and parallel to each flat face portion defining a space therebetween when said beam is mounted to said uprights, a display shelf having a substantially flat support surface having a dimension at least as great as the distance between said upstanding tabs, a pair of mounting means extending perpendicularly from said support surface in registry with each upright and each mounting means having an arcuate lip portion with a slot therein, a pair of slots in said shelf with each slot being aligned with a respective slot in said mounting means, said slots being sized snugly to receive the associated upstanding tab on said horizontal beam, whereby said display shelf is mounted on said uprights and said beam by inserting each tab through an associated pair of slots to provide vertically spaced apart connections between each of said tabs and said mounting means being positioned in the space between each of said tabs and the adjacent upright while said beam provides support for said shelf.

4,491,227

HOISTING ASSEMBLIES WITH A BOOM AND A COUNTERWEIGHT SUPPORT HAVING ADJUSTABLE RESPECTIVE POSITIONS

Lilian Buzzichelli, Toulouse, and Kléber Roy, 26 Rue des Magnanarelles, 31500 Toulouse, both of France, assignors to Entreprises Buzzichelli, L'Union, France, by said Kléber Roy

Continuation of Ser. No. 280,316, Jul. 6, 1981, abandoned. This application Jun. 23, 1983, Ser. No. 507,933
Claims priority, application France, Jul. 4, 1980, 80 14990
Int. Cl.[3] B66C *23/72*
U.S. Cl. 212—196 3 Claims



1. A hoisting assembly for hoisting loads, comprising:

a boom for suspending a load with said boom adapted to pivot in a vertical plane and with said boom extending in one direction,

a counterweight support extending in an opposite direction from said boom and being pivotally mounted on a main horizontal swing axis so as to be pivotable in said vertical plane,

an intermediate pivoting member pivotally connected to said boom whereby said boom is pivotable about an axis that is spaced from but in the same plane as said main horizontal swing axis, said intermediate pivoting member being pivotable substantially in said vertical plane and being pivotably connected to said main horizontal swing axis,

a plurality of adjustable connecting means, one of said connecting means being connected to and extending between said boom and said main horizontal swing axis and another of said connecting means being connected to and extending between said intermediate pivoting member and said counterweight support, said one and said another of said connecting means being adjustable independently of one another whereby the angular position of said boom and said counterweight can be varied independently,

said boom, said counterweight support, said intermediate pivoting member and said connecting means constituting a pendular assembly, idly swinging about said main horizontal swing axis formed by a support.

4,491,228

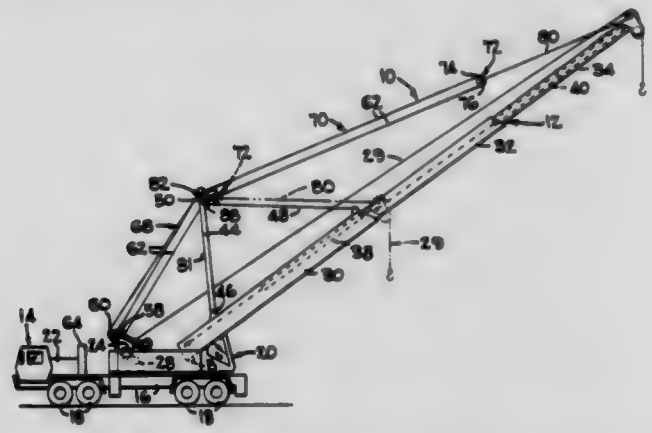
FLOATING SHEAVE TYPE PENDANT PAY-OUT SYSTEM FOR PENDANT SUPPORTED BOOM

Darwin N. Poock, Cedar Rapids, and Robert A. Rathe, Hiawatha, both of Iowa, assignors to FMC Corporation, Chicago, Ill.

Filed Jun. 30, 1982, Ser. No. 393,986
Int. Cl.[3] B66C *23/00*
U.S. Cl. 212—239 9 Claims

9. A pendant pay-out system for a pivotally supported multisection telescopic boom having power operated means for

extending and retracting the boom and having a mast pivoted near the inner end of the boom and having a free end, said boom having a free end; the improvement comprising: a winch selectively driven in a take-up and a haul-in direction; means defining a boom hoist disposed between said winch and the free end of the mast; means defining a pendant take-up hoist disposed between said free end of the mast and the free end of the boom and including a floating sheave; a single rope trained around said winch, said boom hoist, and said pendant take-up



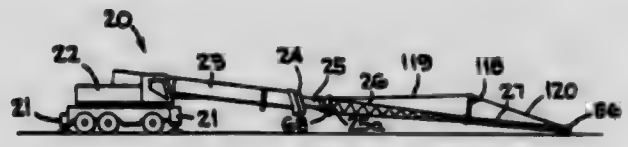
hoist and having an end portion anchored to said mast; a first fixed length pendant connected between the upper end of the mast and the outer end of the base section, a second fixed length pendant connected between said floating sheave and an outer portion of another boom section, and stop means connected to the mast and cradling a portion of said floating sheave when the boom is fully retracted for maintaining control of the mast when pivoted between a predetermined working position and a transport position.

4,491,229

BOOM EXTENSION STOWAGE SYSTEM

Joseph W. Behrendt, Sioux City, Iowa; John D. Evans, Nicholasville, and James W. Cox, Jr., Lexington, both of Ky., assignors to FMC Corporation, Chicago, Ill.

Division of Ser. No. 238,290, Feb. 25, 1981, Pat. No. 4,431,109. This application Aug. 31, 1983, Ser. No. 528,312
Int. Cl.³ B66C 23/62
U.S. Cl. 212—270 **5 Claims**



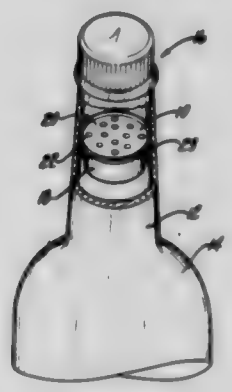
1. A method of changing the position of a fly and a jib from a locked stowed position alongside of and supported by the base section of a telescopic boom, to an operative position extending outwardly from the outer section of the boom and partially supported by pendants connected to a mast; said method comprising the steps of: connecting a first end of the jib pivotally and resiliently to a first end of the fly, supportively attaching a second end portion of the jib to a second end portion of the fly, retracting the boom for positioning the outer section of the boom adjacent the second end portion of the fly, pivotally attaching the fly to the outer boom section for pivotal movement about a generally vertical axis, unlocking the fly from stowed position on the boom, freeing the fly and jib from support on the base section in response to extension of the boom, swinging the fly and jib generally horizontally to move the fly into operative position in longitudinal alignment with the boom, locking the fly to the boom in operative position, releasing the second end portion of the jib from the fly for downward pivotal movement to a position forwardly of the outer end of the fly, lowering the boom for causing said second end of the jib to engage the ground and to complete its forward pivotal movement, resiliently absorbing shock resulting from downward movement of the boom and engagement of the jib with the ground by effecting shifting of the resilient pivotal connection between the fly and the jib, attaching the pendant lines when slack occurs due to said resilient and pivotal connection between the second end portion of the jib and the outer boom section with the mast projecting upwardly, locking the jib to the fly, and raising the boom to lift the jib off the ground and to tighten the pendants.

4,491,230

ONE-WAY POUR VALVE

Nicholas L. Pernia, Erie, Mich., assignor to William McColeman, Southfield, Mich.

Filed Apr. 26, 1983, Ser. No. 488,850
Int. Cl.³ B65D 49/02
U.S. Cl. 215—21 **10 Claims**



1. For use with a container having a neck provided with an opening therein through which the contents of said container may be poured, a device for preventing refilling of said container, comprising:

a cylindrically shaped, substantially hollow body having one end thereof essentially open, said body including a circumferential shoulder formed integral with the outer sidewall thereof, said shoulder being resiliently flexible and engaging the inner wall of said neck to form a seal preventing the passage of said contents between said body and said neck;

a valve assembly slideably received within said body for controlling the flow of contents through said device;

a barrier for preventing access to said valve assembly, said barrier being slideably received within said body; and,

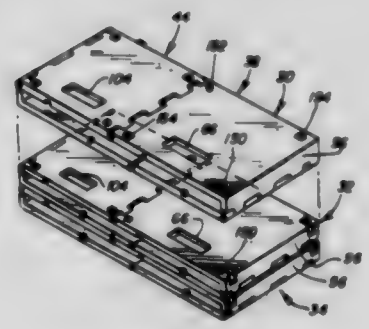
means on each end of said body for retaining said barrier and said valve assembly within said body.

4,491,231

COLLAPSIBLE CASE

Bruce Heggeland, Rolling Meadows; George Garcia, Chicago, and Sam S. LoBosco, Glendale Heights, all of Ill., assignors to Family Distributors, Inc., Glendale Heights, Ill.

Filed May 13, 1983, Ser. No. 494,520
Int. Cl.³ B65D 6/18, 21/02
U.S. Cl. 220—6 **7 Claims**



1. A collapsible square case having a square open top particularly adapted for holding a plurality of items comprising, in

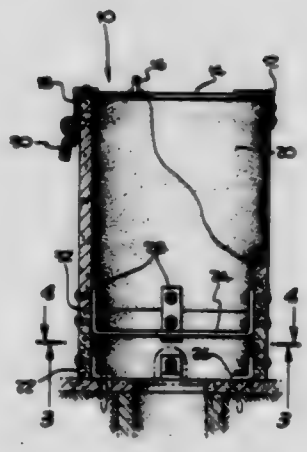
combination, a pair of opposed corner panels, each of said corner panels having a flat side and a corner wall formed integral with one edge of the respective flat side and extending substantially perpendicular to the respective flat side, each of said corner panels being an integral molded plastic part, said flat sides being parallel to each other, said corner walls being parallel to each other, a pair of flat panels, each of said flat panels having one edge hingedly connected to a corner wall and the opposite edge of the flat panel connected to the flat side of the other corner panel, each of the flat panels being an integral molded plastic part, and a floor panel being an integral molded plastic part, said floor panel being hingedly connected to a lower edge of flat side of one of the corner panels, whereby the panels may be subjected to high temperature heat and moisture for cleaning the panels, and raising of the floor panel allows the case to collapse with the floor panel adjacent to its respective flat side and the hingedly connected flat panels placed in an attitude whereby each flat panel is in substantially the same plane as the respective flat side, a collapsed case may be stacked on top of another collapsed like case, a pair of posts formed integral with a flat side of one of the corner side panels, each of said posts being substantially perpendicular to the flat side, the flat side of the other corner side panel having a plurality of receptacles for receiving the posts, each of the flat panels having a receptacle for receiving a post, whereby a pair of like cases being opened and placed adjacent to each other allow the posts of one case to fit into the receptacles of the other case for stabilizing the positioning of the cases, and when the cases are collapsed and the cases are stacked in a collapsed attitude, the posts mate with the receptacles to stabilize the stack.

4,491,232

SECURED SAMPLING FACILITY

Steven D. Hansen, 458 Shady Ct., Brea, Calif. 92621

Filed May 2, 1984, Ser. No. 606,165
Int. Cl.[3] G01F *15/18*; B65D *25/24*
U.S. Cl. 220—18 2 Claims



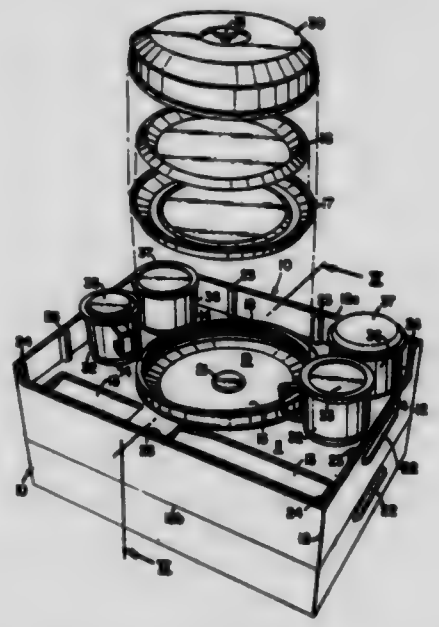
1. A secured sampling facility comprising:
a bottom pipe section;
at least two securing brackets for securing said bottom pipe section in place;
a pair of U-shaped brackets, each having its bottom portion of sufficient length so that the upright arms of said U-shaped brackets fit along the inside of said bottom pipe section and located perpendicular to each other in said bottom pipe section so that the top portions of said U-shaped brackets protrude above the top of said bottom pipe section;
a top pipe section of the same diameters as said bottom pipe section and adapted to fit in interfaced relation therewith and so as to be attached thereto by means of said top portions of said U-shaped brackets that protrude above the top of said bottom pipe section;
a monitoring shelf for supporting measuring instrumentation formed by the orientation of said U-shaped brackets;
a circular cover secured to said top pipe section by means of a hinge and a hasp located in diametric opposition to each other, said cover having an access handle providing for easy access to the interior of said secured sampling facility; and
a padlock 30 for securing said circular cover to said top pipe section when it is desired to prevent access to the interior of said secured sampling facility.

4,491,233

STACKABLE FOOD SERVICE CARRIER

Kendrick A. Johnson, 8242 Queen Ave. South, Bloomington, Minn. 55431

Filed Jan. 25, 1983, Ser. No. 460,764
Int. Cl.[3] B65D *21/02*
U.S. Cl. 220—23.83 10 Claims



1. A carrier adapted for stacking, said carrier comprising a first member and a second member, said first member including a substantially planar portion and a vertical wall portion surrounding said planar portion, said planar portion having an upwardly opening well defined therein for reception of a dinner plate, said well having an upper ridge surrounding said well, said well further including a small downwardly opening cavity; said second member comprising a cover for said well, said second member including a ridge receiving zone for reception of said well upper ridge, said cover further including an upwardly extending handle, said handle being of substantially the same shape as said small downwardly opening cavity, said handle being slightly smaller in size than said cavity.

4,491,234

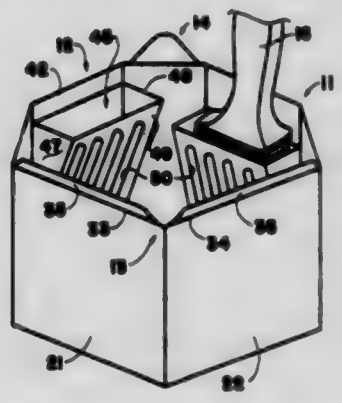
BUCKET APPARATUS

Hal J. Wilcock, Powell, Wyo., assignor to Wayne G. Jones, Powell, Wyo., a part interest

Filed Apr. 11, 1983, Ser. No. 483,577
Int. Cl.[3] B65D *25/40*
U.S. Cl. 220—90 7 Claims

1. Bucket apparatus molded of a plastic material including a container portion, a spout portion, a handle portion and a brush holding portion; said container portion including a bottom section and a plurality of vertical sidewall sections, said container portion including seven sidewall sections, said bottom section including a raised center sloping downwardly to the edges thereof; said spout portion being formed by the intersection of the upper free edges of two adjacent sidewall sections; said handle portion including gripping means disposed on the outside of one of said sidewall sections of said container portion opposite to said spout portion, said gripping means extending from a point on the outer surface of said container portion adjacent the open upper end thereof to a point on the outer surface adjacent the bottom section thereof; said brush holding portion including at least two pocket members extending in-

wardly from said sidewall sections adjacent to said handle portion and spaced above said bottom section, each pocket member including spaced vertical end sections extending inwardly from said sidewall section, each of said end sections



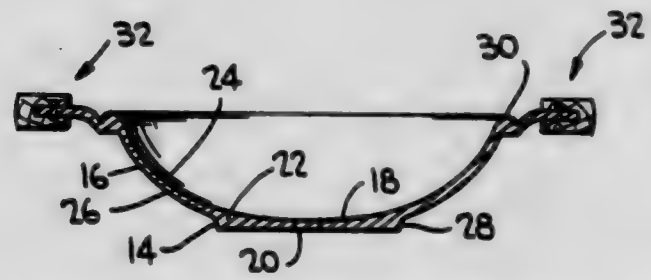
having a generally inverted triangular configuration with a point extending downwardly, a front section connecting said end sections, said front section including a plurality of openings therein; whereby a brush can be inserted into said pocket member when it is not in use.

4,491,235

WOK

Robert L. Fournier, and Priscilla J. Fournier, both of 5607 N. 22nd St., Arlington, Va. 22205

Filed Mar. 20, 1979, Ser. No. 22,276
Int. Cl.³ A47J 37/10
U.S. Cl. 220—94 A 7 Claims



1. A cast iron wok comprising a bowl-like cooking utensil having an interior and an exterior, said utensil interior including a continuously curving bottom surface, and said utensil exterior including a flat bottom surface, said utensil exterior and interior curving upwardly and radially outwardly from said flat bottom surface and said curving bottom surface in generally concentric relation with said utensil wall above said bottom being substantially of uniform thickness, said utensil wall terminating in a rim, said rim extending radially outwardly from said utensil wall and curving downwardly, said flat bottom surface and said curving bottom surface combining to define a wall portion of greatest thickness at the bottom of said utensil in the form of a heat sink, said wok including insulated handle means extending outwardly from said exterior surface substantially immediately below said rim.

4,491,236

CAN END HAVING INTEGRAL OPENING MEANS

Kiyoshi Kawamata, 2-337 Takahana Chō , Ohmiya City, Saitama Prefecture, Japan

Filed Dec. 28, 1981, Ser. No. 335,272
Claims priority, application Japan, Jun. 29, 1981, 56-96488
Int. Cl.³ B65D 17/34
U.S. Cl. 220—269 9 Claims

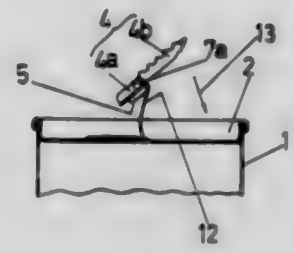
1. A container comprising:

a container body;

an end plate closing an end of said container body, said end plate having a score line defining an elongated tear strip having a first end and a second end opposite said first end, said score line including first and second score line side portions which are joined at said first end of said strip and are free at said second end of said strip;

a finger retainer tab located outward of said container body, having a projectable portion, a finger retainer portion and a fixing portion, said fixing portion being located between said projectable portion and said finger retainer portion, said finger retainer tab being fixed to said elongated strip at said fixing portion, said finger retainer tab being manually pivotable outward at said finger retainer portion away from said container body and inward at said projectable portion such that said projectable portion projects into said container body so as to tear said strip along said score line at said first end when said finger retainer portion is lifted outward;

first and second projection members extending in opposite directions from said finger retainer tab between said finger retainer portion and said projectable portion respectively laterally across said first and second score line side portions outward of said container body, said first and second projection members being sufficiently rigid as to remain



outward of said container body and function as a fulcrum when said finger retainer tab is pivoted by lifting outward on said finger retainer portion, whereby said projectable portion projects into said container body to tear said strip;

said end plate having first and second reinforcement ribs respectively along said first and second score line side portions and a third reinforcement rib extending between said first and second reinforcement ribs and spaced from said first and second score line side portions at said second end; and

a third projection member extending from said tear strip of said end plate inward of said container body opposite said fixing portion of said finger retainer tab, having an inwardly projecting straight edge between said fixing portion and said finger retainer portion extending between said first and second score line side portions to facilitate folding of said tear strip thereover by pulling the finger retainer tab obliquely outward and against the remainder of said end plate after said tear strip has been torn along said score line.

4,491,237

REPLACEABLE INSPECTION PLUG ASSEMBLY

Joseph P. Diggins, Coraopolis, Pa., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

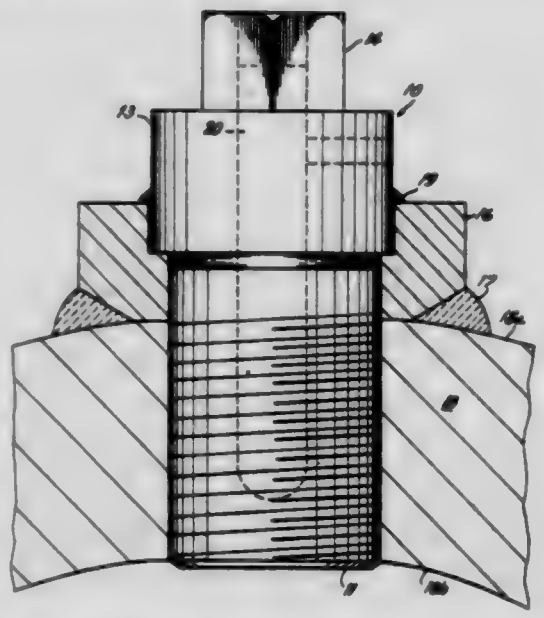
Filed Jul. 15, 1982, Ser. No. 398,487
Int. Cl.³ B65D 41/04
U.S. Cl. 220—288 9 Claims

1. A replaceable inspection plug assembly for pressure vessels, comprising:

(a) a metal reinforcing collar having a circular opening, said collar being seal welded at its outer peripheral surface onto the outer surface of a pressure vessel wall;

(b) a plug having a threaded shank portion and a cylindrical shoulder portion having diameter at least equal to the diameter of said threaded shank portion, said plug being

inserted into said collar opening and threaded into mating threads in the vessel wall; and



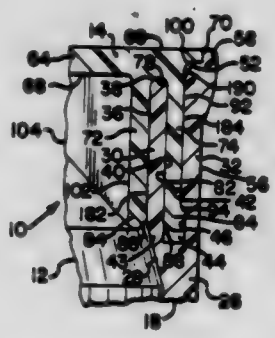
(c) a seal weld located between the upper surface of said reinforcing collar and the outer surface of the said shoulder portion of said plug.

4,491,238

RECEPTACLE HAVING A PLUG CLOSURE

Michael J. Tobolt, 1544 Concord Ct., St. Charles, Ill. 60174

Filed Dec. 12, 1983, Ser. No. 560,314
Int. Cl.[3] B65D *39/00*
U.S. Cl. 220—307 8 Claims



1. A receptacle including a container for holding a liquid and a cover fittable to an open end of said container to inhibit leakage of said liquid from said receptacle regardless of an orientation thereof, said receptacle comprising:

an inner seal between said container and said cover formed by engagement of a pair of parallel inner and outer surfaces of a circular inner rim of said container with an inside and outside surface of an inside and outside flange of said cover respectively, said surfaces proximately aligned with a longitudinal axis of said receptacle, and by engagement of a top edge of said container inner rim with a roof of a slot of said cover,

an outer seal between said container and said cover formed by engagement of an inner surface of a circular outer rim of said container with an outside surface of said outside flange of said cover and by a wall and a ledge of a recess in said container outer rim with a wall and an edge of an offset on said cover outside flange, said surfaces and said walls proximately aligned with said receptacle longitudinal axis, and

gusset means attached to a top wall of said cover and an inside surface of said cover inside flange to produce forces normal to said receptacle longitudinal axis to maintain said aligned surfaces in continuous sealing engagement,

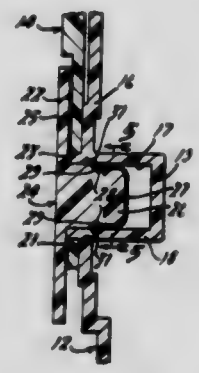
wherein said receptacle may hold said liquid in a leak proof manner during storage and movement, said cover being readily removable from said container to provide access to said liquid with said cover being readily reassemable to said container so that unused liquid may be further stored in a leak proof manner.

4,491,239

PIVOTAL CONSTRUCTION FOR PORTABLE COOLER

Jacque W. Chapman, Gales Feery, Conn., assignor to King-Seeley Thermos Co., Prospects Heights, Ill.

Filed Sep. 6, 1983, Ser. No. 529,497
Int. Cl.[3] B65D *43/14, 51/04*
U.S. Cl. 220—337 11 Claims



1. In a cooler construction having a body portion having an article receiving cavity accessible through an opening, a cover member, and means for supporting said cover member for pivotal movement relative to said body portion for selectively opening and closing said opening, the improvement comprising said means for pivotally supporting said cover member comprising means on said body portion defining a cylindrical recess formed therein and closed at its base by an integral wall, said cover member being formed with an opening therein aligned with the pivot axis of said cover member, and fastening means for connecting said cover member relative to said body member and permitting pivotal movement of said cover member relative to said body member, said fastening means comprising a first piece extending into said cylindrical recess and barb means carried by said first piece for permitting axial entry of said first piece into said cylindrical opening and for precluding withdrawal therefrom.

4,491,240

COMPACT VENDING MACHINE

Frank Ruskin, 1390 Newton St., Los Angeles, Calif. 90021; Van N. Fellner, 12661 Byron Ave., Granada Hills, Calif. 91344, and Joel Haynes, 18316 Oxnard St., Tarzana, Calif. 91356

Filed Dec. 3, 1982, Ser. No. 446,752
Int. Cl.[3] G07F *11/32*
U.S. Cl. 221—5 7 Claims



1. A goods dispensing machine which comprises:

a box-like frame;

a removable magazine positioned on top of the frame;

said magazine comprising

peripheral walls;

a plurality of vertical partitions defining an array of slots therebetween and an opening at the bottom of each of said slots;

releasible trap doors for holding a dispensible item in each of said slots above each opening; and

means for locking said trap doors when the magazine is separated from the box-like frame; said locking means comprising a structure secured against the base of said magazine and moveable relative to said base between a first position in which said trap-doors are locked and a second position in which said trap-doors are released;

said dispensing machine further comprising:

means for holding said trap-doors closed when said locking means is in said second position;

means for securing said magazine on top of said box-like frame;

a chute under said openings shaped and dimensioned to receive items falling through said openings; and

means for selectively releasing said means for holding said trap doors closed.

4,491,241

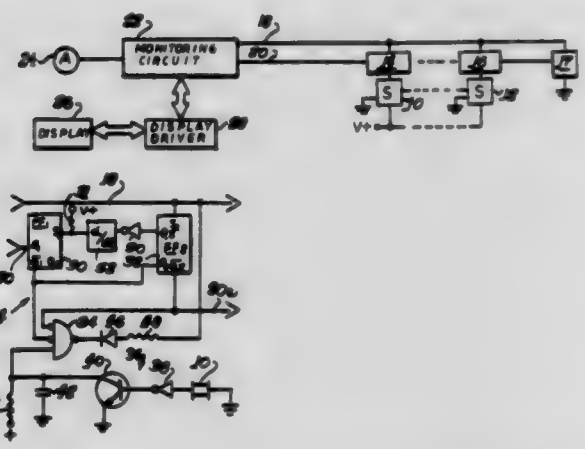
GRAIN DRILL MONITOR

John T. Knepler, Chatham, and Wesley J. Bachman, Auburn, both of Ill., assignors to Dickey-john Corporation, Auburn, Ill.

Continuation-in-part of Ser. No. 170,719, Jul. 21, 1980, abandoned. This application Jan. 11, 1982, Ser. No. 338,641

Int. Cl.[3] G06F *15/20*; G08B *21/00*

U.S. Cl. 221—3 31 Claims



1. A monitor for a machine having a plurality of members to be monitored and a plurality of sensor means respectively associated with said monitored members for producing predetermined signals in response to predetermined conditions of the associated monitored members, said monitor comprising: a common signal line coupled to said sensor means, a plurality of sensor circuit means coupled in series circuit, one of said sensor circuit means being coupled intermediate each of said sensor means and said common signal line, said sensor circuit means being individually and sequentially selectable for causing a signal condition on said common signal line which corresponds in a predetermined fashion to the response of said sensor means, and monitoring circuit means coupled to said common signal line and to said series-coupled sensor circuit means and including means for sequentially selecting said series-coupled sensor circuit means and means responsive to said signal conditions for producing indication signals corresponding to the conditions of the respective monitored members.

4,491,242

NAPKIN HOLDER

Maria A. Trinidad, Rte. 2, 10710 W. Pecan Rd., Tolleson, Ariz. 85353

Filed Dec. 2, 1982, Ser. No. 446,370

Int. Cl.[3] A47K *10/20*

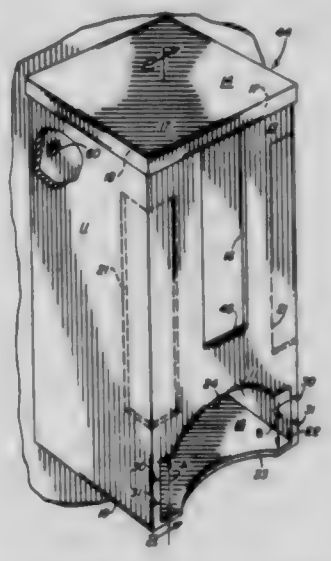
U.S. Cl. 221—312 R 2 Claims

1. In combination with a tabletop napkin holder including a base,

a pair of upstanding, opposed walls attached to said base, each of said upstanding, opposed walls having an upper leading edge, an upstanding napkin container, said container including

(a) front, side and back walls each having upper and lower edges and an inner surface, said upper edges of said walls peripherally defining an opening through which napkins can be inserted in said container, said lower edges of said back and side walls generally being attached to a floor panel, said inner surfaces of said walls being shaped, contoured and dimensioned to receive and maintain in position an upright stack of napkins inserted through said top opening into said container;

(b) a napkin dispensing opening located between said floor panel and at least one of said lower edges of said front wall, said opening being shaped and dimensioned such that an individual can readily remove therethrough a stack of napkins having a predetermined height; and



(c) a notch formed to said floor of said container such that an individual may touch the underside of the bottom napkin of said stack in said container while permitting said bottom napkin to remain in fixed position with respect to said container, said notch permitting a single napkin to be readily withdrawn from said container through said napkin dispensing opening;

at least one of said walls including a vertically disposed aperture formed therethrough such that when said individual inserts said stack of napkins in said container said individual can maintain manual contact with the bottom of said stack while said stack is being inserted in said container,

said opening between said floor panel and front wall being shaped, contoured and dimensioned such that said tabletop napkin holder can, when empty, be inserted therethrough and filled with napkins from said container.

4,491,243

APPARATUS FOR DIRECTLY AND CONTINUOUSLY WEIGHING CONTINUOUSLY FED POWDER OR PARTICLE SUBSTANCES

Yoshikazu Koga, No. 920-74 Mogusa, Hino-shi, Tokyo, and Hiroyuki Fukuya, 1-2-6-306 Kitamidorigaoka, Toyonaka-shi, Osaka-fu, both of Japan

Filed Jan. 22, 1982, Ser. No. 341,630

Claims priority, application Japan, Jan. 28, 1981, 56-11104; Aug. 28, 1981, 56-135883

Int. Cl.[3] B67D *5/08*

U.S. Cl. 222—55 2 Claims

1. An apparatus for directly and continuously weighing continuously fed powder or particle substances comprising:

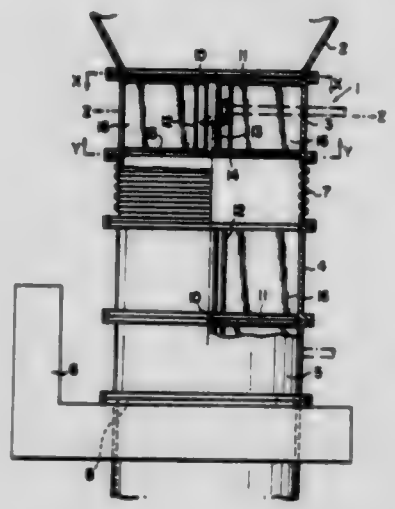
(a) an upper vessel and a lower vessel disposed vertically under a hopper with the axes thereof being aligned with one another and having a plurality of compartments therein, the upper vessel being provided with rotary discs at the top and bottom portions thereof and the lower

vessel being provided with a rotary disc at the bottom portion thereof,

(b) a means for rotating said rotary discs at the same angular velocity,

(c) a weighing means disposed under said lower vessel, and

(d) an opening formed in each of said rotary discs corresponding in size to a compartment of said plural compartments, the opening formed in said top rotary disc of said upper vessel being shifted by 180° about the axis thereof from the opening formed in said bottom rotary disc of said upper vessel, wherein said rotary discs of said upper and lower vessels are rotated by said rotating means so that the openings formed in said top disc of the upper vessel and said bottom disc of the lower vessel coincide with each other.

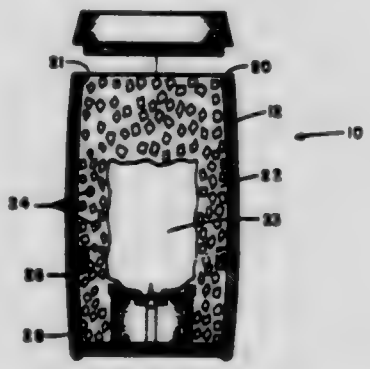


4,491,244

PORTABLE COOLABLE BEVERAGE DISPENSER

Ralph S. Yanes, 1015 W. Verdugo Ave., Burbank, Calif. 91506

Filed Jul. 18, 1983, Ser. No. 514,665
Int. Cl.³ B67B 7/28
U.S. Cl. 222—88 9 Claims



1. A portable dispensing manufacture for maintaining coolness of a liquid in and from a pliant liquid-containing vessel adapted for mounting within the manufacture and comprising

a base unit having a floor from which wall means rise upwardly therefrom and a shell connectable to the wall means to form a single chamber with said base unit within the manufacture,

a container constituting a reservoir for the vessel's liquid securely mounted to the base unit's floor and having wall means spaced from the wall means forming the single chamber to provide spatial dimensions between the wall means forming the single chamber and the container,

a lid mounted on said container for sealing its reservoir,

means for connecting a pliant liquid-containing vessel to said container mounted in said lid,

an actuator disposed within said connecting means and including a piercing element disposed above the level of said lid for cutting open the liquid-containing vessel adapted for mounting and securing to said connecting means,

a spigot or the like exteriorly mounted on the base unit's wall means, and

means forming a passageway mounted between the reservoir and the spigot or the like in the spatial dimensions provided between the wall means of both container and base unit,

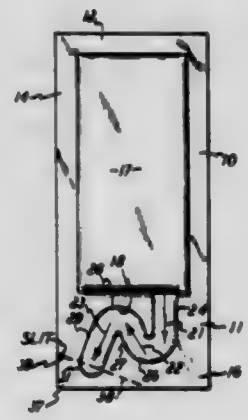
whereby ice or the like can be disposed in the single chamber in such spatial dimensions about and around said container from the base unit's floor to and through said shell and about such liquid-containing vessel connected to said lid, the vessel releasing a supply of liquid into the container's reservoir by the piercing action of said actuator to maintain coolness in the liquid until dispensed from the reservoir through the passageway and spigot or the like.

4,491,245

LIQUID DISPENSING CONTAINER

Mark D. Jamison, 3333 Sharon Pl., Zion, Ill. 60099

Filed Mar. 24, 1982, Ser. No. 361,443
Int. Cl.³ B65D 35/50
U.S. Cl. 222—107 8 Claims



1. In a dispensing squeeze package for liquid contents wherein said package is formed from superposed sheets of flexible liquid-impermeable material connected in liquid-tight relation completely around the periphery thereof and defining therebetween (1) a contents-receiving pouch, and (2) a discharge spout communicating at an inlet end thereof with said pouch and terminating at an outlet end thereof within the periphery of said peripherally connected sheets, said sheets being tearable in proximity to said spout outlet end to disrupt said connected sheets near said spout outlet end to open the spout thereby to permit squeeze-dispensing pressure on said sheets at said pouch therein to force said contents from within said pouch through said spout to dispense the same,

the improvement therein comprising:

said spout defining a flow channel formed between and defined completely by said superposed flexible sheets, with said sheets being connected together along the length of the channel on either side thereof between its said inlet and outlet ends,

said flow channel having a serpentine configuration including

a first flow channel portion extending from said inlet end in a first direction away from said contents pouch,

a seocnd flow channel portion having a curvilinear connection to said first flow channel portion and extending therefrom in a second direction and including a reversely directed component thereof directed toward said contents pouch,

a third flow channel portion having a curvilinear correction to said second flow channel portion and extending therefrom in a third direction to said outlet end and including a component thereof reversely directed with respect to said second flow channel component and

extending away from said contents pouch in generally said first direction, and,

tear means intersecting said spout at said outlet end thereof,

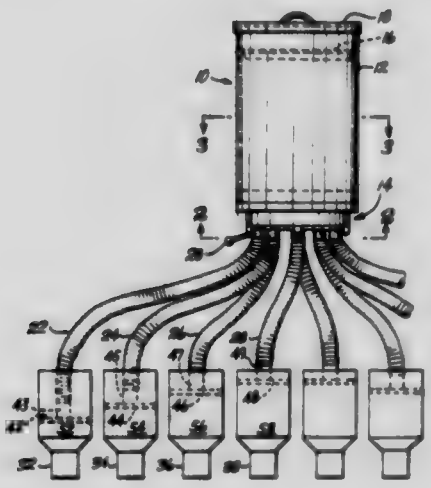
thereby to provide a substantially flat squeeze package, the spout configuration of which provides manual squeeze-controlled flow from said contents pouch with dripless cessation of flow from said spout upon relaxation of squeeze pressure when said spout is opened at its outlet end.

4,491,246

SEED SUPPLY SYSTEM FOR MULTIPLE ROW SOWER

James H. Dooley, Federal Way, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Mar. 18, 1983, Ser. No. 476,752
Int. Cl.³ A01C 7/04
U.S. Cl. 222—129 8 Claims



1. In a seed supply system for a multiple row seed sower of the type having a main seed hopper, a plurality of individual sower unit seed hoppers, and seed supply ducts connecting each sower unit hopper with the main hopper, the improvement which comprises:

a. a seed distributor means in the main hopper adapted to provide a uniform flow of seed by gravity into the supply ducts;

partition means being adjustable to control the seed volume contained in each sower unit hopper, and

c. each transverse partition means being adjustably disposed within its associated sower unit hopper such that the combined volume of each sower unit hopper below the trasverse partition means and the volume defined within the associated seed supply duct is substantially equal for each sower unit hopper and its associated seed supply duct, whereby:

if the main hopper seed supply runs out during sowing, all units will run out of seed essentially simultaneously.

4,491,247

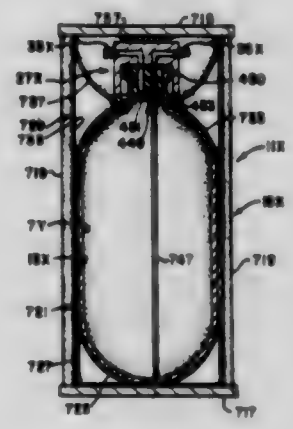
SYSTEM, APPARATUS, AND METHOD OF DISPENSING A LIQUID FROM A SEMI-BULK DISPOSABLE CONTAINER

Harold L. Nitchman, 1230 Parody, St. Charles, Mo. 63301, and William B. Cunningham, Jr., 916 Woodshire La., Creve Coeur, Mo. 63141

Continuation-in-part of Ser. No. 285,611, Jul. 21, 1981, Pat. No. 4,440,319. This application Apr. 2, 1982, Ser. No. 363,511
Int. Cl.³ B67D 5/60; F25J 5/60
U.S. Cl. 222—131 27 Claims

1. Apparatus for dispensing a liquid from a disposable container, said disposable container having an inlet/outlet opening, and a closure sealably secured to said inlet/outlet opening, said apparatus comprising a shroud for receiving said disposable container and a frame for receiving said shroud, said shroud and said frame withstanding pressurization forces exerted on said container upon internal pressurization thereof, said shroud having a first and a second portion telescopically interfitting with one another, and a stopper assembly fitted to said inlet/outlet of said disposable container and being held in place relative to said disposable container by said shroud, said stopper assembly having means for internally pressurizing said container, means for discharging liquid from said disposable container under pressure, and means for sealing said stopper assembly relative to said disposable container upon internal pressurization of said disposable container.

19. A system for dispensing of a liquid from a disposable container containing a supply of liquid therein, said disposable container having at least one opening, said system comprising means sealably engageable with said at least one opening for



permitting pressurization of said liquid within the container and for pressure dispensing of said liquid from within the container, and pressure containment means for receiving and for withstanding pressure forces exerted on said disposable container during internal pressurization thereof, said pressure containment means comprising a shroud having a first portion thereof adapted to receive at least one portion of said disposable container and having another portion thereof adapted to receive the other portion of said disposable container so that upon internal pressurization of said disposable container, said shroud supports said disposable container against the internal pressurization forces exerted thereon, said pressure containment means further comprising a frame adapted to receive said shroud for preventing substantial axial movement of the shroud portions relative to one another upon internal pressurization of the disposable container.

4,491,248

FREE PISTON VOLUMETRIC MEASURING DEVICE AND METHOD FOR MEASURING WHEREIN THE PISTON HAS A SPECIFIC GRAVITY APPROXIMATELY MATCHED TO THE LIQUID BEING DISPENSED

John S. Blackwell, 1 Hickory Dr., Stamford, Conn. 06902

Filed Sep. 12, 1983, Ser. No. 531,605
Int. Cl.³ G01F 11/04
U.S. Cl. 222—249 10 Claims

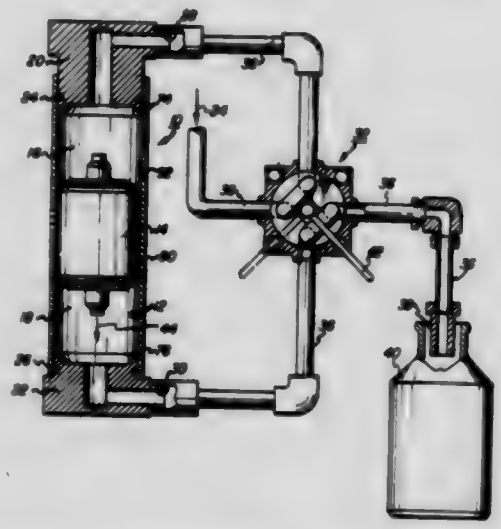
1. A liquid measuring device for dispensing measured volumes of liquid from a source of liquid under pressure, the liquid having a specific gravity, the device comprising:

a cylinder;

a free piston for reciprocal traveling in said cylinder, said cylinder having a chamber on each side of said piston, said piston having a specific gravity;

means for supplying said liquid under pressure from said source alternatively to each chamber to fill one chamber and move said piston to dispense a measured volume of liquid from said other chamber; and

said piston including a hollow volume, said volume being accessible for removal and insertion of weight to permit



adjustment of the specific gravity of said piston to approximately match the specific gravity of said liquid.

4,491,249

LIQUID FOOD DISPENSER

Bela Harmatzy-Simon, Nestorstrasse 11, D-1000 Berlin 31; Peter Schröder, Bergstrasse 96, D-5068 Odenthal-Glöbusch, both of Fed. Rep. of Germany; Peter A. Büchel, deceased, late of Köln, Fed. Rep. of Germany, and by Helga Büchel née Diekmann, legal representative, Semmelweisstr. 159, D-5000 Köln 80, Fed. Rep. of Germany

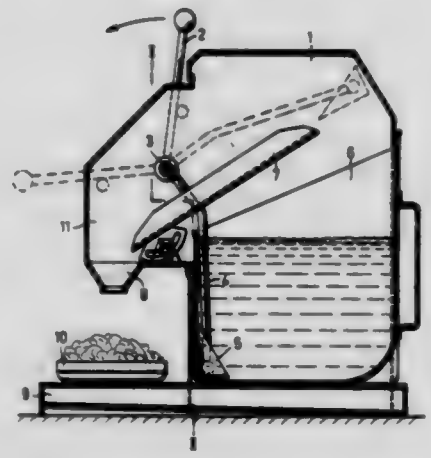
Filed May 19, 1982, Ser. No. 379,774

Claims priority, application Fed. Rep. of Germany, May 26, 1981, 3120879

Int. Cl.³ G01F *11/10*

U.S. Cl. 222—325

8 Claims



1. A liquid food dispenser for dispensing a defined amount of liquid food containing solid components comprising:

a housing for holding the liquid food having an outlet through which the liquid food is dispensed and an angularly adjustable collecting channel for providing liquid food therein to said outlet; and

a shaft in the front upper third of the housing on which is mounted a scoop arm having a cup within said housing, said cup being angularly adjustable with respect to the scoop arm, the scoop arm having an actuation lever external to said housing, the length and shape of the scoop arm being such that, upon actuation of the lever, the cup is displaced through the liquid food along a path as long as possible and, in the upper position of the scoop arm, liquid food in the cup being evacuated into said collecting channel.

4,491,250

PRESSURIZED DISPENSING POUCH

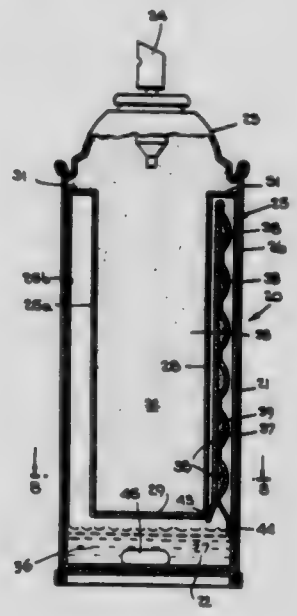
Benno E. Liebermann, Louisville, Ky., assignor to Grow Group, Inc., New York, N.Y.

Filed Jul. 23, 1982, Ser. No. 401,119

Int. Cl.³ B65D *83/14*

U.S. Cl. 222—386.5

11 Claims



1. An elongated tubular member sealed at a first end and at an intermediate location along its length, said tubular member having an outer portion defined by said first end and said intermediate location and having an inwardly folded flexible portion extending into said outer portion said tubular member having a second sealed end terminating short of said first end to provide a fluid tight inner chamber between said portions and a product receptable within said folded portion, a closure member being disposed adjacent said intermediate location enclosing said receptable, dispensing valve means being provided on said closure member for delivering a product from said receptacle in controlled amounts and pressures, pressure generating means being disposed in said inner chamber for progressively moving said second sealed end toward said intermediate location to gradually decrease the volume of said product containing receptacle, said pressure generating means comprising a first elongated strip and a second elongated strip at least partially coextensive therewith and releasably secured thereto, said strips being disposed within said inner chamber and containing a plurality of pocket members at positions spaced from one another generally longitudinally relative to said portions, said second elongated strip being connected at at least one end to said folded flexible portion in a region adjacent said second sealed end, an end of said first strip adjacent said one end of said second strip being interconnected with said outer portion, said second strip being removable from said first strip as said second sealed end moves toward said intermediate location, thereby successively opening adjacent pocket members.

10. An elongated tubular member sealed at a first end and at an intermediate location along its length, said tubular member having an outer portion defined by said first end and said intermediate point and having an inwardly folded flexible portion extending into said outer portion, said tubular member further having a second sealed end terminating short of said first end to provide a fluid tight inner chamber between said portions and a product receptacle within said folded portion, a closure member being disposed adjacent said intermediate location enclosing said receptacle, dispensing vlave means being disposed on said closure member for delivering a product from said receptacle in controlled amounts and pressures, pressure generating means being disposed in said inner chamber for progressively moving said second sealed end toward said intermediate location to gradually decrease the volume of said receptacle, said pressure generating means comprising a plurality of pocket members integrally formed within said

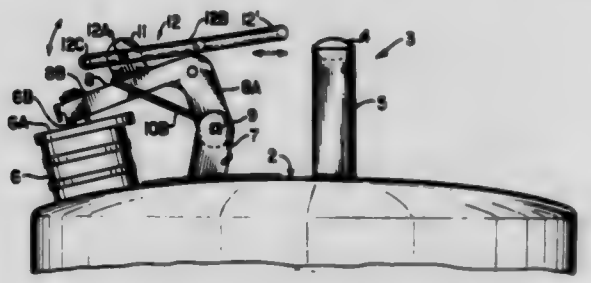
outer portion at positions longitudinally spaced from each other, said folded flexible portion releasably closing said pocket members, whereby adjacent pocket members are successively opened as said second sealed end moves toward said intermediate location.

4,491,251

SAFETY CAN FOR STORAGE OF LIQUIDS

Clarence L. Pratz, Wellsburg, and Archimede DiClemente, Wheeling, both of W. Va., assignors to Eagle Manufacturing Company, Wellsburg, W. Va.

Filed Nov. 18, 1983, Ser. No. 553,133
Int. Cl.³ H47G *19/14*; B67D *5/58*
U.S. Cl. 222—469 8 Claims



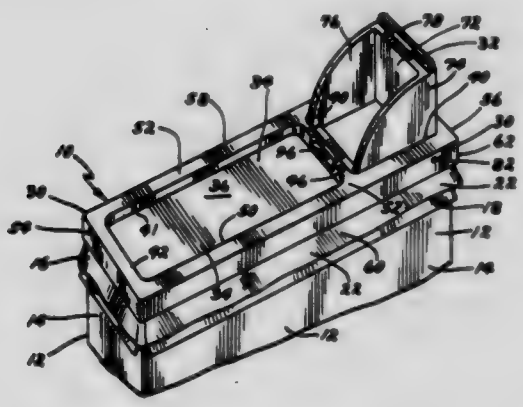
1. A safety can comprising a vessel with a closed top with a pouring spout near the periphery of the top, a primary fixed lifting handle slightly off-center on the top with a hand grip extending in a direction at right angles to the radius on which the spout is centered, a first lever mounted on the cover between the spout and the handle pivoted near one end to swing in a vertical arc above said radius with its free end extending above the pouring spout, a cover for the pouring spout suspended from the free end of said lever, spring means biasing said first lever to yieldably hold the cover tightly over the pouring spout, a secondary handle comprising a second lever having a hand grip at its free end parallel with the hand grip of the primary lifting handle, said second lever having an over-center pivotal mounting on said first lever near to but inwardly from the center of said cover, said secondary handle being arranged to transmit lifting motion to the first lever to raise the cover from the spout only when moved in the direction toward the primary lifting handle.

4,491,252

DISPENSING DEVICE

Paul R. Schmidt, Marshall, Mich., and Nelson J. Beall, St. Michael, Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Jun. 7, 1982, Ser. No. 385,738
Int. Cl.³ B67D *3/00*
U.S. Cl. 222—531 6 Claims



1. A dispensing lid for use in dispensing particulate material from a box having a rectangular orifice defined by the fold formed by folding back closure end and side flaps and an inner liner, said lid comprising:

a cover member, said cover member including

a first planar member having a top surface and a bottom surface,

an upstanding vertical wall surrounding said top surface, said wall including a first end wall and a second end wall,

a transverse upstanding wall intermediate said first and second end walls defining an interior wall,

an opening running inwardly from said first end wall to said transverse wall,

a second planar member spaced above said vertical wall and in a plane parallel to the plane of said first planar member, said second member extending outwardly from said vertical wall; a skirt extending downwardly from said second planar member surrounding the periphery of said first planar member defining a peripheral groove around said first planar member;

a closure member; and

means for pivotably mounting the closure member on the cover member in the opening,

wherein the means for pivotably mounting the closure member on the cover member includes providing an opposed pair of pivot bores in said vertical wall intermediate said first end wall and said transverse wall and wherein the closure member includes a pair of opposed pivot pins projecting laterally from the sides of the closure member journaled in said pivot bores forming a pivot axis,

wherein the pivot bores are positioned proximate the first end wall,

wherein the opening is rectangular and wherein said closure member comprises a rectangular portion having a top surface and a bottom surface, an opposed pair of quadrantal members depending from the bottom face of said rectangular portion and wherein such quadrantal members include a stop lug opposite the pivot axis,

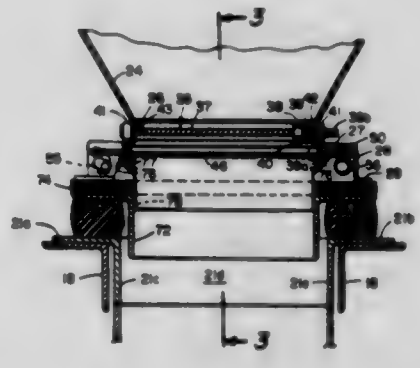
wherein said interior wall includes a first stop surface proximate said opening, said first stop surface being recessed from the plane of the second planar member an amount such that the rectangular portion is in the same plane as the second planar member when the closure member is in a closed position and the rectangular portion is in contact with the first stop surface.

4,491,253

CONTAINER WITH BUTTERFLY VALVE

Clarence B. Coleman, Oakland, Calif., assignor to Fabricated Metals, Inc., San Leandro, Calif.

Filed Apr. 14, 1982, Ser. No. 368,140
Int. Cl.³ B65D *47/00*
U.S. Cl. 222—559 6 Claims



1. A container for material comprising an upright housing having a discharge area near its lower end section and walls defining a discharge passage extending vertically through said area, a door supported by said walls and movable across said passage from a closed position in the passage to a withdrawn position, a butterfly valve pivotally mounted in said housing at said discharge area at a point above the path of movement of said door as it slides across the passage, a generally horizontal ledge on said housing at said discharge area directly above the path of movement of said door, a downwardly-facing seal member on said ledge, cam means for raising said door into

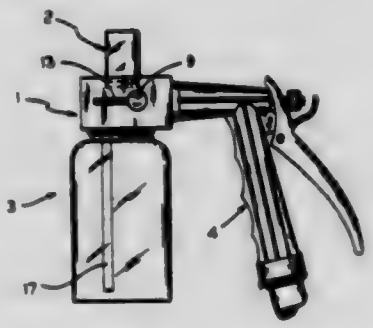
sealing engagement with said seal member, and an abutment on the lower surface of said valve in the path of upward movement of said door to be engaged thereby and moved upwardly during movement of said door to sealed engagement with said member.

4,491,254

LIQUID CHEMICAL APPLICATOR

Alan E. Viets; James D. Amerine, both of Marysville, and Henry M. Lowe, Ostrander, all of Ohio, assignors to The O. M. Scott and Sons Company, Marysville, Ohio

Filed Sep. 22, 1982, Ser. No. 421,122
Int. Cl.[3] B05B 7/30
U.S. Cl. 222—83.5 9 Claims



1. A liquid applicator for dispensing a chemical in dilute aqueous form comprising

an applicator body containing a first passageway therethrough for the passage of water from a water source to the exterior of the applicator,

a first container connected with said applicator body adapted to contain a chemical therein,

a second container mounted vertically beneath said first container on said applicator body and adapted to contain a chemical diluted with water,

said applicator body containing a second passageway for passage of chemical and water by gravity from said first container to said second container,

valve means intersecting said first passageway adapted to divert water from said first passageway into said first container to flush chemical from said first container into said second container and predilute said chemical with water,

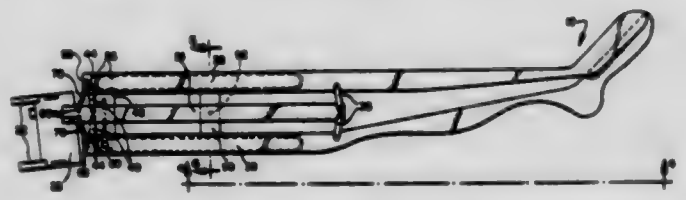
said first passageway containing an aspirator therein for withdrawal and further dilution of prediluted chemical from the second container and for discharge of said diluted chemical from the applicator.

4,491,255

COLLAPSIBLE HOSIERY FORM

Philip S. LaChapelle, Charlotte, N.C., assignor to Istech Corporation, Charlotte, N.C.

Filed May 20, 1983, Ser. No. 496,400
Int. Cl.[3] D06C 15/00; D06H 3/16
U.S. Cl. 223—37 15 Claims



1. A collapsible hosiery form such as employed in hosiery treatment operations for panty hose garments and the like comprising:

a support base having means for supporting said form in hosiery treatment operations;

a pair of generally parallel garment shaping legs extending from said base to define a space between said legs, each of said legs including first and second elongated members;

means mounting said first and second members of each said leg on said support base for said members to undergo substantially translational movement relative to each other between an expanded condition and a collapsed condition for the leg; and

garment fabric tucking means extending from said support base in association with said legs to draw loose fabric into said space between said legs when said elongated members are moved into said expanded condition.

4,491,256

DRYING INSERT FOR CAPS

Paul E. Payne, 1415 Maxmillian Pl., and Charles F. McDonagh, 1640 W. Sage St., both of Tucson, Ariz. 85704

Filed Nov. 8, 1982, Ser. No. 439,826
Int. Cl.[3] B65H 25/24
U.S. Cl. 223—24 6 Claims



1. A generally rigid insert for drying a cap having a visor and a crown section, said visor having a lower surface that is generally concave when dry, said insert comprising in combination:

(a) a first section having a generally convex upper surface that generally conforms to said generally concave lower surface shape of said visor of said cap;

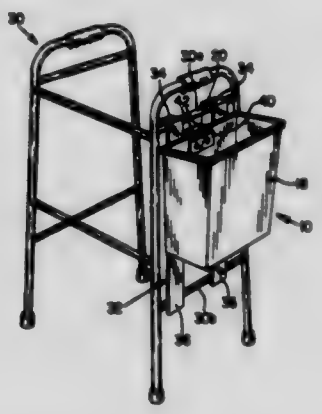
(b) a second section having an upper surface that generally conforms to the proper shape of said crown section, said second section being attached to said first section, said second section including a plurality of arched members and a ring that is attached to said first section, the upper ends of said arched members coming together and being connected together at the top of said second section, the lower ends of said arched members being spaced apart and connected to said ring, the size of said second section causing said crown section of said cap to be stretched over said arched members when said second section is inserted into said crown section of said cap shortly after laundering of said cap, said upper surface of said first section being pressed against the lower surface of said visor when said second section is inserted sufficiently far into said crown section of said cap to stretch said crown section of said cap over said arched members; and

(c) means connected to said first section for holding said lower surface of said visor against said generally convex upper surface of said first section when said visor is wet so that said lower surface of said visor conforms to the shape of said upper surface of said first section to prevent wrinkling of said visor while said cap is drying, wherein said visor holding means includes a plurality of elements attached to the peripheral portion of said first section and a plurality of elastic band means for being stretched between said elements and over the upper surface of said visor to hold its generally concave lower surface against said generally convex upper surface of said first section.

4,491,257
ATTACHABLE BASKET FOR INVALID SUPPORT EQUIPMENT

Wesley L. Ingles, Rte. 1, Box 306, Banks, Oreg. 97106

Filed Jun. 6, 1983, Ser. No. 501,182
Int. Cl.[3] A45B 3/00; A61H 3/00, 3/02, 3/04
U.S. Cl. 224—42.45 R 7 Claims



1. An article carrying receptacle and mounting therefor releasably attachable to a walker having two vertically spaced-apart horizontal side bars, comprising:

(a) a basket configured to carry articles;

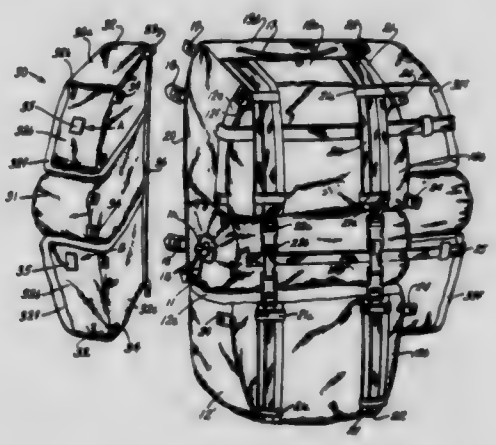
(b) hook means mounted on the basket; and

(c) bracket means mounte on the walker away from the usual working surfaces thereof, and including a plate having a hook at the top thereof configured to overlap the upper of the side bars and a leg extending downwardly from the hook/abutting the lower of the side bars, and having a horizontal top edge thereon configured to receive and support the hook means, the hook means supporting the basket substantially vertically on the outside of the walker.

4,491,258
CONVERTIBLE BACKPACK

Richard R. Jones, Box 919, Ft. Collins, Colo. 80522

Filed May 3, 1982, Ser. No. 374,520
Int. Cl.[3] B62J 7/04, 7/06; A45F 3/08
U.S. Cl. 224—153 11 Claims



1. A convertible backpack assembly comprising:

a main storage element having a plurality of compartments flexibly connected together for arrangement into at least a first position and a second position, said assembly in said first position having a top storage compartment and two side storage compartments depending therefrom, said assembly in said second position having a top storage compartment, a middle storage compartment and a bottom storage compartment, with all three storage compartments generally linearly aligned with the backs thereof generally on one plane;

a plurality of shoulder straps related to said main storage element;

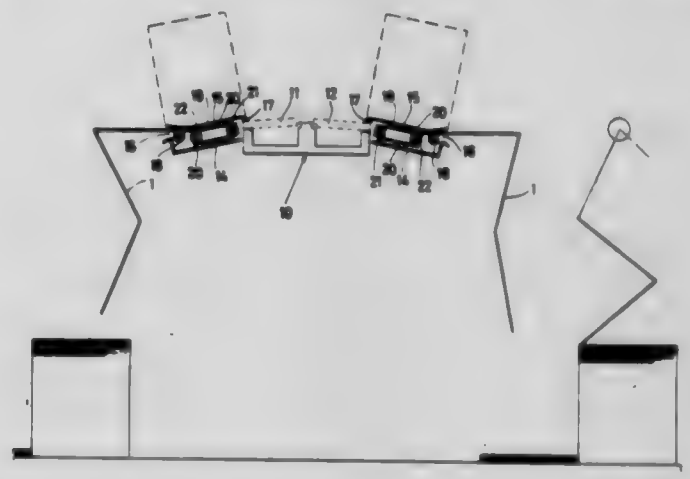
a plurality of frame support means attached to each of said backs of all three storage compartments;

a substantially rigid removable frame means for providing support to said assembly, said frame means including a plurality of vertical frame strips removably supported by said frame support means and extending between said top storage compartment, said middle storage compartment and said bottom storage compartment when said main storage element is in said second position, such that when said frame means is removed from said assembly said main storage element can be moved to said first position and attached to a carrying means, and when said frame means is secured to said assembly said main storage element can be securely carried on a person's back and is maintained in said second position by said frame means.

4,491,259
DEVICE FOR THE AUTOMATIC POSITIONING OF STRIPS OF SHEET MATERIAL

Luciano Meschi, Leghorn, Italy, assignor to Wully S.A., Panama

Filed Mar. 9, 1982, Ser. No. 356,333
Claims priority, application Italy, Mar. 10, 1981, 21033/81[U]
Int. Cl.[3] B65H 17/38
U.S. Cl. 226—74 14 Claims



1. A positioning device for the automatic positioning of form-sheets to be spliced onto a splicing plane, comprising:

a casing having vertical walls and including initial positioning means internally of said casing for initially positioning a form-sheet;

removable means including a cover plate adapted to close said casing, said means being movable between an operating position, in which access to the inside of said casing containing said positioning means is allowable and in which the form-sheet containable therein is freely removable; and

form-sheet advancing means having members capable of engaging and dragging the form-sheet;

said initial positioning means being positioned upstream of said advancing means, for the initial positioning of the form-sheet with respect to said advancing means; and

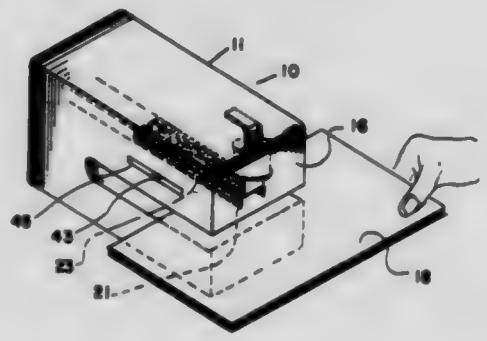
said casing enclosing said form-sheet advancing means, said cover plate being hinged along a side parallel to said form-sheet advancing direction and being movable between the operating position in which it forms, with said vertical walls of said casing, an inlet opening, an exit opening and a non-operating position in which it is rotated towards a position in which it permits free access to the internal members of the device and free removal of a form-sheet contained in the device, after the splicing operation is complete.

4,491,260

ELECTRIC STAPLER

Carlos L. Jimena, 327 Douglas St., Salt Lake City, Utah 84102

Continuation of Ser. No. 153,356, May 27, 1980, abandoned.
This application Jul. 19, 1982, Ser. No. 399,921
Int. Cl.[3] B25C 5/15; B27F 7/36
U.S. Cl. 227—7
1 Claim



1. In a machine for fastening a staple into one or more sheets of paper:

a solenoid having an operating coil and an armature, the armature being movable in a vertical plane;

a staple driver directly fastened to the armature of said solenoid;

spring means to bias the armature away from an anvil;

a source of operating voltage;

a first control relay having an operating coil coupled to said source of operating voltage, and a set of normally open contacts coupling the operating coil of said solenoid to said source of operating voltage;

a second control relay having an operating coil coupled to said source of operating voltage, a first set of normally closed contacts in series with the operating coil of said first control relay, and a second set of normally open contacts in series with the operating coil of said second control relay;

a paper actuated switch in series with the operating coil of said first control relay, the paper actuated switch when actuated by paper to be stapled closing a circuit through the normally closed contacts of said second control relay connecting the operating coil of said first control relay to said source of operating voltage, said first control relay being thereby energized to close the set of contacts of said first control relay, the closed set of contacts of said first control relay connecting the operating coil of said solenoid to said source of operating voltage to energize said solenoid and actuate said staple driver; and

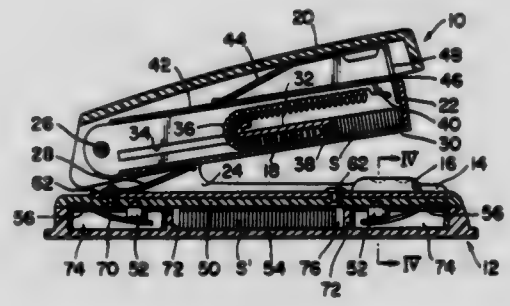
a second normally open switch closed by the actuated armature of said solenoid, said second switch when closed connecting the operating coil of said second control relay to said source of operating voltage to energize said second control relay, the first set of normally closed contacts of said second control relay being thereby opened to deenergize said first control relay, the set of contacts of said first control relay being opened by said deenergized first control relay, the operating coil of said solenoid being thereby deenergized, the second set of contacts of said second control relay closing a holding circuit of the operating coil of said second control relay through said paper actuated switch to said source of operating voltage, said second switch being opened by the armature deactuated in response to the operating coil of said solenoid being deenergized, said second control relay being energized inhibiting said solenoid from being actuated more than one time when the paper is inserted in said machine, said second control relay being deenergized when the paper is removed from said paper actuated switch.

4,491,261

HAND-OPERATED STAPLER-PUNCH COMBINATION

Yoshio Mitsuhashi, 79, Higashi-Kibogaoka, Asahi-Ku, Yokohama-Shi, Kanagawa-ken, Japan

Filed Jan. 11, 1982, Ser. No. 338,791
Claims priority, application Japan, Jan. 20, 1981, 56-5930
Int. Cl.[3] B27F 7/00
U.S. Cl. 227—76
18 Claims



1. A hand-operated stapler-punch combination comprising:

(a) a base having an anvil adjacent one end;

(b) a staple magazine for receiving the bar of staples, the staple magazine being coupled to the base for pivotal motion about a first axis adjacent the other end of the base;

(c) a handle having a staple ejector for forcing the successive staples out of the staple magazine against the anvil on the base, the handle being coupled to the base and the staple magazine for pivotal motion about the first axis;

(d) a platen integral with the base;

(e) a bed coupled to the platen for pivotal motion about a second axis at right angles with the first axis and being in the form of an open-top box;

(f) a set of spaced-apart perforating punches formed on the platen; and

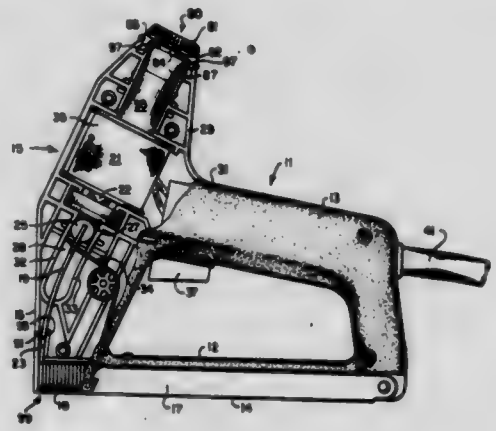
(g) die means mounted in the beds and forming a set of bores for receiving the respective punches for cooperative punching operation.

4,491,262

ELECTRO-MAGNETIC STAPLING TOOL

John F. Ewig, Worcester, Mass., assignor to Parker Manufacturing Company, Worcester, Mass.

Continuation-in-part of Ser. No. 148,721, May 12, 1980, Pat. No. 4,349,143. This application Sep. 10, 1982, Ser. No. 416,647
Int. Cl.[3] B25C 1/00
U.S. Cl. 227—131
4 Claims



1. In an electro-magnetic stapling tool having:

(a) a housing having a main body, a magazine portion, and a handle, said magazine portion having a flat bottom surface which is the bottom surface of said stapling tool and which is adapted to lie along the surface of an article to be stapled, said main body extending upwardly from the forward end of said magazine portion and having an end surface lying substantially at a right angle to said bottom

surface, said main body end surface being the forwardmost surface of said stapling tool;

(b) a staple magazine located in said magazine portion to present staples seriatim to said magazine portion forward end;

(c) an upwardly biased staple driver mounted in a curved passage of said main body for reciprocating sliding motion towards and away from said magazine portion forward end;

(d) a solenoid including a coil and reciprocally movable core mounted in said main body, a plunger coaxially fixed to and extending downwardly from said core for movement therewith along a straight path which lies at an acute angle to said main body end surface, the lower end of said plunger being maintained in continuous contact with the upper end of said upwardly biased staple driver;

(e) said curved passage of said main body in which said staple driver reciprocates extending downwardly to said forward end of said magazine portion and forming a right angle with said bottom surface of said magazine portion; and

(f) means for adjusting the power with which said solenoid-operated plunger and said staple driver drive the staples, the improvement therein comprising:

(i) said main body having at least one opening formed at the upper end thereof in axial alignment with the axis of said core, said main body opening providing access from the main body exterior to said plunger/core assembly;

(ii) a manually adjustable power selector knob mounted to axially rotate in said opening, said knob having an integral locating element associated with said knob, said locating element being positioned within the interior of said main body and having a spiraling cam surface thereon; and

(iii) said solenoid core having a cam folllower mounted adjacent to its upper end, said cam follower being fixed against rotation about the axis of said core, and being upwardly urged against said cam surface, said selector knob being selectively rotatable to rotate said cam surface thereby camming said core axially and adjusting the length of the axial stroke of said solenoid core between a maximum length staple driving stroke generating maximum power and a minimum length staple driving stroke generating minimum power.

4,491,263

HEEL ATTACHING MACHINE

Manfred Bröning, Frankfurt am Main, Fed. Rep. of Germany, assignor to USM Corporation, Farmington, Conn.

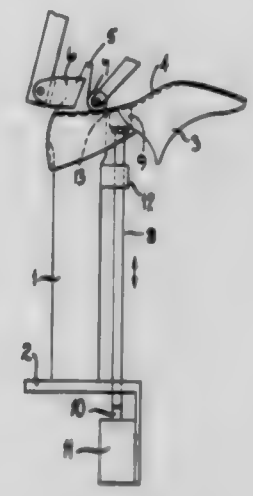
Filed Mar. 24, 1983, Ser. No. 478,261

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1982, 3213676

Int. Cl.³ A43D *67/00, 79/00*

U.S. Cl. 227—152 1 Claim

1. Apparatus for the nailing on of heels onto shoe uppers having insoles, in which the shoe upper is placed on a nailing stand and a holddown presses the heel onto the nailing stand, wherein a support 8 is arranged adjacent to the nailing stand 1 on its side towards the shoe shank, which support has an abutment on its upper end adapted to the form and position of the insole 4, wherein the support 8 rests on a piston 10 of a pneumatically operated piston-cylinder unit 11 which is operated, after pressing of the shoe upper 3 on the nailing stand 1, with such pressure that the insole 4 stops the abutment 9, wherein the piston-cylinder unit 11 has such inertia that blows resulting



from the nailing process acting on the abutment 9 are absorbed by the latter.

4,491,264

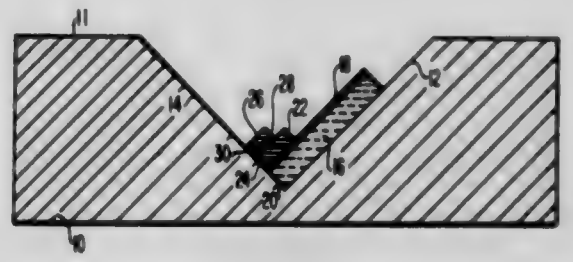
METHOD OF SOLDERING A LIGHT EMITTING DEVICE TO A SUBSTRATE

Frank Z. Hawrylo, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 1, 1982, Ser. No. 383,988

Int. Cl.³ B23K *31/02*

U.S. Cl. 228—121 7 Claims



1. A method of soldering a light emitting device to a metallized major surface of a substrate which comprises the steps of:

mounting the substrate on a first internal surface of a vee-groove in an external surface of a body with an edge face of the substrate adjacent to and abutting a second internal surface of the vee-groove having an internal angle substantially equal to 90° with the first internal surface;

positioning the light emitting device over the metallized surface of the substrate with an emitting facet of said device adjacent to and abutting the second internal surface thereby aligning the emitting facet with the edge face of the substrate;

providing a layer of solder between the metallized surfaces of the substrate and the light emitting device;

heating the substrate, the solder and the light emitting device to melt the solder; and

cooling the substrate, the solder and the light emitting device to room temperature;

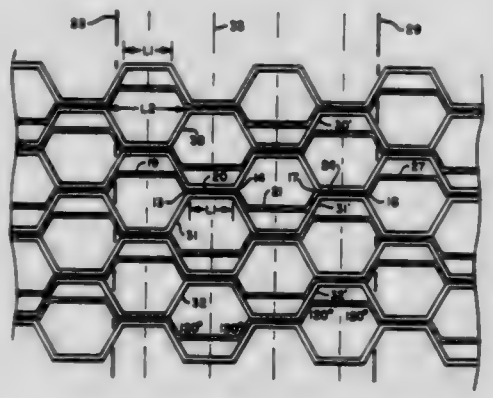
whereby the light emitting device is soldered to the substrate with its emitting facet aligned with the edge face of the substrate.

4,491,265

METHOD OF ALIGNING HONEYCOMB CELLS

Nelson C. Ittner, P.O. Box 2610, Blue Jay, Calif. 92317, and Gary N. Ittner, 12610 Braddock Dr., Los Angeles, Calif. 90066

Filed Jun. 6, 1983, Ser. No. 501,605
Int. Cl.³ B23K *1/12, 35/14*
U.S. Cl. 228—181 5 Claims



1. A method of aligning the nodes of honeycomb cells by means of a continuous strip of brazing material received between the nodes preparatory to welding the nodes together, including the steps of:

(a) partially folding the brazing strip about transverse parallel pairs of fold lines spaced apart the same distance as the nodes of properly horizontally aligned cells, the transverse fold lines in each pair being spaced apart a distance equal to the length of the cell node; and

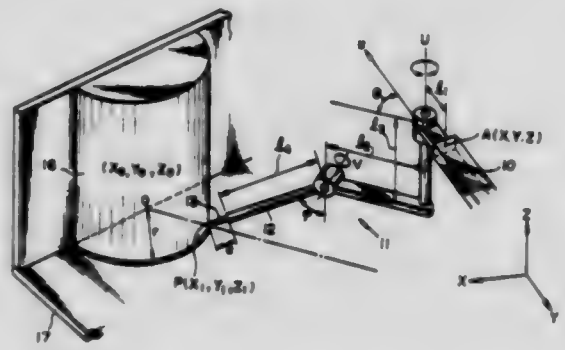
(b) positioning the brazing material between the cell nodes so that a cell node is positioned between the two transverse fold lines making up each pair whereby the brazing strip indexes the positions of the cells into alignment with each other.

4,491,266

MULTI-LAYER PADDING WELDING METHOD

Riichi Abe, Hiratsuka; Katsuji Tsuruta, and Seiji Tsujikado, both of Isehara, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Nov. 6, 1981, Ser. No. 318,951
Claims priority, application Japan, Sep. 10, 1980, 55-125745
Int. Cl.³ B23K *31/02*
U.S. Cl. 228—225 3 Claims



1. A multi-layer padding welding method using a welding robot having a body movable along orthogonal axes and having a wrist with two axes of rotation, a torch tip being mounted at the end of said wrist, wherein the positioning of said torch tip is controlled using a predetermined constant as a parameter so as to follow a desired trajectory, said method comprising the steps of:

conducting a teaching operation only for the first layer welding, during which teaching operation the pivotal orientation about said two axes of rotation of said welding robot body is determined for each point in a desired weld trajectory,

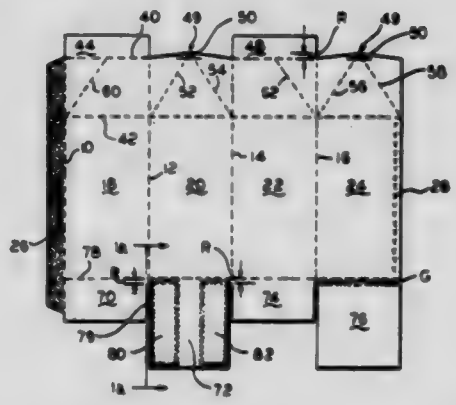
and for welding of the second layer onward, calculating for each point in said desired weld trajectory a new position of said welding robot body taking into account a modified length value associated with the separation between the locations of said two axes of rotation of said wrist, the torch tip being displaced in accordance with said calculated value from the desired trajectory.

4,491,267

FOLDING CARTON FOR DRY POWDER

Steven Tisma, Niles, Ill., assignor to Tisma Machine Corporation, Chicago, Ill.

Filed Sep. 28, 1982, Ser. No. 425,508
Int. Cl.³ B65D *5/02*
U.S. Cl. 229—37 R 7 Claims



1. A product made by the process of forming a dry powder box comprising the steps of:

(a) forming a blank having front and back surfaces and a plurality of spaced parallel score lines which fold to form a plurality of panels that come together to form a tube, the bottoms of a first pair of opposing panels of said tube having dependent therefrom a pair of relatively large dust flaps defined in part by score lines at the ends of said first opposing panels, each of said dust flaps having a configuration conforming to the cross section of said tube, the bottoms of a second pair of opposing panels of said tube having dependent therefrom a pair of major flaps defined in part by score lines at the ends of said second opposing panels, each of said major flaps having a configuration extending over the entire width of and less than half of the length of the cross section of said tube;

(b) forming said flaps by cut lines extending from outer ends of said flaps toward said score lines on one side of said blank, said cut lines extending across the thickness of said blank to a point on the opposite side of said blank which is removed from said score line relative to the end of the cut line on said one side, said cut line being cut through said thickness with a taper of about 15° to 40° taken with respect to said surfaces of said blank;

(c) folding said dust flaps into said tube to occupy and stabilize the cross section of the tube, said folded dust flaps overlying each other with at least a bead of glue between them; and

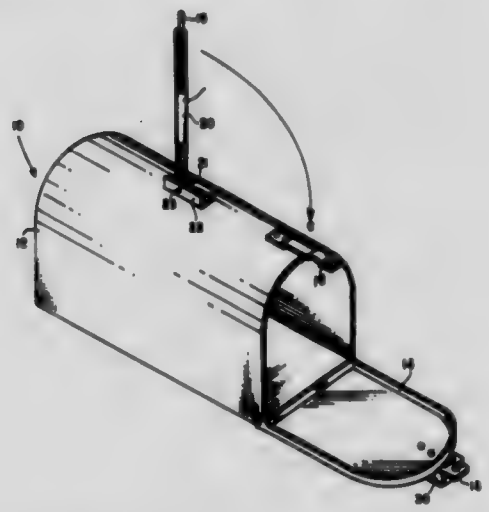
(d) folding said major flaps over said overlying dust flaps, with fields of glue distributed between the major flaps and their confronting dust flap, the tapered cut of said blank material resulting from the cut line of step (b) causing a graduated bulk in thickness for filling any small holes that might otherwise form between said flaps at the roots of said cut lines.

4,491,268

MAILBOX DELIVERY SIGNAL DEVICE

Clifford H. Faulkingham, 3500 Heatherington Rd., Orlando, Fla. 32808

Filed Aug. 22, 1983, Ser. No. 525,014
Int. Cl.³ A47G *29/12*
U.S. Cl. 232—35 5 Claims



1. In a rural mailbox having a door, a signaling device comprising:

a cylindrical signal rod having a proximal end pivotally attached to the top surface of said mailbox and a ball-shaped recess in its distal end;

a spring means attached to said signal rod for biasing said rod toward a vertical position relative to said top surface;

a cylindrical locking pin having a ball-shaped proximal end adapted to snap into said ball-shaped recess of said signal rod, said locking pin adjustable to either a first position coaxial with said signal or to a second right angle position relative to said signal rod; and

a hook member attached to said door for engaging said locking pin when in said first position and said signal rod is disposed in a horizontal position relative to said top surface and said door is closed and adapted to release said locking pin when said door is opened permitting said spring means to move said signal rod to said vertical position.

4,491,269

PARKING LOT FEE BOX

Donald G. Sweazey, 14012 Corliss N., Seattle, Wash. 98133, and Glenn B. Gallagher, Jr., 1202 NW. 199th Pl., Seattle, Wash. 98177

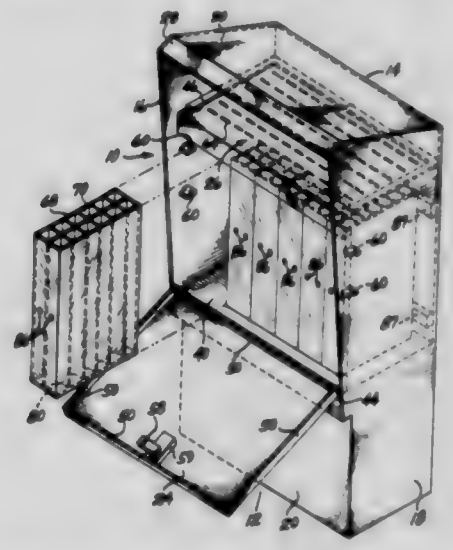
Filed Apr. 26, 1983, Ser. No. 488,736
Int. Cl.³ B65D *91/00*
U.S. Cl. 232—43.2 11 Claims

4. A parking lot fee collection box, comprising:

wall means defining a money receiving and storage chamber, said wall means including a front door openable to provide access into said chamber, a top wall for the chamber including a plurality of money slots, and a bottom for said chamber, said money slots being of a size that paper money needs to be folded in order to be inserted through a slot;

removable money receiving receptacle means in said chamber below said top wall and insertable therein by way of said front door, including a support base which sits down onto the bottom of the chamber, and a plurality of individual compartments, each associated with a slot, each said compartment being vertically aligned with its slot, and each said compartment being vertically elongated;

wherein the upper ends of the compartments are spaced below the money slot carrying top wall at least about three-fourths of an inch, to provide a vertical space between each money slot and the top of the money receiving compartment associated with such slot; and



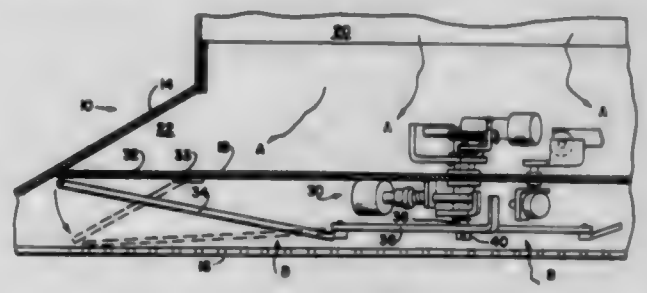
a hood structure which extends over and provides a cover for the money slot carrying top wall.

4,491,270

THERMALLY ACTUATED DIFFUSER

Peter Brand, San Francisco, Calif., assignor to Acutherm, Ltd., Emeryville, Calif.

Filed Jan. 20, 1983, Ser. No. 459,469
Int. Cl.³ F24F *13/10*
U.S. Cl. 236—49 8 Claims



1. In a diffuser of the type for regulating the flow of air from a duct to a room or other space, said diffuser having flow control means for varying the size of an aperture in said diffuser to regulate the flow of air; first sensor actuator means responsive to a first room air temperature and operatively associated with the flow control means for modulating the flow control means when air of one temperature is supplied through the duct; second sensor actuator means responsive to the duct air temperature; wherein the improvement comprising:

said second sensor actuator means for engaging said first sensor actuator means with said flow control means when air of said one temperature is supplied through the duct and for disengaging said first sensor actuator means with said flow control means when air of another temperature is supplied through the duct;

third sensor actuator means responsive to a second room air temperature and operatively associated with the flow control means for modulating the flow control means when air of another temperature is supplied through the duct; and

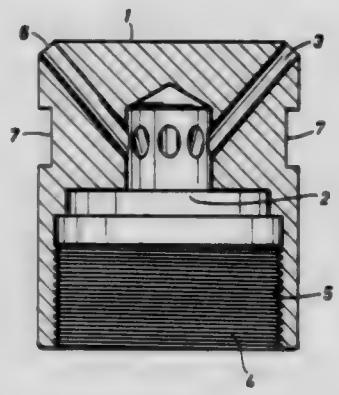
fourth sensor actuator means responsive to the duct air temperature and for engaging said third sensor actuator means with said flow control means when air of said another temperature is supplied through the duct and for disengaging said third sensor actuator means with said flow control means when air of one temperature is supplied through the duct.

4,491,271

PROCESS AND APPARATUS FOR MIXING FLUIDS

Hendrikus J. A. Hasenack, Geldermalsen, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 233,265, Feb. 10, 1981, abandoned.
This application Dec. 20, 1983, Ser. No. 563,880
Int. Cl.[3] B05B 1/14
U.S. Cl. 239—1 7 Claims



1. An internal mix atomizer comprising a member having an internal mixing chamber adapted to receive a liquid and fluid supply, a plurality of interior passages each communicating, at one end thereof, with the mixing chamber and each terminating, at the other end thereof, as an exit port in the surface of the atomizer, the passages being located in the atomizer so that the exit ports are positioned in relation to each other in such manner that the ratio

$$\frac{r_i(0) + r_j(0)}{t_{ij}},$$

where $r_i(0)$ and $r_j(0)$ are jet radii directly after expansion of exit ports i and j, respectively, t_{ij} is the distance between the center of port i and the center of exit port j, is less than about 0.8.

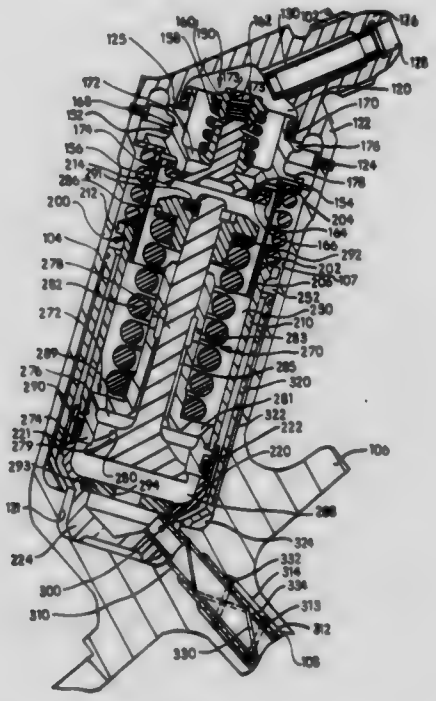
4,491,272

PRESSURE ATOMIZING FUEL INJECTION ASSEMBLY

Jerome R. Bradley, Sterling Heights; Robert M. Halvorsen, Birmingham; Jeffrey B. Hurst, Troy, and Gregory F. Long, Canton, all of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Jan. 27, 1983, Ser. No. 461,407
Int. Cl.[3] F02C 7/22
U.S. Cl. 239—5 37 Claims

1. A fuel nozzle assembly for a gas turbine engine comprising a housing means having fuel inlet means adapted to receive pressurized fuel from a fuel source, means in the housing means providing a secondary fuel chamber and primary fuel chamber downstream from said inlet means for receiving fuel therefrom, a first valve means in the housing means between the fuel inlet means and fuel chamber-providing means operable in response to a given fuel pressure to admit fuel from said inlet means to said secondary fuel chamber and primary fuel chamber, a second valve means in the housing means downstream of said first valve means operable in response to fuel pressure higher than said given fuel pressure to allow fuel flow from the secondary fuel chamber, secondary fuel outlet means in the housing means for receiving fuel from the secondary fuel chamber as allowed by the second valve means, primary fuel outlet means in the housing means for receiving fuel from the primary fuel chamber, and nozzle means on the housing means for receiving primary fuel and secondary fuel from the respective



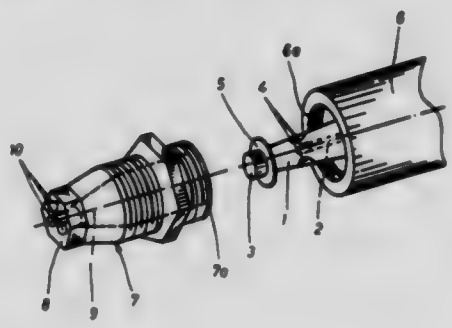
fuel outlet means and introducing same into the engine for combustion.

4,491,273

SNOW GUN

Michael Manhart, Hinterwies, 6764 Lech a/Arlberg, Austria

Filed Sep. 29, 1982, Ser. No. 427,421
Claims priority, application European Pat. Off., Jan. 18, 1982, 8220056.8
Int. Cl.[3] F25C 3/04
U.S. Cl. 239—14 4 Claims

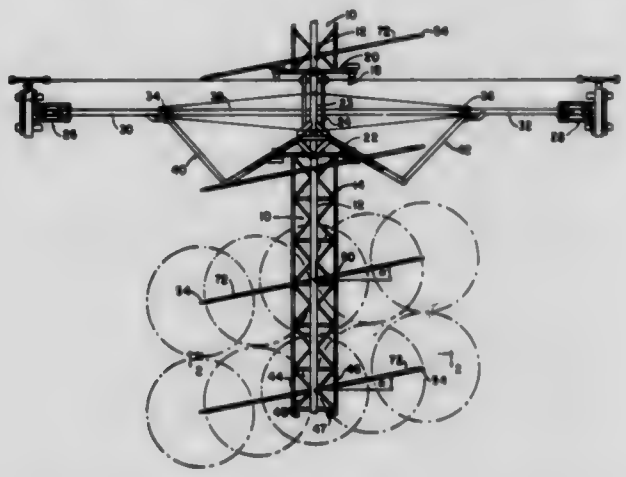


1. A snow gun comprising,
a central compressed-air supply line,
a pressurized-water supply line disposed coaxially with and surrounding said compressed-air supply line,
a spray head attached at one end to said pressurized-water supply line and including an interior space serving as a pre-expansion chamber,
inner nozzles in said compressed-air supply line having central axes intersecting the central axis of said compressed air supply line and forming an acute angle therewith, said inner nozzles communicating with said pre-expansion chamber, and
a perforated end piece attached to the other end of said spray head, bounding said interior space, and including at least three centrosymmetrically disposed discharge nozzles.

4,491,274
LAND IRRIGATION APPARATUS PROVIDING IMPROVED WATER DISTRIBUTION

Allen T. Noble, Boise, Id., assignor to Noble Linear Irrigation, Inc., Boise, Id.

Continuation of Ser. No. 147,351, May 7, 1980, abandoned. This application Nov. 23, 1981, Ser. No. 323,744
Int. Cl.³ B05B 3/18
U.S. Cl. 239—183 18 Claims



1. In a land irrigation system including an elongated structural boom supporting a water distribution pipe above the land to be irrigated, driven means supporting the boom and water distribution pipe for movement over the land to be irrigated, and connector means for connecting the water distribution pipe to a source of water under pressure to be discharged from the water distribution pipe through spray heads during movement of the water distribution pipe over the land, the improvement comprising

a plurality of elongated generally horizontal conduits,

coupling means connecting each of the elongated conduits to the water distribution pipe at spaced intervals along the water distribution pipe and providing a water flow path between the water distribution pipe and each of the elongated conduits,

a plurality of spray heads connected to each elongated conduit along its length and in spaced relation to one another, said spray heads each being adapted to discharge water in a spray pattern to distribute the water over an area of ground having a substantial dimension in a direction parallel to the water distribution pipe,

means mounting the elongated conduits on the structural boom in spaced, generally parallel relation to one another with each elongated conduit being disposed at an acute angle relative to the longitudinal axis of the water distribution pipe, the elongated conduits having their end portions projecting outwardly from the structural boom on each side thereof whereby, upon movement of the water distribution pipe over the land to be irrigated, the spray heads connected to each elongated conduit travel paths above the ground which are offset relative to one another along the longitudinal axis of the water distribution pipe, the spacing of the elongated conduits and their angle relative to the water distribution pipe being such that the area of ground covered by the spray pattern from each spray head overlaps a portion of the areas covered by at least one spray head on an adjacent elongated conduit and at least one spray head on the same elongated conduit.

4,491,275
DISPENSER FOR ROAD VEHICLE

Herbert Holsworth, 1267 Muskingum, Pontiac, Mich. 48054

Filed Jun. 28, 1982, Ser. No. 392,761
Int. Cl.³ A01C 3/06
U.S. Cl. 239—663 10 Claims

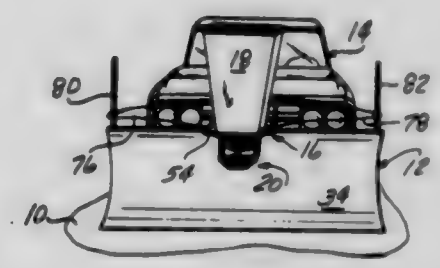
1. In combination with a vehicle equipped with a forward mounted snow plow blade having a concave front surface disposed forward of the vehicle, the improvement comprising:

a road dispenser arrangement for granular material comprising a hopper mounted to the upper edge of said snow plow blade;

said hopper having at least one bottom opening for allowing outflow therefrom;

spreader means mounted to said hopper for directing outflow of road salt from said hopper against said front surface of said snow plow blade;

and means for selectively establishing outflow of road salt from said hopper to said spreader means;



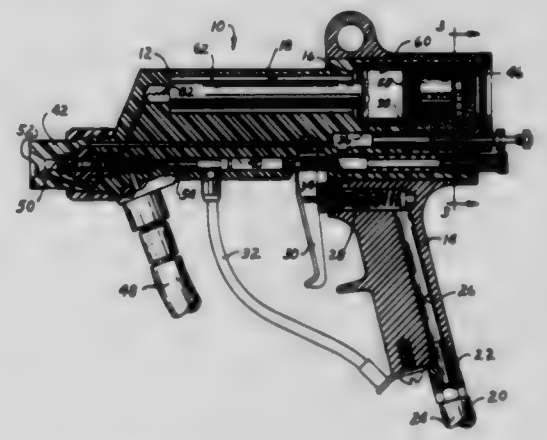
whereby said snow plow blade is tiltable under the selective control of the operator of said vehicle, and wherein said means for controllably establishing outflow from said hopper to said spreader means includes a slidable damper plate slidably mounted beneath said at least one hopper opening, and said damper plate being formed with an opening;

means for causing said damper plate to be moved to bring said damper plate opening into registry with said hopper openings upon tilting movement of said snow plow blade to a predetermined position.

4,491,276
ELECTROSTATIC SPRAY APPARATUS

Clarence C. Reeves, Houston, Tex., assignor to Speeflo Manufacturing Corporation, Houston, Tex.

Filed Jul. 6, 1982, Ser. No. 395,143
Int. Cl.³ B05B 5/02
U.S. Cl. 239—692 17 Claims



1. An electrostatic spray coating apparatus including means for emitting a spray of coating material and electrode means for applying an electric charge to the emitted coating material, and an energy conversion assembly for converting the energy of a fluid under opressure into electrical energy for use in said spray apparatus,

said assembly including a turbine operably connected to a generator for providing an electrical output, said turbine having a rotor adapted to be pneumatially operated by pressurized air delivered to the spray apparatus from a remote supply thereof,

said assembly also including pneumatic drive means and pneumatic brake means cooperatively arranged to accel-

erate said rotor from rest to a predetermined running speed in a predetermined time interval, said pneumatic drive means comprising a first air stream arranged to drive said turbine in a first rotational direction and said pneumatic brake means comprising a second air stream arranged to drive said turbine in an opposite second rotational direction, said streams of air cooperatively accelerating and maintaining the rotation of said rotor in said first direction, said first and second air streams being derived from a common chamber to which pressurized air is delivered at a constant pressure, said common chamber having an annular configuration and extending around said rotor.

4,491,277

METHOD AND APPARATUS FOR RECLAIMING FOUNDRY SAND

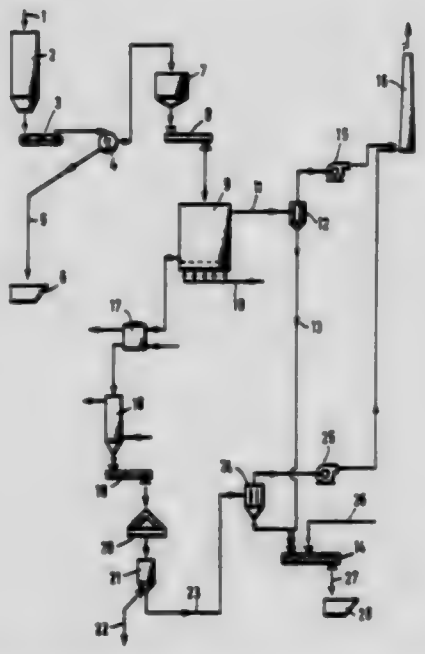
Hans Bauer, Neunkirchen-Seelscheid, and Heinz-Withold Schmitz, Essen, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Continuation of Ser. No. 343,402, Jan. 28, 1982, abandoned. This application Nov. 25, 1983, Ser. No. 554,381

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1981, 3103030

Int. Cl.³ B02C *19/12*

U.S. Cl. 241—5 3 Claims



1. A method for reclaiming foundry sand from foundry sand contaminated with a binder which comprises:

separating ferromagnetic contaminants from the contaminated sand in a magnetic separating zone,

thermally treating the remaining contaminated sand in a fluidized bed at a temperature of at least 870° C. for up to 45 minutes to cause burning off of carbon and embrittlement of binder constituents among the remaining contaminants,

cooling the sand after such thermal treatment,

cleaning the thus treated sand in a counterflow impact jet mill operating at air velocities of from 30 to 50 m/sec to strip solid binder crusts from the surfaces of the sand grains essentially by collisions of said particles with each other, and

sifting the thus cleaned sand to separate relatively coarse, non-comminuted sand grains from finer grained particles of fractured binder crusts.

4,491,278

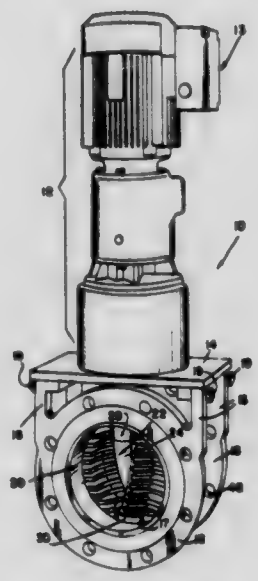
COMMINUTOR FOR INLINE FLOW OF SEWAGE

William B. Galanty, One Argle Ct., Livingston, N.J. 07039

Filed Jan. 30, 1984, Ser. No. 575,306

Int. Cl.³ B02C *23/36*

U.S. Cl. 241—46.06 6 Claims



1. An improved comminutor device for sewage system comprising in combination:

a. a one piece hemispherical cup-like cage member forming a concave surface traversely disposed in a sewage system along a flow path of said system, said cage having a plurality of slotted openings cutting said cage member in planes perpendicular to an axis thereof and said slotted openings being formed by a plurality of spaced-apart arcuate elements along said concave cup-like surface and extending toward a down-stream side of said flow path of said system;

b. said cage member having a stationary circular section with spaced-apart cutter and shredding teeth formed along a peripherical edge thereof as an integral part of said hemispherical cup-like cage, each of said teeth being displsed in alignment with a corresponding end of said arcuate elements of said cage and having individual dimensions along said axis and path of flow which are greater than that of said arcuate elements of the cage;

c. a one piece rotatable member having a plurality of cutting and shredding teeth formed on at least two C-shaped diametrically opposed members having a preselected width and thickness rotatably mounted co-axially with said cup-like cage and disposed perpendicular to the flow of sewage on an upstream side of said flow path, said plurality of teeth on each of said C-shaped rotatable members extending for interengagement with said circular section of spaced-apart cutter and shredding teeth of said cage and for intermeshing with said arcuate elements of said cage; and

d. driving means for rotating said rotatably mounted C-shaped diametrically opposed members about the axis of said cage for interengaging said teeth of said circular section and for sweeping through said plurality of slotted openings of said cage.

4,491,279

PORTABLE ROCK CRUSHING AND CONVEYING SYSTEM

Wallace H. Long, and Ralph Ruggiero, both of Tucson, Ariz., assignors to Duval Corporation, Houston, Tex.

Filed May 18, 1982, Ser. No. 379,512

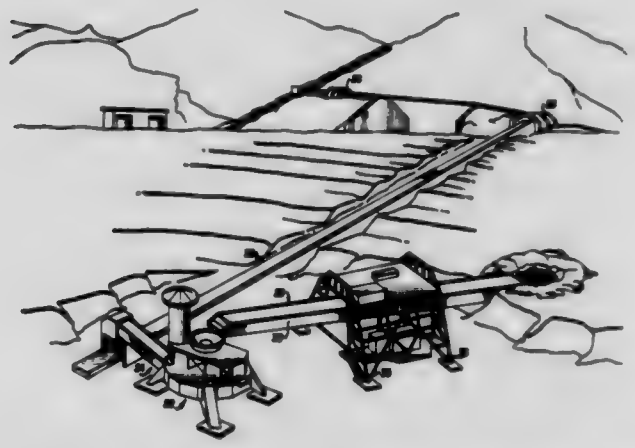
Int. Cl.³ B02C *2/00*

U.S. Cl. 241—101.7 9 Claims

1. A portable crusher for use in an open pit mine and moveable from site to site by a separate transporter vehicle comprising:

a generally toroidal body supported above the ground by at least three legs and spaced above the ground to permit said transporter vehicle to move underneath the body, said body having a central cylindrical cavity housing a gyratory crusher apparatus positioned to receive raw material from above said cavity and discharge crushed material from the bottom of said cavity;

said toroidal body comprising a semimonocoque structure having a steel skeleton of a plurality of steel beams defining an annular upper deck, an annular lower deck, a generally circular circumferential outer wall connecting said upper and lower decks and at least three legs equally spaced about said circumferential outer wall and extending downwardly from said



lower deck and flared radially outwardly so that the lower ends of said legs rest on the ground on a circle of greater diameter than that of said circumferential outer wall; said steel skeleton being covered by an outer skin of steel plates secured to said steel beams so that said plates carry a major part of the load and the toroid walls act as deep beams to transfer load to the legs;

said body having a support ring on the underside of said lower deck for engagement by such a transporter vehicle when being moved;

said body further having hollow spaces between said upper and lower decks and said outer wall and central cavity for housing equipment associated with said crusher.

4,491,280

ROLLER MILL CONSTRUCTION

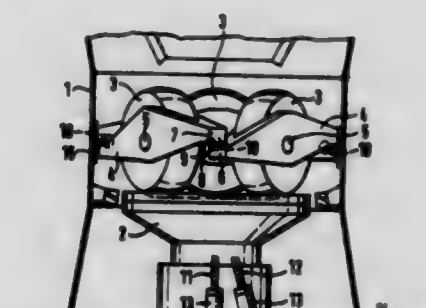
Ottmar Bacharach, Kaiserslatern, and Herbert Schäfer, Vinningen, both of Fed. Rep. of Germany, assignors to Gebr. Pfeiffer AG, Kaiserslauter, Fed. Rep. of Germany

Filed Mar. 29, 1983, Ser. No. 479,957

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1982, 3212724

Int. Cl.³ B02C *15/00*

U.S. Cl. 241—121 **6 Claims**



1. A roller mill comprising:

a grinding plate revolving around a vertical central axis;

a plurality of grinding rollers in rolling grinding contact with said grinding plate;

a roller frame supporting each of said grinding rollers for rotation about a stationary axis in grinding engagement with said grinding plate, with each of said rollers being individually supported on a separate one of said roller frames;

said roller frames comprising projections at both ends thereof constructed to form a connecting joint between adjacent ones of said roller frames and means between adjacent projections for forming a connecting joint between said frames, said connecting joint being structured to enable articulated movement between said roller frames; and

means for generating a grinding pressure at said roller frames, said means for generating being engaged with said roller frames in the area of said joints.

4,491,281

METHOD AND APPARATUS FOR WINDING WIRES

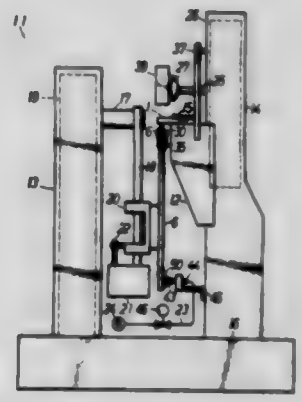
Akira Dosaka, Koganei, Japan, assignor to Ikari Machine Tools Co., Ltd., Tokyo, Japan

Filed Aug. 23, 1983, Ser. No. 525,594

Claims priority, application Japan, Sep. 13, 1982, 57-159295; Apr. 20, 1983, 58-70543; Apr. 20, 1983, 58-70544; Apr. 28, 1983, 58-74106

Int. Cl.³ B65H *81/02*; H01F *41/08*

U.S. Cl. 242—4 R **12 Claims**



1. A method of winding an electric wire around a toroidal core having a hole, comprising the steps of:

(a) guiding an end of the wire from one side of the core closely toward the hole;

(b) developing a vacuum in a suction pipe positioned on an opposite side of the core to create an air stream thereby drawing the wire through said hole from one side to the opposite side of the core;

(c) turning said suction pipe from said opposite side to said one side of said core to transfer the wire in a direction to be wound around the core;

(d) thereafter, positioning the end of the wire on said one side of the core and simultaneously cutting off the end of the wire; and

(e) thereafter, guiding a cut end of the wire from said one side of the core closely toward the hole.

4,491,282

WINDING MACHINE FOR AUTOMATIC SPOOL EXCHANGE

Diethard Hübner, Bordesholm, Fed. Rep. of Germany, assignor to Neumünstersche Maschinen- und Apparatebau Gesellschaft mbH (Neumag), Neumuenster, Fed. Rep. of Germany

Filed Aug. 16, 1982, Ser. No. 408,660

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1981, 3132853

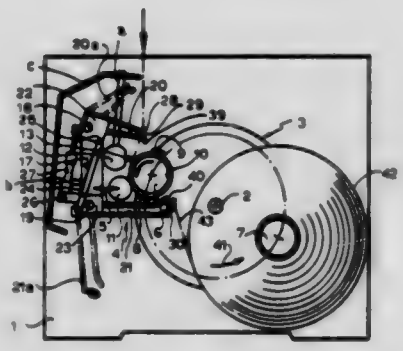
Int. Cl.³ B65H *54/02, 67/04*

U.S. Cl. 242—18 A **5 Claims**

1. A winding machine for automatic spool exchange, comprising

a spool switching element with two alternatively operating clamping pins for receiving spool sleeves;

means defining a knot winding region;
a traverse motion guiding element defining a traverse motion region;
means shiftable during spool exchange to an operational position and including an upper axis-parallel thread guiding member with an abutment in the knot winding region, a lower axis-parallel thread guiding member with a further



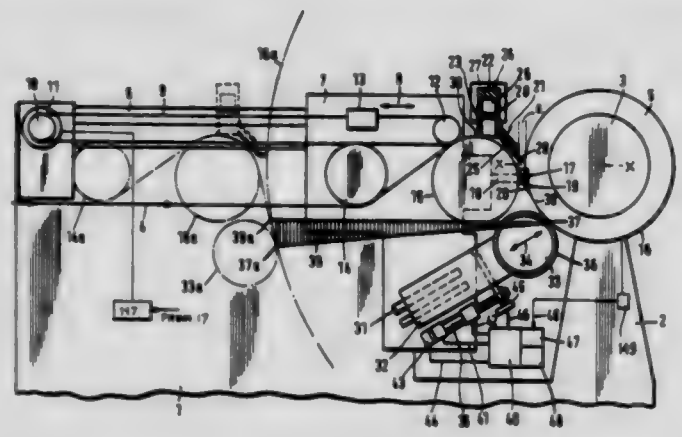
abutment in the traverse motion region, a finger displaceable along said upper guiding member to the vicinity of said first-mentioned abutment, and a further finger displaceable outwardly along said lower thread guiding member to over an end of a sleeve;
means for shifting said shiftable means to the operative position; and
means for displacing said fingers.

4,491,283

APPARATUS FOR CONVOLUTING WEBS OF PAPER OR THE LIKE

Josef Pav; Gerhard Hartwich, both of Krefeld, and Jörg Prey, Tönisvorst, all of Fed. Rep. of Germany, assignors to Kleinewefers GMBH, Krefeld, Fed. Rep. of Germany

Filed Apr. 18, 1983, Ser. No. 485,632
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1982, 3214396
Int. Cl.³ B65H *17/02*
U.S. Cl. 242—67.1 R 33 Claims



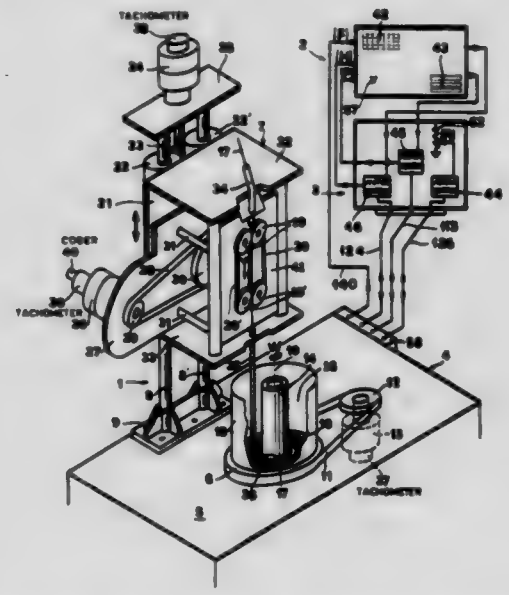
1. Apparatus for convoluting a web of paper or the like, comprising a driven rotary takeup device; means for feeding the web to said takeup device along a predetermined path so that the takeup device converts the running web into a growing roll of neighboring convolutions, said feeding means comprising a distancing device which is adjacent to a predetermined portion of said path and is spaced apart from the outermost convolution of the growing roll on said takeup device, said distancing device being arranged to direct the running web substantially tangentially toward the roll on the takeup device so that the outermost convolution of the roll and the web portion between said distancing device and the roll define a substantially gusset-shaped space; means for moving at least one of said devices with reference to the other of said devices so as to maintain the spacing between said distancing device and the outermost convolution of the roll on said takeup device at an at least substantially constant value; and means for reducing the pressure of air at least at one side of the running web intermediate said distancing device and the outermost convolution of the roll on said takeup device, said pressure reducing means including means for generating suction in said space.

4,491,284

PROCESS AND APPARATUS FOR WINDING AN ELECTRICALLY CONDUCTIVE WIRE INTO AN INDUCTIVE COIL

Miguel Vazquez, and René Bildé, both of Metz, France, assignors to France Transfo (S.A.), Maizieres le Metz, France

Filed Dec. 1, 1982, Ser. No. 446,030
Claims priority, application France, Dec. 1, 1981, 81 22614
Int. Cl.³ B21C *47/12*
U.S. Cl. 242—83 14 Claims



1. An apparatus for winding an insulated electrically conductive wire into a cylindrical coil, comprising:
a first member forming a horizontal supporting surface;
a cylindrical core rising from said supporting surface with a vertical axis;
a cylindrical sleeve on said supporting surface coaxially surrounding said core and defining therewith an annular space centered on said axis;
a tubular guide extending substantially vertically from above into said annular space and terminating in a discharge end disposed above said supporting surface, said discharge end being curved about said axis and having a downwardly inclined outlet about midway between said core and said sleeve;
a second member supporting said guide, said members being relatively vertically displaceable;
a first motor coupled with one of said members for unidirectionally rotating same about said axis at an angular velocity W;
feed means on said second member aligned with an entrance end of said guide and driven by a second motor for continuously advancing a wire at a linear speed V through said guide into said annular space for deposition on said supporting surface on a generally spiral path with contiguous turns to form a succession of mutually coextensive annular layers between said core and said sleeve;
control means coupled with said first motor and said feed means for establishing a ratio V/W proportional to the radius of said turns, said ratio alternately decreasing and increasing progressively over consecutive series of n revolutions of said one of said members where n is the number of wire turns fitting between said core and said sleeve whereby said turns follow one another in a radially outward direction within every other layer and in a radially inward direction within every intervening layer, said control means including a processor programmed to

change the speed of one of said motors after every revolution of said one of said members; and

means including a third motor for relatively vertically displacing said members, said third motor being controlled by said processor to take a step after each nth revolution of said one of said members for raising said discharge end above said supporting surface by an incremental distance sufficient to accommodate an additional layer.

4,491,285

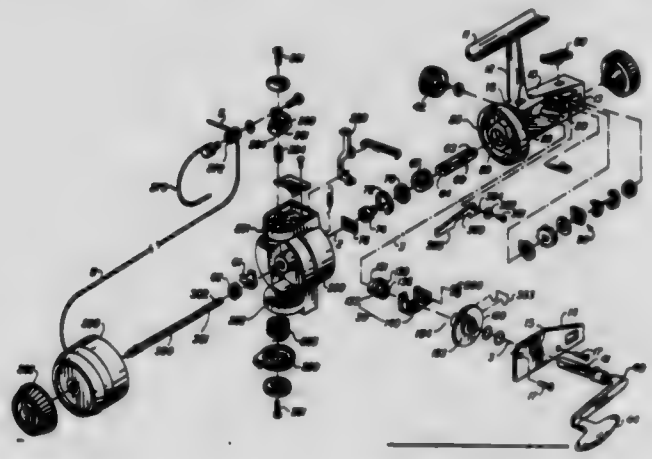
OSCILLATING SYSTEM RETAINING MEANS

Richard R. Councilman, Collinsville, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Division of Ser. No. 84,719, Oct. 15, 1979,. This application Feb. 24, 1983, Ser. No. 469,419

Int. Cl.³ A01K *89/01*

U.S. Cl. 242—84.21 R 7 Claims



1. In a fishing reel having a housing with a front end and a back end, a center shaft mounted on the housing with a back end projecting into the housing, the shaft generally having a diameter "A" with a groove defining an undercut diameter on the shaft located near the back end, the diameter of the undercut being "D" which is smaller than diameter "A" and the width of the undercut groove being "B", the undercut groove having a periphery less than the periphery of the shaft, means for imparting reciprocating motion to the shaft including a reciprocating oscillator slide having a bifurcated fork secured thereto, the fork having first and second lugs with inner walls and a space between the inner walls having a dimension slightly larger than width "B", the lugs have coaxial aligned holes with each hole having a diameter slightly larger than diameter "A", the shaft being slip fitted into the holes in the lugs with the undercut diameter being positioned between the inner walls, an improved means for securing the shaft to the oscillator shaft comprising:

a retainer clip having a base and two integrally formed spaced apart legs extending from the base, each leg having an exterior end, the base and legs having common sides, and defining a hole and a slot separating the legs with the hole near the center of the clip and the slot connecting the hole and the exterior ends, the legs and base being longer than the diameter "A", the hole having a diameter slightly larger than the diameter "D" of the undercut and the slot having a width "F" smaller than the diameter "D", the clip having a thickness defining the distance between the common sides as being slightly less than the width "B" of the undercut groove, the clip made from a material permitting the legs to expand outwardly a sufficient amount to permit positioning the clip in the undercut groove.

4,491,286

TUBE FOR YARN BOBBINS

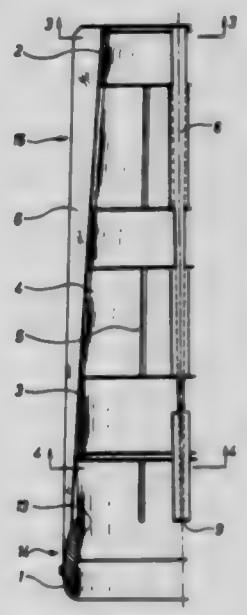
Hans B. Nielsen, Bühlstrasse, CH-8125 Zollikerberg, Switzerland

Filed Apr. 18, 1983, Ser. No. 486,042

Claims priority, application United Kingdom, Apr. 21, 1982, 8211540

Int. Cl.³ B65H *75/20*

U.S. Cl. 242—118.11 5 Claims



1. A tube of plastic for yarn bobbins of the conical type the narrow end of which fits into the broad end and which has a perforated cone surface to carry the yarn during liquid treatment, characterized in having, substantially along one or more generatrices of the cone surface, at least one V-shaped slit extending at least over the major part of the length of the tube, said slit having a pointed end located in the broad end of the tube and having an open end located in the narrow end of the tube.

4,491,287

PUSHBUTTON ACTUATED CASSETTE TAPE TRANSPORT

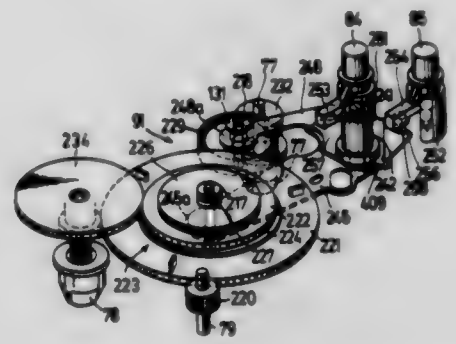
Mitsuru Ida, Koshigaya, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 22, 1981, Ser. No. 333,478

Claims priority, application Japan, Dec. 29, 1980, 55-188031

Int. Cl.³ G11B *15/10*

U.S. Cl. 242—200 11 Claims



1. In a cassette tape recording and/or reproducing apparatus including a substantially rectangular chassis having generally parallel first and second surfaces at its opposed sides, and cassette holding means for operatively positioning a tape cassette against said first surface such that axes of reels within said cassette are normal to said first surface;

a tape transport mechanism comprising reel shafts extending through said chassis from the side of said second surface for engaging respective reels in a tape cassette operatively

positioned against said first surface, and gear transmission means for selectively driving said shafts in accordance with a plurality of operating modes of the apparatus, said gear transmission means consisting of a plurality of gears at the side of said chassis corresponding to said second surface for rotation about respective axes, all of said axes of the gears being normal to said second surface and fixed relative to each other and with respect to said second surface with at least one of said gears being displaceable in the direction of the respective axis for changing from one to another of said modes;

at least one push button each disposed at said side of the chassis corresponding to said second surface and each being manually actuable between extended and depressed positions in a direction normal to said second surface; and

means responsive to actuation of said one push button from said extended position to said depressed position for displacing said one gear in said direction of the respective axis and thereby changing the mode of the apparatus.

4,491,288

AIRCRAFT LANDING WHEEL ROTATING MEANS

Graham R. Sinclair, 18 Marie St., Murarrie, Queensland 4172, Australia

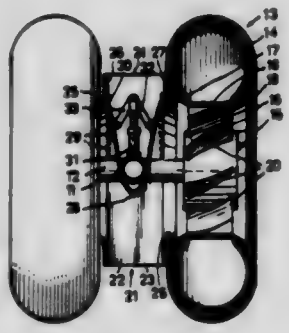
PCT No. PCT/AU82/00130, § 371 Date Jun. 1, 1983, § 102(e) Date Jun. 1, 1983, PCT Pub. No. WO83/01239, PCT Pub. Date Apr. 14, 1983

PCT Filed Aug. 13, 1982, Ser. No. 503,135

Claims priority, application Australia, Oct. 8, 1981, PF1119; Jun. 15, 1982, 84861/82

Int. Cl.³ B64C *25/40*

U.S. Cl. 244—103 S 12 Claims



1. An aircraft landing wheel rotating means including:

a landing wheel (13) rotatably mounted on an undercarriage leg (11); said landing wheel (13) having a plurality of turbine blades (20); and

an airscoop (21) mounted on the undercarriage leg (11) adjacent the landing wheel (13), the airscoop (21) having a forwardly directed inlet (23) and a wheel outlet (25) adapted to direct the airflow through the airscoop (21) to the turbine blades (20) to rotate the landing wheel (13), the airscoop (21) being characterized by:

a rearwardly directed venting outlet (24); and

movable means (29,34) operable to selectively close the venting outlet (24) to direct the airflow through the wheel outlet (25) to the turbine blades (20) and open the venting outlet (24) to at least a portion of the airflow to pass through the venting outlet (24) and bypass the turbine blades (20).

4,491,289

MULTIPLE LOCKING DEVICE INSENSITIVE TO THERMAL VARIATIONS ESPECIALLY APPLICABLE TO SPACE VEHICLES

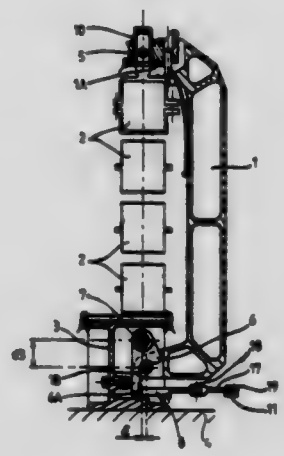
Christian Rina, and Gérard Vezain, both of Mandelieu, France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Jan. 17, 1983, Ser. No. 458,690

Claims priority, application France, Jan. 22, 1982, 82 00962

Int. Cl.³ B64G *1/66, 1/44*

U.S. Cl. 244—158 R 3 Claims



1. A multiple locking device insensitive to thermal variations to ensure temporary locking of the sheaving points for a space vehicle appendix by means of a single sheaving cable which is cut off when it is desired to effect displaying of the appendix, said device comprising at each of said sheaving points:

a sheaving clamp hinged to said appendix and maintained against a foot rigidly secured to the structure of the space vehicle through link means including an element to be locked,

a stop catch hinged to the foot of the sheaving point, said stop catch providing temporary immobilization of the element to be locked at the sheaving point,

an elbow lever hinged to the stop catch on the one hand, and on the other hand, connected to the sheaving cable, and

an elastic link hinged to the foot of the sheaving point at a first hinging point on the one hand and on the other hand to the elbow lever at a second hinging point in such a manner that the elastic link exerts upon the elbow lever a force to balance the holding force exerted therepuon by the sheaving cable,

whereby temporary immobilization of the element to be locked at the sheaving points is ensured through the sheaving cable which through the elbow lever and the elastic link holds the stop catch in its locked position as long as the shearing device for the sheaving cable has not been operated.

4,491,290

TRAIN DEFECT DETECTING AND ENUNCIATING SYSTEM

Robert D. Douglas, 2157 Poinciana Rd., Neptune Beach, Fla. 32233

Continuation of Ser. No. 050,951, Jun. 22, 1979, abandoned. This application Aug. 6, 1982, Ser. No. 406,021

Int. Cl.³ B61L *3/00*; G08B *21/00*

U.S. Cl. 246—169 A 20 Claims

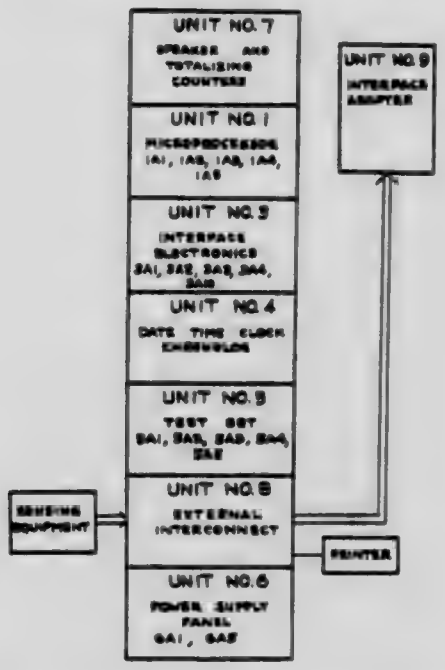
1. A method of detecting hot axle bearings on cars of a train, which comprises the steps of:

(a) obtaining measurements indicative of the heat of the axle bearings on one side of a car of a train,

(b) averaging the two lowest measurements from said axle bearings on said one car side to obtain a first average measurement,

(c) comparing each of the remaining axle bearing measure-

ments on one side of said car with said first average measurement and providing an alarm if any remaining axle bearing measurements on one side of said car exceed said



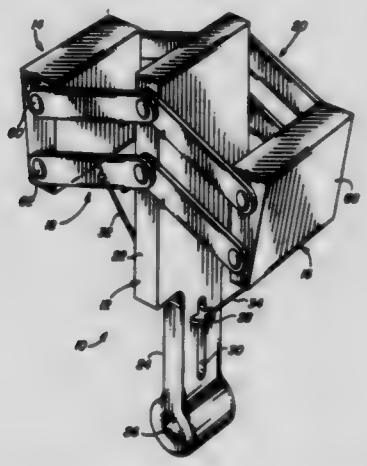
first average measurement by a predetermined amount whereby said axle bearing is classified as being overheated.

4,491,291

CLIMBING AID FOR MOUNTAIN CLIMBERS

Paul W. Ching, 3153 W. Echo La., Phoenix, Ariz. 85021

Filed Feb. 1, 1982, Ser. No. 344,619
Int. Cl.[3] F16M *13/00*
U.S. Cl. 248—1 8 Claims



1. A climbing aid for establishing a removable anchor within a confine, said climbing aid comprising in combination:

(a) a body member;

(b) means for engaging said body member with an element to be supported therefrom;

(c) first and second chock means for contacting opposed surfaces of the confine;

(d) means for biasing said first and second chock means laterally and in opposed directions from said body member to establish frictional contact between said climbing aid and opposed surfaces of the confine;

(e) a first parallelogram linkage for linking said first chock means with said body member and a second parallelogram linkage for linking said second chock means with said body member to urge lateral displacement of said first and second chock means relative to said body member upon application of a force by the element upon said engaging means; and

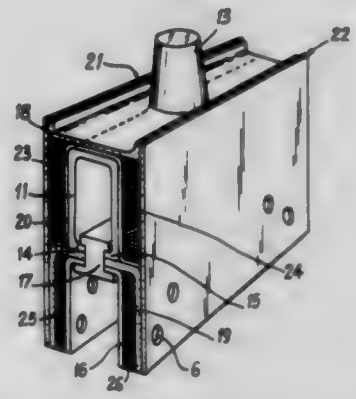
(f) means for displacing said first and second chock means laterally toward said body member to permit withdrawal of said climbing aid from within the confine.

4,491,292

STRUT STRUCTURE FOR SUSPENDING LOADS UNDER AIRCRAFT

Jean-Pierre Mattei, La Varenne, and Pierre F. Courtin, Paris, both of France, assignors to R. Alkan & Cie, France

Division of Ser. No. 175,545, Aug. 5, 1980,. This application Aug. 9, 1983, Ser. No. 521,022
Claims priority, application France, Sep. 8, 1979, 79 20398
Int. Cl.[3] F16M *13/00*
U.S. Cl. 248—1 4 Claims



1. A strut structure for connecting a load carrier device to an aircraft, which comprises:

(a) a horizontal hollow supporting beam comprising a metal hollow longitudinal member disposed within a first U-sectioned longitudinal member made of compound material comprising mineral fibers embedded in a resin forming a setting binder,

(b) a metal connecting member to the aircraft rigid with an upper face of said metal longitudinal member and passing through an upper intermediate portion of said first longitudinal member made of compound material,

(c) a second U-sectioned longitudinal member made of compound material having an intermediate portion rigid with said hollow supporting beam,

(d) metal members each being provided with means for fixing a load carrier device and being rigid with registering portions of said U-sectioned second longitudinal member, and

(e) side plates made of compound material fixed on external portions of said first and second U-sectioned longitudinal members made of compound material,

so that transmission of stress between the load carrier device and the aircraft is performed along two different paths, the one comprising the side plates and the U-sectioned first longitudinal member made of compound material through which passes the metal connecting member while the other comprises said U-sectioned second longitudinal member made of compound material and said metal hollow longitudinal member.

4,491,293

CAN HOLDER

Lilburn E. Tibbs, 3511 E. Rialto Ave., Fresno, Calif. 93726

Filed Sep. 20, 1982, Ser. No. 419,905
Int. Cl.[3] E06C *7/14*
U.S. Cl. 248—211 7 Claims

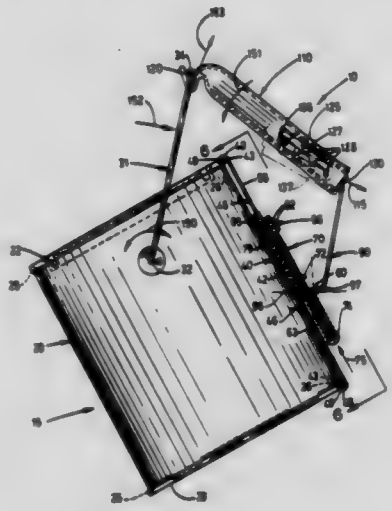
1. A can holder for use with a can having a container, which has an open end and an opposite base end, and having a bail pivotally mounted on the container movable to a position which is opposite of the base end and is in spaced relation to the open end, the holder comprising:

A. a handle having a first end and an opposite second end spaced therefrom,

B. means mounted on the first end for detachably connecting

the handle to the container with the handle disposed in spaced relation thereto,

C. means mounted on the second end for detachably engaging the bail in lifting relation when the bail is in such position comprising a hook which is disposed between the container and the bail and which opens toward the bail when the bail is in such position and wherein the connecting means connects the handle to the container for movement of the hook toward and from said position so that movement of the handle from the container engages the hook with the bail for support of the container by the handle, and wherein the bail is pivotally mounted on the container; wherein said connecting means comprises a clamp releasably attachable to the container and a strut extended between the clamp and such first end of the handle; and wherein the handle includes means for varying selectively the distance between said first end and said second end so that the position of the hook in relation to said first end and the position of the bail when engaged by the hook are correspondingly varied to determine the pivotal relation of the bail and the container.



4,491,294

ADJUSTMENT DEVICE FOR AN OPTICAL WAVEGUIDE

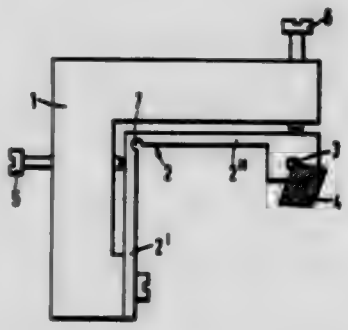
Georg Blume, Backnang, and Ludwig Franke, Murrhardt, both of Fed. Rep. of Germany, assignors to ANT Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

Filed Aug. 11, 1983, Ser. No. 522,391

Claims priority, application European Pat. Off., Aug. 12, 1982, 82107313.7

Int. Cl.[3] G02B *5/172*

U.S. Cl. 248—251 8 Claims



1. An adjustment device for supporting and positioning an optical waveguide end portion, comprising: a supporting frame; a spring element supported by said frame for supporting the waveguide end portion; and means associated with said element for applying pressure thereto in two mutually orthogonal directions perpendicular to the axis of the waveguide end portion for positioning the waveguide end portion in a plane perpendicular to the waveguide end portion axis; wherein said spring element is an L-shaped angle piece having two arms meeting at a vertex, with the end of one said arm remote from said vertex being fastened to said frame, and the end of the other said arm remote from said vertex being arranged to support the waveguide end portion, and said pressure applying means act on each one of said arms.

4,491,295

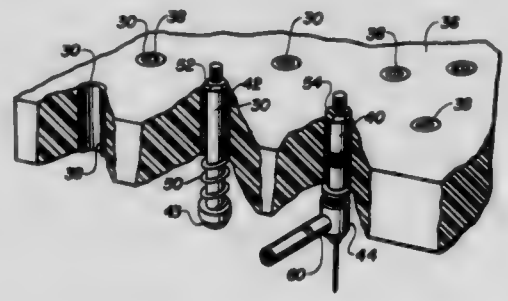
GANG CUTTING TOOL ASSEMBLY AND METHOD OF FORMING SAME

Henry M. Thornton, and John S. Thornton, both of York, Pa., assignors to Ashcombe Products Company, Dover, Pa.

Division of Ser. No. 231,341, Feb. 4, 1981, abandoned. This application Apr. 22, 1983, Ser. No. 487,464

Int. Cl.[3] B29C *11/00*

U.S. Cl. 249—53 R 3 Claims



1. Means for forming a rigid mounting panel of settable material having an irregular pattern of holes comprising one of a set of related patterns and including sleeves integrally embedded in said material to receive and support respectively a plurality of tool-supporting heads adapted to drill a partial irregular pattern of holes in a workpiece requiring an overall irregular pattern of holes, said means comprising in combination:

(a) a diagram sheet indicating said irregular pattern of holes thereon,

(b) a base plate of non-metallic material capable of being penetrated by sharp appendages and having an area at least as large as said diagram sheet and upon which said sheet is mounted upon one surface thereof,

(c) interconnected side mold members positioned edgewise upon said base plate to form a polygon which circumscribes said irregular pattern of holes upon said diagram sheet,

(d) a plurality of plug-like members of uniform diameter having an axially-extending appendage on one end of each member adapted to penetrate said base plate at the center of the indication of each hole on said diagram sheet for firm support by said plate, said members having a size corresponding to objects to be attached to said mounting panel without interference with adjacent objects,

(e) a plurality of similar cylindrical sleeves of uniform length and diameter, the inner diameter of said sleeves being complementary to the outer diameter of said plug-like members and slidably disposed thereon for perpendicular support of said sleeves upon said base plate, thereby forming a mold within which a slurry of said settable material may be poured to a desired depth relative to the height of said sleeves and surrounding the same for fixation of the same in situ in said material when the same has set in cured condition, whereby a rigid mounting panel is formed having an irregular pattern comprising one of a set of related patterns which constitute means to drill an overall irregular pattern of lined holes adapted to receive shanks of similar tool-supporting heads.

4,491,296

DIAPHRAGM DRIVE FOR CONTROLLING THE OPERATION OF A GAS BURNER

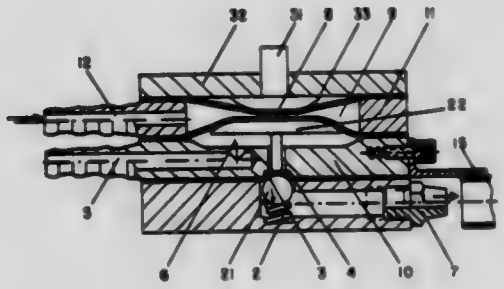
Hermann T. Frank, Fliederstrasse 4, 6229 Niederwalluf, Fed. Rep. of Germany

Continuation of Ser. No. 256,256, Apr. 22, 1981, abandoned. This application Aug. 3, 1983, Ser. No. 519,900

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1980, 3031134

Int. Cl.³ F16K *31/122*

U.S. Cl. 251—14 8 Claims



1. A diaphragm drive for controlling the operation of a valve manually or automatically in response to a control pressure signal, comprising housing means (10, 32) forming a first fixed volume chamber, a second variable volume pressure chamber (9) in said housing means, said pressure chamber (9) comprising a spacer ring plate (11) defining the circumference of the second variable volume pressure chamber (9), a first flexible membrane (8) and a second flexible membrane (33) held in said housing means and spaced from each other by said spacer ring so that the first and second membranes directly face each other and define side walls of said second variable volume pressure chamber, control pressure inlet means (12, 37) extending into said second variable volume pressure chamber (9) for admitting a valve opening pressure signal into the second variable volume pressure chamber between the first and second membranes, manual actuating means (31, 38) operatively extending through said housing means into said first chamber for direct operative contact with one of said membranes (33) opposite one side of said second variable volume pressure chamber (9), said manual actuating means having a shape effectively reducing the volume of said second variable volume pressure chamber (9) between said first and second membranes, valve means (2, 21, 22; 1, 13, 14) in said housing means also extending into said first chamber for direct operative contact with the other of said membranes (8) opposite the other side of said second variable volume pressure chamber (9), said valve means (13, 22) also having a shape effectively reducing the volume of said second variable volume pressure chamber (9) between said first and second membranes, inlet port means (5) and outlet port means (7, 35) in said housing means, said first chamber forming conduit means (6) in said housing means for interconnecting said inlet port means and said outlet port means through said valve means, said valve means being located in said conduit means (6) for operation by a pressure signal in said second variable volume pressure chamber or by actuation of said manual actuating means which is effective through said first and second membranes, said membranes being so arranged that they move in opposite directions relative to each other when a control pressure signal is introduced into said second variable volume pressure chamber (9) and when a control pressure is released from said second variable volume pressure chamber (9).

4,491,297

THREE WAY COUPLING

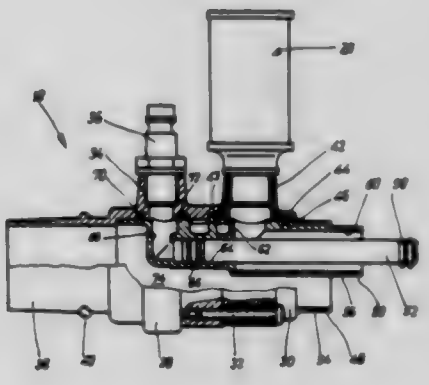
Peter Maier, Gerokstrasse 1, 7311 Neidlingen, Teck, and Dieter Tschacher, Hohenzollernstrasse 4, 7313 Reichenbach, both of Fed. Rep. of Germany

Filed Jun. 4, 1982, Ser. No. 385,244

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1981, 8116897[U]

Int. Cl.³ F16L *37/28*; B24B *5/00*

U.S. Cl. 251—149.1 9 Claims



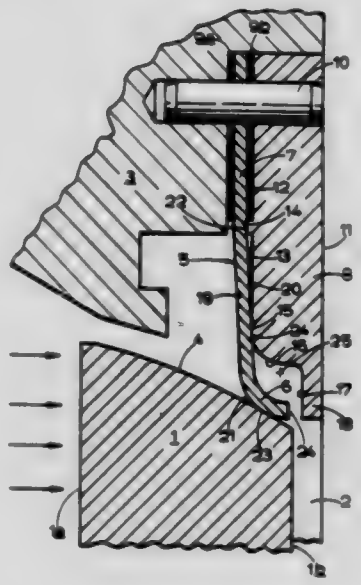
1. An apparatus adapted to be connected to an air-powered, hand-held grinding machine which produces grinding waste for simultaneously creating connections between the grinding machine and a compressed air source which delivers pressurized air to a pneumatic drive mechanism in the grinding machine, between the grinding machine and discharge-air removal means which carries exhaust air from the pneumatic drive mechanism, and between the grinding machine and a suction mechanism for drawing off the grinding waste, comprising an adapter having a housing which, at one end, has annular first, second and third quick-connection parts which are axially parallel and nested, and which respectively communicate with first, second and third channels provided in said adapter housing, said first and second quick-connection parts being the radially inner parts and said first and second channels each having an elbow portion, said elbow portions of said first and second channels being offset in an axial direction with respect to one another and respectively terminating in first and second connection members which project outwardly from said adapter housing transversely with respect to said axial direction, wherein said third channel extends approximately rectilinearly through said adapter housing and terminates in a third connection member which projects in said axial direction from said adapter housing, wherein said first quick-connection part is arranged coaxially within said second quick-connection part and said second quick-connection part is arranged eccentrically in and is near a peripheral wall section of said third quick-connection part; and including a hose arrangement which has first, second and third flexible hoses which are nested and are each coupled at one end to respective fastening connection parts of a coupling member, said fastening connection parts each having a radially facing sealing surface which is adapted to sealingly slidably engage a radially facing sealing surface provided on a respective one of said quick-connection parts when said adapter and said hose arrangement are in an operatively coupled relationship, and said coupling member having locking means which can cooperate with counter-locking means provided on one of said quick-connection parts for releasably maintaining said adapter and said hose arrangement in said operatively coupled relationship.

4,491,298

BUTTERFLY VALVE

David C. Beauchamp, Near Studley, and Philip J. Burton, Great Barr, both of England, assignors to Charles Winn (Valves) Limited, Birmingham, England

Filed Sep. 9, 1982, Ser. No. 416,169
Claims priority, application United Kingdom, Sep. 11, 1981, 8127582
Int. Cl.³ F16K 1/22
U.S. Cl. 251—306 3 Claims



1. A butterfly valve comprising a valve body provided with a fluid flow passage, a valve disc pivotally mounted in the passage for rotation about an axis extending substantially transversely of the passage, and an annular seal assembly carried by the body and encircling the fluid flow passage, said disc having a seal engaging surface which sealingly engages with the seal assembly in the closed position of the disc to close the flow passage, said seal engaging surface tapering radially inwardly of the disc from the front to the rear of the disc, said seal assembly comprising a resilient metal ring which in transverse cross-section comprises a radially inwardly extending arm, the radially outer end of the arm being clamped to the valve body and the radially inner end of the arm presenting a convex surface for engagement by the seal engaging surface of the disc, at least when the metal ring is operative to provide a seal, and a rigid support surface rigidly connected with said valve body, said metal ring being arranged such that for rearward deflection of said disc from the normal closed position of said disc the unclamped portion of said arm initially pivots about a first fulcrum point, but then an intermediate portion of said arm engages with said support surface which provides a second fulcrum point, spaced radially inwardly of said first fulcrum point, for further deflection of said radially inner end of said arm in the rearward direction, and the arrangement being such that the point of contact of said convex surface with the disc is located in a rearward direction of the disc from said first fulcrum point.

4,491,299

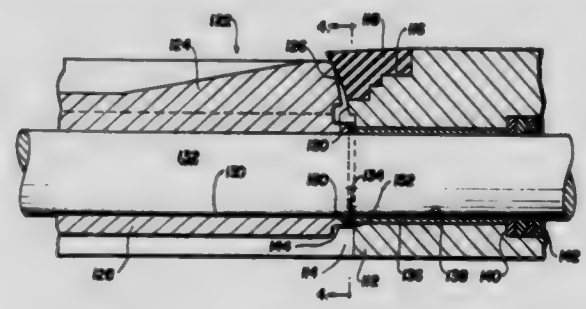
EXTENDED HUB VALVE CLOSURE MEMBER

Anthony C. Summers, St. Cloud, Minn., assignor to General Signal Corporation, Stamford, Conn.

Filed Sep. 3, 1982, Ser. No. 414,869
Int. Cl.³ F16K 1/22
U.S. Cl. 251—306 5 Claims

1. In a rotary valve having a body with a flow passage, an annular circumferential recess in said body for receiving a valve seat, said annular circumferential recess includes a lip extending into said flow passage, a bore in said body whose axis is transverse to the axis of said flow passage, a closure member in said flow passage, a bore in said closure member, a shaft in said bores for rotatably mounting said closure member to said body, a circumferential sealing region on said closure member for forming a seal with a valve seat in said annular circumferential recess, a locator means about said shaft extending between said closure member and said valve body for locating said closure member in said flow passage along the axis of said shaft, the improvement comprising:

a cylindrical hub on said closure member about said bore and spaced from said closure member and extending radially



from a point less than the radius of said closure member to a point greater than the radius of said closure member, the space between said extended portion of said hub and said closure member receives a portion of said lip when said closure member is rotated;

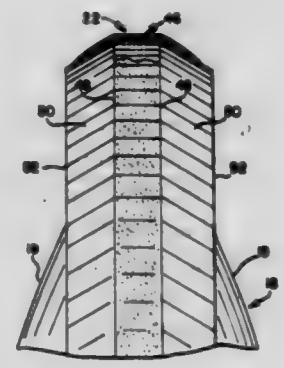
the length of said locator means along said shaft axis being substantially reduced.

4,491,300

VALVE WITH IMPROVED SEALING STRUCTURE

A. Kenneth Wilson, Aurora, and Ronald E. Barker, Somonauk, both of Ill., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Nov. 27, 1981, Ser. No. 325,102
Int. Cl.³ F16K 1/22
U.S. Cl. 251—368 4 Claims



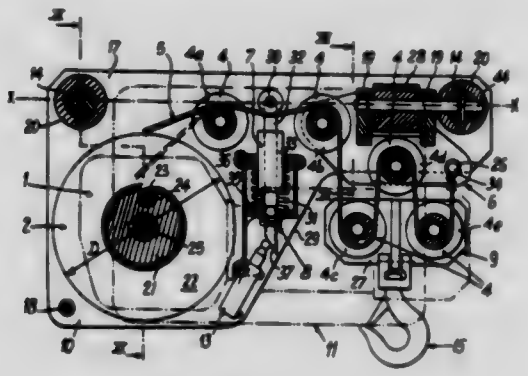
1. A valve comprising a cast metal valve body, a fluid passage in said valve body, a cast metal valve closure member in said body for movement from an open position permitting flow through said fluid passage to a closed position preventing flow through said passage, a first mating surface on said valve body within said passage and a second mating surface on said valve member forming a seal with said first mating surface in said closed position of said valve member, a resilient member mounted on one of said first or second mating surfaces, and a metallic powder composition bonded as a layer of substantially uniform thickness of between about 0.005 inch to 0.020 inch on the other of said first or second mating surfaces to provide a smooth, non-porous overlay having wear and corrosion properties, wherein said metallic powder composition includes, by weight, about 20% chromium and about 70% nickel.

4,491,301

TACKLES

Auguste Péndola, Paris, France, assignor to Etudes Constructions Appareils Levage, Garges les Gonesse, France

Filed Mar. 11, 1983, Ser. No. 474,513
Int. Cl.³ B66D *1/38, 1/56, 1/58, 3/08*
U.S. Cl. 254—285 8 Claims



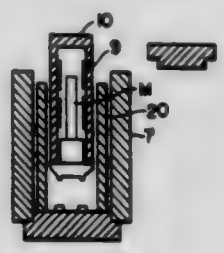
1. A tackle comprising:
a frame;
a drum pulley including a drum;
rotary driving means for driving said drum pulley;
a pulley system including an upper pulley block attached to said frame, a lower pulley block, and at least one upper pulley mounted on said upper pulley block and at least one lower pulley mounted to said lower pulley block;
a load carrier attached to said lower pulley block;
a flat and flexible line which suspends said lower pulley block from said upper pulley block, said line passing around said pulley system and being attached at one end to said drum and at the other end to one of said drum, said upper pulley block, and said lower pulley block;
a mounting means for mounting said upper pulley block to said frame such that said upper pulley block is freely pivotable about a horizontal axis and such that the upper portion of the line receiving groove of said at least one upper pulley is substantially tangent to the horizontal pivot axis of said mounting means; and
wherein said pulley system further includes a frame pulley which is mounted to said frame between said drum and said at least one upper pulley, said frame pulley having a line receiving groove portion which is substantially tangent to the horizontal pivot axis of said mounting means.

4,491,302

HOT ISOSTATIC PRESSING APPARATUS

Akira Asari, Osaka; Yoichi Inoue, Hyogo, and Takahiko Ishii, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Nov. 2, 1983, Ser. No. 548,095
Claims priority, application Japan, Nov. 6, 1982, 57-168476[U]
Int. Cl.³ F27B *17/00*
U.S. Cl. 266—87 3 Claims



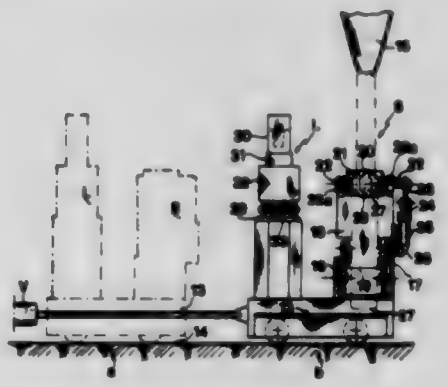
1. A hot isostatic pressing apparatus comprising:
a pressure vessel which includes an upright and pressure-resistant cylinder with upper and lower lids, respectively, hermetically fitted over upper and lower openings of the cylinder;
a heater surrounding a space which is located centrally in the cylinder and adapted to receive therein an object to be treated;
a heat-insulating layer interposed between the heater and the inner wall of the cylinder; and
means for supplying a treatment gas so as to subject the object to hot isostatic pressing treatment in the space; and
pressure- and temperature-controlling means, wherein said heat-insulating layer further comprises at least inner and outer layers, wherein the inner layer has both the space for receiving the object and the heater positioned therein and is loadable in and unloadable from the pressure vessel together with the space for receiving the object and the heater, while maintaining the space in a state hermetically isolated from a surrounding atmosphere, with said outer layer remaining within the pressure vessel.

4,491,303

LOADING METHOD AND INSTALLATION FOR A METAL ALLOY FOUNDING FURNACE TO SUPPLY FOUNDRY MOLDS

Rio Bellocci, Pont-a-Mousson, and Joël Pamart, Chalon, both of France, assignors to Pont-a-Mousson S.A., Nancy, France

Filed Sep. 22, 1983, Ser. No. 534,867
Claims priority, application France, Sep. 28, 1982, 82 16427
Int. Cl.³ B66C *17/08*
U.S. Cl. 266—114 9 Claims



1. A loader for a founding furnace, comprising:
transfer carrier (13) which is mobile in a direction perpendicular to the axis (XX) of solid and liquid load introduction through a loading orifice (3) of said furnace (1);
a liquid loading device (L) with a channel (31) for introducing the liquid load mounted on said carrier parallel with said axis; and
a solid loading device (S) with a channel (20) for introducing the solid load through said orifice, mounted on said carrier parallel and to the side of said liquid loading device (L), wherein each of said channels (31, 20) is mobile in a translational motion that is parallel to said axis.

4,491,304

FLUID-FILLED ENGINE MOUNT DEVICE

Toshihiko Kakimoto, Tokyo; Keizo Konishi, Inuyama; Teruo Yonehama, Komaki, and Takao Yamamoto, Iwakura, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

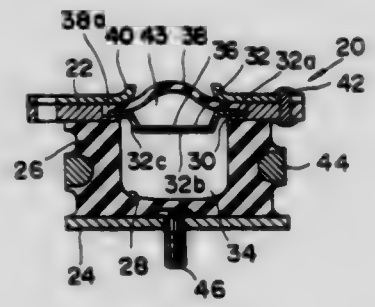
Filed Apr. 9, 1982, Ser. No. 366,938
Claims priority, application Japan, Apr. 15, 1981, 56-56755
Int. Cl.³ F16M *5/00*; F16F *15/04*; B60G *11/62*
U.S. Cl. 267—140.1 4 Claims

1. An engine mount device comprising:
first and second base plate members which are spaced from each other and connected to a power unit side and a vehicle body side, respectively;
a block made of elastic material and having a cavity, said

block being interposed between and secured to said first and second base plate members;

a partition plate member having an orifice, said partition plate member defining a fluid chamber between it and the wall surface of said elastic block cavity;

a diaphragm member affixed to said one of said first and second base plate members and defining an auxiliary chamber between it and said partition plate member, said auxiliary chamber being in communication with said fluid chamber though said partition plate member orifice, at least a part of said fluid and auxiliary chambers being filled with a fluid;



a rigid ring disposed around the intermediate section of said elastic block restricting the radial expansion of said elastic block; and

dynamic damper means including a vibration system constituted by said elastic block and said rigid ring, the natural frequency of said vibration system being so set as to make the resonance vibration of said vibration system have a predetermined frequency, the natural frequency of said vibration system being set at a value expressed by the following equations:

$$f = \frac{1}{2\pi}\sqrt{\frac{kg}{W}}$$

and additionally,

$$50\ \text{Hz} \leqq f \leqq 400\ \text{Hz}$$

where "W" is the weight of said rigid ring; "k" is the spring constant of said elastic block in the axial direction in which said elastic block expands and contracts in response to an input vibration; and "g" is gravitational aceeleration.

4,491,305

AUTOMOBILE DOLLY

Charles J. Walters, 65850 Hartway Rd., Romeo, Mich. 48065

Continuation-in-part of Ser. No. 222,581, Jan. 5, 1981, Pat. No. 4,383,681. This application Aug. 27, 1982, Ser. No. 412,082

Int. Cl.³ B66F *5/04*

U.S. Cl. 269—17 5 Claims

1. An automobile dolly for supporting the front end of a vehicle comprising:

a frame member;

a front wheel;

a pair of spaced rear wheels both spaced from the front wheel;

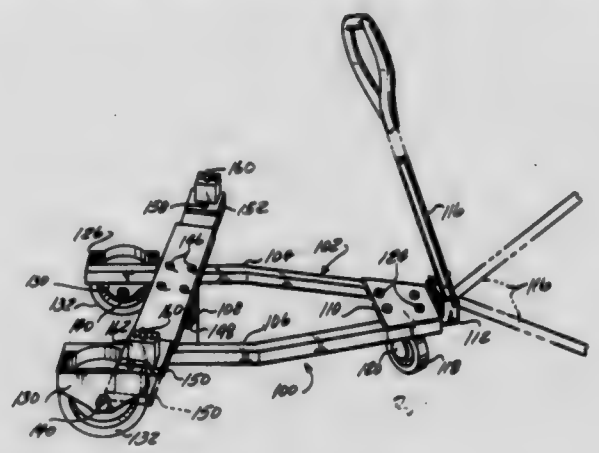
means for pivotally mounting the front and rear wheels to said frame member to permit movement of said frame member;

handle means secured to said frame member to control the movement of said frame member;

a first cross member secured to said frame member between said front and rear wheels but in close proximity to said rear wheels;

a second cross member pivotally carried by said first cross member for rotational movement about a vertical axis; and

A pair of vertical support members telescopically received in the opposite ends of said second cross member to permit alignment of said vertical support members with a predetermined location on the frame of the vehicle to be supported by said dolly, alignment being had by the telescopic engagement of said vertical support members with said second cross member and the pivotable movement of said second cross member with respect to said frame member.



4,491,306

HOLDING CURVED WORKPIECES

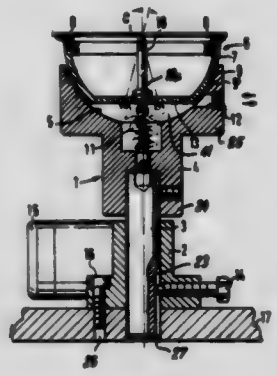
Helmut Eickhorst, Varel, Fed. Rep. of Germany, assignor to Vereinigte Flugtechnische Werke GmbH, Bremen, Fed. Rep. of Germany

Filed Jun. 28, 1982, Ser. No. 393,058

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1981, 3126720

Int. Cl.³ B23B *31/30*

U.S. Cl. 269—21 10 Claims



1. A positioning and holding element for workpieces, having a base and a head part, the base provided for fastening to a stand, frame, table or the like, the head having a concave calotta shaped spherical surface the improvement comprising:

a convex member seated in said concave surface, having a rim portion for engaging the surface of a workpiece and defining a plane of such engagement, the member being hollow for defining a plenum chamber;

the concave and convex surfaces being configured so that upon tilting of the convex member in said concave surface a central point in said plane remains invarient; and

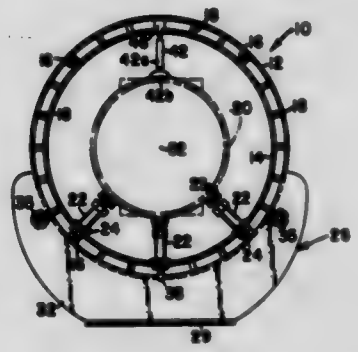
means for applying high or lower pressure to the plenum chamber.

4,491,307

ROTATABLE WORKPIECE HOLDING APPARATUS

Dennis B. Ellefson, 1516 8th Ave. NW., East Grand Forks, Minn. 56721

Filed Aug. 30, 1982, Ser. No. 412,933
Int. Cl.[3] B23K *37/04*; B23Q *1/04*
U.S. Cl. 269—55 3 Claims



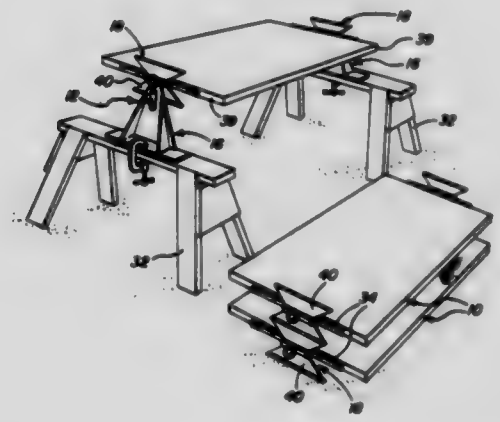
1. An apparatus for holding a workpiece comprising:
a ground-engaging base;
an assembly rotatably supported by said base, said assembly having an axis of rotation and including first and second outer rings each of the same diameter, said rings being spaced apart longitudinally along said axis, first and second inner hoops each secured coaxially within a respective outer ring and each having a diameter less than said respective outer ring diameter;
means for securing a workpiece substantially within said assembly; and
wherein said securing means includes at least one adjustable jack mechanism, said jack mechanism having a base with a top side and a bottom side, a pair of spaced apart leg members extending from said base bottom side, and a telescoping member extending from said top side, said telescoping member being radially adjustable with respect to said assembly and having a free end adapted for contact with the workpiece, said leg members being designed and constructed to engage a portion of one of said inner hoops therebetween.

4,491,308

DOOR FINISHING SUPPORT STRUCTURE

Robert N. Walton, and Ralph C. Pinto, both of P.O. Box 564, Big Pine, Calif. 93513

Filed Nov. 3, 1982, Ser. No. 438,911
Int. Cl.[3] B23Q *1/04*
U.S. Cl. 269—70 1 Claim



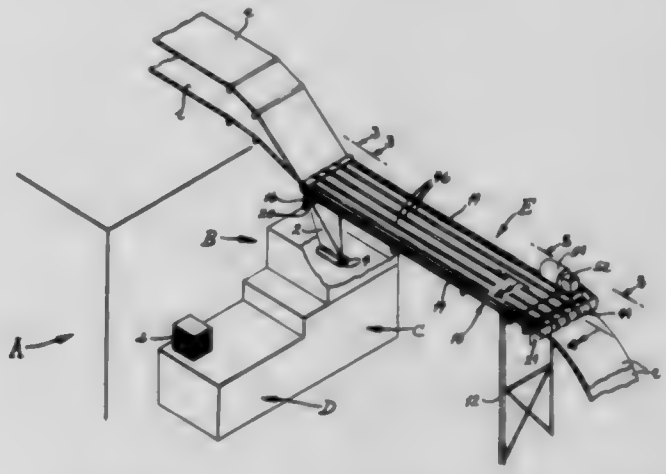
1. A pair of support structures for supporting a panel member from opposite marginal edges thereof, said support structures each including an elongated member defining a central area adapted to abut, extend along and be removably anchored to one marginal edge of a panel member, said elongated members each including first and second means defining first and second remote marginal portions generally paralleling each other and extending longitudinally of the elongated member with said marginal portions spaced on opposite sides of said central area, one of said means defining ridges extending along said first marginal portions of said elongated members and facing outwardly of the latter way from the second marginal portions thereof and said second means defining troughs extending along said second marginal portions of the elongated members opening outwardly of the latter away from said first marginal portions, the ridges of said pair of support structures being receivable in troughs of a second pair of support structures anchored to remote edges of a second panel member, whereby said panel members may be supported relative to each other in generally horizontal spaced apart and stacked relation, a pair of horizontally spaced apart opposing stands, said stands including upper and lower ends, said lower ends of said stands including means for stationary support from a horizontal support surface, the upper end of said stands including means defining upwardly opening notches formed therein, said elongated members including mid-length oppositely outwardly projecting shank portions disposed normal to said elongated members and downwardly received and journalled in said notches, at least one of said shank portions including a laterally enlarged outer end portion, said outer end portion defining angularly displaced generally radially outwardly opening notches formed therein, said stand supporting said one shank portion including upwardly facing and downwardly retractable detent means seatingly engageable in a selected notch of the outer end portion when said selected notch is disposed lowermost.

4,491,309

CONVEYOR FOR DIRECTING RIBBONS AWAY FROM A PRINTING PRESS OPERATING AT WALK SPEED

Robert A. Beckley, Mount Vernon, Ill., assignor to World Color Press, Inc., Effingham, Ill.

Filed Apr. 29, 1983, Ser. No. 490,140
Int. Cl.[3] B41F *13/26*; B65G *37/00*
U.S. Cl. 270—20.1 19 Claims



1. In combination with a printing press having means for advancing a ribbon of paper, onto which a printed impression has been applied, through a path along which exists means for cutting the ribbon of paper into individual sheets, said means for cutting the ribbon tending to operate more efficiently when the ribbon travels at relatively high operating speeds than when it travels at a much slower start-up speed, the improvement comprising: a diverting conveyor having one end located along the path for receiving the ribbon before it reaches the means for cutting the ribbon of paper and for directing the ribbon to and discharging it at a location remote from the press, whereby the ribbon may be diverted from means for cutting when traveling at the start-up speed.

4,491,310

ADJUSTABLE FOLDING APPARATUS

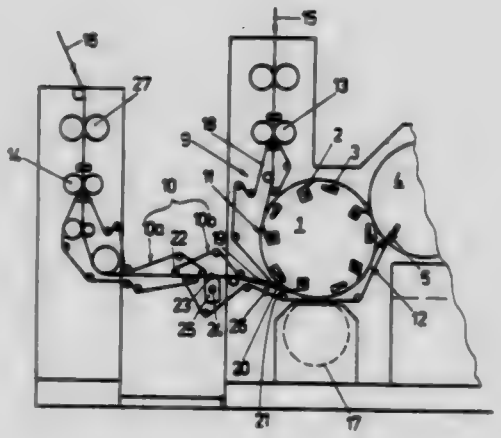
Roland Reffert, Frankenthal, Fed. Rep. of Germany, assignor to Albert-Frankenthal AG, Frankenthal, Fed. Rep. of Germany

Filed Jan. 12, 1984, Ser. No. 570,267

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1983, 3302036

Int. Cl.³ B42C *1/04*

U.S. Cl. 270—49 19 Claims



1. An adjustable folding apparatus for the manufacture of products such as booklets having an outer covering and an inner portion, from an outer covering web and an inner portion web, comprising:

(a) a collecting cylinder;

(b) a first band guidance surrounding a rear peripheral segment in the direction of rotation of said collecting cylinder, cooperating therewith in a slip-free manner, said first band guidance transferring to said collecting cylinder for collection thereon sheet segments forming the inner portion of said booklet, successive rotations of said collecting cylinder collecting in a superimposed manner said inner portion sheet segments;

(c) a second band guidance surrounding a front peripheral segment in the direction of rotation of said collecting cylinder, said front peripheral segment being successively positioned with respect to said rear peripheral segment, said second band guidance cooperating with said peripheral segment in a slip-free manner and transferring to said collecting cylinder sheet segments forming at least one outer covering of said booklet at intervals corresponding to the collection process;

(d) controlled holding members in the form of flat grippers disposed on said collecting cylinder for gripping the leading edges of sheet segments transferred to said collecting cylinder, said holding members being activated at each rotation of said collecting cylinder within the region of said front peripheral segment; and

(e) a folding flap cylinder associated with said collecting cylinder and disposed in front of said front and rear peripheral segments in the direction of rotation of said collecting cylinder and adapted to have transferred from said collecting cylinder superimposed inner portion sheet segments and outer covering sheet segment;

said controlled holding members being inactivated following the completed collection process after passing said folding flap cylinder thus allowing the transfer of the superimposed inner portion sheet segments and outer covering sheet segment from said collecting cylinder to said folding flap cylinder.

4,491,311

APPARATUS FOR OPENING FOLDED SHEETS USING ACCELERATING AND DEACCELERATING SPREADER ELEMENTS

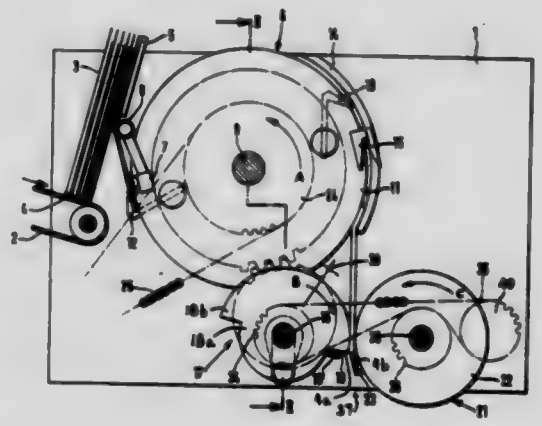
Alfred Glauzmann, Reiden, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

Filed Sep. 13, 1982, Ser. No. 417,526

Claims priority, application Switzerland, Sep. 22, 1981, 6101/81

Int. Cl.³ B65H *39/02*

U.S. Cl. 270—54 11 Claims



1. Apparatus for manipulating folded sheets of the type having a back and two front edges, comprising a source of supply of folded sheets; withdrawing conveyor means arranged to advance successive sheets from said source into a predetermined path wherein the back of a sheet trails the front edges thereof; a pair of spreading elements rotatable in opposite directions and flanking said path, each of said spreading elements having gripping means arranged to engage the respective front edges of successive sheets in predetermined first angular positions of said spreading elements and to move the thus engaged front edges away from one another while advancing the corresponding sheet along said path, and to release the respective front edges in predetermined second angular positions of said spreading elements; and drive means for rotating said spreading elements at a plurality of different peripheral speeds during each revolution of said spreading elements, said speeds including a first range of increasing speeds and a second range of decreasing speeds and the speeds within each of said ranges including speeds above and speeds below a predetermined average peripheral speed, said spreading elements assuming said second angular positions when their peripheral speeds are at least approximately within said second range.

4,491,312

AUTOMATIC FEEDER-LOADER FOR CUT SHEET PAPER

William F. Voecks, Jr., Winter Park, Fla., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 14, 1982, Ser. No. 378,486

Int. Cl.³ B65H *1/08*

U.S. Cl. 271—127 7 Claims

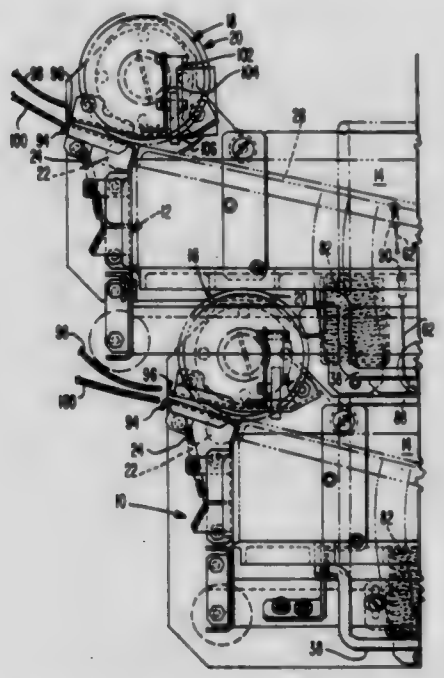
1. Automatic feeder-loader apparatus for cut sheet items comprising:

a sheet item tray pivotally movable from a load position in which said tray is normally empty to a feed position in which said tray is full and wherein the top most sheet item is positioned at the nip of a feeding device;

biasing means in contact with said tray for biasing said tray upwardly from the load to the feed position;

over-center means coupled to said item tray movable between two stable semi-fixed positions and including means biasing said over center means into one or the other of said fixed positions; and

an operably movable handle interengaging and coupling said tray and said over center means alternatively for blocking



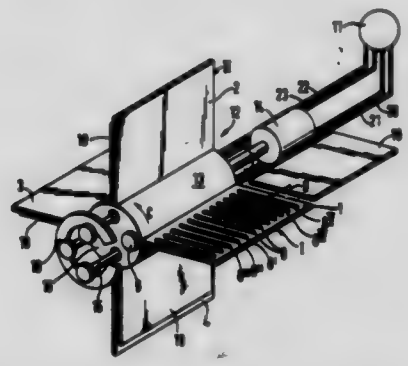
access to said tray when in said feed position and for unblocking access to said tray when in said load position.

4,491,313

SUCTION DEVICE FOR HOLDING PLATES

Klaus-Peter Schoen, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 27, 1982, Ser. No. 402,262
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1981, 3129899; Sep. 26, 1981, 3138404
Int. Cl.³ B65H *29/24, 9/02*
U.S. Cl. 271—194 **17 Claims**



1. A suction device for securely holding plates in a processing position by sub-atmospheric pressure and for transporting the plates through a plurality of processing stations, comprising:

a turnstile arrangement comprising four suction tables which are located in pairs in two mutually perpendicular planes and which extend outwardly from the periphery of a central hub part, wherein each of said four suction tables comprises a plurality of suction slots on the surface thereof;

a vacuum source;

means, including a plurality of suction chambers connected to said suction slots by means of suction passages wherein each of said suction tables has a corresponding suction chamber, for providing a sub-atmospheric pressure through said suction chambers to said suction slots in such a manner that said sub-atmospheric pressure originates with the center slots and progresses in a successive manner to the outer edge slots, in order to provide sufficient pressure to completely lay flat the plates being processed, and wherein each of said suction chambers further comprises a piston which is shiftable from a starting position in said chamber, at which no vacuum is introduced, in a direction away from said pressure source to a final limiting position;

means for shifting each of said pistons between said starting and final positions; and

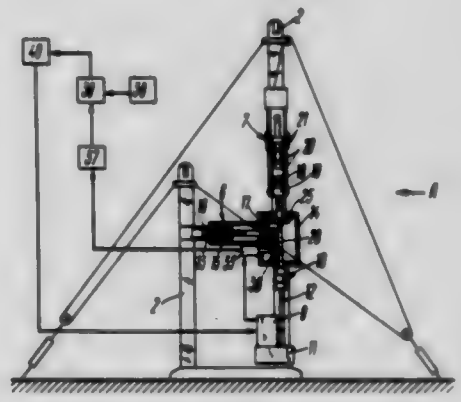
a stepping motor connected to said hub part for rotating said turnstile arrangement through 90° steps, said rotation occurring when said piston reaches said final limiting position.

4,491,314

UNEVEN BARS

Alexandr D. Belyavsky; Gennady M. Borozdinov; Vitaly M. Vasiliev; Viktor I. Kalognomos; Nikolai A. Komov; Gennady A. Pavlov; Evgeny L. Persits; July M. Sergienko; Jury A. Svirin, and Boris V. Titov, all of Moscow, U.S.S.R., assignors to Nauchno-Issledovatelsky I Kostruktorsky Institut, Moscow, U.S.S.R.

Filed Jan. 13; 1983, Ser. No. 457,671
Claims priority, application U.S.S.R., Jan. 13, 1982, 3392651
Int. Cl.³ A63B *3/00*
U.S. Cl. 272—63 **4 Claims**



1. Uneven bars, comprising:

two bases;

two parallel handrails;

two pairs of uneven uprights, each of said pairs of uneven uprights being pivotally attached at their lower ends to one of said bases and both pairs carrying said handrails at the upper ends of said uprights;

a pair of tensioning cables bracing the upper ends of one of said pairs of uprights;

a cable tension automatic control device for each pair of said uneven uprights;

a handrail spacing adjuster connected between the uprights of each pair of uneven uprights and linked mechanically with said cable tension automatic control device of the corresponding pair of uneven uprights;

a hand drive crank axially displaceable with respect to each of said handrail spacing adjusters;

means permitting said axial displacement of each said crank for enabling connection of each crank to the respective handrail spacing adjuster;

an electric motor for driving each of said handrail spacing adjusters;

a reduction gear mechanically connected between each electric motor of said cable and the tension automatic control device of the corresponding pair of uneven uprights; and

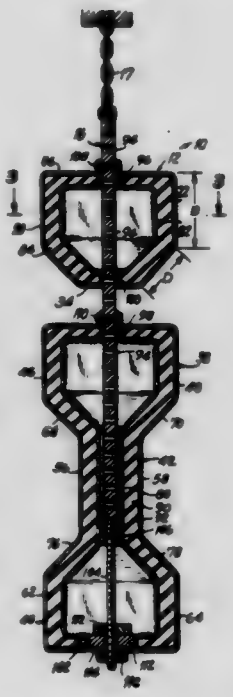
an interlocking device for preventing simultaneous operation of the hand drive crank and the electric motor of each pair of uneven uprights, each interlocking device being engaged with said hand drive crank and coupled to a kinematic train interconnecting said reduction gear of said electric motor and said cable tension automatic control device of each pair of said uneven uprights.

4,491,315

TRAINING BAG FOR BOXING AND THE LIKE

Jeffrey Dye, 451 Howe Ave., Passaic, N.J. 07055

Filed Sep. 22, 1982, Ser. No. 421,254
Int. Cl.³ A63B 69/00
U.S. Cl. 272—78 17 Claims



1. Training bag-type apparatus for use by boxers and participants in other martial arts, comprising:

means for supporting at least two separate anatomical sections, said support means including elongated rod means;

said at least two anatomical sections mounted on and supported by said support means, said anatomical sections including a section representative of the head of an opponent and a section representative of the body of an opponent;

means for mounting said head and body sections on said rod means so as to be selectively adjustable in position with respect thereto, said mounting means including collar means provided on each of said head and body sections through which said rod means is adapted to pass; and

wherein a series of bores are formed through said rod means along the length thereof and wherein openings are formed in said collar means adapted to be aligned with respective ones of said bores and fastener means adapted to be inserted through said aligned openings and bores for securing said head and body sections in position on said rod means.

4,491,316

APPARATUS FOR PRACTICING DEFENSE ARTS

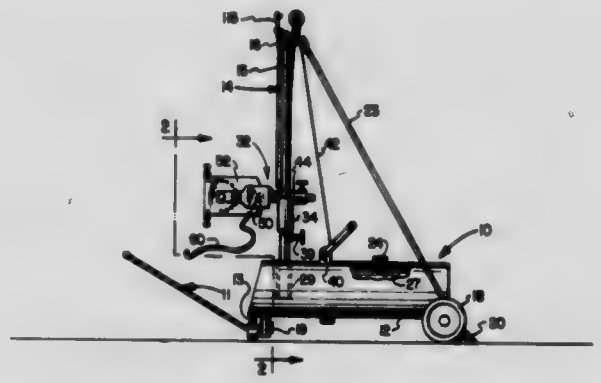
John B. Prince, 118 Tanglewood Loop, Mabank, Tex. 75147

Filed Dec. 17, 1982, Ser. No. 450,670
Int. Cl.³ A63B 69/00
U.S. Cl. 272—78 19 Claims

1. Apparatus for practicing a defense art of striking a swift blow with an appendage such as a hand or foot and comprising:

a support frame including a portion comprising generally vertically upstanding mast means; and

universal bracket means mounted on said mast means and adapted to be adjustably positioned on said mast means, said bracket means including a traverse member mounted on said mast means and including means for selectively securing said bracket means to said mast means at a predetermined vertical position thereon, a first yoke member adapted to be selectively rotatably positioned on said traverse member about a first generally horizontal axis, means for locking said first yoke member in a predetermined position on said traverse member, a second yoke member mounted on said first yoke member and rotatable about an axis generally perpendicular to said first axis and the longitudinal axis of said mast means, and means for releasably locking said second yoke member with respect to said first yoke member, said second yoke member including opposed arms and means for supporting an article in such a way that said article may be broken by striking a blow through said article between said arms of said second yoke member.

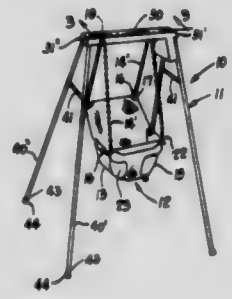


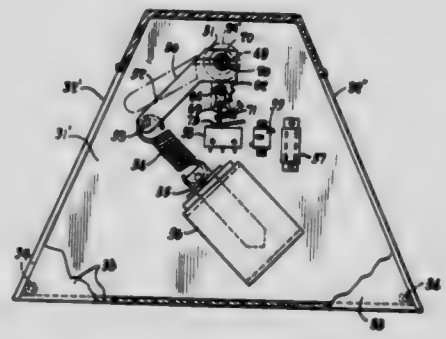
4,491,317

ELECTRICALLY POWERED SWING FOR INFANT

Arun K. Bansal, 8215 Harding, Skokie, Ill. 60076

Filed Jun. 16, 1982, Ser. No. 388,750
Int. Cl.³ A63G 9/16
U.S. Cl. 272—86 8 Claims





1. In an electrically powered device for reciprocably swinging an infant in a pendulum motion, the improvement comprising,

(a) support shaft means to which an infant-support means or 'seat' is removably attached;

(b) support frame means comprising housing means in which said support shaft means is housed, and support legs for supporting said housing means attached thereto;

(c) relatively rigid hanger means connecting said seat to said support shaft means for positive to-and-fro oscillation of said seat;

(d) bearing means in said housing means in which bearing means said support shaft means is rotatably held;

(e) an elongated power arm fixedly disposed to said support shaft means, said power arm including an extension thereof;

(f) solenoid means including a reciprocable plunger, said solenoid being fixedly mounted relative to said housing means;

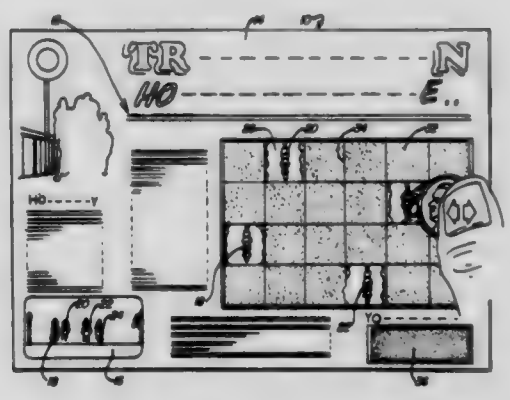
(g) extensible spring means drivingly interconnecting said power arm and said plunger;
(h) switch means, actuatable by said power arm, to provide current intermittently to said solenoid; and,
(i) a source of electric current to be supplied to said solenoid at a voltage no greater than about 24 volts.

4,491,318
VARIABLE SPEED BALANCE OR TEETER BOARD
Amiel W. Francke, 2839 29th St. NW., Washington, D.C. 20015
Filed Sep. 30, 1982, Ser. No. 429,028
Int. Cl.³ A63B *23/04*
U.S. Cl. 272—146 **14 Claims**



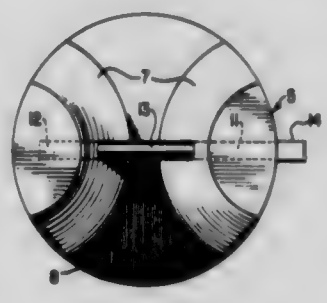
1. A balance board comprising:
(a) a platform of rigid sheet material;
(b) a fulcrum member secured to one face of said platform spaced a substantial distance from the periphery thereof and engaged with a supporting surface and adapted to permit parallel orientation of said platform with said supporting surface during use of the balance board, and,
(c) damping means completely surrounding said fulcrum member disposed between said platform and the supporting surface, said damping means being in constant engagement with the supporting surface and substantially coextensive with said one face of the platform and extending substantially to the periphery thereof for controlling the speed of tilting of the platform when weight is unevenly distributed thereon.

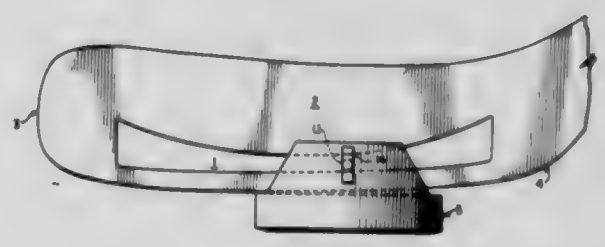
4,491,319
SKILL GAME CARD DEVICE
Edward D. Nelson, 1801 Pheasant Trail, Inverness, Ill. 60067
Filed Oct. 14, 1983, Ser. No. 541,977
Int. Cl.³ B42D *15/00*; A63F *9/18*
U.S. Cl. 273—1 R **17 Claims**



1. A skill game card device providing an apparatus for a game of skill for a player comprising; a substantially flat supporting sheet, a first indicia on the flat supporting sheet, said first indicia depicting a plurality of figures arranged in a given relationship as viewed in a given plane, a first layer of removable opaque coating material covering the first indicia to hide from view of a player the first indicia, a second indicia on the flat supporting sheet, said second indicia depicting the relative position of the figures depicted in the first indicia as viewed in a plane other than the plane of the first indicia, a second layer of removable opaque coating material covering the second indicia to hide from view of a player the second indicia, and means cooperative with the second layer of removable opaque coating material to distinguish areas of said second layer of removable opaque coating material and having separate indicia of separate figures under selected areas, whereby a player has an opportunity to select areas of the second layer of removable opaque coating material for removal to expose selected portions of the second indicia.

4,491,320
HOCKEY PRACTICE DEVICE
David G. Smith, Saskatoon, Canada, assignor to Wetzikon Holdings Ltd., Calgary, Canada
Filed Dec. 6, 1983, Ser. No. 558,464
Int. Cl.³ A63B *69/00, 59/12*
U.S. Cl. 273—1 B **23 Claims**





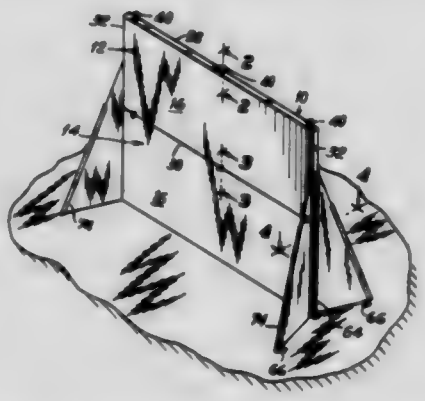
1. A hockey practice device which comprises puck means having a groove in an upper surface thereof for receiving a hockey stick blade and locating means for maintaining said blade in location within said groove with lost motion between the puck means and the blade.

5. A hockey practice device which comprises:
(a) a hockey stick blade having an open slot along the length of said blade;
(b) a disk member having a groove on an upper surface thereof for receiving said blade; and
(c) pin means located in said disk member and traversing said groove, said pin means having a smaller diameter than the width of said slot and passing through said slot thereby connecting the disk member to the blade with lost motion therebetween.

4,491,321
PLAYING WALL
James Veenema, One Hale Ct., Huntington, N.Y. 11743, assignor to Howard Hammer, New City; George McFadden, Middle Village and James Veenema, Huntington, all of, N.Y.
Filed Sep. 30, 1982, Ser. No. 428,699
Int. Cl.³ A63B *61/00*
U.S. Cl. 273—29 A **5 Claims**

1. An improved substantially vertical playing wall comprising at least one playing panel comprising two outer playing surfaces, two support panels affixed to inner surfaces of respective outer playing surfaces, two inner support panels affixed to inner surfaces of respective support panels, and a support core affixed between said inner support panels; U-shaped pultrusions having channels and being positioned around the periphery of said playing panel and having side surfaces affixed to said inner support panels; tube means positioned in said chan-

nels of said U-shaped pultrusions and extending along vertical side edges of said playing panel; and, support fins affixed to



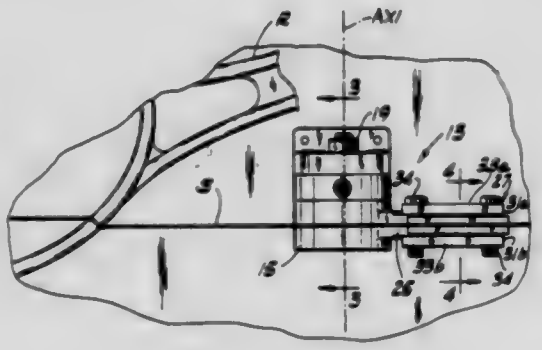
said tube means and extending at an angle to the plane of the playing panel.

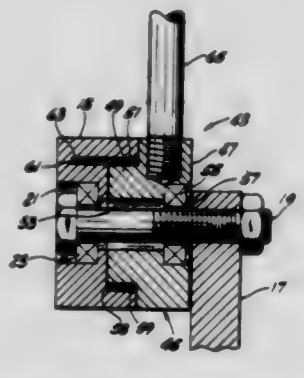
4,491,322

TENSIONING APPARATUS FOR A RACKET-STRINGING MACHINE

Karl J. Heilman, P.O. Box 2906, St. Louis, Mo. 63132

Filed Jul. 11, 1983, Ser. No. 512,584
Int. Cl.[3] A63B *51/14*
U.S. Cl. 273—73 A 14 Claims





8. Tensioning apparatus for a racket-stringing machine of the type comprising a base and means on the base for holding the head of a racket in a generally horizontal plane and in fixed position with respect to the base, said tensioning apparatus comprising:

a generally cylindric member adapted to be mounted on the base adjacent said holding means for rotation on a generally horizontal axis;

means on the cylindric member for gripping said string;

means for rotating the cylindric member on said axis when said gripping means is gripping the string thereby to pull the string to a predetermined tension;

said rotating means comprising a one way clutch means adapted for rotating the cylindric member on said axis in one direction but not the opposite direction, said clutch means being adapted for the attachment thereto of a lever having a tensioning weight thereon, said weight being adapted for causing the lever to swing downwardly to rotate the clutch means and the cylindric member in said one direction to a position in which the lever is either generally horizontal, indicating that the string is at said predetermined tension, or below horizontal, indicating that the string is at less than said predetermined tension, whereupon the lever is adapted to be swung upwardly to rotate the clutch means in said opposite direction, with the cylindric member being held stationary as the clutch means is so rotated, to a position sufficiently above horizontal that when the lever is released the tensioning weight will cause the lever to swing downwardly to rotate the clutch means and the cylindric member in said one direction to a position in which the lever is generally horizontal indicating that the string is at said predetermined tension.

4,491,323

PENDULUM PUTTER

Stanley S. Kozub, 6559 W. Maple Ave., Geneva, Ohio 44041

Filed Mar. 5, 1984, Ser. No. 586,132
Int. Cl.[3] A63B *53/14*
U.S. Cl. 273—81 D 9 Claims



1. A pendulum putter including an elongated upstanding shank having upper and lower ends, a golf club putter head carried by said lower end, said upper end including a disc-shaped terminal end disposed with its center axis generally normal to the longitudinal center axis of said shank and including opposite axial end faces facing in opposite directions disposed at generally right angles relative to said center axis, said putter head comprising an elongated generally horizontal head member with a major portion of the length thereof projecting endwise outwardly of one side of said shank, one of said end faces facing outwardly of said one side of said shank, said end faces defining central areas thereof adapted to be guidingly clamped between the thumb and an opposing finger area of one hand of a golfer preparing to perform a putting stroke and gripping a lower portion of the upper end of the shank with his other hand, said central area defining bearing areas engaged by said thumb and finger area about which said lower end and head are swingable.

4,491,324

ELECTRONIC FIGHTING SPORT GAME APPARATUS

Takao Yoshida, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Sep. 24, 1982, Ser. No. 422,962
Claims priority, application Japan, Oct. 7, 1981, 56/159780
Int. Cl.[3] A63F *9/00*
U.S. Cl. 273—85 G 23 Claims

1. An electronic fighting sport game apparatus, comprising: displaying means including an attack display portion in

which opposing fighting display figures appear to attack each other;

driving means connected to said displaying means for selectively supplying a drive signal to said fighting display figures;

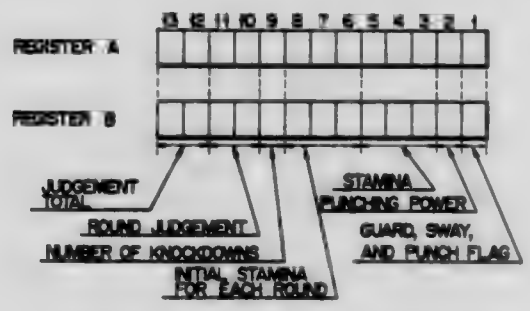
display data storing means connected to said driving means for storing display data to selectively display said fighting display figures and for supplying corresponding display data to said driving means;

key input means including at least one attack key for specifying an attack for at least one of said fighting display figures displayed on said displaying means;

display data producing means connected to said key input means and said display data storing means for producing the display data for said at least one of said fighting display figures in accordance with operation of said at least one attack key and for supplying the display data to said display data storing means;

attack success determining means connected to said display data storing means for receiving the display data of said fighting display figures which is stored in said display data storing means for determining which fighting display figure succeeds to deliver a blow;

stamina data storing means for storing initial stamina data and current stamina data for said fighting display figures;



stamina data operating means connected to said stamina data storing means and said attack success determining means for reading out from said storing means the current stamina data of one of said fighting display figures when attacked by another of said fighting display figures and when said attack success determining means determines that the attack is successful, wherein said stamina data operating means decrements the read out stamina data by a predetermined amount and restores into said stamina data storing means stamina data corresponding to a decreased count; and

winner determining means connected to said stamina data storing means for receiving the stamina data of said fighting display figures which is stored in said stamina data storing means to determine a winner in accordance with predetermined conditions;

wherein said stamina data storing means is arranged to store attack power data, and said stamina data operating means includes means for calculating the attack power data in accordance with the stamina data of each of said fighting display figures and means for decreasing stamina data of one of said fighting display figures which is attacked by a predetermined amount on the basis of the attack power data of the other of the attacking fighting display figures when said attack success determining means determines a successful attack.

4,491,325

GAME CONTROL APPARATUS

Thomas Bersheim, 5816 S. Washtenaw, Chicago, Ill. 60629

Filed Jan. 26, 1983, Ser. No. 462,093
Int. Cl.[3] A63F *9/22*; G05G *9/00*; H01H *19/08, 3/04*
U.S. Cl. 273—148 B 53 Claims

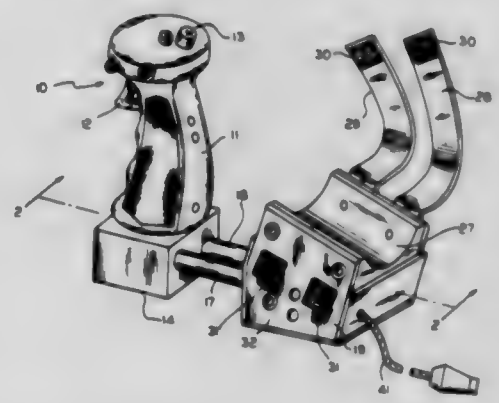
1. Apparatus for controlling electrical signals, said apparatus comprising:

housing means having a top;

means to releasably secure said housing means to a user's arm;

handle assembly means, shaped and positioned to be manipulable by said user's hand when said housing means is secured to said user's arm;

means connecting said handle assembly means and said housing means;



means enabling movement of said handle assembly means with respect to said housing means;

means to transmit said electrical signals to and from said apparatus; and

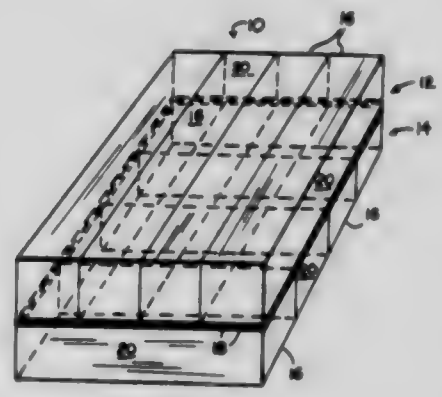
means to control said signals responsive to the movement of said handle assembly means.

4,491,326

PUZZLE HAVING POLARIZED STACKABLE COMPONENTS

Donald P. Halsey, III, 1348 Middleton Ct., Los Altos, Calif. 94022

Filed Mar. 24, 1983, Ser. No. 478,466
Int. Cl.[3] A63F *9/12*
U.S. Cl. 273—157 A 20 Claims



17. A puzzle assembly comprising:

a first stackable component, including at least one activated area, each activated area being arrayed along a planar surface thereof, said activated area being divided into two or more polarized zones arranged along a linear axis, said polarized zones being polarized with respect to visual light in either of two perpendicular directions; and

one or more additional stackable components, compatibly stackable with the first stackable component and apparently physically and visually interchangeable with said first component, each additional component including an activated area having polarized zones of the same size and shape as those of the first component and similarly aligned along a linear axis, the arrangement of polarized zones in said activated areas of at least some of the additional components being distinguishable from the arrangement of polarized zones on the first component such that when the activated areas of such components are aligned at least some of the window areas formed by juxtaposed polarized

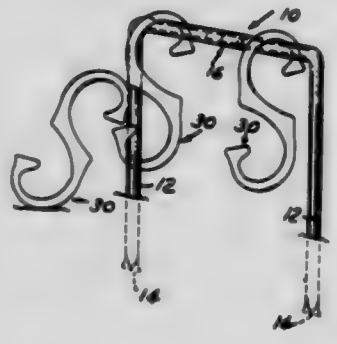
zones are opaque to visible light, where each of said stackable components can be rotated end-for-end around a central point along said linear axis.

4,491,327

GAME WITH THROWING PIECE

Leycester W. Morris, 3208 W. Webster, Royal Oak, Mich. 48072

Filed Sep. 2, 1983, Ser. No. 529,157
Int. Cl.[3] A63B *71/02*
U.S. Cl. 273—343 3 Claims



1. A game which comprises in combination
(a) a U-shaped wicket having a support to locate the wicket as an inverted U above the ground with upright legs and a horizontal bight as a cross-bar, and
(b) a throwing piece to be cast at an upright wicket comprising an S-shaped generally symmetrical member,
(c) the S-shaped throwing piece having a cross member extending essentially transverse of the S between the loops and ending in a corner formation.

2. In a game which utilizes a U-shaped wicket as an inverted U above the ground with upright legs and a horizontal bight as a cross-bar, and a throwing piece to be cast at the upright wicket comprising an S-shaped, generally symmetrical member, that improvement in which the throwing piece has a central axis passing through the center of two symmetrical loops, the loops being formed on each side of a central cross-member which is angled to said central axis, the inside of each loop being composed of a continuously changing, blended curve with a series of ensmalling radii to the end of the loop, which end is directed toward said axis.

4,491,328

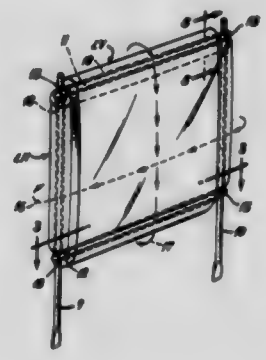
TARGET HAVING SHIFTABLY MOVABLE TARGET STRUCTURE

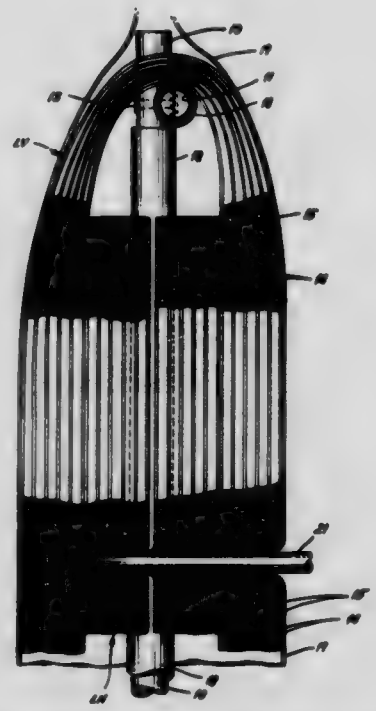
Leonard S. Meyer, 6449 Bridgewood Rd., Columbia, S.C. 29206

Filed Jul. 23, 1982, Ser. No. 401,084
Int. Cl.[3] F41J *3/00*
U.S. Cl. 273—403 14 Claims

4. An archery target comprising an assembly of superimposed membranes of sheet resin material, and a multiplicity of layers of resilient and porous material interposed between and each serving to interspace at least a plurality of the membranes, the membranes and layers comprising continuous loops and the loops being flattened to provide a loop assembly having a substantially flat front face and a substantially flat back face, the membranes being penetrable by an arrow cast at the face and being resilient and tear resistant, and the layers of resilient and porous material being penetrable by an arrow cast at the target and providing freedom for formation of sleeve shaped portions of the membranes engaging the arrow around the penetration apertures to provide for imposition of frictional drag in a plurality of zones along the shaft of an arrow penetrating the target and also for partial recovery of withdrawal of the arrow, and the assembly of membranes being shiftably movable to different positions in said loop assembly, some of the membranes of sheet resin material and some of the layers of resilient and porous material being of smaller width than others of said membranes and layers, and the membranes and layers of smaller width being positioned intermediate the edges of said loops, to provide an increased total number of layers in the central region of the loops as compared with the edge regions of the loops.

13. A target comprising a continuous loop of missile-penetrable target material, the loop being flattened to provide substantially flat sides forming a substantially flat front face and a substantially flat back face, and a pair of spaced parallel target





supports comprising rotative elements positioned within and engaging the ends of the loop, the target material of the loop being flexible and being shiftably movable around end portions of the loop in engagement with said rotative elements, the target comprising two continuous loops of the missile-penetrable target material with the axes of the loops arranged at an angle to each other, and the target comprising separate rotative elements for each loop arranged within and engaging the ends of the loop.

4,491,329

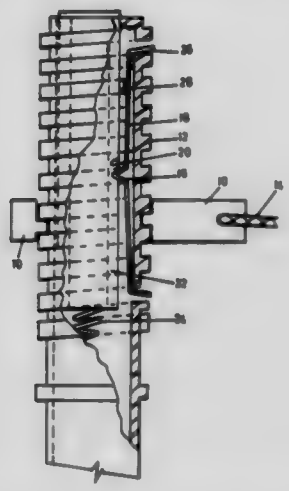
TETHERBALL GAME

Ole K. Nielsen, Copenhagen, Denmark, assignor to Zimm Zamm AG, Baar, Switzerland

Filed Aug. 25, 1983, Ser. No. 526,572
Claims priority, application South Africa, Aug. 26, 1982, 82/6244
Int. Cl.[3] A63B *71/02*
U.S. Cl. 273—413 5 Claims

1. Apparatus for playing a tether ball game including a bolt member mounted on a pole, and a ball attached to a line which is attached at its other end to a nut member rotatable on the bolt member so that the point of attachment moves up or down the helix according to the direction of travel of the ball after being struck by the bat, characterised in that an element is provided inside the bolt member, the element being biased for

movement in one direction and having a formation adapted releasably to receive a locking formation when the element is in a position opposing the bias, the locking formation being in



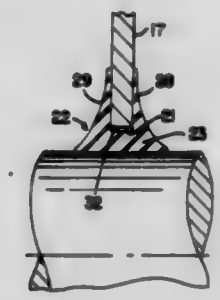
association with members protruding through the bolt member at or towards either end thereof, these members being adapted to be contacted by the nut member during its movement therepast, such contact causing release of the locking formation.

4,491,330

ROTARY LIP SEAL

Peter R. Weihsmann, Sherwood, Ark., assignor to Franklin Electric Co., Inc., Bluffton, Ind.

Filed Aug. 1, 1983, Ser. No. 519,322
Int. Cl.[3] F16J *15/34*
U.S. Cl. 277—65 9 Claims



1. A rotary lip seal for use in a space between a rotatable shaft and a housing part around the shaft, the housing part being formed of relatively flat material and having a hole formed in it through which the shaft extends, said seal comprising an elastic support band portion that is adapted to have a tight interference fit on the shaft, two elastic opposed lips formed on and extending radially outwardly from said band and forming an annular groove therebetween, said lips being shaped to have inherent preloads toward each other, said seal being adapted to be positioned with the housing part in the groove and said preloads holding the lips sealing engaging opposite sides of the housing part, said band being adapted to have greater frictional engagement with the shaft than said lips have with said housing part so that said seal is adapted to rotate with the shaft.

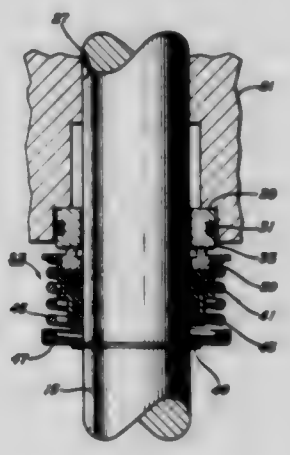
4,491,331

GROOVED MECHANICAL FACE SEAL

Richard F. Salant, Arlington Heights, Ill., and Clinton A. Boyd, Tulsa, Okla., assignors to Hughes Tool Company, Houston, Tex.

Continuation of Ser. No. 334,021, Dec. 23, 1981, abandoned.
This application Feb. 13, 1984, Ser. No. 578,985
Int. Cl.[3] F16J *15/34*
U.S. Cl. 277—96.1 3 Claims

1. In a seal assembly for a rotating shaft having an axis and extending through wall structure, the seal assembly having a stationary seal ring with a circular face with a flat surface and carried stationarily by the structure, a rotating seal ring carried by the shaft for rotation therewith and having a circular face with a flat surface, and spring means for urging the flat surfaces of the faces into engagement with each other, the improvement comprising:



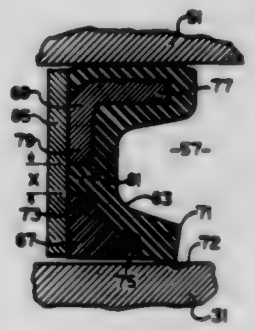
at least one circular groove concentric with the axis of the shaft and recessed within the flat surface of the face of the stationary seal, the groove being free of intersections with any cavities in either face to define with the rotating face a closed, annular space.

4,491,332

SHAFT SEAL AND MEANS TO EFFECT RADIAL MOVEMENT OF SEALING LIP

Steven J. Zumbusch, Eden Prairie, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 7, 1983, Ser. No. 549,053
Int. Cl.[3] F16J *15/32*
U.S. Cl. 277—152 3 Claims

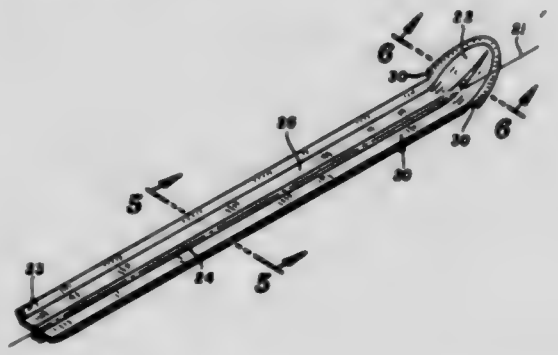


1. A shaft seal assembly for use in a rotary fluid pressure device of the type including a housing and a rotary shaft surrounded by the housing and extending therefrom in an axially forward direction, said shaft seal assembly being operable to effect a fluid seal between the shaft and the surrounding housing, said shaft seal assembly including a generally annular elastomeric sealing element, being generally C-shaped in cross-section, and opening rearwardly, said sealing element including a sealing lip; a generally rigid, non-elastomeric, annular inner support member closely spaced apart from the rotating shaft, substantially all of said inner support member being surrounded by a portion of said elastomeric sealing member, said sealing lip being disposed generally rearwardly of said inner support member and configured such that fluid pressure in a chamber rearward of said shaft seal assembly biases said sealing lip toward the shaft; and a generally rigid outer support member disposed to support the portion of said elastomeric sealing element in engagement with the housing; said inner support member including a forward portion and a rearward portion disposed adjacent said sealing lip; said outer support member including a radially-inwardly extending portion lying in a transverse plane passing through said forward portion of

said inner support member; said elastomeric sealing element including a cushion portion disposed radially between said forward portion of said inner support member and said inwardly-extending portion of said outer support member to cushion radial movement of said inner support member resulting from radial deflection of the shaft characterized by;

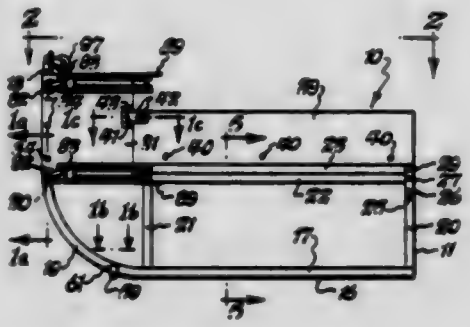
(a) said sealing lip of said elastomeric sealing element defining a pivot point, said rearward portion of said inner support member extending rearwardly of said pivot point whereby radial movement of said inner support member results in corresponding radial movement of said sealing lip, and reduced loading thereof.

4,491,333
SKI FOR SNOWMOBILE
Wayne L. Warake, Coon Rapids, Minn., assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Aug. 23, 1982, Ser. No. 410,270
Int. Cl.[3] B62M *27/02*
U.S. Cl. 280—28 1 Claim



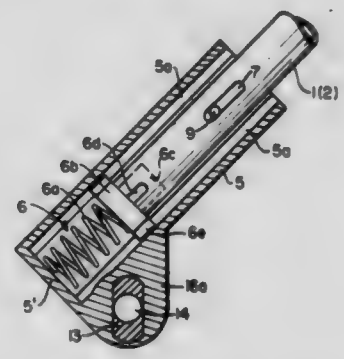
1. In a steering ski, for a snowmobile, of the type having an elongated body with a primary snow-engaging surface, said body being continuous with an upturned forward tip, the improvement which comprises flares extending along the side edges of said primary snow-engaging surface and upturned at angles in the range between 30° and 60°, said flares continuing around said forward tip in a downwardly concave arcuate configuration.

4,491,334
PIANO TRUCK
Robert J. Tarbell, 358 Bedford Ave., Buffalo, N.Y. 14216
Filed Sep. 20, 1982, Ser. No. 420,004
Int. Cl.[3] B62B *3/10*
U.S. Cl. 280—47.12 18 Claims



9. A truck for moving a grand piano having an underside comprising first and second spaced side members, first and second frame members included in said first and second side members for supporting said underside of said piano, said first and second frame members being separated and unconnected relative to each other prior to their attachment to said piano, third and fourth frame members included in said first and second side members, respectively, for supporting said first and second frame members, respectively, in a first attitude substantially parallel to a floor prior to attachment of said first and second frame members to said piano, beam means for selectively connecting said first and second frame members to each other after they have been positioned under said piano, said beam means being essentially coplanar with and spaced along said first and second frame members, means on said first and second spaced side members for pivoting said first and second side members to a second attitude which is substantially perpendicular to said floor, first and second caster means on said truck, and linkage means for moving said first and second caster means toward and away from said floor when said first and second side members are in said second attitude.

4,491,335
INFANTS' CARRIAGES
Amos Evron, No. 1 Inbar St., Neve Monosson, Israel
Filed Mar. 30, 1982, Ser. No. 363,619
Claims priority, application Israel, Apr. 10, 1981, 62632
Int. Cl.[3] B62B *11/00*
U.S. Cl. 280—47.41 11 Claims



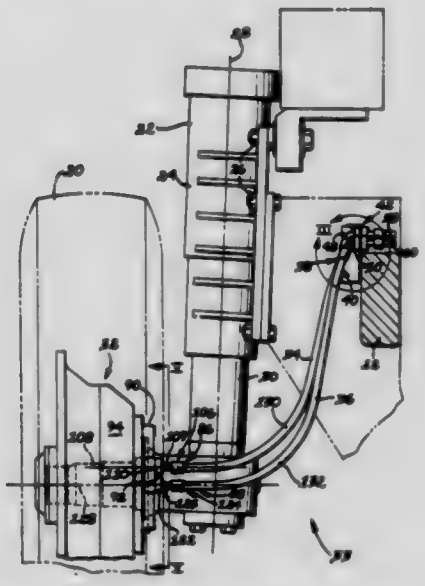
1. An infant carrier comprising a chassis including two pairs of crossing tubular frame members, each of said tubular frame members including a first end and a second end and a rotatable wheel member at said first end thereof, each of said rotatable wheel members being connected to said first end of one of said tubular frame members by connecting means, said connecting means comprising a sleeve member including a tubular cavity having an open end and a closed end for slidably receiving said tubular frame member, and at least one longitudinally extending slot member, spring means disposed within said tubular cavity at said closed end thereof for cushioning said first end of said tubular frame member after it has been inserted into said tubular cavity, said spring means including a first end and a second end, said first end of said spring means being located at said closed end of said tubular cavity and said second end of said spring means including plate means fixedly attached thereto, said plate means including a first face and a second face, said first face of said plate means being fixedly attached to said spring means and said second face of said plate means being in abutment with said first end of said tubular frame member and including rib means projecting therefrom, said plate means further including at least one corresponding radial protrusion extending therefrom for slidable engagement with said slot member, whereby rotational motion between said plate means and said sleeve member is substantially prevented, and said first end of said tubular frame member including rib-enclosing means whereby said rib means project into said rib-enclosing means to prevent rotational movement between said plate means and said first end of said tubular frame member.

4,491,336

FLUID CONNECTION APPARATUS

Allen D. Myers, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 3, 1982, Ser. No. 446,742
Int. Cl.³ B60T 5/00
U.S. Cl. 280—93 19 Claims



8. A fluid connecting apparatus (33), comprising:

a vehicle frame (12);

a steerable wheel member (20) mounted to the frame (12) by a suspension strut (22) for movement relative to the frame (12) along an upright axis (28) of the strut (22) and rotational movement about the axis (28);

a manifold (90) having a mounting surface (92) defined thereon and being mounted on a portion of the wheel (20) adjacent the frame (12) at a location that is above a horizontal centerline (128) of the wheel (20) and rearward of the axis (28) of the strut (22);

a normally flexible conduit (34,36) having first and second end portions (38,40,86,88) and a slack portion (130,132) of the conduit (34,36) defined between the end portions (38,40,86,88);

first means (44,46) for rigidly connecting the first end portion (38,40) of the conduit (34,36) to the frame (12) in a preselected angular relationship (A_1,A_2,A_3) thereto; and

second means (106,124,110,122) for rigidly connecting the second end (86,88) of the conduit (34,36) to the wheel member (20) including a straight connecting stem (109,125) engageable with said mounting surface (92) and extending therefrom at an attitude that is normal thereto, said straight connecting stem (109,125) and the second end portion (86,88) of the conduit (34,36) being rotatable with respect to the mounting surface (92) and the first end portion (38,40) of the conduit (34,36) to create a twist or preload in the conduit (34,36) to control the disposition thereof with respect to the frame (12) and the wheel (20) as the relative movement occurs therebetween.

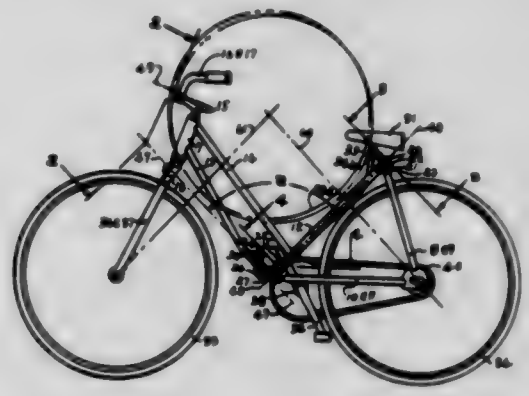
4,491,337

FOLDING BICYCLE

Daniel R. Zack, 14273 Beaver St., Sylmar, Calif. 91342

Continuation-in-part of Ser. No. 940,901, Sep. 11, 1978, abandoned, and Ser. No. 235,532, Feb. 18, 1981, Pat. No. 4,002,351. This application May 17, 1982, Ser. No. 378,836
Int. Cl.³ B62K 3/14, 13/00
U.S. Cl. 280—278 6 Claims

1. A folding bicycle comprising means to fold on two axes with the front and rear wheels substantially coaxial side by side comprising three hingedly interconnected frame structural unit assembly means, side by side when folded; with a center frame structure unit assembly means hingedly connected with hinge means to a rear wheel fork unit assembly means and in the front with a steering journal housing means connected to a front wheel fork unit assembly means with hingeable means in the fork above the wheel and below said steering journal housing means to fold the front wheel aft beside the rear wheel when the bicycle is folded, said center frame structure unit assembly comprising a fixedly integral substantially triangular truss structure means with a rear spreader bar structure means, a lower structural member means, an upper structural member means connected to the said forward steering fork journal housing means with said journal housing means connecting the lower structural member means, a seat post means fixedly secured to said rear spreader bar means and to said upper



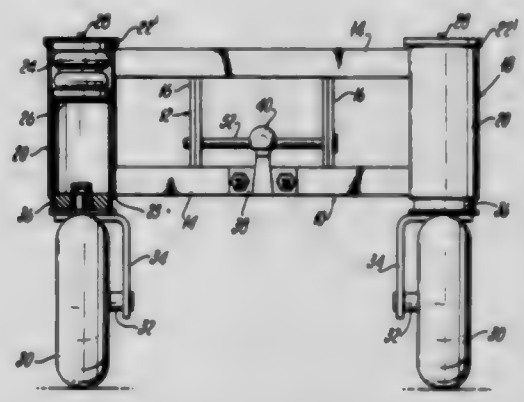
structural member to support a rider's seat, said rear fork assembly means comprising interconnected upper and lower fork means with a pedal housing means fixedly attached to the lower fork means for mechanically driving the rear wheel of the bicycle operable lock means at said front and rear folding axes to alternately fold the bicycle and to lock the center frame means and the front and rear fork means in the unfolded configuration when the bicycle is ridden, said lock means having preset and preadjustment means adjustable prior to locking the lock means to remove the looseness in the lock means when the bicycle is locked in the unfolded configuration for riding.

4,491,338

HITCHES

Ernest J. Sheldrake, 2 Lowick Close, East Dereham, Norfolk, England

Filed Apr. 9, 1982, Ser. No. 367,040
Int. Cl.³ B60D 1/14
U.S. Cl. 280—405 R 10 Claims



1. A hitch for attaching an item of equipment to be towed to a towing vehicle, comprising a framework carried by at least one road wheel or roller for locating between the rear of the towing vehicle and the forward end of the item to be towed, a coupling member secured with respect to said framework for attachment to the item to be towed, connecting means for detachably and securely joining the framework to the rear of the towing vehicle, said connecting means including an attachment member and means for changing the height of said attachment member relative to the height of said framework, pneumatic suspension means rigidly secured to the rear of the towing vehicle to provide resilient mounting of the wheel(s) or

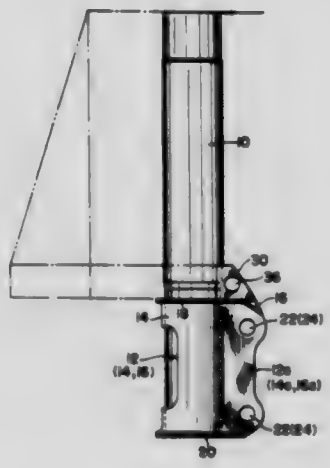
roller(s), and means to vary the resilience of said suspension means.

4,491,339

STRUT FOR MCPHERSON TYPE AUTOMOBILE SUSPENSIONS

Ken Mizumukai, Iwakura, and Shinichi Higuchi, Gifu, both of Japan, assignors to Kayaba KKK, Tokyo, Japan

Filed Dec. 30, 1981, Ser. No. 335,740
Int. Cl.[3] B60G *3/06*
U.S. Cl. 280—668
4 Claims



1. An arrangement for reducing the maximum bending stress in the tubular member in the portion of maximum bending of a strut for McPherson-type automobile suspensions wherein said tubular member has an outer wall forming the cylinder of a liner type shock absorber; and

a knuckle bracket fitted to the lower end of said tubular member;

wherein said knuckle bracket comprises:

a first sheet metal bracket of U-shaped cross section of a predetermined length;

having an opening part and an inner face;

a second sheet metal bracket inserted in said opening of said first bracket;

said second bracket having an outer face, an arcuate base and two sides extending from said base, the outer face of said base facing the inner face of said first bracket, and forming upon insertion of said second bracket into said first bracket a substantially cylindrical hole;

said second bracket having a length extending beyond the length of the said first bracket constituting a rib;

said rib contacting and supporting said tubular member at said portion of maximum bending stress so that said extended portion of said second bracket faces said outer wall of said tubular member to serve as a reinforcement of said portion of said tubular member subject to maximum bending, thus reducing the bending of said portion and reducing the maximum bending stress of said tubular member.

4,491,340

VEHICLE WHEEL AXLE AND BRAKE MOUNTING ASSEMBLY

Hubertus Von Grünberg, Kronberg-Schoenberg, Fed. Rep. of Germany; Frederick Corey, Dearborn, and Jonathan M. Rowell, Birmingham, both of Mich., assignors to ITT Industries, Inc., New York, N.Y.

Filed Dec. 13, 1982, Ser. No. 449,354
Int. Cl.[3] B60B *3/00*
U.S. Cl. 280—668
20 Claims

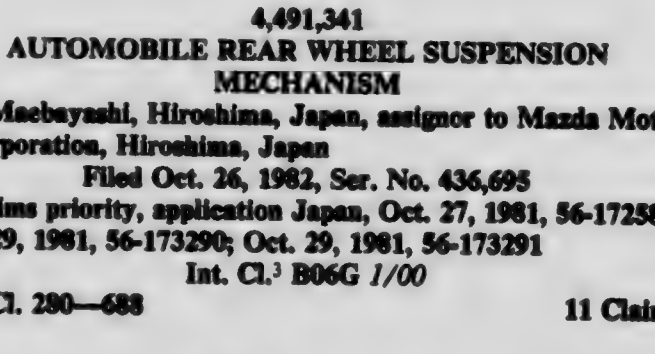
1. An arrangement for mounting on a supporting strut a rotatable vehicle wheel axle and a disc brake assembly including a pair of brake shoes one arranged at one and the other at the other axial side of a brake rotor jointly rotatable with the wheel axle, a brake caliper spanning the brake rotor, and an actuating unit connected to the brake caliper at the one axial side and acting directly on the one and through the brake caliper on the other brake shoe, comprising

a first component of a substantially cup-shaped configuration connected to the strut and having a through opening for the passage of the wheel axle therethrough and an axially facing outer surface surrounding said through opening; and

a second component having a contact surface and so connected to said first component that said contact surface contacts said outer surface,

said second component including

a sleeve-shaped portion extending away from said first component and bounding a passage aligned with said through opening for accommodating the wheel axle,



at least one bearing received in said passage and supporting the wheel axle therein,

a pair of brake shoe supporting arms extending away from, said first component outwardly spaced from said sleeve-shaped portion and circumferentially spaced from one another and having respective guiding surfaces for the brake shoes extending substantially parallel to said passage, and

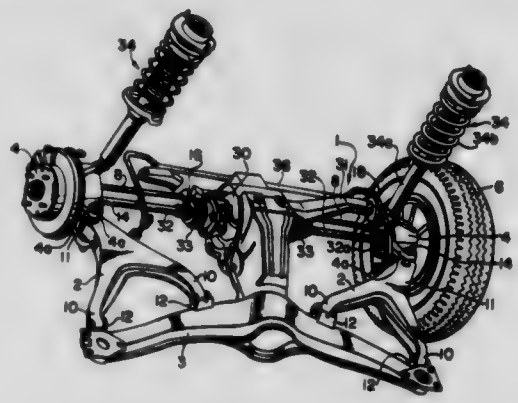
a pair of caliper-mounting portions spaced outwardly from said sleeve-shaped portion and circumferentially from one another for mounting the brake caliper thereon for movement substantially parallel to the wheel axle.

4,491,341

AUTOMOBILE REAR WHEEL SUSPENSION MECHANISM

Jiro Maebayashi, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Oct. 26, 1982, Ser. No. 436,695
Claims priority, application Japan, Oct. 27, 1981, 56-172586; Oct. 29, 1981, 56-173290; Oct. 29, 1981, 56-173291
Int. Cl.[3] B06G *1/00*
U.S. Cl. 280—688
11 Claims



10. An automobile rear wheel suspension mechanism including carrier means for carrying a rear wheel for rotation about an axis of rotation which passes through a center of the rear wheel, arm means having a rear end portion pivotably con-

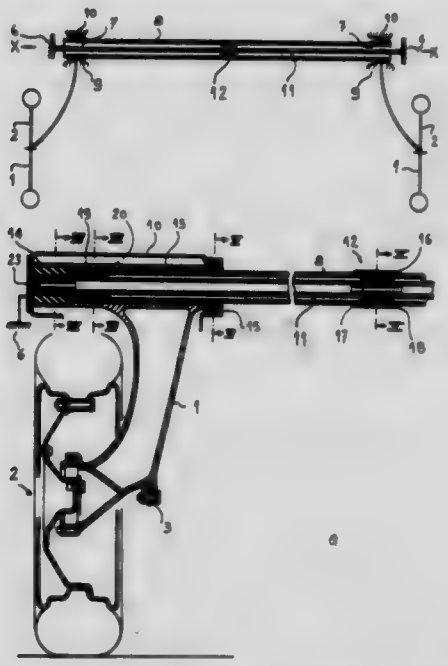
nected through substantially vertical pin means with said carrier means at a portion forwardly of said axis of rotation, said arm means having a forward end portion connected with an automobile body for vertical swinging movement about a swing axis inclined transversely inwardly and rearwardly with respect to a transverse line, substantially transversely extending control rod means having one end connected with the automobile body pivotably about a substantially longitudinally extending first axis and the other end connected, at a portion rearwardly of said portion where said arm means is connected to the carrier means, with said carrier means for pivotable movement about a substantially longitudinally extending second axis, said forward end portion of the arm means connected with a front sub-frame member of the body.

4,491,342

VEHICLE WHEEL SUSPENSION SYSTEM INCORPORATING COAXIAL TUBE DAMPING AND ANTI-ROLL MEANS

Jacques A. Aubry, Cabries, France, assignor to Societa Nationale Industrielle et Aerospatiale, Paris, France

Filed May 19, 1983, Ser. No. 496,276
Claims priority, application France, Jun. 15, 1982, 82 10447
Int. Cl.[3] B60G *7/04*
U.S. Cl. 280—700 6 Claims



1. A suspension for a set of two wheels of a vehicle having a chassis, said suspension comprising two arms adapted to oscillate about an axis X—X transverse to said vehicle, each arm bearing one of said wheels,

elastic damper means associated with said arms to counteract and dampen the vertical movements of said wheels,

said elastic means comprising an assembly of inner and outer concentric tubes made of a composite fibre-synthetic resin material coaxial to said transverse axis X—X,

said tubes being connected to each other near the center of their length;

said arms being connected to the ends of the outer tube;

said outer tube being mounted on said chassis for rotation about said transverse axis X—X,

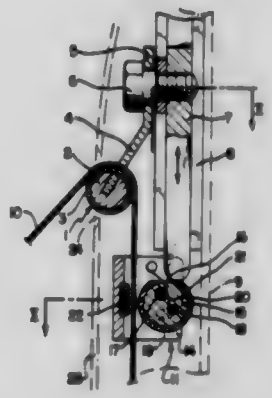
and the inner tube being effectively connected at its ends to the chassis of the vehicle.

4,491,343

INFLECTOR WITH CLAMPING DEVICE FOR A SAFETY BELT IN MOTOR VEHICLES

Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to REPA Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Continuation of Ser. No. 296,167, Aug. 25, 1981, abandoned.
This application Mar. 16, 1984, Ser. No. 590,125
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1980, 3032170
Int. Cl.[3] B60R *21/10;* A62B *35/02*
U.S. Cl. 280—801 14 Claims



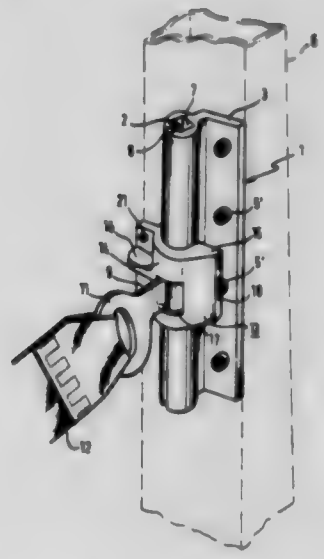
1. An apparatus for use in a motor vehicle to clamp a safety belt, said apparatus comprising a stationary clamp member, a movable clamp member which cooperates with said stationary clamp member to define space through which the belt passes, a movable slide member, a deflector member connected to said slide member and having a surface across which the safety belt extends between said deflector and slide members, said movable clamp member being movable toward said stationary clamp member by said slide member under the influence of force applied against said deflector member by the belt to thereby clamp the belt between said movable and stationary clamp members.

4,491,344

SAFETY BELT SYSTEM FOR MOTOR VEHICLES

Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to REPA Feinstanzwerk GmbH, Aldorf, Fed. Rep. of Germany

Filed Dec. 9, 1982, Ser. No. 448,223
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1981, 3149518
Int. Cl.[3] A62B *35/02;* B60R *21/10*
U.S. Cl. 280—808 15 Claims



1. Safety belt system for motor vehicles comprising a belt strap fo securing a passenger of the vehicle to be protected, a support point in the vehicle for the belt strap, above the shoulder of the vehicle passenger to be protected, in the form of a fitting which can be fastened at different heights in the vehicle

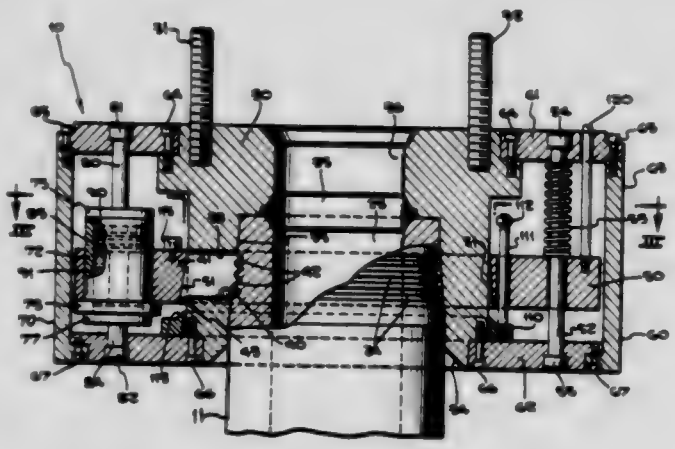
for adaptation to the size of the body of the vehicle passenger, the combination therewith of a substantially vertical anchor track firmly fastened to the vehicle, said fitting guided and movable longitudinally along the track, a longitudinally movable slider supported by the track and provided with locking means for detaining the fitting at the desired height, the movable slider support at the anchor track being tiltable transversely to the moving direction, a spring urging the slider to the utilized position which is the normal rest position, the locking means including detent elements along the track which engage the movable slider at rest position, and which detent elements are disengaged by tilting to permit moving the slider to a different height.

4,491,345

MARINE CONDUCTOR COUPLING

Albert M. Regan, Huntington Beach, Calif., assignor to Hughes Tool Company, Houston, Tex.

Filed Aug. 6, 1981, Ser. No. 290,464
Int. Cl.[3] F16L *35/00*
U.S. Cl. 285—18 9 Claims



1. A marine conductor coupling for use in connecting a subsea well component with a well head associated member, said coupling comprising:

a connector body having a well head member receiving bore and a plurality of latch dogs mounted on said body for engagement with a well head member when the latter is positioned in said bore;

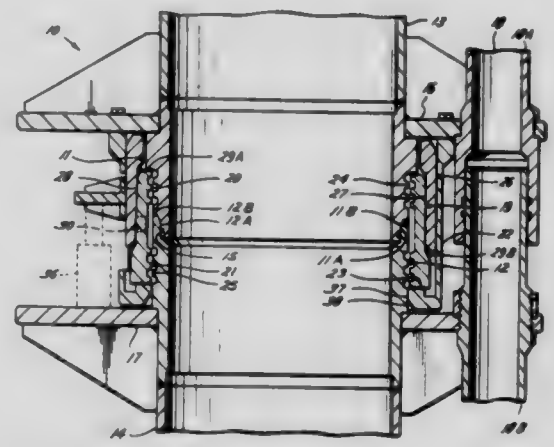
hydraulically actuated means for urging said dogs into a well head member latching position, said hydraulic actuating means comprising a plurality of double ended piston rods fixedly mounted relative to said body with a piston fixed in stationary relation on a midportion of each of said rods, a hydraulic cylinder positioned about each of said rods and its associated piston for vertical movement relative thereto, and seal means for sealing each said cylinder to its associated rod and piston, an actuating ring having a latch dog wedging face and being connected to said cylinders for movement therewith, and hydraulic fluid supply means for supplying hydraulic fluid to said cylinders selectively above and below said pistons to cause movement of said cylinders and associated actuating ring relative to said stationary rods and associated body so that said latch dog wedging face engages said latch dogs to urge said latch dogs into said well head member latching position.

4,491,346

APPARATUS FOR RELEASABLY CONNECTING TUBULAR MEMBERS IN END-TO-END RELATION

James M. Walker, Houston, Tex., assignor to Dril-Quip, Inc., Houston, Tex.

Filed Nov. 1, 1982, Ser. No. 438,575
Int. Cl.[3] F16L *55/00, 37/18, 39/00*
U.S. Cl. 285—18 59 Claims



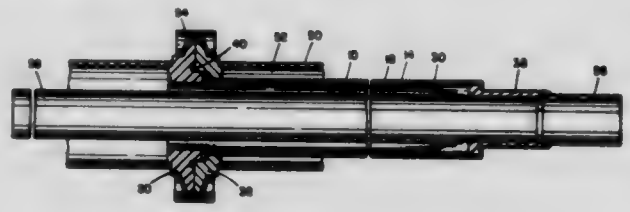
1. A connector, comprising a first tubular member having first locking grooves thereabout, a second tubular member having second locking grooves thereabout, and a split lock ring having first and second axially spaced locking teeth on the inner side thereof which are carried by the first tubular member for radial movement together between expanded positions in which the first teeth are generally opposite the first grooves and the second teeth may be moved past the end of the second tubular member for disposal opposite the second grooves, when said members are moved into end-to-end relation, and contracted positions in which the first and second teeth are interlocked with the first and second grooves, respectively, said teeth having tapered surfaces thereon which are slidable over tapered surfaces of the grooves to urged end surfaces on said members into tight engagement with one another as the lock ring moves to contracted position, and a cam ring arranged about the lock ring for movement between a first position in which the lock ring is expanded and a second position in which the cam ring is slidable over follower means on the lock ring to wedge said lock ring into contracted position.

4,491,347

CRYOGENIC CONNECTOR

Keith W. Gustafson, New Prague, Minn., assignor to Minnesota Valley Engineering, Inc., New Prague, Minn.

Filed Jan. 4, 1982, Ser. No. 336,695
Int. Cl.[3] F16L *59/14*
U.S. Cl. 285—47 7 Claims



1. A cryogenic connector comprising:

(a) a pair of tubular metal members, one of which is a female member and the other of which is a male member received in concentric relation within the female member;

(b) means for securing the male and female members in assembled relation, said male and female members each having a portion in sliding engagement in assembled relation when at ambient temperature, with the portion of the female member being characterized by a coefficient of expansion greater than the portion of the male member, the portion of the female member shrinking onto the

portion of the male member to provide a mechanical seal therebetween at cryogenic temperatures;

(c) a tubular section secured in spaced concentric relation with the male member substantially throughout its length to define an annular space therebetween and providing guiding contact as the male member is moved into the female member;

(d) a low thermal conductivity material disposed in the space between the outer surface of the tubular section and the inner surface of the female member to minimize heat transfer between said tubular members.

4,491,348

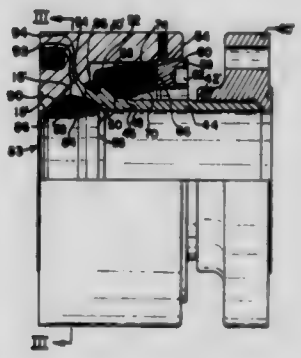
VIBRATION ATTENUATING COUPLING

William G. Thelen, Onondaga, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Oct. 21, 1982, Ser. No. 435,554

Int. Cl.[3] F16L *55/02*

U.S. Cl. 285—49 3 Claims



1. In a vibration attenuating coupling having an annular housing having an internally threaded access end, an annular threaded compression nut mating with the threads of the access end, a radially and axially extending compression surface in opposed axial alignment with the nut intersecting an axially extending cylindrical passage surface, a tubular nipple having an inner end within the housing and an outer end having a conduit mounting flange mounted thereon, an annular elastomeric support interposed between the housing and nipple inner end elastically supporting the nipple relative to the housing, the improvement comprising, said nipple inner end having an annular inner bearing surface, an annular, removable inner elastomeric bearing comprising a metal ring having an outer surface, an elastomer mounted upon said ring outer surface, said elastomer including radial and axially extending surfaces complementary to the housing compression and passage surfaces for engagement therewith positioning the inner bearing upon the housing, the annular elastomeric support comprising an annular elastomeric outer bearing interposed between the nut and nipple inner end elastically supporting the nipple inner end and axially biasing the nipple toward the housing compression surface compressing said inner bearing between said nipple bearing surface and the housing compression surface.

4,491,349

Y-CONNECTION FOR FLEXIBLE CONDUIT

Robert Rice, P.O. Box 454, San Martin, Calif. 95046, and Robert Ferreira, 2885 Hay Loft Way, Morgan Hill, Calif. 95037

Division of Ser. No. 232,863, Feb. 9, 1981, Pat. No. 4,428,601.

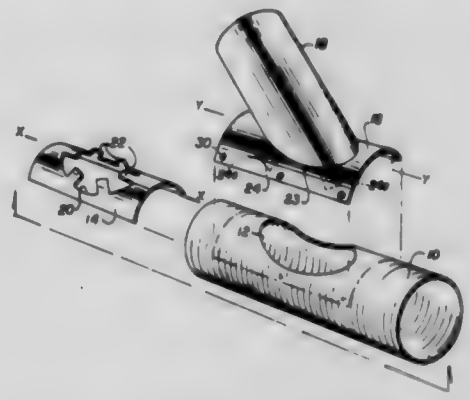
This application Nov. 21, 1983, Ser. No. 553,405

The portion of the term of this patent subsequent to Jan. 31, 2001, has been disclaimed.

Int. Cl.[3] F16L *41/00*

U.S. Cl. 285—197 6 Claims

1. In an apparatus for connecting a branch conduit in flow communication with a flexible main conduit that has an aperture therein, backing means positionable against the inner surface of said main conduit in the marginal area around the aperture therein, said main conduit being bendable to permit said backing means to be insertable into and positioned adjacent the inner surface of said main conduit, an apertured saddle positionable against the outer surface of the main conduit with the aperture in the saddle registering with the aperture in the main conduit, the main conduit being disposed between said backing means and said saddle without any portion of said backing means interpenetrating into said saddle, means for



securing the branch conduit to said saddle, and means for securing said saddle and said backing means to said main conduit with the main conduit disposed between said backing means and said saddle and with the branch conduit in flow communication with the interior of the main conduit through the aperture in the main conduit.

4,491,350

COUPLING

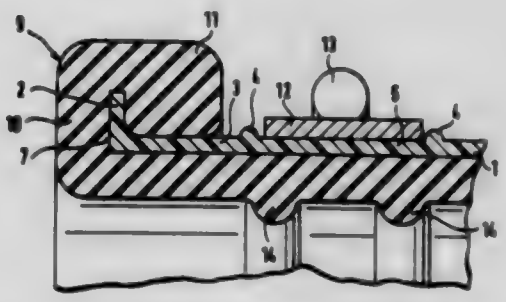
Franz J. Wolf, and Hansjörg Lauer, both of Bad Soden-Salmünster, Fed. Rep. of Germany, assignors to WOCO Franz Josef Wolf & Co., Bad Soden-Salmuenster, Fed. Rep. of Germany

Filed Mar. 10, 1982, Ser. No. 356,690

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1981, 3112258

Int. Cl.[3] F16L *21/02*

U.S. Cl. 285—236 8 Claims



1. A coupling for connecting pipe ends comprising a sleeve member having longitudinal ends and a longitudinal axis, said sleeve member having a plurality of longitudinally extending slits extending from the longitudinal ends of said sleeve member, said sleeve member having a generally longitudinal central section disposed between the longitudinally innermost ends of said slits, said sleeve member being initially formed as an open band having an integrally formed tongue which overlaps along an overlapping section with said central section of the sleeve member when the open band is formed into a generally cylindrical configuration to form said sleeve member, a plurality of spaced ribs formed on said sleeve member, two tightening straps disposed about said sleeve member between said spaced ribs, said overlapping section being longitudinally narrower than the longitudinal distance between said two tightening straps disposed about said sleeve member, radial flanges at the longitudinal ends of said sleeve member, said radial flanges extending perpendicular to the longitudinal axis of said sleeve member, a resilient collar on said sleeve member extending into said sleeve member for receiving the pipe ends, said resilient collar having a first portion extending around the longitudinal

ends of said sleeve member and a second portion extending radially outwardly of said radial flange, said resilient collar also having a ring-like section extending on the longitudinally inner sides of said radial flanges, the longitudinal distance between the longitudinal end of said sleeve and the closest of said ribs being at least as large as the axial length of said ring-like section of said collar, said ring-like section being larger than said first portion of said resilient collar, whereby said ring-like section grips onto the longitudinal inner sides of said radial flanges.

4,491,352

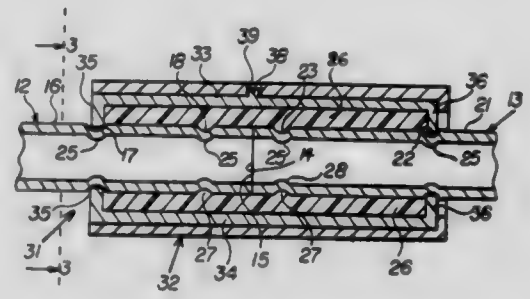
PIPE JOINT

Frank G. Logan, Framingham, and Wilfred V. Johnson, Oxford, both of Mass., assignors to U.S. Fire Control Corporation, Rochdale, Mass.

Filed Sep. 30, 1982, Ser. No. 429,218

Int. Cl.³ F16L *17/04*

U.S. Cl. 285—373 **14 Claims**



4,491,351

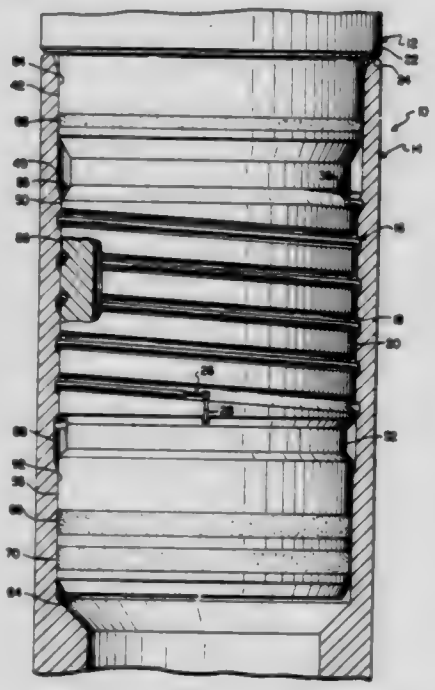
HELICAL COIL STAB-IN CONNECTOR

Edward M. Galle, Jr., and William S. Cowan, both of Houston, Tex., assignors to Armco Inc., Middletown, Ohio

Filed Feb. 8, 1982, Ser. No. 347,069

Int. Cl.³ F16L *39/00*

U.S. Cl. 285—318 **23 Claims**



1. In a connector assembly including a male member having an external helical groove, a female member having an internal helical groove, and a resilient helical coil received in the groove of one of the members and in the relaxed state having a portion extending outwardly of the groove, the groove receiving the helical coil being of a depth substantially equal to the thickness of the helical coil material and the groove in the other member being of a depth less than the thickness of the helical coil material, the improvement comprising:

said helical groove in said female member having an upwardly and inwardly tapering helical load-bearing surface for engaging said helical coil; and

said helical groove in said male member having an upwardly and inwardly tapering helical load-bearing surface for engaging said helical coil,

said upwardly and inwardly tapering helical load-bearing surface in said male member being straight in vertical cross-section,

said upwardly and inwardly tapering helical load-bearing surface in said female member being straight in vertical cross-section.

1. A pipe joint comprising:

a first pipe with an outer surface defining a first circumferential coupling groove and a first circumferential seal groove disposed between said first coupling groove and one end of said first pipe;

a second pipe with an outer surface defining a second circumferential coupling groove and a second circumferential seal groove disposed between said second coupling groove and an end of said second pipe juxtaposed to said one end of said first pipe;

resilient sleeve means fitted over said outer surfaces of said first and second pipes and covering said first and second seal grooves, said sleeve means comprising a first circumferential o-ring portion longitudinally aligned with said first seal groove and a second circumferential o-ring portion longitudinally aligned with said second seal groove;

a clamp means overlaying said sleeve means and being radially collapsible to forcibly engage said resilient sleeve means; said clamp means comprising inwardly directed projections longitudinally aligned with said first and second coupling grooves; and

latch means engaging said clamp means and exerting thereon an inwardly directed force that retains said projections within said first and second coupling grooves and forces said first and second o-ring portions, respectively, into said first and second seal grooves.

4,491,353

RECIPROCATORY DEVICES

Michael J. James, Cheltenham, England, assignor to Micro & Precision Mouldings (Cheltenham) Limited, Cheltenham, England

Filed May 2, 1983, Ser. No. 490,299

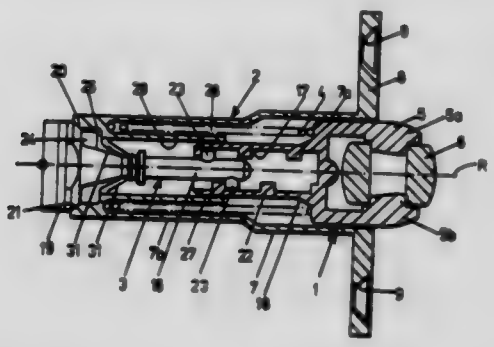
Claims priority, application United Kingdom, May 11, 1982, 8213592

Int. Cl.³ E05C *19/02*

U.S. Cl. 292—75 **11 Claims**

1. A reciprocatory device including a reciprocatory part which is reciprocable relatively to a fixed part, and means to adjust the outward limit of the reciprocatory part comprising an adjustment member which has screw-thread like engagement with the reciprocatory part and a clutch face which engages with a clutch face on, or fixed relatively to, the fixed part to define the outward limit of the reciprocation, wherein the reciprocatory part is restrained against rotation about the reciprocation axis relatively to the fixed part, said screw-thread like engagement includes a degree of axial lost motion between the reciprocatory part and the adjustment member

which approximates to the normal range of reciprocatory movement during use of the device, and axial stop means limit



the inward movement of the adjustment member with the reciprocatory part.

4,491,354

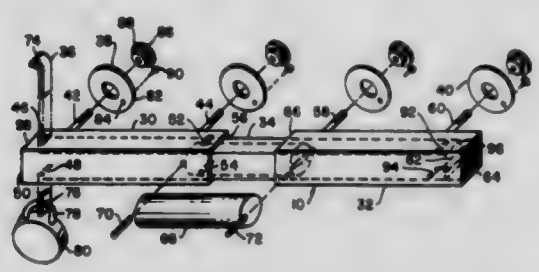
LOCK BAR

Lawrence D. Williams, Windsor, Canada, assignor to Precision Hardware, Inc., Detroit, Mich.

Continuation of Ser. No. 745,634, Nov. 29, 1976, abandoned. This application Nov. 2, 1978, Ser. No. 956,938

Int. Cl.[3] E05C *1/04, 7/04*

U.S. Cl. 292—148 3 Claims



1. A lock bar for securing adjacent door panels each having a hinge edge and a lock edge in a closed condition comprising a first elongated hollow holding bracket having a rectangular cross section, a lock edge end and a hinge edge end extending lengthwise across a substantial portion of the one of the door panels between the hinge edge and lock edge thereof, means securing the first holding bracket to the one of the door panels with the lock edge end thereof adjacent to but in substantial spaced relation from the lock edge thereof, a second elongated hollow holding bracket having a rectangular cross section, a lock edge end and a hinge edge end extending for a substantial distance longitudinally between the hinge edge and lock edge of the other of the adjacent door panels, means for securing the second holding bracket to the other of the door panels with the lock edge end thereof adjacent to but in substantial spaced relation from the lock edge of the other of the door panels in longitudinal alignment with the first holding bracket, an elongated hollow cross bolt having a rectangular cross section with exterior dimensions slightly less than the interior dimensions of the holding brackets whereby the cross bolt may be moved into and out of the holding brackets across the lock edges of the door panels, pin means extending across the hinge edge end of the second holding bracket for preventing movement of the cross bolt through the hinge edge end of the second holding bracket and removable locking means extending across the hinge edge end of the first holding bracket for selectively preventing withdrawal of the cross bolt from the hinge edge end of the first holding bracket, said cross bolt extending from the pin means to the locking means substantially the entire distance between the hinge edge ends of the holding brackets in a locking position within the holding brackets, wherein the means for securing the holding brackets to the door panels are secured to the holding brackets at each end thereof and each comprises a threaded stud secured to the holding bracket and extending perpendicularly thereto through the respective door panel, a dual diameter retaining member the smaller diameter end thereof being threadedly engaged with the free end of the stud on the other side of the door panel from the holding brackets, a larger diameter washer positioned between the other side of the door panel and retaining member concentric with and positioned over the stud, a screw extending through the washer and into the other side of the door panel having a one way slotted head, and means securing the retaining member and washer together to prevent relative rotation thereof about the longitudinal axis of the stud, and further including a cylindrical hardened steel bar positioned centrally of the cross bolt so as to extend between the lock edge ends of the first and second holding brackets with the cross bolt positioned between the pin means across the hinge edge of the second holding bracket and the locking means and pins extending transversely of the cross bolt at the opposite ends of the steel bar for securing the steel bar centrally of the cross bolt while permitting rotation thereof relative to the cross bolt, and wherein the cross bolt is of a highly visible color and distinct from the color of the door panel and the holding brackets so as to be highly visible in a locking position between the holding brackets and in an unlocking position extending out of the hinge edge end of the first holding bracket.

4,491,355

CONTROL MECHANISM FOR HOLDING A DOOR IN THE OPEN POSITION

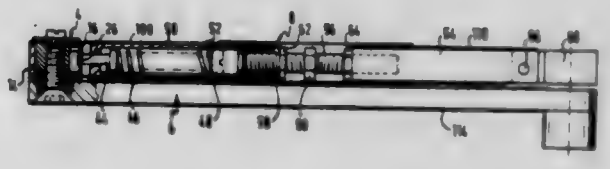
Mario Marinoni, Magenta, Italy, assignor to Casma di V. Marinoni & Figli, Magenta, Italy

Filed Aug. 17, 1981, Ser. No. 293,245

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1980, 3033496

Int. Cl.[3] E05C *17/32*

U.S. Cl. 292—263 6 Claims



1. A control mechanism for a door hinged on a door frame operative to hold said door in an open position comprising a first and a second longitudinal bar each having a pair of ends, hinge means joining together one of the ends of each of said bars with the other ends of said bars being hinged, respectively, to said door and to said frame, said hinge means comprising a hinge pin affixed to said first bar, at least one recess formed in said hinge pin, a locking element on said second bar adapted to engage within said recess and spring means urging said locking element into engagement with said recess, at least one of said longitudinal bars being formed in two sections which are connected together by means of a double ended adjusting screw having oppositely directed threads with check nuts being provided to enable affixation in a desired position of said two sections relative to each other.

4,491,356

SLEEVE STYLE PACKAGE HOLDER

William H. Carr, Jr., West Chester, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Sep. 30, 1982, Ser. No. 428,984

Int. Cl.[3] A47B *95/02*

U.S. Cl. 294—31.2 8 Claims

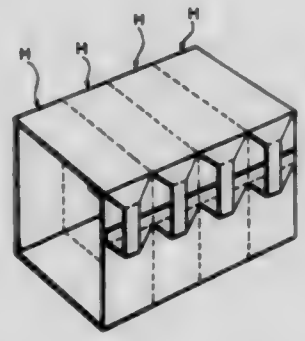
1. A collapsible, open sided sleeve style holder, formed of a unitary blank of foldable sheet material such as paperboard, for receiving and supporting, by frictional engagement only, an inner package, said holder having an integral handle and comprising:

(a) front and rear side walls and top and bottom end walls

foldably joined to each other to form a rectilinear, tubular, body structure;

(b) an integral, open, strap-type handle structure which can be collapsed and folded to lie against said holder front side wall comprising:

(i) an upper panel foldably joined to and extending forwardly from said body structure top end wall;



(ii) a front panel foldably joined to and extending downwardly from the forward edge of said upper panel;

(iii) a lower panel foldably joined to and extending rearwardly from a lower edge of said front panel;

(iv) a rear panel foldably joined to and extending upwardly from a rear edge of said lower panel;

(v) means joining said handle structure rear panel to said body structure front wall.

4,491,357

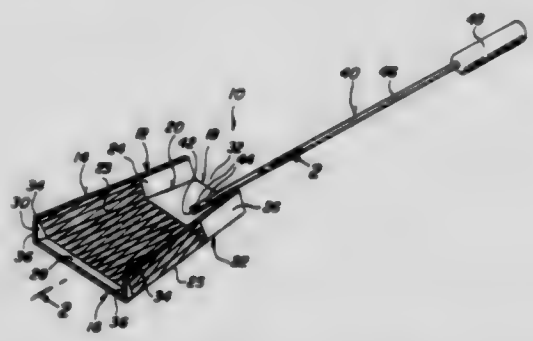
ASH SEPARATING SHOVEL

George A. Richards, 424 Central St., West Action, Mass. 01720

Filed Dec. 7, 1983, Ser. No. 558,990

Int. Cl.[3] A01B *1/02*

U.S. Cl. 294—49 8 Claims



1. An ash separating shovel which comprises a tapered body member having a diagonal ribbed reticulated middle portion in the shape of a trapezoid, a narrow front portion of solid material extending along the wide end of the trapezoidal shaped middle portion, and a wide rear portion of solid material extending along the narrow end of the trapezoidal shaped middle portion, said front, middle and rear porions being continuous along a common plane, said rear portion having side edges which continue the side edges of the trapezoidal middle portion, said body member folded along two said diagonal ribs of the reticulated middle portion to form side walls of uniform height along the sides of the entire body member, and a bottom wall with a wide open front and a narrow open rear, wherein the narrow front portion has tapered edges from the fold line to the corners and the wide end of the trapezoidal middle portion, so that when the side walls are formed the front ends of the side walls will be perpendicular to the bottom wall.

4,491,358

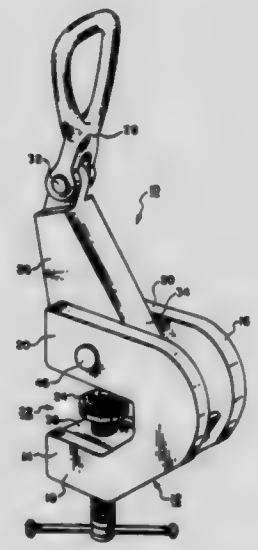
CLAMP

Moon Choung, Bayside, N.Y., assignor to Edison International, Inc., Rolling Meadows, Ill.

Filed Apr. 21, 1982, Ser. No. 370,299

Int. Cl.[3] B66C *1/44*

U.S. Cl. 294—101 9 Claims



1. A clamp for engaging a workpiece to be lifted comprising:

a rigid body defining a slot for receiving a workpiece;

a settable jaw attached to said body having its position with respect to said body adjustable along a line transverse to a longitudinal portion of the workpiece received in the slot of said body so as to be settable within a range of positions;

a swivel pad including a swivel pivot means for pivotally connecting said swivel pad and said rigid body;

a shackle for providing an attachment to a lifting means including a shackle pivot means for pivotally connecting said shackle and said swivel pad, said shackle pivot means having a shackle pivot axis about which said shackle and said swivel pad rotate with respect to each other, said shackle pivot means allowing the center of gravity of a suspended workpiece to align itself with a vertical plane extending through said shackle pivot axis;

a base face formed on said swivel pad for engaging the workpiece in a plane of engagement;

a hypotenusal face formed on said swivel pad for alternately engaging the workpiece in a plane of engagement which intersects the plane of engagement of said swivel pad, the angular relationship between each of the engaging planes and said shackle pivotal axis being such that when one of said faces is selected for engaging the freestanding workpiece, a plane through said shackle pivot axis and the center of gravity of the workpiece will pass through the base of the workpiece so that the workpiece may be lowered to rest on its original base and in its original orientation, and being such that when the other of said faces is selected for engaging the freestanding workpiece a plane through said shackle pivot axis and the center of gravity of the workpiece will not pass through the base of the workpiece so that the workpiece may be lowered to rest on a new base and in a new orientation.

4,491,359

CADDY FOR SKIS, POLES AND BOOTS

Robert P. Metropulos, 6218 Ridgeway Dr., Lake Tomahawk, Wis. 54539

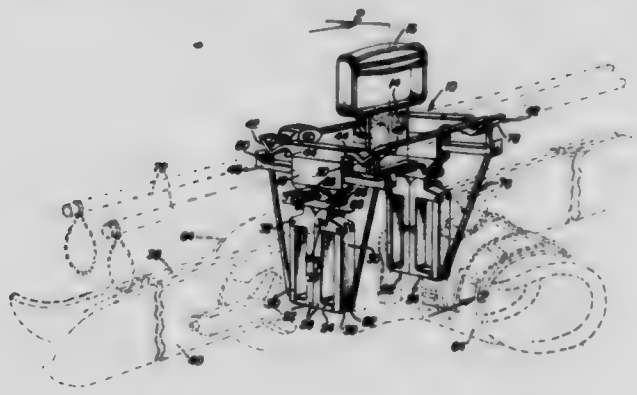
Filed Mar. 1, 1983, Ser. No. 471,273

Int. Cl.[3] A63C *11/02*

U.S. Cl. 294—147 6 Claims

1. A caddy for skis, poles and boots, said caddy including a main horizontally elongated shape retentive body, said body including handle means intermediate opposite ends engageable from above said body, the opposite end portions of said body

each including opposite side ski support structures supported therefrom, whereby each ski of a pair of skis may have longitudinally spaced portions thereof supported from the ski support structures on a corresponding side of said body, said ski support structures each including a pair of dependingly supported vertically elongated inner and outer arms between which to snugly receive a corresponding ski in edge upstanding horizontal position and with the pairs of support structures disposed on opposite sides of said body aligned longitudinally of said body for support of longitudinally spaced portions of a single associated ski therefrom and with the bottom surfaces of a pair of skis supported from said support structures opposing each other in horizontally spaced apart relation, the upper portions of said support structures being pivotally supported from said body for outward and upward swinging of the lower end of said



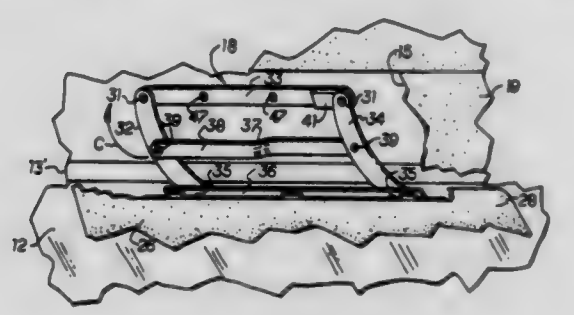
support structures from lower limit positions with corresponding opposite side inner arms abutted against each other through an arc of approximately 90° relative to said body toward generally horizontal positions wherein skis supported therefrom will be horizontally registered in laterally spaced apart relation and with the bottom surfaces of the skis facing downwardly, latch means operative to releasably latch said support structure in said generally horizontal positions, each of said outer arms being pivotally supported at its upper end for angular displacement relative to the corresponding inner arm about a horizontal axis extending longitudinally of said body for swinging movement of the lower end of each outer arm outward and upward away from the corresponding inner arms, said caddy including lock means operative to releasably lock said outer arms against outward and upward swinging movement relative to said corresponding inner arms.

4,491,360

CONCEALED VISOR

Dennis J. Fleming, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Jul. 30, 1982, Ser. No. 403,567
Int. Cl.³ B60J 3/00
U.S. Cl. 296—97 G 18 Claims



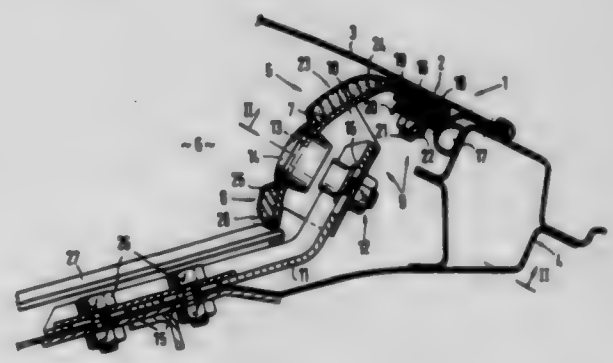
1. A visor control assembly for a vehicle comprising:
a visor body;
at least a pair of substantially parallel rigid arms spaced from one another and means for pivotally coupling one end of each arm to said visor body at spaced locations thereon;
means for pivotally coupling each parallel arm to a vehicle to permit movement of said visor panel on said arms between a raised stored position and a lowered use position; and
a cross arm extending between said parallel arms and having opposite ends pivotally coupled to said parallel arms to stablize the motion of said parallel arms wherein the pivot coupling of each end of said cross arm is offset from a line between the pivot couplings of each parallel arm to said visor body and a vehicle, and wherein each parallel arm is shaped to provide said offset pivotal coupling of said cross arm to said parallel arms.

4,491,361

INSTALLATION FOR FASTENING A LOWER EDGE AREA OF A TOP COVER AT A REAR FRAME OF A MOTOR VEHICLE

Eugen Kolb, Stuttgart, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Mar. 3, 1983, Ser. No. 471,657
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1982, 3207732
Int. Cl.³ B60J 7/00
U.S. Cl. 296—107 11 Claims



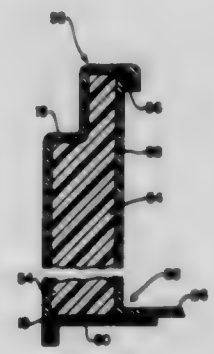
1. An installation for fastening a lower edge area of a top cover at a rear frame means of a motor vehicle, including fastening means and covering means covering said fastening means, comprising rail means angularly shaped in cross section including a first leg facing the passenger space serving as said covering means and as said fastening means at the rear frame means and a second leg extending generally parallel to the lower edge area of the top cover for retaining the lower edge area of the top cover, and a sealing member provided between said rail means and the rear frame means.

4,491,362

AUTOMOTIVE FIBERGLASS BODY

Thomas H. Kennedy, 33 Leighton Ave., Boardman, Ohio 44512

Filed Sep. 23, 1981, Ser. No. 304,655
Int. Cl.³ B62D 29/04, 39/00
U.S. Cl. 296—183 1 Claim



1. An automotive body unit comprising:
a fiberglass outer shell having a top edge about the periphery thereof, said top edge being, in cross-section, of an inverted U-shape;

a fiberglass inner shell received by said outer body still at said top edge and within said U-shape, forming a cavity between said inner shell and outer body shell, said cavity being filled with a close foam insulative material;

a support member attached to said outer body shell and in supporting interconnection with said inner shell about the bottom periphery thereof, said support member including a right angle and sealing said cavity;

wherein said inner shell includes a vertical panel interconnected at right angles to a floor pan, said inner shell being of unitary construction; and

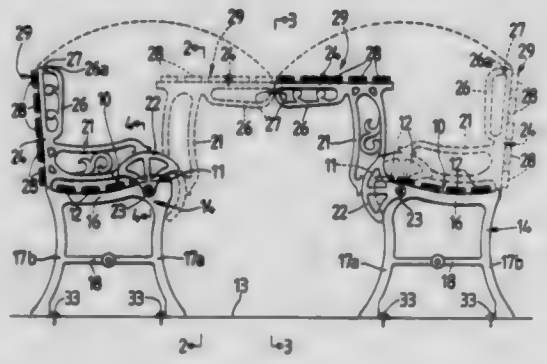
wherein portions of said floor pan further include two layers of balsa wood sandwiched between two layers of fiberglass, with a third layer of fiberglass therebetween.

4,491,363

COMBINATION FOLDABLE TABLE AND BENCH UNIT

James W. Kime, 95 Moonglow Dr., Birmingham, Ala. 35215

Filed Jul. 9, 1982, Ser. No. 396,886
Int. Cl.³ A47B 85/04
U.S. Cl. 297—126 2 Claims



1. In a combined foldable table and bench unit having a pair of elongated seat-like members arranged in parallel, spaced apart relation to each other with the front sides of said seat-like members facing each other, the improvement comprising,

(a) transverse, vertically extending frame supports mounted adjacent each end of said seat-like member for supporting said seat-like member above a supporting surface,

(b) an arm pivotally connected at one end thereof to an upper front portion of each said frame support and adapted for pivotal movement selectively to a rearwardly extending, generally horizontal position and to a generally vertical position,

(c) a back support member extending between the other ends of said arms of each said seat-like member and having a laterally extending back support bracket formed integrally at one end with each of said other ends of said arms with each said back support member extending upwardly in a generally vertical position while its arms extend rearwardly in said horizontal position and with each said back support member extending in a horizontal position while its arms extend upwardly in said vertical position with adjacent portions of said back support members in abutting relation with each other to define a table extending in a horizontal plane at an elevation above said seat-like members,

(d) a laterally projecting member carried by the other end of each said back support bracket with adjacent laterally projecting members being in alignment with and in abutting relation with each other when said back support members are in said horizontal position,

(e) there being aligned annular grooves in said adjacent laterally projecting members,

(f) a connector member adapted to rigidly connect said adjacent laterally projecting members to each other with one end portion of said connector member being of a shape to engage one annular groove of said aligned annular grooves and pivot relative thereto selectively to a first position with its other end portion engaging with a friction fit the other annular groove of said aligned annular grooves and to a second position with said other end portion of said connector member disengaged from said other annular groove; and

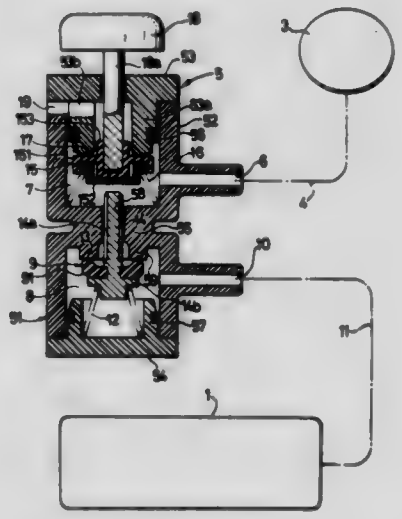
(g) cooperating stop means between said arms and said frame supports limiting downward pivotal movement of each said back support member while in said horizontal position.

4,491,364

LUMBER SUPPORT SYSTEM FOR A VEHICLE SEAT

Takemi Hattori, and Kozo Esaki, both of Aichi, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Feb. 12, 1982, Ser. No. 348,275
Claims priority, application Japan, Feb. 19, 1981, 56-23372
Int. Cl.³ A47C 7/42
U.S. Cl. 297—284 6 Claims



1. A lumbar support system for a vehicle seat, comprising:

a pressurized air supply source;

at leaset two air bags disposed at positions corresponding to the waist of a person seated in the vehicle seat;

each of said air bags being communicated with said pressurized air supply source through a valve casing, respectively;

each of said valve casings being attached to said vehicle seat and comprising a partition wall partitioning the interior of said valve casing into a first chamber and a second chamber, an inlet port opening into said first chamber and connected to said pressurized air supply source, a discharge port opening into said first chamber and allowing the communication of said first chamber with the exterior of said valve casing, an outlet port opening into said second chamber and allowing the communication of said second chamber with said corresponding air bag, and an opening by means of which said first chamber communicates with said second chamber;

a manually-operable push button movably supported on said valve casing;

a first normally closed valve formed within said first chamber for normally closing to interrupt the communication between said first chamber and said discharge port and adapted to be opened when said push button is manually operated; and

a second normally closed valve formed within said second chamber for normally interrupting the communication between said first and second chambers and adapted to be opened when said first normally closed valve is opened as well as when the pressurized air is supplied in said first chamber from said pressurized air supply source,

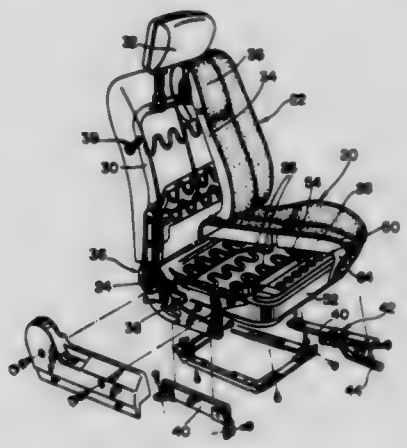
whereby an inadvertent opening of only said first valve by said push button does not release air pressure in said air bag.

4,491,365

THIGH SUPPORT ADJUSTING MECHANISM FOR VEHICLE SEAT

Takashi Murakami, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Mar. 8, 1982, Ser. No. 355,905
Claims priority, application Japan, Mar. 17, 1981, 56-37253
Int. Cl.[3] A47C *1/02*
U.S. Cl. 297—312 14 Claims



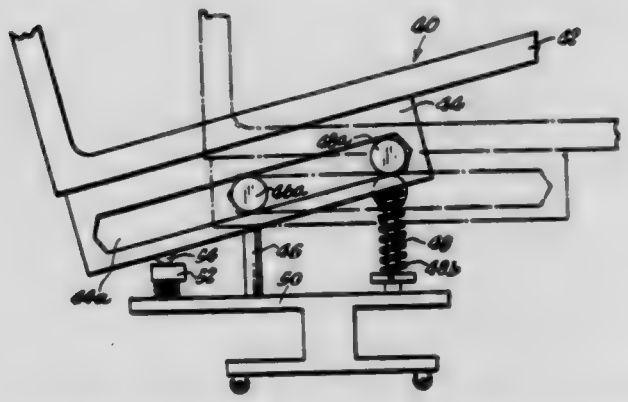
1. A thigh support for an automotive vehicle seat comprising:
a vehicle seat including a seat frame;
a thigh support frame provided adjacent the front end of said seat frame and pivoted thereto;
a manually operable lever means for manually adjusting the tilting angle of said thigh support frame, which lever means receives rotational force moment for variation of the angular position corresponding to the desired angular position of said thigh support frame;
first means, associated with said lever means, for converting the rotational force moment into essentially horizontal force for movement in essentially horizontal direction at a magnitude corresponding to the angular variation of said lever means; and
second means, associated with said first means, for converting the essentially horizontal force to essentially vertical lifting force for lifting up the free end of said thigh support frame to vary the tilting angle of the thigh support frame about said pivoted portion at a magnitude corresponding to the magnitude of the angular variation of said lever means.

4,491,366

MULTI-POSITIONAL CHAIR

Victor Silber, 4254 D'Este Ct., Apt. 202, Lake Worth, Fla. 33460

Filed Oct. 5, 1981, Ser. No. 308,810
Int. Cl.[3] A47C *3/026*
U.S. Cl. 297—329 2 Claims



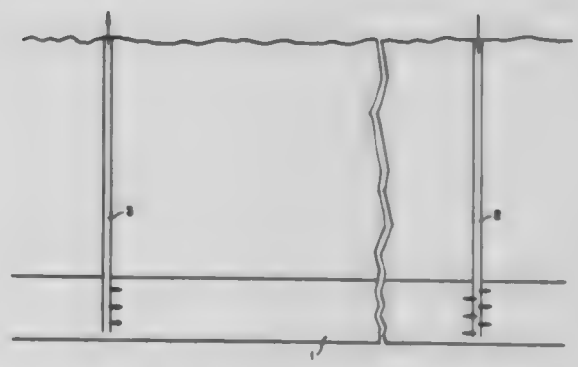
1. A new and improved multi-positional chair, comprising:
a seat portion, each side of said seat portion having a slotted guide member connected thereto;
a base member, each side of said base member having a rear roller pivot member and a front roller pivot member slidably engaged in the base member;
said rear roller'pivot member and said front roller pivot member having a roller pivotally mounted thereon;
each said roller being operably engaged in said slotted guide member;
each front roller pivot having resilient means for biasing said roller pivot upwardly, forcing said seat portion into a reclining position;
said resilient portion dampening inward axial movement of said front roller pivot when forward and downward force is exerted on said seat portion.

4,491,367

METHOD FOR SUBTERRANEAN GENERATION OF HEAT AS A SOURCE OF ENERGY

Miron Tuval, 21 Ezion St., Ramat Gan 52 383; Emanuel Azmon, 16 Oren St., Omer, and Avraham Melamed, 31 Haoranim St., Kfar Shmaryahu 45 263, all of Israel

Filed Aug. 4, 1982, Ser. No. 405,305
Claims priority, application Israel, Aug. 18, 1981, 63602
Int. Cl.[3] E21B *43/24, 43/28*
U.S. Cl. 299—4 9 Claims



1. A method for the generation and recovery of heat as a source of useful energy, comprising
locating substantially compact and impermeable subterranean formation of a calcareous rock in admixture with one or more silicate minerals capable of undergoing an accelerated enthalpic degradation,
boring at least one bore hole leading into said formation,
initiating a gradually proceeding, self-sustaining accelerated enthalpic degradation reaction in the bore hole which produces heat while gradually transforming the originally compact and impermeable subterranean formation into a porous structure,
injecting water into the bore hole in direct contact with the formation undergoing enthalpic degradation, said water being converted to steam by the heat from such enthalpic degradation;
capturing formed steam emerging from the bore hole, and recovering sensible heat therefrom.

4,491,368

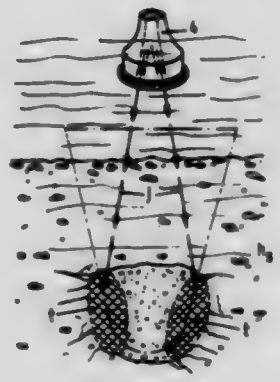
METHOD FOR DREDGING ROCK WITH A PICK AND WATER JET COMBINATION

Robert E. Uittenbogaard, Rotterdam, Netherlands, assignor to Stichting Speurwerk Baggertechniek, Netherlands

Continuation of Ser. No. 435,423, Oct. 20, 1982, abandoned.
This application May 1, 1984, Ser. No. 604,437
Claims priority, application Netherlands, Oct. 22, 1981, 8104796
Int. Cl.[3] E21C *25/60*
U.S. Cl. 299—17 4 Claims

1. A method of breaking out rock from a rock bottom under water, comprising the step of driving a pick at a speed of 1 to 5 meters per second to cut a groove in the rock bottom, thereby causing to form in front of the pick, adjacent to the

lower edge of the pick, a zone in which the rock is disintegrating, the height of said zone being from 25 to 50% of the height of the groove, wherein the improvement comprises the steps of directing at least one water jet so as to cause it to enter said zone at a point adjacent to one of the flanks of the groove, and



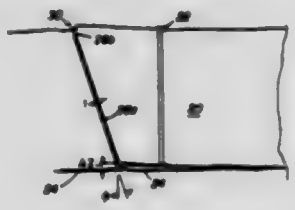
controlling the starting energy of the jet to cause a cavitation cone to form around the jet and to extend to the point where the jet hits said zone, thereby shielding the jet against the dampening action of the surrounding water and maintaining a high driving pressure in the jet until it hits said zone.

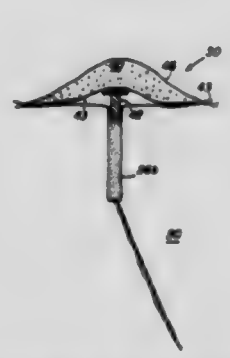
4,491,369

CREATION OF FLOW BARRIERS AND GROUND ISOLATION BY BLOCK DISPLACEMENT

James M. Cleary, 92 McCallum Dr., Box 541, Falmouth, Mass. 02541

Filed Dec. 1, 1982, Ser. No. 445,904
Int. Cl.³ E21C *41/00*
U.S. Cl. 299—19 5 Claims





1. A method for displacing a block of earth comprising the steps of:

(a) forming a separation along at least one side of a block to be displaced;

(b) forming a trench at an upper region of said separation;

(c) forming a passage to the bottom of said block;

(d) sealing an upper region of said separation, including pouring concrete into the top of said trench to form a seal and forming a vertical smooth low friction surface on the block side of said concrete seal within said trench; and

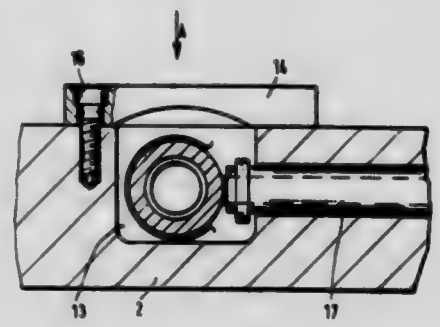
(e) injecting a fluid into said separation and displacing the block.

4,491,370

ROTARY CUTTING ROLLER

Gerd Best, Sprockhövel, and Norbert B. Welkert, Dortmund, both of Fed. Rep. of Germany, assignors to Krampe & Co Fertigung in Bergbaubedarf GmbH Zweigniederlassung, Pelkum, Fed. Rep. of Germany

Filed Aug. 24, 1983, Ser. No. 526,163
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1983, 3301238
Int. Cl.³ E21C *7/08*
U.S. Cl. 299—81 7 Claims



1. A cutting roller for a winning machine, comprising an elongated tubular support; at least one helical blade provided on a circumferential surface of said support; a locking ring connected to said tubular support at one end thereof, said blade and said locking ring each having side walls and a periphery and each being provided with a plurality of pick holders on said periphery for receiving cutting picks therein; spraying nozzles located on said blade and said locking ring near said pick holders and each being assigned to a respective pick holder for spraying a hydraulic fluid on the respective pick; at least one fluid supply passage means formed in said tubular support for said blade and said locking ring; fluid distribution passage means formed in said blade and extended circumferentially thereof and also formed in said locking ring; a plurality of connecting channels for connecting said fluid distribution passage means to individual spraying nozzles, said fluid distribution passage means being radially outwardly spaced from the outer circumferential surface of said tubular body towards said spraying nozzles, said fluid distribution passage means including a first circumferential groove formed in the side wall of said blade and a second circumferential groove formed in the side wall of the locking ring, covers for closing said first and second grooves, respectively; bridging passage means for connecting the fluid supply passage means to said fluid distribution passage means, said bridging passage means including a third radially extended groove in the side wall of said blade, a cover for closing said third groove, said covers for said first and second grooves and said cover for said third groove being made of non-corrosive material and means releasably connecting said cover to the blade and to the locking ring, respectively so as to enable an easy opening of and an access to each of said grooves from outside for cleaning or repairing each of said passage means.

4,491,371

HYDRAULIC PRESSURE CONTROL VALVE FOR AUTOMOBILE BRAKE MECHANISM

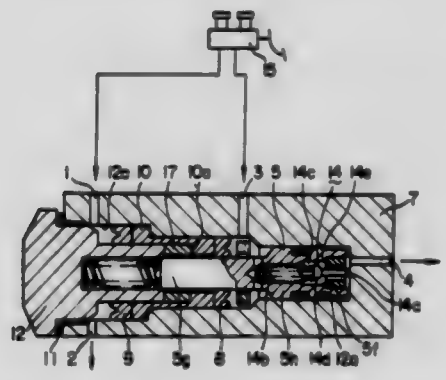
Shinkichi Kadota, and Tsuyoshi Yamase, both of Hamamatsu, Japan, assignors to Rhythm Motor Parts Manufacturing Company Limited, Hamamatsu, Japan

PCT No. PCT/JP81/00215, § 371 Date May 3, 1982, § 102(e) Date May 3, 1982, PCT Pub. No. WO82/00804, PCT Pub. Date Mar. 18, 1982
PCT Filed Sep. 3, 1981, Ser. No. 375,117
Claims priority, application Japan, Sep. 3, 1980, 121871; Jun. 8, 1981, 83748
Int. Cl.³ B60T *13/00*
U.S. Cl. 303—6 C 7 Claims

1. A hydraulic pressure control valve for an automobile brake mechanism having a first hydraulic pressure passage

communicating with each brake unit of one of front and rear wheels of the automobile, a second hydraulic pressure passage communicating with each brake unit of the other of said front and rear wheels, a plunger disposed in at least one of the hydraulic pressure passages and at least one hydraulic pressure regulating mechanism provided in association with the plunger, characterized in that said valve comprises:

a moving member moved by a difference in pressure between the first and second hydraulic pressure passages, said moving member being formed as a cylindrical member, and having an inner peripheral surface, said inner peripheral surface having a first portion conforming to the outer peripheral surface of the plunger with a small gap defined therebetween and said inner peripheral surface



having a second portion separated from said first portion by a shoulder, said shoulder defining a pressurizing surface on said inner peripheral surface of the moving member;

a pressurizing member compressed by the movement of the moving member to apply pressure to the plunger;

and a stopper member for supporting the pressurizing member between the stopper member and the pressurizing surface of said moving member;

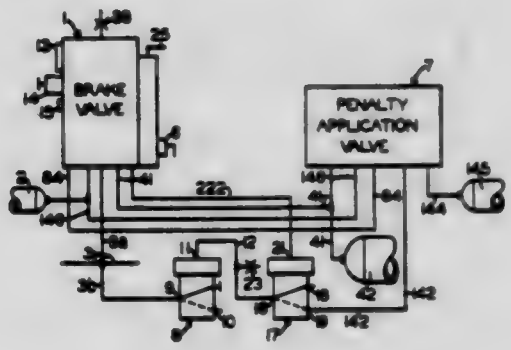
said pressurizing member being formed of an elastic material, so that when compressed by said stopper member and the pressurizing surface of said moving member, said pressure member exerts a large radial force on the plunger, thereby inhibiting the movement of the plunger.

4,491,372

PENALTY BRAKE APPLICATION NULLIFICATION-PREVENTION SYSTEM

Esmet Walley, McKeesport, Pa., assignor to American Standard Inc., Wilmerding, Pa.

Filed Apr. 11, 1983, Ser. No. 483,972
Int. Cl.³ B60T 7/16, 7/18
U.S. Cl. 303—18 10 Claims



1. A penalty brake application nullification-prevention system for a railroad train comprising:

(a) a brake pipe in which fluid under pressure is carried, a reduction of said brake pipe fluid pressure being effective to apply the train brakes;

(b) a brake valve device to which said brake pipe is connected comprising:

1. relay valve means for effecting said reduction of said brake pipe fluid pressure;
2. a manually positionable selector valve having a cut-in and a cut-out position; and
3. cut-off valve means between said brake pipe and relay valve means and operable to a closed position for interrupting fluid pressure communication between said brake pipe and said relay valve means in said cut-out position of said selector valve;

(c) penalty application valve means for sensing an unsafe operating condition of said train to thereby cause said relay valve means to effect said reduction of said brake pipe fluid under pressure; and

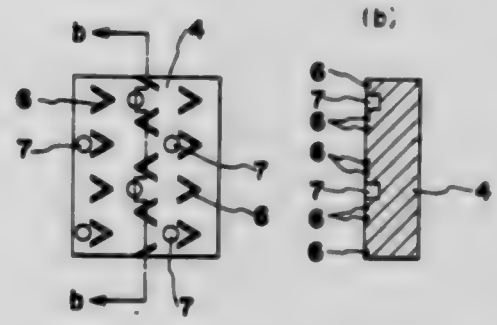
(d) means operative in response to said penalty application valve sensing an unsafe operating condition of said train and to said selector valve being set in said cut-out position for exhausting said brake pipe fluid under pressure in bypass of said cut-off valve means.

4,491,373

CONSTRUCTION OF THE MATING SLIDING MEMBERS IN A LINEAR FEEDING MEANS

Hiromi Sugi, Ayase; Kyozaburo Furumura, Ninomiya, and Hiromitsu Asai, Fujisawa, all of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1983, Ser. No. 526,560
Claims priority, application Japan, Aug. 25, 1982, 57-128381[U]; Mar. 14, 1983, 58-36448[U]; Apr. 8, 1983, 58-61956
Int. Cl.³ F16C 29/00, 32/06
U.S. Cl. 308—5 R 15 Claims



1. A linear feeding means comprising, a rod-shaped supporting member and a carriage member slidably supported thereon for relative reciprocal movement in the lengthwise direction of said supporting member, wherein one of said members is provided with a plurality of arrow head shaped recesses for generating hydrodynamic pressure and each of the tip end of said recesses is disposed so as to be directed to either one direction or to the other opposite direction of the relative reciprocal movement of said supporting member and said carriage member.

4,491,374

SCREW PUMP LUBRICATION SYSTEM

Behzad Hagshenas, Rockford; Donald W. Butler, Roscoe, and Anson S. Coolidge, Rockford, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Mar. 6, 1981, Ser. No. 241,344
Int. Cl.³ F16C 33/66; F01D 25/20
U.S. Cl. 384—471 4 Claims

1. A self-priming high speed screw pump lubrication assembly, including in combination, a rotary shaft mounted in the inner races of a pair of spaced apart bearings to be lubricated, the outer races of said bearing pair positioned against the inner surface of a tubular member fitted in a housing, a source of lubricant stored within said housing, a pair of rotary seal means positioned on said tubular member and between said tubular member and said rotary shaft, such that said rotary shaft passes

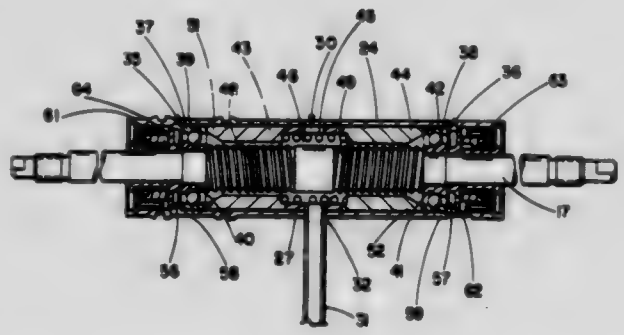
therethrough, said pair of bearings located between said rotary seal means,

first and second concentric sleeves positioned on said rotary shaft and between said bearings, said sleeves spaced apart thereby creating a lubrication chamber formed by said rotary shaft said sleeves and said tubular member, said sleeves each have a portion formed such that said sleeve only contacts said outer race of said bearings to be lubricated,

biasing means positioned between said sleeves to thereby force said sleeves against said outer bearing races,

a conduit coupled to and through said tubular member having one end in communication with said lubrication chamber and another end in communication with said source of lubricant,

said rotary shaft having oppositely threaded surfaces



thereon in the region of said sleeves, said threaded portions in cooperation with said sleeves upon rotation of said rotary shaft acting as a screw pump to thereby draw lubricant from said source of lubricant through said conduit into said lubrication chamber and thence cause said lubricant to flow in a direction between said rotary shaft and said sleeves to be delivered toward said bearings to be lubricated and thereafter returned to said source of lubricant in said housing,

the diameter of said rotary shaft having said threaded portions being greater than the diameter of said rotary shaft passing through said inner races of said pair of bearings,

said rotary shaft having position thereon a pair of bladed oil slingers at a point adjacent to said bearings and on a side opposite to the direction of said lubricant flow,

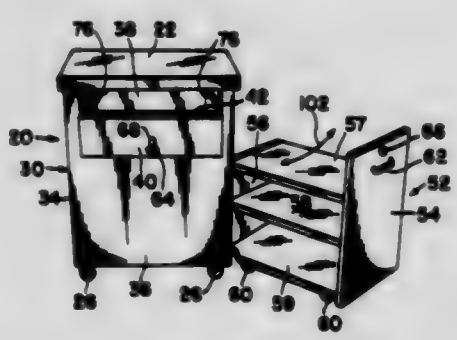
said oil slingers being located within said tubular member and concentrically mounted in respect to said rotary shaft.

4,491,375

COMPUTER WORK STATION CABINET

Carlos V. Ugalde, 1150 E. Service Ave., West Covina, Calif. 91790

Filed Aug. 1, 1983, Ser. No. 519,046
Int. Cl.[3] A47B *88/06*
U.S. Cl. 312—250 19 Claims



1. A combined work station and security cabinet for a computer system including:

a cabinet enclosure having connected:

a front wall;

a back wall;

first and second side walls, said first side wall defining an opening therein; and

a top wall; and

a side drawer assembly having:

an outer side wall positionable to fill said defined opening in said first side wall;

an inner side wall;

at least a first shelf positioned between said inner and outer side walls for supporting at least some of said computer system, said at least a first shelf having:

a front edge;

a first pivot pin extending downwardly from said inner side wall of said side drawer assembly adjacent said front edge of said at least a first shelf;

means to lock said side drawer assembly in position within said cabinet enclosure with said outer side wall filling said defined opening in said first side wall; and

downwardly facing castering rollers out of engagement with said cabinet enclosure positioned to allow said side drawer assembly to be rolled out of said cabinet enclosure, said cabinet enclosure further including:

a first engagement member having:

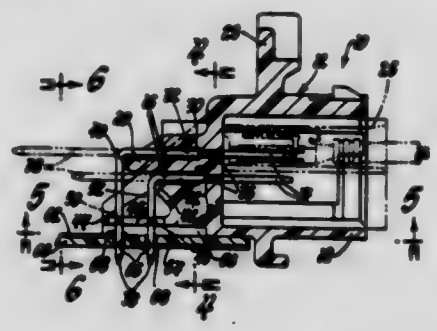
a pin hook thereon positioned to engage said first pivot pin when said side drawer assembly is rolled out of said cabinet enclosure so that said side drawer assembly can swing about said hook through a predetermined angle.

4,491,376

ELECTRICAL HEADER ASSEMBLY

Joseph H. Gladd, Cortland; Robert G. Plyler, Vienna, and Lyle B. Suverison, Fowler, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 20, 1982, Ser. No. 419,934
Int. Cl.[3] H01R *41/00*
U.S. Cl. 339—9 E 5 Claims



1. A header assembly for a printed circuit board or the like comprising:

a housing of thermoplastic material having a mating end, an opposite conductor end and a plurality of longitudinal cavities which extend longitudinally through the housing from the mating end to the conductor end,

said housing having anvil means at the conductor ends of the cavities, and a longitudinal locator plate at the conductor end which is spaced from the anvil means in the transverse direction and which extends beyond the anvil means in the longitudinal direction,

said locator plate having a plurality of longitudinal slots, each of which is aligned with at least one cavity,

a plurality of metallic conductor pins disposed in the respective cavities, said conductor pins having bent tails which engage the anvil means to secure the conductor pins in the longitudinal direction, said bent tails projecting through the slots in the locator plate and retained in a prearranged pattern thereby, and

means for accommodating differential thermal expansion between the housing and the conductor pins comprising a spacing in the rearward portion of the cavities which extends to the anvil means and permits the longitudinal portions of the conductor pins disposed therein to flex

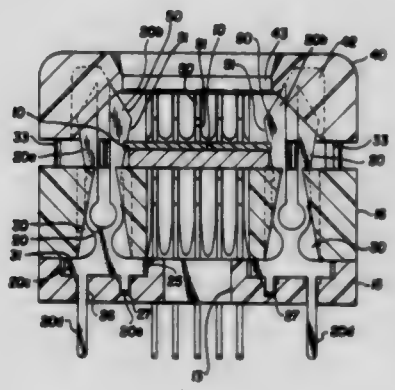
toward the locator plate, and a slip fit of the bent tails in the slots which permits the bent tails to slip in the transverse direction.

4,491,377

MOUNTING HOUSING FOR LEADLESS CHIP CARRIER

Wayne K. Pfaff, 1316 Savannah, Irving, Tex. 75062

Filed Apr. 19, 1982, Ser. No. 369,347
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—74 R 22 Claims



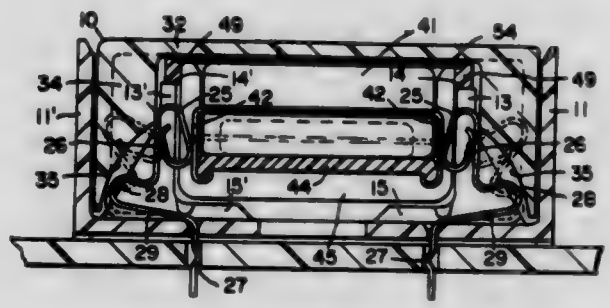
1. Mounting means for a leadless chip carrier comprising:
(a) base support means having first and second oppositely disposed major faces;
(b) a plurality of axially elongated conductive pins passing transversely through said base support means substantially perpendicular to said first and second major faces, the opposed inner edges of the ends of said pins extending from said first major face arranged to define a cavity substantially conforming to at least two oppositely disposed lateral peripheral dimensions of said leadless chip carrier in a plane parallel with said first major face and the inner edges of said pins converging slightly inwardly with distance from said first major face; and
(c) unitary means operable independently of said leadless chip carrier reciprocally moveable axially with respect to said pins and coacting with said opposed inner edges of said pins for uniformly spreading the ends of said pins extending from said first major face to permit the insertion of a leadless chip carrier therebetween.

4,491,378

ZERO INSERTION FORCE ELECTRICAL CONNECTOR

Christopher L. Crawford, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 28, 1983, Ser. No. 470,357
Int. Cl.³ H01R *13/629*
U.S. Cl. 339—75 MP 6 Claims



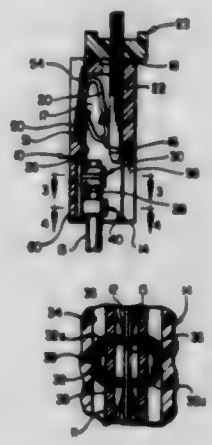
1. A socket housing comprising:
a base having opposed parallel sidewalls and opposed parallel endwalls upstanding from a bottom wall and an open top, rows of closely spaced barriers upstanding from the bottom wall substantially perpendicular to adjacent sidewalls and spaced therefrom adjacent the top, adjacent barriers and sidewalls defining therebetween finger proof terminal receiving compartments, opposed rows defining therebetween a cavity for receiving a dual-in-line plug as a free fit,
terminals in respective compartments having anchoring portions in said bottom wall, contact portions remote therefrom, but not extending beyond said barriers, and resilient arm portions therebetween, each said resilient arm portion comprising a cantilever portion extending outward from the anchoring portion toward the adjacent sidewall and an intermediate portion of sinuous shape between the cantilever portion and the contact portion, and
a cover having rows of cam surfaces aligned with respective terminals to urge the contact portions beyond the barriers and into electrical contact with respective leads of a dual-in-line plug received in the cavity as the cover is placed on top of the base.

4,491,379

INSULATION DISPLACEMENT CONNECTOR

Vincent B. Brown, Prospect Heights; Charles A. Kozel, McHenry, and John T. Scheitz, Palatine, all of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.

Continuation of Ser. No. 212,794, Dec. 3, 1980, abandoned, which is a continuation of Ser. No. 013,238, Feb. 21, 1979, Pat. No. 4,243,286. This application Jul. 30, 1982, Ser. No. 403,462
The portion of the term of this patent subsequent to Jan. 6, 1998, has been disclaimed.
Int. Cl.³ H01R *13/38*
U.S. Cl. 339—97 P 2 Claims



1. An insulation displacement connector for an electric wire having a conductive core and an insulation overwrap, comprising the combination of a housing having walls defining an elongate channel, and a terminal adapted to fit within the channel and present an exposed wire securing end to which the wire is to be connected, said wire securing end having a base and a pair of opposed jaws integral with and upstanding from the base, said pair of jaws including a pair of opposed generally parallel sidewalls upstanding along axial fold lines from said base, each of said sidewalls being bent at each end thereof along fold lines transverse to said base to form a pair of flanges which together with the corresponding sidewall define a generally U-shaped jaw structure, said flanges each being approximately perpendicular to said sidewalls, said base and said sidewalls both being mechanically deformed to define embossment means extending crosswise of the axial fold lines thereby strengthening the sidewalls and increasing axial restraining of a wire held between said jaws, said flanges having lower edges that overlie and approximately abut said base on opposite sides of said embossment means, each of said jaws including a pair of cutting edges converging to opposed gripping edges adjacent said base, which gripping edges are spaced apart a distance slightly less than the diameter of said conductive core, said cutting and gripping edges being formed on the ends of each of said flanges thereby affording four cutting and gripping edges for cooperation with said wire, whereby when said wire with the overwrap thereon is aligned over the exposed pair of jaws and forced transversely therebetween and against the base, said

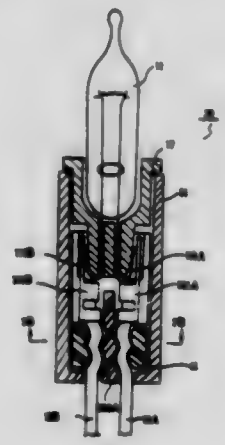
cutting edges of said pair of jaws displace the insulation overwrap and frictionally contact said conductive core to establish an electrical connection between said terminal and wire and also to axially restrain said wire relative to said terminal.

4,491,380

RECEIVING MEANS ADAPTED FOR A PUSH-IN TYPE LAMP SOCKET

Jeng-Shyong Wu, 133 Tungshing Rd., Toufun, Maulil, Taiwan

Filed Mar. 3, 1981, Ser. No. 240,009
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—105 7 Claims



1. A lamp socket for receiving a push-in type lamp, said lamp being carried by a tipped base having wire leads on opposite sides of the base tip, said socket comprising a housing of hollow, tubular character including openings at top and bottom for respectively receiving the lamp and base from the top and a pair of insulated conductive wires from the bottom, receptacle means of insulative material for being received by and contained within the housing, the receptacle means having two joined symmetrical halves defining a central slot between them for receiving the base tip and recesses at opposite ends of the slot for fitting therein of contacts at the ends of said wires for contacting the lamp leads, said halves being joined by an intermediary bar having a tab-like lower portion protruding downwardly from said joined halves with said wires on opposite faces thereof, said faces providing uneven outer surfaces, and a clamp element of insulative material and ring-like configuration, the clamp element being receivable by and contained within the housing below said receptacle means for receiving the downwardly protruding portion thereof and said wires, said clamp element having an uneven inner surface shaped complementarily to said uneven faces for clamping said wires in precisely separated relationship on opposite sides of said protruding portion when said downwardly protruding portion is received by said clamp means.

4,491,381

ELECTRICAL PANELBOARD CONNECTOR

Wilbur A. Hemsher, Jr., New Cumberland, and Daniel E. Stahl, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

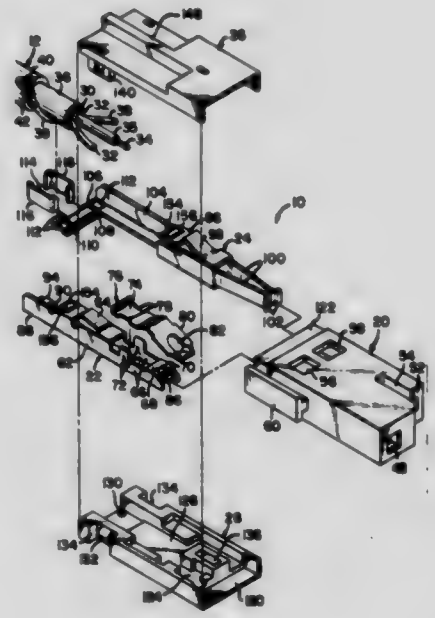
Filed Jun. 23, 1983, Ser. No. 506,964
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—107 9 Claims

1. An electrical connector for terminating signal and ground conductor means of a trilead cable means and electrically connecting the signal and ground conductor means respectively to a pin terminal and a ground rail of a panelboard, comprising:

dielectric housing means having parallel passageway means extending therethrough which communicate with respective opening means at a front end of said housing means into which the pin terminal and ground rail extend;

signal terminal means disposed along one of said passageway means and including contact means and termination means, said contact means being in alignment with said opening means for electrical connection with the pin terminal, said termination means spaced outwardly from a rear end of said housing means for terminating the signal conductor means thereto;

ground terminal means disposed along the other of said passageway means and including contact member means and termination member means, said contact member means being in alignment with said opening means for electrical connection with the ground rail, said termination member means spaced outwardly from a rear end of said housing means and from said termination means of said signal terminal means for terminating the ground conductor means thereto;



one of said signal terminal means and said ground terminal means having cable securing means for engagement with the cable means securing the cable means thereto and providing a cable strain relief;

terminal securing means on said signal terminal means and said ground terminal means and said housing means securing said terminal means in said housing means; and

dielectric cover means secured in position in engagement with said housing means and covering said termination means and said termination member means and engaging a section of the cable means rearward from said cable securing means providing additional cable strain relief.

4,491,382

RESILIENT CONTACT MEMBER OF JACK FOR USE IN CONJUNCTION WITH PIN PLUG

Kazuhiro Ishikawa, Tomioka, Japan, assignor to Iizuka Electric Industry Company Ltd., Tomioka, Japan

Continuation of Ser. No. 389,318, Jun. 17, 1982, abandoned, which is a continuation of Ser. No. 127,786, Mar. 5, 1980, abandoned. This application Feb. 17, 1984, Ser. No. 579,803
Claims priority, application Japan, Oct. 22, 1979, 54-146095; Oct. 22, 1979, 54-146096; Oct. 22, 1979, 54-146097
Int. Cl.³ H01R *13/16*
U.S. Cl. 339—259 R 4 Claims

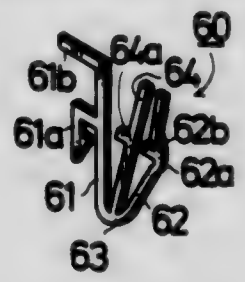
1. A resilient contact member of an electrical jack for use in conjunction with a pin-plug and which can be manufactured by a single punching operation so that any additional manufacturing step is not required, said resilient contact member comprising:

a fixed leg portion for securing the contact member to a housing of the jack;

a movable leg portion extending substantially in parallel with the fixed leg portion;

a substantially U-shaped portion joining one end of the fixed and one end of the movable leg portions to each other;

and a reinforcing resilient leg extending in the same direction as said movable leg from said U-shaped portion into a space between the fixed and movable leg portions for engaging with the movable leg portion in a resilient manner and being movable toward the fixed leg portion,



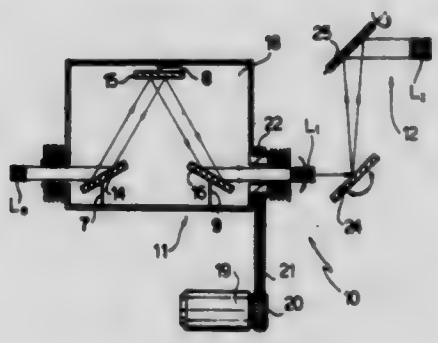
wherein said fixed and movable leg portions, U-shaped portion and reinforcing resilient leg are all formed integrally in a single manufacturing step by punching them from a thin metal plate, and wherein said reinforcing resilient leg and said movable leg extend to substantially the same end point.

4,491,383

DEVICE FOR MODIFYING AND UNIFORMING THE DISTRIBUTION OF THE INTENSITY OF A POWER LASER BEAM

Luciano Pera, Vinovo; Armando Boggero, Turin; Giorgio Manassero, Turin, and Paolo Gay, Turin, all of Italy, assignors to Centro Ricerche Fiat S.p.A., Turin, Italy

Filed Sep. 20, 1982, Ser. No. 420,359
Int. Cl.³ G02B 27/17
U.S. Cl. 350—66 13 Claims



1. A device for modifying and uniforming the distribution of the intensity of a power laser beam, comprising:

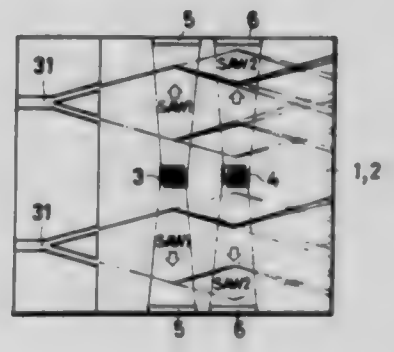
a uniforming section including a rotatable support body having disposed therein to rotate therewith a plurality of mirrors adapted for reflecting an incident laser beam portion as a reflected laser beam portion having a substantially uniform spatial distribution of intensity and rotating about its own axis of symmetry in the direction of propagation, said mirrors being oriented relative to the incident laser beam portion and the reflected laser beam portion such that the axial direction of propagation of both laser beam portions substantially coincide with each other.

4,491,384

OPTICAL SWITCH DEVICE

Tsukasa Yamashita, Nara; Masaharu Matano, Kyoto; Kazuhiko Mori, Osaka, and Norihiro Ota, Saitama, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Jan. 15, 1982, Ser. No. 339,309
Claims priority, application Japan, Jan. 17, 1981, 56-5442; Feb. 18, 1981, 56-22663
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.13 10 Claims



1. An optical switch device comprising:

an optical waveguide layer made of piezoelectric material,

optical switch means for switching the propagation direction of an information carrying light beam through the waveguide layer to one of at least two different directions, and

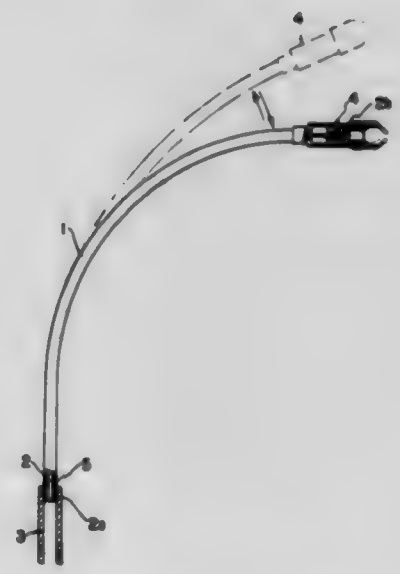
means for generating and propagating on the waveguide layer a surface acoustic wave having a variable frequency and a propagation direction adapted for deflecting the light beam in each of the different propagation directions at different angles to obtain a plurality of resolvable light beams.

4,491,385

CONSTRUCTION FOR HOLDING OPTICAL FIBERS

Kyoshiro Imagawa; Shiro Sakuragi, and Mitsunori Saitoh, all of Kyoto, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Jul. 8, 1982, Ser. No. 396,473
Claims priority, application Japan, Jul. 10, 1981, 56-107138
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.20 6 Claims



1. An optical fiber device, comprising:

a hand piece; a longitudinally extending cable having a longitudinal axis; and an optical fiber extending longitudinally in said cable, one end of said cable and a corresponding free end of said optical fiber being mounted in said hand piece, such that said corresponding end of said fiber

is longitudinally slidable and rotatable about said longitudinal axis, relative to said hand piece.

4,491,386

OPTICAL FIBER CABLE AND PROCESS FOR PRODUCTION THEREOF

Yukiyasu Negishi; Yukinori Ishida, both of Ibaraki; Yasunori Saito, and Shigeru Tanaka, both of Kanagawa, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo and Sumitomo Electric Industries, Ltd., Osaka, both of, Japan

Filed Aug. 31, 1981, Ser. No. 298,150
Claims priority, application Japan, Aug. 29, 1980, 55-118446
Int. Cl.[3] G02B 5/14
U.S. Cl. 350—96.23 12 Claims



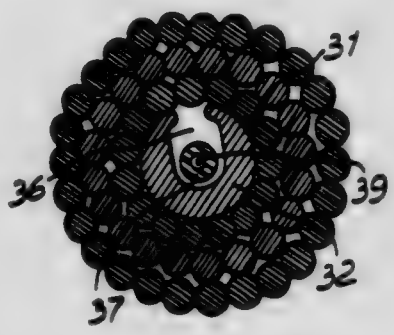
8. An optical fiber cable comprising a linear center member having at least one longitudinal and spiral groove in the surface thereof, an optical fiber coated with a cushioning material positioned in said groove, a thin outer sheath in intimate contact with the linear center member, and a jelly-like material filling the space around said optical fiber, wherein said linear center member is made of copper or aluminum, said jelly-like material is a substance that is fluid or semifluid at room temperature, and the outer sheath is a plastic material.

4,491,387

OVERHEAD ELECTRIC AND OPTICAL TRANSMISSION SYSTEMS

Phillip Dey, New Barnet; Peter Fearns, Huyton; Karl W. Plessner, Kings Langley; Kenneth H. Pickup, Uppermill; Bernard Gaylard, Altrincham, and Arthur B. Murphy, Rainford, all of England, assignors to BICC Public Limited Company, London, England

Division of Ser. No. 220,291, Dec. 29, 1980, Pat. No. 4,359,598, which is a continuation of Ser. No. 904,557, May 10, 1078, abandoned. This application Aug. 25, 1982, Ser. No. 411,584
Claims priority, application United Kingdom, May 13, 1977, 20234/77; Jan. 24, 1978, 2861/78
The portion of the term of this patent subsequent to Nov. 16, 1999, has been disclaimed.
Int. Cl.[3] G02B 5/172; H02G 7/00; H01B 7/18
U.S. Cl. 350—96.23 16 Claims



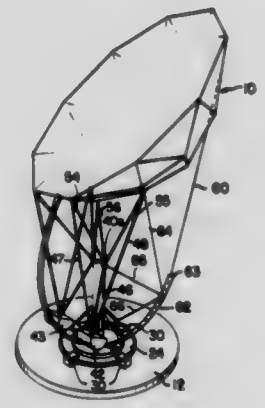
12. An overhead flexible electric transmission conductor adapted to be freely supported from spaced supports in long lengths, comprising a substantially circumferentially rigid central core consisting of a single bare elongate member of metal or metal alloy and of substantially U-shaped transverse cross-section, the space between the limbs and base of the U-shape extending throughout the length of the core and constituting an elongate compartment and the limbs of the U being folded together so that the gap between the free ends of the limbs is at least partially closed; at least one substantially flat flexible elongate support member which is loosely housed in the elongate compartment and on which at least two separate flexible optical guides are secured; and, surrounding the central core, at least one stranded layer of helically wound bare elongate elements of metal or metal alloy.

4,491,388

SUPPORT CARRIAGE FOR A SOLAR CONCENTRATOR

Douglas E. Wood, P.O. Box 32, Fox Island, Wash. 98333

Filed May 28, 1982, Ser. No. 382,918
Int. Cl.[3] G02B 5/10, 7/18
U.S. Cl. 350—636 10 Claims



1. A support system for a solar concentrator, comprising:
concentrator support means, having a bearing means mounted thereon;
means for turning said support means in a horizontal plane;
counterweight means;
strut means connecting said counterweight means, said bearing means and the solar concentrator in such a manner that the solar concentrator can be rotated in a vertical plane to a stowed position face down on the ground, wherein the support system is so arranged that said concentrator support means is outside the rim of the solar concentrator when the solar concentrator is in its stowed position; and
means for rotating the solar concentrator in a vertical plane, including a track means which extends outwardly in a curve to the rear of the solar concentrator from a point approximately on the rim of the solar concentrator, means supporting said track means relative to the solar concentrator, line means which is connected at one end thereof to the solar concentrator, which extends along said track means, and which is connected at the other end thereof to the solar concentrator again, and means operating on said line means for raising and lowering said solar concentrator between a stowed position face down on the ground and a raised upright operative position.

4,491,389

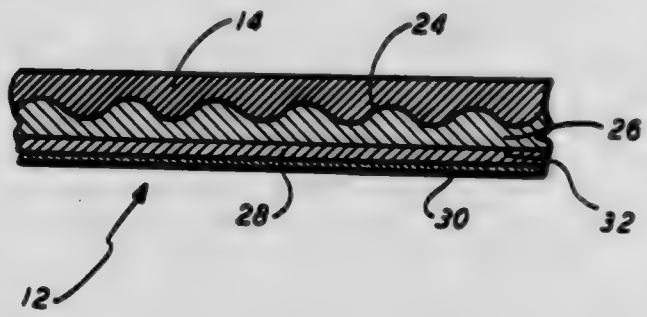
CUSHION MIRROR

Joseph W. Coburn, Jr., 675 Ocean Ave., Long Branch, N.J. 07740

Filed Jul. 6, 1982, Ser. No. 395,637
Int. Cl.[3] G02B 5/08, 5/12; A47F 7/14; A47G 1/16
U.S. Cl. 350—609 7 Claims

5. Apparatus for providing a mirror, comprising:
a rigid mirror support surface having surface irregularity;
a non-rigid mirror having a reflecting surface that produces images by reflection; and
a layer of conformable material conforming to said surface irregularity and for causing said support surface to present a flat support surface to said non-rigid mirror whereby the

distorting effect of said surface irregularity on images produced by said mirror is substantially eliminated, said



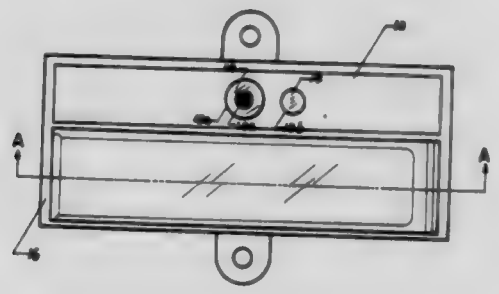
conformable material secured to said support surface and to said mirror.

4,491,390

AUTOMATIC LIQUID-CRYSTAL LIGHT SHUTTER

Hsieh Tong-Shen, No. 126-3, Shen Li Rd., Tso Ing, Kaohsiung, Taiwan

Filed May 6, 1982, Ser. No. 375,570
Int. Cl.³ G02F *1/13*; H01J *40/14*, *1/56*; G01D *5/34*
U.S. Cl. 350—331 R 15 Claims



1. An automatic light-responsive light shutter comprising:
light shutter means responsive to application of a control signal at a first level for passing light therethrough along a first path and responsive to application of said control signal at a second level for highly attenuating light passing therethrough along said first path;
first light responsive means for sensing intensity of direct light which strikes said light shutter means generally along said first path;
second light responsive means for sensing intensity of side light which strikes said light shutter means generally perpendicular to said first path;
circuit means for providing a comparison signal at a level which is a function of the relative intensities of direct and side light sensed at said first and second light responsive means, respectively; and
control means responsive to said comparison signal for applying said control signal to said light shutter means at said first level when said comparison signal level is within a first predetermined range of levels, and for applying said control signal to said light shutter means at said second level when the comparison signal level is within a second predetermined range of levels, said first and second predetermined ranges of levels being substantially adjacent one another.

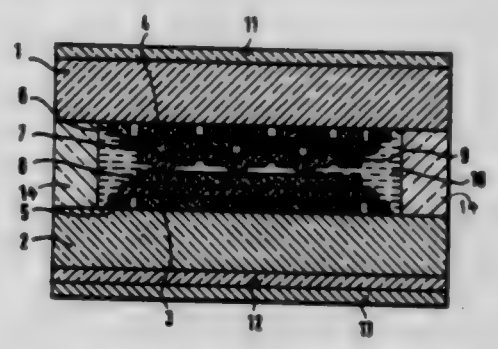
15. The method of controlling visible light attenuation through a liquid-crystal panel, said method comprising the steps of:
sensing intensity of direct light impinging generally perpendicularly on said panel;
sensing intensity of side light directed towards that panel generally perpendicular to said direct light;
comparing the sensed direct light and side light intensities;
passing light through said panel with relatively little attenuation when the sensed side light intensity is approximately the same as or greater than sensed direct light intensity and when the sensed direct light intensity is below a predetermined intensity; and
attenuating passage of light through said panel when the sensed direct light intensity is substantially greater than the sensed side light intensity.

4,491,391

LIQUID CRYSTAL DISPLAY DEVICE WITH VISIBLY IMPERCEPTABLE SPACERS

Friedrich W. Nickol, Eppstein, and Harald Perthes, Sulzbach, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 16, 1982, Ser. No. 348,627
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1981, 3107456
Int. Cl.³ G02F *1/133*
U.S. Cl. 350—339 R 17 Claims



1. In a liquid crystal display device having light characters against a dark background, said device having a fluid which can be switched between two optically different states and is arranged between two support plates which are parallel to each other with a fixing layer applied to one of the facing surfaces of the support plates, wherein said fixing layer is an insulating layer containing spacer elements by which the support plates are held at a given distance apart from each other, and with a polarizer associated with each support plate, the improvement wherein
the insulating layer substantially completely covers the corresponding said support plate, and
the spacer elements comprise a light absorbing material of dark color, and wherein said spacer elements have a diameter less than 100 microns and are spaced apart from each other with spacings greater than said diameter with a distribution density less than two spacer elements per square millimeter thereby minimizing the diffusion of light on the dark background while being substantially imperceptible to a viewer of the display device.

4,491,392

ELECTROCHROMIC DEVICE WITH POROUS GLASS ELECTROLYTE

Thomas H. Elmer, and Francis P. Fehlner, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 17, 1982, Ser. No. 378,780
Int. Cl.³ G02F *1/01*
U.S. Cl. 350—357 4 Claims

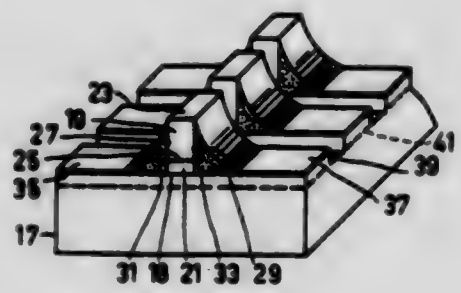
1. An electrochromic device comprising a layer of an electrochromic material as a light-modulating layer, a counterelectrode layer, and a solid electrolyte layer between and in contact with both the electrochromic layer and the counterelectrode layer, characterized in that the solid electrolyte layer consists of a sheet of porous glass impregnated with a solid, ion-conductive silver or alkali metal compound.

4,491,393

SWITCHING DEVICE FOR LIGHT BEAMS

Marc M. M. Roelants, Brussels, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 29, 1982, Ser. No. 373,181
Claims priority, application Netherlands, May 13, 1981, 8102342
Int. Cl.³ G02F 1/03
U.S. Cl. 350—388 11 Claims



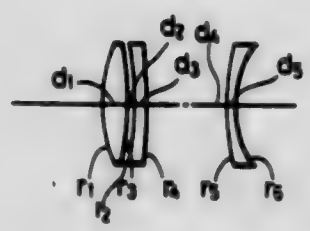
1. A switching device for light beams including a switching member comprising:
   a. a rigid carrier;
   b. an arrangement of electro-optical light transmission elements flexibly attached to the rigid carrier, each element including (1) a block of electro-optical material having oppositely disposed light-transmitting end surfaces and oppositely disposed side surfaces extending between said end surfaces, and (2) an electrode extending across each of said side surfaces;
   c. flexible material disposed between each element and the rigid carrier for effecting said flexible attachment; and
   d. a plurality of conductors electrically-connected to the electrodes, each of said conductors including a conductive layer attached to the rigid carrier and a portion flexibly attached to at least one of said electrodes.

4,491,394

IMAGE-FORMING LENS SYSTEM

Masaki Matsubara, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 25, 1982, Ser. No. 381,886
Claims priority, application Japan, May 26, 1981, 56-79919
Int. Cl.³ G02B 9/12
U.S. Cl. 350—414 8 Claims



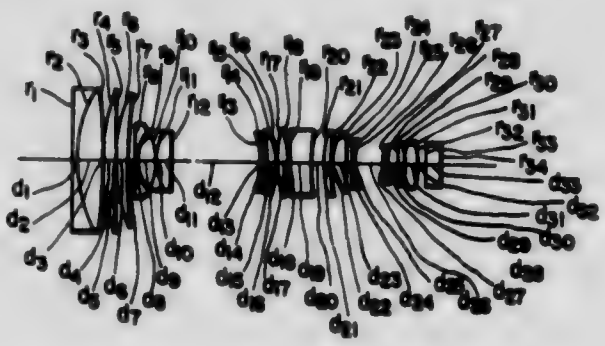
1. An image-forming lens system for forming an image by a microscopic objective of infinite distance design, comprising:
   a lens group consisting of a first lens component together with a second lens component and having a positive refractive power, and a third lens component having a negative refractive power, said lens system having a positive power as a whole and satisfying the following conditions:
   (1) $0.8<f_{12}/|f_3|<1.4$
   (2) $1<100d_4/f<10$
   (3) $10<r_6/(n_3-1)<30$
   (4) $r_6<|r_4|$
   (5) $0.4<f_1/|f_3|<2.0$
   wherein the reference symbol f represents the focal length of the entire system, the reference symbol f_1 represents the focal length of said first lens component, the reference symbol f_{12} represents the focal length of the lens group, the reference symbol f_3 represents the focal length of the third lens component, the reference symbol r_4 represents the radius of curvature of the surface on the image side of the second lens component, the reference symbol r_6 represents the radius of curvature of the surface on the image side of the third lens component, the reference symbol d_4 represents the airspace between the second and third lens components, and the reference symbol n_3 represents the refractive index of the lens nearest the image side of the third lens component.

4,491,395

ZOOM LENS SYSTEM

Sadao Okudaira, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 16, 1982, Ser. No. 349,345
Claims priority, application Japan, Feb. 16, 1981, 56-21183
Int. Cl.³ G02B 15/16
U.S. Cl. 350—427 4 Claims



1. A zoom lens system comprising, in order from the object side, a first lens group having a positive focal length, a second lens group having a negative focal length, a third lens component having a negative focal length and a fourth lens group having a positive focal length, said second component third lens groups being moved along the optical axis to achieve variation in the overall focal length and correction for focus movement, said first lens group including a single negative lens and three positive lenses, said second lens group including, in order from the object side, a negative lens, a negative lens and a positive lens, said third lens component including a single negative lens, and said fourth lens group including an optical path separation prism and, in order from the object side, three positive lenses, two independent negative lenses and two positive lenses, said zoom lens system satisfying the following conditions:

$$4.6F_S<f_1<6.5F_S \quad (1)$$

$$F_S<|f_2|<2F_S,\ f_2<0 \quad (2)$$

$$l>1.4F_S \quad (3)$$

$$\bar{n}_2>1.70 \quad (4)$$

$$\bar{v}_1>45 \quad (5)$$

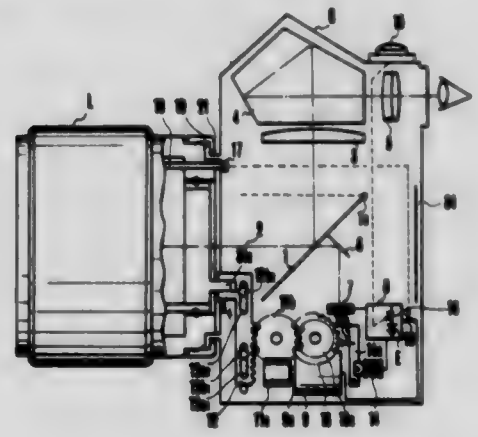
where
F_S is the overall focal length at the minimum focal length,
f_1 is the resultant focal length of the first lens group,
f_2 is the resultant focal length of the second lens group,
l is the distance between the apex of the final lens surface of the positive lens disposed on the object side, of the fourth lens group and the apex of the front lens surface of the positive lens disposed on the image side, of the fourth lens group,
$\bar{n}_2$ is the average refractive index of the negative lenses in the second lens group, and
$\bar{v}_1$ is the average Abbe number of the positive lenses in the first lens group.

4,491,396

AUTOMATIC FOCUSING ZOOM LENS MOUNTING

Takashi Isobe, Kanagawa, and Shigeru Kamata, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Dec. 4, 1981, Ser. No. 327,618
Claims priority, application Japan, Dec. 11, 1980, 55-174915
Int. Cl.³ G02B 7/10, 7/11; G03B 3/10
U.S. Cl. 350—429 2 Claims



1. A lens assembly for manually moving a focusing lens along the optical axis and for automatically focusing the lens in accordance with the signal from distance detecting means, comprising:

(a) manual distance operation means for manually focusing the lens;

(b) driving means for driving the focusing lens in accordance with the signal from the distance detection means, said driving means having a transmitting member for applying the force of the driving means to the focusing lens;

(c) control means coupled to the transmitting member for preventing the operation of the transmitting member during manual focusing and allowing the operation of the transmitting member during automatic focusing, said control means including a control member for preventing and allowing operation of the transmitting member and including change-over means for changing the control member between a preventing position and an allowing position, said change-over means being in operative engagement with the manual distance operation means so as to guide the control member to the preventing position and the allowing position, the transmitting member including a prohibiting portion having a circumferential groove and an axial groove ending in the circumferential groove, said control member being guided by said change-over means into the circumferential groove to allow operation of the transmitting member and into the axial groove to prevent operation of the transmitting member.

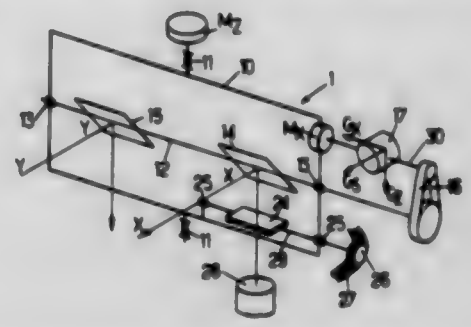
4,491,397

SIGHTING HEADS FOR PERISCOPE INSTALLATIONS, PARTICULARLY FOR SUBMARINES

René Barthelat, Taverny, and Alain Dore, Conflans Ste Honorine, both of France, assignors to Societe d'Applications Generales d'Electricite et de Mecanique Sagem, Paris, France

Filed May 28, 1982, Ser. No. 383,123
Claims priority, application France, Jun. 2, 1981, 81 10935
Int. Cl.³ G02B 27/64
U.S. Cl. 350—500 3 Claims

1. Sighting head in a periscope installation, said sighting head being located at the upper end of a periscope mast and comprising at least one optical sighting unit having an optical axis out of alignment with respect to the axis of the mast of the periscope installation, wherein, so as to stabilize in azimuth and elevation the image provided by the out of alignment optical sighting unit when the mast is swinging, the out of alignment optical sighting unit is supported by a movable support having two gyrostabilized axles so as to direct the optical signals issued from the sighting unit parallel to the axis of the periscope mast, and a trajectory correction device is provided in the path of the optical signals issued from the sighting unit and



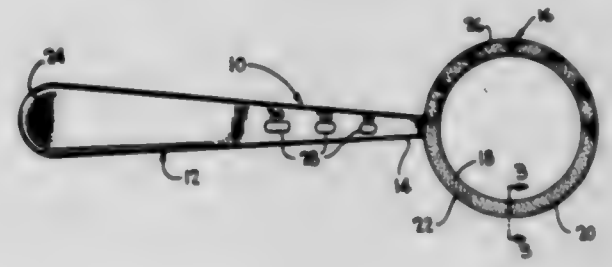
is coupled to the azimuth of the sighting unit so that said optical signals are transmitted to the periscope mast substantially along the axis thereof.

4,491,398

HAND-HELD KERATOMETER

John R. Karickhoff, Fairfax, Va., assignor to Surgidev Corporation, Minneapolis, Minn.

Filed Nov. 30, 1981, Ser. No. 326,041
Int. Cl.³ A61B 3/10
U.S. Cl. 351—211 3 Claims



1. A keratometer comprising:

an elongate handle; and

a circular ring of transparent material mounted on said handle and having a roughened surface to collect incident light and project a circle of light for use in measuring astigmatism of the eye;

wherein said ring carries radially arranged indicia to locate the axis of astigmatism; and

wherein said handle carries indicia shapes representative of standards of astigmatism to facilitate the determination of the extent of astigmatism present in an eye being measured by comparison.

4,491,399

METHOD AND APPARATUS FOR RECORDING A DIGITAL SIGNAL ON MOTION PICTURE FILM

Steven A. Bell, Venice, Calif., assignor to Coherent Communications, Inc., Sylmar, Calif.

Continuation-in-part of Ser. No. 424,840, Sep. 27, 1982, abandoned. This application Jul. 7, 1983, Ser. No. 511,522
Int. Cl.³ G03B 17/24
U.S. Cl. 352—92 34 Claims

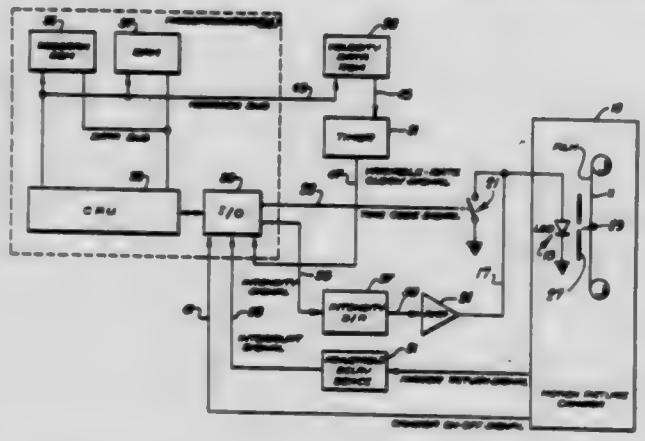
1. Apparatus for recording a continuous digital signal on motion picture film as it is being intermittently advanced a distance of one frame spacing by a motion picture camera, the precise times at which the intermittent frame advancement begins and ends being variable, the apparatus comprising:

transducer means disposed adjacent the film; and

digital signal means for coupling a prescribed sequence of digital bits to the transducer means whenever the motion picture camera intermittently advances the film, to record the bit sequence on the film;

wherein the digital signal means adjusts the durations of the successive bits in each recording sequence such that the last bit recorded on the film during each sequence has a length longer than the nominal lengths of the remaining bits recorded in the sequence, thereby ensuring that the

variability in the precise times at which the intermittent frame advancement begins and ends does not result in the



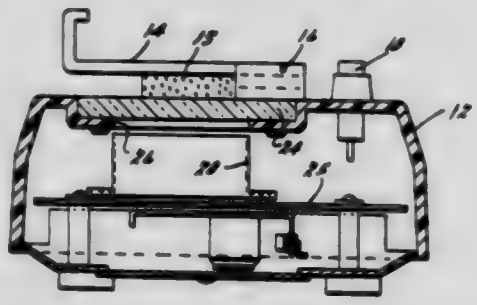
recording of a bit that is shorter than a nominal bit duration.

4,491,400

DUAL-COLOR SENSITOMETER

George R. Utting, Satellite Beach, Fla., assignor to Victoreen Incorporated, Cleveland, Ohio

Filed Mar. 5, 1982, Ser. No. 355,203
Int. Cl.³ G03B 41/00
U.S. Cl. 354—20 8 Claims



1. A dual-color photographic sensitometer comprising a multiple-step density gradient and an electroluminescent lamp spaced a predetermined distance from said multiple-step density gradient for uniformly illuminating said multiple-step density gradient with a selectable one of two different color light sources; said electroluminescent lamp comprising a plurality of elongated segments electrically connected so as to define two sets of segments with each set of segments emitting a different color light; the widths of each of said segments being determined in accordance with the distance of each segment from said multiple-step density gradient.

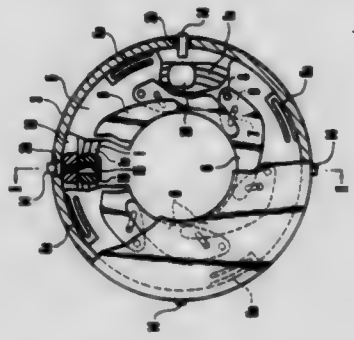
4,491,401

DIAPHRAGM DEVICE

Hiroyoshi Inaba; Akiyasu Sumi; Hidefumi Notagashira; Makoto Katsuma, all of Kanagawa; Hiroyasu Murakami, Tokyo, and Akira Hiramatsu, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1984, Ser. No. 570,352
Claims priority, application Japan, Jan. 17, 1983, 58-5592; Jan. 17, 1983, 58-5593
Int. Cl.³ G03B 9/06; G05D 25/00
U.S. Cl. 354—271.1 4 Claims

1. A diaphragm device comprising:
diaphragm blades which form an aperture;
a first movable member arranged to actuate said diaphragm blades;
a plurality of electrostriction element groups arranged with phase difference or polarization;
a vibrator arranged to generate a progressive oscillation wave with voltages of different phases impressed on said plurality of electrostriction element groups;
a second movable member arranged to be frictionally driven through pressed contact with said vibrator; and



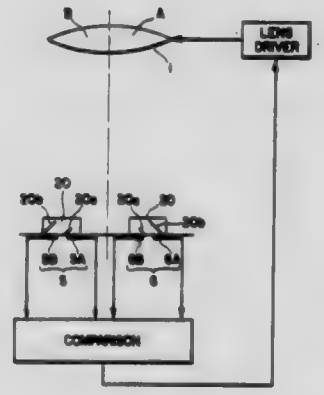
enhancing means arranged to enhance the motion of said second movable member and to transmit the enhanced motion to said first movable member.

4,491,402

METHOD OF FOCUS DETECTION

Takeomi Suzuki, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1982, Ser. No. 410,876
Claims priority, application Japan, Sep. 10, 1981, 56-141675
Int. Cl.³ G03B 7/08; G01J 1/44
U.S. Cl. 354—406 6 Claims



1. A method of focus detection, comprising:
providing at least two pairs of light receiving element rows;
arranging said pairs substantially perpendicular to the optical axis of a photographing lens,
providing light splitters for the respective light receiving element rows in the light receiving element row pairs, said light splitters each wave front splitting the light flux from said photographing lens into two light fluxes,
comparing light intensity distributions detected by the light receiving element rows at least between two light receiving element row pairs to determine whether an image forming plane is in pre- or post-focus or in focus,
and focusing the image forming plane by using the result of comparison.

4,491,403

AUTOMATIC FOCUSING OPTICAL APPARATUS

Shinji Sakai; Yoshihito Harada, both of Tokyo; Akira Ishizaki, and Takashi Kawabata, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 8, 1983, Ser. No. 464,979
Claims priority, application Japan, Feb. 15, 1982, 57-22403
Int. Cl.³ G03B 3/10
U.S. Cl. 354—409 13 Claims

1. An automatic focuing adjustment control apparatus for an optical system operable in a servo automatic focusing mode in which automatic focusing of the optical system is carried out by a servo operation and a one-shot automatic focusing mode

in which the optical system is sharply focused on an object to be photographed, and the optical system is stopped from further movement regardless of a later change in the focusing condition, comprising:

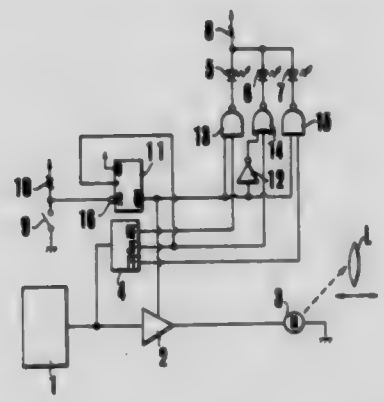
(A) focus detecting means for detecting in-focus and out-of-focus conditions of said optical system;

(B) changeover means having a first position for selecting the servo automatic focusing mode and a second position for selecting the one-shot automatic focusing mode;

(C) focusing means for adjusting the focal point of said optical system, said focusing means arranged to be operated in response to an output of said focus detecting means; and

(D) control means for controlling the adjustment of driving of said focusing means including:

(a) first drive means for moving said focusing means in



response to the output of said focus detecting means when said changeover means is in the first position;

(b) memory means for memorizong the output of said focus detecting means which represents the fact that said optical system reaches an in-focus condition;

(c) second drive means for operating when said changeover means is in the second position and arranged to stop movement of said focusing means when said memory means memorizes that the detecting means has detected that said optical system has reached an in-focus condition and to move said focusing means in response to the output of said focus detecting means when said memory means does not memorize that said optical system has reached an in-focus condition; and

(d) means for resetting the content of said memory means in response to change of said changeover means to the first position.

4,491,404

FLASH PHOTOGRAPHY SYSTEM

Hiroshi Hasegawa; Yoshiyuki Nakano, both of Tokyo, and Yoshiaki Tanabe, Kawasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Feb. 28, 1983, Ser. No. 470,386

Claims priority, application Japan, Mar. 4, 1982, 57/33086; Mar. 5, 1982, 57/33753

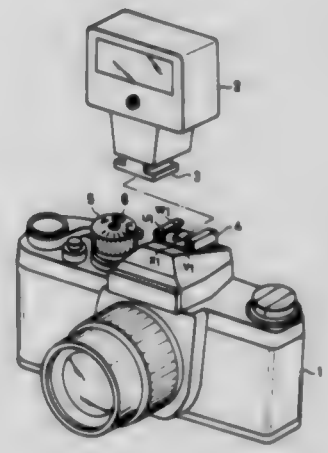
Int. Cl.[3] G03B *15/05*

U.S. Cl. 354—416 14 Claims

1. A camera device adapted to be coupled with a flash device for discharging light energy for illuminating an object for a predetermined very short time period, for exposing an image of said object illuminated by said light energy to a film, said camera device having a focal plane shutter of an adjustable exposure time, comprising:

(a) means for presetting said exposure time;

(b) means for producing an output representing said preset exposure time; and



(c) means for transmitting said output to said flash device when said camera device is coupled to said flash device.

4,491,405

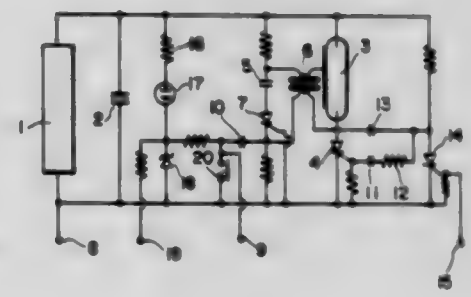
CAMERA SUITABLE FOR FLASH PHOTOGRAPHY

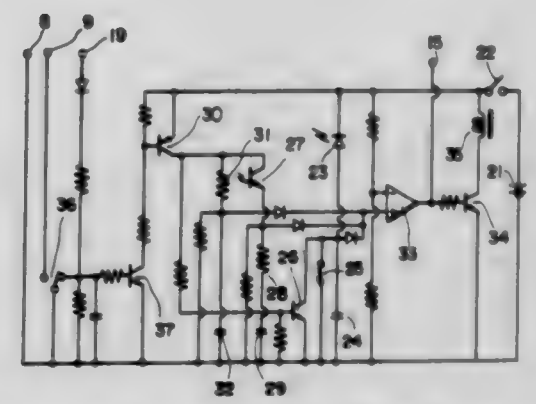
Yuzo Tsuruta, Yokohama, Japan, assignor to Kabushiki Kaisha Sunpak, Tokyo, Japan

Filed May 4, 1983, Ser. No. 491,578

Int. Cl.[3] G03B *15/05*

U.S. Cl. 354—416 5 Claims





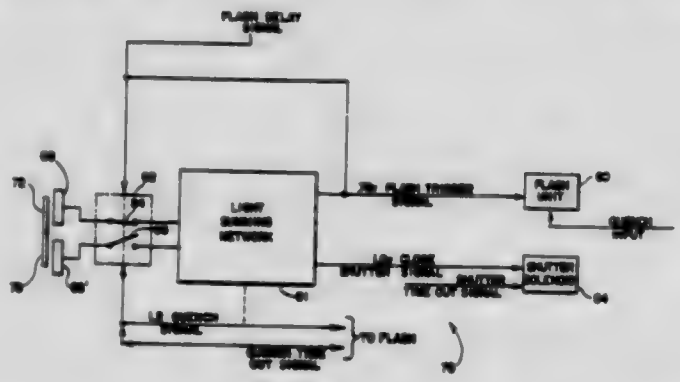
1. A photographic camera capable of using an electronic flash device, said camera including a photointegrating circuit for daylight photography which comprises a photosensitive element and an integrating capacitor, a photointegrating circuit for flash photography which comprises a photosensitive element, a resistor and an integrating capacitor, a terminal to which a voltage is applied from a flash device, a synchronizing switch for flashing the flash device, and a switching means which operates during operation of said synchronizing switch and in response to a voltage applied from a flash device to said terminal to disable said photointegrating circuit for daylight photography inoperable and to cause operation of said photointegrating circuit for flash photography.

4,491,406

METHOD AND APPARATUS EMPLOYING DUAL PHOTOCELLS FOR REMOVING SPECTRAL FILTER DURING STROBE PULSE

Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 31, 1979, Ser. No. 108,381
Int. Cl.³ G03B 7/087, 7/099, 15/05
U.S. Cl. 354—416 42 Claims



1. A photographic apparatus having means for directing image forming light rays from a scene to image recordable material mounted at a given focal plane, means for evaluating radiation from said scene during an evaluation period, means for unblocking and blocking a given path to provide an exposure interval during each part of which essentially the same given range of spectral frequencies are continuously transmitted from the scene to the focal plane, and means responsive to said evaluation means for controlling said photographic apparatus to define a suitable exposure, the improvement wherein said evaluating means includes:

at least a pair of fixed photoresponsive regions, each having photoresponsive characteristics differnt from the other for sensing different relative proportionalities of spectral frequencies of scene radiation; and

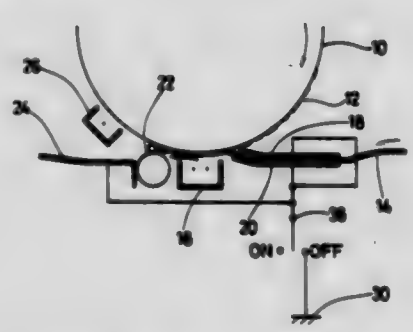
means for automatically electrically switching between outputs of each of said photoresponsive regions in general operative relationship with the commencement of a pulse of illumination so that scene radiation is evaluated from one region substantially during one portion of said evaluation period and from another region during another portion of said evaluation period.

4,491,407

TONER IMAGE TRANSFER SYSTEM

Akira Mitsuyama, and Yoshiaki Imanaka, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 26, 1982, Ser. No. 382,123
Claims priority, application Japan, May 29, 1981, 56-82745
Int. Cl.³ G03G 15/16
U.S. Cl. 355—3 TR 4 Claims



1. A toner image transfer system in an electrophotographic copying machine comprising:

a transfer corona charger unit disposed at a predetermined position around a photosensitive drum;

a copy paper feed mechanism for supplying a copy paper to a clearance formed between the photosensitive drum and the transfer corona charger unit, said copy paper feed mechanism including a paper guide for guiding copy paper to said clearance;

said paper guide being constructed of metal and secured to the body of the electrophotographic copying machine with the intervention of an insulating member; and

a switching system for selectively grounding said paper guide or electrically isolating said paper guide from the body of said electrophotographic copying machine;

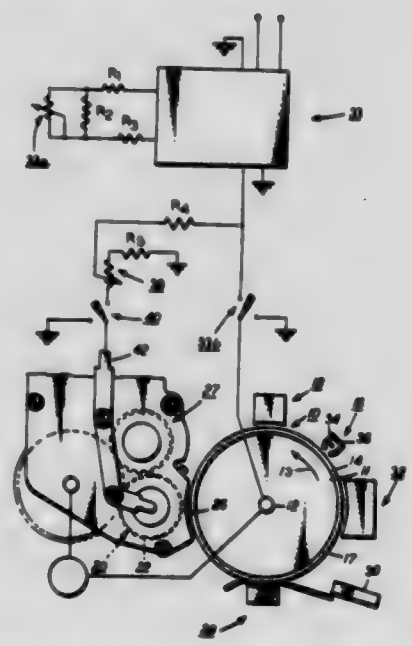
wherein said switching system includes manual switch means for enabling an operator to selectively control characteristics of copies produced by said machine wherein said manual switch means may be switched on in a high humidity condition in order to electrically isolate said paper guide from said body of the electrophotographic copying machine and may be switched off in a normal humidity condition or in a low humidity condition in order to connect said paper guide to a grounded terminal.

4,491,408

ELECTROSTATOGRAPHIC SYSTEM DEVELOPMENT MODULATION

Edward C. Savage, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 3, 1984, Ser. No. 567,729
Int. Cl.³ G03G 15/08, 15/09
U.S. Cl. 355—3 DD 10 Claims



1. An electrostatographic imaging system comprising an imaging member comprising an electrically conductive substrate and at least one electrostatographic insulating layer having an imaging surface, means to form an electrostatic latent image on said imaging surface, means to form a toner image on said imaging surface in conformance to said electrostatic latent image, and means to supply a variable direct current voltage to said electrically conductive substrate.

4,491,409

ELECTROGRAPHIC COPY PAPER SUPPORT

Robert E. Pettitt, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 25, 1983, Ser. No. 516,659
Int. Cl.³ G03G 15/00
U.S. Cl. 355—16 9 Claims

1. A support for maintaining copy paper a predetermined distance from a cylindrical development roller carrying a coating of toner particles, the support having a longitudinal axis parallel to the axis of the roller and comprising a surface facing said roller, said surface having a series of channels formed in and spaced along said surface and angled toward the

center of the length of said support to permit the passage of toner through the silhouette of said support and to redistribute

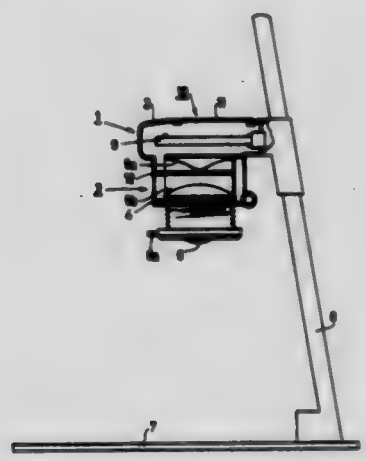


toner passing through said support toward the ends of said roller.

4,491,410
LIGHTING SYSTEM FOR USE IN A PHOTOGRAPHIC ENLARGER

Henricus C. J. Hollants, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 19, 1982, Ser. No. 369,788
Claims priority, application Netherlands, May 18, 1981, 8102417
Int. Cl.³ G03B *27/54*
U.S. Cl. 355—67 1 Claim



1. A lighting system for use in a photographic enlarger comprising an optical system for enlarging a transparent illuminated original, the lighting system having a lamp housing incorporating at least a low pressure mercury vapor discharge lamp, light emitted by said lamp emerging from said housing through a side which in the operating condition faces the optical system of said enlarger, characterized in that a window which holds a transparent, colored plate is provided in that portion of the exterior wall of the housing which during enlarger operation is remote from the optical system of the enlarger, said housing being provided with shutter means for controlling light reaching an associated photo sensitive material.

4,491,411
EXPLORATION METHOD FOR FINDING URANIUM ORE BODIES

Theodore Goldstein, Yardley, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 28, 1982, Ser. No. 392,824
Int. Cl.³ G01N *21/55*
U.S. Cl. 356—30 37 Claims

1. A method for determining the existence of uranium containing ore bodies by vitrinite reflectance measurements of organic deposits or material contained in a coal, sedimentary rock or other similar material comprising the steps of:

(a) obtaining and preparing a sample of the coal, sedimentary rock, or other similar material which sample is suitable for making vitrinite reflectance measurements;

(b) measuring vitrinite reflectance from at least two locations on the face of said sample; and

(c) recording substantial variations in said vitrinite reflectance measurements emitted from the face of said sample which variations represent the existence of different ranks of coal which indicates that a uranium ore body was in close proximity to said organic deposit.

4,491,412
METHOD FOR CHARACTERIZING SOLDER COMPOSITIONS

Shigeo Harada, Isehara, and Soitiro Tozima, Machida, both of Japan, assignors to RCA Corporation, New York, N.Y.

Filed Aug. 19, 1982, Ser. No. 409,366
Int. Cl.³ G01N *21/88*; B23K *1/00*
U.S. Cl. 356—36 8 Claims



1. A method for testing a silvery white solder for the presence of silvery white metal contaminates which comprises:

(a) providing a transparent to translucent substrate coated with a first thin layer of a colored metal which can form an alloy with said solder, and a second outer layer of the metal to be tested,

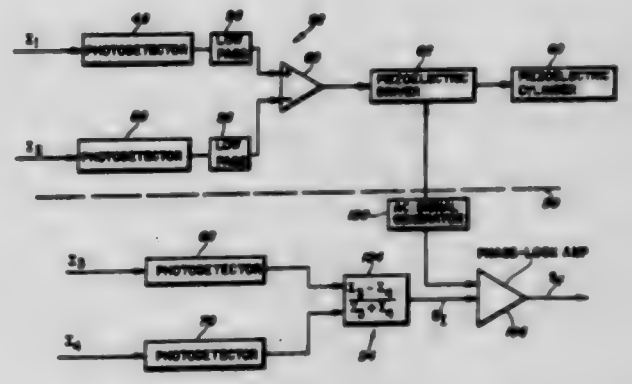
(b) partially immersing the coated substrate in the molten solder to be tested, and

(c) measure the time required for a change in color of the first layer and compare the measure of time with a known standard.

4,491,413
FIBER OPTIC GYROSCOPE WITH ALTERNATING OUTPUT SIGNAL

Scott C. Rashleigh, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 22, 1982, Ser. No. 370,755
Int. Cl.³ G01C *19/64*; G01B *9/02*
U.S. Cl. 356—350 14 Claims



1. A Sagnac rotation-sensing interferometer of the type for use with a light source for providing an input beam to the interferometer and photodetectors for measuring the intensity of the interferometer output beams, said interferometer comprising:

an optical light path circuit for providing a first and a second output beam with a relative Sagnac phase shift therebetween;

optical coupling means for dividing the input beam into a first and second incident beam, of intensity I_1 and I_2 respectively, wherein the first and second incident beams counter-propagate through the optical light path circuit, for dividing the first and second output beams of the optical light path circuit into components and for combining the components to form a third and fourth output beam of intensity I_3 and I_4 respectively, and for coupling the third and fourth output beams to the photodetectors;

means for maximizing the sensitivity of the Sagnac interferometer for zero rotation rate so that the interferometer operates at quadrature;

means for periodically switching the Sagnac interferometer into and out of quadrature so that I_3 and I_4 are moduated at frequency f_o,

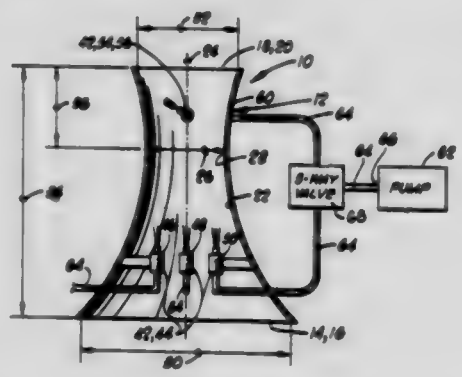
means for phase sensitive detection, of the phase modulated output signals from the photodetectors.

4,491,414

FLUID MIXING SYSTEM

Asadollah Hayatdavoudi, and Ronald F. Marascalco, both of Lafayette, La., assignors to Petroleum Instrumentation & Technological Services, Lafayette, La.

Filed Jun. 22, 1982, Ser. No. 390,954
Int. Cl.³ B01F 5/10
U.S. Cl. 366—6 13 Claims



13. A method of agitating a body of fluid contained in a vessel having a substantially vertical wall portion extending upward from a substantially horizontal bottom portion, said method comprising the steps of:

withdrawing a stream of fluid from said body of fluid;

pressurizing said stream of fluid;

injecting a first portion of said pressurized stream of fluid into a flow passage of a fluid agitating apparatus submerged in said body of fluid; thereby

inducing an upward swirling flow of said body of fluid through said flow passage, so that a lower portion of said body of fluid containing sediment is drawn upward into said flow passage and is mixed with said first portion of said stream of pressurized fluid and expelled with an upward swirling motion from said flow passage;

injecting a second portion of said pressurized stream of fluid into said body of fluid adjacent an intersection of said wall portion and said bottom portion of said vessel; and thereby

inducing fluid flow adjacent said intersection and reducing deposition of sediment adjacent said intersection from said body of fluid.

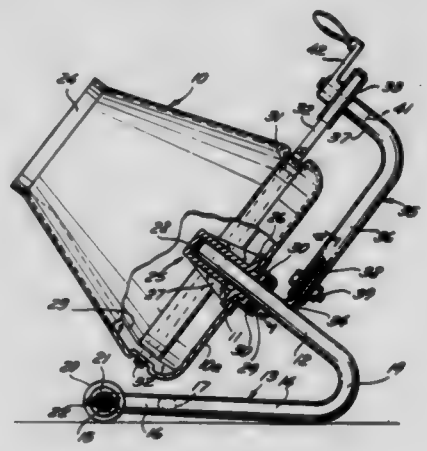
4,491,415

ROTARY DRUM MIXING DEVICE

Robert J. Bishop, 1083 Bloomfield Ave., West Caldwell, N.J. 07006

Continuation-in-part of Ser. No. 380,530, May 21, 1982, Pat. No. 4,435,082. This application Mar. 5, 1984, Ser. No. 586,303
Int. Cl.³ B28C 5/18, 5/20, 7/16
U.S. Cl. 366—47 7 Claims

1. A mixing device comprising a unitary frame extending front to rear of the device, said frame having a base portion with a transverse member forming the front end of said frame and providing a pivot fulcrum at said front end, a short connecting portion joined to said transverse member, said connecting portion terminating in an angularly, forwardly and upwardly extending portion providing a bearing portion at the rear end of said frame, the angularity of said bearing portion being about 35° with respect to the plane of said base portion, a generally pear shaped mixing drum providing large and small ends, said drum being closed and substantially flat at the large end and open at the small end, said closed end having an elongated axial socket, extending inwardly of said drum, said axial socket slidably engaging said bearing end of the frame to rotatably support said drum with its axis at said angle of approximately 35°, axially extending rib means on the inner surface of said drum for lifting contents in the rotation thereof, circumferential groove means adjacent the large end of said drum facilitating application of circumferential force to rotate the drum, drive means for imparting such circumferential force located above said bearing portion with the rotational axis



thereof parallel to the axis of said bearing portion, said drive means including a pulley aligned with the groove means on said drum, a belt operatively engaging said pulley and groove means, an integral upwardly directed projection on said bearing portion perpendicular to the axis thereof, an extension having means at one lower end for detachably and adustably securing the same to said projection, an offset portion at the upper end of said extension disposed parallel to the axis of said bearing portion and providing the sole support for said drive means, the length of the connecting portion of said frame being such as to dispose said pivot fulcrum slightly forwardly of the center of gravity of the drum, readily engageable and disengageable means on said bearing portion and socket to support the drum against axial movement when the assemblage is tilted around said fulcrum to discharge drum contents, said bearing portion being the only support for said drum, and said drum being readily removable from said frame upon disengagement of said last named means.

4,491,416

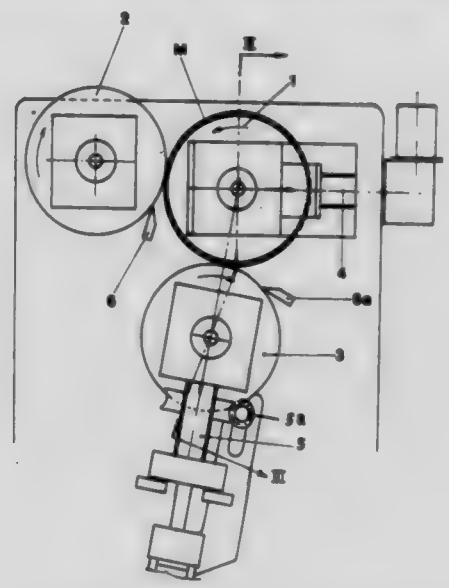
OPEN MIXER FOR THE PROCESSING OF RUBBER AND PLASTICS, PROVIDED WITH AN ADDITIONAL ROLL

Giovanni A. Coscia, Varese, Italy, assignor to Rutil S.r.l., Italy

Filed Jul. 6, 1983, Ser. No. 511,173
Int. Cl.³ A21C 1/08
U.S. Cl. 366—73 10 Claims

1. An improved open-type mixer for processing rubber and plastic material, comprising two internally cooled rolls which are rotatably mounted on horizontal and parallel axes, at least a first one of which can be adjusted as to the distance thereof from the axis of the second roll, until possibly engaging it along a pair of cylinder generating lines, wherein a third additional roll is provided, also having a horizontal rotation axis which is parallel and positioned at a lower height than the other two rolls, the third roll being also internally cooled and provided with quick approachment means and adjusting means for a fine adjustment of the distance from said first upper roll possibly

engaging the same along a pair of generating lines, the three rolls being independently motor-driven, whereby each pair of



mutually engaged rolls show an opposite direction of rotation and the roll having the lowest peripheral speed is one of the two upper rolls.

4,491,417

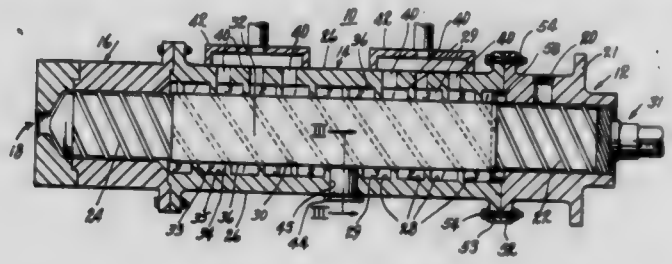
DEVOLATILIZING MIXING EXTRUDER

Peter Hold, Milford, and Marc A. Rizzi, Orange, both of Conn., assignors to USM Corporation, Farmington, Conn.

Filed Apr. 29, 1983, Ser. No. 487,447

Int. Cl.³ B29B *1/06*

U.S. Cl. 366—75 **14 Claims**



1. Devolatilizing apparatus comprising a barrel housing having an axial bore in the surface of which is formed at least one helical channel, a cylindrical rotor coaxially mounted in the bore and closing the open side of the channel to form a helical passage, means for directing fluid plastic into one end of the passage in an amount less than the volumetric capacity of the passage, means for rotating the rotor to move the limited volume of the plastic against and along one side of the passage in the form of a rolling bank, a port extending through the housing and into an unoccupied part of the passage adjacent the rolling bank for withdrawing volatiles.

4,491,418

PLASTICS EXTRUDER

Charles E. Maillefer, Buchillon, Switzerland, assignor to Maillefer S.A., Buchillon, Switzerland

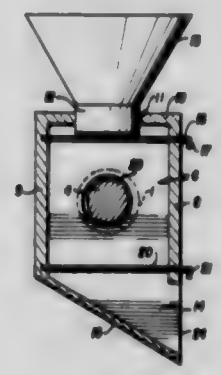
Filed Nov. 9, 1982, Ser. No. 440,430

Claims priority, application Switzerland, Nov. 17, 1981, 7385/81

Int. Cl.³ B28C *7/04*

U.S. Cl. 366—76 **11 Claims**

1. A screw extruder comprising a cylinder having a cylindrical bore of substantially circular cross-sectional shape with an axis, a hopper arranged above said cylinder at an entry end thereof, guiding means for providing communication between said hopper and said bore and a screw coaxially disposed within said bore, said screw having a projecting thread of a predetermined diameter fitted to the internal diameter of said bore with a predetermined clearance, said screw being rotatably driven in a continuous manner and being held in a substantially fixed and predetermined axial position in order to displace material provided in said hopper, said screw thus moving the material into and through said bore, wherein said guiding means comprises a feed chamber situated beneath said hopper and bounded by a plurality of fixed walls disposed generally symmetrically relative to a vertical plane containing the common axis of said screw and said bore, said walls including side and bottom surfaces disposed generally parallel to said com-



mon axis and a downstream transverse surface disposed generally perpendicular to said common axis, said transverse surface extending between said side surfaces, said bore opening into said transverse surface, a downstream outlet wall of said hopper being aligned with said downstream transverse surface, the distance between said bore opening and said side and bottom surfaces being greater in all directions than said predetermined clearance between said diameters of said thread and said bore respectively, whereby the introduction into said cylinder of said material received in said feed chamber remains unaffected by said walls.

4,491,419

METHOD AND APPARATUS FOR MIXING FINE MATERIAL

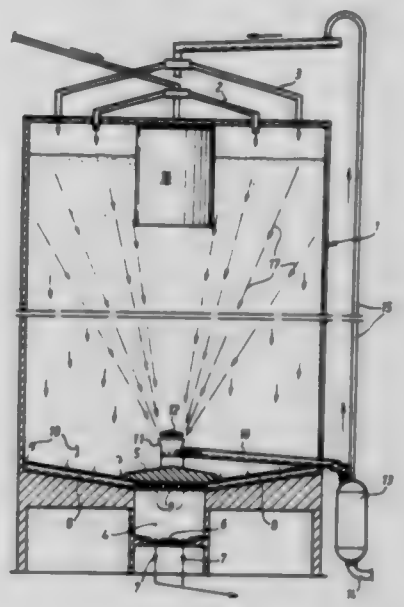
Norbert Ahrens, Oelde; Helmlit Daniel, Beckum, and Gerhard Schacknies, Ennigerloh, all of Fed. Rep. of Germany, assignors to Krupp Polysius AG, Beckum, Fed. Rep. of Germany

Filed May 27, 1983, Ser. No. 498,646

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1982, 3224196

Int. Cl.³ B01F *13/02, 15/02*

U.S. Cl. 366—101 **17 Claims**



1. In a method of mixing fine material in an upright mixing silo wherein material to be mixed is delivered to said silo at its upper end and mixed material is withdrawn from said silo at its base through a discharge chamber located centrally of the base

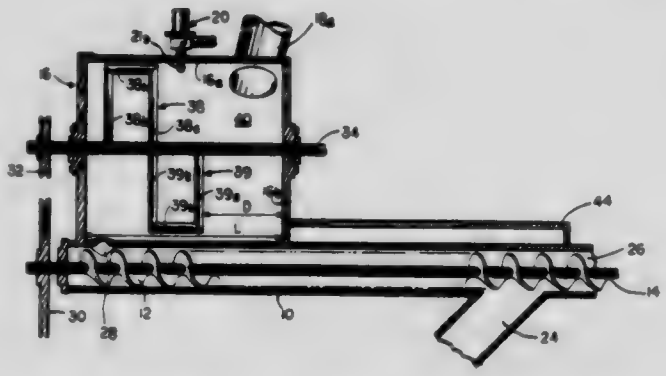
and having a cover, and wherein material in said silo is fluidised, the improvement comprising delivering fresh material to the upper end of said silo in a first region; extracting material from said silo at a level adjacent and above the cover of said discharge chamber; and returning such extracted material to said silo at its upper end and in a second region other than said first region.

4,491,420

APPARATUS FOR MIXING SYRUP WITH FEED

Cera A. Addison, Rte. 3, Box 293, Franklinton, La. 70438

Filed Sep. 2, 1983, Ser. No. 528,809
Int. Cl.[3] A23N *17/00*
U.S. Cl. 366—156 9 Claims



1. An apparatus for mixing particulate livestock feed with a viscous fluid such as syrup comprising:

a. a hollow, inclined cylindrical mixing chamber having a higher end and a lower end for receiving feed and syrup through a feed inlet means and a syrup inlet means connected to the top of said mixing chamber, said feed inlet means being located at the higher end of said chamber, said mixing chamber being inclined at an angle of about 20° to about 70° with the horizontal,

b. at least two mixing members connected to a rotatable shaft extending through and axially aligned with the centerline of said cylindrical mixing chamber, said mixing members being located on the lower end of said rotatable shaft extending through said mixing chamber, said mixing members extending from the lower end of said mixing chamber along said rotatable shaft for a distance of from about ⅓ to about ½ of the total length of the inside of said mixing chamber providing a space in the upper end of said mixing chamber into which dry grain can accumulate without being agitated by said mixing members, said syrup inlet means being located immediately above said mixing member located on the upper end of said rotatable shaft, said feed inlet means being located immediately above the upper portion of said rotatable shaft upon which there are no blades and said space in the upper end of said mixing chamber into which dry grain can accumulate without being agitated,

c. a fluid pump for pumping syrup into said mixing chamber through said syrup inlet means,

d. an outlet means connected to the bottom of said mixing chamber at the end of said chamber opposite from said feed inlet means, and

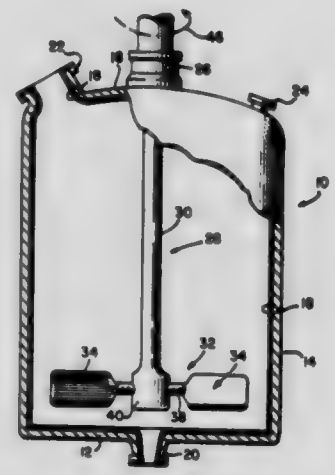
e. an auger means located beneath said outlet means for conveying the mixture of feed and fluid discharged from said outlet means to a desired location.

4,491,421

IMPELLER ASSEMBLY AND SHAFT HAVING INTERFERENCE FIT

Richard Koehl, Niederbronn les Bains, France, and Michael J. Lerman, Edison, N.J., assignors to De Dietrich (USA), Inc., Union, N.J.

Filed Nov. 21, 1983, Ser. No. 552,991
Int. Cl.[3] B01F *7/18, 7/22*
U.S. Cl. 366—247 26 Claims



1. An agitator for use in stirring, agitating, mixing, and so forth materials such as reactants and reaction products within a vessel comprising:

(a) a shaft adapted to be supported by said vessel at a proximal end for supporting an impeller assembly within a region extending from the distal end;

(b) an impeller assembly including

(1) at least one axial tier of blade members,

(2) at least one blade member in each tier having a blade portion and an arm extending from said blade portion provided with an outer surface of constant diameter along its length,

(3) a coating of corrosion resistant material covering the entire surface of each said blade member;

(c) support means for supporting each blade member in each axial tier of blade members, said support means including a bore in said shaft within said region extending toward the longitudinal axis of said shaft, with each bore having a surface complementary to the surface of said arm whereby said surfaces may be received together telescopically; and

(d) a coating of a corrosive resistant material covering the surface of said shaft as shall extend within said vessel and the surface along each bore so that when said arm shall extend through said bore an interference fitted connection is created between coated surfaces of said shaft and impeller assembly.

4,491,422

PORTABLE SPOT MIXING APPARATUS

Franklin J. Salter, Box 134, Modale, Iowa 51556, and Jack L. Purcell, 515 N. Boston, Missouri Valley, Iowa 51555

Filed Jul. 29, 1983, Ser. No. 518,723
Int. Cl.[3] B01F *7/24, 15/00*
U.S. Cl. 366—343 7 Claims

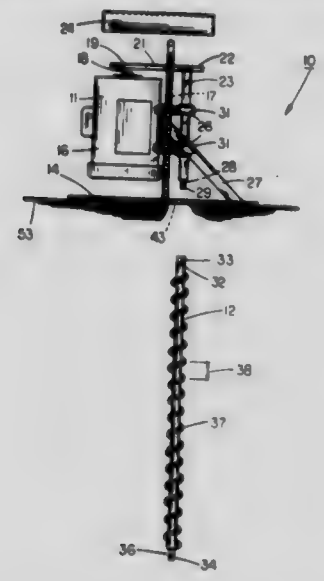
1. A portable spot mixing apparatus for use in mixing grain, the apparatus comprising:

(a) drive means for imparting rotational movement;

(b) mixing means operably connectable to said drive means for mixing at least part of said grain;

(c) a handle connected to said apparatus for facilitating the portability of said apparatus and for allowing an operator to selectively locate said apparatus with respect to said grain; and

(d) a plate attached to said apparatus and disposed substantially normal to the axis of said mixing means for preventing said apparatus from becoming buried in said grain during use.



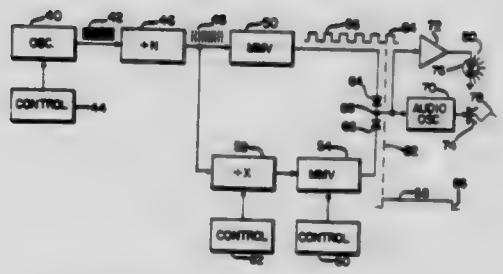
4,491,423

RESUSCITATION ASSISTIVE TIMER

Stanley Cohen, 440 Breakwater Ridge, Atlanta, Ga. 30328

Continuation of Ser. No. 243,848, Mar. 16, 1981,. This application Oct. 26, 1983, Ser. No. 545,591
Int. Cl.[3] G04F *8/00*
U.S. Cl. 368—107 15 Claims





1. A method for stimulating an optimal response in an individual performing cardiopulmonary resuscitation to cue the individual to perform a series of chest compressions followed by a respiration step, said cues being provided at the proper time and for the optimal duration for optimal cardiopulmonary resuscitation comprising the steps of:

automatically cueing said individual by emitting a predetermined number of chest compression marking signals in the form of uniform intensity short pulses being emitted at a rate which is variable to correspond to a predetermined age, the length of the cueing pulses prescribing the length of the actions to be taken;

automatically cueing said individual by emitting a respiration marking signal in the form of a uniform intensity elongated pulse having a duration matching a desired respiration duration, said elongated pulse being emitted subsequent to said predetermined number of chest compression marking signals, the duration of said elongated pulse being longer than the time occupied by each predetermined chest compression marking signal, the length of the elongated cueing pulse prescribing the length of the action to be taken; and,

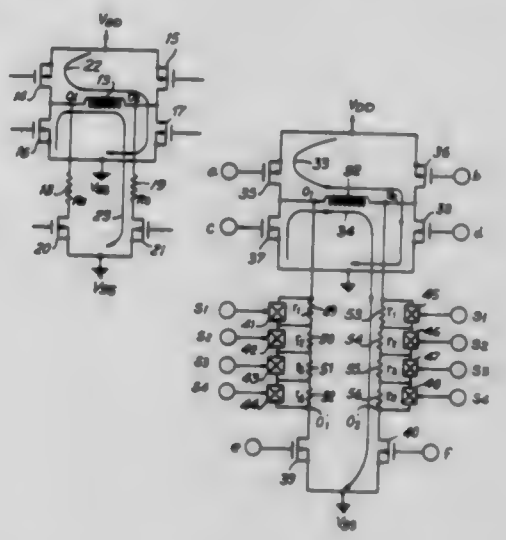
automatically repeating said first and second mentioned emitting steps in sequence, whereby optimal resuscitation may be achieved.

4,491,424

ELECTRONIC ANALOG TIMEPIECE WITH ROTATION DETECTION CIRCUIT

Jiro Ito, Suwa; Masuo Kitano, Matsumoto, and Kenji Sakamoto, Suwa, all of Japan, assignors to Shamauchi Kieki Kabushiki Kaisha, Suwa and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan

Filed Oct. 27, 1982, Ser. No. 436,903
Claims priority, application Japan, Nov. 19, 1981, 56-185849
Int. Cl.[3] G04F *5/00*; G04B *17/20*
U.S. Cl. 368—157 14 Claims



1. In an electronic analog timepiece including a power supply, and a stepper motor to drive hands by 180° rotations of the rotor of said motor, the improvement therein comprising:

a rotation detector circuit, said rotation detector circuit operating to sense whether said rotor of said stepper motor rotated or not upon application of a driving pulse to a coil of said motor, said detector circuit operating after said driving pulse and including:

a detection resistor;

switch means for connecting said coil in first and second states, in said first state said coil being in circuit with said power supply to cause a detection current to flow in said coil, said detection current rising at one rate if said motor rotated in response to said driving pulse and at another rate if said motor did not rotate, said switch means in said second state concurrently connecting said detection resistor in series with said coil to carry said detection current and disconnecting said coil from said power source;

means for detecting the voltage drop across said detection resistor produced by said detection current in said second state, the magnitude of said voltage drop being indicative of whether said rotor did rotate or not by application of said driving pulse;

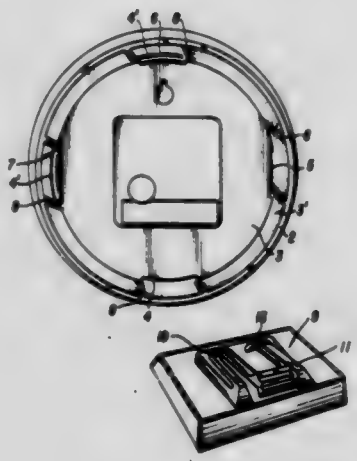
circuit means for selectively changing said switch means at least from said first to said second state.

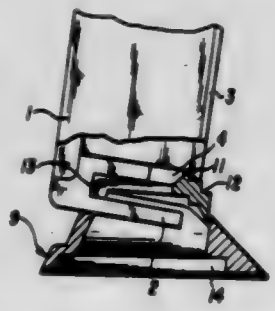
4,491,425

MULTI-ORIENTABLE CLOCK AND STAND

Ahn Young-Koo, Pusan, Rep. of Korea, assignor to Jeco Precision Co., Ltd., Pusan, Rep. of Korea

Filed Sep. 30, 1983, Ser. No. 538,015
Claims priority, application Rep. of Korea, Feb. 11, 1982, 83-1232
Int. Cl.[3] G04B *37/00*
U.S. Cl. 368—317
2 Claims





1. A combination clock and stand comprising a clock including a cylindrical clock body, an outer circumferential cylinder coaxially surrounding and being attached to said clock body, defining a channel therebetween, said outer cylinder having on an inner surface thereof a plurality of axially extending pairs of spaced-apart parallel projections, said projections extending radially into said channel, said clock body having on an outer surface thereof a plurality of openings, each opening extending radially inwardly between one pair of said parallel projections and being spaced inwardly of the back of said clock body; and a stand including a base portion, a pair of parallel elastic latches each having a front end and rear end and being mounted at its rear end on said base portion, said latches being sized to flank one of the pairs of projections, a pair of flexible curved pieces, each having front end and a rear end and being attached at its front end to the front end of one of the latches, said curved pieces and said latches being sized to fit slideably in said channel, multiple jaw members connecting the rear ends of said curved pieces and adapted to engage with one of said openings in said clock body, and means for attaching said base portion to a desired surface.

4,491,426

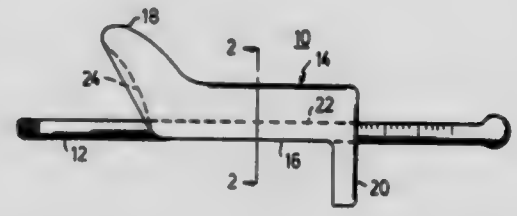
TEMPERATURE SENSING ASSEMBLY

Dieter Berndt, Neptune, N.J., assignor to TRP Energy Sensors, Inc., New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 429,068
Int. Cl.[3] G01K *5/00*
U.S. Cl. 374—194
7 Claims

1. Temperature sensing assembly for insertion in the oral cavity of a mammal, which comprises:

a body member comprised of a shaft portion and a bulbous portion and having a channel formed therein, said shaft portion being cylindrically-shaped and circular in cross-section, said bulbous portion formed with a concave leading surface for engaging a tongue in said oral cavity, and extending upwardly and forwardly of said shaft portion, and



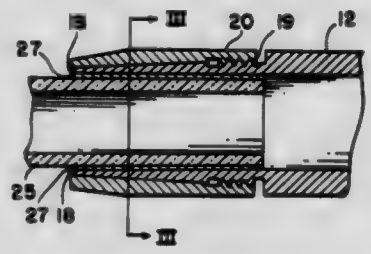
a thermometer disposed in said channel extending outwardly from a lower position of said bulbous portion thereby positioning said thermometer below said tongue in said oral cavity whereby said bulbous portion is caused to press said tongue against said thermometer.

4,491,427

REUSABLE THERMAL CYCLING CLAMP

William J. Debnam, Jr., Hampton; Archibald L. Fripp, Williamsburg, and Roger K. Crouch, Newport News, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 17, 1981, Ser. No. 322,321
Int. Cl.[3] G01K *1/00*
U.S. Cl. 374—208
8 Claims



1. A reusable clamp apparatus for connecting first and second objects comprising:

means integrally secured to a first object and having a plurality of fingers extending therefrom and adapted to receive a second object,

means circumferentially engaging said plurality of fingers so as to exert a force thereon to produce a frictional force onto the second object and thermal expansion means disposed along at least a portion of the length of said fingers and between said fingers and said second object to facilitate securing of said second object by said fingers by maintaining frictional force over a wide range of operating temperatures,

said thermal expansion means comprising a graphite foil having a relatively high radial coefficient of thermal expansion to thereby compensate for any differences in the coefficient of thermal expansion between said first and second objects.

4,491,428

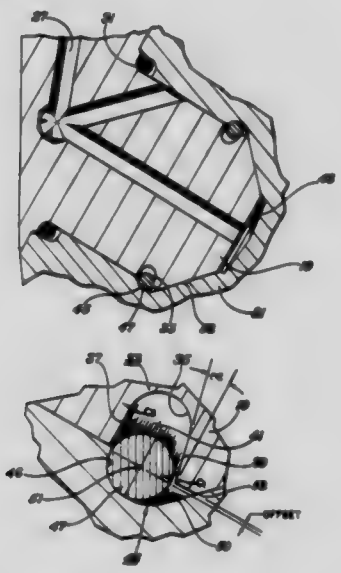
EARTH BORING DRILL BIT WITH SNAP RING CUTTER RETENTION

Bruce H. Burr, Harris; George E. Dolezal, and Edward M. Galle, both of Galveston, all of Tex., assignors to Hughes Tool Company, Houston, Tex.

Division of Ser. No. 174,483, Aug. 1, 1980, Pat. No. 4,344,658, which is a continuation of Ser. No. 8,504, Feb. 1, 1979, abandoned, which is a continuation of Ser. No. 846,643, Oct. 28, 1977, abandoned. This application Nov. 27, 1981, Ser. No. 325,608

Int. Cl.[3] F16C *17/10, 43/02*

U.S. Cl. 384—93 9 Claims



1. In combination with an earth boring bit having at least one cantilevered bearing shaft rotatably supporting a cutter, an improved cutter retention means comprising in combination:

exclusively friction bearing means between said cutter and shaft, including an inwardly facing thrust surface on the shaft to engage a mating thrust surface in the cutter;

a lubrication system to provide lubricant to the friction bearing means;

seal means between the bearing shaft and rotatable cutter to retain lubricant;

pressure compensator means connected with the lubrication system;

one of said cutter and shaft having an assembly groove with inner and outer sidewalls and the other having a registering, retainer groove with inner and outer sidewalls;

a snap ring positioned in said grooves;

the retainer groove having a depth less than the cross-sectional thickness of the ring;

the assembly groove having a depth at least equal to the cross-sectional thickness of the ring;

a clearance formed between the snap ring and at least one sidewall of the assembly groove when said thrust surfaces of the cutter and shaft are engaged, whereby the snap ring may be easily assembled and also isolated during drilling from outward thrust loading.

4,491,429

BUSHING ASSEMBLY FOR SUSPENSION ARM

Taketo Matoba; Yasuhiro Morita, both of Okazaki; Noritoshi Arai, Toyota; Masahiro Ishigaki, Ibaragi, and Hiroshi Harada, Tsu, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Toyo Gomu Kogyo Kabushiki Kaisha, Osaka, both of, Japan

Filed Dec. 23, 1982, Ser. No. 452,826

Claims priority, application Japan, Dec. 29, 1981, 56-196792

Int. Cl.[3] F16C *27/06;* B60G *11/22;* F16F *1/14;* F16D *1/00*

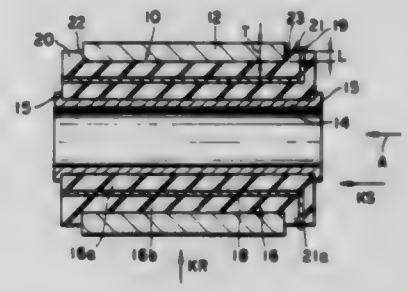
U.S. Cl. 384—221 6 Claims

1. A bushing assembly incorporated in an eye of a suspension arm for an automobile, comprising:

a cylindrical metal member;

a cylindrical rubber bushing adhered to the outer peripheral surface of said member, press fitted into said eye and provided on each end with a flange extending radially outward; and

a cylindrical insert formed of material harder than the bushing and being provided with at least one slit extending axially from a complete cylindrical portion at one end thereof and embedded in the bushing, each said flange contacting each end surface of the eye when said bushing has been press fitted into said eye.



4,491,430

RIBBON MONITOR FOR RIBBON CASSETTE

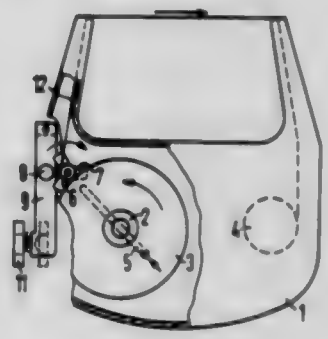
Peter Kaelner, Wessling, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 23, 1983, Ser. No. 478,170

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1982, 3214548

Int. Cl.[3] B41J *35/28*

U.S. Cl. 400—208 5 Claims



1. A monitoring device for monitoring the transport of a strip-like carrier supported on a core-mounted feed reel, said core being displaceable in slots in a cassette housing, said carrier being transported from the feed reel to a take-up reel over a guide roller, and including, in combination; and actuating element secured to said guide roller and extending axially outwardly from said guide roller, a scanning device operatively connected to said actuating element for producing an electrical signal in response to movement of said actuating element, said core moving in said slot toward said actuating element as said carrier is unwound from said feed reel, said core moving into the path of and blocking movement of said actuating element after a predetermined amount of said carrier has been unwound off of said feed reel.

4,491,431

METAL-INSULATOR RESISTIVE RIBBON FOR THERMAL TRANSFER PRINTING

Ari Aviram, and Kwang K. Shih, both of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

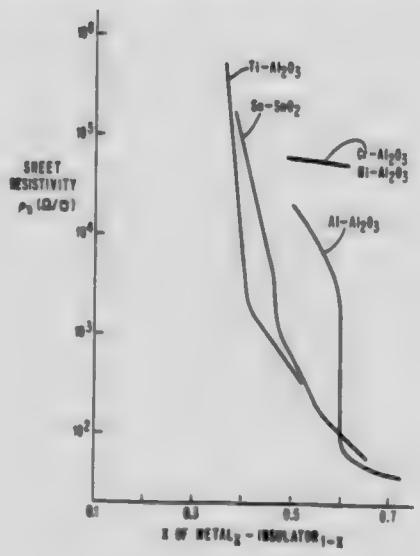
Filed Dec. 30, 1982, Ser. No. 454,812

Int. Cl.[3] B41J *31/02*

U.S. Cl. 400—241.1 24 Claims

1. A resistive ribbon for thermal transfer printing, compris-

ing at least a resistive layer and a fusible ink-bearing layer, where electrical current through said resistive layer causes localized heating of said fusible ink, said resistive layer being



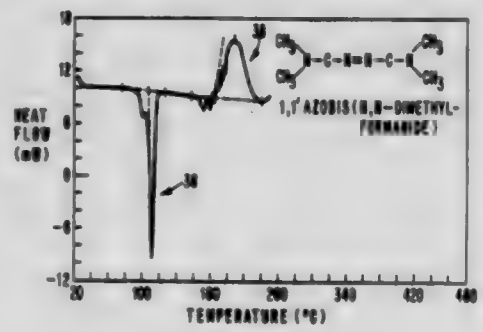
comprised of a metal-insulator composition where said insulator has a bandgap of at least three volts, the relative amounts of said metal and said insulator in said resistive layer being chosen to provide a desired resistivity.

4,491,432

CHEMICAL HEAT AMPLIFICATION IN THERMAL TRANSFER PRINTING

Ari Aviram, and Kwang K. Shih, both of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,814
Int. Cl.³ B41J *31/02*
U.S. Cl. 400—241.1 **31 Claims**



1. In thermal transfer printing an ink bearing ribbon comprising a support layer and at least one other layer, said one other layer including a fusible ink which is solid at room temperature and which includes a low melting point polymer binder and a suitable colorant, and an exothermic heat amplification material, said material giving off heat to said ink when its temperature is raised to at least a threshold amount.

4,491,433

VENTING AND INK RECYCLING DEVICE

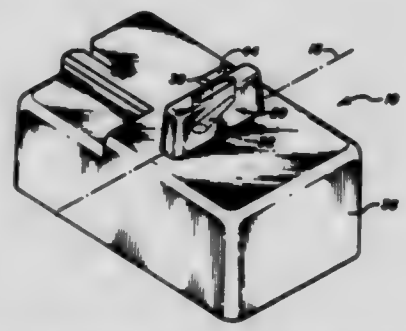
John Shiurila, Londonderry, and Kenneth A. Robert, Derry, both of N.H., assignors to Centronics Data Computer Corp., Hudson, N.H.

Filed Aug. 29, 1983, Ser. No. 527,234
Int. Cl.³ B41J *27/02*
U.S. Cl. 400—471.1 **25 Claims**

1. In an ink supply container adapted to be mounted upon a moving carriage for use in supplying liquid ink to a printing member, said container including an ink reservoir, the improvement comprising:

a well positioned above said reservoir including a top portion containing a venting orifice and a sloping floor portion, said well capturing ink which is expelled from said reservoir;

capillary means for conveying said expelled flow of liquid or foam ink to said well; and



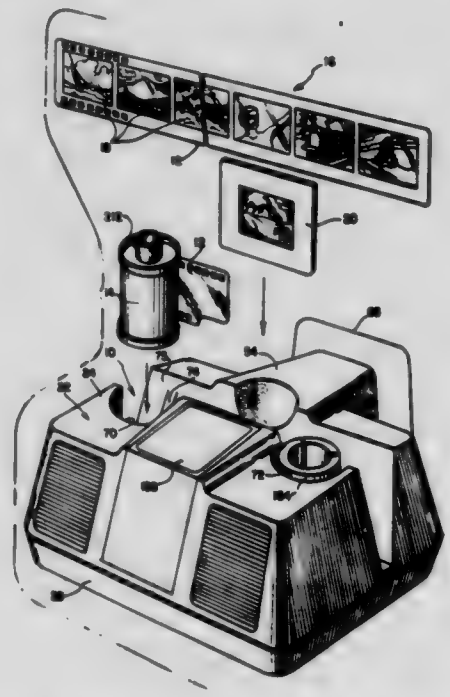
means for recirculating said collected and condensed ink from said well to said reservoir, whereby said well condenses and collects said expelled liquid or foam ink and returns said ink to said reservoir.

4,491,434

HANDHELD VIEWER FOR TRANSPARENCY FILM

Charles A. Barr, Waltham; David E. Van Allen, Malden, and John K. Zanardelli, Quincy, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 24, 1983, Ser. No. 544,547
Int. Cl.³ G02B *27/02*
U.S. Cl. 40—362 **3 Claims**



1. A compact, handheld viewer for use with photographic transparency film located within a film cassette in roll form, in individual film mounts, or in strip form, said viewer comprising:

a housing having means for defining first and second chambers, said first chamber being configured to receive a film cassette of the type having a spool therein about which a length of film containing a plurality of frames each of which contains a visible image is wound and an exit slot through which a leader or leading end of the film is adapted to extend to the exterior of the cassette for attachment to a take-up reel;

means defining a passageway interconnecting said first and second chambers, said passageway including a projection station through which the film in the film cassette or a film strip containing a plurality of individual scenes are adapted to be advanced and into which individually mounted film transparencies are adapted to be inserted;

a film spool drive rotatively mounted within said first chamber;

a film take-up reel rotatively mounted within said second

chamber, said take-up reel including means for releasably securing the leader to said take-up reel;

means for illuminating said projection station; and

manually actuatable means for selectively driving said film take-up reel in a direction so as to withdraw the film from the film cassette and advance it through said projection station or for driving said film spool drive in a direction which will rewind the film into the film cassette while simultaneously unwinding the film from said film take-up reel.

4,491,435

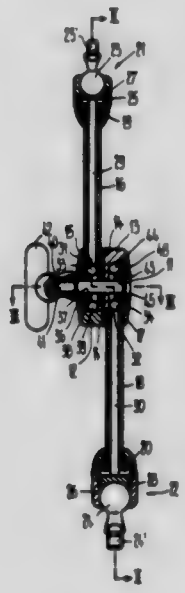
JOINTED STAND

Hans Meier, Mellingen, Switzerland, assignor to Automated Medical Products Corporation, New York, N.Y.

Filed Jul. 18, 1983, Ser. No. 514,922

Int. Cl.[3] F16C *11/06*; E04G *3/00*

U.S. Cl. 403—55 5 Claims



1. A jointed stand comprising:

a pivot joint arrangement comprising two joint heads each having a coupling surface;

said joint heads being arranged such that said coupling surfaces confront one another;

said pivot joint arrangement further comprising a common hinge pin passing through said joint heads;

tightening means acting upon said hinge pin in order to press said joint heads against each other for locking said pivot joint arrangement;

two substantially tube-like arms interlinked by said pivot joint arrangement;

each of said two arms having two ends;

one of said two ends of each arm facing a respective one of said joint heads and being anchored thereto;

the other one of said two ends of each arm carrying a respective joint;

each said joint comprising a joint element, a fixture for said joint element and a socket for said joint element;

two push rods each having first and second opposite ends and each extending through a respective one of said two arms to a related one of said joint heads and being displaceable within its related arm;

each of said sockets being mounted to said first end of a related one of said push rods;

a respective transmission member provided for each push rod and each transmission member possessing a first inclined surface;

said transmission members being displaceable in the lengthwise direction of said hinge pin by said tightening means;

each said transmission member being arranged to act upon said second end of its related push rod in order to displace the same in the direction of said fixture in order to lock said joint element with said pivot joint arrangement;

said hinge pin extending through said transmission members with clearance;

each said transmission member possessing a second inclined surface;

said second inclined surface being located at a side of said transmission member located opposite to the side of said first inclined surface and being oppositely inclined with respect to said first inclined surface; and

a respective roller body for supporting each said second inclined surface within the related joint head.

4,491,436

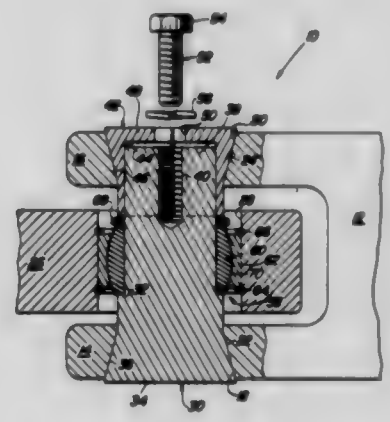
PIVOT PIN ASSEMBLY

David J. Easton, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Mar. 21, 1983, Ser. No. 477,117

Int. Cl.[3] F16C *11/12*

U.S. Cl. 403—122 18 Claims



1. A pivot pin assembly comprising:

(a) a bifurcated member having a pair of arms, each arm having a bore formed therethrough, one of said bores having an outwardly progressing conical surface;

(b) an intermediate member located between said pair of arms and having a bore formed therethrough which is concentrically aligned with said bores formed in said arms;

(c) a pivot pin received in said bores and having a generally cylindrical center portion fitted within said bore of said intermediate member, said pivot pin having a first end mateable with said bore having said conical surface and having a second end freely received in said bore of said other arm;

(d) a split cup-shaped collet having a tapered surface which is positioned between said second end of said pivot pin and said bore formed in said adjacent arm when said collet is inserted over said second end of said pivot pin to form a wedge joint;

(e) a friction-reducing element encircling said center portion of said pivot pin and abutting a non-axially movable stop at one end, said friction-reducing element having an outer race fixed to the interior surface of said bore formed in said intermediate member;

(f) a spring positioned about the periphery of said pivot pin between said friction-reducing element and said collet for exerting a desired pre-load on said friction-reducing element once said spring is compressed a predetermined amount; and

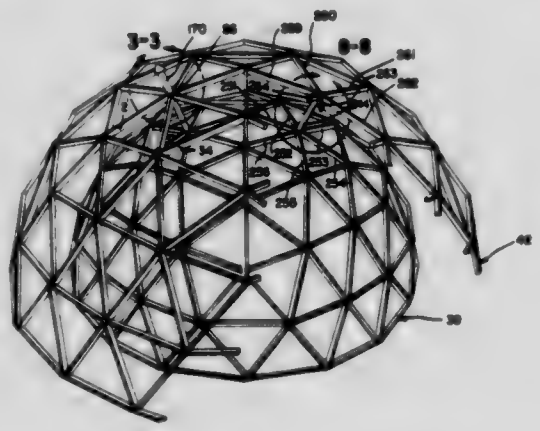
(g) means for axially drawing said pivot pin and said collet together so as to wedge said first end of said pivot pin into said conical bore and to wedge said second end of said pivot pin, said collet and said bore of said other arm together, thereby compressing said spring such that a desired pre-load is obtained on said friction-reducing element which compensates for variations in tolerances between various components of said assembly.

4,491,437

CONNECTOR FOR GEODESIC DOME

Victor M. Schwartz, 2020 Dwight Way, Apt. C, Berkeley, Calif. 94704

Filed Mar. 1, 1982, Ser. No. 353,201
Int. Cl.[3] E04B *1/32*
U.S. Cl. 403—172 3 Claims



1. A metal connector for interconnecting wood structural members in a geodesic dome comprising:

a. a hub member including a wall having a central passage formed therethrough of substantially constant cross sectional area;

b. at least two pairs of circumferentially spaced support arms, each pair of arms being welded to the outside of said wall of said hub extending radially outwardly therefrom parallel to one another and at a pre-selected axial and radial angle and formed with at least two pairs of radially spaced and aligned openings and said pairs of arms being further adapted for the receipt of a wood structural member therebetween and joined to said arms by fastening means registering in said openings and openings in said wood structural member;

c. said inside opening of said tubular hub is formed with internal threads adapted for receiving an externally threaded metal tubular member; and

d. said hub member is tubular in shape and said outside of said wall has a constant diameter.

4,491,438

DELINEATOR POLE, MORE PARTICULARLY FOR SKIING RACE COURSES, HAVING A PIVOTABLE ARRANGEMENT

Giampiero Berutti, Germignaga, Italy, assignor to SPM S.p.A., Brissago Valtravaglia, Italy

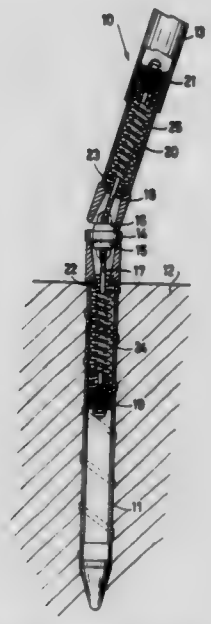
Filed Feb. 16, 1983, Ser. No. 466,847
Claims priority, application Italy, Feb. 16, 1982, 20856/82[U]
Int. Cl.[3] E01F *9/01*
U.S. Cl. 404—10 2 Claims

1. A delineator pole more particularly for ski races of the kind comprising a pole tip intended to be driven into the snow mass and a pole proper, said pole tip being connected to the pole proper by a resilient joint which enables the pole proper to be tilted when a skier bumps into it and to be then restored to its vertical posture again, characterized in that said joint comprises:

a disc of substantially the same diameter as said pole tip and said pole proper and arranged between said pole tip and said pole proper, one hollow end of said pole tip and one hollow end of said pole proper are inserted on first and second bosses projecting from opposite faces of said disc;

a rigid clevis linkably secured to each of said first and second bosses of said disc; and

a spring surrounding each of said rigid clevises, said springs being disposed in the hollow ends of said pole tip and said pole proper respectively and being retained between an annular shoulder in the hollow ends and a slideable header secured to each rigid clevis, whereby said springs cooperate with one another to vertically align said pole tip, said pole proper and said disc.

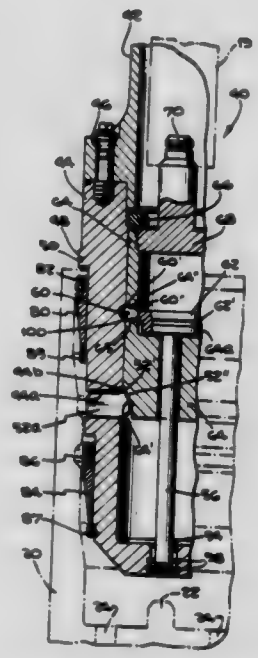


4,491,439

TENDON LATCH

Bruce J. Watkins, Palos Verdes, Calif., assignor to Hughes Tool Company, Houston, Tex.

Filed Jul. 26, 1982, Ser. No. 402,179
Int. Cl.[3] E02D *5/74, 21/00*; E21B *43/013, 43/36*
U.S. Cl. 405—224 18 Claims



1. A latch for connecting a tendon run from an offshore platform to a socket in a foundation on the sea floor comprising:

a latch body;

dog means disposed within the urgible outwardly from said body to latchingly engage said socket;

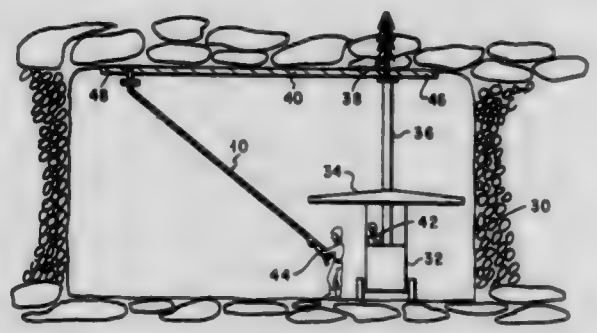
piston means, releasably disposed within said body above said dog means, for moving when released to urge said dog means outwardly from said body into latching engagement with said socket; and

trigger means for releasing said piston means when said latch body lands in said socket.

4,491,440
METHOD AND APPARATUS FOR INSTALLING A ROOF SUPPORT MEMBER IN A MINE

Dewayne E. Baucum, Price, Utah, assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 18, 1983, Ser. No. 524,262
Int. Cl.³ E21D *20/00*
U.S. Cl. 405—288 9 Claims



8. A method for safely supporting a first end of a roof support member in position on a mine roof from a safe location while a second end of said roof support member is bolted in place by a roof bolting machine including a personnel shielding means, said method consisting of:

(a) positioning a miner generally beneath said personnel shielding means so that said miner can position an apparatus for supporting said first end of said roof support member in engagement with a hole in said first end of said roof support member, said apparatus comprising an elongated support member; a fitting means positioned on a first end of said elongated support member for engaging said hole and handle means positioned on said second end of said elongated support member for use by said miner in gripping said apparatus;

(b) supporting said first end of said roof support member by said miner holding said first end of said roof support member in position;

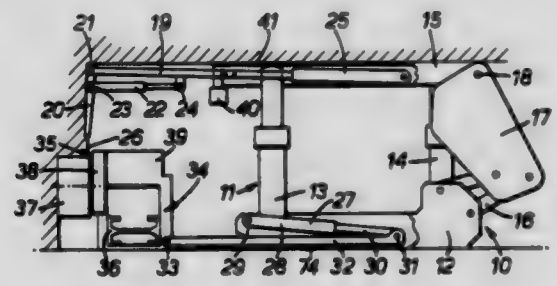
(c) bolting said second end of said roof support member in place; and thereafter

(d) bolting said first end of said roof support member in place.

4,491,441
SELF-ADVANCING SUPPORT AND CONTROL MEANS THEREFOR

Freeman, Reginald E., Upton-Upon-Severn, and Alan J. Berry, Tewkesbury, both of England, assignors to Dowty Mining Equipment Limited, England

Filed Oct. 13, 1983, Ser. No. 541,557
Claims priority, application United Kingdom, Oct. 29, 1982, 8231047
Int. Cl.³ E21D *23/00*
U.S. Cl. 405—294 8 Claims

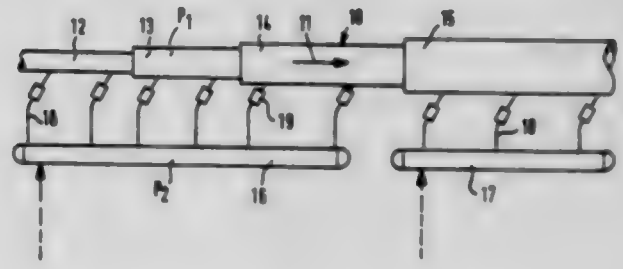


1. A self-advancing support, suitable for use in mines, including a cantilever which is extendible and retractable with respect to a main portion of the support, a sprag which is so mounted on said cantilever as to be extendible and retractable with respect thereto, means for advancing the support with respect to a mineral face and means for ensuring that during advance of the support said sprag is maintained in an extended, mineral-face-engaging, condition while said main portion is moved with respect to said cantilever in the direction towards said face, thereby reducing cantilever extension.

4,491,442
METHOD AND DEVICE FOR PNEUMATIC FEEDING OF MATERIALS

Jürgen Stelter, Grenzach-Wyhlen, and Manfred Hänggi, Rheinfelden, both of Fed. Rep. of Germany, assignors to Dürr Automation + Fördertechnik GmbH, Fed. Rep. of Germany

PCT No. PCT/DE81/00098, § 371 Date Feb. 11, 1982, § 102(e) Date Feb. 11, 1982, PCT Pub. No. WO82/00132, PCT Pub. Date Jan. 21, 1982
PCT Filed Nov. 9, 1981, Ser. No. 348,058
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1980, 3024568
Int. Cl.³ B65G *53/16*
U.S. Cl. 406—95 18 Claims



1. Method for pneumatic feeding of materials to be conveyed along a tubular feeding line supplied with conveying gas at least substantially continually from at least one source of pressure gas via a plurality of gas lines discharging into the feeding line and spaced consecutively apart from each other, comprising increasing the velocity of the conveying gas in each of the gas lines (18) to the velocity of sound at a point (20) before the opening (28) whereby the amount of gas per unit of time flowing through said gas lines is independent of the pressure in said feeding line.

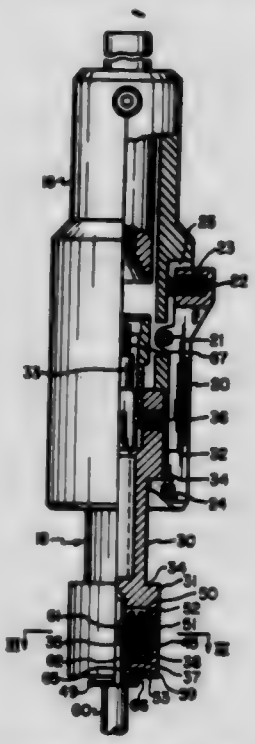
4,491,443
MODIFIED QUICK RELEASE ADAPTER

Charles J. DeCaro, Pittsburgh, Pa., assignor to Textron Inc., Providence, R.I.

Continuation-in-part of Ser. No. 437,542, Oct. 29, 1982,. This application Feb. 18, 1983, Ser. No. 466,637
Int. Cl.³ B23B *31/10*
U.S. Cl. 408—239 A 4 Claims

1. In a reversible adapter for a power driven torquing tool, including an elongated cylindrical body having a bore extending inward from each of a first and second end and adapted to accommodate a fastener driver and a drill bit respectively, said adapter being connectable at both its first and second ends to the torquing tool so as to be reversible in relation thereto, the improvement comprising quick release means external of the tool and cooperating with at least one of said bores to detachably retain the driver or bit within the bore and means associated with said bore and said driver or bit for transmitting torque from the tool to the driver or bit, said body including an opening radially therethrough and in communication with said at least one bore and one said quick release means including a shuttle positioned in said opening and movable between a first position locking said driver or bit in the bore and a second position for releasing said driver or bit, said shuttle having an enlarged central section and first and second opposing ends, said central section having a clear through opening to accommodate one end of the driver or bit, said first end including a threaded bore in registry with the opening and accommodating a set screw for engaging said driver or bit and said second end extending out of said body member, said at least one bore and said driver or bit including corresponding portions having

a D-shaped cross section so that said adapter has an internal surface corresponding to an outer surface of said driver or bit with portions of said surfaces being flat, said driver or bit, in addition, having a shoulder formed between said flat surface



and its working portion that abuts a lower outer surface of said adapter when said driver or bit is inserted within said bore of said adapter so that said flat surfaces are in contact with each other and torque may be transmitted from said adapter to said driver or bit.

4,491,444

TOOL HOLDER DEVICE

Gerhard Rampp, Inning; Manfred Spieth, Martinsried, and Dieter Scholz, Unterpfaffenhofen, all of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Jun. 25, 1982, Ser. No. 392,066

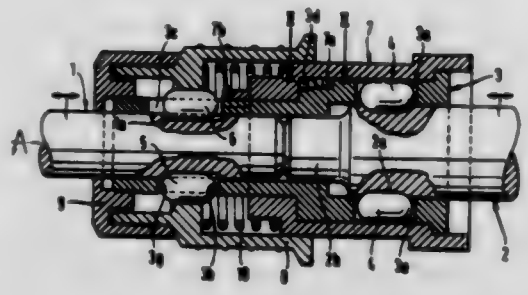
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1981, 3125455

The portion of the term of this patent subsequent to Mar. 6, 2001, has been disclaimed.

Int. Cl.³ B23Q *3/12*; B23B *31/10*; E02D *7/02*

U.S. Cl. 409—234

14 Claims



1. Tool holder for a drill capable of both only rotary drilling and the combination of rotary and percussive drilling and arranged to receive and hold an axially extending tool shank with the tool shank having axially extending closed ended recesses therein, comprising an axially extending sleeve-like retainer member arranged to receive the tool shank therein, locking members mounted in said retainer member and capable of removable engagement in the axially extending closed ended recesses in the tool shank, said locking members dimensioned in the axial direction of said retaining member so as to be axially displaceable in the recesses in the tool shank, stop means for engagement with said locking members for holding said locking members against axial displacement in the recesses in the tool shank, and said stop means being axially displaceable relative to said locking members for movement between a first position wherein only rotary drilling can be effected and a second position where the combination of rotary and percussive drilling can be effected.

4,491,445

TOOL HOLDER FOR HAMMER DRILLS

Josef Hunger, Munich; Wilhelm Klueber, Königsbrunn, and Wolfgang Regelsberger, Weissenburg, all of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft

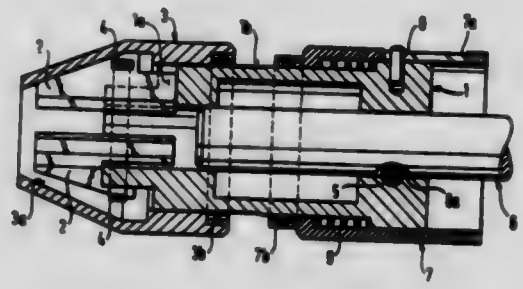
Filed Aug. 13, 1982, Ser. No. 407,798

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 3132449

Int. Cl.³ B23C *9/00*; B23B *31/10*

U.S. Cl. 409—234

6 Claims



1. A tool holder arranged to receive and secure a tool in a hammer drill, comprising an axially extending guide member, a plurality of locking elements supported in said guide member and said locking elements are radially adjustably positionable relative to said guide member for engagement within closed end recesses in the shank of the tool inserted into the tool holder, an adjustment ring is mounted on said guide member for adjustably positioning said locking elements, said adjustment ring being rotatable relative to said guide member for effecting the radial adjustment of said locking elements, a fixing sleeve axially slidably mounted on said guide member and displaceable between a first position for locking said adjustment ring and a second position for releasing said adjustment ring for rotation relative to said guide member, said adjustment ring can be locked by said fixing sleeve in at least two positions for each complete turn of said adjustment ring relative to said guide member, and a toothed construction is provided on said fixing sleeve and a counter toothed construction is on said adjustment ring so that the inter-engagement of said toothed construction and said counter toothed construction locks said adjustment ring against rotation relative to said guide member, and said toothed construction on said fixing sleeve extends in the axial direction thereof and faces radially outwardly and the counter toothed construction on said adjustment ring extends in the axial direction and faces radially inwardly so that said toothed and counter toothed constructions interengage in a telescoping manner.

4,491,446

HOLD-DOWN APPARATUS FOR UNFOLDABLE FUNCTIONAL ELEMENTS

Ruediger Ewald, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Jul. 18, 1983, Ser. No. 514,931

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1982, 3228284

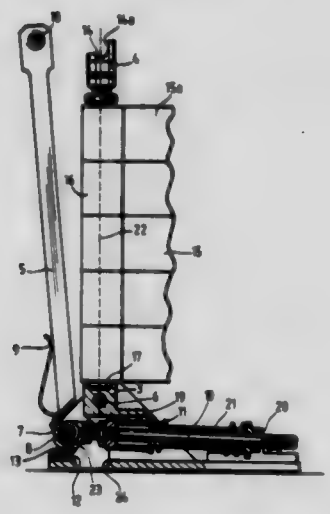
Int. Cl.³ B60P *1/64*; B64G *1/22*

U.S. Cl. 410—32

5 Claims

1. A hold-down apparatus for functional elements which are unfoldable from a carrying body, comprising counter support means (3) on the carrying body for supporting folded functional elements, a pressure piece (4) mounted on the functional element (15*a*) furthest away from said counter support means, a swingable retaining bail (5) operatively arranged for cooper-

ation with said pressure piece (4) for clamping a stack of functional elements in their folded condition, journal means (6) supported in said counter support means (3), a lever arm (7) operatively secured to said journal means (6), drive means (10, 11) operatively mounted on said carrying body, pivot means (8) operatively connecting one end of said lever arm (7) to said drive means (10) and to said retaining bail (5), spring means (9) carried by said lever arm (7) and bearing against said retaining bail (5) for urging said retaining bail around the pivot means (8) toward said pressure piece (4), whereby the lever arm (7), during simultaneous swinging of the retaining bail (5) and



setting thereof onto the pressure piece (4), is tiltable by said drive means (10) into a locked position corresponding to its dead point relative to said journal means (6), and whereby the retaining bail (5) engaging said pressure piece (4) is subjected to tensile stress due to its purposely chosen, relatively short length, prior to said lever arm (7) reaching its locked position, and wherein said counter support means (3) comprise a sloped strike face (12) which causes a tilting motion of said retaining bail (5) directed away from the pressure piece (4) through contact with an end (23) of said retaining bail (5) after said lever arm (7) swings out of the locked position under the operation of said drive means (11).

4,491,447

ANCHORING RETAINER FOR THREADED FASTENERS

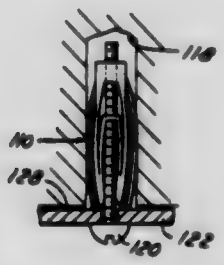
Jon D. Smith, Fenton, and Glenn T. Parker, Ortonville, both of Mich., assignors to Dry Dock Industries, Inc., Fenton, Mich.

Continuation-in-part of Ser. No. 150,013, May 15, 1980, Pat. No. 4,397,595, which is a division of Ser. No. 929,689, Jul. 31, 1978, abandoned, which is a continuation-in-part of Ser. No. 803,806, Jun. 6, 1977, Pat. No. 4,143,581. This application Jan. 5, 1983, Ser. No. 455,779

The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.

Int. Cl.³ F16B *13/04*

U.S. Cl. 411—15 4 Claims



1. A fastener assembly adapted to attach a connecting member provided with an opening to a supporting structure comprising in combination a retainer for mounting in a blind hole of the supporting structure and a threaded element which extends into and is threadedly carried by said retainer for holding said retainer in the blind hole and for attaching the connecting member, said retainer being foldable prior to insertion into the blind hole and comprising a flexible unitary one-piece body made from a plastic material, said body being symmetrical and having an axis which is adapted to extend through the hole in the supporting structure when the retainer is folded and inserted therein, said body having a top, a bottom and a pair of sides, said body between said sides being of substantially uniform width between said top and said bottom, said body prior to its insertion into said hole being of generally triangular configuration when viewed from either one of the sides thereof, said body having a sleeve provided with a sleeve opening surrounding the axis, and sleeve being of rectangular cross section and having a first pair of parallel edge surfaces forming part of the parallel sides of said body, and a second pair of parallel edge surfaces perpendicular to said first pair of parallel edge surfaces and located on opposite sides of said axis, said second pair of edge surfaces being provided with a pair of integrally formed elongated flexible legs, each of said legs having a width generally equal to the distance between the other pair of opposing edges of said sleeve, said legs having said surfaces forming part of the parallel sides of said body, an elongated flexible strut having side surfaces forming part of the parallel sides of said body, said strut being spaced axially from said sleeve and located entirely between said legs, said strut prior to folding being of V-shape and including a central strut portion spaced for the sleeve and a pair of flexible connecting strut portions, a centrally located axially extending opening provided in said central strut portion, each of said connecting strut portions being integrally connected to the central strut portion and to one of the flexible legs near the end thereof, the legs and strut portions of said retainer being moved together to permit said retainer to be inserted into the blind hole, with said sleeve end of the retainer being inserted first into the blind hole and being spaced from the bottom of the blind hole, with said ends of the flexible legs being near the open end of the blind hole, said threaded element extending through the opening in the connecting member and through the opening in the central strut portion and thereafter being threadedly connected to said sleeve whereby rotation of said threaded element into the blind hole being effective to axially move said retainer relative to the open end of the blind hole until the ends of said legs are forceably urged against the opposite surface of the connecting member being mounted on the supporting structure, with continued rotation of said threaded element into the blind hole placing said resilient legs in compression causing a bulge in said legs which assists in moving the outer surfaces of the legs into tight frictional contact with the wall of the blind hole along the height of said legs.

4,491,448

JACKET APPLICATION DEVICE FOR A BOOK BINDING MACHINE

Helmut Anders, Rahden, and Günter Dietrich, Hille, both of Fed. Rep. of Germany, assignors to Rahdener Maschinenfabrik August Kolbus GmbH & Co., Rahden, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 430,793

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1981, 3139656

Int. Cl.³ B42C *11/02, 11/04;* B65G *47/26*

U.S. Cl. 412—21 11 Claims

1. In apparatus for applying a cover to a book block, the apparatus comprising book block supporting tongs movable along a linear path and a lifting element for urging the cover into contact with the spine of a moving book block carried by the tongs, an improved cover transporting and alignment mechanism comprising:

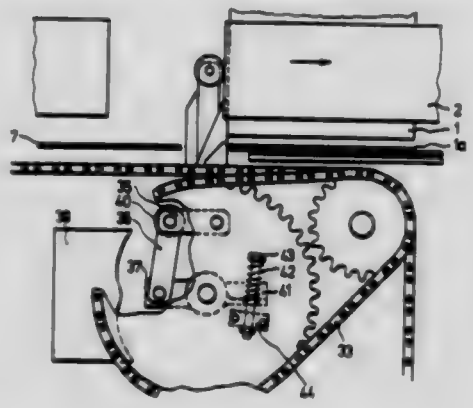
engaging means for moving individual covers along a path which is generally parallel to the path of movement of the book blocks, said engaging means moving at a linear speed which is less than the linear speed of the book block supporting tongs;

movable cover alignment means, said cover alignment

means including at least a first cover contacting alignment element;

registration establishing means, said registration establishing means being connected to said alignment means for movement therewith, said registration establishing means being operatively coupled to a book block supporting tong to determine the positioning of said alignment means relative to a moving block; and

drive means for causing said alignment means and said registration establishing means to be simultaneously driven



about closed non-linear paths, said drive means being operatively coupled to said engaging means and causing said alignment means to travel in the direction of movement of said engaging means at a speed which is greater then the speed of movement of said engaging means, said drive means including means for resiliently braking said alignment means when said registration establishing means overtakes a moving book block.

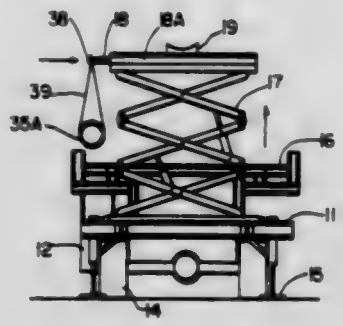
5. The apparatus of claim 1 wherein said drive means comprises means for periodically decelerating said alignment means alignment element and registration establishing means.

4,491,449

LOAD RAISING VEHICLE AND METHOD

Hugh M. Hawkins, Annandale, Va., assignor to John J. Kirlin, Rockville and Wayne T. Day, Wheaton, both of, Md., a part interest to each

Filed May 5, 1981, Ser. No. 260,761
Int. Cl.[3] E04G *21/00*; B66F *3/22*
U.S. Cl. 414—10 43 Claims



28. A pipe loading vehicle for transporting pipes from a ground location to a raised position beneath a covering surface, comprising:

a self-propelled ground engaging vehicle having a front and a back, said vehicle being movable in the longitudinal direction, control means for the vehicle, a chassis, and a base supported on the chassis,

at least one support stand stationarily fixedly mounted on the base and having a horizontal support surface extending transversely across the base for holding elongated pipes extending longitudinally, fornt and back,

a pair of power operated lifts longitudinally aligned with the support stand or stands, each lift having a saddle on the top thereof, each lift movable to a lower position at which the saddle is below the height of the support surface and a raised position at which the saddle is raised substantially above the height of the support surface to raise a pipe from a first position extending longitudinally and supported on the support stand or stands, to a raised longitudinally extending position;

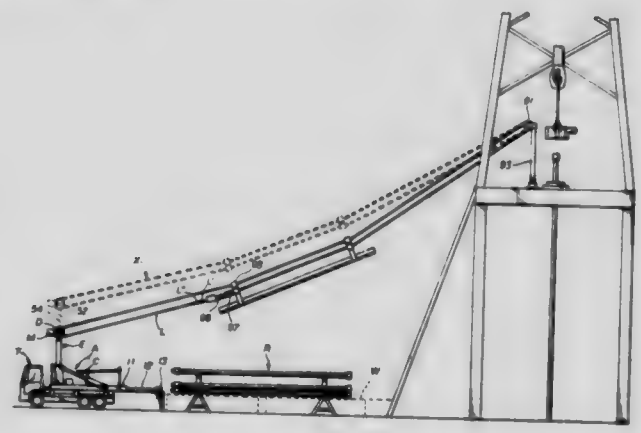
and including a slidable hook rod on top of each lift next to its respective saddle, said hook rod having a hook on its end and being slidable out to at least one side of the vehicle, whereby a cable attached to an elongated pipe and to the hook rod lifts the pipe off the ground and up onto the support surface upon upward movement of the lifts.

4,491,450

PICK-UP AND LAYDOWN MACHINE

Albert L. George, 222 Grand Ave., Lafayette, La. 70503

Filed Sep. 23, 1981, Ser. No. 304,901
Int. Cl.[3] E21B *19/14*
U.S. Cl. 414—22 6 Claims



1. In a pick up and laydown machine having a boom pivoted with respect to a support base and carrying a drum with a single line rove about the drum and about a sheave mounted above the derrick floor and means for pivotally raising and lowering the boom and means for rotating the drum to move the line and with means carried by the line to move a joint of pipe from a position adjacent a catwalk beside the rig to a position partially above the rig floor the improvement comprising the telescoping boom carrying a drum on which an endless line is rove, said telescoping boom having a lower base section and an upper section and means for extending and retracting said upper section with respect to said lower section, and said upper section comprises a laminated member wherein the inner layer is formed of mild steel and the outer layer is formed of high tensile steel.

4,491,451

WORK HANDLING ASSEMBLY FOR DEPOSITING A WORKPIECE INTO THE DIE SPACE OF A DROP-FORGING PRESS

Friedrich Willim, Leverkusen, Fed. Rep. of Germany, assignor to Eumuco Aktiengesellschaft für Maschinenbau, Fed. Rep. of Germany

Filed Aug. 24, 1982, Ser. No. 411,128
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1981, 3136169
Int. Cl.[3] B66C *1/42*
U.S. Cl. 414—732 12 Claims

1. A work handling assembly for depositing a workpiece travelling from a pick-up point to a deposit point in the die space of a drop-forging press, said assembly comprising:

(a) a pincer assembly mounted to form a fourth hinge side on a hinged quadrilateral mechanism and to move between a workpiece pick-up work station and a workpiece deposit work station,

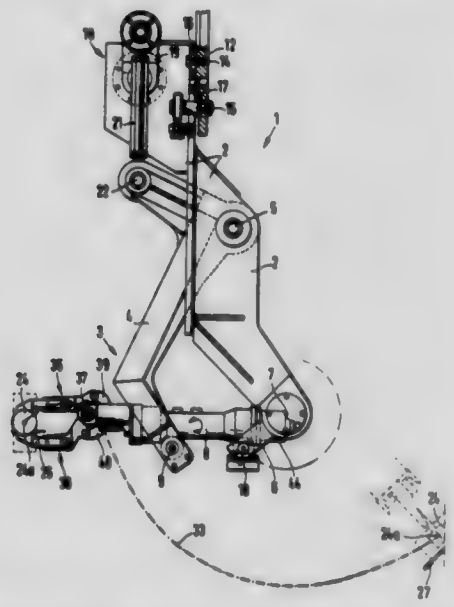
(b) a hinged quadrilateral mechanism being driven by a crank gear assembly,

(c) said quadrilateral mechanism including one fixed hinged side portion and two hinged side portions mounted to the

fixed hinged side portion and being movable between an initial workpiece pick-up position and a subsequent workpiece deposit position,

(d) said pincer assembly being rotatably connected to the free ends of the movable hinged side portions thereby forming said fourth hinge side,

(e) each of the movable hinged portions including a lever member with one of the lever members being longer than the other lever member which is directed outwardly away



from the longer lever member when in the initial workpiece pick-up position,

(f) the longer lever member being rotatably connected to a front portion of the pincer assembly which has an outer, gripping tool carrying end,

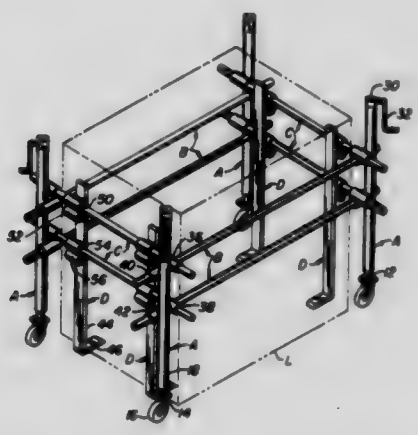
(g) said quadrilateral mechanism being effective to cause the outer, gripping tool carrying end to travel along a curved path between the workpiece pick-up and deposit positions.

4,491,452

LOAD TRANSPORTING APPARATUS

Mitchel J. Matovich, 2323 Eastridge #511, Menlo Park, Calif. 94025

Filed Oct. 7, 1982, Ser. No. 433,225
Int. Cl.³ B60B *29/00*
U.S. Cl. 414—427 **11 Claims**



1. Apparatus for transporting a load upon a surface comprising at least one lifting unit, at least one load engaging unit and at least two rigid elongate bars for joining the lifting unit and the load engaging unit; said lifting unit comprising a rigid inner member having a first end and a second end remote from said first end, means secured to said first end for affording rolling movement of said rigid member upon said surface, a hollow rigid outer member telescoped over said second end for relative axial movement with respect to said inner member, means for selectively axially moving said outer member with respect to said inner member in a direction toward and away from said rolling movement affording means, first and second sleeves secured to the exterior of said outer member in spaced apart relation, said sleeves each defining a passage of substantially uniform cross section, the passages of respective said sleeves being mutually parallel and being substantially perpendicular to and outward of said outer member; said load engaging unit including a rigid elongate member having an end, means secured to said end and projecting laterally of said member for engaging the load, third and fourth sleeves mounted to said rigid elongate member in spaced relation to said load engaging means, said third and fourth sleeves being spaced from one another by a distance substantially equal to the space between first and second sleeves, said third and fourth sleeves defining passages of substantially the same cross sectional shape as the passages in said first and second sleeves, the passages in said third and fourth sleeves being parallel to one another and substantially perpendicular to said rigid elongate member; said rigid elongate bars each having an external cross sectional shape slidably receivable in said passages so that said lifting unit and said load engaging unit can be joined together at a range of distances by installation of one of said bars through said first and third sleeves and installation of the other bar through said second and fourth sleeves.

4,491,453

PROCESS FOR RESTORING TEETH WITH VISIBLE LIGHT CURABLE COMPOSITIONS

Francis F. Koblitz, York, Pa., and Roy L. Smith, Milford, Del., assignors to Dentsply Research & Development Corp., Milford, Del.

Continuation of Ser. No. 406,462, Aug. 9, 1982, abandoned, and a continuation-in-part of Ser. No. 323,313, Nov. 20, 1981, abandoned, which is a continuation of Ser. No. 182,626, Aug. 29, 1980, abandoned. This application Nov. 10, 1983, Ser. No. 550,747
Int. Cl.³ A61K *6/08*
U.S. Cl. 433—217 **9 Claims**

1. A process of restoring teeth comprising applying to a prepared tooth a dental restorative composition hardenable by irradiation with visible light comprising a blend of:

a major proportion of an inorganic filler, and

a minor proportion of a resin component having a viscosity of between about 5,000 and 70,000 centiposes at 25° C. comprising:

a binder resin comprising bis-GMA reacted with a diisocyanate,

a polymerizable acrylic diluent monomer present in an amount sufficient to dissolve said binder resin and

a photosensitizing system comprising:

from about 0.05% to about 0.50% by weight of said resin component of a non-aromatic alpha diketone, and

an amine reducing agent in an amount sufficient to improve the photocatalytic activity to visible light of said alpha diketone in said restorative composition,

said inorganic filler and said resin component being present in relative amounts such that said restorative composition has a viscosity suitable for filling teeth, said composition being capable of passing American Dental Association Specification No. 27 for color stability,

and

exposing said composition to visible light to effect substantial polymerization thereof.

4,491,454

SULFUR REMOVAL FROM COAL

Ludmila Lompe-Krzymien, Gloucester, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Filed Aug. 29, 1983, Ser. No. 527,500
Int. Cl.[3] C10L *9/02*
U.S. Cl. 44—1 SR 14 Claims

1. A process of removing sulfur and decreasing the ash content of coal, comprising

(a) contacting the sulfur-bearing coal in finely divided form with an aqueous solution containing an effective amount of cupric ions at a temperature of at least about 140° C., under autogenic pressure, until substantial amounts of both pyritic and organic forms of sulfur are solubilized;

(b) releasing the pressure, separating the coal solids from the reaction liquor; and

(c) washing the coal solids to remove soluble forms of sulfur, iron and copper therefrom, at least one of the steps (b) and (c) being carried out with oxidative conditions sufficient to provide that Cu and Fe are in cupric and ferric forms.

3. The process of claim 1 wherein the temperature in (a) is maintained within about 150° to about 200° C.

4,491,455

METHOD FOR IMPROVING COLD FLOW OF FUEL OILS

Takaharu Ishizaki, Nishinomiya; Takeshi Nagai, and Shingo Yamazaki, both of Amagasaki, all of Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

Filed Sep. 21, 1982, Ser. No. 420,647
Claims priority, application Japan, Feb. 10, 1982, 57-18974
Int. Cl.[3] C10L *1/22*
U.S. Cl. 44—62 11 Claims

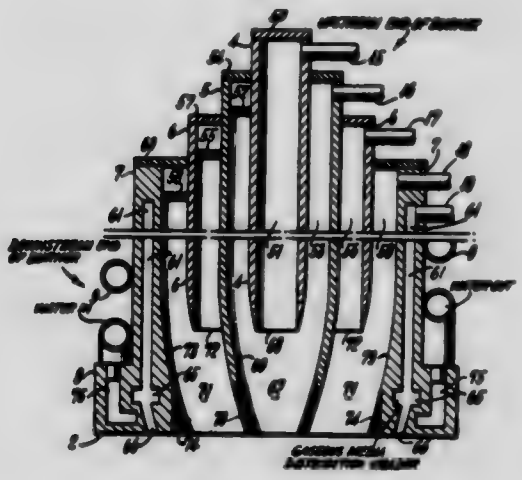
1. A method for improving the cold flow of fuel oils comprising adding esters of nitrogen-containing compounds having polyhydroxyl groups with 2–10 hydroxyl groups, and linear saturated fatty acids having 12–30 carbon atoms to fuel oils.

4,491,456

PARTIAL OXIDATION PROCESS

Warren G. Schlinger, Pasadena, Calif., assignor to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 393,264, Jun. 29, 1982, Pat. No. 4,443,228.
This application Dec. 16, 1983, Ser. No. 562,259
Int. Cl.[3] C10J *3/46*
U.S. Cl. 48—197 R 6 Claims



1. In a continuous process for the manufacture of gas mixtures comprising H_2, CO, CO_2 and at least one material from the group H_2O, N_2, A, CH_4, H_2S and COS by the partial oxidation of a feedstream comprising a pumpable slurry of solid carbonaceous fuel in a liquid carrier and a feedstream of free-oxygen containing gas optionally in admixture with a temperature moderator, said partial oxidation occuring in the reaction zone of a free-flow gas generator at an autogenous temperature in the range of about 1700° to 3500° F., and a pressure in the range of about 5 to 250 atmospheres, the improvement which comprises: (1) passing a first stream of a first reactant feedstream comprising a slurry of solid carbonaceous fuel in a liquid carrier in liquid phase at a temperature in the range of about ambient to 500° F., a pressure in the range of about 5 to 250 atmospheres, and a velocity in the range of about 1 to 50 ft. per second through either the central or first annular passage of a burner and into a central pre-mix chamber in said burner, wherein said burner comprises a central conduit having a central longitudinal axis that is coaxial with the central longitudinal axis of the burner, closing means attached to the upstream end of said central conduit for closing off same; an unobstructed exit nozzle at the downstream end of the central conduit which discharges through circular exit orifice located upstream from the face of the burner to provide a central pre-mix chamber that discharges through an unobstructed circular exit orifice at the face of the burner, inlet means connected to the upstream end of the central conduit for introducing a reactant feedstream; a second conduit coaxial and concentric with said central conduit along its length, an unobstructed exit nozzle at the downstream end of the second conduit which discharges through the circular orifice of said central pre-mix chamber at the face of the burner, spacing means between said central and second conduits for maintaining a spaced relationship and forming therebetween an unobstructed first annular passage with an unobstructed downstream annular exit orifice that discharges into the central pre-mix chamber, closing means attached to said second conduit and first annular passage at their upstream ends for closing off same, said central conduit passing through the upstream closed end of said second conduit and making a gastight seal therewith, and inlet means connected to the upstream end of the second conduit for introducing a reactant feedstream; a third conduit coaxial and concentric with said second conduit along its length, spacing means between said second and third conduits for maintaining a spaced relationship and forming therebetween an unobstructed second annular passage with an unobstructed downstream annular exit orifice located upstream from the face of the burner to provide a portion of an annular pre-mix chamber that discharges through an unobstructed annular exit orifice at the face of the burner, closing means attached to the second annular passage and third conduit at their upstream ends for closing off same, said second conduit passing through the upstream closed end of the third conduit and making a gastight seal therewith, and inlet means connected to the upstream end of the third conduit for introducing a reactant reactant feedstream; an outer conduit coaxial and concentric with said third conduit along its length, an unobstructed exit nozzle at the downstream end of the outer conduit which discharges through said annular exit orifice at the face of the burner, spacing means between said third and outer conduits for maintaining a spaced relationship and forming therebetween an unobstructed third annular passage with an unobstructed downstream annular exit orifice located upstream from the face of the burner that discharges into the remaining portion of said annular pre-mix chamber, closing means attached to the third annular passage and outer conduit at their upstream ends for closing off same, said third conduit passing through the upstream closed end of the outer conduit and making a gastight seal therewith, and inlet means connected to the upstream end of the outer conduit for introducing a reactant feedstream; an annular water-cooled flat face-plate encircling the downstream end of the burner, said face-plate being cored to provide an annular passage for circulating water and an annular header for distributing a gaseous material, passage means extending longitudinally in the wall of said outer conduit and in communication with said distribution header, inlet means in communication with the upstream end of said longitudinal passage means for introducing said gaseous material, and downstream passage means in communication with said distribution header for discharging said gaseous material at the face of the burner; (2) simultaneously and con-

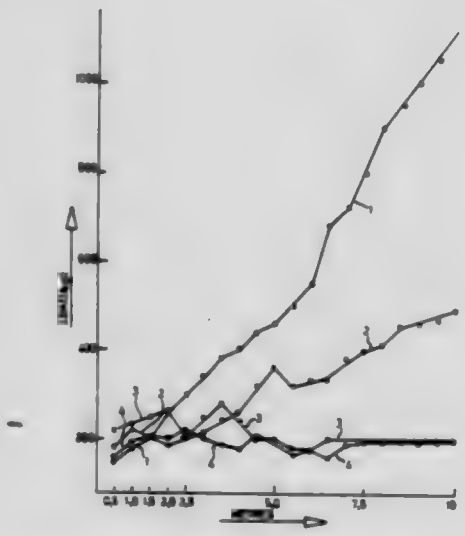
currently passing a second reactant feedstream comprising a free-oxygen containing gas optionally in admixture with steam through either the central conduit or the first annular passage whichever is free at a temperature in the range of about ambient to 1500° F., a pressure in the range of about 5 to 250 atmosphere, and a velocity in the range of about 100 feet per second to sonic velocity; (3) mixing together said first and second reactant feedstreams from (1) and (2) in said central pre-mix chamber and vaporizing about 0 to 100 volume % of said liquid carrier to produce a multiphase mixture at a temperature below its autoignition temperature and in which the ratio of the atoms of free-oxygen plus atoms of organically combined oxygen in the solid carbonaceous fuel per atom of carbon in the solid carbonaceous fuel (O/C atomic ratio) is in the range of 0.5 to 1.95; and the H_2O/fuel weight ratio of lbs. of H_2O per lb. of solid carbonaceous fuel plus liquid hydrocarbonaceous material, if any, is in the range of about 0.1 to 3.0; (4) simultaneously and concurrently passing a second stream of said first reactant feedstream at substantially the same temperature, pressure, and velocity as specified in (1), through either the second or third annular passage of the burner and into the annular pre-mix chamber in the burner; (5) simultaneously and concurrently passing a second stream of said second reactant feedstream at substantially the same temperature, pressure and velocity as specified in (2) through either the second or third annular passage of the burner whichever is free and into said annular pre-mix chamber; (6) mixing together said first and second reactant feedstreams from (4) and (5) in said annular pre-mix chamber and vaporizing about 0 to 100 volume % of said liquid carrier to produce a multiphase mixture at a temperature below its autoignition temperature and having substantially the same O/C atomic ratio and H_2O/fuel weight ratio as specified in (3); (7) discharging the multiphase mixtures produced in the pre-mix chambers in (3) and (6) from the burner; and (8) mixing together and reacting by partial oxidation the multiphase mixtures from (7) in the reaction zone of the gas generator.

4,491,457

DRILLING BIT

Noel C. Pope, Johannesburg, South Africa, assignor to Boart International Limited, Sandton, South Africa

Filed Jun. 3, 1983, Ser. No. 500,901
Int. Cl.[3] B24D *3/02*
U.S. Cl. 51—308 3 Claims



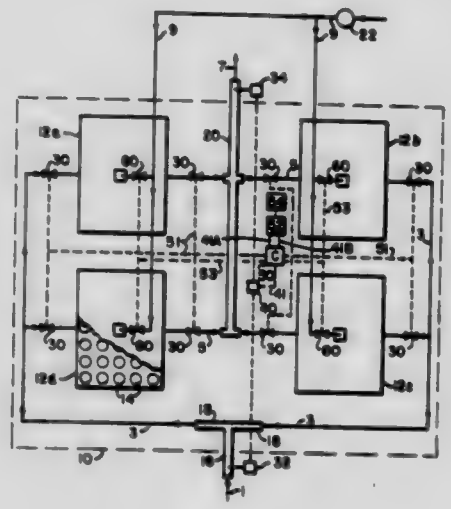
1. An impregnated drilling bit which has a working face, the working face having diamond particles embedded in a matrix and the matrix including particles of a scouring agent selected from the group consisting of alumina, boron carbide and silicon carbide, the scouring agent particles being not larger than the diamond particles.

4,491,458

METHOD FOR DETECTING AN OVERLOAD OF A FABRIC FILTER

Thomas C. Sunter, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Mar. 28, 1983, Ser. No. 479,600
Int. Cl.[3] B01D *46/04*
U.S. Cl. 55—21 3 Claims



1. In a method of filtering particulate matter from a particulate matter-laden gas stream wherein the particulate matter-laden gas stream is passed through a fabric filter collection apparatus comprised of a plurality of independent, isolatable filter chamber each housing fabric filter means upon which a portion of the particulate matter deposits, the particulate matter-laden gas stream being subdivided upstream of the collection apparatus into a like plurality of substreams each of which is passed through one of said plurality of independent, isolatable filter chambers prior to recombining said substreams downstream of said collection apparatus to form a relatively particulate matter-free gas stream, an improved method of sequentially cleaning said plurality of filter chambers of deposited particulate matter comprising:

a. continuously sensing the gas pressure differential across the dust collector between a point upstream of the subdivision of the particulate matter-laden gas stream into a plurality of substreams and a point downstream of the recombination of said substreams into the relatively particulate matter-free gas stream;

b. isolating one of said plurality of filter chambers from gas flow and diverting the substream flowing thereto amongst the remaining filter chambers of said plurality of filter chambers;

c. thence cleaning the particulate matter depositing upon the fabric filter means disposed within said isolated filter chamber;

d. thence returning said cleaned filter chamber to service by reestablishing gas flow therethrough;

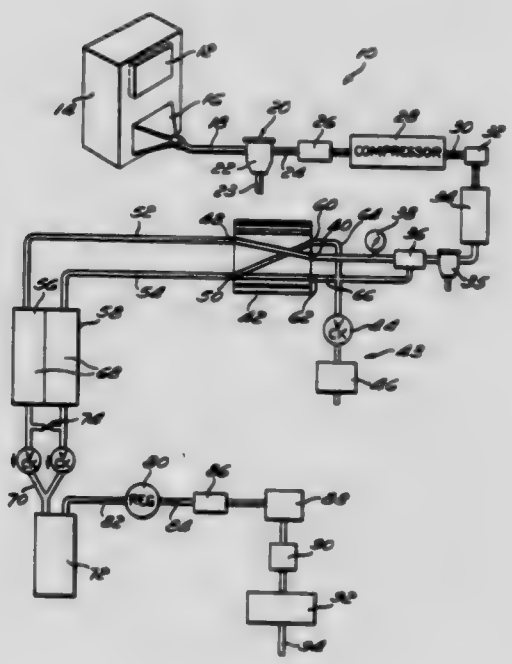
e. comparing the gas pressure differential across the dust collector sensed at the initiation of step (b) to the gas pressure differential across the dust collector sensed at the completion of step (d); and

f. whenever the gas-pressure differential across the dust collector sensed at the completion of step (d) exceeds that sensed at the initiation of step (b), actuating an alarm indicating a malfunction of the cleaning process.

4,491,459
PORTABLE OXYGEN ENRICHMENT AND CONCENTRATION SYSTEM

Charles J. Pinkerton, 2528 E. Terrace, Apt. B, Anaheim, Calif. 92806

Filed May 4, 1983, Ser. No. 491,420
Int. Cl.³ B01D 53/04
U.S. Cl. 55—163 13 Claims



1. An apparatus for taking in a gas containing a plurality of components and producing a product gas having an increased concentration of a given component of the intake gas, the apparatus comprising:

an apparatus gas intake port;

a pair of primary adsorption beds, having an inlet coupled to the intake port and an outlet, and containing an adsorbent material for removing from the gas at least one of the components other than the given component;

a pair of secondary adsorption beds, each having an inlet an outlet and containing an adsorbent material for removing from the gas at least one component other than the given component;

valving means coupled between the primary adsorption beds and the secondary adsorption beds for alternatively directing gas through the first primary and first secondary adsorption beds, or through the second primary and second secondary adsorption beads;

a blower coupled to the outlets of the primary adsorption beds and to the inlets of the secondary adsorption beds for causing a flow of air through the primary and secondary adsorption beds;

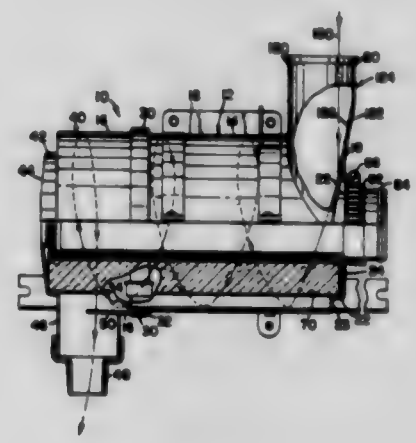
a moisture separator for removing moisture from the gas wherein the moisture separator is coupled to the apparatus so the gas flowing through the primary adsorption beds and the secondary adsorption beds flows through the moisture separator; and

a purge conduit for directing a portion of the product gas output from the first secondary adsorption bed through the second secondary adsorption bed and the second primary adsorption bed when the valving means directs the gas flow through the first primary and first secondary adsorption beds, and for directing a portion of the product gas output from the second secondary adsorption bed through the first secondary and first primary adsorption beds when the valving means directs the gas flow through the second primary and secondary adsorption beds.

4,491,460
AIR CLEANER AND DEFLECTING INTAKE TUBE

Joseph C. Tokar, Apple Valley, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Jan. 31, 1983, Ser. No. 462,456
Int. Cl.³ B01D 45/16
U.S. Cl. 55—337 1 Claim



1. An air cleaner assembly for connection to a machine intake comprising:

(a) a rigid hollow cylindrical central element having first and second ends, said second end to be fitted to a machine intake, said element having perforate and imperforate portions, said imperforate portion extending from said second end toward said first end, said imperforate portion including a stop flange extending circumferentially and outwardly from said element, said perforate portion having a safety filter element affixed thereto,

(b) a cylindrical main filter element having first and second ends and an axial hollow core therebetween, said second end having a central aperture therethrough sized to receive said central element, said second end of said main filter having a neck portion extending circumferentially therefrom at said central aperture, said first end being fluid impervious, said filter element including an outer covering member having perforate and imperforate portions, said imperforate portions extending from both ends leaving a middle, perforate portion,

(c) clamping means around said neck portion for compressing said neck portion onto said imperforate portion of said stop flange so that when said central element is inserted within said central aperture, said neck and said imperforate portion of said central element form a fluid impervious seal therebetween and said stop flange limiting the contact of said first ends of said elements, and

(d) a housing for said main filter having two ends and including an intake port toward one end thereof, an outlet port sized to receive said second end of said central element and a scavenge port located toward the other end thereof, said housing being larger in diameter than said main filter thereby defining a space between said main filter and said housing, said intake port having a generally circular opening including an intake tube having a central axis being generally orthogonal to the central axis of the elements and affixed to said housing at one end thereof, said intake tube including a planar portion extending outwardly from the end having said outlet for causing intake air to be deflected into a helical orbit within said defined space, so that heavier particulate matter will be centrifugally separated and fall toward said scavenge port, said housing being removable to permit replacement of said main filter contained therein.

4,491,461

METHOD OF DESULFURIZATION OF FLUE GASES

Ireneus A. Hoekstra, 906 Woodlyn Dr. North, Cincinnati, Ohio 45230

Filed May 17, 1983, Ser. No. 495,243
Int. Cl.³ B01D *19/00*; F25J *3/02*
U.S. Cl. 62—17 20 Claims



1. The method of significantly reducing the sulfur oxides content of flue gases, which comprises the steps of:

(a) cooling the flue gases to a temperature in the order of about 125° F. while removing particulates and sulfur-tri-oxides therefrom;

(b) absorbing a major part of the SO_2 content of the cooled flue gases by circulating, in a closed system, an absorbing liquid which is contacted with the flue gases to effect the absorption of SO_2, said absorbing liquid being a dilute solution in water of an additive capable of decreasing the partial pressure of SO_2 in the liquid at a temperature of the liquid leaving the absorber which is equivalent to the partial pressure of SO_2 in water at a temperature in the range of about 15° C. to about −20° C;

(c) desorbing SO_2 from the absorbing liquid by subjecting the liquid to multi-stage vacuum stripping;

(d) condensing the steam and vapor stripped in step (c) to recover SO_2; and

(e) controlling the flow rate of absorbing liquid in said closed system and the rate of desorption of step (c) such that the quantity of heat removed by stripping is substantially equal to the heat given up by the flue gases in step (b) while the temperature difference between the absorbing liquid before and after absorption of SO_2 is in the order of 10°–30° F.

4,491,462

CONTINUOUS PACKED BED WASH COLUMN

Henricus A. C. Thijssen, Son, and Bernardus G. M. van der Malen, Hagestein, both of Netherlands, assignors to Douwe Egberts Koninklijke Tabaksfabriek-Koffie-Branderijn-Theehandel B.V., Utrecht, Netherlands

Division of Ser. No. 418,832, Sep. 16, 1982, abandoned, which is a continuation-in-part of Ser. No. 330,592, Dec. 14, 1981, abandoned, which is a division of Ser. No. 46,758, Jun. 9, 1979, Pat. No. 4,332,599, which is a continuation-in-part of Ser. No. 866,169, Dec. 30, 1977, Pat. No. 4,188,797. This application Oct. 26, 1983, Ser. No. 545,771

Claims priority, application United Kingdom, Jan. 12, 1977, 1086/77; Jun. 23, 1978, 27792/78

The portion of the term of this patent subsequent to Jun. 1, 1999, has been disclaimed.

Int. Cl.³ B01D *9/02*

U.S. Cl. 62—542 11 Claims

1. Process for separating the ice crystals contained in a slurry of an aqueous solution and ice crystals from said aqueous solution and washing said ice crystals with an aqueous wash liquid, comprising the steps of:

substantially eliminating channelling and clogging by creating a packed bed of ice crystals which is subjected to a continuous translatory movement and a stable washfront within said packed bed of ice crystals between said aqueous solution and said aqueous wash liquid so that said aqueous solution and said aqueous wash liquid adjacent to said washfront are substantially stagnant, said stable washfront lying in a straight plane perpendicular to said translatory movement of said packed bed of ice crystals and

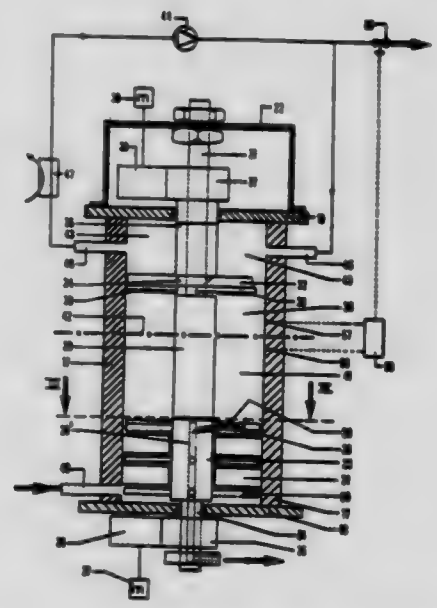
subjecting said packed bed to continuous translatory movement.

9. Process for continuously separating the ice crystals in a slurry of an aqueous solution of ice crystals, from said solution and washing said ice crystals with an aqueous wash liquid in a wash column, comprising: eliminating channelling end clogging, by:

withdrawing solution from said slurry while retaining said ice crystals, producing a thickened slurry of ice crystals,

subjecting the ice crystals in said thickened slurry to a continuous translatory movement in axial direction through a cylindrical space against a restraining force, producing a continuously moving packed bed of ice crystals,

allowing said continuously moving packed bed of ice crystals to homogenize throughout its cross section,



meeting the homogenized continuously moving packed bed of ice crystals with its entrapped aqueous solution by a body of aqueous wash liquid substantially stagnantly maintained in said cylindrical space, such as to create a straight stable washfront between the aqueous solution and the wash liquid, perpendicular to the axis of said cylindrical space,

all the while keeping said washfront substantially at a fixed place with regard to said cylindrical space by sensing devices at both sides of the washfront, said devices cooperating with pressure regulating means to keep said body of aqueous wash liquid adjacent the washfront substantially stagnant,

continuously disintegrating the solid porous ice plug into which the ice crystals of said packed bed are cemented together in passing said washfront,

feeding out the product of disintegration and recovering said solution withdrawn from said slurry.

4,491,463

LASER SIZING METHOD AND APPARATUS FOR FIBER OPTIC BUFFERS

Paul Weinstein, Orange, and Joseph Winter, New Haven, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jul. 26, 1983, Ser. No. 517,302

Int. Cl.³ C03D *37/10*; C03C *25/00*

U.S. Cl. 65—2 20 Claims

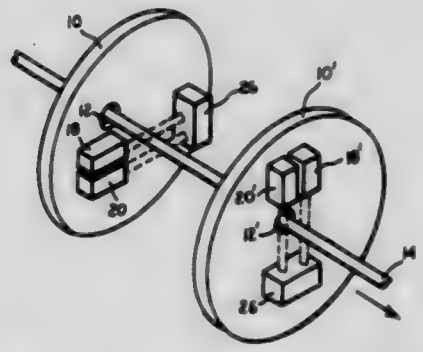
1. A method for sizing an optical fiber having a buffer material surrounding a glass fiber to provide said optical fiber with a desired outer dimension, said method comprising:

providing a table rotatable about an axis coaxial with the optical axis of said optical fiber;

providing means for generating at least one high energy

beam substantially transverse to said buffer material, said at least one beam generating means being mounted to said rotatable table;

rotating said table with said beam generating means about said coaxial axis and thereby rotating said at least one beam about said optical fiber; and



moving said optical fiber past said at least one rotating beam, whereby oversized regions of said buffer material extending beyond said desired outer dimension are vaporized by said at least one rotating beam.

4,491,464

POTASSIUM POLYPHOSPHATE PROTEIN HYDROLYSATE FERTILIZER

Harvey H. Ashmead, 719 E. Center St., Kaysville, Utah 84037, and Hsin-Hung Hsu, 2128 N. 1300 W., Clinton, Utah 84015

Filed May 17, 1983, Ser. No. 495,269

Int. Cl.³ C05G *3/00*; C05B *13/06*

U.S. Cl. 71—11 8 Claims

1. A liquid fertilizer composition suitable for dilution and application as a foliar spray comprising a blend of potassium and ammonium polyphosphates containing from about 0.5% to 3.0% by weight of a protein hydrolysate wherein the ratio of the polyphosphate blend to protein hydrolysate is between 200:1 to 20:1.

4,491,465

SUBSTITUTED PHENYL (THIONO)CARBAMATES, HERBICIDAL COMPOSITIONS CONTAINING THE SAME AS ACTIVE INGREDIENT AND METHOD OF CONTROLLING WEEDS

Tetsuo Takematsu; Makoto Kounai, both of Utsunomiya; Takeo Hosogai, and Takashi Nishida, both of Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

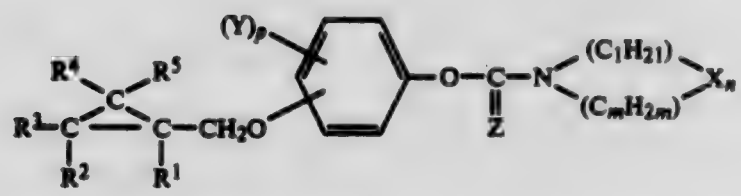
Filed May 14, 1982, Ser. No. 378,221

Claims priority, application Japan, May 19, 1981, 56-76198; Jul. 13, 1981, 56-109787

Int. Cl.³ A01N *43/36, 43/40*; C07D *211/68, 207/00*

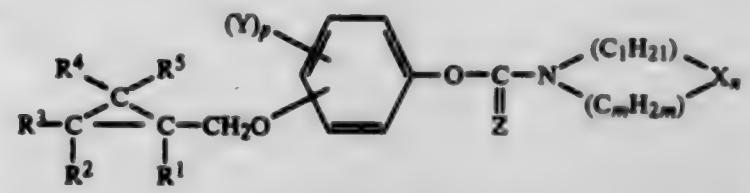
U.S. Cl. 71—88 42 Claims

1. A compound of the general formula



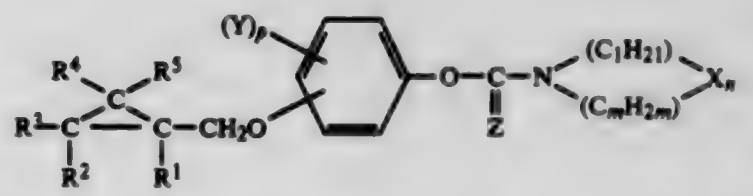
wherein X is a vinylene group, l and m each is an integer of 1 to 4, n is an integer of 0 or 1, the N-heterocycle comprising the nitrogen atom, the two alkylene chains and X is 5- to 7-membered, the two alkylene chains each may be branched, Y is a halogen atom, p is an integer of 1 or 2, R^1 is a hydrogen atom or a lower alkyl group, R^2 and R^3 are the same or different and each is a hydrogen atom or a lower alkyl or phenyl group, R^4 and R^5 are the same or different and each is a halogen atom, and Z is an oxygen or sulfur atom.

13. A herbicidal composition which comprises (i) a herbicidally effective amount of a compound of the general formula



wherein X is a vinylene group, l and m each is an integer of 1 to 4, n is an integer of 0 or 1, the N-heterocycle comprising the nitrogen atom, the two alkylene chains and X is 5- to 7-membered, the two alkylene chains each may be branched, Y is a halogen atom, p is an integer of 1 or 2, R^1 is a hydrogen atom or a lower alkyl group, R^2 and R^3 are the same or different and each is a hydrogen atom or a lower alkyl or phenyl group, R^4 and R^5 are the same or different and each is a halogen atom, and Z is an oxygen or sulfur atom, and (ii) an inert carrier therefor.

28. A method of controlling weeds which comprises applying to the area in which weeds are to be controlled an herbicidally effective amount of a compound of the general formula



wherein X is a vinylene group, l and m each is an integer of 1 to 4, n is an integer of 0 or 1, the N-heterocycle comprising the nitrogen atom, the two alkylene chains and X is 5- to 7-membered, the two alkylene chains each may be branched, Y is a halogen atom, p is an integer of 1 or 2, R^1 is a hydrogen atom or a lower alkyl group, R^2 and R^3 are the same or different and each is a hydrogen atom or a lower alkyl or phenyl group, R^4 and R^5 are the same or different and each is a halogen atom, and Z is an oxygen or sulfur atom.

4,491,466

1,2,3-THIADIAZOLE-5-YL-UREA DERIVATIVES, PROCESSES FOR THEIR USE AS PLANT GROWTH REGULATING AND DEFOLIATING AGENTS

Hans-Rudolf Krüger; Friedrich Arndt, and Reinhard Rusch, all of Berlin, Fed. Rep. of Germany, assignors to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

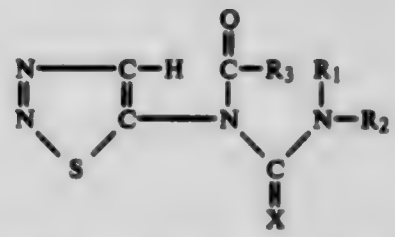
Filed Sep. 27, 1982, Ser. No. 424,987

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1981, 3139506

Int. Cl.³ C07D *285/06*; A01N *43/82*

U.S. Cl. 71—90 14 Claims

1. A 1,2,3-thiadiazole-5-yl urea derivative of formula



wherein R_1 is hydrogen or C_1-C_4-alkyl; R_2 is C_1-C_4-alkyl, C_5-C_8-cycloalkyl, phenyl, halogenophenyl, C_1-C_4-alkylphenyl, C_1-C_4-alkoxyphenyl, nitrophenyl or tifluoromethyl phenyl; R_3 is hydrogen, C_1-C_{10}-alkyl, fluoromethyl, methoxymethyl, phenoxymethyl, 1-phenoxyethyl, 2-phenoxyethyl (2,4-dichlorophenoxy)-methyl, C_2-C_8-aklenyl, benzyl, C_3-C_8-cycloalkyl, phenyl, 2-chlorophenyl, 3-chlorophenyl, 3-methylphenyl, 4-methylphenyl, 3-nitrophenyl, 4-nitrophenyl, 2-

methoxyphenyl, 4-methoxyphenyl, 1-naphthyl, or 2-furyl, and X is oxygen or sulfur.

4,491,467

HERBICIDAL SULFONAMIDES

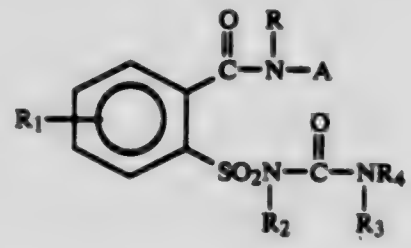
Wallace C. Petersen, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 295,247, Aug. 24, 1981, abandoned. This application Jul. 12, 1982, Ser. No. 395,781

Int. Cl.[3] C07D *403/12, 405/12;* A01N *43/70, 43/68*

U.S. Cl. 71—93 22 Claims

1. A compound of the formula:



wherein

A is a five-membered aromatic heterocycle or a five-membered dihydroaromatic heterocycle which contains 1–4 heteroatoms selected from 0–1 oxygen atoms, 0–1 sulfur atoms, and/or 0–4 nitrogen atoms; the heterocycles may be optionally substituted with 1–4 CH_3, 1–2 OCH_3, 0–1 SCH_3, 0–1 $N(CH_3)_2$, or 0–1 CN groups;

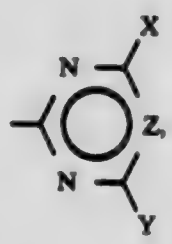
R is H or CH_3;

R_1 is H, F, Cl, Br, CH_3, OCH_3, CF_3 or NO_2;

R_2 is H or CH_3;

R_3 is H or CH_3;

R_4 is



X is CH_3, OCH_3or Cl;

Y is H, CH_3, C_2H_5, OCH_3, OC_2H_5, CH_2OCH_3, NH_2, $NHCH_3$ or $N(CH_3)_2$; and

Z is N

provided that

(1) the bond between N-R and A is attached to a nitrogen or carbon atom of A; and

(2) when A is a thiophene or furan ring, the bond between NR and A is not at the 2- or 5-position of the heterocycle.

13. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of claim 1 and at least one of the following: surfactant, solid or liquid diluent.

4,491,468

HERBICIDAL TRIFLUOROMETHYL PYRIDINYLOXYPHENOXY AND PYRIDINYLTHIOPHENOXY PROPANENITRILES AND DERIVATIVES THEREOF

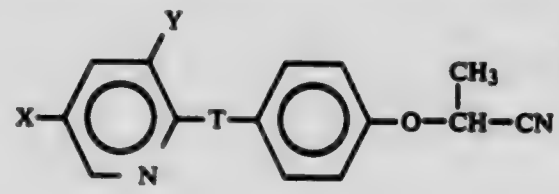
Howard Johnston, Walnut Creek, and Lillian H. Troxell, Antioch, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 918,550, Jun. 23, 1978, , which is a continuation-in-part of Ser. No. 817,943, Jul. 22, 1977, abandoned. This application Aug. 20, 1982, Ser. No. 409,811

Int. Cl.[3] A01N *43/40;* C07D *213/64, 213/70*

U.S. Cl. 71—94 14 Claims

9. The method of controlling undesired plant growth which comprises applying to the locus of said plants a herbicidally effective amount of a compound of the formula:



wherein:

T is oxygen or sulfur;

X is Cl, Br, or CF_3; and

Y is H, Cl, Br, or CF_3, provided at least one of X and Y is CF_3.

4,491,469

HERBICIDAL OXIME ESTERS OF 2-METHOXY-3,6-DICHLOROBENZOIC ACID

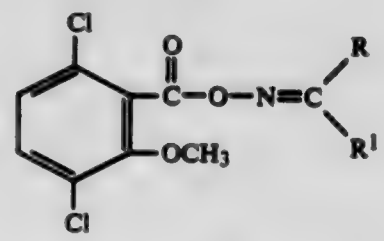
Leonard J. Stach, Riverside, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Feb. 28, 1983, Ser. No. 470,110

Int. Cl.[3] A01N *37/40;* C07C *131/00*

U.S. Cl. 71—121 8 Claims

1. A compound of the formula:



wherein R and R^1 are selected from alkyl and phenyl and R_1 and R_2 together can form a cyclic group having 5 or 6 carbon atoms.

8. A method of controlling weeds which comprises contacting said weeds with the herbicidal composition of claim 1.

4,491,470

METHOD FOR SEPARATING NON-FERROUS METALS FROM FERRUGINOUS SECONDARY SUBSTANCES

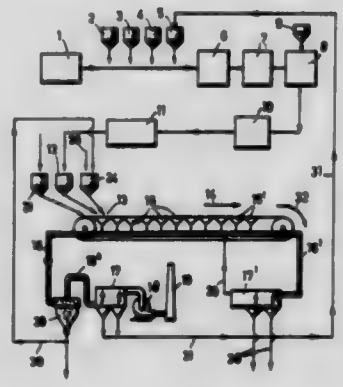
Hermann Hilbrans, Langenfeld, and Chatty Rao, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed May 4, 1983, Ser. No. 491,458

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1982, 3221283

Int. Cl.[3] C22B *1/20*

U.S. Cl. 75—5 14 Claims



1. A method for separating non-ferrous metals from ferruginous secondary substances consisting of iron containing waste materials, which comprises:

combining a layer of secondary substances in agglomerated form with at least one layer of a sinterable mixture,

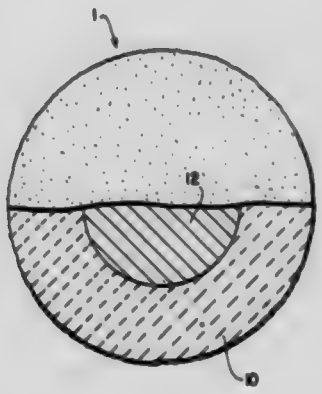
volatilizing off the non-ferrous metals, recovering the volatilized metals in the form of a solid dust,
separating the recovered dust into at least a coarse fraction and a fine fraction each having different non-ferrous metal contents,
combining the coarse fraction with said sinterable mixture,
sintering the resulting combination, and returning said fine fraction to provide part of said secondary substances.

4,491,471

COMPOSITE PELLET FOR USE AS A CARBOTHERMIC REDUCTION FEED

Thomas J. Johnston, Rogersville, Ala., assignor to Reynolds Metals Company, Richmond, Va.

Filed Jan. 16, 1984, Ser. No. 570,822
Int. Cl.[3] C22B *1/24, 21/02*
U.S. Cl. 75—0.5 R 7 Claims



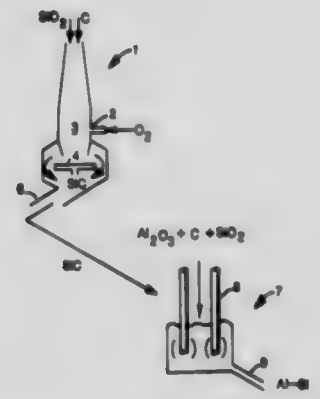
1. A composite pellet suitable for use as a feed for a carbothermic alumina reduction furnace, said pellet consisting of a core and a shell surrounding said core, said core consisting essentially of carbon and optionally alumina and said shell consisting essentially of alumina and being essentially carbon-free, said pellet consisting essentially of, on an overall weight basis, approximately 25–90% carbon and 10–75% alumina.

4,491,472

CARBOTHERMIC REDUCTION AND PREREDUCED CHARGE FOR PRODUCING ALUMINUM-SILICON ALLOYS

David T. Stevenson, Washington Township, Armstrong County, and Robert L. Troup, Murrysville, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 7, 1983, Ser. No. 472,670
Int. Cl.[3] C22B *4/00, 21/00*
U.S. Cl. 75—10 R 30 Claims



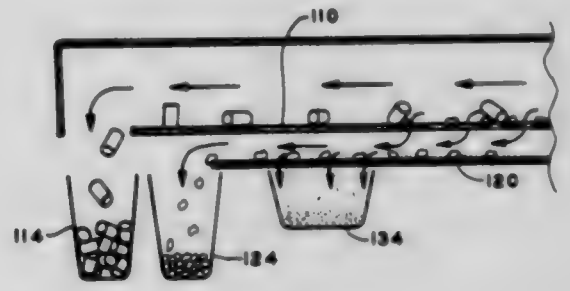
1. A method of carbothermic reduction of aluminum oxide to form an aluminum alloy, comprising:
(a) producing silicon carbide by heating a first mix comprising carbon and silicon oxide in a combustion heated reactor to an elevated temperature by in situ combustion with an atmosphere rich in oxygen gas to produce said silicon carbide at an accelerated rate; and
(b) then admixing said silicon carbide with carbon and aluminum oxide to form a second mix and heating said second mix in a second reactor to an elevated metal-forming temperature sufficient to produce aluminum-silicon alloy.

4,491,473

METHOD OF OPERATING METALLIC SCRAP TREATING FURNACE TO FRAGMENT AND SEGREGATE METALLIC COMPONENTS THEREIN

Kenneth A. Bowman, Allegheny Township, Westmoreland County, Pa., and Chester L. Zuber, Evansville, Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 18, 1983, Ser. No. 553,100
Int. Cl.[3] C22B *21/00*
U.S. Cl. 75—63 21 Claims



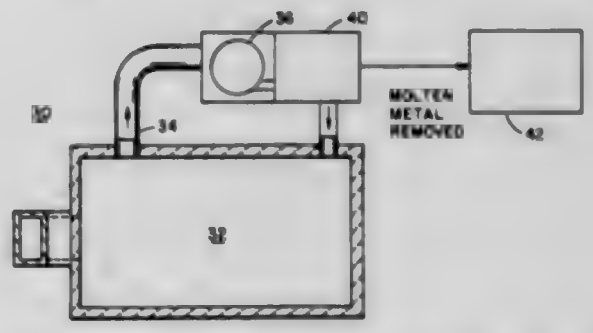
1. A method of operating a scrap treating furnace to permit segregation of components of metallic scrap therein which comprises:
(a) feeding into a rotatable furnace metallic scrap comprising at least two metals having different incipient melting temperatures;
(b) heating said furnace to a temperature sufficient to effect incipient melting of the component having the lowest incipient melting temperature but less than the incipient melting temperature of the component having the higher incipient melting temperature;
(c) rotating at least a portion of said furnace to agitate said scrap whereby the metal component heated to its incipient melting temperature will fragment into smaller particles;
(d) removing said scrap from said furnace; and
(e) segregating said scrap by particle size whereby said metal component having the lowest incipient melting temperature may be separated from the remainder of the scrap because of the fragmentation within said furnace of said metal component having the lowest incipient melting temperature.

4,491,474

METAL SCRAP RECOVERY SYSTEM

Robert J. Ormesher, Leechburg, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 6, 1984, Ser. No. 577,537
Int. Cl.[3] C22B *21/06*
U.S. Cl. 75—65 R 20 Claims



1. A recirculating system for ingestion of metal scrap into a molten melting media comprising:

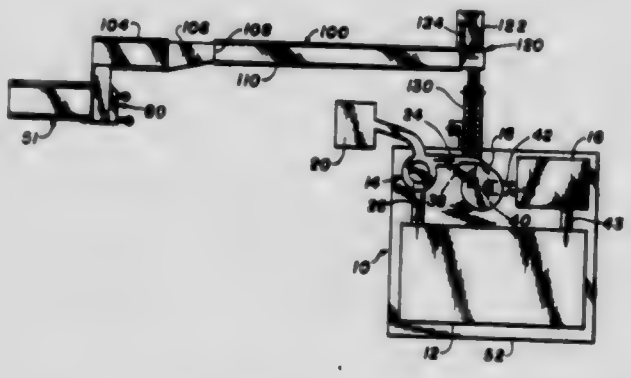
(a) a heating bay containing the molten melting media;
(b) a scrap charging bay having upper and lower portions wherein metal scrap is charged into the upper portions of the bay and ingested into said melting media, the scrap charging bay connected to said heating bay to permit molten melting media to be circulated from the heating bay through the scrap charging bay and back to the heating bay; and
(c) an impeller positioned in the scrap charging bay for purposes of ingesting said metal scrap into the molten melting media,
(i) the impeller having a base member and a top member provided with an opening therein and having an annular flange thereon extending beyond the periphery of said base member substantially transversely to the impeller rotation axis, said impeller having blades positioned between the base member and the top member, the blades extending in a generally radial direction;
(ii) the impeller adapted to draw scrap values and melting media through the opening in said top member in a downward direction on rotation thereof and to propel said scrap values and melting media therefrom in a generally radial direction by use of said blades, the impeller positioned so as to move the scrap values and melting media from said upper portions through said impeller and out into lower portions of the charging bay, the impeller positioned in the lower portions so that the annular flange cooperates with the lower portions to retard recirculation of the melting media to the upper portions.

4,491,475

CONSTANT RATE BRIQUETTE FEEDING SYSTEM

Chester L. Zaber, Evansville; Virgil T. Butrum, Boonville, both of Ind.; Jeffrey B. Gorss, Wexford, Pa., and Manford E. Rydholm, Newburgh, Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 8, 1984, Ser. No. 578,227
Int. Cl.³ C22B *21/00*
U.S. Cl. 75—65 R 9 Claims



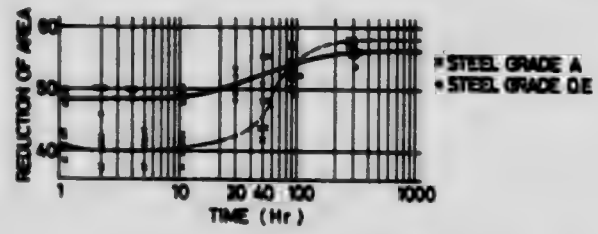
1. A method of charging relatively large briquettes of metal scrap to a melting system at a substantially constant feed rate, the method comprising the steps of:
(a) providing a pumping bay, a charging and melting bay, and a molten metal furnace from which molten metal is recirculated from said furnace through the pumping bay to said charging and melting bay;
(b) providing a relatively large quantity of said briquettes for introducing at a substantially constant rate to said charging and melting bay;
(c) transferring said large quantities of briquettes onto a first conveyor adapted to contain said large quantities and to convey a controlled weight of said briquettes to a second conveyor;
(d) conveying said briquettes along said first conveyor and transferring said controlled weight of briquettes to said second conveyor;
(e) after said second conveyor has received said controlled weight of briquettes, intermittently stopping and starting said first conveyor to maintain said controlled weight on said second conveyor;
(f) moving said briquettes on said second conveyor to a third conveyor where they are aligned and accumulated for charging into a melting bay; and
(g) charging individual briquettes at a constant feed rate from said third conveyor into said melting bay.

4,491,476

BORON-CONTAINING STEEL AND A PROCESS FOR PRODUCING THE SAME

Hideaki Tada, and Yoshiaki Aoki, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 4, 1983, Ser. No. 482,087
Claims priority, application Japan, Apr. 3, 1982, 57-55924
Int. Cl.³ C22C *38/14*
U.S. Cl. 75—124 3 Claims



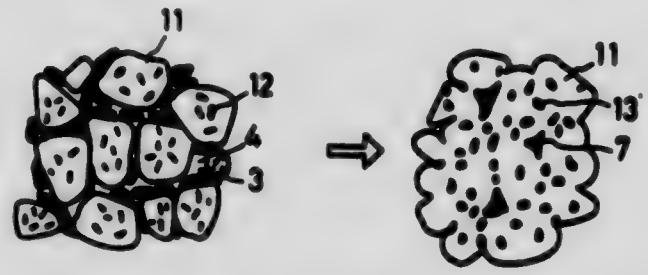
1. Boron-treated low alloy carbon steel, consisting essentially of:
0.15 to 0.85% C;
0.15 to 2.0% Si;
0.3 to 1.5% Mn;
1.0% or less of Cr;
0.020% or less of P and S each;
at least 40 ppm of the total B to obtain 6 to 30 ppm of acid-soluble Boron;
0.008% or less of Al;
0.010% or less of Ti; the balance being Fe and unavoidable other impurities.

4,491,477

ANTI-WEAR SINTERED ALLOY AND MANUFACTURING PROCESS THEREOF

Tetsuya Suganuma, Nagoya; Koji Kamoka, Toyota; Shuichi Fujita, Toyota; Yoshitaka Takahashi, Toyota, and Takeshi Okajo, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 24, 1982, Ser. No. 411,041
Claims priority, application Japan, Aug. 27, 1981, 56-134535
Int. Cl.³ B22F *3/00*
U.S. Cl. 75—230 8 Claims



1. An anti-wear sintered alloy comprising from 2.5 to 25.0% of Cr, from 0.10 to 3.0% of Mn, from 0.1 to 0.8% of P, from 1.0 to 5.0% of Cu, from 0.5 to 2.0% of Si, from 0 to 3% of Mo, 1.5 to 3.5% of C, one selected from the group consisting of from 0.5 to 3.0% of S, and from 1.0 to 5.0% of Pb, and the balance being Fe with less than 2% of impurities, wherein S or Pb is distributed uniformly in the sintered alloy in form of sulfide or lead particles of less than 100 μm.

6. A process for manufacturing an anti-wear sintered alloy, said process comprising: preparing an alloy powder compris-

ing from 2.5 to 25.0% of Cr, from 0.10 to 3.0% of Mn, from 0.1 to 0.8% of p, from 1.0 to 5.0% of Cu, from 0.5 to 2.0% of Si, from 0 to 3.0% of Mo, one selected from the group consisting of from 0.5 to 2.0% of S, and from 1.5 to 5.0% of Pb, and the balance being Fe with less than 2% through atomization;

adding from 1.5 to 3.5% of carbon to the powder mixture;

compacting the mixture obtained in the just preceeding step into a predetermined shape; and

sintering the resulting mold.

4,491,478

COMPOSITIONS AND METHODS FOR POLISHING METAL SURFACES

John P. H. Williamson, Farndon, England, assignor to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Aug. 9, 1983, Ser. No. 521,773

Claims priority, application United Kingdom, Aug. 10, 1982, 8223013

Int. Cl.³ C09G *1/02*

U.S. Cl. 106—3 19 Claims

1. A metal polishing composition comprising a boronated felspathoid and a carrier therefor.

4,491,479

SHAPED SEMI-SOLID ARTICLES

Alfred E. Lauchenauer, Adnovum AG Horn, Switzerland

Filed Nov. 10, 1983, Ser. No. 550,760

Claims priority, application United Kingdom, Nov. 12, 1982, 8232394

Int. Cl.³ C09D *5/14*; C08L *1/08*; A61L *15/00*

U.S. Cl. 106—15.05 20 Claims

1. A method of forming a semi-solid shaped article which method comprises

(a) forming a mixture comprising

(i) a monomeric alicyclic or aliphatic polyhydroxy compound having at least one hydroxy group per 4 carbon atoms, with

(ii) a polymeric polyhydroxy compound which is insoluble in said monomeric polyhydroxy compound at room temperatures, but is soluble therein at elevated temperatures

(b) forming the shaped article from said mixture

(c) heated the shaped article to a temperature at which the polymeric polyhydroxy compound dissolves in the monomeric polyhydroxy compound,

(d) and cooling the shaped article while maintaining the shape thereof

steps (a) and (b) being effected at a temperature insufficient to dissolve the polymeric polyhydroxy compound in the monomeric polyhydroxy compound.

4,491,480

GRINDING AID AND MINERAL MIXTURE CONTAINING IT

Achim Schenker, Wiesloch; Jürgen Schutz, Waghäusel-Kirrlach, and Jürgen Schneider, Wiesloch, all of Fed. Rep. of Germany, assignors to Teroson G.m.b.H., Heidelberg, Fed. Rep. of Germany

Filed Dec. 6, 1983, Ser. No. 558,676

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1982, 3245843

Int. Cl.³ C04B *7/35*

U.S. Cl. 106—90 14 Claims

1. A method comprising the step of grinding a mineral in the presence of grinding aid comprising 1,1-dimethylol propane.

4,491,481

ORGANIC PIGMENT COMPOSITIONS CONTAINING AN AZO COMPOUND WITH A HETEROCYCLIC SUBSTITUENT

George H. Robertson, Paisley, Scotland; David Price, Alderley Edge, and Raymond N. Birrell, Sale, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 21,867, Mar. 19, 1979, abandoned, which is a continuation of Ser. No. 861,387, Dec. 16, 1977, abandoned, which is a continuation of Ser. No. 655,590, Feb. 5, 1976, abandoned. This application Sep. 23, 1980, Ser. No. 189,878

Claims priority, application United Kingdom, Feb. 12, 1975, 6041/75

Int. Cl.³ C09D *11/00, 3/00, 17/00*; C09B *67/00*

U.S. Cl. 106—288 Q 15 Claims

1. A pigment composition comprising:

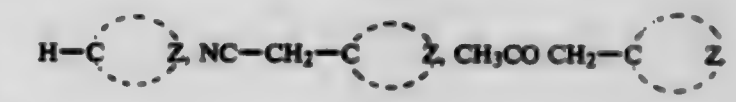
(a) an organic pigment selected from the group consisting of phthalocyanine, quinacridone, anthraquinone, and azo pigments; and

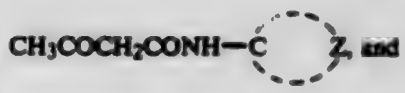
(b) an azo compound of the formula

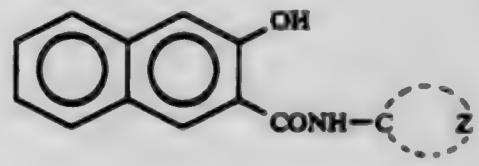
$$A{-}N{=}N{-}B]_n$$

wherein n is 1 or 2,

A and B are radicals of either a coupling component or a diazo component, wherein the coupling component is selected from the group consisting of acetoacetyl arylamide, 1-alryl-pyrazol-5-one, β-naphthol, 3-hydroxy-2-naphthoic acid anilide, 1,3- or 1,4-bisacetoacetyl-phenylene diamine or wherein each of said acetoacetyl arylamide, 1-aryl-pyrazol-5-one, β-naphthol, 3-hydroxy-2-naphthoic acid anilide or 1,3- or 1,4-bisacetoacetyl-phenylene diamine is substituted by chloro, bromo, alkyl having 1 to 6 carbon atoms, alkoxy having 1 to 6 carbon atoms, nitro, carboxylic acid, sulphonic acid, alkali metal carboxylate, alkali metal sulphonate, or arylazo, and a compound of the formula



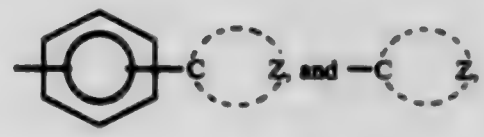




wherein

Z is a group of atoms necessary to complete a benzimidazole, pyridine, benzodiazepine, quinoline, isoquinoline or naphthimidazole group; and

the diazo component is derived from an amine $A(NH_2)_n$ or $B(NH_2)$ where A and B are selected from the group consisting of naphthyl, phenyl, diphenyl, or wherein said naphthyl, phenyl, and diphenyl are each substituted by chloro, bromo, alkyl having 1 to 6 carbon atoms, alkoxy having 1 to 6 carbon atoms, nitro, carboxylic acid, sulfonic acid, alkali metal carboxylate, alkali metal sulphonate, or arylazo and a compound of the formula,



provided where A is the coupling component, B is the diazo component, when A is the diazo component, B is the coupling component and azo compound (b) must contain

at least one benzimidazole, pyridine, benzodiazepine, quinoline, isoquinoline or naphthimidazole group;

wherein said azo compound is present in an amount of from 0.5% to 20% by weight, based upon the weight of said organic pigment(a).

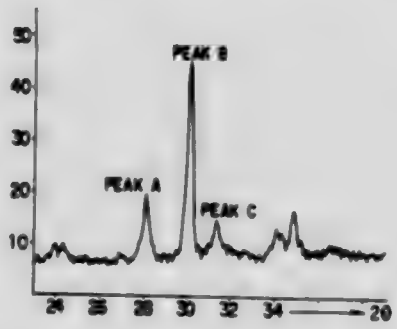
14. A surface coating containing a pigment composition as claimed in claim 1.

4,491,482

POWDERY MATERIAL OF MINUTE COMPOSITE CERAMIC PARTICLES HAVING A DUAL STRUCTURE AND A PROCESS AND AN APPARATUS PRODUCING THEREOF

Saburo Hori, Matsudo, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1983, Ser. No. 477,765
Claims priority, application Japan, Mar. 29, 1982, 57-50541
Int. Cl.³ C09C *1/00, 1/40*
U.S. Cl. 106—308 B 2 Claims



1. A sinterable powdery material of minute composite ceramic particles of a dual structure comprising the core formed of zirconium oxide and the outer shell formed of amorphous aluminum oxide, wherein the content of zirconium oxide is 10 to 25 percent by weight and the volume percentage of monoclinic crystalline phase of said zirconium oxide to the total zirconium oxide crystalline phases is less than 50.

4,491,483

HOT-WATER DISPERSIBLE STARCH-SURFACTANT PRODUCTS, INCLUDING ACID STABLE AND ACID AND FREEZE-THAW STABLE FOOD THICKENERS

Wayne E. Dudacek, La Grange; David A. Kochan, and Henry F. Zobel, both of Darien, all of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Continuation-in-part of Ser. No. 307,550, Oct. 1, 1981, abandoned, and a continuation-in-part of Ser. No. 307,551, Oct. 1, 1981, abandoned. This application Jun. 22, 1983, Ser. No. 506,752
Int. Cl.³ A23L *1/195*
U.S. Cl. 127—33 5 Claims

1. A process for preparing a hot-water dispersible starch-surfactant product which process comprises

(a) combining and mixing to form a uniform, semi-moist granular starch and surfactant mixture

(i) a starch component comprising granular tapioca starch,

(ii) a surfactant component comprising at least one surfactant containing a fatty acid moiety, the proportion of said surfactant component being at least about twenty-five one-hundredths of a percent (0.25%) by weight of said starch component, and

(iii) moisture in the amount of ten percent (10%) to about forty percent (40%) by weight of the mixture, any portion of which moisture may be present as moisture content of said starch component;

(b) heat treating said mixture at a temperature from 50° C. to about 120° C. for a sufficient period of time to produce a heat-moisture treated starch-surfactant product; and

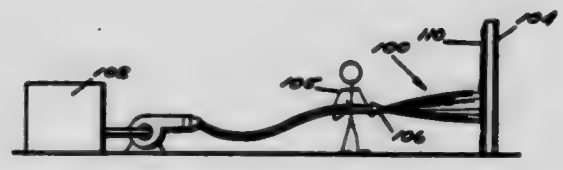
(c) blending said heat-moisture treated starch-surfactant product with a gum component comprising at least one gum selected from the group comprising xanthan, guar, locust bean, alginate, carrageenan, ghatti and karaya, wherein said gum component comprises from five-tenths of one percent (0.5%) to about ten percent (10%) by total weight of the starch surfactant product.

4,491,484

CRYOGENIC CLEANING PROCESS

Roger F. Williams, Louisville, Ky., assignor to Mobile Companies, Inc., Ky.

Division of Ser. No. 324,530, Nov. 24, 1981, Pat. No. 4,409,034. This application Jul. 14, 1983, Ser. No. 513,742
Int. Cl.³ B08B *7/04, 9/08*
U.S. Cl. 134—4 15 Claims



1. A method of removing at least a major portion of a viscous liquid which remains, as contaminant material, upon the rigid surfaces of a cargo hold of an apparatus used to transport said viscous liquid, which method comprises the steps of:

(a) providing a source of liquid cryogen having a temperature of less than about −100° C.;

(b) withdrawing a supply of liquid cryogen from said source thereof and contacting said supply of liquid cryogen directly with at least one contaminated surface of the cargo hold to effect at least partial soldification of said contaminant material thereby effecting at least a partial bonding separation from said at least one cargo hold surface; and

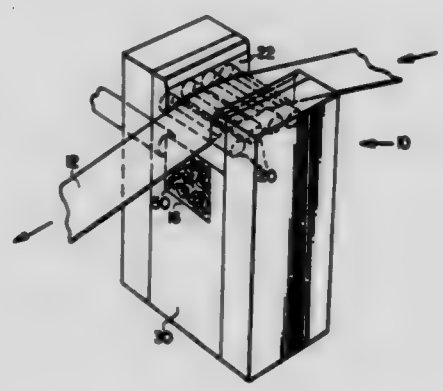
(c) effectively removing only the at least partially solidified contaminant material from said at least one cargo hold surface by impacting the at least partially solified contaminant material with sufficient force to effect substantial comminution thereof and to effect at least partial release of the comminuted contaminant material from said at least one cargo hold surface.

4,491,485

TAPE CLEANING METHOD

Robert A. Sanderson, Graham, Tex., assignor to Graham Magnetics Incorporated, North Richland Hills, Tex.

Division of Ser. No. 307,850, Oct. 2, 1981, Pat. No. 4,400,846. This application Jun. 13, 1983, Ser. No. 503,621
Int. Cl.³ B08B *1/02, 5/04*
U.S. Cl. 134—9 5 Claims



1. In a process for cleaning an abrasive dirt-contaminated elongated web by carrying the web surface to be cleaned over scraper means and simultaneously carrying away debris in a washing fluid, the improvement comprising the steps of:

(a) pulling a front, downwardly facing surface of said web to be cleaned across a plurality of scraper bars to loosen dirt on said surface

(b) simultaneously moving cleaning fluid from below said

web, upwardly and laterally across said front surface of said web towards the side edges thereof, and carrying any such debris away from said web in said fluid; and

(c) simultaneously moving cleaning fluid from above said web, laterally away from said web and downwardly past the side edges of said web, and removing edge debris from said web in said cleaning fluid while maintaining the web proximate to said edges in good contact with said scraper bars.

4,491,486

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

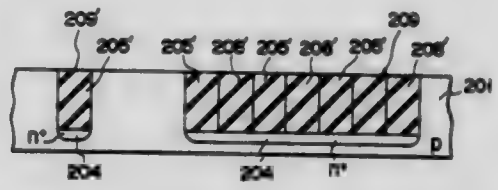
Hiroshi Iwai, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 16, 1982, Ser. No. 418,802

Claims priority, application Japan, Sep. 17, 1981, 56-146547; Oct. 9, 1981, 56-161312

Int. Cl.³ H01L *21/76*

U.S. Cl. 148—105 39 Claims



1. A method for manufacturing a semiconductor device, comprising the steps of:

(a) forming at least one groove which has vertical or substantially vertical wall in a desired portion of a semiconductor substrate;

(b) selectively doping an impurity, whose conductivity type is opposite to that of said semiconductor substrate, in said at least one groove to form a wiring layer; and

(c) depositing an insulating material to cover an entire surface of said semiconductor substrate including said at least one groove to a thickness greater than half the width of the shortest side of the opening of said at least one groove, and forming field region by etching the insulating film of said insulating material to leave said insulating material in said at least one groove.

4,491,487

METHOD FOR PRODUCING A SELECTIVE ABSORPTION SHEET OF A SOLAR RADIATION

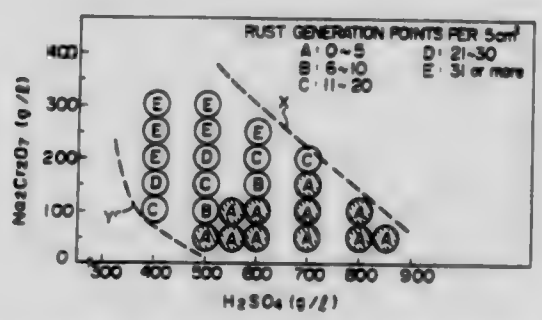
Takehisa Mizunuma, Kawasaki; Seizaburo Abe, Yokohama; Jiro Ohno, Yokohama, and Hisashi Kobayashi, Yokohama, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 318,564, Nov. 5, 1981, abandoned. This application Oct. 17, 1983, Ser. No. 541,491

Claims priority, application Japan, Nov. 6, 1980, 55-156392

Int. Cl.³ C23C *1/10*; C23F *7/00*

U.S. Cl. 148—6.21 7 Claims



1. A method for producing a selective absorption sheet for solar radiation comprising a base made of a stainless steel which is essentially free of intergranular corrosion and having thereon a selective absorption film which comprises metal oxides or metal hydroxides of the base metal, in which film the metals of said base are finely dispersed, provided that an amount of non-oxidized metal is present on the surface of the film in a concentration gradient increasing from said surface toward the interior of said film, said film having a low electric resistivity,

said selective absorption sheet made by subjecting a stainless steel sheet to a chemical conversion treatment in an acidic oxidizing bath containing:

(i) from 70 to 90 g/l of at least one member selected from the group consisting of sodium bichromate and potassium bichromate, and

(ii) from 550 to 630 g/l of sulfuric acid,

said treatment conducted at a temperature ranging from 80° C. to the boiling point of the acidic oxidizing bath.

4,491,488

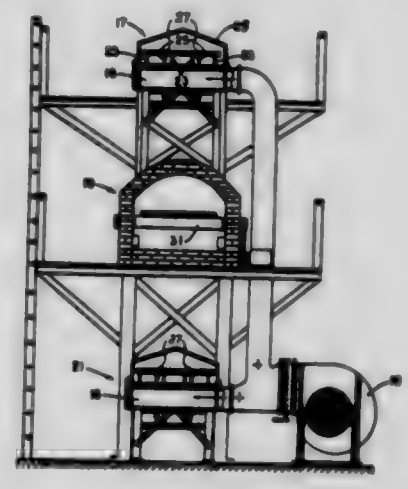
STEEL ROD ROLLING PROCESS

Martin Gilvar, Oakham, and Robert B. Russell, Chestnut Hill, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Division of Ser. No. 215,331, Dec. 11, 1980, Pat. No. 4,401,481, which is a continuation-in-part of Ser. No. 111,122, Jan. 10, 1980,. This application Nov. 24, 1982, Ser. No. 444,111

Int. Cl.³ C21D *8/06*

U.S. Cl. 148—144 5 Claims



1. A process for cooling rod rings laid in offset relation on a cooling conveyor consisting in the steps of:

(a) intermittently cooling the rings non-uniformly at spaced points along said conveyor,

(b) intermittently reheating said rings non-uniformly substantially equally and oppositely to the non-uniformity of the cooling at spaced points along said conveyor between the points of cooling.

4,491,489

METHOD AND MEANS FOR MAKING AN EXPLOSIVE IN THE FORM OF AN EMULSION

David Ellis, Croyden; Jeremy G. B. Smith, Edenvale, and Pieter S. J. Halliday, Randburg, all of South Africa, assignors to AECI Limited, Johannesburg, South Africa

Filed Oct. 6, 1983, Ser. No. 539,405

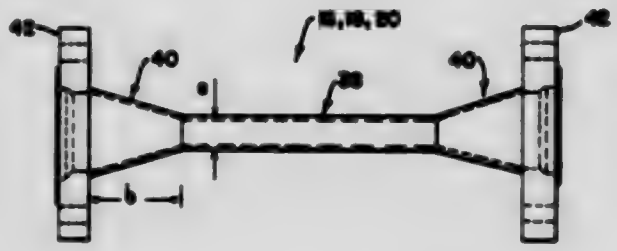
Claims priority, application South Africa, Nov. 17, 1982, 82/8466

Int. Cl.³ D03D *23/00*

U.S. Cl. 149—109.6 17 Claims

1. A method of making an explosive in the form of an emulsion comprising a discontinuous phase which includes an oxidising salt, and a continuous phase which includes a fuel and which is immiscible with the discontinuous phase, the method

including directing a plurality of 0.5 to 5 mm diameter jets of the discontinuous phase into the continuous phase, in the pres-



ence of an emulsifier, and feeding the continuous phase with the discontinuous phase through at least one mixer.

4,491,490

CONTROL DEVICE AND METHOD FOR GLUING TOGETHER CONTINUOUS FORM SETS

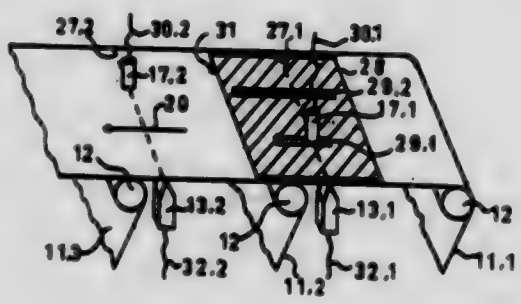
Bernhard Ehret, Im Glaser 25, D-7800 Freiburg, and Stephan Ferroni, Hans-Sachs-Strasse 32, D-7835 Teningen, both of Fed. Rep. of Germany

Filed Jun. 1, 1983, Ser. No. 499,950

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1982, 3220629

Int. Cl.³ B05C *5/00*

U.S. Cl. 156—64 26 Claims



1. A control device for a glue nozzle of a machine for gluing together at least two paper webs each provided with recurring forms thereon for producing multi-part sets of continuous forms, comprising:

(a) a displacement transducer for determining the position of the beginning of each form on one of said webs with respect to the glue nozzle,

(b) at least one sensing element positioned adjacent at least one of said webs for determining during a read-in mode those areas of each form to be provided with glue by sensing a predetermined pattern on a read-in form positioned on said at least one of said webs,

(c) a control circuit responsive to the displacement transducer and the at least one sensing element, said control circuit including a computer, and

(d) output means responsive to said computer for switching the glue nozzle on and off.

4,491,491

ULTRASONIC SEPARATION APPARATUS

Walter Stumpf, Dunwoody, Ga., assignor to Simmons U.S.A. Corporation, Atlanta, Ga.

Filed Nov. 2, 1983, Ser. No. 548,053

Int. Cl.³ B29C *27/08*; B32B *31/18*

U.S. Cl. 156—73.3 10 Claims

1. An ultrasonic cutting and sealing apparatus comprising:

an ultrasonic horn;

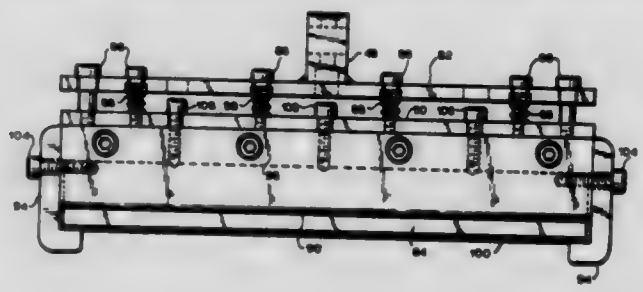
means coupled to said horn for causing the resonant vibration thereof;

a cutting mechanism, said cutting mechanism including a housing and an elongate cutting blade mounted to said housing, a space being defined between at least one end of said cutting blade and said housig to allow said cutting blade to oscillate along its longitudinal axis; and

means for moving said ultrasonic horn and said cutting mechanism toward each other.

8. A method for ultrasonically cutting and sealing a material, comprising:

providing a cutting mechanism including an elongate cutting



blade mounted thereto, said cutting blade being movable for a limited distance along its longitudinal axis;

providing an ultrasonic horn;

positioning said material between said cutting blade and ultrasonic horn and in contact therewith; and

causing said ultrasonic horn to resonate at a desired frequency, thereby causing said cutting blade to oscillate along its longitudinal axis and cut and seal said material.

4,491,492

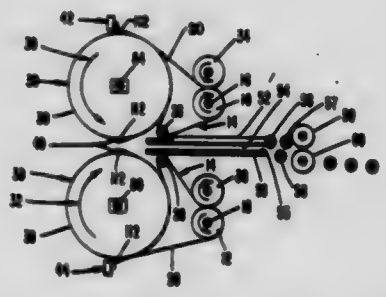
METHODS OF AND APPARATUS FOR APPLYING A SHEET TO A RIGID BOARD

Jack C. Hetherington, Richmond, Va., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Oct. 28, 1982, Ser. No. 437,244

Int. Cl.³ B29C *17/04*; B32B *3/04, 31/00*; B65C *9/04*

U.S. Cl. 156—212 2 Claims



1. A method of applying a sheet to a rigid board which comprises the steps of:

placing the sheet onto a rotatable drum prior to attaching the sheet to the board;

holding the sheet on the drum;

indexing the drum to a selected position so that a leading edge of the sheet is positioned for the attaching thereof to a leading edge of the board;

positioning the leading edge of the sheet on the drum so that the leading edge overlays and is aligned with a pressure bar fixedly secured to the drum and which protrudes slightly outwardly from the surface of the drum;

moving the drum toward the rigid board so that the pressure bar presses the leading edge of the sheet into attachment with the leading edge of the board;

developing slack in the portion of the sheet immediately adjacent to the leading edge thereof as the leading edge of the sheet is being moved toward and into attachment with the leading edge of the board;

extending the remaining portion of the sheet in a position adjacent to but spaced from the rigid board in a wrinkle-free condition;

preventing any premature attachment between the remaining portion of the sheet and the board; and

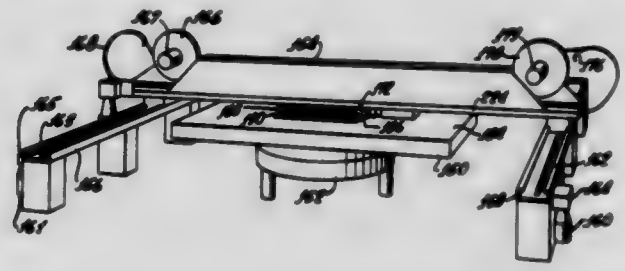
maintaining the wrinkle-free condition of the sheet while securing successive sections of the remaining portion of the sheet to the board.

4,491,493

COMPOSITE TAPE PREPARATION AND APPLICATION

Homer L. Eaton, 652 Neptune Ave., Leucadia, Calif. 92024

Filed Apr. 8, 1983, Ser. No. 483,293
Int. Cl.³ B44C *31/00*
U.S. Cl. 156—235 28 Claims



1. The method of laying composite tape between boundaries defining an area of a work surface that is to be covered with a plurality of strips of tape to form a high strength structural part, comprising

positioning tape supply and take up mechanisms at spaced points along a path that extends between a first boundary and a second boundary,

stretching a strip of tape between said mechanisms adjacent said work surface with one end of said strip at said first boundary,

pressing said strip against said surface along a pressure area of said tape strip, and

moving said pressure area relative to one of said mechanisms along said tape strip and across said work surface area, while holding said tape strip stretched across and adjacent said work surface area.

4,491,494

DECORATING METHODS

Thomas H. Davis, Jr., Leavenworth, and Stephen D. Glasscock, Overland Park, both of Kans., assignors to Hallmark Cards, Inc., Kansas City, Mo.

Filed May 31, 1983, Ser. No. 499,721
Int. Cl.³ B44C *1/16*
U.S. Cl. 156—240 10 Claims



1. A process for decorating an article which comprises:

applying to said article a base coating adapted for receiving inked ornamentation,

placing over and around the coated article a heat shrinkable plastic material carrying a decorative pattern formed from a thermoplastic ink,

heating the shrinkable plastic material to a temperature sufficient to shrink the material and to cause it to conform to the surface of the article and to transfer the thermoplastic ink to the base coating on the article, and

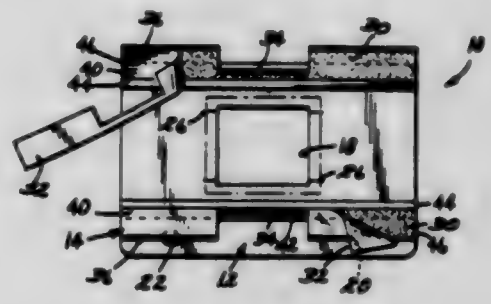
removing the shrinkable plastic material from the article leaving a decorated inked surface on the article.

4,491,495

CARD NEGATIVE HOLDER AND METHOD OF MANUFACTURE

Richard D. Muscoplat, 1435 Quebec Ave. North, Golden Valley, Minn. 55427

Division of Ser. No. 273,471, Jun. 15, 1981, Pat. No. 4,405,228.
This application Apr. 6, 1983, Ser. No. 482,828
Int. Cl.³ G03B *27/62*; B32B *1/00*
U.S. Cl. 156—253 3 Claims



1. A process for manufacturing a mounting card for holding a photographic negative, said process comprising the steps of:

printing a repetitive pattern on a continuous material, each said pattern having a substantially identical length;

laminating a sheet on one side of said material to create a continuous composite, said sheet having adhesive on one side, said adhesive having a partial cover removably adhering thereto;

cutting a repetitive pattern of features in said continuous composite, said pattern including an opening through which said negative may be exposed;

cutting said composite transversely to said length, each said length including one of each of said printed and cut patterns;

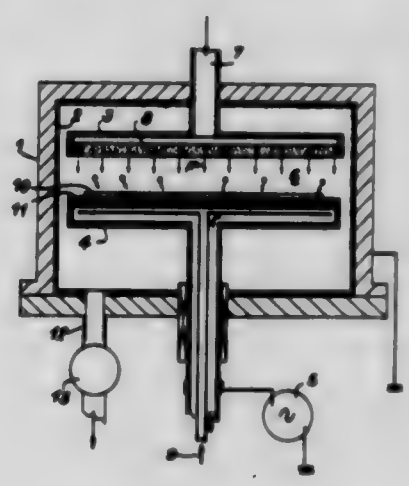
whereby each said length of said composite is a substantially identical mounting card for holding a negative.

4,491,496

ENCLOSURE FOR THE TREATMENT, AND PARTICULARLY FOR THE ETCHING OF SUBSTRATES BY THE REACTIVE PLASMA METHOD

Philippe Laporte, Echirolles, and Louise Peccoud, Claix, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 4, 1984, Ser. No. 568,099
Claims priority, application France, Jan. 5, 1983, 83 00073
Int. Cl.³ H01L *21/30*; B44C *1/22*; C03C *15/00*; C23F *1/00*
U.S. Cl. 156—345 5 Claims



1. Enclosure for the treatment and particularly the etching of substrates by the reactive plasma method, of the kind including, in a known manner, an inlet (7) and an outlet (12) for the circulation of a reactive gas at low pressure, a base supporting the substrate (10) to be treated placed between two electrodes

of which one (3) is at ground potential, and the other (4) or radiofrequency electrode is brought to an alternating potential such as to create in the enclosure an electrical discharge which dissociates the gas into reactive particles which react on the substrate, characterized in that the enclosure is metallic and covered on the inside by plasma-torch spraying with a protective coating (2) of alumina (Al_2O_3) of a thickness between 300 micrometers and 500 micrometers.

4,491,497

HAND LABELING APPARATUS

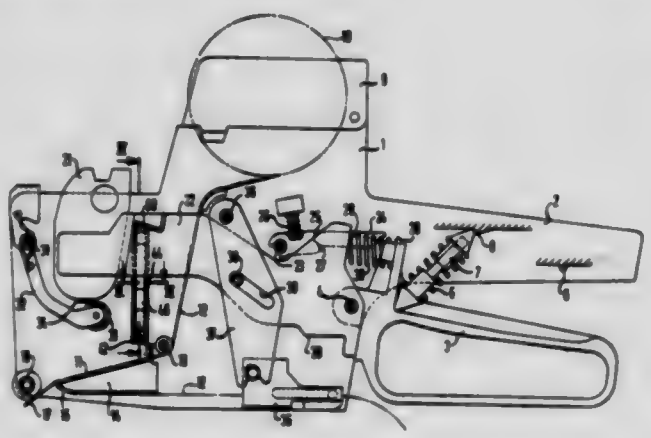
Heinz Kistner, Neckarsteinach, and Kurt Schrotz, Beerfelden, both of Fed. Rep. of Germany, assignors to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed May 9, 1983, Ser. No. 492,671

Claims priority, application Fed. Rep. of Germany, May 11, 1982, 3217647

Int. Cl.³ B32B *31/00*

U.S. Cl. 156—384 14 Claims



1. A hand labeling apparatus for printing and applying adhesive labels on articles including a printer held by a printer carrier which is pivotable from an inoperative position in which it holds the printer lifted off an adhesive label lying on a printing platen into an operative position in which it holds the printer in contact with the adhesive label, and a drive means for pivoting the printer carrier from the inoperative into the operative position and for automatically returning the printer carrier into the inoperative position under the influence of a resetting force, characterized by retaining means which retain the printer carrier in the operative position with a retaining force which prevents the printer from rebounding from the operative position and then again being returned to the operative position to thus avoid double imprinting of the adhesive label, said retaining force being less than the resetting force so that the printer carrier can be readily returned to its inoperative position.

4,491,498

METHOD OF AND APPARATUS FOR APPLYING A LAMINATED PRESSURE-SENSITIVE ADHESIVE STRIP CONSTRUCTION TO A FLEXIBLE SHEET

Ronald R. Harris, and Herbert M. Saunders, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 1, 1982, Ser. No. 364,558

Int. Cl.³ B31F *5/00*; B32B *31/00, 31/04*

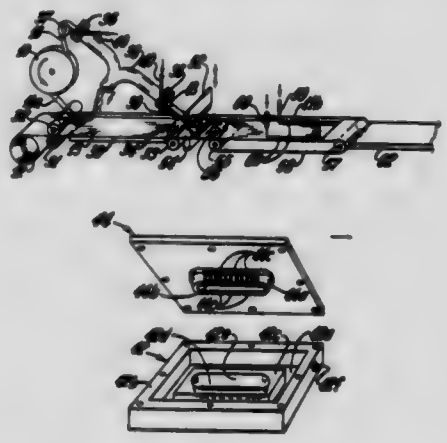
U.S. Cl. 156—497 4 Claims

3. Apparatus for applying a laminated pressure-sensitive adhesive strip construction to flexible sheet material comprising:

(a) means for feeding flexible sheet material from a supply roll along a predetermined path,

(b) first nozzle means for pneumatically stripping a first release strip from a laminated pressure-sensitive adhesive strip construction on a supply reel to expose a first pressure-sensitive adhesive layer, said first nozzle means having a central slot for passage of the first release strip therethrough,

(c) means for feeding the laminated pressure-sensitive adhesive strip construction, without the first release strip, from the supply reel to the flexible sheet material and adhering it thereto by the exposed first pressure-sensitive adhesive layer, and



(d) second nozzle means for pneumatically stripping a second release strip from the laminated pressure-sensitive adhesive strip construction on the flexible sheet material to expose a second pressure-sensitive adhesive layer, said second nozzle means having a central slot for passage of the second release strip therethrough.

4,491,499

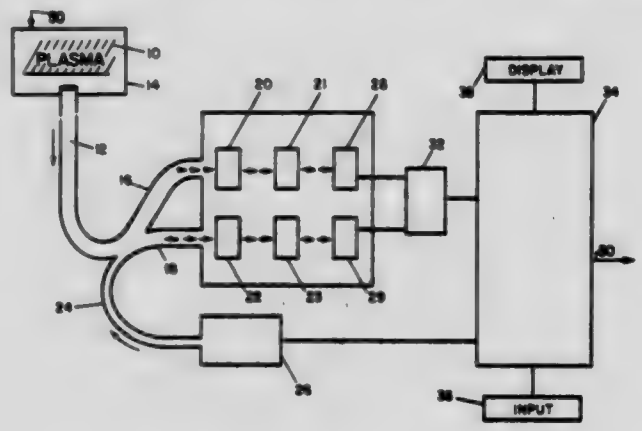
OPTICAL EMISSION END POINT DETECTOR

Leslie G. Jerde, Hopewell Township, Mercer County; Earl R. Lory, Pennington; Kevin A. Muething, Hillsborough Township, Somerset County, and Len Y. Tsou, Lawrence Township, Mercer County, all of N.J., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Mar. 29, 1984, Ser. No. 594,629

Int. Cl.³ C23F *1/00*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—626 12 Claims



1. A method for determining the time at which a plasma etching operation should be terminated, comprising the steps of:

monitoring the optical emission intensity (S_1) of the plasma, in a narrow band centered about a predetermined spectral line, indicative of the gas phase concentration of a plasma etch product or reactant species;

monitoring the optical emission intensity (S_2) of the plasma, in a wide band centered about the predetermined spectral line, indicative of an optical background emission signal;

determining the intensity (S_{1L}) of the spectral line in accordance with the equation:

$$S_{1L}=S_1-k\,(\alpha S_2-S_1)$$

where:

k=a constant set to a value to give optimum results; and
α=a constant determined by optical and electrical responses of the two signal amplification channels; and
terminating the etching process when (S_{1L}) achieves a predetermined value.

4,491,500

METHOD FOR REFINEMENT OF METAL SURFACES

Mark D. Michaud; Robert G. Michaud, both of Bristol; Frank Tirendi, Hamden, and Robert G. Zobbi, Southbury, all of Conn., assignors to Rem Chemicals, Inc., Southington, Conn.

Filed Feb. 17, 1984, Ser. No. 581,420
Int. Cl.[3] C23F *1/00, 5/02;* C23C *1/10*
U.S. Cl. 156—628 14 Claims

1. In a process for refining hard metal surfaces, the steps comprising:

A. introducing into the container of a mass finishing unit a mass of elements comprised of a quantity of objects with hard metal surfaces having a finish of arithmetic average roughness in excess of about 15;

B. wetting said mass of elements with a liquid substance capable of reaction, under oxidizing conditions, to chemically convert the metal of said surfaces to a substantially stable film of substantially reduced hardness;

C. rapidly agitating said mass of elements while maintaining said surfaces in a wetted condition with said substance, said agitation producing relative movement and abrasive contact among said elements and producing continuous oxygenation of said liquid substance; and

D. controlling the reactivity of said substance and the intensity of agitation of said mass so as to maintain said film on said metal surfaces at least at the level of visual perceptibility, said agitating step being continued to produce on said metal surfaces a finish of arithmetic average roughness value less than about 14.

4,491,501

METHOD FOR WASHING A FIBROUS PARTICLE MAT WITH WASH LIQUOR HAVING AN IMPACT ENERGY SUFFICIENT TO DISRUPT AND REARRANGE THE INTERSTITIAL PORE MATRIX

Edward P. Klein, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Dec. 8, 1982, Ser. No. 447,960
Int. Cl.[3] D21C *9/02, 9/06*
U.S. Cl. 162—60 18 Claims



1. A method of flushing suspension liquor from a liquid slurry including fibrous particles suspended in said liquor comprising the steps of:

A. pressure differentially drawing said slurry against a filter screen for separating said particles from said liquor by passing said liquor through said screen which retains said particles deposited thereon in a fibrous mat accumulation having a porous matrix of interstitial flow channels formed therein:

B. removing said screen from said slurry with said mat deposited thereon and said flow channels saturated with said liquor;

C. first flushing said liquor from said mat flow channels with a first quantity of wash liquor applied gently and substantially uniformly to the surface of said mat without substantial disturbance of the interstitial pore matrix within said mat;

D. following said first flushing, applying a second quantity of wash liquor with direct impingement into said mat with sufficient impact energy as to disrupt and rearrange the interstitial pore matrix of flow channels within said mat thereby opening previously closed pores and flow channels without dislodging said mat from said filter screen; and,

E. following said direct impingement, second flushing said mat with a third quantity of wash liquor applied gently and substantially uniformly to the surface of said mat without substantial disturbance of said rearranged interstitial pore matrix of flow channels therewithin, said second quantity of wash liquor being less than 20 percent of the total of said three quantities of wash liquor.

4,491,502

MOLDING OF PAPERBOARD CONTAINERS

Leslie L. Martin, Jr., Saginaw, Minn., assignor to James River-Dixie/Northern, Inc., Norwalk, Conn.

Filed Dec. 10, 1982, Ser. No. 448,649
Int. Cl.[3] D21H *5/12*
U.S. Cl. 162—146 12 Claims

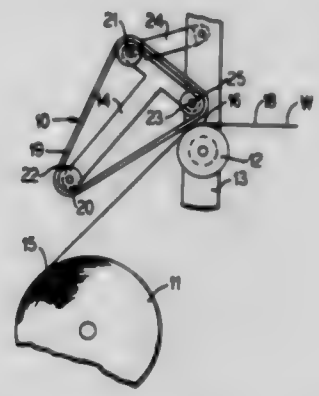
1. A method of forming a molded article consisting essentially of wood cellulose papermaking fibers and up to 8 percent by weight of synthetic fibers capable of withstanding temperatures as high as 400° F. without fusion, comprising forming a sheet of said fibers with a water content in the range of from about 50% to about 100% by weight based on the weight of the dry fibers; and disposing the formed sheet having said water content in a mold and pressing and drying said sheet at a pressure in a range from about 100 psi to about 1,000 psi while maintaining said mold at a temperature in a range of from about 200° F. to about 400° F.

4,491,503

THREADING BELT AND THREADING SYSTEM

Richard J. Adams, Rockton, Ill., and Charles A. Belding, Beloit, Wis. (4), assignors to Beloit Corporation, Beloit, Wis.

Filed Sep. 30, 1982, Ser. No. 428,561
Int. Cl.[3] O21F *1/36*
U.S. Cl. 162—232 12 Claims



1. A threading system for threading a traveling web comprising in combination:

means defining a paper machine processing path through which a lead end of a traveling web is to be carried;

an endless looped belt extending along a threading path essentially parallel to said processing path and having in an outer surface facing the processing path an automatically opening, transversely extending, gripping slot with sides pressed together for gripping a web when extending in a straight run and separated to release the web when curved over an arcuate path; and

means training said belt along the threading path over a first roller at an upstream point in the threading path and a second roller at a downstream point along the threading

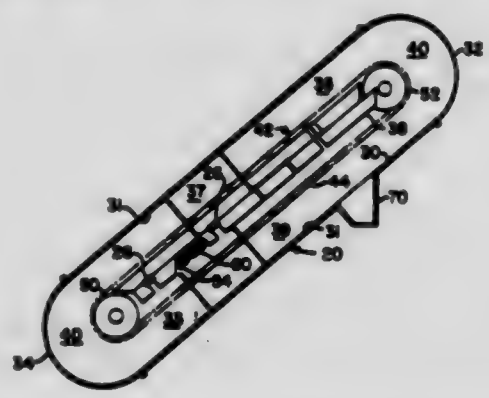
path so that the web is gripped by said slot at the first roller to be carried along the processing path and automatically released at the second roller.

4,491,504

APPARATUS FOR TREATING CELLULOSIC MATERIAL WITH A SCREW FEEDER EXTENDING INTERNALLY WITHIN A TREATMENT VESSEL

John F. Engall, Brantford, Canada, assignor to The Bauer Bros. Co., Springfield, Ohio

Filed Jan. 27, 1983, Ser. No. 461,314
Int. Cl.³ D21C 7/00, 7/06, 7/08
U.S. Cl. 162—237 17 Claims



1. An apparatus for treating a cellulosic material comprising:
a. a longitudinally elongated vessel defining therein a treatment chamber for holding a treatment liquid and a treatment vapor, the level of the treatment liquid defining a boundary between a first liquid filled portion of the chamber and a second vapor filled portion of the chamber;
b. partition means disposed along the longitudinal axis of said vessel for dividing the treatment chamber into longitudinally elongated first and second subchambers disposed on opposite sides of said partition means, each of the subchambers extending through the liquid filled and vapor filled portions of the treatment chamber, the longitudinal extremities of said partition means terminating short of the longitudinal extremities of said vessel so as to provide a continuous passage about said partition means, said partition means having a recess below the level of the treatment liquid;
c. transport means mounted about said partition means for moving cellulosic material about said partition means and through the first and second subchambers;
d. feeder means for receiving cellulosic material from a supply thereof external to said vessel and dispensing said received cellulosic material to said transport means at a location in the first liquid filled portion of the vessel, said feeder means comprising screw feeder means extending internally within said vessel in said partition means recess and opening to said transport means at a point below the liquid level in the chamber; and
e. means for withdrawing cellulosic material from the vessel at at a location in the second vapor filled portion of the vessel.

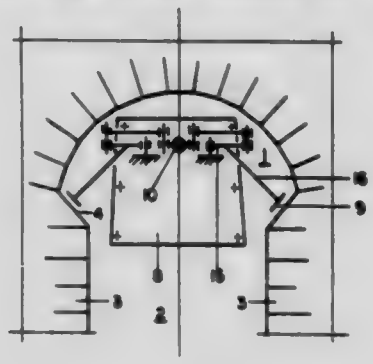
4,491,505

APPARATUS FOR LEVELING COAL IN A COKE OVEN CHAMBER

Heinrich Spindeler, and Folkard Wackerbarth, both of Bochum, Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Dec. 5, 1983, Ser. No. 558,021
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1982, 3245552
Int. Cl.³ C10B 29/02, 37/02
U.S. Cl. 202—270 10 Claims

1. A coal-leveling apparatus including a leveling rod in combination with a coking chamber of a coke oven, a door for said coking chamber, said door including a leveling door normally closing a leveling opening in the door, a pressing machine for supporting said leveling rod for leveling the coal charged into said coking chamber, said coking chamber being bounded by two heating walls and wall portions extending in an upwardly- and outwardly-inclined manner from said heating walls for forming part of a mushroom-shaped gas-collecting space in a top portion of the coking chamber, said coal-leveling apparatus being arranged for introducing said leveling rod through the opening normally closed by said leveling door from the pressing machine into said mushroom-shaped gas-collecting space of the coking chamber for reciprocating the rod



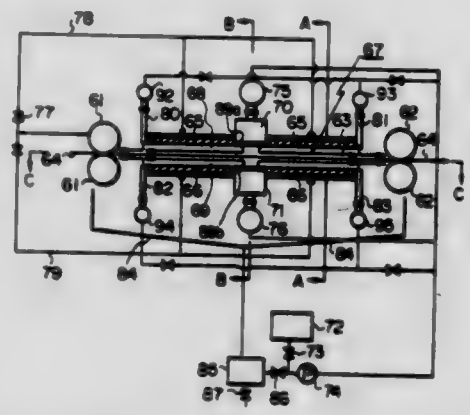
in said space and withdrawal of the leveling rod after leveling the coal charge in the coking chamber, said leveling apparatus further including a head element on a front end portion of said leveling rod and having substantially the same cross-sectional dimensions as the leveling rod, two support members carried by pivot levers on said head element, and actuating means for pivoting said support members from the pressing machine between an inoperative position wherein the support members are disposed in said head element and an operative position wherein said support members are extended from opposite sides of the head element immediately above said wall portions which form boundaries of said mushroom-shaped gas-collecting space.

4,491,506

PROCESS AND APPARATUS FOR THE CONTINUOUS ELECTROLYTIC TREATMENT OF A METAL STRIP USING HORIZONTAL ELECTRODES

Kango Saksi, and Hirobumi Nakano, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 4, 1983, Ser. No. 463,835
Claims priority, application Japan, Feb. 10, 1982, 57-18836; Nov. 9, 1982, 57-195361
Int. Cl.³ C25D 7/06
U.S. Cl. 204—28 26 Claims



1. A process for the continuous electrolytic treatment of a metal strip with an electrolytic treating liquid, which comprises the steps of:
introducing a metal strip along a horizontal path of movement thereof, into a narrow treating space formed between a pair of horizontal electrode devices spaced from

and facing each other, each electrode device having an electrode and a static pressure liquid pad located in said electrode wherein each static pressure liquid pad is provided with a slit nozzle having at least one opening in the form of a closed channel;

ejecting first streams of said electrolytic treating liquid through said slit nozzles toward said metal strip surfaces to form at least one stream in the form of a closed curtain wall in the gap between the static pressure liquid pad and the metal strip surface, to fill the space surrounded by each closed curtain wall with the ejected electrolytic treating liquid and to cause a static pressure of said ejected electrolytic treating liquid to be created in each surrounded space to an extent that said metal strip is supported in said horizontal path thereof; and

applying voltage between said metal strip and said electrodes; and

which process is characterized in that the ejecting of the first streams of the treating liquid through each closed channel slit nozzle is carried out in the longitudinal central portion of the corresponding electrode devices, and additional streams of said electrolytic treating liquid are ejected toward said metal strip surface through additional slit nozzles located at the entrance ends and the exit ends of said pair of electrode devices and each extending in a direction lateral to the longitudinal direction of said horizontal path of movement of said metal strip, whereby the first streams of said electrolytic treating liquid ejected from said closed channel slit nozzles are confined in the spaces between said electrode devices and said metal strip.

4,491,507

GALVANIC DEPOSITING OF PALLADIUM COATINGS

Günter Herklotz, Bruchköbel, and Gerhard Arnold, Hanau, both of Fed. Rep. of Germany, assignors to W. C. Heraeus GmbH, Hanau am Main, Fed. Rep. of Germany

Filed May 9, 1984, Ser. No. 608,475

Claims priority, application Fed. Rep. of Germany, May 13, 1983, 3317493

Int. Cl.³ C25D *3/52*

U.S. Cl. 204—47 4 Claims

1. An aqueous bath for the galvanic depositing of palladium coatings, said bath comprising 5–50 g/l of palladium as tetrammine palladium dibromide, 10–150 g/l of ammonium bromide, 10–150 g/l sulfamic acid and/or ammonium sulfamate, and 1–20 g/l of nicotinic acid and/or 0.1 mg/l to 0.5 g/l of niacinamide and has a pH of 6.5–10.

4,491,508

METHOD OF PREPARING CURABLE COATING COMPOSITION FROM ALCOHOL, COLLOIDAL SILICA, SILYLACRYLATE AND MULTIACRYLATE MONOMER

Daniel R. Olson, Schenectady, and Karen K. Webb, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 269,122, Jun. 1, 1981, Pat. No. 4,455,205. This application Jan. 21, 1983, Ser. No. 459,905

Int. Cl.³ C08F *230/08, 2/50;* C08G *77/18*

U.S. Cl. 204—159.13 5 Claims

1. A method for making a solventless hardcoat composition which comprises

(1) agitating a mixture of a water miscible alcohol, colloidal silica and a silyl acrylate of the formula,

$$(R^1O)_{4-a-b}\overset{(R)_a}{\overset{|}{Si}}\ [C(R^2)_2\ \underset{|}{\overset{R^2}{CH}}-R^3-O-\overset{O}{\overset{\|}{C}}-\overset{R^2}{\overset{|}{C}}=C(R^2)_2]_b$$

(2) adding acrylic monomer of the formula,

$$[(R^2)_2C=CR^2-C-O]_nR^4,$$

to the resulting mixture of (1) and

(3) effecting removal of volatiles under reduced pressure from the mixture of (2) where R is a $C_{(1-13)}$ monovalent organic radical, R^1 is a $C_{(1-8)}$ alkyl radical, R^2 is selected from hydrogen, R and mixtures thereof, R^3 is $C_{(1-8)}$ alkylene, a is a whole number equal to 0–2 inclusive, b is an integer equal to 1–3 inclusive, and the sum of a+b is equal to 3 and n is an integer from 2 to 4 inclusive.

4,491,509

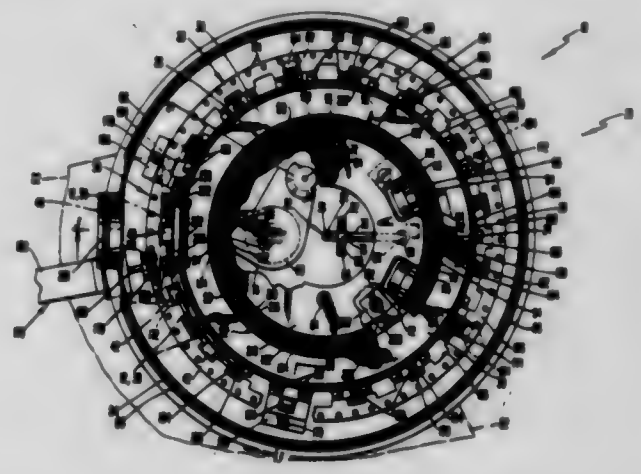
METHODS OF AND APPARATUS FOR SPUTTERING MATERIAL ONTO A SUBSTRATE

Dennis L. Krause, Atkinson, N.H., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Mar. 9, 1984, Ser. No. 587,746

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 R 16 Claims



1. A method of sputtering material onto a substrate in a sputtering chamber, which comprises the steps of:

disposing a target of the sputtering material in the sputtering chamber such that a first surface of the target faces a first portion of the sputtering chamber and a second opposite surface of the target faces a second portion of the sputtering chamber;

disposing the substrate in the second portion of the sputtering chamber in opposed relationship to the second surface of the target to define a sputtering area within the second portion of the sputtering chamber between the substrate and the second surface of the target;

sputtering material from the second surface of the target across the sputtering area in the second portion of the sputtering chamber in a sputtering operation such that the material is deposited on the substrate;

introducing a gaseous doping agent into the first portion of the sputtering chamber at a point which is in opposed relationship to the first surface of the target during the sputtering operation; and

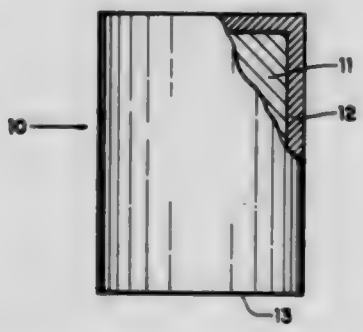
diffusing the gaseous doping agent from the point in the first portion of the sputtering chamber around opposite edges of the target and homogeneously into the sputtering area in the second portion of the sputtering chamber between the substrate and the second surface of the target during the sputtering operation, while precluding flow of the gaseous doping agent through the target into the sputtering area, such that the gaseous doping agent becomes incorporated into the sputtered material on the substrate in an essentially uniform manner to form a uniformly doped film on the substrate.

4,491,510

MONOLITHIC COMPOSITE ELECTRODE FOR MOLTEN SALT ELECTROLYSIS

James M. Clark, Johnson City, and Duane R. Secrist, Elizabethton, both of Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 241,535, Mar. 9, 1981, abandoned. This application Jan. 24, 1983, Ser. No. 460,891
The portion of the term of this patent subsequent to Apr. 5, 2000, has been disclaimed.
Int. Cl.³ C25C *3/06*; C25B *11/00*
U.S. Cl. 204—290 R 31 Claims



1. A non-consumable electrode suitable for use as an anode in the electrolysis of molten salts, produced by the process of:

(a) forming a first conductive ceramic material to produce a core having a substantially flat working surface and a non-working surface;

(b) forming a physically adherent coating over said non-working surface of said core, on at least the portion thereof which is to be exposed to the electrolyte bath in the cell, said coating consisting of a second conductive ceramic material having, as compared to said first conductive ceramic material,

(1) a coefficient of thermal expansion differing by no more than about 1.0×10^{-6}/° C.,

(2) an essentially matched strinkage during sintering,

(3) a higher electrical resistivity, and capable of being chemical diffusion bonded thereto; and

(c) sintering the coated core thus formed to produce a monolithic ceramic electrode having a substantially flat working surface and a non-working surface, said non-working surface having an impervious coating thereon, at least in the portion thereof exposed to the electrolyte bath, of higher resistivity than the core and chemical diffusion bonded thereto, whereby substantially all of the current applied to said electrode is conducted into the electrolyte bath through said flat working surface.

4,491,511

TWO-STAGE COAL LIQUEFACTION PROCESS

Ronald W. Skinner, Allentown; John C. Tao, Perkiomenville, both of Pa., and Samuel Zaaimer, Vancouver, Canada, assignors to International Coal Refining Company, Allentown, Pa.

Filed Nov. 7, 1983, Ser. No. 549,693
Int. Cl.³ C10G *1/00, 1/06, 17/04, 21/02*
U.S. Cl. 208—8 LE 1 Claim

1. In a two-stage coal liquefaction process comprising the steps of:

(a) combining finely divided coal with a solvent therefor in a slurry preparation zone to form a coal/solvent slurry;

(b) pressuring said slurry to between 1000 to 3200 psig;

(c) contacting said coal/solvent slurry with hydrogen rich gas to form a gas/slurry mixture;

(d) heating said gas/slurry mixture in the presence of said hydrogen-rich gas to a temperature of from 600° to 800° F.;

(e) passing the heated gas/slurry mixture to an adiabatic dissolver and adding additional hydrogen as required to dissolve a major portion of the coal and form a liquefied coal slurry;

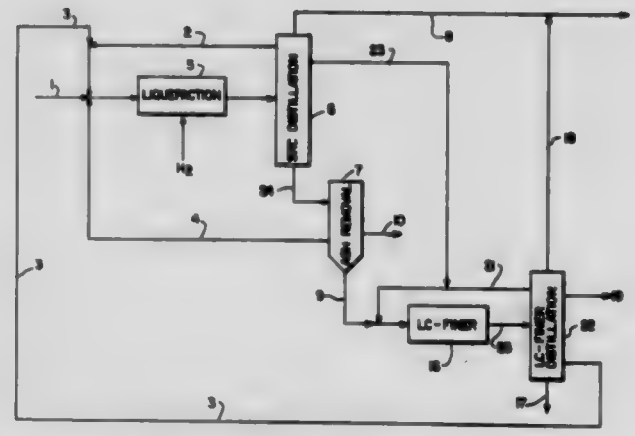
(f) separating said liquefied coal slurry into a vapor product and condensed product;

(g) passing said condensed product to a distillation zone wherein it is separated into a first-stage light distillate fraction, a first-stage solvent fraction, a first-stage middle distillate fraction and a residual bottoms product;

(h) passing said first-stage solvent fraction to the slurry preparation zone where it is combined with finely divided coal in step (a);

(i) separating said residual bottoms product in a deashing zone into an ash residue and a solvent refined coal product;

(j) combining at least a portion of the solvent refined coal product with a hydrocracker solvent in a hydrocracking zone and hydrocracking the resultant mixture to produce a hydrocracked product; and



(k) separating the hydrocracked product into a second-stage light distillate fraction, a second-stage middle distillate fraction, a second-stage heavy distillate fraction, a hydrocracker solvent fraction and a two-stage liquefaction solvent refined coal product;

the improvement comprising:

(1) recycling substantially all of said second stage heavy distillate fraction to said slurry preparation zone and combining said second stage heavy distillate fraction with said solvent in step (a);

(2) combining substantially all of said first-stage middle distillate with said hydrocracker solvent in said hydrocracking zone; and

(3) maintaining said distillation zone of step (g) to provide a sufficiently high boiling point of said first-stage solvent fraction to insure that all of said second stage heavy distillate fraction of step (k) is consumed internally within said process via recycle to said coal slurry formed in step (a).

4,491,512

RECOVERY OF OIL FROM OIL-BEARING CARBONATES

Charles A. Euker, Jr., Houston, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 19, 1983, Ser. No. 562,951
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—11 LE 19 Claims

1. A process for recovering an oil from oil-bearing rock composed primarily of carbonates which comprises:

(a) treating said oil-bearing rock with an aqueous solution of an alkali metal compound selected from the group consisting of alkali metal silicates, alkali metal phosphates and alkali metal borates at a temperature above about 150° F., said aqueous solution having a concentration of said alkali metal compound above about 0.5 molar;

(b) contacting the treated oil-bearing rock from step (a) with hot water or a hot aqueous solution for a sufficient amount of time to extract said oil from said treated rock; and

(c) recovering said oil extracted in step (b).

4,491,513

PROCESS FOR BENEFICIATING OIL-SHALE

Michael Siskin, Livingston, and Glen B. Brons, Phillipsburg, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 16, 1984, Ser. No. 600,431
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—11 LE 14 Claims

1. A process for removing mineral matter from oil-shale which process comprises contacting the oil-shale with (a) an ammonium salt solution and (b) an organic solvent, at a temperature from about 0° C. to about 300° C. for a time which is sufficient to substantially separate at least about 80 wt.% of the carbonate mineral matter from the oil-shale.

4,491,514

PROCESS FOR BENEFICIATING OIL-SHALE

Michael Siskin, Livingston, and Glen B. Brons, Phillipsburg, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 16, 1984, Ser. No. 600,432
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—11 LE 7 Claims

1. A process for removing mineral matter from oil-shale which process comprises contacting the oil-shale with (a) an ammonium salt solution, and (b) a nonionic surfactant at a temperature from about 0° C. to about 300° C. for a time which is sufficient to substantially separate at least about 80 wt.% of the carbonate mineral matter from the oil-shale.

4,491,515

TREATING USED AUTOMOTIVE LUBRICATING OIL TO REDUCE THE CONTENT OF SUSPENDED PARTICULATE MATTER, INCLUDING LEAD

John B. Agnew, Glen Waverley; John A. Barnard, Mount Waverley, and Viyada Tirtaatmadja, Mulgrave, all of Australia, assignors to Monash University, Victoria, Australia

Filed Mar. 19, 1982, Ser. No. 360,055
Claims priority, application Australia, Mar. 23, 1981, PE8105; Jan. 14, 1982, PF2287
Int. Cl.³ C10M *11/00*
U.S. Cl. 208—180 10 Claims

1. Process for treating used lubricating oil to reduce the content of suspended particulate matter therein, characterized by contacting said used lubricating oil with a carbonyl-group containing compound in admixture with an aqueous electrolyte selected from the group consisting of inorganic and organic acids, salts and alkalis, separating the resulting mixture into an upper layer containing clarified oil and a lower layer of agglomerated particulates, and recovering oil of reduced particulate content as product.

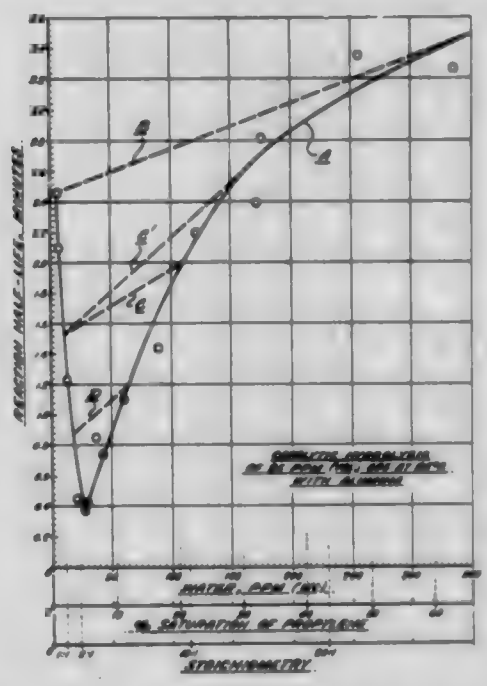
4,491,516

HYDROLYSIS OF CARBONYL SULFIDE OVER ALUMINA

Richard E. Polleck, Wilmington, Del.; Kenneth A. Scott, Swarthmore, Pa., and Robert E. Ledley, Hockessin, Del., assignors to Sun Refining and Marketing Company, Philadelphia, Pa.

Filed Nov. 22, 1983, Ser. No. 554,480
Int. Cl.³ C10G *29/16*
U.S. Cl. 208—248 11 Claims

1. A process for removing carbonyl sulfide from liquid petroleum hydrocarbons containing carbonyl sulfide, which comprises passing the hydrocarbons over alumina, under hydrolysis conditions, while maintaining water in the hydrocarbons in an amount of from one and a half moles of water per mole of carbonyl sulfide to an upper limit of about ten moles of water per mole of carbonyl sulfide or about 30% of saturation



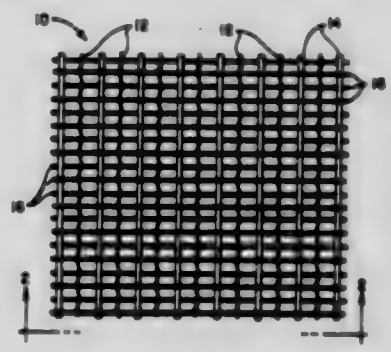
of the hydrocarbons, whichever upper limit provides the lesser amount of water.

4,491,517

MULTI-DIMENSIONAL SCREEN

Stephen J. Janovac, Euclid, Ohio, assignor to W. S. Tyler Incorporated, Mentor, Ohio

Filed Dec. 23, 1983, Ser. No. 564,794
Int. Cl.³ B07B *1/49*
U.S. Cl. 209—401 4 Claims



1. A screen for separating particles according to size, said screen being made up of a plurality of first wires of a first size extending in a first direction, a plurality of second wires, of a second size substantially larger than the first size, also extending in the first direction, said first and second wires alternating, with every other one being a first wire, and every other one being a second wire, a plurality of third wires extending in a second direction substantially transverse to the first direction, each of said third wires being interwoven with each of said first and second wires, with every other third wire extending over each first wire and under each second wire, and the alternating third wires extending under each first wire and over each second wire, so that the formed openings in the screen are 3-dimensional and the second wires are 1½ to 2½ times the diameter of the first and third wires.

4,491,518

DEVICE FOR SELECTIVELY TAKING UP A LAYER OF LIGHT LIQUID FROM THE SURFACE OF A SHEET OF WATER

Henry Benaroya, 41, Bld du Ct Charcot, 92200 Neuilly s/Seine; Jean LeFoll, 14, Av. de l'Europe, 78160 Marly le Roi, and Jean-Elie Cadoux, Le Mesnil Hubert en Exmes, 61230 Gace, all of France

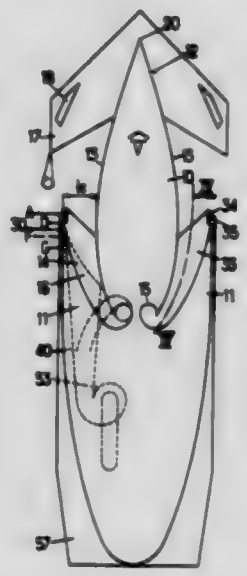
PCT No. PCT/FR82/00198, § 371 Date Jul. 25, 1983, § 102(e) Date Jul. 25, 1983, PCT Pub. No. WO83/01799, PCT Pub. Date May 26, 1983

PCT Filed Nov. 23, 1982, Ser. No. 521,760

Claims priority, application France, Nov. 23, 1981, 81 21905; Dec. 18, 1981, 81 23741

Int. Cl.³ E02B *15/04*

U.S. Cl. 210—177 16 Claims



1. Device for removing floating liquid pollutants from a body of water, comprising: a hull provided with means for moving it in a predetermined direction through the body of water and having two lateral parts, and a vertical central part, placed between the lateral parts, projecting forwards with respect to the latter in said predetermined direction and bearing an immersed deflector fin part at least of which is located forward of the lateral parts, said fin being shaped for creating swirls in the water body whose orientation tends to diminish the divergence of the flow lines in the vicinity of free water level ahead of said lateral parts due to movement of the device, said lateral parts and central part cooperating to define ducts directing a flow of water and pollutant taken close to the water level to separator means in said hull wherein each of said ducts comprises a floor with deviating profile whose leading edge projects upstream of the intake orifice of the duct, which floor is shaped to slow down the flow upstream of the leading edge and to cause a progressive thickening of the light liquid layer and wherein an approximately vertical dividing wall terminating at a distance from the wave which flows through the duct separates the duct, over a fraction of its height, into two sub-channels one of which communicates downstream with said separator means and the other of which opens downstream into pumping means pumping water out of the rearwardly part of said device to cause a propulsive effect.

12. Device according to claim 1, wherein the separator means comprises a cavity (45) with vertical axis (46) separated by a horizontal plate (50) pierced with a central hole into a supply chamber into which opens the sub-channel (38) and a discharge chamber opening into a tangential escape channel (52), the separator further comprising a central tube (47) plunging into the top part of the swirling flow with free surface in the supply chamber and communicating with a light liquid suction pump.

13. Device according to claim 12, wherein the tube (47) has a double wall and has an internal duct (54) for supplying vapor which escapes upwards through holes formed in an internal flange of the tube at the low part thereof.

4,491,519

FILTER CLOTH ARRANGEMENT FOR USE IN FIXED FILTER CLOTH TYPE FILTER PRESS

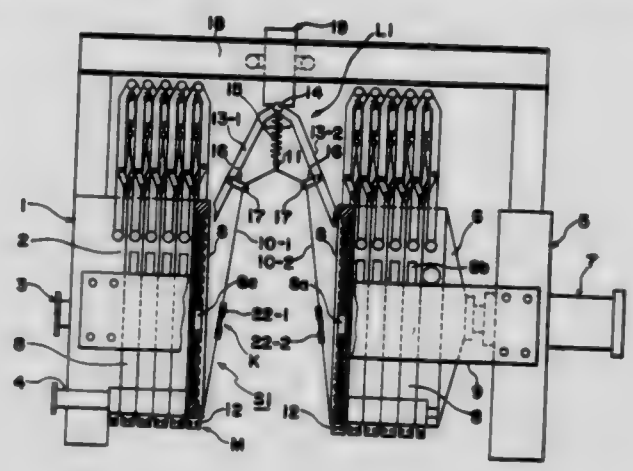
Tetsuya Kurita, Takarazuka, Japan, assignor to Kurita Machinery Manufacturing Company Limited, Osaka, Japan

Filed Nov. 16, 1983, Ser. No. 552,241

Claims priority, application Japan, Nov. 19, 1982, 57-204343; Nov. 19, 1982, 57-204344; Nov. 19, 1982, 57-204345

Int. Cl.³ B01D *25/12*

U.S. Cl. 210—225 10 Claims



1. A filter cloth arrangement for use in a fixed filter cloth type filter press including at least one pair of first and second filter plates formed with first and second slurry feed openings, respectively, and a pair of first and second filter cloths interposed between said first and second filter plates, said first and second filter cloths being, respectively, formed with first and second slurry holes in communication with said first and second slurry feed openings and defining a filter chamber therebetween when said first and second filter plates are clamped to each other, said filter cloth arrangement comprising:

a support member for supporting upper ends of said first and second filter cloths;

an elastic member for vibratingly supporting said support member;

a fixing member for fixing lower ends of said first and second filter cloths to lower portions of said first and second filter plates, respectively; and

a first slurry feeding plate which is attached to said first filter cloth so as to be disposed between said first and second filter cloths such that said first filter cloth is vibrated together with said first slurry feeding plate when said first and second filter plates are retracted away from each other;

said first slurry feeding plate, when said first and second filter plates are clamped to each other, defining a slurry feed passage for introducing, in communication with said first and second slurry holes, into said filter chamber, slurry to be filtered such that the slurry is fed from either one of said first and second slurry feed openings into said filter chamber through corresponding either one of said first and second slurry holes and said slurry feed passage.

4,491,520

FILTER FOR WATER JUGS

Richard C. Jaye, 12 Brian Ct., Watertown, Wis. 53094

Filed Feb. 22, 1984, Ser. No. 612,895

Int. Cl.³ B01D *27/08*

U.S. Cl. 210—232 6 Claims

1. A filter unit for installation in a water jug of the type having a side wall, a substantially flat bottom wall, a top opening through which the jug can be filled and which can be closed by a cover, and a valved outlet tap extending through said side wall at a level near said bottom wall, said tap defining an inwardly facing annular shoulder at the interior of said side wall and having an axially short tubular inlet portion that is

concentrically surrounded by said shoulder and projects beyond the same into the interior of the jug, said filter unit comprising:

A. a pan-like case member having

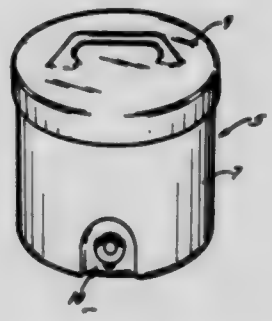
(1) a substantially flat bottom case wall adapted to overlie said bottom wall of the jug,

(2) a side case wall projecting up from said bottom case wall, said side case wall

(a) having a top rim extending therearound that lies in a single plane and

(b) having an aperture therethrough at one side of said case member, and

(3) a tubular collar portion projecting radially outwardly from the side case wall and sealed thereto around said aperture, said collar portion having a diameter to surround said tubular inlet portion of the tap and to have its outer end sealed to said shoulder;



B. tacky, water-insoluble adhesive means on the bottom of said bottom case wall, spaced from said one side of the case member, whereby the case member is secureable to the bottom wall of a jug; and

C. an axially short filter cartridge of a width to be closely receivable within said side case wall and having opposite top and bottom end surfaces through which water to be filtered can flow successively, said filter cartridge having a radially outwardly projecting circumferential flange extending therearound which is spaced above its bottom end surface and which sealingly engages said top rim all around the same and supports the cartridge with its bottom end surface spaced above said bottom case wall.

4,491,521

DEWATERING APPARATUS

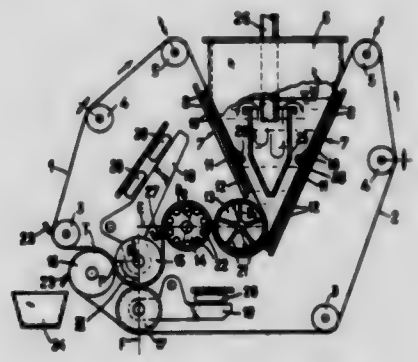
Rolf Wenske, Ravensburg-Torkenweiler; Hans Schnell, Meagen, and Peter Mirsberger, Weingarten, all of Fed. Rep. of Germany, assignors to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Aug. 27, 1982, Ser. No. 412,198

Claims priority, application Switzerland, Sep. 29, 1981, 6253/81

Int. Cl.³ B01D *33/04*; D21F *1/80*

U.S. Cl. 210—401 15 Claims



1. A dewatering apparatus for dewatering of water-solid mixtures, especially suspensions of fiber stock, in particular cellulose or paper fibers, comprising:

two movable wires which coactingly form an infeed funnel;

at least a first dewatering cylinder;

at least a second dewatering cylinder;

said two wires being guided over said first and second dewatering cylinders;

said infeed funnel being constructed as a pre-dewatering funnel containing pervious walls in the manner of wire tables;

each of said wires being guided over a related one of said pervious walls;

both of said wires travelling over said first and second dewatering cylinders with reversed curvatures;

said dewatering cylinders being devoid of press locations formed by press rolls;

each of said dewatering cylinders has a lengthwise axis;

said lengthwise axes of said first and second dewatering cylinders being arranged essentially in a common horizontal plane; and

said second dewatering cylinder possessing a smaller diameter than the first dewatering cylinder which is arranged upstream of said second dewatering cylinder.

4,491,522

ANAEROBIC DIGESTION PROCESS FOR ORGANIC WASTES

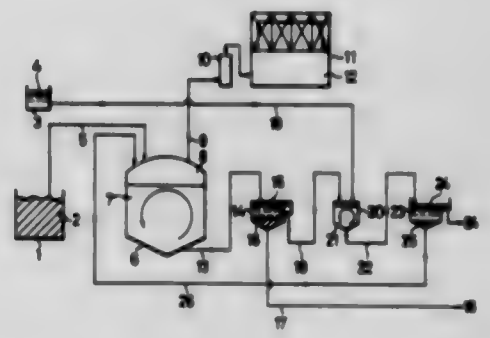
Masahiko Ishida; Ryoichi Haga; Tadashi Ishibashi, and Yoji Odawara, all of Hitachi, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Nov. 15, 1983, Ser. No. 551,730

Claims priority, application Japan, Nov. 18, 1982, 57-201208

Int. Cl.³ C02F *3/28*, *3/30*

U.S. Cl. 210—603 4 Claims



1. An anaerobic digestion process for organic wastes comprising the following steps:

(1) Anaerobically digesting organic wastes under simultaneous presence of facultative anaerobic bacteria and obligatory anaerobic bacteria,

(2) Separating the anaerobically digested slurry obtained from step (1) into a liquor fraction containing the two groups of bacteria and an undecomposed solid fraction,

(3) Mixing under anaerobic conditions, the liquor fraction obtained from step (2) with surplus activated sludge produced by aerobically treating organic waste water,

(4) Separating the mixed slurry obtained from step (3) into a solid fraction containing the surplus activated sludge which has absorbed the two groups of bacteria and a liquor fraction, and

(5) Recycling back the solid fraction obtained from step (4) as a source of nitrogen and the source of the two groups of bacteria to step (1).

4,491,523

METHOD FOR TREATING BARIUM TOXIC WATER USING LOW-TEMPERATURE STABILIZED POLYACRYLAMIDE COMPOSITIONS

Robert W. Foreman, Bloomfield Hills, Mich., assignor to Park Chemical Company, Detroit, Mich.

Continuation-in-part of Ser. No. 276,857, Jun. 24, 1981, abandoned. This application Mar. 28, 1983, Ser. No. 479,421
Int. Cl.³ C02F 5/10; C02B 1/20
U.S. Cl. 210—728 4 Claims

1. The method of treating barium-toxic waste water comprising the steps of mixing an aqueous composition with the waste water in an amount sufficient to enable prompt settling out of barium as solid phase particulates in the thus treated water and separating the particulates from the water as solid waste, the composition consisting essentially of a non-viscous solution of about 15 to 40% by weight of ammonium sulfate and about 0.0005 to about 0.15% by a water-miscible polyacrylamide polymer agent for coagulation of non-ionic barium, the ammonium sulfate being present in a concentration such that the composition is storage stable at temperatures below 32 degrees F.

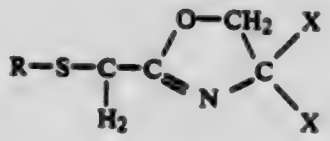
4,491,524

LUBRICATING ADDITIVE FOR DRILLING MUDS

Antonio Gutierrez, Mercerville; Darrell W. Brownawell, Scotch Plains, both of N.J.; Thad O. Walker, Humble, Tex., and Stanley J. Brois, Westfield, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 428,826, Sep. 30, 1982, abandoned. This application Dec. 8, 1983, Ser. No. 559,340
Int. Cl.³ C09K 7/00, 3/00; E21B 3/00
U.S. Cl. 252—8.5 C 9 Claims

1. An alkaline drilling mud comprising particles of clayey material suspended in sufficient water to render it circulatable and from 0.1 to 10 pounds of an alkyl thiomethyl oxazoline per barrel of drilling mud, said oxazoline being represented by the formula



wherein R represents an alkyl radical containing from 1 to 30 carbons and X is selected from the group consisting of an alkyl group or hydroxy alkyl group of the structure $-(CH_2)_nOH$ where n is 1 to 3.

4,491,525

OIL RECOVERY WITH SURFACTANT FLOODING

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 186,862, Sep. 12, 1980, Pat. No. 4,335,787. This application Mar. 17, 1982, Ser. No. 358,983
Int. Cl.³ E21B 43/22
U.S. Cl. 252—8.55 D 9 Claims

1. Surfactant composition comprising
(a) 100 parts by weight of water,
(b) 0.1 to 15 active parts by weight of hydrocarbon sulfonate,
(c) 0.05 to 15 parts by weight of an organic nitrile cosurfactant having one to three —CN groups attached to a molecule containing up to thirteen carbon atoms and up to four oxygen and/or sulfur atoms and up to four additional nitrogen atoms,
(d) 0.1 to 8 parts by weight of NaCl.

4,491,526

THICKENED, WATER-BASED HYDRAULIC FLUID WITH REDUCED DEPENDENCE OF VISCOSITY ON TEMPERATURE

Charles F. Deck, Trenton, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Apr. 4, 1983, Ser. No. 481,761
Int. Cl.³ C10M 1/46, 1/06
U.S. Cl. 252—32.5 14 Claims

1. A hydraulic fluid or metalworking fluid comprising a major proportion of water, minor effective thickening amounts of at least one associative, polyether, aqueous thickener, and minor, effective, temperature-stabilizing amounts of at least one ethoxylated polyether surfactant.

4,491,527

ESTER-HETEROCYCLE COMPOSITIONS USEFUL AS "LEAD PAINT" INHIBITORS IN LUBRICANTS

Richard M. Lange, Euclid, and Jerry L. Rutter, Mentor, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Apr. 26, 1982, Ser. No. 371,880
Int. Cl.³ C10M 1/36
U.S. Cl. 252—51.5 A 43 Claims

1. A composition comprising derivatives of substituted carboxylic acids in which the substituent is a substantially aliphatic, substantially saturated hydrocarbon-based radical containing at least about 30 aliphatic carbon atoms; said derivatives being

at least one heterocyclic condensation product of at least one free carboxylic acid containing ester of said substituted carboxylic acids in which all alcohol moieties are derived from at least one mono- or polyhydroxyalkane; wherein said heterocyclic condensation product contains at least one heterocyclic moiety which includes a 5- or 6-membered ring which contains at least two ring hetero atoms selected from the group consisting of oxygen, sulfur and nitrogen separated by a single carbon atom, at least one of said hetero atoms being nitrogen, and at least one carboxylic moiety; the carboxylic and heterocyclic moieties either being linked through an ester or amide linkage or being the same moiety in which said single carbon atom separating two ring hetero atoms corresponds to a carbonyl carbon atom of the substituted carboxylic acid.

4,491,528

ESTERS OF POLYVALENT ALCOHOLS, PROCESS FOR PREPARING THEM AND THEIR USE AS LUBRICATING OILS

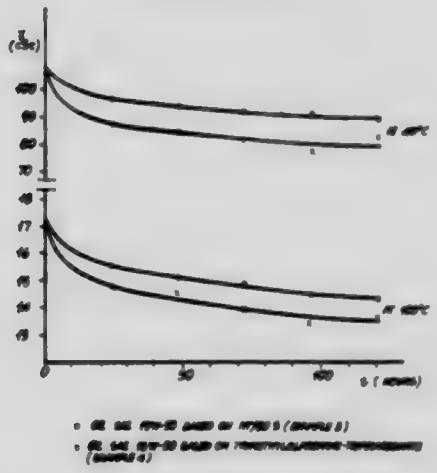
Pietro P. Rossi, Garlasco, and Maurizio Anastasio, Segni, both of Italy, assignors to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 382,757, May 27, 1982, abandoned, which is a continuation of Ser. No. 181,280, Aug. 25, 1980, abandoned. This application Jul. 15, 1983, Ser. No. 514,236

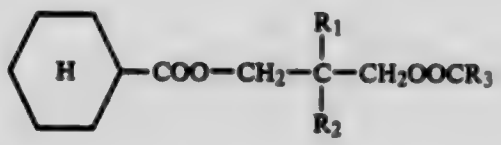
Claims priority, application Italy, Sep. 10, 1979, 25573 A/79; Jun. 24, 1980, 22992 A/80

Int. Cl.³ C10M *3/20, 1/26*

U.S. Cl. 252—56 S 11 Claims



1. An ester of the general formula (A)



(A)

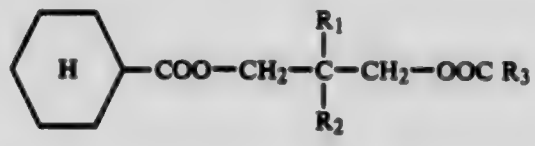
in which

R_1 is an alkyl radical selected from the group consisting of methyl and ethyl;

R_2 is an alkyl radical selected from the group consisting of methyl and ethyl; and

R_3 is an alkyl radical having the formula C_nH_{2n+1} wherein n is a number from 5 to 11.

6. A base for lubricating oils, said base comprising at least one ester of the general formula (A)



in which

R_1 is an alkyl radical selected from the group consisting of methyl and ethyl;

R_2 is an alkyl radical selected from the group consisting of methyl and ethyl; and

R_3 is an alkyl radical having the formula C_nH_{2n+1} wherein n is a number from 5 to 11.

9. A base for lubricating oils according to claim 6, additionally containing other lubricating oils.

11. A base for lubricating oils according to claim 9, additionally containing at least one normal, viscosity index improving additive, detergent, dispersing and/or antifoaming additive.

4,491,529

HEAT ACCUMULATING AGENT

Vera Piel, and Johann Schröder, both of Aachen, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 28, 1983, Ser. No. 518,274

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1982, 3240855

Int. Cl.³ C09K *5/06*

U.S. Cl. 252—70 10 Claims

1. A heat accumulating agent having a solid-liquid phase transition comprising calcium chloride hexahydrate and a nucleating agent selected from the group consisting of caseium chlorate, caesium alum dodecahydrate, bismuth phosphate, bismuth tartrate hexahydrate, basic bismuth carbonate, bismuth hydroxide, lead carbonate, lead oxalate and lead phosphate.

4,491,530

BROWN STAIN SUPPRESSING PHENOL FREE AND CHLORINATED HYDROCARBONS FREE PHOTORESIST STRIPPER

Evan G. Thomas, East Aurora, N.Y., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 20, 1983, Ser. No. 496,764

Int. Cl.³ C11D *3/43;* B08B *3/08*

U.S. Cl. 252—143 7 Claims

1. A composition for stripping photoresist from an inorganic substrate comprising in combination:

(a) from about 5 to about 60 weight percent of an alkarylsulfonic acid surfactant having 12–20 carbon atoms;

(b) from about 5 to about 95 weight percent of a hydrotropic sulfonic acid having 6–9 carbons;

(c) from 0 to about 40 weight percent of a halogen-free aromatic hydrocarbon solvent with a boiling point above 150° C.;

and

(d) from about 0.5 to about 10 weight percent of a substantially water soluble sulfone of the formula

$$R^1SO_2R^2$$

where R^1 and R^2 may be the same or different and are selected from the group consisting of alkyl radicals, aryl radicals and alkylaryl radicals of 1 to 20 carbon atoms and including cyclic structures wherein R^1 is linked to R^2 and have the formula

$$(CH_2)_nSO_2$$

wherein is 4 to 7;

said composition being free of phenol compounds and chlorinated hydrocarbon compounds and being substantially clear water rinsable.

4,491,531

COMPOSITION BASED ON A FLUOROHYDROCARBON SOLVENT, SUITABLE FOR REMOVING WATER FROM THE SURFACE OF MANUFACTURED ARTICLES

Gianangelo Bargigia, and Giuliano Carniselli, both of Milano, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Sep. 23, 1982, Ser. No. 422,146

Claims priority, application Italy, Sep. 25, 1981, 24153 A/81

Int. Cl.³ C11D *7/50;* C23G *5/02*

U.S. Cl. 252—153 10 Claims

1. A homogeneous solvent composition, suitable for removing water from wet articles, comprising:

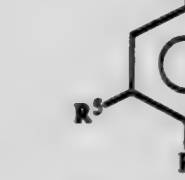
(a) one or more fluorinated or chlorofluorinated hydrocarbons having a density of at least 1.3 g/ml at 20° C., a boiling point in the range of from 27° to 70° C., optionally in admixture with CH_2Cl_2;

(b) from 0.0001 to 0.5% by weight, referred to the dissolving

mixture, of a surface-active agent consisting of a salt formed by:
(I) one or more diamines of general formula

$$H_2N—A—NH_2$$

wherein A is a linear or ramified alkylene C_nH_{2n} containing 4 to 20 carbon atoms, and
(II) a monoester or a diester of phosphoric acid and mixtures thereof, of general formula:



wherein Q_1 is a linear or ramified alkyl containing from 6 to 20 carbon atoms, or an ethoxylated alkyl having in the chain 6 to 26 carbon atoms and 1 to 4 oxygen atoms in the aggregate, and wherein Q_2 is equal to Q_1 or is hydrogen,
the molar ratio between ester and amine in said salt being in the range of from 1:1 to 2:1.

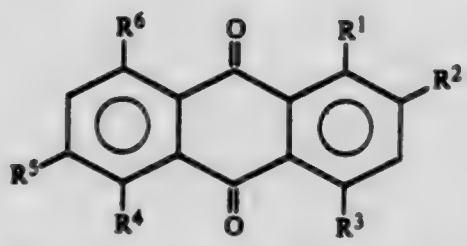
4,491,532

LIQUID-CRYSTAL MIXTURE WITH A PLEOCHROIC ANTHRAQUINONE DYE, AND METHOD FOR PRODUCING SUCH A DYE

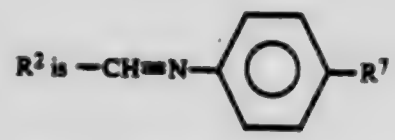
Günther Scherowsky; Alexander Müller; Gerd Heppke, and Bürkhard Knippenberg, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 10, 1981, Ser. No. 301,046
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, 3036895
Int. Cl.³ C09K *3/34*; C09B *55/00, 1/16, 1/50*
U.S. Cl. 252—299.1 17 Claims

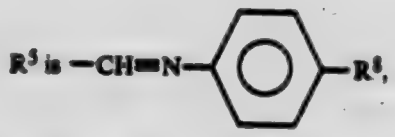
1. Liquid-crystal system comprising a pleochroic anthraquinone dye dissolved in a liquid crystal material, said dye represented by the general formula



wherein R^1, R^3, R^4 and R^6 are selected from the group consisting of H, OH, OCH_3, NH_2, $NHCH_3$ and NO_2, the combination wherein



in which R^7 is selected from the group consisting of H, alkyl, cycloalkyl, alkoxy, alkylmercapto, amino, alkylamino, dialkylamino, nitro, cyano and halogen,



CHO, $COOR^9$, $CH_2—OR^9$ in which R^8 is selected from the group consisting of H, alkyl, cycloalkyl, alkoxy, alkylmercapto, amino, alkylamino, dialkylamino, nitro, cyano and halogen, and in which R^9 is selected from the group consisting of H and alkyl, and either wherein R^1 and R^4 are selected from the group consisting of H, OH, NH_2, $NHCH_3$, NO_2 and OCH_3, where at least one of the two radicals is an NH_2 or an $NHCH_3$, R^3 and R^6 each is H, or wherein R^3 and R^6 are selected from the group consisting H, OH, NH_2, $NHCH_3$, NO_2 and OCH_3, where at least one of the two radicals is an NH_2 or an $NHCH_3$, R^1 and R^4 each is H.

10. Liquid-crystal system according to claim 1 wherein the mixture of the pleochroic anthraquinone dye in liquid crystal material contains additionally a yellow and blue dye, and where the mixture formed by the three dyes in achromatic.

16. Liquid-crystal mixture according to claim 10, wherein the yellow dye is 1,5-dihydroxy-2-(methoxyphenyl) anthraquinone; the blue dye is 1,5-diamino-4,8-dihydroxy-3,7-di(4-methoxyphenyl)anthraquinone; and the third dye is 1,5-diamino-2,6-di(phenylimino-methyl) anthraquinone, where the three dyes have a mutual weight ratio of 1:0.8 to 1.3:0.2 to 0.4.

4,491,533

IMMERSION OIL FOR FLUORESCENCE MICROSCOPY

Robert L. Sacher, and William J. Sacher, both of Newton, N.J., assignors to R. P. Cargille Laboratories, Inc., Cedar Grove, N.J.

Filed Sep. 8, 1983, Ser. No. 530,479
Int. Cl.³ G02B *1/06, 3/12*; C09K *11/06*
U.S. Cl. 252—301.16 2 Claims

1. In a process for using a fluorescent microscope for studying materials which fluoresce in which process an immersion oil is employed in conjunction with the objective lens the improvement therewith of using a heavy mineral oil having a refractive index of about 1.480 as the immersion oil in said process, with said oil having a density between 0.875 to 0.905 and which oil exhibits substantially little background flouorescence when illuminated by near ultraviolet light with said oil further having a viscosity of greater than 150 centistokes at 25° C.

4,491,534

SEQUENCED SURFACTANT OLIGOMERS, PROCESS FOR PREPARING THE SAME AND COMPOSITIONS CONTAINING THE SAME

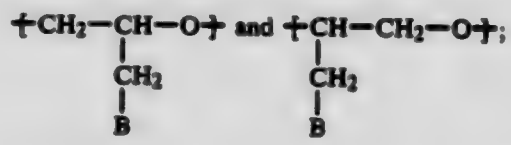
Guy Vanlerberghe, Claye-Souilly, and Henri Sebag, Paris, both of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 815,847, Jul. 14, 1977, Pat. No. 4,199,562.
This application Oct. 24, 1979, Ser. No. 87,794
Claims priority, application Luxembourg, Jul. 16, 1976, 75406
Int. Cl.³ B01F *17/16*
U.S. Cl. 252—357 26 Claims

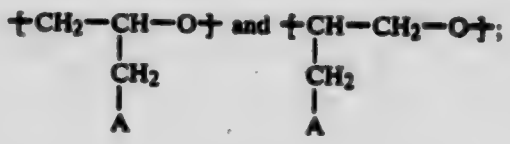
1. A sequenced oligomer surfactant of the formula

$$P—O—C_2H_3(CH_2B)O—_{n'}—C_2H_3(CH_2A)O—_m—C_2H_3(CH_2B)O—_nQ \quad (I)$$

wherein;
$—C_2H_3(CH_2B)O—$ represents the two isomers:



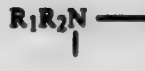
$—C_2H_3(CH_2A)O—$ represents the two isomers:

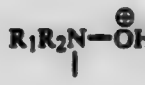


one of P and Q represents hydrogen and the other represents linear or branched alkyl having from 1–20 carbon atoms;
A represents R—CH_2— or —R'—O—, wherein R represents linear alkyl having from 4–16 carbon atoms and R' represents linear or branched alkyl having from 4–20 carbon atoms;
B represents a member selected from:


(a)

(b)


(c)


(d)


(e)


(f)

wherein
R_1 and R_2 each independently represent alkyl or hydroxyalkyl, having 1–3 carbon atoms or R_1 and R_2 together with the adjacent nitrogen atom form a heterocycle selected from piperidino or morpholino,
R_3 represents methyl or ethyl,
$Z^{\ominus}$ is an anion selected from $HSO_3^{\ominus}$, $CH_3SO_3^{\ominus}$, $CH_3SO_4^{\ominus}$ and $CH_3—C_6H_4—SO_3^{\ominus}$, and
$R_1R_2N^{\oplus}HV^{\ominus}$ and $R_1R_2N—O^{\oplus}HV^{\ominus}$ represents a salt of an amine or amine oxide wherein R_1 and R_2 have the meanings given above;
m represents a whole or decimal number from 2 to 10; and
n and n' represents a whole or decimal number from 2 to 25, with one of n and n' capable of being 0.

4,491,535
HYDROCARBON OXIDATE COMPOSITION
Donald D. Carlos, Louisville, and B. Keith Friley, Catlettsburg, both of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.
Filed May 25, 1983, Ser. No. 497,785
Int. Cl.[3] C09K *3/00*
U.S. Cl. 252—389.61 89 Claims

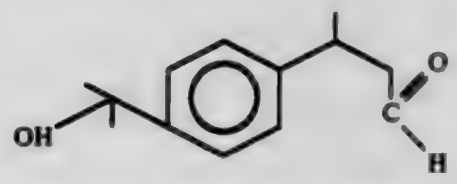
1. A hydrocarbon oxidate composition having a sinewy or film-forming characteristic comprising the reaction product of:
(a) a hydrocarbon oxidate, with
(b) a polyamine containing at least two amino groups, each group having at least one active hydrogen atom; and
(c) at least one copolymer of an olefin and a comonomer selected from (i) an unsaturated carboxylic acid; or (ii) a vinyl ester of a saturated carboxylic acid; or the metal salt of said reaction product.

4,491,536
CARBON FIBER-CONTAINING FLUOROELASTOMER COMPOSITION
Masayasu Tomoda, Shiga; Shoji Kawachi, Nishinomiya, and Hiroyuki Tanaka, Settsu, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan
Filed Sep. 29, 1983, Ser. No. 536,964
Claims priority, application Japan, Sep. 29, 1982, 57-171442; Oct. 7, 1982, 57-177119
Int. Cl.[3] H01B *1/06*
U.S. Cl. 252—511 11 Claims

1. A fluoroelastomer composition comprising a fluoroelastomer selected from at least one member of the group consisting of a cross-linkable fluoroelastomer and a thermoplastic fluoroelastomer and carbon fibers having a length of from 0.1 to 5.0 mm and a length/diameter ratio of at least 10, said carbon fiber being present in said composition in an amount of from 1 to 300 parts by weight on the basis of 100 parts by weight of the fluoroelastomer.

4,491,537
TERTIARY HYDROXYL CARBOXALDEHYDES AND ORGANOLEPTIC USE THEREOF
Futoshi Fujioka, Wanamassa; Richard M. Boden, Ocean, and William L. Schreiber, Jackson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.
Filed Jul. 8, 1983, Ser. No. 511,965
Int. Cl.[3] A61K *7/46*
U.S. Cl. 252—522 R 2 Claims

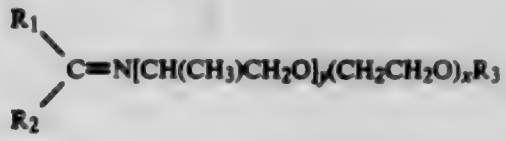
1. A compound having the structure:



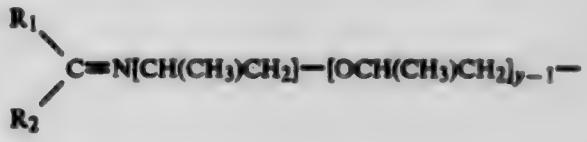
2. A perfume process for augmenting or enhancing the aroma of a consumable materials selected from the group consisting of perfume compositions and perfumed polymers, comprising the step of intametly admixing with said consumable material, an aroma augmenting or enhancing quantity of a compound defined in claim 1.

4,491,538
SCHIFF BASE SURFACTANTS
David R. McCoy, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.
Filed Oct. 18, 1982, Ser. No. 435,131
Int. Cl.[3] B01F *17/16*
U.S. Cl. 252—541 9 Claims

1. A composition of matter of the general formula:



wherein:
R_1 and R_2 are selected from the group consisting of an hydrogen and an alkyl radical such that the sum of the carbon atoms in $R_1—C—R_2$ is from 9 to 20;
R_3 is the radical



y has an average value of from 1 to 3 and
x has an average value of from 8 to 60 such that the amount of (CH_2CH_2O) is not less than 40 wt%.

4,491,539

LIQUID CLEANSING PRODUCT WITH SKIN FEEL ADDITIVES

James J. Hoskins, and Adriaan Kessler, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 460,211, Jan. 24, 1983, , which is a continuation of Ser. No. 270,436, Jun. 4, 1981, abandoned.
This application Apr. 27, 1983, Ser. No. 488,921
Int. Cl.³ C11D *1/83, 3/37, 3/46, 17/08*
U.S. Cl. 252—541 25 Claims

1. A liquid cleansing product having desirable skin feel characteristics and having good stability against phase separation, said product comprising:
(a) from about 5% to about 30% of surfactant;
(b) from about 0.1% to about 1.0% of guar gum material selected from the group consisting of guar gum and hydroxypropyl guar gum;
(c) from about 0.15% to about 1.0% of carboxyvinyl polymer having a molecular weight of at least about 750,000, said carboxyvinyl polymer comprising an interpolymer of a monomeric mixture comprising a monomeric polymerizable, alpha-beta monoolefinically unsaturated lower aliphatic carboxylic acid, and from about 0.1% to about 10% by weight of the total monomers of a polyether of a polyol selected from the class consisting of oligosaccharides, reduced derivatives thereof in which the carbonyl group is converted to an alcohol group, and pentaerythritol, the hydroxyl groups of said polyol which are modified being etherified with allyl groups said polyol having at least two allyl ether groups per polyol molecule;
(d) a ratio of guar gum material to carboxyvinyl polymer of from about 2.5:1 to about 1:2.5; and
(e) water.

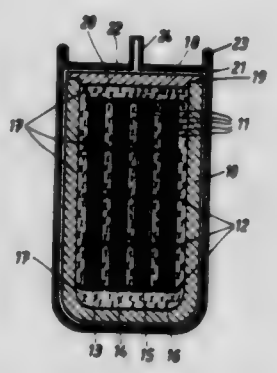
15. The liquid cleansing product of claim 1 wherein said surfactant is selected from the group consisting of alkali metal and ammonium alkyl sulfate, alkali metal and ammonium alkyl ethoxy sulfate, and the monoethanol and diethanol amides of fatty acids, and mixtures thereof.

4,491,540

METHOD OF PREPARING SPENT NUCLEAR FUEL RODS FOR LONG-TERM STORAGE

Hans Larker, Robertsfors, and Ragnar Tegman, Umeå, both of Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Filed Mar. 17, 1982, Ser. No. 358,899
Claims priority, application Sweden, Mar. 20, 1981, 8101778
Int. Cl.³ G21F *9/36*
U.S. Cl. 252—628 15 Claims



1. A method of preparing spent nuclear fuel rods from a nuclear reactor for long-term storage in a copper container, which method comprises the steps of:
embedding the fuel rods in copper powder within the container,
closing the container with a copper lid, and
subjecting the closed container to hot isostatic compression at a pressure and a temperature sufficient to form the container, the powder and the lid into a coherent mass in which the spent fuel rods are embedded.

4,491,541

PEPTIDES

Roberto de Castiglione; Luigia Gozzini, both of Milan; Pier C. Montecucchi, Turin, and Giuseppe Perseo, Desio, all of Italy, assignors to Farmitalia Carlo Erba, Milan

Filed Oct. 18, 1983, Ser. No. 542,974
Claims priority, application United Kingdom, Nov. 10, 1982, 8232080; Apr. 20, 1983, 8310719
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R 3 Claims

1. A peptide of formula (I):

X-A-B-C-TRP-D-Y

wherein
X represents hydrogen, or a terminal nitrogen protecting group selected from formyl, acetyl, trifluoroacetyl, proprionyl, benzoyl, benzyloxycarbonyl, 4-nitrobenzyloxy carbonyl, 4-methoxy-benzyloxycarbonyl, 2, 4, - dichlorobenzyloxy carbonyl, 2-bromobenzyloxycarbonyl, 9-fluorenylmethoxy carbonyl, 3,5-dimethoxy - α α 'dimethylbenzyloxycarbonyl, t-butoxycarbonyl, 1-methyl-cyclobutoxycarbonyl, adamantyloxy carbonyl, isobornyloxy-carbonyl, trityl, benzyl, methyl and isopropyl groups;
A represents a valence bond or an L-α-amino acid residue selected from Phe, Tyr, (4-Cl) Phe and (4-NH_2) Phe residues;
B represents an L-α-imino acid residue or an L-α-amino acid residue selected from Pro, Pyr, Phe and Tyr residues;
C represents an L-α-imino acid residue or a neutral L-α-amino acid residue selected from Pro and Ala residues;
D represents a valence bond or an L-α-amino acid residue selected from Leu, Val, Met, Met(O), Ile and Phe; and,
Y represents hydroxy, an amino group or a group of the formula OR, NHR, NR_2 or NH—NH—R', wherein R represents a group selected from methyl, ethyl, n-propyl, isopropyl, n-butyl, s-butyl, isobutyl, t-butyl 2,2,2-trifluoroethyl, cyclohexyl, adamantyl, phenyl, benzyl and phenethyl group, R' represents a hydrogen atom, any of the groups specifically named in this claim for R, or a formyl, acetyl, trifluoroacetyl, propionyl, butyryl, adamantylcarbonyl, benzoyl, phenylacetyl, cinnamyl, benzyloxycarbonyl, 4-nitrobenzyloxycarbonyl, 4-methoxybenzyloxy-carbonyl, 2,4-dichlorobenzyloxycarbonyl, 2-bromobenzyloxycarbonyl, 9-fluorenylmethoxycarbonyl, 3,5-dimethoxy-α α 'dimethylbenzyloxycarbonyl, t-butoxycarbonyl, 1-methyl-cyclobutoxycarbonyl, adamantyloxycarbonyl or isobornyloxycarbonyl group; and the pharmaceutically or veterinarily acceptable salt thereof.

4,491,542

ORGANIC FILLER OF ANIMAL ORIGIN TO BE USED IN THE PREPARATION OF FRICTION MATERIALS OFFERING A VERY LOW RATE OF WEAR

Michel Cartier, Montbrison, and Georges Cros, Saint Etienne, both of France, assignors to Centre Stephanois de Recherches Mecaniques et Frottement, France

Continuation of Ser. No. 136,105, Apr. 28, 1980, abandoned.
This application Sep. 30, 1982, Ser. No. 431,896
Int. Cl.³ C07G *7/00*; C08J *5/14*
U.S. Cl. 260—123.7 7 Claims

1. A wear resistant composite friction material consisting essentially of a pressed and bonded mixture of about equal amounts by weight of a thermosetting resin, a copper powder, and an organic substance of animal origin substantially comprising a fibrous protein having a high hydroxyproline content.

4,491,543

DIS-, TRIS-, AND TETRAKISAZO COMPOUNDS CONTAINING RESORCINOL, SULFONYLAMINO, AND TWO OR THREE SULFONIC ACID GROUPS

Udo Bergmann, Darmstadt; Guenter Hansen, Ludwigshafen; Dietrich Lach, Friedelsheim; Michael Thomas, Ludwigshafen, and Georg Zeidler, Dannstadt-Schauernheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

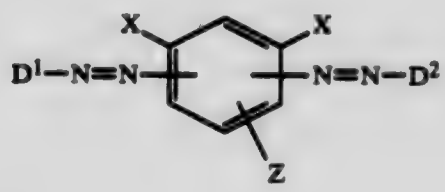
Filed May 21, 1982, Ser. No. 380,711

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3124172

Int. Cl.³ C09B *33/044, 33/22, 33/30, 33/32*

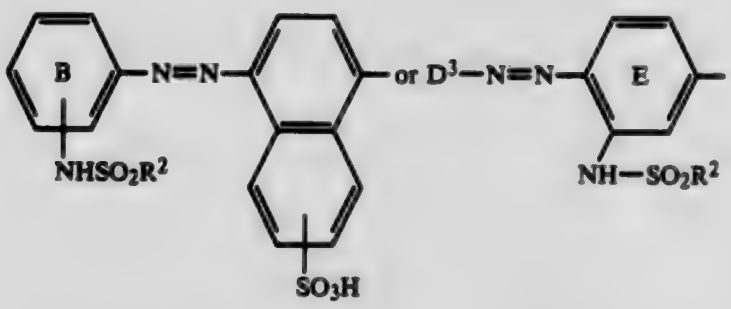
U.S. Cl. 534—677 14 Claims

1. A dye, which is free of reactive groups and contains two or three sulfonic acid groups, of the formula:

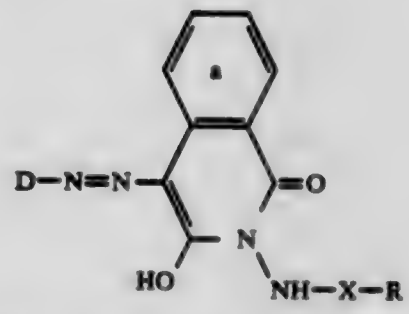


(I)

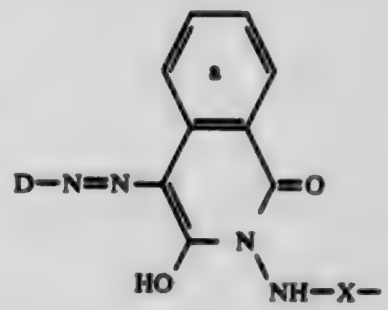
wherein
D^1 is

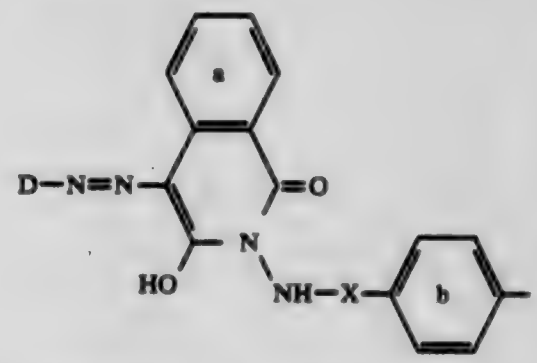


Z is hydrogen or D^4-N=N-;
D^2 is phenyl substituted by hydroxyl, hydroxysulfonyl, chlorine or nitro, or is naphthyl substituted by hydroxy, hydroxysulfonyl or nitro;
X, independently of one antoher, are hydroxyl or amino,
D^3 is phenyl which is substituted by hydroxysulfonyl, chlorine, bromine, methyl, methoxy, ethoxy, nitro, phenylamino, sulfophenylamino or nitrosulfophenylamino, or is naphthyl which is substituted by hdroxysulfonyl;
D^4 is phenyl which is unsubstituted or substituted by methyl, ethyl, methoxy, ethoxy, chlorine, bromine, nitro, sulfamoyl or hydroxysulfonyl, or is naphthyl which is substituted by hdroxysulfonyl; and
R^2 is methyl, ethyl or allyl;
the rings B and E may additionally be substituted by methyl, ethyl, methoxy, ethoxy, chlorine, bromine or hydroxysulfonyl, with the proviso that D^2 has a hydroxyl group ortho to the azo bond; or
the iron, manganese, cobalt, chromium, nickel or copper complexes of this dye.



wherein D is a radical of a heterocyclic or aromatic component selected from the group consisting of aniline, anthraquinone, phthalimide or aminoazobenzene radicals, wherein said radical is unsubstituted or is substituted by fluorine, chlorine, bromine, nitro, C_1–C_4 alkyl, C_1–C_4 alkoxy, trifluoromethyl, cyano, C_1–C_4 alkylsulfonyl, carboxylic acid ester groups, carbamyl, sulfamyl, 1,3,4- or 1,2,4-oxadiazolyl or acylamino groups; X is —CO— or —SO_2—; and R is an aliphatic, aromatic or heterocyclic radical selected from the group consisting of C_1–C_{20} alkyl which is unsubstituted or is substituted by chlorine, bromine, cyano, or dialkyl amino groups; or phenyl or naphthyl groups which are unsubstituted or substituted by fluorine, chlorine, bromine, methyl, ethyl, methoxy, ethoxy, cyano, carbamyl, sulfamyl or benzoylamino; or an amino group; or a radical of the formula:





wherein ring a is unsubstituted or is substituted by nitro, chloro, bromine, or methoxy; and ring b is unsubstituted or is substituted by chlorine, bromine or nitro groups.

4,491,544

DYES HAVING A DIAZO COMPONENT AND AN ISOQUINOLINE COUPLING COMPONENT

Volker Radtke, Hassloch; Heinrich Kowarsch, Oberderdingen; Erwin Hahn, Heidelberg, and Peter Hauser, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 18, 1982, Ser. No. 409,144

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135330

Int. Cl.³ C09B *1/20, 29/00, 29/033, 29/42*

U.S. Cl. 534—655 3 Claims

1. A compound of the formula:

4,491,545

PREPARATION OF 2,3,5-TRIMETHYL-P-BENZOQUINONE

Frank Thoemel, Weinheim, and Werner Hoffmann, Neuhofen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

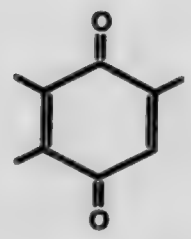
Filed Apr. 6, 1983, Ser. No. 482,416

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1982, 3215095

Int. Cl.³ C07C *50/04*

U.S. Cl. 260—396 R 1 Claim

1. A process for the preparation of trimethyl-p-benzoquinone of the formula I



which comprises dehydrogenating 2,5,6-trimetylcyclohex-2-en-1-one or 2,3,6-trimethylcyclohex-2-en-1-one in an inert organic solvent in the presence of a copper compound, then oxidizing the resulting product in the same inert organic solvent and in the presence of a copper compound, wherein said 2,5,6-trimethylcyclohex-2-en-1-one or 2,3,6-trimethylcyclohex-2-en-1-one is reacted with air or oxygen at from 0° to 150° C. in a substantially anhydrous low molecular weight alkanol in the presence of a catalytic amount of copper (I) oxide or copper (II) oxide and in the presence of from 1 to 10 moles of a hydrogen halide gas per mole of trimethylcyclohexenone, and said reaction mixture, which essentially contains 2,3,6-trimethylphenol or 4-halo-2,3,6-trimethylphenol, or a mixture thereof, is mixed with an alkali metal alcoholate in an amount such that a sample, when moistened with water, has a pH of from 4.0 to 4.4, and is then reacted with air, pure oxygen or tert-butyl hydroperoxide at from 0° to 150° C.

4,491,546

PALLADIUM-LIGAND COMPLEX FOR USE IN CATALYZING THE REACTION OF A MIXTURE OF 1,3-BUTADIENE, CARBON MONOXIDE AND MONOALKANOL TO PROVIDE ALKYL NONADIENOATE ESTER

Ronnie M. Hanes, Milford, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Division of Ser. No. 258,140, Apr. 27, 1981, abandoned. This application Feb. 12, 1982, Ser. No. 348,621

Int. Cl.³ C07F *15/00*

U.S. Cl. 260—429 R 8 Claims

1. A palladium-ligand complex for use in catalyzing the reaction of a mixture of 1,3-butadiene, carbon monoxide and a monoalkanol of the general formula ROH in which R is a straight or branched chain alkyl group of from 1 to about 12 carbon atoms to provide alkyl nonadienoate, said complex being obtained by the process which comprises contacting under complex-forming conditions.

(a) a member selected from the group consisting of zerovalent palladium, a palladium-containing composition which provides zerovalent palladium under reaction conditions and palladium (II) salt;

(b) a strong ligand selected from the group consisting of tertiary phosphine having a pKa in water of not greater than about 6, a phosphate of the general formula $(R^1O)(R^2O)(R^3O)P$ in which each of R^1, R^2 and R^3 is an alkyl group having at least 9 carbon atoms, an aryl group or an alkaryl group, an arsine of the general formula $R^1R^2R^3As$ in which each of R^1, R^2 and R^3 have the aforestated meanings and a stibine of the general formula $R^1R^2R^3Sb$ in which each of R^1, R^2 and R^3 have the aforestated meanings, the mole ratio of said strong ligand to palladium being from about 1:1 to about 3:1; and,

(c) a weak ligand selected from the group consisting of tertiary phosphine having a pKa in water of greater than about 6, a phosphite of the general formula $(R^4O)(R^5O)(R^6O)P$ in which each of R^4, R^5 and R^6 is an alkyl group having less than 9 carbon atoms, an arsine of the general formula $R^7R^8R^9As$ in which each of R^7, R^8 and R^9 is an alkyl group having less than 9 carbon atoms or an alkoxy group and a stibine of the general formula $R^7R^8R^9Sb$ in which each of R^7, R^8 and R^9 have the aforestated meanings, the mole ratio of said weak ligand to palladium being from about 4:1 to about 100:1 thereby providing said palladium-ligand complex.

4,491,547

FLUOROMETHYLTHIOACETIC ACID COMPOUNDS

Teruji Tsuji, Osaka; Hisao Sato, Nara, and Yoshio Hamashima, Kyoto, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Dec. 23, 1981, Ser. No. 333,678

Claims priority, application Japan, Dec. 26, 1980, 55-185781

Int. Cl.³ C07C *153/017, 153/00*

U.S. Cl. 260—455 R 4 Claims

1. A compound selected from the group consisting of monofluoromethylthioacetic acid, difluoromethylthioacetic acid, and a derivative at the carboxy group thereof selected from the group consisting of a light metal salt; an optionally branched, optionally cyclic, optionally unsaturated or optionally substituted C_1 to C_8 alkyl ester; an optionally substituted benzyl or diphenylmethyl ester; an optionally substituted alkylthiolester; an optionally substituted C_1 to C_9 alkylamide or anilide; an acid anhydride with a C_1 to C_6 alkanoic acid or a C_2 to C_6 alkoxyformic acid; and a halide,

in which the substituent is selected from the group consisting of halogen, C_1 to C_4 alkoxy, oxo, nitro, C_1 to C_4 alkyl, C_1 to C_4 alkanoyl and C_2 to C_6 carbalkoxy.

4,491,548

PROCESS FOR PREPARING PHOSPHONOMETHYLATED AMINO ACIDS

Sreeramulu Nagubandi, Bedford Hills, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 28, 1983, Ser. No. 489,627

The portion of the term of this patent subsequent to Mar. 27, 2001, has been disclaimed.

Int. Cl.³ C07F *9/38*

U.S. Cl. 260—502.5 F 15 Claims

1. A process for preparing a phosphonomethylated amino acid comprising:

phosphonomethylating an N-carbamylated amino acid derivative to obtain a phosphonomethylated N-carbamylated amino acid derivative; and hydrolyzing said phosphonomethylated N-carbamylated amino acid derivative to obtain a phosphonomethylated amino acid or acid derivative.

4,491,549

DEVICE FOR DISPERSING A SECOND PHASE IN A FIRST PHASE

Edgar Fischer, Frankfurt am Main, and Wolfgang Sittig, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 20, 1982, Ser. No. 409,942

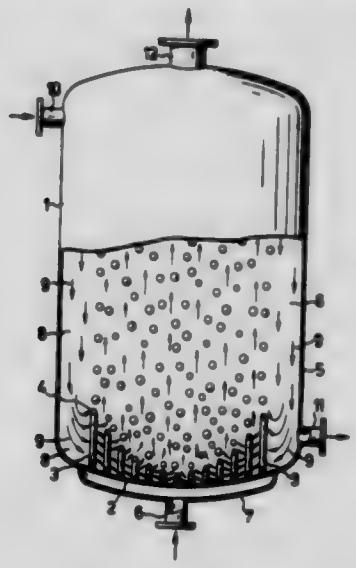
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1981, 3133314

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—36 R 8 Claims

1. A device for dispersing a second phase in a first phase, comprising a vessel containing the first phase having a bottom and inlet means supplying said second phase arranged at the bottom of said vessel, the inlet means including a plurality of inlet pipe elements each rising substantially vertically from said bottom to outlet openings of said inlet means, said pipe element outlet openings having a height over the bottom, and this height decreasing from the periphery of the bottom toward the

center of the bottom, such that at least a portion of the first phase flows past outer ones of said inlet elements towards said



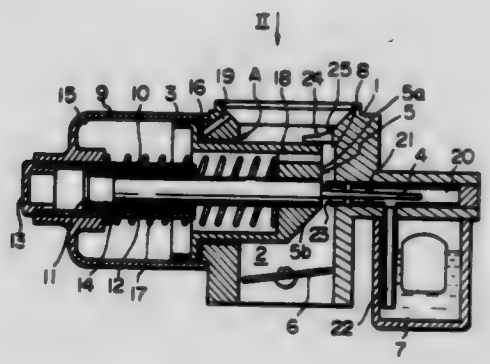
center to ensure even distribution of the first and second phases over the cross section of the vessel.

4,491,550

VARIABLE VENTURI TYPE CARBURETOR

Norihiko Nakamura; Takaaki Itoh, both of Mishima, and Toshiharu Morino, Mie, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Aisan Industry Co. Ltd., both of, Japan

Continuation of Ser. No. 426,832, Sep. 29, 1982, abandoned. This application Jun. 8, 1984, Ser. No. 618,326
Claims priority, application Japan, Feb. 5, 1982, 57-16334
Int. Cl.³ F02M *9/06*
U.S. Cl. 261—44 C 2 Claims



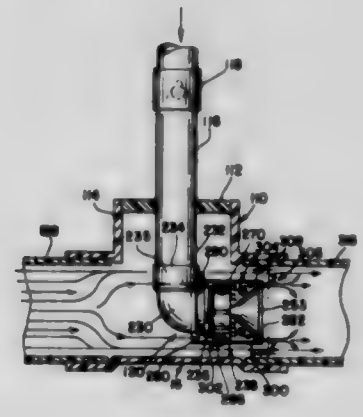
1. A variable venturi-type carburetor comprising:
an axially-extending intake passage formed in the carburetor and having an inner wall and a circular cross section;
a suction piston tranversely movable in said intake passage in response to a change in the amount of air flowing within said intake passage, said suction piston having a tip face which defines a venturi portion in said intake passage and has a flat upstream end portion, the tip face of said suction piston being fully retracted from said intake passage to preclude obstruction of said intake passage when said air flow is large;
a nozzle arranged on the inner wall of said intake passage opposite the tip face of said suction piston;
a needle fixed onto the tip face of said suction piston and extending through said nozzle; and
a raised wall projecting from the inner wall of said intake passage opposite the tip face of said suction piston and being disposed immediately upstream of and adjacent to the upstream end of said suction piston, said raised wall having a tip edge which has an approximately V-shaped cross section expanding toward said intake passage and being disposed for overlapping relationship with the flat upstream end portion of the tip face of said suction piston for defining an approximately isoceles triangular-shaped air inlet control opening between the flat upstream end portion of the tip face of said suction piston and the tip edge of said raised wall when the amount of air flowing within said intake passage is small.

4,491,351

METHOD AND DEVICE FOR IN-LINE MASS DISPERSION TRANSFER OF A GAS FLOW INTO A LIQUID FLOW

Dennis E. J. Johnson, 1025 Garfield Ave., Aurora, Ill. 60506

Continuation-in-part of Ser. No. 325,817, Dec. 2, 1981, Pat. No. 4,382,866, which is a continuation-in-part of Ser. No. 213,829, Dec. 9, 1980, abandoned. This application Dec. 16, 1982, Ser. No. 450,365
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—76 5 Claims



1. A device for in-line dispersion of a gas flow into a liquid flow, said device comprising:
a T-fitting defining in-line liquid inflow and outflow ends and a mounting section intermediate said ends,
said fitting defining between said ends thereof a fluid flow passage,
a standpipe mounted on said fitting at said section in sealed relation to said fitting in fluid flow communicating relation to said fitting passage,
means for connecting the standpipe to a source of gas to be dispersed into a liquid flow passing through said fitting passage,
a sleeve defining inner and outer annular side surfacings and being mounted in said fitting passage in substantially centered relation thereto and extending longitudinally of said passage,
said sleeve defining fluid receiving and discharge ends,
means for affecting substantially laminar flow of the liquid longitudinally of and along one of said sleeve side surfacings between said ends of same, whereby at said discharge end of said sleeve an annular low pressure fluid homogenizing mixing zone is defined,
means for conveying the gas flow from the standpipe into annular relation with said sleeve discharge end whereby the gas flow at said sleeve discharge end is sucked into swirling mixing relation with the liquid flow 360 degrees substantially uniformly about said mixing zone,
said standpipe having a gas flow injector head secured to same and disposed in substantially centered relation in said fitting passage and facing in the direction of the liquid flow,
said head defining said conveyor means,
said head comprising:
an elbow fitting having one end fixed to said standpipe and the other end of same in substantially centered relation in said fitting passage and facing in the direction of the liquid flow,
said sleeve receiving said elbow other end in substantially centered relation thereto,

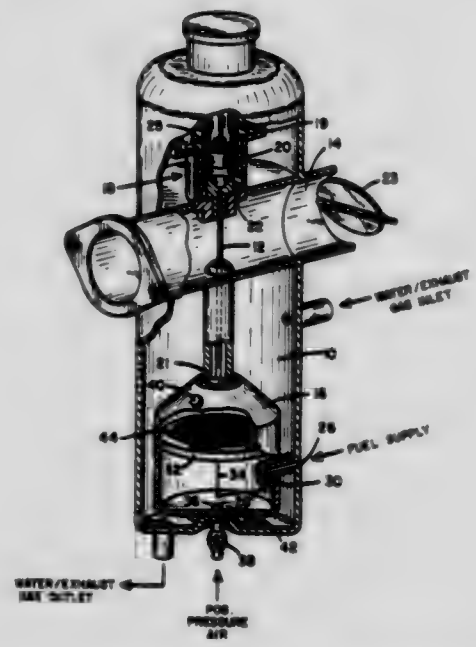
a diffuser member closing off said other end of said elbow and formed to define a plurality of spaced apart orifices, and a funneling member secured to said head within said sleeve down stream of said diffuser member and comprising said conveying means.

4,491,552

PRESSURIZED/HEATED VARIABLE JET CARBURETOR

Tim Wessel, R.R. 2 Box 17, Truman, Minn. 56088

Filed Jul. 5, 1983, Ser. No. 510,775
Int. Cl.[3] F02M *15/02*
U.S. Cl. 261—144 7 Claims



1. An improved carburetor coupled to an internal combustion engine, comprising in combination:

(a) a throttle controlled air intake;

(b) a multi-chambered housing having at least a first and a second chamber, said second chamber mounted in heat transfer relation to said first chamber and said air intake and adapted to receive and exhaust a heated medium;

(c) means for sensing the pressure within said first chamber and producing an associated control signal; and

(d) fuel vaporization means coupled to a fuel supply and contained within said first chamber for controllably vaporizing said fuel and admitting the vaporized fuel to said air intake in response to varying engine demands, said fuel vaporization means including a multi-apertured member mounted in overlying relation to fuel admitted thereto and, including means coupled to a positive pressure air supply and to said pressure sensing means for applying positively pressurized air beneath the surface of the fuel so as to atomize the fuel by forcing it through said multi-apertured member and to vaporize the atomized fuel as it passes from the heated first chamber to the heated air intake and to said engine; and wherein said air admitting means is responsive to said control signal for controllably admitting the air at pressures dependent upon the sensed pressure and engine load conditions.

4,491,553

METHOD FOR PRODUCING FILLER-LOADED THERMOPLASTIC RESIN COMPOSITE

Hisashi Yamada; Masayuki Makise, both of Chiba; Tsutomu Katagiri, Tokyo, and Kaname Abe, Yokohama, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 164,094, Jun. 30, 1980, abandoned. This application Jun. 25, 1982, Ser. No. 392,062
Claims priority, application Japan, Jul. 17, 1979, 54-90657; Mar. 5, 1980, 55-27611
Int. Cl.[3] B29B *1/04;* B29D *27/00*
U.S. Cl. 264—51 14 Claims

2. A method for producing a shaped article of filler-loaded thermoplastic resin composite which comprises (a) from about 20 to 80 parts by weight of a thermoplastic resin, (b) from about 80 to 20 parts by weight of filler and (c) a fibrillatable polytetrafluoroethylene in an amount of from 0.01 to 5% by weight based on the total of the resin and the filler, comprising the steps of

fibrillating the polytetrafluoroethylene by sufficiently mixing the components in particulate form under shearing forces

to form a substantially dehydrated easy-collapsing agglomerate of the components captured in the entanglement of the fibrils of the polytetrafluoroethylene,

then continuing mixing the agglomerate at a temperature higher than the gelation temperature of the resin to form a uniform mixture of melted filler-loaded resin and

shaping the melted filler-loaded thermoplastic resin composite.

4,491,554

ONE PART ACTIVATOR AND BLOWING AGENT FOR FOAMING PLASTICS

Roger G. Hamel, Methuen, and Susan B. Poulin, Woburn, both of Mass., assignors to Thiokol Corporation, Chicago, Ill.

Filed Sep. 27, 1983, Ser. No. 536,332
Int. Cl.[3] B29H *7/20*
U.S. Cl. 264—141 10 Claims

1. A method of making a stable one-part alkali metal borohydride concentrate comprising:

(a) dry blending a mixture of an inert resinous polymer, an alkali metal borohydride, and a salt hydrate;

(b) heating the mixture to a temperature above the melting point of the resin but a temperature less than that which would result in the release of a substantial amount of the water of hydration of the salt hydrate to form a molten mixture;

(c) extruding the molten mixture and cooling to form a solid stable concentrate; and

(d) forming the extruded and cooled concentrate into pellets.

4,491,555

DAMMING OF LOADING COIL CABLE INTERFACE

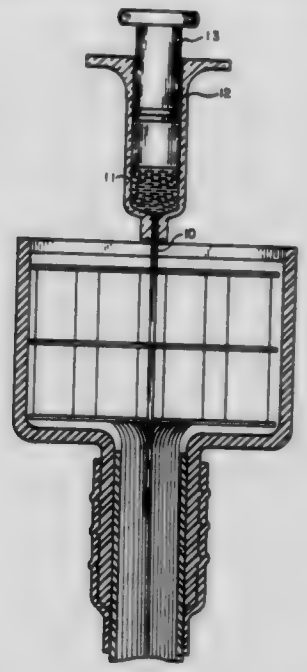
Fay E. Cork, Belvidere, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Dec. 19, 1983, Ser. No. 562,605
Int. Cl.[3] B29C *27/30;* H01B *13/20*
U.S. Cl. 264—240 3 Claims

1. In a method of applying a water repellant substance into a loading coil container including a protruding cable stub; the step of:

injecting a polyurethane system activator through the container a predetermined distance into the cable, thereafter

pouring into said container in a single operation a low viscosity polyurethane, thereby forming a dam at said



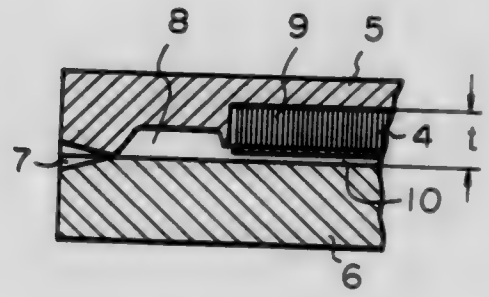
system activator and polyurethane interface and moisture sealing said container simultaneously.

4,491,556

PROCESS AND MOLD UNIT FOR PRODUCING CARPET MAT

Hiromasa Fujii, and Hisakazu Matsui, both of Hiroshima, Japan, assignors to Hiroshima Kasei, Ltd., Hiroshima, Japan

Filed Apr. 13, 1983, Ser. No. 484,514
Claims priority, application Japan, Nov. 13, 1982, 57-199270
Int. Cl.³ B29C *5/00;* B29F *1/10*
U.S. Cl. 264—243 4 Claims



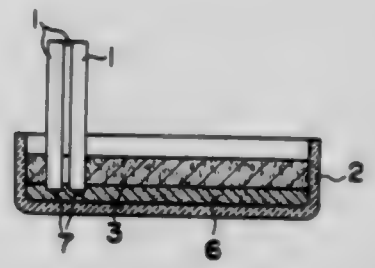
1. A process for injection molding an edged carpet mat base and bonding the base to carpet in situ in the mold, comprising:
(a) providing an injection mold unit having first and second mating molds defining a carpet-accommodating cavity for receiving a carpet; an edge-forming cavity for receiving liquid resin to form the mat edge surrounding the carpet-accommodating cavity and divided therefrom by a peripheral ridge extending between the cavities preventing liquid resin within the edge-forming cavity from entering the carpet-accommodating cavity; and a plurality of grooves for receiving liquid resin to form the mat base extending between opposite sides of the edge-forming cavity along the carpet accommodating cavity;
(b) placing a carpet within the carpet-accommodating cavity so that the carpet is retained in position within the mold unit by the lands of the grooves and the projecting ridge pressing the carpet against the corresponding mating mold;
(c) injecting sufficient molten resin into the edge-forming cavity to fill this cavity and flow into the grooves; and
(d) curing the resin to form a solid edged mat base comprising an edged resin layer with integral ridges bonded to the carpet

4,491,557

METHOD FOR PERMANENTLY CONNECTING DISCRETE STRUCTURAL PARTS

Georg Breitmoser, Groebenzell, and Wilhelm Vogel, Aystetten, both of Fed. Rep. of Germany, assignors to MTU Motoren- und Turbinen-Union München GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 11, 1983, Ser. No. 522,644
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1982, 3230377
Int. Cl.³ B22F *3/10*
U.S. Cl. 419—5 14 Claims



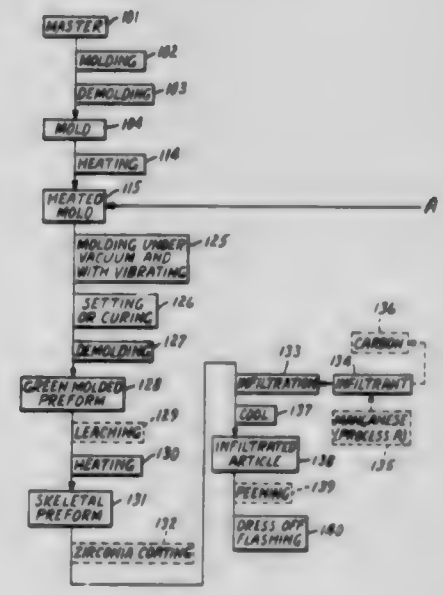
1. A method for undetachably interconnecting discrete structural parts with the aid of a bonding material, comprising the following steps: arranging the structural parts (1) which are to be interconnected in an aligned manner in a hollow mold (2) to form an assembly, filling the interspaces between the hollow mold (2) and the structural parts (1) with at least one sinterable metal powder layer (3), heating the hollow mold (2) together with the structural parts and the metal powder to the sinter temperature of said metal powder for sintering said metal powder, and then cooling said assembly.

4,491,558

AUSTENITIC MANGANESE STEEL-CONTAINING COMPOSITE ARTICLE

Richard N. Gardner, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 5, 1981, Ser. No. 318,430
Int. Cl.³ B22F *3/26, 7/00*
U.S. Cl. 419—23 25 Claims



1. A metal composite article comprising:
(a) a monolithic skeleton consisting essentially of interconnected granules of a ferroalloy of about 1 to about 100 micrometers mean diameter, having a core of martensitic or perlitic steel and an outer layer of austenitic manganese steel; and
(b) a continuous metallic phase occupying the connected porosity in said skeleton, said continuous phase comprising a solid metal or alloy which wets said skeleton and has

a melting point below the melting point of said core of said ferroalloy granules;

with said manganese representing between about 4 percent and about 70 percent of the total weight of said continuous metallic phase plus said manganese of said layer, said article thereby comprising two intermeshed matrices and being substantially free of voids.

15. A process for forming a precision molded composite article, comprising the steps of:

(a) blending granules of iron powder having about 1 to about 100 micrometers mean diameter with up to 50 volume percent of a heat fugitive, organic binder, thereby forming a uniform mixture;

(b) molding the resulting mixture in a heated flexible mold, cooling said mold and its contents to room temperature, and demolding said contents by applying a vacuum to the outside of said mold thereby forming an essentially void-free green molded preform having the size and shape of said mold;

(c) heating said green molded preform to thermally remove said binder and form a rigid, handleable skeletal preform;

(d) placing said skeletal preform in contact with a metal or alloy infiltrant which will wet said skeleton and which has a melting point less than or equal to the melting point of said iron powder;

(e) infiltrating said skeletal preform with said infiltrant by heating said skeletal preform and said infiltrant above the melting point of said infiltrant, but below the melting point of said iron powder, whereby said infiltrant melts and wicks into the connected porosity of said preform by capillary action and fully envelopes said granules of iron powder, with a first proviso that if said iron powder granules are plain iron, then carbon is added to said mixture of step (a), or carbon is present in said infiltrant alloy of step (b), a second proviso that manganese granules are added to said mixture of step (a), or manganese is present in said infiltrant of step (d), and said manganese is about 4 to about 70 percent of the weight of said infiltrant plus the weight of said manganese granules, and a third proviso that said heating of this step (e) is carried out until said manganese diffuses into the outer surface region of said iron powder granules, thereby forming ferroalloy granules consisting essentially of an outer layer of austenitic manganese steel and a core of martensitic or perlitic steel; and

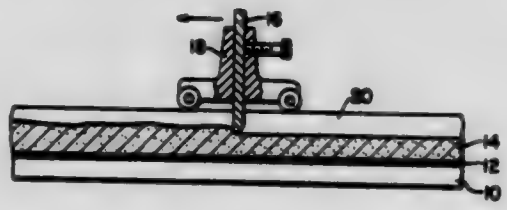
(f) cooling the infiltrated part to room temperature to form a substantially void-free precision molded article.

4,491,559

FLOWABLE COMPOSITION ADAPTED FOR SINTERING AND METHOD OF MAKING

George P. Grab, Greensburg; Grant W. Hood, Jr., Stahlstown, both of Pa.; Sigurd A. Swanson, Shakopee, Minn., and Bela J. Nemeth, Greensburg, Pa., assignors to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 108,968, Dec. 31, 1979, , which is a division of Ser. No. 854,775, Nov. 25, 1979, abandoned, which is a continuation of Ser. No. 409,728, Oct. 25, 1973, abandoned.
This application Apr. 22, 1982, Ser. No. 370,934
Int. Cl.³ B22F *3/00*
U.S. Cl. 419—36 25 Claims



1. The method of making rigid sintered articles from a sinterable powdered material comprising at least one of the class of metals, metal alloys, metal carbides, refractory compounds, and ceramics which comprises: forming a flowable composition by intimately admixing the powdered material with a liquid vehicle which comprises a soluble fugitive binder and a solvent therefor and a surfactant, flowing the composition out to one of a desired shape and/or thickness, avoiding the step of mechanically compacting the article, evaporating the solvent from the composition at a first temperature to form a self-supporting flexible body, and heating the body to a second temperature higher than said first temperature to volatilize the fugitive binder therefrom and sintering the powdered material at a third temperature higher than said second temperature to form a rigid solid article.

4,491,560

LARGE CRYSTAL GRAINS OR SINGLE CRYSTALS OF MOLYBDENUM AND PROCESS FOR PRODUCTION THEREOF

Tadayuki Fujii, Yokohama; Yutaka Hiraoka, Sakura, and Ryoji Watanabe, Matsudo, all of Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Filed Jan. 31, 1984, Ser. No. 575,935
Claims priority, application Japan, Jan. 31, 1983, 58-12928
Int. Cl.³ C22C *27/04*; C22F *1/18*
U.S. Cl. 420—429 23 Claims



1. Large crystal grains or a single crystal of molybdenum composed of molybdenum and at least one trace element selected from the group consisting of calcium and magnesium, the amount of the trace element being 0.003 to 0.12 atomic percent based on the total amount of the components of the large crystal grains or single crystal.

4,491,561

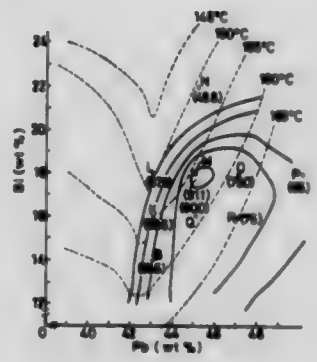
DENTAL ALLOY

Douglass M. Mann, Westport, Conn., assignor to CMP Industries, Inc., Albany, N.Y.

Filed Sep. 12, 1983, Ser. No. 531,429
Int. Cl.³ C22C *19/07*
U.S. Cl. 420—437 4 Claims

1. A dental alloy consisting essentially of from 55 to 65% cobalt, 16 to 24% chromium, 6 to 8% molybdenum, and 2 to 4% each of aluminum and vanadium.

4,491,562
THERMAL FATIGUE RESISTANT LOW-MELTING POINT SOLDER ALLOYS
Tasao Soga, Hitachi; Takaya Suzuki, Katsuta; Masahiro Okamura; Masahiro Gooda, both of Hitachi, and Fumiyuki Kobayashi, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jun. 7, 1983, Ser. No. 501,995
Claims priority, application Japan, Jun. 11, 1982, 57-101254
Int. Cl.[3] C22C *30/04*
U.S. Cl. 420—589 2 Claims



1. A thermal fatigue resistant, low-melting point solder alloy consisting of approximately 18% by weight Bi, approximately 45% by weight Pb, and the remainder being Sn.

4,491,563
PROCESS FOR DEODORIZING A PARAFFINIC HYDROCARBON FEEDSTOCK
Robert E. Reusser; Timothy P. Murtha, and Elizabeth A. Todd, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Dec. 10, 1982, Ser. No. 448,878
Int. Cl.[3] C07C *7/12*; C01B *17/16*; B01J *8/02*
U.S. Cl. 422—5 23 Claims

1. A deodorization process comprising contacting a feedstock with a deodorizing agent at a temperature not exceeding about 150° C.; wherein said feedstock is comprised of at least one paraffin hydrocarbon and contains an odor-causing impurity; wherein said odor-causing impurity is selected from the group consisting of sulfides, mercaptans, olefins and oxygenated olefins; and wherein said deodorizing agent is comprised of a mixture of

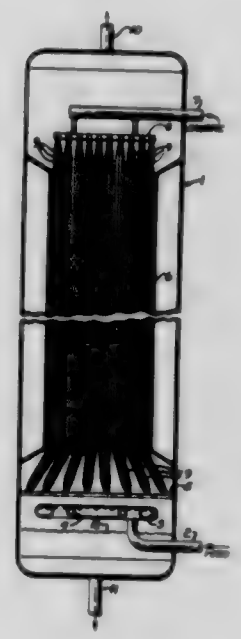
(i) at least one oxide of nickel, and

(ii) at least one oxide of a rare earth metal.

4,491,564
REACTOR CONTAINING A METHANATION CATALYST
Thomas J. Gray, Guilford, Conn., assignor to Olin Corporation, Cheshire, Conn.
Division of Ser. No. 353,534, Mar. 1, 1982,. This application Aug. 22, 1983, Ser. No. 525,354
Int. Cl.[3] B01J *8/02*
U.S. Cl. 422—211 7 Claims

1. In a reactor wherein a gaseous carbon-bearing compound selected from the group consisting of CO, CO_2 and mixtures thereof are converted into methane by a reaction with hydrogen in the presence of a catalyst, the improvement which comprises employing as said catalyst a structure comprised of a Raney metal alloy surface layer integral with and derived from a selected nickel alloy monolithic substrate mesh structure, wherein said surface layer is predominantly derived from an adherent $Ni_xM_{1-x}Al_3$ Beta phase structured crystalline precursory layer where M is a catalytic enhancer selected from the group consisting of molybdenum, titanium, tantalum, ruthenium or mixtures thereof, and where x, the fraction of nickel in the combined weight of Ni and M, is within the range of from about 0.80 to about 0.95.

4,491,565
COUNTERCURRENT LIQUID-LIQUID CONTACTING APPARATUS
Thomas A. Verachtert, Wheeling, Ill., assignor to UOP Inc., Des Plaines, Ill.
Filed Jan. 20, 1983, Ser. No. 459,558
Int. Cl.[3] B01D *11/04*
U.S. Cl. 422—256 4 Claims



1. A liquid-liquid contacting apparatus which comprises:

(a) a vertical enclosed outer vessel having a unitary cylindrical sidewall and an upper and lower end, said vessel having a means defining an upper phase separation zone located at the upper end of said vessel, a means defining a lower phase seperation zone located at the lower end of said vessel and means extending vertically between said upper and said lower phase seperation zones defining an intermediate contact zone having a height equal to at least one-third of the overall height of said outer vessel and having a smaller diameter than the diameter of the unitary cylindrical sidewall;

(b) restraining means located within said lower phase separation zone and supporting means located within said upper phase separation zone;

(c) a mass of contacting strands extending vertically between said supporting means and said restraining means in attachment with said supporting means and said restraining means to prevent vertical movement, said restraining means positioning said contacting strands at an inclination to the vertical axis of said intermediate contacting zone of between 1 and 10 degrees;

(d) said supporting means including a first liquid distribution means which communicates with a first liquid inlet conduit and which is located in said upper phase separation zone, said first liquid distribution means distributing a fluid onto said contacting strands;

(e) a second liquid distribution means which communicates with a second liquid inlet conduit and which is located in said lower phase separation zone, said second liquid distribution means being positioned below said restraining means;

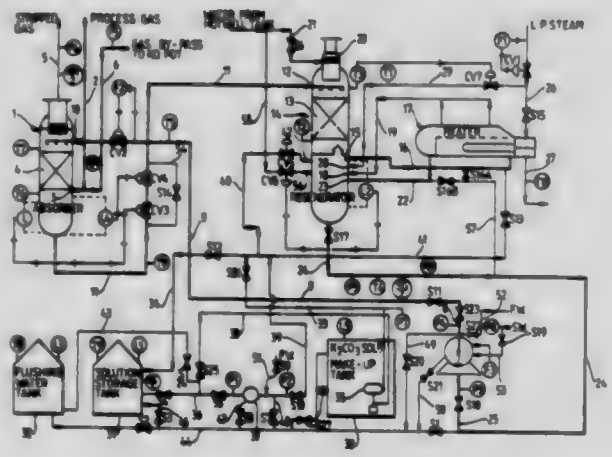
(f) a first liquid outlet conduit communicating with said upper phase separation zone positioned at a point above said first liquid distribution means; and,

(g) a second liquid outlet conduit communicating with said lower phase separation zone positioned at a point below said second liquid distribution means.

4,491,566
AUTOMATIC CO_2 REMOVAL SYSTEM AND OPERATION THEREOF

Keith J. G. Adams, Knowle; Terrance P. Williams, Castle Bromwich; Norman T. Bolt, Iver, and Qazi M. Siddique, London, all of England, assignors to British Gas Corporation, London, England

Filed Apr. 15, 1982, Ser. No. 368,831
Claims priority, application United Kingdom, May 28, 1981, 8116231
Int. Cl.³ B01D *53/34*; G05D *7/00, 9/00*
U.S. Cl. 423—220 38 Claims



1. In a method of operating the CO_2 removal system in a substitute natural gas (SNG) manufacturing plant, in which the manufactured process gas is passed through an absorber column in countercurrent to a stripping liquid which absorbs CO_2 from the process gas and which is then passed through a regenerator column at a lower pressure to liberate the CO_2 and through a steam heated reboiler to reheat the stripping liquid before it is pumped under pressure back to the absorber column, the improvement comprising using a computer to run and control automatically sequences of operations for the start-up, running, and shut-down of the system, the start-up sequence comprising preheating the absorber and the regenerator columns and also the reboiler, supplying and measuring the rate of flow of steam to the reboiler and commencing loop control of the reboiler steam flow rate with a predetermined set point, commencing supply of stripping liquid at a predetermined minimum temperature to the regenerator column from a stripping liquid storage tank, measuring the level of stripping liquid in the regenerator column and commencing loop control of the regenerator liquid level with a predetermined set point, commencing transfer of stripping liquid from the regenerator column to the absorber column by operating a circulating pump when the regenerator liquid level reaches its set point, measuring the level of stripping liquid in the absorber column and commencing loop control of the absorber liquid level with a predetermined set point, commencing transfer of stripping liquid from the absorber column back to the regenerator column when the absorber liquid level approaches its set point, stopping the supply of stripping liquid from the storage tank to the regenerator column when the regenerator liquid level reaches a predetermined maximum value, measuring the rate of flow of the circulating stripping liquid and commencing loop control of the stripping liquid flow rate with a predetermined set point, the running sequence comprising continuing the loop controls and monitoring the concentration of the circulating stripping liquid, the regenerator liquid level loop control causing water or further stripping liquid from the storage tank, depending on whether the concentration of the circulating stripping liquid is above or below a predetermined set point, to be added to the regenerator column when the regenerator liquid level falls below its predetermined set point, and the shut down sequence comprising stopping the flow of process gas through the absorber column, maintaining circulation of the stripping liquid until regeneration of the liquid is complete and the liquid is ready to be stored, stopping the circulating pump, draining the stripping liquid from the absorber and regenerator columns and from the reboiler to the stripping liquid storage tank, supplying flushing water to the regenerator column, commencing transfer of flushing water from the regenerator column to the absorber column by operating the circulating pump when the regenerator liquid level reaches its predetermined set point, stopping the supply of flushing water to the regenerator column when flushing water is detected in the absorber column, commencing transfer of flushing water from the absorber column back to the regenerator column when the absorber liquid level approaches its predetermined set point, stopping the circulating pump, and draining the flushing water from the absorber and regenerator columns and from the reboiler to a flushing water storage tank.

4,491,567
MANUFACTURE OF HYDROXYLAMMONIUM SALTS

Günther Rapp, Ludwigshafen; Erwin Thomas, Freinsheim; Rolf Muenster, Speyer, all of Fed. Rep. of Germany; Brodus E. Caffall, Lake Jackson, Tex.; Philip A. Cyr, Lake Jackson, Tex., and Thomas M. Jones, Lake Jackson, Tex., assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 325,769, Nov. 30, 1981, abandoned, which is a continuation of Ser. No. 942,998, Sep. 18, 1978, abandoned. This application May 31, 1983, Ser. No. 481,000
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743324
Int. Cl.³ C01B *21/20*
U.S. Cl. 423—387 4 Claims

1. A process for the manufacture of hydroxylammonium salts comprising the catalytic reduction of nitric oxide with hydrogen in a dilute aqueous mineral acid in the presence of a suspended platinum catalyst at an elevated temperature, wherein the reaction is carried out in vessels of which the walls consist of conventional copper-containing austenitic chromium-nickel steels consisting of from 16 to 28% by weight of chromium, from 32 to 50% by weight of nickel, from 1 to 4% by weight of molybdenum, from 2.0 to 3.3% by weight of copper and at most 0.1% by weight of carbon, and an amount of titanium which is at least 5 times the amount of carbon but is not more than 1% by weight, or an amount of niobium or tantalum which is at least 8 times the amount of carbon but is not more than 1.5% by weight, the remainder being iron and natural impurities; said steels having been exposed to the reaction medium for about 200 hours, whereby they are passivated and release no materials detrimental to the course of reaction on exposure to the process.

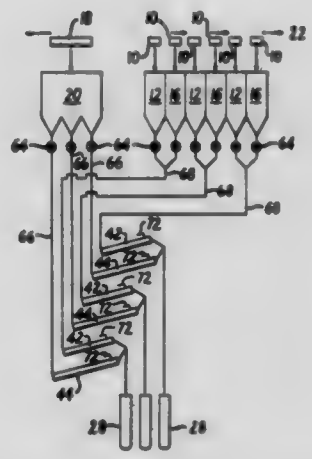
4,491,568
SYSTEM FOR RECYCLING FINES TO HOLLOW ELECTRODE

John F. Bortnik; Donald A. Clayman, both of Ashtabula, and Scott A. Baker, Conneaut, all of Ohio, assignors to Elkem Metals Company, Pittsburgh, Pa.

Filed Jun. 1, 1983, Ser. No. 499,815
Int. Cl.³ C01B *31/32*
U.S. Cl. 423—442 7 Claims

1. A process for feeding finely divided calcium carbide into the aperture of a hollow electrode in a calcium carbide electric furnace which comprises the steps of mixing carbonaceous reducing material with lime to form a fine feed mix, feeding the fine feed mix to the aperture of the hollow electrode, sepa-

rately feeding finely divided calcium carbide to the aperture of the hollow electrode and passing the fine feed mix and calcium



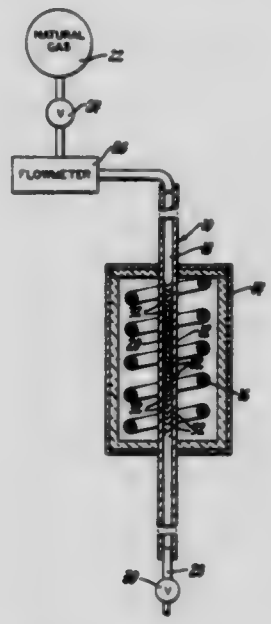
carbide particles down through the aperture into the reaction zone at the bottom of the electrode.

4,491,569

FERRIC NITRATE TREATMENT FOR NUCLEATING GRAPHITE FIBER GROWTH BY METHANE PYROLYSIS

Gary G. Tibbetts, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 20, 1983, Ser. No. 496,482
Int. Cl.[3] C01B *31/04*; D01F *9/12*
U.S. Cl. 423—447.3 3 Claims



1. A process for manufacturing graphite fibers of a type suitable for use as filler in plastic composites, said process comprising

treating a growing surface by evaporating an aqueous ferric nitrate solution in contact therewith to deposit thereon an iron oxide residue,

positioning the treated growing surface in a gas flow path such that the treated surface lies downstream from a region of said path wherein gas caused to flow along said path is brought into contact with stainless steel and further such that the treated surface is exposed to gas caused to flow along said path, and

and

flowing a natural gas stream along said flow path in contact with said stainless steel and thereafter in contact with said growing surface, while heating the gas, stainless steel and growing surface at a temperature sufficient to produce numerous oxide-derived iron-bearing nuclei on said growing surface, to decompose methane in said natural gas adjacent said stainless steel and to react the methane decomposition product with the nuclei to grow graphite fibers.

4,491,570

REMOVAL OF ARSENIC FROM HYDROGEN FLUORIDE

Gregory A. Wheaton, Logan Township, Gloucester County, N.J., and David M. Gardner, Worcester Township, Montgomery County, Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed May 3, 1984, Ser. No. 606,484
Int. Cl.[3] C01B *7/22*
U.S. Cl. 423—484 12 Claims

1. A process for removing arsenic from arsenic contaminated anhydrous hydrogen fluoride which comprises intimately contacting said anhydrous hydrogen fluoride for an effective period of time and in effective amounts with elemental chlorine and a substance selected from the group consisting of anhydrous hydrogen chloride, a fluoride salt and mixtures thereof, and then recovering the anhydrous hydrogen fluoride having a substantially reduced amount of arsenic.

4,491,571

PROCESS FOR PRODUCING HYDROGEN FLUORIDE

Kaichiro Suzuki; Keiichi Nakaya, both of Chiba; Tomohiro Gotoh, Ichihara; Masayuki Kitasako, Ichihara, and Masaharu Iwasaki, Ichihara, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Jun. 6, 1983, Ser. No. 501,119
Claims priority, application Japan, Jun. 11, 1982, 57-99130; Aug. 27, 1982, 57-147828
Int. Cl.[3] C01B *7/19*
U.S. Cl. 423—485 14 Claims

1. A process for producing hydrogen fluoride, comprising:

reacting fluorite wih sulfuric acid, sulfuric acid anhydride and steam in a first reactor under conditions in which the temperature within the reactor is maintained within the range of 140° to 240° C. by the exothermic interaction of steam with sulfuric acid anhydride and sulfuric acid and by the steam itself while attaining a fluorite conversion level ranging from 35 to 90%; and

discharging the contents of the first reactor into a second reactor where the conversion of fluorite to hdyrogen fluoride is completed.

4,491,572

PROCESS FOR PREPARING SULFUR DIOXIDE

Harry O. Burrus, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

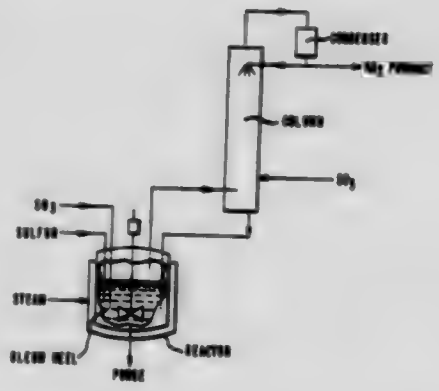
Continuation-in-part of Ser. No. 448,609, Dec. 10, 1982, abandoned, which is a continuation of Ser. No. 188,240, Sep. 26, 1980, abandoned, which is a continuation-in-part of Ser. No. 106,253, Dec. 21, 1979, abandoned. This application Oct. 27, 1983, Ser. No. 546,153
Int. Cl.[3] C01B *17/48*
U.S. Cl. 423—539 4 Claims

1. In a process for preparing sulfur dioxide wherein stoichiometric amounts of liquid sulfur and liquid sulfur trioxide are continuously added to a reaction medium which is sulfuric acid containing 10–65%, by weight, of sulfur trioxide, the improvements which permit production of extremely pure sulfur dioxide and comprise

(a) maintaining the reaction medium at a temperature of 100°–150° C. and a pressure of 483–3447 kPa during the reaction,

and

(b) withdrawing the product sulfur dioxide from the reaction medium and rectifying it in a column, countercurrent to a



reflux stream at a reflux ratio of 0.5–2, at a temperature of 35°–110° C. and a pressure of 483–3447 kPa gauge.

4,491,573

PROCESS FOR HEATING HYDROGEN

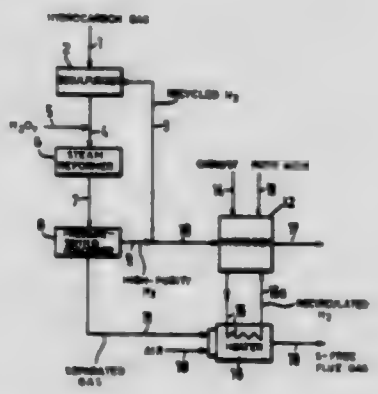
Hans-Martin Stöhner, Schwalbach, and Friedemann Marschner, Oberursel, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 19, 1984, Ser. No. 590,690

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1983, 3310902

Int. Cl.³ C01B *3/26*

U.S. Cl. 423—652 6 Claims



1. A method of heating hydrogen under a pressure of 200 to 400 bars to a temperature between 250° and 500° C. which comprises the steps of:

(a) forming a hydrogen-containing gas by the catalytic reaction of desulphurized hydrocarbons with water vapor at a temperature of 700° to 1200° C.;

(b) subjecting said hydrogen-containing gas to separation in a pressure swing adsorber to produce a high-purity hydrogen and a separated gas containing combustible constituents;

(c) circulating hydrogen through a pipeline at a pressure of 200 to 400 bars; and

(d) heating a recirculated hydrogen in said pipeline in a fuel-fired heater along said pipeline by combustion of said separated gas.

4,491,574

REDUCTION OF HIGH DOSE ASPIRIN TOXICITY BY DIETARY VITAMIN A

Eli Seifter, New Hyde Park, and Giuseppe Rettura, Bronx, both of N.Y., assignors to Albert Einstein College of Medicine of Yeshiva University, a division of Yeshiva University, Bronx, N.Y.

Filed Mar. 2, 1983, Ser. No. 471,498

Int. Cl.³ A61K *31/605, 31/615*

U.S. Cl. 424—10 15 Claims

1. A method for reducing toxicity and inhibiting ulcerogenesis and bleeding in the stomach of a mammal due to the ingestion of aspirin, comprising the concomitant ingestion of an amount of vitamin A or a precursor of vitamin A effective to reduce toxicity and inhibit ulcerogenesis and bleeding in the stomach of a mammal due to the ingestion of aspirin, the amount being such as to provide a daily dosage greater than 10,000 I.U. but less than a toxic amount of vitamin A or vitamin A precursor.

4,491,575

COMPRESSED PRODUCTS WITH RETARDED RELEASE OF ACTIVE SUBSTANCE, A PROCESS FOR THEIR PREPARATION AND A PROCESS FOR THE LONG-TERM ADMINISTRATION OF MEDICAMENTS

Werner Korsatko, Graz, Austria, assignor to Chemie Linz Aktiengesellschaft, Linz, Austria

Filed Oct. 6, 1983, Ser. No. 539,720

Claims priority, application Austria, Oct. 15, 1982, 3791/82

Int. Cl.³ A61K *9/22, 9/26, 9/32, 31/74*

U.S. Cl. 424—19 13 Claims

1. Compressed products with retarded release of active substance for long-term oral or parenteral administration of medicaments, containing a homogeneous mixture of a pharmaceutically active substance in a therapeutically effective amount with at least 20% by weight of poly-D(-)-3-hydroxybutyric acid relative to the amount of active substance.

4,491,576

POLYOXYETHYLENE DERIVATIVES AS ANTIPRURITIC ECTOPARASITICIDE

Myron J. Lover, Mountainside; Arnold J. Singer, South Orange; Donald M. Lynch, Waldwick, and William E. Rhodes, III, Cranford, all of N.J., assignors to Block Drug Company, Inc., Jersey City, N.J.

Division of Ser. No. 4,229, Jan. 17, 1979, Pat. No. 4,372,977, which is a continuation of Ser. No. 802,012, May 31, 1977, abandoned. This application Sep. 30, 1982, Ser. No. 429,457

Int. Cl.³ A61K *31/74*

U.S. Cl. 424—78 11 Claims

1. A method of controlling ectopoarasites or their ova which comprise applying to a human or animal host in need of such control, an effective toxic amount of at least one derivative of polyoxyethylere having an HLB of about 2.5–13.5, said derivative being a block copolymer of polyoxyethylene and polyoxypropylene or ethlylenediamine.

4,491,577

ANTAGONISTS OF THE ANTIDIURETIC ACTION OF ARGININE VASOPRESSIN

Maurice Manning, Toledo, Ohio, and Wilbur H. Sawyer, Scarsdale, N.Y., assignors to The Medical College of Ohio, Toledo, Ohio and The Trustees of Columbia University, New York, N.Y.

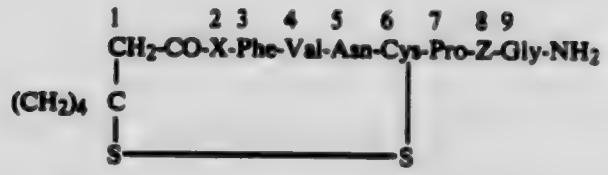
Continuation-in-part of Ser. No. 322,071, Nov. 16, 1981, Pat. No. 4,399,125. This application Jan. 5, 1983, Ser. No. 455,866

The portion of the term of this patent subsequent to Jan. 4, 2000, has been disclaimed.

Int. Cl.³ A61K *37/00;* C07C *103/52*

U.S. Cl. 424—177 32 Claims

1. A compound of the formula



wherein X is (D- or L-)Tyr(R), D-Tyr, D-Phe, D-Val, D-Leu, D-Ile, D-Arg, D-Gln, D-Asn, D-NVa, D-Nle, D-Cha, D-Abu, D-Thr or D-Met; R is methyl, ethyl, propyl or butyl and Z is L- or D-Arg.

4,491,578

METHOD OF STIMULATING SATIETY IN MAMMALS

Steven R. Peikin, 510 Lombard St., Philadelphia, Pa. 19147

Continuation-in-part of Ser. No. 388,088, Jun. 14, 1982, abandoned. This application Jul. 25, 1983, Ser. No. 516,937

Int. Cl.³ A61K *37/00, 31/27, 31/24*

U.S. Cl. 424—177 2 Claims

1. A method of stimulating satiety in mammals by administering to them a therapeutically effective amount of a trypsin inhibitor which stimulates the release of cholecystokinin.

4,491,579

PEPTIDES

Hendrik M. Greven, Almen, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

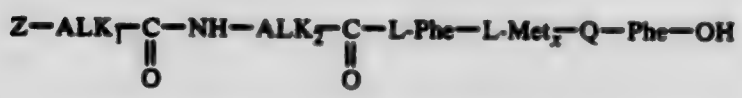
Filed Nov. 1, 1983, Ser. No. 547,438

Claims priority, application Netherlands, Nov. 10, 1982, 8204346

Int. Cl.³ A61K *37/00;* C07C *103/52*

U.S. Cl. 424—177 5 Claims

1. A peptide having the general formula:



or a functional derivative thereof, wherein

Z represents hydrogen or amino,

ALK_1 represents an alkylene or alkylidene group having 1–6 carbon atoms,

ALK_2 represents an alkylidene group with 1–6 carbon atoms,

Met_x represents the aminoacid radical Met, Met(O) or Met-(O_2) and

Q represents the aminoacid radical Lys or Arg, with the proviso that one of the aminoacid radicals

Q and the C-terminal Phe is in the D-configuration and the other has the L-configuration.

4,491,580

AZABICYCLO[2.1.0] ANTIBIOTICS

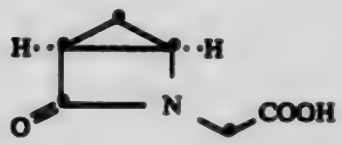
Thomas N. Salzmann, North Plainfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 2, 1982, Ser. No. 365,068

Int. Cl.³ C07D *205/08, 205/12;* A61K *31/395*

U.S. Cl. 424—244 4 Claims

1. A compound of the structure



and pharmaceutically acceptable salts and esters thereof, said salts and esters being those known in the bicyclic β-lactam antibiotic art.

3. An antibacterial pharmaceutical composition comprising a therapeutically effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier therefor.

4,491,581

4-(2,1,3-BENZOXADIAZOL-4-YL)-1,4-DIHYDROPYRIDAZINE DERIVATIVES, THEIR PRODUCTION AND PHARMACEUTICAL COMPOSITIONS

Arnold Vogel, Riehen, Switzerland, assignor to Sandoz Ltd., Basle, Switzerland

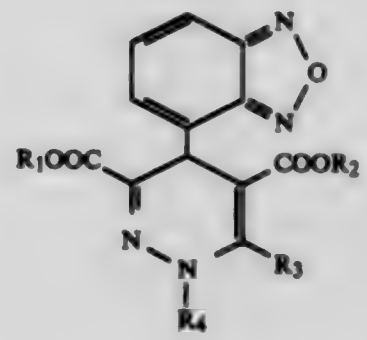
Filed Oct. 28, 1982, Ser. No. 437,280

Claims priority, application Switzerland, Nov. 3, 1981, 7023/81

Int. Cl.³ A61K *31/50;* C07D *413/10*

U.S. Cl. 424—250 7 Claims

1. A compound of the formula



wherein

R_1 and R_2 are, independently, (C_{1-12})alkyl, (C_{3-6})alkenyl, (C_{3-6})alkynyl, (C_{3-7}) cycloalkyl, (C_{4-8})cycloalkylalkyl, (C_{3-12})alkoxyalkyl, (C_{3-12})alkylthioalkyl, (C_{2-6})hydroxyalkyl, (C_{4-8})hydroxyalkoxyalkyl, phenyl or (C_{7-10})phenylalkyl;

R_3 is hydrogen or (C_{1-6})alkyl; and

R_4 is hydrogen, (C_{1-6})alkyl, (C_{3-6})alkenyl, (C_{3-6})alkynyl, (C_{3-7})cycloalkyl, (C_{4-8})cycloalkylalkyl, (C_{7-9})phenylalkyl or (C_{9-12})phenylalkenyl, the phenyl ring being unsubstituted or mono-, di- or trisubstituted independently by halo, hydroxy, (C_{1-4})alkyl or (C_{1-4})alkoxy.

7. A method of treating coronary insufficiency which comprises administering a therapeutically effective amount of a compound of claim 1 to a subject in need of such treatment.

4,491,582

N-(SUBSTITUTED PIPERAZINO)-1,4-DIHYDROPYRIDINE-3,5-CARBOXYLIC ACID

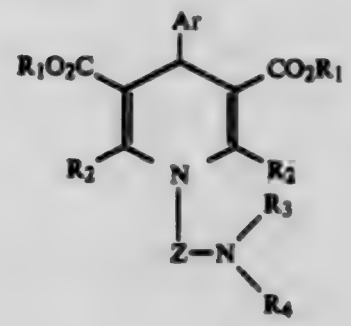
Bernard Loev, Scarsdale; Howard Jones, Ossining, both of N.Y., and John T. Suh, Greenwich, Conn., assignors to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed Mar. 3, 1983, Ser. No. 471,594

Int. Cl.³ C07D *403/06;* A61K *31/495*

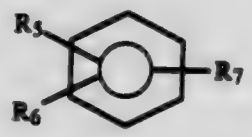
U.S. Cl. 424—250 15 Claims

1. A compound of the formula



wherein Ar is heteroaryl selected from the group consisting of thiophene, furan, pyridine, thiazole, pyrimidine, pyrrole, benzofuran, quinoline and benzothiophene, cycloalkyl having

from 3 to 7 carbon atoms, naphthyl, indanyl, indenyl, tetrahydronaphthyl, or a radical of the formula



wherein each of R_5, R_6 and R_7 is independently H, alkyl, phenyl, tolyl, naphthyl, halo, lower alkoxy, nitro, amino, alkylmercapto, cyano, carboxy, carbalkoxy, sulfamyl, trifluoromethyl, hydroxy, methanesulfonyl, or alkylamino and R_5 and R_6 when taken together, form a methylenedioxy; Z is alkylene containing 1 to about 5 carbon atoms in the principal chain; each R_1 is independently hydrogen, alkyl or alkoxyalkyl, with the proviso that only one R_1 may be hydrogen; R_2 is lower alkyl; and wherein N, R_3 and R_4 when taken together form piperazinyl; wherein the alkyl of the alkyl, carbalkoxy, alkylamino, alkoxy, alkylmercapto, alkylamino, and alkoxyalkyl contains 1–10 carbon atoms.

4,491,583

INTERFERON INDUCTION IN ANIMALS BY AMINES

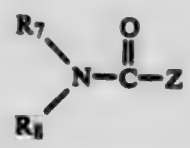
Timothy H. Cronin, Niantic; Hermann Faubl, Groton; William W. Hoffman, Mystic, and James J. Korst, Old Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 209,868, Nov. 24, 1980, abandoned, which is a division of Ser. No. 877,116, Feb. 13, 1978, Pat. No. 4,258,061, which is a division of Ser. No. 687,514, May 18, 1976, Pat. No. 4,087,552, which is a division of Ser. No. 541,240, Jan. 15, 1975, abandoned, which is a division of Ser. No. 330,042, Feb. 6, 1973, Pat. No. 3,872,171, which is a continuation-in-part of Ser. No. 146,548, May 24, 1971, abandoned, which is a continuation-in-part of Ser. No. 62,192, Aug. 7, 1970, abandoned. This application Jul. 18, 1983, Ser. No. 514,670

Int. Cl.³ A61K *31/495*; C07D *241/04*

U.S. Cl. 424—250 4 Claims

1. A process for inducing the production of endogenous interferon in a vertebrate animal which comprises parenterally, intranasally or topically adminstering to the animal an interferon-inducing effective amount of composition containing as the essential active ingredient a compound of the formula



or a non-toxic acid addition salt thereof wherein R_7 and R_8 are each alkyl of from 12 to 20 carbon atoms and Z is selected from the group consisting of N-(lower alkyl)-piperazino and N-(ω-hydroxy-lower alkyl)-piperazino, said lower alkyl groups having from 1 to 4 carbon atoms.

4,491,584

ETHOXYPHENYL PIPERIDINES AND USES THEREOF

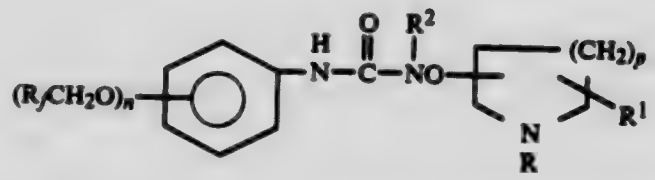
Elden H. Banitt, Woodbury, Minn., assignor to Riker Laboratories, St. Paul, Minn.

Division of Ser. No. 17,588, Mar. 5, 1979, abandoned, which is a division of Ser. No. 853,286, Nov. 21, 1977, Pat. No. 4,154,941, which is a division of Ser. No. 739,612, Nov. 8, 1976, Pat. No. 4,071,524. This application Nov. 19, 1981, Ser. No. 323,055

Int. Cl.³ C07D *211/26, 211/28*; A01N *31/44*

U.S. Cl. 424—263 20 Claims

1. A method for treatment and prevention of arrhythmias comprising administering an effective dose less than the toxic amount of a compound of the formula



wherein R_f is a perfluoroalkyl radial containing one to three carbon atoms, n is one to three, p is one or two, Q is a carbon-nitrogen bond, methylene or methylmethylene, R and R^1 are hydrogen, methyl or ethyl, and R^2 is lower alkyl or hydrogen, provided that when Q is a carbon-nitrogen bond it is bonded to the 3 position of the heterocyclic ring and when it is methylene or methylmethylene it is bonded to the 2 position of the heterocyclic ring, and pharmaceutically acceptable salts thereof.

4,491,585

COMBATING PESTS WITH NOVEL PHENOXYPYRIDYLMETHYL ESTERS

Rainer Fuchs, Wuppertal; Ingeborg Hammann, Cologne; Bernhard Homeyer, Leverkusen, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

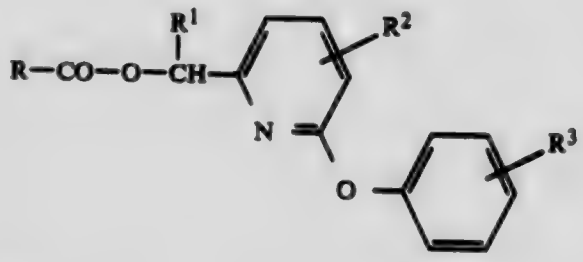
Filed Mar. 5, 1982, Ser. No. 355,044

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1981, 3111644

Int. Cl.³ C07D *213/64*; A01N *43/40*

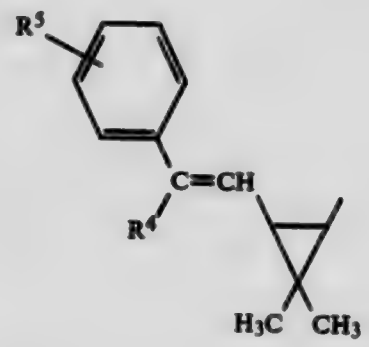
U.S. Cl. 424—263 9 Claims

1. A phenoxypyridylmethyl ester of the formula

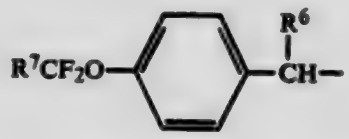


in which

R is



or



R^1 is a hydrogen atom, cyano, or an alkyl, alkenyl or alkinyl group containing up to 4 carbon atoms and optionally substituted by halogen,

R^2 and R^3 each independently is a hydrogen or halogen atom,

R^4 is a hydrogen, chlorine or bromine atom, a cyano group or an optionally halogen-substituted alkyl group of up to 4 carbon atoms,

R^5 is a hydrogen or halogen atom or an optionally halogen-substituted alkyl or alkoxy group of up to 4 carbon atoms,

R^6 is an isopropyl or cyclopropyl group, and
R^7 is a hydrogen or fluorine atom, or a trifluoromethyl or group.

4,491,586

AMINE DERIVATIVES

Roger Hayes, Potters Bar, England, assignor to Glaxo Group Limited, London, England

Filed Dec. 16, 1982, Ser. No. 450,479
Claims priority, application United Kingdom, Jun. 5, 1980, 8018403; Aug. 27, 1980, 8027742
Int. Cl.³ A61K *31/445*; C07D *211/14*
U.S. Cl. 424—267 7 Claims

1. A compound of the formula (I)

$$R_1R_2N-Alk\text{-}Q\text{-}X(CH_2)_nY(CH_2)_mNHCNHR_3 \quad (I)$$
$$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad \| \\ \qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad Z$$

an physiologically acceptable salts and hydrates thereof in which

R_1 represents hydrogen, C_{3-8} cycloalkyl, ar C_{1-16} alkyl, wherein ar is phenyl or phenyl substituted with one or more C_{1-3} alkyl or C_{1-3} alkoxy groups or halogen atoms; trifluoro C_{1-6} alkyl, heteroaralkyl wherein the heterocyclic portion represents a furyl, thienyl, pyrrolyl, pyridinyl, pyrimidinyl, triazinyl, oxazolyl, triazolyl, or thiazolyl ring and the alkylene portion is methylene, ethylene or propylene, with the heterocyclic ring linked to the alkylene chain through either carbon or nitrogen, or R_1 represents C_{1-6} alkyl substituted by C_{3-8} cycloalkyl, or a C_{1-16} straight or branched saturated or unsaturated alkylene chain optionally substituted by a hydroxy, amino, C_{1-6} alkylamino, di-C_{1-6} alkylamino, ester (—CO_2R_2 where R_6 is a C_{1-3} alkyl group) or carboxamide ($CONH_2$) group, or R_1 represents a C_{1-16} straight or branched saturated or unsaturated alkylene chain interrupted by an oxygen atom, sulphur atom, sulphoxide, sulphone, amide (—COHN—or —NHCO—) or ester (—COO—or —OCO—) group with the proviso that when the alkylene chain is interrupted by an oxygen or sulphur atom, or a sulphoxide, —CONH—or —COO—group then there must be at least two carbon atoms between that group and the nitrogen atom to which the group R_1 is attached;

R_2 represents hydrogen or a C_{1-4} alkyl group;

or R_1 and R_1 together with the nitrogen atom to which they are attached form a pyrrolidino, piperidino, hexamethylenimino, heptamethylenimino, tetrahydropyridino, 4-hydroxypiperidino, 4-C_{1-3} alkylpiperidino, 4-hydroxypiperidino, 4-C_{1-3} alkylpiperidino, morpholino, 2,6-di-C_{1-3} alkylmorpholino or thiomorpholino;

Alk represents a straight or branched alkylene chain of 1 to 6 carbon atoms;

Q represents a furan or thiophen ring in which incorporation into the rest of the molecule is through bonds at the 2- and 5-positions, the furan ring optionally bearing a further substituent R_4 adjacent to the group R_1R_2-N- Alk-, or Q represents a benzene ring in which incorporation into the rest of the molecule is through bonds at the 1-and 3-or 1-and 4-positions;

R_4 represents halogen, or C_{1-4} alkyl which may be substituted by hydroxy or C_{1-4} alkoxy;

X and Y, which may be the same or different, each represent oxygen or sulphur, or one of X and Y represents -CH_2- and the other represents oxygen or sulphur;

n and m, which may be the same or different, each represents 2 or 3;

R_3 represents hydrogen, C_{1-6} alkyl, C_{3-6} alkenyl, C_{3-6} alkynyl, ar C_{1-6} alkyl wherein ar is phenyl or phenyl substituted with one or more C_{1-3} alkyl or C_{1-3} alkoxy groups or halogen atoms; or C_{1-6} alkoxy C_{1-6} alkyl; and

Z represents $CHNO_2$.

6. A method of treating a condition mediated through histamine H_2-receptors which comprises administering to a patient an effective amount of a compound according to claim 1 to relieve said condition.

4,491,587

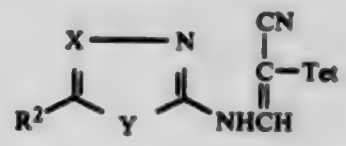
TETRAZOLE DERIVATIVES

Robert R. Covington; Davis L. Temple, Jr., both of Evansville, and Joseph P. Yevich, Newburgh, all of Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Division of Ser. No. 903,265, May 5, 1978, Pat. No. 4,223,031. This application Jul. 11, 1980, Ser. No. 167,552
Int. Cl.³ C07D *257/04*
U.S. Cl. 424—269 4 Claims

1. A compound selected from the group consisting of a compound of Formula IV

Formula IV



wherein

X is N or CR^3,

Y is S, or NH with the proviso that when Y is S, X is CR^3,

Tet is 1H-tetrazol-5-yl;

R^2 and R^3 are independently selected from H, the substituent A, or taken together with the carbon atoms to which they are attached denote cycloalkyl or cycloalkenyl having 5 to 7 ring members and up to 2 ring substituents, benzo, mono-substituted benzo, or di-substituted benzo wherein said substituents are independently defined by A, and

A is selected from the group consisting of alkyl, alkenyl, alkynyl, alkoxy, alkenoxy, alkanoyl, alkenoyl, alkylsulfonyl, alkylsulfinyl, alkylthio, alkanoamido, cycloalkyl having 3 to 6 ring members and 1 to 3 optional alkyl substituents, cycloalkylalkyl having 3 to 6 ring members and 1 to 3 optional alkyl substituents, wherein each of the foregoing groups has up to 8 carbon atoms, phenyl, phenylmethyl, trifluoromethyl, nitro, amino, hydroxyl, halogen, carbamoyl, cyano, and cyanoalkyl having from 2 to 4 carbon atoms.

4,491,588

TREATMENT OF PSORIASIS AND SEBORRHEIC DERMATITIS WITH IMIDAZOLE ANTIBIOTICS

E. William Rosenburg, Memphis, and Patricia W. Belew, Germantown, both of Tenn., assignors to University of Tennessee Research Corporation, Knoxville, Tenn.

Continuation-in-part of Ser. No. 363,845, Mar. 31, 1982, abandoned. This application Mar. 17, 1983, Ser. No. 474,214
Int. Cl.³ A61K *31/415*
U.S. Cl. 424—273 R 7 Claims

1. A method of treating psoriasis or seborrheic dermatitis in humans comprising the oral administration of an effective, lesion reducing, amount of an imidazole antibiotic to said humans, said imidazole antibiotic being selected from the group consisting of ketoconazole and metronidazole.

4,491,589

AMINO ACID SOLUTIONS FOR PARENTERAL NUTRITION AND METHODS OF FORMULATION AND USE

Ralph B. Dell, New York, N.Y.; Robert W. Winters, Summit, N.J., and William C. Heird, New York, N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation-in-part of Ser. No. 378,743, May 17, 1982, abandoned. This application Apr. 29, 1983, Ser. No. 487,409
Int. Cl.³ A61K *31/40, 31/195*
U.S. Cl. 424—274 22 Claims

1. A method of supplying amino acids to a patient, compris-

ing parenterally administering to said patient an aqueous amino acid solution having an amino acid content consisting essentially of

1.03–3.30	mM/dl L-threonine
3.03–4.13	mM/dl L-valine
3.62–10.63	mM/dl L-leucine
1.76–4.12	mM/dl L-isoleucine
0.41–6.55	mM/dl L-lysine
0.55–1.66	mM/dl L-methionine
0–3.00	mM/dl L-cysteine
0.43–5.48	mM/dl L-histidine
1.07–2.09	mM/dl L-phenylalanine
0–1.32	mM/dl L-tyrosine
0.20–0.98	mM/dl L-tryptophan
1.46–6.76	mM/dl L-arginine
0.81–2.71	mM/dl L-serine
1.06–4.42	mM/dl L-proline
1.92–4.44	mM/dl glycine
1.30–4.66	mM/dl L-alanine
0–2.40	mM/dl L-aspartic acid
0.31–2.55	mM/dl L-glutamic acid.

4,491,590

ALLYLSULFOXIDE ENZYME INHIBITORS

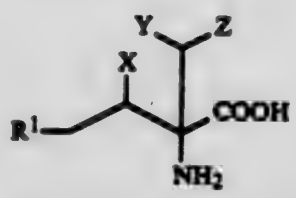
Raymond A. Firestone, Fanwood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 349,809, Feb. 18, 1982, Pat. No. 4,400,395, which is a division of Ser. No. 147,656, May 7, 1980, Pat. No. 4,332,813, which is a continuation-in-part of Ser. No. 66,603, Aug. 15, 1979, abandoned. This application May 26, 1983, Ser. No. 498,344

Int. Cl.³ A61K *31/405*; C07D *209/20*

U.S. Cl. 424—274 6 Claims

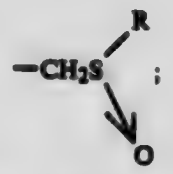
5. A method of inhibiting enzymes in a patient in need of such treatment which comprises the administration of an enzyme inhibitory amount of a compound of structural formula:



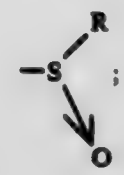
or a pharmaceutically acceptable salt thereof wherein X is hydrogen, fluoro, chloro, bromo, iodo, C_{2-4} alkanoyloxy, toluenesulfonyloxy, benzenesulfonyloxy, C_{1-3} alkanesulfonyloxy, p-nitrobenzoyloxy, or



Y is hydrogen or



and Z is fluoro, chloro, bromo, iodo. C_{2-4} alkanoyloxy, toluenesulfonyloxy, benzenesulfonyloxy, C_{1-3} alkanesulfonyloxy, p-nitrobenzoyloxy, or



or Y and Z taken together form $=CH_2$; with the proviso that one and only one of X, Y and Z is a sulfoxide, and one and only one of X and Z is halo; wherein
R is nitrophenyl, and
R^1 is 5-hydroxyindol-3-yl.

4,491,591

ANTITHROMBOTIC AGENT

Sanders L. Abrahams, Raleigh, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

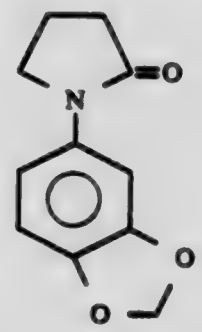
Filed Jul. 12, 1983, Ser. No. 512,910

Claims priority, application United Kingdom, Jul. 16, 1982, 8220651

Int. Cl.³ A61K *31/40*

U.S. Cl. 424—274 3 Claims

1. A method of inhibiting platelet aggregation in the blood of a mammal comprising the addition of an effective platelet aggregation inhibiting amount of the compound of Formula (I)



(I)

to said blood.

4,491,592

METHOD FOR TREATMENT OF INFLAMMATION

Yoshinori Katoh, Misato; Tetsuya Tajima, Nagareyama; Isao Yamatsu; Takeshi Suzuki, both of Ushikumachi; Shinya Abe, Kukizakimura; Akiharu Kajihara, Yatabemachi, and Tohru Sugitani, Abiko, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1983, Ser. No. 543,184

Claims priority, application Japan, Oct. 21, 1982, 57-183641

Int. Cl.³ A61K *31/20*

U.S. Cl. 424—318 9 Claims

1. A method of treating a subject suffering from arthritic or rheumatic disorder characterized by joint inflammation, comprising administering to said subject a therapeutically effective amount of 3,7,11,15-tetramethyl-2,4,6,10,14-hexadecapentaenoic acid of the formula:



or a pharmaceutically acceptable salt thereof.

4,491,593

COMPOSITIONS AND METHODS FOR FERTILITY CONTROL

Alfredo J. Gallegos, 209 Calzada General Anaya, Mexico City, Mexico

Filed Jan. 27, 1983, Ser. No. 461,377
Int. Cl.³ A61K *31/19*
U.S. Cl. 424—317 25 Claims

1. A method of effecting an alteration in the reproductive system of a female mammal which comprises administering internally to said female mammal a pharmaceutical composition which is substantially free of zoapatanol and which comprises a kaurenoic acid compound selected from the group consisting of kaurenoic acid and (−)-kaura-9(11), 16-dien-19-oic acid, the amount of said kaurenoic acid compound administered being from about 0.1 to about 10 mg/kg. body weight of said female mammal, and said alteration in the behavior of said reproductive system being selected from the group consisting of:

(a) induction of a mensis

(b) administration of said pharmaceutical composition to a group of female mammals to initially prevent pregnancy, allowing the members of said group to become fertile within a short time period, rendering at least some of said members pregnant during said time period, and thereafter delivering young at or near term in a biologically synchronized time span; and

(c) prevention of birth by administration of said pharmaceutical composition post-coitally to said female mammal.

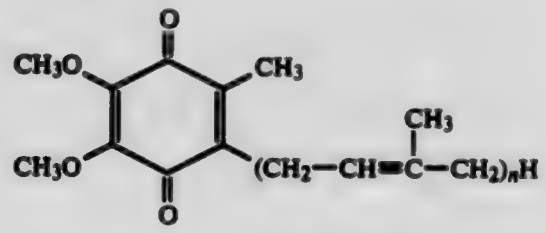
4,491,594

METHOD FOR TREATMENT OF SEIZURES

Norio Ogawa, and Shuji Tsukamoto, both of Okayama, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1984, Ser. No. 585,805
Claims priority, application Japan, Mar. 8, 1983, 58-36568
Int. Cl.³ A61K *31/12, 37/48*
U.S. Cl. 424—331 5 Claims

1. A method for the treatment of seizures which comprises administering to a subject suffering from seizures a therapeutically effective amount of a composition comprising a coenzyme Q of the formula:



wherein n is an integer of from 7 to 10, in combination with a pharmaceutically acceptable carrier.

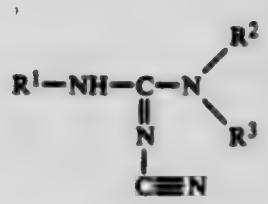
4,491,595

COMBATING FUNGI WITH TRISUBSTITUTED CYANOGUANIDINES

Ekkehard Niemers; Winfried Lunkenheimer, both of Wuppertal, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 30, 1981, Ser. No. 249,249
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014353
Int. Cl.³ C07C *129/12*; A01N *37/52*
U.S. Cl. 424—326 8 Claims

1. A method of combating fungi comprising applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a trisubstituted cyanoguanidine of the formula



in which R^1 represents a phenyl radical which is optionally monosubstituted or polysubstituted by identical or different substituents which are selected from fluorine, chlorine, bromine, iodine, methyl, ethyl, n-propyl, isopropyl, vinyl, methoxy, methylthio, ethoxy, n-propoxy, isopropoxy, trifluoromethyl, nitro, cyano, amino, hydroxy, dimethylamino, acetyl, methylsulphonyl, carbamoyl, aminosulphonyl, phenyl, chlorophenyl, phenoxy, chlorophenoxy, benzyloxy, chlorobenzyloxy, methylaminomethyl, dimethylaminomethyl, methylaminoethyl, dimethylaminoethyl, acetylamino and acetylmethyl-amino; R^2 represents a methyl, ethyl, n-propyl, isopropyl, hydroxyethyl, cyanoethyl or allyl radical; R^3 represents a methyl, ethyl, n-propyl, isopropyl, hydroxyethyl, cyanoethyl, allyl or cyclopentyl radical, a cyclohexyl radical which is optionally substituted by methyl or ethyl, or an optionally substituted phenyl or benzyl radical, the substituents being selected from fluorine, chlorine, bromine, methyl, ethyl, methoxy, nitro and cyano; or R^2 and R^3, together with the nitrogen atom to which they are bonded, represent a pyrrolidine, piperidine or morpholine ring which is optionally subetituted by methyl or a fused-on benzene ring; or a physiologically acceptable acid addition salt thereof.

4. A compound selected from the group consisting of N″-cyano-N′-(2,6-dimethylphenyl)-N,N-tetramethyleneguanidine, N″-cyano'N'-(2,6-dimethylphenyl)-N,N-dimethylguanidine, N″-cyano-N′-(2-chloro-6-methylphenyl)-N,N-dimethyl-guanidine and N″-cyano-N′-(2,6-dichlorophenyl)-N,N-diethyl-guanidine, or a physiologically acceptable acid addition salt thereof.

4,491,596

METHOD FOR PREPARING AERATED GUM CONFECTION

Ronald J. Elias, Mount Laurel, N.J., assignor to Fleer Corporation, Philadelphia, Pa.

Filed Apr. 26, 1983, Ser. No. 488,630
Int. Cl.³ A23G *3/00, 3/30*
U.S. Cl. 426—5 14 Claims

1. A process for producing an aerated gum confection which process comprises the steps of:

(a) preparing a plastic semi-solid candy mass by cooking a mixture consisting essentially of liquid sugar and corn syrup or liquid substitutes therefor, while reducing the moisture content of said candy mass to produce a plastic semi-solid;

(b) preparing a batch material, consisting essentially of said semi-solid candy mass and a gum base by mixing about 70–92 percent of said candy mass and about 8–30 percent of said gum base;

(c) aerating said batch material;

(d) forming said aerated batch material into discrete bits of predetermined size and shape; and

(e) subjecting said bits to a vacuum environment while simultaneously cooling said bits, thereby expanding said bits to provide an aerated gum confection.

4,491,597

CANDY BAR

R. Douglas Varvil, Decatur, Ill.; Lon L. Wilson, Brunswick, Ohio, and Joseph W. Bell, Robinson, Ill., assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 228,281, Jan. 26, 1981, abandoned. This application Oct. 12, 1982, Ser. No. 433,675
Int. Cl.³ A23G *3/00*
U.S. Cl. 426—103 17 Claims

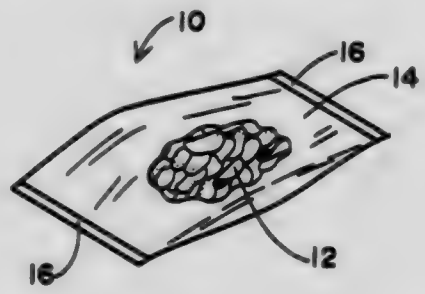
1. A candy bar comprising:
an edible candy matrix; and
about 5–95% fried corn chips, based on the candy bar weight, distributed in or on said edible candy matrix, the size of said fried chips being effective to provide chip mouthfeel;
said candy matrix containing a hard butter having a Wiley Melting Point between about 84° F.–120° F.; and
said corn chips being selected from the group consisting of:
corn chips which are at least partially deoiled following frying, the amount of deoiling being an effective amount sufficient to prevent migration of oil from said corn chips to said hard butter in said candy matrix and softening of said hard butter and to prevent fat bloom in said candy matrix and fracturing at the surface of said candy bar, and
corn chips having as a fat content a hard butter compatible with and having about the same fatty acid composition and melting point as said hard butter contained in said candy matrix to prevent softening of said hard butter contained in said candy matrix and fracturing at the surface of said candy bar.

4,491,598

PACKAGE HAVING OIL-CONTAINING PRODUCT

Joseph C. Hsu, Neenah, and Robert A. Steen, Appleton, both of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Feb. 7, 1983, Ser. No. 464,691
Int. Cl.³ B65D *81/20*; B32B *27/08*
U.S. Cl. 426—127 7 Claims



1. A package having a multiple layer flexible packaging sheet material, wherein the layers are adhered to each other, and wherein said sheet material includes a layer which is susceptible to absorption of oil and which is susceptible to swelling upon said absorption of said oil and exhibiting a cockled appearance in said sheet material, said package comprising said flexible sheet material and an included product therein containing an oil, said flexible sheet material comprising:
(a) a first layer comprising high density polyethylene and being susceptible to absorption of said oil and being susceptible to swelling upon said absorption of said oil; and
(b) a second layer of polypropylene adhered to one surface of said first layer, and being between said first layer and said product.

4,491,599

COMPOUND ANIMAL FEED SUITABLE FOR LONG-TERM PRESERVATION AND PROCESS FOR ITS PREPARATION

Enrico Citterio, Milan, Italy, assignor to Maistore S.p.A., Bergamo, Italy

Continuation-in-part of Ser. No. 197,361, Oct. 15, 1980, abandoned. This application Aug. 3, 1982, Ser. No. 404,961
Claims priority, application Italy, Oct. 18, 1979, 26607 A/79
Int. Cl.³ A23K *3/00*
U.S. Cl. 426—331 7 Claims

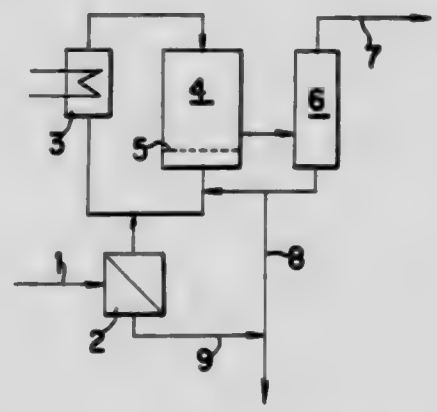
1. A compound animal feed having a resistance to deterioration that makes the feed suitable for long-term preservation, consisting essentially of uncooked, ground cereals having a naturally occurring moisture content of 30–40% by weight, said cereals being characterized by an absence of fermentation treatment; at least one acid present in an amount sufficient to provide the feed with a pH of less than 4; a fat or oil in an aount of 10–15% by weight based upon the weight of the wet cereals; and molasses in an amount of 8–18% by weight based upon the weight of the wet cereals.

4,491,600

PROCESS FOR CONCENTRATING AQUEOUS SOLUTIONS HAVING TEMPERATURE-SENSITIVE COMPONENTS

Gerd Göbel, Erkrath; Norbert Behr, Haan; Henk van der Mei, Rinteln; Franz-Josef Carduck, Haan, and Othmar von Ettingshausen, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,633
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1979, 2949215
Int. Cl.³ A23C *1/06*; B01D *13/00*
U.S. Cl. 426—384 3 Claims



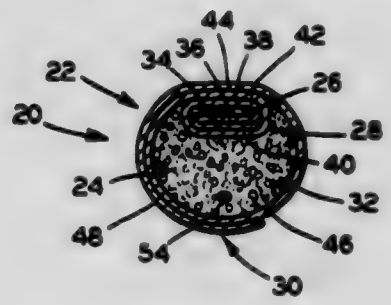
1. A process for the concentration of temperature-sensitive components in a substantially aqueous solution which consists essentially of the steps of:
(a) subjecting the substantially aqueous solution to ultrafiltration in an ultrafiltration means to provide a permeate solution containing temperature-sensitive components and a residual solution containing non-temperature-sensitive components;
(b) subjecting the residual solution from step (a) to evaporation, drying, or evaporation and drying to provide a concentrate thereof;
(c) subjecting the permeate solution from step (a) to reverse osmosis;
(d) subjecting the permeate solution from step (c) to freezing to provide ice crystals and remainder solution;
(e) removing the ice crystals;
(f) recovering the remainder solution; and
(g) combining the concentrate from step (b) with the recovered remainder solution from step (f).

4,491,601

METHOD OF MAKING A READILY PORTABLE BURRITO

Eddie L. Bernal, Defiance, Ohio, assignor to Taco Operations, Incorporated, Defiance, Ohio

Division of Ser. No. 342,380, Jan. 25, 1982,. This application Jun. 18, 1982, Ser. No. 389,705
Int. Cl.[3] A21D *13/00*; A23L *1/00*
U.S. Cl. 426—421 10 Claims



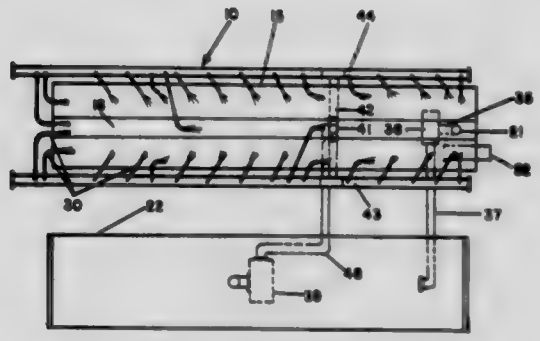
9. A method of making a portable, Mexican-type food item comprising providing a soft, pliable tortilla of generally circular shape, laying the tortilla on a surface, positioning an elongate member on the tortilla with a substantial portion of its length projecting beyond an edge of the tortilla a sufficient distance to be hand held and located asymmetrically on the tortilla with a larger portion of the tortilla on one side of the elongate member and a smaller portion of the tortilla on the opposite side of the elongate member, wrapping the smaller portion of the tortilla around the elongate member to secure the tortilla to the elongate member, placing a food filler on an inner part of the larger portion of the tortilla adjacent the wrapped elongate member, positioning the larger portion around the food filler and with an outer part thereof in overlapping relationship with the wrapped portion of the tortilla to circumferentially enclose the food filler, and cooking the tortilla in hot liquid by immersing it in hot liquid to cause the wrapped portion of the tortilla to swell and become secured more fully to the elongate member and to render the tortilla in a substantially self-sustaining state.

4,491,602

APPARATUS AND PROCESS FOR COOKING FOOD

R. Craig Miller, Cerritos, Calif., assignor to Pro/Pak Industries, Inc., Fullerton, Calif.

Filed Oct. 17, 1983, Ser. No. 542,757
Int. Cl.[3] A23L *1/01*; A47J *37/12*
U.S. Cl. 426—438 12 Claims



7. A process for cooking food including batter or breaded coated food, comprising the following steps:

(a) continuously moving the food by conveyor means through a bath of hot circulating cooking oil and cooking the food therein in an elongate container tank having sidewalls and a bottom portion for containing said bath of hot circulating oil, a length at least greater than about 7 feet, and a tank capacity of at least about 40 gallons, the bottom portion of the tank defining a central channel along the elongate portion of the tank.

(b) injecting a flow of cooking oil into said cooking oil bath having a suspension of food debris and particles by means of a plurality of jet tubes disposed at intervals along the central channel and along each sidewall, said flow of oil being at a predetermined speed sufficient to produce turbulence in said cooking oil bath and to direct hot oil and said suspension of cooking debris and food particles from the sidewalls towards the central channel and along the central channel into an effluent port disposed in the central channel;

(c) removing the oil and said suspension of cooking debris and food particles through the central channel and effluent port and into a filtering means;

(d) filtering the suspension from the oil; and,

(e) recycling the hot filtered oil to the container tank;

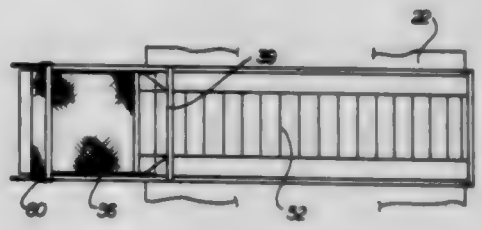
whereby, the food particles and debris are removed by the circulating oil and filtering means at about ¼–5 times/minute to minimize contamination of the oil.

4,491,603

PROCESS FOR REMOVING SKINS FROM NUTS

Kurudamanmil A. George, Levittown, Pa., assignor to Proctor & Schwartz, Inc., Horsham, Pa.

Filed Nov. 1, 1982, Ser. No. 438,279
Int. Cl.[3] A23N *5/08*
U.S. Cl. 426—482 7 Claims



1. In a process for removing skins from edible nuts by soaking the nuts in a liquid to loosen the skins and washing the soaked nuts to remove a majority of the skins from the nuts, said nuts after washing contain remaining skins, the improvement comprising passing an upward stream of fluidizing air through a bed of washed nuts at a velocity sufficient to fluidize said bed of washed nuts and to substantially completely separate the remaining skins from said nuts, said nuts during said fluidization of the bed of nuts have sufficient moisture to permit skin removal; entraining said remaining skins in said fluidizing air; and separating said remaining skins from said fluidizing air.

4,491,604

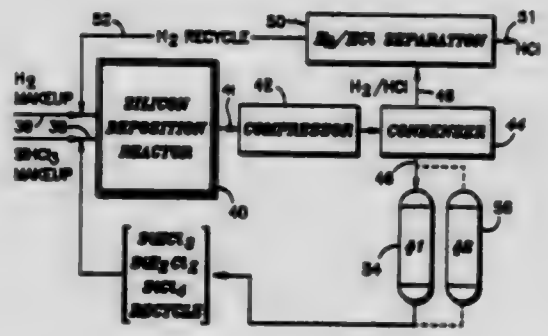
SILICON DEPOSITION PROCESS

Israel A. Lesk, 1750 E. Oregon Ave., Phoenix, Ariz. 85016, and Kalluri R. Sarma, 2352 S. Los Altos Ave., Mesa, Ariz. 85202

Filed Dec. 27, 1982, Ser. No. 453,654
Int. Cl.[3] B05D *5/12*; C23C *11/00*
U.S. Cl. 427—8 11 Claims

3. In a process for depositing silicion wherein a silicon bearing reactant and hydrogen are reacted in a deposition reactor to deposit silicon on a substrate and wherein a silicon-bearing effluent is produced, the improvement which comprises: reacting trichlorosilane and hydrogen to initiate said process and to deposit an amount of silicon; thereafter, in a step-wise manner, collecting a quantity of said effluent, and using said quantity of said effluent together with an amount of trichlorosilane as reactant input to the next step of said process, said amount of

trichlorosilane determined to make up said amount of silicon deposited.



9. The process of claim 3 wherein said silicon-bearing reactant and said hydrogen are reacted in a box system and wherein said substrate comprises interior walls of said box.

4,491,605

CONDUCTIVE POLYMERS FORMED BY ION IMPLANTATION

Harry Mazurek, Wallingford, Pa.; David R. Day; Edward W. Maby, both of Boston, Mass., and Jonathan S. Abel, Sarasota, Fla., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 23, 1982, Ser. No. 391,259
Int. Cl.³ C08F 8/22
U.S. Cl. 427—38 12 Claims

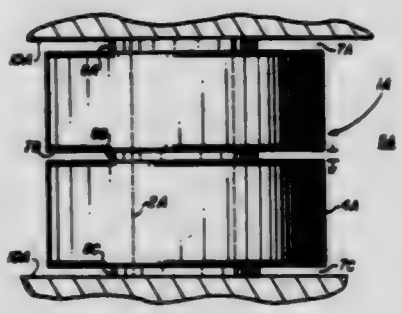
1. A method of imparting conductivity to a material comprising a rigid backboned polymer, the method comprising bombarding the material with ions from a particle accelerator, the ions having a kinetic energy of about 50 or more KeV.

4,491,606

SPACER FOR PREVENTING SHORTING BETWEEN CONDUCTIVE PLATES

Richard S. Rosler, Paradise Valley, and George M. Engle, Scottsdale, both of Ariz., assignors to Advanced Semiconductor Materials of America, Inc., Phoenix, Ariz.

Continuation of Ser. No. 320,453, Nov. 12, 1981, abandoned.
This application May 9, 1983, Ser. No. 492,545
Int. Cl.³ C23C 13/08, 13/04
U.S. Cl. 427—38 9 Claims



1. In a radio frequency plasma apparatus for depositing an electrically conductive film by plasma enhanced chemical vapor deposition and including at least a pair of spaced apart, generally parallel electrically conductive plates for forming the plasma field therebetween, the improvement comprising:

insulated spacer means operably disposed within said plasma field for spacing apart said conductive plates;

said insulating spacer means being generally cylindrical and having a first diameter central portion including an axial aperture through the center thereof, said insulated spacer means further including a second diameter portion where the diameter is significantly reduced from said first diameter portion;

elongated cylindrical alignment means operably disposed within said central aperture for aligning and positioning said insulated spacer means between said conductive plates;

said portions of said reduced second diameter being operably disposed about the end portions of said first diameter central portion when said insulated spacer means is positioned between conductive plates, said reduced second diameter portions including a planer end surface adapted to be operably disposed against a corresponding conductive surface in abutting relationship thereto;

groove means disposed entirely around the circumference of said spacer means for inhibiting the formation of a plasma field in the area proximate the portions of reduced second diameter, said groove means including a first annular side portion disposed radially outwardly from said second portion of reduced diameter and having a thickness equal to the first diameter of the central portion of said insulated spacing means less said second reduced diameter portion, a second side portion formed by the annular area of the surface of a conductive plate surrounding said second portion of reduced diameter and a groove bottom portion formed from the peripheral outer surface of second reduced diameter portion; and

said groove means for inhibiting the deposition of electrically conductive film material across the entire length of said insulated spacer means by substantially precluding the plasma field in the area proximate said groove means including the sides and bottoms thereof for inhibiting the formation of a inductive between said adjacent conductive plates and across the outer surface of said insulated spacer means thereby preventing a breakdown of the plasma field resulting in longer production runs, more production runs, and increased productivity between changing said insulated spacer means.

9. A method of substantially prolonging the useful life of an insulated spacer element which spacially separates a pair of substantially parallel conductive plates in a plasma apparatus for plasma enhanced chemical vapor deposition comprising the steps of:

providing portions of reduced diameter at both ends of said insulated spacer element;

operably positioning said spacer element between said pair of conductive plates with the end portions having a reduced diameter operably disposed for contacting opposite conductive plates for maintaining the spacing therebetween;

forming at least one radial slot completely around the entire circumference of an intermediate portion of said insulated spacer element;

depositing conductive material on a product within said plasma apparatus while inadvertantly depositing at least some of said conductive material onto said insulated spacer element;

inhibiting the formation of the plasma field within and around the portions of reduced diameter and within and around said radial slot to enable a direct conductive electrical path on the surface of the insulated spacer element from forming between adjacent conductive plates only at a very much reduced rate; and

inhibiting a breakdown of the plasma field and a shutdown of the deposition operation for increased productivity.

4,491,607

MOLD RELEASE AGENTS AND MEANS OF APPLICATION

Robert J. Wesala, Dearborn, Mich., assignor to Park Chemical Company, Detroit, Mich.

Filed Nov. 23, 1981, Ser. No. 323,782
Int. Cl.³ B29C 1/04
U.S. Cl. 427—135 13 Claims

1. A mold release agent for coating molds for forming expandable plastics, constituted as a solid-free aqueous fatty acid soap formulation with at least one alkali metal hydroxide selected from the group consisting of sodium hydroxide and

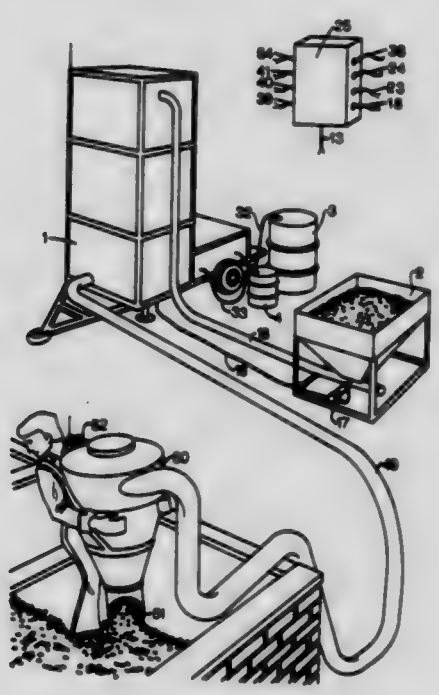
potassium hydroxide at a hydrogen ion concentration in the range from about pH 8.5 to about pH 11, consisting essentially of saponified C_{18} unsaturated fatty acid C_8 to C_{12} saturated fatty acid, the fatty acid content being from about 40 to 90% by weight unsaturated and from about 10 to 60% by weight saturated and further, expressed as total free acid, being about 1 to about 30% by weight of the formulation.

4,491,608

METHOD FOR APPLYING A SCREED COAT TO A ROOF SURFACE

Soren Thygesen, Norrevej 79, DK-3070 Snekkersten, Denmark

Filed Dec. 15, 1982, Ser. No. 450,001
Claims priority, application Denmark, Feb. 8, 1982, 515/82
Int. Cl.³ B05D 1/12
U.S. Cl. 427—186 9 Claims



1. A method of applying a screed coat to a roof surface, comprising the steps of subjecting a granular expanded inorganic material to an atomized spray of an adhesive consisting of a solution of waterglass and a hardener therefor in such a manner as to form a film coating of said adhesive on the surface of each grain without affecting the granular nature of the material, causing the spray coated granular material, immediately after it has been thus produced and without any intervening mechanical working or compression, to be poured out on the roof surface, spreading it over that surface and compressing and smoothing it to form a coherent layer of a geometrical surface configuration showing a gradient from all points of the surface towards rainwater outlets.

4,491,609

METHOD OF MANUFACTURING ADSORBENTS

Josef Degel, Hattingen; Klaus-Dirk Henning; Jürgen Klein, both of Essen, and Klaus Wybranda, Bochum, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Aug. 3, 1983, Ser. No. 520,003
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1982, 3229396
Int. Cl.³ B05D 7/00; B01D 39/00
U.S. Cl. 427—215 6 Claims

1. A method of manufacturing a carbonaceous adsorbent impregnated with elementary sulfur, comprising the steps of:

mixing a carbonaceous adsorbent with elementary sulfur;

heating the thus obtained mixture to a temperature of 120°–300° C.;

maintaining this temperature for a time period of 1–40 hours; and

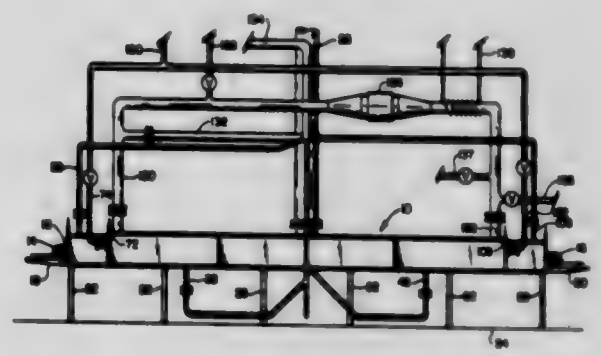
cooling the mixture, so that the elementary sulfur impregnated carbonaceous adsorbent produced is uniformaly distributed with a fixed quantity of elementary sulfur adsorbed exclusively into the inner surface of the carbonaceous adsorbent instead of distributed over the outer surface of the carbonaceous adsorbent.

4,491,610

GAS CURING CHAMBER FOR FLAT SUBSTRATES

Maher L. Mansour, Columbus, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Oct. 21, 1983, Ser. No. 544,364
Int. Cl.³ B05D 3/02, 3/10; F26B 19/00, 25/00
U.S. Cl. 427—337 7 Claims



1. A method for curing a film of a coating composition rapidly curable at room temperature in the presence of a vaporous tertiary amine catalyst, said film being applied to a substrate, which comprises passing said coated substrate through a curing chamber, said chamber comprising an elongate housing having an inlet opening and an outlet opening in the longitudinal direction and a moving conveyor which runs the length of said housing for transporting objects from said inlet opening through said housing and thereout through the outlet opening, the space above said conveyor comprising an inlet zone, a central gas zone, and an outlet zone,

said inlet zone comprising an outer adjustable gate for determining said inlet opening, a central inlet baffle gate, and an inner inlet adjustable deflector wall, the space between said outer gate and said baffle gate being connected to exhaust means, the space between said baffle gate and said deflector wall being a modulating gas cell and containing a gas knife connected to a source of inert gas and capable of injecting said inert gas at an adjustable angle onto said conveyor substantially its entire width;

said outlet zone comprising an outer adjustable gate for determining said outlet opening, a central outlet baffle gate, and an inner adjustable outlet deflector wall, the space between said outer gate and said baffle gate being connected to exhaust means, the space between said baffle gate and said deflector wall being a modulating gas cell and containing a gas knife connected to a source of inert gas and capable of injecting said inert gas at an adjustable angle onto said conveyor substantially its entire width; and

said central gas zone having withdrawal means located in proximity to said inlet deflector wall which withdrawal means are connected to recirculating means for passing gaseous flow back into said central gas zone in a location in proximity to said inner outlet deflector wall, said inlet and outlet deflector walls being sloped downwardly and inwardly within said central gas zone.

4,491,611

PROCESS FOR THE PREPARATION OF SELF-CROSS-LINKING RESINOUS BINDERS AND THEIR USE IN SURFACE COATING COMPOSITIONS

Adrianus J. M. Barnhoorn, and Werner T. Raudenbusch, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 430,469, Sep. 30, 1982, Pat. No. 4,559,393. This application Mar. 12, 1984, Ser. No. 588,606

Claims priority, application United Kingdom, Dec. 9, 1981, 8137056

Int. Cl.³ C08L *63/10*

U.S. Cl. 427—386 **9 Claims**

1. An aqueous paint composition suitable for cathodic electrodeposition comprising:

(1) a resinous binder composition prepared by a process which comprises

(a) reacting a beta-hydroxyalkyl ester of an alpha, beta-ethylenically unstaturated carboxylic acid with a primary mono- or polyamine in such molar ratios that the resulting product has on average from 1 to 2 aminohydrogen atoms per molecule;

(b) reacting the product of (a) with a polyglycidyl ether of a polyhydric phenol in such amounts that there is not more than one aminohydrogen atom per epoxy group, and that the final adduct has on average more than one beat-hydroxyalkyl ester group per molecule, and optionally, together with one or more other amines each having from 1 to 2 aminohydrogen atoms per molecule; and

(c) protonizing the resulting product by at least partial neutralization of the amino functions with an acid; and

(2) from 0.1 to 6.0 percent by weight of the resinous binder of (1) of one or more transesterification-promoting metal compounds.

9. A process for the preparation of an insoluble, infusible coating on a surface comprising applying the composition of claim 1 onto the surface and curing the coating at a temperature not higher than 200° C.

4,491,612

FINISHING LEATHER OR A SYNTHETIC LEATHER SUBSTITUTE

Karl Fischer, Bad Durkheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 26, 1983, Ser. No. 517,438

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1982, 3228128; Mar. 3, 1983, 3307431

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—412 **2 Claims**

1. A process for finishing leather or a synthetic leather substitute which comprises applying a bottoming based on an aqueous acrylic resin dispersion, drying the coating and then applying a season containing an aqueous styrene/acrylate dispersion, wherein the dispersion used in the bottoming procedure comprises one or more copolymers (a) which contain, as copolymerized units, from 30 to 85% by weight of a C_2–C_6-alkyl acrylate or methacrylate, from 1 to 8% by weight of a carboxyl-containing monomer and from 7 to 65% by weight of one or more monomers, which are copolymerizable with the above monomers, and which are selected from the group consisting of acrylonitrile, acrylamide, methacrylamide, vinyl chloride, vinyl acetate and styrene, the percentages being based on the copolymer, and a copolymer composition (b) the composition which contains, as copolymerized units, from 50 to 90% by weight of vinylidene chloride, from 10 to 50% by weight of a C_2–C_4-alkyl acrylate or methacrylate and from 1 to 5% by weight of N-methylolacrylamide or -methacrylamide which carries a group capable of crosslinking the copolymer, the percentages being based on the copolymer, or said composition (b) contains, in dispersed form, from 50 to 90% by weight of vinyl chloride and from 10 to 50% by weight of a C_1–C_4-alkyl acrylate or methacrylate as well as from 0 to 5% by weight of acrylamide or methacrylamide in the ratio a:b of from 2:1 to 5:1, and the season used is a dispersion which contains a divalent metal ion in the form of an ionic compound and selected from the group of chlorides, sulfates, acetates, nitrates, oxalates or carbonates of zinc, cadmium, calcium or magnesium or oxides of zinc or magnesium and, in dispersed form, a copolymer (c) which contains, as copolymerized units, from 20 to 40% by weight of styrene, from 50 to 75% by weight of one or more C_1–C_6-alkyl acrylates or methacrylates, from 1 to 10% by weight of acrylic acid or methacrylic acid and from 1 to 5% by weight of N-methylolacrylamide or -methacrylamide which carries a group capable of crosslinking the copolymer, the percentages being based on the copolymer.

4,491,613

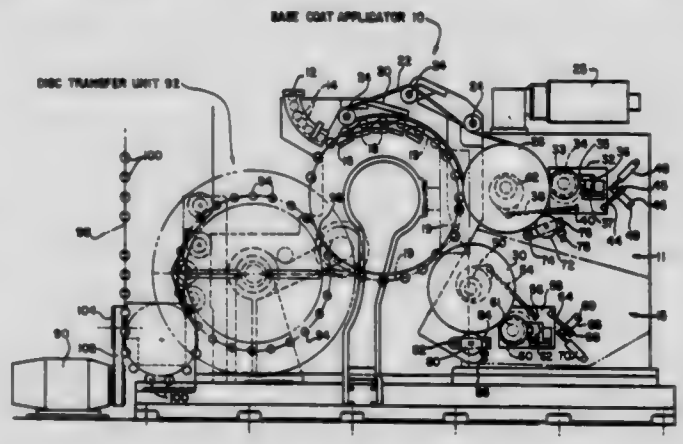
BASE COAT APPLICATOR

Roger Hahn, Arvada, Colo., assignor to Adolph Coors Company, Golden, Colo.

Filed Aug. 22, 1983, Ser. No. 525,060

Int. Cl.³ B05D *1/28*; B05C *1/08*

U.S. Cl. 427—428 **12 Claims**



7. A method of applying a coating material to cylindrical containers at high inventory production speeds while maintaining operational speeds sufficiently slow to substantially eliminate misting and slinging of base coat material comprising:

mounting said cylindrical containers on mandrels;

rotating said mandrels with a spin belt to achieve a predetermined surface speed of said cylindrical containers mounted on said mandrels;

moving said mandrels at a predetermined inventory production speed along a predetermined path;

automatically applying a coating material to multiple applicator wheels when said cylindrical containers are present on said mandrels;

rotating said multiple applicator wheels at least one predetermined rotational speed to produce a first predetermined surface speed on a first applicator wheels which is substantially equivalent to said predetermined surface speed of said cylindrical containers;

automatically engaging said multiple applicator with said cylindrical containers along a portion of said predetermined path to apply said coating material to said cylindrical containers when said cylindrical containers are present on said mandrels;

automatically disengaging said multiple applicator wheels from said cylindrical containers and maintaining rotation of said multiple applicator wheels;

maintaining engagement of said multiple applicator wheels with an engraved wheel which applies said coating material to said multiple applicator wheel to prevent drying of said coating material on said multiple applicator wheels during disengagement of said multiple applicator wheels with said cylindrical containers;

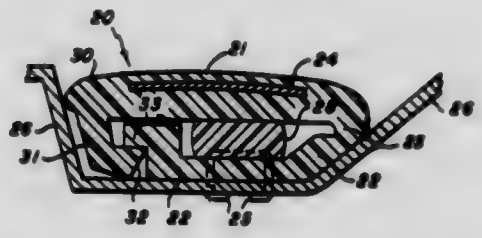
independently controlling said predetermined surface speed and said predetermined inventory production speed to control the amount of said coating material applied to said cylindrical containers independently of said inventory production speed.

4,491,614

FOLDABLE TRIM STRIP WITH MOUNTING PORTION

Dennis R. Wolters, Dayton, Ohio, assignor to Protective Treatments, Inc., Dayton, Ohio

Division of Ser. No. 393,373, Jun. 29, 1982, Pat. No. 4,401,701.
This application Jun. 21, 1983, Ser. No. 506,351
Int. Cl.[3] B60R *13/04*
U.S. Cl. 428—31 4 Claims



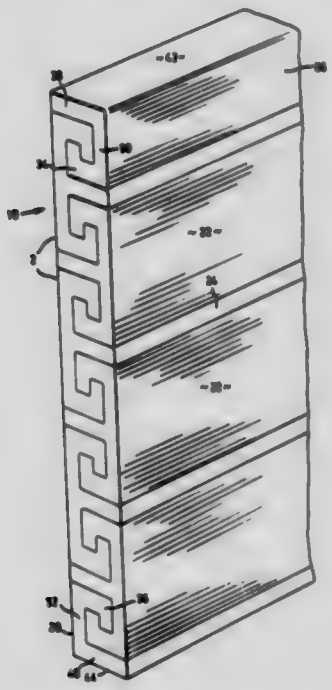
1. An elongated trim strip formed to include an elongated mounting portion, an elongated decorative portion extending to one side of said mounting portion and a flexible connection between the two foldably connecting the inner edges of said two portions, and means for joining said two portions when the decorative portion is folded down upon said mounting portion, said joining means comprising an outwardly extending elevated ledge carried at the outer edge of said mounting portion and a stud positioned at the outer edge of said decorative portion, said stud extending downwardly and then inwardly, the inwardly extending portion including a beveled portion positioned at the inner end thereof, said beveled portion engaging said ledge to move said stud outwardly when said decorative portion is folded upon said mounting portion so that said stud is adapted to snap under said ledge.

4,491,615

COMPOSITE MOLDING STRUCTURE

Ludwig Stilling, 29 Barker Ave., Rexdale, Ontario, Canada M9V 1E6

Filed Jan. 5, 1983, Ser. No. 455,874
Int. Cl.[3] B32B *1/00, 31/04*
U.S. Cl. 428—33 17 Claims



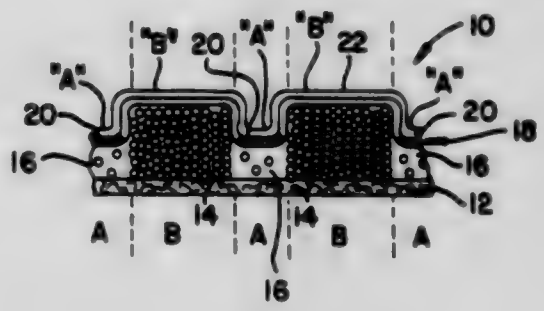
1. A composite, elongate molding structure having transverse flexibility, comprising a plurality of elongate, flexible elements assembled in side by side relation, said elements being slidably interconnected with their longitudinal axes lying parallel to each other, each element being of uniform cross-section throughout its length and comprising a longitudinally extending web portion and a pair of flanges extending laterally from the web portion on opposite sides thereof, each flange defining with a respective side of the web portion a longitudinally extending channel conforming to the cross-sectional configuration of a flange of an adjacent element, said flange of said adjacent element being keyed into the channel and slidable therein upon transverse flexing of the molding structure.

4,491,616

RESINOUS POLYMER SHEET MATERIAL HAVING SURFACE DECORATIVE EFFECTS OF CONTRASTING GLOSS AND METHOD OF MAKING THE SAME

Claude J. Schmidle, Trenton, N.J., and Seevaram N. Varadhacharry, Newtown, Pa., assignors to Congoleum Corporation, Kearny, N.J.

Continuation of Ser. No. 382,895, May 28, 1982, abandoned.
This application Feb. 27, 1984, Ser. No. 582,157
Int. Cl.[3] B32B *3/30;* B05D *3/06*
U.S. Cl. 428—158 11 Claims



1. A process for the production of a surface covering having both dull areas and glossy areas on its surface, which process comprises the steps of:

(a) laying down a base layer,

(b) selectively applying to said base layer in the form of a design having defined areas where a dull surface appearance is desired, a photoinitiator,

(c) applying a resinous composition wear layer uniformly over the surface prepared in step (b), said resinous composition containing a curable monomeric material therein,

(d) subjecting the surface prepared in step (c) to a sufficient amount of heat for a sufficient amount of time to gel the resinous composition wear layer, thereby providing said wear layer with a dull overall appearance, but without providing sufficient thermal energy to cure the monomeric material contained uniformly therein,

(e) subjecting the surface of the gelled wear layer to actinic radiation to selectively cure and harden the monomeric material over those areas where the photoinitiator was selectively applied, thereby permanently securing a dull appearance to the wear layer over such defined areas, and

(f) subjecting the composition of step (e) to a sufficient amount of thermal energy to permit the remaining uncured resinous composition to flow from a dull appearance into a glossy appearance and cure and harden in such a condition, without affecting the dull appearance of the surface on those areas cured and hardened by actinic radiation in step (e) thereby providing a surface covering having both dull and glossy areas on its surface.

4,491,617

REINFORCING COMPOSITE FOR ROOFING MEMBRANES AND PROCESS FOR MAKING SUCH COMPOSITES

Terry J. O'Connor, and Ian G. Cooper, both of St. Catharines, Canada, assignors to Bay Mills Limited, St. Catharines, Canada

Filed Nov. 24, 1982, Ser. No. 444,215
Int. Cl.[3] B32B *5/06*
U.S. Cl. 428—236 20 Claims

1. A composite for reinforcing roofing membranes comprising three layers one of which is made of fiberglass, one of

which is made of polyester, and the third of which is made of either polyester or fiberglass; at least one of which is in the form of a scrim coated with a thermoplastic adhesive, one of which is in the form of a mat, and a third of which is in the form of a mat or a scrim; wherein the composite is flexible, capable of being impregnated by a bituminous material, and has sufficient strength to be useful in reinforcing roofing membranes.

4,491,618

RECONSTITUTED MICA MATERIALS, RECONSTITUTED MICA PREPREG MATERIALS, RECONSTITUTED MICA PRODUCTS AND INSULATED COILS

Hideji Kuwajima, Hitachi; Kazuyoshi Shike, Iwaki, and Takeyoshi Watanabe, Hitachi, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Nov. 6, 1981, Ser. No. 319,094
Claims priority, application Japan, Nov. 8, 1980, 55-157390
Int. Cl.³ B32B *19/04*
U.S. Cl. 428—241 16 Claims

1. A reconstituted mica material produced by sheet forming a slurry containing mica flakes prepared by disintegrating unfired mica and comprising:

(i) 30 to 70 parts by weight of mica flakes having a particle size of 1.0 mm or more and an aspect ratio of 150 or more,

(ii) 20 to 40 parts by weight of mica flakes having a particle size of 0.25 mm or more and less than 1.0 mm, and

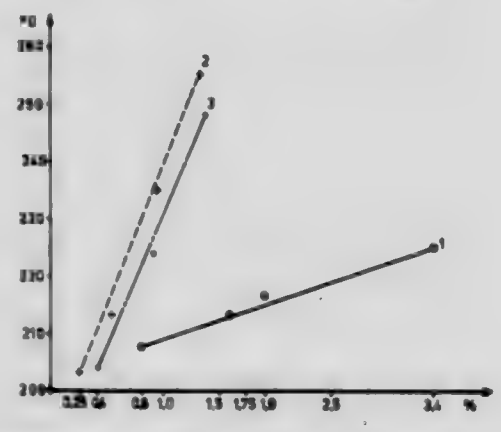
(iii) 10 to 30 parts by weight of mica flakes having a particle size of less than 0.25 mm.

4,491,619

THERMOSTABLE IRON OXIDE PIGMENTS

Hans-Peter Biermann; Peter Köhler, and Heinrich Heine, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 16, 1983, Ser. No. 475,708
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1982, 3211327
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—403 9 Claims



1. Stabilized iron oxide particles having an iron(II) content of at least 5%, by weight, calculated as FeO, and coated with from 0.1 to 4% by weight of boron in the form of boron-oxygen compounds and calculated as B_2O_3.

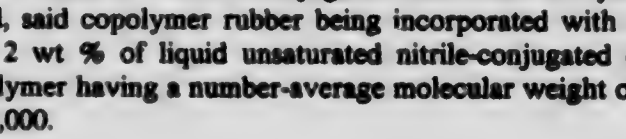
4,491,620

FLEXIBLE, NONSTAINING TOPCOAT FOR AN X-RAY INTENSIFYING SCREEN

James R. Joiner, Jr., Towanda, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 20, 1982, Ser. No. 420,486
Int. Cl.³ G01J *1/58*; B32B *27/20, 27/36, 27/30*
U.S. Cl. 428—421 9 Claims

1. An X-ray image intensifying screen comprising, in order, a support, an active layer on said support comprising fluorescent phosphor particles dispersed in a film-forming binder, and a protective topcoat on said active layer, characterized in that said topcoat is a flexible film composed of a copolymer of (1) a fluoroester of the formula:



wherein n is an integer from 2 to 9, and (2) methylmethacrylate.

4,491,621

DIAPHRAGM

Tadaoki Okumoto, Inazawa; Masatoshi Sugimoto; Noriyuki Horiuchi, both of Kounan; Seiichi Sahara, Nagoya; Tetsuo Yamada, Toyota; Kiaroa Hashimoto, Yokohama; Masayoshi Ichikawa, Ichinomiya, and Fujio Ninomiya, Kounan, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugaigun and Toyota Jidosha Kabushiki Kaisha, Tokyo, both of, Japan

Filed Nov. 19, 1982, Ser. No. 442,979
Claims priority, application Japan, Dec. 30, 1981, 56-213274; Dec. 30, 1981, 56-213275
Int. Cl.³ B32B *27/08*
U.S. Cl. 428—519 4 Claims

1. A diaphragm having the liquid contacting surface made of a vulcanized rubber composition of partially hydrogenated unsaturated nitrile-conjugated diene copolymer rubber in which at least 50% of the conjugated diene units are hydrogenated, said copolymer rubber being incorporated with more than 2 wt % of liquid unsaturated nitrile-conjugated diene copolymer having a number-average molecular weight of 500 to 10,000.

4,491,622

COMPOSITES OF GLASS-CERAMIC TO METAL SEALS AND METHOD OF MAKING THE SAME

Sheldon H. Butt, Godfrey, Ill., assignor to Olin Corporation, New Haven, Conn.

Filed Apr. 19, 1982, Ser. No. 369,699
Int. Cl.³ B32B *17/06*
U.S. Cl. 428—632 18 Claims



1. A composite comprising:

a fist metal or alloy component having a first thin refractory oxide layer on at least a first surface thereof;

a second metal or alloy component having a second thin refractory oxide layer on at least a first surface thereof; and

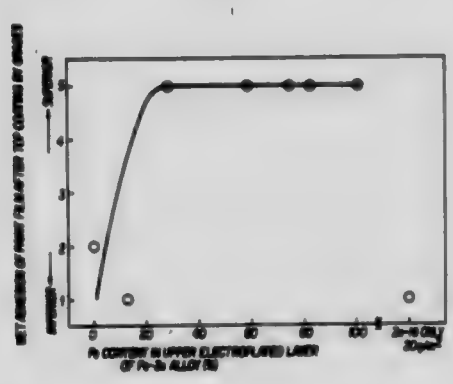
glass or ceramic means having a coefficient of thermal expansion of at least 160×10^{-7} in/in/°C., said coefficient of thermal expansion of said glass or ceramic means being closely matched to the coefficient of thermal expansion of said first and second metal or alloy components, said glass or ceramic means bonding said first and second thin refractory oxide layers for substantially eliminating thermal stress within said composite.

4,491,623

DOUBLE-LAYER ELECTROPLATED STEEL ARTICLE WITH CORROSION RESISTANCE AFTER PAINTING AND WET ADHESION OF PAINT FILM

Ichiro Kokubo, Kakogawa; Shigeki Kirihara, Kobe; Hirohiko Sakai, and Masatoshi Iwai, both of Kakogawa, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jul. 8, 1982, Ser. No. 396,448
Claims priority, application Japan, Jul. 14, 1981, 56-110551
Int. Cl.³ B32B *15/01*
U.S. Cl. 428—658 3 Claims



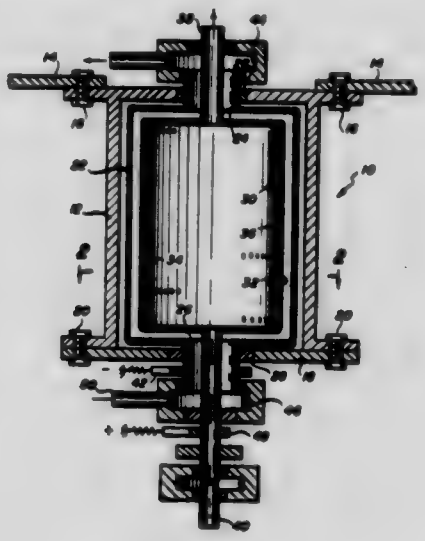
1. An article of manufacture comprising a steel substrate coated with an electroplated double layer with good corrosion resistance after painting and wet adhesion of paint film, said steel article having on a steel substrate a first layer of electroplated Zn-Ni alloy containing 7–15 wt% of Ni and on said first layer a second layer of a metallic material selected from the group consisting of iron and Fe-Zn alloys containing more than 60% iron.

4,491,624

METAL-AIR ELECTROCHEMICAL CELL

Robert I. Sarbacher, Palm Beach, Fla., and Harry R. Fechter, Las Vegas, Nev., assignors to Synectics, Inc., Las Vegas, Nev.

Filed Sep. 30, 1982, Ser. No. 428,873
Int. Cl.³ H01M *2/38*
U.S. Cl. 429—27 10 Claims



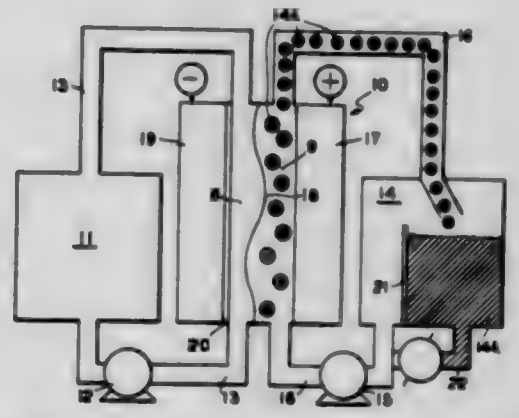
1. A metal-air battery system comprising a cell having a rotatable anode mounted therein, a cathode assembly mounted within said anode and rotatable therewith, the wall of said cathode assembly being spaced from the wall of said anode to provide a reactant space therebetween, means for continuously circulating a slurry of electrolyte and metal particles through said reactant space, means for circulating air through said cathode assembly, means for rotating said anode and said cathode assembly to cause said metal particles to become deposited on said anode due to centrifugal force whereby said metal layer is continuously replenished during discharge of said battery.

4,491,625

ZINC-BROMINE BATTERIES WITH IMPROVED ELECTROLYTE

Edward Kantner, East Brunswick, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 26, 1984, Ser. No. 593,317
Int. Cl.³ H01M *10/44*
U.S. Cl. 429—50 7 Claims



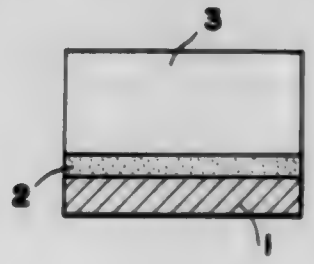
1. An electrochemical cell having a zinc bromine couple, said cell comprising an electrode structure on which zinc is deposited during charging of the cell, a counterelectrode structure at which to generate cathodic bromine during charging of the cell, an aqueous electrolyte comprising a water soluble complexing agent selected from the group consisting of N-methyl, N-ethyl morphilinium bromide, N-methyl, N-ethyl pyrrolidinium bromide, N-methyl, N-ethyl pyrrolidium bromide, N-methyl, N-ethyl piperidinium bromide and mixtures thereof capable of forming a water immiscible complex with bromine, from about 1 to 3 moles per liter zinc bromide and chloride ions in an amount sufficient to reduce the amount of free bromine present in said electrolyte during charging of said cell.

4,491,626

PHOTOSENSITIVE MEMBER

Takao Kawamura, Sakai, and Masazumi Yoshida, Amagasaki, both of Japan, assignors to Minolta Camera Kabushiki Kaisha; Takao Kawamura, both of Osaka and Kyocera Corp., Kyoto, all of, Japan

Filed Mar. 7, 1983, Ser. No. 473,005
Claims priority, application Japan, Mar. 31, 1982, 57-54565; Mar. 31, 1982, 57-54566
The portion of the term of this patent subsequent to May 29, 2001, has been disclaimed.
Int. Cl.³ G03G *5/08, 5/14, 5/024*
U.S. Cl. 430—69 7 Claims



1. A photosensitive member which comprises an electrically-conductive substrate, an amorphous silicon-germanium photoconductive layer overlying said electrically-conductive substrate, said amorphous silicon-germanium photoconductive layer having a thickness of about 0.1 to 3 microns and a molar ratio of silicon to germanium of about 1:1 to 19:1, and an amorphous silicon photoconductive layer overlying said amorphous silicon-germanium photoconductive layer, said amor-

phous silicon photoconductive layer having a thickness of about 5 to 30 microns.

4,491,627

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL WITH MICROCAPSULES THAT DISSOLVE AT PH OF AT LEAST 7

Toshifumi Iijima; Shigeharu Koboshi, and Hiroshi Yamazaki, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jan. 10, 1983, Ser. No. 456,780
Claims priority, application Japan, Jan. 20, 1982, 57-7972
Int. Cl.³ G03C *1/06, 1/42*
U.S. Cl. 430—138 20 Claims

1. A light-sensitive silver halide photographic material, comprising a support having thereon at least one hydrophilic colloid layer containing microcapsules having a mean particle size of up to 5μ, said microcapsules comprising a wall made of a material which can be dissolved at a pH of at least 7, and a photographic treating reagent encapsulated within said wall material.

4,491,628

POSITIVE- AND NEGATIVE-WORKING RESIST COMPOSITIONS WITH ACID GENERATING PHOTOINITIATOR AND POLYMER WITH ACID LABILE GROUPS PENDANT FROM POLYMER BACKBONE

Hiroshi Ito; Carlton G. Willson, both of San Jose, Calif., and Jean M. J. Frechet, Ottawa, Canada, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 23, 1982, Ser. No. 410,201
Int. Cl.³ G03C *1/60, 1/68*
U.S. Cl. 430—176 17 Claims

1. A resist composition comprising:

a polymer and a photoinitiator which generates an acid upon exposure to radiation, the photoinitiator being present in from 1% to 100% by weight of said polymer, and the polymer having acid labile groups pendant from the polymer backbone, said groups being tertiary butyl esters of carboxylic acids or tertiary butyl carbonates of phenols, and

said resist composition being positive working when developed with alkaline developer or polar solvent to remove exposed areas of the composition and negative working when developed with a non-polar solvent to remove unexposed areas of the composition.

4,491,629

WATER SOLUBLE PHOTORESIST COMPOSITION WITH BISAZIDE, DIAZO, POLYMER AND SILANE

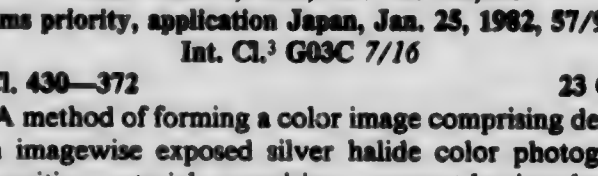
Norio Koike; Takeo Ito, both of Fukaya; Shingo Watanabe, Himeji, and Kunihiro Ikari, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Feb. 18, 1983, Ser. No. 467,886
Claims priority, application Japan, Feb. 22, 1982, 57-25935; Feb. 22, 1982, 57-25936; Feb. 22, 1982, 57-25937
Int. Cl.³ G03C *1/60, 1/70;* G03F *7/26*
U.S. Cl. 430—176 9 Claims

1. A photoresist composition comprising:

a photosensitive composition comprising an admixture of a film-forming amount of a water-soluble, film-forming polymer comprising the combination of polyvinylpyrrolidone and polyvinyl alcohol; a cross-linking amount of a polymer-cross-linking, water-soluble photosensitive bisazide compound; a cross-linking amount of a polymer-cross-linking, adhesion-improving water-soluble photosensitive diazo compound; and

an adhesion-activating amount of a water-soluble polyazamidesilane compound having the following formula:

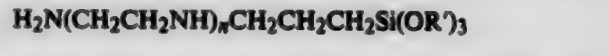


wherein R^1, R^2 and R^3 are independently alkylenes containing carbon 1 to 10 carbon atoms, and x and y are integers from 1 to 10.

4. A photoresist composition comprising:

a photosensitive composition comprising an admixture of a film-forming amount of a water-soluble, film-forming polymer comprising the combination of polyvinylpyrrolidone and polyvinyl alcohol; a cross-linking amount of a polymer-cross-linking, water-soluble photosensitive bisazide compound; a cross-linking amount of a polymer-cross-linking, adhesion-improving water-soluble photosensitive diazo compound; and

an adhesion-activating amount of a water-soluble polyaminosilane compound having the following formula:



wherein R′ is methyl or ethyl, and n is an integer from 2 to 10.

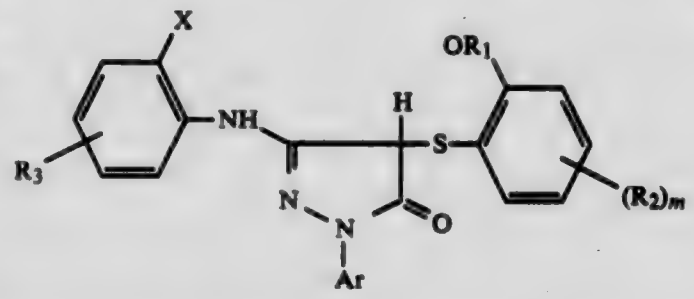
4,491,630

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Takatoshi Ishikawa; Akio Mitsui; Masakazu Morigaki, and Takashi Nakamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanawaga, Japan

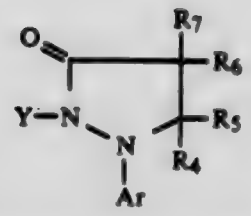
Filed Jan. 24, 1983, Ser. No. 460,512
Claims priority, application Japan, Jan. 25, 1982, 57/9831
Int. Cl.³ G03C *7/16*
U.S. Cl. 430—372 23 Claims

23. A method of forming a color image comprising developing an imagewise exposed silver halide color photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer containing a compound represented by the following general formula (I):



(I)

wherein R_1 represents an alkyl group or an aryl group; R_2 represents hydrogen, a hydroxy group, a halogen atom, an alkyl group, an alkoxy group or an aryl group; R_3 represents hydrogen, a halogen atom, an alkyl group, an alkoxy group, an acylamino group, a sulfonamido group, a sulfamoyl group, a carbamoyl group, a diacylamino group, an alkoxycarbonyl group, an alkoxysulfonyl group, an aryloxysulfonyl group, an alkanesulfonyl group, an arylsulfonyl group, an alkylthio group, an arylthio group, an alkoxycarbonylamino group, an alkylureido group, an acyl group, a nitro group, a carboxy group, or a trichloromethyl group; X represents a halogen atom or an alkoxy group; Ar represents a substituted phenyl group; and m represents an integer of from 1 to 4; said silver halide color photographic light-sensitive material comprises a compound represented by the following general formula (II) in the silver halide emulsion layer containing the compound represented by the above general formula (I) and/or a hydrophilic colloid layer which is positioned at the remoter side than the silver halide emulsion layer from the support:



(II)

wherein Ar represents a phenyl group; Y represents hydrogen or an acyl group; R_4, R_5, R_6 and R_7, which may be the same or different, each represents an alkyl group, an alkoxy group, an aryl group, an alkylthio group or an arylthio group; and the total number of carbon atoms included in the substituents represented by R_4, R_5, R_6 and R_7 and the substituents on the phenyl group represented by Ar is not less than 6, with an aqueous alkaline solution containing a color developing agent.

4,491,631

ASSAY METHOD FOR LIPID COMPONENT, ASSAY COMPOSITION, AND PROCESS FOR PRODUCTION OF ENZYME USED THEREFOR

Shigeyuki Imamura; Hideo Misaki; Hidehiko Ishikawa, and Kazuo Matsuura, all of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Jun. 25, 1982, Ser. No. 392,010

Claims priority, application Japan, Jun. 25, 1981, 56-99314; Sep. 18, 1981, 56-148313

Int. Cl.³ C12Q *1/00, 1/26, 1/32, 1/42, 1/44, 1/46, 1/48, 1/60;* C12N *9/02, 9/04, 9/00, 9/10, 9/88;* C12R *1/38*

U.S. Cl. 435—4 **23 Claims**

1. An assay method for a fatty acid component in a sample, which fatty acid is originally present in the sample or is liberated from a fatty acid ester in the sample, comprising:

(a) converting the fatty acid to acyl-CoA;

(b) converting the thus-produced acyl-CoA to dehydroacyl-CoA;

(c) converting the thus-produced dehydroacyl-CoA to hydroxyacyl-CoA;

(d) converting the thus-produced hydroxyacyl-CoA to ketoacyl-CoA;

(e) converting the thus-produced ketonacyl-CoA to acyl-CoA; and measuring the detectable changes in the reaction mixture, wherein steps (c), (d) and (e) utilize the enzyme activity of a multi-active enzyme comprising enoyl-CoA hydratase activity, 3-hydroxyacyl-CoA dehydrogenase activity and 3-ketoacyl-CoA thiolase activity in a single enzyme protein, said multi-active enzyme being an enzyme obtained from a multi-active-enzyme-producing mircroorganism strain *Pseudomonas fragi* B-0771 FERM-P No. 5601.

4,491,632

PROCESS FOR PRODUCING ANTIBODIES TO HEPATITIS VIRUS AND CELL LINES THEREFOR

Jack R. Wands, Waban, Mass., and Vincent R. Zurawski, Jr., West Chester, Pa., assignors to The Massachusetts General Hospital, Boston, Mass.

Continuation of Ser. No. 245,526, Mar. 19, 1981, abandoned, which is a continuation of Ser. No. 086,947, Oct. 22, 1979, Pat. No. 4,271,145. This application Jul. 26, 1983, Ser. No. 516,672

Int. Cl.³ C12N *5/00, 15/00*

U.S. Cl. 435—240 **13 Claims**

1. A composition comprising a hybrid continuous cell line that produces antibody to a viral hepatitis antigen which comprises a cell hybrid of an animal spleen cell immunized with viral hepatitis antigen fused to a myeloma derived from the same animal species as the spleen cell and a culture medium for said hybrid.

13. A hybrid continuous cell line that procuces antibody to viral hepatitis antigen which comprises a cell hybrid of an animal spleen cell immunized with viral hepatitis antigen fused to a myeloma derived from the same animal species as the spleen cell and having the identifying characteristics of ATCC accession number CRL-8017 or CRL-8018.

4,491,633

METHOD FOR THE FAST CALORIMETRIC QUALIFICATION OF PUZZOULAN MATERIALS

István Sajó; György Vámos; Miklós Ürmösy; Barbara Sipos née Kaveczka; Éva Zemplén née Papp; Éva Borsovszky, all of Budapest, and László Barta, Vécs, all of Hungary, assignors to Energiagazdalkodasi Intezet, Budapest, Hungary

Filed Sep. 30, 1982, Ser. No. 430,239

Claims priority, application Hungary, Oct. 14, 1981, 2955/81

Int. Cl.³ G01N *25/48*

U.S. Cl. 436—147 **5 Claims**

1. A method for the fast determination of puzzoulan activity of solid materials, which comprises:

(a) providing a measured quantity of a solid material of which the puzzoulan activity is to be determined;

(b) reacting the material with a measured quantity of an aqueous solution of a strong mineral acid, said measured quantity of solution providing a stoichiometric excess of strong mineral acid for reaction with the material to form a reacted acid suspension;

(c) reacting the reacted acid suspension with fluoride ions in an acidic medium in a system of constant heat capacity; and

(d) measuring the amount of heat generated during the initial, approximately linear, phase of the reaction with the fluoride ions, whereby the puzzoulan activity is determined as a function of the measurements.

4,491,634

CHEMILUMINESCENT IMMUNOASSAY WITH ACTIVATOR OF HYDROGEN PEROXIDE AND A CHLORAMINE

Bernd Frenzel, Spitzelbergstrasse 18a, D-8000 Munich 71, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 267,414, May 26, 1981, Pat. No. 4,433,060. This application Dec. 22, 1981, Ser. No. 333,407

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1980, 3048447; Feb. 20, 1981, 3106444; Aug. 10, 1981, 3131615; Nov. 2, 1981, 3143423

The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.

Int. Cl.³ G01N *33/54, 33/58, 33/52*

U.S. Cl. 436—518 **8 Claims**

1. A process for qualitative and quantitative analysis of an immunological reagent selected from the group consisting of antigens, antibodies and antigen-antibody complexes comprising:

(a) binding to said immunological reagent a chemiluminescent conjugate comprising an antibody, antigen, or binding protein capable of binding to said immunological reagent which is attached to a chemiluminescent marker selected from the group consisting of fluorescein, methylene blue, thionine and functionally equivalent derivatives of these markers,

(b) contacting said bound chemiluminescent marker with an activator selected from the group consisting of mixtures of hydrogen peroxide and chloramine or functionally equivalent derivative of chloramine,

(c) measuring the light emitted by said activated chemiluminescent marker.

4,491,635

REACTIVATING IRIDIUM AND SELENIUM CONTAINING CATALYSTS WITH HYDROGEN HALIDE AND OXYGEN

Shun C. Fung, Bridgewater; Walter Weissman, Berkeley Heights; James L. Carter, Westfield, and Walter S. Kmak, Scotch Plains, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 374,978, May 5, 1982, Pat. No. 4,444,897. This application Nov. 2, 1983, Ser. No. 547,874

Claims priority, application Finland, May 4, 1983, 831532; Japan, May 4, 1983, 58-78847

The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.

Int. Cl.³ B01J 27/30, 23/96, 27/02; C10G 35/085

U.S. Cl. 502—37 21 Claims

1. A process for reactivating a partially or completely decoked agglomerated catalyst containing metallic iridium and selenium comprising the steps of:

(a) pretreating said iridium and selenium-containing catalyst by contact with a substantially elemental oxygen-free atmosphere comprising a halide-providing compound at elevated temperature to provide about 1.3 weight percent and above, halide to the catalyst, taken as the coke-free, dry catalyst; and

(b) redispersing the metallic iridium from step (a), while maintaining said 1.3 weight percent halide provided to the catalyst, by contact with an atmosphere comprising hydrogen halide and elemental oxygen at elevated temperature at an oxygen:hydrogen halide volume ratio of about 1:5 to 100:1 and a hydrogen halide partial pressure of about 0.00005 to 0.1 MPa for a time sufficient to effect a substantial redispersion of said metallic iridium.

20. A process for reactivating partially or completely decoked agglomerated platinum-iridium-selenium on alumina catalyst containing platinum, iridium oxides and selenium comprising the steps of:

(a) contacting said selenium containing agglomerated catalyst with a hydrogen atmosphere at a temperature in the range of about 300° to 540° C. and a pressure of about 0.1 to 2.0 MPa for a sufficient time to substantially convert said oxides of platinum and iridium to the respective metals;

(b) pretreating the catalyst from step (a) by contact with an elemental oxygen-free atmosphere comprising hydrogen chloride at a temperature in the range of about 300° to 540° C. and a pressure of about 0.1 to 2.0 MPa to saturate the catalyst with chloride; and

(c) redispersing the metallic platinum and iridium while maintaining a saturated catalyst chloride level from step (b) by contact with an atmosphere comprising hydrogen chloride and elemental oxygen in an oxygen/hydrogen chloride volume ratio of about 4:1 to 20:1, at a temperature in the range of about 500° to 540° C. for a sufficient time to effect about a 75 to 100 percent redispersion of both metallic platinum and iridium.

21. A process for reactivating an agglomerated metallic platinum-iridium-selenium on alumina catalyst, which has been partially decoked by hydrogen gas, comprising the steps of:

(a) pretreating said selenium-containing catalyst by contact with an elemental oxygen-free atmosphere comprising hydrogen chloride at a temperature in the range of about 300° to 540° C. and a pressure of about 0.1 to 2.0 MPa to saturate the catalyst with chloride; and

(b) redispersing the metallic platinum and iridium while maintaining a saturated catalyst chloride level from step (a) by contact with an atmosphere comprising hydrogen chloride and elemental oxygen in an oxygen/hydrogen chloride volume ratio of about 4:1 to 20:1, at a temperature in the range of about 500° to 540° C. for a sufficient time to effect about a 75 to 100 percent redispersion of both metallic platinum and iridium.

4,491,636

PROCESS USING HALOGEN/OXYGEN FOR REACTIVATING IRIDIUM AND SELENIUM CONTAINING CATALYSTS

Shun C. Fung, Bridgewater, N.J., and Richard W. Rice, Clemson, S.C., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 374,975, May 5, 1982, Pat. No. 4,447,551. This application Nov. 2, 1983, Ser. No. 547,946

Claims priority, application Japan, May 4, 1983, 58-78847

The portion of the term of this patent subsequent to May 8, 2001, has been disclaimed.

Int. Cl.³ B01J 27/30, 23/96, 27/02; C10G 35/085

U.S. Cl. 502—37 21 Claims

1. A process for reactivating an agglomerated catalyst containing metallic iridium and selenium comprising the steps of:

(a) pretreating the iridium and selenium containing catalyst by contact with a substantially elemental oxygen-free atmosphere comprising a halide-providing compound at an elevated temperature to provide about 1.3 weight percent and above halide to the catalyst, taken as the coke-free dry, catalyst; and

(b) redispersing the metallic iridium from step (a) while maintaining said 1.3 weight percent and above halide provided to the catalyst by contact at an elevated temperature with an atmosphere comprising elemental halogen and a redispersing aid selected from elemental oxygen, or elemental oxygen and water, wherein said halogen and oxygen are present in a halogen to oxygen volume ratio in the range of about 0.05 to 10, for a time sufficient to substantially redisperse said metallic iridium.

20. A process for reactivating an agglomerated platinum-iridium on alumina catalyst, containing platinum and iridium oxides and selenium comprising the steps of:

(a) contacting said selenium containing agglomerated catalyst with a hydrogen atmosphere at a temperature in the range of about 300° to 540° C., and a pressure of about 0.1–2 MPa, for a sufficient time to substantially reduce said oxides of platinum and iridium to the respective metals;

(b) pretreating said catalyst from step (a) by contact with an elemental oxygen-free atmosphere comprising hydrogen chloride at a temperature in the range of about 300° to 540° C. and a pressure of about 0.1–2 MPa for a time sufficient to saturate the catalyst with chloride; and

(c) redispersing the metallic iridium and platinum while maintaining a saturated chloride level by contact with an atmosphere comprising elemental chlorine, elemental oxygen and water in a Cl_2/O_2 volume ratio of about 0.2 to 5 at a temperature in the range of about 500° to 540° C., and a pressure of about 0.1–2 MPa for a time sufficient to effect about a 75–100% redispersion of both metallic platinum and iridium.

21. A process for reactivating an agglomerated metallic platinum-iridium-selenium on alumina catalyst, which has been partially decoked by hydrogen gas, comprising the steps of:

(a) pretreating said selenium containing catalyst by contact with an elemental oxygen-free atmosphere comprising hydrogen chloride at a temperature in the range of about 300° to 540° C. and a pressure of about 0.1–2 MPa for a time sufficient to saturate the catalyst with chloride; and

(b) redispersing the metallic iridium and platinum while maintaining a saturated catalyst chloride level by contact with an atmosphere comprising elemental chlorine, elemental oxygen and water, in a chlorine to oxygen volume ratio of about 0.2 to 5, at a temperature in the range of about 500° to 540° C., and a pressure of about 0.1–2 MPa for a time sufficient to effect about a 75–100% redispersion of both metallic platinum and iridium.

4,491,637

COBALT-CONTAINING SUPPORTED CATALYSTS AND THEIR PREPARATION

Juergen Hartig, Gruenstadt; Armin Stoessel, Frankenthal; Guenter Herrmann, Heidelberg, and Laszlo Marosi, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 31, 1983, Ser. No. 499,354

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1982, 3222143

Int. Cl.[3] B01J *29/14, 29/24*

U.S. Cl. 502—66 4 Claims

1. A supported catalyst containing from 2 to 30% by weight, calculated as cobalt, of cobalt in oxidic form, and from 3 to 16% by weight, calculated as the metal, of sodium in bound form, wherein the carrier used is zeolite.

4,491,638

CONTROLLED ADDITION OF PROMOTERS TO ETHYLENE OXIDE CATALYSTS (11)

Paul J. Busse, Omaha, Nebr., assignor to InterNorth, Inc., Omaha, Nebr.

Continuation-in-part of Ser. No. 364,985, Apr. 2, 1982, Pat. No. 4,406,820. This application Aug. 30, 1983, Ser. No. 527,858

The portion of the term of this patent subsequent to Sep. 27, 1983, has been disclaimed.

Int. Cl.[3] B01J *31/04*

U.S. Cl. 502—167 2 Claims

1. In a method for improving the selectivity of supported silver catalysts by incorporating a promoter therein, the improvement which comprises forming a solution of a compound of the promoter and an aminoorganic acid which is not a catalyst poison in a solvent and contacting said catalyst with said solution.

4,491,639

METHODS OF MAKING HIGH ACTIVITY TRANSITION METAL CATALYSTS

John Happel, Hastings-on-Hudson, N.Y.; Miguel A. Hnatow, Verona, and Laimonis Bajars, Princeton Junction, both of N.J., assignors to Gas Research Institute, Chicago, Ill.

Filed Sep. 30, 1982, Ser. No. 431,192

Int. Cl.[3] B01J *27/02, 21/02*

U.S. Cl. 502—219 14 Claims

1. A method of making a catalyst comprising forming an intimate mixture of one or more sulfides of one or more of the elements selected from the group consisting of vanadium, molybdenum and tungsten with elemental sulfur, heating the mixture to a temperature in excess of 200° C., contacting the mixture with hydrogen and hydrogen sulfide to produce an exotherm, cooling the resulting mixture and forming it into a catalyst.

4,491,640

CATALYST FOR COMBUSTION AT LOW TEMPERATURES AND PROCESS FOR PRODUCING SAME

Hiroki Sadamori, Kashihara; Akio Chikazawa, Kadoma; Setsuo Okamura, Osaka, and Chikako Noda, Amagasaki, all of Japan, assignors to Osaka Gas Company Limited, Osaka, Japan

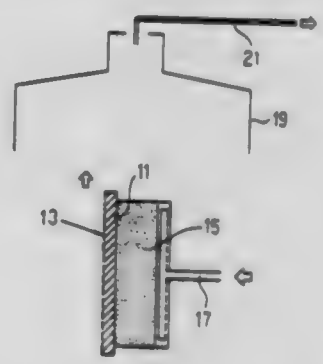
PCT No. PCT/JP81/00373, § 371 Date Jul. 26, 1982, § 102(e) Date Jul. 26, 1872, PCT Pub. No. WO82/02007, PCT Pub. Date Jun. 24, 1982

PCT Filed Dec. 9, 1981, Ser. No. 403,667

Int. Cl.[3] B01J *35/00*

U.S. Cl. 502—242 29 Claims

1. A process for preparing a low-temperature combustion catalyst capable of burning methane or methane-containing gas comprising the steps of bringing a layer of an inorganic fiber having fine pores into contact with a rhodium compound solution having at least 20 times the weight of the layer and containing rhodium in an amount corresponding to 0.1 to 3% of the weight of the layer while circulating the solution; drying the layer at a temperature of up to 200° C. in air; and heat-treating the dried layer at a temperature of 350° to 640° C. in air for 30 minutes to 2 hours, said step of circulating the solution



comprising removing a quantity of said solution after it has been passed through said inorganic fiber and repeatedly passing said removed solution through said inorganic fiber layer.

4,491,641

THERMOSETTING COATING COMPOSITION- III

Panagiotis I. Kordomenos, Mt. Clemens, and Kenneth R. Kurple, Anchorville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 30, 1982, Ser. No. 430,182

Int. Cl.[3] C08K *11/00;* C08G *59/16;* C08L *63/10*

U.S. Cl. 523—400 57 Claims

1. A novel epoxy ester resin adapted for use in a thermosetting coating composition, which epoxy ester resin is of number average molecular weight (M_n) about 1000 to about 5000, being the reaction product of diepoxide with (i) diphenol in chain extension reaction, (ii) dicarboxylic acid in chain extension reaction, and (iii) monobasic fatty acid in chain terminating esterification reaction, which chain extension reactions and esterification reaction occur substantially simultaneously at a reaction temperature reaching at least about 137° C., wherein the epoxy functionality, phenol funtionality, dicarboxylic acid carboxyl functionality and fatty acid carboxyl functionality are employed in relative proportions of about 1:0.2–0.6:0.1–0.4:0-.4–0.9 equivalents, respectively.

4,491,642

UNIFORMLY PIGMENTED, LOW SHRINKING POLYESTER MOLDING COMPOSITIONS

Kenneth E. Atkins, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 420,338, Sep. 20, 1982, abandoned, which is a continuation-in-part of Ser. No. 247,991, Mar. 26, 1981, abandoned, which is a continuation of Ser. No. 868,447, Jan. 10, 1978, abandoned, which is a continuation of Ser. No. 737,580, Nov. 1, 1976, abandoned. This application Apr. 25, 1984, Ser. No. 602,635

Int. Cl.[3] C08K *3/22*

U.S. Cl. 523—515 15 Claims

1. A curable molding composition containing:

(a) an unsaturated polyester resin that is suitable for use in molding and which comprises the reaction product of an olefinically unsaturated dicarboxylic acid or anhydride and a polyol;

(b) an olefinically unsaturated monomer that is copolymerizable with said polyester resin;

(c) a thickening agent comprising an oxide or hydroxide of a metal of Group I, II, or III of the Periodic Table;

(d) a pigment;

(e) a low profile additive comprising a vinyl acetate/maleic acid copolymer; and

(f) a surface active compound that is employed in an amount sufficient to enhance the uniformity of the pigmentation of

the cured composite produced from said curable molding composition.

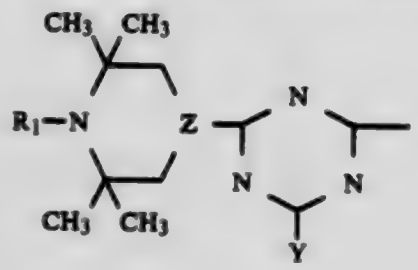
4,491,643

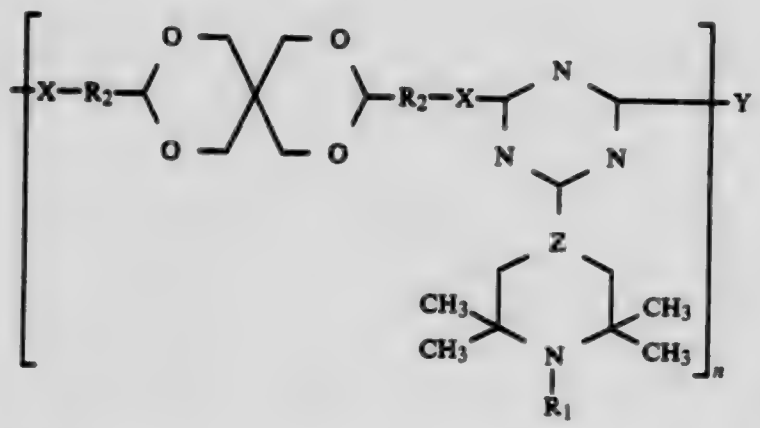
BIS(2,2,6,6-TETRAMETHYLPIPERIDYL-1,3,5-TRIAZINYL)-SPIRODIAMINES AND SPIROGLYCOL ETHERS AND SYNTHETIC RESIN COMPOSITIONS CONTAINING THE SAME

Motonobu Minagawa, Koshigaya; Yutaka Nakahara, Iwatsuki; Toshihiro Shibata, Omiya, and Etsuo Tobita, Tokyo, all of Japan, assignors to Adeka Argus Chemical Co., Ltd., Urawa, Japan

Filed Jan. 9, 1984, Ser. No. 569,123
Claims priority, application Japan, Jan. 10, 1983, 58-2000
Int. Cl.³ C08K 5/34, 5/15
U.S. Cl. 524—96 30 Claims

1. Bis(2,2,6,6-tetramethylpiperidyl-1,3,5-triazinyl) -spirodiamines and spiroglycol ethers having the formula:



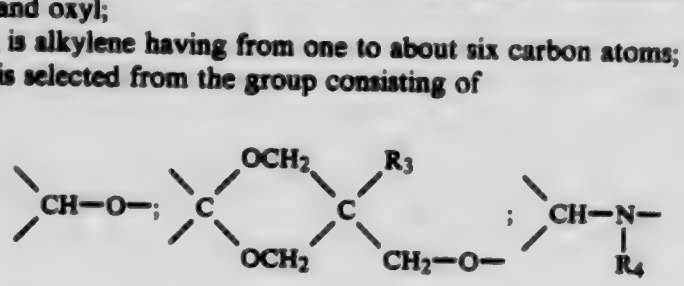


wherein:

R_1 is selected from the group consisting of hydrogen, alkyl having from one to about eighteen carbon atoms, hydroxyalkyl having from two to about six carbon atoms; epoxyalkyl having from three to about eight carbon atoms; alkylaryl having from seven to about eighteen carbon atoms; acyl having from two to about eight carbon atoms; and oxyl;

R_2 is alkylene having from one to about six carbon atoms;

Z is selected from the group consisting of

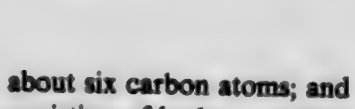


in which

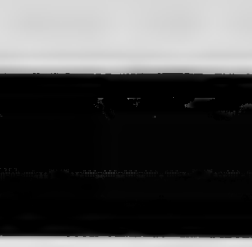
R_3 is alkyl having from one to about six carbon atoms; and

R_4 is selected from the group consisting of hydrogen; alkyl having from one to about eighteen carbon atoms; cycloalkyl having from about four to about eight carbon atoms; hydroxy alkyl and alkoxyalkyl having from two to about twelve carbon atoms and dialkylamino having from two to about ten carbon atoms;

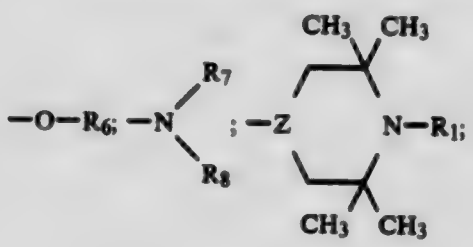
X is selected from the group consisting of —O— and

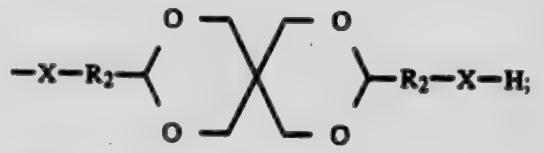


in which R_5 is selected from the group consisting of hydrogen, alkyl having from one to about eighteen carbon atoms; cycloalkyl having from about four to about eight carbon atoms; hydroxy alkyl and alkoxyalkyl having from two to about twelve carbon atoms, and dialkylamino having from two to about ten carbon atoms; and



Y is selected from the group consisting of:





and Cl; in which R_6 is selected from the group consisting of alkyl having from one to about eigtheen carbon atoms; cycloalkyl having from about four to about eight carbon atoms; hydroxy alkyl and alkoxyalkyl having from two to about twelve carbon atoms and dialkylamino having from two to about ten carbon atoms and aryl and alkaryl having from six to about twentyfour carbon atoms;

R_7 and R_8 are selected from the group consisting of hydrogen, alkyl having from one to about eighteen carbon atoms; and alkylene forming a heterocyclic ring including the nitrogen atom in the ring and having from four to seven carbon atoms and no or one oxygen atom; and

n is a number from 1 to about 50 representing the average number of units enclosed by the brackets.

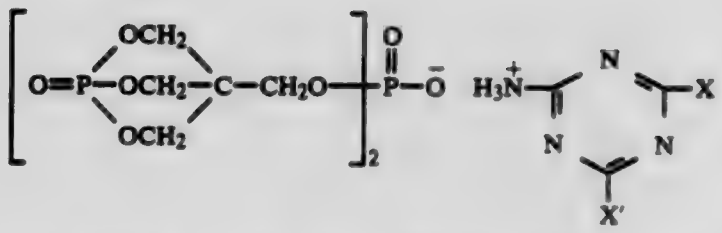
4,491,644

FLAME-RETARDANT POLYMER COMPOSITIONS

Yuval Halpern, Skokie, and Donna M. Mott, Des Plaines, both of Ill., assignors to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed May 23, 1983, Ser. No. 497,355
Int. Cl.³ C08K 5/52
U.S. Cl. 524—100 5 Claims

1. A flame-retarded polymer composition comprising a major proportion polymer selected from the group consisting of an olefin polymer, a polyalkyl acrylate or methacrylate, and polystyrene, and a minor proportion, sufficient to reduce the tendency of the polymer to burn, of an amino-s-triazine salt of a phosphoric acid said salt having the structure



where X and X' are the same or different hydroxy or amine groups.

4,491,645

LEATHER TREATMENT COMPOSITION

John A. Thompson, Milwaukee, Wis., assignor to Henkel Corporation, Minneapolis, Minn.

Filed May 3, 1982, Ser. No. 374,577
Int. Cl.[3] C08L *33/14;* C08K *5/09*
U.S. Cl. 524—112 17 Claims

1. A leather treating composition comprising:

(a) from about 0.5% to about 3% by weight of an aliphatic cyclic anhydride;

(b) from about 3.75% to about 12% by weight of a copolymer of a member selected from the group consisting of:

(i) methyl acrylate and methylmethacrylate and mixtures thereof and,

(ii) ethyl acrylate and,

(iii) acrylic acid and methacrylic acid and mixtures thereof in a weight ratio of (i) to (ii) of about 2:1 to about 1:2 and a weight ratio of (i) or (ii) to (iii) of about 50:1 to 8:1;

(c) from about 3.75% to about 12% by weight of a copolymer of:

(i) a member selected of the group consisting of butyl methacrylate and butyl acrylate and mixtures thereof,

(ii) a member selected from the group consisting of hydroxyethylmethacrylate and hydroxyethylacrylate and mixtures thereof,

(iii) a member selected from the group consisting of methyl acrylate and methyl methacrylate and mixtures thereof,

(iv) a member selected from the group consisting of acrylic acid and methacrylic acid and mixtures thereof; in a weight ratio of (i) to (iii) of from about 2:7 to about 1:7; and a weight ratio of (ii) to (iii) of about 1:30 to about 1:10; and a weight ratio of (i) to (iv) of 25:1 to 15:1;

(d) from about 70% to about 92% by weight of water; and,

(e) a sufficient amount of base to maintain an alkaline pH.

4,491,646

AQUEOUS HYDROXYL-ACRYLIC LATEX AND MULTI-ISOCYANATE ADHESIVE COMPOSITION

Norma J. Gruber, Worthington, and Clois E. Powell, Westerville, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Sep. 29, 1983, Ser. No. 537,294
Int. Cl.[3] C08L *35/02;* C08G *18/62;* C09J *3/16*
U.S. Cl. 524—558 20 Claims

1. In an aqueous latex adhesive composition of an aqueous latex in admixture with an organic solvent solution of multi-isocyanate cross-linking agent, and a thickener, the improvement for a room temperature-curable adhesive composition having improved water resistance which comprises the curable ingredients consisting essentially of an aqueous hydroxyl-functional acrylic latex which contains hydroxyl groups as its only isocyanate-reactive functionality and said multi-isocyanate cross-linking agent.

14. A composite of at least two wooden surfaces which are adhesively joined by the dried residue of an aqueous latex adhesive composition, of claim 1.

4,491,647

POLYMER COMPOSITION CONTAINING POLYCARBONATE AND A COPOLYMER OF METHYLMETHACRYLATE WITH N-PHENYLMALEIMIDE

Barry D. Dean, Broomall, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 5, 1983, Ser. No. 557,975
Int. Cl.[3] C08L *69/00, 51/00*
U.S. Cl. 525—67 10 Claims

1. A polyblend which comprises in weight percent, from about 80 to about 20 of a thermoplastic polycarbonate based on bis-(hydroxyaryl)alkanes, and from about 20 to about 80 of a methylmethacrylate/N-phenylmaleimide copolymer containing from about 75 to about 90 recurring units of methylmethacrylate monomer and from about 25 to about 10 recurring units of N-phenylmaleimide monomer.

4,491,648

POLYMER BLEND COMPOSITION

Daniel P. Durbin, Sugar Land, and Robert G. Lutz, Spring, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 29, 1984, Ser. No. 614,364
Int. Cl.[3] C08L *53/02, 69/00*
U.S. Cl. 525—89 6 Claims

1. A thermoplastic molding composition comprising:

(a) from about 10 to about 85 percent by weight of a selectively hydrogenated block copolymer comprising at least two monoalkenyl arene polymer end blocks A and at least one substantially completely hydrogenated conjugated diene polymer mid block B, the weight percent of blocks A comprising between 8 and 65 percent by weight of said block copolymers wherein at least 80% of the aliphatic double bonds in block B are hydrogenated and no more than about 25% of the alkenyl aromatic double bonds in block A are hydrogenated;

(b) from about 10 to about 80 percent by weight of a vinyl aromatic copolymer comprising a vinyl aromatic compound and an α, β-unsaturated cyclic anhydride; and

(c) from about 10 to about 80 percent by weight of a polycarbonate;

(d) from about 0 to about 50 percent by weight of a hydrogenated diblock copolymer comprising a monoalkenyl arene polymer and a hydrogenated conjugated diene polymer.

4,491,649

HIGH IMPACT POLYPHENYLENE ETHER COMPOSITIONS HAVING IMPROVED PROCESSABILITY

John C. Falk, Northbrook, Ill.; Ronald L. Jalbert, Parkersburg, W. Va., and Klementina F. Khait, Skokie, Ill., assignors to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Dec. 1, 1983, Ser. No. 556,888
Int. Cl.[3] C08L *53/00*
U.S. Cl. 525—92 8 Claims

1. A thermoplastic resin comprising:

100 parts by weight of a blend consisting of from 98 to 75 wt% of a polyphenylene ether and correspondingly from 2 to 25 wt% of a rubbery impact modifier; and

from 5 to 50 parts by weight of an aromatic polycarbonate per hundred parts of said blend.

4,491,650

ACRYLIC RESIN HAVING PENDANT SILANE GROUPS THEREON, AND METHODS OF MAKING AND USING THE SAME

Sidky D. Rizk, Westfield; Harry W. S. Hsieh, Rahway, and Michael P. Mazzeo, Hightstown, all of N.J., assignors to Essex Specialty Products, Inc., Clifton, N.J.

Filed May 5, 1982, Ser. No. 374,989
Int. Cl.³ C08F 8/30
U.S. Cl. 525—102 5 Claims

1. A poly(meth)acrylate polymer having a weight average molecular weight from about 1000 to about 100,000 and having pendant hydrolyzable alkoxysilane groups attached to a poly(-meth)acrylate backbone by urethane linkages, prepared by reacting at least 75 equivalent percent of the hydroxy groups of a poly(meth)acrylate polymer having from 3 to 100 pendant hydroxy groups per molecule with the isocyanate group of an isocyanato functional alkoxysilane of the formula

$$OCN-R^3-SiX_nR^4(3-n),$$

wherein X is lower alkoxy, R^4 is hydrogen or lower alkyl, n is an integer from 1 to 3, and R^3 is a divalent aliphatic, aromatic, or araliphatic organic radical, said poly(meth)acrylate polymer being a copolymer formed from a monomer mixture consisting of one or more hydroxyalkyl acrylates or methacrylates having an alkylene group containing from 2 to 6 carbon atoms and one or more alkyl acrylates or methacrylates having 1 to 8 carbon atoms in the alkyl group.

4,491,651

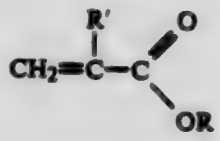
ANTISTATS CONTAINING ACRYLONITRILE COPOLYMERS AND POLYAMINES

Michael I. Naiman, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

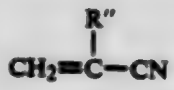
Filed May 17, 1982, Ser. No. 378,541
Int. Cl.³ C08L 33/20, 39/04, 79/02
U.S. Cl. 525—187 12 Claims

1. An antistatic composition for addition to organic fluids to reduce the electrostatic charges thereof comprising

(1) a copolymer of (a) a monomer of the formula



and (b) a monomer of the formula



where R′ and R″, which may be the same or different, are hydrogen or an alkyl group and R is selected from the group consisting of alkyl, cycloalkyl, aryl and alkaryl; the molar ratio of (b) to (a) being from about 10:1 to 1:10; and the molecular weight of the copolymer being at least about 1000; and

(2) a polymeric polyamine selected from the group consisting of (i) the reaction product of an epihalohydrin and an amine and (ii) an α-olefin-maleimide copolymer.

4,491,652

SEQUENTIALLY PREPARED THERMOPLASTIC ELASTOMER AND METHOD OF PREPARING SAME

Demetreos N. Matthews, Bethany, and Walter Nudenberg, Newtown, both of Conn., assignors to UNIROYAL, Inc., Middlebury, Conn.

Continuation-in-part of Ser. No. 263,236, May 13, 1981, abandoned. This application Apr. 29, 1982, Ser. No. 372,461
Int. Cl.³ C08F 297/08
U.S. Cl. 525—247 14 Claims

1. A method of making a thermoplastic elastomeric sequential polymer comprising (a) contacting propylene under polymerization conditions with a polymerization catalyst system which produces polypropylene in which at least some of the polymer molecules have living polymer ends with a short life, said catalyst system comprising a catalyst which is titanium halide or a complex thereof with an electron donor supported on a magnesium or manganese halide and a cocatalyst which is an organo aluminum compound or a substitution product or addition product thereof with an electron donor, thereafter (b) adding ethylene and propylene to the polymerization mixture to form amorphous ethylene-propylene copolymer segments sequentially therein, the resulting polymer having (A) crystalline polypropylene segments of isotactic polypropylene and (B) amorphous segments of elastomeric ethylene-propylene, the weight ratio (A) to (B) segments being within the range of from 10:90 to 75:25.

4,491,653

CONTROLLED SURFACE-FLUORINATION PROCESS

Vincent C. McGinniss, Delaware, and Francis A. Sliemers, Columbus, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 363,065, Mar. 29, 1982, abandoned. This application Jun. 7, 1983, Ser. No. 501,771
Int. Cl.³ C08F 8/22
U.S. Cl. 525—356 9 Claims

1. A method for fluorinating the surface of a polymeric solid for improving a surface property of said solid while substantially maintaining the bulk physical properties of said solid, which comprises:

contacting said polymeric solid with dilute fluorine gas at a temperature not substantially above about room temperature and at a pressure not above about 1 atmosphere for a time adequate to partially fluorinate said solid surface by forming stable fluorocarbon groups wherein the ratio of $-CF_2-$ groups to —CHF— groups is not substantially above about 1:1, the proportion of oxygen-providing groups present during said fluorination being restricted to an amount whereby substantially no oxidation of said surface occurs.

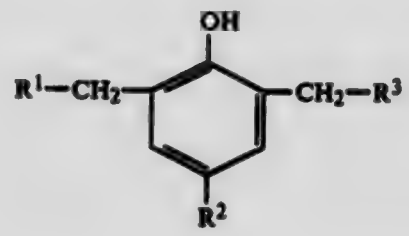
4,491,654

WATER-INSOLUBLE PHENOL-FORMALDEHYDE-POLYAMINES, METHOD FOR MAKING THEM, CURING OF POLYEPOXIDES AND THE RESULTING PRODUCT

Lowell O. Cummings, 133 Crane Dr., San Anselmo, Calif. 94960

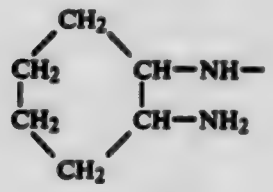
Continuation-in-part of Ser. No. 401,547, Jul. 26, 1982, abandoned. This application Jul. 11, 1984, Ser. No. 629,690
Int. Cl.³ C08G 14/06, 14/12
U.S. Cl. 525—490 27 Claims

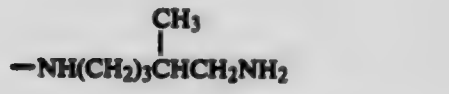
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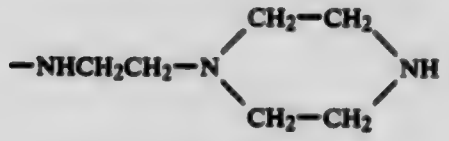


R^1 being chosen from the group consisting of:

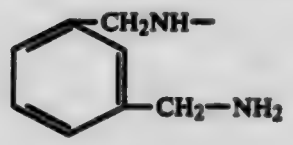
$-NH(CH_2)_6NH_2$
$-NH(CH_2)_2NH_2$
$-NH(CH_2)_2NH(CH_2)_2NH_2$
$-NH(CH_2)_2NH(CH_2)_2(NH(CH_2)_2NH_2)_x$
where x = 1 or 2,







$-NH-(CH_2)_6NH-(CH_2)_6NH_2$



R^2 being chosen from the group consisting of C_4 to C_{12} alkyl groups and the phenyl group on the ring of the phenol, and

R^3 being chosen from the group consisting of fatty propylene diamine radicals, $R^4NH(CH_2)_3NH-$, where R^4 is a C_8 to C_{20} alkyl radical, and ether propylene diamine radicals, $R^5O(CH_2)_3NH(CH_2)_3NH-$, where R^5 is a C_{12} to C_{15} alkyl radical.

14. A method for making a curing agent for epoxy resins, comprising the steps of:

mixing a major amount by weight of a water-insoluble propylene diamine chosen from the group consisting of the C_8 to C_{20} fatty propylene diamines and the C_{12} to C_{15} ether propylene diamines with a minor amount by weight of a water-soluble polyamine suitable for rapid cure of epoxy resins,

mixing the resulting mixture with a water-insoluble substituted phenol to give a water-insoluble reaction product, and then

reacting said reaction product with formaldehyde to give said curing agent.

4,491,655

RUBBER CONTAINING ESTERS OF ROSIN ACID

Paul H. Sandstrom, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 6, 1984, Ser. No. 568,964
Int. Cl.³ C08L 93/00
U.S. Cl. 527—600 9 Claims

1. A process for preparing rubber compositions which comprises admixing a rubber selected from the group consisting of natural rubber, homopolymers of conjugated diolefins and copolymers of conjugated diolefins and ethylenically unsaturated monomers with methyl esters of rosin acids at a concentration from 10 to 70 parts per hundred based on weight of rubber.

3. In a cured rubber stock containing conventional rubber components, said stock being present in a rubber article, the improvement comprising: the stock having incorporated therein prior to curing thereof an ester of a wood rosin wherein the ester of wood rosin is substituted for at least 20% by weight of a petroleum derived product conventionally contained in said stock.

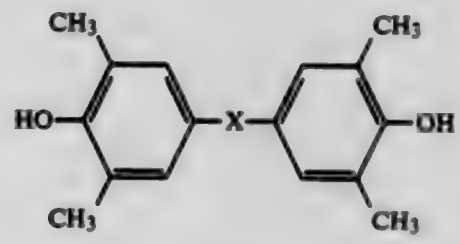
4,491,656

POLYPHOSPHATES AND PROCESS OF PREPARATION

Volker Serini; Bernhard Schulte, both of Krefeld; Hans-Dieter Block, Cologne, and Dieter Freitag, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 30, 1983, Ser. No. 527,833
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1982, 3233616
Int. Cl.³ C08G 79/04
U.S. Cl. 528—167 2 Claims

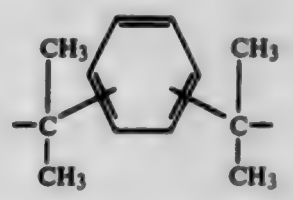
1. A process for the production of branched polyphosphates having relative viscosities of rel = 1.010 to 1.200 (in CH_2Cl_2, c = 5 g/l), characterised in that from 1 to 100 ml % of one or more aromatic diols corresponding to formula (1):



(1)

wherein

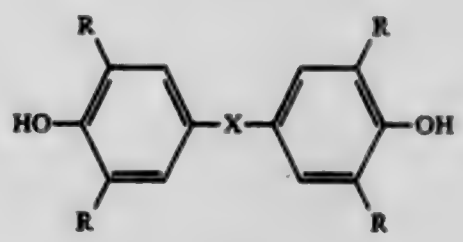
X represents a C_1–C_5 alkylene or alkylidene radical, a C_5–C_6 cycloalkylene or cycloalkylidene radical, a single bond, —S— or a radical corresponding to formula (1a):



(1a)

wherein the two alkylene substituents may be in the o, m or p position relative to each other,

and from 99 to 0 mol % of hydroquinone, resorcine or an aromatic diol corresponding to formula (2):



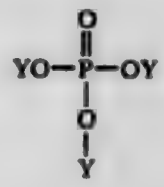
(2)

wherein

R represents hydrogen, halogen as chlorine and bromine and C_1–C_3 alkyl with the provision that at most three alkyl groups are present,

X has the meaning as given in formula (1)

are reacted with at least one phosphoric acid ester corresponding to formula (3):



(3)

wherein

Y represents the same or different alkyl-, cyclo- alkyl-, aryl- and alkylaryl-radicals and wherein the ratio of aromatic

diol to phosphonic acid ester is from about 0.66:1 to 2.3:1 in the presence of basic alkali metal or alkaline earth metal compounds with the release of alcohols and/or phenols at a temperature of from 80° to 350° C.

4,491,657

POLYESTER MULTIFILAMENT YARN AND PROCESS FOR PRODUCING THEREOF

Isoo Saito, Okazaki; Kotaro Fujioka, Nagoya; Hajime Arai, and Hideo Saruyama, both of Okazaki, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 3, 1982, Ser. No. 354,200
Claims priority, application Japan, Mar. 13, 1981, 56-35290
Int. Cl.³ C08G 63/02
U.S. Cl. 528—308.1 8 Claims



1. A polyester multifilament yarn obtained from a polymer comprising at least 90 mol percent ethylene terephthalate as a repeating unit in the molecular chain, said polyester multifilament yarn having the following combination of characteristics;

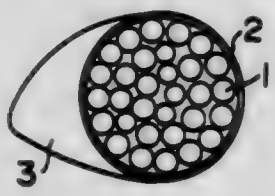
(A) an initial modulus (Mi) of 90 to 130 grams per denier,
(B) a terminal modulus (Mt) of 0 to 15 grams per denier,
(C) a shrinkage index value of 2 to 8 percent expressed by ratio of the shrinkage (ΔS) at dry heating to the intrinsic viscosity (IV)
(D) a birefringence value (An) of 165×10^{-3} to 190×10^{-3},
(E) a crystalline orientation function (f_c) of 0.93 to 0.97,
(F) a crystal size (D) of 47 to 55 angstroms,
(G) a long period (Lp) of 130 to 145 angstroms,
(H) a molecular orientation index in the amorphous region (F) of 0.80 to 0.92, and
(I) a concentration of carboxyyl end groups (—COOH) of 0 to 25 equivalents per 10^6 grams of the polymer.

4,491,658

METHOD FOR TREATING EMULSIFIED LATEX

Teruhiko Sugimori, and Hideaki Habara, both of Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 378,331, May 14, 1982,. This application Nov. 15, 1983, Ser. No. 551,894
Claims priority, application Japan, May 15, 1981, 56/73115
The portion of the term of this patent subsequent to Jan. 31, 2001, has been disclaimed.
Int. Cl.³ C08F 6/22
U.S. Cl. 528—486 11 Claims



1. A method for producing a particulate of a high bulk specific gravity containing substantially no finely powdered material nor a coarse powdered material from an emulsified latex from which impact modifiers or processing aids are obtainable, which comprises:

discharging an emulsified latex of a copolymer consisting of methyl methacrylate and 5 to 39% by weight of at least one other copolymerizable monofunctional vinyl monomer, said latex having a Reynolds number of 300 or less containing particles of 1 μm or less in diameter from fine tubes which satisfy the relationship: $L/D \geqq 0.065\ Re$, wherein L is the length of the fine tubes, D is the equivalent diameter of the fine tubes and Re is the Reynolds number, into a coagulation solution to coagulate the latex; and

washing and drying the coagulated latex.

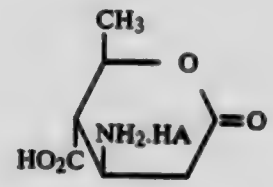
4,491,659

2,6-DIDIOXY-3-AMINE,4-CARBOXY METHYLGLYCOSIDE AND RELATED COMPOUNDS

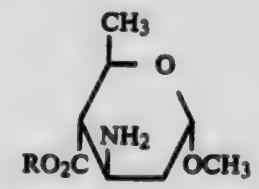
Philippe L. Durette, New Providence, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 248,174, Mar. 30, 1981, abandoned. This application May 26, 1983, Ser. No. 498,447
Int. Cl.³ C07H 15/04, 5/06
U.S. Cl. 536—17.2 2 Claims

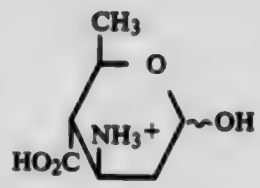
1. A process for preparing



wherein: A is an anion derived from hydrochloric or sulfuric acid; comprising the steps of: hydrolyzing in the presence of aqueous acid:



to form:



followed by treatment with an oxidant selected from bromine water, Pt-O_2, silver carbonate, Jones reagent, pyridinium dichromate, pyridinium chlorochromate, dimethylsulfoxide-acetic anhydride, silver picolinate in water, dimethylsulfoxide, or dimethylsulfoxidediglyme wherein R is selected from the group consisting of alkyl having 1–6 carbon atoms, phenylalkyl having 7–10 carbon atoms.

4,491,660

MATRIX POLYMERS FOR BINDING ENDOTOXINS

Ronald L. Gendrich, Waukegan, and William H. Holleman, Libertyville, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 110,871, Jan. 10, 1980, abandoned. This application May 3, 1982, Ser. No. 374,442
Int. Cl.³ C07H 1/00
U.S. Cl. 536—32 5 Claims

1. A matrix material for binding endotoxins, said matrix material having the formula:

A-x-B-y-Z

wherein

A is a water insoluble, high molecular weight polymer;

x is an O, N, disubstituted isourea, an oxycarbonyl, oxo, aminocarbonyl or amino group;

B is alkyl of from 3 to 12 carbon atoms;

y is an oxo, aminocarbonyl or amino group; and

Z is selected from the group consisting of phenyl, naphthyl, benzyl, or a group consisting of substituted phenyl, substituted naphthyl and substituted benzyl, said substituted groups being substituted with amidino, guandino, amino, carboxamido, halo, nitro, alkyl, or alkoxy groups.

5. The matrix material of claim 1 wherein A is cellulose, x is amino, B is alkyl of 3 to 12 carbon atoms, y is amino or aminocarbonyl, and Z is phenyl or benzyl substituted by amidino.

4,491,661

PROCESS FOR THE PREPARATION OF CELLULOSE ETHERS FROM AMMONIA-ACTIVATED CELLULOSE

Karl Bredereck, and Emy Togelang, both of Stuttgart, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 27, 1983, Ser. No. 546,044

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1982, 3241720

Int. Cl.³ C08B *11/02, 11/08, 11/12*

U.S. Cl. 536—84 15 Claims

1. A process for the preparation of water-soluble cellulose ethers, comprising the steps of:

(a) activating cellulose with ammonia;

(b) alkalizing the activated cellulose with an alkalizing agent in the presence of ammonia, said alkalizing agent comprising an aqueous solution of an alkali metal hydroxide;

(c) removing the ammonia from the alkali cellulose in the presence of the alkalizing agent; and

(d) etherifying the alkali cellulose with an etherifying agent in the presence of an organic solvent.

4,491,662

AMINOMETHYL GROUP CONTAINING CATIONIC DYES

Manfred Patsch, Wachenheim, and Manfred Ruske, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

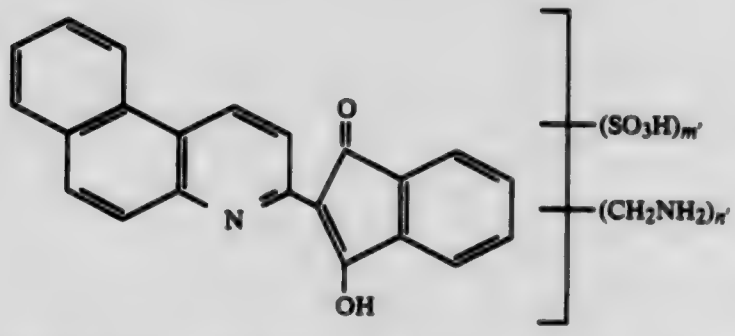
Filed Apr. 20, 1982, Ser. No. 370,266

Claims priority, application Fed. Rep. of Germany, May 7, 1981, 3117956

Int. Cl.³ C07D *498/04, 521/00*

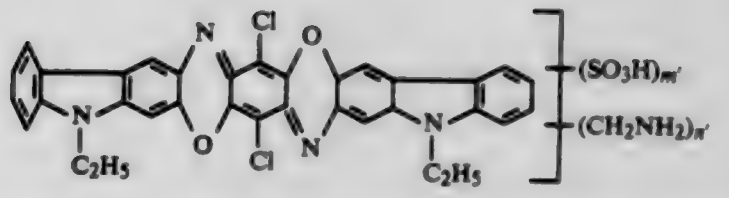
U.S. Cl. 544—74 4 Claims

1. A dye of the formula



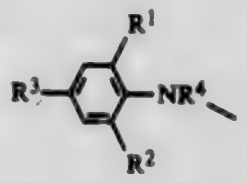
where m' has a mean value of 0.1 and n' has a mean value of 1.1.

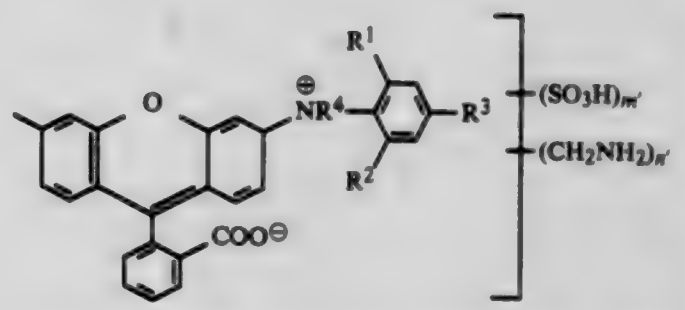
2. A dye of the formula



where m' has a mean value of from 0.5 to 1 and n' has a mean value of 1 to 3.

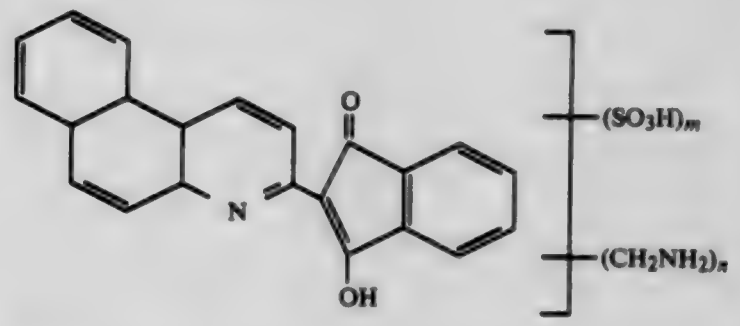
3. A dye of the formula





where m' has a mean value of from 0 to 0.5 and n' has a mean value of from 1.5 to 3, R^1, R^2 and R^3, independently of one another, are hydrogen, C_1–C_4-alkyl or halogen and R^4 is hydrogen or C_1–C_4-alkyl.

4. A dye of the formula:



wherein

M^+ is selected from the group consisting of H^+, alkali metal ion, NH^+_4, and alkaline earth metal ion provided that the resulting dye is water-soluble;

m is 0, 1 or 2; and

n is 1, 2, 3 or 4.

4,491,663

TRIFUNCTIONAL BLOCKED ISOCYANATE CONTAINING AN ISOCYANURATE RING

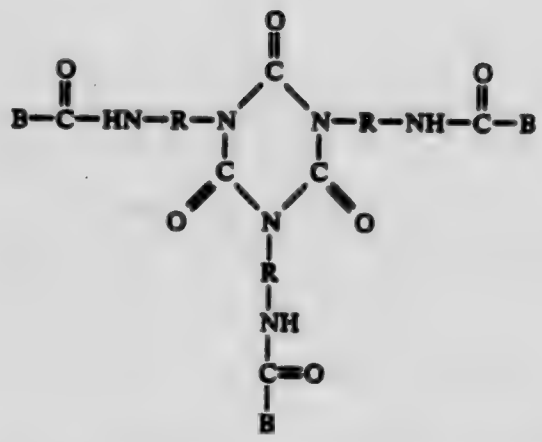
Panagiotis I. Kordomenos, Mt. Clemens, and Andrew H. Dervan, Fraser, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 368,178, Apr. 14, 1982, abandoned. This application May 29, 1984, Ser. No. 614,719

Int. Cl.³ C07D *251/34*

U.S. Cl. 544—193 13 Claims

1. A process for manufacturing pure trifunctional blocked isocyanate compound containing an isocyanurate ring and having the formula



wherein R is selected from the group consisting of aliphatic, cycloaliphatic and aromatic groups and combinations thereof and B is the residue of an active hydrogen containing blocking agent,

said process comprising:

(A) reacting (i) organic diisocyanate represented by the formula

OCN—R—NCO

and wherein one of the isocyanate groups thereof is more reactive than the other and (ii) sufficient active hydrogen containing blocking agent represented by the formula BH to react substantially all of said more reactive isocyanate groups; and

(B) cotrimerizing the reaction product of (A) in the presence of a catalyst such that said isocyanurate ring containing compound is formed by reaction of 3 moles of said blocked diisocyanate.

4,491,664

PROCESS FOR THE PRODUCTION OF ERGOT ALKALOIDS

Wolfgang Oppolzer, Vandoeuvres, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

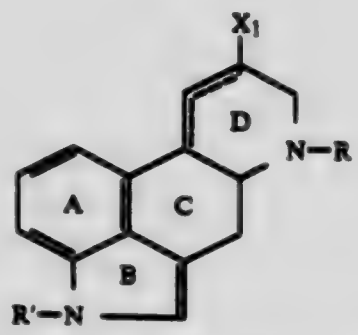
Filed Mar. 12, 1982, Ser. No. 357,526

Claims priority, application United Kingdom, Mar. 13, 1981, 8107959

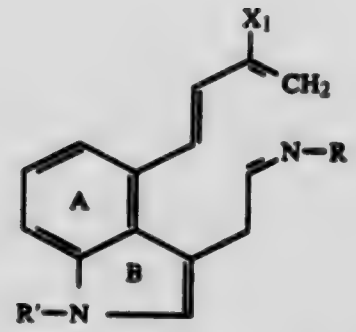
Int. Cl.³ C07D *457/00, 209/14*

U.S. Cl. 546—67 21 Claims

1. A process for the preparation of an ergot alkaloid of the formula



which comprises the step of intramolecularly cyclizing a compound of the formula



under Diels-Alder reaction conditions, wherein

X_1 is a pharmacologically acceptable substituent in the 8-position of an ergot alkaloid or a substituent convertible thereto which is stable under Diels-Alder reaction conditions;

R is (C_{1-4})alkoxy, acyloxy, benzyloxy, amino, (C_{1-4})alkyl amino, acyl or (C_{1-4})alkyl sulphonyl, where acyl is (1-20)alkanoyl, benzoyl or phen(C_{2-5})-alkanoyl;

R′ is hydrogen, (C_{1-4})alkyl, (C_{1-4})alkyl carbonyl, (C_{1-4})alkoxy carbonyl or tosyl; and

Rings A and B are ergot alkaloid rings, which may be substituted with pharmaceutically acceptable ergot alkaloid ring substituents which are stable under Diels-Alder reaction conditions.

4,491,665

METHOD OF PREPARING ISOMERS OF BIS ISOQUINOLINIUM COMPOUNDS

Hassan A. El-Sayad, Chapel Hill; Roy A. Swaringen, Jr., Durham, and David A. Yeowell, Chapel Hill, all of N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 182,446, Jul. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 86,530, Oct. 19, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,299

Int. Cl.³ C07D *401/10*; A61K *31/47*

U.S. Cl. 546—140 1 Claim

1. A method for the preparation of a pharmacuetically acceptable salt of 2,2′-(1,3-phenylenebis(ethylenecarbonyloxytrimethylene)bis(1R,2S)-1,2,3,4-tetrahydro-6,7,8-trimethoxy-2-methyl-1-(3,4,5-trimethoxybenzyl)isoquinolinium cation or 2,2′-(1,3-phenylenebis(ethylenecarbonyloxytrimethylene)-bis(1S,2R)-1,2,3,4-tetrahydro-6,7,8-trimethoxy-2-methyl-1-(3,4,5-trimethoxybenzyl)isoquinolinium cation which comprises:

(1) the resolution of the R or S isomer of 5′,8-dimethoxylaudanosine base from a mixture of the R and S isomers;

(2) addition of a 3-hydroxypropyl halide to the separated R or S isomer to form the corresponding optically active N-(3-hydroxypropyl)tetrahydroisoquinolinium salt (cis, trans mixture);

(3) separation by crystalization of the trans isomer from the cis, trans mixture; and

(4) condensing the trans isomer with an appropriate 1,3-phenylenedipropionic acid.

4,491,666

PREPARATION OF ANTHRAQUINOID DISPERSE DYES

Rolf Niess, Schifferstadt, and Karl Schaeffer, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

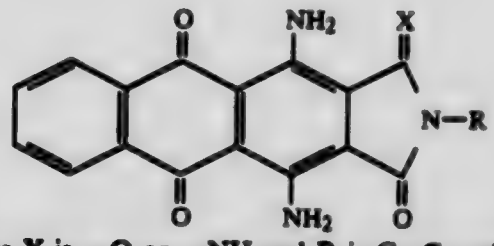
Filed Mar. 5, 1982, Ser. No. 355,308

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1981, 3109951

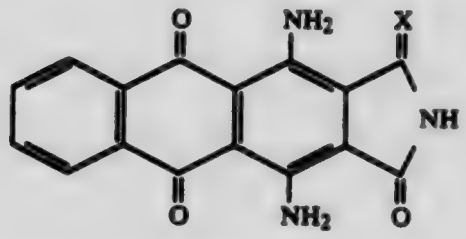
Int. Cl.³ C07D *209/56*; C09B *5/62*

U.S. Cl. 548—426 9 Claims

1. In a process for the preparation of an anthraquinoid disperse dye of the formula



where X is =O or =NH and R is C_1–C_{12}-alkyl, C_2–C_6-hydroxyalkyl, alkoxyalkyl of 3 to 12 carbon atoms in total, C_5–C_8-cycloalkyl, phenoxy-C_2-or -C_3-alkyl, phenyl-C_1–C_4-alkyl or phenyl -C_1–C_4-alkoxy-C_2-or -C_3-alkyl, comprising the step of reacting a compound of the formula



with an amine of the formula

$$R—NH_2$$

where X and R have the above meanings, the improvement wherein the reaction is carried out in water at from 70° to 100° C.

4,491,667

HEXAHYDROPHTHALIDES

Takayuki Saito; Toru Kikuchi; Masakatsu Obara, and Akihiro Kobayashi, all of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

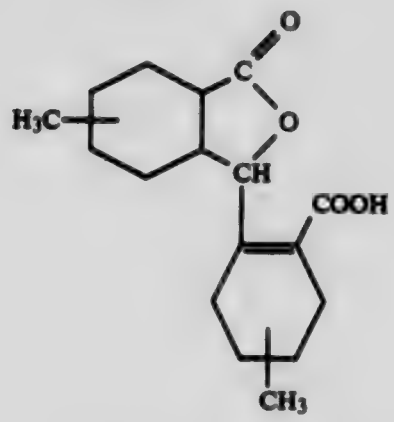
Filed Jan. 14, 1982, Ser. No. 388,244

Claims priority, application Japan, Jun. 17, 1981, 56-94164; Apr. 27, 1982, 57-70921

Int. Cl.³ C07D *307/77*

U.S. Cl. 549—302 1 Claim

1. A lactone of the formula:



4,491,668

PROCESS FOR PREPARING L-ASCORBIC ACID

Kenji Ikawa; Kanji Tokuyama, both of Osaka, and Masumi Kiyokawa, Hyogo, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Mar. 23, 1983, Ser. No. 477,925

Claims priority, application Japan, Apr. 9, 1982, 57-60121

Int. Cl.³ C07D *307/62*

U.S. Cl. 549—315 4 Claims

1. A process for preparing L-ascorbic acid from sodium 2-keto-L-gulonate, comprising the steps of:

introducing gaseous hydrogen chloride in an amount of 1.5–2 moles to 1 mole of sodium 2-keto-L-gulonate into a mixture of sodium 2-keto-L-gulonate, ethanol and acetone wherein the sodium 2-keto-L-gulonate, ethanol and acetone are present at a weight ratio of 1:0.25–1.00:0.5–2.5 and at a temperature of about 25°–75° C. until precipitation of sodium chloride ends;

removing the precipitated sodium chloride before L-ascorbic acid begins to crystallize out;

maintaining the filtrate or supernatant at a temperature of about 25°–75° C. for a period of 5–100 hours; and

cooling said filtrate or supernatant to yield crystals of L-ascorbic acid as a final product.

4,491,669

MIXED ALKOXYAMINOSILANES, METHODS OF MAKING SAME AND VULCANIZING SILICONS PREPARED THEREFROM

Barry C. Arkles, Oreland; William R. Peterson, Jr., Fallsington, and Joseph M. Rokowski, Furlong, all of Pa., assignors to Petrarch Systems Inc., Bristol, Pa.

Filed Nov. 12, 1980, Ser. No. 206,236

Int. Cl.³ C07F *7/08, 7/10, 7/18*

U.S. Cl. 556—410 25 Claims

1. Compounds of the formula

$$R_mSi(OR')_n(NR''R''')_p$$

wherein:

R is hydrogen, short chain alkyl or alkenyl or aryl group;

R'' and R''' are each short chain alkyl;

R' is short chain alkyl or aryl, at least one R' being ethyl; and

m, n and p are integers such that m+n+p=4, and m, n, and p are at least one each.

4,491,670

CATALYTIC PROCESS FOR THE DIRECT CARBONYLATION OF ORGANIC NITRO COMPOUNDS

Sumit Bhaduri; Krishna R. Sharma, and Gopalkrishnan S. Kalpathi, all of Thane, India, assignors to Indian Explosives Ltd., Calcutta, India

Filed Jan. 27, 1983, Ser. No. 461,398

Int. Cl.³ C07C *125/06, 118/06*

U.S. Cl. 560—24 8 Claims

1. A process for the preparation of isocyanates or derivatives thereof which comprises reacting nitrobenzene or 2,4 dinitrotoluene with carbon monoxide or a mixture of carbon monoxide and inert gas in the presence of a polynuclear metal carbonyl or its derivative as catalyst designated by the formula $M_x(CO)_yL_z^{n-}$, wherein,

M =	Fe	x = 3	y = 12	z = 0	n = 0
	Fe	x = 3	y = 11	z = 1	L = H n = 1
	Ru	x = 3	y = 12	z = 0	n = 0
	Ru	x = 3	y = 11	z = 1	L = H n = 1
	Ru	x = 4	y = 12	z = 4	L = H n = 0
	Rh	x = 6	y = 16	z = 0	n = 0
	Pt	x = 15	y = 30	z = 0	n = 2.

4,491,671

PROCESS FOR THE PREPARATION OF N-SUBSTITUTED IMIDO-DICARBOXYLIC ACID DIARYL ESTERS

Karlfried Dickoré, Leverkusen, and Engelbert Kühle, Berg.-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 233,247, Feb. 10, 1981, abandoned.
This application Jun. 10, 1982, Ser. No. 387,096
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1980, 3035393

Int. Cl.³ C07C *125/067*
U.S. Cl. 560—115 33 Claims

1. Process for the production of an N-substituted imido-dicarboxylic acid diaryl ester compound of the formula

$$R^1—N(CO—OR^2)_2 \quad (I)$$

wherein

R^1 is an optionally substituted aliphatic, cycloaliphatic, araliphatic, aromatic or heterocyclic radical; and

R^2 is an optionally substituted aryl radical, which process comprises reacting a primary amine of the formula

$$R^1—NH_2 \quad (II)$$

in which

R^1 is defined as above with a carbonic acid aryl ester halide of the formula

$$X—CO—OR^2 \quad (III)$$

in which

R^2 is defined as above, and

X is a halogen atom

at a temperature between 185°–250° C. and in the presence of a low boiling inert organic solvent as a diluent,

said reacting step including introducing the carbonic acid ester halide of formula (III) into the reaction vessel; then warming the carbonic acid ester halide (III) to said reaction temperature range; and

slowly adding a solution of the primary amine of formula (II) into the reaction flask at the reaction temperature.

4,491,672

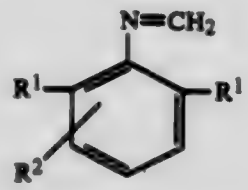
PREPARATION OF AROMATIC AZOMETHINES

Winfried Richarz, Ludwigshafen; Dietrich Mangold, Neckargemuend, and Bjoern Girgensohn, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 2, 1980, Ser. No. 155,760
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925263

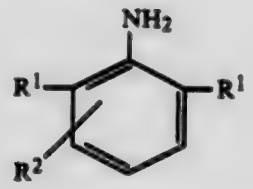
Int. Cl.³ C07C *119/08*
U.S. Cl. 564—271 7 Claims

1. A process for the preparation of aromatic azomethines of the formula



I

where the individual radicals R^1 and R^2 may be identical or different and each is halogen, an aliphatic radical or alkoxy, and R^2 may also be hydrogen, by reacting an aromatic amine with formaldehyde; wherein an aniline of the formula



II

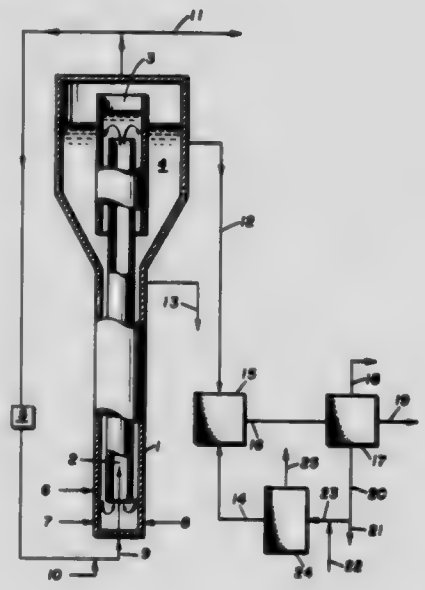
where R^1 and R^2 have the above meanings, is reacted with formaldehyde in the absence of a solvent and without the addition of alcohol, and thereafter, when the reaction is substantially complete, at least 98 percent by weight of the total amount of water is removed from the reaction mixture by distillation being carried out in the presence of from 0.5 to 30 percent by weight, based on starting material II, of an alcohol having a boiling point below 160° C.

4,491,673

PRODUCTION AND SEPARATION OF AMINES

Charles E. Cutchens; Marion J. Mathews, III, and Mark S. Sowell, III, all of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 19, 1982, Ser. No. 369,443
The portion of the term of this patent subsequent to Jul. 26, 2000, has been disclaimed.
Int. Cl.³ C07C *87/14, 87/16*
U.S. Cl. 564—492 6 Claims



1. In a process for the production of an amine from a nitrile where the nitrile is hydrogenated under pressure in the presence of a Raney nickel catalyst continuously in a reactor thereby to produce the amine which is discharged in a stream from which is recovered the amine and residual Raney nickel catalyst, where the Raney nickel catalyst is passivated by charging to the process discharge stream comprising the product amine and the Raney nickel catalyst an inorganic base, and where the product amine is subsequently separated from the Raney nickel catalyst and the inorganic base, the improvement wherein the separation is characterized by mixing an inorganic base feed with the process discharge stream to form a separable two phase mixture having a first phase comprising the product amine and a second phase comprising an aqueous solution of the inorganic base having more than 40% by weight inorganic base, decanting the separable mixture so as to remove the upper layer comprising the first phase from the lower layer comprising the second phase, purging Raney nickel catalyst at the interface of the first and second phases, purging a portion of the second phase (removed) in order to remove aluminum compounds therein, adding fresh inorganic base to and flashing off water from the second phase (removed) as required to form the inorganic base feed with a concentration more than 40 weight percent.

4,491,674

PROCESS AND APPARATUS FOR THE SAFE SUPPLY OF MOLECULAR OXYGEN OR OF GAS CONTAINING MOLECULAR OXYGEN TO AN OXIDATION OF HYDROCARBONS

Norbert Rieber, Mannheim; Hans Hellbach, Lampertheim; Gerhard Hunziker, and Guenter Mueller, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 213,793

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1980, 3001880

Int. Cl.[3] C07C *45/33*

U.S. Cl. 568—357 2 Claims

1. In a process for producing cyclohexanol and cyclohexanone or cyclohexyl hydroperoxide by oxidizing liquid cyclohexane at a temperature of from about 140° to 200° C. and at a pressure of from 10 to 60 bar, the improvement which comprises: passing molecular oxygen or a gas containing molecular oxygen through a tube and into the liquid cyclohexane, said molecular oxygen or gas containing molecular oxygen having a temperature immediately before contact with the liquid cyclohexane which is at least 20° C. lower than the temperature of the cyclohexane, said tube through which said oxygen or gas containing oxygen is passed being surrounded at least at the exit opeining of the tube by a layer of insulating gas of molecular oxygen or a gas containing molecular oxygen; and interrupting the supply of oxygen or gas containing oxygen through the tube as soon as the temperature of the oxygen or oxygen containing gas is less than 20° C. lower than the temperature of the liquid cyclohexane.

4,491,675

HYDROFORMYLATION PROCESS USING TRIARYLPHOSPHINE AND BISPHOSPHINE MONOOXIDE LIGANDS

Anthony G. Abatjoglou, Charleston, and David R. Bryant, South Charleston, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

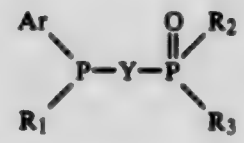
Filed Aug. 17, 1981, Ser. No. 293,189

The portion of the term of this patent subsequent to Aug. 23, 2000, has been disclaimed.

Int. Cl.[3] C07C *45/50*

U.S. Cl. 568—454 7 Claims

1. A process for producing aldehydes comprising of hydroformylating an olefinically unsaturated compound with carbon monoxide and hydrogen in a hydroformylation reaction medium containing a rhodium complex catalyst, free triarylphosphine ligand and free organic tertiary bisphosphine monooxide ligand having the general formula



wherein Ar represents an identical or different substituted or unsubstituted aryl radical, each R_1, R_2 and R_3 group represents an identical or different substituted or unsubstituted monovalent hydrocarbon radical and Y represents a divalent bridging group; and wherein the mole ratio of free triarylphosphine ligand to free bisphosphine monooxide ligand present in said reaction medium ranges from about 2:1 to about 30 to 1.

4,491,676

ACID ADDITION TO AQUEOUS DIALDEHYDE SOLUTIONS

Robert G. Eagar, Jr., Yorktown Heights, and Gerald J. Murphy, Wappinger Falls, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 314,347, Oct. 23, 1981, abandoned, which is a continuation of Ser. No. 221,506, Dec. 30, 1980, abandoned. This application Jun. 28, 1983, Ser. No. 508,468

Int. Cl.[3] C07C *45/86*

U.S. Cl. 568—449 11 Claims

1. A process for rapidly obtaining a stabilized, depressed freeze point for an aqueous solution comprising (1) water, (2) a dialdehyde and (3) an aliphatic monohydroxyl alcohol containing from 1 to 4 carbon atoms and/or polyhydroxyl alcohol containing from 2 to 6 carbon atoms, which comprises adding a catalytic amount of a strong acid to said solution.

4,491,677

ISOMER SEPARATION

Lawrence M. Fodor, and Ronald D. Knudsen, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

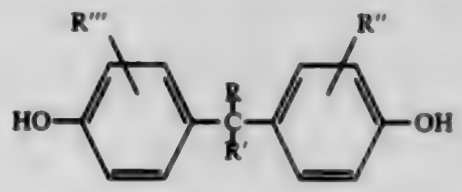
Filed Jul. 5, 1983, Ser. No. 510,856

Int. Cl.[3] C07C *37/84*

U.S. Cl. 568—751 9 Claims

1. A process for recovering high purity m- or p-cresol from a mixture containing them which comprises the steps of:

(1) contacting the mixture with a crystallization medium containing (a) a phenolic compound of the formula:



in which R, R′, R″, and R‴ are independently selected from H and alkyl or cycloalkyl radicals having 1 to 6 carbon atoms, (b) and an inert solvent capable of dissolving said cresol mixture and said phenolic compound

(2) cooling said mixture to produce a crystal fraction rich in p-cresol and a liquor rich in m-cresol, and

(3) recovering the crystal fraction.

4,491,678

PROCESS FOR THE PRODUCTION OF PARA-XYLENE

Sumihiro Oda, and Haruhito Sato, both of Sodegaura, Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Oct. 13, 1983, Ser. No. 541,664

Claims priority, application Japan, Oct. 19, 1982, 57-182206; Dec. 10, 1982, 57-215511; Mar. 28, 1983, 58-50460; May 26, 1983, 58-91592; May 27, 1983, 58-92510

Int. Cl.[3] C07C *2/68*

U.S. Cl. 585—466 17 Claims

1. A process for producing para-xylene comprising reacting benzene or toluene and a methylating agent in the presence of a catalyst comprising (A) crystalline borosilicate and (B) a compound containing at least one element selected from the group consisting of Group IIa elements of the Periodic Table, Group IIIa elements of the Periodic Table, silicon, and phosphorus.

4,491,679

THERMOELECTRIC MATERIALS AND DEVICES MADE THEREWITH

Diane E. Moore, Clawson, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jul. 21, 1983, Ser. No. 516,153
Int. Cl.³ H01L *35/28*
U.S. Cl. 136—203 14 Claims

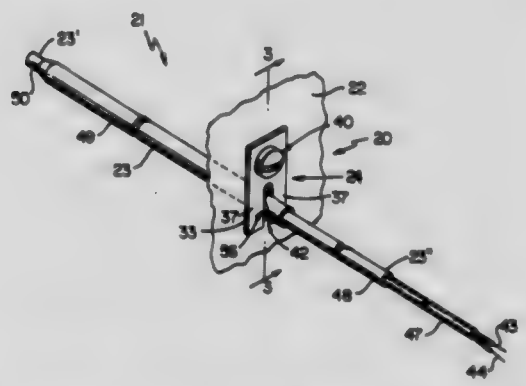
1. A p-type disordered thermoelectric material comprising bismuth, antimony, tellurium, silver and lead.

4,491,680

MOUNTING ARRANGEMENT FOR A CONDITION SENSING PROBE AND METHOD OF MAKING THE SAME

Siegfried E. Manecke, Indiana, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Jan. 9, 1984, Ser. No. 569,516
Int. Cl.³ H01L *35/02*
U.S. Cl. 136—230 20 Claims



1. In an apparatus having a wall means provided with an exterior side and an interior side, said wall means having an opening means passing therethrough, a condition sensing probe means disposed in said opening means and having opposed ends one of which is disposed beyond said interior side of said wall means and the other of which extends beyond said exterior side of said wall means, and a bracket means secured to said wall means and having interconnection means operatively interconnected to interconnection means of said probe means whereby said bracket means holds said probe means in a fixed axial position in said opening means of said wall means, the improvement wherein said interconnection means of said probe means comprises slot means in said probe means and said interconnection means of said bracket means comprises abutment means disposed in said slot means to provide the sole interconnection between said bracket means and said probe means.

4,491,681

LIQUID COOLED, LINEAR FOCUS SOLAR CELL RECEIVER

Aaron S. Kirpich, Broomall, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 8, 1983, Ser. No. 559,504
Int. Cl.³ H01L *31/00*
U.S. Cl. 136—246 16 Claims

1. A liquid cooled, linear focus solar cell receiver, comprising:

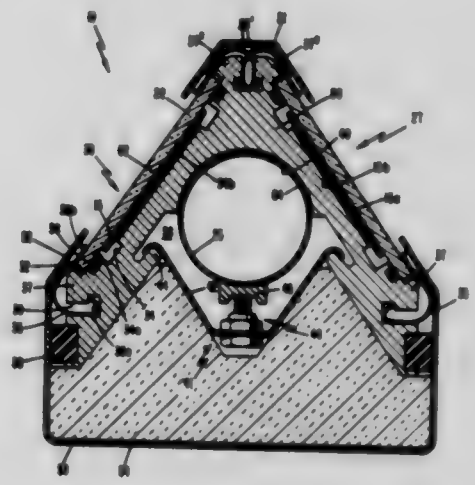
(a) a plurality of solar cells electrically connected in series with each other, each cell having an exposed side to absorb light impinging thereon;

(b) a heat conductive member having a surface in thermal contact with an opposite of each cell;

(c) a coolant tube adapted to be charged with coolant fluid, said tube being in thermal contact with the heat conductive member;

(d) dielectric material means positioned between said heat conductive member and coolant tube to electrically insulate the tube from the heat conductive member;

(e) transparent cover means mounted on the heat conductive member to isolate the solar cells from the external environment, said solar cells being attached to said cover means at their exposed sides; and



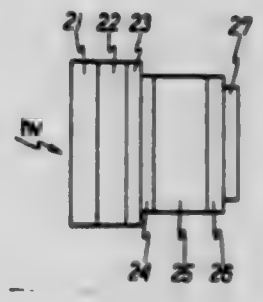
(f) means for releasably securing said cover means in sealing engagement with said conductive member, said releasable securing means facilitating easy removal of the cover means and attached solar cells from the receiver for repair or replacement without interrupting circulation of coolant fluid through the tube.

4,491,682

AMORPHOUS SILICON PHOTOVOLTAIC DEVICE INCLUDING A TWO-LAYER TRANSPARENT ELECTRODE

Yoshihiro Hamakawa, Kawanishi, and Yoshihisa Tawada, Kobe, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 399,312, Jul. 19, 1982, Pat. No. 4,450,316. This application Nov. 17, 1983, Ser. No. 552,952
Claims priority, application Japan, Jul. 17, 1981, 56-112571; Jul. 17, 1981, 56-112572
The portion of the term of this patent subsequent to May 22, 2001, has been disclaimed.
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—256 11 Claims



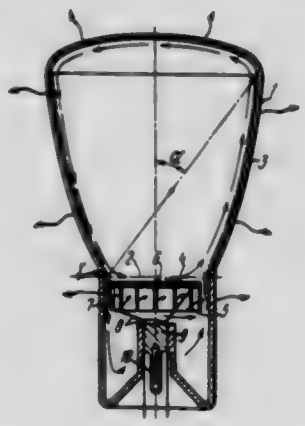
1. In an amorphous silicon derivative PIN junction photovoltaic device, the improvement comprising a two-layer transparent electrode consisting of ITO and SnO_2 layers that are provided on the P or N layer so that the SnO_2 layer is in contact with said P or N layer.

4,491,683

SOLAR PHOTOELECTRIC MODULE

Vladimir K. Baranov, ulitsa Krasnoputilovskaya, 35, kv. 45, Leningrad; Akhsarbek B. Pinov, ulitsa Ushinskogo, 60/2, Ordzhonikidze; Valery N. Potapov, Timiryazevskaya ulitsa, 13, kv. 213, Moscow; Vladimir V. Rostokinsky, Novorogozhskaya ulitsa, 11, korpus 2, kv. 27, Moscow; Stanislav V. Ryabikov, pereulok Vasnetsova, 12, kv. 64, Moscow; Viktor A. Sabelnikov, ulitsa Amundsena, 3, korpus 1, kv. 6, Moscow; Dmitry S. Strebkov, ulitsa B.Galushkina, 20, kv. 79, Moscow, and Eduard V. Tveryanovich, M. Kolkhoznaya ploschad, 1, kv. 90, Moscow, all of U.S.S.R.

Filed Jul. 18, 1983, Ser. No. 514,697
Int. Cl.[3] H01L *31/04*
U.S. Cl. 136—259 5 Claims



1. A solar photoelectric module, comprising:
a composite parabolic solar energy concentrator having an aperture angle α and a radiation outlet surface and comprising a sealed gas-filled bulb,
side walls and a cylindrical part of said bulb bending to each other on a predetermined radius;
an inside reflecting surface applied to said side walls of said bulb;
a photoreceiver disposed inside said cylindrical part of said bulb, separated from the walls of said bulb by a gap and located beside said radiation outlet surface; and
a cooling system of said photoreceiver comprising a metal heat sink with air cooling ribs and separated from the walls of said bulb by a gap to permit convective flow of gas which fills said bulb.

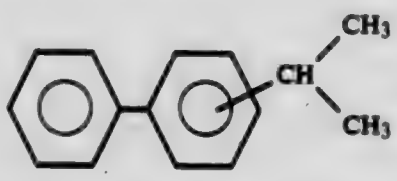
4,491,684

FLAMEPROOF ELECTRIC CABLE IMPREGNATED WITH INSULATING FLUID

Bernardino Vecellio, Milan, Italy, assignor to Societa Cavi Pirelli S.p.A., Milan, Italy

Filed Apr. 29, 1983, Ser. No. 489,956
Claims priority, application Italy, Apr. 30, 1982, 21012 A/82
Int. Cl.[3] H01B *3/46, 9/06*
U.S. Cl. 174—26 R 8 Claims

1. A flameproof electric cable impregnated with an insulating fluid, which comprises at least one conductor, a stratified solid insulation applied in layers, of cellulosic material wrapped around the conductor and impregnated with said insulating fluid and a containing envelope around said solid insulation and filled with insulating fluid, said insulating fluid comprising a mixture of a polydimethylsiloxane having a viscosity greater than 5 cst at 25° C. and an aromatic compound corresponding to the chemical formula:



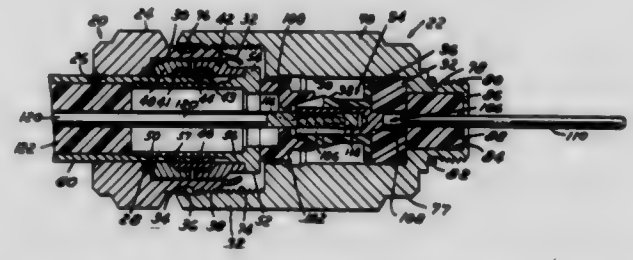
where said aromatic compound is present in the mixture in amount from 0.5% to 10% by weight with respect to the total weight of the polydimethylsiloxane and said aromatic compound.

4,491,685

CABLE CONNECTOR

Thomas J. Drew, New Baltimore, and Frank S. Day, Detroit, both of Mich., assignors to Amex Cable Corporation, Warren, Mich.

Filed May 26, 1983, Ser. No. 498,401
Int. Cl.[3] H02G *15/02;* H01R *4/26*
U.S. Cl. 174—75 C 5 Claims



1. In a mechanical and electrical connector for a coaxial cable in which an outer cylindrical conductor is insulated from an inner core conductor which has a first gripping means for the outer conductor including a split sleeve to be cammed radially inward against the outer conductor by spaced camming rings on each end of said split sleeve, the improvement comprising an end housing receiving said rings and sleeve within an annular axially extending inner recess, a shoulder formed on said recess at one end to abut one of said camming rings, and inturned means at the other end of said recess to confine said rings in said recess as an assembly, and an inner anvil member having a cylindrical support section dimensioned to be received within said rings and sleeve and to be received within the inner surface of an outer conductor without deforming said conductor, and a radial flange on one end of said anvil member to contact the other of said camming rings when said end housing is assembled and threaded into a second housing.

4,491,686

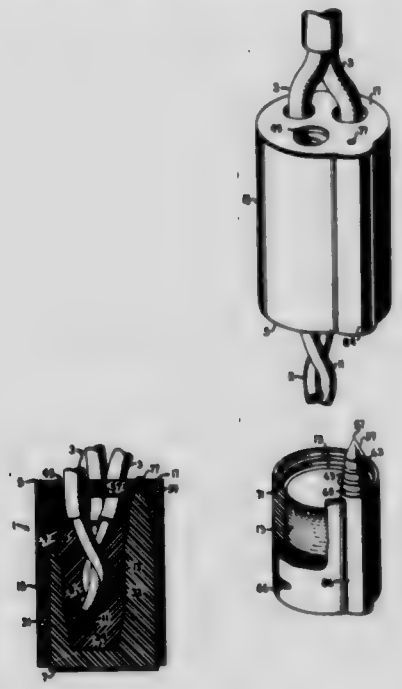
ELECTRICAL CONNECTOR

Lee Caviar, Lenexa, Kans., assignor to Imperial Underground Sprinkler Co., Lenexa, Kans.

Filed Dec. 21, 1982, Ser. No. 451,924
Int. Cl.[3] H02G *15/08*
U.S. Cl. 174—87 12 Claims

7. In combination two electrical wires, potting compound and an insulating electrical connector adapted to provide a sealed and insulated connection between the two electrical wires, the connector including mating portions forming an enclosed cavity therein, said cavity receiving the potting compound and ends of the wires to be connected therein, an associated one of the connector mating portions including ingress means through which the wires extend, the improvement wherein:
(a) said ingress means includes for each of the wires respectively:
(1) a passageway through the associated connector mating portion joining said cavity with an exterior portion of said connector; and
(2) a thin, stretchable and pierceable membrane substantially sealing said passageway prior to use of said connector, said membrane adapted to be pierced by a piercing member so as to define an aperture therethrough approximating a cross section associated with the respective wire and said membrane remaining substantially connected to said passageway after piercing; said membrane stretching about said respective wire after

said respective wire is received therein such that said passageway is substantially sealed about said respective wire, such that said membrane snugly contracts about



and substantially surrounds said respective wire so as to generally prevent the leakage of potting compound about said respective wire but to allow gases to relieve during wire connection.

4,491,687

METHOD OF MANUFACTURING A COMPOSITE TYPE STAY INSULATOR, AND AN INSULATOR OBTAINED BY THE METHOD

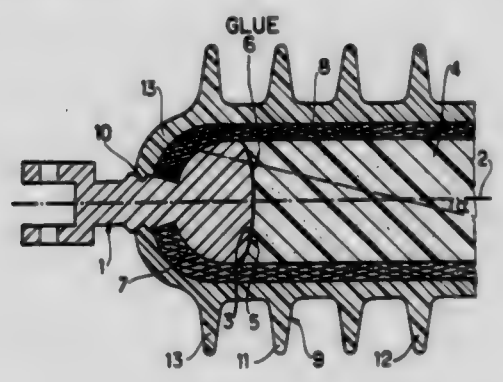
Alexandre Kaczerginski, Bellerive sur Allier, and Jean-Jacques Kaminski, Saint-Yorre, both of France, assignors to Societe Anonyme dite: Ceraver, Paris, France

Filed Jul. 22, 1982, Ser. No. 400,718

Claims priority, application France, Aug. 5, 1981, 81 15202

Int. Cl.³ H01B *17/02*

U.S. Cl. 174—178 **10 Claims**



1. A method of manufacturing a composite type stay insulator including two metal end pieces having anchoring shoulders, the method comprising:

gluing the two metal end pieces to a mandrel of insulating foam;

skein winding resin impregnated insulating fibers around the mandrel and said anchoring shoulders of the metal pieces; and

adhering a resilient insulating covering to said winding and to portions of the end pieces adjacent to said winding.

3. A composite type stay insulator comprising:

an insulating foam mandrel having two ends;

two metal end pieces having anchoring shoulders, one end piece being glued to one end of the mandrel and the other end piece being glued to the other end of the mandrel;

a layer of resin impregnated insulating fibers skein wound around the mandrel and said anchoring shoulders of the metal end pieces; and

a resilient insulating covering adhered to said winding and to portions of the end pieces adjacent to said winding.

4,491,688

ELECTRONIC STYLUS FOR DIGITIZING DEVICES

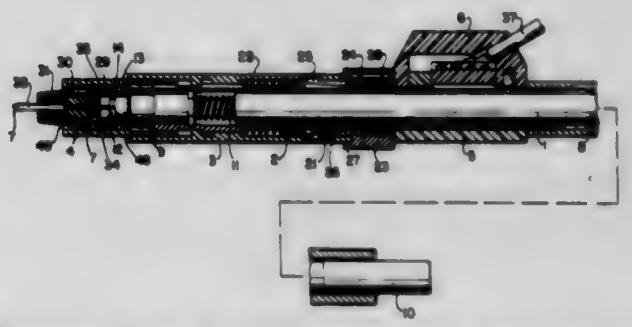
Dietmar Schaub, Lahr, and Gert Heups, Schwanau, both of Fed. Rep. of Germany, assignors to Albert Nestler GmbH, Fed. Rep. of Germany

Filed Apr. 20, 1983, Ser. No. 486,824

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1982, 3214426

Int. Cl.³ G08C *21/00*

U.S. Cl. 178—18 **9 Claims**



1. Electronic stylus for digitizing devices, this stylus being connected to the digitizing device by means of electric connection lines, with a longitudinally displaceable marker tip, an electric contact switch, as well as a bobbin with an induction coil surrounding the marker tip, characterized in that the marker tip is fashioned as a pencil insert with advanceable graphite lead (7); that the bobbin (4) has a plug-in rim (29), exhibits electric sockets (30), contains a lead brake (34), and carries a lead guide (32); that a tubular handle (3) at least partially encompassing the stylus over its length is provided which actuates the contact switch and is longitudinally displaceable against the bias of a spring; and that a turning ring (23) is rotatably mounted to the tubular handle (3), this turning ring activating an electric on-off switch.

4,491,689

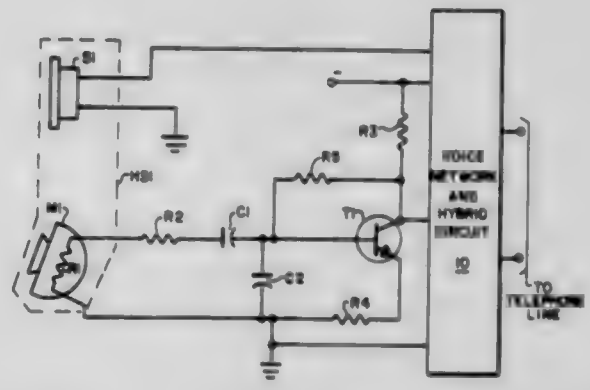
AMPLIFIER FOR USE WITH TELEPHONE TRANSMITTER MOUNTED IN HAND HELD TELEPHONE UNIT

Eduard F. B. Boeckman, Huntsville, Ala., assignor to GTE Business Communication Systems, Northlake, Ill.

Filed May 2, 1983, Ser. No. 490,769

Int. Cl.³ H01M *1/60*

U.S. Cl. 179—81 B **7 Claims**



1. In combination, a telephone line, a hand held telephone unit including a telephone receiver and a telephone transmitter, connected to said telephone line, and an amplifier for said transmitter, said amplifier comprising: first and second circuit

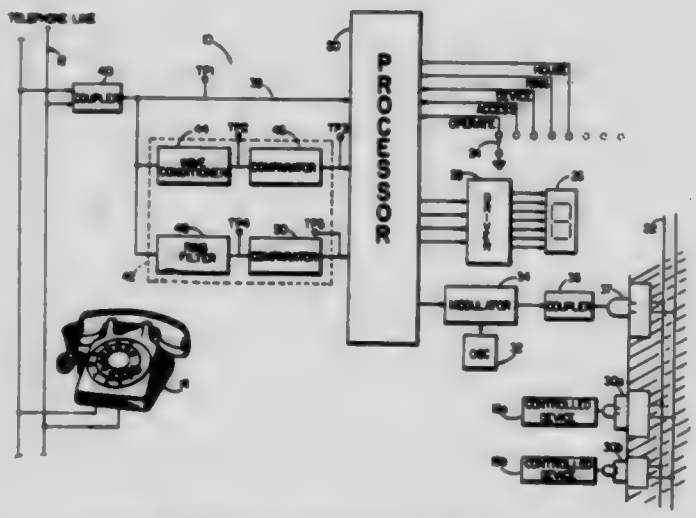
connections to a source of DC power; a transistor stage including an input and an output; a first filter element including said telephone transmitter; a second filter element connected between first filter element and said transistor stage input; a third filter element connected between said transistor stage input and said first circuit connection to said DC power source; and a fourth filter element including said transistor stage; said first, second, third and fourth filter elements in combination, comprising a band pass filter controlling the high and low frequency response of said telephone transmitter, whereby feedback oscillation coupled to said telephone receiver is substantially inhibited.

4,491,690

REMOTE CONTROL SYSTEM FOR USE WITH A TELEPHONE

Ronald J. Daley, 6 Pinewood La., Ellington, Conn. 06029

Filed Feb. 22, 1983, Ser. No. 468,467
Int. Cl.³ H04M *11/00*
U.S. Cl. 179—2 A 18 Claims



1. A remote control system for use in combination with a conventional telephone and associated telephone lines for transmitting actuating signals to a controlled device comprising:

dialing data detecting means coupled with the telephone lines providing telephone service in a premises for detecting dialing data from the lines;

first decoding means connected with the dialing data detecting means for detecting a programmed access code from detected dialing data;

second decoding means also connected to the dialing data detecting means and enabled by the first decoding means when the programmed access code has been detected for detecting a device code from the dialing data and producing an actuating signal for a controlled device;

ring counting means coupled to the telephone lines on the premises for counting the number of rings on an incoming line from distant calling stations;

ring count decoding means connected with the ring counter for detecting ring counts corresponding in number uniquely with a controlled device and producing an actuating signal; and

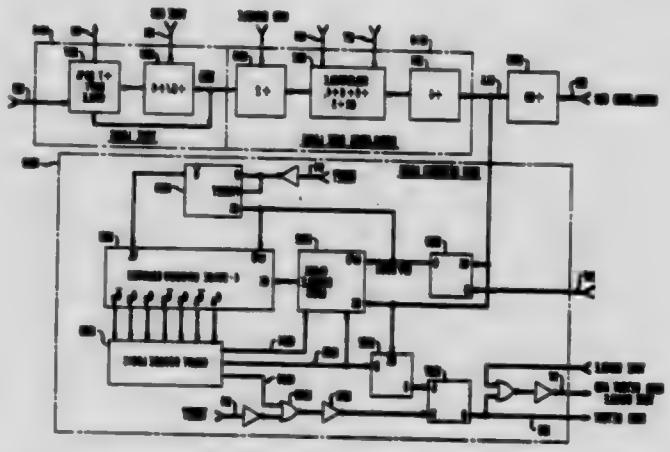
actuating means coupled to a controlled device and responsive to one of the actuating signals from the second decoding means and the ring count decoding means for actuating the controlled device in accordance with the signal whereby a controlled device can be actuated from both distant stations and telephones on the premises.

4,491,691

ELECTRONIC TONE RINGER

David M. Embree; David C. Goldthorp, both of Reading, Pa.; Howard H. Longenecker, and David R. Vogelpohl, both of Indianapolis, Ind., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 28, 1983, Ser. No. 470,150
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—84 T 22 Claims



1. A tone ringer having input lines and operatively responsive to the reception of ringing signals applied across said input lines, the ringer comprising:

an acoustic transducer for providing an audible output;

oscillatory generator means for activating the acoustic transducer;

sensing means for distinguishing between valid and invalid ringing signals applied across the input lines and for applying an activation signal to the oscillatory generator means when a valid ringing signal is detected, the sensing means further including,

comparison means responsive to a voltage produced by the signal applied across the input lines being above or below a predetermined level;

measuring means operably responsive to the comparison means for measuring a first time period during which the voltage produced by the signal across the input lines is above the predetermined level and for measuring a second time period during which the voltage produced by the signal across the input lines is below the predetermined level; and

averaging means for comparing accumulated first time periods with accumulated second time periods, both accumulating in a third time period, the sensing means providing the activation signal to the oscillatory generator means when the time for the accumulated first time periods exceeds the time for the accumulated second time periods.

4,491,692

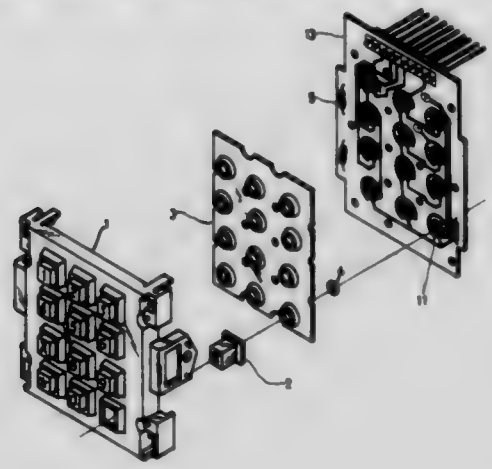
LIGHT-EMITTING DEVICE MOUNTED UNDER KEYBUTTONS OF A KEYBOARD

Shan S. Lee, 2 Fl., 40, Alley 27, La. 55, Sec. 1 Hsing Lung Rd., Taipei, Taiwan

Filed Nov. 5, 1982, Ser. No. 439,407
Int. Cl.³ H04M *1/22*
U.S. Cl. 179—90 L 3 Claims

1. A keyboard comprising a plurality of keys; a power switch; a plurality of light emitting diode means, each light emitting diode means being mounted beneath a corresponding key; a plurality of conductive rubber pads having an opening therethrough, each rubber pad being positioned above each of said light emitting diode means; and an insulated elastic rubber dome sheet having open portions surrounded by projecting portions, said dome sheet being positioned above said conductive rubber pads, such that said conductive rubber pads and said dome sheet are positioned between said light emitting diode means and said keys for preventing pressure on said light emitting diode means when said keys are activated; wherein

when said power switch is on, said light emitting diode means are operative to emit light which passes through the openings in said rubber pads and dome sheet thereby illuminating said



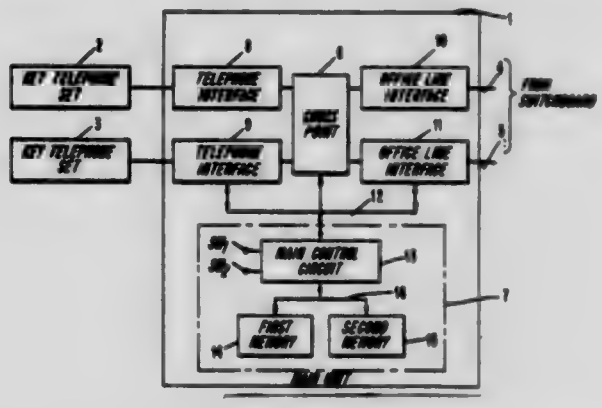
keys from below; and wherein when said power switch is off, said light emitting diode means are not operative and said keys are not illuminated.

4,491,693

KEY TELEPHONE SYSTEM AND METHOD OF SETTING OPERATING DATA IN THE KEY TELEPHONE SYSTEM

Yoshikazu Sano; Hideyasu Mori, both of Hino, and Yasuji Sato, Hachiouji, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Nov. 26, 1982, Ser. No. 444,529
Claims priority, application Japan, Nov. 26, 1981, 56-188299
Int. Cl.[3] H04Q *5/18*
U.S. Cl. 179—99 R 20 Claims



1. A key telephone system comprising:

a main unit connected to a plurality of office lines;

a plurality of key telephone sets connected to said main unit and having keys for performing a variety of operations;

first memory provided in said main unit for storing operating data for restricting a function or adding a different function of said respective key telephone sets and for controlling the operation of the entire system;

writing means for writing said operating data in said first memory by employing the keys of said key telephone sets; and

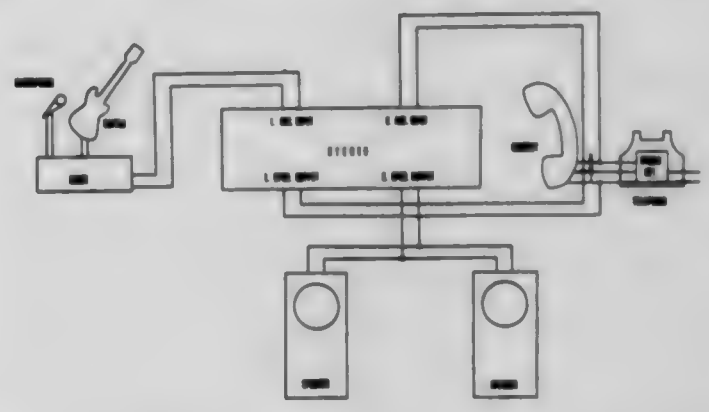
control means provided in said main unit for controlling the connection between said respective key telephone sets, the connection between said respective key telephone sets and said office lines, the operations of said respective key telephone sets and the operation of the entire system in accordance with the operating data stored in said first memory.

4,491,694

TELEPHONE TO STEREO AMPLIFIER INTERFACE COUPLING

Michael Harmeyer, 3001 Haring Rd., Metairie, La. 70002

Filed Oct. 23, 1981, Ser. No. 314,425
Int. Cl.[3] H04M *1/60*
U.S. Cl. 179—100 L 2 Claims



1. A telephone-stereo amplifier speakerphone apparatus which functions as a full duplex speaker phone, said apparatus comprising:

A. a standard telephone having a transmit line and a receive line;

B. a home entertainment variety stereo (two channel) amplifier system and two speakers;

C. a mixer;

D. signal source means such as a microphone or electric guitar connected to one or more inputs of the mixer;

E. an interface coupler connected to an output of the mixer, to both inputs and both outputs of the stereo amplifier system and to both speakers, wherein:

1. the coupler connects one channel of the stereo amplifier system as a transmit channel to amplify signals from the mixer and output amplified signals to the transmit line of the telephone; and

2. the coupler connects the second channel of the stereo amplifier system as a receive channel to amplify signals from the recieve line of the telephone and output amplified signals to the speakers.

4,491,695

MOUNTING FOR A DIAL IN A TELEPHONE SET BASE

Steve W. Haskins, Mount Juliet, Tenn., assignor to Northern Telecom Limited, Montreal, Canada

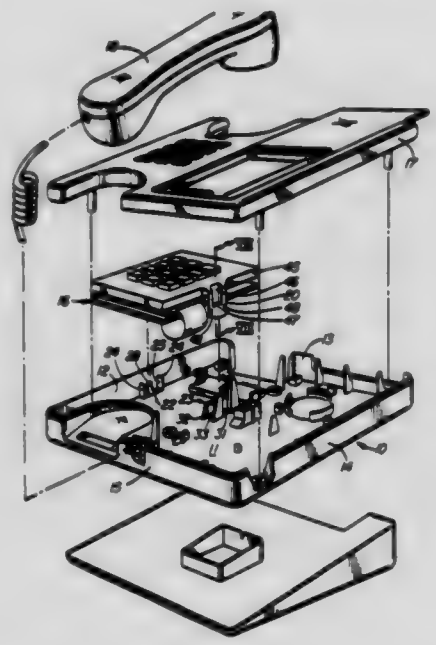
Filed Apr. 20, 1983, Ser. No. 486,721
Int. Cl.[3] H04M *1/23, 1/02*
U.S. Cl. 179—100 D 14 Claims

1. A mounting for a dial in a telephone set base, comprising;

two opposed spaced apart support brackets extending up from a bottom surface of the telephone set base, each support bracket including two guide formations spaced apart in a direction normal to the spacing of the support brckets, and a latch member positioned between the guide formations; each latch member including a latch surface spaced from said bottom surface, the latch surfaces projecting inwardly towards each other, and a downwardly and inwardly inclined surface leading to an inner edge of the latch surface; at least one of said latch members being resiliently deflectable; and

two cooperating mounting brackets extending down one one each side of a dial assembly, each mounting bracket including guide formations for cooperating with the guide formations on saud support brackets and also a recess for reception of one of said latch surfaces, one of said support brackets being unitary with a side wall of said telephone set base, and the other of said support brackets comprising

a channel shaped member having a back flange and two parallel spaced apart webs extending forward from said



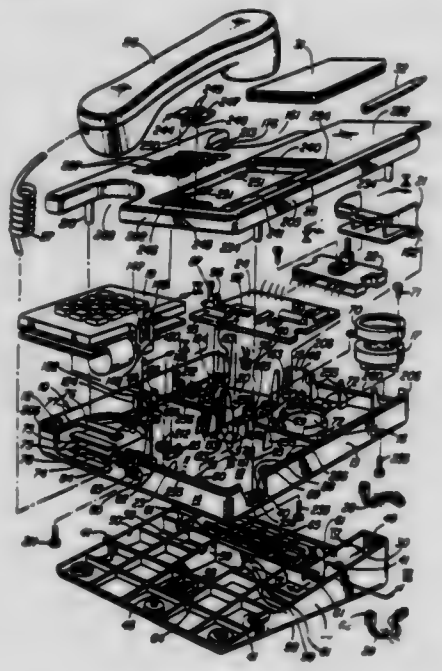
back flange towards said one support bracket, said spaced apart webs forming said guide formations.

4,491,696

TELEPHONE SET BASE

Steve W. Haskins, Mount Juliet, and James K. Vincent, Antioch, both of Tenn., assignors to Northern Telecom Limited, Montreal, Canada

Filed Jul. 14, 1983, Ser. No. 513,911
Int. Cl.³ H04M *1/04*
U.S. Cl. 179—100 C 25 Claims



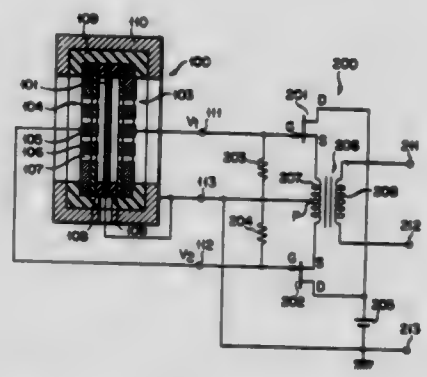
1. A telephone set base comprising;
a bottom housing having a bottom surface, exposed side and end walls extending up from the bottom surface, said exposed side and end walls having a top edge,
a top housing attached to the top of said bottom housing, said top housing having a top surface and depending exposed side and end walls, said depending side and end walls having a bottom edge engaging said top edge of said bottom housing exposed side and end walls,
a wedge-shaped adaptor attached to the bottom of the bottom housing, said adaptor having a bottom surface and upwardly extending exposed side and end walls, one of said adaptor end walls being of greater height than another of said adaptor end walls to form said wedge shape, said upwardly extending side and end walls including a peripherally extending top edge, said peripherally extending top edge of the adaptor engaging said bottom surface of said bottom housing, and
means releasably attaching said adaptor to said bottom housing, such that said adaptor can be mounted in either of two alternate positions with the higher end wall of the wedge shape alternatively at the front and the back of the bottom housing.

4,491,697

CONDENSER MICROPHONE

Masanori Tanaka, and Kenjiro Endoh, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 13, 1982, Ser. No. 377,840
Claims priority, application Japan, May 22, 1981, 56-77747
Int. Cl.³ H04R *19/01, 19/00;* H03F *3/26*
U.S. Cl. 179—111 E 17 Claims



1. A condenser microphone comprising:
an electrostatic transducer including at least one conductive vibrating plate, at least one fixed electrode, and first and second output terminals, two output voltages which are out of phase with respect to each other being generated between the vibrating plate and fixed electrode in response to vibration of the vibrating plate, and the generated two output voltages being supplied from the first and second terminals, respectively;
a first field effect transistor and a second field effect transistor both of the same conductivity channel type, gates of said first and second field effect transistors being connected to the first and second output terminals of said electrostatic transducer, respectively, and drains of said first and second field effect transistors being connected to a DC power supply;
a first resistor and a second resistor both connected between the gate of said first field effect transistor and ground and between the gate of said second field effect transistor and ground, respectively, to hold the DC potential of each of said gates at ground level; and
output circuit means including a transformer with a primary coil and a secondary coil, the primary coil being directly connected between the sources of the first and second field effect transistors, and a output signal which corresponds to the difference between the source potentials of the first and second field effect transistors being picked up from the second coil.

4,491,698

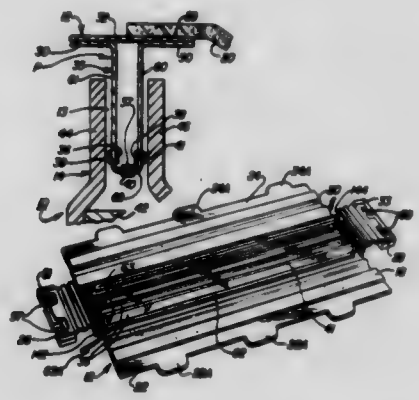
ELECTRO-ACOUSTIC TRANSDUCER WITH DIAPHRAGM AND BLANK THEREFOR

David A. Larson, 2460 Wisconsin Ave., Downers Grove, Ill. 60515, and Daniel A. Schumaker, LaFayette, Ind., assignors to David A. Larson, Downers Grove, Ill.

Filed Jun. 17, 1982, Ser. No. 389,423
Int. Cl.³ H04R *19/00, 7/14*
U.S. Cl. 179—115.5 PV 13 Claims

1. In an electro-acoustic transducer having a spaced-apart

magnet means, a diaphragm comprising a folded sheet of film material having a front surface and having a plurality of spaced-apart elongated projections extending from the back side thereof and being channel-shaped throughout their



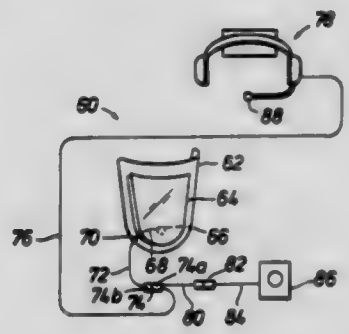
lengths, each one of said projections having conductor means disposed thereon and extending substantially in alignment with said magnet means to coact electromagnetically therewith; and a substantially flat, thin sheet secured in overlying relationship with said front surface.

4,491,699

COMMUNICATION APPARATUS FOR HOSTILE ENVIRONMENTS

Martin J. Walker, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Apr. 15, 1981, Ser. No. 254,428
Int. Cl.³ H04R 1/44; H04M 1/05
U.S. Cl. 179—156 R **8 Claims**



1. Communication apparatus for use with facial covering comprising:

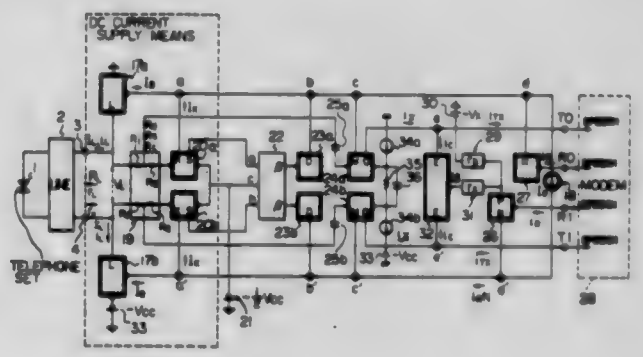
a. first microphone means for mounting relative to such facial covering for use by a wearer of said facial covering;
b. transmitter means;
c. external speaker means;
d. connection means, including cable means and connector means, whereby the output of said first microphone means may be communicated to said external speaker means and to said transmitter means;
e. second microphone means external to said facial covering; and
f. receptacle means included in said transmitter means for receiving said cable and connector means from said first microphone means;
g. wherein said receptacle means is movable between a first configuration, in which said receptacle means does not receive said cable and connector means and does provide communication between said second microphone means and said transmitter means, and a second configuration in which said receptacle means receives said cable and connector means and interrupts said communication from said second microphone means to said transmitter means.

4,491,700

HYBRID CIRCUIT IN A TELEPHONE SUBSCRIBER INTERFACE CIRCUIT

Toshiyuki Tahara; Hironobu Uehara; Kazuo Hamazato, all of Tokyo, and Toshio Hayashi, Saitama, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Japan

Filed Nov. 25, 1981, Ser. No. 325,056
Claims priority, application Japan, Dec. 20, 1980, 55-180839
Int. Cl.³ H04B 1/58
U.S. Cl. 179—170 NC **3 Claims**



1. A hybrid circuit for a telephone subscriber interface circuit comprising:

a pair of input terminals (3, 4) connected to a subscriber line (2),

a DC power source (33) for supplying speech current to a telephone set (1) through said subscriber line (2),

a pair of current amplifiers (17*a*, 17*b*) the outputs of which are connected to said subscriber input terminals (3, 4), respectively, for supplying DC current and speech signal to said telephone set (1), first inputs of said current amplifiers (17*a*, 17*b*) being coupled with ground and said power source (33), respectively, and second inputs of which are coupled with a current source (18) through a plurality of nodes, so that the current from the power source (33) to the subscriber line is adjusted by the control current in said second inputs,

a resistor network (19) coupled with said subscriber input terminals (3, 4),

a pair of DC monitor circuits (20*a*, 20*b*) for adjusting the speech current from said current amplifiers (17*a*, 17*b*) by supplying control current to a first pair of nodes (a, a') in the path of said second inputs of said current amplifiers (17*a*, 17*b*), according to the voltage across the output of said resistor network (19) and ground,

a pair of AC monitor circuits (24*a*, 24*b*) which are coupled to subscriber input terminals (3, 4) through the resistance network (19) and respective capacitors (25*a*, 25*b*), providing first outputs to the pair of current amplifiers (17*a*, 17*b*) through a second pair of nodes (c, c') to provide a predetermined terminal impedance to a speech signal across the subscriber input terminals (3, 4) and providing second outputs related to the speech signal across subscriber input terminals (3, 4) to the modem input terminals (T_0, T_1) of a modem (28) through a third pair of nodes (e, e'),

a pair of transmitters (26, 27) which receive a speech signal from the modem (28) through modem output terminals (R_0, R_1), said transmitters (26, 27) adjusting said current amplifiers (17*a*, 17*b*) by controlling a fourth pair of nodes (d, d') in the control path of said current amplifiers by applying the output signal of the transmitters (26, 27) to said fourth pair of nodes (d, d'),

a return signal detection circuit (32) receiving an output signal of one (26) of said transmitters (26, 27) through an impedance r_x(31) which is coupled in parallel with another impedance r_y(29) which couples between said one (26) of said transmitters and a further power source 30, said impedance r_x(31) being equal to a terminal impedance of the present apparatus across the subscriber input terminals (3, 4), and said impedance r_y(29) being equal to a line

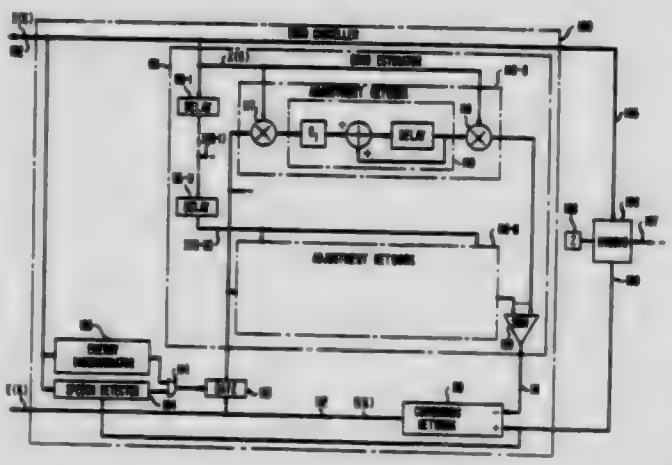
impedance of a subscriber line (2) across the subscriber input terminals (3, 4), the output of said return signal detection circuit (32) being applied to the third pair of nodes (e, e') where return signal is cancelled by said output of the return signal detection circuit (32), said return signal being originated across the subscriber input terminals (3, 4) and applied to said third pair of nodes (e, e') through the resistance network (19), the respective capacitors (25*a*, 25*b*) and the AC monitor circuits (24*a*, 24*b*).

4,491,701

ADAPTIVE FILTER INCLUDING A FAR END ENERGY DISCRIMINATOR

Donald L. Duttweiler, Rumson, and Timothy J. Zebo, Marlboro, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 5, 1981, Ser. No. 240,977
Int. Cl.[3] H04B *3/20*
U.S. Cl. 179—170.2
15 Claims



6. An echo canceler of the type including,

adjustable signal processing means adapted to be coupled to a first transmission path and being supplied with an input signal for generating a transfer function characteristic to generate an echo estimate signal,

means adapted to be coupled to a second transmission path for combining an echo signal developed in the second path in response to said input signal with the echo estimate signal to generate an error signal,

means responsive to the error signal for adjusting the processing means to update the transfer function characteristic, and

means responsive to a control signal for controllably supplying the error signal to the adjusting means to control updating of the transfer functon characteristic, the echo canceler, characterized by,

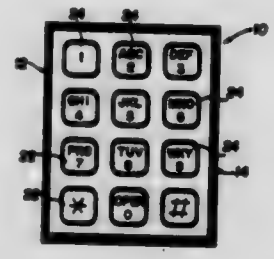
means for discriminating between whole band energy and partial band energy in said input signal in the first transmission path and for generating a first state of said control signal to inhibit the controllable supplying means from supplying the error signal to the adjusting means during intervals that partial band energy is detected in the input signal for inhibiting the updating and a second state of said control signal to enable the controllable supplying means to supply the error signal to the adjusting means during intervals that whole band energy is detected in the input signal for enabling the updating.

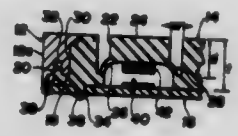
4,491,702

KEY-TOP PANEL AND KEYBOARD STRUCTURE USING THE PANEL

Yoshinobu Kato, Sagamihara, Japan, assignor to Sun Arrow Koeki Company Ltd., Tokyo, Japan

Filed May 3, 1982, Ser. No. 374,174
Claims priority, application Japan, Feb. 1, 1982, 57-12670
Int. Cl.[3] H01H *13/70*
U.S. Cl. 200—5 A
33 Claims





15. A keyboard structure comprising a key-top panel member having an inner face and an outer face and constructed of an electrically non-conductive, resilient material, the key-toop panel member having substantially flat parallel inner and outer faces and a plurality of closed-loop grooves which are open at the outer face of the panel and each of which has a closed-loop cross section, each of the closed-loop grooves being deep in the direction of thickness of the key-top panel member and defining a land portion surrounded by the closed-loop groove, comprising a plurality of key-top portions each of which is constituted by said land portion and surrounded by each of said closed-loop grooves throughout the thickness of the key-top portion; a plurality of concavities which are open at the inner face of the key-top panel member and which are substantially in registry in cross section with said key-top portions, respectively, each of the key-top portions having an inner end surface portion partially defining each of the concavities in the key-top panel member; and skirt portions each of which is formed between each of the closed-loop grooves and each of the concavities so that the key-top portion surrounded by each of said closed-loop grooves is bridged to an inner wall portion of the key-top panel member through each of said skirt portions, each of the skirt portions joining with each of said key-top portions for enabling each of the key-top portions to be elastically deformed a desired distance in the direction of thickness of the key-top panel member when the key-top portion is depressed at the outer face thereof inwardly in said direction, each of said skirt portions extending generally in frusto-conical form between each of said key-top portions and each of peripheral portions of the key-top panel which surround the key-top portions, respectively, the depth of each of said closed-loop grooves being larger than the thickness of each of said key-top portions.

16. A keyboard structure as set forth in claim 15, further comprising a plurality of movable contact elements which are respectively positioned within said concavities and each of which is fixedly attached to said inner end surface portion of each of the key-top portions.

18. A keyboard structure as set forth in claim 16, further comprising a base member fixedly attached to the inner face of said key-top panel member and having attached to the inner face thereof a plurality of stationary contact elements which are distributed substantially in conformity to the distribution of said concavities in the key-top panel member, said movable contact elements being located substantially in alignment with

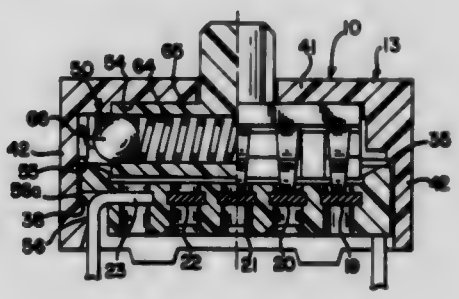
and spaced apart from said stationary contact elements, respectively, on the base member in directions of thickness of the keyboard structure.

4,491,703

DETENTING AND CONTACT REGISTRATION SYSTEM FOR A LINEAR DIP SWITCH

Fred Jaklic, Brookfield, Ill., assignor to Grayhill, Inc., La-Grange, Ill.

Filed Aug. 30, 1983, Ser. No. 527,218
Int. Cl.³ H01H *15/00, 9/00*
U.S. Cl. 200—16 D 10 Claims



1. A linear DIP switch comprising,
a base having a generally flat and rectangular body of insulating material with an upper and a lower surface,
a plurality of contact bars embedded in said body and exposed on the upper surface thereof at one or more switching positions longitudinal of the body through openings formed in the body at a corresponding position, terminals connected to said contact bars and extending from opposite edges of the body and downwardly therefrom in DIP configuration,
a cover having a top wall and opposed side and end walls, said base coacting with said side and end walls, a longitudinal slot in said top wall, and opposed indent track means along said side walls,
and a slide actuator disposed within said cover having a button accessible through said slot, detent means on said actuator coacting with said indent track means to define a primary detenting function for said slide actuator and spaced apart detenting positions, and spring contact arms connected together at one end and having free ends engageable with the upper surface of said base and in selective positions with said contact bars through openings in said body on said base for selectively interconnecting selective contact bars at any one position of the actuator, said contact arms generating a force value and the engagement between the free ends of the contact arms and the body openings effecting a secondary detenting function, and each of said detenting positions corresponding to a switching position such that the secondary detenting function is synchronized with said primary detenting function.

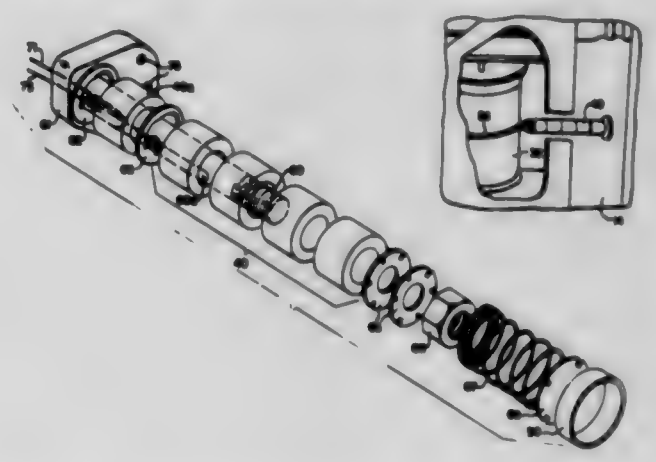
4,491,704

VACUUM CIRCUIT INTERRUPTER HAVING VACUUM MONITORING APPARATUS

Stanislaw A. Milianowicz, Monroeville; Norman Davies, Penn Township, Westmoreland County, and Charles K. Wallace, Penn Hills Township, Allegheny County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 25, 1983, Ser. No. 488,235
Int. Cl.³ H01H *33/66*
U.S. Cl. 200—144 B 3 Claims

1. A vacuum circuit interrupter, comprising:
a. a support frame;
b. a substantially evacuated insulated housing disposed upon said support frame;
c. an electrical conductor means, a portion of which is disposed within said housing and a portion of which is external of said housing;
d. arc shielding means spaced from said electrical conductor means and disposed within said housing to shield the internal portion of said housing from arcing products during a circuit interruption, said arc shield means being electrically conductive and having an external portion which extends through said housing so as to provide electrical continuity to a region outside of said housing;
e. electrically insulating rod means disposed on said support frame;
f. first resistance means having an annular opening therein for disposal upon said rod means;
g. second resistance means having an annular opening therein for disposal on said rod means;



h. electrically conductive ring means having an annular opening therein for being disposed on said rod means between one portion of said first resistance means and one portion of said second resistance means, another portion of said first resistance means disposed in electrical contact with said external portion of said arc shield means, and another portion of said second resistance means being disposed to complete an electrical circuit with said electrical conductor means; and
i. current detection means interconnected between said electrically conductive ring means and said another portion of said second resistance means for determining leakage electrical current in said housing between said electrical conductor means and said arc shield means as a function of the voltage drop across said second resistance means through which said leakage current flows.

4,491,705

ELECTRICAL SWITCH

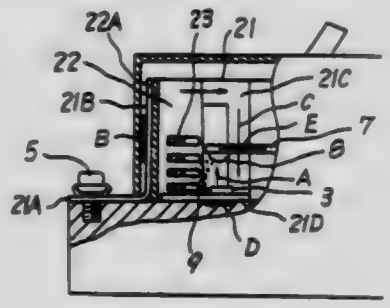
Hideo Hayashi; Iwao Takamatsu, and Ikuo Nakai, all of Saitama, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

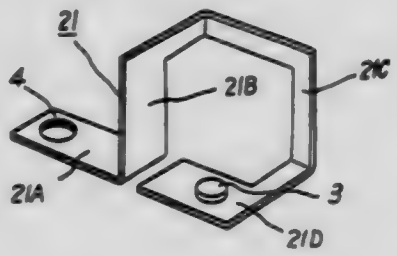
Filed Oct. 15, 1982, Ser. No. 434,621
Claims priority, application Japan, Oct. 16, 1981, 56-164080
Int. Cl.³ H01H *33/18*
U.S. Cl. 200—147 R 2 Claims

1. A switch apparatus comprising:
a first and second terminal;
a first and second contact electrode;
a first conducting member connecting the first terminal to the first contact electrode;
a second conducting member connecting the second terminal to the second contact electrode;
means for selectively moving the relative positions of the first and second contact electrodes to be in contact with or separated from one another;
arc extinguishing means including a plurality of C-shaped grid members arranged in spaced parallel relation and positioned in proximity to the first and second contact electrodes and to an arc zone in which is generated an arc

discharge plasma when the first and second contact electrodes are separated while a current is flowing therebetween;

characterized in that the first conducting member comprises a stamped and bent metal plate member shaped to form a current path which at least partially encircles a region of space which encompasses the grid members, the arc zone and the first and second contact electrodes, the plate member having a first L-shaped segment with one leg extending to the first terminal and the other leg extending adjacent to the plurality of grid members and in the direction perpendicular thereto, a second L-shaped segment





having one leg extending from the first L-shaped segment in a direction parallel to the center of the C-shape of the grid members and another leg extending parallel to one side of the grid members, and a third L-shaped segment having one leg extending from the second L-shaped segment adjacent to one side of the C-shaped grid members and in a direction perpendicular thereto and another leg extending to the first contact electrode, the current path being disposed such that when a current flows therein, a magnetic field is established in the arc zone between the grid members and the first and second contact electrodes, the magnetic field acting to confine the arc discharge plasma to a region adjacent to the grid members.

4,491,706

CIRCUIT BREAKER WITH MEANS FOR PRODUCING A FLOW OF ARC-EXTINGUISHING GAS

Samuel Berg, Ludvika, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed Jul. 25, 1983, Ser. No. 517,019
Claims priority, application Sweden, Jul. 16, 1982, 8204708
Int. Cl.³ H01H *33/88*
U.S. Cl. 200—148 A 6 Claims

1. Electric circuit breaker having a gaseous arc-extinguishing medium comprising:

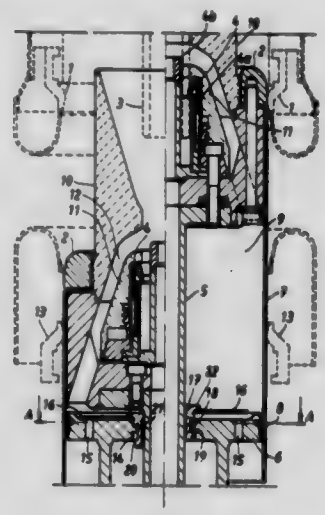
a first and a second contact, one of said contacts being movable in relation to the other contact between an engaged and a disengaged position;

a pump means including a piston and a cylinder, said piston being joined to said first contact, and said cylinder being joined to said second contact, said pump means, during a breaking operation, compressing the gas in a pump chamber to create a blast of arc-extinguishing gas towards the contact area of the circuit breaker;

an operating device being connected to said movable contact by means of a rod, said rod being axially displaceable through an opening in the wall of said pump chamber;

a valve hole in the wall of said pump chamber;

A check valve including a movable valve member associated with said valve hole, said movable valve member being arranged, upon opening of the breaker, to cover the valve hole and, upon closing of the breaker, to open for the supply of gas to the pump chamber;



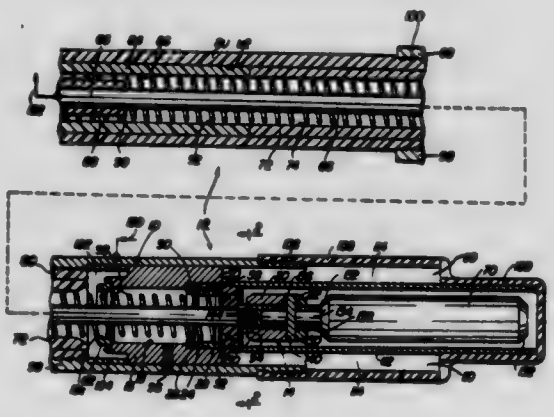
said check valve comprising a guiding sleeve of a ductile material for the movable valve member, said sleeve tightly surrounding the rod and being fixed with a certain axial mobility in the opening arranged for the rod in the wall of the pump chamber, whereby the sleeve also constitutes a seal and bearing between said rod and said wall.

4,491,707

ELECTRICAL CONTACT ASSEMBLY FOR A CURRENT INTERRUPTING UNIT

Raymond P. O'Leary, Evanston, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Sep. 7, 1982, Ser. No. 415,107
Int. Cl.³ H01H *33/60*
U.S. Cl. 200—149 R 21 Claims



1. An improved first electrical contact for a current-interrupting unit which also includes a second contact, the contacts being relatively movable to engage and disengage, disengagement being characterized by separation of the contacts and the formation of an arc therebetween; wherein the improvement comprises:

a body having a bore, the second contact being receivable in the bore, being freely movable along a path through the bore, and being movable out of a first end of the bore and away therefrom during separation of the contacts, all as relative contact movement takes place, the wall of the bore containing a groove;

a pressure ring held in the groove for limited shifting therein transversely of the bore and of the path of the second contact, the pressure ring having an aperture which is

alignable with the path of the second contact, due to the shiftability of the pressure ring, to closely receive the second contact for movement therethrough as relative contact movement takes place;

means in the groove for normally biasing the pressure ring transversely of the bore both to normally position a portion of the pressure ring in the path of the second contact and to normally effect misalignment between the aperture and the path of the second contact, entry of the second contact into the aperture shifting the pressure ring against the action of the biasing means to align the aperture with the path of the second contact, such alignment and the action of the biasing means thereafter effecting intimate sliding engagement between the wall of the aperture and the second contact and between the wall of the bore and the second contact as long as the second contact is within the aperture;

means for closing a second end of the bore so that gas evolved as a result of the formation of the arc between the separating contacts is unable to flow through the bore towards its second end; and

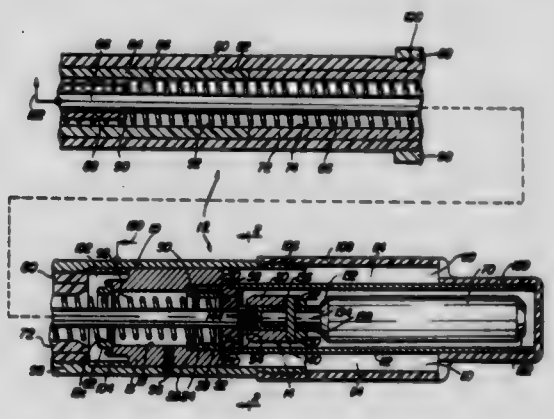
passage means defined at least in part by the exterior of the body for transmitting the evolved gas away from the vicinity of the first end of the bore, so that the arc formed between the separating contacts is not blown into the bore by the evolved gas.

4,491,708

ELECTRICAL CONTACT FOR USE IN A CURRENT INTERRUPTING UNIT

Raymond P. O'Leary, Evanston, and John Urbanek, Chicago, both of Ill., assignors to S&C Electric Company, Chicago, Ill.

Filed Sep. 7, 1982, Ser. No. 415,108
Int. Cl.³ H01H *33/62*
U.S. Cl. 200—149 R **16 Claims**



1. An improved first electrical contact for a current-interrupting unit which also includes a second metal contact, the contacts being relatively movable to engage and disengage, disengagement being characterized by separation of the contacts and the formation of an arc therebetween; wherein the improvement comprises:

a metal body having an elongated bore, the second contact being receivable in the bore, being freely movable along a path through the bore, and being movable out of a first end of the bore and away therefrom during separation of the contacts, all as relative contact movement takes place, the wall of the bore containing a groove near or at a second end of the bore, a portion of the bore between its first end and the groove having a length which is substantially equal to or greater than the length of the second contact, both lengths being measured along the path of the second contact;

a pressure ring held in the groove for limited shifting therein transversely of the bore and of the path of the second contact, the pressure ring having an aperture which is alignable with the path of the second contact, due to the shiftability of the pressure ring, to closely receive the second contact for movement therethrough as relative contact movement takes place; and

means in the groove for normally biasing the pressure ring transversely of the bore both to normally position a portion of the pressure ring in the path of the second contact and to normally effect misalignment between the aperture and the path of the second contact, entry of the second contact into the aperture shifting the pressure ring against the action of the biasing means to align the aperture with the path of the second contact, such alignment and the action of the biasing means thereafter effecting intimate sliding engagement between the wall of the aperture and the second contact and between the wall of the bore and the second contact as long as the second contact is within the aperture, the second contact moving through the bore portion and toward the first end of the bore after leaving the aperture,

the intimate sliding engagement establishing a continuous, metal-to-metal electrical path through the contacts, and the movement of the second contact through the bore portion thereafter establishing a continuous electrical path through the contacts via small arcs or arclets which form between the second contact and the wall of the bore portion.

14. An improved first contact as in claim 1, 2, 3 or 4, which further comprises:

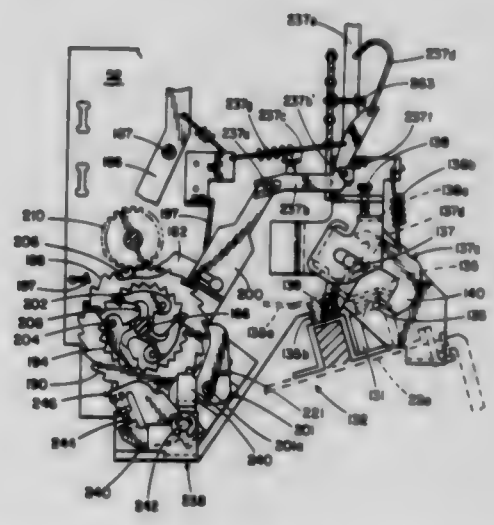
a generally toroidal or annular arcing ring made of a refractory metal and mounted to the body at the first end of the bore, the arcing ring containing a bore through which the second contact passes as it moves out of the first end of the bore, one end of the arc which forms as the contacts disengage terminating on the arcing ring.

4,491,709

MOTOR AND BLADE CONTROL FOR HIGH AMPERAGE MOLDED CASE CIRCUIT BREAKERS

Ferdinand E. Chabot, Cedar Rapids, and Tak M. Wong, Swisher, both of Iowa, assignors to Square D Company, Palatine, Ill.

Filed May 9, 1983, Ser. No. 492,905
Int. Cl.³ H01H *3/00*
U.S. Cl. 200—153 SC **51 Claims**



1. In a multiphase molded case circuit breaker including a plurality of contact blades adapted to carry alternating current with each blade carrying a blade contact for engagement with a respective stationary contact to extend a circuit between a line conductor and a load conductor for each phase in response to the pivoting of the respective blade in one direction by a respective pivotable blade carrier biased to pivot in the opposite direction for disengaging the respective blade contact from the stationary contact, the improvement comprising:

a frame,

a closing spring having one end connected to said frame,

a rotatable crank connected to the other end of said closing

spring for tensing said closing spring in response to rotation of said crank in a selected direction,

means enabling said crank to pivot each carrier in said one direction for engaging each blade contact with a respective stationary contact in response to the rotation of said crank in a direction opposite said selected direction,

an annular ratchet having a series of annular outer teeth and a series of annular inner teeth,

ratchet operating means operable for successively engaging successive teeth of said series of teeth for rotating said ratchet in said selected direction,

pawl means associated with said inner teeth for engaging selected teeth of said series of inner teeth for rotating said ratchet in said selected direction in response to rotation of said pawl means,

a pin supporting said pawl means,

a gear connected to said pin,

a motor operably connected to said gear to drive said gear to effect rotation of said ratchet through rotation of said pawl means,

said ratchet operating means associated with said outer teeth to effect rotation of said ratchet in said selected direction in response to reciprocal movement of said ratchet operating means while permitting independent rotation of said ratchet in said selected direction,

said pawl means associated with said inner teeth to effect rotation of said ratchet in said selected direction in response to rotation of said pawl means while permitting independent rotation of said ratchet in said selected direction, whereby said ratchet may be rotated in said selected direction by operation of said ratchet operating means or by operation of said pawl means either independently or in concert,

a clutch continuously connecting said ratchet to said crank for rotating said crank in said selected direction to tense said spring in response to the rotation of said ratchet in said selected direction,

means operating said clutch to disconnect said ratchet from said crank in response to said crank being rotated to a predetermined position with said closing spring having a predetermined tension,

retaining means operated by said crank prior to said crank being rotated to said predetermined position for preventing said closing spring from rotating said crank in a direction opposite said selected direction,

and means thereafter operable for releasing said retaining means for enabling discharge of said closing spring to rotate said crank in a direction opposite said selected direction to thereby enable said crank to pivot each carrier in said one direction for engaging each blade contact with a respective stationary contact.

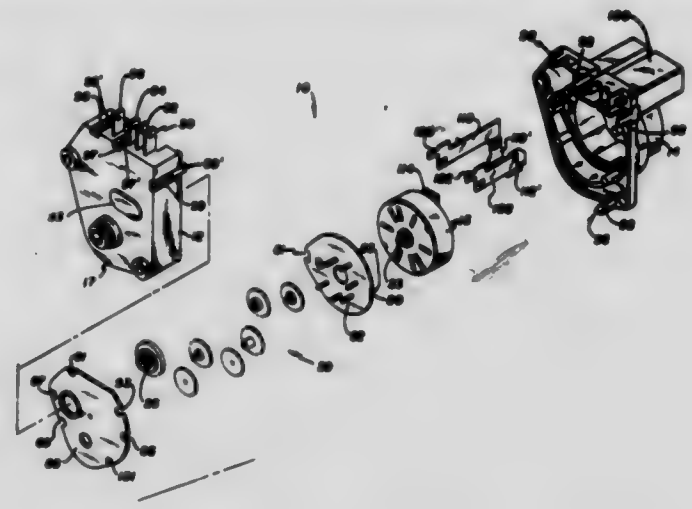
4,491,710

HOUSING ARRANGEMENT FOR A TIMING MECHANISM

Steven W. Smock, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Nov. 14, 1983, Ser. No. 551,089
Int. Cl.³ H01H 43/10, 9/00
U.S. Cl. 200—303 10 Claims

1. In combination, a timing mechanism carried in a first housing constructed of an electrically insulative material, a motor and gear train assembly carried in a second housing constructed of an electrically insulative material, and holding means maintaining said first and second housings together in a working relationship wherein said second housing includes a cavity having first sidewalls and a base receiving said motor and having a second cavity receiving a terminal block carried by said motor, a first ledge extending outwardly from a portion of said first sidewall receiving an arbor plate of said gear train assembly, and second sidewalls extending from said first ledge



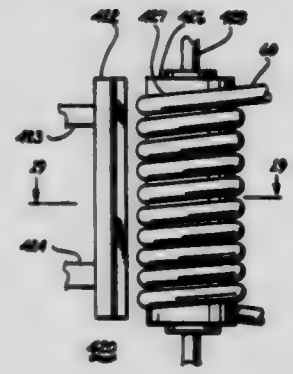
providing a second ledge receiving a cover plate of said gear train assembly.

4,491,711

ELECTRO MECHANICAL TUBING SEALER

Loren C. Acker, Tucson, Ariz., assignor to Engineering & Research Associates, Inc., Tucson, Ariz.

Division of Ser. No. 334,749, Dec. 28, 1981, Pat. No. 4,390,832, which is a continuation of Ser. No. 122,293, Feb. 19, 1980, abandoned. This application Dec. 14, 1982, Ser. No. 449,639
Int. Cl.³ H05B 6/56
U.S. Cl. 219—10.81 2 Claims



1. Apparatus for forming a plurality of sealed segments in a length of tubing containing a fluid, said apparatus comprising in combination:

(a) means for sealing the tubing with each of a plurality of welds to define the segments, said sealing means including:

i. jaw means for compressing the tubing commensurate with the formation of a weld; and

ii. transmission means for transmitting RF energy intermediate said jaw means to melt the compressed tubing and form the weld;

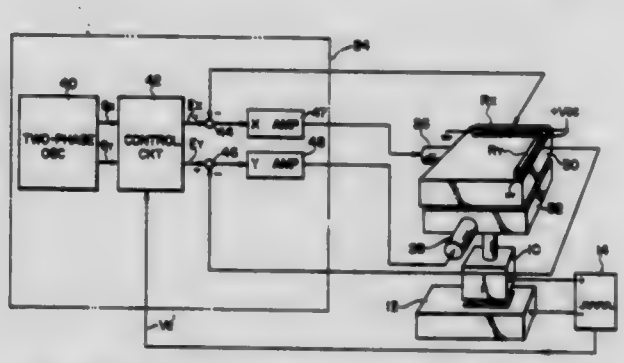
(b) means for supporting and locating the tubing in relation to said jaw means to form a plurality of welds spaced along the tubing and define a plurality of the segments, said supporting and locating means comprising an element and a spiral groove disposed in and circumscribing said element for receiving and supporting multiple wraps of the tubing, said element including an indent extending across said groove in general parallel alignment with the axis of rotation of said groove and said jaw means comprising a jaw extending across and displaceable into said indent of said groove for compressively contacting the tubing disposed within said groove.

4,491,712

FABRICATING MACHINE

Tetsuro Ito, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 10, 1981, Ser. No. 300,864
Claims priority, application Japan, Sep. 10, 1980, 55-125798; Sep. 17, 1980, 55-129868; Sep. 19, 1980, 55-130166; Sep. 19, 1980, 55-130167
Int. Cl.³ B23P 1/08
U.S. Cl. 219—69 G
18 Claims



1. A fabricating machine in which a machining tool or a machining electrode is moved in a circular motion relative to an electrically conductive workpiece while generating a discharge between said electrode and workpiece for machining said workpiece while gradually changing a radius of a moving path of said tool or said electrode a predetermined amount comprising:

discriminating means for determining whether said machining tool or said machining electrode is in a machining enabling state, wherein said discharge can properly take place, or in a machining disabling state wherein said discharge cannot properly take place, while said tool or said electrode is moved in a circular motion; and

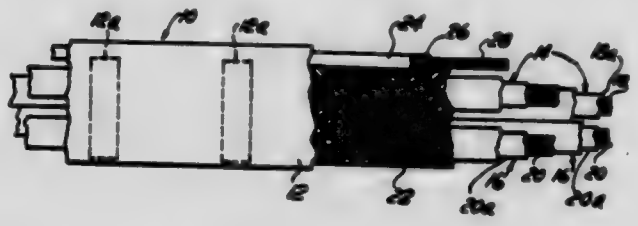
tool or electrode moving path deciding means for changing the radius of the moving path of said tool or said electrode at a first rate for reducing the distance between said electrode and workpiece when said discriminating means determines the machining enabling state and for changing the moving path of said tool or said electrode at a second rate larger than said first rate to reduce said distance when said discriminating means determines the machining disabling state.

4,491,713

POWER AND SENSING CABLE ARRANGEMENT FOR ELECTRICAL DISCHARGE MACHINING ASSEMBLY

Roy D. Patton, and Robert C. Brown, both of Mooresville, N.C., assignors to Colt Industries Operating Corp., New York, N.Y.

Filed Oct. 28, 1981, Ser. No. 315,745
Int. Cl.³ B23P 1/02; H01B 9/00
U.S. Cl. 219—69 R
4 Claims



1. An electric discharge machining apparatus comprising a power supply with two terminals, a power and sensing cable and a machine tool, said machine tool including an electrode tool and workpiece, wherein thhe cable comprises:

a pair of substantially equal length power conducting leads, one of said pair connected between one of said terminals and the electrode tool, the other of said pair connected between the other of said terminals and the workpiece;

each of said leads including a non-conductive sleeve and a plurality of individual conductors inside such sleeve;

a single braided shield sleeve enclosing both of said power conducting leads;

an external insulating jacket enclosing said braided shield sleeve;

a plurality of sensing and control leads and a braided shield enclosing such leads; and

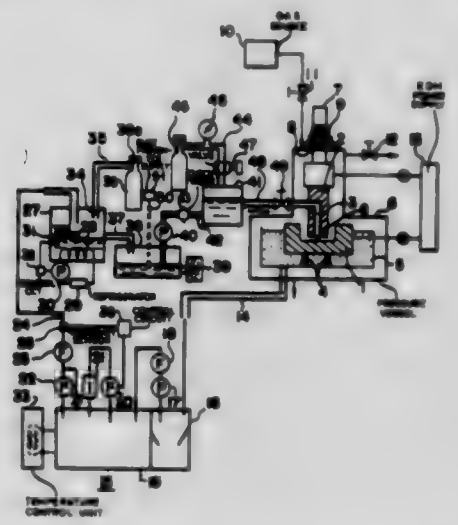
a separate insulating sleeve enclosing said braided shield of said sensing leads and aligned substantially parallel to said power leads intermediate their respective braided shield and said external insulating jacket, said braided shield sleeve enclosing said power conducting leads grounded to said power supply.

4,491,714

METHOD OF AND APPARATUS FOR ELECTRICAL DISCHARGE MACHINING USING A GAS DISSOLVED WATER LIQUID

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Jul. 22, 1982, Ser. No. 400,672
Claims priority, application Japan, Jul. 24, 1981, 56-115155
Int. Cl.³ B23P 1/08
U.S. Cl. 219—69 D
24 Claims



1. A method of electrical discharge machining a conductive workpiece with a tool electrode spacedly juxtaposed therewith across a machining gap traversed by a machining liquid, the method comprising the steps of:

(a) dissolving a gas in a water liquid to produce a solution constituting a machining liquid;

(b) pumping said solution to supply it into a machining gap; and

(c) effecting a succession of electrical discharges across said gap through said solution to electroerosively remove stock from a workpiece with the consequential decomposition of the water liquid into oxygen and hydrogen gases in said machining gap and simultaneously liberating said dissolved gas in said solution from the solution upon contact with said electrical discharges to add volume to said oxygen and hydrogen gases, thereby increasing said stock removal, said gas being dissolved in said water liquid in an amount of at least 20% in volume of the oxygen and hydrogen gases decomposed by the electrical discharges from the water liquid in said machining gap.

4,491,715

APPARATUS FOR GAS-SHIELDED ARC WELDING

Felix V. Voronin; Igor V. Shergov; Vyacheslav F. Gorb, and Viktor V. Sidorov, all of Moscow, U.S.S.R., assignors to Nauchno-Proizvodstvennoe Obiedinenie PO Tekhnologii Mashinostroenia, Moscow, U.S.S.R.

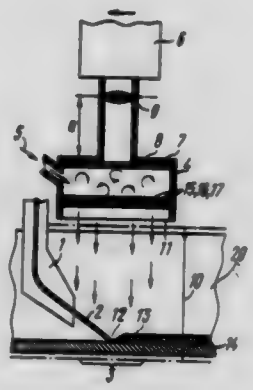
PCT No. PCT/SU80/00180, § 371 Date Jun. 28, 1982, § 102(e) Date Jun. 28, 1982, PCT Pub. No. WO82/01492, PCT Pub. Date May 13, 1982

PCT Filed Oct. 30, 1980, Ser. No. 394,920

Int. Cl.³ B23K 9/16, 9/32

U.S. Cl. 219—74

1 Claim



1. An apparatus for gas-shielded arc welding, comprising a mechanism for guiding and feeding an electrode to a welding zone, a nozzle for feeding a shielding gas medium to the welding zone and a TV transmission camera for realtime monitoring of the welding process, characterized in that a cover plate (8) made of an optically transparent material is provided at an end (7) of the gas nozzle (4) which is remote from the welding zone (3), and a lens (9) of the TV camera (6) is installed above the cover plate coaxially therewith, the distance ("a") from the cover plate (8) to the lens (9) being selected in such a manner that the zone (10) of sharpness of the lens (9) is located beyond the edge (11) of the nozzle (4) which is adjacent to the welding zone (10) and extends over the components of the welding process to be monitored wherein grids for forming a protective gas flow are installed within the nozzle in a superposed relation to one another in the direction of gas flow, said grids (15, 16, 17) being arranged in an offset relation to one another in such a manner that meshes (18) of an upstream grid (15) are partly overlapped by bridges (19) between meshes (18) of each downstream grid (16, 17) so that the combination of grids (15–17) forms a filter attenuating light flux emitted by the components of the welding process.

4,491,716

METHOD AND APPARATUS FOR EQUILIZING TEMPERATURE OF PIPE SECTIONS DURING SOLID PHASE WELDING

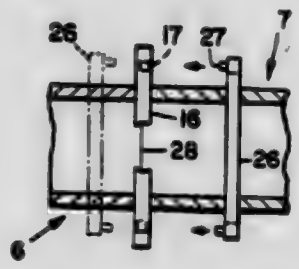
Jean LaForce, P.O. Box C, Inverness, Calif. 94937, assignor to Carl Stringer; Stringer Oil & Gas Co.; Jean LaForce and Carl Thomas Stringer, all of San Angelo, Tex.

Filed Aug. 25, 1980, Ser. No. 181,130

Int. Cl.³ B23K 9/02

U.S. Cl. 219—101

4 Claims



1. In the method of solid phase welding of a first horizontally disposed pipe section to a second horizontally disposed pipe section wherein confronting faces of the two sections are brought into contiguous confronting relationship to define a joint lying in a generally vertical plane and external heat is applied in a generally vertical plane to said pipe sections adjacent to said first vertical joint substantially equally and uniformly around the periphery thereof, and axial pressure is applied to said sections urging said faces toward each other; the improvement comprising directing a stream of air in a horizontal direction and parallel to the axes of said sections substantially uniformly around at least a portion of one of said pipe sections with said air being adjacent to and moving past said joint and said external heat is moved across said joint to cause said pipe sections to be uniformly heated.

4,491,717

RADIATION-TIGHT COUPLING ARRANGEMENT FOR A MACHINING LASER

Jean Geffroy, Versailles; Charles Glachet, Vendome; Maurice Moulin, Palaiseau, and Jean P. Noel, Chatenay Malabry, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

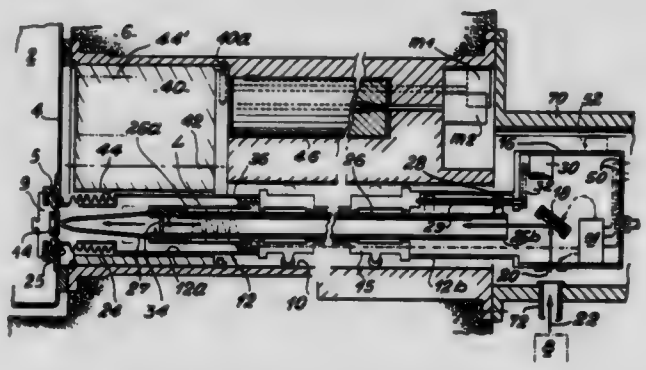
Filed Jan. 26, 1982, Ser. No. 342,885

Claims priority, application France, Jan. 30, 1981, 81 01810

Int. Cl.³ B23K 27/00

U.S. Cl. 219—121 LG

13 Claims



1. A radiation-tight coupling arrangement for coupling a machining laser to a hot cell containing radioactive material, comprising:

(a) a confinement wall defining said hot cell and having a cell opening defined by a cell flange means formed integrally with said confinement wall;

(b) a cell door formed to interlock with said cell flange means for closing said cell opening;

(c) a sleeve having one end rigidly affixed to said confinement wall such that said cell opening faces the internal volume defined by said sleeve;

(d) a radiation-blocking wall formed to surround said confinement wall except for the internal volume defined by said sleeve, said radiation-blocking wall being joined to the circumferential surface of said sleeve;

(e) an elongated container movably arranged in said sleeve and having a first sealing bellows connected to a container flange means, said container flange means defining a container opening and being formed to interlock with said cell flange means;

(f) a container door formed to interlock with said container flange means for closing said container opening and formed to interlock with said cell door;

(g) means for rotating and translating said container about and along its longitudinal axis, respectively; said container being translatable between a forward position and a retracted position;

(h) a machining line translatably arranged in said container, said machining line having a machining head;

(i) means for translating said machining line along the longitudinal axis of said container;

(j) means for removing said cell door from interlocking

relationship with said cell flange means, thereby uncovering said cell opening;

(k) a first radiation blocking means rotatably arranged in said sleeve and capable of occupying a first position between said cell opening and said container opening when said container is in said retracted position; and

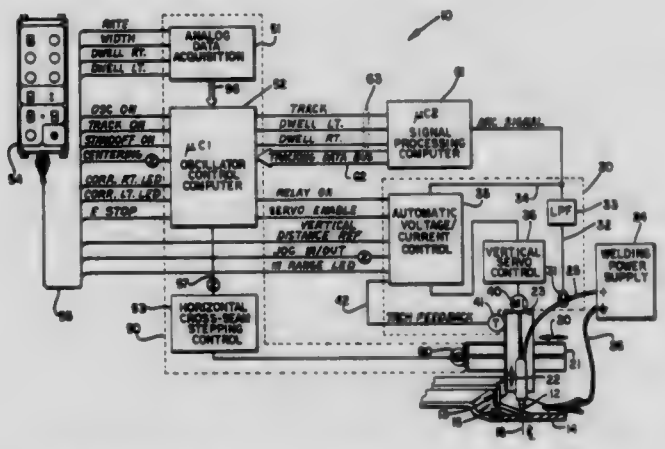
(l) means for rotating said first radiation blocking means; wherein when said container occupies said forward position, said container flange means is capable of being interlocked with said cell flange means by manipulation of said means for rotating said container, said container door being interlocked with said cell door as a result of said manipulation such that said container door is removed from interlocking relationship with said container flange means when said cell door is removed from interlocking relationship with said cell flange means, and said machining head enters said hot cell by way of said container opening and said cell opening when said machining line is translated in the direction of said hot cell.

4,491,718

TEMPLATE-MATCHING ADAPTIVE CONTROL SYSTEM FOR WELDING

George E. Cook, and A. Michael Wells, Jr., both of Nashville, Tenn., assignors to CRC Welding Systems, Inc., Nashville, Tenn.

Filed May 20, 1982, Ser. No. 380,222
Int. Cl.[3] B23K 9/12
U.S. Cl. 219—124.22 48 Claims



1. In an apparatus for arc welding a joint in a workpiece, said apparatus including arc cross-seam moving means for oscillating an electrode laterally across the joint about a predetermined center reference point, an improved adaptive control apparatus responsive to changes in the width, shape, and elevation of the weld joint, comprising:

noncontacting means for sensing the lateral profile of the joint by periodically holding the electrode vertically stationary while the electrode is moving laterally across the joint and for obtaining data representative of the weld joint lateral profile;

means for comparing said representative weld joint lateral profile data to data representative of a predetermined reference profile, said representative reference profile data corresponding to the vertical and horizontal dimensions of an idealized weld joint, and for providing an error signal; and

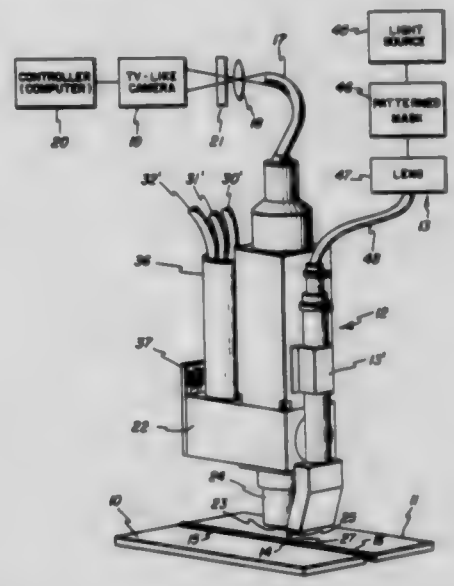
means responsive to said error signal for adjusting a welding parameter.

4,491,719

LIGHT PATTERN PROJECTOR ESPECIALLY FOR WELDING

Nelson R. Corby, Jr., Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 20, 1982, Ser. No. 451,219
Int. Cl.[3] B23K 9/12
U.S. Cl. 219—124.34 12 Claims



1. A robotic welding system comprising:

a gas tungsten arc welding torch having a tungsten electrode inside of a gas nozzle and an integral optical vision system whose axis passes through said gas nozzle;

said torch in operation establishing an electric arc between said electrode and a workpiece having a joint to be welded, and said optical vision system having a field of view containing the weld puddle that is produced;

a projector system which generates a programmable light pattern and is comprised of a light beam source, a first coherent fiber optic bundle, a programmable beam deflection device that traces a particular light pattern on the face of said fiber optic bundle, and an exit optical assembly on said torch comprised of means for mounting the other end of said fiber optic bundle, and a lens system to image the transmitted light pattern onto the workpiece within said field of view;

said optical vision system providing an image on the face of a second coherent fiber optic bundle through which it is transmitted to a camera and a controller, said image containing said weld puddle, joint and remelt zone ahead of and behind said puddle, and projected light pattern.

4,491,720

AUTOMATIC WELDING CONTROL SYSTEM WITH SELECTABLE PAIRS OF ALTERNATE OUTPUT TERMINALS

Paul A. Worsely, Medway, Mass., assignor to Suburban Welders Supply Co., Inc., Ashland, Mass.

Filed Aug. 1, 1983, Ser. No. 519,081
Int. Cl.[3] B23K 9/00
U.S. Cl. 219—136 19 Claims

1. A welding control system comprising:

first and second pairs of gas supply output terminals;

a gas supply connected to a selected one of said first and second pairs of gas supply output terminals;

first and second pairs of contactor output terminals;

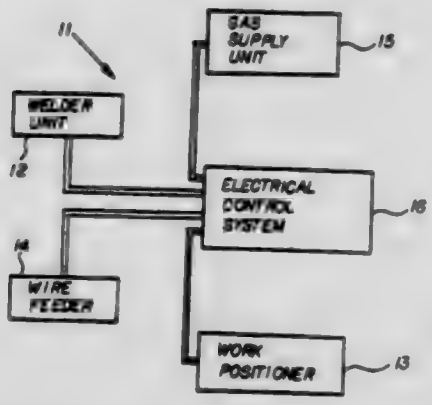
a welder unit connected to a selected one of said first and second pairs of contactor output terminals;

first and second pairs of wire feed output terminals;

a wire feeder connected to a selected one of said first and second pairs of wire feed output terminals;

normally open gas supply switch contacts connected across said second pair of gas supply output terminals;

normally open contactor switch contacts connected across said second pair of contactor output terminals;
normally open wire feed switch contacts connected across said second pair of wire feed output terminals;



input terminals for connection to a voltage supply; and control circuit means for selectively connecting said input terminals across said first pairs of output terminals, and for selectively closing said normally open switch contacts.

4,491,721

ELECTRIC BED HEATING DEVICE

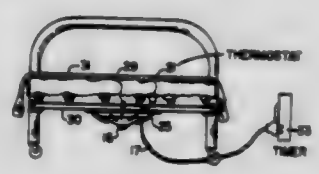
Ralph A. Davis, 1820 W. Douglas, Suite 10,, Wichita, Kans. 67203

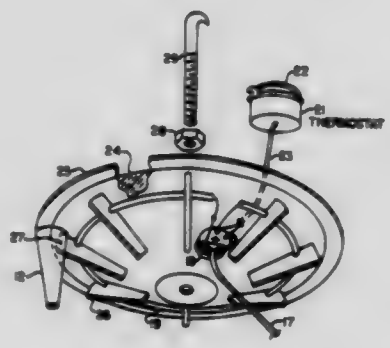
Continuation-in-part of Ser. No. 141,379, Mar. 17, 1980, abandoned, and a continuation-in-part of Ser. No. 006,557, Jan. 25, 1979, abandoned. This application Jun. 7, 1982, Ser. No. 385,518

Int. Cl.³ A47C *21/04*; F24H *3/00*; H05B *3/00*

U.S. Cl. 219—217

3 Claims





2. In combination with a bed understructure and bedding thereon, a heating device comprising a thermally insulated metallic plate supporting an electric resistance heating element in thermally conductive relationship with the lower face thereof, electric connections and wiring from said heating element leading to a suitable on-off timing control device and subsequently to an electrical power source for supplying power to said heating element; said plate disposed generally horizontally with said heating element facing downwardly and attached to the bed understructure by means of a central fastener; said plate being thermally insulated on its upper side and having its heat conductive lower surface shaped sloping upwardly from the center outward radially; said plate having several elongated vertical fin surfaces extending downwardly and radially from the lower surface of said plate; said plate and fins engaging and supporting the heating element on the lower surface, the engagement of said heating element with said fins providing for conductive heat transfer into the air and urging air movements divergently to distribute heated fresher air consistantly across the underside of the bedding, whereby air temperatures above ambient can be created in the area bounded by a vertical bed covering extending about the periphery of the bed and which restricts the heated air from flowing horizontally from beneath the bed into the ambient air thereby causing a storage of periodically supplied heat underneath and within the bedding from which a living body lying thereon receives warmth and comfort.

4,491,722

MOUNTING ARRANGEMENT FOR AN ELECTRIC HOTPLATE WITH A SUPPORT RING SURROUNDING IT

Karl Fischer, Karl-Fischer-Strasse 23, D-7519 Oberderdingen, Fed. Rep. of Germany, and Felix Schreder, Oberderdingen, Fed. Rep. of Germany, assignors to Karl Fischer, Fed. Rep. of Germany

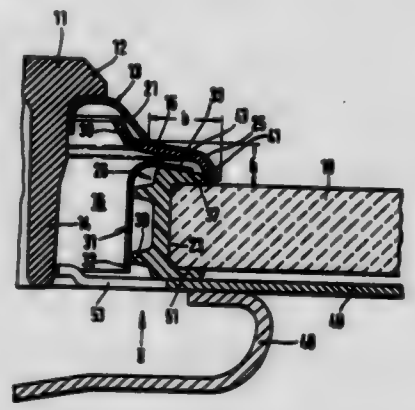
Filed Aug. 9, 1983, Ser. No. 521,648

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1982, 3230085; May 14, 1983, 3317624

Int. Cl.³ H05B *3/68*

U.S. Cl. 219—458

27 Claims



1. An arrangement for mounting electric hotplates in glass and ceramic mounting plates having mounting openings therein, each hotplate being fitted with a sheet metal support ring there around, the support ring having an outer rim adapted to seat on an intermediate ring, the intermediate ring having an outer edge adapted to seat on the mounting plate, the mounting plate itself being adapted to fit into openings in work-tops and cooking appliances, the arrangement comprising: the opening having a much larger diameter than the external diameter of the hotplate and the support ring fixed thereto; and, the intermediate ring having a much greater width than height between the seating of the outer rim of the support ring thereon and its seating on the mounting plates and spanning the distance between the edge of the opening in the mounting plate and the external diameter of the hotplate.

4,491,723

HEATING CIRCUIT WITH OVERHEAT SAFETY CONTROL FEATURE

Graham M. Cole, Lymington, England, assignor to Dreamland Electrical Appliances P.L.C., Southampton, England

Filed Feb. 8, 1983, Ser. No. 465,091

Claims priority, application United Kingdom, Feb. 15, 1982, 8204331

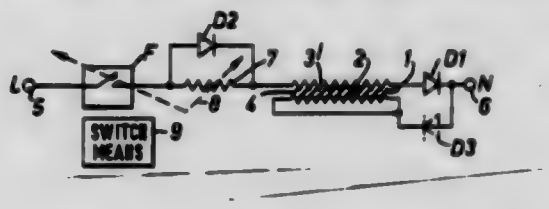
Int. Cl.³ H05B *1/02*

U.S. Cl. 219—505

12 Claims

1. In a heating circuit comprising input terminals for connection to an AC supply, an elongate heating conductor, an elongate sensor conductor substantially coextensive with said heating conductor, separating means which separates said two conductors and which has an impedance that decreases with

increasing temperature, thermally-operative circuit interruption means, first half-wave rectifier means connected in series with said circuit interruption means and said heating conductor between said input terminals whereby heating current can flow between said input terminals and through said heating conductor via said first half-wave rectifier means and said circuit interruption means, said sensor conductor being electrically connected to one only of said input terminals so that said heating current cannot flow through said sensor conductor, and a resistor electrically connected such that the resistor and the impedance of said separating means are connected in series between said input terminals, said resistor being thermally coupled to said circuit interruption means whereby in the



event of overheating of said separating means the resultant drop in the impedance of the separating means will cause the current through the resistor to increase to heat the resistor to cause the circuit interruption means to disconnect the heating circuit from the AC supply, the improvement comprising:

said resistor being connected in series with said elongate heating conductor and said first half-wave rectifier means with the first elongate conductor connected between the resistor and the first half-wave rectifier means; and

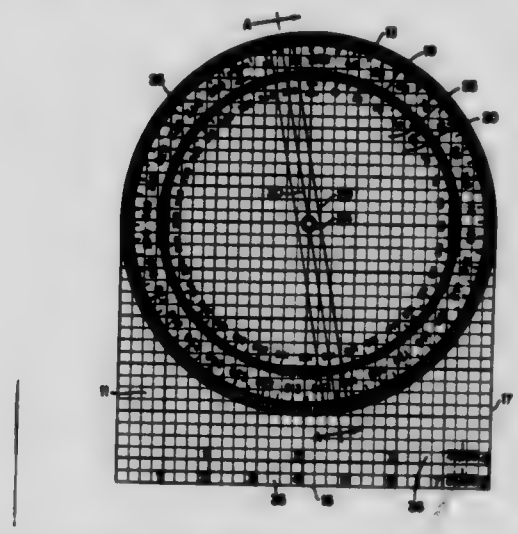
second half-wave rectifier means connected in parallel with said resistor in such a sense that it conducts and therefore bypasses the resistor during those half-cycles of the AC supply voltage during which said first half-wave rectifier means conducts.

4,491,724

COURSE AND HEADING COMPUTER

Robert F. Murray, 6 Arnold Rd., Shrewsbury, Mass. 01545

Filed Jun. 1, 1982, Ser. No. 383,525
Int. Cl.³ G06C 3/00
U.S. Cl. 235—88 N 3 Claims



1. A course and heading computer for use with marine charts, comprising

a transparent planar baseplate having a semicircular edge, defining a semicircle with a center and a diameter, at one end joined with rectangular straight edges at the opposite end, including a first straightedge opposite said semicircular edge and equal in length to the diameter of said semicircle, a 360° circular scale imprinted on said baseplate with its center at the center of said semicircle, wherein said baseplate has a scaled rectilinear grid with lines parallel to said straightedges imprinted thereon to assure quick, accurate alignment with either the latitudinal or longitudinal markings on a marine chart,

a transparent disk member rotatably attached at its center to the center of said semicircle, said disk member having a 360° scale imprinted around its periphery, the scale imprinted on said baseplate and the scale printed on said disk member being concentric with one another to form a compass rose, the zero degree point of said base member scale being located half way around the perimeter of said semicircle, and

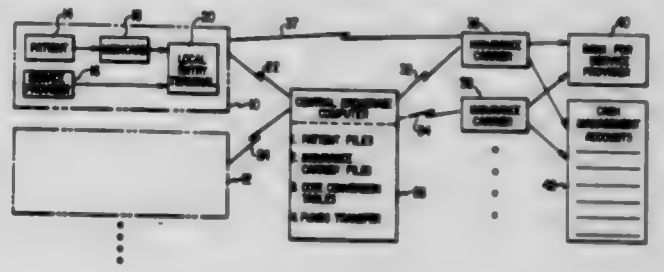
a bar member rotatably attached at its center to the center of said semicircle, said bar member overlaying said transparent disk, said bar member having an axial line inscribed thereon.

4,491,725

MEDICAL INSURANCE VERIFICATION AND PROCESSING SYSTEM

Lawrence E. Pritchard, 2517 Wellington Rd., Cleveland Heights, Ohio 44118

Filed Sep. 29, 1982, Ser. No. 426,982
Int. Cl.³ G06F 3/00
U.S. Cl. 235—375 21 Claims



1. A method for rapidly determining an insurance claim payment for a specified patient service, comprising the steps of:

storing in a system memory a file for each of the plurality of insurance carriers, each file having a set of service codes with a claim payment for each service code,

storing in a system memory a code conversion table for each of said insurance carriers for converting patient treatment codes into service codes for the corresponding insurance carrier wherein said patient treatment codes correspond respectively to patient services,

transmitting through a system input device codes for the name of a selected patient and a selected one of said treatment codes corresponding to said specified patient service,

determining the selected patient's insurance carrier,

machine reading the code conversion table for the selected patient's insurance carrier to translate the selected treatment code into the corresponding service code for the patient's insurance carrier,

machine reading the file for the patient's insurance carrier to determine the claim payment for the service code which is produced by the translation of said patients treatment code, and

displaying via a system output device said determined claim payment for said specified patient service for said selected patient, said input and output devices located at a common site.

4,491,726

INFORMATION DATA PROCESSING AND AUDIO MESSAGE DELIVERING SYSTEM

Yves Marmet, St. Lambert, Canada, assignor to Cossette & Associes, Quebec, Canada

Filed Dec. 6, 1982, Ser. No. 447,116
Int. Cl.³ G06K 7/10
U.S. Cl. 235—458 11 Claims

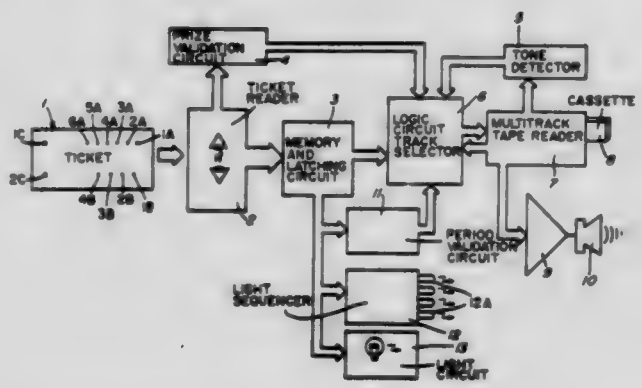
1. A system for processing information data registered on a punch ticket and for delivering an audio message, comprising:

means for reading said information data from said punch ticket and for issuing signals representative of each of said read information data;

memory means for storing and for latching each signal received from said reading means;

first validation means for validating a first set of data signals received from said reading means;

second validation for comparing a second set of data signals received from said memory means to a predetermined data value;

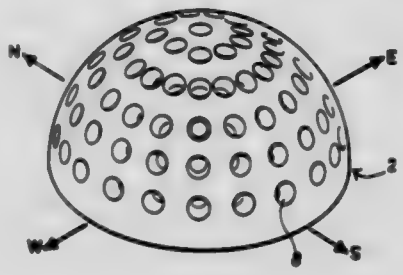


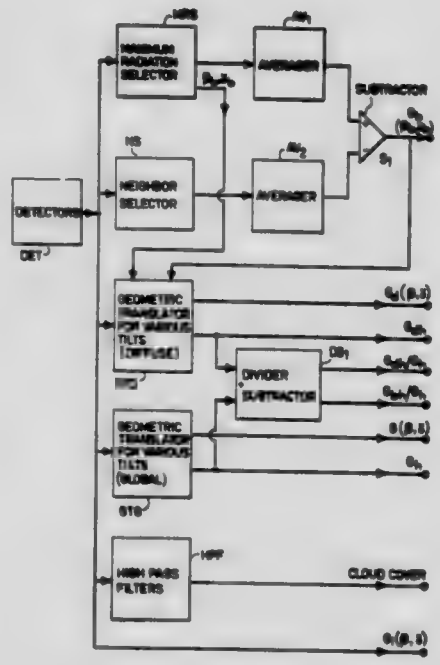
a multi-track tape reading device;

means connected to said first and second validation means, to said second validation means and to said memory means for directing said tape reading device to a selected track of said multi-track tape; and

an electro-magnetic means connected to said tape reading device for audibly delivering a message recorded on the selected track from said multi-track tape.

output, an averager circuit which averages the outputs of the detectors selected by said neighbour selector circuit, and a





subtractor circuit which subtracts the output of said averager circuit from that of the detector having the peak output.

4,491,728

DEVICE FOR DETECTING DEFECTS IN GLASS ARTICLES

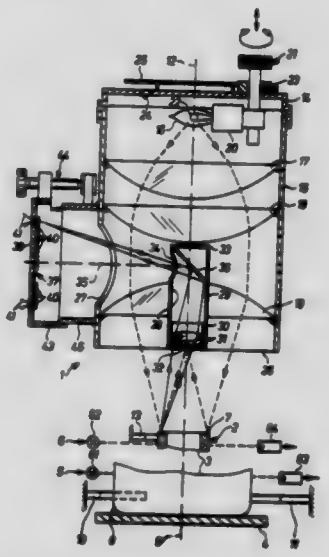
Knut Fischer, Auetal, Fed. Rep. of Germany, assignor to Hermann Heye, Obernkirchen, Fed. Rep. of Germany

Filed Mar. 29, 1982, Ser. No. 363,133

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1981, 3114285

Int. Cl.³ G01N *21/32*

U.S. Cl. 250—223 B **14 Claims**



1. A device for detecting unacceptable defects in a neck area of glass articles, comprising means for continuously feeding glass articles in a substantially upright position without rota-

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4,491,727

SOLAR RADIATION SENSOR AND SYSTEM INCLUDING SAME FOR MEASURING SOLAR RADIATION DISTRIBUTION

Joseph Appelbaum, Raanana, and Reuven Weiss, Bat Yam, both of Israel, assignors to Ramot University Authority for Applied Research, Ramat Aviv, Israel

Filed Jul. 1, 1981, Ser. No. 279,348

Int. Cl.³ G01J *1/20*; F24J *3/02*

U.S. Cl. 250—203 R **10 Claims**

1. A system for measuring solar radiation distribution comprising: a sensor having a plurality of individual, directional, solar radiation detectors oriented radially around at least one-half of a spherical surface and individually shielded so as to simultaneously intercept only solar radiation progressing along radial lines with respect to said surfaces; a maximum radiation selector circuit which selects the peak output from all said detectors to provide a measurement of the direct solar radiation; and means for providing a measurement of the direct solar radiation intensity, comprising, a neighbour selector circuit which selects the detectors nearest to the one having the peak

tion about their longitudinal axis along a predetermined path; detecting means having a longitudinal axis, a stationary light source spaced from the path of feeding of the articles and located above the neck areas of the glass articles so as to illuminate the neck area of each of the articles, an objective through which an image of the neck area of each of the glass articles is projected, a mirror located above the neck area of of the glass articles so that said objective is located between the neck areas of the glass articles and said mirror, so as to project the image projected through said objective by said mirror along a projecting axis which is transverse to said longitudinal axis, an image receiving element arranged to receive the image of the neck area of each of the glass articles projected by said mirror and having a plurality of electrooptical members arranged in a circle, and said electrooptical members being located in a plane normal to said projecting axis; and interpreting means connected with said electrooptical members and arranged to actuate an article ejector.

4,491,729

RADIATION RECEIVER AND METHOD OF MANUFACTURING SUCH A RECEIVER

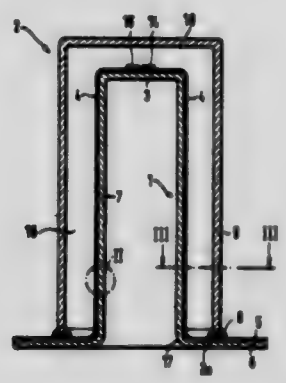
Konrad Stahl; Josef Theiss, both of Ulm, and Jochen Weber, Neu-Ulm, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Fed. Rep. of Germany

Filed Sep. 20, 1982, Ser. No. 420,391

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1981, 3143658

Int. Cl.³ G01J *5/04*

U.S. Cl. 250—336.1 **14 Claims**



1. A radiation receiver, comprising an inner cylindrical part of insulating material having a closed end and an opposite open end with a radially extending annular flange, at least one sensor on said inner part adjacent said closed end, at least one conductor track lead on said inner part extending from said sensor to and along said flange, and an outer cylindrical part having a closed end and an opposite open end having a surrounding rim adjacent said open end which is engaged on said flange and over said track lead leaving an outer extension of said track lead extending outwardly on said flange from said outer part, and a glass solder seam sealing said outer part with said inner part around the rim of said outer part and the flange of said inner part.

4,491,730

METHOD AND APPARATUS FOR FEEDBACK STABILIZED PHOTOMETRIC DETECTION IN FLUIDS

Norman E. Pedersen, Wilmington, Mass., assignor to Panametrics, Inc., Waltham, Mass.

Continuation-in-part of Ser. No. 178,190, Aug. 14, 1980,. This application Oct. 19, 1981, Ser. No. 312,936

Int. Cl.³ G01J *1/00*

U.S. Cl. 250—343 **30 Claims**

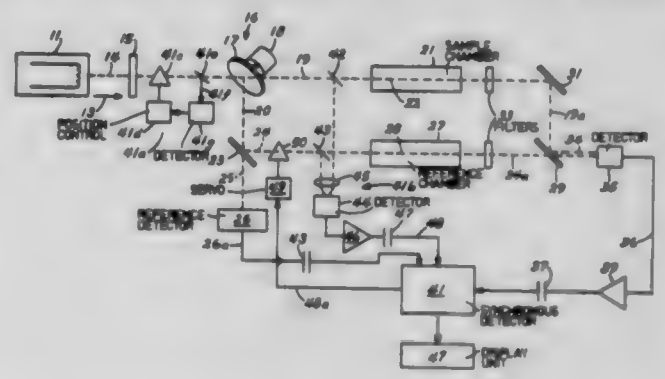
1. A photometric analysis apparatus for analyzing a fluid medium having at least one sample component having a characteristic absorption wavelength of interest, comprising:

a beam source of electromagnetic radiation including radiation at at least said one characteristic wavelength for providing a directed beam containing said characteristic wavelength,

beam modulation means in the path of said beam for providing first and second component beams, said beams having respectively time-varying portions whose intensities vary 180° out of phase at the rate of change of said beam modulation means,

a sample fluid holding chamber having a first optical path passing therethrough, said sample chamber being positioned in the path of one of said component beams for passing said one component through said sample chamber along the sample chamber optical path passing therethrough,

a reference fluid holding chamber having a second optical path passing therethrough, said reference fluid chamber



being positioned in the path of the other of said first and second component beams for passing said other component beam through said reference chamber along the reference chamber optical path passing therethrough,

means for combining said first and second component beams after passage through said sample fluid holding chamber and said reference fluid holding chamber,

first means for measuring the AC component of said combined beam,

second means for measuring said first and second component beams before said beams pass through said sample and reference chambers, and

means responsive to said second measuring means for varying the relative intensities of said first and second component beams prior to passing through said sample and reference chambers.

4,491,731

TUBE WALL THICKNESS MEASUREMENT

Yutaka Funyu; Tadashi Okumura, both of Handa; Asao Monno, and Masami Shimizu, both of Hino, all of Japan, assignors to Fuji Electric Co., Ltd. and Kawasaki Steel Corporation, both of, Japan

Filed Jun. 22, 1981, Ser. No. 275,990

Claims priority, application Japan, Jun. 25, 1980, 55-85214; Jul. 18, 1980, 55-97579; Aug. 20, 1980, 55-113529; Sep. 26, 1980, 55-132987

Int. Cl.³ G01N *23/00*

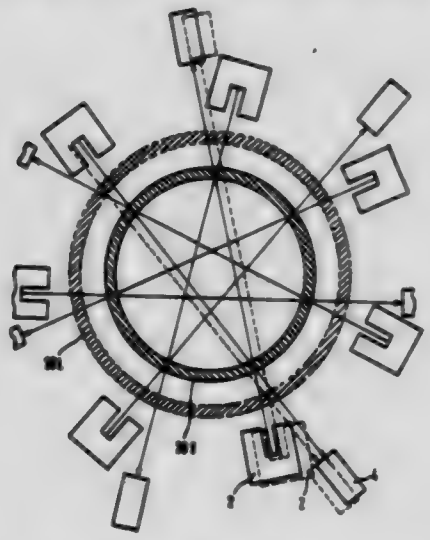
U.S. Cl. 250—358.1 **16 Claims**

1. Apparatus for measuring the thickness of a tube wall while said tube experiences substantially continuous axial motion relative to said apparatus comprising:

beam generation means for generating at least one radiation beam having a known intensity value, said beam having a unique directional radiation path;

radiation beam moving means for rotating the beam generation means around the axis of a tube to be measured substantially continuously so that said beam sequentially passes along at least three different selected beam paths, each beam path passing through at least two distinct measuring point regions within the cross-section of said tube wall during rotation thereof, and wherein at least three measuring point regions are passed through by at least three different radiation beam paths;

beam intenaity detection means for detecting the intensity of said beam during substantially continuous rotational movement of the beam generation means around the tube's axis and when the beam passes through the measuring point regions within said tube wall, and for producing



a detected value of beam intensity for each of said beam paths; and

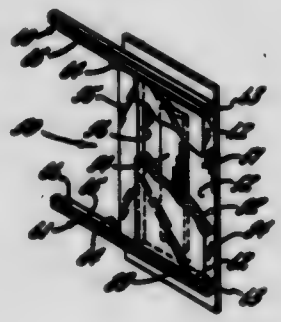
processing means for determining said tube wall thicknesses at the measuring point regions from said known intensity value and said detected values of beam intensity.

4,491,732

OPTICAL POTTING OF SOLID-STATE DETECTOR CELLS

Dennis H. Pritzkow, New Berlin; Neil W. Loomis, Muskego; Thomas M. Golner, Waukesha, and David M. Hoffman, New Berlin, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Aug. 25, 1982, Ser. No. 411,419
Int. Cl.³ G01T *1/20*
U.S. Cl. 250—366 3 Claims



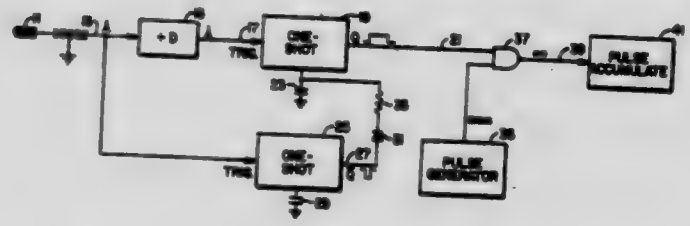
1. In a reflective cavity scintillation detector for a CT scanner for receiving a swath of radiation from an x-ray source to create a plurality of detector readings, the detector having a plurality of cells each including a scintillator and diode means mounted on a reflective collimator plate to form a cell, the improvement comprising, means shielding a part of the detector from the swath of radiation, the diode means being so arranged on the reflective collimator plate as to be within the shielded part of the detector, optical potting means joining the scintillator to the diode means, thereby to enhance the coupling of the scintillator to the shielded diode means.

4,491,733

RADIATION FLUX MEASURING SYSTEM WITH DEAD-TIME CORRECTION

Philip D. Wasserman, Cupertino, Calif., assignor to Xetex, Inc., Mountain View, Calif.

Filed Oct. 22, 1981, Ser. No. 313,779
Int. Cl.³ G01T *1/18*
U.S. Cl. 250—374 13 Claims



1. For a detector which, in response to a certain amount of radiation being received by it, emits an electrical pulse followed by a dead-time period during which the detector is insensitive to radiation, a method of measuring a radiation level received by the detector, comprising the steps of:

initiating a signal each time a certain predetermined number of detector pulse(s) has occurred, said signal having a preset duration in the absence of any pulses occurring during the existence of the signal;

extending the signal duration a fixed increment of time for each detector pulse received during the signal, and

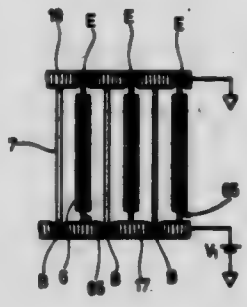
adding the resulting durations of said signals occurring over a period of time, thereby to give an indication of the total radiation received by the detector over that period of time which has been corrected for errors resulting from the detector dead-time periods.

4,491,734

X-RAY DETECTOR AND METHOD OF MAKING SAME

Keiki Yamaguchi; Kazuyuki Tomarikawa; Haruo Kurochi; Jiro Namikawa; Shigeru Matsumura; Ryo Takahashi, and Shiro Mori, all of Tokyo, Japan, assignors to Yokogawa Hokushin Electric Corporation, Tokyo, Japan

Filed Dec. 23, 1982, Ser. No. 452,714
Claims priority, application Japan, Nov. 2, 1982, 57-193157
Int. Cl.³ G01T *1/185;* H01J *47/02*
U.S. Cl. 250—385 10 Claims



1. In an X-ray detector comprising

casing means;

gas filled in said casing means for detecting X-rays;

a plurality of signal electrodes;

a plurality of bias electrodes;

means for positioning said signal electrodes and said bias electrodes within said casing means to form a plurality of detection chambers between each adjacent signal electrode and bias electrode; and

means for selectively reading signals produced by said X-rays in each said chamber;

the improvement comprising

each of said signal electrodes comprises a flat electrically conductive substrate having two sides, insulating layers formed on said two sides of said substrate, and a pair of

electrically conductive electrodes formed on said insulating layers; and

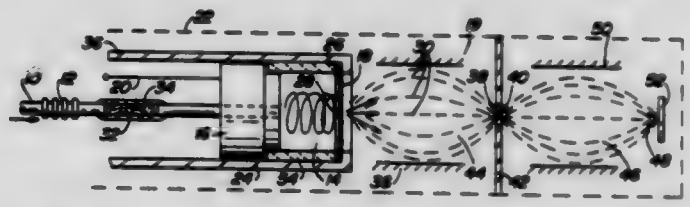
said means for positioning comprises a pair of flat electrically insulating plates for securely holding said signal electrode and said bias electrodes, whereby said signal electrodes and said bias electrodes are positioned alternately with their sides in face to face configuration.

4,491,735

RESTRICTED ION SOURCE OF HIGH CURRENT DENSITY

Donald L. Smith, Westport, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation of Ser. No. 365,930, Apr. 5, 1982,. This application Dec. 15, 1983, Ser. No. 561,859
Int. Cl.³ H01J 27/02
U.S. Cl. 250—423 R 5 Claims



1. Means for producing an ion source having a relatively small area comprising:

(a) a source of gas subject to becoming ionized,

(b) a plasma chamber comprising:

a cathode,

an anode,

an insulating cylinder disposed between one end of said cylinder and said cathode,

first seal means disposed between one end of said cylinder and said cathode,

second seal means disposed between the other end of said cylinder and said anode,

a grounded cylinder disposed about said plasma chamber retaining said insulating cylinder and said first and second seal means in place against said cathode,

(c) conduit means for directing said gas into said plasma chamber,

(d) bellows means disposed in said conduit means for biasing said cathode toward said anode to compress said first and second seal means,

(e) a source of electrical power for ionizing said gas to produce plasma in said plasma chamber,

(f) a first vacuum chamber enclosing said plasma chamber,

(g) said anode forming a diaphragm having an aperture formed therein to permit said ions to pass therethrough from said plasma chamber into said first vacuum chamber,

(h) first means disposed in said first vacuum chamber for focussing the ions effusing from said aperture to produce a focussed beam of ions of relatively high current density in a relatively small area,

(i) a second vacuum chamber connected to said first vacuum chamber for receiving said ions from said first vacuum chamber,

(j) a plate separating said first and second vacuum chambers and having an aperture to permit passage of said focussed ions from said first vacuum chamber into said second vacuum chamber, and

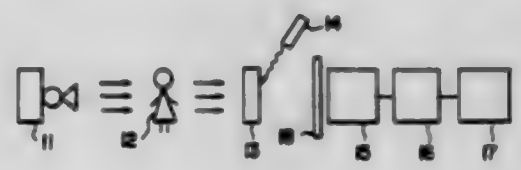
(k) second means in said second vacuum chamber for refocussing the ions passing through the aperture in said plate to produce a refocussed beam of ions.

4,491,736

RADIATION IMAGE STORAGE PANEL

Masanori Teraoka, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 2, 1981, Ser. No. 326,642
Claims priority, application Japan, Dec. 5, 1980, 55-171545
Int. Cl.³ G03C 5/16
U.S. Cl. 250—484.1 16 Claims



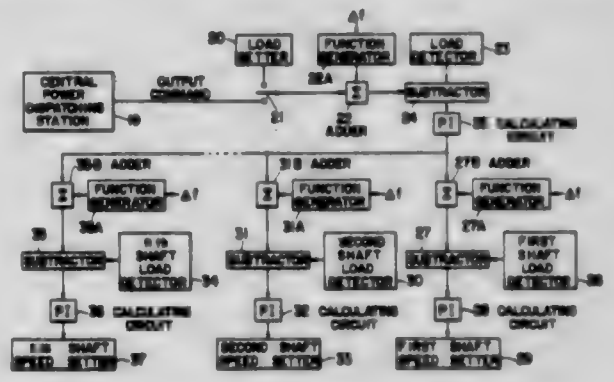
1. A radiation image storage panel having a fluorescent layer comprising a binder and a stimulable phosphor dispersed therein, and being colored with a colorant so that the mean reflectance of said panel in the wavelength region of the stimulating rays for said stimulable phosphor is lower than the mean reflectance of said panel in the wavelength region of the light emitted by said stimulable phosphor upon stimulation thereof characterized in that said colorant is an organic colorant which does not exhibit light emission of longer wavelength than that of said stimulating rays when exposed to said stimulating rays.

4,491,737

OUTPUT CONTROL SYSTEMS OF COMBINED CYCLE TYPE ELECTRIC POWER GENERATING SYSTEMS

Nobumitsu Ishikawa, Machida; Hiroshi Takeoka, Urayasu, and Hiroshi Fukuda, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 8, 1983, Ser. No. 512,015
Claims priority, application Japan, Jul. 12, 1982, 57-120751
Int. Cl.³ F02C 7/02
U.S. Cl. 290—40 R 6 Claims



1. An output control system of a combined cycle type electric power generation system including a plurality of shafts each coupling together a gas turbine, a steam turbine and an electric generator, said output control system comprising:

a central power dispatching station for producing an output command;

a selector for selecting either one of said output command and a signal produced by a load setter;

a first adder for adding together a signal selected by said selector and a signal generated by a function generator and corresponding to a frequency deviation of said electric power generation system;

a load detector producing a load signal representing a total load of said electric power generation system;

a first subtractor for producing a difference signal between an output of said first adder and said load signal;

first calculating means for effecting a proportional integration of said difference signal to produce an output instruction to all of said shafts; and

a plurality of control apparatus for respective shafts;

each control apparatus including:

a second adder for adding together said output instruction and an output of a second function generator corresponding to said frequency deviation,

a load detector of a predetermined one of said shafts,

a second subtractor for subtracting an output of said load detector of said predetermined shaft from an output of said second adder,

second calculating means for processing an output of said second subtractor to produce a control signal such that the output of said second subtractor becomes zero, and

means responsive to said control signal for setting a speed of said predetermined shaft.

4,491,738

MEANS FOR GENERATING ELECTRICITY DURING DRILLING OF A BOREHOLE

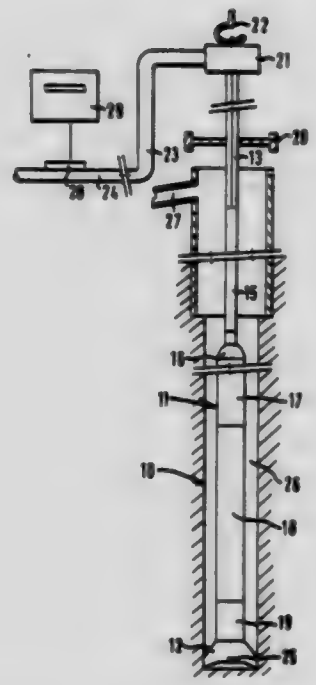
Anthony-Willem Kamp, Rijswijk, Netherlands, assignor to Shell Internationale Research Maatschappij, B.V., The Hague, Netherlands

Filed Nov. 22, 1982, Ser. No. 443,287

Claims priority, application United Kingdom, Nov. 24, 1981, 8135346

Int. Cl.[3] E21C *7/06*; G08C *23/00*; H02K *33/00*; E21B *47/12*

U.S. Cl. 290—43 6 Claims



1. A machine, adapted to be carried in a section of drill string or similar downhole apparatus, for generating electric energy in response to fluid dynamics within the drill string, comprising:

a generator housing provided with connector means for mounting said housing within the drill string;

conduit means associated with said housing for providing fluid communication from the interior of the drill string through said housing;

valve means, associated with said conduit means, for controlling fluid flow through at least a part of said conduit means;

generator means, including a stator and an anchor, said stator being mounted within said housing, said anchor being contained within said housing so as to be movable in a reciprocating mode relative to said stator in response to changes in fluid flow through said conduit means caused by the operation of said valve means.

4,491,739

AIRSHIP-FLOATED WIND TURBINE

William K. Watson, 5409 Denver Ave. South, Seattle, Wash. 98107

Filed Sep. 27, 1982, Ser. No. 424,583

Int. Cl.[3] F03D *9/00*

U.S. Cl. 290—44 22 Claims



1. A wind turbine system comprising:

(a) a buoyant gas airship which functions as the rotational axis for a wind turbine supported from said airship;

(b) a ring which encircles said airship to provide the outer terminus for turbine blades;

(c) multiple rotatably mounted turbine blades which extend outwardly from the airship to said ring;

(d) a plurality of tensional ring support members wherein each member extends from a point of attachment on said ring to a point of attachment along the airship structure, and wherein said points of attachment are distributed around the circumference of said ring, and along the airship structure, as required to stably support said ring from the airship, and as required to convey to the front end of the airship the longitudinally acting component of wind force exerted by the blades on said ring;

(e) means for rotating said rotatably mounted blades to an angle of incidence to airflow which will force the rotation of said ring, along with the airship, about said airship rotational axis;

(f) at least one rotatable airfoil device so mounted from said ring that said device may be used to controllably extract energy from the airflow said device experiences as it rotates with the ring about said axis;

(g) means for transmitting the energy extracted by said rotatable airfoil device to ground level, and

(h) means for offsetting the downwind force exerted by the wind turbine supported from said airship when in operation at a normal working height.

4,491,740

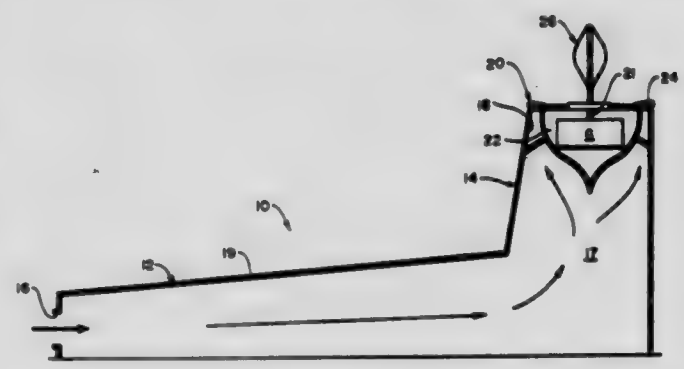
WINDMILL POWER SYSTEM

Edward A. Siegel, 16 Byron Dr., Granby, Conn. 06035

Filed Mar. 1, 1982, Ser. No. 353,183

Int. Cl.[3] F03D *3/02*; F03G *7/02*, *7/06*

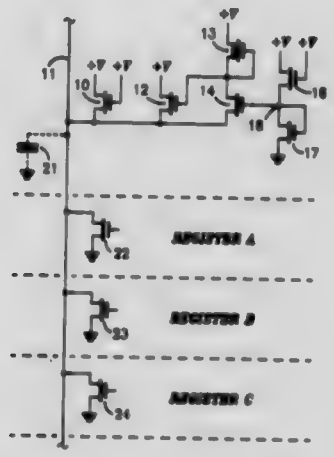
U.S. Cl. 290—55 4 Claims



1. A power generation system including:

heating chamber means for heating a stream of air;
said heating chamber means having inlet means for the entry of air and discharge means for the discharge of air, and said heating chamber means increasing in size from said inlet means to said discharge means;
stack means communicating with said discharge end of said heating chamber means to receive heated air from said heating chamber means, said stack means having a discharge end at the upper portion thereof;
air velocity increasing means in said stack means to increase the velocity of air flowing to said discharge end of said stack means, said air velocity increasing means delivering air of increased velocity to radially outward portions of said stack;
air powered means positioned downstream of said air velocity increasing means to be driven by the air of increased velocity from said air velocity increasing means;
said air velocity increasing means including an aerodynamic plug means in said stack means; and
said plug means defining an annular nozzle in said stack means.

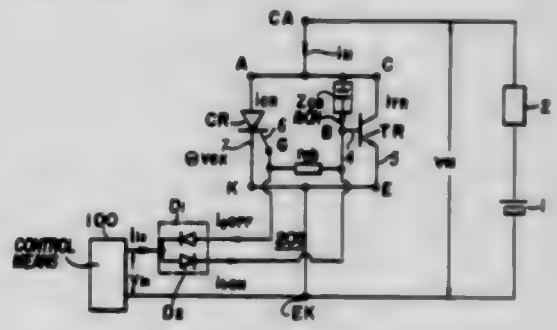
4,491,741
ACTIVE PULL-UP CIRCUIT
Lanny L. Parker, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 14, 1983, Ser. No. 484,749
Int. Cl.[3] H03K *17/22, 19/003, 17/687*
U.S. Cl. 307—200 B 5 Claims



1. An active pull-up circuit comprising:
a voltage reference circuit for providing an output reference voltage; a source follower coupled between the voltage reference circuit and an output node so that the output of the voltage reference circuit controllably varies an inverting output of the source follower; a first pull-up transistor coupled between a power supply terminal and the output node and having a control electrode coupled to the inverting output of the source follower, the output node providing the output for the active pull-up circuit.

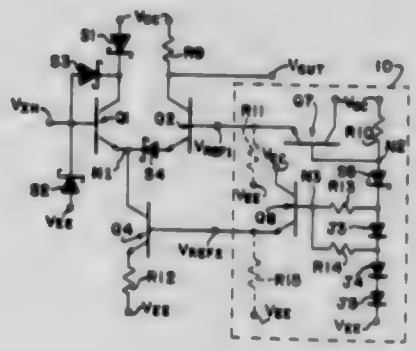
4,491,742
SEMICONDUCTOR SWITCH DEVICE
Masahiko Akamatsu, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 45,660, Jun. 5, 1979, abandoned, which is a continuation of Ser. No. 818,064, Jun. 22, 1977, abandoned, which is a continuation of Ser. No. 677,753, Apr. 16, 1976, abandoned. This application Oct. 25, 1982, Ser. No. 436,359
Claims priority, application Japan, Jun. 18, 1975, 50-74688
Int. Cl.[3] H03K *17/72, 17/04, 17/60*
U.S. Cl. 307—252 C 4 Claims

1. A semiconductor switch device comprising:
a transistor having a base and main electrodes, the main electrodes of the transistor including a collector and an emitter;
a thyristor having a gate and main electrodes, the electrodes of the thyristor including and an anode and a cathode;
a power path for carrying current from a source to said anode;
said main electrodes of said transistor and said main electrodes of said thyristor being connected in parallel in the same direction;
resistor means connecting the base of the transistor to the gate of the thyristor;



forward biased voltage means including a first diode means connected to said resistor means for applying to said resistor means a forward biased voltage to turn-on said transistor and said thyristor; and
reversed biased voltage means including a second diode means connected to said resistor mean for applying a reversed biased voltage to turn off said thyristor and said transistor;
whereby said transistor reduces and absorbs the turn-off switching power of said thyristor.

4,491,743
VOLTAGE TRANSLATOR
Douglas D. Smith, Provo, Utah, assignor to Signetics Corporation, Sunnyvale, Calif.
Filed Mar. 16, 1982, Ser. No. 358,767
Int. Cl.[3] H03K *5/08, 19/092*
U.S. Cl. 307—264 15 Claims



1. A voltage translating circuit which has: a first bipolar transistor having an emitter, a base for receiving an input voltage, and a collector coupled to a source of a first supply voltage; a like-polarity second bipolar transistor having an emitter coupled through a first node to the emitter of the first transistor, a base for receiving a first reference voltage, and a collector for supplying an output voltage at a different level from the input voltage; a first resistor coupled between the source of the first supply voltage and the collector of the second transistor; a like-polarity current-source bipolar transistor having an emitter, a base for receiving a second reference voltage, and a collector coupled to the first node; a second resistor coupled between a source of a second supply voltage and the emitter of the current-source transistor; and means for providing the reference voltages; characterized in that:
the means for providing comprises (1) a set of cathode-to-anode serially coupled diodes comprising a first diode coupled through a second node to the base of the second

transistor, an intermediate second diode, and a third diode forwardly coupled to the source of the second supply voltage and (2) a pair of resistors coupled across the second diode and commonly through a third node to the base of the current-source transistor; and

the second reference voltage equals the second supply voltage plus $(1+\alpha)V_{BE}$ where α is in the range 0.2 to 3.0 and V_{BE} is the base-to-emitter voltage of the current-source transistor when its base-emitter junction is just conductively forward biased.

4,491,744

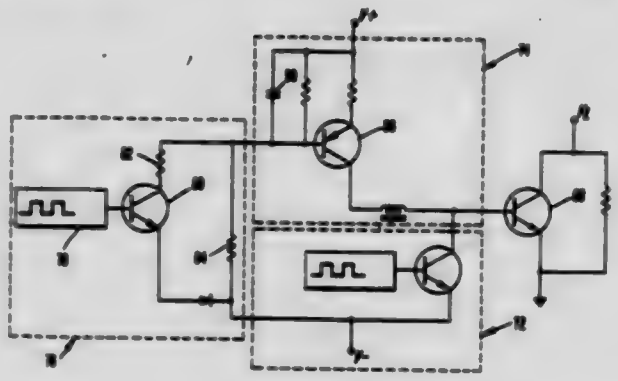
CURRENT SOURCE DIRECT BASE DRIVE FOR TRANSISTOR POWER SWITCHES

Philip D. Corey, assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 404,114, Aug. 2, 1982, , and Ser. No. 121,063, Feb. 13, 1980, abandoned. This application Dec. 14, 1983, Ser. No. 561,140

Int. Cl.³ H03K *3/26, 17/60*

U.S. Cl. 307—270 5 Claims



1. A "programmed" direct drive circuit, for power transistor operated in a non-linear "on-off" mode comprising:

a current source including a base drive inductor for providing current to the base of said power transistor, said base drive inductor forcing an essentially constant current into said base thereby forcing said power transistor into "on" mode saturation;

a programming circuit, connected to the current source, which adjusts the current amplitude produced by said current source to match the requirements of said power transistor;

a reverse biasing low voltage supply; and,

a control steering means connected from the base of said power transistor and the output of said constant current source to said reverse biasing low voltage supply, said control steering means and said reverse biasing low voltage supply connected independent of the emitter of said power transistor, said control steering means directing current from said constant current source either into said power transistor producing its "on" state or away from said power transistor through said reverse biasing low voltage supply creating an "off" state, said reverse biasing low voltage supply putting reverse bias on said base of said power transistor.

4,491,745

TTL FLIP-FLOP WITH CLAMPING DIODE FOR ELIMINATING RACE CONDITIONS

William A. Birch, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

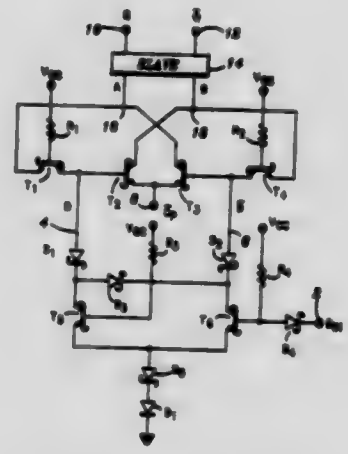
Filed Aug. 12, 1982, Ser. No. 407,372

Int. Cl.³ G11C *11/40;* H03K *3/289, 5/08*

U.S. Cl. 307—272 A 7 Claims

5. An improved TTL flip-flop having an output which follows data present at a data input and of the type which includes a master section responsive to a clock signal for receiving internal data signals representative of the input data and a slave section for storing signals representative of said input data, the improvement comprising:

data gate circuit means for receiving said input data and for generating therefrom first and second complementary internal data signals representative of said input data; and



means for clamping at least one of said internal data signals to prevent it from exceeding a predetermined voltage so as to render said first and second internal data signals symmetrical with respect to each other.

4,491,746

SELF-SUBSTRATE-BIAS CIRCUIT DEVICE

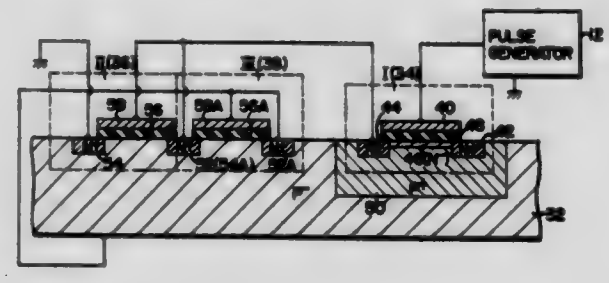
Hideharu Koike, Chigasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 21, 1981, Ser. No. 304,035

Claims priority, application Japan, Sep. 24, 1980, 55-132626

Int. Cl.³ H01L *27/04, 29/94;* H03L *1/00*

U.S. Cl. 307—296 R 10 Claims



1. A self-substrate-bias circuit device for use with a pulse generator comprising:

a semiconductor substrate of a given conductivity type;

a capacitor element of MOS construction formed in said semiconductor substrate having a first side connected to the output terminal of the pulse generator;

a first diode formed in said semiconductor substrate and connected between the other side of said capacitor element and a reference potential; and

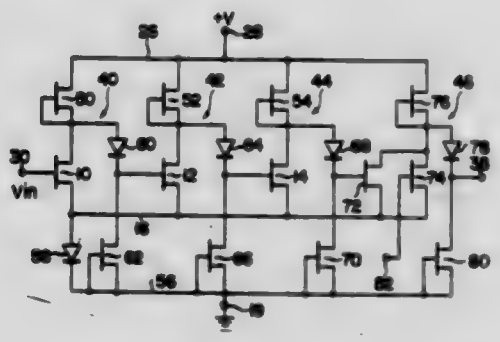
a region of said conductivity type formed in a portion of said semiconductor substrate which is contacted to and surrounding said capacitor element and having higher impurity concentration than that of said semiconductor substrate so that carriers from said capacitor element recombine with carriers existing in said region.

4,491,747

LOGIC CIRCUIT USING DEPLETION MODE FIELD EFFECT SWITCHING TRANSISTORS

Shoichi Shimizu, Fujisawa, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 29, 1982, Ser. No. 427,725
Claims priority, application Japan, Sep. 30, 1981, 56-155175; Dec. 11, 1981, 56-199664
Int. Cl.³ H03K *19/094, 19/20, 19/003*
U.S. Cl. 307—446 20 Claims



1. A circuit for performing a logic operation on an input signal supplied to an input terminal and supplying an output signal from an output terminal, said circuit comprising:

(a) first and second terminals between which an external power source is connected and which are supplied with first and second voltages, respectively, the first voltage being higher than the second voltage;

(b) a plurality of logic elements connected in cascade between the signal input and output terminals, each of said logic elements including at least one switching transistor which comprises a depletion-mode field effect transistor having gate, drain and source electrodes, the source electrodes of the switching field effect transistors being connected to each other;

(c) load means connected between said first terminal and the drain electrode of each of said switching field effect transistors, for receiving an electric power from the external power source and for supplying a substantially constant current to said switching field effect transistor;

(d) voltage level-controlling means, connected between the second terminal and the connection point of the source electrodes of said switching field effect transistors, for maintaining the source electrodes at a predetermined third voltage lower than the first voltage and higher than the second voltage; and

(e) level-shifting means for level-shifting the voltage at the drain electrodes of one switching field effect transistor of each logic element by a predetermined potential difference and applying the level-shifted drain electrode voltage to the gate electrode of said switching field effect transistor in the next succeeding logic element, said predetermined potential difference being such that a logic high voltage at said drain electrode of said switching field effect transistor biases said succeeding switching transistor into conductance, and a logic low voltage at said drain electrode of said switching field effect transistor biases said succeeding switching transistor into nonconductance.

4,491,748

HIGH PERFORMANCE FET DRIVER CIRCUIT

Barbara A. Chappell, Amawalk, and Stanley E. Schuster, Granite Springs, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

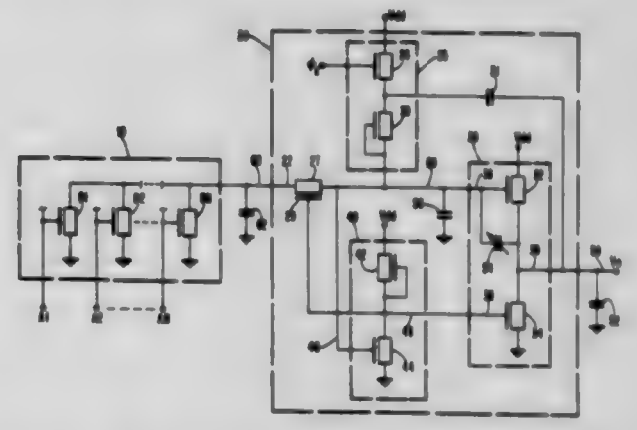
Filed Apr. 16, 1981, Ser. No. 254,806
Int. Cl.³ H03K *19/017, 19/096, 17/04*; G11C *8/00*
U.S. Cl. 307—449 6 Claims

1. A driver circuit comprising:

a depletion mode FET switched transfer means coupling a signal at an input terminal to an internal node of said driver circuit;

a load coupling a first voltage source to said internal node for charging said internal node; and

a push-pull output circuit, having a first stage including an inverter having an input connected to said internal node, an output terminal, and an input connected to said internal node for manifesting said signal at said output terminal, connected between said first voltage source and a second voltage source; the output of said first stage being coupled to said switched transfer means, a second stage including a zero threshold FET coupling said first voltage source to said output terminal, the gate of said zero threshold FET being connected to said internal node and an enhancement mode FET coupling said output terminal to said second voltage source, the gate of said second FET being connected to the output of said inverter;



said switched transfer means being placed in a first state to provide a low impedance coupling between said internal node and said input terminal when the output of said first stage is at a high logic level;

said switched transfer means being placed in a high impedance second state to provide an isolation of said internal node from said input terminal when the output of said first stage shifts from the high logic level to a low logic level, whereby said load charges said internal node to a high potential and charges said input terminal to an intermediate potential below the high potential of said internal node;

said load including a third FET coupling said first voltage source to a feedback node, the gate of said third FET being connected to biasing means; and

a fourth depletion mode FET coupling said feedback node to said internal node, the gate of said forth depletion mode FET being connected to said internal node.

4,491,749

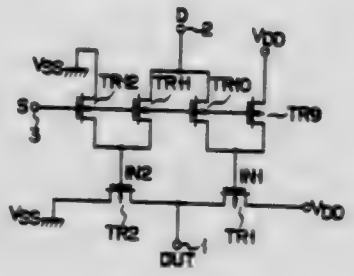
THREE-OUTPUT LEVEL LOGIC CIRCUIT

Jun Iwamura, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 23, 1983, Ser. No. 477,897
Claims priority, application Japan, Mar. 26, 1982, 57-48570
Int. Cl.³ H03K *19/082*
U.S. Cl. 307—473 6 Claims

1. A three-output level logic circuit comprising an output stage including an output terminal for selectively sending forth one of three outputs having different logic levels, a first metal oxide semiconductor (MOS) transistor of first conductivity type whose source-drain path is connected between said output terminal and a first power source, and a second MOS transistor of second conductivity type whose source-drain path is connected between said output terminal and a second power source; a drive stage for driving said output stage; and coupling means for coupling said output stage with said drive stage, wherein said drive stage comprises third and fourth MOS transistors of different conductivity types whose source-drain paths are connected in series between one of said first and

second power sources and a data supply terminal, the gate electrodes of said third and fourth MOS transistors being supplied with a common control signal; and fifth and sixth MOS transistors of different conductivity types whose source-



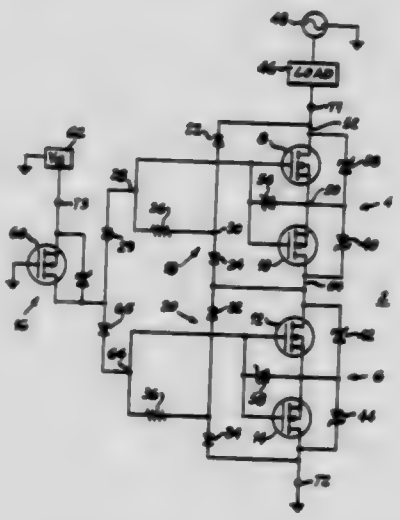
drain paths are connected in series between the other of said first and second power sources and said data supply terminal, the gate electrodes of said fifth and sixth MOS transistors being supplied with said common control signal.

4,491,750

BIDIRECTIONALLY SOURCE STACKED FETS WITH DRAIN-REFERENCED COMMON GATING

William J. Janutka, West Allis, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 28, 1982, Ser. No. 425,158
Int. Cl.³ H03K *17/08, 17/10, 17/687*
U.S. Cl. 307—577 **8 Claims**



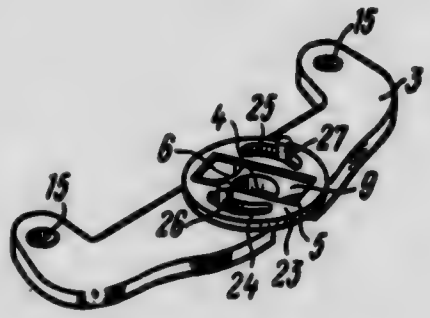
1. A bidirectional FET circuit comprising:
first and second enhancement mode power FETS of like channel type connected source to source in series relation between main power terminals connectable in circuit with a load and a source of potential, current conduction in one direction flowing through the series connection of the drain-source current path of said first FET and the forward biased substrate-drain PN junction of said second FET, and in the opposite direction through the series connection of the drain-source current path of said second FET and the forward biased substrate-drain PN junction of said first FET;
current source means connected to the gates of said power FETs; and
resistance means connected from a point common between the gates of said power FETs and to each of the drains of said power FETs.

4,491,751

SINGLE-PHASE STEP MOTOR

Olga M. Kuznetsova; Zoya D. Novakovskaya; Vladimir A. Denisov; Elena F. Kulevskaya; Jury S. Zhiltsov; Vyacheslav I. Kozlov; Vyacheslav K. Korol; Vladimir V. Kuzmin; Nikolai I. Pershin; Evgeny V. Vlasov, all of Moscow; Natalya M. Reshetnikova, Moskovskaya, and Boris E. Tsirlin, Moscow, all of U.S.S.R., assignors to Moskovsky Energeticheshy Institut, Moscow, U.S.S.R.

Continuation of Ser. No. 363,486, Mar. 30, 1982, abandoned. This application Feb. 10, 1984, Ser. No. 578,601
Int. Cl.³ H02K *37/00*
U.S. Cl. 310—49 R **1 Claim**



1. A single-phase step motor, comprising:
a stator having a magnetic circuit provided by a coil, a core within said coil, and a stator plate magnetically coupled to said core, said plate having a hole therein, with poles and straps between said poles, formed by said hole of said plate, said straps extending between said poles on opposite sides of said hole;
a rotor positioned in said hole of said plate and having an axis of rotation;
said plate having a first surface and a second surface parallel thereto, said surfaces being perpendicular to said axis of said rotor;
a slot provided on at least one of said surfaces of said plate, said slot extending through said straps and said hole;
said rotor having a radially magnetized permanent magnet;
the width of said slot being not more than three times the diameter of said rotor;
a swivel plate arranged on said stator plate and having a first central slit, a second slit on one side of said central slit, and a third slit on the other side of said central slit;
said first central slit being arranged above said hole of said stator plate and covering at least a part of said hole;
said second slit and said third slit comprising guides for permitting movement of said swivel plate clockwise and counterclockwise in order to adjust the magnitude and direction of the torque of the single-phase step motor; and
pins secured on said stator plate and extending into said second slit and said third slit of said swivel plate.

4,491,752

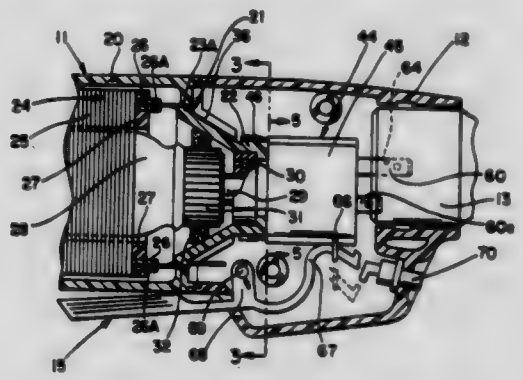
ELECTRICAL CONNECTION SYSTEM FOR SWITCHES

Frank J. O'Hara, Hanover, Pa.; John E. Dibbern, Jr., Street, and Gregory E. Moores, Reisterstown, both of Md., assignors to Black & Decker Inc., Newark, Del.

Filed Mar. 31, 1983, Ser. No. 480,725
Int. Cl.³ H02K *11/00*
U.S. Cl. 310—71 **3 Claims**

1. In a power tool, the combination of a field case made from an insulating material, the field case including a web portion having a rear bearing boss, a field mounted in the field case, terminal means on the field, a switch having a switch body, means for mounting the switch on the bearing boss, the means for mounting the switch on the bearing boss including a forwardly-projecting annular rim on the switch body, the bearing boss having an external annular surface complementary to the annular rim on the switch body, means for slidably positioning the annular rim of the switch body on the external annular

surface of the bearing boss, the means for slidably positioning the annular rim of the switch body on the external annular surface of the bearing boss including two pairs of parallel longitudiinal ribs formed on the bearing boss, the pairs of ribs being substantially diametrically opposite to one another, the rim having two pairs of slots formed therein complementary to the pairs of ribs, whereby the ribs may be received in the corresponding slots, thereby positioning the switch body circumferentially with respect to the bearing boss, the annular rim on the switch body having a resilient tongue formed



thereon between each pair of slots, whereby the tongue is urged radially outwardly as the switch body is slidably received on the bearing boss, keying means between the rim and the bearing boss, the keying means between the rim and the bearing boss including a radially-projecting key on the bearing boss between a pair of ribs, each tongue having a complementary pocket formed therein to receive a respective key, a pair of spaced contacts in the switch, and respective contact means carried by the web portion of the field case for electrically interconnecting the terminal means on the field with the spaced contacts in the switch.

4,491,753

LOW INERTIAL VARIABLE SPEED INDUCTION MOTOR

Hiroshi Kumatani, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

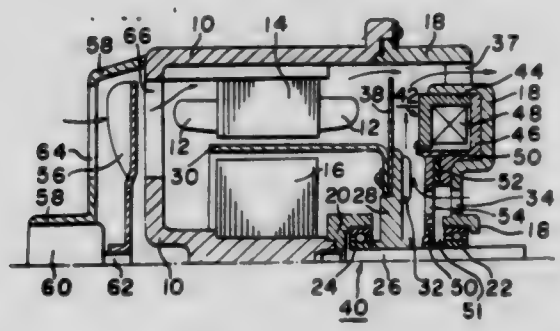
Filed Feb. 19, 1982, Ser. No. 350,355

Claims priority, application Japan, Mar. 19, 1981, 56-40116; Mar. 24, 1981, 56-42728; Mar. 25, 1981, 56-43679; Mar. 25, 1981, 56-43680

Int. Cl.³ H02K *7/12*

U.S. Cl. 310—77

3 Claims



1. A low inertial variable speed induction motor comprising:
(a) a frame;
(b) a stator fixed on an inside peripheral wall of said frame;
(c) a yoke fixed on another inside peripheral wall of said frame, said stator and said yoke being sized and positioned to form a small gap therebetween;
(d) an output shaft which is rotatably mounted in said frame;
(e) a cup-type rotor fixed on said output shaft and disposed in the gap between said stator and said yoke;
(f) heat radiation fins operatively connected to said cup-type rotor;
(g) a fan motor mounted on said frame;
(h) a first fan operatively connected to said fan motor, said first fan being coaxial with said output shaft and being positioned to blow cooling air over said stator, said yoke, said cup-type rotor, and said heat radiation fins;
(i) a second fan operatively connected to said cup-type rotor so as to turn therewith, said second fan being positioned to blow cooling air over said heat radiation fins and at least one of said stator and said yoke;
(j) a non-magnetic bracket fixed on said frame and surrounding said output shaft;
(k) an iron core mounted on said non-magnetic bracket, thereby being non-rotatable relative to said output shaft;
(l) a brake coil mounted on said iron core;
(m) a magnetic brake disc rotatably with but axially slidably on said output shaft adjacent said iron core;
(n) means for biasing said brake disc away from said iron core; and
(o) means for switching the current from said stator to said brake coil, thereby drawing said brake disc against said iron core, and thereby rapidly stopping the rotational motion of said output shaft and said cup-type rotor.

4,491,754

CHARGING GENERATOR FOR CAR

Hitoshi Gotoh, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

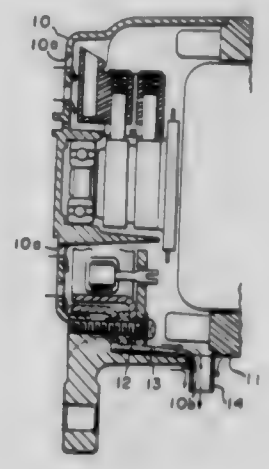
Filed Feb. 19, 1982, Ser. No. 350,351

Claims priority, application Japan, Mar. 3, 1981, 56-29817[U]; Mar. 10, 1981, 56-34335[U]

Int. Cl.³ H02K *5/10*

U.S. Cl. 310—88

2 Claims



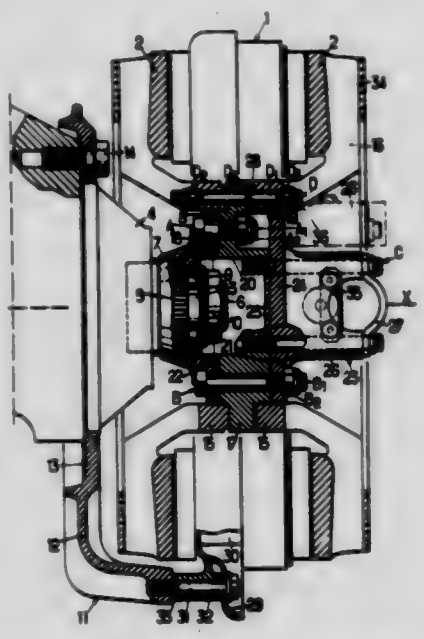
1. A charging generator for a vehicle, comprising:
a cylindrical stator core having one axial end including a first edge;
a cylindrical rear bracket coaxial with said stator core and having one axial end including a second edge abutting said first edge of said stator core;
a recess formed in a lower portion of said one end of said bracket and extending from said second edge;
a drain hose fitted in said recess and clamped in said recess by said first edge of said stator core; said generator includes an electric device in said lower portion of said bracket, said electric device being spaced from said one end of said bracket, wherein said drain hose includes an insulating sheet covering an inner surface of said bracket between said electric device and said one end of said bracket; and a tubular hose portion unitary with said insulating sheet and projecting through said recess and out of said bracket.

4,491,755

IMPROVEMENTS TO MOUNTING ELECTRIC RETARDERS ONTO A GEAR CASING OF A VEHICLE

Philippe Bertrand, Maisons-Laffitte, France, assignor to Labavia - S.G.E., Bois d'Arcy, France

Filed Jun. 3, 1983, Ser. No. 500,961
Claims priority, application France, Jun. 17, 1982, 82 10608
Int. Cl.³ H02K 49/04
U.S. Cl. 310—93
11 Claims



1. An electric retarder assembly coaxially mounted with respect to an axis X between a gear case and a universal joint, said gear case including a frame and a threaded stub shaft each coaxially mounted with respect to said axis X, said assembly comprising:

an annular inductor stator defining inner and outer surfaces;

means to mount said stator to said frame;

a rotor including inner and outer armature disks formed of a ferromagnetic material;

means to mount said inner and outer armature disks in confronting relationship to said inner and outer surfaces to permit relative movement between said inner and outer armature disks of said rotor and said inner and outer surfaces of said stator, respectively;

a collar plate defining a central aperture in which said stub shaft is accepted;

nut means threadably engaged with said stub shaft for rigidly connecting said collar plate to said stub shaft;

an end flange including means to connect said end flange to said universal joint;

a central plate disposed between said collar plate and said end flange; and

means for rigidly mounting said central plate to said collar plate and for mounting said end flange to said central plate, said mounting means including:

(a) a first grouping of plural registered apertures defined in said collar plate and said central plate, said first grouping being radially spaced-apart about axis X at first positions; said central plate further including means associated with each aperture of said first grouping for defining plural recesses adjacent to said end flange;

(b) plural first bolt means each disposed in a respective aperture of said first grouping of apertures, for securing said central plate to said collar plate, said recessed surface defining means for housing a respective terminal end of each said first bolt means;

(c) a second grouping of plural registered apertures defined in said end flange, said central plate and said collar plate, said second grouping being radially spaced apart about axis X at second positions; and

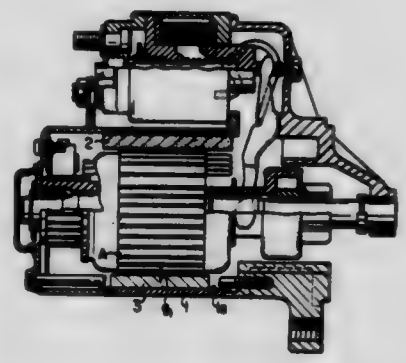
(d) plural second bolt means each disposed in a respective aperture of said second grouping of apertures for securing said end flange to said central plate; wherein said terminal ends of each said plural first bolt means are covered and thus protected by said end flange.

4,491,756

DIRECT CURRENT DYNAMOELECTRIC MACHINE OF PERMANENT MAGNET TYPE

Tosio Tomite, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 19, 1982, Ser. No. 435,278
Claims priority, application Japan, Oct. 21, 1981, 56-167094; Nov. 11, 1981, 56-179761
Int. Cl.³ H02K 21/28
U.S. Cl. 310—154
17 Claims



1. A d.c. dynamoelectric machine of permanent magnet type comprising an armature, a yoke disposed in coaxial relation with said armature, and a plurality of field poles fixed to the inner peripheral surface of said yoke and disposed opposite to said armature with an air gap defined therebetween, each of said poles comprising a main pole part which is a permanent magnet having an axial length larger than that of the armature core, and an auxiliary pole part disposed closely adjacent to said permanent magnet on the side to which the flux-density decreasing action is imparted by the armature reaction, said auxiliary pole part having a permeability higher than the reversible permeability of said permanent magnet and coupled to the trailing end of said permanent magnet in the rotating direction of said armature, said permanent magnet including a first magnet disposed in the area subjected more to the flux-density decreasing action by the armature reaction and having a coercive force high enough to withstand the flux-density decreasing action and a second magnet occupying the remaining area subjected less to the flux-density decreasing action and providing a residual flux density higher than that of said first magnet to ensure a high output.

4,491,757

TRANSVERSELY WEIGHTED SURFACE ACOUSTIC WAVE DEVICE

Clinton S. Hartmann, Carrollton, Tex., assignor to R F Monolithics, Inc., Dallas, Tex.

Filed May 3, 1983, Ser. No. 491,080
Int. Cl.³ H03H 9/25
U.S. Cl. 310—313 B
13 Claims

1. A surface wave device comprising in combination:

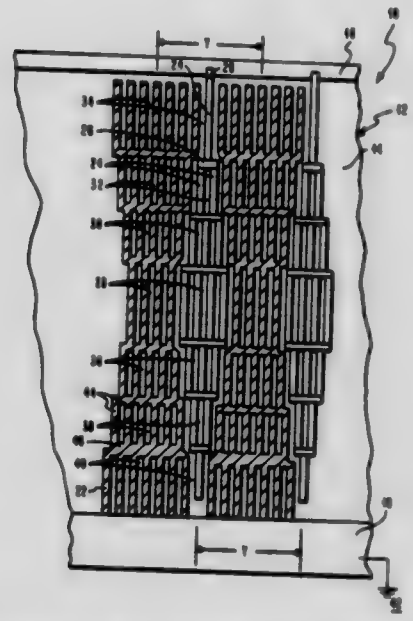
substrate means having at least a surface layer of piezoelectric material;

at least one pair of opposing electrically conducting pads disposed on the piezoelectric surface; and

at least two electrodes disposed on the piezoelectric surface, at least one of the electrodes extending from each of the pads toward the opposing pad wherein the strength of surface waves generated on the piezoelectric surface as a result of applying an electrical signal between the opposing pads varies significantly in a direction transverse to the opposing pads;

wherein one of the opposing pads is ungrounded, and at least one electrode extending from the ungrounded pad comprises parallel segmented electrodes and connecting bars

joining the segmented electrodes to form an electrode array having more segmented electrodes near the center



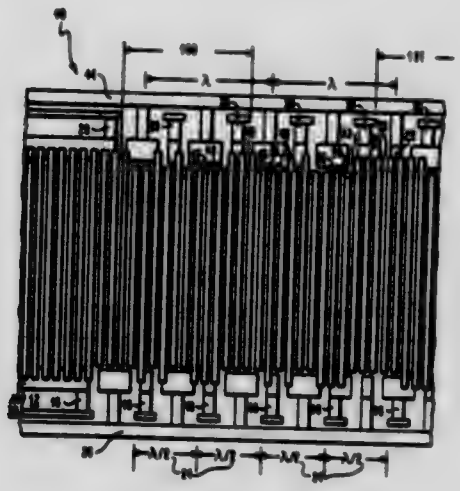
of the transverse distance between the opposing pads than near either of the pads.

4,491,758

SURFACE WAVE DEVICE WITH OVERSAMPLED WITHDRAWAL WEIGHTING

Clinton S. Hartmann, Carrollton, Tex., assignor to R F Monolithics, Inc., Dallas, Tex.

Filed May 3, 1983, Ser. No. 491,081
Int. Cl.³ H03H 9/25
U.S. Cl. 310—313 C
14 Claims



1. A surface wave device for operation at a preselected frequency, comprising in combination:

substrate means having at least a surface layer of piezoelectric material;

at least one pair of opposing electrically conducting pads disposed on the piezoelectric surface;

at least one electrode disposed transversely to the opposing pads on the piezoelectric surface between the opposing pads and electrically connected to only one of the opposing pads; and

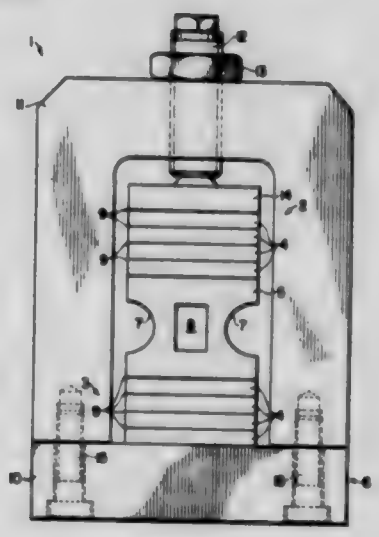
at least two electrodes disposed transversely to the opposing pads on the piezoelectric surface between the opposing pads and electrically connected to only the other opposing pad wherein the at least three electrodes are completely within one half wavelength at the preselected operating frequency in a direction longitudinal to the opposing pads.

4,491,759

PIEZOELECTRIC VIBRATION EXCITER, ESPECIALLY FOR DESTRUCTIVE MATERIAL TESTING

Werner Kunz, Munich, and Walter Voigt, Rain, both of Fed. Rep. of Germany, assignors to MTU Motoren-und Turbinen-Union Muenchen GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 22, 1984, Ser. No. 582,252
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1983, 3309068
Int. Cl.³ H01L 41/08
U.S. Cl. 310—328
9 Claims



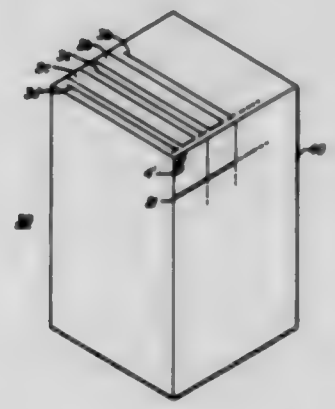
1. A piezoelectric vibration exciter apparatus for generating mechanical vibrations for material testing, comprising a first stack of an even number of piezoceramic disks, a second stack of piezoceramic disks corresponding in number to said even number of disks in said first stack, each stack having the same size, vibration armature means for holding a test specimen operatively mounted between said first and second stacks, stiff mounting means for clamping said two stacks and said vibration armature means in said stiff mounting means, and means for applying an energizing voltage to each piezoelectric disk in each stack in such a manner that upon application of an alternating voltage to said disks one stack contracts axially in phase or synchronism with the applied alternating voltage while the other stack expands axially and vice versa.

4,491,760

FORCE SENSING POLYMER PIEZOELECTRIC TRANSDUCER ARRAY

John G. Linvill, Portola Valley, Calif., assignor to Stanford University, Stanford, Calif.

Continuation-in-part of Ser. No. 312,094, Oct. 16, 1981, Pat. No. 4,379,697. This application Mar. 29, 1983, Ser. No. 480,025
Int. Cl.³ H01L 41/08
U.S. Cl. 310—334
7 Claims



1. An electromechanical transducer for the generation of an electric signal in response to a force or motion applied to the tactile surface thereof comprising:

a stack of planar sheets of a piezoelectric polymer material,

each sheet having two opposed broad flat faces and at least one tactile surface at one longitudinal end;

separate electrodes covering portions of each flat face of the sheets in predetermined patterns;

terminals electrically connected to said electrodes for passage of said electric signal;

means for detecting and amplifying the electric signal generated in response to a force or motion applied to the tactile surface of the transducer; and

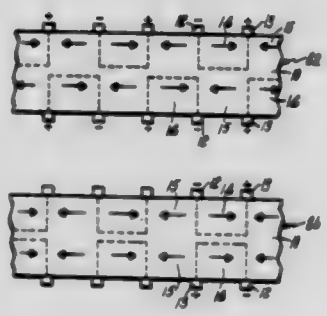
means for connecting the corresponding electrodes of a plurality of the sheets in common, such that the sheet portions between the electrodes will respond as a group to an applied force or motion and wherein said electrodes which are connected in common are separated from adjacent electrodes on the same sheet of the piezoelectric polymer material by providing a pattern of cuts through the piezoelectric polymer material which outline the electrodes such that a force or motion applied to one area of the tactile surface of the electromechanical transducer will result in a generation of an electrical signal substantially only across those electrodes commonly connected to that portion of the piezoelectric polymer material subjected to the force or motion.

4,491,761

PLANAR PIEZOELECTRIC DEFLECTOR WITH ARRAYS OF ALTERNATE PIEZOELECTRIC EFFECT

Thomas W. Gradkowski, Glastonbury; Anthony J. DeMaria; Alexander J. Shuskus, both of West Hartford, and Daniel H. Grantham, Glastonbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1981, Ser. No. 334,760
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—359 5 Claims



1. A planar piezoelectric deflector comprising a piezoelectric substrate having a plurality of first sites disposed adjacent a first surface thereof and a plurality of second sites interposed with said first sites, said first sites exhibiting a characteristic piezoelectric response to electric fields, said second sites exhibiting a piezoelectric response to electric fields different from that of said first sites, and a first interdigital conductor array disposed on said first surface and having a plurality of interconnected first conductors, each first conductor overlaying the junction between one of said first sites and one of said second sites, and having a plurality of interconnected second conductors, each second conductor overlaying the junction between one of said second sites and one of said first sites;

wherein the improvement comprises:

said first sites being composed of a piezoelectric crystal and said second sites having insignificant piezoelectric response to electric fields.

4,491,762

FLAT STORAGE CRT AND PROJECTION DISPLAY

Ifay F. Chang, Chappaqua, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

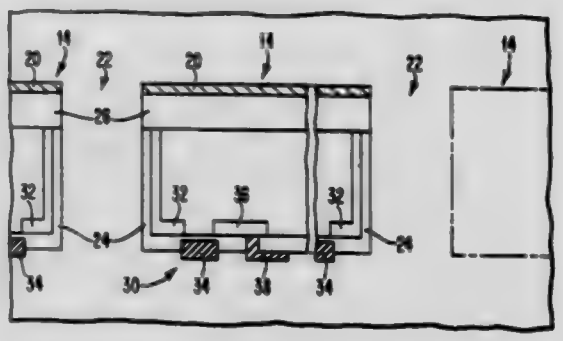
Filed Jun. 30, 1982, Ser. No. 393,837
Int. Cl.³ H01J *31/58*
U.S. Cl. 313—392 7 Claims

1. In a storage cathode ray tube of the type wherein a mesh collector, and a dielectric storage site array are positioned between an area electron source and a phosphor screen, the improvement comprising:

a semiconductor wafer having a first integral layer comprising said mesh collector, and wherein said dielectric storage site array comprises;

a through hole in said semiconductor wafer;

a layer of dielectric material on sidewalls of said through hole for charge storage by collecting electrons from an area electron source, and emitting electrons by way of secondary electron emission;



said semiconductor wafer having thereon an addressable array of transistors for controlling the passage of electrons from said area electron source to said dielectric storage site array;

said addressable array of transistors selecting a predetermined site in said storage site array for writing by electrons from said area electron source;

a source of an associated transistor being disposed along said sidewalls of said through hole, and subsequently surrounding said layer of dielectric material; and

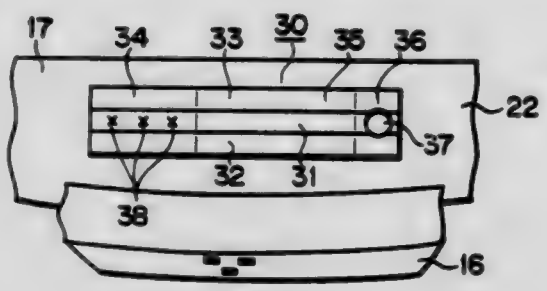
stored charge on a surface of said dielectric layer in said storage site depending upon a potential set at said source.

4,491,763

COLOR PICTURE TUBE WITH SHADOW MASK SUPPORTING MEMBERS

Makoto Fujinuma, Fukaya; Masaomi Futatsudera, Saitama, and Makoto Harigae, Fukaya, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 31, 1982, Ser. No. 413,440
Int. Cl.³ H01J *29/07*
U.S. Cl. 313—405 10 Claims



1. A color picture tube comprising:

a shadow mask assembly having a shadow mask with a large number of apertures permitting the passage of electron beams therethrough and a mask frame for holding the shadow mask at the peripheral edge thereof;

an envelope having a face panel and a fluorescent screen on an inner surface of said panel;

at least two pins built in an inner surface of said envelope; and

at least two supporting members for supporting the shadow mask assembly so as to permit said shadow mask to oppose the fluorescent screen inside the envelope in face to face relationship, each supporting member including a first metal strip having a thermal expansion coefficient substan-

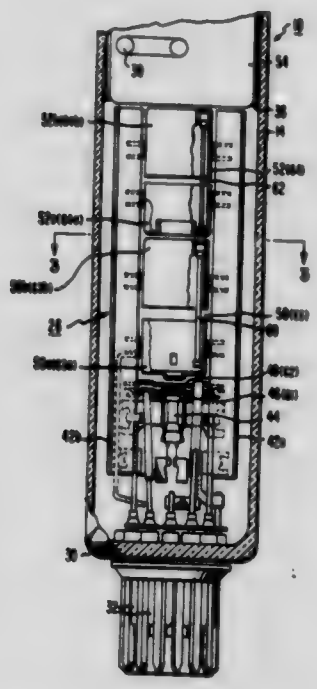
tially equal to that of said mask frame, said first metal strip being fixed at one end portion thereof to said mask frame and engaged at the other end portion thereof with one of said pins, a second metal strip joined to said first metal strip at one side thereof so that their respective faces may form a continuous face and having a thermal expansion coefficient higher than that of said first metal strip, and a third metal strip joined to said first metal strip at the other side thereof so that their respective faces may form a continuous face and having a thermal expansion coefficient lower than that of said first metal strip.

4,491,764

ARC SUPPRESSION STRUCTURE FOR AN ELECTRON GUN

Ralph J. D'Amato, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 27, 1982, Ser. No. 424,139
Int. Cl.³ H01J *29/96, 29/50*
U.S. Cl. 315—3 **9 Claims**



1. In a electron gun comprising at least one cathode for generating an electron beam, a plurality of electrodes for directing said electron beam along a beam path, and at least one arc-suppression resistor, said electrodes including at least one accelerating and focusing electrode comprising a split member having two spaced apart electrode sections, the spaced apart sections being interconnected by said arc-suppression resistor, wherein the improvement comprises

the resistor interconnecting the spaced apart sections of said split member being located in a zero electric field gradient area of said split member and extending along the beam path.

4,491,765

QUASIOPTICAL GYROKLYSTRON

Wallace M. Manheimer; Edward Ott, both of Silver Spring, Md., and Anders Bondeson, Gothenburg, Sweden, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 2, 1982, Ser. No. 414,129
Int. Cl.³ H01J *25/00*
U.S. Cl. 315—4 **6 Claims**

1. A quasioptical gyroklystron comprising:

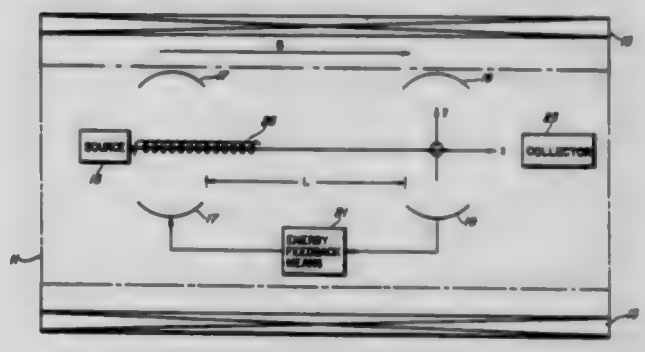
means for producing a magnetic field parallel to an axial direction;

a relativistic electron beam source for imparting momentum to electrons in the axial direction to define an electron beam traveling in the axial direction, and for imparting momentum to the electrons in the beam perpendicular to the axial direction to cause the electrons in the beam to execute a gyratory motion;

a first open confocal spherical mirror resonator positioned downstream of the electron beam source for receiving therethrough the beam of electrons and for exchanging energy with the beam to vary the speed of gyration of each electron in the beam according to the relative phase between its gyration and wave mode fields in the first resonator;

a second open confocal spherical mirror resonator positioned downstream of the first resonator for receiving therethrough the beam of electrons,

the second resonator being separated from the first resonator by a sufficient distance that rapidly gyrating electrons in



the beam overtake slowly gyrating electrons at the entrance to the second resonator with the right phase angle to lose power efficiently to wave mode fields in the second resonator,

energy feedback means coupled to the first and second resonators for feeding back a small amount of energy to the first resonator from the mode in the second resonator with a phase lag of approximately $\pi/2$ to generate the wave mode fields in the first resonator;

the first and second resonators having a wave mode frequency slightly more than an integral multiple of the relativistic cyclotron frquency of the gyrating electrons in the beam; and

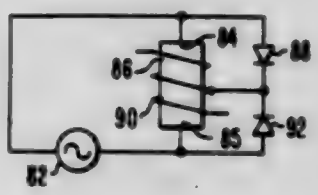
a collector electrode positioned downstream of the second resonator for collecting the electrons in the beam.

4,491,766

HIGH PRESSURE ELECTRIC DISCHARGE LAMP EMPLOYING A METAL SPIRAL WITH POSITIVE POTENTIAL

Daniel A. Larson, Cedar Grove, N.J., assignor to North American Philips Lighting Corporation, New York, N.Y.

Filed Jun. 24, 1982, Ser. No. 391,745
Int. Cl.³ H01J *7/44*
U.S. Cl. 315—60 **3 Claims**



1. In a high-intensity discharge lamp of the type having an arc discharge tube including a pair of discharge electrodes and containing an ionizable material for sustaining an arc discharge when said discharge electrodes are sufficiently electrically biased, the improvement comprising: a spiral metal conductor wound about the outer surface of said arc tube; and a biasing circuit for positively biasing said spiral metal conductor, said biasing circuit consisting essentially of a first diode connected to one of said discharge electrodes and to said spiral metal conductor and having a polarity effective to electrically positively bias said spiral metal conductor, and a second diode

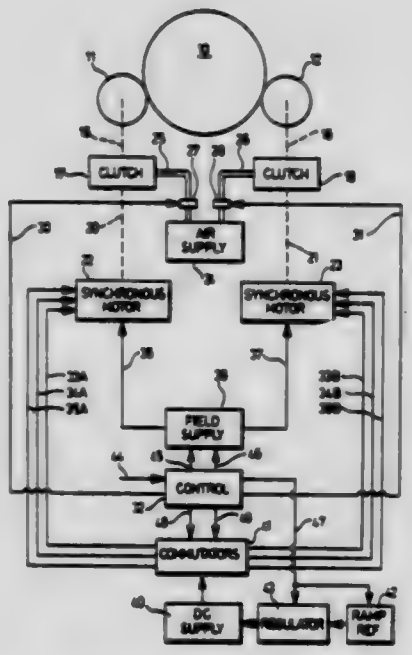
connected to the second of said discharge electrodes and to said spiral metal conductor and said first diode and having a polarity effective to positively electrically bias said spiral metal conductor, and said biasing circuit being free of reactive circuit elements.

4,491,767

SYNCHRONIZING SYNCHRONOUS MOTORS, MOTORS PRIOR TO CLUTCH CLOSURE

Peter D. Eastcott, and Ronald C. Trussler, both of Peterborough, Canada, assignors to Canadian General Electric Company Limited, Toronto, Canada

Continuation-in-part of Ser. No. 448,338, Dec. 9, 1982, abandoned. This application Dec. 19, 1983, Ser. No. 562,527
Int. Cl.[3] H02P *5/46*
U.S. Cl. 318—85
3 Claims



1. Apparatus for achieving angular coincidence between two or more synchronous motors, each motor having a stator winding and a rotor field winding and each motor being coupled through a respective fluid-actuated friction clutch to a common load, prior to closure of said clutches, comprising

a source of fluid pressure connected through a respective control valve to a respective fluid-actuated clutch,

a field supply connected to each field winding to provide field excitation to each said motor,

a source of controllable DC voltage and means for applying said source of controllable DC voltage to said stator windings,

regulator means connected to said source of controllable DC voltage to control the DC voltage therefrom from a low level up to a predetermined operating level to cause the voltages applied to said stator windings to slowly increase in amplitude up to a predetermined operating voltage, and

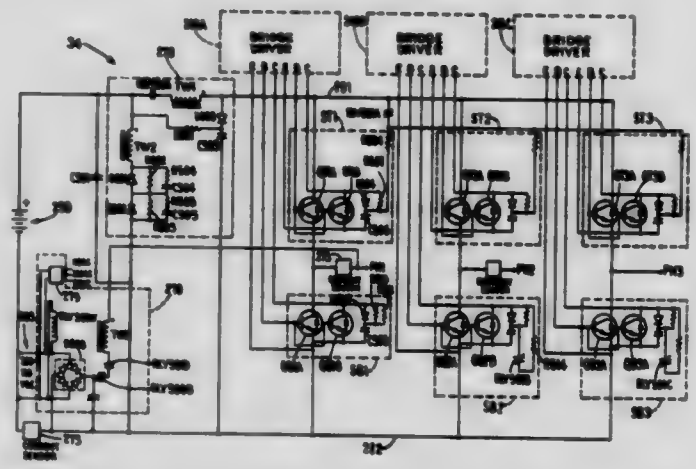
control means having a first output connected to said regulator means to initiate the slow increase in amplitude of the DC voltage applied to the stator windings up to said predetermined operating voltage to bring into angular coincidence the uncoupled rotors of said motors, and a second output connected to said control valves to open said valves and actuate said clutches to their closed positions after the rotors of said motors are in angular coincidence.

4,491,768

PULSE WIDTH MODULATION INVERTER WITH BATTERY CHARGER

James M. Slicker, Union Lake, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 4, 1981, Ser. No. 318,083
Int. Cl.[3] H02P *5/40*
U.S. Cl. 318—139
11 Claims



1. An apparatus for controlling an electric machine in a first mode of operation and for charging a battery in a second mode of operation, comprising:

a control circuit connected to said battery and said electric machine, said control circuit including switch means having an electronic switch for selectively effecting electrical connection of said electric machine to said battery in said first mode of operation;

control means for providing switching command signals to said switch means to cause said electronic switch to open and close in a cyclic manner; and

means for charging said battery, including a diode, a transformer having inductively coupled first and second windings, and a power source; said diode, said first winding and said battery being connected in series in a first circuit loop; said diode being oriented to resist a discharge current flow from said battery through said first winding; said second winding, said electronic switch and said power source being connected in series in a second circuit loop; and said power source urging a current flow through said second winding and electronic switch in one direction during said second mode of operation, whereby when said electronic switch closes during said second mode of operation, said power source causes current to flow in said one direction through said second winding so that energy builds up in said second winding in the form of an electro-magnetic field, and when said electronic switch opens during said second mode of operation and interrupts the flow of current through said second winding, said electro-magnetic field dissipates by inducing a current flow through said first winding and said diode and into said battery, thereby charging said battery.

4,491,769

ROTARY ELECTRIC MACHINE

Götz Heidelberg, Am Hügel 16, D-8136 Percha, Fed. Rep. of Germany

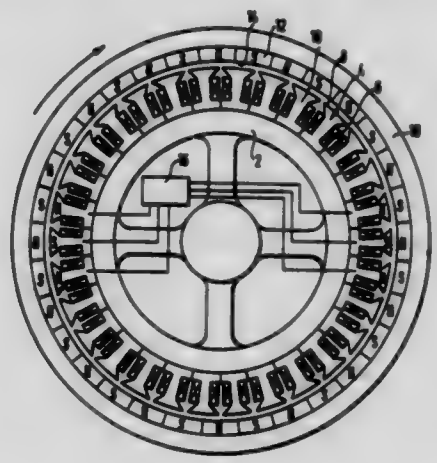
Filed May 24, 1982, Ser. No. 381,372
Int. Cl.[3] H02K *29/00*
U.S. Cl. 318—254
16 Claims

1. A rotary electric machine characterized by the combination of the following features:

(a) a first functional member and a second functional member are provided, one of which is rotatable with respect to the other, an air gap existing between the two surfaces facing each other of the two functional members;

(b) one of the two functional members comprises a plurality of permanent magnet poles of alternating polarity distributed in a ring arrangement at the side facing the air gap;

(c) the permanent magnet poles are provided by permanent magnets having a coefficient of permeability in the order of the permeability of air ($\mu=1$);
(d) the other one of the two functional members comprises a plurality of switchable electromagnet poles distributed in a ring arrangement at the side facing the air gap;
(e) the number of permanent magnet poles and the number of electromagnet poles differ by a small integer;
(f) a plurality of electronic circuit means, each having four controllable semiconductor switch elements and each



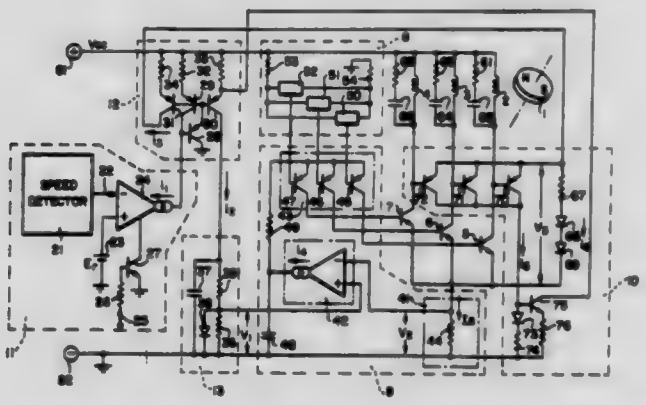
being connected to at least a respective one of said electromagnet poles, is provided for switching the electromagnet poles in the respective proper direction of current during the period of a suitable relative functional position with respect to a permanent magnet pole;
(g) each of the electronic circuit means is controlled by at least one sensor disposed at the functional member which is provided with the electromagnet poles and detecting the rotational relative positions of the two functional members.

4,491,770

BRUSHLESS DC MOTOR

Makoto Gotou, Nishinomiya, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 18, 1982, Ser. No. 409,103
Claims priority, application Japan, Aug. 20, 1981, 56-131318
Int. Cl.³ H02P *7/06, 6/02*
U.S. Cl. 318—254 4 Claims



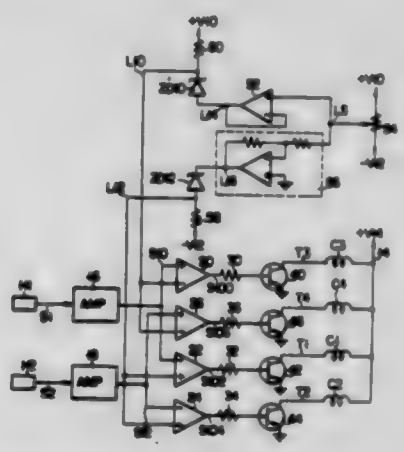
1. A voltage detecting means for a brushless DC motor having a plurality of output transistors having output terminals for changing a current path from a DC voltage source to at least two multiphase coils according to the relative rotation between a field flux generating means and said multiphase coils, wherein said voltage detecting means has a plurality of detecting transistors each having base and emitter terminals, said base terminals of said plurality of detecting transistors being respectively directly connected to said output terminals of said plurality of output transistors, and said emitter terminals of said plurality of detecting transistors being connected in common, and wherein said plurality of detecting transistors are bipolar PNP type transistors having one of either a lateral PNP structure or a substrate PNP structure.

4,491,771

MOTOR APPARATUS USING PWM DRIVE CURRENTS

Kenji Kimura, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 239,496, Mar. 2, 1981, Pat. No. 4,393,339. This application Jan. 5, 1983, Ser. No. 455,902
Claims priority, application Japan, Mar. 7, 1980, 55-28692
Int. Cl.³ H02K *29/00*
U.S. Cl. 318—254 4 Claims



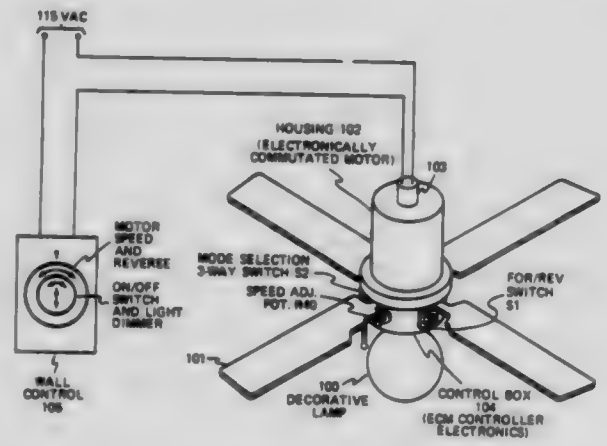
1. A motor apparatus comprising:
a motor including a rotor and exciting coils;
detection means coupled to said motor for providing first and second detection signals corresponding to the rotational speed of said rotor;
amplifier means coupled to said detection means for providing first and second output signals, said first output signal corresponding to said first detection signal and said second output signal corresponding to said second detection signal;
a first comparator for comparing said first output signal with a first threshold level to provide a first pulse signal;
a second comparator for comparing said first output signal with a second threshold level to provide a second pulse signal;
a third comparator for comparing said second output signal with said second threshold level to provide a third pulse signal;
a fourth comparator for comparing said second output signal with said first threshold level to provide a fourth pulse signal;
means coupled to said comparators for generating a reference level and for producing said first and said second threshold levels based on said reference level, and means for changing said reference level in accordance with a desired motor operating condition;
control means responsive to the first output signal of said amplifier means and coupled in negative feedback relation to said changing means for maintaining said desired motor operating condition; and
driver means coupled to said comparators for applying currents to said exciting coils of said motor in accordance with said first through fourth pulse signals, respectively.

4,491,772

CONTROL CIRCUIT FOR AN ELECTRONICALLY COMMUTATED MOTOR (ECM), METHOD OF TIMING THE ELECTRONIC COMMUTATION OF AN ECM, AND METHOD OF OPERATING AN ECM

Ricky F. Bitting, Raleigh, N.C., assignor to General Electric Company, Fort Wayne, Ind.

Filed Jun. 9, 1983, Ser. No. 502,663
Int. Cl.³ H02P *6/02*
U.S. Cl. 318—254 **44 Claims**



1. In a control circuit for an electronically commutated motor adapted to be energized from a DC power source, said motor having a multistage winding assembly, and a magnetic assembly, the two arranged for mutual relative rotation, said motor in a given state of a multistate energization sequence, having an unenergized winding stage in which induced back emf appears which when integrated over time to a predetermined value indicates the instant at which the mutual relative angular position has been attained suitable for commutation to the next state, the combination comprising:

solid state transconductance amplifier means adapted to be coupled to an unenergized winding stage in the motor, for converting the voltage appearing in the winding stage to a corresponding output current,

integration means coupled to the output of said amplifier means for integrating said output current to obtain an output voltage substantially proportional to an integral of said voltage appearing in the winding stage; and

comparison means for comparing the output voltage of said integration means to a value corresponding to the mutual relative angular position suitable for commutation, and upon sensing equality generating a timing signal at the instant for commutation.

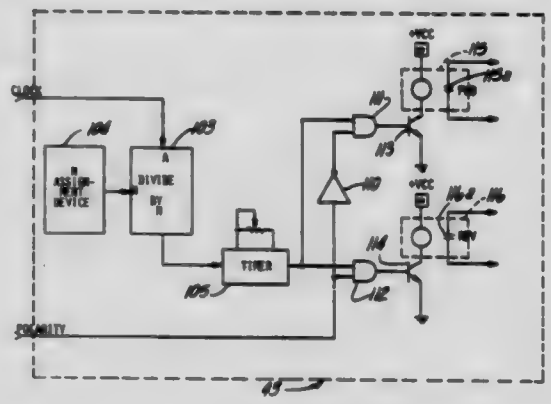
4,491,773

TWO-DIRECTIONAL SWITCHED DRIVER

Richard L. Smith, Livonia, and Kent Van Allen, New Baltimore, both of Mich., assignors to Sears Associates, Inc., Livonia, Mich.

Division of Ser. No. 215,129, Dec. 10, 1980, abandoned, which is a division of Ser. No. 926,913, Jul. 12, 1978, Pat. No. 4,250,543. This application Mar. 9, 1983, Ser. No. 473,813
Int. Cl.³ H02P *7/28*
U.S. Cl. 318—257 **4 Claims**

1. A two-directional switched driver utilizing clock and polarity signals to provide for the control of the average speed and direction of a constant speed reversible device, said device having means, including a divide by "N" circuit and a retriggerable timer, to utilize the frequency of said clock signals to determine said speed, and said polarity signals to determine the direction of operation, of said reversible device, wherein said means to utilize the frequency of said clock signals to determine the speed of said reversible device includes said divide by "N" circuit having an input, an "N" preset input, and an output, with said clock signal being connected to the input of said divide by "N" circuit, an "N" assignment device connected to said preset input of said divide by "N" circuit, and said retriggerable timer having a setable fixed time parameter and having an input and an output, with said output of said divide by "N" circuit being connected to said input of said timer, and a first



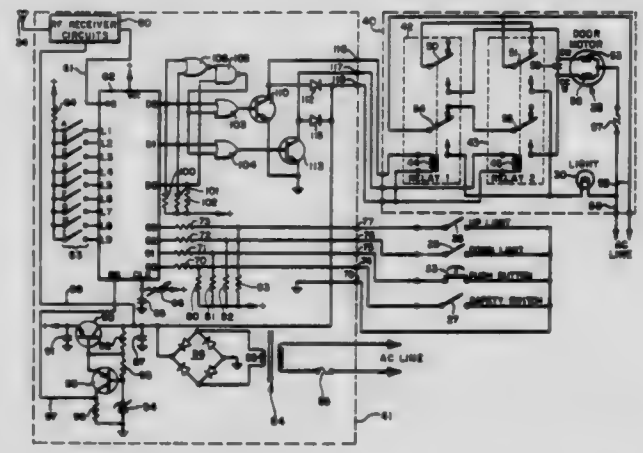
two input AND gate and a second two input AND gate, said output of said timer connected to one input each of said first and said second two input AND gate.

4,491,774

CONTROL SYSTEM FOR A RADIO-CONTROLLED DOOR OPERATOR

Charles J. Schmitz, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 30, 1983, Ser. No. 566,941
Int. Cl.³ H02P *1/40*
U.S. Cl. 318—282 **4 Claims**



1. A door operator control system for use in conjunction with a motor driven door operator and light system including a bidirectional motor and a control unit providing door up, door down and light command signals, comprising:

a first control relay having first and second sets of single-pole double-throw contacts;

a second control relay having first and second sets of single-pole double-throw contacts;

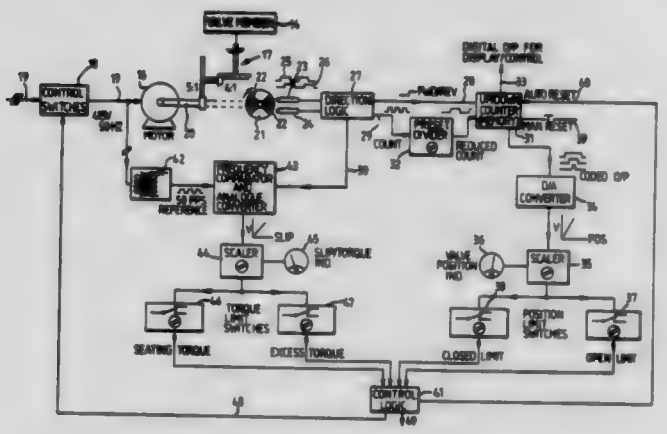
interconnection means connecting said first set of contacts of said first relay with said first set of contacts of said second relay to one direction winding of said motor and to said light, and said second set of contacts of said first relay with said second set of contacts of said second relay to the other direction winding of said motor and to said light, the remaining contacts of said motor and said light being connected to said source, whereby upon actuation of said first relay said motor operates in one direction and said light is powered, upon actuation of said second relay said motor operates in the other direction and said light is powered, and upon actuation of both said relays only said light is powered.

4,491,775

MOTOR OPERATING PARAMETER SENSING APPARATUS

Raymond G. A. Harvey, Greenham, and David S. Evans, Highcleve, both of England, assignors to Colin Frank Norton, Andover, England

Filed Oct. 26, 1981, Ser. No. 315,052
Int. Cl.[3] H02K *17/34*
U.S. Cl. 318—434
7 Claims



1. In a motor-operated valve assembly including a valve housing (11) including inlet (12) and outlet (13) openings communicating with a chamber, a valve member (14) mounted in said chamber for movement between open and closed positions for controlling the flow of fluid between the inlet and outlet openings, and synchronous motor means for driving the valve member between its open and closed position; means for controlling the torque exerted by the motor, comprising

(a) means (42) for producing a reference frequency signal corresponding with the power supplied to the motor under a given load condition;

(b) means (21, 22, 23, 30) for producing an actual speed signal the frequency of which corresponds with the actual speed of the motor;

(c) comparing means (43) for comparing the frequencies of said reference and actual speed signals to produce an analog torque signal corresponding with the torque developed by the motor;

(d) torque limiting means (46, 47) for comparing the torque signal with a preset value and for providing an output signal when the motor torque exceeds a given value; and

(e) means (41, 18) responsive to said output signal for controlling the driving power to said motor means so as to control the motor torque to said given value such that the motor means is prevented from exerting excessive torque on said valve means.

4,491,776

SERVO OPERATED DIGITAL POSITIONING CONTROL SYSTEM

John R. Veale, Manhattan Beach, Calif., assignor to Manhattan Engineering Company, Inc., Manhattan Beach, Calif.

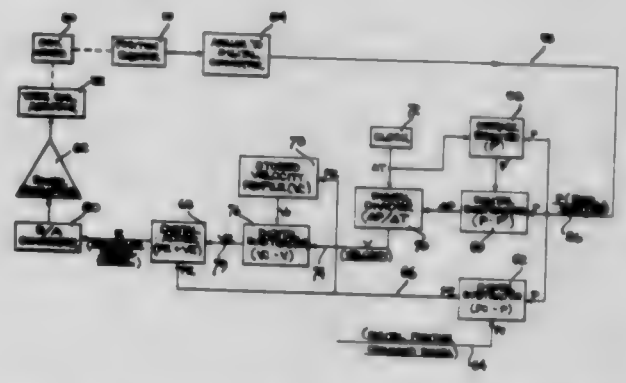
Filed May 25, 1982, Ser. No. 381,975
Int. Cl.[3] G05B *13/00*
U.S. Cl. 318—561
30 Claims

1. In a closed loop digital control system having a moveable member adapted for movement to a command position in response to a command position signal, an encoding means for providing position information and a motive means for moving the moveable member, an improvement comprising:

(a) position detecting means for detecting and subtracting a previous position from a present position and generating a position differential signal effectively on a generally continuous basis relative to controlling the operation of said motive means and storing the position differential signal,

(b) a digital divider and a clocking means operable to derive a present velocity from the position of the moveable member on a clock time basis,

(c) velocity detecting means for subtracting the determined present velocity from a stored predetermined velocity which represents a desired velocity to generate a velocity differential signal effectively on a generally continuous basis relative to controlling the operation of said motive means and storing the velocity differential signal, and



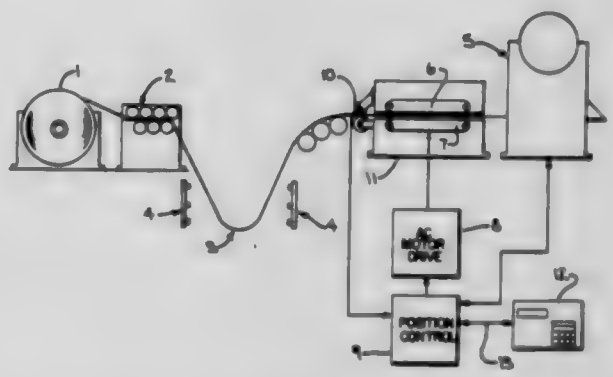
(d) means for combining the velocity and position differential signals to provide a combined differential signal and applying said combined signal to said motive means to control operation thereof for moving the moveable member to the command position in response to the command position signal.

4,491,777

POSITION CONTROL OF FABRICATING MATERIALS

Thomas L. Beck, Union Grove, and Donald B. Lawson, South Milwaukee, both of Wis., assignors to Unico, Inc., Franksville, Wis.

Filed Feb. 12, 1982, Ser. No. 348,491
Int. Cl.[3] G05B *19/24*
U.S. Cl. 318—571
14 Claims



1. A drive system for positioning a fabricating material in a work station, the combination comprising:

stationary stator windings positioned adjacent the fabricating material and being operable when supplied with polyphase current to induce current in the fabricating material producing a force which propels the fabricating material into the work station;

a motor drive circuit connected to the stator windings and being operable to supply polyphase current to the stator windings which produce a propelling force having a magnitude that is determined by the magnitude of a command signal;

a position sensor for generating a position feedback signal which indicates the motion of the fabricating material; and

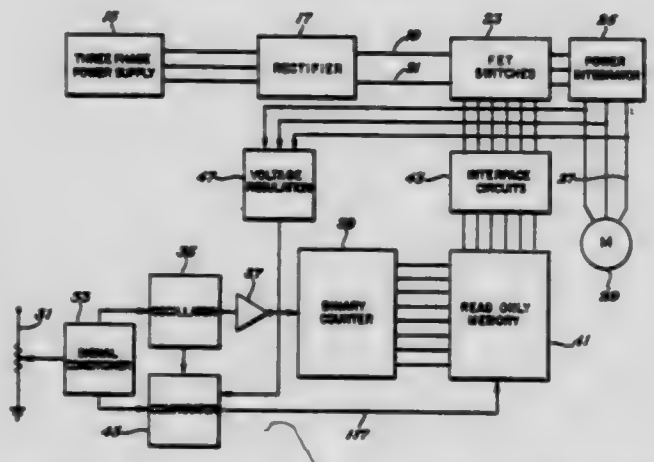
a position control circuit connected to receive the position feedback signal and being operable in response thereto to generate the command signal to the motor drive circuit, wherein the position control circuit generates a command signal which drives the fabricating material to a commanded position.

4,491,778

MOTOR VARIABLE FREQUENCY DRIVE

Dick L. Knox; John M. Leuthen, both of Claremore, Okla., and Kevin W. Lockyear, San Jose, Calif., assignors to Hughes Tool Company, Houston, Tex.

Continuation of Ser. No. 313,043, Oct. 19, 1981, abandoned.
This application Apr. 30, 1984, Ser. No. 604,445
Int. Cl.³ H02P 5/40
U.S. Cl. 318—803
3 Claims



1. Means for varying the speed of a motor powered through power conductors by a three phase AC power source, comprising in combination:

rectifying means for converting the AC voltage supplied by the power source to positive DC voltage on a positive rail and negative DC voltage on a negative rail;

three positive switches, each connecting the positive rail to one of the power conductors;

oscillator means for supplying pulses of frequency which can be varied to select a desired motor speed;

counter means for repeatedly counting the pulses to a selected number and providing a binary output for each pulse counted;

memory means connected between the counter means and an interface circuit means of each of the switches for isolating voltages on the rails from the memory means, the memory means being programmed to directly control and determine entirely the state of each of the switches in a full waveform by providing a programmed output directly to each interface circuit means for each binary output received from the counter means; and

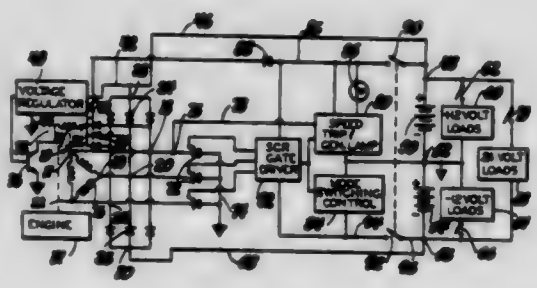
means for varying the amplitude of the waveform produced in proportion to the frequency selected.

4,491,779

MOTOR VEHICLE ELECTRICAL SYSTEM

Robert W. Campbell, and Donald O. Ruff, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 12, 1983, Ser. No. 541,242
Int. Cl.³ H02J 7/14, 7/24
U.S. Cl. 320—6
7 Claims



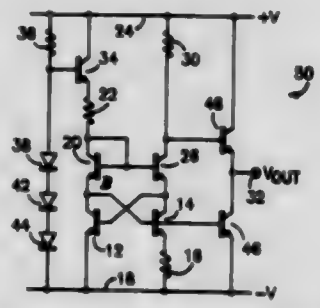
1. A battery charging system for a multivoltage motor vehicle electrical system comprising, first and second storage batteries, an alternating current generator having a polyphase output winding, a bridge rectifier having AC input terminals connected to said output winding and direct voltage output terminals, means connecting said batteries in series and across said direct voltage output terminals of said bridge rectifier, the negative terminal of one battery and the positive terminal of the other battery being connected to common terminal means, a plurality of controlled rectifiers having their anode-cathode circuits connected between said output winding and said common terminal means whereby only one of said batteries is charged by said generator when said controlled rectifiers are gated conductive, a ramp voltage generator, means for developing a control voltage that is a function of the voltage across the battery that is not charged when said controlled rectifiers are conductive, and means responsive to the relative magnitudes of the ramp voltage developed by said ramp voltage generator and control voltage for causing said controlled rectifiers to be gated on and off at the frequency of said ramp voltage generator.

4,491,780

TEMPERATURE COMPENSATED VOLTAGE REFERENCE CIRCUIT

Robert A. Neidorff, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 15, 1983, Ser. No. 523,482
Int. Cl.³ G05F 1/58
U.S. Cl. 323—313
7 Claims



1. Temperature compensated, integrated voltage reference circuit, comprising:

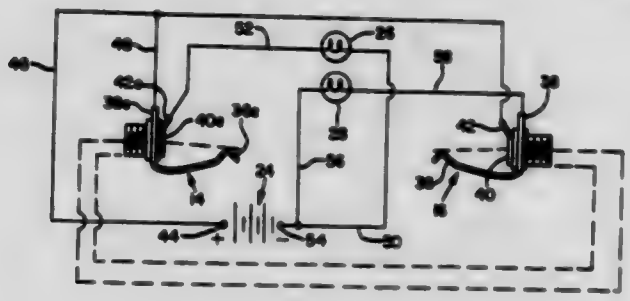
thermal source circuit means having an input and an output which is responsive to a first current supplied to said input for causing a second current having a positive temperature coefficient to flow into said output including first and second transistors each having a control electrode, first and second electrodes, said control electrodes being cross coupled to the second electrode of other one of said first and second transistors, said first electrodes of said first transistor and said second transistor being respectively coupled directly and indirectly to a first power supply conductor; first semiconductor diode means coupled between said input of said thermal source circuit means and said second electrode of said first transistor; and a third transistor having a control electrode, first and second electrodes, said control electrode being coupled to said semiconductor diode means, said first electrode being coupled to said second electrode of said second transistor, and said second electrode being coupled to said output of said thermal source circuit means, and

output circuit means coupled to said output of said thermal source circuit means and responsive thereto for supplying said second current and for producing a voltage at an output thereof having a substantially zero temperature coefficient.

4,491,781
PATCH CORD TESTER

Terry A. McClintic, Eugene, Oreg., assignor to Fred O. Mercer, Hoven, S. Dak.

Filed Jul. 12, 1982, Ser. No. 397,593
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—51 4 Claims

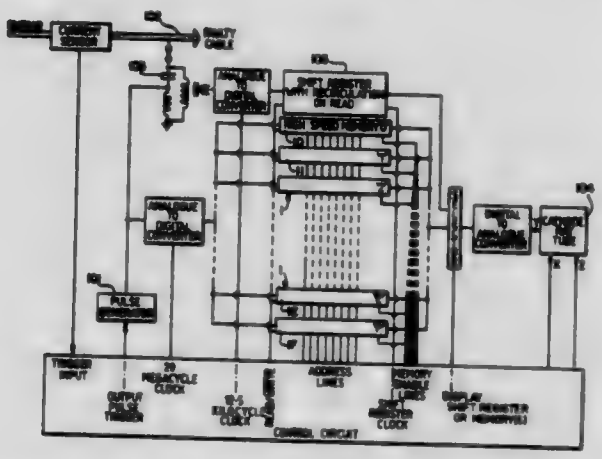


1. A patch-cord tester unit comprising:
a frame and battery means with positive and negative poles mounted on said frame,
a pair of electrically powered jacks mounted on said frame, each jack having a first contact for making contact with one type of contactor in the plug of a patch cord and a second contact for making contact with another type of contactor in the plug of a patch cord,
a pair of electrically powered signal devices,
a conductor means connecting one battery pole directly to the first contact of one jack and the second contact of the other jack, and
a conductor means connecting in series the other battery pole, one signal device, and the second contact of said one jack, and connecting in series the other battery pole, the other signal device, and the first contact of said other jack.

4,491,782
APPARATUS FOR LOCATING FAULTS IN ELECTRIC CABLES

Edward J. Bellis, 14 Royston Close, Ellesmere Port, Cheshire, and Philip F. Gale, Gardea Cottage, Sacombe Green, Ware, Hertfordshire, both of England

Filed Apr. 2, 1982, Ser. No. 365,044
Claims priority, application United Kingdom, Apr. 7, 1981, 8110868
Int. Cl.³ G01R *31/08*
U.S. Cl. 324—52 10 Claims

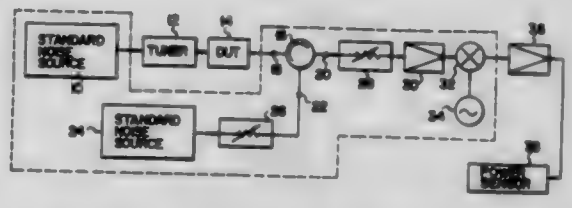


1. Apparatus for detecting and locating, using a pulse-echo technique, unstable and transitory faults as well as stable faults in an energised power distribution electric cable installation which apparatus comprises:
(a) means for detecting two different conditions from the voltampere characteristics of the electric cable, one of said two different conditions being before fault appears in one of the power distribution cables of the installation and the other of said two different conditions being whilst a fault is present in one of the power distribution cables of the installation;
(b) means for injecting a series of pulses into the energised power distribution cable installation under both different conditions of the installation to obtain pulse-echo signals;
(c) an analogue to digital converter for digitising the pulse-echo signals obtained under said two different conditions of the installation;
(d) memory means for storing the digitised signals and for recording a predetermined number of pulses;
(e) means for terminating the recording of pulses a predetermined time after a fault condition is detected; and
(f) means for comparing the waveforms of signals obtained under the two said conditions in order that the distance of the fault in said power distribution cable of the installation can be determined.

4,491,783
APPARATUS FOR MEASURING NOISE FACTOR AND AVAILABLE GAIN

Yoshihiko Sawayama, Yokohama, and Katsuhiko Mishima, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 22, 1982, Ser. No. 370,916
Claims priority, application Japan, Apr. 25, 1981, 56-63001; Aug. 26, 1981, 56-133484
Int. Cl.³ G01S *7/40*; G01R *27/28, 29/26*
U.S. Cl. 324—57 N 8 Claims



1. An apparatus for measuring the noise factor and available gain of a device under test forming a linear two-port circuit, comprising:
first noise source means coupled to an input port of the device under test for generating a noise signal;
a circulator having first, second, and third ports, the first port being connected to an output port of the device under test;
second noise source means coupled to the third port of the circulator for generating a noise signal; and
noise measuring means coupled to the second port of the circulator for measuring the overall noise factor of the system comprising the first noise source means, the device under test, the second noise source means, and the noise measuring means, thereby the overall noise factor is measured by said noise measuring means three times with the excess noise ratio of the second noise source means and the noise factor of the noise measuring means set at different values for each measuring so that the noise factor and available gain of the device under test can be calcutated from the three overall noise factors measured.

4,491,784
PIEZOELECTRIC MOISTURE MEASURING DEVICE

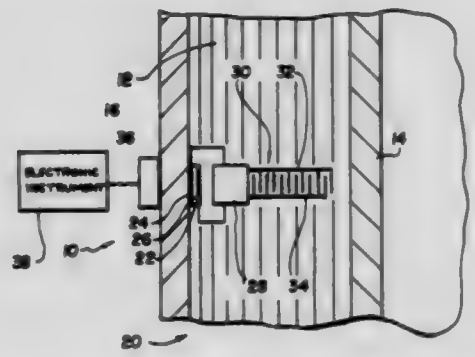
John H. Flora, Lynchburg, and James E. Henderson, Concord, both of Va., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Aug. 31, 1982, Ser. No. 413,286
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—61 QL 12 Claims

1. A moisture-measuring device for measuring moisture of an ambient on one side of a solid wall member comprising:
a piezoelectric crystal sonically coupled to the wall member on a surface thereof facing the one side;
a capacitor having two plate members which are spaced

apart, the space between the two plate members being exposed to the ambient; and

a network connected across said capacitor and crystal to provide a response indicative of the impedance of the



capacitor upon excitation of the crystal at the resonant frequency of the network;

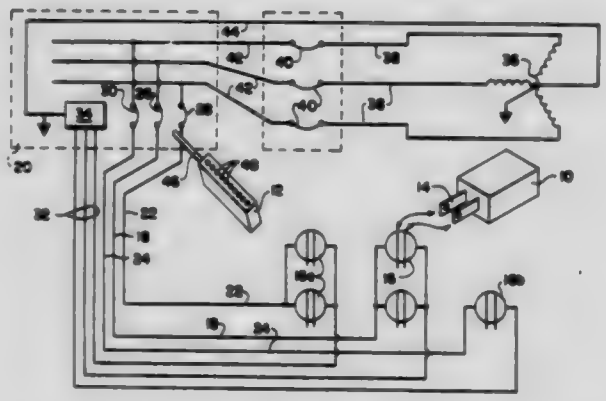
whereby exposure of the capacitor to a moisture variation results in a change in the response obtained upon excitation of the crystal from an opposite side of the wall.

4,491,785

TRACING ELECTRICAL CONDUCTORS BY HIGH-FREQUENCY LOADING AND IMPROVED SIGNAL DETECTION

Joseph P. Pecukonis, Denver, Colo., assignor to Pasar, Inc., Denver, Colo.

Filed Feb. 19, 1981, Ser. No. 236,050
Int. Cl.[3] G01R *31/02, 19/145*
U.S. Cl. 324—67 16 Claims



13. Apparatus for tracing and identifying an electrical current carrying conductor or similar means which has a varying voltage present thereon, comprising in combination:

transmitter means for connection to said conductor and for conducting electrical current through said conductor in repetitious transmission cycles, each transmission cycle being a predetermined waveform having a first predetermined time period during which a plurality of pulses of current are conducted at a predetermined frequency and a second predetermined time period during which no current is conducted, the first predetermined time period being less than the second predetermined period, and the current pulses conducted during the first predetermined time period being of sufficient magnitude to induce about said conductor a predetermined electromagnetic field having a frequency characteristic corresponding to the predetermined frequency of current pulses conducted during the first predetermined time period; and

receiver means responsive to the electromagnetic field about said conductor when placed in proximity of said conductor, said receiver means including (a) transducer means responsive to the predetermined electromagnetic field for supplying signals corresponding to the frequency and strength of the predetermined electromagnetic field at the approximate location of said receiver means with respect to said conductor, (b) filter means responsive to signals from the transducer means and operative for passing detected signals having a predetermined frequency related to the predetermined frequency of the current pulses conducted by said transmitter means during the first predetermined time period and also operative for substantially blocking signals from said transducer means at other frequencies, (c) magnitude detector means responsive to the detected signals from the filter means and operative for deriving a magnitude signal representative of the strength or magnitude of the detected signal, (d) reset means operatively controlling said magnitude detector means during each of a plurality of consecutive repetitious predetermined detection cycles, each detection cycle having a sample time period and a reset time period, said reset means operatively enabling said magnitude detector means to function as recited during the sample time period and operatively disabling said magnitude detector means to prevent the derivation of a magnitude signal over the reset time period, and (e) indicator means for indicating the relative magnitude of the magnitude signal during each sample time period and for terminating the indication during each reset time period; and wherein said transmitter means further comprises:

means associated with said transmitter means and operative for generating a signal representative of an instantaneous voltage present on the conductor; and

means operatively connected to said means for generating a signal representative of the instantaneous voltage and operative for varying the time duration of each current pulse in predetermined relation to the signal representative of instantaneous voltage present on the conductor during the duration of the pulse to establish an approximately predetermined constant energy content of each subsequent pulse during the first predetermined time period.

16. Apparatus for tracing and identifying an electrical current carrying conductor or similar means, comprising in combination:

transmitter means for connection to said conductor and for conducting electrical current through said conductor in repetitious transmission cycles, each transmission cycle being a predetermined waveform having a first predetermined time period during which a plurality of pulses of current are conducted at a predetermined frequency and a second predetermined time period during which no current is conducted, the first predetermined time period being less than the second predetermined period, and the current pulses conducted during the first predetermined time period being of sufficient magnitude to induce about said conductor a predetermined electromagnetic field having a frequency characteristic corresponding to the predetermined frequency of current pulses conducted during the first predetermined time period; and

receiver means responsive to the electromagnetic field about said conductor when placed in proximity of said conductor, said receiver means including (a) transducer means responsive to the predetermined electromagnetic field for supplying signals corresponding to the frequency and strength of the predetermined electromagnetic field at the approximate location of said receiver means with respect to said conductor, (b) filter means responsive to signals from the transducer means and operative for passing detected signals having a predetermined frequency related to the predetermined frequency of the current pulses conducted by said transmitter means during the first predetermined time period and also operative for substantially blocking signals from said transducer means at other frequencies, (c) magnitude detector means responsive to the detected signals from the filter means and operative for deriving a magnitude signal representative of the strength or magnitude of the detected signal, (d) reset means operatively controlling said magnitude detector means during each of a plurality of consecutive repetitious

predetermined detection cycles, each detection cycle having a sample time period and a reset time period, said reset means operatively enabling said magnitude detector means to function as recited during the sample time period and operatively disabling said magnitude detector means to prevent the derivation of a magnitude signal over the reset time period, and (e) indicator means for indicating the relative magnitude of the magnitude signal during each sample time period and for terminating the indication during each reset time period; and wherein said transmitter further comprises:

duty cycle control means comprising a binary coded decimal counter having a plurality of output terminals, and gate means electrically connected for receiving input signals from said output terminals of said binary coded decimal counter, said gate means supplying a signal having characteristics which define the first and second predetermined time periods in accordance with a predetermined relationship of each input signal applied to said gate means;

means for delivering clock pulses to said binary coded decimal counter; and

current switching means electrically connected to said conductor and controlled by the signal from said gate means for conducting current from said conductor during said first predetermined time period.

4,491,786

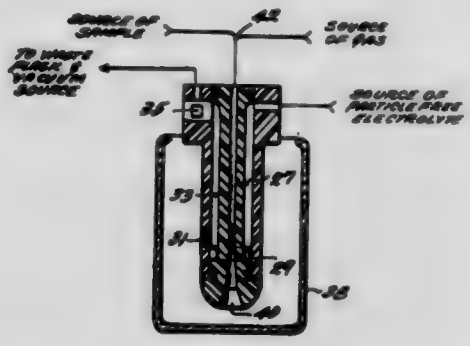
TRANSDUCER FOR MEASURING PARTICLES SUSPENDED IN A FLUID

Thomas J. Godin, Ft. Lauderdale, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Continuation of Ser. No. 942,033, Sep. 13, 1978, abandoned. This application Jan. 15, 1982, Ser. No. 339,809

Int. Cl.³ G01N *15/02, 27/07*

U.S. Cl. 324—71.1 **8 Claims**



2. A transducer for housing a Coulter-type of measuring aperture for electrically measuring particles in a fluid suspension, wherein the suspended particles are caused to flow through a microscopic aperture-defined path and thereby modify an electrical impedance established in that path, and substantially particle-free fluid is caused to flow proximate the downstream side of the aperture-defined path to sweep particles therefrom, the improvement comprising:

said transducer having a body with a first and a second channel formed therein for flow therethrough of fluids, each said channel having an inlet orifice and outlet orifice all of which orifices communicate with the exterior of said body;

said aperture being mounted such that its path is in fluid communication between the exterior of said body, as an input side, and said second channel, as an output side;

said channels being constructed and arranged such that they are isolated fluidically from each other;

the exit orifice of said first channel being spaced from the input side of said aperture path and positioned to be in fluid communication with said aperture for supplying thereto the suspension of particles, which is to flow through said first channel; and

said second channel being adapted to receive particle-free fluid at its input orifice for sweeping past said aperture path output side, for carrying the particles toward said output orifice of said second channel.

4,491,787

FLATNESS MEASURING DEVICE

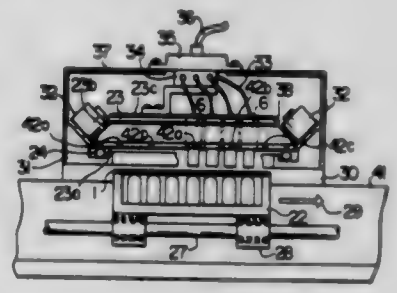
Nobuyuki Akiyama; Yukio Kembo, and Yasuo Nakagawa, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 14, 1981, Ser. No. 292,933

Claims priority, application Japan, Aug. 29, 1980, 55-118497

Int. Cl.³ G01N *27/00*

U.S. Cl. 324—71.5 **7 Claims**



1. A device for measuring a degree of flatness of a surface of a plate the device comprising:

holding means for holding said plate in a manner so as to prevent the plate from being moved and rotated when the plate is measured;

a rotatably supported disc disposed in parallel with one surface of said plate;

a plurality of detecting means mounted to said disc for rotation therewith for detecting distances from tips thereof to said one of the surfaces of said plate, said detecting means being arranged on a line extending radially outwardly from a center of said disc;

drive means for rotating said disc; and

output means for leading out detecting signals from said detecting means.

4,491,788

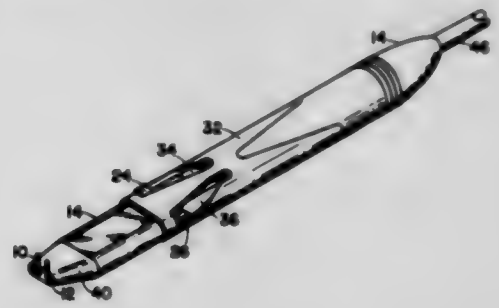
MINIATURE ELECTRICAL PROBE

Raymond A. Zandonatti, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jul. 27, 1981, Ser. No. 286,447

Int. Cl.³ G01R *1/06*

U.S. Cl. 324—72.5 **4 Claims**



1. An electrical probe, comprising:

an insulative body having a longitudinal axis;

a pair of rotatable tip electrodes extending from said body, said tip electrodes being spaced apart at a pivotal end and being disposed at substantially a right angle to the longitudinal axis of said body; and

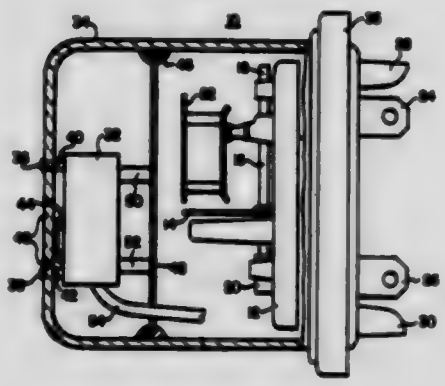
means for simultaneously rotating said tips, wherein said tips are substantially parallel in the open position of said probe and being rotated toward each other through a substantially ninety-detree arc to provide a gripping function in the closed position of said probe.

4,491,789

ELECTRICAL ENERGY METER HAVING A COVER-MOUNTED TIME-OF-DAY MULTIFUNCTION REGISTER

Eugene C. Benbow, Raleigh, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 14, 1981, Ser. No. 292,978
Int. Cl.³ G01R *13/04*
U.S. Cl. 324—113 6 Claims



1. An electrical energy meter having a cover-mounted time-based multifunction register for measuring parameters of electrical energy usage, wherein said multifunction register includes an optical data link tube for interactively communicating by way of light radiations with a prgrammer/reader unit having a plurality of fingers at the front thereof, said electrical energy meter comprising:

a meter base;

means for providing signals representative of electrical energy usage, said means carried by said meter base;

a cable, said cable connecting said multifunction register with said providing means;

a cup-shaped cover engaging said meter base at an open end of said cover, said cover having a front face at the closed end thereof, said front face including an optically transparent portion for allowing transmission of said light radiations therethrough, said cover carrying said multifunction register for measuring parameters of electrical energy usage in response to said signals, said front face further including a plurality of integral index means aligned with said optical data link tube, said plurality of integral index means for engaging said plurality of fingers to orient said programmer/reader unit with said optical data link tube;

whereby accurate data transfer between said optical data link tube and said programmer/reader unit via said optically transparent portion of said front fact is facilitated.

4,491,790

ELECTRIC ENERGY METER HAVING A MUTUAL INDUCTANCE CURRENT TRANSDUCER

Robert C. Miller, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 121,070, Feb. 13, 1980, abandoned, which is a continuation-in-part of Ser. No. 13,938, Feb. 22, 1979, abandoned, which is a continuation-in-part of Ser. No. 923,619, Jul. 11, 1978, abandoned. This application Mar. 16, 1982, Ser. No. 358,770
Int. Cl.³ G01R *11/48, 1/20*
U.S. Cl. 324—142 2 Claims

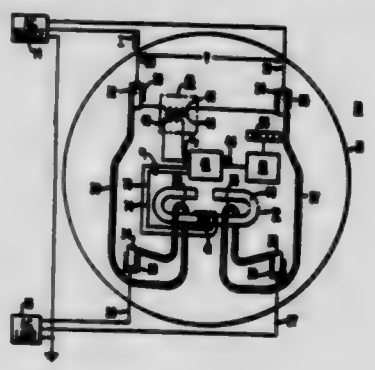
1. An AC electric energy meter having an electronic measuring circuit processing analog signals responsive to current and voltage components of an alternating current electric energy quantity supplied through two power line conductors of a three wire single phase distribution system and to be measured for producing electronic signals representative of quantized amounts of electric energy consumption, said meter comprising:

a meter housing including first and second pairs of blade terminals for detachable series connection with said two power line conductors carrying separate current flows of the current component;

a voltage sensing transducer connected across one terminal of each of said first and second pairs of blade terminals for producing a voltage responsive analog voltage signal proportional to said voltage component;

a current sensing transducer including first and second large conductor means, each connected in series with a separate one of said first and second pairs of blade terminals for series connection with said line current component, each of said first and second conductor means producing magnetic flux variations responsive to the magnitude and rate of changes of the separate current flow therein;

said current sensing transducer formed by a single secondary toroidal winding wound on a non-magnetic core having a



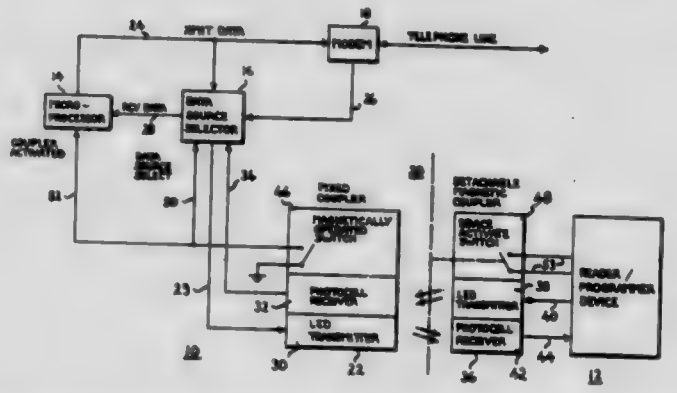
circular opening receiving both said first and second large conductor means in substantially equally spaced symmetrical relationship thereto so as to be magnetically coupled to the sum of said magnetic flux variations effectively passing through an air space, said single toroidal winding developing an electromotive force therein responsive to the sum of said magnetic flux variations of the first and second large conductor means so that said toroidal winding produces a current responsive analog voltage signal proportional to the sums of the time derivatives of the separate current flow in each of said first and second large conductors throughout a ratio of combined current variations up to about four hundred to one with both of said voltage and current responsive analog voltage signals being suitable for connection to high impedance and low level signal inputs of said electronic measuring circuit.

4,491,791

SENSING SWITCH FOR A DETACHABLE COMMUNICATIONS PROBE

Richard A. Balch, Somersworth, and Ansell W. Palmer, Hampton, both of N.H., assignors to General Electric Company, Somersworth, N.H.

Filed Dec. 13, 1982, Ser. No. 449,257
Int. Cl.³ G01R *11/04;* G02B *27/00;* H04B *9/00;* G08C *19/00*
U.S. Cl. 324—157 21 Claims



1. In a system of the type including a meter having electronic

circuitry housed within a cover of the meter and external communication apparatus adapted for communication with said electronic circuitry, means for providing a detachable communications link between said external communication apparatus and said electronic circuitry through said meter cover, said means comprising:

(a) a fixed coupler assembly of magnetically conductive material rigidly mounted through a portion of said meter cover, said fixed coupler assembly having a face portion external of the meter cover and including an aperture extending into said fixed coupler assembly from the face portion, said fixed coupler assembly further including,

(1) a communication means of a first type disposed in the aperture of said fixed coupler assembly for communication external to the meter cover at the face portion of said fixed coupler assembly, and

(2) means connecting said communication means to the electronic circuitry for electronically communicating therewith; and

(b) a detachable coupler assembly having a magnetized surface on one end thereof adapted for magnetically engaging said face portion of said fixed coupler assembly and including an aperture extending into said detachable coupler assembly from the magnetized surface, the detachable coupler assembly further including

(1) a communication means of a second type disposed in the aperture of said detachable coupler assembly for communication out the magnetized surface end thereof,

(2) means for providing an enable signal for activating said communication means of a second type to permit communication of information upon coupling of said detachable and fixed coupler assemblies, and

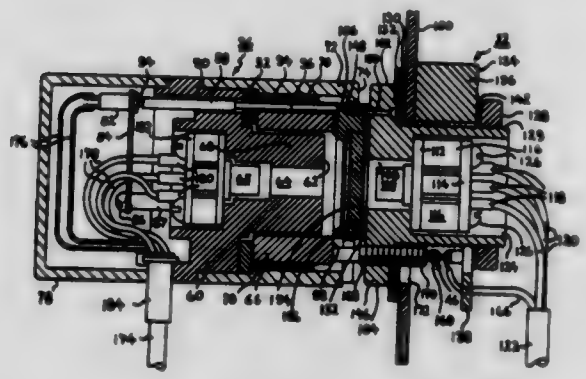
(3) means connecting the enable signal providing means and the communication means of said second type to the external communication apparatus for electroncially communicating information between said external communication apparatus and said electronic circuitry in the meter cover, via the communication means of said first and second types, following receipt by said external communication apparatus of said enable signal.

4,491,792

SENSING SWITCH FOR A MAGNETICALLY COUPLED COMMUNICATIONS PORT

Donald F. Bullock, Somersworth, and Ansell W. Palmer, Hampton, both of N.H., assignors to General Electric Company, Somersworth, N.H.

Filed Dec. 13, 1982, Ser. No. 449,258
Int. Cl.[3] G01R *11/04*; G02B *27/00*; H04B *9/00*; G08C *19/00*
U.S. Cl. 324—157 31 Claims



1. A system of the type including a meter having electronic circuitry housed within a cover of the meter, the combination comprising:

(a) a magnetic coupler assembly having a magnetized surface on one end thereof and including communication means of a first type for communication out of the magnetized surface end thereof;

(b) a fixed coupler assembly of magnetically conductive material mounted through a portion of the meter cover, said fixed coupler assembly having a face portion external of the meter cover and including:

(1) communication means of a second type for communication out of said face portion;

(2) means connecting the communication means of said second type to said electronic circuitry for communicating therewith; and

(3) means responsive to the magnetic flux of said magnetized surface for providing a signal to activate said electronic circuitry to permit communication upon magnetic coupling of said magnetic and fixed coupler assembly; and

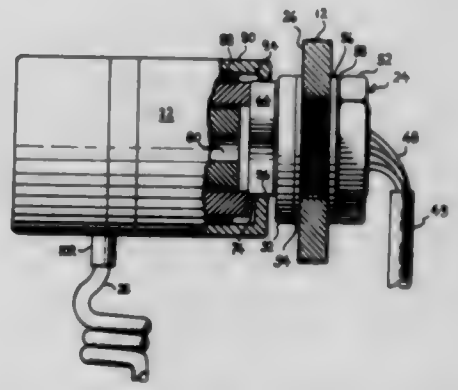
(c) external communication means connected to the communication means of said first type in said magnetic coupler assembly for communicating information between the electronic circuitry in the meter cover and said external communication means, via the communication means of said first and second types, when said fixed and magnetic coupler assemblies are magnetically coupled.

4,491,793

DETACHABLE MAGNETIC COUPLER COMMUNICATION APPARATUS

Warren R. Germer, Dover, and Ansell W. Palmer, Hampton, both of N.H., assignors to General Electric Company, Somersworth, N.H.

Continuation of Ser. No. 190,217, Sep. 24, 1980, abandoned. This application Sep. 21, 1983, Ser. No. 533,895
Int. Cl.[3] G01D *5/06, 5/26*
U.S. Cl. 324—157 5 Claims



1. In a system of the type including a meter having electronic circuitry housed within a cover of the meter, the combination comprising:

(a) a fixed coupler assembly of magnetically inductive material rigidly mounted through a portion of the meter cover, said fixed coupler assembly having a face portion external of the meter cover and including an aperture extending into said fixed coupler assembly from the face portion, said fixed coupler assembly further including,

(1) an optical communication means of a first type disposed in the aperture of said fixed coupler assembly for optical communication external of the meter cover at the face portion of said fixed coupler assembly, and

(2) means connecting said optical communication means of said first type to the electronic circuitry for electronically communicating therewith;

(b) a magnetic coupler assembly comprising a magnet having a surface on one end thereof for mating attachment to the face portion of said fixed coupler assembly and including an aperture extending into said magnet from said surface, said aperture being positioned on said surface for alignment with the aperture in the face portion of said fixed coupler assembly when the surface end of said magnet is brought into mating attachment with the face portion of said fixed coupler assembly, said magnetic coupler assembly further including,

(1) an optical communication means of a second type

disposed in the aperture of said magnet for optical communication out the surface end thereof,

(2) a cover of magnetically inductive material surrounding said magnet, said cover being inductively coupled to said magnet to thereby increase the magnetic holding force of said magnet by providing a closed loop magnetic circuit having a path for the magnetic flux generated by said magnet which flows between said cover and said magnet, said cover being formed with a shield surrounding said magnet in the form of a lip forming a part of the closed loop magnetic circuit and extending outward of the surface end of said magnet whereby the lip of said shield is formed to closely surround said fixed coupler assembly at the face portion thereof to, (i) effect alignment of the optical communication means of said first and second types, (ii) inhibit the entry of ambient light between the face portion and the surface end of said fixed coupler assembly and said magnet respectively, and (iii) enable said fixed coupler assembly to be inserted into the closed loop magnetic circuit to provide an additional path for magnetic flux to flow between said shield and said magnet, via said fixed coupler assembly, to thereby further increase the holding force of said magnetic coupler assembly against said fixed coupler assembly when said fixed and magnetic coupler assemblies are magnetically attached; and

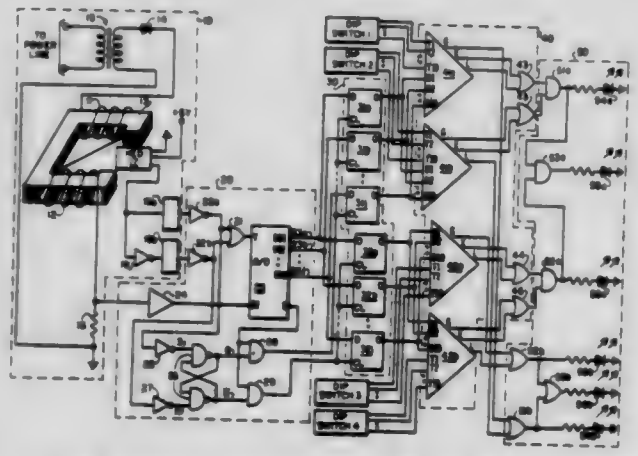
(c) external communication means connected to the optical communication means of said second type in said magnetic coupler assembly for electronically communicating information between the electronic circuitry in the meter cover and said external communication means, via the optical communication means of said first and second types, when said fixed and magnetic coupler assemblies are magnetically attached.

4,491,794

HALL EFFECT DEVICE TEST CIRCUIT

William J. Daley, Geneva, and Hendrik W. Van Husen, Glen Ellyn, both of Ill., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Oct. 29, 1982, Ser. No. 437,670
Int. Cl.³ G01R 33/00
U.S. Cl. 324—158 R 15 Claims



1. A Hall effect device test circuit for use in a test system including a source of a power signal, said test circuit comprising:

magnetic field means connected to said source and operative in response to said power signal to periodically provide a magnetic field of varying intensity;

voltage reference means connected to said source and operative in response to said power signal to periodically provide a sample voltage of varying magnitude and proportional to the intensity of said magnetic field;

a Hall effect device connected in magnetic field proximity to said magnetic field means and operative in response to each occurrence of said magnetic field of a first predetermined intensity to provide an electrical signal of a first characteristic, and operative in response to each occurrence of said magnetic field of a second predetermined intensity to provide an electrical signal of a second characteristic;

conversion means connected to said Hall effect device and said voltage reference means, and operative in response to each electrical signal of said first characteristic and said sample voltage to provide a first digital representation of said sample voltage;

said conversion means further operative in response to each electrical signal of said second characteristic and said sample voltage to provide a second digital representation of said sample voltage;

first threshold means operative to provide a first predetermined digital signal;

second threshold means operative to provide a second predetermined digital signal;

third threshold means operative to provide a third predetermined digital signal;

fourth threshold means operative to provide a fourth predetermined digital signal;

comparison means connected to said conversion means and operative in response to said electrical signal of said first characteristic being less than or equal to said first predetermined digital signal to provide a first operate-pass signal and further operative in response to said electrical signal of said first characteristic being greater than or equal to said second predetermined digital signal to provide a second operate-pass signal; and further operative in response to said electrical signal of said second characteristic being less than or equal to said third predetermined digital signal to provide a first release-pass signal, and further operative in response to said electrical signal of said second characteristic being greater than or equal to said fourth predetermined digital signal to provide a second release-pass signal; and

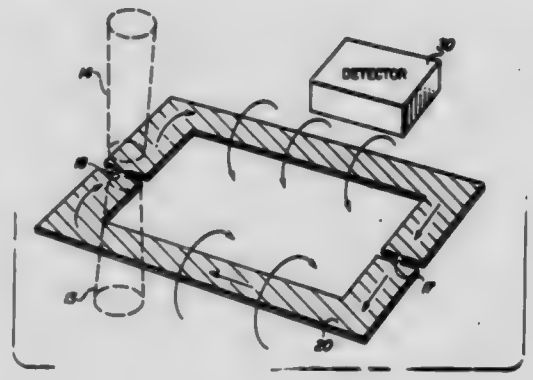
first indicating means connected to said comparison means and operative in response to said first and second operate-pass signal to provide a sensible operate-pass signal, and further operative in response to said first and second release-pass signals to provide a sensible release-pass signal.

4,491,795

JOSEPHSON JUNCTION INTERFEROMETER DEVICE FOR DETECTION OF CURL-FREE MAGNETIC VECTOR POTENTIAL FIELDS

Raymond C. Gelinas, Concord, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 17, 1982, Ser. No. 378,926
Int. Cl.³ G01R 33/035; H01L 39/22
U.S. Cl. 324—248 11 Claims



1. A device for detecting and measuring a magnetic vector potential field comprising:

a Josephson interferometer device including two Josephson junction devices coupled by superconducting elements, and magnetic field shielding means shielding said Josephson interferometer device from magnetic fields, said shielding means have apertures positioned so that said

magnetic vector potential field impinges substantially only on one Josephson device in said Josephson interferometer device.

4,491,796

BOREHOLE FRACTURE DETECTION USING MAGNETIC POWDER

Dan G. Smith, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 18, 1982, Ser. No. 359,635
Int. Cl.³ G01N *3/26*
U.S. Cl. 324—346 6 Claims

1. A method for locating a fractured formation penetrated by a borehole comprising:

removing the mudcake from the wall of the borehole;

introducing a magnetic powder in the range of 5 to 10 microns into the borehole so as to penetrate the fracture;

removing all magnetic material from the borehole; and

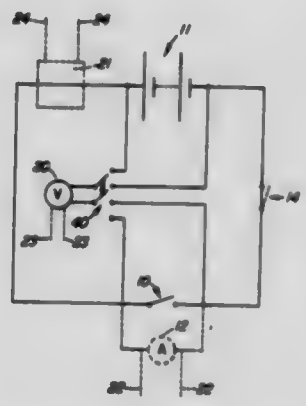
logging the borehole with an instrument that is responsive to the earth's magnetic field to detect any distortions in the earth's normal magnetic field caused by the magnetic powder in the fracture.

4,491,797

TEST CONTACT RESISTANCE OF DRY CIRCUIT CONTACTS

Benne Velsher, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 1, 1982, Ser. No. 383,598
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—421 13 Claims



1. A method of testing dry circuit contacts, comprising:

connecting a constant current source to a set of contacts;

setting said current source to a predetermined open circuit voltage;

measuring the short circuit current supplied to said contacts;

increasing the voltage of the constant current source to produce a short circuit current sufficient to produce a potential difference on a measurable voltage scale at said contacts;

measuring said potential difference across said contacts;

calculating the contact resistance from said potential difference and said short circuit current at said contacts; and

reducing the voltage of said constant current source to at least said predetermined open circuit voltage.

4,491,798

SYSTEM FOR MEASURING CONDUCTIVITY OF A LIQUID

James K. Palmer, 134 Fel Mar Dr., and Robert K. Janeway, 33 Verde Dr., both of San Luis Obispo, Calif. 93401

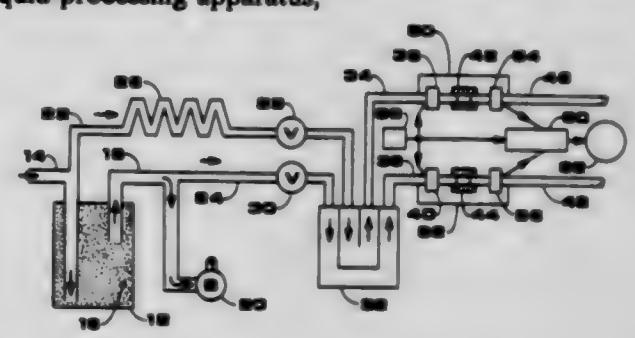
Filed Dec. 21, 1981, Ser. No. 332,874
Int. Cl.³ G01N *27/07*
U.S. Cl. 324—425 15 Claims

1. A system for assessing the effectiveness of a liquid-processing apparatus, such as a water softener, whose effectiveness is determinable from the difference between the conductivity of the liquid supplied to the liquid-processing apparatus and the conductivity of the liquid that has passed through the liquid-processing apparatus, said system comprising in combination:

source means for generating a common exciting signal S_o;

a first sensor connected to said source means for producing when energized by said common exciting signal S_o a first conductivity signal S_1 related to the electrical conductivity of the liquid supplied to the liquid-processing apparatus;

a second sensor connected to said source means for producing when energized by said common exciting signal S_o a second conductivity signal S_2 related to the electrical conductivity of the liquid that has passed through the liquid-processing apparatus;



circuit means connected to said first sensor and to said second sensor for producing a difference signal S_3 substantially equal to the difference between said first conductivity signal S_1 and said second conductivity signal S_2, but typically also including artifact components that are out of phase with the common exciting signal S_o; and,

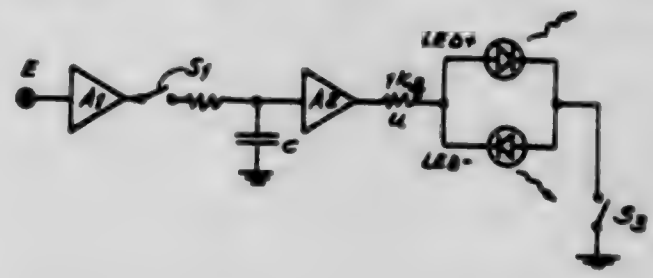
gated synchronous detector means connected to said circuit means and to said source means, enabled and synchronized by said common exciting signal S_o, and responsive to said difference signal S_3 for producing, when enabled by said common exciting signal S_o, a detected difference signal S_4 that is substantially unaffected by said artifact components, thereby making possible a more accurate determination of the difference between the conductivity of the liquid supplied to the liquid-processing apparatus and the conductivity of the liquid that has passed through the liquid-processing apparatus.

4,491,799

DEVICE FOR INDICATING POLE-ZERO CANCELLATION, IN PARTICULAR FOR AMPLIFIERS FOR IONIZING RADIATION SPECTROSCOPY

Silvano C. Giardinelli, Milan, Italy, assignor to Sliena S.p.A., Milan, Italy

Filed Jun. 1, 1982, Ser. No. 383,493
Claims priority, application Italy, Jun. 12, 1981, 22281 A/81
Int. Cl.³ G01R *23/00*
U.S. Cl. 330—2 7 Claims



1. A device for indicating or detecting the pole-zero cancellation in ionizing spectroscopy amplifiers, characterized in that it comprises, cascade coupled to one another and to the output of said amplifier, sampling and averaging controlled circuit means, low pass filter means and display means for displaying the amplitude and sign of the output of said sampling and

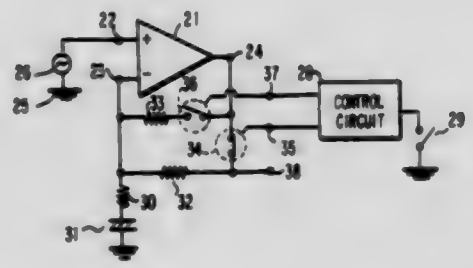
averaging controlled circuit means, said sampling and averaging controlled circuit means being effective to operate on random-time and random amplitude pulses for providing information about the sign of said pulses and averaging a plurality of samples thereof.

4,491,800

SWITCHING CIRCUIT OPERABLE AS AN AMPLIFIER AND A MUTING CIRCUIT

Shinji Miyata, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 31, 1983, Ser. No. 499,703
Claims priority, application Japan, May 31, 1982, 57-92585
Int. Cl.[3] H03G *3/26*
U.S. Cl. 330—51 9 Claims



1. A switching circuit comprising:
a signal input terminal;
a signal output terminal;
a reference potential terminal;
an amplifier having an inverting input port, a non-inverting input port and an output port, and non-inverting input port being coupled to said signal input terminal;
a first impedance element connected between said inverting input port and said reference terminal;
a second impedance element and a third impedance element connected at their one ends to said inverting input port; and
switching means for establishing connection relations among said output port, said signal output terminal, the other end of said second impedance element and the other end of said third impedance element;
wherein said switching means performs the switching operation between a first state in which, while said other end of one of said second and third impedance elements is coupled to said output port, said other end of the other of said second and third impedance elements is coupled to said signal output terminal, and a second state in which said other end of one of said second and third impedance elements is coupled to said output port and said signal output terminal.

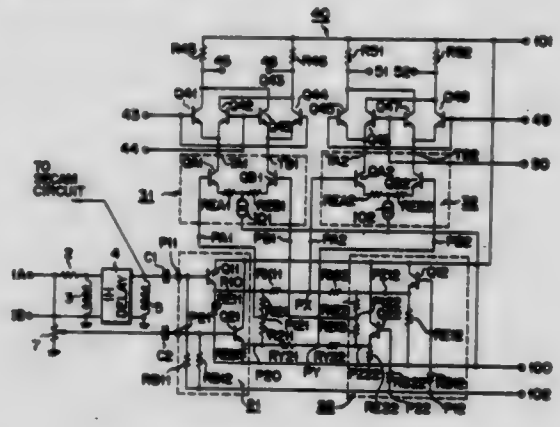
4,491,801

MATRIX CIRCUIT FOR PROCESSING PLURAL SIGNALS

Yoshitaka Kasagi, Fukaya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 18, 1981, Ser. No. 332,293
Claims priority, application Japan, Dec. 25, 1980, 55-184920
Int. Cl.[3] H03F *3/45;* H04N *9/50;* G06G *7/00;* H04S *1/00*
U.S. Cl. 330—69 13 Claims

1. A matrix circuit for processing plural signals comprising:
(a) buffer means having a pair of unbalanced buffer input terminals and a pair of balanced buffer output terminals, for unilaterally transferring input signals applied to the buffer input terminals to the buffer output terminals, and providing at one of the buffer output terminal a first signal and at the other thereof a second signal;
(b) addition means having a pair of balanced input terminals coupled to said buffer output terminals and having an unbalanced addition output terminal, for adding said first and second signals to provide at the addition output terminal a third signal;
(c) first subtraction means having a pair of balanced subtraction input terminals one of whose terminals is coupled to said addition ouput terminal and the other of whose terminals is applied with a given reference potential, for subtracting said third signal from said given reference potential to provide a fourth signal which corresponds to said input signals; and



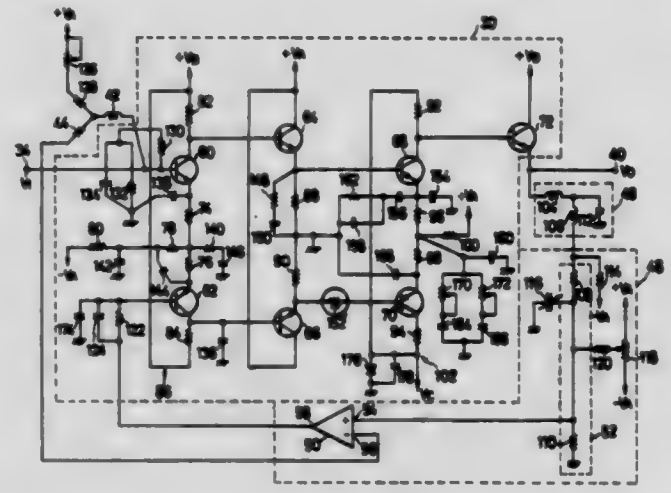
(d) second subtraction means having a pair of balanced subtraction input terminals one of whose terminals is coupled to said one buffer output terminal and the other of whose terminals is coupled to said the other buffer output terminal, for subtracting said second signal from said first signal to provide an fifith signal which corresponds to said input signals;
wherein output signals of the matrix circuit includes said fourth and fifth signals.

4,491,802

WIDE-BAND AMPLIFIER SYSTEM

Kozo Uchida, Akikawa, and Keishi Matsuno, Hino, both of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1982, Ser. No. 388,166
Claims priority, application Japan, Jun. 24, 1981, 56-97650
Int. Cl.[3] H03F *1/34*
U.S. Cl. 330—260 9 Claims



1. A wide-band amplifier system capable of amplifying frequencies from zero to a sufficiently high frequency maximum with essentially constant gain, comprising:
(a) input means for receiving an input signal having a wide band of frequencies from zero upward;
(b) a first amplifier circuit having a first input connected to the input means for receiving the wide-band input signal therefrom, a second input for receiving a low-band input signal having frequencies from zero to a relatively low frequency maximum, and an output for producing an

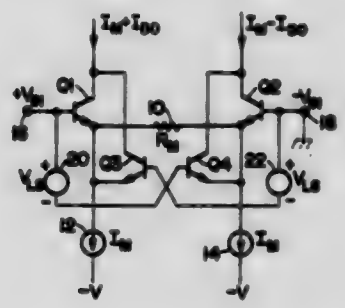
amplified wide-band output signal in response to the wide- and low-band input signals;
(c) a first low-pass filter connected to the input means for deriving a low-frequency component from the wide-band input signal;
(d) a second low pass filter connected to the output of the first amplifier circuit for deriving a low-frequency component from the wide-band output signal;
(e) a second amplifier circuit for producing the low-band signal, for delivery to the second input of the first amplifier circuit, from the difference between the low-frequency components of the wide-band input and output signals, the second amplifier circuit comprising:
(1) a gain setter circuit connected to the second low-pass filter; and
(2) an operational amplifier having a first input connected to the gain setter circuit, a second input connected to the first low-pass filter, and an output connected to the second input of the first amplifier circuit; and
(f) output means connected to the output of the first amplifier circuit.

4,491,803

CURRENT-LIMITING MECHANISM FOR A PRECISION DIFFERENTIAL AMPLIFIER

Arthur J. Metz, Gervais, and Kenneth G. Schlotzhauer, Beaverton, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 26, 1982, Ser. No. 444,768
Int. Cl.³ H03F 3/45
U.S. Cl. 330—261 4 Claims



1. A current-limiting circuit for a differential amplifier which includes an emitter-coupled pair of transistors and a signal-current-generating impedance coupled between the emitters of said pair of transistors, comprising:
means for generating a predetermined fixed voltage coupled from the base of at least one of said pair of transistors to the emitter of the opposite transistor of said pair; and
means for connecting said voltage-generating means in parallel with said impedance when the input signal voltage applied to said differential amplifier exceeds a predetermined fixed voltage, said connecting means comprising electronic switch means interposed between said voltage-generating means and said emitter of said opposite transistor.

4,491,804

BIAS CIRCUIT WHICH IS INDEPENDENT OF OUTPUT DEVICE VOLTAGE CHARACTERISTICS FOR BIASING AN AMPLIFIER IN CLASS AB OPERATION

W. Eric Main; Dennis L. Welty, both of Mesa, and Don W. Zobel, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 18, 1982, Ser. No. 442,808
Int. Cl.³ H03F 3/30
U.S. Cl. 330—265 24 Claims

1. A Class AB amplifier circuit for providing an amplified signal across a load coupled to an output thereof in response to receiving an alternating input signal, comprising:
output drive means including an output transistor connected to the output of the amplifier circuit for producing current through the load when rendered conductive;
differential amplifier means for producing a predetermined offset voltage across first and second terminals thereof including;
a. transistor means for sourcing a current of predetermined value to a first circuit node;
b. diode means coupled to said first circuit node; and
c. said transistor means and said diode means being connected respectively to said first and second terminals;



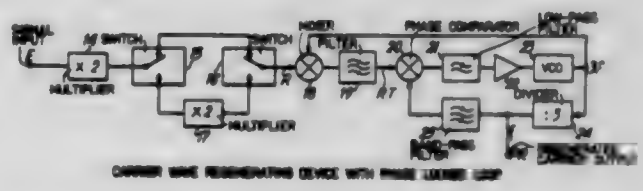
current bias means coupled between said first and second terminals of said differential amplifier means in series with said output transistor for establishing a quiescent bias current therethrough independent of the direct current characteristics of said output transistor; and
circuit means for interconnecting said output drive means, said differential amplifier means and said current bias means for causing said offset voltage developed across said current bias means to remain substantially constant independent to said direct current output transistor characteristics.

4,491,805

BPSK AND QPSK TRANSMISSION SYSTEMS HAVING PHASE LOCKED LOOP FOR REGENERATING THE CARRIER WAVE

Antoine Laures, 16, rue d'Arcueil, F-92120 Montrouge, and Léon Horbacio, 10, rue Edouard Belin, F-78340 Clayes-sous-Bois, both of France

Filed Mar. 10, 1982, Ser. No. 356,799
Claims priority, application France, Mar. 27, 1981, 81 06580
Int. Cl.³ H03L 7/08
U.S. Cl. 331—18 8 Claims



1. A device for regenerating a carrier wave from a BPSK or QPSK modulated input signal, the device comprising means for multiplying the input signal by two or four depending on whether the input signal has BPSK or QPSK modulation, respectively, the multiplying means delivering a reference signal, the device also comprising a locked loop having a voltage-controlled oscillator, a frequency divider having an input connected to the oscillator output and further having an output connected to the second input of a phase comparator means, an output of said phase comparator means being connected to the control input of the oscillator, wherein the mid-band frequency of the oscillator is equal to three times the nominal frequency f_o of the modulated input signal, the output of the oscillator being connected to one input of a mixer means, said mixer means having another input which receives said reference signal and further having an output connected to the first input of the phase comparator means, said frequency divider dividing by three, the output of said frequency divider delivering the regenerated carrier wave, identical band-pass

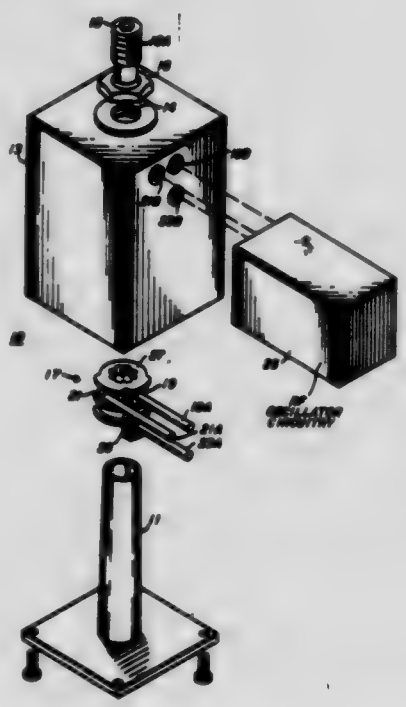
filters having a central frequency equal to f_o and being disposed between (a) the output of the mixer means and the first input of the phase comparator means and (b) between the output of the frequency divider and the second input of the phase comparator means, respectively.

4,491,806

RESONANT CAVITY WITH INTEGRATED MICROPHONIC SUPPRESSION MEANS

Gary R. Reynolds, Oakwood Hills; Thomas R. Gaynor, Arlington Heights; Raul Olivera, Itasca; Ross E. Ruthenberg, Woodale; Jay G. Smith, Hoffman Estates; Christopher N. Kurby, Elmhurst, and Terry K. Mansfield, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 6, 1982, Ser. No. 433,066
Int. Cl.³ H01P 7/04, 7/06; H03B 1/02
U.S. Cl. 331—96
23 Claims



16. A microphonics suppression means for a resonant cavity having a center conductor, tuning slug and coupling probes, said suppression means comprising:

a collar portion for centering said tuning slug within said center conductor,

an encapsulating portion for securing said coupling probes in a fixed relationship to said center conductor.

4,491,807

FET NEGATIVE RESISTANCE CIRCUITS

Merle V. Hoover, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 20, 1982, Ser. No. 380,289
Int. Cl.³ H03K 3/354; H03H 11/00
U.S. Cl. 331—111
10 Claims

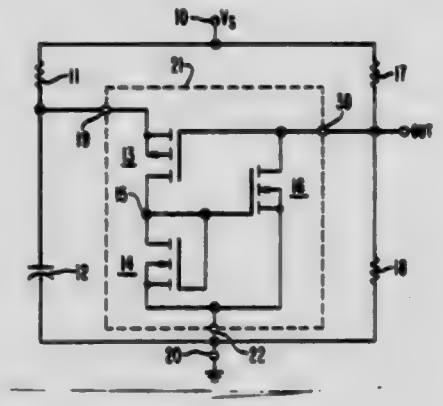
3. A circuit exhibiting negative resistance characteristics comprising:

first and second terminals between which said negative resistance characteristics are exhibited and a control terminal;

a first field effect transistor (FET) of a first conductivity type having source and gate electrodes connected respectively to said first terminal and a first node and having a drain electrode;

an FET current mirror having an input, output and common terminals respectively connected to the drain electrode of said first field effect transistor, said first node, and said second terminal;

means connecting said first node to the control terminal and a further FET of complementary type to said first transistor, said further FET having drain, gate and source electrodes respectively connected to the first terminal, the



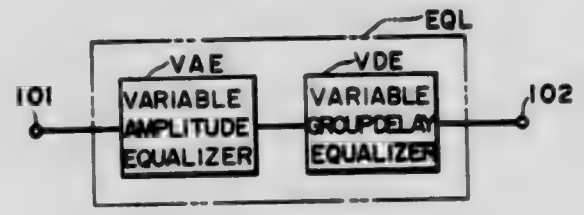
drain electrode of said first transistor and said second terminal.

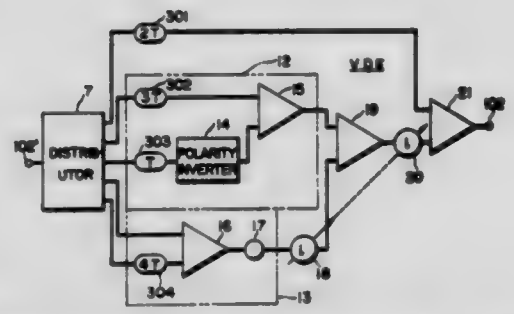
4,491,808

EQUALIZER CIRCUIT FOR USE IN COMMUNICATION UNIT

Kazuo Saito, Osaka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 14, 1982, Ser. No. 418,164
Claims priority, application Japan, Nov. 5, 1981, 56-178551; Nov. 5, 1981, 56-178552; Nov. 5, 1981, 56-178567
Int. Cl.³ H03H 11/06
U.S. Cl. 333—28 R
20 Claims





19. An equalizer circuit for use in communcation apparatus being used in a transmitting apparatus and/or a receiving apparatus and for equalizing an amplitude distortion and group delay distortions caused in a transmit/receive system, comprising:

a variable amplitude equalizer means for varying only an amplitude frequency response characteristic substantially independently of delay and in a continuous manner, and

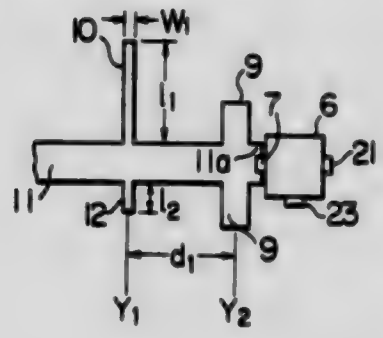
a variable group delay equalizer means connected to said variable amplitude equalizer in a cascade manner and operable for varying only a group delay frequency response characteristic substantially independently of amplitude and in a continuous manner.

4,491,809

MATCHING CIRCUIT FOR A PRE-AMPLIFIER OF SHF BAND TELEVISION SIGNAL RECEIVER

Masaki Noda; Keiro Shinkawa, and Chuichi Sodeyama, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 9, 1982, Ser. No. 406,567
Claims priority, application Japan, Aug. 12, 1981, 56-125175
Int. Cl.³ H01P 5/08
U.S. Cl. 333—35 5 Claims



1. A matching circuit for a pre-amplifier of an SHF band television signal receiver, the operating frequency band of said matching circuit including a first, a second, and a third frequency, said first frequency being lower than said third frequency, said second frequency being substantially the center between said first and third frequencies, said matching circuit comprising:

(a) impedance matching means connected to a terminal of an amplifying device of said pre-amplifier;

(b) a transmission line connected to said impedance matching means, said transmission line being arranged oppositely to said amplifying device; and

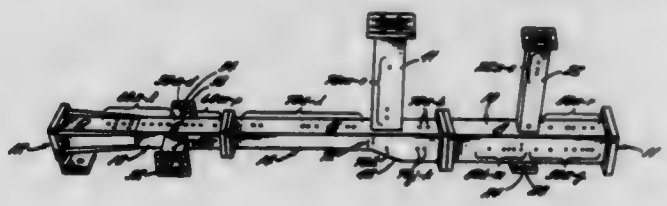
(c) a first and a second stub line connected to said transmission line and spaced from said impedance matching means by a distance approximately equal to (2n-1)/4 wavelength (n=1,2,3, . . .) of a wave of said second frequency, said first and second stub lines being arranged oppositely to each other with respect to said transmission line, said first stub line having a length selected so as to present an inductive impedance in said operating frequency band of said matching circuit and present substantially a short circuit at an image frequency of said second frequency, said second stub line having a length selected so as to present a capacitive impedance in said operating frequency band of said matching circuit and present an admittance which cancels an admittance of said first stub line at said second frequency.

4,491,810

MULTI-PORT, MULTI-FREQUENCY MICROWAVE COMBINER WITH OVERMODED SQUARE WAVEGUIDE SECTION

Saad M. Saad, Chicago, Ill., assignor to Andrew Corporation, Orland Pk., Ill.

Filed Jan. 28, 1983, Ser. No. 461,930
Int. Cl.³ H01P 1/213
U.S. Cl. 333—126 22 Claims



1. A combiner for transmitting and receiving co-polarized microwave signals in a selected propagation mode in at least two different frequency bands, said combiner comprising

a main waveguide having a cross-section in the shape of a right-angle parallelogram and dimensioned to simultaneously propogate co-polarized signals in said different frequency bands and at least one signal that is orthogonally polarized with respect to said co-polarized signals, at least a portion of said main waveguide being overmoded,

a plurality of junctions spaced along the length of said waveguide for coupling selected signals in said different frequency bands in and out of said waveguide, at least one of said junctions being located in an overmoded portion of said main waveguide, at least one of said junctions having a pseudo-balanced feed with only a single side-arm waveguide for transmitting and receiving said signals, said pseudo-balanced feed comprising a pair of diametrically opposed slots in said main waveguide, one of said slots in each pair leading to said side-arm waveguide and the other slot leading to a closed waveguide stub for impedance matching, and

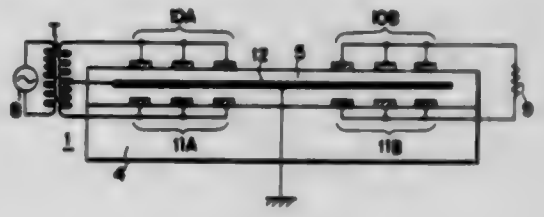
filtering means disposed within said main waveguide and operatively associated with each junction therein for signals in the highest frequency band, said filtering means having (1) a stopband characteristic for coupling signals in said highest frequency band between said main waveguide and said junction and said side-arm waveguide connected thereto, and (2) a passband characteristic for passing signals in lower frequency bands past said junction.

4,491,811

SURFACE ACOUSTIC WAVE DEVICE

Teruo Niitsuma; Shoichi Minagawa, and Takeshi Okamoto, all of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1983, Ser. No. 506,569
Claims priority, application Japan, Jun. 22, 1982, 57-107949; Jul. 2, 1982, 57-115660
Int. Cl.³ H03H 9/145, 9/30, 9/64
U.S. Cl. 333—151 10 Claims



1. A surface acoustic wave device which comprises:

an elastic substrate;

a piezoelectric film deposited on said elastic substrate;

input and output first electrodes both provided on said piezoelectric film;

input and output second electrodes both provided between said piezoelectric film and said elastic substrate;

third electrode provided within said piezoelectric film and between said first electrodes and said second electrodes; and

a signal supply means applying an electric signal to the first and second input electrodes.

4,491,812

OVERLOAD PROTECTION

Anton Happach, Munich, Fed. Rep. of Germany, assignor to Schaltbau Gesellschaft mbH, Munich, Fed. Rep. of Germany

Filed Jan. 23, 1984, Ser. No. 573,069
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1983, 3302229
Int. Cl.³ H01H 9/00
U.S. Cl. 335—184 4 Claims

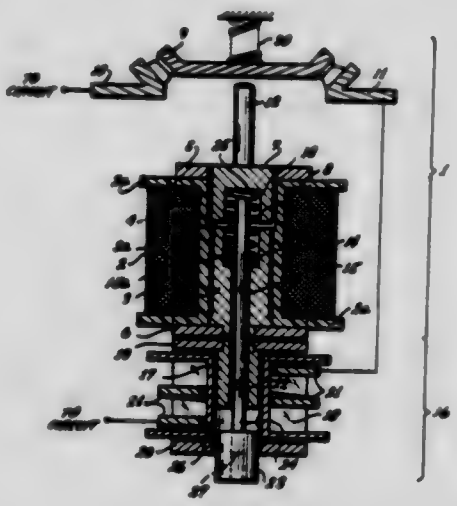
1. Overload protection for an electric circuit which includes contacts operated by a spring biased electromagnetic circuit breaker including an electromagnetic energizing system and an armature which is retracted against the force of the spring for contact closing and wherein said contacts are closed for unenergized circuit breaker by means of a second spring being

weaker than the first one, said electromagnetic circuit breaker including a core system having a bore, the overload protection comprising:

an auxiliary electromagnet system having a core, the core being provided with a bore, the core being arranged and situated so that its bore is aligned with the bore of the core system of the circuit breaker;

the auxiliary electromagnetic system having a coil being electrically connected to said circuit to be flown through by a bypass current whereby regular current flowing through the contacts of the circuit breaker is correspondingly insufficient to energize the auxiliary electromagnetic system;

said auxiliary electromagnetic system having an armature



being in a particular position as long as the auxiliary electromagnetic system is not energized;

a plunger mounted to the armature of the auxiliary electromagnetic system and penetrating both of said bores whereby for unenergized auxiliary electromagnetic systems a distance of said plunger from the armature of the circuit breaker is smaller than a lifting stroke of the armature of the auxiliary electromagnetic system; and

so that upon energization of the auxiliary electromagnetic system on account of an overload in said circuit, the armature of the auxiliary electromagnetic system is attracted to the core of the auxiliary electromagnetic system and the plunger pushes the armature of the circuit breaker into a position such that said circuit breaker contacts in said circuit are opened.

4,491,813

ELECTROMAGNETIC RELAY

Rolf-Dieter Kimpel, Unterschweinbach; Horst Tamm, Munich; Wolfgang Hübner, Munich, and Erwin Steiger, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

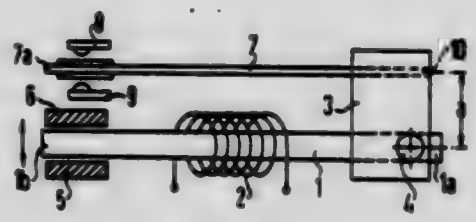
Filed Jul. 23, 1982, Ser. No. 401,236

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1981, 3132239

Int. Cl.³ H01H *50/58*

U.S. Cl. 335—187

20 Claims



1. An electromagnetic relay comprising:

a hollow coil body having a coil flange at each end thereof and a coil wound about said coil body between said flanges;

an insulating carrier and a means connecting said carrier and one of said flanges for pivotally seating said carrier at said one of said flanges;

a magnet system including at least one pole plate disposed at the other of said flanges, a magnetic flux source, and a bar-shaped armature disposed in said coil body for actuation by said flux source and having one end mounted in said carrier and a free end forming a working air gap with and being movable relative to said pole plate, and said armature extending over the length of said coil; and

at least one contact blade mounted in said carrier spaced from said armature and extending over the length of said coil outside of said coil and having a free end movable with respect to at least one fixed contact, movement of said armature with respect to said pole plate being transmitted by pivoting said carrier for moving said contact blades.

4,491,814

CIRCUIT BREAKER

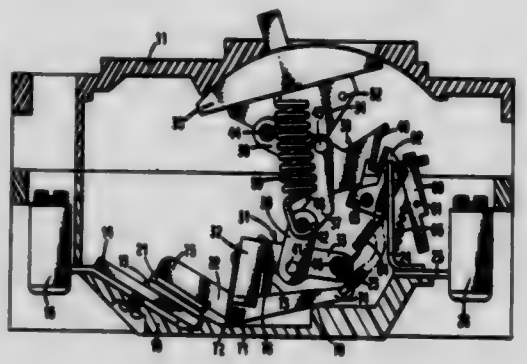
Alfred H. Bellows, Wayland, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 14, 1983, Ser. No. 484,776

Int. Cl.³ H01H *45/00*

U.S. Cl. 335—192

12 Claims



1. A circuit breaker comprising

supporting structure;

a fixed contact mounted on said supporting structure;

a contact carrier member having opposite first and second ends with a movable contact mounted adjacent to said first end;

a contact actuator member mounted in said supporting structure and movable between a first position and a second position;

said contact carrier member being connected to said contact actuator member by a free floating coupling arrangement at a region of the contact carrier member between said first and second ends thereof;

biasing means bearing against the contact actuator member and against a portion of the contact carrier member between the free floating coupling arrangement and said second end and urging said portion away from the contact actuator member;

a bearing member fixed with respect to said supporting structure;

said biasing means urging said portion of the contact carrier member away from the contact actuator member tending to pivot the contact carrier member about a pivot location between the region of the contact carrier member adjacent to said second end thereof and said bearing member thereby urging said movable contact against the fixed contact with said contact actuator member and said contact carrier member being decoupled from each other at said free floating coupling arrangement with no forces being transmitted therebetween, when the contact actuator member is in said first position;

said free floating coupling arrangement coupling the contact

actuator member to the contact carrier member upon movement of the contact actuator member from the first position toward the second position thereby moving the movable contact away from the fixed contact and tending to move the region adjacent to the second end of the contact carrier member away from the bearing member; and

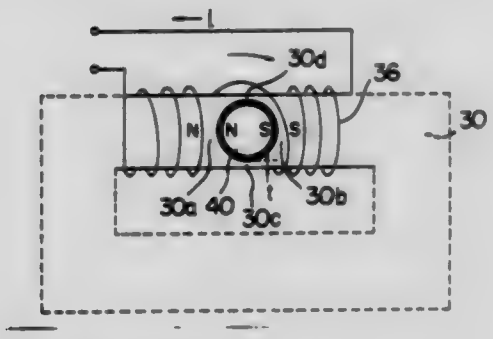
said biasing means urging said portion of the contact carrier member away from the contact actuator member to pivot the contact carrier member about said free floating coupling arrangement when the free floating coupling arrangement couples the contact actuator member to the contact carrier member thereby increasing the movement of the movable contact away from the fixed contact.

4,491,815

ROTARY ACTUATOR

Takaharu Idogaki, Okazaki; Hisasi Kawai, Toyohashi; Kyo Hattori, Susono, and Kazuhiro Sakurai, Gotenba, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Apr. 22, 1983, Ser. No. 487,760
Claims priority, application Japan, Apr. 26, 1982, 57-68751
Int. Cl.³ H01F 7/08
U.S. Cl. 335—229 4 Claims



1. A rotary actuator comprising:

a yoke for forming a closed magnetic path;

an excitation coil partially wound on said yoke for producing a magnetic flux in said yoke;

a permanent magnet rotatably arranged in a through hole of said yoke;

a restoring spring for producing a force acting against a rotational torque generated in said permanent magnet by a main mgnetic flux which flows through said yoke and said permanent magnet when said excitation coil is energized; and

shielding portions formed on both sides of the ends of said yoke, which ends oppose said permanent magnet, for substantially shielding said permanent magnet together with said ends of said yoke;

whereby a magnetic reluctance of a path of the magnetic flux remains substantially constant irrespective of a rotating position of said permanent magnet with respect to said yoke when said excitation coil is deenergized.

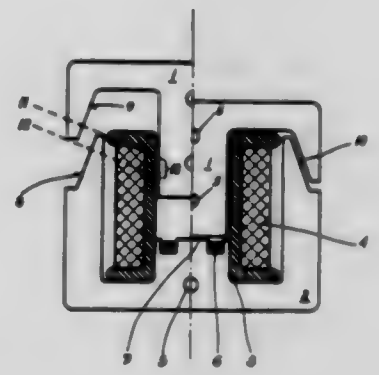
4,491,816

TRANSDUCER FOR ALTERNATING CURRENT LIMITER

Alex Blum, Unterentfelden, Switzerland, assignor to Sprecher & Schuh AG, Aarau, Switzerland

Filed May 27, 1982, Ser. No. 382,759
Claims priority, application European Pat. Off., Dec. 14, 1981, 81 110 410.8
Int. Cl.³ H01F 7/10
U.S. Cl. 335—245 7 Claims

1. An electromechanical transducer for a limiter switch for alternating current, comprising a coil-supporting bobbin and a pair of magnetic pieces forming an armature and a core, at least one of the armature and core being E-shaped, a central leg of said E-shaped piece coming into contact with the other piece when said transducer is activated, at least one of said central leg and the region of the other piece which faces said central leg carrying a short-circuit ring, the pieces being configured so that in an activated state air gaps exist between both pairs of outer legs of the magnetic pieces, surfaces of the pieces which define the gaps being slanted with respect to a travel direction of the armature.

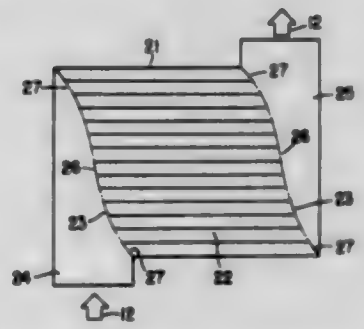


4,491,817

SHEET-WOUND TRANSFORMER

Yoshio Koyama, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 2, 1984, Ser. No. 585,504
Claims priority, application Japan, Mar. 3, 1983, 58-33794
Int. Cl.³ H01F 27/08
U.S. Cl. 336—60 3 Claims



1. A sheet-wound transformer comprising:

a magnetic core;

a number of coil windings made of sheet conductors wound around said magnetic core with insulating sheet interposed between adjacent winding turns;

a plurality of cooling panels inserted in the coil windings in which a coolant flows; and

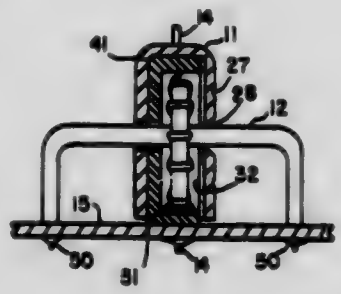
a number of ribs provided in each of the cooling panels so as to extend in parallel with each other in a direction of winding the sheet conductors, either of leading and trailing ends of said ribs forming a line, when interconnected, which has an inclination varied in a direction perpendicular to the winding direction such that a displacement between two adjacent rib ends located on either one of end poritons of said line becomes larger than a displacement between those located on a central portion of said line.

4,491,818

PICKUP COIL ASSEMBLY WITH COAXIAL FEED

Bernard D. Dunenberg, Skokie, and Arthur J. Lostumo, Franklin Park, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Mar. 30, 1983, Ser. No. 480,551
Int. Cl.³ H01F 27/04, 40/06
U.S. Cl. 336—65 7 Claims



1. In combination with a pancake shaped signal pickup coil defining an opening therethrough, means for maintaining a fixed substantially right angle relationship between said coil and a current carrying conductor in said opening comprising:

a housing of substantially larger configuration than said coil;

support means mounted in a fixed, partially surrounding relationship to said coil and adapted to fit within said housing, said support means defining an aperture in substantial alignment with said opening; and

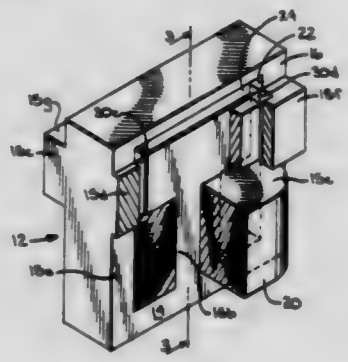
partially cut away jaw portions formed in a wall of said housing around said aperture for engaging and holding a conductor in position in said opening, said jaw portions permitting movement of said conductor in a single axial direction.

4,491,819

MAGNETICALLY BIASED INDUCTOR

Glen Ray, Big Bend, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Sep. 7, 1983, Ser. No. 530,018
Int. Cl.³ H01F 27/36
U.S. Cl. 336—110 7 Claims



1. In an E-I type inductor having a E-shaped central core with a central leg having an end, an inductor coil wrapped around a portion of the E-shaped central core to induce magnetic flux therein, and an I-shaped bridge separated from the end of the central leg of the E-shaped core by an air gap, the improvement comprising:

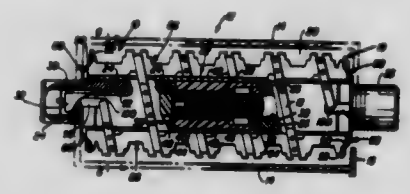
a ferrite magnet cap positioned over the end of the central leg of the E-shaped core so that a first portion of the magnetic cap lies within the air gap and another portion extends downward from the first portion and surrounds opposing sides and edges of the end of the central leg of the E-shaped cord adjacent the air gap, the ferrite magnet cap having a magnetic polarity which opposes the magnetic flux produced in the E-shaped central core by the indicator coil.

4,491,820

DEVICE FOR TERMINATING A FUSIBLE ELEMENT OF AN INTERRUPTING MODULE

John M. Jarosz, Skokie, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Nov. 5, 1982, Ser. No. 439,444
Int. Cl.³ H01H 85/02
U.S. Cl. 337—159 9 Claims





1. An apparatus for terminating a fusible element, the fusible element being maintained in a helix around an elongated insulative housing by a fin carried longitudinally on the housing, the housing carrying an electrical terminal on an end thereof, the apparatus comprising:

a conductive collar mountable over the terminal for mechanical and electrical connection thereto;

a slotted first tab on the collar, the slot being engageable with one end of the fin to support the fin; and

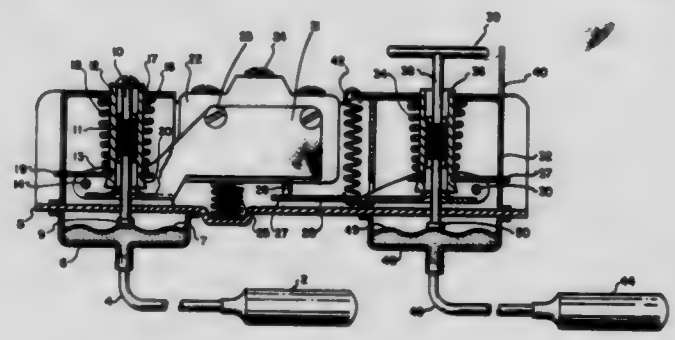
a conductive finger on the collar, an end of the fusible element being attachable to the finger.

4,491,821

DIFFERENTIAL TEMPERATURE CONTROL

Elwyn H. Olson, St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 23, 1983, Ser. No. 497,344
Int. Cl.³ H01H 37/36
U.S. Cl. 337—307 8 Claims



1. A differential temperature control comprising:

a first lever means including a first pivoted lever,

a selectively actuable switch means having a switch actuator and being mounted on a free end of said lever,

a first temperature responsive means for rotating said lever on its pivot,

a second lever means including a second pivoted lever having a switch actuating free end facing said switch actuator and

a second temperature responsive means for rotating said second lever on its pivot to selectively position said free end of said second pivoted lever, said first lever means including a first spring means arranged to maintain a contact between said first lever means and said first temperature responsive means, said spring means including a

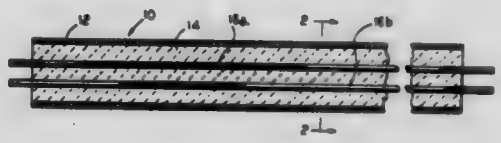
length expandable means arranged to selectively vary the rotational position of said first lever means on its pivot independently of said first temperature responsive means.

4,491,822

HEAT SENSITIVE CABLE

Bayard C. Davis, Lombard, Ill., assignor to XCO International, Inc., Elgin, Ill.

Filed Nov. 2, 1981, Ser. No. 317,631
Int. Cl.[3] H01C *3/04, 7/04*
U.S. Cl. 338—26 13 Claims





1. A heat sensitive cable capable of generating a measurable and predictable voltage over a temperature range of between approximately −20° F. and 1650° F., comprising:

an elongated substantially temperature resistant and moisture impervious tubular metallic sheath;

a pair of elongated thermoelectrically dissimilar conductor means positioned within said sheath, said conductor means being disposed in spaced and substantially parallel relation to each other and said sheath, said conductor means extending through at least one end of said metallic sheath for measuring said voltage; and

means for electrically insulating said conductor means from each other and said sheath and maintaining said conductor means in spaced and substantially parallel relation to each other and said sheath, said insulation means having an insulation resistance variable with temperature over said temperature range between approximately 100 and 50,000 ohms and being such that said measurable and predictable voltage is generated in said temperature range between said conductor means, said measurable and predictable voltage being indicative of temperature and being generated continuously in said temperature range in a passive, self-generating manner.

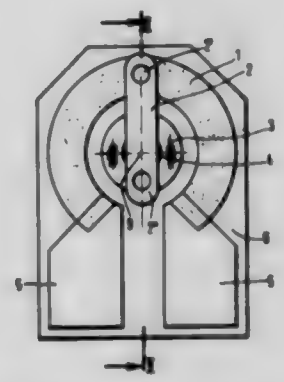
4,491,823

ROTARY RESISTORS

Michael J. Bergmann, Nuremberg; Armin Lederer, Cadolzburg, and Norbert Walliser, Furth, all of Fed. Rep. of Germany, assignors to Siegert GmbH Company, Fed. Rep. of Germany

Filed Nov. 1, 1982, Ser. No. 438,517
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1981, 8131856[U]
Int. Cl.[3] H01C *10/34*
U.S. Cl. 338—174 3 Claims

1. A rotary resistor comprising a one-piece substrate with frontal and rear surfaces and a one-piece metallic wiper which is arranged for rotational adjustment around a fixed point on the substrate and in contact with its frontal surface such that said wiper electrically bridges two mutually insulated printed sections wherein one section consists of a highly conductive thin-film coating of pure metal homogeneously deposited on the frontal surface of the substrate in an annular pattern, on a portion of the rear surface of the substrate so as to form an integral solder contact, and fully through an aperture centered on said fixed point on the substrate, and wherein the other printed section consists of a thin-film coating of relatively less conductive material homogeneously deposited on said frontal surface and arranged thereon in an annular pattern concentric with and outside of the conductive printed section on the frontal surface of the substrate and further arranged for ohmic contact with two additional mutually insulated printed sections of homogeneously deposited pure metal thin films so that these latter two printed sections may function as two individual



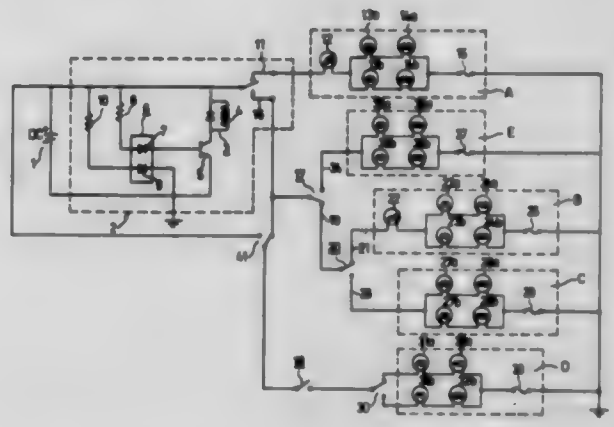
solder contacts, connectable to the leads of an external circuit whereby a resistor is formed, or further connectable, through the metallic wiper to the inner annular printed metal section and thereby to said integral solder contact on the rear surface of the substrate to a second or third external circuit lead to form a rheostat or potentiometer respectively.

4,491,824

SAFETY INDICATOR FOR VEHICLES

Nan-Mu Chiou, 2nd Floor, No. 15, La. 7, San Min Rd., Taipei, Taiwan

Filed Jan. 11, 1982, Ser. No. 338,687
Int. Cl.[3] B60Q *1/00*
U.S. Cl. 340—66 2 Claims



1. A safety indicator for a vehicle having a brake system operated by a brake pedal, headlights, an accelerator pedal and a speedometer to indicate vehicle speed, the safety indicator comprising:

a plurality of red and green lamps located on the vehicle;

red and green warning bulbs corresponding to each of the red and green lamps respectively, the bulbs being located within the vehicle on an instrument panel;

a central circuit connected to each of the lamps and its corresponding bulb, the central circuit having a flashing red light circuit and a red light circuit each connected to the red lamps and bulbs and a flashing green light circuit and a green light circuit each connected to the green lamps and bulbs;

a headlight circuit between the central circut and the headlights of the vehicle;

a brake switch mounted on or near the brake pedal and activated when the brake pedal is depressed, the brake switch being connected to the central circuit;

a pressure sensitive accelerator switch mounted at or near

the accelerator pedal and activated when the accelerator is depressed to a predetermined level, the accelerator switch being connected to the central circuit;

a photo-interrupter located at the speedometer of the vehicle; and

a relay switch electrically connected to the central circuit and the photo-interrupter respectively;

whereby the relay switch selectively activates either the flashing red light circuit and headlight circuit when the vehicle speed, as detected by the photo-interrupter, is zero or substantially zero to cause the red lamps and bulbs to be intermittently energized and the headlights to be switched off, or the brake switch when the vehicle is moving;

the brake switch, when activated, selectively activates either the red lamps and bulbs circuit when the brake pedal is depressed to cause the red lights to be continuously energized or the accelerator switch when the brake pedal is not depressed; and

the accelerator switch, when activated, selectively activates either the green light circuit when the accelerator pedal is stationary causing the green lamps and bulbs to be continuously energized or the flashing green light circuit when the accelerator pedal is moved causing the green lamps and bulbs to be intermittently energized.

4,491,825

HIGH RESOLUTION DIGITAL-TO-ANALOG CONVERTER

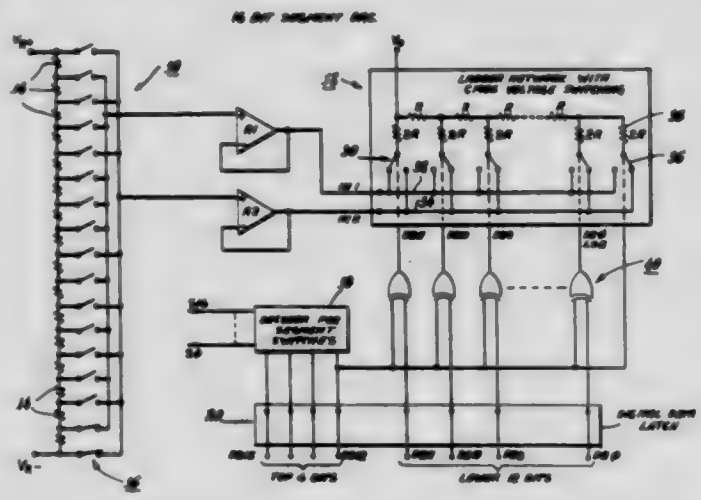
Michael G. Tuthill, Limerick, Ireland, assignor to Analog Devices, Incorporated, Norwood, Mass.

Continuation-in-part of Ser. No. 272,053, Jun. 9, 1981, Pat. No. 4,338,591. This application Mar. 29, 1982, Ser. No. 363,144

The portion of the term of this patent subsequent to Jun. 6, 1999, has been disclaimed.

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 DA 3 Claims



1. In a two-stage digital-to-analog converter wherein the first stage decodes a set of higher-order bits and the second stage decodes the remaining, lower-order bits, said second stage including an output generating circuit, said first stage comprising a series-connected string of resistors energized, in operation, by a reference voltage and including first switch means responsive to said higher-order bits for stepping up or down the string of resistors to make first and second connections respectively to any pair of adjacent nodal points of said resistor string to produce between first and second reference leads any of the voltages appearing across the resistors of said string;

first and second buffer amplifiers having input circuits connected to said reference leads respectively responsive to the selected nodal point voltages to develop a voltage for the input of said second-stage of the converter;

said first switch means being operable at each step up (or down) the resistor string to interchange the roles of said buffer amplifiers at each step up (or down) the resistor string by switching the connection to only one of said nodal points, connecting the corresponding buffer amplifier to the nodal point next beyond the nodal point to which the other buffer amplifier is connected while leaving said other buffer amplifier with its connection to the resistor string unchanged, whereby said buffer amplifiers are alternatingly connected to the successive nodal points of said resistor string as said first switch means steps the connections up (or down) the string; and

means operable to interchange the roles of the buffer amplifiers relative to the output signal generating circuit of said second stage of the converter for each step up (or down) the resistor string effected by said first switch means;

the interchanged roles of said buffer amplifiers produced by said alternating connection of said buffer amplifiers to said successive nodal points serving to minimize differential non-linearity errors which otherwise could occur due to offset mismatch between the buffer amplifiers.

4,491,826

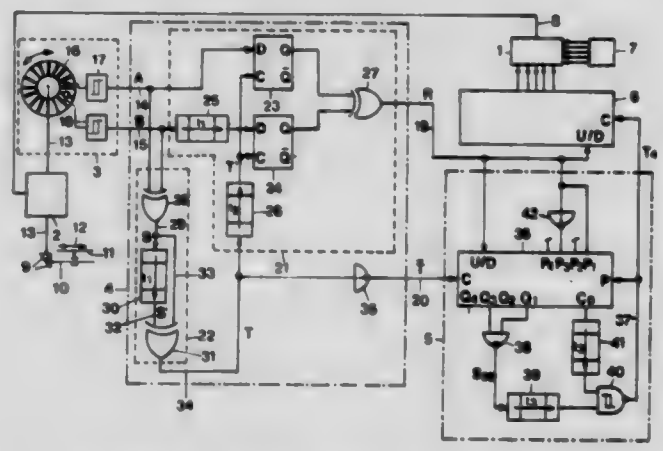
INCREMENTAL DIGITAL CONVERTER

Egon Krogh, Sonderborg, and Knud Blohm, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed May 16, 1983, Ser. No. 495,090

Int. Cl.³ H03D *13/00*; H03K *13/02*

U.S. Cl. 340—347 P 3 Claims

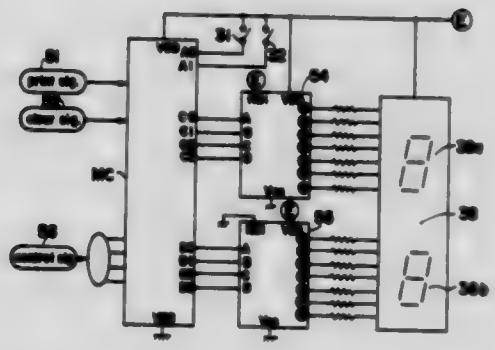


1. An incremental digital converter for converting two phase displaced signals of a pulse generator, which signals represent the position and direction of an object moved in two opposite directions, to a parameter which represents said position digitally, comprising, a reversible position counter, a signal generator which derives from said phase displaced signals a direction signal for determining the counting direction of said counter and timing pulses to be counted by said counter, said signal generator having flank detector means for deriving said timing pulses from each flank of one of said phase displaced signals, said signal generator having direction discriminator means utilizing said timing pulses and said phase displaced signals to derive said directional signal, said direction discriminator means having dual latch means, said phase displacement signals being respectively connected to the inputs of said latch means, a delay element between one of said latch means and one of said phase displacement signals, summating means receiving the outputs of said latch means, said flank detector means also producing said timing pulse from each flank of each of said phase displaced signals for the timing inputs of said latch means, a frequency divider dividing said timing pulses by four disposed between the output of said flank detector means and the timing pulse input of said reversible position counter.

4,491,827
PRESET COUNTER APPARATUS FOR COPYING MACHINES AND THE LIKE

Masamichi Sugiura, and Tsuneo Kitagawa, both of Aichi, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 3, 1981, Ser. No. 327,255
Claims priority, application Japan, May 12, 1980, 55-172223; May 12, 1980, 55-172224; May 12, 1980, 55-172225; May 12, 1980, 55-172226; Mar. 10, 1981, 56-34947
Int. Cl.³ G06F *3/02*; G03G *15/00*
U.S. Cl. 340—365 R
4 Claims



1. A preset counter apparatus for copying machines and the like comprising:

display means for displaying numerical values at least in the digit positions of units and tens;

a first input key provided in a corresponding relation to the digit position of units for generating a signal when operated;

a second input key provided in a corresponding relation to the digit position of tens for generating a signal when operated;

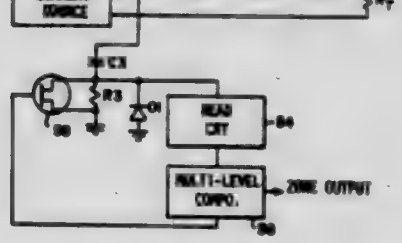
display control means, responsive to said signals generated by the first and second keys, for varying the numerical values of each digit position of units and tens stepwise respectively; and

control means for setting "0" in the digit position of units when generating said signal of said second input key regardless of said value displayed in said digit position of units.

4,491,828
TWO-WIRE MULTI-ZONE ALARM SYSTEM

Aaron A. Galvin, and Roy L. Harvey, both of Lexington, Mass., assignors to American District Telegraph Company, New York, N.Y.

Division of Ser. No. 951,765, Oct. 16, 1978, Pat. No. 4,359,721. This application Sep. 2, 1982, Ser. No. 414,431
Int. Cl.³ G08B *25/00, 26/00*
U.S. Cl. 340—525
2 Claims



1. Apparatus for use in a multi-zone alarm system having a two-wire alarm loop, a plurality of alarm sensors in series with the loop, and a processor at a central location coupled to the loop and operative to indicate an alarm condition in response to alarm signals from any of said sensors, comprising:

a constant current source serially connected to the alarm loop and operative to provide a predetermined current signal having a constant non-zero magnitude in the loop;

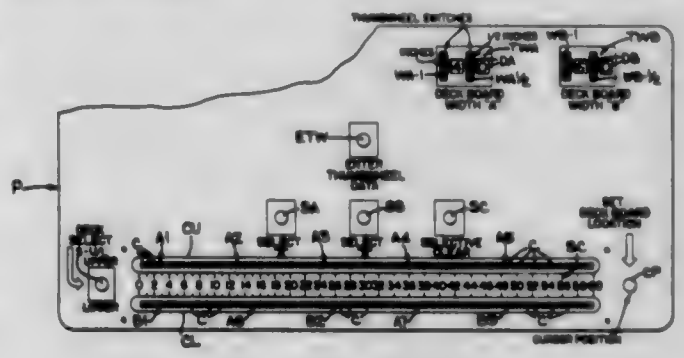
a plurality of networks, each consisting of a resistor of selected different resistance value connected across a respective alarm sensor and operative in response to its sensor actuation and to the constant non-zero magnitude of said loop current signal to provide a signal pulse for transmission in the loop to the central location processor, the signal pulse having a selected different non-zero magnitude to denote the identity of the actuated sensor; and

circit means at the central location processor capacitively coupled to said loop operative in response to the particular different non-zero magnitude of the signal pulses from any or more of the networks to provide a signal indication of the zone in which alarm actuation has occurred.

4,491,829
DISPLAYING ARTICLE CONFIGURATION DATA

Louis S. McTamaney, Cupertino, Calif., assignor to The Salk Institute for Biological Studies, San Diego, Calif.

Filed Jan. 18, 1982, Ser. No. 340,583
Int. Cl.³ G06F *15/20*; G01C *3/00*
U.S. Cl. 364—562
19 Claims



1. An article configuration display system comprising a row of electric display cells with each cell representing a fractional length of the length of the row, means for selectively lighting spaced groups of cells in the row as representations of article positions and article widths at said positions along the row, said selective cell lighting means comprising a configuration data storage register, means for selectively entering cell group length data into said configuration data register in binary form, a data transfer register for receiving binary configuration data from said data storage register, means for outputting the data from said data transfer register for lighting corresponding cells, selectively movable cursor means for entering article position data into said transfer register and blanking means for temporarily removing said article width data from said transfer register when the cursor position data entering said transfer register is changing.

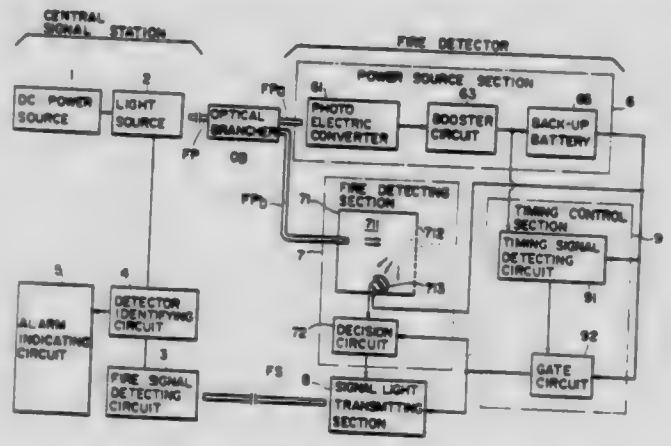
4,491,830
FIRE ALARM SYSTEM

Atsushi Miyabe, Kanagawa, Japan, assignor to Hochiki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 208,329, Nov. 19, 1980,. This application May 10, 1983, Ser. No. 493,246
Claims priority, application Japan, Dec. 1, 1979, 54-166929[U]
Int. Cl.³ G08B *17/00, 17/10*
U.S. Cl. 340—584
11 Claims

1. A fire alarm system comprising fire detectors for detecting a physical change caused by fire and a central signal station connected to the fire detectors so as to receive a first signal from the detectors to raise an alarm, said central signal station and said fire detectors being connected to each other through optical fiber cables; said central signal station including a light source for transmitting power light superposed with timing signals to said detectors through said optical fiber cables, a fire signal detecting circuit for detecting a fire signal by converting

a fire signal light transmitted from a detector through said optical fiber cables into an electric signal, an alarm indicating circuit to be operated by the fire signal for giving the alarm of fire and a d.c. power source for supplying power to the light source and the circuits in the central signal station; said light source of the central signal station including a plurality of light emitting circuits for emitting power light via respective optical fiber cables to respective detectors, and a timing circuit for sequentially outputting timing signals for the respective light emitting circuits so as to superpose the timing signals on the power light; said fire detectors each including a power source section comprised of a photoelectric converter for converting said power light into electricity, a booster circuit for boosting the output from said photoelectric converter and a back-up



battery, a fire detecting section for detecting a physical change caused by fire and outputting a fire signal, a fire signal transmitting section for converting said fire signal into fire signal light and transmitting said fire signal light to the central signal station and a timing control section for detecting said timing signals and controlling the operation timing of said fire detecting section and said first signal light transmitting section; said timing control section of each of the detectors including a timing signal detecting circuit and a gate circuit inserted and connected in a power line connected between said back-up battery and said signal light transmitting section and opened or closed in response to the detected timing signal to connect or disconnect the power supply to the succeeding circuits for controlling the operation timing thereof.

4,491,831

METHOD AND APPARATUS FOR ANALYSIS OF INFORMATION ABOUT YARN EVENESS

Shojo Sakai, Kyoto; Hisaaki Kato; Yoshihiko Samoto, both of Shiga, and Kenichi Inada, Kyoto, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

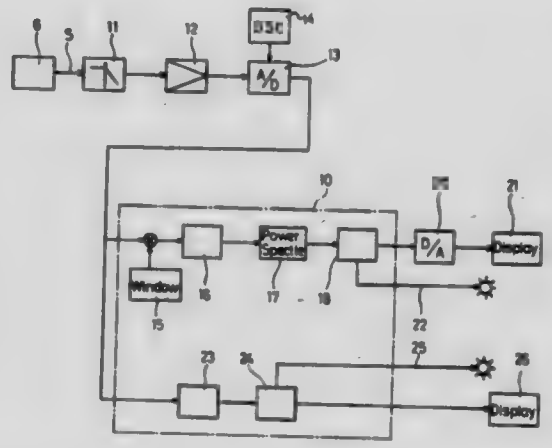
Filed Dec. 28, 1981, Ser. No. 335,213
Claims priority, application Japan, Oct. 9, 1981, 56-161869
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—677 13 Claims

1. A device for the real time analysis of the uneveness of yarn being fed through a textile machine comprising:

detection means for observing said yarn and producing a signal in response to the degree of uneveness of said yarn being fed through said machine;

first analysis means, connected to said detection means, for interpreting said signal and generating information identifying yarn uneveness which is cyclic in nature which may be used to identify the component of said textile machine that is causing said yarn uneveness; and

second analysis means, connected to said detection means, interpreting said signal and generating information identifying yarn uneveness which is non-cyclic in nature which may be used as a comparison of the uneveness of the yarn



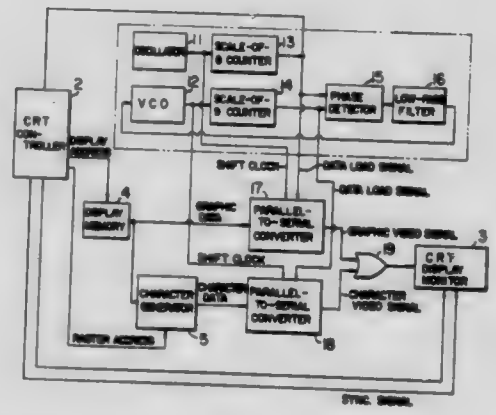
being fed through said machine against a known irregularity standard.

4,491,832

DEVICE FOR DISPLAYING CHARACTERS AND GRAPHS IN SUPERPOSED RELATION

Kazuyuki Tanaka, Kamakura, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 1, 1982, Ser. No. 344,745
Claims priority, application Japan, Feb. 13, 1981, 56-20617
Int. Cl.³ G09G *1/16*
U.S. Cl. 340—721 2 Claims



1. A display device comprising:

display memories for storing character codes and graphic images corresponding to characters and graphs to be displayed in superposed relation on a screen of a raster-scan type cathode ray tube;

first and second parallel-to-serial converters for reading out plural-bit parallel graphic data and plural-bit parallel character data from said display memories in synchronism with a raster-scan timing of said tube in order to output graphic serial data and character serial data respectively;

logic means for logically combining the output graphic serial data and character serial data to produce a video signal to be applied to said cathode ray tube;

a fixed oscillator for generating and applying a first parallel-to-serial conversion control clock signal to said first parallel-to-serial converter;

a PLL circuit for generating and applying a second parallel-to-serial conversion control clock signal to said second parallel-to-serial converter;

means for generating first and second data load signals to cause respective data read-out operations of said first and second converters and for synchronizing said PLL circuit by comparing generated first and second data load signals to selectively produce any of a plurality of numbers of displayed character dots which may be different from a number of displayed graphic dots, whereby the character

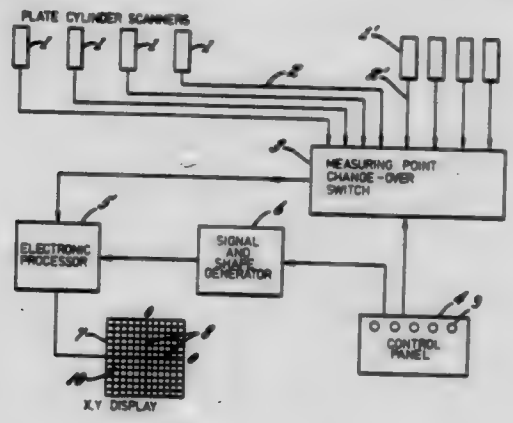
font of displayed characters can be freely changed irrespective to graphic dots.

4,491,833

EQUIPMENT FOR INDICATION OF THE ELECTRICALLY MEASURABLE POSITIONS OR ADJUSTMENTS OF INDIVIDUAL UNITS REQUIRED FOR THE PRINTING PROCESS

Edgar F. Schoneberger, Seligenstadt, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 277,955, Jun. 26, 1981,. This application Feb. 12, 1982, Ser. No. 348,495
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1980, 3024452
Int. Cl.³ G09G 1/00
U.S. Cl. 340—721 12 Claims



1. A remote monitoring system for at least one rotary printing press having a plurality of plate cylinders, said remote monitoring system comprising, in combination,

(a) a plurality of optical scanners sensing the axial and peripheral displacements of the printing plates on said plate cylinders and generating respective electronic measurement signals indicating said axial and peripheral displacements,

(b) input selector means for receiving an indication of a group of plate cylinders to be remotely monitored,

(c) switching means, responsive to the indication received by the input selector means and having a plurality of output lines, for switching to the output lines the electronic measurement signals indicating the axial and peripheral displacements of the selected group of plate cylinders to be remotely monitored,

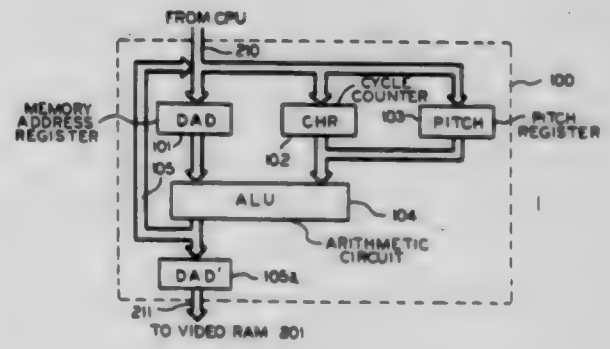
(d) electronic display means for displaying on a two-dimensional display area at least one predefined visual symbol for each plate cylinder in the selected group of plate cylinders, said electronic display means including means responsive to the electronic measurement signals on the output lines of said switching means for positioning the visual symbols for the respective plate cylinders at respective positions, along a first direction, responsive to the respective electronic measurement signals representing said axial displacements and at respective positions, along a second generally orthogonal direction, responsive to the respective electronic measurement signals representing said peripheral displacements.

4,491,834

DISPLAY CONTROLLING APPARATUS

Tetsuji Oguchi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 304,583, Sep. 22, 1981, abandoned. This application Apr. 12, 1984, Ser. No. 598,360
Claims priority, application Japan, Sep. 22, 1980, 55-132009
Int. Cl.³ G09G 1/16
U.S. Cl. 340—726 4 Claims



1. An apparatus comprising:

display means having a display screen with a plurality of horizontal scanning lines, each horizontal scanning line having a plurality of display locations,

memory means for storing the display information which is to be displayed on said display means and having a memory capacity which is larger than a display capacity that can be displayed on the entirety of said display screen,

means for writing said display information into said memory means,

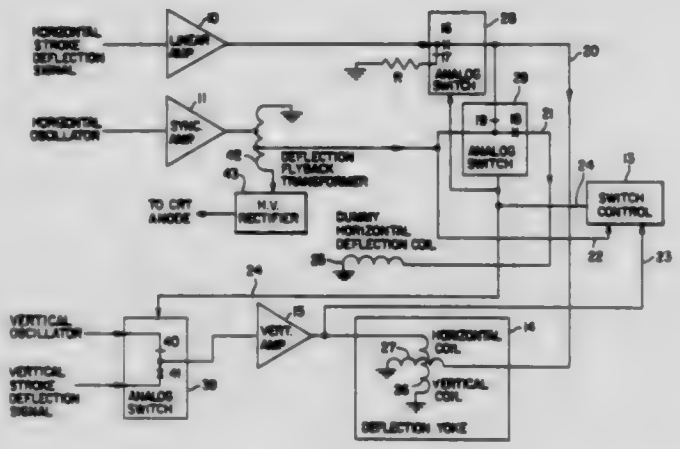
memory address generator means for generating addresses to read said display information stored in said memory means out of said memory means, said memory address generator means including first address register means for storing an address of a start location on a first horizontal scanning line of said display information which is to be displayed at a display screen, counter means for increasing its content by +1, first adder means for adding the content of said counter means to said address stored in said first address register means to produce a plurality of continuous addresses subsequent to the address stored in said first register, display information stored at locations subsequent to the start location on the same horizontal scanning line being accessed by said plurality of continuous addresses, detecting means for detecting when the number of said continuous addresses produced by said first adder means reaches a predetermined number, second register means for storing data which is to be used to produce a new display start address for a next horizontal scanning line which is positioned below said first horizontal scanning line, said new display start address designating the display information to be displayed at the display start location on said next line, second adder means for adding said data stored in said second register means to said address stored in said first register in response to the output of said detecting means, and means for supplying the output of said second adder to said first register means to change the content of said first register means from the address of a display information to be displayed at a display start location on one horizontal scanning line to the address of a display information to be displayed at a display start location on the next horizontal scanning line, and

read-out means for reading out the display information from said memory means at the address designated by said first register means and said first adder means.

4,491,835
RASTER AND STROKE WRITING DEFLECTION AMPLIFIER ARRANGEMENT

Mitchell Aron, Harrington Park, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Mar. 24, 1982, Ser. No. 361,316
Int. Cl.³ G09G 1/04
U.S. Cl. 340—739 8 Claims



1. A deflection amplifier arrangement for a raster scan video display having a cathode ray tube (CRT) with a deflection yoke including horizontal and vertical deflection coils, said arrangement permitting raster scanning responsive to vertical and horizontal periodic scanning signals and raster scan writing of information is accomplished during raster scanning, said arrangement also permitting stroke writing of information responsive to vertical and horizontal stroke writing signals during the vertical retrace period between raster scanning periods, the amplifier arrangement comprising:

an inductor having an inductance substantially equal to that of the horizontal coil of said deflection yoke,

an amplifier amplifying said horizontal stroke writing signals applied to the horizontal coil of said deflection yoke during the vertical retrace period, and

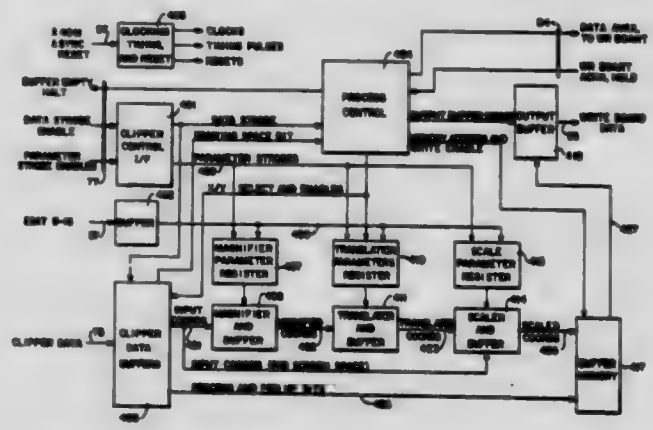
switch means that during raster scanning connects said horizontal scanning signals to said horizontal coil and said vertical scanning signals to said vertical coil and during the vertical retrace period connects the horizontal scanning signals to said inductor, said horizontal stroke writing signals to said horizontal coil and said vertical stroke writing signals to said vertical coil to accomplish stroke writing of information.

4,491,836
GRAPHICS DISPLAY SYSTEM AND METHOD INCLUDING TWO-DIMENSIONAL CACHE

Arthur J. Collmeyer, Saratoga; Jeffrey H. Hoel, Sunnyvale; Paul F. King, LaJolla; Donald O. Stanley, San Jose, and Roger Sturgeon, Santa Cruz, all of Calif., assignors to Calma Company, Sunnyvale, Calif.

Division of Ser. No. 125,843, Feb. 29, 1980, abandoned. This application Sep. 13, 1982, Ser. No. 417,647
Int. Cl.³ G09G 1/16
U.S. Cl. 340—747 9 Claims

1. A graphics image display system comprising vector memory means for storing vector data representing one or more graphics images to be displayed, raster memory means, means for rasterizing said vector data into said raster memory means thereby forming rasterized data, said means for rasterizing including writing means for writing the rasterized data into locations into said raster memory means within raster memory clock cycles of predetermined duration, said raster memory means including a plurality of memory cells wherein each memory cell represents a two-dimensional array of picture elements thereby facilitating rapid rasterization of horizontal, vertical and diagonal vector data, said writing means including means for generating multiple raster points in said matrix field thereby representing the location of two-dimensional straight line vectors and means for writing raster points within an m×n memory cell within said raster memory means in one of said

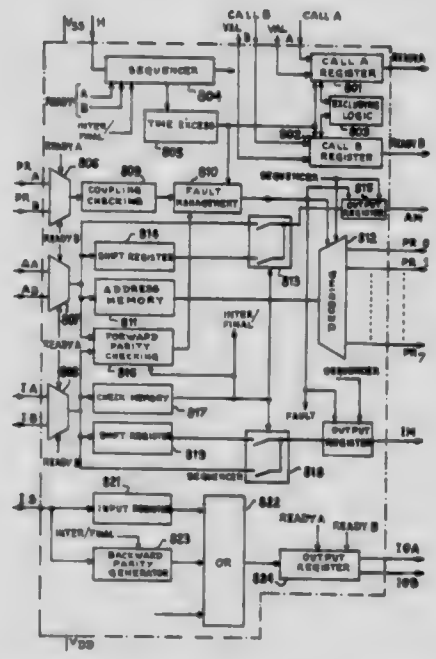


raster memory clock cycles and processor means for controlling the operation of said vector memory means, said raster memory means and said means for rasterizing.

4,491,837
LOGIC SELECTION MODULE

Claude Athénes; Francois Tarbouriech, and Gérard Poux, all of Colombes, France, assignors to Thomson-CSF Telephone, Colombes, France

Filed Mar. 23, 1982, Ser. No. 361,812
Claims priority, application France, Mar. 31, 1981, 81 06429
Int. Cl.³ H04Q 11/04
U.S. Cl. 340—825.02 8 Claims



1. A logic selection module for transmitting outgoing signals from one upstream device out of two to one downstream device out of eight, comprising means for receiving a call signals from the upstream devices, detecting the first call and transmitting a ready signal to the first upstream calling device, means for receiving incoming coupling, address and data signals transmitted by the upstream devices and selecting under the control of the ready signal the signals transmitted by the first upstream calling device, means for decoding in the address signal the address of the downstream device to receive the signals to be transmitted, storing this address for the processing period of the logic selection module and transmitting to the thus selected downstream device an outgoing coupling signal, and means for blocking in the incoming address and data signal carrying both the information intended for the logic selection module and for the selected downstream device, and transmitting to the downstream device selected by the outgo-

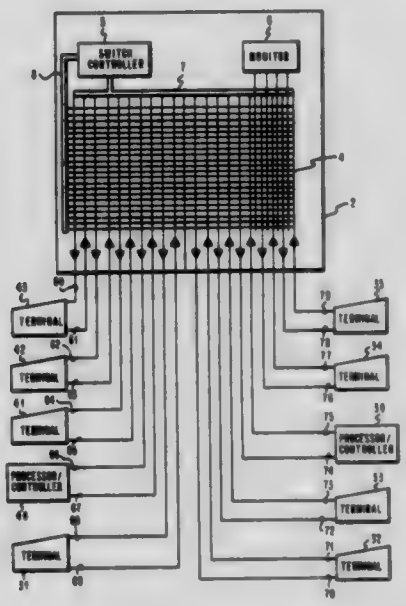
ing coupling signal, the information for use by the downstream device.

4,491,838

STARLOOP COMMUNICATION NETWORK AND CONTROL SYSTEM THEREFOR

Lynn P. West, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,654
Int. Cl.³ H04B *3/46*; H04J *3/14*; H04L *11/20*; H04Q *3/54*
U.S. Cl. 340—825.05 6 Claims



6. A starloop communication system comprising in combination:

a plurality of terminals,

a central processing unit,

a starloop controller including a digital switch, a switch controller, and a monitor, wherein said digital switch and said switch controller are operable to connect said central processing unit and a first portion of said plurality of terminals into a loop network configuration and, with said monitor, automatically isolate terminals from said loop network configuration detected as failing to maintain a continuity of exchange of messages therein,

said starloop controller also being operable to connect said central processing unit and a second portion of said plurality of terminals into a star network configuration, and

said starloop controller also being operable to connect said central processing unit and a third portion of said plurality of terminals into a multidrop network configuration.

4,491,839

CMOS SELECTION CIRCUIT

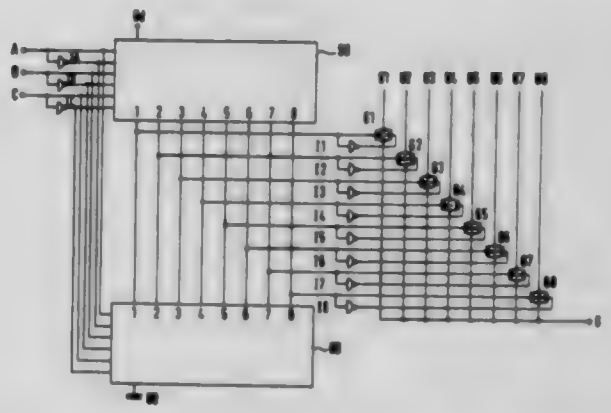
Fritz G. Adam, Freiburg, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 30, 1982, Ser. No. 373,818
Claims priority, application Fed. Rep. of Germany, May 21, 1981, 3120163
Int. Cl.³ H04Q *9/00*
U.S. Cl. 340—825.91 20 Claims

1. An integrated selection circuit for a number (N) of potentials (Ui . . .), which is integrated in a complementary insulated-gate field-effect transistor technique (CMOS selection circuit), comprising:

at least one transmission gate (G . . .) assigned to each of the N potentials (U . . .) whose switching section lies between the potential (U . . .) and the output (U) of the selection circuit, at least one transmission gate further comprising two control inputs,

the two control inputs of the respective transmission gate (G . . .) being connected either directly or via a respectively



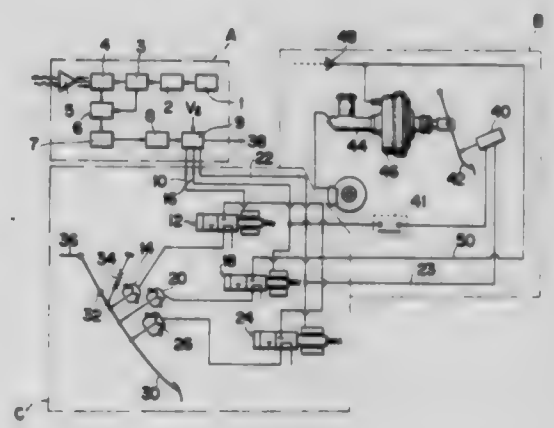
associated inverter (I . . .) to the corresponding output of a CMOS-1-ex-n-decoder.

4,491,840

INTERVEHICLE DISTANCE CONTROL SYSTEM FOR VEHICLES

Masao Nishikawa, Tokyo, and Takashi Aoki, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 5, 1982, Ser. No. 365,159
Claims priority, application Japan, Apr. 7, 1981, 56-52631
Int. Cl.³ G08G *1/00*
U.S. Cl. 340—903 8 Claims



1. An intervehicle distance control system for a vehicle, comprising:

signal generating means for generating, when there exists a possibility of collision between said vehicle and an interfering object ahead thereof, a control signal corresponding to the degree of said possibility;

accelerator means having an accelerator member for increasing the vehicle speed according to the amount of displacement in a predetermined operating direction of said accelerator member from an original position thereof;

reaction force means for urging said accelerator member in the direction opposite to said operating direction with a reaction force of a strength corresponding to said control signal;

said reaction force having a strength of substantially zero when said control signal is absent;

said control signal comprising a number of alerting signals, said number corresponding to said degree of said possibility of collision;

said reaction force means comprising at least one solenoid valve adapted to be activated by said control signal and at least one throttle controller adapted to provide said reaction force when said solenoid valve is active;

said solenoid valve including a first connection port connected to a negative pressure source, a second connection port communicating with the atmosphere, a third connec-

tion port connected to said throttle controller and switching means for connecting said third connection port selectively to said first and second connection ports;

said throttle controller including a diaphragm member defining a pressure chamber communicating with said third connection port and a rod member interlocked with said diaphragm member; and wherein:

the maximum number of said alerting signals is n and there are n said solenoid valves and n said throttle controllers as respectively ordered and with respect to an integer $i \leq n$, said solenoid valves and said throttle controllers up to the i-th order become active when said number of said alerting signals is i.

4,491,841

SELF-ADJUSTING INDUCTIVE OBJECT-PRESENCE DETECTOR

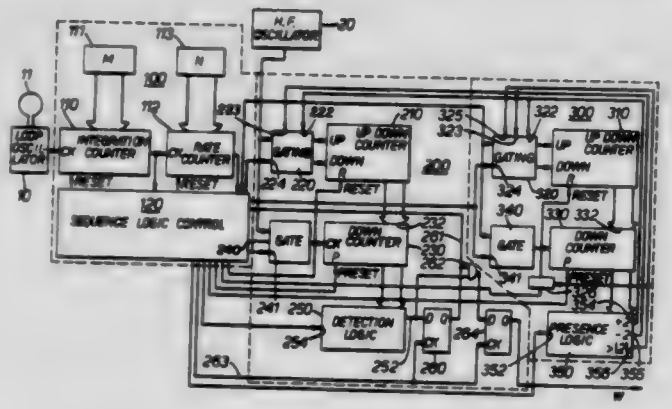
Michael A. G. Clark, Hampshire, England, assignor to Sarasota Automation Limited, Winchester, England

Continuation of Ser. No. 250,783, Apr. 3, 1981, abandoned. This application Sep. 14, 1983, Ser. No. 532,087

Int. Cl.³ G08G 1/00

U.S. Cl. 340—939

20 Claims



1. A method of detecting the arrival of an object in the vicinity of a sensing element sensitive to such object and subject to ambient change, comprising:

sampling the state of the element at successive occasions to obtain sample values dependent on the state of the element;

establishing at a first rate a first succession of sample values each being superseded by the next as a reference value;

establishing at a second rate greater than the first rate a second succesion of sample values and comparing each of these sample values with the existing reference value, and

indicating the presence of an object in the vicinity of the loop upon the difference between the existing reference value and a sample value of the second succession compared therewith exceeding a selected threshold.

4,491,842

FROZEN WAVE GENERATOR JAMMER

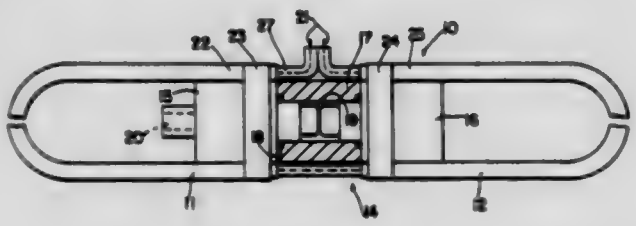
Ronald J. Gripshover, and Larry F. Rinehart, both of King George, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 9, 1981, Ser. No. 252,641

Int. Cl.³ G01S 7/38

U.S. Cl. 343—18 E

9 Claims



1. An improved high frequency square wave pulse generator for generation of pulses of energy in a predetermined frequency range for use in the jamming of radar, data links, voice communications, or other radio frequency signals, said improved high frequency square wave pulse generator being of the type having at least one dipole configured transmission line including inner and outer conductors separated by an insulator and being formed into oppositely disposed first and second half loops so as to form a dipole and configuration for storage of the pulses of energy, wherein the improvement comprises:

a single spark gap switch device operatively connected to said dipole configured transmission line such that said inner conductor thereof is continuous throughout said oppositely disposed first and second half loops from one side of a predetermined load device through said first half loop via said single spark gap switch and through said second half loop via said single spark gap switch to the other side of the predetermined load; such that one half of said outer conductor corresponding to said first half loop farthest from the predetermined load device is electrically connected to a first electrode of said single spark gap switch device and the other half of said outer conductor corresponding to said second half loop farthest from the predetermined load device is electrically connected to a second electrode of said single spark gap switch device; and such that the one half of said outer conductor corresponding to said first half loop nearest to the predetermined load device is connected to a first predetermined voltage potential and the other half of said outer conductor corresponding to said second half loop nearest to the predetermined load device is connected to a second predetermined voltage potential.

4,491,843

PORTABLE RECEIVER WITH HOUSING SERVING AS A DIPOLE ANTENNA

Albert Boubouleix, Paris, France, assignor to Thomson-CSF, Paris, France

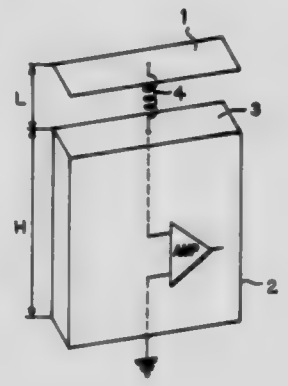
Filed Jan. 20, 1982, Ser. No. 341,120

Claims priority, application France, Jan. 23, 1981, 81 01291

Int. Cl.³ H01Q 1/24, 9/16

U.S. Cl. 343—702

5 Claims



1. An antenna for equipping a portable radio receiver wherein said antenna comprises an electric dipole with one pole of said electric dipole comprising a metal box which contains all of the components of said radio receiver and which forms a reference potential plane having zero electric field for said receiver and wherein the other pole of said electric dipole is a flat metal plate with said metal plate being electrically connected to the electronics components of said radio receiver and wherein said metal plate is fixedly facing and spaced from a surface of said metal box and wherein the gap of the spacing between said metal plate and said surface of said metal box is of a value such that it is much less than the wave length of said radio receiver whereby said dipole formed from said metal box and said flat plate is such that the location of said reference potential plane of said one pole is equal to half the distance

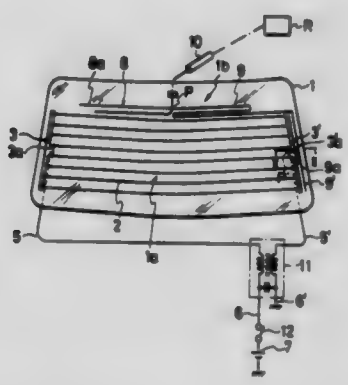
between said surface of said metal box and the surface which is opposite said surface of said metal box.

4,491,844

AUTOMOBILE ANTENNA WINDSHIELD

Masahiro Tsuchie; Tomihiko Takeoka, and Takanobu Nomura, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jul. 22, 1982, Ser. No. 400,677
Claims priority, application Japan, Jul. 23, 1981, 56-116273
Int. Cl.³ H01Q *1/32*
U.S. Cl. 343—713 7 Claims



1. An automobile antenna device comprising a first antenna section provided on a windshield glass for receiving an AM mode wave band, power supply terminal means connected with one end of said first antenna section,grounding terminal means connected with the other end of the first antenna section and having a grounding lug portion which is adapted to be connected with ground, means for connecting an electric power source to said power supply terminal means so that defogging current is supplied to the first antenna section, a second antenna section provided on the windshield glass for receiving an FM mode wave band, a connecting section having one end connected with said second antenna section and the other end connected with said grounding terminal means at least in the vicinity of said grounding lug portion, said connecting section constituting a part of a stub portion of said second antenna section as well as a reactance circuit, said first antenna section including a plurality of wire elements extending transversely substantially across the windshield glass, said power supply terminal means including an elongated terminal connected with one of the ends of said wire elements, said grounding terminal means including an elongated terminal connected with the other of the ends of said wire elements, said elongated terminals extending substantially along opposite side edge portions of the windshield glass, said terminal constituting the grounding terminal means being of a substantially uniform width and formed with said grounding lug portion.

4,491,845

WIDE ANGLE PHASED ARRAY DOME LENS ANTENNA WITH A REFLECTION/TRANSMISSION SWITCH

Carl Rothenberg, N. Bellmore, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

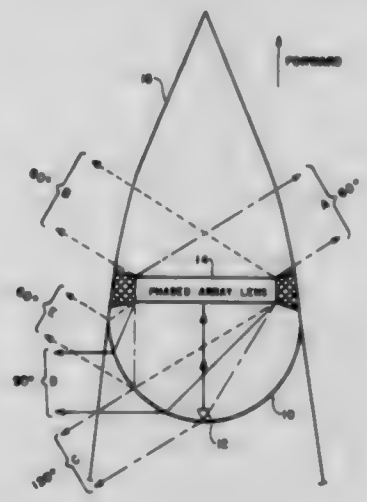
Filed Nov. 23, 1982, Ser. No. 444,003
Int. Cl.³ H01Q *19/06, 3/46, 1/28*
U.S. Cl. 343—754 7 Claims

1. An antenna arrangement for directing a collimated beam of radio frequency energy, such arrangement comprising the combination of:

a stationary, dome lens antenna having substantially ogive geometry;

a beam forming means, including a feed horn, situated at the zenith of said dome antenna for forming a beam of radio frequency energy;

a phased array antenna situated at the opening of said dome, said phased array antenna fed by said beam of radio frequency energy and having beam directing means for creating a transmission mode of operation whereby a beam of radio frequency energy is produced in free space, or, alternately, for creating a reflection mode of operation



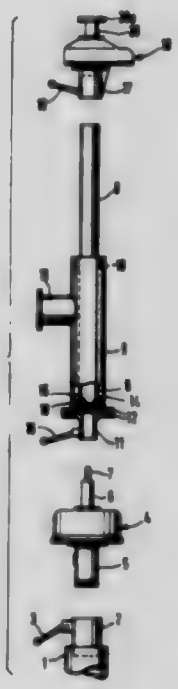
whereby a beam of radio frequency energy is produced and directed into said dome whereby said beam undergoes refraction as it propagates through said dome lens antenna and into free space.

4,491,846

ARRANGEMENT FOR HOLDING A PLURALITY OF VERTICALLY SUPERIMPOSED ANTENNAS FOR ROTARY ADJUSTMENT

Heinrich Buse, Salzgitter, and Heinz-Joachim Schmidt, Liebenburg, both of Fed. Rep. of Germany, assignors to Salzgitter Maschinen und Anlagen Aktiengesellschaft, Salzgitter, Fed. Rep. of Germany

Filed Feb. 12, 1982, Ser. No. 348,458
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1981, 8105223[U]
Int. Cl.³ H01Q *3/02, 1/12*
U.S. Cl. 343—758 3 Claims



1. In combination with an upright mast, an arrangement for holding a plurality of vertically-spaced devices, especially antennas, on an upper end of the mast and for turning said devices relative to and independent from each other about the axis of the mast, said arrangement comprising a plurality of rotary drive means including a first rotary drive means adjacent the upper end of the mast and an uppermost drive means spaced farthest from said upper end, each of said rotary drive

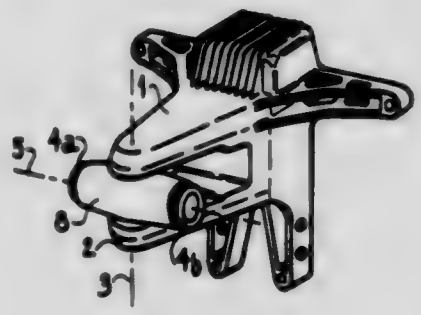
means including a stationary lower part, an upwardly extending hollow drive shaft and, with the exception of said uppermost drive means, also a stationary upper part extending through and projecting with a portion thereof beyond said hollow drive shaft; means for coaxially and releasably connecting said stationary lower part of said first rotary drive means to said upper end of said mast; at least one straight connecting tube and a carrier for a device coaxially mounted on said connecting tube turnable about the axis thereof; further means for coaxially and releasably connecting the hollow drive shaft of said first rotary drive means to a following connecting tube and said stationary upper part of said first drive means to a following carrier turnably mounted on said following connecting tube; and additional means for releasably connecting said stationary lower part of each following drive means to a preceding connecting tube and at least said hollow drive shaft of each following drive means to a carrier for the next following device.

4,491,847

DEVICE FOR ROTATING AN ELEMENT ABOUT TWO ORTHOGONAL AXES, APPLICATION TO THE ORIENTATION OF A RADAR ANTENNA

Bernard Estang, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 20, 1982, Ser. No. 341,119
Claims priority, application France, Jan. 20, 1981, 81 00946
Int. Cl.³ H01Q *3/08*
U.S. Cl. 343—765 4 Claims



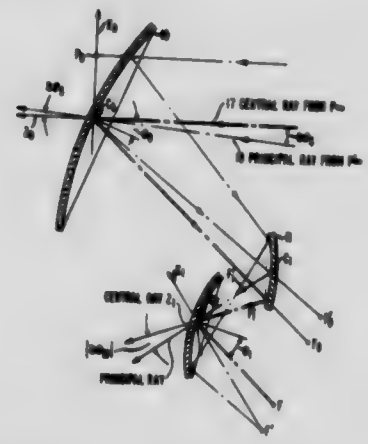
1. A device for rotating a driven element about mutually perpendicular first and second axes, said device comprising:
a stationary part;
a movable part rotatable about said first axis;
first and second elements in parallel with said second axis and supporting said driven element, said first and second elements being rotatably mounted within said movable part;
first and second motor drive mechanisms in said stationary part;
first transmission means mounted in said stationary part and rotatable relative thereto said first transmission means being connected to said movable part for rotating said movable part about said first axis and thus rotating said driven element about said first and second axes and being coupled to said first motor drive mechanism;
second transmission means mounted in said stationary part and extending into said movable part, said second transmission means being rotatable relative to both said stationary and movable parts and being coupled to said second motor drive mechanism; and a third transmission means rotatably mounted in said movable part, said thrid transmission means being connected to said second transmission means and rotating said first and second elements about said second axis.

4,491,848

SUBSTANTIALLY FREQUENCY-INDEPENDENT ABERRATION CORRECTING ANTENNA ARRANGEMENT

Corrado Dragone, Little Silver, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 30, 1982, Ser. No. 412,792
Int. Cl.³ H01Q *19/19*
U.S. Cl. 343—781 P 2 Claims



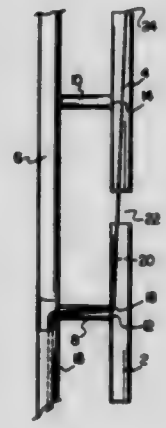
1. An antenna arrangement comprising:
an offset main reflector including a spherical reflecting surface capable of bidirectionally reflecting a beam of electromagnetic energy between a focal point and a far field area of the main reflector along a feed axis of the antenna arrangement;
a first subreflector disposed along the feed axis of the antenna arrangement near the focal point of the main reflector capable of forming an image of the reflecting surface of the main reflector at a conjugate image surface;
at least one feed disposed along the feed axis of the antenna arrangement capable of launching or receiving a beam of electromagnetic energy; and
a second subreflector disposed along the feed axis of the antenna arrangement between the at least one feed and the first subreflector and centered on the image of the main reflector at the conjugate image surface formed by the first subreflector, the second subreflector including a reflecting surface shaped to remove aberrations caused by the offset main reflector from reaching the at least one feed.

4,491,849

RADIO ANTENNA

William V. Tilston, P.O. Box 550, Kemptville, Ontario, Canada (K0G 1J0), and Stephen E. Tilston, General Delivery, Oxford Mills, Ontario, Canada K0G 1S0

Filed Jan. 21, 1982, Ser. No. 341,348
Int. Cl.³ H01Q *1/12, 9/34*
U.S. Cl. 343—791 14 Claims



1. A radio antenna comprising:

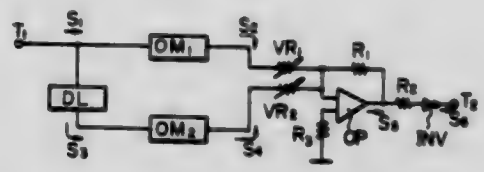
a mast;
a pair of conductive supports mounted on said mast;
a pair of radiating elements, each said radiating element being joined at a midpoint thereof to a respective support for mounting on said mast, said elements oriented in a plane and having one end of one element adjacent to one end of the second element;
a coaxial feeder having an outer conductor joined to the first element of said pair of elements at a junction of said first element with a respective support and having a center conductor extending to a predetermined feedpoint on the second of said elements, said predetermined point being that at which said center conductor will be substantially impedance matched with the antenna; and
wherein the spacing of a gap between the adjacent ends of said first and second elements is such that said elements are fed by said feedpoint across said gap to provide a matched output of said pair of elements having a desired beam tilt.

4,491,850
ANTENNA FORMED OF SERIES OF METALLIC AND NON-METALLIC CONDUCTIVE SECTIONS
David Cutler, 660 Camellia Ct., Plantation, Fla. 33317
Filed Jul. 20, 1981, Ser. No. 284,635
Int. Cl.³ H01Q *9/30*
U.S. Cl. 343—900 4 Claims



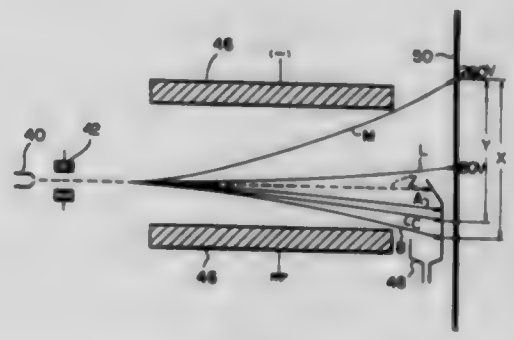
1. An antenna comprising at least one solid, unitary, discrete metallic segment, and at least one similar solid, unitary, discrete, non-metallic, conductive segment, each segment having a longitudinal direction, and a longitudinally opposite pair of ends disposed along the longitudinal direction, wherein:
the antenna is formed by joining the at least one metallic segment and the at least one non-metallic segment into a single elongated member, the elongated member having a longitudinal direction coincident with the longitudinal direction of each discrete segment.

4,491,851
METHOD AND CIRCUIT FOR DRIVING AN INK JET PRINTER
Tsuneo Mizuno, Yokohama; Shigeru Yoshikawa, Tokyo, and Tadashi Matsuda, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Jul. 11, 1980, Ser. No. 168,323
Claims priority, application Japan, Jul. 18, 1979, 54-90447
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—1.1 5 Claims



1. A method for driving an ink jet printer having a pressure chamber containing ink, an ink nozzle connected to the pressure chamber through which the ink is ejected, and an electro-mechanical transducer for transforming an electrical signal applied thereto into a mechanical deformation thereof and for ejecting the ink from the ink nozzle in dependence upon the mechanical deformation, thereby to apply an ink droplet onto a medium to be printed, said method comprising:
supplying a first electrical pulse to said electro-mechanical transducer thereby deforming said electro-mechanical transducer and causing the ink droplet to be ejected from the ink nozzle; and
supplying a second successive electrical pulse to said electro-mechanical transducer before the ink droplet is separated from the remaining ink in the pressure chamber, where the second electrical pulse has a smaller peak value than the first electrical pulse and the peak values of the first pulse and the second pulse are approximately in the ratio of four to three, respectively, thereby applying additional pressure to a tail of the ink droplet.

4,491,852
INK JET PRINTING APPARATUS USING GUARD DROPS
Koichiro Jinnai, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Jun. 30, 1983, Ser. No. 509,392
Claims priority, application Japan, Jul. 2, 1982, 57-116070; Jul. 20, 1982, 57-126028
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 12 Claims

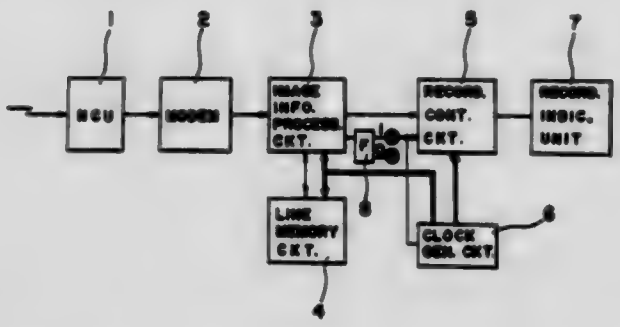


1. An ink jet printing apparatus in which an ink drop ejected from a head is charged and then deflected to print out a dot on a recording medium, said apparatus comprising:
guard drop inserting means for inserting at least one guard drop between adjacent ones of printing drops;
guard drop charging means for selectively charging the guard drop; and
control means for controlling said guard drop charging means in order to cause the guard drop charging means to charge the guard drop to a same polarity as the printing drops and to a predetermined level;
said predetermined level being selected to be high enough to prevent merging of the drops due to attraction and low enough to prevent spreading of the drops along the ink jet path due to repulsion.

4,491,853
IMAGE RECORDING ARRANGEMENT
Motohiko Hayashi, Ikoma; Toshiaki Karita, Sakurai; Matahira Kotani, Nara, and Hiromu Sasaki, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Oct. 13, 1982, Ser. No. 434,000
Claims priority, application Japan, Oct. 19, 1981, 56-167602; Oct. 19, 1981, 56-167603; Oct. 19, 1981, 56-167604; Oct. 19, 1981, 56-167605
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH 5 Claims

1. A recording head assembly for use in an image recording system, said recording head operable to record a predetermined number of bits in a single scan and operating in a rough density mode or a high density mode, comprising:
a plurality of recording elements substantially linearly aligned with a spacing sized to produce a dot density sufficient for said high density mode, said rough density mode having a dot density no more than one half the dot density in said high density mode, said recording elements being sufficient in number to produce an array of length

sufficient to scan said predetermined number of bits when in said rough density mode, adjacent elements being commonly utilized to form individual dots of the desired density in said rough density mode.

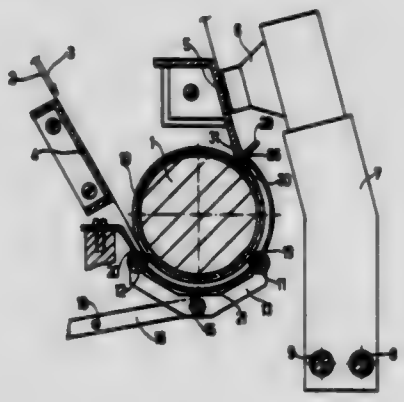


4,491,854

PRINTER WITH A GUIDE RULER FOR FLATTENING A RECORD CARRIER

Gerhard Habelt, and Franz Mucha, both of Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 29, 1982, Ser. No. 403,173
Int. Cl.³ G01D *15/24*
U.S. Cl. 346—136 5 Claims



1. A printer comprising:
an elongated circular cylindrical transport roller for transporting a record carrier about the roller,
an elongated flat supporting surface, having a long side adjoining said roller,
a printing head arranged to be displaceable along said surface for printing on a carrier passed between the head and the surface, and
a member arranged to press the carrier away from said printing head, disposed between the head and the roller,
characterized in that said surface lies in a plane which is a secant plane with respect to said roller, the intersection of said plane with said roller defining a segment of a circle having a height h less than half the radius r of the circle, and
the member presses against the record carrier at a location opposite the flat surface arranged so as to cause the carrier to lie flat against the surface at the location of printing without contacting the surface under the member.

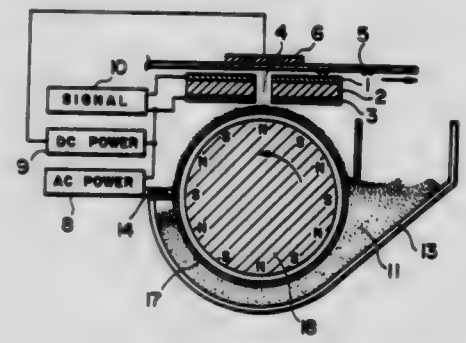
4,491,855

IMAGE RECORDING METHOD AND APPARATUS

Haruo Fujii, and Yujiro Ando, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1982, Ser. No. 416,051
Claims priority, application Japan, Sep. 11, 1981, 56-143205; Nov. 26, 1981, 56-190032
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—159 9 Claims

3. An image recording apparatus in which image recording is effected by controlling the passage of charged particles, said apparatus comprising:
control means formed with openings therein and having an electrode for controlling the passage of the charged particles by forming an electric field in said openings;
a charged particle supporting member for conveying the charged particles while holding them on the surface thereof to supply the charged particles to said control means;



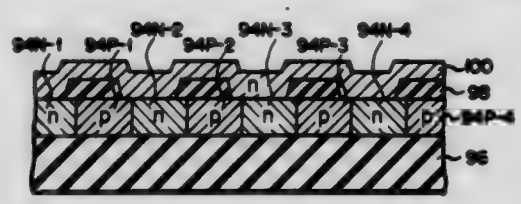
means for forming an alternating electric field between said control means and said charged particle supporting member;
an image receiving member disposed with said control means lying between said image receiving member and said charged particle supporting member; and
means for forming between said control means and said image receiving member an electric field which causes the charged particles to travel toward said image receiving member.

4,491,856

SEMICONDUCTOR DEVICE HAVING CONTACTING BUT ELECTRICALLY ISOLATED SEMICONDUCTOR REGION AND INTERCONNECTION LAYER OF DIFFERING CONDUCTIVITY TYPES

Hideharu Egawa, Tokyo; Yoshio Nishi, and Kenji Maeguchi, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 272,498, Jun. 11, 1981, abandoned.
This application Feb. 27, 1984, Ser. No. 582,864
Claims priority, application Japan, Jul. 15, 1980, 55-96752
Int. Cl.³ H01L *27/12, 29/78, 27/02, 23/48*
U.S. Cl. 357—4 11 Claims



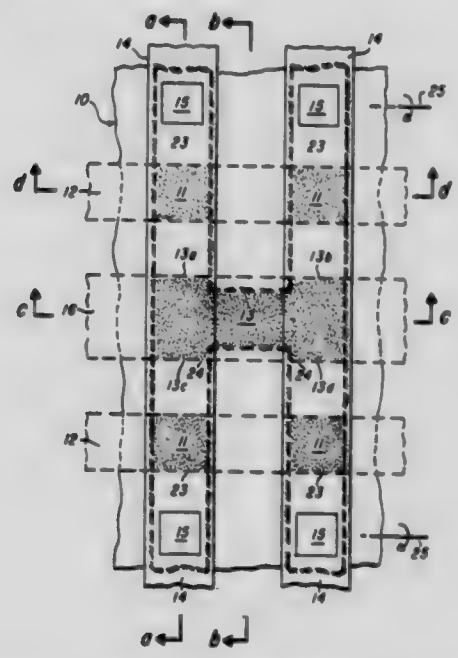
1. A semiconductor device comprising:
a. an insulating body;
b. a first semiconductor layer of first conductivity type formed on said insulating body;
c. a second semiconductor layer of second conductivity type opposite to the first conductivity type formed on said insulating body;
d. an interconnection layer of the second conductivity type formed in contact with at least the top surface of each of said first and second semiconductor layers; and
e. voltage means for applying a reverse bias voltage across a p-n junction formed between said first semiconductor layer and said interconnection layer for electrically isolating said first semiconductor layer and said interconnection layer from each other and electrically coupling said second semiconductor layer and said interconnection layer to each other.

4,491,857

AVALANCHE FUSE ELEMENT WITH ISOLATED EMITTER

David J. McElroy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 23, 1982, Ser. No. 361,011
Int. Cl.[3] H01L *29/70, 29/86, 29/78*
U.S. Cl. 357—23 7 Claims



1. A programmable semiconductor device comprising:
transistor means having a source, a drain, and a source-to-drain path at a face of a semiconductor body, said source-to-drain path extending in said face from said source to said drain, and a gate overlying said face between said source and said drain, said source functioning as an emitter of minority carriers,
a thin dielectric separating the drain from the gate at an interface between said drain and said source-to-drain path,
a thick field oxide area between the source and drain on said face above said source-to-drain path, and
means for applying a high voltage to the drain and a low voltage to the source and gate, said high voltage selectively breaking down the dielectric to create an electrical short between said drain and said gate, said short being created by avalanche breakdown of the junction at the drain and by minority carrier second breakdown, the value of said high voltage needed for breaking down the dielectric being reduced by field-plate effect to less than the dielectric-breakdown voltage of the thin dielectric.

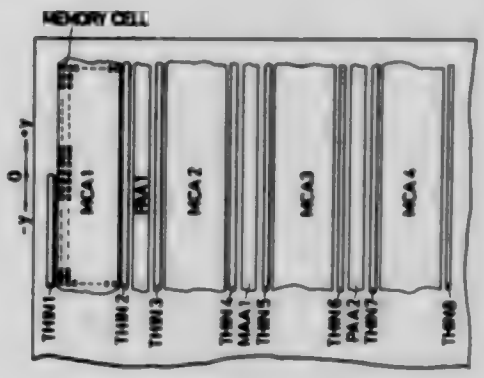
4,491,858

DYNAMIC STORAGE DEVICE WITH EXTENDED INFORMATION HOLDING TIME

Hiroshi Kawamoto, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 851,692, Nov. 15, 1977,. This application May 30, 1980, Ser. No. 154,826
Claims priority, application Japan, Nov. 19, 1976, 51-138341
Int. Cl.[3] H01L *27/02, 29/78, 29/04;* G11C *11/24*
U.S. Cl. 357—41 23 Claims

1. A semiconductor memory circuit device comprising
a memory cell array constructed of a plurality of memory cells arrayed in row and column at a predetermined area in a main surface of a semiconductor substrate having a first conductivity type,
said each memory cell including a capacitor which is made up of a semiconductor portion of said main surface of the semiconductor substrate serving as its one electrode and a conductor layer serving as its other electrode and formed on an insulating film formed over said portion of said semiconductor substrate and an insulated gate field-effect transistor;
and at least one semiconductor region having a second conductivity type opposite to said first conductivity type, extending substantially along and adjacently to said semi-



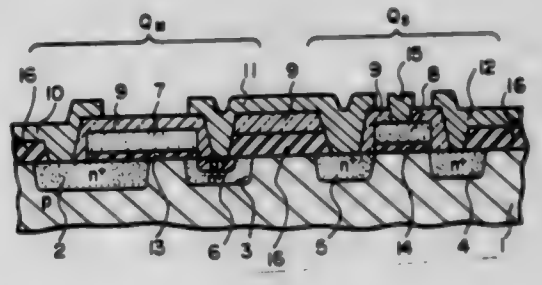
conductor portions of said capacitors of the memory cells arrayed at the most outside row or column of said memory cell array, and formed outside said predetermined area in said main surface of the semiconductor substrate, but not formed between said adjacent semiconductor portions of the capacitors arrayed at the adjacent rows or columns.

4,491,859

SEMICONDUCTOR NON-VOLATILE MEMORY DEVICE

Shinpei Hijiya, Sagamihara, and Takashi Ito, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 160,505, Jun. 18, 1980, abandoned.
This application Aug. 25, 1983, Ser. No. 526,219
Claims priority, application Japan, Jun. 18, 1979, 54-76569; Jul. 28, 1979, 54-96421
Int. Cl.[3] H01L *27/02, 29/78, 27/12;* G11C *11/40*
U.S. Cl. 357—41 14 Claims



1. A non-volatile memory cell comprising;
a memory transistor which includes a floating gate into which information in the form of stored charge can be read, written and erased, and a source, a drain and a channel beneath said floating gate and between said source and said drain, said channel having conductivity type opposite to that of said source and drain;
a first impurity region located in contact with said drain and electrically separated from said channel by said drain, said first impurity region having the same conductivity type as that of said channel;
one end of said floating gate being located over said drain at a position near the boundary between said drain and said first impurity region so that hot carriers can reach said floating gate from said boundary for the writing and erasing of said information;
avalanche means connected to said drain and to said first impurity region, for causing avalanche breakdown of the junction between said drain and first impurity region to provide said hot carriers for said writing and erasing of said information; and
control means for controlling said avalanche means and the potentials of said source, drain and floating gate so that

none of said hot carriers are provided when said information is being read;

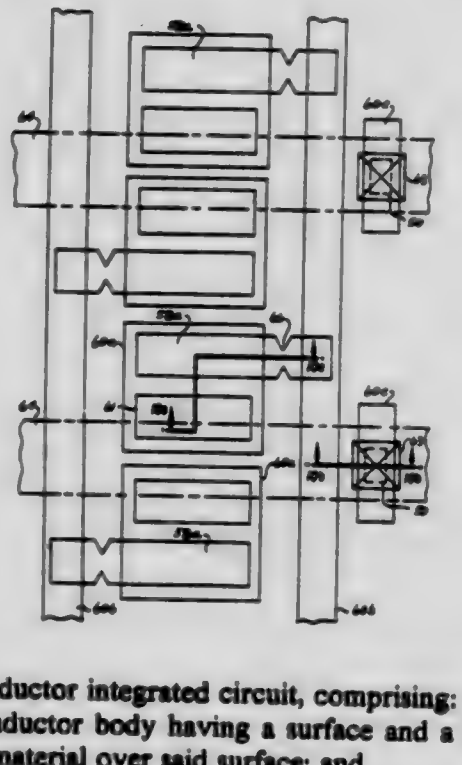
wherein said avalanche breakdown is caused for at least one of said writing and erasing of said information into said memory cell.

4,491,860

TIW_2N FUSIBLE LINKS IN SEMICONDUCTOR INTEGRATED CIRCUITS

Sheldon C. P. Lim, Sunnyvale, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Apr. 23, 1982, Ser. No. 371,147
Int. Cl.³ H01L 21/479, 21/70, 21/94, 23/54
U.S. Cl. 357—68 11 Claims



1. A semiconductor integrated circuit, comprising:

(a) a semiconductor body having a surface and a layer of insulating material over said surface; and

(b) a plurality of memory elements, each memory element including a semiconductive device within said body and a fusible link carried by said layer of insulating material and coupled in series with said semiconductive device, said fusible link being formed from titanium-tungsten-nitride.

4,491,861

TWO-CHANNEL TRANSMISSION OR STORAGE METHOD FOR DIGITAL COLOR TELEVISION SIGNALS

Josef Sochor, Dieburg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 24, 1982, Ser. No. 381,573
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1981, 3121847
Int. Cl.³ H04N 9/32, 9/38
U.S. Cl. 358—13 6 Claims

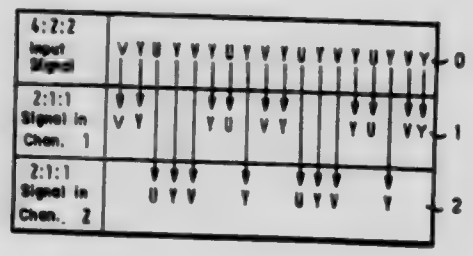
1. A method of transmitting or storing digitally coded color television signals of the separately coded type by means of two channel paths of reduced band-width, incorporating the improvements including the steps of:

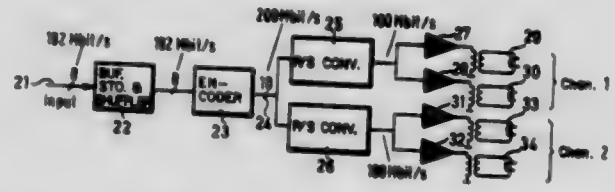
sampling the two components (U, V,) of the chrominance signal at a first frequency to produce two respective sampled chrominance signal components;

sampling the luminance signal (Y) at a second frequency which is twice as high as said first frequency to produce a sampled luminance signal component;

distributing said three sampled signal components (U, V, Y) in such a manner that

both channels are substantially equally used with respect to their transmission bandwidth, successive luminance information samples are alternately distributed to the two channels, samples of both sampled chrominance components are distributed to both channels at substantially the same rate;





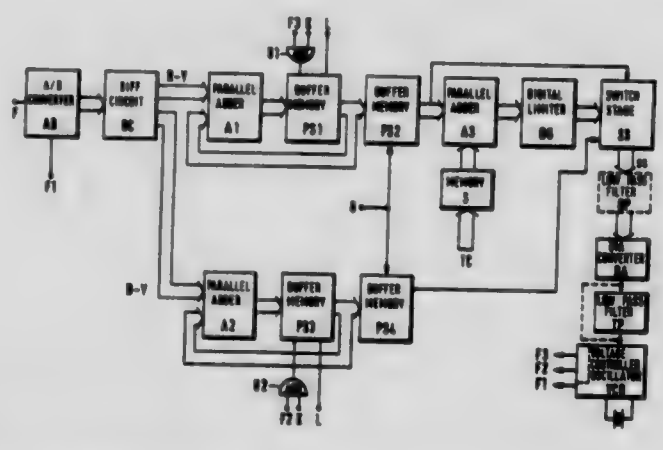
time-correlated pairs of samples respectively from said two sampled chrominance components always appear in the same channel.

4,491,862

COLOR-TELEVISION RECEIVER WITH AT LEAST ONE DIGITAL INTEGRATED CIRCUIT FOR PROCESSING THE COMPOSITE COLOR SIGNAL

Peter M. Flamm, Freiburg, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jun. 15, 1982, Ser. No. 388,775
Int. Cl.³ H04N 9/46, 9/02
U.S. Cl. 358—21 R 16 Claims



1. Color television circuitry comprising:

a chrominance subcarrier oscillator for generating a first clock signal at four times the chrominance subcarrier frequency;

first circuit means clocked by said first clock signal for processing an analog composite color signal to provide digital first color difference signals and digital second color difference signals;

second circuit means for digitally synchronizing said chrominance subcarrier oscillator with the burst contained in said color signal, said second circuit means comprising:

first means for accumulating said digital first color difference signals during a keying pulse which is identical in duration to the duration of said burst to provide a first accumulated digital output signal;

second means for accumulating said digital second color difference signals during said keying pulse to provide a second accumulated digital output signal;

means for arithmetically combining said first accumulated

digital output signal; with second digital signals to provide modified digital output signals;

means for limiting the digital value of said modified digital output signals to provide intermediate digital control signals;

means for providing digital control signals in response to said intermediate control signals, the sign bit of said first accumulated digital output signal, and said second accumulated digital output signal; and

means responsive to said digital control signals for supplying said control signals to said chrominance subcarrier oscillator.

4,491,863

COLOR DISPLAY APPARATUS

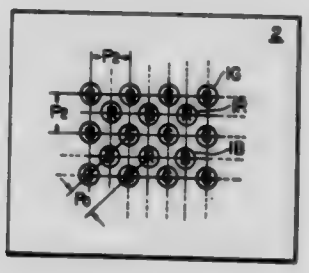
Koichiro Kurahashi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1980, Ser. No. 212,378

Claims priority, application Japan, Dec. 4, 1979, 54-158814; Dec. 4, 1979, 54-158815

Int. Cl.³ H04N *9/16*

U.S. Cl. 358—56 **3 Claims**



1. A large scaled color display apparatus comprising a color display surface constituted by a plurality of cathode ray tubes (CRTs) each emitting light in one of three primary colors, red, blue and green, wherein said CRTs are arranged in the form of a plurality of lattices with a predetermined distance between CRTs adjacent to one another and any four of said CRTs form a lattice square pattern having two diagonals with two green light CRTs being positioned at corners on one of the diagonals of said lattice square pattern and with a red CRT and a blue CRT being positioned at the remaining corners on another diagonal, respectively.

4,491,864

COLOR SEPARATION CONDITION SELECTING MEANS FOR A PICTURE SCANNING AND RECORDING MACHINE

Mitsuhiko Yamada, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

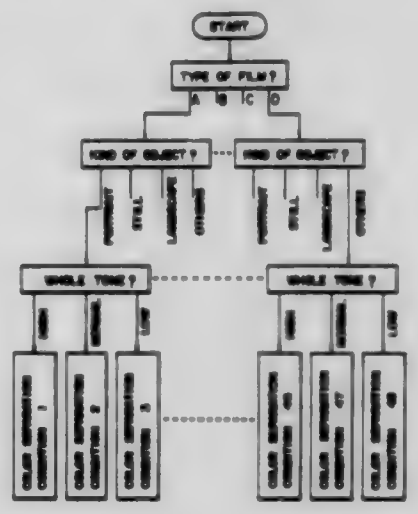
Filed Jul. 26, 1982, Ser. No. 401,512

Claims priority, application Japan, Jul. 31, 1981, 56-119243

Int. Cl.³ G03F *3/08*

U.S. Cl. 358—80 **4 Claims**

1. Color separation condition selecting means for a picture scanning and recording machine, comprising input means which inputs factors for determining color separation conditions, processing means which selectively outputs an enable signal to enable a device for generating the proper signal representing the color separation conditions depending on the input factors, and output means which outputs the selected result of the processing means, the improvement in that the processing means possesses a construction corresponding to a decision



tree which is composed of the input factors and the color separation conditions resulting from the input factors.

4,491,865

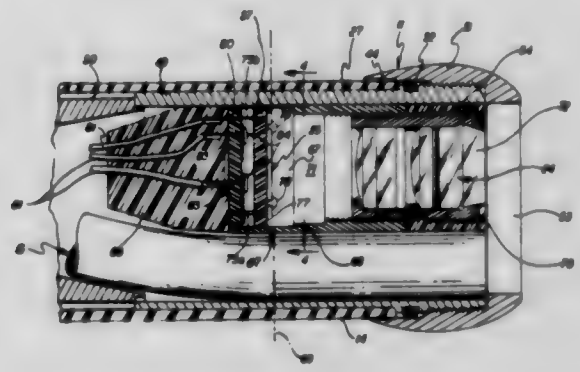
IMAGE SENSOR ASSEMBLY

Dominick Danna, Syracuse, and Richard W. Newman, Auburn, both of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Sep. 29, 1982, Ser. No. 426,927

Int. Cl.³ H04N *7/18, 3/02, 7/14*

U.S. Cl. 358—98 **7 Claims**



1. A compact electo-optical imager assembly for use in the viewing head of an endoscope that includes:

an elongated housing having a circular opening passing axially therethrough and having a lens system mounted in the front of the opening for focusing an image of an external target onto an image plane situated inside the opening,

an imaging unit mounted in the opening behind the lens system having a substantially circular substrate for supporting a solid state rectangular image sensor in a position to record image data focused in said image plane and convert said image data to an electrical output signal, and a circuit board mounted behind the substrate having circuit means connected to the image sensor,

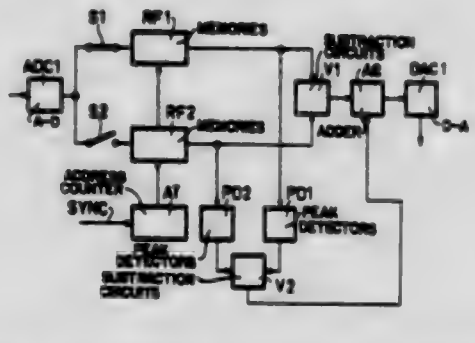
transmission lines passing into the housing through the back of the opening that are connected to the imaging unit for carrying signals into and out of the housing, and

sealing means for hermetically closing the housing.

4,491,866
METHOD OF A DEVICE FOR GENERATING DIFFERENTIAL IMAGES

Leonardus A. J. Verhoeven, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 26, 1982, Ser. No. 411,733
Claims priority, application Netherlands, Jun. 15, 1982, 8202415
Int. Cl.³ H04N 7/18
U.S. Cl. 358—111 8 Claims



1. A method for processing X-ray images comprising the steps of:
storing at least two X-ray images;
forming a display image by subtracting, on a pixel-by-pixel basis, the logarithm of a first of said stored images from the logarithm of a second of said stored images;
calculating the difference between the logarithm of the peak value of said first stored image and the logarithm of the peak value of said second stored image;
adding the difference of said peak value logarithms to all pixels of said display image; and
displaying the resultant sum.

4,491,867
DEVICE FOR THE HETERODYNE DETECTION OF AN OPTICAL IMAGE

Jean-Pierre Huignard, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Sep. 23, 1982, Ser. No. 421,776
Claims priority, application France, Dec. 7, 1981, 81 22852
Int. Cl.³ H01N 5/30
U.S. Cl. 358—113 8 Claims

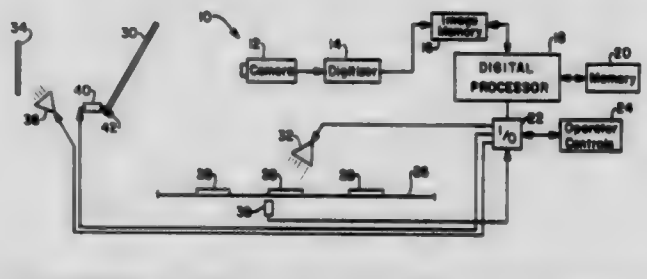


1. A heterodyne detection device for the heterodyne detection of an optical image reflected off a target illuminated by beams emitted from a laser, comprising:
an induced refractive index variation medium (C) adapted to be illuminated by a first portion of a wavefront Σ_1 reflected by said target and a portion of a plane wavefront obtained from the beams emitted by said laser, wherein said wavefront Σ_1 is amplified in said medium (C) into an amplified wavefront Σ_2;
means for frequency shifting a second portion of said wavefront Σ_1 to produce a frequency shift wavefront Σ_{10};
a matrix of photodetectors;
interference means having incident thereon said wavefront Σ_2 and said wavefront Σ_{10} for producing heterodyne signals at a beat frequency between the frequencies of said wavefronts Σ_1 and Σ_{10} and for focusing said heterodyne signals on said matrix of photodetectors for detection thereby, said matrix of photodetectors producing detected heterodyne signals; and
filter means coupled to said matrix of photodetectors for filtering said detected heterodyne signals in a band including said beat frequency.

4,491,868
VIDEO IMAGE COMPENSATOR FOR INSPECTION APPARATUS

Lawrence F. Berridge, Jr., and Amir R. Novini, both of Stow, Ohio, assignors to Inspection Technology Inc., Akron, Ohio

Filed May 6, 1981, Ser. No. 261,280
Int. Cl.³ H04N 7/02, 7/18
U.S. Cl. 358—139 10 Claims



1. An optical inspection system including video image compensation, comprising:
a camera having a field of view and providing an output signal corresponding thereto;
a target to be inspected;
a test piece for achieving horizontal and vertical alignment of said output signal of said camera, and for achieving scaling of said output signal of said camera as to both geometric and gray scale values;
means interposed among said target, test piece, and camera for selectively directing said field of view of said camera from said target to said test piece;
processing means for digitizing, shifting, and scaling said output signal corresponding to said target as a function of said output signal corresponding to said test piece; and
storage means connected to said processing means for receiving therefrom and storing said output signal corresponding to said target, digitized, shifted, and scaled as a function of said output signal corresponding to said test piece.

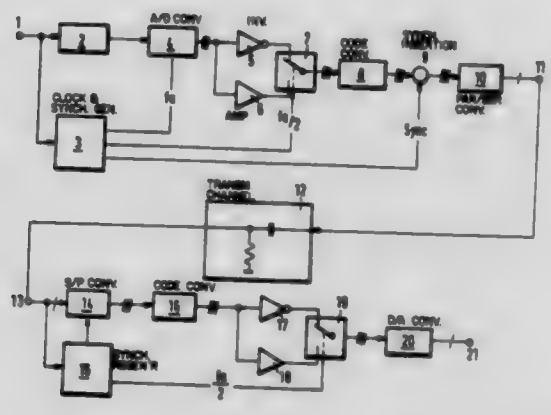
4,491,869
PULSE CODE MODULATION SYSTEM SUITABLE FOR DIGITAL RECORDING OF BROADBAND ANALOG SIGNALS

Jürgen Heitmann, Alsbach-Hähnlein, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 23, 1982, Ser. No. 361,528
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1981, 3113397
Int. Cl.³ H04N 5/40, 9/493
U.S. Cl. 358—141 18 Claims

1. Pulse code modulation method for use in recording digital signals or transmitting them through a channel having a high-pass characteristic, comprising the steps of:
converting an analog signal to be recorded or transmitted into a sequence of digital words, which respectively represent quantized samples of the analog signal level in a binary code at a sampling rate not lower than twice the highest frequency in said analog signal;
inverting alternate digital words, each corresponding to a quantized sample provided as the result of analog-to-digital conversion, and
converting said digital words into coded words, such that

within each said coded word the number of bits having a selected one of the two states, 1 or 0, has an approximately



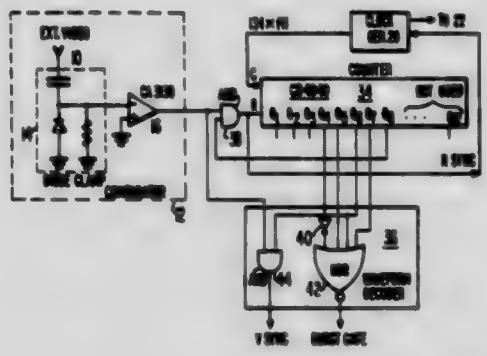
linear dependence upon the value of the corresponding analog signal level.

4,491,870

DIGITAL SYNC SEPARATOR

Felix Aschwanden, Thalwil, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Aug. 17, 1982, Ser. No. 408,784
Int. Cl.³ H04N 5/08, 5/10
U.S. Cl. 358—153 5 Claims



2. Apparatus for separating television synchronization signals from a composite synchronization signal, said apparatus comprising a source of clock signals, counting means coupled to said clock signal source for providing counted clock signals, an AND gate having a pair of inputs coupled to receive said composite synchronization signal and one of said counted clock signals starting at least one-half a line duration after the beginning of a line and before the start of a next line respectively and an output for providing a resetting signal to said counting means, said resetting signal comprising a separated horizontal synchronization signal, and decoding means coupled to said counting means and said composite synchronization signal for decoding vertical synchronization and color burst gate signals from said composite synchronization signal and the counted clock signals.

4,491,871

AUDIO-VISUAL DIPLEXED TELEVISION TRANSMITTER IN WHICH THE AURAL SIGNAL CAN BE MULTIPLEXED WITHOUT SWITCHING

Anthony N. Schmitz, Mount Laurel, and Raymond N. Clark, Cherry Hill, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 6, 1982, Ser. No. 447,142
Int. Cl.³ H04N 5/38, 5/40, 7/04
U.S. Cl. 358—186 10 Claims

1. An improved arrangement for coupling to an antenna signals from a source of television signals modulated onto a carrier and an associated audio signal modulated onto a carrier at a frequency offset from said carrier frequency, the arrangement comprising:

a source of television video signals;

a visual power generator coupled to said source of television video signals for producing a television video signal modulated onto a first carrier at a power level suitable for coupling to a transmitting antenna;

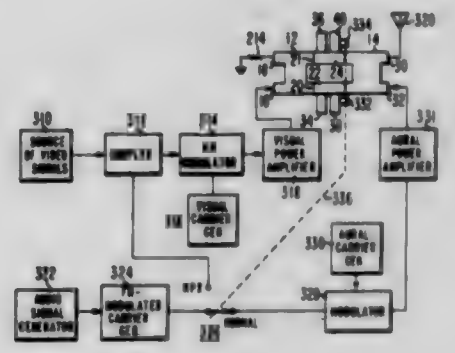
a source of audio signals modulated onto a second carrier, said second carrier having a nominal frequency offset from that of said first carrier,

an aural power amplifier coupled to said source of audio signals modulated onto a second carrier for generating aural power signals at a level suitable for coupling to a transmitting antenna, said aural power amplifier being subject to failure;

a load;

a first four-port hybrid having a first port coupled to said visual power generator, a second port coupled to said load, and third and fourth ports coupled to first and second transmission lines, respectively, for splitting said visual power into first and second portions propagated in said first and second transmission lines, respectively;

a second four-port hybrid having first and second ports coupled to said first and second transmission lines, respectively, for receiving said first and second portions of said visual power and for combining said first and second portions for propagation to a third port for coupling to an antenna, said second hybrid also having a fourth port coupled to said aural power amplifier for splitting said aural power signals into first and second portions coupled



to said first and second transmission lines, respectively, for causing said aural power signals to be propagated towards said first hybrid,

whereby said aural power signals will not reach said antenna and may perturb said visual power generator;

first and second tuned mismatch generating means coupled to said first and second transmission lines for presenting a mismatch to said first and second transmission lines at the frequency of said second carrier for reflecting back towards said second hybrid said first and second portions of said aural power signals whereby said first and second portions of said aural power signals are combined in said second hybrid and coupled to said third port of said second hybrid whereby said aural power signals are coupled to said antenna together with said visual power, and said visual power generator is isolated from said aural power amplifier and is therefore not perturbed, but failure of said aural power amplifier may result in transmission of said visual power without an accompanying audio signal, wherein the improvement lies in emergency coupling means for coupling said source of audio signals modulated onto said second carrier to said visual power generator for generation by said visual power generator of a combined power visual and aural signal, whereby said tuned mismatch generating means coupled to said first and second transmission lines reflect back towards said first hybrid that portion of said power visual and aural signal near the frequency of said second carrier, resulting in perturbation of the operation of said visual power generator and trans-

mission to said antenna of a visual signal with an attenuated aural signal; and

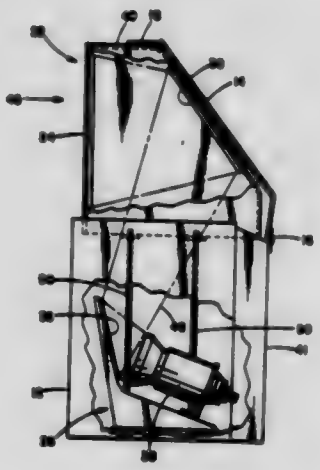
detuning means coupled to said emergency coupling means and to said tuned mismatch generating means for detuning said tuned mismatch generating means whereby said mismatch moves out of a television channel, said portion of said combined power visual and aural signal is not reflected and said combined power visual and aural signal is coupled to said antenna.

4,491,872

ULTRA-COMPACT PROJECTION TELEVISION RECEIVER

Melvin H. Boldt, Glenview, and James W. Schwartz, Deerfield, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Continuation of Ser. No. 228,434, Jan. 26, 1983, abandoned. This application Jan. 17, 1983, Ser. No. 459,004
Int. Cl.³ H04N *5/74*
U.S. Cl. 358—237
2 Claims



1. An ultra-compact, rear projection television receiver having a folded optical path which includes a first stationary planar mirror and a second mirror, said receiver comprising:

an open-topped, jack-in-the-box-like cabinet for enclosing components of said receiver and having lid means hinged to the top of said cabinet;

a unitary opto-mechanical assembly, supported for vertical elevation within said cabinet and selectively storable in said cabinet, comprising a rear projection screen and said second mirror,

said screen and said second mirror constituting at least a portion of said folded optical path,

said assembly maintaining said second mirror in a fixed spaced relation to said screen for establishing an optical alignment integrity between said constituted portion of said folded optical path and said planar mirror and for insuring repeatability of said alignment integrity upon subsequent elevations of said assembly; and

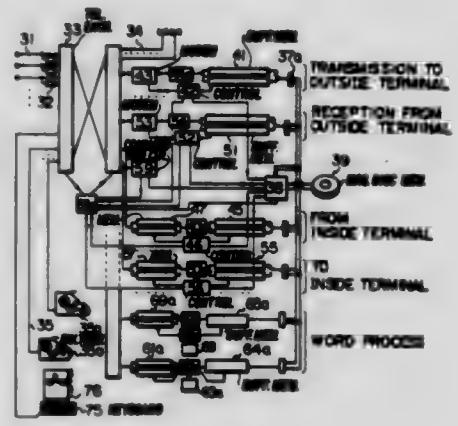
means for lifting said lid and elevating said unitary opto-mechanical assembly from a first receiver-inoperable position, wherein said opto-mechanical assembly is stored in said cabinet and said receiver is rendered substantially as compact as a conventional large-screen console television receiver, to a second receiver-operable position, wherein said opto-mechanical assembly is elevated to extend from said cabinet, so that said receiver, when said assembly is in said receiver-operable position, is capable of displaying an image having an area greater than three times the image area that a conventional console television receiver is capable of displaying.

4,491,873

COMMON CONTROLLED FACSIMILE SYSTEM

Shoichiro Takayama, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1981, Ser. No. 324,597
Claims priority, application Japan, Dec. 3, 1980, 55-169694; Feb. 4, 1981, 56-14402
Int. Cl.³ H04N *1/00*
U.S. Cl. 358—256
3 Claims



1. A common controlled facsimile system, including a plurality of facsimile terminals each having means for converting a picture pattern of an original document to a transmitted scanned electrical facsimile picture signal and means for printing a received scanned electrical facsimile picture signal on a paper comprising:

a common facsimile control system coupled with said plurality of facsimile terminals, said common control system including a switching exchange network coupled with a plurality of external telephone channels and a plurality of extension telephone terminals to provide an exchange function among said telephone terminals and said external telephone channels;

a MODEM provided commonly for said plurality of facsimile terminals and coupled with said switching exchange network for connecting a facsimile terminal with a telephone channel;

a magnetic disc memory for storing a picture image of a facsimile picture signal;

a buffer memory for temporarily storing a facsimile picture signal while said signal is being stored in or read-out from said magnetic disc memory;

means for compressing a facsimile picture signal and means for reproducing an original facsimile picture signal from a compressed picture signal, whereby a picture signal may be stored in said magnetic disc memory in compressed form;

means for communication protocol control of a facsimile terminal provided common to said plurality of facsimile terminals; and

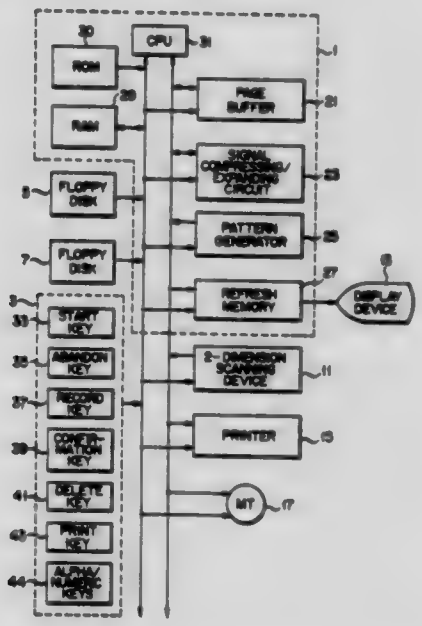
means for controlling operation of said common facsimile control system whereby a facsimile picture signal generated by one of said plurality of facsimile terminals is first stored in said magnetic disc memory through said switching exchange network, said facsimile picture signal compressing means and said buffer memory, and the stored facsimile picture signal in said magnetic disc memory is then transferred to a designated facsimile terminal through said buffer memory, said original facsimile picture reproducing means, and said switching exchange network to reproduce an image at said designated facsimile terminal.

4,491,874

SYSTEM FOR DISPLAYING PICTURE INFORMATION

Kazuhiko Yamamoto, Yokosuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 29, 1981, Ser. No. 316,482
Claims priority, application Japan, Oct. 31, 1980, 55-153252
Int. Cl.³ H04M 1/22
U.S. Cl. 358—296
8 Claims



1. A picture information filing apparatus which stores picture information and a retrieval title including a retrieval code for retrieving the picture information and outputs picture information corresponding to an input retrieval code, said filing apparatus comprising:

scanning means for scanning picture information;

buffer means for storing said scanned picture information;

display means for displaying said picture information stored in said buffer means;

keyboard input means for specifying abandonment of said picture infomation stored in said buffer means, when said displayed picture information does not satisfy prescribed requirements, and for specifying recording of said stored picture information, when said displayed picture information satisfies prescribed requirements;

compandor means for compressing and expanding said picture information;

external recording means for recording said picture information; and

a microprocessor for abandoning said picture information stored in said buffer means, when abandonment of said stored picture information is specified by said keyboard input means, and for recording in said external recording means said picture information compressed by said compressor means, when recording of said picture information stored in said buffer means is specified by said keyboard input means.

4,491,875

APPARATUS AND METHOD FOR TONAL IMAGE PROCESSING

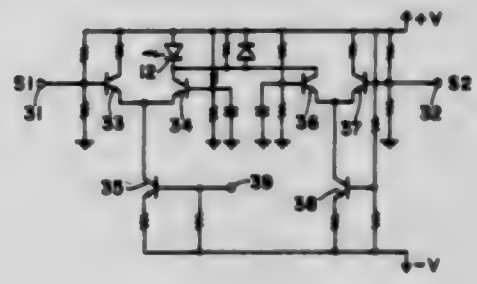
Naoto Kawamura, Inagi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

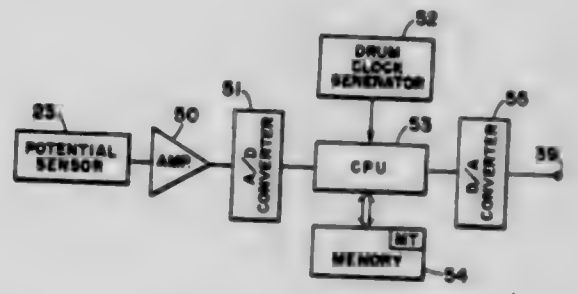
Continuation of Ser. No. 314,439, Oct. 23, 1981, abandoned.
This application Feb. 28, 1984, Ser. No. 583,294
Claims priority, application Japan, Oct. 30, 1980, 55-151477; Oct. 30, 1980, 55-151478
Int. Cl.³ H04N 1/30, 1/40
U.S. Cl. 358—298
18 Claims

1. An intermediate tone image processing method comprising the steps of:

providing one of a plurality of potential levels, including an intermediate potential level, to each of a plurality of small areas on an image carrier adapted to bear an electrostatic latent image thereon;

forming pixels having different gradation levels from combinations of the small areas, the gradation level of each pixel being determined by the combination of small areas;





forming a pattern composed of a set of the pixels;

detecting the density level of the pattern; and

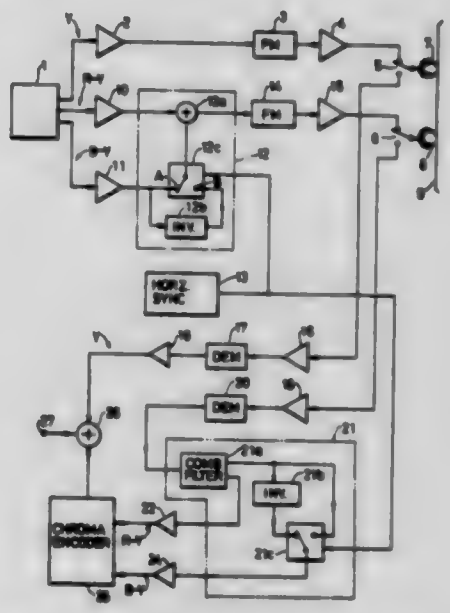
variably controlling the potential of the intermediate potential level in response to an output obtained in the detecting step.

4,491,876

VIDEO RECORDING BY FREQUENCY MODULATION OF LUMINANCE AND MULTIPLEXED CHROMA COMPONENTS

Hitoshi Aoike, Nagareyama; Toyotaka Machida, Kashiwa; Toshimasa Kumazaki, Koshigaya, and Kazuyuki Suenega, Noda, all of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Sep. 15, 1982, Ser. No. 418,818
Claims priority, application Japan, Sep. 16, 1981, 56-145983
Int. Cl.³ H04N 9/491
U.S. Cl. 358—330
6 Claims



1. A video recording system adapted for recording a color television signal having a luminance component and color difference components on a recording medium, comprising:

multiplexer means for multiplexing said color difference components in frequency so that each of the color differ-

ence components concentrates its energy at frequencies which are interleaved with the frequencies at which the energy of the other color difference component is concentrated;

first frequency modulator means for modulating said luminance component to provide an output having upper and lower sidebands spreading substantially over the full range of the passband of said recording system;

second frequency modulator means for modulating said multiplexed color difference components to provide an output having upper and lower sidebands spreading substantially over the full range of said passband; and

first and second transducers respectively coupled to said first and second frequency modulator means and associated with said recording medium.

4,491,877

CROSS-TALK DETECTOR IN INFORMATION-CARRYING DISC PLAYER

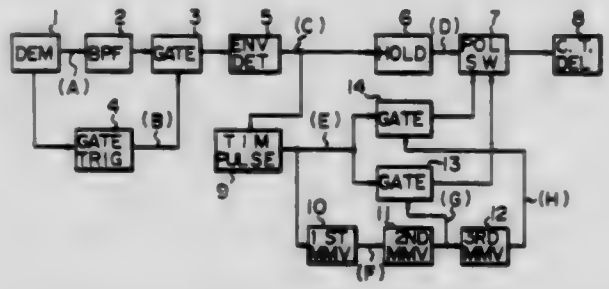
Hitoshi Kanamaru, Tokorozawa, Japan, assignor to Pioneer Video Corporation, Tokyo, Japan

Filed May 7, 1982, Ser. No. 376,034

Claims priority, application Japan, May 9, 1981, 56-070029; May 9, 1981, 56-070030

Int. Cl.³ H04N *5/76*

U.S. Cl. 358—336 6 Claims



1. In an information-carrying disc player for reading a carrier signal recorded on an information-carrying disc in the form of one or more spiral or angular tracks while centering a detecting point on a target track and rotating said disc at an angular velocity uniformly continuously variable with the radial position of said detecting point on the recording surface of the disc, said carrier signal being modulated in frequency by a video modulating signal containing successively appearing constant frequency sections at which the frequency thereof is constant, the improvement which comprises:

demodulating means for demodulating the read carrier signal into said video modulating signal;

filter means for passing therethrough an error component having a frequency within a predetermined frequency range;

gate trigger signal generating means for producing a gate trigger signal during each of said constant frequency sections;

gate means for opening its gate in response to said gate trigger signal so as to pass therethrough said error component; and

signal producing means for producing an error signal representative of the magnitude of said error component.

4,491,878

APPARATUS AND METHOD FOR FORWARD/REVERSE SLOW MOTION VIDEO REPRODUCTION

Akira Toba, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 25, 1982, Ser. No. 352,461

Claims priority, application Japan, Feb. 27, 1981, 56-28217

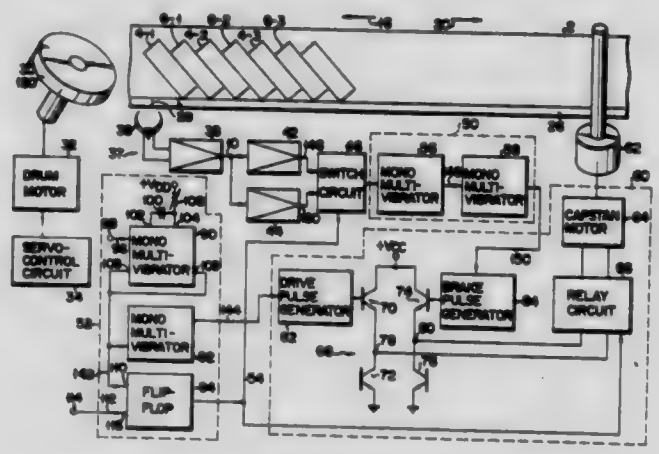
Int. Cl.³ H04N *5/782*

U.S. Cl. 360—10.1 7 Claims

1. A video signal reproducing system for slow motion reproduction of video signals which are recorded on a tape, said system comprising:

a pair of alternately rotatable recording heads for recording said video signals on said tape, mounted on diametrically opposed sides of a rotating member, said video signals being recorded on video tracks disposed contiguously and obliquely relative to the longitudinal direction of the tape, said recording heads having gaps with mutually different azimuth angles, each of said tracks corresponding to one of control signals recorded on said tape and said control signals being alternatley recorded with different polarities for selecting one of the recording heads in the reproduction mode;

tape transporting means for intermittently operating the tape so that said tape runs alternately in a normal reproduction mode and a still reproduction mode, either in forward or



reverse operation, the normal reproduction mode and the still reproduction mode being repeated;

a pair of rotary heads, having the same azimuth angle as the azimuth angle of the gap on either one of the recording heads, which are exclusively used in the reproduction mode; and

control means for detecting said control signals and for causing said transporting means to move into the still reproduction mode from the normal reproduction mode in response to said detected control signals, said control means causing said tape transporting means to substantially stop said tape at a point which corresponds to the middle point between two adjacent control signals, each having the same polarity, and whereby the time required to move from the normal reproduction mode to the still reproduction mode is equally defined for forward and reverse slow motion reproduction.

4,491,879

METHOD OF POST PRODUCTION SOUND RECORDING FOR VIDEO TAPED PROGRAMS

Clarence R. Fine, 570 North St., Harrison, N.Y. 10528

Continuation of Ser. No. 33,950, Apr. 27, 1979, abandoned. This application Jun. 23, 1982, Ser. No. 391,384

Int. Cl.³ H04N *5/782*

U.S. Cl. 360—14.1 14 Claims

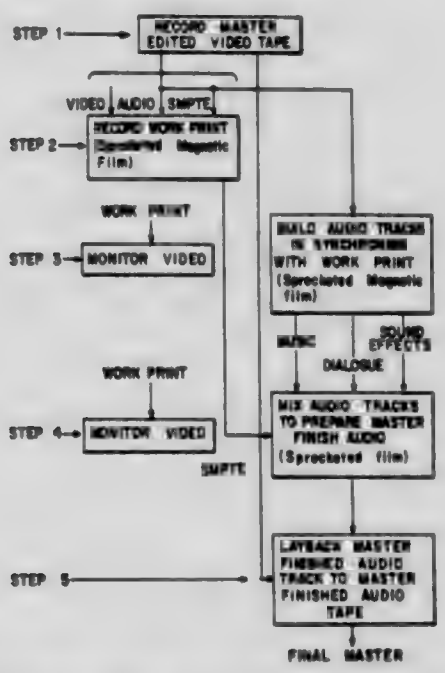
10. A method for synchronizing at least one audio signal with video signals recorded on a video tape, comprising the steps of:

transferring at least the video signals from said video tape to a sprocket-driven magnetic work film being transported at a predetermined speed;

transporting a sprocket-driven audio film at said predetermined speed while maintaining the sprocket drives of said magnetic work film and said audio film in mutual synchronization, this synchronization being maintained without making use of any time code signal recorded on said video tape, and recording said at least one audio signal on said sprocketed audio film, the audio signal being thereby

recorded in synchronism with the video signals on said sprocket-driven magnetic work film.

14. A method of post production sound recording for television, comprising transversely recording a video signal on a sprocket-driven magnetic work film moving at a predetermined linear speed, recording on said sprocket-driven magnetic work film a control track for synchronizing the trans-



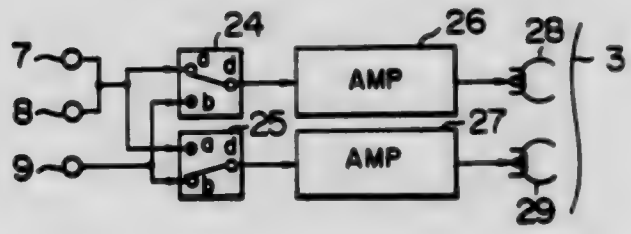
verse scan of the film with the linear speed thereof, synchronizing the movement of at least one sprocket-driven audio film and said work film by maintaining the sprocket drives in mutual synchronization without making use of any time code signal associated with said video signal, and recording on said audio film at least one audio track synchronized with said video signal.

4,491,880

MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS

Nobora Kojima, Yokohama; Yoshizumi Watatani, Fujisawa; Takao Arai, Yokohama; Takashi Hoshino, Fujisawa, and Toshifumi Shibuya, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 22, 1982, Ser. No. 421,401
Claims priority, application Japan, Sep. 24, 1981, 56-149397
Int. Cl.[3] H04N *5/782*
U.S. Cl. 360—19.1 7 Claims



1. A magnetic recording apparatus of 2-head helical scan type comprising:

(a) means including a first and a second magnetic head for forming tracks carrying records of fields of first and second channels respectively of a video signal in a helical direction of a magnetic tape by recording the video signal by said first and second heads, and further recording first and second channels of a digital audio signal corresponding to the first and second channels of said video signal on one end portion of said tracks carrying the records of first and second channels respectively;

(b) a first and a second recording amplifier amplifying said video signal and said audio signal;

(c) signal selecting means for selectively applying said video signal and said audio signal to said first and second heads; and

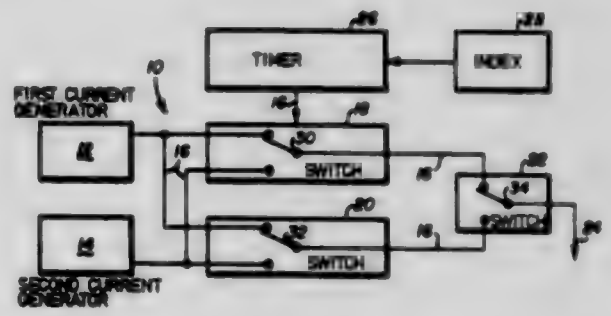
(d) control means for controlling the recording operation so that said audio signal is recorded by said first head on the end portion of said track of first channel in simultaneous relation with recording of said video signal by said second head on said track of second channel, and said audio signal is recorded by said second head on the end portion of said track of second channel in simultaneous relation with recording of said video signal by said first head on said track of first channel; whereby said video signal and said audio signal are simultaneously recorded by said two heads.

4,491,881

CALIBRATED DROP-OUT DISK

Brian Hanlon, Woodview Park, Ireland, assignor to Verbatim Corporation, Sunnyvale, Calif.

Filed Feb. 1, 1982, Ser. No. 344,766
Int. Cl.[3] G11B *27/36, 15/02, 5/09*
U.S. Cl. 360—31 13 Claims



1. A standardized recording medium with calibrated data drop-out characteristics, comprising:

a base film disk substrate;

a magnetic recording layer on at least one surface of the disk substrate suitable for recording in a plurality of separate tracks; and

at least one track being provided with at least one preselected segment in which analog signals have been recorded at a selected first magnitude, said preselected segments being bordered by a pair of segments having analog signals recorded at a second magnitude, said second magnitude being greater than said first magnitude, and approximately equal to a normal recording magnitude whereby preselected locations on the track are recorded to have playback amplitude levels significantly lower than the remainder of the track.

4,491,882

DISC PLAYERS

Kazuhiko Fujile, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

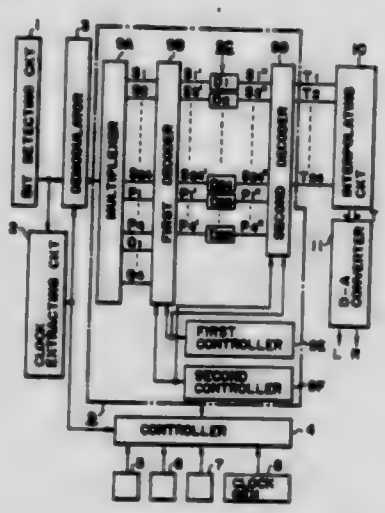
Filed Nov. 8, 1982, Ser. No. 440,032
Claims priority, application Japan, Nov. 14, 1981, 56-182700
Int. Cl.[3] G11B *5/09*
U.S. Cl. 360—53 4 Claims

1. A disc player for reproducing an information signal from a disc having an information track on which the information signal is recorded in the form of digital data, comprising;

detecting circuit means for being supplied with a signal read out from the disc by a pickup device which is provided for reading the signal recorded on the disc and producing a reproduced digital data,

error correcting circuit means for correcting errors contained in the reproduced digital data from said detecting circuit means, said error correcting circuit means being operative to take either a first error correcting mode wherein the error correcting ability thereof is exhibited at

the maximum or a second error correcting mode wherein the error correcting ability thereof is reduced in comparison with the error correcting ability exhibited in the first error correcting mode selectively, and



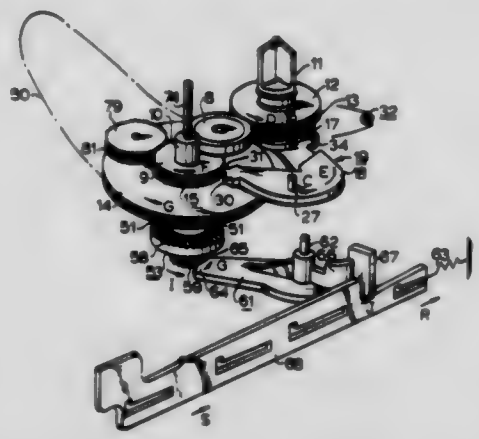
control circuit means for controlling said error correcting circuit means to perform the error correcting operation in said first error correcting mode when the normal reproducing state is taken and in said second error correcting mode when the reproducing state by fast forwarding operation or fast reversing operation is taken.

4,491,883

PULLEY CAM FOR A TAPE CASSETTE DRIVE WHICH MOVES AXIALLY OF THE DRIVING GEAR

Nobuo Suzuki, Kanagawa, Japan, assignor to Technical Incorporated, Japan

Filed May 18, 1982, Ser. No. 379,564
Claims priority, application Japan, May 23, 1981, 56-79049; May 23, 1981, 56-79050; May 23, 1981, 56-79051
Int. Cl.³ G11B *15/22*
U.S. Cl. 360—74.2 5 Claims



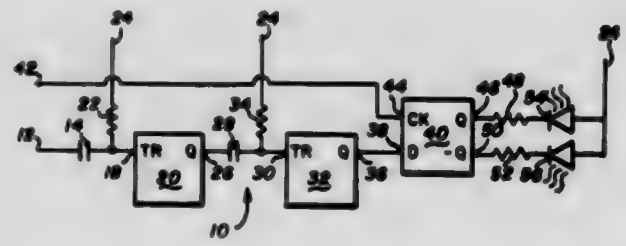
1. Apparatus for automatically shutting off a tape recorder when the tape reaches the end comprising a base plate, feed and winding reel shafts rotatably supported on said base plate for paying out and taking-up magfnetic tape, a driving gear rotatably supported by said base plate and coupled to said winding reel shaft, driving means connected to said driving gear, a sensing mechanism moveable supported on said base plate and adapted to move to a locked position to lock said driving gear when said winding reel shaft is stopped, means for de-energizing said driving means when said driving gear is locked, wherein said winding reel shaft is formed with a collar which has depression and said sensing mechansim has a mating depression and a flexible disc-shaped pad mounted in said depressions between said winding reel shaft and said sensing mechanism, including a liquid lubricant on said flexible disc to lubricate it, including a spring biasing means for spring biasing said winding reel shaft and said sensing mechanism together with said flexible disc-shaped pad between them, including a pulley cam coupled to said driving gear to drive it, a plurality of recesses formed in said driving gear and a plurality of projections formed on said pulley cam for placing them into driven and undriven relationship as they move axially relative to each other, and a stop level forming part of said means for deenergizing said driving means coupled to a locking lever and driven by said pulley cam when said driving gear is stopped, and including a check gear coupled to said pulley cam by a pawl when said pulley cam does not drive said driving gear and said check gear moveable to actuate said stop lever to deenergize said driving means.

4,491,884

METHOD OF MONITORING HEAD ALIGNMENT IN A MAGNETIC DATA STORAGE DEVICE

Kevin J. Carey, and Brian Hanlon, both of Limerick, Ireland, assignors to Verbatim Corporation, Sunnyvale, Calif.

Filed Mar. 1, 1983, Ser. No. 471,008
Int. Cl.³ G11B *5/46, 21/02*
U.S. Cl. 360—75 8 Claims



8. A method for monitoring alignment of a read-write head in a data storage device comprising comparing the actual time required for the head to move from its resting position to a predetermined position, with a predetermined value for that time period, and producing a signal if said actual time required for the head to so move is different from said predetermined value for that time period by an amount of time exceeding a predetermined limit.

4,491,885

MAGNETIC RECORDING/PLAYBACK DEVICE

Toshinori Morikawa, Katano; Seiko Minamide, Nara; Satoshi Kikuya, Katano; Hiroshi Terada, Hirakata; Osamu Zaitsu, Moriguchi, and Narito Shibaike, Habikino, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

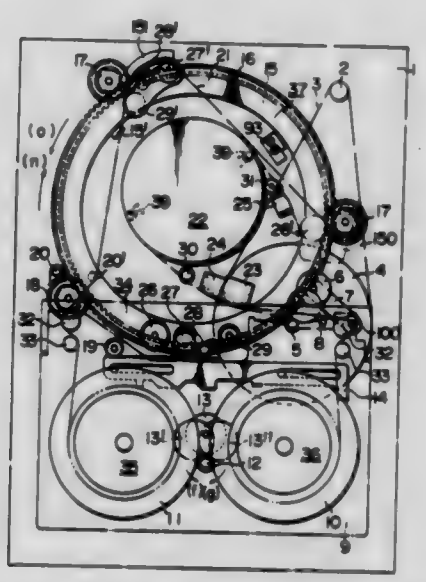
Filed Feb. 1, 1982, Ser. No. 344,788
Claims priority, application Japan, Feb. 6, 1981, 56-17322; Feb. 6, 1981, 56-17323; Feb. 6, 1981, 56-17324; Feb. 6, 1981, 56-16566[U]; Oct. 5, 1981, 56-158948
Int. Cl.³ G11B *5/08, 15/66, 15/18*
U.S. Cl. 360—85 5 Claims

1. A magnetic recording/playback device comprising:
a planetary gear unit section connected at its input side through a reversing prevention means to a driving power source and having a first output portion and a second output portion;
a tape mounting means having at least a magnetic tape extracting post mounted thereon, said tape mounting means being connected to said first output portion of said planetary gear unit section;
an operation mode switching driving means connected to said second output portion of said planetary gear unit section;
a locking means for locking and releasing a cassette housing;
a first resilient member engaged at one end by said operation mode switching driving means and at another end by said locking means and having an initial tension greater than a load imposed by said tape mounting means connected to

said first output portion of said planetary gear unit section during a mounting operation;

a second resilient member engaged by said locking means and having an initial tension greater than said load imposed by said tape mounting means during the mounting operation;

a first stopper for limiting a range of movement of said locking means;



stroke end limiting means for limiting terminal mounting ends of said tape mounting means; and

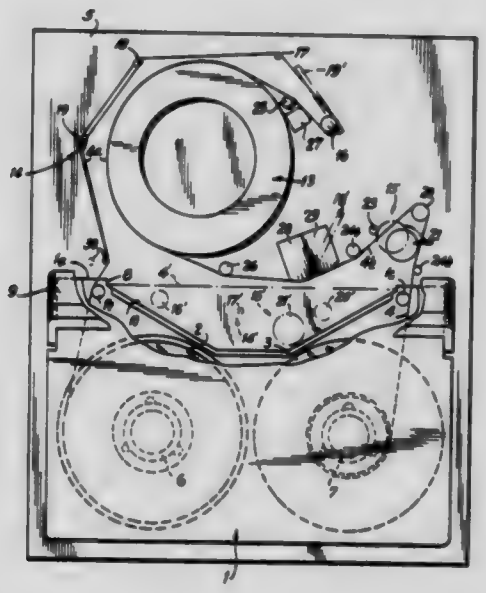
a second stopper for said operation mode switching driving means, the tape mounting operation, driving mode switching operation and operation of said locking means for the cassette housing being effected by switching loads imposed on respective output portions of said planetary gear unit section.

4,491,886

TAPE LOADING APPARATUS

Akiro Saito, Kanagawa; Naoki Kamaya; Junya Endo, both of Tokyo; Seisuke Ohba, Kanagawa; Akira Kumano, Tokyo; Yoshinori Ida, Kanagawa, and Hideo Horie, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 322,015, Nov. 16, 1981, abandoned. This application Mar. 1, 1982, Ser. No. 353,494
Claims priority, application Japan, Nov. 17, 1980, 55-161802
Int. Cl.³ G11B *15/66*
U.S. Cl. 360—85 32 Claims



1. A cassette-type tape recording and/or reproducing apparatus comprising:

a tape guide drum with at least one rotary transducer moved in a circular path substantially coinciding with the circumference of said guide drum;

holder means spaced from said guide drum for receiving a cassette containing a supply of tape wound on at least one spool and locating the cassette in an operative position at which a plane passing through the median of the tape on said spool in the cassette is inclined in respect to a plane of rotation of said rotary transducer;

tape engaging means for withdrawing tape from a cassette in said operative position and wrapping the withdrawn tape about at least a portion of said circumference of the guide drum;

means for guiding said tape engaging means in a path extending from a first position adjacent a cassette in said operative position to a second position spaced substantially from said first position and at which the engaged tape is wrapped about said circumference of the guide drum, with at least a portion of said path leading to said second position being inclined relative to said plane of rotation so that the tape wrapped on the circumference of the guide drum with said tape engaging means in said second position is arranged substantially helically in respect to the guide drum;

driving means for effecting movements of said tape engaging means between said first and second positions, said driving means being movable in a plane substantially parallel to said plane passing through the median of the tape on said spool in the cassette at said operative position; and

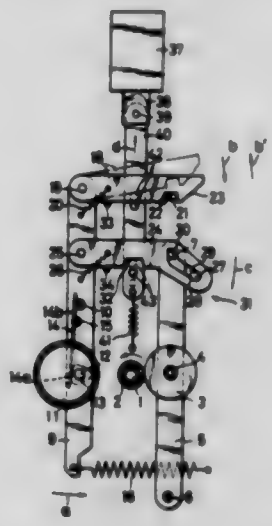
connecting means extending between said driving means and said tape engaging means and through which said driving means moving in said plane of movement thereof can effect movements of said tape engaging means in said path between said first and second positions.

4,491,887

MODE SELECTOR OF RECORDING AND/OR REPRODUCING APPARATUS

Seiji Sato, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 5, 1982, Ser. No. 405,430
Claims priority, application Japan, Aug. 13, 1981, 56-127213
Int. Cl.³ G11B *15/18, 19/02*
U.S. Cl. 360—90 8 Claims



1. A stop/drive mode selector for a signal recording and reproducing apparatus using a longitudinal magnetic tape driven by pinching between a pinch-roller and a capstan rotatable by a motor, comprising:

a pivotally mounted pinch roller lever rotatably supporting said pinch roller for movement into and out of contact with said capstan;

a drive gear rotatable by said motor;

a pivotally mounted drive lever rotatably supporting an eccentric gear for meshing with said drive gear;

a drive spring for pivoting said drive lever;

a locking lever for locking said drive lever against the force of said drive spring in a first position separating said eccentric gear from said drive gear;

solenoid means operative for releasing said locking lever and thereby permitting said drive spring to pivot said drive lever toward a second position;

an interlocking lever, pivoted at one end to said drive lever; and

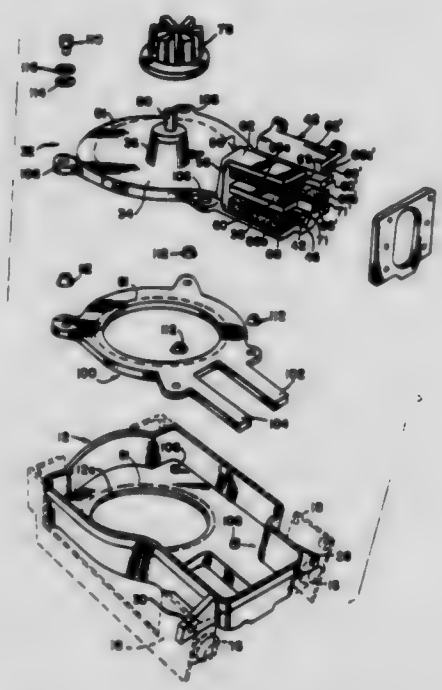
a cam mechanism through which the other end of said interlocking lever is attached with said pinch roller lever for interlocking said pinch roller lever and said drive lever to pivot said pinch roller lever from a tape stop mode into a tape drive mode, wherein said pinch roller is urged against said capstan, in response to the pivotal movement of said drive lever from said first position by said drive spring and to stop said drive lever short of said second position in an intermediate position wherein said eccentric gear does not mesh with said drive gear, said cam mechanism being operable, when said interlocking lever is pivoted about said one end, to pivot said pinch roller lever to separate said pinch roller from said capstan and to release said drive lever for rotation into said second position by said drive spring, wherein said eccentric gear meshes with said drive gear to return said drive lever to said locked first position against the force of said drive spring.

4,491,888

MEMORY STORAGE APPARATUS HAVING VIBRATION-DAMPENED BASE PLATE ARRANGEMENT

Stanley F. Brown, Cupertino, and Garold W. Plonczak, Santa Clara, both of Calif., assignors to Atasi Corporation, San Jose, Calif.

Filed Jun. 28, 1982, Ser. No. 392,862
Int. Cl.³ G11B *5/012*
U.S. Cl. 360—97 9 Claims



1. A rotating disc memory storage apparatus comprising:

a housing having a upper casing and lower casing, said lower casing having a bottom wall,

an electric spindle motor including a stator and a rotor,

a spindle shaft operatively connected to the motor,

a base plate including a platform portion and an actuator portion,

means for mounting the base plate to the housing,

an annular elastomeric member extending between facing surfaces of the base plate and said housing bottom wall,

means for attaching the base plate to the lower casing to firmly engage the elastomeric member in contact with and between the base plate and the housing bottom wall,

means for operatively connecting the motor to the spindle shaft to rotate the spindle shaft when the motor is energized,

at least one disc operatively mounted to the spindle shaft so that the disc rotates in a plane that is coaxial with and normal to the spindle,

at least one transducer for accessing data recorded on the disc, and

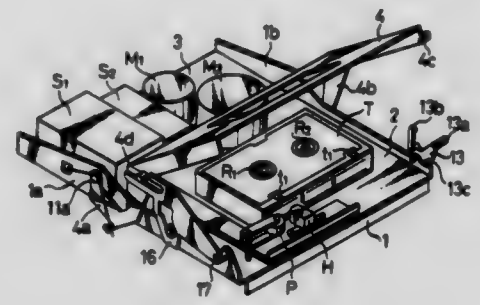
actuator means mounted to the base plate actuator portion at a position remote from the spindle for translating the transducer along the disc to selected track locations thereon.

4,491,889

CASSETTE TAPE PLAYER

Tatsuhiko Tsuchiya, Kakuda, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Feb. 11, 1982, Ser. No. 347,977
Claims priority, application Japan, Feb. 14, 1981, 56-19437[U]
Int. Cl.³ G11B *5/54, 21/22, 5/008, 15/00*
U.S. Cl. 360—105 24 Claims



1. A cassette tape player comprising:

a base carrying reel shafts adapted to receive a cassette tape;

a head base disposed over said base and slidable in rectilinear movement towards and away from said reel shafts;

a magnetic head disposed on said head base;

a cover disposed on said base and adapted to be vertically opened and closed; and

means including a cam mechanism disposed on said base for changing the opening and closing operations of said cover into rectilinear movement of said head base;

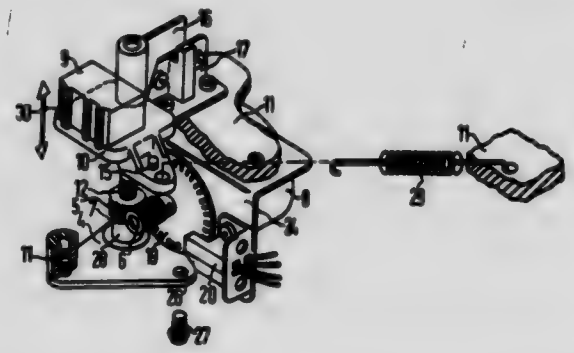
so that when said cover is closed, said head base is moved to a position where said magnetic head is in light contact with a surface of a tape in said cassette.

4,491,890

DEVICE FOR POSITIONING A MAGNETIC HEAD IN A MAGNETIC TAPE DEVICE

Guttorm Rudi, Fjellhamar, Norway, assignor to Tandberg Data A/S, Oslo, Norway

Filed Mar. 30, 1982, Ser. No. 363,438
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112895
Int. Cl.³ G11B *5/55, 21/08, 5/48, 21/24*
U.S. Cl. 360—106 12 Claims



1. A device mounted on a housing frame for positioning a

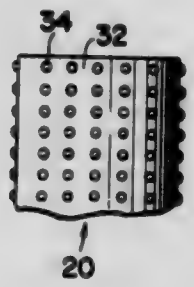
magnetic head relative to magnetic tape in a magnetic tape device comprising: a head carrier on which the head is mounted; a spiral gearing connected to the head carrier, and an operating means for the spiral gearing; the head carrier being disposed in a support means comprising a first bearing in which the head carrier rides rigidly disposed in the housing frame, a bearing plate adjustably attached to the housing frame and which can be positioned relative to a reference surface, and a second bearing in which the head carrier also rides disposed at the bearing plate such that by movement of the bearing plate relative to the housing frame, the magnetic head carrier can be aligned.

4,491,891

TAPE GUIDE FOR A MAGNETIC TAPE CARTRIDGE AND METHOD OF MANUFACTURING THE SAME

Haruo Shiba, Saku, Japan, assignor to TDK Corporation, Tokyo, Japan

Filed Apr. 22, 1982, Ser. No. 370,990
Claims priority, application Japan, Jun. 18, 1981, 56-94547
Int. Cl.[3] G11B *15/16*
U.S. Cl. 360—130.21 5 Claims



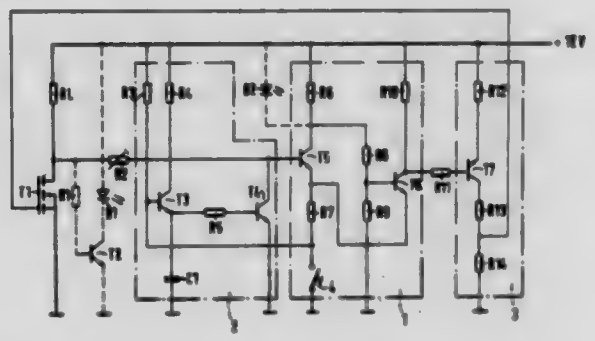
1. A cylindrical tape guide with protrusions on the surface for a magnetic tape cartridge, characterized in that said tape guide is made of one of polyacetal resin, a polyethylene resin, and a polyamide resin, with a molding contraction ratio of greater than about 0.8%, and said protrusions are isolated small projections molded on the surface of the tape guide.

4,491,892

ELECTRONIC CURRENT OVERLOAD PROTECTION INSTALLATION

Ulrich Lehmann, Weissach, and Rudolf Gabriel, Gerlingen, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Stuttgart, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 426,922
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1981, 3138645
Int. Cl.[3] H02H *3/08*
U.S. Cl. 361—101 4 Claims



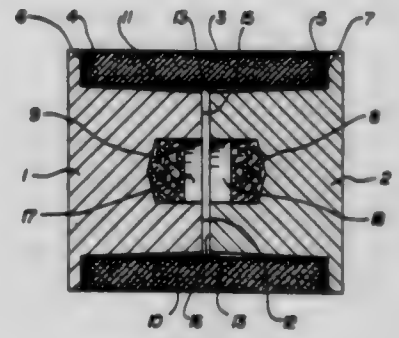
1. An electronic overload current protection device, comprising MOS transistor means for controlling current passed therethrough by being operated as resistance, delay circuit means, a driver stage, electronic threshold switch means, and a power supply, wherein the MOS transistor means which has a resistance substantially linearly proportional to current, is connected to the power supply in series with a load means, the threshold switch means being operatively connected to the delay circuit means and to a junction between the load means and the MOS transistor means for controlling the gate input of the MOS transistor means through said driver stage, thereby to delay the application of said power supply to said load means for a predetermined time period.

4,491,893

GAS FILLED SURGE ARRESTER

Toshiharu Toda, Mitaka, Japan, assignor to Reliance Electric Company, Cleveland, Ohio

Filed May 10, 1983, Ser. No. 493,231
Claims priority, application Japan, May 25, 1982, 57-087252
Int. Cl.[3] H02H *9/06*
U.S. Cl. 361—120 30 Claims



18. A gas filled surge arrester comprising:

(a) a generally cylindrical tubular insulator member having an inner wall;

(b) first and second electrodes of substantially uniform composition having opposed generally planar end faces, said electrodes being hermetically sealed to opposite ends of said insulator member, said insulator member serving to isolate electrically said electrodes and to space apart said opposed end faces to define an interelectrode discharge gap therebetween, said gap being maintained in the range of 0.02 mm to 0.20 mm;

(c) said electrodes including at least one pair of opposed cavities formed as recesses in the end faces and being of a size to occupy less than the full end face area, the cavities having respective bottom end walls which are spaced apart a distance greater than the width of said gap; and

(d) a substance of high electron emission ability relative to that of the electrode material, each of said cavities being only partially filled from said bottom end wall to a height which is less than the depth of each of said cavities with said substance.

4,491,894

ANTISTATIC FLOORMATS

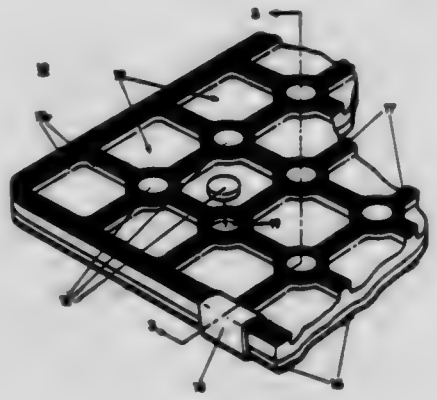
Warren R. Pitts, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Continuation-in-part of Ser. No. 346,716, Feb. 8, 1982, Pat. No. 4,415,946. This application Jul. 27, 1983, Ser. No. 517,620
The portion of the term of this patent subsequent to Nov. 15, 2000, has been disclaimed.
Int. Cl.[3] H05F *3/00*
U.S. Cl. 361—212 17 Claims

1. A charge dissipating mat, comprising:

a plurality of transparent thermoplastic layers, each layer containing an antistatic agent, forming a lamination with first and second faces;

at least one electrically conductive ion collector member; and



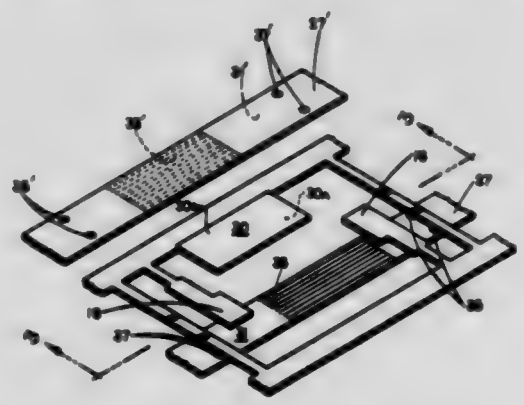
an electrically conductive medium on at least one of the first and second faces of said mat, connected with said ion collector member.

4,491,895

DECOUPLING CAPACITOR AND METHOD OF MANUFACTURE THEREOF

Michael M. Gottlieb, Kraainem, Belgium, and David S. Fishman, West Hartford, Conn., assignors to Rogers Corporation, Rogers, Conn.

Filed Nov. 14, 1983, Ser. No. 551,465
Int. Cl.³ H01G 1/14, 7/00; H01B 7/00
U.S. Cl. 361—306 33 Claims



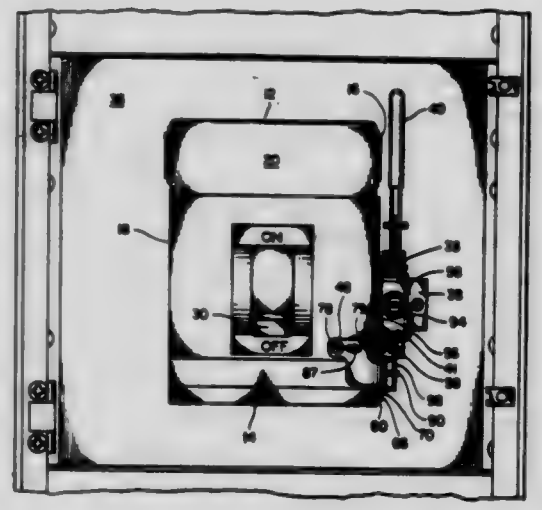
22. A decoupling capacitor including:
a first electrically conductive connection plate;
a second electrically conductive connection plate;
a first terminal pin extending from said first connection plate;
a second terminal pin extending from said second connection plate;
said first and second terminal pins being at different positions relative to the decoupling capacitor;
a capacitive element between said first and second connection plates, said capacitive element having first and second electrically conductive face surfaces;
a first layer of electrically insulating material having a first area of electrically conductive material thereon;
a second layer of electrically insulating material having a second area of electrically conductive material thereon;
said first and second connection plates and said capacitive element being sandwiched between said first and second layers of insulating material with said first connection plate and said first conductive face surface being connected to said first area of electrically conductive material and said second connection plate and said second conductive face surface being connected to said second area of electrically conductive material;
a molded encapsulating cover encapsulating said connection plates and capacitive element, with said terminal pins extending from said encapsulating cover at a first pair of positions; and
a pair of stabilizing elements, said stabilizing elements being at a second pair of positions to balance said terminal pins.

4,491,896

DRAW-OUT CIRCUIT BREAKER

Bernard C. Rickmann, Peru, Ind., assignor to Square D Company, Palatine, Ill.

Filed Oct. 27, 1981, Ser. No. 315,566
Int. Cl.³ H02B 11/12
U.S. Cl. 361—339 3 Claims



1. An automatic trip assembly as part of a switchboard-circuit breaker combination wherein said switchboard includes a back interior wall, said circuit breaker including a molded case having a front surface, a rear surface, opposite side surfaces, a top surface and a bottom surface, said circuit breaker provided with externally accessible manual trip means for tripping said breaker, said manual trip means including a trip pin accessible through an aperture formed in the front surface of said molded case, the improvement comprising;
a plurality of outwardly extending line terminal connectors on said circuit breaker;
a plurality of outwardly extending load terminal connectors on said circuit breaker;
respective receiving connectors in said switchboard adapted to receive a respective extending connector of said circuit breaker;
said circuit breaker having a first position wherein each of said extending connectors is fully engaged with a respective receiving connector of said switchboard, said circuit breaker having a second position wherein said extending connectors are a predetermined distance away from any engagement with the respective receiving connectors;
a channel bracket having a generally C-shaped channel mounted within said switchboard, said channel bracket providing a guideway within said C-shaped channel, said C-shaped channel having a longitudinal axis, said breaker requiring a determined distance of movement along said axis to go from said first position to said second position;
a barrier connected to said channel bracket, said barrier providing a barrier surface in parallel relation to the side surface of said circuit breaker, said barrier surface extending said determined distance;
a cam link including an extending cam surface, said cam link associably mounted with respect to the side of said breaker and normally biased in a direction away from said side surface, said cam portion operatively mounted to be engaged with said barrier surface in response to said circuit breaker assuming a third position between said first position and said second position;
a second generally C-shaped guide bracket connected to one of said sides of said breaker, said guide bracket movably received within the channel of said channel bracket to effect engagement of the respective connectors; and
mechanical actuating means for actuating said automatic trip

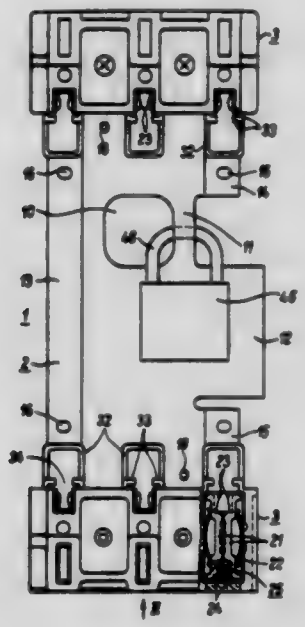
means in response to said cam link engaging said barrier surface.

4,491,897

PLUG-IN BASE FOR LOW-VOLTAGE CIRCUIT BREAKERS

Werner Troebel, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 12, 1982, Ser. No. 338,974
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1981, 3101532
Int. Cl.³ H02B 1/04
U.S. Cl. 361—353 5 Claims



1. The combination of a low voltage circuit breaker and a plug-in base for the circuit breaker, the plug-in base comprising a mounting plate and two identical plug-in units disposed on opposite sides of the plate, each unit comprising a housing and a contact arrangement disposed in the housing, each contact arrangement comprising a first contact and a second contact electrically connected together, the first contact facing a central part of the plug-in base, the circuit breaker including two spaced contacts and the first contact of each plug-in unit contact arrangement mating with a respective contact of the circuit breaker, the second contact of each plug-in unit contact arrangement being disposed on a side of the first contact away from the central part of the base, and connecting elements mating with the second contact of each plug-in unit contact arrangement for connecting a respective second contact in a circuit, each connecting element including an extension extending at an angle therefrom which is removably engaged by a respective second contact in an interlocking manner.

4,491,898

FUSE MOUNTING FOR PAD MOUNTED UNDERGROUND DISTRIBUTION SYSTEM

Carl M. Hillman, Little Genesee, and James W. Dragon, Olean, both of N.Y., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

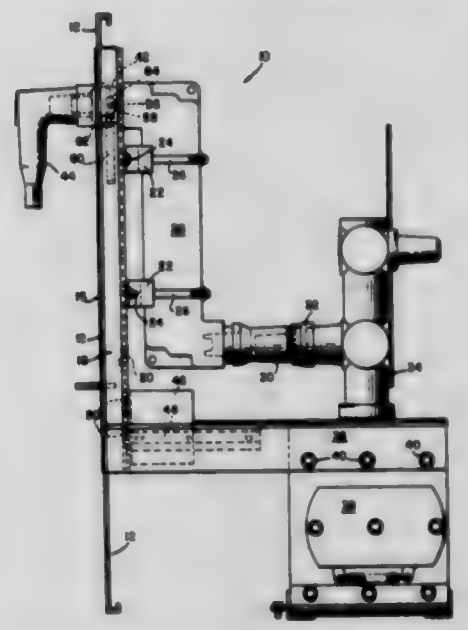
Filed Apr. 5, 1983, Ser. No. 482,197
Int. Cl.³ H02B 11/12
U.S. Cl. 361—432 15 Claims

1. A fuse and fuse mounting arrangement for power distribution systems, comprising:

a housing enclosure;

at least one fuse panel capable of having a power fuse mounted thereon, said fuse panel being mounted on the end of a slidable track to thereby allow said fuse panel to slide into and away from said housing enclosure;

first means operatively defined between said fuse panel and said housing enclosure for releasably locking said fuse panel within said housing enclosure; and



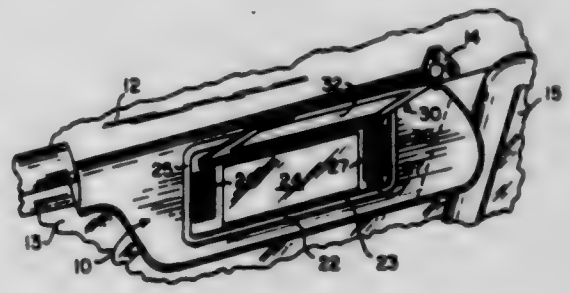
second means connected to said fuse panel for preventing the releasable unlocking of said first means and said fuse panel from said housing enclosure until said second means has been disconnected from said fuse panel.

4,491,899

VISOR COVER ASSEMBLY

Dennis J. Fleming, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Feb. 7, 1983, Ser. No. 464,476
Int. Cl.³ B60Q 1/00
U.S. Cl. 362—74 18 Claims



1. A visor cover control for a vehicle visor including a visor body, a mirror frame and a cover pivotally mounted to the frame comprising:

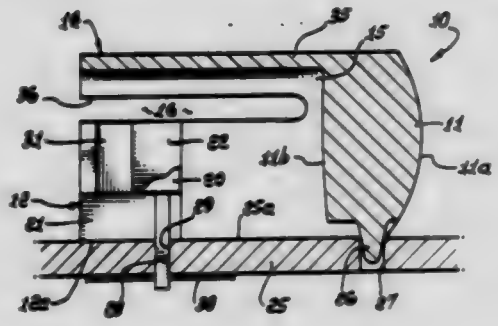
said mirror frame including one of a pair of spaced pivot axles or pivot sockets and said cover including the other of a pair of said pivot axles or pivot sockets, wherein said pivot sockets are shaped to cooperate with and surround said pivot axles and include an opening permitting said cover to be snap-assembled to said frame and pivot between open and closed positions; and

bias means having one end coupled directly to said frame and an opposite end coupled directly to an end of said cover at a location on said cover remote from the pivot connection of said frame and cover and on a side of said pivot connection opposite the connection of said bias means to said frame for alternately urging said cover between fully closed and fully open positions as said cover is manually moved toward such positions and for holding said cover in such positions.

4,491,900
LENS AND MOUNT FOR USE WITH ELECTROMAGNETIC WAVE SOURCE

John M. Savage, Jr., 8118 W. 83rd St., Apt. C, Playa del Rey, Calif. 90291

Filed Sep. 27, 1982, Ser. No. 424,277
Int. Cl.³ F21V 9/00
U.S. Cl. 362—230 16 Claims



1. For use in combination with a radiation emitter or detector device, the improvement comprising:

(a) a lens cap having a skirt defining an emitter or detector device receiving zone,

(b) the cap including a lens integral with the skirt (and characterized as being collimated or convergent beam as respects) for refracting radiation passing to or from said zone,

(c) said skirt including at least two rearwardly and horizontally endwise extending spring fingers adapted to be spread relatively apart to receive and retain said device therebetween, in said zone,

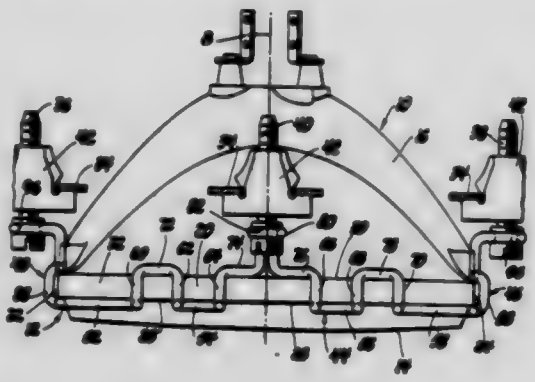
(d) said spring fingers having downwardly relatively divergent cam surfaces to be spread apart in response to relatively upward insertion of said device into said zone, and said spring fingers having grooves therein facing said zone to receive edge portions of said device, said grooves having locating shoulders facing upwardly to position said device, vertically,

(e) and said skirt including another spring finger overlying said zone to be engaged and deflected upwardly by said device and to resiliently urge said device relatively downwardly against said locating shoulders, whereby insertion of said device substantially normal to the endwise direction of the spring fingers is enabled.

4,491,901
SUPPORT DEVICE FOR A VEHICLE HEADLAMP

Stephen Sigety, Jr., Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 20, 1983, Ser. No. 543,610
Int. Cl.³ F21V 21/28
U.S. Cl. 362—275 3 Claims

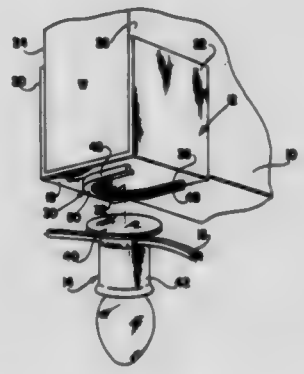


1. A support device attachable to a vehicle body at the front end thereof and adapted to support and provide adjustable aiming movement of a headlamp formed with a radially extending flange surrounding the headlamp adjacent the periphery thereof, said flange being defined by substantially parallel front and rear walls each of which lies in a plane substantially perpendicular to the optical axis of said headlamp, said support device comprising a wire of substantially uniform cross section encompassing said flange and being formed with a plurality of spaced first wire sections located adjacent said front wall and a plurality of spaced second wire sections located adjacent the rear wall in staggered relationship with said first wire sections, said first and said second wire sections each having a portion thereof located radially inwardly from said flange towards said optical axis, a third wire section interconnecting adjacent ends of each of said first and second wire sections and bridging said flange so as to cause the latter to be gripped by the and supported by said first and second wire sections, and three loop wire sections connected to said second wire sections, two of said loop-shaped wire sections lying along a first axis perpendicular of said optical axis of said headlamp and the third loop-shaped wire section lying along a second axis perpendicular to said first axis and passing through said optical axis, an adjusting screw carried by each of said three loop-shaped wire sections and adapted to be threadably received by said vehicle for adjusting the aim of said headlamp.

4,491,902
COMBINATION MOUNTING BRACKET AND LIGHT SOCKET

Frank V. Cangelosi, 10102 Briley Way, Villa Park, Calif. 92667

Continuation-in-part of Ser. No. 414,887, Sep. 3, 1982,. This application Apr. 11, 1983, Ser. No. 483,578
Int. Cl.³ F21V 21/06
U.S. Cl. 362—389 14 Claims



1. An improved mounting bracket adapted to be mounted to a fixed structure member for hanging and removably supporting a light socket in combination, comprising:

a mounting bracket having a substantially "U"-shaped body defined by at least one bottom wall and oppositely disposed, flexible side walls, whereby said flexible side walls are adapted to engage the fixed structure member so as to be mounted thereon;

a light-socket mounting member adapted to be removably mounted to said mounting bracket, and including an extended head member formed on said light-socket-mounting member; and

means for removably mounting said light socket to said mounting bracket, said means being a channel formed in said bottom wall of said mounting bracket, said channel having an open end to receive said head member and a closed end to aid in supporting said head member in said channel.

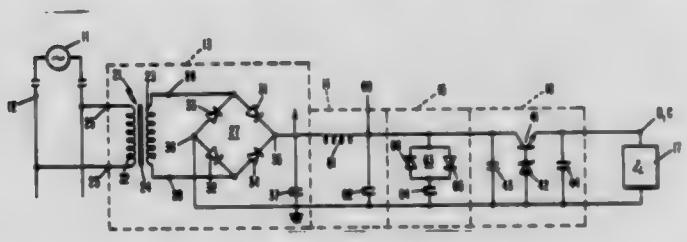
4,491,903
COMBINATION LOW-PASS FILTER AND HIGH FREQUENCY TRANSIENT SUPPRESSOR

Herbert R. Montague, 75 Clifton Blvd., Binghamton, N.Y. 13903

Continuation of Ser. No. 442,968, Nov. 19, 1982, abandoned. This application May 21, 1984, Ser. No. 613,012
Int. Cl.³ H02M 1/14
U.S. Cl. 363—48 21 Claims

1. A circuit for substantially preventing coupling of spikes

occurring on an AC line through an AC to DC converter to a DC load of the converter, the converter including a supply transformer and a shunt filter capacitor, the supply transformer and other reactances of the converter having a tendency to develop pulses in response to the spikes, the pulses having a tendency to be bipolar relative to an output voltage developed by the converter, the pulses having components at a sufficiently high frequency such that the shunt capacitor responds to them as a resistive impedance and not as a capacitive impedance, the circuit comprising a shunt network including a bidirectional breakdown means having a predetermined threshold conduction level with a dead band series connected with a first capacitor that functions as: a low impedance capacitive reactance to the high frequency components, a very high impedance capacitive reactance to the DC derived by the converter, and a high impedance to the frequency of the line, the breakdown means having a zero DC voltage across it



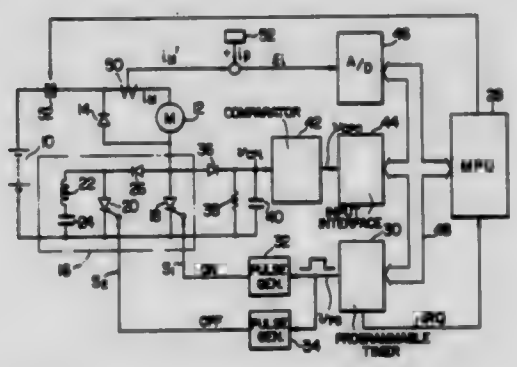
during normal operation of the converter, the first shunt capacitor being biased to a voltage equal approximately to the converter output voltage and conducting substantially no current during normal operation of the converter, high frequency current components being supplied by the breakdown means and through the first capacitor to momentarily interrupt the flow of current from the converter to the load in response to derivation of one of the pulses having an amplitude in excess of the breakdown voltage in either direction; and low pass filter means connected in series with the shunt network and the load, the low pass filter including a shunt second capacitor that functions as: a very low impedance capacitive reactance to the high frequency components, a very high impedance capacitive reactance to the DC derived by the converter, and a low impedance to the frequency of the line, the low pass filter having a cut-off frequency lower than a ripple frequency of the AC line as derived by the converter.

4,491,904

CHOPPER CONTROL APPARATUS

Michizaaa Horiuchi, and Hiroshi Sato, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 3, 1982, Ser. No. 384,519
Claims priority, application Japan, Jun. 5, 1981, 56-85759
Int. Cl.³ H02P *5/06*
U.S. Cl. 364—130 4 Claims



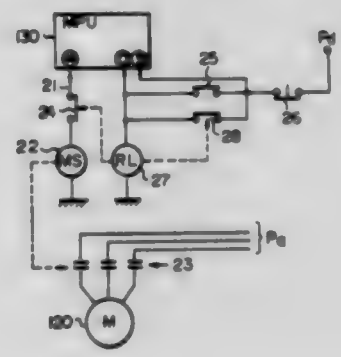
1. A chopper control apparatus comprising:
chopper means connected between a d.c. power supply source and a load;
a computer for performing an arithmetic operation for controlling a duty factor of said chopper means;
means for supplying a clock signal of a predetermined period to said computer;
means for supplying a turn-on signal to said chopper means in synchronism with said clock signal;
means for supplying a turn-off signal to said chopper means after a delay of period of time based on the results of the arithmetic operation performed by said computer subsequent to the supply of said turn-on signal;
means for detecting a conducting state of said chopper means;
delay means for delaying an output signal produced by said conducting state detecting means; and
said computer being provided with a commutation failure detecting program for detecting presence or absence of said output signal produced by said delay means in response to said clock signal serving as an interrupt signal.

4,491,905

METHOD FOR DRIVING A MOTOR USED IN A LOOM

Akio Arakawa, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Apr. 13, 1982, Ser. No. 368,029
Claims priority, application Japan, Apr. 18, 1981, 56-057823
Int. Cl.³ H02K *29/04*; D03D *47/00*
U.S. Cl. 364—181 9 Claims



1. A method for driving a motor which responds to start and stop signals generated on a signal line by a microcomputer to operate a loom, said method comprising the steps of:
providing a first manually controllable switch comprising contacts of a relay in series with said signal line;
starting the motor when there is coincidence between a command issued from the microcomputer to start the motor and a manual operation causing energization of said first switch to start the motor;
stopping the motor when at least one of a command issued from the microcomputer to stop the motor and a manual operation causing de-energization of said first switch to stop the motor is performed; and
turning said first switch ON and OFF by energizing and de-energizing the relay via a manually operable second switch and a third switch connected in series, the third switch comprising another contact of the relay and being self-sustained once the relay is energized from the power source.

4,491,906

METHOD OF CREATING CURVED SURFACE

Hajimu Kishi, Hino, and Masaki Seki, Tokyo, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed May 22, 1981, Ser. No. 266,284
Claims priority, application Japan, Jun. 10, 1980, 55-78247
Int. Cl.³ G06F *15/32, 15/46*
U.S. Cl. 364—191 48 Claims

8. A method of machining a curved surface of a three-dimensional body on a workpiece using a digital computer, comprising the steps of:
(a) inputting, into said computer, section data relating to two parallel sections which specify given sections of said

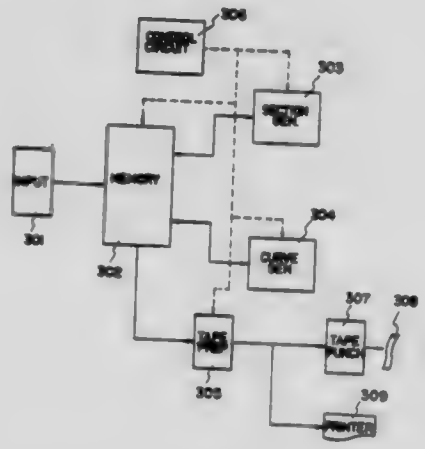
curved surface of said three-dimensional body, and section data relating to a reference section which contains a reference curve specifying the external form of the body and containing first and second points lying on respective given section curves in respective ones of said given sections;

(b) creating data relating to a plurality of given sections of the body in accordance with said section data;

(c) dividing said reference curve into a plurality of segments at dividing points and producing dividing point data;

(d) computing an equation for a transformation from a specific coordinate system to obtain an intermediate section which contains one of the dividing points on the reference curve and which lies in parallel with said parallel sections;

(e) computing data relating to an intermediate section curve in said intermediate section on the basis of data relating to



the section curves in respective ones of said parallel sections and on the basis of the dividing point data relating to the position of the one of said dividing points contained in said intermediate section;

(f) computing intermediate curve section data relating to said intermediate section curve of said intermediate section containing the one of said dividing points;

(g) creating machining data relating to said curved surface of said three-dimensional body from intermediate curve section data relating to a plurality of intermediate section curves;

(h) generating blocks of control data based on said machining data;

(i) producing a paper tape including said control data; and

(j) controlling a machine to produce said curved surface of said three-dimensional body on the workpiece on the basis of said control data on the paper tape.

4,491,907

PLURALITY OF PROCESSORS SHARING THE MEMORY, THE ARITHMETIC LOGIC UNIT AND CONTROL CIRCUITRY ALL ON A SINGLE SEMICONDUCTOR CHIP

Peter L. Koeppen, Houston; Gerald Rogers, Sugarland; Sammy K. Brown, Midland, all of Tex., and Duane Solimeno, Newington, Conn., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 15, 1980, Ser. No. 216,584
Int. Cl.³ G06F *9/18, 15/16*
U.S. Cl. 364—200 11 Claims

1. An electronic digital processor system comprising:

a semiconductor unit;

a memory in said unit for storing instructions;

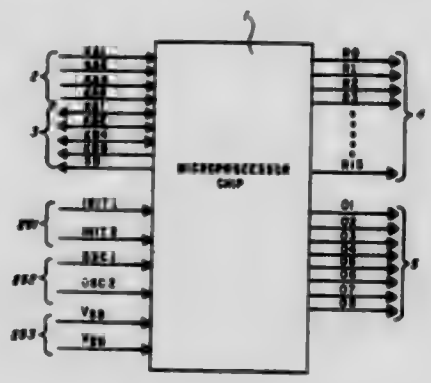
an arithmetic and logic means in said unit for performing operations under control of commands derived from said instructions;

control circuitry in said unit for obtaining from said memory said instructions;

input means in said unit for receiving a data;

output means in said unit for displaying said data;

a first central processor in said unit for executing said instructions using said memory, said arithmetic and logic means, said control circuitry, said input means, said output means and data paths which connect said first central processor to said memory, said arithmetic and logic means, said control circuitry, said input means and said output means;



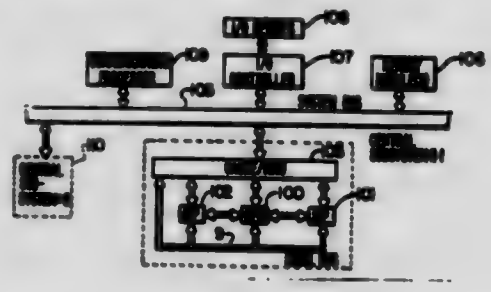
a second central processor in said unit for executing said instructions simultaneously with and independent from execution of instructions by said first central processor, sharing said memory, said arithmetic and logic means, said control circuitry, said input means and said output means with said first central processor while also connected to said data paths.

4,491,908

MICROPROGRAMMED CONTROL OF EXTENDED INTEGER AND COMMERCIAL INSTRUCTION PROCESSOR INSTRUCTIONS THROUGH USE OF A DATA TYPE FIELD IN A CENTRAL PROCESSOR UNIT

William E. Woods, Natick, and Philip E. Stanley, Westboro, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 1, 1981, Ser. No. 326,442
Int. Cl.³ G06F *9/26*
U.S. Cl. 364—200 5 Claims



1. A data processing system includes a memory subsystem which stores instructions and operands and a central processor unit (CPU) which receives said instructions and said operands from said memory subsystem and executes said instructions, one of said instructions includes a first word and a second word, said first word includes an operation code field for identifying said one of said instructions said CPU will execute, and an escape code field for identifying a class of instruction including extended integer instructions (EII) and commercial instruction processor (CIP) instructions, said second word includes a data type field for identifying an operand type and an address syllable field which in conjunction with said escape code field generates an effective address, said CPU comprising:

a control store means having locations for storing a plurality of microwords and generating a plurality of control store signals for each of said plurality of microwords for controlling the operation of said CPU;

register means responsive to a first plurality of said control store signals for storing signals received from said memory subsystem representative of said data type field; and

read only memory means coupled to said register means and said control store means and responsive to a first operation code signal, a first control store signal and a second control store signal, and said data type field signals for generating a plurality of operand size signals; and

multiplexer means responsive to a second plurality of said control store signals and said plurality of operand size signals for generating a test signal representative of a selected one of said plurality of operand size signals,

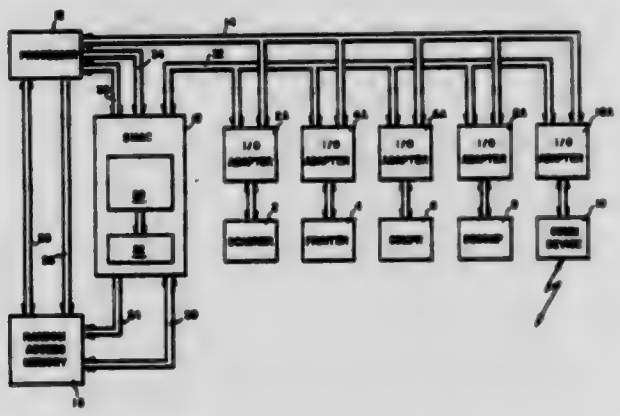
said control store means being responsive to said test signal for branching to the location of the next one of said microwords for generating the next plurality of control store signals.

4,491,909

DATA PROCESSING SYSTEM HAVING SHARED MEMORY

Yutaka Shimizu, Yamato, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 22, 1982, Ser. No. 350,795
Claims priority, application Japan, Mar. 18, 1981, 56-38029
Int. Cl.[3] G06F *13/00, 13/06*
U.S. Cl. 364—200 6 Claims



1. In a data processing system having a processor with a memory, a plurality of functional devices initialized by said processor, a buffer memory shared by all of said functional devices for buffering data transfered between said functional devices, shared memory access means for controlling writing from a selected functional device into said shared buffer memory and reading from said shared buffer memory into another selected functional device, wherein said shared memory access means includes a pointer table having a plurality of entries each capable of retaining an address for said shared buffer memory and wherein said processor initializes, in response to a data transfer request from a functional device, said pointer table, and first and second functional devices active in said data transfer, the improvement comprising:

said functional devices having means for generating one or more control codes representing access status for said shared buffer memory;

said control codes include a first code representing that said buffer memory is available for writing and a second code representing that said shared buffer memory is available for reading; and

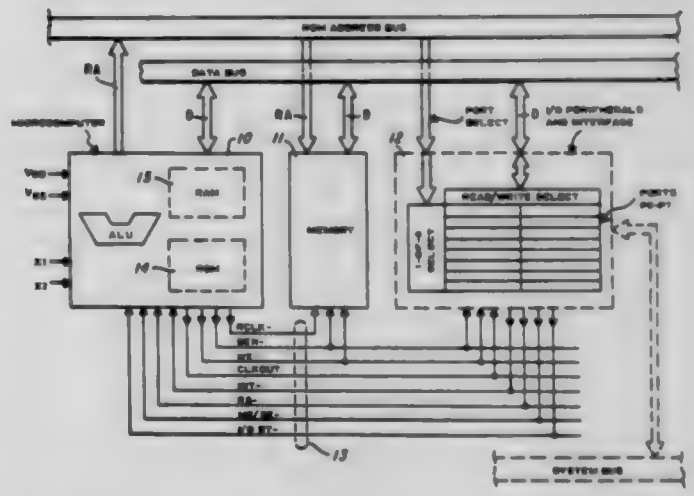
said active functional devices, after being initialized by said processor, transferring data between each other through said shared buffer memory under control of said shared memory access means and independent of said processor by interchanging said control codes with each other, said first active device enabling said shared memory access means to control the transfer of data from said first active device to said buffer memory when said first code is received from said second active device, said second active device enabling said shared memory access means to control the transfer of data from said buffer memory to said second active device when said second code is received from said first active device.

4,491,910

MICROCOMPUTER HAVING DATA SHIFT WITHIN MEMORY

Edward R. Candel; Surendar S. Magar, and Antony W. Leigh, all of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 22, 1982, Ser. No. 350,951
Int. Cl.[3] G06F *9/22, 13/00*
U.S. Cl. 364—200 9 Claims



1. A microcomputer device formed in a single integrated circuit comprising:

an arithmetic/logic unit having a data input and a data output;

a data memory having an array of memory locations for storing data words; said data memory having data input-/output means, and having addressing means for accessing locations of data words in the array for store and recall of data words via said input/output means;

data bus means coupled to the data input and data output of the arithmetic/logic unit and to the data input/output means of the data memory;

shift means included in said data memory means, said shift means moving an entire data word in the memory from one location in the array to another location having an adjacent address, said data word being shifted within said shift means through a shift path that does not include said data bus means and without being coupled through said arithmetic/logic means to implement the shift.

4,491,911

DATA PROCESSING SYSTEM WITH IMPROVED ADDRESS TRANSLATION FACILITY

Fumitaka Sato, Oume, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 24, 1982, Ser. No. 351,859
Claims priority, application Japan, Mar. 3, 1981, 56-29349
Int. Cl.[3] G06F *13/00, 9/30*
U.S. Cl. 364—200 1 Claim

1. A data processing system, comprising:

a central processing unit (CPU), an input and output processor (IOP), main memory modules, and a common bus for coupling said CPU, said IOP and said main memory modules to each other;

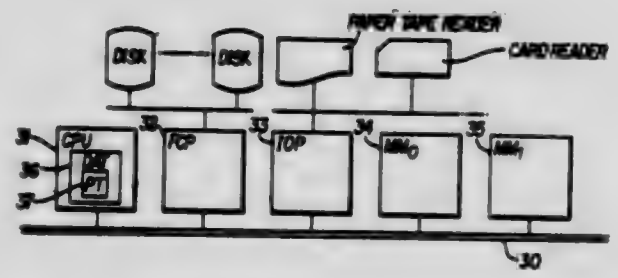
said CPU including a dynamic address translator (DAT) to translate automatically an associative memory address into a respective actual memory address, said DAT comprising,

a first register means for storing an associative address including an associative address portion and an actual address portion,

a page table addressed by said associative address portion for

storing page table entries each including predetermined bits of a respective actual address and plural predetermined control bits, said page table outputting said predetermined bits of said actual address and said plural predetermined control bits upon being addressed by said associative address portion, and

second register means for storing said actual address portion of said associative address and said predetermined bits of said actual address outputted by said page table when said page table is addressed by said associative address portion to produce an actual address, said second register means addressing said memory modules with said actual address; and



said CPU comprising an operating system for processing information, including plural general registers and means for generating a PTH instruction for defining and revising said page table entries, said PTH instruction including an instruction code, a first control portion for identifying a first general register storing an associative address associated with said instruction code and a second general register for storing a page table entry and a page count, and a second control portion for enabling the PTH instruction to undergo self-modification, and means for setting, reading and resetting the page table entry in the page table corresponding to the instruction code based on said second control portion of said PTH instruction.

4,491,912

DATA PROCESSING SYSTEM WITH IMPROVED MICROSUBROUTINE FACILITY

Masahiro Kainaga, Yokohama; Kousuke Sakoda, Hino, and Hiroaki Nakanishi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

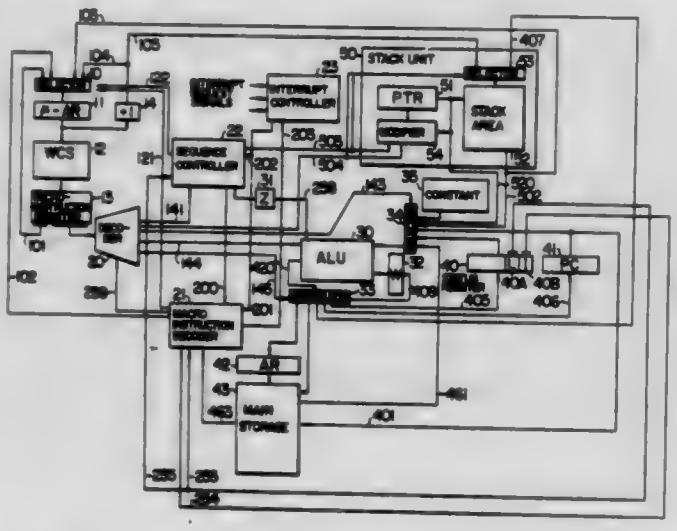
Filed Mar. 16, 1982, Ser. No. 358,676

Claims priority, application Japan, Mar. 18, 1981, 56-37979

Int. Cl.³ G06F *9/22*

U.S. Cl. 364—200

4 Claims



1. A data processing system having an improved microsubroutine facility comprising:

first storage means for storing therein macro instructions;

means including a program counter coupled to said first storage means for supplying an address of a macro instruction next ot be executed to said first storage means;

second storage means for storing therein micro-programs for executing said macro instructions;

means including an address register coupled to said second storage means for supplying an instruction address of a microprogram next to be executed to said second storage means;

stack means for storing therein a return address of the microprogram;

first means responsive to a first microinstruction, which instructs a microsubroutine call, for storing the return address of the microinstruction in said stack means, and responsive to a second microinstruction, which instructs a return from the microsubroutine, for returning the return address of the microinstruction from said stack means;

mode indication means for indicating whether the execution mode of said macro instruction is a control program mode or an application program mode;

means including a status register for indicating the operation status of a macro instruction being executed;

interrupt control means for monitirong an interrupt request;

second means for determining acceptance or non-acceptance of the interrupt request on the basis of said mode indication means including means for setting into said address register a microinstruction address for executing the macro instruction specified by said program counter, when an interrupt request is not accepted, and for storing the contends of said status register, the indication of the program mode, and the contents of said program counter, when the interrupt request is accepted, and means for setting pattern information which corresponds to the execution mode after the interrupt into said status register and said program counter and thereafter setting the microinstruction address specified by said program counter into said address register, thereby restoring the information stored at the time of an interrupt to said status register and said program counter;

third storage means for storing therein the contends of said stack means;

means including a halfway interrupt indicating field for indicating that an interrupt request was accepted in the course of the execution of a macro instruction; and

third means responsive to an interrupt request detection signal from said interrupt control circuit for setting the halfway interrupt indicating field to an interrupt indicating state, when an interrupt request is accepted, and for saving the contents of said stack means, the contents of said status register, the indication of the program mode, and the contents of said program counter, in the course of the execution of the application program mode, and means for setting said halfway interrupt indicating field to a non-interrupt indicating state and for restoring the contends of said stack means after completion of the execution of the interrupt program.

4,491,913

ADDRESS GENERATING DEVICE FOR A COMMUNICATION LINE SCANNING DEVICE

Jean Calvignac, LaGaude; Yves Granger, and Andre Masclet, both of Antibes, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 12, 1982, Ser. No. 433,744

Claims priority, application 10281981, Oct. 28, 1981, 81430038.0

Int. Cl.³ G06F *1/00*

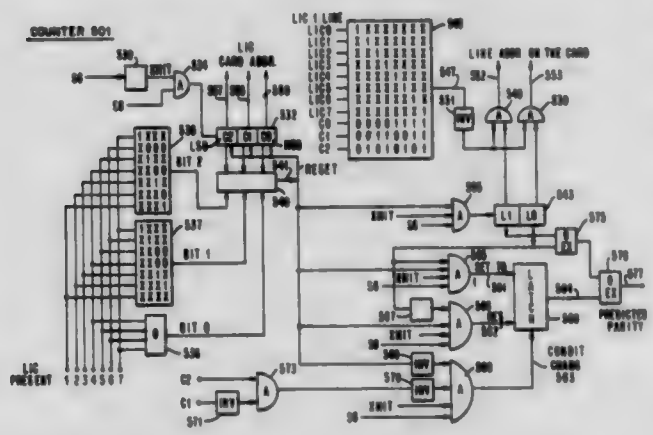
U.S. Cl. 364—200

9 Claims

1. In a device for scanning communication lines, said communication lines being used for exchanging message bits and connected to the scanning device through n line interface circuits, n varying in accordance with the configuration of the line network, an address generating device characterized in that it includes:

a first logic circuit (536, 537, 538) receiving presence indicating signals provided by the interface circuits when they are connected to the scanning device, said logic circuit outputting the address bits of the last present interface circuit to be scanned,

a clock providing an increment pulse on each period assigned to a line scan,



a first counter (532) which is incremented by each increment pulse and which can count in binary mode up to n−1, to output the address bits of the successive interface circuits,

a first comparator (540) receiving at a first input, the output of the first logic circuit and at its second input, the output of the first counter and which outputs a reset signal of the first counter when the first and second inputs are equal.

4,491,914

INITIAL PROGRAM LOAD SYSTEM

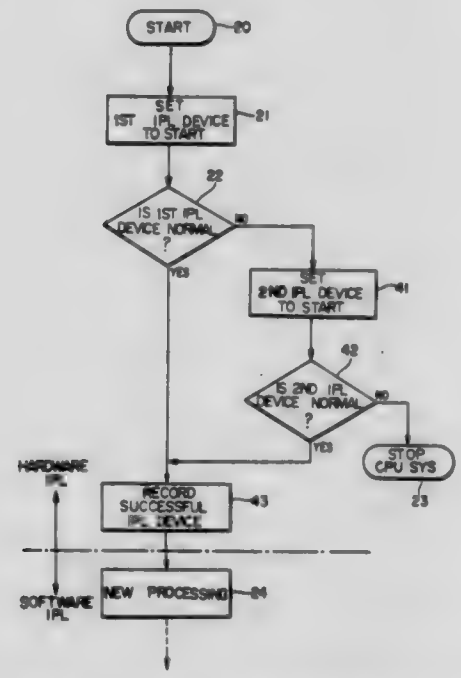
Jiro Sujaku, Fujisawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1982, Ser. No. 445,473

Claims priority, application Japan, Dec. 4, 1981, 56-195247

Int. Cl.³ G06F *1/00*

U.S. Cl. 364—200 **4 Claims**



1. An initial program load system comprising the first load step of starting automatically under a predetermined condition and loading a computer with an initial program from a first device among a plurality of nonvolatile memories each storing the initial program, the second load step of loading the computer with the initial program from a second device among said plurality of nonvolatile memories when any fault has been detected in said first load step or when the load operation does not end within a predetermined period of time, and the step of loading the computer with the initial program by successively using remaining devices among said plurality of nonvolatile memories, when any fault has been detected in said second load step or when the load operation does not end within a predetermined period of time.

4,491,915

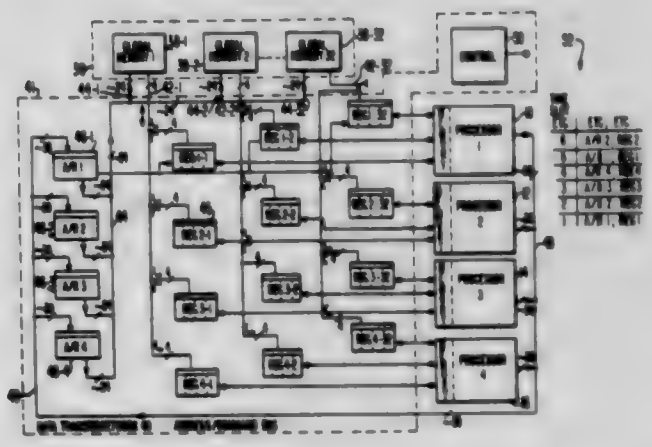
MULTIPROCESSOR-MEMORY DATA TRANSFER NETWORK

Timothy J. Forquer, Haddonfield, and Hungwen Li, Cherry Hill, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 30, 1982, Ser. No. 445,522

Int. Cl.³ G06F *15/16*

U.S. Cl. 364—200 **16 Claims**



1. A system for concurrently transferring words of data between a data storage memory and a plurality N of data procesors, comprising in combination:

means producing timed control signals; and

N buffer means, each buffer means coupled between a different one of said processors and said memory for temporarily storing a number M of words, M being proportional to N and responsive to said control signals for transferring said words serially between itself and its associated one of said processors at a transfer rate X and for transferring, in parallel, M of said words at a time between itself and said memory, the transfer between the N buffer means and memory occurring in succession at a rate which allows uninterrupted said serial word transfer at rate X.

4,491,916

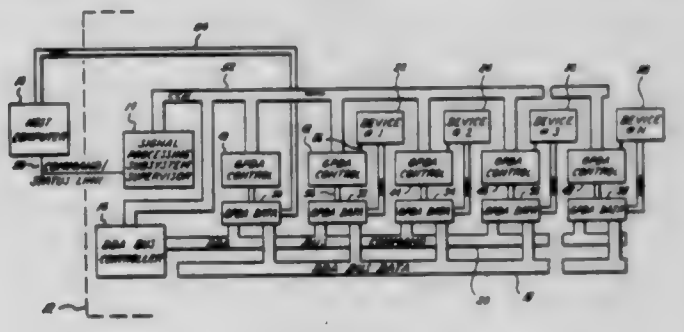
LARGE VOLUME, HIGH SPEED DATA PROCESSOR

Juan B. Vailhourat, Houston, Tex., assignor to Litton Resources Systems, Inc., Alvin, Tex.

Continuation of Ser. No. 328,039, Dec. 7, 1981, abandoned, which is a continuation of Ser. No. 091,166, Nov. 5, 1979, abandoned. This application Jul. 27, 1983, Ser. No. 517,384

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **6 Claims**



1. A data processing subsystem associated with a host computer, said host computer including means for assigning processing tasks to said data processing subsystem by generating a queue of transaction command packets, comprising:

a supervisor for receiving from said host computer transaction command packets, said transaction command packets

consisting of a plurality of supervisor command packets, selected in accordance with separate assigned processing tasks to be performed, into a plurality of device command packets;

a plurality of peripheral devices characterized by different personalities but having equal priority;

a direct device access bus, including a set of data lines for providing data pathways directly between said peripheral devices for parallel transfer of data, and including a set of command lines;

a command control bus coupled to said supervisor;

a plurality of programmable general purpose device adapters for respectively interfacing each said peripheral device in parallel, with the data lines of said direct device access bus;

a decoder associated with each said programmable general purpose device adapter, each said decoder being coupled in parallel to said direct device access bus command lines;

a register means in each said programmable general purpose device adapter, interconnected with the associated decoder and coupled to said command control bus, for receiving device command packets from said supervisor over said command control bus, the device command packets having been selected by said supervisor according to a process task to be performed by selected interfaced peripheral devices, the device command packets including a unique transaction code for identifying a peripheral device as being a member of a particular one of several different sets of peripheral devices, a separate transaction code being assigned to each different peripheral device set and the same transaction code being assigned to all of the members within a particular set;

a bus controller interconnected between said supervisor and the command lines of said direct device access bus;

means, in said bus controller, responsive to commands from said supervisor, for applying, at overlapped timed intervals, respective transaction codes to the decoders over the command lines of said direct device access bus so that, when a transaction code is received by the decoders that are associated with the programmable general purpose device adapters which are interfaced with members of the respective peripheral device sets, matches the transaction code received by the corresponding register means over the command control bus, data pathways are enabled by the programmable general purpose device adapters, over the data lines of said direct device access bus between individual members of the respective peripheral device sets to allow substantially concurrent, direct, parallel data-transfers therebetween as required for the performance of the separate assigned processing tasks, independently of the host computer.

4,491,917

DOOR CONTROL SYSTEMS

Philip M. Higgins, Wilmette; William B. MacKenna, Wheeling; Lawrence G. Sickels, Antioch, and Richard A. Stumpf, Evanston, all of Ill., assignors to Vapor Corporation, Chicago, Ill.

Filed May 22, 1981, Ser. No. 266,306
Int. Cl.[3] G06F *15/20*
U.S. Cl. 364—424 24 Claims

1. A door controller for transit vehicles having a power door operator for moving at least one door in said vehicle between open and closed positions, comprising;

means sensing wheel rotation and generating motion signals;

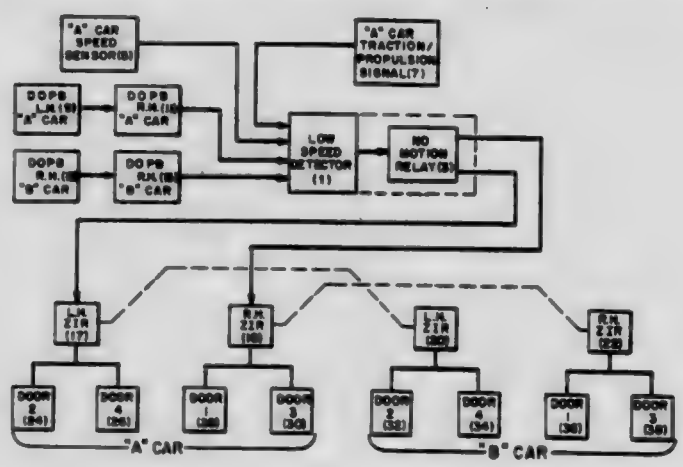
means sensing vehicular propulsion, and generating propulsion signals;

means generating a manual door opening signal;

means generating door operating signals corresponding to door open and closed states respectively;

means responsive to first and second combinations of said motion, propulsions, and operating signals, generating an enabling signal for opening said power door when predetermined first combinations of said motion signals and propulsion signals occur;

means in said responsive means, further responsive to said manual door opening signal, for actuating said operator;



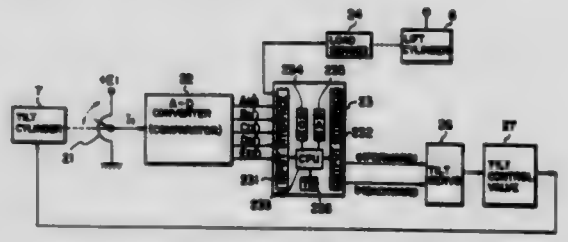
whereby said manual door opening signal moves said doors from closed to open positions on occurrence of said first combination.

4,491,918

METHOD AND SYSTEM FOR HORIZONTALLY CONTROLLING A FORK FOR A FORK LIFT TRUCK

Katsumi Yuki, Toyota; Susumu Yoshida, Aichi; Mineo Ozeki, Ichinomiya; Yasuyuki Miyazaki, Aichi, and Masaru Kawamata, Numazu, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoh Shokki Seisakusho, Kariya and Kabushiki Kaisha Meidensha, Tokyo, both of, Japan

Filed Mar. 31, 1982, Ser. No. 364,480
Claims priority, application Japan, Mar. 31, 1981, 56-47741; Mar. 31, 1981, 56-45961[U]; Mar. 31, 1981, 56-45962[U]
Int. Cl.[3] B66F *9/06;* G06F *15/50*
U.S. Cl. 364—424 12 Claims



6. A system for controlling a fork movably supported by an upright of a fork lift truck attain a position parallel with respect to the ground, according to loads mounted on the fork, which comprises;

(a) a hydraulic tilt cylinder (7) for adjusting the vertical position of the upright;

(b) a hydraulic lift cylinder (6) for lifting or lowering the fork;

(c) a first potentiometer (21) mechanically linked with said hydraulic tilt cylinder for detecting upright forward or backward tilt angles and for outputting signals (I_1) corresponding thereto;

(d) a load sensor (24) mechanically linked with said hydraulic lift cylinder for detecting the load mounted on the fork and for outputting signals corresponding thereto;

(e) an A-D converter (22) connected to said first potentiometer for converting the analog signal indicative of upright tilt angle into the digital signal corresponding thereto;

(f) a microcomputer (23) including:

(1) an input interface (231) connected to said A-D converter for inputting the converted digital tilt angle signals into said microcomputer, and connected to said load sensor for converting the detected analog load

signals into the corresponding digital load signals and inputting the signals into said microcomputer;

(2) a RAM (235);

(3) a ROM (234) for storing preestablished program sequences and target upright backward tilting angles to be previously set for keeping the fork parallel with respect to the ground according to various loads mounted on the fork;

(4) a CPU (233) for selecting a target upright backward tilting angle from among the ones stored in said ROM in accordance with the detected digital load signal, comparing the detected digital upright backward tilt angle with the selected target upright backward tilting angle, and outputting an upright forward tilting operation command signal a when the detected upright backward tilt angle is beyond the selected target upright backward tilt angle, an upright backward tilting operation command signal b when the detected upright backward tilt angle is below the selected target upright backward tilt angle, and an upright neutral position command signal when both the angles are equal to each other;

(5) an output interface (232) for outputting the upright tilting command signals a or b from the microcomputer;

(g) a tilt control valve (27) connected between said microcomputer and said hydraulic tilt cylinder for switching the direction of flow of hydraulic fluid supplied into said hydraulic tilt cylinder in order to tilt the upright backward or forward in response to the upright forward/backward tilting command signals a and b outputted from said microcomputer.

4,491,919

ANTI-SKID REGULATING SYSTEM

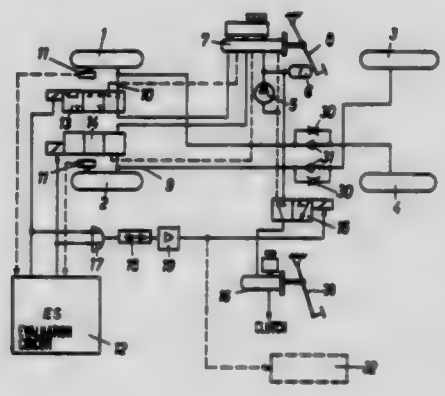
Heinz Leiber, Oberriexingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 25, 1983, Ser. No. 526,240

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1982, 3236534

Int. Cl.³ B60T 8/08

U.S. Cl. 364—426 20 Claims



1. An anti-skid regulating system for front-wheel-drive vehicles having a brake circuit control in which one front wheel and one rear wheel are included in two separate brake circuits, each separate brake circuit includes anti-skid regulator measurement tranaducers which are assigned only to rotational motion of the front wheels for monitoring the front wheel motion behavior, an evaluation circuit is included to which the signals of the measurement transducer are supplied in which the braking pressure in the two brake circuits is regulated individually in accordance with the wheel behavior of the associated front wheel, influencing means are provided which are triggerable by the evaluation circuit which at least temporarily during an anti-skid regulation at least reduce the braking effect of the engine on the driven front wheels.

4,491,920

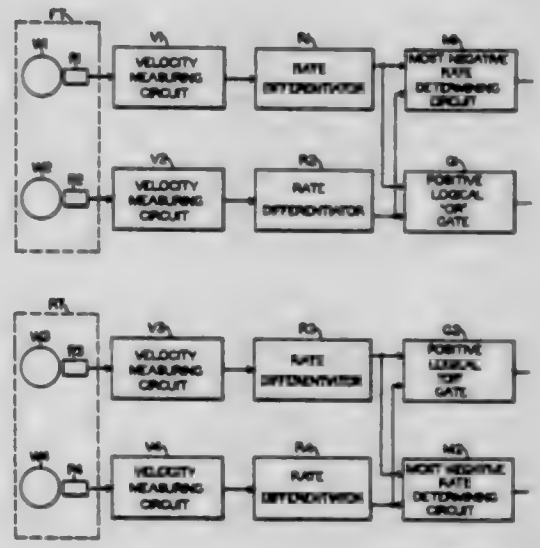
RATE POLARITY SHIFT WHEEL-SLIP CONTROL SYSTEM

James A. Wood, Versailles Boro, and Richard J. Mazur, Pittsburgh, both of Pa., assignors to American Standard Inc., Wilmerding, Pa.

Filed Apr. 24, 1981, Ser. No. 257,445

Int. Cl.³ B60T 8/02

U.S. Cl. 364—426 10 Claims



1. A wheel-slip control system comprising, means for producing signals representative of the velocity of each of the wheels, means for differentiating the velocity signals to obtain rate signals, means for determining the most negative-going rate signal of each wheel axle unit of each truck, means responsive to the most negative-going rate signal to initiate a brake force reduction action on the truck experiencing a wheel-slip condition, and means for sensing a polarity shift in the most negative rate signal to cause said responsive means to reapply a braking action.

4,491,921

METHOD AND APPARATUS FOR CONTROLLING THE AIR FUEL RATIO IN AN INTERNAL COMBUSTION ENGINE

Shinichi Sugiyama; Yoshiki Chujo, both of Susono, and Takehisa Yaegashi, Mishima, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 22, 1981, Ser. No. 333,319

Claims priority, application Japan, Dec. 23, 1980, 55-181208; Dec. 23, 1980, 55-181209

Int. Cl.³ F02B 3/00; F02D 33/00

U.S. Cl. 364—431.05 24 Claims

1. An air-fuel ratio control method of an internal combustion engine having at least one fuel injection valve, an exhaust gas sensor for detecting the concentration of a predetermined component in the exhaust gas and for generating a voltage signal which represents the detected concentration, and an electrical digital computer, said method comprising the steps of:

intermittently sampling the voltage signal from said exhaust gas sensor to produce a first electrical signal indicative of the sampled voltage;

detecting the operating condition of the engine to produce a second electrical signal indicative of the detected operating condition;

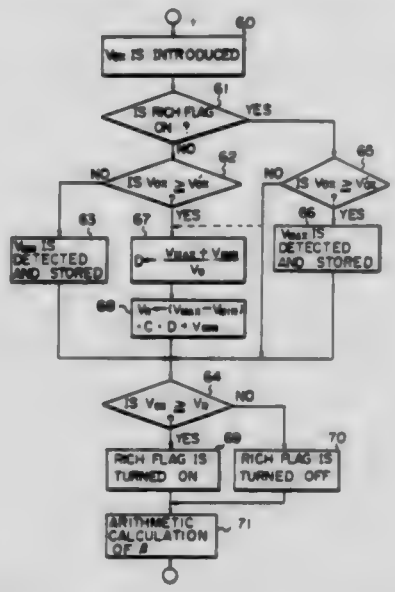
finding a maximum value and a minimum value of said first electrical signal to produce a maximum signal and a minimum signal by means of said digital computer in accordance with said maximum value and said minimum value, respectively;

calculating, in response to said maximum signal and said minimum signal, a first value which is proportional to the difference between the maximum value and the minimum

value, and a second value which is proportional to the sum of the maximum value and the minimum value, by means of said digital computer;

calculating, by means of said digital computer, a reference value in accordance with said first and second values and said minimum value, said reference value corresponding to the sum of the minimum value and the product of the first and second values;

comparing, by means of said digital computer, the magnitude of the reference value with said first electrical signal



to produce a third electrical signal indicative of the comparison result;

calculating, in response to said second and third electrical signals, the fuel feeding rate to the engine to produce a fourth electrical signal indicative of the calculated fuel feeding rate, by means of said digital computer;

converting said fourth electrical signal into a pulse signal having a variable pulse width which corresponds to said fourth electircal signal; and

actuating, in response to said pulse signal, said fuel injection valve.

4,491,922

METHOD AND APPARATUS FOR CONTROLLING STEPPING MOTOR IN IDLING ROTATIONAL SPEED CONTROL

Nobuyuki Kobayashi, Toyota, and Hiroshi Ito, Nagoya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 23, 1981, Ser. No. 323,977

Claims priority, application Japan, Aug. 14, 1981, 55-126690; Aug. 14, 1981, 56-126691

Int. Cl.³ F02D 9/02, 31/00; G06F 15/20

U.S. Cl. 364—431.07 18 Claims

1. Idling rotation speed control apparatus for an electronically controlled engine, comprising:

an engine air intake path portion;

a throttle valve in said intake path portion;

a bypass path parallel to said intake path portion;

a valve for controlling the sectional area of flow in said bypass path, said valve comprising a valve body and a stepping motor displacing said valve body according to step values;

an ignition switch;

an electronic control controllably supplied with electric power in response to the opening and closing of said ignition switch, said electronic control being connected to said sepping motor and comprising a central processing unit and first memory storage means for storing step values of said stepping motor;

second memory storage means for storing a step value of said stepping motor, said second memory storage means being supplied with electric power irrespective of the opening and closing of said ignition switch, and capable of continuous memory storage;

said central processing unit operating said stepping motor according to the step value stored in said first memory storage means to control the sectional area of flow in response to the idling rotation speed of the engine, storing the step value of said stepping motor in said second memory storage means, and making the step value stored in said first memory storage means equal to the step value stored in said second memory storage means following an interruption of electric power supplied to said electronic control; and

said electronic control determining whether said second memory storage means step value is correct, and making said first memory storage means step value equal to said second memory storage means step value only when said second memory storage means step value is correct.

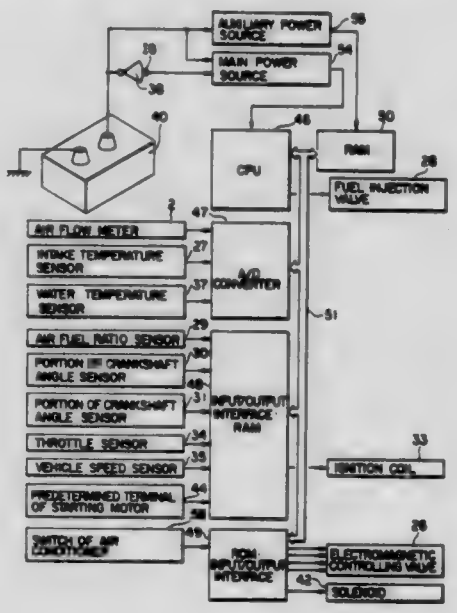
10. A method for idling rotation speed control for an electronically controlled engine having an intake path portion, a throttle valve in the intake path portion, a bypass path parallel to the intake path portion, and a valve operated by a stepping motor for controlling the sectional area of flow in the bypass path, said method comprising the steps of:

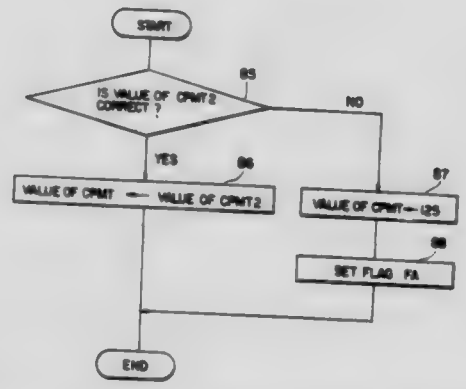
operating the stepping motor according to a step value stored in a first memory storage means controllably supplied with electric power in response to the opening and closing of an ignition switch to control the sectional area of flow in response to the idling rotation speed of the engine;

storing the step value of the stepping motor in the first memory storage means;

storing the step value of the stepping motor in a second memory storage means supplied with electric power irrespective of the opening and closing of said ignition switch and capable of continuous memory storage;

determining whether the step value stored in the second memory storage means is correct; and





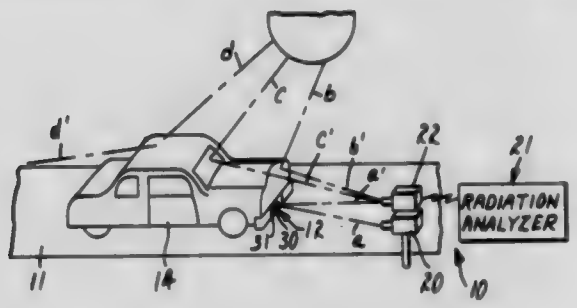
making the step value stored in the first memory storage means equal to the step value stored in the second memory storage means following an interruption in electric power supplied to said electronic control only when the second memory storage means step value is correct.

4,491,923

METHOD AND APPARATUS FOR EXTRACTING INFORMATION FROM AN OBJECT THAT IS WITHIN A LARGE INTERROGATION ZONE

Thomas F. Look, Ham Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 249,180, Mar. 30, 1981, abandoned. This application Feb. 9, 1982, Ser. No. 347,240
Int. Cl.[3] H04N 7/00
U.S. Cl. 364—478 15 Claims



1. A method of sensing and identifying of information having an unknown position and orientation within a large interrogation zone, said method comprising:

incorporating the information which is to be read on a retroreflective material designed to reflect incident electromagnetic radiation in a concentrated cone surrounding the axes of incidence;

irradiating the zone with electromagnetic radiation by a source having a predetermined location with respect to the zone, thereby establishing a known axis of incidence for the radiation from the source;

sensing the zone for electromagnetic radiation which is reflected off of objects within the zone;

locating the sensing means adjacent the known axis of incidence from the irradiation source, thus receiving radiation originating from the irradiation source and reflected by the retroreflective material, but tending to eliminate radiation from radiation sources which is specularly reflected by areas within the zone;

selecting sensed radiation that has a magnitude greater than a predetermined value which is typical for diffuse reflection; and

identifying information contained within the selected radiation.

4,491,924

OLEFIN OXIDATION REACTOR TEMPERATURE CONTROL

Suresh C. Agarwal, Euclid, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Continuation-in-part of Ser. No. 370,703, Apr. 22, 1982,. This application May 7, 1982, Ser. No. 375,795
Int. Cl.[3] G05D 7/100
U.S. Cl. 364—500 2 Claims

1. An arrangement for controlling the temperature of a reactor for containing a reaction from at least one reactant to at least another product, the reactor having a feed line for the reactant and an effluent line for the product, comprising:

a feed flow transmitter connected to the feed line for measuring the flow F_1 of reactant to the reactor;

an effluent flow transmitter connected to the effluent line for measuring the flow F_2 of product from the reactor;

a feed temperature transmitter connected to the feed line for sensing the reactant temperature T_I;

an effluent temperature transmitter connected to the effluent line for measuring the product temperature T_O;

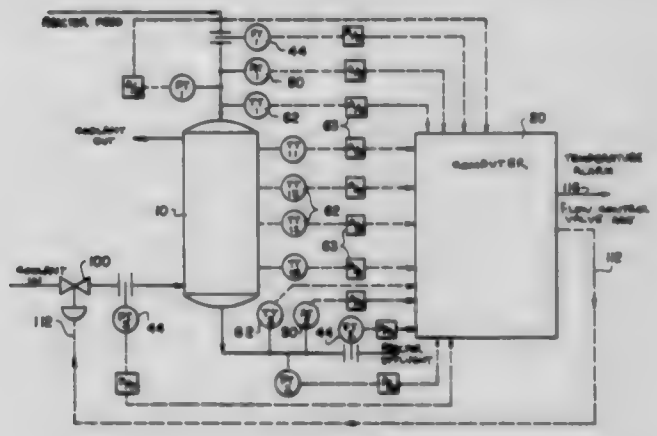
at least one reactor temperature transmitter connected to the reactor for measuring a temperature of reactor T_R;

a concentration transmitter connected to the effluent line for measuring the concentration of the at least one product in the effluent line;

a coolant flow line to the reactor for supplying coolant to the reactor at a coolant flow rate;

coolant flow control means in said coolant line; and

circuit means connected to all of said transmitters and to said



coolant flow control means for controlling the flow of coolant to the reactor according to a coolant flow signal, said circuit means receiving quantities proportional to the heat of reaction for at least one reaction in the reactor, specific heats of the reactant and product, and the heat of vaporization of the coolant, said circuit means operable to obtain values for changes per unit time in feed flow rate ΔF_1, effluent flow rate ΔF_2, feed temperature ΔT_I, reactor temperature, ΔT_R, effluent temperature ΔT_O, and concentration of at least one product Δ_y, said circuit means including circuit components for multiplying each change per unit time by a characteristic factor said circuit means including circuit elements for generating factors as follows:

$$\frac{\partial f}{\partial F_1} = -\left[C_{P1}(T_R - T_I)\right]/\lambda$$

$$\frac{\partial f}{\partial F_2} = \left[y_1\Delta H_1 + y_2\Delta H_2 + C_{P1}(T_R - T_O)\right]/\lambda$$

$$\frac{\partial f}{\partial T_I} = F_1 C_{P1}/\lambda$$

$$\frac{\partial f}{\partial T_R} = (F_2 C_{P1} - F_1 C_I)/\lambda$$

$$\frac{\partial f}{\partial T_O} = -F_2 C_{P1}/\lambda$$

$$\frac{\partial f}{\partial y_1} = F_2 \Delta H_1/\lambda$$

$$\frac{\partial f}{\partial y_2} = F_2 \Delta H_2/\lambda$$

said coolant flow signal being changed by a quantity ΔQ in said circuit means which is calculated as follows:

$$\Delta Q = \left[\frac{\partial f}{\partial F_1}\Delta F_1 + \frac{\partial f}{\partial F_2}\Delta F_2 + \frac{\partial f}{\partial T_I}\Delta T_I + \frac{\partial f}{\partial T_R}\Delta T_R +\right.$$

-continued

$$\frac{\partial f}{\partial T_O} T_O + \frac{\partial f}{\partial y_1} \Delta y_1 + \frac{\partial f}{\partial y_2} \Delta y_2 \Bigg]$$

wherein:

λ = coolant heat of vaporization

y_1 = a first product condensation

ΔH_1 = heat of reaction of reactant to first product

y_2 = a second product concentration

ΔH_2 = heat of reaction of reactant to second product

C_{p_1} = specific heat of effluent,

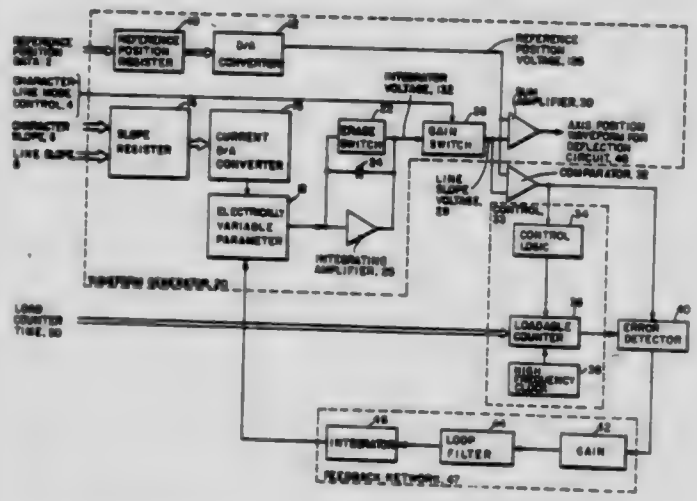
and wherein ethylene plus oxygen is supplied to the reactor as reactant and ethylene oxide plus carbon dioxide and water are generated as products, y_1 being the concentration of ethylene oxide, y_2 being the concentration of carbon dioxide, ΔH_1 being the heat of reaction of ethylene plus oxygen to ethylene oxide, ΔH_2 being the heat of reaction of ethylene plus oxygen to carbon dioxide.

4,491,925

PRECISION TIME TRACKING LINE GENERATOR

Gerald P. Richards, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jun. 19, 1981, Ser. No. 275,489
Int. Cl.³ G06F 3/14
U.S. Cl. 364—521 44 Claims



1. In combination:

means for generating a reference position for a character or a line on a display;

means for generating a character slope or a line slope on said display for defining said character or said line;

said reference position generating means and said slope generating means producing a moving beam on said display for forming said character or said line; and

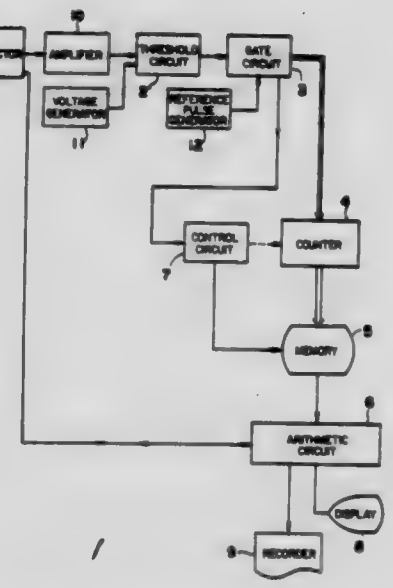
means coupled to said slope generating means for testing and correcting said moving beam on said display by measuring a time for said beam to move from a specific initial position to a specific final position, said initial position and said final position being defined by said reference position generating means, and by adjusting a rate of charge of said position of said beam by varying an electrically variable parameter means in accordance with an output signal from an error detector means.

4,491,926

PARTICLE SIZE DISTRIBUTION ANALYZER

Tokuhiro Okada, Hyogoken, and Masayoshi Hayashi, Kobe, both of Japan, assignors to Toa Medical Electronics Co. Ltd., Kobe, Japan

Filed Mar. 1, 1982, Ser. No. 353,839
Claims priority, application Japan, Apr. 30, 1981, 56-66385
Int. Cl.³ G01N 15/00
U.S. Cl. 364—555 1 Claim



1. A particle size distribution analyzer adapted for observing the health conditions of particles, such as blood cells, the analyzer comprising a detector adapted to detect particles by electrical or optical differences from a medium containing the particles in dispersion and generate signals proportionally to the size of the detected particles, a threshold circuit adapted to remove noises or fragmental signals from the detected signals so as to obtain threshold circuit pulse widths at a constant position, a gate circuit for generating a gate circuit pulse interval signal and a gate circuit pulse width signal from the threshold circuit pulse widths, a counter circuit adapted to count the gate circuit pulse interval signal and the gate circuit pulse width signal from the gate circuit, a memory connected to the counter circuit for storing data, an arithmetic circuit connected to the memory for reading out the data stored in the memory and connected to the detector for stopping the detector after a predetermined lapse of time, a controller circuit connected to the gate circuit, the memory and the counter circuit for controlling the gate circuit, the memory and the counter circuit, and means for displaying or recording the data read out by the arithmetic circuit.

4,491,927

DEPTH MONITORING SYSTEM

Einar H. Bachmann, Wilmette, Ill., and Kristjan Ingvarsson, Gardabae, Iceland, assignors to The Digger Meter Corporation, Chicago, Ill.

PCT No. PCT/US81/00440, § 371 Date Dec. 4, 1981, § 102(e) Date Dec. 4, 1981, PCT Pub. No. WO81/02904, PCT Pub. Date Oct. 15, 1981
Continuation-in-part of Ser. No. 139,603, Apr. 11, 1980, abandoned. This PCT application Apr. 6, 1981, Ser. No. 327,477
Int. Cl.³ E02F 5/04
U.S. Cl. 364—561 10 Claims

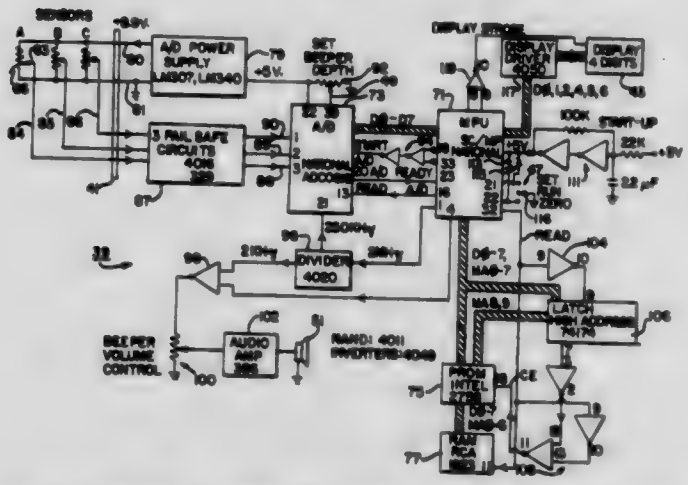
1. In a depth-monitoring system for a digging machine having a boom pivotally mounted at one of its ends to a body, a dipper stick pivotally attached at one of its ends to the free end of the boom, and a bucket pivotally attached to the opposite end of the dipper stick and having digging teeth thereon for digging a hole in the ground, an arrangement comprising:

a first inclinometer sensor mounted on the boom for generating a boom slope angle signal proportional to the slope angle of the boom relative to a horizontal plane;

a second inclinometer sensor mounted on the dipper stick for generating a dipper stick slope signal proportional to the slope angle of the dipper stick relative to a horizontal plane;

processor means responsive to said boom slope signal and to said dipper stick slope signal for generating display depth information indicative of the downward displacement of the bucket relative to the body of the machine;

memory means for storing information indicative of the radial length of the boom, for storing information indicative of the radial length of the dipper stick, for storing information indicative of the bucket height, and for storing sine table information for enabling said processor means to calculate the depth information by adding the bucket height, the product of the boom radial length and the sine of the boom slope angle, and the product of the dipper stick radial length and the sine of the dipper stick slope angle; and



display means responsive to said depth information for providing a read-out output indicative of said displacement.

4,491,928

REFERENCE MARK DESIGNATING SYSTEM FOR INCREMENTAL POSITION MEASURING INSTRUMENTS

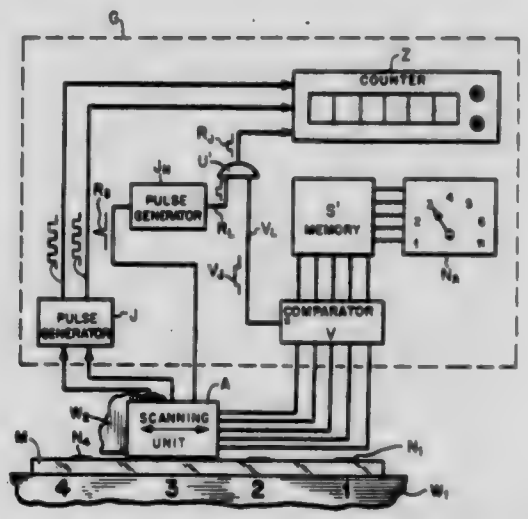
Alfred Reichl, Stein, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Sep. 21, 1981, Ser. No. 304,083

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1980, 3039483

Int. Cl.³ H01J 3/14

U.S. Cl. 364—562 10 Claims



1. In an incremental position measuring instrument comprising a grid scale, a plurality of identical reference marks arranged along the grid scale, each positioned at a predetermined absolute position with respect to the grid scale; means for detecting the reference marks and generating a plurality of reference signals in response thereto; and means, responsive to the reference signals for controlling the instrument; the improvement comprising:

means for defining a plurality of distinct identification marks, each associated with a respective one of the reference marks and each different from the other identification marks;

means for detecting the plurality of identification marks and for generating a plurality of identification signals in response thereto, each of the identification signals indicative of a respective one of the identification marks;

data storage means for storing a set of designation signals indicative of a designated set of the reference marks;

means for comparing each of the identification signals with the set of designation signals and for generating a gating signal as a function of the result of the comparison; and

means for selectively gating each of the reference signals in response to the respective gating signal, such that for at least one state of the gating signal the reference signals are prevented from acting on the controlling means.

4,491,929

APPARATUS FOR DISCRIMINATION OF SHEET TRANSFER CONDITION

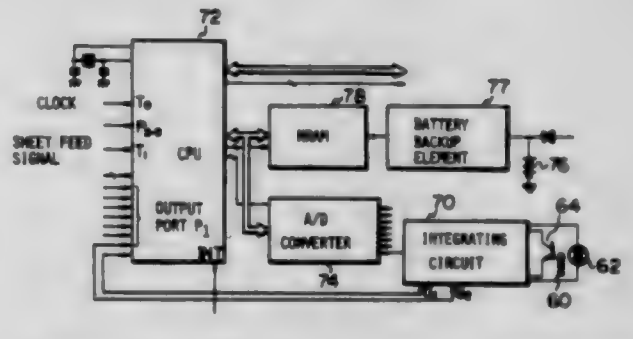
Tadashi Ikoma, and Syoso Miyawaki, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 29, 1981, Ser. No. 335,415

Claims priority, application Japan, Jan. 8, 1981, 56-1416

Int. Cl.³ B65H 7/12; G03G 15/00

U.S. Cl. 364—563 11 Claims



1. An apparatus for discriminating a sheet transfer condition, comprising:

a pair of feed rollers cooperatively disposed in a predetermined sheet feed path, at least one of the rollers being movable toward and away from the other, said movable roller being displaced from the other while a sheet is fed between the rollers by an amount which corresponds to a thickness Dti of the sheet;

roller displacement sensing means for sensing a displacement of the movable roller from the other while a sheet is fed between the rollers; and

computing means for computing a period of time for which at least one of the rollers completes an integral number of rotations, for computing the amount of a displacement of the movable roller for the computed period of time, and for processing the computed amount of displacement on a time series basis, whereby whether the amount of displacement of the movable roller indicative of the sheet thickness Dti coincides with a predetermined sheet thickness is determined.

4,491,930

MEMORY SYSTEM USING FILTERABLE SIGNALS

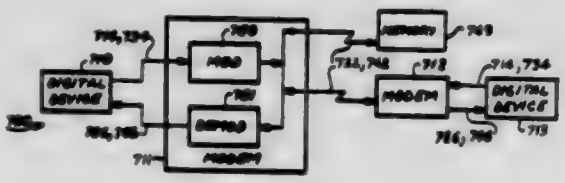
Gilbert P. Hyatt, 4592 Amberwood, La Palma, Calif. 90623

Continuation-in-part of Ser. No. 889,301, Mar. 23, 1978, Pat. No. 4,322,819, and a continuation-in-part of Ser. No. 860,278, Dec. 13, 1977, and a continuation-in-part of Ser. No. 849,812 Nov. 9, 1977, and a continuation-in-part of Ser. No. 844,765, Oct. 25, 1977, and a continuation-in-part of Ser. No. 812,285, Jul. 1, 1977, Pat. No. 4,371,953, and a continuation-in-part of Ser. No. 801,879, May 13, 1977, Pat. No. 4,144,582, and a continuation-in-part of Ser. No. 727,330, Sep. 27, 1976, abandoned, and a continuation-in-part of Ser. No. 730,756, Oct. 7, 1976, and a continuation-in-part of Ser. No. 754,660, Dec. 27, 1976, Pat. No. 4,486,850, and a continuation-in-part of Ser. No. 752,240, Dec. 20, 1976, abandoned, and a continuation-in-part of Ser. No. 550,231, Feb. 14, 1975, Pat. No. 4,209,843, and a continuation-in-part of Ser. No. 522,569, Nov. 11, 1974, Pat. No. 4,209,852, and a continuation-in-part of Ser. No. 490,816, Jul. 22, 1974, Pat. No. 4,029,853, and a continuation-in-part of Ser. No. 476,743, Jun. 5, 1974, Pat. No. 4,364,110, and a continuation-in-part of Ser. No. 402,520, Oct. 1, 1973, and a continuation-in-part of Ser. No. 366,714, Jun. 4, 1973, Pat. No. 3,986,922, and a continuation-in-part of Ser. No. 339,817, Mar. 9, 1973, Pat. No. 4,034,276, and a continuation-in-part of Ser. No. 325,933, Jan. 22, 1973, Pat. No. 4,016,540, and a continuation-in-part of Ser. No. 325,941, Jan. 22, 1973, Pat. No. 4,060,848, and a continuation-in-part of Ser. No. 302,771, Nov. 1, 1972, and a continuation-in-part of Ser. No. 291,394, Sep. 22, 1972, Pat. No. 4,396,976, and a continuation-in-part of Ser. No. 288,247, Sep. 11, 1972, Pat. No. 4,121,284, and a continuation-in-part of Ser. No. 246,867, Apr. 24, 1972, Pat. No. 4,310,878, and a continuation-in-part of Ser. No. 229,213, Apr. 13, 1972, Pat. No. 3,820,894, and a continuation-in-part of Ser. No. 232,459, Mar. 7, 1972, Pat. No. 4,370,720, and a continuation-in-part of Ser. No. 230,872, Mar. 1, 1972, and a continuation-in-part of Ser. No. 134,958, Apr. 19, 1971, and a continuation-in-part of Ser. No. 135,040, Apr. 19, 1971, and a continuation-in-part of Ser. No. 101,881, Dec. 28, 1970, abandoned. This application Jun. 19, 1980, Ser. No. 160,872

Int. Cl.[3] G06J *1/00*; G06F *15/34*

U.S. Cl. 364—602

29 Claims



20. A memory system comprising:

signature means for generating a plurality of signature signals;

a memory for storing the plurality of signature signals generated with said signature means; and

a Fourier filter processor for generating a frequency-related memory output signal in response to Fourier processing of a signature signal stored in said memory.

26. A memory system comprising:

signature means for generating a plurality of signature signals;

a memory for storing the plurality of signature signals generated with said signature means; and

a filter processor for generating a memory output signal in response to filter processing of the signature signals stored in said memory, said filter processor including;

sequential input means for generating a sequence of input signal samples in response to the stored signature signals;

filter operator means for generating operator signal samples;

processor means for processing each of the input signal samples from said sequential input means in sequence with a plurality of the operator signal samples from said filter operator means;

output means for providing a plurality of output signal samples; and

update means for updating the plurality of output signals samples provided with said output means in response to the processing with said processor means of each input signal sample from said sequential input means with the operator signal samples from said filter operator means.

4,491,931

ELASTIC WAVE PROCESSING SYSTEM INVARIANT WITH THE TEMPERATURE

Michel Chomiki, Paris, France, assignor to Thomson-CSF, Paris, France

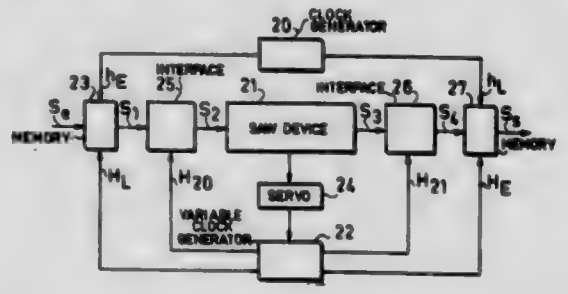
Filed Mar. 29, 1982, Ser. No. 363,383

Claims priority, application France, Apr. 8, 1981, 81 07034

Int. Cl.[3] G06J *1/00*; H03H *9/14*

U.S. Cl. 364—861

18 Claims



1. A signal processing system independent of temperature, comprising:

a generator for producing a fixed clock signal h_E,

an elastic wave device with at least one propagation substrate,

an input memory for storing a signal S_e to be processed at the timing of said fixed clock signal h_E and

a generator for producing a clock signal H_L slaved to the temperature T of the substrate(s) of the elastic wave device for reading said memory, the frequency F_L of the clock signal H_L varying with the temperature T according to the law $(1/F)(\delta F_L/\delta T)=K$, where K is a constant dependent on the material and on the cut of the substrate(s).

4,491,932

ASSOCIATIVE PROCESSOR PARTICULARLY USEFUL FOR TOMOGRAPHIC IMAGE RECONSTRUCTION

Smil Rahman, and Isaac Scherson, both of Rechovot, Israel, assignors to Yeda Research & Development Co. Ltd., Rechovot, Israel

Filed Oct. 1, 1981, Ser. No. 307,663

Int. Cl.[3] G06F *13/00*; G11C *15/00*

U.S. Cl. 364—900

10 Claims

1. A multi-operand associative processor comprising:

A. a main associative memory having a capability of comparing all bits and all words at the same time, and including storage elements constituting:

(i) a storage array for storing a plurality of words, each including a plural-bit data field and a plural, R-bit flag field, which flag field is capable of grouping stored words into a plurality, up to "R", of disjoint-data sets by labeling the respective bit positions of the flag field;

(ii) a MASK-register of equal word length and having corresponding fields for specifying the bit positions to be associated;

(iii) a COMPARAND-register of equal word length and having corresponding fields for storing the bit patterns to be compared against; and

(iv) a TAG-register having a storage element for each word for tagging the words in the storage array which have the specified pattern in the specified bits to be associated;

B. an auxiliary memory having R-operand registers and a

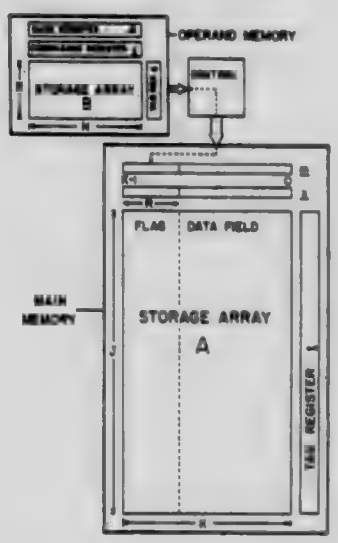
capability of selectively reading out either a bit-slice or its complement at a time; and

C. control means programmed to gate the read-out of the auxiliary memory into the flag field of the MASK-register of the main memory to apply, in a bit-sequential manner, up to "R" operands from the auxiliary memory simultaneously, each to its respective disjoint-data set in the main memory, for simultaneously processing all the disjoint data sets of the main memory by the operands in the auxiliary memory.

10. A tomographic image reconstruction system including a first processor in combination with a second processor;

said first processor being programmed as a convolution processor wherein said main associative memory is capable of shifting-up the contents of its TAG-register one position in a basic operation denoted as SHIFTAG, organized to convolve an m-element data vector p by an m-element filter vector h, to produce a $2m-1$ element vector hp, the p data field in the main memory being considered as the multiplier, the processor being operated through a plurality of major cycles wherein:

during each major cycle, the following functions are performed in all words of the main memory simultaneously using successive elements of the vector h, starting with h_0: the p data field is multiplied by the current h element; the product is summed, one partial product at a time, into the hp field; and this field is shifted one word up via the TAG-register one bit-slice at a time;



and also, during each major cycle, a successive element of hp starting with hp_0 becomes available and is retrieved either bit-serially from the TAG-register at the shift-up of each bit-slice, or in parallel by a READ operation, the other elements of hp, $hp_m \ldots hp_{2m-1}$, being in the main memory at the end of the processing;

said second processor being programmed to perform tomographic back-projection for image reconstruction from a plurality of views taken at different angles, wherein:

said main associative memory has as many words as there are pixels in the image to be reconstructed, each word including the x-y coordinates of its pixel, the density of all pixels being initially set to zero;

for each view taken at angle θ, a coordinate rotation is performed to obtain the new x-coordinate, denoted by x', and the rotated origin is shifted to coincide with the beginning of the first projection;

a consecutive group of R rays is handled at a time, the ray number and density measurement being placed side by side in said auxiliary memory, the pixels lying along each of the R rays being selected and labeled in the flag field of the main memory by a "many-to-many" associative compare of $\log_2 R$ bits of x' against the ray number in said auxiliary memory, all density measurements from said auxiliary memory acting simultaneously, each on the pixels lying along its ray, using a multi-operand ACCUMULATE operation into the density field of the main memory, the process being repeated for all groups in a view; and

the process is repeated for all views to thereby reconstruct the image in said main associative memory;

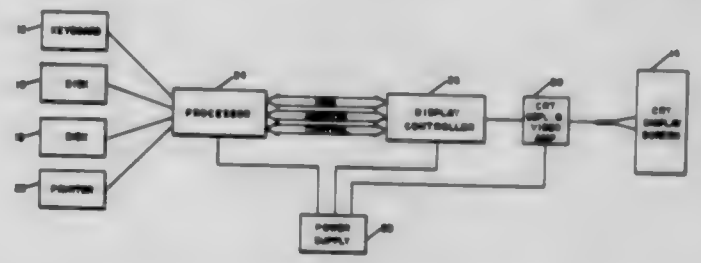
the convolution first processor being sized to match the speed of the back-projection second processor, the two processors operating as a pipe-line.

4,491,933

WORD PROCESSOR

Thomas N. Ursin, and Verne L. Severson, both of Minneapolis, Minn., assignors to Wordtronix Inc., Minneapolis, Minn.

Filed Mar. 18, 1982, Ser. No. 359,497
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—900 25 Claims



1. Word processor including an input keyboard, at least one disk drive, and a cathode ray tube screen for display, all positioned in a single geometrically configured housing for a desktop, and a printer connected to said word processor, said word processor comprising:

a. means for processing information, said processor means including means for interfacing a keyboard and disk drive for inputting information, a printer for outputting information, and a cathode ray tube for displaying information, said processor means including storage means;

b. means for controlling said CRT display, said controlling means including display memory means for said CRT display, said display memory means including row address table means for dynamically storing strings of data in row address tables, and means providing for said strings of data overlapping between said tables;

c. means for generating at least one electronic white sheet of paper on said CRT display including four margins of said paper, and;

d. means for generating on said CRT display a plurality of system-user interaction lines, said line generating means including means for generating

a. margin line,

b. a comment-information line, and;

c. a dialogue-interface line whereby said dialogue lines are prompting to an individual user.

4,491,934

DATA COMPRESSION PROCESS

Karl E. Heinz, Niebuhrstrasse 49, D-5300 Bonn 1, Fed. Rep. of Germany

Filed May 12, 1982, Ser. No. 377,575
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—900 35 Claims

1. A machine process for the compression of redundant sequences of serial data elements which are divided into sequence components each having any number of data elements and a closing character, comprising the following steps:

I. for the first sequence component:

(1) the first and second elements are combined to form a first pair group which receives a code designation and which is stored together therewith in a group list;

(2) the code designation of the first pair group and the third element are combined to form a further pair group which receives a code designation and which is stored together therewith in the group list; and

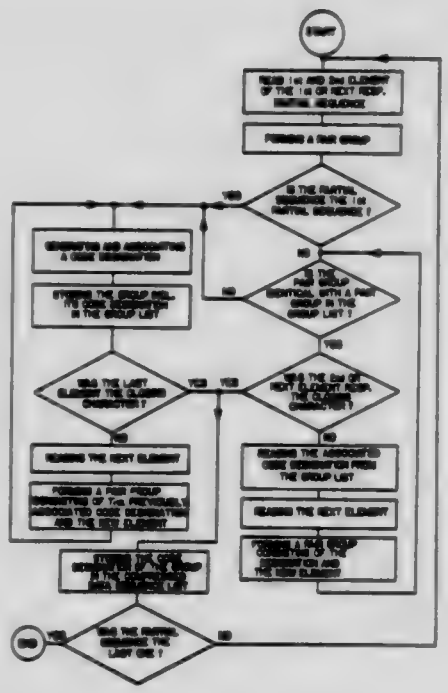
(3) the code designation of the further pair group and the

following element are combined to form a further pair group which receives a code designation, and so forth, to the closing character which with the code designation of the preceding pair group forms a last pair group which in turn receives a code designation and which is stored together therewith in the group list;

II. for the second and further sequence components:

(4) steps (1) through (3) are repeated, but with checking as to whether the first pair group is identical with the first pair group of the first sequence component or one of the further sequence components;

if no, then proceed as in respect of the first sequence component;



if yes, the code designation of the first pair group is combined with the third element and a check is again made as to whether that further pair group is identical with the further pair group of said first or said further sequence component;

if yes the code designation of the further pair group is combined with the following element, and so forth, to the end of identity between the groups;

(5) the code designation of the last identical pair group is stored in the group list and any further elements which occur are processed in accordance with step (3); and

(6) each sequence component is identified in a compressed data sequence list by the code designation of its last pair group.

4,491,935

SCAN-OUT SYSTEM

Hidekiyo Ozawa, Kawasaki; Mikio Itoh, Yokohama, and Akira Yoshida, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 7, 1982, Ser. No. 447,659

Claims priority, application Japan, Dec. 9, 1981, 56-196746

Int. Cl.[3] G06F *1/00*

U.S. Cl. 364—900

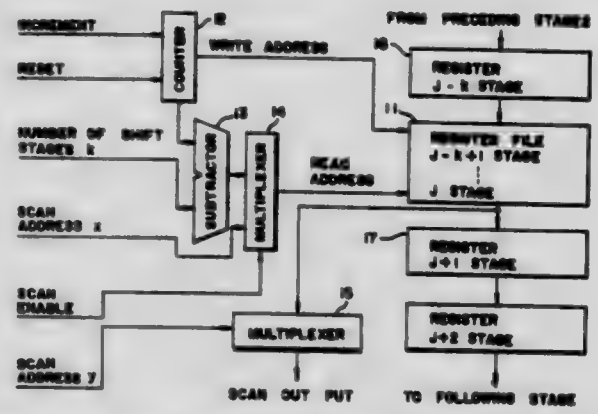
6 Claims

1. A scan-out, system, operatively connected to receive a constant, a scan address and a scan enable signal, for a shift register formed by a memory, comprising:

a counter for designating a write address of the memory;

an operator, operatively connected to said counter and having an input terminal side, for determining an arbitrary value from the count value of said counter to designate a read address of the memory and operatively connected to receive the constant for determining the number of shift stages of the shift register, the scan address and the scan enable signal;

a multiplexer, operatively connected at the input terminal side of said operator and operatively connected to receive the constant for determining the number of shift stages of the shift register, the scan address and the scan enable signal, for calculating the read address of the memory, one of the constant for determining the number of shift stages



of the shift register and the scan address being selected in accordance with the scan enable signal to selectively ouput data from said multiplexer to the input terminal side of said operator.

4,491,936

DYNAMIC RANDOM ACCESS MEMORY CELL WITH INCREASED SIGNAL MARGIN

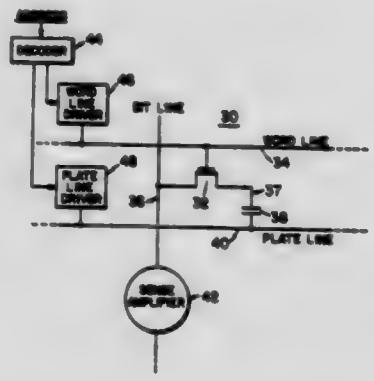
Sargent S. Eaton, Jr., Colorado Springs, Colo., and Robert J. Proebsting, Plano, Tex., assignors to Mostek Corporation, Carrollton, Tex.

Filed Feb. 8, 1982, Ser. No. 346,605

Int. Cl.[3] G11C *11/40, 11/24*

U.S. Cl. 365—149

2 Claims



2. A method of operation for a dynamic semiconductor memory cell, comprising the steps of:

floating a bit line at a predetermined voltage state;

driving a selected word line from a low voltage state to a high voltage state, said word line connected to the gate terminal of an access transistor having a first terminal thereof connected to said bit line;

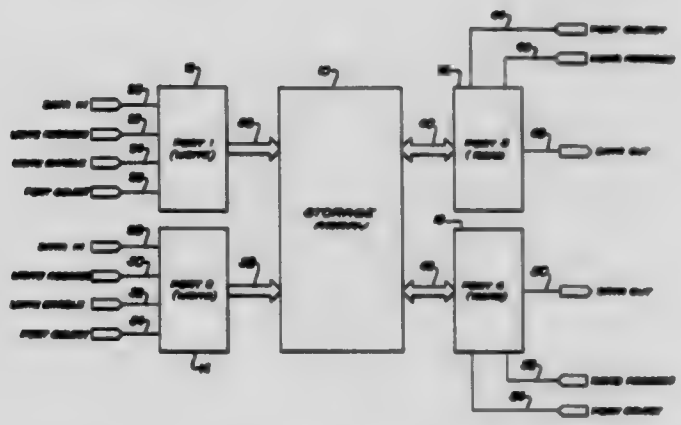
driving a selected plate line from said high voltage state to said low voltage state prior to the time of driving said selected word line from a low voltage state to a high voltage state, said plate line connected to a first terminal of a capacitor having a second terminal thereof connected to a second terminal of said access transistor;

sensing the charge transferred from said capacitor to said bit line when said word line is at said high voltage state and said plate line is at said low voltage state;

driving said plate line from said low voltage state to said high voltage state after said step of sensing; and

driving said word line from said high voltage state to said low voltage state after said plate line is driven to said high voltage state.

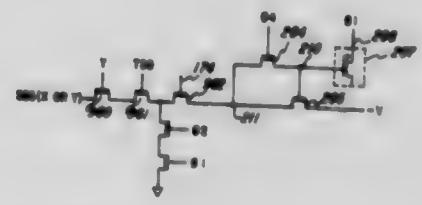
4,491,937
MULTIPORT REGISTER FILE
Daniel F. Chan, Huntington Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Feb. 25, 1982, Ser. No. 352,293
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—154 7 Claims



1. A high-density, monolithic, multiport register file having high immunity to noise, said register file comprising:
a two-dimensional array of storage cells identifiable by reference to a row address and a column address in the array;
a plurality (n) of write ports, each connectable to store data in a selected cell of said array;
a plurality (m) of read ports, each connectable to retrieve data from a selected cell of said array;
wherein said write ports and read ports are operable simultaneously in any combination;
and wherein each cell of said array includes
m flip-flops for the storage of a selected data state, and
n pairs of transistor switches, one pair for each write port, one switch of each pair being operative to store a first data state in said flip-flops, and the other switch of each pair being operative to store a second data state in said flip-flops;
and wherein said array includes
m power supply lines extending through each row of cells and connecting with said respective flip-flops, to provide a first voltage level for rows not selected by one of said read ports and a level of voltage higher than the first level for selected rows,
m pairs of read data lines extending through each column of said array and coupled to corresponding ones of said flip-flops, to determine the data state of said flip-flops,
n row-selecting lines extending through each row of said array, to allow one pair of said transistor switches in each cell of a selected row to be enabled, and
n pairs column-selecting lines extending through each column of said array, to select one of the enabled pair of transistor switches in a selected column of said array and thereby write a selected data state into said flip-flops.

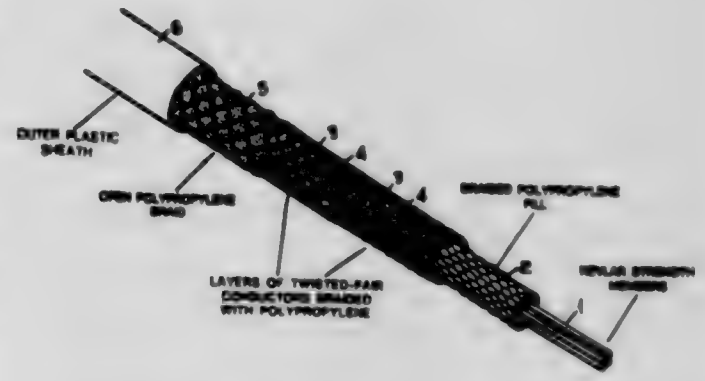
4,491,938
LOW VOLTAGE RAM CELL
Jerald G. Leach, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 28, 1981, Ser. No. 334,852
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—222 8 Claims

1. A memory cell comprising:
a bit line for conducting data to the memory cell;
a gated capacitor device for storing data from the bit line and having a first terminal connect to a first node and a second terminal connected to a first refresh line;
a first transistor with a first terminal connected to said first node, a second terminal connected to a second node and the bit line and a third terminal connected to a second refresh line;
a second transistor with a first terminal connected to a power line, a second terminal connected to said second node and a third terminal connected to said first node; first



means for providing a first reset refresh signal on said first refresh line; and
second means for providing a second refresh signal of a voltage magnitude greater than the voltage on said power line provided on said second refresh line.

4,491,939
HYDROPHONE CABLE
Allan L. Carpenter, Surrey Downs, Australia, assignor to The Commonwealth of Australia, Canberra, Australia
PCT No. PCT/AU82/00127, § 371 Date Apr. 8, 1983, § 102(e) Date Apr. 8, 1983, PCT Pub. No. WO83/00564, PCT Pub. Date Feb. 17, 1983
PCT Filed Aug. 10, 1982, Ser. No. 486,956
Claims priority, application Australia, Aug. 13, 1981, PF0210
Int. Cl.³ G01V *1/38*
U.S. Cl. 367—20 8 Claims



1. A hydrophone cable having a series of hydrophones at spaced intervals along the cable and having an outer sheath and within it strength members and transmission line conductors extending along the cable, the improvement comprising said cable having a braided construction arranged so that the braided members can be loosened to insert the hydrophone assemblies into said cable, said transmission line conductors being helically wound in one direction and being braided with fiber strands helically wound in the opposite direction, said fiber strands at spaced locations along said cable being cut whereby said transmission line conductors can be twisted open at said spaced locations to receive a hydrophone assembly, a hydrophone assembly inserted within said transmission line conductors at said spaced locations, said outer sheath being extruded and filled with a buouant gel to give buoyance to the cable.

4,491,940

SYSTEM FOR REPRODUCING PULSE TIME MODULATED WAVEFORMS STORED ALONG A DIFFRACTIVE TRACK

Claude Thet, Paris, France, assignor to Thomson-CSF, Paris, France

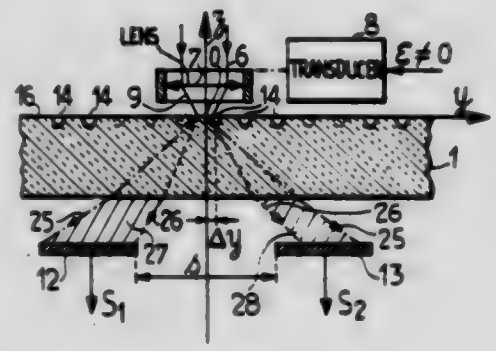
Continuation of Ser. No. 108,499, Dec. 31, 1979, abandoned, which is a continuation of Ser. No. 793,270, May 3, 1977, abandoned, which is a continuation of Ser. No. 390,715, Aug. 23, 1973, abandoned. This application Oct. 25, 1983, Ser. No. 545,110

Claims priority, application France, Aug. 25, 1972, 72 30346

Int. Cl.³ G11B *7/12*

U.S. Cl. 364—46

15 Claims



1. A system for reproducing from a recorded track having an axis, a pulse time modulated waveform, comprising:

a record containing said recorded track and having at least one reference surface, said recorded track being formed from non-contiguous surface irregularities;

uniform upward and downward facing media abutting on said reference surface for forming a modulating structure;

the edges of said surface irregularities having closed contours in said reference surface, the width of said closed contours measured transversely of said axis being substantially constant and not in excess of two microns; the non-uniform length and spacing of said closed contours along said track being at least equal to said width; said surface irregularities forming in said reference surface a set of adjacent track portions; said adjacent track portions being flanked by clearance bands consisting of smooth portions of said reference surface;

a reproducing device arranged for optically reading out said modulating structure; said reproducing device including illumination means for projecting a spot of radiant energy converging onto said phase modulating structure, said spot substantially occupying the width of any one of said track portions, light emerging from said track portion having a spatial distribution representing an amount of track misregistration between said spot and track, photoelectric detection means arranged for partially collecting the modulated radiant energy emerging from the portion of said modulating structure illuminated by said spot, and detecting an amount and direction of track misregistration from said spatial distribution and positional control means for causing said spot to displace with respect to the read-out track to compensate for any misregistration of the spot and track;

said photoelectric detection means comprising at least one photodetector assembly for sensing the spatial distribution of said modulated radiant energy, said photodetector assembly being positioned in a detection plane.

4,491,941

REPRODUCING STYLUS FOR AN INFORMATION SIGNAL RECORDING MEDIUM

Hisao Kinjo, and Keiji Ozawa, both of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Kanagawa, Japan

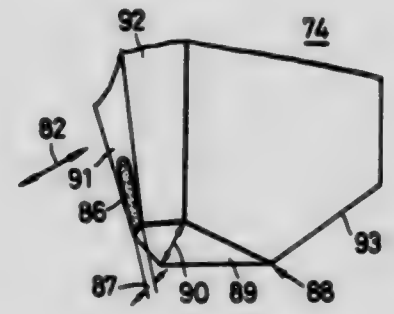
Continuation-in-part of Ser. No. 785,095, Apr. 6, 1977, Pat. No. 4,331,976. This application Jul. 20, 1981, Ser. No. 284,933

Claims priority, application Japan, Apr. 8, 1976, 51-38809; Oct. 26, 1976, 51-127767

Int. Cl.³ G11B *9/06, 3/44*

U.S. Cl. 369—126

4 Claims



1. A reproducing stylus for tracing a track on a recording medium, an information signal being recorded in said track as variations of a geometrical shape, and for reproducing the recorded information signal as variations in capacitance responsive to said variations of said shape, said reproducing stylus comprising:

a reproducing stylus main structure having a tip portion with a sliding contact face for slidingly contacting at least one track of the recording medium; and

an electrode disposed on the reproducing stylus main structure to trace one track and reproduce the information signal as the variations in capacitance in accordance with the variations in geometrical shape, .

said electrode having an end edge and side edges, said side edges being substantially parallel at least in the vicinity of the tip portion of the reproducing stylus main structure,

said reproducing stylus main structure having a rear surface formed on the stylus structure, said electrode being disposed on said rear surface, said rear surface having an end edge and two side edges, said side edges of the rear surface diverging upwardly from both ends of said end edge so that the side edges of the rear surface which are remote from the end edge are wider than the width of the end edge,

said sliding contact face having a pentagonal shape with a leading part and a trailing part respectively located at the foremost end and the rearmost end in a relative sliding direction of the pentagonal sliding contact face,

said end edge of the electrode being at said trailing part, the length of the pentagonal sliding contact face in the relative sliding direction being greater than the width of the end edge of the electrode in a direction perpendicular to the relative sliding direction.

4,491,942

CIRCUIT FOR RECOGNIZING DATA COLLISIONS IN AN OPTICAL DATA BUS AND CIRCUIT FOR RECOGNIZING THE DATA-FREE STATUS OF THE BUS

Hans-Hermann Witte, and Steven Moustakas, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 16, 1983, Ser. No. 505,432

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1982, 3224664

Int. Cl.³ H04B *9/00*

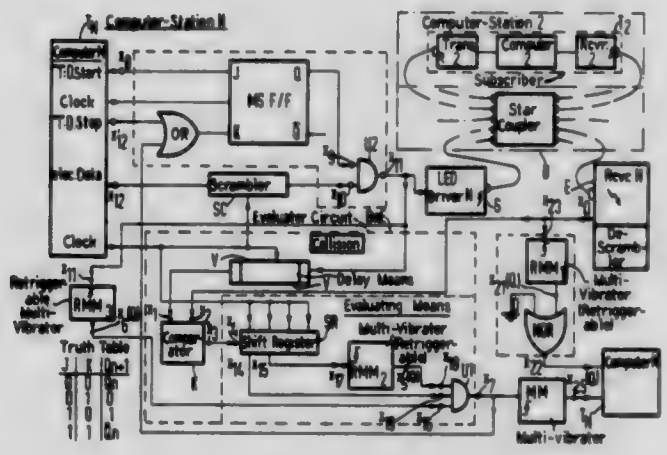
U.S. Cl. 370—4

28 Claims

28. A circuit for recognizing data collisions in an optical data bus to which a plurality of subscribers each with transmitting and receiving capability are connected, a given transmitting

subscriber transmitting data only after the subscriber has determined that the data bus is carrying no data from another transmitting subscriber so that no collisions will occur, comprising:

a given receiving subscriber supplying data received from the data bus to a means for determining whether data is present from another transmitting subscriber not associated with the receiving subscriber which is receiving data; and



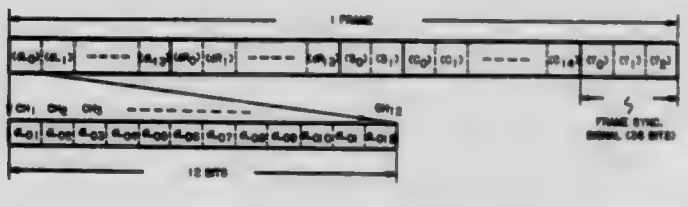
evaluating means following the means for determining and which generates a collision signal indicating a data collision only when within a given short time span it is determined more than once that said means for determining has provided a signal output indicative of possible data collisions.

4,491,943

METHOD FOR TRANSMITTING TIME-SHARING MULTIDATA

Akira Iga; Kentaro Odaka, both of Kawasaki, and Nobuyuki Yasuda, Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 10, 1982, Ser. No. 347,554
Claims priority, application Japan, Feb. 17, 1981, 56-22000
Int. Cl.³ H04J *3/14*
U.S. Cl. 370—13 **9 Claims**



1. A method for transmitting time-sharing multidata in which the data series of a plurality of channels are time-sharing multiplexed to form a transmitting data series, said method for transmitting time-sharing multidata comprising the steps of:

generating error detecting or error correcting redundant bits from a predetermined number of information bits contained in the respective data series of each of said plurality of channels and adding said error detecting or error correcting redundant bits to the respective information bits of each of said plurality of channels to form a corresponding plurality of data sub-blocks for transmitting;

rearranging the bits forming said sub-blocks into a first plurality of bit groups, in which each bit group therein is formed of the corresponding information bits of each of said plurality of channels, and a second plurality of bit groups, in which each bit group thereof is formed of the corresponding bits of said error detecting or error correcting redundant bits of each of said plurality of channels;

time-sharing multiplexing said first and second pluralities of bit groups so as to form one frame in which said bit groups are sequentially continued to each other; and

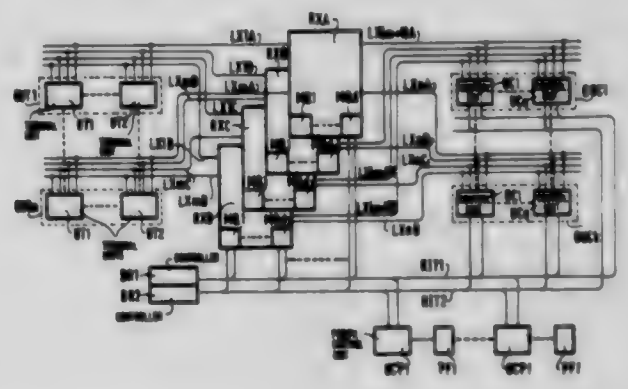
transmitting the time-sharing multiplexed frame together with a frame synchronizing signal.

4,491,944

DISTRIBUTED CONTROL TIME DIVISION EXCHANGE

Paul Caizergues, Jouy en Josas, and Maurice Martin, Paris, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Apr. 5, 1982, Ser. No. 365,692
Claims priority, application France, Apr. 3, 1981, 81 06807
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—58 **10 Claims**



1. A time division exchange, comprising:

a switching network comprising a set of independent planes each driven by at least one respective marker;

a plurality of processor controlled terminal units;

a plurality of first multiplex links for connecting said terminal units to said switching network;

a set of control units constituted by interchangeable physical processors provided with exchange control software;

a plurality of peripheral equipment driving processors;

a data interchange network for connecting said interchangeable and preipheral equipment processors and said markers, said data interchange network providing serial point-to-point connections using a semaphore procedure;

a network controller for controlling access to said data interchange network; and

a plurality of second multiplex links for connecting said interchangeable processors to said switching network, said second multiplex links having time slots used in accordance with a semaphore procedure to control the processors of said terminal units;

wherein said control software is divided into a plurality of logical machines which are independent of the physical processor in which they happen to be loaded at any given time.

4,491,945

FAST PACKET SWITCH

Jonathan S. Turner, Evanston, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 25, 1982, Ser. No. 392,378
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—60 **57 Claims**

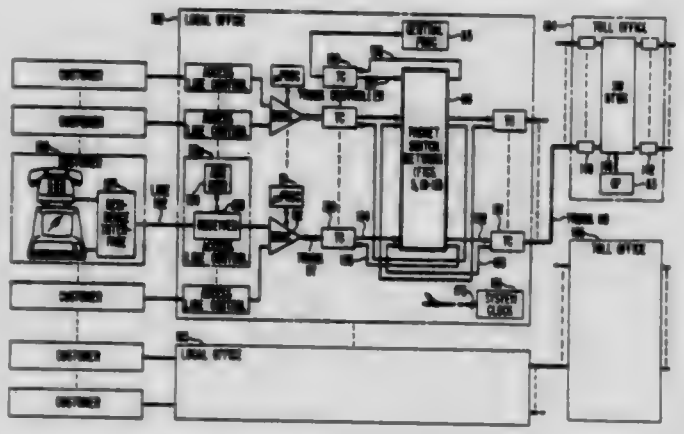
1. A packet switch comprising

a plurality of input conductors,

a plurality of output conductors,

means responsive to a predetermined group of a plurality of address bits in a packet of information bits from one of said input conductors for routing said packet of information

bits to one of said output conductors defined by said predetermined number of address bits, and



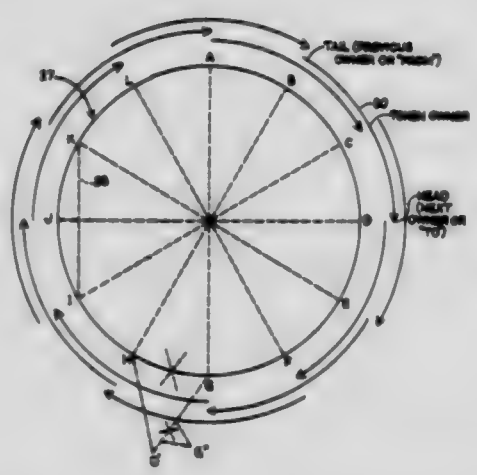
means for repositioning said predetermined number of address bits in said plurality of address bits in the routing of said packet to said defined one of said output conductors.

4,491,946

MULTI-STATION TOKEN PASS COMMUNICATION SYSTEM

J. Michael Kryskow, Jr., Hudson; Jeffery J. Bobzin, Salem, and Bruce S. Allen, East Kingston, all of N.H., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Mar. 9, 1981, Ser. No. 241,688
Int. Cl.³ H04J 6/02
U.S. Cl. 370—89 80 Claims



1. A method of communicating over a communication medium by a plurality of stations interconnected to the medium, comprising the steps of:

(1) generating a list of all stations wanting periodic access to the medium (token list);

(2) each station in the token list capable of sending access type messages for receiving and transferring access to the medium between itself and other stations interconnected to the medium and non-access type messages for transferring all other types of information to stations interconnected to the medium;

(3) each station in the token list knowing from which station (its "FROM" station) it is to receive access transfer enable information and access control information (token) to allow it to obtain access to the medium, as well as to which station (its "TO" station) it is to next pass access transfer enable information and access control information after it has received access to the medium;

(4) each station in the token list, within a first predetermined length of time after it has received access to the medium transmitting non-access messages on the medium or passing access transfer enable information to its TO station, and within a maximum non-access message predetermined length of time after it has received access to the medium, passing access transfer enable information to its TO station;

(5) the TO station, within a second predetermined length of time, acknowledging receipt of the access transfer enable information to the station from which it received the access transfer enable information;

(6) the station passing the access transfer enable information listening to the medium to ascertain if its TO station has sent acknowledge receipt information of the access transfer enable information within the second predetermined length of time, and if acknowledge receipt information has been received, sending access control information to its TO station; and if the station passing access transfer enable information does not receive from its TO station such acknowledge receipt information within the second predetermined length of time, it resends N number of times (where N is an integer equal to or greater than 0) access transfer enable information to its TO station; and

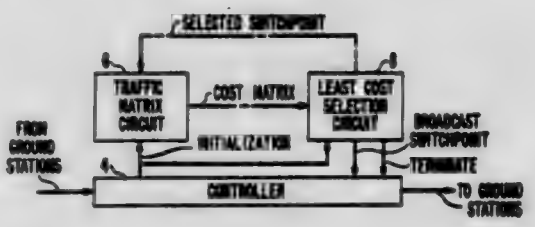
(7) if the station passing access transfer enable informationm has not received acknowledge receipt information from its TO station after resending access transfer enable information N times, it then sends a broadcast message to all stations interconnected to the medium requesting identification of the station which is the present station's TO station's TO station, and upon ascertaining its TO station's TO station sending access transfer enable information to that new TO station.

4,491,947

TECHNIQUE FOR DYNAMIC SCHEDULING OF INTEGRATED CIRCUIT- AND PACKET-SWITCHING IN A MULTI-BEAM SS/TDMA SYSTEM

Amalie J. Frank, Chatham Township, Morris County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 31, 1983, Ser. No. 499,771
Int. Cl.³ H04J 3/00
U.S. Cl. 370—94 6 Claims



3. An onboard satellite switching system responsive to both circuit transmission requests and packet transmission requests from a plurality of N separate ground zones for assigning both said circuit and packet requests in each succeeding time slot of a plurality of time slots forming a single time frame, thereby likewise continuously assigning circuit and packet requests in each subsequent time frame, said satellite switching system comprising

a controller (4) responsive to said circuit and packet requests on a frame-by-frame basis for first initializing and subsequently terminating the assignment of circuit transmission requests and second initializing and subsequently terminating the assignment of packet transmission requests in each time slot of said single time frame, said controller repeating said initializing and terminating for subsequent time slots forming subsequent time frames;

a traffic matrix circuit (6) responsive first to said circuit transmission requests and a plurality of ongoing circuit matrices from said controller for forming a cost matrix related thereto and responsive second to said packet transmission requests from said controller for forming a cost matrix related thereto; and

a least-cost selection circuit (8) responsive first to the cost matrix formed in relation to said circuit transmission requests for selecting a least-cost circuit assignment and using said least-cost circuit assignment to update the cost

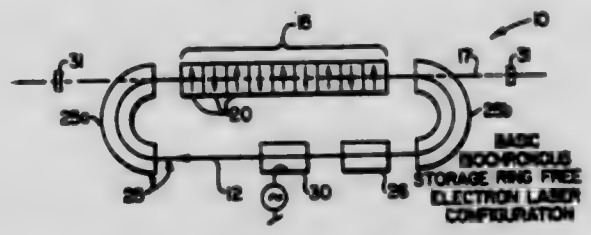
matrix and relaying said least-cost circuit assignment back to said traffic matrix circuit to be used in updating the circuit traffic matrix and one of a plurality of ongoing circuit matrices, and responsive second to the cost matrix formed in relation to said packet transmission requests for selecting a least-cost packet assignment and using said least-cost packet assignment to update the cost matrix and relaying said least-cost packet assignment back to said traffic matrix circuit to be used in updating the packet traffic matrix.

4,491,948

ISOCHRONOUS FREE ELECTRON LASER

David A. G. Deacon, 754 Duncardine, Sunnyvale, Calif. 94087; John M. J. Madey, 2120 Amherst St., Palo Alto, Calif. 94306; Todd I. Smith, 685 Wildwood La., Palo Alto, Calif. 94303, and William B. Colson, 3790 San Remo #1, Santa Barbara, Calif. 93105

Filed Feb. 13, 1981, Ser. No. 235,303
Int. Cl.³ H01S 3/00
U.S. Cl. 372—2 23 Claims



1. A storage ring free electron laser comprising:

means defining a laser section in which a relativistic electron beam is caused to undergo periodic transverse deflections;

means for propagating an electromagnetic wave defining a laser field in the vicinity of said laser section, said laser section and said laser field being characterized by a laser phase advance ϕ which is proportional to the square root of the laser field amplitude;

storage ring means for extracting said beam from said laser section and reinjecting said beam into said laser section so that said electron beam makes repeated passes through said storage ring means, said storage ring means being characterized by an electron trajectory length L outside said laser section, a normalized exterior momentum compaction factor A, a trajectory envelope function, and a normalized emittance D which is a measure of the transverse extent of said beam; and

acceleration means for restoring to said beam energy lost in said laser section and in said storage ring menas, said acceleration means being characterized by a normalized cavity acceleration U;

said normalized exterior momentum compaction factor, said normalized emittance, said normalized cavity acceleration, and said trajectory envelope function being constrained such that said storage ring means is sufficiently isochronous that the electrons' optical phase is well correlated from one pass to the next;

said laser phase advance and said normalized exterior momentum compaction factor being constrained to lie within stability boundaries resulting in stable points in electron phase space;

said normalized cavity acceleration and said laser phase advance being constrained so that said stable points in electron phase space remain separated from unstable points in electron phase space;

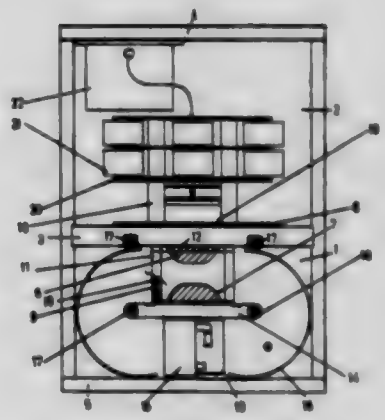
whereupon a significant fraction of the electrons within said beam are trapped in laser potential wells so that a longitudinally bunched structure on the scale of the wavelength of said electromagnetic wave is imparted to said beam and the longitudinally bunched structure of said beam at exit from said laser section is substantially preserved until said beam is reinjected into said laser section at said well correlated optical phase.

4,491,949

APPARATUS FOR PRODUCING LASER RADIATION

Rasmus Beck, Neu-Isenburg, and Erich Hansen, Bad Soden, both of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt, Fed. Rep. of Germany

Filed May 12, 1982, Ser. No. 377,561
Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3118868
Int. Cl.³ H01S 3/02, 3/097
U.S. Cl. 372—86 14 Claims



1. In an apparatus for producing laser radiation having an optical axis extending between two mirrors and an ionizable gas enclosed within a gas chamber between said two mirrors, the improvement comprising: a pair of discharge electrodes for firing a gas discharge which discharge extends transversely with respect to said optical axis so as to produce pre-ionization of said ionizable gas by a corona discharge; a charging-and-discharging circuit; and a gas circulating-and-cooling system means for circulating said ionizable gas; a first electrode being secured to an intermediate support plate of said gas chamber by a plurality of securing elements; said gas chamber being composed of electrically insulating material; said securing elements serving as electrical current supply means; a second electrode being mounted on said intermediate support plate and being spaced a predetermined distance from said first electrode by a plurality of metal rods which simultaneously provide mechanical support and supply electrical current; each metal rod being surrounded by an electrical insulator having a high dielectric constant so that a corona discharge is produced between said first electrode and the insulated metal rods.

4,491,950

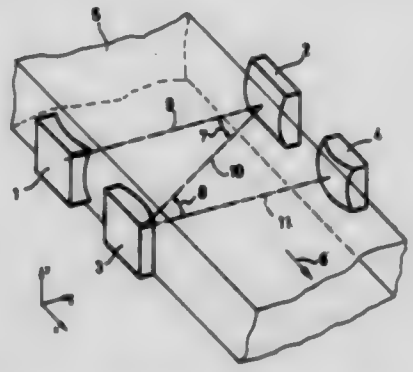
UNSTABLE LASER RESONATOR

Peter Hoffmann, Bernried, Fed. Rep. of Germany, assignor to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt E.V., Fed. Rep. of Germany

Filed Dec. 10, 1981, Ser. No. 329,509
Int. Cl.³ H01S 3/08
U.S. Cl. 372—95 15 Claims

1. An unstable laser resonator including two spherical mirrors spaced apart and disposed about a laser active medium so as to provide a collimated output beam with rotationally un-

symmetrical magnification, distinguished by the fact that in the light paths between the spherical mirrors are at least two other



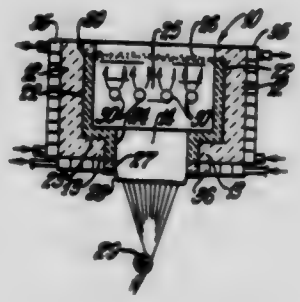
optical elements with cylindrical surfaces, whose cylindrical axes are essentially perpendicular to each other.

4,491,951

ELECTRIC GLASS MELTING FURNACE

Charles S. Dunn, Pataskala, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jul. 11, 1983, Ser. No. 512,854
Int. Cl.³ C03B 5/027
U.S. Cl. 373—30 15 Claims



1. A method of heating molten glass, comprising:
a. providing a body of molten glass in a heating apparatus having glass-confining side and bottom walls provided with a refractory lining, the refractory lining having an electrical resistivity that decreases with an increase in its temperature and that, at the temperature of the molten glass, is less than the electrical resistivity of the molten glass;
b. electrically heating the body of molten glass by heating electrodes of opposite polarity immersed in the molten glass; and
c. cooling the refractory lining of these walls interposed between electrodes of opposite polarity to substantially increase the electrical resistivity of said lining.

4,491,952

ELECTRIC FURNACE DOME

Matti Honkaniemi, Tornio; Martti Jankkila, Kiviranta; Aimo Nurminen; Matias Virta, both of Kokkokangas; Veikko Iisakka, Tornio; Helge Krogerus, Pori; Heikki Tuovinen, Ulvila; Tarmo Mäntymäki, Merstola, and Erkki Lajunen, Nakkila, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

PCT No. PCT/FI82/00022, § 371 Date Jan. 24, 1983, § 102(e) Date Jan. 24, 1983, PCT Pub. No. WO82/04306, PCT Pub. Date Dec. 9, 1982
PCT Filed Jun. 3, 1982, Ser. No. 463,862
Claims priority, application Finland, Jun. 5, 1981, 811763
Int. Cl.³ F27D 1/12
U.S. Cl. 373—74 6 Claims

2. In an electric furnace dome having top and bottom surfaces and respective openings at least for one electrode, for the insertion of raw material, and for the exhaust of gases, and having a central portion and an outer portion, said electrode opening being in said central portion, the improvement comprising

(a) water-carrying spiral tube systems embedded between said surfaces for water-cooling the dome, located only in said central portion, and at least one spiral tube system being centered around each opening in said central portion; and

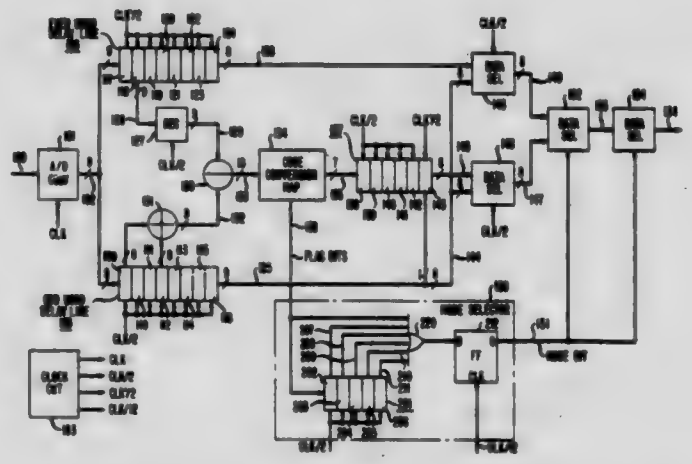
(b) means for supplying cooling water to said spiral tube systems and for supporting the dome, said means including a portion of each of said spiral tube systems that extends upwardly and away from said top surface of the dome.

4,491,953

DUAL MODE CODING

Jules A. Bellisio, Wall Township, Monmouth County, and Arthur B. Larsen, Colts Neck, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 9, 1982, Ser. No. 416,380
Int. Cl.³ H03K 13/22
U.S. Cl. 375—27 18 Claims



1. Apparatus of use in a digital transmission system wherein transmitted digital words are limited on average to an allotted number of bits, said apparatus comprising

first means for encoding an input signal into a preselected combination of alternate first and second digital words such that the average number of bits per word in said combination is not greater than said allotted number of bits, each of said first digital words having more than said allotted number of bits and each of said second digital words being formed using predictive differential coding and having less than said allotted number of bits;

second means for encoding said input signal into third digital words each having said allotted number of bits;

means for determining the precision provided by said preselected combination relative to a preselected threshold;

means responsive to a first result of said precision determination for forming a first output comprising said preselected combination; and

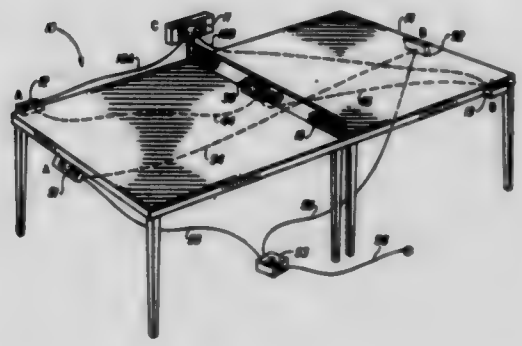
means responsive to a second result of said precision determination for forming an alternate output comprising said third digital words.

4,491,954

ELECTRONIC SCORE-KEEPER FOR TABLE TENNIS

Luther L. Genuit, 6231 E. Calle del Paisano, Scottsdale, Ariz. 85251

Filed Mar. 8, 1982, Ser. No. 355,674
The portion of the term of this patent subsequent to Oct. 10, 1995, has been disclaimed.
Int. Cl.³ G08B 5/36; H03K 21/18
U.S. Cl. 377—5 10 Claims



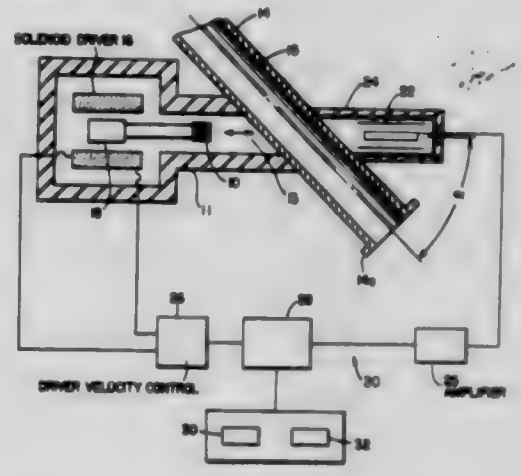
1. An electronic score-keeper for table tennis comprising:
first and second scoring switches,
first and second sets of numerical display devices,
first and second serve indicators,
an electronic control circuit comprising first and second electronic counters and a dual mode serve controller,
reset means,
means for coupling said dual mode serve controller to said first and second scoring switches, to said first and second electronic counters and to said first and second serve indicators,
means for coupling said first electronic counter to said first scoring switch and to said first set of numerical display devices,
means for coupling said second electronic counter to said second scoring switch and to said second set of numerical display devices,
said first electronic counter being responsive to the actuation of said first scoring switch and said second electronic counter being responsive to the actuation of said second scoring switch,
said dual mode serve controller responding to the actuation of either of said first and second scoring switches and to the status of said first and second electronic counters by appropriately controlling the energization of said first and second serve indicators,
said dual mode serve controller being operative in a five-point-shift mode until a score of twenty-all is achieved and thereafter being operative in a one-point-shift mode until the conclusion of the game, and
said reset means being coupled to said first and said second electronic counters and to said serve controller,
whereby when said first or second scoring switch is actuated by the associated player each time a point is gained, the associated said sets of numerical display devices register the running scores of both players, said first and said second serve indicators are alternately energized as appropriate to identify which of said players has the responsibility for the serve in accordance with the current official rules of table tennis, and
at the conclusion of the game, when said reset means is actuated by one of the players, said first and said second counters and said serve controller are reset to zero for the start of another game.

4,491,955

FLUID FLOW AND ASH CONCENTRATION METER SYSTEM USING MOSSBAUER EFFECT

Paul H. Kydd, Lawrenceville, N.J., assignor to HRI, Inc., Gibbsboro, N.J.

Filed Jun. 30, 1982, Ser. No. 393,941
Int. Cl.³ G01T 1/16
U.S. Cl. 378—3 15 Claims



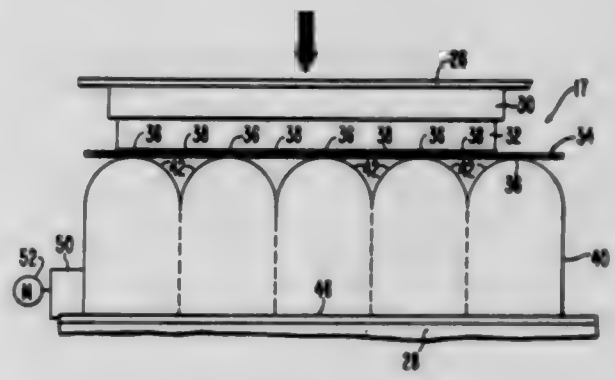
1. A flow meter system for measuring the velocity of a flowing fluid, comprising:
(a) a pipe through which said fluid flows, said fluid containing a gamma ray absorbing metal isotope;
(b) a radioactive source of gamma rays positioned adjacent to said pipe, said source of radiation being oriented toward the pipe and oscillated in a direction at an angle of about 15° to about 80° to the fluid flowing in said pipe;
(c) a gamma ray detector means positioned adjacent to said pipe on a side opposite said radioactive source for detecting the presence of said metal isotope contained in the flowing fluid; and
(d) electrical means for monitoring the velocity of said oscillating gamma ray source and the metal particles in the fluid flowing in said pipe, and thereby measure the velocity of the following fluid.

4,491,956

METHOD AND APPARATUS FOR MAKING THREE-DIMENSIONAL RADIOGRAPHS

Douglas F. Winnek, 10450 W. Loyola Dr., Los Altos Hills, Calif. 94022

Filed Sep. 10, 1982, Ser. No. 416,743
Int. Cl.³ G03B 41/16
U.S. Cl. 378—41 9 Claims



1. An improved X-ray tomograph comprising: a support on which an object to be photographed is placed; an X-ray source on one side of the support and movable in one direction relative to the support from a first position to a second position while delivering X-rays in the direction of the support; a film cassette on the opposite side of the support and movable in a direction opposite to said one direction from a first location to

a second location as the X-ray source moves from the first position to the second position, whereby X-rays from the source can pass through the object on the support and into the cassette, said cassette containing a grating mask having a plurality of slots transparent to X-rays, a photographic film having an emulsion, and a lenticular member between the mask and the emulsion, said cassette having means for moving the lenticular member and the photographic film relative to the mask as the cassette moves from the first location to the second location.

4,491,957

FM-RECEIVER HAVING MULTIPATH RECEPTION DETECTOR AND NOISE PULSE SUPPRESSION

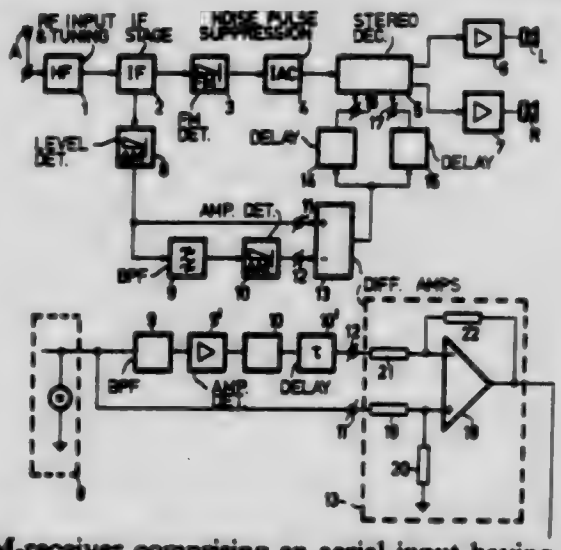
Theodor I. E. Kamalski, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 10, 1982, Ser. No. 440,763

Claims priority, application Netherlands, Aug. 31, 1982, 8203384

Int. Cl.³ H04B *1/10*; H04H *5/00*

U.S. Cl. 381—13 5 Claims



1. An FM-receiver comprising an serial input having connected thereto, in succession, an RF input stage, an IF portion, an FM-detector and a stereo decoder having a mono-stereo control circuit therein, a control signal generating circuit being connected thereto, the control signal generating circuit comprising a multipath reception detector coupled to a level detector, said detector being connected to the IF portion, the multipath reception detector comprising an amplitude detector coupled to a bandpass filter, said bandpass filter being connected to the level detector, characterized in that the FM-receiver further comprises a noise pulse suppression circuit arranged between the FM detector and the stereo decoder for keeping the amplitude of the stereo multiplex signal constant during the occurrence of noise pulses, and the bandpass filter has a lower 3 dB cut-off frequency of the order of magnitude of 1 KHz and an upper 3 dB cut-off frequency of not more than of the order of magnitude of 10 KHz.

4,491,958

SPEECH SYNTHESIZER

Kazuhiro Umemura; Tokyu Sampei, both of Yokohama; Kazuo Nakata, Kodaira; Hirokazu Sato, Yokosuka; Murakami Keiya, Yokosuka, and Kiyoshi Intoh, Yokosuka, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation and Hitachi, Ltd., both of Tokyo, Japan

PCT No. PCT/JP81/00031, § 371 Date Oct. 22, 1981, § 102(e) Date Oct. 22, 1981, PCT Pub. No. WO81/02489, PCT Pub. Date Sep. 3, 1981

PCT Filed Feb. 17, 1981, Ser. No. 314,839

Claims priority, application Japan, Feb. 22, 1980, 55-20597

Int. Cl.³ G10L *1/00*

U.S. Cl. 381—51 1 Claim

1. A speech synthesizer designed to synthesize speech with regard to a selected one of two kinds of speech information whose respective frame periods are different from each other, comprising:

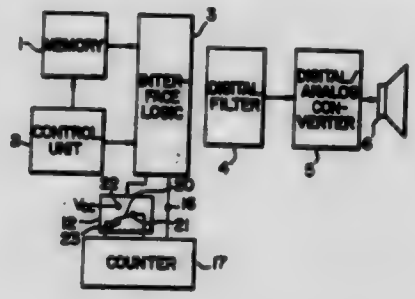
a memory for selectively storing one of first speech information including a first plurality of frames having a first frame period and second speech information including a second plurality of frames having a second frame period which is different from the frame period of the frames of said first speech information, each frame of said first and second speech information having a plurality of bits constituting a digital signal including amplitude information, pitch information and PARCOR coefficient which are extracted from a frequency spectrum of a speech signal, the number of bits constituting said digital signal being the same for all frames;

a control unit for supplying said memory with a command signal for reading out the speech information stored in said memory;

an interface logic for receiving said speech information, from said memory, frame by frame in order and for separating said digital signal into said amplitude information, said pitch information and said parcor coefficient;

a counter portion for generating a first synchronizing signal synchronized with the frame period of the frames of said first speech information and a second synchronizing signal synchronized with the frame period of the frames of said second speech information;

a switch portion for changing the period of said synchronizing signals of said counter portion in accordance with the



frame period of the frames of the speech information stored in said memory; and

means for applying the synchronizing signals generated by said counter portion to said interface logic;

wherein said counter portion includes a first counter for counting clock pulses to generate a first count output when the number of clock pulses counted thereby reaches a first set count number and to generate a second count output and reset said first counter when the number of clock pulses counted thereby reaches a second set count number that is larger than said first set count numbers, a second counter for counting said second count output to generate a third count output when the number of clock pulses counted thereby reaches a third set count number, a flip-flop which is reset by said first count output and set by said second count output, a logic circuit for forming said synchronizing signals by taking a logic result between a set output of said flip-flop and one of said third count output and a constant voltage from a power supply; and

wherein said switch portion selects one of said third count output and the constant voltage from a power supply to be applied to said logic circuit for selection between said synchronizing signals.

4,491,959

PLASTIC BAG WITH GUSSET FOLDS AND PERFORATIONS

Gustaf G. Loefberg, Landskrona, Sweden, assignor to Wavin B.V., Netherlands

Filed Apr. 22, 1983, Ser. No. 487,821

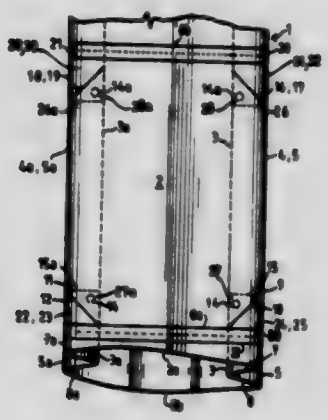
Claims priority, application Netherlands, Apr. 22, 1982, 8201684

Int. Cl.³ B65D *27/10*, *33/01*

U.S. Cl. 383—103 5 Claims

1. A plastic bag having first and second outer layers connected by a pair of longitudinal gusset folds, each gusset fold comprising a central longitudinal gusset fold edge and two outer longitudinal gusset fold edges bounding first and second

inner gusset fold parts and at least one transverse seal, wherein air permeable perforations preventing the passage of filler particles are provided in a region of the inner gusset fold parts bounded by first fold part seals, the central longitudinal gusset



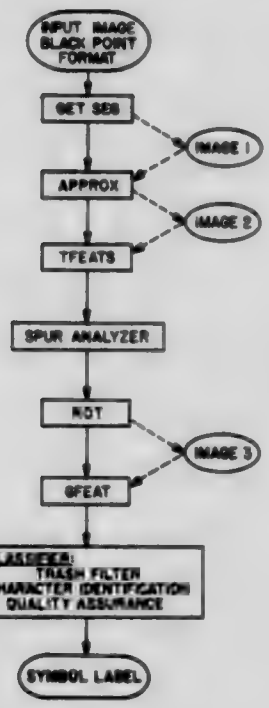
fold edges, and a line extending parallel to said transverse seal and through an intersection of said first fold part seals and said outer longitudinal gusset fold edges, said first fold part seals each connecting one of said outer layers with a subadjacent gusset fold part.

4,491,960

HANDPRINTED SYMBOL RECOGNITION SYSTEM

Robert M. Brown, Carriere, Miss., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 5, 1982, Ser. No. 365,857
Int. Cl.[3] G06K *9/46, 9/68*
U.S. Cl. 382—26 8 Claims



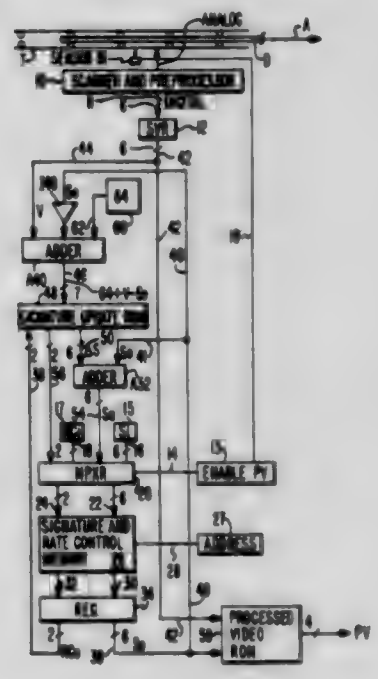
1. A handprinted symbol recognition system comprising:
means for obtaining topologic and geometric rugged features from a skeletonized raster scan line sample image representative of a single handprinted symbol;
means for filtering said topologic and geometric features by testing against given parameters to eliminate said image when said image has no characteristic common to any symbol within a target subset of symbols;
means using a feature selection/decision tree approach for tentatively identifying said handprinted symbol from said target subset corresponding to said image when said image is passed by said filtering means; and
means for assuring that said handprinted symbol identified by said identifying means satisfies a sufficient class membership criterion by applying more specific features to said handprinted symbol;
whereby identification accuracy is decoupled from efficiency.

4,491,961

PIXEL CORRECTION LOGIC CIRCUIT

David Sutton, Margate, Fla., and Jimmie Neill, Walled Lake, Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 12, 1982, Ser. No. 348,519
Int. Cl.[3] G06K *9/36;* H04N *1/40*
U.S. Cl. 382—41 11 Claims



1. A system for generating processed video signals representative of the form of objects scanned by a scanner, comprising:
means for receiving unprocessed video signals from a scanner system;
means coupled responsive to said unprocessed video signals for generating data representing a signature characterizing the entire scanner system including the optical system, the illumination system and the sensor system;
means for storing a plurality of transfer functions of use in correcting the unprocessed video to produce processed video therefrom; and
means for applying said signature and said unprocessed video signals to said means for storing to enable selection of a transfer function to correct the unprocessed video and generate the desired processed video.

4,491,962

METHOD OF DETERMINING AN OPTIMUM THRESHOLD FOR OBTAINING BINARY IMAGE SIGNAL FOR USE IN A PATTERN RECOGNITION SYSTEM

Hiroshi Sakou, and Seiji Kashioka, both of Hachioji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

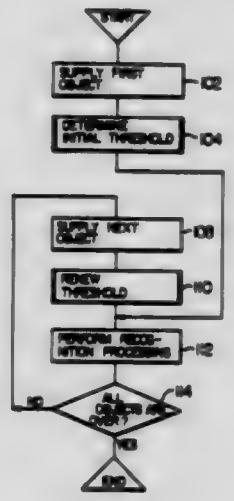
Filed Mar. 23, 1982, Ser. No. 361,479
Claims priority, application Japan, Mar. 25, 1981, 56-42316
Int. Cl.[3] G06K *9/00, 9/38*
U.S. Cl. 382—50 15 Claims

1. A method of determining an optimum threshold for converting a video signal of an object into a binary signal, suitable for use in a process for recognizing a pattern on said object, comprising the steps of:
storing a pattern expected to exist at one or more positions on a surface of an object as a reference pattern;
converting a video signal of an object into a binary image signal on the basis of each of different values of threshold;
cutting a plurality of partial patterns out of a predetermined

region of said binary image signal corresponding to each value of threshold;

detecting the degrees of coincidence each between each of said partial patterns and said reference pattern; and

selecting from said different values of threshold a value of threshold for making highest the overall degree of coincidence between said plurality of partial patterns and said reference pattern, on the basis of aid degrees of coincidence detected at each value of threshold,



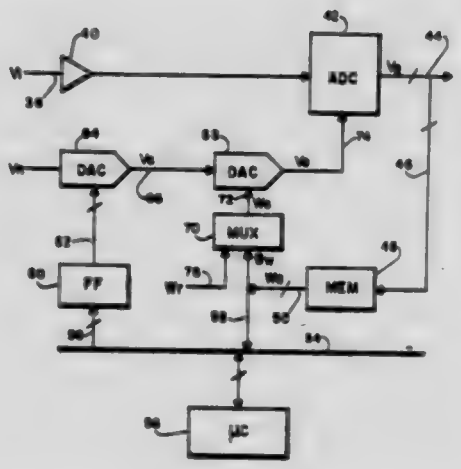
wherein an image of said object is divided into a plurality of sections, the highest value of the degrees of coincidence is selected among the degrees of coincidence between a partial pattern and said reference pattern which are obtained for a plurality of partial patterns included in one section, at all of said sections, and the total sum of the highest values of the degrees of coincidence at all of said sections is used as said overall degree of coincidence.

4,491,963

CORRECTION OF IMAGING IMPERFECTIONS

Richard A. Bellemare, Oakville, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 17, 1982, Ser. No. 408,963
Int. Cl.³ G06K 9/38
U.S. Cl. 382—53 1 Claim



1. A system for compensating for imperfections in an optical apparatus that scans a document for the purpose of producing signals representative of printed information, comprising:

converter means for converting light signals into a serial video signal,

scanning means for directing light across a document in successive scans,

means for directing light from said document to said converter means,

an analog-to-digital converter connected to said light converter means to output binary words V_2 that are a representation of the document, the highest value of the binary word being designated as W_a,

memory means connected to the output of the analog-to-digital converter for receiving and storing all values of V_2,

a microcomputer connected to said memory means, said microcomputer being operative to search said memory means and cause said value W_a to be written out of said memory means,

multiplexer means connected to said memory means and to said microcomputer to receive said value W_a written out of said memory means,

reference means for supplying a word W_r to said multiplexer means, said microcomputer causing a value W_s to be written out of said multiplexer means, where $W_s = W_a$ on a first scanning by said scanning means and $W_s = W_r$ upon a second scanning by said scanning means,

a first digital-to-analog converter connected to said microcomputer and to said memory means for receiving said value W_a when written out of said memory means,

voltage means connected to said first digital-to-analog converter for supplying a voltage V_n, said first digital-to-analog converter computing and writing out an analog signal V_s, where $V_s = (V_n/N) \times W_a$ where N represents the bit capacity of the system,

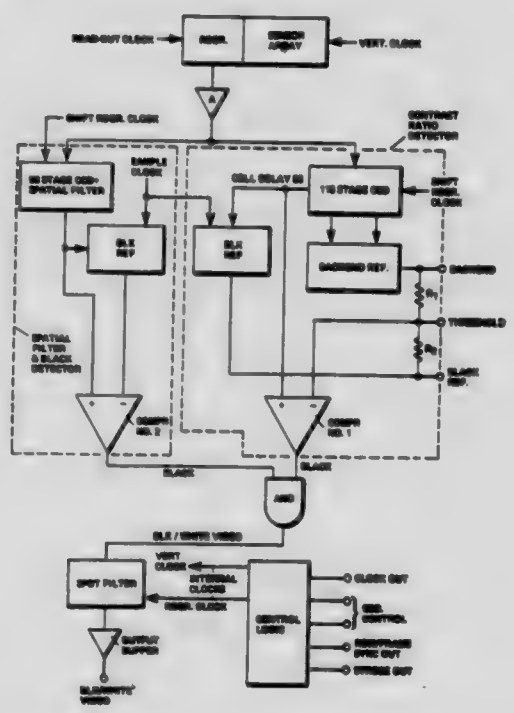
a second digital-to-analog converter connected to said first digital-to-analog converter for receiving said signal V_s, connected to said multiplexer means for receiving said value W_s and connected to said analog-to-digital converter for transmitting a signal V_o to said analog-to-digital converter where $V_o = (W_s/N) \times V$, said analog-to-digital converter receiving said V_o signal for modifying its output V_2.

4,491,964

IMAGE PROCESSING INTEGRATED CIRCUIT

Medford D. Sanner, Irving, Tex., assignor to Recognition Equipment Incorporated, Irving, Tex.

Continuation of Ser. No. 342,560, Jan. 25, 1982, abandoned, which is a continuation of Ser. No. 032,034, Apr. 23, 1979,. This application Mar. 9, 1984, Ser. No. 586,888
Int. Cl.³ G06K 9/36
U.S. Cl. 382—50 1 Claim



1. An image processing system for detecting the presence or absence of a marking in a cell location on a document comprising:

an array of photosensitive cells for sensing the presence or absence of a marking in each cell location on the document;

said array of photosensitive cells producing analog signals

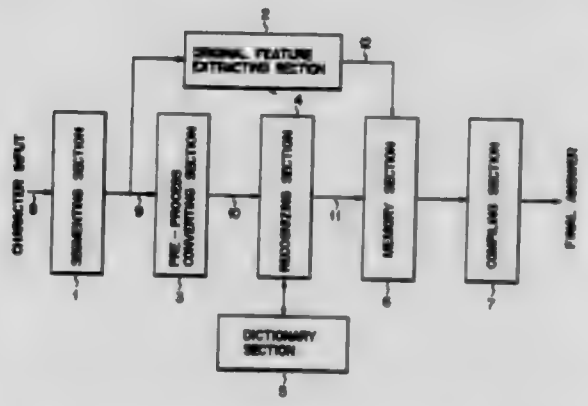
representing levels of black or white, corresponding to the presence or absence of a marking in each cell location;
processing means for processing said analog signals to produce quantized black and white video signals;
said processing means including first and second parallel processing channels;
said first processing channel including filter means for receiving said analog signals and for performing edge enhancement to generate a filtered output signal;
said first processing channel further including comparator means for comparing said filtered output signal with a fixed reference signal level and for producing a first logic signal when said filtered output signal exceeds said fixed reference signal level;
said second processing channel including means for generating a variable reference signal level representing a print contrast ratio value from the cells surrounding a cell having a marking;
said second processing channel further including comparator means for comparing said analog signals with said print contrast ratio value for producing a second logic signal when said analog signals exceed said print contrast ratio value;
said first and second logic signals being synchronously produced with respect to said analog signals of said photosensitive cells; and
said processing means further including means for logically combining said first and second logic signals to produce a quantized black and white video signals.

4,491,965

CHARACTER RECOGNITION APPARATUS

Toora Yoshimura, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Dec. 14, 1982, Ser. No. 449,688
Claims priority, application Japan, Dec. 16, 1981, 56-202808
Int. Cl.[3] G06K *9/03*
U.S. Cl. 382—57 4 Claims



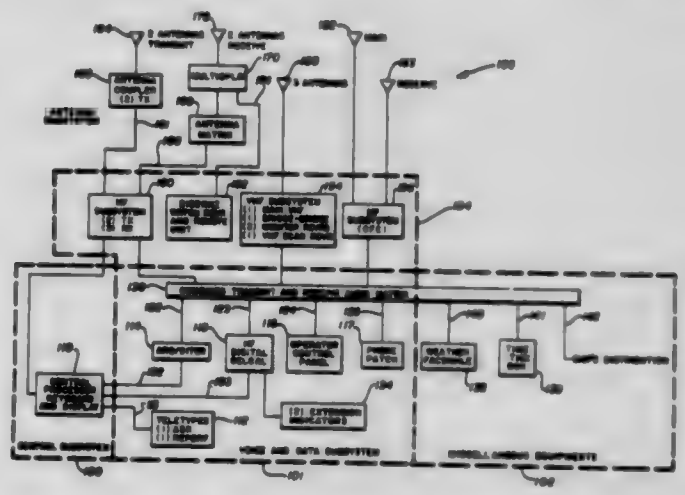
1. A character recognition apparatus comprising:
segmenting means for segmenting a set of input characters into single characters; pre-process converting means connected to said segmenting means, for providing a predetermined conversion for each of the single characters so as to allow easy subsequent recognition operations;
original feature extracting means connected to said segmenting means, for extracting as an original feature at least one feature among features of each of the single characters which is deliberately neglected by said pre-process converting means;
recognizing means connected to said pre-process converting means, for prestoring a reference recognition feature and an answer corresponding thereto, for extracting a recognition feature from each of the single characters which is converted by said pre-process converting means, for comparing the recognition feature with the reference recognition feature, and for determining an answer for each of the single characters;
memory means connected to said recognizing means and said original feature extracting means for storing for each of the single characters the answer determined by said recognizing means and the corresponding original feature extracted by said original feature extracting means; and
compiling means connected to said memory means for reading out the original features corresponding to characters which have the same value among the answers stored in said memory means after the storing of answers and corresponding original features for each of said characters and for rejecting the characters corresponding to the original features which exceed a predetermined allowable value to determine final answers for the set of characters.

4,491,966

MARITIME TELECOMMUNICATIONS SYSTEM

Lester A. Morcerf; Charles E. Kiefer, both of Plano; Gary W. Jones, Garland, and John E. Conditt, Richardson, all of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 29, 1982, Ser. No. 403,225
Int. Cl.[3] H04B *7/00*; H04Q *7/00*
U.S. Cl. 455—32 9 Claims



1. A radio system for automated shipboard operation comprising:
a plurality of HF radio receivers;
a plurality of HF radio transmitters;
an automatic error request (ARQ) unit with which one of said receivers and one of said transmitters is associated;
a digital selective calling (DSELCALL) unit with which another of said receivers and another of said transmitters is associated;
means, including a digital computer to (1) scan the receiver associated with said DSELCALL unit among preselected DSELCALL frequencies, (2) to associate said one receiver and one transmitter with said ARQ unit in accordance with a message received by said DSELCALL assigned receiver and decoded by said DSELCALL unit, and (3) to initiate a DSELCALL ready signal for transmission by the transmitter associated with said DSELCALL unit.

4,491,967

SYSTEMS FOR LOCATING MOBILE OBJECTS BY INDUCTIVE RADIO

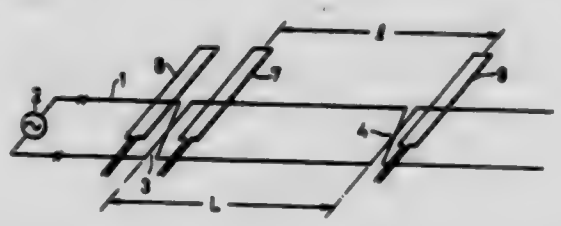
Yoshinobu Kobayashi; Tamio Ueno, both of Osaka, and Koji Kanagawa, Okayama, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, both of, Japan

Filed Jul. 16, 1982, Ser. No. 399,151
Int. Cl.[3] H04B *5/00*; B61L *3/12*
U.S. Cl. 455—41 9 Claims

1. A system for generating a signal representing the location of a mobile object along a predetermined route, said signal being in the form of a succession of first and second code values, said system comprising:

a pair of twisted inductive radio lines installed along said predetermined route, said lines crossing one another at intervals with each interval having one of two predetermined lengths p_1 and p_2;

sensing means mounted on said mobile object for sensing the lengths of a plurality of successive ones of said intervals as



said mobile object travels along said predetermined route; and

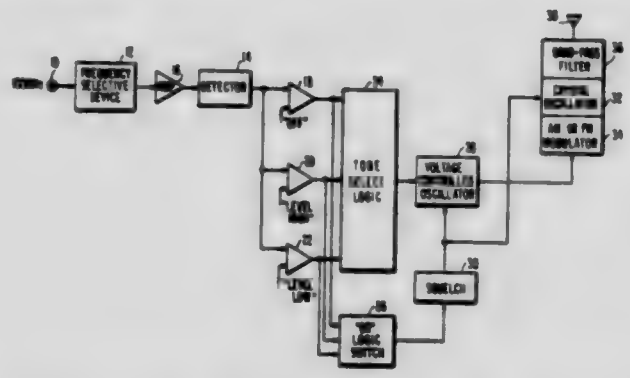
signal generating means responsive to said sensing means for generating a first code value when an interval length p_1 is detected and for generating a second code value when an interval of length p_2 is detected.

4,491,958

STATUS MONITOR

Richard L. Shimp, Harrisonburg, and Dennis A. Zimmerman, Rockingham County, both of Va., assignors to ComSonics, Inc., Harrisonburg, Va.

Filed Apr. 7, 1983, Ser. No. 482,961
Int. Cl.³ H04B *3/46, 17/00*
U.S. Cl. 455—67 6 Claims



1. A status monitor for use in a coaxial cable network comprising:

detector means connected to said coaxial cable network for providing a d.c. output indicating the level of a signal on said network;

signal generating means responsive to said detector means for selectively generating one of a plurality of signals representing a respective one of a plurality of fault conditions including no signal being detected on said network or the signal detected being outside an amplitude window defined by predetermined upper and lower reference levels, said signal generator means generating said one signal only when said respective one of said plurality of fault conditions is detected; and

radiating means connected to said signal generating means for radiating a signal generated thereby.

4,491,969

SATELLITE GROUND STATION

Ravi Datta, Kanata, Canada, assignor to Skyswitch Satellite Communications, Oklahoma City, Okla.

Filed Sep. 23, 1982, Ser. No. 422,189
Claims priority, application Canada, May 25, 1982, 403648
Int. Cl.³ H04B *1/50*
U.S. Cl. 455—75 13 Claims

1. A frequency converter for a receive-transmit terminal useful in a ground station of an earth-satellite communication system comprising:

(a) means for generating a first local oscillator signal,

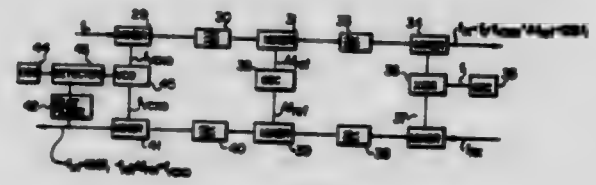
(b) means for adding said first signal to a transmit baseband signal to form a first sum signal,

(c) means for generating a second local oscillator signal,

(d) means for adding said second signal to the first sum signal to form a second sum signal,

(e) means for generating a third local oscillator signal,

(f) means for adding said third signal to the second sum signal to form a third sum transmission frequency signal,



(g) means for receiving a receive frequency signal,

(h) means for subtracting the receive frequency signal from the third local oscillator to form a first difference signal,

(i) means for subtracting the second local oscillator signal from the first difference signal to form a second difference signal, and

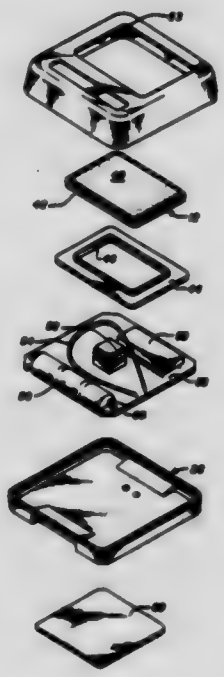
(j) means for adding the first local oscillator signal to the second difference signal to obtain a receive baseband signal.

4,491,970

PORTABLE TRANSMITTER FOR EMERGENCY ALARM SYSTEM HAVING WATERTIGHT ENCLOSURE

Eric L. LaWhite, So. Royalton, Vt., and Patrick G. Phillipps, Lincoln, Mass., assignors to Lifeline Systems, Inc., Waltham, Mass.

Filed Dec. 30, 1982, Ser. No. 454,855
Int. Cl.³ H04B *1/034*
U.S. Cl. 455—100 7 Claims



1. For use in remote actuation of apparatus, a miniature wireless radio transmitter unit comprising:

a housing of a size wearable on the wrist of a user and containing a radio transmitter, antenna, and manually actuable button switch within the housing;

a resilient membrane sealed to an opening in the front face of the housing and in confronting relation to the button switch and deformable in response to finger pressure to cause actuation of the button switch;

at least one elongated narrow passage in the housing in communication at one end with a vent hole through a face

of the housing, and in communication at the other end with the atmosphere;

the passage being operative to provide equalization of air pressure between the housing interior and the atmosphere and isolation of the housing interior from entry of liquid;

said resilient membrane includes a central portion configured to fit within the opening in the front wall of the housing and a peripheral portion configured to fit within a flange of the housing which is in surrounding spaced relation to the opening; and

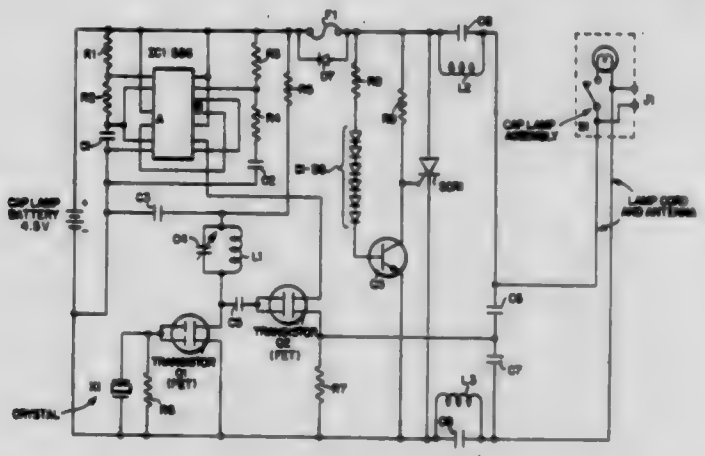
a frame secured to the flange and operative to compress the peripheral portion of the membrane into sealing engagement with confronting surfaces of the housing.

4,491,971

SHORT RANGE TRAPPED MINER LOCATOR

William E. Webb, Tuscaloosa, and Ronald H. Church, Birmingham, both of Ala., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Mar. 8, 1983, Ser. No. 473,298
Int. Cl.³ H04B *1/034*
U.S. Cl. 455—100 4 Claims



1. A personal locator transmitter in combination with a miner's cap lamp comprising:

a common self-contained portable power source means to provide electrical power to both the transmitter and the miner's cap lamp, said cap lamp being located in a miner's cap adapted to be worn on the head of a miner, said power source means and said transmitter being located in a housing spaced from the miner's cap and being adapted to be secured to the body of a miner;

said cap lamp being electrically connected to said power source means by a wire which provides power to the lamp and also functions as a transmitting antenna for the transmitter; and

said transmitter being a portable lower transmitter having an oscillator and modulator circuit to output a high fixed frequency radio wave signal from said wire antenna.

4,491,972

RADIO TRANSMITTER MODULATION CONTROL CIRCUITRY

Paul J. Weber, Elgin, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 473,523, Mar. 10, 1983, abandoned, which is a continuation of Ser. No. 267,096, May 26, 1981, abandoned. This application May 22, 1984, Ser. No. 613,742
Int. Cl.³ H04B *1/04*; H03F *1/34*
U.S. Cl. 455—110 17 Claims

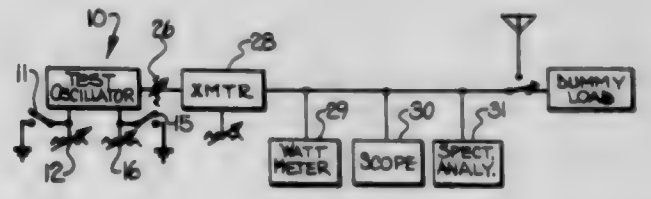
13. Circuitry for controlling modulation of a radio frequency signal transmitter by audio signals from a signal source, comprising:

(a) audio signal amplifying means comprising:

(i) input impedance means having first and second terminals, the first terminal of the input impedance means being coupled to the audio signals from the signal source

(ii) feedback impedance means having first and second terminals, the second terminal of the feedback impedance means being coupled to the second terminal of the input impedance means;

(iii) means, having input and output terminals, for amplifying a signal at its input terminal to provide an amplified signal at its output terminal, the input terminal of the amplifying means being coupled to the second terminals of the input impedance means and feedback impedance means; and



(iv) means, having input and output terminals, for filtering a signal at its input terminal to provide a filtered signal at its output terminal, the input terminal of the filtering means being coupled to the output terminal of the amplifying means and the output terminal of the filtering means coupled to the first terminal of the feedback impedance means;

(b) means for transmitting a radio frequency signal having a predetermined frequency; and

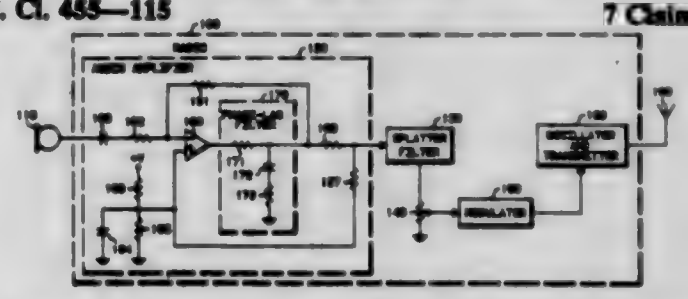
(c) means, having an input terminal coupled to the output terminal of the filtering means and an output terminal coupled to the transmitting means, for modulating the radio frequency signal transmitted by the transmitting means with the signals from the filtering means.

4,491,973

TRANSMITTER TESTING METHOD

Charles A. Idol, P.O. Box 8366, Asheville, N.C. 28814

Filed Jul. 30, 1982, Ser. No. 403,303
Int. Cl.³ H04B *17/00*
U.S. Cl. 455—115 7 Claims



1. A method of determining the linearity of a single sideband radio transmitter and comprising the steps of:

generating a first audio tone signal having a first frequency and delivering the first signal to a transmitter, then

monitoring the output of the transmitter while adjusting the amplitude of the first signal to produce from the transmitter a selected fraction of rated power output, then

interrupting delivery of the first signal to the transmitter, then

generating a second audio tone signal having a second frequency separated from the first frequency by a predetermined frequency range approximating a frequency range of human speech and delivering the second signal to the transmitter, then

monitoring the output of the transmitter while adjusting the amplitude of the second signal to produce from the transmitter the same selected fraction of rated power output, then

simultaneously generating and delivering to the transmitter

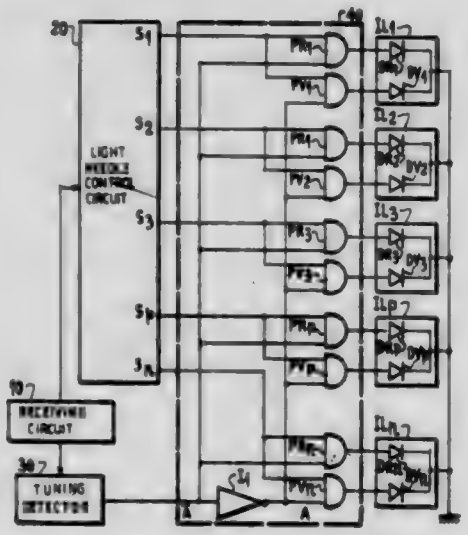
the adjusted amplitude first and second signals while monitoring the output of the transmitter to determine the power output as indicative of the linearity of the transmitter across the predetermined frequency range.

4,491,974

RECEIVER HAVING A LIGHT EMITTING DISPLAY AS FREQUENCY AND TUNING INDICATOR

Jean C. Bouchaut, Paris, France, assignor to Thomson-Brandt, Paris, France

Filed Aug. 26, 1982, Ser. No. 411,957
Claims priority, application France, Aug. 31, 1981, 81 16545
Int. Cl.³ H04B 1/16
U.S. Cl. 455—159 18 Claims



1. A receiver comprising:

a receiving circuit for tuning said receiver to a desired reception frequency and detecting any transmitted signal at said desired reception frequency;

a tuning detector having an input coupled to said receiving circuit for receiving a signal indicative of a detected signal and providing a tuning detector signal corresponding thereto;

a light needle control circuit having an input coupled to said receiving circuit for receiving therefrom a signal representing said desired reception frequency and providing a light needle control signal at one of a plurality of outputs thereof and corresponding thereto;

a logic circuit having a plurality of first inputs coupled to corresponding outputs of said light needle control circuit and a second input coupled to said output of said tuning detector and a plurality of outputs, each output being capable of providing at least two different signals depending upon whether or not said tuning detector indicates receipt of a transmitted signal; and

a light needle display having a plurality of display elements, each display element having two light emitting components for emitting light in at least two different colors, each display element being coupled to a corresponding output of said logic circuit, whereby the particular display element emitting light indicates the frequency to which said receiving circuit is tuned and the color indicates whether a transmitted signal is being received by said receiving circuit.

4,491,975

RADIO RECEIVER OF ELECTRONIC TUNING SYSTEM HAVING AUTOMATIC PRESETTING CIRCUIT

Tatsuo Ito, Kobe, Japan, assignor to Fujitsu Ten Limited, Kobe, Japan

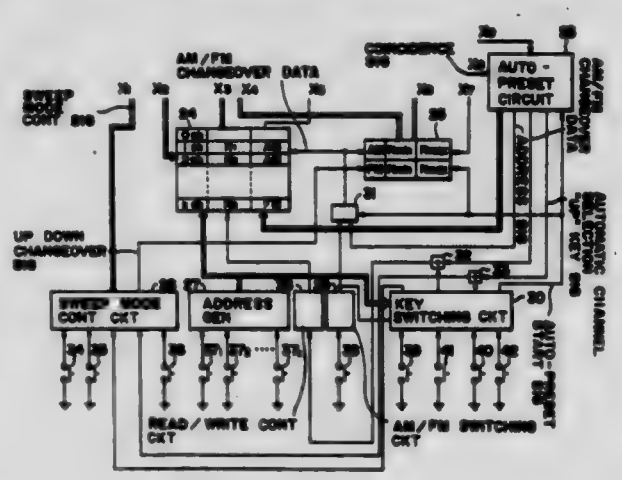
Filed Oct. 14, 1982, Ser. No. 434,325
Claims priority, application Japan, Oct. 16, 1981, 56-165367
Int. Cl.³ H03J 7/18
U.S. Cl. 455—166 8 Claims

1. A radio receiver electronic tuning system having channel selection keys and a preset memory for storing frequency designating information, for receiving broadcasting waves, comprising:

frequency sweep means for changing the broadcasting wave frequency to be received by sequentially changing frequency designating information;

broadcasting wave searching means, operatively connected to said frequency sweep means, for generating a search stop signal when a broadcasting wave having a received electric field intensity higher than a predetermined level is received during the frequency sweep;

preset channel selecting means, operatively connected to the channel selection keys and the preset memory, for reading out the frequency designating information stored in an area of the preset memory corresponding to one of the channel selection keys when said one of the channel selection keys is actuated, so as to select the broadcast wave frequency to be received;



an auto-preset key which is actuated when an automatic presetting operation is to be performed;

frequency changing means, operatively connected to said auto-preset key and said frequency sweep means, for starting said frequency sweep means, upon the actuation of said auto-preset key, to change the broadcast wave frequency to be received in a sequential order during the automatic presetting operation; and

preset means, operatively connected to the preset memory, said frequency sweep means and said broadcasting wave searching means, for storing, in the preset memory, the frequency designating information being output by said frequency sweep means each time the search stop signal is received during the sequential change of the received frequency by said frequency sweep means.

4,491,976

WIDE-BAND TUNER HAVING A TEMPERATURE-COMPENSATED MICROSTRIP RESONATOR ARRANGEMENT

Takeshi Saitoh, Yokohama; Shigeo Matsuura, Chigasaki; Minoru Moteki, and Hiroshi Hatashita, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 25, 1982, Ser. No. 436,357
Claims priority, application Japan, Oct. 26, 1981, 56-170013
Int. Cl.³ H04B 1/26
U.S. Cl. 455—315 38 Claims

1. A tuner for a television receiver comprising:

(a) a first mixer for receiving a received RF signal to frequency-convert said RF signal to a first intermediate frequency signal;

(b) a first variable frequency local oscillator for producing an oscillation signal to excite said first mixer;

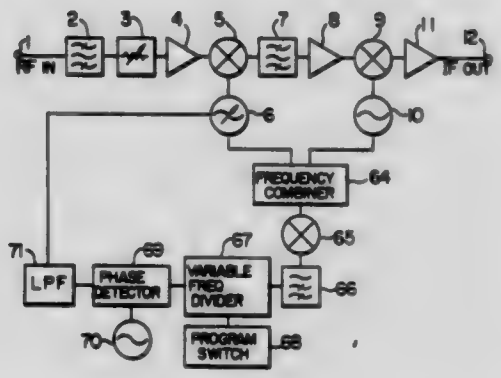
(c) a band-pass filter for selectively passing said first intermediate frequency signal;

(d) a first intermediate frequency amplifier for amplifying said first intermediate frequency signal;

(e) a second mixer for receiving the first intermediate frequency signal amplified by said first intermediate frequency amplifier to frequency-convert the first intermediate frequency signal to a second intermediate frequency signal;

(f) a second local oscillator for producing an oscillation output to excite said second mixer;

(g) a second intermediate frequency amplifier for selectively



amplifying the second intermediate frequency signal output of said second mixer; and

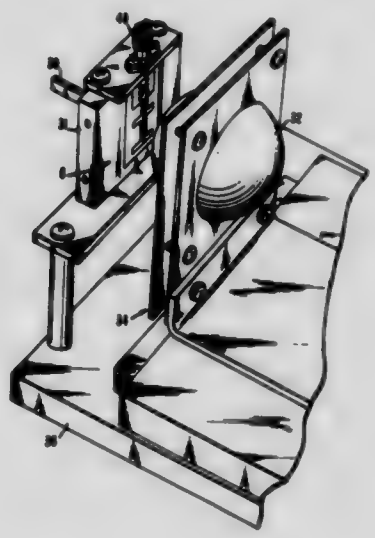
(h) said band-pass filter for selectively passing said first intermediate signal and said second local oscillator including microstrip line resonators constructed on dielectric substrates having an equal dielectric constant and an equal dielectric constant temperature coefficient whereby a variation of a resonant frequency due to an ambient temperature change is compensated.

4,491,977

MILLIMETER-WAVE QUASI-OPTICAL PLANAR BALANCED MIXER

Jeffrey A. Paul, Torrance, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Jun. 10, 1982, Ser. No. 387,059
Int. Cl.³ H04B 1/26
U.S. Cl. 455—327 9 Claims



1. A millimeter-wave mixer comprising:

a planar balanced mixer circuit fabricated as a microwave integrated circuit on a first major surface of a substrate said mixer circuit including a planar intermediate frequency filter;

a source of local oscillator power coupled to said substrate via the opposite major surface of said substrate; and

a free-space optical coupling means for coupling radio frequency power to said first major surface;

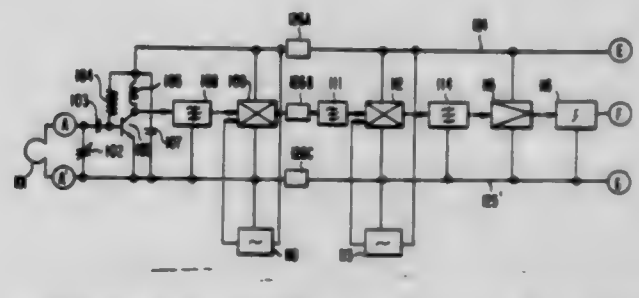
whereby said planar balanced mixer circuit produces an intermediate frequency signal output through the planar intermediate frequency filter of said mixer circuit.

4,491,978

PORTABLE RADIO RECEIVER WITH HIGH ANTENNA GAIN

Koichi Nagata, and Daisuke Ishii, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed May 10, 1982, Ser. No. 376,981
Claims priority, application Japan, May 18, 1981, 56-74411
Int. Cl.³ H04B 1/08, 1/26
U.S. Cl. 455—338 10 Claims



1. A portable radio receiver of the type having an antenna built into the receiver, said receiver comprising:

a high-frequency section having a first power supply line, a first grounding line and an output line, and including an antenna tuning circuit coupled to said antenna, a first circuit connected to said tuning circuit and operating at a tuning frequency of said tuning circuit, and a second circuit connected to the output of said first circuit for converting said tuning frequency into a lower frequency;

a low-frequency section disposed subsequently to said high-frequency section and operating at said lower frequency, said low-frequency section having a second power supply line, a second grounding line and an input line;

a power source means having first and second output terminals connected to said second power supply line and second grounding line, respectively; and

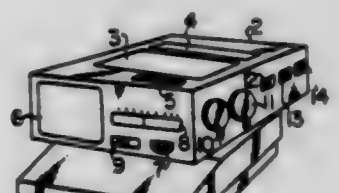
connecting means including first coupling means for coupling said output line with said input line, second coupling means for coupling said first power supply line with said second power supply line and third coupling means for coupling said first grounding line with said second grounding line, each of at least said second and third coupling means having a high impedance at said tuning frequency, thereby increasing the gain of said antenna.

4,491,979

COMBINATION ELECTRONIC APPARATUS

Hidekazu Ogasawara, Odawara, and Takanori Saito, Kamakura, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 5, 1983, Ser. No. 455,848
Claims priority, application Japan, Jan. 14, 1982, 57-4057; Jan. 18, 1982, 57-6317; Jan. 18, 1982, 57-6318; Apr. 28, 1982, 57-72104; Apr. 28, 1982, 57-72105
Int. Cl.³ H04B 1/08; H04N 5/64; H05K 5/00
U.S. Cl. 455—344 6 Claims



1. A composite electronic apparatus containing at least first and second electronic devices having independent functions, said composite apparatus being positionable to face a forward direction, comprising:

a base;

a main body housing said first and second electronic devices, said main body having a first surface on which the principal functional parts of said first electronic device are mounted and a second surface adjacent said first surface on which the principal functional parts of said second electronic device are mounted; and

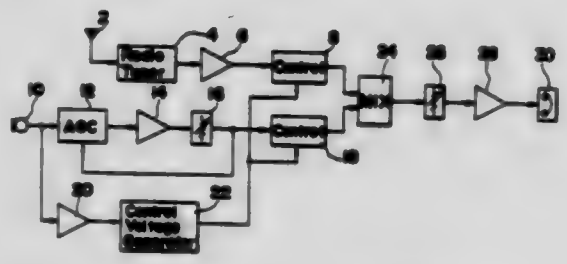
supporting means rotatably supporting said main body on said base for rotation of said main body about a horizontal axis extending substantially perpendicular to said forward direction, said main body being rotatable to a first position in which said first surface on which the principal functional parts of said first electronic device are mounted faces said forward direction and said second surface on which the principal functional parts of said second electronic device are mounted faces toward said base, said main body being further rotatable to a second position in which said second surface faces said forward direction and said first surface faces away from said base.

4,491,980

HEARING AID COUPLED WITH A RADIO

Teruo Ichikawa, Izumi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 21, 1983, Ser. No. 515,599
Claims priority, application Japan, Jul. 26, 1982, 57-130696
Int. Cl.³ H04B *1/06*; H04R *27/00*
U.S. Cl. 455—344 7 Claims



1. A built-in radio/hearing aid, comprising:

a microphone for generating microphone signals;

a radio signal generator for generating radio signals;

a control voltage generator means for generating a control voltage level corresponding to the level of the microphone signal;

a control means responsive to said microphone and radio signals for controlling the relative levels of the microphone signal and the radio signal in accordance with the level of the control voltage from said control voltage generator means such that the microphone signal is emphasized and the radio signal is relatively weakened as the control voltage level increases and vice-versa, said control means providing the level controlled microphone signal and the level controlled radio signal at an output thereof; and

a mixing means for mixing the level controlled microphone signal and the level controlled radio signal from said control means and outputting a mixed signal.

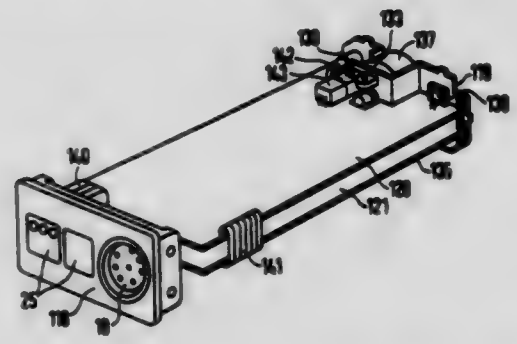
4,491,981

GALVANICALLY SEPARATING COUPLING LOCATION FOR ENERGY AND/OR SIGNAL TRANSMISSION

Gerhard Weller; Bernd Rosenfeldt, and Edmund Reis, all of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 8, 1981, Ser. No. 261,788
Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019646
Int. Cl.³ H04B *9/00*
U.S. Cl. 455—602 20 Claims

1. A coupling apparatus for providing a coupling location for energy and/or signal transmission, comprising a first housing (1) having a recess (14), a second housing (15) insertable as a plug-part into the recess (14) of the first housing (1), first and second inductive coupling elements (137, 153), said first coupling element (153) disposed in the recess (14) of the first housing (1) and said second coupling element (137) seated in the second housing (15), the coupling elements (137, 153) having cooperating coupling surfaces which fit to one another to produce the coupling location when said second housing (15) is inserted into said recess (14), where said first and second coupling elements (137, 153) are galvanically separated from each other but inductively coupled to each other when said second housing (15) is inserted into said recess (14), a spring means for suspending one of the coupling elements (137, 153) in a floating and resilient manner in the respective housing (1, 15) such that the coupling surface of the one coupling element 137, 153 is resiliently adaptable to the cooperating coupling surface of the other one of the coupling elements (137, 153) and said one coupling element (137, 153) automatically seeks an



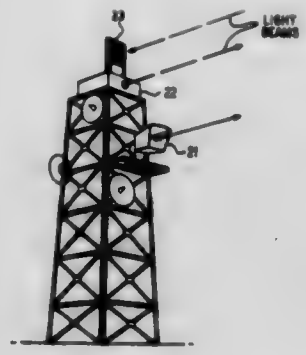
optimum mechanical position for energy and/or signal transmission between said inductive coupling elements (137, 153) when said second housing (15) is inserted into said recess (14), one of the housings (1, 15) having a carrier (57, 51) for supporting the one of said coupling elements (137, 153) in said floating and resilient manner, the one of said coupling elements (137, 153) having a retaining nipple (147, 155) loosely securing the coupling elements (137, 153) with the associated carrier, a spring (148, 156) interposed between the coupling elements (137, 153) and the associated carrier (57, 151, 119) for accommodating universal tilting and adaptation of the coupling element (137, 153), and a retaining means (149, 157) secured to the retaining nipple (147, 155) to retain the retaining nipple (147, 155) in engagement with the associated carrier (57, 151, 119) while accommodating universal tilting of the associated coupling element.

4,491,982

TERRESTRIAL LIGHT BEAM COMMUNICATION SYSTEM

James C. Candy, Middletown, and Bernard G. King, Rumson, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 16, 1982, Ser. No. 399,140
Int. Cl.³ H04B *9/00*
U.S. Cl. 455—607 12 Claims



1. A terrestrial optical transmission system comprising:

transmitting means at a local location for projecting a first light beam to a predetermined location, said transmitting

means including aiming means for changing the direction of transmission of the first light beam,

receiving means, at said predetermined location, for receiving optical energy in spatially displaced stationary locations, said receiving means comparing the optical energy received at each displaced location to the other displaced locations to determine the position of the first light beam amongst the spatially displaced locations, and said receiving means producing a correction signal, and

second transmitting means at said predetermined location including second aiming means for changing the direction of transmission of a second light beam projected in a direction opposite to the first light beam, the second aiming means response to the correction signal of said receiving means and indicating the vertical position of the first light beam by changing the horizontal aim of the second light beam.

4,491,983

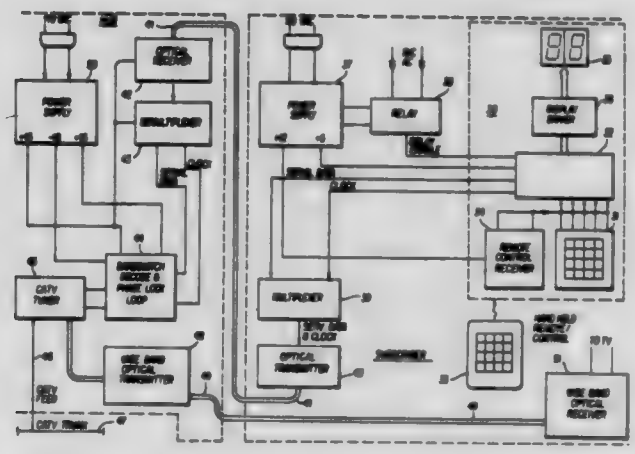
INFORMATION DISTRIBUTION SYSTEM

Douglas A. Pianow, Cheshire, and Gary E. Miller, Wallingford, both of Conn., assignors to Times Fiber Communications, Inc., Wallingford, Conn.

Continuation-in-part of Ser. No. 263,552, May 14, 1981, abandoned. This application Apr. 29, 1982, Ser. No. 373,110

Int. Cl.³ H04B 9/00; H04N 7/12

U.S. Cl. 455—612 14 Claims



1. An information distribution system comprising:

(i) a hub distribution center,

(ii) a plurality of individual subscriber units each connected to said hub distribution center by a fiber optic cable,

(iii) means at said hub distribution center for receiving optical signals transmitted from each of said individual subscriber units to said hub distribution center through the fiber optic cables,

(iv) means at said hub distribution center for receiving a plurality of information signals having different characteristic frequencies in frequency division multiplexed form, for selecting a single information signal from said plurality of information signals having different characteristic frequencies, for converting it to a transmission frequency which can be received directly by a television set and for transmitting it as an optical signal to an individual subscriber unit through the fiber optic cable in response to an optical signal transmitted from said individual subscriber unit to said hub distribution center through the same fiber optic cable,

(v) means at each of said individual subscriber units for generating and transmitting an optical signal to said hub distribution center through the fiber optic cable, and

(vi) means at each of said individual subscriber units for receiving the optical signal transmitted from said hub distribution center and for converting it to an electrical signal at said transmission frequency which can be received directly by a television set.

4,491,984

METHOD AND APPARATUS FOR DETECTING INTERRUPTIONS IN THE TRANSMISSION OF LIGHT SIGNALS

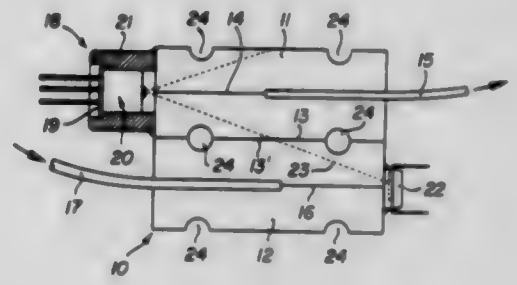
Jean-Pierre Wiedmer, Cortaillod, Switzerland, assignor to Cabloptic S.A., Cortaillod, Switzerland

Filed Feb. 24, 1983, Ser. No. 469,281

Claims priority, application Switzerland, Mar. 2, 1982, 1258/82

Int. Cl.³ H04B 9/00

U.S. Cl. 455—612 8 Claims



1. In the detection of an interruption in the transmission of a light signal in a system comprising a signal emitter, a signal receiver and a signal conductor loop the opposite ends of which are connected to said signal emitter and said signal receiver, the method of establishing that an interruption of the reception of said signal by said signal receiver is the result of a signal transmission interruption occurring at a point in said signal conductor loop, which comprises: transmitting a first signal through said system while simultaneously transmitting a second signal from said signal emitter to said signal receiver but outside of said system whereby both signals are simultaneously received by said signal receiver, an interruption in the reception of said first signal without a simultaneous interruption in the reception of said second signal establishing that such signal reception interruption results from a transmission interruption of said first signal at a point in said signal conductor loop.

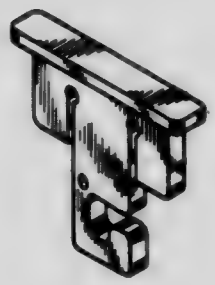
DESIGNS

JANUARY 1, 1985

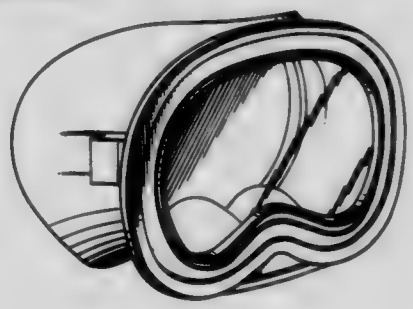
276,949
BRASSIERE
Toshiko Taniyama, White Plains, N.Y., assignor to International Playtex, Inc., Stamford, Conn.
Filed Aug. 23, 1982, Ser. No. 410,208
Term of patent 14 years
U.S. Cl. D2—24



276,950
FACE SHIELD MOUNTING HOLDER FOR PROTECTIVE HELMETS
Göran Hellberg, Varberg, Sweden, assignor to Hellberg Protection Handelsbolag, Varberg, Sweden
Filed Jan. 15, 1982, Ser. No. 339,374
Term of patent 14 years
U.S. Cl. D2—233



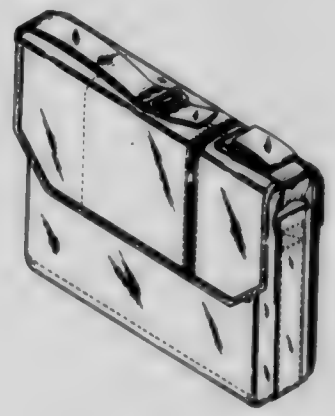
276,951
AVIATOR-STYLE SWIM MASK
Simon C. Fireman, Quincy, Mass., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed Aug. 12, 1982, Ser. No. 407,353
Term of patent 14 years
U.S. Cl. D2—234



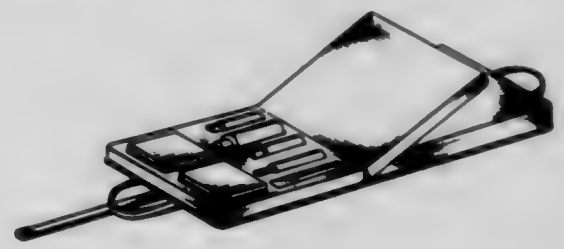
276,952
TIE FASTENER
Peter K. McCully, Henderson, New Zealand, assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Oct. 18, 1982, Ser. No. 435,020
Claims priority, application Australia, Apr. 20, 1982, 0160/82
Term of patent 14 years
U.S. Cl. D2—428



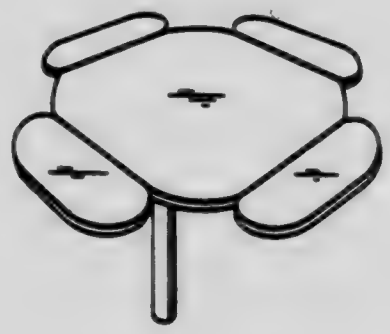
276,953
CAMERA BAG
Robert Weinreb, 510 Broadway, New York, N.Y. 10012
Filed Jul. 23, 1982, Ser. No. 401,337
Term of patent 14 years
U.S. Cl. D3—33



276,954
COMBINED BINGO BAG KIT AND SEAT PAD
Maria C. Kruger, 806 S. Muirfield Rd., Los Angeles, Calif. 90005
Filed Jun. 1, 1982, Ser. No. 383,796
Term of patent 14 years
U.S. Cl. D3—43



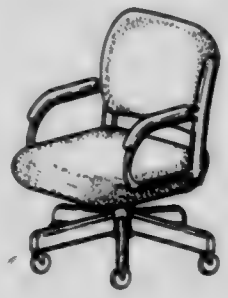
276,955
TABLE
Jacobus N. Hanemaayer, Kitchener, Canada, assignor to Hanmar Home Equipment Limited, Ontario, Canada
Filed Sep. 7, 1982, Ser. No. 415,549
Claims priority, application Canada, Jun. 29, 1982, 29-06-82-2
Term of patent 14 years
U.S. Cl. D6—430



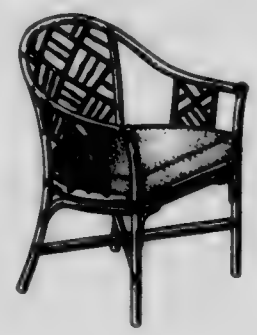
276,956
CHAIR
Robert J. Aronowitz, New York, and Bernard D. Katznaek, Brooklyn, both of N.Y., assignors to Samsonite Corporation, Denver, Colo.
Filed May 27, 1982, Ser. No. 382,799
The portion of the term of this patent subsequent to Jul. 31, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—366



276,957
CHAIR
Moses R. Schultz, Barto, Pa., assignor to Stow & Davis Furniture Company, Grand Rapids, Mich.
Filed Jun. 7, 1982, Ser. No. 386,204
Term of patent 14 years
U.S. Cl. D6—366



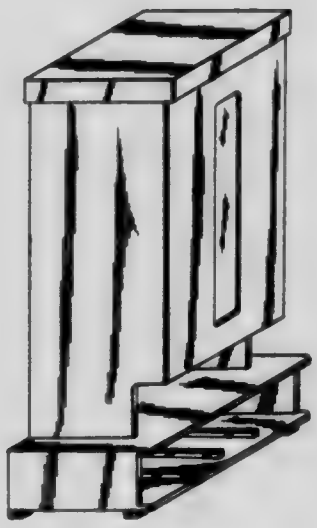
276,958
CHAIR
Robert K. Thorpe, Laguna Beach, Calif., assignor to Brown Jordan Company, El Monte, Calif.
Filed Mar. 29, 1982, Ser. No. 362,963
Term of patent 14 years
U.S. Cl. D6—369



276,959
SEAT
Pierre E. Roset, Serrieres de Briord, France, assignor to Roset S.A., Serrieres de Briord, France
Filed Mar. 17, 1982, Ser. No. 359,142
Claims priority, application World Intel. Prop. Org., Sep. 18, 1981, DM/000953
Term of patent 14 years
U.S. Cl. D6—334



276,960
SOAP PAD DISPENSER
Robert Dunn, 87-23 Flatlands Ave., Brooklyn, N.Y. 11236
Filed Nov. 15, 1982, Ser. No. 441,412
Term of patent 14 years
U.S. Cl. D6—515



276,961

PLATE HOLDER

Diane J. L. Kemper, 31870 Kingwood La., Apt. 22, Farmington, Mich. 48018

Filed Dec. 14, 1981, Ser. No. 330,397
Term of patent 14 years
U.S. Cl. D6—466





276,962

JEWELRY DISPLAY STAND OR THE LIKE

Juanita A. Moore, 11684 Glanus St., Lakeview Terrace, Calif. 91342

Filed May 24, 1982, Ser. No. 381,017
Term of patent 14 years
U.S. Cl. D6—450





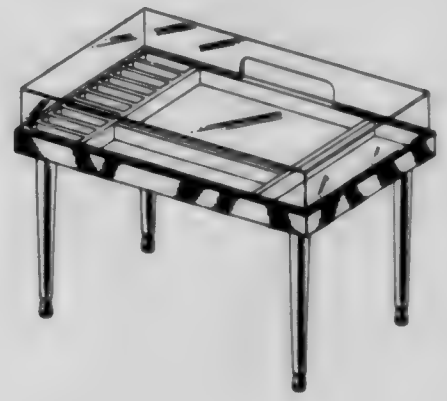


276,963

DISPLAY TABLE FOR VIDEO GAME ACCESSORIES

Domenic Ameduri, 235 Argyle Ave., Youngstown, Ohio 44512

Filed Apr. 30, 1982, Ser. No. 373,674
Term of patent 14 years
U.S. Cl. D6—470

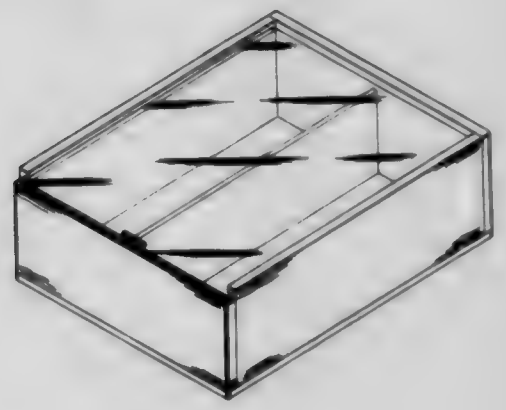


276,964

STORAGE UNIT FOR WINE BOTTLES OR THE LIKE

Edward J. Boland, II, 1049 Amito Ave., Berkeley, Calif. 94704

Filed Jul. 23, 1982, Ser. No. 401,129
Term of patent 14 years
U.S. Cl. D6—470



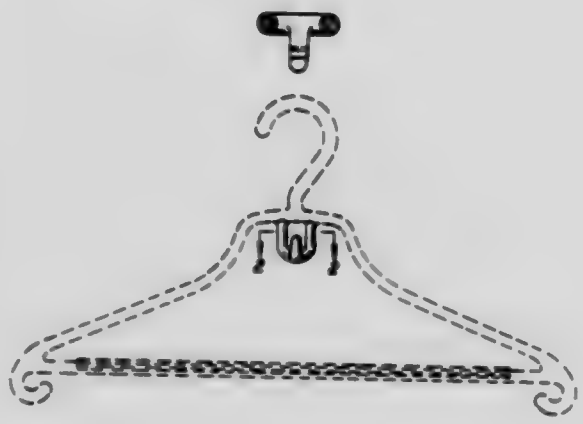
276,965
TABLE
Roberta J. Dancy, 471 Willoughby Ave., Brooklyn, N.Y. 11206
Filed Jul. 19, 1982, Ser. No. 399,365
Term of patent 14 years
U.S. Cl. D6—483



276,966
VENETIAN BLIND HOLD-DOWN BRACKET
George Georgopoulos, Pine Brook, N.J.; Victor Debs, Staten Island, N.Y., and Joseph A. Anderle, Clifton, N.J., assignors to Levolor Lorentzen, Inc., Lyndhurst, N.J.
Filed Jul. 22, 1982, Ser. No. 400,599
Term of patent 14 years
U.S. Cl. D6—580



276,967
INTEGRAL HOOK FOR A CLOTHES HANGER
William D. Arnold, St. Louis, Mo., and Charles E. Causey, Granite City, Ill., assignors to Lee-Rowan Company, St. Louis, Mo.
Filed Aug. 11, 1982, Ser. No. 407,308
Term of patent 14 years
U.S. Cl. D6—327

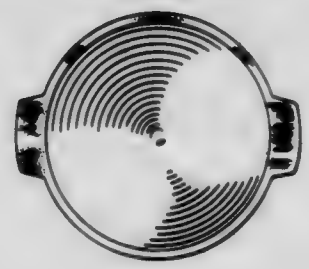


276,968
PLATE OR THE LIKE
Ottorino N. Mercadante, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Aug. 26, 1982, Ser. No. 411,688
Term of patent 14 years
U.S. Cl. D7—24



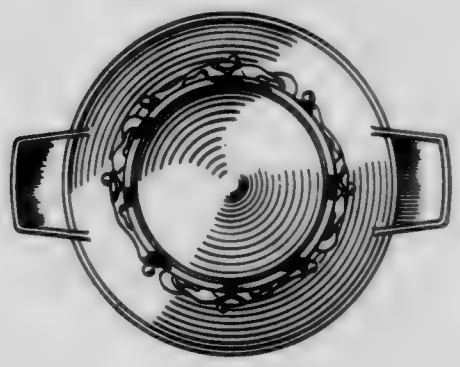
276,969
MICROWAVE CORN POPPER BASE
Robert F. Bowen, Burlington, Mass., and Walter B. Herbst, Evanston, Ill., assignors to Raytheon Company, Lexington, Mass.
Filed Jun. 21, 1982, Ser. No. 390,583
Term of patent 14 years
U.S. Cl. D7—325



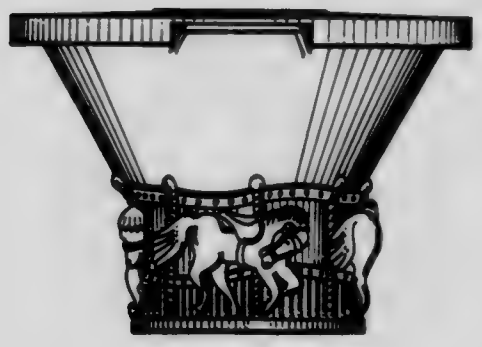




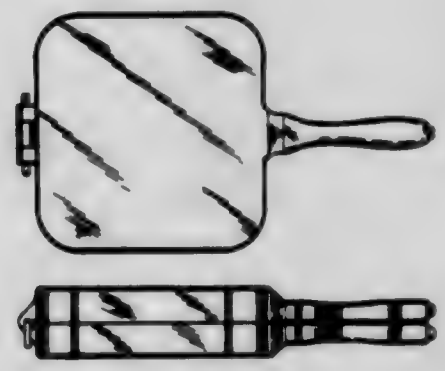
276,970
MICROWAVE CORN POPPER
Robert F. Bowen, Burlington, Mass., and Walter B. Herbst, Evanston, Ill., assignors to Raytheon Company, Lexington, Mass.
Filed Jun. 21, 1982, Ser. No. 391,049
Term of patent 14 years
U.S. Cl. D7—325







276,971
SKILLET OR SIMILAR ARTICLE
Curtis R. Potts, 1512 Hempstead Ct., Norman, Okla. 73071
Filed Nov. 2, 1982, Ser. No. 438,570
Term of patent 14 years
U.S. Cl. D7—352



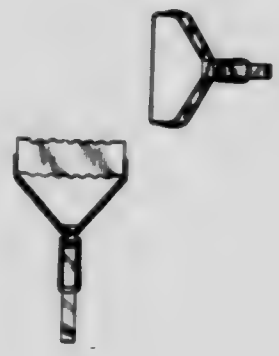
276,972
EXHAUST VALVE FOR PRESSURE COOKERS
Yves Jacob, Selongey, France, assignor to SEB, Selongey, France
Filed Jul. 21, 1982, Ser. No. 400,507
Claims priority, application France, Jan. 29, 1982, 820 281
Term of patent 14 years
U.S. Cl. D7—358



276,973
REFLECTOR PLATE FOR STOVE BURNERS
Peter W. Crossley, Havant, England, assignor to Thorn EMI Electrical Domestic Appliances Limited, London, England
Filed Apr. 27, 1982, Ser. No. 372,250
Claims priority, application United Kingdom, Oct. 29, 1981, 811003299
Term of patent 14 years
U.S. Cl. D7—402



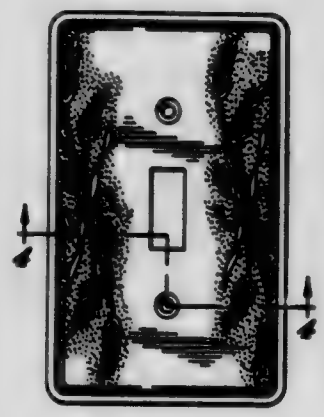
276,974
GARDENING HOE IMPLEMENT HEAD
Walter Kolb, Betzdorf, Fed. Rep. of Germany, assignor to Wolf-Gerate GmbH, Fed. Rep. of Germany
Filed May 28, 1982, Ser. No. 383,155
Term of patent 14 years
U.S. Cl. D8—11



276,975
PAIR OF SCISSORS
Jürgen E. Wordtmann, Solingen, Fed. Rep. of Germany, assignor to J. A. Henckels Zwillingswerk AG, Solingen, Fed. Rep. of Germany
Filed Jun. 1, 1982, Ser. No. 384,168
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1981, 5 MR 9210; May 5, 1982, 5 MR 9260
Term of patent 14 years
U.S. Cl. D8—57



276,976
ESCUTCHEON
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Sep. 13, 1982, Ser. No. 417,126
Term of patent 14 years
U.S. Cl. D8—351

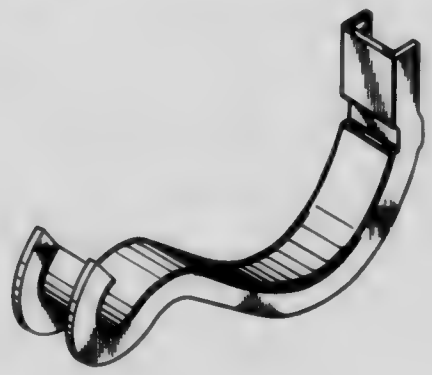


276,977
PAINT CAN SUPPORT FOR A LADDER
Marcul L. Gunnells, Rte. 1, Box 137, Danville, Va. 24541
Division of Ser. No. 916,714, Jun. 19, 1978, Pat. No. 261,984.
This application Jun. 15, 1981, Ser. No. 273,383
Term of patent 14 years
U.S. Cl. D8—373



276,978
RAIL ANCHOR
Graham M. Fee, Geneva, Ohio, assignor to True Temper Railway Appliances, Inc., Chicago, Ill.
Filed Nov. 3, 1982, Ser. No. 439,105
Term of patent 14 years
U.S. Cl. D8—382

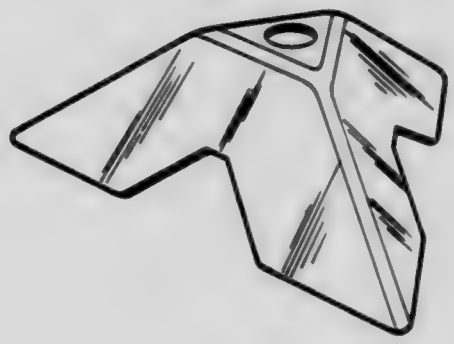




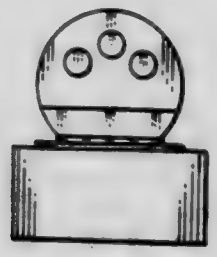
276,979
JAW PLATE FOR A LOCKING DEVICE FOR AN END CLAMP FOR METAL WIRES
Esko M. Tolkko, Porvoo, Finland, assignor to Oy Ensto AB, Porvoo, Finland
Filed Aug. 17, 1982, Ser. No. 408,882
Term of patent 14 years
U.S. Cl. D8—396



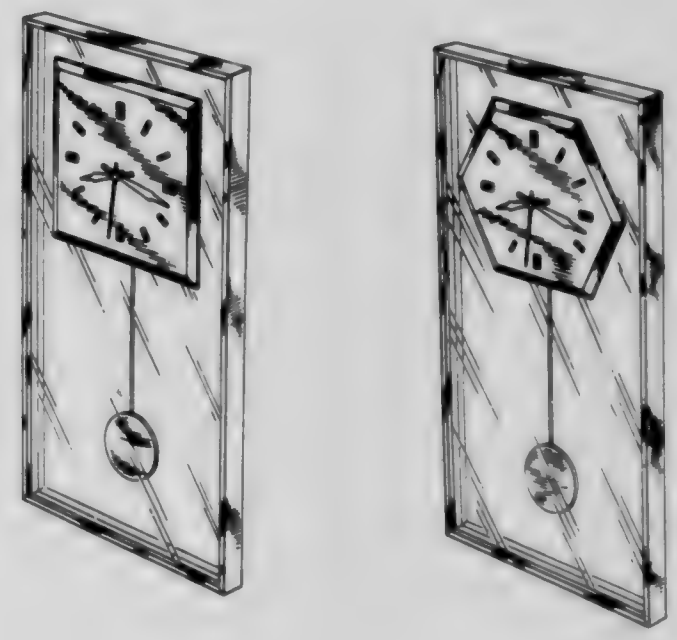
276,980
ANGLE FITTING
Frank Ahlund, Box 8069, 421 08 Vastra Frolunda, Sweden
Filed Jul. 27, 1982, Ser. No. 402,283
Claims priority, application Sweden, Feb. 4, 1982, 247/82
Term of patent 14 years
U.S. Cl. D8—400

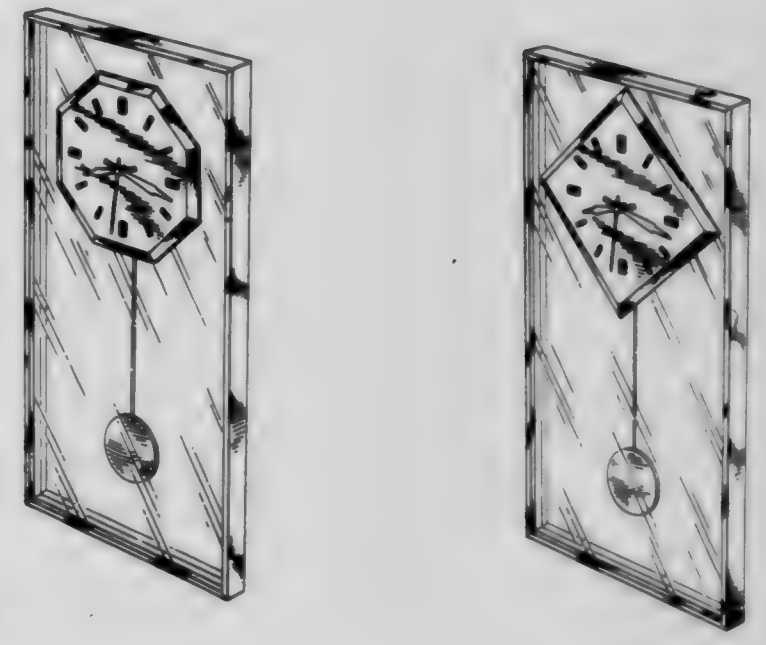


276,981
CONTAINER CAP FOR DISPENSING PARTICULATE MATERIAL
Bruce T. Cleevely, Pittsburgh, Pa., assignor to The C. F. Sauer Company, Richmond, Va.
Filed Jul. 26, 1982, Ser. No. 401,721
Term of patent 14 years
U.S. Cl. D9—449

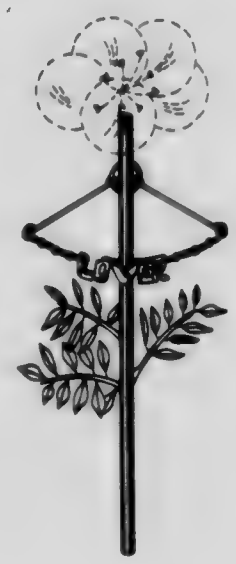


276,982
CLOCK
Ari Kostics, Downsview, Canada, assignor to Aristo Designart Inc., Downsview, Canada
Filed Mar. 15, 1982, Ser. No. 358,415
Claims priority, application Canada, Sep. 16, 1981, 16-09-81-10
Term of patent 14 years
U.S. Cl. D10—24



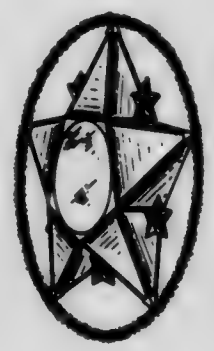


276,983
MESSAGE HOLDER FOR USE WITH AN IMITATION FLOWER OR THE LIKE
Frank J. Falco, 45-43 Springfield Blvd., Bay Side, N.Y. 11361
Filed Jul. 26, 1982, Ser. No. 402,046
Term of patent 14 years
U.S. Cl. D11—117





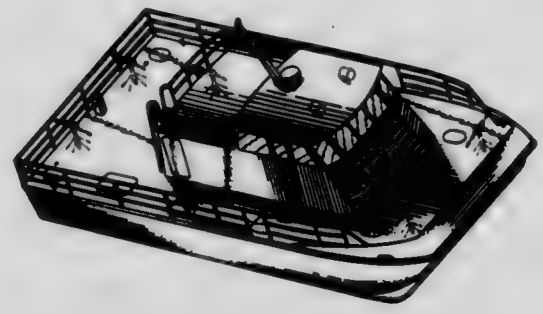
276,984
STAR ORNAMENT
Allan J. Jenkins, 198 Parker St., Cootamundra 2590, New South Wales, Australia
Filed Jul. 23, 1981, Ser. No. 285,904
Term of patent 14 years
U.S. Cl. D11—125



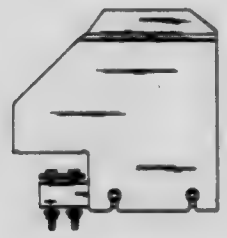
276,985
DECORATIVE WREATH COMPONENT
Harry J. Taylor, and Rae E. Taylor, both of P.O. Box 195, R.D. 2, Milford, N.J. 08848
Filed Jun. 16, 1982, Ser. No. 389,115
Term of patent 14 years
U.S. Cl. D11—130



276,986
SURFACE EFFECT SHIP
John B. Chaplin, Covington, La., assignor to Textron Inc., Providence, R.I.
Filed Dec. 2, 1982, Ser. No. 446,325
Term of patent 14 years
U.S. Cl. D12—5



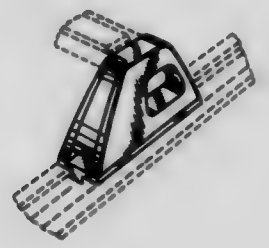
276,987
MOTORCYCLE TRANSMISSION COVER
Stanley A. Johnson, Brookfield, Wis., assignor to Harley-Davidson Motor Co., Inc., Milwaukee, Wis.
Filed Dec. 29, 1982, Ser. No. 454,495
Term of patent 14 years
U.S. Cl. D12—114



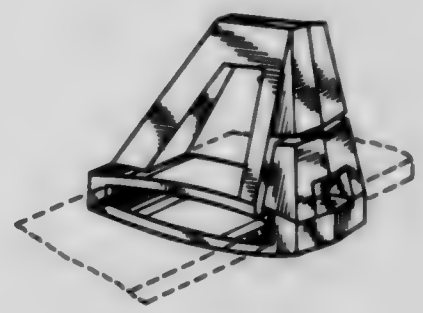
276,988
MOTORCYCLE STAND OR SIMILAR ARTICLE
Joel T. Shedden, P.O. Box 628, Lake Elsinore, Calif. 92330
Filed Jul. 26, 1982, Ser. No. 401,888
Term of patent 14 years
U.S. Cl. D12—115



276,989
ARTICLE CARRIER BRACKET
Frank Whitney, Algonac, Mich., assignor to Masco Corporation
Filed May 6, 1982, Ser. No. 375,408
Term of patent 14 years
U.S. Cl. D12—157



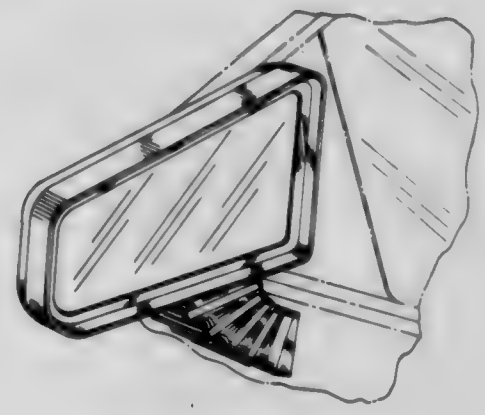
276,990
ARTICLE CARRIER TIE-DOWN BRACKET
Craig A. Stapleton, Port Huron, Mich., assignor to Masco Corporation
Filed May 6, 1982, Ser. No. 375,409
Term of patent 14 years
U.S. Cl. D12—157



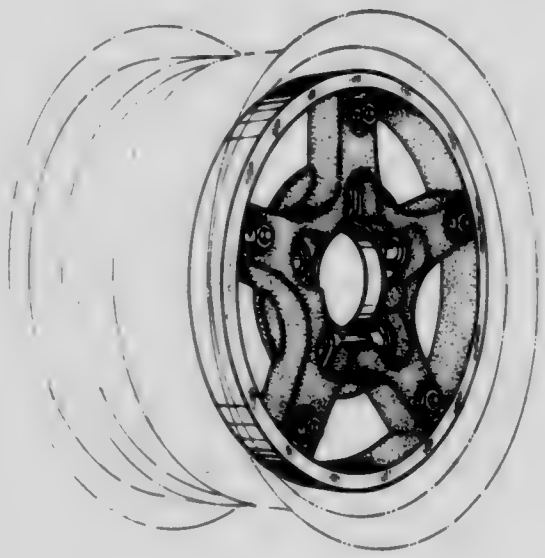
276,991
BICYCLE RACK
James R. Blackburn, 75 Cristich La., Campbell, Calif. 95008
Filed Sep. 24, 1982, Ser. No. 422,715
Term of patent 14 years
U.S. Cl. D12—158



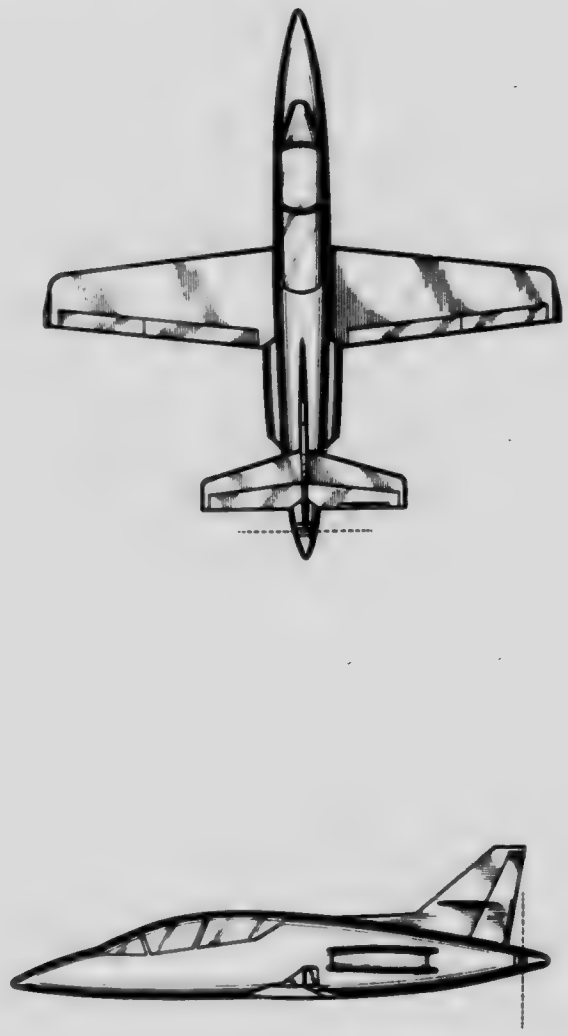
276,992
REAR VIEW MIRROR FOR AUTOMOTIVE VEHICLES
Frank T. Eichstadt, Westminster, Calif., assignor to Orion Industries, Inc., Carson, Calif.
Filed Oct. 18, 1982, Ser. No. 434,735
Term of patent 14 years
U.S. Cl. D12—187



276,993
VEHICLE WHEEL CENTER
Raymond J. Hedlund, Concord, Calif., assignor to Kelsey-Hayes Co., Romulus, Mich.
Filed Apr. 28, 1982, Ser. No. 372,767
Term of patent 14 years
U.S. Cl. D12—211



276,995
AIRPLANE
Anthony F. Drake, 504 Terrace, Pullman, Wash. 99163
Filed Mar. 9, 1982, Ser. No. 356,375
Term of patent 14 years
U.S. Cl. D12—339



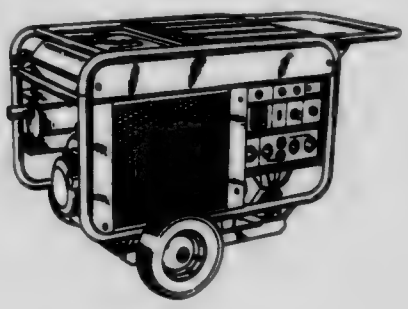
276,994
POWER OPERATED SURFBOARD
Robert E. Montgomery, Mission Viejo, and James A. Mizell, Huntington Beach, both of Calif., assignors to Surf-Jet Corporation, St. Paul, Minn.
Filed May 28, 1982, Ser. No. 382,955
Term of patent 14 years
U.S. Cl. D12—307



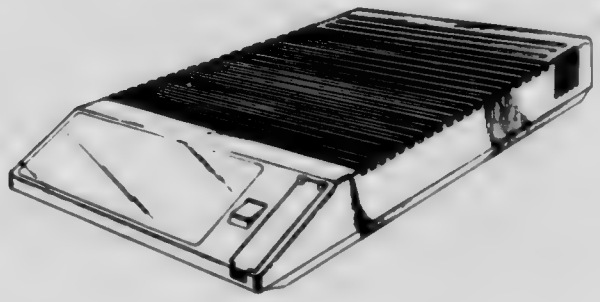
276,996
AUXILIARY HELICOPTER STEP
Robert B. McNab, P.O. Box 3689, Bristol, Tenn. 37625, and James A. Wolfe, Rte. 10, Box 199, Jonesboro, Tenn. 37659
Filed Apr. 26, 1982, Ser. No. 372,214
Term of patent 14 years
U.S. Cl. D12—345



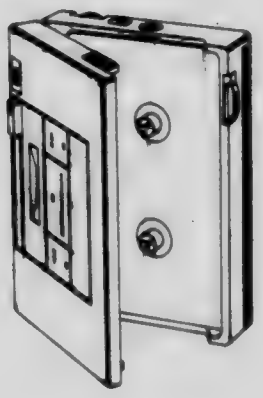
276,997
ENGINE GENERATOR
Yoshio Mikado, Asaka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 16, 1982, Ser. No. 418,823
Claims priority, application Japan, Apr. 13, 1982, 57-15768
Term of patent 14 years
U.S. Cl. D13—3



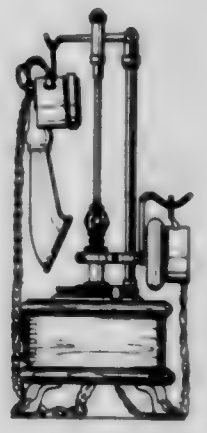
276,998
ELECTRONIC EQUIPMENT CONTAINER
Terence T. Caven, Beeston, England, assignor to Plessey Overseas Limited, Ilford, United Kingdom
Filed Apr. 28, 1982, Ser. No. 372,709
Claims priority, application United Kingdom, Oct. 28, 1981, 1003270
Term of patent 14 years
U.S. Cl. D13—40

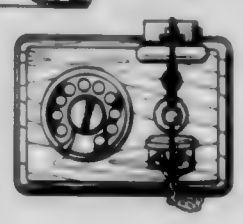


276,999
CASSETTE PLAYER
Takeshi Arimura, Yokohama, Japan, assignor to Toshiba Shibaura Denki Kabushiki Kaisha, Tokyo, Japan
Filed May 27, 1982, Ser. No. 382,656
Claims priority, application Japan, Dec. 11, 1981, 56-54596; Feb. 24, 1982, 57-7290
Term of patent 14 years
U.S. Cl. D14—6

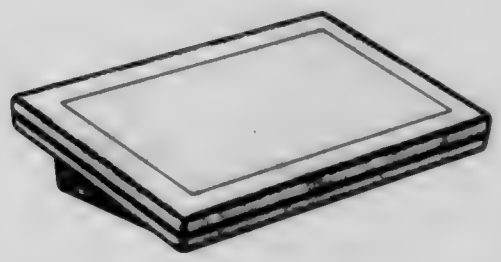


277,000
TELEPHONE SET
Vincenzina Marsovilli, 30, Via Ronchi I 20134, Milan, Italy
Filed Aug. 5, 1982, Ser. No. 405,634
Claims priority, application Italy, Mar. 9, 1982, 21061/82[U]
Term of patent 14 years
U.S. Cl. D14—53

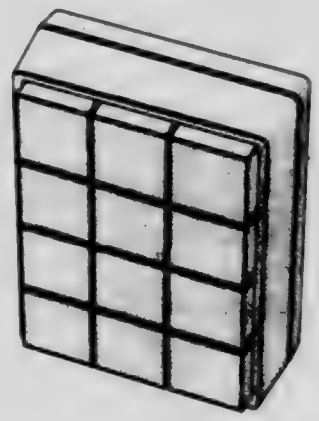




277,001
HOUSING FOR A KEYBOARD OR SIMILAR ARTICLE
John N. McGarvey, Drexel Hill, Pa.; Terry B. Prince, Indianapolis, Ind., and Michael P. Zambelli, Maplewood, N.J., assignors to AT&T Technologies, Inc., New York, N.Y. and AT&T Bell Laboratories, Murray Hill, N.J.
Filed Oct. 13, 1983, Ser. No. 541,774
Term of patent 14 years
U.S. Cl. D14—60



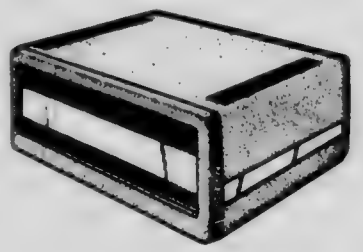
277,002
TELEPHONE STAND OR SIMILAR KEYBOARD ARTICLE
Donald M. Genaro, Haworth, N.J., and John N. McGarvey, Drexel Hill, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Continuation-in-part of Ser. No. 345,559, Feb. 4, 1982, , which is a continuation-in-part of Ser. No. 84,067, Oct. 12, 1979, Pat. No. Des. 265,401. This application Jan. 24, 1984, Ser. No. 573,424
Term of patent 14 years
U.S. Cl. D14—60



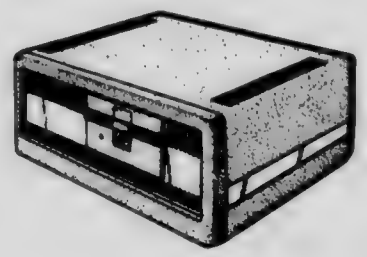
277,003
KEYBOARD CONSOLE
Michael Cridland, Manlius, N.Y., and David P. Moriconi, Ben Lomond, Calif., assignors to Victor Technologies Inc., Scotts Valley, Calif.
Filed Nov. 15, 1982, Ser. No. 441,706
Term of patent 14 years
U.S. Cl. D14—100



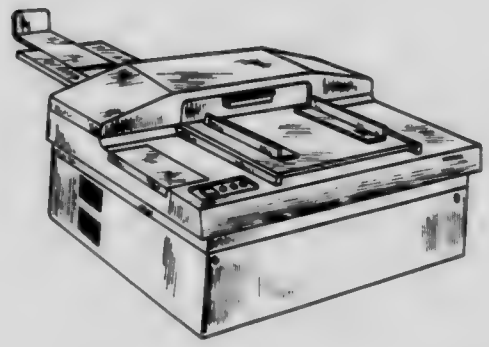
277,004
COMPUTER CONSOLE
Michael Cridland, Manlius, N.Y., and David P. Moriconi, Ben Lomond, Calif., assignors to Victor Technologies Inc., Scotts Valley, Calif.
Filed Nov. 15, 1982, Ser. No. 441,876
Term of patent 14 years
U.S. Cl. D14—100



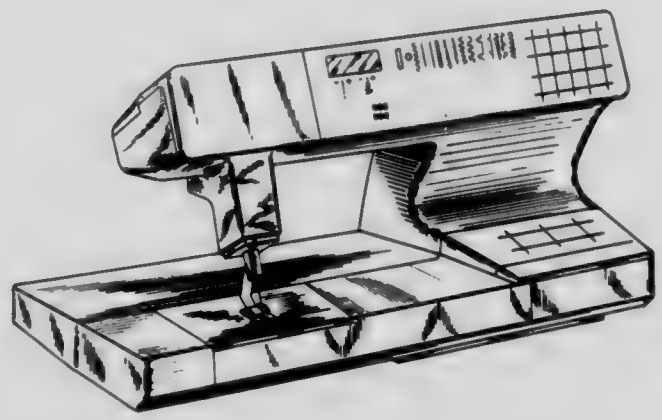
277,005
COMPUTER CONSOLE
Michael Cridland, Manlius, N.Y., and David P. Moriconi, Ben Lomond, Calif., assignors to Victor Technologies Inc., Scotts Valley, Calif.
Filed Nov. 15, 1982, Ser. No. 441,878
Term of patent 14 years
U.S. Cl. D14—100



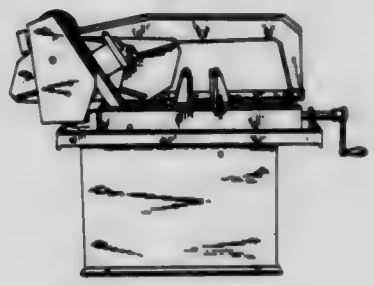
277,006
OPTICAL CHARACTER READER
Mutsumi Takahashi, Kawasaki; Shosuke Sato, and Hideshi Matsuzawa, both of Tokyo, all of Japan, assignors to Tokyo Keiki Company Limited, Tokyo, Japan
Filed Oct. 6, 1982, Ser. No. 433,038
Term of patent 14 years
U.S. Cl. D14—107

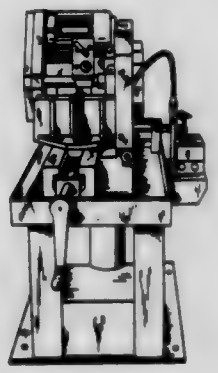


277,007
SEWING MACHINE
Lars G. Rosenblad, Huskvarna, Sweden, assignor to Husqvarna Aktiebolag, Huskvarna, Sweden
Filed Nov. 25, 1981, Ser. No. 324,966
Term of patent 14 years
U.S. Cl. D15—69

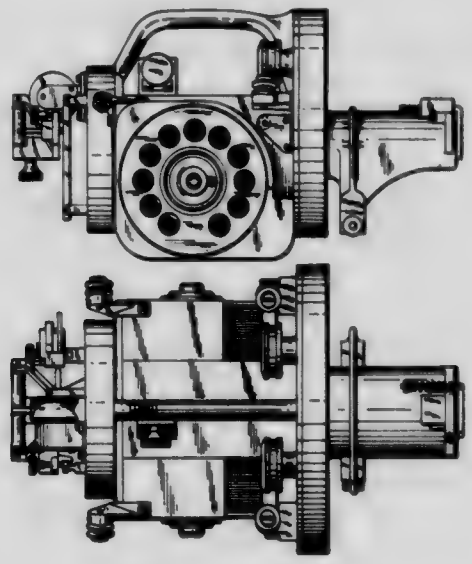


277,008
POWER HACK SAW
Paul Stolzer, Achern, Fed. Rep. of Germany, assignor to Kesro Maschinenbau GmbH & Co. Kommanditgesellschaft, Achern, Fed. Rep. of Germany
Filed Sep. 10, 1980, Ser. No. 185,933
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1980, GSM 5MR III/8-A
Term of patent 14 years
U.S. Cl. D15—133

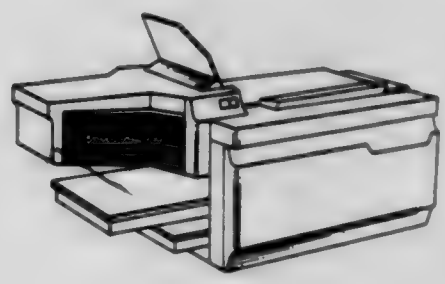




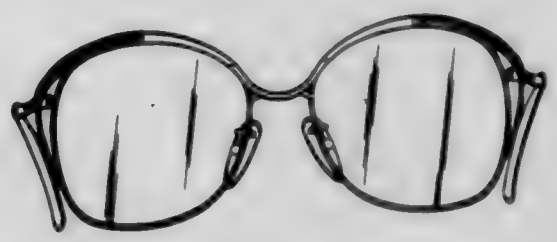
277,009
CABLE LASHING MACHINE
William H. Schweyher, Fort Worth, Tex., assignor to Communications Systems, Inc., Hector, Minn.
Filed Sep. 30, 1982, Ser. No. 432,119
Term of patent 14 years
U.S. Cl. D15—199



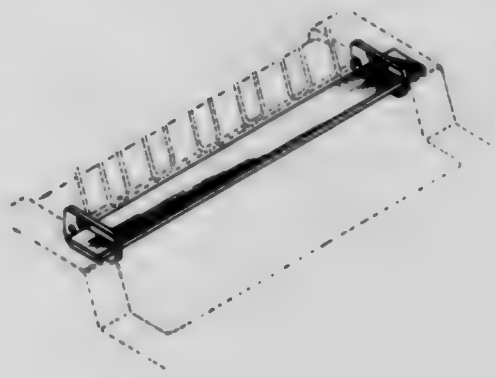
277,010
COMBINED COPYING AND SORTING APPARATUS
Frederick J. Lawrence, 13372 Cindy La., Tustin, Calif. 92680
Filed Nov. 29, 1979, Ser. No. 98,537
Term of patent 14 years
U.S. Cl. D16—31



277,011
EYEGLASS FRAME
Barton M. Levoy, 130 Cutter Mill Rd., Great Neck, N.Y. 11022
Filed Jan. 9, 1984, Ser. No. 569,286
Term of patent 14 years
U.S. Cl. D16—117



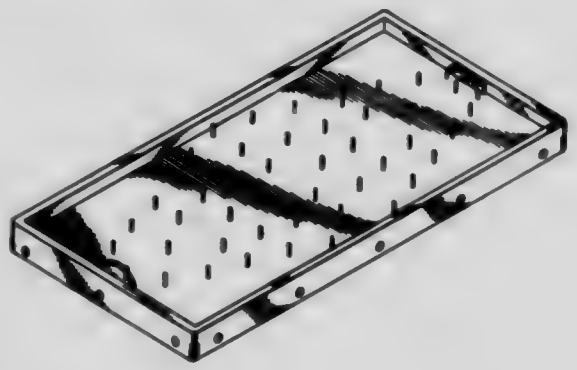
277,012
TEAR BAR FOR A PRINTER
George L. Guthrie, 2938 E. 62nd St., Indianapolis, Ind. 46220
Filed May 10, 1982, Ser. No. 376,376
Term of patent 14 years
U.S. Cl. D18—22



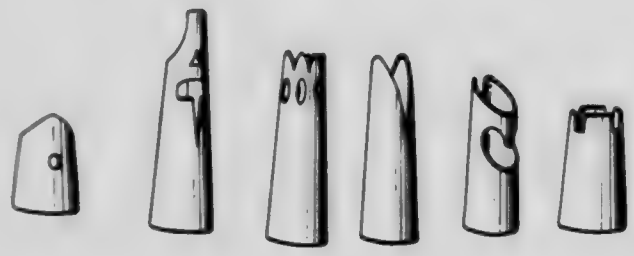
277,013
DESK ACCESSORY
Charles T. Wasson, 1123 Dallas Ave., Natrona Heights, Pa. 15065
Filed Jun. 12, 1981, Ser. No. 272,929
Term of patent 14 years
U.S. Cl. D19—75



277,014
GAME BOARD
Frank Vieira, 1431 Alta Vista, Hollister, Calif. 95023
Filed Apr. 14, 1981, Ser. No. 254,331
Term of patent 14 years
U.S. Cl. D21—18



277,015
SET OF STACKABLE CHESS PIECES
Arthur Elliott, Via Panama 12, 00189 Rome, Italy
Filed Jul. 19, 1982, Ser. No. 399,651
Term of patent 14 years
U.S. Cl. D21—52



277,016
TOY TIGER RATTLE
Terry Paczko, Cleveland, Ohio, assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,666
Term of patent 14 years
U.S. Cl. D21—65



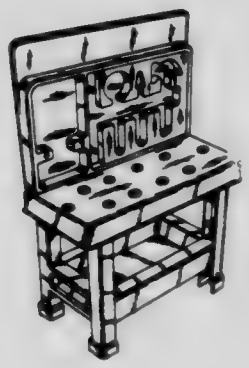
277,017
SIMULATIVE TOY RATTLE
Terry Paczko, Cleveland, Ohio, assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,671
Term of patent 14 years
U.S. Cl. D21—65



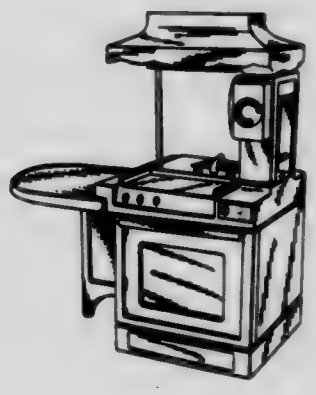
277,018
SIMULATIVE TOY RATTLE
Terry Paczko, Cleveland, Ohio, assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,672
Term of patent 14 years
U.S. Cl. D21—65



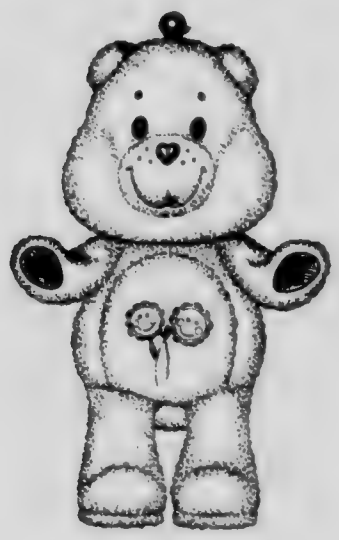
277,019
TOY WORKBENCH
Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039, and George Kress, Scotch Plains, N.J., assignors to Mel Appel, Livingston, N.J.
Filed Jul. 30, 1982, Ser. No. 404,356
Term of patent 14 years
U.S. Cl. D21—121



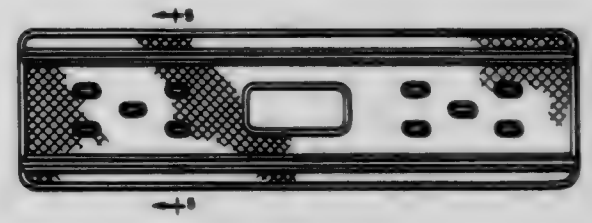
277,020
TOY KITCHEN
James F. Mariol, 481 Dean View Dr., Cincinnati, Ohio 45224
Filed Aug. 11, 1982, Ser. No. 407,305
Term of patent 14 years
U.S. Cl. D21—122



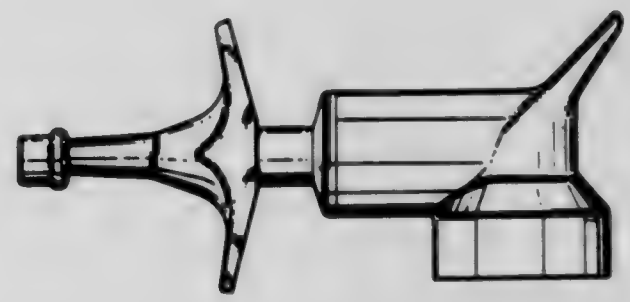
277,021
TOY BEAR FIGURE
Ralph Shaffer, Columbia Station, and William Davidson, Lakewood, both of Ohio, assignors to American Greetings Corporation, Cleveland, Ohio
Filed Oct. 14, 1982, Ser. No. 434,212
Term of patent 14 years
U.S. Cl. D21—159



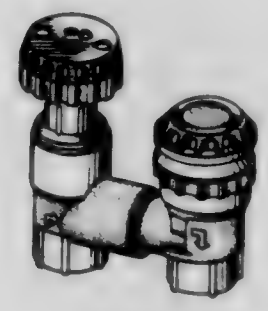
277,022
SWING SEAT
William H. Ziegler, Jr., Bedford, Pa., assignor to Brown Group Recreational Products, Inc., Bedford, Pa.
Filed Aug. 11, 1982, Ser. No. 407,166
Term of patent 14 years
U.S. Cl. D21—246



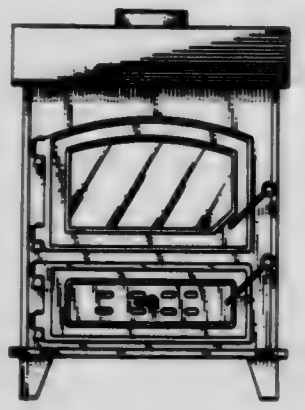
277,023
HAND PUMP FOR DISPENSING LIQUIDS
Clive W. Garrard, Market Harborough, England, assignor to English Glass Company Limited, Leicester, England
Filed Apr. 22, 1982, Ser. No. 372,435
Claims priority, application United Kingdom, Oct. 22, 1981, 1003150
Term of patent 14 years
U.S. Cl. D23—17



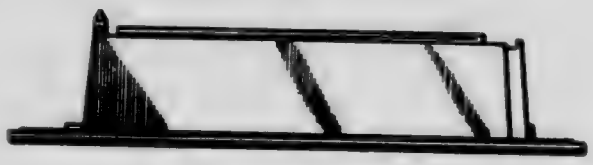
277,024
CONTROL VALVE FOR SPRINKLERS
Harold F. Fechtner, Claremont, and Robert S. Szemeredi, Tujunga, both of Calif., assignors to Anthony Manufacturing Corp., Azusa, Calif.
Filed Jan. 28, 1982, Ser. No. 343,462
Term of patent 14 years
U.S. Cl. D23—19

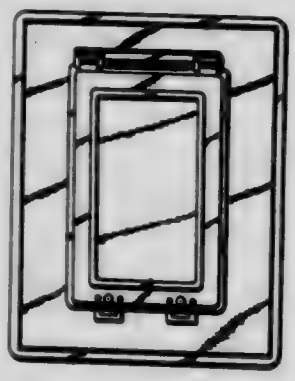


277,025
HEATING STOVE WITH INTERCHANGEABLE DOOR PANELS
Charles F. Buehler, 6540 Kirkville Rd., East Syracuse, N.Y. 13057
Filed Jul. 14, 1982, Ser. No. 398,155
Term of patent 14 years
U.S. Cl. D23—97

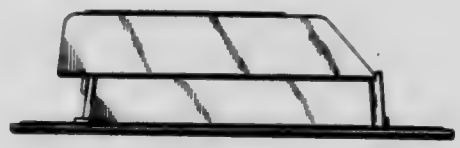


277,026
BASE OF A ROOF VENT
Arthur L. Waltz, 2000 E. Columbia Way Bldg. 42, Vancouver, Wash. 98661, and Elwin E. Peirce, 3890 Monroe Ave. NE., Salem, Oreg. 97301
Filed Sep. 27, 1982, Ser. No. 424,567
Term of patent 14 years
U.S. Cl. D23—153





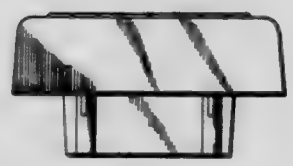
277,027
ROOF VENT
Arthur L. Waltz, 2000 E. Columbia Way, Bldg. 42, Vancouver, Wash. 98661, and Elwin E. Peirce, 3890 Monroe Ave. NE., Salem, Oreg. 97301
Filed Sep. 27, 1982, Ser. No. 424,568
Term of patent 14 years
U.S. Cl. D23—153



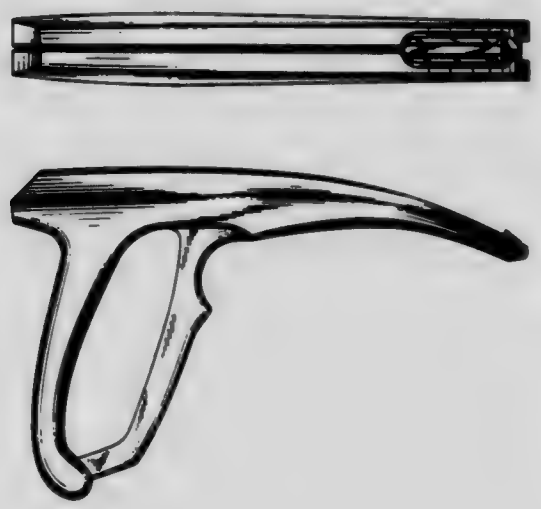


277,028
CAP FOR A ROOF VENT
Arthur L. Waltz, 2000 E. Columbia Way, Bldg. 42, Vancouver, Wash. 98661, and Elwin E. Peirce, 3890 Monroe Ave. NE., Salem, Oreg. 97301
Filed Sep. 27, 1982, Ser. No. 424,569
Term of patent 14 years
U.S. Cl. D23—153

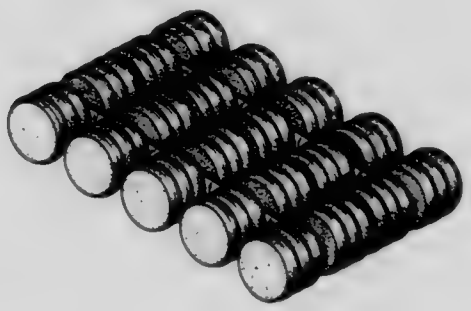




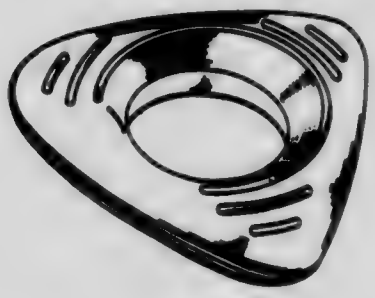
277,029
SURGICAL STAPLER
Joseph W. Blake, III, 88 Main St., New Canaan, Conn. 06840, and Jack W. Kaufman, 357 Frankel Blvd., Merrick, N.Y. 11566
Filed May 4, 1982, Ser. No. 374,691
Term of patent 14 years
U.S. Cl. D24—26



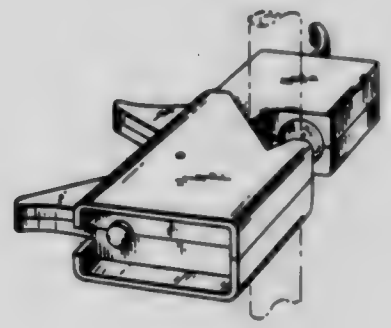
277,030
MASSAGER
Denson D. Coan, Sr., Cincinnati, Ohio, assignor to D.M. Systems, Inc., Cincinnati, Ohio
Filed Nov. 1, 1982, Ser. No. 438,418
Term of patent 14 years
U.S. Cl. D24—36



277,031
TEETHER
Richard L. Panicci, Hanover, Mass., assignor to Kiddie Products, Inc., Avon, Mass.
Division of Ser. No. 40,565, May 29, 1979, Pat. No. Des. 264,880. This application Aug. 3, 1981, Ser. No. 289,532
Term of patent 14 years
U.S. Cl. D24—45



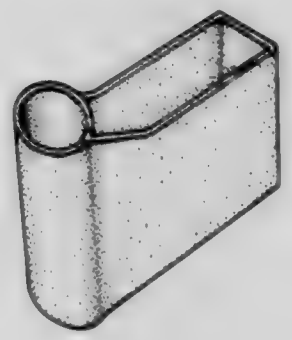
277,032
DROP DETECTOR
James R. Hitchcock, Barrington, and Lenart Andersen, Mt. Prospect, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Mar. 29, 1982, Ser. No. 362,734
Term of patent 14 years
U.S. Cl. D24—52



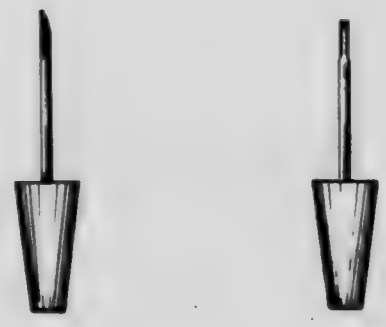
277,033
AIR-COOLED COMPACT ELECTRIC LAMP
Denis E. Bedel, Pittsburgh, Pa., assignor to North American Philips Electric Corp., New York, N.Y.
Filed Jul. 26, 1982, Ser. No. 402,194
Term of patent 14 years
U.S. Cl. D26—3



277,034
COMBINATION CIGARETTE AND LIGHTER CASE
Richard H. Ramsdell, 6691 Ralston Ave., Ventura, Calif. 93003
Filed May 20, 1982, Ser. No. 380,337
Term of patent 14 years
U.S. Cl. D27—48



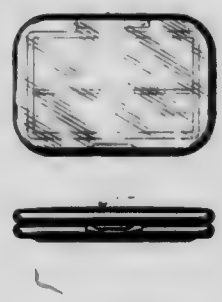
277,035
COSMETIC NAIL ENAMEL GUIDE APPLICATOR
Gino H. Cassai, 924 E. 96 St., Brooklyn, N.Y. 11236, and Henry J. Cassai, 163-47 85 St., Howard Beach, N.Y. 11414
Filed Jun. 16, 1982, Ser. No. 388,912
Term of patent 14 years
U.S. Cl. D28—7



277,036
ELECTRIC SHAVER
Kenichi Haruguchi, and Yukiko Ito, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Dec. 23, 1982, Ser. No. 452,520
Claims priority, application Japan, Jun. 29, 1982, 57-29395
Term of patent 14 years
U.S. Cl. D28—51

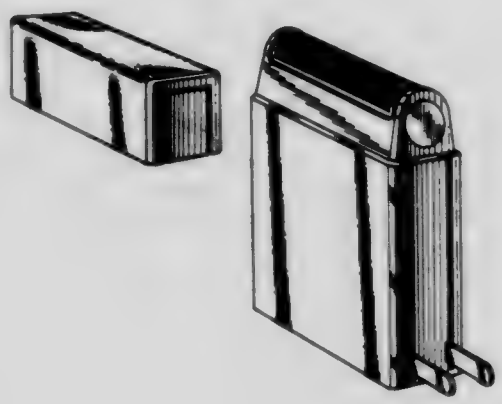


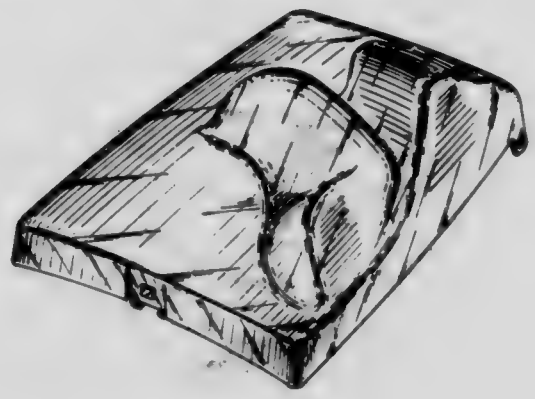
277,037
COSMETIC COMPACT
Murray Nadel, 433 Beechmont Dr., New Rochelle, N.Y. 10804
Filed Sep. 27, 1982, Ser. No. 423,551
Term of patent 14 years
U.S. Cl. D28—83



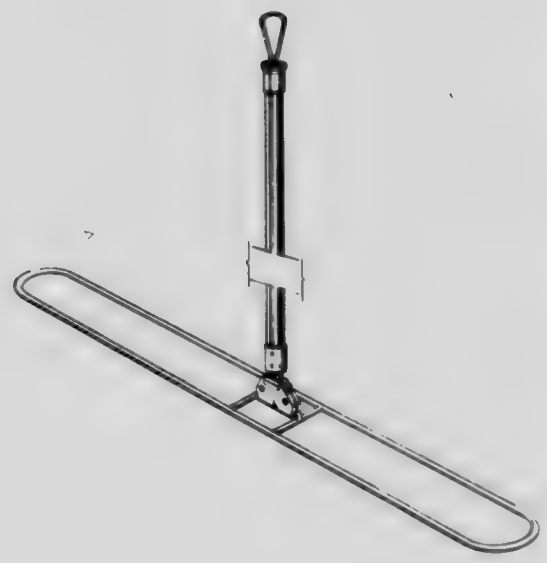
277,038
TRANSPARENT TOOL COVER FOR SUCTION CLEANERS OR THE LIKE
Kenneth R. Parker, Normal, and Samuel E. Hohulin, Lexington, both of Ill., assignors to National Union Electric Corporation, Bloomington, Ill.
Filed Aug. 25, 1982, Ser. No. 411,574
Term of patent 14 years
U.S. Cl. D32—31



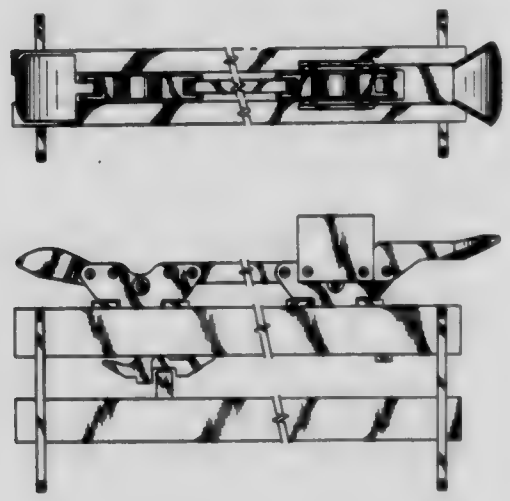




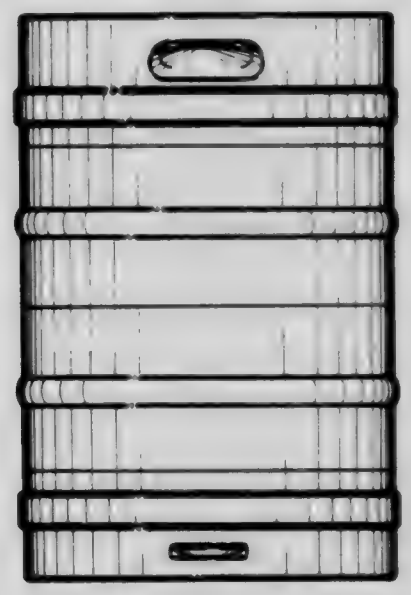
277,039
MOP CARRIER OR SIMILAR ARTICLE
Ichiro Miyoshi, Kobe; Masanobu Nishiyama, Osaka; Hisaji Tanaka, Osaka, and Fusao Kanazawa, Osaka, all of Japan, assignors to Duskin Franchise Kabushiki Kaisha, Osaka, Japan
Filed Mar. 17, 1981, Ser. No. 244,609
Term of patent 14 years
U.S. Cl. D32—50



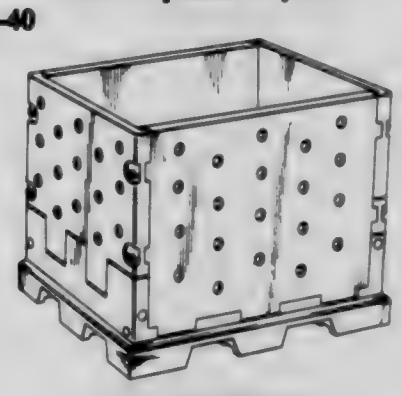
277,040
COMBINED CONVEYOR CARRIER AND TRACK UNIT
Clarence A. Dehne, Farmington Hills, Mich., assignor to Jervis B. Webb Company, Farmington Hills, Mich.
Filed Apr. 17, 1981, Ser. No. 255,114
Term of patent 14 years
U.S. Cl. D34—29



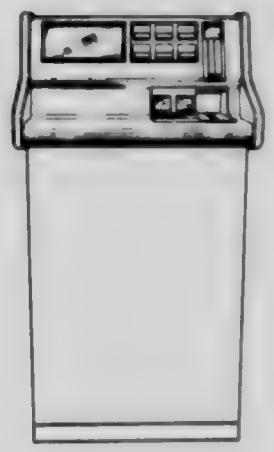
277,041
BEER KEG
Dwight E. Nichols, Beatrice, Nebr., assignor to Hoover Universal, Inc., Ann Arbor, Mich.
Filed Jun. 28, 1982, Ser. No. 392,927
Term of patent 14 years
U.S. Cl. D34—39



277,042
COLLAPSIBLE SHIPPING CONTAINER
Howard B. Carter, Sharon, and Larry Hughes, Lindsay, both of Canada, assignors to Bonar Rosedale Plastics Ltd., Markham, Canada
Filed Mar. 29, 1982, Ser. No. 362,607
Claims priority, application Canada, Feb. 12, 1982, 05-10-81-9
Term of patent 14 years
U.S. Cl. D34—40



277,043
BANKING MACHINE TERMINAL OR THE LIKE
Leif Lundblad, Häradsvägen 102, S-141 41 Huddinge, Sweden, and Kurt Olsson, Ekerö, Sweden, assignors to Leif Lundblad, Huddinge, Sweden
Filed Mar. 18, 1982, Ser. No. 359,638
Claims priority, application Sweden, Sep. 24, 1981, 81-2082
Term of patent 14 years
U.S. Cl. D99—28



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1ST DAY OF JANUARY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Raymond: *See*—
Muller, Klaus; and Mutz, Bernd, 4,490,893, Cl. 24-704.000.

AB Electrolux Motor Aktiebolag: *See*—
Johansson, Rolf A. G., 4,491,105, Cl. 123-335.000.

Abatjoglou, Anthony G.; and Bryant, David R., to Union Carbide Corporation. Hydroformylation process using triarylphosphine and bisphosphine monooxide ligands. 4,491,675, Cl. 568-454.000.

Abbott Laboratories: *See*—
Gendrich, Ronald L.; and Holleman, William H., 4,491,660, Cl. 536-32.000.

Abe, Kaname: *See*—
Yamada, Hisashi; Makise, Masayuki; Katagiri, Tsutomu; and Abe, Kaname, 4,491,553, Cl. 264-51.000.

Abe, Riichi; Tsuruta, Katsuji; and Tsujikado, Seiji, to Kabushiki Kaisha Komatsu Seisakusho. Multi-layer padding welding method. 4,491,266, Cl. 228-225.000.

Abe, Seizaburo: *See*—
Mizunuma, Takehisa; Abe, Seizaburo; Ohno, Jiro; and Kobayashi, Hisashi, 4,491,487, Cl. 148-6.210.

Abe, Shinya: *See*—
Katoh, Yoshinori; Tajima, Tetsuya; Yamatsu, Isao; Suzuki, Takeshi; Abe, Shinya; Kajihara, Akiharu; and Sugitani, Tohru, 4,491,592, Cl. 424-318.000.

Abel, Jonathan S.: *See*—
Mazurek, Harry; Day, David R.; Maby, Edward W.; and Abel, Jonathan S., 4,491,605, Cl. 427-38.000.

Abrahams, Sanders L., to Burroughs Wellcome Co. Antithrombotic agent. 4,491,591, Cl. 424-274.000.

Acker, Loren C., to Engineering & Research Associates, Inc. Electro mechanical tubing sealer. 4,491,711, Cl. 219-10.810.

Ackermann, Wilhelm; Langlitz, Karlheinz; and Schmitz, Gunter, to Mannesmann Aktiengesellschaft. Force equalizing mechanism for the wheels of heavy load-carrying rail vehicles. 4,491,074, Cl. 105-164.000.

Acutherm, Ltd.: *See*—
Brand, Peter, 4,491,270, Cl. 236-49.000.

Adam, Fritz G., to ITT Industries, Inc. CMOS Selection circuit. 4,491,839, Cl. 340-825.910.

Adams, Keith J. G.; Williams, Terrence P.; Bolt, Norman T.; and Siddique, Qazi M., to British Gas Corporation. Automatic CO_2 removal system and operation thereof. 4,491,566, Cl. 423-220.000.

Adams, Richard J.; and Belding, Charles A., to Beloit Corporation. Threading belt and threading system. 4,491,503, Cl. 162-232.000.

Aday, Jorge L., to Ethicon, Inc. Single suture strand dispenser package. 4,491,218, Cl. 206-63.300.

Addison, Cern A. Apparatus for mixing syrup with feed. 4,491,420, Cl. 366-156.000.

Adeka Argus Chemical Co., Ltd.: *See*—
Minagawa, Motonobu; Nakahara, Yutaka; Shibata, Toshihiro; and Tobita, Etsuo, 4,491,643, Cl. 524-96.000.

Adkins, John C.: *See*—
Messick, George H.; and Adkins, John C., 4,491,003, Cl. 72-137.000.

Adolph Coors Company: *See*—
Hahn, Roger, 4,491,613, Cl. 427-428.000.
Stirbis, James S., 4,491,068, Cl. 101-40.000.

Advanced Semiconductor Materials of America, Inc.: *See*—
Rosler, Richard S.; and Engle, George M., 4,491,606, Cl. 427-38.000.

AECI Limited: *See*—
Ellis, David; Smith, Jeremy G. B.; and Halliday, Pieter S. J., 4,491,489, Cl. 149-109.600.

Aero Engineering Corporation: *See*—
Keen, Jack H., 4,490,989, Cl. 62-243.000.

Aeroquip Corporation: *See*—
Thelen, William G., 4,491,348, Cl. 285-49.000.

Agarwal, Suresh C., to Babcock & Wilcox Company, The. Olefin oxidation reactor temperature control. 4,491,924, Cl. 364-500.000.

Agatahama, Shunichi, to Omron Tateisi Electronics Co. Contact switching device production method. 4,490,903, Cl. 29-622.000.

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Imagawa, Kyoshiro; Sakuragi, Shiro; and Saitoh, Mitsunori, 4,491,385, Cl. 350-96.200.
Ishida, Masahiko; Haga, Ryoichi; Ishibashi, Tadashi; and Odawara, Yoji, 4,491,522, Cl. 210-603.000.

Agnew, John B.; Barnard, John A.; and Tirtaatmadja, Viyada, to Monash University. Treating used automotive lubricating oil to reduce the content of suspended particulate matter, including lead. 4,491,515, Cl. 208-180.000.

Ahrens, Norbert; Daniel, Helmut; and Schacknies, Gerhard, to Krupp Polysius AG. Method and apparatus for mixing fine material. 4,491,419, Cl. 366-101.000.

Aikins, Jerry L., to Zimmer, Inc. Sheath and retractable surgical tool combination. 4,491,132, Cl. 128-305.000.

Air Preheater Company, Inc., The: *See*—
Sunter, Thomas C., 4,491,458, Cl. 55-21.000.

Aisan Industry Co. Ltd.: *See*—
Nakamura, Norihiko; Itoh, Takaaki; and Morino, Toshiharu, 4,491,550, Cl. 261-44.00C.

Aisin Seiki Kabushiki Kaisha: *See*—
Hashimoto, Nobuyuki, 4,491,157, Cl. 137-871.000.
Hattori, Takemi; and Eseki, Kozo, 4,491,364, Cl. 297-284.000.
Tsubouchi, Kaoru, 4,491,056, Cl. 91-369.00A.

Akab of Sweden AB: *See*—
Gustavsson, Pertti, 4,491,079, Cl. 112-121.150.

Akamatsu, Masahiko, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor switch device. 4,491,742, Cl. 307-252.00C.

Akashi, Shunji: *See*—
Yoshida, Hiroshi; Akashi, Shunji; and Matsuda, Yoshio, 4,490,890, Cl. 24-434.000.

Akiyama, Nobuyuki; Kembo, Yukio; and Nakagawa, Yasuo, to Hitachi, Ltd. Flatness measuring device. 4,491,787, Cl. 324-71.500.

Akzo N.V.: *See*—
Greven, Hendrik M., 4,491,579, Cl. 424-177.000.

Albert Bocker GmbH & Co. KG: *See*—
Bocker, Albert, 4,491,196, Cl. 187-10.000.

Albert Einstein College of Medicine of Yeshiva University, a division of Yeshiva University: *See*—
Seifter, Eli; and Rettura, Giuseppe, 4,491,574, Cl. 424-10.000.

Albert-Frankenthal AG: *See*—
Reffert, Roland, 4,491,310, Cl. 270-49.000.

Albert Nestler GmbH: *See*—
Schaub, Dietmar; and Heupa, Gert, 4,491,688, Cl. 178-18.000.

Alder, Robert L., to Smith International, Inc. Automatic drilling process and apparatus. 4,491,186, Cl. 175-26.000.

Alexander, Geroge E.: *See*—
Sylvester, Gordon C.; and Alexander, Geroge E., 4,491,062, Cl. 98-40.00D.

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Mattson, Charles A.; and Landy, Richard J., 4,490,910, Cl. 30-276.000.

Allemano, Emilio. Combined instrument system for divers. 4,491,015, Cl. 73-300.000.

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Ray, Glen, 4,491,819, Cl. 336-110.000.

Allen, Bruce S.: *See*—
Kryskow, J. Michael, Jr.; Bobzin, Jeffery J.; and Allen, Bruce S., 4,491,946, Cl. 370-89.000.

Allied Corporation: *See*—
Aron, Mitchell, 4,491,835, Cl. 340-739.000.
Thomas, Evan G., 4,491,530, Cl. 252-143.000.

Allis-Chalmers Corp.: *See*—
Sieren, Gerald E., 4,491,191, Cl. 180-69.200.

Almeida, Anthony. Animal collar. 4,491,090, Cl. 119-106.000.

Alps Electric Co., Ltd.: *See*—
Tsuchiya, Tatsuhiko, 4,491,889, Cl. 360-105.000.

Aluminum Company of America: *See*—
Bowman, Kenneth A.; and Zuber, Chester L., 4,491,473, Cl. 75-63.000.
Ormesher, Robert J., 4,491,474, Cl. 75-65.00R.
Stevenson, David T.; and Troup, Robert L., 4,491,472, Cl. 75-10.00R.
Zuber, Chester L.; Butrum, Virgil T.; Gorss, Jeffrey B.; and Rydholm, Manford E., 4,491,475, Cl. 75-65.00R.

AMCOR Ltd.: *See*—
Yavnieli, Mordechai, 4,490,937, Cl. 43-112.000.

American Can Company: *See*—
Hsu, Joseph C.; and Steen, Robert A., 4,491,598, Cl. 426-127.000.

American District Telegraph Company: *See*—
Galvin, Aaron A.; and Harvey, Roy L., 4,491,828, Cl. 340-525.000.

American National Bank, executor, The: *See*—
Pinson, Sylvain J.; and American National Bank, executor, The, 4,491,179, Cl. 166-257.000.

American Standard Inc.: *See*—
Walley, Ernest, 4,491,372, Cl. 303-18.000.
Wood, James A.; and Mazur, Richard J., 4,491,920, Cl. 364-426.000.

Amerine, James D.: *See*—
Vieta, Alan K.; Amerine, James D.; and Lowe, Henry M., 4,491,254, Cl. 222-83.500.

Ammco Tools, Inc.: *See*—
Mountz, Craig E., 4,491,194, Cl. 187-8.430.
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AMP Incorporated: *See*—
Crawford, Christopher L., 4,491,378, Cl. 339-75.0MP.

Hamaker, Wilbur A., Jr.; and Stahl, Daniel E., 4,491,381, Cl. 339-107.000.

AMSTED Industries Incorporated: *See*—
Neumann, Otto W., 4,491,075, Cl. 105-207.000.
Simpson, Neville H.; Dosemagen, Thomas H.; and Dirks, David E., 4,490,969, Cl. 57-217.000.
Wilson, A. Kenneth; and Barker, Ronald E., 4,491,300, Cl. 251-368.000.

Analog Devices, Incorporated: *See*—
Tuthill, Michael G., 4,491,825, Cl. 340-347.0DA.

Anastasio, Maurizio: *See*—
Rossi, Pietro P.; and Anastasio, Maurizio, 4,491,528, Cl. 252-56.00S.

Anders, Helmut; and Dietrich, Gunter, to Rahdener Maschinenfabrik August Kolbus GmbH & Co. Jacket application device for a book binding machine. 4,491,448, Cl. 412-21.000.

Anderson, Jack F.; and Melrose, Clayton, to Anderson, Jack F. Retractable in-row tiller device. 4,491,183, Cl. 172-5.000.

Ando, Yujiro: *See*—
Fujii, Haruo; and Ando, Yujiro, 4,491,855, Cl. 346-159.000.

Andrew Corporation: *See*—
Saad, Saad S., 4,491,810, Cl. 333-126.000.

ANT Nachrichtentechnik GmbH: *See*—
Blume, Georg; and Franke, Ludwig, 4,491,294, Cl. 248-251.000.

Aoike, Hitoshi; Machida, Toyotaka; Kumazaki, Toshimasa; and Suenaga, Kazuyuki, to Victor Company of Japan, Ltd. Video recording by frequency modulation of luminance and multiplexed chroma components. 4,491,876, Cl. 358-330.000.

Aoki, Nobuyoshi: *See*—
Hongo, Akira; Ueda, Hideki; Nakata, Isei; Yoshida, Eiichi; Aoki, Nobuyoshi; and Suzuki, Toshimitsu, 4,490,984, Cl. 62-49.000.

Aoki, Takashi: *See*—
Nishikawa, Masao; and Aoki, Takashi, 4,491,840, Cl. 340-903.000.

Aoki, Yoshiaki: *See*—
Tada, Hideaki; and Aoki, Yoshiaki, 4,491,476, Cl. 75-124.000.

Appelbaum, Joseph; and Weiss, Reuven, to Ramot University Authority for Applied Research. Solar radiation sensor and system including same for measuring solar radiation distribution. 4,491,727, Cl. 250-203.00R.

Arad, Abraham A.: *See*—
Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Abraham A., 4,490,939, Cl. 446-448.000.

Arai, Hajime: *See*—
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Kojima, Noboru; Watatani, Yoshizumi; Arai, Takao; Hoshino, Takashi; and Shiboya, Toshifumi, 4,491,880, Cl. 360-19.100.

Arakawa, Akio, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method for driving a motor used in a loom. 4,491,905, Cl. 364-181.000.

Argandona, Toby. Fillbox for storage tank inlet. 4,491,147, Cl. 137-371.000.

Arkles, Barry C.; Peterson, William R., Jr.; and Rokowski, Joseph M., to Petrarch Systems Inc. Mixed alkoxyaminosilanes, methods of making same and vulcanizing silicons prepared therefrom. 4,491,669, Cl. 556-410.000.

Armco Inc.: *See*—
Galle, Edward M., Jr.; and Cowan, William S., 4,491,351, Cl. 285-318.000.

Armex Cable Corporation: *See*—
Drew, Thomas J.; and Day, Frank S., 4,491,685, Cl. 174-75.00C.

Arndt, Friedrich: *See*—
Kruger, Hans-Rudolf; Arndt, Friedrich; and Rusch, Reinhard, 4,491,466, Cl. 71-90.000.

Arnheim, Hans-Rudolf; and Warner, Hermann, to General Motors Corporation. Window pane, adjustable in height, particularly for motor vehicles. 4,490,942, Cl. 49-374.000.

Arnold, Gerhard: *See*—
Herklotz, Gunter; and Arnold, Gerhard, 4,491,507, Cl. 204-47.000.

Aron, Mitchell, to Allied Corporation. Raster and stroke writing deflection amplifier arrangement. 4,491,835, Cl. 340-739.000.

Asahi Glass Company Ltd.: *See*—
Suzuki, Kaichiro; Nakaya, Keiichi; Gotoh, Tomohiro; Kitasako, Masayuki; and Iwasaki, Masaharu, 4,491,571, Cl. 423-485.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Okudaira, Sadao, 4,491,395, Cl. 350-427.000.
Suzuki, Takeomi, 4,491,402, Cl. 354-406.000.

Asai, Hiromitsu: *See*—
Sugi, Hiromi; Furumura, Kyozaburo; and Asai, Hiromitsu, 4,491,373, Cl. 308-5.00R.

Asano, Masaharu, to Nissan Motor Company, Limited. Fuel injection means for an internal combustion engine of an automobile. 4,491,114, Cl. 123-492.000.

Asano, Masaharu: *See*—
Kanegae, Hidetoshi; Asano, Masaharu; Yasuhara, Seishi; and Nakajima, Masao, 4,491,112, Cl. 123-479.000.

Asari, Akira; Inoue, Yoichi; and Ishii, Takahiko, to Kabushiki Kaisha Kobe Seiko Sho. Hot isostatic pressing apparatus. 4,491,302, Cl. 266-87.000.

Aschwanden, Felix, to RCA Corporation. Digital sync separator. 4,491,870, Cl. 358-153.000.

ASEA Aktiebolag: *See*—
Berg, Samuel, 4,491,706, Cl. 200-148.00A.

Larker, Hans; and Tegman, Ragnar, 4,491,540, Cl. 252-628.000.

Ashcombe Products Company: *See*—
Thornton, Henry M.; and Thornton, John S., 4,491,295, Cl. 249-53.00R.

Ashland Oil, Inc.: *See*—
Carlos, Donald D.; and Friley, B. Keith, 4,491,535, Cl. 252-389.610.
Gruber, Norma J.; and Powell, Clois E., 4,491,646, Cl. 524-558.000.
Mansour, Maher L., 4,491,610, Cl. 427-337.000.

Ashmead, Harvey H.; and Hsu, Hsin-Hung. Potassium polyphosphate protein hydrolysate fertilizer. 4,491,464, Cl. 71-11.000.

Associated Enterprises, Inc.: *See*—
Tengler, John N., 4,490,908, Cl. 30-90.400.

AT&T Bell Laboratories: *See*—
Bellisio, Jules A.; and Larsen, Arthur B., 4,491,953, Cl. 375-27.000.
Candy, James C.; and King, Bernard G., 4,491,982, Cl. 455-607.000.
Dragone, Corrado, 4,491,848, Cl. 343-781.00P.
Duttweiler, Donald L.; and Zebo, Timothy J., 4,491,701, Cl. 179-170.200.
Embree, David M.; Goldthorp, David C.; Longenecker, Howard H.; and Vogelpohl, David R., 4,491,691, Cl. 179-84.00T.
Frank, Amalie J., 4,491,947, Cl. 370-94.000.
Turner, Jonathan S., 4,491,945, Cl. 370-60.000.

AT&T Technologies, Inc.: *See*—
Hetherington, Jack C., 4,491,492, Cl. 156-212.000.
Jerde, Leslie G.; Lory, Earl R.; Muething, Kevin A.; and Tsou, Len Y., 4,491,499, Cl. 156-626.000.
Krause, Dennis L., 4,491,509, Cl. 204-192.00R.

Atasi Corporation: *See*—
Brown, Stanley F.; and Plonczak, Garold W., 4,491,888, Cl. 360-97.000.

Athenes, Claude; Tarbouriech, Francois; and Poux, Gerard, to Thomson-CSF Telephone. Logic selection module. 4,491,837, Cl. 340-825.020.

Atkins, Kenneth E., to Union Carbide Corporation. Uniformly pigmented, low shrinking polyester molding compositions. 4,491,642, Cl. 523-515.000.

Atlantic Richfield Company: *See*—
Baucum, Dewayne E., 4,491,440, Cl. 405-288.000.
Dean, Barry D., 4,491,647, Cl. 525-67.000.

Atsuta, Toshio: *See*—
Yoshida, Toshio; and Atsuta, Toshio, 4,491,001, Cl. 72-76.000.

Aubry, Jacques A., to Societa Nationale Industrielle et Aerospatiale. Vehicle wheel suspension system incorporating coaxial tube damping and anti-roll means. 4,491,342, Cl. 280-700.000.

Automated Medical Products Corporation: *See*—
Meier, Hans, 4,491,435, Cl. 403-55.000.

Automobiles Citroen: *See*—
Fefeu, Michel, 4,491,119, Cl. 123-557.000.

Automobiles Peugeot: *See*—
Fefeu, Michel, 4,491,119, Cl. 123-557.000.

Avalon Research: *See*—
Coad, George L., 4,491,095, Cl. 123-46.00R.

Aviram, Ari; and Shih, Kwang K., to International Business Machines Corporation. Metal-insulator resistive ribbon for thermal transfer printing. 4,491,431, Cl. 400-241.100.

Aviram, Ari; and Shih, Kwang K., to International Business Machines Corporation. Chemical heat amplification in thermal transfer printing. 4,491,432, Cl. 400-241.100.

Axthammer, Ludwig; and Woessner, Felix, to Fichtel & Sachs AG. Pressurized fluid device. 4,491,160, Cl. 141-349.000.

Azmon, Emanuel: *See*—
Tuval, Miron; Azmon, Emanuel; and Melamed, Avraham, 4,491,367, Cl. 299-4.000.

Babcock & Wilcox Company, The: *See*—
Agarwal, Suresh C., 4,491,924, Cl. 364-500.000.
Flora, John H.; and Henderson, James E., 4,491,784, Cl. 324-61.0QL.

Babson Bros. Co.: *See*—
Rubino, Daniel A., 4,491,085, Cl. 119-14.100.

Bacharach, Ottmar; and Schafer, Herbert, to Gebr. Pfeiffer AG. Roller mill construction. 4,491,280, Cl. 241-121.000.

Bachman, Wesley J.: *See*—
Knepler, John T.; and Bachman, Wesley J., 4,491,241, Cl. 221-3.000.

Bachmann, Einar H.; and Ingvarsson, Kristjan, to Digger Meter Corporation, The. Depth monitoring system. 4,491,927, Cl. 364-561.000.

Baillod, Frederic, to SRP, Inc. Shock cushioning package. 4,491,225, Cl. 206-583.000.

Bajars, Laimonis: *See*—
Happel, John; Hnatow, Miguel A.; and Bajars, Laimonis, 4,491,639, Cl. 502-219.000.

Baker, Scott A.: *See*—
Bortnik, John F.; Clayman, Donald A.; and Baker, Scott A., 4,491,568, Cl. 423-442.000.

Baker, Stanley Z. Flytrap. 4,490,938, Cl. 43-114.000.

Balch, Richard A.; and Palmer, Ansell W., to General Electric Company. Sensing switch for a detachable communications probe. 4,491,791, Cl. 324-157.000.

Banitt, Elden H., to Riker Laboratories. Ethoxyphenyl piperidines and uses thereof. 4,491,584, Cl. 424-263.000.

Bansal, Arun K. Electrically powered swing for infant. 4,491,317, Cl. 272-86.000.

Bar-Nefy, Simcha; and Tiomkin, Michael, to Israel Aircraft Industries, Ltd. Mine field clearing apparatus mountable on a vehicle. 4,491,053, Cl. 89-1.130.

Baranov, Vladimir K.; Pinov, Akhsarbek B.; Potapov, Valery N.; Rostokinsky, Vladimir V.; Ryabikov, Stanislav V.; Sabelnikov, Viktor A.; Strebkov, Dmitry S.; and Tveryanovich, Eduard V. Solar photoelectric module. 4,491,683, Cl. 136-259.000.

Barch, Herbert W.; Salego, George T.; Retsch, William H.; and Blair, Rudolph, to PPG Industries, Inc. Cylindrical sleeve applicator for use in manufacturing chemically treated filaments. 4,491,082, Cl. 118-234.000.

Barcus, Lester M. String instrument pickup system. 4,491,051, Cl. 84-1.160.

Bargigia, Gianangelo; and Carniselli, Giuliano. Composition based on a fluorohydrocarbon solvent, suitable for removing water from the surface of manufactured articles. 4,491,531, Cl. 252-153.000.

Barker, Ronald E.: *See*—
Wilson, A. Kenneth; and Barker, Ronald E., 4,491,300, Cl. 251-368.000.

Barnard, John A.: *See*—
Agnew, John B.; Barnard, John A.; and Tirtaatmadja, Viyada, 4,491,515, Cl. 208-180.000.

Barnhoorn, Adrianus J. M.; and Raadenbusch, Werner T., to Shell Oil Company. Process for the preparation of self-cross-linking resinous binders and their use in surface coating compositions. 4,491,611, Cl. 427-386.000.

Barr, Charles A.; Van Allen, David E.; and Zanardelli, John K., to Polaroid Corporation. Handheld viewer for transparency film. 4,491,434, Cl. 40-362.000.

Barrows, Douglas P.: *See*—
Sutter, David L.; Furbish, Ivan J.; Ferguson, Roland C.; Berry, Richard L.; and Barrows, Douglas P., 4,490,949, Cl. 52-9.000.

Barta, Laszlo : *See*—
Sajo, Istvan; Vamos, Gyorgy; Urmossy, Miklos; Sipos nee Kaveczka, Barbara; Zemplen nee Papp, Eva; Borsovszky, Eva; and Barta, Laszlo , 4,491,633, Cl. 436-147.000.

Barthelat, Rene ; and Dore, Alain, to Societe d'Applications Generales d'Electricite et de Mecanique Sagem. Sighting heads for periscope installations, particularly for submarines. 4,491,397, Cl. 350-500.000.

Bartholomaus, Reiner, to Mannesmann Rexroth GmbH. Pressure reducing valve. 4,491,153, Cl. 137-625.650.

Baruffa, Olindo: *See*—
Jimenez, Antonio; and Baruffa, Olindo, 4,490,930, Cl. 38-32.000.

BASF Aktiengesellschaft: *See*—
Bergmann, Udo; Hansen, Guenter; Lach, Dietrich; Thomas, Michael; and Zeidler, Georg, 4,491,543, Cl. 534-677.000.
Fischer, Karl, 4,491,612, Cl. 427-412.000.
Hartig, Juergen; Stoessel, Armin; Herrmann, Guenter; and Marosi, Laszlo, 4,491,637, Cl. 502-66.000.
Niess, Rolf; and Schaeffer, Karl, 4,491,666, Cl. 548-426.000.
Patsch, Manfred; and Ruske, Manfred, 4,491,662, Cl. 544-74.000.
Radtke, Volker; Kowarsch, Heinrich; Hahn, Erwin; and Hauser, Peter, 4,491,544, Cl. 534-655.000.
Rapp, Gunther; Thomas, Erwin; Muenster, Rolf; Caffall, Brodus E.; Cyr, Philip A.; and Jones, Thomas M., 4,491,567, Cl. 423-387.000.
Richarz, Winfried; Mangold, Dietrich; and Girgensohn, Bjoern, 4,491,672, Cl. 564-271.000.
Rieber, Norbert; Hellbach, Hans; Hunziker, Gerhard; and Mueller, Guenter, 4,491,674, Cl. 568-357.000.
Thoemel, Frank; and Hoffmann, Werner, 4,491,545, Cl. 260-396.00R.

BASF Wyandotte Corporation: *See*—
Deck, Charles F., 4,491,526, Cl. 252-32.500.

Batavier, Benjamin. Garment with a pocket for a purse or wallet. 4,490,858, Cl. 2-252.000.

Battelle Development Corporation: *See*—
McGinniss, Vincent C.; and Sliemers, Francis A., 4,491,653, Cl. 525-356.000.

Battelle-Institut e.V.: *See*—
Beck, Rasmus; and Hansen, Erich, 4,491,949, Cl. 372-86.000.

Baucum, Dewayne E., to Atlantic Richfield Company. Method and apparatus for installing a roof support member in a mine. 4,491,440, Cl. 405-288.000.

Bauer Bros. Co., The: *See*—
Engall, John F., 4,491,504, Cl. 162-237.000.

Bauer, Hans; and Schmitz, Heinz-Withold, to Klockner-Humboldt-Deutz AG. Method and apparatus for reclaiming foundry sand. 4,491,277, Cl. 241-5.000.

Baugh, John L., to Hughes Tool Company. Ball dropping assembly. 4,491,177, Cl. 166-75.00R.

Bay Mills Limited: *See*—
O'Connor, Terry J.; and Cooper, Ian G., 4,491,617, Cl. 428-236.000.

Bayer Aktiengesellschaft: *See*—
Biermann, Hans-Peter; Kohler, Peter; and Heine, Heinrich, 4,491,619, Cl. 428-403.000.
Dickore, Karlfried; and Kuhle, Engelbert, 4,491,671, Cl. 560-115.000.
Fuchs, Rainer; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,491,585, Cl. 424-263.000.
Niemers, Ekkehard; Lunkenheimer, Winfried; and Brandes, Wilhelm, 4,491,595, Cl. 424-326.000.
Serini, Volker; Schulte, Bernhard; Block, Hans-Dieter; and Freitag, Dieter, 4,491,656, Cl. 528-167.000.

Beall, Nelson J.: *See*—
Schmidt, Paul R.; and Beall, Nelson J., 4,491,252, Cl. 222-531.000.

Beauchamp, David C.; and Burton, Philip J., to Charles Winn (Valves) Limited. Butterfly valve. 4,491,298, Cl. 251-306.000.

Beck, Rasmus; and Hansen, Erich, to Battelle-Institut e.V. Apparatus for producing laser radiation. 4,491,949, Cl. 372-86.000.

Beck, Thomas L.; and Lawson, Donald B., to Unico, Inc. Position control of fabricating materials. 4,491,777, Cl. 318-571.000.

Becka, Michael M., to International Shoe Machine Corporation. Composite band for a footwear-forming machine. 4,490,868, Cl. 12-14.400.

Beckley, Robert A., to World Color Press, Inc. Conveyor for directing ribbons away from a printing press operating at walk speed. 4,491,309, Cl. 270-20.100.

Beede Electrical Instrument Co., Inc.: *See*—
Crowdes, George J., Jr., 4,491,007, Cl. 73-2.000.

Begley, Marwell G.; and Munslow-Davies, Keith. Line clamp. 4,490,891, Cl. 24-516.000.

Behr, Norbert: *See*—
Gobel, Gerd; Behr, Norbert; van der Mei, Henk; Carduck, Franz-Josef; and von Ettingshausen, Othmar, 4,491,600, Cl. 426-384.000.

Behrendt, Joseph W.; Evans, John D.; and Cox, James W., Jr., to FMC Corporation. Boom extension stowage system. 4,491,229, Cl. 212-270.000.

Belding, Charles A.: *See*—
Adams, Richard J.; and Belding, Charles A., 4,491,503, Cl. 162-232.000.

Belew, Patricia W.: *See*—
Rosenburg, E. William; and Belew, Patricia W., 4,491,588, Cl. 424-273.00R.

Bell, Joseph W.: *See*—
Varvil, R. Douglas; Wilson, Lon L.; and Bell, Joseph W., 4,491,597, Cl. 426-103.000.

Bell, Steven A., to Coherent Communications, Inc. Method and apparatus for recording a digital signal on motion picture film. 4,491,399, Cl. 352-92.000.

Bellemare, Richard A., to Pitney Bowes Inc. Correction of imaging imperfections. 4,491,963, Cl. 382-53.000.

Bellis, Edward J.; and Gale, Philip F. Apparatus for locating faults in electric cables. 4,491,782, Cl. 324-52.000.

Bellisio, Jules A.; and Larsen, Arthur B., to AT&T Bell Laboratories. Dual mode coding. 4,491,953, Cl. 375-27.000.

Bellocci, Rio; and Pamart, Joel, to Pont-a-Mousson S.A. Loading method and installation for a metal alloy founding furnace to supply foundry molds. 4,491,303, Cl. 266-114.000.

Bellows, Alfred H., to GTE Laboratories Incorporated. Circuit breaker. 4,491,814, Cl. 335-192.000.

Beloit Corporation: *See*—
Adams, Richard J.; and Belding, Charles A., 4,491,503, Cl. 162-232.000.

Belyavsky, Alexandr D.; Borozdinov, Gennady M.; Vasiliev, Vitaly M.; Kalognomos, Viktor I.; Komov, Nikolai A.; Pavlov, Gennady A.; Persits, Evgeny L.; Sergienko, July M.; Svirin, Jury A.; and Titov, Boris V., to Nauchno-Issledovatelsky I Kostruktorsky Institut. Uneven bars. 4,491,314, Cl. 272-63.000.

Benaroya, Henry; LeFoll, Jean; and Cadoux, Jean-Elie. Device for selectively taking up a layer of light liquid from the surface of a sheet of water. 4,491,518, Cl. 210-177.000.

Benbow, Eugene C., to Westinghouse Electric Corp. Electrical energy meter having a cover-mounted time-of-day multifunction register. 4,491,789, Cl. 324-113.000.

Bendix Corporation, The: *See*—
Fulmer, Keith H., 4,490,977, Cl. 60-547.100.

Benedek, Vasile; and Huckler, Volker, to Deere & Company. Safety ignition interlock switch for vehicle transmission. 4,491,039, Cl. 74-850.000.

Benedictus, Jan H., to U.S. Philips Corporation. Shaving apparatus. 4,490,907, Cl. 30-34.200.

Bening, Curtis R., to Deere & Company. Brake and transmission interlock system. 4,491,209, Cl. 192-4.00A.

Berberich, Bernd. Plate holder for pad printing machines. 4,491,072, Cl. 101-327.000.

Berg, Samuel, to ASEA Aktiebolag. Circuit breaker with means for producing a flow of arc-extinguishing gas. 4,491,706, Cl. 200-148.00A.

Bergmann, Michael J.; Lederer, Armin; and Walliser, Norbert, to Siegert GmbH Company. Rotary resistors. 4,491,823, Cl. 338-174.000.

Bergmann, Udo; Hansen, Guenter; Lach, Dietrich; Thomas, Michael; and Zeidler, Georg, to BASF Aktiengesellschaft. Dis-, tris-, and tetrakisazo compounds containing resorcinol, sulfonylamino, and two or three sulfonic acid groups. 4,491,543, Cl. 534-677.000.

Bergwerksverband GmbH: *See*—
Degel, Josef; Henning, Klaus-Dirk; Klein, Jurgen; and Wybranda, Klaus, 4,491,609, Cl. 427-215.000.

Bernabe, Vincent, Jr.: *See*—
Mentzer, William R.; and Bernabe, Vincent, Jr., 4,490,951, Cl. 52-115.000.

Bernal, Eddie L., to Taco Operations, Incorporated. Method of making a readily portable burrito. 4,491,601, Cl. 426-421.000.

Berndt, Dieter, to TRP Energy Sensors, Inc. Temperature sensing assembly. 4,491,426, Cl. 374-194.000.

Berridge, Lawrence F., Jr.; and Novini, Amir R., to Inspection Technology Inc. Video image compensator for inspection apparatus. 4,491,868, Cl. 358-139.000.

Berry, Alan J.: *See*—
Freeman, Reginald E.; and Berry, Alan J., 4,491,441, Cl. 405-294.000.

Berry, Richard L.: *See*—
Sutter, David L.; Furbish, Ivan J.; Ferguson, Roland C.; Berry, Richard L.; and Barrows, Douglas P., 4,490,949, Cl. 52-9.000.

Bernheim, Thomas. Game control apparatus. 4,491,325, Cl. 273-148.00E.

Bertrand, Philippe, to Labavia - S.G.E. Improvements to mounting electric retarders onto a gear casing of a vehicle. 4,491,755, Cl. 310-93.000.

Berutti, Giampiero, to SPM S.p.A. Delineator pole, more particularly for skiing race courses, having a pivotable arrangement. 4,491,438, Cl. 404-10.000.

Best, Gerd; and Weikert, Norbert B., to Krampe & Co Fertigung in Bergbaubedarf GmbH Zweigniederlassung. Rotary cutting roller. 4,491,370, Cl. 299-81.000.

Bhaduri, Sumit; Sharma, Krishna R.; and Kalpathi, Gopalkrishnan S., to Indian Explosives Ltd. Catalytic process for the direct carbonylation of organic nitro compounds. 4,491,670, Cl. 560-24.000.

BICC Public Limited Company: *See*—
Dey, Phillip; Fearns, Peter; Plessner, Karl W.; Pickup, Kenneth H.; Gaylard, Bernard; and Murphy, Arthur B., 4,491,387, Cl. 350-96.230.

Biermann, Hans-Peter; Kohler, Peter; and Heine, Heinrich, to Bayer Aktiengesellschaft. Thermostable iron oxide pigments. 4,491,619, Cl. 428-403.000.

Bilde, Rene : *See*—
Vazquez, Miguel; and Bilde, Rene , 4,491,284, Cl. 242-83.000.

Birch, William A., to Motorola, Inc. TTL Flip-flop with clamping diode for eliminating race conditions. 4,491,745, Cl. 307-272.00A.

Birrell, Raymond N.: *See*—
Robertson, George H.; Price, David; and Birrell, Raymond N., 4,491,481, Cl. 106-288.00Q.

Bishop, Robert J. Rotary drum mixing device. 4,491,415, Cl. 366-47.000.

Bitting, Ricky F., to General Electric Company. Control circuit for an electronically commutated motor (ECM), method of timing the electronic commutation of an ECM, and method of operating an ECM. 4,491,772, Cl. 318-254.000.

Black & Decker Inc.: *See*—
O'Hara, Frank J.; Dibbern, John E., Jr.; and Moores, Gregory E., 4,491,752, Cl. 310-71.000.

Black, Martin M.; and Drury, Philip J., to University of Sheffield. Artificial heart valves. 4,490,859, Cl. 3-1.500.

Blackwell, John S. Free piston volumetric measuring device and method for measuring wherein the piston has a specific gravity approximately matched to the liquid being dispensed. 4,491,248, Cl. 222-249.000.

Blair, Rudolph: *See*—
Barch, Herbert W.; Salego, George T.; Retsch, William H.; and Blair, Rudolph, 4,491,082, Cl. 118-234.000.

Block Drug Company, Inc.: *See*—
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,491,576, Cl. 424-78.000.

Block, Hans-Dieter: *See*—
Serini, Volker; Schulte, Bernhard; Block, Hans-Dieter; and Freitag, Dieter, 4,491,656, Cl. 528-167.000.

Bloem, Herman, to U.S. Philips Corporation. Method of connecting a plate-shaped absorber for solar heat to a tubular heat transport system. 4,491,175, Cl. 165-183.000.

Blohm, Knud: *See*—
Krogh, Egon; and Blohm, Knud, 4,491,826, Cl. 340-347.00P.

Blum, Alex, to Sprecher & Schuh AG. Transducer for alternating current limiter. 4,491,816, Cl. 335-245.000.

Blum, Herman D. Template for scribing polygons. 4,490,916, Cl. 33-174.00B.

Blume, Georg; and Franke, Ludwig, to ANT Nachrichtentechnik GmbH. Adjustment device for an optical waveguide. 4,491,294, Cl. 248-251.000.

Boart International Limited: *See*—
Pope, Noel C., 4,491,457, Cl. 51-308.000.

Bobzin, Jeffery J.: *See*—
Krynkow, J. Michael, Jr.; Bobzin, Jeffery J.; and Allen, Bruce S., 4,491,946, Cl. 370-89.000.

Bocker, Albert, to Albert Bocker GmbH & Co. KG. Telescopic beam. 4,491,196, Cl. 187-10.000.

Boden, Richard M.: *See*—
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,491,537, Cl. 252-522.00R.

Boeckman, Eduard F. B., to GTE Business Communication Systems. Amplifier for use with telephone transmitter mounted in hand held telephone unit. 4,491,689, Cl. 179-81.00B.

Boggero, Armando: *See*—
Pera, Luciano; Boggero, Armando; Manassero, Giorgio; and Gay, Paolo, 4,491,383, Cl. 350-66.000.

Bogga, Eulema G. Shoe scraper. 4,490,878, Cl. 15-237.000.

Bohringer, Wilfried: *See*—
Ehein, Franz; and Bohringer, Wilfried, 4,491,111, Cl. 123-449.000.

Boldt, Melvin H.; and Schwartz, James W., to Zenith Electronics Corporation. Ultra-compact projection television receiver. 4,491,872, Cl. 358-237.000.

Bolt, Norman T.: *See*—
Adams, Keith J. G.; Williams, Terrence P.; Bolt, Norman T.; and Siddique, Qazi M., 4,491,566, Cl. 423-220.000.

Bondeson, Anders: *See*—
Manheimer, Wallace M.; Ott, Edward; and Bondeson, Anders, 4,491,765, Cl. 315-4.000.

Bone, Rainer; Boning, Bernward; Nagel, Rudolf; and Sellmaier, Franz, to Robert Bosch GmbH. Internal combustion engine combustion chamber pressure sensing apparatus. 4,491,110, Cl. 123-425.000.

Boning, Bernward: *See*—
Bone, Rainer; Boning, Bernward; Nagel, Rudolf; and Sellmaier, Franz, 4,491,110, Cl. 123-425.000.

Bonvallet, Duane J., to General Motors Corporation. Hypocyclic rolling contact rocker arm and pivot for an internal combustion engine. 4,491,099, Cl. 123-90.440.

Boonchanta, Pipon; and Krasnicki, Edward J., to Lord Corporation. Fluid control means for vehicle suspension system. 4,491,207, Cl. 188-299.000.

Borg-Warner Chemicals, Inc.: *See*—
Falk, John C.; Jalbert, Ronald L.; and Khait, Klementina F., 4,491,649, Cl. 525-92.000.
Halpern, Yuval; and Mott, Donna M., 4,491,644, Cl. 524-100.000.

Borozdinov, Gennady M.: *See*—
Belyavsky, Alexandr D.; Borozdinov, Gennady M.; Vasiliev, Vitaly M.; Kalognomos, Viktor I.; Komov, Nikolai A.; Pavlov, Gennady A.; Pernis, Evgeny L.; Sergienko, July M.; Svirin, Jury A.; and Titov, Boris V., 4,491,314, Cl. 272-63.000.

Borsovszky, Eva: *See*—
Sajo, Istvan; Vamos, Gyorgy; Urmossy, Miklos; Sipos nee Kaveczka, Barbara; Zemplen nee Papp, Eva; Borsovszky, Eva; and Barta, Laszlo , 4,491,633, Cl. 436-147.000.

Bortnik, John F.; Clayman, Donald A.; and Baker, Scott A., to Elkem Metals Company. System for recycling fines to hollow electrode. 4,491,568, Cl. 423-442.000.

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Boubouleix, Albert, to Thomson-CSF. Portable receiver with housing serving as a dipole antenna. 4,491,843, Cl. 343-702.000.

Bouchant, Jean C., to Thomson-Brandt. Receiver having a light emitting display as frequency and tuning indicator. 4,491,974, Cl. 455-159.000.

Bowman, Kenneth A.; and Zuber, Chester L., to Aluminum Company of America. Method of operating metallic scrap treating furnace to fragment and segregate metallic components therein. 4,491,473, Cl. 75-63.000.

Bowsky, Benjamin: *See*—
Vogel, Richard E.; and Bowsky, Benjamin, 4,490,988, Cl. 62-193.000.

Boyd, Clinton A.: *See*—
Salant, Richard F.; and Boyd, Clinton A., 4,491,331, Cl. 277-96.100.

Bradley, Jerome R.; Halvorsen, Robert M.; Hurst, Jeffrey B.; and Long, Gregory F., to Ex-Cell-O Corporation. Pressure atomizing fuel injection assembly. 4,491,272, Cl. 239-5.000.

Brand, Peter, to Acutherm, Ltd. Thermally actuated diffuser. 4,491,270, Cl. 236-49.000.

Brandes, Wilhelm: *See*—
Niemers, Ekkehard; Lunkenheimer, Winfried; and Brandes, Wilhelm, 4,491,595, Cl. 424-326.000.

Brandt, Herman F.; and Gibson, Franklin R., to General Motors Corporation. Dynamic combustion characteristic sensor for internal combustion engine. 4,491,010, Cl. 73-35.000.

Brautigam, Rolf; Haas, Lothar; Wesemeyer, Jurgen; Hellmann, Heinz-Dieter; Hergt, Peter; and Fassel, Reinhard, to Robert Bosch GmbH. Liquid flow meter. 4,491,026, Cl. 73-861.860.

Bredereck, Karl; and Togelang, Emy, to Hoechst Aktiengesellschaft. Process for the preparation of cellulose ethers from ammonia-activated cellulose. 4,491,661, Cl. 536-84.000.

Breitmoser, Georg; and Vogel, Wilhelm, to MTU Motoren-und Turbinen-Union Munchen GmbH. Method for permanently connecting discrete structural parts. 4,491,557, Cl. 419-5.000.

Brigham Young University: *See*—
Nordmeyer, Francis R.; and Hansen, Lee D., 4,491,011, Cl. 73-61.10C.

British Gas Corporation: *See*—
Adams, Keith J. G.; Williams, Terrence P.; Bolt, Norman T.; and Siddique, Qazi M., 4,491,566, Cl. 423-220.000.

Brois, Stanley J.: *See*—
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Broning, Manfred, to USM Corporation. Heel attaching machine. 4,491,263, Cl. 227-152.000.

Brons, Glen B.: *See*—
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Siskin, Michael; and Brons, Glen B., 4,491,514, Cl. 208-11.0LE.

Brother Kogyo Kabushiki Kaisha: *See*—
Kawahara, Hiroshi, 4,491,069, Cl. 101-93.030.

Brown, Alfred; Grimm, Henry J.; and Sustek, Alvin J., Jr., to Texaco Inc. Tapered steam injection process. 4,491,180, Cl. 166-272.000.

Brown, Robert C.: *See*—
Patton, Roy D.; and Brown, Robert C., 4,491,713, Cl. 219-69.00R.

Brown, Robert M., to United States of America, Navy. Handprinted symbol recognition system. 4,491,960, Cl. 382-26.000.

Brown, Sammy K.: *See*—
Koeppen, Peter L.; Rogers, Gerald; Brown, Sammy K.; and Solimeno, Duane, 4,491,907, Cl. 364-200.000.

Brown, Stanley F.; and Plonczak, Garold W., to Atasi Corporation. Memory storage apparatus having vibration-dampened base plate arrangement. 4,491,888, Cl. 360-97.000.

Brown, Vincent B.; Kozel, Charles A.; and Scheitz, John T., to Methode Electronics, Inc. Insulation displacement connector. 4,491,379, Cl. 339-97.00P.

Brownawell, Darrell W.: *See—*
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Brundage, Richard B.: *See—*
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Bryant, David R.: *See—*
Abetjoglou, Anthony G.; and Bryant, David R., 4,491,675, Cl. 568-454.000.
Bubik, Leslie M. Apparatus and method for high pressure testing and inspection of tires. 4,491,013, Cl. 73-146.000.
Buchel nee Diekmann, Helga, legal representative: *See—*
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Buchel, Peter A., deceased: *See—*
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Buddy L Corporation: *See—*
Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Abraham A., 4,490,939, Cl. 446-448.000.
Buhayar, Eric S., to Scott Paper Company. Rotary cutter for thin, flexible webs. 4,491,045, Cl. 83-341.000.
Bullock, Benton L., to General Motors Corporation. Seal arrangement for disengageable reduction drive unit. 4,491,037, Cl. 74-785.000.
Bullock, Donald F.; and Palmer, Ansell W., to General Electric Company. Sensing switch for a magnetically coupled communications port. 4,491,792, Cl. 324-157.000.
Bumpus, Boyd B.; Rosenblatt, Alex; and Rosenblatt, Leonard, to Globe Illumination. Suspended ceiling structures. 4,490,957, Cl. 52-489.000.
Burdon, Kenneth A., Jr., to PACCAR Inc. Hydraulic control system for a hydrostatic transmission and clutches. 4,491,208, Cl. 192-4.00R.
Burkhardt, Horst, to Dr. Johannes Heidenhain GmbH. Sealing element for encapsulated measuring device. 4,490,915, Cl. 33-125.00R.
Burndy Corporation: *See—*
Moyher, George C., 4,490,904, Cl. 29-864.000.
Burr, Bruce H.; Dolezal, George E.; and Galle, Edward M., to Hughes Tool Company. Earth boring drill bit with snap ring cutter retention. 4,491,428, Cl. 384-93.000.
Burroughs Corporation: *See—*
Corey, Philip D., 4,491,744, Cl. 307-270.000.
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Burroughs Wellcome Co.: *See—*
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El-Sayad, Hassan A.; Swaringen, Roy A., Jr.; and Yeowell, David A., 4,491,665, Cl. 546-140.000.
Burrus, Harry O., to Du Pont de Nemours, E. I., and Company. Process for preparing sulfur dioxide. 4,491,572, Cl. 423-539.000.
Burton, Philip J.: *See—*
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Buse, Heinrich; and Schmidt, Heinz-Joachim, to Salzgitter Maschinen und Anlagen Aktiengesellschaft. Arrangement for holding a plurality of vertically superimposed antennas for rotary adjustment. 4,491,846, Cl. 343-758.000.
Busse, Paul J., to InterNorth, Inc. Controlled addition of promoters to ethylene oxide catalysts (11). 4,491,638, Cl. 502-167.000.
Butkiewicz, Joseph M.; Brundage, Richard B.; and Rawlins, Dal M., to Emerson Electric Co. Direct drive band saw. 4,491,047, Cl. 83-817.000.
Butler, Donald W.: *See—*
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Butrum, Virgil T.: *See—*
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Butt, Sheldon H., to Olin Corporation. Composites of glass-ceramic to metal seals and method of making the same. 4,491,622, Cl. 428-632.000.
Buzzichelli, Lilian; and Roy, Kleber, to Entreprises Buzzichelli, by said Kle ber Roy. Hoisting assemblies with a boom and a counterweight support having adjustable respective positions. 4,491,227, Cl. 212-196.000.
C. G. Sargent's Sons Corporation: *See—*
Lambert, Robert D., 4,490,924, Cl. 34-31.000.
C O D Inter Techniques SA: *See—*
Horvath, Laszlo S., 4,491,224, Cl. 206-484.000.
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Caizergues, Paul; and Martin, Maurice, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Distributed control time division exchange. 4,491,944, Cl. 370-58.000.
Calma Company: *See—*
Collmeyer, Arthur J.; Hoel, Jeffrey H.; King, Paul F.; Stanley, Donald O.; and Sturgeon, Roger, 4,491,836, Cl. 340-747.000.
Calvignac, Jean; Granger, Yves; and Masclet, Andre, to International Business Machines Corporation. Address generating device for a communication line scanning device. 4,491,913, Cl. 364-200.000.
Campbell, Robert W.; and Ruff, Donald O., to General Motors Corporation. Motor vehicle electrical system. 4,491,779, Cl. 320-6.000.
Campbell Soup Company: *See—*
Colacci, John R., 4,491,159, Cl. 141-134.000.
Canadian General Electric Company Limited: *See—*
Eastcott, Peter D.; and Trussler, Ronald C., 4,491,767, Cl. 318-85.000.
Canadian Patents and Development Limited: *See—*
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Candy, James C.; and King, Bernard G., to AT&T Bell Laboratories. Terrestrial light beam communication system. 4,491,982, Cl. 455-607.000.
Cangelosi, Frank V. Combination mounting bracket and light socket. 4,491,902, Cl. 362-389.000.
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Inaba, Hiroyoshi; Sumi, Akiyasu; Notagashira, Hidefumi; Katsuma, Makoto; Murakami, Hiroyasu; and Hiramatsu, Akira, 4,491,401, Cl. 354-271.100.
Isobe, Takashi; and Kamata, Shigeru, 4,491,396, Cl. 350-429.000.
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Carey, Kevin J.; and Hanlon, Brian, to Verbatim Corporation. Method of monitoring head alignment in a magnetic data storage device. 4,491,884, Cl. 360-75.000.
Carlos, Donald D.; and Friley, B. Keith, to Ashland Oil, Inc. Hydrocarbon oxidate composition. 4,491,535, Cl. 252-389.610.
Carlson, John H.; and Peterson, Carl F., to USM Corporation. Double eccentric wave generator arrangement. 4,491,033, Cl. 74-640.000.
Carniselli, Giuliano: *See—*
Bargigia, Gianangelo; and Carniselli, Giuliano, 4,491,531, Cl. 252-153.000.
Carpenter, Allan L., to Commonwealth of Australia, The. Hydrophone cable. 4,491,939, Cl. 367-20.000.
Carr, William H., Jr., to Container Corporation of America. Sleeve style package holder. 4,491,356, Cl. 294-31.200.
Carter, James L.: *See—*
Fung, Shun C.; Weissman, Walter; Carter, James L.; and Kmak, Walter S., 4,491,635, Cl. 502-37.000.
Carter, Neil A.; and Mott, Richard A., to Owens-Corning Fiberglas Corporation. Residential wall construction. 4,490,955, Cl. 52-30.140.
Cartier, Michel; and Cros, Georges, to Centre Stephanois de Recherches Mecaniques et Frottement. Organic filler of animal origin to be used in the preparation of friction materials offering a very low rate of wear. 4,491,542, Cl. 260-123.700.
Casio Computer Co., Ltd.: *See—*
Yoshida, Takao, 4,491,324, Cl. 273-85.00G.
Casma di V. Marinoni & Figli: *See—*
Marinoni, Mario, 4,491,355, Cl. 292-263.000.
Castle, Nial K.; Martin, Derald E.; and Martin, Ralph D. Door lock with indicator. 4,490,999, Cl. 70-432.000.
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Myers, Allen D., 4,491,336, Cl. 280-93.000.
Caudel, Edward R.; Magar, Surendar S.; and Leigh, Antony W., to Texas Instruments Incorporated. Microcomputer having data shift within memory. 4,491,910, Cl. 364-200.000.
Caviar, Lee, to Imperial Underground Sprinkler Co. Electrical connector. 4,491,686, Cl. 174-87.000.
Central Sprinkler Corporation: *See—*
Pieczykolan, George S., 4,491,182, Cl. 169-38.000.
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Centronics Data Computer Corp.: *See—*
Shiurila, John; and Robert, Kenneth A., 4,491,433, Cl. 400-471.100.
Chabot, Ferdinand E.; and Wong, Tak M., to Square D Company. Motor and blade control for high amperage molded case circuit breakers. 4,491,709, Cl. 200-153.05C.
Chaki, Takao, to Clarion Co., Ltd. Link mechanism in pushbutton-operated waveband or station selector. 4,491,030, Cl. 74-10.330.
Chan, Daniel F., to TRW Inc. Multiport register file. 4,491,937, Cl. 365-154.000.
Chang, Ifay F., to International Business Machines Corporation. Flat storage CRT and projection display. 4,491,762, Cl. 313-392.000.
Chapman, Jacque W., to King-Seeley Thermos Co. Pivotal construction for portable cooler. 4,491,239, Cl. 220-337.000.
Chappell, Barbara A.; and Schuster, Stanley E., to International Business Machines Corporation. High performance FET driver circuit. 4,491,748, Cl. 307-449.000.
Charles S. Dozer Enterprises, Inc.: *See—*
Dozer, Charles S., 4,491,073, Cl. 104-95.000.

Charles Winn (Valves) Limited: *See*—
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Charron, Jean-Claude; Mulsant, Philippe; and Poujoulat, Yvan, to Societe Anonyme Sannier Duval/Eau Chaude/Chauffage-S.D.E.C.C. Sealed forced-draft gas boiler disposition. 4,491,092, Cl. 122-18.000.
Chastine, Gary L.; and Haag, Norbert P., to General Electric Company. High-side refrigeration system assembly adapted to be mounted in a refrigerator machinery compartment. 4,490,990, Cl. 62-279.000.
Chastine, Gary L., to General Electric Company. Household refrigerator compressor vibration isolator and condensate collecting tray. 4,490,992, Cl. 62-295.000.
Chemie Linz Aktiengesellschaft: *See*—
Korsatko, Werner, 4,491,575, Cl. 424-19.000.
Chikazawa, Akio: *See*—
Sadamori, Hiroki; Chikazawa, Akio; Okamura, Setsuo; and Noda, Chikako, 4,491,640, Cl. 502-242.000.
Ching, Paul W. Climbing aid for mountain climbers. 4,491,291, Cl. 248-1.000.
Chiou, Nan-Mu. Safety indicator for vehicles. 4,491,824, Cl. 340-66.000.
Chiu, Te-Long, to SEEQ Technology, Inc. Method of fabricating an MOS memory array having electrically-programmable and electrically-erasable storage devices incorporated therein. 4,490,900, Cl. 29-571.000.
Chomiki, Michel, to Thomson-CSF. Elastic wave processing system invariant with the temperature. 4,491,931, Cl. 364-861.000.
Choung, Moon, to Edison International, Inc. Clamp. 4,491,358, Cl. 294-101.000.
Christmas, Michael J., to Planer Products Limited. Method of and apparatus for the controlled cooling of a product. 4,490,982, Cl. 62-3.000.
Chubachi, Noriyoshi, to Keisuke Honda. Ultrasonic microscope. 4,491,020, Cl. 73-606.000.
Chujo, Yoshiki: *See*—
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Church, Ronald H.: *See*—
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Ciba-Geigy Corporation: *See*—
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Cincinnati Milacron Inc.: *See*—
Haas, Robert G.; Haaz, John R.; and Wood, David B., III, 4,491,044, Cl. 82-36.00A.
Citterio, Enrico, to Maistore S.p.A. Compound animal feed suitable for long-term preservation and process for its preparation. 4,491,599, Cl. 426-331.000.
Claas OHG: *See*—
Fredriksen, Nils, 4,491,034, Cl. 74-687.000.
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Clark, Gregory J.; Drake, Robert E.; and Raider, Stanley I., to International Business Machines Corporation. Adjustment of Josephson junctions by ion implantation. 4,490,901, Cl. 29-574.000.
Clark, James M.; and Secrist, Dunne R., to Great Lakes Carbon Corporation. Monolithic composite electrode for molten salt electrolysis. 4,491,510, Cl. 204-290.00R.
Clark, Michael A. G., to Sarasota Automation Limited. Self-adjusting inductive object-presence detector. 4,491,841, Cl. 340-939.000.
Clark, Raymond N.: *See*—
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Clausen, Allan H., to Continental Custom Bridge Company. Vehicle frame measurement device. 4,490,918, Cl. 33-288.000.
Clayman, Donald A.: *See*—
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Cleary, James M. Creation of flow barriers and ground isolation by block displacement. 4,491,369, Cl. 299-19.000.
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Mann, Douglass M., 4,491,561, Cl. 420-437.000.
Coad, George L., to Avalon Research. Cyclic dwell engine. 4,491,095, Cl. 123-46.00R.
Coburn, Joseph W., Jr. Cushion mirror. 4,491,389, Cl. 350-609.000.
Cohen, Stanley. Resuscitation assistive timer. 4,491,423, Cl. 368-107.000.
Coherent Communications, Inc.: *See*—
Bell, Steven A., 4,491,399, Cl. 352-92.000.
Colacci, John R., to Campbell Soup Company. High speed liquid dispenser. 4,491,159, Cl. 141-134.000.
Colby, Robert E. Scraping tool. 4,490,879, Cl. 15-242.000.
Cole, Graham M., to Dreamland Electrical Appliances P.L.C. Heating circuit with overheat safety control feature. 4,491,723, Cl. 219-505.000.
Coleman, Clarence B., to Fabricated Metals, Inc. Container with butterfly valve. 4,491,253, Cl. 222-559.000.
Colgate, Stirling A., to Colgate Thermodynamics Co. Isothermal positive displacement machinery. 4,490,974, Cl. 60-520.000.
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Colgate, Stirling A., 4,490,974, Cl. 60-520.000.
Collmeyer, Arthur J.; Hoel, Jeffrey H.; King, Paul F.; Stanley, Donald O.; and Sturgeon, Roger, to Calma Company. Graphics display system and method including two-dimensional cache. 4,491,836, Cl. 340-747.000.
Colson, William B.: *See*—
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Columbia University, The Trustees of: *See*—
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Columbia University in the City of New York, The Trustees of: *See*—
Dell, Ralph B.; Winters, Robert W.; and Heird, William C., 4,491,589, Cl. 424-274.000.
Commissariat a l'Energie Atomique: *See*—
Geffroy, Jean; Glachet, Charles; Moulin, Maurice; and Noel, Jean P., 4,491,717, Cl. 219-121.0LG.
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Schmidle, Claude J.; and Varadhachary, Seevaram N., 4,491,616, Cl. 428-158.000.
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Continental Custom Bridge Company: *See*—
Clausen, Allan H., 4,490,918, Cl. 33-288.000.
Cook, George E.; and Wells, A. Michael, Jr., to CRC Welding Systems, Inc. Template-matching adaptive control system for welding. 4,491,718, Cl. 219-124.220.
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Cooper, Ian G.: *See*—
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Corby, Nelson R., Jr., to General Electric Company. Light pattern projector especially for welding. 4,491,719, Cl. 219-124.340.
Corey, Frederick: *See*—
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Corey, Philip D., to Burroughs Corporation. Current source direct base drive for transistor power switches. 4,491,744, Cl. 307-270.000.
Cork, Fay E., to GTE Automatic Electric Labs Inc. Damming of loading coil cable interface. 4,491,555, Cl. 264-240.000.
Corning Glass Works: *See*—
Elmer, Thomas H.; and Fehlner, Francis P., 4,491,392, Cl. 350-357.000.
Corona, Oscar M. Composite holder and opener for use with an expresso coffeemaker. 4,491,040, Cl. 81-3.10R.
Coscia, Giovanni A., to Rutil S.r.l. Open mixer for the processing of rubber and plastics, provided with an additional roll. 4,491,416, Cl. 366-73.000.
Cossette & Associes: *See*—
Marmet, Yves, 4,491,726, Cl. 235-458.000.
Coulter Electronics, Inc.: *See*—
Godin, Thomas J., 4,491,786, Cl. 324-71.100.
Councilman, Richard R., to Brunswick Corporation. Oscillating system retaining means. 4,491,285, Cl. 242-84.21R.
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Covington, Robert R.; Temple, Davis L., Jr.; and Yevich, Joseph P., to Mead Johnson & Company. Tetrazole derivatives. 4,491,587, Cl. 424-269.000.
Cowan, William S.: *See*—
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Cox, James W., Jr.: *See*—
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CPC International Inc.: *See*—
Dudacek, Wayne E.; Kochan, David A.; and Zobel, Henry F., 4,491,483, Cl. 127-33.000.
Crawford, Christopher L., to AMP Incorporated. Zero insertion force electrical connector. 4,491,378, Cl. 339-75.0MP.
CRC Welding Systems, Inc.: *See*—
Cook, George E.; and Wells, A. Michael, Jr., 4,491,718, Cl. 219-124.220.
Cresti, Alfio. Masking cover for a wall surface around a pipe which emerges therefrom. 4,490,954, Cl. 52-221.000.
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Cronin, Timothy H.; Faubl, Hermann; Hoffman, William W.; and Korst, James J., to Pfizer Inc. Interferon induction in animals by amines. 4,491,583, Cl. 424-250.000.
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Crotsen, Wildy, to Universal Automat Corp. Automatic animal feeding device. 4,491,086, Cl. 119-51.110.

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Debnam, William J., Jr.; Fripp, Archibald L.; and Crouch, Roger K., 4,491,427, Cl. 374-208.000.

Crowdes, George J., Jr., to Beede Electrical Instrument Co., Inc. Rangeable speedometer/odometer. 4,491,007, Cl. 73-2.000.

Crown Zellerbach Corporation: *See—*
Weis, Rudolf R.; and Schutz, Rudolph W., 4,490,962, Cl. 53-550.000.

Cryomech Inc.: *See—*
Gifford, Peter E.; and Swift, Stephen D., 4,490,983, Cl. 62-6.000.

Cullor, Gary W.: *See—*
Cullor, James S., 4,491,126, Cl. 128-1.00R.

Cullor, James: *See—*
Cullor, James S., 4,491,126, Cl. 128-1.00R.

Cullor, James S., to Smith, Wilbur D.; Cullor, James; Cullor, James S.; and Cullor, Gary W. Method and apparatus for monitoring body parts of animals. 4,491,126, Cl. 128-1.00R.

Cummings, Lowell O. Water-insoluble phenol-formaldehyde-polyamines, method for making them, curing of polyepoxides and the resulting product. 4,491,654, Cl. 525-490.000.

Cunningham, William B., Jr.: *See—*
Nitchman, Harold L.; and Cunningham, William B., Jr., 4,491,247, Cl. 222-131.000.

Curl, Robert B., to Superior Chain, Inc. Conveyor link. 4,490,970, Cl. 59-79.100.

Cutchens, Charles E.; Mathews, Marion J., III; and Sowell, Mark S., III, to Monsanto Company. Production and separation of amines. 4,491,673, Cl. 564-492.000.

Cutler, David. Antenna formed of series of metallic and non-metallic conductive sections. 4,491,850, Cl. 343-900.000.

Cyr, Philip A.: *See—*
Rapp, Gunther; Thomas, Erwin; Muenster, Rolf; Caffall, Brodus E.; Cyr, Philip A.; and Jones, Thomas M., 4,491,567, Cl. 423-387.000.

Cysewski, Jerome M. Baling apparatus. 4,490,968, Cl. 56-341.000.

Daikin Kogyo Co., Ltd.: *See—*
Tomoda, Masayasu; Kawachi, Shoji; and Tanaka, Hiroyuki, 4,491,536, Cl. 252-511.000.

Dainippon Screen Seizo Kabushiki Kaisha: *See—*
Yamada, Mitsuhiko, 4,491,864, Cl. 358-80.000.

Daiwa Can Company, Limited: *See—*
Hongo, Akira; Ueda, Hideki; Nakata, Isei; Yoshida, Eiichi; Aoki, Nobuyoshi; and Suzuki, Toshimitsu, 4,490,984, Cl. 62-49.000.

Dal Pan, Giacinto; and Morali, Giorgio, to Innse Innocenti Santeustacchio S.p.A. Dummy bar wagon for an installation for the continuous casting of steel. 4,491,170, Cl. 164-426.000.

Daley, Ronald J. Remote control system for use with a telephone. 4,491,690, Cl. 179-2.00A.

Daley, William J.; and Van Husen, Hendrik W., to GTE Automatic Electric Labs Inc. Hall effect device test circuit. 4,491,794, Cl. 324-158.00R.

D'Amato, Ralph J., to RCA Corporation. Arc suppression structure for an electron gun. 4,491,764, Cl. 315-3.000.

Danenberg, Bernard D.; and Lostumo, Arthur J., to Zenith Electronics Corporation. Pickup coil assembly with coaxial feed. 4,491,818, Cl. 336-65.000.

Danfoss A/S: *See—*
Krogh, Egon; and Blohm, Knud, 4,491,826, Cl. 340-347.00P.

Daniel, Helmut: *See—*
Ahrens, Norbert; Daniel, Helmut; and Schacknies, Gerhard, 4,491,419, Cl. 366-101.000.

Danna, Dominick; and Newman, Richard W., to Welch Allyn, Inc. Image sensor assembly. 4,491,865, Cl. 358-98.000.

Datta, Ravi, to Skyswitch Satellite Communications. Satellite ground station. 4,491,969, Cl. 455-75.000.

Davies, Norman: *See—*
Milianowicz, Stanislaw A.; Davies, Norman; and Wallace, Charles K., 4,491,704, Cl. 200-144.00B.

Daviz, Bayard C., to XCO International, Inc. Heat sensitive cable. 4,491,822, Cl. 338-26.000.

Davis, Ralph A. Electric bed heating device. 4,491,721, Cl. 219-217.000.

Davis, Thomas H., Jr.; and Glasscock, Stephen D., to Hallmark Cards, Inc. Decorating methods. 4,491,494, Cl. 156-240.000.

Davies, Gilbert P. Container for holding popcorn and a drink cup. 4,491,220, Cl. 206-217.000.

Day, David R.: *See—*
Mazurek, Harry; Day, David R.; Maby, Edward W.; and Abel, Jonathan S., 4,491,605, Cl. 427-38.000.

Day, Frank S.: *See—*
Drew, Thomas J.; and Day, Frank S., 4,491,685, Cl. 174-75.00C.

Day, Wayne T.: *See—*
Hawkins, Hugh M., 4,491,449, Cl. 414-10.000.

De Dietrich (USA), Inc.: *See—*
Koehl, Richard; and Lerman, Michael J., 4,491,421, Cl. 366-247.000.

de la Cruz, Rodolfo V., to Wisconsin Alumni Research Foundation. Cone-shaped coring for determining the in situ state of stress in rock masses. 4,491,022, Cl. 73-783.000.

Deacon, David A. G.; Madey, John M. J.; Smith, Todd I.; and Colson, William B. Isochronous free electron laser. 4,491,948, Cl. 372-2.000.

Deadman, Ray. Automatic engine oil level maintenance system. 4,491,103, Cl. 123-196.00S.

Dean, Barry D., to Atlantic Richfield Company. Polymer composition containing polycarbonate and a copolymer of methylmethacrylate with N-phenylmaleimide. 4,491,647, Cl. 525-67.000.

Debnam, William J., Jr.; Fripp, Archibald L.; and Crouch, Roger K., to United States of America, National Aeronautics and Space Administration. Reusable thermal cycling clamp. 4,491,427, Cl. 374-208.000.

DeCaro, Charles J., to Textron Inc. Modified quick release adapter. 4,491,443, Cl. 408-239.00A.

de Castiglione, Roberto; Gozzini, Luigia; Montecucchi, Pier C.; and Perseo, Giuseppe, to Farmitalia Carlo Erba. Peptides. 4,491,541, Cl. 260-112.50R.

Deck, Charles F., to BASF Wyandotte Corporation. Thickened, water-based hydraulic fluid with reduced dependence of viscosity on temperature. 4,491,526, Cl. 252-32.500.

Deere & Company: *See—*
Benedek, Vasile; and Huckler, Volker, 4,491,039, Cl. 74-850.000.
Bening, Curtis R., 4,491,209, Cl. 192-4.00A.
Easton, David J., 4,491,436, Cl. 403-122.000.
Hutchison, Wayne R., 4,490,965, Cl. 56-11.600.
Kuhn, John B.; and Wykhuis, Lloyd A., 4,490,966, Cl. 56-15.900.

Degel, Josef; Henning, Klaus-Dirk; Klein, Jurgen; and Wybranda, Klaus, to Bergwerksverband GmbH. Method of manufacturing adsorbents. 4,491,609, Cl. 427-215.000.

Dell, Ralph B.; Winters, Robert W.; and Heird, William C., to Columbia University in the City of New York, The Trustees of. Amino acid solutions for parenteral nutrition and methods of formulation and use. 4,491,589, Cl. 424-274.000.

Demand, Erhart E., to Temptronic Corporation. Rotatable inspection table. 4,491,173, Cl. 165-11.00R.

DeMaria, Anthony J.: *See—*
Grudkowski, Thomas W.; DeMaria, Anthony J.; Shuskus, Alexander J.; and Grantham, Daniel H., 4,491,761, Cl. 310-359.000.

Dempsey, Jock D.: *See—*
Dempsey, John D.; and Dempsey, Jock D., 4,491,043, Cl. 81-58.000.

Dempsey, John D.; and Dempsey, Jock D. Stepless wrench including quick release mechanism. 4,491,043, Cl. 81-58.000.

Denisov, Vladimir A.: *See—*
Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; Kuzmin, Vladimir V.; Pershin, Nikolai L.; Vlasov, Evgeny V.; Reshetnikova, Natalya M.; and Tsirlin, Boris E., 4,491,751, Cl. 310-49.00R.

Dennison Manufacturing Company: *See—*
Pitta, Warren R., 4,491,894, Cl. 361-212.000.

Dentsply Research & Development Corp.: *See—*
Koblitz, Francis F.; and Smith, Roy L., 4,491,453, Cl. 433-217.000.

Dervan, Andrew H.: *See—*
Kordomenos, Panagiotis I.; and Dervan, Andrew H., 4,491,663, Cl. 544-193.000.

Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt E.V.: *See—*
Hoffmann, Peter, 4,491,950, Cl. 372-95.000.

Dey, Phillip; Fearns, Peter; Plessner, Karl W.; Pickup, Kenneth H.; Gaylard, Bernard; and Murphy, Arthur B., to BICC Public Limited Company. Overhead electric and optical transmission systems. 4,491,387, Cl. 350-96.230.

Dibbern, John E., Jr.: *See—*
O'Hara, Frank J.; Dibbern, John E., Jr.; and Moores, Gregory E., 4,491,752, Cl. 310-71.000.

Dickey-john Corporation: *See—*
Knepler, John T.; and Bachman, Wesley J., 4,491,241, Cl. 221-3.000.

Dickore, Karlfried; and Kuhle, Engelbert, to Bayer Aktiengesellschaft. Process for the preparation of N-substituted imido-dicarboxylic acid diaryl esters. 4,491,671, Cl. 560-115.000.

DiClemente, Archimede: *See—*
Pratz, Clarence L.; and DiClemente, Archimede, 4,491,251, Cl. 222-469.000.

Didyk, Rostislav P.: *See—*
Toropov, Gennady A.; Shamenko, Stepan P.; Didyk, Rostislav P.; and Toropov, Anatoly A., 4,491,002, Cl. 72-118.000.

Dietrich, Gunter: *See—*
Anders, Helmut; and Dietrich, Gunter, 4,491,448, Cl. 412-21.000.

Digger Meter Corporation, The: *See—*
Bachmann, Einar H.; and Ingvarsson, Kristjan, 4,491,927, Cl. 364-561.000.

Diggins, Joseph P., to Foster Wheeler Energy Corporation. Replaceable inspection plug assembly. 4,491,237, Cl. 220-288.000.

Dirauf, Otmar; and Spielmann, Norbert, to FAG Kugelfischer Georg Schafer & Co. Disk brake with return, guide, and pad-thickness sensor spring. 4,491,204, Cl. 188-73.380.

Dirks, David E.: *See—*
Simpson, Neville H.; Doesemagen, Thomas H.; and Dirks, David E., 4,490,969, Cl. 57-217.000.

Dobesh, Eugene L.: *See—*
Stringer, Jackie D.; and Dobesh, Eugene L., 4,491,018, Cl. 73-432.00R.

Doboy Packaging Machinery, Inc.: *See—*
Klemesrud, James H., 4,490,960, Cl. 53-135.000.

Dr. C. Otto & Comp. G.m.b.H.: *See—*
Spindeler, Heinrich; and Wackerbarth, Folkard, 4,491,505, Cl. 202-270.000.

Dr. Carl Hahn, G.m.b.H.: *See—*
Friese, Axel, 4,490,894, Cl. 28-120.000.

Dr. Ing. h.c.F. Porsche AG: *See—*
Kolb, Eugen, 4,491,361, Cl. 296-107.000.
Lehmann, Ulrich; and Gabriel, Rudolf, 4,491,892, Cl. 361-101.000.

Dr. Johannes Heidenhain GmbH: *See—*
Burkhardt, Horst, 4,490,915, Cl. 33-125.00R.
Reichl, Alfred, 4,491,928, Cl. 364-562.000.
Spies, Alfons, 4,490,914, Cl. 33-125.00R.

Dolan, John E. Rotating toilet bowl dispenser. 4,490,861, Cl. 4-228.000.

Dolezal, George E.: *See—*
Burr, Bruce H.; Dolezal, George E.; and Galle, Edward M., 4,491,428, Cl. 384-93.000.

Dollison, William W., to Otis Engineering Corporation. Control of continuous reciprocation of a fluid power cylinder. 4,491,055, Cl. 91-306.000.

Donaldson Company, Inc.: *See—*
Tokar, Joseph C., 4,491,460, Cl. 55-337.000.

Donatelli, Philip A.: *See—*
Ellion, M. Edmund; and Donatelli, Philip A., 4,490,972, Cl. 60-39.462.

Dooley, James H., to Weyerhaeuser Company. Seed supply system for multiple row sower. 4,491,246, Cl. 222-129.000.

Dore, Alain: *See—*
Barthelat, Rene ; and Dore, Alain, 4,491,397, Cl. 350-500.000.

Dornbusch, Paul E., to General Electric Company. Method and apparatus for improved sensing of roll separation force in a rolling mill. 4,491,000, Cl. 72-8.000.

Dosaka, Akira, to Ikari Machine Tools Co., Ltd. Method and apparatus for winding wires. 4,491,281, Cl. 242-4.00R.

Dosemagen, Thomas H.: *See—*
Simpson, Neville H.; Dosemagen, Thomas H.; and Dirks, David E., 4,490,969, Cl. 57-217.000.

Dost, Carole. Swim suit construction. 4,490,856, Cl. 2-67.000.

Douglas, Robert D. Train defect detecting and enunciating system. 4,491,290, Cl. 246-169.00A.

Douwe Egberts Koninklijke Tabaksfabriek-Koffie-Branderijn-Theehandel B.V.: *See—*
Thijssen, Henricus A. C.; and van der Malen, Bernardus G. M., 4,491,462, Cl. 62-542.000.

Dow Chemical Company, The: *See—*
Johnston, Howard; and Trozell, Lillian H., 4,491,468, Cl. 71-94.000.
Miller, Theodore E., Jr., 4,491,024, Cl. 73-861.050.

Dowty Mining Equipment Limited: *See—*
Freeman, Reginald E.; and Berry, Alan J., 4,491,441, Cl. 405-294.000.

Dozer, Charles S., to Charles S. Dozer Enterprises, Inc. Train system with variably tilting rail. 4,491,073, Cl. 104-95.000.

Dragerwerk Aktiengesellschaft: *See—*
Pasternack, Adalbert, 4,491,130, Cl. 128-202.260.

Dragon, James W.: *See—*
Hillman, Carl M.; and Dragon, James W., 4,491,898, Cl. 361-432.000.

Dragone, Corrado, to AT&T Bell Laboratories. Substantially frequency-independent aberration correcting antenna arrangement. 4,491,848, Cl. 343-781.00P.

Drake, Robert E.: *See—*
Clark, Gregory J.; Drake, Robert E.; and Raider, Stanley I., 4,490,901, Cl. 29-574.000.

Dreamland Electrical Appliances P.L.C.: *See—*
Cole, Graham M., 4,491,723, Cl. 219-505.000.

Drew, Thomas J.; and Day, Frank S., to Armex Cable Corporation. Cable connector. 4,491,685, Cl. 174-75.00C.

Dreyer, Paul L.; and Rarick, Russell F. Flexible seals for sliding blade dampers. 4,491,144, Cl. 137-240.000.

Dril-Quip, Inc.: *See—*
Walker, James M., 4,491,346, Cl. 285-18.000.

Drumm, Arthur E. Spiral brush section. 4,490,872, Cl. 15-182.000.

Drumm, Arthur E. Spiral brush section. 4,490,877, Cl. 15-182.000.

Drury, Philip J.: *See—*
Black, Martin M.; and Drury, Philip J., 4,490,859, Cl. 3-1.500.

Dry Dock Industries, Inc.: *See—*
Smith, Jon D.; and Parker, Glenn T., 4,491,447, Cl. 411-15.000.

Dudacek, Wayne E.; Kochan, David A.; and Zobel, Henry F., to CPC International Inc. Hot-water dispersible starch-surfactant products, including acid stable and acid and freeze-thaw stable food thickeners. 4,491,483, Cl. 127-33.000.

Duncan, Ian J., to Schmidt Manufacturing & Equipment (UK) Ltd. Brush control means. 4,490,874, Cl. 15-87.000.

Dunn, Charles S., to Owens-Corning Fiberglas Corporation. Electric glass melting furnace. 4,491,951, Cl. 373-30.000.

Du Pont de Nemours, E. I., and Company: *See—*
Burns, Harry O., 4,491,572, Cl. 423-539.000.
Joiner, James R., Jr., 4,491,620, Cl. 428-421.000.
Petersen, Wallace C., 4,491,467, Cl. 71-93.000.

Durand-Texte, Gerard, to Etablissements Griset. Apparatus for the continuous casting of products especially of metals, such as copper alloys. 4,491,169, Cl. 164-418.000.

Durbin, Daniel P.; and Lutz, Robert G., to Shell Oil Company. Polymer blend composition. 4,491,648, Cl. 525-89.000.

Durette, Philippe L., to Merck & Co., Inc. 2,6-Didioxy-3-amine,4-carboxy methylglycoside and related compounds. 4,491,659, Cl. 536-17.200.

Durr Automation + Fordertechnik GmbH: *See—*
Stelter, Jurgen; and Hanggi, Manfred, 4,491,442, Cl. 406-95.000.

Duttweiler, Donald L.; and Zebo, Timothy J., to AT&T Bell Laboratories. Adaptive filter including a far end energy discriminator. 4,491,701, Cl. 179-170.200.

Duval Corporation: *See—*
Long, Wallace H.; and Ruggiero, Ralph, 4,491,279, Cl. 241-101.700.

Dye, Jeffrey. Training bag for boxing and the like. 4,491,315, Cl. 272-78.000.

E. H. Wachs Company, The: *See—*
Wachs, Edward H.; and Kwech, Horst, 4,490,909, Cl. 30-97.000.

Eagar, Robert G., Jr.; and Murphy, Gerald J., to Union Carbide Corporation. Acid addition to aqueous dialdehyde solutions. 4,491,676, Cl. 568-449.000.

Eagle Manufacturing Company: *See—*
Pratz, Clarence L.; and DiClemente, Archimede, 4,491,251, Cl. 222-469.000.

Eastcott, Peter D.; and Trussler, Ronald C., to Canadian General Electric Company Limited. Synchronizing synchronous motors, motors prior to clutch closure. 4,491,767, Cl. 318-85.000.

Eastern Metal of Elmira, Inc.: *See—*
Knapp, Michael D., 4,490,934, Cl. 40-603.000.

Easton, David J., to Deere & Company. Pivot pin assembly. 4,491,436, Cl. 403-122.000.

Eaton Corporation: *See—*
Janutka, William J., 4,491,750, Cl. 307-577.000.
Monick, Frederick R., 4,491,203, Cl. 188-71.900.
Slicker, James M., 4,491,768, Cl. 318-139.000.
Zumbusch, Steven J., 4,491,332, Cl. 277-152.000.

Eaton, Homer L. Composite tape preparation and application. 4,491,493, Cl. 156-235.000.

Eaton, Sargent S., Jr.; and Proebsting, Robert J., to Mostek Corporation. Dynamic random access memory cell with increased signal margin. 4,491,936, Cl. 365-149.000.

Edison International, Inc.: *See—*
Choung, Moon, 4,491,358, Cl. 294-101.000.

Egawa, Hideharu; Nishi, Yoshio; and Maeguchi, Kenji, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor device having contacting but electrically isolated semiconductor region and interconnection layer of differing conductivity types. 4,491,856, Cl. 357-4.000.

Eglise, David; and Ruddell, Alan J., to Mars Incorporated. Coin handling apparatus. 4,491,140, Cl. 133-8.00R.

Eheim, Franz; and Bohringer, Wilfried, to Robert Bosch GmbH. Fuel injection apparatus for internal combustion engines. 4,491,111, Cl. 123-449.000.

Ehret, Bernhard; and Ferroni, Stephan. Control device and method for gluing together continuous form sets. 4,491,490, Cl. 156-64.000.

Eickhorst, Helmut, to Vereinigte Flugtechnische Werke GmbH. Holding curved workpieces. 4,491,306, Cl. 269-21.000.

Eisai Co., Ltd.: *See—*
Katoh, Yoshinori; Tajima, Tetsuya; Yamatsu, Isao; Suzuki, Takeshi; Abe, Shinya; Kajihara, Akiharu; and Sugitani, Tohru, 4,491,592, Cl. 424-318.000.
Ogawa, Norio; and Tsukamoto, Shuji, 4,491,594, Cl. 424-331.000.

Eisner, Jeffrey W. Tool for removing mandrel mounted disks. 4,491,041, Cl. 81-55.000.

Eldredge, Kim W. Grain loss indicator. 4,490,964, Cl. 56-10.200.

Elias, Ronald J., to Fleer Corporation. Method for preparing aerated gum confection. 4,491,596, Cl. 426-5.000.

Elkem Metals Company: *See—*
Bortnik, John F.; Clayman, Donald A.; and Baker, Scott A., 4,491,568, Cl. 423-442.000.

Ellefson, Dennis B. Rotatable workpiece holding apparatus. 4,491,307, Cl. 269-55.000.

Ellion, M. Edmund; and Donatelli, Philip A., to Hughes Aircraft Company. Hydrazine thruster. 4,490,972, Cl. 60-39.462.

Ellis, David; Smith, Jeremy G. B.; and Halliday, Pieter S. J., to AECI Limited. Method and means for making an explosive in the form of an emulsion. 4,491,489, Cl. 149-109.600.

Elmer, Thomas H.; and Fehiner, Francis P., to Corning Glass Works. Electrochromic device with porous glass electrolyte. 4,491,392, Cl. 350-357.000.

El-Sayad, Hassan A.; Swaringen, Roy A., Jr.; and Yeowell, David A., to Burroughs Wellcome Co. Method of preparing isomers of bis isoquinolinium compounds. 4,491,665, Cl. 546-140.000.

Embree, David M.; Goldthorp, David C.; Longenecker, Howard H.; and Vogelpohl, David R., to AT&T Bell Laboratories. Electronic tone ringer. 4,491,691, Cl. 179-84.00T.

Emerson Electric Co.: *See—*
Butkiewicz, Joseph M.; Brundage, Richard B.; and Rawlins, Dal M., 4,491,047, Cl. 83-817.000.
Vogel, Richard E.; and Bowsky, Benjamin, 4,490,988, Cl. 62-193.000.

Emhart Industries, Inc.: *See—*
Snock, Steven W., 4,491,710, Cl. 200-303.000.

Endo, Junya: *See—*
Saito, Akiro; Kamaya, Naoki; Endo, Junya; Ohba, Seisuke; Kumano, Akira; Ida, Yoshinori; and Horie, Hideo, 4,491,886, Cl. 360-85.000.

Endoh, Kenjiro: *See—*
Tanaka, Masanori; and Endoh, Kenjiro, 4,491,697, Cl. 179-111.00E.

Endres, Ludwig; and Nellis, Ruald, to Patent-Treuhand-Gesellschaft fur Elektrische Gluhlampen GmbH. Internally illuminated display structure. 4,490,933, Cl. 40-564.000.

Energiagazdalkodasi Intezet: *See—*
Sajo, Istvan; Vamos, Gyorgy; Urmossy, Miklos; Sipos nee Kaveczka, Barbara; Zemplen nee Papp, Eva; Borsovszky, Eva; and Barta, Laszlo , 4,491,633, Cl. 436-147.000.

Energy Conversion Devices, Inc.: *See—*
Moore, Diane E., 4,491,679, Cl. 136-203.000.

Engall, John F., to Bauer Bros. Co., The. Apparatus for treating cellulosic material with a screw feeder extending internally within a treatment vessel. 4,491,504, Cl. 162-237.000.
Engineering & Research Associates, Inc.: *See*—
Acker, Loren C., 4,491,711, Cl. 219-10.810.
Engle, George M.: *See*—
Rosler, Richard S.; and Engle, George M., 4,491,606, Cl. 427-38.000.
Enso-Gutzeit Oy: *See*—
Kipelainen, Osei; Kuhasalo, Antti; and Kyytsonen, Juhani, 4,491,067, Cl. 100-121.000.
Entreprises Buzzichelli: *See*—
Buzzichelli, Lilian; and Roy, Kleber (said Kle ber Roy assors. to), 4,491,227, Cl. 212-196.000.
Eppenbach, Lawrence C. Tent. 4,491,141, Cl. 135-104.000.
Epson Corporation: *See*—
Hosogaya, Hiroshi, 4,491,046, Cl. 83-589.000.
Esaki, Kozo: *See*—
Hattori, Takemi; and Esaki, Kozo, 4,491,364, Cl. 297-284.000.
Escher Wyss GmbH: *See*—
Wenske, Rolf; Schnell, Hans; and Mirsberger, Peter, 4,491,521, Cl. 210-401.000.
Esselte Pendaflex Corporation: *See*—
Kistner, Heinz; and Schrotz, Kurt, 4,491,497, Cl. 156-384.000.
Essex Specialty Products, Inc.: *See*—
Rizk, Sidky D.; Hsieh, Harry W. S.; and Mazzeo, Michael P., 4,491,650, Cl. 525-102.000.
Essig, Karl, to H. Stoll GmbH & Co. Flat knitting machine having needle selector device. 4,490,994, Cl. 66-75.100.
Estang, Bernard, to Thomson-CSF. Device for rotating an element about two orthogonal axes, application to the orientation of a radar antenna. 4,491,847, Cl. 343-765.000.
Etablissments Griset: *See*—
Durand-Texte, Gerard, 4,491,169, Cl. 164-418.000.
Ethicon, Inc.: *See*—
Aday, Jorge L., 4,491,218, Cl. 206-63.300.
Menges, John R.; and Huebscher, Laszlo, 4,491,133, Cl. 128-326.000.
Etudes Constructions Appareils Levage: *See*—
Pendola, Auguste, 4,491,301, Cl. 254-285.000.
Euker, Charles A., Jr., to Exxon Research & Engineering Co. Recovery of oil from oil-bearing carbonates. 4,491,512, Cl. 208-11.0LE.
Eumuco Aktiengesellschaft fur Maschinenbau: *See*—
Willim, Friedrich, 4,491,451, Cl. 414-732.000.
Evans, David S.: *See*—
Harvey, Raymond G. A.; and Evans, David S., 4,491,775, Cl. 318-434.000.
Evans, John D.: *See*—
Behrendt, Joseph W.; Evans, John D.; and Cox, James W., Jr., 4,491,229, Cl. 212-270.000.
Evron, Amos. Infants' carriages. 4,491,335, Cl. 280-47.410.
Ewald, Ruediger, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Hold-down apparatus for unfoldable functional elements. 4,491,446, Cl. 410-32.000.
Ewig, John F., to Parker Manufacturing Company. Electro-magnetic stapling tool. 4,491,262, Cl. 227-131.000.
Ex-Cell-O Corporation: *See*—
Bradley, Jerome R.; Halvorsen, Robert M.; Hurst, Jeffrey B.; and Long, Gregory F., 4,491,272, Cl. 239-5.000.
Excelermatic Inc.: *See*—
Kraus, Charles E., 4,491,038, Cl. 74-798.000.
Exxon Research & Engineering Co.: *See*—
Euker, Charles A., Jr., 4,491,512, Cl. 208-11.0LE.
Fung, Shun C.; Weisman, Walter; Carter, James L.; and Kmak, Walter S., 4,491,635, Cl. 502-37.000.
Fung, Shun C.; and Rice, Richard W., 4,491,636, Cl. 502-37.000.
Gutierrez, Antonio; Brownawell, Darrell W.; Walker, Thad O.; and Brois, Stanley J., 4,491,524, Cl. 252-8.50C.
Kantner, Edward, 4,491,625, Cl. 429-50.000.
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Eytcheson, Charles T.; Lutz, Phillip A.; and Fields, Harold L., to General Motors Corporation. Lead frame for molded integrated circuit package. 4,490,902, Cl. 29-588.000.
F. H. Maloney Company: *See*—
Stringer, Jackie D.; and Dobesh, Eugene L., 4,491,018, Cl. 73-432.00R.
Fabricated Metals, Inc.: *See*—
Coleman, Clarence B., 4,491,253, Cl. 222-559.000.
FAG Kugelfischer Georg Schafer & Co.: *See*—
Dirauf, Otmar; and Spielmann, Norbert, 4,491,204, Cl. 188-73.380.
Falk, John C.; Jalbert, Ronald L.; and Khait, Klementina F., to Borg-Warner Chemicals, Inc. High impact polyphenylene ether compositions having improved processability. 4,491,649, Cl. 525-92.000.
Family Distributors, Inc.: *See*—
Heggeland, Bruce; Garcia, George; and LoBosco, Sam S., 4,491,231, Cl. 220-6.000.
Farmitalia Carlo Erba: *See*—
de Castiglione, Roberto; Gozzini, Luigia; Montecucchi, Pier C.; and Perseo, Giuseppe, 4,491,541, Cl. 260-112.50R.
Fassel, Reinhard: *See*—
Brautigam, Rolf; Hass, Lothar; Wesemeyer, Jurgen; Hellmann, Heinz-Dieter; Hergt, Peter; and Fassel, Reinhard, 4,491,026, Cl. 73-861.860.
Faubl, Hermann: *See*—
Cronin, Timothy H.; Faubl, Hermann; Hoffman, William W.; and Korst, James J., 4,491,583, Cl. 424-250.000.
Faulkingham, Clifford H. Mailbox delivery signal device. 4,491,268, Cl. 232-35.000.
Fearns, Peter: *See*—
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Sarbacher, Robert I.; and Fechter, Harry R., 4,491,624, Cl. 429-27.000.
Fefeu, Michel, to Automobiles Citroen; and Automobiles Peugeot. Diesel oil heater for diesel engine. 4,491,119, Cl. 123-557.000.
Fehlner, Francis P.: *See*—
Elmer, Thomas H.; and Fehlner, Francis P., 4,491,392, Cl. 350-357.000.
Feist, Wieland; and Huther, Gerhard. Leveling arrangement for measuring terrain points. 4,490,919, Cl. 33-290.000.
Fellner, Van N.: *See*—
Ruskin, Frank; Fellner, Van N.; and Haynes, Joel, 4,491,240, Cl. 221-5.000.
Ferguson, Roland C.: *See*—
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Ferreira, Robert: *See*—
Rice, Robert; and Ferreira, Robert, 4,491,349, Cl. 285-197.000.
Ferroni, Stephan: *See*—
Ehret, Bernhard; and Ferroni, Stephan, 4,491,490, Cl. 156-64.000.
Ficht GmbH: *See*—
Hamann, Lutz, 4,491,097, Cl. 123-56.00R.
Fichtel & Sachs AG: *See*—
Axthammer, Ludwig; and Wossner, Felix, 4,491,160, Cl. 141-349.000.
Fields, Harold L.: *See*—
Eytcheson, Charles T.; Lutz, Phillip A.; and Fields, Harold L., 4,490,902, Cl. 29-588.000.
Figgie, Harry E., III; and Figgie, Matthew P., to Figgie International Inc. Knee pad. 4,490,855, Cl. 2-24.000.
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Figgie, Harry E., III; and Figgie, Matthew P., 4,490,855, Cl. 2-24.000.
Figgie, Matthew P.: *See*—
Figgie, Harry E., III; and Figgie, Matthew P., 4,490,855, Cl. 2-24.000.
Fine, Clarence R. Method of post production sound recording for video taped programs. 4,491,879, Cl. 360-14.100.
Firestone, Raymond A., to Merck & Co., Inc. Allylsulfoxide enzyme inhibitors. 4,491,590, Cl. 424-274.000.
Fischer, Edgar; and Sittig, Wolfgang, to Hoechst Aktiengesellschaft. Device for dispersing a second phase in a first phase. 4,491,549, Cl. 261-36.00R.
Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Rotary offset printing machine having a multi-image receiving blanket cylinder. 4,491,070, Cl. 101-181.000.
Fischer, Karl, to BASF Aktiengesellschaft. Finishing leather or a synthetic leather substitute. 4,491,612, Cl. 427-412.000.
Fischer, Karl; and Schreder, Felix, to Fischer, Karl. Mounting arrangement for an electric hotplate with a support ring surrounding it. 4,491,722, Cl. 219-458.000.
Fischer, Knut, to Hermann Heye. Device for detecting defects in glass articles. 4,491,728, Cl. 250-223.00B.
Fishman, David S.: *See*—
Gottlieb, Michael M.; and Fishman, David S., 4,491,895, Cl. 361-306.000.
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Holman, Carroll; and Fite, Arley R., 4,491,150, Cl. 137-565.000.
Flamm, Peter M., to ITT Industries, Inc. Color-television receiver with at least one digital integrated circuit for processing the composite color signal. 4,491,862, Cl. 358-21.00R.
Fleemin, Joseph D. Display device and method. 4,490,931, Cl. 40-406.000.
Fleer Corporation: *See*—
Elias, Ronald J., 4,491,596, Cl. 426-5.000.
Fleming, Dennis J., to Prince Corporation. Concealed visor. 4,491,360, Cl. 296-97.00G.
Fleming, Dennis J., to Prince Corporation. Visor cover assembly. 4,491,899, Cl. 362-74.000.
Flora, John H.; and Henderson, James E., to Babcock & Wilcox Company, The. Piezoelectric moisture measuring device. 4,491,784, Cl. 324-61.0QL.
FMC Corporation: *See*—
Behrendt, Joseph W.; Evans, John D.; and Cox, James W., Jr., 4,491,229, Cl. 212-270.000.
Poock, Darwin N.; and Rathe, Robert A., 4,491,228, Cl. 212-239.000.
Fodor, Lawrence M.; and Knudsen, Ronald D., to Phillips Petroleum Company. Isomer separation. 4,491,677, Cl. 568-751.000.
Fohl, Artur, to REPA Feinstanzwerk GmbH. Inflector with clamping device for a safety belt in motor vehicles. 4,491,343, Cl. 280-801.000.
Fohl, Artur, to REPA Feinstanzwerk GmbH. Safety belt system for motor vehicles. 4,491,344, Cl. 280-808.000.
Ford Motor Company: *See*—
Kordomenos, Panagiotis I.; and Kurple, Kenneth R., 4,491,641, Cl. 523-400.000.

Kordomenos, Panagiotis I.; and Dervan, Andrew H., 4,491,663, Cl. 544-193.000.

Foreman, Robert W., to Park Chemical Company. Method for treating barium toxic water using low-temperature stabilized polyacrylamide compositions. 4,491,523, Cl. 210-728.000.

Formall Syn-Trac Systems, Inc.: *See*—
Forshee, David J., 4,491,076, Cl. 108-53.100.

Forquer, Timothy J.; and Li, Hungwen, to RCA Corporation. Multiprocessor-memory data transfer network. 4,491,915, Cl. 364-200.000.

Forre, Alf M. Device for replacing front suspension components in a vehicle. 4,490,897, Cl. 29-252.000.

Forshee, David J., to Formall Syn-Trac Systems, Inc. Stacking cube construction. 4,491,076, Cl. 108-53.100.

Foster Wheeler Energy Corporation: *See*—
Diggins, Joseph P., 4,491,237, Cl. 220-288.000.

Fournier, Priscilla J.: *See*—
Fournier, Robert L.; and Fournier, Priscilla J., 4,491,235, Cl. 220-94.00A.

Fournier, Robert L.; and Fournier, Priscilla J. Wok. 4,491,235, Cl. 220-94.00A.

Framatome & Cie: *See*—
Marini, Jean; and Heinrich, Jean-Paul, 4,491,008, Cl. 73-19.000.

France Bed Co., Ltd.: *See*—
Hamaguchi, Yoshiharu, 4,490,865, Cl. 5-90.000.

France Transfo (S.A.): *See*—
Vazquez, Miguel; and Bilde, Rene , 4,491,284, Cl. 242-83.000.

Francke, Amiel W. Variable speed balance or tester board. 4,491,318, Cl. 272-146.000.

Frank, Amalie J., to AT&T Bell Laboratories. Technique for dynamic scheduling of integrated circuit- and packet-switching in a multibeam SS/TDMA system. 4,491,947, Cl. 370-94.000.

Frank, Hermann T. Diaphragm drive for controlling the operation of a gas burner. 4,491,296, Cl. 251-14.000.

Franke, Ludwig: *See*—
Blume, Georg; and Franke, Ludwig, 4,491,294, Cl. 248-251.000.

Franklin Electric Co., Inc.: *See*—
Weihmann, Peter R., 4,491,330, Cl. 277-65.000.

Franz Plasser Bahnbaumaschinen-Industriegesellschaft mbH: *See*—
Theurer, Josef; and Hansmann, Johann, 4,490,947, Cl. 51-178.000.

Franzmann, Rainer. Foot-controlled musical instrument. 4,491,050, Cl. 84-1.010.

Frechet, Jean M. J.: *See*—
Ito, Hiroshi; Willson, Carlton G.; and Frechet, Jean M. J., 4,491,628, Cl. 430-176.000.

Fredriksen, Nils, to Claas OHG. Hydraulic-mechanical transmission system having output branches. 4,491,034, Cl. 74-687.000.

Freeman, Reginald E.; and Berry, Alan J., to Dowty Mining Equipment Limited. Self-advancing support and control means therefor. 4,491,441, Cl. 405-294.000.

Freitag, Dieter: *See*—
Serini, Volker; Schulte, Bernhard; Block, Hans-Dieter; and Freitag, Dieter, 4,491,656, Cl. 528-167.000.

Frenzel, Bernd. Chemiluminescent immunoassay with activator of hydrogen peroxide and a chloramine. 4,491,634, Cl. 436-518.000.

Friese, Axel, to Dr. Carl Hahn, G.m.b.H. Apparatus for attaching a withdrawal cord to a tampon. 4,490,894, Cl. 28-120.000.

Friley, B. Keith: *See*—
Carlos, Donald D.; and Friley, B. Keith, 4,491,535, Cl. 252-389.610.

Fripp, Archibald L.: *See*—
Debnam, William J., Jr.; Fripp, Archibald L.; and Crouch, Roger K., 4,491,427, Cl. 374-208.000.

Fuchs, Rainer; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Combating pests with novel phenoxypyridylmethyl esters. 4,491,585, Cl. 424-263.000.

Fuji Electric Co., Ltd.: *See*—
Funyu, Yutaka; Okumura, Tadashi; Monno, Asao; and Shimizu, Masami, 4,491,731, Cl. 250-358.100.
Hayashi, Hideo; Takamatsu, Iwao; and Nakai, Ikuo, 4,491,705, Cl. 200-147.00R.

Fuji Photo Film Co., Ltd.: *See*—
Ishikawa, Takatoshi; Mitsui, Akio; Morigaki, Masakazu; and Nakamura, Takashi, 4,491,630, Cl. 430-372.000.
Teraoka, Masanori, 4,491,736, Cl. 250-484.100.

Fujii, Haruo; and Ando, Yujiro, to Canon Kabushiki Kaisha. Image recording method and apparatus. 4,491,855, Cl. 346-159.000.

Fujii, Hiromasa; and Matsui, Hisakazu, to Hiroshima Kasei, Ltd. Process and mold unit for producing carpet mat. 4,491,556, Cl. 264-243.000.

Fujii, Isao; Nishimura, Hiroyuki; and Kato, Masaaki, to Honda Giken Kogyo Kabushiki Kaisha. Torch ignition type internal combustion engine. 4,491,104, Cl. 123-291.000.

Fujii, Tadayuki; Hiraoka, Yutaka; and Watanabe, Ryoji, to National Research Institute for Metals. Large crystal grains or single crystals of molybdenum and process for production thereof. 4,491,560, Cl. 420-429.000.

Fujie, Kazuhiko, to Sony Corporation. Disc players. 4,491,882, Cl. 360-53.000.

Fujinuma, Makoto; Futatsudera, Masaomi; and Harigae, Makoto, to Tokyo Shibaura Denki Kabushiki Kaisha. Color picture tube with shadow mask supporting members. 4,491,763, Cl. 313-405.000.

Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., to International Flavors & Fragrances Inc. Tertiary hydroxyl carboxaldehydes and organoleptic use thereof. 4,491,537, Cl. 252-522.00R.

Fujioka, Kotaro: *See*—
Saito, Isao; Fujioka, Kotaro; Arai, Hajime; and Saruyama, Hideo, 4,491,657, Cl. 528-308.100.

Fujita, Shuichi: *See*—
Suganuma, Tetsuya; Kazuoka, Koji; Fujita, Shuichi; Takahashi, Yoshitaka; and Okujo, Takeshi, 4,491,477, Cl. 75-230.000.

Fujitsu Fanuc Limited: *See*—
Kishi, Hajimu; and Seki, Masaki, 4,491,906, Cl. 364-191.000.

Fujitsu Limited: *See*—
Hijiya, Shinpei; and Ito, Takashi, 4,491,859, Cl. 357-41.000.
Mizuno, Tsuneo; Yoshikawa, Shigeru; and Matsuda, Tadashi, 4,491,851, Cl. 346-1.100.
Ozawa, Hidekiyo; Itoh, Mikio; and Yoshida, Akira, 4,491,935, Cl. 364-900.000.

Fujitsu Ten Limited: *See*—
Ito, Tatsuo, 4,491,975, Cl. 455-166.000.

Fukuda, Hiroshi: *See*—
Ishikawa, Nobumitsu; Takaoka, Hiroshi; and Fukuda, Hiroshi, 4,491,737, Cl. 290-40.00R.

Fukuda, Masao, to Kabushiki Kaisha Ishida Koki Seisakusho. Combinatorial weighing method and apparatus. 4,491,189, Cl. 177-1.000.

Fukushi, Yutaka: *See*—
Nishizawa, Toshio; Kamata, Keiji; Nonomura, Osamu; and Fukushi, Yutaka, 4,491,061, Cl. 98-34.600.

Fukuya, Hiroyuki: *See*—
Koga, Yoshikazu; and Fukuya, Hiroyuki, 4,491,243, Cl. 222-55.000.

Fulmer, Keith H., to Bendix Corporation, The. Hydraulic brake booster. 4,490,977, Cl. 60-547.100.

Fung, Shun C.; Weissman, Walter; Carter, James L.; and Kmak, Walter S., to Exxon Research & Engineering Co. Reactivating iridium and selenium containing catalysts with hydrogen halide and oxygen. 4,491,635, Cl. 502-37.000.

Fung, Shun C.; and Rice, Richard W., to Exxon Research & Engineering Co. Process using halogen/oxygen for reactivating iridium and selenium containing catalysts. 4,491,636, Cl. 502-37.000.

Funyu, Yutaka; Okumura, Tadashi; Monno, Asao; and Shimizu, Masami, to Fuji Electric Co., Ltd.; and Kawasaki Steel Corporation. Tube wall thickness measurement. 4,491,731, Cl. 250-358.100.

Furbish, Ivan J.: *See*—
Sutter, David L.; Furbish, Ivan J.; Ferguson, Roland C.; Berry, Richard L.; and Barrows, Douglas P., 4,490,949, Cl. 52-9.000.

Furumura, Kyozaburo: *See*—
Sugi, Hiromi; Furumura, Kyozaburo; and Asai, Hiromitsu, 4,491,373, Cl. 308-5.00R.

Futatsudera, Masaomi: *See*—
Fujinuma, Makoto; Futatsudera, Masaomi; and Harigae, Makoto, 4,491,763, Cl. 313-405.000.

G. D. Hanna Incorporated: *See*—
Hanna, Gary D., 4,491,166, Cl. 160-351.000.

Gabriel, Rudolf: *See*—
Lehmann, Ulrich; and Gabriel, Rudolf, 4,491,892, Cl. 361-101.000.

Gabrielsson, Lars, to Lycksele NYA Platprodukter AB. Bed rocking mechanism. 4,490,867, Cl. 5-509.000.

Gaccetta, Carl M.; and Lutz, Terry J., to International Business Machines Corporation. Reel package. 4,491,222, Cl. 206-394.000.

Galanty, William B. Comminutor for inline flow of sewage. 4,491,278, Cl. 241-46.060.

Gale, Philip F.: *See*—
Bellis, Edward J.; and Gale, Philip F., 4,491,782, Cl. 324-52.000.

Gallaugher, Glenn B., Jr.: *See*—
Sweazey, Donald G.; and Gallaugher, Glenn B., Jr., 4,491,269, Cl. 232-43.200.

Galle, Edward M.: *See*—
Burr, Bruce H.; Dolezal, George E.; and Galle, Edward M., 4,491,428, Cl. 384-93.000.

Galle, Edward M., Jr.; and Cowan, William S., to Armco Inc. Helical coil stab-in connector. 4,491,351, Cl. 285-318.000.

Gallegos, Alfredo J. Compositions and methods for fertility control. 4,491,593, Cl. 424-317.000.

Galvin, Aaron A.; and Harvey, Roy L., to American District Telegraph Company. Two-wire multi-zone alarm system. 4,491,828, Cl. 340-525.000.

Gang-Nail Systems, Inc.: *See*—
Palacio, Joaquin J.; and Cristobal, Carlos C., 4,490,956, Cl. 52-639.000.

Garcia, George: *See*—
Heggeland, Bruce; Garcia, George; and LoBosco, Sam S., 4,491,231, Cl. 220-6.000.

Gardner, David M.: *See*—
Wheaton, Gregory A.; and Gardner, David M., 4,491,570, Cl. 423-484.000.

Gardner, Richard N., to Minnesota Mining and Manufacturing Company. Austenitic manganese steel-containing composite article. 4,491,558, Cl. 419-23.000.

Gas Research Institute: *See*—
Happel, John; Hnatow, Miguel A.; and Bajars, Laimonis, 4,491,639, Cl. 502-219.000.

Gassler, Hermann; Joos, Eugen; Jundt, Werner; Kubach, Hans; and Singer, Erich, to Robert Bosch GmbH. Current regulator for an electromagnetic consumer for use with internal combustion engine control. 4,491,113, Cl. 123-490.000.

Gauron, Richard F. Fastener for releasably and adjustably connecting two structural members. 4,490,883, Cl. 16-245.000.

Gay, Paolo: *See*—
Pera, Luciano; Boggero, Armando; Manassero, Giorgio; and Gay, Paolo, 4,491,383, Cl. 350-66.000.

Gaylard, Bernard: *See*—
Dery, Phillip; Fearns, Peter; Plessner, Karl W.; Pickup, Kenneth H.; Gaylard, Bernard; and Murphy, Arthur B., 4,491,387, Cl. 350-96.230.

Gaynor, Thomas R.: *See*—
Reynolds, Gary R.; Gaynor, Thomas R.; Olivera, Paul; Ruthenberg, Ross E.; Smith, Jay G.; Kurby, Christopher N.; and Mansfield, Terry K., 4,491,806, Cl. 331-96.000.

Gearhart Industries, Inc.: *See*—
Terrell, Jamie B.; and Pratt, Donna K., 4,491,178, Cl. 166-192.000.

Gebr. Pfeiffer AG: *See*—
Bacharach, Ottmar; and Schafer, Herbert, 4,491,280, Cl. 241-121.000.

Geffroy, Jean; Glachet, Charles; Moulin, Maurice; and Noel, Jean P., to Commissariat a l'Energie Atomique. Radiation-tight coupling arrangement for a machining laser. 4,491,717, Cl. 219-121.0LG.

Geigas, Albert. Blooming plant implant. 4,490,940, Cl. 47-58.000.

Gelinas, Raymond C., to Honeywell Inc. Josephson junction interferometer device for detection of curl-free magnetic vector potential fields. 4,491,795, Cl. 324-248.000.

Gendrich, Ronald L.; and Holleman, William H., to Abbott Laboratories. Matrix polymers for binding endotoxins. 4,491,660, Cl. 536-32.000.

General Dynamics, Pomona Division: *See*—
Marshall, George C., Jr., 4,491,084, Cl. 118-683.000.
Speer, Spencer J., 4,491,054, Cl. 89-1.814.

General Electric Company: *See*—
Balch, Richard A.; and Palmer, Ansell W., 4,491,791, Cl. 324-157.000.
Bitting, Ricky F., 4,491,772, Cl. 318-254.000.
Bullock, Donald F.; and Palmer, Ansell W., 4,491,792, Cl. 324-157.000.
Chastine, Gary L.; and Haag, Norbert P., 4,490,990, Cl. 62-279.000.
Chastine, Gary L., 4,490,992, Cl. 62-295.000.
Corby, Nelson R., Jr., 4,491,719, Cl. 219-124.340.
Dornbusch, Paul E., 4,491,000, Cl. 72-8.000.
Germer, Warren R.; and Palmer, Ansell W., 4,491,793, Cl. 324-157.000.
Griffin, James R., 4,490,991, Cl. 62-279.000.
Olson, Daniel R.; and Webb, Karen K., 4,491,508, Cl. 204-159.130.
Pritzkow, Dennis H.; Loomis, Neil W.; Golner, Thomas M.; and Hoffman, David M., 4,491,732, Cl. 250-366.000.

General Mills, Inc.: *See*—
Schmidt, Paul R.; and Beall, Nelson J., 4,491,252, Cl. 222-531.000.

General Motors Corporation: *See*—
Arnheim, Hans-Rudolf; and Warner, Hermann, 4,490,942, Cl. 49-374.000.
Bonvallet, Duane J., 4,491,099, Cl. 123-90.440.
Brandt, Herman F.; and Gibson, Franklin R., 4,491,010, Cl. 73-35.000.
Bullock, Benton L., 4,491,037, Cl. 74-785.000.
Campbell, Robert W.; and Ruff, Donald O., 4,491,779, Cl. 320-6.000.
Eytcheson, Charles T.; Lutz, Phillip A.; and Fields, Harold L., 4,490,902, Cl. 29-588.000.
Gladd, Joseph H.; Plyler, Robert G.; and Suverison, Lyle B., 4,491,376, Cl. 339-9.00E.
Hogg, Hubert, 4,490,978, Cl. 60-561.000.
Peterson, Gregory E., 4,490,987, Cl. 62-186.000.
Sigety, Stephen, Jr., 4,491,901, Cl. 362-275.000.
Tibbetts, Gary G., 4,491,569, Cl. 423-447.300.

General Signal Corporation: *See*—
Summers, Anthony C., 4,491,299, Cl. 251-308.000.
Wells, Richard E., 4,490,985, Cl. 62-86.000.

Genuit, Luther L. Electronic score-keeper for table tennis. 4,491,954, Cl. 377-5.000.

George, Albert L. Pick-up and laydown machine. 4,491,450, Cl. 414-22.000.

George, Kurudamannil A., to Proctor & Schwartz, Inc. Process for removing skins from nuts. 4,491,603, Cl. 426-482.000.

Germer, Warren R.; and Palmer, Ansell W., to General Electric Company. Detachable magnetic coupler communication apparatus. 4,491,793, Cl. 324-157.000.

Giacobbi, Peter D.: *See*—
Williams, Kenneth R.; McClaran, Mark R.; and Giacobbi, Peter D., 4,491,145, Cl. 137-312.000.

Giardinelli, Silvano C., to Silena S.p.A. Device for indicating pole-zero cancellation, in particular for amplifiers for ionizing radiation spectroscopy. 4,491,799, Cl. 330-2.000.

Gibson, Franklin R.: *See*—
Brandt, Herman F.; and Gibson, Franklin R., 4,491,010, Cl. 73-35.000.

Gifford, Peter E.; and Swift, Stephen D., to Cryomech Inc. Regenerator apparatus for use in a cryogenic refrigerator. 4,490,983, Cl. 62-6.000.

Gilvar, Martin; and Russell, Robert B., to Morgan Construction Company. Steel rod rolling process. 4,491,488, Cl. 148-144.000.

Ginzburg, Vladimir B.; and Thomas, John E., to Tippins Machinery Company, Inc. Method and apparatus for coiling strip between the roughing train and the finishing train. 4,491,006, Cl. 72-202.000.

Girgensohn, Bjoern: *See*—
Richarz, Winfried; Mangold, Dietrich; and Girgensohn, Bjoern, 4,491,672, Cl. 564-271.000.

Glachet, Charles: *See*—
Geffroy, Jean; Glachet, Charles; Moulin, Maurice; and Noel, Jean P., 4,491,717, Cl. 219-121.0LG.

Gladd, Joseph H.; Plyler, Robert G.; and Saverison, Lyle B., to General Motors Corporation. Electrical header assembly. 4,491,376, Cl. 339-9.00E.

Glanzmann, Alfred, to Grapha-Holding AG. Apparatus for opening folded sheets using accelerating and deaccelerating spreader elements. 4,491,311, Cl. 270-54.000.

Glasscock, Stephen D.: *See*—
Davis, Thomas H., Jr.; and Glasscock, Stephen D., 4,491,494, Cl. 156-240.000.

Glaxo Group Limited: *See*—
Hayes, Roger, 4,491,586, Cl. 424-267.000.

Gleasman, Keith E.: *See*—
Gleasman, Vernon E.; and Gleasman, Keith E., 4,491,035, Cl. 74-715.000.

Gleasman, Vernon E.; and Gleasman, Keith E., to Gleason Works, The. Differential gear apparatus. 4,491,035, Cl. 74-715.000.

Gleason Works, The: *See*—
Gleasman, Vernon E.; and Gleasman, Keith E., 4,491,035, Cl. 74-715.000.
Stritzel, Gene A., 4,491,036, Cl. 74-715.000.

Globe Illumination: *See*—
Bumpus, Boyd B.; Rosenblatt, Alex; and Rosenblatt, Leonard, 4,490,957, Cl. 52-489.000.

Gobel, Gerd; Behr, Norbert; van der Mei, Henk; Carduck, Franz-Josef; and von Ettingshausen, Othmar, to Henkel Kommanditgesellschaft auf Aktien. Process for concentrating aqueous solutions having temperature-sensitive components. 4,491,600, Cl. 426-384.000.

Godin, Thomas J., to Coulter Electronics, Inc. Transducer for measuring particles suspended in a fluid. 4,491,786, Cl. 324-71.100.

Goettel, Richard J. Self-tapping duct fitting. 4,491,124, Cl. 126-293.000.

Goldstein, Theodore, to Mobil Oil Corporation. Exploration method for finding uranium ore bodies. 4,491,411, Cl. 356-30.000.

Goldthorp, David C.: *See*—
Embree, David M.; Goldthorp, David C.; Longenecker, Howard H.; and Vogelpohl, David R., 4,491,691, Cl. 179-84.00T.

Golner, Thomas M.: *See*—
Pritzkow, Dennis H.; Loomis, Neil W.; Golner, Thomas M.; and Hoffman, David M., 4,491,732, Cl. 250-366.000.

Gooda, Masahiro: *See*—
Soga, Tasao; Suzuki, Takaya; Okamura, Masahiro; Gooda, Masahiro; and Kobayashi, Fumiyuki, 4,491,562, Cl. 420-589.000.

Goodyear Tire & Rubber Company, The: *See*—
Sandstrom, Paul H., 4,491,655, Cl. 527-600.000.

Gorb, Vyacheslav F.: *See*—
Voronin, Felix V.; Shergov, Igor V.; Gorb, Vyacheslav F.; and Sidorov, Viktor V., 4,491,715, Cl. 219-74.000.

Gorodetsky, Alexandr A.; Gromov, Nikolai N.; Kulzhinsky, Vladimir L.; Marus, Rudolf A.; Ryskin, Solomon E.; Samoilov, Pavel B.; Shamov, Alexandr N.; Sharygin, Nikolai V.; and Kireev, Ivan N. Apparatus for drying and calcinating coated welding electrodes with the use of induction heating. 4,490,922, Cl. 34-1.000.

Gorss, Jeffrey B.: *See*—
Zuber, Chester L.; Butrum, Virgil T.; Gorss, Jeffrey B.; and Rydholm, Manford E., 4,491,475, Cl. 75-65.00R.

Gotoh, Hitoshi, to Mitsubishi Denki Kabushiki Kaisha. Charging generator for car. 4,491,754, Cl. 310-88.000.

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Gotou, Makoto, to Matsushita Electric Industrial Co., Ltd. Brushless DC motor. 4,491,770, Cl. 318-254.000.

Gottlieb, Michael M.; and Fishman, David S., to Rogers Corporation. Decoupling capacitor and method of manufacture thereof. 4,491,895, Cl. 361-306.000.

Gottling, Helmut: *See*—
Meyer, Hans-Friedrich; Thiele, Wolfgang; Kosmalski, Hermann; Meurer, Klaus; Kruppa, Hans; Gottling, Helmut; and Meyer, Ernst-August, 4,491,155, Cl. 137-625.660.

Gould Inc.: *See*—
Kryskow, J. Michael, Jr.; Bobzin, Jeffery J.; and Allen, Bruce S., 4,491,946, Cl. 370-89.000.

Gozzini, Luigia: *See*—
de Castiglione, Roberto; Gozzini, Luigia; Montecucchi, Pier C.; and Perseo, Giuseppe, 4,491,541, Cl. 260-112.50R.

Grab, George P.; Hood, Grant W., Jr.; Swanson, Sigurd A.; and Nemeth, Bela J., to Kennametal Inc. Flowable composition adapted for sintering and method of making. 4,491,559, Cl. 419-36.000.

Graef, Steffen. Means for checking and/or measuring the actual amount of sprayed plant protective substances. 4,491,023, Cl. 73-861.000.

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Sanderson, Robert A., 4,491,485, Cl. 134-9.000.

Granger, Yves: *See*—
Calvignac, Jean; Granger, Yves; and Masclet, Andre, 4,491,913, Cl. 364-200.000.

Grantham, Daniel H.: *See*—
Grudkowski, Thomas W.; DeMaria, Anthony J.; Shuskus, Alexander J.; and Grantham, Daniel H., 4,491,761, Cl. 310-359.000.

Grapha-Holding AG: *See*—
Glanzmann, Alfred, 4,491,311, Cl. 270-54.000.

Grappendorf, Richard H., to Norton Christensen, Inc. Diamond cutting element in a rotating bit. 4,491,188, Cl. 175-329.000.

Gray, Frank L., Jr. Picker's aid. 4,491,212, Cl. 193-7.000.

Gray, Thomas J., to Olin Corporation. Reactor containing a methanation catalyst. 4,491,564, Cl. 422-211.000.

Grayhill, Inc.: *See*—
Jaklic, Fred, 4,491,703, Cl. 200-16.00D.

Great Lakes Carbon Corporation: *See*—
Clark, James M.; and Secrist, Dunne R., 4,491,510, Cl. 204-290.00R.
Greven, Hendrik M., to Akzo N.V. Peptides. 4,491,579, Cl. 424-177.000.
Griffin, James R., to General Electric Company. High-side refrigeration system assembly adapted to be mounted in a refrigerator machinery compartment. 4,490,991, Cl. 62-279.000.
Grimm, Henry J.: *See*—
Brown, Alfred; Grimm, Henry J.; and Sustek, Alvin J., Jr., 4,491,180, Cl. 166-272.000.
Gripshover, Ronald J.; and Rinehart, Larry F., to United States of America, Navy. Frozen wave generator jammer. 4,491,842, Cl. 343-18.00E.
Griset, Norman. Guide clamp. 4,490,920, Cl. 33-443.000.
Groen Division/Dover Corporation: *See*—
Sveda, Paul, 4,491,146, Cl. 137-341.000.
Gromov, Nikolai N.: *See*—
Gorodetsky, Alexandr A.; Gromov, Nikolai N.; Kulzhinsky, Vladimir L.; Marus, Rudolf A.; Ryskin, Solomon E.; Samoilov, Pavel B.; Shamov, Alexandr N.; Sharygin, Nikolai V.; and Kireev, Ivan N., 4,490,922, Cl. 34-1.000.
Grossi, Lucio. Device for the water feeding and for the filtering of the coffee infusion in coffee-machines particularly of automatic type. 4,491,063, Cl. 99-289.00R.
Grow Group, Inc.: *See*—
Liebermann, Benno E., 4,491,250, Cl. 222-386.500.
Gruber, Ernst; and von Hoessle, Wolfgang, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Position gyroscope. 4,491,029, Cl. 74-5.100.
Gruber, Norma J.; and Powell, Clois E., to Ashland Oil, Inc. Aqueous hydroxyl-acrylic latex and multi-isocyanate adhesive composition. 4,491,646, Cl. 524-558.000.
Gradkowski, Thomas W.; DeMaria, Anthony J.; Shuskus, Alexander J.; and Grantham, Daniel H., to United Technologies Corporation. Planar piezoelectric deflector with arrays of alternate piezoelectric effect. 4,491,761, Cl. 310-359.000.
Grunz, James H. Paint brush. 4,490,875, Cl. 15-143.00R.
GTE Automatic Electric Labs Inc.: *See*—
Cork, Fay E., 4,491,555, Cl. 264-240.000.
Daley, William J.; and Van Husen, Hendrik W., 4,491,794, Cl. 324-158.00R.
GTE Business Communication Systems: *See*—
Boeckman, Eduard F. B., 4,491,689, Cl. 179-81.00B.
GTE Laboratories Incorporated: *See*—
Bellows, Alfred H., 4,491,814, Cl. 335-192.000.
Gulf Research and Development Co.: *See*—
Krol, David A., 4,491,181, Cl. 166-301.000.
Gustafson, Keith W., to Minnesota Valley Engineering, Inc. Cryogenic connector. 4,491,347, Cl. 285-47.000.
Gustavsson, Pertti, to Akab of Sweden AB. Device for folding and making a hem on the end edges of a piece of cloth, e.g. a sheet. 4,491,079, Cl. 112-121.150.
Gutierrez, Antonio; Brownawell, Darrell W.; Walker, Thad O.; and Brois, Stanley J., to Exxon Research & Engineering Co. Lubricating additive for drilling muds. 4,491,524, Cl. 252-8.50C.
H. Stoll GmbH & Co.: *See*—
Essig, Karl, 4,490,994, Cl. 66-75.100.
Haag, Norbert P.: *See*—
Chastine, Gary L.; and Haag, Norbert P., 4,490,990, Cl. 62-279.000.
Haas, Lothar: *See*—
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Haas, Robert G.; Hasz, John R.; and Wood, David B., III, to Cincinnati Milacron Inc. Damped tool turret. 4,491,044, Cl. 82-36.00A.
Habara, Hideaki: *See*—
Sugimori, Teruhiko; and Habara, Hideaki, 4,491,658, Cl. 528-486.000.
Habelt, Gerhard; and Mucha, Franz, to U.S. Philips Corporation. Printer with a guide ruler for flattening a record carrier. 4,491,854, Cl. 346-136.000.
Haberl, Jeffrey S. Flue cleaning device. 4,490,876, Cl. 15-163.000.
Hadican, Alex: *See*—
Iskiw, Metro; and Hadican, Alex, 4,490,885, Cl. 17-66.000.
Haefner, Hans W., to Pfister GmbH. Method and apparatus for measuring the pressure of a fluid. 4,491,016, Cl. 73-302.000.
Haes, Freddy; and Reynhout, Cornelis M., to U.S. Philips Corporation. Shaving apparatus. 4,490,906, Cl. 30-34.200.
Haga, Ryoichi: *See*—
Ishida, Masahiko; Haga, Ryoichi; Ishibashi, Tadashi; and Odawara, Yoji, 4,491,522, Cl. 210-603.000.
Hager, Walter, to Pfaff Industriemaschinen GmbH. Sewing machine with equipment for producing corner seams. 4,491,080, Cl. 112-275.000.
Hagshenas, Behzad; Butler, Donald W.; and Coolidge, Anson S., to Sundstrand Corporation. Screw pump lubrication system. 4,491,374, Cl. 384-471.000.
Hahn, Erwin: *See*—
Radtke, Volker; Kowarsch, Heinrich; Hahn, Erwin; and Hauser, Peter, 4,491,544, Cl. 534-655.000.
Hahn, Roger, to Adolph Coors Company. Base coat applicator. 4,491,613, Cl. 427-428.000.
Halliday, Pieter S. J.: *See*—
Ellis, David; Smith, Jeremy G. B.; and Halliday, Pieter S. J., 4,491,489, Cl. 149-109.600.
Hallmark Cards, Inc.: *See*—
Davis, Thomas H., Jr.; and Glasscock, Stephen D., 4,491,494, Cl. 156-240.000.
Halpern, Yuval; and Mott, Donna M., to Borg-Warner Chemicals, Inc. Flame-retardant polymer compositions. 4,491,644, Cl. 524-100.000.
Halsey, Donald P., III. Puzzle having polarized stackable components. 4,491,326, Cl. 273-157.00A.
Halvorsen, Robert M.: *See*—
Bradley, Jerome R.; Halvorsen, Robert M.; Hurst, Jeffrey B.; and Long, Gregory F., 4,491,272, Cl. 239-5.000.
Hamabe, Takafumi: *See*—
Yamamura, Yukio; and Hamabe, Takafumi, 4,491,127, Cl. 128-57.000.
Hamaguchi, Yoshiharu, to France Bed Co., Ltd. Bed apparatus with urinal and an integral drive mechanism. 4,490,865, Cl. 5-90.000.
Hamakawa, Yoshihiro; and Tawada, Yoshihisa, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Amorphous silicon photovoltaic device including a two-layer transparent electrode. 4,491,682, Cl. 136-256.000.
Hamann, Lutz, to Ficht GmbH. Crank guide assembly for an internal combustion engine with at least two facing cylinders. 4,491,097, Cl. 123-56.00R.
Hamashima, Yoshio: *See*—
Tsuji, Teruji; Sato, Hisao; and Hamashima, Yoshio, 4,491,547, Cl. 260-455.00R.
Hamazato, Kazuo: *See*—
Tahara, Toshiyuki; Uehara, Hironobu; Hamazato, Kazuo; and Hayashi, Toshio, 4,491,700, Cl. 179-170.0NC.
Hamel, Roger G.; and Poulin Susan B., to Thiokol Corporation. One part activator and blowing agent for foaming plastics. 4,491,554, Cl. 264-141.000.
Hammann, Ingeborg: *See*—
Fuchs, Rainer; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,491,585, Cl. 424-263.000.
Hammer, Howard: *See*—
Veenema, James, 4,491,321, Cl. 273-29.00A.
Hammers, P. Fred: *See*—
Wilson, James G., II; and Hammers, P. Fred, 4,490,898, Cl. 29-402.130.
Hamaker, Wilbur A., Jr.; and Stahl, Daniel E., to AMP Incorporated. Electrical panelboard connector. 4,491,381, Cl. 339-107.000.
Haneda, Satoshi: *See*—
Itaya, Masahiko; Haneda, Satoshi; and Tomono, Makoto, 4,491,083, Cl. 118-657.000.
Hanes, Ronnie M., to National Distillers and Chemical Corporation. Palladium-ligand complex for use in catalyzing the reaction of a mixture of 1,3-butadiene, carbon monoxide and monoalkanol to provide alkyl nonadienoate ester. 4,491,546, Cl. 260-429.00R.
Hanggi, Manfred: *See*—
Stelter, Jurgen; and Hanggi, Manfred, 4,491,442, Cl. 406-95.000.
Hanlon, Brian, to Verbatim Corporation. Calibrated drop-out disk. 4,491,881, Cl. 360-31.000.
Hanlon, Brian: *See*—
Carey, Kevin J.; and Hanlon, Brian, 4,491,884, Cl. 360-75.000.
Hanna, Gary D., to G. D. Hanna Incorporated. Panel display. 4,491,166, Cl. 160-351.000.
Hans Horlacher: *See*—
Schelling, Gilbert, 4,490,899, Cl. 29-410.000.
Hansen, Erich: *See*—
Beck, Rasmus; and Hansen, Erich, 4,491,949, Cl. 372-86.000.
Hansen, Guenter: *See*—
Bergmann, Udo; Hansen, Guenter; Lach, Dietrich; Thomas, Michael; and Zeidler, Georg, 4,491,543, Cl. 534-677.000.
Hansen, Lee D.: *See*—
Nordmeyer, Francis R.; and Hansen, Lee D., 4,491,011, Cl. 73-61.10C.
Hansen, Steven D. Secured sampling facility. 4,491,232, Cl. 220-18.000.
Hansmann, Johann: *See*—
Theurer, Josef; and Hansmann, Johann, 4,490,947, Cl. 51-178.000.
Hanstein, Friedrich; and Szigeti, Peter R., to Rohm GmbH. Polishing plate and method for polishing surfaces. 4,490,948, Cl. 51-358.000.
Happach, Anton, to Schaltbau Gesellschaft mbH. Overload protection. 4,491,812, Cl. 335-184.000.
Happel, John; Hnatow, Miguel A.; and Bajars, Laimonis, to Gas Research Institute. Methods of making high activity transition metal catalysts. 4,491,639, Cl. 502-219.000.
Harada, Hiroshi: *See*—
Matoba, Taketo; Morita, Yasuhiro; Arai, Noritoshi; Ishigaki, Masahiro; and Harada, Hiroshi, 4,491,429, Cl. 384-221.000.
Harada, Shigeo; and Tosima, Soitiro, to RCA Corporation. Method for characterizing solder compositions. 4,491,412, Cl. 356-36.000.
Harada, Yoshihito: *See*—
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Harigae, Makoto: *See*—
Fujinuma, Makoto; Futatsudera, Masaomi; and Harigae, Makoto, 4,491,763, Cl. 313-405.000.
Harmatzy-Simon, Bela; Schroder, Peter; Buchel, Peter A., deceased; and by Buchel nee Dickmann, Helga, legal representative. Liquid food dispenser. 4,491,249, Cl. 222-325.000.
Harmeyer, Michael. Telephone to stereo amplifier interface coupling. 4,491,694, Cl. 179-100.00L.
Harris, Ronald R.; and Saunders, Herbert M., to Owens-Corning Fiberglas Corporation. Method of and apparatus for applying a laminated pressure-sensitive adhesive strip construction to a flexible sheet. 4,491,498, Cl. 156-497.000.

Hartig, Juergen; Stoessel, Armin; Herrmann, Guenter; and Maroni, Laszlo, to BASF Aktiengesellschaft. Cobalt-containing supported catalysts and their preparation. 4,491,637, Cl. 502-66.000.
Hartmann, Clinton S., to R F Monolithics, Inc. Transversely weighted surface acoustic wave device. 4,491,757, Cl. 310-313.00B.
Hartmann, Clinton S., to R F Monolithics, Inc. Surface wave device with oversampled withdrawal weighting. 4,491,758, Cl. 310-313.00C.
Hartwich, Gerhard: *See*—
Pav, Josef; Hartwich, Gerhard; and Prey, Jorg, 4,491,283, Cl. 242-67.10R.
Harvey, Raymond G. A.; and Evans, David S., to Norton, Colin Frank. Motor operating parameter sensing apparatus. 4,491,775, Cl. 318-434.000.
Harvey, Roy L.: *See*—
Galvin, Aaron A.; and Harvey, Roy L., 4,491,828, Cl. 340-525.000.
Haschke, Paul C. Method of making a surgical cast with window. 4,491,128, Cl. 128-91.00R.
Hasegawa, Hiroshi; Nakano, Yoshiyuki; and Tanabe, Yoshiaki, to Nippon Kogaku K.K. Flash photography system. 4,491,404, Cl. 354-416.000.
Hasegawa, Shumpei; Kishi, Noriyuki; and Koumura, Takashi, to Honda Motor Co., Ltd. Idling rpm feedback control method for internal combustion engines. 4,491,107, Cl. 123-339.000.
Hasegawa, Shumpei; Koumura, Takashi; and Mieno, Toshiyuki, to Honda Motor Co., Ltd. Idling rpm feedback control method for internal combustion engines. 4,491,108, Cl. 123-339.000.
Hasenack, Hendrikus J. A., to Shell Oil Company. Process and apparatus for mixing fluids. 4,491,271, Cl. 239-1.000.
Hashimoto, Kinrou: *See*—
Okumoto, Tadaoki; Sugimoto, Masatoshi; Horiuchi, Noriyuki; Sahara, Seiichi; Yamada, Tetsuo; Hashimoto, Kinrou; Ichikawa, Masayoshi; and Ninomiya, Fujio, 4,491,621, Cl. 428-519.000.
Hashimoto, Nobuyuki, to Aisin Seiki Kabushiki Kaisha. Valve assembly for air bag control. 4,491,157, Cl. 137-871.000.
Haskins, Steve W., to Northern Telecom Limited. Mounting for a dial in a telephone set base. 4,491,695, Cl. 179-100.00D.
Haskins, Steve W.; and Vincent, James K., to Northern Telecom Limited. Telephone set base. 4,491,696, Cl. 179-100.00C.
Hasz, John R.: *See*—
Haas, Robert G.; Hasz, John R.; and Wood, David B., III, 4,491,044, Cl. 82-36.00A.
Hatamura, Yotaro. Pressure transducer. 4,491,028, Cl. 73-862.620.
Hatashita, Hiroshi: *See*—
Saitoh, Takeshi; Matsuura, Shigeo; Moteki, Minoru; and Hatashita, Hiroshi, 4,491,976, Cl. 455-315.000.
Hattori, Kyo: *See*—
Idogaki, Takaharu; Kawai, Hisasi; Hattori, Kyo; and Sakurai, Kazuhiro, 4,491,815, Cl. 335-229.000.
Hattori, Takemi; and Esaki, Kozo, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Lumber support system for a vehicle seat. 4,491,364, Cl. 297-284.000.
Hauser, Peter: *See*—
Radtke, Volker; Kowarsch, Heinrich; Hahn, Erwin; and Hauser, Peter, 4,491,544, Cl. 534-655.000.
Hawkins, Hugh M., to Kirlin, John J.; and Day, Wayne T., a part interest to each. Load raising vehicle and method. 4,491,449, Cl. 414-10.000.
Hawrylo, Frank Z., to RCA Corporation. Method of soldering a light emitting device to a substrate. 4,491,264, Cl. 228-121.000.
Hayashi, Hideo; Takamatsu, Iwao; and Nakai, Ikuo, to Fuji Electric Co., Ltd. Electrical switch. 4,491,705, Cl. 200-147.00R.
Hayashi, Masayoshi: *See*—
Okada, Tokuhiro; and Hayashi, Masayoshi, 4,491,926, Cl. 364-555.000.
Hayashi, Motohiko; Karita, Toshiaki; Kotani, Matahira; and Sasaki, Hiromu, to Sharp Kabushiki Kaisha. Image recording arrangement. 4,491,853, Cl. 346-76.0PH.
Hayashi, Toshio: *See*—
Tahara, Toshiyuki; Uehara, Hironobu; Hamazato, Kazuo; and Hayashi, Toshio, 4,491,700, Cl. 179-170.0NC.
Hayatdavoudi, Asadollah; and Marascalco, Ronald F., to Petroleum Instrumentation & Technological Services. Fluid mixing system. 4,491,414, Cl. 366-6.000.
Hayes, Roger, to Glaxo Group Limited. Amine derivatives. 4,491,586, Cl. 424-267.000.
Haynes, Joel: *See*—
Ruskin, Frank; Fellner, Van N.; and Haynes, Joel, 4,491,240, Cl. 221-5.000.
Hedelin, Lars G. B. Method for regulating the operating cycle in an external combustion engine. 4,490,971, Cl. 60-39.630.
Heggeland, Bruce; Garcia, George; and LoBosco, Sam S., to Family Distributors, Inc. Collapsible case. 4,491,231, Cl. 220-6.000.
Heidelberg, Gotz. Rotary electric machine. 4,491,769, Cl. 318-254.000.
Heierli, Werner. Front wall of overfilled arched reinforced concrete underpasses. 4,490,950, Cl. 52-87.000.
Heilman, Karl J. Tensioning apparatus for a racket-stringing machine. 4,491,322, Cl. 273-73.00A.
Heine, Heinrich: *See*—
Biermann, Hans-Peter; Kohler, Peter; and Heine, Heinrich, 4,491,619, Cl. 428-403.000.
Heinrich, Jean-Paul: *See*—
Marini, Jean; and Heinrich, Jean-Paul, 4,491,008, Cl. 73-19.000.
Heinz, Karl E. Data compression process. 4,491,934, Cl. 364-900.000.
Heird, William C.: *See*—
Dell, Ralph B.; Winters, Robert W.; and Heird, William C., 4,491,589, Cl. 424-274.000.
Heitmann, Jurgen, to Robert Bosch GmbH. Pulse code modulation system suitable for digital recording of broadband analog signals. 4,491,869, Cl. 358-141.000.
Heilbach, Hans: *See*—
Rieber, Norbert; Heilbach, Hans; Hunziker, Gerhard; and Mueller, Guenter, 4,491,674, Cl. 568-357.000.
Hellmann, Heinz-Dieter: *See*—
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Henderson, James E.: *See*—
Flora, John H.; and Henderson, James E., 4,491,784, Cl. 324-61.0QL.
Henkel Corporation: *See*—
Thompson, John A., 4,491,645, Cl. 524-112.000.
Henkel Kommanditgesellschaft auf Aktien: *See*—
Gobel, Gerd; Behr, Norbert; van der Mei, Henk; Carduck, Franz-Josef; and von Ettingshausen, Othmar, 4,491,600, Cl. 426-384.000.
Henning, Klaus-Dirk: *See*—
Degel, Josef; Henning, Klaus-Dirk; Klein, Jurgen; and Wybranda, Klaus, 4,491,609, Cl. 427-215.000.
Heppke, Gerd: *See*—
Scherowsky, Gunther; Moller, Alexander; Heppke, Gerd; and Knippenberg, Burkhard, 4,491,532, Cl. 252-299.100.
Hergt, Peter: *See*—
Brautigam, Rolf; Haas, Lothar; Wesemeyer, Jurgen; Hellmann, Heinz-Dieter; Hergt, Peter; and Fassel, Reinhard, 4,491,026, Cl. 73-861.860.
Herklotz, Gunter; and Arnold, Gerhard, to W. C. Heraeus GmbH. Galvanic depositing of palladium coatings. 4,491,507, Cl. 204-47.000.
Hermann Heye: *See*—
Fischer, Knut, 4,491,728, Cl. 250-223.00B.
Herring, William T., Sr. Animal feeder especially for feeding pigs and the like. 4,491,087, Cl. 119-53.500.
Herrmann, Guenter: *See*—
Hartig, Juergen; Stoessel, Armin; Herrmann, Guenter; and Maroni, Laszlo, 4,491,637, Cl. 502-66.000.
Hetherington, Jack C., to AT&T Technologies, Inc. Methods of and apparatus for applying a sheet to a rigid board. 4,491,492, Cl. 156-212.000.
Heups, Gert: *See*—
Schaub, Dietmar; and Heups, Gert, 4,491,688, Cl. 178-18.000.
Higgins, Philip M.; MacKenna, William B.; Sickels, Lawrence G.; and Stumpf, Richard A., to Vapor Corporation. Door control systems. 4,491,917, Cl. 364-424.000.
Highland Supply Corp.: *See*—
Weder, Erwin H.; and Weder, Donald E., 4,491,217, Cl. 206-45.330.
Higuchi, Shinichi: *See*—
Mizumukai, Ken; and Higuchi, Shinichi, 4,491,339, Cl. 280-668.000.
Hijiya, Shinpei; and Ito, Takashi, to Fujitsu Limited. Semiconductor non-volatile memory device. 4,491,859, Cl. 357-41.000.
Hilbrans, Hermann; and Rao, Chatty, to Klockner-Humboldt-Deutz AG. Method for separating non-ferrous metals from ferruginous secondary substances. 4,491,470, Cl. 75-5.000.
Hillman, Carl M.; and Dragon, James W., to McGraw-Edison Company. Fuse mounting for pad mounted underground distribution system. 4,491,898, Cl. 361-432.000.
Hilti Aktiengesellschaft: *See*—
Hunger, Josef; Klueber, Wilhelm; and Regelsberger, Wolfgang, 4,491,445, Cl. 409-234.000.
Rumpp, Gerhard; Spieth, Manfred; and Scholz, Dieter, 4,491,444, Cl. 409-234.000.
Hiramatsu, Akira: *See*—
Inaba, Hiroyoshi; Sumi, Akiyasu; Notagashira, Hidefumi; Katsuma, Makoto; Murakami, Hiroyasu; and Hiramatsu, Akira, 4,491,401, Cl. 354-271.100.
Hirano, Tsugutoshi. Pineapple cutter. 4,490,912, Cl. 30-302.000.
Hiraoka, Yutaka: *See*—
Fujii, Tadayuki; Hiraoka, Yutaka; and Watanabe, Ryoji, 4,491,560, Cl. 420-429.000.
Hiroshima Kasei, Ltd.: *See*—
Fujii, Hiromasa; and Matsui, Hisakazu, 4,491,556, Cl. 264-243.000.
Hitachi Chemical Company, Ltd.: *See*—
Kuwajima, Hideji; Shike, Kazuyoshi; and Watanabe, Takeyoshi, 4,491,618, Cl. 428-241.000.
Saito, Takayuki; Kikuchi, Toru; Obara, Masakatsu; and Kobayashi, Akihiro, 4,491,667, Cl. 549-302.000.
Hitachi, Ltd.: *See*—
Akiyama, Nobuyuki; Kembo, Yukio; and Nakagawa, Yasuo, 4,491,787, Cl. 324-71.500.
Horiuchi, Michimasa; and Sato, Hiroshi, 4,491,904, Cl. 364-130.000.
Kainaga, Masahiro; Sakoda, Kousuke; and Nakanishi, Hiroaki, 4,491,912, Cl. 364-200.000.
Kawamoto, Hiroshi, 4,491,858, Cl. 357-41.000.
Kimura, Tomoaki; and Miyakozawa, Keiji, 4,491,005, Cl. 72-201.000.
Kojima, Noboru; Watatani, Yoshizumi; Arai, Takao; Hoshino, Takashi; and Shibuya, Toshifumi, 4,491,880, Cl. 360-19.100.
Noda, Masaki; Shinkawa, Keiro; and Sodeyama, Chuichi, 4,491,809, Cl. 333-35.000.
Saitoh, Takeshi; Matsuura, Shigeo; Moteki, Minoru; and Hatashita, Hiroshi, 4,491,976, Cl. 455-315.000.
Sakou, Hiroshi; and Kashioka, Seiji, 4,491,962, Cl. 382-50.000.
Soga, Tasao; Suzuki, Takaya; Okamura, Masahiro; Gooda, Masahiro; and Kobayashi, Fumiyuki, 4,491,562, Cl. 420-589.000.

Tomita, Tosio, 4,491,756, Cl. 310-154.000.
Umemura, Kazuhiro; Sampei, Tohru; Nakata, Kazuo; Sato, Hirokazu; Murakami Kenya; and Intoh, Kiyoshi, 4,491,958, Cl. 381-51.000.
Hitchin, James, to Thermal Energy Storage, Inc. Energy storage apparatus. 4,491,172, Cl. 165-10.000.
Hnatow, Miguel A.: *See*—
Happel, John; Hnatow, Miguel A.; and Bajars, Laimonis, 4,491,639, Cl. 502-219.000.
Hochiki Kabushiki Kaisha: *See*—
Miyabe, Atsushi, 4,491,830, Cl. 340-584.000.
Hodgkins, David, to Stanadyne, Inc. Fuel conditioner. 4,491,120, Cl. 123-557.000.
Hoechst Aktiengesellschaft: *See*—
Bredereck, Karl; and Togelang, Emy, 4,491.661, Cl. 536-84.000.
Fischer, Edgar; and Sittig, Wolfgang, 4,491,549, Cl. 261-36.00R.
Schoen, Klaus-Peter, 4,491,313, Cl. 271-194.000.
Hoekstra, I. Arthur. Energy and water recovery from flue gases. 4,491,093, Cl. 122-420.000.
Hoekstra, Irenus A. Method of desulfurization of flue gases. 4,491,461, Cl. 62-17.000.
Hoel, Jeffrey H.: *See*—
Collmeyer, Arthur J.; Hoel, Jeffrey H.; King, Paul F.; Stanley, Donald O.; and Sturgeon, Roger, 4,491,836, Cl. 340-747.000.
Hoffman, David M.: *See*—
Pritzkow, Dennis H.; Loomis, Neil W.; Golner, Thomas M.; and Hoffman, David M., 4,491,732, Cl. 250-366.000.
Hoffman, William W.: *See*—
Cronin, Timothy H.; Faubl, Hermann; Hoffman, William W.; and Korst, James J., 4,491,583, Cl. 424-250.000.
Hoffmann, Peter, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt E.V. Unstable laser resonator. 4,491,950, Cl. 372-95.000.
Hoffmann, Werner: *See*—
Thoemel, Frank; and Hoffmann, Werner, 4,491,545, Cl. 260-396.00R.
Hogg, Hubert, to General Motors Corporation. Fluid pressure proportioners. 4,490,978, Cl. 60-561.000.
Hold, Peter; and Rizzi, Marc A., to USM Corporation. Devolatilizing mixing extruder. 4,491,417, Cl. 366-75.000.
Holdahl, Robert A., to Toolmark Co. Hand held duplicator tool. 4,491,162, Cl. 142-7.000.
Hollants, Henricus C. J., to U.S. Philips Corporation. Lighting system for use in a photographic enlarger. 4,491,410, Cl. 355-67.000.
Holleman, William H.: *See*—
Gendrich, Ronald L.; and Holleman, William H., 4,491,660, Cl. 536-32.000.
Holm, Wilfried; Kloos, Jurgen; and Natke, Gerhard, to Institut fur Hochseefischerei und Fischverarbeitung. Process for the manufacture of knotlessly braided nets. 4,491,052, Cl. 87-3.000.
Holman, Carroll; and Fite, Arley R. Outdoor water holding and pumping system. 4,491,150, Cl. 137-565.000.
Holsworth, Herbert. Dispenser for road vehicle. 4,491,275, Cl. 239-663.000.
Homeyer, Bernhard: *See*—
Fuchs, Rainer; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,491,585, Cl. 424-263.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Fujii, Isao; Nishimura, Hiroyuki; and Kato, Masaaki, 4,491,104, Cl. 123-291.000.
Miura, Nobuo; and Ishii, Norihisa, 4,491,121, Cl. 123-631.000.
Nishikawa, Masao; and Aoki, Takashi, 4,491,840, Cl. 340-903.000.
Ooka, Yuzo, 4,491,031, Cl. 74-337.500.
Otobe, Yutaka; and Yamato, Akihiro, 4,491,115, Cl. 123-493.000.
Honda Motor Co., Ltd.: *See*—
Hasegawa, Shumpei; Kishi, Noriyuki; and Koumura, Takashi, 4,491,107, Cl. 123-339.000.
Hasegawa, Shumpei; Koumura, Takashi; and Mieno, Toshiyuki, 4,491,108, Cl. 123-339.000.
Kishi, Noriyuki; and Koumura, Takashi, 4,491,109, Cl. 123-339.000.
Honeywell Inc.: *See*—
Gelinas, Raymond C., 4,491,795, Cl. 324-248.000.
Olson, Elwyn H., 4,491,821, Cl. 337-307.000.
Honeywell Information Systems Inc.: *See*—
Woods, William E.; and Stanley, Philip E., 4,491,908, Cl. 364-200.000.
Hongo, Akira; Ueda, Hideki; Nakata, Isei; Yoshida, Eiichi; Aoki, Nobuyoshi; and Suzuki, Toshimitsu, to Teisan Kabushiki Kaisha; and Daiwa Can Company, Limited. Low-temperature liquefied gas constant outflow device. 4,490,984, Cl. 62-49.000.
Honkaniemi, Matti; Jankkila, Martti; Nurminen, Aimo; Virta, Matias; Iisakka, Veikko; Krogerus, Helge; Tuovinen, Heikki; Mantymaki, Tarmo; and Lajunen, Erkki, to Outokumpu Oy. Electric furnace dome. 4,491,952, Cl. 373-74.000.
Hood, Grant W., Jr.: *See*—
Grab, George P.; Hood, Grant W., Jr.; Swanson, Sigurd A.; and Nemeth, Bela J., 4,491,559, Cl. 419-36.000.
Hoover, Merle V., to RCA Corporation. FET Negative resistance circuits. 4,491,807, Cl. 331-111.000.
Horbacio, Leon: *See*—
Laurus, Antoine; and Horbacio, Leon, 4,491,805, Cl. 331-18.000.
Hori, Saburo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Powdery material of minute composite ceramic particles having a dual structure and a process and an apparatus producing thereof. 4,491,482, Cl. 106-308.00B.
Horie, Hideo: *See*—
Saito, Akiro; Kamaya, Naoki; Endo, Junya; Ohba, Seisuke; Kumano, Akira; Ida, Yoshinori; and Horie, Hideo, 4,491,886, Cl. 360-85.000.
Horiuchi, Michimasa; and Sato, Hiroshi, to Hitachi, Ltd. Chopper control apparatus. 4,491,904, Cl. 364-130.000.
Horiuchi, Noriyuki: *See*—
Okumoto, Tadaoki; Sugimoto, Masatoshi; Horiuchi, Noriyuki; Sahara, Seiichi; Yamada, Tetsuo; Hashimoto, Kinrou; Ichikawa, Masayoshi; and Ninomiya, Fujio, 4,491,621, Cl. 428-519.000.
Horvath, Laszlo S., to C O D Inter Techniques SA. Weldable tear-off capping film for sealing packages. 4,491,224, Cl. 206-484.000.
Hoshino, Takashi: *See*—
Kojima, Noboru; Watatani, Yoshizumi; Arai, Takao; Hoshino, Takashi; and Shibuya, Toshifumi, 4,491,880, Cl. 360-19.100.
Hosie, James: *See*—
Waikas, Jack; and Hosie, James, 4,491,164, Cl. 144-194.000.
Hoskins, James J.; and Kessler, Adriaan, to Procter & Gamble Company, The. Liquid cleansing product with skin feel additives. 4,491,539, Cl. 252-541.000.
Hosogai, Takeo: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Hosogai, Takeo; and Nishida, Takashi, 4,491,465, Cl. 71-88.000.
Hosogaya, Hiroshi, to Epson Corporation. Paper cutting device for a printer. 4,491,046, Cl. 83-589.000.
Hostetler, Eldon, to Ziggity Systems, Inc. Watering system for fowl and small animals. 4,491,088, Cl. 119-72.500.
HRI, Inc.: *See*—
Kydd, Paul H., 4,491,955, Cl. 378-3.000.
Hsieh, Harry W. S.: *See*—
Rizk, Sidky D.; Hsieh, Harry W. S.; and Mazzeo, Michael P., 4,491,650, Cl. 525-102.000.
Hsu, Hsin-Hung: *See*—
Ashmead, Harvey H.; and Hsu, Hsin-Hung, 4,491,464, Cl. 71-11.000.
Hsu, Joseph C.; and Steen, Robert A., to American Can Company. Package having oil-containing product. 4,491,598, Cl. 426-127.000.
Hubner, Diethard, to Neumunstersche Maschinen- und Apparatebau Gesellschaft mbH (Neumag). Winding machine for automatic spool exchange. 4,491,282, Cl. 242-18.00A.
Hubner, Wolfgang: *See*—
Kimpel, Rolf-Dieter; Tamm, Horst; Hubner, Wolfgang; and Steiger, Erwin, 4,491,813, Cl. 335-187.000.
Huckler, Volker: *See*—
Benedek, Vasile; and Huckler, Volker, 4,491,039, Cl. 74-850.000.
Huebecher, Laszlo: *See*—
Menges, John R.; and Huebecher, Laszlo, 4,491,133, Cl. 128-326.000.
Hughes Aircraft Company: *See*—
Ellion, M. Edmund; and Donatelli, Philip A., 4,490,972, Cl. 60-39.462.
Paul, Jeffrey A., 4,491,977, Cl. 455-327.000.
Hughes, Jacqueline S.: *See*—
Hughes, Leland G.; and Hughes, Jacqueline S., 4,490,997, Cl. 70-233.000.
Hughes, Leland G.; and Hughes, Jacqueline S. Bicycle locking device. 4,490,997, Cl. 70-233.000.
Hughes Tool Company: *See*—
Baugh, John L., 4,491,177, Cl. 166-75.00R.
Burr, Bruce H.; Dolezal, George E.; and Galle, Edward M., 4,491,428, Cl. 384-93.000.
Knox, Dick L.; Leuthen, John M.; and Lockyear, Kevin W., 4,491,778, Cl. 318-803.000.
Regan, Albert M., 4,491,345, Cl. 285-18.000.
Salant, Richard F.; and Boyd, Clinton A., 4,491,331, Cl. 277-96.100.
Watkins, Bruce J., 4,491,439, Cl. 405-224.000.
Huignard, Jean-Pierre, to Thomson-CSF. Device for the heterodyne detection of an optical image. 4,491,867, Cl. 358-113.000.
Hunger, Josef; Klueber, Wilhelm; and Regelsberger, Wolfgang, to Hilti Aktiengesellschaft. Tool holder for hammer drills. 4,491,445, Cl. 409-234.000.
Hunziker, Gerhard: *See*—
Rieber, Norbert; Hellbach, Hans; Hunziker, Gerhard; and Mueller, Guenter, 4,491,674, Cl. 568-357.000.
Hurst, Jeffrey B.: *See*—
Bradley, Jerome R.; Halvorsen, Robert M.; Hurst, Jeffrey B.; and Long, Gregory F., 4,491,272, Cl. 239-5.000.
Hussey Manufacturing Company: *See*—
Sutter, David L.; Furbish, Ivan J.; Ferguson, Roland C.; Berry, Richard L.; and Barrows, Douglas P., 4,490,949, Cl. 52-9.000.
Hutchison, Wayne R., to Deere & Company. Riding mower linkage. 4,490,965, Cl. 56-11.600.
Huther, Gerhard: *See*—
Feist, Wieland; and Huther, Gerhard, 4,490,919, Cl. 33-290.000.
Hyatt, Gilbert P. Memory system using filterable signals. 4,491,930, Cl. 364-602.000.
Ichikawa, Masayoshi: *See*—
Okumoto, Tadaoki; Sugimoto, Masatoshi; Horiuchi, Noriyuki; Sahara, Seiichi; Yamada, Tetsuo; Hashimoto, Kinrou; Ichikawa, Masayoshi; and Ninomiya, Fujio, 4,491,621, Cl. 428-519.000.
Ichikawa, Teruo, to Minolta Camera Kabushiki Kaisha. Hearing aid coupled with a radio. 4,491,980, Cl. 455-344.000.
Ida, Mitsuru, to Sony Corporation. Pushbutton actuated cassette tape transport. 4,491,287, Cl. 242-200.000.

Ida, Yoshinori: *See*—
Saito, Akiro; Kamaya, Naoki; Endo, Junya; Ohba, Seisuke; Kumano, Akira; Ida, Yoshinori; and Horie, Hideo, 4,491,886, Cl. 360-85.000.

Idemitsu Kosan Company Limited: *See*—
Oda, Sumihiro; and Sato, Haruhito, 4,491,678, Cl. 585-466.000.

Idogaki, Takaharu; Kawai, Hisasi; Hattori, Kyo; and Sakurai, Kazuhiro, to Nippon Soken, Inc.; and Toyota Jidosha Kabushiki Kaisha. Rotary actuator. 4,491,815, Cl. 335-229.000.

Idol, Charles A. Transmitter testing method. 4,491,973, Cl. 455-115.000.

Iga, Akira; Odaka, Kentaro; and Yasuda, Nobuyuki, to Sony Corporation. Method for transmitting time-sharing multidata. 4,491,943, Cl. 370-13.000.

Igarashi, Isao: *See*—
Noguchi, Masaaki; Tanaka, Yukiyasu; and Igarashi, Isao, 4,491,096, Cl. 123-51.00B.

Iijima, Toshifumi; Koboshi, Shigeharu; and Yamazaki, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic material with microcapsules that dissolve at pH of at least 7. 4,491,627, Cl. 430-138.000.

Iisakka, Veikko: *See*—
Honkaniemi, Matti; Jankkila, Martti; Nurminen, Aimo; Virta, Matias; Iisakka, Veikko; Krogerus, Helge; Tuovinen, Heikki; Mantymaki, Tarmo; and Lajunen, Erkki, 4,491,952, Cl. 373-74.000.

Iizuka Electric Industry Company Ltd.: *See*—
Ishikawa, Kazuhiro, 4,491,382, Cl. 339-259.00R.

Ikari, Kunihiro: *See*—
Koike, Norio; Ito, Takeo; Watanabe, Shingo; and Ikari, Kunihiro, 4,491,629, Cl. 430-176.000.

Ikari Machine Tools Co., Ltd.: *See*—
Doeaka, Akira, 4,491,281, Cl. 242-4.00R.

Ikawa, Kenji; Tokuyama, Kanji; and Kiyokawa, Masumi, to Shionogi & Co., Ltd. Process for preparing L-ascorbic acid. 4,491,668, Cl. 549-315.000.

Ikoma, Tadashi; and Miyawaki, Syozo, to Ricoh Company, Ltd. Apparatus for discrimination of sheet transfer condition. 4,491,929, Cl. 364-563.000.

Imagawa, Kyoshiro; Sakuragi, Shiro; and Saitoh, Mitsunori, to Agency of Industrial Science & Technology. Construction for holding optical fibers. 4,491,385, Cl. 350-96.200.

Imamura, Shigeyuki; Misaki, Hideo; Ishikawa, Hidehiko; and Matsuura, Kazuo, to Toyo Jozo Kabushiki Kaisha. Assay method for lipid component, assay composition, and process for production of enzyme used therefor. 4,491,631, Cl. 435-4.000.

Imanaka, Yoshiaki: *See*—
Mitsuyama, Akira; and Imanaka, Yoshiaki, 4,491,407, Cl. 355-3.0TR.

Imperial Clevite Inc.: *See*—
Snee, David J., 4,491,168, Cl. 164-98.000.

Imperial Underground Sprinkler Co.: *See*—
Caviar, Lee, 4,491,686, Cl. 174-87.000.

Inaba, Hiroyoshi; Sumi, Akiyasu; Notagashira, Hidefumi; Katsuma, Makoto; Murakami, Hiroyasu; and Hiramatsu, Akira, to Canon Kabushiki Kaisha. Diaphragm device. 4,491,401, Cl. 354-271.100.

Inada, Kenichi: *See*—
Sakai, Shojo; Kato, Hisaaki; Samoto, Yoshihiko; and Inada, Kenichi, 4,491,831, Cl. 340-677.000.

Indian Explosives Ltd.: *See*—
Bhaduri, Sumit; Sharma, Krishna R.; and Kalpathi, Gopalkrishnan S., 4,491,670, Cl. 560-24.000.

Ingles, Wesley L. Attachable basket for invalid support equipment. 4,491,257, Cl. 224-42.45R.

Ingram, Gray L., to Spencer Wright Industries, Inc. Tufting machine hook and knife mounting apparatus. 4,491,078, Cl. 112-79.00R.

Ingvarsson, Kristjan: *See*—
Bachmann, Einar H.; and Ingvarsson, Kristjan, 4,491,927, Cl. 364-561.000.

Innse Innocenti Santeustacchio S.p.A.: *See*—
Dal Pan, Giacinto; and Morali, Giorgio, 4,491,170, Cl. 164-426.000.

Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,491,714, Cl. 219-69.00D.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method of and apparatus for electrical discharge machining using a gas dissolved water liquid. 4,491,714, Cl. 219-69.00D.

Inoue, Tomohiro: *See*—
Mizuta, Takemi; and Inoue, Tomohiro, 4,491,049, Cl. 84-1.010.

Inoue, Yoichi: *See*—
Asari, Akira; Inoue, Yoichi; and Iahii, Takahiko, 4,491,302, Cl. 266-87.000.

Inspection Technology Inc.: *See*—
Berridge, Lawrence F., Jr.; and Novini, Amir R., 4,491,868, Cl. 358-139.000.

Institut fur Hochseefischerei und Fischverarbeitung: *See*—
Holm, Wilfried; Kloos, Jurgen; and Natke, Gerhard, 4,491,052, Cl. 87-3.000.

Intech Corporation: *See*—
LaChapelle, Philip S., 4,491,255, Cl. 223-37.000.

International Business Machines Corporation: *See*—
Aviram, Ari; and Shih, Kwang K., 4,491,431, Cl. 400-241.100.
Aviram, Ari; and Shih, Kwang K., 4,491,432, Cl. 400-241.100.
Calvignac, Jean; Granger, Yves; and Masclet, Andre, 4,491,913, Cl. 364-200.000.
Chang, Ifay F., 4,491,762, Cl. 313-392.000.
Chappell, Barbara A.; and Schuster, Stanley E., 4,491,748, Cl. 307-449.000.
Clark, Gregory J.; Drake, Robert E.; and Raider, Stanley I., 4,490,901, Cl. 29-574.000.
Gaccetta, Carl M.; and Lutz, Terry J., 4,491,222, Cl. 206-394.000.
Ito, Hiroshi; Willson, Carlton G.; and Frechet, Jean M. J., 4,491,628, Cl. 430-176.000.
Shimizu, Yutaka, 4,491,909, Cl. 364-200.000.
West, Lynn P., 4,491,838, Cl. 340-825.050.

International Coal Refining Company: *See*—
Skinner, Ronald W.; Tao, John C.; and Znaimer, Samuel, 4,491,511, Cl. 208-8.0LE.

International Design Corporation: *See*—
Woods, William D.; and Pigman, John H., 4,490,921, Cl. 33-476.000.

International Flavors & Fragrances Inc.: *See*—
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,491,537, Cl. 252-522.00R.

International Shoe Machine Corporation: *See*—
Becka, Michael M., 4,490,868, Cl. 12-14.400.

InterNorth, Inc.: *See*—
Busse, Paul J., 4,491,638, Cl. 502-167.000.

Intoh, Kiyoshi: *See*—
Umemura, Kazuhiro; Sampei, Tohru; Nakata, Kazuo; Sato, Hirokazu; Murakami Kenya; and Intoh, Kiyoshi, 4,491,958, Cl. 381-51.000.

Ioptex Inc.: *See*—
Rainin, E. A., 4,490,860, Cl. 3-13.000.

Ishibashi, Tadashi: *See*—
Ishida, Masahiko; Haga, Ryoichi; Ishibashi, Tadashi; and Odawara, Yoji, 4,491,522, Cl. 210-603.000.

Ishida, Masahiko; Haga, Ryoichi; Ishibashi, Tadashi; and Odawara, Yoji, to Agency of Industrial Science & Technology. Anaerobic digestion process for organic wastes. 4,491,522, Cl. 210-603.000.

Ishida, Yukinori: *See*—
Negishi, Yukiyasu; Ishida, Yukinori; Saito, Yasunori; and Tanaka, Shigeru, 4,491,386, Cl. 350-96.230.

Ishigaki, Masahiro: *See*—
Matoba, Taketo; Morita, Yasuhiro; Arai, Noritoshi; Ishigaki, Masahiro; and Harada, Hiroshi, 4,491,429, Cl. 384-221.000.

Ishii, Daisuke: *See*—
Nagata, Koichi; and Ishii, Daisuke, 4,491,978, Cl. 455-338.000.

Ishii, Norihisa: *See*—
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Ishii, Takahiko: *See*—
Asari, Akira; Inoue, Yoichi; and Ishii, Takahiko, 4,491,302, Cl. 266-87.000.

Ishikawa, Hidehiko: *See*—
Imamura, Shigeyuki; Misaki, Hideo; Ishikawa, Hidehiko; and Matsuura, Kazuo, 4,491,631, Cl. 435-4.000.

Ishikawa, Kazuhiro, to Iizuka Electric Industry Company Ltd. Resilient contact member of jack for use in conjunction with pin plug. 4,491,382, Cl. 339-259.00R.

Ishikawa, Nobumitsu; Takaoka, Hiroshi; and Fukuda, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Output control systems of combined cycle type electric power generating systems. 4,491,737, Cl. 290-40.00R.

Ishikawa, Takatoshi; Mitsui, Akio; Morigaki, Masakazu; and Nakamura, Takashi, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,491,630, Cl. 430-372.000.

Ishizaki, Akira: *See*—
Sakai, Shinji; Harada, Yoshihito; Ishizaki, Akira; and Kawabata, Takashi, 4,491,403, Cl. 354-409.000.

Ishizaki, Takaharu; Nagai, Takeshi; and Yamazaki, Shingo, to Nippon Oil and Fats Co., Ltd. Method for improving cold flow of fuel oils. 4,491,455, Cl. 44-62.000.

Iskiw, Metro; and Hadican, Alex. Fish scaler. 4,490,885, Cl. 17-66.000.

Isobe, Takashi; and Kamata, Shigeru, to Canon Kabushiki Kaisha. Automatic focusing zoom lens mounting. 4,491,396, Cl. 350-429.000.

Israel Aircraft Industries, Ltd.: *See*—
Bar-Nefy, Simcha; and Tiomkin, Michael, 4,491,053, Cl. 89-1.130.

Itaya, Masahiko; Haneda, Satoshi; and Tomono, Makoto, to Konishiroku Photo Industry Co., Ltd. Means for developing an electrostatic latent image. 4,491,083, Cl. 118-657.000.

Ito, Hiroshi; Willson, Carlton G.; and Frechet, Jean M. J., to International Business Machines Corporation. Positive- and negative-working resist compositions with acid generating photoinitiator and polymer with acid labile groups pendant from polymer backbone. 4,491,628, Cl. 430-176.000.

Ito, Hiroshi: *See*—
Kobayashi, Nobuyuki; and Ito, Hiroshi, 4,491,922, Cl. 364-431.070.

Ito, Jiro; Kitano, Masuo; and Sakamoto, Kenji, to Shamauchi Kieki Kabushiki Kaisha; and Kabushiki Kaisha Suwa Seikosha. Electronic analog timepiece with rotation detection circuit. 4,491,424, Cl. 368-157.000.

Ito, Takashi: *See*—
Hijiya, Shinpei; and Ito, Takashi, 4,491,859, Cl. 357-41.000.

Ito, Takeo: *See*—
Koike, Norio; Ito, Takeo; Watanabe, Shingo; and Ikari, Kunihiro, 4,491,629, Cl. 430-176.000.

Ito, Tatsuo, to Fujitsu Ten Limited. Radio receiver of electronic tuning system having automatic presetting circuit. 4,491,975, Cl. 455-166.000.

Ito, Tetsuro, to Mitsubishi Denki Kabushiki Kaisha. Fabricating machine. 4,491,712, Cl. 219-69.00G.

Itoh, Mikio: *See*—
Ozawa, Hidekiyo; Itoh, Mikio; and Yoshida, Akira, 4,491,935, Cl. 364-900.000.

Itoh, Takaaki: *See*—
Nakamura, Norihiko; Itoh, Takaaki; and Morino, Toshiharu, 4,491,550, Cl. 261-44.00C.
ITT Industries, Inc.: *See*—
Adam, Fritz G., 4,491,839, Cl. 340-825.910.
Flamm, Peter M., 4,491,862, Cl. 358-21.00R.
Von Grunberg, Hubertus; Corey, Frederick; and Rowell, Jonathan M., 4,491,340, Cl. 280-668.000.
Ittner, Gary N.: *See*—
Ittner, Nelson C.; and Ittner, Gary N., 4,491,265, Cl. 228-181.000.
Ittner, Nelson C.; and Ittner, Gary N. Method of aligning honeycomb cells. 4,491,265, Cl. 228-181.000.
Ivanoff, Osmo O. Apparatus for manufacturing a metal pipe. 4,491,004, Cl. 72-168.000.
Ivanov, Jury P. Method for assembling a complete module of multideck ship hull. 4,491,081, Cl. 114-77.00R.
Iwai, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing a semiconductor device. 4,491,486, Cl. 148-105.000.
Iwai, Masatoshi: *See*—
Kokubo, Ichiro; Kirihara, Shigeki; Sakai, Hirohiko; and Iwai, Masatoshi, 4,491,623, Cl. 428-658.000.
Iwamura, Jun, to Tokyo Shibaura Denki Kabushiki Kaisha. Three-output level logic circuit. 4,491,749, Cl. 307-473.000.
Iwasaki, Masaharu: *See*—
Suzuki, Kaichiro; Nakaya, Keiichi; Gotoh, Tomohiro; Kitasako, Masayuki; and Iwasaki, Masaharu, 4,491,571, Cl. 423-485.000.
Iwatsu Electric Co., Ltd.: *See*—
Uchida, Kosei; and Matsuno, Keishi, 4,491,802, Cl. 330-260.000.
Iyer, L. Srinivasa, to South Dakota School of Mines and Technology. Apparatus for measuring dimensional change of materials. 4,491,017, Cl. 73-432.100.
Jaklic, Fred, to Grayhill, Inc. Detenting and contact registration system for a linear dip switch. 4,491,703, Cl. 200-16.00D.
Jalbert, Ronald L.: *See*—
Falk, John C.; Jalbert, Ronald L.; and Khait, Klementina F., 4,491,649, Cl. 525-92.000.
James, Michael J., to Micro & Precision Mouldings (Cheltenham) Limited. Reciprocatory devices. 4,491,353, Cl. 292-75.000.
James River-Dixie/Northern, Inc.: *See*—
Martin, Leslie L., Jr., 4,491,502, Cl. 162-146.000.
Jamison, Mark D. Liquid dispensing container. 4,491,245, Cl. 222-107.000.
Janeway, Robert K.: *See*—
Palmer, James K.; and Janeway, Robert K., 4,491,798, Cl. 324-425.000.
Jankkila, Martti: *See*—
Honkaniemi, Matti; Jankkila, Martti; Nurminen, Aimo; Virta, Matias; Iisakka, Veikko; Krogerus, Helge; Tuovinen, Heikki; Mantymaki, Tarmo; and Lajunen, Erkki, 4,491,952, Cl. 373-74.000.
Janovac, Stephen J., to W. S. Tyler Incorporated. Multi-dimensional screen. 4,491,517, Cl. 209-401.000.
Janutka, William J., to Eaton Corporation. Bidirectionally source stacked FETs with drain-referenced common gating. 4,491,750, Cl. 307-577.000.
Jarosz, John M., to S&C Electric Company. Device for terminating a fusible element of an interrupting module. 4,491,820, Cl. 337-159.000.
Jaye, Richard C. Filter for water jugs. 4,491,520, Cl. 210-232.000.
Jeco Precision Co., Ltd.: *See*—
Young-Koo, Ahn, 4,491,425, Cl. 368-317.000.
Jerde, Leslie G.; Lory, Earl R.; Muething, Kevin A.; and Tsou, Len Y., to AT&T Technologies, Inc. Optical emission end point detector. 4,491,499, Cl. 156-626.000.
Jimena, Carlos L. Electric stapler. 4,491,260, Cl. 227-7.000.
Jimenez, Antonio; and Baruffa, Olindo, to Mefina S.A. Flexible support for an ironing press hinge. 4,490,930, Cl. 38-32.000.
Jingu, Masaharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Adaptor for ultrasonic transducer probe. 4,491,137, Cl. 128-660.000.
Jinnai, Koichiro, to Ricoh Company, Ltd. Ink jet printing apparatus using guard drops. 4,491,852, Cl. 346-75.000.
Jodry, Dean L.: *See*—
Thompson, William I.; Welter, Mark F.; and Jodry, Dean L., 4,491,200, Cl. 187-61.000.
Johansson, Rolf A. G., to AB Electrolux Motor Aktiebolag. Arrangement in an i.c. engine. 4,491,105, Cl. 123-335.000.
Johnson, Alfred D. Two-way shape memory alloy heat engine. 4,490,976, Cl. 60-527.000.
Johnson, Bruce K., to Polaroid Corporation. Method and apparatus employing dual photocells for removing spectral filter during strobe pulse. 4,491,406, Cl. 354-416.000.
Johnson, Dennis E. J. Method and device for in-line mass dispersion transfer of a gas flow into a liquid flow. 4,491,551, Cl. 261-76.000.
Johnson, Kendrick A. Stackable food service carrier. 4,491,233, Cl. 220-23.830.
Johnson, Wilfred V.: *See*—
Logan, Frank G.; and Johnson, Wilfred V., 4,491,352, Cl. 285-373.000.
Johnston, Howard; and Troxell, Lillian H., to Dow Chemical Company, The. Herbicidal trifluoromethyl pyridinyloxyphenoxy and pyridinylthiophenoxy propanenitriles and derivatives thereof. 4,491,468, Cl. 71-94.000.
Johnston Pump/General Valve, Inc.: *See*—
Williams, Kenneth R.; McClaran, Mark R.; and Giacobbi, Peter D., 4,491,145, Cl. 137-312.000.
Johnston, Thomas J., to Reynolds Metals Company. Composite pellet for use as a carbothermic reduction feed. 4,491,471, Cl. 75-0.50R.
Joiner, James R., Jr., to Du Pont de Nemours, E. I., and Company. Flexible, nonstaining topcoat for an X-ray intensifying screen. 4,491,620, Cl. 428-421.000.
Jones, Gary W.: *See*—
Morcerf, Lester A.; Kiefer, Charles E.; Jones, Gary W.; and Conditt, John E., 4,491,966, Cl. 455-32.000.
Jones, Howard: *See*—
Loev, Bernard; Jones, Howard; and Suh, John T., 4,491,582, Cl. 424-250.000.
Jones, Richard R. Convertible backpack. 4,491,258, Cl. 224-153.000.
Jones, Thomas M.: *See*—
Rapp, Gunther; Thomas, Erwin; Muenster, Rolf; Caffall, Brodus E.; Cyr, Philip A.; and Jones, Thomas M., 4,491,567, Cl. 423-387.000.
Jones, Wayne G.: *See*—
Wilcock, Hal J., 4,491,234, Cl. 220-90.000.
Joos, Eugen: *See*—
Gessler, Hermann; Joos, Eugen; Jundt, Werner; Kubech, Hans; and Singer, Erich, 4,491,113, Cl. 123-490.000.
Joy Manufacturing Company: *See*—
Peters, Clifford M., 4,491,154, Cl. 137-625.660.
Jundt, Werner: *See*—
Gessler, Hermann; Joos, Eugen; Jundt, Werner; Kubech, Hans; and Singer, Erich, 4,491,113, Cl. 123-490.000.
Juriga, Jan; and Muller, Ingo, to U.S. Philips Corporation. Toaster. 4,491,066, Cl. 99-391.000.
Kabushiki Kaisha Ishida Koki Seisakusho: *See*—
Fukuda, Masao, 4,491,189, Cl. 177-1.000.
Kabushiki Kaisha Kobe Seiko Sho: *See*—
Asari, Akira; Inoue, Yoichi; and Ishii, Takahiko, 4,491,302, Cl. 266-87.000.
Kokubo, Ichiro; Kirihara, Shigeki; Sakai, Hirohiko; and Iwai, Masatoshi, 4,491,623, Cl. 428-658.000.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Abe, Riichi; Tsuruta, Katsuji; and Tsujikado, Seiji, 4,491,266, Cl. 228-225.000.
Kabushiki Kaisha Meidensha: *See*—
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,491,918, Cl. 364-424.000.
Kabushiki Kaisha Sunpak: *See*—
Tsuruta, Yuzo, 4,491,405, Cl. 354-416.000.
Kabushiki Kaisha Suwa Seikosha: *See*—
Ito, Jiro; Kitano, Masao; and Sakamoto, Kenji, 4,491,424, Cl. 368-157.000.
Kabushiki Kaisha Toyoda Jidoh Shokki Seisakusho: *See*—
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,491,918, Cl. 364-424.000.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Arakawa, Akio, 4,491,905, Cl. 364-181.000.
Kaczerginski, Alexandre; and Kaminski, Jean-Jacques, to Societe Anonyme dite: Ceraver. Method of manufacturing a composite type stay insulator, and an insulator obtained by the method. 4,491,687, Cl. 174-178.000.
Kadota, Shinkichi; and Yamase, Tsuyoshi, to Rhythm Motor Parts Manufacturing Company Limited. Hydraulic pressure control valve for automobile brake mechanism. 4,491,371, Cl. 303-6.00C.
Kainaga, Masahiro; Sakoda, Kousuke; and Nakaniahi, Hiroaki, to Hitachi, Ltd. Data processing system with improved microsubroutine facility. 4,491,912, Cl. 364-200.000.
Kajihara, Akiharu: *See*—
Katoh, Yoshinori; Tajima, Tetsuya; Yamatsu, Isao; Suzuki, Takeshi; Abe, Shinya; Kajihara, Akiharu; and Sugitani, Tohru, 4,491,592, Cl. 424-318.000.
Kakimoto, Toshihiko; Konishi, Keizo; Yoschama, Teruo; and Yamamoto, Takao, to Nissan Motor Company, Limited. Fluid-filled engine mount device. 4,491,304, Cl. 267-140.100.
Kalognomos, Viktor I.: *See*—
Belyavsky, Alexandr D.; Borozdinov, Gennady M.; Vasiliev, Vitaly M.; Kalognomos, Viktor I.; Komov, Nikolai A.; Pavlov, Gennady A.; Persits, Evgeny L.; Sergienko, July M.; Svirin, Jury A.; and Titov, Boris V., 4,491,314, Cl. 272-63.000.
Kalpathi, Gopalkrishnan S.: *See*—
Bhaduri, Sumit; Sharma, Krishna R.; and Kalpathi, Gopalkrishnan S., 4,491,670, Cl. 560-24.000.
Kamalski, Theodor I. E., to U.S. Philips Corporation. FM-Receiver having multipath reception detector and noise pulse suppression. 4,491,957, Cl. 381-13.000.
Kamata, Keiji: *See*—
Nishizawa, Toshio; Kamata, Keiji; Nonomura, Osamu; and Fukushi, Yutaka, 4,491,061, Cl. 98-34.600.
Kamata, Shigeru: *See*—
Isobe, Takashi; and Kamata, Shigeru, 4,491,396, Cl. 350-429.000.
Kamaya, Naoki: *See*—
Saito, Akiro; Kamaya, Naoki; Endo, Junya; Obba, Seisuke; Kumano, Akira; Ida, Yoshinori; and Horie, Hideo, 4,491,886, Cl. 360-85.000.
Kaminski, Jean-Jacques: *See*—
Kaczerginski, Alexandre; and Kaminski, Jean-Jacques, 4,491,687, Cl. 174-178.000.
Kamp, Anthony-Willem, to Shell Internationale Research Maatschappij, B.V. Means for generating electricity during drilling of a borehole. 4,491,738, Cl. 290-43.000.
Kanagawa, Kozi: *See*—
Kobayashi, Yoshinobu; Ueno, Tamio; and Kanagawa, Kozi, 4,491,967, Cl. 455-41.000.

Kanamaru, Hitoshi, to Pioneer Video Corporation. Cross-talk detector in information-carrying disc player. 4,491,877, Cl. 358-336.000.
Kanegae, Hidetoshi; Asano, Masaharu; Yamahara, Seishi; and Nakajima, Masao, to Nissan Motor Company, Limited. Failsafe for an engine control. 4,491,112, Cl. 123-479.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Hamakawa, Yoshihiro; and Tawada, Yoshihisa, 4,491,682, Cl. 136-256.000.
Kantner, Edward, to Exxon Research & Engineering Co. Zinc-bromine batteries with improved electrolyte. 4,491,625, Cl. 429-50.000.
Karickhoff, John R., to Surgidev Corporation. Hand-held keratometer. 4,491,398, Cl. 351-211.000.
Karita, Toshiaki: *See*—
Hayashi, Motohiko; Karita, Toshiaki; Kotani, Matahira; and Sasaki, Hiromu, 4,491,853, Cl. 346-76.0PH.
Kasagi, Yoshitaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Matrix circuit for processing plural signals. 4,491,801, Cl. 330-69.000.
Kashioka, Seiji: *See*—
Sakoe, Hiroshi; and Kashioka, Seiji, 4,491,962, Cl. 382-50.000.
Katagiri, Tsutomu: *See*—
Yamada, Hisashi; Makise, Masayuki; Katagiri, Tsutomu; and Abe, Kaname, 4,491,553, Cl. 264-51.000.
Kato, Hisaki: *See*—
Sakai, Shojo; Kato, Hisaki; Samoto, Yoshihiko; and Inada, Kenichi, 4,491,831, Cl. 340-677.000.
Kato, Masaaki: *See*—
Fujii, Isao; Nishimura, Hiroyuki; and Kato, Masaaki, 4,491,104, Cl. 123-291.000.
Kato, Yoshinobu, to San Arrow Koeki Company Ltd. Key-top panel and keyboard structure using the panel. 4,491,702, Cl. 200-5.00A.
Katoh, Yoshinori; Tajima, Tetsuya; Yamatsu, Isao; Suzuki, Takeshi; Abe, Shinya; Kajihara, Akiharu; and Sugitani, Tohru, to Eisai Co., Ltd. Method for treatment of inflammation. 4,491,592, Cl. 424-318.000.
Katsuma, Makoto: *See*—
Inaba, Hiroyoshi; Sumi, Akiyasu; Notagashira, Hidefumi; Katsuma, Makoto; Murakami, Hiroyasu; and Hiramatsu, Akira, 4,491,401, Cl. 354-271.100.
Kawabata, Takashi: *See*—
Sakai, Shinji; Harada, Yoshihito; Ishizaki, Akira; and Kawabata, Takashi, 4,491,403, Cl. 354-409.000.
Kawachi, Shoji: *See*—
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Kawahara, Hiroshi, to Brother Kogyo Kabushiki Kaisha. Printing hammer driver mechanism. 4,491,069, Cl. 101-93.030.
Kawaharazuka, Yukio, to Kioritz Corporation. Vibration damping device for mowing machine. 4,491,184, Cl. 173-162.00R.
Kawai, Hisao: *See*—
Idogaki, Takaharu; Kawai, Hisao; Hattori, Kyo; and Sakurai, Kazuhiro, 4,491,815, Cl. 335-229.000.
Kawamata, Masaru: *See*—
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,491,918, Cl. 364-424.000.
Kawamoto, Hiroshi, to Hitachi, Ltd. Dynamic storage device with extended information holding time. 4,491,858, Cl. 357-41.000.
Kawamura, Naoto, to Canon Kabushiki Kaisha. Apparatus and method for tonal image processing. 4,491,875, Cl. 358-298.000.
Kawamura, Takao; and Yoshida, Masazumi, to Minolta Camera Kabushiki Kaisha; Takao Kawamura; and Kyocera Corp. Photosensitive member. 4,491,626, Cl. 430-69.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Yoshida, Toshio; and Atsuta, Toshio, 4,491,001, Cl. 72-76.000.
Kawasaki Steel Corporation: *See*—
Funyu, Yutaka; Okumura, Tadashi; Monno, Aso; and Shimizu, Masami, 4,491,731, Cl. 250-358.100.
Kawashima, Yukio, to Mizuno Corporation. Mid-sole of a shoe. 4,490,928, Cl. 36-69.000.
Kawata, Shun: *See*—
Tamura, Takashi; and Kawata, Shun, 4,491,161, Cl. 141-364.000.
Kayaba KKK: *See*—
Mizumukai, Ken; and Higuchi, Shinichi, 4,491,339, Cl. 280-668.000.
Kazuoka, Koji: *See*—
Suganuma, Tetsuya; Kazuoka, Koji; Fujita, Shuichi; Takahashi, Yoshitaka; and Okujo, Takeshi, 4,491,477, Cl. 75-230.000.
Keen, Jack H., to Aero Engineering Corporation. Helicopter heating and air conditioning system. 4,490,989, Cl. 62-243.000.
Keisuke Honda: *See*—
Chubachi, Noriyoshi, 4,491,020, Cl. 73-606.000.
Kelly, Michael F.; and Kelly, William R. Device for supporting animals. 4,491,089, Cl. 119-103.000.
Kelly, William R.: *See*—
Kelly, Michael F.; and Kelly, William R., 4,491,089, Cl. 119-103.000.
Kembo, Yukio: *See*—
Akiyama, Nobuyuki; Kembo, Yukio; and Nakagawa, Yasuo, 4,491,787, Cl. 324-71.500.
Kennametal Inc.: *See*—
Grab, George P.; Hood, Grant W., Jr.; Swanson, Sigurd A.; and Nemeth, Bela J., 4,491,559, Cl. 419-36.000.
Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Abraham A., to Buddy L Corporation. Hard top convertible toy vehicle. 4,490,939, Cl. 446-448.000.
Kennedy, Thomas H. Automotive fiberglass body. 4,491,362, Cl. 296-183.000.
Kessler, Adriaan: *See*—
Hoskins, James J.; and Kessler, Adriaan, 4,491,539, Cl. 252-541.000.
Khait, Klementina F.: *See*—
Falk, John C.; Jalbert, Ronald L.; and Khait, Klementina F., 4,491,649, Cl. 525-92.000.
Kidde, Inc.: *See*—
Mentzer, William R.; and Bernabe, Vincent, Jr., 4,490,951, Cl. 52-115.000.
Kiefer, Charles E.: *See*—
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Kikuchi, Toru: *See*—
Saito, Takayuki; Kikuchi, Toru; Obara, Masakatsu; and Kobayashi, Akihiro, 4,491,667, Cl. 549-302.000.
Kikuya, Satoshi: *See*—
Morikawa, Toshinori; Minamide, Seiko; Kikuya, Satoshi; Terada, Hiroshi; Zaitsu, Osamu; and Shibaike, Narito, 4,491,885, Cl. 360-85.000.
Kime, James W. Combination foldable table and beach unit. 4,491,363, Cl. 297-126.000.
Kimpel, Rolf-Dieter; Tamm, Horst; Hubner, Wolfgang; and Steiger, Erwin, to Siemens Aktiengesellschaft. Electromagnetic relay. 4,491,813, Cl. 335-187.000.
Kimura, Kenji, to Olympus Optical Co., Ltd. Motor apparatus using PWM drive currents. 4,491,771, Cl. 318-254.000.
Kimura, Tomoaki; and Miyakozawa, Keiji, to Hitachi, Ltd. Rolling mill. 4,491,005, Cl. 72-201.000.
King, Bernard G.: *See*—
Candy, James C.; and King, Bernard G., 4,491,982, Cl. 455-607.000.
King, Paul F.: *See*—
Collmeyer, Arthur J.; Hoel, Jeffrey H.; King, Paul F.; Stanley, Donald O.; and Sturgeon, Roger, 4,491,836, Cl. 340-747.000.
King-Seeley Thermos Co.: *See*—
Chapman, Jacque W., 4,491,239, Cl. 220-337.000.
Kinjo, Hisao; and Ozawa, Keiji, to Victor Company of Japan, Ltd. Reproducing stylus for an information signal recording medium. 4,491,941, Cl. 369-126.000.
Kinsey, James L., to United States of America, Air Force. Flameholder with integrated air mixer. 4,490,973, Cl. 60-261.000.
Kioritz Corporation: *See*—
Kawaharazuka, Yukio, 4,491,184, Cl. 173-162.00R.
Kipelainen, Ossi; Kuhasalo, Antti; and Kyytsonen, Juhani, to Enso-Gutzeit Oy. Bark press. 4,491,067, Cl. 100-121.000.
Kira, Gene S.; and Sorensen, Jens O. Geographically positioned, environmental, solar humidification energy conversion. 4,490,980, Cl. 60-641.800.
Kireev, Ivan N.: *See*—
Gorodetsky, Alexandr A.; Gromov, Nikolai N.; Kulzhinsky, Vladimir L.; Marus, Rudolf A.; Rykin, Solomon E.; Samoilov, Pavel B.; Shamov, Alexandr N.; Sharygin, Nikolai V.; and Kireev, Ivan N., 4,490,922, Cl. 34-1.000.
Kirihara, Shigeki: *See*—
Kokubo, Ichiro; Kirihara, Shigeki; Sakai, Hirohiko; and Iwai, Masatoshi, 4,491,623, Cl. 428-658.000.
Kirlin, John J.: *See*—
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Kirpich, Aaron S., to United States of America, Energy. Liquid cooled, linear focus solar cell receiver. 4,491,681, Cl. 136-246.000.
Kishi, Hajimu; and Seki, Masaki, to Fujitsu Fanuc Limited. Method of creating curved surface. 4,491,906, Cl. 364-191.000.
Kishi, Noriyuki; and Koumura, Takashi, to Honda Motor Co., Ltd. Idling rpm feedback control method having fail-safe function for abnormalities in the functioning of the throttle valve opening detecting means of an internal combustion engine. 4,491,109, Cl. 123-339.000.
Kishi, Noriyuki: *See*—
Hasegawa, Shumpei; Kishi, Noriyuki; and Koumura, Takashi, 4,491,107, Cl. 123-339.000.
Kissell, Ronald E., to Owens-Corning Fiberglas Corporation. Apparatus for curing fibrous mineral insulation material. 4,490,927, Cl. 34-155.000.
Kistner, Heinz; and Schrotz, Kurt, to Esselte Pendaflex Corporation. Hand labeling apparatus. 4,491,497, Cl. 156-384.000.
Kitagawa, Tsuneo: *See*—
Sugiura, Masamichi; and Kitagawa, Tsuneo, 4,491,827, Cl. 340-365.00R.
Kitano, Masuo: *See*—
Ito, Jiro; Kitano, Masuo; and Sakamoto, Kenji, 4,491,424, Cl. 368-157.000.
Kitasako, Masayuki: *See*—
Suzuki, Kaichiro; Nakaya, Keiichi; Gotoh, Tomohiro; Kitasako, Masayuki; and Iwasaki, Masaharu, 4,491,571, Cl. 423-485.000.
Kiyokawa, Masumi: *See*—
Ikawa, Kenji; Tokuyama, Kanji; and Kiyokawa, Masumi, 4,491,668, Cl. 549-315.000.
Kiyoshi, Kawamata. Can end having integral opening means. 4,491,236, Cl. 220-269.000.
Klein, Edward P., to Westvaco Corporation. Method for washing a fibrous particle mat with wash liquor having an impact energy sufficient to disrupt and rearrange the interstitial pore matrix. 4,491,501, Cl. 162-60.000.
Klein, Harvey A. Surgical needle holder. 4,491,135, Cl. 128-340.000.
Klein, Jurgen: *See*—
Degel, Josef; Henning, Klaus-Dirk; Klein, Jurgen; and Wybrands, Klaus, 4,491,609, Cl. 427-215.000.

Kleinewefers GMBH: *See*—
Frey, Josef; Hartwich, Gerhard; and Prey, Jorg, 4,491,283, Cl. 242-67.10R.
Klemsrud, James H., to Doboy Packaging Machinery, Inc. Apparatus and method for closing reclosable bags. 4,490,960, Cl. 53-135.000.
Klockner-Humboldt-Deutz AG: *See*—
Bauer, Hans; and Schmitz, Heinz-Wilhold, 4,491,277, Cl. 241-5.000.
Hilbrans, Hermann; and Rao, Chetty, 4,491,470, Cl. 75-5.000.
Kloos, Jurgen: *See*—
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Klueber, Wilhelm: *See*—
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Kmak, Walter S.: *See*—
Fung, Shun C.; Weissman, Walter; Carter, James L.; and Kmak, Walter S., 4,491,635, Cl. 502-37.000.
Knapp, Michael D., to Eastern Metal of Elmira, Inc. Rigid mechanical corner pocket for tensioning flexible signs and signal devices. 4,490,934, Cl. 40-603.000.
Knepler, John T.; and Bachman, Wesley J., to Dickey-john Corporation. Grain drill monitor. 4,491,241, Cl. 221-3.000.
Knippenberg, Burkhard: *See*—
Scherowsky, Gunther; Moller, Alexander; Heppke, Gerd; and Knippenberg, Burkhard, 4,491,532, Cl. 252-299.100.
Knox, Dick L.; Leuthen, John M.; and Lockyear, Kevin W., to Hughes Tool Company. Motor variable frequency drive. 4,491,778, Cl. 318-803.000.
Knudsen, David S. Packaging machine. 4,490,963, Cl. 53-559.000.
Knudsen, Ronald D.: *See*—
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Kobayashi, Akihiro: *See*—
Saito, Takayuki; Kikuchi, Toru; Obara, Masakatsu; and Kobayashi, Akihiro, 4,491,667, Cl. 549-302.000.
Kobayashi, Fumiyuki: *See*—
Soga, Tasao; Suzuki, Takaya; Okamura, Masahiro; Gooda, Masahiro; and Kobayashi, Fumiyuki, 4,491,562, Cl. 420-589.000.
Kobayashi, Hisashi: *See*—
Mizusawa, Takehisa; Abe, Seizaburo; Ohno, Jiro; and Kobayashi, Hisashi, 4,491,487, Cl. 148-6.210.
Kobayashi, Nobuyuki; and Ito, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for controlling stepping motor in idling rotational speed control. 4,491,922, Cl. 364-431.070.
Kobayashi, Yoshinobu; Ueno, Tamio; and Kanagawa, Kozi, to Sumitomo Electric Industries, Ltd.; and Mitsui Engineering & Shipbuilding Co., Ltd. Systems for locating mobile objects by inductive radio. 4,491,967, Cl. 455-41.000.
Koblitz, Francis F.; and Smith, Roy L., to Dentsply Research & Development Corp. Process for restoring teeth with visible light curable compositions. 4,491,453, Cl. 433-217.000.
Koboshi, Shigeharu: *See*—
Iijima, Toshifumi; Koboshi, Shigeharu; and Yamazaki, Hiroshi, 4,491,627, Cl. 430-138.000.
Kochan, David A.: *See*—
Dudacek, Wayne E.; Kochan, David A.; and Zobel, Henry F., 4,491,483, Cl. 127-33.000.
Koehl, Richard; and Lerman, Michael J., to De Dietrich (USA), Inc. Impeller assembly and shaft having interference fit. 4,491,421, Cl. 366-247.000.
Koehring Canada Limited: *See*—
Kurelek, John, 4,491,163, Cl. 144-336.000.
Koeppen, Peter L.; Rogers, Gerald; Brown, Sammy K.; and Solimeno, Duane, to Texas Instruments Incorporated. Plurality of processors sharing the memory, the arithmetic logic unit and control circuitry all on a single semiconductor chip. 4,491,907, Cl. 364-200.000.
Koga, Yoshikazu; and Fukuya, Hiroyuki. Apparatus for directly and continuously weighing continuously fed powder or particle substances. 4,491,243, Cl. 222-55.000.
Kohler, Peter: *See*—
Biermann, Hans-Peter; Kohler, Peter; and Heine, Heinrich, 4,491,619, Cl. 428-403.000.
Koide, Hiroshi, to Toyota Jidosha Kabushiki Kaisha. Apparatus for supplying cooled fuel to an engine. 4,491,117, Cl. 123-541.000.
Koike, Hideharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Self-substrate-bias circuit device. 4,491,746, Cl. 307-296.00R.
Koike, Norio; Ito, Takeo; Watanabe, Shingo; and Ikari, Kunihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Water soluble photoresist composition with bisazide, diazo, polymer and silane. 4,491,629, Cl. 430-176.000.
Kojima, Noboru; Watatani, Yoshizumi; Arai, Takao; Hoshino, Takashi; and Shibuya, Toshifumi, to Hitachi, Ltd. Magnetic recording and/or reproducing apparatus. 4,491,880, Cl. 360-19.100.
Kokubo, Ichiro; Kirihara, Shigeki; Sakai, Hirohiko; and Iwai, Masatoshi, to Kabushiki Kaisha Kobe Seiko Sho. Double-layer electroplated steel article with corrosion resistance after painting and wet adhesion of paint film. 4,491,623, Cl. 428-658.000.
Kolb, Eugen, to Dr. Ing. h.c.F. Porsche AG. Installation for fastening a lower edge area of a top cover at a rear frame of a motor vehicle. 4,491,361, Cl. 296-107.000.
Komov, Nikolai A.: *See*—
Belyavsky, Alexandr D.; Borosdinov, Gennady M.; Vasiliev, Vitaly M.; Kalognomos, Viktor I.; Komov, Nikolai A.; Pavlov, Gennady A.; Persits, Evgeny L.; Sergienko, July M.; Svirin, Jury A.; and Titov, Boris V., 4,491,314, Cl. 272-63.000.
Konishi, Keizo: *See*—
Kakimoto, Toshihiko; Konishi, Keizo; Yonehama, Teruo; and Yamamoto, Takao, 4,491,304, Cl. 267-140.100.
Konishiroku Photo Industry Co., Ltd.: *See*—
Iijima, Toshifumi; Koboshi, Shigeharu; and Yamazaki, Hiroshi, 4,491,627, Cl. 430-138.000.
Itaya, Masahiko; Haneda, Satoshi; and Tomono, Makoto, 4,491,083, Cl. 118-657.000.
Tamura, Takashi; and Kawata, Shun, 4,491,161, Cl. 141-364.000.
Konnai, Makoto: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Hosogai, Takao; and Nishida, Takashi, 4,491,465, Cl. 71-88.000.
Kontron Holding A.G.: *See*—
Wicki, Gerhard; and Naff, Rolf, 4,491,019, Cl. 73-457.000.
Kordomenos, Panagiotis I.; and Kurple, Kenneth R., to Ford Motor Company. Thermosetting coating composition- III. 4,491,641, Cl. 523-400.000.
Kordomenos, Panagiotis I.; and Dervan, Andrew H., to Ford Motor Company. Trifunctional blocked isocyanate containing an isocyanurate ring. 4,491,663, Cl. 544-193.000.
Korol, Vyacheslav K.: *See*—
Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; Kuzmin, Vladimir V.; Pershin, Nikolai I.; Vlasov, Evgeny V.; Reshetnikova, Natalya M.; and Tsirlin, Boris E., 4,491,751, Cl. 310-49.00R.
Korsatko, Werner, to Chemie Linz Aktiengesellschaft. Compressed products with retarded release of active substance, a process for their preparation and a process for the long-term administration of medicaments. 4,491,575, Cl. 424-19.000.
Korst, James J.: *See*—
Cronin, Timothy H.; Faubl, Hermann; Hoffman, William W.; and Korst, James J., 4,491,583, Cl. 424-250.000.
Kosmalski, Hermann: *See*—
Meyer, Hans-Friedrich; Thiele, Wolfgang; Kosmalski, Hermann; Meurer, Klaus; Kruppa, Hans; Gottling, Helmut; and Meyer, Ernst-August, 4,491,155, Cl. 137-625.660.
Kotani, Matahira: *See*—
Hayashi, Motohiko; Karita, Toshiaki; Kotani, Matahira; and Sasaki, Hiromu, 4,491,853, Cl. 346-76.0PH.
Koumura, Takashi: *See*—
Hasegawa, Shumpei; Kishi, Noriyuki; and Koumura, Takashi, 4,491,107, Cl. 123-339.000.
Hasegawa, Shumpei; Koumura, Takashi; and Mieno, Toshiyuki, 4,491,108, Cl. 123-339.000.
Kishi, Noriyuki; and Koumura, Takashi, 4,491,109, Cl. 123-339.000.
Kowarsch, Heinrich: *See*—
Radtke, Volker; Kowarsch, Heinrich; Hahn, Erwin; and Hauser, Peter, 4,491,544, Cl. 534-655.000.
Koyama, Yoshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Sheet-wound transformer. 4,491,817, Cl. 336-60.000.
Kozel, Charles A.: *See*—
Brown, Vincent B.; Kozel, Charles A.; and Scheitz, John T., 4,491,379, Cl. 339-97.00P.
Kozlov, Vyacheslav I.: *See*—
Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; Kuzmin, Vladimir V.; Pershin, Nikolai I.; Vlasov, Evgeny V.; Reshetnikova, Natalya M.; and Tsirlin, Boris E., 4,491,751, Cl. 310-49.00R.
Kozub, Stanley S. Pendulum putter. 4,491,323, Cl. 273-81.00D.
Krampe & Co Fertigung in Bergbaubedarf GmbH Zweigniederlassung: *See*—
Best, Gerd; and Weikert, Norbert B., 4,491,370, Cl. 299-81.000.
Krasnicki, Edward J.: *See*—
Boonchanta, Pipon; and Krasnicki, Edward J., 4,491,207, Cl. 188-299.000.
Kraus, Charles E., to Excelermatic Inc. Traction roller transmission. 4,491,038, Cl. 74-798.000.
Krause, Dennis L., to AT&T Technologies, Inc. Methods of and apparatus for sputtering material onto a substrate. 4,491,509, Cl. 204-192.00R.
Krogerus, Helge: *See*—
Honkaniemi, Matti; Jankkila, Martti; Nurminen, Aimo; Virta, Matias; Iisakka, Veikko; Krogerus, Helge; Tuovinen, Heikki; Mantymaki, Tarmo; and Lajunen, Erkki, 4,491,952, Cl. 373-74.000.
Krogh, Egon; and Blohm, Knud, to Danfoss A/S. Incremental digital converter. 4,491,826, Cl. 340-347.00P.
Krol, David A., to Gulf Research and Development Co. Method of freeing stuck drill string using spotting fluid. 4,491,181, Cl. 166-301.000.
Kruger, Hans-Rudolf; Arndt, Friedrich; and Rusch, Reinhard, to Schering AG. 1,2,3-Thiadiazole-5-yl-urea derivatives, processes for their use as plant growth regulating and defoliating agents. 4,491,466, Cl. 71-90.000.
Krupp Polysius AG: *See*—
Ahrens, Norbert; Daniel, Helmut; and Schacknies, Gerhard, 4,491,419, Cl. 366-101.000.
Kruppa, Hans: *See*—
Meyer, Hans-Friedrich; Thiele, Wolfgang; Kosmalski, Hermann; Meurer, Klaus; Kruppa, Hans; Gottling, Helmut; and Meyer, Ernst-August, 4,491,155, Cl. 137-625.660.
Kryskow, J. Michael, Jr.; Bobzin, Jeffery J.; and Allen, Bruce S., to Gould Inc. Multi-station token pass communication system. 4,491,946, Cl. 370-89.000.

Kubach, Hans: *See*—
Gessler, Hermann; Joos, Eugen; Jundt, Werner; Kubach, Hans; and Singer, Erich, 4,491,113, Cl. 123-490.000.
Kuelzer, Peter, to Siemens Aktiengesellschaft. Ribbon monitor for ribbon cassette. 4,491,430, Cl. 400-208.000.
Kuhasalo, Antti: *See*—
Kipelainen, Ossi; Kuhasalo, Antti; and Kyytsonen, Juhani, 4,491,067, Cl. 100-121.000.
Kuhle, Engelbert: *See*—
Dickore, Karlfried; and Kuhle, Engelbert, 4,491,671, Cl. 560-115.000.
Kuhn, John B.; and Wykhuis, Lloyd A., to Deere & Company. Hitch structure for coupling an implement to a vehicle. 4,490,966, Cl. 56-15.900.
Kulevskaya, Elena F.: *See*—
Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; Kuzmin, Vladimir V.; Pershin, Nikolai I.; Vlasov, Evgeny V.; Reshetnikova, Natalya M.; and Tsirlin, Boris E., 4,491,751, Cl. 310-49.00R.
Kulzhinsky, Vladimir L.: *See*—
Gorodetsky, Alexandr A.; Gromov, Nikolai N.; Kulzhinsky, Vladimir L.; Marus, Rudolf A.; Ryskin, Solomon E.; Samoilov, Pavel B.; Shamov, Alexandr N.; Sharygin, Nikolai V.; and Kireev, Ivan N., 4,490,922, Cl. 34-1.000.
Kumano, Akira: *See*—
Saito, Akiro; Kamaya, Naoki; Endo, Junya; Ohba, Seisuke; Kumano, Akira; Ida, Yoshinori; and Horie, Hideo, 4,491,886, Cl. 360-85.000.
Kumatani, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Low inertial variable speed induction motor. 4,491,753, Cl. 310-77.000.
Kumazaki, Toshimasa: *See*—
Aoike, Hitoshi; Machida, Toyotaka; Kumazaki, Toshimasa; and Suenaga, Kazuyuki, 4,491,876, Cl. 358-330.000.
Kunz, Werner; and Voigt, Walter, to MTU Motoren-und Turbinen-Union Muenchen GmbH. Piezoelectric vibration exciter, especially for destructive material testing. 4,491,759, Cl. 310-328.000.
Kurahashi, Koichiro, to Mitsubishi Denki Kabushiki Kaisha. Color display apparatus. 4,491,863, Cl. 358-56.000.
Kuraray Co., Ltd.: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Hosogai, Takeo; and Nishida, Takashi, 4,491,465, Cl. 71-88.000.
Kurby, Christopher N.: *See*—
Reynolds, Gary R.; Gaynor, Thomas R.; Olivera, Paul; Ruthenberg, Ross E.; Smith, Jay G.; Kurby, Christopher N.; and Mansfield, Terry K., 4,491,806, Cl. 331-96.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Hori, Saburo, 4,491,482, Cl. 106-308.00B.
Kurelek, John, to Koehring Canada Limited. Method and apparatus for felling trees. 4,491,163, Cl. 144-336.000.
Kurita Machinery Manufacturing Company Limited: *See*—
Kurita, Tetsuya, 4,491,519, Cl. 210-225.000.
Kurita, Tetsuya, to Kurita Machinery Manufacturing Company Limited. Filter cloth arrangement for use in fixed filter cloth type filter press. 4,491,519, Cl. 210-225.000.
Kurochi, Haruo: *See*—
Yamaguchi, Keiki; Tomarikawa, Kazuyuki; Kurochi, Haruo; Namikawa, Jiro; Matsumura, Shigeru; Takahashi, Ryo; and Mori, Shiro, 4,491,734, Cl. 250-385.000.
Kurple, Kenneth R.: *See*—
Kordomenos, Panagiotis I.; and Kurple, Kenneth R., 4,491,641, Cl. 523-400.000.
Kuwajima, Hideji; Shike, Kazuyoshi; and Watanabe, Takeyoshi, to Hitachi Chemical Company, Ltd. Reconstituted mica materials, reconstituted mica prepreg materials, reconstituted mica products and insulated coils. 4,491,618, Cl. 428-241.000.
Kuzmin, Vladimir V.: *See*—
Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; Kuzmin, Vladimir V.; Pershin, Nikolai I.; Vlasov, Evgeny V.; Reshetnikova, Natalya M.; and Tsirlin, Boris E., 4,491,751, Cl. 310-49.00R.
Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; Kuzmin, Vladimir V.; Pershin, Nikolai I.; Vlasov, Evgeny V.; Reshetnikova, Natalya M.; and Tsirlin, Boris E., to Moskovsky Energeticheshy Institut. Single-phase step motor. 4,491,751, Cl. 310-49.00R.
Kwech, Horst: *See*—
Wachs, Edward H.; and Kwech, Horst, 4,490,909, Cl. 30-97.000.
Kydd, Paul H., to HRI, Inc. Fluid flow and ash concentration meter system using Mossbauer effect. 4,491,955, Cl. 378-3.000.
Kyocera Corp.: *See*—
Kawamura, Takao; and Yoshida, Masazumi, 4,491,626, Cl. 430-69.000.
Kyytsonen, Juhani: *See*—
Kipelainen, Ossi; Kuhasalo, Antti; and Kyytsonen, Juhani, 4,491,067, Cl. 100-121.000.
Labavia - S.G.E.: *See*—
Bertrand, Philippe, 4,491,755, Cl. 310-93.000.
Labbe, Francis A. M., to Molins, PLC. Cigarette manufacture. 4,491,138, Cl. 131-109.00R.
Lach, Dietrich: *See*—
Bergmann, Udo; Hansen, Guenter; Lach, Dietrich; Thomas, Michael; and Zeidler, Georg, 4,491,543, Cl. 534-677.000.
LaChapelle, Philip S., to Intech Corporation. Collapsible hosiery form. 4,491,255, Cl. 223-37.000.
LaForce, Jean, to Stringer, Carl; Stringer Oil & Gas Co.; LaForce, Jean; and Stringer, Carl Thomas. Method and apparatus for equilizing temperature of pipe sections during solid phase welding. 4,491,716, Cl. 219-101.000.
Lajunen, Erkki: *See*—
Honkaniemi, Matti; Jankkila, Martti; Nurminen, Aimo; Virta, Matias; Iisakka, Veikko; Krogerus, Helge; Tuovinen, Heikki; Mantymaki, Tarmo; and Lajunen, Erkki, 4,491,952, Cl. 373-74.000.
Lambert, Robert D., to C. G. Sargent's Sons Corporation. Method and apparatus for drying materials while being conveyed. 4,490,924, Cl. 34-31.000.
Landy, Richard J.: *See*—
Mattson, Charles A.; and Landy, Richard J., 4,490,910, Cl. 30-276.000.
Lange, Bernhardt L. Convertible three ball to two ball golf ball carrying container. 4,491,221, Cl. 206-315.900.
Lange, Horst; and Pavel, Klaus, to Rhein-Nadel Maschinennadel GmbH. Device for the transport of bar-shaped workpieces, particularly sewing machine needle blanks. 4,491,167, Cl. 163-1.000.
Lange, Richard M.; and Rutter, Jerry L., to Lubrizol Corporation, The. Ester-heterocycle compositions useful as "lead paint" inhibitors in lubricants. 4,491,527, Cl. 252-51.50A.
Langlitz, Karlheinz: *See*—
Ackermann, Wilhelm; Langlitz, Karlheinz; and Schmitz, Gunter, 4,491,074, Cl. 105-164.000.
Laporte, Philippe; and Peccoud, Louise, to Commissariat a l'Energie Atomique. Enclosure for the treatment, and particularly for the etching of substrates by the reactive plasma method. 4,491,496, Cl. 156-345.000.
Larker, Hans; and Tegman, Ragnar, to ASEA Aktiebolag. Method of preparing spent nuclear fuel rods for long-term storage. 4,491,540, Cl. 252-628.000.
Larriva, R. Marion. Condensing apparatus and method. 4,490,993, Cl. 62-304.000.
Larsen, Arthur B.: *See*—
Bellisio, Jules A.; and Larsen, Arthur B., 4,491,953, Cl. 375-27.000.
Larson, Daniel A., to North American Philips Lighting Corporation. High pressure electric discharge lamp employing a metal spiral with positive potential. 4,491,766, Cl. 315-60.000.
Larson, David A.; and Schumaker, Daniel A., to Larson, David A. Electro-acoustic transducer with diaphragm and blank therefor. 4,491,698, Cl. 179-115.5PV.
Lauchenauer, Alfred E. Shaped semi-solid articles. 4,491,479, Cl. 106-15.050.
Lauer, Hansjorg: *See*—
Wolf, Franz J.; and Lauer, Hansjorg, 4,491,350, Cl. 285-236.000.
Laures, Antoine; and Horbacio, Leon. BPSK And QPSK transmission systems having phase locked loop for regenerating the carrier wave. 4,491,805, Cl. 331-18.000.
LaWhite, Eric L.; and Phillipps, Patrick G., to Lifeline Systems, Inc. Portable transmitter for emergency alarm system having watertight enclosure. 4,491,970, Cl. 455-100.000.
Lawson, Donald B.: *See*—
Beck, Thomas L.; and Lawson, Donald B., 4,491,777, Cl. 318-571.000.
Leach, Jerald G., to Texas Instruments Incorporated. Low voltage RAM cell. 4,491,938, Cl. 365-222.000.
Lechler Chemie GmbH: *See*—
Lutz, Hans, 4,491,219, Cl. 206-216.000.
Lederer, Armin: *See*—
Bergmann, Michael J.; Lederer, Armin; and Walliser, Norbert, 4,491,823, Cl. 338-174.000.
Ledley, Robert E.: *See*—
Polleck, Richard E.; Scott, Kenneth A.; and Ledley, Robert E., 4,491,516, Cl. 208-248.000.
Lee Company, The: *See*—
Lee, Leighton, II, 4,491,156, Cl. 137-870.000.
Lee, Leighton, II, to Lee Company, The. Multiple way pinch valve. 4,491,156, Cl. 137-870.000.
Lee, Shan S. Light-emitting device mounted under keybuttons of a keyboard. 4,491,692, Cl. 179-90.00L.
LeFoll, Jean: *See*—
Benaroya, Henry; LeFoll, Jean; and Cadoux, Jean-Elie, 4,491,518, Cl. 210-177.000.
Legrand: *See*—
Sarton, Francois; and Roby, Gerard, 4,490,887, Cl. 24-16.0PB.
Lehmann, Ulrich; and Gabriel, Rudolf, to Dr. Ing. h.c.F. Porsche AG. Electronic current overload protection installation. 4,491,892, Cl. 361-101.000.
Leiber, Heinz, to Robert Bosch GmbH. Anti-skid regulating system. 4,491,919, Cl. 364-426.000.
Leigh, Antony W.: *See*—
Caudel, Edward R.; Magar, Surendar S.; and Leigh, Antony W., 4,491,910, Cl. 364-200.000.
Leight, Howard S.; and Rosen, Alan D. Band earplug. 4,490,857, Cl. 2-209.000.
Lema, Peter, to Signode Corporation. Method and mechanism for filling bags. 4,490,959, Cl. 53-459.000.
Lerman, Michael J.: *See*—
Koehl, Richard; and Lerman, Michael J., 4,491,421, Cl. 366-247.000.
Lesk, Israel A.; and Sarma, Kalluri R. Silicon deposition process. 4,491,604, Cl. 427-8.000.

Leuthen, John M.: *See—*
Knox, Dick L.; Leuthen, John M.; and Lockyear, Kevin W., 4,491,778, Cl. 318-803.000.
Levant, Jean M., to S.N.E.C.M.A. Clamping band. 4,490,888, Cl. 24-20.00R.
LeVeen, Harry H. Disposable circumcision device. 4,491,136, Cl. 128-346.000.
Li, Hungwen: *See—*
Forquer, Timothy J.; and Li, Hungwen, 4,491,915, Cl. 364-200.000.
Licentia Patent-Verwaltungs-GmbH: *See—*
Stahl, Konrad; Theiss, Josef; and Weber, Jochen, 4,491,729, Cl. 250-336.100.
Liebermann, Benno E., to Grow Group, Inc. Pressurized dispensing pouch. 4,491,250, Cl. 222-386.500.
Lifeline Systems, Inc.: *See—*
LaWhite, Eric L.; and Phillippe, Patrick G., 4,491,970, Cl. 455-100.000.
Lim, Sheldon C. P., to Signetics Corporation. TiW_2N Fusible links in semiconductor integrated circuits. 4,491,860, Cl. 357-68.000.
Lin, P. H. Method for producing cleansing and wiping cloth. 4,490,895, Cl. 28-143.000.
Lincke, Paul, to Sulzer Brothers Limited. Gripper clamp projectile. 4,491,158, Cl. 139-439.000.
Linvill, John G., to Stanford University. Force sensing polymer piezoelectric transducer array. 4,491,760, Cl. 310-334.000.
Lion Corporation: *See—*
Yamada, Hisashi; Makise, Masayuki; Katagiri, Tsutomu; and Abe, Kaname, 4,491,553, Cl. 264-51.000.
Litton Resources Systems, Inc.: *See—*
Vallhonrat, Juan B., 4,491,916, Cl. 364-200.000.
LoBosco, Sam S.: *See—*
Heggeland, Bruce; Garcia, George; and LoBosco, Sam S., 4,491,231, Cl. 220-6.000.
Lockwood, Robert C. Strapping assembly and method for the treatment of acromioclavicular separations. 4,491,129, Cl. 128-94.000.
Lockyear, Kevin W.: *See—*
Knox, Dick L.; Leuthen, John M.; and Lockyear, Kevin W., 4,491,778, Cl. 318-803.000.
Loefberg, Gustaf G., to Wavin B.V. Plastic bag with gusset folds and perforations. 4,491,959, Cl. 383-103.000.
Loev, Bernard; Jones, Howard; and Suh, John T., to USV Pharmaceutical Corporation. N-(substituted piperazino)-1,4-dihydropyridine-3,5-carboxylic acid. 4,491,582, Cl. 424-250.000.
Logan, Frank G.; and Johnson, Wilfred V., to U.S. Fire Control Corporation. Pipe joint. 4,491,352, Cl. 285-373.000.
Lompe-Krzymien, Ludmila, to Canadian Patents and Development Limited. Sulfur removal from coal. 4,491,454, Cl. 44-1.0SR.
Long, Gregory F.: *See—*
Bradley, Jerome R.; Halvorsen, Robert M.; Hurst, Jeffrey B.; and Long, Gregory F., 4,491,272, Cl. 239-5.000.
Long, Wallace H.; and Ruggiero, Ralph, to Duval Corporation. Portable rock crushing and conveying system. 4,491,279, Cl. 241-101.700.
Longenecker, Howard H.: *See—*
Embree, David M.; Goldthorp, David C.; Longenecker, Howard H.; and Vogelpohl, David R., 4,491,691, Cl. 179-84.00T.
Look, Thomas F., to Minnesota Mining and Manufacturing Company. Method and apparatus for extracting information from an object that is within a large interrogation zone. 4,491,923, Cl. 364-478.000.
Loomis, Neil W.: *See—*
Pritzkow, Dennis H.; Loomis, Neil W.; Golner, Thomas M.; and Hoffman, David M., 4,491,732, Cl. 250-366.000.
Lopochonsky, James E. Powered wrench. 4,491,042, Cl. 81-57.300.
Lord Corporation: *See—*
Boonchanta, Pipon; and Krasnicki, Edward J., 4,491,207, Cl. 188-299.000.
L'Oreal: *See—*
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Lory, Earl R.: *See—*
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Lostumo, Arthur J.: *See—*
Danenberg, Bernard D.; and Lostumo, Arthur J., 4,491,818, Cl. 336-65.000.
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, to Block Drug Company, Inc. Polyoxyethylene derivatives as antipruritic ectoparasiticide. 4,491,576, Cl. 424-78.000.
Lowe, Colin F. Sheet metal beam. 4,490,958, Cl. 52-634.000.
Lowe, Henry M.: *See—*
Vieta, Alan K.; Amerine, James D.; and Lowe, Henry M., 4,491,254, Cl. 222-83.500.
Lubrizol Corporation, The: *See—*
Lange, Richard M.; and Rutter, Jerry L., 4,491,527, Cl. 252-51.50A.
Lucas, Geoffrey. Grading apparatus and framework therefor. 4,490,929, Cl. 37-129.000.
Lucas Industries Limited: *See—*
Rath, Heinrich B., 4,491,205, Cl. 188-73.390.
Reynolds, Desmond H. J., 4,490,979, Cl. 60-581.000.
Lucas Industries public limited company: *See—*
Schmitt, Michel, 4,491,202, Cl. 188-71.500.
Luk Lamellen und Kupplungsbau GmbH: *See—*
Steeg, Klaus, 4,491,211, Cl. 192-89.00B.
Lunkenheimer, Winfried: *See—*
Niemers, Ekkehard; Lunkenheimer, Winfried; and Brandes, Wilhelm, 4,491,595, Cl. 424-326.000.
Lutz, Hans, to Lechler Chemie GmbH. Container for two-component systems. 4,491,219, Cl. 206-216.000.
Lutz, Phillip A.: *See—*
Bytcheson, Charles T.; Lutz, Phillip A.; and Fields, Harold L., 4,490,902, Cl. 29-588.000.
Lutz, Robert G.: *See—*
Durbin, Daniel P.; and Lutz, Robert G., 4,491,648, Cl. 525-89.000.
Lutz, Terry J.: *See—*
Gaccetta, Carl M.; and Lutz, Terry J., 4,491,222, Cl. 206-394.000.
Lycksele NYA Platprodukter AB: *See—*
Gabrielsson, Lars, 4,490,867, Cl. 5-509.000.
Lynch, Donald M.: *See—*
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M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Fischer, Hermann, 4,491,070, Cl. 101-181.000.
Schoneberger, Edgar F., 4,491,833, Cl. 340-721.000.
Simeth, Claus, 4,491,071, Cl. 101-248.000.
Maby, Edward W.: *See—*
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MAC Valves, Inc.: *See—*
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Neff, James A., 4,491,152, Cl. 137-596.160.
Machida, Toyotaka: *See—*
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MacKenna, William B.: *See—*
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Martin, Leslie L., Jr., to James River-Dixie/Northern, Inc. Molding of paperboard containers. 4,491,502, Cl. 162-146.000.
Martin, Maurice: *See*—
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Martin, Paul H. Reciprocating rotary brush. 4,490,871, Cl. 15-21.00R.
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Matthews, Demetreos N.; and Nudenberg, Walter, to UNIROYAL, Inc. Sequentially prepared thermoplastic elastomer and method of preparing same. 4,491,652, Cl. 525-247.000.
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Meola, Michael L. Drywall corner bracket. 4,490,953, Cl. 52-211.000.
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Meyer, Hans J., to Maschinenfabrik BESTA. Pressurized explosion containing conveyor. 4,491,215, Cl. 198-861.000.
Meyer, Leonard S. Target having shiftably movable target structure. 4,491,328, Cl. 273-403.000.
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Miller, R. Craig, to Pro/Pak Industries, Inc. Apparatus and process for cooking food. 4,491,602, Cl. 426-438.000.
Miller, Robert C., to Westinghouse Electric Corp. Electric energy meter having a mutual inductance current transducer. 4,491,790, Cl. 324-142.000.
Miller, Theodore E., Jr., to Dow Chemical Company, The. Method for metering sub-10 cc/minute liquid flow. 4,491,024, Cl. 73-861.050.
Mills, Delbert L. Apparatus for lifting crops. 4,490,967, Cl. 56-312.000.
Milo, August. Fill pipe lock assembly. 4,490,996, Cl. 70-165.000.
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Miura, Nobuo; and Ishii, Norihisa, to Honda Giken Kogyo Kabushiki Kaisha. Ignition system for two-cycle engine. 4,491,121, Cl. 123-631.000.
Miyabe, Atsushi, to Hochiki Kabushiki Kaisha. Fire alarm system. 4,491,830, Cl. 340-584.000.
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Mizumuma, Takehisa; Abe, Seizaburo; Ohno, Jiro; and Kobayashi, Hisashi, to Nippon Steel Corporation. Method for producing a selective absorption sheet of a solar radiation. 4,491,487, Cl. 148-6.210.
Mizuta, Takemi; and Inoue, Tomohiro, to Sharp Kabushiki Kaisha. Electronic musical instrument. 4,491,049, Cl. 84-1.010.
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Monick, Frederick R., to Eaton Corporation. Power screw disc brake with internal automatic slack adjuster. 4,491,203, Cl. 188-71.900.
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Montague, Herbert H. Combination low-pass filter and high frequency transient suppressor. 4,491,903, Cl. 363-48.000.
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Sano, Yoshikazu; Mori, Hideyasu; and Sato, Yasuji, 4,491,693, Cl. 179-99.00R.
Mori, Kazuhiko: *See*—
Yamashita, Tsukasa; Matano, Masaharu; Mori, Kazuhiko; and Ota, Norihiro, 4,491,384, Cl. 350-96.130.
Mori, Shiro: *See*—
Yamaguchi, Keiki; Tomarikawa, Kazuyuki; Kurochi, Haruo; Namikawa, Jiro; Matsumura, Shigeru; Takahashi, Ryo; and Mori, Shiro, 4,491,734, Cl. 250-385.000.
Morigaki, Masakazu: *See*—
Ishikawa, Takatoshi; Mitsui, Akio; Morigaki, Masakazu; and Nakamura, Takashi, 4,491,630, Cl. 430-372.000.
Morikawa, Toshinori; Minamide, Seiko; Kikuya, Satoshi; Terada, Hiroshi; Zaitsu, Osamu; and Shibaike, Narito, to Matsushita Electric Industrial Co., Ltd. Magnetic recording/playback device. 4,491,885, Cl. 360-85.000.
Moria, Andre , to SOVAM. Boarding installation, especially for vehicles transporting passengers between an air terminal and an aircraft. 4,490,869, Cl. 14-71.500.
Moria, Gerard, to Societe Anonyme DBA. Stop key for the valve plunger of a power brake servomotor. 4,491,058, Cl. 91-376.00R.
Morin, Rene, to Renault Vehicules Industriels. Built-in hydraulic automatic device for advancing the injection on a diesel engine. 4,491,116, Cl. 123-502.000.
Morino, Toshiharu: *See*—
Nakamura, Norihiko; Itoh, Takaaki; and Morino, Toshiharu, 4,491,550, Cl. 261-44.00C.
Morita, Yasuhiro: *See*—
Matoba, Taketo; Morita, Yasuhiro; Arai, Noritoshi; Ishigaki, Masahiro; and Harada, Hiroshi, 4,491,429, Cl. 384-221.000.
Morris, Anthony D.: *See*—
Ziegler, John A., 4,491,057, Cl. 91-503.000.
Morris, George Q. Throttle configuration achieving high velocity channel at partial opening. 4,491,106, Cl. 123-337.000.
Morris, Leycester W. Game with throwing piece. 4,491,327, Cl. 273-343.000.
Moskovsky Energeticheshy Institut: *See*—
Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; Kuzmin, Vladimir V.; Pershin, Nikolai I.; Vlasov, Evgeny V.; Reshetnikova, Natalya M.; and Tsirlin, Boris E., 4,491,751, Cl. 310-49.00R.
Moss, Garry K. Kneeling platform. 4,491,193, Cl. 182-230.000.
Mostek Corporation: *See*—
Eaton, Sargent S., Jr.; and Proebsting, Robert J., 4,491,936, Cl. 365-149.000.
Moteki, Minoru: *See*—
Saitoh, Takeshi; Matsuura, Shigeo; Moteki, Minoru; and Hatashita, Hiroshi, 4,491,976, Cl. 455-315.000.
Motorola, Inc.: *See*—
Birch, William A., 4,491,745, Cl. 307-272.00A.
Main, W. Eric; Welty, Dennis L.; and Zobel, Don W., 4,491,804, Cl. 330-265.000.
Neidorff, Robert A., 4,491,780, Cl. 323-313.000.
Parker, Lanny L., 4,491,741, Cl. 307-200.00B.
Reynolds, Gary R.; Gaynor, Thomas R.; Olivera, Paul; Ruthenberg, Ross E.; Smith, Jay G.; Kurby, Christopher N.; and Mansfield, Terry K., 4,491,806, Cl. 331-96.000.
Schmitz, Charles J., 4,491,774, Cl. 318-282.000.
Weber, Paul J., 4,491,972, Cl. 455-110.000.
Mott, Daniel B. Tire presses. 4,491,165, Cl. 157-1.330.
Mott, Donna M.: *See*—
Halpern, Yuval; and Mott, Donna M., 4,491,644, Cl. 524-100.000.
Mott, Richard A.: *See*—
Carter, Neil A.; and Mott, Richard A., 4,490,955, Cl. 52-30.140.
Moulin, Maurice: *See*—
Geffroy, Jean; Glachet, Charles; Moulin, Maurice; and Noel, Jean P., 4,491,717, Cl. 219-121.0LG.
Mountz, Craig E., to Ammco Tools, Inc. Vehicle lift rack and jack assembly. 4,491,194, Cl. 187-8.430.
Mountz, Craig E., to Ammco Tools, Inc. Trolley. 4,491,201, Cl. 188-42.000.
Moustakas, Steven: *See*—
Witte, Hans-Hermann; and Moustakas, Steven, 4,491,942, Cl. 370-4.000.
Moyher, George C., to Burndy Corporation. Apparatus and method for installing electrical connectors on flat conductor cable. 4,490,904, Cl. 29-864.000.
MTS Systems Corporation: *See*—
Meline, Harry R., 4,491,021, Cl. 73-767.000.
MTU Motoren-und Turbinen-Union Muenchen GmbH: *See*—
Kunz, Werner; and Voigt, Walter, 4,491,759, Cl. 310-328.000.
MTU Motoren-und Turbinen-Union Munchen GmbH: *See*—
Breitmoser, Georg; and Vogel, Wilhelm, 4,491,557, Cl. 419-5.000.
Mucha, Franz: *See*—
Habelt, Gerhard; and Mucha, Franz, 4,491,854, Cl. 346-136.000.
Mueller, Guenter: *See*—
Rieber, Norbert; Hellbach, Hans; Hunziker, Gerhard; and Mueller, Guenter, 4,491,674, Cl. 568-357.000.
Muenster, Rolf: *See*—
Rapp, Gunther; Thomas, Erwin; Muenster, Rolf; Caffall, Brodus E.; Cyr, Philip A.; and Jones, Thomas M., 4,491,567, Cl. 423-387.000.
Muething, Kevin A.: *See*—
Jerde, Leslie G.; Lory, Earl R.; Muething, Kevin A.; and Tsou, Lee Y., 4,491,499, Cl. 156-626.000.
Muller, Ingo: *See*—
Juriga, Jan; and Muller, Ingo, 4,491,066, Cl. 99-391.000.
Muller, Klaus; and Mutz, Bernd, to A. Raymond. Fastening device for holding construction or functional parts on cover plates. 4,490,893, Cl. 24-704.000.
Mulsant, Philippe: *See*—
Cherros, Jean-Claude; Mulsant, Philippe; and Poujoulat, Yvan, 4,491,092, Cl. 122-18.000.
Munslow-Davies, Keith: *See*—
Begley, Maxwell G.; and Munslow-Davies, Keith, 4,490,891, Cl. 24-516.000.
Murakami, Hiroyasu: *See*—
Inaba, Hiroyoshi; Sumi, Akiyasu; Notagashira, Hidefumi; Katsuma, Makoto; Murakami, Hiroyasu; and Hiramatsu, Akira, 4,491,401, Cl. 354-271.100.
Murakami Kenya: *See*—
Umemura, Kazuhiro; Sampei, Tohru; Nakata, Kazuo; Sato, Hirokazu; Murakami Kenya; and Intoh, Kiyoshi, 4,491,958, Cl. 381-51.000.
Murakami, Takashi, to Nissan Motor Company, Limited. Thigh support adjusting mechanism for vehicle seat. 4,491,365, Cl. 297-312.000.
Murata Kikai Kabushiki Kaisha: *See*—
Sakai, Shojo; Kato, Hisaaki; Samoto, Yoshihiko; and Inada, Kenichi, 4,491,831, Cl. 340-677.000.
Murphy, Arthur B.: *See*—
Dey, Phillip; Fearns, Peter; Plessner, Karl W.; Pickup, Kenneth H.; Gaylard, Bernard; and Murphy, Arthur B., 4,491,387, Cl. 350-96.230.
Murphy, Gerald J.: *See*—
Eagar, Robert G., Jr.; and Murphy, Gerald J., 4,491,676, Cl. 588-449.000.
Murray, Robert F. Course and heading computer. 4,491,724, Cl. 235-88.00N.
Murtha, Timothy P.: *See*—
Reusser, Robert E.; Murtha, Timothy P.; and Todd, Elizabeth A., 4,491,563, Cl. 422-5.000.
Muscoplat, Richard D. Card negative holder and method of manufacture. 4,491,495, Cl. 156-253.000.
Mutz, Bernd: *See*—
Muller, Klaus; and Mutz, Bernd, 4,490,893, Cl. 24-704.000.
Myers, Allen D., to Caterpillar Tractor Co. Fluid connection apparatus. 4,491,336, Cl. 280-93.000.
Naff, Rolf: *See*—
Wicki, Gerhard; and Naff, Rolf, 4,491,019, Cl. 73-457.000.
Nagai, Takeshi: *See*—
Ishizaki, Takaharu; Nagai, Takeshi; and Yamazaki, Shingo, 4,491,455, Cl. 44-62.000.
Nagata, Koichi; and Ishii, Daisuke, to Nippon Electric Co., Ltd. Portable radio receiver with high antenna gain. 4,491,978, Cl. 455-338.000.
Nagel, Dietmar: *See*—
Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Abraham A., 4,490,939, Cl. 446-448.000.
Nagel, Rudolf: *See*—
Bone, Rainer; Boning, Bernward; Nagel, Rudolf; and Sellmaier, Franz, 4,491,110, Cl. 123-425.000.
Nagubandi, Sreeramulu, to Stauffer Chemical Company. Process for preparing phosphonomethylated amino acids. 4,491,548, Cl. 260-302.50F.
Naiman, Michael L., to Petrolite Corporation. Antistats containing acrylonitrile copolymers and polyamines. 4,491,651, Cl. 525-187.000.
Nakagawa, Yasuo: *See*—
Akiyama, Nobuyuki; Kembo, Yukio; and Nakagawa, Yasuo, 4,491,787, Cl. 324-71.500.
Nakahara, Yutaka: *See*—
Minagawa, Motonobu; Nakahara, Yutaka; Shibata, Toshihiro; and Tobita, Etsuo, 4,491,643, Cl. 524-96.000.
Nakai, Ikuo: *See*—
Hayashi, Hideo; Takamatsu, Iwao; and Nakai, Ikuo, 4,491,705, Cl. 200-147.00R.
Nakajima, Masao: *See*—
Kanegae, Hidetoshi; Asano, Masaharu; Yasuhara, Seishi; and Nakajima, Masao, 4,491,112, Cl. 123-479.000.
Nakamura, Norihiko; Itoh, Takaaki; and Morino, Toshiharu, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisan Industry Co. Ltd. Variable venturi type carburetor. 4,491,550, Cl. 261-44.00C.
Nakamura, Takashi: *See*—
Ishikawa, Takatoshi; Mitsui, Akio; Morigaki, Masakazu; and Nakamura, Takashi, 4,491,630, Cl. 430-372.000.
Nakanishi, Hiroaki: *See*—
Kainaga, Masahiro; Sakoda, Kousuke; and Nakanishi, Hiroaki, 4,491,912, Cl. 364-200.000.
Nakano, Hirohumi: *See*—
Sakai, Kango; and Nakano, Hirohumi, 4,491,506, Cl. 204-28.000.
Nakano, Yoshiyuki: *See*—
Hasegawa, Hiroshi; Nakano, Yoshiyuki; and Tanabe, Yoshiaki, 4,491,404, Cl. 354-416.000.
Nakasima, Mikio, to Toyota Jidosha Kabushiki Kaisha. Intake device of an internal combustion engine. 4,491,102, Cl. 123-188.00M.
Nakata, Isei: *See*—
Hongo, Akira; Ueda, Hideki; Nakata, Isei; Yoshida, Eiichi; Aoki, Nobuyoshi; and Suzuki, Toshimitsu, 4,490,984, Cl. 62-49.000.

Nakata, Kazuo: *See*—
Umemura, Kazuhiro; Sampei, Tohru; Nakata, Kazuo; Sato, Hirokazu; Murakami Kenya; and Intoh, Kiyoshi, 4,491,958, Cl. 381-51.000.
Nakaya, Keiichi: *See*—
Suzuki, Kaichiro; Nakaya, Keiichi; Gotoh, Tomohiro; Kitazako, Masayuki; and Iwasaki, Masahara, 4,491,571, Cl. 423-485.000.
Namikawa, Jiro: *See*—
Yamaguchi, Keiki; Tomarikawa, Kazuyuki; Kurochi, Haruo; Namikawa, Jiro; Matsumura, Shigeru; Takahashi, Ryo; and Mori, Shiro, 4,491,734, Cl. 250-385.000.
National Distillers and Chemical Corporation: *See*—
Hanes, Ronnie M., 4,491,546, Cl. 260-429.00R.
National Research Institute for Metals: *See*—
Fujii, Tadayuki; Hiraoka, Yutaka; and Watanabe, Ryoji, 4,491,560, Cl. 420-429.000.
Natke, Gerhard: *See*—
Holm, Wilfried; Kloos, Jurgen; and Natke, Gerhard, 4,491,052, Cl. 87-3.000.
Nauchno-Issledovatelsky I Konstruktorsky Institut: *See*—
Belyavsky, Alexandr D.; Borzdilnov, Gennady M.; Vasiliev, Vitaly M.; Kalognomos, Viktor I.; Komov, Nikolai A.; Pavlov, Gennady A.; Persits, Evgeny L.; Sergienko, July M.; Sviria, Jury A.; and Titov, Boris V., 4,491,314, Cl. 272-63.000.
Nauchno-Proizvodstvennoe Obiedinenie PO Tekhnologii Mashinostroenia: *See*—
Voronin, Felix V.; Shergov, Igor V.; Gorb, Vyacheslav F.; and Sidorov, Viktor V., 4,491,715, Cl. 219-74.000.
NEC Corporation: *See*—
Miyata, Shinji, 4,491,800, Cl. 330-51.000.
Neff, James A., to MAC Valves, Inc. Four-way stacking valve with common electrical conduit and individual body mounted exhaust flow controls. 4,491,151, Cl. 137-596.160.
Neff, James A., to Mac Valves, Inc. Four-way stacking valve with common electrical conduit and body mounted individual exhaust flow controls that project through the cover. 4,491,152, Cl. 137-596.160.
Negishi, Yukiyasu; Ishida, Yukinori; Saito, Yasunori; and Tanaka, Shigeru, to Nippon Telegraph & Telephone Public Corporation; and Sumitomo Electric Industries, Ltd. Optical fiber cable and process for production thereof. 4,491,346, Cl. 350-96.230.
Neidorff, Robert A., to Motorola, Inc. Temperature compensated voltage reference circuit. 4,491,780, Cl. 323-313.000.
Neill, Jimmie: *See*—
Sutton, David; and Neill, Jimmie, 4,491,961, Cl. 382-41.000.
Nellis, Ruald: *See*—
Endres, Ludwig; and Nellis, Ruald, 4,490,933, Cl. 40-564.000.
Nelson, Edward D. Skill game card device. 4,491,319, Cl. 273-1.00R.
Nemeth, Bela J.: *See*—
Grab, George P.; Hood, Grant W., Jr.; Swanson, Sigurd A.; and Nemeth, Bela J., 4,491,559, Cl. 419-36.000.
Neumann, Otto W., to AMSTED Industries Incorporated. Snubbed railway car truck. 4,491,075, Cl. 105-207.000.
Neumuensterache Maschinen- und Apparatebau Gesellschaft mbH (Neumag): *See*—
Hubner, Diethard, 4,491,282, Cl. 242-18.00A.
Newman, Richard W.: *See*—
Danna, Dominick; and Newman, Richard W., 4,491,865, Cl. 358-98.000.
Nickol, Friedrich W.; and Perthes, Harald, to VDO Adolf Schindling AG. Liquid crystal display device with visibly imperceptable spacers. 4,491,391, Cl. 350-339.00R.
Nielsen, Hans B. Tube for yarn bobbins. 4,491,286, Cl. 242-118.110.
Nielsen, Ole K., to Zimm Zamm AG. Tetherball game. 4,491,329, Cl. 273-413.000.
Niemera, Ekkehard; Lunkenheimer, Winfried; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Combating fungi with trisubstituted cyanoguanidines. 4,491,595, Cl. 424-326.000.
Niess, Rolf; and Schaeffer, Karl, to BASF Aktiengesellschaft. Preparation of anthraquinoid disperse dyes. 4,491,666, Cl. 548-426.000.
Nifco, Inc.: *See*—
Omata, Nobuaki, 4,490,886, Cl. 24-16.0PB.
Niitsuma, Teruo; Minagawa, Shoichi; and Okamoto, Takeshi, to Clarion Co., Ltd. Surface acoustic wave device. 4,491,811, Cl. 333-151.000.
Ninomiya, Fujio: *See*—
Okumoto, Tadaoki; Sugimoto, Masatoshi; Horiuchi, Noriyuki; Sahara, Seiichi; Yamada, Tetsuo; Hashimoto, Kinrou; Ichikawa, Masayoshi; and Ninomiya, Fujio, 4,491,621, Cl. 428-519.000.
Nippon Electric Co., Ltd.: *See*—
Nagata, Koichi; and Ishii, Daisuke, 4,491,978, Cl. 455-338.000.
Oguchi, Tetsuji, 4,491,834, Cl. 340-726.000.
Nippon Kogaku K.K.: *See*—
Hasegawa, Hiroshi; Nakano, Yoshiyuki; and Tanabe, Yoshiaki, 4,491,404, Cl. 354-416.000.
Nippon Oil and Fats Co., Ltd.: *See*—
Ishizaki, Takaharu; Nagai, Takeshi; and Yamazaki, Shingo, 4,491,455, Cl. 44-62.000.
Nippon Seiko Kabushiki Kaisha: *See*—
Sugi, Hiromi; Furumura, Kyozaburo; and Asai, Hiromitsu, 4,491,373, Cl. 308-5.00R.
Nippon Soken, Inc.: *See*—
Idogaki, Takaharu; Kawai, Hisao; Hattori, Kyo; and Sakurai, Kazuhiro, 4,491,815, Cl. 335-229.000.
Nippon Steel Corporation: *See*—
Mizunuma, Takehisa; Abe, Seizaburo; Ohno, Jiro; and Kobayashi, Hisashi, 4,491,487, Cl. 148-6.210.
Sakai, Kango; and Nakano, Hirokami, 4,491,506, Cl. 204-28.000.
Nippon Telegraph & Telephone Public Corporation: *See*—
Negishi, Yukiyasu; Ishida, Yukinori; Saito, Yasunori; and Tanaka, Shigeru, 4,491,386, Cl. 350-96.230.
Tahara, Toshiyuki; Uehara, Hironobu; Hamazato, Kazuo; and Hayashi, Toshio, 4,491,700, Cl. 179-170.0NC.
Umemura, Kazuhiro; Sampei, Tohru; Nakata, Kazuo; Sato, Hirokazu; Murakami Kenya; and Intoh, Kiyoshi, 4,491,958, Cl. 381-51.000.
Nishi, Yoshio: *See*—
Egawa, Hidehara; Nishi, Yoshio; and Maeguchi, Kenji, 4,491,856, Cl. 357-4.000.
Nishida, Takashi: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Hosogai, Takeo; and Nishida, Takashi, 4,491,465, Cl. 71-88.000.
Nishikawa, Masao; and Aoki, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. Intervehicle distance control system for vehicles. 4,491,840, Cl. 340-903.000.
Nishimura, Hiroyuki: *See*—
Fujii, Isao; Nishimura, Hiroyuki; and Kato, Masaaki, 4,491,104, Cl. 123-291.000.
Nishiwaki, Muneo, to Mitsubishi Denki Kabushiki Kaisha. Speed control apparatus for A.C. elevator car drive motor. 4,491,197, Cl. 187-29.00R.
Nishizawa, Toshio; Kamata, Keiji; Nonomura, Osamu; and Fukushi, Yutaka, to Topre Corporation. Air conditioning system. 4,491,061, Cl. 98-34.600.
Nissan Motor Company, Limited: *See*—
Asano, Masaharu, 4,491,114, Cl. 123-492.000.
Kakimoto, Toshihiko; Konishi, Keizo; Yonehama, Teruo; and Yamamoto, Takao, 4,491,304, Cl. 267-140.100.
Kanegae, Hidetoshi; Asano, Masaharu; Yasuhara, Seishi; and Nakajima, Masao, 4,491,112, Cl. 123-479.000.
Murakami, Takashi, 4,491,365, Cl. 297-312.000.
Saito, Yoshihiro; and Yazaki, Komei, 4,491,032, Cl. 74-473.00R.
Yasuhara, Seishi, 4,491,100, Cl. 123-145.00A.
Yasuhara, Seishi, 4,491,143, Cl. 137-172.000.
Nitchman, Harold L.; and Cunningham, William B., Jr. System, apparatus, and method of dispensing a liquid from a semi-bulk disposable container. 4,491,247, Cl. 222-131.000.
NL Industries, Inc.: *See*—
Walker, Martin J., 4,491,699, Cl. 179-156.00R.
Noble, Allen T., to Noble Linear Irrigation, Inc. Land irrigation apparatus providing improved water distribution. 4,491,274, Cl. 239-183.000.
Noble Linear Irrigation, Inc.: *See*—
Noble, Allen T., 4,491,274, Cl. 239-183.000.
Noda, Chikako: *See*—
Sadamori, Hiroki; Chikazawa, Akio; Okamura, Setsuo; and Noda, Chikako, 4,491,640, Cl. 502-242.000.
Noda, Masahiro; and Misu, Tatsuo, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for signaling elevator malfunctions. 4,491,198, Cl. 187-29.00R.
Noda, Masaki; Shinkawa, Keiro; and Sodeyama, Chuichi, to Hitachi, Ltd. Matching circuit for a pre-amplifier of SHF band television signal receiver. 4,491,809, Cl. 333-35.000.
Noel, Jean P.: *See*—
Geffroy, Jean; Glachet, Charles; Moulin, Maurice; and Noel, Jean P., 4,491,717, Cl. 219-121.0LG.
Noguchi, Masaaki; Tanaka, Yukiyasu; and Igarashi, Isao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Two-stroke cycle engine. 4,491,096, Cl. 123-51.00B.
Nomura, Takanobu: *See*—
Tsuchie, Masahiro; Takeoka, Tomihiko; and Nomura, Takanobu, 4,491,844, Cl. 343-713.000.
Nonomura, Osamu: *See*—
Nishizawa, Toshio; Kamata, Keiji; Nonomura, Osamu; and Fukushi, Yutaka, 4,491,061, Cl. 98-34.600.
Nordmeyer, Francis R.; and Hansen, Lee D., to Brigham Young University. Dialyzing injection system for instrumental detection. 4,491,011, Cl. 73-61.10C.
North American Philips Lighting Corporation: *See*—
Larson, Daniel A., 4,491,766, Cl. 315-60.000.
Northern Telecom Limited: *See*—
Haskins, Steve W., 4,491,695, Cl. 179-100.00D.
Haskins, Steve W.; and Vincent, James K., 4,491,696, Cl. 179-100.00C.
Richardson, Walter L., 4,491,206, Cl. 188-166.000.
Velsher, Bence, 4,491,797, Cl. 324-421.000.
Norton Christensen, Inc.: *See*—
Grappendorf, Richard H., 4,491,188, Cl. 175-329.000.
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Notagashira, Hidefumi: *See*—
Inaba, Hiroyoshi; Sumi, Akiyasu; Notagashira, Hidefumi; Katsuma, Makoto; Murakami, Hiroyasu; and Hirasawa, Akira, 4,491,401, Cl. 354-271.100.
Novakovskaya, Zoya D.: *See*—
Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; Kuzmin, Vladimir V.; Parshin, Nikolai

I.; Vlasov, Evgeny V.; Reshetnikova, Natalya M.; and Tsirlin, Boris E., 4,491,751, Cl. 310-49.00R.

Novini, Amir R.: *See*—
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NSK-Warner K.K.: *See*—
Ueda, Takeo, 4,490,892, Cl. 24-641.000.

Nuclepore Corp.: *See*—
Peterson, David D., 4,491,012, Cl. 73-61.400.

Nudenberg, Walter: *See*—
Matthews, Demetreos N.; and Nudenberg, Walter, 4,491,652, Cl. 525-247.000.

Nurminen, Aimo: *See*—
Honkanieni, Matti; Jankkila, Martti; Nurminen, Aimo; Virta, Matias; Iisakka, Veikko; Krogerus, Helge; Tuovinen, Heikki; Mantymaki, Tarmo; and Lajunen, Erkki, 4,491,952, Cl. 373-74.000.

O. M. Scott and Sons Company, The: *See*—
Vieta, Alan K.; Amerine, James D.; and Lowe, Henry M., 4,491,254, Cl. 222-83.500.

Obara, Masakatsu: *See*—
Saito, Takayuki; Kikuchi, Toru; Obara, Masakatsu; and Kobayashi, Akihiro, 4,491,667, Cl. 549-302.000.

O'Connor, Terry J.; and Cooper, Ian G., to Bay Mills Limited. Reinforcing composite for roofing membranes and process for making such composites. 4,491,617, Cl. 428-236.000.

Oda, Sumihiro; and Sato, Haruhito, to Idemitsu Kosan Company Limited. Process for the production of para-xylene. 4,491,678, Cl. 585-466.000.

Odaka, Kentaro: *See*—
Iga, Akira; Odaka, Kentaro; and Yasuda, Nobuyuki, 4,491,943, Cl. 370-13.000.

Odawara, Yoji: *See*—
Ishida, Masahiko; Haga, Ryoichi; Ishibashi, Tadashi; and Odawara, Yoji, 4,491,522, Cl. 210-603.000.

Ogasawara, Hidekazu; and Seiin, Takanori, to Matsushita Electric Industrial Co., Ltd. Combination electronic apparatus. 4,491,979, Cl. 455-344.000.

Ogawa, Hitoshi, to Mitsubishi Denki Kabushiki Kaisha. Vacuum pump-radiator fan drive system. 4,491,094, Cl. 123-41.490.

Ogawa, Norio; and Tsukamoto, Shuji, to Eisai Co., Ltd. Method for treatment of seizures. 4,491,594, Cl. 424-331.000.

Oguchi, Tetsuji, to Nippon Electric Co., Ltd. Display controlling apparatus. 4,491,834, Cl. 340-726.000.

O'Hara, Frank J.; Dibbern, John E., Jr.; and Moores, Gregory E., to Black & Decker Inc. Electrical connection system for switches. 4,491,752, Cl. 310-71.000.

Ohba, Seisuke: *See*—
Saito, Akiro; Kamaya, Naoki; Endo, Junya; Ohba, Seisuke; Kumano, Akira; Ida, Yoshinori; and Horie, Hideo, 4,491,886, Cl. 360-85.000.

Ohno, Jiro: *See*—
Mizunuma, Takehisa; Abe, Seizaburo; Ohno, Jiro; and Kobayashi, Hisashi, 4,491,487, Cl. 148-6.210.

Ohta, Norio: *See*—
Tsujiuchi, Toshio; Yoneda, Takao; and Ohta, Norio, 4,490,946, Cl. 51-165.880.

Okada, Tokuhiro; and Hayashi, Masayoshi, to Toa Medical Electronics Co. Ltd. Particle size distribution analyzer. 4,491,926, Cl. 364-555.000.

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Niitsuma, Teruo; Minagawa, Shoichi; and Okamoto, Takeshi, 4,491,811, Cl. 333-151.000.

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Soga, Tasao; Suzuki, Takaya; Okamura, Masahiro; Gooda, Masahiro; and Kobayashi, Fumiyuki, 4,491,562, Cl. 420-589.000.

Okamura, Setsuo: *See*—
Sadamori, Hiroki; Chikazawa, Akio; Okamura, Setsuo; and Noda, Chikako, 4,491,640, Cl. 502-242.000.

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Takayama, Shoichiro, 4,491,873, Cl. 358-256.000.

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Okumoto, Tadaoki; Sugimoto, Masatoshi; Horiuchi, Noriyuki; Sahara, Seiichi; Yamada, Tetsuo; Hashimoto, Kinrou; Ichikawa, Masayoshi; and Ninomiya, Fujio, to Toyoda Gosei Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Diaphragm. 4,491,621, Cl. 428-519.000.

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O'Leary, Raymond P., to S&C Electric Company. Electrical contact assembly for a current interrupting unit. 4,491,707, Cl. 200-149.00R.

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Oliff, James R., to Mead Corporation, The. Wraparound article carrier with adjustable girth. 4,491,223, Cl. 206-434.000.

Olin Corporation: *See*—
Butt, Sheldon H., 4,491,622, Cl. 428-632.000.
Gray, Thomas J., 4,491,564, Cl. 422-211.000.
Weinstein, Paul; and Winter, Joseph, 4,491,463, Cl. 65-2.000.

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Reynolds, Gary R.; Gaynor, Thomas R.; Olivera, Paul; Rothenberg, Ross E.; Smith, Jay G.; Kurby, Christopher N.; and Mansfield, Terry K., 4,491,806, Cl. 331-96.000.

Olson, Daniel R.; and Webb, Karen K., to General Electric Company. Method of preparing curable coating composition from alcohol, colloidal silica, silylacrylate and multiacrylate monomer. 4,491,508, Cl. 204-159.130.

Olson, Elwyn H., to Honeywell Inc. Differential temperature control. 4,491,821, Cl. 337-307.000.

Olympus Optical Co., Ltd.: *See*—
Kimura, Kenji, 4,491,771, Cl. 318-254.000.
Matsubara, Masaki, 4,491,394, Cl. 350-414.000.

Omata, Nobuaki, to Nifco, Inc. Binder for lines, rods, or tubes. 4,490,886, Cl. 24-16.0PB.

Omron Tateisi Electronics Co.: *See*—
Agatahama, Shunichi, 4,490,903, Cl. 29-622.000.
Yamashita, Tsukasa; Matano, Masaharu; Mori, Kazuhiko; and Ota, Norihiro, 4,491,384, Cl. 350-96.130.

Ooka, Yuzo, to Honda Giken Kogyo Kabushiki Kaisha. Shift drum type speed change mechanism for motorcycles. 4,491,031, Cl. 74-337.500.

Oppolzer, Wolfgang, to Sandoz Ltd. Process for the production of ergot alkaloids. 4,491,664, Cl. 546-67.000.

Ormesher, Robert J., to Aluminum Company of America. Metal scrap recovery system. 4,491,474, Cl. 75-65.00R.

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Sadamori, Hiroki; Chikazawa, Akio; Okamura, Setsuo; and Noda, Chikako, 4,491,640, Cl. 502-242.000.

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Boski, Israel, 4,491,060, Cl. 92-128.000.
Dollison, William W., 4,491,055, Cl. 91-306.000.

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Ott, Edward: *See*—
Manheimer, Wallace M.; Ott, Edward; and Bondeson, Anders, 4,491,765, Cl. 315-4.000.

Outokumpu Oy: *See*—
Honkanieni, Matti; Jankkila, Martti; Nurminen, Aimo; Virta, Matias; Iisakka, Veikko; Krogerus, Helge; Tuovinen, Heikki; Mantymaki, Tarmo; and Lajunen, Erkki, 4,491,952, Cl. 373-74.000.

Owens-Corning Fiberglas Corporation: *See*—
Carter, Neil A.; and Mott, Richard A., 4,490,955, Cl. 52-30.140.
Dunn, Charles S., 4,491,951, Cl. 373-30.000.
Harris, Ronald R.; and Saunders, Herbert M., 4,491,498, Cl. 156-497.000.
Kissell, Ronald E., 4,490,927, Cl. 34-155.000.

Ozawa, Hidekiyo; Itoh, Mikio; and Yoshida, Akira, to Fujitsu Limited. Scan-out system. 4,491,935, Cl. 364-900.000.

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Kinjo, Hisao; and Ozawa, Keiji, 4,491,941, Cl. 369-126.000.

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Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,491,918, Cl. 364-424.000.

PACCAR Inc.: *See*—
Burdon, Kenneth A., Jr., 4,491,208, Cl. 192-4.00R.

Paddock, Stephen W., to Whirlpool Corporation. Electronic sensing and display system for a refrigerator. 4,490,986, Cl. 62-127.000.

Palacio, Joaquin J.; and Cristobal, Carlos C., to Gang-Nail Systems, Inc. Truss spacer. 4,490,956, Cl. 52-639.000.

Palmer, Ansell W.: *See*—
Balch, Richard A.; and Palmer, Ansell W., 4,491,791, Cl. 324-157.000.
Bullock, Donald F.; and Palmer, Ansell W., 4,491,792, Cl. 324-157.000.
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Palmer, James K.; and Janeway, Robert K. System for measuring conductivity of a liquid. 4,491,798, Cl. 324-425.000.

Pamart, Joel: *See*—
Bellocci, Rio; and Pamart, Joel, 4,491,303, Cl. 266-114.000.

Panametrics, Inc.: *See*—
Pedersen, Norman E., 4,491,730, Cl. 250-343.000.

Park Chemical Company: *See*—
Foreman, Robert W., 4,491,523, Cl. 210-728.000.
Wesala, Robert J., 4,491,607, Cl. 427-135.000.

Parker, Glenn T.: *See*—
Smith, Jon D.; and Parker, Glenn T., 4,491,447, Cl. 411-15.000.

Parker, Lanny L., to Motorola, Inc. Active pull-up circuit. 4,491,741, Cl. 307-200.00B.

Parker Manufacturing Company: *See*—
Ewig, John F., 4,491,262, Cl. 227-131.000.

Pasar, Inc.: *See*—
Pecukonis, Joseph P., 4,491,785, Cl. 324-67.000.

Pasternack, Adalbert, to Dragerwerk Aktiengesellschaft. Emergency respirator. 4,491,130, Cl. 128-202.260.

Pate, Grover C. Portable hand-held urine disposal system for residential structures. 4,490,863, Cl. 4-301.000.

Patent-Treuhand-Gesellschaft fur Elektrische Gluhlampen GmbH: *See*—
Endres, Ludwig; and Nellis, Ruald, 4,490,933, Cl. 40-564.000.

Patsch, Manfred; and Ruske, Manfred, to BASF Aktiengesellschaft. Aminomethyl group containing cationic dyes. 4,491,662, Cl. 544-74.000.

Patton, Roy D.; and Brown, Robert C., to Colt Industries Operating Corp. Power and sensing cable arrangement for electrical discharge machining assembly. 4,491,713, Cl. 219-69.00R.

Paul, Jeffrey A., to Hughes Aircraft Company. Millimeter-wave quasi-optical planar balanced mixer. 4,491,977, Cl. 455-327.000.

Pav, Josef; Hartwich, Gerhard; and Prey, Jorg, to Kleinewefers GMBH. Apparatus for convoluting webs of paper or the like. 4,491,283, Cl. 242-67.10R.

Pavel, Klaus: *See*—
Lange, Horst; and Pavel, Klaus, 4,491,167, Cl. 163-1.000.

Pavlov, Gennady A.: *See*—
Belyavsky, Alexandr D.; Borozdinov, Gennady M.; Vasiliev, Vitaly M.; Kalogeomos, Viktor I.; Komov, Nikolai A.; Pavlov, Gennady A.; Persits, Evgeny L.; Sergienko, July M.; Svirin, Jury A.; and Titov, Boris V., 4,491,314, Cl. 272-63.000.

Payne, Paul E.; and McDonagh, Charles F. Drying insert for caps. 4,491,256, Cl. 223-24.000.

Pecoraro, Louise: *See*—
Leporte, Philippe; and Pecoraro, Louise, 4,491,496, Cl. 156-345.000.

Pecukonis, Joseph P., to Panar, Inc. Tracing electrical conductors by high-frequency loading and improved signal detection. 4,491,785, Cl. 324-67.000.

Pedersen, Norman E., to Panametrics, Inc. Method and apparatus for feedback stabilized photometric detection in fluids. 4,491,730, Cl. 250-343.000.

Peikin, Steven R. Method of stimulating satiety in mammals. 4,491,578, Cl. 424-177.000.

Pendola, Auguste, to Etudes Constructions Appareils Levage. Tackles. 4,491,301, Cl. 254-285.000.

Pennwalt Corporation: *See*—
Wheaton, Gregory A.; and Gardner, David M., 4,491,570, Cl. 423-484.000.

Pera, Luciano; Boggero, Armando; Manassero, Giorgio; and Gay, Paolo, to Centro Ricerche Fiat S.p.A. Device for modifying and uniforming the distribution of the intensity of a power laser beam. 4,491,383, Cl. 350-66.000.

Perkin-Elmer Corporation, The: *See*—
Smith, Donald L., 4,491,735, Cl. 250-423.00R.

Pernia, Nicholas L., to McColeman, William. One-way pour valve. 4,491,230, Cl. 215-21.000.

Perseo, Giuseppe: *See*—
de Castiglione, Roberto; Gozzini, Luigia; Montecucchi, Pier C.; and Perseo, Giuseppe, 4,491,541, Cl. 260-112.50R.

Pershin, Nikolai I.: *See*—
Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Denisov, Vladimir A.; Kalevskaya, Elena F.; Zhiltsov, Jury S.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; Kuzmin, Vladimir V.; Pershin, Nikolai I.; Vlasov, Evgeny V.; Reshetnikova, Natalya M.; and Tsirlin, Boris E., 4,491,751, Cl. 310-49.00R.

Persits, Evgeny L.: *See*—
Belyavsky, Alexandr D.; Borozdinov, Gennady M.; Vasiliev, Vitaly M.; Kalogeomos, Viktor I.; Komov, Nikolai A.; Pavlov, Gennady A.; Persits, Evgeny L.; Sergienko, July M.; Svirin, Jury A.; and Titov, Boris V., 4,491,314, Cl. 272-63.000.

Perthes, Harald: *See*—
Nickol, Friedrich W.; and Perthes, Harald, 4,491,391, Cl. 350-339.00R.

Peters, Clifford M., to Joy Manufacturing Company. Double acting pilot valve. 4,491,154, Cl. 137-625.660.

Petersen, Wallace C., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,491,467, Cl. 71-93.000.

Peterson, Carl F.: *See*—
Carlson, John H.; and Peterson, Carl F., 4,491,033, Cl. 74-640.000.

Peterson, David D., to Nuclepore Corp. Method for measuring erythrocyte deformability. 4,491,012, Cl. 73-61.400.

Peterson, Gregory E., to General Motors Corporation. Vehicle air conditioning system. 4,490,987, Cl. 62-186.000.

Peterson, William R., Jr.: *See*—
Arkles, Barry C.; Peterson, William R., Jr.; and Rokowski, Joseph M., 4,491,669, Cl. 556-410.000.

Petrarch Systems Inc.: *See*—
Arkles, Barry C.; Peterson, William R., Jr.; and Rokowski, Joseph M., 4,491,669, Cl. 556-410.000.

Petroleum Instrumentation & Technological Services: *See*—
Hayatdavoudi, Asadollah; and Maresca Jr., Ronald F., 4,491,414, Cl. 366-6.000.

Petrolite Corporation: *See*—
Naiman, Michael L., 4,491,651, Cl. 525-187.000.

Pettitt, Robert E., to Minnesota Mining and Manufacturing Company. Electrographic copy paper support. 4,491,409, Cl. 355-16.000.

Petty, Michael H.; and Tidd, Kenneth, to Richardsons Westgarth & Co., Ltd. Vibrating hearth burners. 4,491,077, Cl. 110-278.000.

Pfaff Industriemaschinen GmbH: *See*—
Hager, Walter, 4,491,080, Cl. 112-275.000.

Pfaff, Wayne K. Mounting housing for leadless chip carrier. 4,491,377, Cl. 339-74.00R.

Pfister GmbH: *See*—
Haefner, Hans W., 4,491,016, Cl. 73-302.000.

Pfizer Inc.: *See*—
Cronin, Timothy H.; Fuchs, Hermann; Hoffman, William W.; and Korn, James J., 4,491,583, Cl. 424-250.000.

Phillipps, Patrick G.: *See*—
LaWhite, Eric L.; and Phillipps, Patrick G., 4,491,970, Cl. 455-100.000.

Phillips Petroleum Company: *See*—
Fodor, Lawrence M.; and Knudsen, Ronald D., 4,491,677, Cl. 568-751.000.
Reusser, Robert E.; Murtha, Timothy P.; and Todd, Elizabeth A., 4,491,563, Cl. 422-5.000.
Small, William M., 4,490,896, Cl. 29-157.30R.
Stapp, Paul R., 4,491,525, Cl. 252-8.55D.

Pickup, Kenneth H.: *See*—
Dey, Phillip; Fearns, Peter; Plessner, Karl W.; Pickup, Kenneth H.; Gaylard, Bernard; and Murphy, Arthur B., 4,491,387, Cl. 350-96.230.

Pieczykolan, George S., to Central Sprinkler Corporation. Automatic sprinkler. 4,491,182, Cl. 169-38.000.

Piel, Vera; and Schroder, Johann, to U.S. Philips Corporation. Heat accumulating agent. 4,491,529, Cl. 252-70.000.

Pigman, John H.: *See*—
Woods, William D.; and Pigman, John H., 4,490,921, Cl. 33-476.000.

Pilling, James T. Vehicle docker. 4,490,917, Cl. 33-264.000.

Pinkerton, Charles J. Portable oxygen enrichment and concentration system. 4,491,459, Cl. 55-163.000.

Pinnow, Douglas A.; and Miller, Gary E., to Times Fiber Communications, Inc. Information distribution system. 4,491,983, Cl. 455-612.000.

Pinov, Akhsarbek B.: *See*—
Baranov, Vladimir K.; Pinov, Akhsarbek B.; Potapov, Valery N.; Rostokinsky, Vladimir V.; Ryabikov, Stanislav V.; Sebelnikov, Viktor A.; Strebkov, Dmitry S.; and Tveryanovich, Eduard V., 4,491,683, Cl. 136-259.000.

Pinto, Ralph C.: *See*—
Walton, Robert N.; and Pinto, Ralph C., 4,491,308, Cl. 269-70.000.

Pioneer Video Corporation: *See*—
Kanamaru, Hitoshi, 4,491,877, Cl. 358-336.000.

Pirson, Sylvain J.; and American National Bank, executor, The. Method for oil recovery by in situ exfoliation drive. 4,491,179, Cl. 166-257.000.

Piteo, Michael J., to R. E. Phelon Company, Incorporated. Anti-reverse operation of solid state inductive magneto. 4,491,122, Cl. 123-631.000.

Pitney Bowes Inc.: *See*—
Bellemare, Richard A., 4,491,963, Cl. 382-53.000.

Pitts, Warren R., to Dennison Manufacturing Company. Antistatic floormats. 4,491,894, Cl. 361-212.000.

Plachy, Joseph. Pen gun. 4,490,935, Cl. 42-1.00J.

Planer Products Limited: *See*—
Christmas, Michael J., 4,490,982, Cl. 62-3.000.

Plessner, Karl W.: *See*—
Dey, Phillip; Fearns, Peter; Plessner, Karl W.; Pickup, Kenneth H.; Gaylard, Bernard; and Murphy, Arthur B., 4,491,387, Cl. 350-96.230.

Plonczak, Garold W.: *See*—
Brown, Stanley F.; and Plonczak, Garold W., 4,491,888, Cl. 360-97.000.

Plyler, Robert G.: *See*—
Gladd, Joseph H.; Plyler, Robert G.; and Suverison, Lyle B., 4,491,376, Cl. 339-9.00E.

Pneumo Corporation: *See*—
Martin, Eugene J., 4,491,059, Cl. 92-5.00L.

Polaroid Corporation: *See*—
Barr, Charles A.; Van Allen, David E.; and Zanardelli, John K., 4,491,434, Cl. 40-362.000.
Johnson, Bruce K., 4,491,406, Cl. 354-416.000.

Polleck, Richard E.; Scott, Kenneth A.; and Ledley, Robert E., to Sun Refining and Marketing Company. Hydrolysis of carbonyl sulfide over alumina. 4,491,516, Cl. 208-248.000.

Pont-a-Mousson S.A.: *See*—
Bellocci, Rio; and Pamart, Joel, 4,491,303, Cl. 266-114.000.
Malivoir, Roger; and Mayer, Gilbert, 4,491,214, Cl. 198-374.000.

Poock, Darwin N.; and Rathe, Robert A., to FMC Corporation. Floating sheave type pendant pay-out system for pendant supported boom. 4,491,228, Cl. 212-239.000.

Pope, Noel C., to Boart International Limited. Drilling bit. 4,491,457, Cl. 51-308.000.

Potapov, Valery N.: *See*—
Baranov, Vladimir K.; Pinov, Akhsarbek B.; Potapov, Valery N.; Rostokinsky, Vladimir V.; Ryabikov, Stanislav V.; Sebelnikov, Viktor A.; Strebkov, Dmitry S.; and Tveryanovich, Eduard V., 4,491,683, Cl. 136-259.000.

Poujoulat, Yvan: *See*—
Charron, Jean-Claude; Mulsant, Philippe; and Poujoulat, Yvan, 4,491,092, Cl. 122-18.000.

Poulin Susan B.: *See*—
Hamel, Roger G.; and Poulin Susan B., 4,491,554, Cl. 264-141.000.

Poulson, Larry. Food heating apparatus. 4,491,065, Cl. 99-327.000.

Poux, Gerard: *See*—
Athenes, Claude; Tarbouriech, Francois; and Poux, Gerard, 4,491,837, Cl. 340-825.020.

Powell, Clois E.: *See*—
Gruber, Norma J.; and Powell, Clois E., 4,491,646, Cl. 524-558.000.

PPG Industries, Inc.: *See*—
Barch, Herbert W.; Salego, George T.; Retsch, William H.; and Blair, Rudolph, 4,491,082, Cl. 118-234.000.

Pratt, Donna K.: *See*—
Terrell, Jamie B.; and Pratt, Donna K., 4,491,178, Cl. 166-192.000.

Pratz, Clarence L.; and DiClemente, Archimede, to Eagle Manufacturing Company. Safety can for storage of liquids. 4,491,251, Cl. 222-469.000.
Precision Hardware, Inc.: *See*—
Williams, Lawrence D., 4,491,354, Cl. 292-148.000.
Prey, Jorg: *See*—
Pav, Josef; Hartwich, Gerhard; and Prey, Jorg, 4,491,283, Cl. 242-67.10R.
Price, David: *See*—
Robertson, George H.; Price, David; and Birrell, Raymond N., 4,491,481, Cl. 106-288.00Q.
Prince Corporation: *See*—
Fleming, Dennis J., 4,491,360, Cl. 296-97.00G.
Fleming, Dennis J., 4,491,899, Cl. 362-74.000.
Prince, John B. Apparatus for practicing defense arts. 4,491,316, Cl. 272-78.000.
Pritchard, Lawrence E. Medical insurance verification and processing system. 4,491,725, Cl. 235-375.000.
Pritzkow, Dennis H.; Loomis, Neil W.; Golner, Thomas M.; and Hoffman, David M., to General Electric Company. Optical potting of solid-state detector cells. 4,491,732, Cl. 250-366.000.
Pro/Pak Industries, Inc.: *See*—
Miller, R. Craig, 4,491,602, Cl. 426-438.000.
Procter & Gamble Company, The: *See*—
Hoskins, James J.; and Kessler, Adriaan, 4,491,539, Cl. 252-541.000.
Proctor & Schwartz, Inc.: *See*—
George, Kurudamannil A., 4,491,603, Cl. 426-482.000.
Proebsting, Robert J.: *See*—
Eaton, Sargent S., Jr.; and Proebsting, Robert J., 4,491,936, Cl. 365-149.000.
Protective Treatments, Inc.: *See*—
Wolters, Dennis R., 4,491,614, Cl. 428-31.000.
Purcell, Jack L.: *See*—
Salter, Franklin J.; and Purcell, Jack L., 4,491,422, Cl. 366-343.000.
R. Alkan & Cie: *See*—
Mattei, Jean-Pierre; and Coutin, Pierre F., 4,491,292, Cl. 248-1.000.
R. E. Phelon Company, Incorporated: *See*—
Piteo, Michael J., 4,491,122, Cl. 123-631.000.
R F Monolithics, Inc.: *See*—
Hartmann, Clinton S., 4,491,757, Cl. 310-313.00B.
Hartmann, Clinton S., 4,491,758, Cl. 310-313.00C.
R. P. Cargille Laboratories, Inc.: *See*—
Sacher, Robert L.; and Sacher, William J., 4,491,533, Cl. 252-301.160.
Radtke, Volker; Kowarsch, Heinrich; Hahn, Erwin; and Hauser, Peter, to BASF Aktiengesellschaft. Dyes having a diazo component and an isoquinoline coupling component. 4,491,544, Cl. 534-655.000.
Rahdener Maschinenfabrik August Kolbus GmbH & Co.: *See*—
Anders, Helmut; and Dietrich, Gunter, 4,491,448, Cl. 412-21.000.
Raider, Stanley I.: *See*—
Clark, Gregory J.; Drake, Robert E.; and Raider, Stanley I., 4,490,901, Cl. 29-574.000.
Rainin, E. A., to Ioptex Inc. Intraocular lens apparatus and method for implantation of same. 4,490,860, Cl. 3-13.000.
Ramot University Authority for Applied Research: *See*—
Appelbaum, Joseph; and Weiss, Reuven, 4,491,727, Cl. 250-203.00R.
Rao, Chatty: *See*—
Hilbrans, Hermann; and Rao, Chatty, 4,491,470, Cl. 75-5.000.
Rapp, Gunther; Thomas, Erwin; Muenster, Rolf; Caffall, Brodus E.; Cyr, Philip A.; and Jones, Thomas M., to BASF Aktiengesellschaft. Manufacture of hydroxylammonium salts. 4,491,567, Cl. 423-387.000.
Raque, Glenn F. Heat seal method. 4,490,961, Cl. 53-329.000.
Rarick, Russell F.: *See*—
Dreyer, Paul L.; and Rarick, Russell F., 4,491,144, Cl. 137-240.000.
Rashleigh, Scott C., to United States of America, Navy. Fiber optic gyroscope with alternating output signal. 4,491,413, Cl. 356-350.000.
Rath, Heinrich B., to Lucas Industries Limited. Adjustable abutments in disc brakes. 4,491,205, Cl. 188-73.390.
Rathe, Robert A.: *See*—
Poock, Darwin N.; and Rathe, Robert A., 4,491,228, Cl. 212-239.000.
Raudenbusch, Werner T.: *See*—
Barnhoorn, Adrianus J. M.; and Raudenbusch, Werner T., 4,491,611, Cl. 427-386.000.
Rawlins, Dal M.: *See*—
Butkiewicz, Joseph M.; Brundage, Richard B.; and Rawlins, Dal M., 4,491,047, Cl. 83-817.000.
Ray, Glen, to Allen-Bradley Company. Magnetically biased inductor. 4,491,819, Cl. 336-110.000.
Raychem Corporation: *See*—
Yaeger, John R.; and Morgan, Robert K., 4,490,975, Cl. 60-527.000.
Raytheon Company: *See*—
Richards, Gerald P., 4,491,925, Cl. 364-521.000.
RCA Corporation: *See*—
Aschwanden, Felix, 4,491,870, Cl. 358-153.000.
D'Amato, Ralph J., 4,491,764, Cl. 315-3.000.
Forquer, Timothy J.; and Li, Hungwen, 4,491,915, Cl. 364-200.000.
Harada, Shigeo; and Tosima, Soitiro, 4,491,412, Cl. 356-36.000.
Hawryio, Frank Z., 4,491,264, Cl. 228-121.000.
Hoover, Merle V., 4,491,807, Cl. 331-111.000.
Roach, William R., 4,490,945, Cl. 51-165.00R.
Schmitz, Anthony N.; and Clark, Raymond N., 4,491,871, Cl. 358-186.000.
Recognition Equipment Incorporated: *See*—
Sanner, Medford D., 4,491,964, Cl. 382-50.000.
Reed, Lehman T. Electric power supplying well head assembly. 4,491,176, Cl. 166-65.00R.
Reeves, Clarence C., to Speedio Manufacturing Corporation. Electrostatic spray apparatus. 4,491,276, Cl. 239-692.000.
Reffert, Roland, to Albert-Frankenthal AG. Adjustable folding apparatus. 4,491,310, Cl. 270-49.000.
Regan, Albert M., to Hughes Tool Company. Marine conductor coupling. 4,491,345, Cl. 285-18.000.
Regelsberger, Wolfgang: *See*—
Hunger, Josef; Klueber, Wilhelm; and Regelsberger, Wolfgang, 4,491,445, Cl. 409-234.000.
Reichl, Alfred, to Dr. Johannes Heidenhain GmbH. Reference mark designating system for incremental position measuring instruments. 4,491,928, Cl. 364-562.000.
Reis, Edmund: *See*—
Weller, Gerhard; Rosenfeldt, Bernd; and Reis, Edmund, 4,491,981, Cl. 455-602.000.
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Toda, Toshiharu, 4,491,893, Cl. 361-120.000.
Rem Chemicals, Inc.: *See*—
Michaud, Mark D.; Michaud, Robert G.; Tirendi, Frank; and Zobbi, Robert G., 4,491,500, Cl. 156-628.000.
Renault Vehicules Industriels: *See*—
Morin, Rene, 4,491,116, Cl. 123-502.000.
REPA Feinstanzwerk GmbH: *See*—
Fohl, Artur, 4,491,343, Cl. 280-801.000.
Fohl, Artur, 4,491,344, Cl. 280-808.000.
Reshetnikova, Natalya M.: *See*—
Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; Kuzmin, Vladimir V.; Pershin, Nikolai I.; Vlasov, Evgeny V.; Reshetnikova, Natalya M.; and Tsirlin, Boris E., 4,491,751, Cl. 310-49.00R.
Retsch, William H.: *See*—
Barch, Herbert W.; Salego, George T.; Retsch, William H.; and Blair, Rudolph, 4,491,082, Cl. 118-234.000.
Rettura, Giuseppe: *See*—
Seifter, Eli; and Rettura, Giuseppe, 4,491,574, Cl. 424-10.000.
Reusser, Robert E.; Martha, Timothy P.; and Todd, Elizabeth A., to Phillips Petroleum Company. Process for deodorizing a paraffinic hydrocarbon feedstock. 4,491,563, Cl. 422-5.000.
Reynhout, Cornelis M.: *See*—
Haes, Freddy; and Reynhout, Cornelis M., 4,490,906, Cl. 30-34.200.
Reynolds, Desmond H. J., to Lucas Industries Limited. Vehicle braking system. 4,490,979, Cl. 60-581.000.
Reynolds, Gary R.; Gaynor, Thomas R.; Olivera, Paul; Ruthenberg, Ross E.; Smith, Jay G.; Kurby, Christopher N.; and Mansfield, Terry K., to Motorola, Inc. Resonant cavity with integrated microphonic suppression means. 4,491,806, Cl. 331-96.000.
Reynolds Metals Company: *See*—
Johnston, Thomas J., 4,491,471, Cl. 75-0.50R.
Rhein-Nadel Maschinennadel GmbH: *See*—
Lange, Horst; and Pavel, Klaus, 4,491,167, Cl. 163-1.000.
Rhodes, William E., III: *See*—
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,491,576, Cl. 424-78.000.
Rhythm Motor Parts Manufacturing Company Limited: *See*—
Kadota, Shinkichi; and Yamase, Tsuyoshi, 4,491,371, Cl. 303-6.00C.
Rice, Richard W.: *See*—
Fung, Shun C.; and Rice, Richard W., 4,491,636, Cl. 502-37.000.
Rice, Robert; and Ferreira, Robert. Y-Connection for flexible conduit. 4,491,349, Cl. 285-197.000.
Richards, George A. Ash separating shovel. 4,491,357, Cl. 294-49.000.
Richards, Gerald P., to Raytheon Company. Precision time tracking line generator. 4,491,925, Cl. 364-521.000.
Richardson, Walter L., to Northern Telecom Limited. Braking device. 4,491,206, Cl. 188-166.000.
Richardsons Westgarth & Co., Ltd.: *See*—
Petty, Michael H.; and Tidd, Kenneth, 4,491,077, Cl. 110-278.000.
Richarz, Winfried; Mangold, Dietrich; and Girgensohn, Bjoern, to BASF Aktiengesellschaft. Preparation of aromatic azomethines. 4,491,672, Cl. 564-271.000.
Rickmann, Bernard C., to Square D Company. Draw-out circuit breaker. 4,491,896, Cl. 361-339.000.
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Ikoma, Tadashi; and Miyawaki, Syozo, 4,491,929, Cl. 364-563.000.
Jinnai, Koichiro, 4,491,852, Cl. 346-75.000.
Rieber, Norbert; Hellbach, Hans; Hunziker, Gerhard; and Mueller, Guenter, to BASF Aktiengesellschaft. Process and apparatus for the safe supply of molecular oxygen or of gas containing molecular oxygen to an oxidation of hydrocarbons. 4,491,674, Cl. 568-357.000.
Riemersma, Pieter, to U.S. Philips Corporation. Shaving apparatus. 4,490,905, Cl. 30-34.100.
Riker Laboratories: *See*—
Bazitt, Elden H., 4,491,584, Cl. 424-263.000.
Rinehart, Larry F.: *See*—
Gripshover, Ronald J.; and Rinehart, Larry F., 4,491,842, Cl. 343-18.00E.
Rinn, Christian; and Vezain, Gerard, to Societe Nationale Industrielle Aerospatiale. Multiple locking device insensitive to thermal variations especially applicable to space vehicles. 4,491,289, Cl. 244-158.00R.
Rizk, Sidky D.; Hsieh, Harry W. S.; and Marzeo, Michael P., to Essex Specialty Products, Inc. Acrylic resin having pendent silane groups thereon, and methods of making and using the same. 4,491,650, Cl. 525-102.000.

Rizzi, Marc A.: *See*—
Hold, Peter; and Rizzi, Marc A., 4,491,417, Cl. 366-75.000.
Roach, William R., to RCA Corporation. Stylus manufacturing apparatus and method. 4,490,945, Cl. 51-165.00R.
Robert Bosch GmbH: *See*—
Bone, Rainer; Boning, Bernward; Nagel, Rudolf; and Sellmaier, Franz, 4,491,110, Cl. 123-425.000.
Brautigam, Rolf; Haas, Lothar; Wessemeyer, Jurgen; Heilmann, Heinz-Dieter; Hergt, Peter; and Fassel, Reinhard, 4,491,026, Cl. 73-861.860.
Eheim, Franz; and Bohringer, Wilfried, 4,491,111, Cl. 123-449.000.
Gassler, Hermann; Joos, Eugen; Jundt, Werner; Kubach, Hans; and Singer, Erich, 4,491,113, Cl. 123-490.000.
Heitmann, Jurgen, 4,491,869, Cl. 358-141.000.
Leiber, Heinz, 4,491,919, Cl. 364-426.000.
Sochor, Josef, 4,491,861, Cl. 358-13.000.
Robert, Kenneth A.: *See*—
Shimrila, John; and Robert, Kenneth A., 4,491,433, Cl. 400-471.100.
Robertshaw Controls Company: *See*—
Maseeke, Siegfried E., 4,491,680, Cl. 136-230.000.
Robertson, George H.; Price, David; and Birrell, Raymond N., to Ciba-Geigy Corporation. Organic pigment compositions containing an azo compound with a heterocyclic substituent. 4,491,481, Cl. 106-288.00Q.
Roby, Gerard: *See*—
Sarton, Francois; and Roby, Gerard, 4,490,887, Cl. 24-16.0PB.
Rockwell International Corporation: *See*—
Morcerf, Lester A.; Kiefer, Charles E.; Jones, Gary W.; and Conditt, John E., 4,491,966, Cl. 455-32.000.
Roelants, Marc M. M., to U.S. Philips Corporation. Switching device for light beams. 4,491,393, Cl. 350-388.000.
Rogers Corporation: *See*—
Gottlieb, Michael M.; and Fishman, David S., 4,491,895, Cl. 361-306.000.
Rogers, Gerald: *See*—
Koeppen, Peter L.; Rogers, Gerald; Brown, Sammy K.; and Solimeno, Duane, 4,491,907, Cl. 364-200.000.
Rohm GmbH: *See*—
Hanstein, Friedrich; and Szigeti, Peter R., 4,490,948, Cl. 51-358.000.
Rokowski, Joseph M.: *See*—
Arkles, Barry C.; Peterson, William R., Jr.; and Rokowski, Joseph M., 4,491,669, Cl. 556-410.000.
Rosen, Alan D.: *See*—
Leight, Howard S.; and Rosen, Alan D., 4,490,857, Cl. 2-209.000.
Rosenblatt, Alex: *See*—
Bumpus, Boyd B.; Rosenblatt, Alex; and Rosenblatt, Leonard, 4,490,957, Cl. 52-489.000.
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Bumpus, Boyd B.; Rosenblatt, Alex; and Rosenblatt, Leonard, 4,490,957, Cl. 52-489.000.
Rosenburg, E. William; and Belew, Patricia W., to University of Tennessee Research Corporation. Treatment of psoriasis and seborrheic dermatitis with imidazole antibiotics. 4,491,588, Cl. 424-273.00R.
Rosenfeldt, Bernd: *See*—
Weller, Gerhard; Rosenfeldt, Bernd; and Reis, Edmund, 4,491,981, Cl. 455-602.000.
Rosler, Richard S.; and Engle, George M., to Advanced Semiconductor Materials of America, Inc. Spacer for preventing shorting between conductive plates. 4,491,606, Cl. 427-38.000.
Rossi, Pietro P.; and Anastasio, Maurizio, to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A. Esters of polyvalent alcohols, process for preparing them and their use as lubricating oils. 4,491,528, Cl. 252-56.00S.
Rostokinsky, Vladimir V.: *See*—
Baranov, Vladimir K.; Pinov, Akhsarbek B.; Potapov, Valery N.; Rostokinsky, Vladimir V.; Ryabikov, Stanislav V.; Sabelnikov, Viktor A.; Strebkov, Dmitry S.; and Tveryanovich, Eduard V., 4,491,683, Cl. 136-259.000.
Rothenberg, Carl, to United States of America, Air Force. Wide angle phased array dome lens antenna with a reflection/transmission switch. 4,491,845, Cl. 343-754.000.
Rotondo, Richard D. Device for altering cam profile. 4,491,098, Cl. 123-90.160.
Rowell, Jonathan M.: *See*—
Von Grunberg, Hubertus; Corey, Frederick; and Rowell, Jonathan M., 4,491,340, Cl. 280-668.000.
Roy, Kleber: *See*—
Buzzichelli, Lilian; and Roy, Kleber, 4,491,227, Cl. 212-196.000.
Rubino, Daniel A., to Babcock Bros. Co. Support arm for a milk hose. 4,491,085, Cl. 119-14.100.
Ruddell, Alan J.: *See*—
Eglise, David; and Ruddell, Alan J., 4,491,140, Cl. 133-8.00R.
Rudi, Guttorm, to Tandberg Data A/S. Device for positioning a magnetic head in a magnetic tape device. 4,491,890, Cl. 360-106.000.
Ruesch, James R., to Micro Motion, Inc. Electronic circuit for vibrating tube densimeter. 4,491,009, Cl. 73-32.00A.
Ruff, Donald O.: *See*—
Campbell, Robert W.; and Ruff, Donald O., 4,491,779, Cl. 320-6.000.
Ruggiero, Ralph: *See*—
Long, Wallace H.; and Ruggiero, Ralph, 4,491,279, Cl. 241-101.700.
Ruhman, Smil; and Scherson, Isaac, to Yeda Research & Development Co. Ltd. Associative processor particularly useful for tomographic image reconstruction. 4,491,932, Cl. 364-900.000.
Rumpp, Gerhard; Spieth, Manfred; and Scholz, Dieter, to Hilti Aktiengesellschaft. Tool holder device. 4,491,444, Cl. 409-234.000.
Rusch, Reinhard: *See*—
Kruger, Hans-Rudolf; Arndt, Friedrich; and Rusch, Reinhard, 4,491,466, Cl. 71-90.000.
Ruske, Manfred: *See*—
Patsch, Manfred; and Ruske, Manfred, 4,491,662, Cl. 544-74.000.
Ruskin, Frank; Fellner, Van N.; and Haynes, Joel. Compact vending machine. 4,491,240, Cl. 221-5.000.
Russell, Larry R. Surface controlled auxiliary blade stabilizer. 4,491,187, Cl. 175-325.000.
Russell, Robert B.: *See*—
Gilvar, Martin; and Russell, Robert B., 4,491,488, Cl. 148-144.000.
Ruthenberg, Ross E.: *See*—
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Rutil S.r.l.: *See*—
Coccia, Giovanni A., 4,491,416, Cl. 366-73.000.
Rutter, Jerry L.: *See*—
Lange, Richard M.; and Rutter, Jerry L., 4,491,527, Cl. 252-51.50A.
Ryabikov, Stanislav V.: *See*—
Baranov, Vladimir K.; Pinov, Akhsarbek B.; Potapov, Valery N.; Rostokinsky, Vladimir V.; Ryabikov, Stanislav V.; Sabelnikov, Viktor A.; Strebkov, Dmitry S.; and Tveryanovich, Eduard V., 4,491,683, Cl. 136-259.000.
Rydholm, Manford E.: *See*—
Zuber, Chester L.; Butrum, Virgil T.; Gorss, Jeffrey B.; and Rydholm, Manford E., 4,491,475, Cl. 75-65.00R.
Ryskin, Solomon E.: *See*—
Gorodetsky, Alexandr A.; Gromov, Nikolai N.; Kulzhinsky, Vladimir L.; Marus, Rudolf A.; Ryskin, Solomon E.; Samoilov, Pavel B.; Shamov, Alexandr N.; Sharygin, Nikolai V.; and Kireev, Ivan N., 4,490,922, Cl. 34-1.000.
S&C Electric Company: *See*—
Jaroez, John M., 4,491,820, Cl. 337-159.000.
O'Leary, Raymond P., 4,491,707, Cl. 200-149.00R.
O'Leary, Raymond P.; and Urbanek, John, 4,491,708, Cl. 200-149.00R.
S.N.E.C.M.A.: *See*—
Levant, Jean M., 4,490,888, Cl. 24-20.00R.
Saad, Saad S., to Andrew Corporation. Multi-port, multi-frequency microwave combiner with overmoded square waveguide section. 4,491,810, Cl. 333-126.000.
Sabelnikov, Viktor A.: *See*—
Baranov, Vladimir K.; Pinov, Akhsarbek B.; Potapov, Valery N.; Rostokinsky, Vladimir V.; Ryabikov, Stanislav V.; Sabelnikov, Viktor A.; Strebkov, Dmitry S.; and Tveryanovich, Eduard V., 4,491,683, Cl. 136-259.000.
Sacher, Robert L.; and Sacher, William J., to R. P. Cargille Laboratories, Inc. Immersion oil for fluorescence microscopy. 4,491,533, Cl. 252-301.160.
Sacher, William J.: *See*—
Sacher, Robert L.; and Sacher, William J., 4,491,533, Cl. 252-301.160.
Sadamori, Hiroki; Chikazawa, Akio; Okamura, Setsuo; and Noda, Chikako, to Osaka Gas Company Limited. Catalyst for combustion at low temperatures and process for producing same. 4,491,640, Cl. 502-242.000.
Sahara, Seiichi: *See*—
Okumoto, Tadaoki; Sugimoto, Masatoshi; Horiuchi, Noriyuki; Sahara, Seiichi; Yamada, Tetsuo; Hashimoto, Kinrou; Ichikawa, Masayoshi; and Ninomiya, Fujio, 4,491,621, Cl. 428-519.000.
Saiin, Takanori: *See*—
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Sainsbury, Garrett M. Solar collector. 4,491,125, Cl. 126-424.000.
Saito, Akiro; Kamaya, Naoki; Endo, Junya; Ohba, Seisuke; Kumano, Akira; Ida, Yoshinori; and Horie, Hideo, to Sony Corporation. Tape loading apparatus. 4,491,886, Cl. 360-85.000.
Saito, Isoo; Fujioka, Kotaro; Arai, Hajime; and Saruyama, Hideo, to Toray Industries, Inc. Polyester multifilament yarn and process for producing thereof. 4,491,657, Cl. 528-308.100.
Saito, Kazuo, to Mitsubishi Denki Kabushiki Kaisha. Equalizer circuit for use in communication unit. 4,491,808, Cl. 333-28.00R.
Saito, Takayuki; Kikuchi, Toru; Obara, Masakatsu; and Kobayashi, Akihiro, to Hitachi Chemical Company, Ltd. Hexahydrophthalides. 4,491,667, Cl. 549-302.000.
Saito, Yasunori: *See*—
Negishi, Yukiyasu; Ishida, Yukinori; Saito, Yasunori; and Tanaka, Shigeru, 4,491,386, Cl. 350-96.230.
Saito, Yoshihiro; and Yazaki, Komei, to Nissan Motor Company, Limited. Gear shift control linkage of transmission. 4,491,032, Cl. 74-473.00R.
Saitoh, Mitsunori: *See*—
Imagawa, Kyoshiro; Sakuragi, Shiro; and Saitoh, Mitsunori, 4,491,385, Cl. 350-96.200.
Saitoh, Takeshi; Matsuura, Shigeo; Moteki, Minoru; and Hatashita, Hiroshi, to Hitachi, Ltd. Wide-band tuner having a temperature-compensated microstrip resonator arrangement. 4,491,976, Cl. 455-315.000.
Sajo, Istvan; Vamos, Gyorgy; Urmossy, Miklos; Sipos nee Kaveczka, Barbara; Zemplen nee Papp, Eva; Borsovszky, Eva; and Barta, Laszlo , to Energiagazdalkodasi Intezet. Method for the fast calorimetric qualification of puzzoulan materials. 4,491,633, Cl. 436-147.000.

Sakai, Hirohiko: *See*—
Kokubo, Ichiro; Kirihara, Shigeki; Sakai, Hirohiko; and Iwai, Masatoshi, 4,491,623, Cl. 428-658.000.
Sakai, Kango; and Nakano, Hirofumi, to Nippon Steel Corporation. Process and apparatus for the continuous electrolytic treatment of a metal strip using horizontal electrodes. 4,491,506, Cl. 204-28.000.
Sakai, Shinji; Harada, Yoshihito; Ishizaki, Akira; and Kawabata, Takashi, to Canon Kabushiki Kaisha. Automatic focusing optical apparatus. 4,491,403, Cl. 354-409.000.
Sakai, Shojo; Kato, Hisaaki; Samoto, Yoshihiko; and Inada, Kenichi, to Murata Kikai Kabushiki Kaisha. Method and apparatus for analysis of information about yarn evenness. 4,491,831, Cl. 340-677.000.
Sakamoto, Kenji: *See*—
Ito, Jiro; Kitano, Masuo; and Sakamoto, Kenji, 4,491,424, Cl. 368-157.000.
Sakoda, Kousuke: *See*—
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Sakou, Hiroshi; and Kashioka, Seiji, to Hitachi, Ltd. Method of determining an optimum threshold for obtaining binary image signal for use in a pattern recognition system. 4,491,962, Cl. 382-50.000.
Sakuragi, Shiro: *See*—
Imagawa, Kyoshiro; Sakuragi, Shiro; and Saitoh, Mitsunori, 4,491,385, Cl. 350-96.200.
Sakurai, Kazuhiro: *See*—
Idogaki, Takaharu; Kawai, Hisasi; Hattori, Kyo; and Sakurai, Kazuhiro, 4,491,815, Cl. 335-229.000.
Salant, Richard F.; and Boyd, Clinton A., to Hughes Tool Company. Grooved mechanical face seal. 4,491,331, Cl. 277-96.100.
Salego, George T.: *See*—
Barch, Herbert W.; Salego, George T.; Retsch, William H.; and Blair, Rudolph, 4,491,082, Cl. 118-234.000.
Salk Institute for Biological Studies, The: *See*—
McTamaney, Louis S., 4,491,829, Cl. 364-562.000.
Salter, Franklin J.; and Purcell, Jack L. Portable spot mixing apparatus. 4,491,422, Cl. 366-343.000.
Salzgitter Maschinen und Anlagen Aktiengesellschaft: *See*—
Buse, Heinrich; and Schmidt, Heinz-Joachim, 4,491,846, Cl. 343-758.000.
Salzmann, Thomas N., to Merck & Co., Inc. Azabicyclo[2.1.0] antibiotics. 4,491,580, Cl. 424-244.000.
Samoilov, Pavel B.: *See*—
Gorodetsky, Alexandr A.; Gromov, Nikolai N.; Kulzhinsky, Vladimir L.; Marus, Rudolf A.; Ryskin, Solomon E.; Samoilov, Pavel B.; Shamov, Alexandr N.; Sharygin, Nikolai V.; and Kireev, Ivan N., 4,490,922, Cl. 34-1.000.
Samoto, Yoshihiko: *See*—
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Sampei, Tohru: *See*—
Umemura, Kazuhiro; Sampei, Tohru; Nakata, Kazuo; Sato, Hirokazu; Murakami Kenya; and Intoh, Kiyoshi, 4,491,958, Cl. 381-51.000.
Sanderson, Robert A., to Graham Magnetics Incorporated. Tape cleaning method. 4,491,485, Cl. 134-9.000.
Sandoz Ltd.: *See*—
Oppolzer, Wolfgang, 4,491,664, Cl. 546-67.000.
Vogel, Arnold, 4,491,581, Cl. 424-250.000.
Sandstrom, Paul H., to Goodyear Tire & Rubber Company, The. Rubber containing esters of rosin acid. 4,491,655, Cl. 527-600.000.
Sanner, Medford D., to Recognition Equipment Incorporated. Image processing integrated circuit. 4,491,964, Cl. 382-50.000.
Sano, Yoshikazu; Mori, Hideyasu; and Sato, Yasuji, to Tokyo Shibaura Denki Kaisha. Key telephone system and method of setting operating data in the key telephone system. 4,491,693, Cl. 179-99.00R.
Sarasota Automation Limited: *See*—
Clark, Michael A. G., 4,491,841, Cl. 340-939.000.
Sarbacher, Robert I.; and Fechter, Harry R., to Synectics, Inc. Metal-air electrochemical cell. 4,491,624, Cl. 429-27.000.
Sarma, Kalluri R.: *See*—
Lesk, Israel A.; and Sarma, Kalluri R., 4,491,604, Cl. 427-8.000.
Sarton, Francois; and Roby, Gerard, to Legrand. Cable tie. 4,490,887, Cl. 24-16.0PB.
Saruyama, Hideo: *See*—
Saito, Isoo; Fujioka, Kotaro; Arai, Hajime; and Saruyama, Hideo, 4,491,657, Cl. 528-308.100.
Sasaki, Hiromu: *See*—
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Sato, Fumitaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Data processing system with improved address translation facility. 4,491,911, Cl. 364-200.000.
Sato, Haruhito: *See*—
Oda, Sumihiro; and Sato, Haruhito, 4,491,678, Cl. 585-466.000.
Sato, Hirokazu: *See*—
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Sato, Hiroshi: *See*—
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Sato, Hisao: *See*—
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Sato, Seiji, to Sony Corporation. Mode selector of recording and/or reproducing apparatus. 4,491,887, Cl. 360-90.000.
Sato, Yasuji: *See*—
Sano, Yoshikazu; Mori, Hideyasu; and Sato, Yasuji, 4,491,693, Cl. 179-99.00R.
Satterfield, Audie L. Animal tether. 4,491,091, Cl. 119-117.000.
Saunders, Herbert M.: *See*—
Harris, Ronald R.; and Saunders, Herbert M., 4,491,498, Cl. 156-497.000.
Savage, Edward C., to Xerox Corporation. Electrostatographic system development modulation. 4,491,408, Cl. 355-3.0DD.
Savage, John M., Jr. Lens and mount for use with electromagnetic wave source. 4,491,900, Cl. 362-230.000.
Sawayama, Yoshihiko; and Mishima, Katsuhiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for measuring noise factor and available gain. 4,491,783, Cl. 324-57.00N.
Sawby, Kenneth J. Grain handling system. 4,491,216, Cl. 198-863.000.
Sawyer, Wilbur H.: *See*—
Manning, Maurice; and Sawyer, Wilbur H., 4,491,577, Cl. 424-177.000.
Scans Associates, Inc.: *See*—
Smith, Richard L.; and Van Allen, Kent, 4,491,773, Cl. 318-257.000.
Schacknies, Gerhard: *See*—
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Schaeffer, Karl: *See*—
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Schafer, Herbert: *See*—
Becharach, Ottmar; and Schafer, Herbert, 4,491,280, Cl. 241-121.000.
Schaltbau Gesellschaft mbH: *See*—
Happach, Anton, 4,491,812, Cl. 335-184.000.
Schaub, Dietmar; and Heupe, Gert, to Albert Nestler GmbH. Electronic stylus for digitizing devices. 4,491,688, Cl. 178-18.000.
Scheitz, John T.: *See*—
Brown, Vincent B.; Kozel, Charles A.; and Scheitz, John T., 4,491,379, Cl. 339-97.00P.
Schelling, Gilbert, to Hans Horlacher. Method of and apparatus for removing coupling members from a slide fastener. 4,490,899, Cl. 29-410.000.
Schenker, Achim; Schutz, Jurgen; and Schneider, Jurgen, to Teroson G.m.b.H. Grinding aid and mineral mixture containing it. 4,491,480, Cl. 106-90.000.
Schering AG: *See*—
Kruger, Hans-Rudolf; Arndt, Friedrich; and Rusch, Reinhard, 4,491,466, Cl. 71-90.000.
Scherowsky, Gunther; Moller, Alexander; Heppke, Gerd; and Knippenberg, Burkhard, to Siemens Aktiengesellschaft. Liquid-crystal mixture with a pleochroic anthraquinone dye, and method for producing such a dye. 4,491,532, Cl. 252-299.100.
Scherson, Isaac: *See*—
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Schlindler Haughton Elevator Corp.: *See*—
Thompson, William I.; Welter, Mark F.; and Jodry, Dean L., 4,491,200, Cl. 187-61.000.
Schlinger, Warren G., to Texaco Inc. Partial oxidation process. 4,491,456, Cl. 48-197.00R.
Schlotzhauer, Kenneth G.: *See*—
Metz, Arthur J.; and Schlotzhauer, Kenneth G., 4,491,803, Cl. 330-261.000.
Schmidle, Claude J.; and Varadhachary, Seevaram N., to Congoleum Corporation. Resinous polymer sheet material having surface decorative effects of contrasting gloss and method of making the same. 4,491,616, Cl. 428-158.000.
Schmidt, Heinz-Joachim: *See*—
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Schmidt Manufacturing & Equipment (UK) Ltd.: *See*—
Duncan, Ian J., 4,490,874, Cl. 15-87.000.
Schmidt, Otto. Dust exhaustor. 4,490,881, Cl. 15-301.000.
Schmidt, Paul R.; and Beall, Nelson J., to General Mills, Inc. Dispensing device. 4,491,252, Cl. 222-531.000.
Schmidt, Richard B. Home ice cream and soft drink maker with automatic air injection. 4,491,064, Cl. 99-323.100.
Schmidt, Walter R., to Teppichfabrik Karl Eybl Gesellschaft m.b.H. Right-left knitted pile fabric. 4,490,995, Cl. 66-191.000.
Schmitt, Michel, to Lucas Industries public limited company. Disc brake assembly for vehicles with interchangeable brake modules. 4,491,202, Cl. 188-71.500.
Schmitz, Anthony N.; and Clark, Raymond N., to RCA Corporation. Audio-visual diplexed television transmitter in which the aural signal can be multiplexed without switching. 4,491,871, Cl. 358-186.000.
Schmitz, Charles J., to Motorola, Inc. Control system for a radio-controlled door operator. 4,491,774, Cl. 318-282.000.
Schmitz, Gunter: *See*—
Ackermann, Wilhelm; Langlitz, Karlheinz; and Schmitz, Gunter, 4,491,074, Cl. 105-164.000.
Schmitz, Heinz-Withold: *See*—
Bauer, Hans; and Schmitz, Heinz-Withold, 4,491,277, Cl. 241-5.000.
Schneider, Jurgen: *See*—
Schenker, Achim; Schutz, Jurgen; and Schneider, Jurgen, 4,491,480, Cl. 106-90.000.
Schnell, Hans: *See*—
Wenske, Rolf; Schnell, Hans; and Mirsberger, Peter, 4,491,521, Cl. 210-401.000.
Schoeffler, William N. Automatic choke valve. 4,491,148, Cl. 137-499.000.

Schoen, Klaus-Peter, to Hoechst Aktiengesellschaft. Suction device for holding plates. 4,491,313, Cl. 271-194.000.
Scholz, Dieter: *See*—
Rumpp, Gerhard; Spieth, Manfred; and Scholz, Dieter, 4,491,444, Cl. 409-234.000.
Schonsberger, Edgar F., to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Equipment for indication of the electrically measurable positions or adjustments of individual units required for the printing process. 4,491,333, Cl. 340-721.000.
Schroder, Felix: *See*—
Fischer, Karl; and Schroder, Felix, 4,491,722, Cl. 219-458.000.
Schreiber, William L.: *See*—
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,491,537, Cl. 252-522.00R.
Schroder, Johann: *See*—
Piel, Vera; and Schroder, Johann, 4,491,529, Cl. 252-70.000.
Schroder, Peter: *See*—
Harmatzy-Simon, Bela; Schroder, Peter; Buchel, Peter A., deceased; and Buchel nee Diekmann, Helga, legal representative, 4,491,249, Cl. 222-325.000.
Schrotz, Kurt: *See*—
Kistner, Heinz; and Schrotz, Kurt, 4,491,497, Cl. 156-384.000.
Schulte, Bernhard: *See*—
Serini, Volker; Schulte, Bernhard; Block, Hans-Dieter; and Freitag, Dieter, 4,491,656, Cl. 528-167.000.
Schultz, Charles J. Shoe dewooder. 4,490,911, Cl. 30-297.000.
Schumaker, Daniel A.: *See*—
Larson, David A.; and Schumaker, Daniel A., 4,491,698, Cl. 179-115.5PV.
Schuster, Stanley E.: *See*—
Chappell, Barbara A.; and Schuster, Stanley E., 4,491,748, Cl. 307-449.000.
Schutz, Jurgen: *See*—
Schenker, Achim; Schutz, Jurgen; and Schneider, Jurgen, 4,491,480, Cl. 106-90.000.
Schutz, Rudolph W.: *See*—
Weis, Rudolf R.; and Schutz, Rudolph W., 4,490,962, Cl. 53-550.000.
Schwartz, James W.: *See*—
Boldt, Melvin H.; and Schwartz, James W., 4,491,872, Cl. 358-237.000.
Schwartz, Victor M. Connector for geodesic dome. 4,491,437, Cl. 403-172.000.
SCM Corporation: *See*—
Varvil, R. Douglas; Wilson, Lon L.; and Bell, Joseph W., 4,491,597, Cl. 426-103.000.
Scott, Kenneth A.: *See*—
Polleck, Richard E.; Scott, Kenneth A.; and Ledley, Robert E., 4,491,516, Cl. 208-248.000.
Scott Paper Company: *See*—
Buhayar, Eric S., 4,491,045, Cl. 83-341.000.
Sebag, Henri: *See*—
Vanlerberghe, Guy; and Sebag, Henri, 4,491,534, Cl. 252-357.000.
Secrist, Duane R.: *See*—
Clark, James M.; and Secrist, Duane R., 4,491,510, Cl. 204-290.00R.
SEEQ Technology, Inc.: *See*—
Chiu, Te-Long, 4,490,900, Cl. 29-571.000.
Seifter, Eli; and Rettura, Giuseppe, to Albert Einstein College of Medicine of Yeshiva University, a division of Yeshiva University. Reduction of high dose aspirin toxicity by dietary vitamin A. 4,491,574, Cl. 424-10.000.
Seiler, James F. N., Jr., to United States of America, Army. Bond testing apparatus. 4,491,014, Cl. 73-150.00A.
Seki, Masaki: *See*—
Kishi, Hajime; and Seki, Masaki, 4,491,906, Cl. 364-191.000.
Sellmaier, Franz: *See*—
Bose, Rainer; Boning, Bernward; Nagel, Rudolf; and Sellmaier, Franz, 4,491,110, Cl. 123-425.000.
Sergienko, July M.: *See*—
Belyavsky, Alexandr D.; Borozdinov, Gennady M.; Vasiliev, Vitaly M.; Kalognomos, Viktor I.; Komov, Nikolai A.; Pavlov, Gennady A.; Persits, Evgeny L.; Sergienko, July M.; Svirin, Jury A.; and Titov, Boris V., 4,491,314, Cl. 272-63.000.
Serini, Volker; Schulte, Bernhard; Block, Hans-Dieter; and Freitag, Dieter, to Bayer Aktiengesellschaft. Polyphosphates and process of preparation. 4,491,656, Cl. 528-167.000.
Severson, Verne L.: *See*—
Ursin, Thomas N.; and Severson, Verne L., 4,491,933, Cl. 364-900.000.
Shanzuchi Kieki Kabushiki Kaisha: *See*—
Ito, Jiro; Kitano, Masuo; and Sakamoto, Kenji, 4,491,424, Cl. 368-157.000.
Shamenko, Stepan P.: *See*—
Toropov, Gennady A.; Shamenko, Stepan P.; Didyk, Rostislav P.; and Toropov, Anatoly A., 4,491,002, Cl. 72-118.000.
Shamov, Alexandr N.: *See*—
Gorodetsky, Alexandr A.; Gromov, Nikolai N.; Kulzhinsky, Vladimir L.; Marus, Rudolf A.; Ryskin, Solomon E.; Samoilov, Pavel B.; Shamov, Alexandr N.; Sharygin, Nikolai V.; and Kireev, Ivan N., 4,490,922, Cl. 34-1.000.
Sharma, Krishna R.: *See*—
Bhaduri, Sumit; Sharma, Krishna R.; and Kalpathi, Gopalkrishnan S., 4,491,670, Cl. 560-24.000.
Sharp Kabushiki Kaisha: *See*—
Hayashi, Motohiko; Karita, Toshiaki; Kotani, Matahira; and Sasaki, Hiromu, 4,491,853, Cl. 346-76.0PH.
Mitsuyama, Akira; and Imanaka, Yoshiaki, 4,491,407, Cl. 355-3.0TR.
Mizuta, Takemi; and Inoue, Tomohiro, 4,491,049, Cl. 84-1.010.
Sharygin, Nikolai V.: *See*—
Gorodetsky, Alexandr A.; Gromov, Nikolai N.; Kulzhinsky, Vladimir L.; Marus, Rudolf A.; Ryskin, Solomon E.; Samoilov, Pavel B.; Shamov, Alexandr N.; Sharygin, Nikolai V.; and Kireev, Ivan N., 4,490,922, Cl. 34-1.000.
Shea, Henry J.; and Sumka, Elmer H., to Westinghouse Electric Corp. Elevator system. 4,491,199, Cl. 187-29.00R.
Sheldrake, Ernest J. Hitches. 4,491,338, Cl. 280-405.00R.
Shell Internationale Research Maatschappij, B.V.: *See*—
Kamp, Anthony-Willem, 4,491,738, Cl. 290-43.000.
Shell Oil Company: *See*—
Barnhoorn, Adrianus J. M.; and Raudenbusch, Werner T., 4,491,611, Cl. 427-386.000.
Durbin, Daniel P.; and Lutz, Robert G., 4,491,648, Cl. 525-89.000.
Hasenack, Hendrikus J. A., 4,491,271, Cl. 239-1.000.
Smith, Dan G., 4,491,796, Cl. 324-346.000.
Shergov, Igor V.: *See*—
Voronin, Felix V.; Shergov, Igor V.; Gorb, Vyacheslav F.; and Sidorov, Viktor V., 4,491,715, Cl. 219-74.000.
Sherwood Selpac Corp.: *See*—
Trinkwalder, Joseph C., 4,491,149, Cl. 137-505.460.
Shiba, Haruo, to TDK Corporation. Tape guide for a magnetic tape cartridge and method of manufacturing the same. 4,491,891, Cl. 360-130.210.
Shibaike, Narito: *See*—
Morikawa, Toshinori; Minamide, Seiko; Kikuya, Satoshi; Terada, Hiroshi; Zaitsu, Osamu; and Shibaike, Narito, 4,491,885, Cl. 360-85.000.
Shibata, Toshihiro: *See*—
Minagawa, Motonobu; Nakahara, Yutaka; Shibata, Toshihiro; and Tobita, Etsuo, 4,491,643, Cl. 524-96.000.
Shibuya, Toshifumi: *See*—
Kojima, Noboru; Watatani, Yoshizumi; Arai, Takao; Hoshino, Takashi; and Shibuya, Toshifumi, 4,491,880, Cl. 360-19.100.
Shih, Kwang K.: *See*—
Aviram, Ari; and Shih, Kwang K., 4,491,431, Cl. 400-241.100.
Aviram, Ari; and Shih, Kwang K., 4,491,432, Cl. 400-241.100.
Shike, Kazuyoshi: *See*—
Kuwajima, Hideji; Shike, Kazuyoshi; and Watanabe, Takeyoshi, 4,491,618, Cl. 428-241.000.
Shimizu, Kunio, to Touto Denki Kabushiki Kaisha. Automatic stopping device of combustion fuel supply. 4,491,142, Cl. 137-65.000.
Shimizu, Masami: *See*—
Funyu, Yutaka; Okumura, Tadashi; Monno, Asao; and Shimizu, Masami, 4,491,731, Cl. 250-358.100.
Shimizu, Shoichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Logic circuit using depletion mode field effect switching transistors. 4,491,747, Cl. 307-446.000.
Shimizu, Yutaka, to International Business Machines Corporation. Data processing system having shared memory. 4,491,909, Cl. 364-200.000.
Shimp, Richard L.; and Zimmerman, Dennis A., to ComSonics, Inc. Status monitor. 4,491,968, Cl. 455-67.000.
Shinkawa, Keiro: *See*—
Noda, Masaki; Shinkawa, Keiro; and Sodeyama, Chuichi, 4,491,809, Cl. 333-35.000.
Shionogi & Co., Ltd.: *See*—
Ikawa, Kenji; Tokuyama, Kanji; and Kiyokawa, Masumi, 4,491,668, Cl. 549-315.000.
Tsuji, Teruji; Sato, Hisao; and Hamashima, Yoshio, 4,491,547, Cl. 260-455.00R.
Shiurila, John; and Robert, Kenneth A., to Centronics Data Computer Corp. Venting and ink recycling device. 4,491,433, Cl. 400-471.100.
Shuskus, Alexander J.: *See*—
Grudkowski, Thomas W.; DeMaria, Anthony J.; Shuskus, Alexander J.; and Grantham, Daniel H., 4,491,761, Cl. 310-359.000.
Sickels, Lawrence G.: *See*—
Higgins, Philip M.; MacKenna, William B.; Sickels, Lawrence G.; and Stumpf, Richard A., 4,491,917, Cl. 364-424.000.
Siddique, Qazi M.: *See*—
Adams, Keith J. G.; Williams, Terrence P.; Bolt, Norman T.; and Siddique, Qazi M., 4,491,566, Cl. 423-220.000.
Sidorov, Viktor V.: *See*—
Voronin, Felix V.; Shergov, Igor V.; Gorb, Vyacheslav F.; and Sidorov, Viktor V., 4,491,715, Cl. 219-74.000.
Siegel, Edward A. Windmill power system. 4,491,740, Cl. 290-55.000.
Siegert GmbH Company: *See*—
Bergmann, Michael J.; Lederer, Armin; and Walliser, Norbert, 4,491,823, Cl. 338-174.000.
Siemens Aktiengesellschaft: *See*—
Kimpel, Rolf-Dieter; Tamm, Horst; Hubner, Wolfgang; and Steiger, Erwin, 4,491,813, Cl. 335-187.000.
Kuelzer, Peter, 4,491,430, Cl. 400-208.000.
Scherowsky, Gunther; Moller, Alexander; Heppke, Gerd; and Knippenberg, Burkhard, 4,491,532, Cl. 252-299.100.
Troebel, Werner, 4,491,897, Cl. 361-353.000.
Weller, Gerhard; Rosenfeldt, Bernd; and Reis, Edmund, 4,491,981, Cl. 455-602.000.
Witte, Hans-Hermann; and Moustakas, Steven, 4,491,942, Cl. 370-4.000.
Sieren, Gerald E., to Allis-Chalmers Corp. Adjustable tractor grille shell. 4,491,191, Cl. 180-69.200.
Sigety, Stephen, Jr., to General Motors Corporation. Support device for a vehicle headlamp. 4,491,901, Cl. 362-275.000.

Signetics Corporation: *See*—
Lim, Sheldon C. P., 4,491,860, Cl. 357-68.000.
Smith, Douglas D., 4,491,743, Cl. 307-264.000.
Signode Corporation: *See*—
Lems, Peter, 4,490,959, Cl. 53-459.000.
Silber, Victor. Multi-positional chair. 4,491,366, Cl. 297-329.000.
Silena S.p.A.: *See*—
Giardinelli, Silvano C., 4,491,799, Cl. 330-2.000.
Simeth, Claus, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Arrangement for securing skew adjustment of a plate cylinder in a sheet-fed rotary printing press. 4,491,071, Cl. 101-248.000.
Simmons U.S.A. Corporation: *See*—
Stumpf, Walter, 4,491,491, Cl. 156-73.300.
Simpson, Neville H.; Dosemagen, Thomas H.; and Dirks, David E., to AMSTED Industries Incorporated. Plastic encapsulated wire rope. 4,490,969, Cl. 57-217.000.
Sinclair, Graham R. Aircraft landing wheel rotating means. 4,491,288, Cl. 244-103.00S.
Singer, Arnold J.: *See*—
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,491,576, Cl. 424-78.000.
Singer, Erich: *See*—
Gassler, Hermann; Joos, Eugen; Jundt, Werner; Kubach, Hans; and Singer, Erich, 4,491,113, Cl. 123-490.000.
Sipos nee Kaveczka, Barbara: *See*—
Sajo, Istvan; Vamos, Gyorgy; Urmossy, Miklos; Sipos nee Kaveczka, Barbara; Zemplen nee Papp, Eva; Borsovszky, Eva; and Barta, Laszlo , 4,491,633, Cl. 436-147.000.
Siskin, Michael; and Brons, Glen B., to Exxon Research & Engineering Co. Process for beneficiating oil-shale. 4,491,513, Cl. 208-11.0LE.
Siskin, Michael; and Brons, Glen B., to Exxon Research & Engineering Co. Process for beneficiating oil-shale. 4,491,514, Cl. 208-11.0LE.
Sittig, Wolfgang: *See*—
Fischer, Edgar; and Sittig, Wolfgang, 4,491,549, Cl. 261-36.00R.
Skarsten, Stephen R., to Skilten Tools Limited. Ladder safety device. 4,491,192, Cl. 182-107.000.
Skilten Tools Limited: *See*—
Skarsten, Stephen R., 4,491,192, Cl. 182-107.000.
Skinner, Ronald W.; Tao, John C.; and Znaimer, Samuel, to International Coal Refining Company. Two-stage coal liquefaction process. 4,491,511, Cl. 208-8.0LE.
Skyswitch Satellite Communications: *See*—
Datta, Ravi, 4,491,969, Cl. 455-75.000.
Slicker, James M., to Eaton Corporation. Pulse width modulation inverter with battery charger. 4,491,768, Cl. 318-139.000.
Sliemers, Francis A.: *See*—
McGiannis, Vincent C.; and Sliemers, Francis A., 4,491,653, Cl. 525-356.000.
Small, William M., to Phillips Petroleum Company. Baffle. 4,490,896, Cl. 29-157.30R.
Smith, Dan G., to Shell Oil Company. Borehole fracture detection using magnetic powder. 4,491,796, Cl. 324-346.000.
Smith, David G., to Wetzikon Holdings Ltd. Hockey practice device. 4,491,320, Cl. 273-1.00B.
Smith, Donald L., to Perkin-Elmer Corporation, The. Restricted ion source of high current density. 4,491,735, Cl. 250-423.00R.
Smith, Douglas D., to Signetics Corporation. Voltage translator. 4,491,743, Cl. 307-264.000.
Smith International, Inc.: *See*—
Alder, Robert L., 4,491,186, Cl. 175-26.000.
Smith, James E.; and Cage, Donald R., to Micro Motion, Inc. Parallel path Coriolis mass flow rate meter. 4,491,025, Cl. 73-861.380.
Smith, Jay G.: *See*—
Reynolds, Gary R.; Gaynor, Thomas R.; Olivera, Paul; Ruthenberg, Ross E.; Smith, Jay G.; Kurby, Christopher N.; and Mansfield, Terry K., 4,491,806, Cl. 331-96.000.
Smith, Jeremy G. B.: *See*—
Ellis, David; Smith, Jeremy G. B.; and Halliday, Pieter S. J., 4,491,489, Cl. 149-109.600.
Smith, Jon D.; and Parker, Glenn T., to Dry Dock Industries, Inc. Anchoring retainer for threaded fasteners. 4,491,447, Cl. 411-15.000.
Smith, Richard L.; and Van Allen, Kent, to Scans Associates, Inc. Two-directional switched driver. 4,491,773, Cl. 318-257.000.
Smith, Richard W., to Wangner Systems Corporation. Low permeability spiral fabric and method. 4,490,925, Cl. 34-42.000.
Smith, Roy L.: *See*—
Koblitz, Francis F.; and Smith, Roy L., 4,491,453, Cl. 433-217.000.
Smith, Todd I.: *See*—
Deacon, David A. G.; Madey, John M. J.; Smith, Todd I.; and Colson, William B., 4,491,948, Cl. 372-2.000.
Smith, Wilbur D.: *See*—
Cullor, James S., 4,491,126, Cl. 128-1.00R.
Smock, Steven W., to Emhart Industries, Inc. Housing arrangement for a timing mechanism. 4,491,710, Cl. 200-303.000.
Snee, David J., to Imperial Clevite Inc. Wear resistant insert for cast lightweighted pistons and method of casting. 4,491,168, Cl. 164-98.000.
Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A.: *See*—
Rossi, Pietro P.; and Anastasio, Maurizio, 4,491,528, Cl. 252-56.00S.
Sochor, Josef, to Robert Bosch GmbH. Two-channel transmission or storage method for digital color television signals. 4,491,861, Cl. 358-13.000.
Societa Cavi Pirelli S.p.A.: *See*—
Vecellio, Bernardino, 4,491,684, Cl. 174-26.00R.
Societa Nationale Industrielle et Aerospatiale: *See*—
Aubry, Jacques A., 4,491,342, Cl. 280-700.000.
Societe Anonyme DBA: *See*—
Morin, Gerard, 4,491,058, Cl. 91-376.00R.
Societe Anonyme dite: Ceraver: *See*—
Kaczerginski, Alexandre; and Kaminski, Jean-Jacques, 4,491,687, Cl. 174-178.000.
Societe Anonyme Saunier Duval/Eau Chaude/Chauffage-S.D.E.C.C.: *See*—
Charron, Jean-Claude; Mulsant, Philippe; and Poujoulat, Yvan, 4,491,092, Cl. 122-18.000.
Societe d'Applications Generales d'Electricite et de Mecanique Sagem: *See*—
Barthelat, Rene ; and Dore, Alain, 4,491,397, Cl. 350-500.000.
Societe Nationale Industrielle Aerospatiale: *See*—
Rinn, Christian; and Verzin, Gerard, 4,491,289, Cl. 244-158.00R.
Sodeyama, Chuichi: *See*—
Noda, Masaki; Shinkawa, Keiro; and Sodeyama, Chuichi, 4,491,809, Cl. 333-35.000.
Soga, Tasao; Suzuki, Takaya; Okamura, Masahiro; Gooda, Masahiro; and Kobayashi, Fumiyuki, to Hitachi, Ltd. Thermal fatigue resistant low-melting point solder alloys. 4,491,562, Cl. 420-589.000.
Solimeno, Duane: *See*—
Koeppen, Peter L.; Rogers, Gerald; Brown, Sammy K.; and Solimeno, Duane, 4,491,907, Cl. 364-200.000.
Sony Corporation: *See*—
Fujiie, Kazuhiko, 4,491,882, Cl. 360-53.000.
Ida, Mitsuru, 4,491,287, Cl. 242-200.000.
Iga, Akira; Odaka, Kentaro; and Yasuda, Nobuyuki, 4,491,943, Cl. 370-13.000.
Saito, Akiro; Kamaya, Naoki; Endo, Junya; Ohba, Seisuke; Kumano, Akira; Ida, Yoshinori; and Horie, Hideo, 4,491,886, Cl. 360-85.000.
Sato, Seiji, 4,491,887, Cl. 360-90.000.
Sorensen, Jens O.: *See*—
Kira, Gene S.; and Sorensen, Jens O., 4,490,980, Cl. 60-641.800.
Sorlie, Kjell: *See*—
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South Dakota School of Mines and Technology: *See*—
Iyer, L. Srinivasa, 4,491,017, Cl. 73-432.100.
Southco, Inc.: *See*—
Vickers, James H., 4,490,884, Cl. 16-338.000.
SOVAM: *See*—
Morin, Andre , 4,490,869, Cl. 14-71.500.
Sowell, Mark S., III: *See*—
Cutchens, Charles E.; Mathews, Marion J., III; and Sowell, Mark S., III, 4,491,673, Cl. 564-492.000.
Speeflo Manufacturing Corporation: *See*—
Reeves, Clarence C., 4,491,276, Cl. 239-692.000.
Speer, Spencer J., to General Dynamics, Pomona Division. Pivotal pistol grip firing mechanism. 4,491,054, Cl. 89-1.814.
Spencer Wright Industries, Inc.: *See*—
Ingram, Gray L., 4,491,078, Cl. 112-79.00R.
Spielmann, Norbert: *See*—
Dirauf, Otmar; and Spielmann, Norbert, 4,491,204, Cl. 188-73.380.
Spies, Alfons, to Dr. Johannes Heidenhain GmbH. Error correction system for position measuring instruments. 4,490,914, Cl. 33-125.00R.
Spieth, Manfred: *See*—
Rumpp, Gerhard; Spieth, Manfred; and Scholz, Dieter, 4,491,444, Cl. 409-234.000.
Spindeler, Heinrich; and Wackerbarth, Folkard, to Dr. C. Otto & Comp. G.m.b.H. Apparatus for leveling coal in a coke oven chamber. 4,491,505, Cl. 202-270.000.
SPM S.p.A.: *See*—
Berutti, Giampiero, 4,491,438, Cl. 404-10.000.
Sprecher & Schuh AG: *See*—
Blum, Alex, 4,491,816, Cl. 335-245.000.
Square D Company: *See*—
Chabot, Ferdinand E.; and Wong, Tak M., 4,491,709, Cl. 200-153.05C.
Rickmann, Bernard C., 4,491,896, Cl. 361-339.000.
SRP, Inc.: *See*—
Baillod, Frederic, 4,491,225, Cl. 206-583.000.
Stach, Leonard J., to Velsicol Chemical Corporation. Herbicidal oxime esters of 2-methoxy-3,6-dichlorobenzoic acid. 4,491,469, Cl. 71-121.000.
Stahl, Daniel E.: *See*—
Hamaher, Wilbur A., Jr.; and Stahl, Daniel E., 4,491,381, Cl. 339-107.000.
Stahl, Konrad; Theiss, Josef; and Weber, Jochen, to Licentia Patent-Verwaltungs-GmbH. Radiation receiver and method of manufacturing such a receiver. 4,491,729, Cl. 250-336.100.
Stanadyne, Inc.: *See*—
Hodgkins, David, 4,491,120, Cl. 123-557.000.
Stanford University: *See*—
Linvill, John G., 4,491,760, Cl. 310-334.000.
Stanley, Donald O.: *See*—
Collmeyer, Arthur J.; Hoel, Jeffrey H.; King, Paul F.; Stanley, Donald O.; and Sturgeon, Roger, 4,491,836, Cl. 340-747.000.
Stanley, Philip E.: *See*—
Woods, William E.; and Stanley, Philip E., 4,491,908, Cl. 364-200.000.
Stanton, Norman C., to Tualatin Sleep Products, Inc. System for mounting a mattress cover to a mattress core. 4,490,866, Cl. 5-471.000.

Stapp, Paul R., to Phillips Petroleum Company. Oil recovery with surfactant flooding. 4,491,525, Cl. 252-8.55D.
Stauffer Chemical Company: *See*—
Nagubandi, Sreeramulu, 4,491,548, Cl. 260-502.50F.
Steeg, Klaus, to Luk Lamellen und Kupplungsbau GmbH. Diaphragm spring for friction clutches or the like. 4,491,211, Cl. 192-89.00B.
Steen, Robert A.: *See*—
Hsu, Joseph C.; and Steen, Robert A., 4,491,598, Cl. 426-127.000.
Steiger, Erwin: *See*—
Kimpel, Rolf-Dieter; Tamm, Horst; Hubner, Wolfgang; and Steiger, Erwin, 4,491,813, Cl. 335-187.000.
Stelter, Jurgen; and Hanggi, Manfred, to Durr Automation + Fordertechnik GmbH. Method and device for pneumatic feeding of materials. 4,491,442, Cl. 406-95.000.
Stendel, Wilhelm: *See*—
Fuchs, Rainer; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,491,585, Cl. 424-263.000.
Stevenson, David T.; and Troup, Robert L., to Aluminum Company of America. Carbothermic reduction and prereduced charge for producing aluminum-silicon alloys. 4,491,472, Cl. 75-10.00R.
Stichting Speurwerk Baggertechniek: *See*—
Uittenbogaard, Robert E., 4,491,368, Cl. 299-17.000.
Stilling, Ludwig. Composite molding structure. 4,491,615, Cl. 428-33.000.
Stirbis, James S., to Adolph Coors Company. Print cylinder assembly and mounting and tightening apparatus therefor. 4,491,068, Cl. 101-40.000.
Stoessel, Armin: *See*—
Hartig, Juergen; Stoessel, Armin; Herrmann, Guenter; and Marosi, Laszlo, 4,491,637, Cl. 502-66.000.
Stokes, Scott. Solar drying device and method for drying. 4,490,926, Cl. 34-76.000.
Stoomer, Hans-Martin; and Marschner, Friedemann, to Metallgesellschaft Aktiengesellschaft. Process for heating hydrogen. 4,491,573, Cl. 423-652.000.
Stratton, Harry M. Floating-brush assembly for use with floor-scrubbing and polishing machines. 4,490,873, Cl. 15-49.00R.
Strebkov, Dmitry S.: *See*—
Baranov, Vladimir K.; Pinov, Akhsarbek B.; Potapov, Valery N.; Rostokinsky, Vladimir V.; Ryabikov, Stanislav V.; Sabelnikov, Viktor A.; Strebkov, Dmitry S.; and Tveryanovich, Eduard V., 4,491,683, Cl. 136-259.000.
Stringer, Carl: *See*—
LaForce, Jean, 4,491,716, Cl. 219-101.000.
Stringer, Carl Thomas: *See*—
LaForce, Jean, 4,491,716, Cl. 219-101.000.
Stringer, Jackie D.; and Dobesh, Eugene L., to F. H. Maloney Company. Pig detector. 4,491,018, Cl. 73-432.00R.
Stringer Oil & Gas Co.: *See*—
LaForce, Jean, 4,491,716, Cl. 219-101.000.
Stritzel, Gene A., to Gleason Works, The. Differential assembly having means for accommodating angular misalignments of axle segments. 4,491,036, Cl. 74-715.000.
Strumbos, William P. Multiple heat-range spark plug. 4,491,101, Cl. 123-169.00C.
Stumpf, Richard A.: *See*—
Higgins, Philip M.; MacKenna, William B.; Sickels, Lawrence G.; and Stumpf, Richard A., 4,491,917, Cl. 364-424.000.
Stumpf, Walter, to Simmons U.S.A. Corporation. Ultrasonic separation apparatus. 4,491,491, Cl. 156-73.300.
Sturgeon, Roger: *See*—
Collmeyer, Arthur J.; Hoel, Jeffrey H.; King, Paul F.; Stanley, Donald O.; and Sturgeon, Roger, 4,491,836, Cl. 340-747.000.
Suburban Welders Supply Co., Inc.: *See*—
Worsely, Paul A., 4,491,720, Cl. 219-136.000.
Suenaga, Kazuyuki: *See*—
Aoike, Hitoshi; Machida, Toyotaka; Kunazaki, Toshimasa; and Suenaga, Kazuyuki, 4,491,876, Cl. 358-330.000.
Sugamuma, Tetsuya; Kazuoka, Koji; Fujita, Shuichi; Takahashi, Yoshitaka; and Okujo, Takeshi, to Toyota Jidosha Kabushiki Kaisha. Anti-wear sintered alloy and manufacturing process thereof. 4,491,477, Cl. 75-230.000.
Sugi, Hiromi; Furumura, Kyozaburo; and Asai, Hiromitsu, to Nippon Seiko Kabushiki Kaisha. Construction of the mating sliding members in a linear feeding means. 4,491,373, Cl. 308-5.00R.
Sugimori, Teruhiko; and Habara, Hideaki, to Mitsubishi Rayon Co., Ltd. Method for treating emulsified latex. 4,491,658, Cl. 528-486.000.
Sugimoto, Masatoshi: *See*—
Okumoto, Tadaoki; Sugimoto, Masatoshi; Horiuchi, Noriyuki; Sahara, Seiichi; Yamada, Tetsuo; Hashimoto, Kinrou; Ichikawa, Masayoshi; and Ninomiya, Fujio, 4,491,621, Cl. 428-519.000.
Sugitani, Tohru: *See*—
Katoh, Yoshinori; Tajima, Tetsuya; Yamatsu, Isao; Suzuki, Takeshi; Abe, Shinya; Kajihara, Akiharu; and Sugitani, Tohru, 4,491,592, Cl. 424-318.000.
Sugiura, Masamichi; and Kitagawa, Tsuneo, to Minolta Camera Kabushiki Kaisha. Preset counter apparatus for copying machines and the like. 4,491,827, Cl. 340-365.00R.
Sugiyama, Shinichi; Chujo, Yoshiki; and Yaegashi, Takehisa, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for controlling the air fuel ratio in an internal combustion engine. 4,491,921, Cl. 364-431.050.
Suh, John T.: *See*—
Loev, Bernard; Jones, Howard; and Suh, John T., 4,491,582, Cl. 424-250.000.
Sujaku, Jiro, to Mitsubishi Denki Kabushiki Kaisha. Initial program load system. 4,491,914, Cl. 364-200.000.
Sulzer Brothers Limited: *See*—
Lincke, Paul, 4,491,158, Cl. 139-439.000.
Sumi, Akiyasu: *See*—
Inaba, Hiroyoshi; Sumi, Akiyasu; Notagashira, Hidefumi; Katsuma, Makoto; Murakami, Hiroyasu; and Hiramatsu, Akira, 4,491,401, Cl. 354-271.100.
Sumitomo Electric Industries, Ltd.: *See*—
Kobayashi, Yoshinobu; Ueno, Tamio; and Kanagawa, Kozi, 4,491,967, Cl. 455-41.000.
Negishi, Yukiyasu; Ishida, Yukinori; Saito, Yasunori; and Tanaka, Shigeru, 4,491,386, Cl. 350-96.230.
Tada, Hideaki; and Aoki, Yoshiaki, 4,491,476, Cl. 75-124.000.
Sumka, Elmer H.: *See*—
Shea, Henry J.; and Sumka, Elmer H., 4,491,199, Cl. 187-29.00R.
Summers, Anthony C., to General Signal Corporation. Extended hub valve closure member. 4,491,299, Cl. 251-308.000.
Sun Arrow Koeki Company Ltd.: *See*—
Kato, Yoshinobu, 4,491,702, Cl. 200-5.00A.
Sun Refining and Marketing Company: *See*—
Polleck, Richard E.; Scott, Kenneth A.; and Ledley, Robert E., 4,491,516, Cl. 208-248.000.
Sundstrand Corporation: *See*—
Hagshenas, Behzad; Butler, Donald W.; and Coolidge, Anson S., 4,491,374, Cl. 384-471.000.
Sunter, Thomas C., to Air Preheater Company, Inc., The. Method for detecting an overload of a fabric filter. 4,491,458, Cl. 55-21.000.
Superior Chain, Inc.: *See*—
Curl, Robert B., 4,490,970, Cl. 59-79.100.
Surgidev Corporation: *See*—
Karickhoff, John R., 4,491,398, Cl. 351-211.000.
Sustek, Alvin J., Jr.: *See*—
Brown, Alfred; Grimm, Henry J.; and Sustek, Alvin J., Jr., 4,491,180, Cl. 166-272.000.
Sutter, David L.; Furbish, Ivan J.; Ferguson, Roland C.; Berry, Richard L.; and Barrows, Douglas P., to Hussey Manufacturing Company. Bench type seating modules. 4,490,949, Cl. 52-9.000.
Sutton, David; and Neill, Jimmie, to Burroughs Corporation. Pixel correction logic circuit. 4,491,961, Cl. 382-41.000.
Suverison, Lyle B.: *See*—
Gladd, Joseph H.; Plyler, Robert G.; and Suverison, Lyle B., 4,491,376, Cl. 339-9.00E.
Suzuki, Kaichiro; Nakaya, Keiichi; Gotoh, Tomohiro; Kitasako, Masayuki; and Iwasaki, Masaharu, to Asahi Glass Company Ltd. Process for producing hydrogen fluoride. 4,491,571, Cl. 423-485.000.
Suzuki, Nobuo, to Technical Incorporated. Pulley cam for a tape cassette drive which moves axially of the driving gear. 4,491,883, Cl. 360-74.200.
Suzuki, Takaya: *See*—
Soga, Tasao; Suzuki, Takaya; Okamura, Masahiro; Gooda, Masahiro; and Kobayashi, Fumiyuki, 4,491,562, Cl. 420-589.000.
Suzuki, Takeomi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Method of focus detection. 4,491,402, Cl. 354-406.000.
Suzuki, Takeshi: *See*—
Katoh, Yoshinori; Tajima, Tetsuya; Yamatsu, Isao; Suzuki, Takeshi; Abe, Shinya; Kajihara, Akiharu; and Sugitani, Tohru, 4,491,592, Cl. 424-318.000.
Suzuki, Toshimitsu: *See*—
Hongo, Akira; Ueda, Hideki; Nakata, Isaei; Yoshida, Eiichi; Aoki, Nobuyoshi; and Suzuki, Toshimitsu, 4,490,984, Cl. 62-49.000.
Sveda, Paul, to Groen Division/Dover Corporation. Liquid level control. 4,491,146, Cl. 137-341.000.
Svendsen, Robert A., to Marine Construction & Design Co. Powered net hauling block with tilt mechanism for net balancing. 4,490,936, Cl. 43-8.000.
Svirin, Jury A.: *See*—
Belyavsky, Alexandr D.; Borozdinov, Gennady M.; Vasiliev, Vitaly M.; Kalognomos, Viktor I.; Komov, Nikolai A.; Pavlov, Gennady A.; Persits, Evgeny L.; Sergienko, July M.; Svirin, Jury A.; and Titov, Boris V., 4,491,314, Cl. 272-63.000.
Swanson, Sigurd A.: *See*—
Grab, George P.; Hood, Grant W., Jr.; Swanson, Sigurd A.; and Nemeth, Bela J., 4,491,559, Cl. 419-36.000.
Swaringen, Roy A., Jr.: *See*—
El-Sayad, Hassan A.; Swaringen, Roy A., Jr.; and Yeowell, David A., 4,491,665, Cl. 546-140.000.
Sweazey, Donald G.; and Gallaugher, Glenn B., Jr. Parking lot fee box. 4,491,269, Cl. 232-43.200.
Swift, Stephen D.: *See*—
Gifford, Peter E.; and Swift, Stephen D., 4,490,983, Cl. 62-6.000.
Sylvester, Gordon C.; and Alexander, Geroge E., to Wehr Corporation. Adjustable slot diffuser. 4,491,062, Cl. 98-40.00D.
Synectics, Inc.: *See*—
Sarbacher, Robert I.; and Fechter, Harry R., 4,491,624, Cl. 429-27.000.
Szigeti, Peter R.: *See*—
Hanstein, Friedrich; and Szigeti, Peter R., 4,490,948, Cl. 51-358.000.
Taco Operations, Incorporated: *See*—
Bernal, Eddie L., 4,491,601, Cl. 426-421.000.
Tada, Hideaki; and Aoki, Yoshiaki, to Sumitomo Electric Industries, Ltd. Boron-containing steel and a process for producing the same. 4,491,476, Cl. 75-124.000.
Tahara, Toshiyuki; Uehara, Hironobu; Hamazato, Kazuo; and Hayashi, Toshio, to Nippon Telegraph and Telephone Public Corporation.

Hybrid circuit in a telephone subscriber interface circuit. 4,491,700, Cl. 179-170.0NC.

Tajima, Tetsuya: *See*—
Katoh, Yoshinori; Tajima, Tetsuya; Yamatsu, Isao; Suzuki, Takeshi; Abe, Shinya; Kajihara, Akiharu; and Sugitani, Tohru, 4,491,592, Cl. 424-318.000.

Takahashi, Ryo: *See*—
Yamaguchi, Keiki; Tomarikawa, Kazuyuki; Kurochi, Haruo; Namikawa, Jiro; Matsumura, Shigeru; Takahashi, Ryo; and Mori, Shiro, 4,491,734, Cl. 250-385.000.

Takahashi, Yoshitaka: *See*—
Suganuma, Tetsuya; Kaznoka, Koji; Fujita, Shuichi; Takahashi, Yoshitaka; and Okujo, Takeshi, 4,491,477, Cl. 75-230.000.

Takamatsu, Iwao: *See*—
Hayashi, Hideo; Takamatsu, Iwao; and Nakai, Ikuo, 4,491,705, Cl. 200-147.00R.

Takao Kawamura: *See*—
Kawamura, Takao; and Yoshida, Masazumi, 4,491,626, Cl. 430-69.000.

Takaoka, Hiroshi: *See*—
Ishikawa, Nobumitsu; Takaoka, Hiroshi; and Fukuda, Hiroshi, 4,491,737, Cl. 290-40.00R.

Takayama, Shoichiro, to Oki Electric Industry Co., Ltd. Common controlled facsimile system. 4,491,873, Cl. 358-256.000.

Takematsu, Tetsuo; Konnai, Makoto; Hosogai, Takeo; and Nishida, Takashi, to Kuraray Co., Ltd. Substituted phenyl (thiono)carbamates, herbicidal compositions containing the same as active ingredient and method of controlling weeds. 4,491,465, Cl. 71-88.000.

Takeoka, Tomihiko: *See*—
Tsuchie, Masahiro; Takeoka, Tomihiko; and Nomura, Takanobu, 4,491,844, Cl. 343-713.000.

Tamm, Horst: *See*—
Kimpel, Rolf-Dieter; Tamm, Horst; Hubner, Wolfgang; and Steiger, Erwin, 4,491,813, Cl. 335-187.000.

Tamura, Takashi; and Kawata, Shun, to Konishiroku Photo Industry Co., Ltd. Toner Dispensing apparatus. 4,491,161, Cl. 141-364.000.

Tanabe, Yoshiaki: *See*—
Hasegawa, Hiroshi; Nakano, Yoshiyuki; and Tanabe, Yoshiaki, 4,491,404, Cl. 354-416.000.

Tanaka, Hiroyuki: *See*—
Tomoda, Masayasu; Kawachi, Shoji; and Tanaka, Hiroyuki, 4,491,536, Cl. 252-511.000.

Tanaka, Kazuyuki, to Matsushita Electric Industrial Co., Ltd. Device for displaying characters and graphs in superposed relation. 4,491,832, Cl. 340-721.000.

Tanaka, Masanori; and Endoh, Kenjiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Condenser microphone. 4,491,697, Cl. 179-111.00E.

Tanaka, Shigeru: *See*—
Negishi, Yukiyasu; Ishida, Yukinori; Saito, Yasunori; and Tanaka, Shigeru, 4,491,386, Cl. 350-96.230.

Tanaka, Yukiyasu: *See*—
Noguchi, Masaaki; Tanaka, Yukiyasu; and Igarashi, Isao, 4,491,096, Cl. 123-51.00B.

Tandberg Data A/S: *See*—
Rudi, Guttorm, 4,491,890, Cl. 360-106.000.

Tao, John C.: *See*—
Skinner, Ronald W.; Tao, John C.; and Znaimer, Samuel, 4,491,511, Cl. 208-8.0LE.

Tarbell, Robert J. Piano truck. 4,491,334, Cl. 280-47.120.

Tarbouriech, Francois: *See*—
Athenes, Claude; Tarbouriech, Francois; and Poux, Gerard, 4,491,837, Cl. 340-825.020.

Taub, Stanley. Method and apparatus for cleaning disks containing encoded information. 4,490,870, Cl. 15-1.50A.

Tawada, Yoshihisa: *See*—
Hamakawa, Yoshihiro; and Tawada, Yoshihisa, 4,491,682, Cl. 136-256.000.

TDK Corporation: *See*—
Shiba, Haruo, 4,491,891, Cl. 360-130.210.

Technical Incorporated: *See*—
Suzuki, Nobuo, 4,491,883, Cl. 360-74.200.

Tegman, Ragnar: *See*—
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Teisan Kabushiki Kaisha: *See*—
Hongo, Akira; Ueda, Hideki; Nakata, Isei; Yoshida, Eiichi; Aoki, Nobuyoshi; and Suzuki, Toshimitsu, 4,490,984, Cl. 62-49.000.

Tektronix, Inc.: *See*—
Metz, Arthur J.; and Schlotzhauer, Kenneth G., 4,491,803, Cl. 330-261.000.
Zandonatti, Raymond A., 4,491,788, Cl. 324-72.500.

Temple, Davis L., Jr.: *See*—
Covington, Robert R.; Temple, Davis L., Jr.; and Yevich, Joseph P., 4,491,587, Cl. 424-269.000.

Temptronic Corporation: *See*—
Demand, Erhart E., 4,491,173, Cl. 165-11.00R.

Tengler, John N., to Associated Enterprises, Inc. Wire stripper and method. 4,490,908, Cl. 30-90.400.

Teppichfabrik Karl Eybl Gesellschaft m.b.H.: *See*—
Schmidt, Walter R., 4,490,995, Cl. 66-191.000.

Terada, Hiroshi: *See*—
Morikawa, Toshinori; Minamide, Seiko; Kikuya, Satoshi; Terada, Hiroshi; Zaitsu, Osamu; and Shibaike, Narito, 4,491,885, Cl. 360-85.000.

Teraoka, Masanori, to Fuji Photo Film Co., Ltd. Radiation image storage panel. 4,491,736, Cl. 250-484.100.

Teroson G.m.b.H.: *See*—
Schenker, Achim; Schutz, Jurgen; and Schneider, Jurgen, 4,491,480, Cl. 106-90.000.

Terrell, Jamie B.; and Pratt, Donna K., to Gearhart Industries, Inc. Through tubing bridge plug. 4,491,178, Cl. 166-192.000.

Tetrahedron Associates, Inc.: *See*—
Yalof, Stanley; and Van Doren, Lawrence, 4,491,027, Cl. 73-862.520.

Texaco Inc.: *See*—
Brown, Alfred; Grimm, Henry J.; and Sustek, Alvin J., Jr., 4,491,180, Cl. 166-272.000.
McCoy, David R., 4,491,538, Cl. 252-541.000.
Schlinger, Warren G., 4,491,456, Cl. 48-197.00R.

Texas Instruments Incorporated: *See*—
Caudel, Edward R.; Magar, Surendar S.; and Leigh, Antony W., 4,491,910, Cl. 364-200.000.
Koeppen, Peter L.; Rogers, Gerald; Brown, Sammy K.; and Solimeno, Duane, 4,491,907, Cl. 364-200.000.
Leach, Jerald G., 4,491,938, Cl. 365-222.000.
McElroy, David J., 4,491,857, Cl. 357-23.000.

Textron Inc.: *See*—
DeCaro, Charles J., 4,491,443, Cl. 408-239.00A.

Theiss, Josef: *See*—
Stahl, Konrad; Theiss, Josef; and Weber, Jochen, 4,491,729, Cl. 250-336.100.

Thelen, William G., to Aeroquip Corporation. Vibration attenuating coupling. 4,491,348, Cl. 285-49.000.

Thermal Energy Storage, Inc.: *See*—
Hitchin, James, 4,491,172, Cl. 165-10.000.

Theurer, Josef; and Hansmann, Johann, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft mbH. Mobile rail grinding machine. 4,490,947, Cl. 51-178.000.

Thiele, Wolfgang: *See*—
Meyer, Hans-Friedrich; Thiele, Wolfgang; Kosmalski, Hermann; Meurer, Klaus; Kruppa, Hans; Gottling, Helmut; and Meyer, Ernst-August, 4,491,155, Cl. 137-625.660.

Thijssen, Henricus A. C.; and van der Malen, Bernardus G. M., to Douwe Egberts Koninklijke Tabaksfabriek-Koffie-Branderijn-Theehandel B.V. Continuous packed bed wash column. 4,491,462, Cl. 62-542.000.

Thiokol Corporation: *See*—
Hamel, Roger G.; and Poulin Susan B., 4,491,554, Cl. 264-141.000.

Thoemel, Frank; and Hoffmann, Werner, to BASF Aktiengesellschaft. Preparation of 2,3,5-trimethyl-p-benzoquinone. 4,491,545, Cl. 260-396.00R.

Thomas, Erwin: *See*—
Rapp, Gunther; Thomas, Erwin; Muenster, Rolf; Caffall, Brodus E.; Cyr, Philip A.; and Jones, Thomas M., 4,491,567, Cl. 423-387.000.

Thomas, Evan G., to Allied Corporation. Brown stain suppressing phenol free and chlorinated hydrocarbons free photoresist stripper. 4,491,530, Cl. 252-143.000.

Thomas, John E.: *See*—
Ginzburg, Vladimir B.; and Thomas, John E., 4,491,006, Cl. 72-202.000.

Thomas, Michael: *See*—
Bergmann, Udo; Hansen, Guenter; Lach, Dietrich; Thomas, Michael; and Zeidler, Georg, 4,491,543, Cl. 534-677.000.

Thomas, Perry W. Microwave clothes dryer. 4,490,923, Cl. 34-1.000.

Thompson, John A., to Henkel Corporation. Leather treatment composition. 4,491,645, Cl. 524-112.000.

Thompson, William E. Windshield wiper. 4,490,880, Cl. 15-250.420.

Thompson, William I.; Welter, Mark F.; and Jodry, Dean L., to Schlindler Haughton Elevator Corp. Locking mechanism for an elevator car door. 4,491,200, Cl. 187-61.000.

Thomson-Brandt: *See*—
Bouchant, Jean C., 4,491,974, Cl. 455-159.000.

Thomson-CSF: *See*—
Boubouleix, Albert, 4,491,843, Cl. 343-702.000.
Chomiki, Michel, 4,491,931, Cl. 364-861.000.
Estang, Bernard, 4,491,847, Cl. 343-765.000.
Huignard, Jean-Pierre, 4,491,867, Cl. 358-113.000.
Tinet, Claude, 4,491,940, Cl. 364-46.000.

Thomson-CSF Telephone: *See*—
Athenes, Claude; Tarbouriech, Francois; and Poux, Gerard, 4,491,837, Cl. 340-825.020.

Thornton, Henry M.; and Thornton, John S., to Ashcombe Products Company. Gang cutting tool assembly and method of forming same. 4,491,295, Cl. 249-53.00R.

Thornton, John S.: *See*—
Thornton, Henry M.; and Thornton, John S., 4,491,295, Cl. 249-53.00R.

Thygesen, Soren. Method for applying a screed coat to a roof surface. 4,491,608, Cl. 427-186.000.

Tibbetts, Gary G., to General Motors Corporation. Ferric nitrate treatment for nucleating graphite fiber growth by methane pyrolysis. 4,491,569, Cl. 423-447.300.

Tibbs, Lilburn E. Can holder. 4,491,293, Cl. 248-211.000.

Tidd, Kenneth: *See*—
Petty, Michael H.; and Tidd, Kenneth, 4,491,077, Cl. 110-278.000.

Tilston, Stephen E.: *See*—
Tilston, William V.; and Tilston, Stephen E., 4,491,849, Cl. 343-791.000.

Tilston, William V.; and Tilston, Stephen E. Radio antenna. 4,491,849, Cl. 343-791.000.

Times Fiber Communications, Inc.: *See*—
Pinnow, Douglas A.; and Miller, Gary E., 4,491,983, Cl. 455-612.000.
Times Mirror Company: *See*—
Marcroft, Brian J., 4,491,213, Cl. 194-1.00D.
Tinet, Claude, to Thomson-CSF. System for reproducing pulse time modulated waveforms stored along a diffractive track. 4,491,940, Cl. 364-46.000.
Tiomkin, Michael: *See*—
Bar-Nefy, Simcha; and Tiomkin, Michael, 4,491,053, Cl. 89-1.130.
Tippins Machinery Company, Inc.: *See*—
Ginzburg, Vladimir B.; and Thomas, John E., 4,491,006, Cl. 72-202.000.
Tirendi, Frank: *See*—
Michaud, Mark D.; Michaud, Robert G.; Tirendi, Frank; and Zobbi, Robert G., 4,491,500, Cl. 156-628.000.
Tirtaatmadja, Viyada: *See*—
Agnew, John B.; Barnard, John A.; and Tirtaatmadja, Viyada, 4,491,515, Cl. 208-180.000.
Tisma Machine Corporation: *See*—
Tisma, Steven, 4,491,267, Cl. 229-37.00R.
Tisma, Steven, to Tisma Machine Corporation. Folding carton for dry powder. 4,491,267, Cl. 229-37.00R.
Titaneal Corporation: *See*—
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Titov, Boris V.: *See*—
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Tos Medical Electronics Co. Ltd.: *See*—
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Toba, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus and method for forward/reverse slow motion video reproduction. 4,491,878, Cl. 360-10.100.
Tobita, Etsuo: *See*—
Minagawa, Motonobu; Nakahara, Yutaka; Shibata, Toshihiro; and Tobita, Etsuo, 4,491,643, Cl. 524-96.000.
Tobolt, Michael J. Receptacle having a plug closure. 4,491,238, Cl. 220-307.000.
Toda, Toshiharu, to Reliance Electric Company. Gas filled surge arrester. 4,491,893, Cl. 361-120.000.
Todd, Elizabeth A.: *See*—
Reusser, Robert E.; Murtha, Timothy P.; and Todd, Elizabeth A., 4,491,563, Cl. 422-5.000.
Togelang, Emy: *See*—
Bredereck, Karl; and Togelang, Emy, 4,491,661, Cl. 536-84.000.
Tokar, Joseph C., to Donaldson Company, Inc. Air cleaner and deflecting intake tube. 4,491,460, Cl. 55-337.000.
Tokuyama, Kanji: *See*—
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Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
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Fujinuma, Makoto; Futatsudera, Masaomi; and Harigae, Makoto, 4,491,763, Cl. 313-405.000.
Ishikawa, Nobumitsu; Takaoka, Hiroshi; and Fukuda, Hiroshi, 4,491,737, Cl. 290-40.00R.
Iwai, Hiroshi, 4,491,486, Cl. 148-105.000.
Iwamura, Jun, 4,491,749, Cl. 307-473.000.
Jingu, Masaharu, 4,491,137, Cl. 128-660.000.
Kasagi, Yoshitaka, 4,491,801, Cl. 330-69.000.
Koike, Hideharu, 4,491,746, Cl. 307-296.00R.
Koike, Norio; Ito, Takeo; Watanabe, Shingo; and Ikari, Kunihiro, 4,491,629, Cl. 430-176.000.
Koyama, Yoshio, 4,491,817, Cl. 336-60.000.
Sato, Fumitaka, 4,491,911, Cl. 364-200.000.
Sawayama, Yoshihiko; and Mishima, Katsuhiko, 4,491,783, Cl. 324-57.00N.
Shimizu, Shoichi, 4,491,747, Cl. 307-446.000.
Tanaka, Masanori; and Endoh, Kenjiro, 4,491,697, Cl. 179-111.00E.
Toba, Akira, 4,491,878, Cl. 360-10.100.
Yamamoto, Kazuhiko, 4,491,874, Cl. 358-296.000.
Yoshimura, Tooru, 4,491,965, Cl. 382-57.000.
Tokyo Shibaura Denki Kaisha: *See*—
Seno, Yoshikazu; Mori, Hideyasu; and Sato, Yasuji, 4,491,693, Cl. 179-99.00R.
Tomarikawa, Kazuyuki: *See*—
Yamaguchi, Keiki; Tomarikawa, Kazuyuki; Kurochi, Haruo; Namikawa, Jiro; Matsumura, Shigeru; Takahashi, Ryo; and Mori, Shiro, 4,491,734, Cl. 250-385.000.
Tomite, Tosio, to Hitachi, Ltd. Direct current dynamoelectric machine of permanent magnet type. 4,491,756, Cl. 310-154.000.
Tomoda, Masayasu; Kawachi, Shoji; and Tanaka, Hiroyuki, to Daikin Kogyo Co., Ltd. Carbon fiber-containing fluoroelastomer composition. 4,491,536, Cl. 252-511.000.
Tomono, Makoto: *See*—
Itaya, Masahiko; Haneda, Satoshi; and Tomono, Makoto, 4,491,083, Cl. 118-657.000.
Tong-Shen, Hsieh. Automatic liquid-crystal light shutter. 4,491,390, Cl. 350-331.00R.
Toolmark Co.: *See*—
Holdahl, Robert A., 4,491,162, Cl. 142-7.000.
Topre Corporation: *See*—
Nishizawa, Toshio; Kamata, Keiji; Nonomura, Osamu; and Fukushi, Yutaka, 4,491,061, Cl. 98-34.600.
Toray Industries, Inc.: *See*—
Saito, Isoo; Fujioka, Kotaro; Arai, Hajime; and Saruyama, Hideo, 4,491,657, Cl. 528-308.100.
Toropov, Anatoly A.: *See*—
Toropov, Gennady A.; Shamenko, Stepan P.; Didyk, Rostislav P.; and Toropov, Anatoly A., 4,491,002, Cl. 72-118.000.
Toropov, Gennady A.; Shamenko, Stepan P.; Didyk, Rostislav P.; and Toropov, Anatoly A. Method for forming on workpiece resilient thread having closed helical cavity inside the thread. 4,491,002, Cl. 72-118.000.
Tosima, Soitiro: *See*—
Harada, Shigeo; and Tosima, Soitiro, 4,491,412, Cl. 356-36.000.
Touto Denki Kabushiki Kaisha: *See*—
Shimizu, Kunio, 4,491,142, Cl. 137-65.000.
Townotor Corporation: *See*—
Mikkelsen, Jan; and Sorlie, Kjell, 4,491,195, Cl. 187-9.00R.
Toyo Gomu Kogyo Kabushiki Kaisha: *See*—
Matoba, Taketo; Morita, Yasuhiro; Arai, Noritoshi; Ishigaki, Masahiro; and Harada, Hiroshi, 4,491,429, Cl. 384-221.000.
Toyo Jozo Kabushiki Kaisha: *See*—
Imamura, Shigeyuki; Misaki, Hideo; Ishikawa, Hidehiko; and Matsuura, Kazuo, 4,491,631, Cl. 435-4.000.
Toyo Kogyo Co., Ltd.: *See*—
Tsuchie, Masahiro; Takeoka, Tomihiko; and Nomura, Takanobu, 4,491,844, Cl. 343-713.000.
Toyoda Gosei Co., Ltd.: *See*—
Okumoto, Tadaoki; Sugimoto, Masatoshi; Horiuchi, Noriyuki; Sahara, Seiichi; Yamada, Tetsuo; Hashimoto, Kinrou; Ichikawa, Masayoshi; and Ninomiya, Fujio, 4,491,621, Cl. 428-519.000.
Toyoda Koki Kabushiki Kaisha: *See*—
Tsujiuchi, Toshio; Yoneda, Takao; and Ohta, Norio, 4,490,946, Cl. 51-165.880.
Toyota Jidosha Kabushiki Kaisha: *See*—
Idogaki, Takaharu; Kawai, Hisasi; Hattori, Kyo; and Sakurai, Kazuhiro, 4,491,815, Cl. 335-229.000.
Koide, Hiroshi, 4,491,117, Cl. 123-541.000.
Matoba, Taketo; Morita, Yasuhiro; Arai, Noritoshi; Ishigaki, Masahiro; and Harada, Hiroshi, 4,491,429, Cl. 384-221.000.
Nakasima, Mikio, 4,491,102, Cl. 123-188.00M.
Okumoto, Tadaoki; Sugimoto, Masatoshi; Horiuchi, Noriyuki; Sahara, Seiichi; Yamada, Tetsuo; Hashimoto, Kinrou; Ichikawa, Masayoshi; and Ninomiya, Fujio, 4,491,621, Cl. 428-519.000.
Suganuma, Tetsuya; Kazuoka, Koji; Fujita, Shuichi; Takahashi, Yoshitaka; and Okujo, Takeshi, 4,491,477, Cl. 75-230.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Hattori, Takemi; and Esaki, Kozo, 4,491,364, Cl. 297-284.000.
Kobayashi, Nobuyuki; and Ito, Hiroshi, 4,491,922, Cl. 364-431.070.
Nakamura, Norihiko; Itoh, Takaaki; and Morino, Toshiharu, 4,491,550, Cl. 261-44.00C.
Noguchi, Masaaki; Tanaka, Yukiyasu; and Igarashi, Isao, 4,491,096, Cl. 123-51.00B.
Sugiyama, Shinichi; Chujo, Yoshiki; and Yaegashi, Takehisa, 4,491,921, Cl. 364-431.050.
Trinidad, Maria A. Napkin holder. 4,491,242, Cl. 221-312.00R.
Trinkwalder, Joseph C., to Sherwood Selpac Corp. Pressure regulator with over-pressure safety shut-off feature. 4,491,149, Cl. 137-505.460.
Troebel, Werner, to Siemens Aktiengesellschaft. Plug-in base for low-voltage circuit breakers. 4,491,897, Cl. 361-353.000.
Troup, Robert L.: *See*—
Stevenson, David T.; and Troup, Robert L., 4,491,472, Cl. 75-10.00R.
Troxell, Lillian H.: *See*—
Johnston, Howard; and Troxell, Lillian H., 4,491,468, Cl. 71-94.000.
TRP Energy Sensors, Inc.: *See*—
Berndt, Dieter, 4,491,426, Cl. 374-194.000.
Trussler, Ronald C.: *See*—
Eastcott, Peter D.; and Trussler, Ronald C., 4,491,767, Cl. 318-85.000.
TRW Inc.: *See*—
Chan, Daniel F., 4,491,937, Cl. 365-154.000.
Tschacher, Dieter: *See*—
Maier, Peter; and Tschacher, Dieter, 4,491,297, Cl. 251-149.100.
Tsirlin, Boris E.: *See*—
Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; Kuzmin, Vladimir V.; Pershin, Nikolai I.; Vlasov, Evgeny V.; Reshetnikova, Natalya M.; and Tsirlin, Boris E., 4,491,751, Cl. 310-49.00R.
Tsou, Len Y.: *See*—
Jerde, Leslie G.; Lory, Earl R.; Muething, Kevin A.; and Tsou, Len Y., 4,491,499, Cl. 156-626.000.
Tsubouchi, Kaoru, to Aisin Seiki Kabushiki Kaisha. Suction pressure operated booster for automobile brake systems. 4,491,056, Cl. 91-369.00A.
Tsuchie, Masahiro; Takeoka, Tomihiko; and Nomura, Takanobu, to Toyo Kogyo Co., Ltd. Automobile antenna windshield. 4,491,844, Cl. 343-713.000.
Tsuchiya, Tatsuhiko, to Alps Electric Co., Ltd. Cassette tape player. 4,491,889, Cl. 360-105.000.
Tsuji, Teruji; Sato, Hisao; and Hamashima, Yoshio, to Shionogi & Co., Ltd. Fluoromethylthioacetic acid compounds. 4,491,547, Cl. 260-455.00R.

Tsujikado, Seiji: *See*—
Abe, Riichi; Tsuruta, Katsuji; and Tsujikado, Seiji, 4,491,266, Cl. 228-225.000.
Tsujiuchi, Toshio; Yoneda, Takao; and Ohta, Norio, to Toyoda Koki Kabushiki Kaisha. Grinding wheel feeder in grinding machines. 4,490,946, Cl. 51-165.880.
Tsukamoto, Shuji: *See*—
Ogawa, Norio; and Tsukamoto, Shuji, 4,491,594, Cl. 424-331.000.
Tsuruta, Katsuji: *See*—
Abe, Riichi; Tsuruta, Katsuji; and Tsujikado, Seiji, 4,491,266, Cl. 228-225.000.
Tsuruta, Yuzo, to Kabushiki Kaisha Sunpak. Camera suitable for flash photography. 4,491,405, Cl. 354-416.000.
Tualatin Sleep Products, Inc.: *See*—
Stanton, Norman C., 4,490,866, Cl. 5-471.000.
Tuovinen, Heikki: *See*—
Honkaniemi, Matti; Jankkila, Martti; Nurminen, Aimo; Virta, Matias; Iisakka, Veikko; Krogerus, Helge; Tuovinen, Heikki; Mantymaki, Tarmo; and Lajunen, Erkki, 4,491,952, Cl. 373-74.000.
Turner, Jonathan S., to AT&T Bell Laboratories. Fast packet switch. 4,491,945, Cl. 370-60.000.
Tuthill, Michael G., to Analog Devices, Incorporated. High resolution digital-to-analog converter. 4,491,825, Cl. 340-347.0DA.
Tuval, Miron; Azmon, Emanuel; and Melamed, Avraham. Method for subterranean generation of heat as a source of energy. 4,491,367, Cl. 299-4.000.
Tveryanovich, Eduard V.: *See*—
Baranov, Vladimir K.; Pinov, Akhsarbek B.; Potapov, Valery N.; Rostokinsky, Vladimir V.; Ryabikov, Stanislav V.; Sabelnikov, Viktor A.; Strebkov, Dmitry S.; and Tveryanovich, Eduard V., 4,491,683, Cl. 136-259.000.
Uchida, Kozo; and Matsuno, Keishi, to Iwatsu Electric Co., Ltd. Wide-band amplifier system. 4,491,802, Cl. 330-260.000.
Ueda, Hideki: *See*—
Hongo, Akira; Ueda, Hideki; Nakata, Isaei; Yoshida, Eiichi; Aoki, Nobuyoshi; and Suzuki, Toshimitsu, 4,490,984, Cl. 62-49.000.
Ueda, Takeo, to NSK-Warner K.K. Buckle device. 4,490,892, Cl. 24-641.000.
Uehara, Hironobu: *See*—
Tahara, Toshiyuki; Uehara, Hironobu; Hamazato, Kazuo; and Hayashi, Toshio, 4,491,700, Cl. 179-170.0NC.
Ueno, Tamio: *See*—
Kobayashi, Yoshinobu; Ueno, Tamio; and Kanagawa, Kozi, 4,491,967, Cl. 455-41.000.
Ugalde, Carlos V. Computer work station cabinet. 4,491,375, Cl. 312-250.000.
Uittenbogaard, Robert E., to Stichting Speurwerk Baggertechniek. Method for dredging rock with a pick and water jet combination. 4,491,368, Cl. 299-17.000.
Umemura, Kazuhiro; Sampei, Tohru; Nakata, Kazuo; Sato, Hirokazu; Murakami Kenya; and Intoh, Kiyoshi, to Nippon Telegraph & Telephone Public Corporation; and Hitachi, Ltd. Speech synthesizer. 4,491,958, Cl. 381-51.000.
Unico, Inc.: *See*—
Beck, Thomas L.; and Lawson, Donald B., 4,491,777, Cl. 318-571.000.
Union Carbide Corporation: *See*—
Abatjoglou, Anthony G.; and Bryant, David R., 4,491,675, Cl. 568-454.000.
Atkins, Kenneth E., 4,491,642, Cl. 523-515.000.
Eagar, Robert G., Jr.; and Murphy, Gerald J., 4,491,676, Cl. 568-449.000.
UNIROYAL, Inc.: *See*—
Matthews, Demetreos N.; and Nudenberg, Walter, 4,491,652, Cl. 525-247.000.
United States Borax & Chemical Corporation: *See*—
Williamson, John P. H., 4,491,478, Cl. 106-3.000.
U.S. Fire Control Corporation: *See*—
Logan, Frank G.; and Johnson, Wilfred V., 4,491,352, Cl. 285-373.000.
United States of America
Air Force: *See*—
Kinsey, James L., 4,490,973, Cl. 60-261.000.
Rothenberg, Carl, 4,491,845, Cl. 343-754.000.
Army: *See*—
Seiler, James F. N., Jr., 4,491,014, Cl. 73-150.00A.
Energy: *See*—
Kirpich, Aaron S., 4,491,681, Cl. 136-246.000.
Interior: *See*—
Webb, William E.; and Church, Ronald H., 4,491,971, Cl. 455-100.000.
National Aeronautics and Space Administration: *See*—
Debnam, William J., Jr.; Fripp, Archibald L.; and Crouch, Roger K., 4,491,427, Cl. 374-208.000.
Navy: *See*—
Brown, Robert M., 4,491,960, Cl. 382-26.000.
Gripshover, Ronald J.; and Rinehart, Larry F., 4,491,842, Cl. 343-18.00E.
Manheimer, Wallace M.; Ott, Edward; and Bondeson, Anders, 4,491,765, Cl. 315-4.000.
Rashleigh, Scott C., 4,491,413, Cl. 356-350.000.
U.S. Philips Corporation: *See*—
Benedictus, Jan H., 4,490,907, Cl. 30-34.200.
Bloem, Herman, 4,491,175, Cl. 165-183.000.
Habelt, Gerhard; and Mucha, Franz, 4,491,854, Cl. 346-136.000.
Haes, Freddy; and Reynhout, Cornelis M., 4,490,906, Cl. 30-34.200.
Hollants, Henricus C. J., 4,491,410, Cl. 355-67.000.
Juriga, Jan; and Muller, Ingo, 4,491,066, Cl. 99-391.000.
Kamalski, Theodor I. E., 4,491,957, Cl. 381-13.000.
Piel, Vera; and Schroder, Johann, 4,491,529, Cl. 252-70.000.
Riemersma, Pieter, 4,490,905, Cl. 30-34.100.
Roelants, Marc M. M., 4,491,393, Cl. 350-388.000.
Verhoeven, Leonardus A. J., 4,491,866, Cl. 358-111.000.
United Technologies Corporation: *See*—
Gradkowski, Thomas W.; DeMaris, Anthony J.; Shuskus, Alexander J.; and Grantham, Daniel H., 4,491,761, Cl. 310-359.000.
Universal Automat Corp.: *See*—
Croteau, Wildy, 4,491,086, Cl. 119-51.110.
University of Sheffield: *See*—
Black, Martin M.; and Drury, Philip J., 4,490,859, Cl. 3-1.500.
University of Tennessee Research Corporation: *See*—
Rosenburg, E. William; and Belew, Patricia W., 4,491,588, Cl. 424-273.00R.
UOP Inc.: *See*—
Verachtert, Thomas A., 4,491,565, Cl. 422-256.000.
Urbanek, John: *See*—
O'Leary, Raymond P.; and Urbanek, John, 4,491,708, Cl. 200-149.00R.
Urmossy, Miklos: *See*—
Sajo, Istvan; Vamos, Gyorgy; Urmossy, Miklos; Sipos nee Kaveczka, Barbara; Zemplen nee Papp, Eva; Borsovszky, Eva; and Barta, Laszlo , 4,491,633, Cl. 436-147.000.
Ursin, Thomas N.; and Severson, Verne L., to Wordtronix Inc. Word processor. 4,491,933, Cl. 364-900.000.
USM Corporation: *See*—
Broning, Manfred, 4,491,263, Cl. 227-152.000.
Carlson, John H.; and Peterson, Carl F., 4,491,033, Cl. 74-640.000.
Hold, Peter; and Rizzi, Marc A., 4,491,417, Cl. 366-75.000.
USV Pharmaceutical Corporation: *See*—
Loev, Bernard; Jones, Howard; and Suh, John T., 4,491,582, Cl. 424-250.000.
Utting, George R., to Victoreen Incorporated. Dual-color sensitometer. 4,491,400, Cl. 354-20.000.
Valeo: *See*—
Villeval, Denis, 4,491,174, Cl. 165-104.320.
Vallhonrat, Juan B., to Litton Resources Systems, Inc. Large volume, high speed data processor. 4,491,916, Cl. 364-200.000.
Vamos, Gyorgy: *See*—
Sajo, Istvan; Vamos, Gyorgy; Urmossy, Miklos; Sipos nee Kaveczka, Barbara; Zemplen nee Papp, Eva; Borsovszky, Eva; and Barta, Laszlo , 4,491,633, Cl. 436-147.000.
Van Allen, David E.: *See*—
Barr, Charles A.; Van Allen, David E.; and Zanardelli, John K., 4,491,434, Cl. 40-362.000.
Van Allen, Kent: *See*—
Smith, Richard L.; and Van Allen, Kent, 4,491,773, Cl. 318-257.000.
van der Malen, Bernardus G. M.: *See*—
Thijssen, Henricus A. C.; and van der Malen, Bernardus G. M., 4,491,462, Cl. 62-542.000.
van der Mei, Henk: *See*—
Gobel, Gerd; Behr, Norbert; van der Mei, Henk; Carduck, Franz-Josef; and von Ettingshausen, Othmar, 4,491,600, Cl. 426-384.000.
Van Doren, Lawrence: *See*—
Yalof, Stanley; and Van Doren, Lawrence, 4,491,027, Cl. 73-862.520.
Van Husen, Hendrik W.: *See*—
Daley, William J.; and Van Husen, Hendrik W., 4,491,794, Cl. 324-158.00R.
Vanlerberghe, Guy; and Sebag, Henri, to L'Oreal. Sequenced surfactant oligomers, process for preparing the same and compositions containing the same. 4,491,534, Cl. 252-357.000.
Vapor Corporation: *See*—
Higgins, Philip M.; MacKenna, William B.; Sickels, Lawrence G.; and Stumpf, Richard A., 4,491,917, Cl. 364-424.000.
Mamach, Harry E., 4,490,941, Cl. 49-28.000.
Varadhachary, Seevaram N.: *See*—
Schmidle, Claude J.; and Varadhachary, Seevaram N., 4,491,616, Cl. 428-158.000.
Varvil, R. Douglas; Wilson, Lon L.; and Bell, Joseph W., to SCM Corporation. Candy bar. 4,491,597, Cl. 426-103.000.
Vasiliev, Vitaly M.: *See*—
Belyavsky, Alexandr D.; Borozdinov, Gennady M.; Vasiliev, Vitaly M.; Kalognomos, Viktor I.; Komov, Nikolai A.; Pavlov, Gennady A.; Persits, Evgeny L.; Sergienko, July M.; Svirin, Jury A.; and Titov, Boris V., 4,491,314, Cl. 272-63.000.
Vassiliadis, Arthur, to Xanar, Inc. Laser device for gynecology. 4,491,131, Cl. 128-303.100.
Vazquez, Miguel; and Bilde, Rene , to France Transfo (S.A.). Process and apparatus for winding an electrically conductive wire into an inductive coil. 4,491,284, Cl. 242-83.000.
VDO Adolf Schindling AG: *See*—
Nickol, Friedrich W.; and Perthes, Harald, 4,491,391, Cl. 350-339.00R.
Veale, John P., to Western Gear Machinery Co. Pressure-compensated hydraulic positioning system. 4,490,944, Cl. 51-35.000.
Veale, John R., to Manhattan Engineering Company, Inc. Servo operated digital positioning control system. 4,491,776, Cl. 318-561.000.
Vecellio, Bernardino, to Societa Cavi Pirelli S.p.A. Flameproof electric cable impregnated with insulating fluid. 4,491,684, Cl. 174-26.00R.

Veenema, James, to Hammer, Howard; McFadden, George; and Veenema, James. Playing wall. 4,491,321, Cl. 273-29.00A.
Veisher, Benne, to Northern Telecom Limited. Test contact resistance of dry circuit contacts. 4,491,797, Cl. 324-421.000.
Velsicol Chemical Corporation: *See*—
Stach, Leonard J., 4,491,469, Cl. 71-121.000.
Verachtert, Thomas A., to UOP Inc. Countercurrent liquid-liquid contacting apparatus. 4,491,565, Cl. 422-256.000.
Verbatim Corporation: *See*—
Carey, Kevin J.; and Hanlon, Brian, 4,491,884, Cl. 360-75.000.
Hanlon, Brian, 4,491,881, Cl. 360-31.000.
Vereinigte Flugtechnische Werke GmbH: *See*—
Eickhorst, Helmut, 4,491,306, Cl. 269-21.000.
Verhoeven, Leonardus A. J., to U.S. Philips Corporation. Method of a device for generating differential images. 4,491,866, Cl. 358-111.000.
Vezain, Gerard: *See*—
Rinn, Christian; and Vezain, Gerard, 4,491,289, Cl. 244-158.00R.
Vickers, James H., to Southco, Inc. Adjustable friction hinge. 4,490,884, Cl. 16-338.000.
Victor Company of Japan, Ltd.: *See*—
Aoike, Hitoshi; Machida, Toyotaka; Kumazaki, Toshimasa; and Suenaga, Kazuyuki, 4,491,876, Cl. 358-330.000.
Kinjo, Hisao; and Ozawa, Keiji, 4,491,941, Cl. 369-126.000.
Victoreen Incorporated: *See*—
Utting, George R., 4,491,400, Cl. 354-20.000.
Vidal, Stella M. Attachable drain filter with surface irregularities to entangle hair and debris. 4,490,862, Cl. 4-292.000.
Vieta, Alan K.; Amerine, James D.; and Lowe, Henry M., to O. M. Scott and Sons Company, The. Liquid chemical applicator. 4,491,254, Cl. 222-83.500.
Villeval, Denis, to Valeo. Liquid flow heat exchanger, e.g. for a motor vehicle. 4,491,174, Cl. 165-104.320.
Vincent, James K.: *See*—
Haskins, Steve W.; and Vincent, James K., 4,491,696, Cl. 179-100.00C.
Virta, Matias: *See*—
Honkaniemi, Matti; Jankkila, Martti; Nurminen, Aimo; Virta, Matias; Iisakka, Veikko; Krogerus, Helge; Tuovinen, Heikki; Mantymaki, Tarmo; and Lajunen, Erkki, 4,491,952, Cl. 373-74.000.
Vis, Arthur D. Low contact force position sensing probe. 4,490,913, Cl. 33-172.00E.
Vlasov, Evgeny V.: *See*—
Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; Kuzmin, Vladimir V.; Pershin, Nikolai I.; Vlasov, Evgeny V.; Reshetnikova, Natalya M.; and Tsirlin, Boris E., 4,491,751, Cl. 310-49.00R.
Voecks, William F., Jr., to Burroughs Corporation. Automatic feeder-loader for cut sheet paper. 4,491,312, Cl. 271-127.000.
Vogel, Arnold, to Sandoz Ltd. 4-(2,1,3-Benzoxadiazol-4-yl)-1,4-dihydropyridazine derivatives, their production and pharmaceutical compositions. 4,491,581, Cl. 424-250.000.
Vogel, Richard E.; and Bowsky, Benjamin, to Emerson Electric Co. Degradation sensing and shut-down means for refrigeration motor-compressor units. 4,490,988, Cl. 62-193.000.
Vogel, Wilhelm: *See*—
Breitmoser, Georg; and Vogel, Wilhelm, 4,491,557, Cl. 419-5.000.
Vogelpohl, David R.: *See*—
Embree, David M.; Goldthorp, David C.; Longenecker, Howard H.; and Vogelpohl, David R., 4,491,691, Cl. 179-84.00T.
Voigt, Walter: *See*—
Kunz, Werner; and Voigt, Walter, 4,491,759, Cl. 310-328.000.
von Ettingshausen, Othmar: *See*—
Gobel, Gerd; Behr, Norbert; van der Mei, Henk; Carduck, Franz-Josef; and von Ettingshausen, Othmar, 4,491,600, Cl. 426-384.000.
Von Grunberg, Hubertus; Corey, Frederick; and Rowell, Jonathan M., to ITT Industries, Inc. Vehicle wheel axle and brake mounting assembly. 4,491,340, Cl. 280-668.000.
von Hoessle, Wolfgang: *See*—
Gruber, Ernst; and von Hoessle, Wolfgang, 4,491,029, Cl. 74-5.100.
Voronin, Feliz V.; Shergov, Igor V.; Gorb, Vyacheslav F.; and Sidorov, Viktor V., to Nauchno-Proizvodstvennoe Obiedinenie PO Tekhnologii Mashinostroenia. Apparatus for gas-shielded arc welding. 4,491,715, Cl. 219-74.000.
W. C. Heraeus GmbH: *See*—
Herklotz, Gunter; and Arnold, Gerhard, 4,491,507, Cl. 204-47.000.
W. S. Tyler Incorporated: *See*—
Janovac, Stephen J., 4,491,517, Cl. 209-401.000.
WABCO Steuerungstechnik GmbH: *See*—
Meyer, Hans-Friedrich; Thiele, Wolfgang; Kosmalski, Hermann; Meurer, Klaus; Kruppa, Hans; Gottling, Helmut; and Meyer, Ernst-August, 4,491,155, Cl. 137-625.660.
Wachs, Edward H.; and Kwech, Horst, to E. H. Wachs Company, The. Travelling pipe cutter. 4,490,909, Cl. 30-97.000.
Wackerbarth, Folkard: *See*—
Spindeler, Heinrich; and Wackerbarth, Folkard, 4,491,505, Cl. 202-270.000.
Waikas & Hosie Development Corporation: *See*—
Waikas, Jack; and Hosie, James, 4,491,164, Cl. 144-194.000.
Waikas, Jack; and Hosie, James, to Waikas & Hosie Development Corporation. Impact driven wood splitter. 4,491,164, Cl. 144-194.000.
Walker, James M., to Dril-Quip, Inc. Apparatus for releasably connecting tubular members in end-to-end relation. 4,491,346, Cl. 285-18.000.
Walker, Martin J., to NL Industries, Inc. Communication apparatus for hostile environments. 4,491,699, Cl. 179-156.00R.
Walker, Thad O.: *See*—
Gutierrez, Antonio; Brownawell, Darrell W.; Walker, Thad O.; and Brois, Stanley J., 4,491,524, Cl. 252-8.50C.
Wallace, Charles K.: *See*—
Milianowicz, Stanislaw A.; Davies, Norman; and Wallace, Charles K., 4,491,704, Cl. 200-144.00B.
Walley, Esmet, to American Standard Inc. Penalty brake application nullification-prevention system. 4,491,372, Cl. 303-18.000.
Walliser, Norbert: *See*—
Bergmann, Michael J.; Lederer, Armin; and Walliser, Norbert, 4,491,823, Cl. 338-174.000.
Walters, Charles J. Automobile dolly. 4,491,305, Cl. 269-17.000.
Walton, Robert N.; and Pinto, Ralph C. Door finishing support structure. 4,491,308, Cl. 269-70.000.
Wands, Jack R.; and Zurawski, Vincent R., Jr., to Massachusetts General Hospital, The. Process for producing antibodies to hepatitis virus and cell lines therefor. 4,491,632, Cl. 435-240.000.
Wangner Systems Corporation: *See*—
Smith, Richard W., 4,490,925, Cl. 34-42.000.
Warner, Hermann: *See*—
Arnheim, Hans-Rudolf; and Warner, Hermann, 4,490,942, Cl. 49-374.000.
Warnke, Wayne L., to Yamaha Hatsudoki Kabushiki Kaisha. Ski for snowmobile. 4,491,333, Cl. 280-28.000.
Wasserman, Philip D., to Xetex, Inc. Radiation flux measuring system with dead-time correction. 4,491,733, Cl. 250-374.000.
Watanabe, Ryoji: *See*—
Fujii, Tadayuki; Hiraoka, Yutaka; and Watanabe, Ryoji, 4,491,560, Cl. 420-429.000.
Watanabe, Shingo: *See*—
Koike, Norio; Ito, Takeo; Watanabe, Shingo; and Ikari, Kunihiro, 4,491,629, Cl. 430-176.000.
Watanabe, Takeyoshi: *See*—
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Kojima, Noboru; Watatani, Yoshizumi; Arai, Takao; Hoshino, Takashi; and Shibuya, Toshifumi, 4,491,880, Cl. 360-19.100.
Watkins, Bruce J., to Hughes Tool Company. Tendon latch. 4,491,439, Cl. 405-224.000.
Watson, William K. Airship-floated wind turbine. 4,491,739, Cl. 290-44.000.
Wavin B.V.: *See*—
Loefberg, Gustaf G., 4,491,959, Cl. 383-103.000.
Webb, Karen K.: *See*—
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Webb, William E.; and Church, Ronald H., to United States of America, Interior. Short range trapped miner locator. 4,491,971, Cl. 455-100.000.
Weber, Jochen: *See*—
Stahl, Konrad; Theiss, Josef; and Weber, Jochen, 4,491,729, Cl. 250-336.100.
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Weder, Donald E.: *See*—
Weder, Erwin H.; and Weder, Donald E., 4,491,217, Cl. 206-45.330.
Weder, Erwin H.; and Weder, Donald E., to Highland Supply Corp. Corsage bag, blank and method of forming same. 4,491,217, Cl. 206-45.330.
Wehr Corporation: *See*—
Sylvester, Gordon C.; and Alexander, Geroge E., 4,491,062, Cl. 98-40.00D.
Weihsmann, Peter R., to Franklin Electric Co., Inc. Rotary lip seal. 4,491,330, Cl. 277-65.000.
Weikert, Norbert B.: *See*—
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Weinert, Friedrich. Self-igniting smoking device. 4,491,139, Cl. 131-351.000.
Weinstein, Paul; and Winter, Joseph, to Olin Corporation. Laser sizing method and apparatus for fiber optic buffers. 4,491,463, Cl. 65-2.000.
Weis, Rudolf R.; and Schutz, Rudolph W., to Crown Zellerbach Corporation. Plastic film wrapper and sealer apparatus. 4,490,962, Cl. 53-550.000.
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Appelbaum, Joseph; and Weiss, Reuven, 4,491,727, Cl. 250-203.00R.
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Welch Allyn, Inc.: *See*—
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Wellekens, John. Tamper-resistant lock assembly. 4,490,998, Cl. 70-419.000.
Weller, Gerhard; Rosenfeldt, Bernd; and Reis, Edmund, to Siemens Aktiengesellschaft. Galvanically separating coupling location for energy and/or signal transmission. 4,491,981, Cl. 455-602.000.
Wells, A. Michael, Jr.: *See*—
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Wells, R. Leon. Upright vacuum center. 4,490,882, Cl. 15-337.000.
Wells, Richard E., to General Signal Corporation. Method of dehydrating natural gas. 4,490,985, Cl. 62-86.000.

Welter, Mark F.: *See—*
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Welty, Dennis L.: *See—*
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Wenske, Rolf; Schnell, Hans; and Mirsberger, Peter, to Escher Wyss GmbH. Dewatering apparatus. 4,491,521, Cl. 210-401.000.
Wesala, Robert J., to Park Chemical Company. Mold release agents and means of application. 4,491,607, Cl. 427-135.000.
Wesemeyer, Jurgen: *See—*
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Wessel, Tim. Pressurized/heated variable jet carburetor. 4,491,552, Cl. 261-144.000.
West, Lynn P., to International Business Machines Corporation. Star-loop communication network and control system therefor. 4,491,838, Cl. 340-825.050.
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Wicki, Gerhard; and Naff, Rolf, to Kontron Holding A.G. Detection of dynamic unbalances of centrifuges. 4,491,019, Cl. 73-457.000.
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Wilcock, Hal J., to Jones, Wayne G., a part interest. Bucket apparatus. 4,491,234, Cl. 220-90.000.
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Williams, Kenneth R.; McClaran, Mark R.; and Giacobbi, Peter D., to Johnston Pump/General Valve, Inc. Toggle gate valve. 4,491,145, Cl. 137-312.000.
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Williams, Roger F., to Mobile Companies, Inc. Cryogenic cleaning process. 4,491,484, Cl. 134-4.000.
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Williamson, John P. H., to United States Borax & Chemical Corporation. Compositions and methods for polishing metal surfaces. 4,491,478, Cl. 106-3.000.
Willim, Friedrich, to Eumuco Aktiengesellschaft fur Maschinenbau. Work handling assembly for depositing a workpiece into the die space of a drop-forging press. 4,491,451, Cl. 414-732.000.
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Wilson, A. Kenneth; and Barker, Ronald E., to AMSTED Industries Incorporated. Valve with improved sealing structure. 4,491,300, Cl. 251-368.000.
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Wolters, Dennis R., to Protective Treatments, Inc. Foldable trim strip with mounting portion. 4,491,614, Cl. 428-31.000.
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Wood, Douglas E. Support carriage for a solar concentrator. 4,491,388, Cl. 350-636.000.
Wood, James A.; and Mazur, Richard J., to American Standard Inc. Rate polarity shift wheel-slip control system. 4,491,920, Cl. 364-426.000.
Wooda, William D.; and Pigman, John H., to International Design Corporation. Drafting tool. 4,490,921, Cl. 33-476.000.
Wooda, William E.; and Stanley, Philip E., to Honeywell Information Systems Inc. Microprogrammed control of extended integer and commercial instruction processor instructions through use of a data type field in a central processor unit. 4,491,908, Cl. 364-200.000.
Wooldridge, Bobby M. Fuel mixture method and apparatus employing an electrically heated screen. 4,491,118, Cl. 123-549.000.
Wordtronix Inc.: *See—*
Ursin, Thomas N.; and Severson, Verne L., 4,491,933, Cl. 364-900.000.
World Color Press, Inc.: *See—*
Beckley, Robert A., 4,491,309, Cl. 270-20.100.
Worsely, Paul A., to Suburban Welders Supply Co., Inc. Automatic welding control system with selectable pairs of alternate output terminals. 4,491,720, Cl. 219-136.000.
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Wu, Jeng-Shyong. Receiving means adapted for a push-in type lamp socket. 4,491,380, Cl. 339-105.000.
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Yaeger, John R.; and Morgan, Robert K., to Raychem Corporation. Self-protecting and conditioning memory metal actuator. 4,490,975, Cl. 60-527.000.
Yalof, Stanley; and Van Doren, Lawrence, to Tetrahedron Associates, Inc. Wide-range load cell. 4,491,027, Cl. 73-862.520.
Yamada, Hisashi; Makise, Masayuki; Katagiri, Tsutomu; and Abe, Kaname, to Lion Corporation. Method for producing filler-loaded thermoplastic resin composite. 4,491,553, Cl. 264-51.000.
Yamada, Mitsuhiko, to Dainippon Screen Seizo Kabushiki Kaisha. Color separation condition selecting means for a picture scanning and recording machine. 4,491,864, Cl. 358-80.000.
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Yamaha Hatsudoki Kabushiki Kaisha: *See—*
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Yamamoto, Kazuhiko, to Tokyo Shibaura Denki Kabushiki Kaisha. System for displaying picture information. 4,491,874, Cl. 358-296.000.
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Yasuhara, Seishi, to Nissan Motor Company, Limited. Control system for a glow plug of an internal combustion engine. 4,491,100, Cl. 123-145.00A.
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Yoshida, Hiroshi; Akashi, Shunji; and Matsuda, Yoshio, to Yoshida Kogyo K.K. Separable slide fastener. 4,490,890, Cl. 24-434.000.
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Yoshida, Takao, to Casio Computer Co., Ltd. Electronic fighting sport game apparatus. 4,491,324, Cl. 273-85.00G.
Yoshida, Toshio; and Atsuta, Toshio, to Kawasaki Jukogyo Kabushiki Kaisha. Apparatus for processing welded joint parts of pipes. 4,491,001, Cl. 72-76.000.
Yoshikawa, Shigeru: *See*—
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Young-Koo, Ahn, to Jeco Precision Co., Ltd. Multi-orientable clock and stand. 4,491,425, Cl. 368-317.000.
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, to Kabushiki Kaisha Toyoda Jidoh Shokki Seisakusho; and Kabushiki Kaisha Meidensha. Method and system for horizontally controlling a fork for a fork lift truck. 4,491,918, Cl. 364-424.000.
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Zebo, Timothy J.: *See*—
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Zeidler, Georg: *See*—
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Danenberg, Bernard D.; and Lostumo, Arthur J., 4,491,818, Cl. 336-65.000.
Zenkner, Kurt, to Wilhelm Gebhardt GmbH, Firma. Regenerator with a rotating regenerative heat exchanger. 4,491,171, Cl. 165-7.000.
Zhiltsov, Jury S.: *See*—
Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kozlov, Vyacheslav L; Korol, Vyacheslav K.; Kuzmin, Vladimir V.; Pershin, Nikolai I.; Vlasov, Evgeny V.; Reshetnikova, Natalya M.; and Tsirlin, Boris E., 4,491,751, Cl. 310-49.00R.
Ziegler, John A., to Morris, Anthony D. Axial piston machine having double acting pistons and a rotary control valve. 4,491,057, Cl. 91-503.000.
Ziggity Systems, Inc.: *See*—
Hostetler, Eldon, 4,491,088, Cl. 119-72.500.
Zimm Zamm AG: *See*—
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Zimmer, Inc.: *See*—
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Zimmerman, Dennis A.: *See*—
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Znaimer, Samuel: *See*—
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Zobbi, Robert G.: *See*—
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Zobel, Henry F.: *See*—
Dudacek, Wayne E.; Kochan, David A.; and Zobel, Henry F., 4,491,483, Cl. 127-33.000.
Zuber, Chester L.; Butrum, Virgil T.; Gorss, Jeffrey B.; and Rydholm, Manford E., to Aluminum Company of America. Constant rate briquette feeding system. 4,491,475, Cl. 75-65.00R.
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Bowman, Kenneth A.; and Zuber, Chester L., 4,491,473, Cl. 75-63.000.
Zuck, Daniel R. Folding bicycle. 4,491,337, Cl. 280-278.000.
Zumbusch, Steven J., to Eaton Corporation. Shaft seal and means to effect radial movement of sealing lip. 4,491,332, Cl. 277-152.000.
Zurawski, Vincent R., Jr.: *See*—
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1ST DAY OF JANUARY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Stucki Company: *See*—
Wiebe, Donald, Re. 31,784, Cl. 105-197.0DB.

Borenstein, David E.; and Newton, Richard C., to Phillips Petroleum Company. Method and apparatus for controlling yarn plug length. Re. 31,783, Cl. 28-221.000.

Chang, Robert W. H., to Minnesota Mining and Manufacturing Company. Compositions for reducing elution of therapeutic agents from teeth. Re. 31,787, Cl. 424-52.000.

Figgie International, Inc.: *See*—
Netteland, Loyal G., Re. 31,785, Cl. 128-204.260.

Hasegawa, Katsuji, to Meinan Machinery Works, Inc. Veneer lathe. Re. 31,786, Cl. 144-213.000.

Hashimoto, Kazuo. Telephone information displaying device. Re. 31,789, Cl. 179-5.500.

Iwai, Tadashi; Kawahito, Takashi; and Yamada, Tetsuo, to Ube Industries, Inc. Process for producing metallic nitride powder. Re. 31,788, Cl. 423-290.000.

Kawahito, Takashi: *See*—
Iwai, Tadashi; Kawahito, Takashi; and Yamada, Tetsuo, Re. 31,788, Cl. 423-290.000.

Meinan Machinery Works, Inc.: *See*—
Hasegawa, Katsuji, Re. 31,786, Cl. 144-213.000.

Minnesota Mining and Manufacturing Company: *See*—
Chang, Robert W. H., Re. 31,787, Cl. 424-52.000.

Netteland, Loyal G., to Figgie International, Inc. Breathing valve assembly with diaphragm control of the exhaust ports. Re. 31,785, Cl. 128-204.260.

Newton, Richard C.: *See*—
Borenstein, David E.; and Newton, Richard C., Re. 31,783, Cl. 28-221.000.

Phillips Petroleum Company: *See*—
Borenstein, David E.; and Newton, Richard C., Re. 31,783, Cl. 28-221.000.

Shelton, Richard M., to Sperry Corporation. Shared processor data entry system. Re. 31,790, Cl. 364-200.000.

Sperry Corporation: *See*—
Shelton, Richard M., Re. 31,790, Cl. 364-200.000.

Ube Industries, Inc.: *See*—
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Borzym, Alexander, to Alpha Industries, Inc. Cut-off die set. B1 4,108,029, 1-1-85, Cl. 83-54.000.

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Blackburn, James R. Bicycle rack. 276,991, 1-1-85, Cl. D12-158.000.
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Wasson, Charles T. Desk accessory. 277,013, 1-1-85, Cl. D19-75.000.
Weinreb, Robert. Camera bag. 276,953, 1-1-85, Cl. D3-33.000.
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CLASSIFICATION OF PATENTS

CLASSIFICATION OF PATENTS

ISSUED JANUARY 1, 1985

NOTE.—First number, class; second number, subclass; third number, patent number

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69 4,491,801
260 4,491,802
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265 4,491,804
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96 4,491,806
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192 4,491,814
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65 4,491,818
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26 4,491,822
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4,491,833
726 4,491,834
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18 E 4,491,842
702 4,491,843
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758 4,491,846
765 4,491,847
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791 4,491,849
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80		4,491,864
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111		4,491,866
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237		4,491,872
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90		4,491,887
97		4,491,888
105		4,491,889
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130.21		4,491,891
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120		4,491,893
212		4,491,894
306		4,491,895
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353		4,491,897
432		4,491,898
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230		4,491,900
275		4,491,901
389		4,491,902
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602		4,491,930
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222		4,491,938
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76		4,491,418
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156		4,491,420
247		4,491,421
343		4,491,422
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13		4,491,957
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		4,491,964
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57		4,491,965
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221		4,491,429
471		4,491,374
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208		4,491,430
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		4,491,432
471.1		4,491,433
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209	B1	Re.30,659
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122		4,491,436
172		4,491,437
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10		4,491,438
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224		4,491,439
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294		4,491,441
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732		4,491,451
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5		4,491,563
211		4,491,564
256		4,491,565
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220		4,491,566
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387		4,491,567
442		4,491,568
447.3		4,491,569
484		4,491,570
485		4,491,571
539		4,491,572
652		4,491,573
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19		4,491,575
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177		4,491,577
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103		4,491,597
127		4,491,598
331		4,491,599
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421		4,491,601
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135		4,491,607
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215		4,491,609
337		4,491,610
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412		4,491,612
428		4,491,613
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31		4,491,614
33		4,491,615
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		4,491,984
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219		4,491,639
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400		4,491,641
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96		4,491,643
100		4,491,644
112		4,491,645
558		4,491,646
CLASS 525		
67		4,491,647
89		4,491,648
92		4,491,649
102		4,491,650
187		4,491,651
247		4,491,652
356		4,491,653
490		4,491,654
CLASS 527		
600		4,491,655
CLASS 528		
167		4,491,656
308.1		4,491,657
486		4,491,658
CLASS 534		
655		4,491,344
677		4,491,343
CLASS 536		
17.2		4,491,659
32		4,491,660
84		4,491,661
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74		4,491,662
193		4,491,663
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67		4,491,664
140		4,491,665
CLASS 548		
426		4,491,666
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302		4,491,667
315		4,491,668
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410		4,491,669
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271		4,491,672
492		4,491,673
CLASS 568		
357		4,491,674
449		4,491,676
454		4,491,675
751		4,491,677
CLASS 585		
466		4,491,678

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D2—	24	276,949		483	276,965	D9—	449	276,981	D13—	3	276,997	D19—	75	277,013	D24—	26	277,029
	233	276,950		515	276,960	D10—	24	276,982		40	276,998	D21—	18	277,014		36	277,030
	234	276,951		580	276,966	D11—	117	276,983	D14—	6	276,999		52	277,015		45	277,031
	428	276,952	D7—	24	276,968		125	276,984		53	277,000		65	277,016		52	277,032
D3—	33	276,953		325	276,969		130	276,985		60	277,001			277,017	D26—	3	277,033
	43	276,954			276,970	D12—	5	276,986			277,002			277,018	D27—	48	277,034
D6—	327	276,967		352	276,971		114	276,987		100	277,003		121	277,019	D28—	7	277,035
	334	276,959		358	276,972		115	276,988			277,004		122	277,020		51	277,036
	366	276,956		402	276,973		157	276,989			277,005		159	277,021		83	277,037
		276,957	D8—	11	276,974			276,990		107	277,006		246	277,022	D32—	31	277,038
	369	276,958		57	276,975		158	276,991	D15—	69	277,007	D23—	17	277,023		50	277,039
	430	276,955		351	276,976		187	276,992		133	277,008		19	277,024	D34—	29	277,040
	450	276,962		373	276,977		211	276,993		199	277,009		97	277,025		39	277,041
	466	276,961		382	276,978		307	276,994	D16—	31	277,010		153	277,026		40	277,042
	470	276,963		396	276,979		339	276,995		117	277,011			277,027			
		276,964		400	276,980		345	276,996	D18—	22	277,012			277,028	D99—	28	277,043

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06 : 5,380
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41 : 5,381

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

36 : T105,001
T105,002

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Vol. 1050, Number 2

U.S. DEPARTMENT OF COMMERCE

PATENT AND TRADEMARK OFFICE

Vol. 1050 Number 2

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

January 8, 1985

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

January 8, 1985 Volume 1050 Number 2

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
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COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1042 O.G. 45 on May 15, 1984.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced in the *Official Gazette* at 1039 O.G. 142 on Feb. 21, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

Apr. 13, 1984.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Board of Appeals Decisions Rendered in the Month of Nov. 1984

Affirmed	154
Affirmed in Part	27
Reversed	91
Total	272

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Jan. 5, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,308,622 through 4,309,773

Reissue Patents based on the above identified patents. No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,256,381, Re. S.N. 659,334, Filed Oct. 10, 1984, Cl. 350/423, ZOOMS LENS, Melvyn H. Kreitzer, Owner of Record: *Vivitar Corp., Santa Monica, Calif.* Attorney or Agent: Peter L. Costas, et al., Ex. Gp.: 257

4,353,086, Re. S.N. 658,189, Filed Oct. 5, 1984, Cl. 357/051, SILICON INTEGRATED CIRCUITS, Ralph J. Jaccodine, et al., Owner of Record: *Bell Telephone*

Laboratories, Inc., Murray Hill, N.J., Attorney or Agent: S. E. Hollander, et al., Ex. Gp.: 253

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,777,283, Reexam. No. 90/000,679, Requested: Dec. 3, 1984, Cl. 356/246, TRANSPARENT SLIDE FOR THE EXAMINATION OF LIQUID SPECIMENS, Carlos D. Elkins, Owner of Record: *Carlos D. Elkins, Whittier, Calif.*, Attorney or Agent: Edgar W. Averill, Ex. Gp.: 250, Requester: Owner

3,855,129, Reexam. No. 90/000,681, Requested: Dec. 5, 1984, Cl. 210/198.2, NOVEL PUMPING APPARATUS, Louis Abrahams, et al., Owner of Record: *Waters Assoc., Inc., Framingham, Mass.*, Attorney or Agent: James & Franklin, Ex. Gp.: 130, Requester: Owner

4,060,953, Reexam. No. 90/000,678, Requested: Dec. 3, 1984, Cl. 52/743, ARTIFICIAL AND NATURAL STRUCTURES, James Milne, Owner of Record: *Balfour Beatty & Co., Ltd., Croydon, England*, Attorney or Agent: Eugene F. Buell, Ex. Gp.: 354, Requester: Eugene F. Buell, Pittsburgh, Pa.

4,108,029, Reexam. No. 90/000,682, Requested: Dec. 10, 1984, Cl. 083/054, CUT-OFF DIE SET, Alexander Borzym, Owner of Record: *Alpha Industries, Inc., Detroit, Mich.*, Attorney or Agent: Krass and Young, Ex. Gp.: 324, Requester: Vogel Tool & Die Corp.; Chicago, Ill.

4,146,437, Reexam. No. 90/000,671, Requested: Nov. 23, 1984, Cl. 204/1, METHOD FOR EVALUATING A SYSTEM FOR ELECTRODEPOSITION OF METALS, Thomas O'Keefe, Owner of Record: *Curators of the University of Missouri, Columbia, Mo.*, Attorney or Agent: J. K. Roedel, Ex. Gp.: 110, Requester: Rockwell International Corp., Thousand Oaks, Calif.

4,232,679, Reexam. No. 90/000,677, Requested: Dec. 4, 1984, Cl. 128/419, PROGRAMMABLE HUMAN TISSUE STIMULATOR, Joseph H. Schulman, Owner of Record: *Pacesetters Systems, Inc., Sylmar, Calif.*, Attorney or Agent: Lynch, Sherman & Cox, Ex. Gp.: 335, Requester: Owner

4,305,091, Reexam. No. 90/000,674, Requested: Dec. 3, 1984, Cl. 358/36, ELECTRONIC NOISE REDUCING APPARATUS AND METHOD, J. Carl Cooper, Owner of Record: *Inventor*, Attorney or Agent: Charles R. Rust, Ex. Gp.: 262, Requester: Harris Corp., Cleveland, Ohio

4,330,280, Reexam. No. 90/000,669, Requested: Nov. 13, 1984, Cl. 433/90, EJECTOR HOLDER FOR CAPSULE-LIKE CARTRIDGE, Emery W. Dougherty, et al., Owner of Record: *Dentsply Research Development Corp, Milford, Del.*, Attorney or Agent: C. Hercus Just, Ex. Gp.: 330, Requester: William B. Dragan, Stratford, Conn.

4,335,570, Reexam. No. 90/000,684, Requested: Dec. 10, 1984, Cl. 56/327R., HARVESTING SHAKER FOR CROPS SUCH AS TOMATOES OR THE LIKE, Richard W. Fitzmaurice, Owner of Record: *FMC Corp., San Jose, Calif.*, Attorney or Agent: Henry M. Stanley, Ex. Gp.: 333, Requester: FMC Corp., Chicago, Ill.

4,363,679, Reexam. No. 90/000,683, Requested: Dec. 6, 1984, Cl. 149/37, USE OF ZINC PEROXIDE AS OXIDANT FOR EXPLOSIVES AND PYROTECHNICAL MIXTURES, Rainer Hagel, et al., Owner of Record: *Dynamit Nobel Aktiengesellschaft, Postfach, W. Germany*, Attorney or Agent: Felfe & Lynch, Ex. Gp.: 220, Requester: Owner

4,445,789 Reexam. No. 90/000,680, Requested: Dec. 4, 1984, Cl. 374/198, THERMOMETER OR OTHER INSTRUMENT ASSEMBLY, Edward L. Peart, et al., Owner of Record: *Sybron Corp., Rochester, N.Y.*, Attorney or Agent: Theodore B. Roessel, Ex. Gp.: 246, Requester: Sybron Corp., Rochester, N.Y.

National Inventors Expo

The Patent and Trademark Office, the National Council of Patent Law Associations and the National Inventors Hall of Fame Foundation, Inc., will sponsor the Thirteenth Annual National Inventors Expo in the Public Search Room on Saturday, Feb. 9, 1985 from 1:00 p.m. to 5:00 p.m. and Sunday, Feb. 10, 1985 from 10:00 a.m. to 5:00 p.m. The public is invited to view the exhibits on these days. Inventors will be inducted into the National Inventors Hall of Fame on Sunday, Feb. 10 at 2:00 p.m.

In order to assemble the exhibits it will be necessary to close the Search Room on Friday, Feb. 8, 1985 at 5:00 p.m. The removal of all personal property from the Search Room would be appreciated.

Dec. 18, 1984.

GERALD J. MOSSINGHOFF
Commissioner of Patents and Trademarks

Errata

"All reference to Patent No. RE31756 to John Gagliani, et al. of Calif. for 'MODIFIED POLYIMIDE FOAMS AND METHODS OF MAKING SAME' appearing in the Official Gazette of Dec. 4, 1984, should be deleted since no patent was granted."

"All reference to Patent No. 4,483,542 to Joseph H. Hynes, et al. of Tex. for 'ANNULAR PACKING UNIT AND INSERT' appearing in the Official Gazette of Nov. 20, 1984 should be deleted since no patent was granted."

"All reference to Patent No. 4,485,030 to Terence A. Clarke, et al. of United Kingdom for 'DETERGENT BAR PROCESSING' appearing in the Official Gazette of Nov. 27, 1984 should be deleted since no patent was granted."

"All reference to Patent No. 4,486,409 to Marcia F. Goldfarb of Me. for 'INDUCER OF T-SUPPRESSOR CELLS' appearing in the Official Gazette of Dec. 4, 1984, should be deleted since no patent was granted."

"All reference to Patent No. 4,487,758 to Mattheus F. A. Goosen, et al., of Canada for 'MICROENCAPSULATION OF LIVING TISSUE AND CELLS' appearing in the Official Gazette of Dec. 11, 1984, should be deleted since no patent was granted."

"All reference to Patent No. 4,490,332 to Jacqueline J. Jackson, et al. of Colo. for 'GAS FLOW CARTRIDGE HAVING RESILIENT FLEXIBLE MEMBRANE WITH SLIT SEPARATING REACTION AND REAGENT CHAMBERS' appearing in the Official Gazette of Dec. 25, 1984, should be deleted since no patent was granted."

U.S. GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve ex-

peditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

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U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Office of Federal Patent Licensing
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN 6-308,747 (4,461,167). PSYCHROMETER FOR MEASURING THE HUMIDITY OF A GAS FLOW.
SN 6-423,403 (4,464,392). PROCESS FOR CONTROLLING ANTIMICROBIAL ACTIVITY USING GLYCOLIC ACID DERIVATIVES.
SN 6-443,995 (4,464,390). CONTROL OF PARASITIC MITES WITH ALKYL CARBAMATES.
SN 6-524,179 (4,464,295). SIMPLE AND RAPID METHOD FOR EXTRACTION OF PROTEINS FROM BACTERIA.
SN 6-539,860 (4,464,296). SOLUBILIZATION OF DRY PROTEIN IN AQUEOUS OR ACIDIC MEDIA AFTER TREATMENT WITH CONCENTRATED HYDROGEN PEROXIDE.
SN 6-573,748. ROLLER CHOPPER TRANSPORT CARRIAGE.
SN 6-625,266. COCKROACH REPELLENTS.
SN 6-625,328. INSECT REPELLENTS.
SN 6-626,329. COCKROACH REPELLENTS.
SN 6-626,960. NEW MALONIC ESTER DERIVATIVES.
SN 6-635,945. PROCESS FOR STABILIZING WHOLE CEREAL GRAINS.
SN 6-636,451. LOW WET PICKUP FABRIC FINISHING APPARATUS.

DEPARTMENT OF COMMERCE

SN 6-370,772 (4,464,401). ACOUSTIC THAWING OF FROZEN FOOD.

DEPARTMENT OF THE ARMY

SN 6-611,570. SLUDGE DEWATERING BY FREEZING.

DEPARTMENT OF THE INTERIOR

SN 6-200,110 (4,464,338). IN SITU TRITIUM BOREHOLE PROBE FOR MEASUREMENT OF TRITIUM.

Published Trademark Applications

Papers which are filed in the Patent and Trademark Office in connection with published trademark application files should be captioned to the attention of the Trademark Quality Review Clerk and addressed as follows:

Commissioner of Patents and Trademarks
Attention: Box 5, Trademark Quality Review Clerk
Washington, D.C. 20231

This mailing should be used only for papers filed after publication but before issuance of the registration. This could include corrections to information which appears to have been inadvertently or incorrectly published in the Trademark Official Gazette, as well as changes of attorney or address papers or notification of filing an assignment. Corrections to information published in the TMOG must be received in the Office before the registration is issued.

Use of this mailing address for corrections will help ensure that such papers are properly routed within the Office. Telephone inquiries concerning corrections or other matters in relation to published trademark applications should be directed to (703) 557-4249.

Dec. 10, 1984.

MARGARET M. LAURENCE
Assistant Commissioner for Trademarks.

Initial Guidelines Implementing Changes in 35 U.S.C. 103, 116, and 120

The Patent and Trademark Office has established initial guidelines for patent examiners to use in implementing the changes made in 35 U.S.C. 103, 116, and 120 by Public Law 98-622, the Patent Law Amendments Act of 1984. As a service to the public, those guidelines are published below. A copy of Public Law 98-622 is also being published concurrently herewith. Some of the procedural aspects of matters contained in the guidelines will be incorporated into Title 37 of the Code of Federal Regulation through the rule-making process.

Dec. 11, 1984.

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

Initial Guidelines As To Implementation Of 35 U.S.C. 103

Public Law 98-622 added a new sentence to 35 U.S.C. 103 which reads as follows:

"Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person."

The significant features resulting from this amendment to §103 are the following:

(1) The only prior art which is disqualified is prior art under §102(f) or (g) where the subject matter, i.e., the prior art, and the invention "were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person." (Person includes organization.)
(2) If the subject matter (prior art) qualifies as prior art under any other section, e.g., §102(a), (b), or (e), it is still prior art and can be used.
(3) Amendment applies only to subject matter which qualifies as prior art under §103; it does not affect subject matter which qualifies as prior art under §102, i.e., anticipatory prior art.
(4) Term "another person" means any inventive entity other than the inventor and includes the inventor and any other person.
(5) Term "developed" is to be read broadly and is not limited to any particular manner of development.
(6) Subject matter derived from another under §102(f) is prior art under §103 unless the derived subject matter and the claimed invention are owned by, or subject to an obligation of assignment to, the same person at the time the claimed invention was made.
(7) The disclosure of an earlier filed patent application which issues as a patent continues to be prior art under §102(e) against a later invented and filed application of another inventor even though the patent and the later application are owned by, or sub-

ject to an obligation of assignment to, the same person.

(8) Commonly owned applications, i.e., applications owned by the same person, may be refiled as a single application to avoid one or more of them becoming prior art against another under §§102(e) and 103.

(9) The phrase "owned by the same person" requires that the same person, persons, or organization own 100% of the subject matter (prior art) and 100% of the claimed invention.

(10) The phrase "subject to an obligation of assignment to the same person" requires that a legal obligation of assignment exist and not merely a moral or unenforceable obligation.

(11) As long as the same person owns the subject matter and the invention at the time the claimed invention was made, a license to another may be made without the subject matter becoming prior art.

(12) Amended §103 requires actual ownership (or obligation to assign) be in existence at the time the claimed invention is made for the subject matter to be disqualified as prior art; acquiring one or the other later is not sufficient.

(13) Burden of establishing that subject matter is disqualified as prior art is placed on patent applicant and not on the patent examiner once the examiner establishes a prima facie case of obviousness based on the prior art.

(14) Double patenting rejections may now be made in applications based on commonly owned patents of different inventive entities and double patenting rejections of the obviousness type can be overcome by terminal disclaimers.

(15) A double patenting rejection may also be made in a later filed application where the application/patent on which the rejection is based and the later filed application are not commonly owned as long as one of the inventors is common between the later filed application and the application/patent; such a rejection cannot be overcome by terminal disclaimer in view of the lack of common ownership.

(16) The Commissioner's Notice of January 9, 1967, "Double Patenting", 834 O.G. 1615 (Jan. 31, 1967) is withdrawn to the extent that it does not authorize a double patenting rejection where different inventive entities are present.

(17) Inventors of subject matter not commonly owned at the time of the invention may file as joint inventors in a single application. However, the claims in such an application are not protected from a §102(f)/103 or §102(g)/103 rejection.

Implementation Steps As To Amended 35 U.S.C. 103

A. Applications To Be Considered

(1) Amended §103 does not "affect any final decision made by the court or the Patent and Trademark Office before the date of enactment [November 8, 1984]... with respect to a patent or application for patent, if no appeal from such decision is pending and the time for filing an appeal has expired."

(2) The amendment of §103 will *not* be considered to apply to:

(a) Any application which has been abandoned prior to November 8, 1984, unless such application is revived pursuant to the provisions of 37 CFR 1.137(a) or (b) and is pending on or after November 8, 1984;

(d) Any application in which all the claims have been allowed and in which prosecution has been closed prior to November 8, 1984, e.g., by an *Ex parte Quayle* action, a Notice of allowability, or a Notice of Allowance. However, a continuing application would obtain the benefit of amended §103 if filed prior to the abandonment or issuance of the application; and

(c) Any application in which an appeal has been filed and is no longer pending or in which the time for filing an appeal has expired prior to November 8, 1984. However if the application contains allowed claims on or after November 8, 1984, the allowed claims are subject to amended §103.

(3) The amendment to §103 will be applied to any application (a) which is before the examiner for action and in which all the claims hav not been allowed and the prosecution closed or (b) in which prosecution has been closed and is being reopened to reject the allowed claims on grounds other than §102(f)/103 or §102(g)/103.

(4) Applications not before the examiner for action, e.g., an application in which a response from applicant is required, will *not* be considered as to the applicability of amended §103 unless applicant takes timely action which properly requires an action on the merits by the examiner.

B. *Conflicting Co-pending Applications Of Different Inventive Entities With No Indication That They Are Commonly Owned*

(1) If the application files do not establish that they are owned by, or subject to an obligation of assignment to, the same person, the examiner will:

(a) assume that the applications are not commonly owned;

(b) examine the applications on all grounds other than any conflict between the applications;

(c) consider the applicability of §102(f)/103 or § 102(g)/103 if one application refers to the other (if there is no cross-reference between the applications it would be inappropriate for the examiner to refer to one application in the other in view of 35 U.S.C. 122);

(d) consider interference if appropriate;

(e) suspend the later filed application if it is otherwise allowable until the earlier filed application is abandoned or issues as a patent and then reject the later filed application under § 102(e)/103, if appropriate; and

(f) proceed under item C below if at any time during the examination a statement is made that the applications are commonly owned.

C. *Conflicting Co-pending Applications Of Different Inventive Entities Which Are Commonly Owned*

(1) Co-pending applications will be considered by the examiner to be owned by, or subject to an obligation of assignment to, the same person if (a) the application files refer to assignments recorded in the PTO in accordance with 37 CFR 1.331 which convey the entire rights in the applications to the same person(s) or organization(s); or (b) copies of unrecorded assignments which convey the entire rights in the applications to the same person(s) or organization(s) are filed in each of the applications; or (c) an affidavit or declaration by the common owner is filed which states that there is common ownership and explains why the affiant believes there is common ownership; or (d) other evidence is submitted which establishes common ownership of the applications in question, e.g., a court decision determining the owner. In circumstances where the common owner is a corporation or other organization an affidavit or declaration averring common ownership may be signed by an official of the corporation or organization empowered to act on behalf of the corporation or organization.

(2) If the application files establish that they are owned by, or subject to an obligation of assignment to, the same person, the examiner will:

(a) examine the applications as to all grounds except §§102(f) and (g) as they apply through §103 if the application files establish common ownership at the time the later invention was made;

(b) examine the applications for double patenting, including double patenting of the

obviousness type, and make a provisional rejection, if appropriate, (see *In re Mott*, 190 USPQ 536 (CCPA 1976);

(c) examine the later filed application under §102(e) as it applies through §103 and make a provisional rejection under §102(e)/103 in the later filed application, if appropriate;

(d) permit applicant of the later filed application to file an affidavit under 37 CFR 1.131 to overcome the provisional or actual §102(e)/103 rejection, if appropriate, and a terminal disclaimer to overcome the provisional or actual rejection on double patenting of the obviousness type.

Initial Guidelines As To Implementation Of 35 U.S.C. 116

Public Law 98–622 amended 35 U.S.C. 116 to clarify that each inventor need not "sign the application" in addition to making the required oath and to add a new sentence which reads as follows:

"Inventors may apply for a patent jointly even though (1) they did not physically work together or at the same time, (2) each did not make the same type or amount of contribution, or (3) each did not make a contribution to the subject matter of every claim of the patent."

The significant features resulting from these amendments to §116 are the following:

(1) The joint inventors do not have to separately "sign the application," but only need apply for the patent jointly and make the required oath by signing the same; this is a clarification, but not a change in current practice.

(2) Inventors may apply for a patent jointly even though "they did not work together or at the same time," thereby clarifying (a) that it is not necessary that the inventors physically work together on a project, and (b) that one inventor may "take a step at one time, the other an approach at different times." (*Monsanto Co.* v. *Kamp*, 154 USPQ 259 (D.D.C. 1967)).

(3) Inventors may apply for a patent jointly even though "each did not make the same type or amount of contribution," thereby clarifying the "fact that each of the inventors plays a different role and that the contribution of one may not be as great as that of another does not detract from the fact that the invention is joint, if each makes some original contribution, though partial, to the final solution of the problem." *Monsanto*, supra.

(4) Inventors may apply for a patent jointly even though "each did not make a contribution to the subject matter of every claim of the patent."

(5) Inventors may apply for a patent jointly as long as each inventor made a contribution, i.e., was an inventor or joint inventor, of the subject matter of at least one claim of the patent; there is no requirement that all the inventors be joint inventors of the subject matter of any one claim.

(6) If an application by joint inventors includes more than one independent and distinct invention, restriction may be required with the possible result of a necessity to change the inventorship named in the application if the elected invention was not the invention of all the originally named inventors.

(7) The amendment to §116 increases the likelihood that different claims of an application or patent may have different dates of invention; when necessary the Office or court may inquire of the patent applicant or owner concerning the inventors and the invention dates for the subject matter of the various claims.

Implementation Steps As To Amended 35 U.S.C. 116

(1) See items (1) to (4) above under "Applications To Be Considered" for applications to be considered under amended §116.

(2) Pending applications will be permitted to be amended by complying with 37 CFR 1.48 to add claims to inventions by inventors not named when the application was filed as long as such inventions were disclosed in the application as filed since 37 CFR 1.48 permits correction of inventorship where the "correct inventor or inventors are not named in an application for patent through error without any deceptive intention on the part of the actual inventor or inventors".

(3) Under amended §116 an examiner will reject claims under §102(f) only in circumstances where a named inventor is not the inventor of at least one claim in the application; no rejection under §102(f) is appropriate if a named inventor made a contribution to the invention defined in any claim of the application.

(4) Under amended §116 considered in conjunction with amended §103, a rejection may be appropriate under §102(f)/103 where the subject matter, i.e., prior art, and the claimed invention were not owned by, or subject to an obligation of assignment to, the same person at the time the invention was made.

(5) Applicants are responsible for correcting, and will be required to correct, the inventorship in compliance with 37 CFR 1.48 when the application is amended to change the claims so that one (or more) of the named inventors is no longer an inventor of the subject matter of a claim remaining in the application.

(6) In requiring restriction in an application filed by joint inventors the examiner will remind applicants of the necessity to correct the inventorship pursuant to 37 CFR 1.48 if an invention is elected and the claims to the invention of one or more inventors are cancelled.

(7) The examiner will not inquire of the patent applicant concerning the inventors and the invention dates for the subject matter of the various claims until it becomes necessary to do so in order to properly examine the application.

(8) If an application is filed with joint inventors, the examiner will assume that the subject matter of the various claims was commonly owned at the time the inventions covered therein were made, unless there is evidence to the contrary. If inventors of subject matter, not commonly owned at the time of the later invention, file a joint application, applicants have an obligation pursuant to 37 CFR 1.56 to point out the inventor and invention dates of each claim and the lack of common ownership at the time the later invention was made in order that the examiner may consider the applicability of §102(f)/103 or §102(g)/103. The examiner will assume, unless there is evidence to the contrary, that applicants are complying with their duty of disclosure.

Initial Guidelines As To Implementation Of 35 U.S.C. 120

Public Law 98–622 amended 35 U.S.C. 120 by striking out "by the same inventor" and inserting in its place "which is filed by an inventor or inventors named in the previously filed application."

The amended first paragraph of 35 U.S.C. 120 (the bracketed portion was deleted and the underlined portion added) reads as follows:

§120. Benefit of earlier filing date in the United States

An appliction for patent for an invention disclosed in the manner provided by the first paragraph of section 112 of this title in an application previously filed in the United States, or as provided by section 363 of this title, [by the same inventor] *which is filed by an inventor or inventors named in the previously filed application* shall have the same effect, as though filed on the date of the prior application, if filed before the patenting or abandonment of or termination of proceedings on the first application or on an application similarly entitled to the benefit of the filing date of the first application and if it contains

or is amended to contain a specific reference to the earlier filed application."

The significant features of these amendments to §120 are the following:

(1) A later filed application by an inventor or inventors of a previously filed co-pending application may claim the benefit of the previously filed co-pending application under §120 even though the later filed application does not name all of the same inventors as the previously filed application.

(2) In order for the later filed application to be entitled to claim the benefit of the earlier filed co-pending application under §120 the earlier filed co-pending application must
   (a) have at least one inventor in common with the later filed application; and
   (b) disclose the common inventor's invention in the manner provided by the first paragraph of 35 U.S.C. 112, i.e., fully disclose and support at least one of the common inventor's claims found in the later application.

(3) When necessary the Patent and Trademark Office or a court may inquire of the patent applicant or owner as to who invented, and the date of invention of, the subject matter being claimed in any claims in the later filed application.

(4) Double patenting rejections may be applicable, whether or not the applications and patents are commonly owned as long as the applications/patent(s) have at least one inventor in common.

(5) If the applications and patents are commonly owned, the rejection of the applications on the grounds of double patenting can be overcome by an appropriate terminal disclaimer as long as the identical invention is not being claimed. See *In re Robeson*, 141 USPQ 485 (CCPA 1964), and *In re Kaye*, 141 USPQ 829 (CCPA 1964).

(6) If the applications and patents are not commonly owned, the double patenting rejection is entered in the later filed application and cannot be overcome by a terminal disclaimer since the ownership of the subject matter being claimed belongs to someone other than the owner of the later application.

Implementation Steps As To Amended 35 U.S.C. 120

(1) See items (1) to (4) above under "Applications To Be Considered" for applications to be considered under amended §120.

(2) The examiner will examine any earlier filed co-pending application to which priority is claimed under §120 to determine if
   (a) the earlier filed co-pending application has at least one inventor in common with the later filed application;
   (b) the other requirements for claiming benefit under §120 are met; and
   (c) a rejection on the grounds of double patenting is proper.

(3) As long as the formal requirements for claiming benefit under §120 are met, the examiner will permit the claim to be made without examining the earlier filed co-pending application for disclosure and support of at least one claim of the later filed application under the first paragraph of §112 unless it becomes necessary to do so, e.g. because of an interference or an intervening reference.

(4) The examiner will not inquire of the patent applicant as to who invented, and the date of invention of, the subject matter being claimed in any claims in the later filed application until it becomes necessary to do so in order to properly examine the application.

(5) The examiner will examine the earlier and later filed applications and make actual or provisional rejections for double patenting where appropriate, whether or not the applications are commonly owned.

Example 1 - Single Application - Plural Inventors

Inventors A and B, both employees of Company E with obligation to assign all their inventions to E develop inventions X and Y respectively. An application for patent is properly filed listing A and B as joint inventors and with claims to both X and Y as now possible under §116 as amended by Public Law 98–622.

Situation 1.

The claims to X and Y are not patentably distinct.

Examiner's Action:

If otherwise patentable over the prior art—allows application.

Situation 2.

The claims to X and Y are patentably distinct.

Examiner's Action:

Require restriction and election of claims to either X or Y. The applicant, after election, must correct the inventorship of the application to list only the inventor of the elected invention; for example, inventor A if claims to invention X were elected. A divisional application with B as inventor and claims to Y may claim benefit of the originally filed application under 35 U.S.C. 120 as amended by Public Law 98–622.

Situation 3.

The application contains a Markush-type claim to X and Y and separate species claims to X and Y.

Examiner's Action:

(a) Examine the application to determine if the inventions X and Y are restrictable. If so, the claims to elected invention X (assume X is elected by applicants) and the X portion of the Markush claim to X and Y are examined.
   (i) if the claim to X is allowable, the entire Markush claim and the species claim to Y must also be examined.
   (ii) if the claim to X is *not* allowable, no further action on species claim Y or the Y portion of the Markush claim is required.

The inventorship of the application at the time of allowance must be corrected, if necessary, to correspond to the inventions covered by the claims allowed.

Example 2 - Multiple applications - plural inventions

Inventors A and B, both employees of Company E, with obligation to assign all their inventions to E, develop inventions X and Y with Y being developed by B after knowledge of A's development of X. A files application on X before B's development of Y and B later files application. Both applications establish they are owned by Company E.

Situation 1.

The claims to X and Y are not patentably distinct.

Examiner's Action:

(a) Examine the applications as to all grounds except §102(f) and (g) as they apply through §103;

(b) Make a provisional rejection of the later filed application on the grounds of double patenting of the obviousness type, if appropriate. If a terminal disclaimer is filed in accordance with §1.321(b), the provisional double patenting rejection of the obviousness type will be overcome;

(c) Examine the later filed application under §102(e)/103 and make a provisional rejection based on §102(e)/103, if appropriate. An affidavit under §1.131 can be filed to overcome the rejection based on §102(e)/103.

Situation 2.

After receiving the examiner's action in situation 1, A and B filed a continuation-in-part application with inventor C and claim A's invention, B's invention and an im-

provement they jointly developed with C. A and B abandon their prior applications.

Examiner's Action:
Examine the application in the normal manner; no double patenting and §102(e)/103 problems now exist.

Example 3 - Two copending applications with no indication in the record of common ownership
Inventor A files an application with claims to invention X. Another copending application is filed by inventor B claiming invention Y. There is no indication of common ownership.

Situation 1.
The claims in the two applications are directed to patentably distinct inventions.

Examiner's Action:
If the claims are otherwise allowable, the applications are both allowed.

Situation 2.
The claims in the two applications are *not* patentably distinct.

Examiner's Action:
The applications are prosecuted until one application is allowable. If the time difference between the two applications is too large to declare an interference, action on the later filed application is suspended until the earlier filed application issues as a patent. At that time the later filed application is rejected over the earlier filed application under §102(e)/103.
If the filing dates of the applications are sufficiently close to declare an interference, claims for an interference should be suggested. If the applications are commonly owned, the common owner must make the ownership known. When such common ownership is made known, a provisional double patenting rejection should be made in the later filed application. If the double patenting rejection is of the obviousness type, a terminal disclaimer under 37 CFR 1.321(b) may be filed. The later filed application should be examined under §102(e)/103 and a provisional rejection based on §102(e)/103 should be made in the later filed application, if appropriate. An affidavit under §1.131 can be filed to overcome a rejection based on §102(e)/103.

Example 4 - Claims in single application by different inventors.
An application for patent is filed in the Patent and Trademark Office in which the owner E sets forth the following information.
"The subject matter of claim 1 was invented by inventor A. The subject matter of claim 2 was invented by inventor B. Inventor B knew of the invention of inventor A at the time he made his invention. Both A and B made their inventions while working for owner E with a duty to assign". The inventions are different but not patentably distinct.

Examiner's Action:
If the claims are patentable over the prior art, the application should be allowed.

Public Law 98–622
Signed November 8, 1984

Ninety-eighth Congress of the United States of America

AT THE SECOND SESSION

Begun and held at the City of Washington on Monday, the twenty-third day of January, one thousand nine hundred and eighty-four

An Act

To amend title 35, United States Code, to increase the effectiveness of the patent laws, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

SECTION 1. This Act may be cited as the "Patent Law Amendments Act of 1984".

TITLE I—PATENT IMPROVEMENT PROVISIONS

USE OF PATENTED INVENTIONS OUTSIDE THE UNITED STATES

SEC. 101.(a) Section 271 of title 35, United States Code, is amended by adding at the end thereof the following new subsection:
"(f)(1) Whoever without authority supplies or causes to be supplied in or from the United States all or a substantial portion of the components of a patented invention, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.
"(2) Whoever without authority supplies or causes to be supplied in or from the United States any component of a patented invention that is especially made or especially adapted for use in the invention and not a staple article or commodity of commerce suitable for substantial noninfringing use, where such component is uncombined in whole or in part, knowing that such component is so made or adapted and intending that such component will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer."

STATUTORY INVENTION REGISTRATION

SEC. 102.(a) Chapter 14 of title 35, United States Code, is amended by adding at the end thereof the following new section:

"§157. Statutory invention registration

"(a) Notwithstanding any other provision of this title, the Commissioner is authorized to publish a statutory invention registration containing the specification and drawings of a regularly filed application for a patent without examination if the applicant-
"(1) meets the requirements of section 112 of this title;
"(2) has complied with the requirements for printing, as set forth in regulations of the Commissioner;
"(3) waives the right to receive a patent on the invention within such period as may be prescribed by the Commissioner; and
"(4) pays application, publication, and other processing fees established by the Commissioner.
If an interference is declared with respect to such an application, a statutory invention registration may not be published unless the issue of priority of invention is finally determined in favor of the applicant.
"(b) The waiver under subsection (a)(3) of this section by an applicant shall take effect upon publication of the statutory invention registration.
"(c) A statutory invention registration published pursuant to this section shall have all of the attributes specified for patents in this title except those specified in section 183 and sections 271 through 289 of this title. A statutory invention registration shall not have any of the attributes specified for patents in any other provision of

law other than this title. A statutory invention registration published pursuant to this section shall give appropriate notice to the public, pursuant to regulations which the Commissioner shall issue, of the preceding provisions of this subsection. The invention with respect to which a statutory invention certificate is published is not a patented invention for purposes of section 292 of this title.

"(d) The Secretary of Commerce shall report to the Congress annually on the use of statutory invention registrations. Such report shall include an assessment of the degree to which agencies of the Federal Government are making use of the statutory invention registration system, the degree to which it aids the management of federally developed technology, and an assessment of the cost savings to the Federal Government of the use of such procedures.".

(b) The table of sections at the beginning of chapter 14 of title 35, United States Code, is amended by adding at the end thereof the following:

"157. Statutory invention registration.".

(c) The amendments made by this section shall take effect six months after the date of the enactment of this Act.

PRIOR ART

SEC. 103. Section 103 of title 35, United States Code, is amended by adding at the end thereof the following:

"Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.".

JOINT INVENTORS

SEC. 104. (a) Section 116 of title 35, United States Code, is amended by amending the first paragraph to read as follows:

"When an invention is made by two or more persons jointly, they shall apply for patent jointly and each make the required oath, except as otherwise provided in this title. Inventors may apply for a patent jointly even though (1) they did not physically work together or at the same time, (2) each did not make the same type or amount of contribution, or (3) each did not make a contribution to the subject matter of every claim of the patent.".

(b) Section 120 of title 35, United States Code, is amended by striking out "by the same inventor" and inserting in lieu thereof "which is filed by an inventor or inventors named in the previously filed application".

ARBITRATION OF INTERFERENCES

SEC. 105. Section 135 of title 35, United States Code, is amended by adding at the end thereof the following new subsection:

"(d) Parties to a patent interference, within such time as may be specified by the Commissioner by regulation, may determine such contest or any aspect thereof by arbitration. Such arbitration shall be governed by the provisions of title 9 to the extent such title is not inconsistent with this section. The parties shall give notice of any arbitration award to the Commissioner, and such award shall, as between the parties to the arbitration, be dispositive of the issues to which it relates. The arbitration award shall be unenforceable until such notice is given. Nothing in this subsection shall preclude the Commissioner from determining patentability of the invention involved in the interference.".

EFFECTIVE DATE

SEC. 106. (a) Subject to subsections (b), (c), (d), and (e) of this section, the amendments made by this Act shall apply to all United States patents granted before, on, or after the date of enactment of this Act, and to all applications for United States patents pending on or filed after the date of enactment.

(b) The amendments made by this Act shall not affect any final decision made by the court or the Patent and Tradem athe date of enactment of this Act with respect to a patent or application for patent, if no appeal from such decision is pending and the time for filing an appeal has expired.

(c) Section 271(f) of title 35, United States Code, added by section 101 of this Act shall apply only to the supplying, or causing to be supplied, of any component or components of a patented invention after the date of enactment of this Act.

(d) No United States patent granted before the date of enactment of this Act shall abridge or affect the right of any person or his successors in business who made, purchased, or used prior to such effective date anything protected by the patent, to continue the use of, or to sell to others to be used or sold, the specific thing so made, purchased, or used, if the patent claims were invalid or otherwise unenforceable on a ground obviated by section 103 or 104 of this Act and the person made, purchased, or used the specific thing in reasonable reliance on such invalidity or unenforceability. If a person reasonably relied on such invalidity or unenforceability, the court before which such matter is in question may provide for the continued manufacture, use, or sale of the thing made, purchased, or used as specified, or for the manufacture, use, or sale of which substantial preparation was made before the date of enactment of this Act, and it may also provide for the continued practice of any process practiced, or for the practice of which substantial preparation was made, prior to the date of enactment, to the extent and under such terms as the court deems equitable for the protection of investments made or business commenced before the date of enactment.

(e) The amendments made by this Act shall not affect the right of any party in any case pending in court on the date of enactment to have their rights determined on the basis of the substantive law in effect prior to the date of enactment.

TITLE II—PATENT AND TRADEMARK OFFICE PROCEDURES

BOARD OF PATENT APPEALS AND INTERFERENCES

SEC. 201. (a) Section 7 of title 35, United States Code, is amended to read as follows:

"§7. Board of Patent Appeals and Interferences

"(a) The examiners-in-chief shall be persons of competent legal knowledge and scientific ability, who shall be appointed to the competitive service. The Commissioner, the Deputy Commissioner, the Assistant Commissioners, and the examiners-in-chief shall constitute the Board of Patent Appeals and Interferences.

"(b) The Board of Patent Appeals and Interferences shall, on written appeal of an applicant, review adverse decisions of examiners upon applications for patents and shall determine priority and patentability of invention in interferences declared under section 135(a) of this title. Each appeal and interference shall be heard by at least three members of the Board of Patent Appeals and Interferences, who shall be designated by the Commissioner. Only the Board of Patent Appeals and Interferences has the authority to grant hearings.

"(c) Whenever the Commissioner considers it necessary, in order to keep current the work of the Board of Patent Apeals and Interferences, the Commissioner may

designate any patent examiner of the primary examiner grade or higher, having the requisite ability, to serve as examiner-in-chief for periods not exceeding six months each. An examiner so designated shall be qualified to act as a member of the Board of Patent Appeals and Interferences. Not more than one of the members of the Board of Patent Appeals and Interferences hearing an appeal or determining an interference may be an examiner so designated. The Secretary of Commerce is authorized to fix the pay of each designated examiner-in-chief in the Patent and Trademark Office at not to exceed the maxium rate of basic pay payable for grade GS-16 of the General Schedule under section 5332 of title 5. The rate of basic pay of each individual designated examiner-in-chief shall be adjusted, at the close of the period for which that individual was designated to act as examiner-in-chief, to the rate of basic pay which that individual would have been receiving at the close of such period if such designation had not been made.".

(b) The item relating to section 7 in the table of sections at the beginning of chapter 1 of title 35, United States Code, is amended by striking out "Appeals" and inserting in lieu thereof "Patent Appeals and Interferences".

INTERFERENCES

SEC. 202. Section 135(a) of title 35, United States Code, is amended to read as follows:

"(a) Whenever an application is made for a patent which, in the opinion of the Commissioner, would interfere with any pending application, or with any unexpired patent, an interference may be declared and the Commissioner shall give notice of such declaration to the applicants, or applicant and patentee, as the case may be. The Board of Patent Appeals and Interferences shall determine questions of priority of the inventions and may determine questions of patentability. Any final decision, if adverse to the claim of an applicant, shall constitute the final refusal by the Patent and Trademark Office of the claims involved, and the Commissioner may issue a patent to the applicant who is adjudged the prior inventor. A final judgment adverse to a patentee from which no appeal or other review has been or can be taken or had shall constitute cancellation of the claims involved in the patent, and notice of such cancellation shall be endorsed on copies of the patent distributed after such cancellation by the Patent and Trademark Office.".

APPEALS AND CIVIL ACTIONS

SEC. 203. (a) Section 141 of title 35, United States Code, is amended—

(1) in the first sentence—

(A) by striking out "of the Board of Patent Appeals may appeal" and inserting in lieu thereof "in an appeal to the Board of Patent Appeals and Interferences under section 134 of this title may appeal the decision"; and

(B) by striking out ", thereby waiving his right" and inserting in lieu thereof ". By filing such an appeal the applicant waives his or her right";

(2) in the second sentence—

(A) by striking out "board of patent interferences on the question of priority may appeal" and inserting in lieu thereof "Board of Patent Appeals and Interferences on the interference may appeal the decision";

(B) by striking out "according to" and inserting in lieu thereof " in accordance with"; and

(C) by striking out "he" and inserting in lieu thereof "the party"; and

(3) by amending the last sentence to read as follows: "If the appellant does not, within thirty days after the filing of such notice by the adverse party, file a civil action under section 146, the decision appealed from shall govern the further proceedings in the case."

(b) Section 145 of title 35, United States Code, is amended—

(1) in the first sentence by striking out "Appeals may" and inserting in lieu thereof "Patent Appeals and Interferences in an appeal under section 134 of this title may,"; and

(2) in the second sentence by striking out "Appeals" and inserting in lieu thereof "Patent Appeals and Interferences".

(c) Section 146 of title 35, United States Code, is amended by striking out "board of patent intereferences on the question of priority" and inserting in lieu thereof "Board of Patent Appeals and Interferences on the interference".

TECHNICAL AND CONFORMING AMENDMENTS

SEC. 204. (a) Section 41(a)(6) of title 35, United States Code, is amended—

(1) by striking out "Appeals" each place it appears and inserting in lieu thereof "Patent Appeals and Interferences"; and

(2) by inserting "in the appeal" after "oral hearing".

(b)(1) Section 134 of title 35, United States Code, is amended—

(A) in the section caption by striking out "APPEALS" and inserting in lieu thereof "PATENT APPEALS AND INTERFERENCES"; and

(B) by striking out "Appeals" and inserting in lieu thereof "Patent Appeals and Interferences".

(2) The item relating to section 134 in the table of sections at the beginning of chapter 12 of title 35, United States Code, is amended by striking out "Appeals" and inserting in lieu thereof "Patent Appeals and Interferences".

(c) Section 305 of title 35, United States Code, is amended by striking out "Appeals" and inserting in lieu thereof "Patent Appeals and Interferences".

AMENDMENTS TO OTHER PROVISIONS OF LAW

SEC. 205. (a) Section 1295(a)(4)(A) of title 28, United States code, is amended by striking out "Appeals or the Board of Patent" and inserting in lieu thereof "Patent Appeals and".

(b) Section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182) is amended in the third paragraph—

(1) by striking out "a Board of Patent Interferences" and inserting in lieu thereof "the Board of Patent Appeals and Interferences"; and

(2) by striking out "the Board of Patent Interferences" and inserting in lieu thereof "the Board of Patent Appeals and Interferences".

(c)(1) Section 305(d) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457(d)) is amended—

(A) by striking out "a Board of Patent Interferences" and inserting in lieu thereof "the Board of Patent Appeals and Interferences"; and

(B) by striking out "the Board of Patent Interferences" and inserting in lieu thereof "the Board of Patent Appeals and Interferences".

(2) Section 305(e) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457(e)) is amended by striking out "a Board of Patent Interferences" and inserting in lieu thereof "the Board of Patent Appeals and Interferences".

SAVINGS PROVISION

SEC. 206. Any individual who, on the effective date of this title, is an examiner-in-chief of the Board of Patent Appeals of the Patent and Trademark Office or an examiner of interferences of the Board of Patent Interferences of such office shall be entitled to continue in office as a member of the Board of Patent Appeals and Interferences of the Patent and Trademark Office as of such effective date.

EFFECTIVE DATE

SEC. 207. Section 206 of this Act and the amendments made by this title shall take effect three months after the date of the enactment of this Act.

TITLE III—NATIONAL COMMISSION ON INNOVATION AND PRODUCTIVITY

ESTABLISHMENT

SEC. 301. There is hereby established a National Commission on Innovation and Productivity (hereinafter in this title referred to as the "Commission").

MEMBERSHIP OF COMMISSION

Sec. 302. (a) The Commission shall be composed of —

(1) three Members of the Senate appointed by the President of the Senate;

(2) three Members of the House of Representatives apointed by the Speaker of the House of Representatives; and

(3) three members appointed by the President of the United States, one of whom the President shall designate as Chairman.

Of the members appointed by the President, one member should be an appropriate officer or employee of the United States, one member should be an employer who employs inventors, and one member should be an employed inventor.

(b) At no time shall more than two of the members appointed under paragraph (1), (2), or (3) of subsection (a) be persons who are members of the same political party.

(c) Any vacancy in the Commission shall not affect its powers but shall be filled in the same manner in which the original appointment was made, and subject to the limimtation set forth in subsection (b) with respect to the original appointment.

(d) Six members of the Commission shall constitute a quorum, but a lesser number may conduct hearings.

DUTIES OF THE COMMISSION

SEC. 303. The Commission shall make a full and complete review and study of the level of innovation and producitivity of employed inventors. Such study shall include an analysis of the various methods available to inspire or stimulate individual and corporate innovation and productivity, including an assessment of the techniques used in other countries to achieve this objective. Such study may include an assessment of those aspects of other areas of intellectual property law that inspire or stimulate such innovation and productivity. The Commission shall make recomendations for such revisions of the laws of the United States, including the repeal of unnecessary or undesirable statutes, and such other changes as the Commission considers will better foster innovation and productivity.

COMPENSATION OF MEMBERS OF THE COMMISSION

SEC. 304. (a) A member of the Commission who is a Member of Congress or a full-time officer or employee of the United States shall receive no additional compensation by reason of his or her service on the Commission.

(b) Subject to amounts provided in advance in appropriations Acts, a member of the Commission from private life shall receive the daily equivalent of the annual rate of basic pay payable for level III of the Executive Schedule for each day (including traveltime) during which such member is engaged in the actual performance of duties vested in the Commission, plus reimbursement for travel, subsistence, and other necessary expenses incurred in the performance of such duties, in accordance with subchapter I of chapter 57 of title 5, United States Code.

DIRECTOR AND STAFF

SEC. 305. (a) The Commission shall have a Director who shall be appointed by the Commission and who shall be paid at a rate not to exceed the rate of basic pay payable for level IV of the Executive Schedule. The Director, subject to the direction of the Commission, shall supervise the activities of persons emloyed by the Commission and the preparation of the reports of the Commission and shall perform such other duties as may be assigned to the Director by the Commission.

(b) The Commission may appoint and fix the pay of such additional personnel as it considers appropriate.

(c) The staff of the Commission may be appointed without regard to the provisions of title 5, United States Code, governing appointments in the competitive service, and may be paid without regard to the provisions of chapter 51 and subchapter III of chapter 53 of such title relating to classification and General Schedule pay rates, except that no individual so appointed may receive pay in excess of the maximum annual rate of basic pay payable for GS-16 of the General Schedule.

(d) The Chairman of the Commission may procure temporary and intermittent services under section 3109(b) of title 5, United States Code.

GOVERNMENT AGENCY COOPERATION

SEC. 306. The Commission is authorized to request from any department, agency, or independent instrumentality of the Government any information and assistance it considers necessary to carry out its functions under this title. Each such department, agency, and instrumentality is authorized to cooperate with the Commission and, to the extent permitted by law, to furnish such information and assistance to the Commission.

REPORT OF THE COMMISSION; TERMINATION

SEC. 307. The Commission shall submit interim reports on its activities to the President and the Congress at such times as the Commission considers appropriate, except that at least one such report shall be so submitted within one year after the date of the enactment of this Act. The Commission shall submit its final report on its activities to the President and the Congress within two years after such date of enactment. The Commission shall cease to exist sixty days after the date of the submission of its final report.

ADMINISTRATIVE SERVICES

SEC. 308. The General Services Administration shall provide administrative services for the Commission on a reimbursable basis.

AUTHORIZATION OF APPROPRIATIONS

SEC. 309. There is authorized to be appropriated $250,000 to carry out this title.

EFFECTIVE DATE

SEC. 310. This title shall take effect on January 21, 1985.

TITLE IV—MISCELLANEOUS PROVISIONS

INTERNATIONAL STAGE

SEC. 401. (a) Section 361(d) of title 35, United States Code, is amended in the first sentence by inserting "or within one month after the date of such filing" after "application".

(b) Section 366 of title 35, United States Code, is amended—

(1) in the first sentence—

(A) by inserting "after the date of withdrawal," after "effect"; and

(B) by inserting before the period the following: ", unless a claim for the benefit of a prior filing date under section 365(c) of this part was made in a national application, or an international application designating the United States, filed before the date of such withdrawal"; and

(2) in the second sentence by inserting "withdrawn" after "such".

NATIONAL STAGE

SEC. 402. (a) Section 371(a) of title 35, United States Code, is amended—

(1) by striking out "is" and inserting in lieu thereof "may be"; and

(2) by striking out", except those filed in the Patent Office".

(b) Section 371(b) of title 35, United States Code, is amended to read as follows:

"(b) Subject to subsection (f) of this section, the national stage shall commence with the expiration of the applicable time limit under article 22(1) or (2) of the treaty.".

(c) Section 371(c)(2) of title 35, United States Code, is amended—

(1) by striking out "received from" and inserting in lieu thereof "communicated by"; and

(2) by striking out "verified" before "translation".

(d) Section 371(d) of title 35, United States Code, is amended to read as follows:

"(d) The requirements with respect to the national fee referred to in subsection (c)(1), the translation referred to in subsection (c)(2), and the oath or declaration referred to in subsection (c)(4) of this section shall be complied with by the date of the commencement of the national stage or by such later time as may be fixed by the Commissioner. The copy of the international application referred to in subsection (c)(2) shall be submitted by the date of the commencement of the national stage. Failure to comply with these requirements shall be regarded as abandonment of the application by the parties thereof, unless it be shown to the satisfaction of the Commissioner that such failure to comply was unavoidable. The payment of a surcharge may be required as a condition of accepting the national fee referred to in subsection (c)(1) or the oath or declaration referred to in subsection (c)(4) of this section if these requirements are not met by the date of the commencement of the national stage. The requirements of subsection (c)(3) of this section shall be complied with by the date of the commencement of the national stage, and failure to do so shall be regarded as a cancellation of the amendments to the claims in the international application made under article 19 of the treaty.".

(e) Section 372(b) of title 35, United States Code, is amended—

(1) by striking out the period at the end of paragraph (2) and inserting in lieu thereof "; and"; and

(2) by adding at the end thereof the following:

"(3) the Commissioner may require a verification of the translation of the international application or any other document pertaining to the application if the application or other document was filed in a language other than English.".

(f) Section 372 of title 35, United States Code, is amended by striking out subsection (c).

(g) Section 376(a) of title 35, United States Code, is amended by striking out paragraph (5) and redesignating paragraph (6) as paragraph (5).

TECHNICAL AMENDMENTS

SEC. 403. (a) Title 35, United States Code, is amended by striking out "Patent Office" each place it appears and inserting in lieu thereof "Patent and Trademark Office".

(b) The table of parts at the beginning of title 35, United States Code, is amended by adding at the end thereof the following:

"IV. Patent Cooperation Treaty ..... 351".

PATENT FEES

SEC. 404. (a) Notwithstanding section 41 of title 35, United States Code, as in effect before the enactment of Public Law 97-247 (96 Stat. 317), no fee shall be collected for maintaining a plant patent in force.

(b) Notwithstanding section 41(c) of title 35, United States Code, as in effect before the enactment of Public Law 97-247 (96 Stat. 317), the Commissioner of Patents and Trademarks may accept, after the six-month grace period referred to in such section 41(c), the payment of any maintenance fee due on any patent based on an application filed in the Patent and Trademark Office on or after December 12, 1980, and before August 27, 1982, to the same extent as in the case of patents based on applications filed in the Patent and Trademark Office on or after August 27, 1982.

TRADEMARK TRIAL AND APPEAL BOARD

SEC. 405. Section 3 of title 35, United States Code, is amended by adding at the end thereof the following:

"(e) The members of the Trademark Trial and Appeal Board of the Patent and Trademark Office shall each be paid at a rate not to exceed the maximum rate of basic pay payable for GS-16 of the General Schedule under section 5332 of title 5."

EFFECTIVE DATE

SEC. 406. (a) Section 404 of this Act and the amendments made by section 403 of this Act shall take effect on the date of the enactment of this Act.

(b) The amendments made by sections 401, 402, and 405 of this Act shall take effect six months after the date of the enactment of this Act.

Reference Collections of U.S. Patents Available for Public Use

PATENT NOTICES

Certificates of Correction for the Week of Jan. 8, 1985

4,310,754	4,436,371	4,458,036	4,464,913
4,346,227	4,436,596	4,458,073	4,464,984
4,349,924	4,437,151	4,458,447	4,465,059
4,366,165	4,437,363	4,458,993	4,465,400
4,367,346	4,439,343	4,458,996	4,465,454
4,371,938	4,440,845	4,459,428	4,465,577
4,394,954	4,442,786	4,459,503	4,465,699
4,406,289	4,443,236	4,459,679	4,465,701
4,407,818	4,443,452	4,459,900	4,465,708
4,412,098	4,444,036	4,461,000	4,465,892
4,414,269	4,444,684	4,462,227	4,466,073
4,415,221	4,446,518	4,462,277	4,466,539
4,419,530	4,447,434	4,462,543	4,466,826
4,420,409	4,447,440	4,462,865	4,466,917
4,423,054	4,450,796	4,463,022	4,467,075
4,423,095	4,451,782	4,463,289	4,467,079
4,424,316	4,452,218	4,463,704	4,467,080
4,425,528	4,452,241	4,463,707	4,467,287
4,428,448	4,452,603	4,463,775	4,467,431
4,431,268	4,456,358	4,463,938	4,467,588
4,431,753	4,456,622	4,464,064	4,467,600
4,434,444	4,456,957	4,464,112	4,468,097
4,434,661	4,457,459	4,464,395	4,468,210
4,435,449	4,457,828	4,464,554	4,468,480

Disclaimers

4,443,440.—*Bradley D. Anderson,* Kalamazoo; and *Robert A. Conradi,* Portage, Mich. AMINE CONTAINING ESTER PRODRUGS OF CORTICOSTEROIDS. Patent dated Apr. 17, 1984. Disclaimer filed June 22, 1984, by the assignee, *the Upjohn Co.*

Hereby enters this disclaimer to claims 1 through 12 of said patent.

4,365,656.—*Yuji Takahashi,* Hatano, Japan. IRONLESS ROTOR WINDING FOR ELECTRIC MOTOR, METHOD AND MACHINE FOR MAKING THE SAME. Patent dated Dec. 28, 1982. Disclaimer filed Nov. 3, 1983, by *the inventor.*

The term of this patent subsequent to Mar. 16, 1999, has been disclaimed.

4,007,496.—*Richard Glabiszewski,* Duderstadt, Germany. CONNECTION BETWEEN A COSMETIC COVER AND A PROSTHETIC PART. Patent dated Feb. 15, 1977. Disclaimer filed Aug. 29, 1983 by the assignee, *Otto Bock Orthopadische Industrie KG.*

Hereby enters this disclaimer to claims 1 through 4 of said patent.

Disclaimers and Dedications

Re. 27,701.—*Adrian R. Allan, Jr.,* Washington, N.C., and *Martin R. Fink,* Remsenburg, N.Y. FILTER FRAME SEAL. Patent dated July 17, 1973. Disclaimer and Dedication filed July 30, 1984, by the assignee, *Flanders Filters, Inc.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

3,774,589.—*Frederick P. Kober,* Bayside, N.Y. SELF CONTAINED ELECTROCHEMICAL HEAT SOURCE. Patent dated Nov. 27, 1973. Disclaimer and Dedication filed June 23, 1983, by the assignee, *Chem-E-Watt Corp.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

4,372,227.—*Dennis F. Mahoney,* Three Bridges; *Alfred E. Kober,* Bridgewater, N.J.; and *Subhash H. Risbud,* Champaign, Ill. METHOD OF REDUCING HIGH TEMPERATURE SLAGGING IN FURNACES. Patent dated Feb. 8, 1983. Disclaimer and Dedication filed Aug. 24, 1983, by the assignee, *Economics Laboratory, Inc.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 579-5001
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis-Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: University of Massachusetts Library	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 1, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	8-20-81
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	9-29-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	3-25-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	8-14-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—B. R. GRAY, Director	12-06-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	9-02-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-08-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	2-16-83
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	10-24-80
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	9-12-80
DESIGN, GROUP 290—K. L. CAGE, Director	9-20-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—(Vacant)	7-23-81
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	8-16-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	9-27-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	4-05-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	12-04-81

Expiration of patents: The patents within the range of numbers indicated below expire during December 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,355,744 to 3,360,799, inclusive

Plant Patents ..... Numbers 2,781 to 2,783 inclusive

REISSUES

JANUARY 8, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,791

PICK-PROOF LOCK

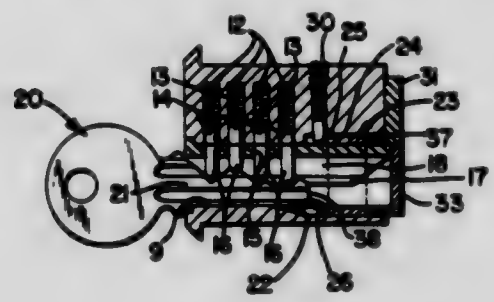
Harry E. Dice, Sr., Edgewater, Md., assignor to George K. C. Hardesty, Mayo, Md., a part interest

Original No. 4,194,379, dated Mar. 25, 1980, Ser. No. 895,708, Apr. 12, 1978. Application for reissue Dec. 2, 1980, Ser. No. 212,107

Int. Cl.³ E05B 63/00

U.S. Cl. 70—421

11 Claims



6. A key operated lock cylinder comprising:

a shell having a longitudinally extending bore;

a plug rotatively mounted in said bore having a keyway including an opening for insertion of a key, said plug having a locked position and an unlocked position;

locking means for restraining said plug in said locked position, said locking means being released when a key corresponding to said locking means is fully inserted into said keyway;

a rotation-limiting pin;

restraining notch means in a labyrinth means operatively associated with said rotation limiting pin to prevent rotation of said plug to said unlocked position;

resilient means for biasing engagement of said pin and labyrinth means to normally hold said rotation limiting pin in said restraining notch means;

said corresponding key displacing the relative positions of said pin and restraining notch means longitudinally of said bore, when said key is fully inserted, so that said pin is out of said restraining notch means and said labyrinth means to allow said plug to rotate to said unlocked position;

said labyrinth means having an enlarged portion constituting said restraining notch means, a restricted end portion, and an opening, said restricted end portion being located near the opening of said labyrinth means, said enlarged portion allowing a limited rotation of said plug when said locking means is released, said restricted end portion preventing the movement of said pin out of said labyrinth means unless said plug is positioned in said locked position.

Re. 31,792

FILTER WITH AUTOMATIC CLEANING

Pierre Colomer, Chatenay-Malabry, France, assignor to Interfiltre S.A., Livarot, France

Original No. 4,285,353, dated Aug. 25, 1981, Ser. No. 75,791, Sep. 14, 1979. Application for reissue May 28, 1982, Ser. No. 383,096

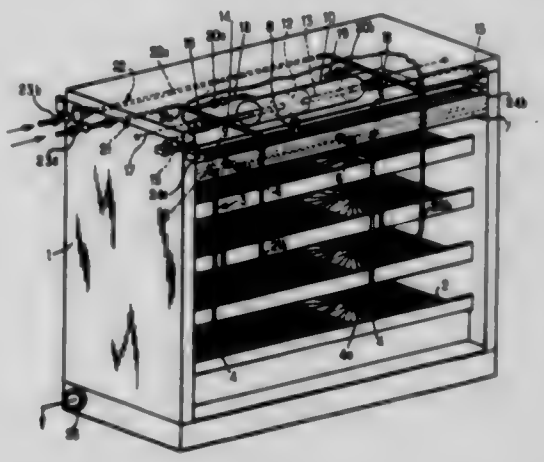
Claims priority, application France, Jun. 18, 1979, 7915581

Int. Cl.³ B01D 41/00; D01D 25/12

U.S. Cl. 134—181

18 Claims

1. A system for automatic cleaning of filter panels supported by a frame comprising means for sprinkling a cleaning liquid upon the filter panels including at least one sprinkling tube having at least one outlet nozzle directed toward at least one filter panel, carriage means joined to said sprinkling means and movably mounted to said frame for movement thereon to move said sprinkling means and said outlet nozzle with respect to said filter panel, fluid driven hydraulic motor means for moving said carriage means on said frame, transmission means interconnecting said hydraulic motor means and said carriage means to transmit movement of said hydraulic motor means to



said carriage means, fluid inlet means for supplying said cleaning fluid to said sprinkling tube and offtake means communicating with said fluid inlet means and said hydraulic motor means to divert a predetermined flow of said cleaning fluid to said hydraulic motor means to power said hydraulic motor means.

Re. 31,793

WINDOW SHADE ROLLER ASSEMBLY

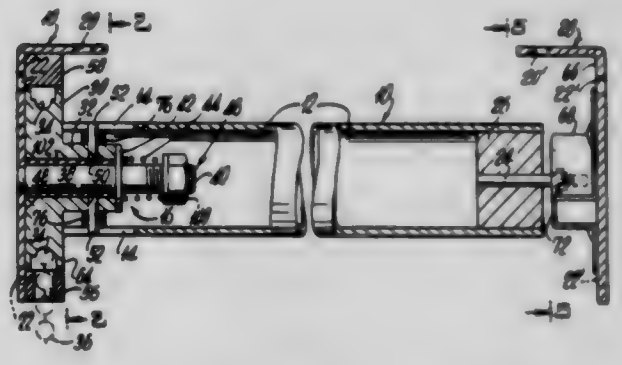
Joel Berman, 1470 Hewlett Ave., Hewlett, N.Y. 11557, and Stephen D. Weinreich, Monmouth Junction, N.J., assignors to Joel Berman, Hewlett, N.Y.

Original No. 4,323,105, dated Apr. 6, 1982, Ser. No. 18,763, Mar. 8, 1979. Continuation-in-part of Ser. No. 716,153, Aug. 20, 1976, Pat. No. 4,223,714. Application for reissue Mar. 29, 1983, Ser. No. 479,948

Int. Cl.³ E06B 9/20

U.S. Cl. 160—309

11 Claims



1. A window shade roll assembly comprising in combination:

a shade roll;

a first support apparatus organized at a first end of the shade roll, a second support apparatus for supporting rotatably a second end of the shade roll;

an operator system on said first support apparatus including:

a mounting plate on said first support apparatus having a pin extending therefrom axially of the shade roll and into the shade roll,

a wheel mounted rotatably about the pin on said first support apparatus and having a face arranged in juxtaposition to the mounting plate,

the wheel having a hub of a diameter smaller than the shade roll and projecting therefrom opposite the face,
means for connecting detachably the hub that is on said first support apparatus to the shade roll,
biasing means connected to the hub for causing frictional contact of the face of the wheel against the mounting plate,
and a wheel turner mechanism;
the window shade roll assembly characterized in that all of the elements of said operator system are mounted on the first support apparatus.

Re. 31,794

SPOT-TYPE DISC BRAKE

Jochen Burgdorf, Offenbach; Karl-Heinz Klose, Frankfurt, and Karl Stormi, Sprendlingen, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

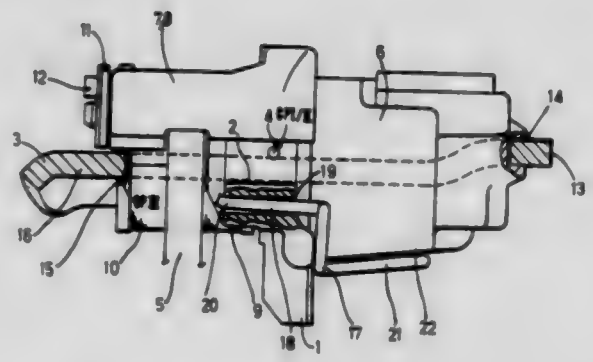
Original No. 3,913,709, dated Oct. 21, 1975, Ser. No. 479,934, Jun. 17, 1974. Continuation of Ser. No. 299,233, Nov. 19, 1980, abandoned, which is a continuation of Ser. No. 21,053, Mar. 16, 1979, abandoned, which is a continuation of Ser. No. 842,008, Oct. 13, 1977, abandoned. Application for reissue Mar. 7, 1983, Ser. No. 471,067

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1973, 2340316

Int. Cl.³ F16D *55/224*

U.S. Cl. 188—73.35

9 Claims



6. In a spot-type disc brake having
a brake disc;
a brake actuating means;
a pair of brake shoes, one of said brake shoes being disposed on one side of said disc and actuated by said actuating means, and the other of said brake shoes being disposed on the other side of said disc;
a non-rotating brake carrier receiving braking torque, said carrier being immovable relative to said disc;
a frame or yoke element embracing said disc and movably guided with respect to said carrier in a direction toward and away from said disc, said element transmitting the actuating force of said actuating means to said other of said brake shoes; and
said brake actuating means including a housing and being in force transmitting contact with said element;
the improvement comprising only three guide points to rigidly support and movably guide said element, two of said guide points being rigidly connected to said carrier and disposed above said element to rigidly support and movably guide said element, said two of said three guide points exerting a downward force on said element and a third of said three guide points being disposed in one of said actuating means and a backing plate of said other of said brake shoes, said third of said three guide points exerting an upward force on said element; and
a single biasing spring having at least one end connected to said carrier at a point radially spaced from said two of said three guide points and said element and another portion thereof acting on one of said actuating means and said element to apply an upward component of force to hold said element without clearance against all of said three guide points;
said spring acting on said one of said actuating means and said element at a point spaced axially from all of said three guide points, said point being outside an imaginary triangle formed by imaginary lines interconnecting all of said three guide points;
said actuating means being secured to said element;
said third of said three guide points including
a recess in a backing plate of said other of said brake shoes, and
a pin formed in said element engaging said recess; and
said spring is fastened to said carrier and acts on said actuating means, said spring projecting away from said carrier and disposed under said element and said actuating means;
said spring being a wire spring having two arms fastened in holes of said carrier and a loop acting upwardly on said actuating means;
said actuating means including
a contact surface for said loop of said spring which is inclined upward toward said element in a direction away from said disc.

Re. 31,795

APPARATUS FOR ROLLING CHAIN LINK FENCE

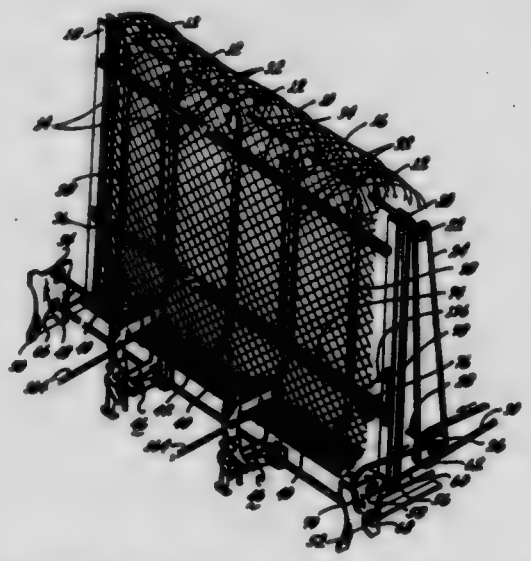
Herbert E. Rohrbacher, 8695 Via Santa Cruz, Whittier, Calif. 90605

Original No. 4,353,512, dated Oct. 12, 1982, Ser. No. 224,952, Jan. 14, 1981. Application for reissue Nov. 18, 1983, Ser. No. 553,051

Int. Cl.³ B65H *75/00*; B65B *63/04*

U.S. Cl. 242—54 R

28 Claims



1. An apparatus for rolling chain link fence including an endless belt including a free loop portion,
means supporting the endless belt and for providing movement of the endless belt in a particular direction and with the movement of the endless belt producing rotative motion in the free loop portion,
means adjacent the free loop portion of the endless belt for feeding progressive portions of the chain link fence into the free loop portion[,] *and including guide means for guiding the chain link fence in a downward path and with the guide means including a bottom portion bent away from the vertical to a more horizontal slope at the position adjacent the free loop portion of the endless belt to guide the chain link fence to a more horizontal path and to partially collapse the individual links as the chain link enters the free loop portion of the endless belt,*
the free loop portion of the endless belt and the means adjacent the free loop portion supporting the progressive portions of the chain link fence to have the individual links of the chain link fence *fully* collapse against each other to provide for a tight configuration of the chain link fence within the free loop portion, and
the rotative motion of the free loop portion of the endless belt producing a rolling of the progressive portions of the chain link fence with the individual links *fully* collapsed

against each other to form a roll of chain link fence with a tight configuration and a small diameter.

Re. 31,796

DERAILLEUR FOR BICYCLES AND SIMILAR VEHICLES

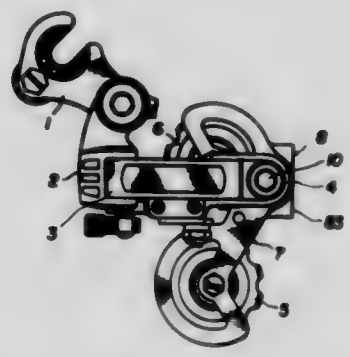
Masashi Nagano, Sakai, and Mitsuhide Isobe, Toyonaki, both of Japan, assignors to Shimano Industrial Company Limited, Osaka, Japan

Original No. 4,198,874, dated Apr. 22, 1980, Ser. No. 905,973, May 15, 1978. Application for reissue May 24, 1983, Ser. No. 497,712

Claims priority, application Japan, May 20, 1977, 52-59211; Sep. 27, 1977, 52-130393; Sep. 27, 1977, 52-130394

Int. Cl.[3] F16H *9/00, 11/00*

U.S. Cl. 474—82 12 Claims



1. A derailleur for shifting a driving chain to one of multi-speed sprockets of a vehicle said derailleur comprising:

a base member;

a movable member movably supported to said base member,

a change-over frame pivotally supported to said movable member, said change-over frame comprising a single plate and carrying a *rotatable* tension *pulley* and a *rotatable* guide pulley [in relation of being rotable], said tension and guide pulleys having teeth in mesh with said driving chain respectively;

a chain holder *having a portion thereof on an opposite side of said driving chain with respect to said guide pulley;*

means for mounting said chain holder to said change-over frame[;

whereby] *such that* said chain holder *portion* is movable radially outward from said guide pulley with respect to said change-over frame, for disengaging said chain from said guide pulley without cutting said chain; and

means for fixing said chain holder in a position for preventing said chain from disengaging from said pulley when said chain holder is moved inward of said guide pulley.

Re. 31,797

ARC-SHIELD SUPPORTING STRUCTURE OF A VACUUM POWER INTERRUPTER

Shinzo Sakuma, Yokohama, and Junichi Warabi, Shizuoka, both of Japan, assignors to Kabushiki Kaisha Meidensha and Kabushiki Kaisha Genvac, both of Tokyo, Japan

Original No. 4,310,735, dated Jan. 12, 1982, Ser. No. 49,456, Jun. 18, 1979. Application for reissue May 17, 1982, Ser. No. 378,825

Claims priority, application Japan, Jun. 23, 1978, 53-86127

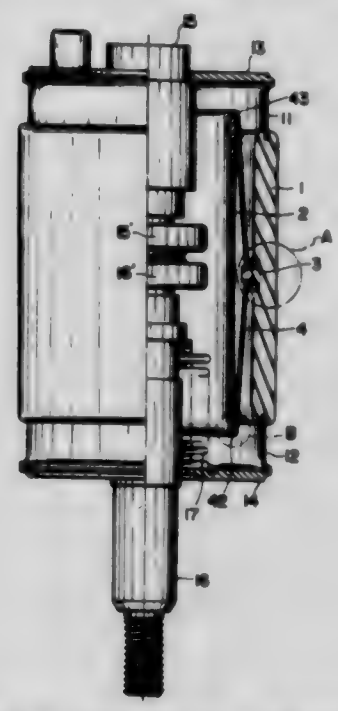
Int. Cl.[3] H01H *33/66*

U.S. Cl. 200—144 B 7 Claims

1. In a vacuum power interrupter, comprising an insulating cylindrical envelope of glass, a pair of end plates fastened to the respective axial ends of said cylindrical envelope, stationary and movable contact rods provided through said end plates, respectively, so that they are aligned to each other in the axial direction of the insulating envelope, the stationary and movable contact rods each have electrical contacts attached thereto at the opposite ends thereof, and an arc-shield member disposed within the envelope to surround the electrical contacts,

the improvement comprising:

(a) a plurality of hollow cylindrical supporting means each having substantially the same coefficient of thermal expansion of said insulating envelope, including a tubular supporting portion and a turnover outwardly U-shaped end portion, said end portion being embedded in



an inner wall of said insulating cylindrical glass envelope so that the axis of said hollow cylindrical supporting means is directed in the radial direction of said envelope, and

(b) a plurality of connecting metallic elongated plates, one end of which is fitted over [an exterior surface of] said [arc-shield member] *supporting means* while the other end of which is fixed to the exterior surface of said arc-shield member.

Re. 31,798

KNOCKDOWN SHADE ASSEMBLY FOR LIGHTING FIXTURE

Franz K. Weber, 15930 Royal Oak Rd., Encino, Calif. 91436, and Martin R. Reed, 323 N. Maple St., Burbank, Calif. 91505

Original No. 4,277,822, dated Jul. 7, 1981, Ser. No. 54,843, Jul. 5, 1979. Application for reissue Aug. 19, 1982, Ser. No. 409,520

Int. Cl.[3] F21V *1/06*

U.S. Cl. 362—352 12 Claims



12. A snap-together frame for supporting the shade of a lighting fixture comprising in combination:

a plastic base member formed by cementing upper and lower plates together;

a central opening in said plastic base member;

at least one radially extending slot in said plastic base member, said slot having an internal recess therein;

at least one elongated rib made of resilient plastic material, said rib having an upper attachment portion adapted to be slideably inserted into said radially extending slot, and having a protrusion adapted for snap locking engagement with the internal recess in said slot;

said rib also having a lower portion, said upper attachment portion having an angular disposition of greater than 90° with respect to said lower portion;

said rib also having first and second latch openings on its underside, each of said latch openings having an arcuate surface extending through an arc of greater than 180 degrees; and

at least one metal brace adapted for snap fit insertion into said first latch opening of said rib.

PLANT PATENTS

GRANTED JANUARY 8, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,384

KALANCHOE PLANT NAMED "ACAPULCO"

Claude Hope, Cartago, Costa Rica, assignor to Pan American Plant Company, Parrish, Fla.

Filed May 19, 1983, Ser. No. 496,283
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct cultivar of Kalanchoe plant named Acapulco, as described and illustrated, and particularly characterized by its bright and uniform fuchsia flower color; compact habit; freely branching, with shoots formed at every node; highly floriferous habit, and by its suitability for production in 10 to 15 cm. pots.

5,385

KALANCHOE PLANT NAMED COZUMEL

Claude Hope, Cartago, Costa Rica, assignor to Pan American Plant Company, Parrish, Fla.

Filed May 19, 1983, Ser. No. 496,285
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct Kalanchoe plant named Cozumel, as described and illustrated, and particularly characterized by its orange flower color with bright yellow eye, compact habit, free branching, average 11-week flowering response, and its adaptability to production in 10–15 cm. pots.

5,386

KALANCHOE PLANT NAMED GRANADA

Claude Hope, Cartago, Costa Rica, assignor to Pan American Plant Company, Parrish, Fla.

Filed May 19, 1983, Ser. No. 496,298
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct Kalanchoe plant named Granada, as described and illustrated, and particularly characterized by its deep coral immature and pink mature flower color, compact habit, highly floriferous habit, free branching, average 13-week flowering response, and its adaptability to production in 10–15 cm. pots.

5,387

KALANCHOE PLANT NAMED CANCUN

Claude Hope, Cartago, Costa Rica, assignor to Pan American Plant Company, Parrish, Fla.

Filed May 19, 1983, Ser. No. 496,304
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct Kalanchoe plant names Cancun, as described and illustrated, and particularly characterized by its early flowering response, highly floriferous habit, orange flower color with yellow eye, compact habit, fast growth rate, free branching, average 11 week flowering response, and its adaptability to production in 10–15 cm. pots.

PATENTS

GRANTED JAN. 8, 1985

ERRATA

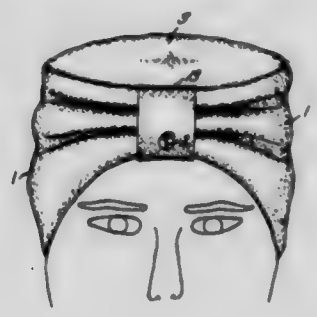
For CLASS	See PATENT NO.
033–366	4,492,029
446–250	4,492,057
446–462	4,492,058
384–463	4,492,415
384–474	4,492,416
568–075	4,492,652
534–796	4,492,653
534–827	4,492,654
264–200	4,493,031

PATENTS

GRANTED JANUARY 8, 1985

GENERAL AND MECHANICAL

4,491,985
HEAD COVERING FOR WOMEN WITH HAIR LOSS
Betty J. Dalton, 647 N. 16th St., Springfield, Oreg. 97477
Filed Sep. 29, 1982, Ser. No. 427,592
Int. Cl.³ A42B *1/04*
U.S. Cl. 2—171 3 Claims



1. A head covering for the hairless scalp of women experiencing a total hair loss from chemotherapy, said covering comprising,

a continuous main body member of elastic material for stretched engagement about the wearer's head, said main body member adapted to overlie the back of the wearer's head,

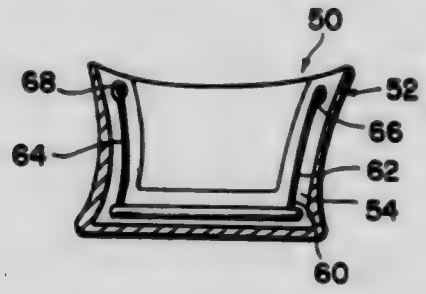
a top piece of circular shape stitched at its edge to said continuous member,

a first fabric liner of a fleecy nature arranged at a frontal portion of said main body and extending at least partially about the interior thereof so as to be pressed into engagement with the wearer's forehead by said main body member,

a second fabric liner of a fleecy nature affixed to the underside of said top piece, and

the main body member and said top piece being at least partially supported by said first and second fabric liners when the head covering is worn to render the appearance of a head covering worn over a full head of hair.

4,491,986
HEART VALVE
Salomo Gabbay, 1740 Bogart St., Bronx, N.Y. 10462
Continuation-in-part of Ser. No. 685,543, May 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 609,685, Sep. 2, 1975, abandoned, which is a continuation-in-part of Ser. No. 533,989, Dec. 18, 1974, abandoned. This application Oct. 13, 1977, Ser. No. 841,791
Int. Cl.³ A61F *1/22*
U.S. Cl. 3—1.5 9 Claims



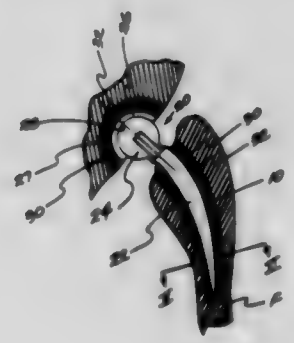
1. A prosthetic heart valve, comprising:

(a) a supporting structure comprising a base ring having two upwardly projecting and diverging struts, said base ring including a first ring portion which is formed from semi-rigid, flexible material and a second ring portion which is formed from soft flexible material;

(b) a membrane forming lips which surround said base ring and struts to form a tubular opening with an exit end and an entrance end which are substantially of equal area; and

(c) said lips being formed to close in an overlapping manner.

4,491,987
METHOD OF ORTHOPEDIC IMPLANTATION AND IMPLANT PRODUCT
Joon B. Park, Clemson, S.C., assignor to Clemson University, Clemson, S.C.
Filed Sep. 24, 1979, Ser. No. 78,225
Int. Cl.³ A61F *1/00, 1/24, 5/04*
U.S. Cl. 3—1.91 14 Claims



1. An orthopedic prosthesis for implantation within a warm blooded mammal with a bone cement composition, said prosthesis comprising a base material structurally defined as to shape and strength to assimilate a portion of hard mammal tissue, said prosthesis having a polymer coating thereabout for contact with bone cement during implantation and having an enlarged surface area therebeneath to provide an improved bond between said prosthesis and said polymer coating, said polymer coating being uniform about said prosthesis, and being up to about 2 millimeters thick, being substantially completely polymerized, having a substantially pore free outer surface, and being compatible with said bone cement composition used during implantation to achieve a chemical bond therebetween.

4,491,988
IN-TANK TOILET BOWL CLEANER DISPENSER
William G. Mizuno, Saint Paul, Minn., assignor to Economics Laboratory, Inc., St. Paul, Minn.
Filed Jan. 28, 1983, Ser. No. 461,968
Int. Cl.³ E03D *9/02*
U.S. Cl. 4—228 15 Claims

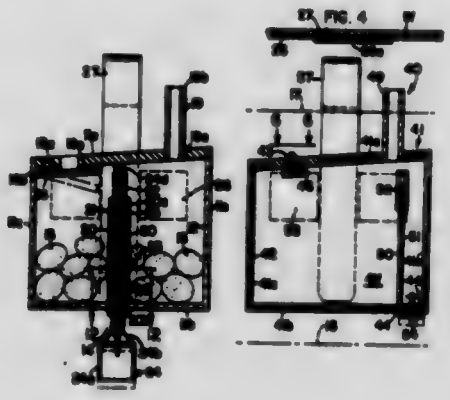
1. A dispenser for use in a flush tank of a toilet, the tank having a first water level during quiescent periods and a second water level when the toilet is flushed, said dispenser comprising:

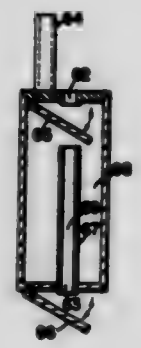
(a) a housing having a top and bottom, said housing defining a reservoir having an inlet proximate said top and an outlet positioned lower than said inlet, said reservoir holding a product to be dispensed, the product dissolving in water forming a solution;

(b) a first valve means for regulating flow of water from the flush tank into said reservoir through said inlet, said first valve means responsive to changes from the first water level to the second water level;

(c) a second valve means for regulating flow of solution out of said reservoir through said outlet, said second valve means responsive to changes from the first water level to the second water level, whereby when the water rises to its first water level, said second valve means is closed and water enters the reservoir through said inlet until said reservoir is filled causing said first valve means to close,

said first and second valve means minimizing migration of the solution out of said reservoir, and when the water is at





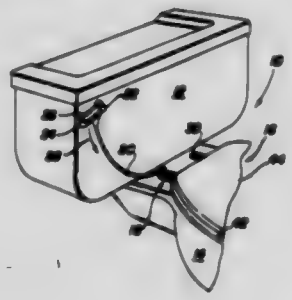
the second water level, said second valve means opens allowing the solution to flow out of said outlet.

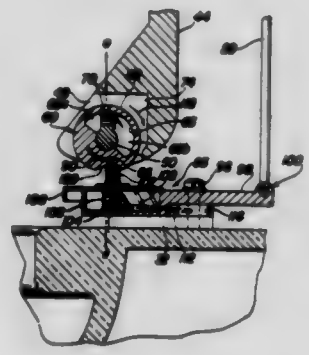
4,491,989

CLOSURE DEVICE FOR TOILET SEATS

John F. McGrail, 7701 Warner, Apt. C197, Huntington Beach, Calif. 92647

Filed Apr. 2, 1984, Ser. No. 595,688
Int. Cl.³ A47K 13/10
U.S. Cl. 4—251 9 Claims





1. An apparatus for automatically releasing a seat, or together a lid and a seat, for a toilet or a commode having a bowl, a water closet, and a flushing handle, wherein the apparatus comprises:

a releasable hinge-closing means mounted to said bowl of said toilet and to said lid and seat thereof, allowing said lid, or lid and seat, to be lowered from an open upright position to a closed horizontal position;

actuating means connected between said releasable hinge-closing means and flushing handle of said toilet, whereby said actuating means is releasably disengaged from said toilet lid;

dampening means mounted to said lid and adapted to be engaged with said releasable hinge-closing means, whereby the downward movement of said lid, or said lid and seat, from an open to a closed position is controlled thereby; and

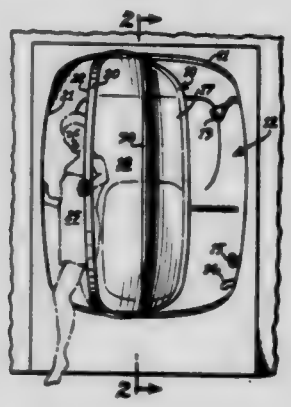
latching means interposed between said toilet lid and said toilet seat, whereby said seat is coupled to said lid when both are in an open upright position.

4,491,990

SHOWER DOOR

Thomas D. Robinson; Lewis A. Sharp, Jr., both of Nashville, and George P. McAllister, Franklin, all of Tenn., assignors to Aqueria Industries, Incorporated, Nashville, Tenn.

Filed Apr. 10, 1981, Ser. No. 252,868
Int. Cl.³ A47K 3/22
U.S. Cl. 4—607 7 Claims



1. In a shower bath cabinet including a door opening having a fixed edge of predetermined contour, a shower door comprising:

(a) a one-piece body including a dished closure panel having a peripheral edge portion of the same shape as the contoured edged of the door opening to be closed by said door,

(b) said closure panel also having a front surface, a concave rear surface, top and bottom portions and first and second opposite side portions,

(c) said edge portion comprising a substantially continuous rim, including first and second opposed side rim portions, projecting rearward from said closure panel and terminating in a free peripheral edge and

(d) pivotal support means on the top and bottom portions of said body for attaching said body to the fixed edge of the door opening in operative position for pivotal movement of said body about a fixed vertical axis in the door opening (extending) spaced between said first and second side rim portions so that said body may swing between a closed position in which said body closes the door opening and said vertical axis is spaced behind said concave rear surface, and an open position in which one side portion of said body swings behind the door opening and the other side portion swings in front of the door opening, and

(e) one of said side rim portions being adapted to engage the corresponding edge of the door opening when in said closed position to limit the swinging movement of said panel away from said open position.

4,491,991

TOILET COVER ATTACHMENT

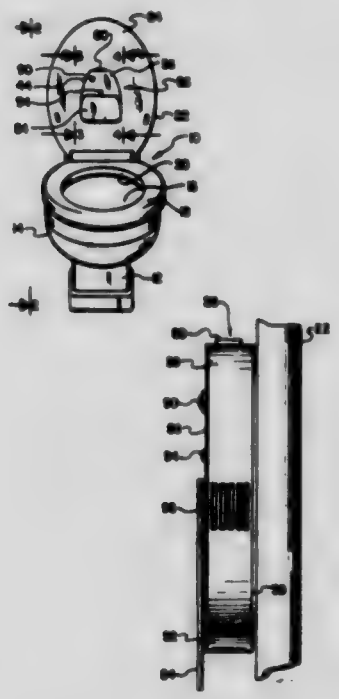
Steven L. Herbruck, 1441 Devonshire Dr., Oxnard, Calif. 93030

Filed Jun. 27, 1983, Ser. No. 507,725
Int. Cl.³ A47K 17/00
U.S. Cl. 4—661 10 Claims

1. In combination with a toilet, said toilet having a bowl, said

toilet having a seat, said toilet having a cover, said cover being pivotable between a lower (horizontal) position and an upper (vertical) position, said lower position preventing access into said bowl, said upper position permitting access into said bowl, a toilet cover attachment comprising:

an annunciator assembly including a first annunciator and a



second annunciator, said first annunciator being activated upon said cover being located in said upper position and deactivated upon said cover being located in said lower position; and

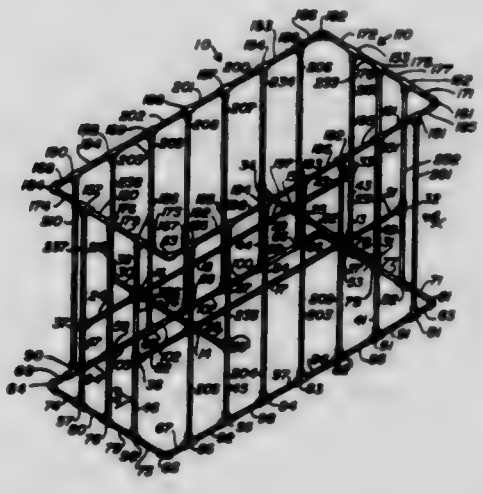
said second annunciator being time delay activated upon said cover being located in said upper position and deactivated upon said cover being located in said lower position.

4,491,992

CONVERTIBLE BABY CRIB AND PLAYPEN

Frederick H. Wittmann, 519 W. Taylor St., Sp. #127, Santa Maria, Calif. 93454

Filed Nov. 3, 1983, Ser. No. 548,281
Int. Cl.³ A47D 7/00, 13/06
U.S. Cl. 5—93 R 3 Claims



1. An adjustable-sized, readily assembled and readily disassembled baby crib made up of a series of plastic tube sections and plastic tube fittings, said crib including in combination:

(1) an invertible bottom portion useful per se as a small short crib and, when inverted, useful as a base portion of a taller playpen type of crib, comprising

(a) a planar assembly of two pairs of cross fittings,

two identical lengthwise-extending first tube sections connecting the cross fittings of each pair together,

four identical lengthwise-extending first tube sections, one extending out from each cross-fitting in line with a said first tube section,

two identical widthwise-extending third tube sections, connecting corresponding cross fittings of one pair to those of the other pair,

four identical shorter widthwise-extending fourth tube section, each extending out from a said cross fitting in line with a third widthwise-extending tube section,

a set of eight 90° first tee fittings, each with one upper socket, one lower socket, and one middle socket, a said middle socket being attached to the distal end of each of the second and fourth tube sections,

(b) a first series of identical vertical fifth tube sections, each extending upwardly from an upper sockets of each said first tee section, and

(c) a first generally rectangular assembly, having an elbow fitting at each corner a set of at least eight second tees, and sixth tube sections horizontally connecting said tees of said second set to each other and to said elbow fitting there connected to said elbow fitting being cemented thereto, each second tee being spaced so as to be in line with a said first tee and receiving the upper end of said fifth vertical tube section, said generally rectangular assembly having also a set of intermediate third tees in between the successive second tees and connected to them by sixth tube sections, and

(2) an upper, second generally rectangular assembly substantially identical to said first generally rectangular assembly and which, when said bottom portion is inverted so that said first rectangular assembly rests on a floor, is spaced well above said planar assembly,

(3) a series of identical long vertical seventh tube sections substantially longer than said fifth tube sections joining the third tees of said first rectangular assembly to corresponding second tees of said second rectangular assembly,

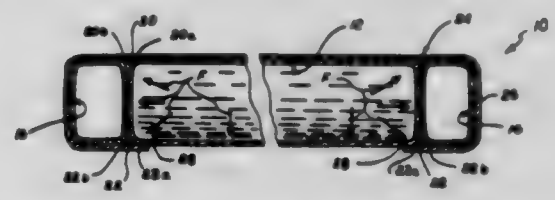
(4) a series of identical vertical eighth tube sections connecting said first tees to corresponding tees of said second, generally rectangular assembly, the combined lengths of each pair of fifth and eighth tube sections plus their fittings, equaling the length of the seventh tube sections.

4,491,993

MECHANISM FOR MAINTAINING THE SHAPE OF A FLOATATION SLEEP SYSTEM

Philip J. Santo, 12 Mountain Rd., Rochester, N.Y. 14625

Filed Dec. 15, 1982, Ser. No. 450,821
Int. Cl.³ A47C 27/08
U.S. Cl. 5—451 5 Claims



1. Mechanism for maintaining the shape of a floatation sleep system, such system including a bladder having flexible walls defining a chamber adapted to be filled with fluid and a marginal perimeter edge support for such bladder, said mechanism comprising:

a flexible dimensionally stable sheet; and

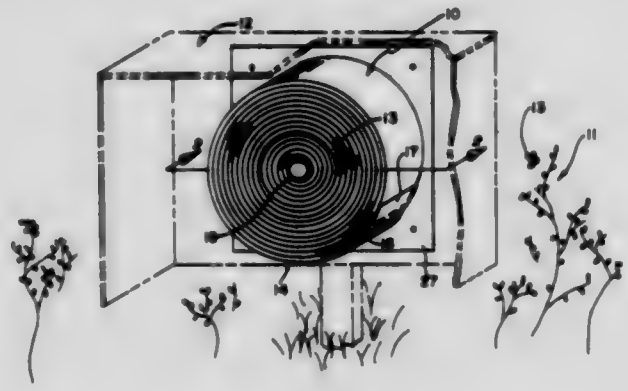
means for attaching said sheet to opposed marginal edges of said bladder, such means including matting releasable fastener members fixed to opposed marginal edges of the underside of said bladder and opposed marginal edges of said sheet respectively, so that such sheet may extend in intimate contact from one edge, across the top portion of said bladder, around the opposite marginal perimeter support to the other edge, whereby such sheet is constrained to oppose fluid forces on the marginal perimeter support.

4,491,994

WILD BEE NESTING DOMICILE

Nabil N. Youssef, 2168 N. 1480 East, North Logan, Utah 84321

Filed Aug. 4, 1983, Ser. No. 520,472
Int. Cl.³ A01K 47/00
U.S. Cl. 6—1 9 Claims



1. A wild bee nesting domicile having a multiplicity of wild bee nesting bores, said domicile comprising:

a continuous elongate strip assembly of thin flexible sheet paper comprising a pleated strip, a matching elongate backing strip and means securing the pleated strip with the roots of the pleats against one of the surfaces of the backing strip, said continuous strip assembly being secured in rolled form so tht the tips of the pleats are against adjacent portions of the other surface of the backing strip so that the pleated strip forms with the backing strip a multiplicity of nesting bores, each bore extending longitudinally from one end of the rolled strip assembly to the other end thereof, all of said nesting bores being on the same side of said pleated strip; and

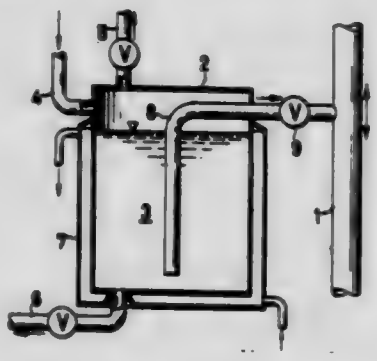
a closure member secured against one end of the rolled strip assembly so as to close one end of each of the nesting bores.

4,491,995

PROCESS FOR THE LEVEL EXHAUST DYEING OF POLYESTER FIBERS

Siegfried Glander, Bad Soden am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 9, 1983, Ser. No. 473,757
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1982, 3210390
Int. Cl.³ D06B 5/18
U.S. Cl. 8—158 12 Claims



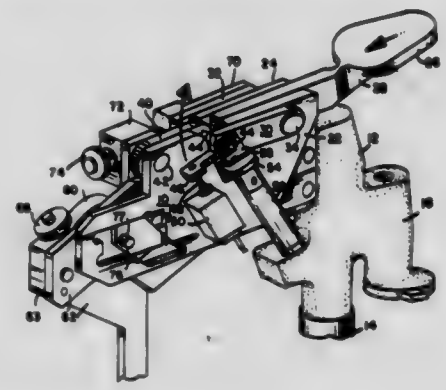
1. In a process for the level exhaust dyeing of textile material which consists of hydrophobic synthetic fibers either on its own or as a component of mixtures with natural or other synthetic fibers, with heat-settable colorants in a closed machine system at temperatures between 90° and 140° C., from an aqueous medium by means of a moving liquor which is circulated in the dyeing system until the colorant has exhausted onto the textile material and become fixed therein, the improvement which comprises using as the heat-settable colorant dyestuffs and/or pigments which are virtually insoluble or sparingly soluble in water, without prior formulation with a finish designed for suitable dyeing properties, dissolving the same in one or more organic solvents which, under dyeing conditions, are sufficiently soluble in or miscible with water, and then introducing the solution thus obtained into the circulating aqueous liquor which is already at the dyeing temperature, is flowing through or around the textile material, and is free of dyestuff or depleted of dyestuff whereupon the dyeing is performed as usual.

4,491,996

INSOLE SUPPORT PLATE MECHANISM

Alphonse C. Kulik, Ipswich, Mass., assignor to USM Corporation, Farmington, Conn.

Filed Oct. 27, 1981, Ser. No. 315,404
Int. Cl.³ A43D 21/00
U.S. Cl. 12—10.1 3 Claims



1. An adjustable insole support plate mechanism for a shoe lasting machine, comprising:

an insole support plate for receiving an moving a shoe assembly bottom down; and

a cam guided toggle link means for controllably toewardly advancing said insole support plate, while said plate is in a toeward down pre-lasting orientation to permit the shoe assembly to be more readily gripped by pincers in the shoe lasting machine said cam guided toggle link means comprising means for controllably retracting heelwardly said insole support plate in a toe downward orientation from said advanced position.

4,491,997

MACHINE FOR LASTING HEEL SEAT PORTIONS OF SHOES

Frank C. Price, Leicester, England, assignor to USM Corporation, Farmington, Conn.

Filed Mar. 21, 1983, Ser. No. 477,313
Int. Cl.³ A43D 21/00
U.S. Cl. 12—12.1 9 Claims

1. A machine for lasting heel seat portions of shoes, comprising:

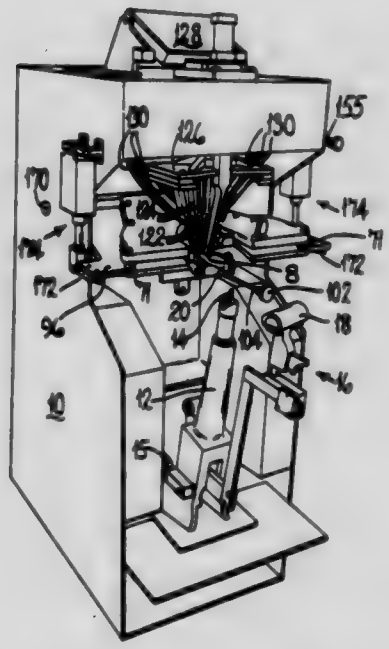
a shoe support for supporting, bottom uppermost, a shoe comprising an upper positioned on a last and an insole on the last bottom;

a wiper assembly, comprising a central wiping member, carried by a support therefor, and two wiper plates, each carried by a wiper carrier, said member being fixed against rotation, while said carriers are mounted for pivotal movement, each about an axis which lies within the confines of the central wiping member, the member and plates presenting a substantially continuous leading edge portion whereby lasting marginal portions of the upper of a shoe supported by the shoe support can be wiped over and pressed against corresponding marginal portions of the insole of such shoe; and

fastener-inserting means, associated with the wiper assembly, whereby fasteners can be driven, through a series of

apertures formed in the wiping member and wiper plates, adjacent the leading edge portion presented thereby, for securing said wiped-over lasting marginal portions of the upper to the corresponding marginal portions of the insole, two such apertures being disposed side-by-side in the central wiping member, and the fasteners driven through said apertures being the most heelwardly disposed of the fasteners inserted by the fastener-inserting means,

wherein advancing means is provided whereby the support for the central wiping member and the wiper carriers can be advanced towards the shoe support, cam means also being provided whereby pivotal movement of the wiper carriers can be effected in response to operation of the advancing means, the position to which the central wiping member is advanced as aforesaid determining the location



of insertion of the most heelwardly disposed fastener(s), while the amount of pivotal movement of the wiper carriers, and thus the wiper plates, determines the overall pattern in which the fasteners are inserted, characterized in that the advancing means is operatively connected to the wiper carriers, and each wiper carrier is connected to the support for the central wiping member, for relative sliding movement therebetween, by an arcuate groove-and-projection connection, the center of curvature of which coincides with the axis of said wiper carriers and in that the construction and arrangement of the cam means is such that during a first part of the operation of the advancing means the wiper carriers are advanced towards the shoe support, while in a subsequent part each carrier merely pivots about its axis.

4,491,998

SCRUBBER MOP

Frank G. Wilson, Malvern, and William A. Patton, Newtown Square, both of Pa., assignors to Kendo Products Co., Inc., Paoli, Pa.

Filed Sep. 21, 1983, Ser. No. 533,731
Int. Cl.³ A47L *13/144*
U.S. Cl. 15—119 A 30 Claims

1. A scrubber head for use in combination with a wringer mop of the type having at least one rotatable wringer roller extending substantially orthogonally and in spatially fixed position to a mop handle, a mop head having a surface engagingly underlying the wringer roller and adapted to having its wringer engaging surface translated with respect to the roller to rotate the latter and wring out the mop head, and an actuating member effective to translate the wringer engaging surface of the mop head in opposite directions to effect opposite rotations of the roller and to alternately wring out the mop head and restore it to use position, said scrubber head comprising in combination,

(a) a scrubber pad,

(b) scrubber pad support means which mechanically support said scrubber pad, and

(c) pivot means connected to said scrubber pad support means and being also couplable to the wringer roller of



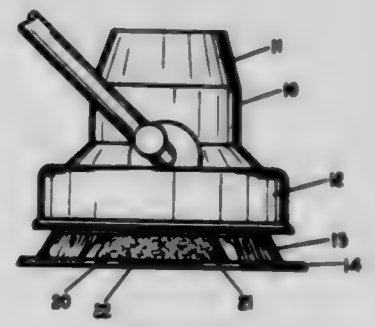
the wringer mop for rotation therewith when the wringer roller is rotated by the engaging surface of the mop head, said scrubber pad support means being pivoted up out of the way when the mop head actuating member moves the mop head into use position and being pivoted down into working scrubbing position when the mop head actuating member moves the mop head to wring it out.

4,491,999

BUFFING PAD RETAINER

Ernest R. Babcock, 257 Lafayette, Iosia, Mich. 48846

Filed Jul. 19, 1982, Ser. No. 399,470
Int. Cl.³ B24B *29/00*; A47L *11/14*
U.S. Cl. 15—230 4 Claims



1. A buffing pad retainer for retaining an annular buffing pad in operable engagement with the bristles of a rotating annular floor machine brush comprising a truncated conical disk having a height no greater than the length of the bristles of said brush and a major diameter approximately equal to the bore diameter of said annular brush, said conical disk having a depending cylindrical coaxial disk portion having a diameter approximately equal to the bore diameter of said annular buffing pad and a height such that the disk portion extends into the bore in the pad but does not extend below the bottom of the pad when the retainer is mounted in a floor machine brush for buffing, the buffing pad retainer urging the buffing pad to rotate with the rotation of the floor machine brush while the pad remains flat on the floor over its entire surface, the cylindrical disk portion having a lower end formed of a material that does not damage the floor surface.

4,492,000

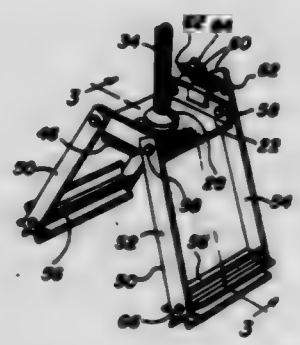
CHIMNEY CLEANER

Kermit J. Skogen, Rte. 1, Box 199, Princeton, Minn. 55371

Filed May 18, 1982, Ser. No. 379,487
Int. Cl.³ F23J *3/02*
U.S. Cl. 15—242 2 Claims

1. A chimney cleaner including a mount having opposite side portions, an elongated upstanding support member having a lower end, means on said mount attaching the lower end of

said support member to said mount between said opposite side portions and with said support member disposed generally normal to a plane extending between and along said opposite side portions, a pair of depending support arms including upper base and lower free end portions, pivot means pivotally supporting said upper base end portions from corresponding opposite side portions of said mount for independent swinging of said arms about generally parallel axes extending along said opposite side portions between extending downwardly and outwardly divergent positions and retracted generally parallel positions disposed generally normal to said plane, said free end portions of said arms having fluttered rollers looeely journaled therefrom for rotation about axes generally paralleling the first mentioned axes, spring means operatively connected between said arms independent of said mount yieldingly biasing said arms toward said extended positions, said arms each including



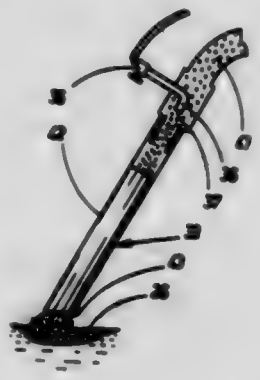
a pair of depending long and short parallel links, each of said rollers being journaled between the lower ends of the associated pair of links, the upper ends of each pair of links being pivotally supported from said mount, said mount including a first portion disposed below said first mentioned axes engageable by corresponding short links of said arms to limit swinging movement of said arms to said retracted positions, said upper ends of said long links defining upper end extensions projecting above the first mentioned axes, said spring means including expansion spring means operatively connected between said extensions, said mount including a second abutment portion disposed above said first mentioned axes and engageable by said extensions to limit swinging movement of said support arms toward the extended positions thereof, each of said rollers including a cylindrical hub portion and longitudinally extending generally radial flutes having sharpened outer edges.

4,492,001

METHOD TO CLEAN UP OIL SPILLS OR SIMILAR SUBSTANCES AND A DEVICE TO PRACTICE THIS METHOD

Stig Erik T. Hedrenius, Stockholm, Sweden, assignor to Saneon Aktieboleg, Stockholm Fruhamn, Sweden

Filed Sep. 29, 1982, Ser. No. 427,579
Int. Cl.³ A47L 7/00
U.S. Cl. 15—320 1 Claim



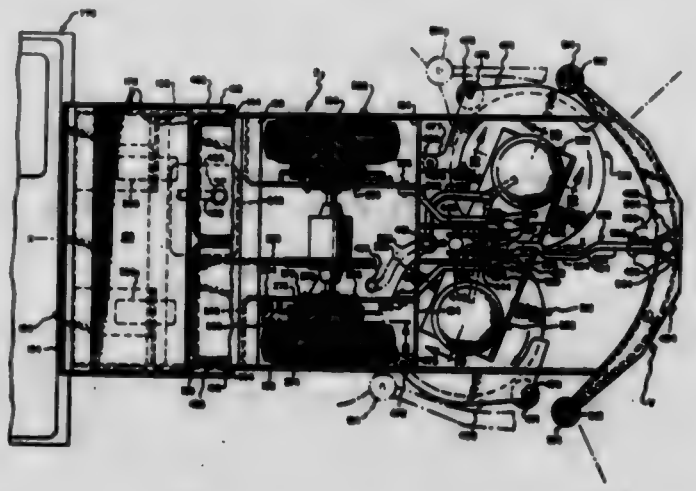
1. A device for cleaning up pollutants resulting from oil spills and chemicals polluting an area on the ground by spreading granulate sorbent material over said area during a spreading period and sucking up the sorbent material carrying adsorbed pollutants from said area during a suction period, said device comprising supply means and first duct means for transporting the sorbent material respectively to and from a nozzle unit connected to said first duct means for blowing out and sucking up the sorbent material, second duct means for supply of compressed air, ejector means actuated by said compressed air and adjustable between a spreading position, taken during the spreading period, in which the ejector directs a first air current for transportation of the sorbent material in said first duct means up to the nozzle unit to blow the sorbent material out through the nozzle unit directly on said area causing the sorbent material to penetrate the polluted area by means of a blasting action and a sucking position, taking during the suction period, in which the ejector means directs a second air current for sucking up spreaded sorbent material carrying adsorbed pollutants and transportation of the polluted sorbent material via said first duct means to receptacle means for disposing of the polluted sorbent material, said ejector being mounted on the nozzle unit and pivotable between said spreading position and sucking position, said ejector including an outlet opening directed in said spreading position forwardly to a common spreading and sucking opening of the nozzle unit, and directed in said sucking position away from said common opening of the nozzle unit, and power means for the generation of compressed air for said second duct means, spreader means for feeding the sorbent material to said first duct means, said first duct means being common for the transportation of unpolluted sorbent material in a spreading period as well as polluted sorbent material in a suction period, and means adjustable between a first position during the spreading period in which the communication between the spreader means and first duct means is open, whereby communication between the receptacle means and the first duct means is discontinued, and a second position during the suction period in which communication between the spreader means and the first duct means is discontinued and the communication between the receptacle means and the first duct means is open.

4,492,002

FLOOR CLEANING MACHINE

Steven J. Waldhauser, Niagara Falls, N.Y., and Dennis J. Corneil, Toronto, Canada, assignors to Wetrok, Inc., Niagara Falls, N.Y.

Division of Ser. No. 186,420, Sep. 12, 1980, Pat. No. 4,380,844.
This application Apr. 22, 1983, Ser. No. 487,503
Int. Cl.³ A47L 11/30
U.S. Cl. 15—320 5 Claims



2. An automatic, self-contained and self-propelled walk behind floor cleaning machine including

a body;

propulsion means capable of propelling said body in a generally forward direction over the surface of the floor to be

cleaned, said propulsion means including ground engaging wheels;

scrubber means carried by said body for wetting and cleaning a width of the surface of the floor, said scrubber means including brush means, and said scrubber means being mounted behind said ground engaging wheels;

vacuum means carried by said body for drying the cleaned surface, said vacuum means including

a curved squeegee of a width slightly greater than the width of the surface of the floor cleaned by said brush means, and

means mounting said squeegee immediately behind said brush means and for swinging movement about a generally vertically extending axis in response to turning movement of the floor cleaning machine whereby said squeegee properly tracks said brush means to insure that virtually all water deposited on the floor by the scrubber means is picked up; and

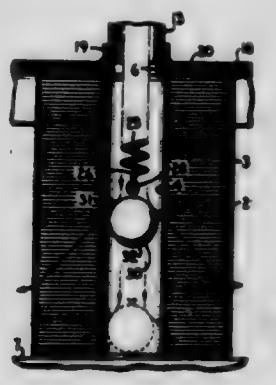
control means operably associated with said propulsion means, scrubber means and vacuum means and including controls located to the rear of the body and engageable by a walk behind operator.

4,492,003

FILTER CLEANING DEVICE

John F. Boylan, Rte. 1 - Box 70, Ulysses, Kans. 67880

Filed Jul. 25, 1983, Ser. No. 516,527
Int. Cl.³ B08B 5/02
U.S. Cl. 15—406 5 Claims



1. A portable cleaning device for purging a filter; said filter having a medium surrounding and defining a chamber, and having at least one end with an opening to said chamber, said cleaning device comprising:

(a) a tank for containing pressurized gas;

(b) charging means on said tank for filling same;

(c) a conduit extending from said tank and having an end with an outflow valve therewith to permit rapid passage of gas through said conduit;

(d) a shield on said conduit adjacent said end and having a surface extending outwardly from said conduit for sealing engagement with said filter around the end opening thereof with said conduit end communicating with said filter chamber end communicating with said filter chamber through said filter end opening; said filter being held in place by a user by positioning said filter between said shield surface and a supporting surface; and

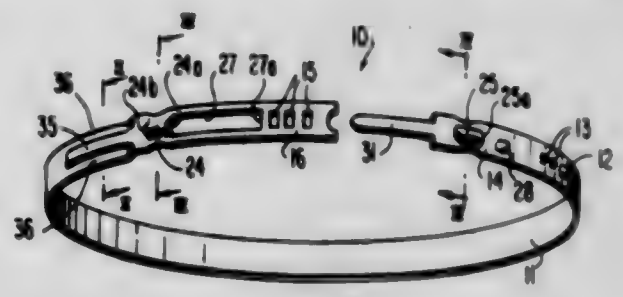
(e) an extensible member longitudinally mounted within said conduit and having a lower end portion with a gas diverter means thereon for forcing gas flow from said tank radially outwardly through said medium to thereby purge it, said diverter means being movable between an upper position located adjacent an upper part of said chamber and a lower position located adjacent a lower part of said chamber; said extensible member and diverter means being responsive to gas flow from said tank to extend and variably position said diverter means between said upper and lower positions.

4,492,004

EARLESS CLAMP STRUCTURE

Hans Oetiker, Oberdorfstrasse 21, CH-8810 Horgen, Switzerland

Filed Dec. 3, 1982, Ser. No. 446,503
Int. Cl.³ B65D 63/02
U.S. Cl. 24—20 R 38 Claims



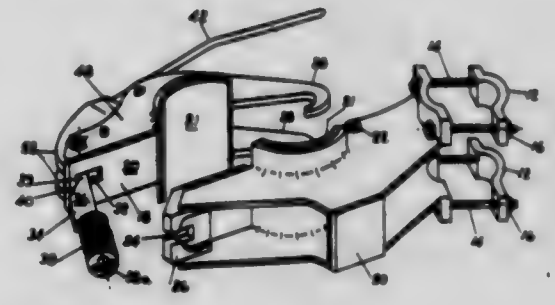
1. A clamp structure, especially for use in applications in which space conditions do not permit any projecting parts such as plastically deformable ears, comprising clamping band means having open ends formed by an inner and outer band portion intended to overlap, and means mechanically interconnecting the overlapping open ends of the band means including outwardly extending hook means in the inner band portion operable to engage in aperture means in the outer band portion in the installed condition of the clamp structure, characterized in that the means mechanically interconnecting the open ends enable tightening of the band means about an object to be fastened and include tool-engaging means provided in the inner and outer band portions, said tool-engaging means being formed by pressed-out portions pressed-out of the inner and outer band portions and extending generally in the circumferential direction so that each pressed-out portion remains integral at least on both sides thereof with the respective band portion, whereby said tool-engaging means are able to withstand substantial forces in the circumferential direction without tearing which permit a secure tightening of the clamp structure about the object to be fastened without the use of any other tightening means in the clamp structure.

4,492,005

CONDUIT CLAMP (CASE 1)

Maxwell G. Bagley, 632 Light St., Dianella, Western Australia 6062, and Keith Munslow-Davies, 7 Chaffers St., Morley, Western Australia 6062, both of Australia

Filed Nov. 16, 1982, Ser. No. 442,163
Claims priority, application Australia, Jun. 23, 1982, PF4557
Int. Cl.³ B65D 63/02; F16L 3/08
U.S. Cl. 24—270 9 Claims



1. A conduit clamp comprising means for securing a conduit to another structure, a pair of jaws arranged to be clamped around a conduit, means on one side of a first jaw arranged to engage pivotally with complementary means on the corresponding side of a second jaw, means for closing the jaws into clamping engagement with a conduit which closing means comprises an open sided recess in one jaw, a locking pin mounted in an aperture in the other jaw, a lever having an inner end, the inner end of the lever being pivotally connected

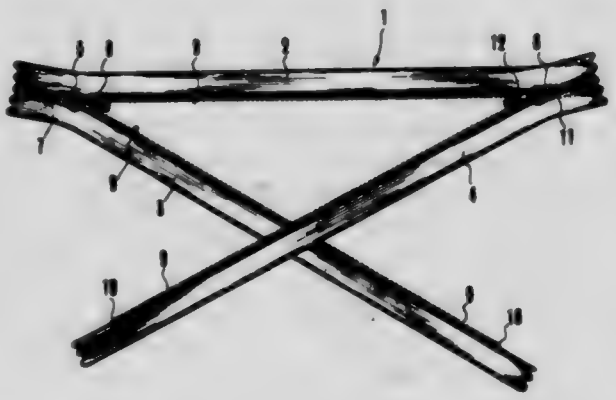
to the locking pin, and the inner end of the lever being pivotally connected to the other jaw at a spacing from the pivotal connection to the locking pin and being located adjacent the aperture in the other jaw, the lever having a first position in which the locking pin is located in the open sided recess which first position of the lever corresponds with a clamping position of the jaws, the lever having a second position in which the locking pin is pivoted away from the recess which second position of the lever corresponds with an open position of the jaws, the pivotal connection of the locking pin to the lever being remote from the aperture and being substantially in alignment with the aperture and the open sided recess in the first position of the lever and the pivotal connection of the locking pin to the lever being adjacent to but disposed laterally of the aperture in the second position of the lever, the arrangement being such that when the lever is pivoted towards its second position, the pivotal connection of the locking pin and lever initially moves towards the aperture to push the locking pin through the aperture and recess so as to release the locking pin, and then the pivotal connection of the locking pin and lever moves laterally relative to the aperture so as to cause the locking pin to be pivoted against an edge of the aperture away from the recess, and when the lever is pivoted towards its first position the locking pin pivots back into the recess and is then pulled through the recess and aperture so as to be locked into the recess.

4,492,006

THREE-TAPE TYPE ZIPPER

Takashi Ishii, 14-1423, Kamiohsato 1028, Isogo-ku, Yokohama, Kanagawa, Japan

Filed Apr. 11, 1983, Ser. No. 483,756
Int. Cl.³ A44B 19/34
U.S. Cl. 24—382 3 Claims



1. A three-tape type zipper essentially comprising in combination;

the first tape with a number of equally spaced elements fixed to one of the edges thereof, one end part of said first tape being connected to one end part of the second tape and the other end part of the same being connected to one end part of the third tape,

the second tape with a number of equally spaced elements fixed to one of the edges thereof at the position confronting to those on said edge of the first tape, both tapes being able to be fastened, one end part of said second tape being connected to said one end part of the first tape and the other end part of the same being kept free,

the third tape with a number of equally spaced elements fixed to one of the edges thereof at the position confronting to those on said edge of the first tape, both tapes being able to be fastened, one end part of said third tape being connected to said other end part of the first tape and the other end part of the same being kept free,

the first slider serving to fasten the first and second tapes together by moving said slider from the first end portion where the one end parts of the first and second tapes are connected to each other to the second end portion where the other end part of the first tape and the one end part of the third tape are connected to each other, said moving of said first slider being performed by means of a tab attached thereon until the first slider is to be stopped by the second slider in contact with the stopper which connects the first and third tapes, and

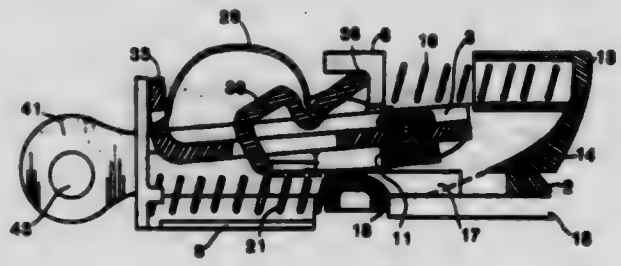
the second slider serving to fasten the first and third tapes together by moving said slider from the aforesaid second end portion to the aforesaid first end portion, said moving of said second slider being performed by means of a tab attached thereon until the second slider is to be stopped by the first slider in contact with the stopper which connects the first and second tapes.

4,492,007

FASTENING MEANS FOR SAFETY BELTS

Ulf Tolfsen, Fredrikstad, Norway, assignor to Loyd's Industri A/S. Boks 609, Fredrikstad, Norway

Filed Apr. 13, 1983, Ser. No. 484,513
Claims priority, application Norway, Apr. 26, 1982, 821350
Int. Cl.³ A44B 11/25
U.S. Cl. 24—461 17 Claims



1. In a fastening means for fastening a safety belt of the type wherein a locking tongue attached to one free end of the belt is slidably engagable with locking means attached to the other free end of the belt or to a vehicle mounting element, and wherein said locking means includes a frame for supporting a locking flap releasably engageable with said tongue, and release means for lifting and releasing said flap from engagement with said tongue; the improvement comprising blocking means for urging said locking flap from an open, raised position to a closed, lowered position in engagement with said locking tongue in response to sliding insertion of said locking tongue into said locking means, for retaining said locking flap in the open, raised position when the seat belt is unfastened, and for resisting initial action of said release means so that the force required to initiate release of the locking tongue is greater than that required to complete the release, said blocking means including a blocking flap pivotally associated with said frame, and biasing means for urging said locking flap into an open, raised position, and for urging said blocking flap against said locking flap to lower it into engagement with said locking tongue when said locking tongue is inserted into said locking means.

4,492,008

METHODS FOR MAKING HIGH PERFORMANCE LATERAL BIPOLAR TRANSISTORS

Narasipur G. Anantha, Hopewell Junction; Tak H. Ning, Yorktown Heights, and Paul J. Tsang, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 4, 1983, Ser. No. 520,366
Int. Cl.³ H01L 27/08, 21/76
U.S. Cl. 29—571 13 Claims

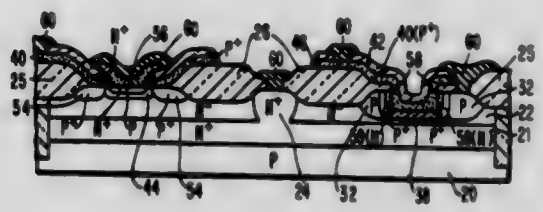
1. Method of fabricating a high performance lateral PNP transistor comprising:

providing a monocrystalline semiconductor body having a principal surface of N conductivity type and a buried N+ region with an N+ reach-through connecting said buried region to said surface;

forming the collector region of said transistor into said surface by diffusing P type impurities into the desired region of said body;
etching a substantially vertical walled groove in said monocrystalline semiconductor body in the area designated to be on the emitter contact;
thermally diffusing N type impurities into the edges and bottom of said groove;
ion implanting oxygen into the bottom of said groove to form a silicon dioxide region at the bottom of the groove;
forming a P+ polycrystalline silicon layer over said surface so that portions of the layer are in direct contact with said groove;







forming an insulator layer upon the top surface of said polycrystalline silicon layer;
patterning said polycrystalline silicon layer and insulator layer with substantially vertical edges wherein the layer remains over areas designated to be the emitter regions of said lateral PNP transistor;
heating the structure to form the P+ emitter region around the side edges of the said P+ polycrystalline silicon filling said groove; and
making electrical contact to the collector, the emitter through said P+ polycrystalline layer and the base through an N+ reach-through to said buried N+ region.

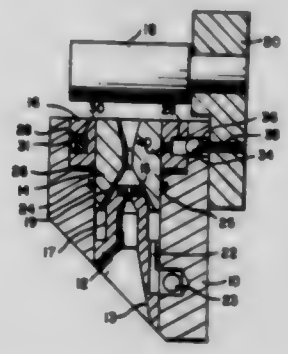
4,492,009

YARN TEXTURING JET

Brian M. Agers, and Arnold S. Goldstein, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 29, 1983, Ser. No. 536,314
Int. Cl.³ D02G *1/16*
U.S. Cl. 28—254 4 Claims

1. In a yarn texturing jet including a body having yarn inlet and outlet ends connected by a central bore, means for introducing pressurized gas through a gas inlet into said bore, a venturi located in said bore at said outlet end, said venturi being axially slidable in said body from a preset operating position to a string up position back to a preset operating position, a yarn guiding element extending into said bore from the yarn inlet end of the body, said yarn guiding element having a passage therethrough for guiding yarn from the yarn inlet to the venturi and a cylindrical baffle attached to a bracket located adjacent the outlet end of the jet, the improvement comprising: a collar attached to said venturi, said collar having



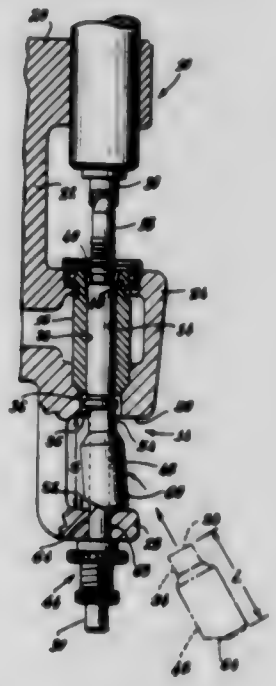
a circumferential groove and being slidably located inside the body at the outlet end thereof; and means engaging said groove to position said venturi in the string up position or the operating position.

4,492,010

GAS CHECK SEATING BODY

C. Kenneth Ramage, Middletown, Conn., assignor to Lyman Products Corporation, Middlefield, Conn.

Filed Jul. 14, 1983, Ser. No. 513,758
Int. Cl.³ B21K *21/06*
U.S. Cl. 29—1.22 9 Claims



1. A device for squarely attaching a gas check onto a bullet in a bullet sizing apparatus having a frame which has one section shaped to receive a bullet swaging die through which a bullet is moved in a swaging direction while seated against an ejector rod located to snugly slide through the die, said frame further having a shelf spaced from the one section in the swaging direction, said shelf adjustably supporting a push rod one end of which may be adjustably spaced from the frame section so as to seat and move with the ejector rod when a bullet is pushed through the swaging die, comprising:

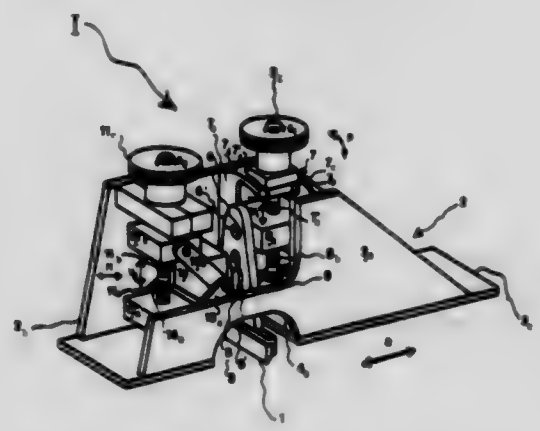
a replaceable gas check seating body having a length so as to fit between the frame shelf and the swaging die placed in said frame section while being of sufficient length so as to seat an ejector rod at a location where one end of the ejector rod can support a gas check and enables a shank of a cast bullet to be pressed into the gas check when so seated on the ejector rod.

4,492,011

SCRAPER TO ROUGH DOWN THE SURFACES OF A COATED FINISH

Antoine Zaragoza, and Raymond Zaragoza, both of 69, Rue Lucien Cassagne, 31500 Toulouse, France

Filed Jan. 13, 1982, Ser. No. 339,650
Claims priority, application France, Jan. 16, 1981, 81 01103
Int. Cl.³ B23D 79/06
U.S. Cl. 29—81 G 4 Claims



1. A hand-operated scraping tool to rough-hew surfaces coated with a primer, said tool comprising:

a frame, said frame comprising at least two laterial walls, a rectangular face defining a plane, said lateral walls connected to said face, a central opening defined by said face, a blade having a bevelled edge positioned within said opening, said blade inserted between said lateral walls to project beyond said face, said blade defining a plane perpendicular to the plane of said face, said blade being slidingly mounted for adjusting the depth of penetration thereof in the material to be rough-hewed, and said blade being pivotally mounted on said rod, with said rod having an axis perpendicular to said face for correcting the displacement of the blade with reference to the face, an upper portion of the blade set inside said frame, a first threaded rod pivotally mounted within said frame, two superposed holes defined by said blade, a first teat rigidly locked with the frame, said first teat set inside one of said superposed holes of said blade, said hole being elongated for allowing motion of said blade along said first teat, a second teat parallel to the first teat and movably mounted on the first threaded rod, said second teat adapted to move towards and away from said first teat, said second teat set inside the other hole of said blade, said other hole allowing said second teat housed therein to transmit motion to said blade, and said blade guided by said first teat inside said elongated hole of said blade.

4,492,012

METHOD OF MAKING ROLL FOR USE IN PRINTING

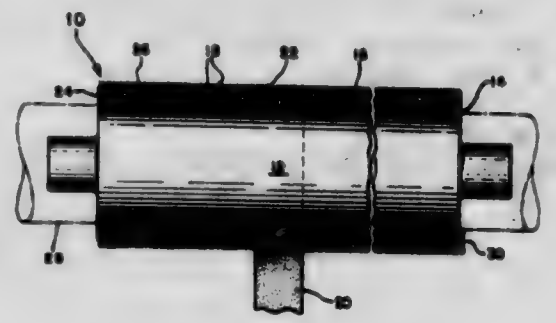
Jerome Pais, Arlington Heights; Yale Karmell, Chicago, and Thaddeus M. Muzyczko, Downers Grove, all of Ill., assignors to Samuel Bingham Company, Mt. Prospect, Ill.

Filed Jan. 13, 1982, Ser. No. 339,163
Int. Cl.³ B21K 1/02
U.S. Cl. 29—148.4 D 26 Claims

1. A method of making a roll for use in a printing operation comprising:

stretching a tubular mesh sleeve onto a metal mandrel;

covering said sleeve with an elastomer composition having a plurality of discrete fibers substantially dispersed therein;



vulcanizing said covering to said sleeve; and

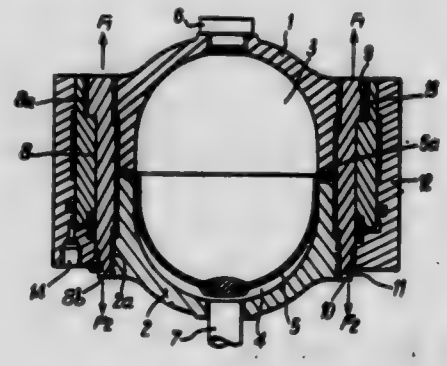
removing said mandrel.

4,492,013

METHOD FOR MANUFACTURING A PRESTRESSED HYDRAULIC ACCUMULATOR

Louis C. Porel, Rambervillers, France, assignor to Hydro Rosa Leduc, Baccarat, France

Filed Feb. 20, 1981, Ser. No. 236,195
Claims priority, application France, Feb. 27, 1980, 80 04313; Apr. 30, 1980, 80 09781
Int. Cl.³ B23P 15/00
U.S. Cl. 29—157 R 5 Claims



1. A method for manufacturing an oleopneumatic accumulator of the type having a first shell having an open end forming a first chamber adapted to receive pressurized gas, and a second shell having an open end forming a second chamber adapted to receive a pressurized hydraulic fluid comprising the steps of:

disposing a flexible membrane between said open ends of said first and second chambers to form a fluid tight seal therewith;

engaging opposite ends of an annular elastic metal clamping band to tension said band in a direction along the longitudinal axis perpendicular to a diameter of said band, said tension being in a predetermined amount corresponding to a hydraulic pressure applied to said second chamber at which said first and second shells separate;

affixing said elastic clamping band to said first and second shells to overlie the edges of said open ends; and

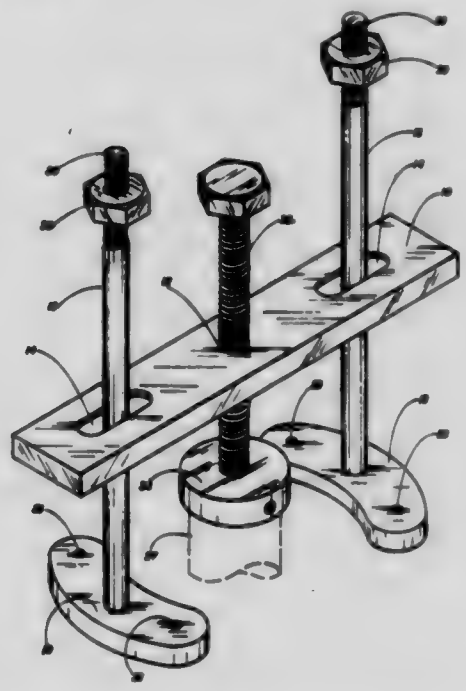
disengaging said opposite ends of said affixed clamping band, said affixed clamping band retaining at least a portion of said tension to clamp the shells together, said band stretching substantially only in the direction of its tension along said longitudinal axis when hydraulic fluid pressure in excess of said predetermined amount of tension is applied to said second chamber to permit said shells to separate.

4,492,014

JET ENGINE COMPRESSOR STAGE PULLER

Billy R. Alexander, Little Rock, Miss., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 8, 1983, Ser. No. 483,458
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—239 1 Claim



1. A compressor stage puller comprising:

a guide bar having a central threaded hole and a slot extending though said guide bar and situated symmetrically one on each side of said central threaded hole extending radially from said central threaded hole;

a bolt threaded through said central threaded hole having a cup attached to the end, said cup being configured to securely fit on the end of a compressor shaft;

a guide rod extending through said slot and capable of being moved along said slot, said guide rod having a nut threaded on one end and a base shoe attached to the other end, said base shoe being configurated to fit under the interior diameter of a compressor stage; and

means for attaching an alternate shoe to said guide rod, said alternate shoe being arcuately shaped, having a central hole through which said guide rod passes, and having means for attachment to said base shoe so that said alternate shoe is used when necessary to compensate for different interior diameters of successive ones of said compressor stages;

whereby downward movement by said bolt causes said cup to exert downward force on said compressor shaft which in turn results in upward force by said base shoe on said compressor stage to free said compressor stage.

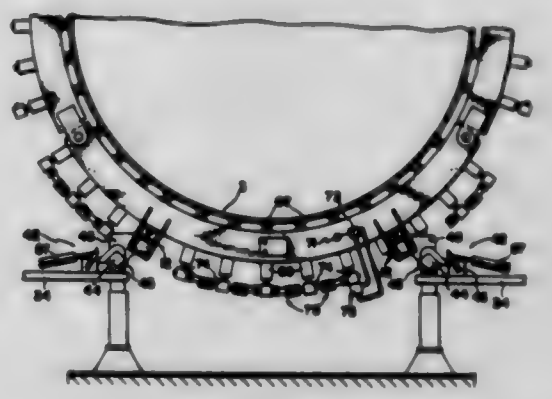
4,492,015

APPARATUS FOR USE IN WELDING

Timothy C. Dearman, P.O. Box 937, Pearland, Tex. 77581

Filed Jun. 24, 1982, Ser. No. 391,980
Int. Cl.³ B23K *37/04*
U.S. Cl. 29—281.5 32 Claims

1. Apparatus for use in welding a first annular member having a free end to a second annular, substantially coaxial member having a free end adjacent and confronting the free end of the first member, said apparatus comprising a first annular clamp for applying a clamping force on one of said members adjacent its free end; a second annular clamp substantially coaxial with said first clamp for applying a clamping force on the other of said members adjacent its free end; support means carried by said first clamp and supporting said second clamp in axially spaced, substantially parallel relation relative to said first clamp; a base; and means mounting said first clamp on said



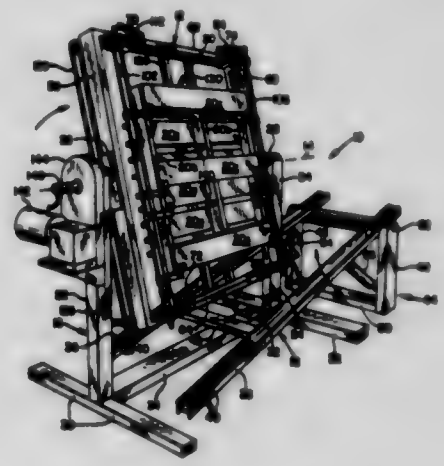
base for conjoint swinging movement of said first and second clamps relative to said base.

4,492,016

PALLET ASSEMBLY APPARATUS AND METHOD

John E. Smets; John S. Smets; Robert D. Smets, all of Lake Oswego, and Barry K. Messinger, Portland, all of Oreg., assignors to Smetco, Inc., Portland, Oreg.

Filed Sep. 16, 1982, Ser. No. 418,611
Int. Cl.³ B23P *11/00*
U.S. Cl. 29—432 18 Claims



1. An apparatus for assembling pallets comprising:

an assembly table pivotable on an axis;

means mounted to said table for supporting a plurality of first deck boards in a first common plane which is initially inclined upwardly;

means mounted to said table for supporting a plurality of stringers placed loosely and abuttingly retained over the first deck boards;

means mounted to said table for supporting a plurality of second deck boards placed in a second common plane over the loosely held stringers and first deck boards; whereby said second deck boards are fastened to said stringers, said table is pivoted on said axis to invert said table, and said first deck boards are fastened to said stringers.

4,492,017

METHOD OF ASSEMBLING A RIGID WIRE FOR DRIVEN ROTATIONAL MOVEMENT

Bruce B. Letter, Anchorage, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jun. 16, 1982, Ser. No. 388,808
Int. Cl.³ B23P *11/00*
U.S. Cl. 29—434 5 Claims

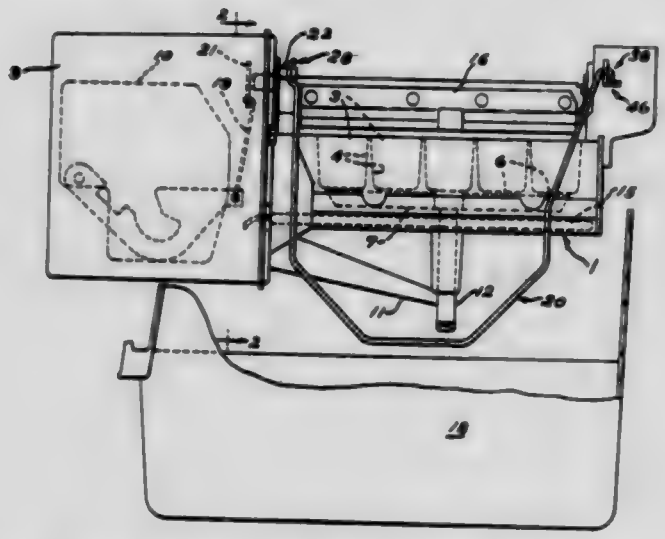
1. A method of assembling a rigid wire element of generally

circular cross section for driven rotational movement comprising:

attaching a rotational element to a drive means, said element having a transverse bore therethrough slightly larger in diameter than the wire diameter;

locating a pivot element spaced from the rotational element, said pivot element having an open slotted aperture with a bottom portion slightly larger in diameter than the wire diameter;

forming a rigid wire element having at one end thereof a relatively straight portion having at one end an integrally formed stop element and at the opposite end a terminal end portion formed at an acute angle relative to the straight portion and the opposite end of the rigid wire element formed as a U-shaped portion having two legs interconnected by a center section with a reduced diameter having two flat opposed sides joined by two arc-shaped opposed sides with the two flat opposite sides having a slightly less dimension than the slot opening of



the slotted aperture, allowing passage of the reduced diameter of the center section through the slot opening and the arc-shaped opposed sides having a dimension slightly greater than the slot opening of the slotted aperture so that upon rotating the reduced diameter section out of alignment with the slot opening the arc-shaped sides prevent the center portion from withdrawal from the slotted aperture through the slot opening;

assembling said three elements by;

inserting the terminal end portion of said one end of the rigid wire element through the rotational element tranverse bore;

then rotating the rigid wire element to orient the substantially straight portion parallel to the bore in the rotational element said integrally formed stop element and terminal end portion cooperating to prevent withdrawal of the straight portion from the bore; and

then inserting the center section of the U-shaped portion of the rigid wire element into the slotted aperture of the pivot element.

4,492,018

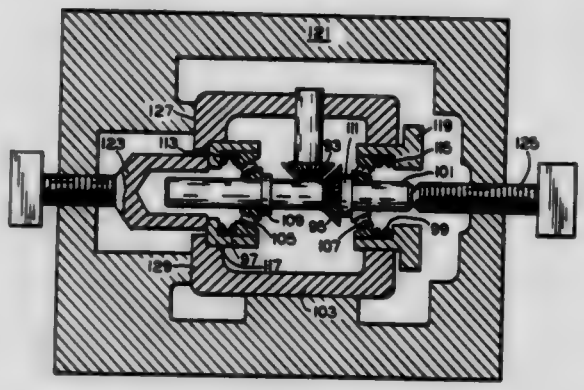
METHOD OF AXIALLY POSITIONING A ROTATING ANNULAR MEMBER SUPPORTING SHAFT WITHIN A SUPPORT

John E. Rode, Albany, N.Y., assignor to Temper-Ring Equipment Corporation, Fonda, N.Y.

Filed Aug. 13, 1982, Ser. No. 407,992
Int. Cl.³ B67B 7/30
U.S. Cl. 29—437 14 Claims

1. The method of accurately and quickly axially positioning a rotating annular member supporting shaft within a support for rotation therein with predetermined axial bearing clearance independent of member and support dimensional variations and with the annular member axial location relative to the support being a critical dimension comprising the steps of:

correctly axially positioning the member relative to the support by engaging the support and moving the shaft axially to properly position the annular member in the support in accordance with the critical dimension and by doing so, compressing a first deformable spacer to its desired final axial dimension;



imparting an additional predetermined axial compression to the first spacer to relieve the stress therein;

compressing a second deformable spacer to its desired final axial dimension;

imparting an additional predetermined axial compression to the second spacer to relieve the stress therein; and

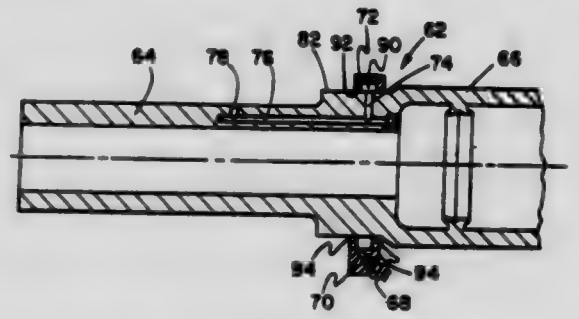
precluding further deformation of the first spacer while deforming the second spacer.

4,492,019

METHOD OF FORMING AN AXLE

Calvin G. Wells, and Steven B. Szabo, both of Warren, Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jun. 30, 1983, Ser. No. 509,580
Int. Cl.³ B23P 11/02
U.S. Cl. 29—447 6 Claims



1. A method of forming an axle of the type which includes a central portion with a pair of hollow spindles welded at opposite ends thereof, each of said spindles being capable of receiving a rotatable hub thereon for support of a wheel and tire, said hub including an intermediate cavity which is sealed to define with a wall of said spindle a reservoir for inflation air for said tire, said spindle being capable of being coupled at a region axially inwardly of said hub at a predetermined circumferential location thereon to a central tire inflation system to provide said inflation air for said reservoir, said method comprising the steps of:

providing a central portion of said axle;

providing a pair of spindles with each said spindle having a cylindrical outer surface at said region;

forming an axially extending passage in said wall of said spindle beginning at an interior surface thereof and terminating in alignment with said intermediate cavity of said hub;

forming a first radially extending passage from said cylindri-

cal outer surface to terminate at said axially extending passage;

forming a second radially extending passage in said wall of said spindle to connect said axially extending passage with said reservoir;

sealing said axially extending passage at said interior surface;

welding each of said spindles respectively to said opposite ends of said central portion;

forming a pair of collar elements, each said collar element having a cylindrical inner surface matching said cylindrical outer surface of said spindle, a coupling passage and a fitting for mating with said central tire inflation system;

forming a circumferential groove in at least one of said cylindrical outer surface of said spindle intersecting said first radially extending passage and said cylindrical inner surface of said collar element intersecting said coupling passage; and

installing each of said collar elements respectively on said cylindrical outer surface of each of said spindles with said first radially extending passage and said coupling passage being connected by said circumferential groove and said fitting being positioned at said predetermined circumferential location for mating with said central tire inflation system.

4,492,020

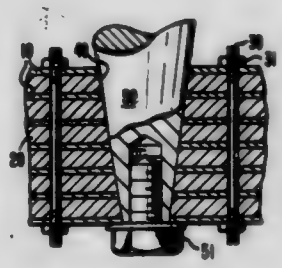
METHOD FOR FABRICATING CORRUGATED MICROWAVE COMPONENTS

Jack M. Cobb, San Juan Capistrano, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Sep. 2, 1982, Ser. No. 414,222

Int. Cl.³ H01P *11/00*; H01Q *13/02*

U.S. Cl. 29—600 11 Claims



1. A method for fabricating corrugated microwave components, said method comprising the steps of:

sandwiching a plurality of layers of chemically removable spacer material alternately with electrically conductive plates which are movable in relation to each other to form a billet, the billet having an outside surface;

clamping the layers of the billet to prevent relative movement thereof with a first clamping means disposed adjacent and inwardly of the outside surface;

forming a tapered hole through the billet;

inserting in said hole a mandrel having substantially the same taper as the hole and a maximum diameter greater than that of the hole;

adjusting a second clamping means operatively secured to the small end of the tapered mandrel for urging the layers towards the large end of the mandrel so as to clamp the plates and the spacer material in fixed positions relative to each other;

then reshaping the outside surface of said billet and removing the first clamping means;

plating said reshaped outside surface with an electrically conductive material to form a connecting means between the electrically conductive plates;

removing said mandrel and second clamping means; and

chemically removing said spacer material.

4,492,021

METHOD OF MAKING CATHODE CURRENT COLLECTORS FOR SODIUM SULPHUR CELLS

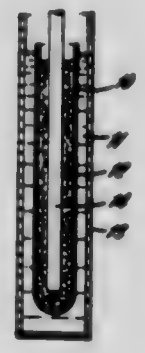
Michael L. Wright, Allestree, and Alec R. Tilley, Blackbrook, near Belper, both of England, assignors to Chloride Silent Power Limited, London, England

Continuation of Ser. No. 217,334, Dec. 17, 1980, abandoned. This application Aug. 16, 1982, Ser. No. 408,573

Claims priority, application United Kingdom, Dec. 24, 1979, 7944348

Int. Cl.³ H01M *6/00*

U.S. Cl. 29—623.1 24 Claims



1. In a method of making a cathode current collector for a sodium sulphur cell comprising forming a collector of a conductive metal and coating the metal with a corrosion resistant material, wherein the improvement consists of covering at least that part of the surface of the collector exposed to a corrosive material, with a material consisting of graphite foil and subjecting the assembly to isostatic pressing to force the graphite foil to adhere to said surface.

4,492,022

APPARATUS FOR THE PAIRED CONNECTION OF SHEET PILES WITH CLAWS

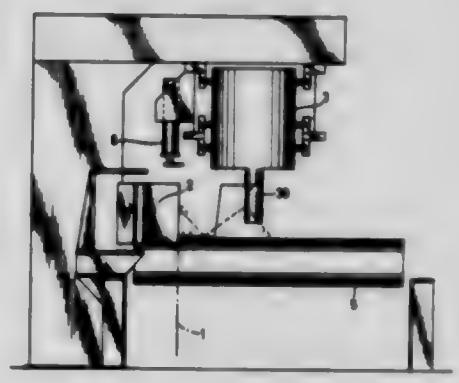
René Graas, Esch, and Michel Fachelstein, Niedercorn, both of Luxembourg, assignors to Arbed S.A., Luxembourg

Filed Aug. 9, 1982, Ser. No. 406,280

Claims priority, application Luxembourg, Aug. 12, 1981, 83549

Int. Cl.³ B23P *23/00*; E02D *13/04*

U.S. Cl. 29—787 11 Claims



1. Apparatus for the paired connection of sheet piles with claws, the apparatus comprising:

first bed means in a first section and second bed means in a second section;

said bed means having a common longitudinal axis;

first alignment means associated with said first bed means for defining a first alignment edge in said first section;

second alignment means associated with said second bed means for defining a second alignment edge in said second section;

first positioning means for positioning a first pile in said first section against said first alignment edge, the pile having a first claw on said common axis;

second positioning means for positioning a second pile having an edge claw in said second section against said second alignment edge, the pile having a second claw on said common axis; and

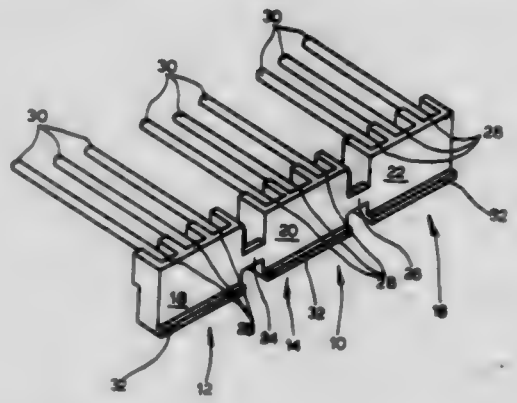
means for moving the pile in one section relative to the pile in the other section to interengage the claws of each pile on the common axis to form a joined pair of piles.

4,492,823

ELECTRICAL HARNESS FABRICATION METHOD AND APPARATUS

Thomas E. Schneider, Burbank, and Jack F. Funcik, Downers Grove, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Sep. 24, 1982, Ser. No. 422,867
Int. Cl.³ H01R 43/04; B23P 19/00
U.S. Cl. 29—861
13 Claims



4. A method of producing a plurality of electrical harnesses, each harness including a connector defined by a housing with at least one insulation displacement type contact loaded therein, said method comprising the steps of:

(a) feeding a set of interconnected connectors spaced predetermined distances from each other by connecting tabs to a first station,

(b) positioning a plurality of wires in alignment with at least one contact of each connector at a second station remote from said first station,

(c) moving said set of interconnected connectors to said second station with at least one contact of each connector in alignment with a wire disposed at said second station,

(d) simultaneously inserting an aligned wire into at least one aligned contact of each connector, and

(e) removing said connecting tabs to form a plurality of separate harnesses.

9. An apparatus for producing a plurality of electrical harnesses wherein each said electrical harness includes a connector defined by a housing with at least one insulation displacement type contact loaded therein, said apparatus comprising:

a connector feed station defined on said apparatus,

means operatively associated with the connector feed station for feeding a set of connectors to said connector feed station wherein said set of connectors includes a plurality of housings spaced predetermined distances from each other and joined together by connecting tabs,

a second station defined on said apparatus spaced from and operatively associated with said connector feed station,

means operatively associated with said connector feed station and said second station for moving said set of connectors from said connector feed station to said second station,

means operatively associated with said second station for simultaneously inserting a wire into at least one of said insulation displacement type contacts of each connector, and

tab removing means operatively associated with said tabs after wire insertion for removing said connecting tabs to separate said set of connectors into a plurality of independent harnesses.

4,492,824

RAZOR BLADE ASSEMBLY

Chester F. Jacobson, Southboro, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Sep. 17, 1982, Ser. No. 419,202
Int. Cl.³ B26B 21/22
U.S. Cl. 30—87
4 Claims



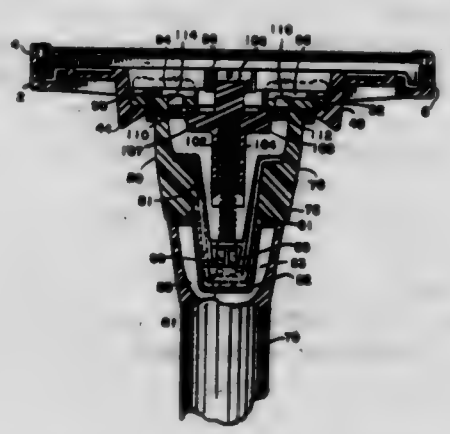
1. A razor blade assembly comprising a leading blade member having a first cutting edge and a following blade member having a second cutting edge, said cutting edges being parallel with each other and facing a same direction to act in tandem upon a surface being shaved, said leading and following blade members being disposed between guard and cap portions adapted in operation to engage said surface being shaved ahead of and behind, respectively, said first and second cutting edges, said leading and following blade members and said guard portion being movable independently of the remainder of said blade assembly and independently of each other in response to forces encountered during a shaving operation, the blade assembly having pivot mounting means thereon for pivotal attachment to a razor handle assembly, the blade assembly, as a whole, being pivotally movable on said handle assembly in response to forces encountered during the shaving operation, and a cam means on said assembly adapted to receive a biasing means disposed in said handle assembly and adapted to exert a yieldable biasing force on said pivotally movable blade assembly, whereby to maintain maximum contact between said surface being shaved and said leading and following independently movable blades and said independently movable guard portion.

4,492,825

RAZOR HANDLE ASSEMBLY

Chester F. Jacobson, Southboro, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 419,203, Sep. 17, 1982,. This application Sep. 29, 1983, Ser. No. 537,873
Int. Cl.³ B26B 21/52
U.S. Cl. 30—87
2 Claims



1. A razor handle assembly comprising a grip portion, a head portion at one end of said grip portion, the head portion having first and second arms movable toward and away from each other, a first shell bearing mounted on said first arm and a second shell bearing mounted on said second arm, said shell

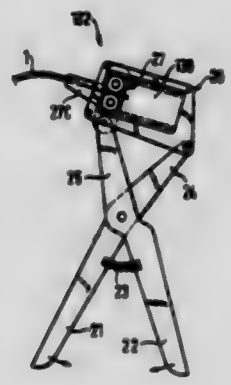
bearings being adapted to receive a razor blade assembly and to permit pivotal movement of said razor blade assembly on said handle assembly, a spring-biased plunger disposed in said head portion and extending between said first and second shell bearings, said plunger being reciprocally movable in said head portion, a free end of said plunger being adapted to engage an underside cam portion of said blade assembly to exercise a bias on said blade assembly and thereby urge said blade assembly to a given position on said shell bearings, first and second extensions protruding outwardly from said plunger, a detent upstanding from each of said extensions, each of said shell bearings having an opening therein adapted to receive, respectively, said detents, said spring being adapted to urge said detents into said openings when said arms are moved toward each other, to lock said arms in close proximity to each other, engagement of said plunger with said blade assembly being operative to remove said detents from said openings to permit said arms to move away from each other and said shell bearings to engage said blade assembly.

4,492,026

CONDUCTOR SEPARATOR

Hans Wisner, Ingarsö, and Hans Undin, Åkersberga, both of Sweden, assignors to C. A. Weidmüller GmbH & Co., Detmold, Fed. Rep. of Germany

Filed Sep. 22, 1982, Ser. No. 421,404
Claims priority, application Sweden, Mar. 15, 1982, 8201600
Int. Cl.³ B21F *13/00*
U.S. Cl. 30—90.9 18 Claims



1. Apparatus for separating conductors in a multiple-conductor flat ribbon cable having an insulating sheathing with longitudinal score lines between each pair of adjacent conductors embedded in the sheathing, said apparatus comprising, in combination:

(a) means for longitudinally feeding said cable through the apparatus and for cutting said sheathing thereof along each said score line, said means being rotatable about an axis of rotation which is perpendicular to the length direction of said cable when inserted into the apparatus, said means being provided with a plurality of protruding cutting edge means spaced one from another by the same distance as said score lines on the sheathing are spaced one from another, each cutting edge means having an arcuate operational edge section with the circumferential shape of a circular arc having its radius of curvature centered on said axis of rotation and extending over less than a full circle between two end points, the remaining part of the periphery of the cutting edge means between the said two end points being defined by an indrawn, non-cutting edge section which at each point thereon is spaced from said axis of rotation less than the length of said radius;

(b) cable support means adjacent said sheathing cutting means having a smooth surface devoid of cutting edge means and adapted to press a flat ribbon cable inserted into the apparatus against said arcuate operational edge sections of the cutting edge means in order to effect feeding of said cable and cutting of said sheathing and to relieve said cable from said non-cutting edge sections and providing in cooperation with said indrawn non-cutting sections a feed-in and feed-out gap having a width greater than a maximum thickness of said cable; and

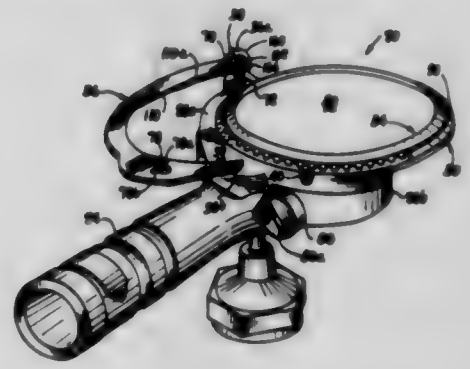
(c) drive means for rotating said sheathing cutting means at least one full turn.

4,492,027

ROTARY HAND KNIFE

Louis A. Bettcher, Amherst, Ohio, assignor to Bettcher Industries, Inc., Birmingham, Ohio

Continuation-in-part of Ser. No. 318,386, Nov. 5, 1981, Pat. No. 4,439,924. This application Apr. 18, 1983, Ser. No. 485,738
Int. Cl.³ A22C *17/04*
U.S. Cl. 30—276 15 Claims



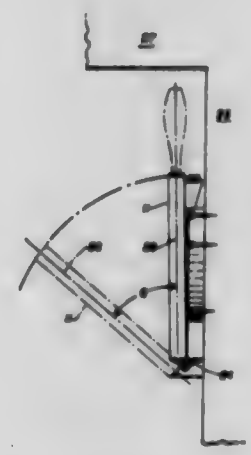
1. A handpiece for a hand knife for cutting meat or the like, comprising a handle portion adapted to be grasped by an operator, a portion for supporting a ring-like blade housing and blade, and a recess in the handpiece for a pinion gear that drives the blade in rotation, the recess opening through a surface of the handpiece that provides a seat for the blade housing, said recess having an outward flare at one side only of said opening.

4,492,028

WALL MOUNTED KNIFE HOLDER

John Bourgeis, 2660 Union St., Oakland, Calif. 94607

Filed Nov. 15, 1982, Ser. No. 441,671
Int. Cl.³ A47F *5/08*
U.S. Cl. 30—296 A 1 Claim



1. A wall mounted cutlery holder which can be used on a wall directly below a cabinet comprising in combination:

a housing defining a narrow slot for receiving a plurality of cutlery knives, wherein said slot is wide enough to receive the blade of a knife and narrow enough to block the passage of a knife handle whereby a knife inserted into said housing slot will have the blade protected within the housing and its handle protruding from said housing;

a securing member for attachment to a wall, said securing member connected to said housing by hinge means whereby when said securing member is attached to a wall

said housing can pivot between a first position in which the longitudinal axis of the slot in said housing is generally vertical whereby cutlery in the slot will be parallel to the wall and a second position in which the longitudinal axis of the slot wil be at an angle of between 30 degrees and 90 degrees from vertical and the wall; and

housing position means selectively holding said housing in either its first position or its second position, whereby in its first position cutlery is conveniently stored in said housing parallel to a wall to which said securing member may be attached even if said wall is immediately below a cabinet, and further whereby in its second position cutlery is easily removable from and insertable into said housing due to the angle of the slot axis relative to the wall and any overhanging cabinetry.

4,492,029

INCLINOMETER

Osamu Tanaka, Kawasaki; Nobuo Watanabe, Tokyo, and Hiroshi Iiyama, Yokosuka, all of Japan, assignors to Jeco Company Limited, Kawasaki, Japan

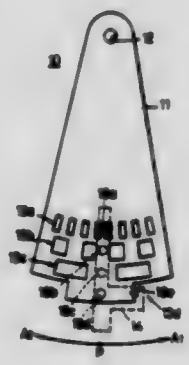
Filed May 2, 1983, Ser. No. 490,666

Claims priority, application Japan, May 6, 1982, 57-65978[U]; Jun. 9, 1982, 57-85631[U]

Int. Cl.³ G01C *9/06*

U.S. Cl. 33—366

10 Claims



1. An inclinometer comprising:

a weight pivotally supported on a main body which may become inclined, said weight being of a sectoral shape and being relatively rotatable with respect to said main body and constantly hanging vertically due to gravity regardless of an inclination of said main body;

a code part provided on said weight, said code part consisting of a plurality of sequences of code elements which correspond to a plurality of bits based on a Gray code according to a relative rotary angle of said weight with respect to said main body; and

a detecting part which becomes inclined together with said main body and becomes displaced with respect to said weight along each of said sequences of said code elements, for producing a detection output based on the Gray code according to the inclination angle of said main body.

4,492,030

CHAIN SAW BARS

Cornelis J. M. Beerens, 40-42 Berkshire Rd., North Sunshine, Victoria, Australia

Filed Aug. 18, 1982, Ser. No. 409,308

Claims priority, application Australia, Aug. 24, 1981, PF0391; Aug. 29, 1981, PF0949; Dec. 30, 1981, PF2105

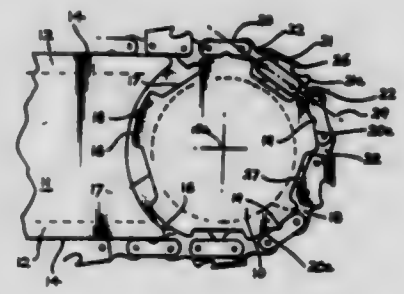
Int. Cl.³ B27B *17/00*

U.S. Cl. 30—384

15 Claims

15. In a chain saw comprising a chain saw bar having opposite longitudinal edges each comprising a central longitudinal guide groove and a longitudinal support surface on each side of the guide groove, and a chain adapted to travel about the periphery of the bar, said chain having a plurality of alternate equi-spaced cutter links having a cutting edge, connector links, and a drive link pivotally connecting each cutter link to the adjacent connector links, said cutter and connector links each having inner edge faces that slidably engage the support surfaces of the bar and each drive link having an inwardly extending tongue that is received in the guide groove, the improvement comprising:

a support member mounted on one end of the bar for rotation in the plane of the bar,



a peripheral edge on said support member to support the chain as it passes from one edge of the bar to the opposite edge, said peripheral edge of the support member being constructed to guide the pivot points of the cutting links on a circumferential path of a first smaller radius and the pivot points of the connecting links on a circumferential path of a second radius, said first radius being smaller than the second radius whereby kickback of the chain saw is minimized.

4,492,031

VERNIER DEVICE OF THE DIGITAL DISPLAY TYPE FOR A UNIVERSAL PARALLEL RULER

Masao Kocuma, Tokyo, Japan, assignor to Asahi Seimitsu Kabushiki Kaisha, Tokyo, Japan

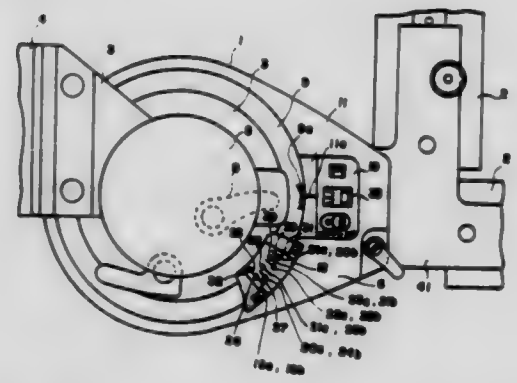
Filed Apr. 21, 1982, Ser. No. 370,152

Claims priority, application Japan, Apr. 21, 1981, 56-59973

Int. Cl.³ B43L *13/08*

U.S. Cl. 33—1 PT

8 Claims



1. Angular position indicating means for a universal parallel ruler, said ruler comprising support means having a stationary portion and a rotatable portion rotatable with respect to said stationary portion, said indicating means comprising;

a first protractor comprising a plurality of visually perceptible graduations on one of said stationary and rotatable portions and a cooperating index on the other of said stationary and rotatable portions, wherein said visually perceptible graduations are spaced at first angular intervals for indicating a first angular measurement;

a second protractor mounted on one of said stationary and rotatable portions and comprising a plurality of first apertures spaced at said first angular intervals, said second protractor also comprising a cutaway sector coextensive with said first apertures for an angle of 180° for detecting the direction in which said rotatable portion is rotated with respect to said stationary portion;

a vernier protractor mounted on the other of said stationary and rotatable portions in juxtaposition to said second protractor, said vernier protractor comprising a plurality

of second apertures spaced at second angular intervals, and also comprising discrimination means cooperating with said cutaway sector for detecting said direction in which said rotatable portion is rotated with respect to said stationary portion;

detecting means for detecting coincidence of one of said first apertures with one of said second aperatures; and

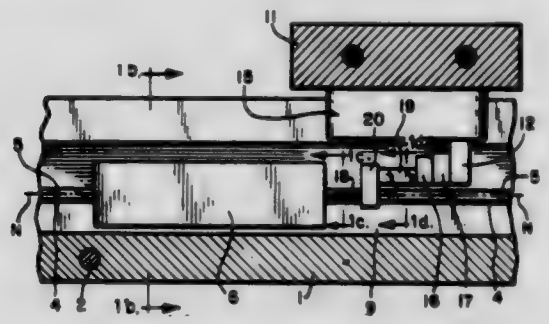
digital display means responsive to said detecting means for displaying a second angular measurement smaller than said first angular measurement.

4,492,032

COUPLING ARRANGEMENT FOR LENGTH MEASURING DEVICE

Günther Nolle, Bergen, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Jan. 20, 1983, Ser. No. 459,375
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1982, 3201887
Int. Cl.³ G01B 11/02
U.S. Cl. 33—125 R 18 Claims



1. In a length measuring device for measuring the relative position of first and second objects, of the type comprising a measuring scale which defines a measuring direction, means for connecting the scale to the first object, a scanning unit, and means for guiding the scanning unit along the scale independently of movement of the second object transverse to the scale, the improvement comprising:

a coupling apparatus arranged to interconnect the scanning unit and the second object and to transmit movement of the second object in the measuring direction to the scanning unit; and

a linear guide, included in the coupling apparatus and having two degrees of translatory freedom in first and second directions perpendicular to the measuring direction, said linear guide connected between the scanning unit and the second object such that the scanning unit is movable with respect to the second object in a plane perpendicular to the measuring direction.

4,492,033

LINEAR SCALE TYPE DISPLACEMENT MEASURING INSTRUMENT

Souji Ichikawa, Kanagawa, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1983, Ser. No. 481,788
Claims priority, application Japan, Apr. 7, 1982, 57-57604
Int. Cl.³ G01B 11/04
U.S. Cl. 33—125 C 6 Claims

1. A linear scale type displacement measuring instrument comprising:

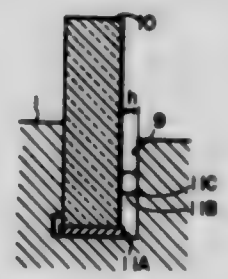
a hollow elongate case including a reference surface and connected to one of two workpieces, between which a relative displacemnt is to be measured;

a main scale guided by said reference surface and made of a material having a coefficient of thermal expansion different from that of said elongate case;

elastic members arranged in a longitudinal groove of said elongate case for urging said main scale to said reference surface so as to hold said main scale in said longitudinal groove; and

an index scale connected to the other of said two workpieces to be measured and movable along said main scale;

wherein said relative displacement between said two workpieces to be measured is measured from a relative movement between said main scale and said index scale, characterized in that there are provided in the longitudinal direction of said main scale, elastic member non-joining portions each having a predetermined pitch and a length according to the material qualities of said main scale, said elongate case and said elastic members, and the length of said main scale, whereby a thermal stress acting on said main scale through the elastic members at the time of a temperature change is reduced.

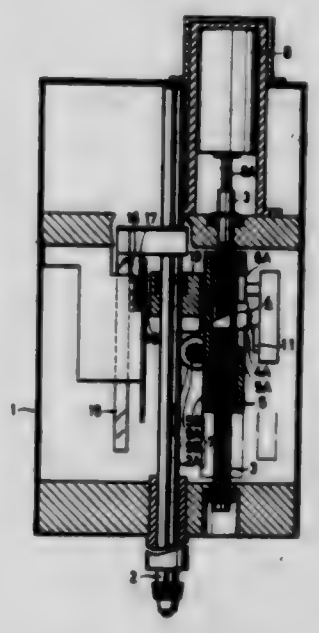


4,492,034

DISPLACEMENT MEASURING DEVICE

Shingo Nishina; Seigo Takahashi, and Shigeru Ohtani, all of Kanagawa, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

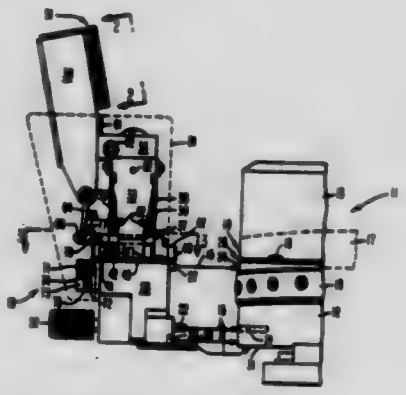
Filed Dec. 17, 1982, Ser. No. 450,767
Claims priority, application Japan, Dec. 18, 1981, 56-205911
Int. Cl.³ G01B 7/02
U.S. Cl. 33—170 16 Claims



1. A displacement measuring device wherein a measuring element slidably supported on a main frame is provided and the length or the like of a work to be measured is measured from a displacement value of said measuring element when the forward end of said measuring element is abutted against said work to be measured, characterized in that there are provided: a feed screw shaft; an internally threaded member threadably coupled onto said feed screw shaft; a cylinder housing surrounding said internally threaded member, loosely coupled onto said feed screw shaft and permitting a projecting portion of said internally threaded member to project outwardly therefrom and move relative thereto within a predetermined range; and constant load springs interposed between opposite ends of

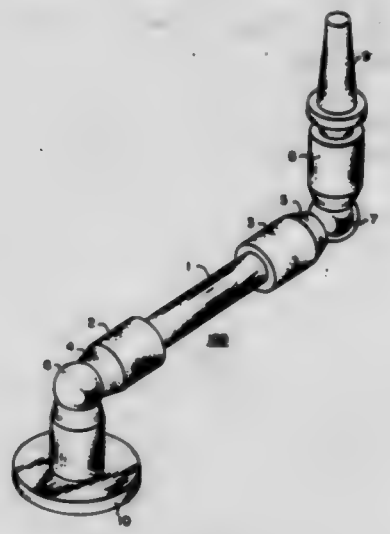
said internally threaded member and opposing inner ends of said cylinder in the axial direction of said feed screw shaft and within said cylinder, for constantly biasing said internally threaded member to a neutral position; and further, said portion projecting from the cylinder, of the internally threaded member is interlocked with said measuring element through said constant load springs and said cylinder.

4,492,635
HEAD PROTRUSION MEASURING STRUCTURE
Peter D. Dominelli, Morgan Hill, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Feb. 18, 1983, Ser. No. 467,629
Int. Cl.³ G01B 3/22
U.S. Cl. 33—172 B 11 Claims



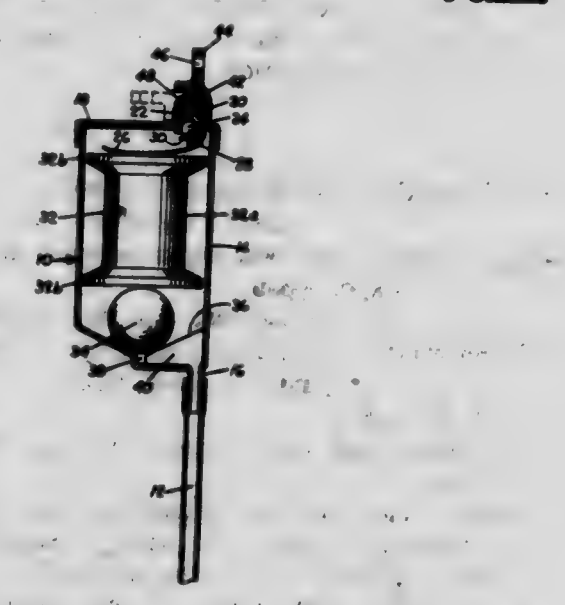
1. For use with a rotating cylindrical guide drum assembly on which is mounted a brittle magnetic transducing head having a safe pressure loading range for engaging a magnetic tape supported by the drum assembly in a helical path, a gauge structure for measuring the radial protrusion of the head from the drum assembly, comprising:
a base for positioning said gauge structure in predetermined radial relation to said drum assembly;
a bearing member extending from said base for generally radial motion in first and second directions respectively away from and toward the axis of said drum assembly;
a gauge means mounted on said base and adapted for urging said bearing member for motion in one of said directions and for providing an indication representing the position of said bearing member with respect to said base; and
means for urging said member for motion in the other direction opposite to said one direction;
said urging means and said gauge means being arranged to produce a maximum net pressurizing effect within said safe loading range for urging said member in said second direction toward said axis;
said generally radially movable bearing member being adapted for radial movement between a first position of tangential engagement with said head in a first position of said head radially aligned with said member, and a second position of said member tangentially engaging said drum assembly, when said head is in a second position circumferentially remote from said member;
said gauge means being adapted for pressurizing said bearing member for motion in one of said directions from one of said positions thereof toward the other position thereof and for providing an indication representing the distance moved by said bearing member from said one to the other position thereof;
said urging means including a pin member mounted for axial rotation on said base, a coil spring mounted co-axially on said pin and having extending ends, a first of said ends being secured to said pin and the second of said ends extending to engage and to urge said bearing member in said second direction toward said drum axis, said pin being axially rotatable to variably adjust the urging force of said coil spring, and setscrew means threaded into said base and peripherally engaging said pin to clamp said pin in a chosen position; and
said urging means and said gauge means being arranged to produce a minimal net pressurizing effect urging said member in the second direction toward said axis.

4,492,036
MAGNETIC BALL BAR GAUGE
Walter L. Beckwith, Jr., Warwick, R.I., assignor to Brown & Sharp Manufacturing Company, North Kingstown, R.I.
Filed Jan. 11, 1984, Ser. No. 569,997
Int. Cl.³ G01B 5/25
U.S. Cl. 33—180 R 12 Claims



1. A ball bar gauge comprising,
a rigid bar,
a pair of tooling balls,
a magnetic chuck attached to each end of said bar, each of said chucks engaging one of said tooling balls, each of said chucks comprising:
a permanent magnet having a plurality of pole faces;
means for attaching said magnet to said bar; and
means for rigidly holding said tooling ball proximate to said magnet so that said ball will be attracted and removably held by said magnet.

4,492,037
LIQUID LEVELING DEVICE
Norman H. Fila, Box 132, R.D. #7, Gibsonia, Pa. 15044
Filed Dec. 7, 1983, Ser. No. 558,903
Int. Cl.³ G01C 5/04
U.S. Cl. 33—367 5 Claims



1. A liquid control assembly for use in combination with a liquid leveling device including a transparent flexible hose, comprising:

a hollow closed body elongated along a central axis which is normally vertically oriented during use and having a lower end with an opening in sealed liquid-flow communication with an end of the hose whereby the closed body projects above the hose end during use of the leveling device;

the upper end of the closed body having an air passage therethrough permitting communication between the interior of the closed body and the atmosphere during use of the leveling device;

valve structure operatively associated with the air passage to open and close the air passage, comprising a ball member adapted to sealably register with the air passage, a pivotally mounted lever projected into the closed body and adapted to urge the ball member into registration with the air passage, and a float member disposed centrally within the closed body to pivot the lever and thereby cause the ball member to close the air passage when sufficient liquid flows from the hose into the closed body;

the closed body having an inner sloped surface converging towards the opening connected with the end of the hose, a spherical member normally resting on the converging surface over the opening to the hose, and the float member being disposed between the spherical member and the lever in order to translate rolling motion of the spherical member away from its normal position and thereby actuate the lever and cause the ball member to close the air passage; and

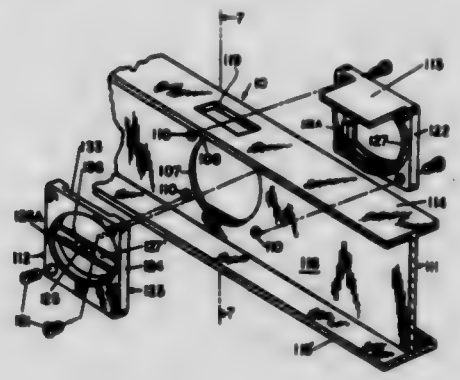
the sloped surface of the closed body constituting an angle of between 22° and 27° taken from a line transverse to the axis of the closed body.

4,492,038

TOP-VIEW-READING LEVEL

Daniel J. Mayes, Johnson City, Tenn., assignor to Great Neck Saw Manufacturing, Inc., Mineola, N.Y.

Filed Apr. 7, 1983, Ser. No. 482,873
Int. Cl.³ G01C 9/28
U.S. Cl. 33—379 4 Claims



1. A level vial assembly for use on a level frame having a web with a vial opening in the web and a cut away portion forming a recess extending to one edge of said web,

said vial assembly comprising:

a vial support and a window support,

said vial support having a relatively flat web engaging surface,

a recess in said vial support extending through said relatively flat web engaging surface a substantial distance and adapted to receive a window member and a locating ring on said surface extending therefrom and adapted to be received in said vial opening in said web,

said window support having a relatively flat web engaging surface and a locating ring attached to said flat surface extending therefrom and adapted to extend into said vial opening from the side thereof opposite said vial support,

a window member integrally attached to said window support and adapted to extend through said cut away adjacent said vial opening into said recess in said vial support,

means for securing said parts together as an assembly and to said level frame,

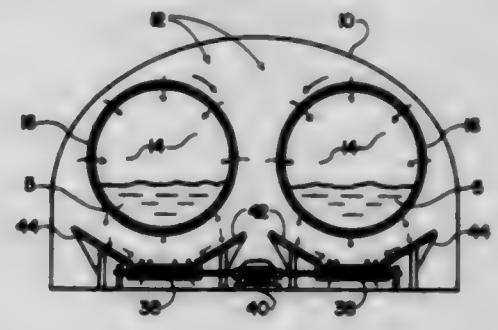
whereby a person viewing said vial assembly through said window member can observe said vial to determine the position of a bubble in said vial.

4,492,039

METHOD AND APPARATUS FOR DRYING AND HANDLING SLUDGE

Allen C. Chao, 1301 DeBoy St., Raleigh, N.C. 27606; Barney K. Huang, 3332 Miner Ridge Dr., Raleigh, N.C. 27603, and James S. J. Wang, 1309 Seabrook Ave., Cary, N.C. 27511

Filed May 10, 1983, Ser. No. 493,213
Int. Cl.³ F26B 3/28, 11/02
U.S. Cl. 34—4 12 Claims



1. An apparatus for drying and handling sludge comprising:

A. a rotary drying chamber having a pair of ends and a side wall and adapted to receive sludge;

B. said side wall including a plurality of generally uniformly spaced perforations formed from one end of said drying chamber to the other end with said perforations being formed over substantially the entire area of said side wall;

C. means for drying the sludge within said rotary drying chamber, said drying means including means for generating a system of drying air and directing the system of drying air from outwardly of said rotary drying chamber through said perforations in the side wall of said rotary drying chamber, and into said rotary drying chamber for drying the sludge therein;

D. means for forming the sludge material within said rotary drying chamber into relatively short spaghetti-like sludge portions and expelling the sludge in the form of said spaghetti-like sludge portion from said rotary drying chamber, said means for forming the sludge into said relatively small sludge-like portions and expelling the same from said rotary drying chamber including means for rotating said rotary drying chamber and moving the sludge therein from one portion of the drying chamber to another as said rotary drying chamber is rotated and causing the sludge within the drying chamber to be impacted against the side wall of the drying chamber so as to force the sludge outwardly from said drying chamber through said perforations formed in the side wall of said drying chamber which in turn forms the spaghetti-like sludge portions which project outwardly from the side wall of said drying chamber as the same is rotated; and

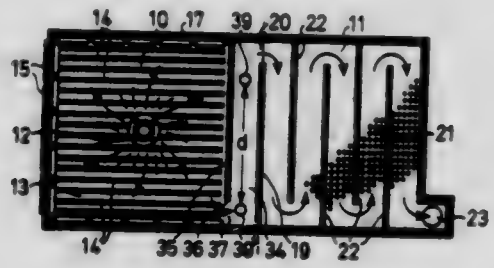
E. means for directing the system of generated drying air into actual drying contact with said spaghetti-like sludge portions projecting outwardly from said side wall of said drying chamber while said spaghetti-like sludge portions actually project from said drying chamber so as to actually dry the formed spaghetti-like sludge portion while they project from said drying chamber as the same is rotated.

4,492,040

METHOD AND APPARATUS FOR DRYING A PULVERULENT OR PARTICULATE PRODUCT

Ulfo L. Jonson, Vanlose, and Sten Mortensen, Vaerlose, both of Denmark, assignors to A/S Niro Atomizer, Soborg, Denmark

Filed Nov. 18, 1981, Ser. No. 322,707
Claims priority, application Denmark, Nov. 20, 1980, 4964/80
Int. Cl.³ F26B 3/08, 17/00
U.S. Cl. 34—10
13 Claims



1. A method of drying a moist particulate product, said method comprising;

(a) feeding said product to a first fluid bed,

(b) supplying fluidizing gas upwardly through said first bed so as to fluidize said product therein,

(c) supplying heat to said fluidized product in said first bed,

(d) continuously discharging product from said first bed through a product outlet, and passing the product discharged through said outlet along a path defined in a second fluid bed so as to produce generally plug flow,

(e) predetermining said path so that the moisture content of said particulate product encompasses the constant rate drying-falling rate drying region,

(f) controlling said heat supply to the product in said first bed in response to the temperature of said product at least at one location along said path so as to obtain a desired degree of dryness of said product discharged through said outlet substantially free of unbound moisture, and

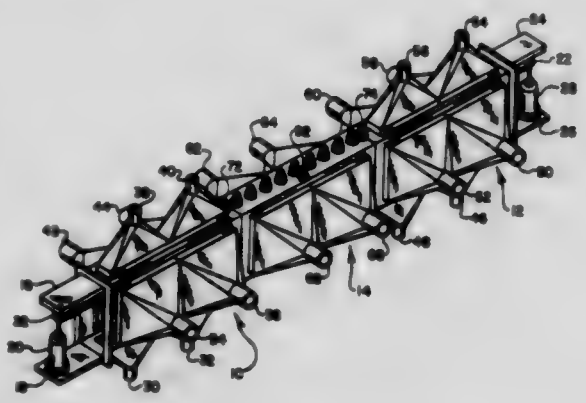
(g) wherein the product temperature varies and passes a minimum while the product travels along said path on said second bed, said one location being positioned downstream of the location at which said minimum temperature is reached.

4,492,041

CURING CHAMBER WITH CONSTANT GAS FLOW ENVIRONMENT AND METHOD

Maher L. Mansour, Columbus, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Jul. 25, 1983, Ser. No. 516,978
Int. Cl.³ F26B 5/04, 3/00, 25/00
U.S. Cl. 34—15
13 Claims



8. A method for maintaining a constant gas environment in a chamber wherein moving objects can be passed through said environment, said chamber housing said constant gas flow environment being in open communication with the ambient outside, comprising:

admitting said gas flow into a central interior gas flow zone through a gas flow inlet means and withdrawing said gas flow from said central gas flow zone by outlet means which is oppositely disposed from said inlet means, said central gas flow zone further containing flow control means which are maintained to establish ostensibly transverse laminar gas flow between said inlet means and said outlet means;

applying suction to an inlet zone and to an outlet zone which zones are connected to said central gas zone and are in open communication therewith, said inlet and outlet zones also being in open communication with the ambient atmosphere outside of said chamber, said source of suction being applied to said inlet zone and to said outlet zone adequately to create substantially equal pressures in said inlet and outlet zones, the pressures within each of said inlet and outlet zones being less than ambient atmospheric pressure outside of said chamber;

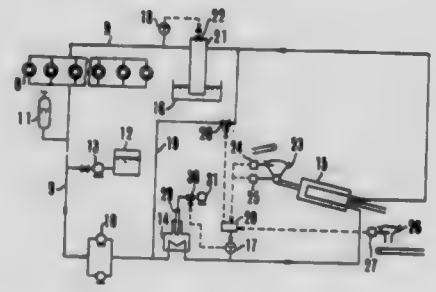
maintaining gas flow conditions at the interface between said interior gas zone and each of said inlet and outlet zones to be substantially preclusive of turbulent flow conditions.

4,492,042

METHOD FOR DRYING COKING COALS TO BE CHARGED IN A COKE OVEN

Norio Otake; Yoshiaki Shimakawa, and Hiroshi Uematsu, all of Fukuoka, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Aug. 26, 1982, Ser. No. 412,523
Claims priority, application Japan, Aug. 28, 1981, 56-134220; Aug. 28, 1981, 56-134221
Int. Cl.³ F26B 3/28
U.S. Cl. 34—35
9 Claims



1. A method for drying coking coals to be charged into a coke oven, which comprises:

(a) recovering the sensible heat from a gas generated in a coke oven with a liquid heating medium, said medium being in a heat exchange relationship with said gas in a heat exchanger;

(b) determining the amount of heat needed to reduce the moisture content of the coking coal to a prescribed value;

(c) heating the heating medium recovered from step (a) to a temperature suitable to reduce the moisture content of the coking coal to said prescribed value;

(d) reducing the moisture content of said coking coal to said prescribed value by the use of the heating medium obtained in step (c); and

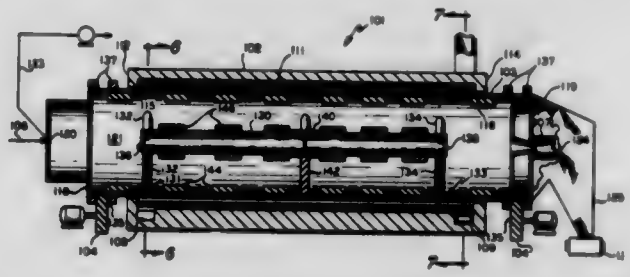
(e) controlling the temperature of the heating medium prior to introduction into the heat exchanger of step (a) so that the temperature of the heating medium remains lower than its boiling point after heat exchange.

4,492,043

APPARATUS AND METHOD FOR DRYING PARTICULATE MATERIAL

Cristiano Zannoni, Ravenna, Italy, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 1, 1982, Ser. No. 394,213
Claims priority, application Italy, Mar. 26, 1982, 20405 A/82
Int. Cl.³ F26B 3/28
U.S. Cl. 34—39 10 Claims



1. Apparatus comprising:

(a) a housing having a generally cylindrical interior surface and having a first end and a second end;

(b) a rotatable drum having a portion thereof positioned in the housing, a generally annular first chamber being defined between an exterior surface of the drum and the interior surface of the housing, a generally cylindrical second chamber being defined by an interior surface of the drum, said drum having a first end positioned adjacent the first end of the housing a second end positioned adjacent the second end of the housing;

(c) a tubular member having a first end and a second end positioned generally axially in the second chamber, said tubular member extending for a major portion of the length of the second chamber, the interior of the tubular member being at least in substantial isolation from the second chamber;

(d) a first conduit means connecting the tubular member in flow communication with the annular first chamber, said conduit means opening into said tubular member adjacent said tubular member first end for flow of heating medium from adjacent the first end of the annular first chamber to the interior of the tubular member; and

(e) a second conduit means connecting the tubular member in flow communication with the annular first chamber, said conduit means opening into said tubular member adjacent said tubular member second end for flow of heating medium from the interior of the tubular member adjacent the second end of the annular member to the tubular first chamber.

4,492,044

POCKET VENTILATION ROLL BAFFLE ASSEMBLY

Daniel P. Kantzas, Pasco, Wash., assignor to Boise Cascade Corporation, Boise, Id.

Filed Aug. 19, 1983, Ser. No. 524,569
Int. Cl.³ F26B 11/02
U.S. Cl. 34—114 7 Claims



1. In combination with a pocket ventilation roll device adapted for use in drying a paper web and including a stationary horizontal tubular inner core roll and an outer tubular shell roll mounted for rotation in concentrically spaced relation about said inner core roll, said outer shell roll being circumferentially perforated throughout its length, an arcuate portion of said inner core roll containing a plurality of longitudinally arranged perforations, said pocket ventilation roll device being closed at one end, and means for supplying drying air within said inner core roll at the other end of said pocket roll device, whereby air flows longitudinally through said inner core roll, and radially outwardly through the perforations of said inner core and outer shell roll members; baffle means for adjusting the profile of the drying air flow through said pocket ventilation roll device, comprising

(a) a central shaft mounted in spaced relation longitudinally within said inner core roll;

(b) a plurality of air-deflecting baffle members located within said inner core roll and pivotally connected with said shaft at longitudinally spaced intervals for pivotal movement about parallel horizontal axes contained in planes normal to the axis of said central shaft, respectively, each of said baffle members including a planar surface for deflecting the longitudinal flow of air radially outwardly through said inner core roll perforations; and

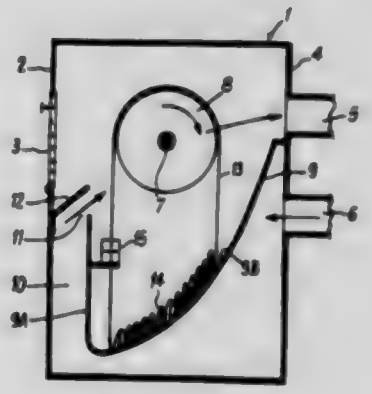
(c) means for positioning and holding said baffle members at given angular air-deflecting positions relative to said central shaft member, respectively.

4,492,045

APPARATUS FOR DRYING AND STABILIZING PIECES OF WOVEN OR KNITTED FABRIC

Frantz M. J. Boucraut, Troyes, France, assignor to Petit Bateau Valton S.A., Troyes, France

Filed Dec. 2, 1982, Ser. No. 446,272
Claims priority, application France, Dec. 15, 1981, 81 23407
Int. Cl.³ F26B 13/00
U.S. Cl. 34—122 9 Claims



1. Apparatus for drying pieces of woven or knitted fabric formed as an endless loop of material, comprising an enclosed main housing having a front wall and a rear wall, a hatch in said front wall, means for providing dry air, a dry air inlet in said rear wall for passing dry air into the main housing, a moist air outlet in said rear wall, at least one transverse rotatable shaft, means for driving said shaft in rotation, an openwork barrel-shaped drum disposed on said shaft opposite said moist air outlet, said drum supportingly receivable of a first portion of said endless loop of material, a downwardly sloping partition extending from said rear wall at a point below said moist air outlet towards said front wall and having a smooth surface directed towards said drum, at least a portion of said smooth surface being concave toward said drum, said smooth surface being slidingly supportable of a second portion of said endless loop of material formed in regular and natural folds, an upwardly directed channel communicating with said partition, an outlet from said channel situated at a point not higher than the bottom of said drum, and at least one deflector at said outlet directed towards said transverse shaft, said dry air inlet being disposed beneath said partition, whereby, in operation, rotation of said drum causes rotation of said endless loop of material about said drum causing fabric to be lifted from said smooth surface passed over said drum and returned to said smooth surface, said fabric returned to said smooth surface forming regular and natural folds which slide down said smooth sur-

face, while dry air enters through said inlet, passes beneath said partition, upwardly through said channel and channel outlet and passes through said material and said drum and is removed via said moist air outlet.

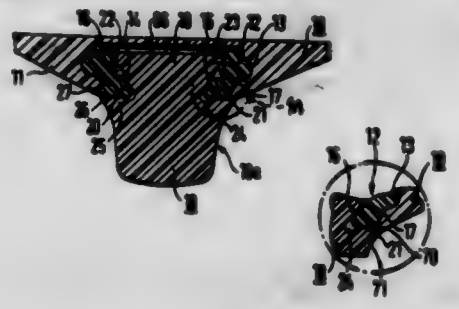
4,492,046
RUNNING SHOE
Ghaaz Kosova, 100 NW. Second Ave., Boca Raton, Fla. 33432
Filed Jun. 1, 1983, Ser. No. 500,242
Int. Cl.³ A43B 13/28
U.S. Cl. 36—27 14 Claims



1. In a sole for a running shoe having a sole body of deformable resilient material with:
a heel-supporting rear segment with top and bottom faces;
an arch-supporting middle segment extending forward from said rear segment; and
a ball and toe-supporting front segment extending forward from said middle segment;
said rear segment having a longitudinal slot extending forward from its rear edge between said top and bottom faces across its complete width and separating said rear segment of the sole body into upper and lower sections;
the improvement which comprises:
a spring wire received in said slot and having an upper half engaging said upper section of said rear segment of the sole body and a lower half engaging said lower section of said rear segment of the sole body, said upper and lower halves of said spring wire being flexibly and resiliently connected to each other at the front end to bias said upper half of the spring wire upward from its lower half toward the rear of the shoe sole and permit up and down movement of said upper half of the spring wire away from and toward said lower section of said rear segment of the shoe sole;
said upper and lower halves of the spring wire being flexibly and resiliently connected to each other forward beyond said slot along the opposite sides of said middle segment of the shoe sole.

4,492,047
CLEAT FOR SPORTS SHOES
Heino Arff, Hamburg, Fed. Rep. of Germany, assignor to ITW Ateco GmbH, Norderstedt, Fed. Rep. of Germany
Filed Feb. 11, 1983, Ser. No. 465,843
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1982, 3205239; Nov. 18, 1982, 3242686
Int. Cl.³ A43C 15/02, 15/16
U.S. Cl. 36—134 17 Claims

1. A cleat for sports shoes, especially football boots, comprising a socket situated in the outsole, a cleat body, a fastening attachment via which the cleat body is detachably connectible to the socket, and a supporting surface formed at the cleat body which comes to lie in close contact against the outsole from below, characterized in that at least two circumferentially spaced downward pointing mounting surfaces are formed at the fastening attachment and after rotation thereof through a predetermined angle of rotation come to lie in close contact under pressure against supporting surfaces in the socket, with the other supporting surface of the cleat body lying under compression pressure against the outsole and with a means of protection against rotation provided between the



fastening attachment and the socket, said fastening attachment forming a ball and socket joint with said socket.

4,492,048
LABELING KEEPER
Robert A. Brewer, 15 Castle Park Way, Oakland, Calif. 94611
Filed Jun. 8, 1983, Ser. No. 502,333
Int. Cl.³ A44C 3/00
U.S. Cl. 40—2 R 4 Claims

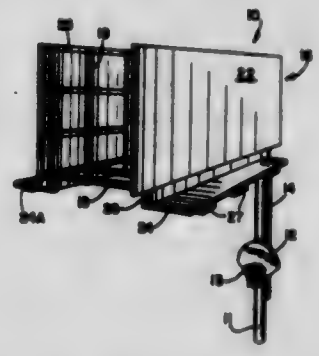


1. A labeling keeper comprising:
a. an attachment member having a body portion presenting a display surface area which is manufactured from a plastic material selected to receive erasable markings from a writing instrument;
b. said attachment member includes an extension area adjacent said display surface area formed with an opening having a dimension selected for receiving a portion of an article organizer therethrough;
c. an arm disposed from said extension area and integrally connected to said attachment member at a location adjacent said display area and having a distal head end adapted for insertion through an opening in an article to be indentified and forming an opening separate from said display area;
d. locking means formed in said distal head of said arm;
e. latching means formed in said display area of said body portion dimensioned and formed for interlocking with said locking means;
f. a transparent, flexible, protective strip having a back face coated with an adhesive selectively encircling said body portion of said attachment member for covering said markings on said display surface; and
g. said protective strip selectively covers said locking means and latch means for preventing said distal head end of said arm from separating from said display area of said attachment member.

4,492,049
ADVERTISING DISPLAY STRUCTURE AND SPORTS FACILITY
Marcia Gayler, Suite 5706 300 N. State St., Chicago, Ill. 60610
Filed Oct. 24, 1983, Ser. No. 544,586
Int. Cl.³ G09F 15/00
U.S. Cl. 40—624 7 Claims

1. The combination of an advertising display structure and a

sporting facility, the combination including a vertically-extending support member adapted to engage the ground at one end and to provide a support for both a basketball hoop and backboard and an advertising display, a basketball hoop and backboard affixed to said vertical support intermediate its ground-engaging end and its upper end, an advertising display



structure affixed to and supported by the upper end of said vertical support consisting of a frame and one or more message display panels carried by said frame, and illuminating means carried by said frame arranged so as to direct light downwardly from said advertising display structure and to illuminate the area below said display structure including said hoop and backboard.

4,492,050
SHOTGUN RECOIL REDUCER
Ken Kagahiro, Rte. 1, Colusa, Calif. 95932
Filed Apr. 12, 1983, Ser. No. 484,215
Int. Cl.³ F41C *21/18*
U.S. Cl. 42—1 V 13 Claims



1. A recoil reducer for attachment to a shotgun having a barrel and a magazine tube below the barrel with a threaded forward end, comprising:

a cylinder tube comprising an extension for the forward end of the magazine tube, including a rearward-extending reinforcing sleeve of outside diameter sized to fit closely inside the shotgun's magazine tube, a forward extension connected to the sleeve, and threaded means on the exterior of the cylinder tube for engaging the threaded forward end of the magazine tube and securing the cylinder tube to the magazine tube such that the reinforcing sleeve extends into the magazine tube for stability of the cylinder tube and added strength for the magazine tube;

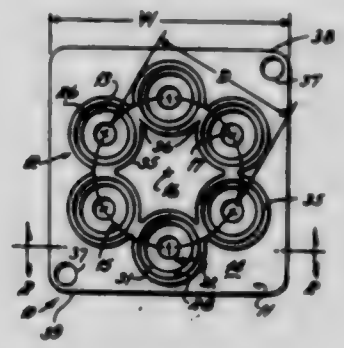
a slidable piston weight inside the cylinder tube, with means biasing it in the forward direction in the cylinder tube;

means forming an expansible chamber in the cylinder tube adjacent to the forward end of the piston weight;

gas conducting means for admitting pressurized gases generated upon the firing of a round in the shotgun, from the barrel to the expansible chamber to move the piston weight rearwardly against the biasing means;

whereby, when a round is fired in the shotgun, pressurized gases from behind the fired shot are admitted from the barrel to the expansible chamber in the cylinder tube, pushing the piston weight rearward and thereby recoiling the shotgun forward to partially offset the recoil from firing of the round.

4,492,051
MODULAR CARTRIDGE LOADING BOARD SYSTEM
Robert D. Switzer, 149 Highview Dr., Ft. Thomas, Ky. 41075
Filed Sep. 19, 1983, Ser. No. 533,236
Int. Cl.³ F41C *27/00*; F42B *39/04*
U.S. Cl. 42—87 15 Claims

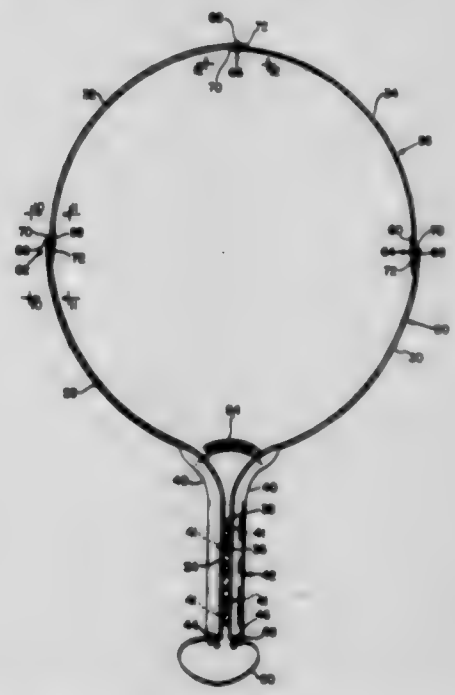


1. A modular cartridge loading board system comprising a plurality of modular cartridge storage blocks, each of those blocks having a series of cartridge tubes oriented on a generally circular locus of points and upstanding from one face of a base plate, said cartridge tubes being sized to receive a load of cartridges equal in number to the number of cartridge chambers in a hand gun's cylinder with which the cartridges are adapted for use,

a backing board on which said cartridge storage blocks are adapted to be connected, and

fasteners by which said cartridge storage blocks are connectable to said backing board, said plurality of cartridge storage blocks, fasteners and backing board being cooperable one with the other to provide a matrix of said cartridge storage blocks in connected fashion on said backing board as desired by the end user.

4,492,052
FOLDING FISHING NET
Bennie I. Davis, 6149 Belmore SW., Olympia, Wash. 98502
Filed Feb. 7, 1983, Ser. No. 464,679
Int. Cl.³ A01K *77/00*
U.S. Cl. 43—12 5 Claims



1. A folding fishing net, unfoldable by the motions of one hand of a stream fisherman creating a circular rim supporting a depending netting, via rotations about a longitudinal axis passing through the center of a handle and about a transverse

axis passing through the center of the opening created by the circular rim, comprising:

(a) a circular rim having four frame members, two of these frame members of opposite hand forming the one half of the circular rim nearest a handle and arranged for joining a handle, and equipped with hinge portions at a transverse axis, and two of these frame members of opposite hand forming the one half of the circular rim farthest from the handle, and arranged with hinge portions at a transverse axis and there pivotally joined with other frame members, and arranged with hinge portions to be pivotally joined together along a horizontal axis passing through the center of both the handle and the opening provided by the circular rim;

(b) a two piece handle having a longitudinal axis hinge, with respective pieces of the handle secured to the respective opposite hand frame members of the circular rim;

(c) a netting threaded about the circular rim and depending therefrom creating a fish surrounding net; and

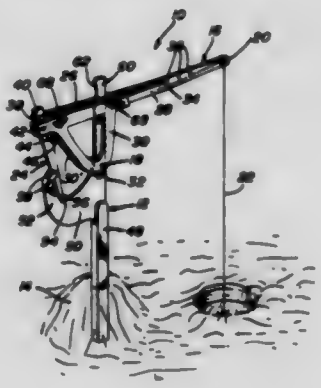
(d) a compression spring installed between the pieces of the handle where the opposite hand frame members first join the handle pieces, whereby the force of this compression spring aids in the rotation about the longitudinal axis of this fishing net from the folded position to the unfolded position.

4,492,053

AUTOMATIC HOOK SETTER

Gilles Poulin, 535 Richard, Rouyn-Noranda, Quebec, Canada J9X 4L9

Filed Jul. 13, 1983, Ser. No. 513,277
Int. Cl.³ A01K 97/12
U.S. Cl. 43—15
15 Claims



1. An automatic hook setting device for setting in a fish a hook connected to a fishing line in response to a pull exerted by the fish on the line, said device comprising:

an elongated main support member adapted to be held in a generally upright position;

an elongated line support member having a front end and a rear end, said line support member being pivotally mounted on said main support member for pivotal movement in a substantially vertical plane about a pivot point located intermediate said front and rear ends;

means for securing said fishing line to said line support member adjacent said front end such that said line depends therefrom;

an elongated tension member having one end connected to said line support member at a point intermediate said front end and said pivot point, said tension member being elastically stretchable in a direction towards the rear end of said line support member so as to cause a free end of said tension member to be displaced under tension in a direction towards the front end of said line support member;

a trip element for releasably holding said free end of said tension member whereby to releasably hold said tension member under tension, said trip element being pivotally connected to said line support member adjacent said rear end for pivotal movement between a loaded position whereat said trip element holds said tension member and an unloaded position whereat said trip element releases said tension member, said trip element when in the loaded position being normally urged to said unloaded position by said tension member;

trip retaining means on said main support member for releasably retaining said trip element in said loaded position, said trip retaining means adapted to release said trip element when said front end of said line support member pivotally moves downwardly a distance exceeding a predetermined displacement; and

stop means on said main support member adapted to engage said free end of said tension member for arresting same when released by said trip element and thereby causing said front end of said line support member to jerk upwardly;

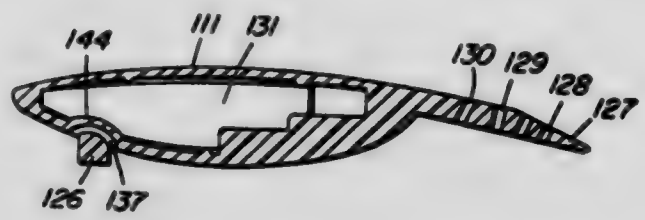
whereby a fish pulling on the fishing line to pivotally move the front end of said line support member downwardly a distance exceeding said predetermined displacement, causes said trip retaining means to release said trip element which is thus moved to said unloaded position and in turn releases said tension member so as to engage said stop means and cause said front end of said line support to jerk upwardly, thereby setting said hook in said fish.

4,492,054

FISH LURE

Gerald K. Barnhart, c/o 3252 Shelley St., Victoria, B.C., Canada V8P 4A5

Continuation-in-part of Ser. No. 319,906, Nov. 10, 1981,. This application Sep. 1, 1982, Ser. No. 413,881
Claims priority, application Canada, Jul. 30, 1981, 382884
Int. Cl.³ A01K 85/00
U.S. Cl. 43—42.23
10 Claims



1. A fish lure in the general shape of a tail-less minnow comprising a main body of generally hydrodynamic shape including a head portion and a tail tip portions: said main body having, in side elevational view, a gently rounded upper back surface and an arcuately rounded belly surface and having, in top plan view, side faces which diverge from the head portion to a maximum body thickness and then converge to the tail tip portion; a projecting, flat, plate-like nose extending from the head in the form of a smooth extension of the gently rounded upper back surface and extending downwardly less than the height of the body from the upper surface to the lower surface, the nose, in longitudinal section, having a bow portion constituted by an upper surface which near the body runs parallel to the bottom surface thereof, but which, near the tip slopes downwardly to merge with the lower surface at a forward edge thereof, the nose having a shape, in top plan view, of sides which diverge from the body portion, the diverging sides running forwardly in parallel with one another and then curving towards each other to meet in a flat front edge at the bow of the nose, only the nose further being provided with a plurality of spaced apart holes therethrough disposed along the central longitudinal axis thereof for securing a fish line drawn through a selected hole or holes; a depending tail fin along the central longitudinal axis of the body, said tail fin being associated with a fish-line guiding channel extending along an arcuate path longitudinally disposed above a joint between said tail fin and said body and extending longitudinally exclusively through said body; whereby, in use, an erratic a side-to-side

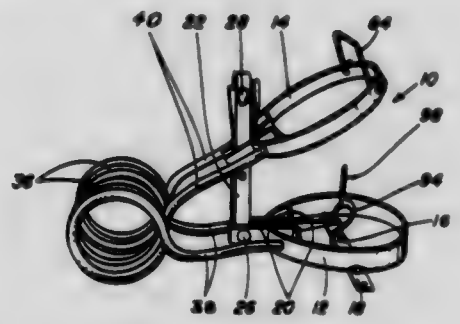
action is imparted to said fish lure simultaneously along with an oscillation of said lure along its longitudinal axis.

4,492,055

HUMANE ANIMAL TRAP

Michael Benz, deceased, late of Williams Lake, Canada by Violet E. Benz, Executrix, assignor to Violet E. Benz, Williams Lake; Michael J. Benz, Lavington and Randy Benz, Vernon, all of, Canada, a part interest to each

Filed May 17, 1983, Ser. No. 495,387
Int. Cl.³ A01M *23/26*
U.S. Cl. 43—88 7 Claims



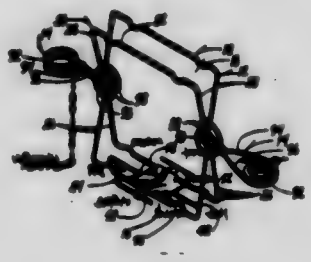
1. A humane animal trap comprising:
(a) a pair of generally circular jaws, each jaw having arm means extending outwardly from the outer surface thereof;
(b) main spring means connected to said arm means so as to bias said jaws to a closed position, said jaws being openable against the bias of said spring means;
(c) lower trigger means pivotally connected to lug means outside one of said jaws and extending into the interior of said one jaw;
(d) support means extending generally perpendicularly from said lug means away from said one jaw;
(e) upper trigger means pivotally connected at one end adjacent the free end of said support means and engageable at the other end with a notch in said lower trigger means;
(f) catch means on said other jaw engageable with a second notch adjacent the one end of said upper trigger means; and
(g) latch means on said one jaw adjacent the free end of said lower trigger means and engageable therewith.

4,492,056

BODY GRIPPING ANIMAL TRAP STAND WITH TRIGGER

Russell R. Rossland, R.R. 2, Creston, Iowa 50801

Filed May 20, 1983, Ser. No. 496,446
Int. Cl.³ A01M *23/26*
U.S. Cl. 43—96 9 Claims



1. An improved release mechanism for a body grasping trap comprising first and second rectangular frames pivotally mounted to each other for pivotal movement about a horizontal axis from a set position to a sprung position, spring means yieldably biasing said frames from said set position to said sprung position, said rectangular frames each having a horizontal member, said horizontal members being in adjacent spaced relation to one another when said frames are in said set position, said horizontal members moving away from one another as said frames move from said set to said sprung position: said release mechanism comprising:
a first trigger frame member positioned between said horizontal members when said rectangular frame members are in said set position;
a pair of trigger arms mounted to said trigger frame for pivotal movement about a horizontal axis; each of said trigger arms having a shoulder facing said trigger frame and being movable from a catch position wherein said shoulders of said two trigger arms retentively embrace said horizontal frame members therebetween and hold said frame members in said set position to a release position wherein said shoulders move out of retentive engagement with said horizontal frame members and free said frame members for moving to said sprung positon;
said trigger frame comprising a horizontal rod extending parallel to said horizontal frame members, said trigger arms being pivotally mounted for pivotal movement around the longitudinal axis of said rod;
said horizontal rod including downwardly extending tines connected thereto for penetrating the ground and supporting said rod.

4,492,057

YO-YO WITH NON-CIRCULAR CROSS-SECTIONAL AXLE

Patrick MacCarthy, 37 Mines Park, Golden, Colo. 80401

Continuation-in-part of Ser. No. 298,720, Sep. 2, 1981, Pat. No. 4,442,625, which is a continuation-in-part of Ser. No. 138,729, Apr. 8, 1980, Pat. No. 4,290,224, and a continuation-in-part of Ser. No. 293,797, Aug. 18, 1981, Pat. No. 4,437,261. This application Aug. 30, 1982, Ser. No. 413,119
Int. Cl.³ A63H *27/12*
U.S. Cl. 446—250 8 Claims



1. A toy capable of combined rotational motion about an axle and translational motion in a vertical direction, comprising:
an assembled axle of non-circular transverse cross-section;
a first disc connected at its center point to one end of said axle;
a second disc connected at its center point to said axle at the end opposite that whereat said first disc is attached; and
a flexible torsional resistant tape one end of which is attached to said axle along the axle's longitudinal axis.

4,492,033

ULTRACOMPACT MINIATURE TOY VEHICLE WITH FOUR-WHEEL DRIVE AND UNUSUAL CLIMBING CAPABILITY

Adolph E. Goldfarb, 1432 SE. Wind Cir., Westlake Village, Calif. 91361, and Delmar E. Everitt, Woodland Hills, Calif., assignors to Adolph E. Goldfarb, Westlake Village, Calif.

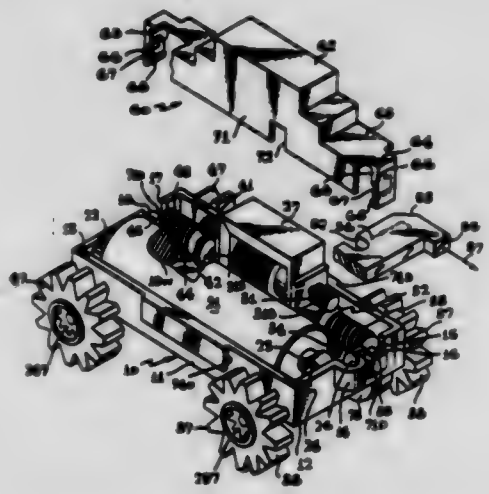
Continuation of Ser. No. 233,496, Feb. 11, 1981, abandoned, which is a continuation-in-part of Ser. No. 121,645, Feb. 14, 1980, Pat. No. 4,306,375. This application Sep. 13, 1982, Ser. No. 417,554

The portion of the term of this patent subsequent to Dec. 22, 1998, has been disclaimed.

Int. Cl.³ A63H *17/00*

U.S. Cl. 446—462

5 Claims



1. A miniature electrically self-powered wheeled toy vehicle for use with electrical battery means comprising an elongated dry-cell battery, and capable of climbing over operating surfaces that are rough and that include obstacles as well as climbing up operating surfaces that include steep inclines, said vehicle having major weight components positioned to provide a generally symmetrical, compact, balanced, and relatively low arrangement, while also providing adequate ground clearance in the area between the front and rear wheels, said vehicle comprising:

a frame having a right edge and a left edge;

front wheel means and rear wheel means mounted to the frame for rolling rotation about respective mutually parallel but spaced-apart front and rear axes, the distance between the front and rear axes being generally about two inches;

an electric motor mounted adjacent to one of said edges of the frame, and having a driveshaft which is perpendicular to the two axes and extends both fore and aft from the motor;

means mounted to the frame to releasably support such an elongated dry-cell battery alongside the motor and adjacent the other of said edges of the frame in a position with its longitudinal axis substantially parallel to the driveshaft, the length of such battery extending substantially the full distance between said front and rear axes; the motor and such battery side-by-side substantially occupying the full width between said right and left edges of the frame;

said motor being positioned between said axes and being substantially shorter than the distance between said axes to provide a pair of transmission spaces, one fore and one aft of the motor;

means for electrically connecting such battery, when supported in the supporting means, to the motor, so that such battery powers the motor; and

a pair of transmission means, each at least partially disposed in one of said transmission spaces and each comprising a speed reduction mechanism connecting one end of the driveshaft to one of the wheel means to transmit rotation from the driveshaft to such wheel means with reduced speed and with increased power;

at least a major portion of such battery, said motor and said transmission means being at approximately the same height as said front and rear wheel means; and

said frame, said motor, such battery and said transmission means not protruding any appreciable distance below the level of said front and rear axes in the area between said front and rear wheel means.

4,492,089

GRINDING DEVICE FOR THE REPROFILING OF A RAIL OF A RAILWAY TRACK

Romolo Panetti, Geneva, Switzerland, assignor to Speno International S.A., Geneva, Switzerland

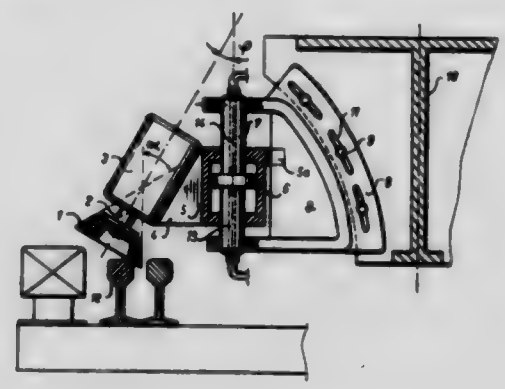
Continuation of Ser. No. 279,554, Jul. 1, 1981, abandoned. This application Dec. 12, 1983, Ser. No. 560,262

Claims priority, application Switzerland, Jul. 23, 1980, 5331/80

Int. Cl.³ B21B *7/00, 23/00*

U.S. Cl. 51—178

10 Claims



1. In a grinding device for reprofiling a rail of a railroad track, comprising at least one grinding unit having at least one grinding wheel rotatably driven about an axis by a motor, means mounting said device on a grinding carriage of a vehicle adapted to move along the track, means to change the elevation of the grinding unit relative to the vehicle and to force the grinding unit against the rail, the grinding wheel having a front working surface; the improvement in which the grinding wheel has a conical peripheral surface having two side profiles on opposite sides of the grinding wheel intersecting above the rail on said axis of rotation of the grinding wheel, said two side profiles lying in the plane that is perpendicular to the length of the rail and in which plane said axis lies, and linear actuating means to feed the grinding wheel along a path approximately parallel to the said side profile that is closer to the rail surface that is being ground and toward the rail in said plane in which said axis lies, said path making an angle with the axis of rotation of the grinding wheel which is approximately equal to half the angle formed by said intersecting side profiles of the grinding wheel.

4,492,060

METHOD FOR OPTICALLY FINISHING CONNECTOR-MOUNTED OPTICAL FIBERS

Kenneth M. Clark, Irvine, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Division of Ser. No. 63,636, Aug. 3, 1979, abandoned. This application May 4, 1981, Ser. No. 260,660

Int. Cl.³ B24B *1/00*

U.S. Cl. 51—283 R

3 Claims

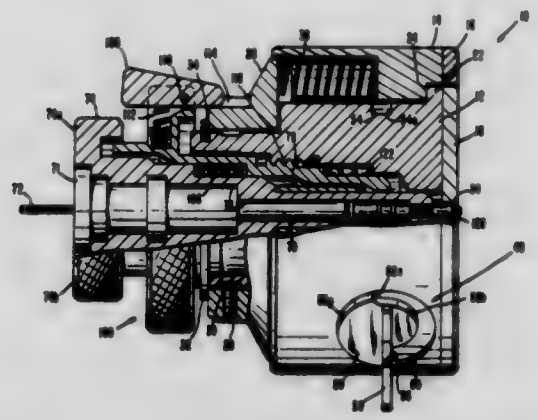
1. A method for providing end surface optical polishing of means defining at least one optical fiber housed in and extending from an end of a fiber optic ferrule, comprising the sequential steps of:

utilizing a tool in which the ferrule is retained;

providing a pair of relatively hard and soft surfaces on the tool;

positioning the fiber means and ferrule ends in the relatively soft surface;

positioning the relatively hard and soft surfaces coplanar, respectively, for grinding the extending fiber means flush



with the ferrule end by grinding implementation, and for limiting said grinding by a determinate amount; and

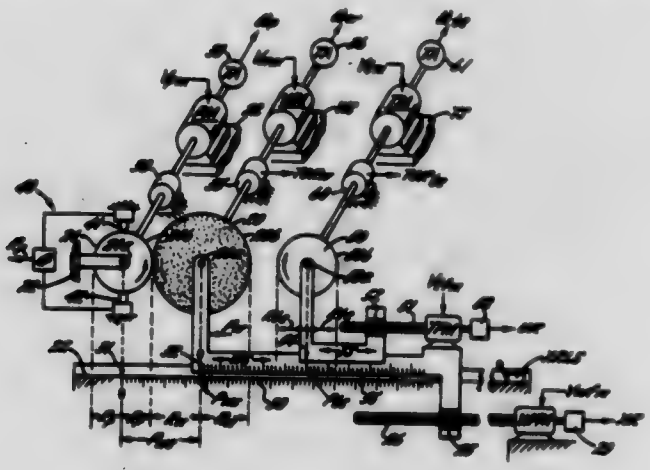
positioning the relatively soft surface forward of the relatively hard surface for polishing the fiber means to a desired optical quality by a polishing implementation different from the grinding implementation.

4,492,061

CONTROL SYSTEM FOR GRINDING APPARATUS

Roderick L. Smith, Rockford, Ill., assignor to Energy-Adaptive Grinding, Inc., Rockford, Ill.

Filed Mar. 5, 1982, Ser. No. 355,303
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—325 27 Claims



1. A method of grinding a selected workpiece with a selected grinding wheel at a desired grinding rate, said method comprising

determining the relationship between the wear rate of said grinding wheel and the feed rate at which said grinding wheel is fed into said workpiece, and

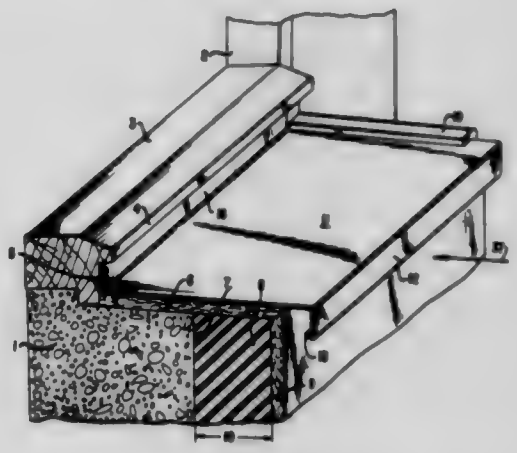
feeding said grinding wheel into said workpiece at a feed rate which is approximately equal to the sum of the desired grinding rate and the wheel wear rate corresponding to the feed rate.

4,492,062

WINDOW SILL

Pierre Levenez, Rochefey, Villars, Loire, France

Filed Jun. 11, 1982, Ser. No. 387,589
Claims priority, application France, Jun. 11, 1981, 81 11887
Int. Cl.³ F04D *13/00*
U.S. Cl. 52—97 12 Claims



1. A window sill assembly for protecting and covering an exterior insulated wall adjacent an existing window sill at a base of a window, said window sill assembly comprising:

two elongated side members disposed opposite each other at said base of said window;

first fastening means for fastening said two elongated side members to said existing window sill in a spaced apart relationship such that said two elongated side members extend outwardly a predetermined distance from said base;

a rectangular plate mounted to said two elongated side members and disposed contiguous said existing window sill, said rectangular plate having one edge cooperating with one of said two elongated side members and an opposite edge cooperating with the other of said two elongated side members;

means for guiding said rectangular plate interposed said one edge of said rectangular plate and said one of said two elongated side members, said means for guiding further being interposed said opposite edge of said rectangular plate and said other of said two elongated side members to receive said one edge and said opposite edge of said rectangular plate for communication therewith, said rectangular plate further abutting said base of said window and being contiguous said existing window sill and said exterior insulated wall whereby any water collecting on said rectangular plate drains away from said base along said rectangular plate and is prevented from draining into said exterior insulated wall; and

second fastening means for fastening said rectangular plate to said existing window sill.

4,492,063

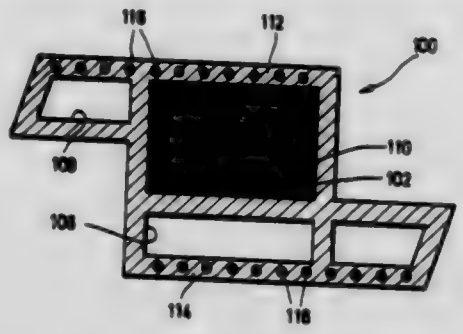
EXTRUDED PLASTICS MATERIAL HOLLOW PROFILED STRIP FOR WINDOW FRAMES, WINDOW FRAMES PRODUCED FROM THIS TYPE OF PROFILED STRIPS AND METHOD FOR THE PRODUCTION OF A WINDOW FRAME OF THIS TYPE

Karl Schock, Schorndorf, and Lothar Frank, Pfäffenhausen, both of Fed. Rep. of Germany, assignors to Schock & Co. GmbH, Fed. Rep. of Germany

Filed Mar. 31, 1982, Ser. No. 363,882
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1981, 3115254; Sep. 17, 1981, 3136863
Int. Cl.³ E06B *1/28*
U.S. Cl. 52—389.7 13 Claims

1. Extruded plastics material profiled strip for butt-welded window frames, said strip having a profile body with profile

walls forming a longitudinal chamber and consisting at least essentially of a thermoplastics material, at least one profile wall being provided with a reinforcement element which is integrally connected to said profile wall, characterized in that the reinforcement element consists of reinforcement fibres bonded to each other by a synthetic resin cement selected from the group comprising synthetic resins having thermoplastic properties and synthetic resins that manifest thermoelastic properties at the welding temperature of said profile walls so that the reinforcement fibres can be deflected during butt-welding and said reinforcement element being continuous and separate from said thermoplastic material forming said profile walls and said reinforcement element extending along said profile wall throughout its length.

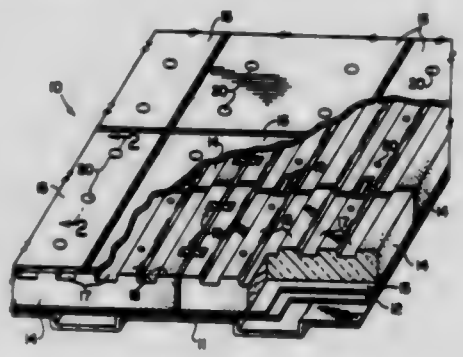


4,492,064

INSULATED ROOF CONSTRUCTION

Robert J. Bynoe, Chagrin Falls, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Dec. 11, 1981, Ser. No. 329,843
Int. Cl.³ E04B 5/00
U.S. Cl. 52—309.8
11 Claims



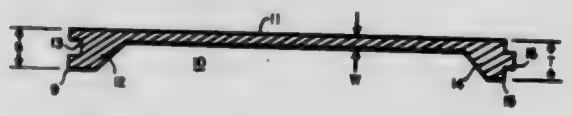
1. A thermal insulated roof construction comprising
a. a roof support means,
b. a water-impermeable layer overlying said roof support means,
c. a layer of thermal insulation overlying said water-impermeable layer and being unattached thereto throughout essentially its entire extent, said layer of thermal insulation being comprised of a plurality of panels position in side-by-side abutting relationship and having upper and bottom faces groves and ridges being formed in the upper faces facilitating water drainage from the ridges into the grooves, said panels being formed of a closed-cell cellular material and being essentially water-impermeable, and
d. a water-permeable protective layer overlying in contacting relationship said layer of thermal insulation to shield said layer of thermal insulation from sunlight.

4,492,065

SELF-ARCING TANK SEGMENTS

Herbert H. Clarke, Jr., 800 Garden St., Santa Barbara, Calif. 93101, and William E. Reefman, 2420 Calle Soria, Santa Barbara, Calif. 93109

Filed Jan. 15, 1979, Ser. No. 3,418
Int. Cl.³ E04B 2/08; E04H 12/16
U.S. Cl. 52—595
3 Claims



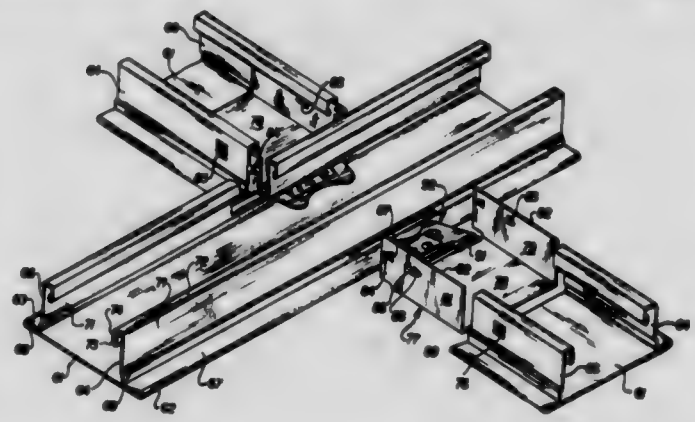
1. An automatically arcing tank segment comprising:
(a) an elongated substantially flat web having a thickness, edges, and inner and outer surfaces;
(b) a tongue section connected to one edge of the web having a thickness greater than the web thickness and having an inner surface and an outer surface and an outer edge that is approximately at a right angle to the outer surface of the web and forming a square inner corner with said inner surface and forming a square outer corner with said outer surface and having a tongue projecting from the outer edge intermediate the inner and outer surfaces;
(c) a groove section connected to the other edge of the web and having a thickness greater than the web thickness and having an inner surface and an outer surface and an outer edge that is approximately at a right angle to the outer surface of the web and forming a square inner corner with said inner surface and forming a square outer corner with said outer surface and having a groove projecting inwardly intermediate the outer surface and the inner surface;
(d) characterized by the web being located at one side of the tongue-and-groove section and the outer surfaces of the web, tongue, and groove sections forming a continuous smooth outer surface, and also characterized by said tongue having a cross section wherein the outer end of the tongue is not greater in thickness than the base of the tongue, and also characterized by the groove cross section being of a substantially uniform width over the distance of the tongue projection,
whereby the inner corner of the tongue section of one segment contacts the inner corner of the groove section of another segment to arc the cross sections of the segments.

4,492,066

SUSPENSION CEILING GRID SYSTEM

Paul D. LaLonde, Avon, Ohio, assignor to Donn Incorporated, Westlake, Ohio

Continuation-in-part of Ser. No. 346,857, Feb. 8, 1982,. This application Feb. 9, 1983, Ser. No. 465,249
Int. Cl.³ E04C 2/42
U.S. Cl. 52—668
28 Claims



1. A suspension ceiling grid system comprising a plurality of elongated grid members providing a face portion and a pair of

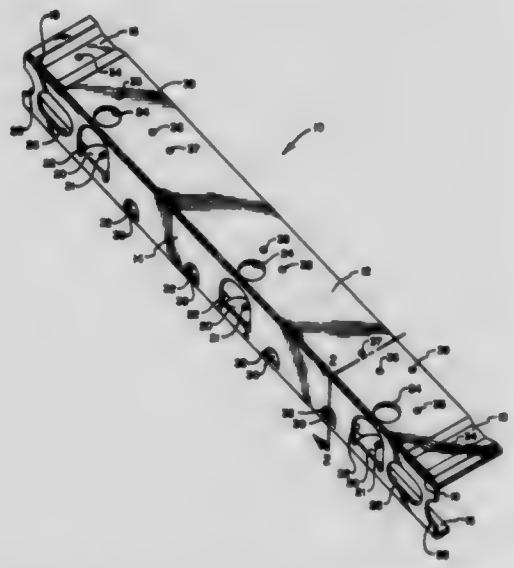
spaced webs extending therefrom, some of said members including logitudinally extending slots in said web at locations spaced from the ends thereof, some of said members also including end connectors providing upwardly extending resilient lock means, said end connectors being insertable through said slots, insertion of said end connectors through said slots deflecting said resilient lock means in a direction toward said face portion until an installed position is reached, said lock means being operable to engage the remote side of web to lock said members together in said installed position, said slots being formed substantially adjacent to said face portion so that tensile forces applied to said end connectors do not produce significant lateral deflection of the associated web.

4,492,067

END STILE APPARATUS AND METHOD FOR AN OVERHEAD DOOR SECTION

David O. Martin, Salt Lake City, and Lawrence G. Martin, Bountiful, both of Utah, assignors to Martin Door Manufacturing, Salt Lake City, Utah

Filed Sep. 29, 1982, Ser. No. 428,101
Int. Cl.³ E04C 2/38
U.S. Cl. 52—822 6 Claims



1. An end stile for an overhead door comprising:

A back element, the back element being relatively wide and having a length generally corresponding to a width of the overhead door section and a hem-receiving indentation at each end;

a side element having a length corresponding to the length of the back element and a width corresponding to the thickness of the overhead door section;

a front element having a length corresponding to the length of the back element and a relatively narrow width, the back element, side element and front element are formed from a single piece of sheet metal formed into a modified J-shaped cross section; and

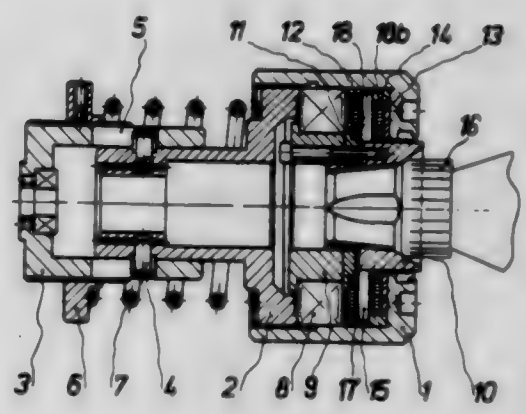
securement means for securing the end stile to an overhead door section panel comprising tab means formed in the end stile, said tab means comprising a spring clip means for clipping the panel to the front element, said tab means comprising a tab spaced from the front element, the tab serving as a securement element for the panel, said tab means comprising a first tab means and at least a second tab means, the first tab means spaced a first distance from the front element and the second tab means spaced a second distance from the front element.

4,492,068

CLOSURE APPARATUS WITH MAGNETIC COUPLING FOR SCREWING ON A PLASTICS SCREW CLOSURE

Albert Obrist, Kaiseraugst, Switzerland, assignor to Albert Obrist AG, Reinach, Switzerland

Continuation of Ser. No. 143,751, Apr. 25, 1980, Pat. No. 4,364,218. This application Aug. 16, 1982, Ser. No. 408,681
Claims priority, application Switzerland, Apr. 25, 1979, 3 885/79
The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.
Int. Cl.³ B65B 3/20
U.S. Cl. 53—331.5 10 Claims



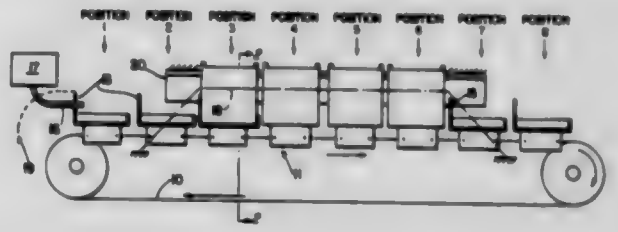
1. A closure apparatus for screwing a plastics screw closure onto a container provided with a screw-thread, said closure apparatus comprising a drive means and a screw-on head for screwing on the screw closure, a torque-limiting clutch arranged between the screw-on head and the drive means to interrupt the screwing-on process when a predetermined torque is reached, said clutch having a clutch member on the drive side and a clutch member on the driven side, said clutch members comprising clutch plates spaced from each other with plural permanent magnets positioned on facing surfaces thereof, the permanent magnets on each clutch member being arranged such that adjacent permanent magnets are of opposite polarity, and wherein in an idle position the permanent magnets defining aligned pairs of permanent magnets, each pair comprising one permanent magnet on each of the clutch plates, are of opposite polarity.

4,492,069

APPARATUS AND METHOD FOR FLATTENING A POUCH

Gordon Hewson, Cobourg, Canada, assignor to General Foods Inc., Ontario, Canada

Filed Feb. 28, 1983, Ser. No. 470,411
Int. Cl.³ B65B 1/24, 13/20
U.S. Cl. 53—436 12 Claims



1. An apparatus for flattening a pouch of a flexible material containing therein a solid flowable product in a gaseous medium, comprising:

bucket means for mounting a pouch with a first pouch end containing a disproportionately large portion of the product located at a first end of the bucket means, and a second pouch end which contains a disproportionately lesser portion of the product, mounted at the opposite, second end of the bucket means,

tilting means operatively connected to said bucket means for

tilting the first end of the bucket means upwardly to place the pouch in an inclined position with the first pouch end raised,

and pressure means located above said bucket means for exerting a pressure against the sides of the pouch, while it is in its inclined position, to increase the pressure within the pouch, creating a gas space at the second end, and thereby permitting a sufficient volume of the solid flowable product to flow down toward the second end to generally even out the solid flowable product and hence generally flatten the pouch itself.

10. A method of flattening a pouch of a flexible material containing solid flowable product in a gaseous medium by evening out the solid flowable product within the pouch, comprising the steps of:

positioning generally horizontally a generally flat pouch having a disproportionately large portion of its solid flowable product located toward a first end of the pouch and a disproportionately lesser portion of the product located at a second end of the pouch,

tilting the first end of the pouch upwardly while concurrently applying a pressure uniformly against the opposed side surfaces of the pouch, to slightly increase the pressure within the pouch, and to form a gas pocket in the pouch at the second end thereof,

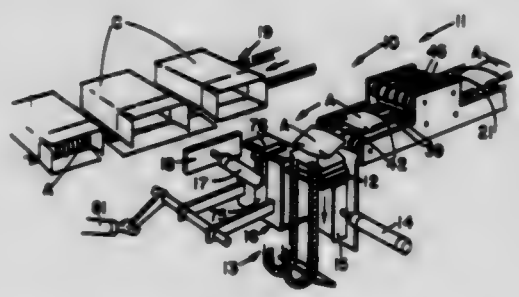
and continuing to exert the pressure until a sufficient portion of the solid flowable product at the first end runs down toward the second end to essentially even out the solid flowable product, and hence generally flatten the pouch itself.

4,492,070

CASE LOADING APPARATUS AND METHOD

Hugh B. Morse, 1840 Campbell Ave., San Jose, Calif. 95125, and Helmut E. Masch, 764 Asbury St., San Jose, Calif. 95126

Continuation-in-part of Ser. No. 28,127, Apr. 9, 1979, abandoned. This application Mar. 27, 1980, Ser. No. 134,703
Int. Cl.³ B65B *35/50*
U.S. Cl. 53—438 22 Claims



16. A method for end-loading a case with a plurality of stacked articles comprising the steps of

conveying said articles in a first direction,

intermittently moving a plurality of platens in an endless path,

stacking a predetermined pluarlity of articles on a said platen while simultaneously lowering said platen,

stopping said platens while simultaneously pushing said articles off said platen and into a generally vertically disposed receptacle,

moving said receptacle generally horizontally to align said stacked articles with an open end of a case, and

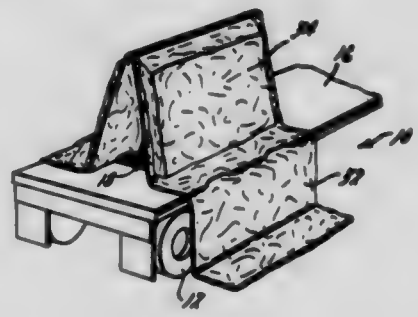
pushing said articles from said receptacle and into the open end of said case.

4,492,071

METHOD FOR PREPARING BLOCKS OF GLASS FOR SHIPMENT

Donald D. Gibson, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 23, 1983, Ser. No. 535,093
Int. Cl.³ B65B *11/02, 51/20, 53/06*
U.S. Cl. 53—442 11 Claims



1. A method for preparing a plurality of large blocks of glass for shipment on a transportable device, which method is characterized in the following steps:

providing an "A" frame carrier on the transportable device;

providing a plurality of layers of shrinkable film lying over and on both sides of said "A" frame carrier;

loading a block of glass on each side of said "A" frame carrier;

wrapping each block of glass in a layer of said shrinkable film in a manner such that each of said first glass blocks is substantially enclosed in said shrinkable film;

shrinking said shrinkable film about said substantially enclosed block of glass thereby to form a sealed pouch pack about said glass block;

loading at least a second block of glass on each side of said "A" frame carrier in association with said previously loaded blocks of glass;

wrapping each of said newly loaded blocks of glass in a layer of said shrinkable film in a manner such that each of said newly loaded glass blocks is substantially enclosed in said shrinkable film; and

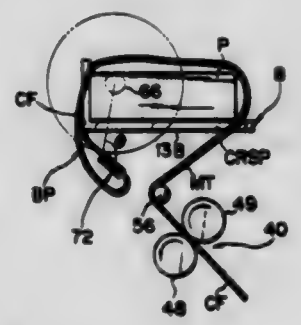
shrinking said shrinkable film about said substantially enclosed glass blocks thereby to form a sealed pouch pack about said newly loaded glass blocks.

4,492,072

BUNDLING APPARATUS

Toshiyuki Miyano, Yokohama, and Hideo Okuura, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 31, 1983, Ser. No. 480,982
Claims priority, application Japan, Mar. 31, 1982, 57-52913
Int. Cl.³ B65B *11/00*
U.S. Cl. 53—586 15 Claims



1. A bundling apparatus comprising:

transfer means for receiving stacked objects to be bundled and transferring the same along a prescribed path of travel; and

bundling means for bundling the objects to be bundled transferred thereto by the transfer means,

said bundling means including winding means for winding a band around the objects to be bundled so that one end of the band is joined with another portion of the band, and bonding means for bonding together the joined end portions of the band wound around the objects to be bundled,

said transfer means including a carrier bearing thereon the objects to be bundled and capable of moving between a first position where the carrier receives thereon the objects to be bundled and a second position inside the winding means, and first driving means for moving the carrier from the first position to the second position after the objects to be bundled are set on the carrier, and then moving the carrier from the second position to the first position,

said winding means including

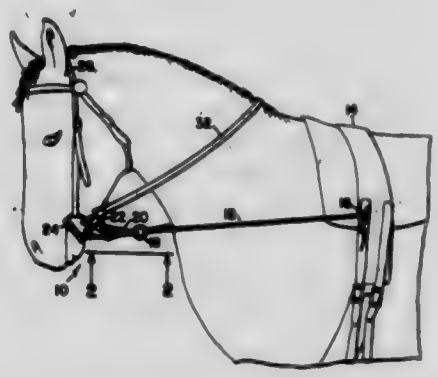
a catcher retaining the one end of the band and capable of moving across the path of travel, the catcher being moved along a line of movement including a third position below the objects to be bundled on the carrier and a fourth position above the objects to be bundled, the line of movement lies between the first and second positions, and second drive means for moving the catcher from the third position to the fourth position before the carrier moved from the first position toward the second position by the first driving means crosses the line of movement, moving the catcher from the fourth position to the third position after the carrier crosses the line of movement, thereby winding the band around the objects to be bundled, and then moving the catcher from the third position to a fifth position defined between the third and fourth positions, thereby joining the one end of the band with the other portion of the band.

4,492,073

BITTING RIG APPARATUS FOR TRAINING HORSES

Scott C. Flake, 7171 Eagan Dr., Savage, Minn. 55378

Filed May 6, 1983, Ser. No. 492,377
Int. Cl.³ B68B *1/00*
U.S. Cl. 54—35 4 Claims



1. A bitting rig apparatus for training horses, comprising:

(a) an elongated flexible member, said member being releasably attached at its ends to a saddle or the like on a horse on opposite sides of the horse, and extending about the outside of the horse's legs, said elongated member being configured such that when placed in tension, an intermediate portion of said elongated member is displaced forwardly of and apart from the horse's neck, the length of the elongated flexible member between its ends of attachment to the saddle being readily adjustable;

(b) a ring-like member slideably positioned on said elongated member for slideable movement therealong; and,

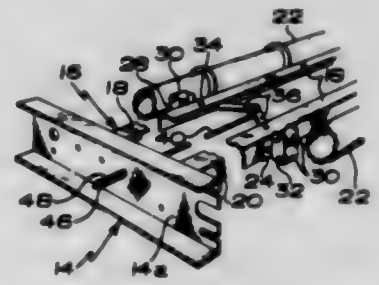
(c) a second elongated, resilient flexible member extending through said ring-like member, the ends of said second member being releasably attached to a shank portion at opposite ends of a bit positioned in the horse's mouth, said second elongated member being substantially shorter than said first elongated member, the second elongated resilient flexible member cooperating with the elongated flexible member when in tension to cause the horse's neck to flex an adjustable predetermined amount at its poll location.

4,492,074

PICKUP ROLLER SPREADER

Lloyd P. Sund, Newburg, N. Dak. 58762

Continuation-in-part of Ser. No. 516,472, Jul. 22, 1983,. This application Dec. 23, 1983, Ser. No. 564,892
Int. Cl.³ A01D *89/00*; B65G *15/50*
U.S. Cl. 56—364 6 Claims



1. In a pickup having at least one belt running over first and second belt rollers, said belt rollers begin parallel to one another and rotatably mounted and extending between first and second end frames, said pickup further comprising first and second cross members parallel to and located between said belt rollers and running between said first and second end frames, the improvement comprising:

at least two support rollers mounted on each said cross member intermediate said end frames in rolling relationship with a said belt roller; and

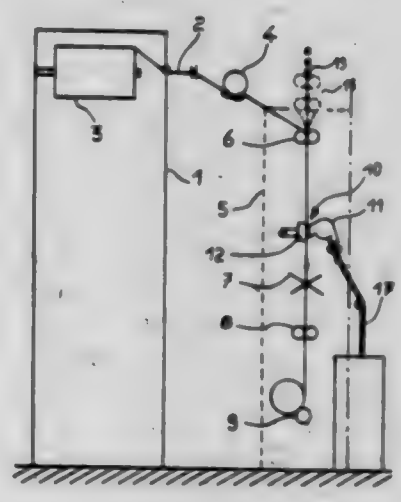
means for forcing said cross members apart and said support rollers into said belt rollers.

4,492,075

METHOD FOR PRODUCING FIBER SPUN YARNS AND THE FIBER SPUN YARNS OBTAINED WITH SAID METHOD

Jean-Louis Faure, Roanne, France, assignor to ASA S.A., Villeurbanne, France

Filed Jan. 17, 1983, Ser. No. 458,701
Claims priority, application France, Jan. 26, 1982, 82 01381
Int. Cl.³ D02G *3/34, 3/38*
U.S. Cl. 57—5 8 Claims



1. A method for producing a spun fiber yarn upstream of a false twist spindle, comprising:

(a) providing a textile core comprising a single yarn;

(b) guiding said core tangentially into a V-shaped channel having an open face and a bottom, said open face of said channel facing a parallelized elementary fibers projection zone;

(c) providing parallelized elementary fibers in said parallel-

ized elementary fibers projection zone, said parallelized elementary fibers being projected on and joined to said textile core; and

(d) subjecting said bottom of said channel to a flow of fluid to exert a pulling force on said parallelized elementary fibers.

4,492,076

PREPARATION DEVICE FOR MAKING A THREAD END READY FOR SPLICING

Ivica Rosic, Osijek, Yugoslavia, and Jürgen Loos, Monchen-Gladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

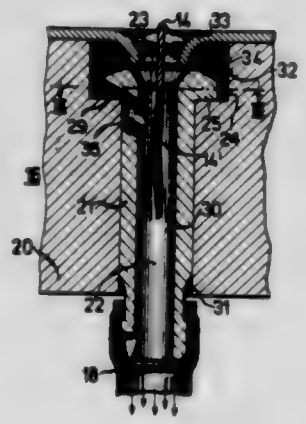
Filed Jan. 14, 1983, Ser. No. 458,160

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1982, 3201049

Int. Cl.³ D01H *15/00*

U.S. Cl. 57—22

9 Claims



1. Make-ready device for making a first thread end ready for connection to a second thread end in a thread joining device, the make-ready device having a hollow body open at opposite ends thereof for receiving the first thread therein and traversible by a gas flow, comprising at least one compressed gas guiding device for guiding the gas flow so as to at least partly stretch, parallelize and clean the fibers of the first thread in the hollow body, the compressed gas guiding device serving to control at least one of the nature and the direction of the compressed gas flow to the first thread end inside the hollow body, said compressed gas guiding device having a branch line connected to a compressed gas supply line and being continuously adjustably tappable with respect to at least the one of the nature and the direction of the compressed gas flow, said branch line comprising an annular channel surrounding the hollow body.

4,492,077

SPINNING ROTOR FOR AN OPEN-END SPINNING MACHINE AND METHOD OF CONSTRUCTION THEREOF

Hans Raasch, Monchen-Gladbach, and Dieter Busch, Wegberg, both of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Aug. 12, 1982, Ser. No. 407,612

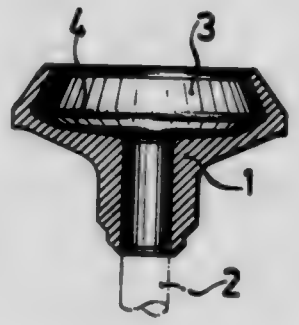
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1981, 3132131; Nov. 7, 1981, 3144383

Int. Cl.³ D01H *1/12*

U.S. Cl. 57—414

9 Claims

1. Spinning rotor for an open-end spinning machine comprising a rotational body having a hollow interior, said body being formed of steel and having thereon a surface layer formed of at least one of the compounds iron carbide, iron boride, iron silicide and iron nitride at least at locations of said hollow interior thereof at which the spinning rotor comes into contact with spinning fibers spun into a thread, said steel body with said surface layer thereon having been heat-treated in a process wherein it had been hardened by being heated to a given temperature, then quenched in liquid, and thereafter tempered and having increased ductility at high elastic limits.



4,492,078

GAS TURBINE ENGINE CASING

Willie Williamson, Derby, England, assignor to Rolls-Royce Limited, London, England

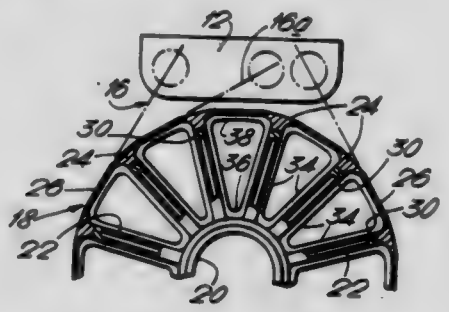
Filed Oct. 7, 1983, Ser. No. 540,186

Claims priority, application United Kingdom, Nov. 9, 1982, 8231922

Int. Cl.³ F02C *7/20*

U.S. Cl. 60—39.31

5 Claims



1. A polygonal casing suitable for use as a gas turbine engine bearing housing and comprising a hollow hub, a plurality of spokes radiating outwardly from said hub in equiangularly spaced relationship, each spoke terminating in a flanged cap, each pair of adjacent flangeed caps being joined via their flanges by a plate which is straight at least in a direction peripherally of the casing and wherein said flanged caps and plates comprise a sub assembly which is shrunk onto the spoke ends so as to exert a tensile stress of such magnitude on said plates that under predictable operating conditions of a gas turbine engine which includes said casing, tensile stress in said plates is not obviated.

4,492,079

METHOD AND APPARATUS FOR DETECTING DEGREE OF CLOGGING IN PARTICLE TRAPPING MEMBER OF INTERNAL COMBUSTION ENGINE

Shigeru Takagi, Anjo, and Nobutoshi Hayashi, Nishio, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 25, 1982, Ser. No. 361,613

Claims priority, application Japan, Mar. 30, 1981, 56-46755

Int. Cl.³ F01N *3/02*

U.S. Cl. 60—274

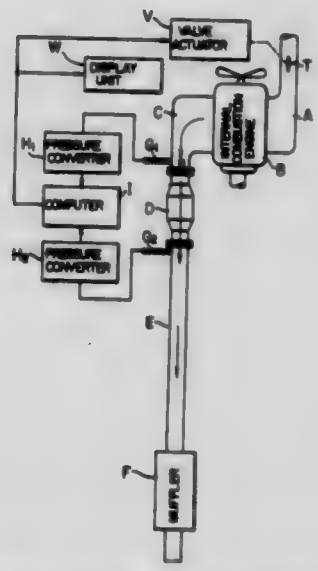
7 Claims

1. A method for detecting the degree of clogging of a particle-trapping-member of an internal combustion engine and for trapping the particles contained in the exhaust gas discharge from an internal combustion engine by the particle-trapped-member disposed in the exhaust gas flow path, comprising:

the step of measuring a selected one of the difference ΔP1 of the pressure before and after said particle-trapped-member and the pressure P1 on the inlet side of said particle-trapping-member;

the step of measuring an exhaust gas flow rate signal pro-

duced from exhaust gas flow rate detector means, the step of comparing the selected one of the difference ΔP1 and the pressure P1 with the exhaust gas flow rate signal, thereby detecting the degree of clogging of said particle-trapping-member, wherein a muffler is disposed in the



exhaust gas flow path at the downstream side of said particle-trapping-member as said exhaust gas flow rate detector means, and the outlet of said muffler is open to the atmosphere, and the pressure on the inlet side of said muffler is used as said exhaust gas flow rate signal.

4,492,080

TRACTOR HYDRAULIC CONTROL SYSTEMS

Robert E. Yapp, Solihull, and John D. Smith, Sutton Coldfield, both of England, assignors to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

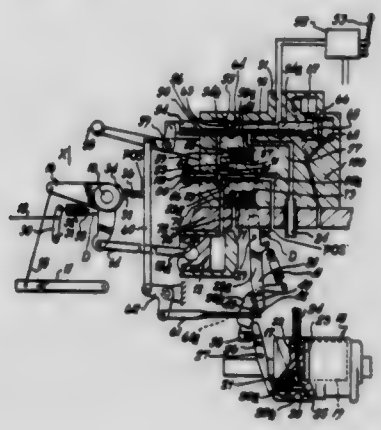
Continuation of Ser. No. 299,603, filed as PCT GB 80/00075, Apr. 30, 1980, published as WO 80/02355, Nov. 13, 1980, § 102(e) date, Jan. 9, 1981, abandoned. This application Feb. 21, 1984, Ser. No. 590,675

Claims priority, application United Kingdom, May 9, 1979, 7915993

Int. Cl.³ F15B 9/08

U.S. Cl. 60—388

7 Claims



1. A tractor hydraulic control system comprising a power lift having:

a hydraulic actuator for raising and lowering an implement hitch;

a fluid pump;

conduit means connecting the actuator and pump;

a main control valve for controlling flow through the conduit means and having supply and discharge positions allowing the supply of fluid to and discharge of fluid from the actuator, and a neutral position in which fluid is neither supplied to nor discharged from the actuator; manually operable system control means for providing a power lift command signal to the main control valve; a system control mechanism operatively connecting the implement hitch, the main control valve and the system control means;

a selector valve connected in the conduit means, the selector valve having an external services outlet and a valve member movable between a first position in which flow to and from the actuator occurs via the selector valve under the control of the main control valve and the associated system control mechanism, and a second position in which the actuator is hydraulically locked in a given position and the external services outlet is placed in communication with the pump via the conduit means;

bias means to bias the main control valve towards a supply position in which the pump delivers its maximum output flow to the selector valve, and linkage means operatively connecting the selector valve and the system control mechanism to automatically disconnect the system control mechanism from the main control valve to allow the main control valve to move to said maximum pump output flow position under the action of the bias means on movement of the selector valve to its second position thereby ensuring the supply of fluid to the external services outlet.

4,492,081

LOW PRESSURE CASING FOR A BRAKE BOOSTER

Rolf Weller, Sindlingen; Peter Boehm, Frankfurt am Main; Lucas H. Haar, Niddatal, and Karlheinz Timtner, Bad Homburg, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

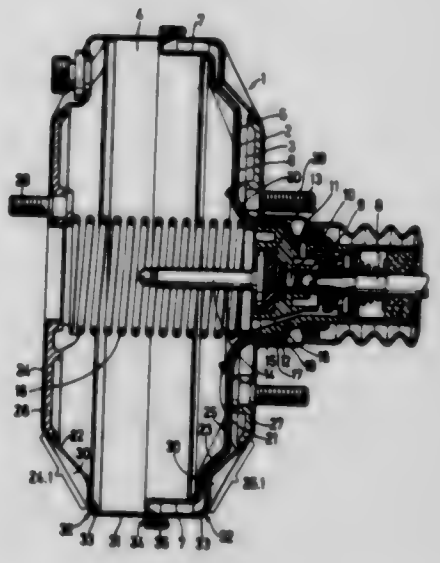
Continuation of Ser. No. 291,550, Aug. 10, 1981, abandoned. This application Mar. 21, 1984, Ser. No. 591,895

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1980, 3031206

Int. Cl.³ F01B 19/02

U.S. Cl. 60—547.1

4 Claims



1. A low-pressure casing of thin-walled construction for a brake booster comprising:

an axially movable wall sealingly subdividing said casing into a low-pressure chamber and a working chamber;

two thin-walled casing shells sealingly interconnected to form said casing, one of said tow casing shells having a first end wall adjacent said low-pressure chamber disposed coaxial of and transverse to a longitudinal axis of said casing and the other of said two casing shells having a second end wall adjacent said working chamber disposed coaxial of and transverse to said axis, said first end wall having a first central reinforced ring flange disposed against an inner surface thereof coaxial of said axis, said first flange having at least one threaded mounting member integral to said flange for connection to a master cylinder, said second end wall having a second central ring flange disposed against an inner surface thereof coaxial of said axis, said second flange having threaded means integral thereto and extending through said second wall to con-

nect said booster to an automotive means, each of said first and second end walls including a first portion lying radially outside the associated one of said first and second flanges having a truncated cone configuration and a second portion merging into said first portion along a circumferential merging or transition area, said second portion being an outer cylindrical casing portion coaxial of said axis; and

a separate prop ring mounted and secured inside each of said two casing shells bearing against the inner surface thereof both said portions to bear against and reinforce both said first and second portions on both sides of the trantition area.

4,492,052

MASTER CYLINDER FOR HYDRAULICALLY ACTUATED BRAKES FOR AUTOMOTIVE VEHICLES

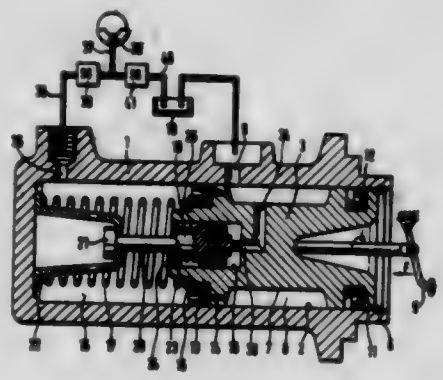
Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 4, 1983, Ser. No. 472,325

Claims priority, application Fed. Rep. of Germany, May 21, 1982, 3219134

Int. Cl.³ F15B 7/08

U.S. Cl. 60—589 10 Claims



1. A master cylinder for use in a vehicle hydraulic braking system, said system including a hydraulic fluid reservoir for controlling the pressure of hydraulic fluid acting on at least one hydraulically actuated brake in said system, said pressure of hydraulic fluid depending on the position of the brake operating member, said master cylinder comprising:

a cylinder member bounding an internal bore centered on an axis;

at least one piston sealingly and axially displaceably received in said bore and having an end surface that delimits a working chamber in said bore;

means for communicating said working chamber with the brake;

means for axially displacing said piston member in response to changes in the position of the brake operating member;

means for defining in said piston member a compensating passage that is in communication with the reservoir and has an axially extending portion which opens onto said end surface; and

means for establishing and interrupting communication between said compensating passage and said working chamber in dependence on the position of said piston member in said bore, including

a valve body slidably disposed in said working chamber,

a pin-shaped projection extending axially from said valve body toward said compensating passage and having a cross section configuration adapted to register only with said compensating passage, and

an annular elastic sealing element surrounding at least that portion of said pin-shaped projection which is closest to said valve body and operative for sealingly contacting said end surface of said piston member around said compensating passage portion upon predetermined displacement of said piston member toward said valve body while said pin-shaped projection is out of contact with said end surface, said pin-shaped projection and said sealing element bound with one another a gap of a predetermined internal dimension at least at the area thereof which is close to said end surface of said piston member, said internal dimension of said gap being larger than the internal dimension of said compensating passage whereby said sealing element is prevented from penetrating into said compensating passage upon said displacement of said piston member toward said valve body.

4,492,083

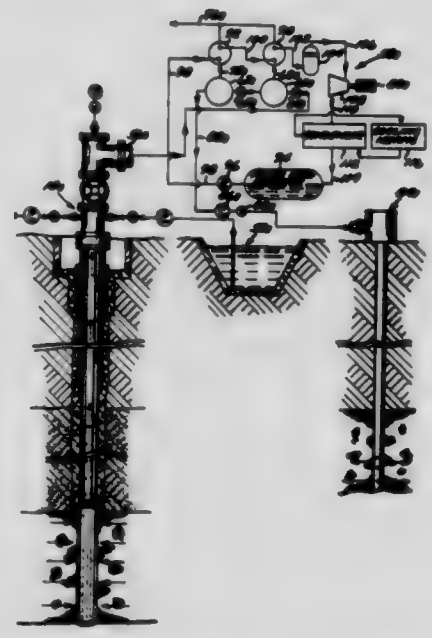
GEOTHERMAL SALINITY CONTROL SYSTEM

Barkman C. McCabe, Los Angeles, and Edward Zajac, Hollywood, both of Calif., assignors to Magma Power Company, Los Angeles, Calif.

Filed Jul. 18, 1980, Ser. No. 170,105

Int. Cl.³ F03G 7/04

U.S. Cl. 60—641.5 38 Claims



1. The method of reducing mineral scaling and corrosion in a geothermal energy system having a production well that provides access to an underground source of high temperature, highly saline geothermal brine and heat extraction means connected to said production well to receive said brine from said well, which comprises mixing non-geothermal water with said geothermal brine at a location in said system upstream of said heat extraction means, said non-geothermal water being much less saline than said geothermal brine.

4,492,084

METHOD FOR SUPPLYING REMOTE HEATING CIRCUITS WITH HEAT FROM A THERMAL POWER PLANT

Heinz Spliethoff, Friedrichsthal, Fed. Rep. of Germany, assignor to Saarbergwerke Aktiengesellschaft, Saarbrücken, Fed. Rep. of Germany

PCT No. PCT/EP81/00205, § 371 Date Aug. 20, 1982, § 102(e) Date Aug. 20, 1982, PCT Pub. No. WO82/02248, PCT Pub. Date Jul. 8, 1982

PCT Filed Dec. 23, 1981, Ser. No. 413,385

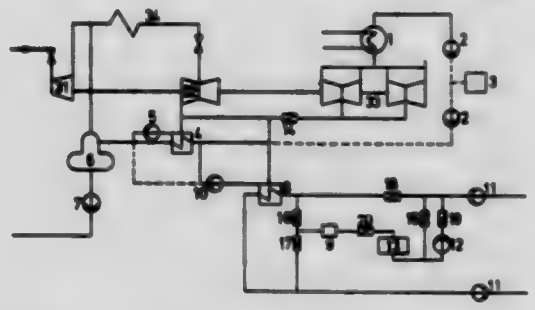
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048605; Sep. 19, 1981, 3137379

Int. Cl.³ F01K 17/00

U.S. Cl. 60—648 5 Claims

1. A method for supplying remote heating circuits with heat, which is taken at least partly from a thermal power plant, and utilizing at least one heat reservoir, located close to the power plant, at the beginning of a long distance heating flow and a return line to long distance heating circuits, preferably with water as a storage medium, comprising the steps of heating the storage medium to a constant base temperature by means of a

first circulation through a heat exchanger of a heat delivery unit, and raising the temperature of the storage medium to a value of greater than 110° C. immediately before it enters the



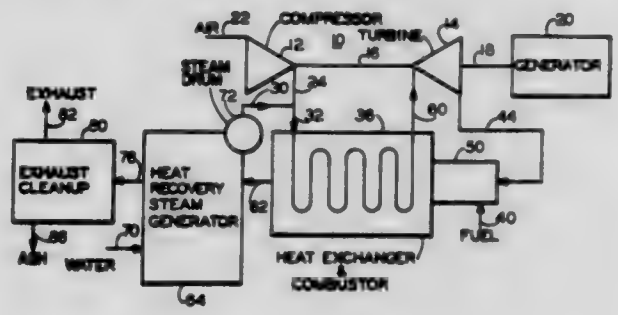
remote heating circuit by means of a second circulation of the storage medium through said heat exchanger of said heat delivery unit.

4,492,085

GAS TURBINE POWER PLANT

Charles R. Stahl, Scotia, and Archie H. Perugi, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 9, 1982, Ser. No. 406,124
Int. Cl.³ F01K 21/04, 23/10; F02C 1/04
U.S. Cl. 60—649 26 Claims



1. An improved gas turbine power plant using a state-of-the-art gas turbine comprising:

(A) a state-of-the-art gas turbine apparatus having at least one gas-driven turbine section and a compressor section driven by the turbine section for supplying a first pressurized gaseous stream;

(B) a combustor for burning a carbonaceous fuel or wood to form combusted gases to provide heat energy for driving the turbine section;

(C) at least a first heat exchanger means for transferring a portion of the heat energy provided by said combusted gases in said combustor to said pressurized gaseous stream; and

(D) at least, a first heat recovery steam generator which converts water to a first steam flow wherein said first steam flow is mixed with the pressurized gaseous stream from said compressor section to form a gaseous mixture and wherein said gaseous mixture is fed to said turbine section and is discharged therefrom as an exhaust gas stream.

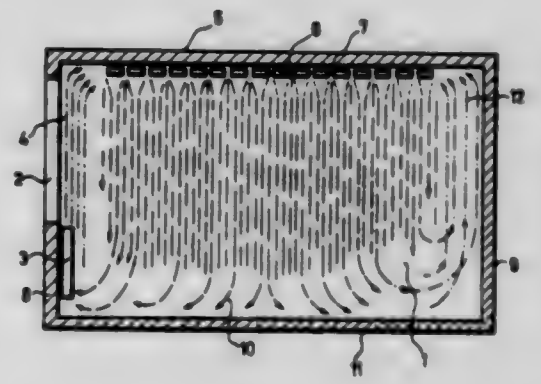
4,492,086

AIR CONDITIONING SYSTEM FOR HEATED ROOMS

Viktor Bellinger, Nevlstrasse 29, D-5620 Velbert 1, Fed. Rep. of Germany

Filed Oct. 15, 1982, Ser. No. 434,498
Int. Cl.³ F25B 21/02
U.S. Cl. 62—3 4 Claims

1. A passive Peltier effect room heat recirculating system including at least one longitudinal housing, said housing including an upper longitudinal reflection element, a spaced away lower longitudinal element, said upper longitudinal reflection element and said lower longitudinal radiating element spaced apart adapted to receive the flow of air through said housing, and a plurality of thermo-electric elements longitudinally aligned in said housing, said elements electrically interconnected and alternating an upper heat absorbing element and a lower heat radiation element, said heat absorbing element exposed to air flowing through said housing, said lower heat



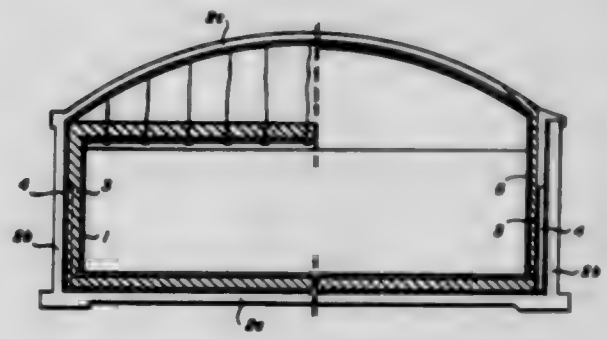
radiation element adapted to radiate heat through said lower longitudinal radiating element, whereby warm air in said housing is cooled and cool air in a room is warmed by heat radiated from said lower heat radiation element through said lower longitudinal radiating element.

4,492,087

CONTAINER FOR STORING REFRIGERATED LIQUIDS

Hans Schiffer, Darmstadt, and Michael Gaechler, Reinbeck, both of Fed. Rep. of Germany, assignors to Philipp Holzmann AG, Frankfurt and Gg. Noell GmbH, Würzburg, both of, Fed. Rep. of Germany

Filed Jun. 13, 1983, Ser. No. 503,693
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1982, 3222064
Int. Cl.³ F17C 1/00
U.S. Cl. 62—45 19 Claims



1. Container for storage of refrigerated liquids comprising

a concrete outer container;

an insulation disposed on the bottom of the outer container,

an inner steel container resting on the insulation and disposed inside the outer container for providing an annular interspace between the inner wall side of the outer container and the outer wall side of the inner container;

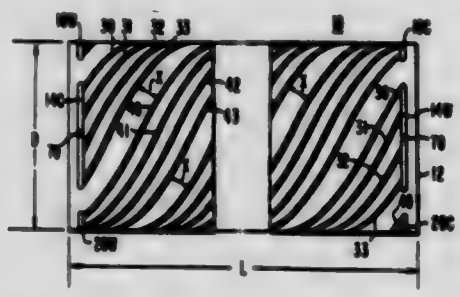
insulating material filled into the interspace; and

at least two gush braking bodies attached to either the outer wall side of the inner container and/or to the inner wall side of the outer container and protruding into the interspace, wherein the exposed angle between the tank and the gush breaking body is 90 degrees or greater, and wherein the gush braking bodies extend in radial direction to from about one quarter to one half of the width of the annular interspace between the two containers.

4,492,088
RADIATION SHIELD WITH HELICAL FLUID PASSAGES

El-Ersky A. Ibrahim, Monroeville, and Phillip W. Eckels, Penn Hills, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 31, 1983, Ser. No. 499,627
Int. Cl.³ F17C 7/02
U.S. Cl. 62—55 13 Claims

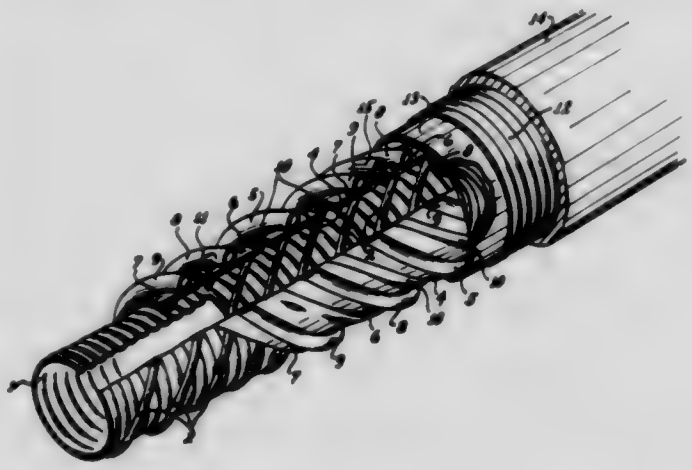


1. A superconducting generator, comprising:
a rotor assembly having a superconducting winding;
a radiation shield disposed cylindrically about said rotor assembly, said radiation shield having a first circumferential fluid passage at one of its axial ends and a second circumferential fluid passage at the other of its axial ends, said radiation shield having a helical fluid passage extending around the circumference of said radiation shield, said helical fluid passage providing fluid communication between said first and second circumferential fluid passages;
first means for introducing a fluid into said first circumferential fluid passage; and
first means for removing a fluid from said second circumferential fluid passage.

4,492,089
FLEXIBLE CRYOGENIC CONDUIT

Peter Rohner, Isernhagen; Klausdieter Schippl, Lautzen; Günther Blumenberg; Werner Meyer, both of Hanover, all of Fed. Rep. of Germany, and Wolfgang Obert, Oxford, England, assignors to Kabelmetal Electro GmbH, Hanover, Fed. Rep. of Germany

Filed Sep. 12, 1983, Ser. No. 531,054
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1983, 3234476
Int. Cl.³ F16L 11/11, 11/12
U.S. Cl. 62—55 5 Claims

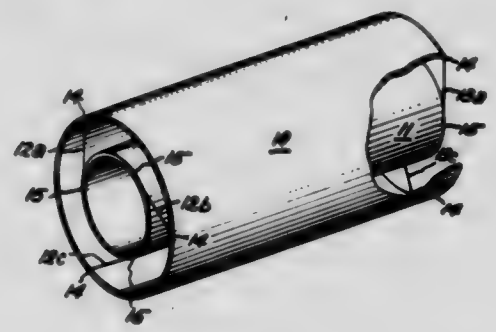


1. A cryogenic tube system including at first corrugated tube, the interior of which is to be thermally isolated against the exterior at large; and
a second, outer also corrugated tube concentrically arranged with respect to said inner tube, to establish a flexible assembly comprising:
a plurality of metallic ribbons being of a flat cross-section and arranged helically in an intertwined relationship around said inner tube;
a corresponding plurality of conduits for coolant affixed respectively to said ribbons, facing the outer tube and looping accordingly around said inner tube in a configuration of intertwined helices; and
spacer means arranged with respect to the aforementioned assembly for supporting thereon said outer tube.

4,492,090
CRYOSTAT FOR NMR MAGNET

Evangelos T. Laskaris, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 19, 1983, Ser. No. 533,336
Int. Cl.³ F17C 7/02
U.S. Cl. 62—55 16 Claims



1. A cryostat compriaing:
a substantially rigid outer, evacuable vessel having an annular shape;
a substantially rigid interior vessel having an annular shape and being wholly contained within said outer vessel so that the central axis of said interior vessel and said outer vessel lie substantially along the same line;
a first set of at least three supporting ties extending transversely from attachment positions on a first end of said interior vessel to said corresponding attachment points on the proximal end of said outer vessel, said attachment points on said first end of said interior vessel being substantially uniformly disposed about the periphery thereof and said corresponding attachment points on said outer vessel being substantially uniformly disposed about said outer vessel; and
a second set of at least three supporting ties extending transversely from attachment points on a second end of said interior vessel to corresponding attachment points on the proximal end of said outer vessel, said attachment points on said second end of said interior vessel being substantially uniformly disposed about the periphery thereof and said corresponding attachment points on said outer vessel being substantially uniformly disposed about said outer vessel;
said first set of ties being disposed so as to inhibit relative rotation of said outer and said interior vessels in a first rotational direction and said second set of ties being disposed so as to inhibit relative rotation of said vessels in the opposite rotational direction.

4,492,091
APPARATUS AND METHOD FOR CONTROLLING A HEAT PUMP WATER HEATER

Robert J. Whitwell, Baldwinsville, and James P. Schafer, Canastovia, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jan. 20, 1983, Ser. No. 459,296
Int. Cl.³ F25D 17/00
U.S. Cl. 62—180 7 Claims

1. A water heating system including a tank wherein heated

water may be stored and a refrigeration circuit having a compressor, condenser and evaporator wherein the condenser includes a water passageway and a refrigerant passageway in heat exchange relation to transfer heat energy from the refrigerant to the water to be heated which comprises:

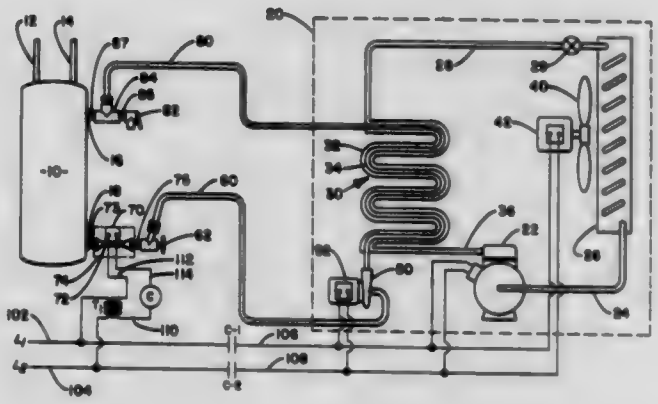
a thermally conductive tubular member extending from a bottom portion of the tank;

a first conduit connecting the tubular member to the water passageway of the condenser;

a second conduit connecting the water passageway of the condenser to the tank at a position spaced from the tubular member;

a pump for circulating water through the first conduit, the water passageway, condenser and second conduit;

thermal sensing means mounted to sense the temperature of the tubular member, said thermal sensing means being connected to energize the pump to circulate water, to



energize the compressor of the refrigeration circuit when the temperature sensed is below a first threshhold temperature and to de-energize the pump and the compressor when the temperature sensed exceeds a second threshhold temperature; and

insulation mounted about the thermal sensing means and the thermally conductive tubular member to reduce the heat transfer from the tubular member to the ambient air such that the temperature sensed by thermal sensing means is an accurate reflection of the temperature of the water in the tank, said insulation comprising an elastomeric foam sheet, said sheet being wrapped about said tubular member and said thermal sensing means, and further including a securing means for securing said sheet in position, and said sheet further defining an opening leading to said thermal sensing means for allowing said thermal sensing means to be adjusted without removal of said insulation.

4,492,092

COMBINATION REFRIGERANT CIRCUIT AND HOT WATER PREHEATER

Michael E. Smorol, Syracuse; Michael C. Witmzyuski, Liverpool, and Theodore L. Woollis, Clay, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jul. 2, 1982, Ser. No. 394,575
Int. Cl.³ F25D *17/00*
U.S. Cl. 62—181 2 Claims

1. A combination referigeration circuit including a compressor and a hot water heating system which comprises:

a water inlet for receiving water to be heated;

a water outlet for discharging water to a storage tank and a hot water tap through a single conduit;

a pump connected to receive water from the water inlet and to circulate water through the water heating system to the water outlet, said pump being energized in conjunction with the compressor;

heat exchange means connected to receive hot gaseous refrigerant from the refrigeration circuit and to effect a transfer of heat energy from said refrigerant to the water flowing through the hot water heating system;

a first water conduit means connecting the heat exchange means to the pump;

valve means located downstream of said heat exchange means to control the flow of water from the heat exchange means to the water outlet;

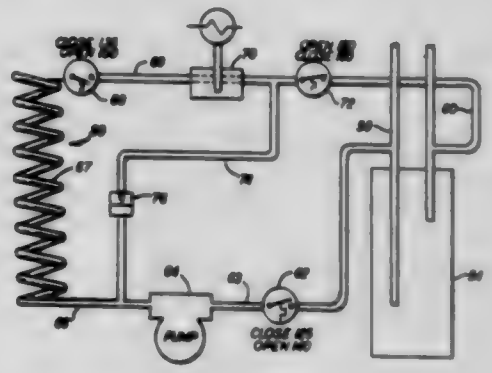
a second water conduit means connecting the heat exchange means to the valve means;

a third water conduit means connecting the valve means to the water outlet;

a bypass means including a flow restriction for limiting flow therethrough connecting the first conduit means to the third conduit means;

an entering water temperature sensor located upstream of said pump;

a leaving water temperature sensor located within said second water conduit means;



a safety temperature sensor located downstream of said bypass means within said third conduit means for sensing the temperature of the water flowing to the water outlet through the third conduit means including water flowing through the bypass means; and

circuit means connecting contacts of the safety temperature sensor, said entering water temperature sensor, and said leaving water temperature sensor in series with the valve means, and said contacts of said safety temperature sensor in series with said pump and compressor, which are in parallel, whereby said valve means is open only when said contacts of all three of said safety temperature sensor, said entering water temperature sensor, and said leaving water temperature sensor are closed by sensing the appropriate temperature conditions, and said compressor and said pump are running when only said contacts of said safety temperature sensor are closed.

4,492,093

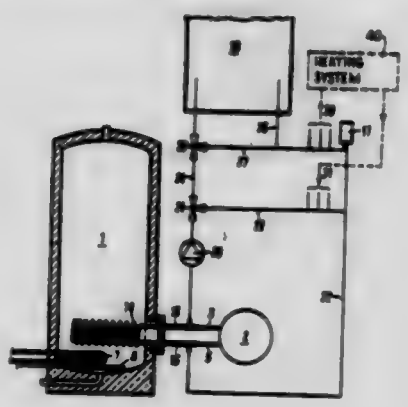
HEAT EXCHANGER SYSTEM

Alois Schwarz, St. Johann in Tirol, Austria, assignor to ID-Energiesysteme Gesellschaft m.b.H., St. Johann in Tirol, Austria

Filed Jul. 21, 1983, Ser. No. 516,135
Claims priority, application Austria, Jul. 21, 1982, 2825/82
Int. Cl.³ F25B *27/02*
U.S. Cl. 62—238.6 8 Claims

1. A heat exchanger apparatus, comprising: a container containing a quantity of a liquid; a heat source arranged outside of said container; a pipe arrangement which is disposed within said container and includes an outer pipe and an inner pipe, said inner pipe being disposed within said outer pipe; first fluid circuit means for effecting fluid communication between said inner pipe and said heat source and for causing a first fluid to flow through said inner pipe and to carry heat from said heat source to said pipe arrangement and to discharge the heat through said pipe arrangement to said liquid in said container; pump means; second fluid circuit means for providing fluid communication between said pump means and said outer pipe, said pump means causing a second fluid to flow through said outer pipe in a direction opposite the direction in which said

first fluid flows through said inner pipe; inwardly projecting rib means provided on an inner surface of said inner pipe; and



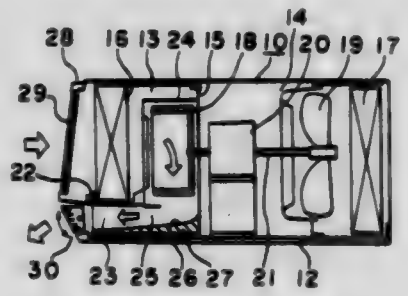
outwardly projecting rib means provided on an outer surface of said outer pipe.

4,492,094

ONE-BODY TYPE AIR CONDITIONER

Kaneo Katayama, Shimoda, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1983, Ser. No. 505,498
Claims priority, application Japan, Jun. 30, 1982, 57-113541; Jul. 8, 1982, 57-183523[U]; Jul. 8, 1982, 57-118932
Int. Cl.³ F25D 23/12
U.S. Cl. 62—262
6 Claims



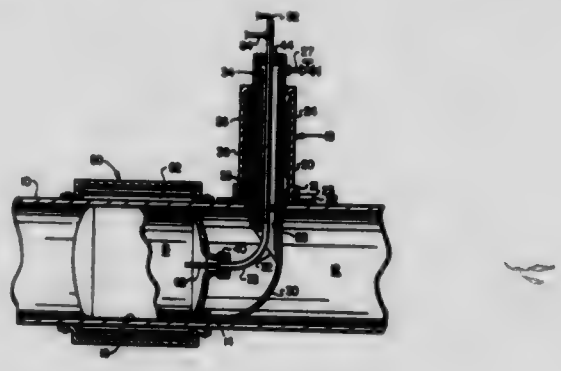
1. A single-body type air conditioner; comprising:
a casing;
a base plate placed in said casing;
a front panel connected to said casing and having an air intake grille formed therein at an upper portion thereof;
an intermediate partition positioned in said casing to define a room side section and an outdoor side section;
a room side heat exchanger positioned in said room side section;
an outdoor side heat exchanger positioned in said outdoor side section;
a room side fan and an outdoor side fan positioned respectively adjacent said room side heat exchanger and said outdoor side heat exchanger;
a driving motor having first and second shafts extending first and second sides thereof, first and second ends of said shaft securing said room side fan and said outdoor side fan respectively;
a drain pan and an air blowing outlet positioned below said room side heat exchanger;
room side air blowing passage means located within said casing to communicate said air intake grille with said air blowing outlet and which further comprises an air passage wall for forming a lower part of said room side air passage formed unitarily with said intermediate partition; heat insulator means interposed between said air passage wall and said base plate; and
a synthetic resin sound absorber and an air blowing louver located adjacent a lower portion of said front panel and which is placed downstream of said air intake opening and said air blowing outlet wherein said air blowing passage means and said air passage wall extend horizontally from said intermediate partition to said air blowing louver and wherein said air passage wall is of a gradually decreasing curved shape.

4,492,095

APPARATUS AND METHOD FOR FORMING A TEMPORARY PLUG IN A FLUID CONDUIT

Beryle D. Brister, Amarillo, Tex., assignor to Brister, Incorporated, Amarillo, Tex.

Division of Ser. No. 328,029, Dec. 8, 1981, Pat. No. 4,428,204. This application Dec. 9, 1983, Ser. No. 559,787
Int. Cl.³ F25D 3/00
U.S. Cl. 62—293
14 Claims



1. Apparatus for forming a substantially flow stopping plug in a conduit such as a fluid transmission line comprising:
a flexible bag formed of a substantially liquid impervious material;
conduit means connected at one end to said bag and adapted to be connected at the other end to a source of liquid for filling said bag with liquid when said bag is in a deployed position in the interior of said line; means extending into the interior of said bag for conducting fluid in heat exchange relationship with liquid in the interior of said bag; and
bag holding means for holding said bag in a collapsed condition, said bag holding means being operable to be connected to said line, said bag holding means including means for ejecting said bag from said bag holding means into said interior of said line whereby said bag may be filled with said liquid to be frozen to form said plug.

4,492,096

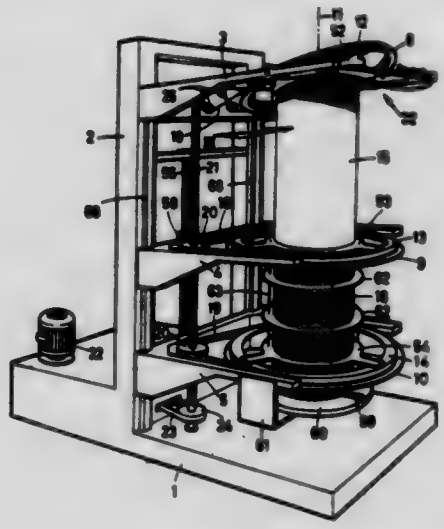
HOLLOW REINFORCEMENTS OF REVOLUTION MADE BY THREE-DIMENSIONAL WEAVING METHOD AND MACHINE FOR FABRICATING SUCH REINFORCEMENTS

Georges J. J. Cahuzac, Le Bouscat, France, assignor to Societe Nationale Industrielle Aerospatiale, France

Filed Jun. 27, 1983, Ser. No. 508,186
Claims priority, application France, Jul. 2, 1982, 82 11693
Int. Cl.³ D04B 9/12, 9/14, 9/16, 9/44
U.S. Cl. 66—11
20 Claims

1. A reinforcement in the shape of a hollow cylindrical body of revolution about an axis, made by a three-dimensional weaving of three systems of threads comprising a first system of threads which are parallel to the axis of the reinforcement and disposed in an equidistant manner in coaxial sheets which sheets are also equidistant, said first system of threads defining therebetween two respective series of crossed passages, and a second system of threads and a third system of threads substantially contained in planes perpendicular to said axis, forming superimposed layers and inserted in said two respective series of crossed passages, the threads of said first system being dis-

posed in staggered relation to each other from one sheet to the neighbouring sheet and the two sheets of crossed passages



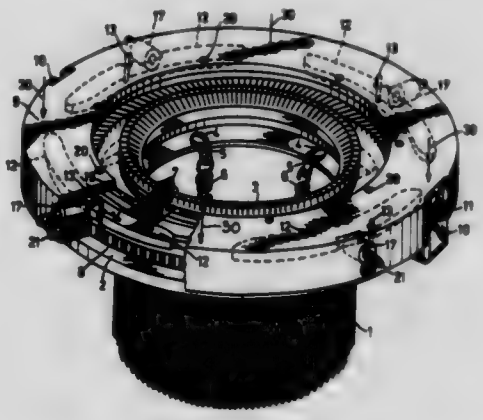
defined therebetween extending through the thickness of the reinforcement in an oblique non-radial direction.

4,492,097

CIRCULAR KNITTING MACHINE FOR HOSIERY ARTICLES

Carlo Ferraris, Collatica, Italy, assignor to Santoni & Co. SpA, Italy

Filed May 17, 1982, Ser. No. 378,876
Claims priority, application Italy, May 19, 1981, 21817A/81
Int. Cl.³ D04B 15/06
U.S. Cl. 66—108 R 5 Claims



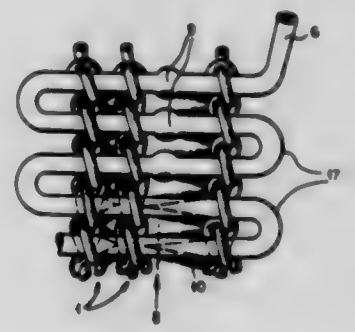
1. A circular hosiery knitting machine, more particular for ladies' stockings, having a needle cylinder, sinker-carrying rings secured to the top of said cylinder, and a lid overlying said rings, said lid housing outwardly of the sinkers in said rings, and in the intermediate areas between the individual points at which yarn is disposed to be fed, a plurality of sinker-pressing cams mounted to float dadially beneath said lid and to be centripetally shiftable by means adapted selectively to urge said cams toward heels on the sinkers, and characterized in that said urging means comprises a plurality of miniature pneumatic rams each with an attendant plunger, each of said sinker-pressing cams having, associated therewith, a ram and its attendent plunger, which is engagable with the last-named cam, said rams being con- nected in parallel together in a pneumatic circuitry comprising a control valve and a pressure regulator selectively for supplying air under pressure to said rams.

4,492,098

METHOD OF MAKING A SLIDE FASTENER COUPLING STRIP

Helmut Heimberger, Steinhausen, Switzerland, assignor to Optilon W. Erich Hellmann GmbH, Cham, Switzerland

Filed Jul. 10, 1981, Ser. No. 282,075
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1980, 3026448
Int. Cl.³ D04B 7/16
U.S. Cl. 66—202 1 Claim



1. A method of making a coupling strip for a slide fastener stringer comprising the steps of:

knitting a pair of relatively closely spaced warp chains and a further warp chain spaced from the pair of warp chains of a distance greater than the distance between the warp chains of said pair by sweeping respective thread guides for a warp filament for each chain back and forth with respect to a stitch-forming needle and inserting the synthetic resin monofilament thread into the stitches of said warp chain as they are formed to generate a fabric with said synthetic resin monofilament thread forming a weft inlay;

connecting the stitches of said warp chains by a weft-inserted thermally shrinkable yarn;

bending said fabric along a zone between said pair of warp chains and said further warp chain to form respective bends in said synthetic resin monofilament thread such that such bends from slide fastener coupling heads, while said further warp chain is disposed between the warp chains of said pair; and

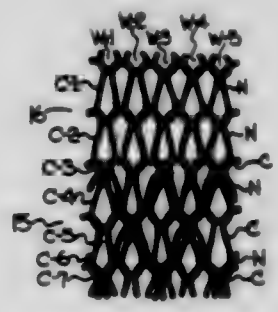
thereafter subjecting the bent fabric to heat to shrink said thermally shrinkable yarn and lock said further warp chain between the warp chains of said pair.

4,492,099

SHEER HOSIERY WITH A RUN-RESISTANT TOE AND METHOD

Sam C. Sofrit, Pfafftown; Roscoe M. Farrell, Pittsboro, and Melvin C. Eaker, Burlington, all of N.C., assignors to Kayser-Roth Hosiery, Inc., Burlington, N.C.

Filed Aug. 15, 1983, Ser. No. 523,380
Int. Cl.³ D04B 7/16
U.S. Cl. 66—202 11 Claims



1. A circularly knit hosiery article having a sheer foot portion and a run-resistant toe portion, with said toe portion being adapted to have substantially the same dyed shade as the adjacent foot portion, said foot portion being knit of a fine denier

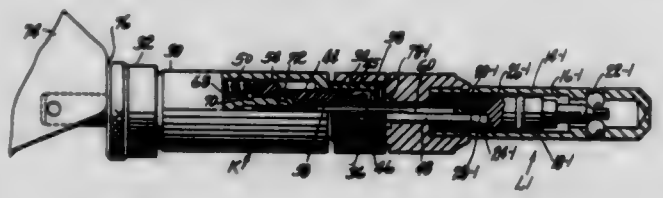
synthetic yarn capable of being dyed with a particular type of dye, said toe portion being integrally knit as a continuation of the sheer foot portion and comprising alternating single courses of plain stitch loops in every wale, and intervening single courses of alternating tuck and plain stitch loops in adjacent wales, at least some of said single courses throughout said toe portion being knit of a fine denier synthetic yarn capable of being dyed with said particular type of dye and the remaining courses of said toe portion being knit of a fine denier synthetic dye-resistant yarn which is not capable of being dyed with said particular type of dye, and said single courses of alternating tuck and plain stitch loops providing run-resistant characteristics to said toe portion while said single courses knit of said dye-resistant yarn aid in providing said run-resistant toe portion with substantially the same dyed shade as said sheer foot portion.

4,492,100

KEY FOR A LOCK OF THE PLUNGER OPERATED TYPE

James A. Swisher, 2497 Castellon Dr., North Jacksonville, Fla. 32217

Filed Jul. 9, 1981, Ser. No. 281,704
The portion of the term of this patent subsequent to Jan. 24, 2001, has been disclaimed.
Int. Cl.³ E05B *19/18, 35/06*
U.S. Cl. 70—34 6 Claims



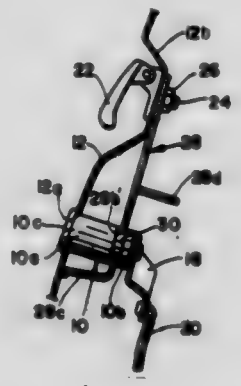
1. In a key for opening a lock of the plunger operated type, said key comprising a housing, a series of resilient fingers extending forwardly from a finger carrier axially movable in the housing, and a mandrel disposed between the fingers which is retractable through the finger carrier to spread the fingers, the improvement comprising adjustable means on the key for varying the effective length of the fingers.

4,492,101

LOCK CYLINDER ATTACHING DEVICE FOR VEHICLE MOVABLE CLOSURE LOCKS

Yoshiyuki Tanaka, Sagamihara, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 14, 1982, Ser. No. 418,093
Claims priority, application Japan, Sep. 25, 1981, 56-151737
Int. Cl.³ E05B *9/08*
U.S. Cl. 70—370 4 Claims



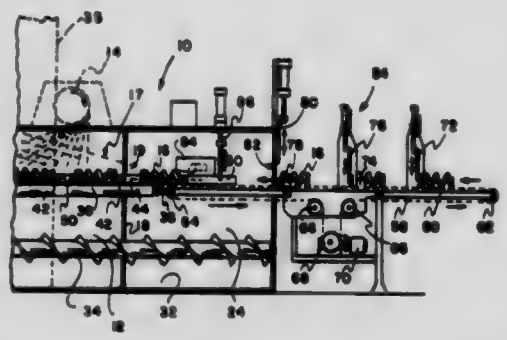
1. A lock cylinder attaching device comprising:
a vehicle body member;
a lock cylinder arranged transversely of said vehicle body member to have an outer end portion and an inner end portion;
means for attaching said outer end portion of said lock cylinder to said vehicle body member; and
a support having one end portion fixed to said vehicle body member and the other end portion supporting said inner end portion of said lock cylinder, said support being in the form of an elongated plate having a lower end bent portion and an intermediate bent portion, said lower end bent portion projecting outwardly from the lower end of said support to form an abutment arm which is abuttingly engageable with said door outer panel, said intermediate bent portion projecting inwardly from a location intermediate between the upper and lower ends of said support to form a cover concealing said inner end portion of said lock cylinder.

4,492,102

SEPARATING AND FEEDING SYSTEM FOR A SHOT PEENING MACHINE

Gerold Liesert, Georgetown, Canada, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Nov. 30, 1982, Ser. No. 445,393
Int. Cl.³ B21J *5/00*
U.S. Cl. 72—53 5 Claims



1. A separating and feeding system for a shot peening machine of the type which includes blast wheel means or the like which is mounted on a housing thereof and is capable of propelling a plurality of shot generally downwardly into a critical blast region within said housing for shot peening a plurality of work pieces passing therethrough, said work pieces being supported on and separately conveyed along a horizontal peening path into one side of, through, and out another side of said critical blast region, said separating and feeding system comprising:
an entrance chamber within said housing adjacent said critical blast region at said one side thereof;
an elongated, horizontally extending support surface mounted relative to said housing for continuous movement from a first end exterior of said housing through an opening in a wall of said housing to a second end within said entrance chamber at said one side of said critical blast region;
said horizontally extending support surface being capable of supporting said work pieces thereon and making sufficient frictional contact therewith for transportation of said work pieces from said first end to said second end thereof, said horizontally extending support surface being able to continue said movement beneath any of said work pieces which are prevented by retarding means from continuing said transportation;
said retarding means including a shot screening and work piece stopping gate in a normally closed position at said opening to prevent escape of said shot therethrough and entrance of one of said work pieces into said entrance chamber;
means for indicating when said one side of said critical blast region is available for delivery of said one work pieces thereto;
said means for indicating producing a signal for opening said shot screening and work pieces stopping gate for a predetermined amount of time to allow said movement of said horizontally extending support surface to cause said trans-

portation of said one work piece into said entrance chamber, to said second end of said horinzontally extending support surface and to said one side of said critical blast region; and

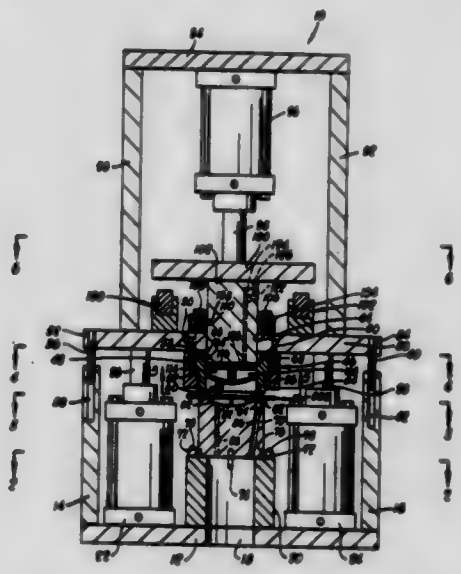
a secondary shot screening gate between said shot screening and work piece stopping gate and said second end of said horizontally extending support surface, said secondary shot screening gate being in a normally opened position, receiving said signal from said means for indicating to be closed thereby for said predetermined amount of time when said shot screening and work piece stopping gate is opened and returning to said normally opened position prior to said transportation of said one work piece therethough to insure it will not retard as transportation of said one work piece to said second end of said horinzontally extending support surface and said one side of said critical blast region.

4,492,103

APPARATUS FOR MANUFACTURING RUPTURE DISKS

Leo J. Naumann, Broken Arrow, Okla., assignor to BS&B Safety Systems, Inc., Tulsa, Okla.

Division of Ser. No. 465,799, Feb. 11, 1983, Pat. No. 4,458,516. This application Apr. 20, 1984, Ser. No. 602,541
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—55 10 Claims



1. Apparatus for manufacturing scored or perforated rupture disks from sheet metal sections comprising:

a base;

a rupture disk forming die removably attached to said base;

means for sealingly clamping a sheet metal section to said die and cutting said section into a disk movably positioned adjacent said die;

means for applying pressurized fluid to a sheet metal disk whereby said disk is forced against and conformed to said die attached to said clamping and cutting means;

means for selectively moving said clamping and cutting means into and out of clamping and cutting contact with a sheet metal section attached to said base and to said clamping and cutting means;

a movable ram having a score or perforation forming blade attached thereto sealingly attached to said clamping and cutting means and positioned to move said blade into forceable contact with a sheet metal disk forced against and conformed to said die whereby scores or perforations are formed on or in said disk; and

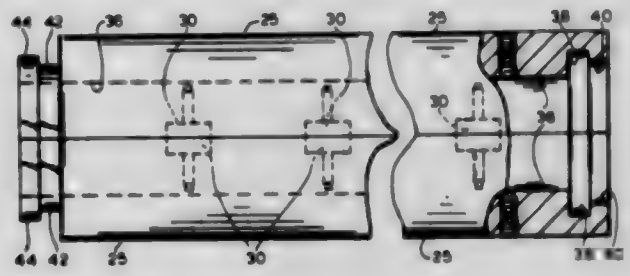
means for selectively moving said ram attached thereto and to said clamping and cutting means.

4,492,104

EXPLOSIVE SHAPING OF METAL TUBING

Henry Weaver, and Joseph C. Pawlusk, both of York, Pa., assignors to Meadowcraft Inc., Birmingham, Ala.

Filed Dec. 2, 1981, Ser. No. 326,451
Int. Cl.³ B21D *26/02*
U.S. Cl. 72—56 1 Claim



1. A method for explosively shaping a deformable metal tube blank comprising the steps of:

providing a forming die having a bore therein, the surfaces defining said bore being a negative of the configuration desired on the exterior surface of the metal tubing to be shaped;

providing a breech assembly at one end of said bore, said breech assembly including means for receiving a shell, detonating means for exploding said shell, and means for connecting said breech assembly with said bore such that the exploding of said shell causes an explosive force to be exerted within said bore; filling said metal tube blank with a liquid medium;

exploding said shell thereby causing said liquid medium to transmit the explosive charge to the inner wall of the tube and cause the tube blank to assume the desired configuration; and

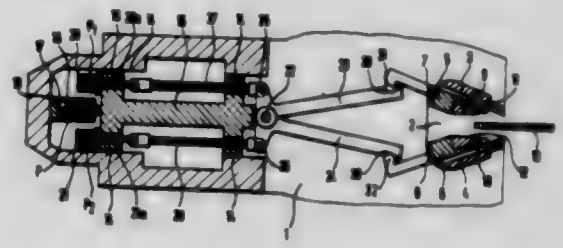
removing the liquid medium from said tube by causing a blast of gas from said breach assembly to be introduced into said tube.

4,492,105

TIGHTENING DEVICE FOR THE GRIPPING JAWS OF A PLATE STRETCHER

Heinrich Kutz, Neuss; Gunter Ostlinning, Duesseldorf, and Gerd Jung, Koblenz, all of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Mar. 15, 1982, Ser. No. 358,242
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1981, 3111140
Int. Cl.³ B21D *11/02*
U.S. Cl. 72—302 11 Claims



10. In a plate stretcher comprising a gripping head having a griping mouth, at least one pair of plate-gripping jaws in the gripping mouth, V-form guide means in which the jaws are slidable, and means for sliding the jaws relative to the guide means synchronously forwards for closing the jaws and backwards for opening the jaws, the improvement wherein said means for sliding said jaws comprises, driving means and, for each jaw of said pair of jaws, a respective coupling member operatively positioned to be in compression between said driving means and the associated jaw during forward movement for moving said jaw forwards to close the jaws, said coupling member being releasably operatively associated with said jaw

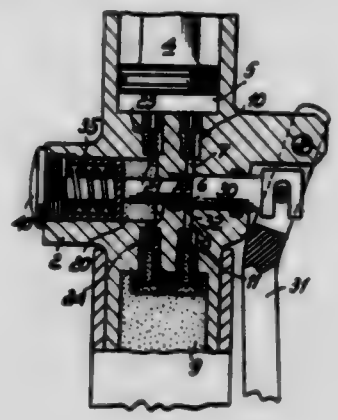
so that said coupling member is separable from said jaw during operation of the plate stretcher, and means for moving each coupling member between a first position wherein said coupling member is in operating relationship with a respective jaw and a second position wherein said coupling member is in nonoperating relationship with a respective jaw and clear of the region of movement of said jaw so that said jaw is movable separately and independently of said coupling member.

4,492,106

MANUALLY ACTUATED HYDRAULIC JACK FOR COMPRESSIVELY APPLYING TERMINALS ON ELECTRIC CABLES AND CONDUCTORS IN GENERAL

Mario Amighini, Via Zadei 52, Brescia, Italy

Filed Dec. 27, 1982, Ser. No. 453,188
Claims priority, application Italy, Jan. 7, 1982, 19015 A/82
Int. Cl.³ B21J 9/18
U.S. Cl. 72—453.02 4 Claims



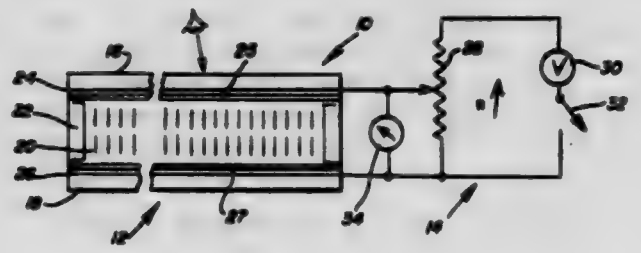
1. A manually actuated hydraulic jack for compressively applying terminals on electric cables and conductors in general, comprising a jack body, a fixed jaw rigidly associated with said jack body, a moving jaw facing said fixed jaw, an actuating lever handle pivoted to said jack body for effecting a forward stroke toward said jack body and a reverse return stroke, a cylindrical chamber in said body, a piston movable within said cylindrical chamber and rigidly connected to said movable jaw, a working fluid reservoir, first and second chambers in said jack body, a first intake conduit and a first delivery conduit for establishing communication between said reservoir and said first chamber and between said first chamber and said cylindrical chamber, second intake conduit and second delivery conduit for establishing communication between said reservoir and said second chamber and between said second chamber and said cylindrical chamber, one-way valving means in said intake and said delivery conduits for controlling said intake and said delivery conduits, a high-pressure piston sealingly movable in said first chamber and pivoted to said actuating handle, a low-pressure piston movable in said second chamber, elastic bias means in said second chamber acting on said low-pressure piston, said high-pressure piston having a lug protruding out of said first chamber toward said second chamber and acting on said low-pressure piston, for urging it, during the forward stroke of the actuating lever handle, to a retracted filling position where said elastic means is compressed wherein said second chamber is filled in use with working fluid through said second intake conduit and said first chamber has discharged working fluid contained therein through said first delivery conduit, said elastic means acting on said low-pressure piston during the reverse stroke of said actuating lever handle for bringing said low-pressure piston in its expanded position to discharge the working fluid filling said second chamber through said second delivery conduit and urge said high-pressure piston in its retracted position where said first chamber is filled with working fluid through said first intake conduit.

4,492,107

ACOUSTIC POWER METER

Jawinder S. Sandhu, Chicago, Ill., assignor to RAJ Technology Partnership, Chicago, Ill.

Filed Mar. 22, 1982, Ser. No. 360,623
Int. Cl.³ G01H 9/00
U.S. Cl. 73—1 DV 15 Claims



1. A method of calibrating an acoustic power meter which includes a liquid crystal detector cell and circuit means for controllably applying a DC electric field to said cell, said method comprising the steps of:

(a) determining the electrical resistance of the detector cell;

(b) providing different levels of acoustic energy;

(c) exposing said cell to a plurality of said different levels of acoustic energy and determining the voltage required to restore the cell to the unexcited condition for each of said levels;

(d) determining from the resistance of the cell and voltage applied thereto the power required to restore the cell to the unexcited condition for each of said levels; and

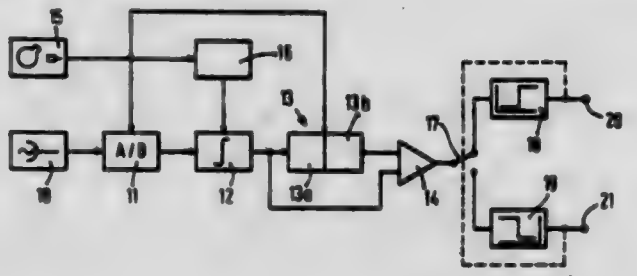
(e) correlating the observed voltage and determined power for each level, with the restoring power being equivalent to the incident energy.

4,492,108

METHOD AND APPARATUS FOR RECOGNIZING IRREGULAR COMBUSTION PROCESSES IN AN INTERNAL COMBUSTION ENGINE

Anton van Zanten, Ditzingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE82/00034, § 371 Date Sep. 29, 1982, § 102(e) Date Sep. 29, 1982, PCT Pub. No. WO82/03685, PCT Pub. Date Oct. 28, 1982
PCT Filed Feb. 24, 1982, Ser. No. 432,913
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1981, 3115194; May 27, 1981, 3121120
Int. Cl.³ G01L 23/22
U.S. Cl. 73—35 12 Claims



1. A method for recognizing the knocking of an internal combustion engine,

in which a sensor signal is integrated within an interval of the combustion cycle to produce an intelligence signal,

at least one intelligence signal associated with the knocking process is compared with at least one reference signal corresponding to the background noise and

a recognition signal is emitted whenever the intelligence signal exceeds the reference signal in a prespecified manner,

wherein, in accordance with the invention,

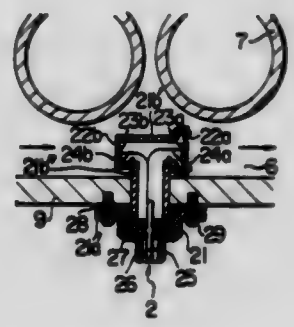
the intelligence signal occurring during one combustion cycle is stored and,
during the next combustion cycle, this stored intelligence signal is used as a reference signal and is compared with the intelligence signal appearing at that time,
and wherein,
in the event of the emission of the recognition signal for knocking combustion during a combustion cycle,
the reference signal used during this combustion cycle is also used during the following combustion cycle.

4,492,109

KNOCKING DETECTION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Tadashi Ozaki, Gamagori; Tadashi Hattori; Kazuhiko Miura, both of Okazaki; Masamori Hanaoka, and Yukihide Hashigechi, both of Toyota, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Oct. 13, 1982, Ser. No. 433,878
Claims priority, application Japan, Oct. 14, 1981, 56-164842; Oct. 14, 1981, 56-153423[U]
Int. Cl.³ G01L 23/22
U.S. Cl. 73—35 4 Claims



1. An apparatus for detecting knocking occurring in at least one of aligned cylinders in a cylinder block of an internal combustion engine, comprising:
sensing means, mounted on a mounting portion of a wall of said cylinder block, for sensing pressure pulsations propagating through cooling water which flows around said cylinders in said cylinder block,
said sensing means including first and second diaphragm means, each comprising a diaphragm, one surface of which is exposed to said cooling water in a space defined by said wall of said cylinder block and said cylinders, and a transducer, secured to the other surface of each of said diaphragms, for outputting signals corresponding to pressure changes caused by said pulsations, said one surface of the diaphragm of said first means being located downstream from said mounting wall portion with respect to the flow of cooling water, and said one surface of the diaphragm of said second means being located upstream from said mounting wall portion with respect to the flow of cooling water, wherein
said first diaphragm means has a higher sensitivity to pressure changes than does said second diaphragm means.

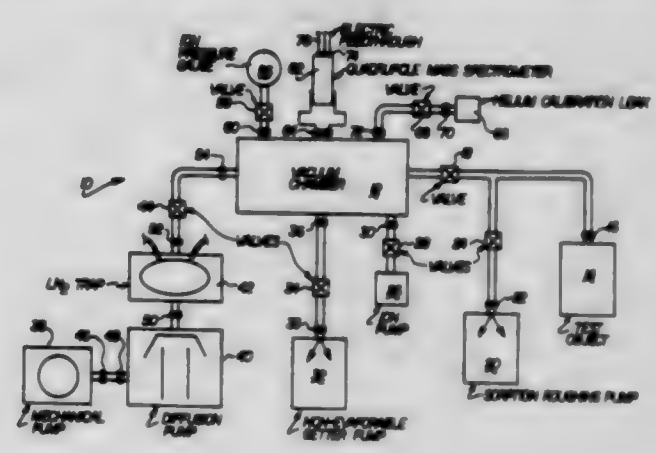
4,492,110

ULTRA SENSITIVE NOBLE GAS LEAK DETECTOR

Lyle E. Bergquist, Lakewood, Colo., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Jun. 1, 1983, Ser. No. 499,825
Int. Cl.³ G01M 3/00; B01D 59/44
U.S. Cl. 73—40.7 5 Claims

1. In a noble gas leak detector having a vacuum chamber, a gas detector and a getter pump connected through connection means to said vacuum chamber and connection means for placing a test object in gaseous communication with said vacuum chamber, the improvement wherein said getter pump is a non-evaporable getter pump which entraps non-noble gases but not noble gases, each of said connection means consists of metal-to-metal contact surfaces, and said vacuum chamber and



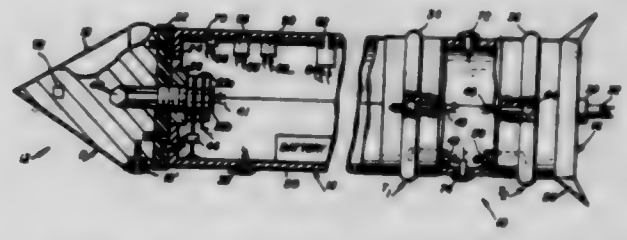
equipment connected thereto form an internal vacuum passage consisting of metal.

4,492,111

RHEOLOGICAL PENETROMETER

James L. Kirkland, 2211 Lombardy Ave., Panama City, Fla. 32405

Filed Oct. 7, 1981, Ser. No. 309,403
Int. Cl.³ G01N 3/00
U.S. Cl. 73—84 13 Claims



1. A probe for determining characteristics of a medium comprising an outer housing for supporting a penetration assembly, a monitoring assembly, a guide assembly and control means for controlling the impact velocity and direction, said penetration assembly including soil penetration means for allowing the probe to penetrate the soil, said monitoring assembly including a plurality of vibrating bodies positioned so as to project at least in part away from said housing so that each is vibrated a predetermined amount in response to the passage of specific mediums there past, first sensor means for sensing the vibration of each of said vibrating bodies and for generating a signal corresponding thereto, and electrode means for sensing the electrical resistance of the medium orthogonally in three separate directions.

4,492,112

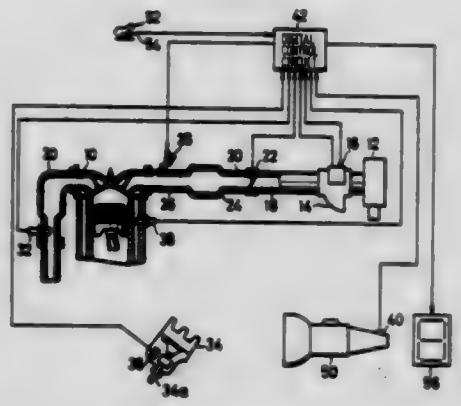
OPTIMUM SHIFT POSITION INDICATING DEVICE OF VEHICLE

Koshei Igarashi, Susono, and Kazuo Tomita, Gotemba, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 30, 1982, Ser. No. 403,814
Claims priority, application Japan, Apr. 13, 1982, 57-61247
Int. Cl.³ G01M 15/00
U.S. Cl. 73—117.3 11 Claims

1. The optimum shift position indicating device of a vehicle, comprising:
a vehicle speed sensor for detecting a running speed of the vehicle;
an engine rotation sensor for detecting a rotational speed of an engine;
an engine load sensor for detecting an engine load;
an operational circuit in which a driving power at present is

calculated from an engine torque obtainable from the engine rotational speed and the engine load, subsequently, required engine torques at respective shift positions are calculated form the driving power, further, fuel consumption rates at the respective shift positions are calculated from the required engine torques at the respective shift



positions and the engine rotational speeds obtainable from said detected vehicle running speed, and information on the optimum shift position where the best fuel consumption rate is obtainable is outputted; and

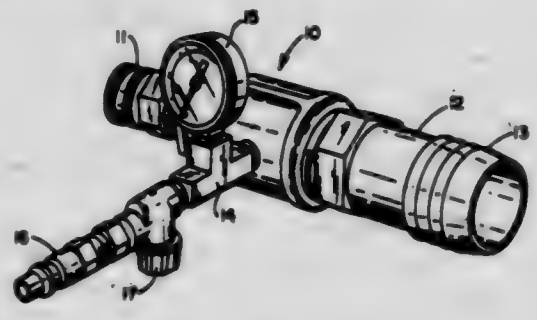
shift position indicating means for indicating an output from said operational circuit.

4,492,113

METHOD AND APPARATUS FOR CLEANING AND TESTING HEAT EXCHANGERS

Philip Weatherholt, E. College St., P.O. Box 265, Rio Grande, Ohio 45674

Filed Dec. 10, 1982, Ser. No. 448,459
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—118 8 Claims



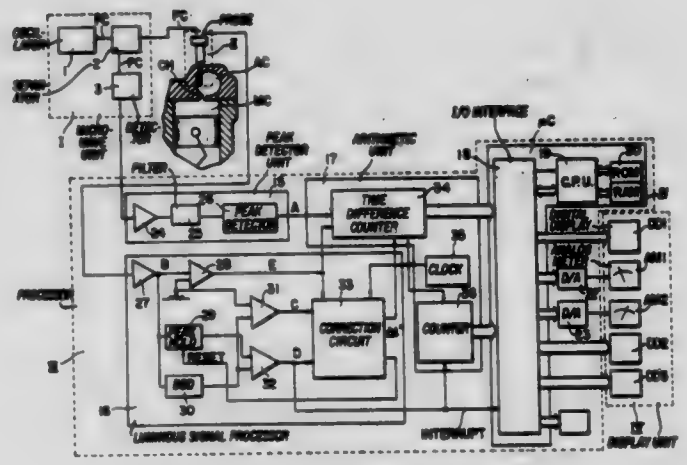
1. A combination cleaning and static testing device for a heat exchanger, said cleaning and testing device being generally in the shape of a "T", the top portion of said T-shaped portion of said device being hollow and tubular in shape and being provided with water source connecting means at one end for connecting said device to an external source of water and the other end of said T-shaped portion of said device being provided with heat exchanger connecting means for connecting said device to a heat exchanger, a hollow tubular portion constituting the single leg of the T-shaped portion being connected to the hollow tubular top portion of said T-shaped portion and being provided at its open end with air source connecting means capable of connecting said device to a source of air under pressure, said single leg of said T-shaped portion connecting means containing a shut-off and variable pressure air control valve for modulating and closing off the flow of air into said testing device and also containing between said air flow modulating and closure means and the hollow tubular top portion of said T-shaped portion, means for measuring the pressure in said device.

4,492,114

APPARATUS FOR DETECTING COMBUSTION TIMING

Teruo Yamanaka, 1756-2, Aza Hosoguchi-shita, Oaza Hiraberi, Tempaku-cho, Tempaku-ku, Nagoya-shi, Aichi-ken; Kiso Hayakawa, 41-2, Higashiyashiki, Takayokosuka-cho, Tokai-shi, Aichi-ken; Yasuhiko Suzuki, 8, Yamane-cho, Tempaku-ku, Nagoya-shi, Aichi-ken, and Michiru Enoki, 2, Uenomo-cho 2-chome, Meito-ku, Nagoya-shi, Aichi-ken, all of Japan

Filed May 20, 1983, Ser. No. 496,656
Claims priority, application Japan, May 25, 1982, 57-88290
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—117.3 16 Claims



1. An apparatus for detecting combustion timing in an internal combustion engine comprising:

a microwave unit comprising a microwave oscillator for generating a microwave having a predetermined frequency, a transmission and reception separator connected to said microwave oscillator, for separating transmitted and received microwaves from each other, and a detector connected to said transmission and reception separator, for detecting the received microwave so as to be converted to a low frequency signal;

a probe means comprising a microwave sensor connected to said separator, for radiating the microwave from said separator into a combustion chamber of said internal combustion engine and receiving a reflected wave, and a light sensor for electrically detecting light emitted upon combustion in the combustion chamber; and

a processing unit comprising a peak detector circuit, connected to said detector of said microwave unit, for detecting peaks of a microwave signal supplied by said detector, a luminous signal processor, connected to said light sensor of said probe means, for detecting a peak value of a luminous signal supplied by said light sensor in each cycle and also detecting the time when the luminous signal reaches an intensity having a predetermined proportion to the peak value thereof, and an operating unit, connected to said peak detector and luminous signal processor, for operating a time difference between a middle point between a pair of peaks of the microwave signal and the time when the luminous signal reaches an intensity having a predetermined portion to the peak value thereof based on peak and luminous signals,

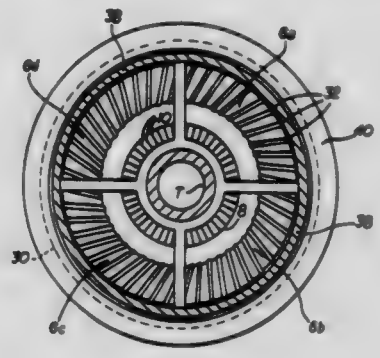
thereby detecting the timing for starting combustion with respect to a top dead center of said internal combustion engine.

4,492,115

METHOD AND APPARATUS FOR MEASURING DEFECTS IN FERROMAGNETIC TUBING

John E. Kuhl; Mark S. Jaynes, and James E. Bradfield, all of Houston, Tex., assignors to PA Incorporated, Houston, Tex.

Filed Apr. 11, 1984, Ser. No. 599,162
Int. Cl.³ G01N *27/82, 27/72*
U.S. Cl. 73—151 13 Claims



13. A method of determining the extent of defects in used tubular elements forming a tubular string after use in a subterranean oil or gas well, comprising the steps of:

determining the extent of the reduction in average wall thickness at successive positions on each tubular element at the well surface during movement of each tubular element into or out of the well;

determining the extent of corrosion pitting at successive positions on each tubular element at the well surface during movement of each tubular element into or out of the well;

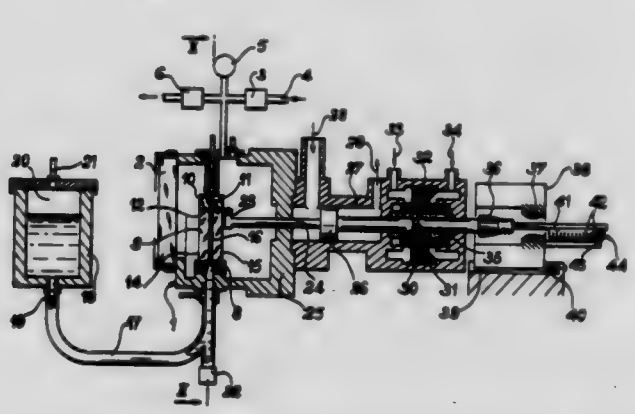
determining the extent of wear due to sucker rod interference at successive positions on each tubular element at the well surface during movement, into or out of the well, wherein the determination of the reduction in wall thickness, corrosion pitting, and wear due to sucker rod interference are simultaneously determined at the same position on each tubular element.

4,492,116

APPARATUS FOR THE OPTICAL OBSERVATION OF PHENOMENA IN MIXTURES

Hugues Gillier, Paris; Jean-Claude Redonnet, Noisy-le-Sec, and Maurice Renaut, Aulnay sous Bois, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 23, 1983, Ser. No. 507,069
Claims priority, application France, Jun. 23, 1982, 82 10974
Int. Cl.³ G01N *21/00*
U.S. Cl. 73—432 R 4 Claims



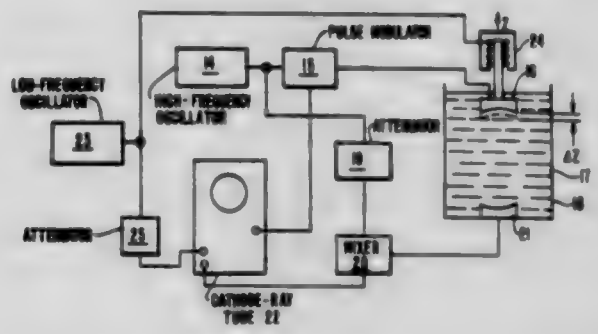
1. An apparatus for the optical observation of the evolution of instabilities between two fluids having different densities subject to high initial pressures, of the type comprising an observation chamber with parallel faces containing the two fluids, initially separated by a diaphragm, and wherein it comprises in combination the arrangement of the observation chamber within a tight enclosure equipped with static pressurizing means and whereof one face is constituted by an optical observation window parallel to the two parallel faces of the observation chamber, the diaphragm having a straight cylindrical shape and is coupled to a mechanical extraction shaft, the geometrical axes of the diaphragm and the extraction shaft being perpendicular to the faces of the observation chamber, the extraction shaft sealingly sliding through the wall of the enclosure opposite to the said window, whilst part of the extraction shaft external of the pressure enclosure is integral respectively with a piston sliding within a cylinder and which can be actuated by a high pressure fluid in order to drive the extraction shaft towards the outside of the enclosure, a mechanical device for locking and unlocking the extraction shaft and a device for stopping the extraction shaft at the end of its travel.

4,492,117

ULTRASONIC NONDESTRUCTIVE TEST APPARATUS

Noriyoshi Chubachi, Miyagi, Japan, assignor to Keizuke Honda, Aichi, Japan

Filed Nov. 5, 1982, Ser. No. 439,581
Claims priority, application Japan, Nov. 13, 1981, 56-182709
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—597 6 Claims



4. An ultrasonic nondestructive test apparatus for detecting variations in velocity of an ultrasonic wave propagating through an object, said apparatus comprising a focusing ultrasonic transmitting element for irradiating an object to be measured with a focused ultrasonic wave, an ultrasonic receiving element positioned with respect to said object for detecting ultrasonic energy from said transmitting element which has been subjected to a change inside the object, a low-frequency oscillator, a vibrator coupled to said oscillator for vibrating said ultrasonic receiving element with a spatial amplitude which is small in comparison with the distance between said elements and at a frequency which is low compared to that of said ultrasonic wave, and a cathode-ray tube for displaying an output from said ultrasonic receiving element, the horizontal sweep of said cathode-ray tube being synchronized with an output signal from said low-frequency oscillator used for vibrating said vibrator, so that the display shows variations in the ultrasonic propagation velocity through said object.

4,492,118

NONDESTRUCTIVE TESTING OF STRUCTURAL MATERIAL BY MEANS OF ULTRASONICS

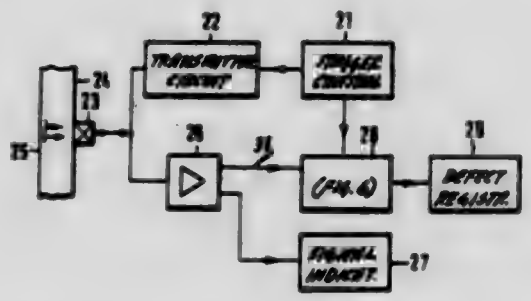
Hans-Jürgen Böthmann, Moers; Bernhard Hoh, Hilden, and Siegmar Schulz, Cologne, all of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf and Kraftkraemer GmbH, Cologne, both of, Fed. Rep. of Germany

Filed Sep. 8, 1982, Ser. No. 415,830
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1981, 3135969
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—612 5 Claims

1. A method for nondestructive testing of structural material having front and rear surfaces and under utilization of ultrasonic test pulses set into the front surface and under further

utilization of echoes being detected as return signals emerging from said front surface, comprising the steps of:

providing a first gating and detection period for echo signals which covers at least a period in which a rear wall echo will appear;



detecting any echo signal that occurs within said period, the detected echo signal may be a defect echo or a true rear wall echo and using such detection for generating a second gating and detection period; and

detecting a rear wall echo that occurs in the second gating period as an indication of the presence of a defect.

4,492,119

ARTICULATED ARM ULTRASOUND IMAGING SYSTEMS

Mark J. Dulaps, Denver, and William M. Glenn, Jr., Evergreen, both of Colo., assignors to Technicare Corporation, Solon, Ohio

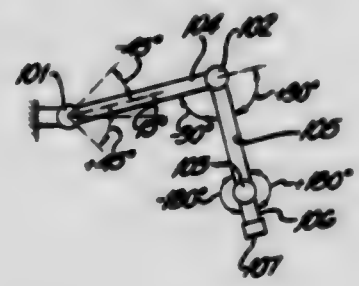
Filed Feb. 3, 1983, Ser. No. 463,426

Claims priority, application United Kingdom, Oct. 1, 1982, 8228894

Int. Cl.³ G01N 29/04

U.S. Cl. 73—621

10 Claims



1. In an ultrasonic diagnostic imaging system, including an articulated arm for mounting an ultrasonic scanner, said arm including a plurality of joints, at least two of which exhibit respectively different permitted angular ranges of movement; apparatus for processing signals indicative of the arm position comprising:

means, associated with said joints, for providing analog output signals representative of the angular position of said joints;

means, responsive to said angular position output signals, for producing a plurality of scaled analog output signals over a common dynamic range corresponding to the respective permitted angular ranges of movement of said arm joints;

means for proportionately combining ones of said scaled output signals to provide a plurality of combined angular representative analog signals; and

means for digitizing said combined angular representative analog signals.

4,492,120

DUAL FUNCTION ULTRASONIC TRANSDUCER ASSEMBLY

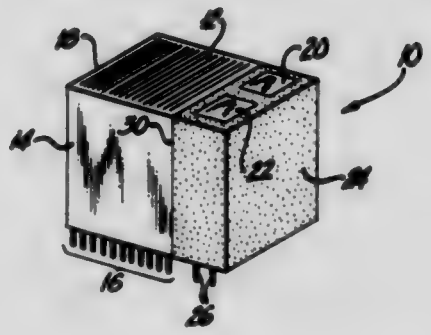
George K. Lewis, Wyckoff; Franklin K. Sun, Tenafly, both of N.J.; Douglas L. Keene, Central Valley, and Howard F. Fidel, Hartsdale, both of N.Y., assignors to Irex Corporation, Ramsey, N.J.

Filed Mar. 18, 1983, Ser. No. 476,671

Int. Cl.³ G01N 29/00

U.S. Cl. 73—625

13 Claims



1. A dual function ultrasonic transducer assembly for performing imaging and flow measurement comprising:

an upper surface including first transducer means, occupying a first area of said surface, for sending and receiving imaging signals, and second transducer means, occupying a second area of said surface, for sending and receiving flow measurement signals;

a first backing material, located between said first transducer means and a lower surface of said assembly, said first backing material chosen to have damping characteristics for the transmission and reception of imaging signals by said first transducers means; and

a second backing material, located between said second transducer means and said lower surface of said assembly, said second backing material chosen to have damping characteristics for the transmission and reception of flow measurement signals by said second transducer means;

wherein said first and second backing materials are joined at a common interface.

4,492,121

GAUGE FOR MEASURING HIGH TRANSIENT PRESSURES

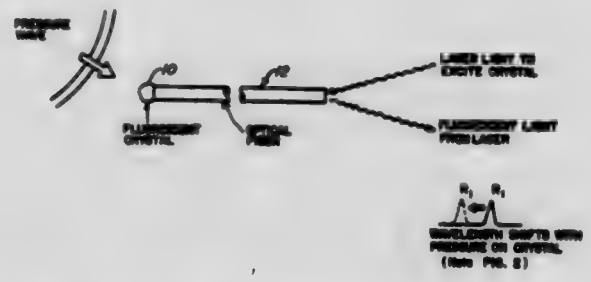
Delbert L. Lehto, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 30, 1982, Ser. No. 429,692

Int. Cl.³ G01L 23/08; G01N 33/22, 21/64

U.S. Cl. 73—705

11 Claims



1. A method of remotely measuring high transient isotropic pressures in water comprising:

providing an elongate optical fiber waveguide;

securing a fluorescent crystal on one end of the optical fiber waveguide in optical communication therewith;

disposing the one end of the optical fiber waveguide in water in the vicinity of an underwater explosion;

launching light into the other end of the optical fiber waveguide for traveling to the one end for stimulating the

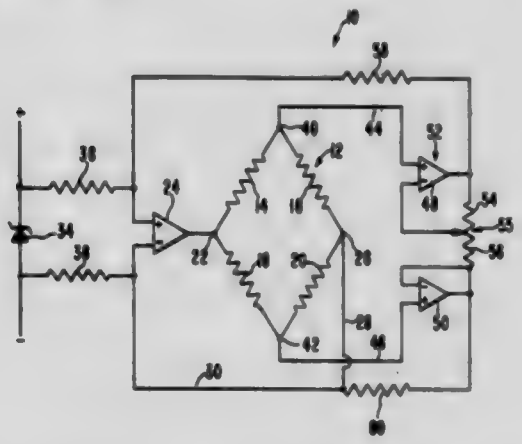
crystal to fluoresce at a wavelength responsive to pressure on the crystal;
transporting the crystal fluorescence back through the optical fiber waveguide to the other end; and,
measuring the shift in fluorescent light wavelength resulting from isotropic pressure changes on the crystal.

4,492,122

CIRCUIT FOR LINEARIZATION OF TRANSDUCER

John Dinsdale, San Jose, Calif., assignor to Mark Telephone Products, Inc., Santa Clara, Calif.

Filed Jul. 2, 1982, Ser. No. 394,990
Int. Cl.³ G01B 7/18; G01L 19/00
U.S. Cl. 73—708 19 Claims



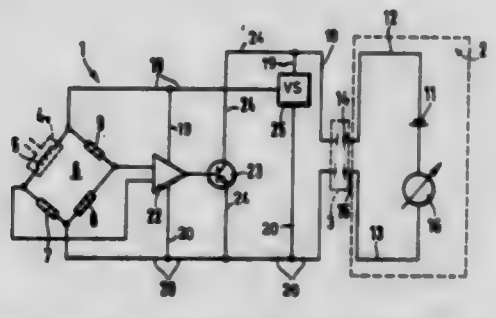
1. A transducer circuit comprising: first means, including a differential amplifier having a pair of output terminals, defining a transducer responsive to a stimulus; second means, including a pair of input terminals, coupled with the transducer for providing a power input thereto; and third means, including a pair of feedback resistors, coupling the respective output terminals to respective input terminals of the second means to cause a change of the current flow through the transducer as a function of a change in the stimulus to thereby cause a linearization of the output signal at the output terminals of the transducer.

4,492,123

THERMAL CONDUCTIVITY VACUUM GAGE

Günther Reich, Cologne, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Mar. 31, 1982, Ser. No. 364,099
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1981, 3130817
Int. Cl.³ G01N 25/00, 27/18
U.S. Cl. 73—755 5 Claims



1. A thermal conductivity gage for measuring the vacuum (pressure) of a gas, comprising:
at least one probe means in a probe unit including at least a temperature-dependent resistance element in thermal communication for said measuring, whereby the vacuum (pressure) of said gas affects the temperature-dependent resistance of said temperature-dependent resistance element;
an operating unit including a power supply and an indicator;
electrical conductor means for electrically connecting said probe means and said operating unit;
a measuring circuit electrically connected to said operating unit, said measuring circuit connected by said conductor means to responsive means for response to the temperature-dependent resistance of said temperature-dependent resistance element and said indicator, a measuring electric current flowing within said measuring circuit which is changed by said responsive means, whereby to allow said indicator to reflect said vacuum affect on said temperature-dependent resistance of said temperature-dependent resistance element and thereby indicate the vacuum; and
a power supply circuit to supply electrical current to said temperature-dependent resistance element and said measuring electric current,
said measuring circuit having a portion in said probe means and a portion in said operating unit, and
said power supply circuit having a portion in said probe means and a portion in said operating unit,
said portion of said measuring circuit in said operating unit being identical with (the same as) said portion of said power supply circuit in said operating unit.

4,492,124

SAMPLING SYSTEM FOR STOOL ANALYSIS

Martin Fleisher, Glen Cove, and Sidney J. Winawer, New York, both of N.Y., assignors to Memorial Hospital for Cancer and Allied Diseases, New York, N.Y.

Filed Jul. 30, 1982, Ser. No. 404,201
Int. Cl.³ G01N 1/08
U.S. Cl. 73—864.44 9 Claims



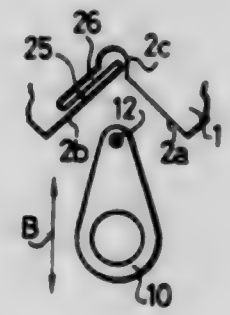
1. A sampling system for stool analysis comprising an elongated handle and a cylindrical coring device, said handle including means for holding said coring device which comprises a structure operable to be force-fitted into said coring device.

4,492,125

PUSH-BUTTON TUNER

Hiroyasu Miyata, Furukawa; Akio Yamaguchi, and Keizo Watanabe, both of Iwaki, all of Japan, assignors to Sanshin Electric Co., Ltd., Kanagawa, Japan

Filed Apr. 23, 1982, Ser. No. 371,508
Claims priority, application Japan, Apr. 25, 1981, 56-59215[U]
Int. Cl.³ F16H 35/18; H03J 5/06
U.S. Cl. 74—10.33 6 Claims



1. A push-button tuner having an elongate slide ember adapted to be moved longitudinally for tuning the tuner, said slide member having means formed by inclined portions of a side edge thereof for sliding said member longitudinally upon receiving a thrust force perpendicular to the longitudinal direction of movement of said slide member, means including a

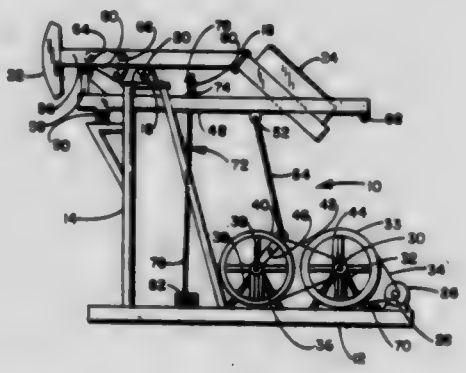
lock member movable in the direction perpendicular to said longitudinal direction of movement and carrying a cam adapted to engage said inclined portions for sliding said slide member longitudinally upon applying a thrust force to said inclined portions form said cam, said inclined portions being formed at least in part by means including an elastic element secured at one end portion of said side edge for deflecting inwardly under a thrust load applied by said cam.

4,492,126

VARIABLE LEVERAGE OIL FIELD PUMP JACK

C. Arthur Davis, P.O. Box 2114, Ada, Okla. 74820

Filed May 17, 1982, Ser. No. 378,509
Int. Cl.³ F16H 21/32
U.S. Cl. 74—41 19 Claims



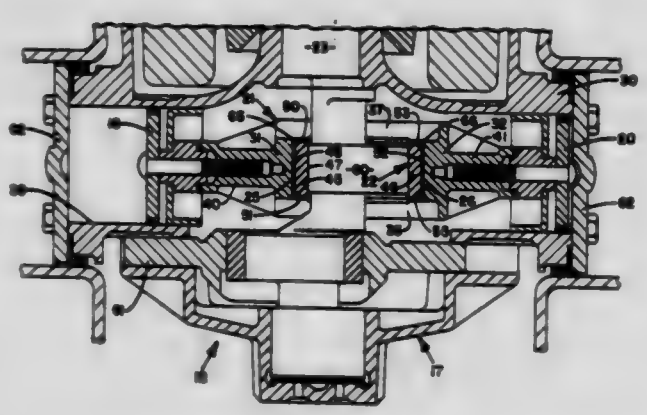
1. A pump jack comprising:
a post;
a walking beam pivotably mounted on said post for oscillating on its pivot with respect to said post, roller engagement means on said walking beam away from its pivot, said walking beam having means thereon for connection to pumping equipment;
a leverage beam pivotably mounted with respect to said post, said leverage beam having a roller rotatably mounted thereon on a fixed rotational axis during operation for engaging said walking beam for urging said walking beam to rotate upon its pivot; and
a crank connected to said leverage beam for oscillating said leverage beam when said crank is turned so that rotation of said crank causes oscillation of said leverage beam which, in turn, causes oscillation of said walking beam to produce pumping motion.

4,492,127

MOTOR-COMPRESSOR UNIT

Gerhard Kuhn, Cypress, Calif., and John J. Jacobs, Flint, Tex., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 29, 1982, Ser. No. 437,730
Int. Cl.³ F16H 21/18; F04B 35/04
U.S. Cl. 74—60 4 Claims



1. A yoke and slide block combination comprising:
a yoke including
a left longitudinally extending side wall portion,
a right longitudinally extending side wall portion spaced from the left side wall portion,
a lower front connecting portion secured to and transversely extending between lower front regions of the left and right side wall portions,
an upper front connecting portion secured to and transversely extending between upper front regions of the left and right side wall portions and spaced from the lower front connecting portion, the upper and lower front connecting portions defining a front transverse opening therebetween,
a lower rear connecting portion secured to and transversely extending between lower rear regions of the left and right side wall portions, and
an upper rear connecting portion secured to and transversely extending between upper rear regions of the left and right side wall portions and spaced from the lower rear connecting portion, the upper and lower rear connecting portions defining a rear transverse opening therebetween;
a slide block supported by the yoke, between the left and right side wall portions, for longitudinally sliding movement through the front and rear transverse openings, and including
a left shoulder extending parallel and adjacent to the left side wall portion of the yoke, and
a right shoulder extending parallel and adjacent to the right side wall portion of the yoke;
a left rail bearing secured to the left side wall portion of the yoke to facilitate sliding movement between the slide block and the yoke, and including
a left bearing surface disposed between the left side wall portion of the yoke and the left shoulder of the slide block,
an upper flange portion integral with and extending inward from an upper edge of the left bearing surface, between the left shoulder of the slide block and the upper front and rear connecting portions of the yoke, and
a lower flange portion integral with and extending inward from a lower edge of the left bearing surface, between the left shoulder of the slide block and the lower front and rear connecting portions of the yoke; and
a right rail bearing secured to the right side wall portion of the yoke to facilitate sliding movement between the slide block and the yoke, and including
a right bearing surface disposed between the right side wall portion of the yoke and the right shoulder of the slide block,
an upper flange portion integral with and extending inward from an upper edge of the right bearing surface, between the right shoulder of the slide block and the upper front and rear connecting portions of the yoke, and
a lower flange portion integral with and extending inward from a lower edge of the right bearing surface, between the right shoulder of the slide block and the lower front and rear connecting portions of the yoke.

4,492,128

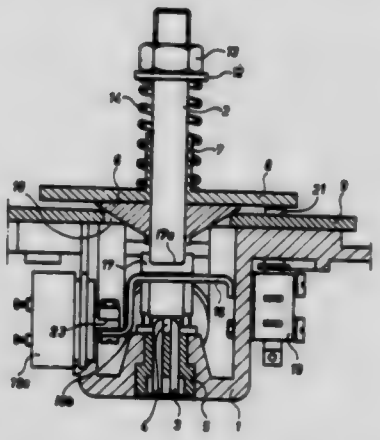
CONTROL MECHANISM

Walter Heidelberger, Klarenthal, and Joachim Morsch, St. Wendel, both of Fed. Rep. of Germany, assignors to Ino Steuerungstechnik GmbH, Sulzbach, Fed. Rep. of Germany

Filed Apr. 21, 1982, Ser. No. 370,203
Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117414
Int. Cl.³ G05G 9/04; H01C 10/16; H01H 25/04
U.S. Cl. 74—471 XY 5 Claims

1. A control mechanism comprising
a housing;
a guide plate mounted on said housing, said plate having an opening therein;

at least one electrical component having an operator element extending through said guide plate adjacent said opening;
a control lever extending through said opening, said control lever having a handle end outside of said housing and a coupling end mounted within said housing to permit movement of said lever in various directions from a control, rest position;
a frustoconical pivot member slidably mounted coaxially on said control lever with the smaller end thereof extending



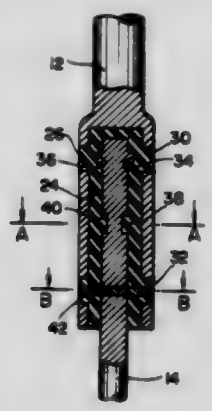
into said housing through said opening, the larger end thereof being dimensioned to engage said opening;
a restoring spring urging said pivot member toward said coupling end of said lever;
a control plate attached to the larger end of said pivot member for tilting movement with said pivot member and said lever between a rest position with the rest position of said lever in which said control plate engages said operator element and tilting positions in which said element is not engaged.

4,492,129

SHIFT LEVER FOR AN AUTOMOTIVE TRANSMISSION

Hideo Hasegawa, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Apr. 27, 1982, Ser. No. 372,390
Claims priority, application Japan, Apr. 28, 1981, 56-64688
Int. Cl.³ B60K *20/60*; G05G *1/10*
U.S. Cl. 74—473 R 4 Claims



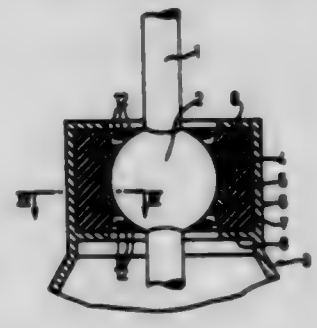
1. A shift lever for an automotive transmission, comprising:
(a) a first shaft having a first hole and a second hole opening to the first hole;
(b) a second shaft extending partially into the first hole;
(c) a resilient member located in the second hole and in a section of the first hole forming a space between the first and second shafts, the resilient member completely surrounding the second shaft within the first hole and adhering to both of the first and second shafts; and
(d) a rod mounted on the second shaft and extending into the first and second holes, the rod extending in the resilient member located in the first and second holes and being spaced from the first shaft by the resilient member, said resilient member extending continuously into the second hole from a portion thereof in the first hole.

4,492,130

DEVICE FOR FILTERING OUT VIBRATIONS AND NOISE

Jean-Michel Lamy, Paris, and Albert Le Bail, Nanterre, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Aug. 13, 1982, Ser. No. 408,121
Claims priority, application France, Aug. 14, 1981, 81 15743
Int. Cl.³ G05G *9/12*; F16C *11/08*
U.S. Cl. 74—473 P 4 Claims



1. In an automotive vehicle gearshift control assembly having a gear control lever with a ball thereon, a spherical bearing cup surrounding said ball, and a lever-ball support housing having an inner surface,
a hollow one-piece filter component for filtering noise and vibration, located between said spherical bearing cup and said support housing,
said filter component being made of a material having a Shore hardness of between 50 and 70 and having
a massive base with an inner surface connected to said cup and an outer surface facing the inner surface of said housing,
protuberances extending out from said outer surface and having a width greater where they meet said base than at their tip and a height smaller than their thickness where they meet said base and at least equal to the width of the protuberances where they meet said base,
said protuberances occupying, where they meet said base, only a small portion of said outer surface of said base from which they project,
only the tips of said protuberances bearing against said housing when no significant load is applied, and thus being effective for filtering vibration and noise,
while under the effect of load applied when operating the gear control lever, said protuberances are crushed elastically until, after a limited idle travel corresponding to the height of said protuberances, said massive base comes into contact with said housing and then transmits said load without significant deformation of said massive base.

4,492,131

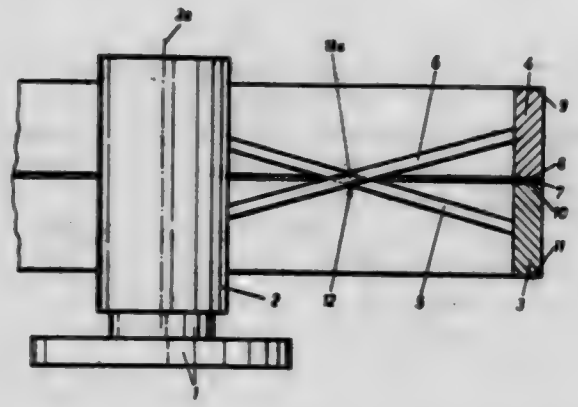
FLYWHEEL

Werner Auer, Wiesenbach, Fed. Rep. of Germany, assignor to Teldix GmbH, Heidelberg, Fed. Rep. of Germany

Continuation of Ser. No. 365,474, Apr. 5, 1982, abandoned. This application Apr. 6, 1984, Ser. No. 597,216
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1981, 3114798
Int. Cl.³ F16F *15/10*
U.S. Cl. 74—574 14 Claims

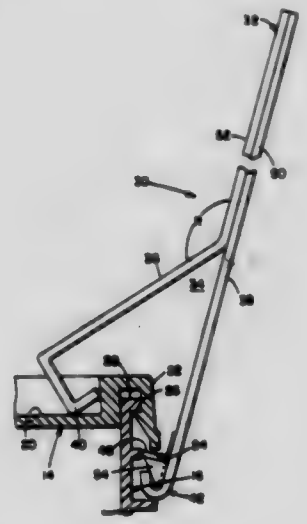
1. A flywheel comprising: a hub for a bearing unit; a flywheel mass including at least two partial masses; and independent connecting means each connecting said hub with a respective one of said at least two partial masses, each respective partial mass and independent connecting means representing a partial system, wherein said partial systems are constructed such that each exhibits a resonance step-up at a differ-

cut resonant frequency when subjected to an external excitation to damp at least one of axial and radial vibrations of said



flywheel that are caused by the external excitation, thereby reducing the stress on said hub as a result of resonance step-up at a respective one of said different resonant frequencies.

4,492,132
LID REMOVAL TOOL
Richard P. Obey, 5 Warden St., Apt. 6, Saugus, Mass. 01906
Filed Jun. 3, 1983, Ser. No. 500,929
Int. Cl.³ B67B 7/00
U.S. Cl. 81—3.1 R 6 Claims



1. For removing relatively rigid, heavy-gauge lids of synthetic material, of the type having a top surface and a substantial, downwardly extending rim which ends in a continuous lip, said rim designed to provide a tight fit on bulk containers, said lid being removable only after the downwardly extending lip of said rim is cut at spaced apart points about the circumference,

a tool enabling easy removal of said lid without normally experienced difficulties,

said tool comprising a rigid shaft,

one end of said shaft adapted for use as a handle, and

a forked construction at the other end of said shaft, defining two arms configured and arranged to engage about said rim of said lid,

the first arm having at its outer end a portion shaped to rest on the top surface of said lid and adapted to serve as a fulcrum during removal of said lid,

the second arm having at its end a rim-gripping formation shaped to grip the lip of said downwardly extending rim, and an upwardly directed cutting edge adapted to move upwardly during inward rotation of said handle in a manner to progressively cut said lip and locally sever said rim, and said rim-gripping formation adapted to engage and pull upwardly said rim during rotation of said handle,

whereby to remove said lid, at several points spaced around the circumference of said rim, said tool can be engaged about said rim, the end portion of said first arm resting on the top surface of said lid, the end portion of said second arm positioned to grip said lip and said cutting edge engaged on said lip, and the handle portion of said tool can be moved inwardly rotating about said fulcrum to cause said cutting edge to cut said lip and locally sever said rim and to cause the end portion of the second arm to grip the lip of said rim and pry it outward and upward to facilitate removal of said lid.

4,492,133
UNDERGROUND PIPE OR CABLE INSTALLATION
William O. Schosek, North Fort Myers, Fla., assignor to Elephant Industries, Inc., North Ft. Myers, Fla.
Filed Aug. 2, 1982, Ser. No. 404,428
Int. Cl.³ B25B 17/00
U.S. Cl. 81—57.3 1 Claim

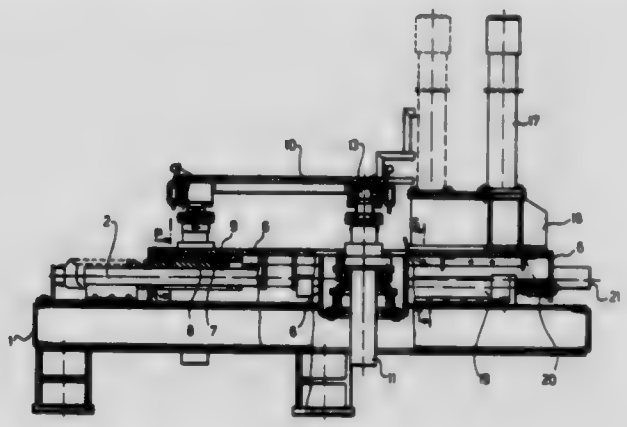


1. In an underground pipe installing device wherein short installation rod segments are successively threadedly connected into an installation rod positioned in a narrow and deep operating trench for penetration by an underground pipe installing device through the earth to a remotely spaced target trench, comprising an elongated rod threader adapted to be positioned in a substantially vertical position in the narrow and deep operating trench, and having a rod segment engaging clutch and a rod segment rotational drive mechanism of the rod threader at the lower end to align short installation rod segments with the installation rod, and a manually operated clutch actuating control and a manually operable rotational drive mechanism at the upper end of the rod threader, motion transmitting means between opposite ends of the rod threader, the opposite ends of the rod threader being connected by a tubular frame member, and the rod segment engaging clutch having a rod holder and radially pivoted cams to clampingly engage the rod segments, and manually operable means at the upper end of the rod threader to actuate the clutch.

4,492,134
APPARATUS FOR SCREWING PIPES TOGETHER
Bernd Reinboldt, Langenhagen, and Hans-Christian Beck, Burgdorf, both of Fed. Rep. of Germany, assignors to Weatherford Oil Tool GmbH, Langenhagen, Fed. Rep. of Germany
Filed Sep. 24, 1982, Ser. No. 423,001
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1981, 3138870
Int. Cl.³ B25B 13/50
U.S. Cl. 81—57.34 7 Claims

1. Apparatus for screwing together pipes provided for the casing of boreholes, comprising a support; a slide movably

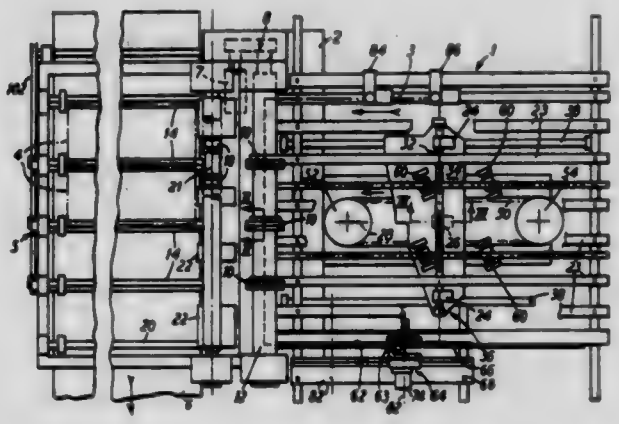
mounted on said support; a power-driven screwing clamp on said slide; a counter device on said slide; and level compensating means connecting said clamp to said counter device, including a plurality of hydraulic operating cylinders.



4,492,135
APPARATUS FOR HANDLING THIN SHEETS OF MATERIAL

Ian D. Glen, Sale; Leonard Gleave, Davyhulme, and Leslie Woods, Altrincham, all of England, assignors to Metal Box Public Limited Company, Reading, England

Filed Sep. 29, 1982, Ser. No. 426,750
Claims priority, application United Kingdom, Sep. 29, 1981, 8129371
Int. Cl.³ B65H 7/08
U.S. Cl. 83—155 18 Claims



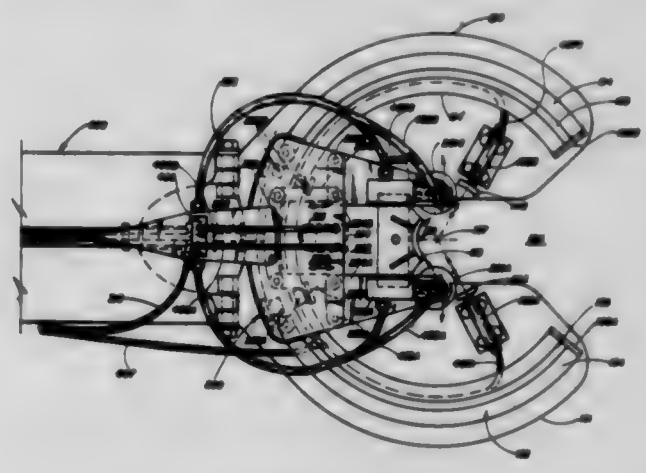
1. Apparatus for handling thin sheets of material, such apparatus comprising at least one pair of rollers, for cooperating with each other to draw a said sheet tangentially between them, and drive means for rotating said rollers, each roller comprising a rigid roller body carrying a respective circumferential roller surface for engaging the sheet between the two roller surfaces, one roller of the pair having a first said roller surface which is immovable circumferentially with respect to the corresponding roller body, and the other roller having a draw ring encircling its body, the roller surface of said other roller being defined on the draw ring, wherein

the draw ring comprises a resilient ring member, resiliently gripping the roller body, and a relatively rigid tyre carried entirely by and encircling the ring member and having the roller surface of the draw ring, the draw ring being unsecured against circumferential movement with respect to the roller body, whereby the draw ring, as a whole, is capable of limited rotation about the corresponding roller body such as substantially to prevent slippage between either of the roller surfaces and a said sheet when the latter is engaged between the rollers.

4,492,136
CUTTING ASSEMBLY SYSTEM FOR PIPE CASINGS AND THE LIKE

Ronald I. Walker, 2411 White St., Mobile, Ala. 36606

Filed Dec. 18, 1981, Ser. No. 331,977
Int. Cl.³ B26D 7/08
U.S. Cl. 83—169 9 Claims



1. A cutter system for an object having a wall to be cut which is generally circular in cross-section, such as pipe casings and the like, comprising:

an annular shaped object encircling assembly defining a centrally located object cutting area and having a basic assembly body; said body defining an open side entry area means having a predetermined width between respective ends of said basic body for allowing entry and exit of the object into and from said basic body without any supplemental opening and closing action, respectively, of said body;

an annular shaped trackway fixedly mounted on said basic body and extending substantially around the object cutting area and terminating at two ends adjacent said side entry area means thereby forming a gap having an arcuate distance between the ends of the trackway;

at least two, spaced, moveable cutter means forming an arcuate separation distance for cutting the object located in the object cutting area about three hundred and sixty degrees of the object's periphery, said at least two cutter means being mounted on said trackway by track mounting means, said track mounting means traveling along said trackway around the object cutting area a distance equal to at least one-half of their arcuate separation distance plus at least one-half said gap arcuate distance with said cutter means in cutting engagement with the object on one side of a midpoint of said trackway and a distance equal to at least one half of their arcuate separation distance on the other side of said midpoint of said trackway, producing a total of at least three hundred sixty degrees of cut.

4,492,137
APPARATUS FOR REMOVING LIGATING FITTINGS ON SMOKING CASINGS

Shingo Ohashi, Tokyo, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 12, 1982, Ser. No. 433,811
Claims priority, application Japan, Oct. 15, 1981, 56-153099[U]; Oct. 15, 1981, 56-153100[U]; Oct. 15, 1981, 56-153101[U]; Oct. 15, 1981, 56-153102[U]
Int. Cl.³ B26D 7/14
U.S. Cl. 83—175 4 Claims

1. An apparatus for removing ligating fittings of smoked ham casings comprising:

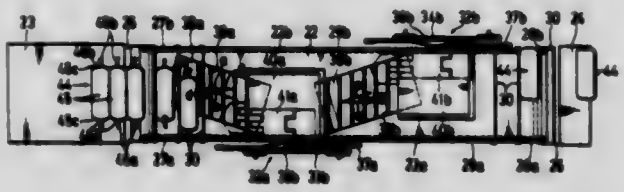
a plurality of conveyer plates mounted on a pair of endless rotary bodies and moved along a fixed deck plate for conveying smoked hams in parallel with each other along an upper surface of the deck plate;

a deflecting conveyer arranged on the deck plate aslant of the moving direction of the conveyer plates and moved with higher speed than that of the conveyer plates for conveying each smoked ham outwardly toward a side of the deck plate;

a sandwiching conveyer arranged by the side of the deck plate and moved in the same direction and with the same speed as the conveyer plates for sandwiching an ear of the smoked ham casing brought near the side of the deck plate;

a guide means arranged by the side of the deck plate and inwardly of the sandwiching conveyer, the ear of the smoked ham casing being inserted into a lateral slot thereof for leading the ligating fitting near the base of the ear in an outward direction; and

a cutter arranged in a terminal end of the guide for cutting the base of the ear off inwardly of the ligating fitting, said guide means having a first guide portion upstream and a



second guide portion downstream in the moving direction of said conveyer plates, said first guide portion including a slant surface which traverses inwardly and gradually away from said sandwiching conveyer in the downstream direction, and said second guide portion including a slant surface which traverses outwardly and gradually toward said sandwiching conveyer in the downstream direction, said second guide portion being positioned between said shoulder and said ligating fitting, while said ear is conveyed by said sandwiching conveyer, whereby said first guide portion urges said shoulder inwardly while the outer end of said ear is conveyed downstream by said sandwiching conveyer and said second guide portion urges said ligating fitting outwardly from said shoulder due to a relative extension between the outer end and the shoulder of said ear, thereby enlarging the gap between said ligating fitting and said shoulder, the base of said ear being cut off by said cutter within said enlarged gap.

4,492,138

APPARATUS FOR DELIVERING WEB MATERIAL OR THE LIKE FROM ROLLS

Theo P. C. Brouwers, Venlo; Andreas T. Heijnen, Tegelen, and Arie Leppink, Venlo, all of Netherlands, assignors to Océ-Nederland B.V., Venlo, Netherlands

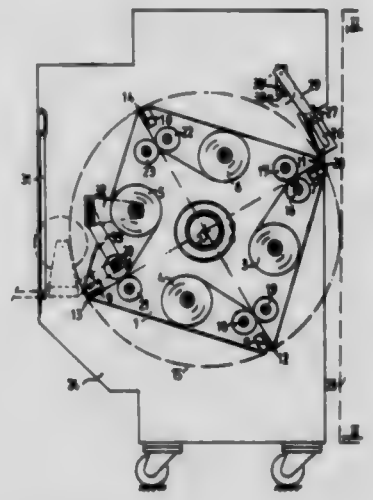
Filed Mar. 4, 1983, Ser. No. 472,145

Claims priority, application Netherlands, Mar. 10, 1982, 8200980

Int. Cl.³ G03B *27/14*

U.S. Cl. 83—203 7 Claims

1. An apparatus for delivering web material or the like from rolls, comprising a movable holder having thereon means for holding a plurality of supply rolls of such material and, for each of said rolls, means for unwinding a portion of the web material and transporting the unwound portion along a path separate from the paths of materials unwound from the other rolls, said holder being movable to any of a plurality of positions in each of which one of said rolls is in an active position with the free end of its web material at a certain fixed location, said holder comprising for each of said rolls a support means adapted to support the free end of an unwound portion of the related web material, each said support means being provided with a cutting edge lying at and transverse to the path of transport of such web material, and web cutting means mounted outside the path of movement of said holder and including a cutting element operable to cut off sheets by cooperation with any of said cutting edges when the related supply roll is in said active position.



4,492,139

DEVICE IN A MICROTOME FOR RELATIVE MOVEMENT BETWEEN THE KNIFE AND SPECIMEN HOLDER

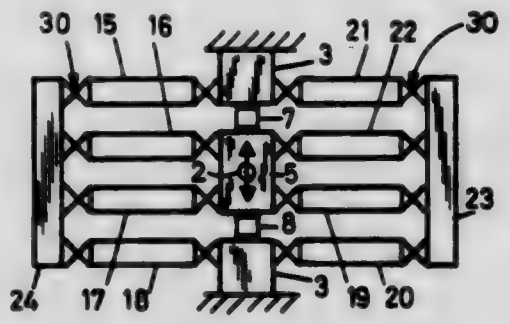
Bo Forsström, Järfälla; Tomas Laniewski, Stockholm, and Per Wikefelt, Järfälla, all of Sweden, assignors to LKB-Produkter, Bromma, Sweden

Filed Oct. 26, 1981, Ser. No. 314,969

Claims priority, application Sweden, Oct. 27, 1980, 8007527

Int. Cl.³ G01N *1/06*

U.S. Cl. 83—727 10 Claims



1. In a microtome of the type wherein a knife and a specimen holder comprise two relatively movable members for cutting extremely thin successive sections from a specimen the improvement which comprises mounting means for said two members for reciprocatory relative movement between the two members in a first plane and for relative incremental feeding movement between the two members in a plane disposed transversely with respect to said first plane;

said reciprocatory and feeding movements being disposed in respective straight lines normal to the line of intersection of said transversely disposed planes;

one of said two relatively movable members is hingedly connected to one end of each of a first two pairs of rigid parallel arms disposed in the plane of movement of said one member, the respective pairs of said arms extending outwardly from said one member in opposite directions from each other for hinged connection at their respective other ends to two remotely disposed elongated intermediate support elements extending generally parallel with the direction of said movement, said support elements being, in turn, hingedly connected to one end of each of a second two pairs of rigid parallel arms disposed in the plane of movement of said one member, the respective other ends of the second two pairs of arms being inwardly disposed for hinged connection to respectives ones of a pair of

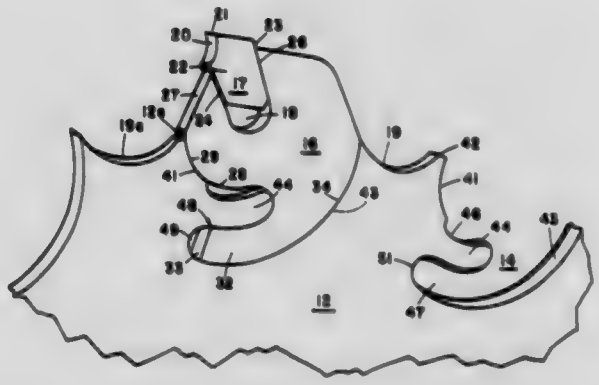
support portions of a unit adapted to support said one member for said reciprocating relative movement.

4,492,140

ROTARY SLOT CUTTING TOOLS HAVING REPLACEABLE INSERTS AND REPLACEABLE SEATS

Joseph Pano, Shavey-Zion, Israel, assignor to Iscar Ltd., Nahariya, Israel

Filed Jun. 4, 1982, Ser. No. 385,173
Int. Cl.³ B27B 33/08
U.S. Cl. 83—839 9 Claims



1. An improved rotary cutting tool arrangement, said cutting tool arrangement comprising:

a disc-shaped body,

a plurality of peripheral recesses on said body,

replaceable seats each configured to self-lock into one recess due only to locking forces between said body and said seat,

replaceable cutting inserts, and

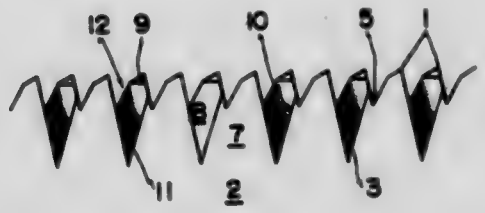
means independent of the locking forces between said body and said seat for lockingly inserting and locking said insert to said seat, without relative motion between said body and said seat.

4,492,141

SABER SAW BLADE

Eiji Takeuchi, 18-4 Jounancho, Sanjo-shi Niigataken, 955, Japan

Continuation-in-part of Ser. No. 246,912, Mar. 23, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 428,640
Claims priority, application Japan, Dec. 15, 1980, 55-176702
Int. Cl.³ B27B 33/02
U.S. Cl. 83—852 9 Claims



1. A saber saw for cutting in parallel, perpendicular and oblique directions relative to a wood grain, the saber saw comprising:

a blade having a plurality of teeth, said plurality of teeth being alternatively and oppositely faced to define alternating, shallow and deep recesses along a side of said blade;

each tooth having a cutting edge, a tooth face and an upper triangular face on said tooth face;

said cutting edge extending from a top of said tooth to a deep recess at an inclination angle in the range of 90° to 120°;

said tooth face extending from a top of said tooth to a shallow recess at a releaf angle in the range of 10° to 45°; and

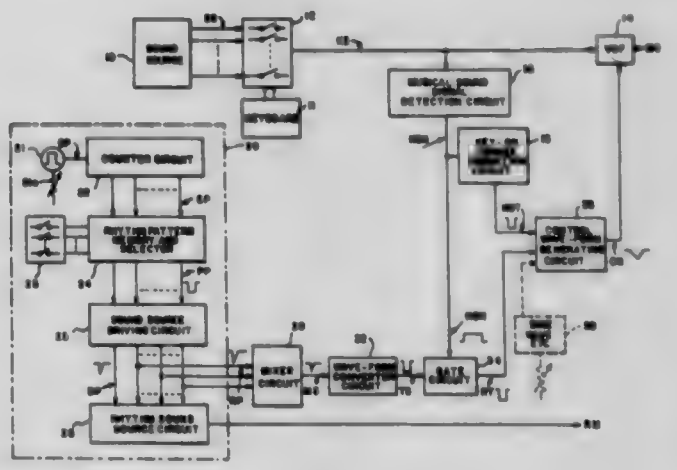
said upper triangular face being formed on the top of said tooth.

4,492,142

TIMBRE MODULATION CIRCUIT FOR ELECTRONIC MUSICAL INSTRUMENTS

Akiyoshi Oya; Akira Nakada, and Tatomu Suzuki, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan

Continuation of Ser. No. 188,575, Sep. 18, 1980, abandoned, which is a continuation of Ser. No. 003,476, Jan. 15, 1979, abandoned. This application May 26, 1982, Ser. No. 382,309
Claims priority, application Japan, Jan. 18, 1978, 53-3928
Int. Cl.³ G10F 1/00
U.S. Cl. 84—1.03 5 Claims



1. An electronic musical instrument comprising:

keyboard means having a plurality of keys;

tone signal generating means for generating a tone signal each time when at least one key among said plurality of keys is depressed, said tone signal having a frequency corresponding to the depressed key;

automatic rhythm accompaniment means which comprises tempo clock pulse generating means for generating tempo clock pulses, rhythm pattern signal generating means for generating a rhythm pattern signal in response to said tempo clock pulses, said rhythm pattern signal being a signal expressing a pattern of a certain rhythm, and sound source means for converting said rhythm pattern signal into a rhythm sound signal which is a musical tone signal different from said tone signal and representing a rhythmic sound of at least one rhythmic musical instrument;

control means responsive to said rhythm pattern signal for producing a control signal whose waveform is different from that of said rhythm pattern signal;

variable filter means receiving said tone signal from said tone signal generating means and having a control input terminal to which said control signal from said control means is applied to alter an amplitude-frequency characteristic of said variable filter means whereby the timbre characteristics of said tone signal from said tone generating means are caused to vary in synchronism with a generation timing of said rhythm sound signal.

4,492,143

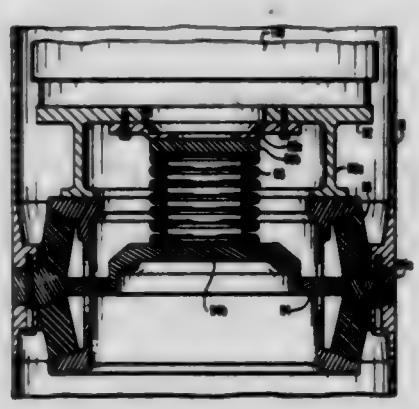
ANTI-ROTATION MASS SUPPORT SYSTEM PARTICULARLY FOR MISSILE SUPPORT

Philip G. Rubis, Los Gatos, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 31, 1983, Ser. No. 499,629
Int. Cl.³ F41F 3/04
U.S. Cl. 89—1.816 2 Claims

1. An anti-rotation shock absorber system for supporting a missile comprising: a substantially cylindrical launch tube; a substantially circular support pad for the missile disposed within said launch tube; said support pad being joined at an outer portion thereof to an elastomer shock isolator that is joined to said launch tube; said support pad also being joined at an inner portion thereof to an upper end of a metal bellows that

is centrally located thereunder and resists rotation while permitting axial, tilt and radial movement; said metal bellows



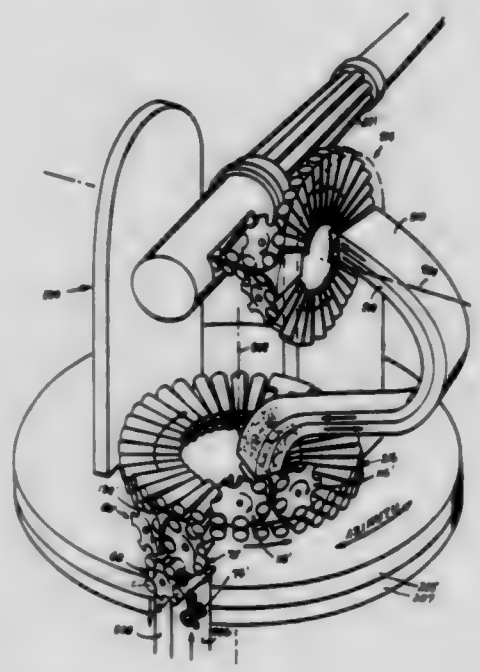
having a lower end joined to said launch tube in a manner to provide said metal bellows mechanically in parallel with said elastomer shock isolator.

4,492,144

TRANSPORT MECHANISM FOR AMMUNITION

Joseph Dix, Williston, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Apr. 5, 1982, Ser. No. 365,727
Int. Cl.³ F41D *10/02*
U.S. Cl. 89—33.17 8 Claims



1. A weapon system comprising:

a gun which is journaled for rotation about an axis with respect to a support;

an ammunition supply means which is stationary with respect to said support;

a differential means journaled for rotation about said axis with respect to said support and including a plurality of compartments in a circular row about said axis, each compartment for receiving a round of ammunition or a fired case;

a first ammunition transport means which is stationary with respect to said support and which is coupled to and between said supply means and said differential means;

a second ammunition transport means which is coupled to and between said gun and said differential means;

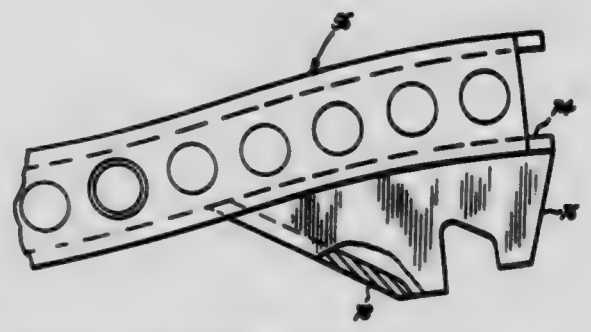
said first and second transport means serving to respectively insert or extract rounds or cases into said compartments of said differential means so that the number of compartments containing either a round or a case is constant at all relative rotational positions of said gun and said supply means.

4,492,145

FEEDING MECHANISM FOR A GAS OPERATED MACHINE GUN

George F. Curtis, Sanford, Me., assignor to Maremont Corporation, Carol Stream, Ill.

Division of Ser. No. 193,838, Oct. 3, 1980, Pat. No. 4,395,938.
This application Jun. 2, 1983, Ser. No. 500,533
Int. Cl.³ F41D *10/08*
U.S. Cl. 89—33.2 2 Claims



1. In a machine gun having a barrel for receiving a cartridge and guiding the projectile thereof forwardly in response to the firing of the cartridge, feed tray means for receiving and supporting a belt of cartridges, cover means for said feed tray means movable between an open loading position and a closed firing position, a bolt assembly mounted for repetitive cycles of reciprocating movement between rearward and forward limiting positions including a forward stroke under the urging of spring means for transferring the leading cartridge of the cartridge belt when disposed in a transfer position on said feed tray means into said barrel and firing the same, trigger mechanism for releasably retaining said bolt assembly in said rearward position, means responsive to the generation of gas pressure within the said barrel on the firing of a cartridge therein for moving said bolt assembly through a rearward stroke to strip the spent cartridge shell from said barrel, and cam means carried by said cover means for movement therewith and operatively engageable with said bolt assembly when said cover means is moved to said closed position with said bolt assembly in said rearward position for moving the belt to feed the leading cartridge into said transfer position in response to a rearward stroke of said bolt assembly, the improvement which comprises said cam means being provided with means for guiding and thereby enabling said bolt assembly to be manually moved through a rearward stroke and snapping into operative engagement with said cam track means following movement of said cover means into said closed position with said bolt assembly in said forward position, wherein the cam means comprises contoured inverted trough means extending generally longitudinally of the gun and carried by the cover means for lateral oscillation about an upright axis adjacent the rearward end of said cam means when said cover means is in the closed position, the bolt assembly includes cam follower means engageable within said trough means, and the enabling means comprises lateral flange means on the forward end of said cam means having a forwardly inclined cam rib for guiding said cam follower means into said trough means when said bolt assembly is moved through a rearward stroke following movement of said cover means to said closed position with said bolt assembly in said forward position.

4,492,146

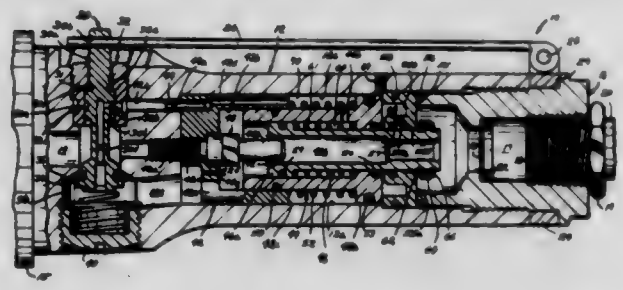
SHUT-OFF DEVICE FOR A FLUID DRIVEN MOTOR

William Werkman, Jr., Spring Lake, Mich., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Jul. 26, 1982, Ser. No. 401,906
Int. Cl.³ F15B *13/04*
U.S. Cl. 91—29 9 Claims

1. A device for shutting off a supply of motive fluid under pressure to an associated fluid driven motor, said device comprising a housing, a passageway for the motive fluid extending

through said housing between a fluid inlet port connected to the fluid supply and a fluid outlet port connected to the associated fluid motor, valve means shiftable to close said passageway in response to fluid pressure at said outlet port, an orifice of variable size within said passageway, a pilot piston slidably mounted within said housing and coupled to vary the size of said orifice, said pilot piston having a passageway extending therethrough and forming a portion of the motive fluid passageway, said pilot piston being responsive to predetermined



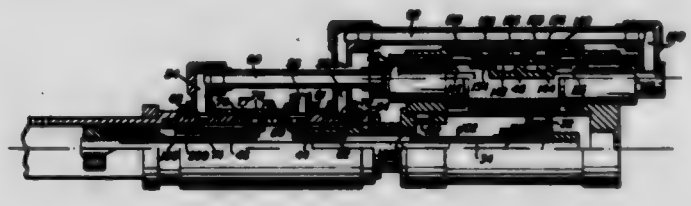
fluid pressure at said outlet port and shiftable between a first position and a second position, a restriction element cooperating with said piston passageway for defining said variable orifice, said pilot piston and said restriction element cooperating to enlarge the size of said orifice as said pilot piston is shifted between said first and said second positions and a shut-off piston slidably mounted within said housing and shiftable to close said housing passageway whereby fluid pressure at said outlet port is increased before said valve means closes said passageway.

4,492,147

RECIPROCATORY AIR MOTOR WITH CUSHIONING PISTONS

Wallace C. Knapp, Towson, Md., assignor to Knapp Pneumatics, Inc., Baltimore, Md.

Filed Dec. 30, 1983, Ser. No. 567,164
Int. Cl.³ F01L *25/06*; F01B *11/02*
U.S. Cl. 91—306 14 Claims



1. A reciprocatory motor having a main piston, means for providing reciprocation of the main piston in a main cylinder of the motor, and means for absorbing kinetic energy of the main piston during each stroke thereof, the energy absorbing means comprising a pair of cushion pistons received in a cushion piston housing and control means for providing relative movement between the cushion pistons on each stroke of the main piston so as to compress gas in a space between the cushion pistons and for translating the compression of gas between the cushion pistons into absorption of kinetic energy of the main piston.

4,492,148

CONTROL SYSTEM FOR A PLURALITY OF HYDRAULIC ACTUATORS

Kazunori Kuromoto, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 21, 1982, Ser. No. 451,805
Int. Cl.³ F15B *11/16*
U.S. Cl. 91—523 1 Claim

1. A control system for a plurality of hydraulic actuators, comprising:

a hydraulic pump;

first, second, third and fourth hydraulic actuators each having first and second chambers formed therein;

first, second, third and fourth conduits each being divided at one end thereof into two auxiliary conduits, each of said auxiliary conduits being connected with either one of said first and second chambers of different actuators;

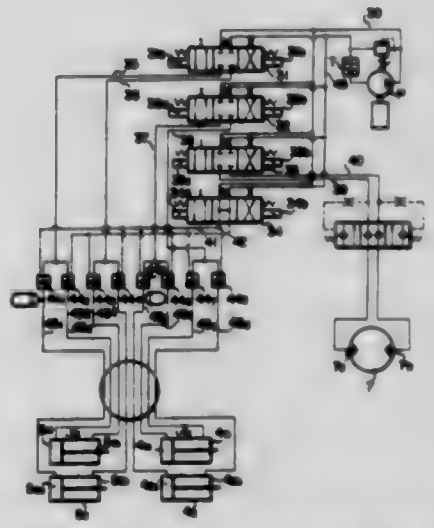
a plurality of pilot-operated check valves each being disposed in said respective auxiliary conduits for controlling the passage of fluid in a single direction from said hydraulic pump;

first solenoid-operated valve means connected at one end thereof with said hydraulic pump and at the other end with said first and second conduits for controlling flow of fluid in said first and second conduits; second solenoid-operated valve means connected at one end thereof with said hydraulic pump and at the other end with said third and fourth conduits for controlling flow of fluid in said third and fourth conduits;

first pilot pressure conduit connected with the first half of said plurality of check valves;

second pilot pressure conduit connected with the second half of said plurality of check valves; and

third solenoid-operated valve means connected at one end thereof with said hydraulic pump and at the other end with said first and second pilot pressure conduits for selec-



tively supplying fluid pressure into said first and second pilot pressure conduits thereby selectively opening said first half of and said second half of said check valves;

said first solenoid-operated valve means having a neutral position at which said first valve is closed, a first offset position at which said first conduit is connected with said hydraulic pump and said second conduit is connected with a tank and a second offset position at which said first conduit is connected with the tank and said second conduit is connected with said hydraulic pump;

said second solenoid-operated valve means having a neutral position at which said second valve is closed, a first offset position at which said third conduit is connected with said hydraulic pump and said fourth conduit is connected with the tank and a second offset position at which said third conduit is connected with the tank and said fourth conduit is connected with said hydraulic pump;

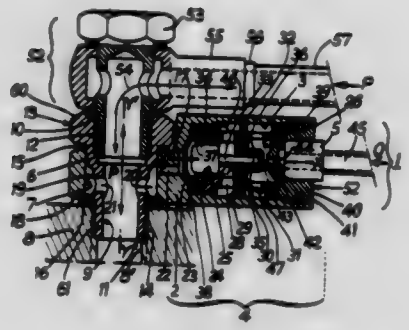
said third solenoid-operated valve means having a neutral position at which said first and second pilot pressure conduits are connected with the tank, a first offset position at which said first pilot pressure conduit is connected with said hydraulic pump and said second pilot pressure conduit is connected with the tank and a second offset position at which said first pilot pressure conduit is connected with the tank and said second pilot pressure conduit is connected with said hydraulic pump.

4,492,149

PRESSURE RELAY ADAPTED TO SIGNAL THE POSITION OF THE MOVABLE MEMBER OF A JACK

Daniel Boutelle, Ville d'Avray; Eric Petrimaux, Huest, and Jean-Luc Barbon, Maisons Laffitte, all of France, assignors to Legris, Rouen, France

Continuation of Ser. No. 263,992, May 15, 1981, abandoned.
This application Aug. 19, 1983, Ser. No. 525,256
Claims priority, application France, May 23, 1980, 80 11560
Int. Cl.³ F01B 31/12
U.S. Cl. 92—5 R 12 Claims



1. In combination, a jack and a pneumatic pressure relay the jack having a fluid receiving housing, and having a fluid inlet and having a member therein movable in response to the fluid in a chamber defined by the member and the walls of the housing, said relay

comprising:

a body with an auxiliary conduit therethrough, with first means on said body at one end of said conduit connecting said one end of said conduit to said fluid inlet of said housing and securing said body to said jack, said conduit extending from said fluid inlet to a portion of said body spaced from said fluid receiving housing thereby permitting access to the other end of said conduit from externally of said housing when the body is secured to said housing, second means on said body at said other end of said conduit for connecting said conduit to a source of supply of operating fluid under pressure for said housing for operating said member, said conduit having a cross-sectional size which is substantially equal to the cross-sectional size of said fluid inlet to permit the operating fluid for said member to flow through said conduit into said housing without substantial pressure loss, and said body having a chamber therein with an exhaust outlet and a signal outlet and having a control opening extending from said conduit to said chamber for fluid flow from said conduit to said chamber;

dividing means dividing said chamber into a first sub-chamber and a second sub-chamber and having an opening therein, said dividing means preventing the flow of fluid between said first sub-chamber and said second sub-chamber except through said opening of said dividing means, said first sub-chamber being adjacent said control opening for receiving fluid therefrom and being connected for fluid flow to said exhaust outlet and said second sub-chamber being connected for fluid flow to said signal outlet;

an elastic membrane intermediate said control opening and at least a portion of said first sub-chamber, said membrane being in fluid-tight relation with the wall of said first sub-chamber and being movable by fluid in said control opening away from the latter;

fluid feeding means on said body for supplying fluid to said second sub-chamber, said feeding means being spaced from said fluid receiving housing thereby permitting access thereto from externally of said housing when said body is secured to said housing and having an opening at said second sub-chamber for supplying a fluid to said second sub-chamber;

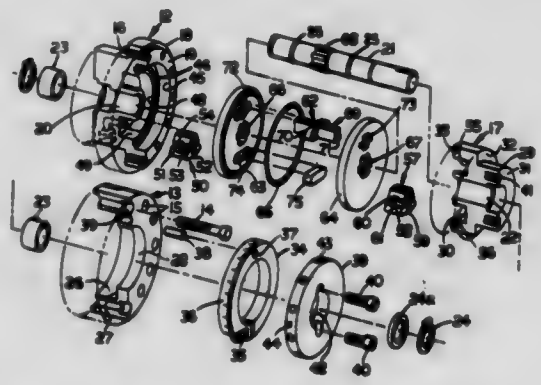
valve means in said chamber for alternately preventing fluid flow through said opening in said dividing means while permitting fluid flow through said opening in said feeding means and permitting fluid flow through said opening in said dividing means while preventing fluid flow through said opening in said feeding means for thereby interconnecting, in a first position thereof, said first sub-chamber and said second sub-chamber for fluid flow therebetween and preventing fluid flow from said feeding means into said second sub-chamber and for alternately, in a second position thereof, preventing fluid flow between said first sub-chamber and said second sub-chamber and permitting fluid flow from feeding means into said second sub-chamber, said valve means being movable from said second position thereof to said first position thereof by fluid supplied by said feeding means and having operating means adjacent said membrane for moving said valve means from said position thereof to said first position thereof upon movement of said membrane away from said control opening by fluid flowing through said control opening.

4,492,150

ACTUATOR FOR MECHANICAL APPARATUS

Harlan W. Yates, 10035 Third Ave. South, Minneapolis, Minn. 55420

Filed Jul. 1, 1983, Ser. No. 509,994
Int. Cl.³ F15B 15/24
U.S. Cl. 92—13.6 10 Claims



1. A variously adjustable device for producing reciprocating rotary motion, comprising:

a housing including a pair of housing members each having a hollow interior, means interconnecting said housing members together and permitting one of said housing members to be rotated relative to said other housing member;

means defining a shaft extending through said housing;

chamber defining means in said housing to form the interior thereof into a pair of axially separated chambers, said chamber defining means being revolvable relative to said housing;

vane means connected with said chamber defining means and projecting into said chambers;

a fixed stop member mounted in one of said chambers in obstructing relation with said vane means, said fixed stop member having opposite sides;

a pair of primary ports in said housing connected in communicating relation with a source of fluid under pressure and communicating with one of said chambers, one of said ports being located on one side of said fixed stop member and the other port being located on the other side of said fixed stop member;

a pair of transfer ports in said chamber defining means interconnecting said chambers in communicating relation, one of said transfer ports interconnecting said chambers on one side of said vane means and the other transfer port interconnecting the chambers on the other side of said vane means, whereby when fluid under pressure is introduced through one of said primary ports into said one chamber, said vane means and chamber defining means

will be rotated in one direction, and when fluid under pressure is introduced into said one chamber through the other primary port, the vane means and chamber defining means will be revolved in the opposite direction; and

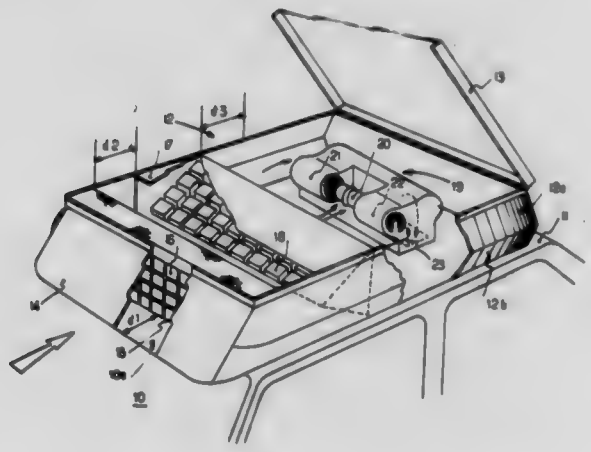
a movable stop member mounted in the other of said chambers of said housing in obstructing relation with said vane means and being movable with said one housing relative to said other housing for variously adjusting the position of said stop member relative to said fixed stop member whereby the amount of reciprocating movement of the vane means and chamber defining means may be variously adjusted.

4,492,151

AIR PRESSURIZERS/CONDITIONERS ESPECIALLY FOR WORK CABS IN A POLLUTED ATMOSPHERE

Etienne Mattei, 11 blj rue Chevalier, 94210 Lavarenne St. Hilaire, France

Filed Mar. 3, 1983, Ser. No. 471,826
Claims priority, application France, Mar. 5, 1982, 82 03663
Int. Cl.³ B60H *3/00*
U.S. Cl. 98—2.11 6 Claims



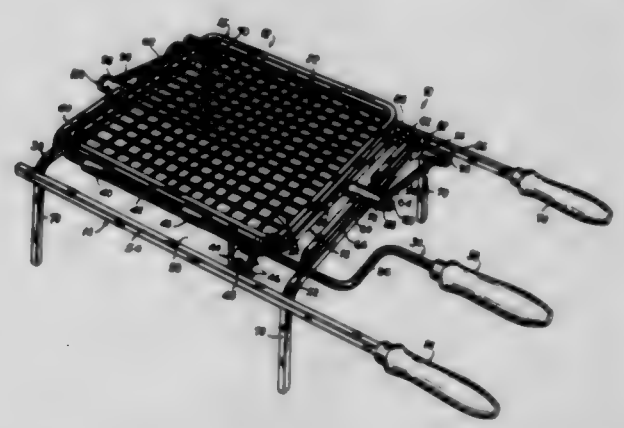
1. Air pressurizer/conditioner for work cabs in a polluted atmosphere, especially the driving cabs of agricultural tractors, this equipment comprising an air treatment unit mounted or built into the roof of a cab, this unit being equipped on the inside with at least one coarsefilter element for eliminating the solids, such as tree leaves and grit, a fine filter element, for dust removal and an activated-charcoal cell for stopping the harmful gases and vapours by absorption, and finally a turbo-fan assembly for sucking in the outside air and conveying it, filtered and purified, to the working cab, this air pressurizer/conditioner being characterized in that, on the one hand, the air treatment unit takes the form of a box, preferably the general form of a parallelepipedic box, which has, on one of its front faces a suction orifice extending over the greater part of this face to allow access to the front face of the coarse filter element and to the front face of the fine filter element, these said faces being attached mechanically and without a leak to an intermediate leakproof frame, in that, on the other hand, the turbo-fan assembly is located inside the box downstream of the filter elements so that the air passes through the said filter elements as a result of suction and is delivered purified into the working cab through a diffuser, and further in that the pressurizer is provided with a pressurization monitoring device and a toxicity detector for the air forced into the cab, characterized in that the pressurization and toxicity monitoring device comprises, on the one hand, a differential pressure controller having a pressure intake in the cab and a pressure intake outside the cab, this pressure controller feeding a pressurization indicator in the cab, and, on the other hand, a pulse counter associated with a divider bridge having as many ratios as the turbo-fan assembly has flow speeds, this counter displaying, in corrected time, the effective working time of the chemical filter as a function of the flow speeds of the turbo-fan, and further a toxicity detector incorporating, on a replaceable support located in the path of the air forced into the cab, several reagent pellets which by a change of colour reveal, from a certain threshold, the presence of polluting chemical bodies.

4,492,152

ROTATABLE COOKING DEVICE

Michelangelo DeSantis, 9 Ave. A, Port Washington, N.Y. 11050

Filed Apr. 1, 1983, Ser. No. 481,374
Int. Cl.³ A47J *37/06*
U.S. Cl. 99—397 17 Claims



1. A cooking device disposable above a heating means for cooking an article of food comprising:

a grill assembly comprising first and second grills and means for releaseably securing said grills together in confronting spaced relation whereby the article to be cooked is releaseably securable in the space between said grills;

a post having one end secured to said grill assembly;

a frame having an opening for receiving said grill assembly, said frame defining a channel along one side thereof and a space communicating with the top of said channel, said channel being dimensioned for slidably receiving the other end of said post, said space accommodating disengagement of said post from said channel;

a pivot arm, means for rotatably securing said pivot arm at one end to said frame and at the other end to one side of said grill assembly substantially at the midpoint thereof; and

handle means secured to said grill assembly for rotating said assembly substantially 180? about the axis thereof aligned with the rotation axis of said other end of said pivot arm for alternately exposing opposite surfaces of said food article to said heating means, said post traversing said channel during each rotation of said assembly.

4,492,153

KNOCK-DOWN PLASTIC CHEESE CURING CONTAINER

Paul P. Grabowski, Mt. Prospect, Ill., assignor to Kraft, Inc., Glenview, Ill.

Filed Dec. 13, 1982, Ser. No. 449,150
Int. Cl.³ A23C *19/00*
U.S. Cl. 99—460 14 Claims

1. A knock-down cheese curing box comprising

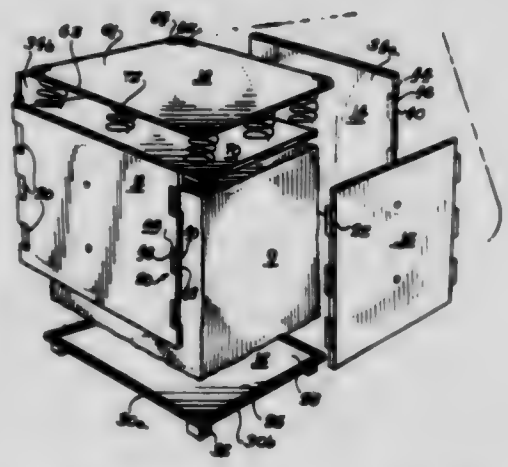
a first pair of plastic, opposed, individually constructed, unitary, rectangular side panels each having a flat, smooth cheese-contact interior surface and vertical edges,

a second pair of plastic, opposed, individually constructed, unitary, rectangular side panels, each having a flat, smooth, cheese-contact interior surface and vertical edges,

each of said first pair side panels having notch means along each vertical edge providing for joining to said second pair side panels and each of said second pair side panels having tab means along each vertical edge for sliding horizontally inward into nonlinterlocking engagement with said notch means forming a tubular configuration of said pairs of side panels, said notch means and said en-

gaged tab means restraining vertical movement of said side panels relative to each other,

an individually constructed, rectangular, plastic bottom tray, said bottom tray having a flat bottom panel and leg means for supporting said bottom panel above a support surface to allow lifting apparatus to be inserted therebelow, said bottom panel having an upper surface with lip means upstanding therefrom for locating said tubular configuration of side panels freestanding on an area of said top surface defined inward of said lip means, said lip means being of such minimal height as to permit said tubular configuration to be collapsed while filled with a block of cured cheese by sliding said engaged side panels horizontally outward from each other to leave the cured cheese block sitting on said self-supporting bottom tray, said top surface of said bottom panel interior of said lip means being flat and smooth for cheese contact,



said side panels and said bottom tray being formed having solid outer plastic skins and porous plastic interior cores,

a plastic pressure plate having peripheral dimensions substantially matched to the interior dimensions of said tubular configuration and having a smooth, flat, cheese-contact lower surface,

an individually constructed cover adapted to overlie said tubular configuration,

means interposed between said cover and said pressure plate for biasing said pressure plate away from said cover,

means for restraining said side panels in interfitted relationship to each other, and

means for holding said cover means downward over said tubular configuration with said biasing means exerting downward pressure on said pressure plate.

4,492,154

OVERLOAD PROTECTION IN PRESSES

Werner Rupp, Heidingen, and Johannes Koch, Weilheim, both of Fed. Rep. of Germany, assignors to L. Schuler GmbH, Goeppingen, Fed. Rep. of Germany

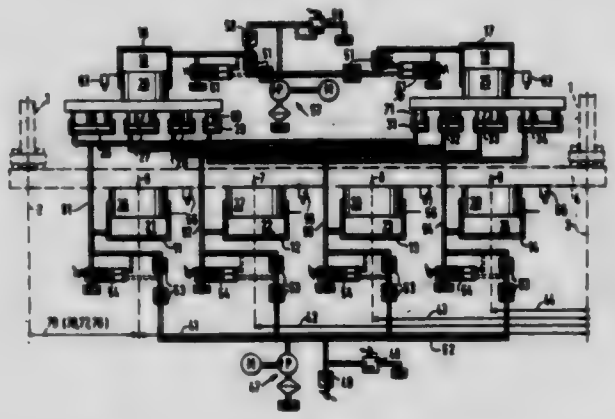
Filed Jan. 28, 1984, Ser. No. 572,305

Claims priority, application European Pat. Off., Jan. 22, 1983, 83100561.6

Int. Cl.³ B30B 1/32

U.S. Cl. 100—53 4 Claims

1. An overload protection for presses, comprising connecting rod means for driving the press in a first actuating plane and in a second actuating plane remote to the first actuating plane, a plurality of working stages, ram means driven by said connecting rod means and acting on said working stages, at least one overload pressure-responsive means coordinated to each working stage, each overload pressure-responsive means having a pressure space means, the overload pressure-responsive means being operatively connected in common to adding pressure-responsive means and the value of the overall overload protection of each adding pressure-responsive means being adjusted smaller than the sum of the values of the individual overload protections of the overload pressure-responsive means, one pressure space means in a first adding pressure-responsive means and one pressure space means in a second adding pressure-responsive means being coordinated to the pressure space means of each overload pressure-responsive means, a piston means for each pressure space means, and the cross section of each piston means acted upon in the first adding pressure-responsive means being proportional to the product of the distance of the connected working stage to the



second actuating plane and the piston cross section of the piston means in the corresponding overload pressure-responsive means, and the cross section of each piston means acted upon in a second adding pressure-responsive means being proportional to the product of the distance of the connected working stage to the first actuating plane and the piston cross section of the piston means in the corresponding overload pressure-responsive means.

4,492,155

SIEVE BELT PRESS

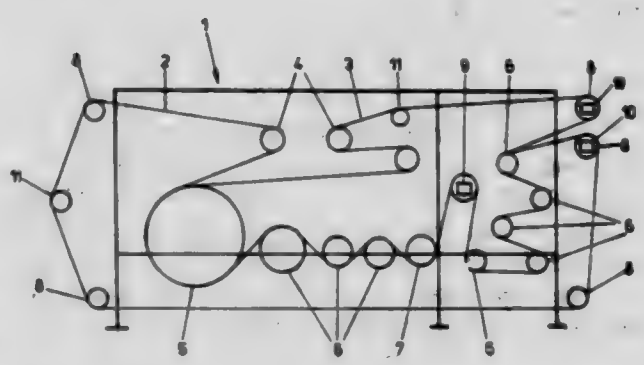
Robert Wolkenstein, Lienz, Austria, assignor to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Mar. 30, 1983, Ser. No. 480,273

Claims priority, application Austria, Apr. 1, 1982, 1303/82

Int. Cl.³ B30B 9/24

U.S. Cl. 100—118 6 Claims



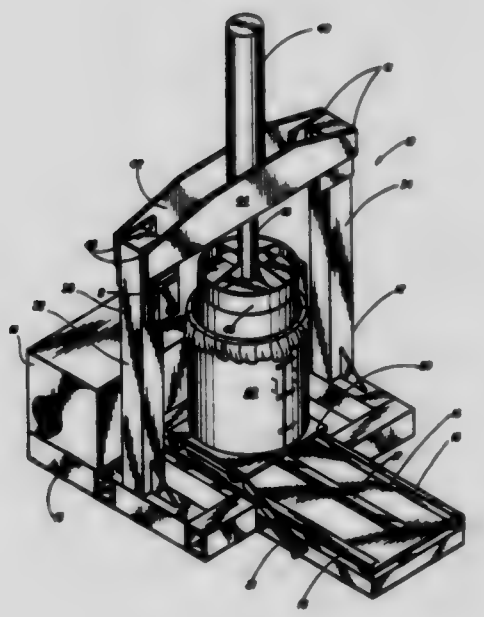
1. Sieve belt press, in which the material to be dewatered is pressed between two endless sieve belts which pass in common in a dewatering area over a plurality of common rolls and then separately over separate rolls in the area downstream of a discharge location characterized in that in the area downstream of the discharge location both sieve belts are passed over drive rolls and in that additionally at least one drive roll is power driven within the dewatering area within which the sieve belts are in common passed over common rolls.

4,492,156

APPARATUS FOR COMPACTING REFUSE

John Zimmer, 502 Estate Dr., New Iberia, La. 70560

Filed Jan. 10, 1983, Ser. No. 456,574
Int. Cl.³ B30B 15/06
U.S. Cl. 100—229 R 2 Claims



1. A refuse compacting apparatus comprising:

a. a frame, said frame providing a horizontal base and an upwardly extending superstructure, rigidly attached to said base;

b. a hydraulic cylinder having a movable driven ram portion and being mounted on said superstructure and being vertically oriented for extending said ram portion of said cylinder in a downward direction;

c. a compaction disk attached to a lowermost end of said ram portion and being movable with said ram portion from an upper idle position to a lower operating position;

d. a movable compaction platform securedly mounted on said base beneath said cylinder during a compacting operation and slidably removable from said base during an unloading operation;

e. an open-ended cylindrical jacket assembly adapted to receive the refuse to be compacted, said jacket assembly being adapted to be releasably attached to said compaction platform and having a hinged portion on one side of a side wall and latches on diametrically opposite side of the side wall for assembling said jacket in the cylindrical operational position and disassembling it in an open-wall position during non-operation;

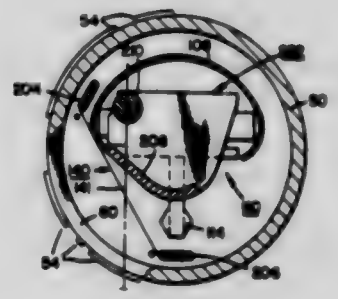
f. a runway portion extending upwardly from said frame to facilitate movement of said compaction platform and said jacket assembly attached thereto between an operating position when said platform is beneath said cylinder and on-operating position laterally removed from said frame, said runway portion being provided with a pair of parallel spaced apart rails and an I-beam fixedly attached between said rails, and platform being provided on its undersides with a plurality of castors slidably engaging said rails and a T-shaped groove for slidable engagement with said I-beam of said runway portion, this combination of the rails, the castors, the I-beam, and the groove facilitating back and forth movement of said platform along said runway.

4,492,157

POSTAGE PRINTING APPARATUS HAVING A MOVABLE PRINT HEAD AND A ROTATING PRINT DRUM AND RIBBON CARTRIDGE

John I. Clark, Milford, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 9, 1983, Ser. No. 473,418
Int. Cl.³ B41F 11/00; B41J 32/00
U.S. Cl. 101—71 9 Claims



1. A postage meter printing apparatus for applying postage indicia to a mailpiece comprising:

(a) a rotary operating drum means for feeding the mailpiece through the postage meter, the periphery of the drum means having an aperture therein,

(b) means for maintaining the mailpiece against the drum means as the mailpiece is fed by the drum means,

(c) means to cycle the drum means,

(d) a non-rotating reciprocating print head means secured to a stationary support and located internal to the drum having a printing position and non-printing position, the print head means being automatically placed adjacent the mailpiece through the aperture in the drum means to its printing position, when the aperture is between the print head means and mailpiece, the print head means being an impact matrix print head, and

(e) a cartridge located on and rotatable with the drum means, the cartridge further containing an inked ribbon means, the print head means and inked ribbon means cooperate to print on a mailpiece, and

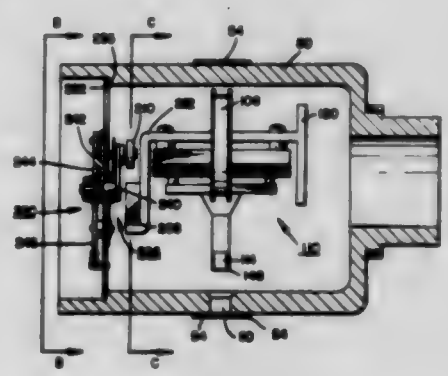
(f) means to activate the print head means when it is in its printing position.

4,492,158

POSTAGE PRINTING APPARATUS HAVING A MOVABLE PRINT HEAD AND A HOLLOW NON-ROTATING SUPPORT SHAFT

John I. Clark, Milford, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 9, 1983, Ser. No. 473,831
Int. Cl.³ B41F 11/00, 13/36
U.S. Cl. 101—71 14 Claims



14. A postage meter printing apparatus for applying postage indicia to a mailpiece comprising:

(a) a rotary operating drum means for feeding the mailpiece

through the postage meter to a printing position, the drum means having printing means and an internal control means,

(b) non-rotating shaft means supporting the print means for reciprocation and the drum means for rotation, the shaft means also having a passageway therethrough,

(c) means for maintaining the mailpiece against the drum means as the mailpiece is fed by the drum means through the printing position,

(d) means to cycle the drum means, and

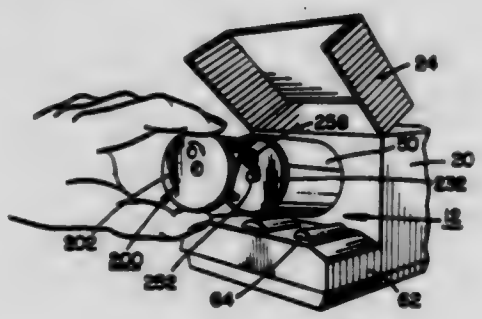
(e) means to enable control wire means to be brought into the drum means from outside the drum means to the internal control means through the passageway of the non-rotating shaft means.

4,492,159

POSTAGE PRINTING APPARATUS HAVING A PRINT HEAD WITH A REPLACEABLE RIBBON CARTRIDGE

John I. Clark, Milford, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 8, 1983, Ser. No. 473,842
Int. Cl.³ B41J 32/00; B41F 11/00
U.S. Cl. 101—71 5 Claims



1. A postage meter printing apparatus for applying postage indicia to a mailpiece comprising:

(a) a rotary operating drum means for feeding the mailpiece through the postage meter, the periphery of the drum means having an aperture therein,

(b) means for maintaining the mailpiece against the drum means as the mailpiece is fed by the drum,

(c) means to cycle the drum means,

(d) a reciprocating print head means located internal to the drum means having a printing position and non-printing position, the print head means being automatically placed adjacent the mailpiece through the aperture in the drum means to its printing position when the aperture is between the print head means and a mailpiece, the print head means being an impact matrix print head, and

(e) a replaceable cartridge located on and rotating with the drum means, the cartridge having first and second arms extending into the drum means, the cartridge containing an inked ribbon means, the print head means and inked ribbon means cooperate to print on the mailpiece,

(f) means to activate the print head means when it is in its printing position, and

(g) means associated with the print head means to advance the ribbon on activating of the print head means.

4,492,160

POSTAGE PRINTING APPARATUS HAVING A MOVABLE PRINT HEAD AND A VARIABLE SPEED DRUM ROTATION

John I. Clark, Milford, and Alton B. Eckert, Norwalk, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

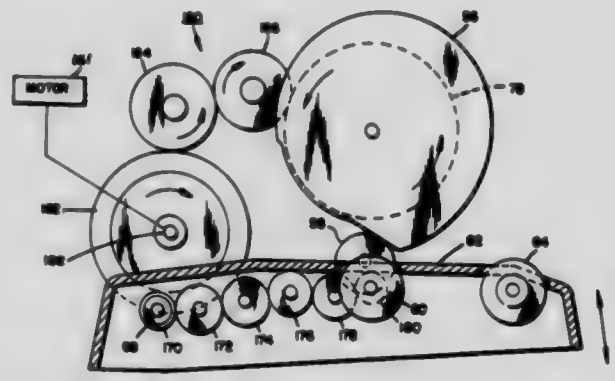
Filed Mar. 9, 1983, Ser. No. 473,843
Int. Cl.³ B41F 13/36, 11/00
U.S. Cl. 101—71 15 Claims

15. A postage meter printing apparatus for applying postage indicia to a mailpiece comprising:

(a) a rotary operating drum means for feeding the mailpiece through the postage meter, the periphery of the drum means having an aperture therein,

(b) means for maintaining the mailpiece against the drum means as the mailpiece is fed by the drum,

(c) a nonrotary reciprocating impact matrix printing means secured to a stationary support and located internal to the drum means which is automatically activated to print on the mailpiece through the aperture in the drum means when the aperture is between the internal printing means and mailpiece, and



(d) a linkage assembly which cooperates with the rotary drum means to move the print head between a printing and non-printing position, and

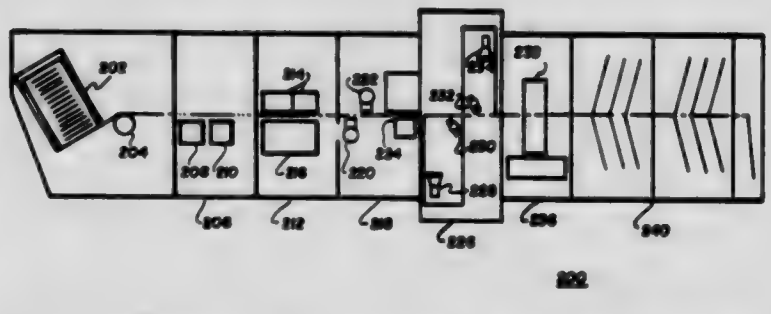
(e) means to cycle the drum means at a first rotational speed, the cycling means having means to vary the rotational speed of the drum means to a second slower rotational speed during the time the printing means internal to the drum means is activated.

4,492,161

HIGH SPEED DOCUMENT ENCODING SYSTEM

Gerald L. Johnson, Garland, Tex.; Eugene C. Nolting, Gardnerville, Nev., and John H. Allen, Arlington, Tex., assignors to BancTec, Incorporated, Dallas, Tex.

Filed Oct. 1, 1981, Ser. No. 307,537
Int. Cl.³ B41J 1/36
U.S. Cl. 101—109 22 Claims



202

1. Apparatus disposed at an encoding station for encoding discrete documents continuously moving through said station, said apparatus comprising:

a plurality of stationary character imprinters;

a plurality of striking means, each of said plurality of striking means positioned, when activated, to strike a particular and corresponding one of said plurality of stationary character imprinters;

ink bearing ribbon means disposed between said striking means and said character imprinters for transferring character imprint to said documents, said ribbon means remaining stationary during the absence of a document at said encoding station;

means continuously transporting said discrete documents through said encoding station between said plurality of character imprinters and said plurality of striking means; and

control means for advancing said ribbon in the direction of

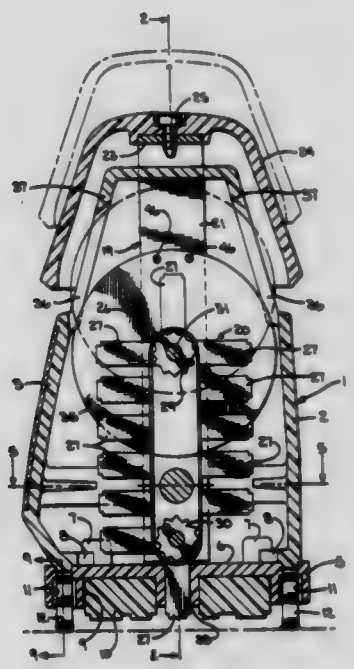
document travel and for activating particular ones of said plurality of striking means in a preselected sequence and at preselected times only in response to a document being present at said encoding station, thereby to character imprint said document as it is being continuously transported through said encoder station.

4,492,162

TYPE BAND INK STAMP

Daniel R. Nettesheim, Waukesha, and Fred W. Kufris, Janesville, both of Wis., assignors to Schwaab Inc., Milwaukee, Wis.

Filed Mar. 17, 1983, Ser. No. 476,054
Int. Cl.³ B41J *1/20*
U.S. Cl. 101—103 16 Claims



1. An improved type band ink stamp, comprising a housing having an opening in the lower end, a frame disposed within the housing, means for mounting the frame for vertical movement relative to the housing between a lower operating position and an upper adjusting position, an endless type band carried by the frame and having a plurality of type characters spaced along the length of said band, a handle operably connected to the frame whereby lowering and raising of the handle will move the frame between the operating and adjusting positions, the lowermost type character of said band projecting through said opening in said housing when the frame is in the lower operating position and said lowermost type character being disposed above said opening when said frame is in the upper adjusting position, and adjusting means including a manually adjusting member disposed in the housing for adjusting the band when the frame is in the adjusting position whereby the desired type character can be moved into alignment with said opening in the housing, said adjusting member extending through an aperture in said housing to an accessible position when the frame is in the upper adjusting position and said adjusting member being located within the housing in an inaccessible position when said frame is in the lower operating position.

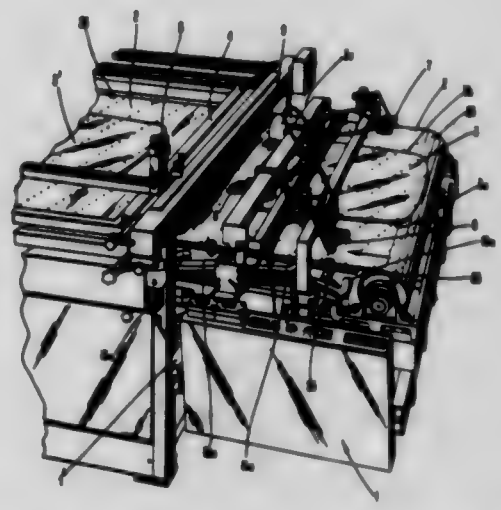
4,492,163

SILK-SCREEN PRINTING MACHINE HAVING AN ENDLESS CONVEYOR AND REGISTRATION FOR THE PRINTED ON MATERIAL

Sylve J. D. Ericsson, Storvretsvägen 48, 147 00 Tumba, Sweden

Filed Feb. 27, 1980, Ser. No. 125,197
Claims priority, application Sweden, Feb. 28, 1979, 7901808
Int. Cl.³ B41L *13/02*
U.S. Cl. 101—126 6 Claims

1. A silk-screen printing machine, comprising drive means for driving a material-conveying means arranged to be stopped in a first position for registering material to be printed upon, and then to convey said material to a second, printing position in which a print corresponding to a stencil pattern is applied to said material, sensing means for sensing the movement of the material from said registering position to said printing position, said sensing means generating a pulse for displacements of the material of less than 0.5 mm, said sensing means is connected to a counter, said counter having means for generating a signal when a predetermined number of pulses corresponding to the conveyed distance between said first position and said second



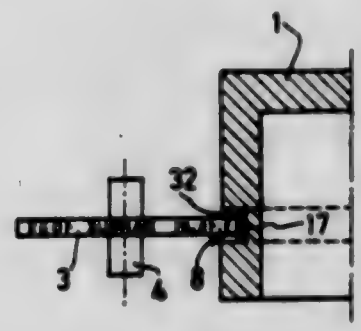
position is counted, the signal is adapted to actuate the drive means for stopping the conveying means when said material is in the second position, connecting means for controlling the drive means during a substantial portion of the transport of the material from the first to the second position over a period of rapid acceleration, substantially constant velocity and rapid deceleration, the counter controlling said drive means during the remaining small portion of the transport over a period of very low speed operation after the rapid deceleration and stopping said drive means.

4,492,164

PRINTER WITH INKER ON THE PLATEN ROLLER

Claude Cassanas, Bossey St Antoine; Jean-Pierre Cosot, Erie Comte Robert, and Jacques Royer, Maisons Alfort, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 24, 1983, Ser. No. 469,537
Claims priority, application France, Feb. 26, 1982, 82 03235
Int. Cl.³ B41K *3/32, 3/56, 3/62*
U.S. Cl. 101—216 11 Claims



1. Apparatus for printing information on an associated information carrier which comprises a platen for carrying the information carrier, a rotary stamp for printing on the information carrier, means mounting said rotary stamp to move said record carrier between said platen and said stamp, means for delivering ink from an inking device to said stamp, said stamp printing information on said carrier by the rolling movement of said stamp on said information carrier, said platen having at least one groove having two edges and a bottom, said groove being situated between planes which bound at least one circular

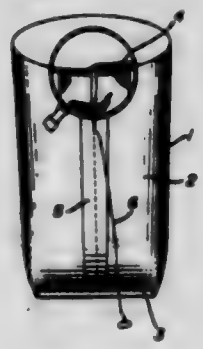
stamp surface carrying the printing faces, a part of the stamp periphery, carrying the printing faces on said circular surface, extending into said groove without touching the edges thereof at least in the absence of an information carrier, the apparatus further including a spindle mounting said stamp and a spindle mounting said platen, and reset means which act between said spindle of said stamp and said spindle of said platen to move said stamp and said groove towards each other, the bottom of said groove carrying said inking device, and said reset means urging the stamp and the bottom of the groove towards each other in the absence of an information carrier.

4,492,163

EXPANDABLE EXPLOSIVE AND STEMMING CARTRIDGE

Horst F. Marx, Otterburn Park, Canada, assignor to C-I-L Inc., North York, Canada

Filed Apr. 12, 1984, Ser. No. 599,646
Claims priority, application Canada, Aug. 8, 1983, 434111
Int. Cl.³ F42D 3/00
U.S. Cl. 102—313 1 Claim



1. A method of charging an upward or inclined vertical borehole in stable rock with packaged flowable explosive or stemming material using as a container for the said explosive or stemming material an elongated, flexible, thin-walled tube closed at each end and having at least one end-to-end longitudinal pleat, said pleat being sealed closed by means of an adhered, severable overcovering, the said overcovering having a fastened to it a ripcord extending beyond the borehole opening to longitudinally sever said overcovering, said method comprising elevating said container to a chosen position within the said vertical borehole and while in said chosen position operating the said ripcord to sever the said overcovering to allow said pleat to expand from the head pressure of the contained material so that said container engages and is retained by the walls of said borehole and is prevented from falling from the borehole by the frictional contact between the said container and the said borehole wall.

4,492,165

SUBMUNITION HAVING TERMINAL TRAJECTORY CORRECTION

William O. Purcell, Maitland, Fla., assignor to Martin Marietta Corporation, Bethesda, Md.

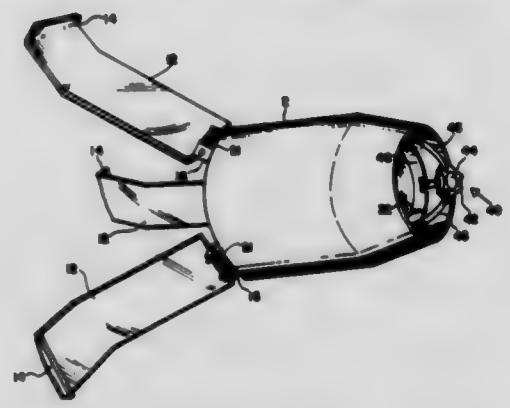
Filed Apr. 28, 1977, Ser. No. 791,805
Int. Cl.³ F42B 25/16, 25/24
U.S. Cl. 102—384 8 Claims

1. A bomblet having a correctible terminal trajectory and being capable of being air-dropped in a cluster together with a multiplicity of said bomblets comprising:

a body having a nose portion and a tail portion, said body carrying a warhead,

a plurality of vanes hingedly attached to said tail portion of said body, said vanes being maintained in a closed position prior to being airdropped such that said vanes are disposed longitudinally along the outer surface of said body, said vanes being arranged to change to an open position when airdropped, thereupon said vanes being caused to extend rearwardly from said tail portion, said vanes being continuously maintained in a canted attitude with respect to the longitudinal centerline of said body so as to cause said body to spin from airflow caused by dropping of said body,

heat detection means disposed in said nose portion of said body, said heat detection means having a narrow forward field-of-view, said field-of-view having a boresight line slightly displaced from the fore and aft axis of said body, thereby producing a rotating scan axis as a result of the rotation of said body, said field-of-view occuring at body spin rate in an inward spiral pattern on the ground as said bomblet approaches the ground, said heat detection means producing a detection signal when said field-of-view scans



across a target having a higher temperature than the ground,

firing pulse generation means disposed in said body and connected to said heat detection means for receiving such detection signal for generating an electrical firing pulse in response thereto, and

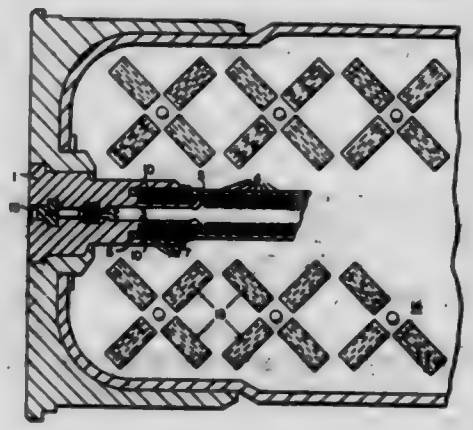
an explosive charge disposed on the outer surface of said body, said charge being connected to said firing pulse means and arranged to fire in response to such electrical firing pulse, said explosive charge producing a lateral impulse in a direction substantially perpendicular to said body upon such firing, to change the terminal trajectory of said bomblet in the direction of the target causing such detection signal.

4,492,167

PARTIALLY COMBUSTIBLE PROPELLANT CHARGE IGNITER

Uwe Brede, Firth; Alfred Hörr, Zirndorf, and Horst Penner, Fürth, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed May 19, 1983, Ser. No. 496,256
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1982, 3226269
Int. Cl.³ F42B 9/08
U.S. Cl. 102—470 20 Claims



1. A partially combustible propellant charge igniter compris-

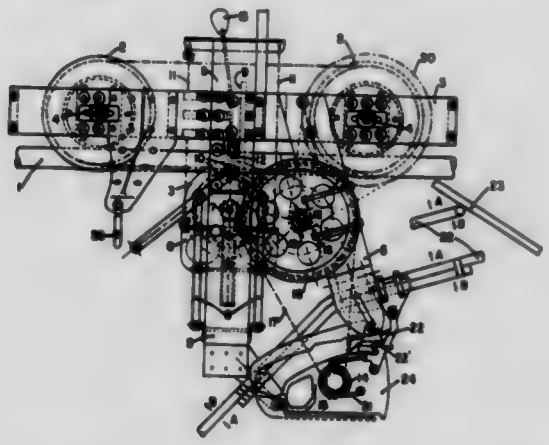
ing a metallic bottom piece accommodating an igniter charge therein, a centrally arranged ignition gas guide chamber in communication with the igniter charge for guiding ignition gas therefrom, a combustible ignition-conducting tube accommodating a propagation charge, the ignition-conducting tube being inserted into the bottom piece and extending outwardly therefrom, the propagation charge being arranged in the region of the ignition-conducting tube extending outwardly from the bottom piece, at least one cavity accommodating a separating charge and being at least partially delimited by a wall of the ignition gas guide chamber and the ignition-conducting tube portion inserted in the bottom piece, and nozzle means for establishing a communicating connection of the cavity to the portion of the ignition-conducting tube accommodating the propagation charge, the nozzle means enabling the escape of gases produced by the separating charge after ignition of the separating charge.

4,492,168

AUTOMATIC SELF-PROPELLED DEVICES FOR TRAVELLING ON A TRACK CABLE

Stelvio S. Cellai, Villa "Alba Chiara" 23, Avenue Mohamed El Karoui, Sousse, Tunisia

Filed Oct. 21, 1980, Ser. No. 199,298
Claims priority, application France, Oct. 24, 1979, 79 26940
Int. Cl.³ B61B 7/06; B61C 11/02, 13/06
U.S. Cl. 105—30 7 Claims



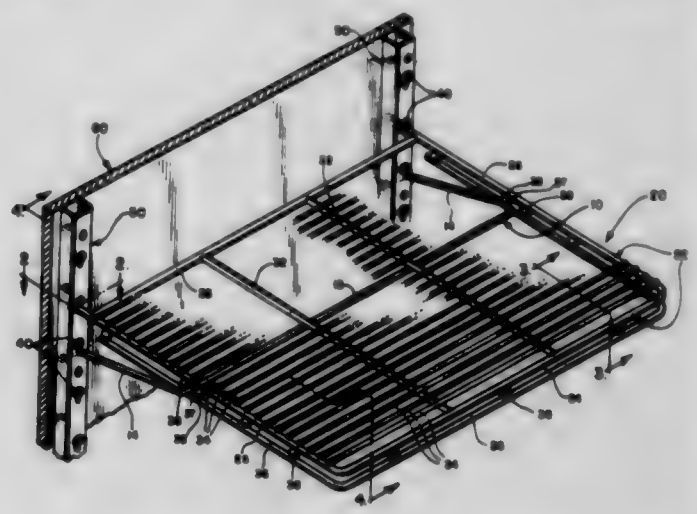
1. In a self-propelled device adapted for travelling on a track cable (1), comprising a frame (5), a driven wheel (2) that is rotatably mounted on the frame and that bears on the upper surface of the rack cable (1), and means carried by said frame (5) for forcing said wheel (2) against the rack cable (1), said means comprising lever means which carries an axle of an idler wheel (3) that bears against the underside of the track cable a distance from point of contact of said driven wheel (2) with said track cable (1) and means (25) for connection to a load (29) to be borne, such that an increase in the load swings the lever means in a direction to increase the force with which the wheels (2 and 3) are applied against the track cable; the improvement comprising means pivotally interconnecting said lever means with said frame (5) about an axle (33), both said latter axle (33) and said idler wheel (3) being located on the same side of a plane (P) containing the axis (4) of rotation of said driven wheel (2) and perpendicular to said track cable (1), said side of the plane (P) being the side that faces in said direction.

4,492,169

ADJUSTABLE CANTILEVERED SHELVING

Warren O. Ware; Gary M. Borst, and Ronald E. Abitz, all of Oshkosh, Wis., assignors to S.R.F. Corporation, Oshkosh, Wis.

Filed Apr. 5, 1982, Ser. No. 365,592
Int. Cl.³ A47B 9/00
U.S. Cl. 108—6 5 Claims



1. An adjustable cantilevered shelving comprising:
upright support means including a front member and a side member;
a shelf including a U-shaped top frame and U-shaped bottom frame, said U-shaped top frame and U-shaped bottom frame being secured together;
means extending from a rear edge of said shelf for adjustably mounting said shelf to said upright support means at a chosen vertical position;
a U-shaped bracket, including an axial portion and two arms, rotatably mounted between said U-shaped top frame and said U-shaped bottom frame of said shelf, whereby said arms pivot about the axis of said axial portion into positions above or below said shelf; and
means for detachably engaging said arms of said U-shaped bracket to said front member of said upright support means to provide support for said shelf.

4,492,170

LOCKING MECHANISM FOR VERTICALLY ADJUSTABLE TABLE

Robert A. Solomon, Kalamazoo, Mich., assignor to Am Fah, Inc., Kalamazoo, Mich.

Filed Jul. 20, 1982, Ser. No. 400,193
Int. Cl.³ A47B 9/00
U.S. Cl. 108—148 10 Claims



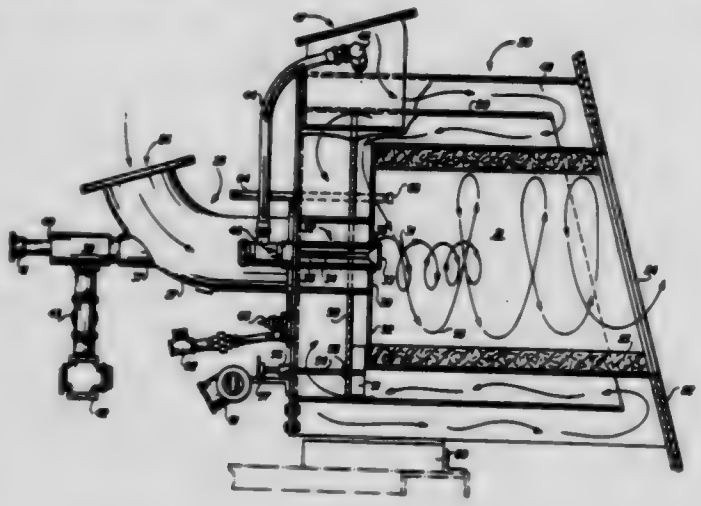
1. In a vertically adjustable table, including an upright tube and an upright post telescopically slidably received within said tube, one of said tube and post being supported on a base and the other of said tube and post having a table top supported at the upper end thereof, and including locking means cooperable

with said tube and post for releasably securing them against relative movement, the improvement comprising wherein a first wall portion of said post slidably engages a first wall portion of said tube and respective second wall portions of said tube and post on sides thereof opposite said first wall portions are spaced from each other, said second wall portion of said tube having means for receiving a tab near an end thereof, said locking means including a single piece locking member having a tab thereon received in said tab receiving means so that said locking member is thereby rendered pivotal about a generally horizontal axis lying generally in the plane of said second wall portion of said tube, having a cam surface thereon directly intermediate said tab receiving means and said second wall portion of said post and being movable into and out of engagement with said second wall portion of said post in response to said pivotal movement of said locking member, and having a manually graspable portion extending out of said space between said post and tube past said end of said tube, and including resilient means for yieldably urging pivotal movement of said locking member relative to said tube in a first direction which corresponds to movement of said cam surface into engagement with said second wall portion of said post.

4,492,171
SOLID FUEL BURNER

David F. Brashears, 790 Palmetto St., Oviedo, Fla. 32765, and Joseph T. Mollick, 122 Hickory Tree Rd., Longwood, Fla. 32750

Filed Dec. 12, 1983, Ser. No. 560,316
Int. Cl.³ F23D *1/02*
U.S. Cl. 110—261 14 Claims

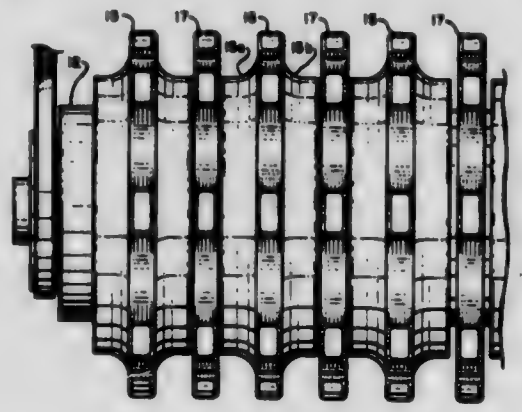


1. A solid fuel burner comprising in combination:
a combustion chamber;
a solid fuel and primary air nozzle attached to said combustion chamber for directing pulverized solid fuel and air into said combustion chamber;
solid fuel primary air spinning means for spinning said solid fuel and primary air into said combustion chamber in one direction of rotation;
secondary air input means for feeding secondary air into said combustion chamber;
secondary air spinning means for spinning the secondary air from said secondary air input means into said combustion chamber in a direction of rotation opposite in direction from said solid fuel and primary air;
gas fuel input having a flame disk positioned to feed gas into said combustion chamber in the center portion of said solid fuel and primary air nozzle; and
an auxiliary gas spud extending into said combustion chamber for directing gas thereinto, whereby said solid fuel burner is adapted to burn low density, low mass solid fuels.

4,492,172
METHOD AND APPARATUS FOR PRODUCING NON-RHIZOMING GRASSES

Jurgen Gramckow, 4096 Faria Rd., Ventura, Calif. 93001

Filed Dec. 30, 1982, Ser. No. 454,690
Int. Cl.³ A01C *5/00*
U.S. Cl. 111—1 5 Claims

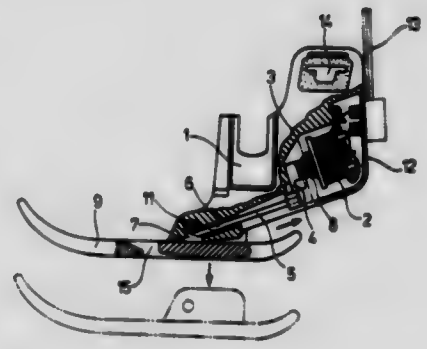


1. A method of producing a higher than normal density non-rhizoming grass sod including the steps of:
a. preparing seed beds in the form of spaced parallel troughs;
b. reducing the spacing between adjacent troughs to a value substantially less than the corresponding spacing provided for seeding grasses having rhizoming and non-rhizoming characteristics; and
c. planting seeds in said troughs at a normal rate to provide a substantially uniform seed density for all troughs whereby sufficient plant competition is provided by said spacing and seed density to force the growth upward, thereby resulting in a greatly enhanced turf appearance in a reduced period over that which would result using conventional trough spacing and the same seeding rate.

4,492,173
DETACHABLE PRESSURE FOOT WITH SOLENOID ACTUATED SECURING DEVICE

Tomonao Hirose, Tokyo, Japan, assignor to Kobshin Seimitsu Kikai Kabushiki Gaisha, Tokyo, Japan

Filed Aug. 18, 1983, Ser. No. 524,159
Claims priority, application Japan, Aug. 23, 1982, 57-127586
Int. Cl.³ D05B *29/06*
U.S. Cl. 112—240 3 Claims

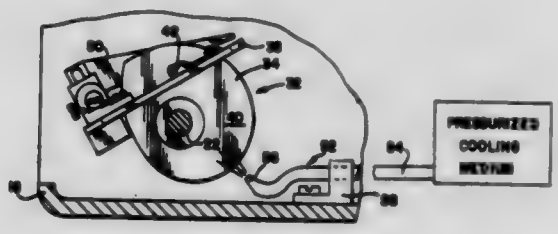


1. A detachable pressure foot mount in a sewing machine comprising: a hollow solenoid (2) fixed to a holder (1), which is, in turn, fixed to a push rod in a sewing machine; a drive rod (3) slidingly fitted in the hollow space of the solenoid and spring-biased to rise partly out of the hollow space of the solenoid; and a hold pin (5) connected to the rising end of the drive rod via a joint, and extending to a recess (7) made in the bottom of the holder, thereby catching a cross rod (11) of the pressure foot when the cross rod fits in the recess in the bottom of the holder.

4,492,174
THREAD CONTROL MECHANISM FOR SEWING MACHINES

Juergen Kaufmann, Mount Prospect, Ill., assignor to Union Special Corporation, Chicago, Ill.

Filed Feb. 16, 1983, Ser. No. 467,003
Int. Cl.³ D05B 57/00
U.S. Cl. 112—248 1 Claim



1. A cam thread pulling device for a looper thread of a sewing machine comprising:

a cam operatively driven by a rotating shaft;

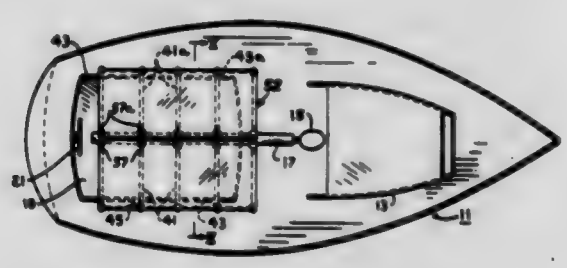
a plate member including means defining an elongated opening through which said cam may extend and including thread guiding means thereon to direct thread in a direction substantially laterally across said elongated opening; and

means for directing a flow of air through said elongated opening and against the looper thread whereby preventing a free end of looper thread from becoming entangled with said rotary shaft.

4,492,175
SAIL BOOM TENT

David E. Johnson, 1147 Sleepy Hollow Ct., Venice, Fla. 33595

Continuation-in-part of Ser. No. 389,712, Jun. 18, 1982, abandoned. This application Sep. 29, 1982, Ser. No. 427,867
Int. Cl.³ B63H 9/00
U.S. Cl. 114—39 9 Claims

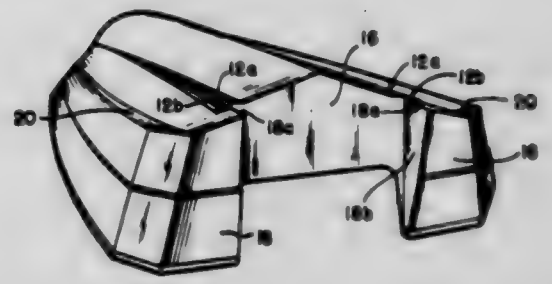


1. In a sailboat wherein a sail boom is pivotally mounted to a mast and wherein said boom is hollow and extends aft from said mast over an open cockpit, in combination with said boom, a plurality of fittings mounted longitudinally in spaced apart relationship along both sides of said hollow boom, said fittings being adapted to hold elongate members extending laterally outboard on port and starboard sides from said fittings over said open cockpit and terminating above the port and starboard sides of said cockpit, means for fastening said fittings to said boom, said fastening means comprising a bolt and nut assembly extending through said hollow boom and coacting with opposite fittings, a tubular member surrounding said bolt and extending through said hollow boom for preventing excessive tightening of said nut over said bolt and deformation of said hollow boom, means for securing said elongate members each in a respective fitting, a first flexible membrane disposed on said elongate members extending on port side, a second flexible membrane disposed on said elongate members extending on starboard side, fastener means for removably securing each membrane to said hollow boom, and fastener means for removably securing said membranes respectively to said elongate port and starboard members.

4,492,176
BOAT HULL

Juichi Arima, King County, Wash., assignor to Arima Marine International, Inc., Seattle, Wash.

Filed Jan. 4, 1982, Ser. No. 336,570
Int. Cl.³ B63B 1/00
U.S. Cl. 114—56 23 Claims



18. A motorized recreational boat with a single hull wherein the bottom of the hull of the boat comprises:

a lower hull portion extending outwardly and upwardly along at least a part of said lower hull portion length from the longitudinal center of the hull toward the port and starboard sides of the hull;

a pair of abutting strakes positioned at the upper edge of the lower hull portion of each of the port and starboard sides of the hull, each of said pairs of strakes having a first strake projecting outwardly, then upwardly from the upper edge of the lower hull portion, the second strake projecting outwardly, then upwardly from the uppermost portion of the first strake, each of said pairs of strakes forming a pair of substantially horizontal surfaces for planing and a pair of substantially vertical surfaces for resisting side slippage, each of said pairs of strakes extending from a position toward the stern of the boat to a position forward of the midportion of the hull, each of said pairs of strakes forming into a single strake extending from the midportion of the hull to a position toward the bow of the boat;

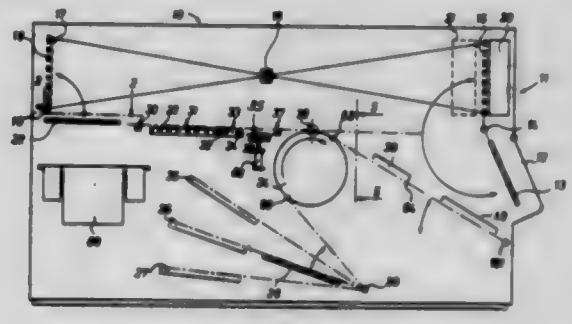
a middle hull portion extending outwardly and upwardly along at least a part of said middle hull portion length from the uppermost portion of each of said second strakes to the chine of the boat; and

an upper hull portion extending upwardly from the chine of the boat to form the hull sides.

4,492,177
APPARATUS FOR TRANSFERRING XEROGRAPHIC IMAGES

Leo N. Vackier, Gravenwezel; Josef L. Mampaey, Kontich, and Leo B. Alaerts, Boechout, all of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed May 25, 1983, Ser. No. 498,160
Claims priority, application United Kingdom, May 26, 1982, 8215318
Int. Cl.³ G03G 15/06
U.S. Cl. 118—651 9 Claims



1. Apparatus for transferring a liquid toner image from one element surface to another element surface comprising a first

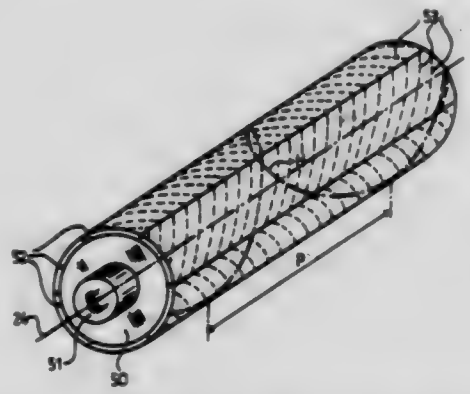
carriage movable through an arcuate path around a fixed axis, a second carriage movable through a generally horizontal path extending above and in close proximity to the top of the arcuately curved path of said first carriage, means for advancing said two carriages substantially synchronously through said paths to bring said carriages to the locus of proximity substantially simultaneously, means on the uppermost of said carriages for suspending a flexible sheetlike element by the margins thereof with the unsupported remainder of the flexible element free to sag therebelow, means on the lowermost of said carriages for rigidly supporting a second element, means for forming a liquid toner image on a surface of one of said elements which faces the other said element when the same are carried through said paths by said carriages, which toner image directly contacts the surface of the other elements as said elements pass through the locus of proximity of their paths and supports the surface of the flexible element out of contact with said other element surface, and means disposed adjacent the locus of proximity of said carriage paths for forming an electrical potential gradient across said two elements for effecting during their passage through said locus transfer of said liquid toner image from the surface on which it is formed to the other element surface.

4,492,178

APPARATUS FOR APPLYING SOLID DEVELOPER PARTICLES TO THE RECORDING ELEMENT OF A NON-IMPACT PRINTER

Jean-Philippe Voirin, Hericourt, and Bernard Cherbuy, Belfort, both of France, assignors to Cii Honeywell Bull (Societe Anonyme), Paris, France

Filed Jun. 20, 1983, Ser. No. 505,973
Claims priority, application France, Jul. 8, 1982, 82 12020
Int. Cl.³ B05C *11/02*
U.S. Cl. 118—653 16 Claims



1. In an apparatus for applying to the recording element (10) of a non-impact printer solid magnetically attractable developer particles contained in a tank (15), said apparatus comprising a conveyor roller (22) in the tank (15) arranged so as to bring said particles near the surface of said element (10), a baffle plate (23) positioned between said element and said conveyor roller to collect the particles conveyed by said roller, said baffle plate having a first edge (42) arranged in the immediate vicinity of said element (10) in order to form therewith a trough (43) having substantially the shape of a dihedral in which the particles thus gathered are collected, said element being movable in a direction (F) so as to cause its surface to pass the trough (43) and pick up particles from the trough, the particles carried beyond said trough remaining applied only to sensitized areas of said recording element, the improvement comprising a rotary cylinder (50), conveyor roller (22) coated on its outer cylindrical surface with strips (52) of magnetic material arranged side by side and parallel with the rotational axis (24) of said cylinder, each one of said strips being magnetized such as to have on the outer face thereof magnetic poles forming equidistant magnetic lines (53), the magnetic north (N) or south (S) polarity of which alternates from one magnetic line to the other, said magnetic lines extending in the direction of portions of helices with a constant pitch, said helices being so arranged that on two adjacent strips (52) the pitch of the helix portions of one of said two strips is the reverse of that of the helix portions of the other strip.

4,492,179

CONTROL SYSTEM FOR REGULATING THE DISPENSING OF MARKING PARTICLES IN AN ELECTROPHOTOGRAPHIC PRINTING MACHINE

Jeffrey J. Folkins; Shahid Haque; Alfred M. Loeb, and Henry R. Till, all of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 16, 1983, Ser. No. 505,014
Int. Cl.³ G03G *13/00, 15/06*
U.S. Cl. 118—689 20 Claims

1. An apparatus for developing a latent image with marking particles, including:

means for storing a supply of marking particles;

means for dispensing marking particles into said storing means; and

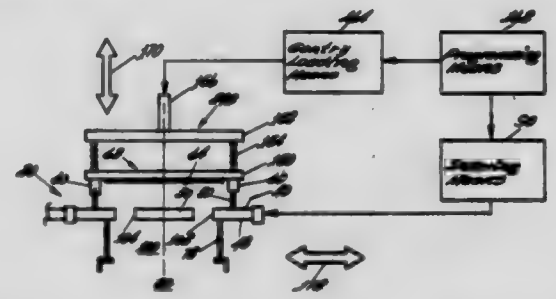
means for transporting the marking particles from said storing means to a location closely adjacent the latent image, said transporting means sensing the charge of the marking particles developed on the latent image and transmitting a signal indicative thereof to said dispensing means for regulating the discharging of marking particles into said storing means.

4,492,180

APPARATUS FOR INDEXING AND REGISTERING A SELECTED DEPOSITION MASK TO A SUBSTRATE AND METHOD THEREFOR

Richard T. Martin, Goleta, Calif., assignor to Applied Magnetics Corporation, Goleta, Calif.

Filed Mar. 16, 1981, Ser. No. 243,825
Int. Cl.³ C23C *13/08, 13/05*
U.S. Cl. 118—704 29 Claims



1. Apparatus for indexing and accurately registering a deposition mask in a predetermined spacing and position relative to a substrate comprising

carriage means for supporting a deposition mask having a selected number of prealigned registration members which are located therein in a predetermined pattern, said carriage means being adapted to transport said deposition mask including said prealigned registration members along a predetermined path to a deposition station;

gantry means for supporting a said substrate at a said deposition station in spaced opposed relationship to said deposition mask located at a said deposition station with said prealigned registration members thereof positioned towards said gantry means;

reference registration members which are equal in number to the selected number of prealigned registration members which are located on at least one of said gantry means and a said substrate and positioned thereon in a predetermined pattern and which are adapted to co-act with said prealigned registration members loaded thereagainst being adapted to position the gantry means including a said substrate at a predetermined spacing and position relative to said deposition mask;

indexing means operatively coupled to at least one of said carriage means and said gantry means for transporting said carriage means relative to said gantry means to index said deposition mask to said gantry means; and

gantry loading means operatively coupled to the other of said carriage means and said gantry means for moving said carriage means and said gantry means towards each other to bring said prealigned registration members and said reference registration members into engagement causing said reference registration members to be loaded against said prealigned registration members being adapted to position said gantry means and a said substrate relative to said deposition mask to accurately register a said substrate at a predetermined spacing and position relative to said indexed deposition mask.

24. The method of indexing and accurately registering a deposition mask from a plurality of deposition masks in a predetermined spacing and position relative to a substrate comprising

supporting a plurality of deposition masks each of which have a plurality of prealigned registration members formed in a predetermined pattern thereon for movement along a predetermined path;

supporting a gantry means having means for supporting a said substrate wherein at least one of the gantry means and a said substrate has a plurality of reference registration members located in said predetermined pattern and which are equal to the number of prealigned registration members on each of said plurality of deposition masks and positioned to face said prealigned registration members located on each of said deposition masks;

indexing at least one of said plurality of deposition masks to a deposition station; and

accurately registering said indexed deposition mask and a said substrate at a predetermined spacing and position by relative movement of said indexed deposition mask and said gantry means towards each other to bring said prealigned registration members and said reference registration members into engagement causing said reference registration members to be loaded against said prealigned registration members which are adapted to position said gantry means and a said substrate at a predetermined spacing and position relative to said indexed deposition mask.

4,492,181

APPARATUS FOR CONTINUOUSLY PRODUCING TANDEM AMORPHOUS PHOTOVOLTAIC CELLS

Herbert C. Ovshinsky, Oak Park, and Masatsugu Izu, Birmingham, both of Mich., assignors to Sovonics Solar Systems, Solon, Ohio

Filed Mar. 19, 1982, Ser. No. 359,825
Int. Cl.³ C23C 13/10
U.S. Cl. 118—718 21 Claims

1. A multiple chamber deposition apparatus for continuously producing tandem, amorphous, photovoltaic cells; each cell having a total cell thickness of at least two tri-layered units, each unit including one p-type layer and one n-type layer operatively disposed on opposite sides of an intermediate intrinsic layer; said apparatus comprising, in combination:

substrate material;

a pay-off chamber including a pay-off mandril;

a substrate cleaning chamber;

sources of cleaning gases;

means for introducing the cleaning gases into the cleaning chamber for cleaning the substrate;

a triad of deposition chambers for each tri-layered unit of the tandem cells; the deposition chambers arranged sequentially for the deposition of the p-type and n-type layers at the ends of each triad sequence and for the deposition of the intrinsic layer between the p-type and n-type layers of each triad sequence to provide three deposition layers for each cell unit;

a take-up chamber including a take-up mandril;

a source of interleaf sheeting for positioning between adjacent layers of substrate material as the substrate material is wound about the take-up mandril;

means for vacuumizing the apparatus;

means for heating the deposition chambers and the substrate;
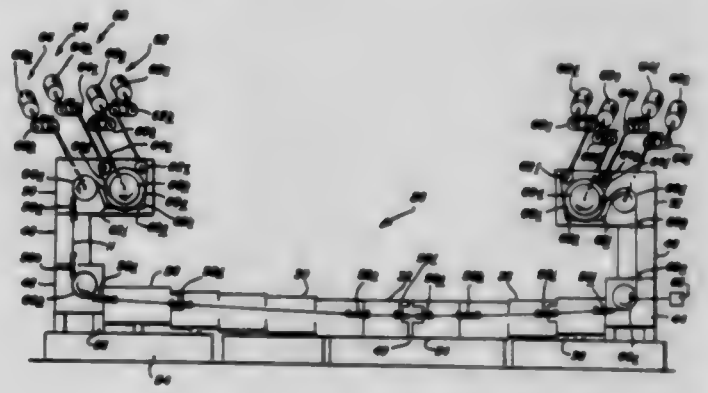
automatic threading means adapted to deliver the leading edge of the substrate material from the pay-off mandril to the take-up mandril;

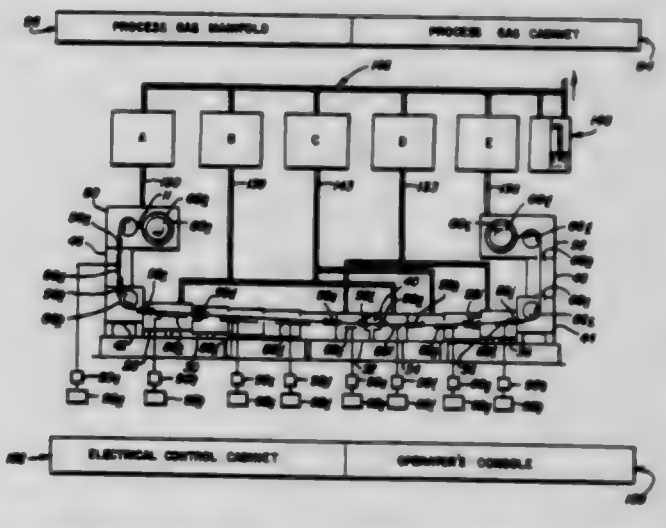
means for continuously moving the substrate material from the pay-off mandril through the cleaning chamber and each triad of deposition chambers to the take-up mandril;

means for depositing the successive layers of the tri-layered units upon the substrate material or previously deposited layers;

sources of reaction gases which include semiconductor precursor gases and dopant precursor gases;

means operatively associated with each chamber of each triad of deposition chambers for introducing a preselected reaction gas mixture thereinto;





a gas gate operatively disposed between each pair of deposition chambers of the triads;

a source of sweep gas for the gas gates;

means adapted to introduce sweep gas into the gas gates for substantially isolating the reaction gas mixture in the second chamber of each triad of chambers from the reaction gas mixtures in the first and third chambers of said triad of chambers;

a discrete isolation chamber disposed between the third chamber of one triad of chambers and the first chamber of the succeeding triad of chambers;

sources of isolation gases;

means for introducing an isolation gas mixture into said isolation chamber, means associated with said isolation chamber for providing a unidirectional flow of gas therefrom into said third chamber of one triad and said first chamber of the succeeding triad, so as to substantially prevent cross contamination of the respective gas mixtures therein; and,

means for substantially maintaining the preset substrate

temperature, speed of substrate travel, substrate tension, mixtures of reaction gases in each deposition chamber, mixtures of isolation gases in the isolation chamber, sweep gas in the gas gates, pressure differentials between adjacent chambers, and vacuum pressures; whereby, high quality tandem photovoltaic cells are continuously produced on the substrate material.

4,492,182

METHOD AND DEVICE FOR FEEDING ANIMALS

Gunnar Wennman, and Britta Wennman, both of Myrmalmsvägen 56, 802 38 Gävle, Sweden

PCT No. PCT/SE82/00207, § 371 Date Jan. 27, 1983, § 102(e) Date Jan. 27, 1983, PCT Pub. No. WO82/04379, PCT Pub. Date Dec. 23, 1982

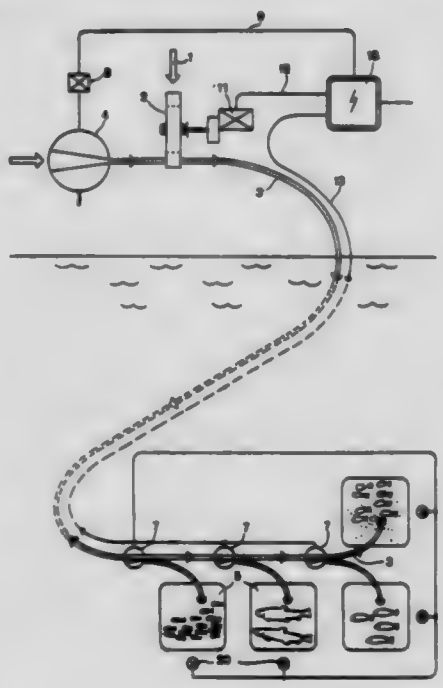
PCT Filed Jun. 11, 1982, Ser. No. 464,512

Claims priority, application Sweden, Jun. 12, 1981, 8103690

Int. Cl.³ A01K *61/02*

U.S. Cl. 119—51 R

14 Claims



3. A device for feeding animals, particularly fish, comprising a conduit leading to a feed location, a member for supplying food into said conduit and a pressurized fluid source to provide a flow of fluid through said conduit for transport of said food, said food supply member comprising a rotor having food cells adapted to be successively filled with individual food charges and brought into communication with said conduit for successively discharging said individual charges into said conduit, said rotor being located in a housing having inlet and outlet openings, said inlet opening communicating with a conduit portion located upstream of said housing and said outlet opening communicating with a conduit portion located downstream of said housing, said inlet and outlet openings of said housing being further disposed so as to have between them a portion of said rotor and being adapted to cause said flow of fluid generated by said pressurized fluid source to flow into and through said cells of said rotor from one end of said cells to the other end thereof as said cells are successively rotated proximate to said inlet opening so as to positively evacuate said food charges from said cells and transfer said food charges from said cells into said conduit through the outlet opening.

4,492,183

AUTOMATIC DISTRIBUTOR-FEEDER WITH PLURAL COMPARTMENTS FOR GRANULAR FOOD FOR DOMESTIC ANIMALS

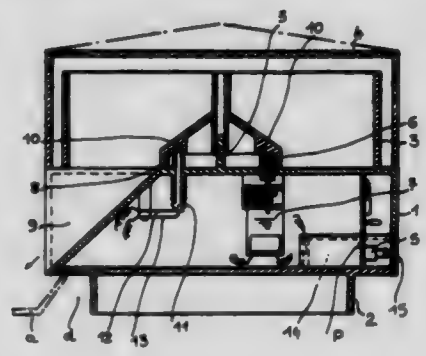
Pierre Chiotasso, and Jacques Destas, both of Nice, France, assignors to Societe Spart, Nice, France

Filed Dec. 20, 1982, Ser. No. 451,239

Int. Cl.³ A01K *5/02*

U.S. Cl. 119—51.13

2 Claims



1. Automatic distributor-feeder for various foods comprising a reservoir (3) with plural recesses c adapted to be moved by a motor (7) actuated by a programmer, characterized by the fact that the motor is fed by batteries and consumes power only instantaneously and by virtue of the use of an electric programmer, said motor (7) driving, by a pinion (6), a central toothed wheel (8) coaxial with the reservoir (3), said toothed wheel being integral with the base of the center of the reservoir (3), and automatic aligning means (10 and 11) which permit the reservoir (3) always to stop with one of the recesses c above a hopper (9) into which the food falls from the recesses c, said aligning means comprising a pusher (11) which is disposed at the level of a support body (1) and which registers with cams in the form of inclined ramps (10) provided at the level of the toothed wheel (8) and whose arrangement permits the pusher to actuate the motor (7) so as to bring the recess c into registry with said hopper (9).

4,492,184

SOLIDS COOLING

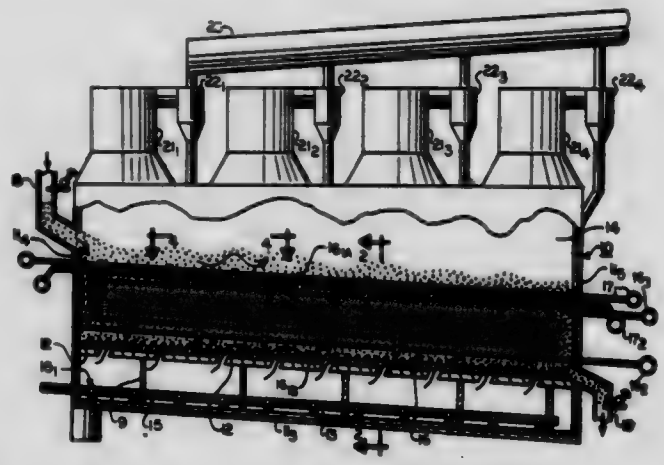
James P. Norton, Elmwood Park, and Lawrence P. Golan, Randolph, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Oct. 13, 1983, Ser. No. 541,530

Int. Cl.³ F22B *1/02*; F23G *7/00*

U.S. Cl. 122—4 D

9 Claims



1. In apparatus for cooling hot particulate solids of a wide range of particle size distribution, and recovering heat therefrom principally by contact of the hot particulate solids with a tube type heat exchanger through which a coolant is passed, which comprises

an elongate housing having enclosing end and side walls, the lower ends of the side walls of which slope inwardly, inclusive of a floor and a sloped distributor plate declined from horizontal at an angle, with jet openings there-

through directed downwardly in the direction of the slope and declined from the vertical at an angle between about 0° to 45°, located above the floor which partitions the housing into two compartments, an upper compartment the lower side of which is of reduced cross-section as compared with its upper side as produced by said inwardly sloped side walls, within which can be provided a bed of solids, and a lower plenum, inclusive of

a gas manifold located within the plenum, inclusive of gas inlet means for injection of gas into the manifold for release through the jet openings of the distributor plate for contact and expansion of the bed of solids, at velocities insufficient to fluidize a significant portion of the solids to maximize heat transfer between the tube type heat exchanger and the solids, and assist in the movement of the solids along the surface of the distributor plate,

a hot particulate solids inlet for the delivery of hot particulate solids to the bed of particulate solids within said upper compartment,

an elongate tube type heat exchanger inclusive of a bundle of tubes held together via a series of tube sheets which extend from one side wall to the other side wall, and are alternately vertically staggered one with regard to another to reduce the amount of backmixing of the solids, a plurality of said, tubes oriented generally parallel to the major solids velocity component of solids movement, located within the upper compartment and immersed within the bed of particulate solids, through which the field coolant can be passed in heat exchange relationship with the solids, and

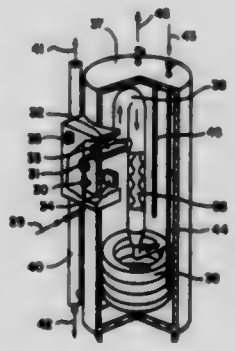
a cool solids outlet located at the level of the distributor plate through which cooled solids can be discharged after passage of hot particulate solids from the hot solids inlet into the bed which moves downwardly along the sloped surface of the distributor plate, through the length of the upper compartment contacting the tubes of the heat exchanger to effect heat exchange between the hot particulate solids and the fluid coolant passed through the tubes of the heat exchanger, sufficient to recover a principle amount of the heat from the solids, cooled solids being discharged through the cool solids outlet.

4,492,185

HIGH EFFICIENCY, REDUCED EMISSIONS WATER HEATER

Robert M. Kendall, Sunnyvale; Richard J. Schreiber, Mountain View, and John P. Kesselring, Mt. View, all of Calif., assignors to Alzeta Corporation, Mt. View, Calif.

Continuation of Ser. No. 308,374, Oct. 5, 1981, abandoned. This application Jan. 20, 1984, Ser. No. 572,602
Int. Cl.³ F22B *1/02*
U.S. Cl. 122—32 3 Claims



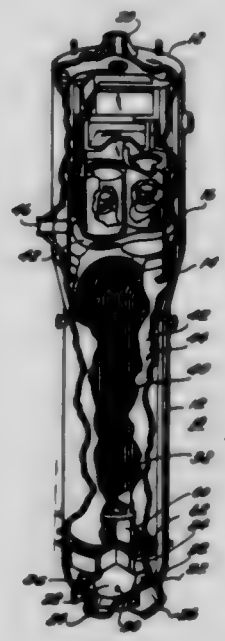
1. A water heater comprising a water storage chamber; combustion heating means comprising an infrared fiber matrix burner positioned in the upper portion of the interior of said chamber; heat exchanging means positioned below said combustion heating means within said chamber accommodating a first conduit for flue gas from said combustion heating means whereby said heat exchanging means provides heat to water in said chamber and lowers the temperature of said flue gas to about 500° F.; condensing heat exchanging means positioned below said heat exchanging means within said chamber accommodating a second conduit for said flue gas, said second conduit communicating with said first conduit, whereby contact of said condensing heat exchanging means with water at substantially ambient or lower than ambient air temperature from a source of water external to said chamber lowers the temperature of said flue gas below the dew point whereby moisture formed as a by-product of combustion condenses in said condensing heat exchanging means; and whereby water entering said chamber at substantially ambient or less than ambient temperature is heated by said combustion heating means, heat exchanging means and condensing heat exchanging means to provide stratified zones of heated water within said chamber, said heater characterized by a steady state thermal recovery efficiency from said combustion heating means and both said heat exchanging means to the water within said chamber in the range of 90–95%, and further characterized by NO_x emission concentration of flue gas exiting said condensing heat exchanging means of less than about 15 ppm.

4,492,186

STEAM GENERATOR SLUDGE REMOVAL METHOD

John L. Helm, Groton, Conn., assignor to Proto-Power Management Corporation, Groton, Conn.

Filed Aug. 23, 1982, Ser. No. 410,562
Int. Cl.³ F22B *37/54*
U.S. Cl. 122—382 14 Claims



1. A method of removing sludge deposits from a steam generator in which primary heating fluid tubes rise within a peripheral wall of said generator from a substantially horizontal tube sheet, with the tubes being arranged to define passageways therebetween extending from a medial end thereof at a medial portion of the tube sheet to a peripheral end thereof at an edge of said tube sheet, and with a peripheral channel being defined between outermost tubes on said tube sheet and said peripheral wall; comprising:

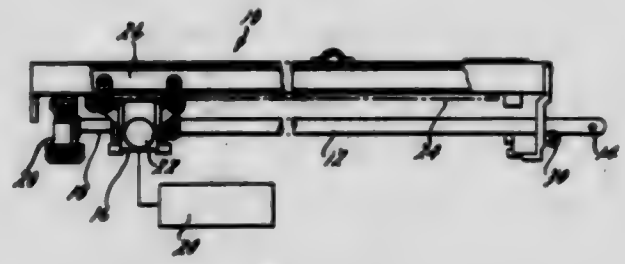
inserting a fluid jet lance through a port in said peripheral wall near said tube sheet at said medial portion thereof to direct a jet of fluid along one of said passageways between said tubes;

positioning a fluid suction conduit through a port in said peripheral wall into said peripheral channel so that a suction opening of said fluid suction conduit is aligned at the peripheral end of the one passageway along which the jet of fluid is directed;

supplying fluid to said fluid jet lance to form said jet of fluid, and dislodge and entrain sludge on said tube sheet in said jet of fluid, so that the jet of fluid and the entrained sludge flow toward the suction opening of said fluid suction conduit at said peripheral end of said one passageway; and

applying sufficient suction to said fluid suction conduit to suck up the fluid and entrained sludge at the peripheral end of said one passageway.

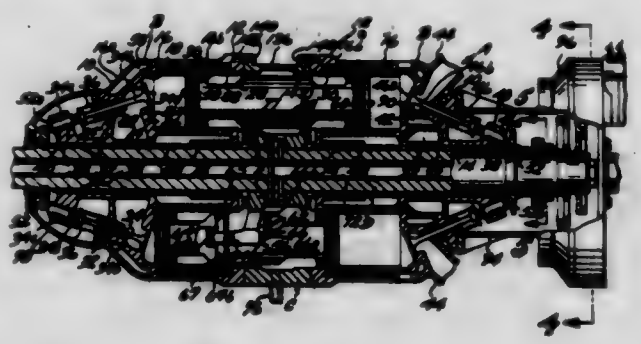
4,492,187
SOOTBLOWER APPARATUS
Charles W. Hammond, Lancaster, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.
Filed Dec. 5, 1983, Ser. No. 558,390
Int. Cl.³ F22B 37/52
U.S. Cl. 122—390 8 Claims



1. In a sootblower apparatus of the type having a lance tube and drive means for translating said lance tube into and out of a boiler or the like and simultaneously rotating the lance tube, wherein the unsupported length of said lance tube varies during its inward and outward movement, and means for supplying a blowing agent to an outer end of said lance tube, the improvement comprising:

variable speed modulation controller means for the drive means such that the speed at which the lance tube is rotated is at a maximum value when the lance tube is in a position intermediate its fully extended and fully retracted positions within the boiler, and reduces gradually as the lance tube moves toward the fully extended position, the rate of rotation being at all times below the critical speed at which resonance occurs, thereby optimizing the cycle time of the sootblower apparatus.

4,492,188
INTERNAL COMBUSTION ENGINE
Dennis C. Palmer, P.O. Box 8009, Fountain Valley, Calif. 92708, and Edward B. Palmer, 3520 E. Janice St., Long Beach, Calif. 90808
Filed Jan. 21, 1983, Ser. No. 459,765
Int. Cl.³ F02B 25/28
U.S. Cl. 123—58 R 1 Claim



1. In an internal combustion engine that includes an elongate drive shaft having first and second end portions, a force receiving cam that has first and second oppositely disposed sinusoidal edge surfaces, a plurality of pistons that have first and second ends, a plurality of pair of cam followers mounted on said pistons that are at all times in moving contact with said first and second edge surfaces and that impart rotary motion to said cam and drive shaft when reciprocated relative thereof, an improved block assembly for rotatably supporting said drive shaft, said improved block assembly including:

a. a circular connector shell within which said cam is disposed;

b. forward and rearward identical engine blocks that have adjacent ring shaped surfaces in abutting contact with said connector shell and when so disposed defines a plurality of axially aligned forward and rearward cylinders in which portions of said pistons are at all times slidably disposed;

c. forward and rearward axially aligned tubular bearing in said forward and rearward engine blocks that rotatably support said drive shaft, said drive shaft having an elongate passage and at least one transverse passage in communication therewith;

d. first and second circumferentially extending confined spaces defined in each of said engine blocks, each of said first confined spaces in communication with a plurality of first fuel inlet valve seats that communicate with said cylinders, and each of said first confined space in communication with oppositely disposed fuel inlets through which fuel may be concurrently discharged to assure that said engine will not suffer from fuel starvation, and each of said second confined spaces having oppositely disposed coolant supply inlets through which coolant may be concurrently discharged to cool said engine block and then discharge therefrom, and a plurality of exhaust valve seats in each of said engine blocks in communication with said cylinders;

e. a plurality of spring loaded fuel inlet and exhaust valves in said forward and rearward engine blocks that are movably supported and at all times tend to sealingly engage said fuel inlet and exhaust valve seats;

f. first and second sets of spark plugs in said forward and rearward engine blocks;

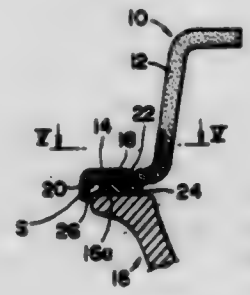
g. first and second electrical means including a distributor driven by said drive shaft for supplying high voltage current to said spark plugs to sequentially ignite fuel charges in said cylinders adjacent first ends of said pistons and then fuel charges in said cylinders adjacent second ends of said pistons;

h. first and second cam means mounted on said drive shaft that actuate said fuel inlet and exhaust valves on each of said cylinders to sequentially open and close to admit fuel into and exhaust from said cylinders as said pistons reciprocate relative to said forward and rearward engine blocks;

i. bolt means for removably holding said forward and rearward engine blocks in abutting contact with said connector shell, with said connector shell having a transverse opening therein through which a lubricant may flow by gravity when said engine is in a horizontal position; and

j. first means for forcing lubricant under pressure into said elongate and transverse passages to flow therefrom to lubricate said cam, cam followers and said drive shaft in said forward and rearward tubular bearings, and said lubricant discharging through said transverse openings after flowing into an interior confined space defined by said connector shell.

4,492,189
ROCKER COVER ASSEMBLY
Naoki Ogawa, and Akira Toda, both of Yokosuka, Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan
Filed Jul. 15, 1982, Ser. No. 398,708
Claims priority, application Japan, Jul. 16, 1981, 56-105539[U]
Int. Cl.³ F01L 1/46
U.S. Cl. 123—90.38 10 Claims



1. A rocker cover assembly for covering a cylinder head, comprising:

a rocker cover body made of a material having damping capacity and including an installation flange section at which said rocker cover body is mounted on the cylinder head, said installation flange section having a plurality of projections each of which projects toward the cylinder head;

a rigid frame-like pressure-plate disposed in contact with the rocker cover body installation flange section and including an outer bent section to cover the outer periphery of said installation flange section, and a plurality of inner bent portions each of which is plunged into said installation flange section at a location where a projection of said rocker cover body installation flange section is formed, said pressure plate being higher in rigidity than said rocker cover body; and

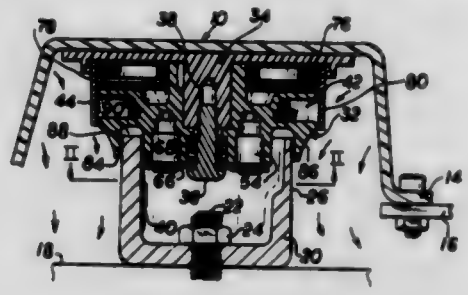
a seal-ring interposed between the cylinder head and said rocker cover body installation flange section and located within a space defined between said pressure-plate outer bent section and the projections of said rocker cover body installation flange section.

4,492,190

RECOIL STARTER

Leon D. Greenwood, Okemos, and Thomas A. Thorsen, Eaton Rapids, both of Mich., assignors to Eaton Stamping Company, Eaton Rapids, Mich.

Filed Apr. 20, 1983, Ser. No. 486,709
Int. Cl.³ F02N *1/00*
U.S. Cl. 123—185 A 10 Claims



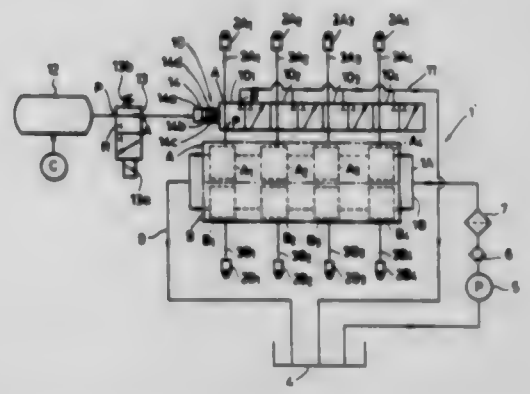
1. A recoil starter for internal combustion engines wherein the starter comprises a supporting housing, a pulley mounted upon the housing rotatable in cranking and rewind directions about an axis and having a rope receiving groove defined therein, a rope within the pulley groove, a recoil spring interposed between the housing and pulley biasing the pulley in the rewind direction, a dog movably mounted upon the pulley movable between a retracted position and an extended position and a dog operator mounted adjacent the pulley rotatable about the pulley axis operatively connected to the dog having a first rotative position relative to the pulley moving the dog to the extended position upon the pulley rotating in the cranking direction and having a second rotative position relative to the pulley moving the dog to the retracted position upon the pulley rotating in the rewind direction, the improvement comprising, spring operated displaceable detent means interposed between the pulley and dog operator maintaining the dog operator in its second position, said detent means being overcome upon the pulley being rotated by the rope in the cranking direction.

4,492,191

FUEL CUT-OFF DEVICE FOR FUEL INJECTION PUMPS FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINES

Fujio Aoki, and Hiroshi Isobe, both of Higashimatsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Saitama, Japan

Filed Feb. 22, 1983, Ser. No. 468,397
Claims priority, application Japan, Mar. 2, 1982, 57-29168[U]
Int. Cl.³ F02D *17/02*
U.S. Cl. 123—198 F 5 Claims



1. In a fuel injection pump for an internal combustion engine having a plurality of cylinders, said fuel injection pump including a feed pump, at least one injection pump body connected to said feed pump, a plurality of injection nozzles mounted in said engine, and a plurality of injection pipes connected between said injection pump body and said injection nozzles, each of said injection pipes extending between said injection pump body and a corresponding one of said injection nozzle and supplying fuel pumped from injection pump body to said corresponding one injection nozzle, a fuel cut-off device comprising: at least one three way valve arranged across one of said injection pipes connected to one of said injection nozzles associated with at least preselected one of said cylinders of said engine; return fuel line means extending from said three way valve to a lower pressure zone; said three way valve being disposed to connect said injection pump body to said one injection pipe when it is in a first valve position thereof, and to connect said injection pump body to said return fuel line means when it is in a second valve position thereof; and operating means for changing the valve position of said three way valve; whereby when said three way valve is changed to said first valve position, fuel pumped from said injection pump body is immediately delivered to said one injection nozzle through said three way valve and said one injection pipe and injected into the engine, and when said three way valve is changed to said second valve position, said delivery of said pumped fuel to said one injection nozzle is immediately interrupted to interrupt said injection of said pumped fuel to the engine and simultaneously said pumped fuel is returned to said lower pressure zone through said return fuel line means.

4,492,192

DIESEL PISTON ENGINE

Yves Bagnelin, Rhone, France, assignor to Renault Vehicules Industriels, France

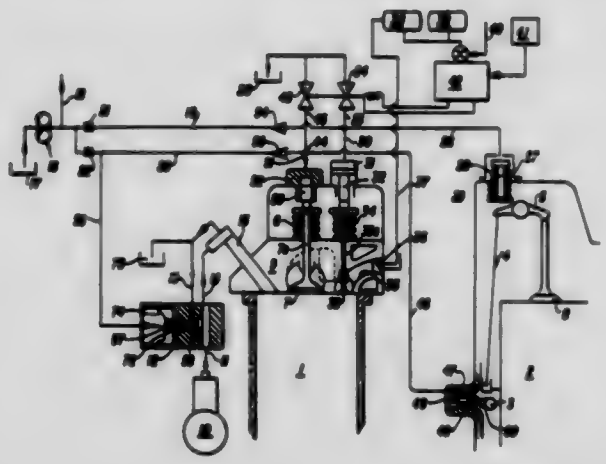
Filed Jul. 29, 1983, Ser. No. 518,434
Int. Cl.³ F02D *13/04, 17/02*
U.S. Cl. 123—198 F 20 Claims

1. In a diesel piston engine, comprising a plurality of cylinders, a cylinder head for each of said plurality of cylinders, intake valve means and exhaust valve means for each of said plurality of cylinders, a fuel oil injector for each of said plurality of cylinders, control means selectively operable to enable and disable said fuel oil injectors, and timing means for regulating the cycle of operation of said plurality of cylinders, said intake valve means, said exhaust valve means and said fuel oil injectors, the improvement wherein a preselected cylinder of said plurality of cylinders further comprises:

passage means in said cylinder head of said preselected cylinder having one end opening into said preselected cylinder;

extra valve means along said passage means for selectively opening and closing said passage means;

hydraulic means for controlling the sequential opening and closing of said extra valve means in synchronism with the cycle of the other cylinders of said plurality of cylinders; and



switching means selectively operable to disconnect and connect said hydraulic means and to enable and disable said fuel oil injector such that said switching means disconnects said hydraulic means and enables said fuel oil injector to operate said preselected cylinder as an engine cylinder and further such that said switching means connects said hydraulic means and disables said fuel oil injector to operate said preselected cylinder as a compressor cylinder.

4,492,193

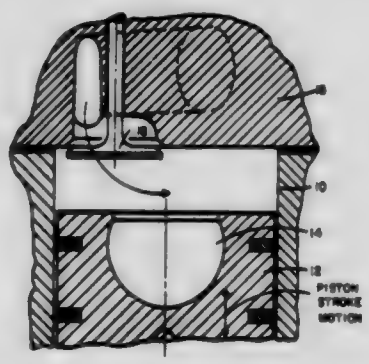
METHOD OF OPERATING INTERNAL COMBUSTION ENGINES

Alfred Neitz, Rötsenbach, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 79,156, Sep. 26, 1979, abandoned. This application Jul. 8, 1981, Ser. No. 281,517

Int. Cl.³ F02B 3/04

U.S. Cl. 123—276 8 Claims



1. A method of operating air-compressing direct-injecting internal combustion engines having at least one piston, a cylinder having a cylinder head, a combustion chamber including a wall formed in said at least one piston, means for introducing air, said combustion chamber in said at least one piston having a cylindrical shape with a longitudinal central axis and being adapted to accommodate movement of air about its longitudinal central axis, injector means for introducing fuel in the direction of movement of air in said combustion chamber and depositing fuel partially as a film on the wall of said combustion chamber in said piston during at least one of the conditions consisting of the group of upper speed range and upper load range, while during idling of said combustion engine and during at least one of the conditions consisting of lower speed range and lower load range, a direct mixing of combustion air and fuel occurs, said injector means having an outlet and means adjustable therewith so that effective cross sectional area of the outlet is selectively controllable, said method comprising in combination the steps of:

introducing combustion air into said combustion chamber to rotate about said longitudinal axis at a predetermined velocity;

injecting a fuel stream at a predetermined velocity into said combustion chamber so that a hollow fuel stream with differing inner diameters of the fuel stream for predetermined surface area of the fuel stream leaving the injector means with varying of inner diameter thereof, has a velocity equal to the combustion air velocity when the engine is operating at its rated speed;

reducing the velocity of the combustion air by varying inner diameter of the fuel stream in proportion to a decrease of speed of said internal combustion engine and at a constant velocity of introduction of said fuel stream, to provide a velocity difference between the fuel velocity and the air velocity; and

selectively controlling the surface area of the fuel stream leaving the injector means by varying inner diameter of the fuel stream as an inverse function of a speed air said internal combustion engine so that upon increasing the speed thereof the surface area is decreased.

4,492,194

SPARK-IGNITION AIR-COMPRESSING INTERNAL COMBUSTION ENGINE

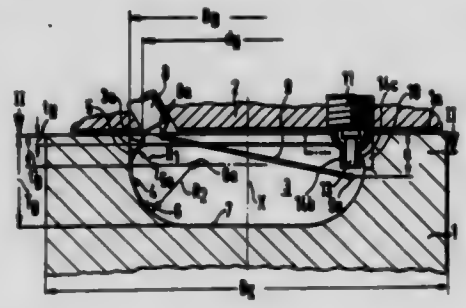
Franz Chmela, Nuremberg; Walter Herzog, Katzwang, and Richard Meier, Stein, all of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik, Nuremberg, Fed. Rep. of Germany

Filed Dec. 12, 1983, Ser. No. 560,154

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1982, 3245780

Int. Cl.³ F02B 3/00

U.S. Cl. 123—276 14 Claims



1. Spark-ignition, air-compressing internal combustion engine, comprising: a cylinder head on the engine, an ignition device on the cylinder head; a piston movable in the engine toward the cylinder head; a combustion chamber in the piston; injection nozzle means for direct injection of fuel by a jet applying the major portion of the fuel onto the wall of the combustion chamber, the wall being in the shape of a solid of revolution; means for imparting such a rotary motion in the direction of the injected fuel jet to air flowing into the combustion chamber that the fuel is gradually removed in a vapor state from the combustion chamber wall and mixed with the air, the injection nozzle means being situated in the cylinder head near the edge of the combustion chamber and the ignition device being arranged opposite the injection nozzle and projecting into the combustion chamber in the top, dead-center position of the movement of the piston toward the cylinder head, the side wall (4) of the combustion chamber (3)—seen in cross section—being formed by two curved lines (5, 6) which blend into each other, a first (5) of the curved lines having the smaller radius of curvature (R_1) and extending from a constricted

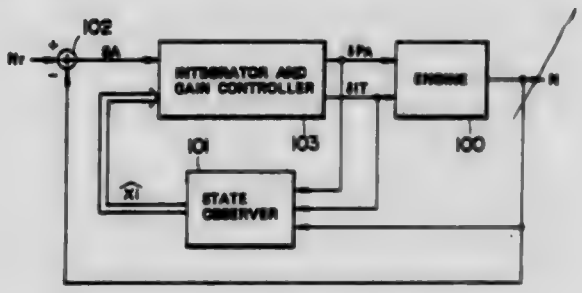
combustion chamber opening (3*a*) down to the maximum combustion chamber diameter (D_B) and the second curved line (6) having the greater radius of curvature (R_2) and extending down to and blending into a substantially-flat combustion chamber bottom (7), the maximum combustion chamber diameter (D_B) amounting to 0.5 to 0.7 times the piston diameter (D_E) and—measuring from the piston crown (1*a*)—located at a depth (t_D) which corresponds to 0.3 to 0.4 times the combustion chamber depth (T_B), and the smaller radius of curvature (R_1) of the combustion chamber side wall (4) having a length of 0.2 to 0.3 T_B, the greater radius of curvature (R_2) having a length of 0.5 to 0.75 T_B, the ratio of the combustion chamber opening diameter (d_H) to the maximum combustion chamber diameter (T_B) being between 0.85 and 0.95 and the wall height (t_H) of the combustion chamber opening (3*a*) being between 0.1 and 0.15 T_B.

4,492,195

METHOD OF FEEDBACK CONTROLLING ENGINE IDLE SPEED

Toru Takahashi, and Takashi Ueno, both of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Sep. 15, 1983, Ser. No. 532,555
Claims priority, application Japan, Sep. 16, 1982, 57-159533
Int. Cl.³ F02M *3/00, 23/06*
U.S. Cl. 123—339 19 Claims



1. A method of feedback controlling engine idle speed to a target speed on the basis of mathematical dynamic models to determine engine state variables representative of engine dynamic behavior, which comprises the following step of:

(a) calculating the differences SA between the target engine idle speed N_r and current engine speeds N;

(b) integrating the calculated idle speed differences SA to obtain integral value DUN of speed differences;

(c) selecting an appropriate mathematical engine dynamic model according to at least one of predetermined engine operating conditions;

(d) estimating low-order variables x_i representative of engine internal dynamic states in accordance with the selected dynamic model and on the basis of at least one or two or more combinations of preceding increments of engine idle speed controlling parameters δP_A, δIT and controlled engine idle speed δN;

(e) selecting an appropriate gain K according to external engine load conditions; and

(f) determining increments of engine idle speed controlling parameters δP_A, δIT on the basis of the estimated state variables $\hat{x}_i$, the selected gain K, and the integrated idle speed difference DUN,

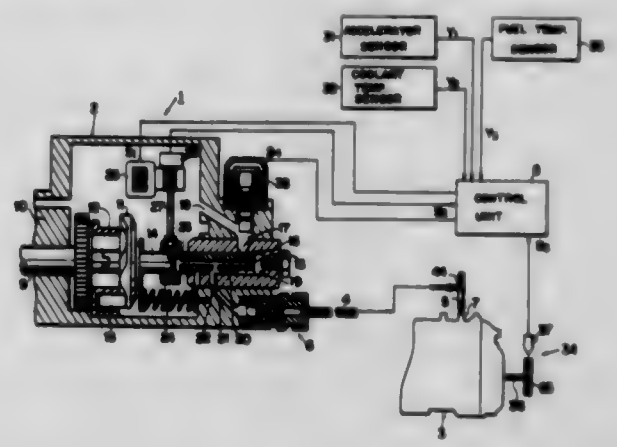
whereby engine idle speed is feedback controlled in accordance with low-order engine dynamic state variables.

4,492,196

ELECTRONICALLY CONTROLLED FUEL INJECTION APPARATUS

Hidekazu Oshizawa, Kasugaya, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1981, Ser. No. 296,766
Claims priority, application Japan, Sep. 11, 1980, 55-128528
Int. Cl.³ F02M *39/00*; F02B *25/08*
U.S. Cl. 123—357 8 Claims



1. An electronically controlled fuel injection apparatus for an internal combustion engine, comprising:

means for actuating a member for adjusting the amount of fuel injection;

a position sensor for producing a first signal indicating the position of said member;

at least one condition sensor for generating condition data indicating the operating condition of said engine;

a circuit for generating a first target signal indicating the position of said adjusting member necessary for injecting the optimum amount of fuel based on said condition data;

a circuit for generating a first control signal in accordance with the difference between said first target signal and said first signal;

a first detector for detecting the occurrence of trouble in said position sensor;

a circuit for producing a second target signal in accordance with the operating quantity of an accelerator pedal, said second target signal being indicative of an engine speed decided in advance in correspondence to said operating quantity of an accelerator pedal;

means for generating a second signal indicative of the rotational speed of the engine;

a circuit for producing a second control signal in accordance with the difference between said second target signal and said second signal; and

a switching means for selectively providing either of said first and said second control signals to said actuating means in response to the result of detecting operation of said first detector in such a way that said actuating means is controlled in accordance with said first control signal for the normal condition of said position sensor and is controlled in accordance with said second control signal for the abnormal condition of said position sensor.

4,492,197

OVER-REVOLUTION PREVENTING APPARATUS FOR INTERNAL COMBUSTION ENGINES

Yasuo Yamamoto, Hamamatsu, and Isao Kamo, Shizuoka, both of Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Japan

Filed Oct. 3, 1983, Ser. No. 538,097
Claims priority, application Japan, Oct. 4, 1982, 57-172153
Int. Cl.³ F02N *15/10*; F02P *1/00*; F02D *33/00*
U.S. Cl. 123—630 15 Claims

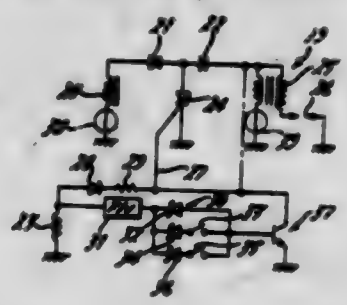
1. In an internal combustion engine which is capable of operating in a plurality of selectable operation states and has an

ignition system, a revolution rate limiting apparatus, comprising:

means for generating a tachometer signal indicative of the revolution rate of said internal combustion engine;

means for producing a control signal which is responsive to said tachometer signal and the operation state of said internal combustion engine, and which determines a maximum revolution rate for each of said plurality of operation states, said means for producing said control signal including a frequency to voltage converter which receives said tachometer signal; and

means for interacting with said ignition system to prevent a sparking voltage from being induced in said ignition system in response to the value of said control signal.

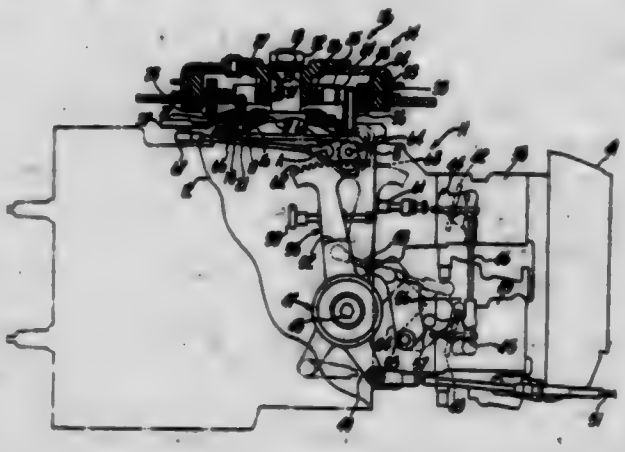


4,492,198

ADVANCING MECHANISM FOR INTERNAL COMBUSTION ENGINES

Shigeo Okumura, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha and Sanshin Kogyo Kabushiki Kaisha, both of, Japan

Continuation of Ser. No. 347,583, Feb. 10, 1982, abandoned. This application Feb. 27, 1984, Ser. No. 583,272
Claims priority, application Japan, Mar. 10, 1981, 56-34141
Int. Cl.³ F02P 5/02
U.S. Cl. 123—413 9 Claims



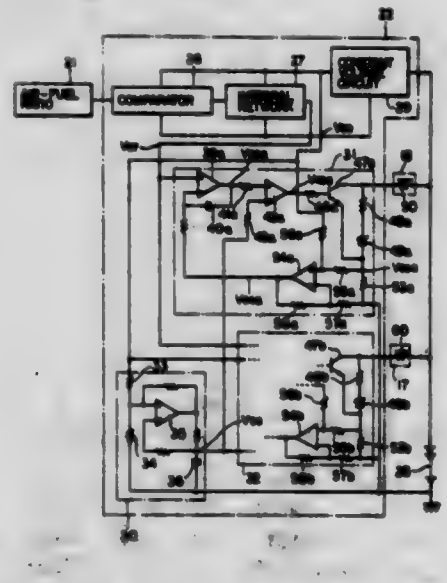
1. In a timing mechanism for an internal combustion engine comprising means for initiating ignition, timing means for altering the timing of said ignition by means of a movable element, a throttle valve, an operating member mechanically connected to said throttle valve for positioning said throttle valve, and means for interrelating the operation of said timing means with the position of said throttle valve, the improvement comprising said interrelating means including means providing a mechanical connection between said operating member and said movable element being effective to move said movable element in a direction to advance the ignition timing from a predetermined position as said throttle valve is opened to a predetermined maximum advance and thereafter moving said movable element in a direction to retard the ignition timing from said maximum advance upon continued opening of said throttle valve to a fixed advance intermediate of said maximum advance and said predetermined position at an opening of said throttle valve less than its wide-open position and permit continued movement of said operating member without further movement of said movable element to retain said fixed advance during continued opening of said throttle valve until wide-open throttle position is reached.

4,492,199

AIR-FUEL RATIO COMPENSATING APPARATUS FOR INTERNAL COMBUSTION ENGINE

Yukio Kawai, Toyota; Toshihiro Ogawa, Aichi, and Seietsu Yoshida, Kariya, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan.

Filed Sep. 14, 1982, Ser. No. 417,853
Int. Cl.³ F02M 7/24
U.S. Cl. 123—440 4 Claims



1. An air-fuel ratio compensating apparatus for the carburetor of an internal combustion engine comprising a first electromagnetically controlled valve for controlling the amount of air bled into the main fuel supply system of the carburetor and a second electromagnetically controlled valve for controlling the amount of air bled into the slow fuel supply system of the carburetor, said first and second valves having equal opening characteristics in response to the same input current, an electronic circuit responsive to the air-fuel ratio condition of the engine for providing input currents to said first and second valves for controlling the operation thereof, said electronic circuit having first and second output drive means connected respectively to said first and second valves for providing an input current to said second valve which is always larger than the input current applied to said first valve such that the second valve is opened a greater amount than the first valve in response to a deviation of the air-fuel ratio condition of the engine.

4,492,200

FUEL PUMPING APPARATUS

Ikuo Takahashi, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 13, 1983, Ser. No. 494,446
Claims priority, application Japan, May 14, 1982, 57-79859
Int. Cl.³ F02M 41/06
U.S. Cl. 123—468 6 Claims

1. A fuel pump for an internal combustion engine, the fuel pump comprising:

a main body having a bore therein;

a rotor housed within said bore and adapted to be rotated in synchronism with a rotation of said engine;

a working chamber formed in said rotor;

a shuttle member disposed slidably within said working chamber to divide said working chamber into a first and second working chamber section;

a pumping means having a pumping chamber, a volume of said pumping chamber being varied in accordance with a rotation of the engine;

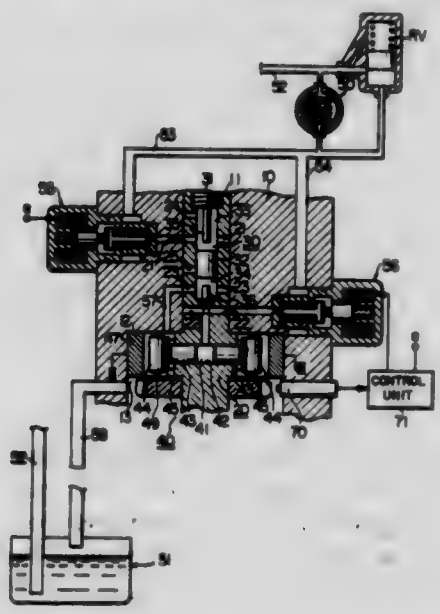
a first fuel passage in which a first metering means is disposed for metering a pressurized fuel to be delivered into said first working chamber section through said first fuel passage;

a second fuel passage in which a second fuel metering means is disposed for metering a pressurized fuel to be delivered to said second working chamber section through said second fuel passage;

a third fuel passage adapted to communicate said second working chamber section with an atmosphere;

a fourth fuel passage adapted to communicate said first working chamber section with an injection nozzle; and

a fifth fuel passage adapted to communicate said pumping chamber with said second working chamber section;



wherein, when the pressurized fuel is delivered into said first working chamber section through said first fuel passage, said second working chamber is communicated with the atmosphere through said third fuel passage as well as the pressurized fuel is delivered into said pumping chamber through said second fuel passage, and, when said first working chamber section is communicated with said injection nozzle through said fourth fuel passage, the pressurized fuel delivery into said first working chamber section through said first fuel passage is interrupted, and the communication between the second working chamber section and the atmosphere is also interrupted and said second working chamber is communicated with said pumping chamber.

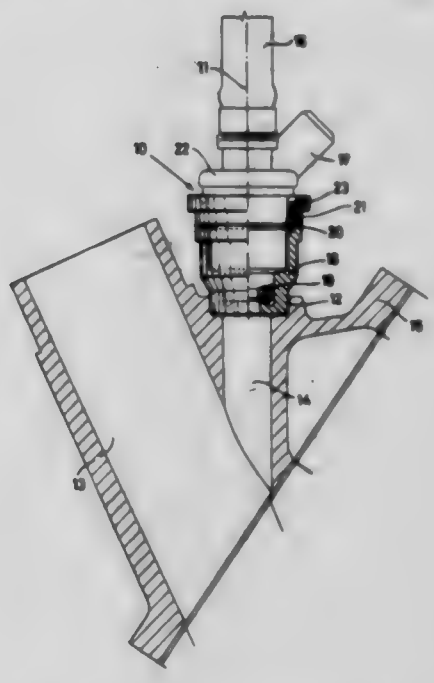
4,492,201

PETROL INJECTOR PROTECTION SHEATH

Dario Radaelli, Legnano, Italy, assignor to Alfa Romeo Auto S.p.A., Naples, Italy

Filed May 5, 1983, Ser. No. 491,704
Claims priority, application Italy, May 17, 1982, 21314 A/82
Int. Cl.³ F02M 55/00, 61/14, 55/02
U.S. Cl. 123—470 9 Claims

1. A fuel injector of the type having a fitting for attachment to a fuel supply line, an electrical control, a body and a lower nozzle, said fuel injector being improved by heat shielding means including a thick wall heat insulating cup-shaped sheath telescoped entirely over said nozzle and surrounding said body, said sheath including a bottom wall having a hole therethrough for the injection of fuel, a lower part of said sheath including an outer portion of said bottom wall forming combined seating and sealing means for the mounting of said fuel injector within a seat of an engine intake duct.

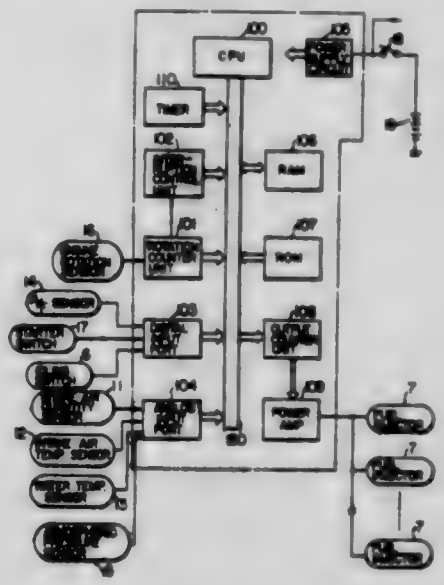


4,492,202

FUEL INJECTION CONTROL

Toshihiko Muramatsu; Akio Kobayashi; Toshio Kondo; Shigenori Iconura, and Tomomi Hino, all of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 25, 1983, Ser. No. 460,856
Claims priority, application Japan, Jan. 29, 1982, 57-13133
Int. Cl.³ F02B 3/00, 3/04
U.S. Cl. 123—478 3 Claims



1. A fuel injection control method for an internal combustion engine having electromagnetic fuel injectors to control an air-fuel ratio of said engine at a desired air-fuel ratio, said method comprising the steps of:

detecting conditions of operation parameters of said engine by respective sensors;

determining a basic fuel injection time width of a fuel injection pulse signal applied to said electromagnetic fuel injectors in accordance with the detected conditions of said engine operation parameters;

storing maximum fuel injection time width values predetermined in correspondence to values of a predetermined one of said engine operation parameters;

reading one of said predetermined maximum fuel injection

time width values, corresponding to the values of said predetermined one of said engine operation parameters, after a predetermined time elapses from the acceleration of said engine from the idling condition and correcting the same in accordance with the values of the other ones of said engine operation parameters; and

correcting said basic fuel injection time width in accordance with said corrected predetermined maximum fuel injection time width value.

4,492,203

FUEL SUPPLY CONTROL METHOD FOR AN INTERNAL COMBUSTION ENGINE EQUIPPED WITH A SUPERCHARGER, HAVING A FAIL-SAFE FUNCTION FOR ABNORMALITY IN INTAKE PASSAGE PRESSURE SENSOR MEANS

Yutaka Otobe, Shiki, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

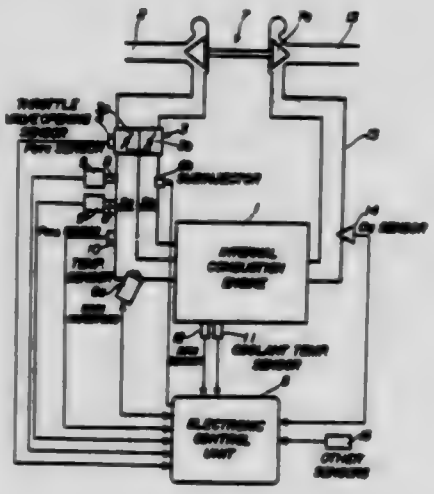
Filed Jun. 2, 1983, Ser. No. 500,300

Claims priority, application Japan, Jun. 10, 1982, 57-99758

Int. Cl.³ F02M 51/00

U.S. Cl. 123—478

3 Claims



1. A method for electronically controlling the quantity of fuel being supplied to an internal combustion engine having an intake passage, a throttle valve arranged in said intake passage, and a supercharger, comprising the steps of: (1) detecting pressure in said intake passage of the engine at a location downstream of said throttle valve, by means of first and second pressure sensor means; (2) storing a plurality of predetermined values of basic fuel quantity which are functions of the intake passage pressure and the engine rpm, in each of first and second storage means which correspond, respectively, to said first and second pressure sensor means; (3) comparing the value of an output signal from said first pressure sensor means with a first predetermined value; (4) reading from said first storage means a stored value of basic fuel quantity corresponding to the value of an output signal from said first pressure sensor means and the engine rpm, when it is determined in the step (3) that the value of the output signal from said first pressure sensor means is smaller than said first predetermined value; (5) reading from said second storage means a stored value of basic fuel quantity corresponding to the value of an output signal from said second pressure sensor means and the engine rpm, when it is determined in the step (3) that the value of the output signal from said first pressure sensor means is larger than said first predetermined value; (6) supplying a quantity of fuel corresponding to the stored value read in the step (4) or (5) to the engine; (7) comparing the value of an output signal from said second pressure sensor means with a second predetermined value which is smaller than said first predetermined value; and (8) supplying a predetermined quantity of fuel to the engine when it is determined in the step (3) that the value of the output signal from said first pressure sensor means is larger than said first predetermined value, and at the same time it is determined in the step (7) that the value of the output signal from said second pressure sensor means is smaller than said second predetermined value.

4,492,204

METERING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Richard Bertsch, Asperg; Dieter Günther, Marr, and Ulrich Steinbrenner, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

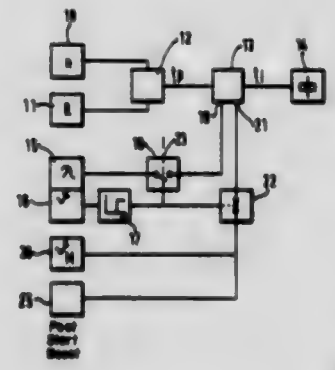
Filed Aug. 25, 1982, Ser. No. 411,228

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1982, 3207787

Int. Cl.³ F02D 5/00

U.S. Cl. 123—489

6 Claims



1. A method for controlling fuel supply rate in a fuel metering system for an internal combustion engine having a closed-loop lambda regulating device and means providing a warm-up enrichment, comprising the steps of sensing the temperature of a lambda sensor of said lambda regulating device, switching from an open-loop regulation to closed-loop lambda regulation of fuel supply in response to said sensing step, reducing the amount of warm-up enrichment when said closed-loop regulation begins, switching from said closed-loop regulation to said open-loop regulation in response to sensing of a predetermined temperature range in said sensing step, and preventing the amount of warm-up enrichment from being increased following a return from closed-loop lambda regulation to open-loop regulation.

4,492,205

METHOD OF CONTROLLING THE AIR-FUEL RATIO IN AN INTERNAL COMBUSTION ENGINE

Werner Jundt, Belschnerstrasse 34, D-7140 Ludwigsburg, and Rolf Reischl, Lissenstrasse 44, D-7000 Stuttgart 30, both of Fed. Rep. of Germany

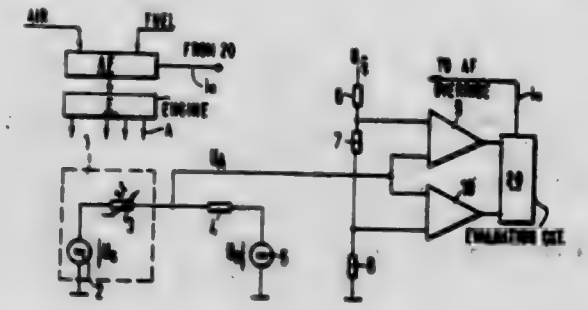
Filed Oct. 14, 1982, Ser. No. 434,181

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1981, 3149136

Int. Cl.³ F02M 51/00

U.S. Cl. 123—489

8 Claims



1. Method of controlling operation of an air-fuel ratio control system for an internal combustion engine (E), having a lambda sensor (1) exposed to the exhaust gases of the engine, means (4,5) for monitoring operating readiness of the sensor

including a d-c reference voltage (U_o) source (5) and a coupling resistor (4) serially connected therewith and with the lambda sensor (1) and a resistance sensing means for evaluating the internal resistance of the sensor, the reference voltage being connected to be polarized opposite to the polarity of the output voltage of the lambda sensor;

threshold means (6, 7, 8, 9, 10) including two comparators (9, 10) each having an output signal state, being connected to the lambda sensor, and connected to respond respectively to upper (U_{max}) and lower (U_{min}) threshold voltage levels, each voltage taking on values respectively above and below the voltage (U_o) of said reference source, and hence evaluating the voltage jump between said values upon change of oxygen content of the exhaust gases from the engine,

said threshold means further comprising resistances (6, 7, 8) which determine said threshold voltages,

and air-fuel control means (20, AF) controlling the air-fuel ratio, of the air-fuel mixture being supplied to the engine, selectively, in accordance with signals derived from said lambda sensor, when said sensor is in condition to maintain a minimum threshold voltage signal output, or in accordance with a preset ratio, when said sensor fails to maintain said threshold voltage output,

said method comprising, in accordance with the invention, the steps of

feeding the outputs of said sensor and said reference voltage source to a junction,

applying the output signal from said junction to one of the inputs of each of said comparators (9, 10),

selecting said resistances such that said maximum threshold voltage (U_{max}) takes on a value not symmetrical to said reference voltage (U_o) with respect to the value of said minimum threshold voltage (U_{min}), but rather is displaced in the direction of a higher value than the value of said minimum threshold voltage,

starting the operation of said engine with said control means (20, AF) controlling the air-fuel mixture in accordance with said preset ratio ,

upon receipt of signals from said threshold comparators (9, 10) indicating a change in their output state, switching said control means (20, AF) to control in accordance with signals from said comparators (9, 10), and

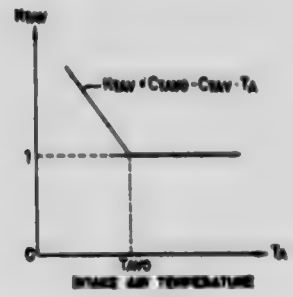
in the absence of signals from said comparators (9, 10) for a predetermined period of time, switching said control means back to control in accordance with said preset ratio.

4,492,206

DEVICE FOR INTAKE AIR TEMPERATURE-DEPENDENT CORRECTION OF AIR/FUEL RATIO FOR INTERNAL COMBUSTION ENGINES

Shunpei Hasegawa, Niiza, and Akihiro Yamato, Sayama, both of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1982, Ser. No. 442,614
Claims priority, application Japan, Nov. 20, 1981, 56-186631
Int. Cl.³ F02M 17/00
U.S. Cl. 123—491 2 Claims



1. In a fuel supply control system for use with an internal combustion engine having an intake pipe, said system including means for determining a basic value of the air/fuel ratio of an air/fuel mixture being supplied to said engine, as a function of at least one parameter representing operating conditions of said engine, an air/fuel ratio correcting device comprising:

a sensor for detecting a value of intake air temperature in said intake pipe of said engine;

means for setting a predetermined value of the intake air temperature which falls within a range of intake air temperature at which fuel injected into the intake pipe of the engine can be completely evaporated within a period of time between the injection of the fuel and ignition of the injected fuel;

means for determining a value of a correction coefficient solely as a function of a value of the intake air temperature detected by said sensor in a manner dependent on a value of the evaporation rate of fuel within said period of time between the injection of the fuel and ignition of the injected fuel, said value of the evaporation rate of fuel being given solely as a function of the intake air temperature, said value of said correction coefficient having (i) a predetermined constant value when the intake air temperature has a value higher than said predetermined value thereof, and having (ii) a value increasing as the intake air temperature has a value thereof decreasing from said predetermined value; and

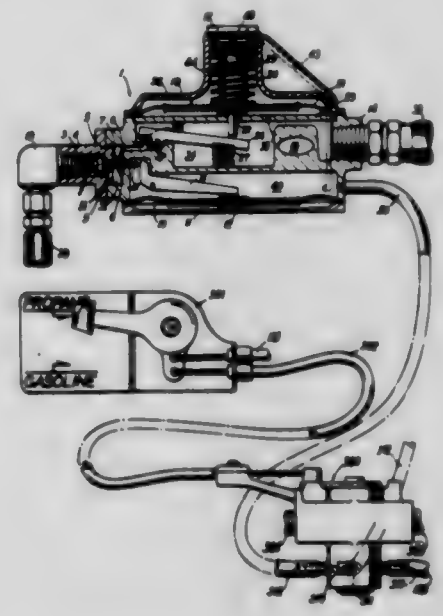
means for correcting a basic value of the air/fuel ratio of said air/fuel mixture determined by said basic value determining means, by multiplying said basic value by an amount corresponding to a value of said correction coefficient determined by said correction coefficient determining means.

4,492,307

DUAL FUEL SYSTEM

John E. Hallberg, Peachtree City, Ga., assignor to PetroSystems International, Inc., Nashville, Tenn.

Filed Feb. 27, 1981, Ser. No. 239,005
Int. Cl.³ F02B 43/00; F02M 21/04
U.S. Cl. 123—527 25 Claims



2. A dual fuel system for an internal combustion engine comprising:

(a) a converter body forming a liquified fuel passage and a gaseous fuel chamber;

(b) a liquid fuel inlet valve yieldably biased toward a closed position and a first actuator responsive to a drop in engine manifold pressure to actuate the liquid fuel inlet valve for permitting fuel to flow into the liquified fuel passage;

(c) a gaseous fuel inlet valve between the liquified fuel pas-

sage and the gaseous fuel chamber which valve is yieldably biased toward a closed position and a second actuator responsive to a pressure drop in the gaseous fuel chamber to actuate the gaseous fuel valve for permitting fuel flow into the gaseous fuel chamber;

(d) a mixer body forming an air passage and a pressurized gaseous fuel passage communicating with the gaseous fuel chamber and having an orifice communicating with the air passage;

(e) a plunger proximate the air passage for movement to variably restrict air flow through the air passage;

(f) a means for yieldably biasing the plunger in one direction of movement, the plunger having a surface communicating with the air passage at the downstream side of the plunger to receive application of vacuum tending to move the plunger in the opposite direction against resistance imposed by the yieldable bias means;

(g) a needle positionable within the orifice, one of the orifice and needle being movable relative to the other by the plunger to control the flow of gaseous fuel through the orifice;

(h) a valve body having a liquid inlet opening, a vacuum outlet opening, a vacuum inlet port, a vacuum outlet port communicating with the first actuator, and a vent; and

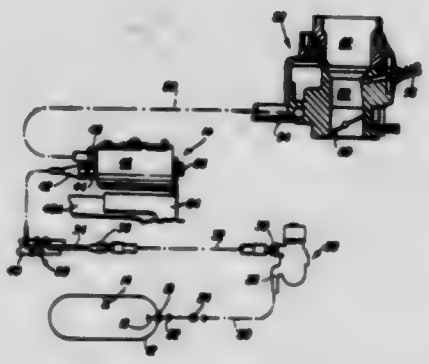
(i) a spool rotatable within the valve body in response to a control, said spool having a tunnel communicating between the liquid inlet opening and the liquid outlet opening when the control is in a first position, a duct communicating between the vacuum inlet port and the vacuum outlet port when the control is in a second position, and a notch communicating between the vacuum outlet port and the vent when the control is in the first position.

4,492,208

LIQUID PROPANE GAS FUEL SYSTEM

Mark S. Lent, Golden Valley, Minn., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Jul. 1, 1983, Ser. No. 510,112
Int. Cl.³ F02B 43/00
U.S. Cl. 123—527 11 Claims



1. Apparatus for supplying fuel to a combustion engine having an exhaust manifold, a carburetor, and a supply of liquefied gas fuel, comprising:

(a) a pressure regulator having a housing defining an internal chamber, a fuel inlet in said housing in fluid communication with said chamber, means for coupling a fuel supply line to said fuel inlet, a fuel outlet in said housing in fluid communication with said chamber, and means for coupling said fuel outlet to the carburetor; and

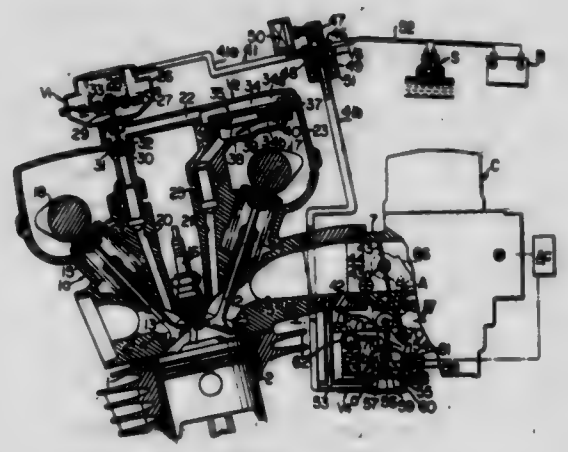
(b) bracket means for transferring heat to said pressure regulator in proportion to the engine load and characterized by a heat flux time constant such that the rate of change of temperature of said pressure regulator is proportional to the rate at which said engine increases in temperature during the warm-up time of said engine.

4,492,209

EXHAUST GAS RECIRCULATION SYSTEM

Junji Otani, Osuniyo; Yasuo Ikenoya, Kawagoe, and Masafumi Araki, Asaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1982, Ser. No. 386,209
Claims priority, application Japan, Jun. 5, 1981, 56-86608; Jul. 3, 1981, 56-104238
Int. Cl.³ F02M 25/06
U.S. Cl. 123—568 3 Claims



1. In an exhaust gas recirculation system for an internal combustion engine, comprising: an exhaust pick-up port communicating with an exhaust passage; an exhaust gas recirculation port communicating with an intake passage having therein a throttle valve; and an exhaust gas recirculation passage providing communication between said exhaust pick-up port and said exhaust gas recirculation port so that the exhaust gas in said exhaust passage may be partially recirculated into said intake passage by the intake pressure prevailing in said intake passage,

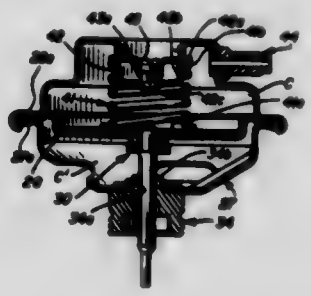
the improvement comprising: a vacuum-operated type exhaust gas recirculation valve disposed midway of said exhaust gas recirculation passage for regulating and controlling the flow rate of the exhaust gas to flow in said exhaust gas recirculation passage; a vacuum supply passage opening to said intake passage downstream of said throttle valve for providing communication of a vacuum chamber of said exhaust gas recirculation valve with said intake passage; a vacuum control valve connected with said vacuum supply passage for controlling the vacuum force of intake air to flow in said vacuum supply passage, wherein said vacuum control valve includes a valve housing, a diaphragm partitioning the inside of said valve housing into a vacuum chamber communicating with said vacuum supply passage and an atmospheric chamber vented to the atmosphere, a valve seat formed on said diaphragm and formed with a valve opening for providing communication between said vacuum chamber and said atmospheric chamber, a valve body adapted to be brought into and out of contact with said valve seat and made coactive with said valve seat for forming a variable orifice, and a diaphragm spring for biasing said diaphragm so that said valve seat may approach said valve body; and an interlocking mechanism for interlocking said vacuum and said throttle valve, said interlocking mechanism having a control member disposed between said vacuum control valve and said throttle valve for providing positive control of the interlocking relation between those valves.

4,492,210

SERVICEABLE VALVE CONSTRUCTION

Donald E. Hunt, New Haven, Mo., assignor to Ballwin-Washington, Inc., Washington, Mo.

Filed Feb. 18, 1983, Ser. No. 467,774
Int. Cl.³ F02M 25/06
U.S. Cl. 123—568 3 Claims



2. A serviceable valve for controlling the recirculation of exhaust gases within an internal combustion engine, comprising a housing having a first section provided with an interior chamber, and a second section secured to and subtending said first section; a diaphragm affixed to and interposed said housing sections, said diaphragm being in communication with said chamber and in response to a predetermined pressure within said chamber having a portion of the diaphragm movable in one direction from a predetermined rest position; a fitting mounted on and subtending said housing second section whereby said housing and diaphragm are rotatable as a unit about an axis of said fitting to selected positions of adjustment, said fitting being adapted to be removably mounted on the engine; a stem assembly carried by said diaphragm and being movable in response to the movement of said diaphragm portion, said assembly having an elongated stem member operatively connected to said diaphragm and in coaxial relation with said fitting axis, one end of said stem member having a valve piece mounted thereon for coaction with a valve seat provided on the engine and disposed within a recirculation flow path of the exhaust gases within the engine whereby, when said valve piece is seated on the valve seat, recirculation of the exhaust gases through the engine is blocked; a port formed in said housing first section and communicating with the chamber therein, said port being offset with respect to the fitting axis and being adapted to be removably connected to a pressure fluctuating segment of the engine; and means coacting with said fitting and said housing second section to releasably retain said housing and diaphragm in a selected position of adjustment relative to said fitting; said fitting including a substantially cylindrical portion protruding upwardly from a surface of said fitting, said protruding portion extending through an opening formed in said housing second section and terminating within the interior thereof, and means coacting with the terminating protruding portion and resiliently biasing the portion of said housing second section circumjacent said opening into a predetermined frictional engagement with said fitting surface and effect retention of said housing and diaphragm in a selected position of adjustment relative to said fitting.

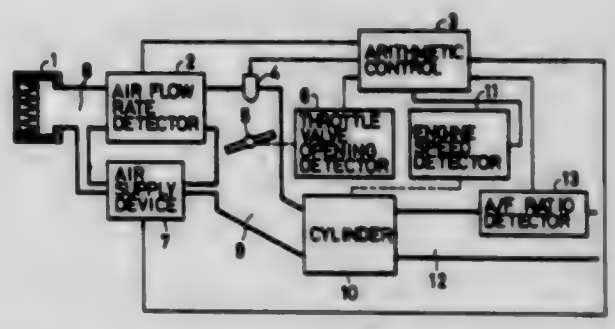
4,492,211

AIR-TO-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Setsuhiro Shimomura, and Yuuji Ekbinoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 18, 1982, Ser. No. 409,226
Claims priority, application Japan, Aug. 19, 1981, 56-130763
Int. Cl.³ F02D 5/02, 9/02; F02M 25/06
U.S. Cl. 123—585 2 Claims

1. In an electric-type air-to-fuel ratio control system for an internal combustion engine including fuel flow rate adjusting means disposed upstream of a branch point in an intake manifold of the engine, an arithmetic control device for driving the fuel flow rate adjusting means in accordance with outputs of a plurality of sensing means for sensing predetermined operating parameters of said engine, and a throttle valve disposed in said intake manifold at a point downstream of said fuel flow rate adjusting means, the improvement comprising: bypass air supplying means for supplying air into said intake manifold at a point downstream of both said fuel flow rate adjusting means and said throttle valve, said air supplying means being actuated



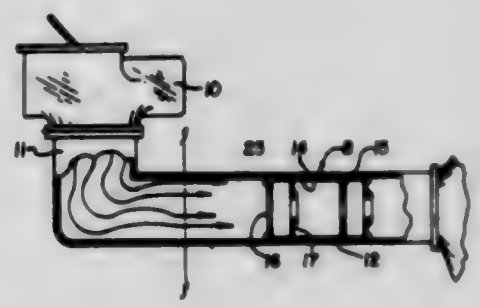
to supply air in response to at least one of the rate of closing of said throttle valve and changes in sensed operating parameters of said engine, said air supplying means being electrically controlled by said arithmetic control means; wherein a first one of said sensing means comprises intake air flow rate detecting means disposed in said intake manifold, and wherein said air supplying means is connected to bypass said intake air flow rate detecting means.

4,492,212

INTERNAL COMBUSTION ENGINE OF IMPROVED EFFICIENCY

Richard L. Deeley, 921 Maple Ave., Lisle, Ill. 60532

Filed Aug. 9, 1982, Ser. No. 406,383
Int. Cl.³ F02M 29/00
U.S. Cl. 123—590 6 Claims

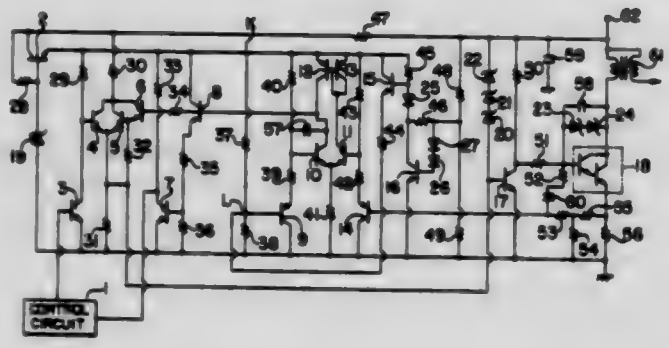


1. In an internal combustion engine having a plurality of cylinders, a carburetor and a manifold, said manifold having a log section adapted to receive fuel-gas mixture from said carburetor, and a plurality of finger sections each being connected independently to said log section to receive fuel-gas mixture from said log section and being adapted to pass fuel-gas mixture forwardly to the end of the finger section, the improvement comprising a baffle device located within one of said finger sections and between the place of beginning laminate flow and the outlet end of said finger, said device including a pair of plates each of which has a central opening therein and the second of which is disposed downstream of said first plate, said plates forming between them an area wholly within said finger section and containing fuel-gas mixture in a turbulent state.

4. A method for assembling an internal combustion engine having a carburetor and a log section into which fuel-gas mixture from the carburetor is passed and having finger sections which are adapted to receive fuel-gas mixture separately from said log section and through which the fuel-gas mixture passes to the outlet end of the finger sections, the step of inserting into said outlet of a finger section a device having a pair of

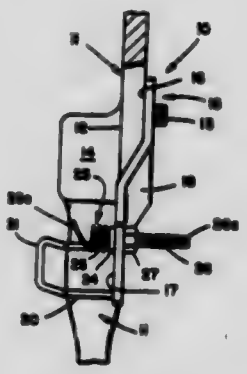
spaced plates having central openings therein until said device is wholly contained within said one finger section.

4,492,213
IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES
Nobuo Yamamoto; Ryoichi Okuda, both of Kariya, and Tomotsu Makino, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Continuation of Ser. No. 327,114, Dec. 3, 1981, abandoned. This application Feb. 6, 1984, Ser. No. 577,316
Claims priority, application Japan, Dec. 8, 1980, 55-172790
Int. Cl.³ F02P 1/00
U.S. Cl. 123—644 1 Claim



1. An ignition system for internal combustion engines for effecting constant current control of an ignition coil primary current comprising:
an ignition coil;
an adjusting circuit for adjusting a magnitude of an interrupted primary current of said ignition coil;
a circuit for detecting the magnitude of the interrupted primary current of said ignition coil and generating a primary current detection signal;
a constant voltage circuit connected to a power supply and regulating a power supply voltage from said power supply to supply a constant output voltage;
a circuit for generating a reference voltage from an output voltage of said constant voltage circuit, wherein said reference voltage generating circuit includes a voltage dividing circuit connected to an output of said constant voltage circuit;
a comparison circuit for comparing a voltage of said primary current detection signal with said reference voltage and supplying an output signal as an adjusting signal of said adjusting circuit;
a circuit for detecting a decrease of said power supply voltage below a voltage regulation threshold input level of said constant voltage circuit; and
a compensating circuit responsive to a detection output of said power supply voltage decrease detecting circuit to increase said reference voltage substantially in proportion to the decrease of said power supply voltage below the voltage regulation threshold input level of said constant voltage circuit, and wherein said compensating circuit comprises a transistor circuit having a collector-emitter circuit connected in series between the output of said constant voltage circuit and a voltage dividing point of said voltage dividing circuit, and a base voltage adjusting circuit responsive to the detection output of said power supply voltage decrease detecting circuit to vary a base voltage of a transistor comprised in said transistor circuit so as to increase conduction through said transistor circuit in proportion to the decrease of said power supply voltage,
whereby the magnitude of the interrupted primary current of said ignition coil is controlled at a given constant value irrespective of the decrease of said power supply voltage to a level lower than the voltage regulation threshold input level of said constant voltage circuit.

4,492,214
ARCHERY BOW WITH ARROW REST THEREFOR
Karey Kielhoffer, P.O. Box 992, Morongo Valley, Calif. 92256
Filed Aug. 13, 1982, Ser. No. 407,706
Int. Cl.³ F41B 5/00
U.S. Cl. 124—24 R 5 Claims

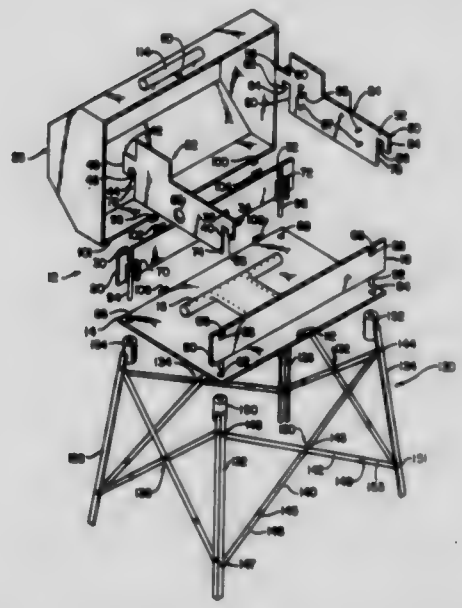


1. An overdraw arrow rest unit comprising:
a flat elongated bar element with a central offset between its ends, said bar element having a first planer surface at one end for attaching it to a bow and a second planer surface forming a rest portion at its opposite end with said two surface portions connected by said central offset, said first and second surfaces being in an offset spaced apart parallel relationship;
a base rest element fixedly attached to the bottom edge of the rest portion of said elongated bar element adjacent to its distal end and projecting perpendicularly from said second planer surface, said rest element having an upwardly directed distal end operable to prevent arrows from sliding off said rest element;
an arrow rest means located between said first planar surface and said base rest element in the central position of said rest surface and secured therein operable to provide a support for resting the head portion of an arrow thereon; and,
attaching means operable to fixedly attach said first planer surface to a bow whereby said unit can be attached to a bow to provide an arrow rest between a bow and a bow string to allow an archer to use shorter arrows and also to provide a safety base rest element between a bow string and an arrow rest.

4,492,215
OUTDOOR PORTABLE CHARCOAL GAS GRILL
Florindo DiGiamvittorio, 62 Webster St., East Boston, Mass. 02128
Filed Apr. 2, 1984, Ser. No. 595,657
Int. Cl.³ F24C 1/16; B65D 6/12; F16M 11/32
U.S. Cl. 126—9 R 23 Claims

1. In a portable outdoor grill a collapsible housing for accommodating a burner, comprising:
a base for supporting the burner thereon;
a pair of spaced apart front and rear walls;
a pair of spaced apart side walls; each wall in each pair of walls including means for releasably interlocking with complementary means on each associated wall of the other pair of walls;
means for detachably mounting at least one of said walls to said base;
a cover;
first hinge means carried by one of said walls;
second hinge means carried by said base; and
third hinge means carried by said cover for engaging said first hinge means to permit hinged attachment of said cover to said wall when said wall is erected on said base

and for engaging said second hinge means to permit hinged attachment of said cover to said base when said



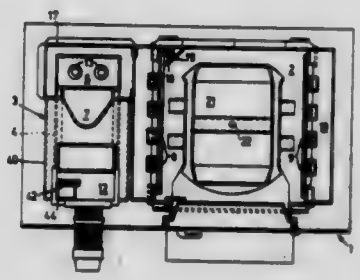
walls are detached from said base to form a portable housing for the walls.

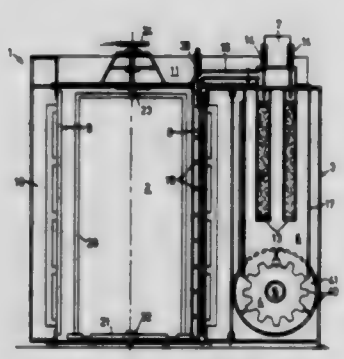
4,492,216

OVEN WITH AIR CONVECTION COMBUSTION, MORE PARTICULARLY FOR BAKEHOUSES

Philippe Dumont, Montreuil, France, assignor to Dumont S.A., Montreuil, France

Filed Nov. 9, 1982, Ser. No. 440,337
Claims priority, application France, Nov. 13, 1981, 81 21237
Int. Cl.³ F24C 1/00; A47J 00/00; F27B 9/04
U.S. Cl. 126—21 A 6 Claims





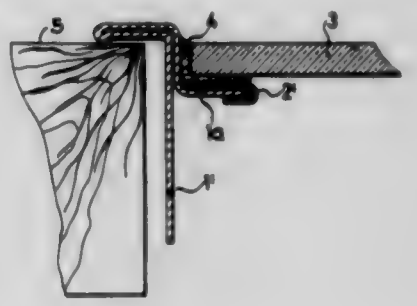
1. A baking oven with air convection combustion comprising: a baking chamber having walls and a door opening; a fire-box; a burner operatively disposed in said fire-box; a vertical primary exhaust duct connected to said fire-box for exhausting the hot gases therefrom and forming a primary circuit therewith; a closed heating duct adjacent the baking chamber surrounding said fire-box and said exhaust duct and forming a secondary circuit for providing secondary air heated to about 200°–300° C. by contact with said exhaust duct and fire-box; a plurality of adjustable input nozzles mounted on the oven in spaced relationship over the height of and on one side of the baking chamber operatively connecting said heating unit to said chamber for conducting air from said secondary circuit to said chamber; adjustable exhaust nozzles mounted on the side of said baking chamber opposite the intake nozzles for exhausting said chamber; a chamber exhaust duct operatively connected to said exhaust nozzles for collecting the secondary air from said exhaust nozzles and returning it to said heating duct; a turbine mounted on a horizontal axis situated above said fire-box and operatively connecting said chamber exhaust duct to said heating duct for recycling said secondary air; a vapor producing humidifier means; a vertical ramp mounted within said baking chamber adjacent the input nozzle side thereof; a humidifier duct connecting said humidifier means with said ramp; and bore holes disposed along said ramp to inject vapor produced by said humidifier means into said baking chamber in the vicinity of said input nozzles.

4,492,217

PANEL ASSEMBLY, PARTICULARLY A GLASS OR VITREOUS CERAMIC HEATER OR COOKER PANEL ASSEMBLY

Herwig Schneider, Mainz, Fed. Rep. of Germany, assignor to JENAer Glaswerk Schott & Gen., Fed. Rep. of Germany

Continuation of Ser. No. 32,873, Apr. 24, 1979, abandoned. This application Feb. 25, 1983, Ser. No. 469,976
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1978, 2819118
Int. Cl.³ F24C 3/00
U.S. Cl. 126—39 B 9 Claims



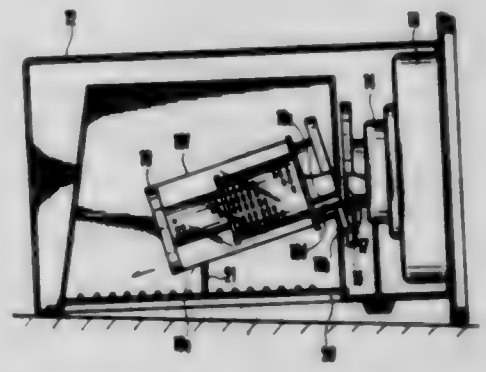
1. A heating panel assembly comprising:
a glass hob plate;
a supporting frame for said hob plate having a first frame profile including a flange extending beneath said hob plate for supporting said hob plate such that a gap exists between the bottom and sides of said hob plate and said first frame profile, a second frame profile covering a portion of said first profile adjacent said hob plate rigidly connecting said first and second profiles during assembly; and
a thermostable elastic adhesive completely filling said gap between said first profile and said hob plate sides and further disposed between said second profile and said hob plate bottom for bonding said first profile, said second profile and said hob plate and forming a non-detachable continuous joint between said first profile and said hob plate, said surface of said second profile being comprised of a material selected for forming a strong mechanical bond with said adhesive.

4,492,218

OIL STOVE

Tetsuo Uchida, and Takao Adachi, both of Sanjyo, Japan, assignors to Uchida Manufacturing Co., Ltd., Japan

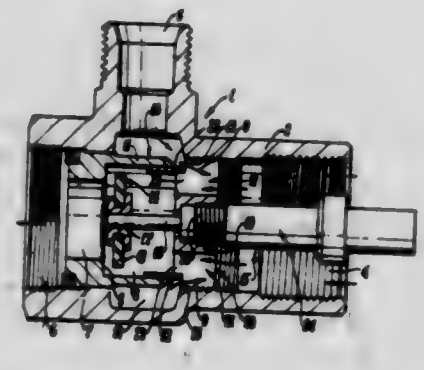
Filed Feb. 25, 1983, Ser. No. 469,908
Int. Cl.³ F24C 5/04
U.S. Cl. 126—96 3 Claims



1. An oil stove comprising:

a base;
a cabinet mounted on said base and extending upward therefrom;
a hot dish mounted in said cabinet;
a burning sleeve removably mounted in said cabinet on said hot dish for defining a burning chamber at its lower end and extending upward from said hot dish at said lower end to an upper end;
a cylindrical burning wick adapted to be displaced upwardly and downwardly in said burning chamber;
a guard formed of a plurality of horizontally extending rods fixed to a plurality of vertically extending rods; and
a guide member fixedly secured to said guard and extending inwardly therein, said guide member including means defining a surface which comes into contact with said upper end of said burning sleeve when said stove falls over in a forward direction and to thereafter permit said burning sleeve to slide along said defined surface of said guide member to part said lower end from said hot dish.

4,492,219
VALVE AND SYSTEM INCORPORATING SAME
Marcus F. Schoenheimer, Indooroopilly; Lionel A. Gaskell, Bracken Ridge, and Keith A. Ackermann, Lawnton, all of Australia, assignors to Actrol Industries Pty. Ltd., Australia
Filed Apr. 1, 1983, Ser. No. 481,564
Claims priority, application Australia, Apr. 6, 1982, PF3499
Int. Cl.³ F24J 3/02
U.S. Cl. 126—427 12 Claims



10. A fluid heating system including: a storage container; a fluid circulating loop having opposite ends respectively connected to an outlet and an inlet of said container; fluid heating means within said loop; means for drawing fluid from said container; a temperature responsive valve connected to said loop between said heating means and said container outlet and including a hollow body, a chamber within said body, a primary inlet port which is connected to said container outlet, a secondary inlet port, each of said inlet ports communicating with said chamber so as to be in continual communication with one another, an outlet port communicating with said chamber through an orifice within said body and being connected to that part of said loop which leads to said heating means, a valve member mounted within said body for movement towards and away from a position at which it closes said orifice, and a temperature responsive means located within or adjacent said primary inlet port and connected to said valve member so as to control said movement thereof; and a source of said fluid connected to said secondary inlet port.

4,492,220
VAGINAL SPECULUM PROTECTOR
Allen L. Hayes, 7362 Creekview, West Bloomfield, Mich. 48033
Filed Nov. 15, 1982, Ser. No. 441,703
Int. Cl.³ A61B 1/32
U.S. Cl. 128—17 3 Claims

1. A pair of identical disposable covers for use with a vaginal speculum of the type including a lower elongated blade, an upper elongated blade pivotally mounted at its rearward end to the rearward end of the lower blade, and a handle formed integrally with the rearward end of the lower blade and extending downwardly therefrom:

A. each cover comprising first and second elongated sheets of a smooth, compliant, plastic material,
   1. said first elongated sheet having a size and shape conforming to a speculum blade surface,
   2. said second elongated sheet having a forward portion overlying and conforming to said first sheet and a rearward portion extending rearwardly from the rearwardly edge of the first sheet;

B. said sheets being suitably joined together along their forward edges and along their confronting side edges to form a pocket opening at the rearward edge of said first sheet;

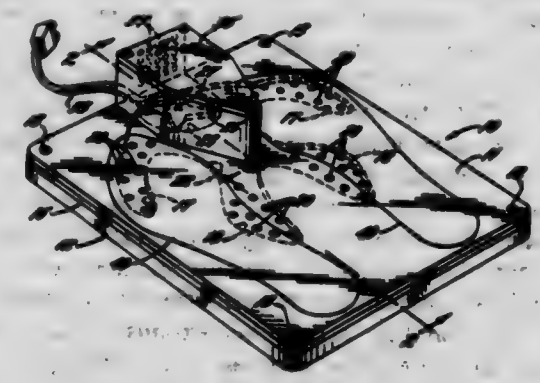
C. said covers being configured and dimensioned to slip smoothly over the free end of each blade to a fitted position snuggly conforming to the respective blade;



D. One of said covers, when positioned second sheet up and fitted over the upper speculum blade, having its first sheet covering substantially all of the lower surface of that blade, the forward portion of its second sheet covering the upper surface of that blade, and the rearward portion of its second sheet extending rearwardly of the rearward end of that blade to facilitate application and removal of the cover;

E. the other of said covers, when positioned first sheet up and fitted over the lower speculum blade, having its first sheet covering substantially all of the upper surface of that blade, the forward portion of its second sheet covering the lower surface of that blade, and the rearward portion of its second sheet extending downwardly in front of and in juxtaposition to the handle of the speculum to preclude contact between the patient and the handle.

4,492,221
DEVICE FOR RELAXING AND REFRESHING HANDS OR FEET
Eddie F. Kerley, 3313 Bildahl St., Rockford, Ill. 61109
Filed Feb. 18, 1983, Ser. No. 467,735
Int. Cl.³ A61H 21/00
U.S. Cl. 128—24.1 13 Claims



1. A device for relaxing and refreshing left and right terminal limbs having digits, said device comprising an upper, gen-

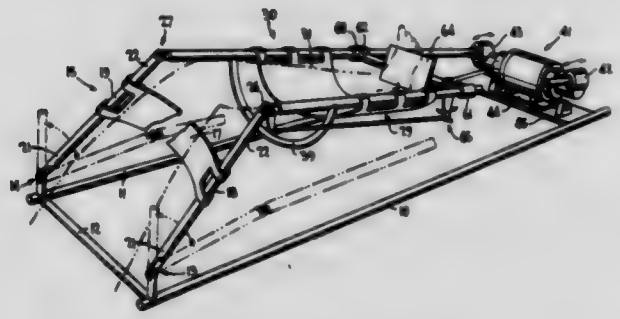
erally horizontal platform of sufficient length and width to enable left and right limbs to rest on the platform in side-by-side relation, a lower base underlying and supporting said platform, means defining left and right sets of channels between said platform and said base, each of said sets comprising at least two distinct channels positioned to underlie different areas of the respective limb, a manifold between said platform and said base and communicating with all of said channels, said means comprising a plate sandwiched between said platform and said base, slots formed through said plate and defining said channels, an opening formed in said plate and defining said manifold, the upper and lower sides of said slots and said opening being closed by said platform and said base, respectively, a hole formed in said platform above said manifold, a rotatable impeller alined with said hole and operable when rotated to circulate air in said manifold and into said channels, a motor for rotating said impeller, and ports formed through said platform and overlying said channels whereby upwardly directed air streams are emitted from said ports to relax and refresh said limbs.

4,492,222

KNEE EXERCISE MACHINE

Mohamad-Ali Hajianpour, Miami Springs, Fla., assignor to Diversified Medical Systems, Inc., South Miami, Fla.

Filed Mar. 9, 1983, Ser. No. 473,541
Int. Cl.³ A61H *1/02*
U.S. Cl. 128—25 R 15 Claims



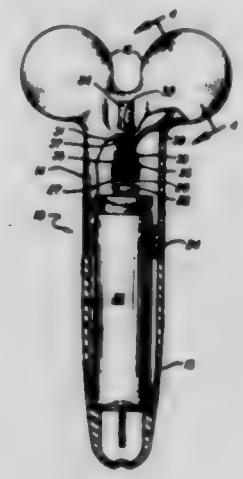
1. An automatic knee exerciser comprising:
a frame;
a thigh support member having proximal and distal ends;
a leg support member having proximal and distal ends;
a motor assembly;
means connecting said proximal end of said thigh support member to said frame for pivotal movement about a first horizontal axis which is fixed relative to said frame;
means rigidly connecting said distal end of said leg support member to said motor assembly;
means mounting said motor assembly on said frame for pivotal movement about a second horizontal axis which is fixed relative to said frame and located in spaced parallel relation to said first horizontal axis;
pivot means joining the distal end of said thigh support means to the proximal end of said leg support means for mutual pivotal motion about a third horizontal axis which is movable relative to said frame and located in spaced parallel relation to said first and said second horizontal axes;
actuator means drivingly interconnected to said motor assembly and thereby providing a driving force applied to said leg support member for selectively axially extending and retracting said leg support member to move said pivot means and said third horizontal axis and to thereby cause said leg support member to pivot with respect to said thigh support means about said third horizontal axis;
said leg support member including a first elongated member secured to said pivot means so as to move therewith and further movably interconnected to said actuator means so as to move relative thereto;
said first elongated member and said actuator means attached in coaxial relation to one another along a common longitudinal axis thereof and relatively disposed to apply said driving force along said common longitudinal axis.

4,492,223

FLUID DISPENSING MASSAGE DEVICE

James E. Burke, Shelton, Conn., assignor to Jack B. Hoxid, Fairfield, Conn.

Filed Jun. 30, 1982, Ser. No. 393,683
Int. Cl.³ A61H *15/00*
U.S. Cl. 128—57 3 Claims



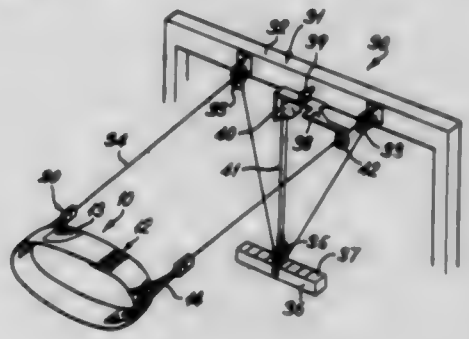
1. In a fluid dispensing massage device including a pair of rollable members adapted to engage the area to be massaged and a handle assembly having a bifurcated extension for supporting the rollable members, the handle assembly having separable upper and lower portions, the improvement comprising a replaceable cartridge containing fluid under pressure positioned in the lower portion of the handle assembly and extending upwardly therefrom into the upper portion, the cartridge including a metered valve that dispenses a metered amount of fluid from the cartridge when actuated, movable means in the upper portion of the handle assembly for actuating the metered valve, the valve extending upwardly into engagement with the movable actuating means, and a flexible tube extending from the actuating means to each rollable member for delivering fluid from the cartridge to the members, the tubes having sufficient slack to permit movement of the actuating means.

4,492,224

ORTHOPAEDIC TRACTION APPARATUS

Terence Singleton, Manchester, England, assignor to National Research Development Corporation, London, England

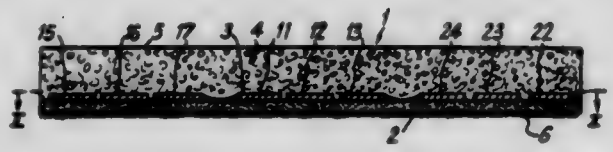
Filed Feb. 10, 1983, Ser. No. 465,456
Claims priority, application United Kingdom, Feb. 13, 1982, 8204296; Feb. 13, 1982, 8204291; Nov. 16, 1982, 8232623
Int. Cl.³ A61H *1/02*
U.S. Cl. 128—75 9 Claims



1. Orthopaedic traction apparatus comprising:

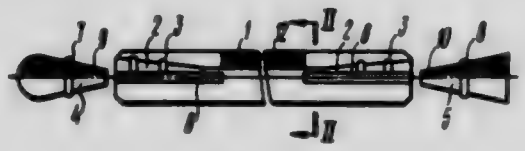
a support structure;
first guide means carried by said support structure;
connection means securable to the body of a patient;
a load;
a first elongate flexible member operably connected to extend under tension between said connection means and said load, and to engage therebetween said first guide means, to apply tractive force to said patient; and
a safety mechanism including a second elongate flexible member operably connected to extend between said support structure and said load, a retractor allowing extension of said second elongate member against a continuous return action, and an arresting element operable to lock said second elongate member in response to predetermined mobile change in the condition of said mechanism.

4,492,225
CRADLES AND MINERVA JACKETS, AND MANUFACTURING MATERIAL THEREFOR
Jean-Pierre Picolet, St Priest-en-Jarez; Jean-Loup Rudloff, Nanterre, and Francois Courtet, St Bonnet-les-Oules, all of France, assignors to Etablissements Thuasne & Cie and Thuasne-Paris, both of, France
PCT No. PCT/FR82/00030, § 371 Date Nov. 9, 1982, § 102(e) Date Nov. 9, 1982, PCT Pub. No. WO82/03005, PCT Pub. Date Sep. 16, 1982
PCT Filed Feb. 19, 1982, Ser. No. 448,995
Claims priority, application France, Mar. 10, 1981, 81 04715
Int. Cl.³ A61F 5/04
U.S. Cl. 128—87 R
17 Claims



1. A surgical cradle for supporting the heads or members of persons or animals comprising a layered panel formed by the assembly of a layer of plastic material in the form of hard foam, a sheet of preferably inelastic metal, a layer of plastic material in the form of flexible foam, and a flexible and smooth protective internal sheet, said metal sheet is cut into a predetermined form related to the member being protected.

4,492,226
DEVICE FOR UNITING BONE FRAGMENTS
Sergei I. Bolykh, Moscow; Anatoly D. Meschersky, Malakhovka; Anatoly B. Davydov, Moscow; Gely G. Pershin, Moscow; Boris A. Smirnov, Moscow, and Mikhail V. Gromov, Moscow, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky I Ispytatelny Institut Meditsinskoi Tekhniki, Moscow, U.S.S.R.
Filed Oct. 10, 1979, Ser. No. 83,310
Int. Cl.³ A61F 5/04
U.S. Cl. 128—92 BC
5 Claims



1. A device for uniting bone fragments, comprising:
a rectilinear body having a longitudinally-extending through bore formed therein;
holes coaxial to said body, provided at opposite end portions thereof and shaped as frustums of cones facing with their greater bases the respective ends of said body;
annular grooves made in the bore surfaces of said holes;
longitudinal through slots made in said end portions of said body within the zones of said holes;
cone-shaped inserts adapted for being introduced into said holes so as to wedge apart said body at the both ends thereof;
annular ridges made on said inserts and adapted to fit in said annular grooves so as to hold said inserts in positions wedging apart said end portions of said body;
said device featuring its length less than a total length of the coapted bone frements so that it can be arranged fully in the bone tissues.

4,492,227
ELASTIC KNEE BANDAGE
Urs Senn, Basel, and Bernhard Segesser, Richen, both of Switzerland, assignors to Senn & Co. AG, Basel, Switzerland
Filed May 23, 1983, Ser. No. 496,851
Claims priority, application Switzerland, May 27, 1982, 3270/82
Int. Cl.³ A61F 13/00
U.S. Cl. 128—165
12 Claims

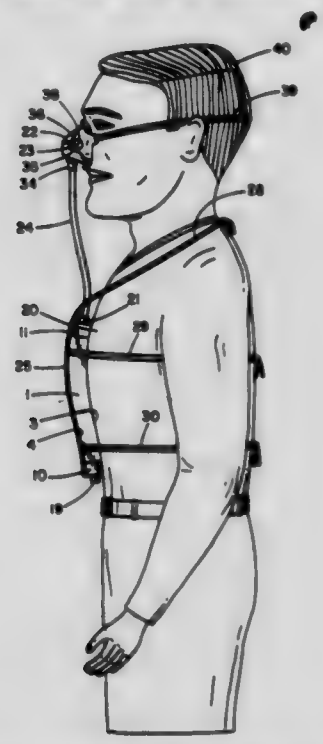


1. Knee bandage having a tubular base body which consists at least partially of an elastic textile material and comprises a central region which is to be laid against a knee joint, as well as two edge sections which adjoin this central region on both sides and the stretch properties of which differ from those of the central region, characterised in that, when the central region (II) and edge sections (I, III) are equally loaded, the central region (II) has an elastic stretch in the longitudinal and transverse directions which is at least 100% greater than that of the edge sections (I, III), that two zones (4) for stabilising the joint flanks are provided on the base body (1), which zones are each inclined relative to the longitudinal centre line (A) of the base body by an angle of 15°–45° and are arranged, on the one hand, to converge towards one another up to a region on the base body located below the position to be envisaged for the knee joint and, on the other hand, to extend beyond the knee region, and that at least that edge section (I) which adjoins the central region above the knee region is provided on the inside of its upper edge part with a holding strip (2) made of material which is resistant to sliding.

4,492,228
AIR WARMING DEVICE TO FACILITATE BREATHING
Edward M. Makovic, 510 N. Lincoln, Coal City, Ill. 60416
Filed Dec. 16, 1982, Ser. No. 449,888
Int. Cl.³ A61M 15/00
U.S. Cl. 128—204.17
9 Claims

1. An air warming device to facilitate breathing comprising a warming chamber having a peripheral wall comprising a first side wall, a second side wall spaced apart from said first side wall to define warming cavity means therebetween to warm the contents within said cavity means, securing means to secure and hold said warming chamber against a portion of the body of a user, said first side wall being imperforate and adapted for facing the body of said user to transmit body heat from said user to the interior of said warming cavity means, air

intake means to admit cold outside air into said warming cavity means, air discharge means to discharge warmed air from said warming cavity means, and air conduit means to conduct said warmed air from said air discharge means to said user to enable said user to breathe said warmed air, wherein said warming cavity means includes a plurality of elongated cells, each of said cells including imperforate side wall means connected between said first and second side walls and surrounding a cavity therein, a first end wall at one end of each of said cells



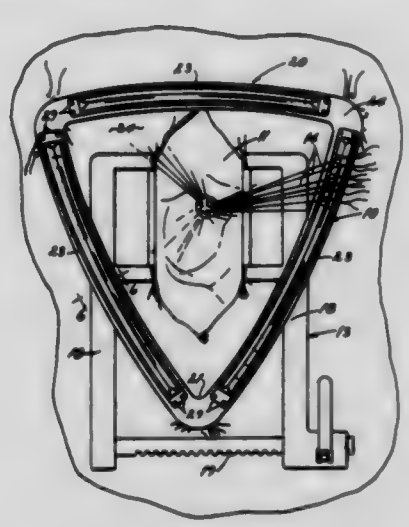
and a second end wall at the opposite end thereof, said air intake means including a relatively large opening in said first end wall of each of said cells to admit cold outside air into said cavity of each of said cells, said air discharge means including a relatively smaller opening in said second end wall of each of said cells to discharge warmed air from said cavity of each of said cells, each smaller opening being substantially aligned with and in substantial registration with a corresponding one of said large openings and in unobstructed open communication therewith.

4,492,229

SUTURE GUIDE HOLDER

Ronald P. Grunwald, 203 Deaconess Doctors Bldg., Spokane, Wash. 99204

Filed Sep. 3, 1982, Ser. No. 414,603
Int. Cl.³ A61B *17/00*
U.S. Cl. 128—303 R 16 Claims



10. A holder for securing elongated suture guides having towel clip mounting holes about a surgical incision site comprising:

a rigid frame member having upper and lower surfaces and a central opening of the approximate size of the surgical incision site extending between the upper and lower surfaces;

support means on the frame member for securing the frame member in a selected position relative to the surgical incision site;

mounting means on the upper surface of the frame member for receiving and releasably securing a suture guide; and

wherein the mounting means is comprised of:

upwardly projecting studs on the upper surface of the rigid frame adapted to be releasably received through the towel clip mounting holes;

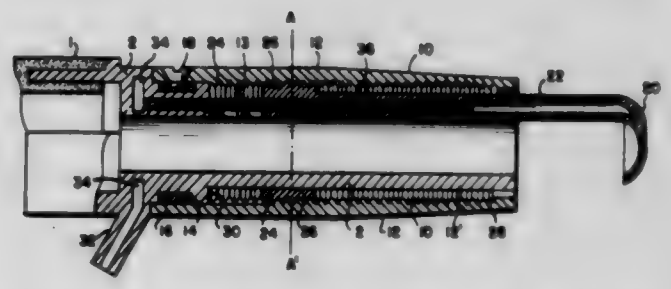
wherein the studs are spaced about the frame and in positions adapted to mount three suture guides in a triangular end-to-end relationship around the frame.

4,492,230

EXTENSION MECHANISM OF ADAPTOR FOR LASER SCALPEL

Katsuyoshi Sumago, and Tomio Iwamoto, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 6, 1982, Ser. No. 395,309
Claims priority, application Japan, Jul. 7, 1981, 56-100952[U]
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—303.1 6 Claims



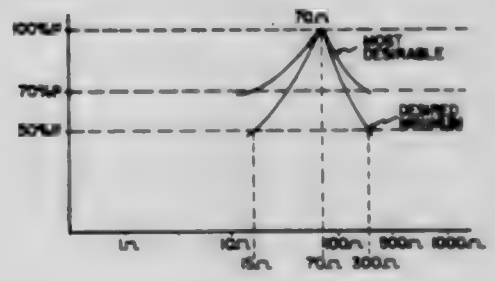
1. An extension mechanism of an adaptor for a laser-powered scalpel, in which an adaptor holding portion of said laser scalpel is provided with a substantially cylindrical main body having a longitudinal axis, said main body supporting an adaptor top portion, said adaptor top portion being reciprocally movable in the longitudinal axial direction of said main body, wherein a sleeve provided with threads on its internal surface is mounted rotatably around said main body, said adaptor top portion including a threaded portion engaging with said threads of the sleeve and positioned between said main body and said sleeve, said adaptor top portion being reciprocally movable by rotating said sleeve.

4,492,231

NON-STICKING ELECTROCAUTERY SYSTEM AND FORCEPS

David C. Auth, 4739 Somerset Ave. Southeast, Bellevue, Wash. 98006

Filed Sep. 17, 1982, Ser. No. 419,400
Int. Cl.³ A61B *17/39*
U.S. Cl. 128—303.17 10 Claims



1. A non-sticking electrocautery forceps adapted for use with an RF signal generator producing an RF signal, said

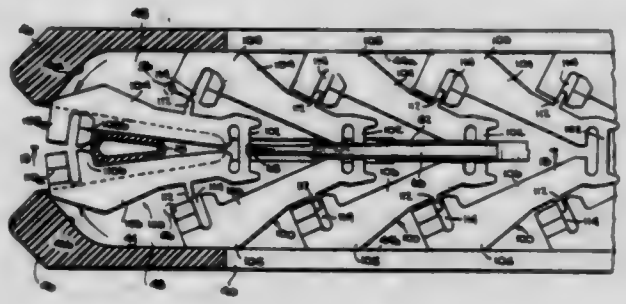
forceps comprising a pair of electrically conductive forceps arms electrically isolated from each other between which said RF signal is adapted to be applied, said forceps arms terminating in respective, closely spaced jaws, each having a tissue contact surface through which said RF signal is adapted to be applied to tissue positioned in contact with said jaws, each of said forceps arms having a volume of heat-absorbing material of at least about 6.5 mm^3 for each mm^2 area of said tissue contact surface, said heat-absorbing material having a thermal conductivity of at least 60 mW/mm°C. such that said heat-absorbing material is capable of both transferring heat at a sufficient rate and absorbing heat in a sufficient quantity to maintain said tissue contact surface at a temperature low enough to prevent tissue from adhering to said tissue contact surface while said forceps delivers power to said tissue to raise the temperature of said tissue to a level sufficient to produce coagulation, said jaws having a relatively hard protective coating applied thereto, thereby chemically isolating tissue from said heat-absorbing material and mechanically protecting said jaws.

4,492,232

SURGICAL CLIP APPLYING APPARATUS HAVING FIXED JAWS

David T. Green, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Sep. 30, 1982, Ser. No. 429,249
Int. Cl.³ A61B 17/12
U.S. Cl. 128—325 19 Claims



11. Apparatus for applying a plurality of surgical clips to body tissue one at a time in succession comprising:

a plurality of surgical clips in a linear array, each clip including first and second coupling means for respectively releasably interfitting with the second coupling means of the preceding clip and releasably interfitting with the first coupling means of the succeeding clip so that each clip pulls along the succeeding clip when advanced in the direction away from the succeeding clip;

third means disposed adjacent to, but just beyond the forwardmost clip in the array for closing a clip pushed into the third means, the third means comprising a pair of laterally spaced fixed jaws having opposing surfaces which incline toward one another in the direction away from the array of clips for closing the forwardmost clip as it is pushed into the third means; and

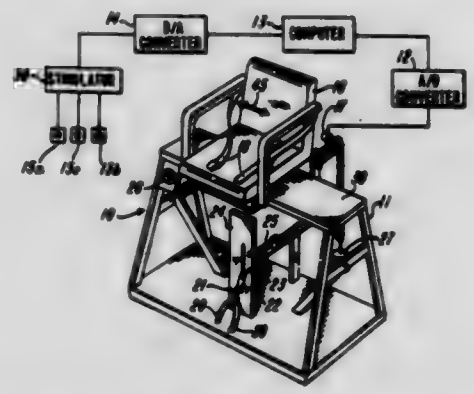
fourth means for engaging the forwardmost clip, pushing the forwardmost clip into the third means, and uncoupling the forwardmost clip from the succeeding clip as the forwardmost clip enters the third means.

4,492,233

METHOD AND APPARATUS FOR PROVIDING FEEDBACK-CONTROLLED MUSCLE STIMULATION

Jerrold S. Petrofsky, Beavercreek; Roger M. Glaser, Dayton; Chandler A. Phillips, Tipp City, all of Ohio, and Steven H. Petrofsky, Florissant, Mo., assignors to Wright State University, Dayton, Ohio

Filed Sep. 14, 1982, Ser. No. 417,934
Int. Cl.³ A61N 1/36
U.S. Cl. 128—421 17 Claims



1. Apparatus for causing the coordinated motion of a paralyzed human limb comprising:

a microprocessor responsive to a feedback signal for generating a command signal indicating a desired effort by the muscles controlling said coordinated motion of said limb,

at least three transcutaneous electrodes for placement in a spaced apart pattern on the skin above said muscles,

a stimulator responsive to said command signal for generating a pair of stimulation signals comprising alternately generated pulses of stimulation energy,

means for applying said stimulation signals across pairs of said electrodes, and

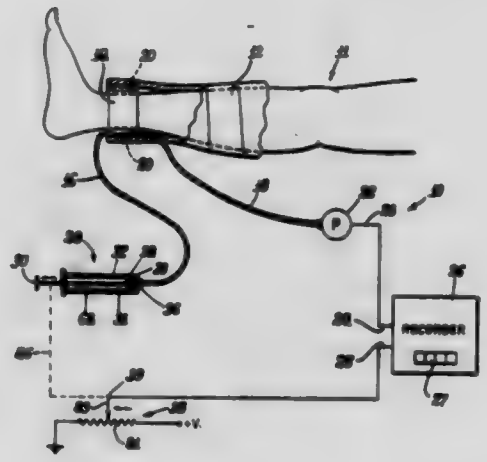
feedback means responsive to the motion of said limb for generating said feedback signal.

4,492,234

PRESSURE MEASUREMENT METHOD

Edward J. Arkans, Hoffman Estates, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed Jul. 2, 1981, Ser. No. 279,744
Int. Cl.³ A61B 5/02
U.S. Cl. 128—677 7 Claims



1. A method of measuring the compression applied to a portion of a body by a resilient inflatable garment, comprising the steps of:

inserting a flexible pressurizable member between the body portion and the garment to receive the compression applied by the garment; and

determining the pressure in said member due to the compres-

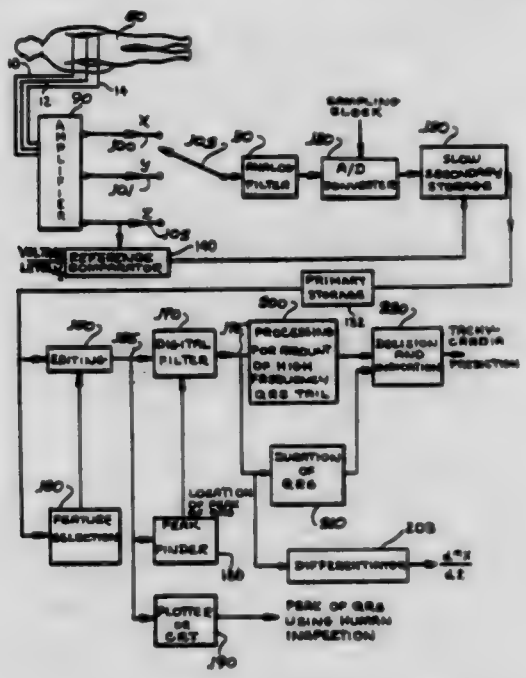
sion, said pressure being approximately equal to the compression applied to the body portion.

4,492,235

SYSTEM AND METHOD FOR PREDICTING VENTRICULAR TACHYCARDIA BY DERIVATIVE ANALYSIS

David H. Stirick, Highland Park, Ill., assignor to Arrhythmia Research Technology, Inc., Freeport, Tex.

Filed Feb. 11, 1982, Ser. No. 347,988
Int. Cl.³ A61B 5/04
U.S. Cl. 128—705 26 Claims



1. A system for predicting ventricular tachycardia from electrocardiograph input waveforms comprising:

filter means for providing a high pass filter output responsive to said input waveforms,

means for providing a time derivative output of said filter output responsive to the filter output,

means for predicting ventricular tachycardia responsive to said time derivative output.

4,492,236

APPARATUS FOR BALANCING SKELETAL ALIGNMENT

Donald L. Pile, 839 N. Kansas Ave., Topeka, Kans. 66608

Filed Nov. 5, 1981, Ser. No. 318,678
Int. Cl.³ A61B 5/10
U.S. Cl. 128—781 21 Claims

1. An apparatus for skeletal alignment comprising:

a patient support assembly having left and right pedal plates for respectively receiving a left foot and right foot of a patient to support said patient in a standing position thereon;

pivot means for mounting said pedal plates in movement about longitudinal and lateral axes passing through each of said plates;

a first measuring device having first and second patient contact tips for engaging selected skeletal features of said patient;

means for mounting said first measuring device to said support assembly in longitudinal and vertical movement relative to said support assembly whereby to provide similar movement of said first and second tips into said engagement with said selected skeletal features;

a lateral measuring device having first and second laterally spaced-apart measuring arms with each arm having a patient contact free end for engaging selected skeletal features of said patient;

means for mounting said lateral measuring device to said support assembly in lateral movement relative to said patient whereby to provide similar movement of said free ends of each measuring arm into laterally spaced-apart engagement with said selected skeletal features of said patient;

a first indicator means operably responsive to said movement of said first and second patient contact tips of said first measuring device to gauge the relative degree of vertical and longitudinal displacement of said first and second patient contact tips and said skeletal features contacted thereby from a predetermined position;

a second indicator means operably responsive to lateral movement of said first and second arms of said lateral measuring device to guage the relative degree of lateral displacement of said patient contact free ends of said lateral measuring arms and said skeletal features contacted thereby from a predetermined position; and

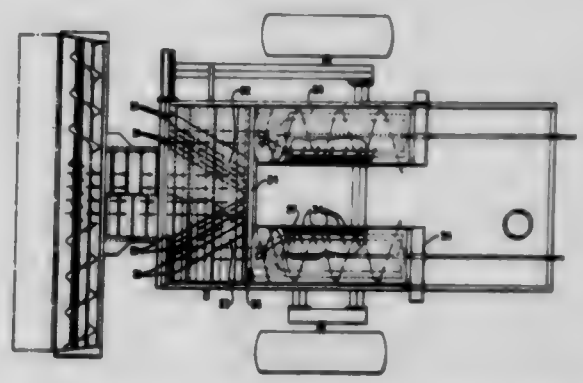
control means for selectively moving said pedal plates about said respective axes to adjust the attitude of said patient and said selected skeletal features to a position so that said first and second indicator means respectively gauge said respective predetermined positions.

4,492,237

ROTARY COMBINE

Daniel Pakosh, Winnipeg, Canada, assignor to Versatile Corsat Corporation, Vancouver, Canada

Filed Aug. 13, 1980, Ser. No. 176,014
Claims priority, application Canada, Aug. 13, 1979, 333768
Int. Cl.³ A01F 7/04
U.S. Cl. 130—27 R 16 Claims



1. A rotary combine for threshing and separating crop comprising crop feed means, a large capacity rotary threshing assembly for carrying out substantially only threshing mounted substantially transversely to the longitudinally axis of said combine, said threshing assembly comprising a substantially cylindrical rotor, a threshing cap around the upper periphery of said rotor and a concave around the lower periphery of said rotor and means for causing crop being threshed to move in a direction parallel to the axis of said rotor from the center of said threshing assembly to the ends thereof, entrance means midway of the length of said threshing assembly operable to receive said crop from said crop feed means, threshing guide means in said threshing assembly to convey crop to an end portion thereof, two rotary separator assemblies mounted substantially transversely to said threshing assembly, one at each end of said threshing assembly, for carrying out substan-

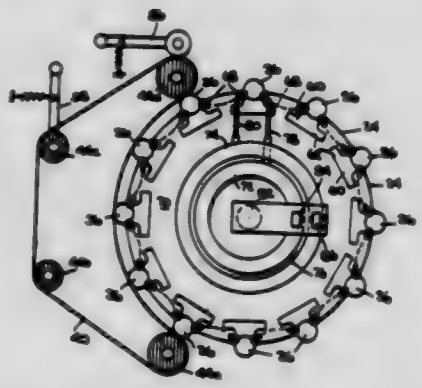
tially only grain and straw separation and having an entrance area adjacent said end portion of said threshing assembly, passage means in said threshing assembly at said end portion to allow passage of said crop from said end portion to the entrance area of said separator assembly, and separating guide means in said separator assembly to convey said crop rearwardly therein, whereby the separator assemblies can be made sufficiently long to accommodate the quantity of crop being threshed in said threshing assembly and the width and length of the combine can be kept to a minimum for a given capacity thresher.

4,492,238

METHOD AND APPARATUS FOR PRODUCTION OF SMOKE FILTER COMPONENTS

Jack C. Wheless, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 307,115, Sep. 30, 1981,. This application Jan. 12, 1982, Ser. No. 338,946
Int. Cl.³ A24C 5/50
U.S. Cl. 131—94 24 Claims



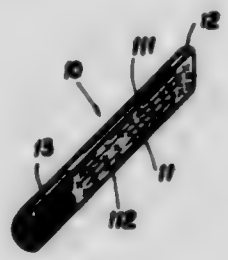
1. An apparatus for shaping a cylindrical object, comprising:
transport means for transporting a cylindrical object along a first predetermined path;
a plurality of heated former means disposed on said transport means, for thermally deforming a portion of the cylindrical object to impart a predetermined desired shape thereto; and
means moving adjacent to and independent of said transport means for maintaining the cylindrical object in operative contact with at least one of said former means for a sufficient length of time to cause said predetermined shape to be imparted to the cylindrical object while said transport means is transporting the cylindrical object along said first predetermined path.

4,492,239

SMOKING BLEND EFFECTIVE TO DISCOURAGE THE BAD HABIT OF SMOKING AND CIGARETTES OR THE LIKE OBTAINED THEREBY

Francesco Cornelio, Via Roma, 13, 33030 - Varmo (Udine), Italy

Filed Feb. 1, 1983, Ser. No. 463,067
Claims priority, application Italy, Oct. 2, 1982, 84107 A/82
Int. Cl.³ A24D 1/00; A24B 15/30
U.S. Cl. 131—270 15 Claims



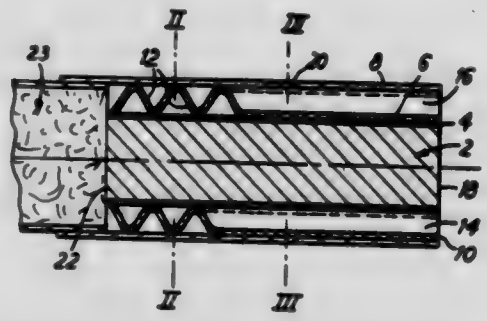
1. A smoking blend capable of discouraging the habit of smoking, which comprises tobacco or a tobacco substitute and an antismoking chemical substance which is solid paraformaldehyde of formula $(HCHO)_n$ wherein n is equal to or greater than 3 or formalin.

4,492,240

SMOKE FILTER

Ernest B. Hayes, 14 Heath Ct., Leighton Buzzard, Bedfordshire, and Anthony S. Cantell, 20 Willow Grove, Old Stratford, Milton Keynes, Buckinghamshire both of England

Filed Jun. 23, 1982, Ser. No. 391,357
Claims priority, application United Kingdom, Jul. 6, 1981, 8120821
Int. Cl.³ A24D 3/04
U.S. Cl. 131—336 16 Claims



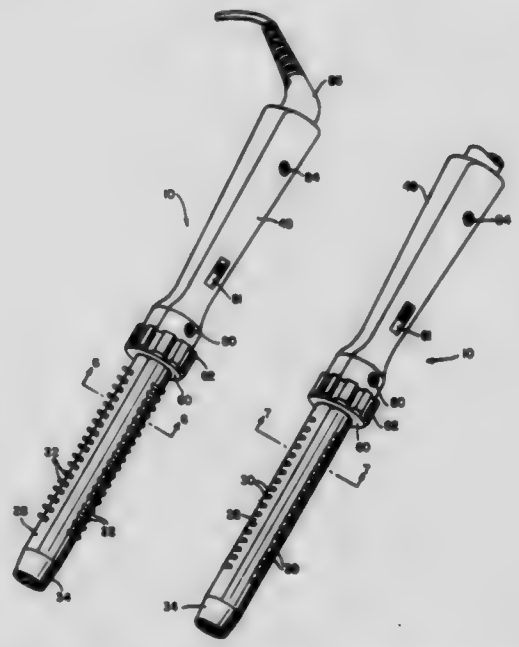
11. A cigarette filter comprising opposite ends, a filtering core, a smoke-impermeable wrapper in surrounding engagement with the core, tipping material in surrounding engagement with the impermeable wrapper, at least one internal passage defined between the impermeable wrapper and core and open at an end of the filter, and at least one external passage defined between the impermeable wrapper and tipping material and open at an end of the filter, the tipping material having at least one perforation for the ingress of external air laterally into said external passage.

4,492,241

RETRACTABLE CURLING BRUSH

Arnold Thaler, Plantation; David Friedson, Miami, both of Fla., and Lai Kin, Kowloon, Hong Kong, assignors to Windmere Corporation, Hialeah, Fla.

Filed Feb. 19, 1982, Ser. No. 350,185
Int. Cl.³ A45D 2/24
U.S. Cl. 132—37 R 19 Claims



1. A retractable hair curling brush comprising: an inner barrel member having a plurality of longitudinally extending

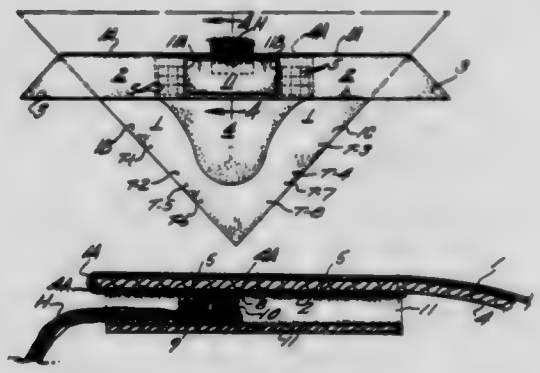
slots and a plurality of recesses extending from each slot transversely along the peripheral surface of said inner barrel member; a handle secured to one end of said inner barrel member; a toothed comb member pivotally mounted in each slot and oriented such that each tooth can be received by one of said recesses; an outer barrel member rotatably mounted around said inner barrel member, said outer barrel member having a plurality of apertures for receiving the teeth of combs; and means for rotating said outer barrel member so that the teeth of said comb members move between an extended position in which each tooth extends outwardly through said apertures of said outer barrel member and a retracted position within the transverse recesses of said inner barrel member with said teeth lying between said inner and outer barrel members, said means for rotating said outer barrel member comprising a ring assembly mounted on said outer barrel member, said ring assembly including; an inner ring mounted on said outer barrel for enabling rotation of said outer barrel with said inner ring; an outer ring mounted concentrically with the inner ring, said outer ring being movable between a locked and unlocked position; biasing means positioned between said inner and outer rings for biasing said outer ring into a locked position; said outer ring being longitudinally movable for unlocking said outer ring and said outer ring being rotatable when unlocked; and means for causing said inner ring to rotate with the outer ring when said outer ring is unlocked with rotation of said inner ring causing rotation of said outer barrel member.

4,492,242

HEAD SCARF FOR WOMEN WITH HAIR LOSS

Betty J. Dalton, 647 N. 16th St., Springfield, Oreg. 97477

Continuation of Ser. No. 397,108, Jul. 12, 1982, abandoned. This application Sep. 9, 1983, Ser. No. 530,744
Int. Cl.³ A41G 5/00; A42B 5/00
U.S. Cl. 132—53 2 Claims



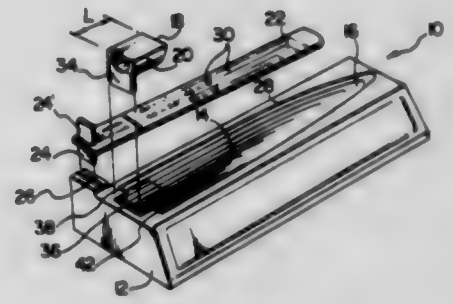
1. A scarf for wear by women undergoing chemotherapy to conceal partial or total baldness, said scarf comprising,
a main outer cloth member for covering the head of the wearer and having a forward edge and rearwardly converging side marginal edges,
a hem formed along the forward edge of said main member, said hem terminating at its ends in ties for tying in a secure manner at the nape of the wearer's neck,
a first fabric closure strip stitched in the underside of said hem,
a second closure strip for removable attachment to said first closure strip,
a hair piece simulating bangs, said hair piece stitched to said second fabric closure strip and projecting forwardly beyond said hem when the scarf is worn to simulate bangs,
an elongate fleeced fabric retention member attached at its ends to said hem at locations oppositely offset from the ends of said first closure strip, said retention member for contact with the wearer's scalp to retain scarf against slipping and further serving to isolate the first closure strip from injurious scalp contact while allowing access to the first closure strip attachment and for hair piece removal purposes,
a fabric filler sheet secured along its forward boundary between said main outer cloth member and said hem and having a rearwardly extending, unattached portion adapted to fully and loosely drape over the wearer's scalp to impart the illusion to a viewer that the scarf outer cloth member is in place over a full head of hair, and
said rearwardly converging side marginal edges of the main outer member each having permanent folds formed therein by stitching each marginal edge at intervals to draw the main outer member of the scarf when worn against the nape of the wearer's neck to fully conceal the scalp.

4,492,243

COIN COUNTING AND WRAPPING DEVICE

Robert W. Lombard, 217 - 1350 Stanley Ave., Victoria, British Columbia, Canada (V8S 2S7)

Filed Sep. 27, 1982, Ser. No. 424,603
Int. Cl.³ G07D 9/06
U.S. Cl. 133—8 A 3 Claims



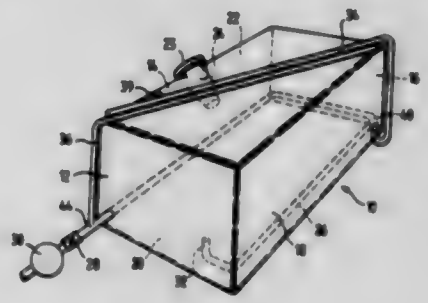
1. A coin-counting and wrapping device, comprising:
(a) a base having a coin-receiving trough, said trough sloping downwardly toward a coin-supporting end surface of said trough; and,
(b) a coin-counting arm removably attached to said base and pojecting along an edge of said trough, slightly above said base, to facilitate passage of a sheet of coin-wrapping material between said arm and said base, said arm bearing a scale for counting coins in said trough.

4,492,344

NON-SPILL LIQUID FUEL TANKS

Bryan P. Chinn, Bracknell; John S. Armour, Farnborough; Peter M. F. Watson, Basingstoke, and Graham L. Downe, Bracknell, all of England, assignors to Secretary of State for Her Majesty's Government of the United Kingdom and Britain, London, England

Filed Mar. 28, 1983, Ser. No. 479,847
Claims priority, application United Kingdom, Mar. 29, 1982, 8209227
Int. Cl.³ B65D 25/00; F16K 17/36, 24/04
U.S. Cl. 137—38 6 Claims



1. A fuel tank comprising, in combination
a top, a bottom and opposite side walls defining a container,
fuel inlet means having a closure,
air vent means comprising a non-return vent arranged to vent said container when in a generally upright attitude,
fuel outlet means comprising a fuel outlet duct extending to circuit said bottom wall of said container,

a first fuel outlet duct vent means, said first fuel outlet duct vent having access to the fuel outlet duct and extending to terminate at a position symmetrically disposed across the bottom wall of the container to the access to the outlet duct, above the highest portion of said top wall, when the container is in an upright attitude, and

a second fuel outlet duct vent means, said second fuel outlet duct vent having access to the fuel outlet duct beneath the termination of the first outlet duct and extending to terminate over the position at which the first outlet duct vent has access to the outlet duct, above the highest portion of said top wall, when the container is in an upright attitude,

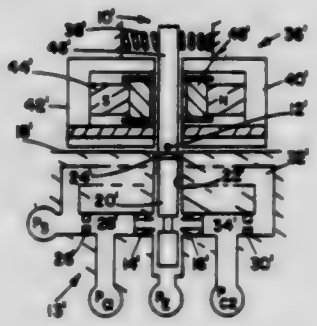
whereby fuel contained in said container is displaced from said fuel outlet duct by air drawn into the fuel outlet duct from the outlet duct vents when said container is tilted from a generally upright attitude, preventing the unwanted escape of fuel from the fuel outlet duct.

4,492,245

NOZZLE AND FLAPPER WITH SQUEEZE FILM DAMPING

John R. Sjoland, St. Paul, Minn., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 18, 1982, Ser. No. 416,738
Int. Cl.³ F15B 5/00; F16F 9/34
U.S. Cl. 137—82 20 Claims



15. A squeeze film damper for a hydraulic contol having a pair of opposed flow nozzles directed toward a pivoted control flapper having flattened areas adjacent said nozzles and positioned relative to said nozzles by an electric force motor wherein the flow of fluid through said nozzles is controlled by the distance between said nozzles and said flapper flattened areas to generate a differential pressure upstream of said nozzles, wherein said flapper being straight and having an axis passing through a pivot mounting said flapper, said flapper having an armature section on one side of said pivot forming the armature of said force motor and a flapper section on the opposite side of said pivot, said flapper section being of generally circular cross section except for said flattened areas immediately adjacent said opposed nozzles and exially speced from said pivot,

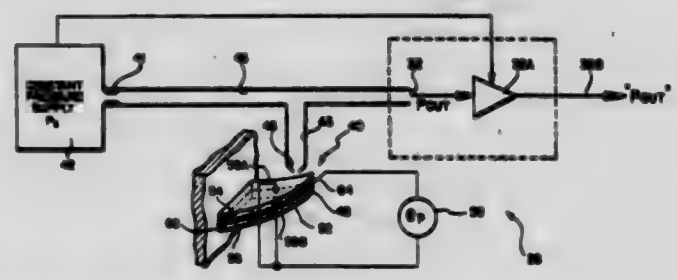
said squeeze film damper comprising an exhaust passageway of circular cross section having an axis coincident with the axis of said flapper and sped from said nozzles and adapted to receive at least a portion of the fluid passing through said nozzles, said nozzles being positioned between said pivot and said exhaust passageway, a portion of said flapper being located within said passageway with sufficient clearance between said flapper and said passageway to permit control movement of said flapper and cooperating with fluid in said passageway to provide fluid damping on said flapper within said passageway, said clearance being of lesser area closer to said pivot and of greater area farther from said pivot, and wherein said portion of said flapper section extends from said flattened areas to a free end of said flapper section opposite said pivot includes fluid passage means to permit passage of the majority of fluid flow from said nozzles through said exhaust passageway.

4,492,246

SOLID STATE CURRENT-TO-PRESSURE AND CURRENT-TO-MOTION TRANSDUCER

Robert C. Prescott, Marshfield, Mass.; Calman Gold, Post Mills, Vt., and Eric V. Anderson, Greenacres, Wash., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Mar. 28, 1983, Ser. No. 479,460
Int. Cl.³ G05D 16/00
U.S. Cl. 137—85 11 Claims



1. Control apparatus, comprising:

a. current sensing means for sensing a current signal and producing a first output signal and for producing a plurality of constant voltages generally independent of the magnitude of said current signal;

b. pressure source means for providing a controlled pneumatic pressure whose magnitude varies in response to a control signal, said pressure source means including:

(1) a supply of gas at a substantially constant pressure,

(2) a conduit having one end in flow communication with said supply and an outlet port at an opposite end,

(3) an exhaust valve in flow communication with said conduit, said valve including a fixed nozzle and an electrically movable flapper element which is adapted to cooperate with said nozzle to throttle the flow of gas through said nozzle in response to said control signal;

c. solid-state pressure sensing means, powered by said current sensing means, for sensing said controlled pneumatic pressure at said outlet port and for providing a second output signal proportional to the magnitude thereof; and

d. amplifier means, responsive to said current sensing means and to said pressure sensing means, for providing a control signal which varies in magnitude with the difference between said first output signal and said second output signal and which is adapted to drive said flapper element to reduce the magnitude of said difference,

whereby a pneumatic pressure is produced at said outlet port which is characteristic of said current signal.

4,492,247

SEQUENCING VALVE

George H. Lockwood, Wilton Manors, Fla., assignor to Anthony Manufacturing Corp., Azusa, Calif.

Filed Feb. 24, 1983, Ser. No. 469,204
Int. Cl.³ F16K 11/00, 31/12
U.S. Cl. 137—119 35 Claims

1. A sequencing valve for coupling a fluid from a supply line in sequence to a plurality of outlet conduits, comprising:

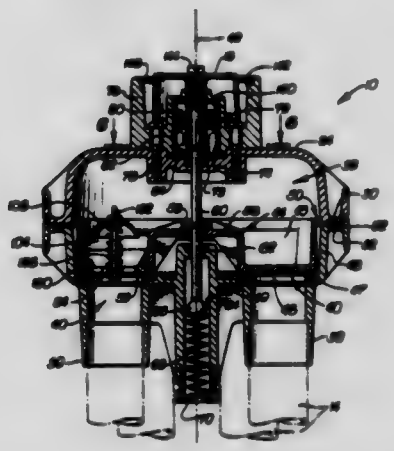
a valve housing having an inlet port for connection to the supply line and a plurality of outlet ports for respective connection to the outlet conduits;

a valve disk within said housing generally between said inlet port and said outlet ports and having a flow opening formed therein;

means for suppporting said valve disk for movement toward a position seated over said outlet ports with said flow opening aligned with one of said outlet ports when the pressure of fluid supplied through said inlet port reaches a predetermined threshold and for movement away from said seated position when the pressure is less than the predetermined threshold, said support means including means for aligning said flow opening in sequence with said

outlet ports upon successive pressure increases to the predetermined threshold; and

a control valve for closing said flow opening unless said valve disk is in said seated position;



said valve disk further having a relatively small bleed port formed therein in a position for alignment with one of said outlet ports other than the outlet port in alignment with said flow opening.

4,492,248

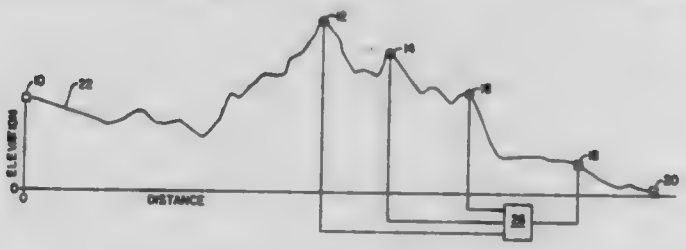
APPARATUS AND METHOD FOR SLACK FLOW ELIMINATION IN A SLURRY PIPELINE

Thomas C. Ando, Orinda, Calif., assignor to Bechtel International Corporation, San Francisco, Calif.

Division of Ser. No. 899,429, Apr. 24, 1978, Pat. No. 4,230,137. This application Apr. 24, 1980, Ser. No. 143,221

Int. Cl.³ F17D *1/08*

U.S. Cl. 137—236 R 11 Claims



1. In a pipeline traversing terrain of varying elevations wherein consecutive batches of liquid materials having different specific gravities flow at a substantially constant rate over the length of the pipeline, apparatus for reducing slack flow within said pipeline when an interface between batches passes a relative high point of the pipeline, said apparatus comprising: means coupled with an interior of the pipeline and located proximate to at least one relative high point of said pipeline for sensing when conditions in the pipeline interior downstream of the high point are such that slack flow may occur; and means operatively coupled with and responsive to said sensing means for selectively increasing the pressure in the liquid flow downstream of the high point when a slack flow condition occurs.

4,492,249

MOUNTED CHECK VALVE ASSEMBLY

Masao Arisa, Higashimatsuyama, and Tarao Koyama, Okazaki, both of Japan, assignors to Jidosha Kiki Co., Ltd., Japan

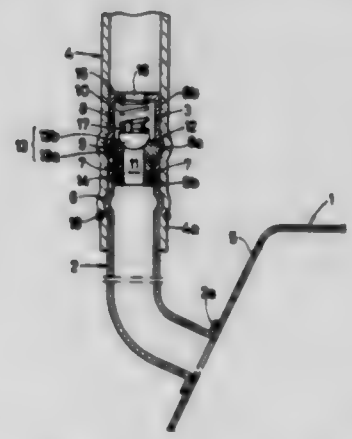
Filed May 18, 1982, Ser. No. 379,318

Claims priority, application Japan, Jun. 3, 1981, 56-81874[U]

Int. Cl.³ F16K *15/00*

U.S. Cl. 137—515 4 Claims

1. In a combination with a brake booster having a shell with an opening therein, a mounted check valve assembly comprising, a check valve having a cylindrical body defining an interior passage with a valve seat, a closure member movable in said passage against said seat to close said check valve, biasing means in said passage engaged with said closure member for biasing said closure member against said seat, said cylindrical body having an outer surface with an annular bulge defined around said cylindrical body intermediate a length of said cylindrical body, a pipe securely connected to said shell and around said opening, said pipe having an end portion spaced from said shell, said end portion having an interior with an internal projection extending in said interior, said cylindrical body of said check valve on one side of said annular bulge being threaded and being threadably engaged in said end portion of said pipe and with said internal projection, and a hose



having an end portion extending over a full length of said cylindrical body and onto said end portion of said pipe, said pipe having another annular bulge formed in the end portion to be covered by said end portion of said hose, said annular bulge being circular, said cylindrical body of said check valve comprising a first part carrying said thread and one half of said circular annular bulge in a second part having a cylindrical outer surface and carrying a second half of said circular bulge, said first part defining said valve seat and said second part defining a portion of said passage containing said closure member and said biasing means.

4,492,250

FUEL TANK FOR MOTOR VEHICLES

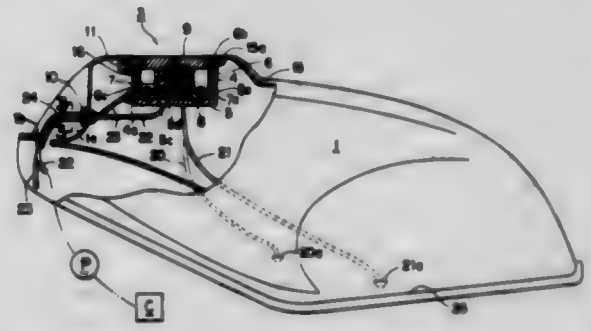
Yoshitaka Okmori, and Hideaki Nobu, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1983, Ser. No. 486,914

Claims priority, application Japan, Apr. 21, 1982, 57-65399; Apr. 21, 1982, 57-56788[U]; Apr. 22, 1982, 57-66214

Int. Cl.³ F17D *1/02*

U.S. Cl. 137—590 14 Claims



1. A fuel tank for motor vehicle of the type in which the rider rides the motor vehicle astride, comprising:

a bottom wall;

a tank body wall which, together with said bottom wall, defines a fuel storing space;

a fuel feed port formed in said tank body wall;

a concave portion formed in said tank body wall;

a fuel cock embedded in said concave portion;

a fuel suction pipe extending from said fuel cock into said fuel storage space; and

a fuel pipe extending from said fuel cock to the engine side of the motor vehicle,

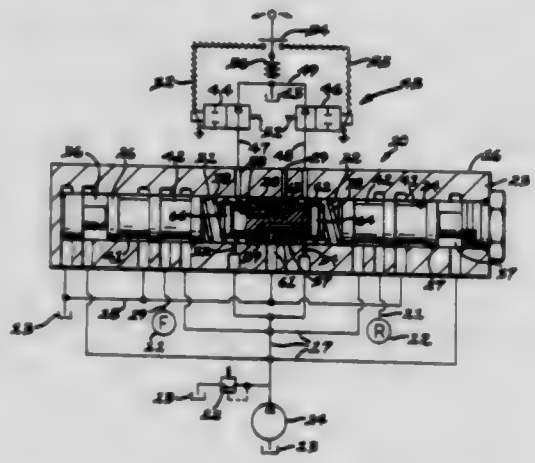
in which said fuel suction pipe and said fuel pipe can be brought into communication and out of communication with each other in the interior of said fuel cock.

4,492,251

FLUID CONTROL SYSTEM FOR TWO INDEPENDENT ACTUATORS

William W. Blake, Kewanee, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 24, 1981, Ser. No. 334,418
Int. Cl.³ F16K *11/04*
U.S. Cl. 137—596.16 6 Claims



1. A fluid control system (10) for selectively controlling actuation of a pair of actuators (11,12) comprising:

a reservoir (13);

a pump connected to the reservoir (13);

a control valve (16) connected to the pump (14) and having a pair of separate directional spools (26,27) slidably positioned therein, and a pair of actuating chambers (31,32) each chamber being disposed at one end of one of the directional spools, respectively (26,27), each of said directional spools being independently movable between a first position at which the pump (14) is in communication with one of the actuators (11,12) and a second position at which said one of the actuators is in communication with the reservoir (13), each of said directional spools being moved to said first position independent of the other directional spool in response to the associated actuating chamber (31,32) being pressurized;

means (43) for selectively pressurizing the actuating chambers (31,32); and

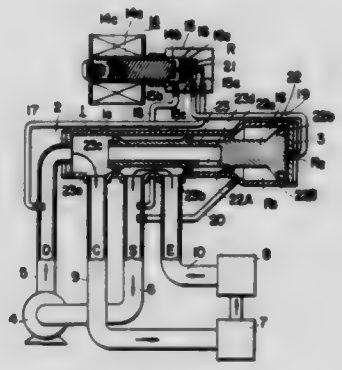
means (57) for venting one of the actuating chambers (31,32) to the reservoir (13) in response to the other chamber (31,32) being pressurized so that simultaneous movement of the separate directional spools is prevented and only the directional spool associated with said other actuating chamber is moved to said first position, said means for venting (57) including a shuttle spool (59) having first and second passageways (62,63) defined therein, said shuttle spool being movable between a first position at which one of the first and second fluid passageways in the shuttle spool communicates one of the actuating chambers (31,32) with the reservoir (13) and a second position at which the other of said first and second passageways in the shuttle spool communicates said other of the actuating chambers (31,32) with the reservoir, said shuttle spool (59) being moved to the first position in response to said other of the actuating chambers (31,32) being pressurized and to said second position in response to said one of the actuating chambers being pressurized.

4,492,252

REVERSIBLE VALVE FOR REVERSIBLE REFRIGERATION CYCLE

Yoshikazu Kanai, Sayama, Japan, assignor to Kabushiki Kaisha Saginomiya Seisakusho, Tokyo, Japan

Filed Mar. 3, 1982, Ser. No. 354,492
Claims priority, application Japan, Mar. 18, 1981, 56-36788[U]
Int. Cl.³ F25B *13/00*; E03B *3/00*
U.S. Cl. 137—625.43 7 Claims



1. A reversible valve for a reversible refrigeration cycle which comprises

a valve body having a small diameter section and a large diameter section;

a delivery tube in communication with a compressor and opening into said small diameter section;

a suction tube in communication with said compressor and opening into said small diameter section;

a pair of tubes in communication with two heat exchangers, respectively, and opening into said small diameter section one on each side of the suction tube;

a one-piece valve means for communicating said suction tube selectively with either one of said pair of tubes; and

a pilot valve to operate said valve means, said one-piece valve means including a hollow cylindrical body longitudinally extending within the valve body and having a small diameter pressure receiving portion and a large diameter pressure receiving portion in snug sliding engagement with the large diameter section, and a pair of inclined walls projecting from around the hollow cylindrical body to seal against the wall of the valve body small diameter section in snug sliding engagement with the small diameter section to define a closed annular chamber around said hollow cylindrical body in cooperation with said small diameter section such that said closed annular chamber communicates the suction tube selectively with either one of said pair of tubes when said cylindrical body is operated.

4,492,253

TIDE GATE VALVE

Spiros G. Raftis, Pittsburgh, Pa., assignor to Red Valve Company, Inc., Carnegie, Pa.

Continuation-in-part of Ser. No. 220,962, Dec. 29, 1980, abandoned. This application Jun. 1, 1982, Ser. No. 384,102
Int. Cl.³ F16K *15/14*
U.S. Cl. 137—849 4 Claims

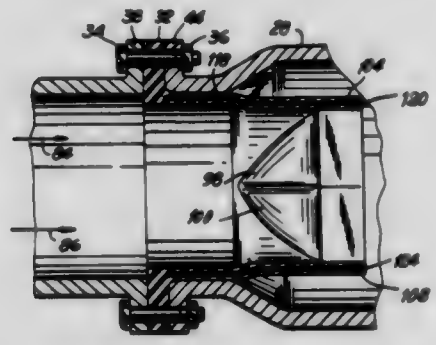
1. An inversion-resistant tide gate valve for large-sized sewage conduits, particularly storm sewer pipes having diameters on the order of 36", 72" and greater, comprising:

(a) a valve body having a flow-through passage for sewage fluids;

(b) a flexible, resilient sleeve elongated along an axis of symmetry and mountable in the valve body in co-axial relationship with the passage, said sleeve having an upstream fluid inlet end region in constant fluid communication with the passage, a downstream fluid outlet end region, and a tapered intermediate region between the inlet and outlet regions,

(i) said tapered region having a plurality of pairs of converging sides circumferentially arranged about the symmetry axis, each pair of converging sides having two side walls which meet at and extend along an inclined crease line that converges at an angle of about 38° relative to the symmetry axis at a a point thereon,

(ii) said downsteam end region having a pair of opposed lips at each junction between the pairs of converging sides, each pair of lips extending in the axial direction from said point of convergence to a downstream end face on the downstream end region, each pair of lips having lateral outer edges which extend along the symmetry axis, all of the lateral outer edges being continuously joined and bounding a fluid-impervious extension of the tapered



region, each pair of lips also having lateral inner edges which are unconnected and discrete and are movable away from each other in response to a pressure head exerted along the downstream direction; and

(c) means for resisting inversion of the sleeve in response to a back-pressure force exerted along the upstream direction, said inversion-resisting means including a plurality of axially-extending reinforcing elements embedded in the sleeve at each pair of opposed lips between the inner and outer edges thereof, the number of reinforcing elements corresponding to the number of pairs of lips, each reinforcing element extending along the respective pair of lips along the upstream, tapered and downstream regions to the downstream end face of the latter.

4,492,254

APPARATUS FOR GUIDING A FLUID MEDIUM DRIVEN WEFT THREAD IN THE SHED OF A WEAVING MACHINE AND USE OF THE APPARATUS AT A MULTIPLE LONGITUDINAL TRAVERSING SHED WEAVING MACHINE

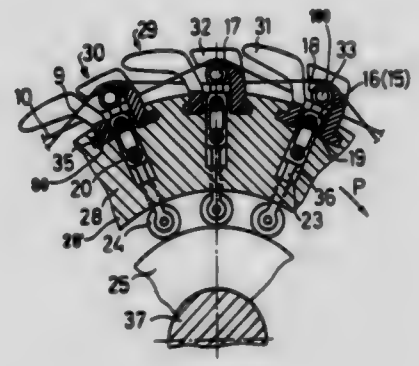
Alois Steiner, Rieden, Switzerland, assignor to Sulzer-Rüti Machinery Works Limited, Rüti, Switzerland

Division of Ser. No. 241,934, Mar. 9, 1981, Pat. No. 4,438,790. This application Jan. 30, 1984, Ser. No. 575,466

Claims priority, application Switzerland, Mar. 27, 1980, 2440/80

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—11 8 Claims



1. An apparatus for guiding a fluid-driven weft thread within an open shed of a plurality of open sheds defined in a multiple longitudinal traversing shed weaving machine, comprising:

a weaving rotor provided at its circumference with comb means of shed retaining elements for the warp threads defining the open shed;

two lamellae combs which are provided at said weaving rotor and capable of dipping into and out of the open shed defined by the warp threads;

said two lamellae combs being operatively associated with said comb means of shed retaining elements;

each of said two lamellae combs comprising a predetermined number of elastically structured lamella elements;

each of said lamella having a throughpass opening for guiding an inserted weft thread and a thread outlet opening;

said lamella elements of said two lamellae combs, when assuming an operative position where they are immersed into the open shed being interleaved with one another and forming by means of their throughpass openings a guide channel for the weft thread inserted in a predetermined weft insertion direction;

said guide channel being essentially continuous in the weft insertion direction;

said thread outlet openings of said lamellae elements, when in their operative position, being sealed and said guide channel also being continuously closed in radial direction; and

stop means operatively associated with said elastically structured lamella elements in order to close said thread outlet openings during interleaving of said lamella elements of said two lamellae combs.

4,492,255

APPARATUS FOR GUIDING A FLUID MEDIUM DRIVEN WEFT THREAD IN THE SHED OF A WEAVING MACHINE AND USE OF THE APPARATUS AT A MULTIPLE LONGITUDINAL TRAVERSING SHED WEAVING MACHINE

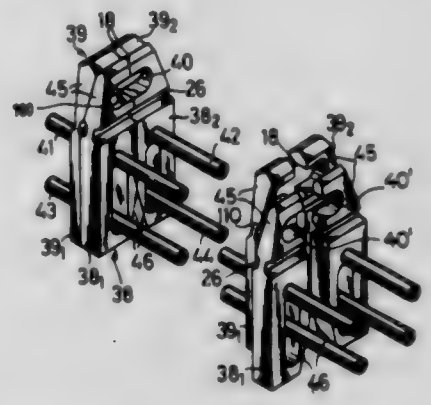
Alois Steiner, Rieden, Switzerland, assignor to Sulzer-Rüti Machinery Works Limited, Rüti, Switzerland

Division of Ser. No. 241,934, Mar. 9, 1981, Pat. No. 4,438,790. This application Jan. 30, 1984, Ser. No. 575,467

Claims priority, application Switzerland, Mar. 27, 1980, 2440/80

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—11 14 Claims



1. An apparatus for guiding a weft thread within the shed of a weaving machine and which is driven by a flowing fluid medium, comprising:

two lamellae combs which are capable of dipping into and out of the shed and between warp threads thereof;

each of said two lamellae combs comprising a predetermined number of lamella elements;

said lamella elements of said two lamellae combs being alternatingly arranged across the width of the weaving machine;

each said lamella element having a throughpass opening for guiding an inserted weft thread and a thread outlet opening;

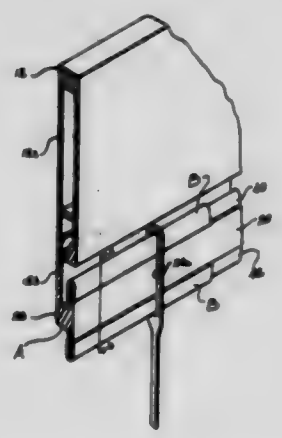
each said lamella element being divided along a predetermined dividing plane into two lamella segments;
each said lamella segment being provided with a cut-out extending from said dividing plane;
means for moving said two lamellae combs between an operative position, in which the lamella elements are dipped into the shed, and an inoperative position, in which the lamella elements are dipped out of the shed;
said lamella elements, in the operative position of the two lamella combs, contacting each other and said lamella segments of each said lamella element contacting each other at the related dividing plane such that said thread outlet opening of each lamella element is closed and said cut-outs of the two lamella segments of each lamella element complement each other and define the throughpass opening, and forming, by means of their throughpass openings, a guide channel for weft insertion in a predetermined weft insertion direction;
said guide channel being essentially continuous in said weft insertion direction and being continuously closed in radial direction; and
said lamella segments of said lamella elements, in the inoperative position of said two lamellae combs, being spread apart at said dividing plane such that said thread outlet openings are open.

4,492,256

EXTRUDED HEDDLE ROD AND CAP

Charles F. Kramer, Greenville, S.C., assignor to Steel Heddle Manufacturing Company, Greenville, S.C.

Filed Jun. 30, 1982, Ser. No. 393,635
Int. Cl.³ D03D 9/00
U.S. Cl. 139—92 9 Claims



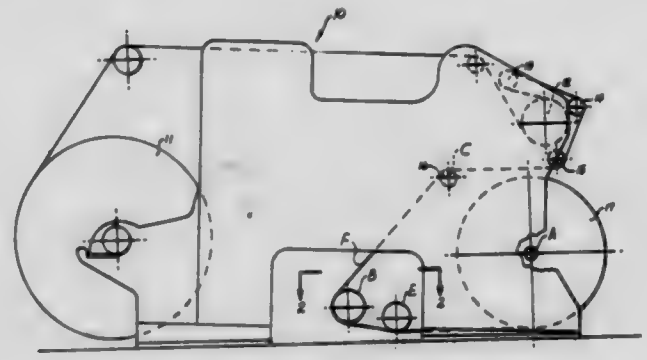
1. In a heddle frame having top and bottom frame slats, a heddle rod carried by each said frame slat, and heddles supported on said heddle rods in said heddle frame having end slots received over said heddle rods, a frame slat and heddle rod construction comprising:
connecting means connecting said heddle rod to said frame slat;
a web portion carried transverse to said connecting means extending past said connecting means in opposing directions;
a web portion having a rear planar surface and a forward planar surface opposite said rear planar surface defining a predetermined thickness therebetween;
said web portion extending transversely past said connector means terminating in remote free ends having outer free edges;
cap means having spaced legs carried on said free ends of said web portion covering said outer free edges and wrapping around said outer free edges to form rear and forward wear surfaces having a generally parallel relationship with said rear and forward planar surfaces of said web portion of said heddle rod; and
said legs of said cap means and said free ends of said heddle rod having a total thickness greater than said web portion so that said rear and forward wear surfaces project beyond said rear and forward planar surfaces of said web portion so that opposing interior surfaces of said heddle eye slot contact said wear surfaces and are held thereby generally out of contact from said rear and forward planar surfaces of said web portion of said heddle rod.

4,492,257

ON LOOM CLOTH TAKEUP WITH OSCILLATING GUIDE ROLL

William J. Alexander, III, 41 W. Golden Strip Dr., Mauldin, S.C. 29662

Filed Dec. 30, 1982, Ser. No. 454,703
The portion of the term of this patent subsequent to Jan. 28, 2000, has been disclaimed.
Int. Cl.³ D03D 49/20
U.S. Cl. 139—304 5 Claims



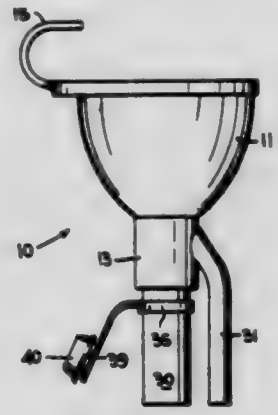
1. In a loom having a driven cloth takeup roll carried on the loom, an oscillating guide over which cloth passes on the way to said takeup roll comprising:
guide means directing cloth manufactured on the loom rearwardly above the cloth roll;
a guide roll receiving said cloth from said guide means;
means mounting said guide roll for oscillatory movement longitudinally thereof;
drive means imparting oscillatory movement to said guide roll; and
means carrying said cloth roll for center winding of the cloth delivered from said guide roll;
whereby the edges of the cloth are moved from side to side during the build of the cloth roll sufficiently to avoid alignment of the edges.

4,492,258

STERILE URINE SPECIMEN COLLECTION

Joseph Lichtenstein, Colonia, and Vincent Vaillancourt, Livingston, both of N.J., assignors to Whitman Medical Corporation, Clark, N.J.

Filed Feb. 18, 1983, Ser. No. 467,994
Int. Cl.³ B65B 3/04
U.S. Cl. 141—1 37 Claims



36. A method for collecting a midstream specimen of void urine comprising the steps of:

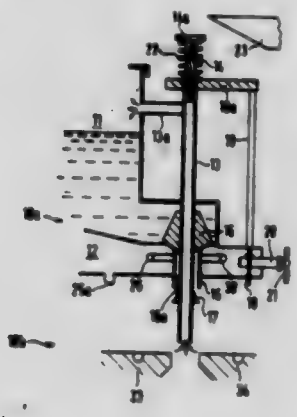
collecting a forestream portion of void urine in a chamber disposed partially in a midstream collection container;
retaining the collected forestream portion in said chamber while overflowing a subsequent midstream portion of the void urine into said container; and
draining urine which overflows said container.

4,492,259

APPARATUS FOR FILLING BOTTLES

Peter Sick, Ahlenbachweg 21a, D-7804 Glottertal, Fed. Rep. of Germany, and Joseph Menini, Selencourt, France, assignors to Peter Sick, Glottertal, Fed. Rep. of Germany

Filed May 2, 1983, Ser. No. 490,371
Claims priority, application Fed. Rep. of Germany, May 7, 1982, 3217271
Int. Cl.³ B65B 1/30
U.S. Cl. 141—198 10 Claims



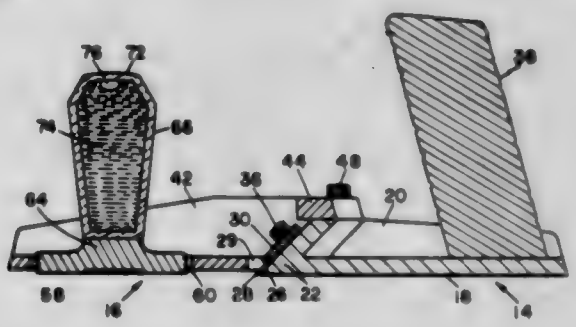
1. Apparatus for filling bottles with liquid to a predetermined height comprising:
a work station including an upper section and a lower section, said upper section including a generally upstanding suction pipe, a liquid tank adapted for connection to a vacuum source and having an upper space in communication with said pipe, and a control assembly,
said lower section including a centering chuck having bottle top receiving and centering structure defining a central opening,
said lower section being relatively upwardly and downwardly movable toward and away from said upper section between an initial bottle loading and unloading position and a bottle filling position proximal said upper section in response to the movement of a bottle to be filled toward and away from said filling position with its mouth in said structure and in alignment with said opening, said suction pipe on the upper section being disposed in longitudinal alignment with said opening in the structure,
said control assembly including a pipe segment disposed in surrounding relationship to said suction pipe to present an annular duct space therebetween, and atmospheric air and inert gas ducts in fluid communication with said duct space, said duct space also being in communication with said liquid tank and disposed in alignment with said opening for communicating with the opening and the bottle mouth when the lower section is in its bottle filling position,
said pipe segment presenting an annular valve seat at the upper end of said duct space, said suction pipe being longitudinally shiftable relative to said upper section and having an annular valve body mounted thereon in alignment with said valve seat, whereby longitudinal shifting of said suction pipe opens and closes said valve to correspondingly cause and interrupt the communication between the space and the liquid tank.

4,492,360

WOODWORKING PLANE

Carl Whiteford, 3 High Point Rd., Westport, Conn. 06880

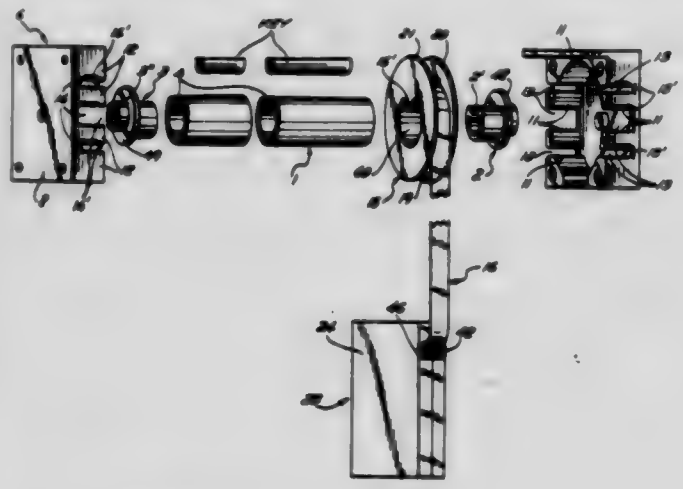
Filed Apr. 14, 1983, Ser. No. 484,906
Int. Cl.³ B27G 17/02
U.S. Cl. 145—5 R 2 Claims



1. A plane for straightening and smoothing surfaces of wood and the like comprising:
A. an elongate body member having forward and rearward sections,
B. handle means affixed to said body member adjacent said forward and rearward sections for moving said body member along a piece of material being cut,
C. a cutting blade mounted in said rearward section of said body member,
D. a sole plate as part of said body member, said sole plate defining a planar bearing surface on which said body member slides across the material being planed, said sole plate having
(1) a rearward section which extends from said cutting blade toward said rearward end of said body member and which has a fixed position relative to said body member, and
(2) a forward section which extends from said cutting blade toward said forward end of said body member, said forward section of said sole plate comprising a peripheral frame section which is fixed relative to said rearward section of said sole plate and which defines an opening therein and a central disc member carried by said peripheral frame section within said opening,
E. means mounting a portion of said forward section of said sole plate for limited movement relative to said rearward section of said sole plate in a direction perpendicular to the plane of said bearing surface, said means comprising connection means operatively associated with said peripheral frame section and said central disc member for moving said central disc member relative to said peripheral frame section and for holding said central disc member in a pre-selected position relative to said peripheral frame section, said connecting means comprising
(1) female screw threads formed on the interior annular surface of said opening and complimentary male threads formed on the exterior circumferential surface of said central disc member, and
(2) means operatively associated with said peripheral frame section and said central disc member for restraining relative rotary movement between said peripheral frame section and said central disc member, said means comprising a plurality of arcuately elongate resilient fingers formed in said peripheral frame section adjacent said opening, said female threads being formed only on said resilient fingers, the diametral distance between opposed resilient fingers in the unstressed position thereof being slightly less than the diameter of said central disc member, whereby upon engagement of said central disc member with said peripheral frame section said resilient fingers flex slightly and engage said central disc member with high frictional resistence to relative movement, and
F. means for adjustably moving said portion of said forward section of said sole plate in order to adjust the depth of the

cut made by said plane during movement thereof across the material being planed.

4,492,261
SHADING SYSTEM
Ian Cheng, New York, N.Y., assignor to General Drapery Services, Inc., New York, N.Y.
Continuation of Ser. No. 305,869, Sep. 28, 1981, abandoned. This application Jul. 19, 1983, Ser. No. 515,322
Int. Cl.³ E06B 9/20
U.S. Cl. 160—319 5 Claims



1. A shading system comprising:
(a) a shade;
(b) a strap or cord for winding and unwinding said shade;
(c) a hub, said strap or cord being wound about said hub at an end opposite said shade;
(d) a coil spring, said coil spring being wound about said hub coaxially with said strap or cord, the outer end of said coil spring being stationary, the inner end of said coil spring being affixed to said hub, so that said coil spring winds or unwinds from its center as said hub turns;
(e) a roller or tube, said roller or tube supporting said shade as it hangs, with said strap or cord being wound around said roller or tube at its end opposite said hub;
(f) a hollow pulley, said roller or tube being inserted through said pulley, said strap or cord being wound around said pulley at the end opposite said hub;
(g) a pivotal grip for engaging said strap or cord between said pulley and said hub, to secure said strap or cord against movement, thereby maintaining said shade at a certain height;
(h) a pair of supports for said roller or tube, each of said supports being at one of the ends of said roller or tube and supporting said roller or tube, each of said end supports being provided with a series of slots through which said shade wound around said roller or tube passes, to allow said shade to hang in a direction other than directly down from said roller or tube; and
(i) a key, said roller or tube being provided with a keyway at an end of said shade for receiving said key, as said shade is wound around said roller or tube.

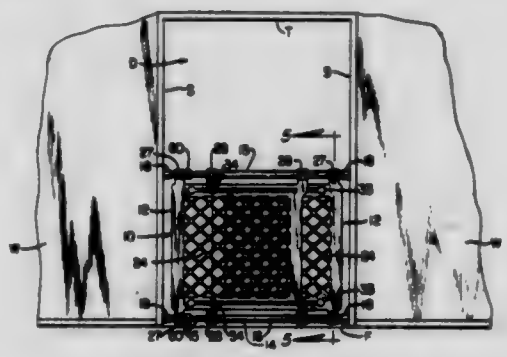
4,492,263
ADJUSTABLE TRAVERSE ROD AND MOTOR DRIVE COMBINATION
Paul E. Comeau, Warwick, R.I., assignor to Kenney Manufacturing Company, Warwick, R.I.
Filed May 7, 1982, Ser. No. 376,203
Int. Cl.³ A47H 1/00
U.S. Cl. 160—126 3 Claims

1. A drapery traverse rod and motor drive combination comprising:
(a) a pair of telescoping semi-tubular members forming a curtain rod,
(b) a pair of wall brackets,
(c) means at the outer ends of said rod for mounting said rod on said brackets,
(d) a drive motor,
(e) means for mounting said drive motor on one of said brackets,
(f) a pair of master carriers mounted in said rod for sliding motion, longitudinally of said rod,
(g) a flexible drive tape,
(h) pulley means within one outer end of said rod for receiving and guiding said tape,
(i) a length of said drive tape with both ends releasably secured to one of said master carriers to form an endless



loop within said rod passing from end to end of said rod around said pulleys, said drive tape releasably secured to the other of said master carriers at an intermediate point between the ends of said length of tape,
(j) positive drive means on said drive tape,
(k) a drive sprocket within said loop of tape engaging said positive drive means on said tape in positive driving relation, and means mounted on one outer end of said rod for retaining said drive sprocket relative thereto but free to slide within narrow limits in a plane normal to the rotational axis of said sprocket, and
(l) a drive shaft on said motor for engaging, and supporting said drive sprocket in driving relation to said tape.

4,492,263
INFANT SECURITY DOOR GATE ASSEMBLY
Albert W. Gebhard, Denver, Colo., assignor to Gerico, Inc., Denver, Colo.
Continuation of Ser. No. 283,044, Jul. 13, 1981, abandoned. This application Aug. 30, 1983, Ser. No. 527,777
Int. Cl.³ E06B 3/12
U.S. Cl. 160—228 6 Claims



1. A releasable closure adaptable for disposition between spaced, confronting sides of an area way comprising:
a pair of panels arranged in parallel, substantially overlapping relation to one another, and
supporting means for said panels including upper and lower common support bars traversing the upper and lower edges of said panels and to which said panels are secured, sleeve members disposed at upper and lower corners of said pair of panels for insertion of said support bars therethrough, at least one of said sleeve members on one panel being positively connected to one of said support bars, said support bar being fixed against rotation within said one sleeve, and said sleeve members on the other of said panels being slidable with respect to said support bars, said support bars being journaled for rotation therein, each of

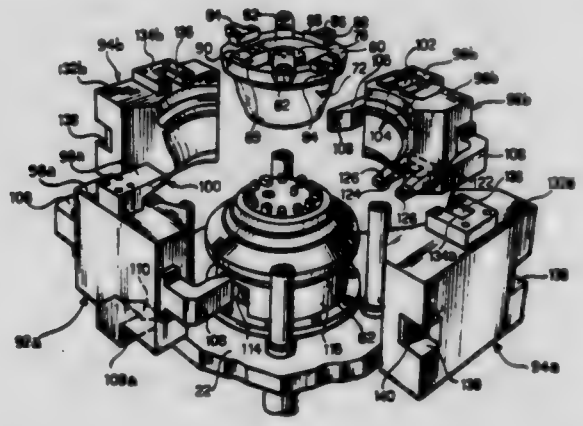
said support bars including telescoping tubular sections having side-engaging means at opposite ends thereof, and threaded adjustment means between each of said telescoping tubular sections for rotating one of said tubular sections to vary the effective length of said support bars, said threaded adjustment means having spring-loading means associated therewith to yieldingly urge said telescoping sections of each support bar in an outward direction forcing said side-engaging ends into engagement with the sides of said area way, and panel expansion means associated with said one of said tubular sections comprising locking collar means engageable with said one of said sleeve members on said other of said panels to cause said panel to resist sliding movement in an inward direction and to follow the movement of said one tubular section in said outward direction.

4,492,264

CENTRIFUGAL CASTING DEVICE

Roberto Gaddi, Torino, Italy, assignor to Fataluminium S.p.A., Torino, Italy

Filed Jun. 23, 1982, Ser. No. 391,423
Claims priority, application Italy, Jul. 6, 1981, 67939 A/81
Int. Cl.³ B22D *13/04, 13/10*
U.S. Cl. 164—292 17 Claims



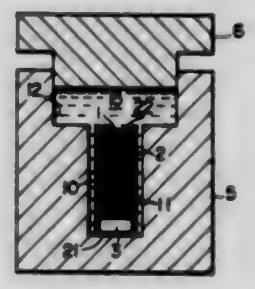
1. In a device for the centrifugal chill-casting of light alloy parts substantially in the form of a body of revolution, such as motor vehicle wheels, of the type in which a chill mold comprising several elements which fit together to define a casting cavity of a shape corresponding to that of the part, and are separable for removal of the part, is mounted on a support which can be rotated about the vertical axis of the casting cavity, and has an upper coaxial pouring opening for pouring molten metal into the mold, the improvement wherein the chill mold comprises a lower element for defining the lower part of the cavity, an upper element for defining the upper part of the cavity and including the pouring opening, and four peripheral elements located in two opposing pairs, which together are able to define the cavity peripherally, the lower element occupying a casting position on the support coaxial therewith, the upper element being movable between a casting position in which it overlies the lower element coaxially and a shakeout position in which it does not interfere with the upward removal of the part from the mold, and the peripheral elements being individually displaceable radially on the support to enable them to be moved from a casting position, in which they together surround the upper and lower elements, to a shakeout position in which they are further removed from the axis of rotation, and wherein the elements of the chill mold are provided with locking means which are mutually engageable due to the movement of a first pair of the opposed pheripheral elements towards their respective casting positions when the lower and upper elements and the opposed peripheral elements of the other pair are subetantially in their respective casting positions and means being provided for locking the peripheral elements of the first pair in their respective casting positions.

4,492,265

METHOD FOR PRODUCTION OF COMPOSITE MATERIAL USING PREHEATING OF REINFORCING MATERIAL

Tadashi Donomoto, and Atsuo Tanaka, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 29, 1981, Ser. No. 288,004
Claims priority, application Japan, Aug. 4, 1980, 55-107040; Mar. 6, 1981, 56-32289; Mar. 26, 1981, 56-44847; Mar. 26, 1981, 56-44848; Mar. 26, 1981, 56-44849
Int. Cl.³ B22D *19/14, 18/02*
U.S. Cl. 164—493 3 Claims



1. A method of producing a composite material from reinforcing material and molten matrix metal, said reinforcing material being an assembly of parallely arranged linear fibers, comprising the steps, performed in the specific order, of:

(a) charging linear fibers of substantially the same length as parallelly arranged in a tubular case closed at one axial end thereof to form a bundle of said linear fibers while leaving a substantial empty space in said tubular case adjacent the closed axial end thereof;

(b) heating said bundle of said linear fibers to a temperature substantially above the melting point of said matrix metal;

(c) placing said tubular case with said heated bundle of said linear fibers charged therein in a cavity of a pressurizing type casting mold having a pressure plunger in such a manner that only one of opposite axial ends of said bundle of said linear fibers is directly exposed to the space of said cavity while the other of the opposite axial ends and an annular outer side surface of said bundle of said linear fibers is substantially isolated from the space of said cavity;

(d) pouring said matrix metal in molten condition into said cavity so as to submerge said tubular case with said heated bundle of said linear fibers charged therein totally in a molten bath of said matrix metal received in said cavity with said one axial end of said bundle of said linear fibers directly open to said cavity space being directly exposed to the body of said molten bath of said matrix metal while said other axial end and said annular outer side surface of said bundle of said linear fibers are substantially isolated from direct exposure to the body of said molten bath of said matrix metal;

(e) applying a substantial pressure to said molten bath of said matrix metal by driving said pressure plunger so as to infiltrate said molten matrix metal into spaces left among and around said linear fibers in said tubular case in the axial direction of said bundle of said linear fibers; and

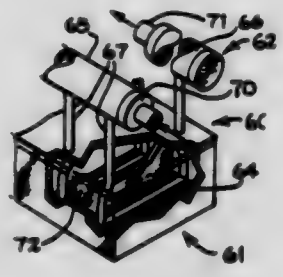
(f) cooling said molten bath of said matrix metal with said bundle of said linear fibers submerged therein and infiltrated with said molten matrix metal down to a temperature below the melting point of said matrix metal while maintaining said pressure.

4,492,266

MANIFOLDED EVAPORATOR FOR PUMP-ASSISTED HEAT PIPE

Gary D. Bissell, Los Altos, and William F. Ehara, Sunnyvale, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Division of Ser. No. 313,737, Oct. 23, 1981, Pat. No. 4,470,450. This application Dec. 22, 1983, Ser. No. 564,410
Int. Cl.³ F28D 15/00
U.S. Cl. 165—104.26 16 Claims



1. A heat absorption component for a closed-loop heat transfer system, said heat absorption component comprising:

(a) a hollow evaporation chamber, an exterior portion of a first wall of said evaporation chamber being configured to intercept heat flux from a heat source, said evaporation chamber having an outlet means for exit therefrom of working fluid in vapor phase, said evaporation chamber also having a wick structure positioned adjacent an interior portion of said first wall;

(b) a supply plenum outside said evaporation chamber;

(c) a recovery plenum outside said evaporation chamber;

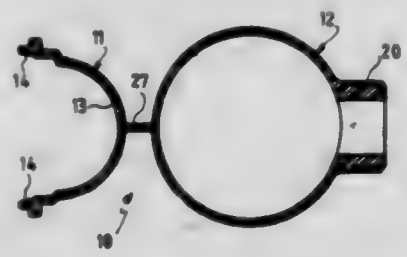
(d) a plurality of delivery conduits extending from said supply plenum to said recovery plenum for transporting working fluid in liquid phase from said supply plenum to said recovery plenum, a portion of each of said delivery conduits passing through said evaporation chamber, a segment of said portion of each delivery conduit inside said evaporation chamber being positioned adjacent said wick structure, said delivery conduit segment adjacent said wick structure having an aperture through which working fluid in liquid phase can flow from said delivery conduit into said wick structure, a constant supply of said working fluid in liquid phase thereby being provided adjacent said first wall to absorb heat from said first wall by evaporation.

4,492,267

WATER BOX AND EXPANSION CHAMBER DEVICE FOR A HEAT EXCHANGER

Patrick Cadars, Montigny, France, assignor to Valeo, Paris, France

Filed Feb. 1, 1982, Ser. No. 344,757
Claims priority, application France, Feb. 12, 1981, 81 02764
Int. Cl.³ F01P 11/02
U.S. Cl. 165—104.32 13 Claims



1. In a heat exchanger comprising a water box and an expansion chamber, a sub-assembly comprising at least part of the wall of the water box and at least part of the wall of the expansion chamber, said at least parts of the walls comprising a plastic material being formed in a single piece and being of a cross-section adapted to resist deformation caused by changes in pressure inside the water box and expansion chamber being of substantially circular or semi-circular cross-section, wherein the parts of the walls comprised by said sub-assembly are external to each other such that the water box and expansion chamber substantially do not contain a wall which is liquid-contacting on both sides.

4,492,268

CONDENSER

Haruo Uehara, Saga, and Hiroyuki Sumitomo, Osaka, both of Japan, assignors to Hisaka Works, Ltd., Osaka, Japan

Continuation of Ser. No. 76,443, Sep. 17, 1979, abandoned. This application Aug. 24, 1981, Ser. No. 295,309
Int. Cl.³ F28F 3/00
U.S. Cl. 165—166 1 Claim



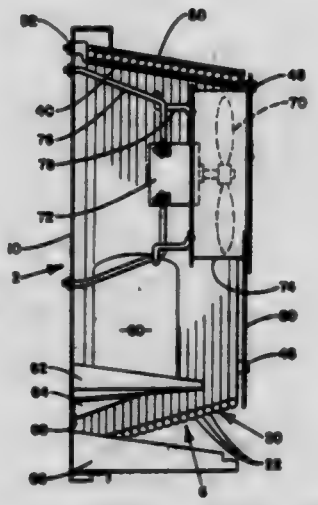
1. A plate-type condenser adapted to handle organic working fluids whose surface tension is not more than 35 dyne/cm as gas mediums to be condensed comprising a plurality of heat transfer plates each of which consists substantially of transversely spaced vertially extending grooves with intervening ridges, said plate elements being put together to define therebetween alternate spaces for a cooling medium and for a medium to be condensed, the ridges of adjacent plate elements extending into the spaces for the medium to be condensed and abutting the adjacent plate element in between opposed ridges of the adjacent plate element, whereby the cross-sectional area of the spaces for the medium to be condensed are smaller than the cross-sectional area of the spaces for the cooling medium, and in which the space vertically extending grooves in the condensing areas have a pitch and depth of 1–2 mm and 0.3 to 0.6 mm respectively.

4,492,269

TUBE SUPPORT ASSEMBLY FOR A HEAT EXCHANGER

William B. Jennings, Collierville, Tenn.; Robert M. Koslowski, Syracuse, and Richmond S. Hayes, Jr., Fayetteville, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 17, 1982, Ser. No. 450,705
Int. Cl.³ F28F 9/00; F28D 1/04, 7/04; F25B 39/04
U.S. Cl. 165—172 5 Claims



1. A heat exchanger assembly which comprises:

a heat exchanger formed from a plurality of loops of wound

fin tubing including a projecting fin material extending from a base tube, said loops being located in a circumferentially extending pattern wherein adjacent loops are displaced relative to each other to provide a tapered configuration; and

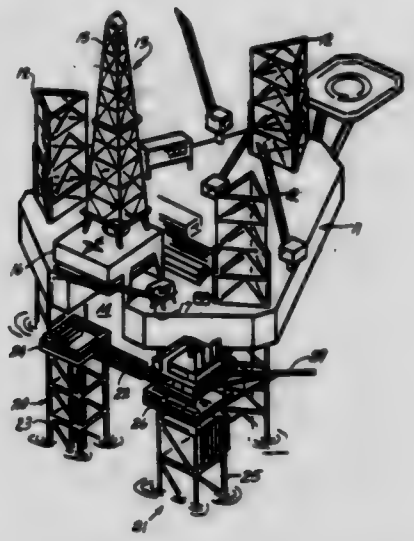
at least one tube support assembly for securing the loops in the tapered configuration including a support member having a partition end portion and an orifice end portion with tube securing portions therebetween which define tube receiving openings for the receipt of the individual loops of tubing, at least one extension portion projecting at a non-perpendicular angle beyond the tube securing portion and defining a rod slot, another extension portion projecting perpendicular to and beyond said tube securing portion, a rod having a body portion extending the length of the support member and being sized to only snap fit and be secured within the rod slot of the extension portion and having a threaded portion located at an angle to said body portion and coacting with said partition end portion and said another extension portion, said rod securing the loops of tubing in the tube receiving openings by engaging the loops between the rod and the support member.

4,492,270

METHOD OF INSTALLING AND USING OFFSHORE WELL DEVELOPMENT AND PRODUCTION PLATFORMS

Edward E. Horton, Rancho Palos Verdes, Calif., assignor to Global Marine, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 146,360, May 2, 1980, abandoned. This application Apr. 6, 1981, Ser. No. 251,112
Int. Cl.³ E02B *17/02*; E21B *43/01*
U.S. Cl. 166—358
9 Claims



1. A method for installing and using an offshore well development platform in water having a depth suitable for use of jack-up drilling platforms, the method comprising the steps of:

(a) providing a jack-up drilling platform having thereon:

(1) a drilling rig having an operative position in a drilling operations area outboard of an elevatable base of the jack-up platform; and

(2) a crane on the elevatable base adjacent the perimeter of the base and proximate the drilling rig operative position;

(b) positioning the jack-up platform at an offshore location with the base thereof elevated above the water surface so that the drilling operations area is located vertically over a submerged location on the sea floor at which at least one subsea oil or gas well is to be drilled;

(c) thereafter moving to the offshore location a prefabricated well protector jacket assembly having a length sufficient to extend from the submerged location to above the water surface thereabove, such length being insufficient to extend to the elevation of the drilling rig when the drilling rig is in its operative position;

(d) thereafter setting the well protector jacket assembly in an erect attitude on the sea floor over the submerged location;

(e) thereafter securing the sea jacket assembly to the sea floor over the submerged location by use at least in part, of the jack-up platform;

(f) moving to the site of the secured jacket assembly a prefabricated development wellhead deck assembly matable with the upper end of the secured jacket assembly;

(g) thereafter mating the wellhead deck assembly securely to the jacket assembly below the operative position of the drilling rig, thus to define independently of the jack-up platform a completed development wellhead platform above the water surface and below the operative position of the drilling rig;

(h) thereafter using the drilling rig in its operative position to drill and complete through the wellhead platform at least one well into the sea floor;

(i) at a desired time after performance of step (b) above, moving to the offshore location adjacent the jack-up platform a prefabricated production platform leg assembly having a length substantially equal to that of the well protector jacket assembly;

(j) thereafter, at a desired time after performance of step (e) above, setting the leg assembly in an erect attitude on the sea floor adjacent the secured jacket assembly;

(k) thereafter, securing the leg assembly to the sea floor by use, at least in part, of the jack-up platform;

(l) thereafter, moving to the site of the secured leg assembly a completed prefabricated production platform deck assembly matable with the upper end of the secured leg assembly; and

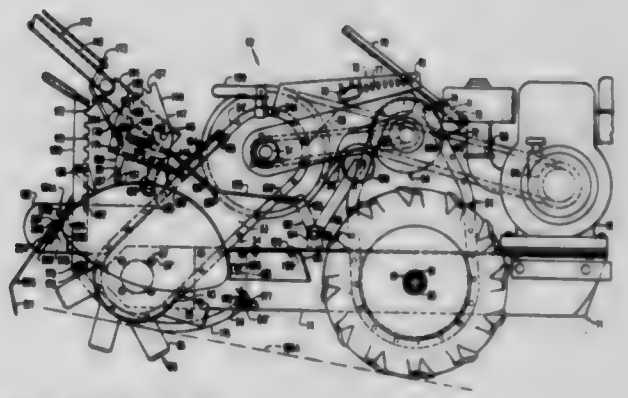
(m) thereafter, mating the production platform deck assembly securely to the production leg platform assembly to define a complete production platform.

4,492,271

TINE TILLER WITH TINES AND WHEELS EACH ROTATABLE IN EITHER DIRECTION

Charles W. Doering, New Albany, Ind., assignor to Brinly-Hardy Co., Inc., Louisville, Ky.

Filed Jul. 12, 1982, Ser. No. 397,479
Int. Cl.³ A01B *33/00*
U.S. Cl. 172—43
6 Claims



4. A tine tiller including:

a frame;

wheel means rotatably supported by said frame;

first rotating means to cause rotation of said wheel means in either direction to advance said frame in either direction;

tine assembly means supported by said frame, said tine assembly means including a plurality of rotatably mounted tines for engaging soil to be tilled;

second rotating means to cause rotation of said tines in either direction irrespective of the direction of rotation of said wheel means;

said tine assembly means including:

a shaft rotatably supported by said frame;

means to connect each of said tines to said shaft for rotation therewith;

each of said tines having a cutting edge on opposite sides

thereof so that one of said cutting edges engages the soil to till the soil when said second rotating means rotates said tines in one direction with each of said tines in a first tilling position and the other of said cutting edges engages the soil to till the soil when said second rotating means rotates said tines in the other direction with each of said tines in a second tilling position;

and control means to control the tilling position of each of said tines during rotation in each direction;

said connecting means including:

two pairs of plates mounted on each side of said frame and connected to said shaft;

each of said plates having a circular periphery and being of the same diameter;

a plurality of pivotal mounting means supported by said plates at the same radial distance from the center of said shaft and at equally angular spaced distances from each other;

and each of said pivotal mounting means having one of said tines pivotally mounted thereon for movement between the first tilling position of each of said tines during rotation in one direction and the second tilling position of each of said tines during rotation in the other direction;

said control means including:

a plurality of stop means supported by said plates at the same radial distance from the center of said shaft at equally angularly spaced distances from each other, each of said tines engaging one of said stop means in each of its tilling positions;

and an annular member mounted on said shaft and formed of a resilient material to engage each of said tines in each of its first and second tilling positions when each of said tines is engaging one of said stop means;

motive means;

said first rotating means including connecting means to connect said motive means to said wheel means;

a first shaft driven at a speed having a constant ratio to the speed of said motive means;

and said second rotating means including:

first means mounted on said first shaft for axial movement between first and second positions;

and second means cooperating with said first means when said first means is in its first position to rotate said tines in the one direction and cooperating with said first means when said first means is in its second position to rotate said tines in the other direction.

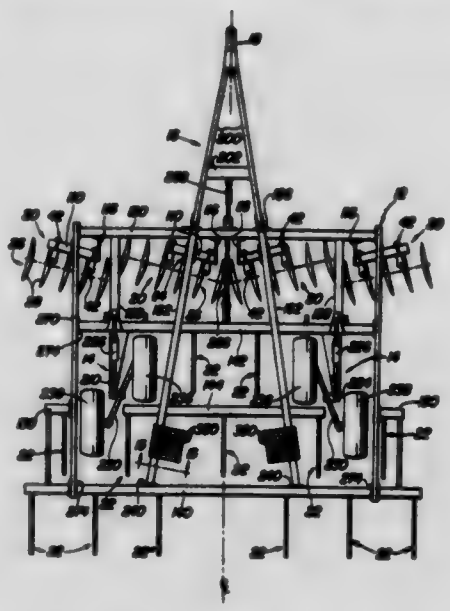
4,492,272

TILLAGE IMPLEMENT AND IMPROVED GANG ASSEMBLY THEREFOR

Thomas C. Jensen, Ankeny, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Mar. 15, 1982, Ser. No. 358,121
Int. Cl.³ A01B *35/18, 63/22*
U.S. Cl. 172—178 45 Claims

1. In a tillage implement having a transversely extending rigid main frame adapted for forward movement over the soil, a plurality of rearwardly located earth-working tools supported from the main frame, means for moving the frame vertically to vary the depth of penetration of the tools over a substantial preselected range, and a trash-sizing gang assembly supported forwardly of the earth-working tools comprising: a transversely extending gang tube, a standard having an upper end connected to the gang tube and a lower end extending generally downwardly and rearwardly from the gang tube, a gang of cutter blades rotatably mounted at the lower end of the standard, and bracket means rockably connecting the gang tube to the main frame for supporting the gang of cutter blades generally transverse to the forward direction and permitting the gang to rock vertically below the main frame over a working range of distance approximately equal to that of the preselected range, and wherein said bracket means includes a fore-and-aft extending arm member, a first pivot connecting the forward end of the member to the frame, an upwardly and rearwardly directed member fixed to the frame and including a downwardly and forwardly directed spring-abutting surface located rearwardly of and above the aft end of the arm member, a spring compressed between the spring-abutting surface



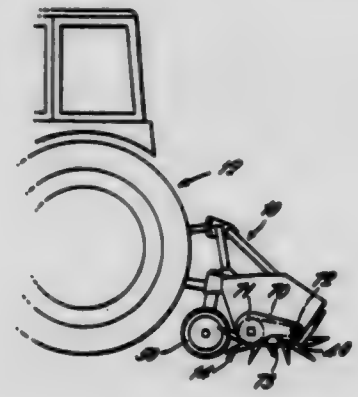
and the aft end of the arm member and acting through a moment arm which decreases as the arm rocks upwardly to compress the spring for automatically maintaining a substantially constant down pressure of the gang against the soil as the gang rocks vertically over the entire working range.

4,492,273

ROTARY SURFACE CULTIVATOR

John V. Fox, Stratford on Avon, England, assignor to Bomford & Evershed Limited, Worcestershire, England

Continuation of Ser. No. 240,397, Mar. 4, 1981, abandoned. This application Aug. 19, 1983, Ser. No. 524,673
Claims priority, application United Kingdom, Mar. 11, 1980, 8008145
Int. Cl.³ A01B *21/04, 33/02*
U.S. Cl. 172—520 2 Claims



1. A soil surface cultivating machine comprising a first forward horizontally elongate rotor shaft having a plurality of axially spaced mounting means thereon, a plurality of tines each having one end removably secured to said means, each tine having a flat spade end portion, the tines being positioned on said rotor so that the spade end portions are positioned generally tangentially of the underside of the rotor shaft when the tines extend forwardly to enter the ground and rotate in the same direction as the intended forward direction of the movement of the machine for engaging and lifting the soil surface, the rotor being arranged to extend across the machine with the tines arranged along the length of the rotor, means to mount said rotor for rotation about an axis substantially transverse to the intended direction of movement of the machine with the tines penetrating the ground, a second rearwardly positioned

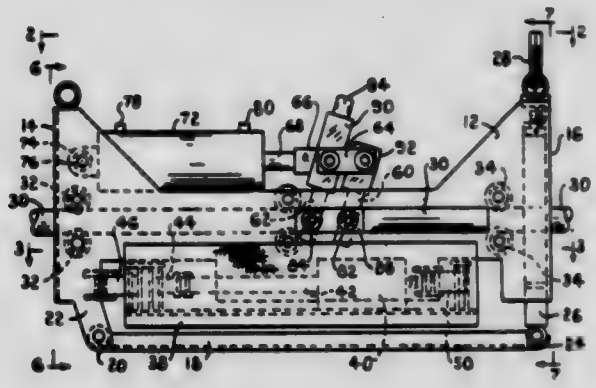
rotor shaft having a plurality of axially spaced mounting means thereon and a plurality of tines each having a flat spade end portion, the tines of the second rotor being removably fixed to said mounting means so that the spade portions thereof are positioned generally tangentially of the underside of the second rotor shaft when the tines extend to the rear and enter the ground in the opposite sense to the tines of the first rotor in soil lifting and working contact with the ground, the axes of the rotors being parallel and spaced apart such that the tines of one rotor pass between the tines of the other rotor, the second rotor being drivingly connected to the first rotor so as to rotate at a faster speed than the first rotor and to rotate in the same direction as the wheels of a vehicle when driving the machine, the speeds of rotation of the first and second rotors being directly proportional and in the ratio of between 1:2 and 1:4.

4,492,274

LIGHT WEIGHT UNDERGROUND PIPE OR CABLE INSTALLING DEVICE

William O. Schoesk, North Fort Myers, Fla., assignor to Elephant Industries, Inc., North Fort Myers, Fla.

Filed Aug. 2, 1982, Ser. No. 404,390
Int. Cl.³ E21B 7/26
U.S. Cl. 175—19 1 Claim



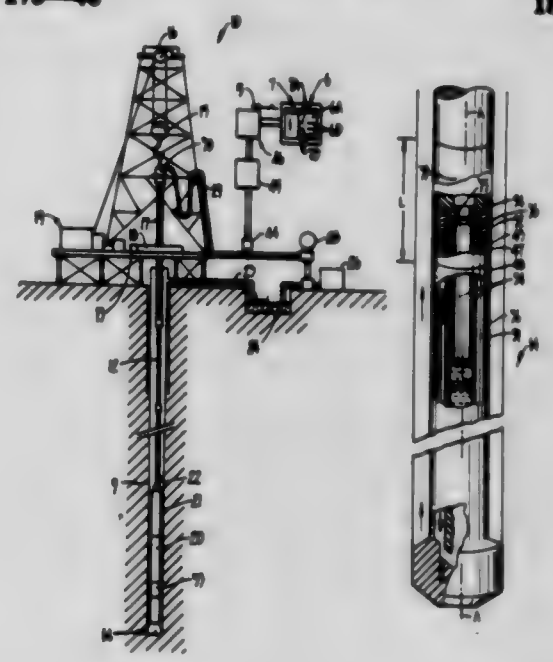
1. An underground pipe installer device adapted to be positioned in a narrow and deep operating trench and having reciprocating drive jaws to tightly engage an actuating rod consisting of a plurality of rigid rod sections coupled in end to end arrangement and to move said actuating rod longitudinally to form an underground hole between two spaced points comprising a rectangular framework having closely spaced apart side plates connected by front and rear end plates, front and rear guide rollers for the actuating rod, laterally movable elongated gates positioned adjacent the bottom of the framework beneath the guide rollers for the actuating rod and adapted in a retracted position to lie parallel and substantially flush with the side plates, and in an extended position to project outwardly from the parallel to the side plates to engage the walls of the narrow and deep operating trench beneath the actuating rod to clamp the pipe installer device in the trench, fluid pressure operated means to actuate the gates, a support plate hingedly mounted relative to the framework to vary the angular inclination of the actuating rod, drive jaws to engage the actuating rod, said drive jaws being positioned above the actuating rod, and fluid pressure operated means positioned above the actuating rod to actuate the drive jaws and to project the actuating rod longitudinally between said two spaced points.

4,492,275

MEANS AND METHOD FOR FACILITATING MEASUREMENTS WHILE CORING

Frank L. Campbell, Santa Ana; Dean C. Barnum, Fullerton, and William C. Corea, Placentia, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Aug. 12, 1983, Ser. No. 522,922
Int. Cl.³ E21B 47/09
U.S. Cl. 175—46 18 Claims



1. Apparatus for monitoring detrimental conditions associated with extraction of a core from an earth formation penetrated by a well bore using a core barrel having a rotatable outer cylindrical barrel attached to and operationally rotated by, a drill string, and drilling fluid circulating within said well bore as said core is extracted, wherein rotation of a usually stationary inner core barrel coaxial of the outer core barrel during said extraction of said core and its placement thereof within the cylindrical inner barrel, is used to indicate said associated detrimental coring conditions, comprising;

first means mechanically attached to said core barrel and operationally fitted between said outer and inner core barrels for generating a series of electrical signals indicative of relative rotation of the inner core barrel relative to the outer core barrel during extraction of said core from the formation;

second means uphole from said first means and operational connected thereto for responding to said series of electrical signals indicative of said relative inner barrel rotation wherein occurrence o said relative inner barrel rotation, causes operations to be initiated to overcome any associated detrimental condition within said well bore.

4,492,276

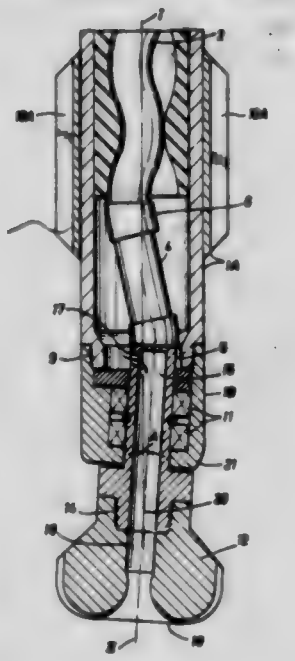
DOWN-HOLE DRILLING MOTOR AND METHOD FOR DIRECTIONAL DRILLING OF BOREHOLES

Anthony W. Kamp, Rijswijk, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 13, 1983, Ser. No. 541,821
Claims priority, application United Kingdom, Nov. 17, 1982, 8232755
Int. Cl.³ E21B 7/04
U.S. Cl. 175—61 8 Claims

1. Down-hole drilling motor for directional drilling of boreholes in subsurface formations, said motor including a motor housing with a longitudinal axis, said housing being rigid throughout its length at all times, the upper end of the housing being provided with upper connector means for connecting the motor to the lower end of a drill string, a rotor mounted on a rotor shaft and being rotatable relative to the housing, flexible connector means connecting the rotor shaft to an output

shaft provided with lower threaded connector means for threaded engagement with a drill bit, and a bearing unit mounted in the lower end of said housing and having an inclined bore therethrough at all times that supports the output



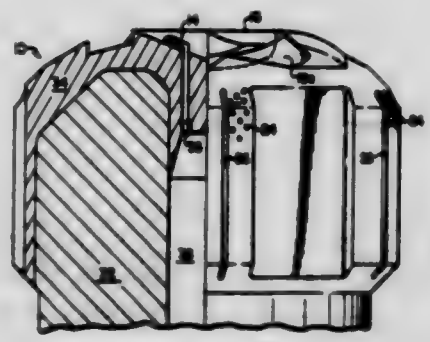
shaft in an inclined position relative to the axis of the housing at all times, such that the central axis of rotation of the output shaft intersects the longitudinal axis of the housing at a point of intersection located outside the housing and below the lower end of the housing.

4,492,277

HYDRAULIC ENERGY DRILL BIT

Kenneth R. Creighton, 3238 Ottawa Dr., Oklahoma City, Okla. 73112

Filed Feb. 22, 1983, Ser. No. 468,685
Int. Cl.³ E21B 10/60
U.S. Cl. 175—329 16 Claims



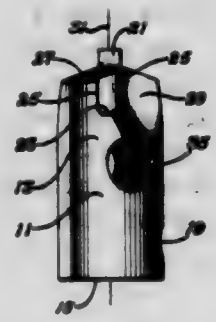
1. A drill bit for drilling a foundation having a bit face matrix for supporting a plurality of cutters, the bit face matrix having one or more centrally-located fluid passages therein for discharging a fluid to flow over the bit face matrix, and at least one radius nozzle having the shape of an annular projection surrounding said fluid passages for restricting a surface fluid flow area between the foundation and the bit face matrix to create a high velocity radial fluid flow across the major surface area of the bit face matrix, said radius nozzle being located intermediate said fluid passages and the major surface area of said bit face matrix.

4,492,278

ROOF BIT

Joseph C. Leighton, Bridgeport, W. Va., assignor to Hughes Tool Company, Houston, Tex.

Continuation of Ser. No. 492,908, May 9, 1983, abandoned. This application Jul. 27, 1984, Ser. No. 635,466
Int. Cl.³ E21B 10/58
U.S. Cl. 175—410 2 Claims



1. A cutter bit for roof drilling, comprising:

a cylindrically shaped tubular body having a cylindrical exterior, a solid upper end and an open lower end, the solid upper end being of the same outside diameter as the lower end of the cylindrically-shaped body;

the body having an upwardly opening groove formed transversely of the upper end of the body;

a plate-like, hard carbide insert fixed within the groove and extending outwardly thereform to form a cutting edge;

the upper end of the body having multiple work surfaces including a pair of oppositely disposed, tapered heel surfaces extending downwardly and outwardly in a direction away from the longitudinal central axis of the body and a pair of oppositely disposed, tapered dust control surfaces, the dust control surfaces being disposed on an inclined angle greater than that of the heel surfaces; and

the body having a pair of openings formed beneath the groove and extending inwardly in open communication with the hollow interior of the body, the openings being formed diametrically opposite each other on an axis transverse to the longitudinal central axis of the body, and at least partly on the tapered dust control surfaces, and wherein the remaining portion of each of said openings is located on the outside diameter of said cylindrically-shaped body.

4,492,279

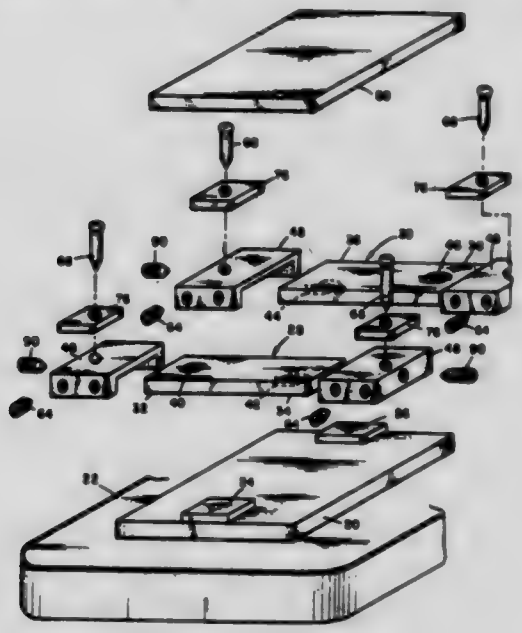
INFANT HEALTH MONITORING SYSTEM

Frank H. Speckhart, 534 Dellwood Dr., Knoxville, Tenn. 37919

Filed Sep. 29, 1982, Ser. No. 423,389
Int. Cl.³ G01G 23/18, 3/14, 3/08; A61B 19/00
U.S. Cl. 177—45 4 Claims

1. A scale for weighing infants comprising: a base; a first pair of cantilevers mounted on the base adjacent one end of the base; a second pair of cantilevers mounted on the base adjacent the other end of the base; a first strain gauge mounted on the upper surface of one of said first pair of cantilevers; a second strain gauge mounted on the lower surface of the other of said first pair of cantilevers; a third strain gauge mounted on the lower surface of one of said second pair of cantilevers; a fourth strain gauge mounted on the upper surface of the other of said second pair of cantilevers, said first and fourth strain gauges being mounted on diagonally opposite cantilevers, and said second and third strain gauges being mounted on diagonally opposite cantilevers; said strain gauges being connected in Wheatstone bridge circuit comprising a voltage source and four nodes, one lead of each of said third and fourth strain gauges being connected to the first of said nodes, one lead of each of said first and second strain gauges being connected to the second of said nodes, the other leads of said first and fourth strain gauges being connected to the third of said nodes, the other leads of said second and third strain gauges being connected to the fourth of said nodes; means for providing a signal

corresponding to the voltage difference between said first and second nodes; and a platform supported by said cantilevers, four slideable members, one of said slideable members being adjustably mounted on each of said cantilevers, each slideable



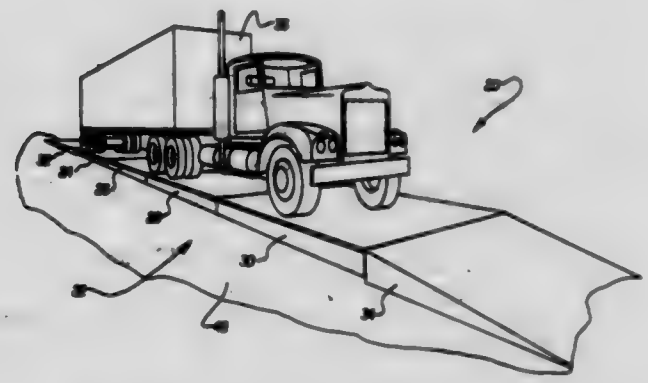
member having a support surface formed in its upper face adapted to receive a conically terminated support pin; and four support pins, each support pin being in pivotable engagement with one of said support surfaces whereby said platform is supported by said support pins.

4,492,280

WEIGHING APPARATUS INCLUDING LOAD CELLS WITH INTRINSIC SAFETY BARRIER

William C. Susor, deceased, late of Westerville, Ohio (by Rita M. Susor, executor, assignor to Maastron Scale Inc., Columbus, Ohio.

Filed Feb. 28, 1983, Ser. No. 470,251
Int. Cl.³ G01G 3/14; G01L 1/22
U.S. Cl. 177—211 6 Claims



5. Weighing apparatus, comprising

more than four load cells, each having excitation input terminals and signal output terminals, all of said excitation input terminals being connected in parallel and all of said signal output terminals being connected in parallel,

voltage source means supplying an excitation voltage across output terminals thereof,

means for coupling said voltage source output terminals across said parallel-connected excitation input terminals of said load cells, said means including at least one intrinsic safety barrier, and

voltage measuring means coupled to said parallel connected signal output terminals,

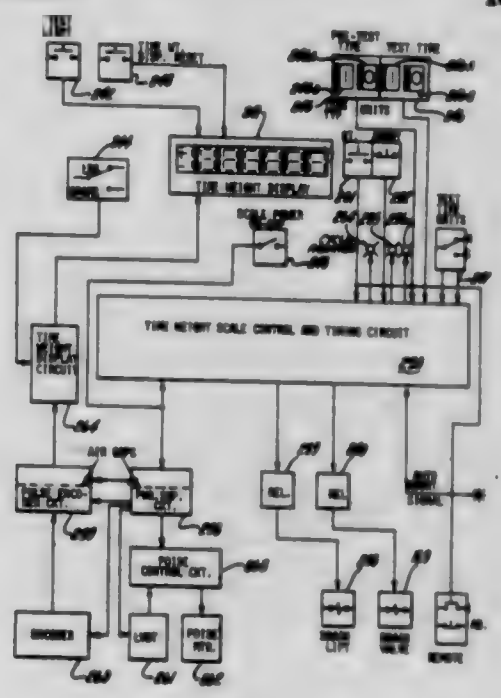
wherein said load cells each comprises a bridge network including four strain gauge elements, each element having a resistance greater than one thousand ohms.

4,492,281

WEIGH SCALE

Kent Van Allen, New Baltimore, and James M. Bordato, Grosse Pointe Wds., both of Mich., assignors to Scans Associates, Inc., Livonia, Mich.

Filed Mar. 1, 1982, Ser. No. 353,171
Int. Cl.³ G01G 7/00, 19/52, 3/14
U.S. Cl. 177—213 16 Claims



1. In a weigh scale of the dual-beam type having large and small platform supports supporting high-flow and low-flow buckets respectively, a linear variable differential transformer to detect vertical movement of said platform supports, a ball screw with a movable poise weight operatively attached to one of said dual beams to keep said scale in balance while media is flowing into one of said buckets by movement of said poise weight, an encoder operatively attached to said ball screw to record the movement thereof, a poise motor to turn said ball screw, a pulse encoder, and a pulse encoder circuit to produce pulse train signals related to the movement of said ball screw, and a poise control circuit to accept signals from said pulse encoder circuit and said linear variable differential transformer to control the operation of said poise motor to keep said scale in balance as media enters said flow buckets, the improvement consisting of an improved poise control circuit including in combination circuitry providing low gain with high integration for use while said scale is running and, in addition, being adapted to provide a DC gain boost when said scale is being calibrated to provide for high gain and derivative action of said circuitry during calibration.

4,492,282

SIX-WHEEL ARMORED VEHICLE

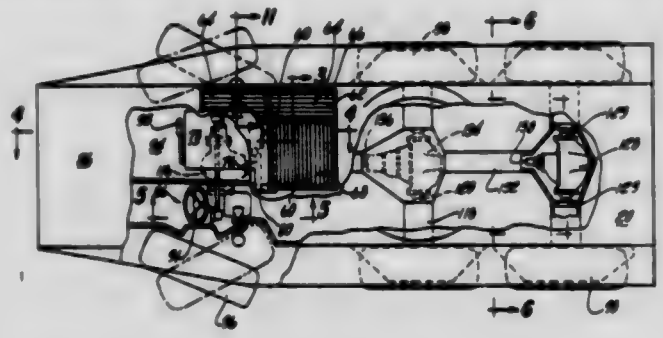
Irving Appelbaum, West Bloomfield, and Peter Krawiecki, Utica, both of Mich., assignors to Cadillac Gage Company, Warren, Mich.

Continuation of Ser. No. 182,254, Aug. 28, 1980, abandoned. This application Feb. 22, 1983, Ser. No. 468,114
Int. Cl.³ B60L 11/00
U.S. Cl. 180—68.1 6 Claims

1. An armored vehicle comprising:

A. A hull having a front end, a rear end, lateral side walls, and a top wall defining an enclosed interior space including an engine compartment defined in the front end of said vehicle at one side of the hull and a driver's compartment defined in the front end of said vehicle at the other side of the hull along-side said engine compartment, said front end of said hull including an upper sloping wall blending at its upper rearward edge with the forward edge of said top wall, said engine compartment extending into said front end of said vehicle beneath said upper sloping wall;

B. Wheel means supporting said hull;
C. An engine mounted in said engine compartment and drivingly connected to said wheel means when normally propelling said vehicle for travel in a forward direction;
D. An air inlet opening in said top wall rearwardly of the blend joint between said upper sloping wall and said top wall;
E. An air exhaust opening in said top wall rearwardly of the



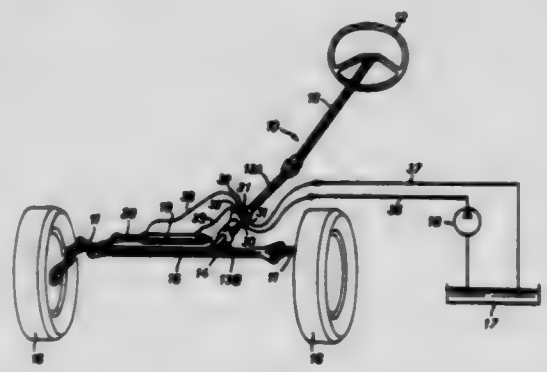
blend joint between said upper sloping wall and said top wall and along side said inlet opening;
F. An engine cooling system including air circulation means operative to draw air in through said inlet opening, move it forwardly in said engine compartment over said engine, reverse the air flow direction, and move the air rearwardly for exit through said exhaust opening; and
G. A hatch in said upper sloping wall overlying said driver's compartment.

4,492,283

POWER-ASSISTED STEERING DEVICE FOR MOTOR VEHICLES

Patrice Bertin, Paris, France, assignor to Valeo, Paris, France

Filed May 12, 1982, Ser. No. 377,394
Claims priority, application France, May 12, 1981, 81 09391
Int. Cl.³ B62D 5/08
U.S. Cl. 180—148 6 Claims



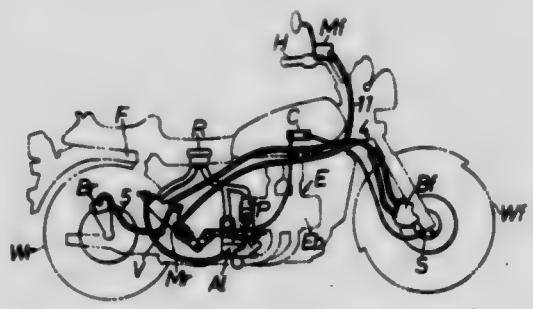
1. Power-assisted steering device for motor vehicles, comprising means, operated by the driver, for steering the vehicle 10, acting on means for changing its direction 11, said means 10 for steering the vehicle including a two-part rotating transmission component 13, said two parts 13A, 13B possessing a limited degree of relative angular play allowing said parts 13A, 13B to become offset in the angular sense as a result of the action of said means 10 for steering the vehicle, and power-assistance means 17, 18, 19, 21, which, in response to such angular offset are allowed to operate on said means 11 for changing the direction of the vehicle in the same direction as that of the means 10 for steering the vehicle, said power assistance means including a source of hydraulic power, 17, 18, an actuator 19 acting on the means 11 for changing the direction of the vehicle, and a distributor 21 inserted between the source of hydraulic power 17, 18 and the actuator 19 and having at least one rotor disc 23A, 23B rigidly fixed in rotation to one of said two parts 13A, 13B, said rotor disc 23A, 23B being provided with hydraulic passages 24A, 24B and being housed in a cavity 25 of a casing 26 with a small degree of axial play J between a base 27 of this cavity 25 and a closure member 28 fixed to the casing 26, characterized in that the closure member 28 is positioned with respect to the casing by spaced lugs 51 on the closure member 28 which surround the rotor disc 23A, or 23B and which are applied so as to abut at 52, against the base 27 of the cavity 25 in that casing 26.

4,492,284

APPARATUS FOR ARRANGING OIL PRESSURE PUMP IN MOTOR-CYCLE

Tsutomu Hayashi, Hoya, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1982, Ser. No. 411,025
Claims priority, application Japan, Aug. 24, 1981, 56-132416
Int. Cl.³ B62D 61/02
U.S. Cl. 180—219 6 Claims



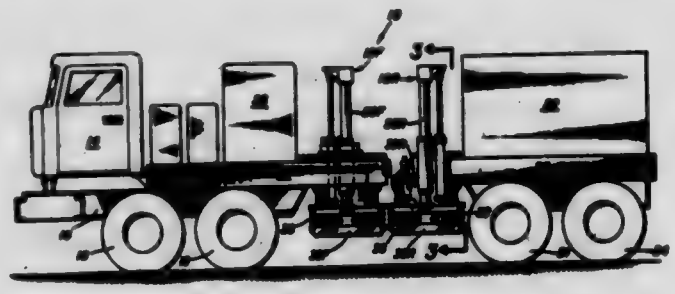
1. In an apparatus for arranging an oil pressure pump in a motor-cycle having mounted thereto an engine equipped with front and rear engine blocks projecting to the right and left from a vehicle frame and positioned so as to deviate from each other in the longitudinal direction of the vehicle frame, the improvement wherein said oil pressure pump is disposed at the rear of said front engine block which is offset, in the forward direction of the vehicle frame, said front engine block having an overhead cam shaft mounted thereon with its axis extending in the longitudinal direction of the vehicle frame, the rear end of said cam shaft being operatively connected to an operation portion of said oil pressure pump for power transmission therebetween.

4,492,285

MOBILE HIGH FREQUENCY VIBRATOR SYSTEM

Delbert W. Fair, and Paul L. Buller, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

PCT No. PCT/US79/00603, § 371 Date Apr. 13, 1981, § 102(e) Date Feb. 24, 1981, PCT Pub. No. WO81/00459, PCT Pub. Date Feb. 19, 1981
PCT Filed Aug. 13, 1979, Ser. No. 270,536
Int. Cl.³ G01V 1/09
U.S. Cl. 181—114 12 Claims



10. A seismic vibrator system including a mobile carrier having motive power in combination with dual seismic vibrators, the combination comprising:
carrier means including elongated load frame steerably supported by front and rear assemblies;
first and second vibrators and lift means assemblies secured in juxtaposition at a central longitudinal position of said

load frame for ground contact between said front and rear wheel assemblies;

first and second base plates for earth engagement to couple vibratory energy;

vibration isolation means resiliently connecting each of said first and second lift means to respective first and second base plates;

first and second seismic vibrators including reaction mass and frame secured centrally of said respective of first and second base plates;

hydraulic means energizable to actuate said first and second lift means to place said first and second base plates in similar earth-coupling contact while said front and rear wheel assemblies retain traction contact with the earth surface; and

control means for synchronously energizing said first and second vibrators through a selected vibratory sequence.

4,492,286

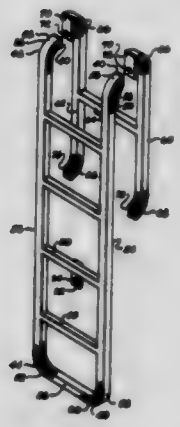
TRUCK MOUNTED LADDER ASSEMBLY

David H. Lemire, Rte. 3, Box 36, Lugoff, S.C. 29078

Filed May 17, 1982, Ser. No. 379,270

Int. Cl.³ E06C 5/00

U.S. Cl. 182—93 3 Claims



1. A ladder assembly for use on trucks to provide access to the interior of an open top body of said truck which includes vertically extending high side walls and end walls which are supported on a bed comprising:

a pair of laterally spaced vertically extending side rails constructed of a single length of square tubing integrally joined at the bottom by a horizontally extending rung;

vertically spaced rungs extending between said side rails;

a fastening device carried by said ladder securing a lower portion of said ladder to the bed of said truck;

upper ends of said rails being bent inwardly ninety degrees to said vertically extending portion of said rails towards the outside wall of said body so as to mount perpendicular to said outside wall of said body, said upper bent-in ends holding said side rails away from said side walls of said truck;

said rails having right angeled corners at the junction of said side rails and said bottom rung and at the junction of said side rails and said inwardly bent upper ends;

three sides of said tubing at said corners being bent inwardly by a forming die producing reinforcing sections and a fourth outer side opposite the radius of bend being smooth providing strenthened corners;

a threaded bolt receiver carried by the upper ends of said rails; and

bolts extending through said side wall of said body into said threaded bolt receivers and into the hollow of the tubing securing said ladder to said wall.

4,492,287

APPARATUS FOR UTILIZING THE IMPACT FORCE OF BODIES FALLING UNDER GRAVITY

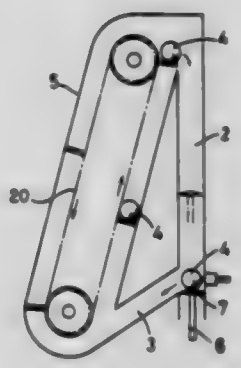
Masuyu Umehara, 8, Kita 5-chome, Takayasu-cho, Yao-shi, Osaka, Japan

Filed Jul. 8, 1982, Ser. No. 396,475

Claims priority, application Japan, Aug. 6, 1981, 56-124873

Int. Cl.³ F03G 3/00

U.S. Cl. 185—33 5 Claims



1. An apparatus for allowing the impact force of a plurality of falling bodies to cause the rotation of a shaft, said apparatus comprising:

a main pipe vertically positioned,

an inclined pipe branched downwardly from the middle portion of said main pipe,

a communicating passage interconnecting the lower end of said inclined pipe and the upper end of said main pipe,

a plurality of steel balls having a diameter smaller than the inside diameter of said main pipe and said inclined pipe and passing through said main pipe, said inclined pipe and said communicating passage,

a conveyor accommodated in said communicating passage and adapted to carry said steel balls from the lower end of said inclined pipe to the upper end of said main pipe,

a rod with a head disposed in said main pipe coaxially therewith,

a means for biasing said rod upwardly,

a pinion meshed with a rack on the lower portion of said rod,

a shaft disposed through said pinion coaxially therewith, and

a means for transmitting the rotation of said pinion to said shaft only when said rod moves downwardly.

4,492,288

GROUP CONTROL FOR ELEVATORS CONTAINING AN APPARATUS FOR CONTROLLING THE DOWN-PEAK TRAFFIC

Joris Schröder, Lucerne, Switzerland, assignor to Inventio AG, Hergiswil, Switzerland

Filed Mar. 21, 1983, Ser. No. 476,991

Claims priority, application Switzerland, Apr. 8, 1982, 2187/82

Int. Cl.³ B66B 1/18

U.S. Cl. 187—29 R 7 Claims

1. A group control for elevators including a number of elevator cars of an elevator group and containing an apparatus for controlling the DOWN-peak traffic by means of which a defined number of down hall calls is allocated to each elevator car in the elevator group, said group control comprising:

a hall call storage containing first storage locations;

a number of switching circuits, each switching circuit being operatively associated with a respective one of said cars;

a monitoring counter contained in each switching circuit;

said monitoring counter storing said defined number of down hall calls and limiting a number of entering stops for the relevant car associated with said switching circuit to said stored defined number;

waiting list means provided for each of said switching circuits and containing second storage locations;

said down hall calls being stored in said second storage

locations of said waiting list means in their chronological input sequence;

a number of allocating storages to each of which a respective one of said switching circuits is connected and each of which allocating storages contains third storage locations operatively associated with said first storage locations;

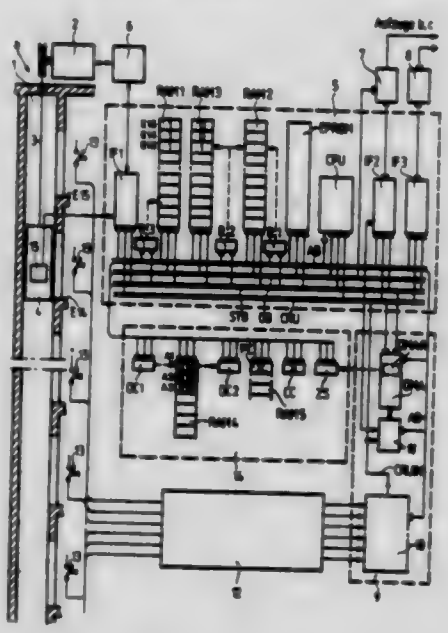
said third storage locations of said allocating storages storing allocation instructions limited to a control counter state of its related monitoring counter, said allocation instructions being associated with the chronologically consecutive down hall calls stored in said waiting list means, to thereby form groups of hall calls;

a respective priority counter provided for each switching circuit;

each priority counter being associated with a respective one of said cars and being settable to a priority number corresponding to the chronological age of a hall call such that upon storing a respective latest call in said waiting list means the respective earliest hall call is allocated by storing a respective allocation instruction to that one of said cars which will most rapidly service said respective earliest hall call;

said groups of hall calls, upon arrival of a further hall call, being sequentially increased in their order of priority such that the respective earliest hall call in one of said groups is transferred to another one of said groups associated with one of said cars having the next-higher priority and the respective latest hall call is allocated to the car having the lowest priority; and

said groups of hall calls being generated in the same size with respect to one another until said number of down hall calls stored in said monitoring counter is reached.



4,492,289

INTERNAL SHOE DRUM BRAKE

Robert J. Warnock, Solihull, England, assignor to Lucas Industries Limited, Birmingham, England

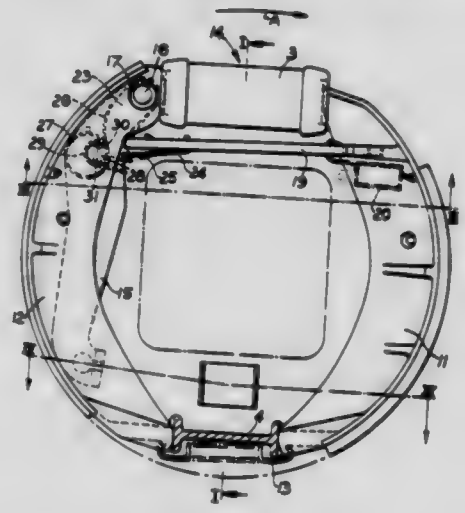
Filed Nov. 9, 1981, Ser. No. 319,713

Claims priority, application United Kingdom, Dec. 30, 1980, 8041930

Int. Cl.³ F16D 65/58

U.S. Cl. 188—79.5 GE 3 Claims

1. A self-adjusting shoe drum brake comprising an actuator operably connected to the shoes to move them apart into braking engagement with the drum; shoe return spring means operably connected to said shoes to retract said shoes out of engagement with the drum when said actuator is deactivated; an automatic adjuster element movably mounted on one of the shoes; a strut extending between the shoes and engaging said one shoe via said adjuster element so that the spacing between the shoes in the retracted position is dependent upon the position of said adjuster element with respect to said one shoe; a spring connected at one end to said strut and at the other end to said adjuster element to resiliently urge said adjuster element and said strut into engagement with each other; a helical spring connected at one end to said strut and at the other end to said other shoe to urge said strut and other shoe toward each other to constrain said strut to follow outward movement of the other shoe; a rotatable adjuster cam mounted on said one shoe; means to resiliently urge said cam to rotate; an additional helical spring connected at one end to said strut and at the other end to said one shoe to resiliently urge said cam into engagement with said adjuster element; cooperating means on said cam and adjuster element to prevent rotation of said cam when in engagement with said adjuster element; and means to provide limited free play of said strut upon separation of said shoes by said actuator for controlling the desired clearance between said shoes and drum in the retracted position comprising a slot in said other shoe, a hook shaped extension on said strut interfitting in said slot, and a gap between said extension and one side of said slot when in said retracted position, said extension and said slot extending substantially perpendicular to the direction of movement of said strut when the brake is actuated, and said gap being on the side of said extension opposite to the direction of movement of said other shoe when actuated; so that, when outward movement of the shoes by said actuator exceeds a predetermined value, the strut and adjuster element are displaced by said other shoe to disengage the adjuster element from the cam and the cam is rotated in a direction to re-engage said adjuster element and thereby set a new retracted position of the shoes when the actuator is deactivated.



4,492,290

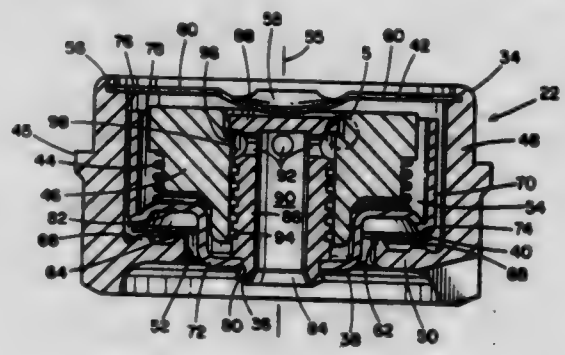
ACCELERATION SENSITIVE COMPRESSION HEAD

Eugene N. Zavodny, Bloomingdale, Ill., assignor to Maremont Corporation, Carol Stream, Ill.

Filed Jan. 12, 1983, Ser. No. 457,437

Int. Cl.³ F16F 9/34

U.S. Cl. 188—322.14 9 Claims



1. An improved compression head assembly for an automo-

tive shock absorber, providing (a) regulated flow from a compression chamber to a reservoir during shock absorber compression, (b) relatively unrestricted flow from the reservoir to the compression chamber during shock absorber recoil, and (c) a uniquely decreased resistance to flow from the compression chamber to the reservoir during relatively highly accelerated shock absorber compression; the compression head assembly comprising:

a compression head with a wall portion and a ledge portion, the head defining a space within the wall portion and an opening through the ledge portion;

a valve disk loosely mounted in the space adjacent the orifice;

a cup slidably mounted in the space adjacent the disk and defining a chamber, the cup and compression head ledge portion cooperatively defining thereon orifice and restriction valve seats with orifice and restriction valve openings among the orifice and restriction valve seats;

a pin mounted to the cup in the chamber, the pin defining a passage therethrough;

a mass slidably mounted to the pin in the chamber for movement to and from a position closing the passage;

means in the chamber for biasing the mass to the position closing the passage;

and means for retaining the disk, cup, pin, mass and biasing means in the space defined by the head;

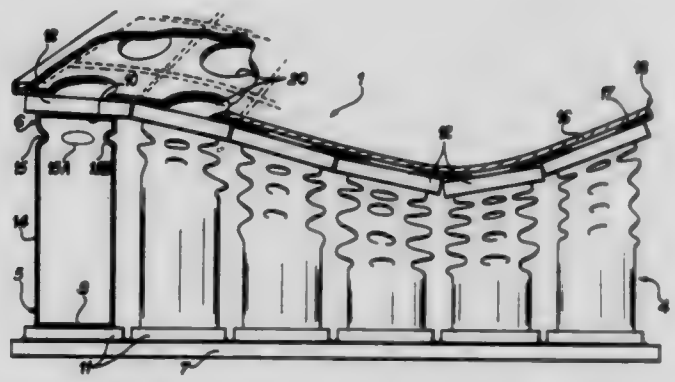
whereby the regulated flow and the relatively unrestricted flow occur through the orifice and restriction slots as permitted by the valve disk, and the flow during the uniquely decreased resistance to flow occurs through the passage when shock absorber acceleration moves the mass relative to the pin to open the passage.

4,492,281

DEVICE FOR DAMPING SHOCKS CAUSED BY MOVING HEAVY OBJECTS

Pierre Chemotton, Saint Germain en Laye, and Jacques Dolifus, Les Essarts-le-Roi, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Feb. 10, 1982, Ser. No. 347,378
Claims priority, application France, Feb. 13, 1981, 81 02882
Int. Cl.³ F16F 7/12; G21C 19/06
U.S. Cl. 188—377 4 Claims



1. A device for damping shocks due to impacts by heavy moving objects, comprising:

(A) a plurality of substantially identical tubular members, each of which has

(1) an axis,

(2) a pair of axially opposite ends, and

(3) a radially deformed portion intermediate its ends that allows the member to be endwise crushed by a substantially axial compressive impact;

(B) a supporting plate to which each of said members is secured at one of its ends and from which said members all project in one direction, in radially spaced relation to one another;

(C) a plurality of substantially thick supplementary plates, one for each of said members, each

(1) rigidly secured to the other end of its member, normal to the axis thereof, and

(2) having edge portions spaced radially outwardly from its member that oppose edge portions of supplementary plates on adjacent members to maintain the members radially spaced from one another notwithstanding axial crushing deformation of them;

(D) a bendingly deformable perforated sheet overlying said supplementary plates and having a plurality of apertures, one for each said member, each aperture being substantially coaxial with its member;

(E) means at the edge of each said aperture bonding the perforated sheet to the supplementary plate beneath the aperture; and

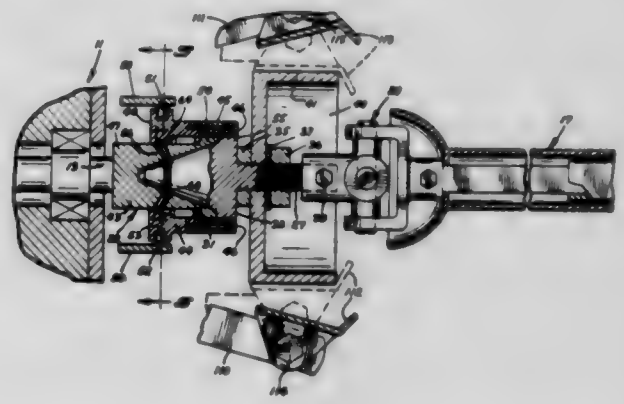
(F) a substantially imperforate sheet overlying said perforated sheet and having edge portions substantially coterminuous with those of the perforated sheet and bonded to them, so that portions of said imperforate sheet and said perforated sheet that are inward of their said edge portions are flatwise slidable relative to one another.

4,492,282

COUPLING SYSTEM FOR POWER TAKE-OFF SHAFTS

Charles C. Thor, Box 654, Hutchinson, Minn. 55350

Filed Aug. 6, 1982, Ser. No. 405,908
Int. Cl.³ F16D 11/00, 25/08
U.S. Cl. 192—67 R 4 Claims



1. A coupling mechanism comprising, in combination:

(a) a first coupling member having a convex conical surface tapering along an axis from a smaller first end to a larger second end, said surface including a peripheral groove spaced from said ends and having the cross-section of a portion of a circle, said first coupling member further including a first external gear peripheral to said second end thereof;

(b) a second coupling member having a concave conical surface congruent with said convex surface and tapering from a small end to a large end, said second member including a second external gear peripheral to said large end thereof, said second coupling member including latching means operable to cooperate with said peripheral groove in said first member to retain said first and second coupling members in axial relation when said first member is received in said second member with said external gears disposed in axially adjacent and coaxial relationship, one with the other;

(c) a driving member comprising an internal gear sized to simultaneously mesh coaxially with the external gears of said first and second coupling members and thereby transmit power from said second coupling member to said first coupling member, the width of said internal gear face being substantially the same as the sum of the widths of the gear faces of the external gears of said first and second coupling members;

(d) means actuable to move said first coupling member axially into a position in which the concave and convex surfaces of said first and second coupling members are in engagement;

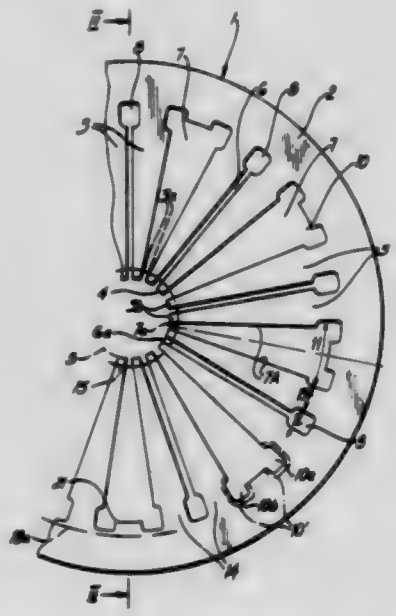
(e) and means actuable to move said driving member axially so as to selectively engage either one or both of said external gears.

4,492,293

DIAPHRAGM SPRING FOR USE IN FRICTION CLUTCHES OR THE LIKE

Paul Mancher, Sasbach, Fed. Rep. of Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Filed Jan. 6, 1982, Ser. No. 337,516
Int. Cl.³ F16D 13/44
U.S. Cl. 192—89 B 12 Claims



1. A diaphragm spring, particularly for use in friction clutches, comprising an annular main section; and a plurality of elongated fingers extending from said section substantially radially inwardly and having inner end portions with end faces defining a substantially circular opening, said fingers defining between themselves alternating elongated narrower first and wider second slots extending from said end faces to said section and respectively having enlarged first and second outermost portions of lesser and greater width, as considered in the circumferential direction of said section, the width of said first slots being at least substantially identical with the width of said second slots in the region of the inner end portions of said fingers, said fingers having outer end portions in the region of said section and the width of each second outermost portion at least approximating 2m+n wherein m is the width of a first outermost portion and n is the width of the outer end portion of a finger, as considered in the circumferential direction of said section.

4,492,294

BULK CONVEYOR APPARATUS

David C. Bull, LaPuente, Calif., assignor to The W. W. Sly Manufacturing Co., Strongsville, Ohio

Filed Mar. 3, 1980, Ser. No. 126,531
Int. Cl.³ B65G 11/00
U.S. Cl. 193—25 C 5 Claims

1. A bulk material conveyor which comprises:

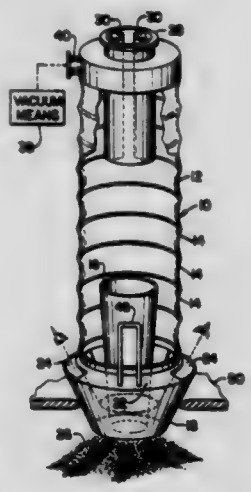
means for conveying which comprises an elongated flexible duct for conveying an associated bulk material in a first direction;

means for viewing the materials being transferred within said means for conveying; and

means for maintaining a fluid stream proximate to said means for viewing, said fluid stream moving in a second direction which is substantially opposite to said first direction, said maintaining means including:

(a) a first truncated conical member having an outside diameter which varies from a first outside diameter to a second outside diameter which is greater than said first outside diameter;

(b) a second truncated conical member having an inside diameter at least at one axial cross-section which is greater than said first outside diameter of said first truncated conical member, said second truncated conical member being disposed in substantially coaxial relationship to said first truncated conical member with at least an axial portion thereof overlapping a portion of said first truncated conical member; and,



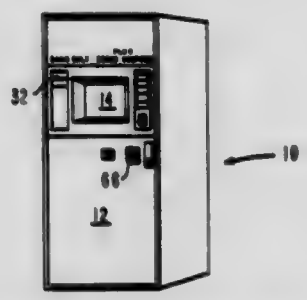
(c) a third truncated conical member having an inside diameter at least at one axial cross-section which is greater than said first outside diameter, said third truncated conical member being disposed at least partly in axially overlapping relationship with said second truncated conical member.

4,492,295

AUTOMATED REDEMPTION CENTER FOR METAL CONTAINERS

Bruce H. DeWoolfson, Arlington, Va., assignor to Environmental Products Corporation, McLean, Va.

Continuation-in-part of Ser. No. 355,206, Mar. 5, 1982, Pat. No. 4,440,284, which is a continuation-in-part of Ser. No. 148,371, May 9, 1980, Pat. No. 4,345,679. This application May 13, 1982, Ser. No. 377,918
The portion of the term of this patent subsequent to Aug. 24, 1999, has been disclaimed.
Int. Cl.³ G07F 7/06
U.S. Cl. 194—4 C 13 Claims



1. Apparatus for collecting and storing empty metallic containers having a distinguishing indicia thereon and for issuing predetermined return deposits for collected containers comprising:

preselection means for exposing a crushed or non-crushed container offered by a customer to an electromagnetic field for identifying whether said container is substantially either aluminum or steel without establishing direct electrical contact with said container, and for detecting the presence of said distinguishing indicia on said crushed or non-crushed container;

said preselection means including a container access area configured to accommodate both crushed or non-crushed containers for exposure to said field;

means for accepting only a container identified by said preselection means as being substantially aluminum or steel

and as having said distinguishing indicia thereon, independent of the configuration of said container;

dispensing means responsive to said preselection means for dispensing a predetermined payment in return for containers having a substantially aluminum or steel composition and carrying said distinguishing indicia;

means cooperating with said accepting means for crushing said containers; and

means for storing crushed containers received from said crushing means.

4,492,296

CIRCUIT ARRANGEMENT IN A COIN ACCEPTOR UNIT

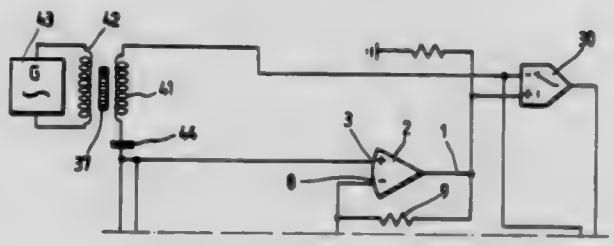
Pierre Dubey, Le Pontet, Switzerland, assignor to Autelca AG, Gumligen, Switzerland

Filed Dec. 2, 1981, Ser. No. 326,920

Claims priority, application Switzerland, Dec. 5, 1980, 8979/80

Int. Cl.³ G07D 5/08

U.S. Cl. 194—100 A 9 Claims



1. A circuit for a coin acceptor unit in which the coin (37) to be tested comes into the coil field of an oscillator (2,6,7), a coin acceptance signal being created dependent upon the condition whether the coin (37) will stop or start the oscillations, respectively, comprising an oscillator amplifier (2,6,7), a plurality of switching devices (21–28) connected with said oscillator amplifier, means (29) connected to control said plurality of switching devices (21–28), the amplification of the oscillator amplifier (2,6,7) being controllable step-by-step by means of said means (29) connected to control said plurality of switching devices, said means (29) connected to control said plurality of switching devices having a memory (39) in which a standard value of amplification is stored, with which the oscillations stop or start, respectively, whenever the coil field (6) is free, and two pre-determined standard limit valves of amplification being stored for each type of coin, the oscillations stopping or starting, respectively, between the said values in the presence of an acceptable coin; said means (29) connected to control said plurality of switching devices prior to each coin testing procedure by switching said plurality of switching devices (21–28) altering step-by-step the amplification until oscillations stop or start, respectively, an arithmetic unit (69) connected with said means (29) creating from the relation of the thus obtained amplification value to their standard value and the two standard limit values of each type of coin two nominal limit values each for the amplification, altering the said amplification step-by-step during the testing process and a comparator including means issuing a coin acceptance signal if the oscillations stop or start, respectively, between the two nominal limit values of a type of coin.

4,492,297

ASSEMBLY LINE ARRANGEMENT

Walter Sticht, Wenkheimerstrasse 8, A-4800 Attnang-Puchheim, Austria

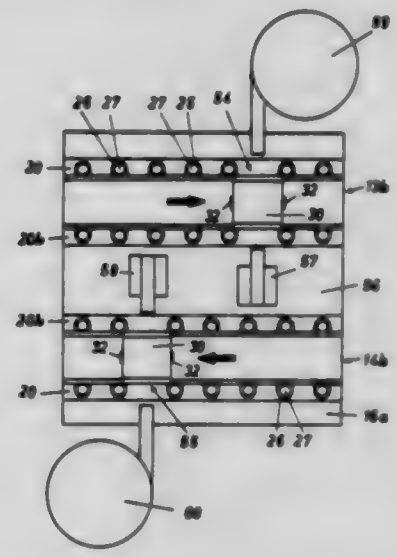
Continuation of Ser. No. 891,294, Mar. 29, 1978, abandoned. This application Apr. 23, 1980, Ser. No. 143,049

Claims priority, application Austria, Dec. 15, 1977, 8956/77

Int. Cl.³ B65G 21/20

U.S. Cl. 198—345 13 Claims

1. An assembly line arrangement defining a linear conveying path for successive workpieces or workpiece carriers, which comprises a succession of replaceable in-line working stations, each working station having a conveyor section extending substantially from one end to the other end of the working station, and the conveyor sections of successive ones of the in-line working stations being arranged end-to-end in series to constitute the conveying path, the conveyor section of each working station having a succession of areas each of which accommodates a respective one of the workpieces or workpiece carriers and at least one of the successive areas being a waiting area and at least one other one of the areas being a processing area for working on the respective workpiece, and each conveyor section including guide means for vertically and laterally guiding the successive workpieces or workpiece carriers along the conveying path, the guide means being



arranged to provide access to the workpieces or workpiece carriers in the processing area from below, and discrete friction drive rollers spaced along, and separate from the guide means, the drive rollers being dimensioned and operable for individually driving each workpiece or workpiece carrier independently through the conveyor section and being so spaced along the guide means that the processing area is free of drive rollers, the guide means of each conveyor section of a respective one of the in-line working stations extending substantially to the functional ends of the working stations and being arranged to provide a continuous planar conveying path between the working stations and along the entire assembly line arrangement for securely holding the successive workpieces or workpiece carriers.

4,492,298

COIL SPRING ASSEMBLY MACHINE

Henry Zapletal, Carthage, Mo.; Horst F. Wentsak, and George M. Chembakaffery, both of Kenosha, Wis., assignors to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Sep. 10, 1981, Ser. No. 300,995

Int. Cl.³ B65G 47/24

U.S. Cl. 198—403 12 Claims

1. A coil spring assembly machine for connecting together successive groups of coil springs into an assembled matrix of coil springs, each of said coil springs having a central axis and parallel top and bottom loops extending generally perpendicular to said axis, said top and bottom loops being interconnected by at least one intermediate loop, which machine comprises,

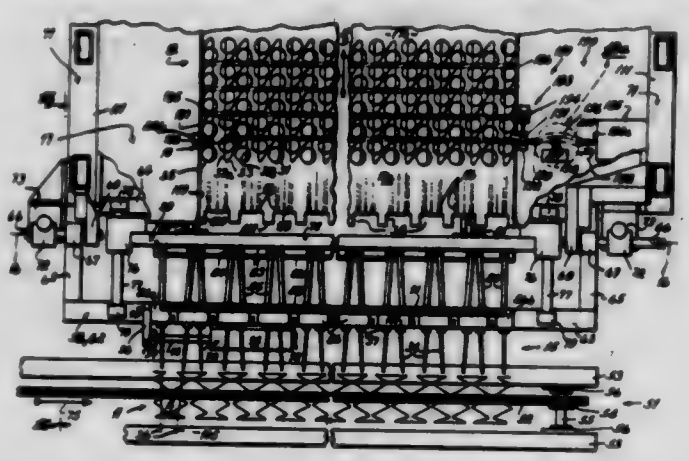
transfer means for transferring a group of coil springs from a first location to a second location, said transfer means comprising,

a group of fingers, each finger being sized to be received within a barrel of one coil spring,

means for inserting each finger in an axial direction into, and for retracting each finger axially from, one of said top and bottom loops and said barrel of said one coil spring,

means for moving said fingers, and therefore said springs, from said first location to said second location after said fingers have been inserted into said barrels of said springs,

said springs being supported in said first location upon a support surface with their axes parallel to said support



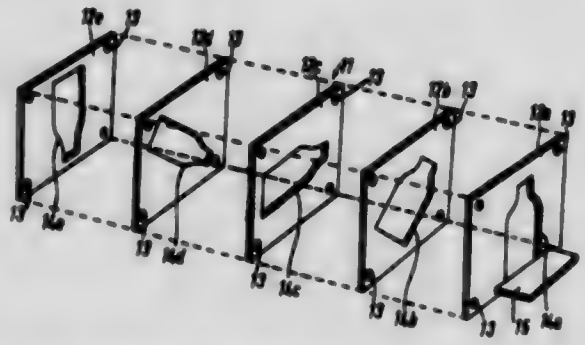
surface and said spring being supported at said second location upon a support platen with their axes normal to said support platen.

4,492,299

ARTICLE TURNING DEVICE

Alasdair D. McLeod, Hull, England, assignor to B.M.H. Feedgear, Hull, England

Filed Jul. 14, 1982, Ser. No. 398,135
Claims priority, application United Kingdom, Jul. 14, 1981, 8121651
Int. Cl.³ B65G 47/24
U.S. Cl. 198—417 12 Claims



1. A static article turning device comprising:

(A) a succession of plates each bearing an aperture generally of the outline shape of the article to be turned; the apertures collectively defining a path of traverse of the article through the device; and

(B) obstructions, formed in each plate subsequent to the first one along said path of traverse, by parts thereof delineating the aperture and angularly displaced in relation to the like parts of the last preceding plate, so that, as the article passes along the path of traverse the obstructions incrementally deflect the article about an axis passing therethrough and parallel with the path of traverse, thereby to change the orientation of the article; said plates being spaced so as to prevent movement of the article following any incremental deflection thereof.

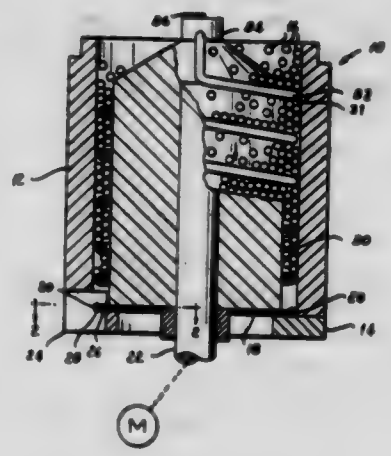
4,492,300

RESILIENT-FEED BALL INJECTOR FOR MICROBALLISTIC PRINTER

Bennion Lunde, Edmonton, Canada, assignor to Savin Corporation, Stamford, Conn.

Filed May 27, 1981, Ser. No. 267,468
Int. Cl.³ B65G 47/12
U.S. Cl. 198—443 7 Claims

1. Apparatus for feeding objects including in combination means forming a passage for receiving said objects, an element formed with an aperture for receiving one of said objects, said element being mounted for movement of said aperture toward said passage, a helical spring having an end disposed adjacent said element, means for driving said spring in such a direction



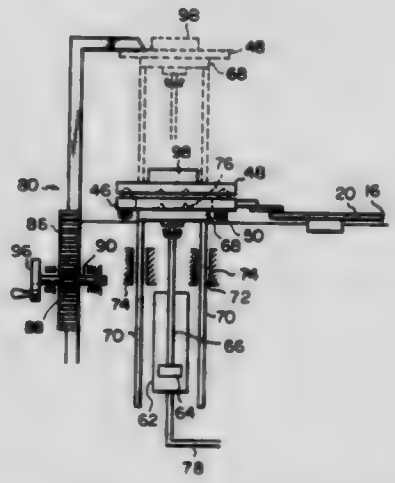
as to move an object supplied to said spring toward said element to bias said object into said aperture, and means for driving said element to feed said object to said passage.

4,492,301

WORKPIECE FEEDER

Hajime Inaba, Hino, and Nobutoshi Torii, Hachioji, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Jun. 21, 1982, Ser. No. 390,560
Claims priority, application Japan, Jun. 30, 1981, 56-100501
Int. Cl.³ B65G 37/00
U.S. Cl. 198—472 3 Claims



1. A workpiece feeder for successively feeding workpieces to a predetermined area, typically a workpiece gripping position of a hand of an industrial robot, said workpiece feeder including a frame, a table mounted on said frame, and an endless conveyor mounted on said table and having plurality of movable pallets interspaced from each other at equal distances, said conveyor having at least one belt run portion extending over said table and adapted to move said pallets intermittently one by one under said predetermined area; characterized in that said table has a window aligned with said predetermined area, that each of said pallets comprises a lower plate having a central opening and an upper plate which is detachably mounted on said lower plate, that there is provided a lifting means having a platform movable vertically through said window in the table and said central opening in the lower plate to engage said upper plate from below, causing said upper plate to move and lift a workpiece placed on said upper plate up to said workpiece gripping position of the robot, and that there is provided a stop mechanism engageable with said platform for limiting the upward movement thereof so that when said platform is lifted together with a workpiece placed thereon, said platform abuts against said stop mechanism thereby holding

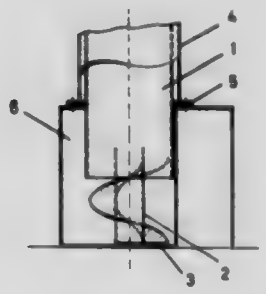
the workpiece at said predetermined area, said stop mechanism including a vertically extending pillar mounted to the frame, a stop member connected to the top of the pillar and extending horizontally toward the workpiece gripping position, and means for adjusting the vertical position of said stop member, said adjusting means including a rack mounted lengthwise of the pillar and an associated pinion which is rotatably mounted on the machine frame and is in mesh with said rack.

4,492,302

FEEDING DEVICE FOR A VERTICAL TUBE CONVEYOR

Runar Svens, Enköping, Sweden, assignor to AB Nordströms Linbanor, Enköping, Sweden

Filed Jan. 21, 1982, Ser. No. 341,210
Claims priority, application Sweden, Jan. 26, 1981, 8100455
Int. Cl.³ B65G 33/00
U.S. Cl. 198—671 1 Claim



1. Screw conveyor for raising powder or particulate material, comprising a cylindrical casing with a lower inlet end, a conveyor screw rotatably mounted in said casing and a feeder device for moving material toward the inlet end of said casing, said feeder device being rotatable relative to said screw and comprising at least one feeder shovel disposed about the inlet end of said casing and extending in its entirety parallel to said casing from a plane above the lower end of said casing at least down to the lowest point of said conveyor, characterized in that said shovel forms a spiral drum which surrounds the inlet end of said casing, that said shovel has a top portion and a bottom portion, each of which defines a plane which is perpendicular to the axis of rotation of said conveyor screw, that said shovel describes, in a plane perpendicular to the longitudinal axis of said casing, a spiral curve which has a starting edge and a trailing edge and which starts from a point a short distance from said casing, the angle formed between the tangent to said spiral curve and the rotational, directional component being constant at every point along said spiral curve, that said angle is so small that said shovel moves the material inward with a force which is greater than the outwardly-directed force on the material exerted by said screw, and that said starting edge and said trailing edge of said spiral curve of said shovel extending between and being perpendicular to said planes formed by said top portion and said bottom portion of said shovel.

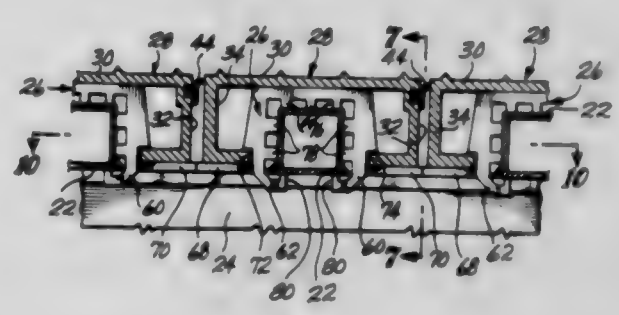
4,492,303

DRIVE/GUIDE SYSTEM FOR A RECIPROCATING FLOOR CONVEYOR

Raymond K. Foster, P.O. Box 1, Madras, Oreg. 97741

Filed Feb. 8, 1982, Ser. No. 346,865
Int. Cl.³ B65G 25/04
U.S. Cl. 198—750 12 Claims

1. A reciprocating floor conveyor, comprising:
a plurality of elongated floor members, each of which is of channel form comprising a top panel, a pair of opposite side panels projecting downwardly from the top panel, and a pair of bottom flanges projecting inwardly from the side panels;
an elongated metal guide beam for each floor member;
a plurality of transverse metal support beams;
said guide beams resting on said metal support beams;
a plurality of plastic slide bearings on the guide beams at locations where the guide beams rest on the support beams;
drive means for moving the floor members in one direction along the guide beams and bearings, for advancing a load, and for retracting them in the opposite direction; and
the improvement comprising:
each said plastic slide bearing having a top which extends the full length of the bearing above the guide beam on which the bearing is mounted, sidewall portions on each side of the bearing, extending downwardly from the top of the bearing, outwardly adjacent the sides of the guide beam, and bottom lock flanges projecting inwardly from said sidewall portions, below the guide beam;



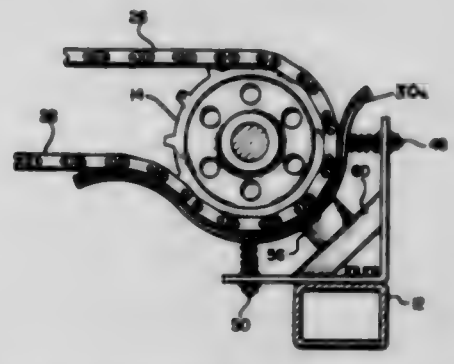
a wing on each side of the bearing, each wing extending laterally outwardly from its side of the bearing, in coplanar parallelism with the other wing, and in spaced parallelism with the top of the bearing;
said wings having lower surfaces resting on upper surface portions of the support beams, between the guide beams, and upper surfaces situated below the bottom flanges of the floor members;
each said wing having an outer edge which makes mutually bracing contact with the outer edge of an adjacent wing on a laterally adjacent plastic slide bearing, for an adjoining floor member.

4,492,304

CONVEYOR CHAIN RETAINER SHOE

Robert J. Geis, Yardley, Pa., assignor to FMC Corporation, Chicago, Ill.

Filed Dec. 14, 1981, Ser. No. 330,649
Int. Cl.³ B65G 21/20
U.S. Cl. 198—837 2 Claims



1. A guide shoe for retaining a conveyor chain in engagement with and trained around an arc of a sprocket, comprising
a shoe having an arcuate portion with a concave cylindrical surface complementary to a portion of the arc of a said sprocket,
a lining of anti-friction material on said arcuate portion and presenting a like concave cylindrical anti-friction surface for disposition along a length of the chain that is trained over a drive sprocket and through said arc,
a bracket for supporting said shoe and positioned such that the shoe is between the lining and the bracket,
means carried by said bracket for biasing said shoe for move-

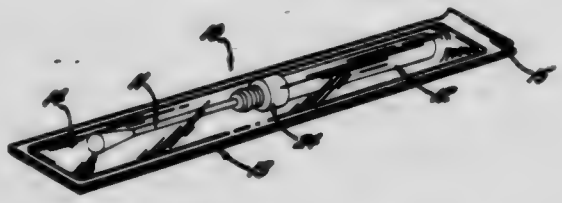
ment toward the sprocket to maintain said concave surface of said lining in contact with said length of chain as it passes through said arc, and, a separate guide means carried by said bracket for engaging and guiding said shoe to compel its movement in a direction radially of said sprocket, thereby to maintain concentricity of said shoe with said sprocket.

4,492,305

PACKAGE FOR COLLECTING CULTURES

Carl F. Avery, Overland Park, Kans., assignor to Marion Laboratories, Inc., Kansas City, Mo.

Filed Jul. 8, 1983, Ser. No. 511,851
Int. Cl.³ B65D *81/22, 85/50;* C12B *1/00;* C12K *1/10*
U.S. Cl. 206—210 3 Claims



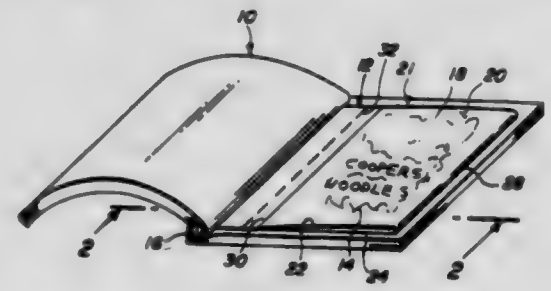
1. A culture collecting package having, in combination, a sealed one-piece ampoule made of glass, said ampoule having an elongated tubular body of circular cross section and having first and second closed ends, a culture-sustaining media contained within said ampoule, a circumferentially extending score line formed in said body a preselected distance from said first end whereby the end portion of the ampoule at said first end may be broken away from the body along the score line to permit access to said media, a swab comprising an elongated stem and a swabbing tip on one end of said stem, and a unitary closure member made of a resiliently yieldable material and mounted on the other end of said stem, said member including a cup portion opening longitudinally away from said stem and sized to snugly receive the outside of said end portion and to extend beyond said score line whereby said end portion may be broken away from said body while inside the cup portion and thereafter is retained in the cup portion, said member also including a plug portion extending along said stem toward said tip and sized to fit snugly into and close the open end of said body after a culture has been collected on said tip and the latter has been inserted in the ampoule and placed in contact with said media.

4,492,306

MAGAZINE PAGE DEHYDRATED FOODS IN PLASTIC BAGS

Penny S. Cooper, 336 W. 71st St., New York, N.Y. 10023, and Richard L. Miller, Dix Hills, N.Y., assignors to Penny S. Cooper, New York, N.Y.

Filed Jan. 16, 1984, Ser. No. 571,334
Int. Cl.³ B65D *27/00, 85/72*
U.S. Cl. 206—216 5 Claims



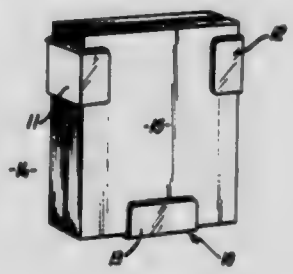
1. A magazine advertising device, comprising:
a sheet of material bound into a magazine as a page thereof, said sheet being folded onto itself about a fold line thereby defining a base layer and a cover layer, the fold line therebetween defining the outer edge of the page, advertising means formed onto the outer face of said cover layer, fastening means for securing the inner edge of the cover layer onto the base layer to define a pouch therebetween for receiving samples of the goods advertised on the cover layer, securing means for binding the inner edge of the base layer into the magazine, and detaching means for separating the portion of the body layer containing said pouch from the portion of the body layer bound in the magazine.

4,492,307

LEAFLET DISPENSER

Malcolm Hargrave, 67 Garden Village, Darwen, Lancashire, England BB3 2HS

Filed Mar. 19, 1984, Ser. No. 590,218
Claims priority, application United Kingdom, Mar. 25, 1983, 8308350
Int. Cl.³ B65D *85/62;* H47B *81/00*
U.S. Cl. 206—449 9 Claims



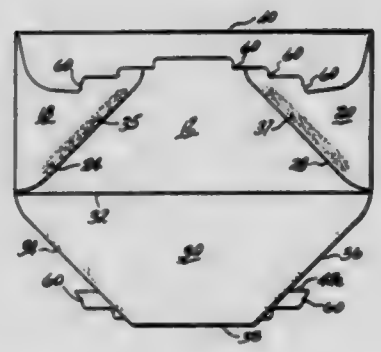
1. A dispenser for leaflets or the like comprising at least three channel-section members of like configuration, each having a base wall and two opposed side walls and having on said base wall at least one protrusion extending within said channel thereby defining at least two sub-channels.

4,492,308

QUICK OPENING ENVELOPE

David M. Meeker, Saratoga, and Harold R. Lillibridge, Burlingame, both of Calif., assignors to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 448,794, Dec. 10, 1982, abandoned, which is a continuation-in-part of Ser. No. 353,176, Jul. 1, 1982, abandoned. This application Jan. 17, 1984, Ser. No. 571,642
Int. Cl.³ B65D *27/34*
U.S. Cl. 206—610 4 Claims



1. A quick opening reclosable envelope constructed from a single sheet of flexible sheet material, said envelope comprising:
a substantially rectangular front panel having opposed inner and outer surfaces and a top edge, a bottom edge, and first and second opposed side edges;
first and second side flaps having opposed inner and outer surfaces and being hingedly connected respectively to said first and second opposed side edges of said front panel, the inner surfaces of said first and second side flaps being in abutting relationship with said inner surface of said front panel;

a planar back panel having opposed inner and outer surfaces, and a top edge, a bottom edge, and two opposed side edges, the bottom edge of said back panel being hingedly connected to the bottom edge of said front panel; and the inner surface of said back panel being attached with releaseable adhesive material to the outer marginal surfaces of said first and second side flaps;

a closure flap having opposed inner and outer surfaces, and a top edge hingedly connected to the top edge of said front panel, an adhesive portion being centrally disposed on said inner surface of said closure flap adjacent the free edge thereof opposite said top edge thereof, the distance from said top edge of said closure flap to said adhesive portion thereof being such that said closure flap may be adhesively secured to the outer surface of said back panel thereby securely closing said envelope;

a V-shaped formation of elongated perforations in said closure flap each perforation of which includes a curved portion and a straight portion, each of said straight portions extending substantially parallel to said bottom edge of said back panel, said straight portions of each of said perforations accomodating the bending and twisting of the portion of said closure flap lifted which occurs during an envelope opening operation;

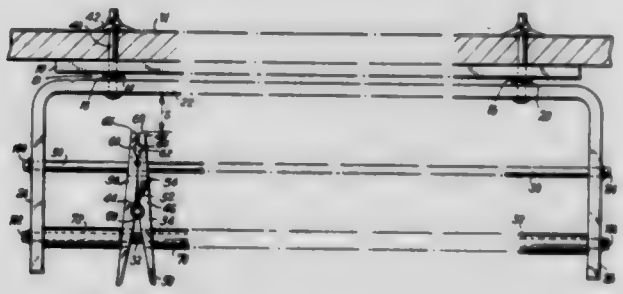
the apex of said V being the closest part of said V to the top edge of said front panel and defining a pull tab for separating said closure flap along said perforations and along a pair of severance lines substantially perpendicular to the top edge downwardly to the free edge for separating said back panel from the outer marginal surfaces of said first and second side flaps for opening said envelope.

4,492,309

MULTIPLE-OBJECTS SUPPORT RACK

Nicholas R. Fedoryshyn, 14 Evelyn La., Syosset, N.Y. 11791

Filed Jun. 10, 1982, Ser. No. 386,925
Int. Cl.³ A47F 7/00
U.S. Cl. 211—65 8 Claims



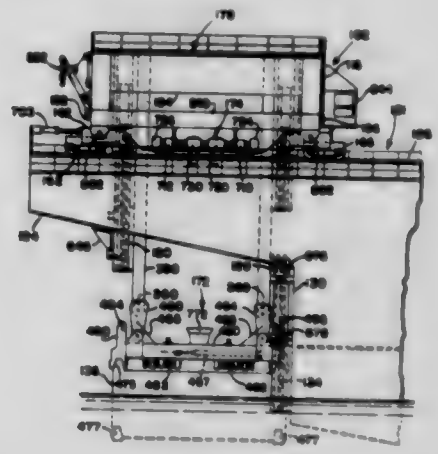
1. Apparatus for the support of a plurality of objects on a supporting structure, said apparatus comprising a support means and a plurality of clamps on said support means for the respective engagement of said objects, said clamps each including clamping members and spring means operatively associated with said members for resiliently urging one of the members towards the other of said members, said clamps being arranged in spaced rectilinear alignment and being clothespin-like structures, said support means including an anchor means for being connected to said supporting structure and detachable means detachably coupled with said anchor means to support said clamps thereon, said support means comprising a bracket including spaced arms and two spaced rods extending in parallel between and supported by said arms, said rods extending through and supporting said clamps; and spacers on said rods between said clamps to space the latter, said clamps being provided with elongated openings through which said rods pass.

4,492,310

APPARATUS AND METHOD FOR LOADING AND UNLOADING CARGO LIGHTERS ON OR FROM SHIPS

Brooks E. Weingart, Alliance, Ohio, assignor to AMCA International Corporation, Hanover, N.H.

Filed Apr. 6, 1982, Ser. No. 365,916
Int. Cl.³ B63B 35/40
U.S. Cl. 212—191 35 Claims



1. A crane for transporting a lighter from a floating position adjacent the stern of a ship to a storage location aboard said ship or for transporting said lighter from said storage location to said floating position comprising:

a hoist support structure of sufficient transverse dimension to span the width of the cargo hold of said ship;

means including wheel means for moving said hoist support structure fore and aft along spaced rails extending longitudinally along opposite sides of said ship;

hoisting means mounted on said hoist support structure;

a load frame suspended by said hoisting means, said load frame including roller guide means, said load frame being adapted for attachment to said lighter; and

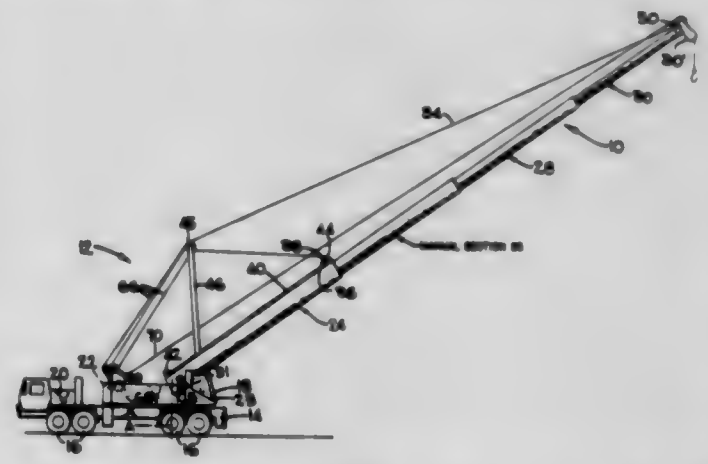
vertically extendable and retractable load frame guide means depending from said hoist support structure, said extendable and retractable guide means including vertically elongated channel means for engaging said roller guide means, said extendable and retractable guide means being adapted for restraining the swinging movement of said lighter when said lighter is hoisted.

4,492,311

COUPLING AND LATCHING MECHANISM FOR EXTENSIBLE BOOM

Robert A. Rathe, Cedar Rapids, Iowa, assignor to FMC Corporation, Chicago, Ill.

Filed Aug. 17, 1981, Ser. No. 293,729
Int. Cl.³ B66C 7/00, 23/56, 23/04
U.S. Cl. 212—264 4 Claims



1. An extensible telescopic boom for a crane or the like having a cab comprising means defining a tubular base section;

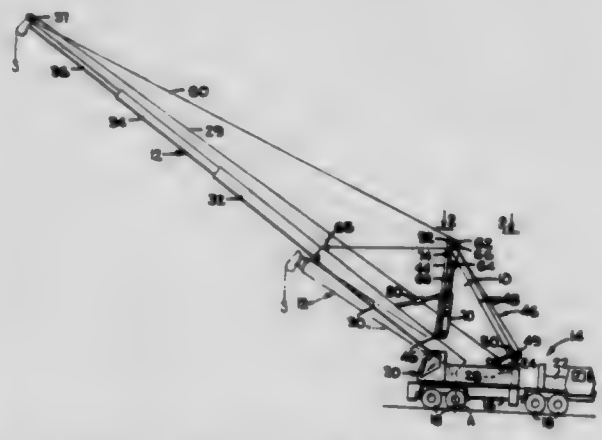
means supporting said base section for pivotal movement about a horizontal axis; means defining a manual section telescopically received in said base section; means defining at least one additional boom section telescopically received in said manual section; power means including a single cylinder connected to said additional section and a reciprocable piston rod extending therefrom; first and second abutment means rigidly secured to said piston rod; first coupling means including a first a pair of pivotal jaw means mounted on said base section for coupling said power means to said base section in response to said first abutment means entering said first pair of pivotal jaw means for extending or retracting said manual section and said at least one additional boom section relative to said base section; section coupling means including a second pair of pivotal jaw means mounted on said manual section for coupling said power means to said manual section in response to said second abutment means entering said second pair of pivotal jaw means for extending and retracting said at least one additional section relative to said manual section and said base section; powered base-manual latching means mounted adjacent one end of said boom section for latching said manual section in selected one of a plurality of positions; powered jaw latching means mounted on said base section and said manual section for selectively engaging and respectively locking said first pair of pivotal jaw means on said first abutment means and said second pair of pivotal jaw means on said second abutment means in coupling position in response to the associated pair of pivotal jaw means being in coupling position; first operator controlled means in said cab for selectively controlling said base-manual latching means and said jaw latching means; and second operator controlled means for extending and retracting the piston rod.

4,492,312

EXTERNAL PENDANT PAY-OUT SYSTEM WITH ANTI-DROOP CONTROL

Darwin N. Poock, Cedar Rapids, Iowa, assignor to FMC Corporation, Chicago, Ill.

Filed Jun. 30, 1982, Ser. No. 393,985
Int. Cl.³ B66C 23/04, 23/56, 7/00
U.S. Cl. 212—264 3 Claims



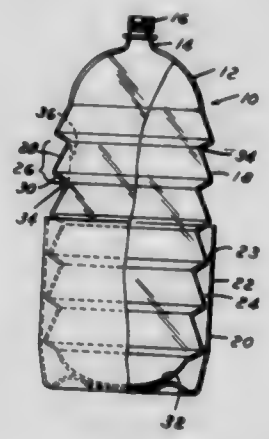
1. In a pendant pay-out system for maintaining the working angle of a pendant supported extensible boom substantially constant when the boom is being extended or retracted, said boom being pivoted to support means and including a pivotally supported base section having at least one boom section telescopically received therein, first power means for extending and retracting said at least one boom section, a live mast supported on said base section for pivotal movement relative thereto and having rotatable pendant supporting means on the free end thereof, and second power means for pivoting the mast between a lowered position and one of a plurality of raised working positions with one position defining a predetermined mast-boom angle, the improvement whih comprises: a fixed length pendant disposed entirely externally of said boom and trained over said rotatable means on said mast with one end portion connected to said at least one boom section and another end portion supportively connected to said base section, reversible power operated pendant haul in or pay out means operatively connected to said pendant for hauling in or paying out pendant, and control means mounted between said mast and base section being responsive to detecting slight angular deviations of said boom from said predetermined angle due to extension of the boom or retraction of the boom for actuating said reversible power operated means to respectively pay out or haul in sufficient pendant to maintain the boom at a predetermined angle and said mast-boom angle substantially constant during extension and retraction of the boom, said rotatable pendant supporting means including a first set of sheaves journaled on said mast, said reversible power means including a hydraulic ram having a movable portion and a stationary portion, means connecting said stationary portion to said mast, a second set of sheaves mounted for rotation on the movable portion of said ram, said pendant having multiple parts of pendant trained over said sets of sheaves.

4,492,313

COLLAPSIBLE BOTTLE

William Tousani, 318 Capitol St., Vallejo, Calif. 94590

Filed May 29, 1984, Ser. No. 614,860
Int. Cl.³ B65D 1/40
U.S. Cl. 215—1 C 18 Claims



1. A collapsible plastic bottle having a top and a base joined by a substantially cylindrical side wall integral therewith and an aperture in the top,

the improvement comprising a plurality of circular bellows formed by conical sections integrally joined to create at least a portion of the bottle side wall,

the conical sections comprising alternating short portions and long portions, said short portions being at a greater angle to the bottle axis than said long portions, and

the lesser diameter junctures of the long portions with the short portions being formed with a wall thickness less than the side thickness of the portions to create fold rings for the circular bellows.

4,492,314

REINFORCED TANK WALL STRUCTURE FOR TRANSFORMERS

Randall N. Avery, Franklin Park, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

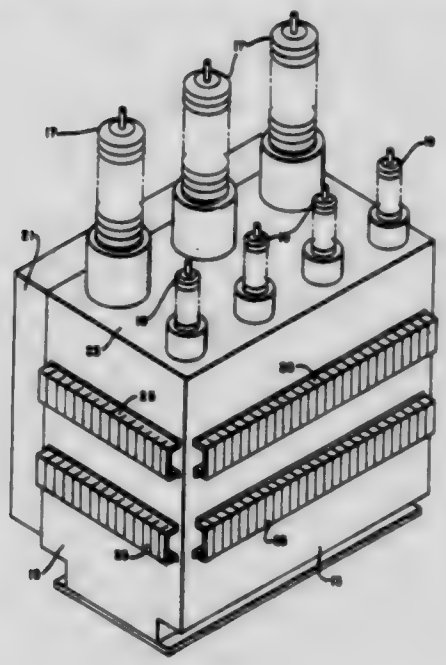
Filed Mar. 28, 1984, Ser. No. 594,058
Int. Cl.³ B65D 7/42
U.S. Cl. 220—71 10 Claims

6. A reinforced structure for resisting deflections of a tank wall that is subjected to a range of positive and negative pressures within the tank, comprising:

(a) tank means for containing fluids and comprising a tank wall; and

(b) brace means mounted on the wall for stiffening the wall and including a plurality of spaced brace members dis-

posed in general alignment so that upon limited deflection of the wall the brace members move into contact to



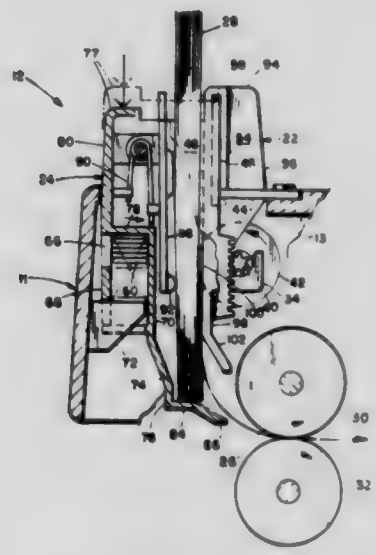
thereby increase wall resistance to additional damaging deflection.

4,492,315

MAILING MACHINE CUT TAPE FEED MODULE

Clinton E. Hooper, Brookfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 22, 1982, Ser. No. 421,698
Int. Cl.³ B65H 3/06
U.S. Cl. 221—186 6 Claims



1. A cut tape feed module for use with a mailing machine, comprising:

a stationary mounting and cassette support;

a driven pinion rotatably mounted on said mounting and cassette support;

a drive roller drivingly connected to said driven pinion; and

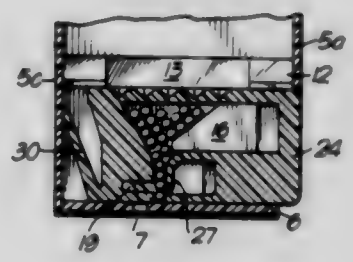
a movable, cut tape cassette slidably mounted on said mounting and cassette support, said cassette having a gear rack for driving engagement with said pinion and a biased backing plate for urging the cut tape against the drive roller, wherein downward movement of the cassette causes rotation of the drive roller which in turn effects separation of the forwardmost cut tape and dispensing thereof from the cassette, the downward movement of the cassette and the rotation of the drive roller both being in the same direction as the movement of the cut tape being dispensed.

4,492,316

TABLET DISPENSER

Norman R. Emms, Welwyn Garden, England, assignor to The Boots Company PLC, Nottingham, England

Filed Oct. 25, 1982, Ser. No. 436,555
Claims priority, application United Kingdom, Oct. 24, 1981, 8132142
Int. Cl.³ B65G 59/06
U.S. Cl. 221—202 3 Claims



1. A dispenser for dispensing tablets one at a time which comprises

an outer casing containing a reservoir in which the tablets are randomly orientated,

means for causing the tablets to be transferred from the reservoir and to become arranged in a single layer in a chamber which feeds the tablets into a dispensing passageway which is of such a width that only a single column of abutting tablets can be accomodated,

a slider mechanism, having portions which define the width of the dispensing passageway, said slider mechanism being moveable within the outer casing from a first position in which the column of abutting tablets is contained within the outer casing and a second tablet dispensing position in which the column of abutting tablets is aligned with a dispensing opening in the outer casing, said slider mechanism being provided with means whereby it is urged towards the first position,

a projection which is fixed in position relative to the outer casing in such a position that the projection is not aligned with the column of abutting tablets when the slider mechanism is in its first position but, when the slider mechanism is in its second dispensing position, the projection is aligned with the column of abutting tablets and is interposed between the tablet adjacent the dispensing opening and the remaining tablets in the column to retain the remaining tablets within the passageway so that only the tablet adjacent the dispensing opening can pass through that opening,

said means for causing the tablets to be transferred comprising a serrated portion of the slider mechanism which is located adjacent the exit from the reservoir and which, as the slider mechanism is moved between the first position and the second, agitates the tablets near the exit and causes some of the tablets to attain the correct orientation to fall into the chamber, and

one of said portions of the slider mechanism which define the width of the dispensing passageway being resilient so that in the event of a tablet being trapped between said one of said portions and the projection, said one of the portions will deform to minimize damage to the tablet as the slider mechanism is moved from the first to the second position.

4,492,317

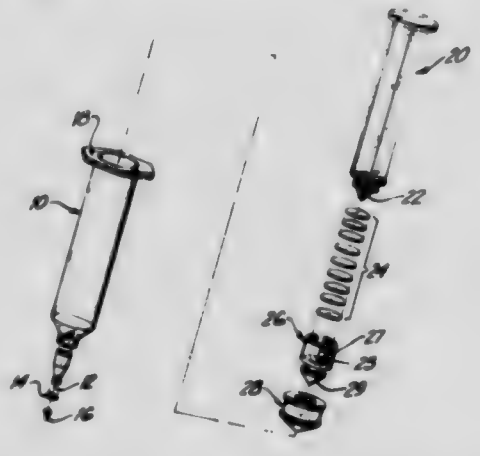
PRESSURIZING SYRINGE

Joe F. Guess, and Thomas Pearce, both of Littleton, Colo., assignors to Technicare Corporation, Solon, Ohio

Filed Aug. 19, 1982, Ser. No. 409,700
Int. Cl.³ B67D 5/06
U.S. Cl. 222—39 11 Claims

1. In a syringe, including a hollow barrel section which

contains a plunger assembly, a needle located at the distal end of said barrel section, and a fluid compartment located between said plunger assembly and said needle, wherein said plunger assembly includes a plunger, and a piston located between said plunger and said fluid compartment; the improvement comprising:



a snapdome located between said plunger and said piston, said snapdome deforming upon the attainment of a predetermined pressure within the fluid compartment to provide an audible indication thereof to a user.

4,492,318

WATER PISTOL

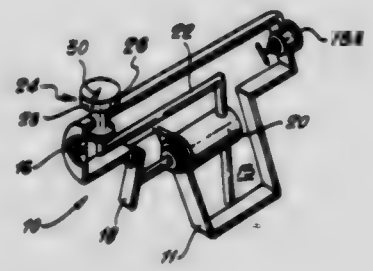
Ka-Shiu Lak, Hong Kong, Hong Kong, assignor to Heep Tung Manufactury Limited, Kowloon, Hong Kong

Filed Jul. 26, 1982, Ser. No. 402,005

Claims priority, application United Kingdom, Aug. 5, 1981, 8123953

Int. Cl.³ A63H *3/18*

U.S. Cl. 222—79 7 Claims



1. A toy water pistol comprising:

a hollow body in the shape of a gun to constitute a water reservoir, said body including,

a gun barrel,

a grip,

a simulated muzzle mounted on said gun barrel through which it can be assumed that a jet of water will issue,

a round knob-like member mounted above said gun barrel having,

a cylindrical wall with a water outlet formed therein said water outlet being of such dimensions and located in said cylindrical wall in such a manner as not to be obviously visible to an observer; and

means to allow said knob-like member to rotate through 360° whereby the user can turn said knob member to place the outlet in any desired or arbitrary orientation relative said barrel and simulated muzzle,

wherein the pistol further includes

a trigger, and

a pump capable of pumping water from said hollow body to the water outlet in said cylindrical wall on operation of said trigger, whereby a jet of water is emitted in a direction which is not obvious to people who are potential targets, including the user.

4,492,319

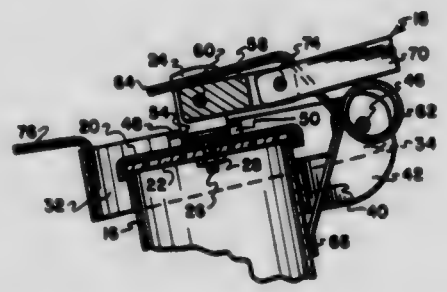
METHOD AND APPARATUS FOR ENHANCING THE FIRE COMBATANT PROPERTIES OF SAFETY CANS

Clinton T. Cooper, 105 Overhill Rd., Youngstown, Ohio 44512

Filed Aug. 9, 1982, Ser. No. 405,021

Int. Cl.³ B67D *1/16*

U.S. Cl. 222—108 8 Claims



1. In a safety can for flammable liquid comprising a container body for holding flammable liquid, a spout projecting generally upwardly from the container body and having an opening, a closure member movably mounted on the safety can for movement between open and closed positions for selectively opening and closing the spout opening, and means for biasing the closure member toward its closed position but capable of being overcome by pressure within the container beyond a predetermined value to allow the closure member to lift sufficiently from its closed position to form a substantially annular orifice through which contents of the safety can may spray to relieve such pressure, the improvement comprising skirt means mounted on the safety can and having the form of a strip of sheet material that defines an upwardly and downwardly opening, generally tubular skirt that subtantially surrounds but is spaced from the orifice for intercepting the spray pattern created when the closure member moves from its closed position under the influence of pressure within the container, and for redirecting the spray of escaping fluid such that it will accumulate in the immediate vicinity of the safety can.

4,492,320

DISPENSER WITH AN AIR PUMP MECHANISM

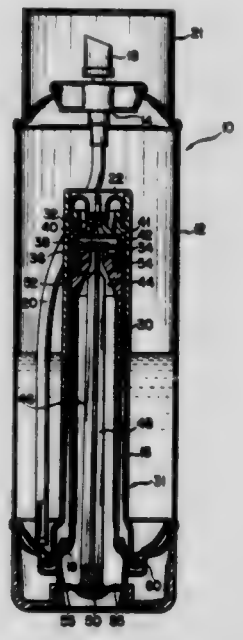
Tetsuya Tada, Tokyo, Japan, assignor to Canyon Corporation, Tokyo, Japan

Filed Sep. 9, 1982, Ser. No. 416,305

Claims priority, application Japan, Sep. 17, 1981, 56-137795[U]

Int. Cl.³ B65D *83/14*

U.S. Cl. 222—398 6 Claims



1. A dispenser with an air pump mechanism for dispensing

liquid in a container by utilizing compressed air accumulated previously in the container through a pressure accumulating valve attached to an internal end of a cylinder by sliding a piston in the cylinder extended into the container, said piston having an internal end and a bottom end, and a pressure chamber being formed between said piston and said cylinder, the dispenser comprising:

an air suction valve including an axially flexible valve body, said air suction valve being attached to said internal end of said piston for allowing air flow only into said pressure chamber formed between the piston and the cylinder; and

a release means including an elastic piece which has axially flexible elasticity and which is attached to the bottom of said piston, and a stem member having one end thereof fixed to the bottom of the elastic piece and another end extending into the piston, said stem member having a pushing part at said another end to release the air suction valve apart from a valve seat by contacting said valve body when said elastic piece moves to said air suction valve;

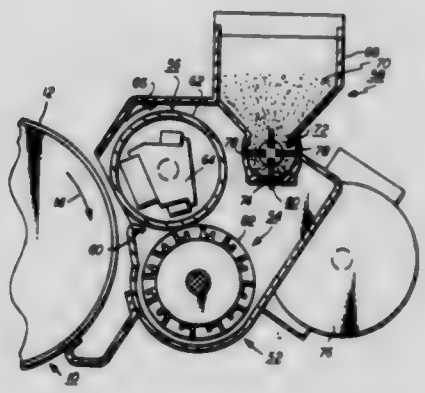
said air suction valve including said axially flexible valve body, a deformable skirt-like seal piece formed around the periphery of said valve body, and a plurality of flexible pieces coupling said valve body to said skirt-like seal piece, said axially flexible valve body being adapted to contact said valve seat in a watertight manner, and wherein a deformation of said skirt-like seat piece permits air flow into said pressure chamber.

4,492,321

APPARATUS FOR DISPENSING TONER PARTICLES AND SEALING THE STORAGE CHAMBER THEREOF

John D. Zoltner, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 22, 1982, Ser. No. 443,402
Int. Cl.³ G01F 11/20
U.S. Cl. 222—410 14 Claims



1. An apparatus for discharging particles, including:

means, defining a chamber having at least one open end, for storing a supply of particles therein; and

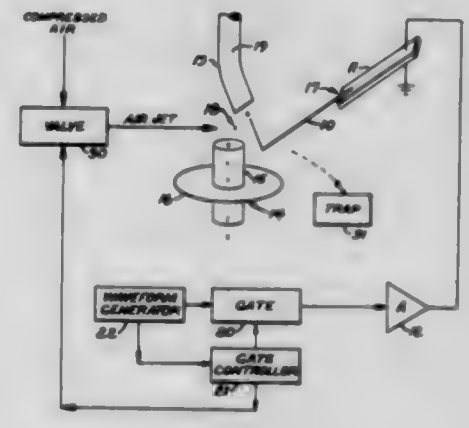
a movable brush having at least one row of bristles being of at least a size equal to the size of the open end of the chamber in said storing means and being positioned adjacent the open end of the chamber of said storing means, said brush, in the operative mode, being movable to discharge particles from the open end of the chamber in said storing means, and, in the inoperative mode, always being positioned to locate the row of bristles in the open end of the chamber of said storing means to seal the chamber of said storing means preventing the discharge of particles therefrom.

4,492,322

DEVICE FOR THE ACCURATE DISPENSING OF SMALL VOLUMES OF LIQUID SAMPLES

Gary M. Hieftje, and John Shabushnig, both of Bloomington, Ind., assignors to Indiana University Foundation, Bloomington, Ind.

Filed Apr. 30, 1982, Ser. No. 373,647
Int. Cl.³ B67D 5/00
U.S. Cl. 222—420 1 Claim



1. An apparatus for accurately dispensing small volumes of a liquid sample, which comprises:

a reservoir tube with an open lower end for holding a liquid sample;

stylus means responsive to a drive signal for forming and releasing droplets of said liquid sample by insertion into and withdrawal from said open lower end of said reservoir tube;

a baffle for shielding said droplets from air movement thereby preventing deflection of the droplets from their desired trajectory, said baffle comprising a tube and a shield for catching droplets that do not pass through the tube; and

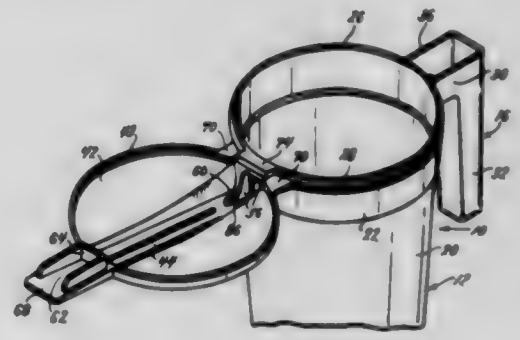
driving means for generating said drive signal for driving said stylus means.

4,492,323

WATER PITCHER

R. Eric Esser, St. Louis, Mo., assignor to Gateway Plastics, Inc., St. Louis, Mo.

Filed Nov. 9, 1981, Ser. No. 319,110
Int. Cl.³ A47G 19/14
U.S. Cl. 222—465 R 38 Claims



1. A pitcher for pouring liquid comprising a container portion having a top opening, a lid hinged at the top of the container portion near the periphery thereof allowing pivoting of the lid between an open position for access to the interior of the container and a closed position over the container opening, said top opening and lid being sized to expose substantially the entire interior of said container portion with the lid open, said pitcher having a spout opening near the periphery of said container portion on the same side as said hinge for the pouring of the contents therethrough.

4,492,324
CONTAINER WITH INTEGRAL FLEXIBLE NECK

Helmz Weber, 14 Lakeview Blvd., Beaconsfield, Quebec, Canada

Filed Mar. 15, 1982, Ser. No. 358,048
Int. Cl.³ B67D 5/37
U.S. Cl. 222—529 12 Claims

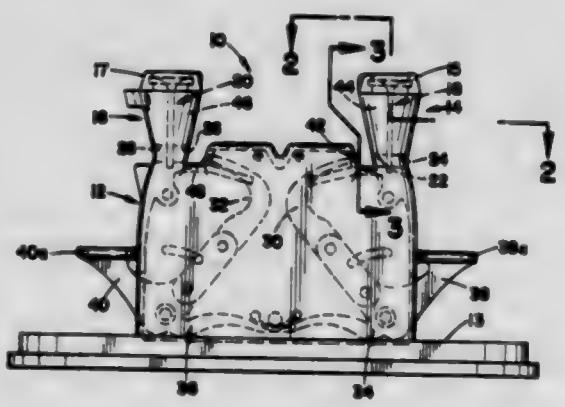


1. A container having integral therewith a flexible neck portion with a smaller cross sectional area than the container, the neck portion comprising a plurality of specially shaped accordion ribs around the neck portion extending for at least a part of the length of the neck portion said ribs having a circular profile shaped such that when the neck portion is fully extended each of the ribs has a curved upward and inward sloping wall from an extremity of each of the ribs and a curved downward and inward sloping wall from the extremity of each of the ribs, such that an integral pouring spout at the end of the neck portion can be flexed to a flexed position from an upright position to accommodate pouring, and generally retain the flexed position, the neck portion being retractable such that the walls of the accordion ribs are substantially flat, the spout having a cap to hold the neck portion in a retracted position supported on the container.

4,492,325
NEEDLE THREADING DEVICE

Arnoldus Biemans, Mathenesserlaan 432, 3023 Hg Rotterdam, Netherlands

Filed Jul. 7, 1982, Ser. No. 396,022
Int. Cl.³ D05B 87/02
U.S. Cl. 223—99 7 Claims

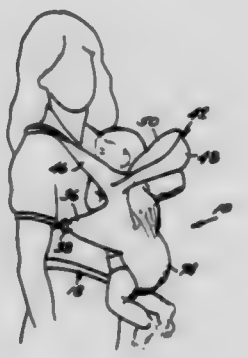


1. A needle threading device comprising housing means supporting upwardly extending needle support means having an upper end and providing needle receiving cavity means having a lower end, said needle support means having a diametrically opposed pair of openings therethrough adjacent said lower end of said cavity means, needle threader means supported in said housing means for displacement in a threading direction to move a thread sequentially through one of said openings, the eye of a needle in said cavity means and thence through the other of said openings, said needle support means including means providing a thread release passageway extending therethrough from said upper end to said one opening, said needle threader means including an actuator lever supported in said housing means for pivotal movement about a fixed axis, threader member means on said actuator lever for pivotal movement therewith, pivotal movement of said actuator lever in one direction relative to said fixed axis displacing said threader member means in said threading direction, said actuator lever including actuating arm means integral therewith and extending outwardly from said housing for pivoting said actuator lever in said one direction, said actuator lever further including biasing means integral therewith and biasing said lever to pivot relative to said fixed axis in the direction opposite said one direction, said actuator lever being of inverted generally T-shaped configuration and including an upwardly extending leg portion carrying said threader member means and having a lower end, and arm portions extending in opposite directions from said lower end of said leg portion, said fixed axis being through said lower end of said leg portion, one of said arm portions extending outwardly from said housing means and providing said actuating arm means, and the other of said arm portions being flexible relative to said leg portion and having an end spaced from said axis and engaging an abutment in said housing means to provide said biasing means for said actuator lever.

4,492,326
SLING-TYPE INFANT CARRIER

Linda W. Storm, White Sands Missile Range, N. Mex., assignor to Babies by Storm, Inc., Springfield, Ohio

Filed Mar. 28, 1983, Ser. No. 479,917
Int. Cl.³ A47D 13/02
U.S. Cl. 224—160 8 Claims



1. A sling-type infant carrier, comprising:

an approximately retangular body made of flexible material, said body having respective upper, lower, left lateral and right lateral margins;

a length-adjustable lower strap means having two opposite ends and first connector means for disconnectably connecting these ends together in encircling relation to the girth of an adult user at mid-torso level for facilitating donning and doffing of the sling-type infant carrier;

said lower strap means having a central portion thereof connected to the body in the vicinity of said lower margin, at least by said left and right lateral margins;

a length-adjustable upper strap means having two opposite ends and having a central portion thereof secured to said body along said upper margin of said body;

second connector means associated with one of said ends of said upper strap means for disconnectably connecting that end to said left lateral margin of said body below where said central portion of said upper strap means is secured along the upper margin of said body, with a respective portion of said upper strap means adjoining said second connector means, obliquely crossing the adult user's torso and extending over the adult user's right shoulder to the right lateral margin of said body;

third connector means associated with the other of said ends of said upper strap means for disconnectably connecting that end to said right lateral margin of said body below where said central portion of said upper strap means is secured along the upper margin of said body, with a re-

spective portion of said upper strap means adjoining said third connector means, obliquely cross the adult user's torso and extending over the adult user's left shoulder to the left lateral margin of said body;

said upper strap means being stuffed with pillow stuffing material along the width of said upper margin of said body and along adjoining portions thereof extending laterally leftwards and rightwards beyond the respective lateral margins of said body so as to provide a pillow which is substantially more laterally extensive than is said body at said upper margin, with said pillow thereby extending over where said upper strap means is disconnectably connected by said second and third connector means to said left and right lateral margins of said body;

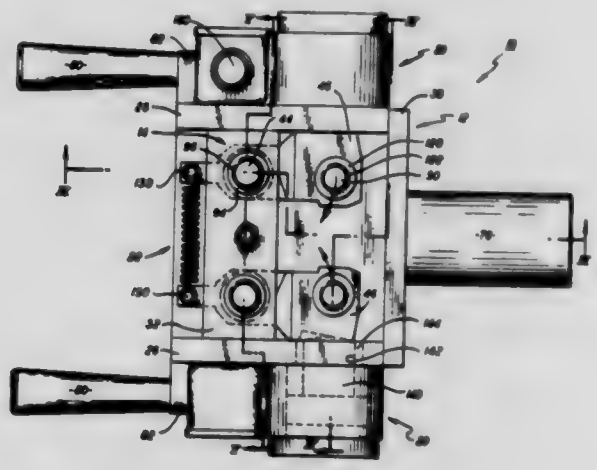
whereby said body is constructed and arranged to be supported sling-fashion on the torso of the adult user between the upper strap means and the lower strap means.

4,492,327

TUBE PULLING APPARATUS

Gregory W. Martin, Rochester, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Sep. 21, 1981, Ser. No. 303,796
Int. Cl.³ B65H *17/20*
U.S. Cl. 226—177 3 Claims



1. A tube pulling apparatus comprising:

frame means for receiving a tube;

a pair of arm means each pivotably mounted to, and located within, said frame means;

a pair of tube gripping means each rotatably supported within one of said pair of arm means at one end thereof and moved by said arm means into and out of engagement with the tube, wherein each of said pair of tube gripping means is of a generally cylindrical shape with a concave outside surface having a plurality of helically extending raised threads extending from said concave surface whereby a tube is rotated as well as moved axially;

a pair of motive means each engageable with said one end of one of said pair of arm means for moving said one end of each of said arm means to move said pair of tube gripping means into engagement with the tube;

biasing means connected to the other end of both of said pair of arm means for urging said other ends of said pair of arm means together to thereby tend to move said pair of tube gripping means out of engagement with the tube;

drive means connected to said pair of tube gripping means for rotating said pair of tube gripping means to thereby pull the tube;

each of said pair of arm means includes a pivot pin supported by said frame means and defining a pivot axis;

a pivot arm supported for pivotal movement about said pivot axis;

said drive means includes

a pair of drive gears supported for rotation about each of said pivot axes; and

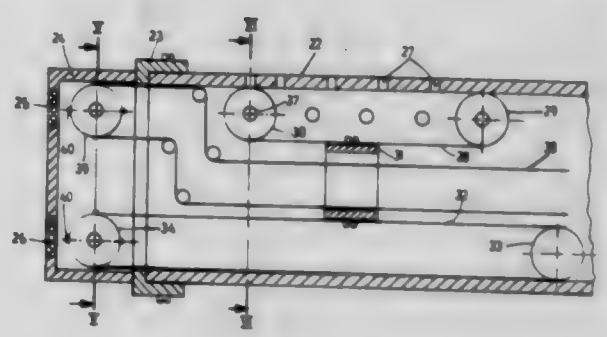
a pair of driven gears each connected to both of one of said drive gears and one of said tube gripping means for transmitting rotary motion therebetween.

4,492,328

AIR-FLOW EQUIPPED TURNING BAR FOR WEB MATERIAL

Wilhelm Männich, and Manfred Batke, both of Augsburg, Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Jul. 1, 1983, Ser. No. 510,309
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1982, 3225922
Int. Cl.³ B65H *23/32*
U.S. Cl. 226—197 15 Claims



1. Air-flow equipped turning bar for changing the path of a web, particularly of a web of printed material, having

a tubular, hollow structure (1, 22) connected to a source of air under pressure above atmospheric to subject the interior thereof to overpressure;

a plurality of air exit holes (4, 27) located in at least one axial row along the circumference of the hollow structure;

and means for closing off selected ones of said holes, comprising, in accordance with the invention,

a flexible ribbon or tape (5, 5', 28, 32, 38) located in the tubular structure close to the wall of the tubular structure through which the holes extend, said ribbon or tape, extending axially within the hollow tubular structure and being formed with a longitudinal slit (90) shorter than the length of the tape;

and positioning means (15, 13, 14, 16, 17, 18, 31, 34, 39, 40, 43, 44) coupled to the ribbon or tape axially moving the ribbon or tape, and for selectively positioning under selected ones of said holes (4, 4', 27) and slit (90) or a solid portion of the ribbon or tape, to permit, selectively, escape of pressurized air from the hollow interior of the tubular structure through the slit and the holes, or blocking of the holes by a solid portion of the ribbon or tape by engagement of the ribbon or tape against portions of the tubular structure surrounding the holes under force of the overpressure in the interior of the tubular structure, to seal the ribbon or tape against the interior walls of the tubular structure.

4,492,329

POWDER ACTUATED TOOL

John Benson, Sherwood; Harold L. Hazel, and Douglas A. Freeman, both of Portland, all of Oreg., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 322,569, Nov. 18, 1981,. This application Jun. 11, 1984, Ser. No. 619,364
Int. Cl.³ B25C *1/14*
U.S. Cl. 227—10 4 Claims

1. A tool for explosively driving an elongated fastener into a work surface comprising:

a barrel housing having a barrel slidably mounted therein;

a piston slidable in said barrel, said piston having a head on the rear thereof;

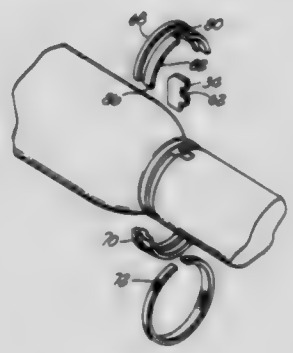
an axial slot in the wall of said barrel;

an axial slot in the wall of said housing radially aligned with said barrel slot;

a return dog extending inwardly through said slots in front of said head for limiting forward movement of said piston in said barrel; and

retention means for releasably retaining said return dog in said slots, said retention means comprising:

an annular groove in the outer surface of said housing behind said dog;



a pair of semi-cylindrical clamping segments positioned in said groove;

one of said segments having an axial cutout therein opening at its forward edge receiving said dog;

said cutout being located between 30° and 60° from one end of said one segment; and

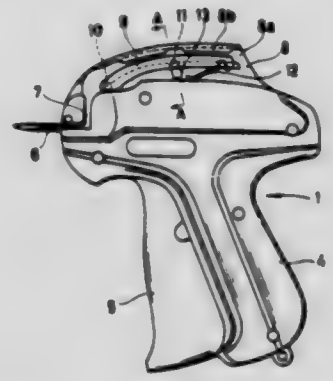
releasable spring means holding said segments in said groove.

4,492,330

FASTENER ATTACHER

Akira Furutsu, Tokyo, Japan, assignor to Japan Bano'k Co., Ltd., Tokyo, Japan

Filed Feb. 1, 1982, Ser. No. 344,593
Int. Cl.³ A41H *37/00*
U.S. Cl. 227—67 8 Claims



1. A fastener attaching device for loading and dispensing an assembly of fasteners, each fastener having a head, a crossbar, a filament connecting together the head and the crossbar, a neck disposed normal to the crossbar and extending away from the head, connecting rods disposed at the end of the fastener neck opposite the crossbar and extending normal to the neck and crossbar, the connecting rods of the fasteners being integrally joined and interconnecting the fasteners to form the assembly, said attaching device comprising:

means for individually dispensing said fasteners including an attachment mechanism, and

means, disposed along an upper surface of said dispensing means, for holding said fastener assembly, said holding means including a first wall extending upwardly from, and substantially normal to, said dispensing means upper surface, and a second wall extending normal to said first wall and overlaying said upper surface,

said first and second walls defining means for guiding said fastener assembly connecting rods to said attaching mechanism,

said second wall including surface means, disposed parallel to said first wall, for supporting said crossbars of said fastener assembly,

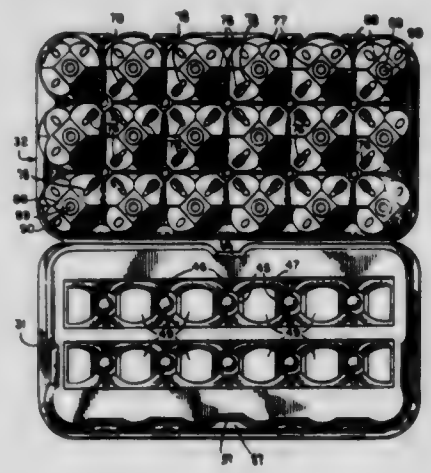
said surface means comprising a third wall extending toward said upper surface parallel with said first wall, said third wall including a surface facing said upper surface and abutting the necks of said fasteners, said third wall being positioned between said crossbars and said connecting necks of said fastener assembly.

4,492,331

MULTI-ROW EGG CARTONS

Kenneth D. Bixler, Huntington, N.Y.; Richard F. Reifers, New Canaan, Conn., and Henry A. Lord, Cape Elizabeth, Me., assignors to Packaging Corporation of America, Evanston, Ill.

Filed Sep. 29, 1981, Ser. No. 306,981
Int. Cl.³ B65D *1/00*
U.S. Cl. 229—2.5 EC 14 Claims



1. In a windowed egg carton having at least two rows of egg cells,

a cellular tray having a longitudinal row of upstanding posts,

a carton cover hingedly connected to said cellular tray and including

at least two sets of spaced rails with one set arranged at right angles to the other set with a windowed structure formed between at least one set,

said windowed structure including a plurality of openings,

at least two interengaging formations located below the level of said rails and supported on top portions of a corresponding number of said upstanding posts,

channel walls with vertical pilaster ribs extending upwardly and outwardly from opposite sides of the periphery of said interengaging formation to one of said sets of spaced rails forming a strengthened structure supporting said rails on said upstanding posts under vertical loading,

at least one of said pilaster ribs being disposed within a plane extending substantially transversely of the row of posts formed in said tray and intersecting a post of said row.

4,492,332

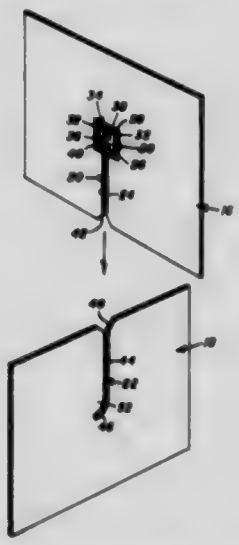
CARTON DIVIDER

Thomas D. Collins, Kennesaw, Ga., assignor to Sonoco Products Company, Hartsville, S.C.

Filed Dec. 23, 1983, Ser. No. 565,200
Int. Cl.³ B65D *5/48*
U.S. Cl. 229—15 8 Claims

1. In a carton divider comprising a pair of planar partitions having cooperative vertical slots for an intersecting of said partitions; the slot in one partition having an inner portion and an outer portion, said inner portion being enlarged and defined by an inner edge and opposed side edges, tab means within said inner portion and including an inner end attached to the inner edge of the inner portion, said tab means being coplanar with

said one partition and laterally flexible out of the plane of the one partition about the inner edge, said tab means being of greater width than the outer portion of the slot and including an outer end spanning the outer portion of the slot, said tab means including a pair of laterally spaced coplanar side bars defining a central opening therebetween aligned with the outer portion of the slot; the slot in the other partition having an



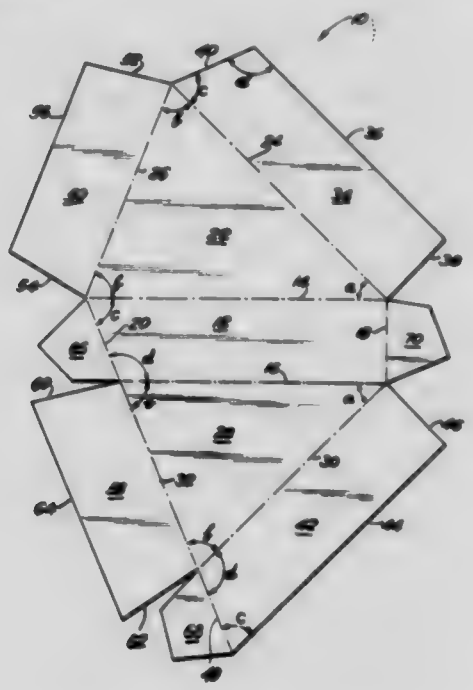
outer portion internestable with the outer portion of the slot of the one partition, and an inner portion laterally extending from the outer portion of the slot of the other partition at an angle sufficient, upon advancing engagement with said outer end of the tab means, to laterally guide the tab means along the inner portion of the slot of the other partition and position the tab means side bars to the opposite sides of the other partition.

4,492,333

SINGLE SLICE PIE CARTON WITH SLANTED OPENABLE REAR WALL AND BLANK FOR FORMING SAME

Harry H. Roberts, Roswell, Ga., assignor to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 411,523, Aug. 25, 1982, abandoned.
This application Jan. 23, 1984, Ser. No. 572,618
Int. Cl.³ B65D 5/00
U.S. Cl. 229—22 9 Claims



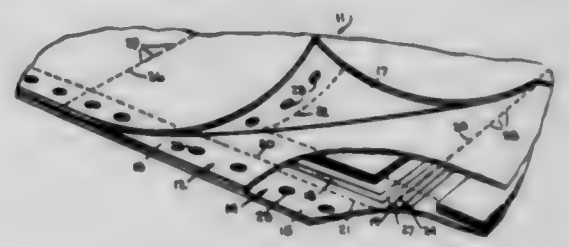
1. A paperboard blank for forming a wedge shaped carton having an openable slanted rear wall, said blank comprising:
a trapezoidal first side panel having parallel top and bottom edges and non-parallel first and second side edges, said first side edge being substantially perpendicular to said top and bottom edges, and said top edge being longer than said bottom edge;
an isosceles triangular top panel having first and second equal side edges and a base edge, said top panel first side edge and said first side panel top edge being hingedly connected and of equal length;
an isosceles triangular bottom panel having first and second equal side edges and a base edge, said bottom panel first side edge and said first side panel bottom edge being hingedly connected and of equal length, the angle between said first and second side edges of said top panel being equal to the angle between the first and second side edges of said bottom panel;
a trapezoidal second side panel having parallel top and bottom edges and non-parallel first and second side edges, said first and second side panels being substantially identical in size and configuration, said second side panel top edge and said top panel second side edge being hingedly connected and of equal length;
a trapezoidal third side panel having parallel top and bottom edges and non-parallel first and second edges, said first and third side panels being of substantially identical size and configuration, said third side panel bottom edge and said bottom panel second side edge being hingedly connected and of equal length;
an isosceles trapezoidal top flap having parallel top and bottom edges and non-parallel side edges, said top flap top edge and said top panel base edge being hingedly connected and of equal length, said top flap bottom edge and said bottom panel base edge being of substantially equal length and said top flap side edges and said first side panel second edge being of substantially equal length; and
an isosceles trapezoidal bottom flap having parallel top and bottom edges and non-parallel side edges, said bottom flap and said top flap being of substantially identical size and configuration, said bottom flap bottom edge and said bottom panel base edge being hingedly connected and of substantially equal length, whereby the carton formed from said blank includes a double side wall and a double slanted rear wall for protecting a slice of pie stored therein.

4,492,334

TENTLESS CONTINUOUS MAILER ASSEMBLY

David Dicker, Scarsdale, N.Y., assignor to Transkrit Corporation, Elmsford, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,697
Int. Cl.³ B65D 27/10
U.S. Cl. 229—69 9 Claims



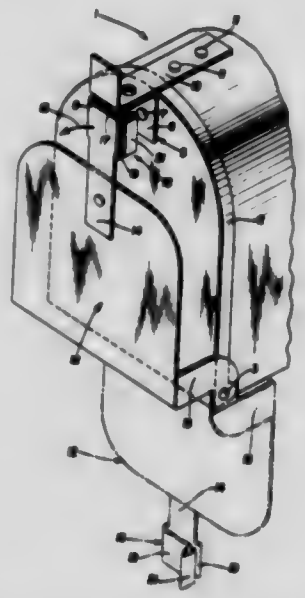
1. A continuous mailer assembly comprising
a plurality of interconnected units disposed in stacked array, each unit including a front ply, a back ply secured to said front ply to define an envelope and at least one insert ply between said front ply and said back ply;
one of said front ply and said back ply of one of said units being unconneted and contiguous with one ply of an adjacent unit and the other of said front ply and said back ply being connected with another ply of said adjacent unit in an interrupted manner.

4,492,335

MAILBOX SIGNALING DEVICE

Bobby V. Davis, 2057 Rathburn Rd., Wooster, Wayne County, Ohio 44691

Filed Nov. 9, 1983, Ser. No. 549,917
Int. Cl.³ B65D 91/00
U.S. Cl. 232—35 3 Claims



1. A mail delivery-indicating signaling device for a mailbox of the type having a box provided with an open end, a flanged door for said open end having a pivot mounting at the bottom door edge on the mailbox for movement between open and closed positions with respect to said box open end, and latch means normally holding the door in closed position; in which the latch means includes an L-shaped bracket mounted on the door adjacent the top door edge projecting outward of the door releasably engageable with a bracket mounted on the box; in which said L-shaped bracket has a flat downturned flange spaced outward of and oriented parallel to said door adapted to be engaged by the mailman and pulled outwardly to open the door on said pivot mounting; in which the mailbox is provided with a mail pickup signal device; and in which the mailbox is provided with a mail delivery signaling device actuated or released for movement to signaling position upon movement of the door to open position; wherein the improvement comprises:

(a) a generally flat mail delivery-indicating signal member pivotally mounted on the mailbox for movement between signaling and nonsignaling positions independently of opening and closing movements of the mailbox door and having a contour similar to that of the mailbox door and also having a height less than that of said door and a width substantially the same as that of said door;

(b) a signal control strap pivotally mounted on the flat signal member adjacent the top edge of said signal member for rotational movement above and laterally of the flat signal member and releasably connected with said latch means flat downturned L-shaped bracket flange when said strap extends vertically upward from said flat signal member; and

(c) said strap having actuating flange means adapted to be pressed by a mailman to rotate said strap to disconnect said strap from said flat downturned bracket flange to permit said signal member to rotate on its pivotal mounting independently of mailbox door movement to a mail delivery-indicating position below said door, before the door is opened by the mailman pulling said flat downturned bracket flange to deliver mail into said box;

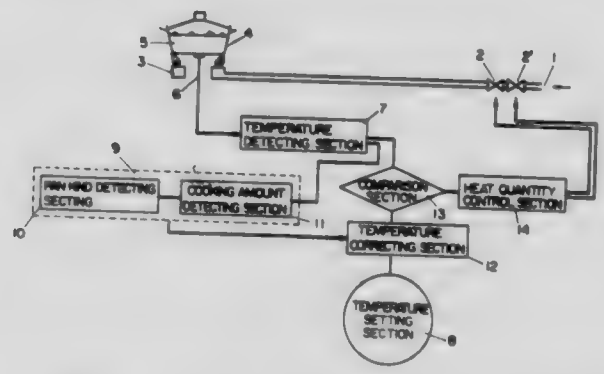
(d) whereby said door may be opened and closed by the mailman without disconnecting said flat signal member to pick up mail in the box.

4,492,336

COOKER WITH HEATING CONTROL SYSTEM

Masahe Takata, Yamatokoriyama; Shojiro Inoue, Nara, and Keiichi Mori, Izumiotsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 9, 1983, Ser. No. 473,437
Claims priority, application Japan, Mar. 17, 1982, 57-43469; Apr. 13, 1982, 57-61585; Apr. 14, 1982, 57-62745
Int. Cl.³ F23N 1/08; F24C 3/00
U.S. Cl. 236—20 A 23 Claims



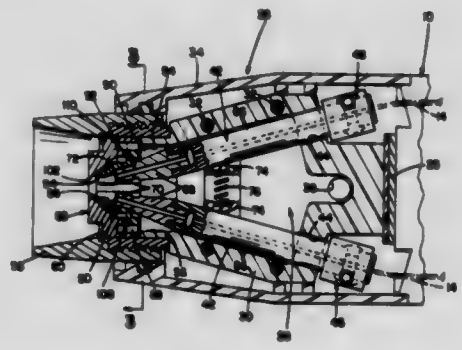
1. A cooking temperature control system comprising: a means for heating food to be cooked, a temperature detecting section for detecting the temperature of a temperature sensor in contact with the bottom of a pan, a temperature presetting section that can be preset as desired, a temperature correcting section for correcting a preset temperature by a pan kind detecting section attached to said temperature detecting section for detecting the temperature rise gradient of the pan bottom, and a heat quantity control section for delivering a control signal to a heating control means for controlling the heating rate of said heating means, wherein the temperature signal from said temperature detecting section and the temperature corrected by said temperature correcting section are compared with each other in a comparing section which is operatively connected to said heat quantity control section, and wherein the heat quantity control section increases or decreases the amount of heat generated by said heating means and controlled by said heating control means or stops it so as to maintain the temperature of the food at a constant value.

4,492,337

METAL SPRAY

Kent W. Harrington, Pembroke; John L. Stevens, Dunbarton, and Merle L. Thorpe, Hopkinton, all of N.H., assignors to TAFA Incorporated, Bow, N.H.

Filed Feb. 28, 1983, Ser. No. 470,071
Int. Cl.³ B05B 1/24
U.S. Cl. 239—81 19 Claims



10. In a metal spray device of the arc spray type,

alignment structure of electrically insulating material that defines a through passage,

said alignment structure being disposed between a gas inlet and an arc zone such that a primary stream of gas is arranged to flow through said through passage,

seat surfaces on the walls of said through passage,

individual wire guides for each wire to be sprayed, each said wire guide being adapted to guide a metal wire therethrough towards an arc zone forward of said alignment structure,

means for connecting said wire guides to a source of electric current for establishing an electric arc between the ends of the wires at said arc zone,

a gas inlet for flowing a primary stream of gas through said through passage into the arc zone to cause molten metal particles to be carried from the arc zone for deposit on a substrate, and

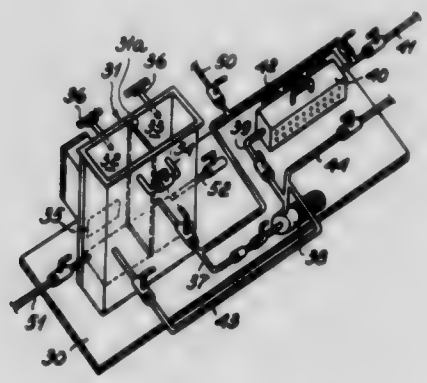
means for urging the tips of said wire guides outwardly away from one another to seat the tips of said wire guides on said seat surfaces of said alignment structure.

4,492,338

ULTRASONIC APPARATUS, PARTICULARLY FOR LIQUID PROCESSING

Ernesto Marelli, Mezzo, Italy, assignor to Ottorino Speranza, Carnobbio, Italy

Filed Feb. 16, 1982, Ser. No. 349,237
Claims priority, application Italy, Feb. 26, 1981, 20006 A/81
Int. Cl.³ B05B 1/08
U.S. Cl. 239—102 4 Claims



1. An ultrasonic assembly for the ultrasonic treatment of liquids comprising a pre-atomizer having a casing and a partition wall in the casing defining two chambers, a bridge conduit having a first end connected to a first of said chambers and another end connected to a second of said chambers, a final atomizer located downstream of said pre-atomizer and having an outlet end, piezoelectric transducers mounted on said pre-atomizer and said final atomizer, a pumping element having a suction conduit and a delivery conduit, said suction conduit of said pumping element being connected to one of said chambers, and said delivery conduit of said pumping element being connected to said final atomizer, and a recirculation conduit having a first end connected to said outlet end of said final atomizer and a second end connected to said suction conduit of said pumping element.

4,492,339

FLOW CONTROL NOZZLE

Jeffrey P. Kreitzberg, Walla Walla, Wash., assignor to Nelson Irrigation Corporation, Walla Walla, Wash.

Filed Mar. 2, 1983, Ser. No. 471,331
Int. Cl.³ B05B 3/02
U.S. Cl. 239—230 19 Claims

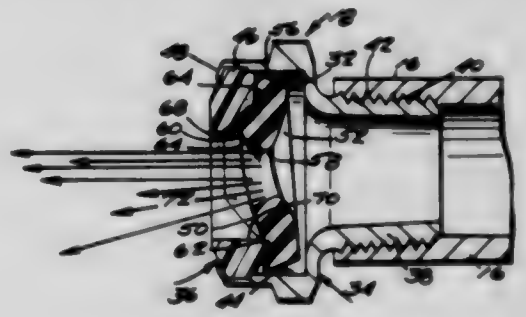
1. A nozzle assembly for a sprinkler comprising a resilient annular washer having and upstream side, a downstream side, an exterior periphery extending therebetween and an interior opening extending therebetween,

a rigid structure cooperatively receiving said washer, said rigid structure having means for enabling the same to be detachably secured to a sprinkler so as to communicate water under pressure within the sprinkler with the upstream side of said washer,

said rigid structure including peripheral surface means generally confining the periphery of said washer so as to determine generally the relative radial position at which said washer is presented for communication with the water under pressure within the sprinkler when said rigid structure is secured thereto,

interengaging surface means on the downstream side of said washer and on said rigid structure for enabling said washer to be controllably distorted by the water under pressure communicated with the upstream side thereof such that the periphery of the downstream face remains generally in the aforesaid relative radial position while the remainder is distorted axially in the downstream direction an amount which increases progressively in a direction toward said interior opening,

said washer having stream defining surface means at the juncture between said interior opening and said upstream side for engaging the water under pressure communicated



with the upstream side of the washer and forming the same into a stream issuing through said opening having a cross-sectional area and velocity which vary inversely with respect to one another depending upon the pressure of the water under pressure communicated with the upstream side of the washer so that the water flow rate within the stream is generally constant within an operative range of pressures,

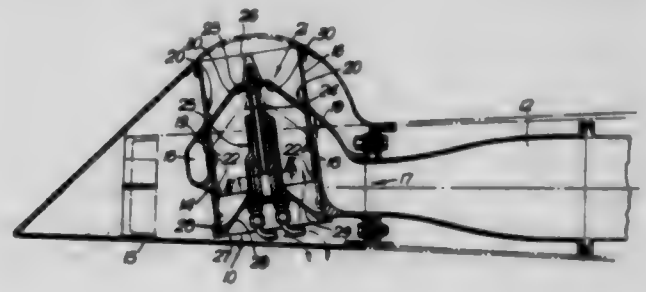
said stream defining surface means when distorted as aforesaid including at least one annular portion which is disposed axially upstream with respect to another annular portion thereof such that one portion of the stream engaged by said one surface means portion has a greater radially outward component of movement as compared with another portion of the stream engaged by said other annular surface means portion thus resulting in a greater diffusion of said one stream portion with respect to said other stream portion.

4,492,340

VALVE ARRANGEMENTS FOR PROPULSIVE FLUID

Geoffrey H. Fielding, Kingston-upon-Thames, England, assignor to British Aerospace Public Limited Company, London, England

Filed Oct. 8, 1982, Ser. No. 433,444
Claims priority, application United Kingdom, Oct. 12, 1981, 81306617
Int. Cl.³ B64C 15/00; F02K 1/00
U.S. Cl. 239—265.25 11 Claims



1. A valve arrangement for controlling the flow of a propul-

sive fluid in a reaction control system, said arrangement being adapted to receive propulsion fluid in a given direction and to controllably exhaust it in a direction generally perpendicular to said given direction, said valve arrangement comprising:

a generally muff-shaped manifold member, including manifold inlet means extending generally radially away therefrom and adapted to receive propulsion fluid from a propulsion fluid source and having a wall defining a cylindrical bore extending generally perpendicular to said inlet means, said wall also defining, adjacent one end of said bore, annular slot means through which propulsion fluid may leave said manifold;

propulsion jet outlet means arranged substantially coaxially with respect to said bore and being in flow communication therewith;

a piston member slidably received in said bore for movement between a closed position in which it sealingly closes said annular slot means and an open position in which said annular slot means is opened to allow propulsive fluid to pass from the manifold member via said annular slot means to exhaust through said propulsion jet outlet means; and

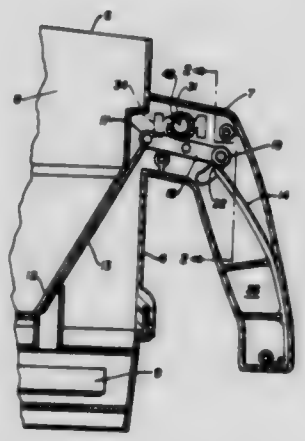
actuator means coupled to said piston member and operable to effect movement of the piston member between its open and closed positions.

4,492,341

PORTABLE HAND-HELD MATERIAL BROADCASTING DEVICE

Francis F. Allen, Moraga, Calif., assignor to Bermuda Research Corp., Orinda, Calif.

Filed Jan. 28, 1983, Ser. No. 461,943
Int. Cl.³ A01C *17/00*
U.S. Cl. 239—686 2 Claims



1. In a portable handheld material broadcasting device, a housing having a manually engageable handle and providing a storage chamber for flowable granular material superimposed over a normally horizontally rotating impeller and having a discharge opening for gravitational flow of material from said chamber to said impeller, a valve member mounted for reciprocation across said opening for regulating said material flow and having closed, intermediate and full open positions, means biasing said valve member to closed position, a manually displaceable actuating member positioned adjacent said handle and having a connection for displacement of said valve member against the action of said biasing means, and being movable to closed, intermediate and full open positions corresponding with said closed, intermediate and to full open positions of said valve member, and manually adjustable means for limiting the opening movement of said valve member and corresponding position of said actuating member for setting the rate of flow of said material; the improvement comprising:

a stop mounted on said handle and positioned to engage said actuator member when moved to its full open position and to support said actuator member when in such position against further displacement in a valve opening direction; and

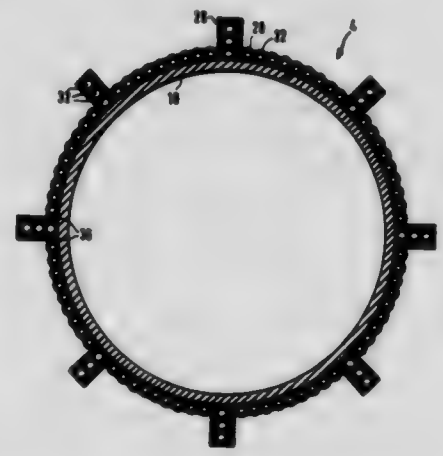
said connection being resiliently yieldable to permit forced displacement of said actuator member to said stop and without damage to said connection when said valve opening adjusting means is set at an intermediate valve open position.

4,492,342

CENTRIFUGAL DRUM FOR METALLURGICAL SLAG

Clement Burton, 42, rue Mathias Kremer, Esch sur Alzette; André Kremer, 15, bld. Pierre Dupong, Luxembourg; Hubert Stoeng, 11, rue Speyer, Howald, and Marc Solvi, 56, rue des 3 Cantons, Ehlange s/Mess, all of Luxembourg

Filed Dec. 2, 1981, Ser. No. 326,922
Claims priority, application Luxembourg, Dec. 12, 1980, 83000
Int. Cl.³ B02C *13/06, 13/26*
U.S. Cl. 241—67 15 Claims



1. Apparatus for breaking a stream of inflowing coagulated material into discrete particles comprising:

a plurality of groups of conduits, the conduits of each group being in abutting relationship and defining a portion of the outer surface of a cylinder, said cylinder having a length in the axial direction;

each of said conduits substantially extending said length of said cylinder in said axial direction beater bar means positioned between each of said groups of conduits, said beater bar means including portions which extend outwardly with respect to the surface of said cylinder, opposite side surfaces of each of said beater bar means being in abutting relationship with an outermost conduit of respective adjacent conduit groups, rotation of the cylinder defined by said conduits about its axis causing said beater bar means to impact upon and fracture material which is caused to come in contact therewith;

means for delivering a coolant to first ends of said conduits, said coolant delivering means including a common distribution chamber; and

coolant collection means, said collection means being in fluid communication with the second end of each of said conduits and including a common collection chamber.

4,492,343

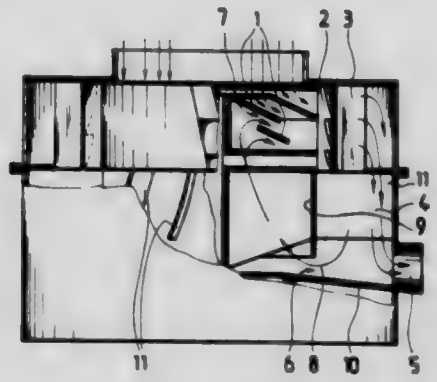
WOOD CHIP SHAVING MACHINE

Matti Jaakonmäki, and Pentti Raura, both of Valko, Finland, assignors to Rauma-Repola Oy, Finland

Filed Jan. 10, 1983, Ser. No. 456,742
Claims priority, application Finland, Jan. 28, 1982, 820285
Int. Cl.³ B02C *13/16*
U.S. Cl. 241—95 4 Claims

1. Wood chip shaver comprising a rotor, a chip guide plate on said rotor, circumferential blades disposed around the outside of said rotor, an annular interspace formed outside and below said circumferential blades to receive shavings cut from wood chips, a discharge aperture communicating with said annular interspace through which the shavings leave said

interspace, and at least one air passage provided on the margin of said interspace and in the chip guide plate of the rotor



through which an air flow created by the rotor can rejoin circulation in the shaver.

4,492,344

FIXTURE FOR A WIRE IN A WIRE-WINDING DEVICE FOR AN ELECTRIC MACHINE

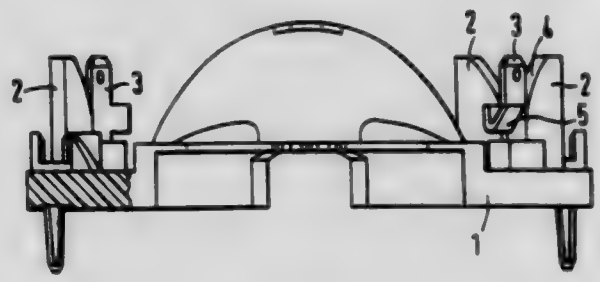
Fritz Baumann; Ernst Krländer; Siegmund Radke, all of Leinfelden-Echterdingen; Rainer Schilling, Stuttgart; Wolfgang Fuchs, Filderstadt, and Werner Rieker, Steinenbronn, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,991

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3150970

Int. Cl.³ F16C *25/00*

U.S. Cl. 242—1 10 Claims



1. A fixture for use in a wire-winding device for winding electric machines, which is mounted at a front face of a stator pack of the electric machine and is insulated thereform, comprising a connection clip for a wound wire end; a groove-shaped wire-receiving member provided on said clip at its one side for receiving the wound wire end and having an elongated receiving slot for guiding the wire, said receiving slot of said wire-receiving member having an axis of elongation and insertion means provided at the opposite side of said clip and having an elongated insertion slot for inserting the wire, said insertion slot extending at an angle with respect to said axis of elongation for inserting the wire into said elongated insertion slot, then passing the wire to said clip at the angle, and thereafter receiving the wire into said elongated receiving slot.

4,492,345

PAPER ROLL REWINDER

William J. Bakker, P.O. Box 128, Caledon, Ontario, Canada L0N 1C0

Filed Aug. 6, 1982, Ser. No. 405,769

Claims priority, application Canada, Aug. 7, 1981, 383453

Int. Cl.³ B41J *15/16*; B65H *17/02*

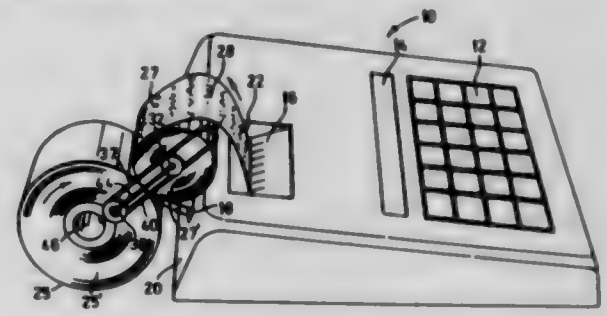
U.S. Cl. 242—67.3 R 3 Claims

1. Apparatus for allowing a paper tape to be unwound from a first roll by a printing unit, and for simultaneously rewinding the paper tape on a second roll, each roll including a hollow cylindrical core, the apparatus comprising:

low-friction cylindrical axle means for positioning within the hollow core of the second roll,

alignment means for maintaining said axle means such that the axis of the axle means remains parallel with the axis of the second roll, and for keeping the two rolls laterally aligned,

and retention means for keeping the two rolls together, said retention means including an elastic cord member adapted to pass in a closed loop through the hollow core of the first roll, between the two rolls, and through a central opening in the axle means positioned in the hollow core of the second roll,



the axle means including two stub axles, each adapted to enter one end of the hollow core of the second roll, and each having an axial bore through which the elastic cord member passes,

the alignment means including an annular gallery around each stub axle, and for each stub axle a member adapted to lodge in the gallery and to extend perpendicular to the axis of the stub axle, the member being juxtaposed and urged against the respective end of both rolls by the elastic cord member, thus maintaining the rolls laterally aligned, the two members being separate and independent of one another, and linked only by the elastic cord member.

4,492,346

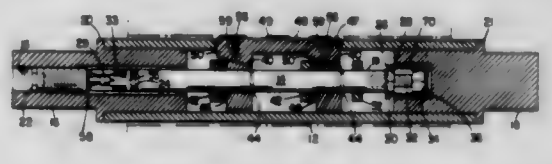
POSITIVE RETRACTING MECHANICAL EXPANSIBLE SHAFT

Lawrence C. Young, So. Easton, Mass., assignor to Double E Company Inc., Brockton, Mass.

Filed Feb. 28, 1983, Ser. No. 470,143

Int. Cl.³ B65H *75/24*, *54/54*

U.S. Cl. 242—72.1 12 Claims



1. An expansible shaft for engaging and rotating the core of a roll comprising:

an axially-extending housing;

an operating rod mounted coaxially of said housing and arranged for movement axially relative to said housing;

a core engager movable radially relative to said housing and said operating rod between an expanded position in which said core engager extends beyond the outer wall of said housing and a retracted position in which said core engager is positioned radially within said expanded position thereof;

an actuator mounted on said rod and arranged to move axially in response to axial movement of said rod, said actuator axial movement causing said core engager to move towards said expanded position in response to axial movement of said rod;

an actuating screw threadingly engaging said housing and being rotationally and axially movable relative to said

housing, said screw being mounted coaxially of and in general axial alignment with said rod; and,

means for connecting said screw to said rod to permit relative rotation of said screw and rod and to move said rod axially in one axial direction in response to clockwise rotation of said actuating screw and in the opposite axial direction in response to counterclockwise rotation of said actuating screw,

said rotatable connecting means comprising a first pair of generally oppositely axialy facing surfaces and a second pair of generally oppositely axially facing surfaces axially spaced from said first pair of surfaces,

the surfaces of said first pair of surfaces being attached to one of said rod and said screw,

the surfaces of said second pair of surfaces being attached to the other of said rod and said screw,

said surfaces of said first pair being positioned axially between said surfaces of said second pair whereby screw movement in one axial direction causes one surface of said first pair to contact one surface of said second pair and push said rod in said one direction and screw movement in the opposite axial direction causes the other surface of said first pair to contact the other surface of said second pair and push said rod in said other direction,

said one surface of said first pair of surfaces comprising a segment of a ball surface facing in one generally axial direction, said ball being attached to one of said rod and said screw, and

said one surface of said second pair of surfaces comprising a segment of the inner surface of a socket that generally envelopes said ball and is attached to the other of said rod and said screw.

4,492,347

ANTI-REVERSE MECHANISM

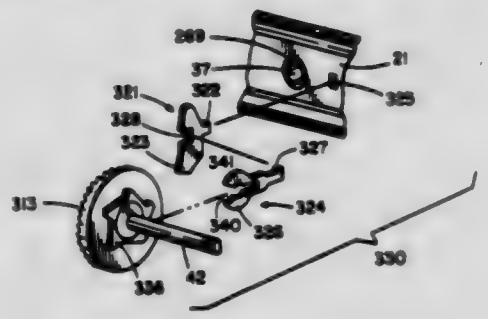
Elvis W. Moss, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 398,414, Jul. 14, 1982, abandoned, which is a continuation of Ser. No. 218,920, Dec. 22, 1980, abandoned. This application Jul. 28, 1983, Ser. No. 517,735

Int. Cl.³ A01K *89/01, 89/02*

U.S. Cl. 242—84.2 R

4 Claims



2. In a spinning reel having a body portion with a deck plate, and a fishing line retrieval mechanism having a centershaft with a first gear thereon drivably connected to a second gear on a crankshaft, the crankshaft having a handle thereon for rotation by an operator for retrieval of fishing line, an anti-reverse mechanism comprising:

a ratchet fixed for rotation with said crankshaft;

a pawl lying in a plane common with the plane of the ratchet and having

a tab and an opposing recess, said tab loosely fitting in a slot in said deck plate, and

a pawl tooth for engaging the ratchet to prevent reverse rotation of the crankshaft;

an actuator lying in a plane adjacent the plane of the pawl and ratchet, and frictional engaging the crankshaft for rotation therewith, said actuator having a tab extending transverse to the actuator plane and received in the pawl recess, whereby rotation of the crankshaft in a positive direction pivots the actuator so that the actuator tab rocks the pawl about the pawl tab to a position where the pawl tooth is free from engagement with the ratchet, and rotation of the crankshaft in the reverse direction pivots the actuator so that the actuator tab rocks the pawl about the pawl tab to a position where the pawl tooth engages the ratchet to prevent further reverse rotation of the crankshaft.

4,492,348

PROTRACTIVE FORCE RESPONSIVE SAFETY BELT LOCKING APPARATUS

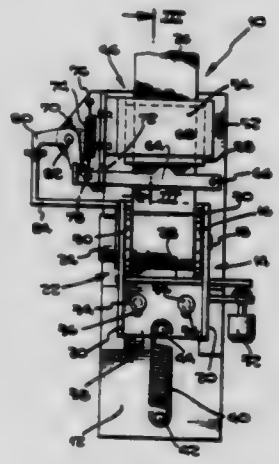
Avraham Ziv, Sepulveda, and Akira Tanaka, Northridge, both of Calif., assignors to American Safety Equipment Corporation, Troy, Mich.

Filed Jan. 29, 1982, Ser. No. 343,896

Int. Cl.³ B65H *75/48, 75/42;* B60R *21/10;* A62B *35/02*

U.S. Cl. 242—107.2

5 Claims



1. In a locking seat belt retractor apparatus for a vehicle having a frame mounted to the vehicle, a retractor reel mounted on the frame and having a safety belt webbing wound thereon for protraction and retraction and an inertia-activated pawl mounted on the frame for engaging the reel to prevent protraction of the safety belt webbing in an emergency, the improvement comprising:

(a) means for slidably mounting the retractor reel on the frame for movement between an extended position and a retracted position;

(b) biasing means for biasing the retractor reel toward said retracted position, said retractor reel being movable to said extended position by a protraction force on the safety belt webbing exceeding a threshold amount predetermined by the bias force of said biasing means;

(c) clamping means mounted on the frame and having the safety belt webbing passing therethrough for selectively clamping the safety belt webbing against further movement relative to said clamping means, wherein said clamping means comprises a wedge-shaped clamp member and means for mounting said clamp member for movement from a webbing disengaging position to a webbing clamping position, said operating means includes, biasing means for normally biasing said clamp member toward a webbing clamping position, releasable retaining means for normally holding said wedge-shaped member against movement toward said webbing clamping position and protraction force-activated tripping means for operating said releasable retaining means to a released position whereby said wedge-shaped clamp member is moved by said biasing means to said webbing clamping position, said means for mounting said wedge-shaped clamp member includes a pivotally-mounted support bar underlying said wedge-shaped clamp member and said biasing means comprises a spring operably connected to said support bar, and said releasable retaining means comprises a bell-crank linkage operably connected between said protraction force-activated tripping means and said support bar whereby said linkage normally holds said bar against the

bias of said spring and is released by rotation thereof by said protraction force activated tripping means; and,

(d) operating means operably connected to said clamping means and said reel for operating said clamping means to clamp the safety belt webbing against further relative movement when said reel is in said extended position in response to a protractive force on the safety belt webbing which exceeds said predetermined threshold amount.

4,492,349

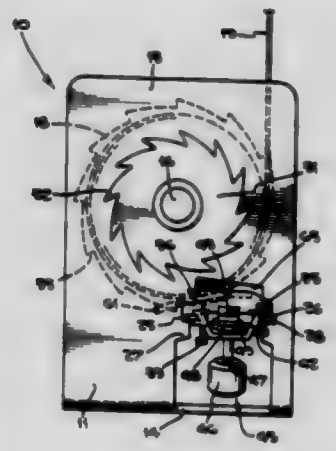
PROGRAMMED PAWL CONTROL MEANS

Nazareth Stamboulian, Los Angeles, Calif., assignor to American Safety Equipment Corporation, Troy, Mich.

Filed Sep. 8, 1981, Ser. No. 299,940

Int. Cl.³ A62B *35/02*; B65H *75/48*

U.S. Cl. 242—107.4 A 6 Claims



1. In an automatically locking safety belt retractor for use with safety harnesses employed for restraining passengers in their seat in vehicles wherein the retractor includes a belt storage spool rotatably mounted by a spool axle in a retractor frame, one or more ratchet wheels mounted on said axle, a locking bar with one or more pawl teeth for engaging said one or more ratchet wheels to lock said axle and spool against belt protraction movement, programming means for operating said locking bar into engagement with said one or more ratchet wheels and including a programming ratchet mounted to turn with said spool and a programming pawl, and vehicle inertia sensor means for actuating said programming pawl into engagement with said programming ratchet in response to changes in vehicle inertia of more than a predetermined amount, the improvement comprising the provision of:

control means for preventing movement of said programming pawl under the influence of said vehicle inertia sensor means when said belt is fully wound on said spool.

4,492,350

PACKAGING REEL

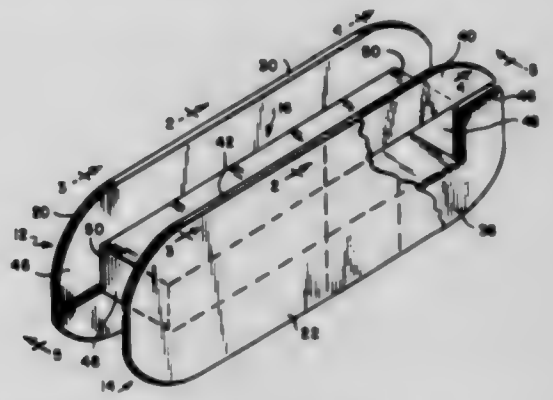
John Dgetluck, Wilbraham, Mass., assignor to Pioneer Packaging, Inc., Chicopee, Mass.

Filed Oct. 17, 1983, Ser. No. 542,545

Int. Cl.³ B65H *75/06, 75/14*

U.S. Cl. 242—118.4 12 Claims

1. A reel comprising spaced, parallel first and second outer side wall panels of corresponding configuration and a hub positioned between said first and second side wall panels comprising spaced, parallel first and second longitudinal hub panels spaced inwardly from the edges of said first and second outer side wall panels, said longitudinal hub panels being positioned at right angles to the first and second outer side wall panels and being shorter than said first and second side wall panels such that the ends of said first and second longitudinal hub panels are spaced inwardly equidistantly from the opposite ends of said first and second outer side wall panels, said first and second longitudinal hub panels defining, in conjunction with said first and second outer side wall panels, a channel between the first and second outer side wall panels within which to confine ribbon-like material to be stored thereon and said reel comprising a first reinforcing panel integrally connected at one edge to an edge of the first side wall panel and extending therefrom to one edge of the first longitudinal hub panel, a second reinforcing panel integrally connected at one edge to the other edge of the first outer side wall panel and extending therefrom to one edge of the second longitudinal hub panel, hinge means integrally connecting the other edge of the second reinforcing hub panel to said one edge of the second longitudinal hub panel, a third reinforcing panel integrally connected at one edge to the second outer side wall panel and extending therefrom to the other edge of the second longitudinal hub panel, hinge means integrally connecting the other edge of the third reinforcing hub panel to the other edge of the second longitudinal hub panel, a fourth reinforcing panel integrally connected at one edge to the other edge of the second outer side wall panel and



extending therefrom to the other edge of the first longitudinal hub panel, hinge means integrally connecting the other edge of the fourth reinforcing panel to the other edge of the first longitudinal hub panel and a glue strip hingedly connected to the other edge of the first longitudinal hub panel and adhered to the inner side of the first outer side wall panel intermediate the first and second longitudinal hub panels, said panels being comprised of a single sheet of cardboard appropriately folded to dispose the reinforcing panels at the inner sides of the first and second outer side wall panels and the first and second longitudinal hub panels at right angles to the first and second outer side wall panels and said reinforcing panels being adhesively bonded to the inner sides of the first and second outer side wall panels throughout their area of contact with the inner sides of the first and second outer side wall panels.

4,492,351

HOUSING FOR TAPE CASSETTE

Rainer Zöellner, Dietenhofen, Fed. Rep. of Germany, assignor to Grundig E.M.V., Fuerth, Fed. Reg. of Germany

Filed Jun. 9, 1983, Ser. No. 502,467

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1982, 3221761

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—197 28 Claims

1. A housing for receiving an expandable tape cassette comprising at least two sections containing respective winding spools of the tape cassette between which tape runs, with the sections movable with respect to each other so as to vary the distance between the spools and accordingly the running length of the tape therebetween with the housing adapting the cassette for use in tape playing and/or recording devices having different cassette size requirements, said housing comprising:

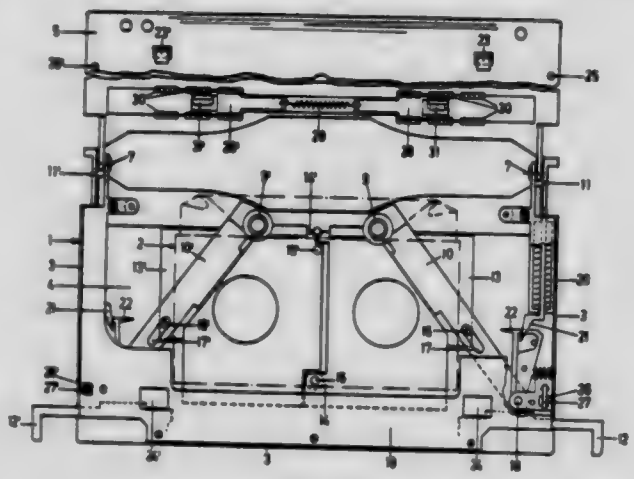
a substantially rectangular frame having at least one open side providing access to the frame interior;

plate means movably supported by said frame and adapted to receive the tape cassette sections with movement of said plate means causing respective movement of the sections positioned thereon;

pivot means supported by said frame and engageable with a portion of tape running between the spools so as to in-

crease the length of the tape adjacent the open side from a first length to a second length and guiding the tape at said second length during the running of the tape between the spools of the cassette;

slide means coupled with said plate means and said pivot means and movable from a first position to a second position whereupon said movement of said slide means causes



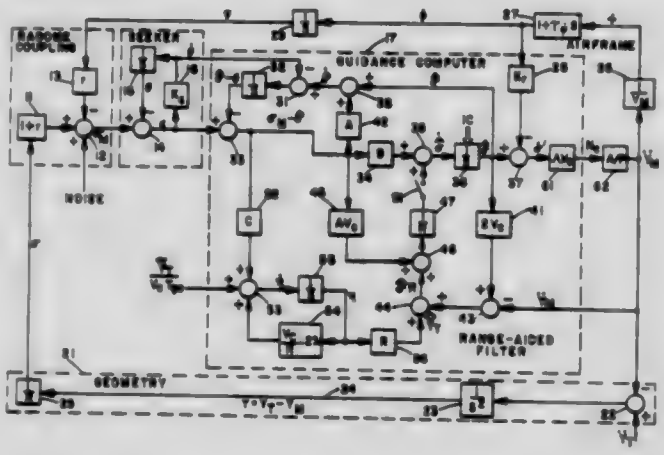
the movement of said plate means and accordingly separating the cassette sections thereon and accordingly the winding spools to a predetermined point while pivoting the pivot means so as to increase the running length of the tape along the open side of the frame and the movement from the second position to the first position returns the plate means and pivot means to their initial position.

4,492,352

NOISE-ADAPTIVE, PREDICTIVE PROPORTIONAL NAVIGATION (NAPPN) GUIDANCE SCHEME

William R. Yeah, Claremont, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Sep. 22, 1982, Ser. No. 421,537
Int. Cl.³ F41G 7/22
U.S. Cl. 244—3.15 6 Claims



1. A method for terminal guidance of a missile to intercept a target, the missile having missile control surfaces to control missile flight direction, said method employing a predictive proportional navigation system including an autopilot, an antenna, an inertial reference unit and a noise adaptive guidance computer, said system including noise and radome error compensation, said computer having an adaptive guidance filtering system, said proportional navigation system having input values for line of sight (LOS) angle σ, antenna electrical boresight angle ϵ, angle θ between the antenna axis and the missile axis, the rate of change $\dot{\theta}$ of the angle θ, and time varying noise-adaptive time constants τ_d and τ_c, where $\epsilon=\sigma_M-\theta$, deriving a modified value of LOS angle σ_M, an estimate of LOS angle σ and a residual LOS angle $\sigma_M-\sigma$, the output of said filtering system being a smoothed line of sight rate $\dot{\sigma}$ which is then multiplied by a product of the system navigation ratio A and the closing velocity V_c to provide command acceleration information to said autopilot to modify the position of the missile control surfaces, actual missile lateral acceleration being detected by said inertial reference unit, the output of said inertial reference unit being a measure of actual lateral acceleration Y_M, said method comprising the steps of:

applying the boresight error angle ϵ to a first combining point;

multiplying the residual LOS angle from said first combining point by a gain A to provide the value $A(\sigma_M-\sigma)$;

combining the value $A(\sigma_M-\sigma)$ with the LOS rate $\dot{\sigma}$ at a second combining point to provide an estimated LOS rate $\dot{\sigma}$;

combining said estimated LOS rate $\dot{\sigma}$ with said rate $\dot{\theta}$ to provide the value $\dot{\sigma}-\dot{\theta}$;

integrating the value $\dot{\sigma}-\dot{\theta}$ to provide $\sigma-\theta$;

feeding back the value $\sigma-\theta$ to said first combining point;

combining said value $\sigma-\theta$ with the angle ϵ to provide the value $\sigma_M-\sigma$ at the input to said filtering system;

multiplying the residual LOS angle by a gain B to provide the value $B(\sigma_M-\sigma)$;

multiplying the LOS rate $\dot{\sigma}$ by $2V_c$;

combining said multiplied LOS rate with acceleration term Y_M at a third combining point to provide the term $2V_c\dot{\sigma}-Y_M$;

multiplying the residual LOS angle by AV_c to provide the value $AV_c(\sigma_M-\sigma)$;

combining the values $AV_c(\sigma_M-\sigma)$ and $2V_c\dot{\sigma}-Y_M$ at a fourth combining point to provide the value

$$2V_c\dot{\sigma}-Y_M+AV_c(\sigma_M-\sigma);$$

dividing the value $2V_c\dot{\sigma}-Y_M+AV_c(\sigma_M-\sigma)$ by the range R between said missile and the target to provide the value

$$\frac{2\dot{\sigma}}{T_{go}}-\frac{Y_M}{V_cT_{go}}+\frac{A}{T_{go}}(\sigma_M-\sigma);$$

combining the immediately preceding value with the value $B(\sigma_M-\sigma)$ to provide the corrective and predictive term

$$\dot{\sigma}=\frac{2\dot{\sigma}}{T_{go}}-\frac{Y_M}{V_cT_{go}}+\left(B+\frac{A}{T_{go}}\right)(\sigma_M-\sigma);$$

then integrating the term $\dot{\sigma}$ to provide the smoothed LOS rate σ; where

$$A=\frac{1}{\tau_d}+\frac{1}{\tau_c}$$

and

$$B=\frac{1}{\tau_d\tau_c};$$

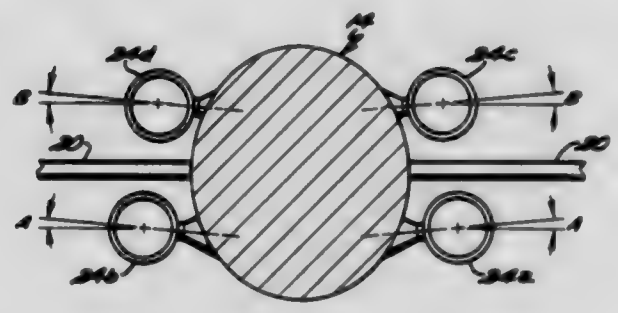
whereby gains A and B are noise-adaptive and dependent upon time-to-go, while the guidance filter output σ is also range dependent and includes both corrective and predictive terms, said method being a second order guidance scheme.

4,492,353

AIRCRAFT CAPABLE OF VERTICAL SHORT TAKEOFF AND LANDING

Bryan D. Phillips, 11605 49th Avenue North, Plymouth, Minn. 55442

Filed Sep. 30, 1982, Ser. No. 430,432
Int. Cl.³ B64C *15/12, 29/00*
U.S. Cl. 244—12.4 7 Claims



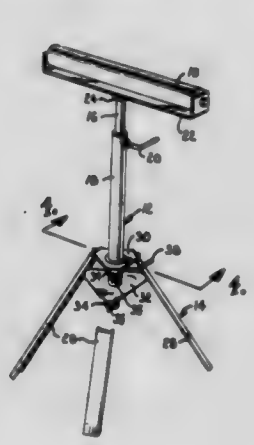
6. Engine mounting and rotating system for use in an aircraft capable of vertical and/or horizontal flight including a fuselage comprising, in combination: a mount formed in the fuselage; a shaft having a first end and a second end, with the first end of the shaft being operatively attached to the engine; bearing means located between the shaft and the mount for allowing the rotation of the shaft but preventing the shaft from moving in any other direction; and means for rotating the shaft in the mount such that the thrust of the engine can be directed at the desired angle by rotating the shaft within the mount, with the bearing means comprising, in combination: first frusto-conical surface formed on the shaft; second, frusto-conical surface formed in the mount complementary to the first frusto-conical surface; first tapered roller bearing members rotatably received by and between the first and second frusto-conical surfaces; a collar removably attached to the shaft, with the collar including a third frusto-conical surface; fourth frusto-conical surface formed on the mount complementary to the third frusto-conical surface; and second tapered roller bearing members rotatably received by and between the third and fourth frusto-conical surfaces.

4,492,354

COLLAPSIBLE STAND FOR ROLLER SUPPORT

Verle L. Rice, Cass County, Mo., assignor to R. B. Industries, Inc., Pleasant Hill, Mo.

Filed Jan. 20, 1983, Ser. No. 459,479
Int. Cl.³ F16M *11/32*
U.S. Cl. 248—163.1 3 Claims



1. A collapsible stand for mounting an upright vertical support, said stand comprising:

at least three legs;

a first plate having an opening for receiving said vertical support,

said plate having a plurality of downturned tabs at least equal to the number of legs and adapted to be coupled with said legs;

a second plate adapted to be positioned in spaced apart relationship to said first plate and having an opening aligned with said opening in said first plate,

said second plate having a plurality of douwnturned tabs at least equal to the number of legs and adapted to be coupled with said legs; and

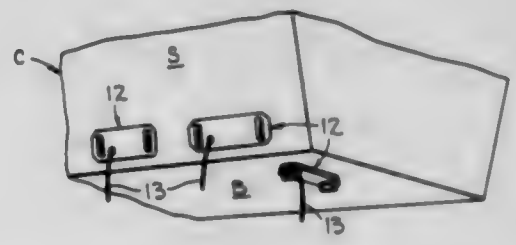
fastener means for coupling said plates with said legs.

4,492,355

MAGNETIC MOUNT FOR HEATING MODULE

Robert O. Bylin, Belmont, Calif., assignor to Bylin Heating Systems, Inc., Redwood City, Calif.

Filed Mar. 21, 1982, Ser. No. 390,316
Int. Cl.³ F24H *9/06*
U.S. Cl. 248—206.5 8 Claims



1. Apparatus for mounting a heating module having a generally planar face to a ferrous surface so that the face is in heat transferring contact with the surface comprising first and second base members rigid with the heating module and disposed adjacent the periphery of said heating module at spaced apart regions thereof, each said base member having a plate portion extending laterally outward from the periphery of said heating module disposed rearward of the plane of said face in substantial parallelism thereto, each said plate portion having at least one hole therethrough, first and second attachment members mounted to respective said base members, each said attachment member including a rigid elongate spacer extending through said hole, said spacer having an inner first end on one side of said plate portion and an outer second end on the other side of said plate portion, each said attachment member including a magnet having a body and a magnet surface, means for fixing said magnet to said first end of a respective spacer, a handle fixed to said second end and defining an abutment transverse of said spacer, said magnet residing between said plate portion and the plane of said face, a compression spring circumscribing said spacer and extending between said abutment and said plate portion for resiliently biasing said magnet so that said magnet surfae normaly resides in a first position substantially coextensive with the plane of said face, each said spring affording independent movement of a respective said magnet relatve to said face to a second position at which said magnet surface is forward of the plane of said face, said handle affording application of manual force to said magnet to move said magnet to said second position.

4,492,356

PRECISION PARALLEL TRANSLATION SYSTEM

Motoya Taniguchi; Minoru Ikeda, and Yoshihiro Komeyama, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 26, 1982, Ser. No. 436,721
Claims priority, application Japan, Feb. 26, 1982, 57-28963
Int. Cl.³ A47B *91/00*
U.S. Cl. 248—346 11 Claims

1. A precision parallel translation system comprising:

a base;

a pair of guide members parallel to each other spaced apart a predetermined distance on said base;

first rough drive means including a first moving member for

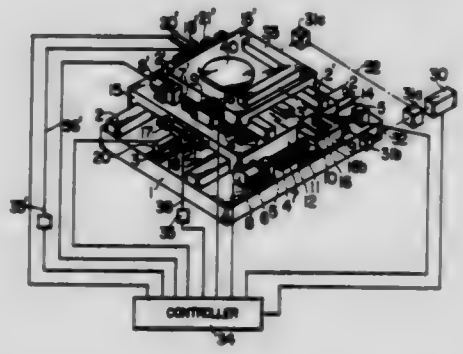
rough movement arranged on said base in parallel relation to said pair of guide members;

a first table slidably supported on said pair of guide members;

first connecting means supported on said first table for connecting and disconnecting said first moving member of said first rough drive means to said first table;

first fine drive means for fine movement supported on a support member arranged for slidingly moving and fixedly secured relation to said base, said first fine drive means including a movable portion connected to said first table;

a pair of guide members parallel to each other spaced apart a predetermined distance on said first table;



second rough drive means including a second moving member for rough movement arranged on said first table and arranged parallel to said pair of guide members;

a second table slidably supported on said pair of guide members;

second connecting means supported on said second table for connecting and disconnecting said second moving member of said second rough drive means to said second table; and

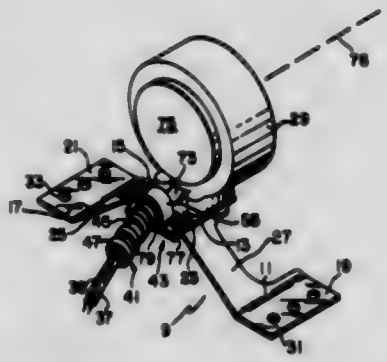
second fine drive means for fine movement supported on a support member arranged for slidingly moving and fixedly secured relation to said first table, said second fine drive means including a movable portion connected to said second table.

4,492,357

FLEXIBLE CONDUIT CONNECTION FOR MOTOR

Giles W. Merrill, Erwin, Tenn., assignor to Merrill Motors of Virginia, Inc., Pennington Gap, Va.

Filed Dec. 16, 1982, Ser. No. 448,796
Int. Cl.³ F16M 5/00
U.S. Cl. 248—674 7 Claims



1. A mounting bracket for an electric motor which provides both support for the motor and a secure anchor for one end of a flexible metal conduit through which electrical leads for the motor pass, the bracket being formed from an elongated relatively flat section of sheet metal by making four distinct bends in the sheet metal through acute angles along four generally straight lines each extending generally perpendicular to the direction of sheet metal elongation so as to define a central bracket portion to which a motor may be attached, a pair of depending legs extending from opposite sides of the central portion and a pair of feet each at a leg end remote from the central portion with the feet adapted to be mounted on a support surface, and means for securely clamping a flexible metal conduit to the central portion to prevent flexing of leads extending from an end of the conduit near the clamping means to a motor attached to the central portion,

the clamping means comprising a U-shaped strap and means for fastening the opposed free ends thereof to the central bracket portion,

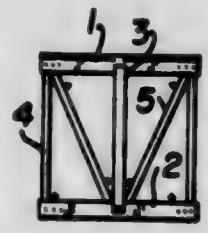
the central bracket portion including a region for receiving the strap, the region being inclined obliquely to the remainder of the central portion to minimize bending of the motor leads.

4,492,358

TRUSS SHORING SYSTEM AND APPARATUS THEREFOR

Henry J. Manderla, Burlington, Canada, assignor to Anthes Equipment Limited, Mississauga, Canada

Filed Jul. 23, 1981, Ser. No. 286,277
Int. Cl.³ E04G 11/40
U.S. Cl. 249—18 3 Claims



1. A flying truss utilized in the pouring of concrete floors, said flying truss being for use with jacks for raising and lowering said flying truss and with form means into which the concrete may be poured said flying truss including:

(a) a pair of spaced and braced substantially rectangular interconnectable modular truss sections connected together to form a structural unit, each said section at least including:

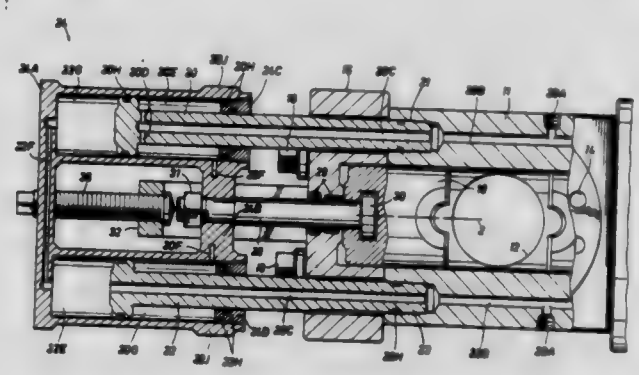
(i) a pair of upper and lower longitudinally extending chords, the upper chords being adapted to support the form means;

(ii) at least a pair of longitudinally spaced vertically extending connectors serving to connect and space said chords apart,

(iii) at least one vertically extending load-bearing member of substantially hollow, box-like cross-section, intermediate said pair of vertical connectors, secured to the side faces of said chords and also serving to connect and space said chords apart, the connection of said vertically extending load bearing member and said lower chord defining a support point for one of said jacks; and

(iv) a pair of diagonally extending members located between an associated pair of vertical connectors and load-bearing members; the first diagonal member of each said pair thereof being connected at its upper end to the upper chord adjacent the upper end of an associated said connector and the second diagonal member of each said pair thereof being connected at its upper end to said upper chord adjacent the upper end of an associated said load-bearing member; the diagonal members of each said pair thereof extending downwardly from their said upper connections towards one another where their lower ends are connected to said lower chord intermediate said associated pair of vertical connectors and load-bearing members, said lower connections being capable of serving, when required, as additional support points for said jacks.

4,492,359
VALVE ASSEMBLY
Benton F. Baugh, 14626 Oak Bend, Houston, Tex. 77079
Filed Jun. 25, 1982, Ser. No. 392,277
Int. Cl.³ E21B 33/06
U.S. Cl. 251—1 A 13 Claims



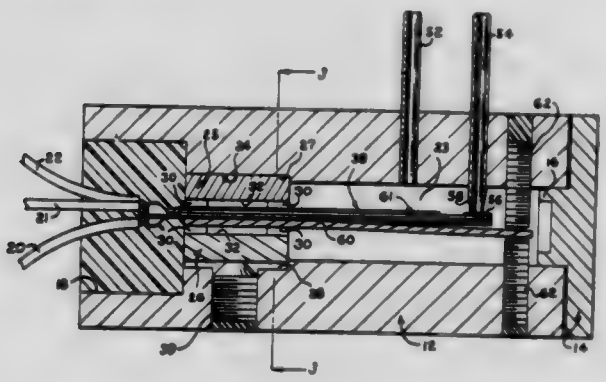
4. In a valve of the ram-type having a housing with a central bore therethrough, a ram guideway transverse to said bore, and a ram slidable along said guideway, improved means for moving said ram comprising:

piston support means interconnected to said housing;

pressure-responsive cylinder means carried by and slidably movable relative to said support means and including an inner cylinder assembly plate rigidly interconnected to said ram whereby said pressure-responsive means is immovable with respect to said ram, said pressure-responsive means being for

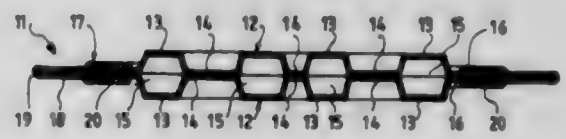
urging said ram toward said bore to reduce fluid flow therethrough; and away from said bore and at least partially out of said guideway in response to said pressure.

4,492,360
PIEZOELECTRIC VALVE
Leighton Lee, II, Guilford; Gerald W. O'Dell, Old Lyme, and Ludwig K. Holtermann, Old Saybrook, all of Conn., assignors to The Lee Company, Westbrook, Conn.
Filed Jun. 7, 1982, Ser. No. 385,885
Int. Cl.³ F16K 31/04
U.S. Cl. 251—129 13 Claims



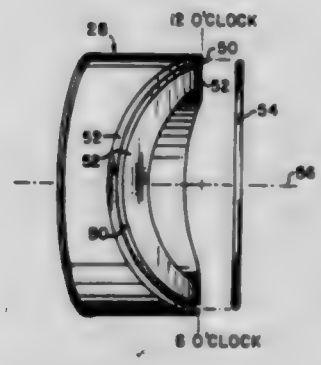
1. In a piezoelectric valve having an elongated, cantilevered control arm assembly with an elongated, cantilevered, piezoelectric valve operating arm adapted to be selectively piezoelectrically deflected in at least one direction in a plane of operation thereof for selectively operating the valve, and mounting means cantilever mounting the control arm assembly, the improvement wherein the control arm assembly further comprises an elongated, cantilevered, limit arm having inner and outer ends and being mounted contiguous to the valve operating arm in its said plane of operation with said outer end separate from said operating arm and adapted to engage said operating arm to limit the deflection of the valve operating arm in its said one direction.

4,492,361
FLAP FOR AIR FLOW CONTROL IN VEHICLE HEATING AND COOLING SYSTEMS
Maurice Jacquet, and Jean-Claude Le Du, both of Mesnepus, France, assignors to Valeo, Paris, France
Filed Jul. 19, 1982, Ser. No. 399,285
Claims priority, application France, Jul. 28, 1981, 81 14631
Int. Cl.³ F16K 1/22
U.S. Cl. 251—356 5 Claims



1. A flap for controlling the flow of air in a duct, and particularly in a heater or air conditioner for a motor vehicle, said flap having a peripheral edge being formed by two substantially identical, half-flaps stamped from a sheet of light material having a thickness of less than about 0.6 mm, the half-flaps being joined together in face-to-face relation, each of said half-flaps having a plurality of outwardly projecting hollow stiffener ribs disposed opposite from each other and having rib interiors facing each other when the two are joined forming box section channels, the ribs in each half-flap including longitudinal, transverse, and diagonal rib portions all being in contiguous relation with each other, a duct sealing ring of resiliently deformable material, molded over the peripheral edge of the flap, and an end piece fixed between the mating half-flaps on at least one end of the flap when joined and serving as a stub-axle about which the flap may pivot.

4,492,362
VALVE SEAT WITH TRAPPED O-RING
Frank Garcia, Jr., Spring, and David L. Brown, Houston, both of Tex., assignors to Vetco Offshore, Inc., Ventura, Calif.
Filed Nov. 26, 1982, Ser. No. 444,565
Int. Cl.³ F16K 3/00
U.S. Cl. 251—363 16 Claims



1. A generally cylindrical valve seat adapted to mate transversely with the inner surface of a valve main bore, said seat comprising:

a cylindrical neck portion of constant inner and outer diameters;

a generally saddle-shaped mating end including a smooth eccentric surface between the inner and outer diameters, said eccentric surface contoured to conform to the inner surface of the valve main bore;

a generally rectangular groove following the contour of the eccentric surface and having constant width and depth, said groove further having opposite, parallel sidewalls substantially perpendicular to the eccentric surface, and a base parallel to the eccentric surface;

a flexible O-ring seal trapped within the groove by friction, said ring protruding above the eccentric surface while being compressed within the groove such that the ring contacts the opposite sidewalls and the base.

4,492,363

MULTIPLE PULLEY SHEAVE ASSEMBLY WITH RETAINER PULLEYS

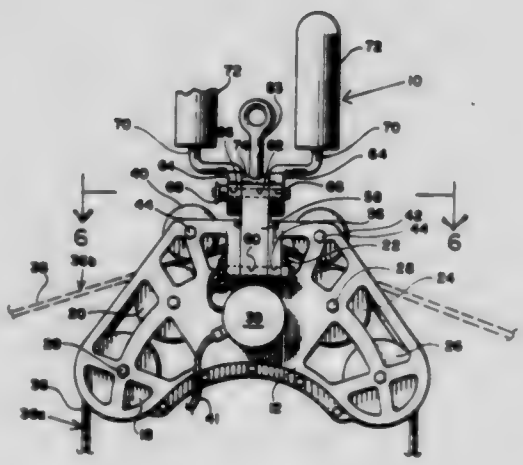
Shale J. Nishis, 3415 Chase Ave., Miami Beach, Fla. 33140

Continuation-in-part of Ser. No. 313,758, Oct. 22, 1981, Pat. No. 4,417,718, which is a continuation-in-part of Ser. No. 222,970, Jan. 7, 1981, Pat. No. 4,301,996, which is a continuation of Ser. No. 105,666, Dec. 20, 1979, abandoned, which is a continuation of Ser. No. 027,311, Apr. 5, 1979, abandoned. This application Feb. 18, 1983, Ser. No. 467,932

The portion of the term of this patent subsequent to Nov. 29, 1996, has been disclaimed.

Int. Cl.³ B66D *3/08*; G01P *3/50*

U.S. Cl. 254—394 5 Claims



1. A sheave assembly for supporting a cable, comprising:

a support frame;

a plurality of cable-receiving pulleys for receiving the cable comprising at least two outer pulleys and a center pulley positioned therebetween, each of said cable-receiving pulleys being rotatably mounted to said support frame along an arcuate path with their axes of rotation being substantially perpendicular to a plane containing said arcuate path;

a pair of retaining pulleys being rotatably mounted to said support frame with their axes of rotation being substantially perpendicular to said plane, said retaining pulleys being positioned immediately adjacent said cable on the side of said cable opposite that side which is adjacent to said cable-receiving pulleys, one of said retainer pulleys being on one side of said center pulley and the other retainer pulley being on the opposed side of said center pulley;

cable monitoring means operatively coupled to said center pulley for measuring the tension of said cable; whereby the bend of said cable remains substantially constant regardless of the direction of the ends of the cable extending from said sheave assembly, said cable monitoring means includes means for slidably mounting said center pulley to provide movement of said center pulley in a direction substantially angled with respect to said arcuate path at said center pulley and strain measuring means operatively coupled to said means for slidably mounting said center pulley for measuring the force applied by the cable to said center pulley in said direction substantially angled with respect to said arcuate line, whereby the force is used to determine the line tension of the cable, wherein said arcuate path of said cable-receiving pulleys has an increasing rate of curvature as the path extends outward and downward from its center.

4,492,364

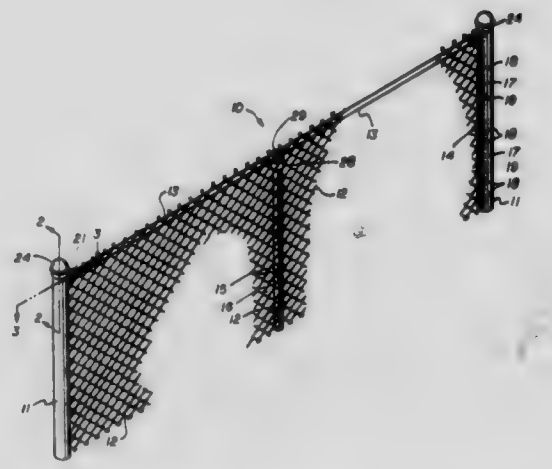
CHAIN LINK FENCE SYSTEM

Walter L. Boynton, Houston, Tex., assignor to Innovative Research and Development Co., Houston, Tex.

Filed Aug. 17, 1983, Ser. No. 523,838

Int. Cl.³ B21F *27/00*

U.S. Cl. 256—47 15 Claims



1. A chain link fence system comprising

a pair of end, corner, or gate posts anchored vertically in the earth in laterally spaced relation,

a cross bar extending between the upper ends of said posts and secured thereon, and

a chain link fence material extending between and secured at opposite ends to said posts, in which

each of said posts comprises a tubular metal post having a series of vertically aligned retaining bands spaced longitudinally thereof with narrow openings extending between said bands in vertical linear relation,

said openings receiving the opposite end portions of said chain link fence material,

an opening on the surface of the top portion of said post in vertical alignment with said first named openings and retaining bands to receive one end of said cross bar member,

said cross bar member having opposite end portions, each sized to fit into said last named opening and having a hole positioned vertically when installed in said last named opening, and

a retaining rod inserted downwardly through said hole in the end of said cross bar member behind said bands and through the end loops of the respective ends of the chain link fence material, thereby securing said cross bar and chain link fence material to each of said posts.

4,492,365

POROUS NOZZLE FOR BLOWING GAS THROUGH STEEL

René Desaar, rue Michel Body, 67, B-4330 Grace-Hologne, Belgium

Filed Jun. 27, 1983, Ser. No. 508,165

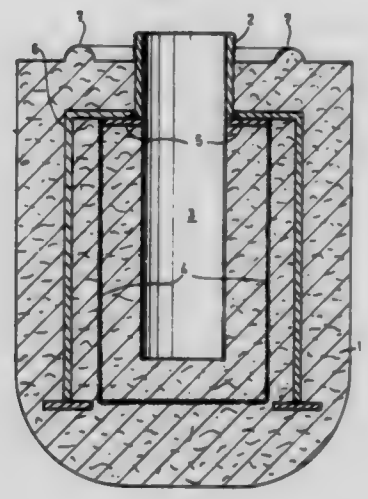
Claims priority, application Belgium, Jun. 25, 1982, 208450

Int. Cl.³ C21C *5/32*

U.S. Cl. 266—220 4 Claims

1. Porous nozzle for blowing gas through a bath of steel, characterized by a body (1) of solid porous material, having on its upper face a bushing (2) for securing the body to the end of a blowing lance, said body being formed with a central cylindrical cavity (3) which is in communication with the interior of the bushing (2) for receiving an inert gas from said lance, a

large-mesh grill (4) which is embedded in the body and encloses the central cavity (3) so as to reinforce the porous material of the body (1), and a metal ring (5) secured about the bushing (2), the grill (4) being welded to said metal ring (5).

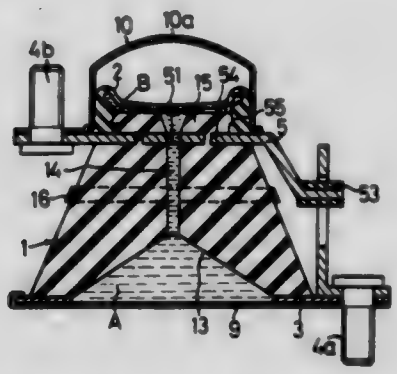


4,492,366

ELASTICALLY DAMPING DEVICE FOR THE SUSPENSION OF AN ENGINE

Isao Ozawa; Yukio Aoso, both of Inazawa, and Masato Ueno, Komaki, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Sep. 29, 1982, Ser. No. 427,533
Claims priority, application Japan, Sep. 30, 1981, 56-156031; Oct. 9, 1981, 56-161878; Dec. 24, 1981, 56-213604; Dec. 25, 1981, 56-198200[U]; Dec. 29, 1981, 56-215872; Dec. 29, 1981, 56-198337[U]
Int. Cl.³ F16M *5/00*; B60G *11/62*
U.S. Cl. 267—140.1
10 Claims



1. An elastically damping device for the suspension of an engine comprising:

an elastically yielding block having an upper surface and an under surface which is in parallel with said upper surface;

a first supporting plate for supporting said block on a body of a vehicle, which is connected to said under surface of said block;

a second supporting plate for mounting said engine on said block, which is connected to said upper surface of said block;

said block being provided with a conical cavity which is formed in the bottom portion thereof so as to open in said under surface, and a passageway which is formed from the top portion of said cavity to said upper surface of said block in the vertical direction;

the diameter of said passageway being changeable as said block yields upon receiving engine vibration of large amplitude;

a bottom plate which is fixed to said under surface of said block and covers said cavity to form a first fluid chamber;

an elastically yieldable sheet member of which peripheral end is fixed to said upper surface of said block around the opening of said passageway to form a second fluid chamber;

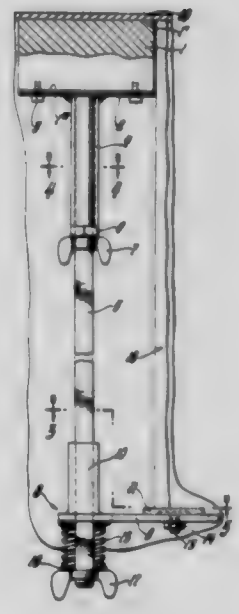
said first fluid chamber, said second fluid chamber and said passageway being filled with a liquid.

4,492,367

MAGNETIC HOLDING APPARATUS

Larry Cox, 40643 Judd Rd., Belleville, Mich. 48111

Filed Dec. 7, 1979, Ser. No. 101,092
Int. Cl.³ B25B *11/00*
U.S. Cl. 269—8
3 Claims



1. An apparatus for holding a furnace or kiln block in a predetermined position relative to the external metallic shell of a furnace or kiln, comprising:

a foot assembly engaging a first side of said furnace or kiln block, said first side being remote from said external metallic shell;

a rod having first and second ends for adjustably supporting said foot assembly so as to hold said furnace or kiln block in a predetermined position relative to said external metallic shell, said rod being threaded along substantially the entire length thereof;

said foot assembly including a plate member adjustably supported by said rod, said plate member being provided adjacent a first end thereof with a collar member adapted to be received about said rod;

a resilient protective pad member mounted on said plate member and adapted to engage said first side of said furnace or kiln block, said protective pad member being adjustably supported on said plate member so as to be selectively fixed at a desired position along the length of said plate member;

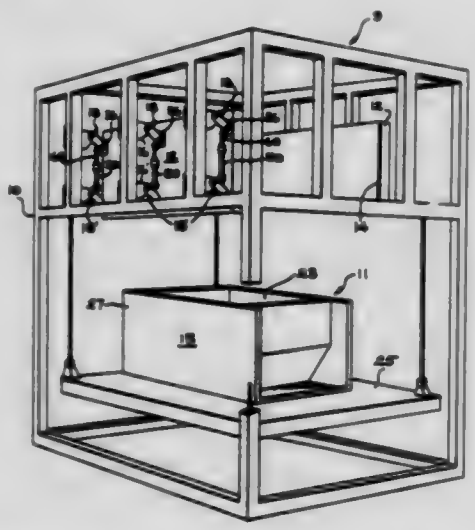
said foot assembly including a spring member received around said rod below said plate member, and a fastening member disposed below said spring member;

said fastening member cooperating with the threads of said threaded rod and with said spring member so as to selectively and resiliently fix said plate member at a position along said threaded rod wherein said furnace or kiln block is securely positioned between said protective pad member engaging said first side of said block and a portion of an inner surface of said metallic shell engaging said second side of said block; and

a magnet operably connected to said rod for magnetically securing said apparatus to said external metallic shell to enable said apparatus to hold said furnace or kiln block in said predetermined position to said external metallic shell, said magnet being disposed between said external metallic shell and said rod and having a first side thereof removably and magnetically affixed to said external metallic shell;

said rod having a first end thereof supported by a second side of said magnet opposite said first side of said magnet;
said first end of said rod being adjustably received within a sleeve member secured to said second side of said magnet and secured at a desired position within said sleeve member by a fastening member.

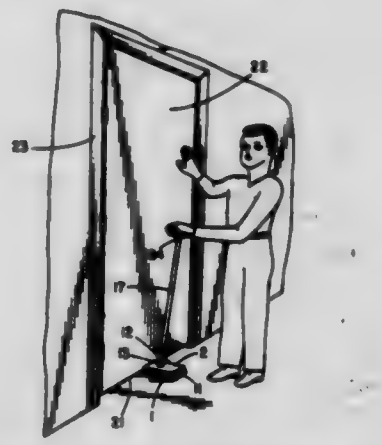
4,492,368
FORCE APPLYING APPARATUS
Cornelius DeLeeuw, and Thomas O. Blunt, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.
Filed Jul. 13, 1983, Ser. No. 513,441
Int. Cl.³ B29D 23/00
U.S. Cl. 269—32 11 Claims



1. Apparatus for applying force in one direction to an article and restraining movement of the article in the opposite direction comprising:
a reciprocally rotatable link having a first and second end,
means to rotate the link connected to the first end of the link,
a cam shaft having a first and second cylindrical portion, said first cylindrical portion having a different central axis of rotation than the second cylindrical portion, said first cylindrical portion of the cam shaft being secured to the end of the link at the end of the link opposite the end connected to the rotating means to provide rotational movement of the cam shaft when the link is rotated,
a mounting block having a bore therethrough and the first cylindrical portion of the cam shaft passes through the bore,
a rotating member pivotal at one end and movable from a first position to a second position and having the second cylindrical portion of the cam shaft rotatably secured at the end opposite from the pivotal end,
whereby rotation of the member from the first position to the second position moves the mounting block in the direction of the article, and rotation of the link rotates the cam shaft about the axis of the second cylindrical portion and the eccentric rotation of the first cylindrical portion through the mounting block causes the mounting block to exert mechanical force against the article in the direction of the article.

4,492,369
DOOR LIFTING AND CENTERING DEVICE FOR HANGING HEAVY DOORS
Harold F. Pohl, 69 Dawn Ave., Plano, Ill. 60545
Filed Feb. 7, 1983, Ser. No. 464,208
Int. Cl.³ E23Q 3/18
U.S. Cl. 269—69 4 Claims

1. A door lifting and centering device for hanging heavy doors, comprising door engaging means to raise and lower a door to position it for hanging, lifting means to raise and lower said door engaging means, said lifting means including elongated operating means to operate said lifting means for raising and lowering said door engaging means, said elongated operating means including a hand grasp member, said elongated operating means extending between said door engaging means and said hand grasp member a preselected distance, said preselected distance being long enough to position said hand grasp member at a height relative to a person operating said device whereby he need not stoop down in order to reach said hand grasp member with his hand for operation of said device when said door engaging means thereof has engaged a door for positioning said door for hanging, wherein said lifting means includes a base plate having a flat smooth upper surface, a lift plate positioned above said base plate, said door engaging means includes a projecting finger projecting outwardly from an edge of said lift plate, said lift plate and said projecting finger extending in one direction a first distance, said base plate extending in said one direction at least said first distance, an aperture through said lift plate, a projecting body portion extending upwardly from said upper surface of said lift plate

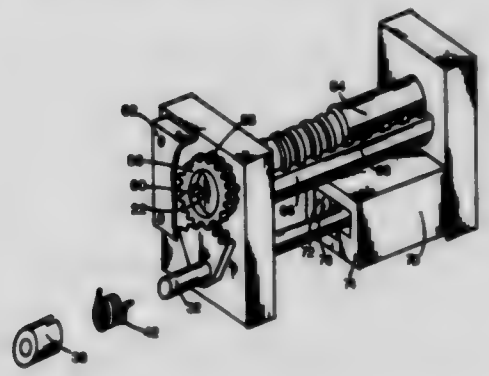


positioned over said aperture and integrally connected to said lift plate, said projecting body portion including an internally threaded bore therethrough, said internally threaded bore being in registration with said aperture, said elongated operating means including an elongated shaft having a first free end and an opposite second end, a portion of said elongated shaft having external threads formed thereon from an intermediate point thereon and extending to said first free end, said first free end being received in said internally threaded bore of said body portion becoming threadedly engaged therewith, said first free end being movable through said bore and said aperture through said lift plate to contact and bear against said flat smooth upper surface of said base plate, said hand grasp member being affixed to said second end of said elongated shaft, wherein said lifting means includes connecting means to connect said lift plate to said base plate, said connecting means including a hinge assembly to connect a first end of said lift plate to a corresponding first end of said base plate.

4,492,370
QUICK RELEASE CLAMPING DEVICE
Kyoo P. Park, 4657-208A St., Langley, British Columbia, Canada
Filed Nov. 10, 1982, Ser. No. 440,503
Int. Cl.³ B25B 1/02
U.S. Cl. 269—182 5 Claims

1. A clamping device comprising:
a first jaw member;
a second jaw member;
a screw having a screw spindle rotatably mounted on the first jaw member;
a half nut mounted on the second jaw member;
a cam means operatively connecting the screw to the half nut so that the half nut is engaged with the screw or disengaged from the screw by rotation of the screw, the cam means comprising a cam and a cam follower, the half nut being mounted on the cam follower;
gear means connecting the screw to the cam means, the gear

means comprising a gear wheel connected to the screw and a gear wheel segment connected to a cam lobe;



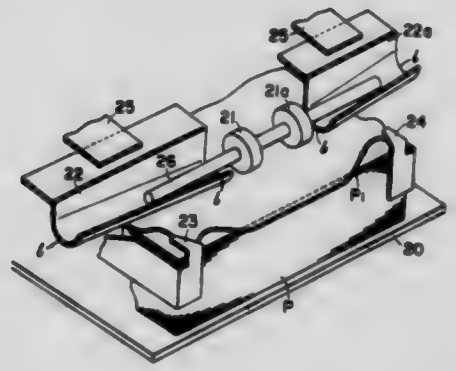
a cam spindle connected to the cam, the gear wheel segment being rotatably mounted on the cam spindle; and resilient means connecting the gear wheel segment to the cam spindle.

4,492,371

FEEDING DEVICE

Yasuhito Kaa, Urawa, and Koichi Miyamoto, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1981, Ser. No. 234,601
Claims priority, application Japan, Feb. 22, 1980, 55-21345; Oct. 2, 1980, 55-138003; Oct. 2, 1980, 55-138001
Int. Cl.³ B65H *3/32*
U.S. Cl. 271—21 17 Claims



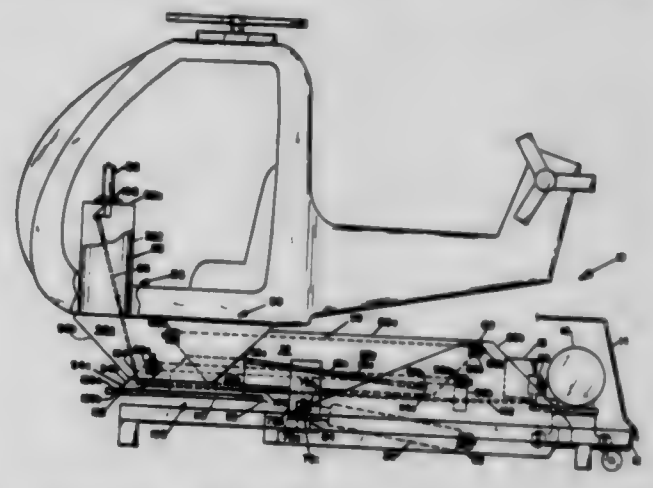
1. A feeding device, comprising:
a stacking table for carrying thereon a stack of cut sheets;
separation pawls, disposed on the downstream side of said stacking table with respect to a feeding direction of the cut sheets to engage both downstream corners of said stack of cut sheets, for separating the topmost sheet of the stack;
first mounting means;
feeding means, mounted with said first mounting means to be disposed upstream of said separation pawls with respect to the feeding direction of the cut sheets, for urging the topmost sheet in the feeding direction to cooperate with said separation pawls to warp the topmost sheet and separate it from the remaining sheets of the stack, and then feed it out;
second mounting means separate from said first mounting means; and
warp regulating means, mounted with said second mounting means to provide a clearance between itself and the topmost sheet when the topmost sheet is not fed, for regulating the formation of the warp, at least a portion of said warp regulating means being disposed between said feeding means and said separation pawls in a direction generally perpendicular to the feeding direction and downstream, in the feeding direction, of a portion of contact between the feeding means and the cut sheets and between the portion of contact and said separation pawls.

4,492,372

AMUSEMENT HELICOPTER

Allan L. Lorence, Oelwein; Thomas L. Maring, Cedar Rapids, both of Iowa, and James L. Rawson, deceased, late of Oelwein, Iowa (by Oelwein State Bank, administrator), assignors to Rawson Control Systems, Inc., Oelwein, Iowa

Filed Feb. 11, 1982, Ser. No. 348,032
Int. Cl.³ A63G *31/00*
U.S. Cl. 272—1 C 8 Claims



1. An amusement aircraft simulator comprising:
a. frame support means including a raisable fourbar linkage having one end rotatably mounted about a shaft secured on said frome and an aircraft body supported on an other end of said linkage;
b. hydraulic means including a motor-driven hydraulic pump, a reservoir, a geometrically configured valve means connected thereto connected in a hydraulic circuit, and a hydraulic cylinder connected between said frame and a midpoint of said fourbar linkage;
c. electronic control means for controlling said hydraulic means and supported on said frame;
d. stop pin means for limiting the distance of travel of said fourbar linkage; and connected to said valve means;
e. safety bar means over a portion of said fourbar linkage, said safety bar means including pivoting structure connected at a rearward end to said fourbar linkage and having slotted key means at an other end, a first barbell crank connected to a forward end of said fourbar linkage and said slotted key means, and a joy stick linkage connected on opposing sides of said first barbell crank, and a second barbell crank connected to a rearward end of said fourbar linkage;
f. joy stick means positioned at said other end if said fourbar linkage and including linkage means connected to said valve means; and,
g. said aricraft body mounted to said other end of said fourbar linkage housing said joy stick means therein, whereby manual actuation of said joy stick means actuates said hydraulic means to further actuate said fourbar linkage to move said aircraft body to simulate free flight.

4,492,373

BODY THERAPEUTIC AND EXERCISING APPARATUS

Max Daltzar, 1953 Rayshire St., Thousand Oaks, Calif. 91360

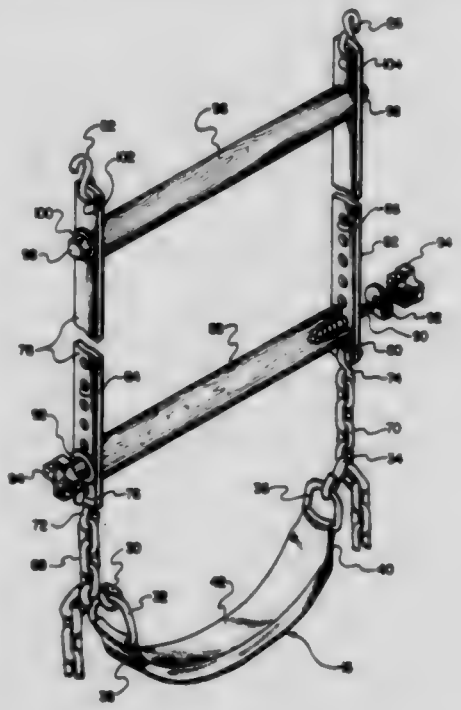
Continuation-in-part of Ser. No. 223,686, Jan. 9, 1981, abandoned. This application Nov. 1, 1982, Ser. No. 437,964
Int. Cl.³ A61H *1/02*
U.S. Cl. 272—61 4 Claims

1. A therapeutic exercising device comprising:
a first hanger and a second hanger, both said first hanger and said second hanger having an upper end and a lower end, each said upper end including a hanging means, said hanging means facilitating connection of both said first and second hangers to fixed structures so said first and second hangers suspend therefrom, said first hanger including a first rigid member, said second hanger including a second rigid member;

a first chain connected to and extending from said first rigid member of said first hanger at said lower end, a second chain connected to and extending from said second rigid member of said second hanger at said lower end;

a sling having a fore end and an aft end, said fore end terminating in a first pivot connection, said aft end terminating in a second pivot connection, said first pivot connection being connected to said first chain with said second pivot connection being connected to said second chain, said sling being flexibly resilient, said sling being constructed of a soft padding encased within a sheet material fabric cover, whereby said sling is to readily conform to the users body in the midriff area during suspension of the user in an up-side-down manner;

both said first pivot connection and said second pivot connection comprises:



a first ring and a second ring, both said first and second rings being connected by sewing to said sheet material fabric cover, a first hook removably connected to said first chain, said first hook being connected to said first ring, a second hook removably connected to said second chain, said second hook being connected to said second ring, said first and second hooks can be disengaged from their respective said chain and relocated to a different location on its respective said chain thereby providing adjustment;

both said first rigid member and said second rigid member including a series of openings; and

at least one rigid bar member connecting said first rigid member and said second rigid member, said rigid bar member being spaced from said sling, said bar member being removably connected to said series of openings of first and second rigid members by a manually operable knob assembly.

4,492,374

SPORTING AND EXERCISING SPRING SHOE

David Lekhtman, 5350 Macdonald, Montreal, Quebec, and Gregory Lekhtman, 6555 Kildare, Cote St. Luc, Quebec, both of Canada

Filed Apr. 21, 1981, Ser. No. 256,100
Int. Cl.³ A63B 25/10
U.S. Cl. 272—114 7 Claims

1. A sporting and exercising unit; comprising:

a foot receiving member;

a spring member attached to and disposed at the bottom of said foot receiving member;

said spring member comprising a spring-leaf-like portion forming a closed loop and shaped to permit backward and forward rocking of a user;

said spring member being shaped to form an oval shape;

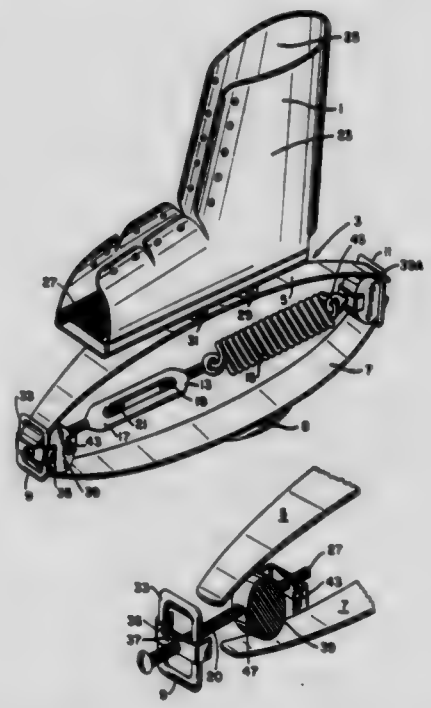
said oval being formed from two separate layers, each said layer comprising a flexible material, said layers being joined to each other at the ends thereof;

said layers being joined by separate joints, each said joint comprising;

a ring member having a bar extending centrally thereacross, said bar having an opening extending centrally therethrough;

a circular member having an opening extending diametrically thereacross;

a second bar having an opening extending centrally therethrough;



said circular member being disposed between said layers at a respective end thereof, the opening of said circular member extending centrally of said layers;

said ring being disposed at one end of said layers outwardly of said circular member such that the top part of the ring overlies the top layer and the bottom part of the ring underlies the bottom layer, said bar of said ring abutting said circular member, the opening of said bar of said ring being aligned with the opening in said circular member;

said second bar abutting said circular member on the other side thereof, the opening of said second bar being aligned with the opening of said circular member; and

a respective rod member extending through said aligned openings of each respective joint.

4,492,375

RESILIENT TYPE EXERCISING DEVICE WITH REMOVABLE WEIGHTS

Richard E. Connelly, Jeromesville, Ohio, assignor to Contractor Equipment Manufacturers, Inc., Ashland, Ohio

Filed Aug. 16, 1982, Ser. No. 408,146
Int. Cl.³ A63B 21/00
U.S. Cl. 272—134 8 Claims

1. Apparatus for physical exercise comprising:

a longitudinal column,

a first sleeve slidably engaging said column, said sleeve including first securing means for securing a biasing means to said sleeve,

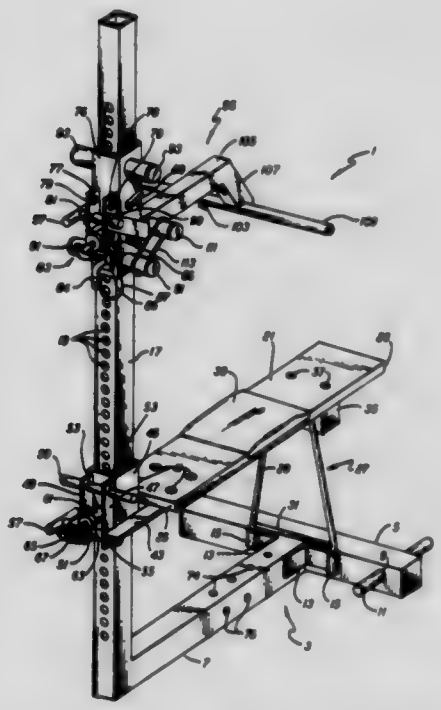
first locking means for locking said first sleeve at a selected position along said column,

a lever transversely, pivotally connected to said first sleeve, said lever comprising: a yoke straddling said first sleeve and containing coaxial transverse yoke bores; an arm joined to said yoke centrally; and second securing means joined to said arm for securing a biasing means to said arm,

pivot means passing through said yoke bores and said first

sleeve for pivotally connecting said first sleeve and said lever,

biasing means securable to said first and second securing means for providing resistance to pivotal movement of said lever,



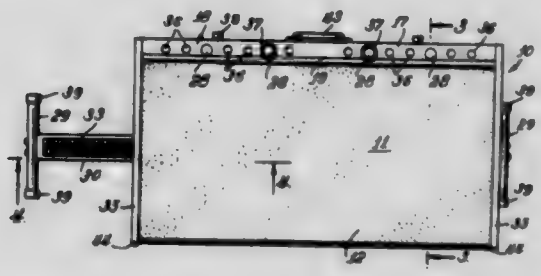
wherein said pivot means comprises a cylinder extending through said yoke bores and said biasing means comprises a helical coil encircling said cylinder, said coil having first and second coil arms for bearing on said first and second securing means, respectively.

4,492,376

LOWER EXTREMITY EXERCISER

Jack M. Schatz, 403 W. Harding Rd., Lombard, Ill. 60148, and Robert S. Gajda, 5921 Meadow La., Lisle, Ill. 60532

Filed Apr. 1, 1983, Ser. No. 481,407
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—138 11 Claims



1. In a lower extremity exercise board device of the type for use with endless elastic bands including a planar bed member closely associating with a plurality of vertical sockets for receiving band engageable peg members, the improvement comprising:

support means associating with the undersurface of the bed member forming an open-ended channel and at least one storage chamber to a side of the channel, said support means including;

an elongate support member rigidly connected to the bed member to be supportively arranged at the undersurface of the bed member and extend outwardly of the bed member along one edge thereof and generally parallel to said channel, said support member having an upper horizontal surface including a plurality of spaced-apart vertical sockets having axes at generally right angles to said planar bed and an external vertical edge surface including horizontal spaced-apart apertures having axes at generally right angles to the socket axes, said upper horizontal surface forming a depressed shoulder with respect to the edge of said bed member;

a slidable bar means movably arranged within said channel and terminating at an outward end thereof in band-engageable means, the bar means being movable outward of said channel to position said outward end at a pre-selected distance from said bed member;

latching means associated with said slidable bar means capable of securing the bar means at pre-selected positions from the bed member;

a plurality of band engageable peg members insertably cooperative with said vertical sockets and horizontal apertures wherein peg members are sized to be vertically held upon insertion at said sockets, and horizontally held when inserted at said apertures, wherein said peg members are capable of being selectively insertable to provide for a variety of band arrangements for different exercises; and,

securement means associated with said storage chamber means capable of removably storing peg members;

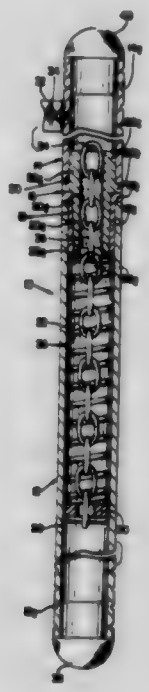
wherein said improved device provides for a removably looping engagement of endless elastic bands around said peg members and band-engageable means without mechanical fastening of bands, and wherein said peg members and slidable bar means enable the device to be selectively arranged for a wide variety of band orientations.

4,492,377

COLLAPSIBLE BATON

George W. Eby, 29188 S. Grayshill Rd., Colton, Oreg. 97017

Filed Mar. 30, 1984, Ser. No. 595,353
Int. Cl.³ F41B *15/02*
U.S. Cl. 273—84 R 9 Claims



1. A collapsible baton comprising

a first member including a sleeve portion and an annular radially outwardly projecting shoulder joined to one end of the sleeve portion,

a second member including a stem portion conforming with and extending through said one end of the sleeve portion and snugly fitted within said sleeve portion, said second member further including a mounting portion forming the other end of the second member and an annular radially outwardly projecting shoulder disposed intermediate said stem portion and said mounting portion, said second member having a passage extending therethrough between its ends,

a first tubular baton section with one end enveloping and fixedly engaging the sleeve portion of said first member adjacent the shoulder of said first member,

a second tubular baton section with one end enveloping and

fixedly engaging said other end of said second member adjacent its shoulder, and

biasing means operatively interposed the two members operatively to pull them together.

4,492,378

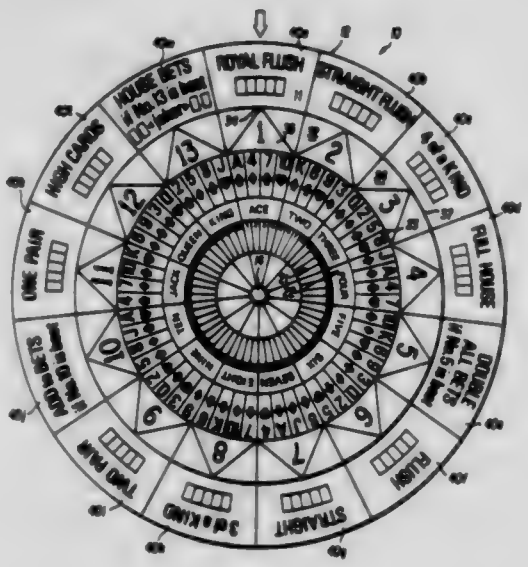
GAME APPARATUS

Daniel W. Williams, Atlantic City, N.J., assignor to Robert McCurdy, Atlantic City, N.J.

Division of Ser. No. 184,874, Sep. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 39,555, May 16, 1979, abandoned. This application Feb. 5, 1982, Ser. No. 346,361

Int. Cl.³ A63F 5/04

U.S. Cl. 273—142 HA 5 Claims



1. Apparatus for playing a game of chance, the apparatus comprising in combination:

a rotatable wheel, the wheel including:

a display surface divided into first, second, third and fourth concentric, annular areas,

wherein

the first area is innermost of the four concentric areas and is divided by fifty-two radial lines into fifty-two sections consecutively numbered by numerals 1 to 52;

the second area surrounds the first area and is divided by thirteen radial lines into thirteen sections marked with indicia identifying each section consecutively with a single respective denomination of the thirteen denominations of a standard fifty-two card playing deck;

the third area being divided by fifty-two radial lines into separate sections each of which is identified by indicia specifying one respective playing card in a standard deck of fifty-two playing cards; and

the fourth area surrounding the third area and being divided by thirteen radial lines into thirteen spaces consecutively identified by numerals one through thirteen;

means for mounting the wheel for rotation about an axis, and

means for stopping rotation of the wheel; and

a fixed surface disposed adjacent to the wheel and having a display area visible around the periphery of the wheel, the display area being divided into thirteen spaces, each space having indicia therein indicative of a class of playing card hands or an instruction.

4,492,379

REEL TYPE SLOT MACHINE

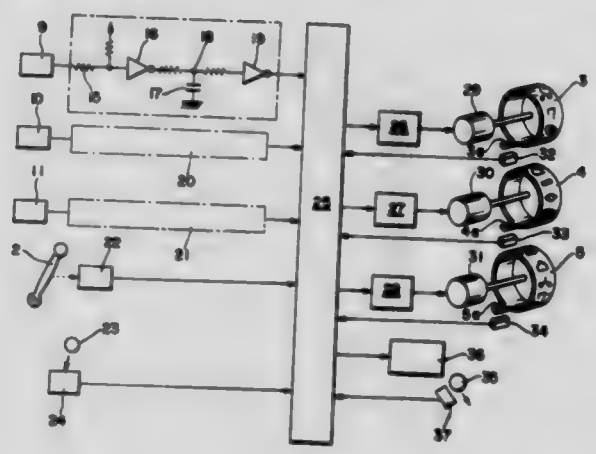
Kazuo Okada, Tokyo, Japan, assignor to Kabushiki Kaisha Universale, Tochigi, Japan

Filed Dec. 20, 1982, Ser. No. 451,240

Claims priority, application Japan, Dec. 22, 1981, 56-191405[U]

Int. Cl.³ A63F 5/04

U.S. Cl. 273—143 R 2 Claims



1. A slot machine having a pluraltiy of reels provided each with an annular series of various symbols, said reels being rotatably arranged side-by-side, wherein, upon the occurrence of a predetermined prize winning combination of symbols in prize awarding rows of said symbols, coins or tokens are paid out, said slot machine comprising:

a pulse motor individual to each said reel;

means to supply a series of pulses to said motor continuously during the rotation of the reel associated with said motor, for driving said motor;

means for stopping each said reel;

means for detecting the stopped position of each said reel, said detecting means comprising means for counting said pulses as they are supplied to said pulse motor, a light shielding member on each reel, and a photo-interrupter responsive to interruption of light by said light shielding member for resetting the previous content of said counting means to zero once each rotation of the reel;

memory table means for storing information as to the symbol arrangements of the respective reels;

memory means for storing information as to the number of coins or tokens to be paid out according to predetermined prize winning combination of symbols;

means for paying out coins or tokens as prizes; and

a microprocessor for accessing said memory table means with the contents of said counting means of the respective reels to read out particular combinations of symbols that have occurred in the prize awarding rows so as to detect coincidence of said particular combinations of symbols with said predetermined prize winning combinations of symbols and to control said pay-out means to pay out a given number of coins or tokens as prizes.

4,492,380

ARENA TYPE GAME

Andrew Saytar, 184 Glenview Dr., Mississauga, Ontario, Canada L5G 2N6

Filed Mar. 21, 1983, Ser. No. 476,914

Int. Cl.³ A63B 71/02

U.S. Cl. 273—411 1 Claim

1. Game apparatus, suitable for use when playing both a modified hockey game and a modified basketball game, where the apparatus comprises:

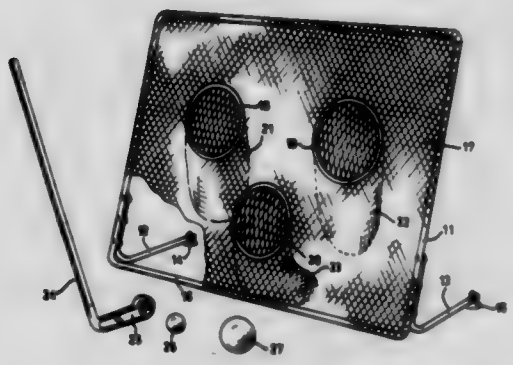
two goal assemblies, where a goal assembly comprises:

a net;

a net-supporting frame;

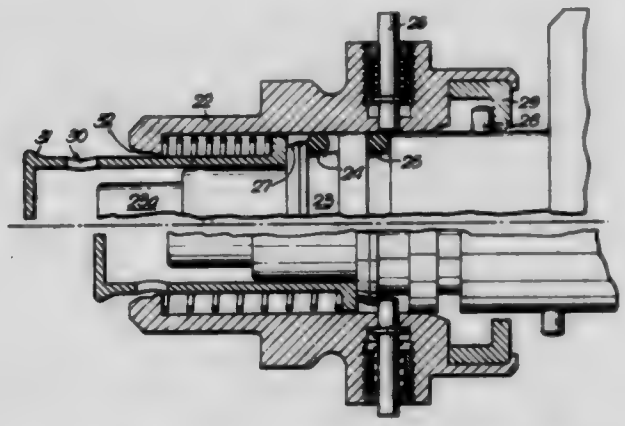
where the net is stretched over the frame and where the net is held by the frame in a substantially upright position;

at least one hole formed in the net;
a rigid ring;
where the ring is secured and attached to the material of the net in such a manner as to delineate the hole;
a pocket, formed of net material;
where the ring is secured and attached to the net material of the pocket in such a manner that the pocket is effectively secured and attached to the net, and is effective to receive and contain a game ball that passes through the ring;
wherein the diameter of said at least one delineating ring is substantially 12 inches;



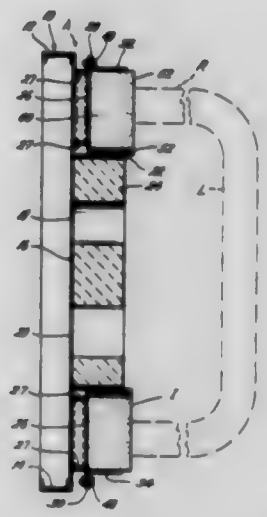
and the apparatus further compriaes two balls;
a first ball for use when playing a modified hockey game, the ball being a sphere having a diameter substantially of 3 inches, and having the characteristic of being not bounce-able on the surface of the playing area, substantially in the manner of a hockey puck on ice;
and a second ball for use when playing a modified basketball game, the ball being a sphere havin a diameter substantially of 6 inches, and having the characteristic of being bounce-able on the surface of the playing area, substantially in the manner of a basketball on a basketball court.

4,492,381
SEALING PLUG
Gordon C. Cooper, and Douglas Dawson, both of Derby, England, assignors to Rolls-Royce Limited, London, England
Filed Jul. 17, 1984, Ser. No. 631,748
Claims priority, application United Kingdom, Sep. 21, 1983, 8325268
Int. Cl.³ F16J 9/0, 15/0
U.S. Cl. 277—2 5 Claims



1. A sealing plug comprising a plug member and a housing, the plug and housing including co-operating means whereby they may be secured together, the radially outermost cylindrical surface of the plug including at least one circumferentially extending groove within which an O ring seal may be disposed, the housing including an aperture within which the plug is adapted to be located within the at least one circumferentially extending groove when the O ring is omitted from the assembly such as to prevent the plug being secured within the housing by the co-operating means.

4,492,282
REFRACTORY FIBER LADLE PREHEATER SEALING RINGS
Mack A. Hemsel, Houston, Tex., assignor to J. T. Thorpe Company, Houston, Tex.
Filed Dec. 21, 1983, Ser. No. 564,748
Int. Cl.³ F16J 15/02; F27B 14/08
U.S. Cl. 277—12 23 Claims

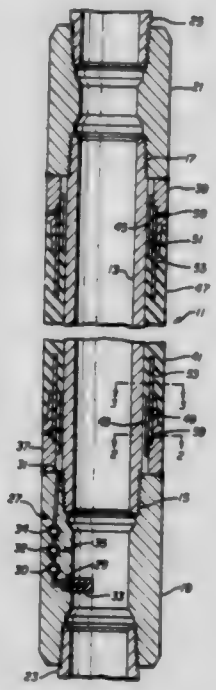


1. An apparatus for sealing the rim of a ladle as it is positioned adjacent a ladle preheater, comprising:
(a) a plurality of refractory fiber ring insulation units, each of said units comprising:
(1) a plurality of adjacent layers of refractory ceramic fiber insulating material;
(2) said layers having an inner surface portion adjacent the preheater;
(3) said layers further having an outer surface portion adapted to be contacted by the rim of the ladle during preheating of the ladle;
(4) said layers further having intermediate portions extending between said inner and outer surface portions;
(b) means conforming to the shape of the rim of the ladle for mounting said plurality of refractory fiber insulation units adjacent the preheater;
(c) said layers being mounted on said means for mounting in planes extending radially outwardly from a central portion of the ladle.

4,492,383
INFLATABLE WELL BORE PACKER WITH PRESSURE EQUALIZED RIB CAVITY
Edward T. Wood, Kingwood, Tex., assignor to Completion Tool Company, Houston, Tex.
Continuation of Ser. No. 470,199, Feb. 28, 1983, abandoned. This application Mar. 9, 1984, Ser. No. 587,918
Int. Cl.³ F16J 15/46; E21B 33/127
U.S. Cl. 277—34 11 Claims

1. A inflatable packer, which comprises:
a tubular mandrel;
an inflatable sleeve positioned about said mandrel, said inflatable sleeve including a pair of axially spaced apart axially extending annular cavities adjacent the ends of said inflatable sleeve;
an annular head connected to each end of said inflatable sleeve, each head including a reinforcing sheath comprising a plurality of axially extending overlapping ribs connected at one end to one of said heads and extending into the adjacent one of said cavities;
a collar connected to each head, both of said collars being connected to said mandrel, one of said collars including

passage means for allowing inflating fluid to inflate said sleeve;



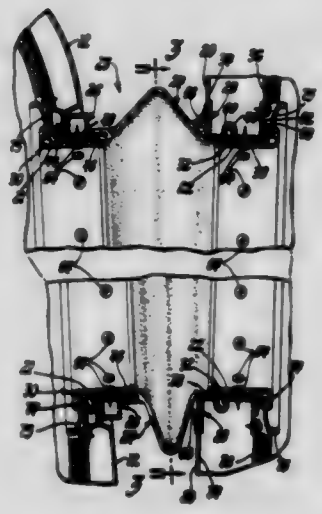
and means for communicating well bore fluid to said cavities, thereby to balance the pressure between said ribs to equal the well bore pressure.

4,492,384

SEALING ARRANGEMENT

Fredric A. Herscheiman, Lapeer, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 25, 1983, Ser. No. 488,066
Int. Cl.³ F16J 15/02; B60P 3/32
U.S. Cl. 277—237 R
2 Claims



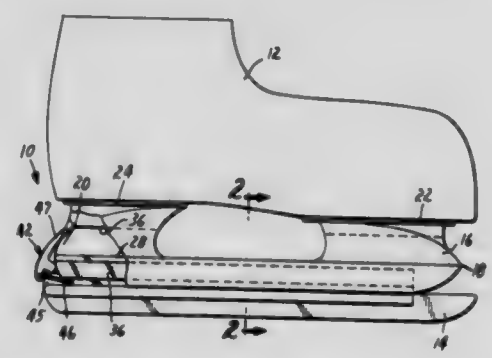
1. A sealing arrangement for sealing a first opening formed in the rear portion of a cab and a second opening aligned with the first opening and formed in the front portion of an enclosure located adjacent to said cab, said first opening and said second opening each being defined by a ring type frame member having a continuous flat mounting surface, a continuous groove formed in the mounting surface of one of said frame members and having a circular cross sectional configuration, said sealing arrangement including a boot and a pair of molding members, said boot having a continuous elastomeric body portion of uniform cross-section and including a V-shaped web section integrally formed with a pair of oppositely extending arm members, each of said arm members terminating with a radially outwardly extending and reversely bent continuous foot, a continuous bead member having a circular head, said bead member being integrally formed on one of said arm members and extending radially outwardly therefrom in the same direction as the associated foot formed on said one of said arm members, said circular head of said bead member adapted to be snapped into and retained by said groove formed in said one of said frame members for maintaining the associated arm member in engagement with the mounting surface of said one of said frame members, a tapered lip integrally formed on one leg of said web section, said lip being curved towards and terminating adjacent to said bead member when in the unflexed position, each of said molding members having a pair of transversely spaced and continuous ridges formed thereon, and fastener means for securing said pair of molding members to the respective frame members of said first and second openings with an arm member of said boot located between each of said pair of molding members and the associated frame member whereby said pair of ridges serve to press the associated arm member at localized points thereof into sealing engagement with said associated frame member and said lip sealingly contacts the outer surface of said enclosure.

4,492,385

SKATE HAVING AN ADJUSTABLE BLADE OR WHEEL ASSEMBLY

Scott B. Olson, 8701 Virginia Ave. South, Bloomington, Minn. 55438

Filed Jul. 21, 1982, Ser. No. 400,302
Int. Cl.³ A63C 17/18
U.S. Cl. 280—7.13
6 Claims



1. A skate comprising a boot including a sole having a bottom surface, an operative portion affording relative movement of the skate with respect to a supporting surface and including means for making contact with said support surface only along a single straight narrow area, and means for releasably fastening said operative portion to said boot, said means including:

a frame having top and bottom surfaces fixed to said sole with the top surface of said frame against the bottom surface of said sole, said frame having walls defining an elongate channel extending longitudinally of said boot and having an opening through the bottom surface of said frame, the walls defining said channel including opposed side walls extending to said opening, and an inner wall opposite said opening, the transverse cross sectional shape of said side walls having greater length than width in a direction normal to said bottom surface of said sole, the width of said frame along said side walls being substantially less than the width of said sole, said walls defining a transverse cross sectional shape for said channel that has a greater length than width in a direction normal to the bottom surface of the said sole, and said channel releasably receiving said operative portion with parts of said operative portion and said side walls being in close fitting relationship including projections on said operative portion, said projections having a greater height than width in a direction normal to the bottom surface of said sole and being received in recesses in said side walls and parts of said operative portion projecting along said side walls to a position closely adjacent said inner wall; and

manually operable means for releasably securing said operative portion in said channel at a predetermined position with respect to said frame with said single straight narrow area centrally aligned with said opening.

4,492,386

TRAILER SAFETY DEVICE

Hardy G. Roberts, 2790 Oneida La., Provo, Utah 84604

Filed Jun. 10, 1983, Ser. No. 503,301
Int. Cl.³ B60D 1/12
U.S. Cl. 280—507 17 Claims





1. A safety device to be used in conjunction with a trailer coupling having a movably operable member capable of being moved substantially vertically to effect the opening or closing of the trailer coupling comprising:

a bracket assembly capable of being secured in position above the movably operable member of the trailer coupling;

means for securing said bracket assembly in position above the movably operable member of the trailer coupling;

a free-swinging body assembly suspended from said bracket assembly and positioned in spaced relationship above the movably operable member of the trailer coupling thereby blocking the movably operable member from substantial upward vertical movement to open the trailer coupling; said body assembly being manually retractable to enable upward vertical movement of the movably operable member opening the trailer coupling; and

limitation means for restricting the arcuate motion of said free-swinging body assembly such that said body assembly is maintained in a position above the movably operable member unless manually displaced.

4,492,387

STEP-IN SIDE-CLAMP SAFETY SKI RELEASE SYSTEM

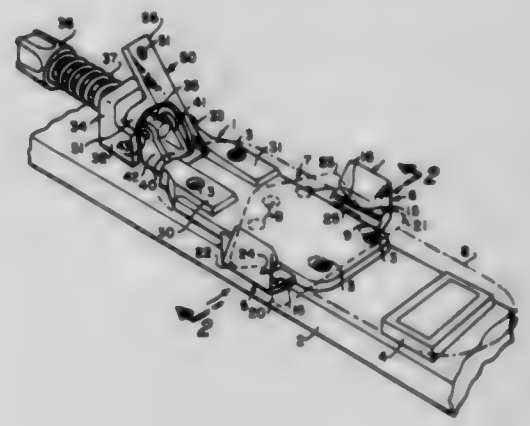
Richard G. Spademan, 1421 Old Country Rd., Belmont, Calif. 94002

Continuation of Ser. No. 109,807, Jan. 7, 1980, abandoned. This application Apr. 20, 1982, Ser. No. 370,028
The portion of the term of this patent subsequent to Oct. 5, 1999, has been disclaimed.
Int. Cl.³ A63C 9/085
U.S. Cl. 280—624 11 Claims

1. In a ski binding having a housing, a clamping member movably mounted in said housing for movement relative to said housing between a clamp-open and a clamp-closed position and means for applying a clamping force to said clamping member for releasably securing a ski boot to a ski rearward of the toe and forward of the rear of the heel of the ski boot, an improvement for opening and closing said clamping member comprising:

a lever member of one-piece construction spaced from and independent of said clamping member having a first and a second end movable about an axis intermediate said ends between a clamp-open and a clamp-closed position, said lever member being coupled to said clamping force applying means;

means on the lever member and engageable by a ski pole for allowing said lever member to be moved to its clamp-open



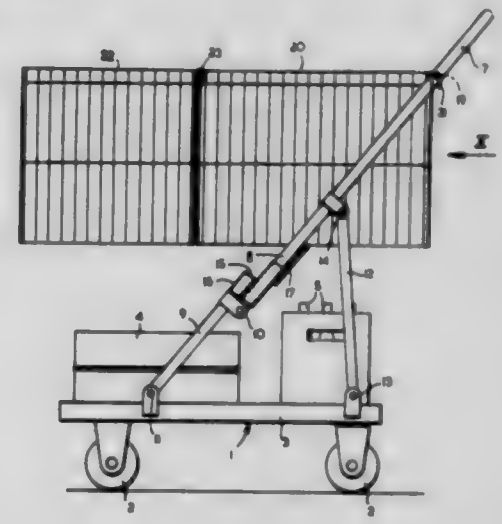
position against said clamping force in response to a force applied to said first end thereof by said ski pole to allow said clamping member to move to its open position; means for frictionally holding said lever member in its open position against said clamping force when the force applied by the ski pole to said first end of said lever member is removed therefrom; and means for moving said lever member to its clamp-closed position in response to applied pressure brought to bear on said second end thereof for releasing said lever member from said holding means when said ski boot is in skiing position to allow said clamping member to close with said clamping force.

4,492,388

COLLAPSIBLE SHOPPING CART

Hendrik C. de Wit, Burg. Hoggerstraat 529, 1064 CV Amsterdam, Netherlands

Filed Dec. 28, 1981, Ser. No. 335,098
Claims priority, application European Pat. Off., Dec. 29, 1980, 80201239.3
Int. Cl.³ B62B 3/02
U.S. Cl. 280—651 8 Claims



1. A shopping cart comprising: a movable frame; a support structure collapsibly mounted on said frame; and at least one basket for purchases, said at least one basket being removably fastened to said support structure; said support structure com-

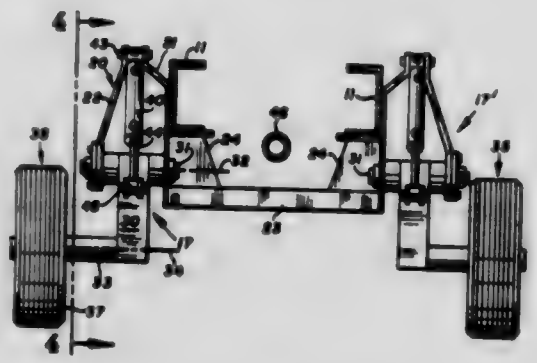
prising a U-shaped handle having a middle portion and two legs which extend downwardly at an angle in the operating state of said cart, the free end of each of said legs being respectively pivotally connected to said frame by means of a first hinge; said middle portion of said U-shaped handle being located at hand level in the operating state of said cart and forming a handgrip for pushing said cart; each leg of said handle respectively comprising an upper and lower member which are pivotally interconnected by means of a second hinge; the members of each leg being provided with abutment means for the at least nearly extended final position of said members, said second hinge, in the operating state of said cart, being located between said frame and the underside of said at least one basket; a respective auxiliary support rod having two ends being provided for each leg of said handle, one end of said support rod being pivotally connected to said frame by means of a third hinge, and the other end of said support rod being pivotally connected to said upper member of said leg by means of a fourth hinge; said abutment means including, on said lower member of said leg of said handle, an extension located on that side of said second hinge remote from said first hinge, said extension cooperating with said upper member of said leg in said at least nearly extended final position of said members; a shift piece displaceably mounted on each said upper member between said second hinge and said fourth hinge, said shift piece being adapted to be slid over said extension to effect fixing of said members of a given leg in said extended final position; a connecting rod which rigidly interconnects said shift pieces of each leg and simultaneously serves as a support for the underside of said at least one basket, a horizontal transverse bar located in the vicinity of said handgrip portion of said handle and extending between said legs of said handle, said at least one basket being fastened to said transverse bar; said at least one basket including a wire-part, and at least one hook that can be flipped over, said at least one hook, after introduction of said at least one basket into said support structure, being placed around said transverse bar of said handle to effect said fastening of said basket to said support structure, said at least one hook having two hook ends.

4,492,389

HIGH-LIFT HYDRAULIC AXLE

Gordon F. Wyatt, Rte. 4, Box 122, Isanti, Minn. 55040; Willis G. Wyatt, 8505 Eldorado St., Blaine, Minn. 55434, and Erle L. Wyatt, 14461 Highway 65, Anoka, Minn. 55303

Filed Jan. 21, 1982, Ser. No. 341,509
Int. Cl.³ B60G *11/26*
U.S. Cl. 280—704 4 Claims



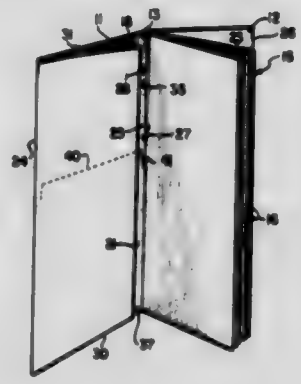
1. A work vehicle for transporting loads of a weight which can exceed road axle weight restrictions, said vehicle having:
(a) a generally horizontal frame normally supported above the ground by a plurality of primary axles extending transversely to said frame;
(b) wheel means rotatably attached to each end of said primary axles;
(c) at least one auxiliary wheel assembly comprising:
(1) a suspension arm;
(2) a stub axle having an axis and projecting from said arm in a first generally horizontal direction;
(3) wheel means rotatable on said stub axle;
(4) a mounting bracket adapted for securement to the outside of said generally horizontal frame;
(5) means pivoting said suspension arm in said bracket, so that said first direction is outward from said frame, for movement of said arm about a second axis aligned with said axis of said axle;
(6) and means for causing said movement of said arm between first and second extreme positions to lower and raise said axle through a path lying totally outward of the frame, so that said axle moves between a first position in which said wheel means contacts the ground to increase the number of axles having wheel means contacting the ground to help support the vehicle and thus reduce the axle weight of said vehicle and a second position in which said axle is spaced from the ground by a distance greater than the spacing of said frame above the ground to prevent said axle from engaging obstructions in the path of the vehicle.

4,492,390

COMBINED AIRLINE TICKET HOLDER AND ADVERTISING BOOKLET

Anthony S. Jacobs, Glencoe; James E. Riley, Deerfield, and Jon D. Christman, Northbrook, all of Ill., assignors to The Wessel Company, Inc., Elk Grove Village, Ill.

Filed Aug. 20, 1981, Ser. No. 294,453
Int. Cl.³ B42D *3/12*
U.S. Cl. 281—31 22 Claims

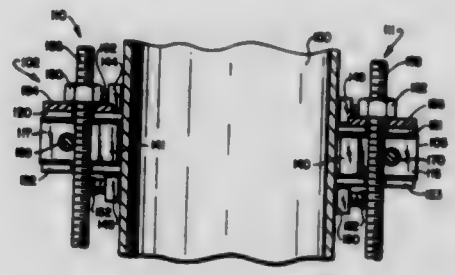


1. An article of manufacture comprising:
a pair of covers joined together along a junction;
a booklet comprising a plurality of pages;
said booklet being located between said covers;
means attaching said booklet to a cover;
and means on said article for holding an object;
said pair of covers, said booklet pages, and said holding means having lateral and longitudinal dimensions;
each booklet page being joined together along an inner longitudinal edge portion and having an unjoined longitudinal edge portion;
the longitudinal dimensions of both covers, of said booklet pages and of said holding means being the same;
the lateral dimension of each cover and of each booklet page being constant along the entire length thereof;
all of said booklet pages having substantially the same lateral dimension;
the lateral dimension of one cover being different than the lateral dimension of said booklet pages along substantially the entire length of each to facilitate thumbing readily of said one cover without obstruction by said booklet;
the lateral dimension of the other cover being different than the lateral dimension of said one cover to facilitate thumbing readily of said other cover without obstruction by said booklet and to facilitate thumbing readily of either of said covers without obstruction by another cover.

4,492,391
THRUST ROD ANCHOR FOR PIPE JOINT RESTRAINT SYSTEMS

Robert E. Haines, Columbus, Ohio, assignor to Star Industries, Inc., Columbus, Ohio

Filed May 3, 1982, Ser. No. 374,000
Int. Cl.³ F16L 13/04
U.S. Cl. 285—114 20 Claims

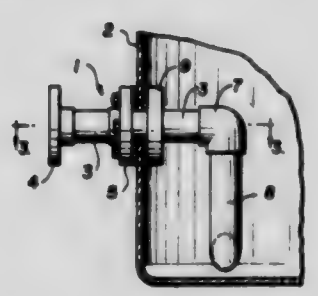


15. A thrust rod anchor for connection to a pipe comprising:
first and second spacers, each having an arcuate portion mountable over a cylindrical portion of said pipe and each having oppositely disposed connector portions extending outwardly from said arcuate portion;
a pair of spaced parallel flanges fixed to each said first and second spacer connector portions, corresponding said pairs of flanges being in abuttable adjacency and having an opening configured to receive a thrust rod when said first and second spacers are operationally positioned about a said pipe;
rigid support means fixed to and extending between each said pair of flanges adjacent said arcuate portion;
a bolt and nut connector extensible through said first and second spacer connector portions outwardly of said flange openings for retaining said first and second spacers in an operational said position about a said pipe; and
support means fixed to the outwardly disposed surface of each said flange and having a threadably tapped bore for receiving a set screw.

4,492,392
TANK FITTING

Arthur F. Woods, Monroe, La.; Harry Bush, St. Louis, Mo., and Eugene J. Kane, Pittsburgh, Pa., assignors to Poly Processing Company, Inc., Monroe, La.

Filed Jan. 19, 1983, Ser. No. 459,235
Int. Cl.³ F16L 5/02
U.S. Cl. 285—119 1 Claim

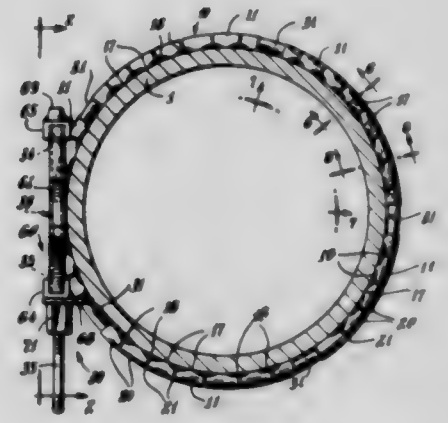


1. A tank fitting comprising, a plastic pipe, said pipe extending through a side wall of a cylindrical plastic tank, a plastic flange integrally formed on said pipe in proximity to the exterior curved surface of the tank side wall, another plastic flange slidably mounted on the portion of the pipe within the tank and positioned in proximity to the interior curved surface of the tank side wall, compressible gasket means interposed the exterior surface of the tank side wall and the first-mentioned flange and between the interior surface of the tank side wall and the second-mentioned flange, bolt means extending between said flanges for drawing said flanges toward each other to thereby compress said gasket means axially against the tank side wall to conform the gaskets to the curvature of the tank wall and radially against the pipe to provide a leak-proof connection, the heads of the bolt means being encased within the second-mentioned flange to prevent corrosion of said bolt means; said pipe and associated flanges being positioned in proximity to and above the bottom of the tank side wall, a siphon drain connected to the end of the pipe within the tank to thereby facilitate the draining of the tank; and a third plastic flange integrally formed on the end of the pipe exterior of the tank.

4,492,393
PIPE RESTRAINT DEVICE

Erwin L. Schaub, Manhasset, N.Y., assignor to Parker Hannifin Corporation, Brooklyn, N.Y.

Filed Aug. 31, 1981, Ser. No. 297,574
Int. Cl.³ F16L 21/00
U.S. Cl. 285—236 25 Claims



1. A restraint device to prevent axial separation of two cast iron pipes or the like joined end to end by a sealing coupling, comprising:
at least one stiff yet forceably springable rod having lengths thereof pre-bent circularly to substantially the outside curvature of the pipes and forming two coils spaced apart axially a distance sufficient for said coils to encircle respective surfaces of said pipes that border said coupling at opposite sides of said coupling, each of said coils having at least nearly its entire length disposed on a single plane perpendicular to the axis of said coils,
said at least one rod having substantially tangentially extending end portions thereof arranged in oppositely directed pairs defining a contractable region of said coils,
axial restraining means to engage against said pipe surfaces and engaged with and interconnecting at least major portions of the respective lengths of said coils for constraining said coils to said distance of axial spacing, and
means for displacing respective rod end portions of said pairs one relative to another substantially tangentially and holding them displaced under tension sufficiently great to contract said coils and said restraining means into immovable tight engagement upon said pipe surfaces.

4,492,394
ADJUSTABLE-GRIP LATCH

Donald J. Dignan, South Euclid, Ohio, assignor to The Eastern Company, Cleveland, Ohio

Filed Feb. 25, 1982, Ser. No. 352,311
Int. Cl.³ E05C 3/04
U.S. Cl. 292—64 24 Claims

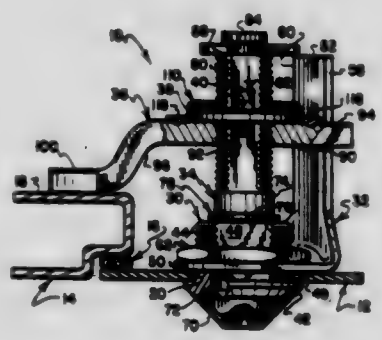
1. A latch, comprising:
(a) a shaft of generally round cross section having threads on at least a part of the shaft;
(b) stop means;
(c) mounting means mounting the shaft for rotation about an axis, and positioning the stop means near the shaft;
(d) pawl means carried by the shaft for threadably engaging the threaded part of the shaft, the pawl means including

friction drive means for transmitting limited torque from the shaft to the pawl means to urge the pawl means to rotate about the axis together with the shaft;

(e) the pawl means and the stop means being configured such that:

(i) when the shaft is rotated about the axis in one direction, torque is transmitted from the shaft to the pawl means through the friction drive means to rotate the pawl means with the shaft toward a latched position wherein the pawl means engages the stop means, and, once the pawl means has engaged the stop means, to thereafter restrain further rotary movement of the pawl means as the shaft continues to be rotated, whereby the threaded engagement between the shaft and the pawl means causes the pawl means to travel axially along the shaft as the shaft is rotated relative to the pawl means;

(ii) when the shaft is rotated about the axis in the opposite direction, torque is transmitted from the shaft to the pawl means through the friction drive means to rotate the pawl toward an unlatched position wherein the pawl means engages the stop means, and, once the pawl means has engaged the stop means, to thereafter restrain further rotary movement of the pawl means as the shaft continues to be rotated, whereby the threaded engagement between the shaft and the pawl means causes the pawl means to travel axially along the shaft as the shaft is rotated relative to the pawl means;



(f) the friction drive means including:

(i) a compressible spring washer which extends about a part of the shaft, the washer having opposed, axially-spaced face portions which may be compressed relatively axially in opposition to the spring action of the spring washer; and,

(ii) connection means compressively engaging the opposed face portions of the spring washer and establishing a frictional drive connection for transmitting torque from the shaft to the pawl means.

4,492,395

AUTOMOTIVE DOOR LATCH SYSTEM INCLUDING A CHILDPROOFING MECHANISM

Shinjiro Yamada, Tokyo, Japan, assignor to Mitsui Kinzoku Kogyo K.K., Tokyo, Japan

Filed Aug. 2, 1982, Ser. No. 404,524

Claims priority, application Japan, Aug. 7, 1981, 56-122922; Aug. 7, 1981, 56-122923

Int. Cl.³ E05C 3/06

U.S. Cl. 292—216 8 Claims

1. An automotive door latch system operable by both outside and inside handles on a vehicle door, comprising:

(a) a striker attached to a vehicle body;

(b) a main body attached to the vehicle door, the main body having a guideway for receiving the striker when the vehicle door is in a closed position relative to the vehicle body;

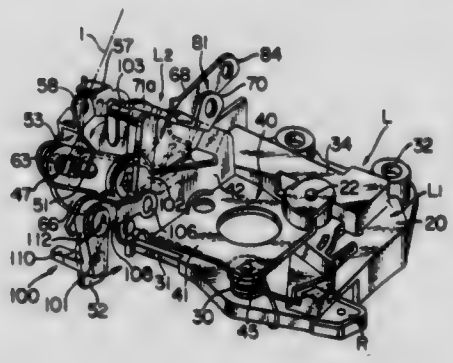
(c) a latch member movably mounted in the main body and adapted to engage the striker in the guideway for holding the vehicle door in the closed position;

(d) a ratchet engageable with the latch member to inhibit its motion in a direction to disengage the striker, the latch member and the ratchet being disposed in coplanar relation to each other and being the sole members mounted in the main body;

(e) a bracket formed in rigid relation to the main body and having at least a portion upstanding on the outside of the main body, the upstanding portion of the bracket being oriented normal to the plane of the latch member and the ratchet; and

(f) lever means mounted on the upstanding portion of the bracket for pivotal motion in a plane parallel to the upstanding portion, said lever means comprising:

(1) an actuating lever mounted on a pivot for acting directly on the ratchet to cause the same to disengage the latch member;



(2) an outside release lever mounted on said pivot and operatively linked to the outside handle to be pivoted thereby;

(3) an inside release lever mounted on said pivot and operatively linked to the inside handle to be pivoted thereby, the inside release lever being normally in abutting contact with the outside release lever to cause pivotal motion thereof in response to the actuation of the inside handle whereby the outside release lever is pivoted in the same direction upon actuation of the outside handle and of the inside handle; and

(4) means for transmitting the pivotal motion of the outside release lever to the actuating lever to cause the latter to act on the ratchet.

4,492,396

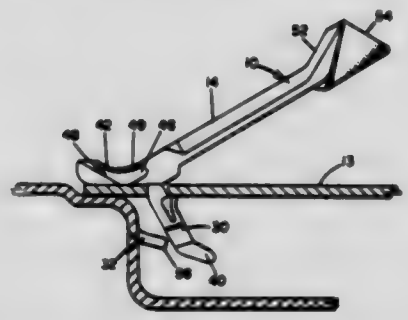
ONE-PIECE, SLAM-TYPE LATCH FOR SNAP-IN INSTALLATION

Roger D. Lake, Clifton Park, N.Y.; Wayne A. Ingram, Stone Mountain, and Michael S. Jarrell, Decatur, both of Ga., assignors to Siemens-Allis, Inc., Atlanta, Ga.

Filed Oct. 28, 1981, Ser. No. 315,773

Int. Cl.³ E05C 3/14

U.S. Cl. 292—228 13 Claims



1. A one-piece, slam-type latch for snap-in installation in an orifice provided in a pivotal door for maintaining the door in a closed position relative to a door frame having keeper means extending from the inner side of said door frame, comprising:

a first portion for placement on an outer surface of said door;

a second portion extending outward from said first portion for insertion through said orifice, said second portion

being in integral attachment with one side of said first portion;

a third portion in integral engagement with said second portion and substantially coplanar with the first portion, said third portion having a thin-walled section being sufficiently flexible to allow said third portion to be deformed;

means on said second portion, cooperating with said keeper means for increasiong resistance against pivotal movement of said door with increases in pressure on the inside of the door; and

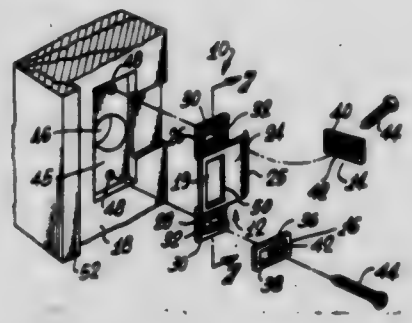
a fourth portion integrally attached to one end of said first portion opposite the end that said second and third portions are attached to, said fourth portion extending angularly outward from said first portion away from said second portion, said fourth portion having sufficient dimensions to allow at least one finger of a latch operator to be placed between said door and said fourth portion when said second portion is inserted through said orifice, said second portion having a camming surface extending from one end of said second portion opposite the end of said second portion attached to said first portion, said camming surface extending angularly toward said fourth portion, said camming surface being provided to contact said keeper means of said door frame to cause said flexible thin-walled section of said third portion to deform as said door is closed when said second portion is inserted through said orifice, said thin-walled section being provided with an angular nib for prevention of excessive deformation of said thin-walled section.

4,492,397

ADJUSTABLE STRIKE

Howard M. Allenbaugh, Fountain Valley, Calif., assignor to M.A.G. Engineering & Manufacturing Co., Inc., Gardena, Calif.

Filed Oct. 26, 1981, Ser. No. 314,561
Int. Cl.³ E05C *13/00*
U.S. Cl. 292—341.18 6 Claims



1. An adjustable strike comprising:

a strike plate having an aperture therein to receive a bolt or latch, upper and lower interlock surfaces above and below said aperture, respectively, corresponding upper and lower back surfaces on the opposite side of said strike plate from said interlock surfaces, a plurality of closely spaced parallel vertical grooves on each of said interlock surfaces and said back surfaces, and upper and lower horizontally elongated screw holes above and below said aperture, respectively; and

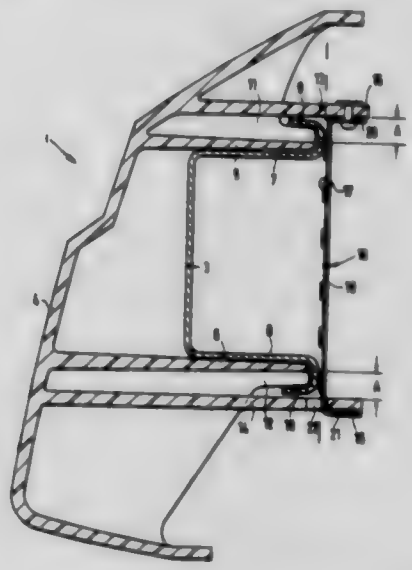
separate and independently movable upper and lower keeper plates each having a screw hole therein and an interlock surface thereon, said interlock surfaces each having a plurality of closely spaced parallel vertical grooves thereon adapted to slidably engage said grooves of said strike plate, said keeper plates being so configured as to align said screw holes thereof with said screw holes of said strike plate while mating said interlock surfaces thereof with said interlock surfaces of said strike plate, whereby said strike plate can be secured to a door jamb in any of a plurality of horizontally and vertically displaced interlock positions relative to said keeper plates with said back surfaces engaging said door jam.

4,492,398

RESILIENT VEHICLE BUMPER INDIRECTLY SECURED TO A RIGID SUPPORT

Dietmar Peter, Hemmingen, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Apr. 23, 1982, Ser. No. 371,205
Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117379
Int. Cl.³ B60R *19/08*
U.S. Cl. 293—120 9 Claims



1. A bumper for vehicles, and more particularly, for motor vehicles, comprising a rigid support of U-shaped cross section and a resilient guard, said rigid support including holding fixtures and the guard having at least one pair of generally vertically aligned guide bars resting against opposed parallel legs of the U-shape of the rigid support, said guide bars and holding fixtures interacting in a reinforcing manner, said resilient guard including generally horizontally disposed cross bars which are located at a vertically-spaced distance from respective guide bars, said cross bars including portions protruding beyond a generally vertical boundary plane delimiting the rigid support, and fastening link means for interconnecting only the protruding portions of the cross bars beyond the generally vertical boundary plane to thereby indirectly secure the guard to the rigid support.

4,492,399

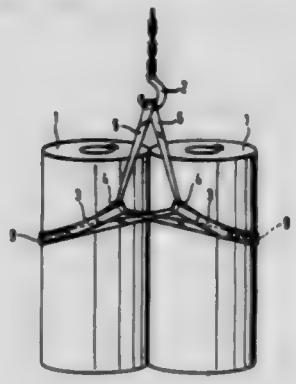
LIFTING HARNESS FOR LIFTING OF A LOAD CONSISTING OF TWO OR MORE ESSENTIALLY CYLINDRICAL OBJECTS IN AN UPRIGHT POSITION

Ilkka U. Randen, Rauma; Mikko Kiema, and Lauri S. Porthen, both of Turku, all of Finland, assignors to Lassila & Tikanoja Oy, Helsinki, Finland

Filed May 21, 1982, Ser. No. 380,943
Claims priority, application Finland, May 27, 1981, 811620; Oct. 29, 1981, 813402; Nov. 10, 1981, 813559; Feb. 15, 1982, 820495
Int. Cl.³ B66C *1/18*
U.S. Cl. 294—74 12 Claims

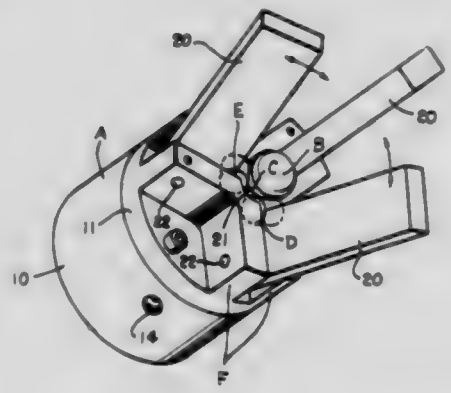
1. A lifting harness for lifting of a load of two essentially uniform surfaced cylindrical objects in an upright position, characterized in that it comprises two lifting slings, which are intended to be applied around the load from opposite sides, the ends of one of the lifting slings are fashioned into eyes, said one lifting sling has additionally at least one eye adjacent at least one of its ends, and the other lifting sling is extended by a

lifting loop which is threaded through two of the eyes of said one lifting sling and stretches upwards to a lifting means; said



harness consisting essentially of non-metallic materials without hardware.

4,492,400
ROBOTIC GRIPPER OPERATOR MECHANISM
Lawrence F. Yuda, P.O. Box 176, Westminster, S.C. 29693
Filed Mar. 28, 1983, Ser. No. 479,502
Int. Cl.³ B25J *15/00*
U.S. Cl. 294—88 5 Claims



1. A robotic gripper having a housing carrying a fluid-operated piston with a plunger connected in axial alignment therewith comprising:

a plurality of gripping fingers each pivotally connected to said housing adjacent said plunger;

a transverse arcuate groove in said plunger opposite each of said fingers;

a corresponding groove in each finger opposite a said first mentioned groove and forming respective seats therewith; and

a free bearing member retained within each of said respective seats formed by opposed respective grooves;

whereby a power stroke operating said fingers is exerted responsive to a power stroke of said piston.

4,492,401
NON-MARRING LIFTING CLAMP
Charles J. Renfroe, and William Davies, both of Jacksonville, Fla., assignors to J. C. Renfroe and Sons, Inc., Jacksonville, Fla.
Filed Jun. 14, 1983, Ser. No. 504,313
Int. Cl.³ B66C *1/48*
U.S. Cl. 294—101 14 Claims

1. A lifting clamp for articles such as metal plates comprising:

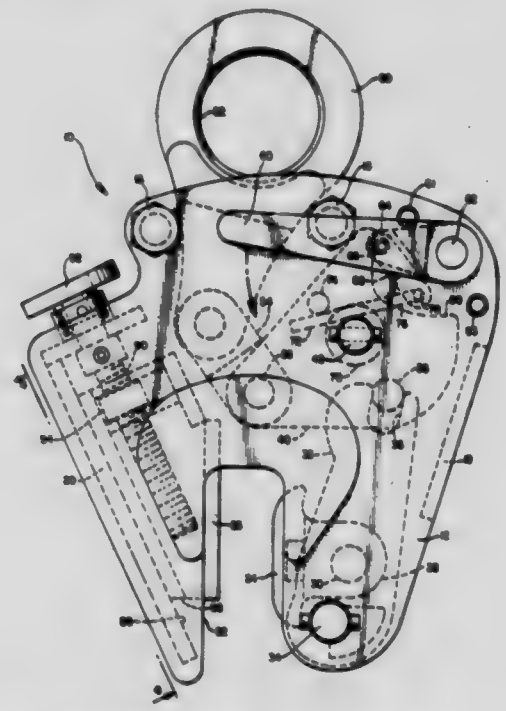
a clamp body including a pair of spaced side plates, said body defining a slot through said side plates to receive an article to be lifted;

a pair of opposed jaws mounted on opposite sides of said slot, one of said jaws being a gripping jaw pivotally mounted for opening and closing movements relative to the other jaw;

a shackle mounted for guided movement in said clamp body and adapted for connection to a lifting force;

a linkage assembly in said body coupling said shackle to said gripping jaw to control movements of said gripping jaw between a jaw closing position and a jaw open position, said assembly including a swing link carrying said gripping jaw and connected to move said gripping jaw through said opening and closing movements, and a control link pivoted to said side plates with first and second connecting means coupling said control link to said shackle and to said swing link, respectively; and

locking means having a manually operated handle pivotally



mounted on said clamp body and spring means between said side plates connected to act on said linkage assembly, said spring means having one end constrained to pivot with said control link and the other spring end connected to a cam link means whereby said spring means is tensioned by rotation of said handle to urge said assembly and thereby said gripping jaw toward said jaw closing position and the tension released by reverse rotation of said handle to release said assembly and thereby said gripping jaw to move to said jaw open position, said cam link means being connected to be shifted by movements of said handle, said cam link means cooperating with said control link through said spring means to bias said control link to said jaw closing position or release said assembly to said jaw open position.

4,492,402
COIL UP-ENDING GRAB
Harvey Bradley, East Prospect, Pa., assignor to Bradley Lifting, Corp., York, Pa.
Filed Mar. 28, 1983, Ser. No. 479,697
Int. Cl.³ B66C *1/22*
U.S. Cl. 294—103 CG 6 Claims

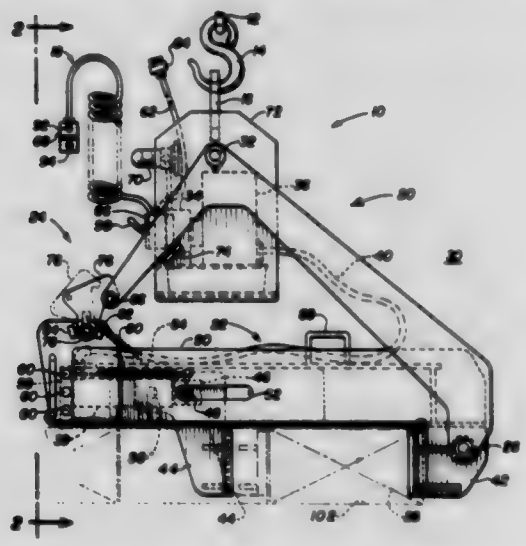
1. A coil up-ending grab adapted for use in combination with an overhead crane, said coil up-ending grab comprising in combination:

a. an inverted L-shaped lever arm assembly having a spaced clevis structure insertably receiving by pivotal mounting means therebetween at the apex junctures of the respective long-leg members and the short-leg members thereof a hydraulic power and control unit with a support structure housing therefor upwardly mounting thereon a grab lifting connector for detachable connection with a crane hook of said overhead crane,

b. a clamp deck provided with a fixed jaw and a moveable

jaw adapted to engage coils for up-ending, said clamp deck insertably received pivotally within said spaced clevis structure of said inverted L-shaped lever arm assembly the long-leg member end thereof by a pintle means retainably inserted through a transverse set of aligned openings therein cooperatively with a corresponding opening provided within said clamp deck the fixed jaw end thereof, and

c. a latch-and-pin assembly comprised of a pivotal latch means connectably assembled the moveable jaw end of



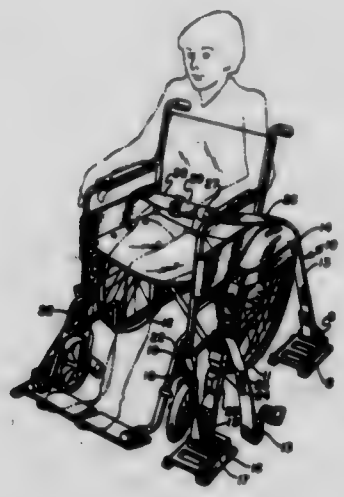
said clamp deck upwardly thereof and adapted to releasably engage a pin means fixedly assembled transversely said inverted L-shaped lever arm assembly spaced clevis structure the short-leg member end thereof whereby a reel of coiled strip material compressively engaged between the fixed jaw and moveable jaw of said clamp deck may be up-ended from a core axis vertical to a core axis horizontal disposition upon release of said latch-and-pin assembly and elevation of said crane hook when cooperatively engaged with said grab lifting connector.

4,492,403

METHOD AND APPARATUS FOR SECURING A WHEELCHAIR TO A VEHICLE FLOOR

Kenneth E. Blomgren, P.O. Box 33, Spicer, Minn. 56288, and Louis B. Oberhauser, 2425 Dunwoody Ave., Wayzata, Minn. 55391

Filed Jul. 1, 1982, Ser. No. 394,480
Int. Cl.³ B60N 1/02; B60P 3/06, 7/08; B62B 11/00
U.S. Cl. 296—65 R 16 Claims



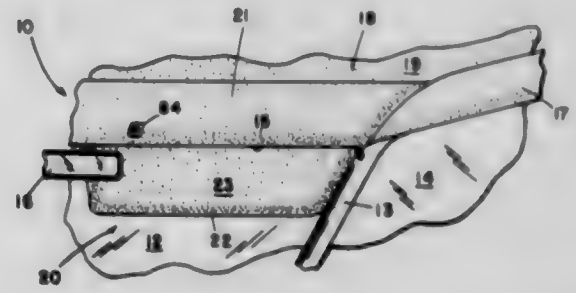
1. Wheelchair transport apparatus comprising:
(a) a vehicle having a floor;
(b) a pair of separate elongated flexible tensioning means each having intermediate portions constructed and arranged to engage and extend along the upper periphery of one of the large wheels of the wheelchair to be transported and to prevent axial slippage with respect thereto;
(c) a pair of anchor means carried by said floor and securing one end portion of each of said tensioning means to said floor at points spaced from each other a distance approximating the axial spacing of the large wheels of the wheelchair chair to be transported;
(d) a pair of keeper means secured to said floor, each in aligned spaced relation with one of said anchor means and spaced therefrom a distance somewhat greater than the diameter of the large wheel of the wheelchair to be transported and secured thereby;
(e) each of said elongated flexible tensioning means extending through its aligned keeper means in free-sliding, piercing relation; and
(f) connector means carried by the terminal portion of the opposite end portion of said tensioning means for connecting said terminal portion under tension to the frame of such a wheelchair to be transported to preclude rotation of the chair relative to the axis of its large wheel while the latter is being transported.

4,492,404

VISOR ACTUATING MECHANISM

Konrad H. Marcus, and Dennis J. Fleming, both of Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Filed Dec. 27, 1982, Ser. No. 453,530
Int. Cl.³ B60J 3/02
U.S. Cl. 296—97 J 17 Claims



1. A visor actuating mechanism for use with a visor assembly including a visor body and means for movably mounting the visor body to a vehicle for movement between stored and use positions, said actuating mechanism comprising:

bias means having one end coupled to said mounting means for urging the visor body toward the use position and selective coupling means for disengagably coupling an opposite end of said bias means to said visor body such that said visor moves free of said bias means upon movement of said visor body a predetermined distance from said stored position; and

means for releasably holding the visor body in a stored position against the force provided by said bias means such that the visor can be automatically moved from a stored position by actuating said holding means to release the visor body.

4,492,405

SEALING STRUCTURE FOR AUTOMOTIVE VEHICLE SIDE DOORS

Takuyo Chikamichi, Kawasaki; Yasumasa Tachiya, Ebina, and Kazunori Kawama, Atsugi, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama and Nissan Shatai Company, Limited, Hiratsuka, both of, Japan

Filed Jul. 14, 1983, Ser. No. 513,401
Claims priority, application Japan, Jul. 16, 1982, 57-124192
Int. Cl.³ B60J 5/04
U.S. Cl. 296—146 14 Claims

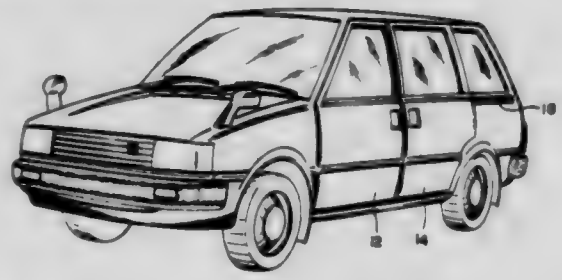
1. In an automotive vehicle having a front door, a rear door the front vertical edge of which opposes to the rear vertical

edge of said front door, upper and lower vehicle body side members extending along the upper and lower edges respectively of a door opening to be covered by said front and rear doors, and a roof panel having edge associated with said upper vehicle body side member for defining a drip-channel,

a sealing structure comprising:

first and second seals mounted on said upper vehicle body side member, each adapted to sealingly contact the upper edges of said front and rear doors when the latter are in their closed positions;

a third seal mounted on the rear vertical edge of said front door and adapted to sealingly contact the front vertical edge of said rear door;



a fourth seal mounted on the front vertical edge of said rear door and adapted to sealingly contact said third seal along a locus of points of said third seal different from the locus of points along which the front vertical edge of said rear door contacts said third seal; and

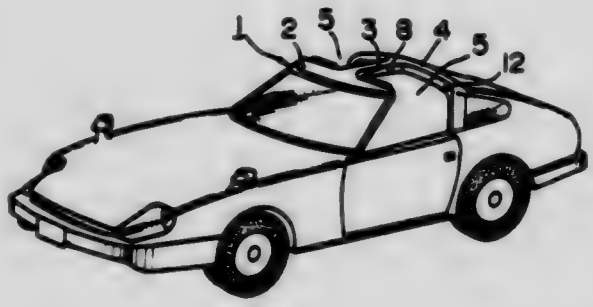
said third and fourth seals have top sections positioned beneath said drip-channel and adapted to receive any water passing between said first seal and said upper edges of the front and rear doors, and said third and fourth seals define drain passages for draining the water from said top sections.

4,492,406

RETRACTABLE AIR DEFLECTOR

Toora Matsubara, Hiratsuka, Japan, assignor to Nissan Shatai Company, Limited, Japan

Filed May 2, 1983, Ser. No. 490,669
Claims priority, application Japan, Dec. 29, 1982, 57-229588
Int. Cl.³ B60J 7/22
U.S. Cl. 296—217
5 Claims



1. A retractable air deflector for an at least partially open automobile top, comprising:

an air deflector member; and

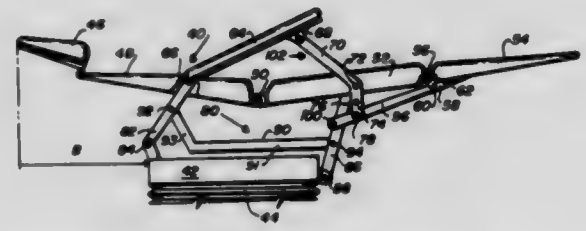
a support means supporting the air deflector member on the fixed automobile top on the front end of an opening in the automobile top; the support means being adapted to move the air deflector between an operative protruding above the contour surface of the automobile top and a retracted position submerged below the contour surface of the automobile top as a substantially parallel translation; the support means being so biased that the air deflection member is normally biased toward its operative position and may be pushed into its retracted position when the air deflector is subjected to a certain downward force which may be produced by pushing a detachable roof over the air deflector member and the opening of the automobile top; wherein the support means is comprised of at least a pair of parallel links which are pivoted to the air deflector member at their one ends and pivoted to a fixed automobile top on the front end of the opening in the automobile top.

4,492,407

PATIENT SUPPORT AND TRANSVERSE MOTION LINKAGE THEREFOR

James H. Broadhead, Bay Minette, Ala., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jul. 19, 1982, Ser. No. 399,561
Int. Cl.³ A47C 1/035
U.S. Cl. 297—78
17 Claims



1. A transverse motion linkage for a patient support having a base, a seat, a backrest pivotally connected to one end of said seat and a legrest pivotally connected to the other end of said seat, comprising:

a four-bar linkage having said base as its bottom link, a rear link pivotally connected between said bottom link and the backrest, a front link pivotally connected between said bottom link and the seat, and a horizontal link pivotally connected between said rear link and said front link, and

a three-bar linkage having a first link, a second link and a third link, said first link pivotally connected at one end to said legrest and at the other end to said second link, said second link pivotally connected at its end remote from said first link to said third link and pivotally secured at an intermediate portion to said seat, said third link pivotally connected at its end remote from said second link to said backrest at substantially the level of its connection to said rear link of said four-bar linkage,

whereby moving said patient support transversely forward on said four bar linkage reclines said backrest and raises said legrest so that the ratio of the horizontal distance between said backrest and the back end of said base in the fully reclined position, compared to said horizontal distance in the fully upright position, is about 1.5 to 1.

4,492,408

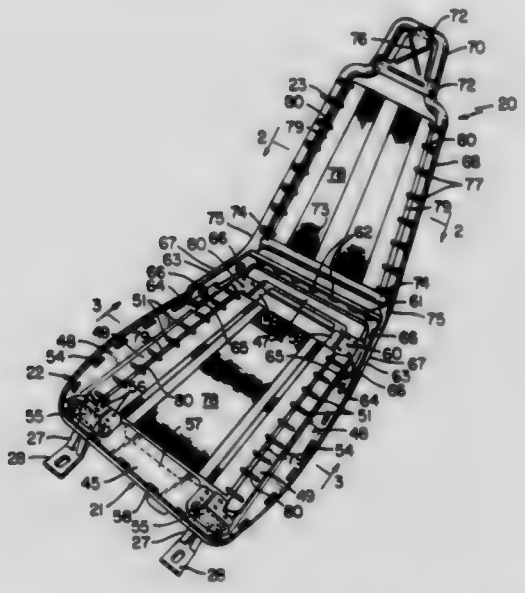
VEHICLE SEAT CONSTRUCTION AND METHOD OF MAKING THE SAME

Thomas E. Lohr, Harrison Township, Macomb County, Mich., assignor to Allen Industries, Inc., Troy, Mich.

Filed Jan. 19, 1982, Ser. No. 340,681
Int. Cl.³ A47C 1/02
U.S. Cl. 297—344
7 Claims

1. In a longitudinally adjustable vehicle seat construction comprising a lower structural substantially rectangular seat frame means, a seat cushion means supported by said lower seat frame means, and upper slide means carried by said construction for sliding longitudinally on fixed lower slide means carried by a vehicle to thereby permit longitudinal adjustment of said seat construction in said vehicle, said upper slide means comprising a pair of spaced apart substantially parallel slide tracks that form a structural part of said lower structural seat frame means, each said slide track having a generally C-shaped cross-sectional configuration with a bight that faces said fixed lower slide means so as to receive said fixed lower slide means therein and being provided with a front end and a rear end, the improvement wherein said seat frame means comprises a front structural portion that has opposed ends respectively secured to said front ends of said slide tracks and extends in a forward

direction beyond said front ends, said seat frame means comprising a rear structural portion that has opposed ends respec-



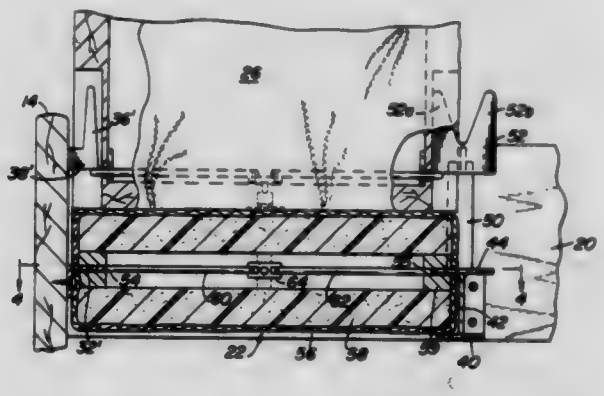
tively secured to said rear ends of said slide tracks and extending in a rearward direction beyond said rear ends whereby said slide tracks define side portions of said seat frame means.

4,492,409

FURNITURE WITH REMOVABLE PADDED CUSHIONS

William B. Laird, 121 First Ave, Red Lion, Pa. 17356

Continuation-in-part of Ser. No. 237,338, Feb. 23, 1981, Pat. No. 4,395,071. This application Oct. 20, 1982, Ser. No. 435,436
The portion of the term of this patent subsequent to Jul. 26, 2000, has been disclaimed.
Int. Cl.³ A47C 4/02
U.S. Cl. 297—440 10 Claims



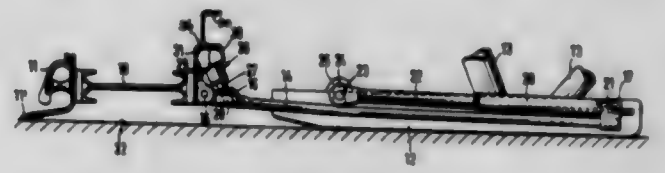
1. Furniture of the chair, loveseat and couch type comprising a frame having at least one removable cushion, said cushion having oppositely disposed grooves, a pair of tongues on said frame, each tongue projecting into one of said grooves, latch means within said cushion, said latch means including a latch member projecting into at least one of the grooves on the cushion for latching cooperation with mating structure on the associated tongue, an actuator on the cushion connected to the latch member for releasing the latch member so that the cushion may be removed, a plate having a non-circular keyhole attached to said cushion, said actuator being aligned with said keyhole for reception of a key and being generally perpendicular to said latch member at a rear end of said cushion.

4,492,410

APPARATUS FOR CONTROLLING THE POSITION OF A MINERAL MINING MACHINE

Horst Schlüsener, Werne, and Norbert Heese, Lünen, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhütte Westfalia, Lünen, Fed. Rep. of Germany

Filed Apr. 30, 1982, Ser. No. 373,548
Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117401
Int. Cl.³ E21C 27/32
U.S. Cl. 299—43 15 Claims



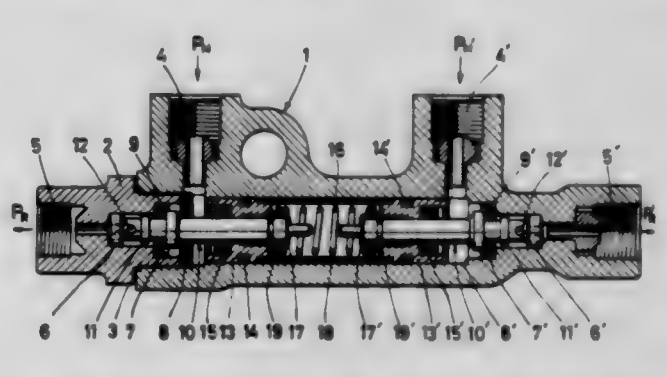
1. In apparatus for controlling the position of a mineral machine movable along a guide on one side of a conveyor and comprising bracket means on a side of the conveyor opposite said one side, at least one elongate rod guided for displacement on a roof support, connection means effecting pivotal connection between the conveyor and said rod and at least one inclined piston and cylinder unit connected between the connection means and the bracket means and operable to adjust the guide; the improvement wherein the piston and cylinder unit has its cylinder coupled to the bracket means with a ball-and-socket joint located above a pivot connection between the conveyor and the connection means, and the connection means has a pocket for receiving a lower region of the piston rod of said unit which is connected to the connection means with a lower pivot joint.

4,492,411

BRAKE PRESSURE CONTROL VALVE WITH A DISABLER FOR SPLIT BRAKING SYSTEM

Michio Moriya, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Japan

Filed Oct. 21, 1982, Ser. No. 435,891
Claims priority, application Japan, Oct. 29, 1981, 56-174048; Apr. 22, 1982, 57-59075[U]; Apr. 22, 1982, 57-59076[U]
Int. Cl.³ B60T 8/26, 11/34, 17/18
U.S. Cl. 303—6 C 3 Claims



1. In a brake pressure control valve with a disabler for a split braking system having two brake circuits having a valve body having two pairs of fluid inlets and outlets and formed with a bore connecting said inlets with said respective outlets, a pair of pressure reducing valves disposed in an opposed relationship and each having a round valve seat of an elastic material mounted in a fixed position with respect to said valve body and a plunger slidably mounted in said valve body and formed with a valve head thereon, at least one spring for urging said plungers in such a direction that the respective of said pressure reducing valves will open, and piston means slidably mounted on said plungers at inner end thereof, said piston means being in a neutral balanced position when the fluid pressure in one brake circuit is substantially equal to that in the other brake

circuit and being movable toward the circuit that failed, if one brake circuit should fail, the improvement comprising engaging means for bringing said piston means into engagement with said plunger in the live circuit when said piston means has moved toward the failed circuit for a predetermined distance, whereby forcibly moving said plunger in the live circuit toward the failed circuit, so that the valve head on said plunger in the live circuit will pass through said valve seat and thus said pressure reducing valve in the live circuit is disabled.

4,492,412

BRAKING CYLINDER INLET VALVE ARRANGEMENT IN BRAKING SYSTEMS FOR RAILWAY VEHICLES

David J. Wickham, and Clive A. Rathbone, both of Chippenham, England, assignors to Westinghouse Brake and Signal Company Limited, Chippenham, England

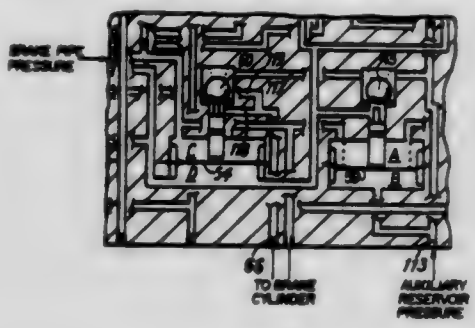
Filed Sep. 8, 1982, Ser. No. 416,075

Claims priority, application United Kingdom, Sep. 11, 1981, 8127542

Int. Cl.³ B60T 15/20

U.S. Cl. 303—32

3 Claims



1. A brake cylinder inlet valve arrangement for the braking system of a railway vehicle including a brake pipe pressure, an auxiliary reservoir pressure, and a brake cylinder, said brake cylinder inlet valve arrangment comprising:

an actuating means for said brake cylinder inlet valve means for opening said valve means when supplied with an auxiliary reservoir pressure; and means for opening said valve means when supplied with an auxiliary reservoir presure; and

an application valve means for supplying auxiliary reservoir pressure to said actuating means only when said brake pipe pressure is less than said auxiliary reservoir pressure such that said brake cylinder inlet valve means is interlocked so as to be not actuatable until said application valve means is first actuated.

4,492,413

CONTROL ARRANGEMENT FOR AN ANTISKID HYDRAULIC BRAKING SYSTEM OF A VEHICLE

Juan Belart, Walldorf; Jochen Burglorf, Offenbach-Rumpenheim; Dieter Kircher, Frankfurt am Main, and Lutz Weise, Mainz, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Oct. 28, 1981, Ser. No. 315,820

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1980, 3040548

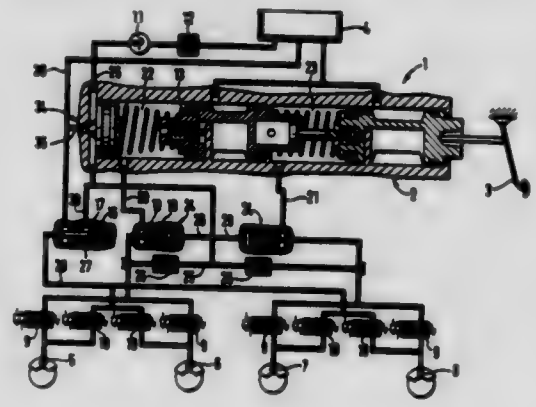
Int. Cl.³ B60T 8/02

U.S. Cl. 303—92

28 Claims

1. A control arrangement for use in hydraulic braking system of a vehicle, particularly of a motor vehicle, equipped with an antiskid control device, for controlling the operation of at least one brake actuating cylinder interposed in a braking circuit between a supply conduit having a first and a second branch respectively communicating with a master cylinder device having at least one master piston and with an auxiliary energy pressure source at their upstream ends and merging with one another upstream of the brake actuating cylinder, said auxiliary pressure source responsive to antiskid control action for generating elevated hydraulic pressure and a return conduit connected to a supply reservoir at its downstream end, in dependence on the operation of the antiskid control device and of the auxiliary energy source, the invention comprising:

means for hydraulically separating the brake actuating cylinder from the master cylinder device during antiskid control action, including a hydraulically operated separating valve interposed in the first branch of the supply conduit and assuming its open position in the absence of antiskid control action and its closed position during antiskid con-



trol action and when the auxiliary energy source is operational in response to elevated hydraulic pressure; and

means for hydraulically connecting the brake actuating cylinder to the auxiliary energy source during antiskid control action, including a check valve interposed in the second branch of the supply conduit and assuming its open position when the pressure prevailing upstream thereof exceeds that prevailing downstream of the same.

4,492,414

REGULATOR VALVE FOR HYDRAULIC ANTI-SKID APPARATUS

Asao Kozakai, Anjo; Shingo Watanabe, and Nobuyasu Nakanishi, both of Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

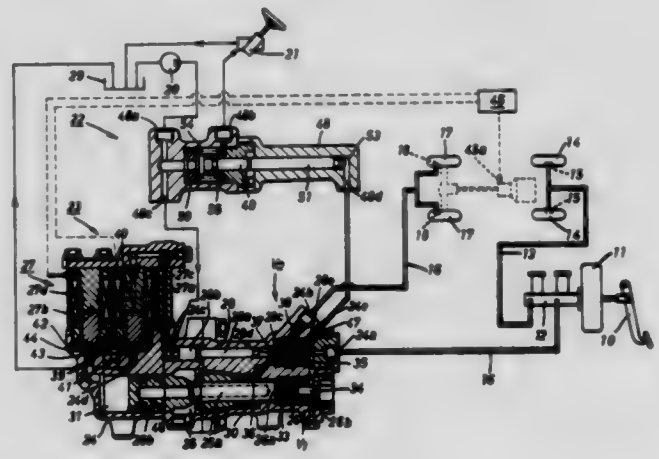
Filed May 27, 1983, Ser. No. 498,855

Claims priority, application Japan, Jun. 23, 1982, 57-109013

Int. Cl.³ B60T 8/02

U.S. Cl. 303—116

3 Claims



1. A regulator valve for a hydraulic anti-skid apparatus for installation in a vehicle braking system between a master cylinder and a wheel brake cylinder, the regulator valve comprising:

a housing provided with first and second inlet ports respectively for connection to a hydraulic power pressure source and said master cylinder and with first and second outlet ports respectively for connection to a fluid reservoir and said anti-skid apparatus;

a first valve member in the form of a piston reciprocable within an axial bore in said housing and subdividing the interior of said housing into a first chamber in open com-

munication with said first inlet and outlet ports and said second outlet port and a second chamber in open communication with said second inlet port, said first valve member being formed at one end thereof with a valve part exposed in said first chamber;

a second annular valve member arranged in said first chamber coaxially with said first valve member, said second valve member being formed at one end thereof with a first valve part in a small diameter cooperating with the valve part of said first valve member to form a first annular throttle for throttling the flow of fluid from said first inlet port to said first outlet port and at the other end thereof with a second valve part in a large diameter cooperating with the inner end wall of said first chamber to form a second annular throttle for throttling the flow of fluid from said first inlet port to said first outlet port after said first throttle is closed; and

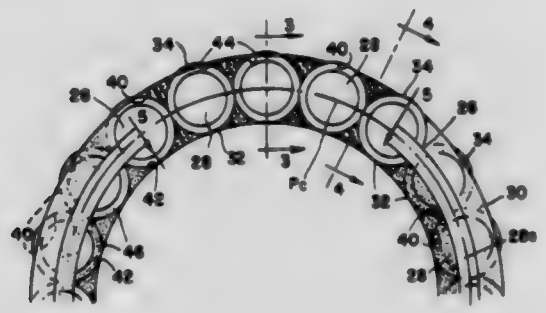
resilient means for biasing said second annular valve member toward the inner end wall of said first chamber to restrict the movement of said second annular valve member toward said first valve member until a power pressure from said power pressure source reaches a predetermined value.

4,492,415

UNITARY FULL COMPLEMENT BEARING COMPONENTS CONTAINING ROLLING ELEMENTS IN A SELF-SUPPORTING LUBRICATING MATRIX

George H. Bailie, Beach Haven, N.J., and John J. Johnson, Wayne, Pa., assignors to SKF Industries, Inc., King of Prussia, Pa.

Filed Mar. 3, 1982, Ser. No. 354,501
Int. Cl.³ F16C *33/38, 33/44, 33/56;* C10M *5/00*
U.S. Cl. 384—463 24 Claims



1. A component of a full complement bearing assembly comprising:

a. a plurality of rolling elements;

b. a self-supporting lubricating matrix composed of a solid, tough, elastic gel comprising a lubricating oil and a high molecular weight polymer, and being capable of exuding lubricating oil in response to sliding friction;

c. means defining a plurality of pockets in said matrix of a configuration closely conforming to the rolling elements and each pocket having at least one opening to expose at least one operative surface of each rolling element permitting rolling contact with another bearing element;

d. said matrix acting to positively space said rolling elements in said assembly and hold them in place to permit or facilitate assembly of said rolling elements to said bearing as a unit and to maintain said rolling elements in properly spaced relation during operation of said bearing; and

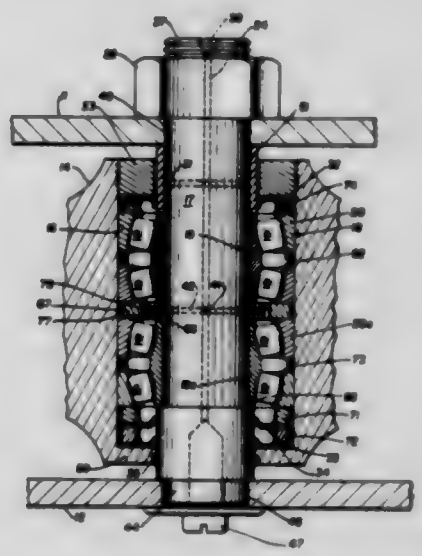
e. said rolling elements being in the form of a circular bracelet having an axial bore severed at least at one location to form a split ring capable of being temporarily deformed to permit its installation over the retaining flanges of the inner ring of a bearing assembly.

4,492,416

CABLE WHEEL MOUNTING FOR CABLE CARS

Erich Kaufmann, San Leandro, Calif., assignor to D. W. Nicholson Corporation, San Leandro, Calif.

Filed Apr. 18, 1983, Ser. No. 485,951
Int. Cl.³ F16C *19/30*
U.S. Cl. 384/474 11 Claims



1. In a wheel mounting having a pair of spaced apart supports and a wheel having a hub, said hub having an internal wall surrounding and journaled for rotation on a shaft mounted between said supports, said shaft having a normally vertical axis in use and said wheel having a substantially horizontal plane of rotation, the improvement comprising:

a bearing having concentric spaced apart inner and outer races mounted at said shaft and hub wall respectively and roller bearing members mounted between said races;

said shaft having one end fixed to one of said supports and an opposite end extending through said other support.

a sleeve surrounding said shaft and having its opposite ends positioned for engagement with said other support and an adjacent end of said inner race;

means connecting said opposite shaft end and said support and urging said support to displace said sleeve against said adjacent end of said inner race to lock said inner race and shaft against relative movement;

means clamping said outer race to said hub for rotation with said wheel;

conduit means positioned for introducing lubricating oil to the space between said races, said conduit means extending longitudinally in said shaft and having an oil receiving opening at the normally upper end of said shaft and at least one radially extending passage for discharge of oil into said space; and

sealing means providing oil retention in said bearing.

4,492,417

TAPE CASSETTE STORAGE BOX

Sheichi Saito, and Hideo Shirako, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 318,037, Nov. 4, 1981,. This application Feb. 14, 1984, Ser. No. 580,101
Claims priority, application Japan, Nov. 11, 1980, 55-160966
Int. Cl.³ A47B *81/06;* B65D *85/67*
U.S. Cl. 312—9 3 Claims

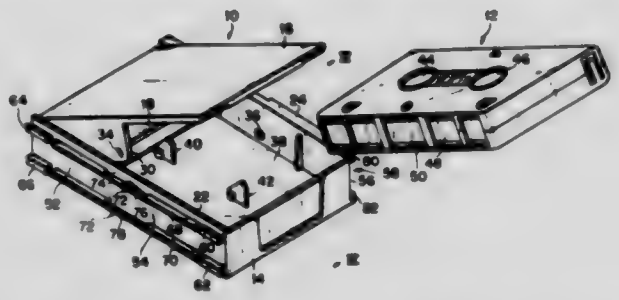
1. A tape cassette storage box comprising:

a storage box body having a hollow for receiving a microcassette;

a cover having a kangaroo pocket for detachably holding the microcassette and coupled with said storage box body so as to be able to rotate about an axis between a first position in which the microcassette held in said kangaroo pocket is located in said hollow of said storage box body and said cover houses, in cooperation with said storage

box body, the microcassette held in said kangaroo pocket, and a second position in which said kangaroo pocket is located outside of said hollow and said cover allows said microcassette as held in said kangaroo pocket to be removed from said storage box body; and

a pair of reel hub stopper members formed on said storage box body and arranged in a direction which crosses the axis of rotation of said cover so as to be able to engage a pair of reel hubs of the microcassette held in said storage



box body wherein said pair of reel hubs are prevented from rotating by said engagement with said reel hubs,

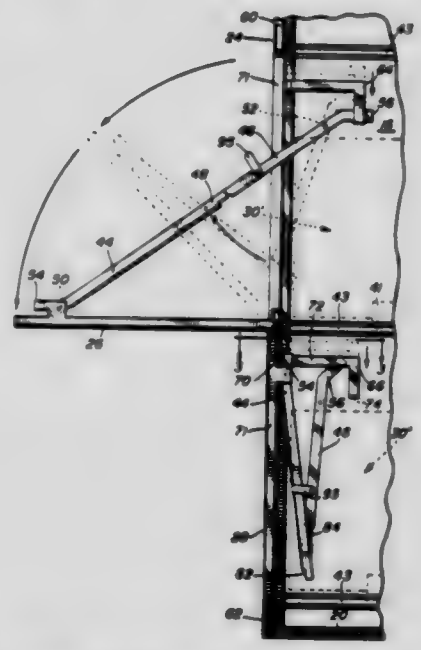
the height of that one of said pair of reel hub stopper members which is nearer to said axis of rotation of said cover being lower than the height of the other one of said pair of reel hub stopper members which is farther from said axis of rotation of said cover so as to facilitate insertion and removal of a microcassette in and from said kangaroo pocket.

4,492,418

LATERAL FILING DRAWERS

Arthur Bailey, deceased, late of Montreal, Canada, and by Vici Bailey, executor, 6300 Lennox, Montreal, Canada, assignors to Vici Bailey, Montreal, Canada

Filed Feb. 24, 1983, Ser. No. 469,447
Int. Cl.³ E05B 65/46
U.S. Cl. 312—220 7 Claims



1. A filing cabinet comprising:

a frame defining an enclosure and having two or more drawer openings;

a door hinged to said frame at the bottom of each opening, said door being swingable downward to reach a substantially horizontal opened position and swingable upward to reach a substantially vertical closed position;

link means consisting of a pair of foldable arms piviotally connected to one another at one end thereof, and at the other ends thereof to a respective one of said door and said frame, at each side of said frame to hold said door in said horizontal position;

a drawer at each said opening; said drawer having roller means whereby said drawer may be rolled out of said enclosure onto said door in said horizontal opened position; and

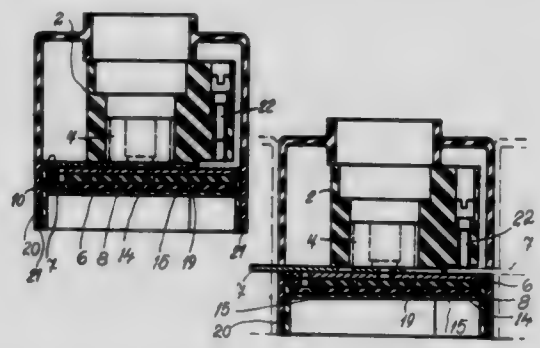
lock receiving means on a rear face of each door at the upper part thereof; one of said arms having its opposite end fixed to said door adjacent said lock receiving means; the other of said arms having finger means at its opposite end; a door locking means consisting of an elongated rail extending vertically of said frame from bottom to top of said enclosure adjacent said openings, and of lever means having one end fixedly attached to said rail and the other end adapted to engage said finger means, the engagement of said lever means being such that, when one door is in the opened horizontal position, all remaining doors are locked as a result of said one end of said lever means being engaged in said lock receiving means of closed doors.

4,492,419

ELECTRIC DISTRIBUTION CENTER

Lennart H. Denckert, Sörgården 125, Danderyd, Sweden (S-186 00)

Continuation of Ser. No. 91,203, Nov. 7, 1979, abandoned. This application Jan. 25, 1982, Ser. No. 342,088
Int. Cl.³ H01R 9/04
U.S. Cl. 339—18 C 12 Claims



1. An electrical distribution center of the type in which at least one fuse element is adapted to be electrically connected to incoming and outgoing electrical wires and wherein plural such fuse elements are adapted to be positioned in adjacent relation, each fuse element comprising:

a support member having a defined periphery;

plural spaced grooves defined in and extending across said support member;

plural slidable conductors, each positioned for longitudinally slidable movement in respective one of said plural grooves, said slidable conductors each having a length which is shorter than the length of said grooves and having an underside facing into said respective grooves;

plural stationary conductors, one for each slidable conductors, each disposed in slidable contact with the underside of a respective slidable conductor;

wherein said slidable conductors are each slidable to a position in its respective groove wherein the slidable conductor extends beyond the periphery of said support member and into a groove of a support member of a fuse element positioned adjacent said each fuse element; and

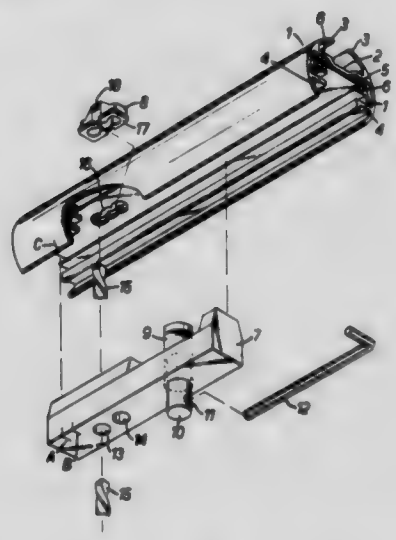
adjustable securing means for selectively pressing said slidable conductors into secure mechanical and electrical contact with said stationary conductors.

4,492,420

ELECTRICAL SUPPLY SYSTEMS

Robert A. Stuart, Newhaven, England, assignor to Rotaflex plc, London, England

Filed Jan. 10, 1983, Ser. No. 457,057
Claims priority, application United Kingdom, Jan. 18, 1982, 8201241
Int. Cl.³ H01R *13/60*; B23B *47/28*; B23G *1/48*
U.S. Cl. 339—22 R 5 Claims



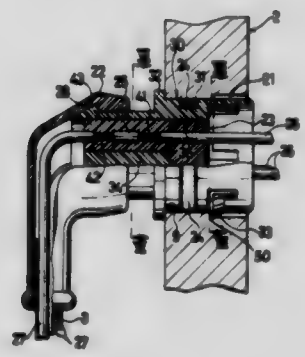
1. In combination a wiring kit and electrical distribution track, said track including a channel having a mouth and a rear wall opposite the mouth, said channel including a plurality of conductors housed in the channel and extending longitudinally thereof, said kit comprising guide means insertable through said mouth into contact with said rear wall, releasable means on said guide means for securing said guide means to said channel at a selected, adjusted position along said track, at least two holes formed in said guide means for guiding a drill bit inserted through said holes toward said rear wall to form openings of predetermined shape in said rear wall, said holes being spaced to enable a series of intersecting openings to be drilled in said rear wall to define a slot shaped opening, and a bushing of electrically insulating material adapted to fit in said opening for protecting supply leads passed therethrough.

4,492,421

LEAK-TIGHT CONNECTOR FOR ELECTRICAL CABLES

Yasunobu Ito, Aichi, Japan, assignor to Aisin Warner Kabushiki Kaisha, Anjo, Japan

Filed Oct. 21, 1981, Ser. No. 313,715
Claims priority, application Japan, Nov. 22, 1980, 55-148714
Int. Cl.³ H01R *11/00*
U.S. Cl. 339—59 R 18 Claims



1. A sealed connector for cables passing through a wall of a housing, a hole formed through the wall of said housing, comprising;

a connecting element, said connecting element having at least on its outer periphery, a portion for mating with said hole, said connecting element having at least one passage through the interior thereof;

means for fixing said connecting element in said hole of said housing;

means for connecting together at least one first and at least one second cable, said at least one first cable and at least one second cable each comprising a bundle of electrically conductive wires and a coating over the outer periphery of said bundle of wires, and defining clearances within the coating and between the wires, the coating being stripped from respective ends of the first and second cables which are to be attached to each other, said means for connecting said cables comprising a joint terminal adapted to connect the respective ends of said first and second cables;

said connecting element being adapted to receive a respective end of each of said at least one first and at least one second cable from opposite sides of said wall of said housing in one of said passages through the interior of said connecting element; and

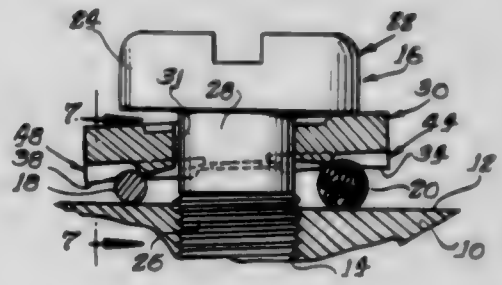
means for sealing the outer periphery of the bundle of wires and the clearances of at least one of said at least first cable and said at least one second cable in the region where the coating is stripped, said sealing means permeating said clearances and coating said periphery of the bundle of wires with a filler therein in a liquid tight manner, fluid being prevented from leaking out of said housing through the clearances between said electrically conductive wires due to capillary action in the clearances.

4,492,422

WIRE CLAMP ASSEMBLY

Martin Bleschke, Rockford, Ill., assignor to Textron Inc., Providence, R.I.

Filed Dec. 10, 1982, Ser. No. 448,479
Int. Cl.³ H01R *11/20*
U.S. Cl. 339—95 R 14 Claims



1. A wire clamp assembly for use with an internally threaded terminal member, said wire clamp assembly comprising in combination: a screw member having an externally threaded shank portion for engagement with said internal thread of said terminal member, a driver head, and an unthreaded shank portion intermediate said head and said threaded shank portion; and a polygonal plate-like washer member having a central aperture and mounted upon said unthreaded shank portion, the plate-like washer member being engageable by said driver head to be moved toward said terminal member for clamping at least one wire therebetween, said washer member having an undersurface for facing said terminal member and a plurality of sides which meet to define corners, said undersurface including rib means associated with at least one side of said polygonal plate-like washer member, said rib means being defined by a pair of spaced apart rib members, each said rib member being disposed substantially radially with respect to the axis of said central aperture in the washer member, and each said rib member extending from an area generally adjacent said central aperture toward the periphery of said one side, said pair of rib members diverging in a direction away from the central aperture and toward said periphery, said rib members intersecting the said one side at spaced locations, both of said locations being intermediate the corners associated with said one side, each said rib member defining a ramp surface protruding from the undersurface of the washer member, said ramp surface gradually increasing in height in a direction from said central

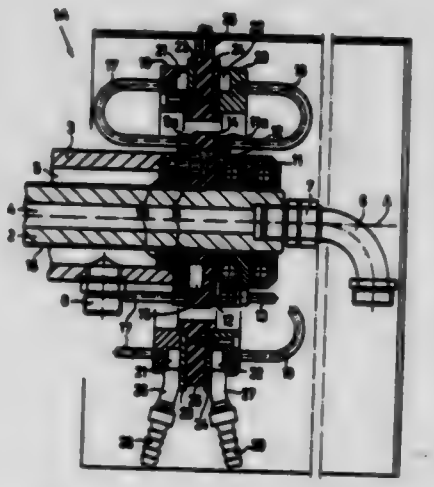
aperture toward said periphery, such that said rib members will bitingly engage a wire to be retained thereby in multi-location contact while urging said wire inwardly toward said central aperture in response to advancement of said washer member toward said terminal member by said screw member.

4,492,423

ROTATABLE HEAVY-CURRENT CONNECTOR

Wolfgang Reuter, Niddatal, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed May 26, 1983, Ser. No. 497,787
Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219721
Int. Cl.³ H01R 13/533, 39/02
U.S. Cl. 339—112 L
3 Claims



1. In a rotatable connector for heavy electrical currents having first and second fluid-cooled conductors, a first flange unit having first and second electrically conducting flanges insulated from each other and physically and electrically connected respectively to the first and second conductors, a second flange unit which is annular and generally coaxially receives in the annular space thereof the first flange unit for relative rotation therebetween, the second flange unit having first and second electrically conducting flanges insulated from each other, the improvement comprising, in combination;

projection means on the first flange of the first flange unit for direct thermal communication of the first flange with the fluid cooling the first conductor connected thereto;

cooling means for providing a cooling fluid inside the second flange of the first flange unit and both flanges of the second flange unit; and

at least two U-shaped stranded wires each embedded at opposite ends of the U thereof in respective pairs of the first and second flanges of the first and second flange units, first flange to first flange and second flange to second flange,

whereby the projection means and cooling means in combination with the embedding of the ends of the U-shaped stranded wires keeps the latter cool enough to carry heavy electrical currents without corroding contact between the stranded wires and cooling fluid.

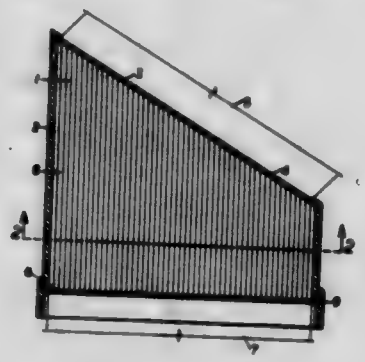
4,492,424

SOLAR COLLECTOR

John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

Filed Jul. 19, 1981, Ser. No. 282,042
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.10
1 Claim

1. A solar collector comprising vertical glass rods enclosed in a housing under a plate glass cover, with the glass rods being of a relatively large diameter of one to six millimeters, with the exposed upper ends of the glass rods being uniformally inclined from horizontal, with the exposed inclined upper ends of the glass rods occupying a common plane, with the lower ends of the glass rods being perpendicular to the vertical axes of the glass rods and occupying a horizontal plane, with the glass rods being supported at their lower ends by a horizontal plate



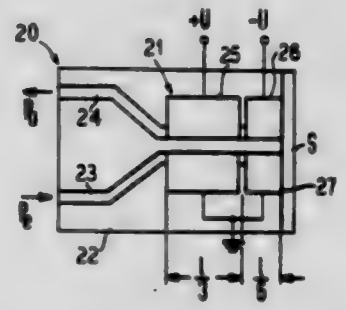
glass base; as a means of receiving, refracting and transmitting parallel solar rays in a vertical direction.

4,492,425

DEVICE FOR DEFLECTING LIGHT THROUGH 180 DEGREES

Ralf T. Kersten; Karl H. Tietgen, and Helmut F. Schlaak, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 8, 1982, Ser. No. 338,003
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1981, 3108814
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.14
19 Claims



1. A device comprising a substrate having a pair of strip waveguides disposed thereon and arranged in a form of a directional coupler and a mirror on a pair of end faces of the waveguides so that light traveling therein is reflected.

4,492,426

OPTICAL BRANCH COUPLER

Antonius J. A. Nicia, and Cornelis J. T. Potters, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 27, 1982, Ser. No. 372,358
Claims priority, application Netherlands, May 4, 1981, 8102183
Int. Cl.³ G02B 7/26; F16M 11/08
U.S. Cl. 350—96.15
12 Claims

1. An optical branch coupler for splitting an incoming light beam from a light source into two outgoing light beams or for combining two incoming light beams from respective light sources into one outgoing light beam, said coupler comprising:

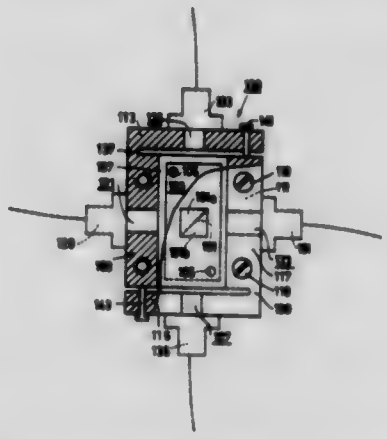
a housing having a bottom wall and first, second and third side walls having openings, said first and second side walls being fixed to the bottom wall substantially perpendicular thereto and substantially parallel to each other, said third side wall being mounted substantially perpendicular to the first and second side walls and to the bottom wall; and

an optical element arranged in the housing between the first and second side walls, said optical element arranged to transmit part of a light beam incident thereon via the opening in the first side wall to the opening in the second

side wall, said optical element arranged to reflect the nontransmitted part of a light beam incident thereon via the opening in the first side wall to the opening in the third side wall;

characterized in that:

the optical element is mounted on a mounting plate which is connected to the bottom wall of the housing by an elastic bridge, said mounting being pivotably adjustable about a



first axis which extends parallel to an optical surface of the optical element and parallel to the bottom wall of the housing;

the third side wall is connected to the first or second side wall so that it is pivotably adjustable about a second axis which extends perpendicular to the bottom wall; and

the coupler further comprises an adjusting screw in the mounting plate to adjust the optical element about the first axis by deforming the elastic bridge.

4,492,427

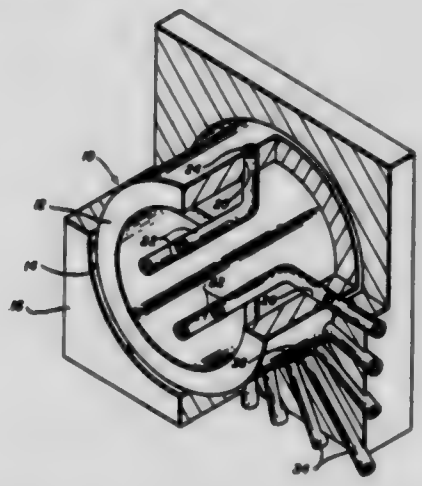
OPTICAL SLIP RING ASSEMBLY

Norris E. Lewis, Christiansburg, and Michael B. Miller, Blacksburg, both of Va., assignors to Litton Systems, Inc., Blacksburg, Va.

Continuation-in-part of Ser. No. 241,588, Mar. 9, 1981, Pat. No. 4,436,367. This application Jan. 25, 1982, Ser. No. 342,197

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.20 5 Claims



1. An optical slip ring assembly for coupling an optical signal from a rotor to a stator, the slip ring assembly comprising:

a hollow cylinder comprising said rotor,

a plurality of apertures through said hollow cylinder, said apertures defining a circle around said rotor,

a plurality of rotor optic fibers within said hollow cylinder, said rotor optic fibers having signal emitting ends positioned in said apertures and intersecting the surface of said hollow cylinder prependicularly, and

a plurality of stator optic fibers mounted on said stator, said stator optic fibers having signal receiving ends which collectively define a pickup area and which are arranged concentrically around the circle defined on said rotor by said apertures.

4,492,428

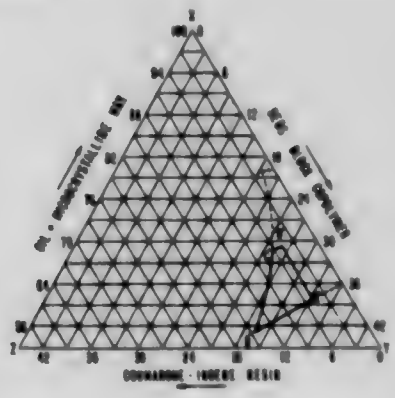
COATED OPTICAL FIBER

Alvin C. Levy, Gwinnett County, Ga., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 315,429, Oct. 27, 1981, Pat. No. 4,432,607. This application Aug. 16, 1982, Ser. No. 408,713

Int. Cl.³ G02B 5/172

U.S. Cl. 350—96.30 4 Claims



1. A coated optical fiber comprising an optical fiber and one or more coated layers thereon, characterized in that

at least one coated layer comprises a mixture of: (X) An ASTM type 103, 104A, 104B, or mixture thereof, napthenic or paraffinic oil, with a wax optionally substituted for a portion of said oil; (Y) a styrene-rubber-styrene block copolymer having a styrene-rubber ratio of 0.2 to 0.5; and optionally (Z) a coumarone-indene copolymer or vinyl toluene —α methyl styrene copolymer; and further comprises a thermal oxidative stabilizer, wherein the ingredients X, Y, and Z have relative proportions by weight falling within the shaded area bounded by A'B'C'D' of FIG. 2 for a styrene-rubber-styrene block copolymer having a viscosity of 1190 cps and with the acceptable proportions of said block copolymer adjusted corresponding to a reduction by 3 parts for block copolymer material having a viscosity of 1800 cps, and to an increase by 6 parts for block copolymer material having a viscosity of 500 cps, with said viscosity being measured for a solution of 20 weight percent block copolymer in toluene at 25 degrees Celsius.

4,492,429

MOUNTING DEVICE OF OPTICAL UNIT

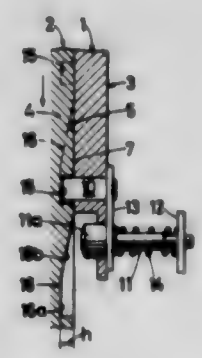
Yukio Miki, Sakai, and Takeshi Egawa, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 21, 1982, Ser. No. 380,872

Claims priority, application Japan, May 25, 1981, 56-79768

Int. Cl.³ G02B 7/02

U.S. Cl. 350—257 6 Claims



1. In an optical unit which includes a first optical device and

a second optical device; said first optical device including a body member, a mounting surface connected to said body member, a bayonet pawl on said mounting surface, an engaging member mounted to extend away from said body member and biased to be located away from said body member, and a release means connected to said engaging means to move it toward said body member; said second optical device including a body member, a mounting surface on said body member, a bayonet pawl on said mounting surface, and an engaging recess, said engaging recess being capable of accommodating said engaging member; said first and second optical devices being connectable to one another by placing them together in a first relative positioning wherein their respective mounting surfaces contact one another and their respective bayonet pawls are aligned to engage one another, and then moving them relative to one another to a second relative positioning where their respective bayonet pawls engage one another and the engaging member of said first optical device lockingly extends into the engaging recess in said second optical device, said first and second optical devices being disengageable from one another by operating said release means of said first optical device and then causing said first and second optical devices to move from their second relative positioning to their first relative positioning,

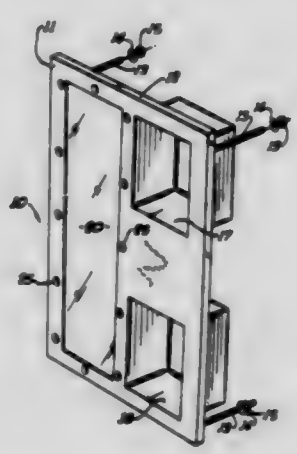
the improvement wherein said second optical device includes a groove therein in which the engaging member of said first optical device will extend when said first and second optical devices are moved from their first relative positioning to their second relative positioning and vice versa, said groove having a first end remote from said engaging recess and a second end adjacent said engaging recess, said groove having a maximum depth at said first end, a minimum depth at said second end and decreasing depth therebetween, said maximum depth being such that said engaging member therein is no more than slightly moved toward its respective body member when said first and second optical devices are in their first relative positioning with respect to one another.

4,492,430

SECURITY MIRROR REPLACEABLE FROM PIPE CHASE

Earl L. Morris, La Habra Hts.; V. Walter Hafner, Whittier, and Ron T. Haba, Fullerton, all of Calif., assignors to Acorn Engineering Company, City of Industry, Calif.

Filed Jan. 5, 1983, Ser. No. 455,668
Int. Cl.³ G02B 7/18; A47G 1/16; E04B 1/38
U.S. Cl. 350—631 11 Claims



1. A vandal-resistant and tamper-proof security mirror assembly with fasteners which are not removable from the viewing side thereof but which are removable and replaceable from the back side of the mounting surface, said mirror assembly comprising:

a mounting plate, having a viewing side and back side, securely affixed over an access hole in a wall, said mounting plate having an opening therein;

fastening means affixed to the mounting plate along the opening therein, said fastening means extending away from the back side thereof, said fastening means being removable from the back side of the mounting plate;

pan means held by said fastening means over the opening in the mounting plate and against the back side thereof, said pan means extending past the edges of the opening along the entire periphery of the opening and said pan means having a side wall extending completely therearound, the inner edge of the side wall abutting the back surface of the mounting plate at a location further away from the opening than the fastening means; and

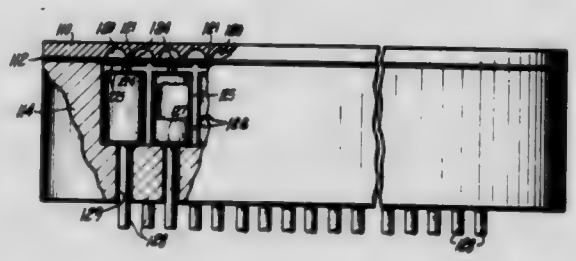
a mirror and back laminate having a backing layer adjacent the pan means and a reflective layer held against the back side of the opening in the mounting plate, said mirror and backing laminate extending beyond said opening around the entire periphery thereof.

4,492,431

PRESSURE ACTUATED DEFORMABLE MIRROR

Frederick G. Eitel, North Palm Beach, and Thomas J. Hodges, Palm Beach Gardens, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 4, 1982, Ser. No. 374,680
Int. Cl.³ G02B 7/18, 5/06
U.S. Cl. 350—310 4 Claims



1. A deformable mirror system comprising:

a flexible faceplate having a mirror surface with a surface contour;

a plurality of actuators for determining said surface contour; and

control means for controlling said plurality of actuators, characterized in that:

at least one of said actuators is included within a variable pressure control means that comprises a non-piston pressure vessel containing a fluid at a variable pressure and having a variable length dependent on said variable pressure; and

in which said control means generates a plurality of control signals for controlling said variable pressure in said plurality of actuators by detecting an optical beam having an intensity distribution dependent on said surface contour and generating control signals to said variable pressure control means dependent on said intensity distribution, thereby determining said surface contour.

4,492,432

HOMEOTROPIC NEMATIC DISPLAY WITH INTERNAL REFLECTOR

Meinolph Kaufmann, Rüthof-Baden, and Hanspeter Schad, Rieden, both of Fed. Rep. of Germany, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jul. 14, 1981, Ser. No. 283,175
Claims priority, application Switzerland, Jul. 28, 1980, 5753/80
Int. Cl.³ G02F 1/133
U.S. Cl. 350—338 6 Claims

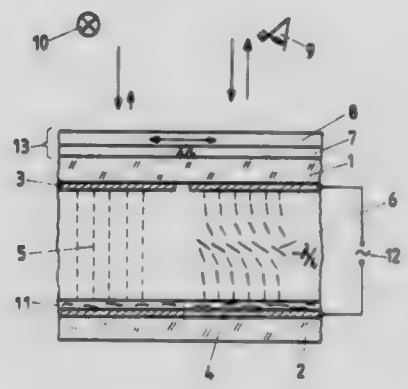
1. A liquid crystal display comprising:

a cell consisting of two plane-parallel plates with a maximal cell thickness of 6 microns;

a pair of electrode layers on the inner surfaces of said two

plane-parallel plates wherein at least one of said electrode layers is transparent;

a nematic liquid crystal having a negative dielectric anisotropy and a double refraction anisotropy between 0.04 and 0.15 and having rubbed orientational surfaces of said two plane-parallel plates to give the nematic liquid crystal a



homeotropic orientation, wherein said rubbed orientational surfaces are treated with silane after rubbing;

an internal reflector mounted on one of said electrode layers and consisting of aluminum flakes and an insulating oxide layer with said aluminum flakes embedded therein;

a polarizer mounted on one of said two plane-parallel plates.

4,492,433

IN-FEM LIQUID CRYSTAL DISPLAY PANEL WITH A FILM OF CELLOPHANE TAPE

Akihiko Inaya, and Susumu Kitamura, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

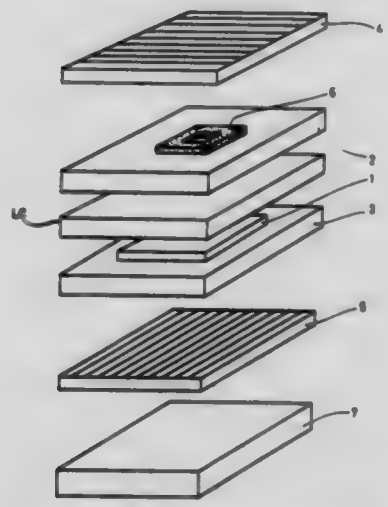
Filed Oct. 28, 1982, Ser. No. 437,507

Claims priority, application Japan, Oct. 28, 1981, 56-161540[U]

Int. Cl.³ G02F *1/133*

U.S. Cl. 350—339 R

2 Claims



1. A liquid crystal display panel comprising:

a pair of polarizers, the polarization axes of the polarizers being substantially orthogonal each other;

a pair of substrates each supporting an electrode;

a film composed of a cellophane tape provided between one of the substrates and one of the polarizers, the film having an optical axis inclined to the polarization axis of said one of the polarizers at about 45°; and

a liquid crystal material disposed between the substrates, molecules of the liquid crystal material being twisted at about 90° between the surfaces of the substrates.

4,492,434

MULTI-COLOR TUNABLE SEMICONDUCTOR DEVICE

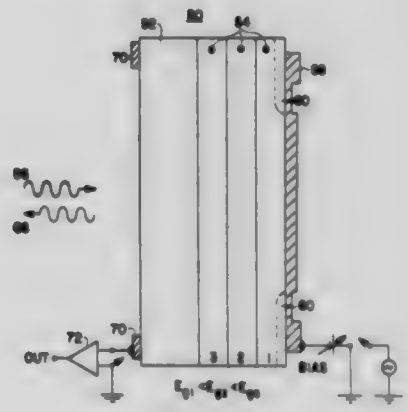
Nicholas Bottka, Ridgecrest, Calif.; Howard Lessoff, Potomac, Md., and Marian E. Hills, Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 7, 1982, Ser. No. 337,659

Int. Cl.³ G02F *1/03*

U.S. Cl. 350—356

11 Claims



1. A detector with a variable bandwidth response for light comprising:

a substrate in the path of said light for transmitting said light;

a plurality of epitaxial layers on said substrate the outermost epitaxial layer with proton bombarded regions, placed such that said light passes through said plurality of epitaxial layers after passing through said substrate, absorbing selected wavelengths;

electrodes attached to the outer surface of the substrate and outer surface of the top epitaxial layer, for maintaining an electric field across said substrate and said epitaxial layers such that a current flows between said electrodes if light is absorbed by any of said epitaxial layers;

means for producing a variable voltage potential across said epitaxial layers in a predetermined manner; and

means for monitoring the current flow from said epitaxial layers as a function of said voltage potential when light is incident on said detector.

4,492,435

MULTIPLE ARRAY FULL WIDTH ELECTRO MECHANICAL MODULATOR

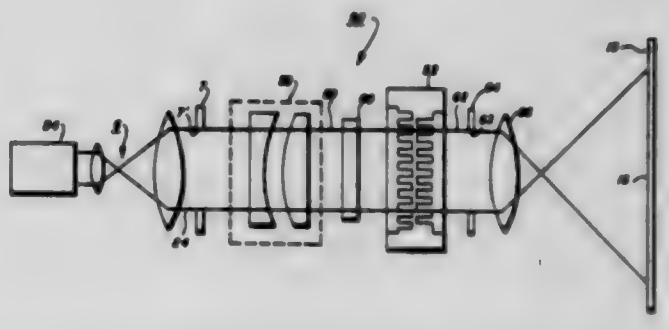
Martin E. Banton, Fairport; Pierre A. Lavallee, Penfield; Mehdi N. Araghi, West Webster; Joseph J. Daniele, Pittsford, and Kwok L. Yip, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 2, 1982, Ser. No. 394,604

Int. Cl.³ G02F *1/29*

U.S. Cl. 350—360

7 Claims



2. An electro-mechanical modulator for modulating a beam of light to provide an image exposure beam comprising in combination:

(a) a substrate; and

(b) at least two opposing rows of reflectors, each of said reflector rows being comprised of a plurality of separate

closely spaced finger-like reflecting elements on said substrate adapted on interposition into the path of a light beam to reflect the portions of said light beam striking each individual one of said reflecting elements along a first path;

said reflecting elements bending in response to application of a predetermined electrical potential thereacross to reflect the light portion striking said bent reflecting elements along a second path;

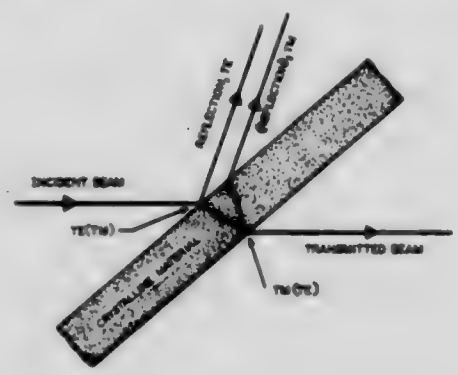
light rays reflected along one of said first and second paths cooperating to form said exposure beam.

4,492,436

POLARIZATION INDEPENDENT BEAM SPLITTER

Ernest E. Bergmann, Fountain Hill, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 3, 1983, Ser. No. 455,003
Int. Cl.³ G02F 1/01
U.S. Cl. 350—395
4 Claims



1. Device comprising:

a beam splitting element,

means for directing a beam of electromagnetic radiation onto the beam splitting element,

means for utilizing the portion of the beam that is reflected by the beam splitting element, and

means for utilizing the portion of the beam that is refracted by the plate beam splitting element,

the invention characterized in that the beam splitting element comprises a first interface reflecting a portion of the incident beam and a second interface reflecting a portion of the beam refracted from the first interface and means between the first and second interface for converting the characteristic polarization TE(TM) to TM(TE) so that the characteristic polarization of the beam incident on the second interface is substantially the complement of the characteristic polarization of the beam incident on the first interface and the combined amount of light that is reflected at both interfaces is independent of the characteristic polarization of the beam.

4,492,437

ZOOM LENS SYSTEM

Hisayuki Masumoto, and Masaichi Shimomura, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

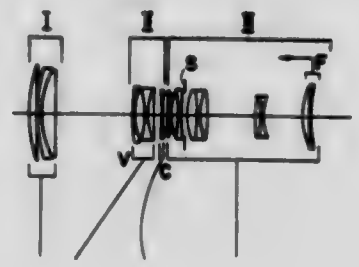
Filed Nov. 4, 1981, Ser. No. 318,144
Claims priority, application Japan, Nov. 4, 1980, 55-154050; Nov. 4, 1980, 55-154051
Int. Cl.³ G02B 15/14, 15/18
U.S. Cl. 350—428
19 Claims

1. A zoom lens system comprising, from the object to the image side:

a front lens group;

a zooming lens group including at least a movable lens group; and

a rear lens group including a fixed lens unit and a variable aperture stip located within the fixed lens unit towards the object side and a focusing lens unit movable on the image side of the fixed lens unit, wherein the lens system fulfills the following condition:



$$0.1 < \frac{|f_F|}{f_{III} \cdot \gamma} < 2$$

wherein:

f_F represents the focal length of the focusing lens unit in the rear lens group;

f_{III} represents the focal length of the whole rear lens group upon infinity focusing; and

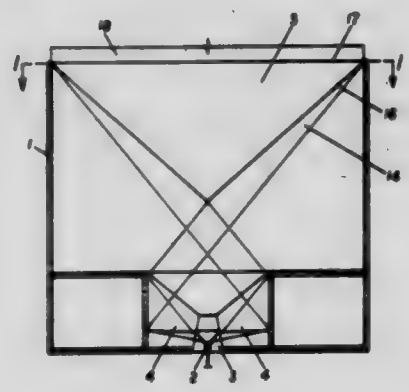
γ represents the zoom ratio of the zoom lens system.

4,492,438

CONICAL WIDE-FIELD MICROSCOPIC LENS

John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

Filed Feb. 19, 1982, Ser. No. 350,242
Int. Cl.³ G02B 13/08, 21/00
U.S. Cl. 350—432
1 Claim



1. A conical wide-field microscopic lens comprising four component lenses (2,3,4,5), with each component lens having one or two conical sections with surfaces which refract light rays at prescribed angles, with all conical sections of the components lenses being aligned on a common axis which is parallel to the incident rays entering and the refracted rays emanating from the microscopic lens, with all surfaces of the component lenses not used for refraction, reflection and transmission of light rays being opaque, and with the four component lenses as described below:

(a) lower component lens RT (2) positioned above the object and having a concave conical section (7) which receives and refracts incident beam (6) outward from the common axis at the prescribed angle, forming conical beam (8), and having a convex conical section (9) normal to the direction of propagation of conical beam (8) so as to receive and emit conical beam (8) without refraction,

(b) first middle component lens RT (3) above and adjacent to lower component lens RT (2) and having a concave conical section (10) which receives and refracts conical beam (8) outward from the common axis at the prescribed angle, and having a convex conical section (11) normal to the direction of propagation of conical beam (8) so as to receive and emit conical beam (8) without refraction,

(c) second middle component lens RLT (4) above and adjacent to first middle component lens RT (3) and having a

convex conical section (12) which receives and refracts conical beam (8) outward from the common axis at the prescribed angle, and having a reflective cylindrical section (13) which receives and reflects conical beam (8) in toward the common axis at the prescribed angle, forming conical beam (14), and having a concave conical section (15) normal to the direction of propagation of conical beam (14) so as to receive and emit conical beam (14) without refraction, and

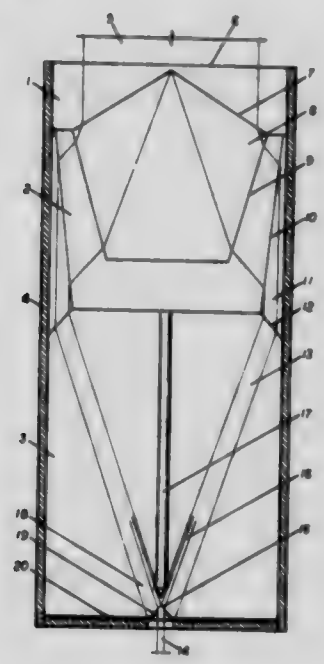
(d) upper component lens RT (5) above and adjacent to second middle component lens RT (4) and having a convex conical section (16) which receives and refracts conical beam (14) parallel to the common axis at the prescribed angle, and having a planar section (17) normal to the direction of propagation of conical beam (14) so as to emit conical beam (14) without refraction, forming whole beam (18) which is parallel to the common axis and parallel to incident beam (6).

4,492,439

MONOCHROMATIC BEAM CONCENTRATOR

John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

Filed Mar. 15, 1982, Ser. No. 358,468
Int. Cl.³ G02B 13/18
U.S. Cl. 350—432 1 Claim



1. A monochromatic beam concentrator comprising three component lenses mounted in a tubular casing (4), with each component lens having one or two conical sections with surfaces which refract light rays at prescribed angles, with all conical sections being aligned on a common axis which is parallel to the light rays entering and emanating from the concentrator, with all surfaces not used for the refraction and transmission of light rays being opaque, with the three component lenses as follows;

(a) Upper component lens (1) mounted at the top of the beam concentrator with a planar section (6) which receives a perpendicular incipient beam (5) of light which is transmitted through the lens to the opposite section, and with a concave conical section (7) which receives the incipient beam (5) transmitted from the planar section (6) and separates and refracts the beam out of the upper component lens (1), forming conical beam (8);

(b) Middle component lens (2) mounted below upper component lens (1), with a concave conical section (9) which receives conical beam (8) refracted from concave conical section (7) and refracts the beam through the lens to the opposite section, and with a convex conical section (10) which receives conical beam (8) refracted from concave conical section (9) and refracts the beam out of the middle component lens (2), forming annular beam (11) which is parallel to the common axis; and

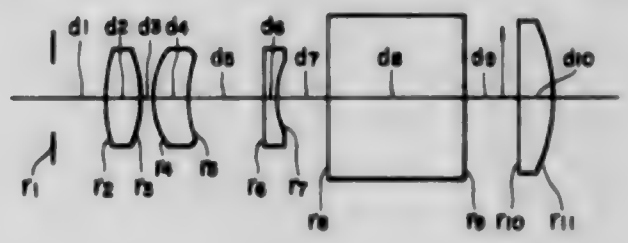
(c) Lower component lens (3) mounted below middle component lens (2), with a convex conical section (12) which receives annular beam (11) refracted from convex conical section (10) and refracts the beam through the lens to the opposite section, forming spectral beam (13), with a concave conical section (15) which receives the spectral beam (13) refracted from convex conical section (12) and refracts the beam out of the lower component lens (3), forming concentrated monochromatic beam (14) which is emitted parallel to the common axis and parallel to the incipient beam (5), with a vertical heat-absorbing metal rod (17) occupying the apex area of the concave conical section (15) so as to intercept portions of spectral beam (13), and with a truncated conical heat-absorbing metal shield (19) mounted inside concave conical section (15) so as to intercept portions of spectral beam (13).

4,492,440

FINDER OPTICAL SYSTEM

Kimihiko Nishioka, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 27, 1982, Ser. No. 343,363
Claims priority, application Japan, Jan. 31, 1981, 56-12224
Int. Cl.³ G02B 25/00
U.S. Cl. 350—445 4 Claims



1. A finder optical system comprising an objective, a field lens, a rectangular field mask placed at the image forming position by said objective, a pentagonal roof prism for bending the optical axis and an eyepiece, said objective, field lens, field mask, pentagonal roof prism and eyepiece being arranged in turn.

4,492,441

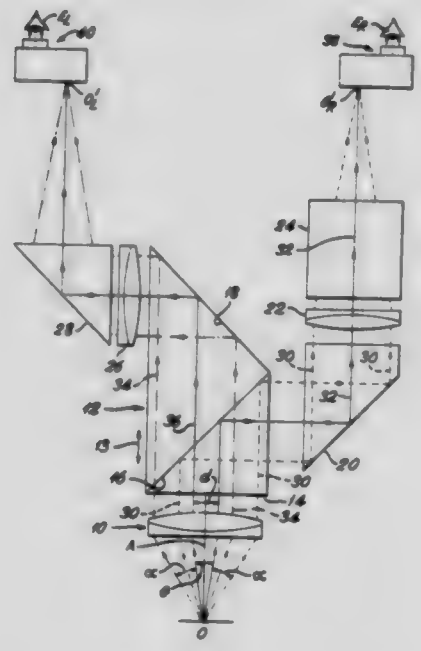
VARIABLE STEREOMICROSCOPE

Harold H. Hopkins, Reading, England, assignor to National Research Development Corporation, London, England

Filed Aug. 16, 1982, Ser. No. 408,283
Claims priority, application United Kingdom, Aug. 17, 1981, 8125085
Int. Cl.³ G02B 21/22
U.S. Cl. 350—516 9 Claims

1. An optical system comprises a front objective lens system; first and second secondary objective lens systems arranged to provide focused images from light received from the front objective lens system; and between the front objective lens and the secondary objective lens systems a beam directing means arranged to receive light from the objective lens and to direct substantially a full aperture part of said light to each secondary objective lens system, the beam directing means being movable along the axis of the front objective lens system with respect to that lens and to the secondary objective lens systems, said movement causing equal variations in the angle subtended at the focus of the front objective lens system by the rays forming corresponding points of the respective images formed by each secondary objective lens system whereby an image having a variable degree of stereoscopy is provided.

9. A variable stereomicroscope comprising an optical system according to claim 1, and two Porro prism systems arranged



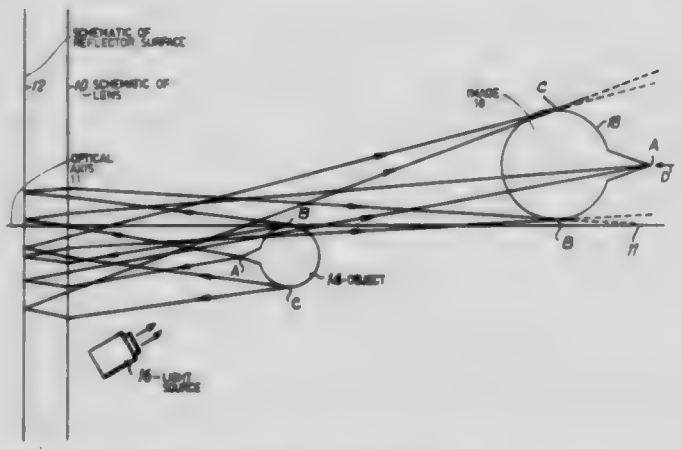
respectively to receive light from the first and second eyepiece lens systems.

4,492,442

THREE DIMENSIONAL PROJECTION ARRANGEMENT

Tad J. Gandyra, 112 Messrole Ave., Brooklyn, N.Y. 11222

Continuation-in-part of Ser. No. 082,211, Oct. 4, 1979, abandoned, which is a continuation-in-part of Ser. No. 917,400, Jun. 20, 1978, abandoned. This application Jan. 22, 1982, Ser. No. 341,613
Int. Cl.³ G03B 21/00
U.S. Cl. 353—10 17 Claims



1. A three-dimensional projection arrangement for projecting a three-dimensional image of an object into space for viewing by an audience, said arrangement comprising: an object for which a three-dimensional image is projected; a light source oriented for illuminating said object; lens means comprising a multifocal refracting lens having multiple spherical zones on the side opposite from said light source, said lens being positioned to receive reflected light from said object; and

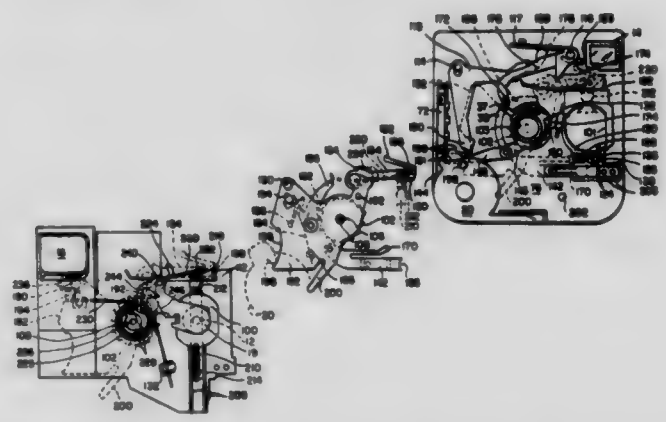
mirror means located behind said lens means away from said light source, said mirror means being adjustable relative to the lens and adapted for receiving and reflecting an image of said object from said lens means and reflecting said image back through said lens means, whereby said projection arrangement forms an enlarged three-dimensional image projected in space for viewing by an audience, the magnification of said image being adjustable by moving said mirror means relative to the lens means.

4,492,443

CAMERA MECHANISM

John E. Spencer, Geneseo; Reginald S. Greene, and Terrence L. Fisher, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 2, 1983, Ser. No. 500,505
Int. Cl.³ G03B 17/42
U.S. Cl. 354—121 14 Claims



1. In a disk camera having a shutter, cockable and releasable shutter actuating means, film advancing means, and film locating means movable between a film locating position and a film releasing position, the improvement comprising:

a release member arranged for movement in opposite first and second directions, said release member arranged, when moved in said first direction, to first cock said shutter actuating means and to move said film locating means into said film locating position and then to release said shutter actuating means to actuate said shutter;

said release member, when moved in said second direction, arranged to move said film locating means into said film releasing position and then to actuate said film advancing means;

said shutter actuating means including a high energy member fixed at one end and having a shutter actuating portion at the opposite end; and

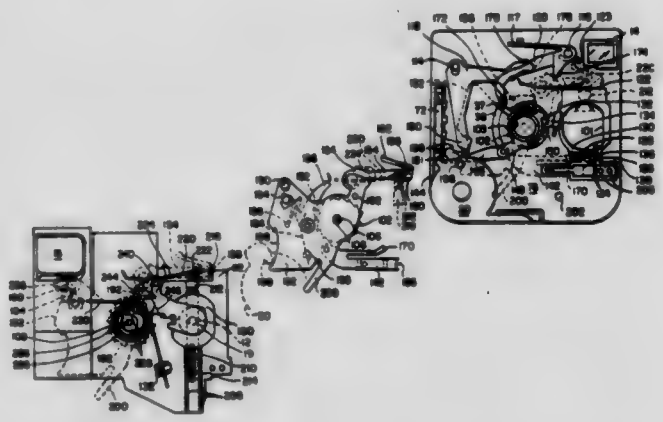
a cocking member operatively connected to said release member and including a cam means arranged to engage a first surface of the high energy member while cocking said shutter actuating portion and to engage the opposite surface of the high energy member after release of the shutter actuating portion.

4,492,444

CAMERA MECHANISM

Dana W. Wolcott, Brockport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 2, 1983, Ser. No. 500,507
Int. Cl.³ G03B 17/42
U.S. Cl. 354—121 8 Claims



1. In a disk camera having a shutter, cockable and releasable

shutter actuating means, film advancing means, and film locating means movable between a film locating position and a film releasing position, the improvement comprising:

a release member arranged for movement in opposite first and second directions, said release member arranged, when moved in said first direction, to first cock said shutter actuating means and to move said film locating means into said film locating position and then to release said shutter actuating means to actuate said shutter; and

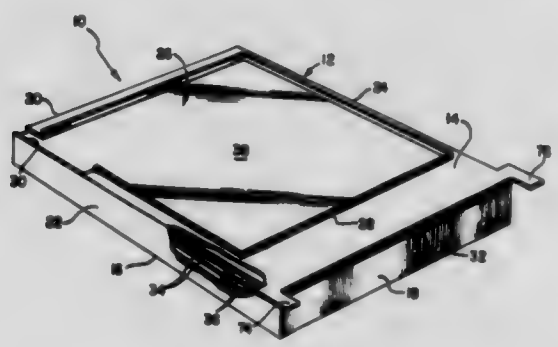
said release member, when moved in said second direction, arranged to move said film locating means into said film releasing position and then to actuate said film advancing means.

4,492,445

PHOTOGRAPHIC FILM ASSEMBLAGE WITH MEANS FOR ESTABLISHING A GAP BETWEEN A PAIR OF PRESSURE-APPLYING ASSEMBLIES

Philip R. Norris, North Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 8, 1982, Ser. No. 439,733
Int. Cl.³ G03B *17/26, 17/52*
U.S. Cl. 354—180 15 Claims



1. A film assemblage for use with a camera of the self-developing type having a pair of superposed pressure-applying assemblies at least one of which is movable relative to the other such that the adjacent spreading surfaces thereof define a gap therebetween having a predetermined minimum spacing for influencing the thickness of a layer of processing liquid to be subsequently spread between elements of an exposed film unit as it moves through the gap, said film assemblage comprising:

a film cassette having an exposure opening in one wall thereof through which a film unit is adapted to be exposed and an egress through which an exposed film unit is adapted to be moved;

a plurality of film units located within said film cassette, each said film unit comprising a container of processing liquid adjacent a leading end thereof, and a plurality of elements including a photosensitive element, said film units being arranged in a stack with said photosensitive element of an endmost film unit being located adjacent said exposure opening;

a dark slide positioned within said film cassette between said endmost film unit and said exposure opening for protecting said endmost film unit from premature exposure to ambient light during loading of said film cassette into a camera, said dark slide being adapted to be moved from said film cassette via said egress and completely through a pair of superposed pressure-applying assemblies; and

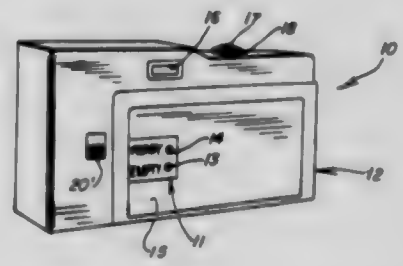
spacing means engageble with at least one of the pressure-applying assemblies and spaced from its liquid spreading surface for establishing a predetermined minimum spacing between adjacent liquid spreading surfaces of each assembly, the value of the predetermined minimum spacing being related to the desired thickness of a layer of processing liquid to be spread between elements of said film units as they are moved in engagement with and between the liquid spreading surfaces.

4,492,446

CAMERA HAVING FILM FEED INDICATOR

Arthur Zawodny, Budd Lake, and Jerzy Krysicki, Passaic, both of N.J., assignors to Keystone Camera Corporation, Clifton, N.J.

Filed Apr. 19, 1983, Ser. No. 486,397
Int. Cl.³ G03B *1/00, 17/18*
U.S. Cl. 354—215 9 Claims



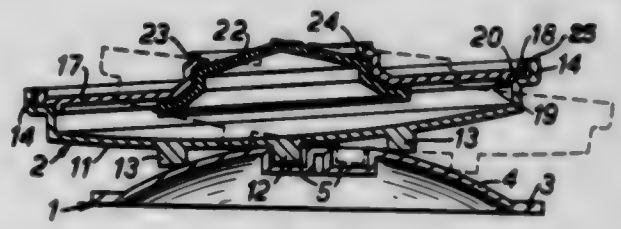
1. In a camera including housing means defining an exposure chamber, lens means at one end of said exposure chamber, a film support at the opposite end of said exposure chamber to support the periphery of a section of film for exposure of a frame thereof, film supply spool receiving means, film take-up means for engaging a perforation of a leader of a film of a supply spool in said receiving means and for advancing said film from said supply spool to position frame sections of said film seriatim at said film support for exposure thereof, indicating means operable between a first condition indicating that film is not properly threaded and a second condition indicating that film is properly threaded and that a section of film is engaged with said film support and ready for exposure, actuating means responsive to proper initial movement of film by said film take-up means to operate said indicating means from said first condition to said second condition, said actuating means being arranged to maintain said indicating means in said second condition until after exposure of frame sections of said film, and a door movable from a closed position to an open position for access to said supply spool receiving means and said take-up means, said actuating means being arranged to operate said indicating means from said second condition to said first condition upon movement of said door from said closed position to said open position.

4,492,447

APPARATUS FOR DEVELOPING PHOTOGRAPHIC MATERIAL

Eric Taylor, London, England, assignor to Paterson Product Ltd., London, England

Filed Sep. 28, 1982, Ser. No. 426,198
Claims priority, application United Kingdom, Oct. 2, 1981, 8129884
Int. Cl.³ G03B *3/04, 13/04*
U.S. Cl. 354—312 5 Claims



1. Apparatus for developing photographically sensitised material comprising: a tray for receipt of the photographically sensitised material to be processed, said tray having a raised annular foot on an underside thereof; a lid adapted to fit the tray forming a light tight processing tank, the lid having light tight means introducing processing liquid into the interior of the processing tank; and a domed base; whereby when said tray is mounted on said domed base, a point of said tray within

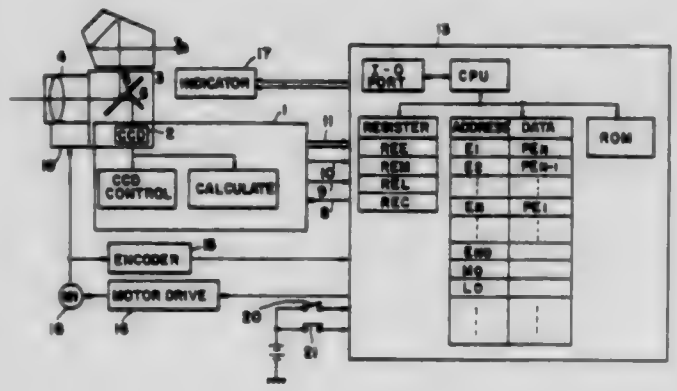
the raised annular foot is movable in a substantially circular path substantially about the central axis of said domed base with the annular foot bearing on said domed base.

4,492,448

AUTOMATIC FOCUSING DEVICE FOR USE IN A CAMERA

Iorio Ishikawa, Osaka, and Takanobu Omaki, Sennan, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 431,288, Oct. 1, 1982, Pat. No. 4,445,761. This application Apr. 25, 1984, Ser. No. 603,622
Claims priority, application Japan, Oct. 2, 1981, 56-157921
Int. Cl.³ G03B 13/00
U.S. Cl. 354—406 1 Claim



1. An automatic focusing system for use in a camera comprising:

means for successively driving an objective lens of said camera along its optical axis;

means for repeatedly detecting a focusing condition of the objective lens during the movement of the objective lens to produce a direction signal which represents a defocus direction of the objective lens with respect to a predetermined image plane, and an amount signal which represents an amount of defocus of the objective lens;

means for producing a predetermined signal which represents a predetermined amount of defocus of the objective lens;

means for comparing said amount signal with said predetermined signal to produce a comparison signal which represents the compared result;

means for monitoring the amount of axial movement of the objective lens between successive detections to produce a lens moving amount signal which represents the monitored amount; and

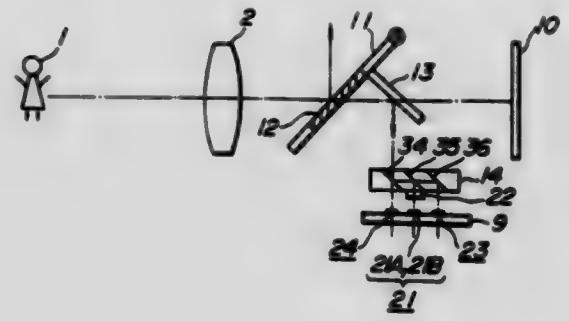
means for controlling said driving means in accordance with said direction signal, said amount signal, said comparison signal, and said lens moving amount signal, said controlling means controlling said driving means in accordance with said direction signal when said comparison signal indicates that the amount of defocus represented by said amount signal is larger than said predetermined amount of defocus represented by said predetermined signal, and said controlling means controlling said driving means in accordance with said direction signal, said amount signal and said lens moving amount signal when said comparison signal represents that the amount of defocus is smaller than said predetermined amount.

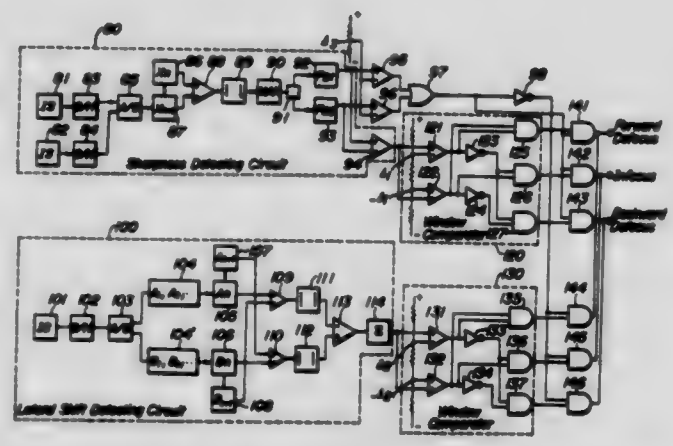
4,492,449

APPARATUS AND TECHNIQUE FOR DETECTING AND CONTROLLING THE FOCUSING OF AN OPTICAL SYSTEM BY IMAGE SHARPNESS AND LATERAL SHIFT TECHNIQUES

Kenichi Oinoue, Tokyo; Azuo Hayashi, Hachioji; Junichi Nakamura, Hachioji; Masatoshi Ida, Hachioji; Masahiro Aoki, Tokyo, and Kenji Fukuoka, Fussa, all of Japan, assignors to Olympus Optical Co. Ltd., Japan

Filed May 31, 1983, Ser. No. 499,491
Claims priority, application Japan, Jun. 4, 1982, 57-95869
Int. Cl.³ G03B 7/099
U.S. Cl. 354—407 17 Claims





1. In a method for detecting a focus condition of an imaging optical system by effecting an image sharpness detection to produce a first evaluation function value S representing a sharpness of an image formed by said imaging optical system on at least two light receiving element arrays and by effecting an image lateral shift detection to produce a second evaluation function S' representing a lateral shift of two images formed on at least one light receiving element array, said two images being formed by light fluxes transmitted through different areas of the imaging optical system, the improvement comprising the steps of:

detecting the focus condition of the imaging optical system by processing said second evaluation function value S' produced by the image lateral shift detection in a first region far away from an in-focus position; and

detecting the focus condition of the imaging optical system by processing both said first and second evaluation function values S and S' in a second region near the in-focus position.

4,492,450

CAMERA WITH MICROPROCESSOR

Koji Watanabe; Kazuo Shiozawa; Kinjiro Suzuki, all of Tokyo, and Ryuichi Shimokawa, Takasaki, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 423,783
Claims priority, application Japan, Sep. 30, 1981, 56-156814
Int. Cl.³ G03B 7/00
U.S. Cl. 354—412 8 Claims

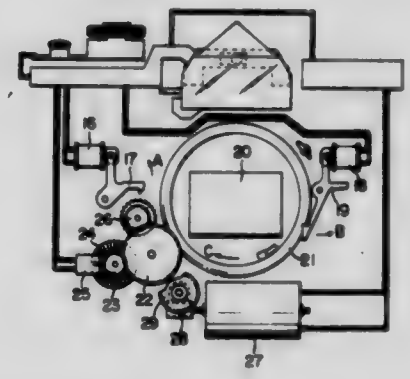
1. A method of controlling a camera having a release means

which can be operated at two stages, a microprocessor, a clock signal generating means which generates clock signals regularly, and a counter means characterized by comprising the steps of

(a) completing the arrangement for operation of the counter means according to a first stage operation of the release means,

(b) applying an output from the counter means as an interruption signal on the microprocessor when the number of clock signals from the clock signal generating means has a fixed relation with a preset value setting for the counter means,

(c) introducing selectively an information in a plurality of photographic informations to the microprocessor according to a specific program based on the interruption signal,



(d) preparing the reoperation of the counter means so as to obtain regular interruption signals based on the preset value of the counter means,

(e) introducing selectively an information in the photographic informations to the microprocessor according to the priority level thereof by next interruption signal,

(f) repeating the above steps applying an output from the counter means as an interruption signal on the microprocessor when the number of clock signals from the clock signal generating means has a fixed relation with a preset value setting for the counter means, introducing selectively an information in the photographic informations to the microprocessor according to the priority level thereof by next interruption signal, and

(g) introducing to the microprocessor photographic informations at higher priority levels many times more than that at lower priority levels.

4,492,451

ELECTRONIC FLASH UNIT

Egbertus J. P. Maassen, and Frederik J. de Jong, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

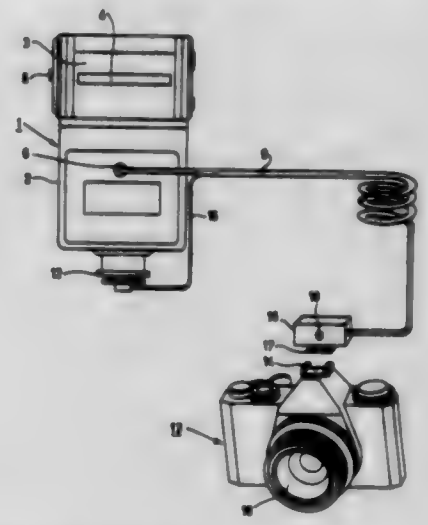
Continuation of Ser. No. 456,941, Jan. 10, 1983, abandoned. This application Jul. 5, 1984, Ser. No. 628,951

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1982, 8218380[U]

Int. Cl.³ G03B *15/05*

U.S. Cl. 354—416 2 Claims

1. An electron flash unit having a thin-walled housing, in which is accommodated a reflector with a discharge flash lamp and which on the light exit side is provided with a photosensitive cell, which is connected to a dosimeter for measuring a quantity of light reflected from an object to be photographed and switches off the discharge flash lamp by means of an electric circuit after measurement of an adjustable dose, of light, characterized in that the wall of the housing is provided with means for receiving an end of a light-conducting fiber cable, which end is arranged in front of the photosensitive cell, said



unit having a discrete electrically conductive wire extending from said flash unit to a connector for an associated camera.

4,492,452

PICTURE BLUR-ALARM DEVICE FOR A CAMERA

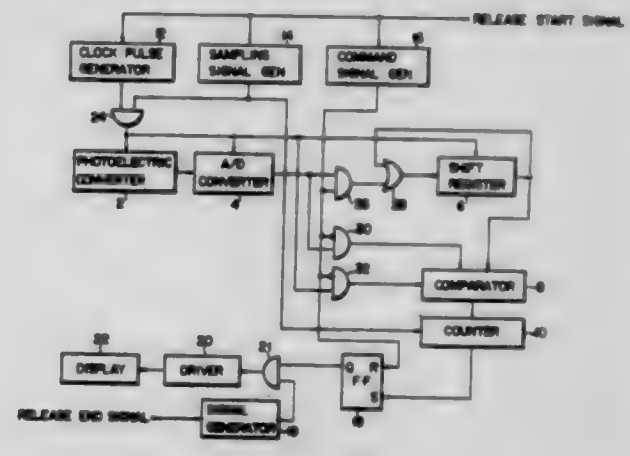
Shinichi Suzuki, Yokohama; Masayuki Sasaki, Sagamihara; Toshinori Moriyasu, Chigasaki, and Takao Arakawa, Takamatsu, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 6, 1983, Ser. No. 482,562

Claims priority, application Japan, Apr. 7, 1982, 57-57919; Apr. 7, 1982, 57-57925

Int. Cl.³ G03B *7/08*

U.S. Cl. 354—430 16 Claims



1. A picture-blur alarm device for a camera which device comprises:

signal generating means which is actuated in response to the shutter operation to time-sequentially generate brightness data corresponding to the brightness of at least one part of an optical image of a foreground object;

comparing means for successively comparing two brightness data which are issued at different timings from said signal generating means; and

alarm means for producing an alarm signal in accordance with the result of a comparison conducted in said comparing means,

wherein said signal-generating means comprises:

photoelectric conversion means which is provided with a plurality of photoelectric conversion elements to successively generate groups of output analog signals from said plurality of photoelectric conversion elements; and

analog-digital conversion means which converts output analog signals from said photoelectric conversion means into bit data and time-sequentially supplies said comparing means with groups of bit data corresponding to groups of

analog signals as brightness data, said photoelectric conversion means issuing in series output analog signals from said plurality of photoelectric conversion elements, and the analog-digital conversion means time-sequentially producing groups of serial bit data; and

said comparing means comprises bit data-storing means formed of a circulating type shift register for storing output serial brightness bit data from said analog-digital conversion means and cyclically supplying said serial brightness bit data; and

a comparing circuit for successively comparing serial bit data constituting output brightness data from the analog-digital conversion means with respective output serial bit data from said bit data-storing means, and producing an output signal when it is detected that both input bit data have different logic levels.

4,492,453

SINGLE LENS REFLEX CAMERA WITH MIRROR OPERATING MECHANISM

Akira Hiramatsu, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

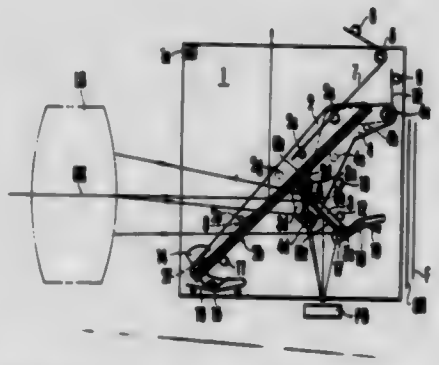
Filed Oct. 27, 1982, Ser. No. 437,016

Claims priority, application Japan, Nov. 5, 1981, 56-177367; Nov. 5, 1981, 56-177368; Dec. 22, 1981, 56-191318[U]

Int. Cl.³ G03B 7/099

U.S. Cl. 354—479

8 Claims



1. A single lens reflex camera comprising:

(a) a photographic lens system defining a photographic optical path;

(b) first mirror means constituting part of a viewfinder and having a light-permeable portion;

(c) second mirror means for receiving light passed through said light-permeable portion of said first mirror means, said second mirror means being connected to said first mirror means in pivoting relation thereto;

(d) a driving lever including an actuating portion for turning said first mirror means and said second mirror means into and from an at-rest position in said optical path;

(e) cam means engaging with said actuating portion of said driving lever, said cam means being arranged so that said second mirror means can fold on said first mirror means;

(f) first bias means for allowing said first mirror means to stay in said optical path against the force of said driving lever; and

(g) second bias means having a weaker bias force than that of said first bias means for allowing said second mirror means to stay against the force of said driving lever in a position where light passed through said light-permeable portion of said first mirror means is received.

4,492,454

REPROGRAPHY CAMERA

Ulrich F. Moser, Siegen, Fed. Rep. of Germany, assignor to Eurograph Gesellschaft fur Photomechanik mbH, Siegen, Fed. Rep. of Germany

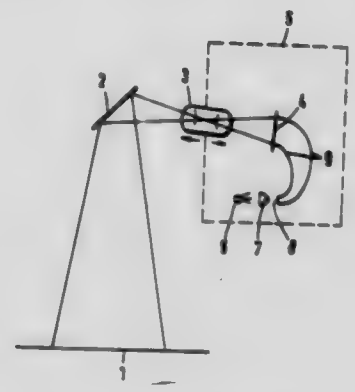
Filed Dec. 13, 1982, Ser. No. 449,251

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1981, 3150433

Int. Cl.³ G03B 27/00, 27/52

U.S. Cl. 355—1

5 Claims



1. A reprography camera comprising

a copy table;

a longitudinally displaceable lens such that the longitudinal displacement of the lens results in a change in the image size;

a stationary image platform having perforations;

a light source; and

light guides providing light spots positioned in the peripheral area of the image platform at the four corners of the image platform, each of the light spots being provided by a single light guide; and all of the light guides having a first end which is illuminated by a common light source, and a second end which terminates in one of the perforations in the image platform.

4,492,455

IMAGE SCANNING SYSTEM HAVING A CONTINUOUSLY ROTATING SUB-SCANNING DRUM

Yasuhiro Kawai, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

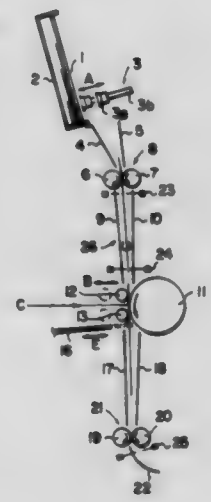
Filed Jul. 6, 1982, Ser. No. 395,320

Claims priority, application Japan, Jul. 6, 1981, 56-105255

Int. Cl.³ G03G 15/00; H04N 1/22

U.S. Cl. 355—3 R

4 Claims



1. An image scanning system for two-dimensionally scanning a light beam across a recording sheet material comprising a sub-scanning drum adapted to be continuously rotated to feed the recording sheet material in the sub-scanning direction which is perpendicular to the rotational axis of the sub-scan-

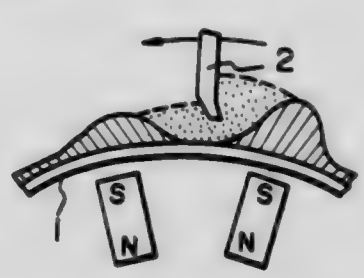
ning drum, a main scanning system for scanning the light beam across the recording sheet material in the direction of the rotational axis of the sub-scanning drum, at least one nip roll movable between a first position in which it is pressed against the sub-scanning drum at a part near the scanning position of the light beam and a second position in which it is removed therefrom, a sheet feeding means for feeding the recording sheet material between the sub-scanning drum and the nip roll with the recording sheet material being unrestrained, a stopper which is disposed downstream of the sub-scanning drum and the nip roll with respect to the feeding path of the recording sheet material and is movable into and away from the feeding path, a sheet discharging means for discharging the recording sheet material, said sheet discharging means being arranged so as not to act on the recording sheet material to be discharged until the scanning of the recording sheet material is completed whereby when said stopper is moved into said feeding path, the said unrestrained feeding of the recording sheet material between the sub-scanning drum and the nip roll occurs until the recording sheet material is stopped by the stopper, at which time, the stopper is removed away from the feeding path and the nip roll is moved to its first position pressed against the sub-scanning drum to feed the recording sheet material in the sub-scanning direction to thereby effect the two-dimensional scanning of the light beam across the recording sheet material as the sub-scanning drum is continuously rotated.

4,492,456

DEVICE FOR DEVELOPING ELECTROSTATIC LATENT IMAGES

Satoshi Haneda; Masahiko Itaya, and Minoru Tanaka, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co. Ltd., Tokyo, Japan

Filed Jul. 21, 1982, Ser. No. 400,391
Claims priority, application Japan, Jul. 31, 1981, 56-121044
Int. Cl.³ G03G *15/08*
U.S. Cl. 355;3 DD 4 Claims



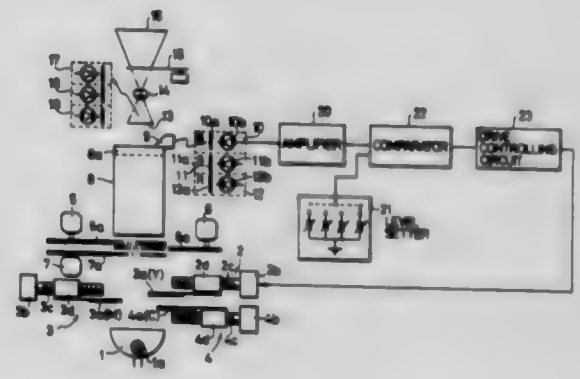
1. An electrostatic latent image developing device having a non-magnetic movable carrier member for carrying a magnetic developer from a source of supply of magnetic developer to a development area adjacent a photosensitive surface, fixed magnets installed inside said carrier member, said fixed magnets including two magnetic poles of the same polarity disposed adjacent one-another to provide two adjacent peaks of magnetic flux on the exterior of said carrier member, and a regulating member for regulating a developer layer thickness on the surface of the carrier member, said regulating member disposed over and spaced from the carrier member at a location between said source of supply and said development area and at a point between adjacent said two peaks of magnetic flux.

4,492,457

COLOR CORRECTING DEVICE FOR COLOR PRINTING LIGHT SOURCE

Tetsuo Kawada, Matsudo, and Yoshio Ozawa, Yokohama, both of Japan, assignors to Copal Company Limited, Tokyo, Japan

Filed Jun. 1, 1982, Ser. No. 383,837
Claims priority, application Japan, Jun. 4, 1981, 56-86004
Int. Cl.³ G03B *27/80*
U.S. Cl. 355—38 2 Claims



1. In a color correcting device for a printing light source in a color printer comprising light adjusting filters provided insertably in a light path of a light from said light source for adjusting the amount and the color temperature of the light from said light source so as to adapt the light from said light source for a printing exposing light, and exposing filters for determining an exposure amount of said printing exposing light on a negative film, an improvement comprises light receiving means arranged to receive a part of the printing light leading to a printing paper from the light source, driving means respectively connected to the light adjusting filters to insert said light adjusting filters into said light path, and servo-systems including therein said light receiving means and said driving means, the amounts of insertion of said light adjusting filters into said light path being adjusted through said servo-systems by comparing values obtained through said light receiving means by receiving said printing exposure light before passing through said negative film under the state in which said exposing filters are retracted out of the light path, with values obtained through said light receiving means by receiving said printing exposure light passed through a standard negative film set in the light path.

4,492,458

METHOD OF AND ARRANGEMENT FOR COPYING A COLORED ORIGINAL

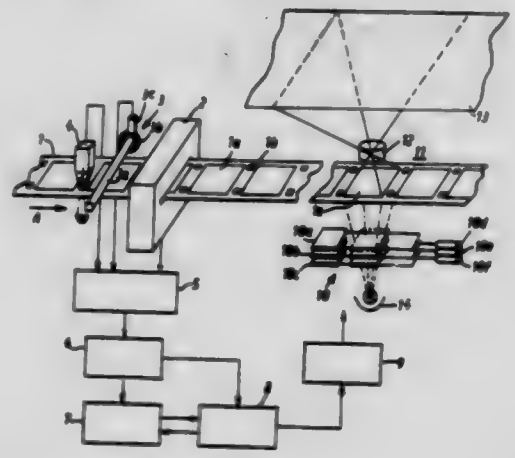
Horst Bickl, Pullach; Günter Findeis, Sauerlach, and Helmut Treiber, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Sep. 22, 1982, Ser. No. 421,500
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1981, 3151939
Int. Cl.³ G03B *27/80*
U.S. Cl. 355—38 40 Claims

1. A method of copying a colored original comprising the steps of:

(a) deriving a first magnitude and a plurality of second magnitudes for at least one color-dependent parameter of said colored original by sensing selected regions of the latter, said first magnitude being characteristic of at least the major part of said colored original and said second magnitudes respectively being characteristic of said selected regions;

(b) determining the deviation of said first magnitude form a reference magnitude for said one parameter;
(c) comparing said first magnitude with said second magnitudes when said deviation exceeds a predetermined amount;



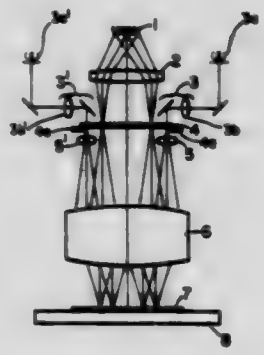
(d) establishing the probable source of said deviation by calculating a value representative of said probable source from the results of the comparing step and relating said respresentative value to a reference value; and
(e) copying said colored original under conditions depending upon said probable source.

4,492,459

PROJECTION PRINTING APPARATUS FOR PRINTING A PHOTOMASK

Takashi Omata, Yokosuka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 229,932, Jan. 30, 1981, abandoned. This application Jan. 18, 1983, Ser. No. 458,949
Claims priority, application Japan, Feb. 6, 1980, 55-13254
Int. Cl.³ G03B 27/52; G01B 11/26
U.S. Cl. 355—43
6 Claims



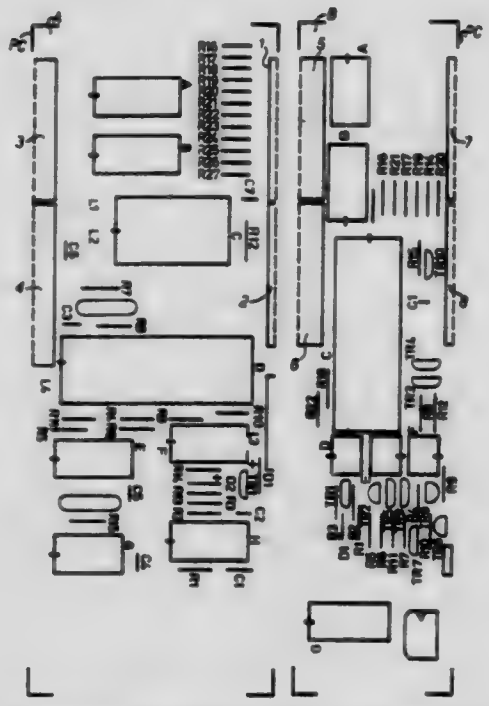
1. Projection printing apparatus for printing images carried on a photomask onto a wafer alignable with the photomask, comprising:
photomask supporting means for supporting a photomask having a circuit pattern image and an alignment pattern image thereon;
wafer supporting means for supporting a wafer for receiving a circuit pattern image and an alignment pattern image projected thereto;
an image projection optical system having an image field sufficiently large to project both the circuit pattern image and the alignment pattern image from the photomask to the wafer;
light source means for illuminating the photomask with non-sensitizing light during alignment of the photomask and wafer and for illuminating the photomask with sensitizing light during printing of the wafer with the images; and
an alignment pattern imaging system, cooperating with the image projection optical system, to form on the wafer the alignment image of the photomask illuminated by the non-sensitizing light.

4,492,460

METHOD OF MAKING REPRESENTATIONS OF, AND METHOD OF AND MEANS FOR MAKING, PRINTED CIRCUIT BOARDS

William H. Considine, Haymans Ghyll, Coolham, Nr. Horsham, Sussex, England

PCT No. PCT/GB81/00134, § 371 Date Mar. 1, 1982, § 102(e) Date Mar. 1, 1982, PCT Pub. No. WO82/00398, PCT Pub. Date Feb. 4, 1982
PCT Filed Jul. 8, 1981, Ser. No. 359,659
Claims priority, application United Kingdom, Jul. 10, 1980, 8022667
Int. Cl.³ G03B 27/02
U.S. Cl. 355—133
22 Claims



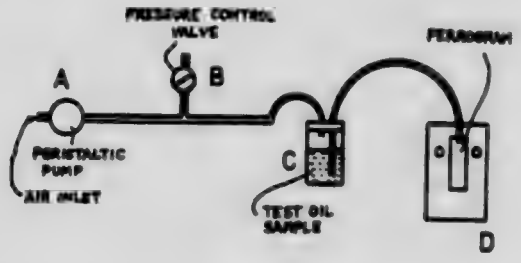
1. A method of making a system of representations of printed circuit board sections and comprising the steps of forming at least two printed circuit board (p.c.b.) section representations having portions corresponding to inter-p.c.b. section connections which are to provide interconnections between two circuit portions respectively represented by the representations, arranging each p.c.b. section to correspond to a respective one of a plurality of functional modules comprising apparatus based on the complete circuit and arranging the corresponding inter-p.c.b. section connection portions of each of the representations in predetermined positions such that visually continuous interconnections can be formed between the circuit portions when the representations are caused to provide a visual pattern of the complete circuit represented by the combined representations, at least one of the representations, being of a first functional module, being capable of being substituted by a representation of a second functional module different from the first functional module while still maintaining the visual continuity of the necessary inter-p.c.b. section interconnections with the representations immediately adjoining the substituted representation.

4,492,461

WEAR ANALYSIS EQUIPMENT

David G. Jones, P.O. Box 9531, Dhahran, Saudi Arabia, and Ok K. Kwon, KIST Labs., P.O. Box 131, Dongdaemoon, Seoul, Rep. of Korea

Filed Mar. 12, 1982, Ser. No. 357,553
Claims priority, application United Kingdom, Mar. 19, 1981, 8108695
Int. Cl.³ G01N 33/28
U.S. Cl. 356—38
3 Claims



1. A method of analyzing magnetically polarisable wear particles carried in a liquid medium, comprising the steps of:

passing the liquid medium with its wear particles carried therein from a reservoir thereof through a length of a tube to an outlet end thereof;

impinging a flow from the outlet end onto an entry point on a upper surface of a substrate located in a magnetic force field having a component extending generally at right angles to the upper surface for attracting the particles thereonto, the liquid medium with its wear particles carried therein being fed to the entry point on the substrate via said length of the tube by applying pressure to the reservoir of the liquid medium with its wear particles without subjecting any region of said length of the tube to fluctuating lateral compressions;

allowing the medium to flow from the entry point across the upper surface while the force field precipitates the particles in any array on the upper surface at varying distances from the entry point depending on the nature of the wear particles; and

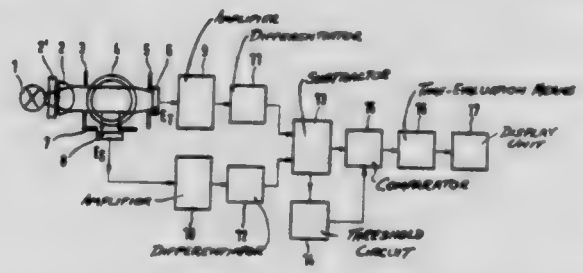
optically monitoring the array of precipitated particles.

4,492,462

PHOTOMETRIC METHOD FOR DETERMINING COURSES OF REACTIONS

Wilhelm Preus, Oberstdorfer Str. 8, 8000 München 71; Jürgen Berry, Ludmillastr. 13, 8000 München 90; Franz Mühlböck, Gabriele-Münter Str. 9, 8000 München 71, and Klaus Hartmann, Südliche Auffahrtsallee 68, 8000 München 19, all of Fed. Rep. of Germany

Filed Feb. 13, 1981, Ser. No. 234,573
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1980, 3005923
Int. Cl.³ G01N 33/48
U.S. Cl. 356—39
8 Claims



1. A photometric method for determining the coagulation time of a sample, said sample including blood mixed with a reagent, comprising:

detecting the intensity of a light beam transmitted through said sample and forming an electrical signal proportional thereto;

detecting, at an angle of from 90 to 180 degrees to the transmitted light beam, the intensity of light scattered by said sample and forming an electrical signal proportional thereto;

combining said electrical signals to form a combined signal;

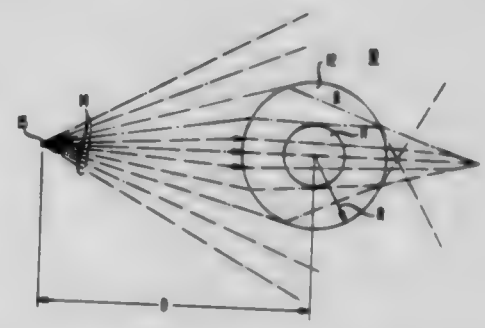
from said combined signal, determining the coagulation time of said sample.

4,492,463

METHOD FOR INSPECTING MULTILAYER TRANSPARENT RODS

Dietrich Marcuse, Lincroft, and Herman M. Presby, Highland Park, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 29, 1982, Ser. No. 362,961
Int. Cl.³ G01N 21/88
U.S. Cl. 356—73.1
4 Claims



1. A method for fabricating an optical fiber, comprising the steps of:

forming an optical fiber which includes a longitudinal axis and a surface;

impinging at least a characteristic region of said fiber with electromagnetic radiation while said region is immersed in a fluid medium, said fluid medium and said region being at least partially transparent to said radiation, and the index of refraction of said fluid medium being different from that of said region;

detecting electromagnetic radiation emanating from said region; and

accepting the whole of said fiber if the structure of said region, as determined from the detected radiation, conforms to a desired standard,

characterized in that

at least a portion of said impinging electromagnetic radiation is a diverging beam of light lying in a plane transverse to said longitudinal axis, said beam undergoing refraction at said surface, and the divergence of the beam being chosen so that after said refraction, at least a portion of the beam is substantially collimated.

4,492,464

APPARATUS AND METHOD FOR DISTANCE MEASUREMENT BY LASER INTERFEROMETRY

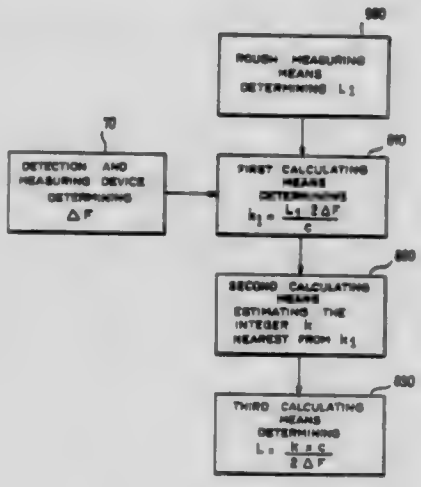
Gilbert L. Bourdet, Buros sur Yvette, and Michel A. Franco, Paris, both of France, assignors to Agence Nationale de Valorisation de la Recherche, Paris, France

Continuation-in-part of Ser. No. 197,905, Oct. 17, 1980, abandoned. This application Mar. 27, 1984, Ser. No. 593,927
Claims priority, application France, Oct. 17, 1979, 79 25771
Int. Cl.³ G01C 3/00
U.S. Cl. 356—4.5
10 Claims

1. A process for precisely measuring distances comprising the steps of:

arranging two spaced plates of an interferometer at a distance apart denoted L which is the distance to be measured,

applying to the plates two beams of radiation of differing frequencies from respective single frequency lasers,
adjusting the frequencies of the lasers independently of one another so that they correspond to two different longitudinal modes of the interferometer, respectively,



measuring the difference (ΔF) between said frequencies after adjustment,
carrying out a rough measurement of the distance to be measured, so as to obtain a rough estimated value denoted L_1 of said distance to be measured,
calculating a number k_1 by the equation:

$$k_1 = \frac{L_1 \times 2\,\Delta F}{c}$$

where c is the speed of light in the interferometer,
determining an integer k which is the nearest integer to k_1, and then
calculating the distance (L) between the two plates of the interferometer by the equation:

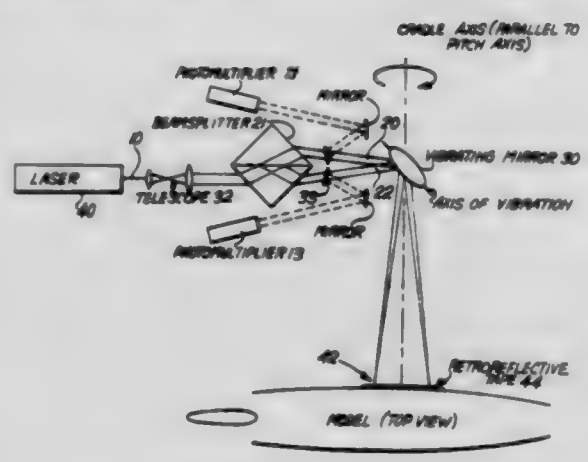
$$L = \frac{kc}{2\,\Delta F}$$

4,492,465

RETRO-REFLECTIVE ELECTRO-OPTICAL ANGLE MEASURING SYSTEM

Joachim C. Erdmann, Seattle, Wash., and Robert I. Gellert, Quesnel, Canada, assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 18, 1980, Ser. No. 217,733
Int. Cl.³ G01B *11/26*; G01C *21/06*
U.S. Cl. 356—152 11 Claims



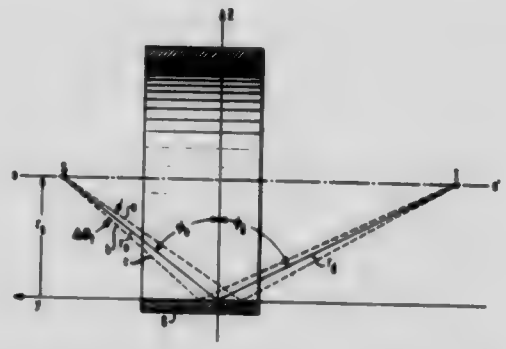
1. A signal processor for reading out the time differences between two pulses which arise sequentially providing first and second signals when a first beam and then a second beam are incident upon a retro-reflective tape during a half period of a sweep cycle, said signal processor comprising:
a function generator for generating a triangular waveshape signal utilized to drive a vibrating mirror;
signal generating means for blanking the retro-reflective signal during a half period of said sweep cycle;
high frequency clock signal generating means for providing a sequence of clock pulses;
a signal processor logic circuit;
signal shaping means coupled to said signal processor logic circuit, said signal shaping means responsive to said first and second signals;
counter circuit means coupled to a digital to analog converter circuit for providing readout signals at an output terminal; and,
said signal processor logic circuit providing signals representative of the sign of the angle information and further providing an enable status signal for turning on and off said sequence of clock pulses coupled to said counter circuit means.

4,492,466

CYLINDRICAL GRATING MONOCHROMATOR FOR SYNCHROTRON RADIATION

David E. Aspnes, Watchung, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 28, 1982, Ser. No. 393,078
Int. Cl.³ G01J *3/18*
U.S. Cl. 356—334 5 Claims



1. A monochromator comprising a grating, said grating having a plurality of grooves with variable groove spacing, d, and entrance and exit slits, said grating being rotationally symmetric about an axis between said entrance slit and said exit slit whereby the diffraction into the exit slit occurs at the same wavelength for each ray incident on said grating from said entrance, said variable groove spacing is approximately of the form $d = d_o \exp(-ay)$ where d_o is the separation between the grooves at y_o, a is a constant, and y is the coordinate parallel to said symmetry axis.

4,492,467

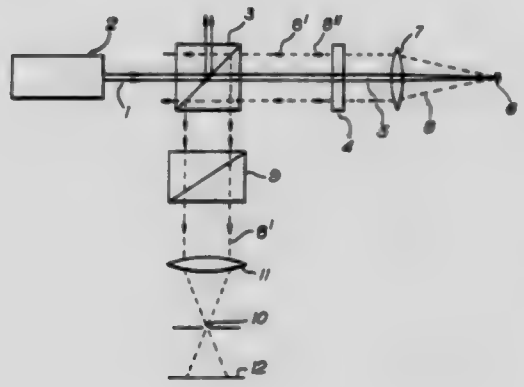
MEASUREMENT OF THE SIZE OF PARTICLES

Leslie E. Drain, Goring on Thames, and Clive R. Negus, Stanford in the Vale, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed May 25, 1982, Ser. No. 381,855
Claims priority, application United Kingdom, Jun. 4, 1981, 8117190
Int. Cl.³ G01N *15/02*
U.S. Cl. 356—336 4 Claims

1. A method of determining the size of spherical particles, comprising the operations of illuminating a volume of space including spherical particles, the size of which is to be measured, with circularly polarized light having a given direction of rotation of its electric vector, detecting circularly polarized light backscattered from the particles and having the direction

of rotation of its electric vector opposite to that of the incident light, measuring the angular distribution of the intensity of the



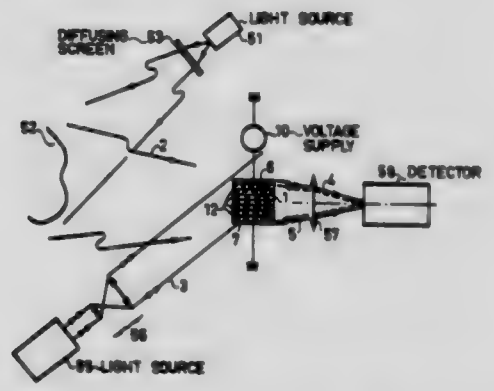
said backscattered light, and deriving therefrom the size of the particles.

4,492,468

INTERFEROMETER FOR THE REAL TIME DISPLAY OF DEFORMATIONS OF VIBRATING STRUCTURES

Jean-Pierre Huignard; Jean-Pierre Herriau, and Abdellatif Marrakchi El Fellah, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 16, 1981, Ser. No. 321,701
Claims priority, application France, Nov. 25, 1980, 80 24966
Int. Cl.³ G01B 9/029
U.S. Cl. 356—347 10 Claims



1. An interferometer for the real time display of deformations of a vibrating structure comprising:

means for producing coherent radiation and directing said radiation onto said vibrating structure

photosensitive electrooptical recording material for receiving coherent reference radiation and object radiation beams diffused by the said vibrating structure to record in volume and in real time, to within a time constant characteristic of the material, an interferomatic hologram constituted by a fixed system of index layers corresponding to the deformation of said vibrating structure and

means for reading and displaying the interferomatic hologram recorded in said material from the object beam directly emerging from the recording material.

4,492,469

SYSTEM FOR MEASURING THE PRESSURE SEALED INSIDE AN ENVELOPE

Yasutomo Fujimori, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 5, 1982, Ser. No. 375,225
Claims priority, application Japan, May 20, 1981, 56-74850
Int. Cl.³ G01B 9/02
U.S. Cl. 356—361 7 Claims

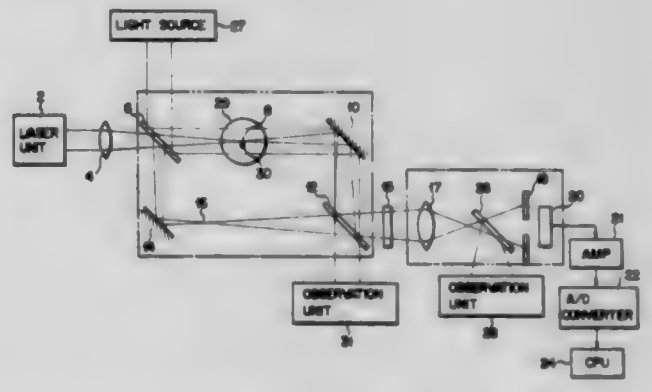
1. A system for measuring a pressure of a gas contained in a lamp having a heat source in the form of a filament comprising:

emitting means for emitting a coherent light beam;

splitting means for splitting the coherent light beam into a first and second light beam;

means for conversion at least said first light beam towards a conversion point;

means for subjecting to interference said first light beam diverse from said conversion point and said second light beam, and for producing light containing information of the interference fringes;



reading means for reading from the received interferred light a change a number of order of interference which is caused by interference during a predetermined period of time after said filament of said lamp arranged near said conversion point is energized;

calculating means coupled to said reading means for performing an operation according to the relationship of:

$$P \cong \frac{m\lambda}{\eta l(n_0-1)} \cdot P_0$$

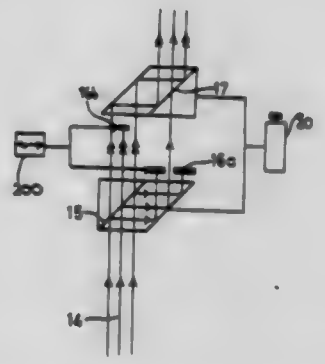
where m is the order of interference change which is not limited to an integer, λ is a wavelength of a coherent light beam, l is an inner diameter of said lamp, n_0 is a refractive index of said gas at ambient pressure p_0 and η is a proportional constant.

4,492,470

MEASURING MICROSCOPE

Francis H. Smith, York, England, assignor to Vickers Limited, London, England

Continuation-in-part of Ser. No. 060,868, Jul. 26, 1979, abandoned. This application Mar. 1, 1982, Ser. No. 353,207
Claims priority, application United Kingdom, Jul. 26, 1978, 31185/78; Dec. 20, 1978, 49229/78
Int. Cl.³ G01B 11/00
U.S. Cl. 356—372 12 Claims



1. A measuring microscope, for measuring the distance between line elements of an optical image, the microscope comprising:

amplitude dividing means arranged to receive an image-carrying beam, bearing only the said optical image, and to provide therefrom mutually shearable image beams;

suppression means arranged in the paths of the shearable image beams to suppress respective complementary regions of the shearable image beams, to form respective non-overlapping but adjacent image portions for viewing; and

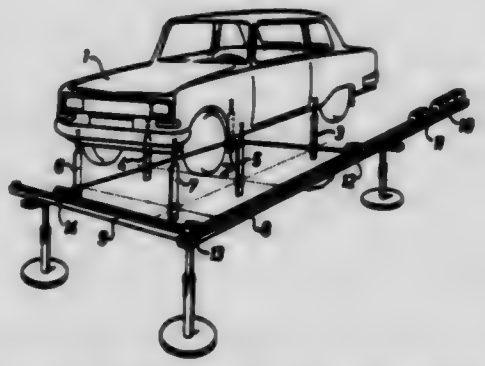
adjustment means for carrying out calibrated displacement of the image portions relative to one another.

4,492,471

ARRANGEMENT FOR CHECKING DIMENSIONAL ACCURACY

Kiss R. Wiklund, Taby, Sweden, assignor to Pharos AB, Lidingo, Sweden

Continuation of Ser. No. 256,908, Apr. 23, 1981, abandoned. This application Sep. 30, 1983, Ser. No. 537,329
Claims priority, application Sweden, Apr. 23, 1980, 8003081
Int. Cl.³ G01B 11/14; G01C 3/02; G02B 5/12; G02F 1/19
U.S. Cl. 356—375 9 Claims



1. A dimensional checking apparatus for checking the dimensions of large, heavy, elongate objects such as automobile bodies, each object being provided with a plurality of checking points spaced along the length and width thereof and being mounted on a device such as a jig or alignment bench, the apparatus comprising:

a plurality of graduated rulers, each ruler mountable at a corresponding checking point;

at least one measuring guide bar having a length that is at least substantially the length of the object;

means for positioning said at least one guide bar parallel to the longitudinal axis of said object;

a source of a visible light beam fixedly mounted to said bar, said source emitting said light beam parallel to said bar;

at least two directing means longitudinally, adjustably mounted on said bar for receiving and directing at least a portion of said beam of light, each directing means for directing said beam of light at the same selectable one of said rulers at known angles with respect to said guide bar, but from different points on said guide bar, each directing means having an indicatable position on said guide bar;

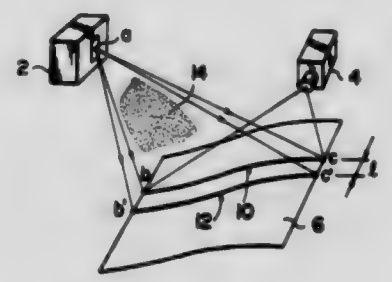
a modulating means to modulate said light beams with mutually different phases at a modulation frequency, said modulating means including means for causing each beam to abruptly commence transmission of light toward the object at the start of its on phase, and for causing said beam to remain on during its on phase, and for abruptly stopping light transmission at the commencement of its off phase, and for causing said beam to remain off during its off phase, wherein, light incident upon a point from only one light beam is seen to be flickering, while a steady light is seen if that point has more than one light beam incident thereon.

4,492,472

METHOD AND SYSTEM FOR DETERMINING SHAPE IN PLANE TO BE DETERMINED IN ATMOSPHERE OF SCATTERING MATERIALS

Yuichiro Asano, Chiba; Akira Hirabaski, Kobe; Soshiro Ohga, Takarazuka; Tadashi Yabe; Kunio Kurita, both of Chiba, and Atsushi Momose, Takarazuka, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Jul. 19, 1982, Ser. No. 399,847
Claims priority, application Japan, Jul. 27, 1981, 56-117247; Jul. 27, 1981, 56-117249
Int. Cl.³ C21B 7/24
U.S. Cl. 356—376 8 Claims



1. A method for determining the shape of a surface to be determined in an atmosphere of scattering materials comprising:

irradiating light on a first line to be determined being imagined on said surface to be determined in the atmosphere of scattering materials to extract a first picture signal at the time of picking up said first line;

irradiating light on a second line on said surface to be determined being imagined at a position on a prescribed distance apart from said first line to extract a second picture signal at the time of picking up said second line;

subtracting said second picture signal from said first picture signal to extract a fresh picture signal; and

applying said fresh picture signal to the two-dimensional position coordinates of a first image of said first line in the first picture signal to extract three-dimensional position coordinates of said first line on said surface to be determined through coordinate conversion of said two-dimensional position coordinates.

4,492,473

OPTICAL MICROMETER

Bruno Richter, Stegaurach, and Bernhard Brand, Niederwerrn, both of Fed. Rep. of Germany, assignors to Bruno Richter GmbH, Stegaurach, Fed. Rep. of Germany

Filed Nov. 1, 1979, Ser. No. 90,331
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1978, 2849252
Int. Cl.³ G01B 11/02, 11/08, 11/10
U.S. Cl. 356—386 6 Claims

1. An opto-electronic measuring device for measuring the position or dimensions of an object for use with a light source which emits a highly coherent light beam, said measuring device comprising:

a motor having a rotating drive shaft;

a single or multifaced rotating mirror mounted on said shaft for rotation by said motor;

a deflecting mirror positioned to reflect said light beam from said light source to said rotating mirror to produce a scanning plane of light;

a collimating means to bend light in said scanning plane into parallel beams directed at an object to be measured, said object interrupting a portion of said parallel beams;

a first light receiver for receiving non-interrupted parallel light beams and generating a signal corresponding to the position of said interrupted portion of parallel beams;

a focusing means to direct non-interrupted light to said first light receiver;

a voltage controlled oscillator for producing pulses of a controlled frequency;

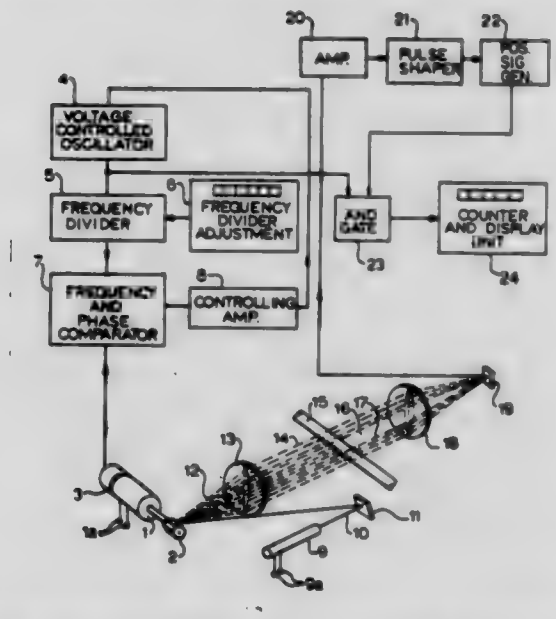
a means for generating and displaying a position signal derived from said signal from said first light receiver including a means for counting the number of pulses from said oscillator which occur during each interruption, said position signal representing the position or dimension of the object to be measured;

a shaft encoder mounted on said drive shaft for corotation with said rotating mirror for generating a pulse signal at a first output having a pulse frequency proportional to the angular velocity of said motor and said rotating mirror;

a frequency control loop for controlling the frequency of said pulses from said oscillator for which the pulse signal from said shaft encoder serves as a reference signal, said frequency control loop including

a frequency divider for receiving the output of said voltage controlled oscillator, and

a phase and frequency comparator connected to said frequency divider and said shaft encoder for comparing



the respective frequencies thereof and for generating an error signal corresponding to a difference between said frequencies, said comparator being connected to said voltage controlled oscillator for supplying said error signal thereto so that the oscillator output is continuously synchronized with the angular velocity of said rotating mirror;

a frequency divider adjustment circuit connected to said frequency divider for selectively changing the dividing ratio of said frequency divider;

a counter to which pulses from said shaft encoder are supplied;

a means for generating a reset signal to set said counter, said reset signal corresponding to at least one specific position of said drive shaft; and

an addressable memory connected to said counter with the contents of said counter determining a memory output, said memory output being conducted to said frequency divider adjustment circuit for automatically operating the frequency divider adjustment circuit to change the dividing ratio.

4,492,474

METHOD AND APPARATUS FOR ASCERTAINING COLOR BALANCE OF PHOTOGRAPHIC PRINTING PAPER

Bertram W. Miller, Apartado Postal 316, Chapala, Jalisco 45900, Mexico

Filed May 26, 1982, Ser. No. 382,030
Int. Cl.³ G01J 3/46
U.S. Cl. 356—404 11 Claims

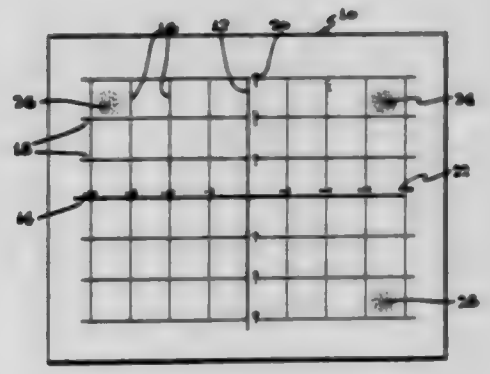
1. A method for ascertaining the color balance of color photographic printing paper of the type having three superimposed light-sensitive emulsion layers, each of which is selectively responsive to a different primary color of light, comprising the steps:

(a) photographing a target-card on each roll of color film from which it is desired to make positive color prints, under conditions common to other exposures made on the same roll of film, said target-card having three primary colors printed thereon, a first primary color being printed in essentially uniform density over a given area, a second primary color being printed with essentially a linearly varying density over said given area and a third primary color being printed with essentially a linearly varying density over said given area, the axes of the linearly varying second and third primary color being disposed at a predetermined angle to each other;

(b) developing the color film and printing the resulting negative or transparency on the color printing paper under test with an enlarger having a colorhead filter unit;

(c) processing the exposed test print; and

(d) identifying the estimated overall density of the test print and the coordinates of a small area of neutral gray in the test print, the estimated overall density being indicative of needed correction for overall density in subsequent prints and the coordinates being indicative of the measure of



required filtration changes at the enlarger colorhead to produce balanced color in subsequent prints made on the same lot of color printing paper from the same roll of negatives or transparencies.

5. A target-card for use in ascertaining the color balance of photographic printing paper, said card having:

(a) a layer of a color of uniform density, said color being one of the primary colors;

(b) a coincident layer of a different primary color whose density varies linearly with distance horizontally across the card, said density being a logarithmic function;

(c) a coincident layer of a third primary color whose density varies linearly with distance vertically across the card; and

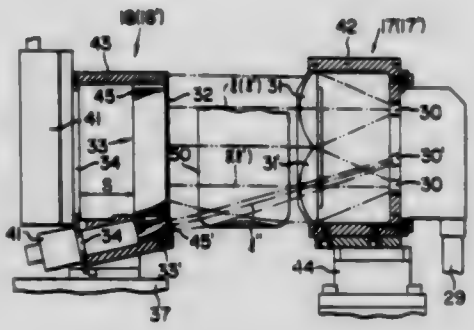
(d) a grid coincident with the aforementioned colors, said grid composed of horizontal and vertical lines, the major axes of said grid crossing at the center of the grid, the pigments of said primary colors being selected such that a net color of neutral gray is found at said center, the intersection of each grid line with a major axis being marked with a filtration correction composed of a signed number, the spacings of the grid lines and the marked corrections being preselected based upon the gamma of an average sample of the film to be used.

4,492,675

METHOD OF DETECTING FOREIGN MATTERS MIXED IN A LIQUID CONTAINED IN TRANSPARENT RECEPTACLES AND APPARATUS RELEVANT THERETO

Toshio Takahashi, Honjo, Japan, assignor to Elasi Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1982, Ser. No. 353,794
Int. Cl.³ G01N *21/90*
U.S. Cl. 356—427 4 Claims



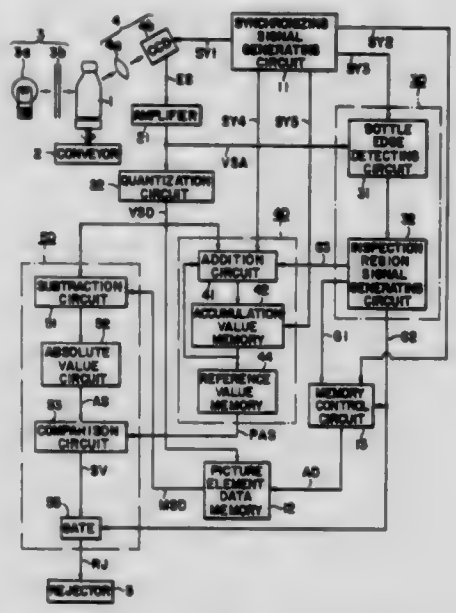
1. An apparatus for detecting foreign matters mixed in liquid in an upstanding transparent receptacle, including receptacles of the kind having a generally cylindrical sidewall and a bottom wall joined generally at right angles to said sidewall through a curved bottom corner portion, said apparatus comprising means for bringing a receptacle filled with liquid to a sudden stop after rotating at high speed, means disposed adjacent one side of the receptacle for projecting rays of light through the thus-stopped receptacle to expose foreign matters in floating state within the liquid contained in the receptacle to rays of light, ray receiving means disposed opposite to said projecting means relative to the receptacle for receiving rays of light transmitted through the receptacle, and means for detecting foreign matters mixed in the liquid by sensing the decrease in the amount of rays received by the ray receiving means, said projecting means comprising a first projecting head disposed in the upper part of said projecting means for projecting rays of light along a first optic axis through the upper portion of the receptacle at a first angle thereto which is almost a right angle and a second projecting head disposed in the lower part of said projecting means, said ray receiving means comprising first and second receivers each including a ray receiving surface and a corresponding ray focusing lens aligned therewith, each focusing lens being composed of a bundle of a multiplicity of light focusing glass fibers arranged in parallel with the optic axis of such lens, said second projecting head being aimed divergently from said first projecting head to project rays of light aslant downward through the lower portion of the receptacle along an optic axis at a second angle thereto and diverging from said first optic axis, said downward aslant optic axis of said second projecting head passing through the curved bottom corner portion of the receptacle at the circumferential segment thereof furthest from said second projecting head and closest to said second receiver for illuminating such curved bottom corner portion, said focusing lens and the ray receiving surface of said first and second receivers being aligned along different directions so as to respectively face generally horizontally toward the first projecting head and upward aslant toward the outside of said circumferential segment of said curved bottom portion of said receptacle.

4,492,676

DEFECT DETECTING METHOD AND APPARATUS

Takashi Miyazawa, Funabashi, Japan, assignor to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 10, 1982, Ser. No. 347,748
Claims priority, application Japan, Feb. 20, 1981, 56-23895; Feb. 2, 1982, 57-15395
Int. Cl.³ G01N *21/90*
U.S. Cl. 356—428 27 Claims



1. A defect detecting method comprising the following steps:

a bottle under inspection is conveyed while being spun,

picture element signals respectively corresponding to a plurality of picture elements, arranged in a matrix form, of an image of said bottle are generated sequentially and repeatedly, and

the picture element signals of picture elements which are on a same imaginary line perpendicular to a central axis of said image are sequentially subjected to comparison to detect a defect in said bottle,

wherein the picture element signal of one picture element is compared with the picture element signal of another picture element that is symmetrical with respect to the central axis of said image to detect a defect in said bottle,

the central axis being an axis parallel to an axis about which the bottle is spun.

4,492,677

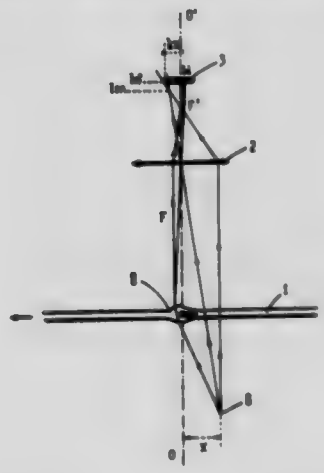
PROCESS AND APPARATUS FOR THE DETECTION OF FLAWS IN TRANSPARENT SHEETS OF GLASS

Jacques F. Leser, Montpellier, France, assignor to CEM Cie Electro-Mecanique, Paris, France

Filed Feb. 17, 1982, Ser. No. 349,621
Claims priority, application France, Feb. 25, 1981, 81 04139
Int. Cl.³ G01N *21/89*
U.S. Cl. 356—430 14 Claims

3. An apparatus for permitting the examination of transparent sheets for detecting flaws in a sheet and for discriminating between the flaws and opaque foreign bodies deposited on the transparent sheet, comprising means for moving the sheets, a light source located below the transparent sheet to be checked, said light source being thin and linear and arranged at a 45° angle in relation to the direction of movement of the sheet, said light source being parallel to the horizontal plane of said sheet and being parallel to a vertical plane containing an optical axis of a convergent optical system and a linear network of photodiodes which constitute a receiving organ for the light from the light source, said light source being located at a distance (x) relative to the vertical plane such that the linear network is externally tangent to a fringe of a fuzzy real image produced by the optical system in a plane of the network of photodiodes, the lengths and positions of the light source and of the network

of photodiodes being such that the fuzzy real image which the optical system produces of the light source in the plane of the network, covers the length of this network whereby sweeping of the whole of the surface of the sheet is accomplished without any moving mechanical element interposed between the light source and the network of photodiodes, adjustment means for maintaining constant both the distance (x) at which the light source is located from the vertical plane containing both the optical axis of convergent optical system and the linear network of photodiodes and the parallelism of the light source with the vertical plane such that the optical gain will always be optimal over the whole length of the linear network in spite of the variations in either the nature of the transparent sheet to be checked or dimensional variations of a chassis of the



apparatus, said adjustment means includes a plate for mounting the linear network of photodiodes, said plate being provided with two toothed circular sectors diametrically opposed on each side of the network and a worm screw associated with each of the circular sectors activating the circular sectors either simultaneously or individually at equal or different speeds and in the same direction or in opposite directions, said worm screws being driven by two motors step by step controlled independently from each other in response to the amount of light received by each one of photodiodes, whereby the network can be moved automatically either in a direction parallel to itself or at an angle and the network may be subjected to two simultaneous movements so as to be moved on the resultant of the movement to a desired value (kx), K being the coefficient of reduction of the optical system.

4,492,478

METHOD AND APPARATUS FOR APPLYING MORTAR OR CONCRETE

Yasuro Ito, 38-16, Numabukuro 4-chome, Nakano-ku, Japan; Yoshiro Higuchi, Tokyo; Masanori Tsuji, Osaka; Yasuhiro Yamamoto, Kawasaki; Hiroshi Tada, Saita; Kenji Kuroha, Tokyo; Takashi Nakamura, Hasuda, and Koichi Tomikawa, Yokohama, all of Japan, assignors to Yasuro Ito and Taisei Corporation, both of Tokyo, Japan

Filed Apr. 29, 1982, Ser. No. 372,950

Claims priority, application Japan, Sep. 18, 1981, 56-146065; Jan. 22, 1982, 57-6340[U]; Jan. 27, 1982, 57-10205; Jan. 27, 1982, 57-9682[U]; Jan. 27, 1982, 57-9683[U]

Int. Cl.³ B28C *5/38*

U.S. Cl. 366—28 11 Claims

1. Apparatus for projecting mortar or concrete comprising:

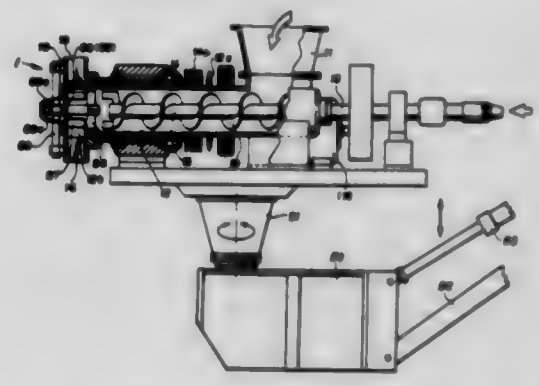
a first material supply pipe for conveying under pressure said first material, one of ingredients of said mortar or concrete;

a hopper charged with second material, the other ingredient of said mortar or concrete;

a second material supply pipe connected to said hopper;

a rotary screw disposed in said second material supply pipe for mechanically conveying said second material supplied from said hopper; and

a rotary disc for admixing said first and second materials conveyed through said first and second material supply pipes to project a resulting mixture;



said first and second material supply pipes and said rotary disc being arranged coaxially and said first and second material supply pipes being arranged concentrically.

4,492,479

SMALL ELECTRONIC TIMERS

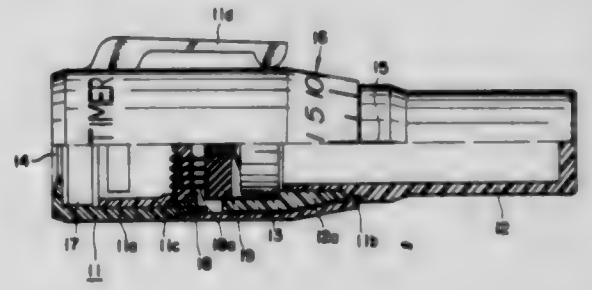
Toshikazu Hatsuse, Tanashi, and Kazunori Kuse, Tokorozawa, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1983, Ser. No. 489,266

Claims priority, application Japan, May 7, 1982, 57-76181; May 14, 1982, 57-70266[U]

Int. Cl.³ G04F *8/00*; G04C *21/16*

U.S. Cl. 368—109 10 Claims



1. A small electronic timer comprising:

(1) a circuit arrangement including:

(a) a standard frequency oscillator,

(b) a frequency divider,

(c) a time unit pulse generating circuit for generating a time unit pulse in response to an output signal of said frequency divider,

(d) a time counter for counting said time unit pulse,

(e) a data memory circuit,

(f) a coincidence detecting circuit for comparing data stored in said data memory circuit and data of said time counter and producing a coincidence signal, and

(g) a control circuit operated by said coincidence signal,

(2) a battery for supplying power to said circuit arrangement;

(3) a sound emitting means driven by said control circuit;

(4) a time setting means for feeding a set time to said data memory circuit; and

(5) a first housing and a second housing for accommodating said circuit arrangement, battery, sound emitting means and time setting means, said first and second housings permitting their relative position to be changed;

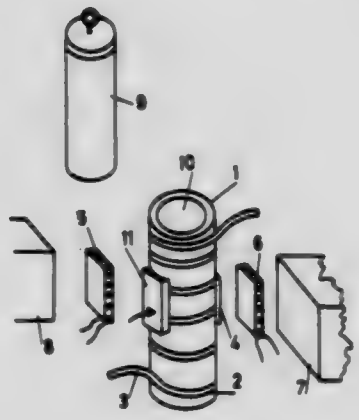
(6) whereby, by changing the relative position of said first and second housings, said time setting means is operated and said timer is set.

4,492,480

PROBE FOR USE IN A MICROCALORIMETER

Ingemar Wadsö, Blickhornsvägen 6, S-222 67 Lund; Jaak Suurkuusk, and Robert L. Taylor, both of Grönsvägen 21, S-175 46 Järfälla, all of Sweden

Continuation of Ser. No. 349,768, Feb. 18, 1982, abandoned. This application Mar. 28, 1984, Ser. No. 594,414
Claims priority, application Sweden, Feb. 26, 1981, 8101245
Int. Cl.³ G01K 17/00; G01N 25/20
U.S. Cl. 374—33 3 Claims



1. A device for use in a microcalorimeter, comprising a hollow tubular body adapted to receive an article which contains at least one material to be thermally tested therein; said hollow tubular body being further adapted to conduct heat generated by the article received therein;

a fluid conduit adapted to conduct heat;

said hollow tubular body having a continuous helical groove about its periphery, said helical groove being adapted to receive said fluid conduit therein;

said fluid conduit being adapted to receive a heat-generating fluid flowing therethrough;

first and second heat-conducting members fixedly attached to the outer periphery of said hollow tubular body, and first and second heat-conducting members being adapted to conduct heat from said hollow tubular body and said fluid conduit; each of said first and second heat-conducting members having a generally flat surface thereon;

a first and second Peltier thermocouple having one side thereof in thermal contact with respective ones of said generally flat surfaces of said first and second heat-conducting members;

said first and second Peltier thermocouples each having another side in thermal contact with a heat sink, each said heat sink having sufficient heat capacity so as to be adapted to remain at a substantially constant temperature while heat is being conducted across said first and second Peltier thermocouples;

heat generated within said hollow tubular body and said fluid conduit being conducted to said heat sinks;

whereby heat generated within said hollow tubular body and said fluid conduit, passing across said first and second heat-conducting members and passing across said first and second Peltier thermocouples, is measureable by said first and second Peltier thermocouples.

4,492,481

THRUST BEARING STARTER APPARATUS

David J. Shore, Clarence, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 28, 1982, Ser. No. 437,373
Int. Cl.³ F16C 17/10, 19/50, 21/00, 39/04
U.S. Cl. 384—228 1 Claim

1. A vertical axis machine comprising:

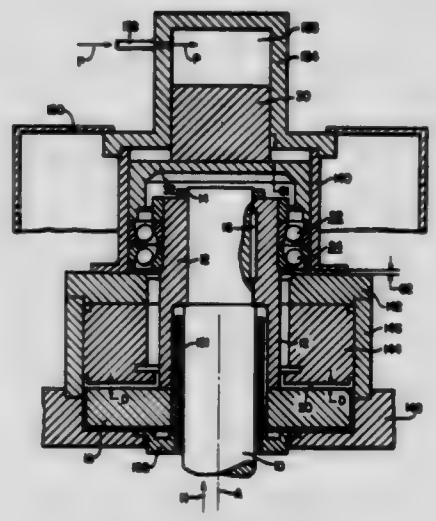
a rotor shaft subjected to an axial force;

a shaft runner located around and locked to a portion of said shaft;

a bearing runner connected to said shaft runner and extending radially outward from said shaft, said bearing runner having a bearing surface located in a plane perpendicular to said axis;

a thrust bearing member disposed in a fixed axial location to run on said bearing surface;

means for relieving force between said bearing runner and said thrust bearing member during start up of the machine comprising (a) additional bearing means, for running said shaft runner in relation to a housing member fixed to said thrust bearing member, comprising at least one ball bearing having an outer race joined to said housing member, an inner race joined to said shaft runner, and a plurality of rotatable balls between said outer race and said inner race,



(b) a hydraulically operated piston in a cylinder located directly axial of said shaft, and (c) a piston thrust plate located axially between said piston and an end of said shaft to move in response to axial motion of said piston and to apply force to said additional bearing means, which force is transmitted to said shaft runner and said bearing runner to relieve the axial force between said bearing runner and said thrust bearing member at said bearing surface, said piston, said piston thrust plate, said ball bearing, said shaft runner, and said bearing runner are arranged for axial force transmission from said piston to, in sequence, said piston thrust plate, said ball bearing outer race, said rotatable balls, said ball bearing inner race, said shaft runner, and said bearing runner.

4,492,482

THERMAL HEAD DRIVING SYSTEM

Yasuhito Eguchi, Kanagawa, and Izumi Kariya, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 25, 1983, Ser. No. 460,907
Claims priority, application Japan, Jan. 25, 1982, 57-9656; Jan. 25, 1982, 57-9657
Int. Cl.³ B41J 3/02; G01D 15/10
U.S. Cl. 400—120 18 Claims

1. An apparatus for thermally printing data onto a medium, comprising:

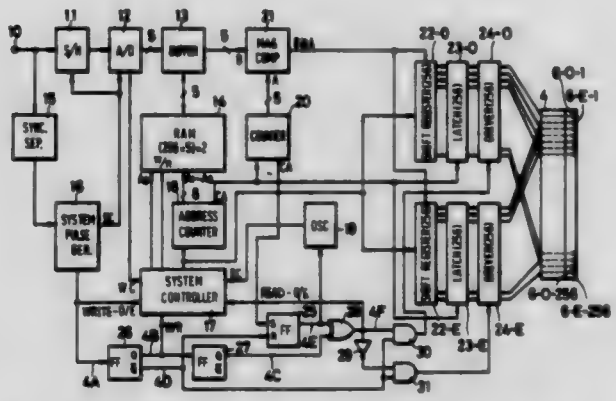
thermal head means having a first group of heat elements and a second group of heat elements arranged in interleaved relationship with said first group and in which all of said heat elements are arranged in a line;

memory means for storing data consisting of a plurality of separate data points to be printed by said thermal head means;

first driving means receiving alternate ones of said plurality of separate data points from said memory means and

connected to said first group of heat elements comprising every other heat element of said thermal head means;

second driving means receiving the remaining ones of said plurality of separate data points from said memory means and connected to said second group of heat elements comprising the remaining ones of said heat elements of said thermal head means; and



means for selectively sequentially activating said first and second driving means, whereby said every other ones of said plurality of separate data points are printed simultaneously by said first group of heat elements during a first time period and said remaining ones of said plurality of separate data points are printed simultaneously by said second group of heat elements during a second time period that does not overlap said first time period.

4,492,483

MEANS FOR DETECTING THE END OF A RIBBON FOR TYPEWRITERS

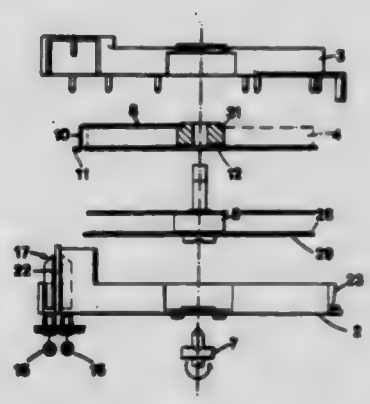
Errick Guillaume, Moudon, Switzerland, assignor to Hermes Precisa International S.A., Yverdon, Switzerland

Filed Mar. 8, 1983, Ser. No. 473,328

Claims priority, application Switzerland, May 14, 1982, 3005/82

Int. Cl.³ B41J *35/28*

U.S. Cl. 400—208 1 Claim



1. Means for detecting the end of a ribbon (6) for a typewriter having a cassette comprising a case (1), a supply spool (4) and a receiving spool (5) in said case, drive means (7) engageable with said receiving spool, said receiving spool receiving used ribbon, said detecting means including an optical reader (14) comprising a light source (15) emitting a luminous flux to illuminate a portion of said ribbon (6) and a detector (16) for detecting the luminous flux coming from said illuminated portion of ribbon, said light source and said detector fixed on said typewriter and adapted to respectively transmit and receive parallel beams of luminous flux with said beams in turn parallel to the transverse extent of said ribbon (6), characterized in that said cassette includes luminous flux transmitting means comprising two light guides (18,19) integral with the case (1), one of said guides (18) disposed adjacent one side of said ribbon so as to transmit the flow of light emitted by said light source (15) to that one side of said ribbon (6), the other of said guides (19) disposed adjacent an opposite side of said ribbon so as to receive the luminous flow of light which transverses the ribbon and to transmit that luminous flow of light to said detector (16), said luminous flux transmitting means (17) integral with the case of the cassette and said light guides (18,19) comprising two parallel prismatic bodies each having a longitudinal axis and with upper ends including two faces oriented relative to the longitudinal axis of each of said bodies so as to reflect the light from one of said guides (18) towards the other guide (19) with said ribbon (6) being moved between said two faces.

4,492,484

IMPROVED RIBBON MASK AND GUIDE FOR WIRE DOT PRINTERS

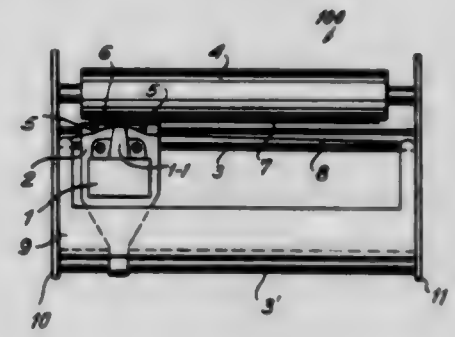
Hiroyuki Akazawa, Shiojiri, and Kazue Yoshile, Okaya, both of Japan, assignors to Epson Corporation, Tokyo; Okaya Kogyo Kabushiki Kaisha, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, all of, Japan

Filed Aug. 13, 1982, Ser. No. 407,859

Claims priority, application Japan, Aug. 21, 1981, 56/124012[U]

Int. Cl.³ B41J *35/04, 35/26*

U.S. Cl. 400—248 16 Claims



1. A printing device for use in a wire dot printer having a plurality of printing wires, comprising a frame, a carriage means slidably supported on said frame for lateral translation thereacross, printing head means supported on said carriage means having a nose member for holding said plurality of wires, first and second holding means disposed on said carriage means so that said nose member is intermediate said first and second holding means, a ribbon mask constructed from an elastic material and disposed on said nose member, said ribbon mask being removably held between said first and second holding means so as to extend across said nose member, said printing head means including a nose guide coupled to said nose member, and an ink ribbon having upper and lower edges disposed intermediate said nose guide and said ribbon mask, said nose guide having first and second projections disposed proximate said upper and lower edges of said ink ribbon respectively to limit longitudinal movement of said ink ribbon therebetween, said first and second holding means being pin-shaped and being disposed on opposite sides of said nose member, said first and second holding means each including spaced step portions.

4,492,485

ERROR CORRECTING TYPEWRITER FOR SIMPLIFIED WORD OBLITERATION

John C. Gall, Chicago, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.

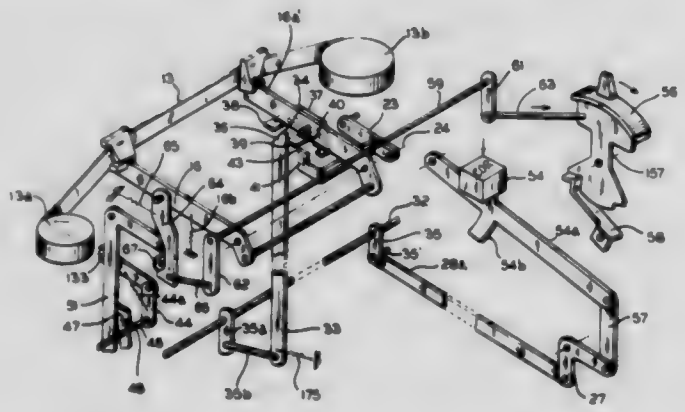
Filed Sep. 2, 1980, Ser. No. 183,547

Int. Cl.³ B41J *29/16*

U.S. Cl. 400—697.1 10 Claims

1. In a typewriter having ribbon means for providing a printing and a print obliterating field, means for supporting paper thereon, printing means, means for positioning a printing point, and instrumentalities for providing individual character obliteration with or without initial backspacing, together with

means for preventing forward advancement of the printing point relative to paper on said supporting means following an obliterating operation to permit insertion of a single correct character without further manipulation of the printing point



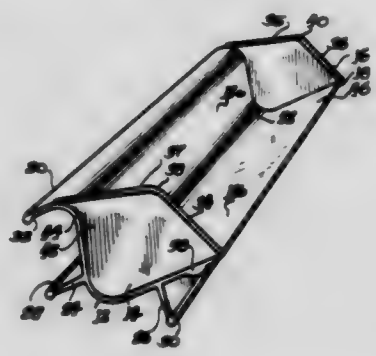
positioning means, the improvement comprising optional means for selectively effecting forward spacing of the printing point after each obliteration whereby to effect consecutive obliterations of a series of characters with a minimum number of operations.

4,492,486

SCOOP COATER

Melvin E. Green, Chicago, Ill., assignor to Advance Process Supply Co., Chicago, Ill.

Filed Aug. 9, 1982, Ser. No. 406,691
Int. Cl.³ B05C *1/00*; B41F *15/02*; B41L *13/18*
U.S. Cl. 401—131
4 Claims



1. A scoop coater for use in application of emulsion to screens for screen printing operations, the scoop coater comprising:

an extruded metal body having a trough portion for holding liquids, two legs projecting downwardly from the underside of the trough-shaped portion of the body, a handle extending along one side of the body, a lip extending along the opposite edge of the body, said body being asymmetrical with the trough having sides of different lengths,

two upstanding extruded metal end walls attached to the body to define a hollow reservoir,

a bead extending along each of the legs and handle to facilitate manual handling of the scoop coater,

guide surfaces formed on the end walls for sliding contact with a screen to aid in positioning the scoop coater at a preferred angle with respect to the screen during use and having rounded corners formed at the leading ends of the guide surfaces to prevent damage to the screen, said end walls being asymmetrical in shape and having first and second portions meeting at a pointed intersection,

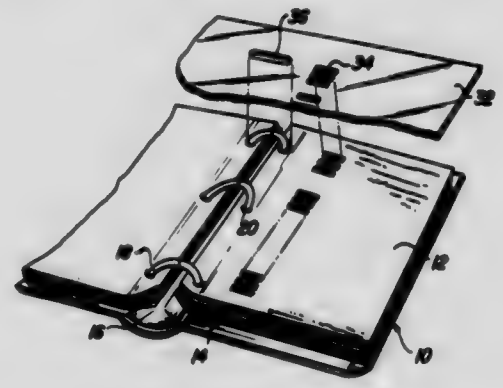
the angle between the plane of the guide surfaces and the plane of the upper surface of the trough at the lip is between 51° and 81°.

4,492,487

OVERLAY CODE SELECTION SYSTEM

Woodrow Spear, c/o OSOS, 513 W. Mt. Pleasant Ave., Livingston, N.J. 07039

Filed Apr. 1, 1982, Ser. No. 364,504
Int. Cl.³ B42F *13/00*; B42D *15/00*; B42F *21/10*
U.S. Cl. 402—79
6 Claims



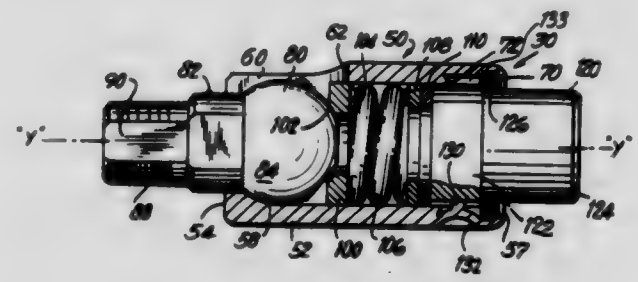
1. For use with a data sheet bearing certain printed indicia in close spaced relation to each other and a loose leaf binder having a spine and at least two rings projecting therefrom adapted to extend through holes in the sheet when inserted into the binder, a method of marking selected indicia on the sheet by use of a mark applying device, including the steps of: inserting the data sheet into the binder with the rings extending through said holes therein; placing a separate overlay mask having aligning slots and cutouts formed therein over the inserted data sheet to restrictively expose the printed indicia through the cutouts; and marking the selected indicia through the corresponding cutouts in the mask to prevent unintentional marking of portions of the data sheet bordering the selected indicia, said step of placing the mask comprising positioning the mask in the binder bridging the spine with each of the two rings respectively projecting through one of the aligning slots formed in the mask.

4,492,488

LAMP SWIVEL

Jerome Warshawsky, Baldwin Harbor, N.Y., assignor to I. W. Industries, Inc., Melville, N.Y.

Filed Oct. 15, 1982, Ser. No. 434,614
Int. Cl.³ F16C *11/00*
U.S. Cl. 403—113
11 Claims



1. A swivel assembly for a lamp; comprising:

(a) a swivel housing having a body portion of substantially tubular configuration and of first predetermined length and having a first end and a second end;

(b) a swivel unit disposed within said housing proximate said first end thereof, said swivel unit and said first end of said housing being respectively formed to permit rotation of said swivel unit with respect to said housing about a first predetermined axis of rotation and through a first predetermined angle of rotation;

(c) a tailpiece unit disposed within said housing at said second end, said swivel housing and said tailpiece unit being respectively formed to permit rotation of said housing

with respect to said tailpiece unit about a second predetermined axis of rotation;

(d) spring means located between said swivel unit and said tailpiece unit to urge each unit against its respective end of said housing; and

(e) said tailpiece unit having a predetermined configuration and including an outer surface at least a portion of which is of a predetermined outer diameter for a first predetermined length of said tailpiece unit;

(f) said swivel housing including a first inner wall portion of a first predetermined internal diameter and of a second predetermined length, and a second inner wall portion adjacent said first inner wall portion of an enlarged internal diameter, in comparison with said first predetermined internal diameter of said swivel housing, and of a third predetermined length;

(g) said tailpiece unit being disposed within said swivel housing so that a first section of said first predetermined length of said tailpiece unit is disposed for coaction with at least a portion of said first inner wall portion of said swivel housing and a second section of said first predetermined length of said tailpiece unit is disposed to be concentric with and spaced from said second inner wall portion of said swivel housing;

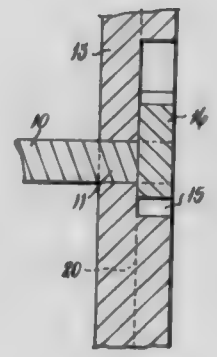
(h) said second inner wall portion of said swivel housing meeting said first inner wall portion of said housing at a shoulder.

4,492,489

MORTICE AND TENON JOINT

Roy H. Kantorowich, Manchester, England, assignor to The Victoria University of Manchester, Manchester, England

Filed Aug. 22, 1983, Ser. No. 525,028
Int. Cl.³ B25G *3/00*; F16D *1/00*
U.S. Cl. 403—319 7 Claims



1. A mortice and tenon joint of two structural members, characterized in that across the tenon of one member there is cut a passage of tapered cross section, and in that a movable wedge having a similar tapered cross-section is slidably housed within a channel also of similar tapered cross-section which intersects the mortice of the other member, whereby when the tenon is inserted into the mortice, the wedge may be driven along the channel to become firmly engaged within said passage to prevent the members from separating until the wedge is withdrawn.

4,492,490

ROAD REPAIR SPREADER

David R. Christine, 925 Township Rd. 2408, R.D. #1, and John F. Terry, Jr., 2488 State Rte. 39, both of Perrysville, Ohio 44864

Filed Jun. 25, 1982, Ser. No. 392,276
Int. Cl.³ E01C *19/15*
U.S. Cl. 404—108 8 Claims

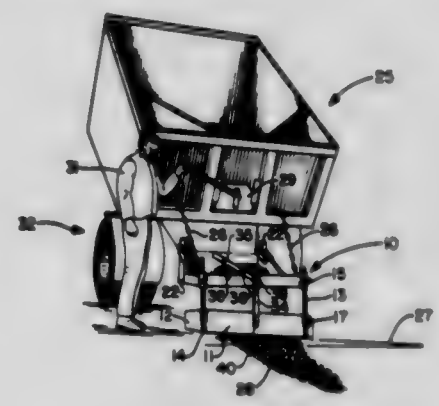
1. A road repair spreader, comprising:

a frame adapted for attachment to a vehicle;

first and second sleeves affixed to said frame in spaced-apart relationship to each other;

a mold board;

first and second shafts having first ends thereof respectively slidingly received by said first and second sleeves and



second ends thereof pivotally connected to said mold board; and wherein

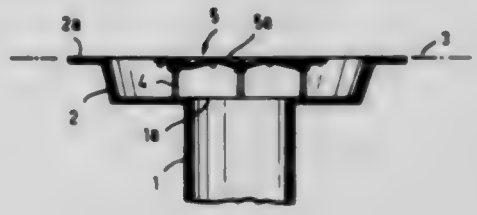
said shafts pass through brackets on said mold board, said brackets restricting pivotal movement of said shafts.

4,492,491

RAIN WATER ROOF OUTLET OR SIMILAR FOR A BUILDING

Risto Luukka, and Olavi Ebeling, both of Helsinki, Finland, assignors to Oy Kontekla, Helsinki, Finland

Filed May 26, 1982, Ser. No. 382,120
Claims priority, application Finland, Jun. 2, 1981, 811700
Int. Cl.³ E02B *5/08*; E03F *5/14*; E04D *13/04*
U.S. Cl. 405—119 6 Claims



1. A rain roof outlet for a building comprising: a vertical drain pipe leading from a roof having a roof line, a trough arranged in the roof and adapted to collect water from the roof, the trough having a bottom and side walls which have upper edges in line with the roof line, the drain pipe having an upper end forming a mouth which is connected with the bottom of the trough so as to drain the water collected in the trough from the roof; and means for retarding circumferential whirling of water about the axis of the axis of the drain pipe as the water enters the mouth of the drain pipe, said means being a lid in the form of a net having a large number of perforations, and having a rough lower surface, said net being located substantially at the roof line and providing a resistance to circumferential flow of water through and along the surfaces of the net thereby creating full flow of water into said mouth.

4,492,492

GUIDING METHOD FOR CABLE BURYING DEVICE AND A DEVICE THEREFOR

Toshio Izawa, Tokyo; Yoshinao Iwamoto, Fujimi; Yuichi Shirasaki, Tokyo, and Kenichi Asakawa, Hachiohji, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Apr. 2, 1981, Ser. No. 250,264
Claims priority, application Japan, Sep. 22, 1980, 55-130610
Int. Cl.³ F16L *1/04*; G01S *5/18*, *15/06*
U.S. Cl. 405—160 2 Claims

1. A cable position confirming device for a cable burying device comprising four ultrasonic receiving elements arranged in the form of a rectangle on the cable burying device in a

plane beneath the cable burying device and parallel to a horizontal surface thereof, an ultrasonic transmitter/receiver element provided at the center of said rectangle, and two ultrasonic transponders mounted on a cable to be buried by said cable burying device, said elements being used descriminatingly to receive ultrasonic signals transmitted by said two



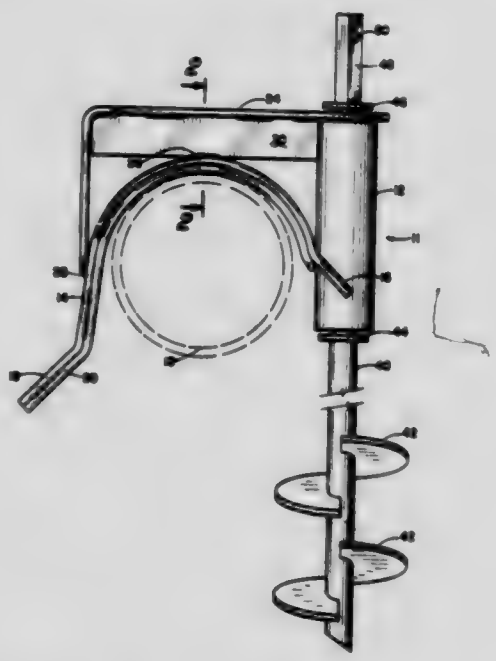
ultrasonic transponders in response to ultrasonic transmission command signals transmitted by said transmitter/receiver element, the distance between pairs of said receiving elements forming parallel sides of said rectangle being substantially equal to the distance between said two ultrasonic transponders, whereby to facilitate accurate measurement of the position of the cable.

4,492,493

PIPELINE ANCHOR HOOK

Brian C. Webb, 4236 S. 76th E. Ave., Tulsa, Okla. 74145

Filed Aug. 16, 1982, Ser. No. 408,665
Int. Cl.³ F16L *1/00*; E02D *5/80*
U.S. Cl. 405—172 7 Claims



1. A ground held anchor to restrain upward movement of buried or submerged pipeline or other articles comprising:

a sleeve;

an arcuate saddle one end of which is attached to said sleeve and extending outward thereof, said saddle of interior configuration to fit over said pipeline or article;

a saddle structural support means attached to said sleeve and extending outwardly therefrom, said support means attached to the exterior of said saddle to prevent bending of said saddle from said upward movement of said pipeline.

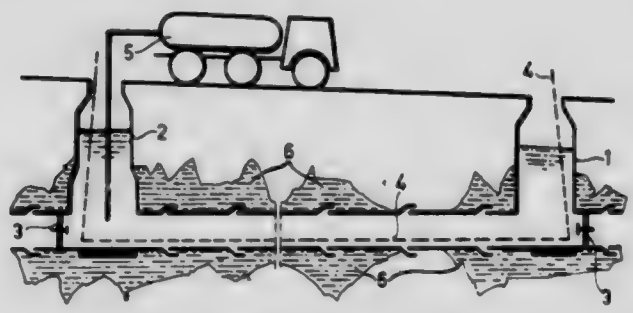
an anchor rod rotatably supported within said sleeve, said rod having at least one ground engaging fluke, said rod being bendable, before disengagement of said anchor rod and fluke, from the ground, at a point along its length just below said sleeve due to said upward movement.

4,492,494

PROCESS FOR STABILIZING AQUEOUS SOLUTIONS USED IN THE PREPARATION OF HYDROPHILIC POLYMERIC GELS

Tamás Székely; Ferenc Csanda; Gábor Nagy, and Gyorgy Csorny, all of Budapest, Hungary, assignors to Magyar Tudományos Akadémia Természettudományi Kutató Laboratóriuma and Földmérő és Talajvizsgáló Vállalat, both of Budapest, Hungary

Continuation of Ser. No. 957,804, Nov. 6, 1978, abandoned. This application Aug. 5, 1981, Ser. No. 290,315
Claims priority, application Hungary, Nov. 8, 1977, MA 2924
Int. Cl.³ E02D *3/12*
U.S. Cl. 405—264 7 Claims



1. A process for improving the strength and impermeability of particulate materials or solid articles, comprising the steps of:

(a) stabilizing an aqueous gel-forming system comprising a water-soluble acrylic monomer as gellifying agent, methylenebis-acrylamide co-monomer or a mono- or bivalent aldehyde as cross-linking agent, a redox catalyst system containing an alkali metal or ammonium persulfate as oxidizing component along with an amine compound as reducing component, and optionally a water-soluble polymer for adjusting the viscosity of the solution or modifying the gel structure, by saturating said gel-forming system with molecular oxygen;

(b) treating the particulate materials or the solid articles with said aqueous gel-forming system; and

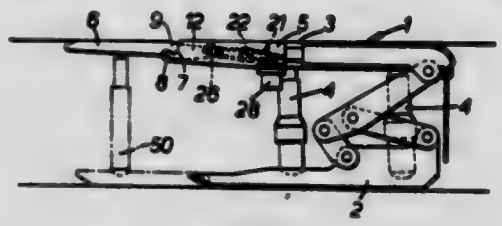
(c) finally suspending oxygen saturation of the gel-forming system after an effective amount of oxygen is introduced in the system.

4,492,495

ROOF SUPPORT FOR USE IN MINES

Dennis F. Rutherford, and Keith D. Blackmore, both of Cheltenham, England, assignors to Dowty Mining Equipment Limited, Great Britain

Filed Jun. 13, 1983, Ser. No. 503,849
Claims priority, application United Kingdom, Jul. 9, 1982, 8219955
Int. Cl.³ E21D *17/02*
U.S. Cl. 405—294 10 Claims



1. A mine roof support including a roof-engageable beam which comprises a main portion, a further portion forming an extension of the main portion and hinged thereto by a pin-less knuckle joint, said further portion having a rear part which

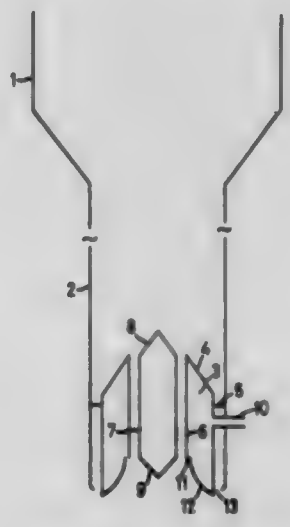
projects beyond said knuckle joint and beneath the underside of said main portion with which the rear part is engageable to limit pivotal movement of said further portion about said joint, and retaining means to provide security of connection of said further portion to said main portion a said retaining means being pivotally connected to the rear part of the extension and pivotally connected to the main portion, the pivotal connections permitting movement of the rear part vertically but preventing lateral movement of said rear part.

4,492,497

APPARATUS AND METHOD FOR TRANSFERRING SOLIDS

John L. Barclay, Tadworth; Alan G. Brooks, Bagshot, and Clive P. J. Duebel, Meopham Green, Nr. Gravesend, all of England, assignors to The British Petroleum Company p.l.c., London, England

Filed Mar. 5, 1982, Ser. No. 355,148
Claims priority, application United Kingdom, Mar. 26, 1981, 8109528
Int. Cl.³ B65G *53/14*
U.S. Cl. 406—153 2 Claims



1. Apparatus for transferring solid particles to a receptacle from a storage hopper (1), which apparatus comprises a primary loading tube, a Coanda surface and a Coanda nozzle characterised by the fact that the primary loading tube (2) contains at its lower end an annular gas supply chamber (3) spaced inwardly of the tube (2) and coaxially aligned within it to provide an annular space between the inner wall of the primary loading tube (2) and the outer wall of the annular gas supply chamber (3), the innermost surface of the annular chamber (3) forming a secondary loading tube (6) and at its lower end forming a Coanda surface (12), a slot (11) being provided between the innermost surface of the gas supply chamber (3) and the Coanda surface (12) to form a Coanda nozzle said primary loading tube and said secondary loading tube being open at each end and the secondary loading tube (6) contains at its lower end a cylinder (7) coaxially aligned within it to provide an annulus for the passage of solid particles the aforementioned apparatus providing satisfactory distribution of solid particles at high loading rate with efficient utilization of gas.

4,492,496

METHOD OF ATTACHING A STUB TO A POLE

Victor Arnold, Mosman, Australia, assignor to Austpole Pty., Ltd., Victoria, Australia

Division of Ser. No. 187,994, Sep. 17, 1980, Pat. No. 4,371,018.
This application Sep. 30, 1982, Ser. No. 429,862
Claims priority, application Australia, May 20, 1980, PE03723
Int. Cl.³ E02D *37/00*; E04H *12/00*
U.S. Cl. 405—303 15 Claims



1. A method of attaching a stub to a pole partially embedded in the ground, said method comprising:

providing apparatus having movable pole clamping means;

bringing the apparatus into operative position adjacent the pole;

engaging the clamping means with the pole;

raising the clamping means and the pole to expose a lower end portion of the pole, whereby the apparatus bears the effective weight of the pole and any additional force needed for initial disengagement of the pole from the ground;

providing a replacement stub and sleeve junction means of deterioration-resistant material, the sleeve junction means adapted to join and enclose a conjunction between the pole lower end portion and the stub;

positioning the stub in an underpinning, abutted position relative the pole lower end portion;

securing the sleeve junction means to join the stub and the lower end portion of the pole;

lowering the pole clamping means so that the pole and stub are lowered vertically to a predetermined depth with the sleeve junction at least partially below ground level and whereby the weight of the restored pole is taken by the ground;

consolidating the ground around the pole; and,

removing the apparatus.

4,492,498

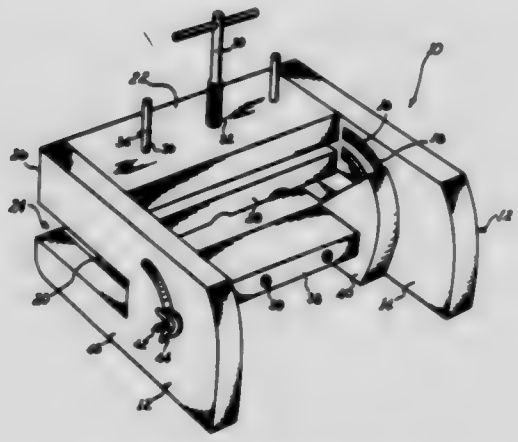
DRILL BIT JIG

Emery M. Kaufman, R.R. 1, 1699 E.B. Rd., Bremen, Ind. 46506

Filed Aug. 18, 1982, Ser. No. 409,125
Int. Cl.³ B23B *47/28*
U.S. Cl. 408—115 R 4 Claims

1. An adjustable jig for guiding the bit of a drill into a workpiece, said jig comprising end plates having opposed inner faces, guide means for directing said drill bit extending between said end plate inner faces, clamp means carried between said end plates and opposed to said guide means for retaining said workpiece adjacent said guide means, slide means associated with said end plates and said guide means at each end thereof for selectively moving the guide means toward and away from the clamp means, wherein said guide means may be shifted through said slide means to butt against said work piece to guide said drill bit into the work piece, said slide means defining arcuate grooves formed in one of said guide means

and said end plates and further defining arcuate ribs carried by the other of said guide means and said end plates which interfit



into said grooves for guiding said guide means in an arcuate path relative to said clamp means.

4,492,499

FRAME FIXTURE ARRANGEMENT

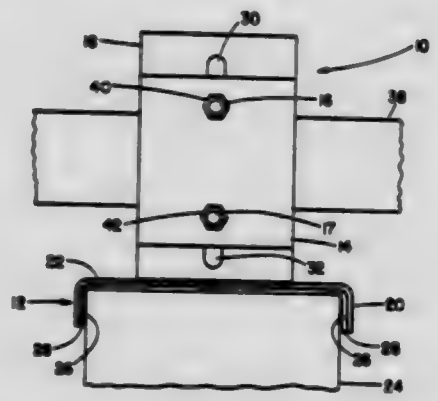
John S. Gasper, Fort Wayne, Ind., assignor to North American Van Lines, Inc., Fort Wayne, Ind.

Continuation-in-part of Ser. No. 252,026, Apr. 8, 1981, abandoned. This application Aug. 5, 1983, Ser. No. 520,719

Int. Cl.³ B60P *7/10, 7/14;* B61D *45/00*

U.S. Cl. 410—32

6 Claims



1. A frame fixture apparatus for stabilizing goods within a transport vehicle, wherein said goods include a plurality of breakable equipment items which tend to topple about one pivot plane and are stable in other directions, said items being arranged in spaced relationships in said vehicle whereby said items tend to topple towards each other, and said apparatus including a plurality of clamping devices for interlinking said items and forming a rigidly interconnected stabilized structure preventing toppling of said items, each said clamping device comprising:

a. a base having a gripping means for gripping the edges of a surface of said item on which said base is positioned;

b. an upright post having a pair of slots therein, said post being affixed to said base so as to provide a surface in coplanar relationship with the posts on the bases arranged on the other items in said vehicle;

c. a plate having a pair of holes therein;

d. means for attaching said plate to said post; and

e. an elongate cargo bar extending between said items in the toppling plane of said items intermediate each said post and plate so as to be clampingly engaged therebetween by said attaching means and to form a rigidly interlinked bracing frame structure with said items.

4,492,500

TORQUE LIMITING SET SCREW

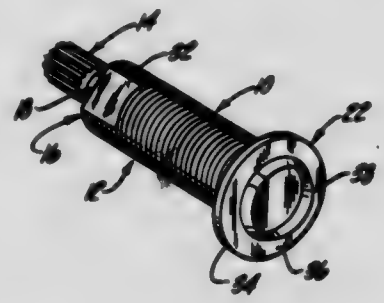
Peter D. Ewing, 7011 Biscayne, Milford, Mich. 48042

Filed Feb. 10, 1983, Ser. No. 465,672

Int. Cl.³ F16B *31/02, 35/00*

U.S. Cl. 411—5

5 Claims



1. A torque limiting set screw of the type comprising a unitary body including a threaded shank and a tightening head at one end of the shank,

the tightening head being adapted to be engaged by a torque applying tool for tightening the set screw,

the tightening head being joined with the shank by a torque control neck having a torsional breaking strength less than the other portions of said body,

the improvement including:

the major transverse dimension of said tightening head being no greater than the diameter of said shank,

a seating head at the other end of said shank and having an axial seating surface with a surface area larger than the cross-sectional area of said shank,

a point extending from the seating surface for engaging a member to be retained when the set screw is tightened,

the breaking strength of said torque control neck being great enough to permit sufficient tightening of the set screw to cause indentation of said member by the point,

the breaking strength of the torque control neck being small enough so that continued tightening of the set screw after the seating surface engages said member will cause the tightening head to break off.

4,492,501

PLATFORM POSITIONING SYSTEM

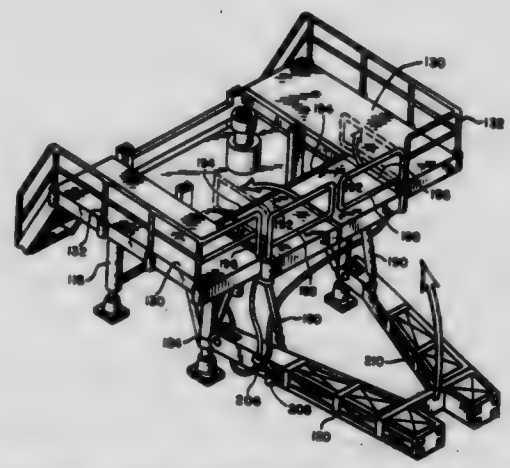
Keith M. Haney, Wichita Falls, Tex., assignor to Walker-Neer Manufacturing Company Inc., Wichita Falls, Tex.

Filed Apr. 11, 1983, Ser. No. 483,560

Int. Cl.³ E04H *12/18;* E21B *15/00*

U.S. Cl. 414—22

10 Claims



9. In combination with a drilling apparatus of the type having a support structure and a tranafer arm pivotably connected to the support structure to rotate about a first axis, the improvement comprising:

a platform pivotably connected to the support structure to

rotate about a second axis, parallel to the first axis, said transfer arm and platform pivotable about the respective axes between respective raised and lowered positions, said platform when positioned in the lowered position situated to obstruct movement of the transfer arm into the raised position;

a telescoping rod comprising first and second rod sections and means for securing the first and second rod sections together to provide axial movement therebetween for a first distance;

means for mounting the first rod section to the platform such that the first rod section pivots about a platform axis and is movable through a first angular range in a plane passing through the platform axis; and

means for mounting the second rod section to the transfer arm such that the second rod section pivots about an arm axis and is movable through a second angular range in a plane passing through the arm axis;

a guard rail pivotably mounted to the support structure adjacent the platform;

the position of the arm and platform axes and the length of the telescoping rod selected such that the transfer arm automatically and progressively raises the platform to the raised position by means of the rod as the transfer arm moves to the raised position, and the transfer arm automatically and progressively lowers the platform to the lowered position by means of the rod as the transfer arm moves to the lowered position;

the length of the rod and the first distance chosen such that movement of the transfer arm within a predetermined range of positions adjacent the lowered position produces no movement of the platform from the lowered position; and

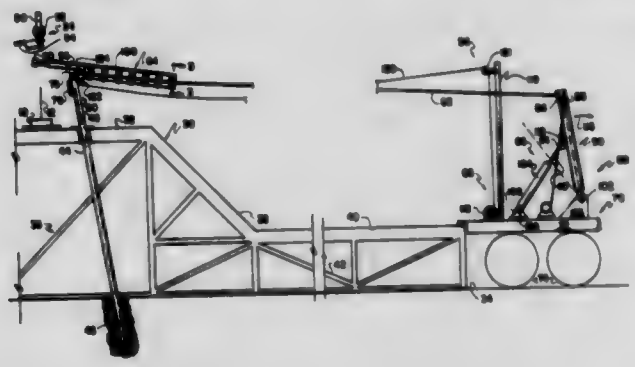
means for automatically pivoting the guard rail to a first position along the edge of the platform adjacent the transfer arm when the platform is in the lowered position and for automatically pivoting the guard rail out of the path of the platform as the platform moves to the raised position.

4,492,502

TECHNIQUE FOR PICKING UP AND LAYING DOWN PIPE

Charles G. Delano, Guaranty Bank Plaza, Corpus Christi, Tex. 78475

Continuation of Ser. No. 335,258, Dec. 28, 1981, abandoned. This application May 27, 1983, Ser. No. 498,738
Int. Cl.³ E21B *19/00*
U.S. Cl. 414—22 16 Claims



1. A laydown unit for transporting pipe joints between a first location and a rig floor providing a rotary table at a higher elevation, comprising

an upstanding support on the rig floor between the rotary table and the first location;

a base unit and a bull line extending between the base unit and the upstanding support;

a pipe carrier, supported on the bull line, including means for supporting a joint of pipe;

means for propelling the pipe carrier from the first location toward the rotary table; and

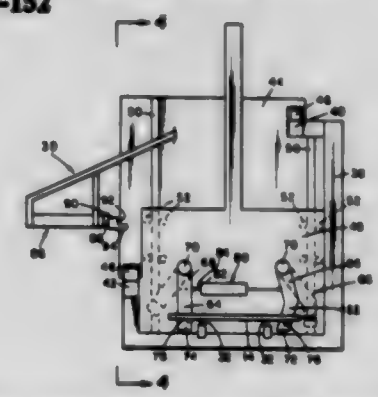
means for moving the pipe joint over the top of the upstanding support to deliver the pipe joint adjacent the rotary table.

4,492,503

HIGH SPEED PUSHER

Paul M. Thomas, Paradise Valley, and Daniel P. Abrahamson, Phoenix, both of Ariz., assignors to Builders Equipment Company, Phoenix, Ariz.

Continuation of Ser. No. 225,714, Jan. 16, 1981, abandoned. This application May 23, 1983, Ser. No. 496,331
Int. Cl.³ B66C *17/08*
U.S. Cl. 414—152 6 Claims



1. In an apparatus for conveying and lifting blocks on rigid pallets to an elevated position for being loaded into a loading opening of a kiln with the apparatus including a conveyor extending parallel to the face of the loading opening for conveying palletized blocks to a position beneath the loading opening, the width of said pallets being the distance across said pallet in a direction perpendicular to the conveyor and the length of the pallets being the distance across the pallet in a direction parallel to the conveyor, the improvement comprising:

a pair of elongated pallet support arms, each having first and second ends disposed longitudinally in an orientation generally parallel to the conveyor and having a length between said first and second ends of about the length of the pallets for being disposed below and along the length of the pallets;

lifting means;

mounting means for mounting only said first end of each of said support arms on said lifting means and providing for lateral movement of said support arms in a direction generally perpendicular to the conveyor;

actuation means for moving said support arms laterally between a clearance position, wherein said support arms are spaced apart at a distance greater than the width of the pallets, and a support position, wherein said support arms are spaced apart at a distance less than the width of the pallets;

said lifting means being operable to move said support arms between a lowered position that is at least beneath the level of the conveyor and a raised position wherein said support arms are level with the lower surface of the loading opening of the kiln, whereby palletized blocks may be lifted from the conveyor by moving said support arms to the clearance position, lowering said support arms to the lowered position, moving said support arms to the support position beneath the pallet on the conveyor, raising said support arms to the raised position to raise the palletized blocks to the level of the loading opening of the kiln; and

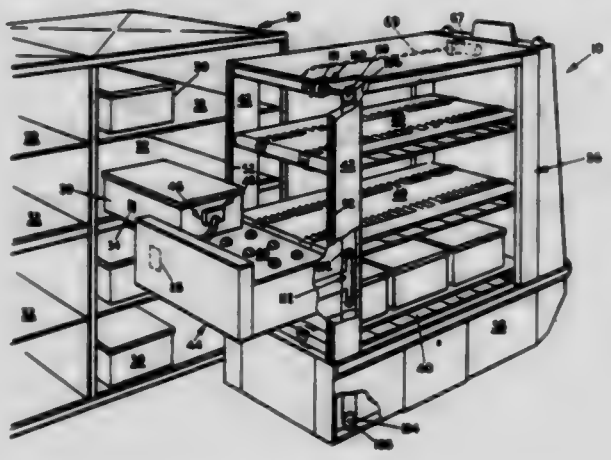
pusher means for pushing palletized blocks in a direction perpendicular to the length of said support arms and the conveyor when said support arms are in the raised position to push the palletized blocks into the loading opening.

4,492,504

MATERIALS HANDLING SYSTEM

Thomas E. Hainsworth, Holland, Mich., assignor to Bell & Howell Company

Filed Dec. 7, 1981, Ser. No. 327,789
Int. Cl.³ B60P 1/46
U.S. Cl. 414—273 19 Claims



1. An unmanned guided vehicle system comprising:

a frame including a pair of upstanding frame members at one end of said vehicle;

traction means for propelling said vehicle along a selected path which includes at least one stationary location;

guide means for guiding movement of said vehicle along said selected path;

first control means for controlling the movement of said vehicle along said selected path;

storage means on said vehicle and extending to said upright frame members for storing at least one container on said vehicle;

transfer means mounted to said frame members for vertical movement along the outward side of said frame members for moving said at least one container from said at least one stationary location vertically along said outward side of and between said frame members to said storage means on said vehicle; and

second control means coupled to said transfer means for selectively controlling the transfer of said at least one container between said at least one stationary location and said storage means;

wherein said vehicle is propelled along said path to said at least one stationary location whereupon said at least one container is moved from said storage means to said transfer means and then along the outward side of said frame members to said at least one stationary location or said container is moved from said stationary location by said transfer means and is then moved through said frame members to said storage means.

4,492,505

CLAMPING DEVICE FOR USE ON HAND TRUCK

Donald T. Dunning, 224 W. Boeing Dr., Midwest City, Okla. 73110

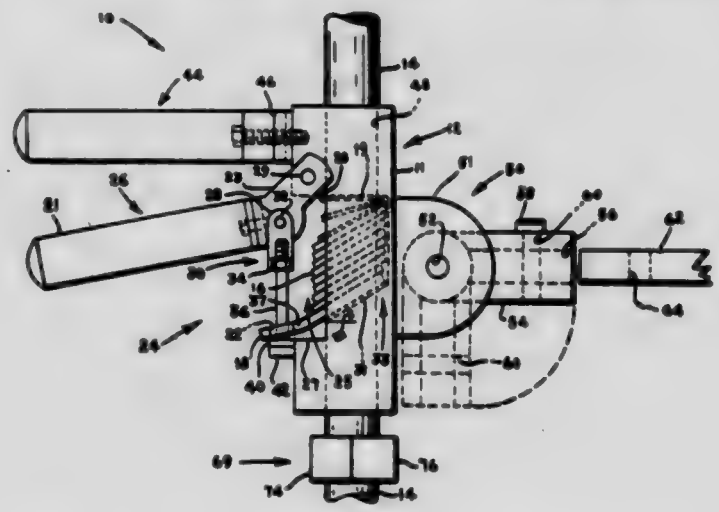
Filed Jan. 27, 1982, Ser. No. 343,043
Int. Cl.³ B62B 1/06
U.S. Cl. 414—454 5 Claims

1. A clamping device for securing a load on a load carrying surface comprising:

means for mounting said clamping device to a side of said load carrying surface, said means for mounting including a plurality of brackets and a guide rod, said brackets fixedly secured to a side tube on said load carrying surface and said guide rod being essentially parallel with said side tube, said brackets being fixedly attached to the ends of said guide rod,

a control body attached to said mounting means for reciprocal movement thereon as required by the shape of said load, said control body including a housing and a handle, said handle attached to said housing, said housing having said guide rod passing therethrough and being a rectangular solid box having a guide rod hole therein and a recess therein having an inclined seat,

means for locking and releasing said control body, said locking and releasing means attached to said control body and said mounting means, said means for locking and releasing including a release lever, a connecting rod assembly, a plurality of clamps, and a spring, said release lever pivoting on said housing so that said operator is able to squeeze said handle of said control body and the handle of said release lever together with one hand, said connecting rod at one end pivoting on said release lever, the other end of said connecting rod attached to a master release



clamp, said master release clamp being adjacent to said inclined seat of said housing, said plurality of clamps having said guide rod therethrough and having elliptical holes therein for said guide rod, when said release lever is not actuated, said clamps lock on said guide rod, said spring having said guide rod therethrough and said spring positioned between said housing and said plurality of clamps, said spring biasing said clamps against said inclined seat, and

means for contacting said load to secure said load on said load carrying surface, said contacting means attached to said control body so that when an operator actuates said locking and releasing means, said control body can be moved on said mounting means such that said contacting means operably secures the load when the operator ceases actuation of said locking and releasing means.

4,492,506

UNDER VEHICLE CARRIER FOR A SPARE WHEEL

Merle R. Hoogland, Astoria; Robert M. Hoogland, and Dean W. Hoogland, both of Warrenton, all of Oreg., assignors to DMB Enterprises, Inc., Warrenton, Oreg.

Filed Apr. 29, 1983, Ser. No. 489,825
Int. Cl.³ B62D 43/04
U.S. Cl. 414—463 13 Claims

5. An under vehicle carrier for a spare wheel having a tire portion mounted to a central rim portion, comprising:

an elongated body adapted for mounting to the underside of a vehicle with a first end portion of the body adjacent to a side or end margin of the underside of the vehicle;

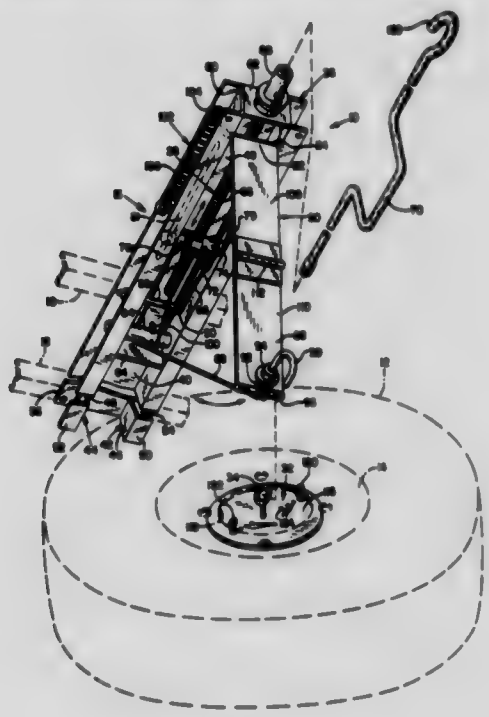
arm means for supporting the spare wheel;

pivot means for pivoting one end portion of said arm means to said body for movement about a horizontal pivot axis to permit raising and lowering of the free end of said arm means;

biasing means for biasing said arm means to a lowered position;

arm operating means for raising and lowering said arm means;

spare wheel coupling means for releasably coupling the spare wheel to the free end portion of the arm means such that the spare wheel is lowered through an arc and delivered partially out from underneath the vehicle as said arm



means is lowered and raised through an arc as said arm means is raised; and

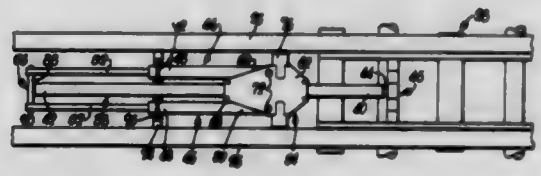
said pivot means including a crank portion, said biasing means comprising biasing spring means connected to said body and to said crank portion.

4,492,507

ACTUATOR FOR SHIFTABLE UNDERCARRIAGE OF TILTABLE TRAILER

Donald R. Landoll; David J. Konga, and Alfred R. Belknap, all of Marysville, Kans., assignors to Landoll Corporation, Marysville, Kans.

Filed Mar. 10, 1983, Ser. No. 474,128
Int. Cl.³ B60P *1/04*
U.S. Cl. 414—475 14 Claims



1. In combination with a trailer having an elongated, tiltable bed provided with a deck and an elongated, underlying deck-supporting frame, said bed being normally disposed in a substantially horizontal, roading position, and a wheeled, bed-supporting undercarriage beneath the bed and normally disposed adjacent the rear end of the bed, said undercarriage being shiftable forwardly relative to the frame longitudinally thereof from said rear end to a bed-tilting position intermediate the front and rear ends of the bed,

an undercarriage control assembly beneath the bed for shifting the undercarriage fore and aft, said assembly including:

support structure suspended from the frame adjacent said front end of the bed;

a double acting, primary, fluid pressure piston and cylinder unit having an elongated cylinder carried by said structure for fore and aft reciprocation longitudinally of the frame,

said cylinder having a forwardmost butt end and a reciprocable, rearwardly extensible piston rod at the rearmost end of the cylinder;

a coupling attaching the rod to the undercarriage;

a pair of double acting, secondary, fluid pressure, piston and cylinder units alongside the primary unit, each having an elongated cylinder provided with a rearmost butt end and a reciprocable, forwardly extensible piston rod at the forwardmost end of its cylinder;

means attaching the butt ends of the cylinders of the secondary units to said structure; and

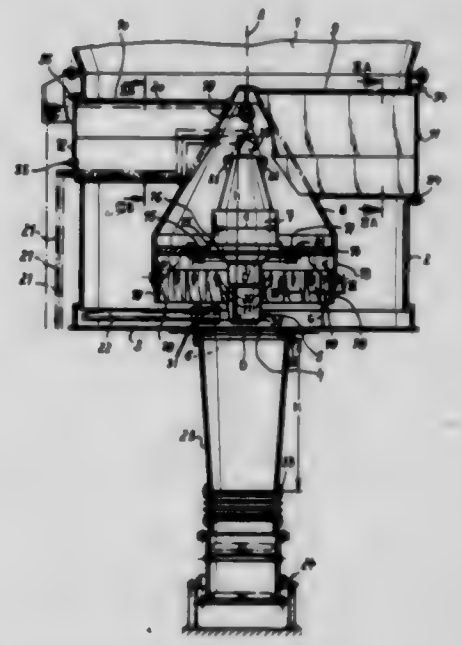
apparatus connecting the butt end of the cylinder of the primary unit to the rods of the secondary units whereby, upon application of fluid pressure to the cylinders, the rods of the secondary units first shift the primary unit and the undercarriage fore and aft a predetermined distance and, thereupon, the rod of the primary unit shifts the undercarriage fore and aft an additional distance.

4,492,508

BULK-STORAGE APPARATUS WITH UNLOADER

Lothar Teske, Hegelstr. 15, D-5000 Köln, Fed. Rep. of Germany

Filed Jun. 9, 1982, Ser. No. 386,594
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1981, 3125110
Int. Cl.³ B65G *65/48*
U.S. Cl. 414—304 17 Claims



1. A bulk-storage apparatus comprising:

a large hopper adapted to hold a large supply of bulk material and having a floor formed with a central outlet opening defining a vertical axis and a side wall extending upward from said floor;

an upwardly tapered hood generally centered on said axis and open downwardly toward said opening, said hook having a lower edge vertically spaced from said floor around said opening;

at least one tubular traverse supporting said hood in said hopper and having an inner end secured to and opening into said hood and an outer end secured to and opening outside said hopper, said traverse being of a cross-sectional size big enough that a man can crawl between outside said hopper and inside said hood along said traverse;

an openable cover closing said traverse between said ends;

a drive motor supported in said hood and accessible through said tubular traverse, said drive having a rotary output projecting down into the space between said floor and said lower edge above said opening, whereby a man can crawl through said traverse into said hood to service said drive while said hopper is full, said drive motor being of smaller horizontal cross section than said opening;

means for vertically displacing said drive through said opening; and

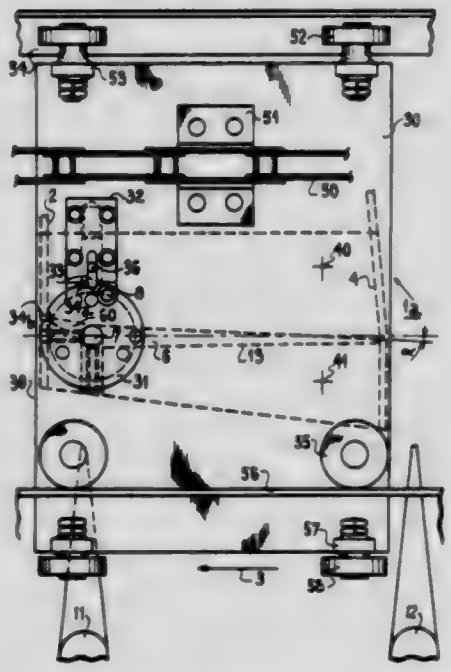
an arm carried on said output and sweepable over said floor around said opening by said drive.

4,492,509

OBJECT-CONVEYING BOX, AND OBJECT-SORTING MACHINE EQUIPPED WITH SUCH BOXES

Michel Divoux; Hubert Bonnaudo, and Bernard Constant, all of Paris, France, assignors to Hotchkiss-Brandt Sogeme H.B.S., Paris, France

Filed Apr. 27, 1981, Ser. No. 257,653
Claims priority, application France, Apr. 29, 1980, 80 09622
Int. Cl.³ B65G *17/36*
U.S. Cl. 414—367 13 Claims



1. Apparatus for conveying objects from a loading zone to an ejection zone, said apparatus comprising:

(a) a set of walls defining a frame;

(b) a bottom mounted at the front of said frame for pivotal movement about an axis such that, when said bottom is pivoted open by the force of gravity, an object being conveyed by the apparatus is permitted to fall vertically into a receptacle intended to receive it;

(c) a trunnion operatively connected to said bottom such that prevention of the pivotal motion of said trunnion prevents pivotal motion of said bottom, said trunnion being mounted for pivotal movement about the same axis as said bottom;

(d) a retractable finger which is mounted on one of said walls and which engages in a first notch provided in said trunnion during the loading and conveying phases, thereby preventing pivotal motion of said trunnion;

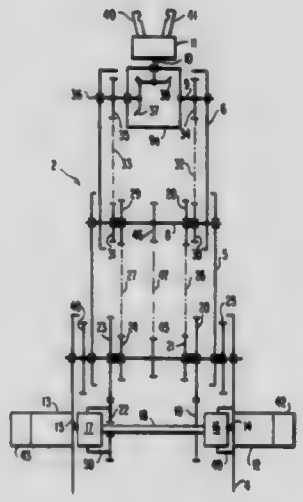
(e) a cam and cam follower arrangement which cams said retractable finger out of said first notch, thereby permitting said bottom to begin pivoting open due to the force of gravity, said cam and cam follower arrangement being positioned and said bottom being mounted on said walls sufficiently far above the lower edges of said walls so that said bottom does not pivot beneath said walls before the box formed by said set of walls and said bottom arrives at the ejection zone.

4,492,510

ROBOT HAND DRIVING MECHANISM

Shigetaka Tanii, and Hisao Sasaki, both of Toyama, Japan, assignors to Toyama Machine Works, Ltd., Toyama, Japan

Filed Feb. 11, 1983, Ser. No. 465,717
Claims priority, application Japan, Feb. 12, 1982, 57-21592
Int. Cl.³ B66C *1/00*
U.S. Cl. 414—733 7 Claims



1. A mechanism for driving a robot hand of an industrial robot, comprising:

a robot hand mounted on an arm;

a differential gear mechanism mounted on said arm for swinging the robot hand about first shaft means and for rotating the robot hand about second shaft means, said first and second shaft means being rotatably mounted within said arm;

first and second motors for driving said first and second shaft means, respectively;

first and second transmission systems for transmitting rotative power from said first and second motors respectively to said first and second shaft means;

a first planetary gear assembly disposed in said first transmission system and having a fixed first internal gear and a first planet gear operatively connected to said first shaft means;

a second planetary gear assembly disposed in said second transmission system and having a second internal gear operatively connected to said second shaft means and having a second planet gear; and

a coupling shaft connecting said first and second planet gears to one another, whereby a rotation of said robot hand resulting from a swinging movement thereof can be cancelled.

4,492,511

CONVEYOR ROBOT

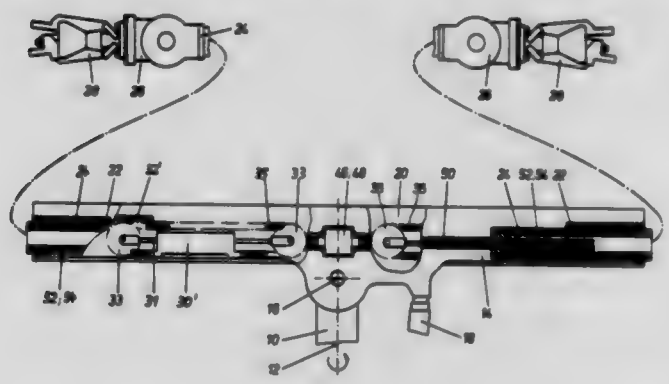
Alfred Bilsing, Schwedengraben 12, 5952 Attendorn, Fed. Rep. of Germany

Filed Jun. 29, 1981, Ser. No. 278,571
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1980, 3024432; Apr. 10, 1981, 3114476
Int. Cl.³ B25J *9/00*; B30B *15/30*
U.S. Cl. 414—744 A 8 Claims

1. A conveyor robot comprising:

an elongated arm rotatable about a vertical axis, a pair of extensions, one for supporting an engaging member at each end of the arm, such that each engaging member is movable longitudinally of the arm to extend out from and retract towards said vertical axis, each extension having a center line about which the extension is symmetrical, said extensions being mounted with their said center lines in a common vertical plane with the said vertical axis, said extensions, with their respective engaging members being movable simultaneously in opposite directions, means for swinging said arm, and hence also said extensions and said

engaging members about a common central horizontal axis, and including a separate drive means for driving each of the extensions in said longitudinal movement, each drive means comprising a double acting hydraulic cylinder mounted on the arm and including a piston rod extending out in two opposite directions, a pair of sprocket



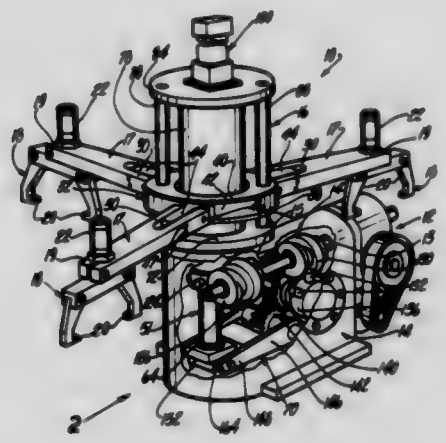
wheels mounted on the arm, having their axes perpendicular to the rod and connected to the opposed ends of the rod, and including an elongated element encircling both of said sprocket wheels and fixed at one point to the arm, and including a means connecting the elongated element and the respective extensions.

4,492,512

AMPLIFIED MOTION TRANSMITTING DEVICE

George Mink, 37900 Mound Rd., Sterling Heights, Mich. 48077

Filed Dec. 2, 1981, Ser. No. 326,552
Int. Cl.³ B66C *23/00*
U.S. Cl. 414—744 A 8 Claims



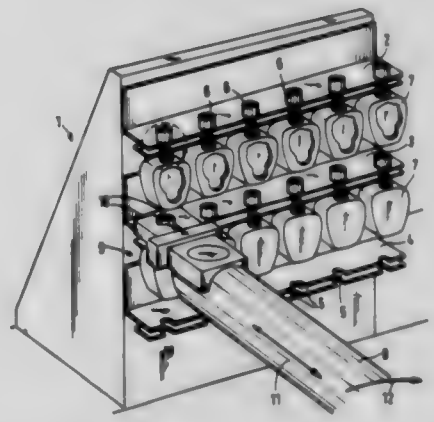
1. A material handling device for moving a workpiece along first and second paths to effect movement of the workpiece from a first location to a second location, said device comprising gripping means for gripping a workpiece to be moved, a first cam and follower arrangement for generating a defined amplitude of movement in a first degree of freedom, first motion transfer means operatively connected with said first cam and follower arrangement for transferring movement in said first degree of freedom into movement of said gripping means along said first path, a second cam and follower arrangement for generating a defined amplitude of movement in a second degree of freedom, second motion transfer means operatively connected with said second cam and follower arrangement for transferring movement in said second degree of freedom into movement of said gripping means along said second path, and transmission means interposed in the operative connection of one of said cam and follower arrangements and the motion transfer means operatively associated therewith for effecting a multiplication of the amplitude of movement in the degree freedom generated by that cam and follower arrangement to yield a different amplitude of output movement in the same degree of freedom for transfer by the associated motion transfer means into movement of said gripping means along one of said paths, said transmission means receiving a defined amplitude of oscillation about a first axis as an input movement from the associated cam and follower arrangement and generating a different amplitude of oscillation about a second axis as an output movement and comprising a sector gear assembly having a first sector gear supported for oscillation about said first axis and a second sector gear supported for oscillation about said second axis and drivingly engaged with said first sector gear.

4,492,513

WORKPIECE MANIPULATION SYSTEM

Manfred Weck, Aachen; Hans Klingel, Möglingen, and Georg Werntze, Hopfen, all of Fed. Rep. of Germany, assignors to Maho Werkzeugmaschinenbau Babel & Co., Fed. Rep. of Germany

Filed Jun. 7, 1982, Ser. No. 385,835
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1981, 3123029
Int. Cl.³ B23Q *7/04*
U.S. Cl. 414—729 2 Claims



1. A workpiece manipulator, in combination with workpieces that are gripped by gripping means provided at the loading arm of and manipulator and are transported to predetermined positions of processing and/or magazine stations the workpieces comprising a detachable handling member having an enlarged hollow head (16), a relatively narrow hollow central portion (13) and an enlarged base (15), said base being curved inwardly toward said narrow central portion, the interior of said hollow head forming a relatively large reservoir for adhesive (18) and said narrow central portion and said base having a relatively small opening formed therethrough in communication with said reservoir whereby said adhesive may contact said workpiece to secure said handling member for gripping by said gripping means.

4,492,514

SUBMERGED PUMP ASSEMBLY AND METHOD OF MAKING AND USING SAME

James B. Dron, Orange, Calif., assignor to Stang Hydronics Inc., Orange, Calif.

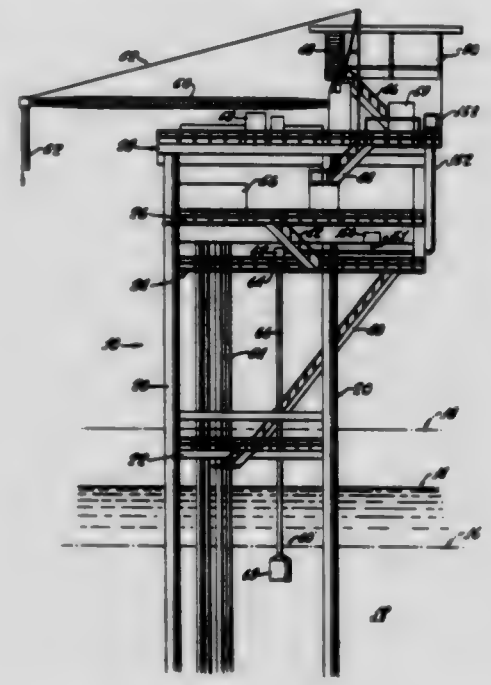
Filed Aug. 18, 1980, Ser. No. 178,844
Int. Cl.³ F04D *7/00*
U.S. Cl. 415—1 29 Claims

1. In a pump assembly means for pumping a liquid from a body of said liquid wherein said means includes a rotary pump which has at least an inlet portion submerged in said body for substantial periods of time when the rotatable element in said pump is not rotating and wherein said liquid contains constituents having a tendency to impair the performance of said pump after extended contact therewith, the improvement comprising:

casing means at least partially submerged in said body of liquid and disposed about the periphery of at least said pump inlet portion and spaced apart therefrom, said cas-

ing means defining an opening at a portion thereof below said inlet portion of said pump,

means for displacing said liquid downwardly to a level below the upper surface of said body of liquid and out of substantial contact with at least the interior of said submerged portion of said pump,



means for maintaining said liquid out of substantial contact with said interior when the rotatable element in said pump is not rotating, and

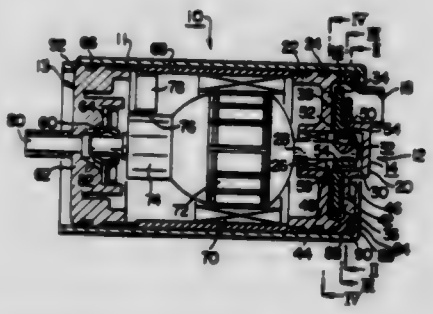
means for introducing said liquid into said interior of said pump up to the level of the upper surface of said body of liquid when pumping of said liquid is desired.

4,492,515

PUMP APPARATUS

Kiyohiko Watanabe, Chiryu; Kazuma Matsui, Toyohashi; Yoshiyuki Hattori, Toyoake; Toshihiro Takei, Kariya; Toshiaki Nakazawa, Anjo, and Shunsaku Ohnishi, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 12, 1982, Ser. No. 377,546
Int. Cl.³ F04D 1/02, 1/12
U.S. Cl. 415—53 T 9 Claims



1. A pump apparatus comprising:

a regenerative pump including a pump housing formed therein with suction and discharge ports and a disc-like impeller mounted in said housing for rotation therein and for axial movement within a limited range;

driving means drivingly connected to said impeller to rotate the same for thereby pumping a fluid;

said impeller having substantially constant thickness and having substantially circular and substantially planar end faces and being provided with circumferential rows of radial vane grooves formed in said end faces adjacent to the outer periphery of said impeller;

said pump housing cooperating with said impeller to define a circumferential passage surrounding said circumferential rows of radial vane grooves and communicated with said suction and discharge ports;

said pump housing having substantially circular and substantially planar inner surfaces opposed to said end faces of said impeller, respectively, to cooperate therewith to form a first set of sealing sections extending over substantially the entire surface areas of said impeller end faces, respectively; and

means for axially centering said impeller within said pump housing to keep at least the major surface areas of the opposite end faces of said impeller closely spaced axially from said substantially circular inner surfaces of said pump housing, the axial spacings between said impeller and said pump housing being substantially uniform within said first set of sealing sections;

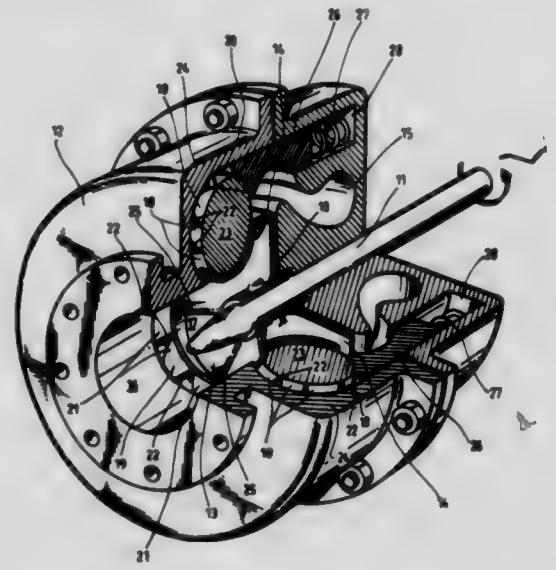
said centering means including spacer means comprising circumferentially continuous annular projections formed on at least one of said impeller and said pump housing in parts of said first set of sealing sections to cooperate with the other of said impeller and said pump housing to form a second set of sealing sections.

4,492,516

METHOD AND APPARATUS FOR CONTROLLING RECIRCULATION IN A CENTRIFUGAL PUMP

James J. McCoy, Jr., Houston, Tex., assignor to Tenneco, Inc., Houston, Tex.

Filed Sep. 30, 1982, Ser. No. 428,636
Int. Cl.³ F01D 1/12
U.S. Cl. 415—53 T 25 Claims



1. A centrifugal pump having reinjection passageways, comprising:

a centrifugal pump, the pump having an impeller, the impeller having an inlet and discharge tips;

a plurality of S-shaped passageways, the S-shaped passageways providing fluid communication between the discharge tips of the impeller and the inlet of the impeller, the S-shaped passageways being adapted to reinject fluid from the discharge tips to the inlet of the impeller, the S-shaped passageways having intake openings near the discharge tips of the impeller adapted to receive fluid so that the momentum of the fluid, as it is expelled from the discharge tips, will carry the fluid directly into the intake openings of the S-shaped passageways, the S-shaped passageways being shaped to redirect the flow if reinjection fluid so that reinjection fluid exits the S-shaped passageways at the inlet of the impeller at a generally small angle of attack with respect to impeller vanes at the inlet, the S-shaped passageways being shaped to redirect the reinjection fluid so that reinjection fluid exits the S-shaped passageways in a direction which has a component opposite to the direction of rotation of the impeller, the S-shaped passageways being arranged in side-by-side relation to form an annular

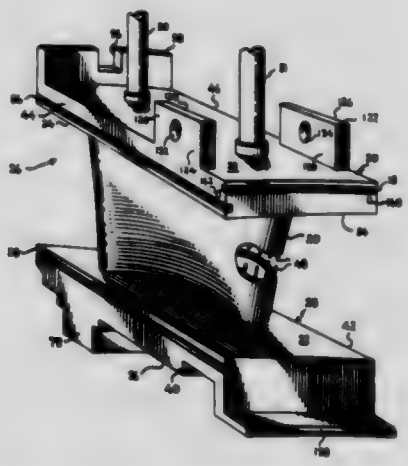
reinjection port to inhibit undesirable fluid flow patterns in the pump.

4,492,517

SEGMENTED INLET NOZZLE FOR GAS TURBINE, AND METHODS OF INSTALLATION

Nicholas Klompas, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 6, 1983, Ser. No. 456,288
Int. Cl.³ F01D *11/00*
U.S. Cl. 415—139 16 Claims



1. A nozzle guide vane assembly for a gas turbine engine, said assembly comprising:

a plurality of arcuate nozzle segments elastically joined to each other and forming an annular nozzle ring, each of said nozzle segments including a vane extending between a nozzle segment inner endwall and a nozzle segment outer endwall, the inner and outer endwalls of each nozzle segment having a pair of generally circumferentially-facing edges abutting respective corresponding circumferentially-facing endwall edges of adjacent nozzle segments in sealing relationship to form continuous inner and outer endwall rings;

inner and outer support structures for said nozzle ring;

an inner mounting arrangement mounting said inner endwall ring to said inner support structure, said inner mounting arrangement including means for providing axial retention and for permitting at least free relative radial movement;

an outer mounting arrangement mounting said outer endwall ring to said outer support structure, said outer mounting arrangement including means for permitting at least free relative radial movement;

at least one of said inner and outer mounting arrangements also including means for providing circumferential retention;

each abutting pair of said circumferentially-facing edges including a compressible seal therebetween;

means for applying a compressing force to each of said abutting pairs whereby said compressible seal is compressed to form an effective seal between said abutting pairs;

said means for applying a compressing force including each of said nozzle segments including a flange projecting radially outwardly from said outer endwall adjacent each of said generally circumferentially-facing endwall edges, each of said flanges having a front surface generally parallel to the adjacent endwall edge and abutting a corresponding flange front surface of an adjacent nozzle segment, and each of said flanges having a rear surface, and a generally circumferentially-extending aperture formed in each of said flanges in alignment with a corresponding aperture in the adjacent nozzle segment flange; and

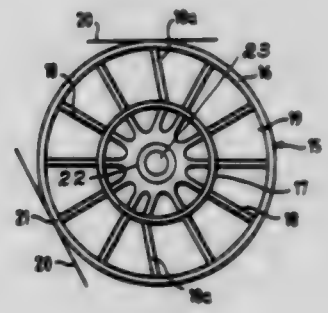
a tie rod extending through said corresponding apertures of each pair of corresponding flanges with extending portions of each tie rod extending away from said corresponding flange rear surface, a pair of sleeves surrounding said extending portions on respective sides of each pair of corresponding flanges with one end of each sleeve bearing against a flange rear surface, and an enlarged portion on each tie rod end bearing against the other end of each sleeve to place said tie rods in tension and said sleeves in compression.

4,492,518

GAS TURBINE ENGINE BEARING SUPPORT STRUCTURE

Peter F. Neal, Castle Donington, England, assignor to Rolls-Royce Limited, London, England

Filed Jan. 11, 1983, Ser. No. 457,234
Claims priority, application United Kingdom, Feb. 12, 1982, 8204170
Int. Cl.³ F01D *25/16*
U.S. Cl. 415—142 4 Claims



1. A bearing support structure for a bearing and a shaft of a gas turbine engine, said bearing support structure comprising:

a central hub portion for receiving and coaxially supporting the bearing and the shaft;

a ring member spaced radially outwardly of said central hub portion, said ring member being coaxial with said central hub portion and defining therewith and annulus forming a portion of a gas passage through said gas turbine engine;

and means for receiving and transferring radial loads received by said central hub portion from said bearing and said shaft to said ring member, said means including a plurality of spokes all lying in a plane perpendicular to an axis of said central hub portion, said plurality of spokes interconnecting said central hub portion and said ring portion, a majority of said plurality of spokes extend radially of said axis of said central hub portion and are perpendicular to an imaginary tangent at a point of intersection with said ring member and a remaining minority of said plurality of spokes extend at an incline to an imaginary tangent at a point of intersection with said ring member whereby loading of said inclined spokes promotes limited rotation of said central hub portion relative to said ring member and causes localized bending of said radially extending spokes to partially relieve compressive loads in said radially extending spokes.

4,492,519

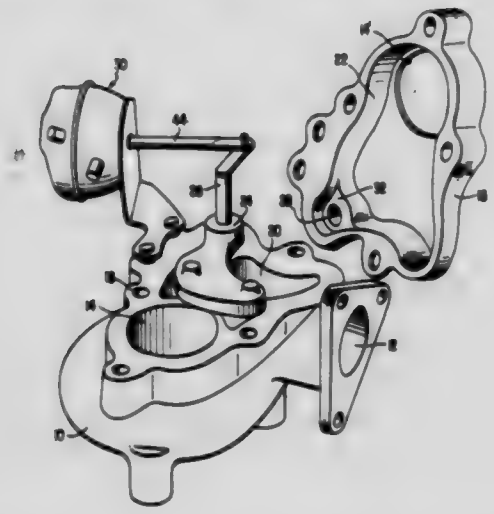
TURBOCHARGER EXHAUST GAS BY-PASS VALVE

Bruce R. Owen, Indianapolis, and R. Charles Sarle, Noblesville, both of Ind., assignors to Wallace Murray Corporation, New York, N.Y.

Filed Feb. 15, 1979, Ser. No. 12,364
Int. Cl.³ F01D *17/00*; F02B *37/00*; F16K *3/04*
U.S. Cl. 415—145 6 Claims

1. A turbocharger including a housing having an exhaust inlet and an exhaust gas outlet in the turbine section thereof, the improvement comprising, a by-pass system for diverting exhaust gases around the turbine section, said by-pass system including a by-pass port and passage and a valve within said housing for selectively closing said by-pass port against exhaust gas flow therethrough into said by-pass passage, said valve being in the form of a pivotally mounted valve plate, said

by-pass port opening through a face of said housing, and means mounting said valve plate for sliding movement parallel to said housing face and perpendicular to by-pass exhaust gas flow, whereby said valve plate position between fully opened and fully closed is infinitely variable, said means mounting said



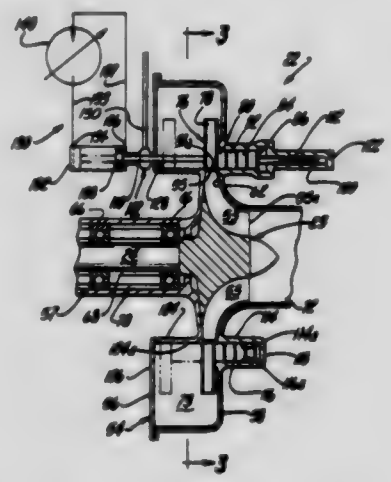
valve including a valve stem extending through an orifice in said housing to an external control, and said valve has a plate portion sealable against the interior of said turbine housing surrounding said orifice for closing said orifice in the closed position of said valve.

4,492,520

MULTI-STAGE VANE STATOR FOR RADIAL INFLOW TURBINE

William C. Marchand, 11339 Roxbury Avenue, Detroit, Mich. 48224

Filed May 10, 1982, Ser. No. 376,327
Int. Cl.³ F01D *1/08*
U.S. Cl. 415—150
7 Claims



1. In a turbine engine for driving a vehicle, said turbine engine consisting of a turbine housing having a free turbine wheel rotatably mounted therein, and inlet means for directing a gas radially inwardly towards said free turbine wheel, the improvement comprising:

multi-stage stator vane means, said multi-stage stator vane means having a plurality of stator stages, each respective stator stage of said plurality of stator stages having respective inlet vanes set at a predetermined respective angle of incidence;

mounting means mounting said multi-stage stator vane means to said inlet means for relative movement therebetween;

control means operatively connected to said stator means to selectively locate any of said plurality of stator stages over said inlet means, said control means further comprising shaft means movably interconnected with said turbine housing and power actuated piston cylinder means fixedly interconnected with said shaft means to position said plurality of stator stages relative to said inlet means; and

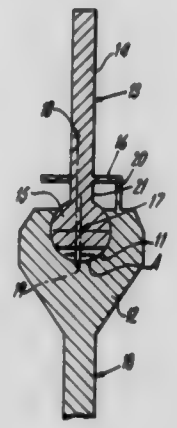
additional housing means provided between said power actuated piston cylinder means and said turbine housing, said additional housing means defining an annulus for the passage of fluid at a higher pressure than said gases in said turbine housing, to thereby provide a heat shield for said power actuated piston cylinder means.

4,492,521

SEALED AEROFOIL BLADE/DISC ASSEMBLY FOR A ROTOR

George Pask, and Clive E. Brett, both of Derby, England, assignors to Rolls-Royce Limited, London, England

Filed May 10, 1983, Ser. No. 493,268
Claims priority, application United Kingdom, Jan. 17, 1982, 8217518
Int. Cl.³ F01D *5/30*
U.S. Cl. 416—193 A
4 Claims



1. An aerofoil blade/disc assembly for a rotor of a compressor or turbine of a gas turbine engine comprising:

a rotor disc having an axis of rotation, said rotor disc including a circumferential channel opening to a periphery of the same, said circumferential channel having a part circular cross-sectional shape on at least a radially inwardly facing surface of the same;

an annular array of rotor blades mounted on said rotor disc, each blade of said array of rotor blades including an aerofoil cross-section portion and a root portion, said root portion having a part circular cross-sectional shape complimentary to and engaging said part circular cross-sectional shape of said circumferential channel to provide a limited degree of pivotal movement of said blade to said disc about a pivot axis, each said blade having a center of gravity offset relative to a radial plane perpendicular to said axis of rotation of said disc and extending through said pivot axis so that said blade pivots with respect to said disc upon rotation of said disc;

and means operative when said rotor disc is rotating to define a seal between said annular array of rotor blades and said rotor disc, said means including a circumferential radially extending feature provided on the periphery of said disc and a seal portion on each of said blades, said seal portion on each of said blades sealingly engaging with said feature when said disc is rotating and said blades have pivoted.

4,492,522

BLADE FOR A FLUID FLOW ENGINE AND METHOD FOR MANUFACTURING THE BLADE

Axel Rossmann, and Werner Huether, both of Karlsfeld, Fed. Rep. of Germany, assignors to MTU Motoren-und Turbinen-Union Muenchen GmbH, Munich, Fed. Rep. of Germany

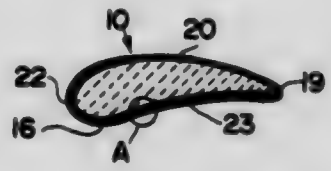
Filed Dec. 10, 1982, Ser. No. 448,706

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151413

Int. Cl.³ F01D 5/14

U.S. Cl. 416—241 R

11 Claims



1. A blade for a turbomachine, comprising a blade body of a dense ceramic material and a protective coating on at least certain surface portions of said blade body, said protective coating being selected from the group consisting of titanium nitride, titanium carbide and titanium carbon nitride, said protective coating having been applied by chemical vapor deposition (CVD) or physical vapor deposition (PVD), whereby said blade has an improved resistance to both corrosion and erosion as compared to said blade without said protective coating.

4,492,523

TOROIDAL INDUCTOR FOR A PRESSURE SENSOR IN A SUBMERSIBLE PUMP

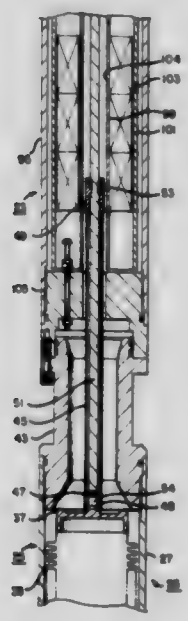
Dick L. Knox, Claremore, Okla., assignor to Hughes Tool Company, Houston, Tex.

Filed Feb. 10, 1984, Ser. No. 579,045

Int. Cl.³ F04B 49/02, 49/10, 35/04

U.S. Cl. 417—13

3 Claims



1. A submersible pump assembly, comprising in combination:

a pump;

an electrical motor located below the pump and having a drive shaft for rotating the pump, the motor being filled with lubricant;

a sensor housing carried by the motor below the motor;

at least one inductor located in the sensor housing and connected between a transducer for measuring a physical parameter and a winding of the motor, for shielding AC power from the transducer, the inductor having a toroidal configuration with an aperture therethrough, defining a longitudinal passage;

a pressure compensator carried by the motor below the motor and in communication with lubricant of the motor;

a bellows located in the pressure compensator housing, separating lubricant from well fluid, the bellows having an end and an axially expansible sidewall that allows the end to move between an upper position and a lower position to reduce pressure differential between lubricant and well fluid; and

retaining means for mechanically preventing the end of the bellows from moving to the lower position while lowering the pump assembly in the well, and for releasing the pressure compensator for free movement during operation of the motor, the retaining means including an elongated member that engages the end of the bellows and passes through the longitudinal passage of the inductor.

4,492,524

MULTIPLE PISTON PUMP WITH A CONSTANT DISCHARGE CAPACITY

Dieter Koch, Ettlingen, and Tonio Gianotti, Weinheim, both of Fed. Rep. of Germany, assignors to Bruker-Analytische Messtechnik GmbH, Rheinstetten-Forchheim, Fed. Rep. of Germany

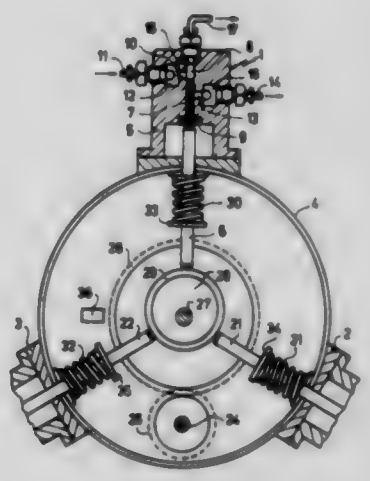
Filed Sep. 17, 1981, Ser. No. 303,057

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1980, 3035770

Int. Cl.³ F04B 49/06, 49/08

U.S. Cl. 417—18

19 Claims



1. A multiple piston pump with a constant discharge capacity for liquid chromotography,

said pump comprising at least three piston-cylinder units having their individual liquid discharge outlets connected to a common liquid discharge outlet,

a single electric stepping motor providing the motive power for operating all of said piston-cylinder units,

a single circular eccentric rotatable drive cam operable by said motor for operating all of said piston-cylinder units,

said circular eccentric rotatable drive cam having a rotary cycle in which said piston-cylinder units are operated in sequence with equal phase displacement intervals therebetween of 360° divided by the number of piston-cylinder units,

said circular eccentric drive cam affording a non-linear relationship between the rotary speed of said motor and the linear speed of each piston-cylinder unit during its pumping stroke,

a pressure transducer for producing an electrical signal corresponding to the pressure in said common discharge outlet,

said piston-cylinder units producing a combined liquid discharge tending to have pressure pulsations therein at said common liquid discharge outlet,

and an electronic control system connected between said pressure transducer and said stepping motor for regulating the instantaneous speed of said motor to maintain at least

approximately constant outlet discharge pressure and thereby to maintain at least approximately constant discharge capacity,

said electronic control system having fast response regulating means for rapidly changing the speed of said motor in response to outlet pressure pulsations during each cycle of said circular eccentric drive cam so as to minimize said pulsations and thereby compensate for the non-linear character of said drive cam so as to maintain the outlet pressure at least approximately constant during each cycle of said drive cam,

said fast response regulating means including a high-pass filter for receiving and passing the pulsations in the pressure signals from said pressure transducer while withholding any substantial transmission of long term changes in the pressure signals,

means for supplying a reference direct voltage,

a summing stage for receiving the pulsating signals from said high-pass filter and for superimposing said pulsating signals upon said reference direct voltage to produce combined output signals,

a threshold value discriminator connected to said summing stage for receiving said combined output signals,

pulse generating means connected to said stepping motor for producing pulses to operate said stepping motor at a speed corresponding to the frequency of said pulses,

said pulse generating means including switchable pulse frequency changing means for switching the pulse frequency between a higher value and a lower value,

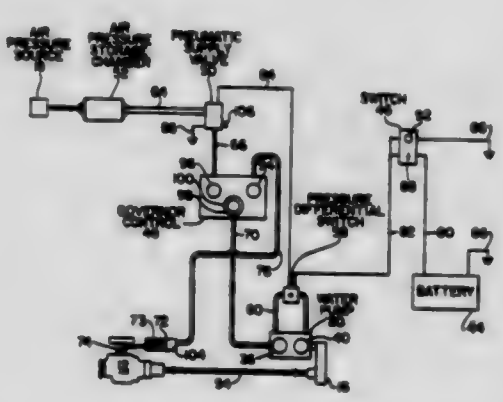
and electronic switching means connected between said threshold value discriminator and said switchable means for switching the pulse frequency between its two values to speed up and slow down the instantaneous speed of said stepping motor to minimize such output pressure pulsations.

4,492,525

PNEUMATIC FIRE PUMP PRESSURE CONTROLLER

Delford D. Bilyeu, Roanoke, Va., assignor to Grumman Emergency Products, Inc., Roanoke, Va.

Filed Feb. 18, 1983, Ser. No. 467,599
Int. Cl.³ F04B 49/00
U.S. Cl. 417—34 4 Claims



1. An electro-pneumatic fire pump pressure controller which controller comprises:

an air pressure supply means;

an electrical supply means;

a water supply means;

a pump means connected to said water supply means, said pump means having discharge means for delivery of water under pressure;

a powerplant means connected to said pump means to drive same, said powerplant means having a control means to regulate the powerplant means rpm and thereby the pump means rpm, said control means being biased towards an idle position to maintain a minimum powerplant means rpm when no flow is scheduled by said pump means, said control means being connected to said air pressure supply means;

modulating means interposed in the connection of said control means and said air supply means to operate the said control means with air pressure from said air pressure supply mean;

a differential pressure means connected between said water supply means and said discharge means, said differential pressure means including electrical circuit breaker means that is normally open when said water under pressure at said discharge means is below a predetermined pressure and closed when above said predetermined pressure;

a first switch means connected to said electrical supply means and said differential pressure means;

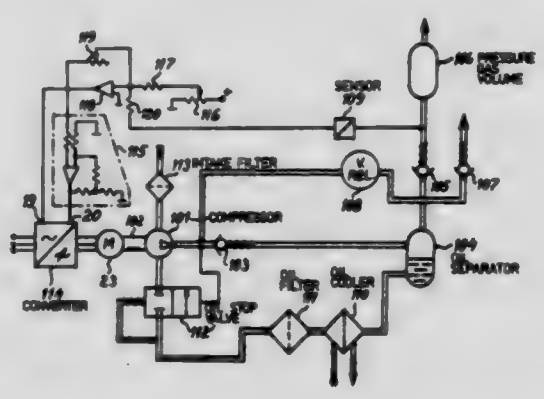
a second switch means connected to said differential pressure means, said second switch means having a solenoid valve means interposed with said air supply and said modulating means that will port said air supply means to said modulating means upon closure of the electrical circuit breaker of said differential pressure means for actuation of said control means and exhaust said air supply means from said control means when said electrical circuit breaker opens.

4,492,526

COMPRESSOR DRIVE SYSTEM

Carl S. M. Hartwig, Täby, Sweden, and Ludovicus J. van Nederkassel, Buggenhout, Belgium, assignors to Institut Cerac S.A., Ecublens, Switzerland

Filed Nov. 26, 1982, Ser. No. 444,827
Claims priority, application Switzerland, Dec. 18, 1981, 8098/81
Int. Cl.³ F04B 49/06
U.S. Cl. 417—45 3 Claims



1. A compressor drive system for controlling the gas pressure in a pressure gas volume connected to the compressor comprising:

a compressor,

a brushless alternating current motor for driving said compressor, and

pressure sensing means connected to said gas volume for sensing the gas pressure therein,

the improvement comprising said compressor being directly coupled to said motor for driving said compressor with the same speed as the motor,

a converter means for supplying said motor with a drive voltage of variable amplitude and frequency,

said pressure sensing means being connected to the converter to simultaneously change the amplitude and frequency of said drive voltage in a direction opposite to the direction of change of pressure of the pressure in said gas volume, and

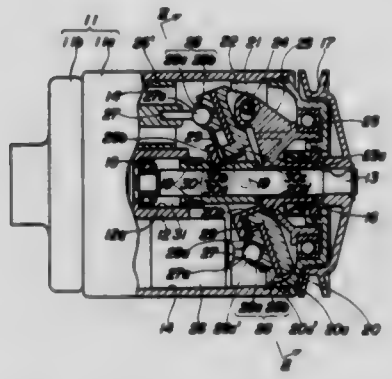
means for controlling the amplitude and frequency of said drive voltage so that the current at normal speed maximum load of the motor is never exceeded during motor start.

4,492,527

WOBBLE PLATE PISTON PUMP

James C. Swain, and David L. Thomas, both of Columbus, Ohio, assignors to Diesel Kiki Co., Ltd. (Japanese Corp.), Tokyo, Japan

Filed Feb. 17, 1983, Ser. No. 467,413
Int. Cl.³ F04B 1/26
U.S. Cl. 417—222 6 Claims



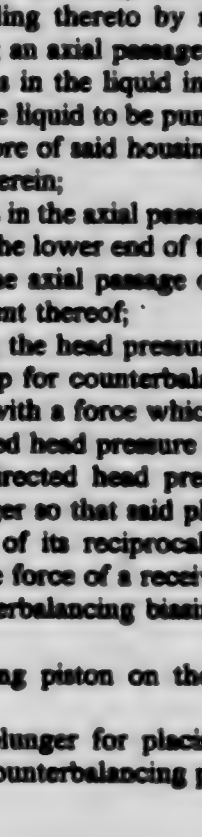
1. In a wobble plate piston pump including a housing a drive shaft rotatably mounted in said housing, a cylinder block fixedly disposed in said housing and formed therein with a plurality of cylinders circumferentially arranged around said drive shaft and extending substantially parallel to the axis of said drive shaft pistons received in said cylinders for reciprocating motions therein, piston rods secured integrally to said pistons, a wobble plate having a central through bore through which said drive shaft extends, said wobble plate being rotatable in unison with rotation of said drive shaft and tiltable relative to said drive shaft, slipper shoes each having a flanged portion disposed in slidable contact or close proximity with a side surface of said wobble plate and a trunk portion engaging a corresponding one of said piston rods, and means for holding said slipper shoes in slidable contact or close proximity with said wobble plate, the improvement comprising in said slipper shoe holding means: a first retainer member in the form of an annular plate and substantially flat over whole side surfaces thereof, said first retainer member having a first through bore formed in a central portion thereof, and a plurality of second through bores circumferentially arranged in the vicinity of an outer periphery thereof, each being slightly larger in diameter than said trunk portions of said slipper shoes, said first retainer member being loosely fitted at said first through bore on said drive shaft, said second through bores loosely receiving therethrough respective ones of said trunk portions of said slipper shoes; a second retainer member having an axially extending tubular portion loosely fitted through said first through bore in said first retainer member and unremovably fitted in said central through bore of said wobble plate, said tubular portion being smaller in diameter than said first through bore in said first retainer member to provide a radial space between said first and second retainer members, and a radially flanged portion formed integrally with said tubular portion and having an outer diameter substantially larger than that of said first through bore of said first retainer member but so small that said flanged portion of said second retainer member does not interfere with the sliding movement of said slipper shoes on said wobble plate, said flanged portion of said second retainer member being disposed to slide on an inner fringe portion of said first retainer member encircling said first through bore in a manner permitting radial and circumferential movements of said first retainer member in said radial space; and means for holding said second retainer member at a predetermined axial location relative to said wobble plate, said first retainer member being held at said inner fringe portion thereof in slidable contact with said flanged portion of said second retainer member by said second retainer member holding means so that said first retainer member is held in slidable contact or close proximity with said flanged portions of said slipper shoes to keep said flanged portions of said slipper shoes in slidable contact or close proximity with said sliding side surface of said wobble plate, whereby during rotation of said wobble plate, said first retainer member is movable in unison with the sliding movement of said slipper shoes, in directions radial and circumferential relative to said wobble plate and substantially parallel to said sliding side surface of said wobble plate.

4,492,528

PRESSURE BALANCED LIQUID ELEVATING MECHANISM

Arthur P. Bentley, P.O. Box 6791, Great Falls, Mont. 59406

Filed Apr. 6, 1983, Ser. No. 482,490
Int. Cl.³ F04F 7/00; F04B 35/02
U.S. Cl. 417—241 17 Claims



1. A liquid elevating mechanism for use with pumps of the type having a generator which produces cyclic pressure waves for transmission through a column of liquid to said mechanism for liquid elevating operation thereof, said liquid elevating mechanism comprising:

(a) a housing having a bore the upper end of which is for communication with the liquid column of the pump and having a liquid intake opening in the lower end thereof for communication with a liquid to be pumped;

(b) a plunger reciprocally movable in the bore of said housing for impingingly receiving the transmitted pressure waves and responding thereto by reciprocally moving, said plunger having an axial passage;

(c) check valve means in the liquid intake opening of said housing to allow the liquid to be pumped to flow into the lower end of the bore of said housing when said plunger moves upwardly therein;

(d) check valve means in the axial passage of said plunger to allow the liquid in the lower end of the bore of said housing to move into the axial passage of said plunger upon downward movement thereof;

(e) means for utilizing the head pressure force of the liquid column of the pump for counterbalancingly biasing said plunger upwardly with a force which is greater than the downwardly directed head pressure force but is less than the downwardly directed head pressure force plus the weight of the plunger so that said plunger is normally in the down position of its reciprocal stroke and will be moved up when the force of a received pressure wave is added to the counterbalancing biasing force, said means including,

I. a counterbalancing piston on the upper end of said plunger,

II. means in said plunger for placing the opposite end surfaces of said counterbalancing piston in communica-

tion with the head pressure force of the liquid column of the pump,

III. said counterbalancing piston having its downwardly facing end surface of larger surface area than the upwardly facing end surface theeof; and

(f) said plunger further including means for adjusting the weight thereof to compensate for different head pressure values of different lengths of the liquid column of the pump.

4,492,529

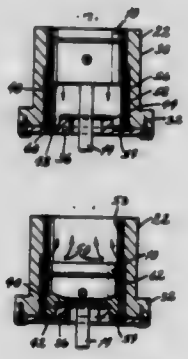
COMPRESSORS EFFICIENCY IMPROVEMENT

Robert B. Grisbrook, 594 Gederson La., Kirkwood, Mo. 63122

Filed Jun. 21, 1982, Ser. No. 390,385

Int. Cl.³ F04B *25/00, 39/10*

U.S. Cl. 417—242 8 Claims



1. A reciprocating compressor for use with a reciprocating compressor including a cylinder head, a cylinder and a skirt piston driven reciprocally therein by a crankshaft and connecting rod for compressing air or other gases by displacement within a space above said piston by alternate intake and compression strokes, an efficiency improvement device installed within the cylinder and defining an annular recess proximate the side walls of the cylinder below said piston, said recess being shaped complementarily to said piston skirt for providing a closely fitted relationship with, and being oriented relative to, said piston for receiving at least a portion of the skirt of said piston during its intake stroke for compressing of gas in said recess, said device being of flange-like configuration and including a flange portion extending laterally inwardly from the walls of said cylinder and carrying a central annular boss extending upward toward said piston for defining between said boss and the cylinder walls said annular recess, and means defining at least one passage between said recess and the space between said piston and cylinder head for causing gas compressed in said recess to be provided under pressure to said head space for increasing the initial charge of gas within said head space for compression by said piston during its compression stroke, thereby to increase the efficiency of the compressor said flange portion defining a central opening therein for said connecting rod, said boss including seal means for providing a sealing relationship between said boss and inner surfaces of said piston skirt for preventing gas in said recess from escaping around said boss as said skirt is received in said recess, said central opening having relatively larger diameter than corresponding dimensions of said connecting rod and whereby there is not provided a sealing relationship between said connecting rod and said device, and whereby there is no interference with movement of said connecting rod.

4,492,530

COMPRESSOR UNIT

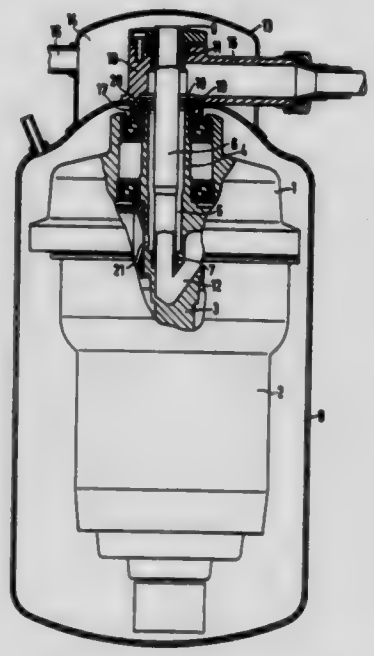
Siegfried Schäuwald, Bad Neustadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 18, 1982, Ser. No. 379,444

Claims priority, application Fed. Rep. of Germany, May 25, 1981, 3120730

Int. Cl.³ F04B *35/04*

U.S. Cl. 417—271 3 Claims



1. In a compressor unit comprising a housing, a radial piston compressor and a drive motor for the piston compressor, the piston compressor and the drive motor being disposed about and supported by a stationary shaft suspended in the unit housing, the improvement comprising the stationary shaft being hollow at its end adjacent the piston compressor and defining a cavity thereat, a flexible support member having one end protruding into said cavity connected to the shaft therein and another end fastened to the housing to flexibly couple the stationary shaft to the housing, the stationary shaft, and the piston compressor and the drive motor supported by the shaft, being arranged in the housing to swing freely therein upon flexing of the flexible support member.

4,492,531

APPARATUS FOR PRODUCING A CONTROLLED PULSED LIQUID FLOW

Kubota Kenji, Okayama; Fukunaga Kouji, Kurashiki; Kirita Yasuzo, Toyonaka, and Naito Hidemune, Kobe, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Apr. 21, 1983, Ser. No. 487,212

Claims priority, application Japan, Apr. 30, 1982, 57-74169

Int. Cl.³ F04B *49/00, 43/12;* A61M *1/03;* B01D *13/00*

U.S. Cl. 417—279 6 Claims

1. Apparatus for producing a controlled pulsed liquid flow comprising:

a roller pump for pumping a liquid;

a conduit coupled to the output of said pump for providing a liquid flow path;

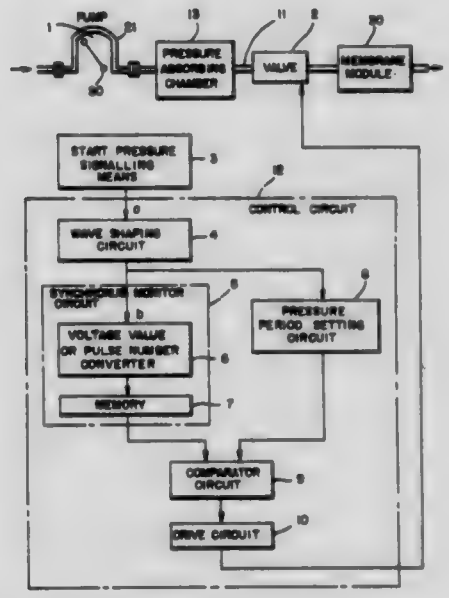
a normally open valve coupled to said flow path for closing the flow path in response to a close-valve signal;

start-pressure signalling means operatively associated with said pump for intermittently issuing a start-pressure signal;

synchronous monitor circuit means for generating a voltage value or pulse number representative of the period of said start-pressure signal;

pressure-period setting circuit means for generating a time varying signal in accordance with a desired pressure-period setting and in correlation with the period of said start-pressure signal; and

comparator circuit means coupled to said synchronous monitor circuit means and said pressure-period setting circuit means for comparing said time varying signal to the voltage value or pulse number generated by said synchronous



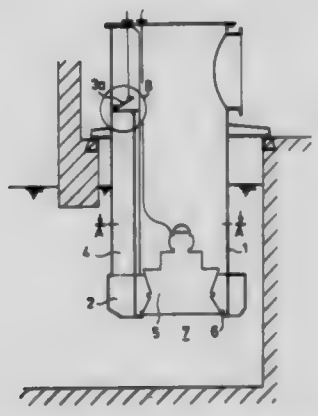
monitor circuit means, and producing a close-valve signal commencing with the issuance of said start-pressure signal and terminating when the value of said time varying signal concurs with said voltage value or pulse number.

4,492,532

SHAFT PIPE CONSTRUCTION FOR REGULATING LIQUID DELIVERY OF SUBMERSIBLE PUMPS

Janos Csonnieszky, and Istvan Jozsa, both of Budapest, Hungary, assignors to Ganz-Mavag Mozdony-Vagon-és Gépgyar, Hungary

Filed Jan. 8, 1982, Ser. No. 386,344
Claims priority, application Hungary, Jan. 19, 1981, 1820/81
Int. Cl.³ F04B *23/02*; F04D *5/00*
U.S. Cl. 417—360
5 Claims



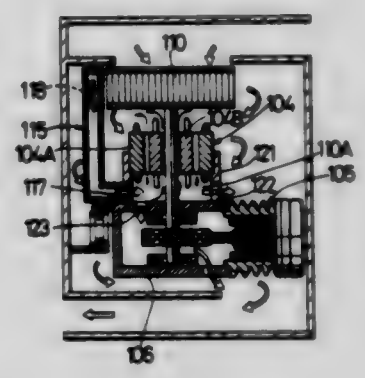
1. A submersible pump system for pumping liquids, comprising:
- a shaft tube having a lower inlet at a lower end thereof and adapted to have its lower inlet immersed in a liquid;
- a liquid rotating case connected at the lower end of said shaft tube, having an outlet adjacent said lower inlet of said tube and an upper inlet for receiving liquid;
- a submersible pump supported in said tube at the lower end of said tube, adjacent said lower inlet of said tube, said pump having an inlet adjacent said lower inlet of said tube for receiving liquid, and an upper outlet for discharging liquid into said tube;
- a vertical return passage connected between said rotating case upper inlet and a portion of said shaft tube above said pump outlet; and
- a regulating throttle disposed in said return passage for regulating a flow of liquid from said portion of said shaft tube to said rotating case.

4,492,533

AIR COMPRESSOR

Kazuo Tsuge, Yokohama, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Continuation of Ser. No. 272,266, Jun. 10, 1981,. This application May 9, 1984, Ser. No. 608,537
Claims priority, application Japan, Jun. 17, 1980, 55-85431[U]; Oct. 20, 1980, 55-149503; Dec. 18, 1980, 55-182564
Int. Cl.³ F04B *39/06*, *35/04*
U.S. Cl. 417—372
2 Claims



1. An air compressor, comprising:
- a compressor unit;
- a drive unit having a drive shaft for driving said compressor unit;
- a circular cylindrical sound insulating box having a longitudinal axis extending parallel to said drive shaft, said box having an air inlet and an outlet and encasing said compressor and drive units;
- a fan mounted on said drive shaft and positioned eccentrically from said axis of said sound insulating box and sucking air axially from said air inlet to supply cooling air to the interior of said sound insulating box from the outer periphery thereof;
- a duct mounted in said sound insulating box at a position where an outer periphery of said fan most closely approaches an inner peripheral wall of said sound insulating box;
- an inlet of said duct opening between the outer periphery of said fan and inner peripheral wall of said sound insulating box;
- an outlet of said duct opening to the interior of at least one of said drive unit and said compressor unit; and
- a chamber providing communication between said drive unit and compressor unit.

4,492,534

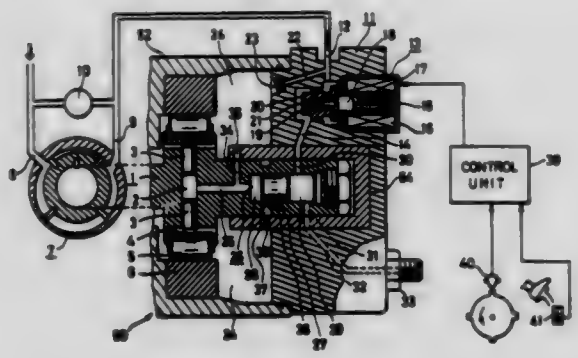
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINE

Masahiko Miyaki, Oobu; Akira Maeda, and Toshimi Matsumura, both of Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 4, 1983, Ser. No. 538,994
Claims priority, application Japan, Oct. 5, 1982, 57-175668
Int. Cl.³ F04B *35/02*, *19/02*; F02M *39/00*
U.S. Cl. 417—386
6 Claims

1. A fuel injection pump of a fuel injection system of the type arranged to control the amount of fuel injected into engine cylinders by using an electromagnetic valve, comprising:
- (a) a rotor arranged to rotate in synchronism with engine rotation, and having a radial bore and an axial bore communicating with each other, said rotor being rotatably mounted in said fuel injection pump;
- (b) an inner cam mechanism having a pair of plungers movably received in said radial bore of said rotor, said plungers being arranged to reciprocate as said rotor rotates to compress fuel between said plungers;
- (c) a shuttle axially movable within said axial bore of said rotor, defining first and second chambers within said axial bore;

(d) main fuel intake port means communicable with said first chamber for supplyag fuel thereto when said electromagnetic valve is open, said fuel in said first chamber being compressed when said shuttle moves in a direction from said second chamber toward said first chamber;
(e) a low pressure fuel reservoir for receiving fuel therein, wherein the fuel pressure is lower than that of the fuel in said main fuel intake port means;
(f) auxiliary fuel intake port means for establishing communication between said low pressure fuel reservoir and said



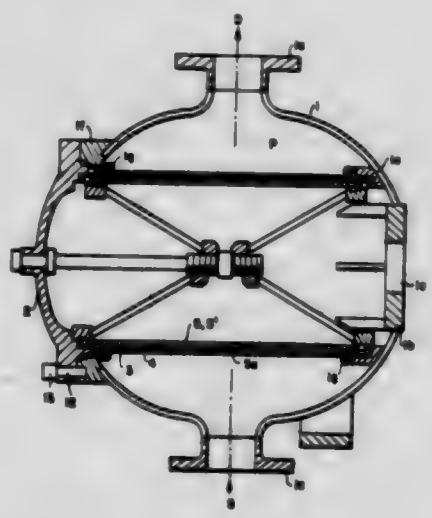
axial bore and said second chamber when said rotor assumes predetermined angles;
(g) a by-pass means communicable with said second chamber when said shuttle has been moved toward said first chamber with the fuel pressure within said second chamber being increased by the movement of said plungers, said by-pass communicating with said low pressure fuel reservoir; and
(h) fuel distribution passage means communicable with said first chamber for injecting pressured fuel into engine cylinders one after another.

4,492,535

DIAPHRAGM PUMP

Friedrich R. R. Stahlkopf, Büchen, Fed. Rep. of Germany, assignor to Otto Tuchenhagen GmbH & Co. KG, Büchen, Fed. Rep. of Germany

Continuation of Ser. No. 263,745, May 14, 1981, abandoned. This application Feb. 1, 1984, Ser. No. 575,490
Claims priority, application Fed. Rep. of Germany, May 31, 1980, 3020775
Int. Cl.³ F04B 43/08
U.S. Cl. 417—394 22 Claims



1. A hydraulically-actuated, reciprocating diaphragm pump comprising:
inlet means defining a suction opening for receiving fluid to be pumped;
a spherical housing connected to said inlet means for receiving in a pumping chamber defined therein the fluid to be pumped;
an elongated cylindrical, tubular, generally hose-shaped membrane located in the interior of said spherical housing, said membrane being pulsed by pulsating pressure from a pressure source to pump said fluid being pumped through the pumping chamber of said spherical housing by expansion and contraction of said member when pulsed, said membrane being vertically, horizontally, and axially symmetrically disposed within said spherical housing to define the pumping chamber at the exterior thereof and inside of the spherical housing, said pumping chamber being symmetrically located between an inner surface of said membrane and the inner surface of said spherical housing, even when said membrane is pulsed, said membrane being clamped to said housing only at its opposite ends within said housing so that, during the pressure stroke of said pressure source, the tubular membrane is symmetrically deformed at points remote from its both clamped ends so that the points of greater distension of said membrane are remote from adjacent points of the interior of said spherical housing;
a support pipe within said membrane located so that said membrane closely surrounds said support pipe to prevent deformation of said membrane inwardly during the suction stroke of said pressure source, thus to avoid compressive strain on said membrane; and
outlet means defining a discharge opening axially aligned with said suction opening and located opposite said suction opening on said spherical housing, said membrane comprising an inner cylindrical hose membrane and an outer cylindrical hose membrane provided about said support pipe, the outer membrane sheathing the inner membrane concentrically and without space between them, said pump being further characterized in that the inner and outer hose membranes at their rear ends are clamped together while the inner hose membrane at its frontal end is clamped in tight material contact between a rear acceptance ring and a cover at the outer side and a divided or radially stretchable ring at the inner side, a conical tension ring being axially movable toward the center of the spherical housing and arranged in a respective intermediate ring.

4,492,536

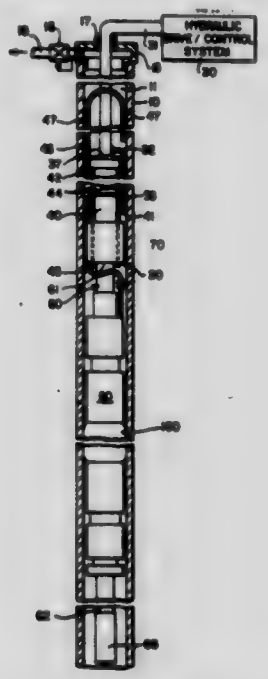
HYDRAULIC OIL WELL PUMPING UNIT

Thomas A. Gilbertson, 216 Sandringham, N., Moraga, Calif. 94556

Continuation of Ser. No. 271,592, Jun. 8, 1981, abandoned. This application Jul. 15, 1983, Ser. No. 513,948
Int. Cl.³ F04B 47/08
U.S. Cl. 417—401 14 Claims

1. An oil well pump unit adapted to be mounted within an oil producing zone of an oil well bore hole and comprising a pump barrel in the form of an elongated section of pipe; an elongated pump rod adapted to be received within and to traverse said pump barrel; an integral pump rod seal and check valve assembly mounted on top of said pump barrel and including means for receiving said pump rod in a sliding seal engagement to permit said pump rod to enter said pump barrel; said pump rod seal and check valve assembly further including a valve bypass channel extending between a fluid passageway above said check valve and said pump barrel; said pump rod having at least one flat edge surface formed at a bottom end thereof and being adapted to communicate with said valve bypass channel

when said pump rod is at the end of its upstroke so as to permit well fluid above said check valve to enter said pump barrel



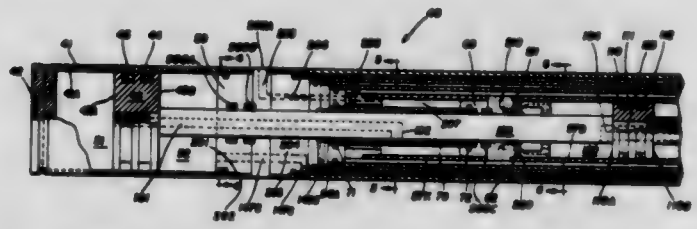
through said bypass and thereby to displace any gas within said pump barrel.

4,492,537

FLUID-OPERATED OIL OR WATER WELL PUMP

John B. Awerkamp, 720 N. 2nd St., Quincy, Ill. 62301

Filed Dec. 10, 1982, Ser. No. 448,719
Int. Cl.³ F04B 47/08
U.S. Cl. 417—404 21 Claims



1. A fluid operated pump adaptable for use in a vertical orientation comprising:

an outer housing including a closure mounted adjacent a first end thereof;

a rod operatively mounted for reciprocation within said outer housing and including first and second ends;

a first piston member affixed to a first end of said rod and being operatively disposed within said outer housing adjacent said closure and defining a first fluid chamber therebetween;

a first casing being positioned within said outer housing adjacent to said piston member and defining a second fluid chamber therebetween;

a second casing being positioned at a predetermined distance from said first casing and defining a chamber between said outer housing and said first and second casings;

a plurality of tubes having inner and outer surfaces being disposed within said chamber and defining a plurality of fluid passages between said inner and outer surfaces and said first and second casings;

a third and fourth casing being positioned at a predetermined distance within an inner tube of said plurality of tubes being disposed in said chamber and defining a working pump chamber therebetween;

a second piston member being affixed to said rod and being operatively disposed within said working pump chamber;

an inlet conduit being in communication with one of said plurality of fluid passages for supplying fluid to said working pump chamber;

an outlet conduit being in communication with one of said plurality of fluid passages for discharging fluid from said working pump chamber;

pressurized fluid being in communication with at least one of said plurality of fluid passages for selectively supplying fluid to said first and second fluid chambers to impart movement to said first piston member;

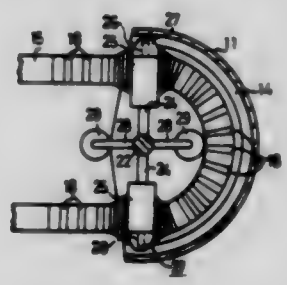
whereby selectively supplying pressurized fluid to said first and second fluid chambers imparts reciprocation to said first piston member which imparts reciprocation to said rod and said second piston member for supplying fluid to said working pump chamber and simultaneously discharging fluid therefrom.

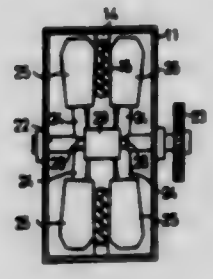
4,492,538

SQUEEZE PUMP

Noboru Iwata, Gifu, Japan, assignor to Daiichi Engineering Co., Ltd., Gifu, Japan

PCT No. PCT/JP81/00364, § 371 Date Aug. 2, 1982, § 102(e) Date Aug. 2, 1982, PCT Pub. No. WO82/02075, PCT Pub. Date Jun. 24, 1982
PCT Filed Dec. 3, 1981, Ser. No. 440,214
Claims priority, application Japan, Dec. 13, 1980, 55/176235; Mar. 25, 1981, 56/44490; Jul. 6, 1981, 56/105354; Jul. 23, 1981, 56/116270
Int. Cl.³ F04B 43/12, 45/08
U.S. Cl. 417—477 3 Claims





1. A squeeze pump comprising

a semi-circular casing,

a resilient tube situated along the inside of the semi-circular casing so that the direction of the tube is changed along the semi-circular portion of the casing, said tube including a plurality of grooves on the outer periphery so that the resilient tube is bent easily when pressure is applied thereto, material to be transferred passing through the resilient tube,

a rotary arbor rotationally situated in the casing, said arbor being disposed equidistantly away from the curved portion of the resilient tube and adapted to be rotated by power means,

at least one pair of means for pressing the resilient tube connected to the arbor, each pressing means including a support shaft extending outwardly from the arbor, and a presser roll rotationally connected to the support shaft and having a main body with a tapered head, said main body being frusto-conical with the diameter increasing towards the outer end thereof, the diameter D of the presser roll at the radially outer point thereof clamping the radially outer portion of the tube and the diameter d of

the presser roll at the radially inner point clamping the radially inner portion of the tube being defined by $D=2R/n$, $d=2r/n$, wherein R, r denote the distances from the axis of the rotary arbor to said outer and inner points respectively, and n denotes the number of revolutions that the presser roll may rotate about its own axis without slipping when the rotary arbor performs one complete rotation, two pressing means facing each other so the innermost tangential planes on the main bodies facing each other are parallel and are spaced apart at a distance about twice as great as the thickness of the wall of the resilient tube, said pressing means, when the rotary arbor is rotated, at first nipping the tube by means of the tapered heads and then pressing the tube completely by means of the main bodies, and

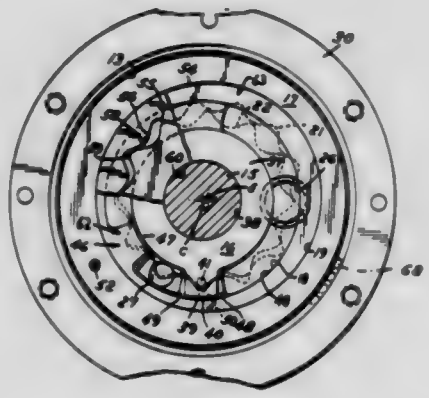
at least one auxiliary support shaft connected to the arbor, said auxiliary support shaft having a restoration roll rotationally connected thereto, said restoration roll being situated adjacent to the resilient tube so that after the tube is pressed by the presser rolls, the tube is urged by the restoration roll to return to its undistorted configuration.

4,492,539

VARIABLE DISPLACEMENT GEROTOR PUMP

Victor J. Specht, 197 S. Saginaw St., Pontiac, Mich. 48058

Continuation-in-part of Ser. No. 250,341, Apr. 2, 1981, Pat. No. 4,413,960. This application Jan. 21, 1983, Ser. No. 459,957
Int. Cl.³ F04C 2/10, 15/04
U.S. Cl. 418—19
20 Claims



1. In a variable displacement gerotor pump comprising:

a housing having a bore and a cover at one end;

a fluid inlet port and a fluid outlet port opening into the bore of the housing;

a commutator member having an annular portion with a first crossover element extending radially outwardly from the annular portion, said commutator member with said first crossover element being located between the fluid inlet port on one side and the fluid outlet port on an opposite side;

a variator member in said housing having a first inner surface centered relative to said bore and having a second crossover element extending radially inwardly from the first inner surface, and a second inner surface axially adjacent said first inner surface and being eccentric relative to the bore with the central axis of the second inner surface being offset from the central axis of the bore away from said second crossover element;

means for fixing one of said members to said housing;

said first crossover element engaging said first inner surface of the variator member and the second crossover element engaging said annular portion of the commutator member to separate the fluid inlet and outlet ports;

control means for arcuately shifting and thereby moving the other of said members from a maximum flow position to a minimum flow position;

a gerotor adapted to nest within the second inner surface of said variator member; and

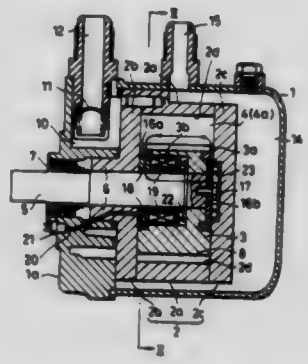
a drive shaft secured to the gerotor and being effective to rotate the gerotor for drawing a fluid through the fluid inlet port on said one side of the first crossover element and discharging said fluid through the fluid outlet port on said opposite side of the first crossover element whereby displacement of said pump is varied by shifting and thereby moving the other of said members between the maximum and minimum flow positions.

4,492,540

VARIABLE-DISPLACEMENT VANE COMPRESSOR WITH ONE OR MORE FERROMAGNETIC VANES

Katsuichi Yamamoto, Saitama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Jun. 3, 1983, Ser. No. 500,624
Claims priority, application Japan, Jun. 14, 1982, 57-101775
Int. Cl.³ F04C 18/00, 29/10
U.S. Cl. 418—23
4 Claims



1. A variable-displacement vane compressor comprising:

a pump housing having an inner peripheral camming surface, said pump housing having a cam ring defining said inner peripheral camming surface, and a pair of side blocks joined to axial ends of said cam ring, said cam ring and said side blocks being made of a non-magnetic material;

a drive shaft rotatably journalled in said pump housing, said drive shaft being made of a ferromagnetic material;

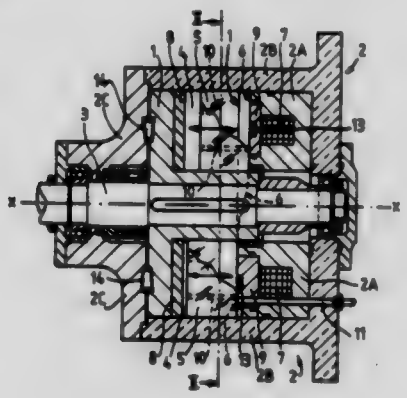
a cylindrical rotor mounted on said drive shaft and disposed in said pump housing, said cylindrical rotor being made of a non-magnetic material, said pump housing and said cylindrical rotor defining at least one pump working chamber therebetween, said cylindrical rotor having a plurality of axial slits spaced circumferentially and a plurality of vanes movably fitted in respective ones of said axial slits and having radially outward ends slidable against said inner peripheral camming surface in response to rotation of said cylindrical rotor for compressing a fluid in a variable-volume chamber in said pump working chamber which is defined by adjacent ones of said vanes, said inner peripheral camming surface and said cylindrical rotor, said plurality of vanes being divided into a first group made of a ferromagnetic material and a second group made of a non-magnetic material, and said cylindrical rotor having a recess coaxial with said drive shaft; and

an electromagnetic coil accommodated in said recess of said cylindrical rotor in a stationary manner and disposed around said drive shaft, said electromagnetic coil being controllably energizable and de-energizable for maintaining said first group of said vanes in and out of sliding contact with said inner peripheral camming surface, whereby the volume of the compressed fluid can be discharged in a variable volume from said pump working chamber.

4,492,541
ROTARY ELECTROHYDRAULIC DEVICE WITH AXIALLY SLIDING VANES

José Mallen-Herrero, Paris; Daniel Leroy, Limay; Urs Zimmermann, Le Chesnay, and Patrice Charlat, Mantes, all of France, assignors to Compagnie de Construction Mecanique Sulzer, Paris

Continuation of Ser. No. 201,935, Oct. 29, 1980, abandoned. This application Feb. 6, 1984, Ser. No. 576,798
Claims priority, application France, Oct. 30, 1979, 79 26873; Jan. 24, 1980, 80 01502
Int. Cl.³ F03C 2/00; F04C 2/00, 15/04
U.S. Cl. 418—23 2 Claims



1. A rotary electrohydraulic device of the volumetrical pump type comprising

a stator and a rotor,

axially sliding vanes of magnetizable material in said rotor,

said stator including

a continuous stator bottom surface of a constant width with said vanes bearing constantly and totally on said continuous bottom surface,

an amagnetic stator member,

a yoke member of magnetizable material in said amagnetic stator member,

electromagnetic means located behind said continuous stator bottom surface in said yoke member to control said vanes to enable said vanes to rest on said continuous stator bottom surface during rotation of said rotor, and

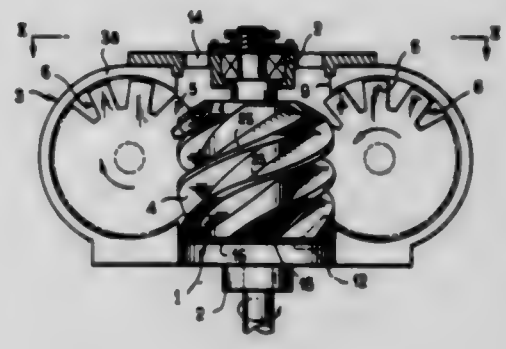
auxiliary permanent magnet means located beneath said continuous stator bottom surface to assist in maintaining said vanes suitably applied at any moment against said surface.

4,492,542
GLOBAL WORM MACHINE WITH SEIZURE-PREVENTING CELLS

Bernard Zimmern, 27 rue Delabordère, 92200 Neuilly-sur-Seine, France

Continuation-in-part of Ser. No. 381,566, May 24, 1982, Pat. No. 4,470,777. This application Dec. 9, 1982, Ser. No. 448,073
Int. Cl.³ F04C 18/12, 29/00
U.S. Cl. 418—46 3 Claims

1. A volumetric machine for compressing, pumping or expanding a fluid, comprising a casing, a screw having screw threads defining crests and grooves, said screw being rotatable in said casing on an axis of rotation, said casing and the crests of said screw threads carrying two cooperating surfaces for establishing between said screw and said casing a substantially fluid-tight relationship as a result of the mutual proximity of said cooperating surfaces, at least one pinion-wheel which is disposed in a passageway within the casing and the teeth of which are adapted to engage with the screw grooves, at least one low-pressure port located at one end of the screw and at least one high-pressure port located at the other end of the screw and separated from the pinion-wheel passageway by a casing zone of predetermined width, wherein at least part of one of the two cooperating surfaces respectively of the casing and of the screw comprises lands defining continuity of said one surface, but being discontinued along any circle centered on the axis of the screw and wherein said lands separate cells from each other, the periphery of each cell being capable of intersection simultaneously by at most only one of the two edges of any of said thread crests, the cells being arranged in

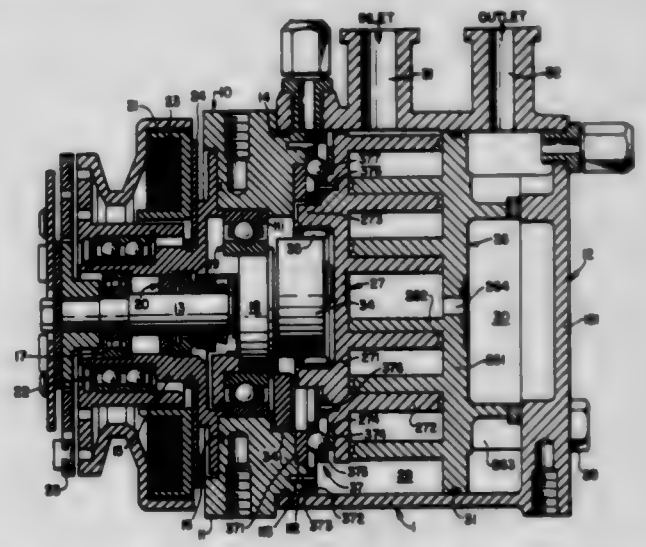


rows separated from each other by lands forming an angle with a plane perpendicular to the axis of the screw, and some at least one the lands being arranged in at least two groups of parallel rows, the rows of one group intersecting with the rows of the other group, the rows of both groups forming an angle with a plane perpendicular to the axis of the screw.

4,492,543
ORBITING MEMBER FLUID DISPLACEMENT APPARATUS WITH ROTATION PREVENTING MECHANISM

Takayuki Iimori; Kiyoshi Terauchi, both of Isesaki, and Seiichi Sakamoto, Gunma, all of Japan, assignors to Sanden Corporation, Gunma, Japan

Filed Mar. 9, 1982, Ser. No. 356,647
Claims priority, application Japan, Mar. 9, 1981, 56-33644
Int. Cl.³ F01C 1/02, 21/02; F16D 3/16; F16C 19/16
U.S. Cl. 418—55 7 Claims



1. In an orbiting member fluid displacement apparatus including a housing, a fixed member attached to or integral with said housing, an orbiting member having an end plate from which an orbiting fluid displacement member extends, said fixed member and orbiting fluid displacement member interfitting at a radial offset to make a line contact to separate a fluid outlet from a fluid inlet and a driving mechanism including a rotatable drive shaft connected to said orbiting member to drive said orbiting member in an orbital motion, rotation preventing/thrust bearing means connected to said orbiting member for preventing the rotation of said orbiting member and for carrying axial thrust load from said orbital member during orbital motion so that the line contact moves toward a discharge opening, said rotation preventing/thrust bearing means being comprised of a discrete orbital portion, a discrete fixed

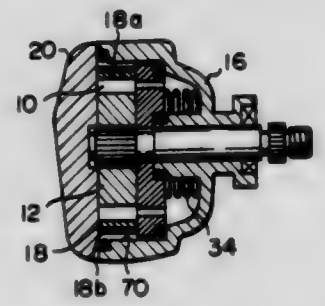
portion and bearing elements coupled between said portions, a center line extending through the center of said bearing elements, said orbital portion including an orbital annular race and an orbital ring, said orbital annular race being placed within an annular groove formed in said end plate on an opposite side from which said orbiting fluid displacement member extends, said annular groove in said end plate having an axial end surface spaced from the center line, said orbital ring being attached to said end plate to cover said orbital race, said orbital ring being in contact with a contact surface of said end plate spaced from the center line, the spacing between the center line and said contact surface being less than the spacing between the center line and said axial end surface, said orbital ring having a plurality of first pockets extending axially toward said orbital race, said fixed portion including a fixed annular race and a fixed ring, said fixed annular race being placed within an annular groove formed in said housing, said annular groove in said housing having an axial end surface spaced from the center line, said fixed ring being attached to said housing to cover said fixed race and facing said orbital ring, said fixed ring being in contact with a contact surface of said housing spaced from the center line, the spacing between the center line and said last-mentioned contact surface being less than the spacing between the center line and said last-mentioned axial end surface, said fixed ring having a plurality of second pockets extending axially toward said fixed race, said bearing elements each being carried within a generally aligned pair of said first and second pockets and contacting said orbital and fixed races to prevent the rotation of said orbiting member by said bearing elements interacting with said orbital and fixed rings and to carry the axial thrust load from said orbiting member on said fixed race through said bearing elements.

4,492,545

CAM RING FOR VANE PUMP

Norihiro Mochizuki, Isuyama, and Hiroyuki Hashizume, Kani, both of Japan, assignors to Kayaba Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 1, 1982, Ser. No. 364,357
Claims priority, application Japan, Apr. 6, 1981, 56-49270
Int. Cl.³ F04C 2/00, 15/00
U.S. Cl. 418—149 19 Claims



1. A cam ring for a vane pump for a power steering system of a motor vehicle, the vane pump having a rotor which carries a plurality of vanes therewith for cooperation with a contoured inner wall of the cam ring, the cam ring comprising:

an inner ring member having two side walls and a contoured inner wall which defines a noncircular contoured bore for rotatably accommodating the rotor therein, said inner ring member having a passageway therein extending from one of said two side walls to the other of said two side walls and through which liquid to be pumped flows, said passageway being located radially outwardly of said contoured inner wall, said inner ring member being made of a sintered alloy material which is highly resistive to wear and provides for good lubrication;

an outer ring member receiving the inner ring member therein, said outer ring member being made of a second material other than sintered alloy, said second material having the property of being non-infiltratable by the working fluid, said outer ring member having a recess extending radially outwardly of said passageway, and

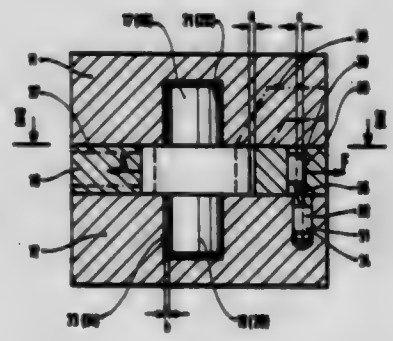
an oil seal means in said recess, said oil seal means being disposed radially outwardly of said passageway, said oil seal means preventing the working fluid from leaking between said inner and outer ring members.

4,492,544

GEAR MACHINE WITH DISPLACEABLE CENTRAL HOUSING PART

Günter Wolff, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 1, 1982, Ser. No. 344,777
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112470
Int. Cl.³ F04C 27/00
U.S. Cl. 418—107 10 Claims



1. A gear machine, comprising a housing having a receiving recess and a sealing region; two gear members engaging with one another and arranged so that after mounting of the machine said gear members penetrate in a material removing manner into said sealing region of said housing for sealing purposes; and spring means for urging said gear members and said sealing region of said housing to contact with one another prior to a material removal from said housing, said housing having a plurality of housing parts which together form said housing and include one housing part defined by two intersecting bores completely surrounding said gear members, said spring means being arranged to displace said one housing part toward and against said gear members.

4,492,546

ROTOR TOOTH FORM FOR A SCREW ROTOR MACHINE

Katsuhiko Kawye; Hidetomo Mori; Mitsuru Fujiwara, and Tetsuo Matsunaga, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 25, 1982, Ser. No. 436,371
Claims priority, application Japan, Mar. 27, 1981, 56-43904; Apr. 24, 1981, 56-61182
Int. Cl.³ F01C 1/16, 1/24
U.S. Cl. 418—201 7 Claims

1. Rotor tooth forms for a screw rotor of a rotor machine comprising a female rotor and a male rotor rotating about two axes parallel to each other, said female rotor having a rotor tooth form including a flank of a surface of advance comprising a first flank of the surface of advance formed by a second order curve, and a second flank of the surface of advance formed by an arc of a radius R_1 having a center thereof inside a pitch circle of the female rotor, and a flank of a surface of retrocession comprising a first flank of the surface of retrocession generated by a forward end portion of a lobe on the male rotor formed by an arc of a radius R_4 having a center thereof on a line drawn from a pitch point at an angle ϕ with respect to a straight line connecting the two axes together, and a second flank of the surface of retrocession formed by a circular arc of a radius R_3 smaller than the radius R_1 having a center

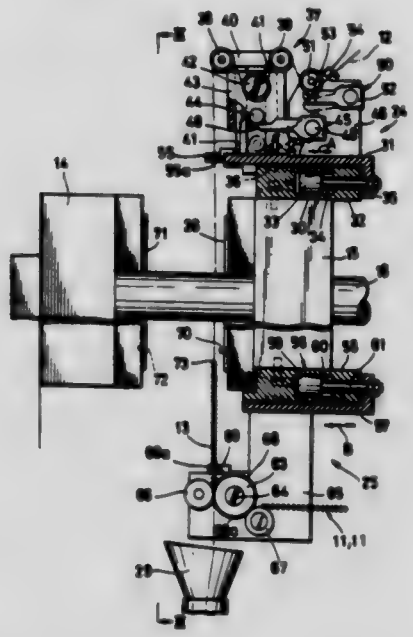
thereof inside the pitch circle of the female rotor, the rotor tooth form of the male rotor being essentially formed by generating loci of the flank of the surface of advance of the female rotor and the flank of the surface of retrocession thereof.

4,492,547

APPARATUS FOR MANUFACTURING A CONTINUOUS SLIDE FASTENER STRINGER

Akira Nogai, Kurobe, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Nov. 18, 1983, Ser. No. 553,249
Claims priority, application Japan, Nov. 19, 1982, 57-203280
Int. Cl.³ B29C 5/00; B29D 3/00, 31/00
U.S. Cl. 425—111 6 Claims



1. An apparatus for manufacturing a continuous slide fastener stringer including a continuous stringer tape and a row of injection-molded coupling elements secured to the stringer tape along a longitudinal edge thereof, said apparatus comprising:

(a) a frame;

(b) a pair of fixed and movable mold members supported on said frame and defining a series of mold cavities, said movable mold member being reciprocably movable between an advanced position in which said mold members are fully closed to hold one of successive part of the stringer tape, and a retracted position in which said mold members are fully opened for the passage therethrough of the stringer tape, said mold members having a pair of mating mold surfaces, respectively,

(c) a feeler disposed on said movable mold member adjacent to a trailing end of said mold cavities and projecting from the mold surface of said movable mold member toward said mold surface of said fixed mold member for detecting a trailing end of the injection-molded coupling elements;

(d) means disposed upstream and downstream of said mold members for intermittently advancing the stringer tape through said mold members;

(e) a pair of first and second tape shifters mounted on said movable mold member respectively upstream and downstream of said movable mold member and movable, in timed relation to said stringer-tape advancing means, with respect to said movable mold member to move said one part of the stringer tape between a first position in which said one part of the stringer tape lies flatwise on said mold surface of said movable mold member and said trailing end of the injection-molded coupling elements is engageable with said feeler, and a second position in which said one part of the stringer tape is spaced away from the last-mentioned mold surface and is held out of interference with said feeler; and

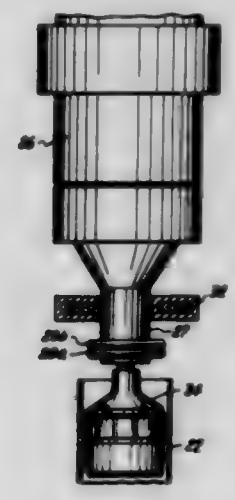
(f) said stringer-tape advancing means comprising a pair of drive and pinch rolls rotatably mounted on said second tape shifter, said drive roll being drivable to rotate in opposite directions, a braking device mounted on said first tape shifter for applying a braking force to said stringer tape, a tension roll vertically movably supported on said first tape shifter downstream of said braking device and carried on the stringer tape extending between said braking device and said drive and pinch rollers, and a roll holder mounted on said first tape shifter for preventing the downward movement of said tension roll.

4,492,548

MACHINERY FOR MOLDING HEADPIECE FOR COLLAPSIBLE TUBE INCLUDING A CHILLED WIPER

Warren N. Hubert, Decanville, Tex., assignor to RJR Archer, Inc., Winston-Salem, N.C.

Continuation-in-part of Ser. No. 121,827, Feb. 15, 1980, abandoned, which is a continuation-in-part of Ser. No. 72,104, Sep. 4, 1979, abandoned. This application Dec. 1, 1981, Ser. No. 326,325
Int. Cl.³ B29F 3/08
U.S. Cl. 425—113 5 Claims



1. In a machine for molding a plastic head onto a cylindrical body, the improvement in an extruder for extruding the plastic material that is to be formed into the head comprising:

a nozzle having outlet ports, the plastic extruded from said ports positioning itself on said nozzle,

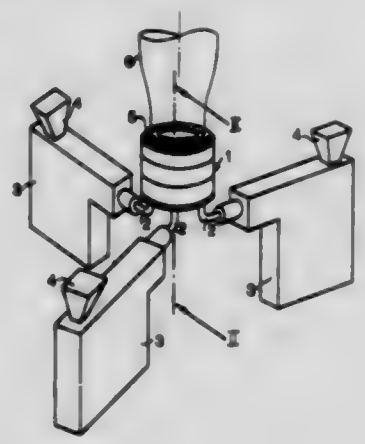
a chilled wiper member movable along said nozzle between a retracted position on one side of said ports and a protracted position at the outer end of said nozzle on the other side of said ports, said wiper when moving from said retracted position to said protracted position wiping off whatever plastic material has been extruded through said ports.

4,492,549

COEXTRUSION DIE

Ole-Benzt Rasmussen, Mundschipfweg, Walchwil/Zug CH-6318, Switzerland, and Borge Jensen, Virum, Denmark, assignors to Ole-Benzt Rasmussen Rasmussen, Walchwil/Zug, Switzerland

Division of Ser. No. 314,070 filed as PCT DK 81/00023, Feb. 27, 1981, published as WO 81/02406, Sep. 3, 1981 §102(e) date Oct. 20, 1981, Pat. No. 4,403,934.
This application Mar. 30, 1983, Ser. No. 480,311
Claims priority, application Denmark, Feb. 29, 1980, 891/80
The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.
Int. Cl.³ B29F 3/04
U.S. Cl. 425—131.1 10 Claims



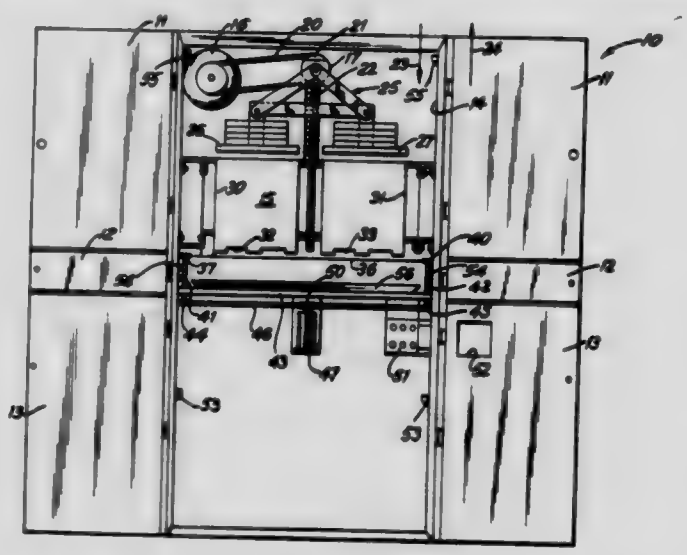
1. An extrusion die for the coextrusion of plural plastic materials into the form of a tubular film, said die comprising: (A) means for separately supplying at least two extrudable plastic materials in a fluid state; (B) a material distribution section comprising an array of annular elements providing a plurality of pairs of mutually contacting surfaces, at least one of said surfaces of each pair being recessed to define a labyrinthine distribution channel system for each such material, each said system having an inlet opening connected to one of said supply means and dividing into generally oppositely directed peripherally extending passages terminating in axially extending connecting passages which in turn divide into generally oppositely directed peripherally extending passages terminating in axially extending connecting passages which in turn divide into oppositely peripherally extending passages terminating in axially connecting passages, the number of said passage divisions being sufficient to provide for each extrudable material an array of at least eight peripherally spaced apart connecting passages opening generally axially through an end wall of said distribution section, the plural distribution channel systems being arranged in radially displaced relation at different radial distances from the center axis of the extrusion die; (C) an extrusion die section having one end wall contacting said distribution section end wall and comprising a plurality of concentric generally annular elements including generally spaced parallel concentric surfaces adjacent pairs of which define at least one axially elongated generally annular collecting chamber in communication with the open ends of the arrays of said connecting passages from said distribution sections, at least one of said annular elements defining said collecting chamber being mounted for rotation about its axis relative to said material distribution section and relative to at least the other of said annular elements defining said chamber, a common continuous annular extrusion orifice opening through the opposite end wall of said die section and connecting with the downsteam end of each such annular collecting chamber; (D) mechanical engagement means uniting the annular elements of said distribution and extrusion die sections, respectively, and maintaining said sections together and at least one of said annular sections free for said relative rotation with said end faces in contact; and (E) means for rotating said at least one rotatably mounted annular element of said die section about its axis relative to said distribution section and relative to said at least one other annular element.

4,492,550

EXTRUSION APPARATUS

Morris M. Levine, Scarsdale, N.Y., assignor to CIC Int'l. Corp., New York, N.Y.

Filed Dec. 5, 1983, Ser. No. 558,289
Int. Cl.³ A21C 3/04, 5/02, 11/18
U.S. Cl. 425—142 4 Claims



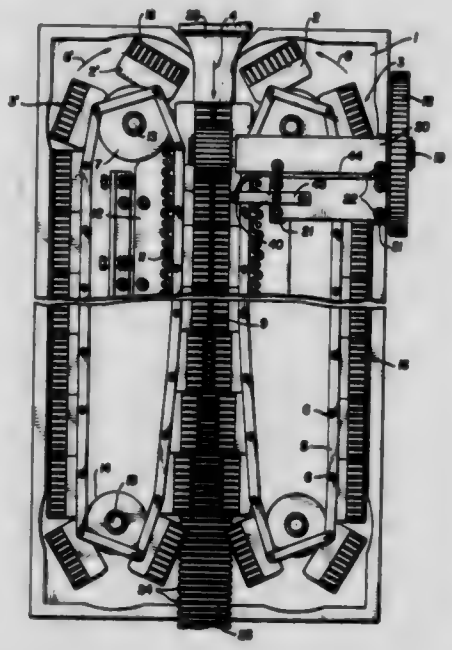
1. A dough extrusion apparatus comprising, a pair of hoppers, individual platens within each of said hoppers for movement therethrough, an extrusion die forming one side of each of said hoppers, a cutting wire space from said extrusion die, a pair of rotatably and axially movable spindles supporting said wire therebetween, a motor for driving said platens, a motor for driving said spindles a cabinet for enclosing the extrusion apparatus, at least one door on said cabinet for providing access to the extrusion apparatus, and safety interlock switch means for responding to said cabinet door by deenergizing said platen and cutting wire motors.

4,492,551

APPARATUS FOR THE PRODUCTION OF PLASTIC PIPES WITH TRANSVERSE GROOVES

Wilhelm Hegler, Goethestrasse 2, D-8730 Bad Kissingen, and Ralph-Peter Hegler, Bad Kissingen, both of Fed. Rep. of Germany, assignors to Wilhelm Hegler, Bad Kissingen, Fed. Rep. of Germany

Filed May 10, 1982, Ser. No. 376,737
Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3120480
Int. Cl.³ B29C 17/07
U.S. Cl. 425—144 2 Claims



1. In apparatus for the production of plastic pipes with

transverse grooves, in which half-shells each provided with a mold recess, are arranged on a machine bed and driven in a cycle so that respective pairs thereof complete a mold on a molding path, an injection head of an extruder being located at the start of the molding path, and furthermore the half-shells being each provided with vacuum channels communicating with the respective mold recess, said channels joining into vacuum connections formed in the machine bed in the molding path, and the half-shells being provided with cooling channels which join into cooling water inlets and outlets formed in the machine bed in the molding path, the improvement comprising:

said cooling channels and said vacuum channels being completely separated from each other in the respective half shells, said cooling channels joining with cooling water return channels provided separately in the machine bed from the vacuum connections, said cooling water return channels being likewise subjectable to vacuum, and

means for automatically regulating the temperature of said half-shells including at least one means for sensing the temperature of a half-shell on the molding path and means for governing the quantity of cooling water per unit time flowing to said cooling water inlets,

said regulating means actuating said governing means to control the quantity of flowing cooling water when said sensed temperature exceeds a predetermined temperature,

the temperature of the half-shell being governed only by the quantity of flowing cooling water and maintained at a constant value during the molding operation,

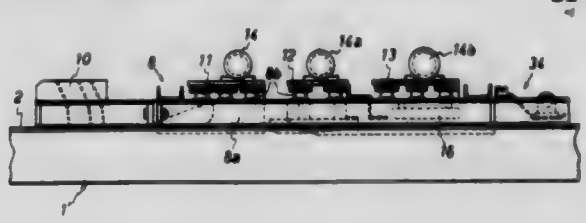
said temperature sensing means contacting a smooth external surface of said mold half-shell on the molding path by means of a shoe.

4,492,552

APPARATUS FOR SLIDE FORMING OF PRESTRESSED CONCRETE

Yoshihiko Murakami, Tsukushino, and Noboru Ohta, Fukuoka, both of Japan, assignors to Fuji P.S. Concrete Co., Ltd., Fukuoka, Japan

Filed Apr. 30, 1982, Ser. No. 373,800
Claims priority, application Japan, May 1, 1981, 56-65188; May 6, 1981, 56-66893; May 21, 1981, 56-75638
Int. Cl.³ B28B 7/02
U.S. Cl. 425—218 11 Claims



9. Apparatus for slide forming a concrete product containing one or more ribs extending in the longitudinal direction of said product, comprising:

an elongated lower mold;

an upper frame member slideably disposed upon said lower mold;

first means disposed upon the forward end of said upper frame member for regulating the height of said concrete disposed atop said lower mold by removing excess concrete from said lower mold, and for preliminarily preshaping said concrete disposed upon said lower mold toward a predetermined configuration of said concrete product containing at least one longitudinally extending rib portion as will finally be determined by means of an upper mold of said apparatus, said first means including first vibration-inducing means for imparting requisite activity within said concrete disposed upon said lower mold so as to facilitate the movement of said concrete material disposed upon said lower mold and thereby achieve said height regulation and pre-shaping of said concrete;

second means, disposed rearwardly of said first means upon said upper frame member, including second vibration-inducing means, for vibrationally compacting and densifying said concrete disposed atop said lower mold whereby said concrete will tend to fill said upper and lower mold portions of said apparatus with a predetermined degree of densification;

third means, including said upper mold for cooperating with said lower mold in forming said concrete product to said predetermined configuration, disposed rearwardly of said second means upon said upper frame member for finally shaping said concrete product, including said at least one rib portion, so as to achieve said predetermined configuration, and further including third vibration-inducing means for achieving said finally shaped concrete product with a requisite degree of densification; each of said first, second, and third means being secured to said upper frame member independently of said other two means; and

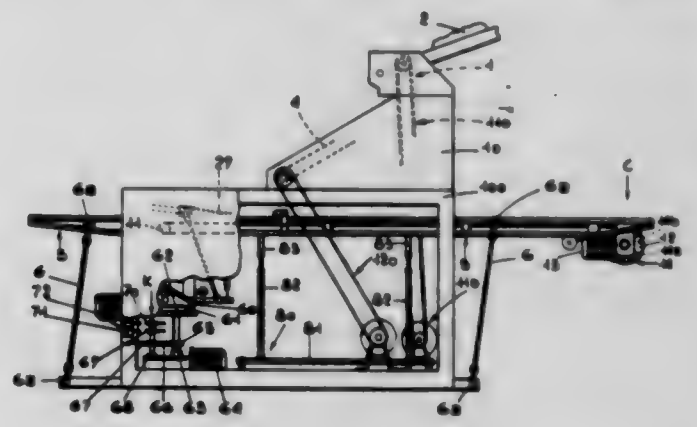
shock absorbing means interposed between each of said first, second, and third means and said upper frame member for isolating each of said first, second, and third means from each other and said upper frame member whereby the vibrations induced within said concrete product by any one of said first, second, and third vibration-inducing means will be absorbed by said shock-absorbing means and not be transmitted to said upper frame member or to any other one of said first, second, and third means so as to effectively prevent the development of any vibrational interference or resonance between said first, second, and third means.

4,492,553

AUTOMATIC MACHINE FOR FORMING SHAPED PIECES OF DOUGH

Folli Giulio, Via Ines Bedeschi, 5-Conselice-Ravenna, and Casadei Marino, Via Provinciale S. Mauro, 3501-Cesena (Forlì), both of Italy

Filed Jun. 20, 1983, Ser. No. 506,121
Claims priority, application Italy, Oct. 22, 1982, 3571 A/82
Int. Cl.³ A21C 11/10, 9/08
U.S. Cl. 425—308 5 Claims



1. In an automatic machine for forming shaped pieces of dough having closed or open configuration, comprising: a device for manipulating the moistened and kneaded flour, designed to furnish at least one continuous strip of dough and set in intermittent operation by first drive means; a first conveyor, set in intermittent operation by second drive means synchronously with the said first drive means, placed downstream of the said manipulation device, oriented downwards and destined to receive the said strip of dough in order to carry it downwards into the region of a station where the said pieces of dough are defined; a second conveyor positioned beneath the first conveyor, constituting, jointly with the lower extremity of the latter, the above-mentioned station that is destined to receive, resting thereon, the said strip and is set in intermittent

operation by third drive means on a time relationship basis with the said other drive means; and movable cutting means, positioned above the said second conveyor, downstream of the aforementioned station, destined to intercept, when in the operating position, the part of the said strip that is in between the first and the second conveyor, the said movable cutting means being set in intermittent operation by fourth drive means on a time relationship basis with the said first, second and third drive means; the improvement comprising: a frame for supporting the said second conveyor and the corresponding third drive means, and for supporting the said cutting means and the corresponding fourth drive means, secured by means of ball and socket joints to the extremity of at least three arms, the other extremity of which is secured, in each case, to a fixed structure by means of ball and socket joints; projections and blocks connected to the said frame, positioned beneath the lower extremity of the first conveyor perpendicularly to the movement direction of the second conveyor, destined, in cooperation with the said cutting means, when these are in the operating position, to shear the part of the strip that is in between the first and the second conveyor; means for operating the said frame on a time relationship basis with the said first, second, third and fourth drive means, defining for each point of the said frame, closed trajectories contained in horizontal planes; and means for stabilizing the vertical elevations of each point of the frame.

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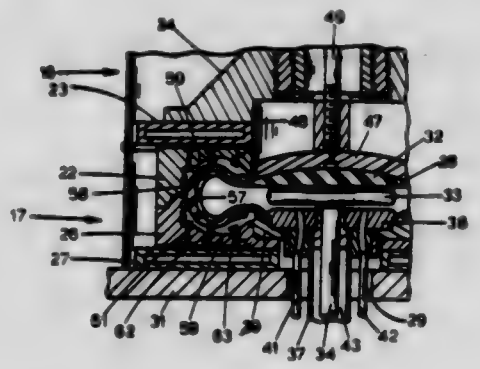
VALVE UNIT FOR A MOLD VENT

Russell W. Carter, Des Moines, Iowa, assignor to Corn States Metal Fabricators, Inc., Des Moines, Iowa

Continuation of Ser. No. 363,037, Mar. 29, 1982, abandoned, which is a continuation-in-part of Ser. No. 181,461, Aug. 20, 1980, Pat. No. 4,347,212. This application Jun. 3, 1983, Ser. No. 499,672

Int. Cl.³ B29H 5/02

U.S. Cl. 425—383 7 Claims



1. A valve unit for the vent of a mold for forming a rubber product wherein vented mold sections form a closed cavity for receiving an expandable rubber body member for expansion from a normal non-distended condition to a final expanded condition, in which the outer surface of the body member is in full conforming engagement with the inner surface of the cavity side wall and wherein the vent is in a side wall of the cavity and open to the atmosphere, said valve unit comprising:

(a) a first vent section having one end terminating in said inner surface of the cavity side wall,

(b) a valve seat at one end of said first vent section,

(c) a second vent section open to the opposite end of said first vent section and to the atmosphere, said second vent section having defined end portions,

(d) a valve member for opening and closing said vent including a stem portion located within and movable axially of said first vent section and a head portion movable to a vent closing position in seated engagement with said valve seat and to a vent opening position within said cavity and out of said seated engagement, said head portion, in the vent closing position therefor, having an exterior surface in smooth, continuous conformance with the inner surface of the cavity side wall, and

(e) a coil spring means only in said second vent section engageable with said stem portion and arranged in compression between said defined end portions for yieldably urging said head portion to said vent opening position, said head portion exterior surface engageable by the outer surface of the expandable body member for movement thereby into said seated position in the final expanded condition of the body member to provide for a positive venting of air through the vent and to the atmosphere as the body member is expanded from the non-distended condition to the final expanded condition therefor.

4,492,555

MULTIPLE HOT RUNNER INJECTION BUSH

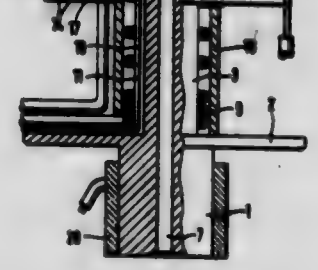
Wolfgang Schulte, Schalksmühle-Heedfeld, Fed. Rep. of Germany, assignor to Firma Jetform Heizkanalnormalien und Zubehor GmbH, Fed. Rep. of Germany

Filed Aug. 3, 1983, Ser. No. 519,996

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1982, 8222390[U]

Int. Cl.³ B29F 1/08

U.S. Cl. 425—548 9 Claims



1. A multiple hot runner injection bush for lateral tunnel gating, with a foot and a shaft heated by a heating element and a central hot sprue arranged therein, furthermore, with a nozzle head heated by a heating element wherein the nozzle head contains radially extending injection channels, characterized by the following features:

(a) the nozzle head is provided as a plate-like head and projects beyond the diameter of the shaft by a multiple distance of the shaft diameter;

(b) the nozzle head incorporates, at least, four radially extending injection channels;

(c) the nozzle head comprises a plane ring face adjacent to the shaft, and an outer covering apron;

(d) a copper ring is attached on the ring face;

(e) the copper ring carries a spirally arranged high capacity coil heater;

(f) the heating element for the nozzle head and the heating element for the shaft are independently controllable.

4,492,556

UNITARY HEATED NOZZLE ASSEMBLY

Walter R. Crandell, Addison, Ill., assignor to Fast Heat Element Mfg. Co., Inc., Elmhurst, Ill.

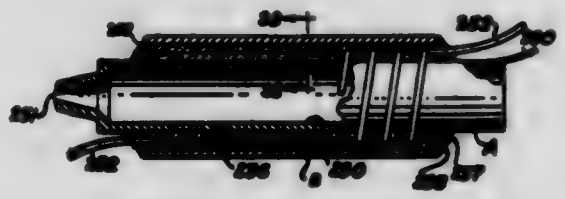
Division of Ser. No. 951,609, Oct. 16, 1978, Pat. No. 4,304,544, which is a continuation-in-part of Ser. No. 705,996, Jul. 16, 1976, Pat. No. 4,120,086, which is a continuation-in-part of Ser. No. 516,618, Oct. 21, 1974, Pat. No. 3,970,821. This application Dec. 8, 1981, Ser. No. 328,747

Int. Cl.³ B29F 1/03

U.S. Cl. 425—549 18 Claims

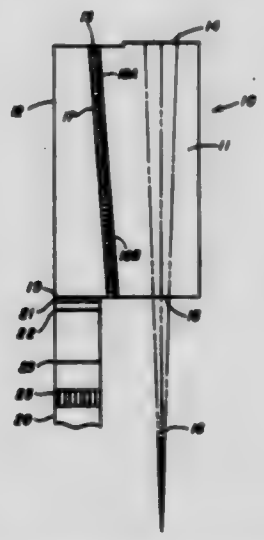
1. A unitary heated nozzle assembly for delivering under pressure a melt stream of moldable material to a mold having cavity means for forming parts therein, said assembly comprising a heat conductive metal body suitable for withstanding

molding pressures having a passage therein for conveying said melt stream of moldable material into said mold, unsheathed electrical heater assembly means within said body arranged in heat transfer relation to said melt stream in said passage, a sandwich of layers of electrically insulating heat conductive particles compressed together and encapsulating said heater



assembly means, said sandwich, heater assembly means and body forming an integral void-free compacted mass embedding said heater assembly means in said sandwich and said sandwich and heater assembly means in said body, and electrical lead wires attached to said heater assembly connecting it with a source of current.

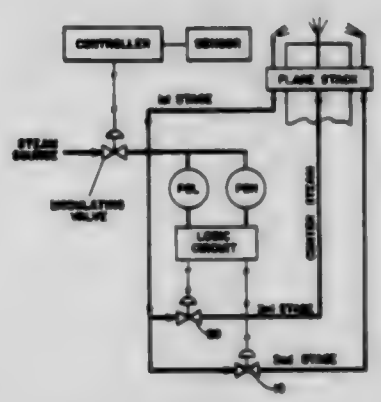
4,492,557
FILAMENT QUENCHING APPARATUS
Valton O. Ray, Irmo; Robert H. Rosland, Columbia, both of S.C.; Carl H. Potter, Richmond, Va., and Yehuda I. Szmuilowicz, Columbia, S.C., assignors to Allied Corporation, Morris Township, Morris County, N.J.
Filed Jul. 19, 1983, Ser. No. 515,096
Int. Cl.³ B29C *25/00*
U.S. Cl. 425—72 S 12 Claims



1. Apparatus for quenching a melt extruded filament, comprising
(a) a quenching chamber through which said filament can pass;
(b) a plenum chamber, said plenum chamber having a gas entry opening and being separated from said quenching chamber by
(c) a diffuser, said diffuser comprising a layer of foam with at least two areas of differing porosity; whereby a varied gas distribution pattern into the quenching chamber can be achieved.

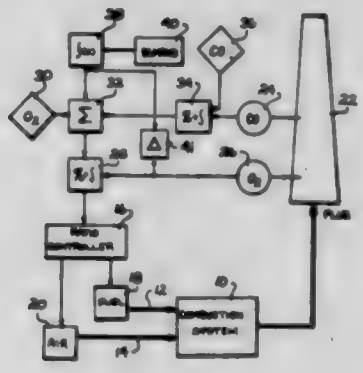
4,492,558
SMOKELESS WASTE GAS BURNING USING LOW PRESSURE STAGED STEAM
Robert E. Schwartz, and Michael R. Keller, both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.
Filed May 16, 1983, Ser. No. 494,941
Int. Cl.³ F23D *13/20*
U.S. Cl. 431—4 3 Claims

1. A flare stack for waste gases to be burned above the tip;
means to inject smoke suppressant from a steam source which does not exceed 50 p.s.i.g. into said burning gases through at least two separate manifolds and injection nozzles which are about the flare stack adjacent the tip;
a smoke suppressant conduit connected from a supply conduit to each manifold;
a normally closed valve means to control the quantity of smoke suppressant to each manifold except the first;
means to sense the need for smoke suppressant as a function of the need for smoke suppression;
a modulating valve in said supply conduit operated by said means to sense the need for smoke suppressant;



means downstream of said modulating valve to sense the flow or pressure of said smoke suppressant;
means to control the opening of each of said normally closed valve means as a function of the flow or pressure downstream of said modulating valve so that the pressure of said smoke suppressant downstream of said normally closed valve means will not be below that necessary to maintain at least sufficient mechanical kinetic energy in each of said manifolds and injection nozzles for smokeless burning of said waste gases.

4,492,559
SYSTEM FOR CONTROLLING COMBUSTIBLES AND O_2 IN THE FLUE GASES FROM COMBUSTION PROCESSES
Robert E. Pocock, Highland Heights, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.
Filed Nov. 14, 1983, Ser. No. 551,550
Int. Cl.³ F23N *5/00*
U.S. Cl. 431—12 6 Claims



1. A method of controlling a fuel/air ratio of a fuel/air mixture for a combustion process which produces flue gases having a combustible content and an oxygen content, comprising;
selecting a low combustion content set point value corresponding to a desired level of combustible content in the flue gas;
selecting an oxygen content set point value corresponding to a desired level of oxygen content in the flue gas;
sensing the combustible content of the flue gas to generate a first signal corresponding to the actual combustible content of the flue gas;
simultaneously, sensing the oxygen content of the flue gas to

generate a second signal corresponding to the actual oxygen content of the flue gas;

using said first signal corresponding to an actual combustible content of the flue gas to adjust said selected oxygen content set point value; and

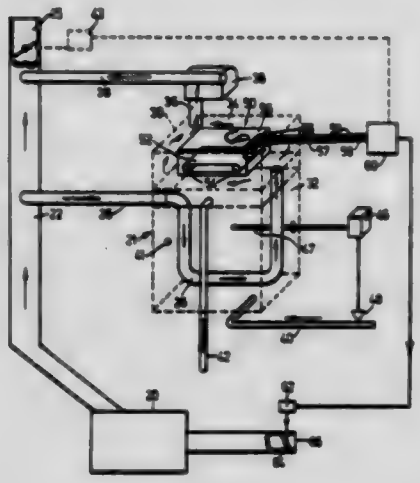
controlling the fuel/air ratio exclusively as a function of said adjusted oxygen content set point value and said second signal.

4,492,560

GAS COMBUSTION CONTROL APPARATUS

Hardy Sundberg, R.R. #1, Brantford, Ontario, Canada N3T 5L4

Filed Nov. 14, 1983, Ser. No. 551,751
Int. Cl.³ F23N 5/00
U.S. Cl. 431—12 21 Claims



1. Apparatus for controlling the combustion of a fuel in an appliance comprising:

means for receiving the exhaust gases of the appliance,

means for maintaining the exhaust gases at a substantially constant temperature between the steam point and the dew point of the gases,

humidity sensor means for monitoring the relative humidity of the substantially constant temperature exhaust gases and for producing an output signal upon the relative humidity deviating from a predetermined level, and

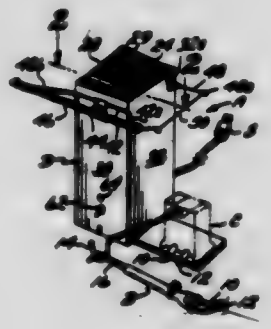
control means for using said output signal to control the combustion of fuel in the appliance to maintain the humidity at said predetermined level.

4,492,561

WELDERS TORCH IGNITING DEVICE

Richard R. Braswell, 3154 Studebaker Rd., Long Beach, Calif. 90808

Filed Dec. 20, 1982, Ser. No. 451,285
Int. Cl.³ F23Q 7/10
U.S. Cl. 431—128 1 Claim



1. In combination with a source of alternating electric power a device for igniting a mixture of oxygen and acetylene flowing from a tip of a welders torch, said device including:

a. a vertically disposed housing that includes an upper end that has a plurality of spaced openings therein;

b. an electrical circuit that may be connected to said source of electrical power, said electrical circuit including first and second portions, said first portion incuding an electrically operated signal light and first electrical switch that is manually operated, said second portion including a high tension coil, a spark plug adjacent said upper end and a second electrical switch that includes a spring loaded actuator that when moved from a first to a second position closes said second electrical switch for said high tension coil to generate a spark at said spark plug, said first electrical switch and signal light mounted on said housing, and said signal light when illuminated indicating that said device is in an operating condition;

c. a bracket supported from said housing adjacent said top, said bracket including first and second spaced arms;

d. a tensioned helical spring that has a first elongate substantially straight end portion in which a loop is defined and a second end, said second end secured to said second arm and said loop pivotally engaging said first arm; and

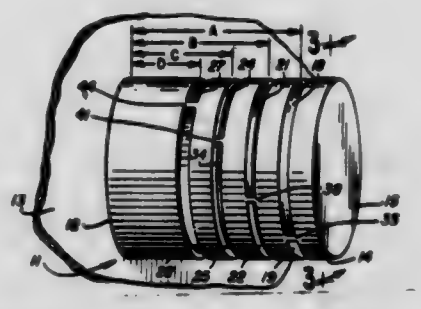
e. a cord that extends from the extremity of said straight end portion to said actuator, said helical spring when pressure contacted by said tip when the latter is disposed to discharge said oxygen-acetylene mixture onto said top flexing transversely and said straight end portion pivoting to tension said cord to move said actuator from said first to said second position to complete said second portion of said electrical circuit for said high tension coil to generate a spark at said spark plug to ignite said oxygen-acetylene mixture, with said actuator automatically moving to said first position when said tip is removed from contact with said helical spring.

4,492,562

PREMIX-TYPE BURNER DISTRIBUTER TIP

Frederick A. Michel, Alvin, Tex., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 27, 1983, Ser. No. 489,129
Int. Cl.³ F23C 5/08
U.S. Cl. 431—177 4 Claims



1. In combination with a premixed fuel-oxygen burner adapted to project a burning premixed fuel-oxygen mixture to an interior surface of a furnace in which surface the burner is mountable and which surface then radiates heat to the interior of the furnace, the burner comprising a distributor tip which, when mounted in the interior surface, extends lengthwise from the furnace interior surface into the interior of the furnace and through which the fuel-oxygen mixture passes into the furnace; the improvement comprising a distributor tip comprising an end wall and a slotted cylindrical sidewall extending axially perpendicularly from the interior surface and wherein a plurality of arcuate slots spaced along the length of the side wall at different distances from the interior surface and extending lengthwise circumferentially therein form exclusive paths for passage of the fuel-oyxgen mixture into the interior of the furnace, with each slot extending through the side wall at an angle with respect to the axis of the cylindrical side wall so that all of the slots collectively direct the fuel-oxygen mixture to a

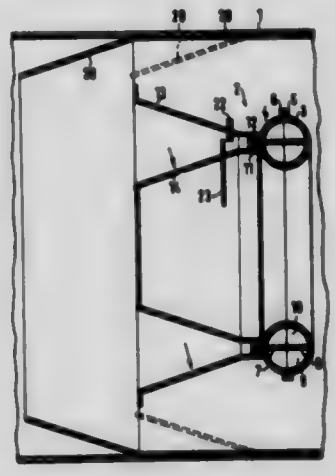
predetermined region of the interior surface, and wherein the slots in the cylindrical side wall at a relatively greater distance from the interior surface of the furnace in which the distributor tip would be mounted are formed therein at a more acute angle with respect to the axis of the cylindrical side wall than are the slots in the cylindrical side wall at a relatively closer distance from the interior surface of the furnace in which the distributor tip would be mounted.

4,492,563

BURNER FOR HEATING AIR AND DISPOSED IN A PASSAGE THROUGH WHICH AIR FLOWS

Klaus Reinhold, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Apr. 22, 1983, Ser. No. 487,466
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1982, 3214923
Int. Cl.³ F23Q *3/00*
U.S. Cl. 431—264 4 Claims



1. A burner for heating air and disposed in a passage through which the air flows, comprising: a tube which is connected to a gas supply and having mixing plates with flow apertures for the air, the mixing plates secured to the tube to diverge from each other conically in the direction of air flow, the tube being provided with gas outlet apertures between the mixing plates and having the form of a circular annulus in which the gas outlet apertures are disposed in a circular array, the mixing plates including an outer conically diverging plate and an inner conically converging plate which are at least partially bounded over their axial length by an air guide plate which converges conically in the direction of air flow and which is carried on an inner surface of the air passage for axial displacement, and ignition means disposed downstream of the gas outlet apertures.

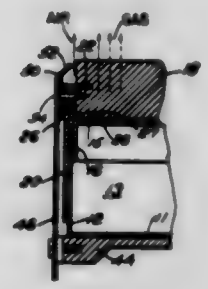
4,492,564

CLAMPING MEANS FOR MATRIX IN RADIANT GAS BURNER

Robert A. Wolf, Coventry, R.I., assignor to Radiant Heat, Inc., Coventry, R.I.

Filed Jun. 24, 1983, Ser. No. 507,664
Int. Cl.³ F23D *13/12*
U.S. Cl. 431—328 2 Claims

1. A radiant gas burner comprising a gas permeable matrix, a combustion gas plenum having means to support the marginal edges of the matrix, a plurality of clamping clips about the marginal edge of the matrix, said clips fastened to the plenum and having inturned terminal edges engaging the matrix, a non-combustible gas supply enclosure, said enclosure having plate means extending in spaced relation to said clips and terminating beyond the clips, said plate means having



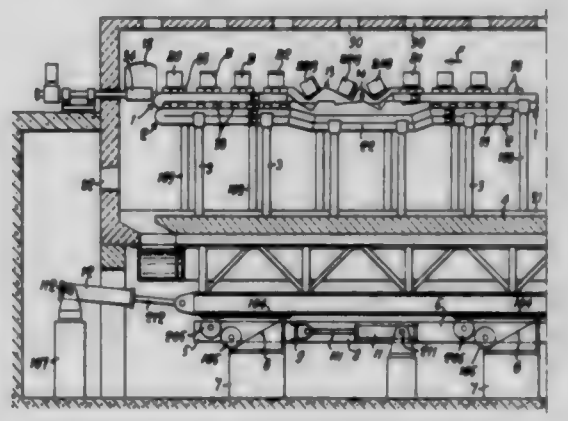
inturned terminal edges to direct a stream of non-combustible gas on the marginal matrix edge.

4,492,565

METHOD FOR ELIMINATING THE SKID MARKS FROM WORKPIECES HEATED IN WALKING BEAM FURNACES AND WALKING BEAM FURNACE FOR PERFORMING THE SAID METHOD

Bruno Feroldi, Genoa, Italy, assignor to Italimpianti Societa Italiana Impianti P.A., Italy

Filed Jan. 11, 1983, Ser. No. 457,251
Claims priority, application Italy, Jan. 22, 1982, 12413 A/82
Int. Cl.³ F27D *3/00, 3/04*; F27B *9/14*
U.S. Cl. 432—11 11 Claims



1. A method of elliminating or minimizing the effect of localized cooling on metallurgical articles (B) due to contact with cooled fixed and/or walking beams (1, 2) in a walking beam furnace for heating metalurgical articles (B), such as billets, blooms and the like, characterized by turning each metallurgical article over 180° around its longitudinal axis at least once at a region within the furnace and near the discharge end (18) thereof and thereafter maintaining the metallurgical articles in the furnace for a period of time sufficient to eliminate or substantially reduce areas of such localized cooling.

4,492,566

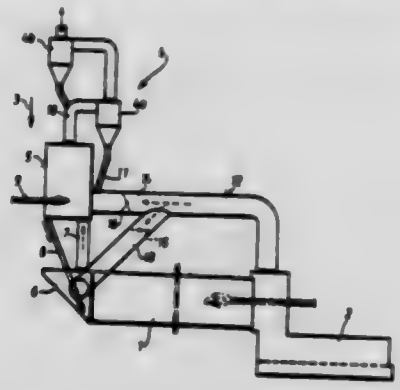
METHOD AND APPARATUS FOR HEAT TREATMENT OF FINE-GRAINED MATERIAL

Wilfried Kreft, Ennigerloh, Fed. Rep. of Germany, assignor to Krupp Polysius AG, Beckum, Fed. Rep. of Germany

Filed Mar. 21, 1983, Ser. No. 477,066
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1982, 3212009
Int. Cl.³ C04B *7/02*; F27B *15/00, 7/02*
U.S. Cl. 432—14 15 Claims

1. In a method for the heat treatment of fine-grained material wherein such material is preheated in a preheating zone, then precalcined in a precalcining zone, and then delivered to a sintering zone the exhaust gases of which flow in a single stream to said precalcining zone and thence to said preheating zone, said material being delivered from said sintering zone to a cooling zone from which tertiary air is discharged, the im-

provement comprising dividing said tertiary air into two branches; mixing the air of one of said branches with said



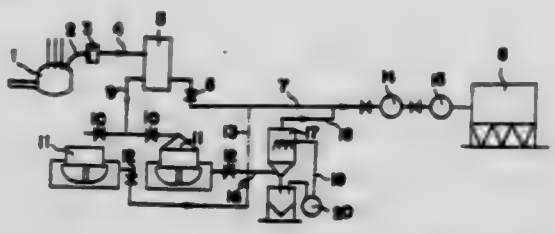
stream of exhaust gases in a region between said sintering zone and said precalcining zone; and introducing the air of the other of said branches directly into said precalcining zone.

4,492,567

METHOD OF REMOVAL OF IMPURE GASES AT THE TIME OF SCRAP PREHEATING, AND EQUIPMENT FOR USE OF SAME

Kazunori Saitoh, Tokyo, Japan, assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa. and Hotaka Engineering Co., Ltd., Tokyo, Japan

Filed Oct. 28, 1983, Ser. No. 543,988
Claims priority, application Japan, Oct. 13, 1982, 57-178440
Int. Cl.³ F24H 7/00; B01D 47/00
U.S. Cl. 432—30
5 Claims



1. A method of preheating scrap metal with impure gases containing particulates and discharging from a metallurgical furnace, the method comprising the steps of:

burning said impure gases in a combustion chamber,

conducting a first portion of the combustion products from said combustion chamber to a container of scrap metal,

contacting the scrap metal with said combustion products for preheating the scrap whereby additional impurities are generated and entrained in said combustion products,

washing in a wet scrubber the combustion products and entrained additional impurities,

mixing the first portion of the combustion products and entrained additional impurities after wet scrubbing with a second portion of the combustion products from said chamber,

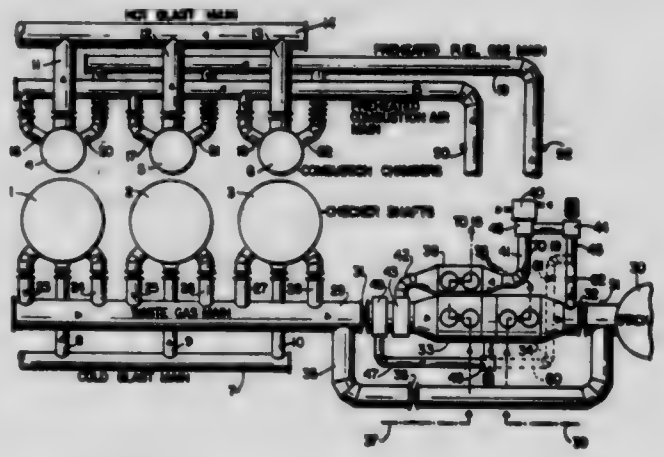
and removing particulates from the mixture of the second portion of combustion products and the first portion of combustion products and the entrained additional impurities after the wet scrubbing thereof.

4,492,568

PROCESS AND APPARATUS FOR PREHEATING THE COMBUSTION MEDIUMS USED FOR FIRING BLAST FURNACE STOVES

Helmut Palz, Wiesbaden, Fed. Rep. of Germany, assignor to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Dec. 9, 1983, Ser. No. 559,683
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1982, 3246255; Dec. 30, 1982, 3248623
Int. Cl.³ F24H 7/00, 1/00; F28C 3/10; C21C 5/48
U.S. Cl. 432—30
17 Claims



1. A process for preheating the combustion mediums of combustion air and fuel gas used for firing blast furnace stoves by utilizing the heat of waste gases resulting from such firing, said process comprising:

passing said combustion mediums through respective heat exchangers in heat exchange relationship with said waste gases, and thereby preheating said combustion mediums;

further preheating one said combustion mediums, after the passage thereof through the respective said heat exchanger, by an externally fired recuperator;

feeding flue gases from said externally fired recuperator to said waste gases before preheating of said one combustion medium by said waste gases; and

controlling the external firing of said recuperator as a function of the final preheated temperature of the thus twice preheated said one combustion medium.

4,492,569

OVEN

Alex D. Vestergaard, Kastrup, Denmark, assignor to Ingeniørfirmaet Lytzen KS, Herlev, Denmark

Filed Feb. 28, 1983, Ser. No. 470,182
Claims priority, application Denmark, Mar. 3, 1982, 918/82
Int. Cl.³ B01D 45/00, 39/00; A21B 1/00
U.S. Cl. 432—72
2 Claims

1. An oven for connectively separating two otherwise independent, isolated medium chambers, said oven comprising:

means forming an air-tight oven shell;

an internal four sided chamber within said oven shell;

means in said oven adjacent said chamber forming a closed path channel for conducting air within said oven;

means for circulating air in said closed path;

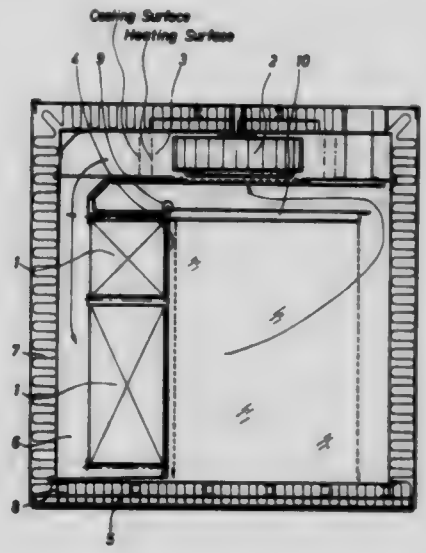
at least two doors in said oven shell, one located adjacent each of two of the sides of said chamber, only one of said doors being able to be opened at a time;

a filter assembly located in said oven at one side of said chamber and in said closed path through which all air circulating therein must pass;

means forming a funnel-shaped suspension system releasably mounting said filter assembly in said closed path, said suspension system being secured to the outermost portion of said means forming said air channel;

a frame included in said filter assembly mounting the filters of the filter assembly through which all air passes in said

closed path, said frame being releasably mounted by said suspension system to allow expansion and contraction of said frame with temperature changes while said funnel-shaped suspension system correspondingly expands and contracts, thereby preventing bypass of air around the filters; and



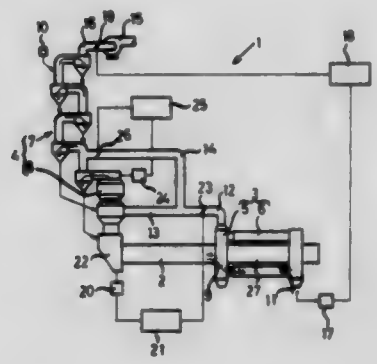
a rail and wheel combination supporting said frame and located over the doors to allow said frame when released by said suspension system to roll adjacent at least one of the doors and allow access to the filters.

4,492,570

CALCINING SYSTEM PROVIDED WITH A PLANETARY COOLER

Takeshi Suzuki; Mikio Murao; Masahiro Uchida; Chikanori Kumagai, and Yasuhiko Yotsui, all of Kobi, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed Sep. 2, 1983, Ser. No. 528,970
Claims priority, application Japan, Sep. 2, 1982, 57-153745; Dec. 9, 1982, 57-186230
Int. Cl.³ F27B 7/02
U.S. Cl. 432—106 3 Claims



1. A calcining system wherein raw material is preheated by raw material preheating means for preheating the raw materials by contact with a gas, calcined in a rotary kiln and cooled in a planetary cooler; a portion of cooling gas used for cooling the calcined materials in the planetary cooler and heated thereby is led through an air extracting duct to said raw material preheating means and the rest of the heated cooling gas is introduced into the rotary kiln; and exhaust gases from the rotary kiln is led to the raw material preheating means, wherein the improvement comprises:

a first damper mounted in a duct for exhausing the exhaust gas from said raw material preheating means;

a temperature sensor for sensing the temperature of calcined material discharged through an outlet of said planetary cooler;

a control means operative to increase the degree of opening of said first damper when the temperature sensed by said temperature sensor rises to a high level;

a second damper mounted in said air extracting duct;

a gas sensor for sensing a gas component capable of indicating the condition of combustion in the rotary kiln; and

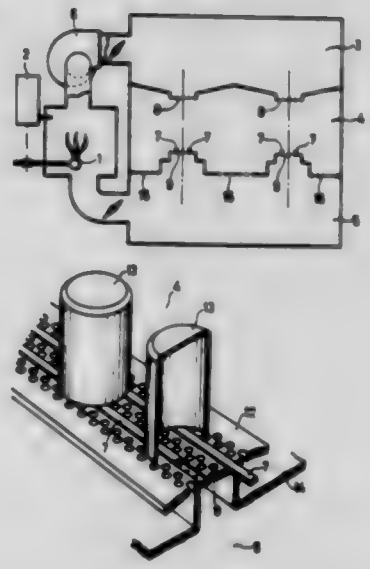
a control means for controlling the degree of opening of the second damper so as to bring the value of the gas component sensed by the gas sensor to a predetermined level.

4,492,571

BAKING AND DRYING FURNACE FOR CONTAINERS SUCH AS CANS

Hideo Miura, Yokohama, Japan, assignor to Toyo Seikan Kaisha, Ltd., Japan

Filed Jul. 30, 1982, Ser. No. 403,359
Claims priority, application Japan, Jul. 31, 1981, 56-112963[U]
Int. Cl.³ F24J 3/00; F26B 25/00
U.S. Cl. 432—225 2 Claims



1. A baking and drying furnace for containers comprising

(A) a hot air supply chamber,

(B) a container passage chamber,

(C) a hot air recovery chamber, and

(D) a hot air reservoir.

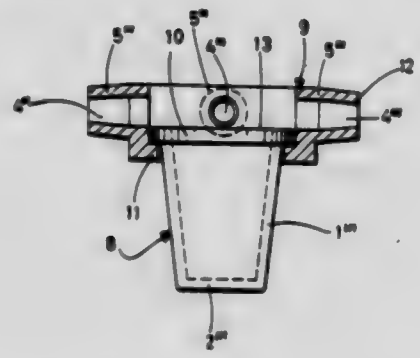
wherein said container passage chamber and said recovery chamber are connected by first and second suction nozzles and said hot air reservoir and said container passage chamber are connected by third and fourth suction nozzles wherein said first, second and at least one row of said third suction nozzles are located so that when a container is placed in said furnace, said first, second and at least one row of said third suction nozzles are covered by the inside diameter of said container and at least one row of said fourth suction nozzles is located externally of the outside diameter of said container, whereby hot air moves substantially from said hot air supply chamber, passes through said passage chamber, said fourth suction nozzles, into said hot air reservoir, through said third suction nozzles into the interior portion of said container, and through said first suction nozzles into said recovery chamber, and wherein said second suction nozzles are covered by a means for transporting said containers through said furnace, wherein said first suction nozzles are one tenth to one half the inside diameter of said container, said third suction nozzle are one tenth to one third of said container diameter, and said means for transporting said containers comprises conveyor belts, said conveyor belts being laid in sliding belt guide grooves and covering the said second suction nozzles whereby said belt is attracted to said groove.

4,492,572

MELTING CRUCIBLE

Horst Linn, Hirschbach, Fed. Rep. of Germany, assignor to Linn Elektronik GmbH, Hirschbach, Fed. Rep. of Germany

Filed Apr. 9, 1982, Ser. No. 366,987
Claims priority, application Fed. Rep. of Germany, May 12, 1981, 3118790
Int. Cl.³ F27B *14/00*; B65D *5/72*; C21B *3/00*
U.S. Cl. 432—263
12 Claims



1. A melting crucible assembly for accommodating small amounts of material particularly for dental, analytical and metallurgical purposes, which comprises:

a container portion having a mouth opening and an upper edge portion for accommodating said material; and

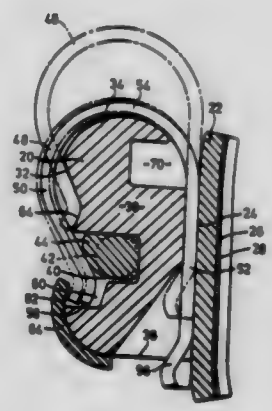
a pouring ring having at least one pouring opening, said pouring ring engaging said container portion about said upper edge portion thereof.

4,492,573

ORTHODONTIC BRACKET

Gustaf H. Hanson, Hamilton, Canada, assignor to Augusta Developments Inc., Hamilton, Canada

Filed Mar. 27, 1984, Ser. No. 593,222
Int. Cl.³ A61C *7/00*
U.S. Cl. 433—11
12 Claims



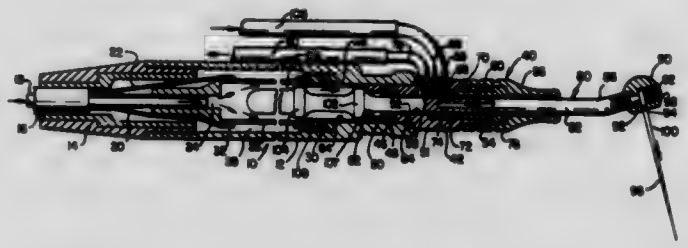
1. An orthodontic bracket comprising a bracket body having lingual, labial, gingival, occlusal, distal and mesial surface portions and a mesial-distal extending arch wire slot opening to the labial surface portion, and a retainer member of resilient meterial having labial and lingual portions in embracing sliding engagement with corresponding labial and lingual surface portions of the body, the retainer member being movable on the body between two positions in which the open labial side of the slot is respectively open and closed, wherein the mesial distal extending slot is provided in its gingival surface immediately adjacent to the labial bracket surface with a mesial distal extending retainer against which the end of the retainer member labial portion can engage when in slot-closed position to prevent labial movement of the thus engaged retainer member end of more than a predetermined extent.

4,492,574

ULTRASONIC ENDODONTIC DENTAL APPARATUS

George E. Warrin, North Merrick, and Rene J. Perdreaux, Brooklyn, both of N.Y., assignors to Cavitron, Inc., Long Island, N.Y.

Filed Apr. 15, 1983, Ser. No. 485,421
Int. Cl.³ A61C *5/02*
U.S. Cl. 433—81
14 Claims



1. In an ultrasonic device including a handpiece having an elongated hollow housing, coil means in said housing adapted to be connected to an external energy source for establishing an alternating electromagnetic field within said housing, said housing having a cooling fluid inlet at one end and being open at its other end, and an insert adapted to be removably mounted on the other end of said handpiece, said insert comprising,

an elongated hollow body having one end adapted to be insertably mounted in said open end of said housing with said one end of said body being in fluid communication with the interior of the housing whereby cooling fluid admitted into said housing can flow into said body,

a tool support assembly telescopingly received in said body, said tool support assembly including an elongated shank having vibrating means rigidly mounted on one end, said vibrating means projecting from the open end of the said body in position to be vibrated by the electromagnetic field when said body is mounted in said housing,

seal means provided within said insert between said body and said shank outboard of said housing for directing the flow of cooling fluid through said body between said seal means,

cooling fluid outlet means in said body between said seal means and said one end of said body providing a flow path for cooling fluid from said handpiece,

the other end of said shank projecting outward from said body and terminating in mounting means for supporting an endodontic instrument, said shank having a fluid flow passage extending longitudinally therein from said mounting means and terminating at a location within said body, and

irrigation fluid inlet means for admitting an irrigation fluid into said fluid flow passage to be discharged from said mounting means in a direction substantially parallel to the endodontic instrument mounted in said mounting means, whereby said irrigation fluid and said cooling fluid may be separately controlled.

4,492,575

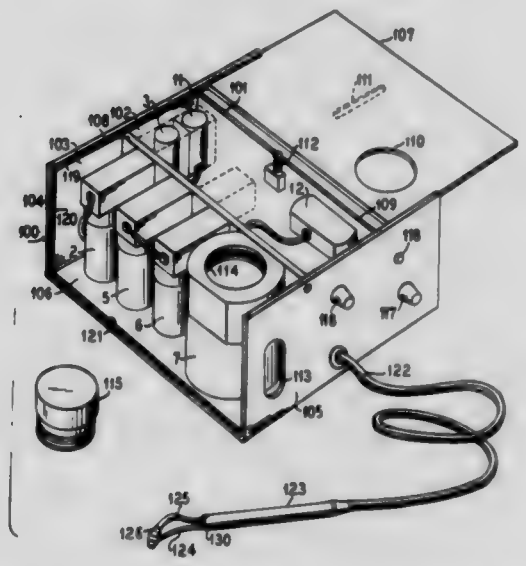
DENTAL PROPHYLACTIC APPARATUS

Pierre Mabille, Le Sentier, Switzerland, assignor to Electro Medical Systems, S.A., Le Sentier, Switzerland

Filed Apr. 27, 1983, Ser. No. 489,122
Claims priority, application France, Jun. 22, 1982, 82 10920
Int. Cl.³ A61C *3/02*
U.S. Cl. 433—88
18 Claims

1. A prophylactic apparatus for cleaning teeth with a flow of air containing powder particles, said apparatus comprising a hand piece with a first nozzle opening and a second nozzle opening, a water line with a valve means extending from a source of water and being connected to the first nozzle opening, a first air line extending from a source of pressurized air to a mixing device, first control means disposed in said first air

line for controlling flow of air therethrough, said first air line between the first control means and the mixing device having a section containing at least one air filter, said mixing device having a chamber for receiving powder to be fluidized and mixed with air to form air laden with powder particles, said mixing device having a nozzle connected to the first air line being disposed in the chamber above the level of powder



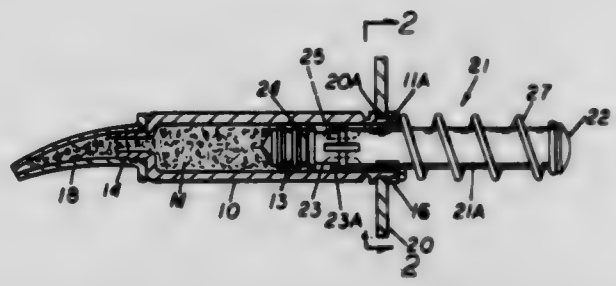
therein and a discharge opening disposed above the level of powder in the chamber connected to a second air line extending to the second nozzle opening of the hand piece, second control means for controlling the flow of air laden with powder particles in said second air line and means for unclogging each filter by creating a reverse flow of air through the chamber, the jet nozzle, the section of the first line and through each filter.

4,492,576

DENTAL SYRINGE AND METHOD OF PACKAGING AND DISPENSING A DENTAL MATERIAL

William B. Dragan, R.F.D. 1 Burr St., Fairfield, Conn. 06430

Filed Jun. 15, 1982, Ser. No. 388,649
Int. Cl.³ A61C 5/04; A61M 5/31
U.S. Cl. 433—90 14 Claims



1. A dental syringe for extruding dental materials comprising:

a handle means and a cartridge adapted to contain a bulk supply of said dental material sufficient to perform a plurality of dental procedures whereby said cartridge defines the barrel portion of said syringe,

said cartridge comprising an elongated barrel having a rear open end and a forward discharging orifice portion,

a freely displaceable portion disposed in said barrel portion for sealing the rear end thereof,

a plunger means adapted to extend into the rear open end of said barrel for engaging said piston,

said plunger means having an end portion for engaging the rear of said piston for effecting the displacement of said piston within said barrel as said plunger means is activated to extrude a proportional amount of said material,

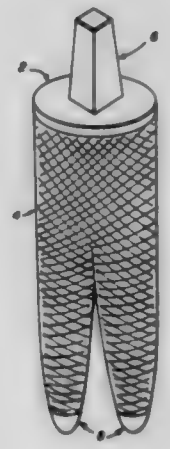
a spring means for normally biasing said plunger means toward a retracted inoperative position and a valving means including a vent slot disposed on the end of said plunger means for engaging said piston for venting the area to the rear of the piston for creating a vacuum between said piston and said plunger to effect a pull back of said piston to relieve the back pressure of said material acting on said piston upon the termination of an extruding operation so as to prohibit any drooling of the material from the cartridge.

4,492,577

SURGICAL IMPLANTS WITH SOLID INTERIORS AND POROUS SURFACES

Edward T. Farris, 4715 Greenville Ave., Dallas, Tex. 75206, and J. Lester Matthews, 6944 Lakewood Blvd., Dallas, Tex. 75214

Filed Oct. 25, 1982, Ser. No. 436,618
Int. Cl.³ A61C 8/00
U.S. Cl. 433—201 4 Claims



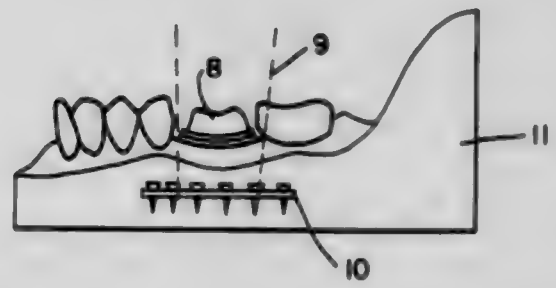
1. A device for surgical implantation comprising a solid metallic core piece surrounded by a porous shell formed of a woven, metal material bonded firmly to said core piece, the pores of the shell having a depth of about 300 microns or less and a diameter or a diagonal of about 50 to about 500 microns.

4,492,578

PLASTIC LAMINAR DIGITALLY INDEXED DENTAL DIE SYSTEM

William Hann, 325 Ashlawn Dr.; Sanford D. Bosin, P.O. Box 9371, both of Norfolk, Va. 23505, and Cecil White, 1464 Longdale Dr., Norfolk, Va. 23513

Filed Sep. 29, 1983, Ser. No. 511,748
Int. Cl.³ A61C 11/00, 13/02; B32B 3/00
U.S. Cl. 433—213 3 Claims



1. A device for keying a dental model to a dental model base comprising:

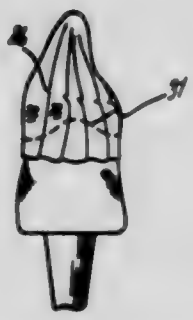
a polymeric sheet having a generally flat web portion and having projections extending from opposite sides of said web portion, said projections from a first of said sides being in the shape of cones with broad base portions of said cones being connected to said web portion and tips of said cones being spaced from said web portion and said projections from a second of a said sides having broad end portions spaced from said second of said sides.

4,492,579

DENTAL JACKET CROWN, COPING AND METHOD OF CONSTRUCTION

Itzhak Shoher, 50 Shlomo Hamelech St., Tel-Aviv, and Aharon Whiteman, 13 J. L. Peres St., Petach-Tikvah, both of Israel

Continuation-in-part of Ser. No. 414,415, Sep. 2, 1982, Pat. No. 4,459,112. This application Apr. 22, 1983, Ser. No. 487,839
The portion of the term of this patent subsequent to Jul. 10, 2001, has been disclaimed.
Int. Cl.³ A61C 5/08
U.S. Cl. 433—222 10 Claims



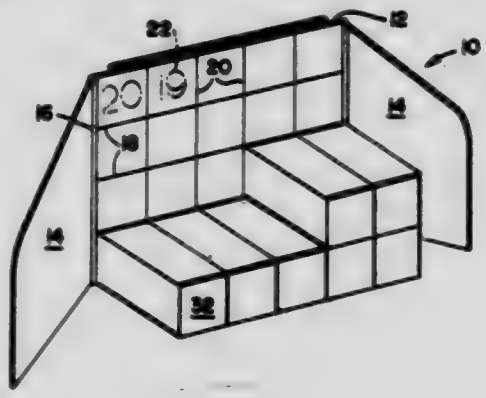
1. A jacket crown comprising a composite body including a thin foil of high fusing temperature metal substantially of platinum having a surface geometry conforming to a die to which it has been adapted with the foil having a minimum of at least three folded over pleats in a substantial symmetrical arrangement around the body of the foil with each pleat forming a triangular like flap in the unfolded position and wherein said foil has an unfolded area substantially in the center of the foil body with said foil having at least one thin coated layer of a gold based noble metal composition of up to 100% gold superimposed over one surface of said thin foil and disposed beneath the folded over pleats and a relatively thick outer coating of a dental veneering material.

4,492,580

WEIGHT-LOSS MOTIVATION KIT

Herbert J. Sabal, 543 Avenue Del Oro, Sonoma, Calif. 95476

Filed Mar. 30, 1984, Ser. No. 594,744
Int. Cl.³ G09B 19/00
U.S. Cl. 434—127 5 Claims



1. A device for motivating dieters to maintain a weight-loss program, comprising a display board with indicia on its front side forming an array of spaces each with a symbol therein indicating a preselected number of pounds that the dieter must lose in a diet program;

a plurality of foldable cartons for use with said display board each carton being symbolic of a pound of removable human weight and, when erected, having end surfaces with substantially the same dimensions as one of said array of spaces, a number of said cartons being stacked against said board to cover a like number of spaces;

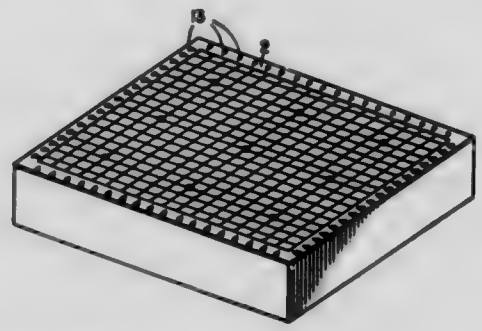
whereby each time a user of said device is weighed during a weight-loss program, a said carton is removed for each pound lost or a said carton is added for each pound gained from the dieter's previous weight measurement.

4,492,581

GAMEBOARD TEACHING APPARATUS

Kazuo Arai, and Takeshi Shimamoto, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 11, 1982, Ser. No. 377,247
Claims priority, application Japan, May 14, 1981, 56-73054
Int. Cl.³ G09B 19/22
U.S. Cl. 434—128 4 Claims



1. A game apparatus comprising:

a game board on which a player plays a game;

game pieces for the game;

a memory means for storing coded data of orders of development of the game or problems of the game;

a game piece detecting means for detecting a position of a game piece on the game board and for providing a detected signal;

a display means for displaying the next move of the game piece;

a control means for controlling said display means to display according to said coded data stored in said memory means when said detecting means detects a move of the game piece;

wherein said game piece detecting means comprises a plurality of game piece sensors for detecting the game piece and a sensor selecting means for selecting one of said game piece sensors; and

wherein said control means comprises:

an imaginary board memory for storing the state of development in the game;

a sensor address counter for feeding address data to said sensor selecting means and to said imaginary board memory;

a comparator for comparing said detected signal from said game piece detecting means with an output signal of said imaginary board memory; and

a memory address counter for feeding memory address data to said memory and incrementing the memory address data when triggered by an output signal from said comparator, said control means causing said display means to display the next coded data in said memory means only when said detected signal and said output signal of said imaginary board memory are equal;

wherein said control means further comprises:

an address comparator for comparing the address data from said sensor address counter with said coded data from said memory, said address comparator being triggered by the output of said comparator;

a false counter for counting up a signal from said address comparator;

a presettable number means for presetting a specified number; and

a number comparator for comparing an output of said false counter with the specified number of said presettable number means, said control means causing said display means to display said coded data from said memory means when triggered by an output from said number compara-

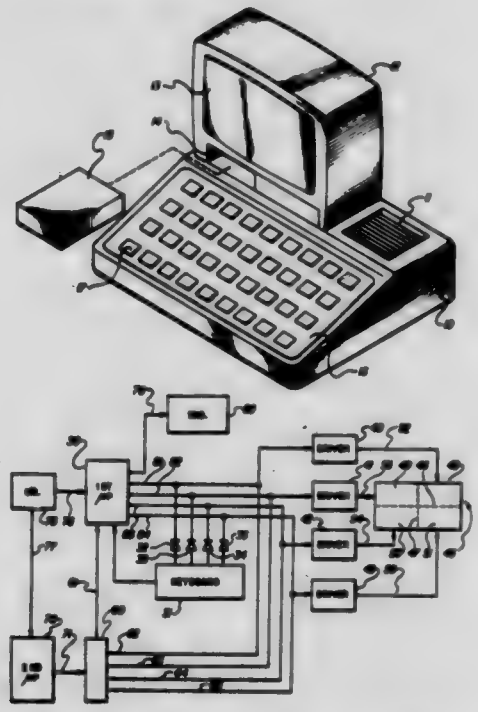
tor, whereby said display means displays a position for placing a game piece when the address data from said sensor address counter is equal to the coded data and the output of said false counter is equal to the specified number.

4,492,582

TEACHING AND ENTERTAINMENT DEVICE

Richard S. Cheng, Rolling Hills Estates; John Y. Ling, Chino, and Daniel J. Sheff, Torrance, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 6, 1981, Ser. No. 222,847
Int. Cl.³ G09B 7/02, 13/00
U.S. Cl. 434—169 7 Claims
MICROFICHE APPENDIX INCLUDED
(2 Microfiche, 192 Pages)



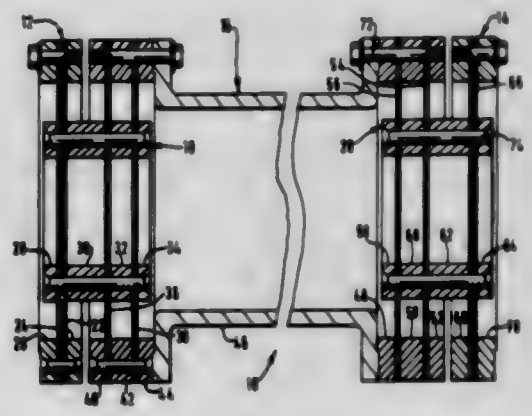
1. A teaching and entertainment device comprising:
display means including a matrix of individually operable display cells, each of said display cells configurable into selected one of at least two image states and requiring periodic refreshing to maintain an imposed image state;
a plurality of display drivers, each including a driver memory, periodically refreshing said display cells and each being coupled to and controlling a portion of said display means;
information means for displaying a figure at a location on said matrix including portions of said matrix under control of two or more of said display drivers;
a user operable keyboard;
a first microprocessor, including first microprocessor memory means in which a predetermined coded program is stored, coupled to said first microprocessor memory means, said keyboard and said plurality of display drivers, said first microprocessor being operable in a dominant first mode, in which it periodically poles said keyboard and responds thereto in accordance with said stored program to carry forth computational and interactive teaching and entertainment activities and to alter the image upon said display means, and in a subservient second mode;
a plug-in cartridge;
a plug-in cartridge receiving means for receiving and making electrical connections to said plug-in cartridge;
a second microprocessor, having second microprocessor memory means and housed within said plug-in cartridge, said second microprocessor being electrically compatible with said first microprocessor;
means cooperating with said first microprocessor and said second microprocessor to establish a master-slave relationship between said first and second microprocessors whenever said plug-in cartridge is received by said plug-in receiving means in which said first microprocessor is switched from operation in said dominant first mode to operation in said subservient second mode and transfers system preimmenance to said second microprocessor and in which said first microprocessor polls said keyboard, presents information to said second microprocessor, and responds to commands therefrom; and
clock means, coupled to said first and second microprocessors, providing a common periodic clock signal.

4,492,583

MEMBRANE TYPE COUPLINGS

Norman J. Morrison, Bramhall, England, assignor to Flexibox Limited, Manchester, England

Filed Mar. 29, 1983, Ser. No. 480,371
Claims priority, application United Kingdom, Apr. 2, 1982, 8209933
Int. Cl.³ F16D 3/76, 3/78
U.S. Cl. 464—99 6 Claims



1. A rotary coupling comprising:
(a) an input and output member connectable to a driving and a driven shaft respectively;
(b) an intermediate member disposed concentrically with respect to the input and output members;
(c) a pair of spacers disposed concentrically with respect to the intermediate member;
(d) a pair of axially spaced membrane packs connecting one spacer to one of the intermediate member and the input member;
(e) a membrane pack connecting said one spacer to the other of said intermediate member and input member;
(f) a second pair of axially spaced membrane packs connecting the other spacer to one of the intermediate member and the output member; and
(g) a second membrane pack connecting said other spacer to the other of said intermediate and output member, wherein said pairs of axially spaced membrane packs provide lateral stability to the coupling.

4,492,584

TRANSFER PRINTING PROCESS FOR CELLULOSE FABRIC

Evans M. Jenkins, Thomasville, N.C., assignor to Apollo Chemical Corporation, Burlington, N.C.

Filed Aug. 19, 1982, Ser. No. 409,397
Int. Cl.³ D06M *13/34*
U.S. Cl. 8—471 5 Claims

1. A method for heat transfer printing a disperse dye formulation from a transfer paper onto a textile fabric of the type composed of a natural and/or synthetic cellulosic material alone or in a blend with at least one natural and/or synthetic cellulosic material; said method comprising the steps of:

(a) impregnating said textile fabric with an aqueous solution of methylated trimethylol melamine reactant;

(b) polymerizing said methylated trimethylol melamine reactant in the total absence of any acidic or potentially acidic catalyst under such conditions that the reactant polymerizes within the fiberous structure of said fabric without substantially cross-linking said reactant to said fibers;

(c) said polymerizing step being carried out to according to one of the procedures selected from the group consisting of (1) subjecting the impregnated fabric to a steaming operation for at least thirty seconds, then drying at substantially 100° C. and curing at substantially 170° C.; and (2) maintaining the pH of said reactant during polymerization in the range of 8.5 to 10 by initially adding an alkaline catalyst selected from the group containing sodium hydroxide and potassium hydroxide to said aqueous solution, then subjecting said textile fabric to a drying operation at a temperature of substantially 80° C. and a subsequent curing operation at a temperature of substantially 170° C.;

(d) heat transfer printing onto said fabric.

4,492,585

PROCESS FOR THE ANTIFELTING TREATMENT OF KERATINOUS FIBRES, COMPRISING A BASIC OXIDATION CATALYZED BY A METAL SALT, AND FIBRES SO OBTAINED

Pierre Prevel, Caudebec-les-Elbeuf, France, assignor to Societe Normande de Recherches et de Participation, Louviers, France

Filed Jul. 5, 1983, Ser. No. 511,113
Claims priority, application France, Jul. 7, 1982, 82 11950
Int. Cl.³ D06P *5/22;* D06L *3/02, 3/04;* D06M *3/22*
U.S. Cl. 8—493 12 Claims

1. A process for the antifelting treatment of keratinous fibres, comprising:

(1) freeing the keratinous fibres of their natural or foreign impurities by hot washing in a bath of purified water containing detergent agents in the presence of at least one metal ion sequestering agent and an alkali phosphate if necessary, emptying the bath and rinsing the keratinous fibres with purified water;

(2) treating the rinsed fibres thus obtained by a bath of purified water containing per 100 kg of material 0.4 to 1.6 moles (gram-molecules) of a water-soluble salt of a metal having several valencies chosen from the cupric salts, the ferrous salts, the aluminum salts and the titanium salts, having a pH of 3 to 4 obtained by addition of an organic acid, heated to a temperature of 60°1 to 70° C. with circulation of the bath for a sufficient period of time to achieve homogeneous fixing of the metal salt on the fibre, subsequently emptying the bath and rinsing the fibres with purified water;

(3) treating the rinsed fibres thus obtained with a bath of purified water in the presence of an oxidizing agent which does not introduce metal ions and an organic base to obtain a pH of 8.5 to 9, at a temperature of 45° to 50° C. for a time period of 1 hour 30 minutes to 2 hours, with the pH being maintained within the above-mentioned range by addition of the organic base, subsequently emptying the bath and rinsing the fibres with purified water;

(4) treating the rinsed fibres thus obtained with a bath of purified water containing a reducing agent which does not introduce metal ions and a sequestering agent, until the ingredients used in the treatment have been eliminated, subsequently emptying the bath and rinsing the fibres with purified water; and

(5) treating the fibres thus obtained with a bath of purified water having a pH of about 3 obtained by adding an organic acid, the fibres being subsequently either dyed directly or drained and dried.

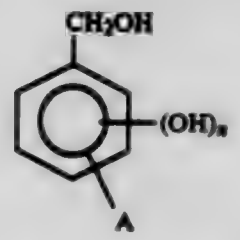
4,492,586

DYESTUFFS AND DYEING METHOD USING LIGNIN ADDUCT DISPERSANT

Stephen Y. Lin, Wausau, Wis., assignor to Reed Lignin, Inc., Greenwich, Conn.

Division of Ser. No. 123,696, Feb. 22, 1980, Pat. No. 4,308,203.
This application Jun. 25, 1981, Ser. No. 277,225
The portion of the term of this patent subsequent to Nov. 16, 1999, has been disclaimed.
Int. Cl.³ D06P *67/00;* C07G *1/00*
U.S. Cl. 8—528 8 Claims

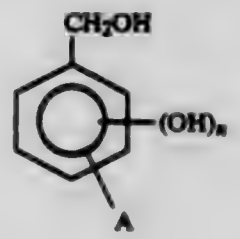
1. A dyestuff composition comprising a water-insoluble dye; and a lignin adduct of a methylolated derivative of a sulfonated lignin material containing about 2 to 8 percent by weight of combined organic sulfur, and about 0.05 to 4.0 millimoles, per gram of the lignin moiety of said material, of an hydroxyl benzyl alcohol compound having the general formula:



wherein n is an integer from 1 to 3 and A is a substituent selected from the group consisting of hydrogen, alkyl groups containing 1–4 carbon atoms and the hydroxymethyl group, said adduct being present in a weight ratio to said dye of from about 0.25 to 0.75:1.0.

7. In a method of dyeing a fabric, the steps comprising:

a. forming a dye bath by admixing with water an effective amount of a dyestuff composition, said composition comprising: (1) a water-insoluble dye, and (2) a lignin adduct of a methylolated derivative of a sulfonated lignin material containing about 2 to 8 percent by weight of combined organic sulfur, and about 0.05 to 4.0 millimoles, per gram of the lignin moiety of said material, of an hydroxyl benzyl alcohol compound having the general formula:



wherein n is an integer from 1 to 3 and A is a substituent selected from the group consisting of hydrogen, alkyl groups containing 1–4 carbon atoms, and the hydroxymethyl group, said adduct being present in a weight ratio to said dye of from about 0.25 to 0.75:1.0, and the insoluble fraction of said dyestuff composition having a weight average particle size of about 50 to 200 angstroms;

b. heating said bath to a temperature of about 75° to 135° Centigrade;

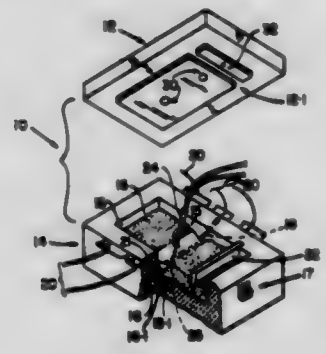
c. immersing a fabric in said bath for a period of time sufficient to effect dyeing thereof; and
d. removing said fabric from said bath.

4,492,587

METHOD OF FUSING VANADIUM PENTOXIDE POWDER

Michael B. Fletcher, Pretoria, South Africa, assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 113,696, Jan. 17, 1980, Pat. No. 4,337,373. This application Jun. 28, 1982, Ser. No. 392,661
Int. Cl.³ C01G 31/02
U.S. Cl. 23—293 R 9 Claims



1. A method for fusing vanadium pentoxide powder which comprises:
adding a charge of vanadium pentoxide powder to a furnace having walls provided with electrode ports and an overflow weir, the electrode ports containing electrodes having ends submerged in the powder charge, the furnace additionally including a baffle located upstream from the weir and projecting downwardly into the melt, the baffle providing a quiet zone adjacent to the weir;
passing an electric current through the melt by applying substantially constant electric power to the electrodes;
feeding additional vanadium pentoxide powder onto the surface of the melt within a zone separated from the weir by the baffle, the powder forming a thin solidified film on the surface of the melt;
allowing the vanadium pentoxide powder to build up as a layer on top of the thin solified film to a depth sufficient to provide an insulating blanket which limits the temperature of the air above the layer;
allowing excess melt to flow out of the furnace through the weir;
monitoring the temperature of the melt within the quiet zone adjacent to the weir; and
controlling the rate of feed of vanadium pentoxide powder so as to supply more or less powder to the melt in response to changes in the melt temperature in order to keep the temperature within predetermined limits.

4,492,588

METHOD FOR REMOVING SULFUR FROM FOSSIL FUELS

James G. Kralik, Pasadena, and William H. Corcoran, San Gabriel, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 259,736, May 1, 1981, abandoned. This application Sep. 29, 1983, Ser. No. 537,155
Int. Cl.³ C10L 9/06
U.S. Cl. 44—1 R 55 Claims

1. In a process for preparing a sulfur-containing fossil fuel for combustion: forming a basic and distributed precursor by subjecting the fuel for combustion to an oxidative treatment at approximately ambient temperature; and subjecting the oxidant-treated fuel to a basic aqueous solution of a compound of an alkali metal or an alkaline earth metal without substantially removing the sulfur from the fuel, whereby, upon combustion of the fuel, a major portion of the sulfur in the fuel will be trapped in the reaction with the precursor and appear in the resulting ash as a sulfate.

5. In a process as set forth in claim 1, wherein said fuel is peat.

49. An oxidatively treated fuel product comprising a sulfur-containing fuel exposed to an aqueous solution of a compound of a metal selected from the group including alkali metals and alkaline earth metals to form a basic and distributed precursor whereby a major portion of the sulfur in the fuel, when the fuel is burned, will be trapped as a sulfate in the ash.

4,492,589

ANIONIC DISPERSANTS FOR AQUEOUS SLURRIES OF CARBONACEOUS MATERIALS

Martin J. Schick, New York, N.Y., and Edwin L. Kelley, Succasunna, N.J., assignors to Diamond Shamrock Chemicals Company, Dallas, Tex.

Filed Sep. 20, 1982, Ser. No. 419,753
Int. Cl.³ C10L 1/32
U.S. Cl. 44—51 11 Claims

1. An aqueous carbonaceous slurry consisting essentially of carbonaceous material and water, the carbonaceous material of a size such that at least 80% will pass through a 200 mesh screen, containing at least one dispersant having the formula

$$[R^1OOC-CH_2-\underset{\displaystyle SO_3}{\underset{|}{CH}}-COOR^2]^-M^+$$

where R^1 and R^2 represent straight or branched chain alkyl groups having from about 4 to about 12 carbon atoms, R^1 and R^2 being the same or different, and M is a cation selected from the group consisting of sodium, potassium, lithium and ammonium
said dispersant present in an amount sufficient to reduce viscosity of the slurry, stabilize the network of carbonaceous material in water and improve pumpability.

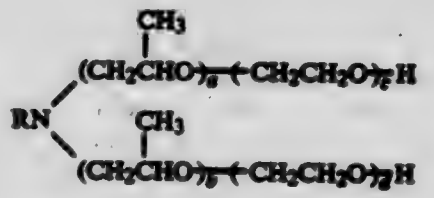
4,492,590

STABILIZERS FOR OIL SLURRIES OF CARBONACEOUS MATERIAL

Martin J. Schick, New York, N.Y., and Edwin L. Kelley, Succasunna, N.J., assignors to Diamond Shamrock Chemicals Company, Dallas, Tex.

Filed Dec. 6, 1982, Ser. No. 447,315
Int. Cl.³ C10L 1/32
U.S. Cl. 44—51 18 Claims

1. A slurry of solid particulate carbonaceous material in oil containing at least one stabilizer having the formula



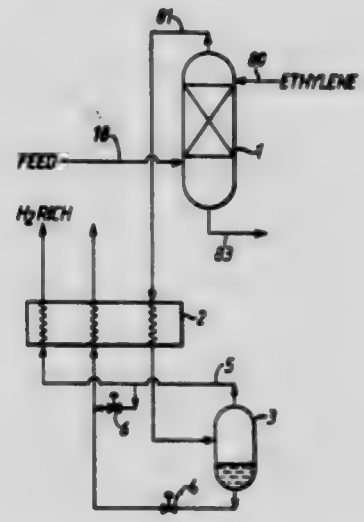
where R is a straight or branched saturated or unsaturated hydrocarbon chain of 12 to 18 carbon atoms,
a+b totals from about 2 to about 4 and
c+d totals from about 7 to about 22,
said stabilizer present in an amount sufficient to stabilize said slurry.

4,492,591

METHOD AND APPARATUS FOR RECOVERING HYDROGEN FROM A FEED COMPRISING METHANE, ETHYLENE, HYDROGEN AND ACETYLENE

Richard O'Reilly, Fetcham, England, assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 26, 1982, Ser. No. 381,234
Claims priority, application United Kingdom, May 26, 1981, 8115934
Int. Cl.³ F25J 3/02
U.S. Cl. 62—17 8 Claims



1. A method for recovering hydrogen from a feed comprising methane, ethylene, hydrogen and acetylene, which method comprises the steps of cooling said feed; scrubbing said cooled feed with a scrubbing liquid selected from the group consisting of liquid ethylene, liquid propane, liquid ethane and mixtures thereof to absorb at least part of said acetylene; and subsequently further cooling the scrubbed feed to condense at least part of the methane and ethylene and leave a gaseous, substantially acetylene-free hydrogen product of a purity of up to greater than 96% by volume.

4,492,592

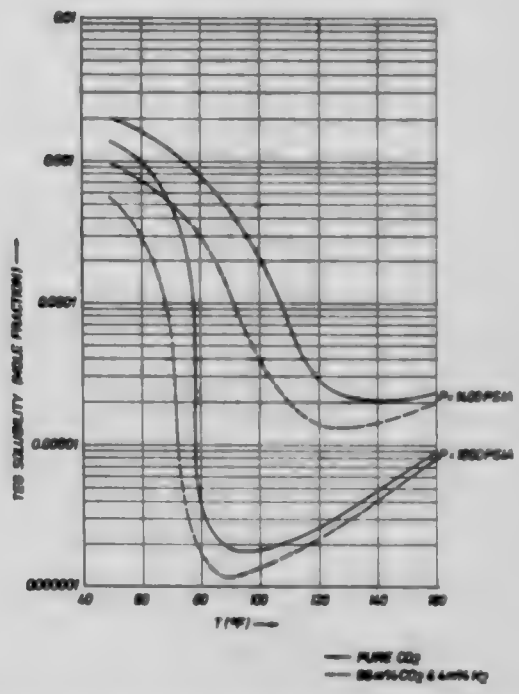
COMBINED DESICCATION OF SUBSTANTIALLY SUPERCRITICAL CO_2

Zalda Diaz, Houston, and James H. Miller, Katy, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 6, 1983, Ser. No. 501,583
Int. Cl.³ B01D 53/04
U.S. Cl. 62—18 5 Claims

1. A process for drying water-containing CO_2 at or above its critical point, comprising:

providing a two-component desiccant system, including at least one electrolyte desiccant adsorbed on a permeable mass of at least one solid desiccant material; said desiccant and desiccant material being preselected to maximize water removal, minimize desiccant loss and maximize drying efficiency; and



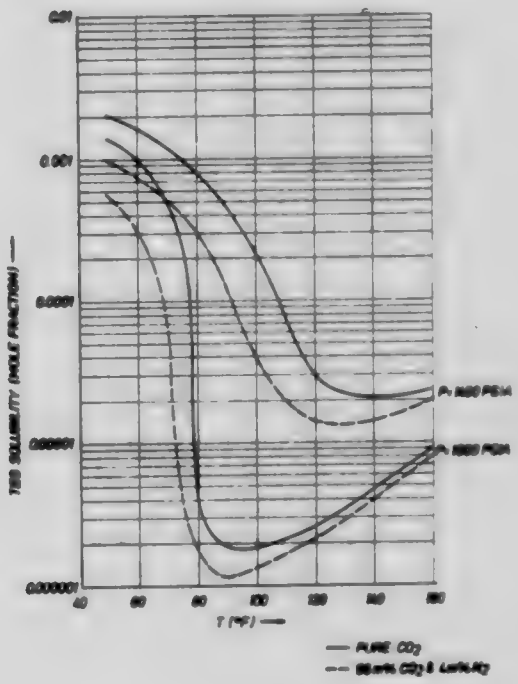
contacting said two-component system with CO_2 at or above its critical point to an extent sufficient to provide a CO_2 stream having a non-corrosive water content.

4,492,593

SEQUENTIAL LIQUID SOLID DESICCATION OF SUPERCRITICAL AND NEARCRITICAL CO2

Zalda Diaz, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 6, 1983, Ser. No. 501,668
Int. Cl.³ F25J 3/00
U.S. Cl. 62—18 5 Claims



1. A process for drying water containing CO_2 at or above its critical point, comprising:

providing at least one liquid desiccant solution and at least one permeable mass of solid desiccant material for a two-step system;

preselecting each of said desiccants so that the volume of CO_2 desiccated to a selected non-corrosive water content in a single cycle with said two-step system is greater than the sum of the volumes which can be dried to the same extent by separate single cycles through said liquid desic-

cant solution or said permeable mass of solid desiccant material of said two cycle system;

contacting said CO_2 at or above its critical point, first with said at least one liquid desiccant solution, and;

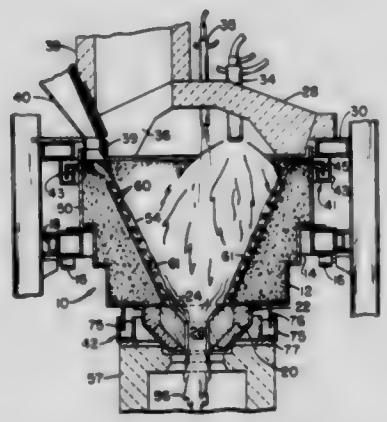
second, contacting said CO_2 at or above its critical point with said at least one permeable mass of solid desiccant material sufficient to recover a stream of CO_2 with said non-corrosive water content.

4,492,594

METHOD AND APPARATUS FOR LIQUEFYING MATERIAL WITH RETAINER MEANS

John E. Curley, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 3, 1984, Ser. No. 567,603
Int. Cl.³ C03B 5/10
U.S. Cl. 65—134 15 Claims



1. Apparatus for liquefying pulverulent material comprising: a vessel having an interior side wall, means for heating the interior of the vessel to a liquefying temperature, outlet means at a bottom portion of the vessel for draining liquefied material from the vessel, inlet means at an upper portion of the vessel for feeding pulverulent material onto interior side wall portions of the vessel, and grid means within the vessel spaced from the interior side wall for retaining pulverulent material against the interior side wall portions.

10. A method for liquefying pulverulent material comprising: providing a lining of pulverulent material on interior side wall portions of a vessel so as to present a sloped melting surface, feeding additional pulverulent material onto the lining, heating the vessel interior so as to liquefy portions of the pulverulent material, draining the liquefied material from the vessel, and retaining the lining in place by means of a grid structure in contact therewith.

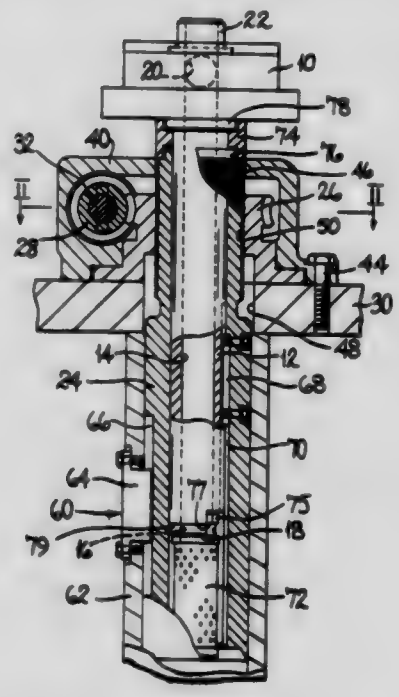
4,492,595

BOTTOM PLATE MECHANISM FOR A MOULD OF A GLASSWARE CONTAINER MANUFACTURING MACHINE

Hermann H. Nebelung, Zurich, Switzerland, and Werner-Dieter Knoth, Essen, Fed. Rep. of Germany, assignors to Emhart Industries, Inc., Farmington, Conn.

Filed Nov. 21, 1983, Ser. No. 553,942
Claims priority, application United Kingdom, Nov. 30, 1982, 8234098
Int. Cl.³ C03B 9/20
U.S. Cl. 65—263 8 Claims

1. A bottom plate mechanism for a mould of a glassware container manufacturing machine comprising an adaptor plate which provides a support for one or more mould bottom plates and contains passages which connect an inlet of the adaptor plate to the or each bottom plate supported thereby so that, when vacuum is applied to the inlet, air is sucked from the or each bottom plate, connecting means on which the adaptor plate is mounted which connects the inlet to a vacuum source, a filter which serves to prevent particles sucked from the or each bottom plate from reaching the vacuum source, and height adjustment means operable to vary the height at which the adaptor plate is supported, the connecting means being arranged to maintain the connection between the inlet and the vacuum source as the height of the adaptor plate is varied, wherein the adaptor plate is supported by a vertically-extending tubular member of the connecting means which is supported for vertical adjustment by the height adjustment means, the tubular member being telescopically received in a fixed



duct of the connecting means leading to the vacuum source, and the adaptor plate comprises a cylindrical projection which is telescopically received in the tubular member and in which the inlet is formed within the tubular member, the filter being mounted on the cylindrical projection so that it extends across the inlet, the arrangement being such that the adaptor plate may be lifted away from the tubular member so that the cylindrical projection and filter leave the tubular member.

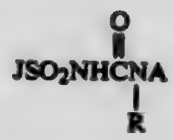
4,492,596

PHENYL-SUBSTITUTED SULFONAMIDES

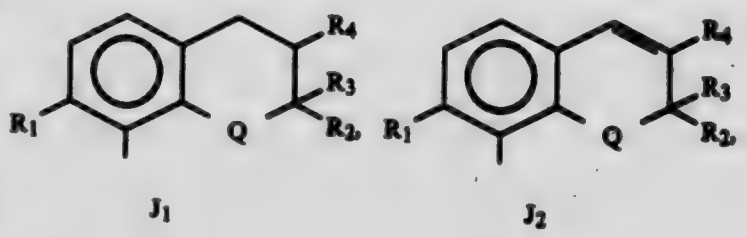
Robert J. Pasteris, Wilmington, Del., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed Aug. 11, 1982, Ser. No. 406,191
Int. Cl.³ C07D 407/12, 409/12; A01N 43/54
U.S. Cl. 71—90 54 Claims

1. A compound of the formula:

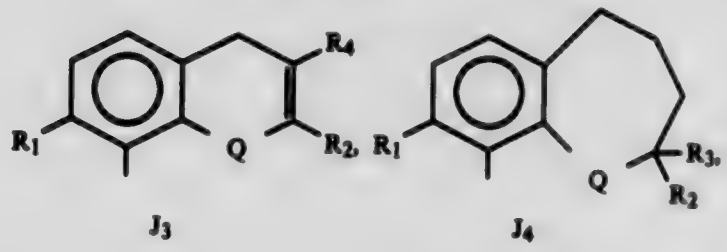


wherein J is

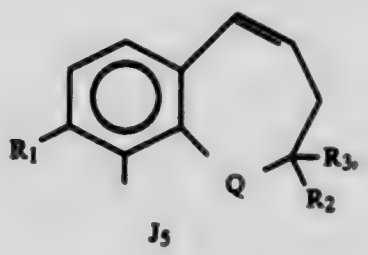


J_1 J_2

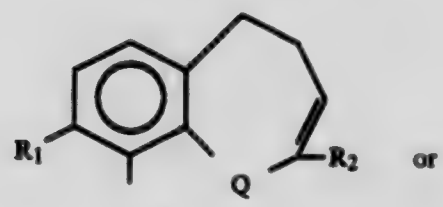
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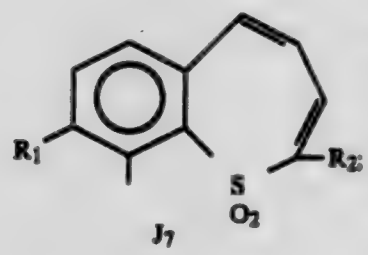
J_3 J_4



J_5

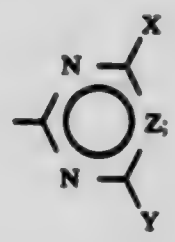


J_6 or



J_7

Q is O, S or SO_2;
R is H or CH_3;
R_1 is H, CH_3, OCH_3, Cl, Br, CO_2R_5, SO_2R_6, OSO_2R_7 or $SO_2NR_8R_9$;
R_4 is H or CH_3;
R_2 and R_3 are independently H or C_1–C_3 alkyl;
R_5 is C_1–C_3 alkyl, $CH_2CH{=}CH_2$, $CH_2CH_2OCH_3$ or CH_2CH_2Cl R_6 is C_1–C_3 alkyl;
R_7 is C_1–C_3 alkyl or CF_3;
R_8 and R_9 are independently C_1–C_2 alkyl;
A is



X is CH_3, OCH_3 or Cl;
Y is CH_3, OCH_3, OC_2H_5, CH_2OCH_3, C_2H_5, NH_2, $NHCH_3$ or $N(CH_3)_2$;
Z is CH;
and their agriculturally suitable salts; provided that:
(1) when X is Cl, then Y is OCH_3, NH_2, $NHCH_3$, $N(CH_3)_2$ or OC_2H_5;
(2) the total number of carbon atoms in R_2 and R_3 are less than or equal to 3;
(3) in Formula J_2, when R_2 and R_3 are other than H, then R_4 is H;
(4) in Formula J_3, when R_2 is other than H, then R_4 is H;
(5) when Q is S, then R_1 is not $SO_2NR_8R_9$;
(6) in Formulae J_3 and J_6, Q may not be O; and
(7) in Formula J_7, R_1 is not CH_3.

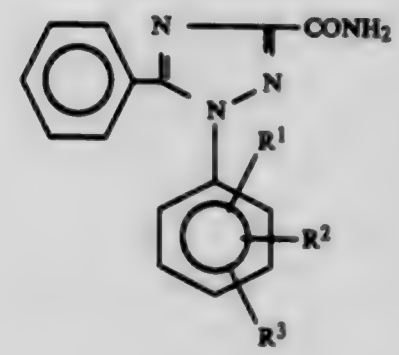
4,492,597

1,5-DIPHENYL DERIVATIVE OF 1,2,4-TRIAZOLE-3-CARBOXAMIDE AND HERBICIDE CONTAINING THE SAME

Katsumichi Aoki; Yoichi Kanda; Keigo Satake, and Hiroyasu Shinkawa, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

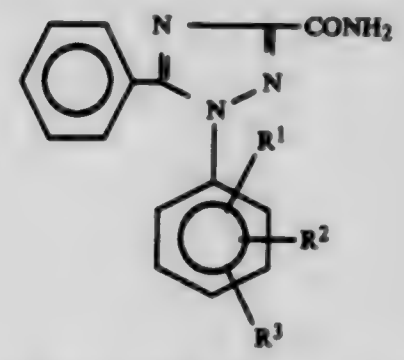
Filed May 19, 1982, Ser. No. 379,944
Claims priority, application Japan, May 25, 1981, 56-77967; May 25, 1981, 56-77968
Int. Cl.³ A01N *43/64*; C07D *249/10*
U.S. Cl. 71—92 11 Claims

1. A 1,5- disubstituted 1,2,4-triazole-3-carboxamide having the formula:



wherein R^1 is an atom of fluorine or chlorine, a methyl group or a trifluoromethyl group; R^2 is an atom of chlorine or a methyl group; and R^3 is an atom of hydrogen or a methyl group.

8. A herbicide composition comprising as an active ingredient a herbicidally effective amount of a 1,5-disubstituted 1,2,4-triazole-3-carboxamide represented by the formula:



wherein R^1 is an alkyl group having 1 to 3 carbon atoms, a trifluoromethyl group, a chlorine atom, fluorine atom, an iodine atom or a nitro group, R^2 is a methyl group or a chlorine atom and R^3 is a methyl group or a hydrogen atom, provided that 1-(4-methylphenyl)-5-phenyl-1,2,4-triazole-3-carboxamide is excluded, together with a herbicidally acceptable carrier or a diluent.

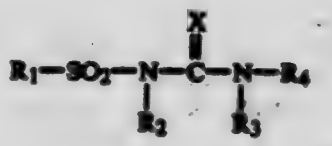
4,492,598

SULFONYLUREAS HAVING HETEROCYCLIC SUBSTITUENTS, AND THEIR USE IN AGRICULTURE

Lothar Willms, Unkel; Thomas Hütteimaier; Hilmar Mildenberger, both of Kelkheim; Klaus Bauer, Rodgau; Helmut Bürstell, Frankfurt am Main, and Hermann Bieringer, Eppstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 6, 1982, Ser. No. 406,076
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1981, 3131489
Int. Cl.³ C07D *251/52*, *251/46*, *251/70*; A01N *43/70*
U.S. Cl. 71—93 18 Claims

1. A compound of the formula I



wherein

R_1 is a saturated cycloaliphatic radical having 3 to 12 C atoms or a cycloaliphatic radical having 5–12 C atoms, which is monounsaturated and all of which can optionally be substituted by up to 4 halogen atoms, (C_1–C_4)-alkyl, halogenoalkyl of 1–3 halogen atoms or (C_1–C_4)-alkoxycarbonyl; a bicyclic saturated or monounsaturated aliphatic radical having 7 to 12 C atoms,

optionally substituted by up to 6 halogen atoms or (C_1–C_4)-alkyl, or in which a CH_2 bridge can be replaced by oxygen,

R_2 and R_3 are the same or different and each may be H or (C_1–C_4)-alkyl,

X is O or S,

R_4 is a 1,3,5-triazine optionally substituted 1–2 times by halogen, NO_2, CN, CHO, (C_1–C_4)-alkylamino,

(C_1–C_4)-dialkylamino, (C_1–C_4)-alkyl which is optionally substituted by halogen, (C_1–C_3)-alkoxy,

(C_1–C_3)-alkylthio, (C_1–C_3)-alkylamino, (C_1–C_3)-dialkylamino (C_1–C_4)-alkoxycarbonyl, (C_1–C_4)-alkoxy which is optionally substituted by halogen or (C_1–C_4)-alkoxycarbonyl, or (C_1–C_4)-alkylthio which is optionally substituted by halogen or (C_1–C_4)-alkoxycarbonyl, or (C_2–C_4)-alkoxycarbonyl, and, if R_2 denotes hydrogen, its physiologically tolerated salt with base.

10. A herbicidal agent having an effective content of a compound as claimed in claim 1 in combination with a carrier therefor.

4,492,599

HERBICIDAL S-TRIAZINES

George Levitt, Wilmington, and Wallace C. Petersen, Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

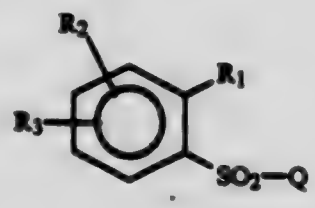
Division of Ser. No. 212,869, Dec. 4, 1980, Pat. No. 4,370,480, which is a continuation-in-part of Ser. No. 168,891, Jul. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 098,776, Nov. 30, 1979, abandoned. This application Sep. 27, 1982, Ser. No. 424,478

Int. Cl.³ C07D 251/46, 405/12; A01N 43/68, 43/70

U.S. Cl. 71—93

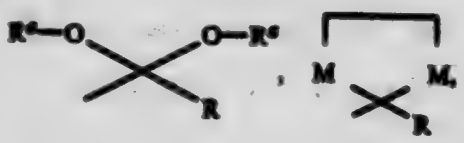
26 Claims

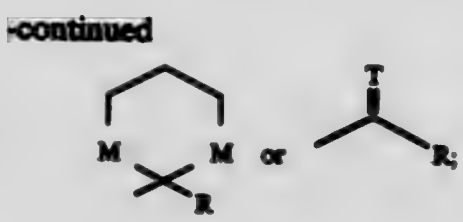
11. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound selected from



where

R_1 is



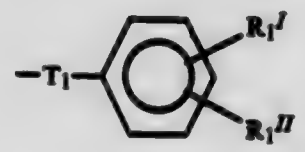


M=O or $S(O)_G$;

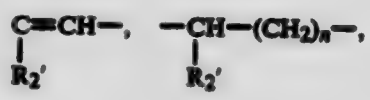
G=0 or 2;

R^a is CH_3 or CH_3CH_2;

R=H; C_1–C_{12} alkyl; C_2–C_6 alkenyl; C_2–C_6 alkynyl; C_1–C_4 alkyl substituted with one to four substituents selected from 0–3 F, 0–3 Cl, 0–3 Br, 0–2 OCH_3, 0–1 cyano, 0–1 CO_2R_1' where R_1' is C_1–C_3 alkyl; CO_2R_1'; C_2–C_4 alkenyl substituted with 1–3 Cl; C_3–C_6 cycloalkyl; C_3–C_6 cycloalkenyl; C_3–C_6 cycloalkyl substituted with substituents selected from 1–3 CH_3 or one of CH_3CH_2, Cl, OCH_3; C_4–C_7 cycloalkylalkyl;



where T_1 is



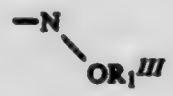
or a single bond;

where

R_2' is H or CH_3, n is 0 or 1;

R_1^I and R_1^{II} are independently H, CH_3, Cl or OCH_3;

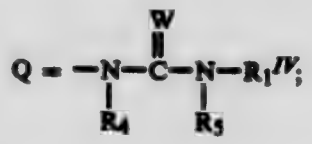
T=O or



where R_1^{III} is H, C_1–C_4 alkyl or C_3–C_4 alkenyl;

R_2=H, F, Cl, Br, C_1–C_3 alkyl, NO_2, SO_2CH_3, OCH_3, SCH_3, CF_3 or $N(CH_3)_2$;

R_3=H, F, Cl, Br or CH_3;

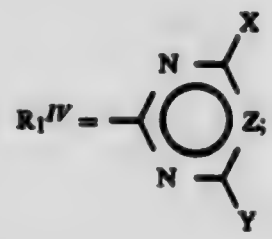


where

R_4=H or CH_3;

R_5=H, CH_3 or OCH_3;

W=O or S;



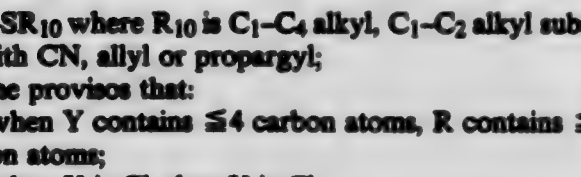
where

Z=N;

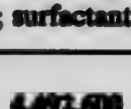
X=H, Cl, —CH_3, —OCH_3, —OCH_2CH_3 or —$OCH_2CH_2OCH_3$;

Y=H; Cl; C_1–C_4 alkyl; C_1–C_4 alkyl substituted with —OCH_3, —OC_2H_5, —CN, —CO_2CH_3, —$CO_2C_2H_5$ or

1-3 atoms of F, Cl, Br; C_3-C_4 alkenyl; $—CH_2C{=}CR_6$ where R_6 is H, $—CH_3$, $—CH_2Cl$; $—A—(CH_2)_{n'}—A_1—(C_1$-C_3 alkyl) where n' is 2 or 3, A is O or S and A_1 is O, S or SO_2;



where
L is OH, $—NH_2$,



$—NH(C_1$-C_4 alkyl), $—N(C_1$-C_4 alkyl)$_2$, C_1-C_6 alkoxy; SCN; $—N_3$; NR_7R_8 where R_7 is H or CH_3 and R_8 is H, $—OCH_3$, C_1-C_4 alkyl, C_3-C_6 cycloalkyl, C_1-C_4 alkyl substituted with —CN or $—CO_2CH_3$ or $CO_2C_2H_5$, C_3-C_4 alkenyl or C_2-C_3 alkyl substituted with OCH_3 or OC_2H_5, or R_7 and R_8 can be taken together to form $—CH_2CH_2CH_2CH_2—$ or $—CH_2CH_2OCH_2CH_2—$; $—O—R_9$ where R_9 is C_1-C_4 alkyl, C_2-C_4 alkyl substituted with 1-3 atoms of F, Cl or Br, C_1-C_4 alkyl substituted with cyano, C_3-C_4 alkenyl, $—CH_2C{=}CR_6$, where R_6 is as previously defined,



$—SR_{10}$ where R_{10} is C_1-C_4 alkyl, C_1-C_2 alkyl substituted with CN, allyl or propargyl;

with the provisos that:

(1) when Y contains ≦4 carbon atoms, R contains ≦4 carbon atoms;
(2) when X is Cl, then Y is Cl;
(3) when X and Y are both H, then R is ≦4 carbon atoms;
(4) when T is $—N—OR_1{}^{III}$, then R contains ≦5 carbon atoms; and their agriculturally suitable salts and at least one of the following; surfactant, solid or liquid diluent.

4,492,600

CORROSION-INHIBITING PAINTS AND LACQUERS

Horst Brunn; Franz Hunsl; Wolfgang Rambold; Peter Krause, and Gerd von Sandkowski, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 14, 1982, Ser. No. 398,226
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1981, 3128716
Int. Cl.³ C04B 9/02; C09D 5/08
U.S. Cl. 106—14.34 1 Claim

1. Corrosion-inhibiting paints and lacquers pigmented with a corrosion-inhibiting pigment having a specific surface according to BET of from 0.1 to 200 m^2/g, a content of water-soluble components of less than 0.6%, and comprising an organic corrosion inhibitor intercalated into an inorganic matrix having the formula:

$$x[Me(II)O] \cdot \frac{1-x}{2}\,[Me(III)_2O_3] \cdot y[A] \cdot z[I] \cdot aq$$

wherein
Me(II)O is at least one divalent metal oxide;
$ME(III)_2O_3$ is at least one trivalent metal oxide;
A is at least one inorganic acid anhydride;
I is at least one organic corrosion inhibitor;
aq is from 0.5 to 9 moles of water; and
x, y and z are whole or fractional numbers and
x has a value of from 0 to 1,
y has a value of from 0 to 0.7 and
z has a value of from greater than 0 to 0.4,
with the proviso that the organic corrosion inhibitor is at least 0.5% by weight of inorganic material.

4,492,601

PROCESS FOR CLARIFYING AND DESALINATING SUGAR CANE SYRUP OR MOLASSES

Seikan Nakasone; Saiso Miyagi, both of Okinawa; Takehiko Aragaki, Itoman, and Yasuo Higa, Naha, all of Japan, assignors to Daiichi Seito Kabushiki Kaisha, Okinawa and Taito Kabushiki Kaisha, Tokyo, both of, Japan

Filed Oct. 15, 1982, Ser. No. 434,484
Int. Cl.³ C13D 3/02, 3/16
U.S. Cl. 127—48 3 Claims

1. A process for clarifying and desalinating raw cane sugar syrup or molasses solutions containing inorganic oxy-acid and organic acid impurities therein, which compriaes the steps of (1) admixing with the raw cane sugar syrup or molasses solution a water-soluble chloride of an alkaline earth metal ion which reacts with inorganic oxy-acid anions and radicals and with organic acids to form a water-insoluble precipitate of said oxy-acid anions and radicals and organic acids, (2) separating said precipitate from said solution while maintaining the Brix degree of the solution between more than 60% and less than 80%, (3) diluting the precipitate-free solution to a Brix of less than 55%, and (4) subjecting said diluted solution to an electrodialysis using cation exchange film and neutral film arranged in an alternating manner.

4,492,602

COPPER BASE ALLOYS FOR AUTOMOTIVE RADIATOR FINS, ELECTRICAL CONNECTORS AND COMMUTATORS

Yung W. Lee; Fu W. Ling, both of Edison, and Stanley Shapiro, Hillside, all of N.J., assignors to Revere Copper and Brass, Inc., New York, N.Y.

Filed Jul. 13, 1983, Ser. No. 513,280
Int. Cl.³ C22C 9/02; C22F 1/08
U.S. Cl. 148—11.5 C 24 Claims

1. A copper alloy composition having an improved anneal resistance and minimum electrical conductivity of 95% IACS consisting essentially of copper, oxygen, a sufficient amount of tin that is about 3.7 times the oxygen content plus about 0.025 to 0.08 weight percent, and 0.005 to 0.05 weight percent tellurium.

4,492,603

SEALING MATERIAL

Takashi Kase, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 29, 1982, Ser. No. 428,057
Claims priority, application Japan, Sep. 8, 1982, 57-155184
Int. Cl.³ B32B 15/04, 15/18
U.S. Cl. 148—31.5 10 Claims

1. A sealing material which comprises a soft glass-sealing alloy of an iron - nickel - chromium system consisting essentially of about 40 to 55% by weight of nickel, about 3 to 8% by weight of chromium, and the balance principally of iron, and an oxide layer formed on the surface thereof by a preoxidation treatment and having a sulfur content of not more than 15 ppm and a phosphorus content of not more than 20 ppm.

4,492,604

SALT BATH FOR NITRIDING IRON MATERIALS

Johannes Muller, Frankfurt am Main; Helmut Kunst, Rodenbach, and Christian Scoudo, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 20, 1982, Ser. No. 435,401
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1981, 3142318
Int. Cl.³ C21D *1/48*
U.S. Cl. 148—15.5 24 Claims

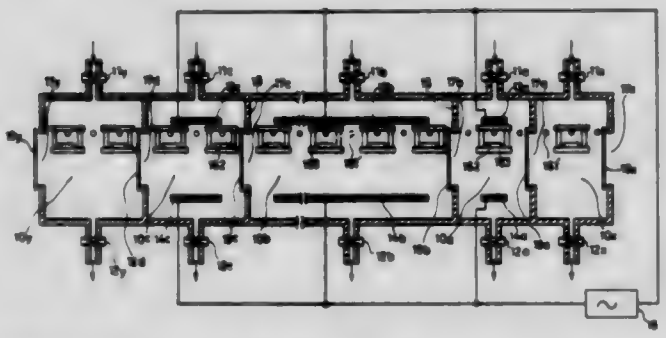
1. A salt bath suitable for nitriding components made of iron and steel consisting essentially of at least one alkali metal cyanide, alkali metal cyanate and alkali metal carbonate and having a cyanide content of between 0.01 and 3% CN^- and also containing 0.5 to 12 ppm of selenium in the form of elemental selenium or a selenium compound.

4,492,605

METHOD OF MAKING PHOTOVOLTAIC DEVICE

Shin-ichiro Ishihara, Hirakata; Takashi Hirao, Ikoma; Koshiro Mori, Osaka, and Motonori Mochizuki, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 18, 1983, Ser. No. 476,707
Claims priority, application Japan, Mar. 19, 1982, 57-44922
Int. Cl.³ C23C *13/10*; H01L *31/18*
U.S. Cl. 148—174 6 Claims



1. A method for making photovoltaic device comprising the steps of moving at least one substrate into a reaction chamber,
causing a plasma reaction of raw material gases in said reaction chamber, thereby forming an amorphous silicon layer of a first conductivity type on said substrate,
moving said at least one substrate into a next reaction chamber for a next plasma reaction,
causing said next plasma reaction of next raw material gases in said next reaction chamber, thereby forming a second amorphous silicon layer of a second conductivity type of said layer of the first conductivity type,
the improvement being in
after finishing said forming of said an amorphous silicon layer of a first conductivity type, changing the gas atmosphere of said reaction chamber into a different atmosphere which is substantially identical and of equal pressure to the next gas atmosphere of said next reaction chamber, and thereafter moving said substrate to said next reaction chamber.

3. A method for making a photovoltaic device comprising the steps of
moving at least one substrate into a reaction chamber,
causing a plasma reaction of raw material gases in said reaction chamber, thereby forming an amorphous silicon layer of a first conductivity type,
moving said at least one substrate into a next reaction chamber for a next plasma reaction, causing said next plasma reaction of next raw material gases in said next reaction chamber, thereby to form second amorphous silicon layer of a second conductivity type on said layer of the first conductivity type,
the improvement being in
after finishing said forming of said amorphous silicon layer of the first conductivity type, changing the next gas atmosphere of said next reaction chamber into another different atmosphere which is substantially identical and of equal pressure to the gas atmosphere of said reaction chamber, and thereafter moving said substrate to said next reaction chamber.

4,492,606

COMPOSITE PRODUCT HAVING A LOW-POROSITY SUPPORT LAYER, AND METHOD OF MANUFACTURE THEREOF

Laurent Haag, Wiltz, Luxembourg, assignor to Eurofloor S.A., Luxembourg, Luxembourg

Filed Sep. 1, 1982, Ser. No. 413,746
Claims priority, application Luxembourg, Sep. 2, 1981, 83602
Int. Cl.³ B32B *31/26, 5/18*
U.S. Cl. 156—79 11 Claims



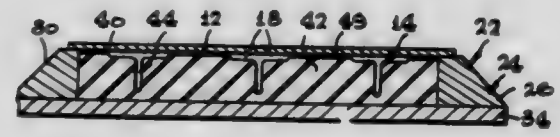
1. A process for the manufacture of a composite material having a low-porosity support layer, including the steps of:
perforating a low-porosity support material wherein said low-porosity support has perforations ranging in diameter from about 0.5 to about 3 mm, arranged in unit grid segments of from about 2 to about 20 mm in length on each side;
coating a compact plastisol precoat on both surfaces of said perforated support material wherein said plastisol essentially fills the perforations, and wherein said coatings are joined and locked together through said perforations;
gelling said precoat;
applying a foamable plastisol coating to the plastisol precoat on one surface of said support material; and
expanding the foamable coating.

4,492,607

METHOD FOR PRODUCING INTEGRALLY STIFFENED FIBER REINFORCED PLASTIC PANELS

Ronald G. Halcomb, Tulsa, Okla., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 22, 1983, Ser. No. 468,101
Int. Cl.³ B29B *1/14*
U.S. Cl. 156—242 24 Claims



1. A process for producing an integrally stiffened panel comprising a skin of fiber reinforced resin containing T-section stiffeners of fiber reinforced resin, which comprises:
(a) producing a rubber-like form block having T-shaped grooves therein corresponding to the shape of said T-section stiffeners,
(b) inserting T-section stiffeners of fiber reinforced partially cured thermosetting resin into the grooves of said form block, said T-section stiffeners comprising a leg and outwardly extending flanges,
(c) introducing the resulting assembly of the form block and stiffeners into a die,
(d) placing a sheet of fiber reinforced partially cured thermosetting resin forming a skin over said form block and in contact with the flanges of said T-section stiffeners.

(e) and co-curing said stiffeners and said skin under heat and pressure to integrally connect said stiffeners to said skin.

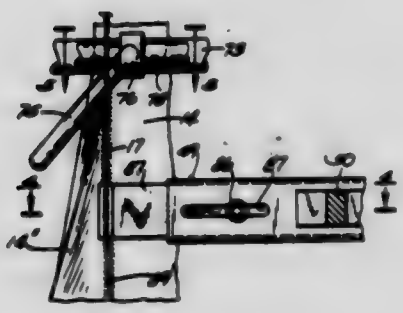
4,492,608

ELASTIC BAND APPLICATOR AND SHEET FOLDER

John L. Hirsch, Sheboygan Falls, and Ludwig W. Freitag, Elkhart Lake, both of Wis., assignors to Curt G. Joa, Inc., Sheboygan Falls, Wis.

Filed Jan. 6, 1983, Ser. No. 456,062
Int. Cl.³ B32B *31/00, 31/04;* B31F *5/00;* B29C *19/00*
U.S. Cl. 156—467 6 Claims





1. Apparatus for applying elastic bands to the laterally spaced apart margins of a longitudinally moving sheet, such as a sheet that is part of a diaper, comprising:

first and second parallel cylindrical members spaced apart in the longitudinal direction of the moving sheet, the second cylindrical member being located downstream of the first one and the sheet running in the same plane on the members under longitudinal tension,

shoe means extending laterally of the sheet and having a length from end-to-end that is less than the width of said sheet, said shoe means having a side for interfacing with the sheet and being positioned between the first and second cylindrical members for pressing against the sheet to deflect laterally extending central region of the sheet and put said region under lateral tension while letting opposite laterally spaced apart margins of the sheet beyond the ends of the shoe means remain free and untensioned,

nozzle means preceding said shoe means to apply longitudinally extending stripes of glue that are wider than the elastic bands to be attached to said margins of the sheet,

said side of the shoe means interfacing with said sheet having passageways wider than the glue stripes through which said glue stripes pass and into which said elastic bands, respectively, of lesser width than the glue stripes are fed onto said sheet over the glue stripes, and

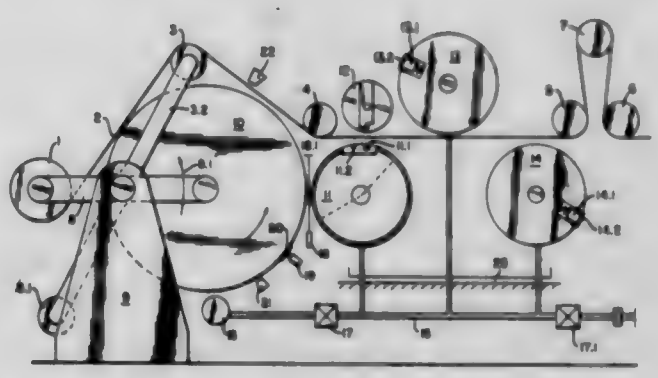
folding means next downstream from said shoe means, said folding means being constructed and arranged for folding said sheet margins over said glue stripes on the sheet to effect adhesion of the margins to the sheet with the glue stripe margins remaining on each side of the bands.

4,492,609

APPARATUS FOR SPLICING THE TRAILING END OF A WEB FROM AN EXHAUSTED SUPPLY ROLL TO THE LEADING END OF A WEB FROM A NEW SUPPLY ROLL

Friedrich Blom, Lengerich, Fed. Rep. of Germany, assignor to Windmöller & Hölscher, Lengerich, Fed. Rep. of Germany

Filed Mar. 9, 1982, Ser. No. 356,650
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1981, 3109529
Int. Cl.³ G03D *15/04;* B31F *5/00;* B32B *31/00;* B26D *5/00*
U.S. Cl. 156—507 11 Claims



1. Apparatus for splicing the trailing end of a web from an exhausted supply roll to the leading end of a web from a new supply roll with the leading end having an outwardly facing adhesive, said apparatus comprising:

a cutter cylinder having a single cutter adapted for cutting through a web;

a backing cylinder;

a longitudinal sector-shaped portion on the periphery of said backing cylinder and aligned parallel to the axis of said backing cylinder, with suction holes for retaining the leading end of the new web behind the severing cut;

a first tape-applying cylinder, adapted to carry a tape which is adhesive on one side, and to apply the adhesive tape to the two webs at their abutting cut edges as they pass between the first tape applying cylinder and said backing cylinder;

means to move said backing cylinder into engagement with the new supply roll;

means for accelerating said new supply roll, said cutter cylinder and said backing cylinder to the same peripheral velocity as said exhausted supply roll;

controlling means for controlling the rotation of said backing cylinder and said new supply roll, so that said adhesive means engages said backing cylinder at a position other than at said sector-shaped portion, whereby a length of said leading end of said web is wrapped around the periphery of said backing cylinder and cut from the web of the new roll; and

means for moving the cutter cylinder and the first tape-applying cylinder into and out of engagement with the common backing cylinder.

4,492,610

DRY ETCHING METHOD AND DEVICE THEREFOR

Haruo Okano, Yokohama, and Yasuhiro Horiike, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

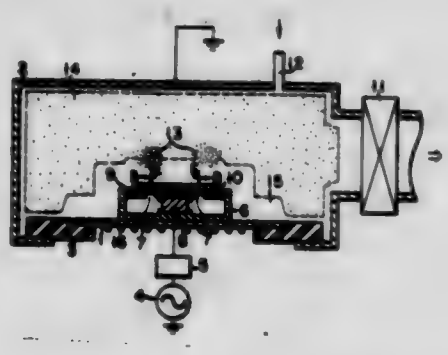
Continuation of Ser. No. 486,456, Apr. 25, 1983, abandoned, which is a continuation of Ser. No. 324,663, Nov. 24, 1981, abandoned. This application Dec. 12, 1983, Ser. No. 559,857
Claims priority, application Japan, Dec. 11, 1980, 55-173821; Sep. 25, 1981, 56-150801
Int. Cl.³ H01L *21/306;* B44C *1/22;* C03C *15/00;* C23F *1/02*
U.S. Cl. 156—643 13 Claims

1. A dry etching method comprising the steps of:

supplying power between a cathode and an anode;

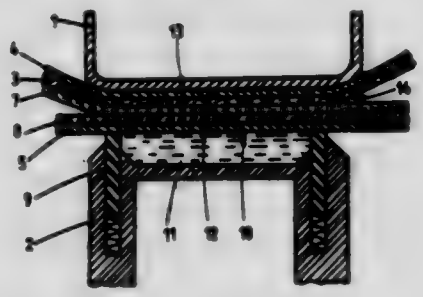
generating a plasma of a reactive etchant gas containing halogen within a reaction chamber;

placing a sample composed of a layer to be etched and an etching mask formed thereon on said cathode;
etching said sample by ions attracted from said plasma toward said cathode;
inducing a magnetic field having field lines perpendicular to



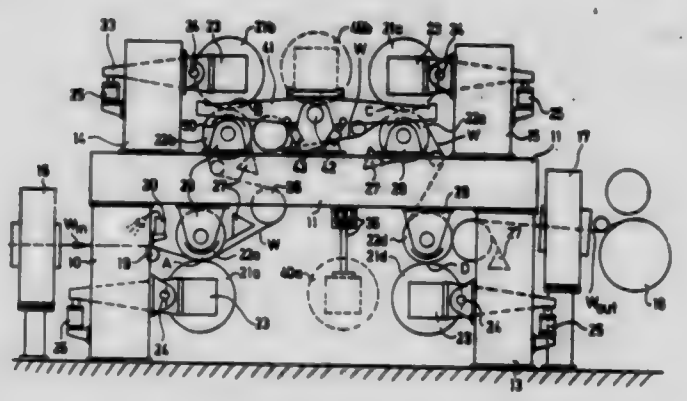
an electric field created by said step of supplying power between said cathode and said anode whereby said field lines are perpendicular to said electric field at a surface of said sample to be etched and whereby a plurality of high plasma density areas are formed at the surface of said cathode which areas overlap each other.

4,492,611
EXTENDED NIP PRESS WITH MOVABLE SEALING STRIPS
Paul O. Meinecke, Osnabrück, Fed. Rep. of Germany, assignor to A. Ahlstrom Osakeyhtiö, Noormarkku, Finland
Filed Jul. 5, 1983, Ser. No. 510,877
Claims priority, application Finland, Jul. 13, 1982, 822482
Int. Cl.³ D21F *3/06*
U.S. Cl. 162—358
3 Claims



1. A press for removing liquid from a moving material web, comprising
two endless liquid impervious belts forming an extended press nip;
at least one liquid pervious belt which together with said material web travels through the nip;
a first beam provided with movable sealing strips at each end of the extended nip which together with the inner surface of one of said liquid impervious belts forms at least one pressure compartment for exerting pressure onto said material web in the nip along its entire width, wherein the movable sealing strips compensate for the deflection of the beams and the thickness of the moving material web;
a second beam which is in contact with the inner surface of the other of the liquid impervious belts and is provided with a slide surface, said slide surface being essentially plane; and wherein the distance between said first beam and said second beam is adjustable.

4,492,612
APPARATUS FOR ON-MACHINE SUPERCALENDERING OF PAPER
Reino Matarainen, Jyväskylä, Finland, assignor to Valmet OY, Finland
Filed May 21, 1981, Ser. No. 266,108
Claims priority, application Finland, May 22, 1980, 801666
Int. Cl.³ D21G *1/00*
U.S. Cl. 162—360.1
15 Claims

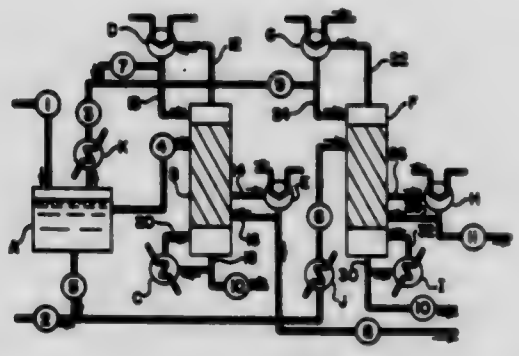


1. On-machine supercalender apparatus for treating a web leaving the discharge end of a paper machine, comprising:
a frame;
a plurality of soft and hard calendering rolls mounted to said frame defining a plurality of soft calendering nips arranged successively in the direction of the run of the web being calendered, the web run between the nips being substantially free, each soft calendering nip being formed by its own separate pair of calendering rolls including a respective soft calendering roll and a corresponding respective hard calendering roll, and such that each calender roll of a particular pair of calendering rolls forming a soft calendering nip is in nip defining relationship only with a corresponding respective calendering roll; and
means for guiding the run of the web successively through the nips so that said soft rolls do not participate in the guidance of the run of the web, said guiding means including the outer surfaces of said hard calendering rolls; and supporting arms on which said soft calendering rolls are journalled, each of said supporting arms being movably mounted to said frame for selective movement between a first position wherein said soft calendering roll journalled thereto is in nip defining relationship with a corresponding hard calendering roll and a second position wherein said soft roll is spaced from said corresponding hard roll, wherein the soft rolls can be removed without any web breakage.

4,492,613
RECOVERY OF COMPONENTS OF A BINARY AZEOTROPE
Gerald V. Woettea, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio
Filed Aug. 2, 1982, Ser. No. 404,157
Int. Cl.³ B01D *3/36*
U.S. Cl. 203—39
14 Claims

1. A process for the separation and recovery of methanol and cyclohexane liquids from a mixture of methanol and cyclohexane comprising the steps of introducing into a decanter vessel a condensed azeotrope of methanol and cyclohexane, separating the phases into upper and lower liquid phases by decantation in the decanter vessel, conveying each phase to a separate distillation column, distilling the azeotrope from the upper portion of each column, condensing the azeotrope from each column, returning the condensed azeotrope to the de-

canter vessel, and recovering methanol, the lower boiling liquid, from the lower portion of one column and cyclohexane,



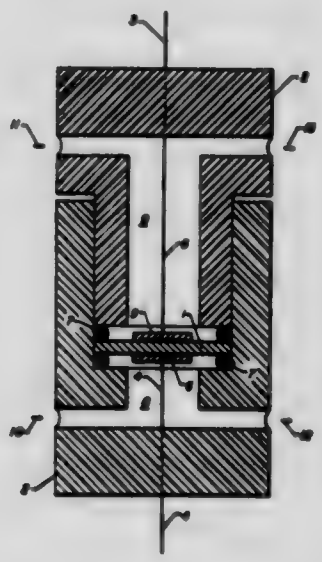
the higher boiling liquid, from the lower portion of the other column.

4,492,614

CHLORINE DETECTION

Lawrence B. Welsh, Evanston, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jul. 8, 1983, Ser. No. 512,298
Int. Cl.³ G01N 27/58
U.S. Cl. 204—1 T 12 Claims



1. An apparatus for detection, in a gas sample containing a concentration of chlorine which is capable, in the presence of a catalytic agent, of dissociating to yield chloride ions, comprising:

(a) a sensor housing comprising a sample gas chamber and a reference gas chamber;

(b) an imporous solid electrolyte element partition separating said sample gas and said reference gas chamber having a first surface in common with said sample gas chamber and a second surface in common with said reference gas chamber, wherein said solid electrolyte element partition comprises a chloride ion conducting material selected from the group consisting of stannous chloride, barium chloride and lead chloride;

(c) a catalytic agent selected from the group consisting of platinum, palladium and alloys of platinum and palladium effective to promote dissociation and combination of said chloride ions in contact with said first surface in common with said sample gas chamber;

(d) a catalytic agent selected from the group consisting of platinum, palladium and alloys of platinum and palladium effective to promote dissociation and combination of said chloride ions in contact with said second surface in common with said reference gas chamber; and,

(e) means for forming an electrical connection in operative contact with said catalytic agent which is in contact with said first surface and said catalytic agent which is in contact with said second surface.

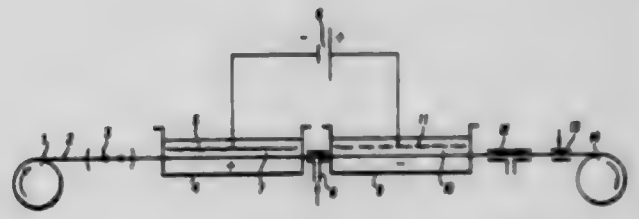
7. A method for detection, in a gas sample containing a concentration chlorine which is capable, in the presence of a catalytic agent, of dissociating to yield chloride ions, comprising contacting said gas sample with a first surface of an imporous solid electrolyte element and detecting an EMF between means for forming electrical connection with two separate portions of a catalytic agent effective to promote dissociation and combination, where a catalytic agent selected from the group consisting of platinum, palladium and alloys of platinum and palladium is in contact with said first surface and a catalytic agent selected from the group consisting of platinum, palladium and alloys of platinum and palladium is in connection with a second surface of said imporous solid electrolyte element, which element isolates said gas sample from a reference gas and has said second surface exposed to said reference gas, said element comprising a chloride ion conducting material selected from the group consisting of stannous chloride, barium chloride, and lead chloride.

4,492,615

PROCESS FOR PLATING A LONG SPAN OF METAL WITH A METAL LAYER

Jacques LeFebvre, Voiron, France, assignor to Aluminium Pechiney, Paris, France

Filed Apr. 18, 1983, Ser. No. 486,012
Claims priority, application France, Apr. 20, 1982, 82 07922
Int. Cl.³ C25D 7/06, 5/04, 5/44
U.S. Cl. 204—28 15 Claims



1. A process for the continuous electrolytic plating of a long span of metal with an adhesive nickel layer, having a high line speed and low period of immersion in the electrolyte which comprises:

(a) submerging a long span of metal in a nickel plating solution, and

(b) applying an electric voltage to the nickel plating solution having said long span of metal submerged therein in such a manner that the positive terminal power supply is connected to said nickel plating solution and the negative terminal to a fluid electric connector, the passage of the current from one to the other being effected by the long span of metal, wherein said fluid electric connector comprises a solution of a nickel chloride, a fluoride and boric acid.

4,492,616

PROCESS FOR TREATING ALUMINUM OXIDE LAYERS AND USE IN THE MANUFACTURE OF OFFSET-PRINTING PLATES

Engelbert Pliefke, and Gerhard Uebeck, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 19, 1983, Ser. No. 524,591
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1982, 3232485
Int. Cl.³ C25D 11/16, 11/18
U.S. Cl. 204—33 6 Claims

1. A process for using an offset printing plate comprising an aluminum or an aluminum alloy support subjected to (1) electrochemical roughening in an aqueous solution containing at least one of HCl and HNO_3; (2) anodic oxidation in an aqueous

solution containing at least one of H_2SO_4 and H_3PO_4; (3) treatment in an aqueous alkali metal silicate solution, wherein said solution comprises from about 0.5 to 10% by weight of alkali metal silicate; and thereafter (4) treatment in an aqueous solution comprising at least one alkaline earth metal salt, wherein said solution comprises from about 0.1 to 10% by weight of alkaline earth metal salt, thereby forming a hydrophilic layer on said surface, said process comprising the steps of:

(A) applying a radiation-sensitive coating to said support;
(B) imagewise exposing said coating; and thereafter
(C) developing said coating in an alkali developer, whereby said hydrophilic layer resists attack by said alkali developer.

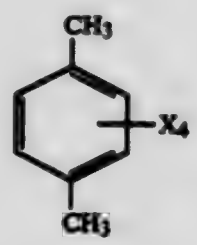
4,492,617

METHOD OF PREPARING TETRAHALOBENZENE COMPOUNDS

Gwilym R. Davies, Kingsley, England, assignor to Imperial Chemical Industries PLC, London, England

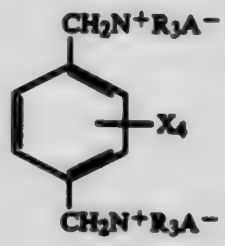
Filed Jan. 11, 1984, Ser. No. 569,898
Claims priority, application United Kingdom, Nov. 10, 1983, 8329956
Int. Cl.³ C25B *3/00*
U.S. Cl. 204—73 R 3 Claims

1. Method of preparing tetrahalobenzene compounds of the formula (IX):



(IX)

in which each X is independently chloro or fluoro, which comprises electrolysing in a protic medium a compound of the formula (IV):



(IV)

in which X has the meaning already given, each R is independently C_{1-4} alkyl and A is a radical capable of forming an anion A^-.

4,492,618

METHOD OF DISINFECTING WATER, IN PARTICULAR SWIMMING POOL WATER

Bernd Eder, Eingruberstrasse 10, München 82, Fed. Rep. of Germany (8000)

Filed Feb. 14, 1984, Ser. No. 580,067
Int. Cl.³ C25B *1/00*
U.S. Cl. 204—152 11 Claims

1. A method of disinfecting water comprising the steps:
(a) immersing electrodes of a copper-silver alloy in the water,
(b) applying to the electrodes current from a direct current source and changing the polarity of the applied current at certain time intervals to produce copper and silver ions,
(c) and adding sodium persulfate to the water to oxidize organic substances present in the water.

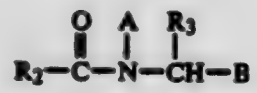
4,492,619

PHOTOCHEMICAL PROCESS FOR PREPARING ALKOXY SUBSTITUTED COMPOUNDS

Xuan T. Phan, 2540 Valley Dr., Lancaster, Pa. 17603, and Paul J. Shannon, 45B Lynnbrook Apartments, Millersville, Pa. 17551

Filed Feb. 1, 1984, Ser. No. 575,799
Int. Cl.³ B01J *19/12*
U.S. Cl. 204—158 R 8 Claims

1. A process for preparing alkoxy substituted compounds of the formula



(I)

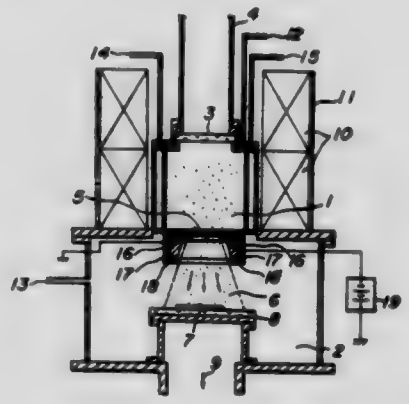
where
A=H
B=OR_1
R_1=a primary alkyl group comprising 1–3 carbon atoms
R_2=a lower alkyl group comprising 1–6 carbon atoms, an alkoxy group comprising 1–6 carbon atoms, an aryloxy group, or an alicyclic group, and
R_3=H, a lower alkyl group comprising 1–6 carbon atoms, an alicyclic ring, a substituted aromatic ring, an unsubstituted aromatic ring and, where R_3 is other than H, combinations of these moieties,
provided that R_2 and R_3 taken together may be an alkylene chain comprising 1–10 carbon atoms, said process comprising the steps of
(1) preparing a solution comprising
(a) an alcohol of the formula R_1OH where R_1 is as described above, and
(b) a compound having the above formula where A=Cl, B=H, and R_2 and R_3 are as described above, and
(2) photolyzing said solution.

4,492,620

PLASMA DEPOSITION METHOD AND APPARATUS

Seitaro Matsuo, and Toshiro Ono, both of Isehara, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

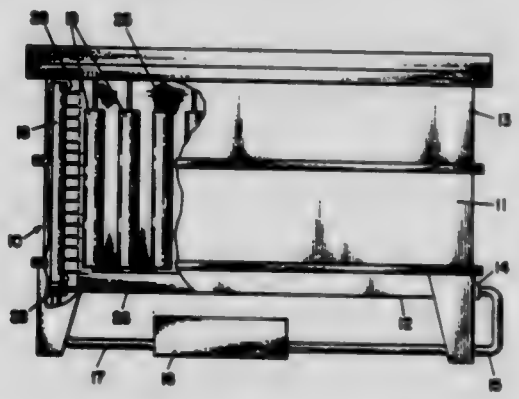
Filed Sep. 9, 1983, Ser. No. 530,671
Claims priority, application Japan, Sep. 10, 1982, 57-156843; Aug. 26, 1983, 58-155097
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 R 16 Claims



1. A plasma deposition method comprising the steps of:
(a) introducing a gas into a vacuum vessel to produce a plasma stream of ions
(b) sputtering a target disposed about said plasma stream and made of a sputtering material by ions in (a) said plasma stream;
(c) ionizng atoms which are sputtered from said target into said plasma stream; and
(d) transporting the ionized atoms together with said plasma

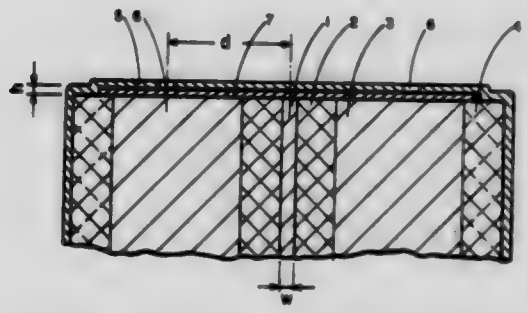
stream to a specimen substrate so that said ionized atoms reach said specimen substrate to form a thin film including said sputtering material on said specimen substrate.

4,492,621
METHOD AND APPARATUS FOR ELECTRODEPOSITION OF MATERIALS
Paul R. Stubb, 3032 Stearns Dr., Orange, Calif. 92669
Filed Sep. 29, 1982, Ser. No. 427,849
Int. Cl.³ C25D *21/10*
U.S. Cl. 204—261
9 Claims



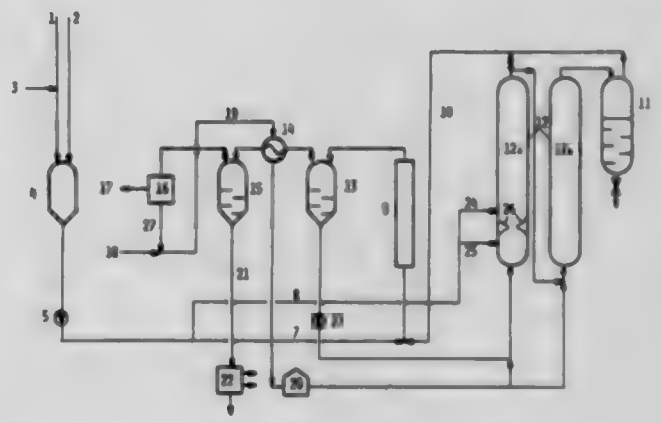
1. An electrodeposition cell comprising:
(a) a fluid containing tank means;
(b) anode means being positioned in said tank means such that said anode means will be at least partially submerged in an electrolyte contained in said cell when said cell is in operation;
(c) at least one cathode means positioned in said tank means such that said cathode means will be at least partially submerged in said electrolyte contained in said cell when said cell is in operation;
(d) means positioned within said tank means capable of confining a portion of said electrolyte in the area of said cathode, while at the same time permitting ions to pass therethrough and to be freely exchanged between said anode and cathode means when said cell is in operation;
(e) means to promote a high velocity flow of electrolyte parallel to the face of the cathode through the area around said cathode defined by said electrolyte confining means; and
(f) means to circulate said electrolyte into the confined area around said cathode to and from other areas of said fluid containing tank means.

4,492,622
CLARK CELL WITH HYDROPHYLIC POLYMER LAYER
Martinus H. Kuypers, Veldhoven, Netherlands, assignor to Honeywell Inc., Minneapolis, Minn.
Filed Sep. 2, 1983, Ser. No. 529,183
Claims priority, application European Patent Office, Sep. 3, 1982, 82108135.3
Int. Cl.³ G01N *27/30, 27/40*
U.S. Cl. 204—403
9 Claims



1. Electro-chemical cell for determining a particular property or component of a fluid comprising a cathode electrode (1) and spaced therefrom an anode electrode (3), whereat a space engaging said electrodes is adapted for being filled with an electrolyte,
and comprising a selectively permeable membrane (5) separating said electrodes and said space from the fluid characterized in that a thin layer (7) of hydrophylic polymer is provided between said membrane (5) and said electrodes (3, 4) covering at least the cathode (4);
that the membrane (5) has at least one hole (6) in it for allowing an electrolytic component of the fluid to enter said hydrophylic polymer layer (7);
and that the distance (d) between the hole(s) (6) and the cathode (1) is larger than the width (w) of the cathode (1).

4,492,623
PROCESS FOR THE HYDROGENATION OF COAL USING A SPLIT FEED
Helmut Würfel, Bliesakastel, Fed. Rep. of Germany, assignor to GfK Gesellschaft für Kohleverflüssigung mbH, Saarbruecken, Fed. Rep. of Germany
PCT No. PCT/DE81/00196, § 371 Date Jul. 13, 1982, § 102(e) Date Jul. 13, 1982, PCT Pub. No. WO82/01715, PCT Pub. Date May 27, 1982
PCT Filed Nov. 12, 1981, Ser. No. 403,651
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1980, 3042984
Int. Cl.³ C10G *1/06*
U.S. Cl. 208—10
6 Claims



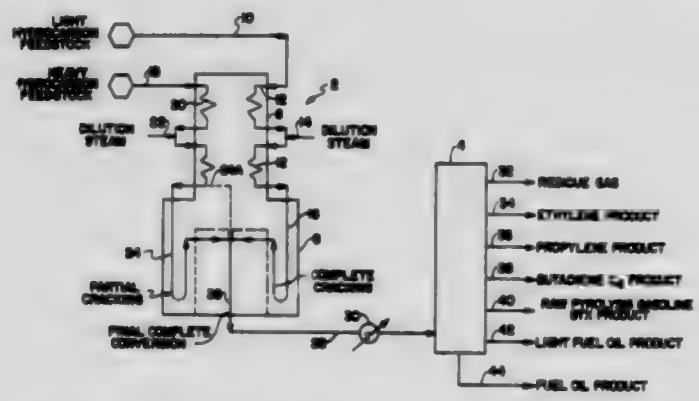
1. A process for the hydrogenation of coal comprising:
(1) forming a coal paste at a first temperature;
(2) pumping said paste to reaction pressure,
(3) dividing said paste into first and second portions wherein said first portion comprises about 50 to 70 wt. % of said coal paste;
(4) heating said first portion from said first temperature to about 400°–420° C., the initiation temperature of hydrogenation, by heat exchange with gaseous and vapor products;
(5) introducing the heated first portion into a lower region of a catalytic reaction zone and flowing said first stream upwardly thru said reaction zone wherein said first portion reacts exothermally and produces surplus heat; and
(6) introducing said second portion of coal paste at about said first temperature into said reaction zone above the introduction region of said first portion so that said second stream is heated to said hydrogenation initiation temperature by said surplus heat from said first stream reaction.

4,492,624

DUOCRACKING PROCESS FOR THE PRODUCTION OF OLEFINS FROM BOTH HEAVY AND LIGHT HYDROCARBONS

Axel R. Johnson, North Babylon, N.Y.; Swami Narayanan, Westwood, Mass., and Hermann N. Woebcke, Stamford, Conn., assignors to Stone & Webster Engineering Corp., Boston, Mass.

Filed Sep. 30, 1982, Ser. No. 431,538
Int. Cl.³ C10G 9/14, 51/06
U.S. Cl. 208—78 6 Claims



1. A process for the thermal cracking of heavy hydrocarbon feed selected from the group consisting of naphtha, kerosene, atmospheric gas oil, vacuum gas oil and resid to produce olefins comprising:

(a) diluting the heavy hydrocarbon feed with steam in a ratio of 0.2 or less pound of steam per pound of heavy hydrocarbon;

(b) elevating the temperature of the heavy hydrocarbon with the steam diluent to a temperature to effect partial thermal cracking;

(c) mixing a stream of light hydrocarbon feedstock selected from the group consisting of ethane, propane, propylene, normal and iso-butane, raffinates and naphthas, or their mixtures, which light hydrocarbon is lighter than the heavy hydrocarbon feed with steam diluent;

(d) thermally cracking the light hydrocarbon feedstock to completion to produce principally olefins;

(e) delivering the completely cracked light hydrocarbon effluent to the stream of partially cracked heavy hydrocarbon to form a composite stream, said light hydrocarbon effluent providing heat for subsequent cracking and serving as a diluent for the partially cracked heavy hydrocarbon;

(f) further cracking the composite stream; and

(g) quenching the effluent from the cracked composite stream of heavy and light hydrocarbon to terminate the reactions.

4,492,625

DELAYED COKING PROCESS WITH SPLIT FRESH FEED

David E. Allan, Baton Rouge, La., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 17, 1983, Ser. No. 552,625
Int. Cl.³ C10G 9/14
U.S. Cl. 208—131 8 Claims

1. In a delayed coking process which comprises the steps of:

(a) preheating a hydrocarbonaceous oil chargestock to a coking temperature in a preheating zone;

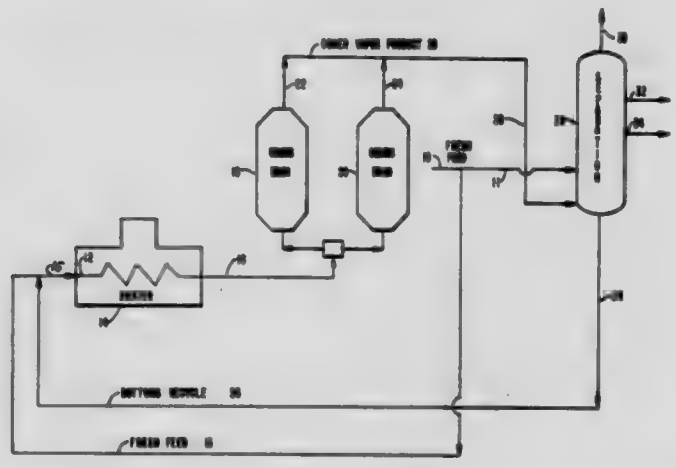
(b) introducing the resulting preheated oil chargestock into a coking zone at delayed coking conditions to form coke and a vapor phase product, including heavy and light hydrocarbon products;

(c) introducing said vapor phase product and a fresh hydrocarbonaceous oil into a separation zone;

(d) withdrawing a heavy bottoms fraction, including at least a portion of said heavy hydrocarbon products, from said separation zone, and

(e) recycling at least a portion of said withdrawn bottoms fraction to said preheating zone of step (a),

the improvement which comprises:



introducing a first portion of a fresh hydrocarbonaceous oil having a Conradson carbon content of at least about 5 weight percent directly without intervening treatment into said preheating zone of step (a) and introducing a second portion of said fresh hydrocarbonaceous oil into said separation zone of step (c).

4,492,626

HYDROFINING PROCESS FOR HYDROCARBON CONTAINING FEED STREAMS

Simon G. Kukes, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 11, 1984, Ser. No. 619,661
Int. Cl.³ C10G 45/00
U.S. Cl. 208—251 H 10 Claims

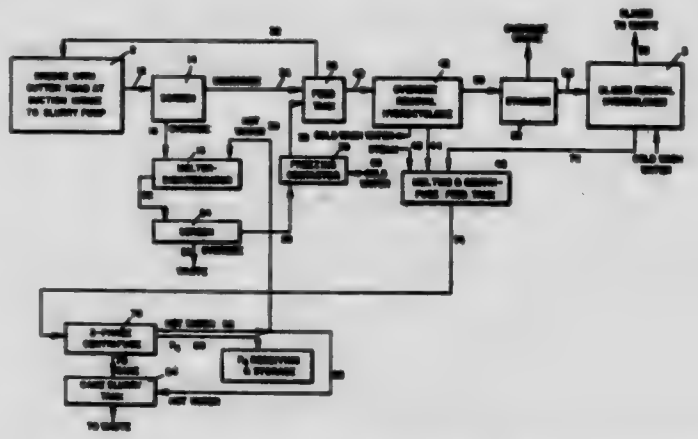
1. A process for hydrofining a hydrocarbon-containing feed stream comprising the step of contacting said hydrocarbon-containing feed stream under suitable hydrofining conditions with hydrogen and a catalyst composition consisting essentially of an alumina support, platinum and a promoter selected from the group consisting of scandium oxide, yttrium oxide, lanthanum oxide and oxides of elements of the lanthanide group, wherein the concentrations of platinum in said catalyst composition is at least about 0.3 weight percent based on the weight of said catalyst composition.

4,492,627

RECOVERY OF PHOSPHORUS FROM WASTE PONDS

David A. Cree, Pocatello, Id., assignor to FMC Corporation, Philadelphia, Pa.

Filed Jun. 14, 1982, Ser. No. 387,911
Int. Cl.³ B03B 7/00, 1/02; B04C 5/24
U.S. Cl. 209—3 6 Claims



1. A process for recovering phosphorus from waste ponds

comprising dredging the waste pond to obtain an aqueous slurry containing comminuted, frozen phosphorus-containing particles, screening an oversized fraction containing particles larger than about 2 mm from an undersized portion in said slurry, feeding said undersized fraction into an initial hydrocyclone, removing a first underflow stream from said initial hydrocyclone having phosphorus-containing solids larger than about 500 micrometers, heating said first underflow stream to melt the phosphorus therein, removing a first overflow stream from said initial hydrocyclone having particles smaller than about 500 micrometers and introducing said first overflow stream into a plurality of hydrocyclones each having a diameter less than said initial hydrocyclone, removing a second overflow stream containing particles smaller than about 8–15 micrometers from at least one of said plurality of hydrocyclones diminished in phosphorus and enriched in slimes, removing a second underflow stream containing particles larger than about 8–15 micrometers from at least one of the plurality of hydrocyclones enriched in phosphorus and diminished in slimes, heating said second underflow stream sufficiently to melt the phosphorus in said stream, introducing said second underflow stream containing molten phosphorus into a centrifugal separator, removing a coalesced phosphorus stream as product from said separator, and a fraction of heavier dirt containing minor amounts of phosphorus as a waste stream.

4,492,628

METHOD OF TREATING CLAY TO IMPROVE ITS WHITENESS

Raymond H. Young; Horton H. Morris, both of Macon, and Robert L. Brooks, Gordon, all of Ga., assignors to Freeport Kaolin Company, New York, N.Y.

Filed Aug. 25, 1982, Ser. No. 411,588
Int. Cl.³ B03B *1/00*
U.S. Cl. 209—5 19 Claims

1. A method of treating clay to remove therefrom titanium mineral impurities, said method comprising the steps of:

(a) mixing said clay in the form of an aqueous slurry having a solids content of clay and said impurities of at least 20% by weight with a collector for the titanium mineral impurities, and an activator for the titanium mineral impurities comprising a water-soluble salt of a metal chosen from the alkaline earth metals and the heavy metals;

(b) conditioning the aqueous clay slurry at a solids content of at least 20% by weight for a time sufficient to dissipate therein at least 25 horsepower hours of energy per ton of solids at a pH below 7;

(c) mixing a polyacrylate salt deflocculant with the resulting conditioned aqueous clay slurry after conditioning;

(d) subjecting the resulting mixture of conditioned aqueous slurry having a solids content of at least 20 wt. % and the polyacrylate salt deflocculant to an air flotation process by passing air bubbles upwardly through the conditioned aqueous slurry and removing titanium mineral impurities with the froth; and

(e) recovering clay having a reduced titanium minerals impurities content.

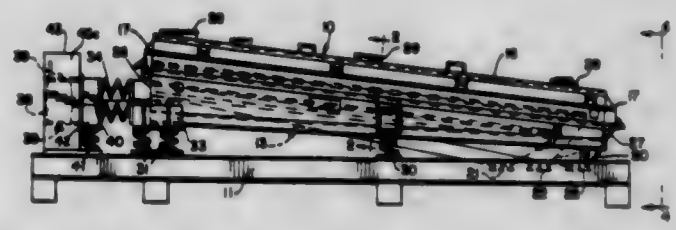
4,492,629

SIFTER STROKE SCREENING UNIT

George D. Dunbeagh, Louisville, Ky., assignor to Kinergy Corporation, Louisville, Ky.

Filed Jan. 28, 1983, Ser. No. 462,043
Int. Cl.³ B07B *1/38*
U.S. Cl. 209—332 6 Claims

1. A vibratory sifter screen unit including a sifter trough and screen structure having an inlet end and an outlet end downstream from the inlet, spaced apart spring isolators supporting the sifter trough and screen structure for free floating motion laterally and axially said outlet end being unsupported for free motion, said screen structure having a crown with its apex extending longitudinally on the axial center line of the screen structure, a vibratory drive assembly mounted on the structure at the inlet end, said assembly comprising a rotary motor and counterbalance mass mounted in spaced relation ahead of said inlet end on the longitudinal center line of the screen unit, springs supporting said assembly independently of the sifter trough and screen structure, and steel coil drive springs providing an operative connection between said assembly and the inlet end of the sifter screen unit and comprising the only driving connection therebetween, said motor having an eccentric weight imparting a generally elliptical vibratory motion to the unit adjacent the inlet end and exciting said drive springs to develop vibratory motion axially or linearly of the unit, said vibratory motion initially developing the generally elliptical motion of the sifter screen adjacent to the inlet end and diminishing gradually along the length of the sifter screen to a straight linear, axial motion adjacent to the outlet end of the screen structure.

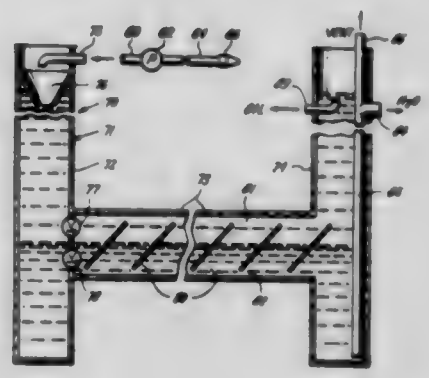


4,492,630

BILGE SYSTEM

Theodore R. Rymal, Jr., Conroe, Tex., assignor to Texas Oil Spill Control, Inc., Conroe, Tex.

Continuation-in-part of Ser. No. 308,932, Aug. 5, 1981, abandoned. This application Aug. 9, 1982, Ser. No. 406,443
Int. Cl.³ B01D *17/02*
U.S. Cl. 210—117 4 Claims



1. An oil/water separator comprising in combination:

a housing forming a pair of tanks connected by a passageway arranged between the top and bottom of said tanks;

an oil/water mixture inlet in one tank of said housing;

check valve means between said one tank and said passageway between said tanks to prevent said oil/water mixture from flowing back to said one tank from said passageway;

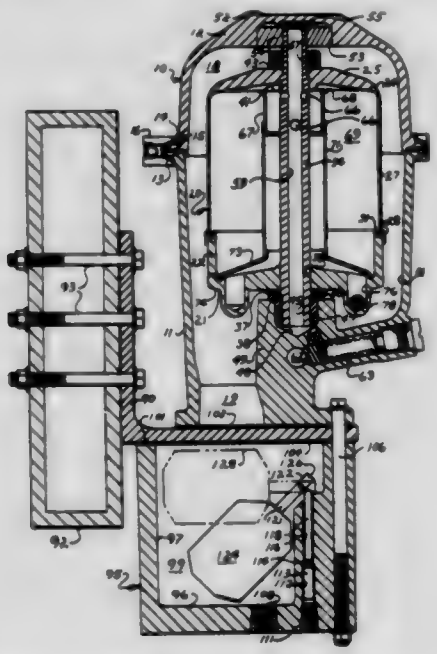
a plurality of baffles mounted at an angle with a space above and below each said baffle in said passageway between said tanks to permit fluid to flow about both the upper and lower ends of said baffles and therebetween;

an oil outlet from said other tank;

a water outlet from said other tank; and

the area of said passageway is one to two times as great as the area of said one tank, whereby an oil/water mixture fed into said one tank begins separating in said one tank and through a series of baffles dividing the oil from the water in said passageway for separate removal from said other tank.

4,492,631
CENTRIFUGAL SEPARATOR
H. Woods Martin, Houston, Tex., assignor to AE PLC, Warwickshire, England
Continuation of Ser. No. 340,884, Jan. 19, 1982, abandoned. This application Nov. 15, 1983, Ser. No. 551,510
Int. Cl.³ B01D *33/04*
U.S. Cl. 210—127 17 Claims



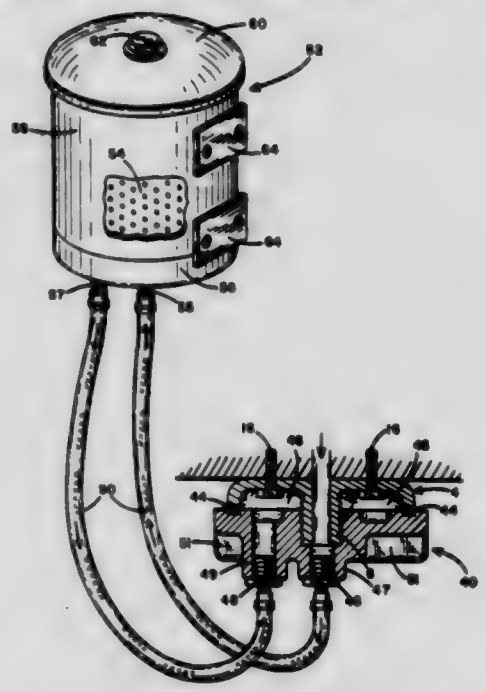
1. A centrifugal oil filter system for a machine having an oil pump adapted to supply oil under pressure and a sump, said filter including a casing defining a first chamber having an upper end and a lower end, a drain line between said chamber lower end and said sump, an oil pressure line connected between said oil pump and said casing, a rotor in said chamber upper end mounted for rotation about a subetantially vertical axis and having an interior supplied with oil under pressure from said pressure line, said rotor having jets to discharge oil into said chamber and by reaction cause said rotor to rotate, the improvement comprising means to supply air under pressure to said chamber to replace air entrained in the oil returning to said sump and thereby prevent a build up of oil within said chamber, said air supply means including sensing means responsive to the oil level in said chamber lower end and a valve operated by said sensing means and connected to a source of pressurized air.

4,492,632
ADAPTOR FOR EXTERNAL OIL FILTER
Fred P. Mattson, Box 207, Elmwood, Wis. 54740
Filed Dec. 16, 1983, Ser. No. 562,156
Int. Cl.³ B01D *27/08*; F01M *1/10*
U.S. Cl. 210—168 5 Claims

1. An oil filter adaptor assembly for an internal combustion engine having an internal oil pump and an external mounting member whereat a first bypass oil filter of a first capacity is normally attached, comprising:

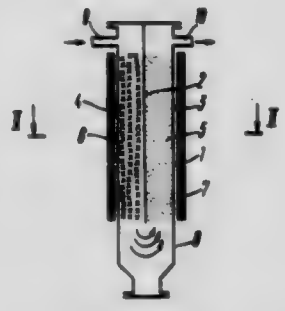
a generally squat, cylindrical cast adaptor member having a threaded central bore formed therein for mounting about an externally threaded tubular spindle extending from said mounting member and through which unfiltered oil is directed from said engine, said adaptor member including an outlet port in fluid flow communication with an annular recess formed in said cast adaptor member and through which filtered oil flows to said engine, and said adaptor member further including a gasket extending from a surface of said adaptor member in surrounding relation to said recess for sealing against said mounting member upon threadably securing said bore to said spindle;

second bypass filter means of a capacity substantially greater than said first oil filter and remotely mounted from said adaptor member and including a replaceable oil filter cartridge for filtering the engine oil; and



means for coupling dirty engine oil flowing through said central bore and spindle to said second bypass filter means and filtered oil back to said outlet port and said annular recess and thence to said engine.

4,492,633
SEPARATOR FOR SEPARATING FLUID MEDIA FROM MINUTE PARTICLES OF IMPURITIES
Alexandr V. Sandulyak; Vyacheslav I. Garanchenko, and Nikolai V. Yatskov, all of Rovno, U.S.S.R., assignors to Ukrainsky Ordena Druzhby Narodov Institut Inzhenerov Vodnogo Khozyaistva, U.S.S.R.
Filed Apr. 27, 1983, Ser. No. 488,998
Claims priority, application U.S.S.R., Feb. 26, 1982, 3402868
Int. Cl.³ B01D *35/06*
U.S. Cl. 210—223 7 Claims



1. A separator for separating a fluid medium from minute particles of impurities, comprising:

a housing,

a partition in said housing,

a first chamber and a second chamber defined in said housing by said partition,

a means defining space at an end of said housing which connects said chambers to each other,

a pipe means connected at a second end of said housing for feeding the fluid medium into said first chamber,

a second pipe means connected at the second end of said housing for discharging cleaned fluid medium from said second chamber,

a ferroelectric filtering packing contained in said first chamber,

a ferromagnetic filtering packing contained in said second chamber, and

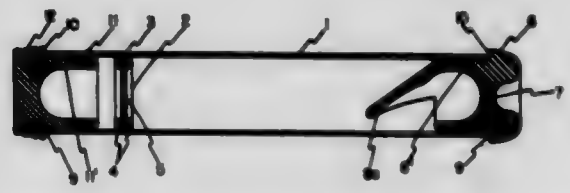
a magnetic system for producing a magnetic field in the zone of said housing through both said first and second chamber.

4,492,634

PRE-EVACUATED BLOOD COLLECTION TUBE WITH ANTI-HEMOLYSIS BAFFLE SYSTEM AND CENTRIFUGATION PROPELLED FILTRATION DISC AND EFFICIENT SERUM-FROM CELLS SEPARATOR

Antony-Euclid C. Villa-Real, Las Vegas, Nev., assignor to EMDE Medical Research, Reno, Nev.

Filed Sep. 28, 1982, Ser. No. 434,052
Int. Cl.³ B01D *33/00*
U.S. Cl. 210—396
7 Claims



1. An improved pre-evacuated blood sampling collection tube comprising:

a hollow tube having a first opening located at a first end thereof, a closed second end opposite said first end, and an interior surface;

a detachable first stopper mounted in said first opening, said first stopper including an outer wall adapted to make sealing engagement with said tube interior surface to seal said first opening and a baffle means formed integrally with said outer wall and projecting rearwardly and radially inwardly into said tube for deflecting blood against said interior surface of the tube; and

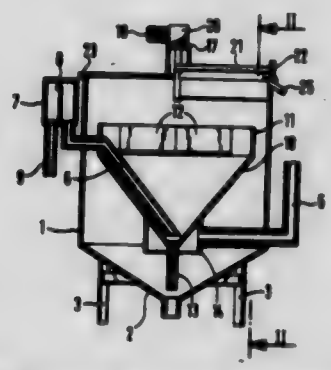
a filtration disc slideably mounted in said tube for axial motion therealong, said filtration disc oriented perpendicularly to the central axis of said tube and including sealing means thereon for maintaining sealing engagement with said tube interior surface during sliding motion of said filtration disc, said filtration disc operative to separate materials of different physical sizes.

4,492,635

DEVICE FOR SEPARATING SOLID SUBSTANCES FROM LIQUIDS

Ake Stigebrandt, Nygatan 30, Marstrand, Sweden

Filed Sep. 15, 1983, Ser. No. 532,529
Claims priority, application Sweden, Sep. 20, 1982, 8205380
Int. Cl.³ B01D *21/02*
U.S. Cl. 210—519
4 Claims



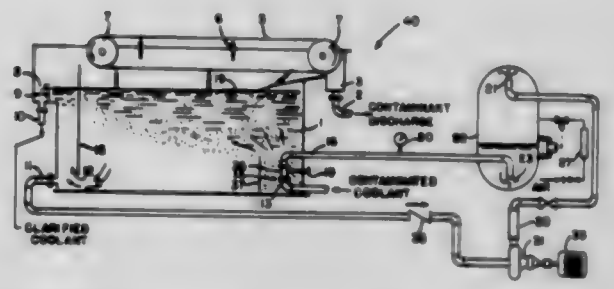
1. In a device for separating solid substances from a liquid, said substances having a density close to that of said liquid, particularly adapted for the extraction of fatty and protein-like substances from food processing water, and having a vessel provided at the top thereof with means for removal of solid substances collected on the surface of said liquid and at the bottom thereof with means for removal of settled residue, the improvement comprising an outer vessel, the lower portion of which is shaped in the form of an inverted cone, the apex of which is provided with means for discharging settled residue therefrom; an inner inverted conical receptacle concentrically disposed within said outer vessel and spaced from the bottom thereof, said inner receptacle being provided at the bottom thereof with means for discharging liquid downwardly from the apex of said inner receptacle near the discharge means of said outer vessel, the uppermost portion of said inner receptacle being open and provided with angularly spaced vertical partitions to impede rotary flow of liquid within said inner receptacle; inlet duct means for feed extending through said outer vessel and terminating near the base of said inner receptacle; an outlet duct for liquids extending from about the inside of the base of said inner receptacle, along the side wall thereof, through said inner receptacle and outer vessel and terminating at about the base of a chamber disposed outside of said outer vessel near the top thereof, said chamber having an overflow weir separating liquid introduced thereinto from liquid discharged therefrom, the height of said weir determining the level of liquid in said outer vessel; a duct for removing excess liquid overflowing said weir; and means for removing solid substances from the top of said outer vessel; whereby liquid introduced into the device is caused to flow upwardly along the outer surface of said inner receptacle and downwardly along the inner surface thereof to said outlet duct for liquids.

4,492,636

PROCESS FOR CLEANING METAL WORKING FLUIDS FOR RE-USE

John M. Burke, Kirtland, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 465,708, Feb. 11, 1983, abandoned, which is a continuation-in-part of Ser. No. 363,190, Mar. 29, 1982, abandoned, which is a continuation-in-part of Ser. No. 172,626, Jul. 28, 1980, abandoned. This application Jan. 20, 1984, Ser. No. 572,341
Int. Cl.³ B03D *1/02*
U.S. Cl. 210—706
6 Claims



1. In a continuous recycling process for removing suspended foreign matter including tramp oil from contaminated metal working fluid in an effective manner with little or no foaming and without removing or otherwise adversely affecting any oil or synthetic emulsions present in the fluid, said process comprising the steps of:

(a) providing a tank through which the metal working fluid is able to continuously flow, said tank having a mixing zone within the lower region thereof in which the contaminated metal working fluid and a saturated dissolved air solution are able to mix quiescently prior to formation of air bubbles within the solution,

(b) locating the tank in the process at a location that enables the tramp oil to enter the tank prior to the emulsification thereof by any emulsifying agents present in the fluid,

(c) introducing the metal working fluid into the mixing zone of the tank of step (a),

(d) dissolving air into a portion of the metal working fluid contained in a pressure vessel under sufficient pressure to provide a saturated dissolved air solution,

(e) introducing the pressurized saturated dissolved air solution of step (d) into said mixing zone of the tank of step (c) in such a manner that the solution is able to mix quiescently with the contaminated metal working fluid before the formation of air bubbles within the solution begins to occur,

(f) permitting the pressure on the saturated dissolved air

solution to lessen within the tank so as to enable the air to spontaneously nucleate and expand into a multitude of bubbles that adhere to and carry the foreign matter and tramp oil but not the emulsion upwardly through the metal working fluid to form a concentrated layer of the foreign matter and tramp oil in the upper level of the metal working fluid, and

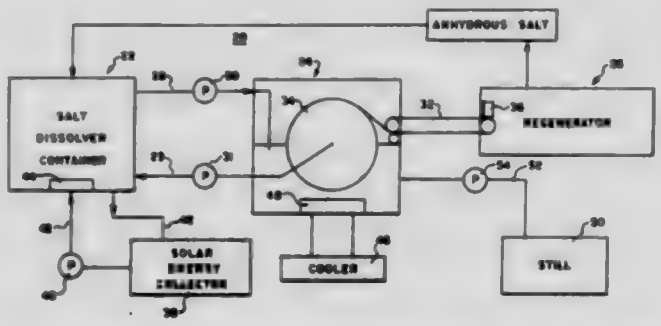
(g) removing the concentrate of step (f) from the metal working fluid.

4,492,637

WATER SEPARATION PROCESS

Lah C. Tao, Lincoln, Nebr., and James W. Bloom, Rochester, N.Y., assignors to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Filed Nov. 28, 1983, Ser. No. 554,947
Int. Cl.³ B01D 9/02
U.S. Cl. 210—711 9 Claims



1. A method of concentrating a dilute solution of ethanol in a sequence of stages in which the first stage comprises the steps of:

flowing said dilute solution of ethanol through a first container containing sodium sulfate;

maintaining the temperature of the first container at substantially thirty degrees centigrade while the dilute solution flows through it whereby said dilute solution dissolves the sodium sulfate;

flowing the dilute solution with the dissolved sodium sulfate into a second container;

maintaining the second container at substantially twenty degrees centigrade while the dilute solution flows through it, whereby the dissolved sodium sulfate precipitates out as hydrate crystals;

flowing the solution from the second container to the first container whereby the solution is repeatedly circulated between the first and second containers and back to the first container; and

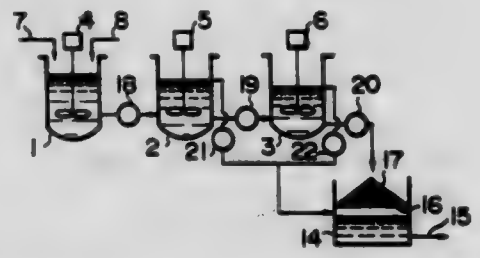
said circulating between the first and second containers and back to the first container including repeated steps until a dilute solution of ethanol with an initial concentration less than 15 percent by weight of ethanol in water has been circulated between the first and second containers in said first stage until the ethanol concentration by weight is increased to a value in excess of 45 percent, whereby the ethanol is concentrated using low quality energy in the first stage of the sequence of stages.

4,492,638

METHOD FOR AGGLOMERATING COAL PARTICLES IN PULP WATER

Kosei Hiratsuka; Yoichi Nakamura; Morihisa Maruko, all of Kadamatsu; Yoshio Matsuura, Funabashi, and Michio Kurihara, Chiba, all of Japan, assignors to Hitachi, Ltd. and Electric Power Development Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 317,984, Nov. 4, 1981, abandoned. This application Jun. 22, 1983, Ser. No. 506,871
Claims priority, application Japan, Nov. 7, 1980, 55-155971
Int. Cl.³ B01D 21/01
U.S. Cl. 210—728 6 Claims



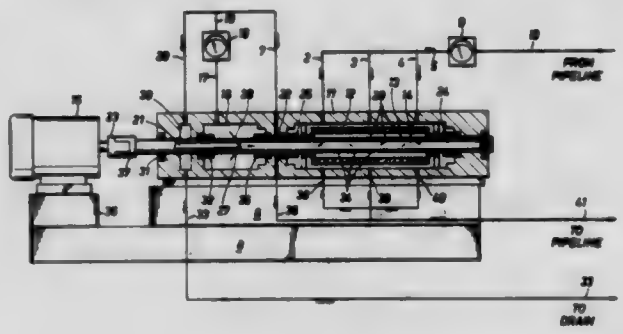
1. A method for agglomerating coal particles in pulp water of coal particles by agitating the pulp water in the presence of a binder, which comprises conducting agglomeration in at least three zones, the zones being in communication one after another, charging the pulp water and the binder only into a first zone, agitating the charged pulp water and binder while maintaining a coal concentration in the pulp water of 40% by weight or less in terms of the coal particles, transferring the pulp water together with the binder agitated in the first zone, to successive zones, one after another, and agitating the pulp water in each successive zone while removing water from the pulp water in each successive zone after the first zone, thereby increasing the coal concentration in the pulp water in each successive zone.

4,492,639

LEAK DETECTION

Thomas L. Stewart, Houston, and Florian C. Denny, Pasadena, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 22, 1984, Ser. No. 582,416
Int. Cl.³ B01D 17/02, 33/00
U.S. Cl. 210—746 8 Claims



1. A process for measuring the water and sediment content of a wet stream which is predominantly non-aqueous, comprising, removing a sample of the wet stream, admitting the wet stream sample to an outer chamber containing an inner chamber having a wall formed of a filter, rotating the inner chamber while pressuring the wet stream sample from the outer chamber into the inner chamber, whereby sediment is filtered from the wet stream sample passing into the inner chamber and centrifugal force in the inner chamber forces water and sediment in the wet stream sample to remain in the outer chamber and thereby form a dry sample stream, passing the dry sample stream axially from the inner chamber to an aligned chamber which is separated and sealed from the outer chamber, periodically blocking the axial passage of the dry stream sample to the

aligned chamber, and checking the aligned chamber for leakage from the outer chamber.

4,492,640

TRIHYDROXYHYDROCARBYL SULFIDES AND LUBRICANTS CONTAINING SAME

Andrew G. Horodysky, Cherry Hill, and Joan M. Kaminski, Mullica Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 2, 1983, Ser. No. 463,223
Int. Cl.³ C10M *1/54*
U.S. Cl. 252—46.3 25 Claims

1. A product made by reacting (1) a mixture of an alcohol of the formula

$$R(OR^1)_xOH$$

wherein R is a hydrocarbyl group containing 8 to 30 carbon atoms, R^1 is a C_2 to C_4 alkylene group and x is 0 to 10 and a hydroxysulfide of the formula

$$(HO)_yR^2SR^3(OH)_z$$

wherein R^2 is a C_6 to C_{30} hydrocarbyl group, R^3 is a C_2 to C_6 alkyl group, the sum of the carbon atoms of R^2 and R^3 being 8 to 36, y and z are 0 to 3, their sum being 3 with (2) a boron compound, the reaction being carried out at from about 90° C. to about 260° C. using the alcohol-hydroxysulfide mixture in a respective molar ratio of from about 4:1 to about 1:4 and sufficient boron compound to provide from about 0.1% to about 10% by weight of boron in said product.

4,492,641

PROCESS FOR THE CHIP FORMING, CUTTING OR ABRASIVE WORKING OF METALS

Hans Buchwald, Hanover, and Boleslaus Raschkowski, Wiedensahl, both of Fed. Rep. of Germany, assignors to Kali-Chemie AG, Hanover, Fed. Rep. of Germany

Filed Nov. 30, 1983, Ser. No. 556,393
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1982, 3244543
Int. Cl.³ C10M *1/30*
U.S. Cl. 252—48.4 21 Claims

1. In a process for working of metals using a cooling lubricant containing a fluorochlorohydrocarbon, the improvement comprising said cooling lubricant comprising from about 0.5 to 25% by weight of an ester of a long chain carboxylic acid and a monoalcohol having a total of 34 to 50 carbon atoms, and/or a sulfochlorinated or sulfided derivative of said ester.

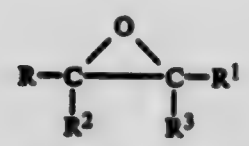
4,492,642

AMMONIATED BORATED EPOXIDES AND LUBRICANTS AND FUELS CONTAINING SAME

Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 14, 1983, Ser. No. 504,116
Int. Cl.³ C10M *1/36, 1/54*
U.S. Cl. 252—49.6 25 Claims

1. A product of reaction made by (1) reacting an epoxide of the formula



wherein R, R^1, R^2 and R^3 are hydrogen or C_1 to C_{30} hydrocarbyl groups, at least one of which is a hydrocarbyl group, with a nitrogen compound of the formula

$$(R^4)_aNX$$

wherein R^4 is hydrogen or a C_1 to C_3 hydrocarbyl group, X is hydrogen or hydroxyl, a being 2 when X is hydrogen or 4 when X is hydroxyl, and (2) reacting the material thus formed with a boron compound, reaction (1) being carried out at from about 60° C. to about 200° C. using from about 0.1 mole portion to about 1.0 mole portion of nitrogen compound per mole portion of epoxide, and reaction (2) being carried out at from about 80° C. to about 260° C. using sufficient boron compound to give a final product containing from about 0.1% by weight to about 10% by weight of boron.

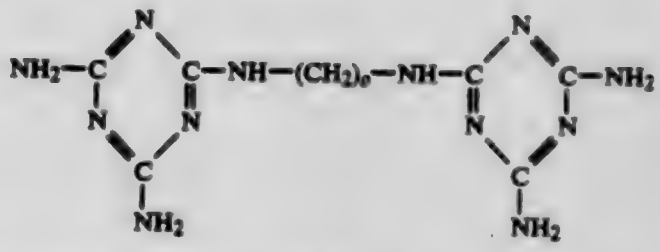
4,492,643

BISMELAMINE STABILIZERS

Peter Werle, Getnhausen; Holger Focke, Bruchköbel; Klaus Popp, Rodenbach, and Wolfgang Merk, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Nov. 1, 1982, Ser. No. 438,349
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1981, 3143920
Int. Cl.³ B01J *13/00*; C09K *15/30*; B01F *17/32*
U.S. Cl. 252—311 13 Claims

1. An aqueous formaldehyde solution stabilized with a stabilizingly effective amount of an alkylene bismelamine of the formula



where o is an integer from 10 to 18.

4,492,644

SLOWLY RELEASING PERFUME COMPOSITIONS

Yuuichi Matsumoto, Abiko; Kiyomitsu Kawasaki, Noda, and Masato Ishitani, Kashiwa, all of Japan, assignors to Soda Aromatic Company, Limited, Tokyo, Japan

Filed Apr. 15, 1982, Ser. No. 368,520
Int. Cl.³ A61K *7/46*
U.S. Cl. 252—522 A 4 Claims

1. A slowly releasing perfume composition prepared by mixing a granulated ethylene-vinyl acetate copolymer having a vinyl acetate content in the range of 19 to 40% by weight and a perfume, said perfume containing as an essential component at least one fragrant component selected from the group consisting of hydrocarbons and esters the total amount of said hydrocarbons and esters in said perfume being not less than about 30%, at a temperature in the range of about 10° C. to about 50° C. to thereby allow said perfume to be absorbed in said granulated copolymer and wherein the diameter of each granule of said granulated copolymer is in the range of about 1 to about 10 mm.

4,492,645

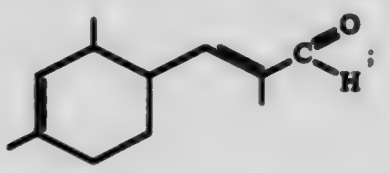
ORGANOLEPTIC USE OF CYCLOHEXENYL-ALPHA-ALKYL ACROLEIN DERIVATIVES

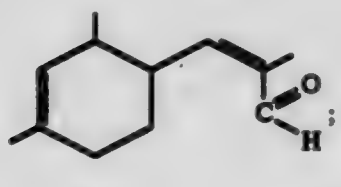
Mark A. Sprecker, Sea Bright, N.J.; Philip T. Klemarczyk, Newington, Conn., and Robert P. Belko, Woodbridge, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

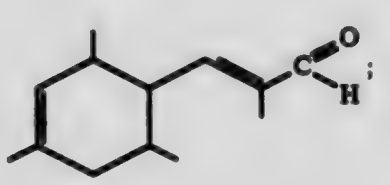
Division of Ser. No. 398,953, Jul. 16, 1982, Pat. No. 4,424,379. This application Jun. 16, 1983, Ser. No. 505,423
Int. Cl.³ C11B *9/00*
U.S. Cl. 252—522 R 15 Claims

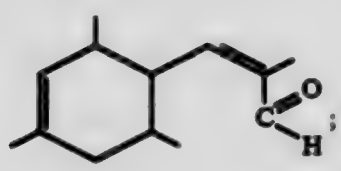
1. A process for augmenting or enhancing the aroma of a

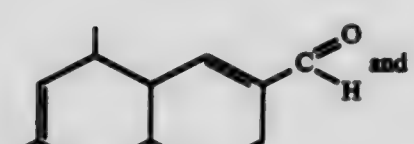
consumable material selected from the group consisting of perfume compositions, colognes and perfumed polymers comprising the step of adding to said consumable material an aroma augmenting or enhancing quantity of at least one aldehyde having a structure selected from the group consisting of:



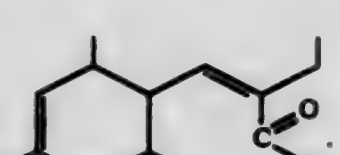








and



4,492,646

LIQUID DISHWASHING DETERGENT CONTAINING ANIONIC SURFACTANT, SUDS STABILIZER AND HIGHLY ETHOXYLATED NONIONIC DRAINAGE PROMOTOR

John B. Welch, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 354,679, Mar. 4, 1982, abandoned, which is a continuation of Ser. No. 230,143, Jan. 31, 1981, abandoned, which is a continuation-in-part of Ser. No. 118,705, Feb. 5, 1980, abandoned. This application Feb. 22, 1984, Ser. No. 581,222

Int. Cl.³ C11D *1/722, 1/75, 1/83, 3/066*

U.S. Cl. 252—528 8 Claims

1. A liquid detergent composition comprising, by weight:

(a) from about 10% to about 50% of an anionic surfactant;

(b) from about 3% to about 8% of a drainage promoting nonionic surfactant selected from the group consisting of:

(i) an ethoxylated aliphatic alcohol of the formula

$R(OC_2H_4)_nOH$

wherein R is an aliphatic hydrocarbyl radical containing from about 16 to about 30 carbon atoms, and n is from about 16 to about 100;

(ii) an ethoxylated alkyl phenol of the formula

$R(OC_2H_4)_nOH$

wherein R is an alkyl phenyl radical containing a total of from about 18 to about 30 carbon atoms and at least one alkyl group containing at least about 12 carbon atoms, and n is from about 16 to about 100;

(iii) the condensation product of mono C_{16-22} fatty acid esters of polyglycols with from about 13 to about 100 moles of ethylene oxide per mole of the monoester;

(iv) the condensation product of cholesterol and from about 13 to about 100 moles of ethylene oxide;

(v) a material which is a condensate of ethylene oxide, propylene oxide and a compound containing hydroxy or amine groups onto which alkylene oxides can be polymerized, said polymer having a molecular weight of from about 500 to about 15,000, an ethylene oxide content of from about 30% to about 70% by weight and a propylene oxide content of from about 30% to about 70% by weight; and

(vi) mixtures thereof;

(c) from about 2% to about 8% of a suds stabilizing nonionic surfactant selected from the group consisting of amine oxides, ammonia, monoethanol and diethanol amides of fatty acids having an acyl moiety of from about 8 to about 18 carbon atoms, and mixtures thereof;

(d) from 0% to about 10% of a detergency builder selected from inorganic phosphates, polyphosphates, silicates and carbonates, organic carboxylates, phosphonates and mixtures thereof; and

(e) from about 20% to about 88% water.

4,492,647

ORGANOPOLYSILOXANES USEFUL AS DIELECTRIC FLUIDS AND ANTI-TREEING ADDITIVES

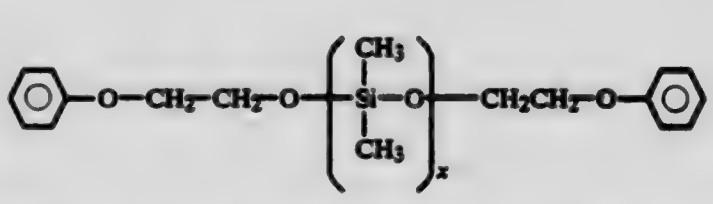
Harry Braus, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Feb. 1, 1984, Ser. No. 575,979

Int. Cl.³ H01B *3/30*

U.S. Cl. 252—573 6 Claims

1. A compound having the general structure:



wherein x is from about 3 to about 15 and mixtures thereof.

4,492,648

LIGHT-COLLECTING SYSTEMS USING HALOGENATED PERYLENE DERIVATIVES AS LIGHT CONVERTERS

Uwe Claussen, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

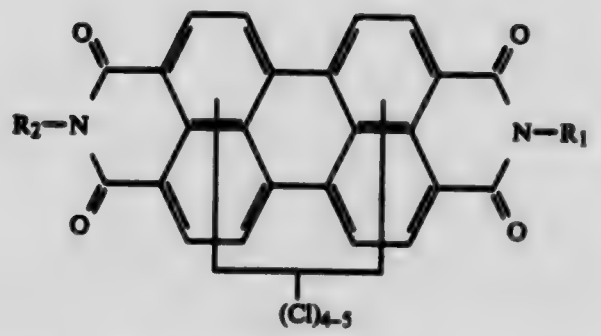
Filed Dec. 7, 1982, Ser. No. 447,545

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1981, 3149520

Int. Cl.³ C08K *5/00*; C09B *5/62*; H01L *31/02*; C09K *3/34, 11/06*; G02F *2/02, 9/33*

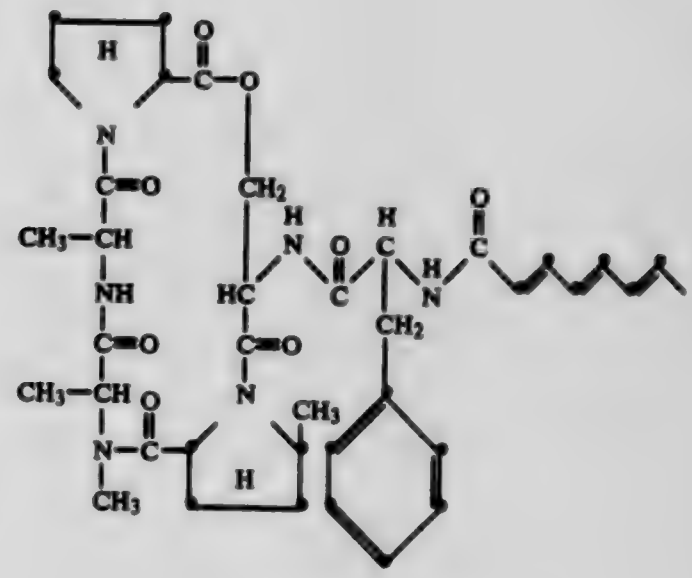
U.S. Cl. 252—582 7 Claims

1. In a light-collecting system comprising emission areas and absorption areas wherein the ratio of emission areas to absorption areas are 1:10 to 1:1,000, said light-collecting system comprising a transparent, optically usable plastic which contains centers capable of fluorescence, the improvement wherein said centers capable of fluorescence comprise a mixture of dyestuffs of the formula



in which R_1 and R_2 designate hydrogen, unsubstituted C_1–C_{18}-alkyl radicals or C_1–C_{18}-alkyl radicals substituted by C_1–C_{10}-alkoxy, C_1–C_{10}-alkylthio, halogen or cyano, and consisting of about 1 to about 20% by weight of the pentachloro derivatives and about 99 to about 80% by weight of the tetrachloro derivatives.

(I)

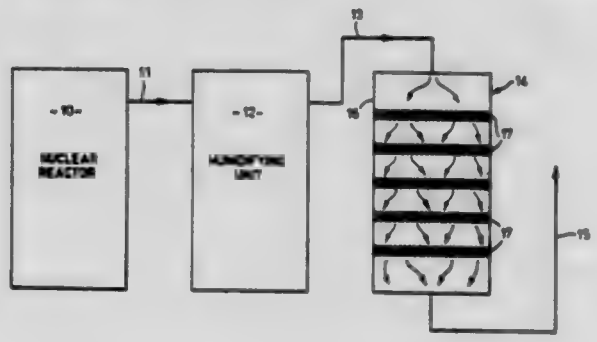


4,492,649

CARBON DIOXIDE REMOVAL METHOD EMPLOYING PACKED SOLID CALCIUM HYDROXIDE

Christopher H. Cheh, 4239 Anworld Pl., Mississauga, Ontario, and Roger W. Glass, 2290 Wyandotte Dr., Oakville, Ontario, both of Canada

Filed Sep. 23, 1982, Ser. No. 422,479
Claims priority, application Canada, Jan. 15, 1982, 394275; Apr. 23, 1982, 401539
Int. Cl.³ G21F *9/02*; B01D *53/34*
U.S. Cl. 252—630 10 Claims



7. A method of removing and immobilizing carbon dioxide from a gas stream including carbon dioxide containing radioactive carbon as a constituent, which comprises providing a gas filter comprising a packed bed of solid $Ca(OH)_2$ prepared by hydrating CaO and drying, crushing and packing the resultant hydroxide, contacting the gas stream with water to raise its moisture content to a value corresponding to a relative humidity in the range 80%–100% at the temperature of the bed, and flowing the humidified gas stream through the gas filter to effect conversion of the calcium hydroxide to calcium carbonate.

4,492,650

A54556 ANTIBIOTICS AND PROCESS FOR PRODUCTION THEREOF

Karl H. Michel, and Ralph E. Kastner, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 27, 1982, Ser. No. 423,948
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R 6 Claims

1. A54556 Factor A, which has the structure

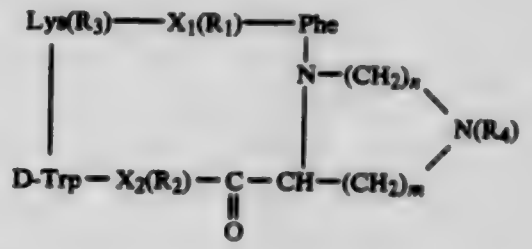
4,492,651

CYCLIC HEXAPEPTIDES

Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Nov. 23, 1983, Ser. No. 554,853
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 S 5 Claims

1. A compound of the formula:



in which
X_1 is Thr, Val or Abu;
X_2 is Phe, Trp or Tyr;
n is one of the integers 2, 3 or 4;
m is one of the integers 1, 2, 3 or 4;
R_1 is hydrogen or a hydroxyl protecting group for Thr;
R_2 is hydrogen or a hydroxyl protecting group for Tyr;
R_3 is hydrogen or a N^{ϵ} protecting group for Lys;
R_4 is hydrogen, alkanoyl of 2 to 6 carbon atoms, aroyl of 7 to 10 carbon atoms or an amino protecting group,
or a pharmaceutically acceptable salt thereof.

4,492,652

REACTIONS OF AROMATIC COMPOUNDS HAVING TWO OR MORE FUSED RINGS

Martin L. Kaplan, Morris Plains, N.J., assignor to AT&T Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 104,159, Dec. 17, 1979, abandoned. This application Jan. 31, 1983, Ser. No. 462,405
Int. Cl.³ C07C *1/253, 1/32*
U.S. Cl. 568—75 8 Claims

5. A process for the production of a carbon containing body comprising the steps of pyrolyzing a carbon containing compound and collecting a reaction product from said pyrolysis characterized in that said carbon containing compound comprises an aromatic organic compound having fused aromatic rings which, due to said pyrolysis at a temperature in the range from 700 to 1200 degrees C., forms free radicals at the peri positions of said fused rings of said carbon containing compound, wherein said free radicals are formed due to said pyrolysis through the production of a stable inorganic gas by removal of a substituent from said peri positions of said compound without the destruction of said fused aromatic rings,

wherein sulfur is the only agent present during said pyrolysis step which reacts with said radicals, and wherein said collected reaction product is a high volatility product.

4,492,653

WATER-SOLUBLE TRISAZO DYESTUFFS ON THE BASIS OF A COMBINATION OF NAPHTHALENE-, DIPHENYLAMINE- AND PYRAZOLONE DERIVATIVES

Karl Sommer, Kleinstein, and Norbert Arnbrecht, Sulzbach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

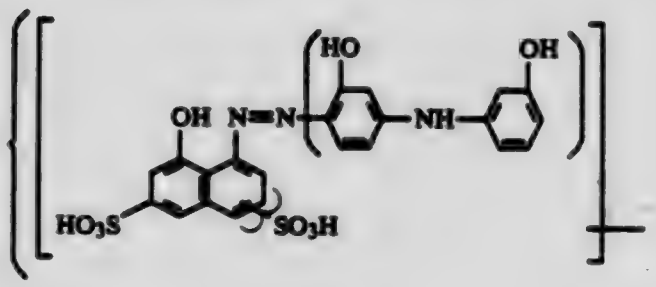
Filed Aug. 23, 1982, Ser. No. 410,621

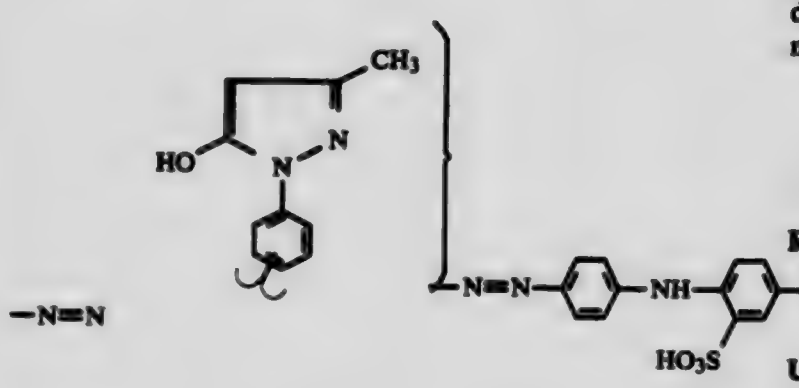
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1981, 3133552

Int. Cl.³ C09B *31/02, 33/22;* D06P *3/30, 3/32*

U.S. Cl. 534—796 1 Claim

1. A water-soluble trisazo-dyestuff of the formula





4,492,654

WATER-SOLUBLE AZO COMPOUNDS, A PROCESS FOR THEIR PREPARATION AND THEIR USE AS DYES

Ernst Heyer, Frankfurt am Main; Folker Kohlhaas, Hochheim am Main, and Fritz Meininger, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

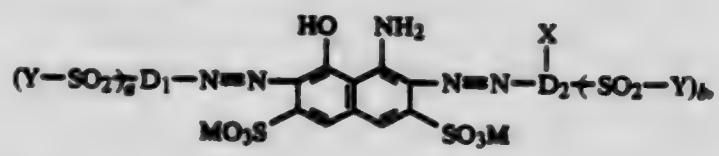
Continuation of Ser. No. 279,735, Jul. 2, 1981, abandoned. This application Jul. 20, 1983, Ser. No. 515,442

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1980, 3025572

Int. Cl.³ C09B *33/02, 31/02*

U.S. Cl. 534—827 10 Claims

1. A disazo compound of the formula



in which

M is hydrogen or an alkali metal;

D_1 is the benzene or naphthalene nucleus unsubstituted or, apart from the group $Y—SO_2—$, substituted by one or two substituents selected from the group consisting of fluorine, chlorine, bromine, carboxy, lower alkyl, lower alkoxy and nitro, and/or by one, two or three sulfo groups;

D_2 is the benzene or naphthalene nucleus substituted by X defined below, unsubstituted or substituted by the group $—SO_2—Y$ and unsubstituted or substituted by one or two substituents selected from the group consisting of carboxy, lower alkyl and lower alkoxy, and/or by one substituent selected from the group consisting of fluorine, chlorine, bromine and nitro, and/or by one, two or three sulfo groups, D_1 and D_2 being identical to or different from one another;

X is bonded to D_2 in ortho-position to the azo group and is fluorine, chlorine or bromine;

Y is vinyl or β-sulfatoethyl;

a is zero or 1; and

b is zero or 1; and the sum of (a+b) is 1 or 2.

4,492,655

TRICYCLOPENTADIENYL CERIUM AND PROCESS FOR PREPARING THE SAME

Peter S. Gradeff, Pottersville, and Fred G. Schreiber, Highland Park, both of N.J., assignors to Rhone-Poulenc, Inc., New Brunswick, N.J.

Filed Apr. 27, 1984, Ser. No. 604,756

Int. Cl.³ C07F *5/00*

U.S. Cl. 260—429.2 11 Claims

1. A process for preparing tricyclopentadienyl cerium as well as the mono and dicyclopentadienyl cerium intermediates which comprises slowly adding alkali metal cyclopentadienide into a solution of ceric ammonium nitrate, forming, in sequence, and stepwise, monocyclopentadienyl cerium dinitrate, dicyclopentadienyl cerium mononitrate, and tricyclopentadienyl cerium.

4,492,656

DICYANOMETHYL ETHYL PEROXY DICARBONATE POLYMERIZATION INITIATORS

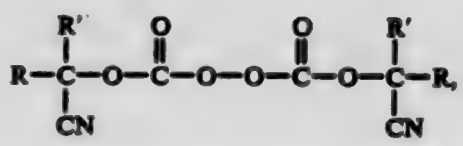
Robert H. Tang, Norton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 30, 1982, Ser. No. 430,167

Int. Cl.³ C07C *179/20*

U.S. Cl. 260—453 RZ 4 Claims

1. An organic peroxydicarbonate of the graphic formula:



wherein R and R′ are each selected from the group consisting of C_1–C_4 alkyl, C_5–C_7 cycloalkyl, and C_1–C_4 alkyl-substituted C_5–C_7 cycloalkyl, or participate in a cycloalkyl group of from 5 to 7 carbon atoms, provided that when one of R and R′ is each individually a cycloalkyl group, the other is a C_1–C_4 alkyl.

4,492,657

IMINES OF ALKYL 4-HALOMETHYLBENZOATES

Lorenz Heiss, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 25, 1983, Ser. No. 488,126

Claims priority, application Fed. Rep. of Germany, May 5, 1982, 3216722

Int. Cl.³ C07C *119/20*

U.S. Cl. 260—453.7 1 Claim

1. An alkyl (4-halomethyl)iminobenzoate of the formula



and its HCl or HBr salts, R denoting C_1–C_4-alkyl or C_1–C_4-alkoxymethyl and X denoting Cl or Br.

4,492,658
THIOUREYLENES
Thomas J. Bellos, Kirkwood, Mo., assignor to Petrolite Corporation, St. Louis, Mo.
Filed Jul. 21, 1980, Ser. No. 170,326
Int. Cl.³ C07C 155/00, 157/00, 87/02
U.S. Cl. 260—455 A 5 Claims

1. A thioureylene derived from reacting an oxyalkylated polyamine with Thiourea.

4,492,659
PHOSPHOLIPID COMPOUND
Elmar Bosies, Weinheim; Rudi Gall, Hirschberg; Günter Weimann, Weinheim-Lützelsachsen; Uwe Bicker, Lorsch, and Wolf Pahlke, Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany
Filed Jul. 7, 1982, Ser. No. 395,954
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1981, 3127503
Int. Cl.³ C07F 9/02
U.S. Cl. 260—925 6 Claims

1. Phospholipid compound, designated (2-ethyl-1-octadecyloxy-3-propyl)-(2-trimethylammonium-ethyl) phosphate.

2. Phospholipid compound, designated (2-methoxymethyl-2-methyl-1-octadecyloxy-3-propyl)-(2-trimethylammonium-ethyl) phosphate.

3. Phospholipid compound, designated (2,2-bis-methoxymethyl-1-hexadecyloxy-3-propyl)-(2-trimethylammonium-ethyl) phosphate.

4. Phospholipid compound designated (2-allyl-1-octadecyloxy-3-propyl)-(2-trimethylammonium-ethyl) phosphate.

5. Phospholipid compound designated [1-hexadecyloxy-2-(2-propynyl)-3-propyl]-(2-trimethylammonium-ethyl) phosphate.

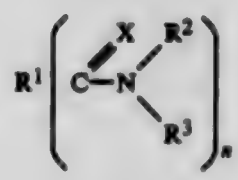
4,492,660
LOW TEMPERATURE STABLE TERT-BUTYLPHENYL DIPHENYL PHOSPHATE
Silvio L. Giolito, Whitestone, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.
Division of Ser. No. 279,389, Jul. 1, 1981, Pat. No. 4,414,161. This application Sep. 6, 1983, Ser. No. 529,466
Int. Cl.³ C07F 9/09
U.S. Cl. 260—966 4 Claims

1. A low temperature, stable tert-butylphenyl diphenyl phosphate product which will not crystallize at temperatures of about 0° C., comprised of mixed meta/para isomers produced by (a) alkylating a phenol with isobutylene to produce a predominantly para-tert-butylphenol and (b) catalytically isomerizing the para-tert-butylphenol to produce a meta/para isomerized tert-butylphenol mixture; then (c) realkylating the isomerized tert-butylphenol mixture to obtain a desired C_4/ϕ ratio; and (d) phosphorylating the realkylated tert-butylphenol with a phosphorylating agent to produce a tert-butylphenyl diphenyl product characterized by low temperature stability.

4,492,661
PROCESS FOR PRODUCING TRIARYLPHOSPHITES
Rudolf Maul, Lerach; Eberhard Otto, Lindenfels, and Horst Zinke, Ernsthofen, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Continuation of Ser. No. 307,474, Oct. 1, 1981, Pat. No. 4,440,696, which is a continuation of Ser. No. 103,132, Dec. 13, 1979, Pat. No. 4,312,818, which is a continuation of Ser. No. 928,644, Jul. 27, 1978, abandoned. This application Jul. 5, 1983, Ser. No. 510,706
Claims priority, application Switzerland, Aug. 8, 1977, 9691/77
The portion of the term of this patent subsequent to Jan. 26, 1999, has been disclaimed.
Int. Cl.³ C07F 9/141
U.S. Cl. 260—976 5 Claims

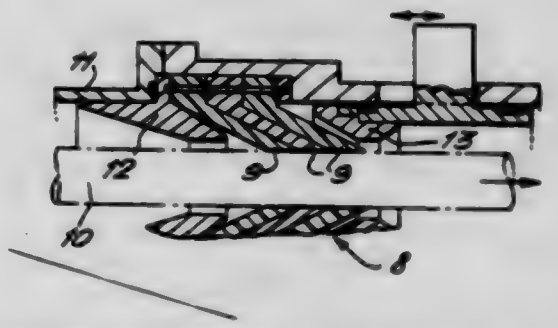
1. A process for producing a triaryl phosphite of the formula $(RO)_3P$, in which R represents aryl substituted by one or more straight-chain or branched-chain alkyl of 4 to 18 carbon atoms in the ortho position, cycloalkyl, aryl or aralkyl groups in the 2- or 2,4-positions, by reaction of a phosphorus trihalide with a hydroxy-substituted aromatic compound of the formula ROH in the presence or absence of a solvent, and in the presence of 0.005 to 10 mol %, relative to the hydroxy-substituted aromatic compound, of a catalyst selected from the group consisting of

(a) an amide of a carboxylic acid of the formula



in which, where n is 1, R^1 is hydrogen, X is an oxygen atom; and R^2 and R^3 independently of one another are each a hydrogen atom, phenyl, benzyl, cyclohexyl or alkyl having 1 to 12 C atoms, or R^2 and R^3 together are alkylene which is optionally interrupted by O or S atoms.

4,492,662
MANUFACTURE OF INSULATED ELECTRIC CABLES
Christopher Larrive, Southampton, England, assignor to Pirelli General plc, London, England
Filed Apr. 28, 1983, Ser. No. 489,475
Int. Cl.³ B29F 3/10
U.S. Cl. 264—40.1 16 Claims



1. Apparatus for curing an extruded insulation layer of an electric cable, comprising a tube for the through-passage of the insulated electric cable, which tube is formed at least in part as a catenary, means for filling said tube with a heated fluid for effecting curing of the cable insulation layer, and cable restraining means at the exit end of the curing tube, or adjacent said exit end and within the curing tube, for applying to the cable insulation a restraining force directed oppositely to forces developed by the hydrostatic pressure of the curing fluid which tend to extrude the cable through the exit end of the curing tube, so as to nullify the effects of such forces, said cable restraining means comprising flexible means in sliding engagement with said cable insulation and adjustable means for

pressing said flexible means toward said cable and thereby varying the restraining force on said cable.

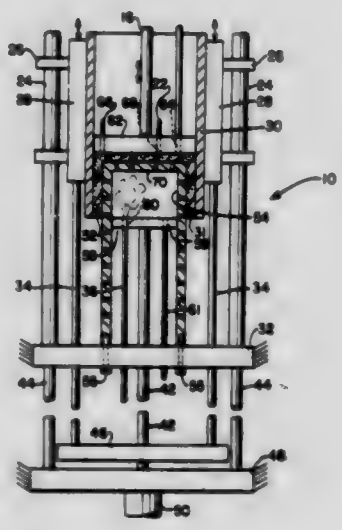
6. A method of curing an extruded insulation layer of an electric cable, comprising passing the insulated electric cable along a catenary path through a curing tube which conforms generally to said catenary path, filling said curing tube with a heated fluid for effecting curing of the cable insulation layer, applying to the cable, at the exit end of the curing tube or adjacent said exit end and within the curing tube, a restraining force applied by sliding friction to the cable and opposing the forces developed by the hydrostatic pressure of the curing fluid which tend to extrude the cable through the exit end of the curing tube, and varying said frictional restraining force as the cable is passed through the curing tube so as to nullify the effects of the forces developed by the hydrostatic pressure of the curing fluid.

4,492,663

METHOD AND ADJUSTABLE LENGTH MOLD FOR MANUFACTURING A FOAMED PACKAGING ASSEMBLY

Nyles V. Reinfeld, P.O. Box 2321, Bath, Ohio 44240, and Michael J. Valentine, 78 Tower Rd., Pines Lake, Wayne, N.J. 07470

Continuation-in-part of Ser. No. 338,471, Jan. 11, 1982, abandoned. This application Jan. 10, 1983, Ser. No. 456,595
Int. Cl.³ B29D *27/00*; B15B *3/02*
U.S. Cl. 264—45.4 19 Claims



1. A method of making a packaging assembly in an adjustable length mold formed within a mold shell by a hollow mold core and an axially movable mold end plate, said mold core having a fixed position, a bottom plate positioned within said mold core and being movable axially thereof in sealed relation thereto, said mold shell being movable axially in relation to said mold core, said mold having a mold cavity with one open end and a closed end formed by said mold shell, mold core and mold end plate, the mold being adapted to make a container having side walls, a bottom and an open end, the length of the side walls and the thickness of the bottom being adjustable, comprising the steps of:

adjusting the axial position of the mold shell in relation to the mold core to adjust the side wall length of the container;

forming a closed mold cavity by moving said mold end plate axially into said mold shell a desired distance to place it in spaced relation to an end of said mold core to control the thickness of the bottom of the container to be formed;

filling the mold cavity with expandable thermoplastic beads; and

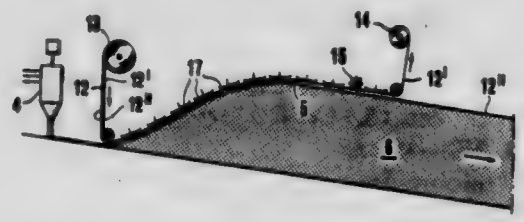
heating the plastic material to expand it into a mass including a container having a bottom of a predetermined thickness and side walls of a predetermined length.

4,492,664

PROCESS FOR THE CONTINUOUS FOAMING OF PLASTICS

Mellé Bruno, Via Lampegnano 144, I-20151 Milan, Italy

Filed Jan. 4, 1983, Ser. No. 455,580
Claims priority, application Italy, Jan. 18, 1982, 67046 A/82
Int. Cl.³ B29D *27/04*
U.S. Cl. 264—46.2 9 Claims



1. In a process for the continuous foaming of plastics, comprising the steps of pouring a foaming mixture into a foaming space, of letting said mixture foam and solidify in said foaming space, of limiting said foaming space by means of flexible bands and of guiding and moving said flexible bands so as to follow the corresponding surfaces of the material being foamed and solidified, the improvement that as flexible band a composite web is used, which is formed by a support paper band and a very thin impermeable band of plastic material detachably coupled to said paper band and disposed between said paper band and said material being foamed and solidified.

4,492,665

PROCESS FOR THE PRODUCTION OF MOULDINGS FROM MATERIALS BASED ON SILICON NITRIDE

Robert Pompe, Moelndal, Sweden, assignor to Swedish Institute for Silicate Research, Goeteborg, Sweden

PCT No. PCT/SE82/00161, § 371 Date Jan. 21, 1983, § 102(e) Date Jan. 21, 1983, PCT Pub. No. WO82/04245, PCT Pub. Date Dec. 9, 1982
PCT Filed May 10, 1982, Ser. No. 463,884
Claims priority, application Sweden, May 25, 1981, 8103269
Int. Cl.³ C01B *21/68*; C04B *35/58*
U.S. Cl. 264—65 7 Claims

1. A process for the production of moulded bodies consisting of materials based on silicon nitride comprising preparing a powder mix of silicon powder, silicon nitride powder and a sintering aid, moulding said mix, nitriding the Si-content to Si_3N_4 and sintering, characterised in that the silicon powder is ground down to a mean particle size below 1 μm in the presence of silicon nitride powder as a dispersing agent and in the presence of sintering aids and, that a body moulded of this powder mix hereafter is nitrided during a time period not longer than 5 (five) hours whereby the nitriding temperature is kept below the melting point of pure silicon.

4,492,666

METHOD FOR FORMING A PROTECTIVE PIPE CAP

Wilfried Dreyfuss, Dorfstrasse 52, D-3111 Elmke, Fed. Rep. of Germany; Thomas E. Remp, Jr., 5555 Del Monte Dr., Houston, Tex. 77056, and Kurt Müller, Muhlenweg 58, 3101 Eicklingen, Fed. Rep. of Germany

Filed Mar. 31, 1982, Ser. No. 364,474
Int. Cl.³ B29C *5/00*, *6/04*
U.S. Cl. 264—261 10 Claims

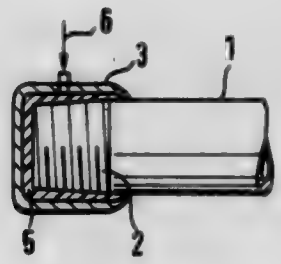
1. A method of manufacturing a protective device for threads on an end of a pipe, said threads defining a corrugated surface, comprising:

mounting a mold around said threads to provide a cavity between said threads and said mold, said cavity being unfilled;

inserting an elongate tear element into said cavity between said mold and said threads; and

filling said cavity with polyurethane by injecting said poly-

urethane into said cavity under pressure to form a protective covering for said threads and forming a tear-open lug



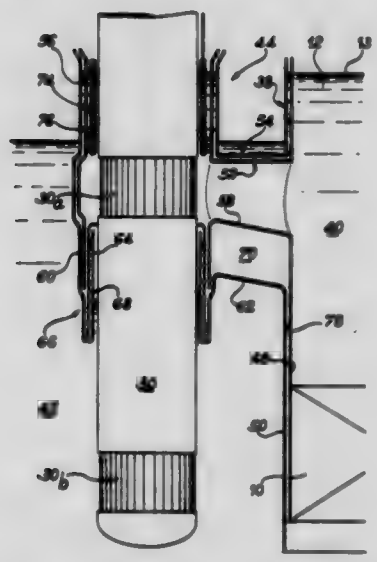
on said protective covering, said protective covering engaging said threads and being substantially adjacent said corrugated surface of said threads.

4,492,667

FAST NEUTRON NUCLEAR REACTOR

Marie-Thérèse Cabrillat, Pertuis, and Noël Lions, Manosque, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 25, 1982, Ser. No. 381,894
Claims priority, application France, May 27, 1981, 81 10565
Int. Cl.³ G21C *15/00*
U.S. Cl. 376—405 4 Claims



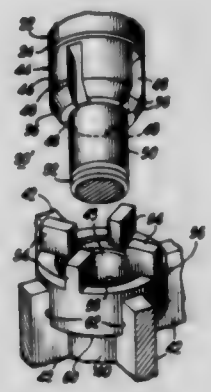
1. A fast neutron nuclear reactor comprising a vertically axed main vessel sealed in its upper part by a slab and containing the core of the reactor and a volume of liquid cooling metal for the latter, an inner cylindrical vessel defining within the main vessel a hot collector overhanging the core and a cold annular collector, at least one heat exchanger and at least one primary pump suspended on the slab and disposed in the cold collector for respectively ensuring the cooling of the liquid metal contained in the hot collector and its circulation between the hot and cold collectors, and connecting means making it possible to pass the liquid metal contained in the hot collector up to an inlet port of the exchanger, the inner vessel incorporating an inner cylindrical ferrule and an outer cylindrical ferrule arranged in a coaxial manner, the connecting means comprising a cold outer structure supported by the outer ferrule and comprising a first ferrule which is concentric to the exchanger and whose lower end is sealingly connected thereto below the inlet port, and a hot inner structure supported by the inner ferrule and comprising a second ferrule concentric to the exchanger and placed within the first ferrule, wherein the first ferrule is open at its upper end above the free level of the liquid metal contained in the main vessel and wherein the second ferrule is open at its two ends located respectively above the free level of the liquid metal contained in the vessel and below the inlet port of the exchanger, and wherein the hot inner structure, the cold outer structure and the heat exchanger are spaced apart from one another, the hot inner structure passing the liquid metal contained in the hot collector to the inlet port of the exchanger and forming a heat baffle, whereas the cold outer structure ensures sealing between the hot collector and the cold collector.

4,492,668

APPARATUS AND METHOD FOR PREVENTING THE ROTATION OF RODS USED IN NUCLEAR FUEL ASSEMBLIES

Lawrence G. Pilgrim, Jr., and Leigh F. Jackson, both of Greensburg, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 8, 1982, Ser. No. 366,819
Int. Cl.³ G21C *23/00*
U.S. Cl. 376—440 3 Claims



1. An improved nuclear fuel assembly having a plurality of elongated rods with an end plug disposed at least at one longitudinal end of each of said rods and having at least one tie plate with a plurality of circumferentially enclosed cylindrical tie plate sleeves with one of said tie plate sleeves having a circumferentially enclosed internal cavity for receipt therethrough of one of said end plugs of one of said elongated rods, wherein the improvement comprises:

(a) said one tie plate sleeve having a circumferential outer surface and an elongated out-of-cavity flat on an end portion of said outer surface; and

(b) said one end plug having a stud portion disposable in said internal cavity of said one tie plate sleeve and having a cylindrical body portion disposed between said one elongated rod and said stud portion, said cylindrical body portion including a longitudinally extending, internal flat portion on the stud-portion-facing end of said cylindrical body portion, with said internal flat portion seatable against and surroundably engageable with said out-of-cavity flat to prevent rotation of said one elongated rod about its longitudinal axis when said stud portion of said one end plug is disposed in said internal cavity of said one tie plate sleeve.

4,492,669

METHOD AND MEANS FOR MAKING A BERYLLIUM MIRROR

Gerald Gould, Bethel, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 21, 1983, Ser. No. 476,945
Int. Cl.³ B22F *3/14, 7/06*
U.S. Cl. 419—5 2 Claims

1. A process for forming a monolithic mirror from fine powder comprising the steps of;

(a) providing an open container,

(b) placing a plurality of hollow, hexagonal shaped elements in said container,

(c) precisely spacing each of said hexagonal shaped elements from one another by pins disposed in recesses through alternate surfaces of said hexagonal shaped elements,

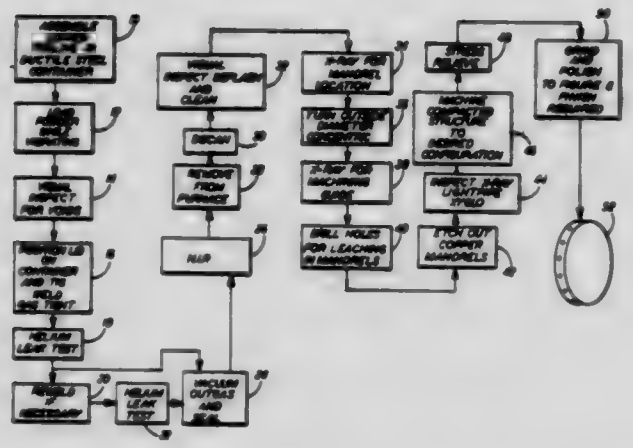
(d) special positioning each of said hexagonal shaped ele-

ments vertically by pins disposed in recesses in the bottom of each of said hexagonal shaped elements,

(e) placing said fine powder in the spaces between said elements,

(f) closing said container,

(g) hot isostatically pressing said closed container,



(h) removing said container to provide a blank including said powder and said plurality of hexagonal shaped elements,

(i) drilling holes about the periphery of said blank communicating with said hexagonal shaped elements,

(j) inserting a leaching fluid into said holes and recesses for removing all of said hexagonal shaped elements and pins.

4,492,670

PROCESS FOR MANUFACTURING SOLID CATHODES

Thorin Minrah, Schaffhausen; Matthias Hoffmann, Diessenhofen; Peter Kleer, and Klemens Hollig, both of Schaffhausen, all of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jan. 23, 1984, Ser. No. 572,798

Claims priority, application Switzerland, Feb. 10, 1983, 740/83

Int. Cl.³ C25C *7/06*; C25B *11/04*

U.S. Cl. 419—9 14 Claims

1. A process for manufacturing solid cathodes for the fused salt electrolytic production of aluminum wherein the cathode material is wettable by precipitated aluminum comprising:

mixing a powdered titanium and a boron containing material with a powdered carbon material where the ratio of the sum of the powdered carbon material is super stoichiometric in an amount between 5 to 20 wt.% in excess of the required stoichiometric amount with respect to said powdered titanium and a boron containing material to form titanium diboride so as to form a mixture;

heating said mixture to a first temperature of about between 2000° to 2200° C.;

holding said heated mixture at said first temperature for about 5 to 45 minutes to form a reaction product characterized by pores and channels;

heating said reaction product to a second temperature of about between 2250° to 2600° C.;

holding said heated reaction product at said second temperature for about 10 to 60 minutes to form a molten titanium diboride-carbon eutectic; and

forming a wettable cathode from said molten titanium diboride-carbon eutectic.

4,492,671

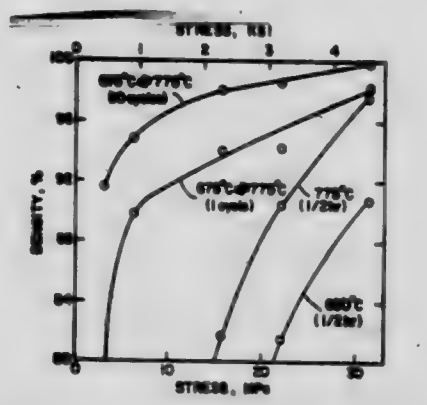
METHOD FOR CONSOLIDATION OF IRON-BASED ALLOY POWDER BY CYCLIC PHASE TRANSFORMATION UNDER PRESSURE

Oscar Ruano, Madrid, Spain; Jeffrey Wadsworth, Menlo Park, and Oleg D. Sherby, Palo Alto, both of Calif., assignors to Leland Stanford Junior University, Stanford, Calif.

Filed Mar. 15, 1982, Ser. No. 358,365

Int. Cl.³ B22F *3/16, 3/14*

U.S. Cl. 419—48 5 Claims



1. A powder metallurgical method of consolidating iron-based alloy powder having an alpha-gamma transformation temperature below 800° C. to form a body of high density, comprising thermally cycling the iron-based powder at least once above and below the alpha-gamma transformation temperature, and simultaneously applying a stress of from about 5 MPa to about 34.5 MPa to the powder to form a high density consolidated body.

2. The method of claim 1 in which the powder comprises an iron-carbon alloy.

3. The method of claim 2 in which the alloy comprises a white cast iron powder.

4,492,672

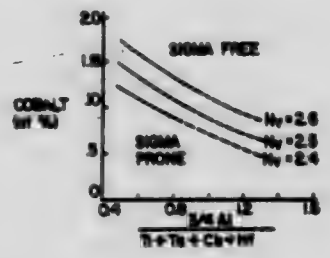
ENHANCED MICROSTRUCTURAL STABILITY OF NICKEL ALLOYS

David N. Duhl, Newington, Conn., and Xuan Nguyen-Dinh, Phoenix, Ariz., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 19, 1982, Ser. No. 369,880

Int. Cl.³ C22C *19/05*

U.S. Cl. 420—448 1 Claim



1. A method of enhancing the microstructural stability at high temperatures of nickel-base alloys having ingredients consisting essentially in weight percentage ranges set forth: chromium 12.0–24.0, tungsten 2.9 to 4.9, tantalum 3.1 to 9.9, aluminum 2.1 to 4.2, titanium 2.6 to 4.9, the improvement being characterized by the addition of cobalt within the range of 10.0 to 14.9 weight percent for bringing the electron vacancy number of the alloy within the range of 2.4 to 2.7 inclusive for reduction of precipitation of the sigma phase, the remainder being nickel.

4,492,673

DISPOSABLE SOBRIETY TESTER

Wilbur R. Erikson, Irvine, and Harry E. Payne, Jr., Mission Viejo, both of Calif., assignors to Sobryco, Inc., El Segundo, Calif.

Filed Sep. 2, 1983, Ser. No. 528,967
Int. Cl.³ G01N 1/22, 21/78
U.S. Cl. 422—85 7 Claims



1. A disposable field sobriety tester, comprising:
(a) a base plate;
(b) inflatable balloon means having a single interior chamber and attached to said base plate in fluidtight relation thereto providing a fluid sample flowpath into and out of said balloon means;
(c) mouthpiece means having two ends and being fixedly attached at one end to said base plate in fluidtight relation thereto, said base plate having formed therein a first aperture providing a fluid path between said mouthpiece means and the interior chamber via said sample flowpath of said balloon means, and said mouthpiece means having check valve means associated therewith to prevent fluid backflow from said interior chamber of said balloon means through said mouthpiece means; and
(d) indicator means having two ends and being fixedly attached at one end to said base plate in fluidtight relation thereto, said base plate having formed therein a second aperture providing a fluid path between the interior chamber of said balloon means and said indicator means via said sample flowpath, whereby said first and second aperture communicate through said interior chamber of said balloon means; and
(e) alcohol responsive reagent means contained within said indicator means and providing a visual indication when exposed to fluid containing alcohol vapors.

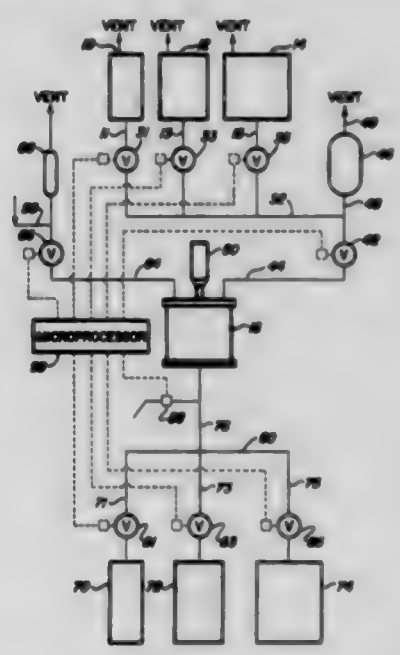
4,492,674

AUTOMATED APPARATUS FOR SOLVENT SEPARATION OF A COAL LIQUEFACTION PRODUCT STREAM

Frank K. Schweighardt, Upper Macungie, Pa., assignor to International Coal Refining Company, Allentown, Pa.

Filed Jan. 17, 1983, Ser. No. 458,373
Int. Cl.³ B01D 11/00; C01G 1/00
U.S. Cl. 422—101 9 Claims

1. Apparatus for performing sequential solvent extraction of a coal liquefaction product stream containing liquids and solids dissolved or suspended therein comprising,
means containing and supplying a coal liquefaction product stream containing liquids and solids dissolved or suspended therein,
means defining and containing a supply of virgin solvent mixtures arranged in individual reservoirs,
a filter having a filter chamber and a filter element having filter pore size of from 0.5 to 10 microns,
means for delivering metered amounts of individual solvent streams from said supply reservoirs to said filter chamber under a positive pressure and additional means for maintaining said filtration chamber under a positive pressure,
valve means for controlling the flow of the individual virgin solvent streams from said supply reservoirs to the filter chamber,
means for ultrasonically agitating the contents of the filter chamber to enhance extraction by agitation,
means for receiving the solution flowing from said filter and collecting said solution in a plurality of receivers,
means for delivering the solution from the filter chamber to said receivers in individual streams,



valve means situated within said means for delivering said solution from said filter to said receivers for controlling the flow of the solution passing from said filter to said receivers,
means for sensing the endpoint of solvent extraction, said sensing means determining the condition of the solution flowing from said filter to said receiver, and
control means for sequentially operating said valve means for performing sequential solvent extraction of said coal liquefaction product stream in the sample.

4,492,675

APPARATUS FOR THE PRODUCTION OF VINYLTOLUENE

James M. Watson, Big Spring, Tex., and Darrell E. Bailey, Prairieville, La., assignors to Cosden Technology, Inc., Dallas, Tex.

Division of Ser. No. 221,662, Dec. 31, 1980,. This application Oct. 29, 1981, Ser. No. 316,446
Int. Cl.³ B01D 3/34; C07C 7/05, 7/20
U.S. Cl. 422—187 14 Claims



1. An apparatus for manufacturing vinyltoluene comprising:

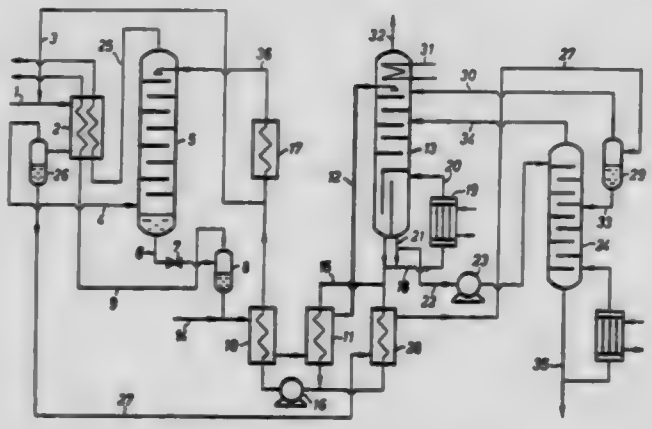
means for dehydrogenating ethyltoluene to form vaporous vinyltoluene;
first means for introducing a polymerization inhibitor into said vaporous vinyltoluene after said vaporous vinyltoluene leaves said dehydrogenation means;
means for condensing said vaporous vinyltoluene to produce an aqueous crude vinyltoluene feed stock, said first inhibitor introducing means is located immediately upstream of said condensing means;
means for adjusting the pH value of the aqueous phase of the condensed crude vinyltoluene feed stock to maintain said polymerization inhibitor in the organic phase of the condensed crude vinyltoluene feed stock;
means for collecting said condensed crude vinyltoluene feed stock;
a second means for introducing a polymerization inhibitor into said collected crude vinyltoluene feed stock; and
means for purifying said vinyltoluene.

4,492,676

PROCESS FOR PREVENTING THE PLUGGING OF INSTALLATIONS WITH METALLIC SULFIDES

Karl Baur, Baierbrunn, and Heinz Karwat, Pullach, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Feb. 16, 1984, Ser. No. 580,598
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1983, 3308392
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—210 20 Claims



1. In a gas absorption process for the removal of carbon dioxide, hydrogen sulfide, and metal carbonyls from a synthesis gas, comprising scrubbing said synthesis gases with a physical solvent, regenerating resultant physical solvent and reusing resultant regenerated solvent in the scrubbing step, the improvement comprising adding to the solvent an organic phosphite or phosphine as a complexing agent for the metals in said metal carbonyls, thereby inhibiting the formation of metal sulfides which would otherwise foul parts of apparatus used in the process.

4,492,677

PREPARATIVE PROCESS FOR ALKALINE EARTH METAL, ALUMINUM-CONTAINING SPINELS AND THEIR USE FOR REDUCING THE SULFUR OXIDE CONTENT OF GASES

Jin S. Yoo, Flossmoor, and Cecelia A. Radlowski, Riverside, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed May 17, 1984, Ser. No. 611,243
Int. Cl.³ B01J *20/01, 21/00, 23/00;* C01B *17/96*
U.S. Cl. 423—244 37 Claims

1. A process for the production of an alkaline earth metal, aluminum-containing spinel composition comprising:
(a) combining (i) an acidic aqueous medium containing at least one alkaline earth metal component; (ii) at least one organic compound having inherent basicity; and (iii) a basic aqueous medium containing at least one aluminum component in which the aluminum is present as an anion to form a combined mass including a liquid phase and an alkaline earth metal, aluminum-containing precipitate, provided that the pH of said combined mass during said combining is maintained at about 8.0 or higher; and
(b) calcining said precipitate to form said alkaline earth metal, aluminum-containing spinel composition.

30. In a process for reducing the sulfur oxide content of a sulfur oxide-containing gas which includes contacting said gas with a material at conditions to associate at least a portion of said sulfur oxide contained in said gas with said material, the improvement comprising utilizing as said material an alkaline earth metal, aluminum-containing spinel composition produced in accordance with the process of claim 1.

4,492,678

PREPARATIVE PROCESS FOR ALKALINE EARTH METAL, ALUMINUM-CONTAINING SPINELS AND THEIR USE FOR REDUCING SULFUR OXIDE CONTENT IN GASES

Jin S. Yoo, Flossmoor, and Cecelia A. Radlowski, Riverside, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed May 17, 1984, Ser. No. 611,289
Int. Cl.³ B01J *20/04, 21/00, 23/00;* C01B *17/96*
U.S. Cl. 423—244 39 Claims

1. A process for the production of an alkaline earth metal, aluminum-containing spinel composition comprising:
(a) combining (i) an acidic aqueous medium containing at least one alkaline earth metal component; (ii) at least one solid organic material capable of being at least partially combusted during step (b) hereof; and (iii) a basic aqueous medium containing at least one aluminum component in which the aluminum is present as an anion to form a combined mass including a liquid phase and an alkaline earth metal, aluminum-containing precipitate, provided that the pH of said combined mass during said combining is maintained at about 8.0 or higher; and
(b) calcining said precipitate to form said alkaline earth metal, aluminum-containing spinel composition.

32. In a process for reducing the sulfur oxide content of a sulfur oxide-containing gas which includes contacting said gas with a material at conditions to associate at least a portion of said sulfur oxide contained in said gas with said material, the improvement comprising utilizing as said material an alkaline earth metal, aluminum-containing spinel composition produced in accordance with the process of claim 1.

4,492,679

CYANURIC CHLORIDE HAVING IMPROVED SHELF LIFE

Horst Michaud, Trostberg, and Joachim von Seyerl, Seeon, both of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Jul. 22, 1983, Ser. No. 516,260
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1982, 3228915
Int. Cl.³ C01C *3/08*
U.S. Cl. 423—268 9 Claims

1. Cyanuric chloride having improved shelf life, comprising cyanuric chloride and 0.1–10 percent by weight of dicyandiamide.

4,492,680

REMOVAL OF CADMIUM FROM ACIDIC PHOSPHATIC SOLUTIONS

Klaus Frankenfeld; Peter Ruschke, both of Budenheim; Peter Brodt, Idstein-Eschenhahn, and Gerhard Eich, Ingelheim, all of Fed. Rep. of Germany, assignors to Chemische Fabrik Budenheim, Budenheim, Fed. Rep. of Germany

Filed May 18, 1983, Ser. No. 495,653
Claims priority, application Fed. Rep. of Germany, May 18, 1982, 32185995
Int. Cl.³ C01B *25/16*; B03C *1/00*; C01G *9/00*
U.S. Cl. 423—321 S 20 Claims

1. A process for the selective extraction of cadmium ion from a P_2O_5-containing acid solution comprising the steps of:

(a) providing a first aqueous phase comprising an aqueous acid solution containing an amount of cadmium ion;

(b) contacting said first aqueous phase with an organic phase comprising an organic solvent and a hydrogen halide salt of amine containing an alkyl radical of between about 8 and about 30 carbon atoms in length, said amine being selected from the group consisting of a primary amine, a secondary amine, and a tertiary amine, whereby cadmium ion is extracted from said first aqueous phase into said organic phase;

(c) thereafter separating said organic phase from said first aqueous phase; and

(d) contacting said organic phase with a second aqueous phase comprising one selected from the group consisting of a saline solution and water to extract cadmium ion from said organic phase into said second aqueous phase.

4,492,681

METHOD FOR THE PREPARATION OF SILICON CARBIDE FIBERS

Morinobu Endou, Nagano; Minoru Takamizawa, Tokyo; Tatsuhiko Hongu, Kanagawa, and Taishi Kobayashi, Niigata, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 17, 1983, Ser. No. 505,250
Claims priority, application Japan, Jun. 30, 1982, 57-113689
Int. Cl.³ C01B *31/36*
U.S. Cl. 423—345 11 Claims



1. A method for the preparation of silicon carbide fibers by the pyrolysis of an organosilicon compound on a substrate at an elevated temperature which comprises contacting a feed gas containing an organosilicon compound having at least one hydrogen atom and no halogen and oxygen atoms directly bonded to the silicon atoms at an elevated temperature with a finely divided powder of a metal or a compound of the metal to effect pyrolysis of the organosilicon compound.

4,492,682

PREPARATION OF ULTRAPURE BOEHMITES AND/OR PSEUDO-BOEHMITES

Emile Treblilon, Neuilly/sur/Seine, France, assignor to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Jan. 25, 1983, Ser. No. 460,926
Claims priority, application France, Jan. 29, 1982, 82 01391
Int. Cl.³ C01F *7/02*
U.S. Cl. 423—626 20 Claims

1. A process for the preparation of ultrapure and homogeneous boehmite and pseudo-boehmite, comprising (i) admixing amorphous aluminum hydroxycarbonate which has been prepared by carbonating an alkali metal aluminate with carbon dioxide and then filtering and washing the precipitate which results, with a solution of an acid, a base, a salt, or mixture thereof, with the pH of the reaction medium which results being maintained at a value of less than 11, (ii) next heating such reaction medium at a temperature of less than 90° C. for a period of at least 5 minutes, and (iii) thence heating the reacting medium resulting from the step (ii) at a temperature ranging from 90° C. to 250° C.

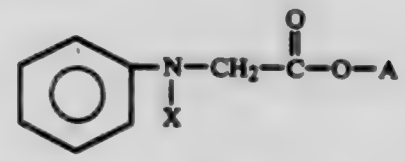
4,492,683

METHOD FOR INHIBITING THE GROWTH OF FUNGI WITH PHENYL GLYCINE COMPOUNDS

Krishen L. Nagpal, Williamsville, N.Y., assignor to Buffalo Color Corporation, West Paterson, N.J.

Filed Aug. 6, 1982, Ser. No. 406,007
Int. Cl.³ A01N *37/10, 37/12*
U.S. Cl. 424—309 6 Claims

1. A method of inhibiting the growth of fungi which comprises contacting the fungi with a fungicidal amount of at least one compound of the formula



wherein A is hydrogen, or an alkyl group having from 2 to 10 carbon atoms, and X is selected from hydrogen or C═ZNHCH₃ wherein Z is oxygen or sulfur.

4,492,684

SLOW RELEASE INJECTABLE INSULIN COMPOSITION

Matthews F. A. Goosen, Toronto, and Anthony M. F. Sun, Willowdale, both of Canada, assignors to Connaught Laboratories Limited, Willowdale, Canada

Filed Jun. 20, 1983, Ser. No. 505,840
Claims priority, application Canada, Jun. 8, 1983, 429960
Int. Cl.³ A61K *9/22, 9/26, 37/26*
U.S. Cl. 424—19 9 Claims

1. A biodegradable insulin-containing composition suitable for administration to a living body for the control of blood sugar levels therein, comprising a matrix of partially cross-linked physically-native albumin and insulin where the extent of said partial cross-linking is such as to permit insulin to be released from the matrix by diffusion and/or erosion when positioned in the body, said cross-linking being achieved by the use of glutaraldehyde in a concentration of less than 3.75% v/w of the albumin.

4,492,685

PROTECTIVE SKIN MATRIX

Alec D. Keith, Miami, Fla., and Wallace Snipes, State College, Pa., assignors to Key Pharmaceuticals, Inc., Miami, Fla.

Continuation of Ser. No. 425,853, Sep. 28, 1982, abandoned, which is a continuation of Ser. No. 295,689, Aug. 24, 1981, abandoned, which is a continuation of Ser. No. 163,105, Jun. 26, 1980, abandoned, which is a continuation of Ser. No. 109,242, Jan. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 2,565, Jan. 11, 1979, abandoned, and Ser. No. 47,084, Jun. 11, 1979, abandoned. This application Jan. 30, 1984, Ser. No. 574,844
Claims priority, application Japan, Aug. 14, 1979, 54-103489
Int. Cl.³ A61K *9/70*; A61L *15/03*; A61F *13/00*
U.S. Cl. 424—28 9 Claims

1. A cured self-supporting polymeric diffusion matrix suitable for providing protection to a burned or wounded patient, said matrix being formed by:

(a) heating an aqueous system comprising 2 to 20% glycerol,

4 to 30% polyvinyl alcohol molecular weight 50,000 to 150,000, 2 to 20% polyvinylpyrrolidone molecular weight 25,000 to 100,000, and the balance water, the weight ratio of polyvinyl alcohol to polyvinylpyrrolidone being 2:1 to 3:2, the weight ratio of glycerol to polyvinyl alcohol and polyvinylpyrrolidone together being 0.5:1 to 1:1, and weight ratio of water to glycerol being 3:1 to 7:1, until solution occurs,

(b) casting or molding the resultant solution, and

(c) curing the cast or molded solution by permitting it to stand for one-half to twenty-four hours.

4,492,626

COSMETIC MAKEUP CONTAINING COLORED PIGMENTS SALIFIED WITH AMINE FUNCTIONS

Michel Guillon, Bourg-la-Reine; Jean Mondet, Sevran; Christos Papantoniou, Montmorency, and Claudine Vandenbossche, Aulnay-sous-Bois, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Filed Oct. 13, 1982, Ser. No. 433,874

Claims priority, application France, Oct. 15, 1981, 81 19388

Int. Cl.³ A61K *7/04, 7/021, 31/00, 47/00*

U.S. Cl. 424—61 7 Claims

1. In a cosmetic makeup composition for application to the lips, skin or nails comprising a cosmetically acceptable vehicle for the lips, skin or nails and a colored pigment, wherein the improvement comprises, as said colored pigment, 0.1 to 20 weight percent of a colored pigment resulting from the salification reaction in an aqueous medium of an azo dye selected from the group consisting of D and C Red 7, D and C Red 8, D and C Red 33, D and C Yellow 5, D and C Yellow 6, D and C Red 2 and D and C Red 4, with polyvinylamine hydrochloride, said colored pigment having a molecular weight between 1,000 and 200,000, said dye being attached to polyvinylamine hydrochloride by said salification reaction in an amount of at least 10 weight percent of the stoichiometric quantity.

4,492,687

LIGHT-STABLE PESTICIDAL COMPOSITIONS

Jean-Jacques Hervé, Asnieres; Jean-Claude Suglia, Le Destrousse, and Colette Meinard, Marseille, all of France, assignors to Roussel Uclaf, Paris, France

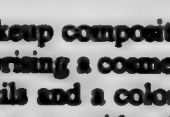
Division of Ser. No. 271,909, Jun. 9, 1981, Pat. No. 4,440,756. This application Nov. 8, 1983, Ser. No. 550,082

Claims priority, application France, Jun. 11, 1980, 80 12960; Jun. 16, 1981, 81-00752

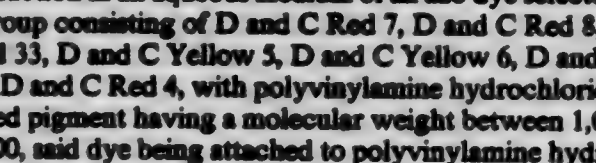
Int. Cl.³ A01N *25/22*

U.S. Cl. 424—174 29 Claims

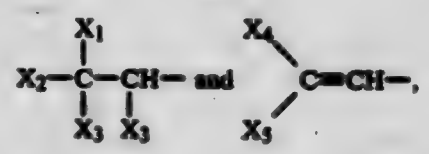
1. A light stable pyrethrinoid composition comprising (a) at least one liquid vehicle, (b) at least one surface-active agent soluble in the said liquid vehicle, (c) 0.1 to 10 gl/l of at least one azodyestuff stabilizer selected from the group consisting of N-ethyl-1-[{4-(phenylazo)-phenyl}-azo]-2-naphthalenylamine (Red to fat 7B), 1-[{1-naphthalenyl}-azo]-2,4-benzene-diamine (Brown RR to fat) and N,N-diethyl-4-(phenyl azo)-benzeneamine (Yellow to fat GGN), and (d) 5 to 100 g/l of at least one ester of the formula



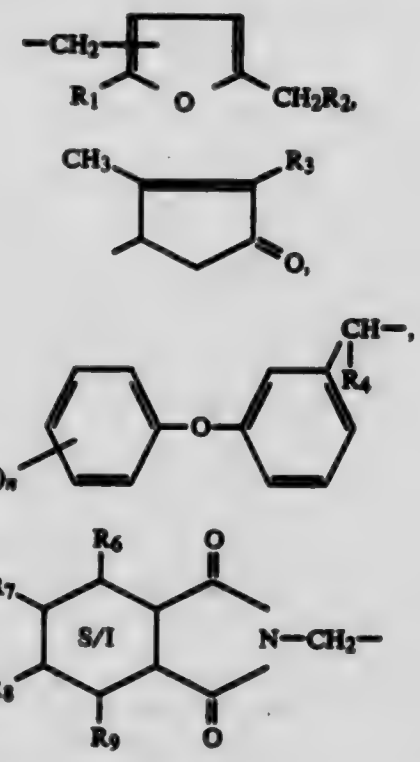
wherein Y is selected from the group consisting of



in its various stereoisomeric forms and mixtures thereof, Z is alkyl of 1 to 6 carbon atoms, Y' is selected from the group consisting of hydrogen, halogen, —CN, —NO_3, alkyl of 1 to 4 carbon atoms and alkoxy of 1 to 4 carbon atoms, n is 0,1,2 or 3, W is selected from the group consisting of



X_1 and X_2 are individually selected from the group consisting of fluorine, chlorine and bromine, X_3 is selected from the group consisting of chlorine, bromine and iodine, X_4 is a halogen and X_5 is a halogen other than that of X_4 and due to asymetric carbon atom in W, the compounds are in the A isomer or B isomer form or mixtures thereof and R is selected from the group consisting of



and benzyl optionally substituted with at least one member of the group consisting of alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 6 carbon atoms, alkenyloxy of 2 to 6 carbon atoms, alkadienyl of 4 to 8 carbon atoms, methylenedioxy, benzyl and halogens, R_1 is selected from the group consisting of hydrogen and methyl, R_2 is selected from the group consisting of monocyclic aryl and —CH_2—C≡CH, R_3 is an aliphatic of 2 to 6 carbon atoms having at least one carbon-carbon unsaturation, R_4 is selected from the group consisting of H, —CN, —CH_3 and —C≡CH, R_5 is selected from the group consisting of chlorine and methyl, n is 0, 1 or 2, R_6, R_7, R_8 and R_9 are individually selected from the group consisting of hydrogen, chlorine and methyl and S/I indicates that the ring may be aromatic, dihydro or tetrahydro, the alcoholic moiety R-OH being capable of containing one or more asymetric carbon atoms and of existing in the form of various stereoisomers.

4,492,688

ANTIBACTERIAL CYCLIC ETHERS OF 9-DEOXO-9A-AZA-9A-HOMOERYTHROMYCIN A AND INTERMEDIATES THEREFOR

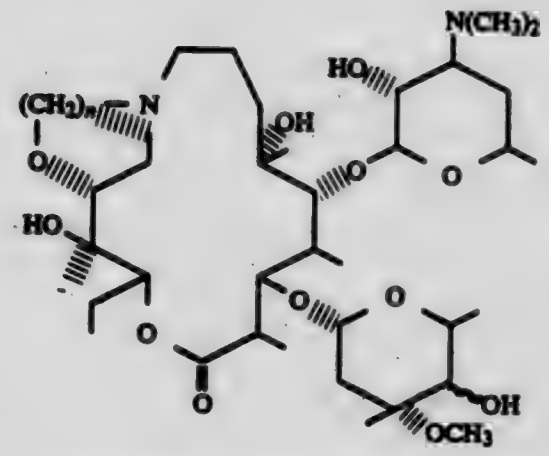
Gene M. Bright, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 497,773, May 23, 1983, abandoned. This application Nov. 25, 1983, Ser. No. 555,221

Int. Cl.³ A61K *31/71*; C07H *17/08*

U.S. Cl. 424—180 29 Claims

1. A compound having the formula



(I)

and the pharmaceutically acceptable acid addition salts thereof wherein n is 1, 2 or 3; the wavy line at the 4"—OH group represents the axial and equatorial configurations at said position; provided that when n is 1, the 4"—OH group has the equatorial configuration.

26. A method for treating a bacterial infection in a mammal which comprises administering to said mammal an antibacterially effective amount of a compound of claim 1.

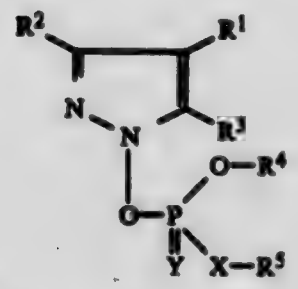
4,492,689

HALOGENATED 1-HYDROXYPYRAZOLES AND THEIR USE AS PESTICIDES

Norbert Rieber, Mannheim; Heinrich Böhme, Neuhofen, and Heinrich Adolphi, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 9, 1983, Ser. No. 465,269
Int. Cl.³ A01N 57/16; C07F 9/65
U.S. Cl. 424—200 13 Claims

1. A 1-pyrazolyl-phosphoric acid ester of the formula



(II)

where R^1, R^2 and R^3 independently of one another are hydrogen, chlorine, bromine or iodine, with the proviso that R^1, R^2 and R^3 are not all hydrogen, R^4 and R^5 are identical or different and each is alkyl of 1 to 6 carbon atoms, and X and Y are oxygen or sulfur.

6. A compound of the formula II as defined in claim 1, wherein R^1, R^2 and R^3 are each chloro.

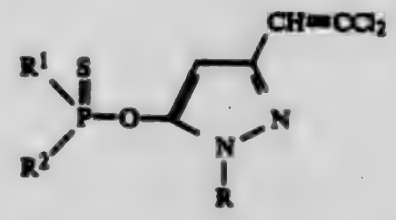
4,492,690

PHOSPHORIC AND THIOPHOSPHORIC ESTERS OF 5(3)-HYDROXYPYRAZOLES EXERTING AN INSECTICIDAL ACTION

Pier M. Bocchi, Piacenza; Franco Genne, S. Donato Milanese, and Angelo Longoni, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 426,881, Sep. 29, 1982, Pat. No. 4,459,294, which is a continuation of Ser. No. 182,680, Aug. 29, 1980, abandoned, which is a continuation of Ser. No. 129,724, Mar. 12, 1980, Pat. No. 4,256,902, which is a continuation-in-part of Ser. No. 971,548, Dec. 20, 1978, abandoned. This application Aug. 18, 1983, Ser. No. 524,229
Claims priority, application Italy, Dec. 23, 1977, 31190 A/77; Dec. 23, 1977, 31191 A/77
The portion of the term of this patent subsequent to Jul. 10, 2001, has been disclaimed.
Int. Cl.³ A01N 57/16; C07D 9/65
U.S. Cl. 424—200 7 Claims

1. A thiophosphoric ester of a 5-hydroxypyrazole, having the formula



wherein:

R = H, alkyl with from 1 to 7 carbon atoms, optionally substituted with the CN group, or phenyl; and

R^1 and R^2, equal to or different from each other, =O-alkyl.

7. A composition for fighting infestations of insects, acari and nematoda, characterized in that such compositions contain as active ingredient a compound as defined in claim 1, in quantities ranging from 0.1% upwards by weight together with an inert carrier.

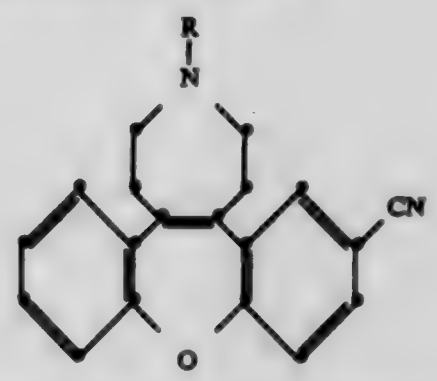
4,492,691

AZATETRACYCLIC CARBONITRILES

Hans Blattner, Riehen, and Angelo Storni, Rheinfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 212,472, Dec. 3, 1980, abandoned. This application Jul. 1, 1982, Ser. No. 394,368
Claims priority, application Switzerland, Dec. 10, 1979, 10928/79
Int. Cl.³ C07C 491/02; A61K 31/55
U.S. Cl. 424—244 9 Claims

1. A compound of the formula I



(I)

wherein R represents lower alkyl having from 1 to 4 carbon atoms or cyclopentylmethyl and pharmaceutically acceptable salts thereof.

7. A method of treatment of agitated states in a warm-blooded animal, which comprises administering to said animal a therapeutically effective amount of a compound according to claim 1, or a pharmaceutically acceptable salt of such a compound.

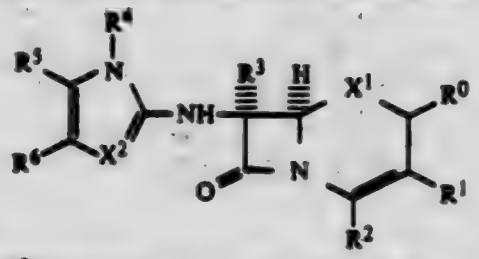
4,492,692

CEPHALOSPORIN DERIVATIVES

Frederic H. Jung, Rilly la Montagne, France, and Gareth M. Davies, Cheshire, England, assignors to Imperial Chemical Industries PLC, London, England and ICI Pharma, Enghien-les-Bains, France

Filed Dec. 22, 1981, Ser. No. 333,570
Claims priority, application France, Dec. 22, 1980, 80 27254
Int. Cl.³ A61K 31/545; C07D 501/56
U.S. Cl. 424—246 9 Claims

1. A cephalosporin derivative of the formula:

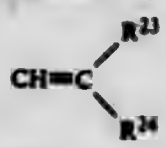


(I)

in which R^0 is a hydrogen atom; R^1 is a hydrogen or halogen atom, a hydroxy or amino radical or a radical selected from:

(a) 1–6C alkyl, benzyl optionally substituted by fluorine or methoxy, 1–6C haloalkyl, formyl, carboxy, 1–6C alkoxy, 1–6C methylthio, 1–6C alkylamino, phenylamino, benzylamino, 3–6C cycloalkylamino, cyano, 2–6C alkoxycarbonyl, 2–6C alkanoyl, 3–10C alkoxycarbonylalkyl, 2–6C alkoxycarbonylamino, 2–6C alkylthiocarbonylamino, piperidino, pyrrolidino, morpholino, 2–6C alkanoylamino, ureido, 2–6C alkylureido, 3–8C dialkylureido, 1–6C alkanesulphinyl, 1–6C alkanesulphonyl, heterocyclyl and heterocyclylthio radicals in which the heterocycle is a 1,3,4-thiadiazol-2-yl or 1,3,4-oxadiazol-2-yl, each optionally substituted in the 5-position, a 1H-tetrazol-5-yl optionally substituted in the 1-position, or a 1H-1,2,3-triazol-4-yl radical optionally substituted in the 1 or 5 position, the optional substituents in each of these heterocycles being a 1–6C alkyl, a 1–6C sulphoalkyl, a 2–6C carboxyalkyl, a 1–6C haloalkyl or a 3–6C alkylthioalkyl radical or a pyridazin-3-yl, oxazol-3-yl or thiazol-3-yl each optionally substituted by 1 or 2 radicals selected from 1–6C alkyl, 1–6C haloalkyl and 2–6C alkoxycarbonyl radicals;

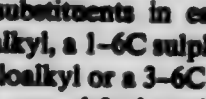
(b) radicals of the formula:



(XIII)

in which R^{23} and R^{24}, which may be the same or different, are hydrogen atoms, 1–6C alkyl, 5–7C cycloaliphatic, 6–12C aryl, 7–10C arylalkyl, formyl, cyano, carboxy, 2–6C alkoxycarbonyl, sulpho, 1–6C alkanesulphinyl, 1–6C alkanesulphonyl, 1–6C alkoxy, 1–6C alkylthio, carbamoyl, nitro, 1–6C hydroxyalkyl, methylcarbamoyloxymethyl, benzylcarbamoyloxymethyl, 2–6C alkoxymethyl, 2–6C alkylthiomethyl, 2-haloethoxymethyl, cyclopentyloxymethyl, benzyloxymethyl or 3–8C alkanoyloxymethyl radicals or radicals of the formula CH_2SHet^1 in which Het^1 is a 1,3,4-thiadiazol-2-yl or 1,3,4-oxadiazol-2-yl, both optionally substituted in the 5-position by a methyl radical, a 1H-triazol-5-yl radical optionally substituted in the 1-position by a methyl radical or a 1H-1,2,3-triazol-4-yl radical;

(c) radicals of the formula:



(XIV)

in which R^{25} is a cyano, carboxy or 2–6C alkoxycarbonyl radical;

(d) radicals of the formula:

(XV)

in which R^{26} and R^{27}, which may be the same or different, are hydrogen atoms or 1–6C alkyl radicals and e is 1 to 4; and

(e) radicals of the formula CH_2Y in which Y is an atom or group which is the residue of a nucleophile or a derivative of a residue of a nucleophile, such a nucleophile or a derivative thereof being:

A. 3–15C trialkylamines;

B. heterocyclic amines having more than one heteroatom, at least heteroatom being nitrogen;

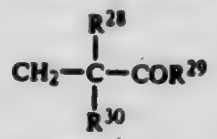
C. pyridines which are optionally substituted by 1 to 3 substituents selected from halogen atoms, and 1–6C alkyl, 6–10C aryl, 7–11C arylalkyl, 2–10C alkoxyalkyl, 3–10C alkanoyloxymethyl, formyl, carbamoyl, 2–6C alkanoyloxy, 2–6C alkoxycarbonyl, 1–6C alkoxy, 6–10C aryloxy, 7–11C aralkoxy, 1–6C alkylthio, 6–10C arylthio, 7–11C aralkylthio, cyano, hydroxy, 2–6C alkylcarbamoyl, 3–10C dialkylcarbamoyl, 2–6C (hydroxyalkyl)carbamoyl and 2–6C carbamoylalkyl radicals;

D. azide radicals;

E. amino, 1–6C alkanoylamino and 7–11C aroylamino radicals;

F. cyanide, pyrroles and substituted pyrroles;

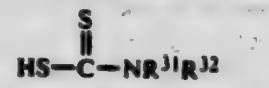
G. nucleophiles giving rise to R^1 of the formula:



(XVI)

in which R^{28} and R^{29}, which may be the same or different, are selected from hydrogen atoms and cyano, 1–6C alkyl, 2–6C alkoxycarbonyl, 8–20C mono- or di-arylalkoxycarbonyl, 2–6C alkanoyl, 7–11C aralkyl, cyclopentyl and cyclohexyl radicals, and phenyl radicals optionally substituted by 1 or 2 radicals selected from halogen atoms and 1–6C alkyl, 1–6C alkoxy, 1–6C alkylamino, nitro and amino radicals, and R^{30} is selected from hydrogen, 1–6C alkyl, 7–11C aralkyl, cyclopentyl and cyclohexyl radicals, and phenyl radicals optionally substituted by 1 or 2 radicals selected from halogen atoms, 1–6C alkyl, 1–6C alkoxy and 1–6C alkylamino radicals;

H. thiourea optionally substituted by a 1–6C alkyl, 6–10C aryl, 5–7C alicyclic or a heterocyclic radical, dithiocarbamates, thioamides substituted by a 1–6C alkyl or 6–10C aryl radical or thiosemicarbazides, thiosulphates, arylthioacids or heterocyclicthioacids of up to 10 carbon atoms and dithioacids of the formula:



(XVII)

in which R^{31} and R^{32} which may be the same or different, are hydrogen atoms, 1–6C alkyl, 2–6C hydroxyalkyl, 3–8C alkylaminoalkyl, 4–10C dialkylaminoalkyl or phenyl radicals, or R^{31} and R^{32} are joined to form a pyrrolidine, piperidine or morpholine ring or a piperazine ring which is optionally substituted on the nitrogen atom by one or two (in quarternised form) radicals selected from 1–6C alkyl and 3–6C alkenyl radicals;

I. radicals of the formula $R^{33}S(O)d$— in which d is 0, 1 or 2 and R^{33} is a 1–6C alkyl, 5–7C alicyclic, 6–10C aryl optionally substituted by a carboxy radical, or 7–11C arylalkyl radical or a 5- or 6-membered heterocyclic ring (partially or fully unsaturated) containing 1 to 4 nitrogen atoms which ring may further include oxygen and/or sulphur atoms, in which the nitrogen atom or atoms may be in the oxide form, which herterocyclic ring may be fused with another heterocyclic ring within the same definition or may be fused with a benzene ring, the above aryl, arylalkyl, heterocyclic or fused benzene ring being optionally substituted by 1 or 2 substituents selected from halogen atoms and 1–6C alkyl, 1–6C haloalkyl, 6–10C aryl, 2–6C alkenyl, 1–6C alkoxy, oxo, hydroxy, mercapto, amino, carboxy, cyano, isothi-

ocyanato, carbamoyl, sulphamoyl, 2–6C alkoxycarbonyl, 3–6C alkenyloxycarbonyl, 8–12C aralkylcarbonyl, 7–11C aryloxycarbonyl, 2–6C hydroxyalkyl, 3–6C dihydroxyalkyl, sulphoamino and 1–6C alkanesulphonylamino radicals and radicals of the formula B—R^{34} in which B is a 2–8C straight or branched chain which may be interrupted by a sulphur or oxygen atom or by an NH or 1–6C N-alkyl radical and R^{34} is a radical selected from hydroxy, mercapto, cyano, 1–6C alkylamino, 2–6C dialkylamino, 2–6C alkanoylamino, carboxy, sulpho, carbamoyl, sulphamoyl, amidino, quinidino, 2–6C alkoxycarbonyl, 2–6C alkylcarbamoyl, 2–6C dialkylcarbamoyl, 1–6C alkylsulphamoyl, 2–6C dialkylsulphamoyl, sulphoamino, ureido, 1–6C alkoxy, 1–6C alkylthio, 1–6C alkanesulphonyl, 2–6C alkanoyl and 2–6C alkanoyloxy radicals and radicals of the formula —S—R^{35} in which R^{35} is a 1–6C alkyl radical or a group of the formula B—R^{34} in which B and R^{34} have the meanings given above and radicals of the formula $NR^{36}R^{37}$ in which R^{36} and R^{37}, which may be the same or different, are selected from 1–6C alkyl radicals, groups of the formula B-R^{34} in which B and R^{34} have the definitions given above, 1–6C alkoxycarbonyl, 2–6C alkanoyl, carbamoyl, 2–6C alkylcarbamoyl and 3–10C dialkylcarbamoyl radicals;

J. radicals of the formula R^{38}—O— in which R^{38} is a hydrogen atom, or a 1–6C alkyl, 3–6C alkenyl, 3–6C alkynyl, 5–7C cycloalkyl, 6–12C cycloalkylalkyl, 6–10C aryl, 7–11C arylalkyl or furfuryl radical, any of which may be substituted by 1 or 2 radicals selected from halogen atoms, and 1–6C alkyl, nitro, hydroxy, carboxy, 2–6C alkanoyloxy, 2–6C alkoxycarbonyl, 2–6C alkanoyl, 1–6C alkanesulphonyl, 1–6C alkoxysulphonyl, amino, 1–6 alkylamino and 2–6C alkanoylamino radicals or R^{38} is a carbamoyl radical;

K. radicals of the formula R^{39}—Q—COO— in which Q is a direct bond, an oxygen or sulphur atom or an NH radical and R^{39} is:

(i) a hydrogen atom or a 1–6C alkyl radical which may be interrupted by an oxygen or sulphur atom or by an NH group or substituted by a cyano, carboxy, methoxycarbonyl, ethoxycarbonyl, hydroxy, carboxycarbonyl, halogen or amino radical;

(ii) a 2–6C alkenyl radical which may be interrupted by an oxygen or sulphur atom or an NH group;

(iii) a phenyl, hydroxyphenyl, chlorophenyl, fluorophenyl, tolyl, nitrophenyl, aminophenyl, methoxyphenyl, methylthiophenyl, thienyl, pyridyl, cyclohexyl, cyclopentyl, sydnonyl, naphthyl or ethoxynaphthyl radical;

or (iv) R^{40}-$(CH_2)_g$ where R^{40} has the value for R^{39} listed in (i) above and g is 1 to 4;

R^2 is a carboxy radical;

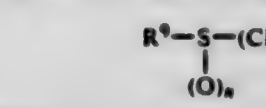
R^3 is a hydrogen atom;

X^1 is a sulphur or oxygen atom;

X^2 is a nitrogen atom;

R^4 is hydrogen;

R^6 is hydrogen and R^5 is a 2–6C alkenyl, 2–10C alkanesulphonylaminoalkyl, 2–6C cyanoalkyl, 1–6C nitroalkyl, 2–6C alkanoylaminoalkyl, 3–8C haloalkanoylaminoalkyl, 3–8C alkylcarbamoyloxyalkyl, 2–6C ureidoalkyl, 3–15C heterocyclylcarbonylaminoalkyl or 4–15C heterocyclylalkylcarbonylaminoalkyl radical wherein the heterocyclic radical is a 5- or 6-membered aromatic or non-aromatic heterocyclic radical which contains 1, 2, 3 or 4 hetero atoms selected from oxygen, nitrogen and sulphur atoms, such ring optionally being in the form of the N-oxide and such ring being optionally fused with a benzene ring, and such fused benzene and/or heterocyclic ring being optionally substituted by one or two substituents selected from halogen atoms and 1–6C alkyl, hydroxy, 1–6C alkoxy, phenoxy, mercapto, 1–6C alkylthio, phenylthio, carboxy, 2–6C alkoxycarbonyl, phenoxycarbonyl, carbamoyl, 2–6C alkylcarbamoyl, 3–10C dialkylcarbamoyl, phenylcarbamoyl, diphenylcarbamoyl, nitro, amino, 1–6C alkylamino, 2–8C dialkylamino, phenylamino, 7–12C (phenyl(alkyl)amino, diphenylamino, carboxyamino, 2–6C (carboxy)(alkyl)amino, (carboxy)(phenyl)amino, 1–6C alkanoylamino, 2–10C (alkanoyl)(alkyl)amino, benzoylamino, 8–14C (benzoyl)-(alkyl)amino, cyano, phenyl, sulphamoyl, 1–6C alkylsulphamoyl, 2–10C dialkylsulphamoyl, phenylsulphamoyl, 1–6C haloalkyl, 1–6C aminoalkyl, 2–8C alkylaminoalkyl, 3–12C dialkylaminoalkyl, 2–6C carboxyalkyl and 1–6C sulphoalkyl radicals or R^5 is a radical of the formula:



(II)

in which m is 1 to 6, n is 1 or 2 and R^9 is a 1–6C alkyl radical;

and, where the compound of the formula I contains a free basic or acidic group, the pharmaceutically-acceptable acid- or base-addition salts thereof.

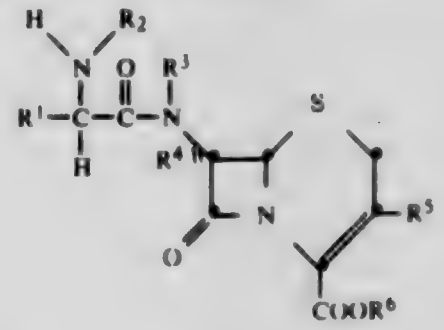
4,492,693

BENZOTHIENYLGLYCYL CEPHALOSPORIN DERIVATIVES

Larry C. Blaszczak, Indianapolis; Stjepan Kukolja, and Jan R. Turner, both of Carmel, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

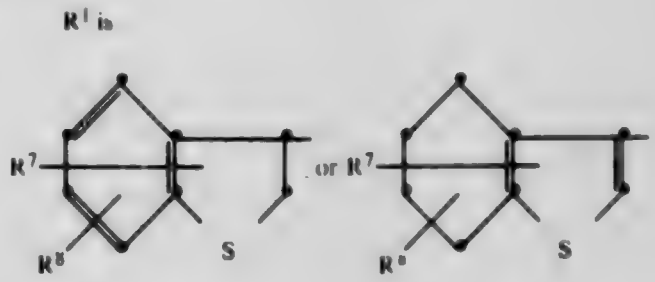
Filed Apr. 12, 1983, Ser. No. 484,129
Int. Cl.[3] A61K *31/545*; C07D *501/22*
U.S. Cl. 424—246 40 Claims

1. A compound of the formula



wherein

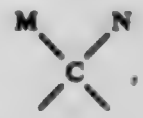
R^1 is



in which

R^7 and R^8 independently are hydrogen, halo, hydroxy, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, amino, C_1–C_4 alkanoylamino, C_1–C_4 alkylsulfonylamino, and when R^7 and R^8 are on adjacent carbon atoms, they can be taken together to form methylenedioxy;

R^2 is hydrogen, an amino protecting group, and R^3 is hydrogen, or R^2 and R^3 taken together are



where M and N independently are C_1–C_4 alkyl;

R^4 is hydrogen, methoxy or methylthio;

R^5 is hydrogen, methoxy, methyl, halo, methoxymethyl, or vinyl;

R^6 is hydrogen, a salt forming cation group, or a carboxy protecting group; and the pharmaceutically acceptable acid addition salts thereof.

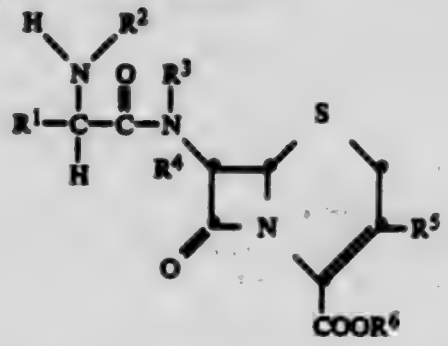
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INDOLYLGLYCYL CEPHALOSPORIN DERIVATIVES

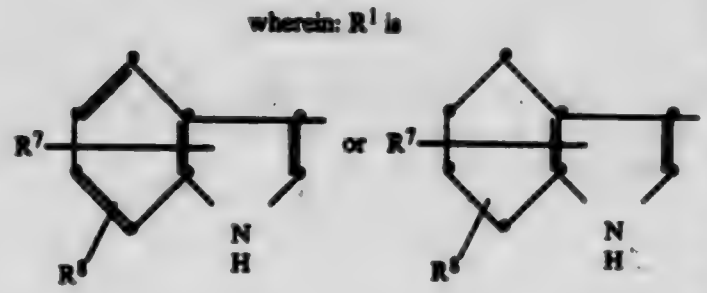
Larry C. Blaszczak, Indianapolis, and Jan R. Turner, Carmel, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 12, 1983, Ser. No. 484,340
Int. Cl.³ A61K 31/545; C07D 501/22
U.S. Cl. 424—246 40 Claims

1. A compound of the formula



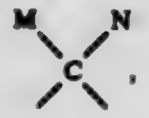
wherein: R^1 is



in which

R^7 and R^8 independently are hydrogen, halo, hydroxy, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, amino, C_1–C_4 alkanoylamino, C_1–C_4 alkylsulfonylamino, or when R^7 and R^8 are on adjacent carbon atoms, they may be taken together to form methylenedioxy;

R^2 is hydrogen, an amino protecting group, and R^3 is hydrogen, or R^2 and R^3 taken together are



where

M and N independently are C_1–C_4 alkyl;

R^4 is hydrogen, methoxy or methylthio;

R^5 is hydrogen, methoxy, methyl, halo, methoxymethyl, or vinyl;

R^6 is hydrogen, a salt forming cation group, or a carboxy protecting group; and the pharmaceutically acceptable acid addition salts thereof.

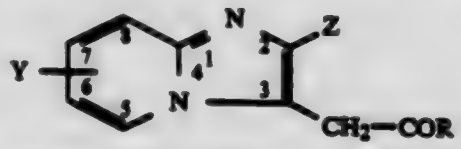
4,492,695

THERAPEUTICALLY USEFUL IMIDAZO[1,2-A]PYRIDINE DERIVATIVES

Jean-Pierre Kaplan, Bourg la Reine; Pascal George, Vitry, and Jean-Michel Bernardon, Chilly Mazarin, all of France, assignors to Synthelabo, Paris, France

Filed Apr. 13, 1983, Ser. No. 484,611
Claims priority, application France, Apr. 21, 1982, 82 06841
Int. Cl.³ A61K 31/435; C07D 471/04
U.S. Cl. 424—246 12 Claims

1. An imidazo[1,2-a]pyridine derivative of the formula:



(I)

wherein Y represents a hydrogen or halogen atom or a C_{1-4} alkyl radical, Z represents a furan-2-yl, thien-2-yl or pyridin-2-yl radical optionally carrying a halogen atom or a methyl or ethyl radical in the 5-position, and R represents the hydroxy radical, a C_{1-4} alkoxy radical or a group $—NR_1R_2$ in which R_1 and R_2 independently of one another each represent a hydrogen atom; a straight- or branched-chain C_{1-5} alkyl radical optionally carrying one or more halogen atoms or a hydroxy radical, a group $—N(C_{1-4}\ alkyl)_2$, a carbamoyl radical or a C_{1-4} alkoxy radical; the allyl radical; the propargyl radical; a C_{3-6} cycloalkyl radical; the benzyl radical; or the phenyl radical, or alternatively $-NR_1R_2$ together represent a heterocyclic ring containing from 3 to 6 carbon atoms, or a heterocyclic ring of the formula

in which X is 0, S, CHOR' or N-R", R' being a hydrogen atom or the benzyl radical and R" being a hydrogen atom, a C_{1-4} alkyl radical or the phenyl radical optionally carrying a methoxy radical or a halogen atom, and pharmaceutically-acceptable acid addition salts thereof.

12. A method for the treatment of anxiety states, sleep disorders, and behavioural disorders attributable to cerebral vascular damage and to the cerebral sclerosis encountered in geriatrics, which comprises administering to a patient with such an ailment an amount of an imidazo[1,2-a]-pyridine derivative of the formula depicted in claim 1, wherein Y, Z and R are defined in claim 1, or a pharmaceutically-acceptable acid addition salt thereof, sufficient to ameliorate the condition of the patient.

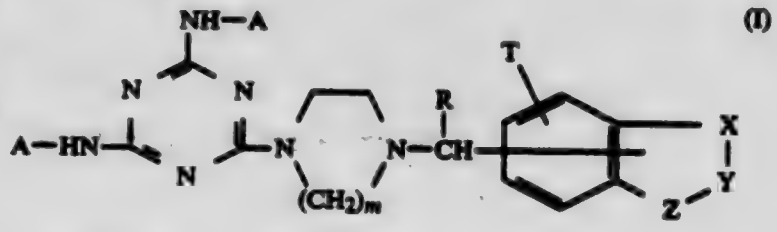
4,492,695

PIPERAZINE AND HOMOPIPERAZINE COMPOUNDS

Gilbert Regnier, Chatenay-Malabry; Michel Laubie, Vaucresson, and Jacques Dubeault, Croissy sur Seine, all of France, assignors to ADIR, Neuilly-sur-Seine, France

Filed Feb. 15, 1983, Ser. No. 466,603
Claims priority, application France, Feb. 17, 1982, 82 02555
Int. Cl.³ A61K 31/53; C07D 403/14, 409/14, 405/14
U.S. Cl. 424—249 4 Claims

1. A compound selected from the group consisting of: piperazine and homopiperazine compounds of the formula:



(I)

in which:

A is selected from the group consisting of hydrocarbon radicals having from 3 to 5 carbon atoms inclusive, in straight and branched chain and these radicals containing one and two double bonds and substituted by one and two hydroxy;

m is an integer selected from 2 and 3;

—X—Y — represents a group of the formula:

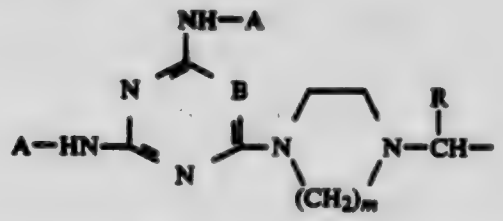
—CH=CH—$(CR'R'')_n$— in which n is selected from the group consisting of 0 and 1, and R' and R" which are the same or different are each selected from the group consisting of hydrogen and methyl;

Z is selected from the group consisting of oxygen and sulfur;

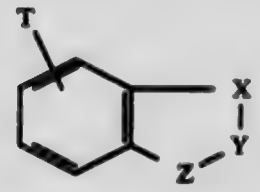
R is selected from the group consisting of hydrogen, alkyl having from 1 to 5 carbon atoms inclusive, cycloalkyl having from 3 to 7 carbon atoms inclusive, unsubstituted phenyl and phenyl mono- and poly-substituted by a substituent selected from the group consisting of fluorine, chlorine and alkyl having from 1 to 5 carbon atoms inclusive;

T is selected from the group consisting of hydrogen, fluorine,

chlorine and alkyl having from 1 to 5 carbon atoms inclusive,
and the group



is bonded to either one of the cycles forming the group:

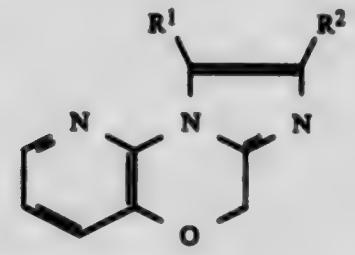


in the formula I; and
physiologically tolerable addition salts thereof.

3. A pharmaceutical composition, suitable for use in the treatment of hypoxia, containing as active ingredient a compound of claim 1, in an amount effective for such purpose, together with a suitable pharmaceutical carrier.

4,492,697
4H-IMIDAZO[2,3-C]PYRIDO[2,3-E][1,4]OXAZINE DERIVATIVES
Jean A. Gauthier, and Ivo L. Jirkovsky, both of Montreal, Canada, assignors to Ayerst, McKenna & Harrison, Inc., Montreal, Canada
Filed Aug. 16, 1983, Ser. No. 523,989
Int. Cl.³ A61K 31/535; C07D 498/14
U.S. Cl. 424—248.4 7 Claims

1. A compound of the formula

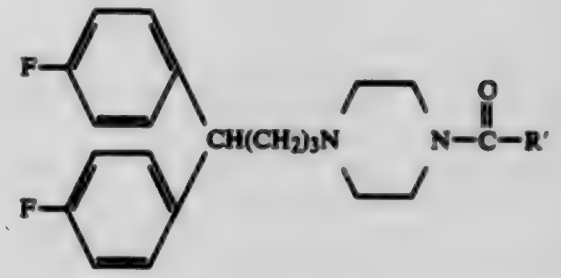


in which R^1 and R^2 are hydrogen, or R^1 is amino and R^2 is COR^3 wherein R^3 is lower alkoxy, lower alkylamino, di(lower alkyl)amino, 1-pyrrolidinyl or 1-piperidinyl, or a therapeutically acceptable acid addition salt thereof.

6. A method of preventing or treating anaphylactic reactions or allergic conditions in a mammal, which comprises administering to said mammal an effective anaphylaxis alleviating or allergy alleviating amount of a compound of claim 1.

4,492,698
DIPHENYLBUTYL-1-ACYLPIPERAZINES
Anders K. Björk, Svalvägen 9; Aina L. Abramo, Järvavallagatan 30, both of S-230 50 Bjärred, and Erik G. Christensson, Nils Bjelkegatan 3 A, S-222 20 Lund, all of Sweden
PCT No. PCT/SE81/00169, § 371 Date Jan. 25, 1982, § 102(e) Date Jan. 25, 1982, PCT Pub. No. WO81/03658, PCT Pub. Date Dec. 24, 1981
PCT Filed Jun. 5, 1981, Ser. No. 354,088
Claims priority, application Sweden, Jun. 16, 1980, 8004465
Int. Cl.³ A61K 31/495; C07D 241/04
U.S. Cl. 424—250 9 Claims

1. A compound having the formula:

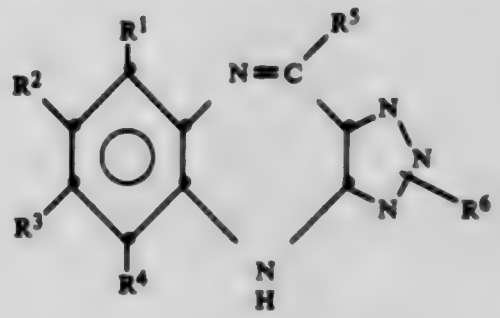


wherein R' is selected from the group consisting of alkyl straight or branch chained having from 2 to 10 carbon atoms, cycloalkyl having from 3 to 8 carbon atoms, aralkyl having from 7 to 9 carbon atoms, phenyl and substituted phenyl wherein the substituents of the substituted phenyl are selected from the group consisting of one to three F, Cl, Br, lower alkyl having from 1 to 5 carbon atoms, lower alkoxy having from 1 to 5 carbon atoms, alkylenedioxy having from 1 to 3 carbon atoms, $—CF_3$ and —CN and pharmaceutically acceptable salts thereof.

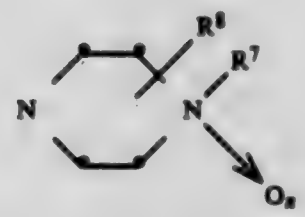
7. A method of treating mammals for anti-aggressive purposes comprising administrating an anti-aggressive effective amount of a compound of Formula I as defined in claim 1.

4,492,699
TRIAZOLOBENZODIAZEPINE DERIVATIVES
Jiban K. Chakrabarti, Camberley; Terrence M. Hotten, Farnborough, and David J. Steggles, Bracknell, all of England, assignors to Lilly Industries Limited, London, England
Division of Ser. No. 327,143, Dec. 3, 1981, Pat. No. 4,431,589.
This application Oct. 13, 1983, Ser. No. 541,605
Claims priority, application United Kingdom, Dec. 11, 1980, 8039639
Int. Cl.³ A61K 31/495; C07D 487/04
U.S. Cl. 424—250 7 Claims

1. A compound of formula



or an acid addition salt thereof; in which R^1, R^2, R^3 and R^4 independently represent hydrogen, C_{1-4} alkyl, C_{2-4} alkenyl, halogen, C_{1-4} haloalkyl, nitro, C_{1-4} alkoxy, C_{1-4} haloalkoxy, C_{1-4} alkylthio or phenylsulphonyl; in which R^5 is a group of the formula



where R^7 is hydrogen or C_{1-6} alkyl, R^8 is hydrogen or C_{1-4} alkyl and n is 0 or 1, provided that when R^7 is hydrogen n is 0; and in which R^6 is attached to the 1, 2 or 3 position of the triazole ring and is hydrogen, C_{1-10} alkyl, C_{3-7} cycloalkyl, C_{3-7} cycloalkyl C_{1-4} alkyl, phenyl, benzyl or acyl.

6. A pharmaceutical formulation useful for treating CNS disorders comprising an effective amount of a compound as defined in claim 1, or a pharmaceutically-acceptable acid addi-

tion salt thereof, and a pharmaceutically-acceptable diluent or carrier therefor.

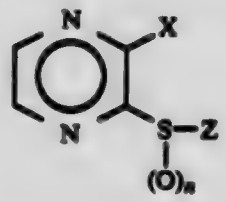
4,492,700

3-HALO-2-THIOPYRAZINES AS ANTIMICROBIAL AGENTS

Arthur J. Friedman, Marlboro, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 24, 1983, Ser. No. 544,949
Int. Cl.[3] C07D *241/16*; A61K *31/495*
U.S. Cl. 424—250 9 Claims

1. A compound represented by the formula:



wherein:

X is a chloro or bromo radical;

Z is a chloro, bromo, amino, amino mono- and di-substituted by lower alkyl, 3-halo-pyrazinyl-2-thio, cyano,

—C(S)—NR_3R_4,

wherein R_3 and R_4 independently are methyl or ethyl, benzylidineamino, lower alkyl substituted benzylidineamino group; and

n is 0 or 1, provided that when n is 1, Z is a benzylidineamino or lower alkyl substituted benzylidineamino group.

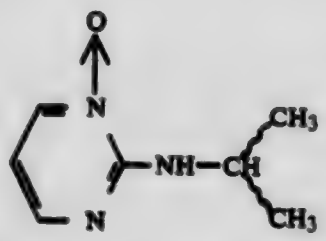
4,492,701

ISOPROPYLAMINO PYRIMIDINE DERIVATIVE ITS PREPARATION AND THERAPEUTIC COMPOSITIONS CONTAINING THE SAME

André Esanu, Paris, France, assignor to Societe de Conseils de Recherches et d'Applications Scientifiques, Paris, France

Filed Sep. 29, 1982, Ser. No. 427,924
Claims priority, application United Kingdom, Oct. 16, 1981, 8131301
Int. Cl.[3] A61K *31/505*; C07D *239/42*
U.S. Cl. 424—251 7 Claims

1. 2-isopropylamino-pyrimidine-N-oxide of the formula:



and therapeutically acceptable salt thereof.

2. A therapeutic composition for nervous regeneration comprising in a pharmaceutically acceptable carrier a compound according to claim 1 in an amount effective to induce nervous regeneration.

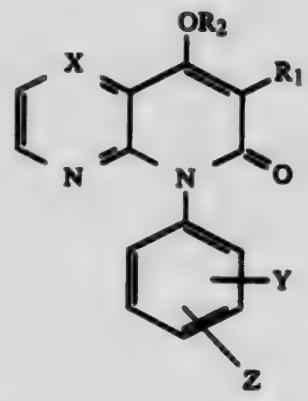
4,492,702

1-PHENYL-1,8-NAPHTHRIDIN-2(1H)-ONES

Margaret H. Sherlock, Bloomfield, N.J., assignor to Schering Corporation, Madison, N.J.

Continuation-in-part of Ser. No. 438,681, Nov. 3, 1982, abandoned. This application Sep. 19, 1983, Ser. No. 533,674
Claims priority, application European Pat. Off., Apr. 20, 1983, 83103839.3
Int. Cl.[3] A61K *31/435*; C07D *471/04*
U.S. Cl. 424—256 47 Claims

1. A compound having the structural formula I



I

wherein

X is CH;

Y is hydrogen, hydroxy, benzyloxy, amino, sulfamyl, halogen, nitro, alkyl having from 1 to 6 carbon atoms, alkoxy having from 1 to 6 carbon atoms, carboxylic acyl having from 2 to 6 carbon atoms, alkyl-$S(O)_m$- having from 1 to 6 carbon atoms wherein m is 0, 1 or 2, trifluoromethyl, trifluoromethylthio, or COOA wherein A is hydrogen, alkyl having from 1 to 6 carbon atoms or a cation derived from a pharmaceutically acceptable metal or an amine;

Z is hydrogen, hydroxy, halogen, alkyl having from 1 to 6 carbon atoms, alkoxy having from 1 to 6 carbon atoms, hydroxyalkyl having from 1 to 6 carbon atoms, or carboxylic acyloxy having from 2 to 6 carbon atoms;

R_1 is alkenyl having from 2 to 10 carbon atoms, alkynyl having from 2 to 10 carbon atoms, cycloalkyl having from 3 to 7 carbon atoms, cycloalkenyl having from 5 to 8 carbon atoms, carboxylic acyl having from 3 to 6 carbon atoms or substituted alkyl having from 1 to 10 carbon atoms which is substituted with a substituent selected from hydroxy, halogen, alkoxy having from 1 to 6 carbon atoms, phenyl, carboxylic acyl having from 2 to 6 carbon atoms, cycloalkyl having from 3 to 7 carbon atoms or carboxylic acyloxy having from 1 to 6 carbon atoms;

R_2 is hydrogen, carboxylic acyl having from 1 to 6 carbon atoms, alkenyl having from 3 to 8 carbon atoms, alkynyl having from 3 to 8 carbon atoms, $R_aR_bN(CH_2)_n$- (wherein R_a and R_b are hydrogen, alkyl having from 1 to 6 carbon atoms and n is an integer of from 2 to 6) hydroxyalkyl having from 2 to 6 carbon atoms, dihydroxyalkyl having from 2 to 6 carbon atoms, hydroxyalkoxyalkyl having from 2 to 8 carbon atoms, or a cation derived from a pharmaceutically acceptable metal or an amine.

4,492,703

4-(2-SUBSTITUTED PHENYL)-1,4-DIHYDROPYRIDINE-3,5-DICARBOXYLIC ACID ESTERS ACTIVE ON BLOOD CIRCULATION

Siegfried Goldmann, Wuppertal; Horst Böshagen; Jürgen Stoltefuss, both of Haan; Matthias Schramm, Cologne; Günter Thomas, and Stanislav Kazda, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

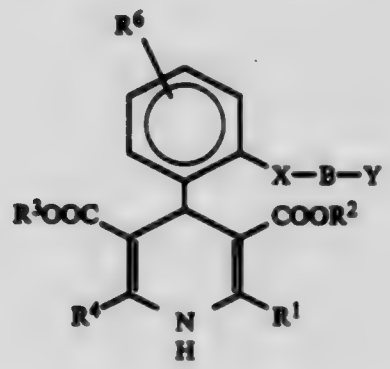
Filed Feb. 22, 1983, Ser. No. 468,819

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1982, 3207982

Int. Cl.³ A61K *31/455*; C07D *211/82*

U.S. Cl. 424—266 13 Claims

1. A 1,4-dihydropyridine of the formula



in which

R^1 and R^4 each independently is hydrogen or an alkyl radical having up to 6 carbon atoms which optionally contains 1 or 2 chain members independently selected from the group consisting of O, CO and NH,

R^2 and R^3 each independently is an alkyl or alkenyl radical having up to 6 carbon atoms, which is optionally substituted by halogen, hydroxyl, cyano, amino, monoalkylamino, dialkylamino or alkyl-benzylamino, the alkyl radicals mentioned each containing 1 to 4 carbon atoms,

R^6 is 1 or 2 substituents independently selected from the group consisting of hydrogen, chloro, nitro and alkyl or alkoxy each having 1 to 4 carbon atoms,

X is a bridging member selected from the group consisting of O and S,

B is an alkylene group having 1 to 4 carbon atoms or a direct bond (excepting X—B—Y = —O—O—), and

y is cyclohexyl, being either directly bonded to B or bonded to B via a hetero member selected from the group consisting of O, S, SO, SO_2, NH and N-alkyl having 1 to 4 carbon atoms, and optionally containing substituents independently selected from the group consisting of nitro, halogen, trifluoromethyl, cyano, hydroxyl, phenyl, ethoxycarbonyl and alkyl or alkoxy each having 1 to 4 carbon atoms,

or a pharmaceutically acceptable addition salt thereof.

12. A method of lowering blood pressure in human and non-human animals which comprises administering to such animal a hypotensive amount of a compound or salt according to claim 1.

4,492,704

QUINOLINE QUINONES AND ANTI-ASTHMATIC USE THEREOF

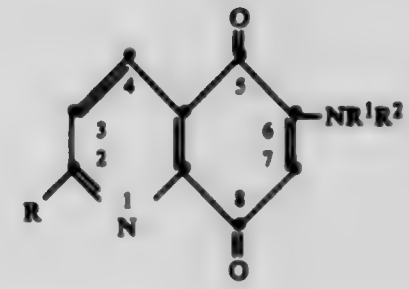
Jerome H. Fleisch, Indianapolis; Winston S. Marshall, Bargersville, and George J. Cullinan, Trafalgar, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 30, 1982, Ser. No. 430,895

Int. Cl.³ A61K *31/505*, *31/47*; C07D *215/24*, *401/04*

U.S. Cl. 424—269 19 Claims

1. A compound of formula (I):



(I)

wherein

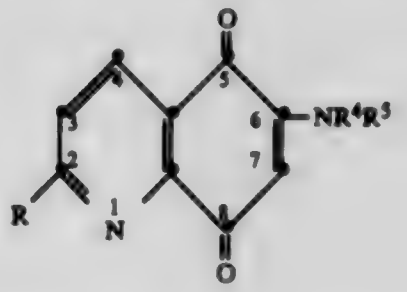
R is hydrogen or C_1–C_3 alkyl;

R^1 and R^2 are hydrogen; C_3–C_6 cycloalkyl; C_2–C_6 alkenyl; tetrahydronaphthyl; together with the nitrogen atom form a morpholine ring; or phenyl subetituted by R^3; and

R^3 is hydrogen; C_1–C_6 alkyl, except ortho ethyl, and para methyl; C_2–C_6 alkenyl; C_1–C_6 alkoxy; halo, except para chloro; trifluoromethyl, except in the para position; nitro; hydroxy; C_1–C_3 alkylthio; or C_1–C_3 alkylcarbonyl;

providing that R^1 and R^2 are not both hydrogen or phenyl, and further providing that R^1 is not phenyl when R and R^2 are hydrogen.

10. A method of treating asthma, which comprises administering a therapeutically-effective amount of a compound of formula (II):



(II)

wherein

R is hydrogen or C_1–C_3 alkyl;

R^4 and R^3 are hydrogen; C_1–C_6 alkyl; C_3–C_6 cycloalkyl; C_2–C_6 alkenyl; di(C_1–C_6 alkyl)amino C_1–C_6 alkyl; tetrahydronaphthyl; together with the nitrogen atom form a morpholine ring; or phenyl substituted by R^3; and

R^3 is hydrogen; C_1–C_6 alkyl, except ortho ethyl; C_2–C_6 alkenyl; C_1–C_6 alkoxy; halo; trifluoromethyl, except in the para position; nitro; hydroxy; C_1–C_3 alkylthio; or C_1–C_3 alkylcarbonyl.

4,492,705

3-AMIDINO-BENZISOTHIAZOLE-1,1-DIOXIDES AND THEIR USE FOR CONTROLLING PESTS

Josef Drabek, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

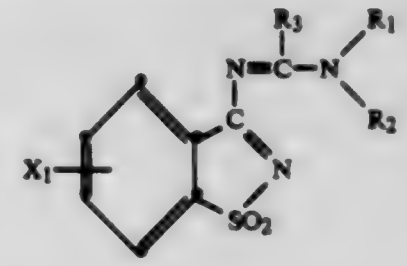
Filed Jan. 31, 1983, Ser. No. 462,256

Claims priority, application Switzerland, Feb. 12, 1982, 888/82; Jan. 7, 1983, 87/83

Int. Cl.³ C07D *275/06*

U.S. Cl. 424—270 9 Claims

1. 3-Amidino-benzisothiazole-1,1-dioxide of the formula I



(I)

wherein

R_1 and R_2 are each C_1–C_5-alkyl or C_2–C_5-alkenyl,

R_3 is hydrogen or methyl, or
R_1 and R_2 together form a C_3–C_6-alkylene chain which can be interrupted by O, S or NH, or
R_1 and R_3 together are —CH_2—CH_2—CH_2—, and
X_1 is hydrogen, halogen, C_1–C_5-alkyl, halo-C_1–C_5-alkyl or C_1–C_5-alkoxy.

4,492,706

METHOD OF LOWERING LIPID LEVELS

Mary-Ann Kallai-Sanfacon, Mount Royal, Canada, assignor to American Home Products Corporation, New York, N.Y.

Filed Aug. 1, 1983, Ser. No. 518,997
Int. Cl.³ A61K *31/425, 31/209, 31/195*
U.S. Cl. 424—270 9 Claims

1. A method for lowering lipid levels in a mammal in need thereof which comprises administering to the mammal an effective hypolipidemic amount of a N-naphthoylglycine derivative selected from the group consisting of N-[[5-(trifluoromethyl)-6-methoxy-1-naphthalenyl]thioxomethyl]-N-methylglycine, N-[(5-bromo-1-naphthalenyl)thioxomethyl]-N-methylglycine, N-[[6-methoxy-5-(trifluoromethylthio)-1-naphthalenyl]thioxomethyl]-N-methylglycine, or a therapeutically acceptable salt of one of the aforementioned three compounds with an organic or inorganic base; and 5-hydroxy-2-[5-(trifluoromethyl)-6-methoxy-1-naphthalenyl]-3-methylthiazolium hydroxide, inner salt.

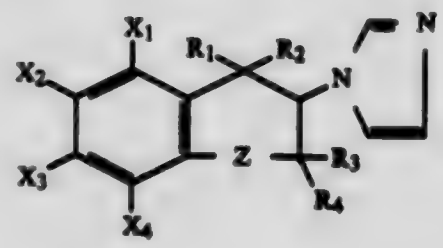
4,492,707

N-IMIDAZOLYL DERIVATIVES OF 1,2,3,4-TETRAHYDRO-NAPHTHALENE AND INDAN

Paolo Conti; Antonio Pillan, and Pier P. Lovisolo, all of Milan, Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

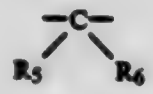
Filed Jul. 15, 1982, Ser. No. 398,545
Claims priority, application United Kingdom, Jul. 23, 1981, 8122689; Aug. 5, 1981, 8123920
Int. Cl.³ A61K *31/415;* C07D *233/54*
U.S. Cl. 424—273 R 12 Claims

1. A pharmaceutical composition having hypolipaemic activity containing a suitable carrier and/or diluent and a therapeutically effective amount of a compound of formula (I)

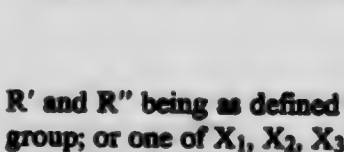


(I)

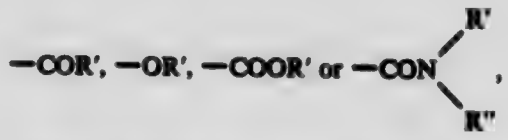
wherein:
Z completes a bond or is a



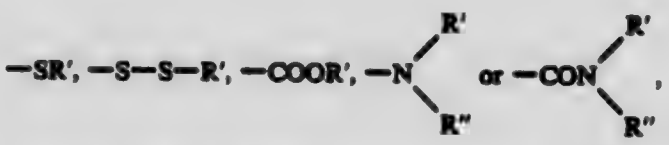
group, wherein each of R_5 and R_6, being the same or different, is hydrogen or C_1–C_4 alkyl;
one of R_1 and R_2 is hydroxy and the other is hydrogen or C_1–C_6 alkyl, or R_1 and R_2, taken together, form an oxo group;
one of R_3 and R_4 is hydrogen or C_1–C_4 alkyl and the other represents hydrogen or:
(a) C_1–C_8 alkyl, unsubstituted or substituted by one or more substituents chosen from halogen; hydroxy, cyano; —COOR′, wherein R′ is hydrogen or C_1–C_6 alkyl;



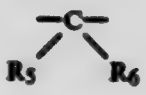
wherein each of R′ and R″, being the same or different, represents hydrogen or C_1–C_6 alkyl;
(b) straight or branched C_1–C_4 alkyl or C_2–C_4 alkenyl, each substituted by a C_1–C_4 alkyl, or a C_3–C_7 monocycloalkyl;
(c) cyano;



wherein R′ and R″ are as defined above;
each of X_1, X_2, X_3, and X_4, which may be the same or different, is hydrogen; halogen; hydroxy; nitro; cyano, C_1–C_6 alkyl; C_2–C_6 alkenyl; C_1–C_6 alkoxy; trihalo-C_1–C_6 alkyl;



R′ and R″ being as defined above; or a C_2–C_4 acylamino group; or one of X_1, X_2, X_3 and X_4 is phenyl, phenylthio, phenoxy or benzyl, the phenyl, phenylthio, phenoxy or benzyl groups being unsubstituted or substituted by one or more substituents chosen from halogen, C_1–C_6 alkyl, hydroxy, C_1–C_6 alkoxy,—SR′ or —S—S—R′, wherein R′ is as defined above, and the others are as defined above; or any two adjacent X_1, X_2, X_3 and X_4 groups, taken together, complete a saturated or unsaturated 6-membered carbocyclic ring fused to the benzene ring shown in formula (I), the carbocyclic ring being unsubstituted or substituted by one or more substituents selected from halogen, C_1–C_6 alkyl, halo-C_1–C_6 alkyl, C_1–C_6 alkoxy, —SR′ or —S—S—R′, wherein R′ is as defined above, and any groups X_1 to X_4 not participating in the completion of such a fused ring are as defined above; provided that:
when Z is a group



and, at the same time, at least one of R_3 and R_4 is different from hydrogen, then R_5 and R_6 are both hydrogen; and
when Z is a group



and, at the same time, at least one of R_5 and R_6 is different from hydrogen, then R_3 and R_4 are both hydrogen, or a pharmaceutically acceptable salt thereof.

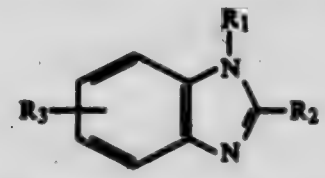
4,492,708

ANTIVIRAL BENZIMIDAZOLES

Wayne A. Spitzer, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 27, 1982, Ser. No. 424,784
Int. Cl.³ A61K 31/415; C07D 235/30, 235/06
U.S. Cl. 424—273 R 53 Claims

42. A method of treating or preventing viral infections in mammals comprising administering to a mammal suffering from or exposed to a viral infection and in need of treatment an effective antiviral amount of a compound of the formula



or a pharmaceutically acceptable salt thereof, wherein

R_1 is C_1–C_8 alkyl, C_2–C_8 alkenyl, C_3–C_7 cycloalkyl, C_5–C_7 1-cycloalkenyl, adamantyl, hydroxy-substituted C_1–C_8 alkyl, unsubstituted or substituted phenyl, or unsubstituted or substituted benzyl;

R_2 is hydrogen, amino, C_1–C_4 alkylamino, methylmercapto, hydroxy, C_1–C_4 carboxylic acylamino, or 1-hydroxyethyl;

R_3 is C_2–C_8 alkanoyloxy, unsubstituted or substituted phenylacetoxy, unsubstituted or substituted benzoyloxy, or



Z is oxygen, hydroxyimino, C_1–C_4 alkoxyimino, C_1–C_4 carboxylic acyloxyimino, hydrazono, C_1–C_7 alkylidene, =CHBr, =CHCl, =CHCN, =CHCONH$_2$, or =CHCO$_2$(C_1–C_4 alkyl);

R_6 is C_1–C_7 alkyl, C_3–C_7 cycloalkyl, (C_3–C_7 cycloalkyl)-methyl, 2-(C_3–C_7 cycloalkyl)ethyl, unsubstituted or substituted benzyl, or unsubstituted or substituted phenyl wherein the substituents on the phenyl, benzyl, phenylacetoxy and benzoyloxy rings are one to three of C_1–C_4 alkyl, C_1–C_4 alkoxy, fluoro, chloro, bromo, iodo, nitro, amino or trifluoromethyl; and

R_3 is at the 5 or 6 position,

subject to the limitation that when R_2 is hydroxy, R_1 may only be C_5–C_7 1-cycloalkenyl.

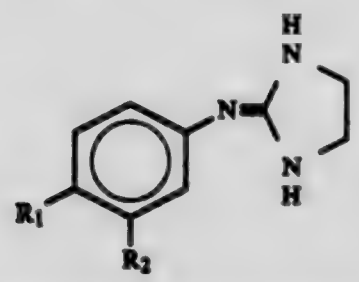
4,492,709

2-[4(3)-AMINO-3(4)-HYDROXYPHENYLIMINO]-IMIDAZOLINES, USEFUL IN THE TREATMENT OF GASTRIC HYPERSECRETION AND HYPERACIDITY

Thomas A. Purcell, Fontenay aux Roses, France, assignor to Synthelabo, Paris, France

Filed Jan. 25, 1983, Ser. No. 460,993
Claims priority, application France, Feb. 5, 1982, 82 01877
Int. Cl.³ A61K 31/415; C07D 231/06
U.S. Cl. 424—273 R 8 Claims

1. An imidazolidine compound of the formula:



wherein R_1 represents the hydroxy radical and R_2 represents a grouping, —NHCOR′ or —NHCONR′R″, R′ and R″ independently of one another representing a hydrogen atom or an alkyl radical of 1 through 4 carbon atoms, or alternatively R_2 represents the hydroxy radical and R_1 represents a grouping —NHCOR′ or —NHCONR′R″, R′ and R″ independently of one another representing a hydrogen atom or an alkyl radical of 1 through 4 carbon atoms, and pharmacologically-acceptable acid additions salts thereof.

8. A method for the treatment of a patient suffering from gastric hypersecretion or hyperacidity, which comprises administering to the patient a hypersecretion or hyperacidity reducing amount of an imidazolidine compound of claim 1, or a pharmacologically-acceptable acid addition salt thereof.

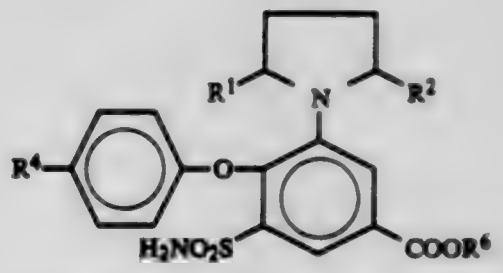
4,492,710

SUBSTITUTED PYRROLIDINYL-BENZOIC ACID DERIVATIVES AND A PROCESS FOR THEIR MANUFACTURE

Wulf Merkel; Dieter Bormann, both of Kelkheim, and Roman Maschaweck, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 146,017, May 2, 1980, abandoned. This application Sep. 22, 1982, Ser. No. 421,030
Claims priority, application Fed. Rep. of Germany, May 4, 1979, 2917973
Int. Cl.³ A61K 31/44, 31/40; C07D 207/327, 401/12
U.S. Cl. 424—274 7 Claims

1. A substituted pyrrolidinylsulfamoylbenzoic acid compound of the formula



or a pharmaceutically acceptable salt thereof with an acid or a base, wherein

R^1 and R^2 are the same or different and are both methyl having 1 to 4 carbon atoms or wherein one of R^1 or R^2 is hydrogen and the other is such methyl;

R^4 is methyl or ethyl; and

R^6 is hydrogen or alkyl having 1 to 4 carbon atoms.

5. A saluretic and diuretic pharmaceutical composition comprising a saluretically- and diuretically-effective amount of a compound or salt as in claim 1 and a pharmaceutically acceptable carrier therefor.

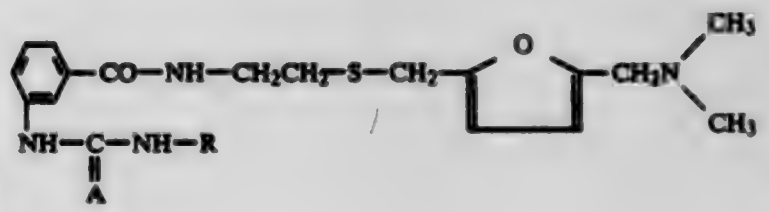
4,492,711

BENZAMIDES, THEIR SALTS, AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Dino Nisato, Pavia, and Sergio Boveri, Tortona, both of Italy, assignors to SANOFI, Paris, France

Filed Jul. 6, 1983, Ser. No. 511,107
Claims priority, application France, Aug. 13, 1982, 82 14125
Int. Cl.³ A61K 31/34; C07D 307/54
U.S. Cl. 424—285 5 Claims

1. A benzamide of formula



wherein A represents an oxygen or sulfur atom, an N—CN or a CH—NO_2 group, and R represents an alkyl group of from 1 to 6 carbon atoms, or a phenyl group; or a pharmaceutically acceptable addition salt thereof.

3. A pharmaceutical composition containing as active ingredient a compound as claimed in one of claim 1 or 2 in admixture with a pharmaceutical carrier.

4,492,712

USE OF HYDROLYZED WHEY PRODUCTS IN FERMENTED SAUSAGES

Linda J. Casella, Ithaca, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 17, 1983, Ser. No. 542,704
Int. Cl.³ A23L *1/31*
U.S. Cl. 426—59 16 Claims

1. A fermented sausage product comprising:

a. a meat or meat by-product containing mixture suitable for making a fermented sausage product, the mixture including a microbial fermentation culture; and

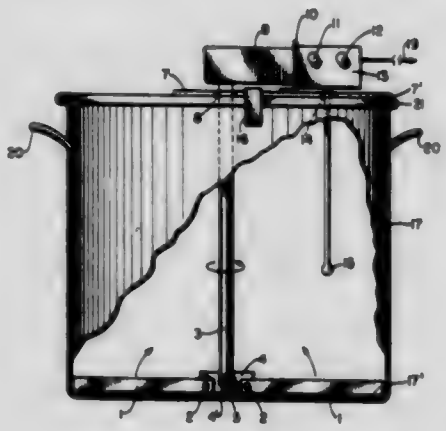
b. an extender comprising lactose hydrolyzed whey which has a protein content of from about 2 to about 90 percent on a dry weight basis and which had, before hydrolysis, a lactose content of from about 5 to about 85 percent on a dry weight basis, which lactose is at least about 30 percent hydrolyzed.

4,492,713

METHOD OF AUTOMATIC ROUX MAKING

John A. Chauvin, P.O. Box 39, Gretna, La. 70054

Filed Sep. 24, 1982, Ser. No. 422,570
Int. Cl.³ G01N *33/00*; A23D *5/00*
U.S. Cl. 426—231 3 Claims



1. An automated method of preparing a roux comprising the following steps:

a. providing a cooking pot with an automatically controlled, motor driven agitator having at least one, flexibly mounted blade contacting the bottom of the pot and movable in a sweeping action across and in contact with the full bottom of the pot, and a heat source with a controller system for controlling the amount and duration of the heat supplied to the pot by the heat source and controlling the cut-off of the motor for said agitator;

b. placing in the pot the ingredients for the roux comprising flour and a fat;

c. applying power to the heat source to heat the pot and said ingredients and to the motor for the agitator to drive the agitator blade across the full bottom of the pot to mix the ingredients and to prevent the heated ingredients from being in contact with the bottom of the pot for a period of time that would cause scorching of the ingredients;

d. maintaining the supply of energy to the heat source to cook the ingredients to the desired degree of brownness for the roux while maintaining the bottom sweeping action of the agitator, and then terminating the heat to the pot but maintaining the bottom sweeping action of the agitator; and

e. terminating the bottom sweeping action of the agitator by means of the controller system after the temperature of the roux in the pot has dropped down to a temperature level which will not scorch the ingredients.

4,492,714

NON-PROTEIN, HIGH STABILITY FAT EMULSION COMPOSITION AND METHOD OF PRODUCTION

Stephen E. Cooper, and Donald L. Lechner, both of Menomonie, Wis., assignors to Beatrice Foods Co., Chicago, Ill.

Filed Feb. 25, 1983, Ser. No. 469,900
Int. Cl.³ A23D *5/00, 5/02*
U.S. Cl. 426—602 25 Claims

1. A high stability, protein-free, rapidly cold water soluble, fat emulsion, which comprises on a solids basis:

(a) 10 to 75% of an edible fat having an average particle size of 4 microns or less;

(b) 0.1 to 3% of an edible emulsifier; and

(c) 8 to 20%, based on the weight of the fat, of an edible, hydrated, substantially undextrinized lipophilic starch, which is predominately in a submicroscopic form;

the remainder of the solids being principally an edible filler.

4,492,715

USE OF HYDROLYZED WHEY PRODUCTS IN COMMINUTED MEAT PRODUCTS

Linda J. Casella, Ithaca, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 17, 1983, Ser. No. 542,748
Int. Cl.³ A23L *1/31*
U.S. Cl. 426—646 20 Claims

1. A comminuted meat product comprising:

a. a meat or meat by-product containing mixture suitable for making a comminuted meat product; and

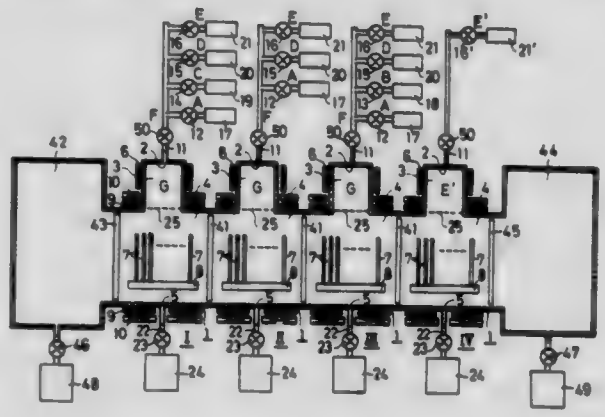
b. an extender comprising lactose hydrolyzed whey which has a protein content of from about 2 to about 90 percent on a dry weight basis and which had, before hydrolysis, a lactose content of from about 5 to about 85 percent on a dry weight basis, which lactose is at least about 30 percent hydrolyzed.

4,492,716

METHOD OF MAKING NON-CRYSTALLINE SEMICONDUCTOR LAYER

Shunpei Yamazaki, 21-21 Kitakarasuyama 7-chome, Setagaya-ku, Tokyo, Japan

Division of Ser. No. 177,889, Aug. 14, 1980, abandoned. This application May 12, 1982, Ser. No. 377,314
Claims priority, application Japan, Aug. 16, 1979, 54/104452
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—38 13 Claims



1. A multi-layer, non-single crystal semiconductor manufacturing method which employs a plurality of sequentially ar-

ranged reaction chambers separated from one another by normally closed shutter means, the reaction chambers being each provided with a gas inlet and a gas outlet, said method comprising the steps of:

positioning a substrate in a first one of the reaction chambers;

depositing a first silicon compound including hydrogen or a halogen on the substrate to form thereon a first non-single-crystal silicon layer of either one of N, I and P conductivity types by introducing at least a gas of said first silicon compound into the first reaction chamber through the gas inlet thereof in such a state that gas in the first reaction chamber is exhausted therefrom through the gas outlet thereof and by applying a first ionizing high-frequency electromagnetic field to the first silicon compound gas to ionize it into a first silicon compound gas plasma while at the same time passing the first silicon compound gas plasma into the first reaction chamber by discharging the gas in the first reaction chamber and maintaining the atmospheric pressure in the first reaction chamber below 1 atm and the temperature of the first substrate below 700° C. which is lower than that for single-crystalling the first silicon deposited on the substrate;

displacing the shutter means between the first reaction chamber and a second reaction chamber adjacent thereto and moving the substrate from the first reaction chamber to the second reaction chamber while at the same time evacuating entirely the first and second reaction chambers or passing therethrough only carrier gases and then closing the shutter means between the first and second reaction chambers;

depositing a second silicon compound including hydrogen or a halogen on the first non-single-crystal silicon layer to form thereon a second non-single-crystal silicon layer of other one of N, I and P conductivity type by introducing a gas of at least said second silicon compound into the second reaction chamber through the gas inlet thereof in such a state that gas in the second reaction chamber is exhausted therefrom through the gas outlet thereof and by applying a second ionizing high-frequency electromagnetic field to the second silicon compound gas to ionize it into a second silicon compound gas plasma while at the same time passing the second silicon compound gas plasma into the second reaction chamber and maintaining the atmospheric pressure in the second reaction chamber below 1 atm and the temperature of the first substrate below 700° C. which is lower than that for single-crystallizing the second silicon deposited on the first non-single-crystal silicon layer; whereby to fabricate the multi-layer, non-single-crystal semiconductor having a PN, PI, NP, NI, IP or IN junction and in each step while a shutter is open between adjacent chambers, no plasma is energized in those chambers.

4,492,717

METHOD FOR FORMING A PLANARIZED INTEGRATED CIRCUIT

William A. Pliskin, and Jacob Riseman, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

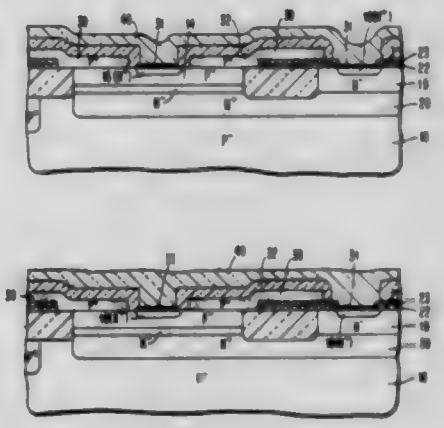
Filed Jul. 27, 1981, Ser. No. 287,467
Int. Cl.³ H01L 21/316
U.S. Cl. 427—96 19 Claims

1. A method for forming a planarized integrated circuit structure comprising:

providing an integrated circuit intermediate product having devices formed therein but before metallurgy has been formed on a principal surface of said product and having a non-planar surface composed of many step-like irregularities;

non-conformally depositing preferentially upon the horizontal surfaces of said irregularities a glass layer having a thermal coefficient of expansion that approximates that of silicon and has a softening temperature of less than about 1200° C. onto said surface;

heating the structure to cause the flow of said glass on said surface to fill in the said irregularities therein and to planarize said surface;



forming openings through said glass down to the device elements of said integrated circuit; and

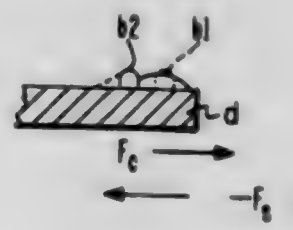
forming an interconnection metallurgy over and through said openings in said glass to interconnect said device elements of said integrated circuit.

4,492,718

ROTATION COATING OF DISK SUBSTRATE WITH ACRYLATE PREPOLYMER

Thomas Mayer; Michael D. Temple; Norman L. Boling, and James D. Rancourt, all of Santa Rosa, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 17, 1982, Ser. No. 450,779
Int. Cl.³ B05B 5/00
U.S. Cl. 427—160 24 Claims



1. A method of applying a relatively "hard" outer-seal coating of moderate-to-high viscosity to a disk substrate to yield very high thickness uniformity, this substrate including at least one recording area wherein information is to be recorded with prescribed radiation, the method comprising the steps of:

formulating a coating mixture to comprise the polymerization product of a formulation including at least one acrylate pre-polymer;

applying this mixture in a prescribed stream to the outer surface of the recording area, while rotating it at a prescribed rpm, so as to form one or several annular bead segments, extending circularly or spirally about the disk surface;

the mixture being so formulated and so applied as to be capable of leveling and so rendering the desired coating; this coating serving as a mechanical/chemical barrier, while also being relatively transparent to said radiation.

4,492,719

PROCESS FOR THE PRODUCTION OF SLIPPERY BIAXIALLY STRETCHED POLYESTER FILMS

Tamaki Kanai, Sagamihara; Hirofumi Yoshikawa, Hachioji; Takashi Yamaguchi, Yokohama; Kenji Suzuki, and Yoshikatsu Ohta, both of Sagamihara, all of Japan, assignors to Teijin, Limited, Osaka, Japan

Division of Ser. No. 338,682, Jan. 11, 1982, Pat. No. 4,439,479. This application Nov. 21, 1983, Ser. No. 555,006

Int. Cl.³ B05P 3/12

U.S. Cl. 427—171 15 Claims



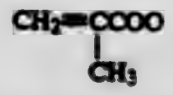
1. A process for producing a slippery biaxially stretched polyester film, which comprises coating one or both surfaces of a running polyester film, before the completion of its crystalline orientation, with an aqueous solution or dispersion containing

(A) a metal salt having the composition of the following formula



$$Me_y(CH_2{=}\underset{\displaystyle R}{\underset{|}{C}}COO)_z(O)_p(X)_w \qquad (I)$$

wherein Me represents a metal ion having a valence of 2 to 6, R is a hydrogen atom or a methyl group, X is one equivalent of an anion, y is a number of from 1 to 6, z is a number of from 0 to 2, w is a number of from 0 to 8, and p is a number equal to the quotient obtained by dividing the total of $y+2z+w$ by the atomic valence of Me, provided that when y is a number of 2 or more, two or more R groups may be identical or different, when w is a number of 2 or more, two or more X ions may be identical or different, and the group



$$CH_2{=}\underset{\displaystyle CH_3}{\underset{|}{C}}COO$$

in the case of R=methyl is contained in a number of not more than 2 for each Me,

and (B) a film-forming polymeric compound, a monomer thereof, or a mixture of these; and thereafter heating the coating, before completion of the crystalline orientation of the film, to convert it on the film surface into numerous minute protrusions substantially having form retention.

4,492,720

METHOD OF PREPARING MICROSPHERES FOR INTRAVASCULAR DELIVERY

Benjamin Mosier, 5139 S. Braeswood, Houston, Tex. 77096

Filed Nov. 15, 1983, Ser. No. 552,160

Int. Cl.³ B01J 13/02

U.S. Cl. 427—213.3 18 Claims

1. The method of preparing microspheres containing therapeutic or diagnostic agents, comprising:

(a) preparing a solution by dissolving said agent and a non-toxic matrix material in a first organic solvent in which they are mutually soluble, said matrix material being heat-liquifiable and having a congealing temperature above 100° F., said first organic solvent having a dielectric constant above 15;

(b) dispersing the prepared solution in a second organic solvent to form an emulsion containing dispersed droplets of said solution in said second solvent as the continuous phase, said second organic solvent having a dielectric constant below 5, and being present in at least as great a volume as said solution;

(c) removing substantially all of both of said solvents from said dispersion while maintaining said droplets at a temperature substantially below the congealing temperature of said matrix material to produce solid microspheres comprising said matrix material with said water-soluble agent distributed therein; and

(d) recovering said microspheres.

4,492,721

METHOD OF PROVIDING MAGNESIUM FLUORIDE LAYERS

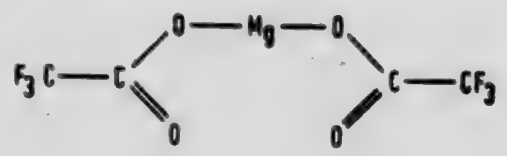
Paul H. Joosten; Theo J. A. Popma; Hendrikus J. P. Nabben; Henricus A. M. Van Hal, and Jan Haisma, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 11, 1983, Ser. No. 512,518

Claims priority, application Netherlands, May 10, 1983, 8301652

Int. Cl.³ B05D 3/02

U.S. Cl. 427—226 15 Claims



1. A method of providing a layer of magnesium fluoride on a substrate in which a solution of a fluorine-containing magnesium compound is contacted with the substrate and the resultant layer of the solution formed on the substrate is treated thermally, characterized in that a solution of a fluorine-containing organic magnesium compound, which comprises at least six fluorine atoms per magnesium atom, is contacted with the substrate and the resultant layer of the solution formed on the substrate is treated thermally while forming magnesium fluoride by disproportionation.

4,492,722

PREPARATION OF GLASS-CERAMIC FIBERS

George W. Ritter, II, Newark, and Leonard J. Adriana, Pickerington, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jul. 25, 1983, Ser. No. 517,106

Int. Cl.³ B05D 3/02; C03C 17/00

U.S. Cl. 427—226 7 Claims

1. A method of treating S glass fibers which comprises depositing a metallic compound consisting essentially of a titanium-organo complex on the surface of the heat cleaned glass fibers to deposit up to about 15 weight percent titanium dioxide on the glass fibers after heat treating, and heat treating the glass fibers at a temperature within the range of from about 1700° to about 2100° F. for a period of up to about 3 hours to convert said titanium-organo complex to said titanium dioxide and to convert said glass to a stabilized glass ceramic material.

4,492,723

CURVILINEAR POLYHEDRAL CONSTRUCTION KIT

Lee S. Chadwick, II, R.F.D. #2 Box 138, Randolph, Vt. 05060

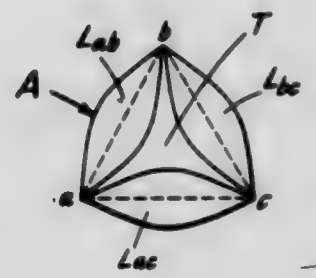
Filed Oct. 14, 1982, Ser. No. 434,175

Int. Cl.³ A63H 33/16

U.S. Cl. 428—7 40 Claims

1. A construction kit for forming an entirely curvilinearly faced polyhedron, all surfaces of which are curved surfaces

laterally define exclusively by arcs, from a plurality of polygonal planar components defined exclusively by arcuate edges



and being scored exclusively along arcuate interior lines to form arcuately defined polygons to facilitate the folding and assembly of said components to form said polyhedron.

4,492,724

HUMIDITY-RESISTANT WET-STICK ADHESIVES

Charles T. Allbright, Covina, and Dennis S. Culp, Rancho Cucamonga, both of Calif., assignors to Avery International Corp., Pasadena, Calif.

Filed Jul. 13, 1982, Ser. No. 397,837
Int. Cl.³ B32B 7/06, 7/10
U.S. Cl. 428—40 12 Claims

1. A humidity-resistant wet-stick pressure-sensitive composition comprising, based on the total weight of the dry adhesive:

(a) from about 20 to about 55 percent by weight of a substantially non-water-soluble backbone polymer system comprised of a normally solid, elastomeric interpolymer of vinyl acetate and acrylic acid, and a normally solid, brittle copolymer provided for cohesive strength;

(b) from about 8 to about 35 percent by weight of an acrylic acid polymer system having an average molecular weight of between about 70,000 and 90,000 and capable of absorbing moisture from a wet surface without loss of cohesive strength or tack of the adhesive composition; and

(c) from about 20 to about 65 percent by weight of a tackifier system comprising at least one nonionic surfactant which is an alkylaryl polyether present in an amount sufficient to induce pressure-sensitive adhesive properties to the composition.

12. A pressure-sensitive adhesive label stock comprising a face material laminated to a release liner by an adhesive which is a humidity-resistant wet-stick pressure-sensitive composition comprising, based on the total weight of the dry adhesive:

(a) a backbone polymer system comprising:

(i) from about 20 to about 22 percent by weight of the adhesive composition of an elastomeric, normally solid interpolymer comprised of vinyl acetate, acrylic acid and 2-ethylhexyl acrylate; and

(ii) from about 13.5 to about 14.5 percent by weight of the adhesive composition of a copolymer comprising methacrylic acid and ethyl acrylate;

(b) an acrylic acid polymer system comprising:

(i) from about 8 to about 9 percent by weight based on the weight of the adhesive composition of an acrylic acid homopolymer having an average molecular weight of about 100,000;

(ii) from about 4 to about 5 percent by weight based on the weight of the adhesive composition of an acrylic acid homopolymer having an average molecular weight of about 60,000;

(c) a tackifier system comprising:

(i) from about 30 to about 35 percent by weight based on the weight of the adhesive composition of an octyl phenol adduct of an ethylene oxide polymer containing from about 12 to about 14 ethylene oxide units per molecule;

(ii) from about 8 to about 9 percent by weight based on the weight of the adhesive composition of a nonyl phenol adduct of an ethylene oxide polymer containing from about 9 to about 10 ethylene oxide units in the molecule; and

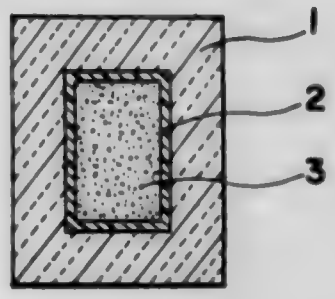
(iii) from about 8 to about 9 percent by weight based on the weight of the adhesive composition of an octyl phenol adduct of an ethylene oxide polymer containing about 40 ethylene oxide units per molecule.

4,492,725

COMPOSITE THERMAL INSULATOR

Shoichi Ishihara, Katano; Hiroshi Yosano, Nara, and Ryoichi Yamamoto, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 18, 1983, Ser. No. 514,980
Claims priority, application Japan, Jul. 20, 1982, 57-126910; Dec. 16, 1982, 57-221404
Int. Cl.³ B32B 5/16, 5/18
U.S. Cl. 428—69 8 Claims



1. A composite thermal insulator which comprises an expanded plastic, a film-like plastic container evacuated to form a vacuum in its interior and partly or entirely covered by said expanded plastic, and activated carbon tightly enclosed within said plastic container.

4,492,726

HIGH WET STRENGTH WAFERBOARD

George N. Rosenberg, British Columbia, Canada, assignor to MacMillan Bloedel Limited, Vancouver, Canada

Continuation-in-part of Ser. No. 388,977, Jun. 16, 1982, abandoned. This application Jun. 16, 1983, Ser. No. 504,869
Int. Cl.³ B32B 23/02
U.S. Cl. 428—192 16 Claims

1. A waferboard panel comprising wood wafers having an initial average specific gravity based on oven dry weight with volume at 12% moisture content, of less than about 0.6, said wood wafers having a length of at least about 1.5 inches and a width in the range of about 0.125 to 1.5 inches, adhesive resin in the range of about 4% to 10% by weight of the wood wafers, at least a portion of the wood wafers being oriented generally in a lengthwise direction, such that the length to width strength ratio of the waferboard panel, measured as modulus of rupture, is in the range of about 1.3:1 to 2:1,

the waferboard panel having a density in the range of about 38 to 45 lb/ft^3,

the fully soaked waferboard panel having a moisture content of at least about 30%, with an MOR lengthwise greater than about 2900 lb/in^2 and an MOE lengthwise greater than about 0.9×10^6 lb/in^2,

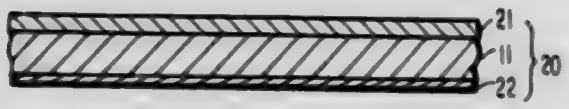
and the waferboard panel having a weight gain of not more than about 14% after a ten week exterior exposure.

4,492,727

INK DONOR SHEET

Toshiharu Inui, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 1, 1982, Ser. No. 438,186
Claims priority, application Japan, Oct. 30, 1981, 56-172994
Int. Cl.³ B41M 5/26
U.S. Cl. 428—216 6 Claims



1. An ink donor sheet recording medium consisting essentially of a paper base;

an ink layer on a surface of the paper base, the ink layer comprising a solidified ink composition capable of being heat-transferred to a recording paper brought into contact with the ink layer upon heating through the paper base; and

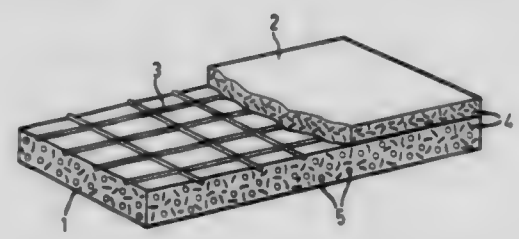
a dampproof layer comprising a silicone resin on the opposite surface of the paper base to prevent absorption of moisture in the paper base.

4,492,728

SPORTS GROUND COVERING WITH EXPANDED CLAY PARTICLES

Pierre Zurkinden, Obholzerstrasse 22, Birchwil, Switzerland

Filed Feb. 22, 1983, Ser. No. 468,497
Claims priority, application PCT Int'l Appl., Feb. 19, 1982, CH82/00024
Int. Cl.³ B32B 5/16
U.S. Cl. 428—240 2 Claims



1. A sports ground covering comprising a lower layer (1) for cushioning or damping impact effects on the covering, an upper wear-resisting coating (2) applied thereto and an intermediate reinforcing netting (3) for stabilizing the cushioning layer (1), the two layers (1, 2) containing rubber chips (4) bound with polyurethane, said lower layer (1) also containing expanded clay (5) interspersed therein.

4,492,729

COHESIVE FIBROUS MAT FOR IN-TRANSIT PARTICULATE CONTROL

Wyburn G. Bunnerman, Ferndale, and Charles H. Ludwig, Waldron Island, both of Wash., assignors to Georgia-Pacific Corporation, Atlanta, Ga.

Filed Oct. 8, 1982, Ser. No. 433,458
Int. Cl.³ B32B 5/16
U.S. Cl. 428—283 30 Claims

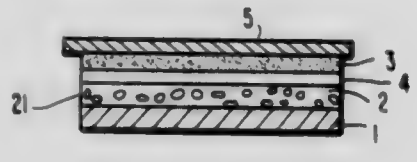
1. A protected mass of wood chips comprising a mass of wood chips wherein at least a substantial portion of the exposed surface is a cohesive fibrous mat comprising said wood chips bound by cellulosic fibrous material and gelatinized starch, said cohesive fibrous mat being essentially only on the surface of said mass of wood chips.

4,492,730

SUBSTRATE OF PRINTED CIRCUIT

Naoaki Otaki, Machida; Noriyuki Shimizu, Saitama; Takashi Shoji, Chichibu, and Shoji Harada, Asaka, all of Japan, assignors to Showa Denko Kabushiki Kaisha and Nikkan Industries Co., Ltd., both of Tokyo, Japan

Filed Mar. 28, 1983, Ser. No. 479,236
Claims priority, application Japan, Mar. 26, 1982, 57-47075; Mar. 26, 1982, 57-47076
Int. Cl.³ B32B 15/08, 27/36, 27/28
U.S. Cl. 428—328 11 Claims



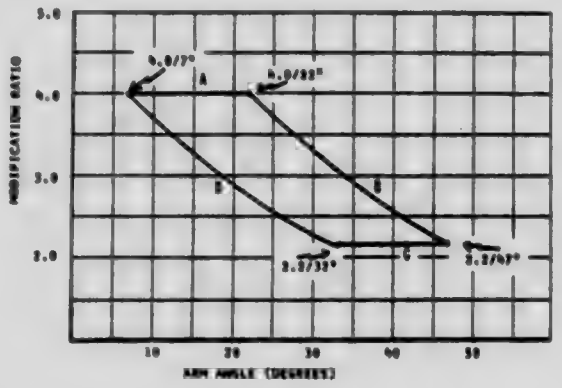
1. A substrate of a printed circuit comprising a metallic plate, and further comprising on at least one surface of said metallic plate, (a) a synthetic resin layer containing an inorganic filler in an amount of from 10 to 300 parts by volume based on 100 parts by volume of synthetic resin, (b) a heat-resistant resin film wherein said heat-resistant resin film consists of a material selected from the group consisting of polyimide, polyparabanic acid and polyester, and (c) a synthetic resin layer free of inorganic filler, wherein each of said layers (a), (b) and (c) are successively laminated on said metallic plate, and wherein the resin of said synthetic resin layers (a) and (c) are selected from the group consisting of epoxy, phenol, polyimide, unsaturated polyester, BT resins, modified polyethylene, polysulfonic acid and polyphenylene sulfide.

4,492,731

TRILOBAL FILAMENTS EXHIBITING HIGH BULK AND SPARKLE

Vilas G. Bankar, Seaford; Terry L. Stuchlik, Newark, and Frank Werny, Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 22, 1982, Ser. No. 443,864
Int. Cl.³ D02G 3/00
U.S. Cl. 428—362 4 Claims



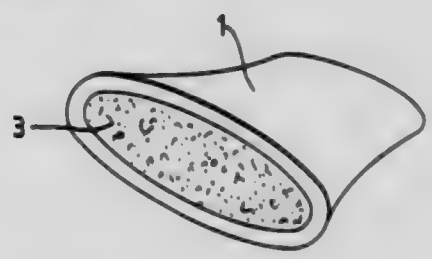
1. Trilobal synthetic polymer filaments for carpet yarn having high bulk and high sparkle, said filaments having a cross-section consisting of three substantially equi-spaced, integrally joined arms of substantially similar shape and size, said cross-section having a modification ratio and arm angle within the range represented by the area enclosed by sides A,B,C, and D on FIG. 2 of the drawing.

4,492,732

MATERIALS SUITABLE FOR THERMOSETTING

Davis J. Murphy, Church Crookham, and Leslie N. Phillips, Farnborough, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, England

Division of Ser. No. 417,516, Sep. 13, 1982, Pat. No. 4,405,543, which is a continuation of Ser. No. 139,733, Apr. 11, 1980, abandoned. This application May 18, 1983, Ser. No. 495,699
Claims priority, application United Kingdom, Apr. 20, 1979, 7913856
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—404 5 Claims



1. A material suitable for thermosetting including a collection of hollow particles having average diameters in the inclusive range of 20 μm to 150 μm, each particle coated with a curable thermosetting resin, said resin being presented in the material in an amount not less than 45% by weight such that the mixture exists in a granular form of discrete individual grains, each grain having an and average diameter of about 2 mm. or less and including one or more of said resin-coated hollow particles such that each grain remains separate from other grains, said mixture being convertible by thermosetting to a fused solid mass having a density not greater than 0.5 grams per cubic centimeter.

4,492,733

METHOD OF MAKING AN ABRASION RESISTANT COATING ON A SOLID SUBSTRATE AND ARTICLES PRODUCED THEREBY

Richard A. Phillips, Acton, and Theodore A. Haddad, Leominster, both of Mass., assignors to Foster Grant Corporation, Leominster, Mass.

PCT No. PCT/US83/01260, § 371 Date Jan. 23, 1984, § 102(e) Date Jan. 23, 1984, PCT Pub. No. WO84/00722, PCT Pub. Date Mar. 1, 1984
Continuation-in-part of Ser. No. 409,272, Aug. 18, 1982, Pat. No. 4,435,476. This PCT application Aug. 17, 1983, Ser. No. 577,616
The term of this patent subsequent to Mar. 6, 2001 has been disclaimed.
Int. Cl.³ B32B *27/12, 27/30*
U.S. Cl. 428—412 18 Claims

1. A method of improving the abrasion resistance of cross-linked organosiloxane coating, said coating having been prepared by applying to a solid substrate an organosiloxane coating liquid comprising as a main ingredient organosilanol molecules, at least 90 mole percent of which being trifunctional silanols of the formula $RSi(OH)_3$ where R is a hydrocarbon radical, and at least 50 mole percent of said trifunctional silanols being an alkyltrisilanol of 1–3 carbons or phenyltrisilanol, or a percursor thereof or a partial hydrolysis product thereof and by curing the resultant coating in order to obtain an abrasion resistant, cross-linked organosiloxane coating, which method comprises a glow discharge treatment of said cross-linked organosiloxane coating under a pressure range of from about 5 to about 150 microns.

7. A solid substrate coated with an abrasion-resistant cross-linked organosilane coating comprising the cross-linked condensation product of organosilanol molecules at least 90 mole percent of which being trifunctional silanols of the formula $RSi(OH)_3$ where R is a hydrocarbon radical, and at least 50 mole percent of said trifunctional silanols being an alkyltrisilanol of 1–3 carbons or phenyltrisilanol, a precursor thereof or a partial hydrolysis product thereof that has been glow discharge treated at a pressure of 5–150 microns subsequent to condensation and crosslinking.

4,492,734

MAGNETIC RECORDING MEDIUM

Hiroshi Ogawa, and Yasuo Tamai, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 1, 1983, Ser. No. 518,843
Claims priority, application Japan, Jul. 30, 1982, 57-132067
Int. Cl.³ B32B *27/30*
U.S. Cl. 428—424.2 10 Claims

1. A magnetic recording medium comprising a non-magnetic support and a magnetic layer provided thereon, said layer comprising a ferromagnetic powder dispersed in a binder consisting essentially of a copolymer of 50 to 95 percent by weight of vinyl chloride, 0.5 to 20 percent by weight of ethylene, 0.5 to 20 percent by weight of vinyl acetate, and 0.5 to 5 percent by weight of maleic anhydride, wherein the copolymer has a degree of polymerization of 200 to 2000.

4,492,735

MAGNETIC RECORDING MEDIUM

Hiroshi Ogawa, and Yasuo Tamai, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 1, 1983, Ser. No. 518,844
Claims priority, application Japan, Jul. 30, 1982, 57-132068
Int. Cl.³ B32B *27/30*
U.S. Cl. 428—424.2 9 Claims

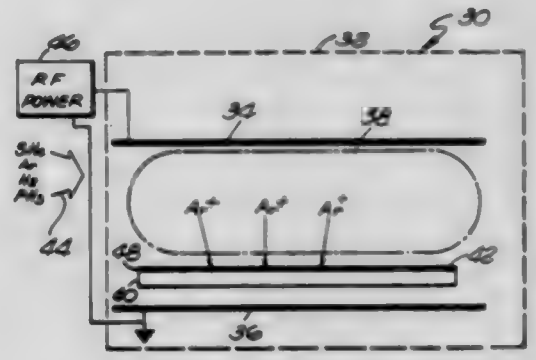
1. A magnetic recording medium comprising a non-magnetic support and a magnetic layer provided thereon, said layer comprising a ferromagnetic powder dispersed in a binder consisting essentially of a copolymer of 50 to 95 percent by weight of vinyl chloride, 0.5 to 20 percent by weight of ethylene, 0.5 to 20 percent by weight of vinyl acetate, and 1 to 15 percent by weight of vinyl alcohol, wherein the copolymer has a degree of polymerization of 200 to 2000.

4,492,736

PROCESS FOR FORMING MICROCRYSTALLINE SILICON MATERIAL AND PRODUCT

David P. Tanner, Thousand Oaks, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 29, 1983, Ser. No. 537,132
Int. Cl.³ B32B *9/04*
U.S. Cl. 428—446 16 Claims



1. A process for forming microcrystalline silicon comprising the steps of:

introducing a silicon-containing gas, hydrogen gas and a relatively inert gas into a work environment to form a preselected gas atmosphere;

the relative concentration of the inert gas being no less than approximately 10 volumetric percent and no more than approximately 50 volumetric percent, and the gas atmosphere being maintained at a flow rate of no more than

approximately 5×10^{-3} SCCM per cubic centimeter within the work environment;

establishing a glow discharge through the gas atmosphere; at a power level less than 0.3 watts per square centimeter; and

exposing a substrate to the glow discharge to form a microcrystalline thin film of silicon thereon.

4,492,737

COMPOSITE METALLIC AND NON-METALLIC ARTICLES

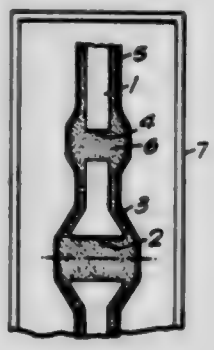
Ralph I. Cassidy, Bristol, England, assignor to Rolls-Royce Limited, England

Filed Mar. 4, 1983, Ser. No. 472,032

Claims priority, application United Kingdom, Mar. 5, 1982, 8206583

Int. Cl.³ B22F 7/06, 5/04; F23C 11/00

U.S. Cl. 428—552 20 Claims



1. A method for manufacturing a composite component having a pre-formed body made from a base material chosen from the group consisting of a ceramic, a high temperature glass/ceramic composite and a carbon-in-carbon composite, and a metallic component bonded to a selected area on the pre-formed body, comprising the steps of:

placing the pre-formed body in a peripherally walled can, with the pre-formed body spaced throughout substantially its entire extent, from the can wall, to define a space therebetween;

filling the space between the pre-formed body and the can wall with a powdered metal, thereby completely surrounding the pre-formed body with the powdered metal;

sealing and evacuating the can;

applying hot isostatic pressure to the can to compact and sinter the metal powder and to bond the metal powder to the pre-formed body;

removing the can from the exterior of the completely coated body; and

removing the bonded metal powder from selected areas on the surface of the pre-formed body to expose areas of the base material and to leave the bonded metal powder at other areas, whereby the composite component can be directly connected to another metal component through a portion of the bonded metal powder.

11. The method of claim 1, wherein the composite component comprises an integral hub portion and blade portion for a turbine wheel, whereby the method further comprises manufacturing a plurality of integral hub portions and blade portions and after removing the bonded metal powder from selected areas on the surface of the integral hub and blade portions, said other areas of the bonded metal powder are mechanically fixed to said another metal component to form a turbine wheel.

12. The method of claim 1, wherein the composite component comprises an integral blade portion and root portion for a rotor turbine, whereby the method further comprises manufacturing a plurality of integral blade and root portions and after removing the bonded metal powder from selected areas on the surface of the individual blade and root portions, said other areas of the bonded metal powder are mechanically fixed to said another metal component to form a rotor turbine.

13. The method of claim 1, wherein the composite component compriaes a flame tube, whereby said other areas of the bonded metal powder comprise supporting ribs which effectively strengthen the pre-formed body portion.

4,492,738

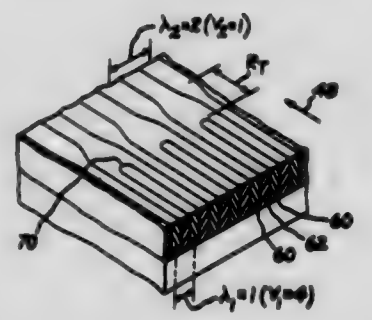
DIFFRACTION GRATING WIRE ARRAYS IN SERIES

Harvey E. Cline, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 320,995, Nov. 13, 1981,. This application Dec. 5, 1983, Ser. No. 558,124

Int. Cl.³ C22B 9/00, 61/00

U.S. Cl. 428—611 4 Claims



1. A diffraction grating situate on a substrate comprising a plurality of eutectic fine wire arrays in series, said grating comprising:

(1) a first region of substantially mutually parallel wires situated on said substrate, said wires of said first region having a composition substantially corresponding to at least one phase of a eutectic alloy system, a first interwire spacing and a first width measured along a plane parallel to the plane of said substrate;

(2) at least a second region of substantially mutually parallel wires situated on said substrate, said wires of said second region having the same composition as the wires of said first region, a second interwire spacing and a second width measured along a plane parallel to the plane of said substrate; and

(3) a transition region between said first and second regions, at least some of said wires of said second region being contiguous with at least some of said wires of said first region across said transition region.

4,492,739

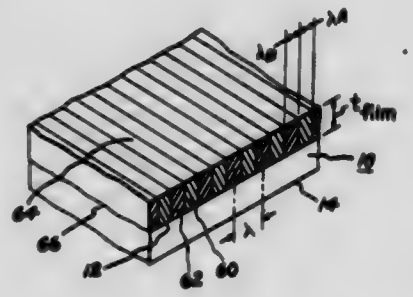
EUTECTIC FINE WIRE ARRAYS

Harvey E. Cline, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 320,995, Nov. 13, 1981,. This application Dec. 5, 1983, Ser. No. 558,125

Int. Cl.³ C22B 9/00, 61/00

U.S. Cl. 428—611 7 Claims



1. A eutectic fine wire array comprising a plurality of substantially mutually parallel wires situated on a substrate, said wires having a composition substantially corresponding to at least one phase of a eutectic alloy system, an interwire spacing λ_{fine} and width W measured along a plane parallel to the plane of said substrate.

4,492,740

SUPPORT FOR LITHOGRAPHIC PRINTING PLATE

Takeshi Yamamoto; Norihito Suzuki; Toru Aoki, and Akio Iwaki, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 10, 1983, Ser. No. 503,186
Claims priority, application Japan, Jun. 18, 1982, 57-105724
Int. Cl.³ C25D *3/04*
U.S. Cl. 428—629 9 Claims



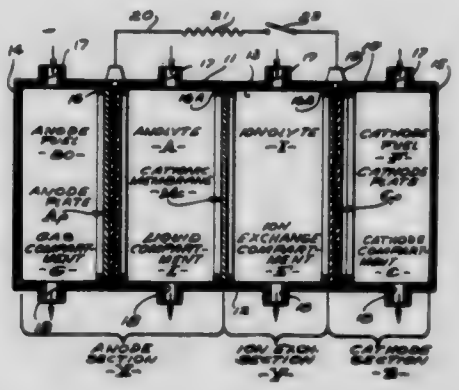
1. A support for lithographic printing plate having an electrodeposited chromium layer on an iron material, characterized in that the surface of said electrodeposited layer has a shape in which crystalline products with angles protrude thereon, the elemental composition in the surface side portion of said electrodeposited layer consists substantially of chromium and oxygen and the ratio of the atomic concentration of chromium and oxygen at said portion is substantially even at the same depth from every point on said surface.

4,492,741

BORON MONOXIDE-HYDROGEN PEROXIDE FUEL CELL

Ralph C. Struthers, 39503 Calle El Fuente, Saugus, Calif. 91350

Filed Dec. 20, 1983, Ser. No. 563,464
Int. Cl.³ H01M *8/22*
U.S. Cl. 429—34 17 Claims



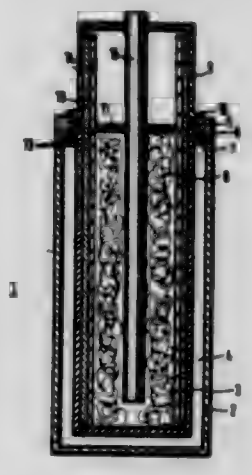
1. A boron monoxide fueled primary fuel cell comprising an elongate case structure having a central ion exchange section defining an ion exchange compartment with opposite ends and containing a fluid ionolyte, an anode section at one end of the case defining a gas compartment containing fluid boron monoxide gas, a liquid compartment between the gas compartment and one end of the ion exchange compartment and containing a fluid anolyte, a cationic membrane is disposed between and separates the anolyte and ionolyte, an anode plate is disposed between and separates the boron monoxide gas and the anolyte, said anode plate includes an electron collector part which is substantially coextensive with the interface between the boron monoxide gas and the anolyte and is connected with a terminal which connects with a related external electric circuit, a catalyst material carried by the collector part and a gas permeable hydrophobic membrane at the interface between and separating the boron monoxide and the catalyst material, a cathode section at the other end of the case defining a cathode fuel compartment adjacent the other end of the ion exchange compartment and containing a fluid cathode fuel and a cathode plate is disposed between and separates the ionolyte and the cathode fuel, said cathode plate includes an electron distributor part substantially coextensive with the interface between the ionolyte and cathode fuel and is connected with a terminal connected with said external circuit and a catalyst material carried by the distributor part.

4,492,742

ELECTROCHEMICAL STORAGE CELL

Fritz Haberfellner, Heidelberg; Stefan Mennicke, Leimen-Gauangelloch, and Gerd Prappacher, Schwetzingen, all of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 431,371, Sep. 30, 1982, abandoned. This application Apr. 2, 1984, Ser. No. 595,644
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1981, 3145112
Int. Cl.³ H01M *10/39*
U.S. Cl. 429—104 8 Claims



1. Electrochemical storage cell based on sodium and sulfur comprising at least one anode space for the sodium anolyte and a cathode space for the sulfur catholyte with the anode and the cathode spaces separated from each other by a sodium ion-conducting solid electrolyte which permit sodium ions during the charge of the cell to migrate from the anode space to the cathode space and chemically react to form sodium polysulfide and the reverse reaction during the charge of the cell, said cathode space filled with sulfur catholyte to an extent that the addition of sodium ions during the discharge of the cell causes a rising pressure in the cathode space and the loss of sodium ions during the charge of the cell causes a decreasing pressure in the cathode space, at least one of said spaces bounded at least in some areas by a metallic housing, at least one supply container for the sodium polysulfide formed in the chemical reaction in which the only communication with the cathode space is at least one porous mat of ceramic showing wick action for transfer of said sodium polysulfide into the supply container by rising pressure caused by the sodium ions coming in the cathode space during discharge of the cell and for transfer of the sodium polysulfide back into the cathode space by decreasing pressure during the charge of the cell.

4,492,743

MULTILAYER PHOTOELECTRODES AND PHOTOVOLTAIC CELLS

Arthur T. Howe, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 434,603, Oct. 15, 1982,. This application Apr. 29, 1983, Ser. No. 489,815
Int. Cl.³ H01M *6/36*; H01L *31/04*
U.S. Cl. 429—111 24 Claims

1. A multilayer structure which is suitable for use as either a photovoltaic cell or a photoelectrode in a photoelectrochemical cell which comprises an n-type semiconductor layer, a layer of insulator material which is in direct contact with said

semiconductor layer, and a layer of conducting material which is in direct contact with said layer of insulator material, wherein said insulator material is negatively charged as a consequence of the presence of aliovalent dopant ions and has a thickness which is effective to permit electron tunneling between said semiconductor and conducting material layers.

4,492,744

SECONDARY ZINC ELECTRODE FOR A SECONDARY ELECTRO-CHEMICAL CELL

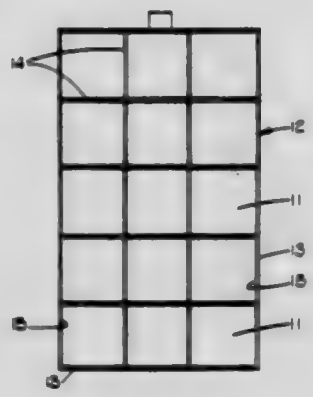
David J. Brown, Solihull; Trever L. Markin, Reading, and Ronald M. Dell, Abingdon, all of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Mar. 28, 1983, Ser. No. 479,802

Claims priority, application United Kingdom, Apr. 6, 1982, 8210161

Int. Cl.³ H01M 4/76

U.S. Cl. 429—217 9 Claims



1. A secondary zinc electrode for a secondary electrochemical cell, comprising an electrically conductive support, a pressed active zinc material containing an organic binder adhering to at least one major surface of the support and presenting an outer face which is spaced outwardly of said major surface, and an electrically non-conducting grid structure separating the active material on the support into a plurality of physically separate areas.

4,492,745

PHOTOSENSITIVE MEMBER FOR ELECTROPHOTOGRAPHY WITH MIRROR FINISHED SUPPORT

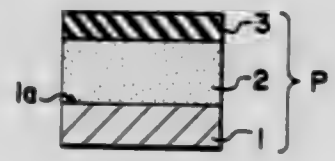
Yoshiyuki Mimura; Takeo Okada, and Akitoshi Toda, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 31, 1983, Ser. No. 546,953

Claims priority, application Japan, Nov. 24, 1982, 57-205868

Int. Cl.³ G03G 5/04, 5/00

U.S. Cl. 430—67 2 Claims



1. a photosensitive member for electrophotography for use in a process of forming an electrostatic latent image by sequential steps of a primary corona charging concurrent with imagewise exposure, a secondary corona charging and a flush irradiation; comprising:

a conductive support having its surface treated to a mirror finish, the surface roughness of said surface being no greater than 0.1 S;

a photoconductive layer laminated on the surface of the conductive support; and

a transparent insulating layer laminated on the photoconductive layer.

4,492,746

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MATERIAL WITH POLYESTER BINDER

Nobuhiro Miyakawa, Abiko; Teruaki Higashiguti, Tokyo; Yumiko Sano, Ibaragi, and Masatomi Funato, Sakai, all of Japan, assignors to Mita Industrial Co. Ltd., Osaka, Japan

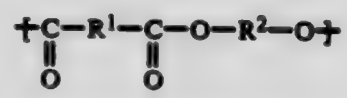
Filed Jul. 30, 1982, Ser. No. 403,855

Claims priority, application Japan, Aug. 4, 1981, 56-121440

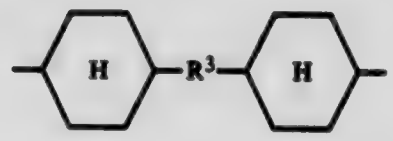
Int. Cl.³ G03G 5/07

U.S. Cl. 430—71 5 Claims

1. A photosensitive material for electrophotography comprising an organic polymeric photoconductive material selected from the group consisting of poly-N-vinyl carbazole and its nuclear substitutions, polyvinyl anthracene, polyvinylpyrene and polyacenaphthylene and a thermoplastic polyester composed mainly of recurring units represented by the general formula



wherein R^1 is a phenylene group, R^2 is a group of the formula



R^3 is a direct bond or a divalent bridging atom or group.

4,492,747

FLEXIBLE LAMINATABLE PHOTOSENSITIVE LAYER

Alfred Brechlin, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 22, 1981, Ser. No. 275,712

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1980, 3024772

Int. Cl.³ G03G 5/05

U.S. Cl. 430—96 20 Claims

1. A flexible photosensitive material, comprising:

a flexible photosensitive layer having a thickness greater than about 15 microns and comprising a substantially organic photoconductor, at least one of at sensitizer and an activator, and a binder comprising at least one copolymer formed by copolymerizing monomers comprised of an alkyl methacrylate having 6 carbon atoms in the alkyl group and an acid component selected from acrylic acid and a mixture of acrylic acid and methacrylic acid, said copolymer having an acid number in the range from about 90 to about 250, wherein the proportion by weight of said methacrylic acid to said acrylic acid is between about 0:1 and 2:1; and a flexible support layer carrying said photosensitive layer.

4,492,748

LIGHT-SENSITIVE POLYCONDENSATION PRODUCT CONTAINING DIAZONIUM AND DIALDEHYDE GROUPS, AND LIGHT-SENSITIVE RECORDING MATERIAL PREPARED THEREWITH

Walter Lutz, Eleonorenstrasse 130, 6503 Mainz-Kastel; Hartmut Stoppan, Panoramastrasse 17, 6200 Wiesbaden, and Fritz Erdmann, Hermann-Hesse-Strasse 38, 6500 Mainz, all of Fed. Rep. of Germany

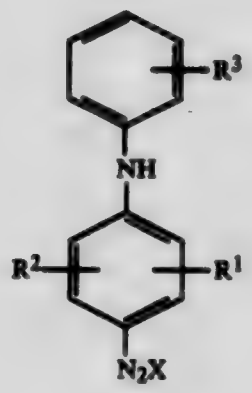
Filed Sep. 8, 1982, Ser. No. 415,927

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1981, 3135804

Int. Cl.³ G03C 1/54; C07C 113/04

U.S. Cl. 430—175 10 Claims

1. a light-sensitive diazonium group-containing polycondensation product of a diazonium salt corresponding to the general formula



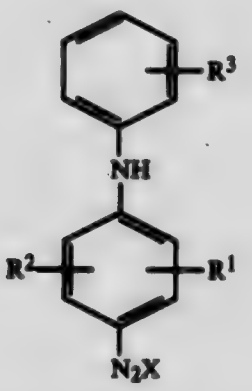
wherein

R^1, R^2, and R^3 denote hydrogen atoms, halogen atoms, alkyl groups having 1 to 3 carbon atoms, or alkoxy groups having 1 to 6 carbon atoms, and

X denotes the anion of the diazonium salt,

and an aldehyde selected from the group consisting of aromatic dialdehydes, acetals of dialdehyde hydrates, and esters of dialdehyde hydrates.

8. A process for preparing a light-sensitive diazonium group-containing polycondensation product comprising reacting a diazonium salt corresponding to the general formula:



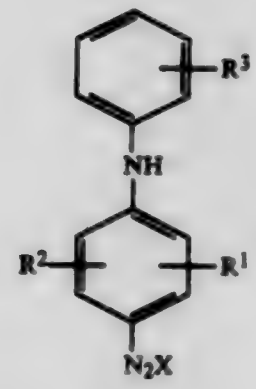
wherein

R^1, R^2, and R^3 denote hydrogen atoms, halogen atoms, alkyl groups having 1 to 3 carbon atoms or alkoxy groups having 1 to 6 carbon atoms, and

X denotes the anion of the diazonium salt

and aldehyde selected from the group consisting of aromatic dialdehydes, acetals of dialdehyde hydrates and esters of dialdehyde hydrates in a strongly acid medium.

10. A light-sensitive recording material comprising a layer support and a light-sensitive layer containing as the light-sensitive compound, a diazonium group-containing polycondensation product of a diazonium salt corresponding to the general formula



wherein

R^1, R^2 and R^3 denote hydrogen atoms, halogen atoms, alkyl groups having 1 to 3 carbon atoms or alkoxy groups having 1 to 6 carbon atoms, and

X denotes the anion of the diazonium salt,

and an aldehyde selected from the group consisting of aromatic dialdehydes, acetals of dialdehyde hydrates, and esters of dialdehyde hydrates.

4,492,749

DIAZOTYPE MATERIALS WITH 2-HYDROXY-NAPHTHALENE HAVING SULFONAMIDE SUBSTITUENT AS COUPLER

Siegfried Scheler, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 115,401, Jan. 25, 1980, abandoned. This application Sep. 15, 1983, Ser. No. 532,302

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1979, 2903342

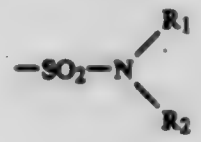
Int. Cl.³ G03C 1/58

U.S. Cl. 430—180 3 Claims

1. A diazotype material having at least one diazo compound in a light-sensitive acid stabilized layer, which comprises, as a coupling component, at least one 2-hydroxy-naphthalene of the general formula



wherein A in the 6- or 7-position is



R_1 is hydrogen,

R_2 is an aryl group substituted by halogen alkyl or halogen, or

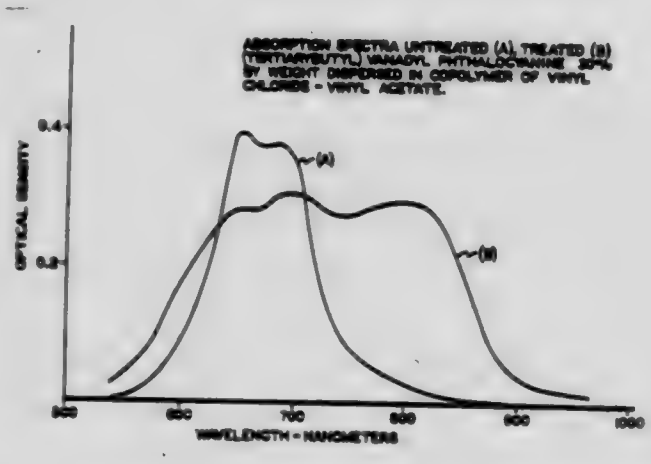
R_1 and R_2 are, conjointly with the nitrogen atom to which they are attached, pyrrolidine, piperidine, piperazine, morpholine, thiomorpholine, or hexamethyleneimine.

4,492,750

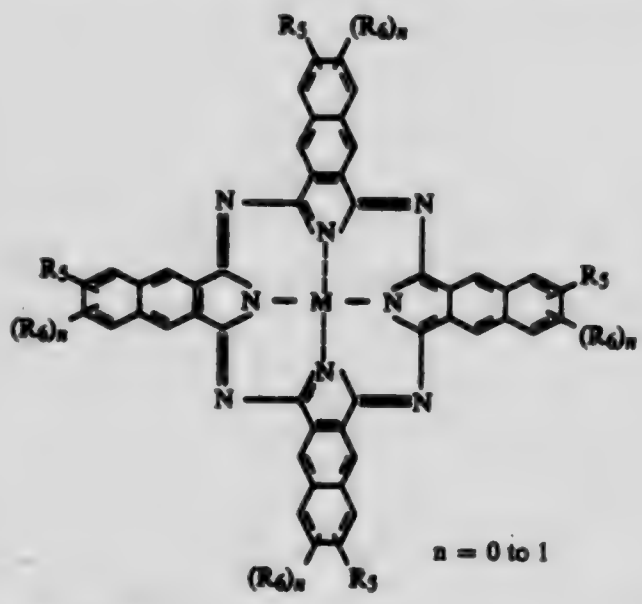
ABLATIVE INFRARED SENSITIVE DEVICES CONTAINING SOLUBLE NAPHTHALOCYANINE DYES

Kock-Yee Law, Fairport; Gordon E. Johnson, and John W. P. Lin, both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 13, 1983, Ser. No. 541,592
Int. Cl.³ G03C 5/04, 1/76
U.S. Cl. 430—494 16 Claims



1. An ablative infrared-sensitive optical recording composition containing as a component thereof a dispersion of a resinous binder and a vapor treated organic solvent soluble naphthalocyanine infrared absorbing additive of the following formula:



wherein R_5 and R_6 are alkyl groups of from 4 carbon atoms to 8 carbon atoms, M is a divalent metal complex, and n is a number of from 0 to 1, wherein said vapor treated organic solvent soluble naphthalocyanine infrared absorbing additive is of a diameter of from 0.005 microns to 0.1 microns.

4,492,751

HETEROGENOUS SPECIFIC BINDING ASSAY EMPLOYING AN ENZYME SUBSTRATE AS LABEL

Robert C. Boguslaski, Elkhart; Robert J. Carrico, Bremen, both of Ind., and James E. Christner, Ann Arbor, Mich., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 894,838, Apr. 10, 1978, which is a continuation of Ser. No. 667,982, Mar. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 572,008, Apr. 28, 1975, abandoned. This application Oct. 15, 1979, Ser. No. 84,867
Int. Cl.³ G01N 33/54, 33/58, 33/52
U.S. Cl. 435—7 18 Claims

1. In a heterogeneous specific binding assay method for determining a ligand in a liquid medium, which method comprises the steps of:

(a) contacting said liquid medium with reagent means including a labeled conjugate comprising a specific binding substance coupled to a labeling substance, said reagent means and the ligand forming a binding reaction system producing

(1) a bound-phase of the labeled conjugate in which the specific binding substance therein is bound by a specific binding partner thereto and

(2) a free-phase of the labeled conjugate in which the specific binding substance therein is not bound by a specific binding partner thereto,

(b) separating said bound-phase and said free-phase; and

(c) determining said labeling substance in said bound-phase or said free-phase as a function of the amount of said ligand in said liquid medium;

the improvement wherein said labeling substance is a substrate for an enzyme, said labeled conjugate being capable of being acted on by said single enzyme to yield directly a detectable product.

4,492,752

METHOD FOR DISCRIMINATING BETWEEN UNSTAINED AND ABSORBING DYE STAINED CELLS

Robert A. Hoffman, and Stephen H. C. Ip, both of Mansfield, Mass., assignors to Ortho Diagnostics Systems Inc., Raritan, N.J.

Filed Sep. 3, 1982, Ser. No. 414,683
Int. Cl.³ G01N 33/50, 33/52, 33/54, 21/47
U.S. Cl. 435—7 3 Claims



1. A method for discriminating, in a mixed cell sample, between unstained cells and cells stained with a cell surface or cytoplasmic stain using low angle and wide angle light scatter measurements in light based flow cytometry instrumentation compriaing the steps of:

(a) staining some cells in the mixed sample with a light absorbing stain;

(b) providing the mixed sample having stained and unstained cells past a focused light source;

(c) detecting low angle and wide angle light scatter as the cells pass the light source; and

(d) discriminating between stained and unstained cells on the basis that cells with a light absorbing stain produce comparatively less low angle light scatter and comparatively more wide angle light scatter than do unstained cells.

4,492,753

METHOD AND MEANS FOR ASSESSMENT AND PREDICTION OF RISK OF SUBSEQUENT ISCHEMIC CARDIAC EVENTS

William E. Shell, Los Angeles; Michael H. Burnam, Hidden Hills, and Zoltan A. Tokes, Los Angeles, all of Calif., assignors to Immunex, Inc., San Diego, Calif.

Filed Oct. 6, 1982, Ser. No. 433,153
Int. Cl.³ C12Q 1/50; G01N 33/68
U.S. Cl. 435—17 16 Claims

1. A method for assessing a cardiac patient's risk for future ischemic heart events comprising the steps of:

(a) monitoring the level of alpha-1-acid glycoprotein in a

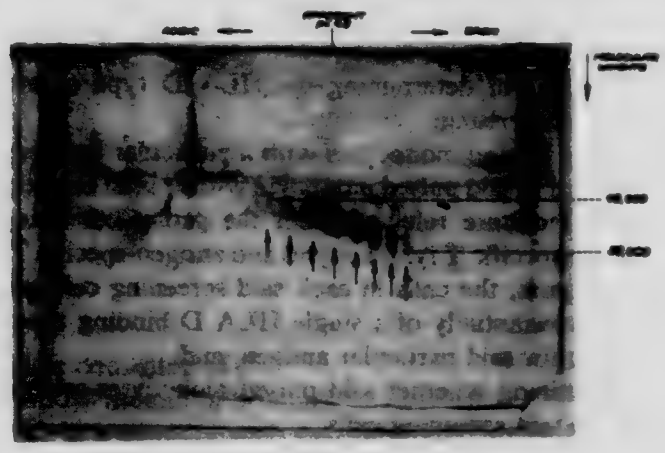
cardiac patient's plasma or serum following an ischemic heart event;

(b) comparing the levels of alpha-1-acid glycoprotein measured in step (a) to a threshold level for alpha-1-acid glycoprotein; and

(c) determining whether said cardiac patient has a low risk of experiencing future ischemic heart events.

7. A method for assessing a cardiac patient's risk for future ischemic heart events comprising the steps of:

(a) monitoring the level of alpha-1-acid glycoprotein in a cardiac patient's plasma or serum following an ischemic heart event;



(b) monitoring the level of CK-MB in a cardiac patient's plasma or serum following said ischemic heart event;

(c) comparing the levels of alpha-1-acid glycoprotein measured in step (a) to a threshold level for alpha-1-acid glycoprotein;

(d) comparing the levels of CK-MB measured in step (b) to a threshold level for CK-MB; and

(e) determining whether said cardiac patient is a high, intermediate or low risk candidate for future ischemic heart events.

4,492,754

COMPOSITION AND METHOD FOR THE DETERMINATION OF HYDROGEN PEROXIDE

Ulrich Triiger, Limburgerhof; Bernward Sojka, Viernheim, and Hans Lange, Lampertheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Jun. 11, 1982, Ser. No. 387,392

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1981, 3124594

Int. Cl.³ G01N *33/52, 33/66, 33/70, 33/92*

U.S. Cl. 435—28 17 Claims

1. Composition for the detection of

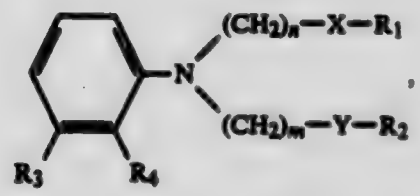
(a) hydrogen peroxide or hydrogen peroxide forming substrates, or

(b) peroxidases or peroxidatively reacting substances, which composition comprises a substrate capable of coupling 2-hydrazono-2,3-dihydro-3-methylbenzthiazole-6-sulfonic acid (S-MBTH), S-MBTH, and

(a) a peroxidase or

(b) hydrogen peroxide and hydrogen peroxide forming substance,

wherein the substrate capable of coupling is a compound of the formula



(I)

in which

n and m are individually selected from whole numbers of 1 to 4,

X and Y, which can be the same or different, represent a valence bond or a phenylene radical,

R_1 and R_2 are individually selected from carboxyl or sulfonic acid groups and one of R_1 and R_2 can also be hydrogen or lower alkyl,

R_3 is alkyl or up to 6 carbon atoms; and

R_4 is hydrogen;

or a salt of such compound.

4,492,755

PROCESS FOR ISOMERIZING L-MANNOSE TO L-FRUCTOSE

Robert O. Herwath, Westport, and William J. Colonna, Wilton, both of Conn., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jun. 30, 1982, Ser. No. 393,844

Int. Cl.³ C12P *19/24;* C12N *15/00, 9/90;* C12R *1/19, 1/22, 1/25*

U.S. Cl. 435—94 6 Claims

1. A process for isomerizing L-mannose to L-fructose which comprises contacting L-mannose with L-mannose isomerase produced by a mutant microorganism selected from the group consisting of the genera Escherichia, Lactobacillus, and Klebsiella cultivated in the absence of an inducing sugar.

4,492,756

MICROORGANISMS OF THE GENUS HYPHOMICROBIUM AND PROCESS FOR DEGRADING COMPOUNDS WICH CONTAIN METHYL GROUPS IN AQUEOUS SOLUTIONS

Oreste Ghisalba, Basel; Franz Heitzer, Perrentruy, and Martin Kliemi, Muttenz, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 1, 1982, Ser. No. 445,783

Claims priority, application Switzerland, Dec. 11, 1981, 7932/81

Int. Cl.³ C12N *1/20, 1/32;* C07 *00/00;* C12R *1/01*

U.S. Cl. 435—253 7 Claims

1. A biologically pure culture of microorganisms of the genus Hyphomicrobium selected from the group of the following strains:

Hyphomicrobium NRRL-B-12573,
Hyphomicrobium NRRL-B-12572,
Hyphomicrobium NRRL-B-12571,
Hyphomicrobium NRRL-B-12570,
Hyphomicrobium NRLL-B-12569,

and mutants thereof.

2. A process for the microbiological purification of aqueous solutions by degradation of lower alkanols, lower alkanoates, monosaccharides, disaccharides, dimethyl phosphite, trimethyl phosphite, lower alkylammonium compounds or free amines thereof, or of methylsulfate compounds or mixtures thereof, which process comprises culturing in such aqueous solution a microorganism of the genus Hyphomicrobium according to claim 1 or a mutant derived from said microorganism suitable for the process, in the presence of nutrient inorganic salts and optionally of a nitrogen source, in the temperature range from about 20° to 40° C. and in a pH range from about 4 to 7.5, and, if desired, isolating the biomass obtained.

4,492,757

PROCESS FOR PREPARING L-THREONINE

Masaaki Kato; Teruzo Miyoshi; Iwao Kibayashi, all of Machida; Masahisa Ikeda, Tokyo; Haruo Gomi, Machida; Yoshiaki Ishimatsu, Zama; Noriaki Kaizumi, Ibaraki, and Hideaki Yamada, Kyoto, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1982, Ser. No. 449,216

Claims priority, application Japan, Dec. 28, 1981, 56-209984; Dec. 28, 1981, 56-209985

Int. Cl.³ C07B *19/02*; C12P *13/08*

U.S. Cl. 435—280 9 Claims

1. A process for preparing L-threonine which comprises causing D-threonine-aldolase, or D-threonine-aldolase and L-allothreonine-aldolase to act on a solution containing at least DL-threonine.

4,492,758

HYBRID VECTOR AND PROCESS FOR IMPROVING THE AMPLIFICATION AND EXPRESSION OF HYBRID VECTORS BY THE USE OF MITOCHONDRIAL DNA

Karl Esser; Ulf Stahl, both of Bochum; Paul Tudzynski, Gladbeck, and Ulrich Kück, Bochum, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed May 28, 1982, Ser. No. 383,205

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1981, 3121815

Int. Cl.³ C12N *1/00, 1/20, 5/00, 5/02, 1/14*; C12P *21/00, 19/34, 15/00*

U.S. Cl. 435—317 3 Claims

1. A hybrid vector synthesized from a fragment of mitochondrial DNA, containing a mitochondrial DNA origin of replication, of Acremonium or Podospora species.

4,492,759

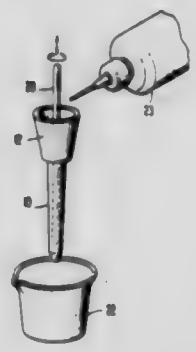
FIELD-TEST METHOD AND APPARATUS FOR THE DETECTION OF ASBESTOS

Esther M. Gorman, and William W. Gorman, Jr., both of St. Petersburg Beach, Fla., assignors to E-C Apparatus Corporation, St. Petersburg, Fla.

Filed Dec. 28, 1981, Ser. No. 334,991

Int. Cl.³ G01N *31/22*

U.S. Cl. 436—72 6 Claims



1. Step-by-step method for conducting field-tests for the possible presence of asbestos comprising the following sequentially performed steps:

(a) placing a sample to be tested in an open column having removable top and bottom caps and a filter material resistant to phosphoric acid and sulfuric acid, the filter material being lodged inside the column, at one end;

(b) preparing the sample in the same column for testing by washing said sample in the same column to remove waste;

(c) draining the wash water and waste from the same column through said filter material leaving a residue to be tested on said filter material;

(d) placing said bottom cap on said column;

(e) reacting the residue on said filter material with an acid reagent for releasing magnesium or iron, by contacting the residue on said filter material with said acid reagent in the same column and with said bottom cap in place on said column; and

(f) adding a color indicating reagent to the residue on said filter material and in the same column to detect the presence of magnesium or iron.

4,492,760

HLA D TYPING ASSAY

Elaine C. DeFreitas, Villanova, Pa., assignor to The Wistar Institute of Anatomy and Biology, Philadelphia, Pa.

Filed Apr. 19, 1983, Ser. No. 486,441

Int. Cl.³ G01N *33/50*; C12N *15/00*

U.S. Cl. 436—503 36 Claims

1. A method of determining the HLA D type of human monocytes comprising:

(a) pulsing human monocytes with a particular antigen;

(b) contacting said pulsed monocyte with at least one screening cell culture selected from the group consisting of antigen-specific T lymphocytes and antigen-specific T cell hybridomas, the cells in each said screening cell culture being substantially of a single HLA D binding type and specific for said particular antigen; and

(c) determining whether said pulsed monocytes selectively bind to said screening cells.

4,492,761

COMPLEMENT ASSAY METHOD

David T. Durack, Durham, N.C., assignor to Duke University, Durham, N.C.

Filed Apr. 5, 1982, Ser. No. 365,334

Int. Cl.³ C12Q *1/18, 1/34*; C12N *1/06, 1/20*

U.S. Cl. 436—519 16 Claims

2. A method of determining the activity of complement in a sample, which comprises:

(a) incubating a mixture comprising (1) an aqueous suspension of *E. coli* ATCC 39056 bacteria at a concentration of from 10^5 to 10^9 cells/ml, said cells containing an assayable intracellular component, and (2) said sample, wherein said mixture contains from 0.2 to 50% by volume of said sample and said incubating is conducted at a temperature of at least 4° C. but less than 50° C., at a pH of from 7.0 to 7.9 and at an ionic strength of from 0.027 to 0.20 for a time sufficient to allow 100% lysis of said bacteria in a mixture containing 12% of a normal human serum standard under the same conditions of temperature, ionic strength, and pH at which said mixture is incubated; and

(b) detecting said assayable component released into solution during said incubating.

4,492,762

FLUORESCENT POLARIZATION IMMUNOASSAYS

Chao-Huei J. Wang, Gurnee; Stephen D. Stroupe, Libertyville, and Michael E. Jolley, Round Lake, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 329,974, Dec. 11, 1981, which is a continuation-in-part of Ser. No. 235,259, Feb. 17, 1981, abandoned, Ser. No. 329,975, Dec. 11, 1981, and Ser. No. 325,872, Nov. 30, 1981, Pat. No. 4,420,568, said Ser. No. 325,872, is a continuation of Ser. No. 173,553, Jul. 30, 1980, abandoned. This application Jun. 30, 1982, Ser. No. 393,577

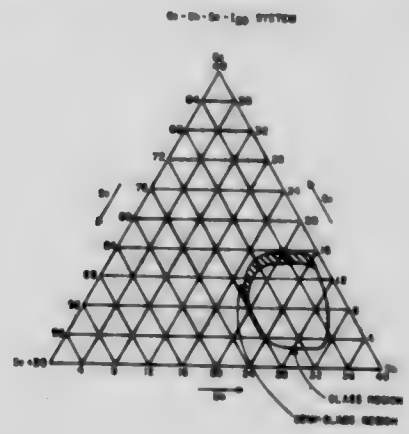
Int. Cl.³ G01N *33/54*

U.S. Cl. 436—537 4 Claims

1. In a fluorescent polarization immunoassay for a substance in blood serum or plasma the improvement comprising:

conducting the fluorescent polarization immunoassay in a solution containing effective amounts of an anionic surfactant to disrupt bilirubin serum albumin complex in the sample and thereby reduce background fluorescence of the blood serum or plasma sample.

4,492,763
LOW DISPERSION INFRARED GLASS
Patrick A. Trotta, Plano, and Paul A. Zak, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jul. 6, 1982, Ser. No. 395,774
Int. Cl.³ C03C 3/12, 3/30
U.S. Cl. 501—40 7 Claims



1. A glass consisting of:
from 6–30% atomic of bromine;
selenium in a quantity such that the total concentration of bromine plus selenium comprises between 55% and 90% atomic of the total;
from 2–22% atomic of gallium; and
from 4–30% atomic of antimony.

4,492,764
SINTERED CERAMIC BODY CONTAINING TITANIUM CARBONITRIDE
Tadahiko Watanabe, Saga; Yuko Tsuya, Tokyo, and Yuji Enomoto, Sakura, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan
Filed Mar. 16, 1983, Ser. No. 475,976
Claims priority, application Japan, Jul. 12, 1982, 57-121748
Int. Cl.³ C04B 35/56, 35/58
U.S. Cl. 501—87 16 Claims

1. A titanium carbonitride-based ceramic body prepared by sintering a powdery mixture consisting essentially of
(a) from 5 to 95% by weight of a titanium carbonitride,
(b) from 95 to 5% by weight of at least one metal boride selected from the group consisting of titanium diboride TiB_2, chromium diboride CrB_2, tantalum diboride TaB_2, manganese diboride MnB_2, molybdenum diboride MoB_2, vanadium diboride VB_2, niobium diboride NbB_2, hafnium diboride HfB_2, aluminum diboride AlB_2 and zirconium diboride ZrB_2, tungsten boride W_2B_5 and molybdenum boride Mo_2B_5,
(c) from 0 to 10% by weight elementary boron, and
(d) from 0 to 50% by weight of titanium carbide or titanium nitride.

4,492,765
Si_3N_4 CERAMIC ARTICLES HAVING LOWER DENSITY OUTER LAYER, AND METHOD
Sergej-Tomislav Buljan, Acton, Mass., assignor to GTE Products Corporation, Stamford, Conn.
Filed Aug. 18, 1980, Ser. No. 178,485
Int. Cl.³ C04B 35/58
U.S. Cl. 501—97 2 Claims

1. A dense monolithic Si_3N_4 ceramic body, characterized in that at least a portion of the body has an outer layer exhibiting a lower density than the interior of the body.

4,492,766
SPRAY-COATING MATERIAL
Karel Zverina, and Petr Kroupa, both of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia
Filed Jun. 3, 1983, Ser. No. 500,616
Claims priority, application Czechoslovakia, Jan. 11, 1982, 4350-82
Int. Cl.³ C04B 35/08, 35/48
U.S. Cl. 501—104 5 Claims

1. Spray-coating material consisting essentially of an admixture of the following metal oxides which admixture consists of 8–35 wt. % of a metal oxide selected from the group consisting of magnesium oxide MgO and calcium oxide CaO, 2–10 wt. % of beryllium oxide BeO, and 55–90 wt. % of a metal oxide selected from the group consisting of aluminum oxide Al_2O_3, zirconium dioxide ZrO_2, silicon dioxide SiO_2, chromic oxide Cr_2O_3, and titanium dioxide TiO_2 alone or in admixture.

4,492,767
LOW TEMPERATURE DECOKING PROCESS FOR REACTIVATING IRIDIUM AND SELENIUM CONTAINING CATALYSTS
Shun C. Fung, Bridgewater, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.
Continuation-in-part of Ser. No. 378,230, May 5, 1982,. This application Nov. 2, 1983, Ser. No. 548,218
Claims priority, application Japan, May 4, 1983, 58-78247
Int. Cl.³ B01J 27/30, 23/96, 27/02; C10G 35/085
U.S. Cl. 502—35 14 Claims

1. A process for reactivating an agglomerated, coked, iridium and selenium containing catalyst comprising the steps of:
(a) partially decoking said selenium containing catalyst in an oxygen-containing atmosphere at a temperature below about 430° C. for a sufficient time so that the remaining catalyst coke level is less than 1 weight percent and the iridium agglomeration on said catalyst is less than about 50 percent;
(b) reducing said catalyst from step (a) by contact with a reducing atmosphere at elevated temperature for a sufficient time to substantially convert said iridium to metallic iridium;
(c) pretreating said catalyst from step (b) by contact with an elemental oxygen-free atmosphere comprising a halide-providing compound at elevated temperature for a sufficient time to provide the catalyst with about 1.3 weight percent and above halide, taken as the coke-free, dry catalyst; and
(d) redispersing the metallic iridium from step (c) while maintaining said 1.3 weight percent halide provided to the catalyst by contacting with an atmosphere comprising elemental halogen and water vapor in a halogen/water volume ratio of about 0.2 to 5 at a temperature of about 480° C. and above, for a time sufficient to substantially complete decoking and to effect a 75–100 percent redispersion of said metallic iridium.

12. The process of claim 1 wherein the temperature in steps (b) and (c) is in the range of about 250° to 600° C.

14. A process for reactivating a coked, agglomerated platinum-iridium-selenium on alumina catalyst comprising the steps of:
(a) decoking said selenium containing catalyst in an oxygen-containing atmosphere at a temperature in the range of about 375° to 430° C., for a sufficient time so that about 0.3 to about 0.8 weight percent carbon remains on said catalyst and iridium metal agglomeration on said catalyst is less than about 50 percent;
(b) contacting said agglomerated catalyst with a hydrogen atmosphere at a temperature in the range of about 300° to 540° C. for a sufficient time to substantially reduce the oxides of platinum and iridium to the respective metals;
(c) contacting said catalyst from step (b) with an elemental oxygen-free and elemental halogen-free atmosphere com-

prising hydrogen chloride at a temperature in the range of about 300° to 540° C. for a sufficient time to saturate the catalyst with chloride; and

(d) contacting the catalyst from step (c) while maintaining a saturated catalyst chloride level with an atmosphere comprising elemental chlorine and water vapor in a chlorine/-water volume ratio of about 0.5 to 2 at a temperature in the range of about 500° to 540° C. for a sufficient time to substantially remove all coke deposits and to effect about a 90 to 100 percent redispersion of metallic platinum and iridium.

4,492,768

POLYOLEFIN POLYMERIZATION PROCESS AND CATALYST

Gil R. Hawley, Dewey, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 19, 1983, Ser. No. 524,615

Int. Cl.³ C08F *4/64*

U.S. Cl. 502—111 14 Claims

1. A process for preparing an olefin polymerization catalyst comprising reacting an alkoxytitanium compound, a phenol, and a small quantity of water in a hydrocarbon liquid, then reacting the resulting solution with a magnesium dihalide having less than 1.5 moles of water per mole of magnesium dihalide to form a first catalyst component solution, then reacting that solution with an organoaluminum halide to form a solid product, and then reacting said solid product with a halogenating agent comprising a titanium halide, wherein the amount of water employed in forming said first catalyst component solution is such that the catalyst is more active than if no water were employed.

4,492,769

POLLUTION CONTROL CATALYST FOR INTERNAL COMBUSTION ENGINE EXHAUST SYSTEM/CATALYTIC CONVERTER AND PROCESS FOR ITS PREPARATION

Gilbert Blanchard, Le Plessis Belleville; Jean-Pierre Brunelle, Saint-Brice Sous Foret, and Michel Prigent, Rueil Malmaison, all of France, assignors to Pro-Catalyse, Rueil-Malmaison, France

Filed Jul. 25, 1983, Ser. No. 516,844

Claims priority, application France, Jul. 26, 1982, 82 12969

Int. Cl.³ B01J *23/58, 23/60, 23/64, 23/89*

U.S. Cl. 502—262 17 Claims

1. A process for the preparation of a catalyst composition adopted for the treatment of internal combustion engine exhaust gases, comprising (i) coating and/or impregnating a support with a catalyst of palladium and at least one base metal element, (ii) activating the step (i) catalyst at a temperature ranging from 120° to 800° C., (iii) next coating and/or impregnating the step (ii) activated catalyst with at least one platinum group precious metal other than palladium, or a combination of palladium and at least one other platinum group precious metal, and (iv) thence activating the step (iii) catalyst at a temperature ranging from 300° to 800° C.

4,492,770

CATALYST AND USE THEREOF IN TREATING INTERNAL COMBUSTION ENGINE EXHAUST GASES

Gilbert Blanchard, Le Plessis Belleville; Jean-Pierre Brunelle, Saint-Brice Sous Foret, and Michel Prigent, Rueil-Malmaison, all of France, assignors to Procatalyse, Rueil-Malmaison, France

Filed Dec. 11, 1981, Ser. No. 330,007

Claims priority, application France, Dec. 17, 1980, 80 26749

Int. Cl.³ B01J *23/10, 23/42, 23/44, 23/72*

U.S. Cl. 502—304 17 Claims

1. A catalyst useful for treating the exhaust gases of internal combustion engines comprising a support and an active phase deposited thereon, which activate phase comprises copper, either cerium or iron, at least one metal selected from the group consisting of platinum and palladium, and at least one metal selected from the group consisting of iridium and rhodium.

4,492,771

PROCESS FOR PRODUCING CARBON MATERIAL FOR DE-SULFURIZATION FROM A BINDER WITH A BLEND OF NONCOKING AND COKING COAL

Takashi Hasegawa; Koji Tsuchihashi, both of Fukuoka, and Hiroshi Yamashita, Kanagawa, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

PCT No. PCT/JP82/00024, § 371 Date Sep. 24, 1982, § 102(e) Date Sep. 24, 1982, PCT Pub. No. WO82/02537, PCT Pub. Date Aug. 5, 1982

PCT Filed Jan. 26, 1982, Ser. No. 432,958

Claims priority, application Japan, Jan. 27, 1981, 56-10688; Jan. 30, 1981, 56-12337

Int. Cl.³ C01B *31/10, 31/08, 31/02;* B01J *20/20*

U.S. Cl. 502—420 10 Claims

1. A process for producing a carbon material useful as an adsorbent for the desulfurization of discharge gases, comprising:

(a) mixing a binder with a coal blend of a non-coking coal and a coking coal;

(b) shaping said mixture into objects of a desired shape; and

(c) carbonizing the shaped coal product by heating the same in the presence of a combustion waste gas atmosphere containing oxygen until said shaped coal mass attains an elevated temperature of 600° to 1000° C., said process being characterized by the fact that the blended coal materials of step (a) have a mean reflecting power ($\bar{R}_o$) of 0.3 to 1.0 and by the fact that the mixture of binder with blended coal material in step (a) has the following physical properties:

(a) Gieseler maximum fluidity (GP-MF) to 0 to 3000 DDPM

(b) Crucible swelling number (CSN) of 0, ½, 1, 1½ or 2

(c) Roga-microstrength index (RI) of 10 to 95.

2. The process of claim 1 wherein, in said carbonization treatment, the increase in the temperature of the coal is initially elevated at a rate within the range of 15° to 120° C./min until the temperature of the shaped coal reaches 400° C.

7. The process of claim 1 or 2, wherein said carbonization of said shaped coal material is achieved by heating the shaped coal material in a counter-current, internal heating rotary kiln with a combustion waste gas comprised of 3 to 10% by volume oxygen and 20 to 80% by volume water vapor which is supplied to said kiln at a rate of 1 to 10 Nm^3/hr per 1 kg of shaped coal material fed into said rotary kiln, the gas phase temperature at the inlet of said rotary kiln being maintained at 450° to 750° C. and the gas phase temperature at the outlet of said rotary kiln being maintained at 700° to 1000° C.

4,492,772

PROCESS FOR THE PRODUCTION OF OXYGENATED HYDROCARBONS BY THE CATALYTIC CONVERSION OF SYNTHESIS GAS

William J. Ball, Capel; Leonard Cotton, and David G. Stewart, both of Epsom, all of England, assignors to The British Petroleum Company Limited, London, England

Filed Oct. 13, 1982, Ser. No. 434,055

Claims priority, application United Kingdom, Oct. 17, 1981, 8131380

Int. Cl.³ C07C *27/06*

U.S. Cl. 518—713 10 Claims

1. A process for the production of an oxygenated hydrocarbon product comprising methanol and ethanol which process comprises contacting synthesis gas at a temperature in the range 150° to 450° C. and a pressure in the range 1 to 700 bars with a catalyst comprising a mixture of the metals rhodium, silver, zirconium and molybdenum incorporated on the same support.

459-641 O.G.-85-10

4,492,773

PROCESS FOR THE PRODUCTION OF C_1 TO C_4 OXYGENATED HYDROCARBONS BY THE CATALYTIC CONVERSION OF SYNTHESIS GAS

William J. Ball, Capel; Leonard Cotton, and David G. Stewart, both of Epsom, all of England, assignors to The British Petroleum Company Limited, London, England

Continuation of Ser. No. 285,409, Jul. 20, 1981, abandoned. This application Dec. 8, 1982, Ser. No. 447,783

Claims priority, application United Kingdom, Aug. 1, 1980, 8025261

Int. Cl.³ C07C 27/06

U.S. Cl. 518—713 13 Claims

1. A process for the production of C_1 to C_4 oxygenated hydrocarbon compounds comprising methanol and/or ethanol which process comprises contacting synthesis gas at a temperature in the range of from 150° to 450° C. and a pressure in the range of from 1 to 700 bars with a catalyst comprising a mixture of a rhodium component and a silver component on the same support, said rhodium and silver components under the reaction conditions being substantially in the metallic form.

4,492,774

METHOD FOR CONVERTING SYNTHESIS GAS USING AN ACTIVATED COBALT-SUBSTITUTED LAYERED ALUMINOSILICATE

Charles L. Kibby, Gibsonia, and Thaddeus P. Kobylinski, Prospect, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 27, 1982, Ser. No. 453,139

Int. Cl.³ C07C 1/04

U.S. Cl. 518—713 10 Claims

1. A method for converting synthesis gas to a product predominating in liquid hydrocarbons which comprises contacting said synthesis gas under conversion conditions with a synthesis gas conversion catalyst obtainable by the multi-stage activation of a layered aluminosilicate having cobalt incorporated into the crystal lattice and having the general formula:

$$Al_{4-n-x}Co_{(3/2)n}O_8(OH,F)_6Si_{8-y}Al_yO_{12}\cdot(3x+y)NH_4^+\cdot zH_2O$$

where n is between about 0.02 and about 4; x is up to about 1; n+x is between about 0.02 and about 4; y is between about 0.05 and about 2; and z is up to about 10; said activation procedure comprising the steps:

(a) heating the layered aluminosilicate in a reducing atmosphere at a temperature between about 500° and about 750° C. until a significant amount of the cobalt is reduced;

(b) heating the reduced aluminosilicate in an oxidizing atmosphere at a temperature between about 100° and about 600° C. until a significant amount of the cobalt is oxidized, and

(c) heating the oxidized aluminosilicate in a reducing atmosphere at a temperature between about 200° and about 500° C. until a significant quantity of the cobalt is reduced.

4,492,775

ORGANOPOLYSILOXANE FOAM COMPOSITION

Taro Koshii, Chiba, and Mitsuga Yamashita, Ichihara, both of Japan, assignors to Toray Silicone Co., Ltd., Tokyo, Japan

Filed May 22, 1984, Ser. No. 612,773

Claims priority, application Japan, Jun. 7, 1983, 58-101150

Int. Cl.³ C08J 9/02

U.S. Cl. 521—77 11 Claims

1. A foamable polyorganosiloxane composition comprising the product obtained by mixing together:

(A) 50–100 parts by weight of a polyorganosiloxane substantially free of silicon bonded hydroxyl groups, containing at least 2 silicon-bonded hydroxyl groups per molecule, no aliphatically unsaturated hydrocarbon radicals, and exhibiting a viscosity of from 1 to 1000 Pa·s at 25° C.;

(B) 0.1–50 parts by weight of a polyorganohydrogensiloxane containing at least two silicon-bonded hydrogen atoms per molecule, no aliphatically unsaturated hydrocarbon radicals, and exhibiting a viscosity of from 0.001 to 1000 Pa·s at 25° C.;

(C) a catalytic quantity of a platinum group metal or compound thereof;

(D) 0.1–10 parts by weight per 100 parts of combined weight of (A) and (B) of a material containing at least 0.5 weight % of either hydroxyl or carboxyl groups and selected from the group consisting of (a) polyorganosiloxanes exhibiting a viscosity of at most 1 Pa·s at 25° C. and represented by the average unit formula

$$R_a^1R_b^2SiO_{(4-a-b)/2}$$

where R^1 is a monovalent hydrocarbon radical; R^2 is $—R^3OH$ or $—R^3COOH$ where R^3 is a monovalent hydrocarbon radical, a is from 0 to 3, inclusive, b is greater than 0 but not more than 3, and the sum of a and b is greater than 0 but not more than 3; (b) the partial esters of saturated aliphatic divalent- and trivalent alcohols and the partial esters of polyalkylene glycols and copolymers thereof;

(E) 1–150 parts by weight per 100 parts of combined weight of (A) and (B) of an inorganic filler with a maximum mean particle size of 1 micron; and

(F) 0.001–3 parts by weight per 100 parts by weight of combined weight of (A) and (B) of a retarder for (C).

4,492,776

HYDROGEL CONTACT LENSES FOR PERMANENT WEAR

Ivor B. Atkinson, and Barry C. Holdstock, both of Surbiton, England, assignors to CooperVision, Inc., Menlo Park, Calif.

Division of Ser. No. 505,419, Jun. 16, 1983, Pat. No. 4,451,630. This application Apr. 12, 1984, Ser. No. 599,739

Claims priority, application United Kingdom, Apr. 29, 1983, 8311788

Int. Cl.³ C08J 3/00

U.S. Cl. 523—108 1 Claim

1. A contact lens comprising a polymer hydrogel having a water content of from about 55 to 85% by weight of water and containing alkali metal or alkaline earth metal carboxylate moieties, wherein said polymer is the product obtained by polymerizing, in the presence of an azo type initiator, from 30 to 50% by weight of N-vinyl pyrrolidone, up to 5% by weight of acrylic or methacrylic acid, 0.1 to 1% by weight of 1,3,5-tris(propenoxy)-2,4,6-triazine as cross-linking monomer, the balance being essentially hydroxyethyl methacrylate and subsequently swelling in aqueous medium.

4,492,777

HEAT TREATED BARIUM OR STRONTIUM GLASS

Robert E. Denton, Jr., Allentown, and Narayan G. Kumar, Freehold, both of N.J., assignors to Johnson & Johnson Dental Products Co., East Windsor, N.J.

Filed Nov. 26, 1982, Ser. No. 444,560

Int. Cl.³ C08K 3/40; C03B 32/00

U.S. Cl. 523—115 4 Claims

1. A single phase barium or strontium glass powder produced by a process that comprises subjecting acid-washed single phase barium or strontium glass powder to an elevated temperature sufficient to cause a significant reduction in the specific surface area of said glass powder, but below the sintering temperature of said glass powder, wherein said glass is hydrophobic as is evidenced by its absorbing less than 0.1 weight percent water, as determined by a differential scanning calorimeter, when exposed to normal ambient conditions.

3. A resinous dental restorative composition containing a polymerizable composition, a polymerization initiator, and the glass powder of claim 1.

4,492,778
METHOD FOR MAKING FLUORESCENT LIGHT-COLLECTORS

Uwe Claussen, Leverkusen; Josef Merten, Kerschenbroich; Harry Biller, Frechen, and Bernd Meichler, Rommerskirchen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Sep. 19, 1983, Ser. No. 533,126
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1982, 3236241
Int. Cl.³ G21K *1/10*; H01L *31/04*; G21F *1/10*
U.S. Cl. 523—137 2 Claims

1. A method for making a light-collector from a transparent plastic containing a fluorescent dye, wherein the monomers forming transparent plastics are mass-prepolymerized at temperatures of from 50° to 160° C. and under pressures of from 2 to 20 bars using a radical catalyst from the group consisting of percarbonates, acyl sulfonyl peroxides, perketones, or azodiiso butyric acid esters, and the fluorescent dye is added either before, during, or at the end of prepolymerization, and the mixture is then polymerized to completion after adding another catalyst from the group consisting of percarbonates, acyl sulfonyl peroxides, perketones, azoisobutyronitrile or azoisobutyric acid esters, hydroperoxides, and perketals, also under pressures of from 2 to 20 bars and at temperatures of from 50° to 160° C.

4,492,779
ARAMID POLYMER AND POWDER FILLER REINFORCED ELASTOMERIC COMPOSITION FOR USE AS A ROCKET MOTOR INSULATION

Kenneth E. Junior, Madison, and James D. Byrd, Huntsville, both of Ala., assignors to Thiokol Corporation, Chicago, Ill.

Filed Dec. 7, 1981, Ser. No. 328,333
Int. Cl.³ C08K *3/40*, *3/36*, *3/22*
U.S. Cl. 523—138 19 Claims

1. A process for insulating a solid propellant rocket motor, comprising the step of employing an essentially asbestos-free elastomeric composition as an insulating liner, said composition comprising:

A. from 1 to 40 percent by weight of aramid polymer fibers,

B. from 1 to 75 percent by weight of a powder filler selected from the group consisting of silica, iron oxide, titanium oxide, carbon, milled glass, and ceramic clays, and

C. A vulcanizable elastomeric composition including:

(i) a vulcanizable elastomer, and

(ii) vulcanizing agents for said elastomer.

4,492,780
PROCESS FOR THE PREPARATION OF A POLYMER DISPERSION

Klaus Zimmerschied, Wiesbaden, and Helmut Rinno, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 27, 1982, Ser. No. 453,096
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1981, 3151813
Int. Cl.³ C08L *1/26*, *1/28*
U.S. Cl. 524—45 7 Claims

1. The method of making a polymer dispersion, which method comprises polymerizing:

(a) at least one ester of acrylic acid and/or methacrylic acid with an alcohol having 1 to 10 carbon atoms,

(b) 0.1 to 10 percent, by weight of all the monomers, of at least one water soluble unsaturated carboxylic acid or of one water soluble derivative of such an acid, and

(c) 0 to 30 percent, by weight of all the monomers, of at least one mono-olefinically unsaturated compound which is different from any compound in (a) or (b) above,

in an aqueous medium at a temperature from 30° C. to 100° C. in the presence of free radical-forming polymerization initiator, an emulsifier, and of a protective colloid which is water soluble carboxymethylcellulose having an average degree of substitution from 0.3 to 0.65.

4,492,781
METHOD AND COMPOSITION FOR MAINTAINING AND REPAIRING ASPHALT-AND RUBBER-CONTAINING SURFACES

Francis J. Dumak, Box 297, Landenberg, Pa. 19350; James P. Medrak, 483 Blackstone Rd., Newark, Del. 19713, and Dick Denver, 121 Old Kennett Rd., Kennett Square, Pa. 19348

Filed May 19, 1983, Ser. No. 496,148
Int. Cl.³ C08L *93/00*
U.S. Cl. 524—59 24 Claims

1. A spreadable fiber reinforced composition comprising, in combination

(A) an emulsion comprising

(a) a base component of one or more materials of a member selected from the group consisting of an asphalt, asphalt/rubber, rubber, acrylic copolymer, and asphalt-/acrylic copolymer having a ratio by base weight of asphalt/rubber/acrylic copolymer of about 100–10-/0–90/0–70,

(b) an effective amount of emulsifying agent, and

(c) water;

(B) an active effective amount of water-soluble polymer material compatible with the emulsifying agent;

(C) 0.25 to about 10.0 weight percent reinforcing fiber component by weight of base component;

(D) about 0–1000 weight percent aggregate by weight of base component;

(E) about 0–5 weight percent of curing and thickening agent by weight of base component; and

(F) about 0–10 weight percent rosin ester material by weight of base component.

4,492,782
MOULDING COMPOUNDS BASED ON POLYESTER

Richard S. Williams, Bromsgrove, and Terry Daniels, Oldbury, both of England, assignors to BIP Chemicals Limited, Manchester, England

Filed Jul. 26, 1983, Ser. No. 517,446
Claims priority, application United Kingdom, Aug. 3, 1982, 8222385
Int. Cl.³ C08K *5/07*; C08L *67/00*, *67/04*
U.S. Cl. 524—293 19 Claims

1. A polyester moulding composition consisting essentially of polyethylene terephthalate or a polyester containing at least 80% by weight of polyethylene terephthalate repeating units, polycaprolactone and a nucleant for crystallization of the polyethylene terephthalate, the polycaprolactone having a number average molecular weight of above 20,500.

4,492,783
BINDER FOR OBTAINING A CERAMIC MOLDED GREEN BODY

Taku Tanaka; Hitoshi Maruyama, both of Kurashiki; Takuji Okaya, Nagaokakyo, and Koichi Kajitani, Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jan. 16, 1984, Ser. No. 571,373
Claims priority, application Japan, Jan. 14, 1983, 58-4472
Int. Cl.³ C08L *3/22*
U.S. Cl. 524—430 14 Claims

1. A composition for producing a ceramic molded green body which comprises 100 parts of ceramic powder and about 0.1 to about 20 parts of a binder which comprises a modified polyvinyl alcohol having either (A) a hydrophobic group having a hydrocarbyl group of four or more carbon atoms or (A) plus (B) an ionic hydrophilic group in the side chain.

4,492,784

ADHESIVE FOR BUTADIENE STYRENE COPOLYMER

Harold D. Boettinghouse, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 16, 1983, Ser. No. 523,531
Int. Cl.³ C08K 5/02
U.S. Cl. 524—473 5 Claims

1. An adhesive composition consisting essentially of:

(a) from about 10–90 weight percent of at least one solvent selected from the group consisting of perchloroethylene, 1,1 -dichloroethane and 1,1,1-trichloroethane; and

(b) from about 90–10 weight percent of a copolymer consisting of at least one vinyl arene selected from the group consisting of styrene, alpha-methyl styrene, o-, m-, or p-vinyltoluene, 2,4-dimethylstyrene, 2,4-diethylstyrene, 2-chlorostyrene, 2-chloro-5-methylstyrene, vinylnaphthalene and at least one substituted or unsubstituted alkyl acrylate, selected from the group consisting of methyl acrylate, ethyl acrylate, isopropyl acrylate, butyl acrylate, methyl methacrylate, ethyl methacrylate, butyl methacrylate, hexyl methacrylate, cyclohexyl methacrylate, and methyl ethacrylate wherein the weight ratio of vinyl arene to acrylate in the copolymer of (b) is about 5:95 to about 95:5.

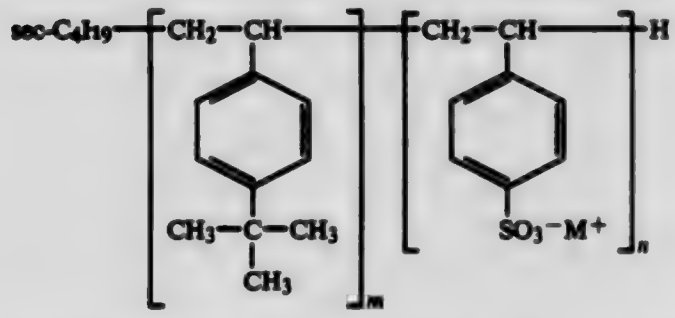
4,492,785

WATER SOLUBLE BLOCK POLYMERS

Paul L. Valint, Jr., Asbury, and Jan Bock, Bridgewater, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 29, 1982, Ser. No. 454,243
Int. Cl.³ C08L 51/00
U.S. Cl. 524—529 8 Claims

1. A water soluble diblock polymer having the formula:



wherein m is about 0.5 to about 15.0 mole %, n is about 85.0 to about 99.5 mole %, and M is selected from the group consisting of hydrogen, and metal ions of iron, aluminum, lead, and Groups IA, IIA, IB and IIB of the Periodic Table of Elements.

4,492,786

MODIFIED ORGANOPOLYSILOXANE COMPOSITION

Edwin R. Evans, New York, and Robert F. Clark, Saratoga, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Aug. 26, 1983, Ser. No. 527,298
Int. Cl.³ C08L 83/04
U.S. Cl. 524—865 32 Claims

1. a curable fluorosilicone composition comprising:

(A) an organopolysiloxane having terminal groups selected from the class consisting of —H, —OH, —R, —OR, and —CH=CH2, and pendant groups, bonded directly to silicon, selected from —R, —R′ and —R′—R″ groups, wherein R is a monovalent hydrocarbon radical of from 1 to 8 carbon atoms free of aliphatic unsaturation, R′ is a monovalent hydrocarbon or halo-hydrocarbon radical of from 1 to 8 carbon atoms, and R″ is a monomeric or polymeric group grafted to said R′ group and derived from an unsaturated fluorocarbon or mixture of unsaturated fluorocarbons having 2 or 3 carbon atoms and up to 6 fluorine atoms grafted to the organic radicals represented by R′, said organopolysiloxane having at least one pendant —R′—R″ group;

(B) a vinyl-functional polymeric crosslinking agent; and

(C) a free-radical initiator capable of promoting crosslinking between components (A) and (B), above.

16. A curable composition as defined in claim 1, which contains the additional component (D) of a filler selected from fumed silica, treated silica, and silica aerogel.

4,492,787

PROCESS FOR CONTINUOUSLY PRODUCING PROPYLENE-ETHYLENE BLOCK COPOLYMER

Ryokichi Takashima; Nobuaki Goko; Yuzuto Uehara; Yasuhiro Nishihara, and Hidetoshi Yamamoto, all of Kurashiki, Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Aug. 30, 1982, Ser. No. 413,159
Claims priority, application Japan, Sep. 18, 1981, 56-147581; Oct. 22, 1981, 56-169007
Int. Cl.³ C08G 297/08
U.S. Cl. 525—53 7 Claims

1. In a process for producing a propylene-ethylene block copolymer by a continuous multi-stage polymerization comprising a first stage in which propylene is polymerized in a first polymerization vessel in the presence of a propylene polymerization catalyst, and a second stage in which propylene and ethylene are copolymerized in a second polymerization vessel, wherein:

the polypropylene slurry discharged from the first polymerization vessel is supplied to a concentrator to separate said slurry into a concentrated polypropylene slurry and a supernatant liquid;

the concentrated polypropylene slurry is then introduced through an upper part of a hydraulic sedimentation classifier to be countercurrently contacted with the upward flowing supernatant fluid introduced through a lower part of said classifier to obtain hydraulically sedimented polypropylene and not hydraulically sedimented polypropylene;

the thus obtained hydraulically-sedimented polypropylene is then supplied to the second polymerization vessel or to a further propylene polymerization vessel; and

the not hydraulically sedimented polypropylene is then recycled from the classifier to the first polymerization vessel.

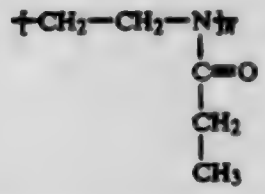
4,492,788

PARTIALLY DEACYLATED ULTRA-HIGH MOLECULAR WEIGHT POLY(N-PROPIONYLETHYLENIMINES)

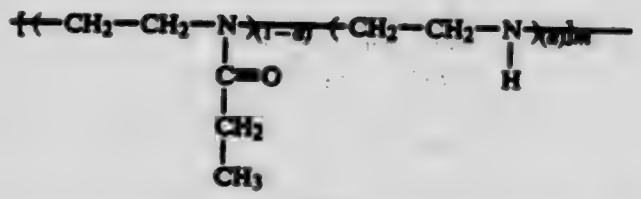
Robert S. Cooke, Morris Plains, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jan. 3, 1983, Ser. No. 455,093
Int. Cl.³ C08G 73/00
U.S. Cl. 525—410 9 Claims

1. A partially deacylated polymer produced via deacylation of a polymer having a polymeric structure consisting essentially of repeat units having the structure



wherein said partially deacylated polymer is represented by the structure



wherein m is between about 5,000 and about 200,000; wherein n is between about 10,000 and about 200,000 and wherein d represents the degree of deacylation and is between 0.1 and 0.9.

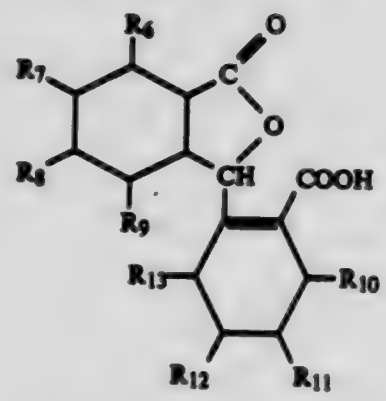
4,492,789

EPOXY RESIN COMPOSITION

Kenshide Nakashima, Ichihara; Takayuki Saito, Hitachi; Takeshi Nakahara, Chiba, and Shigeo Tanaka, Ichihara, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 392,249, Jun. 25, 1982, abandoned. This application Apr. 1, 1983, Ser. No. 481,359
Claims priority, application Japan, Jun. 30, 1981, 56-102964
Int. Cl.³ C08G 59/16
U.S. Cl. 525—531 11 Claims

1. An epoxy resin composition comprising
(a) an epoxy resin, and
(b) a lactone represented by the formula:



wherein the group represented by R_6, R_7, R_8, R_9, R_{10}, R_{11}, R_{12} and R_{13} are independently hydrogen or an alkyl group having 1 to 5 carbon atoms, at least one of said group being an alkyl group.

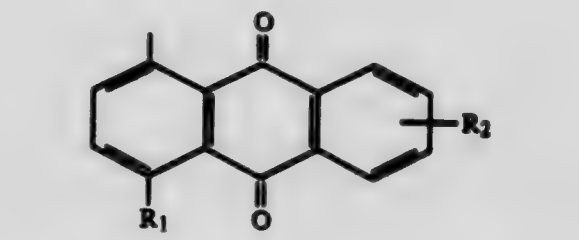
4,492,790

VAT DYESTUFFS OF THE TRISANTHRAQUINONYLAMINOTRIAZINE SERIES

Walter Holzmann, and Klaus Wunderlich, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

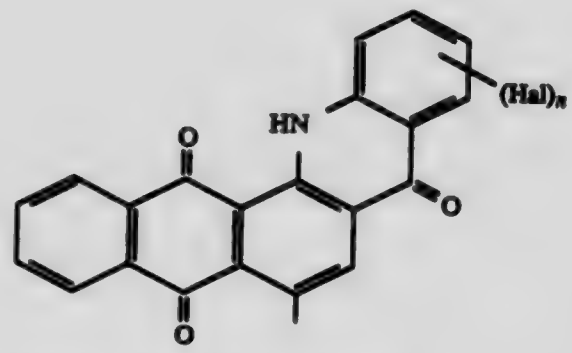
Filed Jan. 18, 1982, Ser. No. 339,943
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1981, 3103252
Int. Cl.³ C07D 401/12, 401/14
U.S. Cl. 544—188 4 Claims

1. A compound selected from the compounds of the formula

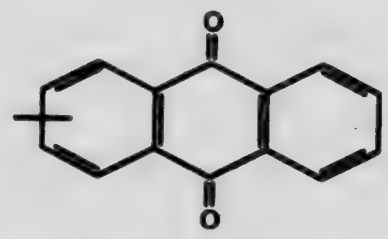


(I)

wherein A represents —NHV, —NHW or —NHZ and B represents —NHW or —NHZ,
in which
V represents a radical of the formula



W represents a radical of the formula



and Z represents a radical of the formula

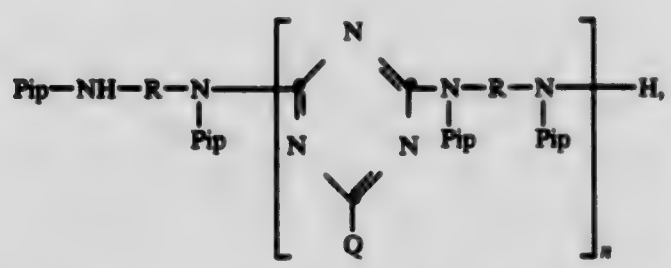
R_1 and R_2 are hydrogen or C_{1-4} alkylcarbonylamino, but do not simultaneously denote C_{1-4} alkylcarbonylamino,
Hal is a halogen atom and
n is a halogen atom and
n is the numbers 0, 1 or 2.

4,492,791
PROCESS FOR THE PREPARATION OF POLYAMINOTRIAZINES

Ivan Orban, and Eduard Troxler, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

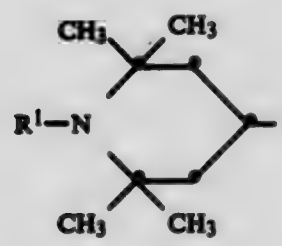
Filed Apr. 25, 1983, Ser. No. 488,246
Claims priority, application Switzerland, May 4, 1982, 2732/82
Int. Cl.³ C07D *401/14*
U.S. Cl. 544—198 8 Claims

1. An improved process for the preparation of a compound of formula I



(I)

in which n is a number from 2 to 20, Pip is a radical of the formula



in which R^1 is hydrogen, C_1–C_{12}-alkyl, C_3–C_8-alkenyl, C_7–C_{11}-phenylalkyl, C_2–C_8-alkanoyl or C_3–C_5-alkenoyl, R is C_2–C_{12}-alkylene, which can be interrupted by —O— or —NR^2—, in which R^2 is hydrogen, C_1–C_{12}-alkyl, C_3–C_{12}-alkoxyalkyl, cycloalkyl, Pip or a divalent cycloaliphatic C_6–C_{15}-radical, and Q is a radical of the formula —OR^3, —NHR^4 or —NR^4R^5, in which R^3 is C_1–C_{12}alkyl, C_3–C_{12}-alkoxyalkyl, cyclohexyl, benzyl, phenyl, tolyl or Pip, R^4 is C_1–C_{12}-alkyl, C_3–C_{12}-alkoxyalkyl, C_4–C_{12}-dialkylaminoalkyl, allyl, benzyl, cyclohexyl, phenyl, tolyl or Pip and R^5 is C_1–C_{12}-alkyl, C_3–C_{12}-alkoxyalkyl or cyclohexyl, or R^4 and R^5 together with the N atom to which they are bonded form a 5- or 6-membered heterocyclic ring, by polycondensation of a dichlorotriazine of the formula II



(II)

with a diamine of the formula III

Pip—NH—R—NH—Pip (III)

in a molar ratio of 1 mol of dichlorotriazine of formula II to 1.0 to 1.2 moles of diamine of formula III in an inert organic solvent in the presence of a base wherein the improvement comprises

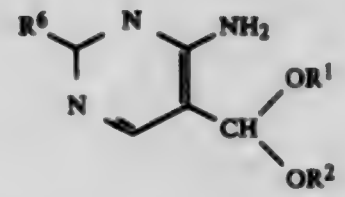
carrying out the reaction in a water-immiscible organic solvent and an aqueous solution of an inorganic base at a temperature of 140°–220° C. under elevated pressure.

4,492,792
PROCESS FOR PREPARING 4-AMINO-5-DIALKOXY-METHYLPYRIMIDINE DERIVATIVES

Kosa Fujii; Keigo Nishihira; Hiroyaki Sawada; Shuji Tanaka; Mamoru Nakai; Hiroshi Yoshida, and Terukiko Inoue, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

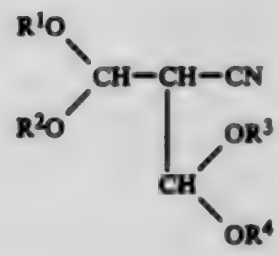
Filed Jan. 26, 1983, Ser. No. 461,191
Claims priority, application Japan, Feb. 4, 1982, 57-15503; Sep. 10, 1982, 57-156687
Int. Cl.³ C07D *239/02*
U.S. Cl. 544—326 18 Claims

1. A process for preparing a 4-amino-5-dialkoxymethylpyrimidine compound represented by the formula

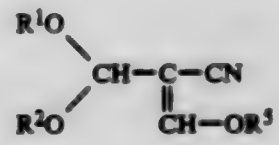


wherein R^1 and R^2 may be the same or different and each represent a lower-alkyl group having 1–4 carbon atoms or R^1 and R^2 may be lower-alkylene groups having 1–4 carbon atoms which are bonded to each other to form a a ring; and R^6 represents a hydrogen atom, a lower-alkyl group having 1–4 carbon atoms or a phenyl group wherein the hydrogen atom or atoms may be replaced by a lower-alkyl group having 1–3 carbon atoms, a lower-alkoxy group having 1 or 2 carbon atoms or a halogen atom,

which comprises reacting a propanenitrile compound represented by formula (I) or (II)



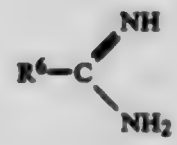
(I)



(II)

wherein R^1, R^2, R^3, R^4 and R^5 may be the same or different and each represent a lower-alkyl group having 1–4 carbon atoms or R^1, R^2, R^3 and R^4 may be lower-alkylene groups having 1–4 carbon atoms which are bonded to each other to form at least one ring,

with an amidine represented by the formula



wherein R^6 has the same meaning as defined above.

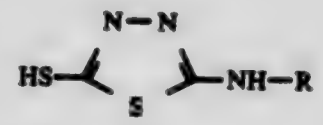
4,492,793

PROCESS FOR THE PRODUCTION OF 2-AMINO-5-MERCAPTO-1,3,4-THIADIAZOLE

Herbert Klenk, Hanau, Fed. Rep. of Germany, assignor to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 13, 1982, Ser. No. 408,131
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1981, 3133096
Int. Cl.³ C07D 285/12
U.S. Cl. 548—141 21 Claims

1. A process for the production of a 2-amino-5-mercapto-1,3,4-thiadiazoles of the formula I:



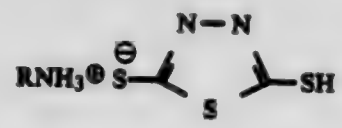
(I)

where R is hydrogen, an alkyl group of 1 to 10 carbon atoms, a cycloalkyl group of 5 to 6 carbon atoms or a phenyl group comprising reacting a thiosemicarbazide of the formula (II):



(II)

with carbon disulfide in aqueous phase wherein the aqueous phase has 15 to 70 weight % of an ammonium salt of bis-2,5-mercapto-1,3,4-thiadiazole of the formula (III):



(III)

at a temperature above 40° and 100° C.

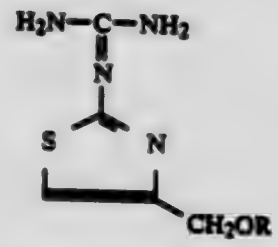
4,492,794

2-GUANIDINO-4-HYDROXYMETHYLTHIAZOLE AND DERIVATIVES THEREOF

Kentaro Hirai, Kyoto, Japan, assignor to Shionogi & Co., Ltd., Osaka, Japan

Filed Apr. 26, 1983, Ser. No. 488,821
Claims priority, application Japan, Oct. 27, 1981, 56/172391
Int. Cl.³ C07D 277/38
U.S. Cl. 548—193 10 Claims

1. A compound of the formula:



wherein R is hydrogen, C_1–C_5 alkanoyl, C_1–C_5 alkanesulfonyl or C_6–C_8 arenesulfonyl.

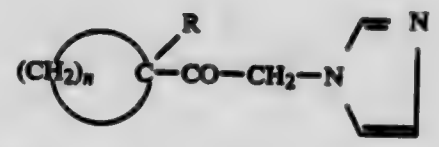
4,492,795

ALKYLCYCLOALKYL IMIDAZOLYLMETHYL KETONES AS FUNGICIDE INTERMEDIATES

Wolfgang Krämer, Wuppertal; Manfred Jautelat, Burscheid, and Eckart Kranz, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 1, 1982, Ser. No. 438,087
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1981, 3145858
Int. Cl.³ C07D 233/60
U.S. Cl. 548—341 3 Claims

1. An alkylcycloalkyl imidazolylmethyl ketone of the formula



in which

R is an alkyl group having 1 to 6 carbon atoms, and

n is 3, 4, 5, 6 or 7.

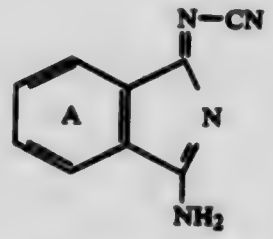
4,492,796

ISOINDOLENINE DERIVATIVES, PROCESSES FOR THEIR PREPARATION AND THEIR USE AS INTERMEDIATE PRODUCTS FOR THE PREPARATION OF DYESTUFFS

Manfred Lorenz, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 1, 1981, Ser. No. 268,963
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1980, 3022839
Int. Cl.³ C07D 209/44
U.S. Cl. 548—471 2 Claims

1. A compound which, in one of its tautomeric structures, corresponds to the formula



in which the ring A can be substituted by one substituent selected from the group consisting of chlorine, bromine, nitro, C_1–C_6-alkyl, C_1–C_6-alkoxy, C_1–C_6-alkylsulphonyl, phenylsulphonyl, phenyl, cyano, amino, mono-C_1–C_4-alkylamino, di-C_1–C_4-alkylamino and acetylamino.

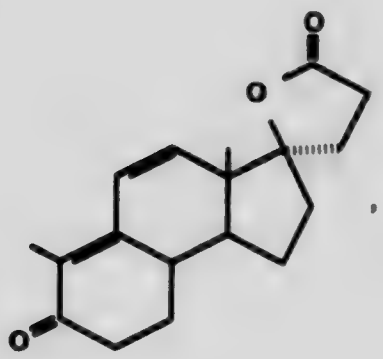
4,492,797

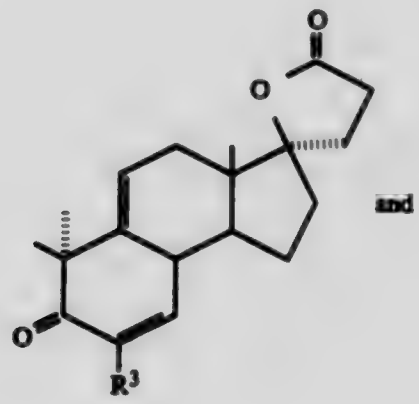
DEA-STEROIDS

Andor First, Basel; Peter Keller, Reinach, and Marcel Miller, Frenkendorf, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

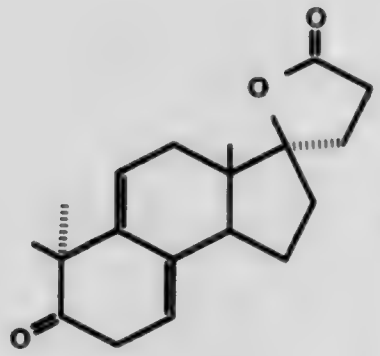
Continuation of Ser. No. 121,614, Feb. 14, 1980, abandoned.
This application Oct. 4, 1982, Ser. No. 432,503
Claims priority, application Switzerland, Feb. 23, 1979, 1838/79; Jan. 10, 1980, 172/80
Int. Cl.³ C07D 307/94
U.S. Cl. 549—265 5 Claims

1. A compound of a formula selected from the group consisting of





and



wherein R^3 is hydrogen or methyl.

4,492,798

PROCESS FOR PREPARING ARYLALKYLPYRUVIC ACIDS

John Y. Lee, and Joachim W. Wolfram, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 353,440, Mar. 1, 1982, abandoned. This application Jan. 13, 1983, Ser. No. 457,520
Int. Cl.³ C07C 51/10
U.S. Cl. 562—406 27 Claims

1. A process for the production of an arylalkylpyruvic acid of the general formula:

$$(R)_n—A—(CH_2)_mCH_2COCOOH$$

or a salt thereof wherein:

A represents a benzene or naphthalene group,

each R, which may be the same or different, represents hydrogen or a linear or branched alkyl radical with up to 4 carbon atoms which is unsubstituted or substituted by a nitro group or by an alkoxy group containing 1 to 4 carbon atoms, or an alkoxy group containing 1 to 4 carbon atoms, or a halogeno, nitrile, nitro or alkylcarbonyloxy group,

n is 0 or an integer from 1–3 when A is a benzene group, and n is 0 or an integer from 1–5 when A is a naphthalene group and m is 1–20, which comprises carbonylating an arylalkyl halide of the general formula:

$$(R)_n—A—(CH_2)_mCH_2X$$

where R, n, A and m are defined above and X represents halogen, by reacting the arylalkyl halide in a liquid solvent medium of a mixture of water and alcohol, with carbon monoxide at elevated temperature and pressure in the presence of a catalytic amount of a metal carbonyl compound wherein said metal is iron, nickel, or cobalt and an alkali or an alkaline earth metal inorganic base to form a salt of the arylalkylpyruvic acid, and optionally then acidifying the salt to form said acid.

4,492,799

HALO-4-ALKENOIC ACIDS AND THEIR USE AS PESTICIDAL INTERMEDIATES

Thomas N. Wheeler, Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 2, 1979, Ser. No. 54,209
Int. Cl.³ C07C 61/40, 59/40
U.S. Cl. 562—506 5 Claims

1. A halo-4-alkenoic acid compound of the structure:



wherein:

R_1 and R_2 independently halogen; and

R_6 is C_1 is C_3 alkyl or cycloalkyl.

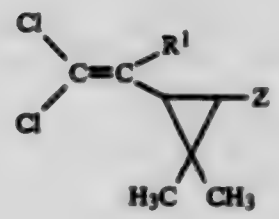
4,492,800

PROCESS FOR THE PREPARATION OF 1,1-DICHLORO-ALKENES

Fritz Maurer, Wuppertal; Uwe Priesnitz, Solingen, and Hans-Jochem Riebel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 237,006, Feb. 23, 1981, abandoned. This application Feb. 22, 1983, Ser. No. 468,786
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1980, 3009485
Int. Cl.³ C07C 69/74, 121/48, 121/60
U.S. Cl. 562—506 6 Claims

1. A process for the preparation of a 1,1-dichloroalkene of the formula



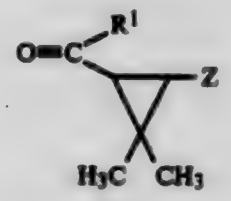
in which

R^1 is hydrogen, or an alkyl, alkenyl or alkinyl radical with up to 5 carbon atoms, or a cycloalkyl, phenalkyl, phenalkenyl, or phenyl radical,

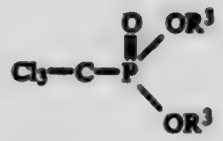
Z is an acetyl, cyano, carbamoyl or C_1 to C_4 alkoxycarbonyl radical, or a radical of the formula COOM, and

M is a hydrogen atom, an alkali metal, one equivalent of an alkaline earth metal or an ammonium radical,

consisting essentially of reacting a carbonyl compound of the formula



with a trichloromethanephosphonic acid ester of the formula



in which

R^3 each individually is a C_1 to C_4 alkyl or phenyl radical, or together are C_2 to C_5 alkanediyl,

in the presence of at least an equimolar amount of elemental magnesium metal based on the carbonyl compound at a temperature between about 0° and 150° C.

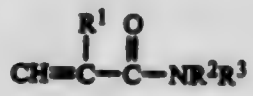
4,492,801

PRODUCTION OF N-SUBSTITUTED (METH)ACRYLAMIDES FROM (METH)ACRYLATES AND AMINES OVER A METAL ALKOXIDE CATALYST

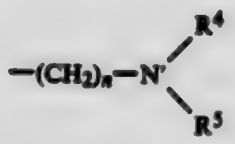
Edward E. McEntire; Kathy B. Sellstrom; Edward C. Y. Nieh, and David R. Livingston, all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 28, 1983, Ser. No. 469,860
Int. Cl.³ C07C 102/06, 103/44
U.S. Cl. 564—135 10 Claims

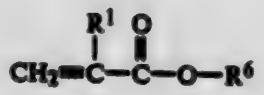
1. A process for the preparation of N-subetituted acrylamides of the formula



where R^1 is hydrogen or methyl, R^2 is hydrogen or lower alkyl of 1 to 4 carbon atoms and R^3 is alkyl, aryl, alkaryl, aralkyl or alkoxyalkyl containing 1 to 20 carbon atoms or



where n is an integer from 2 to 6 and R^4 and R^5 taken singly are lower alkyl groups containing 1 to 4 carbon atoms or R^4 and R^5 taken jointly are combined with the N′ atom to form a heterocyclic ring group selected from the group consisting of morpholine, pyrrolidine or piperidine ring groups, which process consists essentially of reacting an acrylate ester of the formula



where R^1 is defined as above and R^6 is lower alkyl of 1 to 4 carbon atoms with an amine of the formula HNR^2R^3 where R^2 and R^3 are defined as above over a catalytic amount of a metal alkoxide catalyst having the formula

$M(OR^7)_x$

where M is a metal atom selected from the group consisting of lanthanum, niobium, tantalum, copper, zinc, tin, lead, antimony and bismuth, R^7 is a lower alkyl group of one to four carbon atoms and x is two through five depending on the valence of the metal atom.

4,492,802

PROCESS FOR MANUFACTURE OF QUATERNARY AMMONIUM COMPOUNDS

Horst Ratzen, Langenfeld; Peter Nikolaus, Hilden; Martin Bischoff, Gelsenkirchen, and Rudolf Lehmann, Neuss, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf and Degussa Aktiengesellschaft, Frankfurt am Main, both of, Fed. Rep. of Germany

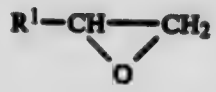
Filed Apr. 19, 1982, Ser. No. 369,760
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1981, 3116087
Int. Cl.³ C07C 89/02
U.S. Cl. 564—292 10 Claims

1. A process for the preparation of a quaternary ammonium compound comprising the steps of

(I) forming an aqueous mixture of

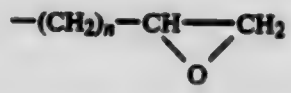
(a) a compound containing a terminal epoxy group selected from the group consisting of

(i) a compound of the formula



(I)

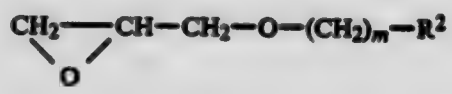
wherein R^1 is a straight or branched chain aliphatic hydrocarbon group having 4 to 16 carbon atoms or a group of the formula



(II)

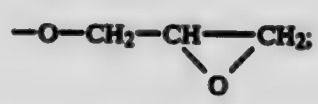
wherein n is an integer of from 4 to 16, and

(ii) a compound of the formula



(III)

wherein m is an integer of from 1 to 10, and R^2 is hydrogen, or a straight or branched chain aliphatic hydrocarbon group having from 1 to 24 carbon atoms, or a group of the formula



(IV)

(b) a salt of a tertiary amine which contains one or more alkyl, hydroxyalkyl, or aralkyl groups wherein such groups each contain less than 10 carbon atoms, and wherein the tertiary amines can optionally contain a C_{10} to C_{20} straight or branched chain alkyl or alkenyl group; and

(c) from about 0.5 to about 10% by weight, based on the theoretical weight of the quaternary ammonium compound reaction product, of a quaternary ammonium catalyst and

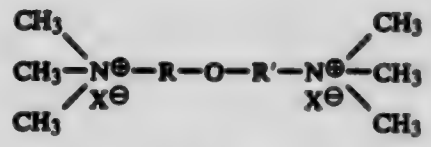
(II) heating said aqueous mixture to a temperature in the range of from about 40° to about 100° C. for a period of time sufficient to produce a quaternary ammonium compound from the reaction between compound (a) and compound (b) above.

4,492,803
METHOD FOR PRODUCING BIS[β-(N,N-DIMETHYLAMINO)ALKYL]-ETHER

Sadakatsu Kuwai, Hikari; Keiji Mitarai, Shinnanyo, and Yukihiro Tsutsumi, Tokuyama, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Filed Sep. 26, 1983, Ser. No. 536,028
Int. Cl.³ C07C 85/00
U.S. Cl. 564—486 14 Claims

1. A method for producing bis[β-(N,N-dimethylamino)alkyl]ether by reacting a bismethohalide of a bis[β-(N,N-dimethylamino)alkyl]ether represented by the following general formula



wherein R and R′ denote alkyl groups having 2-3 carbon atoms and X denotes halogen atom, with an aliphatic amine having a boiling point of 40°–170° C. at atmospheric pressure and having one or two primary amine groups in the molecule thereof under an increased pressure.

4,492,804
PREPARATION OF PRIMARY AMINES

Gerhard Frank, Hirschberg; Peter Rudolf, Neuhofen; Gerald Neubauer, Weinheim; Paul Duffner, Ludwigshafen; Manfred Oblinger, Frankenthal; Hans J. Wilfinger, and Emil Pfannebecker, both of Schifferstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 18, 1983, Ser. No. 524,318
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1982, 3231193
Int. Cl.³ C07C 85/12
U.S. Cl. 564—493 8 Claims

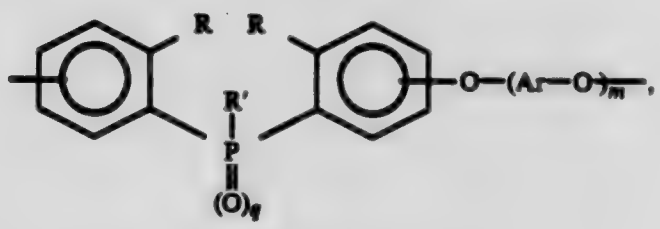
1. A process for the preparation of a saturated primary amine by reacting a nitrile with hydrogen at elevated temperature under superatmospheric pressure in the presence of ammonia and a metallic iron catalyst which has been obtained by reducing an iron compound with hydrogen at ≦500° C., wherein a metallic iron catalyst which has been obtained from anisometric iron oxide particles is used.

4,492,805
POLYARYLENE ETHERS CONTAINING PHOSPHORUS

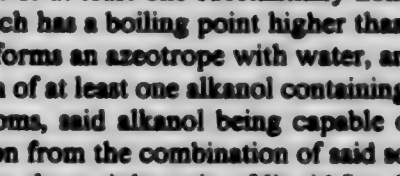
Siegmund Besecke, Seeheim-Jugenheim; Günter Schröder, Ober-Ramstadt; Werner Ude, Darmstadt-Arheilgen, and Winfried Wunderlich, Roßdorf, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jan. 26, 1983, Ser. No. 461,037
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1982, 3203186
Int. Cl.³ C07F 9/50, 9/53
U.S. Cl. 568—012 13 Claims

1. A polyarylene ether containing phosphorus and consisting of recurring units having the structure



wherein
m has an average value between 0 and 10;
q is 0 or 1;
R′ is methyl or phenyl;
R, taken alone, is hydrogen, or adjacent R's taken pairwise are oxygen or R″;
Ar is phenylene, naphthalene, or



wherein
R″ is a covalent single bond, sulfur, sulfonyl, carbonyl, methylene, isopropylidene, or another difunctional organic residue containing 5 to 15 carbon atoms and a number of carbon atoms which is at most equal to the number of carbon atoms in said residue;
said polyarylene ether having a reduced viscosity, $\eta_{sp/c}$ of at least 0.25 dl/g.

4,492,806
PROCESS FOR PREPARING ALKALI METAL SALTS OF HYDROXYAROMATIC COMPOUNDS

Ashok K. Mendiratta, Schenectady, and Wayne F. Morgan, Mechanicville, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 28, 1983, Ser. No. 555,752
Int. Cl.³ C07C 39/16
U.S. Cl. 568—723 15 Claims

1. A method for preparing at least one anhydrous alkali metal salt of a hydroxyaromatic compound which comprises:
(A) forming a solution of at least one hydroxyaromatic compound in a solvent mixture comprising (I) a major proportion of at least one substantially non-polar organic liquid which has a boiling point higher than that of water or which forms an azeotrope with water, and (II) a minor proportion of at least one alkanol containing up to about 4 carbon atoms, said alkanol being capable of removal by evaporation from the combination of said solvent mixture with water; the weight ratio of liquid I to liquid II being from 4:1 to about 8:1;
(B) reacting said solution at a temperature within the range of about 40°–100° C. with an aqueous solution of a substantially stoichiometric amount of alkali metal hydroxide for a period of time sufficient to form said alkali metal salt; and
(C) removing substantially all volatile materials, including water and said liquid II, from the reaction mixture by evaporation, thereby obtaining a slurry in said liquid I of said anhydrous alkali metal salt.

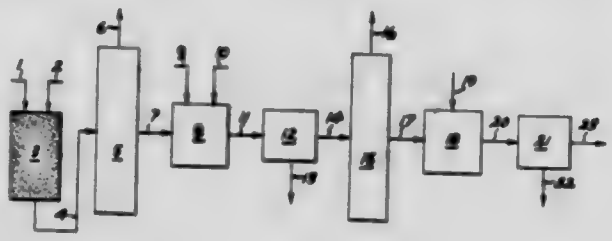
4,492,807
METHOD FOR PURIFICATION OF BISPHENOL A

Viney P. Aneja, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 22, 1983, Ser. No. 487,546
Int. Cl.³ C07C 37/70
U.S. Cl. 568—724 12 Claims

1. In a method for purifying bisphenol A which includes the steps of adding up to about 15% by weight of water to a mixture comprising impure bisphenol A and phenol, heating said mixture to a temperature no higher than 100° C. at which it is

entirely liquid, and cooling said mixture to form an adduct of bisphenol A and phenol, the improvement which comprises adding to said mixture simultaneously with said water, up to about 15% by weight of an organic liquid which will not react



with bisphenol A or phenol in the presence of water under substantially neutral conditions and which dissolves a substantial proportion of the impurities or by-products produced in the reaction forming said bisphenol A, and subsequently crystallizing and separating said adduct.

4,492,808

METHOD FOR SEPARATING ETHANOL FROM AN ETHANOL CONTAINING SOLUTION

Rainer Hagen, and Jürgen Hartwig, both of Essen, Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

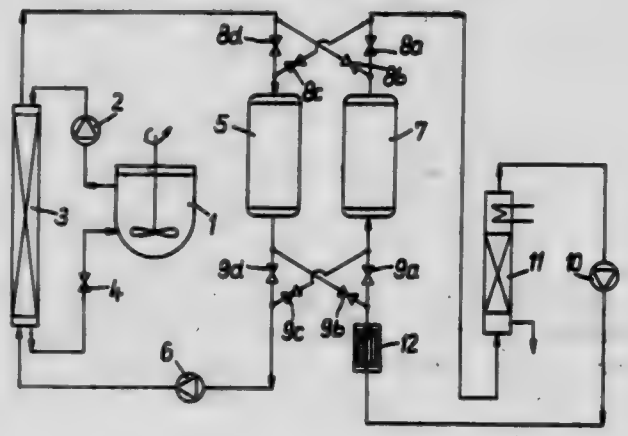
Filed Apr. 13, 1984, Ser. No. 600,301

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1983, 3313530

Int. Cl.³ C07C 29/76, 28/86, 29/78, 31/08

U.S. Cl. 568—916 11 Claims

1. A process for separating ethanol from an ethanol containing water solution, wherein the ethanol containing solution is extracted in an extraction stage with a solvent that is gaseous at 20° C. and 1 bar and is in the liquid or supercritical state in the extraction stage, and wherein the ethanol containing solvent phase is separated from the ethanol poor solution after extraction and is then separated into its components to recover the ethanol; said ethanol recovery comprising the steps of: passing the ethanol containing solvent phase from the extraction stage without changing pressure or temperature over an adsorption medium and returning the ethanol free solvent phase to the

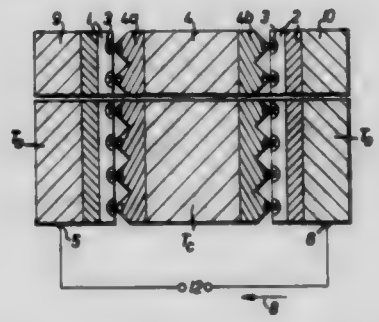


extraction stage; driving out the ethanol from the adsorption medium with a gaseous extraction solvent stream at a pressure of 1 to 30 bar and at a temperature from 150° to 300° C.; cooling the gaseous extraction solvent which contains ethanol to below the boiling temperature of ethanol at the existing pressure to separate the stream into a liquid ethanol phase and a substantially ethanol free gas phase; and recirculating the substantially ethanol free gas phase.

4,492,809
THERMOELECTRICAL ARRANGEMENT

Reinhard Dehlberg, Immere Bergstrasse 32, 7101 Flein, Fed. Rep. of Germany

Continuation of Ser. No. 715,172, Aug. 17, 1976, abandoned. This application Dec. 4, 1979, Ser. No. 100,004
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1975, 2547362
Int. Cl.³ H01L *35/28*
U.S. Cl. 136—212 22 Claims

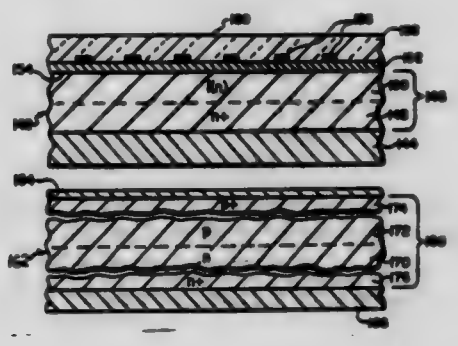


1. A thermoelectrical arrangement having large temperature gradients comprising a thermocouple having two thermolimbs including respectively different thermocouple materials and a bridging member which pressure contacts each of said thermolimbs at a respective plurality of points forming a respective planar array; and means for providing a temperature difference between said thermolimbs and said bridge member which temperature difference is sufficiently great to cause large temperature gradients greater than 10^4 degrees per centimeter in the regions of said plurality of points of contact whereby the specific heat conductivity at said regions is reduced as a result of inelastic scattering of electrons in said temperature gradients.

4,492,810
OPTIMIZED DOPED AND BAND GAP ADJUSTED PHOTORESPONSIVE AMORPHOUS ALLOYS AND DEVICES

Stanford R. Ovshinsky, Bloomfield Hills, and Masatsugu Izu, Southfield, both of Mich., assignors to Sovonics Solar Systems, Solon, Ohio

Continuation-in-part of Ser. No. 368,221, Apr. 14, 1982, which is a division of Ser. No. 185,520, Sep. 9, 1980, Pat. No. 4,342,044, which is a continuation-in-part of Ser. No. 884,664, Mar. 8, 1978, Pat. No. 4,217,374, and Ser. No. 104,285, Dec. 17, 1979, abandoned, which is a division of Ser. No. 884,664, . This application Nov. 19, 1982, Ser. No. 442,895
The portion of the term of this patent subsequent to Jul. 27, 1999, has been disclaimed.
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—255 83 Claims



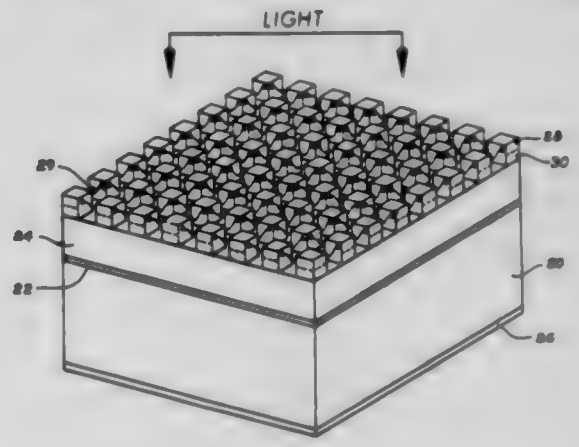
58. An improved photoresponsive device, said device comprising superimposed layers of various materials including an amorphous semiconductor alloy body having an active photoresponsive region including a band gap therein upon which radiation can impinge to produce charge carriers, said amorphous alloy including at least one density of states reducing element, said alloy further including one of a dopant or a band gap adjusting element therein to enhance the radiation absorption thereof without substantially increasing the effective states in the gap, at least one of said layers being formed with a plurality of substantially discrete subportions therein.

78. The device as defined in claim 58 wherein said alloy body forms part of a Schottky barrier solar cell.

4,492,811
HETEROJUNCTION PHOTOVOLTAIC DEVICE

Jay A. Switzer, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 1, 1983, Ser. No. 518,814
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—255 41 Claims



1. A photovoltaic device comprising a conductive solid coating material containing a degenerate n-type semiconductor having a band gap from about 0.5 to about 2.35 e.V. forming a heterojunction with a solid substrate containing an n-type semiconductor material.

12. The device defined in claim 1 further comprising a thin layer of material having a band gap greater than about 3.0 e.V. between said semiconductor material and said coating material.

4,492,812
ELECTRICAL CONTACTS FOR A SOLAR CELL

Joseph Lindmayer, Potomac, Md., assignor to Solarex Corporation, Rockville, Md.

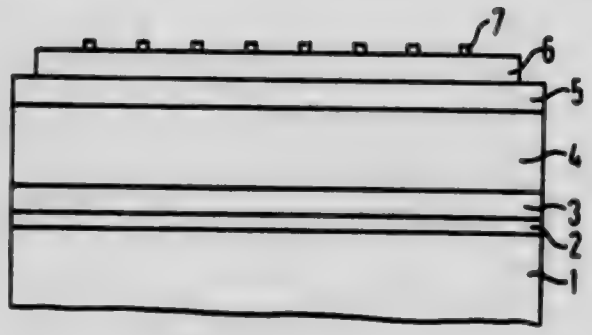
Continuation-in-part of Ser. No. 281,380, Jul. 8, 1981, Pat. No. 4,392,010, which is a continuation-in-part of Ser. No. 3,945, Jan. 16, 1979, Pat. No. 4,297,391. This application Jun. 2, 1983, Ser. No. 500,404
The portion of the term of this patent subsequent to Jul. 5, 2000, has been disclaimed.
Int. Cl.³ H01L *31/04, 31/18*
U.S. Cl. 136—256 24 Claims

12. A silicon containing photovoltaic cell having a front surface adapted to receive and absorb light impinging thereon and a back surface opposed to said front surface, and an electrical contact covering at least a portion of at least one of said surfaces, said contact being comprised of a layer of a mixture of aluminum and a solderable soft metal, said solderable metal consisting essentially of a combination of tin and a minor amount of silver, said combination of tin and silver comprising at least about 10% of said mixture.

4,492,813
AMORPHOUS SILICON SOLAR CELL

Helmold Kaesche; Matthias Moeller, and Franz Fischer, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 18, 1983, Ser. No. 524,438
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1982, 3242835
Int. Cl.³ H01L 31/04
U.S. Cl. 136—256
6 Claims

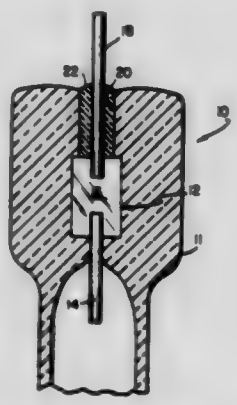


1. In a solar cell having a semiconductor body composed essentially of amorphous silicon applied to a substrate having at least at one surface thereof comprised of a metal layer functioning as a back contact, the improvement wherein said back metal layer is composed of an aluminum-silicon alloy, with or without a titanium additive.

4,492,814
SOLDER GLASS AND ELECTRICAL DEVICE EMPLOYING SAME

Richard G. Snell, Topsfield, and Fredrick A. Loughridge, Ipswich, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jan. 4, 1984, Ser. No. 568,030
Int. Cl.³ H01J 5/00; H05K 5/06
U.S. Cl. 174—50.64
2 Claims

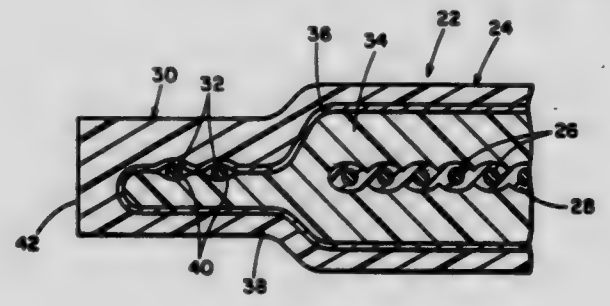


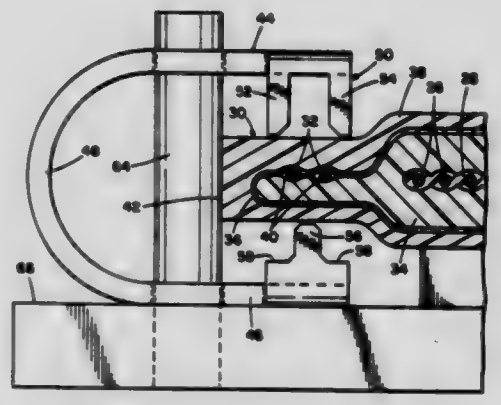
2. A seal for electrical devices comprising a body of substantially fused silica and at least one electrically conductive member sealed therein, said member comprising a proximal portion projecting within said body, an intermediate thin foil portion hermetically sealed within said body, and a distal portion projecting exteriorly of said body, and a capillary passage surrounding said distal portion and extending to said intermediate portion, said capillary passage being substantially filled with a solder glass comprising: about 65 weight percent Sb_2O_3; about 30 weight percent B_2O_3; and about 5 weight percent Bi_2O_3.

4,492,815
SHIELDED JACKETED FLAT CABLE AND GROUNDING CLIP FOR USE THEREWITH

Ronald R. Maros, Itasca, Ill., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Aug. 23, 1983, Ser. No. 525,643
Int. Cl.³ H01B 7/08; H01R 4/24
U.S. Cl. 174—78
10 Claims





1. The combination of a metallic grounding clip and a shielded, jacketed flat cable of the type comprising a main portion having a plurality of spaced signal conductors, an offset portion joined to said main portion and including a drain wire spaced from a distal side of said offset portion, and a metallic shield which encompasses said signal conductors and extends into said offset portion in contact with said drain wire, said clip comprising:

a first leg;

a second leg; and

a web joining said legs and defining therewith a channel receiving said offset portion, at least one of said legs comprising a termination means piercing said offset portion to contact said drain wire whereby said clip can be attached to said cable, remote from said signal conductors, at any desired location along its length and the shield of said cable can extend to the cable ends.

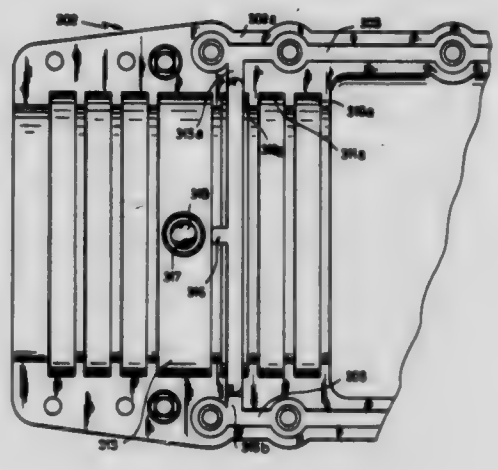
4,492,816
SPLICE-PROTECTING SLEEVE FOR ELECTRIC CABLES OR TELEPHONE CABLES

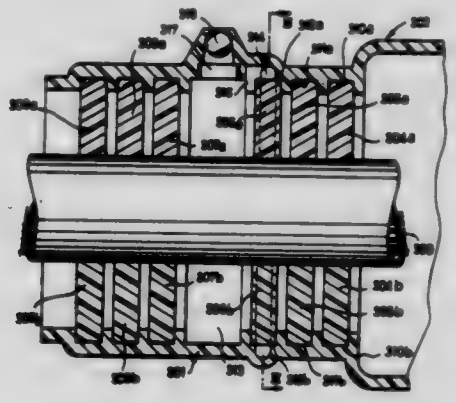
André Morel, and Jacques Morel, both of Favieres, France, assignors to Etablissements Morel, Ateliers Electromecaniques de Favieres, Favieres, France

Filed Jun. 13, 1983, Ser. No. 503,582
Claims priority, application France, Jun. 30, 1982, 82 11467; Feb. 18, 1983, 83 02641
Int. Cl.³ H02G 15/18, 15/113
U.S. Cl. 174—92
19 Claims

1. A sleeve for protecting cable splices, comprising two half-shells having longitudinal flanges, said half-shells being adapted to be assembled together around a splice by means of said flanges, a channel in said flanges defining a duct in the assembled position, means for introducing material in paste form into said duct so as to ensure fluid-tightness between said flanges, the opposite ends of the sleeve having jaws adapted to

be clamped against the cable at the time of assembly of the two half-shells, a chamber which communicates with said duct, said chamber being defined between at least two of said jaws, said chamber communicating with said duct by means of a





channel formed around the entire periphery of a said jaw which is adjacent to said chamber, said channel being formed at the bottom of a recess in said half-shells in which said jaw is fitted.

4,492,817

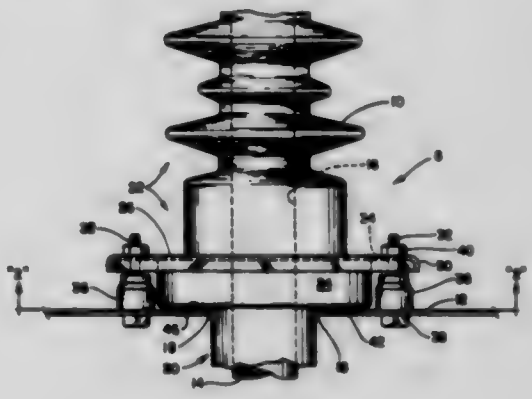
WATERTIGHT BUSHING AND BOLT MOUNTING ASSEMBLY

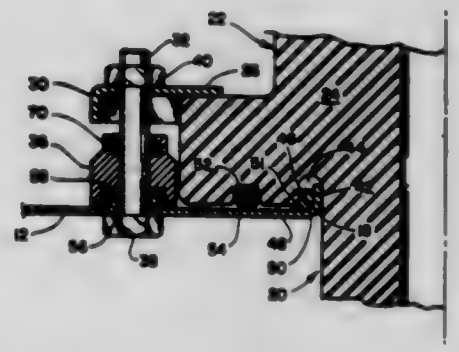
Donald W. Selby, Brentwood, Tenn., assignor to Square D Company, Palatine, Ill.

Filed Mar. 1, 1982, Ser. No. 353,785
Int. Cl.³ H01B 17/30
U.S. Cl. 174—152 R 12 Claims

1. A watertight bushing assembly comprising:
a wall member having an opening;
an upturned flange peripherally surrounding said opening and extending generally perpendicular to said wall member;
a bushing extending through said opening, said bushing including an elongate body portion and a collar portion surrounding said body portion and overlying said wall member around said opening, said collar portion having a circular first groove receiving said flange, said first groove being defined by a first surface coextensive with said body portion, a spaced apart second surface and a bridging portion extending between said first surface and said second surface;
a resilient first seal member received in said first groove intermediate said flange and said second surface, said flange abutting against said first surface; and
means securing the bushing to the wall member with the resilient first seal member resiliently squeezed within the first groove between the second surface and the flange.

7. A watertight bolt mounting assembly comprising:
a wall member including a plurality of bores, each having a surrounding lip;
a plurality of bolts substantially perpendicular to said wall member and passing through the respective bores in the wall member;
a plurality of resilient bolt seal members surrounding said lips and bores; and





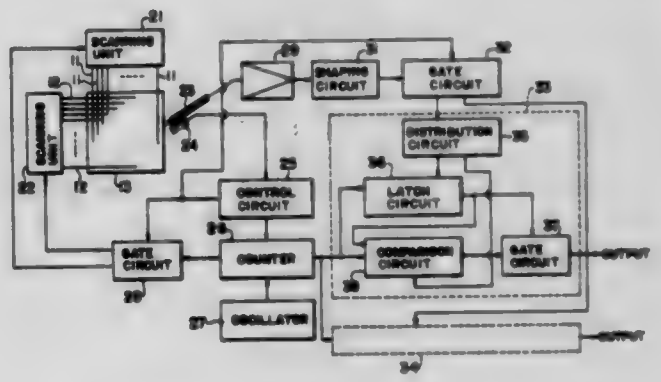
a plurality of nuts each having a hole therethrough receiving a respective bolt, each nut also having a cavity surrounding the hole receiving a respective lip, each nut being tightened onto its respective bolt to squeeze the respective bolt seal member between the nut and the respective lip.

4,492,818

TABLET INPUT APPARATUS

Kiyomi Abe, Soka, Japan, assignor to Pentel Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 15, 1982, Ser. No. 441,779
Claims priority, application Japan, Nov. 14, 1981, 56-182682
Int. Cl.³ G08C 21/00
U.S. Cl. 178—18 3 Claims



1. A tablet input apparatus comprising:
a tablet comprising a matrix having two sets of a group of conductors arranged in spaced relation along coordinate axes to define a plurality of lattice points, and a segment including at least one of the lattice points of said matrix, said segment being, as a separate key, associated with a symbol representative of said key;
a pair of scanning units respectively connected to said two

sets of a group of conductors to sequentially supply scanning pulses to said each set of a group of conductors;

an input pen for detecting said scanning pulses from the desired said segment of said tablet and producing corresponding scanning pulse detection signals; and

control circuit means for supplying a control signal to each of said pair of scanning units and for receiving the scanning pulse detection signals from said input pen thereby to specify said segment selected by said input pen to output a coordinate data signal,

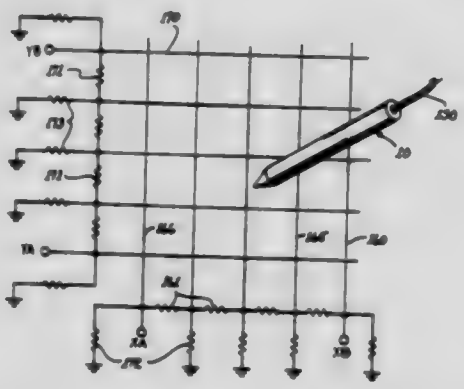
said control circuit means including a distribution control circuit operative when said input pen is placed in contact with a segment having at least two lattice points to detect scanning pulses supplied to at least two said conductors adjacent to said input pen to render at least one of the scanning pulse detection signals ineffective in specifying the selected segment, said distribution control circuit comprising a logical circuit actuated in cooperation with said control signal for controlling the passing of the scanning pulse detection signals.

4,492,819

GRAPHIC TABLET AND METHOD

James L. Rodgers, Mesa, and Billy C. Fowler, Scottsdale, both of Ariz., assignors to Kurta Corporation, Phoenix, Ariz.

Filed Dec. 30, 1982, Ser. No. 454,695
Int. Cl.³ G08C 21/00
U.S. Cl. 178—18 12 Claims



4. Apparatus for determining the position of an instrument on a surface comprising:

a. a plurality of grid conductors oriented in X and Y directions, all X conductors interconnected by resistors, said plurality of X conductors having a pair of terminals, a first X terminal connected to a first X conductor and a second X terminal connected to a last X conductor, all Y conductors interconnected by resistors, said plurality of Y conductors having a pair of terminals, a first Y terminal connected to a first Y conductor and a second Y terminal connected to a last Y conductor;

b. a signal generator for generating an electrical signal;

c. an instrument connected to said signal generator for transmitting said electrical signal through said surface into said grid to cause signals to appear at each of said terminals;

d. a detector for sequential connection to each of said terminals;

e. switch means for sequentially connecting said detector to said terminals;

f. means for ratioing the level of the signals at the X terminals and for ratioing the level of the signals at the Y terminals;

g. means responsive to the ratio of signal levels at the X terminals for generating a digital signal proportional to the instrument position in the X direction;

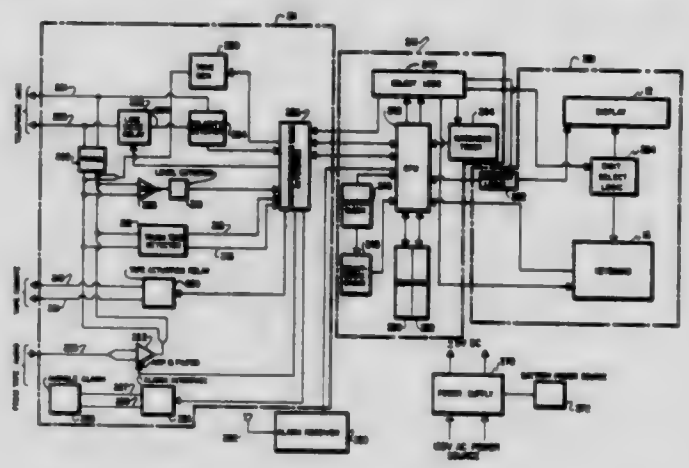
h. means responsive to the ratio of signal levels at the Y terminals for generating a digital signal proportional to the instrument position in the Y direction.

4,492,820

TELEPHONE ALARM SYSTEM

Lon H. Kennard, Heber; Duane O. Hall, Sandy, and Richard M. Bangerter, South Jordan, all of Utah, assignors to Salt Lake Communications, Inc., Salt Lake City, Utah

Filed Oct. 24, 1980, Ser. No. 200,368
Int. Cl.³ H04M 11/00
U.S. Cl. 179—5 P 51 Claims



1. A telephone alarm device for automatically transmitting messages over telephone communication systems, comprising:

means for storing at least one telephone number;

means for activating device operation;

means connectable to a telephone communication system for electrically connecting the telephone alarm device to said telephone communication system;

means connectable to the storing means for transmitting signals corresponding to selected telephone numbers onto the telephone communication system so as to call corresponding telephones;

means connectable to the telephone communication system for detecting if a telephone corresponding to a selected telephone number is answered, said answer detecting means indicating that said telephone is answered both upon detecting reversal of voltage polarity on the telephone communication system and, if no such voltage polarity reversal is detected, upon detecting a predetermined number of odd count signls on the telephone communication system;

means connectable to the telephone communication system for detecting incoming telephone calls; and

means, responsive to the answer detecting means, for transmitting signals corresponding to a message onto the telephone communication system after the answer detecting means indicates that a telephone corresponding to a selected telephone number is answered.

4,492,821

SUBSCRIBER CONNECTION CIRCUIT

Horst Kopetzky, Unterhaching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 3, 1982, Ser. No. 404,710
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1981, 3133934
Int. Cl.³ H04M 3/06, 3/22
U.S. Cl. 179—18 FA 10 Claims

1. A subscriber connection circuit for monitoring the state of excitement of subscriber loop interruptions due to dialing and clearance and for monitoring loop closure as a result of a call for a subscriber station which is indirectly connected across a feed battery by first and second conductive paths respectively connected in series with first and second conductors of a subscriber line, said subscriber connection circuit comprising:

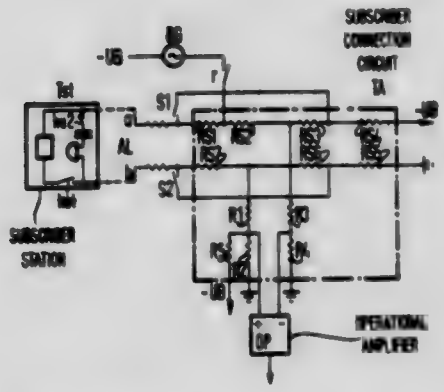
an analysis device including first and second inputs and an output and operable to provide a signal at said output which represents the difference and direction of voltages applied to said first and second inputs;

a plurality of resistors connected in series with junctions therebetween in each of said first and second conductive paths, a first of said junctions in said first conductive path serving as a ringing current input;

a first voltage divider connected between a second of said junctions in said first conductive path and said first input of said analysis device;

a second voltage divider connected between a third of said junctions in the second conductive path and said second input of said analysis device; and

switching means connected to said plurality of resistors and



operable to a first condition in which all of said resistors serve as feed resistors and to a second condition in which some of said resistors serve as feed resistors and others become parts of said first and second voltage dividers and provide ringing voltage components at said first and second inputs of said analysis device in response to ringing current,

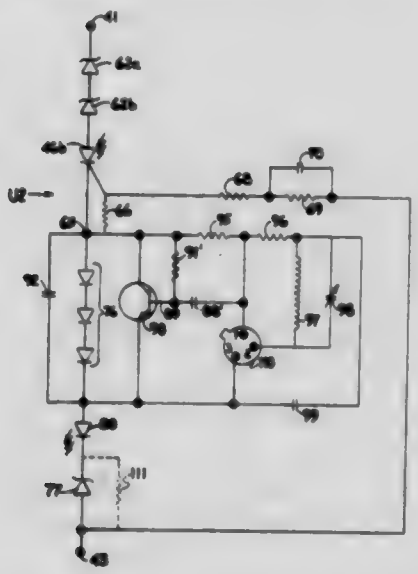
said resistors, said first, second and third junctions and said first and second voltage dividers selected to provide that the ringing voltage components compensate one another at said first and second inputs of said analysis device when the subscriber loop is open.

4,492,822

TELEPHONE HOLD CIRCUIT WITH IMPROVED SELF-LIMITING AMPLIFIER FOR INJECTING AN AUDIO SIGNAL DURING HOLD CONDITIONS

Robert J. Alderman, 3406 G-7 Ranch Rd., Ruskin, Fla. 33570

Filed Sep. 30, 1982, Ser. No. 430,945
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—81 R 4 Claims



1. In a telephone hold circuit of the type including an arrangement for injecting an audio signal from an audio signal source into a loop circuit conducting loop current, the improvement of a limiting output stage comprising in combination:

a transistor characterized by a pair of main terminals and control terminal;

a series connection of N formed biased diodes, N being an integer greater than zero, connected between said main terminals;

means operatively connecting said main terminals to said loop circuit to conduct said loop current when said hold circuit is in an active condition; and

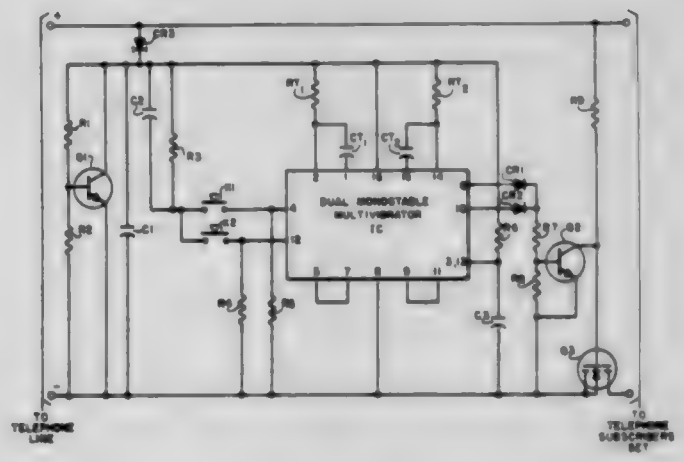
means connecting said control terminal to said audio signal source.

4,492,823

DUAL TIMING CIRCUIT FOR TELEPHONE SUBSCRIBER'S INSTRUMENT

Miranda L. James, Hartselle, and Albert Tester, Huntsville, both of Ala., assignors to GTE Business Communication Systems, Northlake, Ill.

Filed May 2, 1983, Ser. No. 490,770
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—81 R 10 Claims



1. A timing circuit for use with a subscriber's telephone instrument connected to a telephone line, said timing circuit comprising: a first monostable multivibrator operable for a first predetermined period of time and including a first input and first output; a second monostable multivibrator operable for a second predetermined period of time and including a second input and a second output; switching means connected to said telephone line; gating means connected between said switching means and said first and second outputs; first trigger means connected to said first monostable multivibrator, said first monostable multivibrator operated to generate a signal at said first output for a first predetermined period of time in response to the manual operation of said first trigger means; second trigger means connected to said second monostable multivibrator, said second monostable multivibrator operated to generate a signal at said second output for a second predetermined period of time in response to the manual operation of said second trigger means; said gating means operated in response to said signal at said first output to operate said switching means to simulate at said telephone line an "on-hook" condition for said first predetermined period of time and alternately said gating means operated in response to said signal at said second output to operate said switching means to simulate at said telephone line an "on-hook" condition for said second predetermined period of time.

4,492,824

SPEAKERPHONE LINEAR COMPARATOR

Steve W. Bell, Extontown, N.J., and Milton L. Embree, Reading, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 11, 1983, Ser. No. 522,106
Int. Cl.³ H04M *9/08*
U.S. Cl. 179—81 B 17 Claims

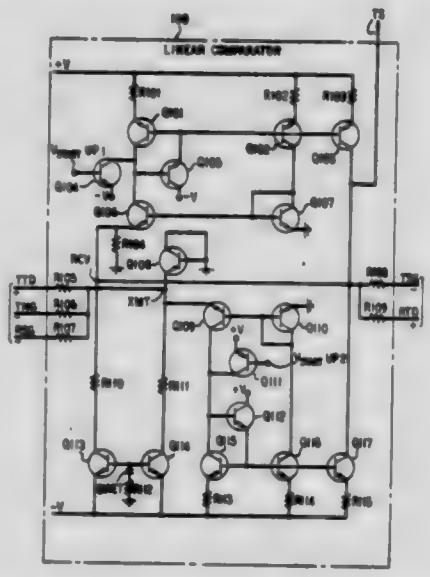
1. A linear comparator having a first group and a second group of input terminals, comprising

a first summing node for summing ones of signals inputted to said first group of terminals,

means connected to said first node for holding said first node at a constant potential and for accepting a first summed signal of a first polarity and for blocking a first summed signal of a second polarity,

a second summing node for summing ones of signals inputted to said second group of terminals,

means connected to said second node for holding said second node at a constant potential and for accepting a second summed signal of said second polarity and for blocking a second summed signal of said first polarity,



an output node,

an output terminal, and

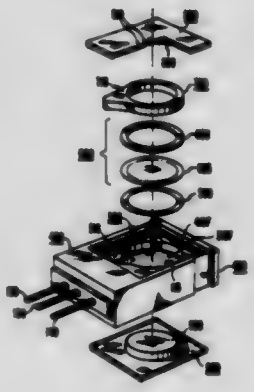
means connected to said output node operative for summing said unblocked signals and for supplying to said output terminal a signal representative of the difference between said unblocked signals and wherein said output node supplying a null signal to said output terminal during the absence of said unblocked signals.

4,492,825

ELECTROACOUSTIC TRANSDUCER

Alex M. Brzezinski; Harold J. Hershey, and Stephen R. Whitesell, all of Indianapolis, Ind., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 28, 1982, Ser. No. 402,613
Int. Cl.³ H04R *19/01, 19/00, 17/00*
U.S. Cl. 179—111 R 27 Claims



1. An electroacoustic transducer comprising:

a unitary discrete electrically conductive member from which both a plurality of leads and a backplate are formed;

a diaphragm positioned adjacent to the backplate; and

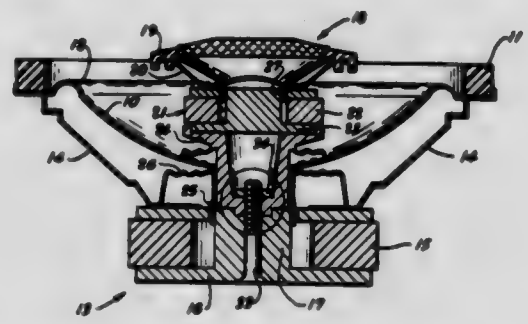
means for providing electrical interconnection between the backplate and at least one of the leads.

4,492,826

LOUDSPEAKER

Robert C. Chiu, Downey, Calif., assignor to R&C Chiu International, Inc., City of Industry, Calif.

Filed Aug. 10, 1982, Ser. No. 406,780
Int. Cl.³ H04R *1/24*
U.S. Cl. 179—115.5 PS 3 Claims



1. A high fidelity loudspeaker system of the type having a permanent magnet and a moving coil which drives the speaker cone of the largest speaker of the system and further being of the type which has at least one additional smaller speaker mounted above the speaker cone and supported from a support member which passes through the moving coil, wherein the improvement comprises:

a first support pedestal affixed to the permanent magnet of the largest speaker having the first of a set of non-circular keyed male and female interlocking members:

a second support pedestal affixed to the permanent magnet of at least one of the smaller speakers, said second support pedestal having the second of a set of keyed male and female interlocking members; and

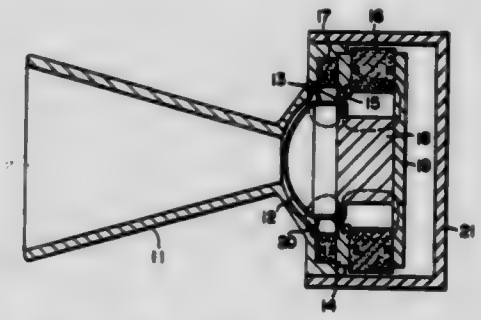
fastening means passing through said first support pedestal and terminating within said second support pedestal to hold the two pedestals together, whereby a second smaller speaker may be securely held above the cone of a larger speaker even when the assembly is subjected to the vibration of a motor vehicle.

4,492,827

HORN SPEAKER WITH REDUCED MAGNETIC FLUX LEAKAGE

Yoshihige Shintaku, Takarazuka, Japan, assignor to Ibuki Kogyo Co., Ltd., Osaka, Japan

Filed Jun. 27, 1983, Ser. No. 508,248
Claims priority, application Japan, Jan. 31, 1983, 58-12679
Int. Cl.³ H01F *7/00*
U.S. Cl. 179—115.5 SF 2 Claims



1. A horn speaker with reduced magnetic flux leakage, comprising:

a diaphragm having a voice coil wound around a tubular portion formed on the proximal end thereof;

a primary magnetic piece of an annular shape;

a primary yoke of an annular shape securely fixed on the front surface of the primary magnetic piece concentrically thereto;

a secondary yoke of a discoidal shape securely fixed on the rear surface of the primary magnetic piece concentrically thereto; and

a central pole piece extending from the front surface of the

secondary yoke, defining a gap between the inner periphery of the primary yoke and the periphery of the free end of the pole piece;

further comprising:

a secondary magnetic piece securely fixed on the front surface of the primary yoke concentrically thereto;

the primary and the secondary magnetic pieces opposing one another with the ends of a same polarity;

whereby magnetic flux leakage from the primary magnetic piece is reduced and the magnetic flux extending through the gap is mutually intensified by the primary and the secondary magnetic pieces.

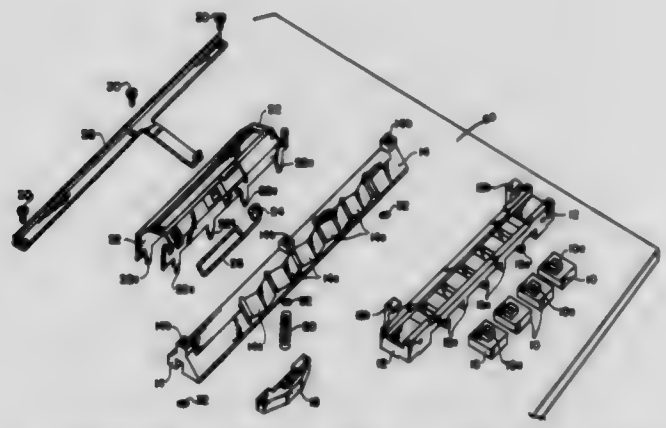
4,492,823

SLIDE SELECTOR SWITCH

Arthur T. Martinez, and Richard B. Klistofis, both of Long Beach, Calif., assignors to T.A.D. Avanti, Inc., Compton, Calif.

Filed Jul. 25, 1983, Ser. No. 517,004
Int. Cl.³ H01H 9/26
U.S. Cl. 200—5 R 7 Claims





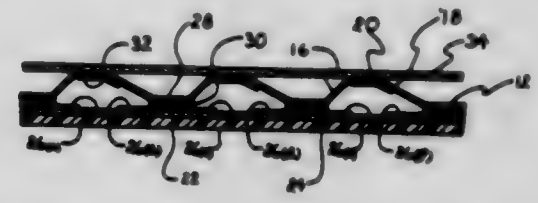
1. A mechanical selector switch assembly for selectively operating a series of pushbutton switches, said pushbutton switches being mounted adjacent to one another and each including an operating element movable from a first position to a second position, said selector switch assembly including: an elongated support extending over the series of pushbutton switches and including a plurality of spaced and parallel transverse members extending between successive ones of the switches; an elongated actuator mounted on the support for reciprocal movement therealong, said actuator having a series of detents formed thereon; a plunger mounted on the underside of said actuator for movement thereby from between one pair of said parallel transverse members to another to move the operating element of a corresponding one of said pushbutton switches to its second position as the plunger is positioned between the corresponding pair of transverse members; an elongated housing mounted on said support and extending over said actuator; and a spring-biased roller mounted on said housing in position successively to engage said detents as the actuator is reciprocally moved along the support.

4,492,829

TACTILE MEMBRANE KEYBOARD WITH ASYMMETRICAL TACTILE KEY ELEMENTS

Leo J. Rodrigue, Ipswich, Mass., assignor to Rogers Corporation, Rogers, Conn.

Continuation of Ser. No. 352,318, Feb. 25, 1982, abandoned. This application Feb. 13, 1984, Ser. No. 579,814
Int. Cl.³ H01H 13/70
U.S. Cl. 200—5 A 26 Claims



1. A tactile snap action switch element comprising:

a sheet of base material; and

at least one snap action protrusion having a first wall segment and a second wall segment formed in said sheet of base material, said protrusions being asymmetric with respect to a center axis thereof or a plane containing said center axis.

5. A keyboard comprising:

a sheet of base material;

a plurality of tactile elments formed in said sheet of base material, each of said tactile elements being a protrusion in said base material, each of said protrusions having a first wall segment and a second wall segment, said protrusions being asymmetric with respect to a center axis thereof or a plane containing said center axis;

first electrically conductive means associated with each tactile element; and

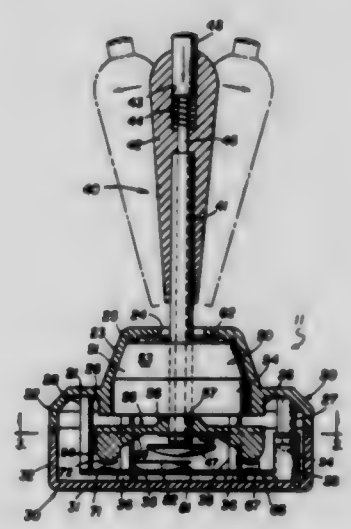
second electrically conductive means aligned with each of said tactile elements, said first electrically conductive means contacting said second electrically conductive means to complete an electric circuit upon actuation of each of said tactile elements.

4,492,830

JOYSTICK WITH SINGLE-LEAF SPRING SWITCH

Syng N. Kim, Hoffman Estates, Ill., assignor to Wico Corporation, Niles, Ill.

Filed Mar. 28, 1983, Ser. No. 479,317
Int. Cl.³ H01H 19/00
U.S. Cl. 200—6 A 15 Claims



1. In a joystick controller including a housing and handle means tiltably mounted on the housing for actuating direction control switches in the housing, the improvement comprising: a printed circuit board having an aperture therethrough and having printed thereon a fixed contact of a direction control

switch, a single resilient leaf spring contact member of the direction control switch mounted on said circuit board for movement between a normal open condition spaced from said fixed contact and a closed condition contacting said fixed contact, said leaf spring contact member having a tab projecting therefrom and disposed through said aperture for connection to circuitry on the opposite side of said circuit board, and actuator means disposed in the housing spaced from said printed circuit board and responsive to tilting movement of the handle means for directly engaging and selectively moving said leaf spring contact member to the closed condition thereof.

4,492,831

ELECTRICAL SWITCHGEAR

Martin C. Oakes, Hornbeam Cottage, White Gate, East Keswick, West Yorkshire, England

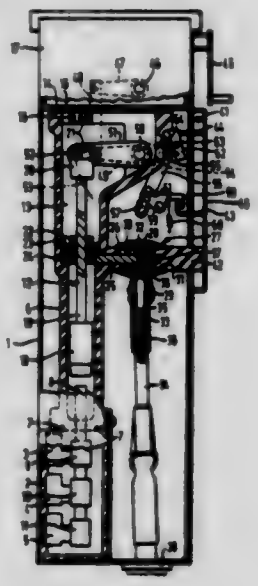
Filed Apr. 1, 1983, Ser. No. 481,274

Claims priority, application United Kingdom, Apr. 5, 1982, 8210054

Int. Cl.³ H01H 9/22

U.S. Cl. 200—50 A

7 Claims



1. Electrical switchgear comprising a chamber; input contacts, output contacts and earth contacts located within the chamber; switch means within the chamber for connecting the input and output contacts or for connecting the output and earth contacts; a conductor electrically connected to the output contacts and extending through a wall of the chamber; a connector unit located externally of the chamber and providing first contact means for connection to the conductor, second contact means for connection to an output conductor and third contact means for connection to a test unit; a housing surrounding the connector unit; a cover on the housing, the cover being openable to allow direct access to the third contact means of the connector unit; and interlock means coupled between the switch means and the cover to prevent opening of the cover unless the switch means connects the output and earth contacts.

4,492,832

HAND-CONTROLLABLE SWITCHING DEVICE FOR ELECTROSURGICAL INSTRUMENTS

Glenn N. Taylor, Longmont, Colo., assignor to Neomed, Incorporated, Boulder, Colo.

Filed Dec. 23, 1982, Ser. No. 452,450

Int. Cl.³ H01H 35/00, 13/08; A61B 17/36

U.S. Cl. 200—52 R

16 Claims

1. A hand-controllable electrical switching device comprising an elongated hollow body composed of electrically insulative material, an elongated electrical conductor positioned longitudinally within the hollow interior of said body and being hollow at one end, a tool inserted lengthwise through one end of said body into said hollow end of said electrical conductor for electrical connection therewith, and at least one electrical lead extending into said body in spaced relation to said electrical conductor; and an annular contact member disposed in said body in normally outer, spaced concentric relation to said electrical conductor and connected to said



electrical lead, and means resiliently mounting said annular contact member normally away from contact with said electrical conductor and said annular contact member being depressible under hand pressure at any point on the circumference of said body surrounding said annular contact member to cause said annular contact member to move into contact with said electrical conductor.

4,492,833

DOOR JAMB SWITCH

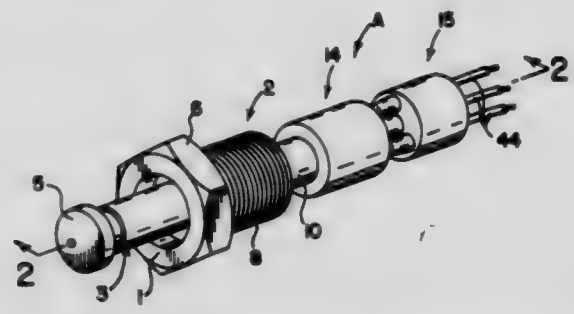
Michael W. Maleske, Troy, Mich., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Oct. 15, 1982, Ser. No. 434,523

Int. Cl.³ H01H 3/16

U.S. Cl. 200—61.78

18 Claims



1. A door jamb switch comprising:

a stationary member adapted to be fixedly secured onto a door jamb;

a plunger within said stationary member mounted for reciprocation along an operating axis by a door between a first position and a second position;

first and second support members with first and second electrical contacts respectively supported thereon, said first and second support members being mounted along said operating axis with said first support member fixed with respect to said stationary member and said second support member on said plunger and movable therewith so as to provide for relative movement of said support members with respect to each other between first and second positions in response to the reciprocation of the plunger, the first position having said contacts in biased engagement with each other and the second position having said contacts disengaged from each other; and

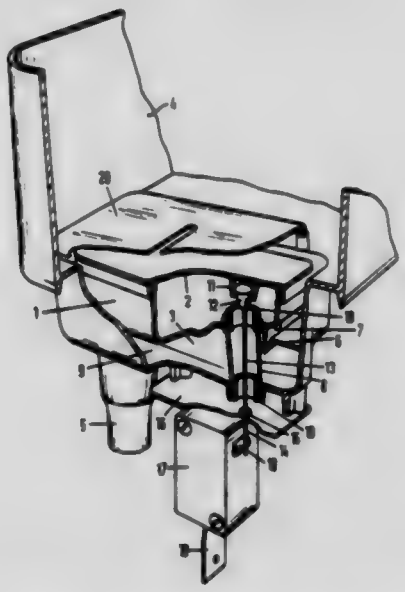
at least one of said first and second support members including a member of resilient material separate from its respective electrical contact which member yieldingly supports said respective electrical contact for angular displacement relative to said operating axis during engagement of said contacts with each other.

4,492,834

FLOAT CONTROL FOR A SWITCH

Gerard C. Smit, Amerongen, Netherlands, assignor to Smit-design B.V., Amerongen, Netherlands

Filed Apr. 13, 1982, Ser. No. 367,956
Claims priority, application Netherlands, Apr. 24, 1981, 8102042
Int. Cl.³ H01H 35/18
U.S. Cl. 200—84 R
6 Claims



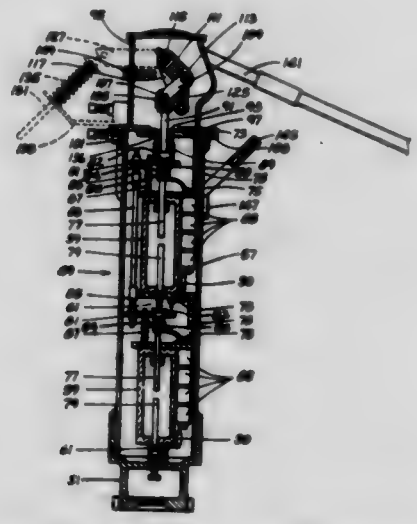
1. A float control assembly for a push-button switch, said assembly comprising a float chamber, a float having a fixed, substantially horizontally extending pivot axis being located within said float chamber; a two-armed lever having a fulcrum, one arm of said lever extending substantially at right angles to the said float pivot axis, said lever arm and said float being mutually connected within said float, said connection being spaced from said pivot axis and facilitating mutual pivoting movements, said lever being slideable at least at its fulcrum and the other lever arm actuating said push-button.

4,492,835

LOAD INTERRUPTER DEVICE

John L. Turner, Fairview Heights, Ill., assignor to Turner Electric Corporation, East St. Louis, Ill.

Filed Jul. 8, 1982, Ser. No. 396,457
Int. Cl.³ H01N 33/66
U.S. Cl. 200—144 B
17 Claims



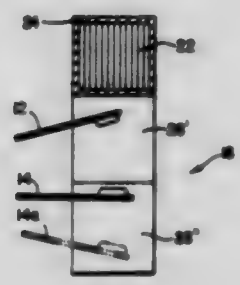
1. A load interrupter device for use with air break switch gear comprising an elongated housing of dielectric material, at least one vacuum bottle positioned within said housing and having a fixed and a movable contact axially aligned with respect to said fixed contact in the bottle, said axially movable contact being movable between a closed position engageable with said fixed contact and an open position spaced from said fixed contact, interrupter operating mechanisms including a mechanism housing secured to one end of said elongated housing, an operating shaft journaled in the walls of the mechanism housing and extending transversely of said elongated housing with its axis substantially co-planar with the axes of said fixed and movable contacts, an operating arm connected to the operating shaft, a first toggle link rotatably journaled on said operating shaft and extending outwardly therefrom to an opposite end, a second toggle link pivoted to the opposite end of said first toggle link at a location spaced from said operating shaft, means pivotally connecting the other end of said second toggle link to means for controlling the position of the movable contact relative to the fixed contact including first means to maintain the fixed and movable contacts in engagement when the first and second toggle members are in substantial alignment, second means operatively engageable with the pivotally connected other ends of the toggle members including means to cause the first and second toggle members to move out of alignment and to cause the movable contact to move away from the fixed contact, said last named means including a lost motion connection, and means on the mechanism housing engageable with the toggle links adjacent to the pivotally connected ends thereof to control and maintain the positions of the toggle links in their substantially aligned condition.

4,492,836

ARC MOTIVATING ASSEMBLY FOR CIRCUIT BREAKERS

Franco P. Pardini, Milan, and Francesco De Vizzi, San Giuliano, both of Italy, assignors to General Electric Company, New York, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,678
Claims priority, application Italy, May 25, 1982, 21463 A/82
Int. Cl.³ H01H 33/00
U.S. Cl. 200—144 R
6 Claims



1. An improved arrangement for enhancing arc blow out and extinction between the contacts of circuit breakers of the type containing an arc motivating assembly which includes two opposing columns of magnetic plates along said contacts, wherein the improvement comprises:

first and second insulating materials on said magnetic plates, said first insulating materials providing high dielectric strength and high arc resistance without low electrical resistance track formation, said second insulating material becoming vaporized upon the occurence of an arc between said contacts and emitting gas to assist in the blow out and extinction of said arc without maintaining its insulating properties after exposure to said arc.

4,492,837

GUIDE MEANS FOR THE MOVABLE CONTACT ROD OF A VACUUM INTERRUPTER

Donald W. Creech, Newton Square, and Joseph C. Sofianek, Broomall, both of Pa., assignors to General Electric Company, New York, N.Y.

Filed Mar. 21, 1983, Ser. No. 477,584
Int. Cl.³ H01H 33/66
U.S. Cl. 200—144 B
9 Claims

1. A vacuum type circuit interrupter comprising:

(a) an evacuated envelope comprising a cylindrical shell of

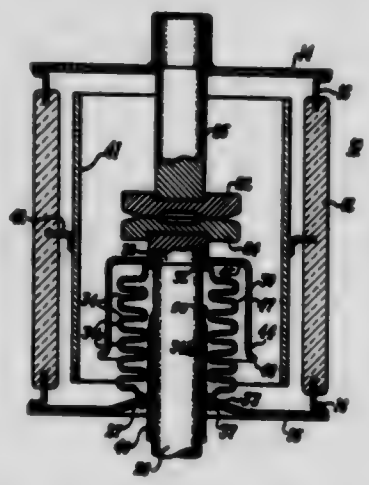
electrical insulating material and an end plate extending transversely of said shell and joined thereto in sealed relationship, said end plate having a central opening therein,

(b) a movable contact rod extending through said central opening generally axially of said shell,

(c) a contact joined to said rod at the inner end of the rod,

(d) a tubular metallic bellows surrounding said contact rod and having axially opposed inner and outer ends and inner and outer diameters, the bellows including a plurality of annular convolutions located at its inner diameter and at spaced locations along its length,

(e) means for joining the inner end of the bellows in sealed relationship to said contact rod, and means for joining the



outer end of the bellows in sealed relationship to said end plate,

(f) guide structure lining said central opening, fixed to said end plate, and located outside said convolutions of said tubular bellows,

(g) a sleeve of a material having a high degree of lubricity surrounding said contact rod and fixed thereto, said sleeve being disposed within said guide structure and within said tubular bellows, the sleeve fitting closely within said convolutions of the bellows so that the convolutions are capable of bearing against said sleeve to assist in guiding said rod, and

(h) said guide structure closely surrounding said sleeve and cooperating therewith for guiding said rod.

4,492,838

KEY SWITCH HAVING AN ACTUATOR INTEGRAL WITH THE RETURN SPRING

Kazutoyo Fukukura, Reading, Mass., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 24, 1983, Ser. No. 469,331
Int. Cl.³ H01H 1/06
U.S. Cl. 200—159 A 6 Claims

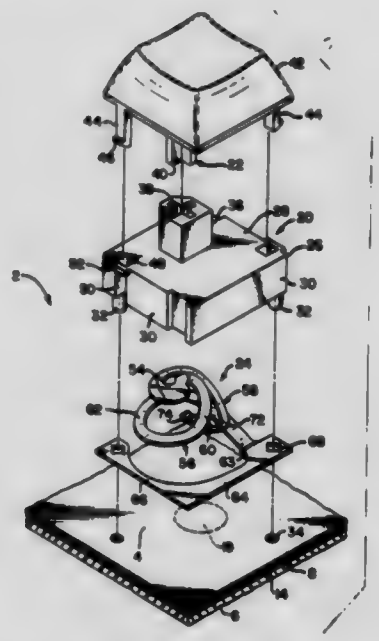
1. A key switch assembly of the type comprising a plunger, a return spring, and an actuator, the plunger being movable from an extended position to a depressed position with accompanying flexure of the return spring, the actuator being normally spaced from a switch contact zone and being movable against the contact zone in response to movement of the plunger from the extended position to the depressed position thereby to change the condition of the switch, the return spring being effective to return the plunger to the extended position with accompanying movement of the actuator away from the contact zone, the return spring and the actuator being provided as a one-piece member, the key switch assembly being characterized in that:

the one-piece member has a force-receiving portion which is in engagement with the plunger,

the return spring extends away from the force-receiving portion along a spiral path to a reaction portion which bears against a fixed support that is proximate to the switch contact zone,

the actuator extends away from the force-receiving portion towards the reaction portion, the actuator having a free end and having a contact portion on the free end which is engageable with the switch contact zone, the contact portion being between the force-receiving portion and the reaction portion when the plunger is in its extended position,

the return spring extending along a first spiral path from the



force-receiving portion, the radius of the first spiral path increasing along at least a portion of the first spiral path, the actuator extending along a second spiral path from the force-receiving portion to a reversed portion adjacent to its free end,

the actuator being entirely between adjacent turns of the return spring whereby

upon movement of the plunger from the extended position to the depressed position, the return spring is resilienty flexed and the contact portion of the actuator is moved against the contact zone thereby to change the condition of the switch.

4,492,839

THERMAL TREATMENT APPARATUS

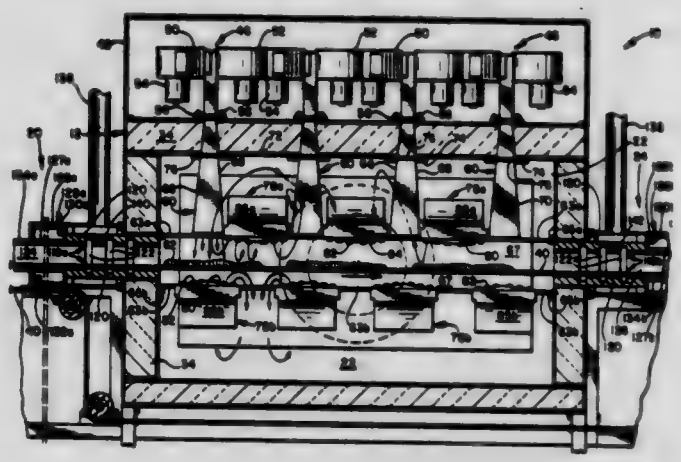
Donald P. Smith, P.O. Box 340530, Dallas, Tex. 75234

Continuation-in-part of Ser. No. 177,174, Aug. 11, 1980, abandoned, and Ser. No. 341,640, Jan. 22, 1982, which is a continuation-in-part of Ser. No. 286,060, Jul. 22, 1981, Pat. No. 4,409,453, which is a continuation of Ser. No. 20,968, Mar. 16, 1979, abandoned, which is a division of Ser. No. 687,982, May 19, 1976, Pat. No. 4,154,861, said Ser. No. 177,174, is a continuation of Ser. No. 38,129, May 11, 1979, abandoned. This application Aug. 13, 1982, Ser. No. 407,943
Int. Cl.³ H05B 9/06
U.S. Cl. 219—10.55 R 14 Claims

1. Apparatus for thermally treating food products, said apparatus comprising:

a heating section comprising means for supporting a food product; at least one microwave heating means; at least one impingement heating means, said impingement heating means further comprising a plurality of jet fingers adapted to direct a plurality of columnated jets of a temperature controlled gaseous fluid in substantially perpendicular relation against the surface of the food product; and means within the heating section for controlling the equilibrium relative humidity at the surface of the food

product so as to avoid localized overheating and over-browning of the food product; and



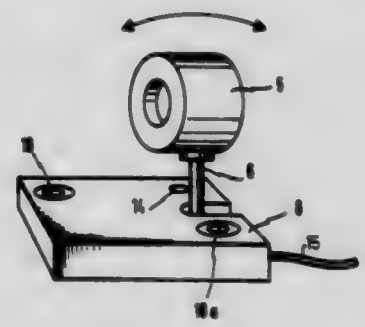
means for alternately imparting thermal energy to said food products from said microwave heating means and from said impingement heating means.

4,492,840

APPARATUS FOR INDUCTIVELY HEATING METALLIC MEDICAL AND DENTAL TOOLS

August Lex, Enterrüihlstr. 3, 8221 Grabenstätt, Fed. Rep. of Germany

Filed Jun. 25, 1982, Ser. No. 392,150
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1980, 3007982
Int. Cl.³ H05B 6/14; A61C 19/00
U.S. Cl. 219—10.57 6 Claims



1. In an apparatus for heating metallic medical and dental laboratory tools, instruments and implements by means of exposure to a high frequency electrical field and including an electrically conductive induction coil embedded in an insulator with an annular cavity formed therewithin, said apparatus further comprising:

(a) said induction coil being pivotally secured to a stationary base by means of a pivot arm linkage;

(b) a light emitting diode for indicating the operational status of a circuit providing power to said induction coil is visibly mounted on the outer surface of said stationary base;

(c) said induction coil being arranged for mechanical and electrical coupling to a source of alternating current power; and

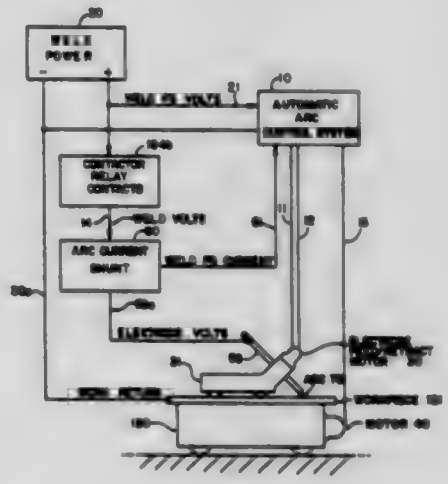
(d) a photosensitive switching circuit and mechanism being provided for controlling the energization of said alternating current power source, said photosensitive switching circuit and mechanism including two photoresistive elements with the first of said photoresistive elements being installed within said stationary base such that it continues to be exposed to light when work is introduced into the confines of said induction coil, and with the second of said photoresistive elements being installed within said stationary base and adjacent said annular cavity such that it is at least partially obstructed from light when work is introduced and present in the confines of said induction coil.

4,492,841

CONSTANT POTENTIAL/CONSTANT CURRENT AUTOMATIC CONTROL SYSTEM FOR AIR-CARBON ARC METAL REMOVAL

Henry B. Delius, Lancaster, Ohio, assignor to Arcair Company, Lancaster, Ohio

Filed Apr. 18, 1983, Ser. No. 485,804
Int. Cl.³ B23K 9/10
U.S. Cl. 219—69 R 22 Claims



1. A control system which senses arc current and arc voltage and controls the feed of a carbon electrode in an air-carbon arc metal removal system having arc power produced by either a constant potential power source or a constant current power source comprising:

means for sensing the magnitude of the arc current and providing an arc current command signal;

means for sensing the magnitude of the arc voltage and providing an arc voltage command signal;

feedback control means for controlling the feed of the carbon electrode toward and away from a workpiece in accordance with an applied input signal; and

switching means for alternately applying as said input signal to said feedback means (1) said arc current command signal when said constant potential source provides weld power thereby to maintain the arc current at a predetermined value, or (2) said arc voltage command signal when said constant current source provides weld power thereby to maintain the arc voltage at a predetermined value.

4,492,842

PROCESS OF BRAZING USING LOW TEMPERATURE BRAZE ALLOY OF GOLD-INDIUM TIN

Nicholas G. Koopman, Hopewell Junction, and Vincent C. Marcotte, Lagrangeville, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 8, 1983, Ser. No. 521,286
Int. Cl.³ C22C 5/02
U.S. Cl. 219—85 M 7 Claims

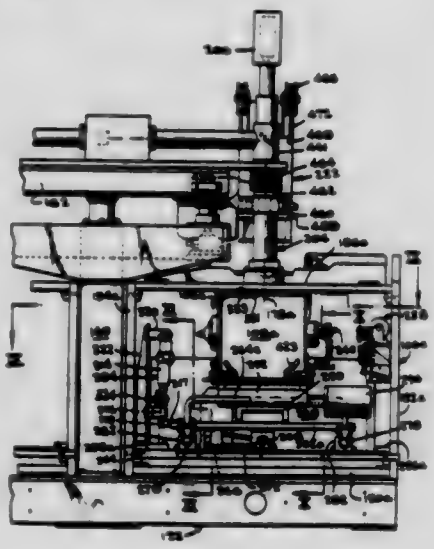
1. In a process for joining chips to a nickel-plated circuit on the surface of a multi-layer ceramic structure at a temperature of about 300° to 360° C. wherein brazed joints are provided prior to said joining, the improvement which comprises forming said braze joints with a brazing alloy consisting essentially of gold, indium and tin, said brazing alloy not undergoing even partial melting at a temperature below about 360° C.

4,492,843

APPARATUS AND METHOD FOR LASER MACHINING IN A NON-REACTIVE ENVIRONMENT

Richard A. Miller, North Huntingdon, and Gerald G. Leeman, Pleasant Hills Boro, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 1, 1982, Ser. No. 414,242
Int. Cl.³ B23K 27/00
U.S. Cl. 219—121 LC 30 Claims



1. Welding apparaus for providing a welding environment about a work piece to be welded, the welding environment being of a substantially pure non-reactive gas and substantially free of any gas reactive to the material of the work piece, said welding apparatus comprising:

(a) a welding chamber for receiving the work piece and for establishing the welding environment about the work piece, said welding chamber having an input port means disposed at a bottom portion thereof and output port means disposed at a top portion of said welding chamber, the remainder of said welding chamber defining a gas tight chamber for preventing the exchange of the non-reactive gas within the said welding chamber and any reactive gas outside of said welding chamber;

(b) means coupled to said input port means for providing the non-reactive gas at a controlled flow rate into said bottom portion of said welding chamber, said non-reactive gas having a high density relative to any reactive gas to be evacuated from said welding chamber; and

(c) diffuser means disposed at the bottom portion of said welding chamber in operative relation to said input port means for distributing the non-reactive gas substantially evenly over the cross section of said welding chamber, whereby a uniform, laminar flow of the non-reactive gas is formed about the work piece and any reactive gas is aspirated from said welding chamber through said output port means; and

wherein said diffuser means is disposed across a portion of the cross sectional area of said welding chambers sufficient to establish the desired laminar flow of the non-reactive gas about the work piece,

wherein there is further included means for mounting the work piece within said welding chamber intermediate said input port means and said output port means,

wherein there is included means for generating and forming a welding beam, and means for moving said mounting means and the work piece mounted thereby with respect to the welding beam, and

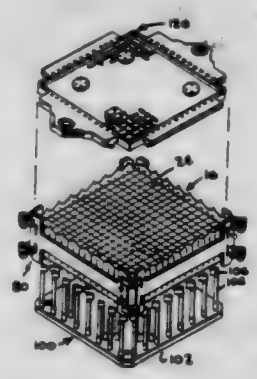
wherein there is further included second input port means associated with said mounting means and said flow providing means, whereby said flow providing means directs a second controlled flow of the non-reactive gas into an intermediated portion of said welding chamber and about said mounting means and the work piece.

4,492,844

WELDING PLATES FOR A FUEL ROD GRID

Richard M. Kobuck, Delmont; Richard A. Miller, North Huntingdon; Ralph W. Kalkbrenner, Irwin, all of Pa.; John S. Kerrey, and Robert Duncan, both of Columbia, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 1, 1982, Ser. No. 414,265
Int. Cl.³ B23K 27/00
U.S. Cl. 219—121 LC 16 Claims



1. A vane side welding plate for use in welding the vane side of a grid comprising sets of spaced, parallel and slotted straps, said straps of one set being substantially perpendicular to the straps of the other set, and the straps of each set intersecting and entering the slots of the straps of the other set, said straps having on one side of said grid resilient vanes extending at a small angle to the strap from which it extends and resiliently urged to a larger angle, said welding plate comprising:

i. means for holding the straps of each set closely parallel and for holding the straps of one set closely perpendicular to the straps of the other set, and

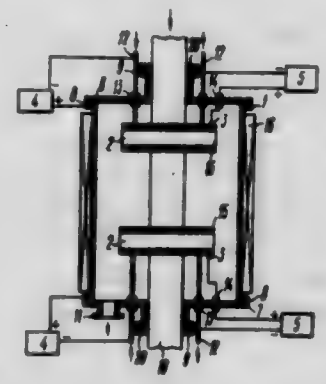
ii. means for holding said vanes at said small angle to said straps.

4,492,845

PLASMA ARC APPARATUS FOR APPLYING COATINGS BY MEANS OF A CONSUMABLE CATHODE

Gennady V. Kljuchko, prospekt Kurchatova, 27, kv. 68; Valentin G. Padalka, ulitsa Dmitrievskogo, 10, kv. 122; Leonid P. Sablev, ulitsa P. Morozova, 3, kv. 3, and Rimma I. Stupak, ulitsa Valtera, 12, kv. 32, all of Kharkov, U.S.S.R.

Filed Sep. 9, 1982, Ser. No. 416,310
Int. Cl.³ B23K 9/00; C23C 15/00
U.S. Cl. 219—121 P 14 Claims



1. A plasma arc apparatus for applying coatings comprising:

(a) a working anode chamber of a non-magnetic metal, made in the form of a pipe of a uniform cross-section having a predetermined axial length and intended for work to be disposed therein and to be subjected to a plasma spraying process;

(b) an annular consumable cathode having a central opening for work to be installed therewithin in a working position within said working anode chamber and having a cross-sectional configuration, which substantially coincides

with the cross-sectional configuration of said pipe which forms said chamber, said cathode being disposed within the latter in coaxial relationship therewith and having a lateral evaporation surface that faces said anode chamber and is of an axial length less than the axial length of the anode chamber;

(c) a starting electrode serving to start an arc discharge;

(d) a direct current source for feeding electrical power to form an arc between said anode and cathode, said direct current source being connected with said anode and cathode;

(e) a pulsed current source for starting the arc, said pulsed current source being initially connected with said cathode and the starting electrode;

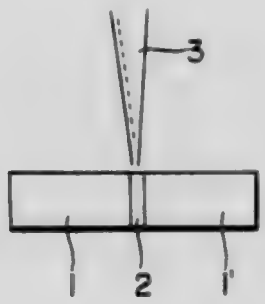
(f) a magnetic system for diverting charged particles of plasma produced in said working anode chamber from the surface of the anode chamber towards the working being treated, said system being mounted on the outer side of said pipe forming said working anode chamber.

4,492,846

PROCESS FOR THE PRODUCTION OF BONDED HARD ALLOYS

Akio Hara; Masaya Miyake, and Shuji Yaza, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 8, 1982, Ser. No. 433,533
Claims priority, application Japan, Oct. 15, 1981, 56-165440
Int. Cl.³ B23K 27/00
U.S. Cl. 219—121 LC 5 Claims



1. A process for the production of bonded hard alloys, which comprises inserting a sheet of a material selected from the group consisting of an iron group metal and an alloy thereof as a filler metal between the surfaces, to be bonded, of at least one kind of hard alloy selected from the group consisting of carbides, nitrides, carbonitrides and carboxynitrides of Group 4a, 5a and 6a elements of the Periodic Table and solid solutions thereof, and applying a high energy beam to at least part of the sheet to melt and solidify the sheet in a slit form and thereby bond the hard alloys together.

4,492,847

MANIPULATOR WELDING APPARATUS WITH SENSING ARRANGEMENTS FOR WELD SLAM TRACKING

Ichiro Masaki, Utica, Mich.; Burt H. Shulman, Salt Point, N.Y., and Robert R. Gorman, Newtown, Conn., assignors to Unimation, Inc., Danbury, Conn.

Filed Sep. 30, 1981, Ser. No. 307,174
Int. Cl.³ B23K 9/12
U.S. Cl. 219—124.34 6 Claims

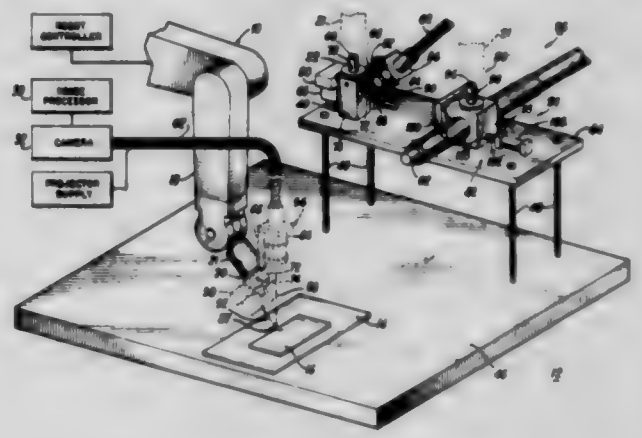
1. An image sensing arrangement for manipulator welding apparatus comprising:

sensing means including a projection source and an image sensing unit, the manipulator apparatus including a manipulator arm controllable in a plurality of axes and having a hand at one end of the arm, said sensing means being carried by the hand so as to be movable in said plurality of axes;

a generally elongated welding torch carried by the hand;

means for mounting said welding torch to the manipulator arm;

means for rotatably mounting said sensing means with respect to the hand and said welding torch, the axis of rotation of said sensing means being substantially perpendicular to the longitudinal axis defined by said welding torch; and



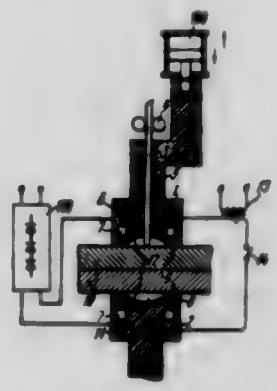
means for selectively rotating said sensing means between an operative sensing position and an inoperative position, said welding torch performing welding with said sensing means in said inoperative position, said welding torch being inoperative with said sensing means in said operative position.

4,492,848

SPOT ARC WELDING APPARATUS

Genrikha Strokalov; Anatoly S. Shtyrin, both of Moscow; Viktor I. Matveev, Domdedovo; Mikhail A. Maryanchik, and Genrikh S. Garibov, both of Moscow, all of U.S.S.R., assignors to Spetsialnoe Konstruktorsko-Tekhnologicheskoe Bjuro "Energomontazhproekt", Moscow, U.S.S.R.

Division of Ser. No. 213,386, Dec. 5, 1980, Pat. No. 4,396,821.
This application Mar. 30, 1983, Ser. No. 480,228
Int. Cl.³ B23K 9/00
U.S. Cl. 219—127 19 Claims



1. An apparatus for spot arc welding comprising:

a consumable electrode;

a pair of contact electrodes arranged opposite to each other, at least one of said contact electrodes having a central hole to accommodate said consumable electrode;

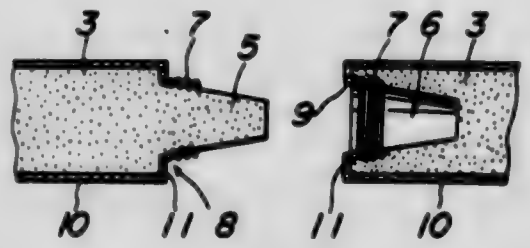
said contact electrodes each having surfaces contacting a workpiece to be welded and each being provided with a central concave portion whose shape corresponds to a calculated shape of weldment reinforcements at both sides of a planned spot welded joint; and

means associated with said contact electrodes for preheating thereof.

4,492,849
METHOD OF WELDING STEEL STRIP
Jack M. Biagay, Freeport, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.
Filed May 26, 1981, Ser. No. 267,176
Int. Cl.³ B23K 9/02, 20/24
U.S. Cl. 219—137 WM 16 Claims

1. A method of autogenous welding sections of steel strip comprising the steps of:
- applying to at least one edge of said strip sections a material selected from the group consisting of titanium, titanium alloys, aluminum and manganese, by rubbing a solid piece of said material against said edge,
- placing said strip sections to be welded in a desired relative position, and
- welding said strip sections, whereby said material is applied in amounts sufficient to effect a chemical change in said steel strip in the weld zone to resist undesired hot cracking in said weld.

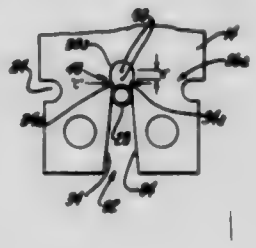
4,492,850
CARBON ROD ASSEMBLY FOR ARC GOUGING AND BLASTING OF METALLIC ARTICLE
Haruo Yasuda, Otsuki; Kunihiko Yoshida, Motosu; Yasuro Iwai, Otsuki, and Takayuki Mimatani, Yoro, all of Japan, assignors to Ibiden Co., Ltd., Japan
Filed Feb. 26, 1982, Ser. No. 352,758
Claims priority, application Japan, Mar. 3, 1981, 56-29348
Int. Cl.³ B23K 35/04
U.S. Cl. 219—146.21 8 Claims

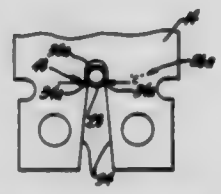


1. A carbon rod assembly for arc gouging and blasting of a metallic article, comprising:
- a first carbon rod piece having a substantially frusto-conical axial projection formed at one end thereof, the diameter of said projection being smaller than the diameter of said first carbon rod piece at said one end thereof and decreasing as said projection extends away from said first carbon rod piece, said projection having from one-half to three turns of external screw threads formed on a foot portion thereof, and a conductive metallic coating continuously covering the outer periphery of said first carbon rod piece and said external screw threads; and
- a second carbon rod piece having a frusto-conical axial socket hole formed at an open end thereof, the diameter of said socket hole being smaller than the diameter of said second carbon rod piece, said socket hole having from one-half to three turns of internal screw threads formed adjacent said open end portion thereof, and a conductive metallic coating continuously covering the outer periphery of said second carbon rod piece and said internal screw threads;

wherein said substantially frusto-conical axial projection and said frusto-conical axial socket hole have the same taper, the axial length of said projection being smaller than the axial depth of said socket hole, whereby said first and second carbon rod pieces are adapted to be firmly joined together by inserting said projection into said socket hole and rotating said carbon pieces relative to each other.

4,492,851
SWAP ACTION ARRANGEMENT MOUNTING AN ELECTRIC DEFROSTER HEATER TO A FINNED REFRIGERATION UNIT
Charles R. Carr, Manitou Beach, Mich., assignor to Bramway, Inc., Adrian, Mich.
Continuation-in-part of Ser. No. 221,126, Dec. 29, 1980, abandoned. This application Aug. 25, 1982, Ser. No. 411,219
Int. Cl.³ H05B 3/40; F25D 21/08; F28F 1/30
U.S. Cl. 219—201 2 Claims



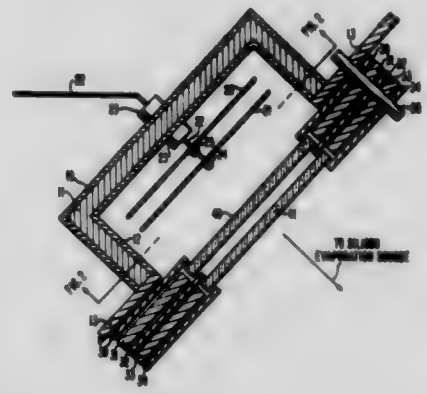


1. A refrigeration unit of the type comprising a plurality of spaced, parallel, metal fins, at least one refrigerant tube extending through the fins and in mechanical engagement therewith, and a rod-like heating element for defrosting said unit, wherein the improvement comprises:
- an entry slot in at least one of said fins extending inwardly from a peripheral edge thereof and through which said heating element may be introduced into said fin;
- said entry slot being inwardly tapered to define a narrowed deformable throat at the inner end of said slot, said throat being defined by a pair of opposing edges of said cutout, said edges being spaced apart a distance marginally less that the outside cross sectional dimension of said heating element thereby to present resistance to the passage of said heating element through said throat; and
- a notch in said fin communicating with said throat and within which said heating element is normally held, said notch having a first dimension parallel to said entry slot which is substantially greater that the diameter of said heating element and a second dimension transverse to said entry slot which is substantially equal to the diameter of the heating element to allow said heating element to clear said throat upon insertion of said heating element into said notch but to be firmly held in said notch.

4,492,852
GROWTH SUBSTRATE HEATING ARRANGEMENT FOR UHV SILICON MBE
Sean N. Finegan, Aberdeen; James H. McFee, East Windsor, and Robert G. Swartz, Highlands, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Feb. 11, 1983, Ser. No. 465,800
Int. Cl.³ H05B 1/00; H01L 21/20
U.S. Cl. 219—405 6 Claims

1. In an evacuable chamber adapted for use in a molecular beam epitaxy system, a substrate heating arrangement including filament means responsive to an applied current for generating thermal energy, container means for forming an enclosure around said filament means, said container means includ-

ing an aperture on at least one surface, first and second semiconductor substrates, said first semiconductor substrate regulating the temperature on the surface of said second semiconductor substrate to be not greater than a predetermined temperature for any current applied to said filament means, said



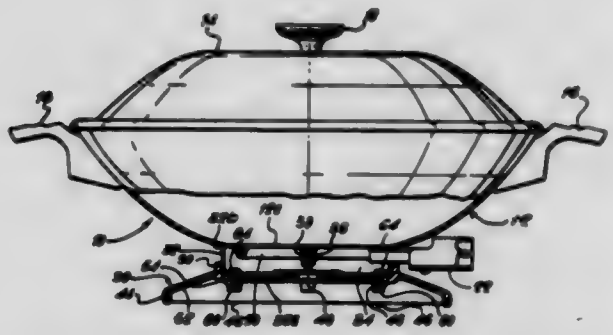
second semiconductor substrate being a growth substrate, and substrate support means for holding said first and second substrates in a substantially parallel, spaced-apart relationship with respect to each other, said substrate support means being mounted to said container means at said aperture.

4,492,853

ELECTRICALLY HEATED COOKING OR FOOD HEATING DEVICES

Yanta Lam, Kowloon, Hong Kong, assignor to Meyer Manufacturing Company, Limited, Kwun Tong, Hong Kong

Filed Jun. 8, 1983, Ser. No. 502,314
Int. Cl.³ F27D *11/02*
U.S. Cl. 219—432 5 Claims



1. An electrically heated cooking or food heating device comprising

a metal food container having a base and upstanding sides,

a sheathed electrical heating element attached to the underside of the base for heating food in the container, said heating element having terminal connections,

a stud fixed to the approximate centre of the underside of the base and extending downwardly therefrom,

a pan-shaped metal cover defining with the underside of said base an enclosed region for the electrical heating element,

a central hole through that cover,

a locking device extending through said central hole and fixed to said stud to hold said cover in place, and

a stand of synthetic plastics material attached to the underside of said cover, said stand comprising:

a circular ring having an outer periphery and an inner periphery,

a downwardly depending flange approximately at the outer periphery, said downwardly depending flange having a lower edge for supporting said device on a flat surface, a portion adjacent said inner periphery on which the underside of said cover rests,

means for joining said cover to said stand, and

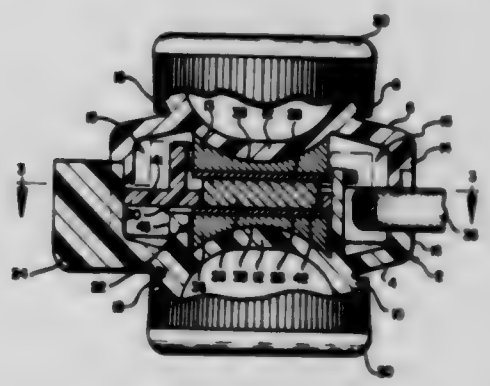
an intermediate upstanding circular flange defining a central open-topped bowl-shaped region in which the lower end and base of said pan-shaped cover is positioned.

4,492,854

CONTACT LENS DISINFECTOR

Francis E. Ryder, and Scott Ryder, both of Arab, Ala., assignors to Ryder International Corporation, Arab, Ala.

Filed Nov. 15, 1983, Ser. No. 552,170
Int. Cl.³ A61L *2/04*; H05B *1/02*
U.S. Cl. 219—521 11 Claims



1. A contact lens disinfector comprising: a casing formed from an electrically insulative material and defining a pair of wells at opposite ends thereof for receiving contact lenses and a quantity of disinfecting solution, each well opening to an end surface of the casing, and removable cover means attachable to said casing at each end thereof to overlie the associated well opening, each said well having an arcuately shaped end wall opposite to said end surface, a pair of metallic heat sink elements in said casing exterior of said wells and each heat sink element having a surface disposed against an associated end wall surface, electrical heater means intermediate said heat sink elements and in heat conductive engagement with said heat sink elements for supplying heat to each heat sink element, said heater means being of a type having an electrical resistance that increases upon increases of temperature above a predetermined temperature to limit the maximum operating temperature of the heater means, power supply leads in electrical circuit-forming relation with said heater means and extending from said heater means to the exterior of said casing for connection to a source of power, the surface of each end wall and the associated heat sink element disposed thereagainst being of similar arcuate configuration for conformable engagement to provide intimate surface-to-surface contact between each heat sink element and its associated end wall.

4,492,855

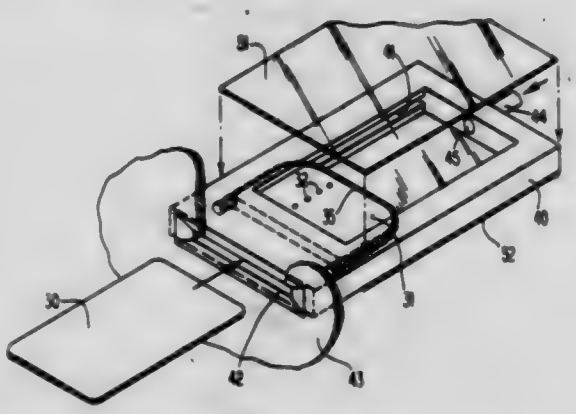
BADGE READER WITH IMPROVED SLIDE ARRANGEMENT

John S. Garczynski, Norristown; Frank J. Reed, Philadelphia; Jeffrey C. Hahn, and John J. Debcon, both of Oreland, all of Pa., assignors to Peripheral Dynamics, Inc., Plymouth Meeting, Pa.

Filed Jul. 9, 1982, Ser. No. 396,936
Int. Cl.³ G06K *7/10*
U.S. Cl. 235—458 22 Claims

1. Apparatus for reading a data encoded badge, comprising a channel for receiving said badge within said apparatus, said channel permitting said badge to move within it, an opaque slide having a given number of transparent clock-holes therein and adapted to be moved within said channel, paired optical source and detector means disposed on opposite sides of said slide for generating clock signals to detect movement of said clock-holes there between, means for maintaining said badge and said slide in abutting relation while said badge is being moved in a given direction within said apparatus, and means for reading data from said badge while said badge is moved in said given direction, said reading means incorporating means for utilizing said clock signals for synchronizing said data

reading with the movement of said clock-holes, wherein plural pairs of optical source and detector means are provided to detect movement of given clock-holes there between and



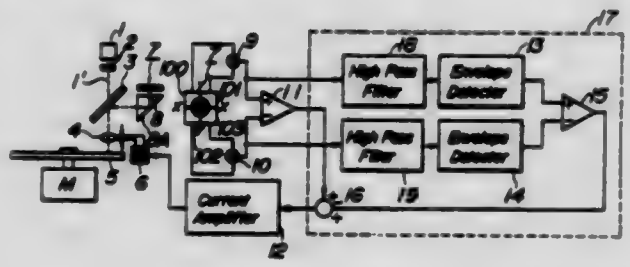
generate plural clock-signals therefrom such that a number of said clock signals greater than the number of said clock-holes is generated by movement of said badge in said given direction, thereby reducing the overall length of the apparatus.

4,492,856

APPARATUS FOR EFFECTING FOCUS CONTROL FOR USE IN OPTICAL DISC PLAYER

Kenji Kimura, Tachikawa, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed May 5, 1982, Ser. No. 375,305
Claims priority, application Japan, May 14, 1981, 56-71341
Int. Cl.³ G01J 1/20
U.S. Cl. 250—201 6 Claims



1. An apparatus for effecting a focus control for use in an optical disc player in which a light beam is projected onto an information track having a crenellated pit construction recorded on an optical disc as a light spot and a light beam modulated by said pit construction is made incident upon photoelectric converting means to produce an information signal, comprising:

means for introducing at least a part of said modulated light beam onto a photodetector having a plurality of light receiving regions divided in a given direction;

means for deriving a difference between output signals from said light receiving regions to produce a first focus information signal on a basis of a variation in amount of the light beam impinging upon the light receiving regions;

means for detecting, from the output signals of said plurality of light receiving regions of the photodetector, signal components modulated by the pit construction;

means for deriving a difference between said signal components to produce a second focus information signal on a basis of a variation in level of the signal components;

means for mixing said first and second focus information signals to produce a composite focus information signal; and

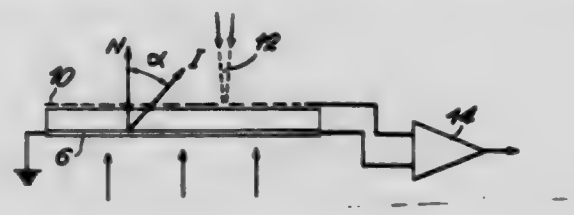
means for effecting a focus control in response to said composite focus information signal to maintain the light spot focused on the optical disc.

4,492,857

PYROELECTRIC DETECTOR AND VIDICON

Marie-Thérèse Averbuch, Meylan; André Durif-Varambon, Varges; Sylviane Gentilot, Grenoble; Ion F. Nicolau, Saint Nazaire les Eymes, and Jean C. Peuzin, Eybens, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 7, 1982, Ser. No. 415,702
Claims priority, application France, Sep. 9, 1981, 81 17075
Int. Cl.³ H01J 40/14
U.S. Cl. 250—211 R 8 Claims



1. A pyroelectric radiation detector comprising a dielectric material inserted between two parallel electrodes, said material being a monodomain ferroelectric monocrystal having a polar axis, wherein the said material is ammonium phosphotellurate of chemical formula:

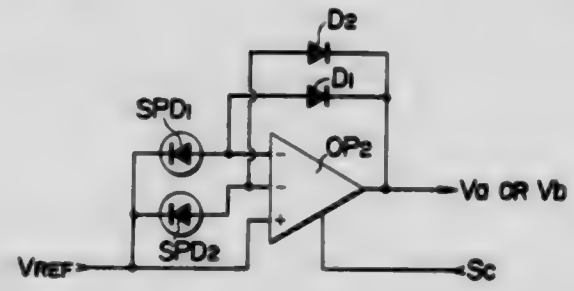
$$Te(OH)_6, 2[NH_4H_2PO_4], [(NH_4)_2HPO_4].$$

4,492,858

PHOTOMETRIC CIRCUIT HAVING A PLURALITY OF PHOTOELECTRIC TRANSDUCER ELEMENTS CAPABLE OF BEING SELECTIVELY ENABLED FOR PHOTOMETRY

Kazunori Mizokami, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 7, 1982, Ser. No. 385,778
Claims priority, application Japan, Sep. 11, 1981, 56-144118
Int. Cl.³ G03B 7/083
U.S. Cl. 250—214 P 10 Claims



1. A photometic circuit having a plurality of photoelectric transducer elements each capable of being selectively enabled for photometry, comprising:

a first operational amplifier including a plurality of differential amplifiers, each differential amplifier having a pair of input terminals and an output terminal, the pairs of input terminals of each of said differential amplifiers respectively defining a set of inverting and non-inverting input terminals of the operational amplifier and the output terminals of said differential amplifiers being coupled in common and defining the output of the operational amplifier;

a constant current bias circit for selectively supplying one of said differential amplifiers with a constant bias current, and a bias control switching circuit which selectively connects the constant bias current circuit to the differential amplifier selected by the bias control switching circuit in response to an external control signal applied at a control input of the operational amplifier; and

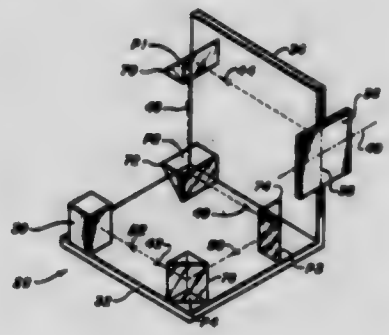
each of said photoelectric transducer elements being respectively connected across a pair of input terminals of each of said differential amplifiers.

4,492,859

DUAL AXES MULTIPLE PRISM OPTICAL SYSTEM FOR AZIMUTH AND ELEVATION VARIATION DETECTION

Anthony S. Pruzanski, Jr., Newbury, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Nov. 30, 1982, Ser. No. 445,556
Int. Cl.³ G01C 1/02
U.S. Cl. 250—216 8 Claims



1. A dual axes multiple prism optical system, comprising:

first and second 45°–90° prisms mounted in spaced apart relation with the hypotenuse face of each in planes nearly normal to each other and mutually normal to a first plane such that a ray of light at a predetermined wavelength in a direction selected to establish a reference is incident to the normal of the hypotenuse face of said first prism at the critical angle for said light at said predetermined wavelength and is deviated therefrom by total internal reflection in the direction of said second prism and is incident to the normal of the hypotenuse face of said second prism at the critical angle and is deviated therefrom by total internal reflection, any deviation of said ray in a plane parallel to said first plane causing opposite variations in reflection and refraction at the hypotenuse of said first and second prisms;

third and fourth 45°–90° prisms mounted in spaced apart relation with the hypotenuse face of each in planes nearly normal to each other and mutually normal to a second plane such that said ray of light totally internally reflected and deviated by said second prism is incident to the normal of the hypotenuse face of said third prism at the critical angle and is totally internally reflected therefrom in the direction of said fourth prism and is incident to the normal of the hypotenuse face of said fourth prism at the critical angle and is totally internally reflected therethrough, any deviation of said ray in a plane parallel to said second plane causing opposite variations in reflection and refraction at the hypotenuse face of said third and fourth prisms; and

means associated with each of said prisms for providing a signal indication of light refracted through the hypotenuse faces of corresponding ones of said prisms.

4,492,860

OPTICAL MEASURING DEVICE WITH MEANS FOR SUPPRESSING REFLECTIONS

Torgny Brogårdh; Anders Linge, and Lars Sander, all of Västerås, all of Sweden, assignors to Asea Aktiebolag, Västerås, Sweden

Filed Nov. 30, 1981, Ser. No. 326,057
Claims priority, application Sweden, Dec. 1, 1980, 8008423
Int. Cl.³ G02B 5/14
U.S. Cl. 250—227 10 Claims

1. An optical measuring device for measuring a physical quantity, comprising:

a light source means adapted to generate incident light,

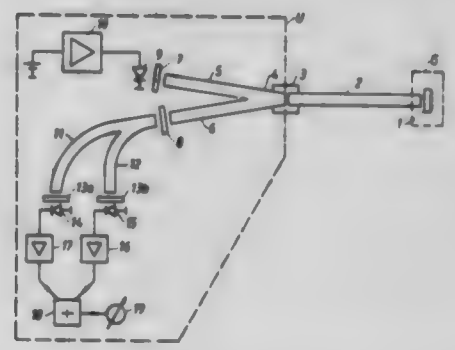
a measuring transducer exposed to the quantity to be measured and responsive to the incident light and able to modify the latter in response to changes in the quantity to be measured,

photo-detector means to respond to light coming from said measuring transducer and to produce electrical signals therefrom,

electronic means to process said signals and produce an output indicative of the quantity to be measured,

a light-transmitting system comprising a single optical fiber, the means for coupling incident light into said single fiber and modified light out of said single fiber consisting of a fiber optical Y-branch,

said light-transmitting system feeding incident light from said light source means to said measuring transducer and



feeding modified light from said measuring transducer to said photo-detector means,

a first element for polarizing the incident light entering said light-transmitting system from said light source means, and a second element for polarizing the light fed to the photo-detector means,

the difference in the direction of polarization between the two polarizing elements being chosen so that a direct path for light from said light source means to said photo-detector means via reflections in said light-transmitting system in and adjacent to the photo-detector means are substantially blocked from said photo-detector means by said second polarizing element, thus preventing said reflected signal from interfering with the measurement result, thus light polarized in one direction, and being reflected, being blocked in a polarizing device for polarization in another direction.

4,492,861

ARRANGEMENT FOR DETECTING THE POSITION OF AN INDEX MARK RELATIVE TO A GRADUATION

Franz Kobschull, 150, W.-Pieck-Str., Radeberg, District of Dresden, German Democratic Rep., and Ehrhardt Seidenschnur, H.-Matern-Str., 9, Jena-Lobeda, District of Gera, German Democratic Rep.

Filed Mar. 24, 1982, Ser. No. 358,193
Claims priority, application German Democratic Rep., May 29, 1981, 230392
Int. Cl.³ H01S 3/14
U.S. Cl. 250—237 G 7 Claims

1. An arrangement for detecting the position of an index line relative to a graduation, particularly for use in angle measuring devices,

comprising subsequent to a light source emitting a beam and being illuminated by said beam,

a graduation carrier means defining a first plane,

a mask defining a second plane,

an array of photodetectors defining a third plane,

said first, second and third plane being substantially in parallel to one another and substantially at right angles to said beam,

said graduation carrier means and said mask, said mask

and said array of photodetectors, respectively, being separated from one another by a narrow space,

a graduation track having a definite number of marks for defining the degree values of said measuring device,

the intervals between neighbouring graduation marks being equal,

a code track having a definite number of marks for encoding said degree values of respective graduation marks in said graduation track,

a pulse track, having a definite number of regularly arranged and spaced marks,

said graduation track, said code track, and said pulse track being provided on a transparent portion of said graduation carrier means in parallel to one another substantially in said first plane,

said mask having a first track of openings, a second track of openings and a third track of openings,

said marks in said pulse track,

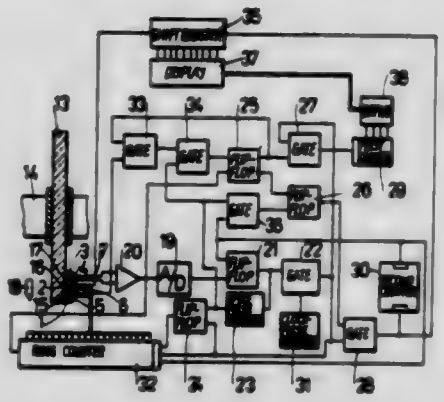
said marks in said graduation track, said marks in said code track, said openings in said first,

second and third tracks being substantially of equal size and geometry,

said marks in said graduation track, being vertically aligned to the neighbouring marks, if any, in said code track and in said pulse track,

said array of photodetectors being composed of a first sequence of photodetectors, a second sequence of photodetectors and a third sequence of photodetectors,

said light source being for illuminating:



said first sequence of photodetectors through said first track and said graduation track,

said second sequence of photodetectors through said second track and said code track,

said third sequence of photodetectors through said third track and said pulse track, the number of photodetectors in the sequences being defined by the number of openings in the associated first, second and third track, respectively,

said mask having a virtual central line being identical to said index line, and being substantially at right angles to the first, second and third track,

said first track having a first or start opening in said central line and further nine openings to the right for subdividing the interval between two adjacent degree marks into decidegree units,

said second track being ten openings to the left considered from said central line and eight openings to the right,

said third track having at least two openings symmetrically relative to said central line, said two openings being laterally displaced relative to the openings in said second track,

a ring counter,

said third sequence of photodetectors feeding a starting pulse into said ring counter via circuit elements when said virtual or index line is exactly between said two openings of said third track,

said ring counter being connected to said first and second sequence of photodetectors,

said ring counter having at least a same number of bit positions as said second track of said mask has openings,

each photodetector of said first and second sequence of photodetectors being connected via its input to a bit position of said ring counter,

the photodetector of said second sequence of photodetectors being connected to one another and to a storage of an output unit,

said starting pulse via said ring counter sampling said first sequence of photodetectors and feeding the sampling information to said output unit,

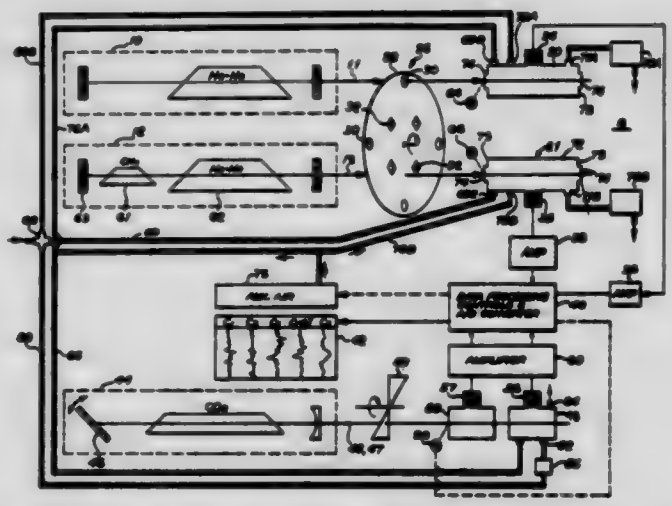
and sampling said second sequence of photodetectors and feeding the sampling information to said output unit.

4,492,862

METHOD AND APPARATUS FOR ANALYZING COMPONENTS OF HYDROCARBON GASES RECOVERED FROM OIL, NATURAL GAS AND COAL DRILLING OPERATIONS

Jack Grynberg, Englewood, Colo.; Leonard Y. Nelson, Seattle, and Stephen E. Moody, Kirkland, both of Wash., assignors to Mathematical Sciences Northwest, Inc., Bellevue, Wash.

Filed Aug. 7, 1981, Ser. No. 290,824
Int. Cl.³ G01V *5/00*
U.S. Cl. 250—255 88 Claims



1. A method of determining the composition of hydrocarbon gases extracted during drilling operations, comprising the steps of:

(a) directing a first laser beam at a frequency strongly absorbed by methane gas and other hydrocarbon gases at a sample of the extracted gas;

(b) measuring the absorption of the first laser beam by the sample of gas;

(c) directing a second laser beam at the sample of gas at a frequency weakly absorbed by methane gas;

(d) measuring the absorption of the second laser beam by the sample of gas;

(e) calculating the concentration of methane gas present in the gas sample based on the absorption of the first and second laser beams by the sample of gas;

(f) directing a third laser beam at a sample of such gas at a frequency strongly absorbed by an additional type of hydrocarbon gas;

(g) measuring the absorption of the third laser beam; and

(h) calculating the concentration of the additional type of hydrocarbon gas present in the sample of gas based on the level of absorption of the third laser beam.

4,492,863

DETERMINING ELEMENTAL CONCENTRATIONS AND FORMATION MATRIX TYPE FROM NATURAL GAMMA RAY SPECTRAL LOGS

Harry D. Smith, Jr., Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Oct. 1, 1982, Ser. No. 432,203
Int. Cl.³ G01V *5/00*
U.S. Cl. 250—256 14 Claims

1. A method of natural gamma ray spectral well logging to

determine the formation matrix type or lithology of earth formation penetrated by a well borehole, comprising the steps of:

passing a fluid tight hollow well logging sonde, sized and adapted for passage in a well borehole, through earth formations penetrated by a well borehole, said sonde containing a scintillation type radiation detector and an associated photomultiplier, and obtaining therefrom a gamma ray energy spectrum of naturally occurring gamma rays emitted by the earth formations;

separating said gamma ray energy spectrum into at least two separate energy regions, an upper energy region and a



lower energy region, said upper energy region being selected such that gamma radiation detected therein is comprised essentially of naturally occurring gamma rays attenuated primarily by Compton scattering in the earth formations and said lower energy region being selected such that gamma radiation detected therein is comprised essentially of naturally occurring gamma rays attenuated significantly by photoelectric absorption in the earth formations; and

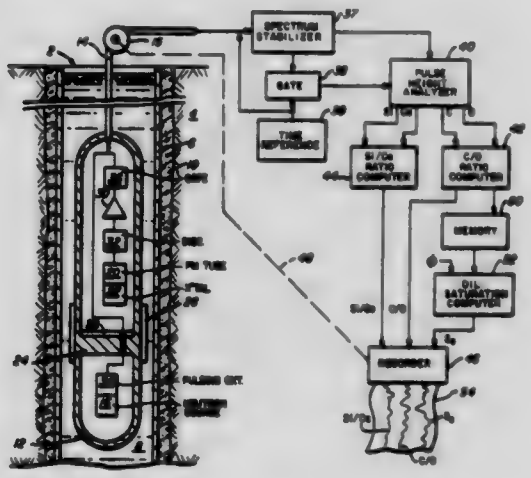
deriving from a function of the number of gamma rays occurring in said upper and lower energy regions an indicator of the lithology of the earth formation.

4,492,864

NEUTRON WELL LOGGING

Harry D. Smith, Jr., and Ward E. Schultz, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 31, 1981, Ser. No. 288,441
Int. Cl.³ G01V 5/10
U.S. Cl. 250—259 8 Claims



1. A method for determining the oil saturation of an earth formation of interest adjacent a well bore, comprising the steps of:

(a) irradiating the formation of interest with high energy neutrons;

(b) obtaining a measure of the relative presence of carbon and oxygen in the formation from inelastic scatter gamma rays returned from the irradiated formation;

(c) displacing the formation oil and water mixture from the formation of interest with a mutually soluble liquid;

(d) irradiating the formation a second time with high energy neutrons;

(e) obtaining a second measure of the relative presence of carbon and oxygen in the formation from inelastic scatter gamma rays returned from the formation containing the mutually soluble liquid;

(f) displacing the mutually soluble liquid from the formation of interest with water;

(g) irradiating the earth formation a third time with high energy neutrons;

(h) obtaining a third measure of the relative presence of carbon and oxygen from inelastic scatter gamma rays of the formation containing water;

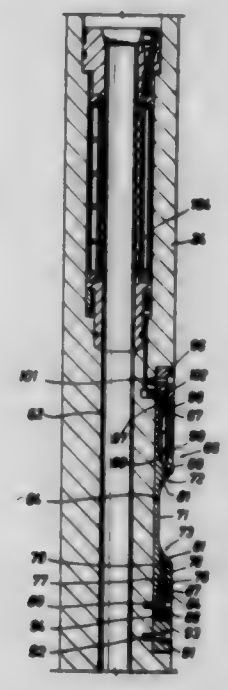
(i) determining from the three gamma ray measurements of carbon and oxygen the oil saturation of the formation of interest.

4,492,865

BOREHOLE INFLUX DETECTOR AND METHOD

Richard D. Murphy, and Daniel F. Coope, both of Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Feb. 4, 1982, Ser. No. 345,592
Int. Cl.³ G01V 5/12
U.S. Cl. 250—265 31 Claims



1. An apparatus for detecting the influx of formation fluids into a borehole and capable of being used in a drill string during a drilling operation, comprising:

a housing capable of being coupled in a drill string;

a radiation source means mounted on said housing;

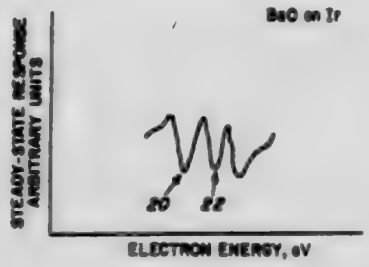
a radiation detection means spaced from said radiation source means on said housing, said detection means for detecting radiation from said source means which has substantially only passed through the fluids in said borehole.

4,492,866

METHOD FOR PREDICTING THE PERFORMANCE OF CATHODE MATERIALS

George A. Haas, Alexandria, Va.; Arnold Shih, Potomac, Md., and Christie R. K. Marrian, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 2, 1983, Ser. No. 490,994
Int. Cl.³ H01J 40/00, 47/00
U.S. Cl. 250—305 11 Claims



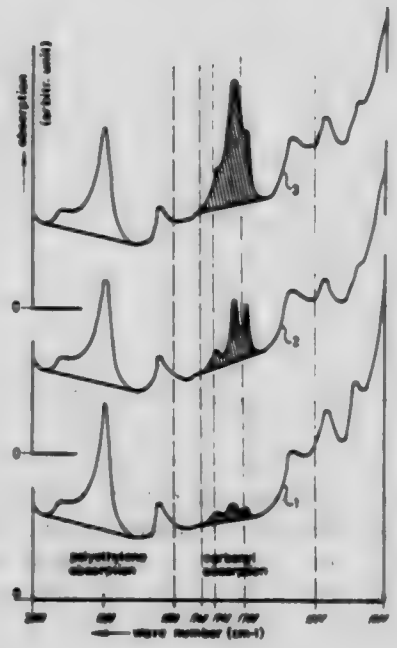
1. A method for predicting the suitability of various materials for use in fabricating cathodes comprising the steps of:
(a) preparing a plurality of samples having various concentrations of metal substrate materials,
(b) forming a surface layer on said samples with an alkaline earth compound,
(c) measuring the relative magnitudes of at least two adjacent interatomic Auger peaks for each sample,
(d) determining from said relative magnitudes the relative degree of charge transfer between the alkaline earth metal and oxygen atoms for each sample, and
(e) comparing the relative degree of charge transfer of each sample with every other sample, whereby the suitability of the various materials for use in fabricating cathodes may be predicted.

4,492,867

METHOD OF AND APPARATUS FOR DETERMINING THE STATE OF AGEING OF PLASTIC PRODUCTS

Johannes J. Laarhoven, Hardenberg; Jan P. van Dongeren, Bergentheim; Hendrik de Wit, Wassenaar, and Louis M. Smeets, Amsterdam, all of Netherlands, assignors to Wavin B.V., Zwolle, Netherlands

Filed Jul. 14, 1982, Ser. No. 398,235
Claims priority, application Netherlands, Jul. 5, 1981, 8103468
Int. Cl.³ G01J 1/00
U.S. Cl. 250—341 16 Claims



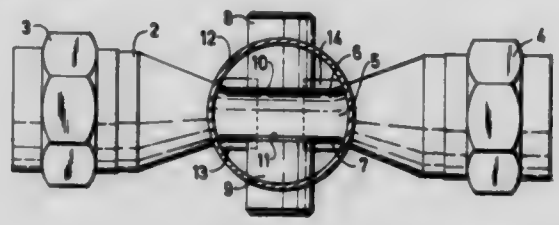
1. Method of determining the state of ageing of plastic products comprising the steps of passing infrared radiation through the product determining the absorption thereof in the material at a wavelength value selected at the spectral location where the chemical and/or physical change in the plastic created by ageing causes a change in absorption, performing a second measurement in a different wavelength area where the absorption value is independent of the state of ageing, and comparing the difference between the absorption value and the value of said second measurement to obtain a pre-adjusted calibration value as a criterion for determining the state of ageing.

4,492,868

DEVICE FOR MEASURING CONCENTRATION OF PARTICLES CONVEYED BY A LIQUID

Roland E. Jelvestam, Björnidegränd 29, S-163 64 Vällingby, and Pär-Halan Bergström, Vasavägen 5H, S-141 39 Huddinge, both of Sweden

Filed Nov. 4, 1982, Ser. No. 439,224
Claims priority, application Sweden, Nov. 25, 1981, 8107026; Nov. 25, 1981, 8107027
Int. Cl.³ G01J 5/54; G01N 21/84
U.S. Cl. 250—345 14 Claims



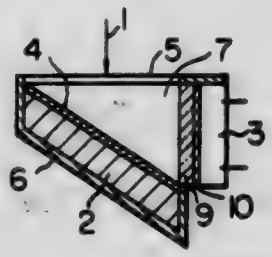
1. A measuring device for measuring the concentration of particles conveyed by a liquid through a tube and including measuring probes and a reference apparatus, each one of said measuring probes and reference apparatus including an emitter and a detector, comprising said emitter and said detector of the measuring probes are disposed in the wall of the tube axially in register with each other on either side of the liquid advanced through the tube and said emitter and detector of the reference apparatus are arranged on either side of a reference path being free from liquid and are of the IR type, said emitters being fed from a common source sending pulsed energy to the emitters, said energy having short energy pulses with relatively long time intervals between said pulses, said pulse being of a shorter duration than that of square wave pulses, and said reference apparatus is involved in an electronic circuit being temperature-compensated.

4,492,869

RADIATION DETECTOR

Atsushi Suzuki, Higashiyamato; Hiromichi Yamada, Hino; Yoko Uchida, Kawasaki; Hideki Kohno, and Minoru Yoshida, both of Tokyo, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Oct. 20, 1981, Ser. No. 313,171
Claims priority, application Japan, Oct. 22, 1980, 55-146891
Int. Cl.³ G01T 1/20
U.S. Cl. 250—367 67 Claims



1. A radiation detector comprising:

a housing having a window for introducing radiation therethrough from one direction;

a scintillator disposed within said housing, said scintillator including a layer of phosphor particles which emit radiation-stimulated light therefrom upon impingement of said radiation thereon;

a secondary radiation shielding layer disposed in a face of said housing located at a position deviated from a path of transmission of said radiation, said secondary radiation shielding layer being made of a material which has a high permeability with respect to the radiation-stimulated light emitted from said phosphor particle layer and a low permeability with respect to secondary radiation from said phosphor particle layer; and

a light detector for receiving the radiation-stimulated light emitted from said phosphor particle layer through said secondary radiation shielding layer.

4,492,870

ANGULAR LIMITATION DEVICE IN A CHARGED PARTICLE BEAM SYSTEM

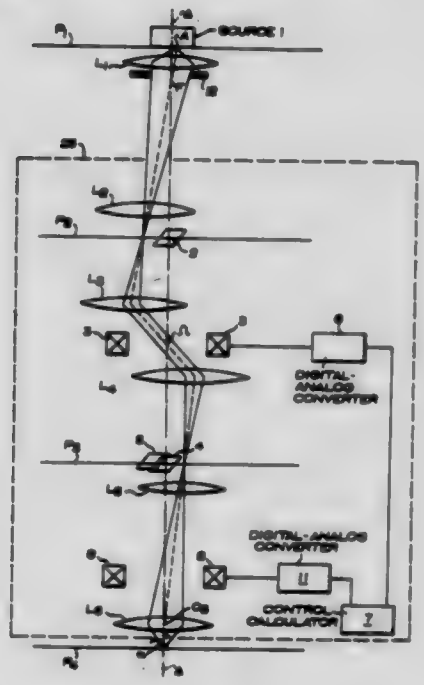
Emmanuel de Chambost, and Jacques Trotel, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Aug. 31, 1982, Ser. No. 413,524

Claims priority, application France, Sep. 22, 1981, 81 17846

Int. Cl.³ H01J *37/00*; A61K *27/02*

U.S. Cl. 250—398 7 Claims



1. An angular limitation device in a charged particle beam system comprising a source and an electronic optical system permitting the projection of the beam onto a target plane, wherein only a single diaphragm for the angular limitation of the beam is positioned between the source and the electronic optical system, the useful current of the beam at the target plane being more than one thousandth of the current emitted by the source and wherein a first lens is positioned between said source and said diaphragm, said diaphragm being located in the focal plane of said first lens.

4,492,871

METHOD FOR DETERMINING IMPURITIES IN EPITAXIAL SILICON CRYSTALS

Michio Tajima, Yatabemachi, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Aug. 17, 1982, Ser. No. 408,908

Claims priority, application Japan, Oct. 7, 1981, 56-159727

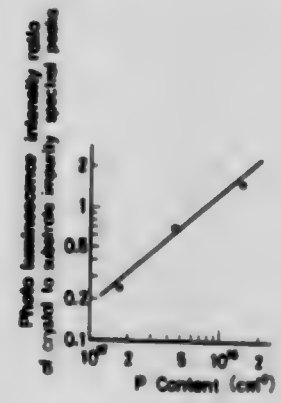
Int. Cl.³ G01N *21/64*

U.S. Cl. 250—459.1 5 Claims

1. A method for determining impurities within an epitaxial silicon crystal grown upon a silicon crystal substrate, comprising the steps of:

irradiating the surface of an epitaxial silicon crystal grown upon a silicon crystal substrate with a laser beam at the temperature of liquid helium so as to result in the emanation of luminescent light beams from said epitaxial silicon crystal and said silicon crystal substrate in response to the presence of impurities within said epitaxial silicon crystal and said silicon crystal substrate;

obtaining spectra of said luminescent light beams emanating from said epitaxial silicon crystal and said silicon crystal substrate; and



forming a relationship between the photo luminescence intensity ratio of the photo luminescence intensity of said luminescent light beam from said epitaxial silicon crystal to the photo luminescence intensity of said luminescent light beam from said silicon crystal substrate, as derived from said spectra of said luminescent light beams emanating from said epitaxial silicon crystal and said silicon crystal substrate, and the concentration of said impurity within said epitaxial silicon crystal, whereby the concentration of said impurity within said epitaxial silicon crystal may be determined from said relationship as a function of said photo luminescence intensity ratio.

4,492,872

ALBEDO DOSIMETER ENCAPSULATION

Bertram Burgkhart, Karlsruhe, Fed. Rep. of Germany; Gaber Hassib, Cairo, Egypt, and Ernst Piesch, Eggenstein-Leopoldshafen, Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed May 19, 1982, Ser. No. 379,694

Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3120373

Int. Cl.³ G01T *1/11*

U.S. Cl. 250—484.1 9 Claims

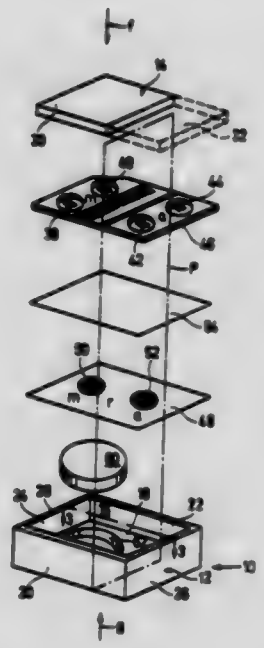
1. Albedo dosimeter encapsulation for measuring neutron and gamma radiation in at least two dosimeter zones, comprising:

(a) a casing having boron or cadmium containing walls which have neutron absorbing capability, said casing having a front side which faces a radiation field and a rear side which faces a body which carries the encapsulation, the rear side of the casing being closed by a cadmium or boron containing rear wall having a first portion and a second portion;

(b) a cover located at the front side of the casing, the cover having a cadmium or boron containing wall portion and a window portion; and

(c) the casing having a first zone for holding a first dosimeter means and a second zone for holding a second dosimeter means, for first zone being aligned with the cadmium or boron containing wall portion of the cover and the first portion of the rear wall, and the second zone being aligned with the window portion of the cover and the second portion of rear wall, the cadmium or boron containing wall portion of the cover having a neutron absorbing capability which is different from the neutron absorbing

capability of the first portion of the rear wall, and the first portion of the rear wall having a neutron absorbing capability which is different from the neutron absorbing capability of the second portion of the rear wall.



4,492,873

APPARATUS FOR ELECTRON BEAM IRRADIATION OF OBJECTS

Stanislav P. Dmitriev, ulitsa Michurinskaya, 19, kv. 23; Andrei S. Ivanov, ulitsa Kuznetsovskaya, 8, kv. 33; Mikhail P. Svistin, poselok Metallostroi, ulitsa Bogatchuka, 4, kv. 25, and Mikhail T. Fedotov, poselok Metallostroi, ulitsa Polevaya, 22, kv. 58, all of Leningrad, U.S.S.R.

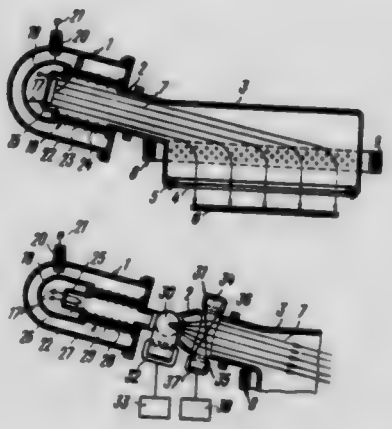
PCT No. PCT/SU80/00065, § 371 Date Dec. 21, 1981, § 102(e) Date Dec. 21, 1981, PCT Pub. No. WO81/03104, PCT Pub. Date Oct. 29, 1981

PCT Filed Apr. 25, 1980, Ser. No. 336,393

Int. Cl.³ H01J 33/02

U.S. Cl. 250—492.3

3 Claims



1. An apparatus for an electron beam irradiation of objects, comprising an electron beam shaper and a deflecting electromagnet with a frame-type magnetic circuit to direct the electron beam onto an irradiated object substantially at an angle at 90°, characterized in that the electron beam shaper 1 is made such as to provide a ribbon-shaped electron beam 7, the deflecting electromagnet 8 having two-poles 10, 11, said poles extending over the whole width of the object 6, and comprises two windings 12, 13 embracing said poles 10, 11 and connected to a direct current source 14, the deflecting electromagnet 8 being arranged so that the trajectories of the electrons within the area from the shaper 1 to the deflecting electromagnet 8 are inclined to the plane of the frame of its magnetic circuit 9, and wherein the electron beam shaper 1 comprises an electron gun 15 with an extended cathode 16 and an accelerating tube 19 providing acceleration of the ribbon-shaped electron beam.

3. An apparatus for irradiation, comprising an electron beam shaper and a deflecting electromagnet with a frame-type magnetic circuit to direct the electron beam onto an irradiated object substantially at an angle of 90°, the electron beam shaper is made such as to provide a ribbon-shaped electron beam, and the deflecting electromagnet has two poles, said poles extending over the whole width of the irradiated object and comprises two windings connected to a direct current source, the deflecting electromagnet being arrangeed so that the trajectories of the electrons within the area from the shaper to the deflecting electromagnet are inclined to the plane of the frame of its magnetic circuit, characterized in that the electron beam shaper (1) comprises an electron beam (25) with a point cathode (26), an accelerating tube (27) and an electron beam sweeping electromagnet (30).

4,492,874

SYNCHRONIZATION FUEL CONTROL FOR GAS TURBINE-DRIVEN AC GENERATOR BY USE OF MAXIMUM AND MINIMUM FUEL SIGNALS

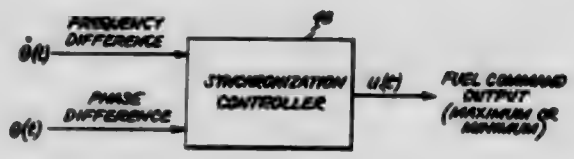
Timothy P. Near, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 26, 1982, Ser. No. 371,881

Int. Cl.³ H02P 9/04

U.S. Cl. 290—40 B

51 Claims



1. An automatic synchronization fuel control for guiding an AC generator having an output into synchronization with an AC power system, said output of said generator and said power system each having respective AC voltages associated therewith, said generator being of a type which is driven by a turbine, said synchronization fuel control comprising:

first means for determining an instantaneous frequency difference and an instantaneous phase difference between said power system voltage and said generator output voltage;

second means for providing one of a first signal command for supplying a fixed predetermined minimum fuel flow to said turbine and a second signal command for supplying a fixed predetermined maximum fuel flow to said turbine;

said fixed predetermined maximum fuel flow being of a first value which is effective to produce a substantially constant acceleration of said generator, and said fixed predetermined minimum fuel flow being of a second value which is effective to produce a substantially constant deceleration of said generator;

third means for substantially continuously comparing said instantaneous frequency difference and said instantaneous phase difference; and

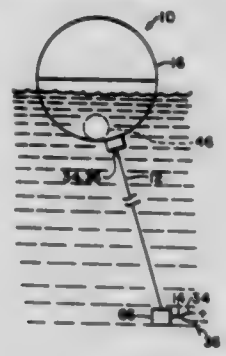
fourth means for determining, in accordance with predetermined functions, whether said second means should provide said first signal or said second signal, said predetermined functions being selected so as to guide said generator to an optimal synchronization point at which a predetermined frequency difference and a predetermined phase difference exist.

4,492,875

WAVE POWERED BUOY GENERATOR

Raymond A. Rowe, Encinitas, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 2, 1982, Ser. No. 446,284
Int. Cl.³ F03B 13/12
U.S. Cl. 290—53 18 Claims



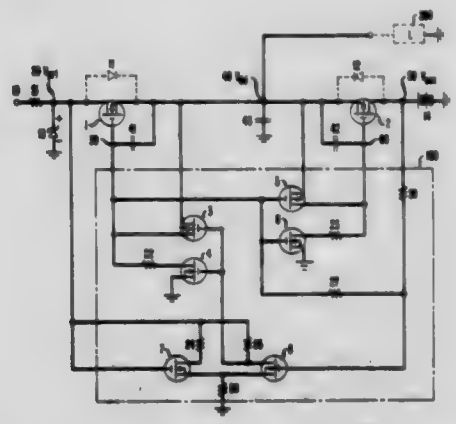
1. A buoy generator comprising:
a hollow buoy having inner and outer surfaces;
at least one winding mounted to the buoy parallel to its surfaces, the winding having a pair of ends;
magnetized means freely disposed in all dimensions within the hollow buoy for unrestricted rolling on the inside surface of the hollow buoy whenever the hollow buoy has any rolling movement; and
means connected to the winding ends for rectifying current flow therefrom,
whereby, upon mooring the buoy in water, the flux lines of the magnetized roller means cut the winding when there is water motion and electrical current is provided by the winding through the rectifying means.

4,492,876

POWER SUPPLY SWITCHING ARRANGEMENT

Raymond O. Colbert, Oaklandon, and Bengt H. Hellman, Indianapolis, both of Ind., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 18, 1983, Ser. No. 514,596
Int. Cl.³ H02J 9/06
U.S. Cl. 307—66 11 Claims



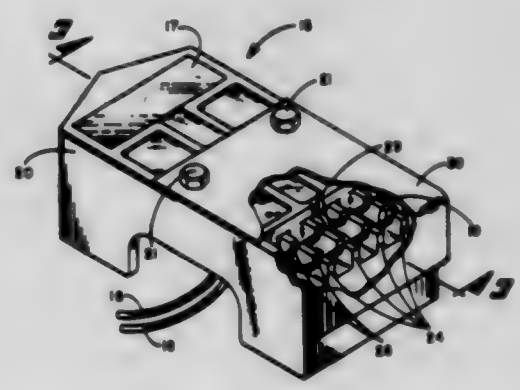
1. Apparatus for interconnecting one of a plurality of voltage sources with a load comprising..
metal oxide semiconductor (MOS) transistor means, electrically in series with each of the voltage sources and the load, responsive to control signals for interconnecting the voltage sources with the load, only one of said voltage sources being interconnected at a time;
sequencing means, generating control signals for turning off all interconnecting MOS transistors when the voltage of the interconnected voltage source falls below a predetermined threshold level, and thereafter for enabling another of the voltage sources; and
means for supplying voltage to the load during the time interval that all interconnecting MOS transistors are turned off.

4,492,877

ELECTRODE APPARATUS FOR CATHODIC PROTECTION

Richard E. Staral, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jul. 26, 1982, Ser. No. 402,191
Int. Cl.³ H01B 7/28
U.S. Cl. 307—95 11 Claims



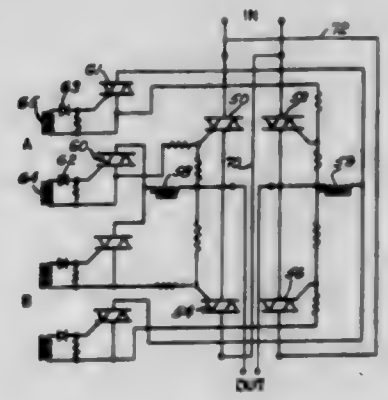
1. In a cathodic protection apparatus for a submersible metal unit subject to corrosion and including a submersible anode, a submersible reference electrode, and a current supply means connected between said anode and said metal unit and to said reference electrode to regulate the potential of said metal unit by maintaining the potential of said metal unit at a selected level relative to said reference electrode, the improvement comprising:
A metallic shield element mounted in close proximity to said reference electrode and said anode and connected to said metal unit to cause a first distance between said electrode and said anode to electrically simulate a second distance between said anode and a selected portion of said submersible metal unit, said second distance greater than said first distance, whereby said reference electrode can be mounted adjacent to said anode.

4,492,878

ELECTRICAL LINE REVERSAL AND PROTECTION SYSTEM

Howard L. Hamel, 67 Winthrop Rd., East Greenwich, R.I. 02818

Filed May 25, 1983, Ser. No. 498,020
Int. Cl.³ H02H 3/26
U.S. Cl. 307—127 3 Claims



1. An electrical apparatus connected between an alternating current supply and a load for the automatic reversal of the connection of supply lines to a load which has a near ground conductor comprising in combination an alternating current source and a load, said source and said load having at least a

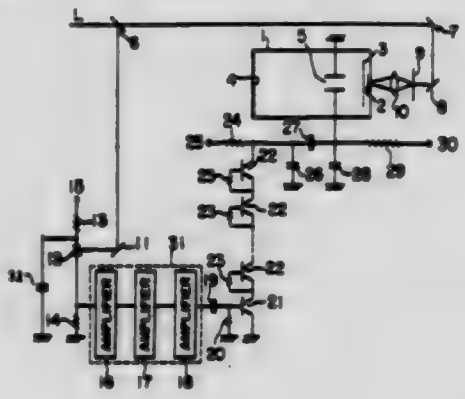
ground wire and a pair of phase wires; a change-over switch means comprising two pairs of triacs with both anodes of each pair connected together to one phase wire, one of the other anodes of each pair being connected to a separate load phase wire; a logic circuit including a pair of three-terminal semiconductors, each with a control electrode and output electrode for operating the switch means; said control electrode connected to a phase wire for detecting a voltage change between one of the phase wires and the ground wire whereby when a voltage change is detected the output electrode will energize the gate of one triac of each pair to change the connection of said supply to said load.

4,492,879

TRIGGER CIRCUIT

Yutaka Tsuchiya, Hamamatsu; Eiji Imanaka, Shizuoka, and Yuji Shinoda, Hamamatsu, all of Japan, assignors to Hamamatsu Terebi Kabushiki Kaisha, Shizuoka, Japan

Continuation-in-part of Ser. No. 709, Jan. 3, 1979, abandoned. This application Oct. 16, 1981, Ser. No. 312,126
Int. Cl.³ H03K 5/04, 5/02, 17/60
U.S. Cl. 307—248 3 Claims



1. In combination, an avalanche transistor and a trigger circuit responsive to trigger signals of variable intensity for driving said avalanche transistor into a conductive mode, said trigger signals having a frequency component, said trigger circuit comprising:

a first circuit stage receiving said trigger signals and comprising band pass amplifier means having an upper limit frequency much lower than the frequency component of the trigger signals to produce output signals which rise with a substantially constant ramp angle independent of waveforms of the trigger signals and,

a second circuit stage receiving output signals from said first circuit stage and comprising saturable amplifier means having a saturation voltage which is sufficiently low that said saturable amplifier means develops output signals having a substantially constant amplitude.

4,492,880

DRIVER CIRCUIT

Harold Weiss, Framingham, Mass., assignor to Parker Manufacturing Company, Worcester, Mass.

Filed Aug. 4, 1983, Ser. No. 520,412
Int. Cl.³ H03K 17/72
U.S. Cl. 307—252 N 19 Claims

1. A driver circuit which is responsive to an input AC line voltage for providing a drive signal to a load circuit, said driver circuit comprising:

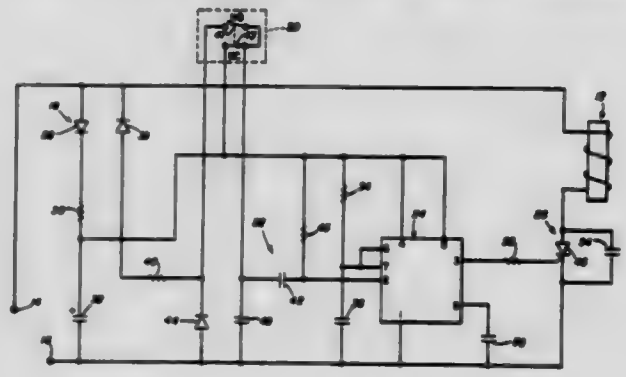
(a) means for receiving the input AC voltage;

(b) means for providing a DC voltage related to the input AC voltage;

(c) switch means connected to said DC voltage means, said switch means having first and second states;

(d) trigger means connected to said switch means, said trigger means charged to a voltage related to the DC voltage when said switch means is in said first state, said trigger means generating a triggering signal during such time that the input AC voltage is in a negative portion of its cycle and said switch means is in said second state;

(e) timing means responsive to said triggering signal for generating a control signal for a selected time period which is related to one cycle of the input AC voltage; and



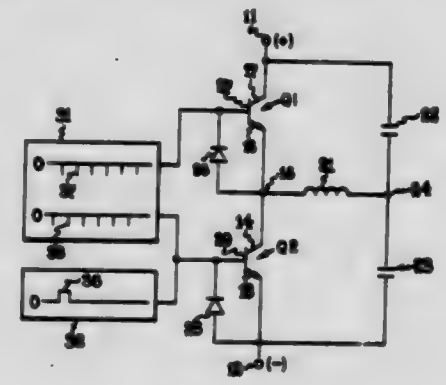
(f) firing means responsive to said timing means for providing the drive signal to the load circuit, said firing means providing the drive signal when the control signal is applied to said firing means.

4,492,881

STORED CHARGE INVERTER CIRCUIT

Thomas E. Anderson, Avon, Conn.; Alvin A. Bush, and John Giorgis, both of South Euclid, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 184,648, Sep. 5, 1980, abandoned. This application Mar. 7, 1983, Ser. No. 472,681
Int. Cl.³ H03K 17/60, 3/33; H02M 7/537
U.S. Cl. 307—270 14 Claims

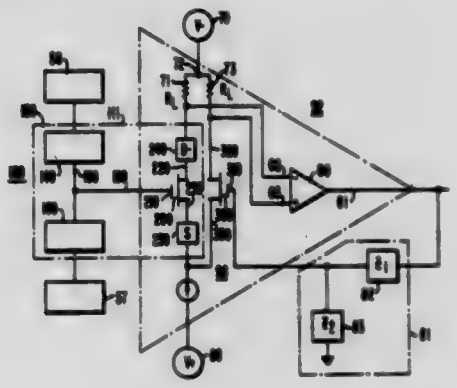


1. An inverter circuit for operating from a d-c power source and applying alternating current through a load which is inductive or has an inductive component, comprising two transistors connected to alternately apply current through said load from said power source, said transistors having the characteristic of storing a charge in their base-collector regions, and said load having the characteristic of inducing a fly-back current when current flow therein is terminated, wherein the improvement comprises means connected between said load and the base electrodes of respective ones of said transistors for applying the fly-back current resulting from each turn-off of one of said transistors through the base-collector path of the other of said tranistors for causing said other of said transitors to operate as an inverted transistor and rendering said other transistor conductive and storing a charge therein to keep it conductive for a period of time, said circuit being devoid of an external source of repetitive turn-on pulses for said transistors.

4,492,862
INTEGRATED CIRCUIT FOR CHIP OP/AMP INTERFACE

Arthur S. Jensen, and Keefer S. Stull, Jr., both of Baltimore, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 163,549, Jun. 27, 1980, Pat. No. 4,341,963. This application Jul. 26, 1982, Ser. No. 402,171
Int. Cl.³ G06G 7/12
U.S. Cl. 307—497 7 Claims

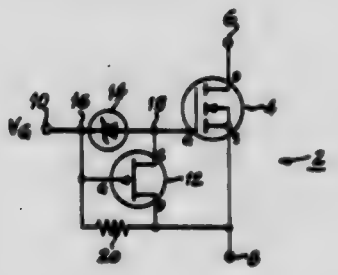


1. A circuit for coupling an electrical signal from an integrated circuit with portions of said circuit external said integrated circuit comprising:
an operational amplifier external to said integrated circuit having a first non-inverting input, a second inverting input and an output;
said integrated circuit including a semiconductor substrate;
differential amplifying means including first and second transistors, said first transistor in said substrate;
means in said substrate for coupling said first transistor to said electrical signal;
a feedback circuit;
said output of said operational amplifier coupled through said feedback circuit to said second transistor of said differential amplifying means;
said differential amplifying means having a first non-inverting output and a second inverting output;
said first non-inverting output of said differential amplifying means coupled to said non-inverting input of said operational amplifier;
said second inverting output of said differential amplifying means coupled to said inverting input of said operational amplifier.

4,492,883
UNPOWERED FAST GATE TURN-OFF FET

William J. Janutka, West Allis, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 21, 1982, Ser. No. 390,720
Int. Cl.³ H03K 17/04, 17/687
U.S. Cl. 307—571 11 Claims

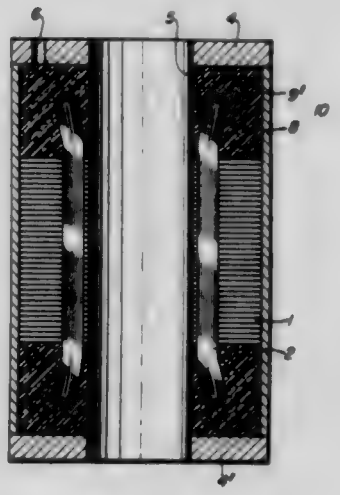


1. A fast turn-off FET circuit having drain, source and gate terminals, comprising:
an enhancement mode FET having a drain connected to said drain terminal, a source connected to said source terminal and a gate operatively coupled to said gate terminal;
a depletion mode JFET having a normally conductive ON state and connected to said FET gate and source and conductive upon turn-off of the latter due to removal of gate drive, conduction of said JFET providing faster discharge therethrough of residual stored charge on said FET gate, whereby to facilitate faster FET turn-off;
threshold voltage breakdown means connected between said gate terminal and said FET gate and having a greater breakover voltage than the pinch-off voltage of said JFET.

4,492,884
POROUS FILL STATOR OF A CANNED MOTOR

Etsu Asano, Sakura; Yasuro Suzuki, Narashino, and Nobuo Midou, Funabashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 22, 1982, Ser. No. 443,400
Claims priority, application Japan, Nov. 26, 1981, 56-188370
Int. Cl.³ H02K 1/04
U.S. Cl. 310—45 3 Claims



1. A canned motor comprising:
a stator including a cylindrical motor housing, a stator core having a stator winding mounted on an inner surface of said motor housing, a pair of end brackets each secured to one of two opposite open ends of said motor housing, and a cylindrical can arranged on an inner side of said stator core and secured at opposite ends to said end brackets;
a rotor mounted on an inner surface of said can; and
a porous insulator located in said stator and sealed by said motor housing, said end brackets and said can, said porous insulator is formed of an inorganic filler in particulate form having a grain size in a range of between 0.05 and 0.35 mm, and a resin having minute pores and connecting filler particles together, the resin is within a range of between 3–20 weight parts for 100 weight parts of the inorganic filler.

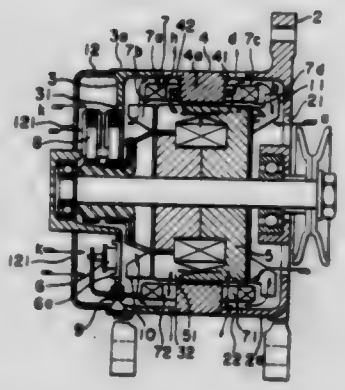
4,492,885
ALTERNATING CURRENT GENERATOR FOR A CAR

Yutaka Kitamura, Himeji; Yoshihisa Kitora, and Masatoshi Koyanagi, both of Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 16, 1982, Ser. No. 358,587
Claims priority, application Japan, Mar. 30, 1981, 56-47199[U]
Int. Cl.³ H02K 9/06
U.S. Cl. 310—62 8 Claims

1. An alternating current generator for a car comprising:
first and second brackets which respectively have a cup-like shape having a cylindrical portion and facing each other in the axial direction,
a rectifying device fixed to one of said brackets,

a stator held between said brackets,
a rotor which is placed inside of said stator and is rotatably held by both of said brackets,
a first centrifugal fan fixed to one end of said rotor,
first ventilating means formed in the cupped end portion of one of said first and second brackets in the axial direction and on the side of said alternator having said first centrifugal fan, for feeding coolant air,
a second ventilating means formed in the cylindrical portion of said first bracket in which the first ventilating means is formed for discharging the coolant air,
a second centrifugal fan which is fixed to the other end of said rotor and which has an outer diameter larger than that of said first centrifugal fan and wherein said second centrifugal fan has a outer diameter greater than the inner diameter of said stator,



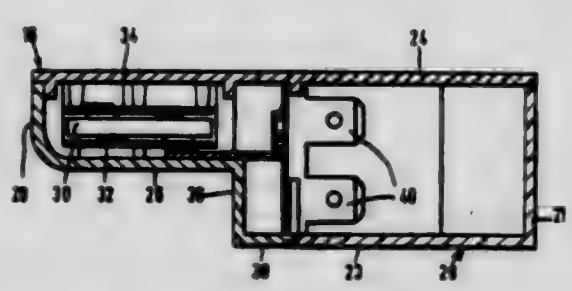
third ventilating means for feeding coolant air which is formed in the end portion in the axial direction of said second bracket, and
fourth ventilating means for discharging coolant air which is formed in the cylindrical portion of said second bracket, wherein when said first and second centrifugal fans are rotated, coolant air is ventilated through said third ventilating means to be discharged from said fourth ventilating means, a part of the coolant air ventilated through said third ventilating means is discharged from said second ventilating means through the air gap between the rotor and the stator and a coolant air ventilated through said first ventilating means is discharged from said second ventilating means.

4,492,886

STARTING RELAY-TERMINAL BOX GROUP FOR HERMETIC MOTOR-DRIVEN COMPRESSORS

Alfredo Bar, Pavia, Italy, assignor to Necchi Società per Azioni, Pavia, Italy

Filed Jul. 20, 1982, Ser. No. 400,010
Claims priority, application Italy, Sep. 3, 1981, 42916 A/81
Int. Cl.³ H02K *11/00*
U.S. Cl. 310—68 C 1 Claim



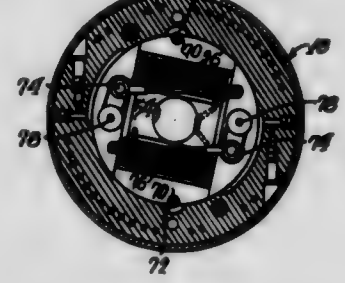
1. Starting relay-terminal box for hermetic motor-driven compressors for cooling apparatuses, comprising a base surface securable to the wall of the motor-driven compressor, a fixed cover covering a portion of said surface and forming with it a space of limited height inside, a starting relay positioned within said space consisting of a positive temperature coefficient resistance (PTCR), a removable cover covering the remaining portion of said base surface and forming with it a space larger than said space defined by said fixed cover and said base surface and a terminal box housed within the space defined by said removable cover and said base surface.

4,492,887

COMPACT RESISTOR ASSEMBLY FOR ROTARY ELECTRIC MACHINE

Jeffrey D. Baldwin, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Aug. 25, 1983, Ser. No. 526,341
Int. Cl.³ H02K *11/00*; H01C *3/18*
U.S. Cl. 310—68 R 12 Claims



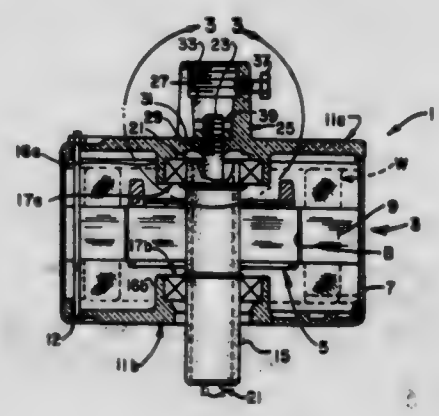
1. A rotary electric machine comprising:
a stator;
a rotor journalled for rotation within said stator about an axis and carrying an electrical conductor; and
a resistor mounted on said rotor and electrically associated with the conductor, said resistor being narrow axially of said rotor and elongated radially but within the periphery of the rotor and extending across the axis thereof.

4,492,888

WIRE WAY SECUREMENT MEANS FOR DYNAMOELECTRIC MACHINE

C. Theodore Peschke, and Daniel R. Messner, both of St. Louis County, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 11, 1983, Ser. No. 457,164
Int. Cl.³ H02K *11/00*
U.S. Cl. 310—71 3 Claims



1. In a dynamoelectric machine having a stator assembly including a core, a bore within said core, and a bearing support carried by said core, said dynamoelectric machine further comprising a rotor assembly having a rotor body rotatable within said bore, a shaft extending from said rotor body, said shaft being hollow and being journalled by bearings carried by said bearing support, a wire way extending through said hollow rotor shaft and being stationarily secured with respect to said stator assembly, wherein the improvement comprises: an opening within said bearing support for threadably receiving said wire way, an end of said wire way protruding beyond said bearing support, a locking nut threadably received on the end of said wire way protruding beyond said bearing support

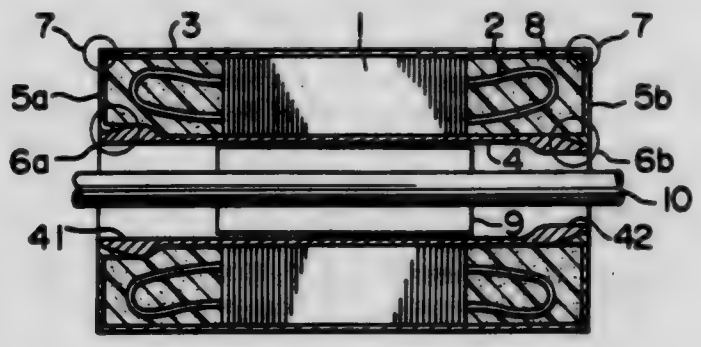
thereby to lock said wire way with respect to said bearing support, said bearing support further having a hub thereon generally coaxial with said wire way opening, said hub having a blind opening therein facing away from said rotor, said blind opening being substantially coaxial with said opening receiving said wire way, said blind opening being of only slightly larger diameter than the diameter of said lock nut, the latter having means on its outer end for engagement by a tool for tightening said lock nut on said wire way and on the base of said blind opening within said hub surrounding said opening receiving said wire way.

4,492,889

STATOR OF SUBMERGED MOTOR

Keiji Fukushi; Yutaka Higashimura, both of Hitachi; Shisei Hanioka, Ibaraki; Syunou Iwasaa, Hitachi, and Kenzo Kadotani, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 17, 1983, Ser. No. 552,763
Claims priority, application Japan, Nov. 19, 1982, 57-202114
Int. Cl.³ H02K *5/10*
U.S. Cl. 310—87 8 Claims



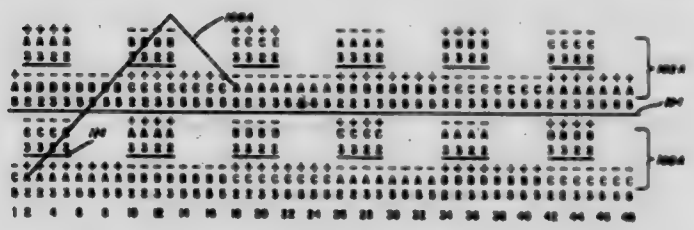
1. A stator of a submerged motor comprising:
a stator core having a winding applied thereto;
an outer cylinder supporting said stator core at the outside;
an inner cylinder supporting said stator core at the inside; and
end covers joining said outer and inner cylinders together at end portions thereof to provide a watertight container composed of said outer and inner cylinders and said end covers and having a hardened resin filled in a vacant space between the inner and outer cylinders and the end covers;
wherein the improvement comprises:
increased wall thickness portions formed at said inner cylinder at axial opposite end portions thereof in the vicinity of joints of the inner cylinder with the end covers, one of said increased wall thickness portions being formed on an outer side surface of one axial end portion and the other increased wall thickness portion being formed on an inner side surface of the other axial end portion.

4,492,890

STATOR WINDING PROVIDING MAGNETOMOTIVE FORCE WAVE OF REDUCED HARMONIC CONTENT

Daniel J. MacDonald, Brookfield, Wis., assignor to Litton Industrial Products, Inc., Beverly Hills, Calif.

Filed May 18, 1983, Ser. No. 495,809
Int. Cl.³ H02K *3/00*
U.S. Cl. 310—184 17 Claims



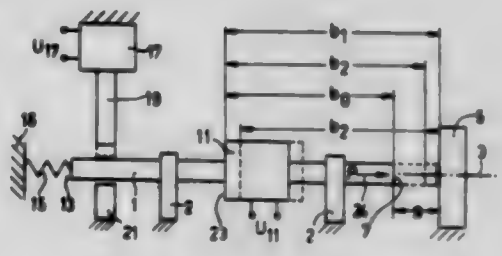
1. A stator winding for a polyphase a.c. machine, said stator winding having a plurality of coils formed of turns of wire lying in a plurality of stator slots spaced along an air gap surface of a stator core, said coils being connected into groups of coils lying in adjacent stator slots for polyphase alternating current operation, each of said coil groups having at least one central coil with a predetermined number of turns and at least two outer coils, one of which lies on either side of said central coil, said outer coils containing reduced turns with respect to said central coil to provide a graded coil turn configuration to the coil group, the reduced turn coils of coil groups that are adjacent along the air gap surface of the stator core occupying common stator slots so that coils of adjacent coil groups overlap.

4,492,891

PIEZOELECTRIC ACTUATOR ARRANGEMENT WITH ADJUSTMENT FOR WEAR

Heinz Wieters, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 21, 1983, Ser. No. 477,031
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1982, 3212062
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—328 6 Claims



1. An actuator arrangement for a controlled device, comprising
a ram having a front surface and an end remote from the front surface,
means for guiding the ram for movement along a line of movement such that the front surface is movable toward and away from the controlled device, and
an actuator for urging the front surface of the ram against the controlled device, characterized in that
the actuator is arranged to be displaceable along the line of movement together with the ram, and
the arrangement further comprises a re-adjusting abutment means for engaging said remote end of the ram and urging said remote end along said line of movement toward the controlled device, the re-adjusting abutment means consisting of a thrust block and a compression spring arranged between the thrust block and a compression spring arranged between the thrust block and the ram, and
a releasable locking actuator for locking the position of said remote end with respect to said controlled device.

4,492,892

PIEZOELECTRIC RESONATOR DEVICE SUPPORTED BY ANISOTROPIC RUBBER CONDUCTOR

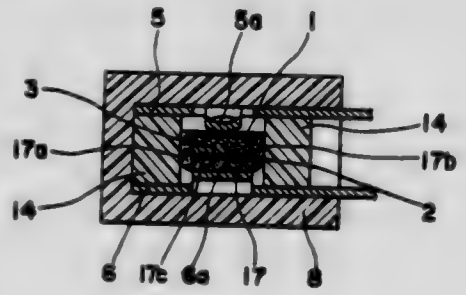
Hiroshi Nakatani, Kanazawa, Japan, assignor to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Apr. 19, 1984, Ser. No. 601,848
Claims priority, application Japan, May 25, 1983, 58-79404[U]
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—345 7 Claims

1. A piezoelectric resonator device comprising:
a first casing having a through-hole opening formed therein, said opening defining first and second side walls;
a first plate made of electrically conductive material applied at one end of said through-hole opening;

a second plate made of electrically conductive material applied at other end of said through-hole opening, thereby defining a cavity inside said first casing;

a rectangular plate shaped piezoelectric resonator element deposited with at least first and second electrodes at opposite surfaces, respectively, and having a configuration smaller than said cavity, said resonator element accommodated in said cavity such that said first electrode is facing said first plate and said second electrode is facing said second plate;



first anisotropic conduction pliable sheet pressure fitted between said first electrode and said first plate, thereby holding said piezoelectric resonator element between said first and second plates through said first anisotropic conduction pliable sheet;

second anisotropic conduction pliable sheet pressure fitted between one elongated side of said piezoelectric resonator element and said first side wall; and

third anisotropic conduction pliable sheet pressure fitted between other elongated side of said piezoelectric resonator element and said second side wall.

4,492,893

DUAL FILAMENT HALOGEN CYCLE AUTOMOTIVE-TYPE INCANDESCENT LAMP

Hermann Steiner, Herbrechtingen, and Walter Schomberr, Giengen-Hürben, both of Fed. Rep. of Germany, assignors to Patent-Treuhand Gesellschaft für elektrische Glühlampen GmbH, Munich, Fed. Rep. of Germany

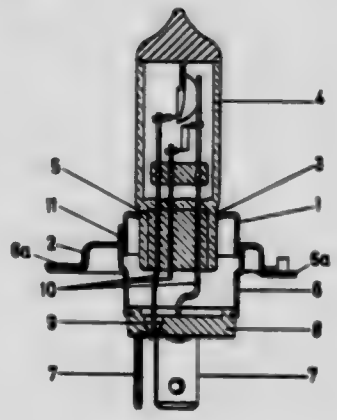
Filed Jun. 30, 1982, Ser. No. 393,776

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1981, 8121528[U]

Int. Cl.³ H01J 5/48, 5/56, 5/58

U.S. Cl. 313—318

5 Claims



1. Cementless halogen cycle incandescent lamp and base combination, especially dual filament lamp for motor vehicle headlight having

a lamp bulb (4) and a press stem (5) extending from the bulb;

a stem holder (1) retaining the lamp bulb therein and having a sleeve-like tubular portion surrounding the press stem,

a positioning ring (2) formed with a flange-like portion (6a), a depending sleeve-like portion (6) which telescopically surrounds the sleeve-like tubular portion of the stem holder (1) and further formed with at least three upstanding lugs (11) extending from the sleeve-like portion in alignment therewith and in a direction perpendicular with respect to the flange-like portion (6a) and in axial direction with respect to the lamp bulb along the outer wall of the tubular, sleeve-like portion;

and wherein

the sleeve-like tubular portion of the stem holder (1) projects outwardly from the depending sleeve-like portion (6) of the positioning ring (2) to define an outwardly extending region which is free from telescopic engagement with the depending sleeve-like portion of the positioning ring; and

the upstanding lugs of the positioning ring (2) are fitted against and welded to said outwardly extending region of the stem holder of the sleeve-like tubular portion of the stem holder,

whereby the relative alingment of the bulb (4) and the positioning ring (2) can be determined by positioning of the stem holder with respect to the upstanding lugs in accordance with the desired alignment before welding of the lugs to the stem holder.

4,492,894

ELECTRON-BEAM FORMING SYSTEM FOR MULTI-BEAM CATHODE-RAY TUBES

Hans Reule, Wendlingen; Hartmut Genzle, Plochingen, and Horst H. Vogel, Denkendorf, all of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

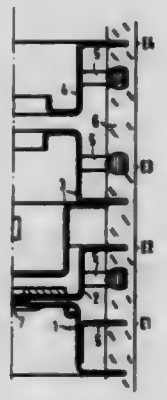
Continuation of Ser. No. 429,572, Sep. 30, 1982, abandoned, which is a continuation of Ser. No. 149,102, May 12, 1980, abandoned. This application Oct. 17, 1983, Ser. No. 542,090

Claims priority, application Fed. Rep. of Germany, May 18, 1979, 2920151

Int. Cl.³ H01J 29/50, 29/82

U.S. Cl. 313—414

5 Claims



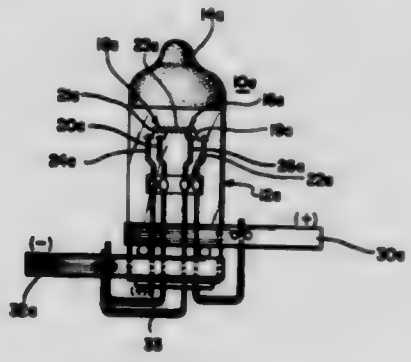
1. An electron-beam forming system for multibeam cathode-ray tubes and particularly for color-picture tubes comprising:

a plurality of cathodes for generating a plurality of electron beams; and

at least four electrodes for acting on the electron beams, each of said four electrodes being supported from spaced glass beads to dispose each of said four electrodes in different planes lying one behind the other each differently spaced from said plurality of cathodes, each of said four electrodes including a plurality of apertures each aligned with a different one of said plurality of cathodes for passing the electron beam radiating therefrom, at least three of said four electrodes closest to said plurality of cathodes each being formed of different materials each selected to have different coefficients of thermal expansion so that the ratio of the difference in linear thermal expansion between every two adjacent ones of said three electrodes to the distance between the planes of said adjacent ones of said three electrodes is approximately constant whereby mechanical stresses and convergence errors are avoided during operation as said four electrodes are heated to

different temperatures depending on their proximity to the cathodes.

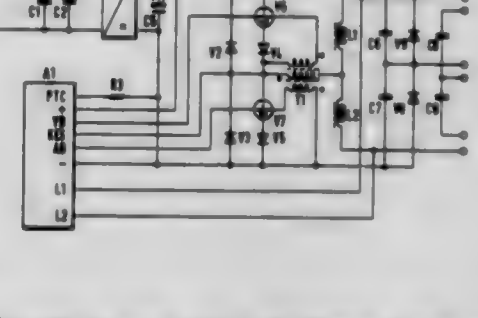
4,492,895
ARC RESISTANT HALOGEN HEADLAMP AND WIRING SCHEME THEREFOR
Robert A. Powell, Cookeville, Tenn., assignor to Edison International, Inc., Rolling Meadows, Ill.
Filed Sep. 23, 1982, Ser. No. 422,005
Int. Cl.³ B60Q *1/02*
U.S. Cl. 315—82 4 Claims



1. An incandescent lamp for use in a headlamp of an automotive vehicle, said lamp being of the dual-filament type having a first, low beam filament and a second, high beam filament, said lamp being connected electrically to the positive and negative terminals of the vehicle battery through means for energizing said high beam filament momentarily in a "flash to pass" mode while said low beam filament is energized, said first, low and second, high beam filaments being mounted in a gas-filled, sealed envelope in generally parallel, closely adjacent, overlapping physical relationship, each said filament including first and second ends with the first and second ends of said low beam filament being at the same ends of said filaments as the first and second ends of said high beam filament, respectively, a central portion of said high beam filament being aligned generally with said first end of said low beam filament, said first end of said low beam filament and the second end of said high beam filament being connected to the negative terminal of said vehicle battery and the first end of said high beam filament and the second end of said low beam filament being connected to the positive terminal of said vehicle battery in a fashion essentially minimizing the potential difference between the overlapping portions of the filaments subsequent to the momentary energization of the high beam filament during said "flash to pass" mode, whereby upon operating said high beam filament in said "flash to pass" mode, arcing between said filaments is avoided.

4,492,896
ELECTRONIC CANDLE SYSTEM
Graham A. Jullien, Windsor, Canada, assignor to James J. Ogilvy, Windsor, Canada
Filed May 4, 1983, Ser. No. 491,447
Claims priority, application Canada, Nov. 18, 1982, 415826
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—153 20 Claims

1. A decorative light array comprising:
(a) a plurality of light bulbs,
(b) a wand for manually pointing to a light bulb,
(c) means for sensing which light bulb has been pointed to by the wand, and



(d) means for lighting the light bulb upon said sensing having been completed.

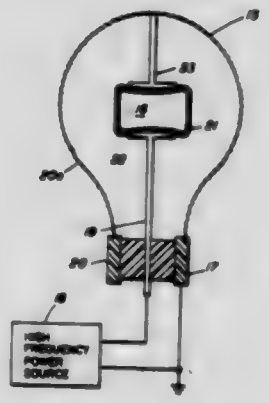
4,492,897
MEANS FOR LIMITING AND CONTROLLING THE CURRENT OF A DISCHARGE LAMP
Martti Seiranen, Espoo, and Matti Virta, Helsinki, both of Finland, assignors to Hamenkalliontie 6 A 4, Espoo and Porientie 3 E 48, Helsinki, both of, Finland
Filed Sep. 20, 1982, Ser. No. 420,010
Claims priority, application Finland, Oct. 21, 1981, 813297; Jan. 12, 1982, 820096
Int. Cl.³ G02B *9/60*
U.S. Cl. 315—219 3 Claims

1. Electronic ballast means for a discharge lamp, controllable by a supply voltage phase angle controller (1), with a lamp circuit (7) comprising a high frequency generator and before this circuit being connected a D.C. voltage filtering capacitor (6) which has through a rectifier (5) been connected to a filtering circuit consisting of a choke (2) and a capacitor (3), this latter circuit being connected through a phase angle controller (1) to an A.C. voltage source, characterized in that in series with capacitor (3) of said filtering circuit has been connected a current limiting or switching-off means (4) having its control electrode connected to a sensing means (9, 10) responsive to the changes in the generator's load.

4,492,898
MERCURY-FREE DISCHARGE LAMP
Walter P. Lapatovich, Watertown, and George R. Gibbs, Marlboro, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.
Filed Jul. 26, 1982, Ser. No. 402,175
Int. Cl.³ H05B *41/16, 41/24*
U.S. Cl. 315—248 7 Claims

1. A mercury free molecular vapor discharge lamp comprised of:
a vessel having walls defining a discharge chamber;
said chamber free of mercury and filled with an inert gas and containing an amount of aluminum trichloride;
means for heating said aluminum trichloride for generating aluminum chloride vapor at a pressure not above 20 torr,

causing a mixture of said inert gas and said aluminum chloride vapor to fill said discharge chamber; and



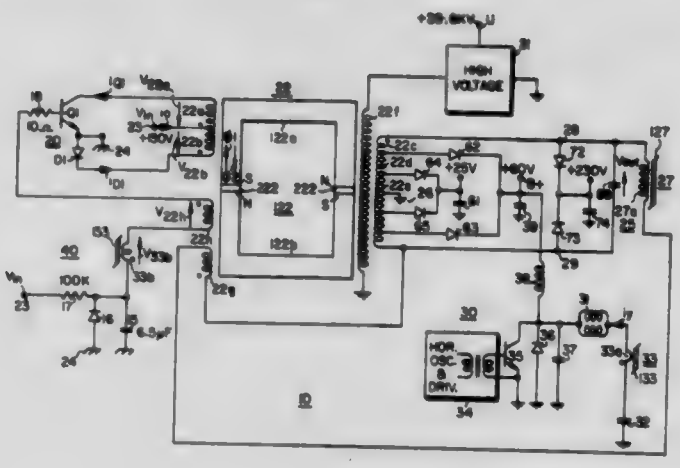
means for initiating and sustaining a glow discharge through said mixture, which in response emits ultraviolet light in a band peaking near 261.4 nm.

4,492,900

SINGLE CONTROLLABLE SWITCH, PUSH-PULL INVERTER FOR A TELEVISION RECEIVER FERRORESONANT POWER SUPPLY

David W. Lux, and Donald H. Willis, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 14, 1981, Ser. No. 330,363
Int. Cl.³ H01J *29/70*
U.S. Cl. 315—411
17 Claims



1. A scan synchronized push-pull power supply for a television display system, comprising:

a deflection winding;

a deflection generator coupled to said deflection winding for generating scanning current in said deflection winding during trace and retrace intervals of each deflection cycle;

a source of direct voltage;

a power transformer having a primary winding wound around a portion of a magnetizable core and coupled to said direct voltage source and having a secondary winding;

a first controllable switch having a main current path and a control terminal for controlling conduction in said main current path;

a second switch having a main current path including first and second main current path terminals, the main current path of said first controllable switch being coupled to a first winding section of said primary winding to generate only a unidirectional current therein, the main current path of said second switch being coupled to a second winding section of said primary winding to generate only a unidirectional current therein, the main current paths of the two switches being coupled to the two winding sections of said primary winding in a push-pull arrangement;

means for developing a deflection rate signal that is synchronized with scanning current generation;

means for applying said deflection rate signal to the control terminal of said first switch to alternately switch conduction of said main current path of said first switch between conductive and nonconductive states during each deflection cycle in synchronism with scanning current generation, the switching of the main current path of said first switch to either the conductive or nonconductive state producing a change of voltage between the two main current path terminals of said second switch that switches the conduction state of the main current path of the second switch to the one that is opposite that of the main current path of the first switch, resulting in the development of an alternating polarity output voltage across said transformer secondary winding; and

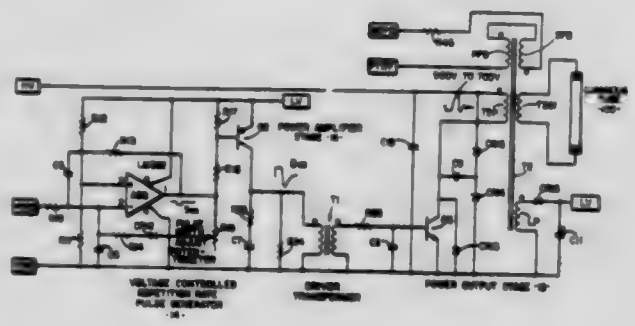
a load circuit within said television display system energized by said output voltage.

4,492,899

SOLID STATE REGULATED POWER SUPPLY SYSTEM FOR COLD CATHODE LUMINOUS TUBE

Marshal H. Martin, Northridge, Calif., assignor to Indicator Controls Corporation, Gardena, Calif.

Continuation-in-part of Ser. No. 293,018, Aug. 18, 1981, abandoned. This application May 23, 1983, Ser. No. 497,185
Int. Cl.³ G05F *1/00*; H05B *37/02*
U.S. Cl. 315—308
9 Claims

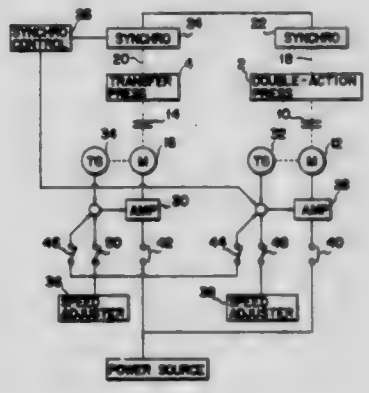


1. A regulated solid state power supply system for a cold cathode luminous tube, comprising: a transformer having a primary winding and having a first secondary winding connected to the cold cathode luminous tube; a power input circuit adapted to be connected to an energy source; a switching circuit connecting said power input circuit to the primary winding of said transformer; a voltage controlled repetition rate constant duration pulse generator circuit for producing constant duration pulses at a variable repetition rate; power amplifier driver circuitry connecting the output of the generator circuit to said switching circuit for introducing a constant duration variable repetition frequency pulse signal to said switching circuit alternately to cause energy to flow into the transformer and energy in the transformer to be transferred to the luminous tube in the form of variable frequency constant current pulses; and regulating control circuitry connected to said power input circuit and to said transformer and responsive to the line voltage of said energy source and the current flow in the luminous tube for supplying a regulating voltage to said pulse generator to control the repetition rate of the pulses produced by said generator.

4,492,901
CONTROL SYSTEM FOR SYNCHRONIZING COMBINATION PRESS LINE

Yoshihiro Higuchi, Nonoichi, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 27, 1982, Ser. No. 382,642
Claims priority, application Japan, May 29, 1981, 56-80801
Int. Cl.³ H02P 5/46
U.S. Cl. 318—85 3 Claims



1. A control system for synchronizing a press line comprised of a transfer press and a double-action press, said transfer press including a first motor and a first drive shaft and said double-action press including a second motor and a second drive shaft, said control system comprising:

first detector means coupled to said first drive shaft for detecting an angular position of said transfer press in a press cycle and transmitting a first signal corresponding to the angular position thereof;

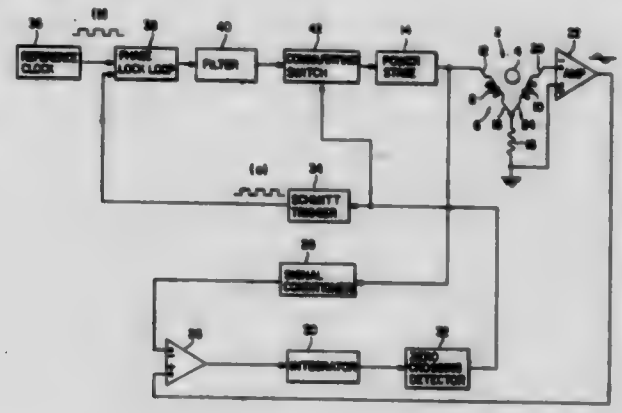
second detector means coupled to said second drive shaft for detecting an angular position of said double-action press in the same press cycle and transmitting a second signal corresponding to the angular position thereof; and

means for comparing said first and second signals and generating a third signal corresponding to a difference between said first and second signals, said third signal being fed only to said second motor for controlling the speed thereof.

4,492,902
PERMANENT MAGNETIC MOTOR COMMON LEG IMPEDANCE COMPENSATION MEANS

William Ficken, Berkeley Heights; Jerome Sears, Wyckoff, and Walter Parfomak, Wallington, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 500,739, Jun. 3, 1983,. This application Apr. 5, 1984, Ser. No. 597,036
Int. Cl.³ H02K 23/00
U.S. Cl. 318—254 5 Claims



1. A permanent magnet motor for a sensing device, characterized by:

a permanent magnet rotor;

a two-phase stator including a driving winding for providing a driving signal having a first phase and a sensing winding magnetically coupled to the driving winding for providing a sensing signal having a second phase;

an undesired common impedance connected to the driving winding and to the sensing winding;

power means for providing a power signal, and connected to the driving winding for applying said power signal thereto, with a portion of the driving signal appearing across the undesired common impedance and becoming a part of the sensing signal;

means connected to the sensing winding and to the undesired common impedance for combining the sensing signal and the signal across the common impedance;

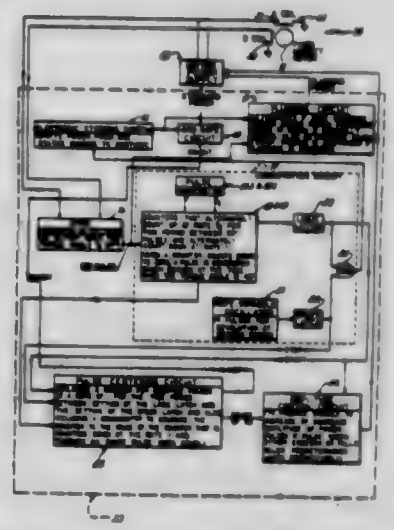
means connected to the power means and to the combining means for feeding back the combined signal to the power means to compensate for that portion of the driving signal appearing across the undesired common impedance and which becomes a part of the sensing signal; and

the power means being responsive to the combined signal fed back thereto for providing the power signal.

4,492,903
OPTIMUM EFFICIENCY BRUSHLESS DC MOTOR

John H. Knight, Kettering, and Milton S. Isaacson, Dayton, both of Ohio, assignors to Nu-Tech Industries, Inc., Dayton, Ohio

Division of Ser. No. 799,730, May 23, 1977, Pat. No. 4,238,717, which is a continuation-in-part of Ser. No. 561,537, Mar. 24, 1975, Pat. No. 4,027,215. This application Dec. 8, 1980, Ser. No. 213,925
The portion of the term of this patent subsequent to May 31, 1994, has been disclaimed.
Int. Cl.³ H02D 5/16
U.S. Cl. 318—341 9 Claims



1. A brushless dc motor coupled to a load and to a source of electrical power comprising, in combination:

a stator with a plurality of windings thereon, each said stator winding producing a flux when electrical current flows therethrough;

a rotor, rotatably mounted with respect to said stator, one of said stator and rotor being coupled to the load;

means for producing a magnetic field in said rotor which is fixedly oriented with respect to said rotor, said field interacting with said flux to produce a rotational torque force on said rotor when the physical positioning of said rotor with respect to conducting stator windings is such that the torque angle is greater than 0°, said magnetic field of said stator windings when said rotor is rotating;

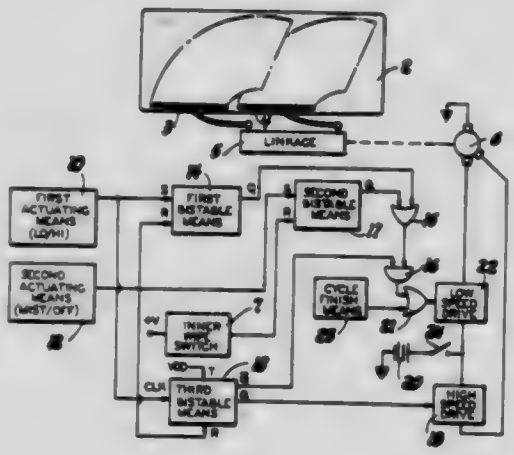
power signal generating means, coupled to the source of electrical power and responsive to said induced voltage in said stator windings, for applying power signals to said stator windings in a predetermined sequence, said power signals being applied at times always symmetric about the time when said torque angle is a predetermined value over a range of loads and over a range of power source variations.

4,492,904

WINDSHIELD WIPER SYSTEM WITH TOUCH CONTROL

Donald E. Graham, Centerville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 528,629, Sep. 1, 1983, abandoned. This application Jul. 2, 1984, Ser. No. 625,567
Int. Cl.³ H02P 1/10
U.S. Cl. 318—444 6 Claims



1. Touch controlled drive apparatus for a wiper on a motor vehicle window comprising, in combination:

electric motor means adapted, when actuated, to drive said wiper cyclically through a predetermined path between an inner wipe position and another position;

high and low speed motor actuating means effective, when actuated, to actuate said motor means in high speed and low speed operational modes, respectively;

first and second single touch actuating means;

first bistable electronic circuit means having first and second output states responsive to actuation of the first and second single touch actuating means, respectively;

inner wipe switch means effective to generate an output signal when the wiper is not in its inner wipe position;

second bistable electronic circuit means having first and second output states responsive to actuation of the second single touch actuating means and inner wipe switch, respectively;

third bistable electronic circuit means having first and second output states, the second output state being effective to actuate the high speed motor actuating means and the first output state being effective when simultaneous with the first output state of either of the first and second bistable electronic circuit means to actuate the low speed motor actuating means, said third bistable electronic circuit means being responsive to actuation of the second single touch actuation means to reset to its first output state and thereafter responsive to successive actuations of the first single touch actuation means after the first such actuation to toggle between its first and second output states; and

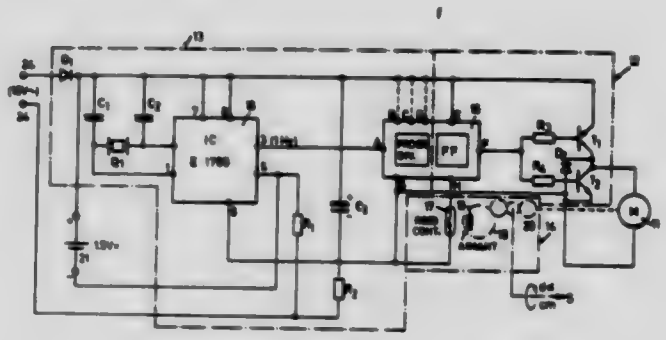
cycle finish means effective to actuate the low speed motor actuation means as required to finish any cycle of wiper operation and return said wiper at least to the inner wipe position, whereby continuous wiper operation may be initiated, stopped and switched between low and high speed modes and single cycle wiper operation may be initiated with only two single touch actuators.

4,492,905

INTERMITTENT DRIVE ARRANGEMENT

Jean-Francois Pfister, Rue du Soleil 10, CH-2605 Sonceboz, Switzerland

Continuation-in-part of Ser. No. 200,868, Oct. 27, 1980, abandoned. This application Mar. 4, 1983, Ser. No. 472,291
Claims priority, application France, Oct. 31, 1979, 79 27047
Int. Cl.³ G05B 5/00
U.S. Cl. 318—470 9 Claims



1. An arrangement for intermittently driving a monitoring apparatus operative without maintenance over an extended period of time to record data during widely spaced intervals of time, said arrangement comprising a DC motor having a shaft which drives said monitoring apparatus, the amount of torque required to drive said apparatus being variable, a DC power source, an electronic switching circuit disposed between said power source and said DC motor for selectively connecting said source to said motor and for selectively disconnecting said source from said motor, said switching circuit being free of electrical contacts that exhibit bounce during said connecting and disconnecting operations, switching-on control means coupled to said switching circuit for repetitively causing said electronic switching circuit to connect said power source to said DC motor thereby to energize said motor, and switching-off control means coupled to said switching circuit and responsive to movement of the shaft of said DC motor, after said motor has been energized, for disconnecting said power source from said motor as a function of a predetermined magnitude of movement of the shaft of the motor, said connecting and disconnecting operations being effected repetitively with said power source being connected to said DC motor for time intervals that are small in comparison with the time intervals that said power source is disconnected from said motor, said DC motor operating to automatically adapt its power consumption during said small time intervals to the torque required to drive said apparatus, said switching-on control means comprising a standard time pulse generator coupled to at least one frequency-dividing circuit having a programmable counting cycle, said frequency-dividing circuit including a plurality of setting connections which are adapted to be actuated in selected different, readily changeable combinations to change said counting cycle of said frequency-dividing circuit to a selected counting cycle within a range of counting cycles, the ratio of the maximum and minimum counting cycles within said range being at least 12 to 1, whereby said setting connections are adapted to permit ready selection and change of the intermittency rate of the repetitive connecting of said power source to said DC motor to a desired rate within a wide range of possible rates.

4,492,905

ELECTRIC MOTOR

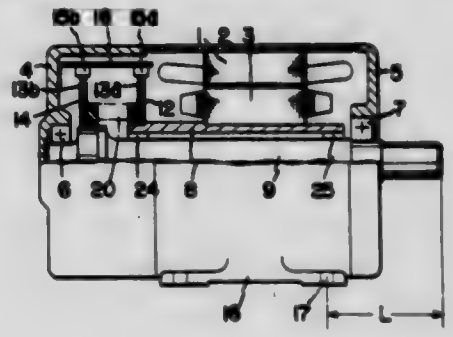
Tadahiko Goto, Nakama; Kiyoshi Ouiki; Satoshi Murakami, both of Kitakyushu; Mitsunori Yokooji, Munakata; Norio Andou, and Norio Shimojyo, both of Kitakyushu, all of Japan, assignors to Yaskawa Electric Mfg. Co., Ltd., Fukuoka, Japan

Filed Oct. 8, 1981, Ser. No. 309,734

Claims priority, application Japan, Oct. 15, 1980, 55-145364; Oct. 29, 1980, 55-156071[U]; Apr. 30, 1981, 56-65372; Apr. 30, 1981, 56-65373; Aug. 14, 1981, 56-127897

Int. Cl.³ G01L *3/14*

U.S. Cl. 318—488 25 Claims



1. An electric motor comprising:

(a) a stator fixedly mounted on a motor casing,

(b) a rotor concentrically disposed in said stator,

(c) a hollow tubular drive shaft fixedly mounting said rotor thereon for rotating said rotor relative to said stator with a suitable circular gap between said stator and said rotor,

(d) an output shaft passing thru said hollow tubulur drive shaft said output shaft sharing the same rotating axis with said drive shaft,

(e) a resilient connecting member disposed at the non-load side of said motor and connecting said drive shaft and said output shaft for transmiesing torque from said drive shaft to said output shaft and

(f) means for measuring the transmission torque by detecting the twisting amount of said resilient connecting member produced during transmission of said torque from said drive shaft to said output shaft.

4,492,907

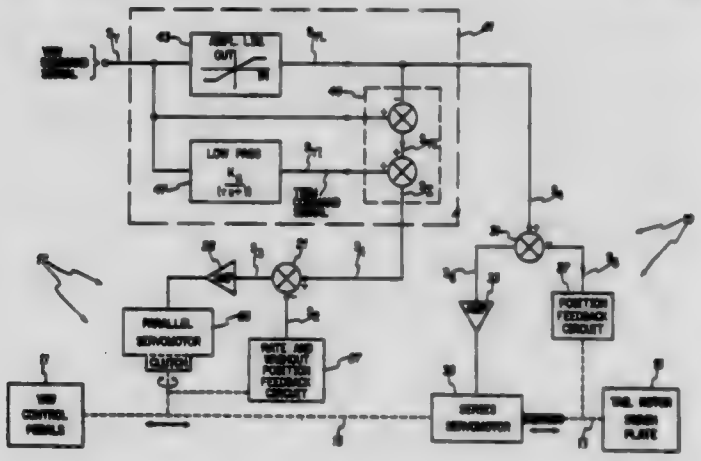
COMBINED SERIES AND PARALLEL SERVO CONTROL FOR AIRCRAFT

Gordon R. Fabian, and Kenneth W. McElreath, both of Cedar Rapids, Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 28, 1982, Ser. No. 393,166

Int. Cl.³ G05D *1/08*

U.S. Cl. 318—586 16 Claims



1. For use in an aircraft having (a) an autopilot for providing one or more flight control command signals and (b) a manually operable device mechanically coupled through appropriate linkages to a flight control surface so as to afford positioning of said surface, the apparatus comprising:

(1) servomotor first means connected to said linkages so as to operate in series with said manually operable device;

(2) second means connected to said first means output for providing a feedback first signal;

(3) third means for receiving said feedback first signal and a control first signal and producing therefrom a corrective error first signal which causes the servomotor first means output position to change so as to maintain said corrective error first signal substantially at zero;

(4) servomotor fourth means connected to said linkages so as to operate in parallel with said manually operable device;

(5) fifth means connected to fourth means output for providing a feedback second signal;

(6) sixth means for receiving said feedback second signal and a control second signal and producing therefrom a corrective error second signal which causes the servomotor fourth means output position to change so as to maintain said corrective error second signal substantially at zero; and

(7) seventh means for (a) receiving a predetermined autopilot generated command signal and (b) providing as output said control first signal and said control second signal such that said control first signal comprises a signal indicative of output signal of an amplitude limiter whose input signal is said autopilot generated command signal, and such that said control second signal comprises a signal indicative of excess of said autopilot generated command signal over a predetermined reference.

4,492,908

APPARATUS FOR SYNCHRONIZING THE SLATS OF MOTOR DRIVEN WINDOW BLINDS

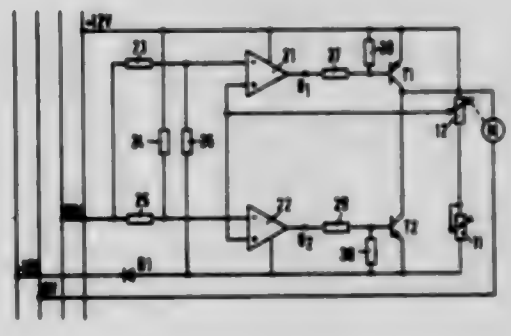
Bernd Stickle, and Klaus Pfendler, both of Bonndorf, Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 17, 1983, Ser. No. 467,521

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1982, 3206002

Int. Cl.³ C05B *1/06*

U.S. Cl. 318—663 2 Claims



1. In a follow-up system for positioning the louvers of a venetian blind or the like, said system comprising: positive, negative, zero and nominal input leads; variable means for producing an input voltage on said nominal input lead to control the position of the louvers; first and second differential amplifiers each having a plus input, a minus input, and an output; first and second resistors connected from said nominal input lead to the minus inputs of said first and second amplifiers, respectively; a third resistor connected from the minus input of said first amplifier to said positive input lead; a fourth resistor connected from the minus input of said second amplifier to said negative input lead; first and second transistors; said first transistor having an emitter connected to said negative input lead; said first and second transistors each having a base and a collector; said second transistor having an emitter connected to said positive input lead; a collector connected to that of said first transistor; said transistors being of opposite conductivity types; a fifth resistor connected from said first amplifier output to said first transistor base; a sixth resistor con-

nected from said second amplifier output to said second transistor base; a seventh resistor connected from said first transistor base to said negative input lead; an eighth resistor connected from said second transistor base to said positive input lead; a motor having a drive shaft to tilt the louvers; said motor being connected from said transistor collectors to said zero input lead; and feedback means connected between said positive and negative input leads; said feedback means including a potentiometer having a winding and a wiper movable in contact with said winding in response to rotation of said drive shaft; said wiper being connected to said amplifier plus inputs.

4,492,909

DEVICE FOR CONTROLLING THE DRIVE OF A STEPPING MOTOR, TO ADJUST THE LATERAL STITCH BIGHT AND/OR THE FEED LENGTH OF A SEWING MACHINE

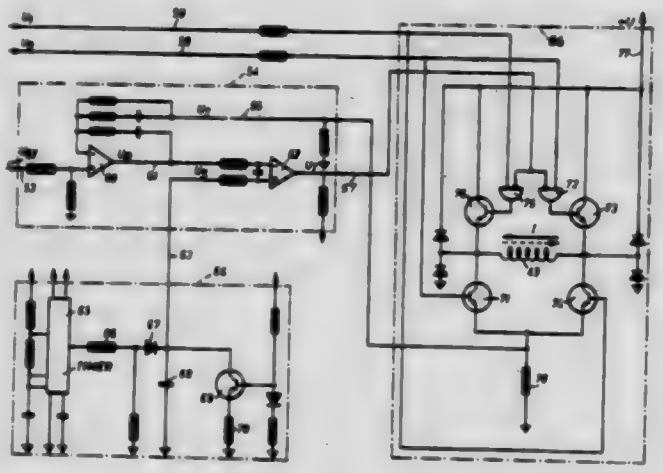
Jürgen Hartwig, Ettlingen, Fed. Rep. of Germany, assignor to Pfaff AG Haushaltmaschinen, Fed. Rep. of Germany

Division of Ser. No. 184,744, Sep. 8, 1980, Pat. No. 4,404,509. This application Mar. 22, 1982, Ser. No. 360,653

Int. Cl.³ H02K 29/02

U.S. Cl. 318—696

3 Claims



1. A device for controlling the drive of a stepping motor of the bipolar chopper phase type having two section windings, with the section currents being capable of taking two opposite nominal values and being controllable in phase opposition by switching transistors in full bridge connection, the reversal of the current direction in the section windings being effected by varying the switching voltages applied to the base of the switching transistors and the steps to be executed being subdivided by intermediate graduation in staircase form, comprising a microcomputer for controlling the stepwise change of the magnitude of the section current of one of the section windings through one digital-to-analog converter, from its negative nominal value through zero to its positive nominal value and conversely, while holding the magnitude of the section current of the other section winding through another digital-to-analog converter at one of the constant maximum nominal values and, upon reaching the maximum nominal value of the section current of one of the section windings, controls the keeping up of this nominal value and controls the section current of the other section winding stepwise from the maximum positive nominal value through zero to the maximum negative nominal value thereof, and conversely, while holding the magntitude of the section current of one of the section windings at the previously reached constant maximum nominal value, and a counter connected to said digital-to-analog converters to supply thereto consecutive digital counter signals.

4,492,918

CONTROL CIRCUIT FOR A TIMING MOTOR

Dan-Cornelis Radoczan, Bad Soden, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

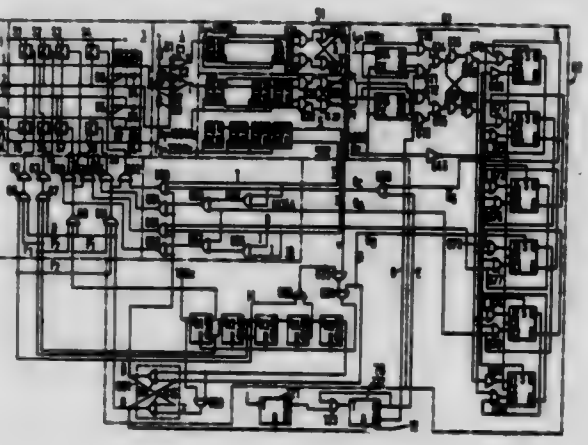
Filed Apr. 20, 1983, Ser. No. 486,760

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1982, 3215449

Int. Cl.³ H02P 5/16

U.S. Cl. 318—772

3 Claims



1. An apparatus for controlling and regulating the rotational speed of a motor having a permanent-magnetic rotor with at least one pair of magnetic poles and a stator with at least first and second coils, said first coil being provided with driving pulses and said second coil being utilized as a control coil for providing a sinusoidal voltage corresponding to the motion of said rotor with respect to said stator in a nominal running mode, said apparatus comprising:

(a) comparator means for providing first and second sequences of substantially rectangular pulses by comparing said sinusoidal voltage with first and second reference voltages;

(b) oscillator and frequency divider means for generating a plurality of frequency signals, including a reference frequency signal;

(c) nominal running mode regulation means for correlating, at a first correlation frequency, said first sequence of pulses and said reference frequency signal with respect to phase and time duration and for generating and supplying to said second coil accelerating or braking driving pulses having a phase and time duration corresponding to the phase offset and time duration differential between said first pulse sequence and said reference frequency signal;

(d) mode switchover initiation means for monitoring said second pulse sequence to determine the rotational speed of said rotor and for initiating a self-starting mode of operation whenever said rotor speed falls below a predetermined value;

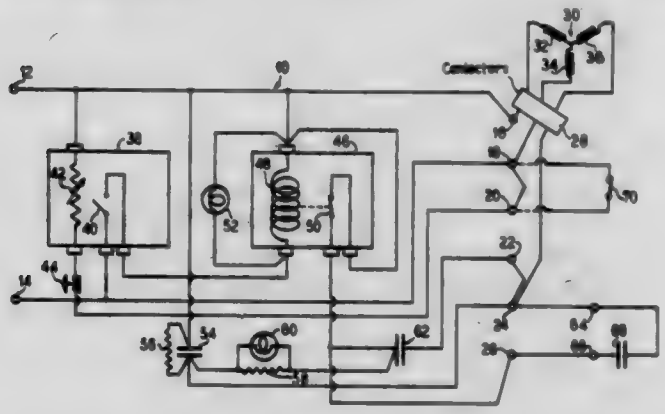
(e) self-starting mode control means, responsive to said mode switchover initiation means, for alternately reswitching and repoling driving pulses between said first and second coils for a given time period to thereby accelerate the rotational speed of said rotor; and

(f) mode transition control means, operable following the expiration of said given time period and for a predetermined transitional time interval, for correlating said first pulse sequence and said reference frequency pulses at a second frequency which is a multiple of said first correlation frequency and for generating and supplying said accelerating and braking pulses to said working coil at said second correlation frequency and for thereafter switching over into said nominal running mode of operation.

4,492,911
STATIC PHASE CONVERTER

Robert L. Molitor, 16 Oak Grove Dr., Hampshire, Ill. 60140

Filed Jul. 26, 1983, Ser. No. 517,506
Int. Cl.³ H02P 1/18
U.S. Cl. 318—779 23 Claims



8. A static phase converter for starting a motor having at least first, second and third windings, comprising:

first and second input terminals for receiving a single-phase alternating voltage;

first, second, third, fourth and fifth output terminals, said first output terminal adapted for connection to the first winding, said second and third output terminals connected together and adapted for connection to the second winding, and said fourth and fifth output terminals connected together and adapted for connection to the third winding;

said first and second input terminals respectively connected to said first output terminal and said second and third connected output terminals to energize said first and second windings upon the receipt of alternating current;

capacitance means, including running capacitance connected between said first input terminal and said fourth and fifth output terminals to provide an alternating voltage with a phase shift, with respect to the applied voltage, at the third winding, sufficient to maintain motor operation after starting, and starting capacitance connected between said fourth and fifth output terminals to provide starting a phase-shifted alternating voltage at the third winding, to develop starting torque for the motor for a predetermined interval; and

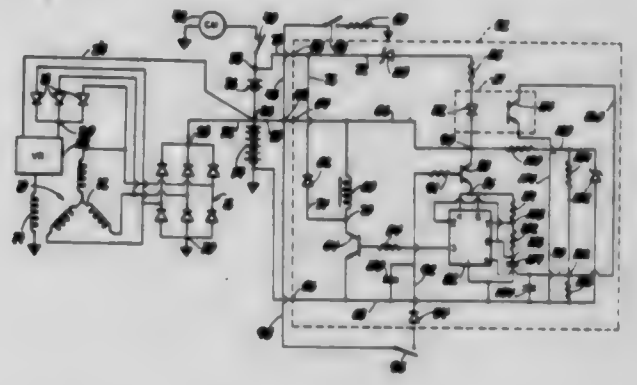
starting control means connected to said first and second input terminals, comprising relay means including a normally-closed contact connecting said first input terminal to said starting capacitance and shunting said running capacitance, and delay means connected to said relay means and time responsive to the application of the alternating voltage at said first and second input terminals to operate said relay means to open said normally-closed contacts, remove the shunt of said running capacitance, and disconnect said starting capacitance from said first input terminal.

4,492,912
DUAL VOLTAGE MOTOR VEHICLE ELECTRICAL SYSTEM

Robert J. Nowakowski, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 12, 1983, Ser. No. 457,495
Int. Cl.³ H02J 7/14, 7/24
U.S. Cl. 320—6 5 Claims

1. A dual voltage motor vehicle electrical system comprising in combination, first and second series connected batteries for supplying an electrical engine cranking motor with a voltage corresponding to the sum of the voltages of the batteries, at least one of said batteries being connected to supply at least one other electrical load with a lower voltage corresponding to its terminal voltage, a voltage regulated direct voltage generating means driven by the engine of the vehicle, conductor means connecting the output terminals of said generating means to the terminals of said first battery whereby said first battery is charged by said generating means, a control means having an input connected to said conductor means and an output connected to the terminals of said second battery for charging said second battery from the voltage applied to said conductor means, said control means including means for varying the

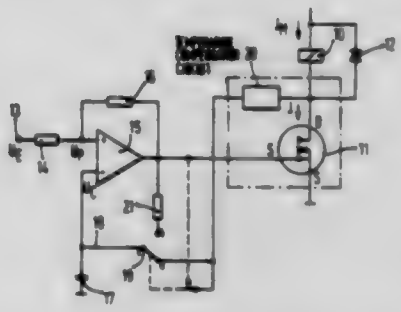


charging current supplied to said second battery as a function of the terminal voltage of said second battery, and means for maintaining said control means in operation for a predetermined time period following shut down of said engine to charge said second battery from said first battery for said time period.

4,492,913
CURRENT REGULATING CIRCUIT FOR AN ELECTRIC CONSUMER

Winfried Arnold, Vaihingen; Johannes Locher, and Bernd Schelling, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 25, 1982, Ser. No. 411,713
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1981, 3135805
Int. Cl.³ G05F 1/56
U.S. Cl. 323—282 16 Claims



1. In an electrical circuit in combination with a motor vehicle control unit having an electrical consumer and a switch means for supplying current to the consumer, the improvement which compriaes:

current regulating means for regulating the consumer current;

a field effect transistor (FET) which is connected in the circuit to serve as said switching means and to also serve as a current measuring device for said current regulating means; and

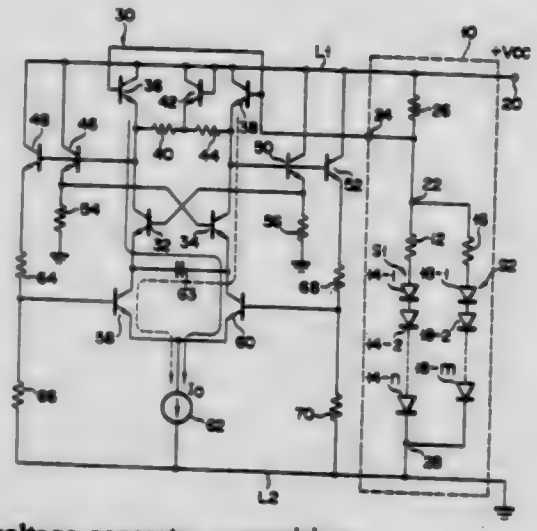
the field effect transistor having a current measuring pick-up means connected thereto.

4,492,914

TEMPERATURE-COMPENSATING BIAS CIRCUIT

Hirokazu Hitomi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 29, 1983, Ser. No. 518,579
Claims priority, application Japan, Jul. 29, 1982, 57-131242
Int. Cl.³ G05F 3/16
U.S. Cl. 323—313
6 Claims



1. A voltage generator comprising:

(a) a first line supplied with a first voltage corresponding to a source voltage;

(b) a second line supplied with a second voltage corresponding to the ground potential; and

(c) means connected between said first and second lines, for generating a third voltage corresponding to the product of said first voltage and a constant number greater than 0 and less than 1, said third voltage generating means comprising,

a first resistor having a first end connected to said first line and a second end,

a first circuit connected between the second end of said first resistor and said second line and including a second resistor and at least one diode,

a second circuit connected in parallel with said first circuit and including a third resistor and at least one diode, and

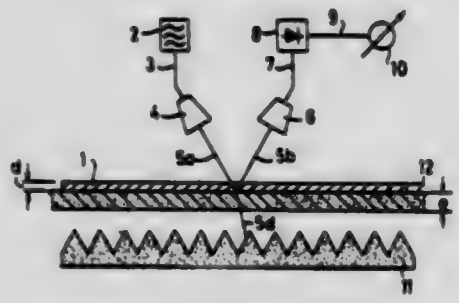
voltage output means connected to the second end of said first resistor, for providing a voltage generated at the second end of said first resistor corresponding to a junction between said first and second circuits as the third voltage.

4,492,915

METHOD AND APPARATUS FOR THE ELECTRONIC MEASUREMENT OF THE THICKNESS OF VERY THIN ELECTRICALLY CONDUCTIVE FILMS ON A NONCONDUCTIVE SUBSTRATE

Friedhelm Caspers, Bochum, Fed. Rep. of Germany, assignor to Elektro-Physik & Erich Steingroever, Fed. Rep. of Germany

Filed Feb. 25, 1982, Ser. No. 352,189
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1981, 3107675
Int. Cl.³ G01R 27/04
U.S. Cl. 324—58.5 R
24 Claims



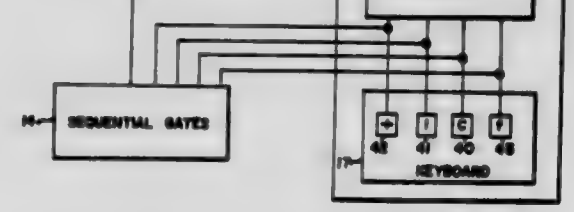
1. Method for the electronic measurement of the thickness of very thin electrically film supported on a nonconductive base, the thickness of said film being within the range of between 1 and 1000 nanometers and the conductivity of which is known, comprising the steps of: subjecting said film to a beam of microwave energy directed toward the film by a microwave transmitting means; receiving by microwave receiving means a portion of said microwave beam reflected by said film and measuring an output value of said microwave receiving means as a factor indicative of the surface resistance of said film.

4,492,916

DIGITAL METER USING CALCULATOR COMPONENTS

Benjamin A. Johnson, 77 Ridgeway Ave., Rochester, N.Y. 14615

Continuation of Ser. No. 59,371, Jul. 20, 1979, abandoned. This application Sep. 21, 1981, Ser. No. 304,241
Int. Cl.³ G06F 3/05; G01R 11/52, 27/26
U.S. Cl. 324—60 CD
16 Claims



1. A meter for measuring an analog value and displaying the result as a digital value, said meter comprising:

a. means of the type used in electronic pocket calculators for displaying digits;

b. electronic pocket calculator circuitry means electrically connected with said digital display means and having calculational capacity for operating said display means to display digits resulting from calculations;

c. electronic pocket calculator keyboard means having keyboard terminals electrically connected with said circuitry means and arranged so that actuation of keys on said keyboard means produces electric pulses at said keyboard terminals to operate said circuitry means and display digits on said display means;

d. at least one of said keyboard terminals being a summation terminal arranged relative to said circuitry means so that an electric pulse at said summation terminal advances a summation entered into said circuitry means and displayed by said display means;

e. RC circuit means including an integrating capacitor and a resistive element electrically interconnected so that changing a charge on said capacitor from an initial state to a terminal state requires a time interval that varies as a function of said analog value;

f. time base generator means electrically connected with said RC circuit and said summation terminal for producing and delivering actuation pulses to said summation terminal so that each pulse operates said circuitry means to advance said summation entered into said circuitry means and displayed by said display means;

g. actuating switch means electrically connected with said RC circuit means and said time base generator means and arranged so that operation of said switch means starts said generator with said capacitor in said initial state; and

h. gating means electrically connected with said RC circuit means and said time base generator means and arranged for stopping said generator means when said capacitor reaches said terminal state so that the total of said actuation pulses delivered to said summation terminal and the value displayed by said display means are functions of said analog value.

4,492,917

DISPLAY DEVICE FOR DISPLAYING AUDIO SIGNAL LEVELS AND CHARACTERS

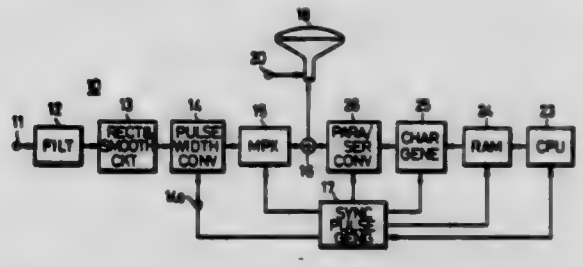
Mamoru Inami, Yokohama; Yoshiki Tanaka, Fujisawa, and Zenju Ohtsuki, Tokyo, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Aug. 30, 1982, Ser. No. 412,970

Claims priority, application Japan, Sep. 3, 1981, 56-138867; Sep. 3, 1981, 56-138868; Sep. 3, 1981, 56-138869; Sep. 3, 1981, 56-138870

Int. Cl.³ G01R 23/16

U.S. Cl. 324—77 A 8 Claims



1. A display device comprising:

a plurality of bandpass filters having filtering bands of respectively different center frequencies, for band-dividing and filtering an input audio signal supplied thereto through an input terminal;

synchronizing signal generating means for generating a horizontal synchronizing signal, a vertical synchronizing signal, and synchronizing pulses;

level indication signal producing means supplied with output signals of said bandpass filters, for converting the thus supplied output signal into a signal in synchronism with the horizontal synchronizing signal from the synchronizing signal generating means and having a pulse width in accordance with the level of the horizontal synchronizing signal, and serially obtaining the converted signal in synchronism with the vertical synchronizing signal from the synchronizing signal generating means by successive time-division carried out during a vertical scanning period;

character indication signal producing means stored with information signals for displaying characters and the like, for serially obtaining a character indication signal in synchronism with the synchronizing pulses from the synchronizing signal generating means;

composing means driven by said synchronizing signals from the synchronizing signal generating means, for obtaining a video signal by composing an output of said level indication signal producing means and an output of said character indication signal producing means; and

a picture tube,

said display device composing and displaying bars in a horizontal direction corresponding to the audio signal level, characters, and the like, on the picture tube, by the outputs of said composing means.

4,492,918

HIGH VOLTAGE POWER LINE PHASE ANGLE AND CURRENT MEASURING INSTRUMENT

E. Norman Hernandez, Seattle, and Eric M. Hammerquist, Arlington, both of Wash., assignors to Terra Technology Corp., Redmond, Wash.

Filed Aug. 26, 1982, Ser. No. 411,378

Int. Cl.³ G06F 15/20

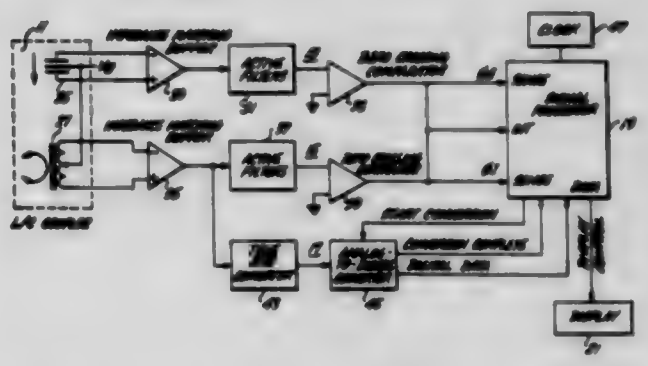
U.S. Cl. 324—83 R 33 Claims

1. A high voltage power line phase angle measuring instrument comprising:

an L/C coupler, including a coupling capacitor and a coupling inductor suitable for producing voltage and current signals whose fluctuations track the voltage and current fluctuations of the power carried by a high voltage power line when said L/C coupler is positioned suitably close to, but spaced from, a single power line;

a voltage channel connected to said coupling capacitor of said L/C coupler for: receiving said voltage signal, filtering said voltage signal to remove undesirable components therefrom, and squaring said filtered voltage signal to produce a square wave voltage signal that tracks said voltage fluctuations of the power carried by said high voltage power line;

a current channel connected to said coupling inductor of said L/C coupler for: receiving said current signal, filtering said current signal to remove undesirable components therefrom, and squaring said filtered current signal to produce a square wave current signal that tracks said current fluctuations of the power carried by said high



voltage power line, the circuits included in said voltage and current channels being formed such that the phase shift produced in said channels as the voltage and current signals are filtered and squared is substantially identical whereby the phase angle between said square wave voltage and current signals is the same as the phase angle between the voltage and current fluctuations of the power carried by said voltage power line;

a signal processor connected to said voltage and current channels for receiving said square wave voltage and current signals and determining the phase angle between said voltage and current signals based on the time between transitions of said square wave voltage and current signals; and,

a display connected to said signal processor for displaying the phase angle determined by said signal processor.

4,492,919

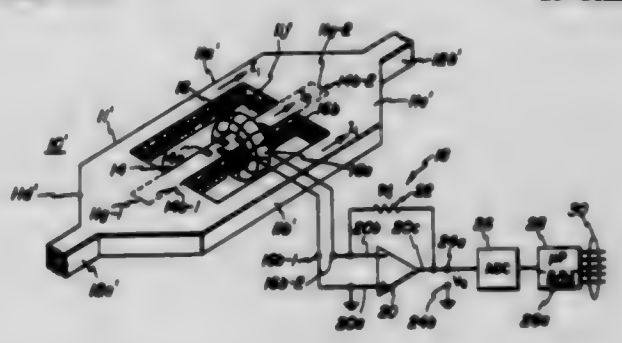
CURRENT SENSORS

Miran Milkovic, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 12, 1982, Ser. No. 367,315

Int. Cl.³ G01R 1/20; H01F 40/06

U.S. Cl. 324—127 15 Claims



1. Apparatus for sensing the magnitude of a current flowing therethrough, comprising:

a member having a plurality of current-carrying first element portions each having substantially the same resistance R_1, and a second current-carrying element portion, coplanar with at least one of said first element portions, having a meander-line geometry and a second resistance R_2; each of said first element portion resistance R_1 being

less than the resistance R_2 of said second element portion; said second element portion being electrically connected in parallel with at least one of said first element portions; said plurality of first element portions being arranged to each provide an induced current in the second element portion of magnitude and phase selected to substantially cancel one another; and

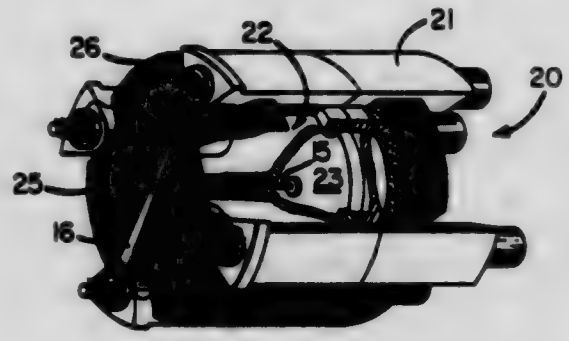
means associated with the second element portion for transforming the magnitude of current flowing through said second element portion to a sensor output current related to the total current flowing through said member by the ratio of the second resistance R_2 and the first resistance R_1.

4,492,920

ELECTRIC INDICATOR WITH RETURN-TO-ZERO FEATURE AND COMPENSATING COIL TO CANCEL THE RETURN-TO-ZERO FEATURE DURING MEASUREMENT

Arthur L. Reesstra, New Hope, Pa., assignor to Beede Electrical Instrument Co., Inc., Penacook, N.H.

Filed Jun. 22, 1981, Ser. No. 275,977
Int. Cl.³ G01R 1/20
U.S. Cl. 324—146 14 Claims



1. An electrical indicator having an indicator pointer and means for angularly displacing said pointer in response to variations in the magnitude of an external electrical signal, said indicator comprising:

a rotor retaining said indicator pointer and being magnetized to provide opposite magnetic poles;

means for rotatably mounting said rotor and said indicator pointer;

permanent magnet means for establishing a first magnetic flux passing through said rotor substantially perpendicular to the axis thereof and urging said rotor to an equilibrium position;

first coil means oriented in relation to said permanent magnet means such that on passage of a predetermined current therethrough, an independent second magnetic flux is established for substantially cancelling said first magnetic flux;

second coil means responsive to said external electrical signal and oriented to establish a third flux disposed at an angle representative of said external signal magnitude;

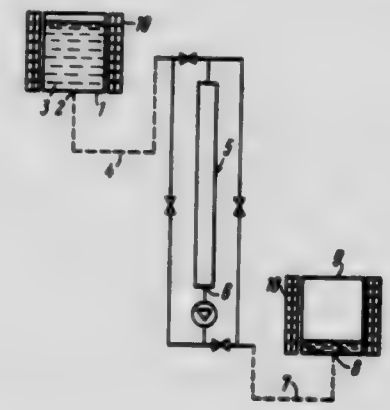
wherein said rotor and indicator pointer rotate from said equilibrium position to a position at said angle of said flux of said second coil means when both first and second coil means are energized as aforesaid and said rotor and said pointer return to said equilibrium position pursuant established by the flux of said permanent magnet means when said first and second coil means are not energized.

4,492,921

METHOD OF DETERMINING THE QUANTITY OF SOLID FRACTION OF FERROMAGNETIC MATTER IN A FLUID

Alexandr V. Sandulyak; Vyacheslav I. Garaschenko, and Oleg J. Korikov, Rovno, all of U.S.S.R., assignors to Ukrainsky Institut Inzhenerov Vodnogo Khozyaistva, Leninskaya, U.S.S.R.

Filed Apr. 6, 1983, Ser. No. 482,453
Int. Cl.³ G01N 15/06
U.S. Cl. 324—204 3 Claims



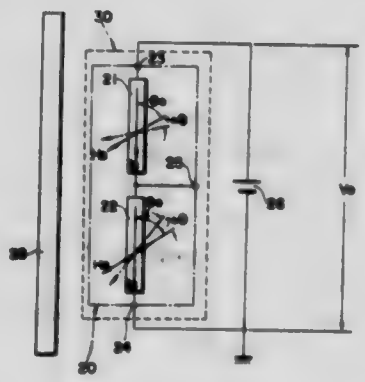
1. A method of measuring the quantity of the solid fraction of ferromagnetic matter in a fluid, including recirculating a predetermined volume of the fluid to be analyzed through magnetized filtering packing, acting periodically upon said fluid subjected to recirculation through the magnetized packing by an attenuating magnetic field outside the magnetized packing, to demagnetize the particles of the solid fraction remaining in the fluid, measuring the content in said fluid of the solid fraction of the material between its exit from the packing and successive re-entry into the packing, and continuing said recirculation until a permanent residual content of the solid fraction in said fluid is attained, used to evaluate the initial content thereof.

4,492,922

MAGNETIC SENSOR WITH TWO SERIES-CONNECTED MAGNETORESISTIVE ELEMENTS AND A BIAS MAGNET FOR SENSING THE PROXIMITY OF A RELATIVELY MOVABLE MAGNETICALLY PERMEABLE MEMBER

Hiroyuki Ohkubo, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 8, 1981, Ser. No. 328,613
Claims priority, application Japan, Dec. 9, 1980, 55-172553; Dec. 9, 1980, 55-172554
Int. Cl.³ G01B 7/14; G01R 33/02
U.S. Cl. 324—207 12 Claims



1. A magnetic sensor for sensing the proximity of a magnetically permeable member, the sensor and member being relatively movable with respect to each other and having an axis of movement disposed within a fixed plane, said magnetic sensor comprising first and second coplanar magnetoresistive ele-

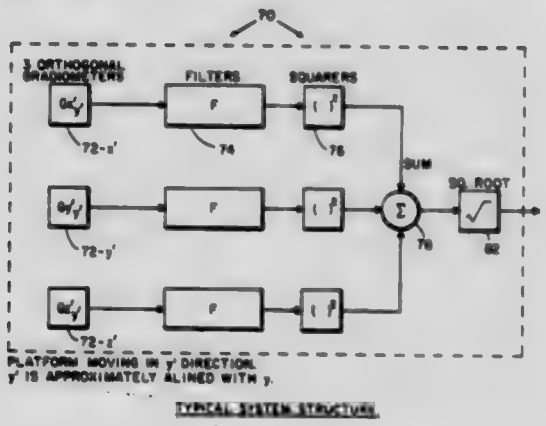
ments, each magnetoresistive element having a main current conducting path and processing anisotropic resistance as a function of the direction of a resultant magnetic field applied thereto, said two magnetoresistive elements being connected in series with each other to define a junction therebetween; means for supplying a d. c. current to said series-connected magnetoresistive elements; bias means for supplying first and second saturating bias magnetic fields to said first and second magnetoresistive elements, respectively, at the same angle θ_o only to each of the respective main current conducting paths thereof in the absence of said magnetically permeable member, with said first and second saturating bias magnetic fields being the only bias magnetic fields supplied to said first and second magnetoresistive elements, respectively, said angle θ_o differing substantially from 90° and 270°, said angle at which each bias field is supplied being changed by substantially equal and opposite small deviation angles $\pm\Delta\theta$ in response to the relative movement of said permeable member proximate said magnetic sensor; and output means coupled to said junction to produce an output signal which varies as a function of said deviation angles by which the angles of said bias fields change.

4,492,923

APPARATUS FOR MEASURING THE SPATIAL SCALAR VARIATION OF A MAGNETIC FIELD WITH VECTOR MAGNETIC SENSORS ON A MODERATELY STABLE MOVING PLATFORM

George W. Byram, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 21, 1982, Ser. No. 390,461
Int. Cl.³ G01B 7/14; G01R 33/02
U.S. Cl. 324—207 7 Claims



TYPICAL SYSTEM STRUCTURE

1. An apparatus for measuring the spatial variation of magnetic field, along a path of motion of the apparatus, the magnetic field having the coordinates x, y and z with respect to a fixed frame of reference, the apparatus, when in use, generally being mounted on a movable platform, the platform defining another set of orthogonal axes, x', y' and z', the two sets of axes being substantially parallel, the apparatus comprising:

three means for measuring the gradient of a magnetic field, the means being oriented along the mutually orthogonal axes, x', y' and z' on the platform, the direction of motion being such that the angles between corresponding axes, for example between axes y and y', are within predetermined limits, the outputs of the gradiometers comprising the gradients $Gx'_{y'}$, $Gy'_{y'}$ and $Gz'_{y'}$ of the magnetic field when the motion is considered to be in the y' direction;

three means for filtering, each means having an input connected to the output of one of the means for measuring, the means having a configuration such that its output signal for a doublet input is a relatively narrow positive peak with a relatively wide negative area on each side of the peak, the net area approximating zero;

three means for squaring, each having an input connected to the output of a means for filtering, for squaring their input signals;

a means for summing, having three inputs connected to the outputs of the means for squaring, for obtaining the sum of the squares of the components x', y' and z' of the magnetic field when the platform is moving in the y direction; and

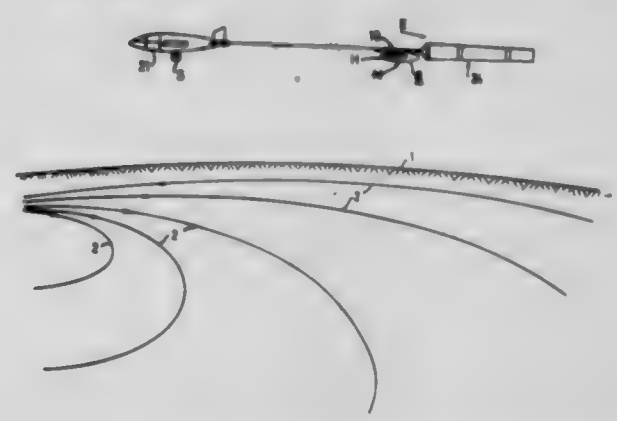
means, whose input is connected to the output of the means for summing, which takes the square root of its input signal, and has as an output the variation of the magnitude of the magnetic field along the y' direction, which is substantially the direction in which the platform is moving.

4,492,924

METHOD AND APPARATUS FOR ORE PROSPECTING UTILIZING AN AERIAL TRANSMITTER AND AERIAL RECEIVER

Bruno Y. Nilsson, Boliden, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

PCT No. PCT/SE80/00386, § 371 Date Jul. 8, 1981, § 102(e) Date Jul. 8, 1981, PCT Pub. No. WO81/01617, PCT Pub. Date Jun. 11, 1981
PCT Filed Nov. 28, 1980, Ser. No. 285,077
Claims priority, application Sweden, Nov. 29, 1979, 7909875
Int. Cl.³ G01V 3/165, 3/16
U.S. Cl. 324—330 8 Claims



1. A method for determining the electrical conductivity of the ground, particularly in connection with aerial prospecting, comprising generating an electromagnetic field which induces an electric current in the ground by means of an aerial transmitter unit, measuring the magnetic and electric fields induced by said current at the measuring site by means of an aerial receiver unit, said fields representing a measurement of said electrical conductivity and variations therein, said electromagnetic field from the transmitter being transmitted horizontally and directed transversally of an imaginary line that connects the transmitter with the receiver; a horizontal component of an electric field E being measured in the receiver in a radial direction to the transmitter; a magnetic field H being measured in a direction parallel with the magnetic field from the transmitter; and forming from the measured magnitudes the ratio E/H and/or the phase difference ψ, both of which are dependent on the electrical conductivity of the ground.

4,492,925

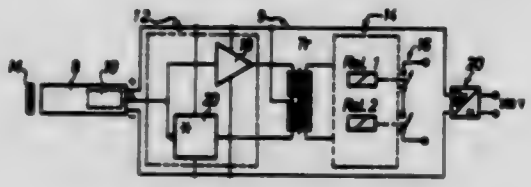
TESTING AND EVALUATING CIRCUIT FOR PROXIMITY SWITCHES IN MACHINE CONTROL MEANS

Heinz Kammerer, Ostfildern, and Hans Langheinrich, Leonberg-Silberberg, both of Fed. Rep. of Germany, assignors to Gebhard Balluff Fabrik feinmechanischer Erzeugnisse GmbH & Co., Neuhausen, Fed. Rep. of Germany

Filed Feb. 26, 1982, Ser. No. 352,804
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1981, 3110390
Int. Cl.³ G01R 31/02, 31/32
U.S. Cl. 324—418 13 Claims

1. A testing and monitoring circuit for a proximity switch forming an element of a machine control means including in combination, a proximity switch alternately switchable be-

tween two operating conditions, control circuit means for switching said proximity switch between its two operating conditions to generate a timed output signal with a given frequency and monitoring circuit means responsive to said



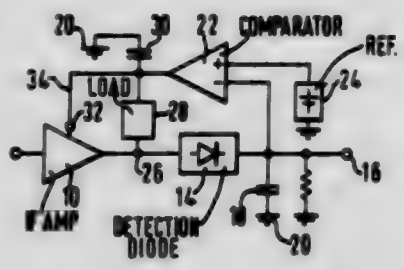
proximity switch and to said control circuit means for producing a clear signal for the duration of said timed output signal and a blocking signal for the machine control means in the absence of changes in the potential of the output signal from the proximity switch.

4,492,926

AMPLITUDE MODULATION DETECTOR

Hiromi Kusakabe, and Atsushi Ogawa, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Aug. 12, 1981, Ser. No. 292,263
Claims priority, application Japan, Aug. 14, 1980, 55-112074
Int. Cl.³ H03D 1/10, 1/06
U.S. Cl. 329—205 R 4 Claims



1. An amplitude modulation detector having a constant D.C. output voltage, for detecting the audio component of an AM signal, comprising:

AM detection means responsive to first and second input signals for maintaining said constant D.C. output voltage regardless of level changes in said AM signal, said first signal being the AM signal;

a D.C. reference voltage; and

feedback means connected to the output of said detection means for comparing said D.C. output voltage of said detection means with said D.C. reference voltage to produce said second signal, said feedback means including a D.C. voltage comparator supplied with said D.C. reference voltage and said constant D.C. output voltage being regulated to a value signal to said D.C. reference voltage by said feedback means.

4,492,927

OFFSET VOLTAGE COMPENSATION CIRCUIT

Douglas R. Holberg, Austin, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Division of Ser. No. 265,983, Jun. 30, 1980, Pat. No. 4,390,754. This application Sep. 30, 1982, Ser. No. 430,446
Int. Cl.³ H03F 1/01
U.S. Cl. 330—9 4 Claims

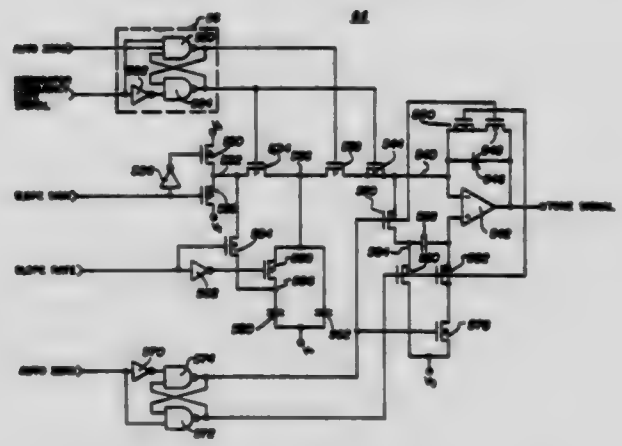
1. A circuit to compensate for the offset voltage of an operational amplifier, comprising:

means for connecting the output terminal of said amplifier to a first of the input terminals;

a capacitor having a first terminal thereof connected to the second input terminal of said amplifier;

means for connecting the second terminal of said capacitor to said first input terminal when said output terminal and said first terminal are connected; and

means for connecting said second terminal of said capacitor



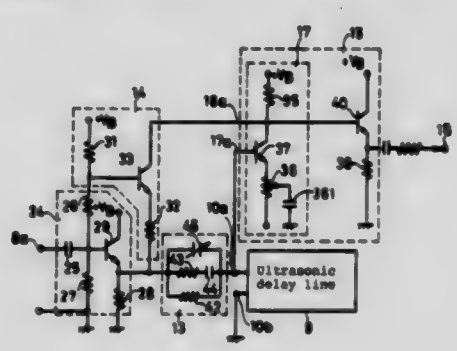
to a reference node when said output terminal is not connected to said first terminal, said capacitor charged to provide at said second input terminal an offset compensating voltage for said amplifier.

4,492,928

COMB FILTER

Daishiro Hayakawa, Ashiya; Masao Akimoto, Neyagawa; Katsumi Narita, Neyagawa, and Kenroku Tani, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 12, 1981, Ser. No. 272,919
Claims priority, application Japan, Jun. 23, 1980, 55-85548
Int. Cl.³ H03F 3/68; H04B 11/00
U.S. Cl. 330—126 10 Claims



1. A comb filter comprising

an ultrasonic delay line element having a common terminal for inputting an ultrasonic signal therethrough in said delay line and at the same time taking a delayed ultrasonic signal therethrough out of said delay line,

an impedance element connected between a signal input terminal and said common terminal,

a first amplifier circuit connected to an end of the impedance element,

a second amplifier circuit connected to the other end of the impedance element,

an operation circuit which provides summing of or subtraction between output signals of said first amplifier and said second amplifier to produce an output signal.

4,492,929

OPERATIONAL AMPLIFIER HAVING ENHANCED GAIN THROUGH CURRENT FEEDBACK

Robert L. Vyne, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

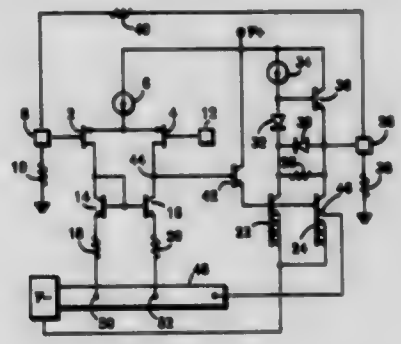
Filed May 13, 1983, Ser. No. 494,193
Int. Cl.³ H03F 3/45
U.S. Cl. 330—253 7 Claims

1. An integrated operational amplifier circuit of the type which includes an output, and power supply conductor means

for distributing power from a first source of supply voltage, said integrated operational amplifier circuit comprising:

an input stage having an output node and including first and second input transistor devices, said input stage being coupled across a portion of said power supply conductor means; and

an output stage coupled to said output node and including first and second NPN transistor means each having base,



emitter and collector terminals, said first NPN transistor means for conducting load current to said output and said second NPN transistor means for receiving load current from said output, said output stage being coupled to said power supply conductor means for supplying a portion of the current received by said second transistor means to said power supply conductor to generate a voltage in said input stage to compensate for voltage translated back to said output node from said output stage.

4,492,930

AUTOMATIC GAIN CONTROL SYSTEM

Robert C. Knowles, Ocala, and Darrell R. Marshall, Palatka, both of Fla., assignors to Microdyne Corporation, Ocala, Fla.

Filed Oct. 13, 1981, Ser. No. 310,959
Int. Cl.³ H03G 3/30
U.S. Cl. 330—284 5 Claims

1. An automatic gain control system comprising:

a first controlled amplifying means for producing an output signal that is a function of a varying amplitude carrier input signal,

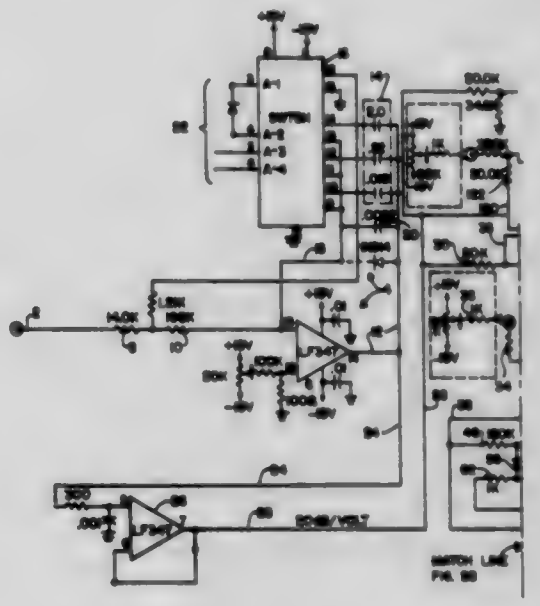
a second controlled amplifying means for producing an output signal that is a function of a varying amplitude carrier input signal,

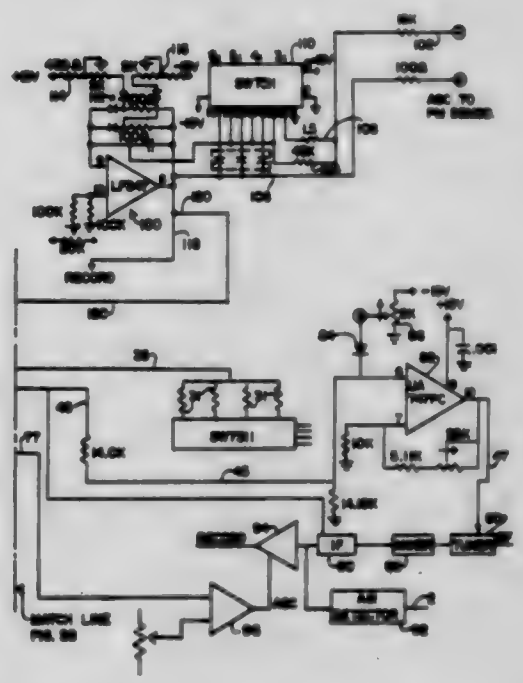
an automatic gain control circuit for producing a first gain control voltage which varies as a function of the amplitude level of the input carrier signal,

said amplifying means including means for varying the gain of said amplifying means as a function of the first gain control voltage only above a prescribed voltage level greater than 0,

means for applying said first gain control voltage to said first amplifying means,

said automatic gain control circuit further comprising means for generating a further gain control voltage for establishing a linear logarithmic relationship between the gain control voltage and the varying amplitude input carrier signal applied to said gain controlled amplifying means over the entire operating range of said amplifying means,





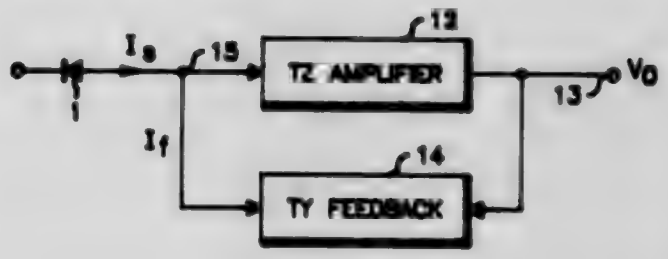
means applying said further gain control voltage to said second amplifying means.

4,492,931

INFRA-RED RECEIVER FRONT END

Lionel Deweck, Mont de Vaux, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 396,553, Jul. 9, 1982,. This application Jul. 9, 1984, Ser. No. 629,739
Int. Cl.³ H03F 1/34
U.S. Cl. 330—294 11 Claims



1. A front-end circuit suitable for use in an infra-red receiver, the circuit comprising a transimpedance amplifier for providing an output voltage at an output terminal, a current source connected to supply an input current to an input terminal of the transimpedance amplifier; and transadmittance feedback means

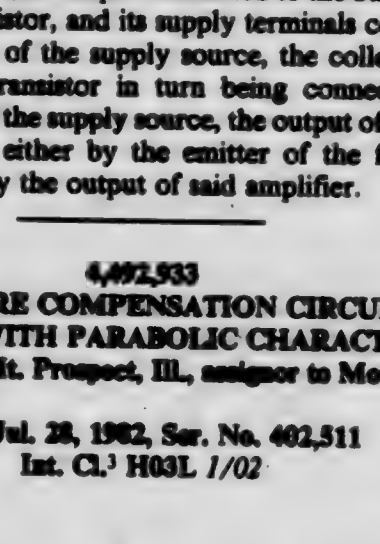
having a low pass transfer characteristic and connected between the output terminal and the input terminal of the transimpedance amplifier so that unwanted signals in the output voltage due to undesirable low frequency components in the input current are removed.

4,492,932

AMPLIFIER CIRCUIT HAVING A HIGH-IMPEDANCE INPUT AND A LOW-IMPEDANCE OUTPUT

Andreas Rusznyak, Chene-Bourgeries, Switzerland, assignor to Asulab S.A., Bienne, Switzerland

Filed Sep. 28, 1982, Ser. No. 419,887
Int. Cl.³ H03F 1/38, 3/16
U.S. Cl. 330—300 11 Claims



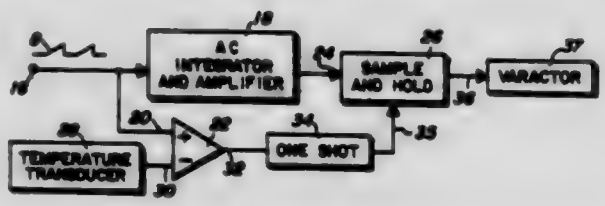
1. An electronic amplifier circuit having a high-impedance input and a low-impedance output, comprising:
a field effect transistor, the gate of which forms said input;
a first bipolar transistor having its base connected to the source of the field effect transistor and its emitter connected to the drain of the same transistor;
a first current source having one terminal connected to the emitter of the first bipolar transistor;
a supply source having two poles, the first of which is connected to the other terminal of the current source;
a first resistor having a terminal connected to the source of the field effect transistor; and
an amplifier with a positive gain which is slightly less than unity, having its input connected to the source of the field effect transistor, its output connected to the other terminal of the first resistor, and its supply terminals connected to the two poles of the supply source, the collector of the first bipolar transistor in turn being connected to the second pole of the supply source, the output of said circuit being formed either by the emitter of the first bipolar transistor or by the output of said amplifier.

4,492,933

TEMPERATURE COMPENSATION CIRCUIT FOR OSCILLATOR WITH PARABOLIC CHARACTERISTIC

Steven E. Grisco, Mt. Prospect, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 28, 1982, Ser. No. 402,511
Int. Cl.³ H03L 1/02
U.S. Cl. 331—66 10 Claims



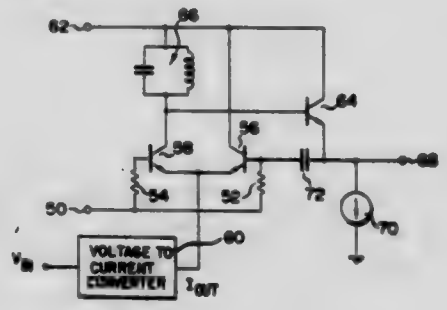
10. A method for temperature compensating an oscillator circuit having a frequency response that is parabolic with respect to temperature, comprising:
generating a ramp signal having a linear voltage change with respect to time;
integrating said ramp signal to produce single-sided parabolic voltage functions with respect to a time base;
sampling said parabolic voltage functions at selected times corresponding to varying ambient temperatures to produce compensating voltages; and
varying the frequency of said oscillator circuit in response to said compensating voltages.

4,492,934

VOLTAGE CONTROLLED OSCILLATOR WITH LINEAR CHARACTERISTIC

Yasuhiro Sugimoto, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 5, 1982, Ser. No. 346,234
Claims priority, application Japan, Feb. 12, 1981, 56-19479
Int. Cl.³ H03B 5/04, 5/12
U.S. Cl. 331—117 R 5 Claims



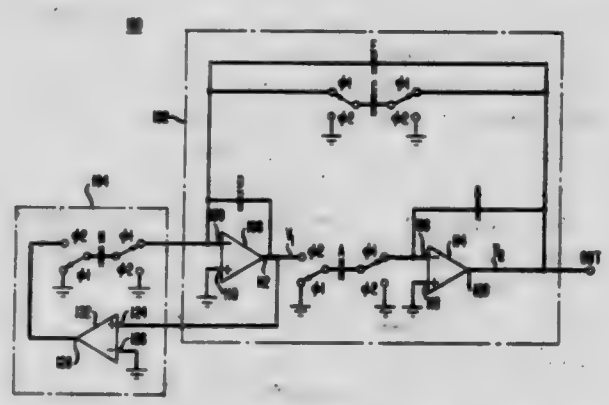
1. An oscillator comprising:
first and second bias terminals;
a first transistor whose base and collector are connected to said first and second bias terminals, respectively;
a second transistor whose base and emitter are connected to said first bias terminal and the emitter of said first transistor, respectively;
voltage-to-current converter means for generating a current proportional to the square of an input voltage, wherein said voltage-to-current converter generating means is connected to the emitters of said first and second transistors;
a resonance circuit connected between the collector of said second transistor and said second bias terminal; and
a feedback path, having an amplifier and a capacitor, connected between the collector of said second transistor and the base of said first transistor.

4,492,935

SWITCHED CAPACITOR OSCILLATOR FORMED BY A DAMPED RESONATOR WITH SATURABLE FEEDBACK

Paul E. Fleischer, Little Silver, N.J.; Apparajan Ganesan, Indianapolis, Ind., and Kenneth R. Laker, Staten Island, N.Y., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 11, 1983, Ser. No. 474,685
Int. Cl.³ H03B 5/06; H03C 1/00, 3/00
U.S. Cl. 331—135 15 Claims



1. An oscillator, comprising

a switched capacitor damped resonator network having at least one signal input node and at least one signal output node and including at least one amplifier, and

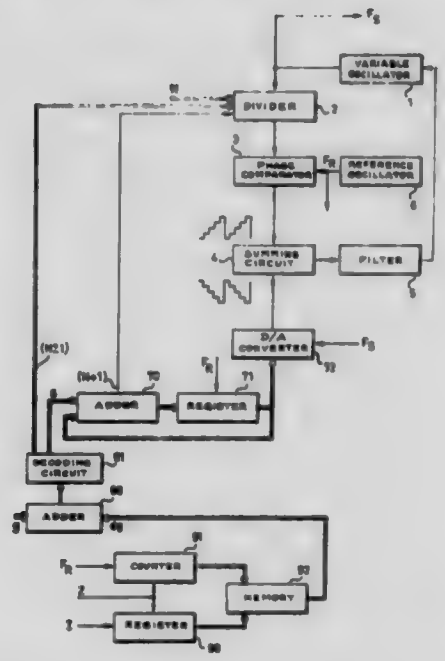
a switched capacitor nonlinear feedback control network coupling one of said output nodes to one of said input nodes, said feedback control network comprising a saturable device for affecting the waveform of the feedback signal to said resonator network.

4,492,936

FRACTIONAL-DIVISION FREQUENCY SYNTHESIZER FOR DIGITAL ANGLE-MODULATION

Alain Alberville; André Roullet, and Alberto Pimentel, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Aug. 17, 1982, Ser. No. 408,874
Claims priority, application France, Aug. 17, 1981, 81 15808
Int. Cl.³ H03C 3/06; H04B 1/04
U.S. Cl. 332—19 4 Claims



1. A fractional-divisional frequency synthesizer for delivering an output signal of the form $F_S=(N+k)\,F_R$, where N is the integral part and k is the fractional part of the number N+k and F_R is the frequency of a reference signal, wherein said synthesizer comprises:

a reference oscillator for delivering the reference signal;

a variable oscillator having a control input and an output, said output providing said output signal F_S;

a variable-oscillator control loop comprising in series a variable divider having one signal input coupled to the output of the variable oscillator and one control input to select the divisor N+1, said divider having a preselected divisor N, a comparator for comparing the phase of the output signal of the divider with the phase of the reference signal, a summing device having a first input coupled to the output of the comparator and a second input, and a filter coupled between the output of the summing device and the control input of the variable oscillator, means having a main output for delivering a number $G=k\,(M)$, M being a positive whole number; and

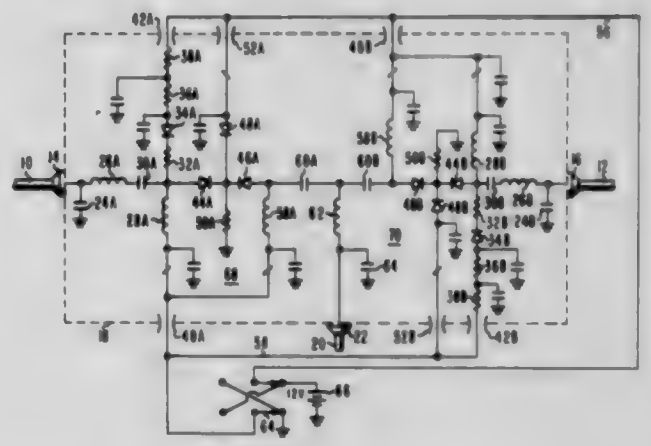
a phase accumulator for receiving the reference signal and the signal G in order to perform modulo-M summation of the number G at the frequency F_R, said phase accumulator having sum and carry outputs respectively coupled to the second input of the summing device and to the control input to select the divisor N+1 of the variable divider and wherein, in order to angle modulate the synthesizer output signal F_S by digital information, the means comprises an adder, said adder having an output coupled to the main output and a first adder input for receiving a constant number g and a second input for receiving a number dg which is representative of the digital information.

4,492,937

TERMINATED SWITCH

Gerald E. Theriault, Hopewell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 29, 1982, Ser. No. 437,829
Int. Cl.³ H03H 7/48
U.S. Cl. 333—103 4 Claims



1. Switch apparatus, comprising:

first and second input ports and an output port;

first and second signal switch sections for selectively coupling a signal between one of said first and second input ports, respectively, and said output port,

said first signal switch section including a first pair of diodes each having first and second electrodes, said first and second diodes being oppositely-poled and connected in series with a first junction formed by said first electrodes, and a first shunt diode having first and second electrodes, said first electrode being coupled to said first junction;

said second signal switch section including a second pair of diodes eaching having first and second electrodes, said first and second diodes being oppositely-poled and connected in series with a second junction formed by said first electrodes, and a second shunt diode having first and second electrodes, said first electrode being coupled to said second junction,

said first electrodes of each diode coupled to respective ones of said first and second junctions being of the same type; and

biasing means for selectively biasing said first and second series coupled diodes into a conductive state to selectively couple a signal between said first and second inputs, respectively, and said output port,

said biasing means establishing a selectable bias potential between first and second conductors, said second electrodes of said first pair of series diodes being coupled to receive bias potential from said first conductor, said second electrode of said first shunt diode being coupled to receive bias potential from said second conductor, said second electrodes of said second pair of series diodes being coupled to receive bias potential from said second conductor, and said second electrode of said second shunt diode being coupled to receive bias potential from said first conductor,

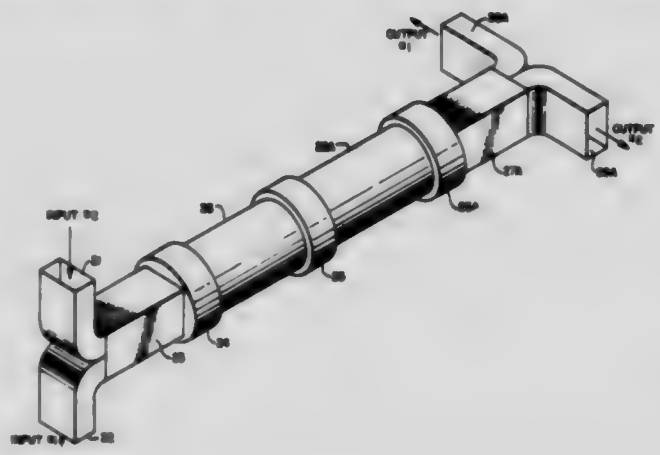
for each selective bias potential established between said first and second conductors, the diodes of one of said pairs of series-connected diodes being biased into a conductive state to couple the respective one of said input ports to said output port and the shunt diode coupled to the junction of the other of said series-connected diodes being biased concurrently into a conductive state to automatically bias the diodes of said other pair of series diodes into a non-conductive state to decouple the other of said input ports from said output port.

4,492,938

SYMMETRICALLY-CONFIGURED VARIABLE RATIO POWER COMBINER USING SEPTUM POLARIZER AND QUARTERWAVE PLATE

Lock R. Young, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Sep. 21, 1982, Ser. No. 420,887
Int. Cl.³ H01P 5/04, 5/18
U.S. Cl. 333—111 26 Claims



5. A microwave power divider for providing controllable amounts of microwave energy at first and second output ports comprising:

an input waveguide adapted to receive linearly polarized microwave energy;

first waveguide means serially coupled to said input waveguide for converting said linearly polarized microwave energy into circularly polarized microwave energy; and

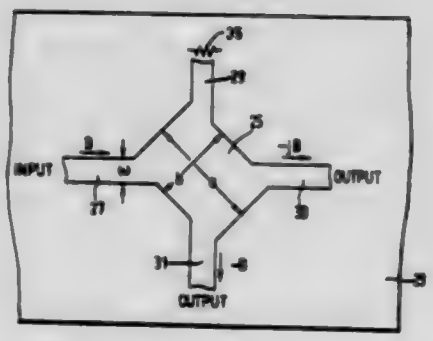
symmetrically configured output waveguide transducer means having an input port and a pair of output ports symmetrically disposed with respect to the input port thereof, which input port is coupled to receive circularly polarized microwave energy converted by said first waveguide means, so that at said pair of output ports there are provided respective amounts of microwave energy in accordance with the circular polarization conversion action of said first waveguide means.

4,492,939

PLANAR, QUADRATURE MICROWAVE COUPLER

John W. Burns, Middlesex, England, assignor to The Marconi Company Limited, England

Filed Dec. 1, 1982, Ser. No. 445,955
Claims priority, application United Kingdom, Dec. 2, 1981, 8136362
Int. Cl.³ H01P 5/18
U.S. Cl. 333—116 1 Claim



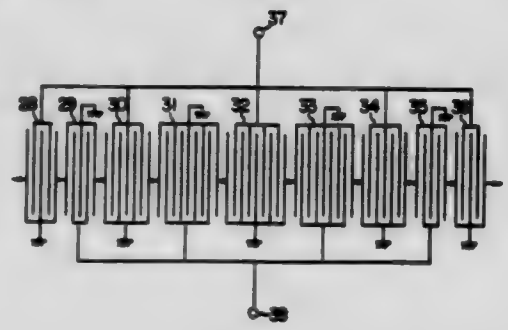
1. A microwave coupler device comprising: a substrate of dielectric material; a ground plane conductor on one main face of the substrate; and an electrically conductive pattern on the other main face of the substrate comprising a central portion in the form of a rectangle and four strip portions respectively extending from positions adjacent the corners of the rectangle, the strip portions being of equal widths, the dimension of the rectangle between its side extending between a first strip portion and an adjacent second strip portion and its opposite side exceeding the dimension of the rectangle between its other pair of opposite sides by substantially $\sqrt{2}$ times the width of the strip portions, the dimension of the rectangle between said other pair of opposite sides being substantially 0.46 times the wavelength of signals at the centre of the frequency band over which the coupler is required to operate in a transmission line formed by a said strip portion and the ground plane conductor, and the strip portions extending from positions at the ends of the longer sides of the rectangle with the sides of the strip portions at substantially 45° to the sides of the rectangle, the arrangement being such that with a dummy load connected between said first strip portion and the ground plane conductor, and input signal applied between said adjacent second strip portion and the ground plane conductor produces substantially equal amplitude, quadrature outputs between the third and fourth strip portions respectively and the ground plane conductor.

4,492,940

ACOUSTIC SURFACE-WAVE BANDPASS FILTER

Mitsutaka Hikita, Hachioji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 4, 1983, Ser. No. 463,959
Claims priority, application Japan, Mar. 10, 1982, 57-36410
Int. Cl.³ H03H 9/64, 9/145
U.S. Cl. 333—194 5 Claims



1. An acoustic surface-wave bandpass filter comprising a plurality of input transducers and a plurality of output transducers formed on a substrate and arrayed in the direction in which acoustic surface waves travel on said substrate, each of said input and output transducers having a plurality of interleaved metal electrodes, wherein the number of said interleaved metal electrodes of at least one of said input and output transducers is increased for the transducer located at the center portion of said array as compared with the transducers located at both end portions of said array.

4,492,941

CIRCUIT BREAKER COMPRISING PARALLEL CONNECTED SECTIONS

Harry H. Nagel, Westwood, N.J., assignor to Heinemann Electric Company, Lawrenceville, N.J.

Filed Feb. 18, 1983, Ser. No. 467,588
Int. Cl.³ H01H 75/00
U.S. Cl. 335—13 11 Claims

1. A single pole circuit breaker comprising at least two sections

each section comprising

an electromagnetic sensing means,

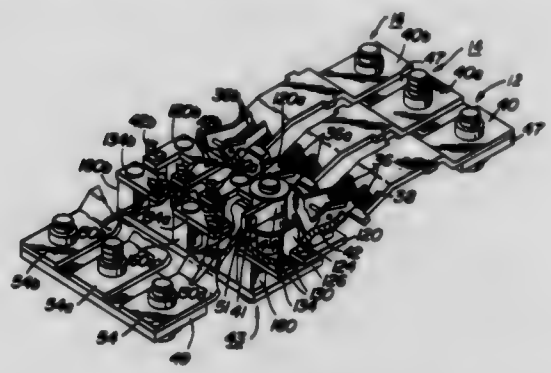
a set of relatively movable contacts, and

a mechanism for opening and closing said contacts in response to said electromagnetic sensing means,

all of said electromagnetic sensing means being connected in electrical parallel with each other at both of their electrical ends,

all of said sets of relatively movable contacts being connected in electrical parallel with each other at both of their electrical ends, and

all of said parallel connected electromagnetic sensing means being electrically connected in series with all of said sets of relatively movable contacts,



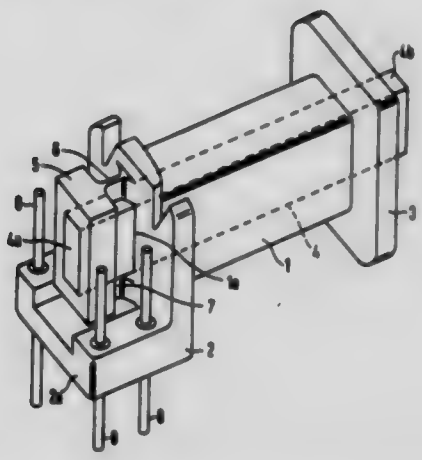
whereby the current through the two or more electromagnetic sensing means will be divided equally even though the current through the two or more sets of movable contacts may not be equally divided due to varying contact resistance.

4,492,942

ELECTRO-MAGNETIC RELAY

Erwin Mueller, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 14, 1983, Ser. No. 475,225
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3213799
Int. Cl.³ H01H 67/02
U.S. Cl. 335—202
13 Claims



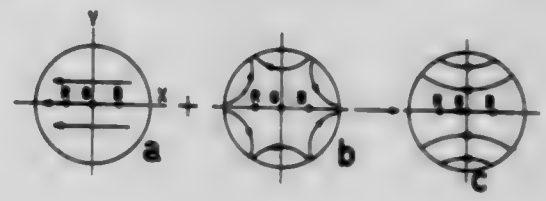
11. An electro-magnetic relay, comprising: an excitation coil having a coil body with a flange; an armature having an armature retaining element attached to the flange via integral first and second elastic stays or supporting arms on respective opposite sides of a longitudinal axis of the armature; the armature extending along a winding axis of the coil and through an inner opening within the coil body; the elastic stays permitting a rotation of the armature and armature retaining element about an axis perpendicular to the coil winding axis; and the stays extending between the armature retaining element and flange in a direction of the longitudinal axis of the armature, and wherein the stays bend to permit said rotation.

4,492,943

DEVICE FOR DISPLAYING TELEVISION PICTURES AND DEFLECTION UNIT THEREFOR

Albertus A. S. Sluyterman, and Nicolaas G. Vink, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 23, 1984, Ser. No. 583,049
Claims priority, application Netherlands, Feb. 28, 1983, 8300729
Int. Cl.³ H01F 5/02
U.S. Cl. 335—213
3 Claims



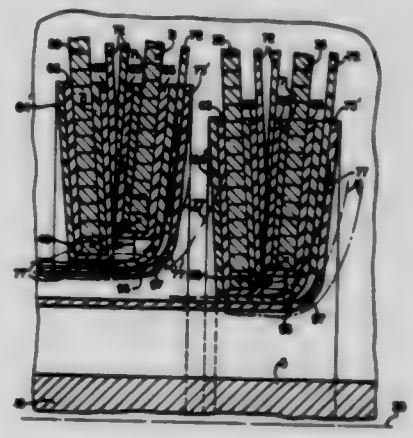
1. In a device for displaying television pictures by means of a display tube in the neck of which a gun system is present for emitting at least one electron beam towards a display screen, and having an electromagnetic deflection unit which is disposed around a portion of the display tube and which comprises a first deflection coil for producing, when energized, a frame deflection field and a second deflection coil for producing when energized, a line deflection field, said second deflection coil being located coaxially within the first deflection coil, each deflection coil having two diametrically oppositely located coil units, the first deflection coil having a winding distribution for producing, upon energization, a dipole deflection field in combination with a positive sixpole deflection field on the side of the gun system, producing a dipole field in combination with a negative sixpole field in the central area, and producing a dipole field in combination with a positive sixpole field on the side facing the display screen, the improvement wherein the first and the second deflection coil are positioned in the axial direction relative to each other so that upon energisation the magnetic field generated by the first deflection coil extends farther towards the display screen than the magnetic field generated by the second deflection coil so that the device shows a minimum east-west raster distortion.

4,492,944

TRANSFORMER WINDING

Yasuo Toba, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 7, 1983, Ser. No. 540,455
Claims priority, application Japan, Oct. 8, 1982, 57-177881
Int. Cl.³ H01F 15/14
U.S. Cl. 336—69
2 Claims



1. A transformer, comprising:
a magnetic core having two windows separated by a winding leg having a longitudinal axis,
an electrical winding disposed about said winding leg,
said electrical winding having first and second ends, and a

winding axis which extends between its ends, with said winding axis being coaxial with the longitudinal axis of said winding leg,

said electrical winding including a plurality of pancake coils each having inner and outer ends and inner and outer peripheral edges, with portions of said inner and outer peripheral edges being adjacent to core portions, devoid of any intervening electrical winding,

said plurality of pancake coils being arranged in pairs,

means electrically interconnecting the inner ends of the pancake coils of each pair via start-start, connections,

means electrically interconnecting the outer ends of the adjacent pancake coils of adjacent pairs via finish-finish connections,

the inner edges of each coil pair being radially offset from one another,

and the outer edges of the adjacent pancake coils of adjacent coil pairs being radially offset from one another;

first insulative channel members disposed about the radially offset inner edges of each coil pair,

and second insulative channel members disposed about the radially offset outer edges of the adjacent pancake coils of adjacent coil pairs,

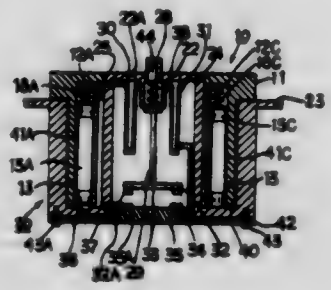
each of said first and second insulative members including a smoothly curved portion which extends between the edges of the associated pancake coils, resulting in the surfaces of said curved portions closely conforming to the equipotential planes of the dielectric field which exists adjacent to the inner and outer edges of the pancake coils.

4,492,945

SAFETY SOCKET WITH EASY FUSE REPLACEMENT DEVICE

W. F. Jou, 8, La. 18, Pao Yuan Rd., Sec. 2, Hsintien City, Taipei Hsien, and C. N. Chen, 4th Floor, No. 17, La. 411, Nellu Rd., Sec. 1, Taipei, both of Taiwan

Filed Sep. 21, 1982, Ser. No. 420,659
Int. Cl.³ H01H 85/14
U.S. Cl. 337—229 3 Claims



1. A safety socket with easy fuse replacement device, comprising: a socket body, a cylinder projecting from the center of the fix board for the socket body with orificed fronts, a socket cylinder complete with frontal insertion slits as extended from the base of the cylinder, whose tail is apertured, an annular guidance to facilitate the suitable introduction of a hollow cylinder as formed between above mentioned cylinders, a first clip and a second clip as provided paralled and aligned to above mentioned slits in the socket cylinder, the second clip extended exposed outside the socket cylinder to form an arc conductor;

a hollow cylinder whose frontal end can be suitably sleeved over the annular guidance as provided in the socket body, the tail end of the hollow cylinder annexed with a swivel knob whose interior is equidistantly spaced to permit housing of a number of fuse containing holes, in each fuse containing hole there are loaded respectively conduction pieces that will extend outside of the hollow cylinder and effect apt engagement with arc conductor, to be executed by taking the dimension of the two arc conductors led from the two clips into account;

a base lid as mounted to the bottom of the cylinder body, on which lid there are provided two sets of joint contacts, the upper joint point for each set being connected to the power line by the medium of conducting wires, whereas the lower joint point for each set are each connected to the first and the second clips respectively by means of conducting bodies and the active fuse;

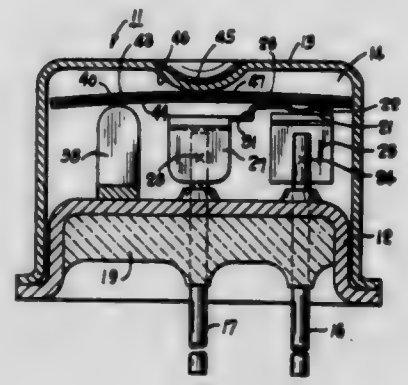
a push-on switch provided between the two slit holes of the socket cylinder, comprising a push-on button exposed outside the fix board and a shaft bar that is incorporated integrally to the push-on button, the front end of the shaft bar being furnished with an insulation piece, both ends of the insulation piece provided with conducting bits leading to said two sets of joint contacts going to the power source.

4,492,946

EDGE-ACTUATED THERMOSTAT

Michael R. Loescher, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Oct. 20, 1983, Ser. No. 543,619
Int. Cl.³ H01H 37/54
U.S. Cl. 337—365 19 Claims



1. A thermostat comprising, in combination:

a base;

a metal cap mounted on said base to form an enclosure therewith;

first and second terminals mounted on said base in a manner insulated from each other and each having one end extending into said enclosure;

a fixed contact on said one end of said first terminal;

a resilient contact strip having a mounting end and a contact end;

means mounting said mounting end on said one end of said second terminal within said enclosure;

a movable contact on said contact end of said contact strip and adapted to cooperate with said fixed contact;

said contact strip having a resilient bias away from said fixed contact;

first and second supports on said base;

a thermostatic snap element having two positions of stability mounted on said two supports and on said contact end of said contact strip for a three-point support; and

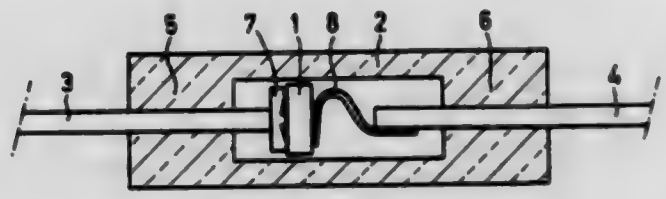
a convex projection on the inside of the top of said cap adapted to engage a convex central region of said thermostatic snap element in one temperature condition thereof to establish contact pressure forcing said movable contact against said fixed contact, and whereby upon temperature change beyond a predetermined temperature said thermostat will snap to a condition concave toward the inside of said cap for an open circuit condition of said contacts as established by the resiliency of said contact strip.

4,492,947

RESISTOR HAVING A POSITIVE TEMPERATURE COEFFICIENT

Jean B. C. H. Staats, Staalduinsel, Netherlands, and Gabriël D. Declerck, Brussels, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 17, 1982, Ser. No. 389,187
Claims priority, application Netherlands, Jun. 29, 1981, 8103116
Int. Cl.³ H01C 7/02
U.S. Cl. 338—22 R 6 Claims



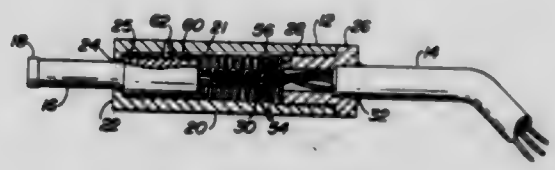
1. A positive temperature coefficient resistor comprising a generally tubular envelope, a plate-shaped resistance element having a positive temperature coefficient positioned within said envelope with the rotational axis thereof substantially parallel to the major axis of said envelope, two electrical conductors, each of said conductors making electrical contact with a separate major surface of said resistance element and each of said conductors extending out of an opposite end of said envelope, characterized in that at least one of said conductors has an end face opposed, and substantially parallel to a major surface of said resistance element and provided with outwardly extending portions bearing on, and forming an electrical contact with, a portion of the opposing major surface of said resistance element, said outwardly extending portions being radial stripe whose height increases gradually from the center towards the end of the end face of said conductor.

4,492,948

FAST RESPONSE SURFACE CONTACT TEMPERATURE SENSOR

Wilson A. Clayton, LaHabra, and Alexander Galperin, Fullerton, both of Calif., assignors to Leeds & Northrup Company, North Wales, Pa.

Filed Sep. 2, 1981, Ser. No. 298,681
Int. Cl.³ H01C 3/04
U.S. Cl. 338—25 10 Claims



1. An improved surface temperature measuring probe comprising:

a support assembly having a body portion, a recessed chamber in one end thereof, and at least one passageway extending through said body portion;

an electrical temperature sensing element housed in said recessed chamber;

electrical signal leads connected to said electrical temperature sensing element and passing through said passageway;

a thin cap in intimate thermal contact with said electrical temperature sensing element closing said recessed chamber in said end and extending up the sidewall of said support assembly for a short distance exposing said thin cap to ambient conditions, said thin cap having a thermal conductivity substantially greater than the thermal conductivity of said support assembly and having an end surface area that is equal to the surface area of the portion extending up the sidewall;

handle means telescopically holding said support assembly; and

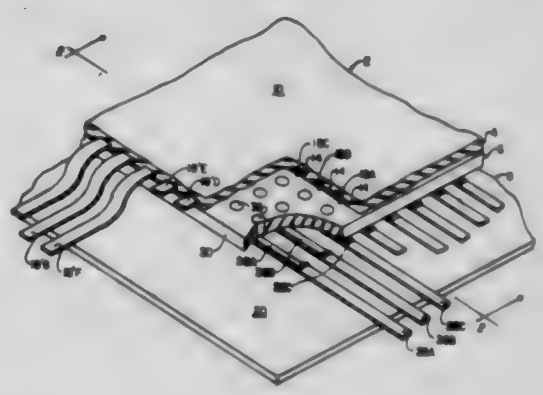
spring means connected between said handle means and said support assembly whereby forces applied to said handle means are transmitted through said spring means to said support assembly.

4,492,949

TACTILE SENSORS FOR ROBOTIC GRIPPER AND THE LIKE

Robert R. Peterson, Hudson; Dale W. Schubert, Sudbury, and Peter N. Cholakis, Hopkinton, all of Mass., assignors to Barry Wright Corporation, Newton Lower Falls, Mass.

Filed Mar. 18, 1983, Ser. No. 476,685
Int. Cl.³ H01C 10/10
U.S. Cl. 338—114 31 Claims



1. A tactile sensor for sensing the pressure impressed by an object in contact therewith, said sensor comprising a sandwich having:

(a) a top layer comprised of a first flexible, electrically-insulating material and a plurality of first flexible, electrically-conductive rods disposed in parallel grooves in said first electrically-insulating material;

(b) a bottom layer secured to said top layer, said bottom layer being comprised of a second electrically-insulating material and a plurality of second electrically-conductive rods extending parallel to one another, said bottom layer being disposed relative to said top layer so that said first rods extend across and substantially parallel to said second rods; and

(c) an intermediate layer engaged by said top and bottom layers, said intermediate layer being comprised of a selected material that is both resilient and electrically-insulating and a plurality of mutually-spaced electrically-conductive posts disposed in and extending transversely through said selected material so that the opposite ends of said posts confront said top and bottom layers, said electrically-conductive posts being made of a resilient material and being disposed so that the axis of each post intersects one each of said first and second rods, whereby a matrix of electrically conducting paths is provided by said first and second rods and said posts.

4,492,950

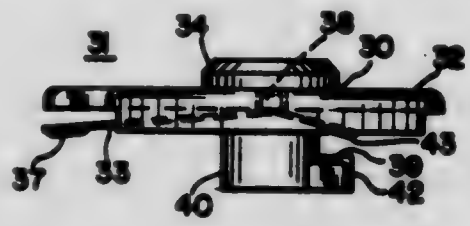
VARIABLE RESISTANCE ASSEMBLY WITH IMPROVED CONTACTOR KNOB

Stephen S. Simovits, Jr., Downers Grove, Ill., assignor to American Plasticraft Company, Chicago, Ill.

Filed Mar. 1, 1983, Ser. No. 470,993
Int. Cl.³ H01C 10/32
U.S. Cl. 338—162 4 Claims

1. A variable resistance assembly functioning as a voltage divider for a cathode ray tube comprising: an electrically nonconductive substantially flat substrate having terminal pads connectable to a source of voltage; an electrically-resistive

path on said substrate; a key slot adjacent said resistive path; a contactor assembly including a contactor knob, a resilient conductive spring mounted on said knob and having a portion engaging said resistive path, an L-shaped mounting post on said contactor, said post conforming to said key slot and extending therethrough from one surface to the opposite surface



of said substrates, the horizontal leg of said L-shaped post engaging the opposite surface of said substrate to retain said contactor on said substrate, and said contactor being rotatably adjustable to vary the point of contact of said spring with said resistive path and, hence, the effective voltage coupled therefrom.

4,492,951

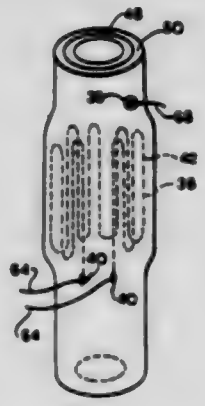
GLASS CAPTIVATED HEATING UNIT FOR STILL OR THE LIKE

Richard L. Apothaker, Northfield; James Reed, Newfield; Carmen L. Croce, Vineland, and Frederick B. Wagner, III, Elmer, all of N.J., assignors to Kontes Glass Company, Vineland, N.J.

Division of Ser. No. 241,055, Mar. 6, 1981, Pat. No. 4,334,904. This application Mar. 12, 1982, Ser. No. 357,790

Int. Cl.³ H01C *10/16*

U.S. Cl. 338—316 15 Claims



1. A glass captivated heating unit comprising a heating element of the type which expands when energized, from a normal to an expanded condition, a glass body having a channel therein, said element being freely received within said channel when said element is in the normal condition, said channel substantially conforming to the contours of, and being defined by the dimensions of said element, when said element is in said expanded condition.

4,492,952

AUTOMOTIVE DRIVING CONDITION ALARM SYSTEM

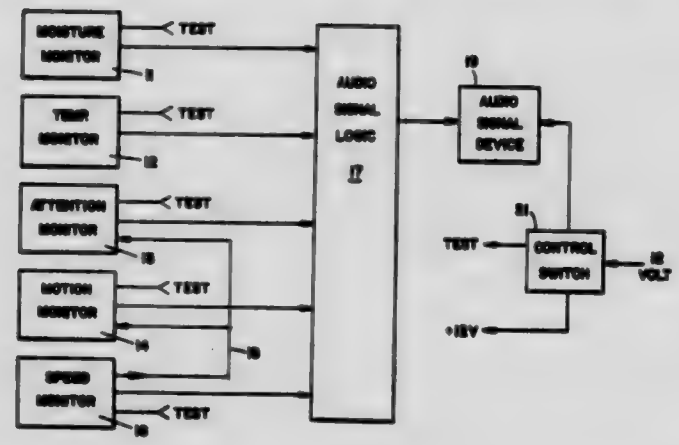
Albert J. Miller, Los Gatos, Calif., assignor to Atlas Electronics International, Santa Clara, Calif.

Filed Apr. 12, 1982, Ser. No. 367,340

Int. Cl.³ B60Q *1/00*

U.S. Cl. 340—52 F 9 Claims

1. A vehicle driving condition monitoring system for warning of dangerous driving conditions, including sensor means mounted on the vehicle for detecting dangerous driving conditions, said sensor means including first sensor means for detecting excessive moisture on the road surface, second sensor means for detecting freezing temperature at the road surface, third sensor means for detecting excessive vibration of the vehicle in both horizontal and vertical directions, fourth sensor means for detecting excessive vehicular speed, and fifth sensor means for detecting drowsiness or inattention of the driver of the vehicle, said fifth sensor means including means for sensing lack of movement of the driver's hands on the steering wheel of the vehicle, comprising a pair of conductors wrapped about the steering wheel in non-connecting fashion, said conductors being connected in parallel with a RC timing network, frequency generator means connected to said timing network for generating an ac signal having a frequency which varies with the impedance of said timing network, means for sensing changes in said frequency of said ac signal, means for generating an alarm actuating signal in response to said predetermined changes in said ac signal, and alarm means connected to said sensors for emitting audible and visible alarm signals to the driver.



4,492,953

METHOD AND APPARATUS FOR CODING PULSE-AMPLITUDE MODULATED SIGNALS INTO PULSE-CODE MODULATED SIGNALS IN ACCORDANCE WITH AN APPROXIMATED LOGARITHMIC CHARACTERISTIC CURVE

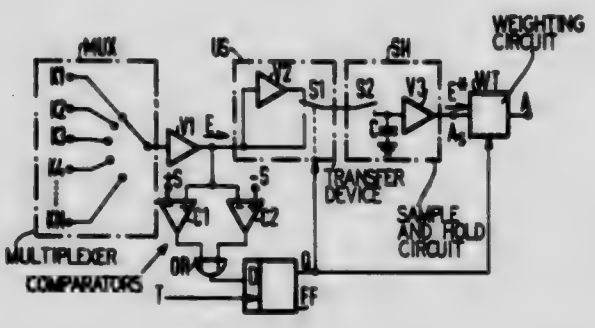
Max Rathgeber, Taufkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 1, 1982, Ser. No. 383,978

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1981, 3127600

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 AD 8 Claims



1. In a process for coding pulse amplitude modulated signals into pulse code modulated signals, in accordance with an approximated logarithmic coding characteristic curve having a dynamic region which is sub-divided into a plurality of segments each having linear coding, in which process a first predecision is performed which is dependent upon the amplitude of an input signal of a maximum value E = ±2048 and subjects signals above or below a first threshold value to an amplitude transmission, the improvement therein comprising the step of:

given a thirteen segment characteristic, setting the first threshold value for positive and negative values between

128/2048 and 256/2048 of the maximum input signal E=±2048 and selecting a partial coding characteristic curve from the characteristic curve having companded input values E*;

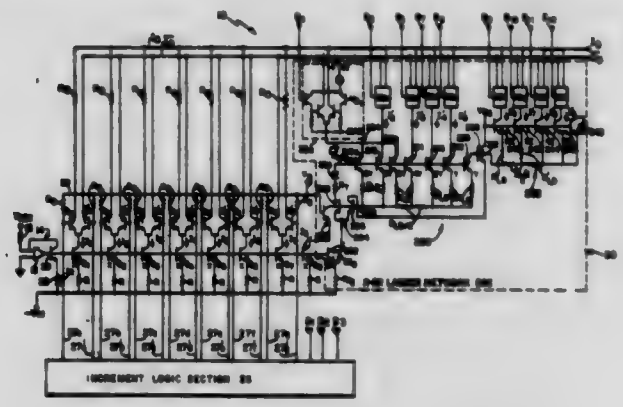
amplifying input signals of less than the first threshold value by the factor 8; setting a second pre-decision at a second threshold value of between 16/256 and 32/256 of the maximum companded input value E*=±256 to divide the dynamic region of the partial coding characteristic curve into upper and lower subregions; and weighting the amplitude transformed signals falling into the upper and lower subregions with the same number of weighting steps to code the signals.

4,492,954

DIGITAL-TO-ANALOG CONVERTER

David J. Harris, San Jose, and Charles L. Vinn, Milpitas, both of Calif., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 334,190, Dec. 24, 1981, abandoned. This application May 11, 1984, Ser. No. 608,928
Int. Cl.³ H03K 13/05
U.S. Cl. 340—347 DA 12 Claims



1. A digital-to-analog converter for producing an output current through an output bus, such current having a level related to a digital word, comprising:

(a) a first converter section fed by a first portion of the digital word for electrically coupling, or decoupling, a selected one, or ones, of a plurality of equal current sources to, or from, the output bus selectively in accordance with the first portion of the digital word, such first converter section, comprising:

(i) a plurality of switching transistors, each one thereof having a first electrode coupled to a corresponding one of the plurality of equal current sources; and

(ii) a plurality of resistor means, each one thereof being coupled between the output bus and a second electrode of a corresponding one of the plurality of switching transistors;

(b) a second converter section fed by a second portion of the digital word, for electrically coupling, or decoupling, a selected one, or ones, of a plurality of binarily weighted current sources to, or from, the output bus selectively in accordance with the second portion of the digital word, such plurality of binarily weighted current sources, comprising:

(i) a plurality of current source transistors; and

(ii) a resistor ladder network having resistors disposed in rungs thereof, such resistors being connected to emitter electrodes of the current source transistors; and

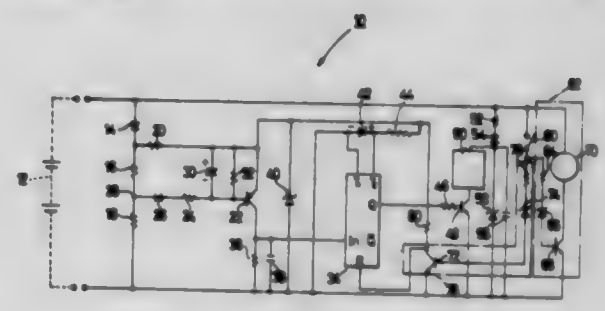
(c) wherein the resistances of the plurality of resistors of the first converter section are selected to produce a voltage drop across each one thereof equal to a voltage drop produced by one of the binarily weighted current sources across one of the resistors in the rungs of the resistor ladder network.

4,492,955

BATTERY VOLTAGE DROP ALARM DEVICE FOR A BATTERY FORKLIFT TRUCK

Toru Kubota, Kegunai; Masaki Tanaka, Musashino, and Masaaki Sawa, Fuchu, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 18, 1983, Ser. No. 476,717
Claims priority, application Japan, Mar. 26, 1982, 57-47259
Int. Cl.³ G08B 21/00; G01R 31/36; H02J 7/00
U.S. Cl. 340—636 9 Claims



1. In a battery forklift truck having an auxiliary movement apparatus, a battery voltage drop alarm device for alarming the necessity of charging a battery by detecting that the battery voltage drops to less than a prescribed value, comprising:

(a) battery voltage drop detecting means for generating an alarm instruction signal by detecting that the voltage of said battery drops to less than a prescribed voltage value;

(b) alarm means for generating an alarm signal according to the alarm instruction signal generated from said battery voltage drop detecting means; and

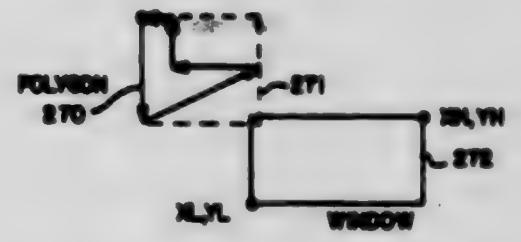
(c) alarm cut off means connected to an auxiliary work switching means for supplying an electric power from the battery to the auxiliary movement apparatus and also connected to said alarm means, said alarm cut off means being provided for stopping the alarm operation of said alarm means when the auxiliary work switching means supplies the electric power to the auxiliary movement apparatus.

4,492,956

GRAPHICS DISPLAY SYSTEM AND METHOD INCLUDING PRECLIPPING CIRCUIT

Arthur J. Collmeyer, Saratoga; Jeffrey H. Hoel, Sunnyvale; Paul F. King, LaJolla; Donald O. Stanley, San Jose, and Roger Sturgeon, Santa Cruz, all of Calif., assignors to Calma Company, Sunnyvale, Calif.

Division of Ser. No. 125,843, Feb. 29, 1980, abandoned. This application Sep. 13, 1982, Ser. No. 417,684
Int. Cl.³ G09G 1/16
U.S. Cl. 340—723 17 Claims



1. A graphics display system comprising vector memory means for storing vector data representing one or more graphics images to be displayed, wherein said vector data represents one or more polygons where each polygon representation includes header information specifying the format of said representation and where each polygon includes line segments having at least one vertex, memory update means including means for inserting said vector data into said vector memory means, means for modifying said vector data within said vector memory means, and preclipper means for retrieving said vec-

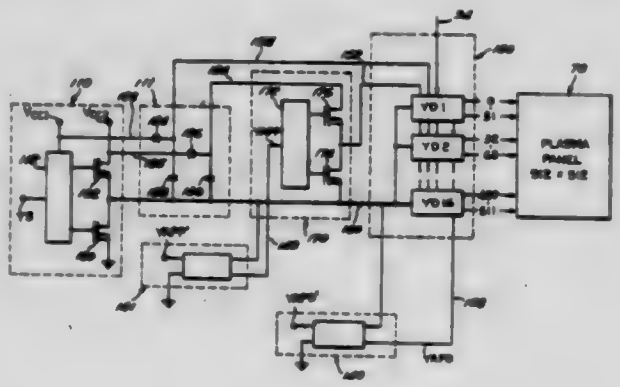
tor data from said vector memory means, clipper means for clipping specified ones of said polygons and for identifying specified ones of said polygons by a closest point, by a closest segment, and by partial or complete containment within a window, scaler means for translating and scaling ones of said polygons thereby transforming the image to be displayed, raster memory means, writing means for rasterizing the transformed vector data into said second memory means thereby forming raster data, reading means for reading said rasterized data from said raster memory means thereby forming raster data, reading means for reading said rasterized data from said raster memory means, monitor means for displaying said graphics image and processor means for controlling the operation of said system, and wherein said preclipper means include means for circumscribing a rectangle around one of said polygons and means for determining whether the circumscribed rectangle intersects a specified window.

4,492,957

PLASMA DISPLAY PANEL DRIVE ELECTRONICS IMPROVEMENT

Michael J. Marentic, Orange, Calif., assignor to Interstate Electronics Corporation, Anaheim, Calif.

Filed Jun. 12, 1981, Ser. No. 272,885
Int. Cl.³ G09G 3/28
U.S. Cl. 340—777 16 Claims



1. A circuit for a plasma panel comprising:
an intergrated circuit comprising:
a first pair of transistors, connected in totem pole, between a first terminal and a second terminal, said pair of transistors alternatively conductive to alternatively connect an output line to said first terminal or to said second terminal;
a second pair of transistors, outside of said intergrated circuit, connected in totem pole between said first terminal and a voltage source, said second pair of transistors alternatively conductive to alternatively connect said second terminal to said first terminal or to said voltage source.

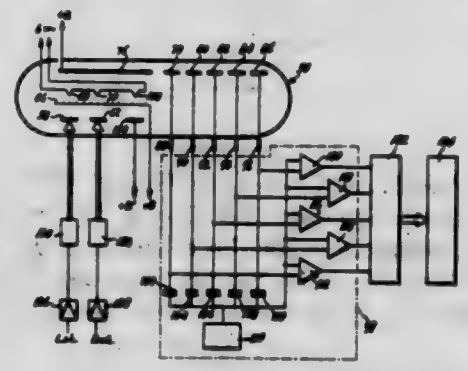
4,492,958

DEVICE FOR CONTROLLING AND DISPLAYING THE FUNCTIONS OF AN ELECTRIC OR ELECTRONIC APPARATUS

Eiji Minami, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 15, 1982, Ser. No. 368,842
Claims priority, application Japan, Apr. 22, 1981, 56-61605; May 13, 1981, 56-71701; Jul. 30, 1981, 56-120322
Int. Cl.³ H04Q 9/00; G08B 5/36
U.S. Cl. 340—825.25 12 Claims

1. A display apparatus having an operational control for use in an electric or electronic apparatus, comprising:
a display device having a housing made of non-conductive material for displaying an indication that an operating switch is actuated and for displaying an indication that said electric or electronic apparatus is in operation, said operating switch including at least one operation electrode disposed within said housing so that an activation signal can be produced in response to a capacitor produced between said operation electrode and a stimulus external to said housing;
a first display disposed within said housing for indicating that the operating switch is activated;
a second display element disposed within said housing for indicating that said apparatus is in operation, said operation electrode, first display element and second display element being enclosed within the housing;



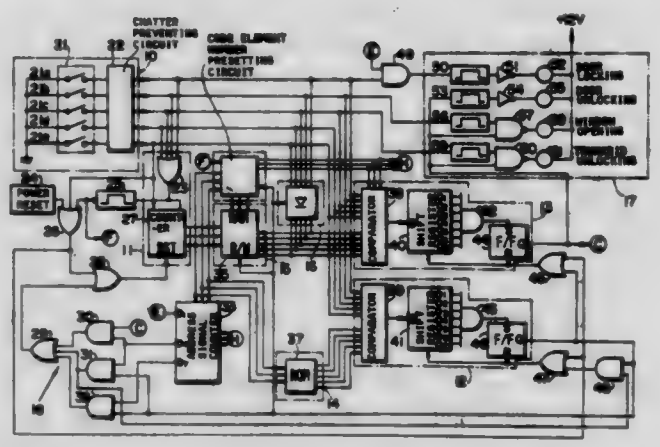
a detection circuit coupled to said operation electrode for detecting said activation signal and producing an operation order signal in response to the detection of the activation signal; and
control means responsive to said operation order signal for controlling said electric or electronic apparatus;
whereby when said operation switch is actuated, said first display element indicates that the operating switch is actuated, and when said apparatus operates in response to the actuation of the operation switch, said second display element indicates that the apparatus is in operation.

4,492,959

KEYLESS ENTRY SYSTEM FOR AN AUTOMOTIVE VEHICLE

Haruo Mochida, Yokohama; Hiroshi Nakakouji, Zama, and Hirotoshi Namazue, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited and Kokusan Kinzoku Kogyo Co., Ltd., both of, Japan

Filed Jun. 23, 1982, Ser. No. 391,343
Claims priority, application Japan, Jun. 24, 1981, 56-96753; Jun. 24, 1981, 56-96754
Int. Cl.³ E05B 49/00; H04Q 9/00
U.S. Cl. 340—825.56 14 Claims



1. A keyless entry system for unlocking an automotive door lock in use with a code inputted thereto, which comprises:
an input unit for inputting an input code;
a first memory means for storing a first code;
a second memory means for storing a second code having a given number of code elements, the number being variable

in a range limited by a predetermined maximum number; and

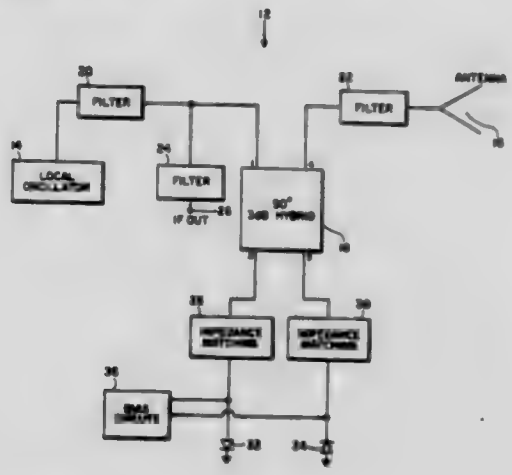
a third means, responsive to an inputted first code through said input unit, for enabling variation of said second code and for varying said number of code elements, said third means being adapted to record the varied second code in said second memory means.

4,492,908

SWITCHING MIXER

Alfred R. Hisley, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 18, 1982, Ser. No. 340,397
Int. Cl.³ G01S 9/00
U.S. Cl. 343—5 DD 6 Claims



1. A switching mixer comprising:

a local oscillator having an input and an output;

first filter means connected to said local oscillator output for passing RF signals and signals from said local oscillator and for blocking intermediate frequency signals and having an input and an output;

a hybrid coupler having a first port connected to said output of said first filter means and also having second, third and fourth ports;

first and second impedance matching networks each having a first terminal connected respectively to said hybrid coupler second and third ports and each said impedance matching network having a second terminal;

first and second mixer diodes, each being connected to a respective second terminal of one of said first and second impedance matching networks;

diode bias network means connected to said first and second mixer diodes for variably adjusting the amount of bias to said first and second mixer diodes;

second filter means connected to said hybrid coupler for passing intermediate frequency signals; and

third filter means connected to said hybrid coupler fourth port for passing RF signals and signals from said local oscillator and for blocking intermediate frequency signals.

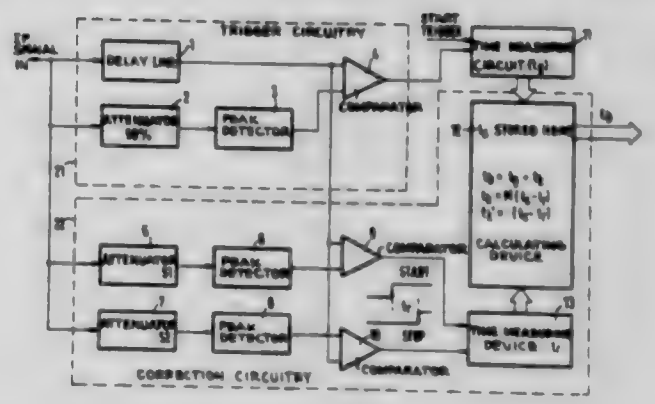
4,492,961

SYSTEM FOR DERIVING PRECISE INSTANTS OF TRIGGERING OF A PULSED DEVICE

Wilhelm J. Koller, Brunswick, and Horst Vogel, Kortal, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 241,603, Mar. 9, 1981, abandoned. This application Jun. 24, 1983, Ser. No. 507,372
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1980, 3009651
Int. Cl.³ G01S 13/70, 7/40
U.S. Cl. 343—7.3 1 Claim

1. A distance measuring equipment (DME) system comprising: an interrogator; a transponder, said interrogator and transponder each including cooperating transceivers to measure the distance from said interrogator to said transponder, said interrogator including first means for producing a first signal proportional to the time elapsed t_g between a start trigger and a first invariant percent of the leading edge of a received pulse; second means for producing a second signal proportional to the time elapsed t_r between the occurrence of second and third different invariant percents of the leading edge of a received pulse, said second and third percents being respectively smaller and larger than said first percent, respectively; and third means



for producing an output signal proportional to a time t_b which is, in turn, proportional to the distance between said interrogator and said transponder,

where

$$t_b = t_g + t_k$$

$$t_k = M(t_s - t_r)$$

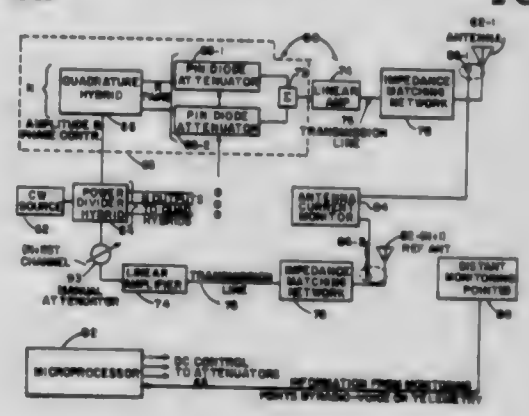
M is a constant, and t_s is a constant.

4,492,962

TRANSMITTING ADAPTIVE ARRAY ANTENNA

Peder M. Hansen, 655 Savoy St., San Diego, Calif. 92106

Filed Aug. 31, 1981, Ser. No. 297,598
Int. Cl.³ G01S 5/02
U.S. Cl. 343—369 2 Claims



TRANSMITTING ADAPTIVE ARRAY

1. An adaptive array system comprising N+1 channels for transmitting a signal, where N is some positive integer, comprising:

means for generating a continuous-wave (C-W) signal, having a predetermined amount of power;

means having N+1 outputs, whose input is connected to the output of the generating means, for dividing the power of the signal received at its input between the N+1 outputs;

a plurality of N means, whose signal inputs are connected to N of the outputs of the power dividing means, for controlling amplitude and phase for each of the N channels, said controlling means also having inputs for receiving d-c control signals;

means whose input is connected to an output of the power

dividing means for providing a reference phase and amplitude for the adaptive system;

a plurality of N+1 means, whose inputs are connected to the outputs of the amplitude and phase control means and of the reference means, for linearly amplifying its input signal;

a plurality of N+1 means, whose inputs are connected to the output of the linear amplifying means, for matching the impedance at their inputs to the impedance at their outputs;

means, whose input is connected to the output of the impedance matching means, for transmitting the generated signal into the environment;

at least one monitoring means, distributed at various locations or sites, within the environment, for receiving, monitoring, and retransmitting the amplitude of the transmitted signal at the several locations; and

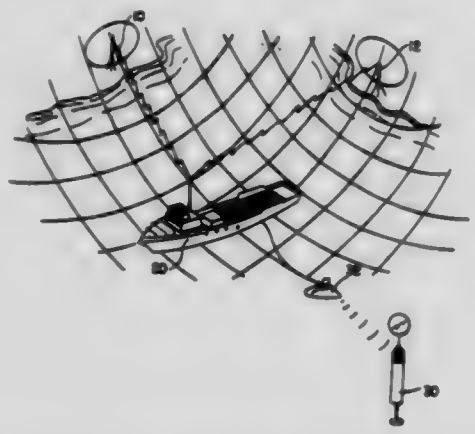
means, disposed to receive the amplitude of the retransmitted signal from the monitoring means, for processing the amplitude of the retransmitted signal according to a preselected optimization algorithm, said processing means outputs connected to the inputs for receiving d-c control signals of the d-c controlling means whereby control signals are relayed to cause the controlling means to readjust phase and amplitude levels for each of the N channels.

4,492,963

METHOD AND APPARATUS FOR DETERMINING LANE COUNT ERROR IN A RADIO NAVIGATIONAL SYSTEM

Richard I. Scarlet, Boxborough, Mass.; James B. Andrews, Nashua, N.H., and William F. Henning, II, Annandale, Va., assignors to EG&G, Inc., Wellesley, Mass.

Filed Oct. 5, 1983, Ser. No. 538,822
Int. Cl.³ G01S 3/02
U.S. Cl. 343—464 7 Claims



1. A method for determining lane count error, if any, in a conventional navigational system which includes at least two fixed transmitting stations and a first navigation instrument on a vessel and which gives the position of a vessel in an integer and fractional lane count format but has an inherent integer lane count ambiguity, the method comprising:

(1) surveying an element to determine its known depth and position relative to the fixed transmitting stations;

(2) positioning a second navigation instrument on the vessel, said second navigation instrument being capable of determining the distance R between the surveyed element and the vessel;

(3) moving the vessel from a position S_1 to a position S_2 and taking readings from the first and second navigational instruments to obtain data representing at least (a) the actual distances R_1 and R_2 between the surveyed element and the positions S_1 and S_2, respectively, and (b) the integer and fractional lane count readings, as given by the conventional navigational system, for the positions S_1 and S_2;

(4) calculating from the known position and depth of the element, the known distances R1 and R2, and the known integer and fractional lane count readings, the mathematically possible mirror image positions of at least S_1 and S_2 relative to the element, one set of mirror image positions S_1 and S_2 representing the actual position of the vessel and the other set of mirror image positions S_1' and S_2' representing false positions of the vessel; and

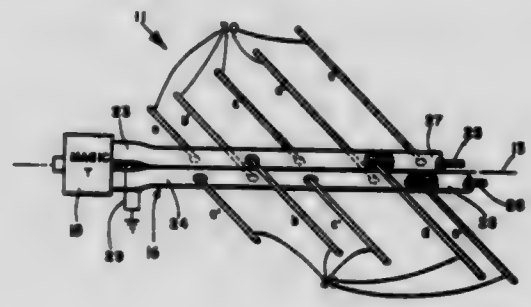
(5) comparing the calculated possible mirror image positional information with the information provided by one or the other of the first and second navigational instruments to determine the actual position of the vessel, and thereby determine the lane count error in the conventional navigational system.

4,492,964

GROUNDPLANE MOUNTED LOG-PERIODIC ANTENNA

Samuel C. Kao, Saratoga, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 309,874, Oct. 9, 1981, abandoned. This application Sep. 29, 1983, Ser. No. 537,778
Int. Cl.³ H01Q 11/10
U.S. Cl. 343—792.5 17 Claims



1. A log-periodic dipole antenna comprising:

a ground plane,

an array of radiating elements, said array having an axis and comprising first and second sets of said elements, each of said sets of elements having an axis, the elements of each set having lengths and interelement spacings decreasing axially from a maximum at one end to a minimum at the other end in increments at a predetermined ratio, adjacent elements of each set extending on opposite sides of the axis of the set and forming dipoles, and

balanced feed means for energizing said elements comprising first and second lines and means to shield said lines, said shield means being connected to the ground reference potential of the ground plate,

the elements of said first set being connected to said first line and the elements of said second set being connected to said second line,

each element of said first set having a length equal to the length of a corresponding element of said second set and being axially spaced from said other end by the same distance as said corresponding element, with elements of equal length of said sets extending in opposite directions,

said array being located over said ground plane for creating a mirror image,

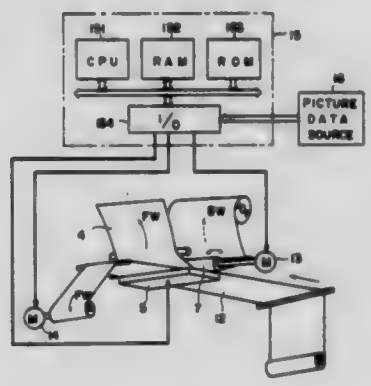
said array elements being arranged in an E-plane, in a frequency independent manner, and to be coplanar with corresponding mirror image elements.

4,492,965

THERMAL TRANSFER PRINTING METHOD

Masaru Ohnishi, and Masayuki Saito, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1983, Ser. No. 494,283
Claims priority, application Japan, May 24, 1982, 57-89074; Sep. 24, 1982, 57-167262
Int. Cl.³ G01D *15/10, 15/34;* B41J *35/18*
U.S. Cl. 346—1.1 11 Claims



1. A thermal transfer printing method using at least one ink sheet provided with at least one thermally transferable solid ink layer formed on a base film as a donor medium, said solid ink layer being heated and transferred onto a record medium whereby picture elements of a picture to be printed are printed on the record medium,

the optical reflection density of said solid ink layer being smaller than the maximum value of the optical reflection density of said picture elements,

said method comprising at least:

a first step of printing at least one picture element out of said picture elements by moving said record medium and said ink sheet in a forward direction so that said solid ink layer is transferred onto said record medium,

a second step of returning said record medium in a state before said first step, and

a third step of transferring said solid ink layer in an overlapping manner to the picture element printed in said first step, by moving said record medium and said ink sheet again in the forward direction after said second step.

4,492,966

RECORDING APPARATUS

Mitsuaki Seki, Machida; Shigemitsu Tazaki, Matsudo, and Yoshiaki Shirato, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

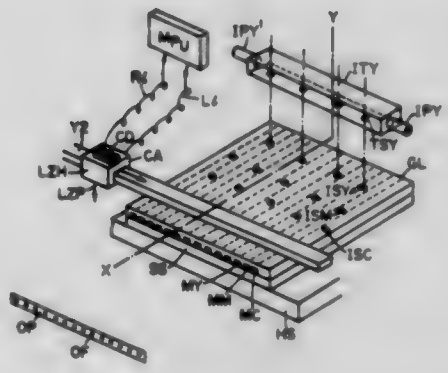
Continuation of Ser. No. 407,090, Aug. 11, 1982, abandoned, which is a continuation of Ser. No. 135,192, Mar. 28, 1980, abandoned. This application Mar. 16, 1984, Ser. No. 589,870
Claims priority, application Japan, Apr. 2, 1979, 54-39475
Int. Cl.³ G01D *5/26, 15/16*
U.S. Cl. 346—33 A 13 Claims

1. Recording apparatus, comprising:

a recording unit having a plurality of dot forming means disposed in a plane, each of said dot forming means having an axis in the plane;

a carriage movable incrementally in a direction normal to the plane of dot forming means; and

a laser generating means mounted on said carriage and having a semiconductor for selectively irradiating any of said dot forming means with a laser pulse emitted in a direction



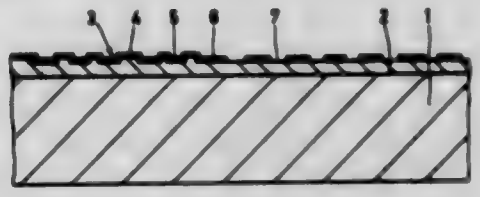
substantially perpendicular to the respective axis of each said dot forming means.

4,492,967

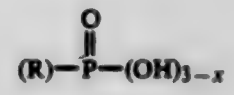
OPTICAL RECORDING DISC

Dirk J. Broer, and Adrianus W. De Poorter, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

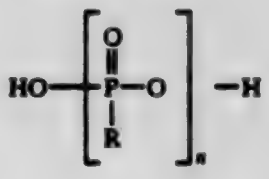
Filed Jan. 10, 1983, Ser. No. 456,878
Claims priority, application Netherlands, Nov. 5, 1982, 8204297
Int. Cl.³ G01D *15/34*
U.S. Cl. 346—135.1 5 Claims



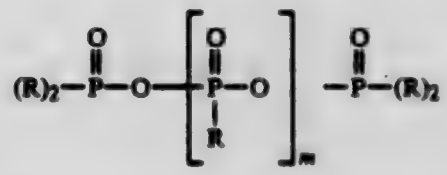
1. In an optical recording disc in which information can be written and read optically comprising a substrate having a synthetic resin surface and an ablative recording layer situated on said synthetic resin surface, the improvement wherein said synthetic resin surface comprises an organic phosphorous compound of the formula:



I



II



wherein

R is an alkyl group or an alkoxy group having 1 to 18 carbon atoms which may be ethoxylated,

X has the value 1 or 2,

N has the value 2–10, and

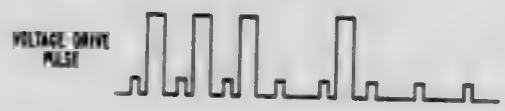
M has the value 0–10.

4,492,968

DYNAMIC CONTROL OF NONLINEAR INK PROPERTIES FOR DROP-ON-DEMAND INK JET OPERATION

Francis C. Lee, San Jose; Ross N. Mills, Morgan Hill; Tiefa K. Niweigha, San Jose, and Frank E. Talke, Morgan Hill, all of Calif., assignors to International Business Machines, Armonk, N.Y.

Filed Sep. 30, 1982, Ser. No. 431,407
Int. Cl.³ G01D 15/16
U.S. Cl. 346—140 R 9 Claims



1. A drop-on-demand ink jet printing apparatus comprising a print head having an electromechanical transducer operable, when actuated, to eject a drop of ink, means for generating drop ejecting voltage drive pulses of at least a predetermined amplitude, said voltage drive pulses being selectively produced at a predetermined regularly recurring drop production rate, and means for coupling said drop ejecting voltage drive pulses to said transducer to actuate said transducer to produce one ink drop in response to each of said drop ejecting voltage drive pulses, the improvement comprising:

means to produce a series of voltage excitation pulses, said voltage excitation pulses having a predetermined repetition rate and an amplitude small with respect to said predetermined amplitude;

means for relatively timing said voltage excitation pulses with respect to said drop ejecting voltage drive pulses at said predetermined drop production rate so that said voltage excitation pulses drive said transducer during the intervals between said drop ejecting voltage drive pulses; and

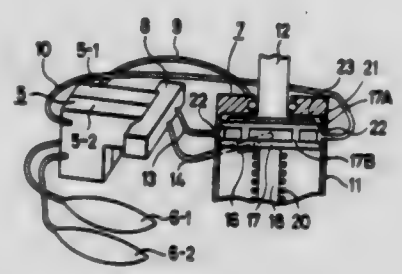
means for coupling said voltage excitation pulses to continuously actuate said transducer so that a pressure wave is propagated in the ink in response to said voltage excitation pulses to maintain dynamic ink characteristics constant and thereby prevent misplaced or missing ink drops after an idle period.

4,492,969

CAPPING DEVICE FOR A MULTI-INK JET HEAD

Koji Terasawa, Mitaka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1982, Ser. No. 432,438
Claims priority, application Japan, Oct. 8, 1981, 56-160426; Oct. 14, 1981, 56-162768
Int. Cl.³ G01D 15/18
U.S. Cl. 346—140 R 13 Claims



1. A suction device for a multi-ink jet head comprising:

means for airtightly closing the respective fore ends of a plurality of nozzles provided in such a head to jet inks of respective different colors;

suction means for sucking the closed nozzle ends;

a plurality of ink suction channels disposed between said closing means and said suction means and connecting said closing means and said suction means, wherein each of said channels is provided for a respective ink color and wherein said suction means prevents ink from one of said channels from entering another of said channels during suction; and

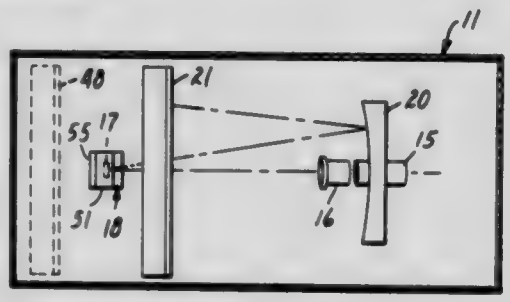
means for preventing the different color inks from being mixed together when said suction means is not in operation, by blocking off said ink suction channels when said suction means is not in operation for suction.

4,492,970

LASER DIODE PRINTER

Charles C. Lee, Little Canada, and Richard Owen, St. Anthony, both of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Jul. 22, 1982, Ser. No. 400,638
Int. Cl.³ G01D 15/14
U.S. Cl. 346—160 12 Claims



1. An imaging device for use with an electrophotographic printer to print graphic information on a web of customary width comprising

a laser diode source for producing monochromatic radiation,

condensing lens for collecting radiation from said source and forming a beam,

a compound curved reflector positioned along said path for imaging radiation from the laser diode onto a flat field, and

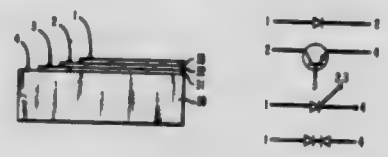
scanning means for moving the beam across a path traverse to said beam.

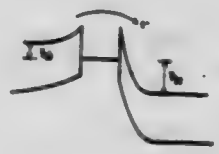
4,492,971

METAL SILICIDE-SILICON HETEROSTRUCTURES

John C. Bean, New Providence, N.J.; Kin-Chung R. Chiu, Mountain View, Calif., and John M. Poate, Summit, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 5, 1980, Ser. No. 156,649
Int. Cl.³ H01L 29/48
U.S. Cl. 357—15 7 Claims





1. Article comprising a composite structure of:

a single crystal silicon substrate,

a single crystal metal silicide layer overlying the silicon substrate,

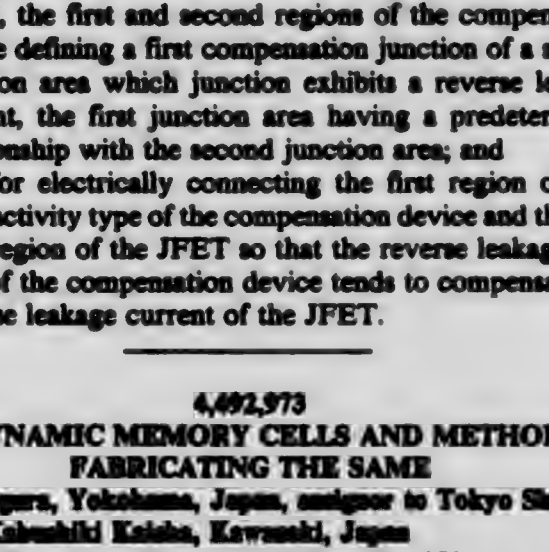
and a single crystal silicon layer overlying the metal silicide, said composite structure having an essentially continuous single crystal lattice between the three layers.

4,492,972

JFET MONOLITHIC INTEGRATED CIRCUIT WITH INPUT BIAS CURRENT TEMPERATURE COMPENSATION

James L. Gorecki, Plymouth, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 17, 1981, Ser. No. 293,436
Int. Cl.³ H01L 29/48, 29/06
U.S. Cl. 357—22 27 Claims



1. A gate-channel reverse leakage current compensated junction field effect transistor (JFET) monolithic integrated circuit comprising:

a JFET having a drain region of first conductivity type, a source region of first conductivity type, a channel region of first conductivity type extending between the drain region and the source region, and a first gate region of second conductivity type adjacent the channel region, the first gate region and the channel region defining a first gate/channel junction of a first junction area which junction exhibits a reverse leakage current;

a compensation device having a first region of first conductivity type formed concurrently with the channel region of the JFET and a second region of second conductivity type adjacent the region of first conductivity type and formed concurrently with the first gate region of the JFET, the first and second regions of the compensation device defining a first compensation junction of a second junction area which junction exhibits a reverse leakage current, the first junction area having a predetermined relationship with the second junction area; and

means for electrically connecting the first region of first conductivity type of the compensation device and the first gate region of the JFET so that the reverse leakage current of the compensation device tends to compensate the reverse leakage current of the JFET.

4,492,973

MOS DYNAMIC MEMORY CELLS AND METHOD OF FABRICATING THE SAME

Mitsugi Ogura, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 104,866, Dec. 18, 1979, abandoned.
This application Dec. 30, 1981, Ser. No. 335,601
Claims priority, application Japan, Dec. 25, 1978, 53-158709; Dec. 25, 1978, 53-158710
Int. Cl.³ H01L 29/78, 27/02, 29/04; G11C 11/24
U.S. Cl. 357—23 10 Claims

1. A MOS (Metal Oxide Semiconductor) dynamic memory cell comprising:

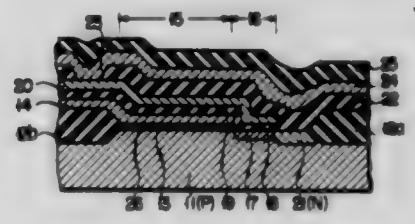
a semiconductor substrate of a first conductivity type having a first semiconductor region of a low impurity concentration;

a first electroconductive layer formed on a first insulating film provided on the surface of said first semiconductor region;

a second semiconductor region of the first conductivity type formed in said semiconductor substrate by implanting ions by using said first electroconductive layer as a mask and having one end contacting one end of the surface region of said first semiconductor region, said second semiconductor region having a higher impurity concentration than that of said first semiconductor region;

a second electroconductive layer formed on a second insulating layer provided on the surface of said second semiconductor region and extended along a third insulating layer provided on said first electroconductive layer;

a third semiconductor region formed in said semiconductor substrate and having one end in contact with the other end of said second semiconductor region, said third semiconductor region having a second conductivity type and being in contact also with a portion of the substrate, said portion hving the same impurity concentration as said first semiconductor region;



means for applying different potentials to said third semiconductor region and to said first and second electroconductive layers;

an inversion layer being formed in said surface region of said first semiconductor region by two means in which one means includes means for applying a voltage between said first electroconductive layer and said semiconductor substrate and the other means includes the impurity concentration of said first semiconductor region being at less than 5×10^{14} cm^{-3};

one end of said inversion layer adjacent to said second semiconductor region and one end of said first electroconductive layer adjacent to said second semiconductor region being aligned with each other;

said one end of said inversion layer and the corresponding end of said second semiconductor region being closely contacted with each other; and

said inversion layer being used as a depletion mode MOS capacitor.

4,492,974

DMOS WITH GATE PROTECTION DIODE FORMED OVER BASE REGION

Isao Yoshida; Takeaki Okabe, both of Nishitama; Minao Katsuoda, Hachioji; Minoru Nagata, Kodaira; Toshiaki Masuhara, Nishitama; Kazutoshi Ashikawa; Hideaki Kato, both of Takasaki; Mitsuo Ito, Gunma; Shigeo Ohtaka, Takasaki; Osamu Minato, Kodaira, and Yoshio Sakai, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 22, 1982, Ser. No. 350,589
Claims priority, application Japan, Feb. 27, 1981, 56-26797
Int. Cl.³ H01L 29/78, 29/90, 27/02; H02H 3/20
U.S. Cl. 357—23 15 Claims

1. A semiconductor integrated circuit device comprising:

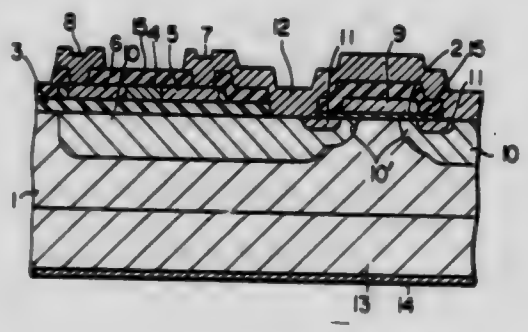
a semiconductor body;

a semiconductor element formed in said semiconductor body;

a semiconductor region formed in a surface region of said semiconductor body and having an opposite conductivity type to that of said semiconductor body; and

a protection element for protecting said semiconductor

element, said protection element being formed in a semiconductor layer provided on an insulating film situated on said semiconductor region, said protection element including a pair of highly doped regions and a low doped region in such a manner that said low doped region is sandwiched between said highly doped regions and that a



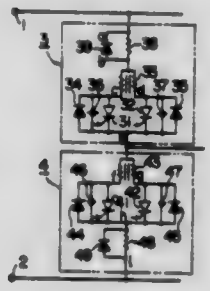
pn junction is formed between said low doped region and at least one of said highly doped regions, the number of impurity atoms per unit area at said low doped region being in a range from 10^{13} to 10^{15} cm^{-2}, and the thickness of said low doped region being in a range from 0.1 to 1 μm.

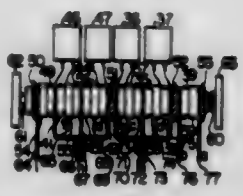
4,492,975

GATE TURN-OFF THYRISTOR STACK

Yukio Yamada; Hiroshi Itahana, and Hisashi Kuwana, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 8, 1982, Ser. No. 396,377
Claims priority, application Japan, Jul. 10, 1981, 56-107100
Int. Cl.³ H01L 23/32, 23/42, 25/04; H03K 17/60
U.S. Cl. 357—76
5 Claims





1. A gate turn-off thyristor stack comprising:

a set of two flat type gate turn-off thyristor elements and a set of two diode elements which sets are stacked with a stacking structure in which the two elements in one set of said thyristor and diode element sets are located at the middle of the stacking structure and sandwiched between the two elements of the other set, said stacking structure having means for electrically connecting said two thyristor elements in parallel with each other and elecrically connecting said two diode elements in antiparallel with said two thyristor elements respectively; and

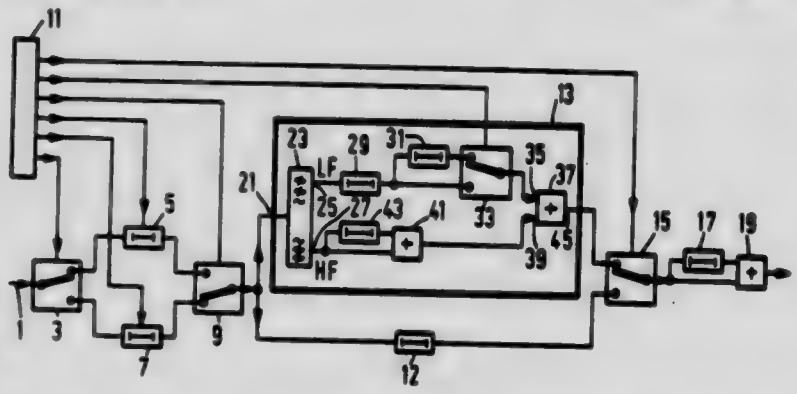
a pair of clamper members provided through insulating members at opposite outer sides of said stacking structure respectively for clamping said stacking structure.

4,492,976

LINE STANDARD CONVERSION CIRCUIT FOR A TELEVISION SIGNAL

Mariaus C. W. vanBaal, Breda; Johannes G. Raven, and Wilhelmus H. C. A. van de Ven, both of Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 10, 1982, Ser. No. 416,736
Claims priority, application Netherlands, Oct. 6, 1982, 8104532
Int. Cl.³ H04N 9/42
U.S. Cl. 358—11
8 Claims



1. In a television receiving system for converting a signal of one line standard to a signal of another line standard, a field delay circuit connected to receive said signal of one line standard comprising:

a separation circuit for dividing said signal of one line standard signal into a high frequency and a low frequency signal;

first means for processing said low frequency signal to have a delay during one field different than the delay of a subsequent field;

second processing means independent of said first processing means for receiving said high frequency signal; and

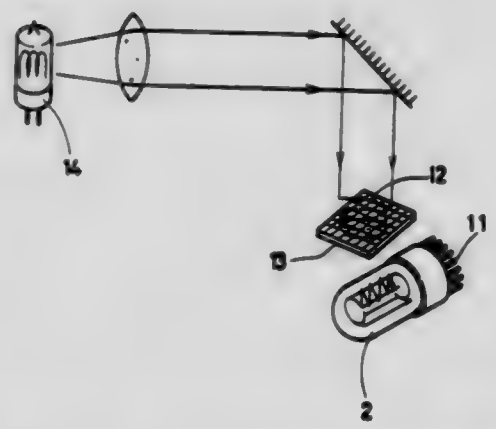
means for combining signals from said first and second processing means to provide a combined video signal.

4,492,977

PHOTOMULTIPLIER TUBE DEVICE

Masaya Tsuda; Ken-Ichi Yonemaru, both of Kyoto, and Yoshikazu Masuda, Ibaraki, all of Japan, assignors to Dainippon Screen Manufacturing Co., Ltd., Kyoto, Japan

Filed Jul. 19, 1982, Ser. No. 399,525
Claims priority, application Japan, Jul. 23, 1981, 56-110170[U]
Int. Cl.³ H04N 1/46
U.S. Cl. 358—75
5 Claims



1. In an electronic color separation system having a photomultiplier tube device in the scanning unit thereof for producing electrical color separation signals in response to light received from color separation means, the improvement wherein said scanning unit comprises a halogen lamp as a light source, and said photomultiplier tube device comprises light diffuser plate means positioned and oriented in the light path from said halogen lamp in the vicinity of a photomultiplier tube for diffusing light from said halogen lamp to ensure that a uniform

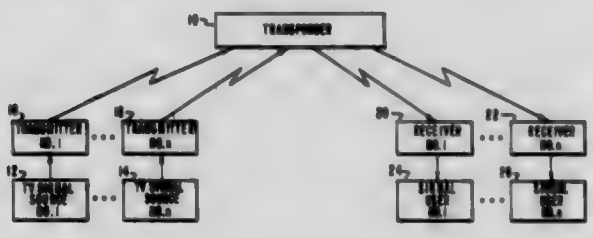
amount of diffused light impinges on the photomultiplier tube whereby the image of filaments from said halogen lamp is diffused eliminating the requirement of precise adjustment of the positioning of the photomultiplier tube.

4,492,978

TRANSMISSION SYSTEM FOR TV SIGNALS

Leslie D. Thomas, Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 12, 1979, Ser. No. 19,987
Int. Cl.³ H04N 7/12
U.S. Cl. 358—134 9 Claims



1. A system for simultaneously transmitting and simultaneously receiving a plurality of signals via a common transponder comprising:

(1) a plurality of transmitting stations, each including:

(a) means for sampling a signal to be transmitted at a predetermined sampling rate to generate a plurality of digital data words, each of said data words being indicative of the magnitude of the sampled signal;

(b) memory means for storing said plurality of digital words;

(c) memory read means for reading said stored digital data words at a rate less than said sampling rate to produce a data stream comprising said digital data words at the output of said memory means;

(d) circuit means responsive to said data stream to produce a compressed signal having a bandwidth less than the bandwidth of the original signal;

(e) transmitting means for producing a respective first carrier modulated by said compressed signal;

(f) a transponder responsive to said respective first carrier to produce a respective second carrier modulated with said compressed signal;

(2) a plurality of receiving stations, each including:

(a) a receiving means tuned to said respective second carrier, said receiving means also including demodulating means for recovering said compressed signal from said respective second carrier, said compressed signal being available at the output terminal of said receiving means;

(b) digital sampling means for sampling said compressed signal at a preselected rate to produce a plurality of digital data words;

(c) memory means for storing said plurality of digital data words;

(d) memory read means for reading said stored digital data words at a rate higher than said preselected rate to produce a data stream comprising a plurality of digital words; and

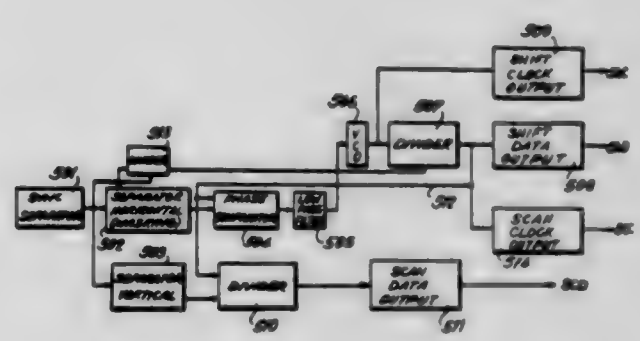
(e) circuit means responsive to said data stream to produce a reconstructed signal having the same bandwidth as said signal to be transmitted.

4,492,979

SYNCHRONIZING CIRCUIT FOR MATRIX TELEVISION SET

Masayuki Ikeda, Sawa, Japan, assignor to Kabushiki Kaisha Sawa Seikusha, Tokyo, Japan

Division of Ser. No. 295,192, Aug. 21, 1981, Pat. No. 4,393,405.
This application May 24, 1983, Ser. No. 497,622
Claims priority, application Japan, Aug. 22, 1980, 55-116278
The portion of the term of this patent subsequent to Jul. 12, 2000, has been disclaimed.
Int. Cl.³ H04N 5/04, 5/08
U.S. Cl. 358—153 4 Claims



1. In a synchronizing circuit for a matrix television set having display means including picture elements arranged in a matrix of lines and columns, and connected to line driver and column driver circuits respectively so as to be individually selectable in both line and column directions, and wherein display is made by selecting lines and columns successively, the improvement therein comprising:

a voltage controlled oscillator circuit, said oscillator circuit producing a shift clock signal applied to said column driver circuits for selecting individual columns in succession;

first frequency divider means for dividing down an output frequency signal from said oscillator circuit, the output of said first frequency divider means being a clock signal applied to said line driver circuits for selecting individual lines in succession;

phase comparison means, said comparison means determining the difference in phase of a output of said first frequency divider means with the phase of a horizontal synchronizing signal, said horizontal synchronizing signal being a portion of a television signal transmission, an output of said comparison means being fed back to said oscillator circuit, said feedback being in proportion to said phase difference, said oscillator circuit being adapted to adjust the output frequency of oscillation in response to said phase difference signal, said adjustment causing said phase difference to approach zero, said clock signals being synchronized with said horizontal synchronizing signal;

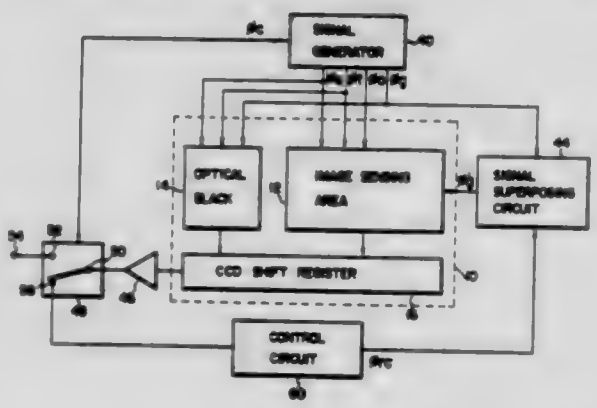
a synchronizing signal separator circuit, said television signal transmission including a composite synchronization signal, said separator circuit separating a vertical synchronizing signal from said composite signal, and a signal including said horizontal synchronizing signal, said synchronizing signal separator circuit including an inverter, first capacitor, first resistor and a MOS FET, said MOS FET having gate and drain electrodes connected together, the source and drain of said MOS FET being connected across said inverter, said first capacitor being connected at one end in series with said inverter and charging through said MOS FET, said signal transmission being input to the other end of said capacitor, said first capacitor discharging through said first resistor.

4,492,980

SOLID STATE IMAGE-SENSING DEVICE

Nozomu Harada, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 31, 1981, Ser. No. 297,968
Claims priority, application Japan, Sep. 10, 1980, 55-124510
Int. Cl.³ H04N 3/14, 5/30
U.S. Cl. 358—213 13 Claims



1. A solid state image-sensing device which comprises:
(a) a group of matrix-arranged cells, each of which includes means for generating signal charges corresponding to the luminosity of an introduced light, means which forms a potential well and stores therein mixed charges consisting of the second charges produced by said signal charge-generating means and first unnecessary noise charges;
(b) detection means for detecting the amount of said noise charges stored in said charge-storing means and issuing a first electrical signal corresponding to the detected amount of said first noise charges;
(c) elimination means in response to said first electrical signal for eliminating said first noise charges detected by said detection means from the mixed charges stored in said charge-storing means;
(d) readout means connected at least to said matrix-arranged cell group for reading out the amount of the remaining portion of the mixed charges after removal of the first charge which equals said second charges; and
(e) each of said cells further including transfer means for transferring the remaining portion of the mixed charges stored in said potential well of said charge-storing means and gate means which is disposed between said charge-storing means and transfer means to form a second potential well and freely move the remaining portion of the mixed charged between said charge-storing means and transfer means by varying the depth of said second potential well.

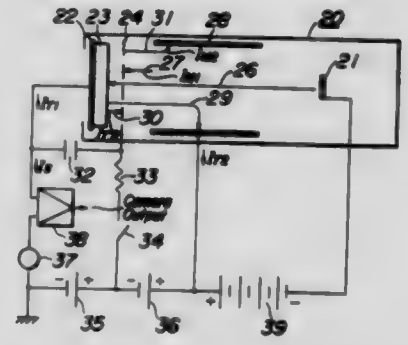
4,492,981

TV CAMERA TUBE

Kazuhisa Taketoshi, and Chiharu Ogusu, both of Tokyo, Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Filed Jan. 11, 1982, Ser. No. 338,239
Claims priority, application Japan, Jan. 29, 1981, 56-10848; Jan. 29, 1981, 56-10850
Int. Cl.³ H04N 9/04; H01J 29/45
U.S. Cl. 358—217 22 Claims

1. A TV camera tube having an envelope containing a glass faceplate and an electron gun including a cathode, comprising:
an n-type transparent electrode layer formed on said glass faceplate;
a photoconductive target composed at least of a photoconductive layer formed by depositing a thin p^+-type layer, a p-type layer and an n-type layer in succession on said n-type transparent electrode layer, and
a block layer formed on said photoconductive layer for blocking an electron beam emitted from said cathode passing through said photoconductive layer;
a metal mesh disposed in the vicinity of a side of said photoconductive target, said side being scanned by said electron beam; and
a collector electrode disposed between said metal mesh and



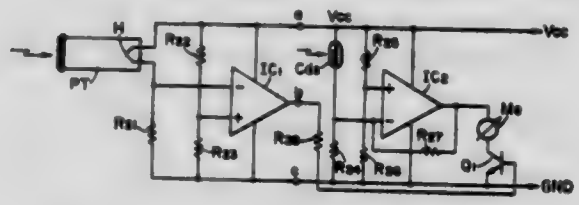
said cathode for collecting secondary electrons emitted from said photoconductive target, whereby said photoconductive target is scanned by said electron beam emitted from said cathode.

4,492,982

VIDEO CAMERA IMAGE TUBE BURN-IN PREVENTION APPARATUS

Hiroyuki Takimoto, Yokohama; Takashi Kuniyoshi, Sagamihara, and Tatsuno Ushiro, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 251086, Apr. 6, 1981, abandoned. This application Nov. 10, 1983, Ser. No. 550,517
Claims priority, application Japan, Apr. 18, 1980, 55-51221; Apr. 18, 1980, 55-51222; Apr. 18, 1980, 55-51223
Int. Cl.³ H04N 5/193
U.S. Cl. 358—228 22 Claims



1. A video camera, comprising:
an imaging pick up tube for picking up object images, including a light receiving face plate and a heater;
detecting means for detecting an initially operative condition of said imaging tube;
interrupting means for interrupting an incident light irradiating to said light receiving face plate;
power supply means for supplying power to said heater; and
control means associated with said power supply means for causing said interrupting means to operate when the application of power by said power supply means is interrupted, and for releasing the operation of said interrupting means in response to detecting output from said detecting means after the application of power by said power supply means.

4,492,983

SYSTEM FOR DECODING COMPRESSED DATA

Shigeru Yoshida, Kawasaki; Minoru Koseki, Koshigaya, and Masakatsu Horie, Atsugi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP80/00185, § 371 Date Apr. 17, 1981, § 102(e) Date Apr. 17, 1981, PCT Pub. No. WO81/00659, PCT Pub. Date Mar. 5, 1981
PCT Filed Aug. 15, 1980, Ser. No. 253,924
Claims priority, application Japan, Aug. 17, 1979, 54-104635
Int. Cl.³ H04N 7/12
U.S. Cl. 358—260 3 Claims

1. A system for decoding compressed data, operatively

connectable to a length equalizing circuit to receive therefrom data for independent and correlated elements and relative distance data therefrom, comprising:

a memory for storing reference data for a reference element;

a first register, operatively connected to said memory, for storing and passing therethrough the reference data;

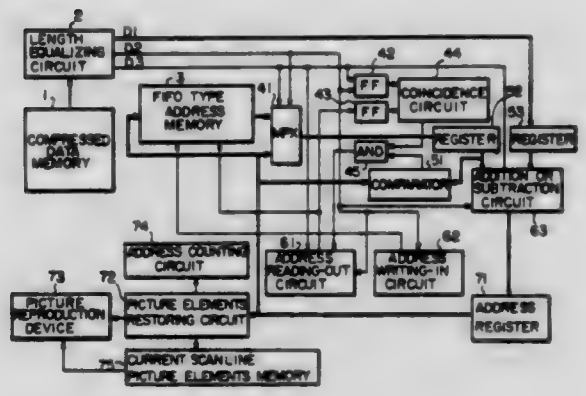
a second register, operatively connectable to the length equalizing circuit, for storing and passing therethrough the relative distance data;

an addition/subtraction circuit, operatively connected to said first and second registers, for generating an address of a needed element in dependence upon the reference element data and the relative distance data;

a third register, operatively connected to said addition/subtraction circuit and said memory, for storing and passing therethrough the address of the needed element;

a multiplexer, operatively connected to said memory, said first register and said third register, and operatively connectable to the length equalizing circuit, for multiplexing between said memory and said third register in dependence upon the data for the independent and correlated elements;

a comparator, operatively connected to said third register and said first register, for generating a greater than signal in dependence upon the reference data and the address of the needed element;



a coincidence circuit, operatively connectable to the length equalizing circuit to receive the data for the independent and correlated elements, for generating a coincidence signal;

an AND circuit, operatively connected to said coincidence circuit and said comparator, for generating an output signal in dependence upon the coincidence signal and the greater than signal;

an address reading-out circuit, operatively connected to said coincidence circuit, said AND circuit and said memory, and operatively connectable to the length equalizing circuit, for controlling the reading out of the data concerning color change elements from said memory in dependence upon the output signal and the data for the independent and correlated elements and for generating data for a preceding element, said coincidence signal being generated in dependence upon the data for the independent and correlated elements and the data for the preceding element; and

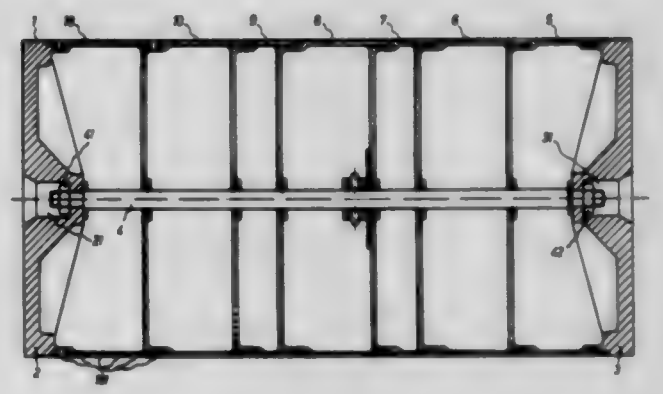
an address writing-in circuit, operatively connected to said memory and operatively connectable to the length equalizing circuit, for controlling the writing of data concerning color change elements into said memory in dependence upon the data for the independent element.

4,492,984

DRUM SCANNERS

Wolfgang Diass, Altenholz; Ralf Bolsolt, Preetz, and Reinhard Genoll, Schönkirchen, all of Fed. Rep. of Germany, assignors to Dr.-Ing. Rudolf Hell GmbH, Kiel, Fed. Rep. of Germany

Filed Nov. 1, 1982, Ser. No. 438,016
Int. Cl.³ H04N 1/06, 1/04
U.S. Cl. 358—289 17 Claims



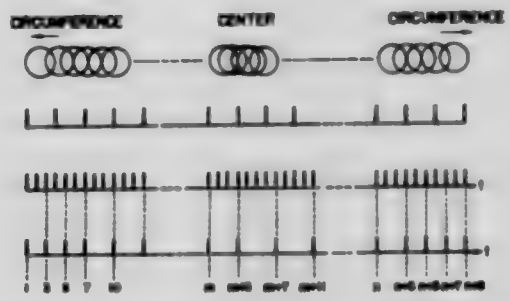
14. A drum scanner roller comprising a plurality of rings of the same external diameter, joined together to form a continuous outer surface, each ring having opposed end faces, said rings being assembled in end to end axially aligned relation with the end faces of adjacent rings abutting each other to form a joint, an annular coupling within at least one end of each ring at a joint, means connecting adjacent rings at each joint to the annular coupling, and a circular transverse plate within and connected to an annular coupling.

4,492,985

BEAM SCANNING MEANS FOR INPUT/OUTPUT UNIT

Masato Sato; Hiroyuki Katsoka, and Yoshio Arai, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 10, 1981, Ser. No. 291,738
Claims priority, application Japan, Aug. 19, 1980, 55-116383[U]
Int. Cl.³ H04N 1/10
U.S. Cl. 358—293 7 Claims

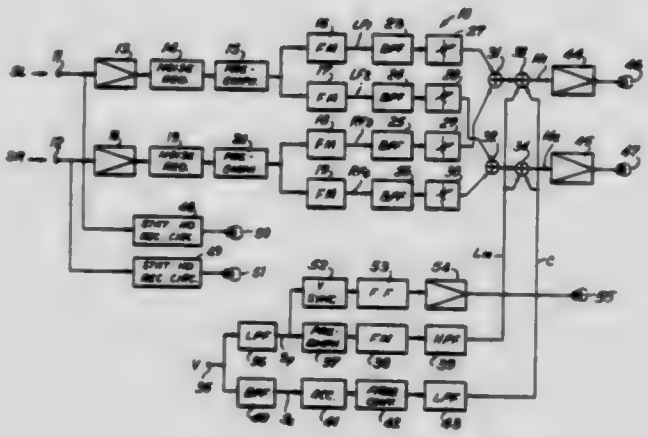


1. In an input and/or output unit for pictures which reads or records a picture with a scanning beam, the improvement comprising: a sampling signal generator for generating a sampling signal with a timing such that an interval of said scanning beam between sampling points on a scanning line is constant, said said interval being determined by a read-only memory storing numerial values corresponding to constant sampling point intervals on a scanned surface.

4,492,986
VTR WITH HIGH-QUALITY AUDIO RECORDING SYSTEM

Takashi Kono, Hachioji; Akira Minegishi, Tokyo, and Toshimitsu Kamei, Higashikurume, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 8, 1982, Ser. No. 447,874
Claims priority, application Japan, Dec. 15, 1981, 56-201916
Int. Cl.³ H04N 9/491
U.S. Cl. 358—330
32 Claims



18. Apparatus for recording color video and audio signals comprising:

frequency-modulating means for modulating a plurality of carriers having different frequencies by an audio signal to be recorded and thereby providing a corresponding plurality of respective FM audio signals;

video signal processing means receiving a color video signal which has luminance and chrominance components and including additional frequency-modulating means for modulating an additional carrier with said luminance component, said additional carrier having a frequency substantially higher than that of each of the carriers of said FM audio signals so that the resulting FM luminance signal is in a band of which at least the major part is above a band containing said FM audio signals, and frequency converting means for converting said chrominance component to a frequency converted chrominance signal in a relatively low frequency band spaced from said band of said FM luminance signal to provide a gap therebetween in which said FM audio signals are situated;

first mixing means for mixing said FM luminance signal and said frequency converted chrominance signal with one of said FM audio signals and thereby providing a first mixed audio and video signal;

second mixing means for mixing said FM luminance signal and said frequency converted chrominance signal with another of said FM audio signals and thereby providing a second mixed audio and video signal;

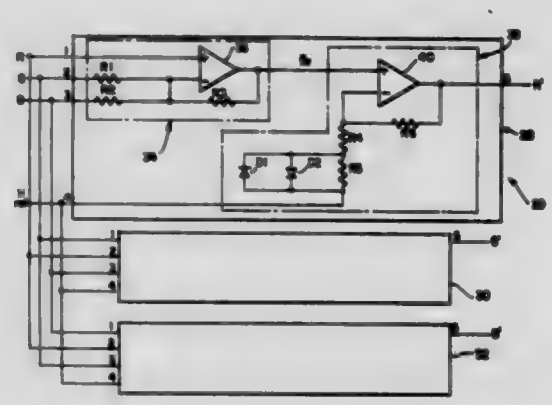
first and second magnetic heads respectively receiving said first and second mixed audio and video signals from said first and second mixing means for recording said first and second mixed signals in respective record tracks on a magnetic record medium;

means for varying the levels of said FM audio signals in said first and second mixed audio and video signals upon changes in the level of said audio signal to be recorded.

4,492,987
PROCESSOR FOR ENHANCING VIDEO SIGNALS FOR PHOTOGRAPHIC REPRODUCTION

James L. Burkhardt, Watertown, and John J. McCann, Belmont, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 22, 1982, Ser. No. 360,468
Int. Cl.³ H04N 5/76
U.S. Cl. 358—332
17 Claims



1. A signal processor for use with a color television receiver of the type having a colored display screen, comprising:

circuit means for receiving color video signals from the color television receiver in order to impose a select transfer function to the received color video signals which function generally approximates the inverse of the transfer function of a selected photographic reproduction process so as to produce modified video signals which when transmitted to the color television receiver operate to produce an image on the display screen of the television receiver in accordance with said select transfer function such that a photographic image of the display screen made by said selected photographic process will substantially visually correspond to the video image which would otherwise be displayed on the display screen if the video signals had not been modified by said circuit means, wherein said circuit means also includes means for further modifying the video signals so that when the video signals are transmitted to the television receiver, the saturation of the imaged colors on the display screen is enhanced to at least partly compensate for a mismatch in the spectral emission properties of the display screen and the spectral sensitivities in the photosensitive layers of a photosensitive material selected for the photographic reproduction process; and

means for connecting said circuit means to receive said video signals from the receiver and to transmit said modified video signals back to the colored display source.

4,492,988
DROPOUT COMPENSATION SYSTEM

Kiyokazu Hashimoto, Matsubara, and Keizi Hayashi, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 25, 1982, Ser. No. 411,265
Claims priority, application Japan, Aug. 27, 1981, 56-134587
Int. Cl.³ H04N 5/76
U.S. Cl. 358—336
7 Claims

1. A dropout compensation system comprising:

input means for receiving a modulated signal subject to dropouts;

dropout detector means having an input connected to said input means, an output and a control output, for producing a first control signal in response to the occurrence of a dropout;

first switch means having an output, a first input connected to said input means, a second input, and a control input connected to the control output of said dropout detector means, said first switch means being controlled by said first control signal such that the modulated signal applied

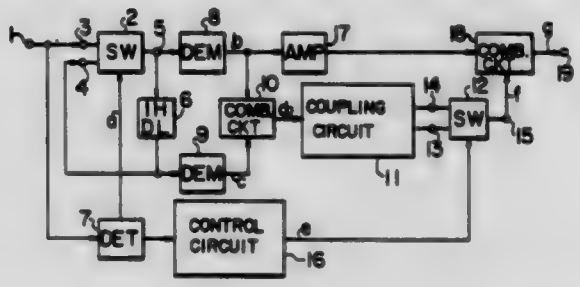
to said first input is normally introduced to the output thereof and when the dropout occurs, the signal of said second input is introduced to said output;

delay means having an input connected to the output of said first switch means and an output connected to the second input of said first switch means;

means for demodulating said modulated signal, said demodulating means including a first demodulator having an input connected to the output of said first switch means and an output and including a second demodulator having an input connected to the output of said delay means and an output;

first combining means having a first input connected to the output of said first demodulator, a second input connected to the output of said second demodulator and an output, for producing a difference signal between first and second input signals;

means having an input connected to the output of said dropout detector means, and an output, for producing second control signals of a predetermined time length respectively starting from the beginning and end of the dropout detection by said first control signal, or producing a second control signal having a maximum time length starting from the generation of said first control signal until a predetermined time elapses after the end of dropout detection;



second switch means having at least an input, an output and a control input supplied with the second control signal, for switching the passage and cutoff of the input signal applied to the input terminal thereof in response to the second control signal without substantially changing the DC voltage at the output thereof;

coupling means for coupling the output of said first combining means and the input terminal of said second switch means; and

second combining means having a first input connected to the output of said first demodulator, a second input connected to the output of said second switch means and an output, for combining signals applied to said first and second inputs and producing a dropout-compensated signal.

4,492,989

TIME BASE CORRECTING APPARATUS

Nobuhiko Watanabe, and Masato Tanaka, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 10, 1983, Ser. No. 465,462
Claims priority, application Japan, Feb. 15, 1982, 57-22290
Int. Cl.³ G11B 5/00
U.S. Cl. 360—32 5 Claims

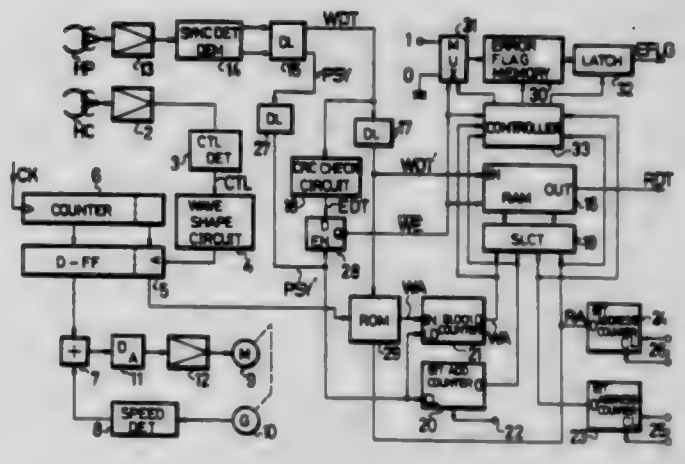
1. A time base correcting apparatus for correcting time base errors in a digital signal supplied thereto in the form of successive data blocks, each data block including at least plural data words and a block address circulating with a predetermined phase relation to a reference signal, said apparatus being characterized by:

memory means having plural addressable storage locations, each storing a respective data block;

write address generating means responsive to said block address for generating write-in addresses to identify particular storage locations into which the supplied data blocks are written;

write-in means for writing successive data blocks into those storage locations identified by said write address generating means;

read address generating means for generating read-our addresses to identify particular storage locations from which a stored data block is read out;



read-out means for reading out the contents of a storage location identified by said read address generating means; and

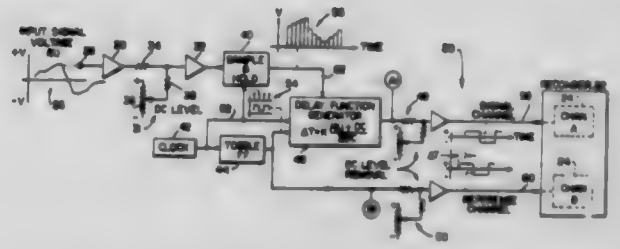
means contained in said write address generating means for varying said write-in address by a lock mode signal, said lock mode signal representing a phase relation at which said incoming digital signal is locked.

4,492,990

NOISE REDUCTION SYSTEM

Clark E. Johnson, Jr., Minneapolis, Minn., assignor to Vertimag Systems Corporation, Minneapolis, Minn.

Filed Feb. 28, 1983, Ser. No. 470,435
Int. Cl.³ G11B 5/00, 5/09
U.S. Cl. 360—32 19 Claims



1. A recording system comprising:

means for generating a square-wave signal;

sampling means synchronized to said generating means for providing samples of an input signal;

delay means coupled to said generating means and driven by said samples of said sampling means for delaying, independently, the leading and the trailing edges of successive pulse of said square-wave signal to provide a delayed signal, the amount of delay in said delayed signal being dependent on amplitudes of said samples;

means for recording said square-wave signal and said delayed signal in synchronism with each other, said square-wave signal serving as a time-reference signal during playback; and

playback means coupled to said recording means for retrieving said input signal.

4,492,591

METHOD AND APPARATUS FOR CONTROLLING THE STEPPING FEED OF AN INFORMATION MEDIUM

Nobuo Onuki, Yokohama; Akira Kanemori, Kanazawa; Takaaki Kimura, Kawasaki; Saiko Mereto, Tokyo; Hideo Horie, and Toshiide Yoshizoe, both of Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP81/00172, § 371 Date Mar. 22, 1982, § 102(e) Date Mar. 22, 1982, PCT Pub. No. WO82/00840, PCT Pub. Date Feb. 18, 1982

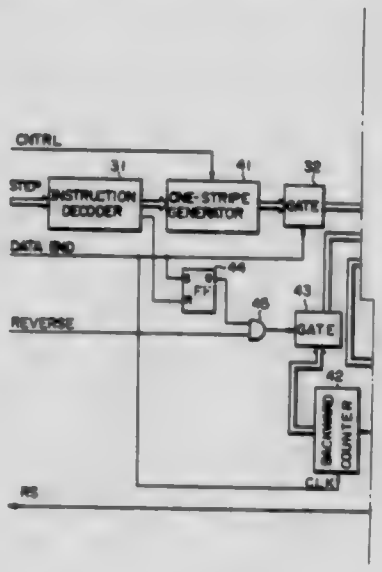
PCT Filed Jul. 30, 1981, Ser. No. 364,850

Claims priority, application Japan, Jul. 31, 1980, 55-105896

Int. Cl.³ G11B *21/04*

U.S. Cl. 360—70

12 Claims



1. A method for controlling the stepping feed of a tape-shaped information medium on which recording tracks are formed by stripes, the recording tracks running diagonally or perpendicularly across the information medium, said method comprising the steps of:

(a) accessing data on a first recording track by performing an action selected from among recording the data and reading the data;

(b) checking the accessed data on the first recording track;

(c) feeding the information medium to access data on a second recording track next to the first recording track, said feeding starting after said accessing step (a) is completed and before said checking step (b) is completed; and

(d) determining whether the feeding of said feeding step (c) is to be continued or reversed in dependence upon the result of said checking step (b) when said checking step (b) is completed and before said feeding step (c) is completed.

4,492,592

HIGH STORAGE DENSITY DISC DATA STORE EMPLOYING CONTROLLED-ANGULAR-VELOCITY ROTARY MEDIUM

John O. Rooney, 29, Drum Cless, Stanton, Glenrothes, Fife, Scotland, and Ian B. Freeman, 2242, Ptarmigan Ct., Union City, Calif. 94457

Continuation-in-part of Ser. No. 138,469, Apr. 8, 1980, abandoned. This application Jun. 24, 1982, Ser. No. 391,804

Claims priority, application United Kingdom, Apr. 17, 1979, 7913220

Int. Cl.³ G11B *5/55, 19/24*

U.S. Cl. 360—73

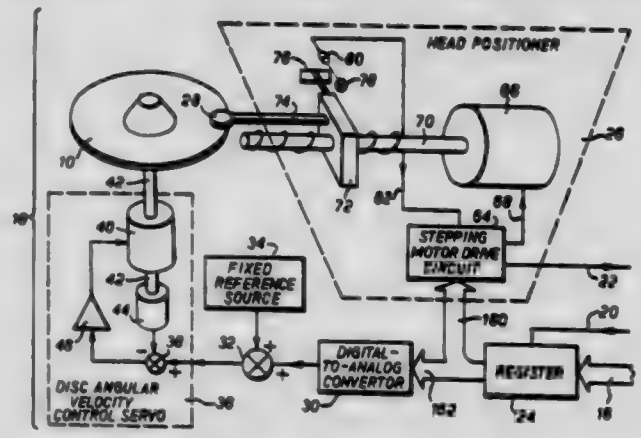
22 Claims

1. A store for the storage of retrievable informational data in a plurality of concentric, circular storage tracks on a rotary medium, said store comprising:

a positioner coupled to receive (a) track address information indicative of a selectable one, or a group, of said plurality of tracks and operable to respond thereto to move a data recording or recovering transducer toward adjacence with said selected track, or group of tracks, and

an angular velocity controller coupled to receive said track address information and operable to respond thereto to select a related value of angular velocity for said medium associated with said track, or track group, and to (move) adjust said angular velocity toward said selected value,

whereby said angular velocity controller is operable to (move) adjust said angular velocity toward said selected



value (simultaneously with) contemporaneously with, but independently of, said movement of said transducer toward adjacence with said selected track and operable to arrive at said selected value contemporaneously with, if not in advance of, said transducer arriving at said selected track.

4,492,593

MAGNETIC RECORDING TAPE AND CORRESPONDING METHOD PROVIDING INDICATION OF END-OF-TAPE CONDITIONS

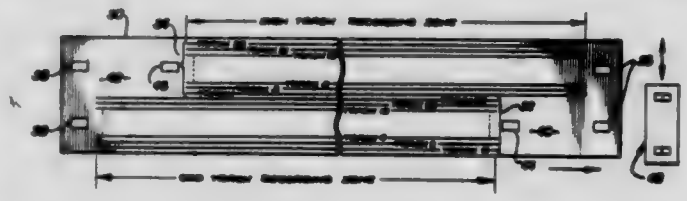
Douglas A. Otis, North Hollywood, Calif., assignor to Ecostream Research Associates, Ltd., Carrites, Calif.

Filed Dec. 14, 1982, Ser. No. 449,599

Int. Cl.³ G11B *15/06, 15/22, 23/30, 23/42*

U.S. Cl. 360—74.5

8 Claims



1. A method of detecting a warning marker indicative of an approaching end-of-tape condition for one direction of tape motion, and indicative of a load point in the other direction of tape motion, said method comprising the steps of:

positioning a first set of the recording tracks on a first half of the tape, for reading and writing in a first tape direction;

positioning a second set, constituting the remainder of the recording tracks, on the second half of the tape, for reading and writing in the opposite tape direction, the second set of tracks being offset longitudinally with respect to the first set, leaving a first unrecordable half-width region prior to the beginning of the first set of tracks and a second unrecordable half-width region prior to the beginning of the second set of tracks;

providing a first tape marker located in the first unrecordable region in such a position as to be encountered when the beginning of one of the first set of tracks is positioned in engagement with a read/write head, and also serving as a warning marker when one of the second set of tracks is being used; and

providing a second tape marker located in the second unrecordable region in such a position as to be encountered when the beginning of one of the second set of tracks is positioned in engagement with the read/write head, and

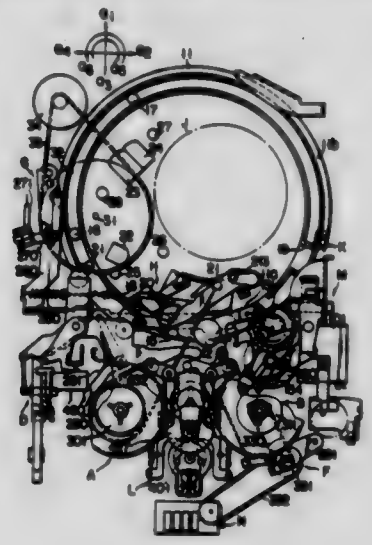
also serving as a warning marker when one of the first set of tracks is being used.

4,492,994

VIDEO TAPE RECORDER

Kenichi Suda, Kawasaki; Katsuyuki Tamaki, Yokohama; Kazushi Tateishi, Kawasaki, and Koichiroh Abe, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha and Teac Corp., both of, Japan

Filed Feb. 12, 1982, Ser. No. 348,177
Claims priority, application Japan, Feb. 16, 1981, 56-21029
Int. Cl.³ G11B *5/08, 5/008, 15/00, 17/00*
U.S. Cl. 360—85 7 Claims



1. In a video tape recorder comprising a motor; a loading disc; a supply reel mount and a take-up reel mount; and a reel mount driving device to be selectively associated with the supply reel mount and the take-up reel mount to establish recording, playback, rewinding, fast-forward, and stop modes, the improvement which comprises:

mode switching means for selectively transmitting the rotary force of the motor to the loading disc and the reel mount driving device so that the loading disc is rotated when the rotary force is transmitted to the loading disc, and to set the reel mount driving device to a selected one of said modes when the rotary force is transmitted to the reel mount driving device, wherein said mode switching means includes:

(a) clutch means for selectively transmitting the rotary force of the motor to the loading disc and the reel mount driving device,

(b) a loading gear engaging the loading disc,

(c) a cam arm coupled with the reel mount driving device, and

(d) a mode cam means capable or rotation for moving the cam arm according to the rotation angle position of the mode to set the reel mount driving device to the selected mode by means of the cam arm, the loading gear and the mode cam means being connected with the motor by the clutch means, wherein

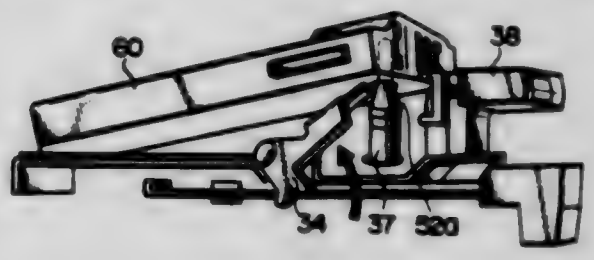
said clutch means transfers the rotary force from said loading disc to said reel mount driving device in response to said clutch means sensing an increased load transmitted thereto by said loading disc, said increased load indicative that said loading disc has stopped rotating, whereby said clutch means causes said reel mount driving device to thereupon rotate so as to set said reel mount driving device at said selected mode by virtue of said transferred rotary force.

4,492,995

TAPE CASSETTE LOADING AND EJECTION DEVICE

Seiji Tomita, Yokosuka, and Hideo Yokoyama, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 322,911, Nov. 19, 1981, abandoned, which is a continuation-in-part of Ser. No. 162,446, Jun. 24, 1980, Pat. No. 4,360,174. This application Apr. 18, 1984, Ser. No. 601,128
Claims priority, application Japan, Jun. 28, 1979, 54-80362
Int. Cl.³ G11B *15/66*
U.S. Cl. 360—96.5 7 Claims



1. A tape cassette loading device for selectively holding, in an operating position or an ejection position, a tape cassette of the type including forward and rearward portions and having at least one guide hole which includes a bottom edge defined in said forward portion, said tape cassette loading device comprising:

chassis means defining one surface on which the tape cassette is mounted when in said operating position;

guide pin means protruding from said one surface of said chassis means and engageable with said at least one guide hole to guide the tape cassette throughout the entire movement thereof between said operating and ejection positions; and

ejection means operatively associated with said chassis and moveable along said guide pin between an upper position and a lower position to responsively displace the tape cassette between said operating position and said ejection position, respectively, said ejection means operating to raise said forward portion of the tape cassette so as to angularly dispose the tape cassette when in said ejection position relative to said one surface; and wherein

said guide pin means includes downwardly and outwardly tapered surface defined at a predetermined height above said surface, said tapered surface establishing means for retaining said bottom edge of said guide hole in bearing contact against said tapered surface to responsively retain the tape cassette in said angularly disposed ejection position while yet permitting the tape cassette to be manually moved to said operating position upon application of pressing force to the tape cassette to cause said bottom edge to slide along said tapered surface.

4,492,996

ROTARY RECORDING MEDIUM REPRODUCING APPARATUS

Takashi Saito, Ayase, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa, Japan

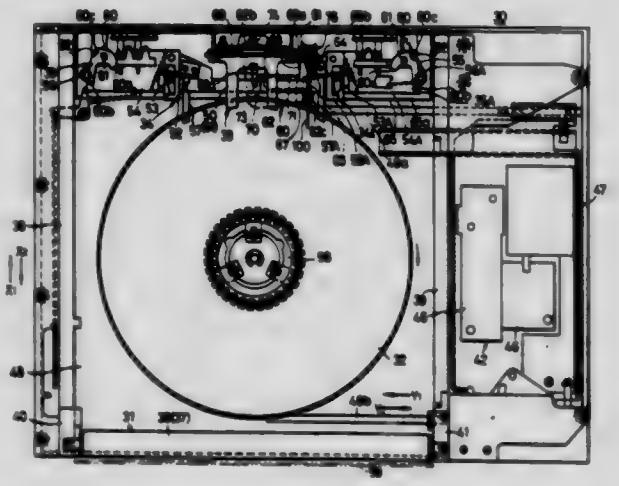
Filed Jun. 7, 1982, Ser. No. 386,138
Claims priority, application Japan, Jun. 12, 1981, 56-90322
Int. Cl.³ G11B *5/016*; B65D *85/30*; G11B *23/02*; G03B *17/26*
U.S. Cl. 360—99 6 Claims

1. A rotary recording medium reproducing apparatus for reproducing a rotary recording medium accommodated within a case, said case comprising a jacket provided with a space for accommodating said rotary recording medium and an opening for allowing said rotary recording medium to go in and out of said jacket, and a lid member inserted through said opening of said jacket for closing said opening of said jacket, said rotary recording medium reproducing apparatus comprising:

lid member locking and holding means provided at an inner-

most part of said reproducing apparatus, for locking and leaving said lid member inside said reproducing apparatus when said case is inserted into said reproducing apparatus through an inserting opening provided thereat, and for releasing the lock with respect to said lid member when an empty jacket is inserted into said reproducing apparatus;

lid member connection releasing means for releasing connection of said lid member with respect to said jacket when said case is inserted into and then pulled out from said reproducing apparatus, and for connecting said lid member to said empty jacket when said jacket is inserted into and then pulled out from said reproducing apparatus;



lid member push-back means for pushing back said lid member released from locking in a direction approaching said empty jacket which is inserted, interrelatedly with the lock releasing operation of said lid member locking and holding means; and

jacket pull-out preventing means provided interrelatedly with said lid member push-back means, for permitting said jacket to be pulled out when said lid member is pushed back to connect with said jacket, and preventing said jacket from being pulled out in a state where said lid member is not connected to said jacket.

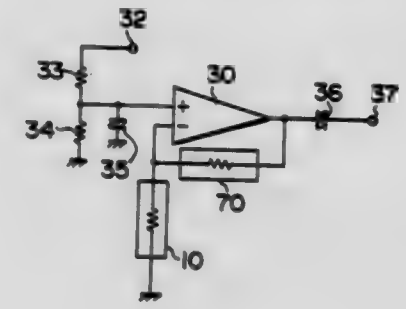
4,492,997

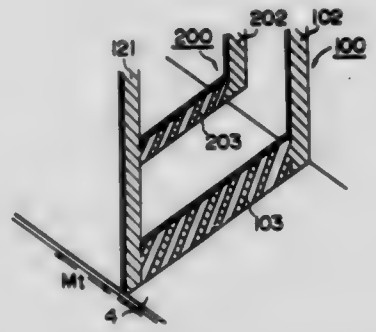
REPRODUCING AND AMPLIFYING CIRCUIT FOR MAGNETORESISTIVE HEAD

Takao Arai, and Takaharu Noguchi, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 24, 1981, Ser. No. 324,674
Claims priority, application Japan, Nov. 28, 1980, 55-166551; Dec. 10, 1980, 55-173261
Int. Cl.³ G11B *5/00*
U.S. Cl. 360—113 12 Claims

1. A reproducing and amplifying circuit for a magnetoresistive head engageable with a magnetic recording medium for reproducing an electric signal from magnetization in said recording medium, comprising circuit means for amplifying said reproduced electric signal derived from said head, said amplifying circuit means including an amplifier circuit and a feedback circuit for said amplifier circuit, in which said feedback circuit is provided with means for electrical connection with said head so that said head constitutes a part of said feedback circuit thereby for supplying a drive current to said head and coupling said reproduced electric signal to said amplifying circuit means for its amplification, and said amplifying circuit means has such a circuit structure that in operation the voltage at the junction of said head and said feedback circuit is held constant in which said amplifier circuit includes a differential amplifier having a non-inverted input terminal for receiving a fixed potential and an inverted input terminal for electrical





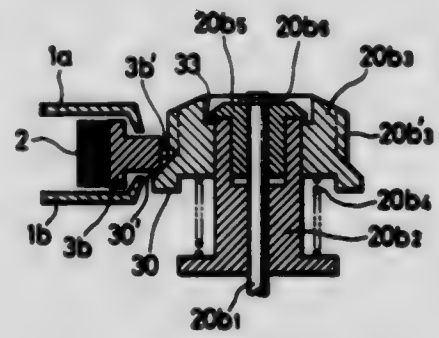
connection with said head by said electrical connection means in said feedback circuit.

4,492,998

CASSETTE TAPE RECORDER

Tesuro Kanimura, and Seiichiro Matsuki, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 7, 1982, Ser. No. 415,620
Claims priority, application Japan, Sep. 7, 1981, 56-131920[U]
Int. Cl.³ G11B *23/02*
U.S. Cl. 360—132 15 Claims



1. A cassette tape recorder of the type comprising at least one rotatable shaft unit for extending through an aperture in a cassette reel, said cassette reel having reel projections extending toward said shaft unit from the periphery of said aperture, said rotatable shaft unit having shaft unit projections thereon for matingly engaging said reel projections, with said shaft being adapted to be rotated by said cassette reel when said cassette reel rotates in a tape suppy direction, said shaft unit further including a tapered portion adjacent said reel having a sloping surface coaxial with a center axis of said shaft unit for supporting said cassette reel at a position coaxial with said center axis along said sloping surface, thus insuring positive centering of said cassette reel and minimizing wow.

4,492,999

SUPERVISORY UNIT FOR ROTARY ELECTRICAL MACHINERY AND APPARATUS

Nobutada Amagase, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

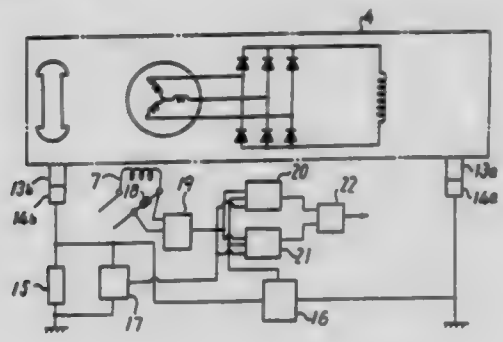
PCT No. PCT/JP82/00161, § 371 Date Dec. 15, 1982, § 102(e) Date Dec. 15, 1982, PCT Pub. No. WO82/04164, PCT Pub. Date Nov. 25, 1982

PCT Filed May 10, 1982, Ser. No. 456,013

Claims priority, application Japan, May 9, 1981, 56-71813; May 9, 1981, 56-71814; May 9, 1981, 56-71815

Int. Cl.³ H02H 7/06

U.S. Cl. 361—21 4 Claims



1. In rotary electrical machinery and apparatus of rotary field system type comprising a first detection earthing brush disposed on an end of a rotor shaft, and a second detection earthing brush disposed on the other end of said rotor shaft through a resistance circuit, and said rotary electrical machinery and apparatus receiving power source supply from a thyristor exciter through a slip ring, a supervisory unit for said rotary electrical machinery and apparatus characterized by comprising a first detector for detecting voltage across both ends of said resistance circuit; a second detector for detecting voltage across said both earthing brushes; a third detector for detecting electrical signals of an AC exciter which constitutes a part of the field system side of said rotary electrical machinery and apparatus; and an abnormality detecting means wherein the values of shaft voltage and frequency are detected on the basis of signals of said respective detectors, and comparison is made to determine if said voltage and frequency values are greater than a reference value, and wherein if said values are greater than said reference value, said means provides a signal indicating an abnormal condition.

4,493,000

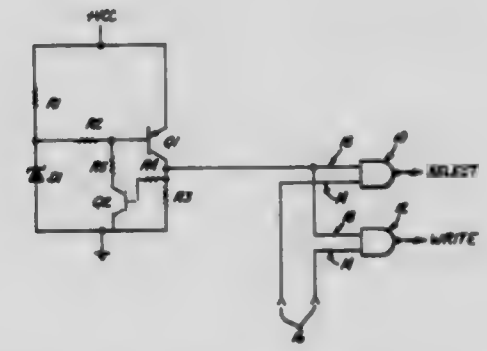
POWER ON/OFF PROTECT CIRCUIT

Michael W. Edwards, Oklahoma City, Okla., assignor to Magnetic Peripherals Incorporated, Minneapolis, Minn.

Filed Sep. 30, 1983, Ser. No. 537,907

Int. Cl.³ H02H 3/24

U.S. Cl. 361—92 2 Claims



1. Power on/off protect circuit for enabling one or more logic gates when their power supply voltage is above a predetermined level at which the outputs of the logic gates are indeterminate and for disabling the gates before the voltage drops below said predetermined level, comprising:

one or more gates having outputs which are indeterminate when the gates power supply is below a first predetermined voltage level and whose output is off when at least one input is held below a second predetermined voltage above ground;

a set of inputs to said one or more gates connected through a low impedance resistor to ground;

a first transistor whose collector is connected to said set of inputs between said low impedance resistor and said gates;

a power supply whose voltage level is to be monitored connected to the emitter of said first transistor and to the base of said first transistor through one or more resistors;

a zener diode connected on one side to ground and on the other side to the base of said first transistor and to the the power supply between said power supply and one or more resistors; the zener diode adapted to conduct above a third predetermined voltage level, said predetermined third voltage level being at least a predetermined voltage drop level above a level sufficient to reliably operate logic gates;

a second transistor;

the base of said second transistor connected through a resistor to the collector of said first transistor;

the emitter of said second transistor connected to ground; and

the collector of said second transistor connected to the base of said first transistor; whereby the second transistor operates to maintain the first transistor in a conducting state for said predetermined voltage drop after the zener diode has ceased to conduct in response to said power supply voltage dropping below said third predetermined voltage, after which said first transistor ceases to conduct and the voltage input to said logic gates falls below said second predetermined voltage level thereby disabling said logic gates.

4,493,001

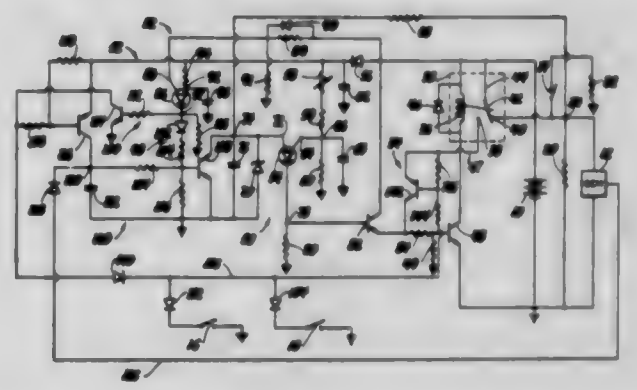
MOTOR VEHICLE BATTERY RUNDOWN PROTECTION SYSTEM

Leonard J. Sheldrake, Noblesville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 10, 1983, Ser. No. 550,365

Int. Cl.³ H02H 7/18

U.S. Cl. 361—92 3 Claims



1. In a motor vehicle electrical system including an electrical load and a battery for supplying power to such load when the vehicle engine is not running, apparatus comprising:

a switching mechanism trippable to interrupt the supply of power from said battery to said electrical load;

means defining a reference battery voltage determined in relation to the nominal current drain of said electrical load such that if the actual battery voltage falls significantly below such reference voltage, the energy remaining in the battery may be insufficient to restart the vehicle engine;

protective means responsive to the actual battery voltage and operative following a time delay which is initiated when the actual battery voltage falls below said reference

battery voltage for tripping said switching mechanism thereby to interrupt the supply of power to said load before the battery is too discharged to restart the vehicle engine; and

override means responsive to an abrupt drop in the actual battery voltage indicative of vehicle entry for inhibiting the operation of said protective means for a timed period sufficiently long in duration to enable entry of the vehicle and starting of the engine so that battery voltage drops incident to entry of the vehicle do not result in interruption of the supply of power to the electrical load.

4,493,002

ELECTRONIC CIRCUIT BREAKER

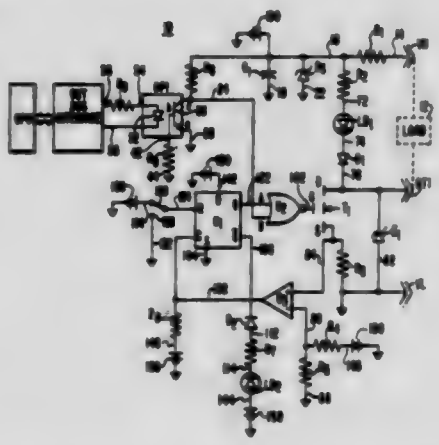
Kenneth R. Pelowski, Bloomfield Township, Oakland County, and Robert J. Winkel, Royal Oak, both of Mich., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 28, 1983, Ser. No. 470,651

Int. Cl.³ H02H 3/08

U.S. Cl. 361—93

1 Claim



1. Solid state electronic circuit breaker apparatus comprising:

(a) an electric field activated semiconductor switching means;

(b) an electrically isolating optocoupler for responding to a first predetermined signal for activating logic circuit means for providing a first predetermined electric field level to said electric field activated semiconductor switching means to activate said electric field activated semiconductor switching means; and

(c) resistor means connected in series circuit relationship with the output of said electric field activated semiconductor switching means for providing a signal to a comparator means for switching the output of the comparator means when the voltage across said resistor means exceeds a predetermined value as a function of load current flowing therethrough the output of said comparator means is connected to the input of a flipflop means for causing said flipflop means to change state to in turn energize a NOR logic means to change state. The output of said NOR logic means being interconnected with said electric field activated semiconductor switching means and the input of said NOR logic means being connected to said optocoupler means and said flipflop means for overriding said optocoupler means for causing said electric field activated semiconductor switching means to become nonconductive when load current as measured across said resistor means exceeds a predetermined value.

4,493,003

SURGE ARRESTER ASSEMBLY

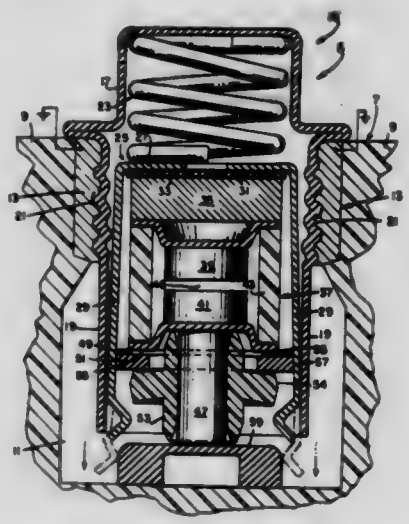
Nils P. Mickelsen, Raymond, Me., and Richard P. De LaChapelle, Rockport, Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jan. 28, 1983, Ser. No. 461,764

Int. Cl.³ H02H 9/06

U.S. Cl. 361—119

9 Claims



1. A surge voltage arrester assembly comprising:

an electrically conductive tubular housing member;

an electrically conductive cage member disposed within and having resilient finger members slideably engaging said housing member;

a sealed cold cathode gas tube with first and second electrodes spaced by an insulator means to form a primary arc gap and said first electrode contacting said cage member;

an electrically conductive cylinder extending outwardly of said second electrode;

an insulator member and an electrical conductor telescoped over said cylinder to form a secondary arc gap intermediate said electrical conductor and second electrode; and

retainer means telescoped over said cylinder intermediate thereto and said electrical conductor and contacting said second electrode and said electrical conductor to exert a retaining force against said electrical conductor and insulator member.

4,493,004

SURGE ARRESTER WITH A GAS-FILLED HOUSING

Gerhard Lange, and Jürgen Boy, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 28, 1983, Ser. No. 470,709

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1982, 3207663

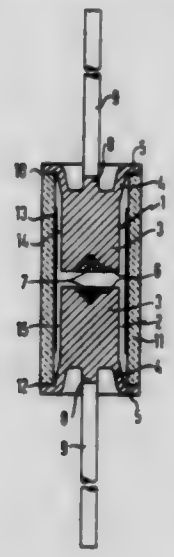
Int. Cl.³ H02H 9/06

U.S. Cl. 361—120

3 Claims

1. Surge arrester, comprising a gas-filled housing, copper electrodes disposed opposite each other in said housing, said electrodes each including a relatively thin-walled truncated conical part having a flange integral therewith and a solid cylindrical part, said cylindrical parts each having a respective end surface facing each other, said end surfaces being mutually spaced apart by a given distance and each having a trough-shaped axially-symmetrical depression formed therein, a highly active electrode activating compound filling each of said depressions, a tubular ceramic insulator at least partly surrounding said electrodes, said ceramic insulator and said electrodes defining respective annular gaps between said insulator and each of said cylindrical parts, said gaps having widths being substantially between 0.2 mm and 0.4 mm, said gaps including rear spaces being low in vapor deposition, said insulator having end surfaces being vacuum-tightly hard soldered to said flanges, and at least one ignition line being disposed on

said insulator and respectively projecting into each of said gaps and into said rear spaces, said ignition lines projecting into each of said gaps by at least 1.5 mm measured from said end faces of said cylindrical parts, said given distance between said end



surfaces of said cylindrical parts being at most 3.5 times the width of one of said gaps, as said widths of said gaps are measured in vicinity of said at least one ignition line, said electrodes defining a discharge space including said gaps having a volume of at least 20 mm^3.

4,493,005

OVERLOAD BY-PASS CONDUCTOR WITH AN EXTERNAL SHORT CIRCUIT PATH

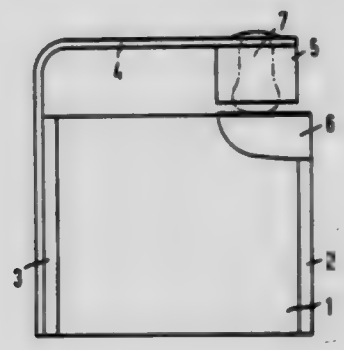
Gerhard Lange, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 24, 1982, Ser. No. 444,089

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1981, 3146787

Int. Cl.³ H02H 9/06

U.S. Cl. 361—124 8 Claims



1. Overload by-pass conductor with an external short circuit heat conduction path, comprising a metal carrier, a solder piece and other parts of the overload by-pass conductor, said other parts including an outer wall of the overload by-pass conductor, two electrodes disposed on said outer wall, one of said electrodes being a counter electrode, and a contact surface connected to said counter electrode, said metal carrier being disposed along said outer wall and being electrically conductingly connected to one of said electrodes, said solder piece being in a mechanically fixed connection with said metal carrier and being adjacent said contact surface, said solder piece being spaced from all of said other parts of the overload by-pass conductor in an operating state, and said solder piece being deformable for causing an external short circuit by directly contacting said contact surface upon the occurence of an overload, said external short circuit being triggered after a delay with respect to the beginning of the overload due to the heat conduction path.

4,493,006

GAS DISCHARGE OVERVOLTAGE ARRESTER WITH PARALLEL-CONNECTED SPARK GAP

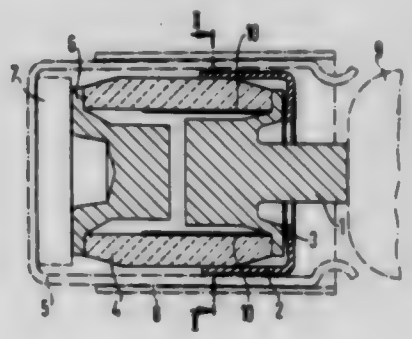
Gerhard Lange; Jürgen Boy; Ernst-Ludwig Hoena, and Oskar Sippelkamp, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 332,654, Dec. 21, 1981, abandoned. This application Feb. 17, 1984, Ser. No. 580,739

Claims priority, application Fed. Rep. of Germany, May 7, 1981, 3118137

Int. Cl.³ H02H 9/06

U.S. Cl. 361—124 9 Claims



1. Overvoltage arrester having a gas-filled housing, comprising two overvoltage arrester electrodes disposed across from each other in the housing, a tubular insulator body spacing said overvoltage arrester electrodes apart from each other so as to define an isolating gap therebetween, a ring-shaped flange integral with one of said overvoltage arrester electrodes and forming a first spark gap electrode, a ring-shaped metal cap having an annular, radially inward projecting flange, said inward projecting flange surrounding and spaced from said first spark gap electrode and pressed onto said tubular insulator body, and a contact spring connecting said metal cap to the other of said overvoltage arrester electrodes, said metal cap inward projecting flange forming a second spark gap electrode defining with said first spark gap electrode a spark gap having a defined clearance therebetween smaller than the clearance of said isolating gap, said cap being inwardly arched in the vicinity of said spark gap.

4,493,007

NOISE ELIMINATOR

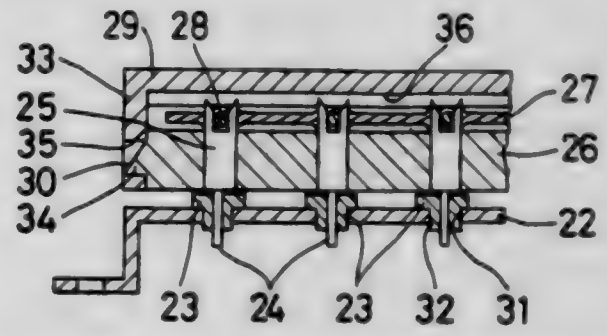
Masumi Sugitani, Imadate, Japan, assignor to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Sep. 29, 1983, Ser. No. 537,043

Claims priority, application Japan, Oct. 1, 1982, 57-169866[U]

Int. Cl.³ H01G 1/14; H01R 13/38

U.S. Cl. 361—307 5 Claims



1. A noise eliminator characterized by comprising a substrate provided with feedthrough capacitors, feedthrough terminals inserted into said feedthrough capacitors respectively, insulation displacement connection portion which have sharp furcate portions and are provided at the upper ends of

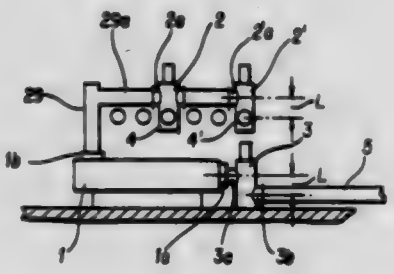
said feedthrough terminals respectively, an insulating member holding said insulation displacement connection portion spaced at intervals coincident with those between said feedthrough capacitors disposed, and a cover insulator for press-fitting the furcate portions at said insulation displacement connection portion into a flat cable, so that said cover insulator is adapted to be fixed to said insulating member by holding means.

4,493,008

GAS-INSULATED SWITCHGEAR

Eiichi Haginomori, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 12, 1982, Ser. No. 348,273
Claims priority, application Japan, Feb. 12, 1981, 56-19492; Jul. 22, 1981, 56-107717[U]
Int. Cl.³ H02B 1/04
U.S. Cl. 361—341
3 Claims



1. A gas-insulated switch-gear comprising:
a circuit breaker mounted parallel with respect to a horizontal ground plane and defining an axial line and having two ends;
a first line disconnecting switch mounted vertically with respect to said ground plane and having upper and lower terminal sections in which the upper terminal section thereof is connected to one end of said circuit breaker;
a line link bus defining an axial line and coupled to the lower terminal section of said first disconnecting switch;
a second vertical type line disconnecting switch having upper and lower terminal sections;
a bus link bus coupling said second disconnecting switch to the other terminal of said circuit breaker, said bus link having a horizontal portion defining an axial line and connected to the upper terminal section of said second disconnecting switch and a vertical portion connected to the other terminal section of said circuit breaker;
a horizontally disposed main bus located above said circuit breaker and defining a respective axial line, said main bus connected to the lower terminal section of said second disconnecting switch; and
the axial lines of said circuit breaker and said line linked bus defining a difference in height and the axial lines of said bus link bus and said main bus defining a difference in height which is equal to the difference in height between the axial lines of said circuit breaker and said line link bus.

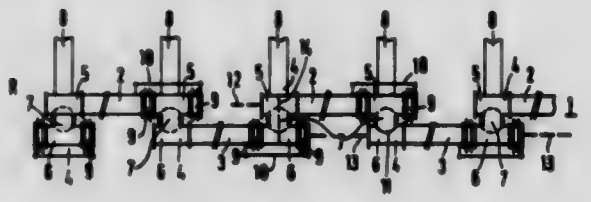
4,493,009

COMPRESSED GAS INSULATED HIGH VOLTAGE SWITCHING INSTALLATION WITH SINGLE PHASE METALLIC ENCAPSULATION

Dieter Lorenz, and Willi Olsen, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 28, 1983, Ser. No. 488,275
Claims priority, application Fed. Rep. of Germany, May 4, 1982, 3217186
Int. Cl.³ H02B 1/04
U.S. Cl. 361—341
11 Claims

1. In a compressed gas insulted high voltage switching installation with a metallic encapsulation, including bus bar systems and switchgear sections at least one of which is firmly anchored in space and in which compensators with tie rods are arranged in line with the bus bar systems, the improvement comprising:
(a) all branches of the switchgear sections in the installation firmly anchored in space;
(b) each phase of the bus bar systems being subdivided into sections alternately lying along two parallel longitudinal axes in such a manner that between three respective successive branches at least two successive sections having different longitudinal axis are disposed;
(c) double T-shaped connecting housings, having parts



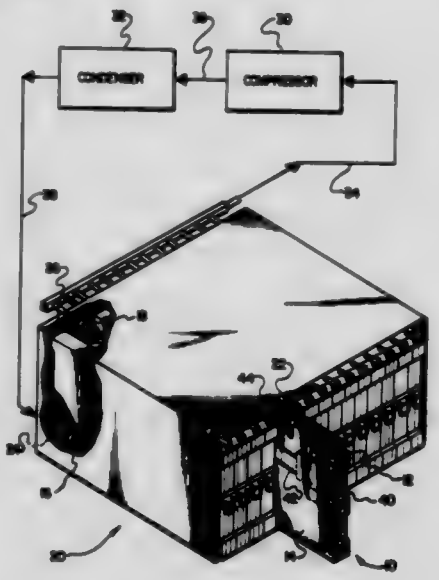
aligned with said two axes and a cross piece connecting said parts with inner and outer connecting flanges at the ends of the parts aligned with said axes, disposed between and coupled to adjacent sections of the same phase, said double T-shaped housings firmly anchore in space;
(d) a compensator for each section of the bus bar, arranged at the ends said inner and outer connecting flanges at one of the two connecting housings disposed at opposite ends of said section; and
(e) tie rods extending from the outer flange of each compensator to its inner flange bridging said compensators and said connecting housing part.

4,493,010

ELECTRONIC PACKAGING MODULE UTILIZING PHASE-CHANGE CONDUCTIVE COOLING

Robert A. Morrison, Granada Hills, and Attila Frink, Northridge, both of Calif., assignors to Lockheed Corporation, Burbank, Calif.

Filed Nov. 5, 1982, Ser. No. 439,482
Int. Cl.³ H05K 7/20
U.S. Cl. 361—385
12 Claims



1. An electronics packaging assembly comprising in combination:
a plurality of circuit board modules each comprising;
a housing having a chamber therein;
an inlet refrigerant fitting coupling the exterior of said module to said chamber, said inlet fitting having an inlet line extending into said chamber;
an outlet refrigerant fitting coupling the exterior of said housing to said chamber, said outlet fitting having an outlet line extending into said chamber;

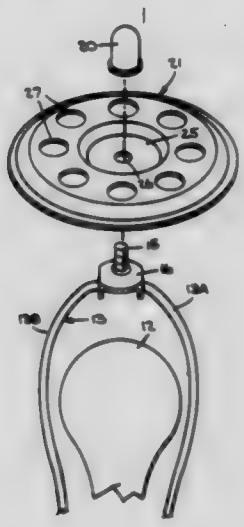
a plurality of electronic components within said chamber;
electrical termination means external to said module for making electrical connection to said electronic components inside said chamber;
an evaporator within said chamber, said evaporator being connected to said inlet line and said outlet line within said chamber;
an inert coolant liquid contained inside said chamber in surface contact with said electronic components and with said evaporator so as to facilitate the transfer of heat therebetween; and
means for retaining said liquid inside said chamber;
whereby when a compressed refrigerant liquid is introduced into said module via said inlet fitting, it may experience a change of phase within said evaporator and thereby absorb heat from said evaporator and the surrounding portion of said coolant liquid in surface contact therewith so as to maintain said coolant at a first temperature within a predetermined first temperature range which in turn will result in said electronic components being maintained within a predetermined second temperature range related to said first temperature by a predetermined differential temperature range;
a refrigeration compressor;
a refrigeration condensor;
a rack for holding said modules;
a plurality of inlet couplings attached to said rack;
a plurality of outlet couplings attached to said rack;
a plurality of external refrigerant lines respectively connecting said outlet couplings to said compressor, said compressor to said condensor, and said condensor to said inlet couplings;
a plurality of electrical connectors secured to said rack, at least one of said connectors being provided for each of said modules; and
means for removing a particular one of said modules from a first position wherein said inlet fitting of said particular module is in gas-tight connection with a corresponding one of said inlet couplings, said outlet fitting of said particular module is in gas-tight connection with a corresponding one of said outlet couplings, and said electrical termination means of said particular module is in electrical connection with a corresponding one of said electrical connectors to a second position wherein there is no fluid connection between said module and said external refrigerant lines and no electrical connection between said module and said electrical connectors.

4,493,011

AROMA DISC FOR TABLE LAMP

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Filed Mar. 14, 1984, Ser. No. 589,465
Int. Cl.³ A61L 9/02
U.S. Cl. 362—96 6 Claims



1. An aroma disc usable in conjunction with a conventional table lamp whose light bulb socket has a harp secured thereto to support a lampshade having a spider provided with a center collar, the harp being provided with an upright bolt to receive the collar, said disc comprising:

A. a round pad of porous material having good wicking properties and impregnated with a liquid fragrance; and

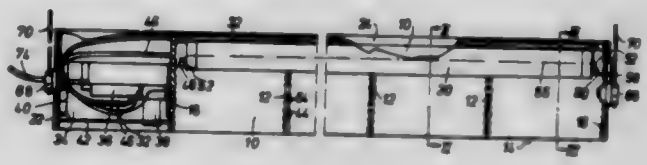
B. a pair of round plies on opposite faces of the pad, the plies being joined peripherally to form a disc having a peripheral seal which also rigidifies the disc, said disc having a center hole to accommodate said bolt, said plies having a circular array of openings therein concentric with the center hole to define ports for directly exposing the pad in the port regions thereof, whereby when the lamp is turned on, the resultant hot air currents penetrate the ports to volatilize the liquid fragrance to generate an aromatic vapor, the portions of the pad surrounding the port regions acting as a reservoir for the liquid fragrance which is wicked into the port regions as the liquid fragrance is volatilized.

4,493,012

COMBINED FIXTURE AND SHADE FOR TUBULAR FLUORESCENT LAMPS

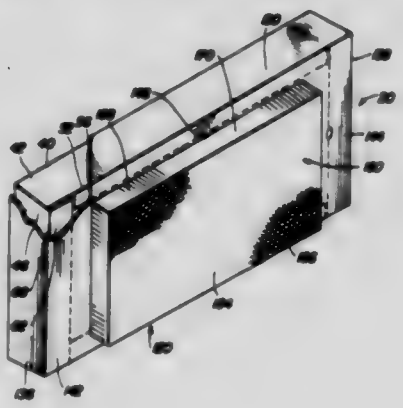
Jann Petersen, 34, Ryttarbakken, DK-2670 Greve Strand, Denmark

PCT No. PCT/DK81/00113, § 371 Date Aug. 10, 1982, § 102(e) Date Aug. 10, 1982, PCT Pub. No. WO82/02081, PCT Pub. Date Jun. 24, 1982
PCT Filed Dec. 10, 1981, Ser. No. 414,322
Claims priority, application Denmark, Dec. 11, 1980, 5277/80
Int. Cl.³ F21S 3/00
U.S. Cl. 362—225 15 Claims



1. A combined elongated light fixture and shade structure for at least one fluorescent tube,
comprising, in combination,
an elongated first housing adapted to hold a tube and open on one side to emit light from a fluorescent tube placed therein, said first housing comprising,
two longitudinally extending side plates facing each other, arranged substantially symmetrically on both sides of an imaginary median plane,
first and second transversely extending end plates, arranged substantially perpendicularly to said median plane, and attached to said side plates,
at least one pair of first and second sockets, adapted to receive a fluorescent tube between said first and second sockets, said first socket mounted on said first end plate, and said second socket mounted on said second end plate,
a second housing containing a cavity, adapted to receive a transformer unit, connected to said second end plate, said second housing and said second end plate having openings adapted for the passage therethrough of electrical wiring,
means located in said first end plate adapted for the lengthwise insertion therethrough of a fluorescent tube into an initial position inside said first housing, and
guiding means adapted to guide the fluorescent tube from said initial into said final position.

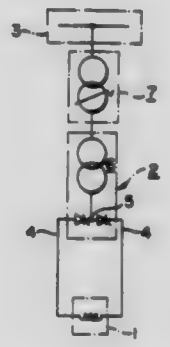
4,493,013
SHATTER-PROOF LIGHTING FIXTURE
Kenneth R. Hawkins, 33730 River Rd., Gurnee, Ill. 60031
Filed Feb. 14, 1983, Ser. No. 466,001
Int. Cl.³ F21V 7/00
U.S. Cl. 362—307 5 Claims



1. A lighting fixture comprising
a unitary lamp housing and light-transmitting lens assembly fabricated of molded plastic,
said lens assembly comprising a generally dish-shaped pan including a diffuser plate and circumambient light-transmitting walls, said walls framing said plate and extending inwardly from and generally normally thereto,
a pair of opaque, wing-like panels displaced rearwardly with respect to said diffuser plate, said panels being integrally connected to and projecting from a corresponding pair of parallely extending inward edge portions of two opposed said walls framing said plate,
said panels extending generally normally of said walls and in a panel paralleling said diffuser plate,
an endless, opaque perimetric wall circumscribing said pan and said panels connected thereto, said wall being normal to a light-transmitting face of said diffuser plate,
an open-face chassis serving as a receptacle for lamps, lamp-holding sockets secured therewithin and ancillary electrical apparatus including circuit wiring,
said chassis having a rear principal face and a bounding circumambient wall and being sized for insertion slidably, wall first, into said housing and sleevingly to nest therewithin with said bounding wall of said chassis disposed interiorly of and in substantially contiguous abutment with said perimetric wall of said housing, and
generally trough-shaped, concave, removable reflector means of preformed self-sustaining shape for focusing and for intensifying illuminating light emanating from lighted lamps of said fixture,
retention means carried by and integral respectively with said chassis and with said reflector means for removably securing said reflector means functionally within said chassis to facilitate assembly of said fixture.

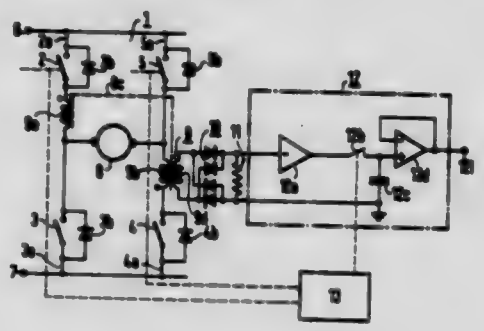
4,493,014
SUPERCONDUCTION STORAGE APPARATUS OF ELECTRICAL POWER
Shigenori Higashino, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 2, 1982, Ser. No. 384,171
Claims priority, application Japan, Jun. 3, 1981, 56-87278
Int. Cl.³ H02J 15/00
U.S. Cl. 363—14 1 Claim

1. A superconduction power storage apparatus comprising a superconduction coil for storage and release of an electrical energy, a separately excited thyristor conversion unit having d.c. terminals connected to said superconduction coil and a.c. terminals connected to an a.c. power source, said conversion unit being arranged for converting said electrical energy from a d.c. form to an a.c. form and vice versa between said superconduction coil and said a.c. power source, and an on-load voltage regulator connected between said a.c. terminals of said thyristor conversion unit and said a.c. power source, said voltage regulator being arranged for adjusting the voltage



appearing at said a.c. terminals of the thyristor conversion unit and said thyristor conversion unit being phase controlled so as to regulate its d.c. output voltage at its d.c. terminals, wherein said on-load voltage regulator regulates its a.c. output voltage at its a.c. output terminals.

4,493,015
CIRCUIT ARRANGEMENT FOR DETERMINING THE LOAD CURRENT IN A REVERSIBLE D-C CONTROLLER OR CHOPPER
Franz Ramlohr, and Wolfgang Spitaler, both of Vienna, Austria, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Dec. 14, 1982, Ser. No. 449,833
Claims priority, application Austria, Dec. 21, 1981, 5487/81
Int. Cl.³ H02M 7/537
U.S. Cl. 363—63 5 Claims



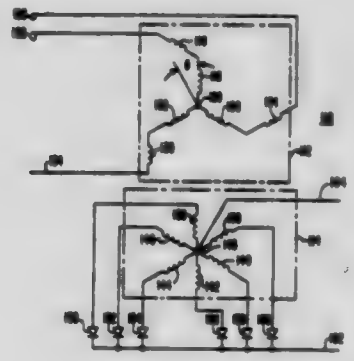
1. In a circuit arrangement for determining the polarity of the load current in a reversible d-c controller having a bridge circuit which is connected across a d-c supply voltage source, said bridge circuit having four bridge arms, respective pairs of said bridge arms diagonally disposed in said bridge circuit, load current flowing to or from the d-c supply voltage source through the diagonally disposed bridge arms, each of said bridge arms including an antiparallel circuit comprising first electronic switch means and bypass diode means wherein two pairs of bridge arms respectively connected to the same bus of said supply voltage source each form a bypass circuit in which a measuring sensor is provided, the improvement comprising:
a current transformer having a secondary winding and having two primary windings provided as measuring sensors, said primary windings connected in opposite winding sense in respective ones of said bypass circuits in two of said diagonally disposed bridge arms;
rectifier means coupled to the secondary winding of said current transformer;
sample-and-hold means having an input coupled to said rectifier means, said sample-and-hold means including electronic sampling switch means;
digital logic means coupled to said first electronic switch means so that said sampling switch means causes said sample-and-hold means to sample the signal present at the input of said sample-and-hold means during a predeter-

mined time in each time interval in which the load current circulates in either of the bypass circuits whereby a signal proportional to the actual value of the load current is formed at the output of said sample-and-hold means.

4,493,016
RECTIFIER TRANSFORMER

Edward J. Chass, Warren, Ohio, and Theodore R. Specht, Sharon, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 7, 1982, Ser. No. 433,322
Int. Cl.³ H02M 7/06
U.S. Cl. 363—126 11 Claims



1. A rectifier transformer circuit adapted for connection to a three-phase power frequency system for providing a rectified ac signal at a predetermined phase shift, without the necessity of using a phase shift transformer, or an interphase transformer, said rectifier transformer circuit comprising:

means providing a magnetic flux path circuit including a magnetic core having an iron flux return path;

electrical winding means;

said electrical winding means including a zig-zag wye primary winding adapted for connection to said three-phase power frequency system, and a single six-phase star secondary winding;

said zig-zag wye primary winding including three coils each having a zig portion having N_1 turns and a zag portion having N_2 turns, with the number of said turns being selected to obtain a predetermined phase shift ϕ between said primary and secondary windings according to the relationship:

$$\phi = \frac{\arctan \sqrt{3}\ N_2}{2N_1 + N_2};$$

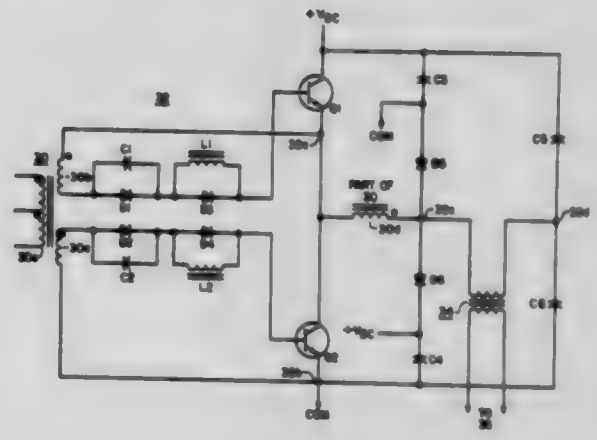
said six-phase star secondary winding having a common terminal and a plurality of output terminals, wherein said iron flux return path allows: (a) the voltage at said common terminal to oscillate, and (b) each phase of the secondary winding to carry current for one-third of a power frequency cycle;

and a plurality of rectifier means each having first and second terminals, said first terminals each being connected to one of said plurality of output terminals and said second terminals being connected together, such that said rectified ac signal is produced between said common terminal and said second terminals.

4,493,017
SINGLE DRIVE TRANSPORMER WITH REGENERATIVE WINDING FOR P.W.M. SUPPLY HAVING ALTERNATELY CONDUCTING POWER DEVICES

Neil A. Kaminiller, Lakewood, and Nedyalko V. Ivanov, Lorain, both of Ohio, assignors to Reliance Electric Company, Cleveland, Ohio

Filed Jan. 24, 1983, Ser. No. 460,368
Int. Cl.³ H02M 7/537
U.S. Cl. 363—132 9 Claims



1. A single drive transformer for use in a switching power supply of the type which includes alternately conducting power switching devices, a driver circuit for generating p.w.m. driver signals for initiating the turnon and turnoff of said devices and power output means, said power switching devices being arranged to provide a current to said output means, said transformer comprising:

(a) primary winding means connected to said driver circuitry to receive said p.w.m. driver signals;

(b) secondary winding means connected to said alternately conducting power switching devices and responsive to said signals on said primary means to provide to each of said alternately conducting switching devices a signal proportional to said driver signals; and

(c) regenerative winding means connected between said alternately conducting power devices and said power output means, said current flowing through said regenerative means in a manner such that said regenerative means provides through said secondary winding means a regenerative current to each of said devices, said regenerative current reinforcing said proportional signal when said driver signals initiate the turnon of the then nonconducting one of said devices.

4,493,018
CONDUCTOR SEPARATOR, WIRING HARNESS, AND RECTIFIER ASSEMBLY FOR AN ALTERNATOR INCLUDING SAME

Gary S. Hopmayer, Wilmette, and Charles Barone, Norwood Park, both of Ill., assignors to Mega International, Inc., Des Plaines, Ill.

Filed Sep. 30, 1982, Ser. No. 430,365
Int. Cl.³ H02M 1/00; H05K 7/02
U.S. Cl. 363—145 14 Claims

1. A rectifier assembly for use with an electrical power alternator, comprising:

two planar rectifier plates arranged adjacent one another in a plane, the plates each carrying rectifier diodes for rectifying the electrical power of the alternator;

a conductor separator member arranged substantially between adjacent ends of the two plates, the member being generally planar and including at least one pair of upstanding means for retaining a conductor therein and at least one terminal passageway located between said pair of retaining means; and

at least one conductor having two opposed ends and a termi-

nal portion located therebetween, one end of the conductor being connected to a rectifier diode on one plate and the other end of the conductor being connected to a rectifier diode on the other plate, the conductor being engaged and retained in the pair of retaining means and the terminal portion passing through and extending beyond the passageway in said member.

8. A wiring harness for use in a rectifier assembly of an alternator, comprising:



a conductor separator member that is generally planar and includes at least one pair of integral retaining means for retaining a conductor therein, and one terminal passageway located between said pair of retaining means, said member being made of synthetic resin material; and

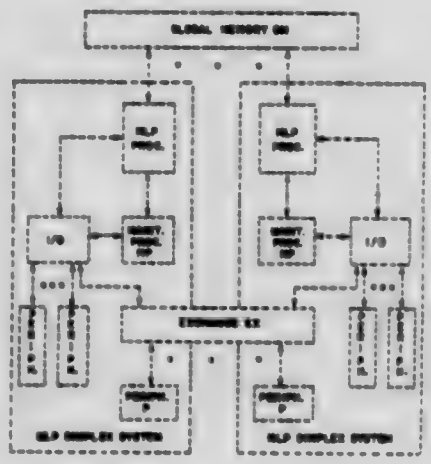
at least one conductor having two opposed ends and a terminal portion located therebetween, the conductor being engaged and retained in said pair of retaining means with said terminal portion passing through and extending beyond said passageway and the ends of said conductor extending beyond said member.

4,493,019

PIPELINED MICROPROGRAMMED DIGITAL DATA PROCESSOR EMPLOYING MICROINSTRUCTION TASKING

Dongwung R. Kim, Laguna Hills, and John H. McClintock, Jr., Mission Viejo, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 6, 1980, Ser. No. 147,149
Int. Cl.³ G06F 9/28
U.S. Cl. 364—200 15 Claims



Overall System

1. In a pipelined microprogrammed data processing system, the combination comprising:

microinstruction storage means for storing selectably addressable microinstructions;

instruction decoding means responsive to applied instructions for identifying particular ones of said microinstructions to be executed for performing said instructions;

microinstruction execution means for executing each microinstruction received from said microinstruction storage means in a plurality of at least three stages occurring over a plurality of consecutive time periods, one time period for each stage;

said microinstruction execution means including means for providing for the concurrent performance during each time period of the operations required for each of said plurality of stages in a pipelined manner such that the operations of each of said plurality of stages are performable with respect to a different microinstruction; and

microinstruction sequencing means responsive to microinstructions read out from said microinstruction storage means and to the results of microinstruction execution performed by said microinstruction execution means for providing next microinstruction address data;

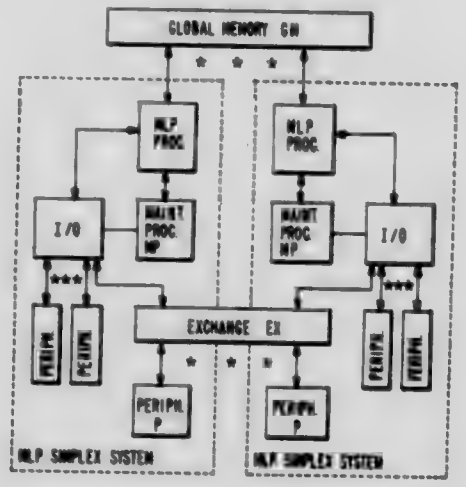
said instruction decoding means including microinstruction addressing means responsive to said next microinstruction address data provided by said microinstruction sequencing means for addressing said microinstruction memory so as to provide a next microinstruction to said microinstruction execution means during each time period.

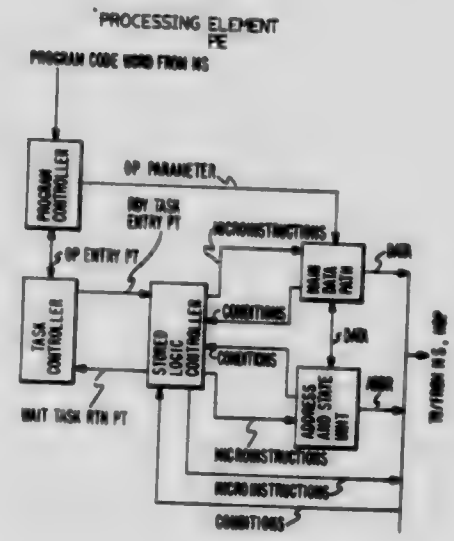
4,493,020

MICROPROGRAMMED DIGITAL DATA PROCESSOR EMPLOYING MICROINSTRUCTION TASKING AND DYNAMIC REGISTER ALLOCATION

Dongwung R. Kim, Laguna Hills, and John H. McClintock, Jr., Mission Viejo, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 147,251, May 6, 1980,. This application Jul. 29, 1980, Ser. No. 173,379
The portion of the term of this patent subsequent to May 17, 2000, has been disclaimed.
Int. Cl.³ G06F 9/22, 9/28, 9/38, 9/46
U.S. Cl. 364—200 10 Claims





1. In a microprogrammed data processing system including

high level instruction storage means, the combination comprising:

task generation means for fetching high level instructions from said high level instruction storage means and in response thereto generating one or more tasks for performing each high level instruction, each task being in turn performable by the execution of one or more task microinstructions;

microinstruction storage means for storing selectably addressable task microinstructions for use in performing said tasks;

said task generating means being operative to access selected microinstructions from said microinstruction storage means;

microinstruction execution means for receiving and executing microinstructions selected from said microinstruction storage means by said task generating means; and

task control means responsive to said task generation means and to said microinstruction execution means for determining which tasks are ready for execution and for causing said task generation means to address said microinstruction storage means with addresses corresponding to ready task microinstructions, the order of addressing of microinstructions being chosen to allow for the execution of ready task microinstructions by said microinstruction execution means in an intermixed order regardless of the particular task to which each belongs so as to thereby provide for task multiprogramming at a microinstruction level; and

a plurality of dynamically allocatable registers for storing data required during execution of said tasks;

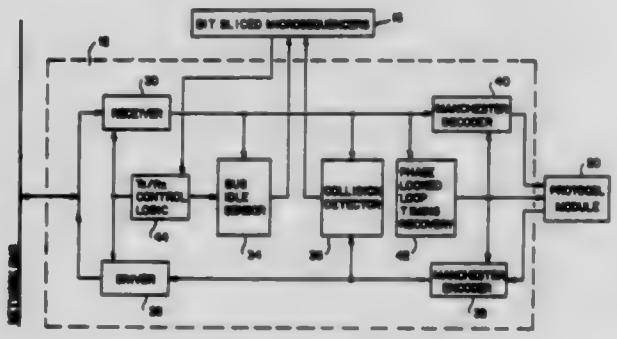
said task control means including register allocation means for monitoring the free and use states of said registers and in response thereto for dynamically assigning the registers required by each task during execution thereof.

4,493,021

MULTICOMPUTER COMMUNICATION SYSTEM

Anil K. Agrawal, Pasadena; Philip G. Mullen, Glendale, and Vivatvong V. Vadakan, Pasadena, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 3, 1981, Ser. No. 250,585
Int. Cl.³ G06F 15/16, 3/04
U.S. Cl. 364—200 5 Claims



1. In apparatus for communication between a plurality of autonomous computers operated in a local area network using multimode addressing, each computer being connected to a single bus by a separate assigned network bus adapter, each adapter having a stored address code for each type of data it is to receive, each adapter comprising a data processing means programmed for carrying out all data handling and communication of its host computer with the bus, said processing means including means for data buffering, such that computers operating at different speeds in accordance with its protocol can send data to each other at their maximum speeds, an interface connecting said host computer to said processing means, protocol handling means connected to said data processing means for modifying the data handling protocol of the data being transmitted by said data processing means to a standard protocol and the data being received by said data processing means to the protocol of the host computer, means coupled to said protocol handling means for driving onto said bus data to be transmitted and for receiving data on said bus, and microprogrammed sequencing means for coordinating operation of said processing means, said protocol handling means and said transmitting and receiving means, whereby each adapter is a self-contained, autonomous unit for the protocol handling and network management of the data communications between any two or more computers wherein data transmitted is divided into packets by said processing means of the adapter assigned to the transmitting computer, an improvement comprising

said processing means providing each packet with a first uniquely encoded field,

each adapter provided with means responsive to said first uniquely encoded field for identifying the address code being used by each packet,

said processing means providing each packet with a second uniquely encoded field

said protocol handling means having means responsive to said second uniquely encoded field for identifying a mode selected from the group consisting of a first mode, a second mode and a third mode,

said protocol handling means having means responsive to said first mode for identifying said second uniquely encoded field as a physical destination address code identifying one or more of the computers for an information frame specified by said first encoded field,

said protocol handling means having means responsive to said second mode for identifying said second uniquely encoded field as a logical channel number, LCN, preestablished between two or more computers, and means responsive to said identification for establishing a logical channel number with said two or more computers and allowing communication therebetween without physical destination addressing,

said two or more computers being able to communicate after establishment of said logical channel number using said logical channel number as an address to which said two or more computers respond without physical destination addressing for a broadcast of information to said two or more computers specified by said first encoded field,

said protocol handling means having means responsive to said third mode for identifying said second uniquely encoded field as a data type identification code, and means responsive to said identification for permitting transmission of different types of data onto said bus without physical destination addresses and for permitting one or more computes to selectively receive data according to the type of data, thereby providing for a broadcast of data by type as specified by said first uniquely encoded field,

whereby data transmitted onto said bus is selectively accepted by different computers according to said first and second uniquely encoded field.

4,493,022

CENTRALIZED ARBITRATION PROCESS AND CENTRALIZED ARBITER FOR MULTIPROCESSOR SYSTEM

Alain Nicolas, and Jean-Pierre Chapelain, both of Colombes, France, assignors to Thomson-CSF Telephone, Paris, France

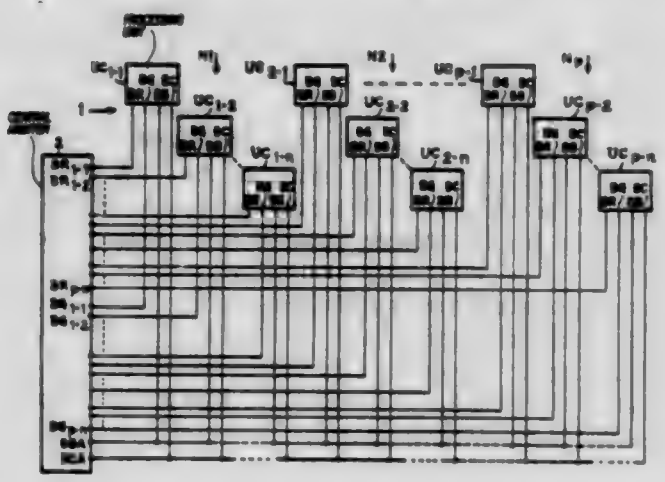
Filed May 4, 1981, Ser. No. 260,108
Claims priority, application France, May 6, 1980, 80 10286
Int. Cl.³ G06F 15/16
U.S. Cl. 364—200 8 Claims

1. A synchronously operated process for the centralized arbitration of a plurality of processing units in a multi-processor system wherein said processor units are divided into a plurality of levels, comprising the steps of:

generating a predetermined main timing cycle;

cyclically attributing, in accordance with said main cycle, at leasts one priority to each of said levels;

generating a plurality of predetermined secondary timing cycles witheach secoaary timing cycle being associated with a corresponding one of said plurality of levels;



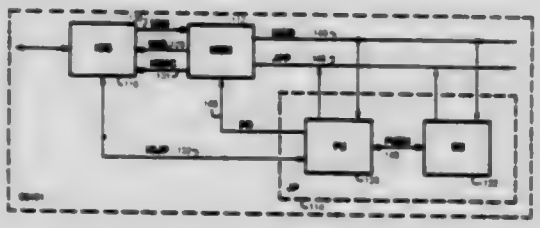
cyclically attributing to each of said processing units within each of said levels at least one priority in accordance with said corresponding one of said secondary cycles.

4,493,023

DIGITAL DATA PROCESSING SYSTEM HAVING UNIQUE ADDRESSING MEANS AND MEANS FOR IDENTIFYING AND ACCESSING OPERANDS

Edward S. Gavrin, Lincoln; Richard G. Brett, Wayland, both of Mass.; Stephen I. Schleimer, Chapel Hill, N.C.; John F. Pilat, Raleigh, N.C.; Michael S. Richmond, Pittsboro, N.C.; Walter A. Wallach, Jr., Raleigh, N.C.; Richard A. Belgard, Saratoga, Calif.; David A. Farber, Durham, N.C.; John K. Ahlstrom, Mountain View, Calif.; Steven J. Wallach; Gerald F. Clancy, both of Saratoga, Calif.; Craig J. Mundie, Cary; Thomas M. Jones, Chapel Hill, both of N.C.; Brett L. Bachman, Boston, and David H. Bernstein, Ashland, both of Mass., assignors to Data General Corporation, Westboro, Mass.

Filed May 22, 1981, Ser. No. 266,403
Int. Cl.³ G06F *9/30*
U.S. Cl. 364—200 2 Claims



1. In a digital computer system including processor means for performing operations upon operands, memory means for storing said operands and instructions for directing said operations, said memory means being organized into objects for containing said operands and said instructions, bus means for conducting operands and instructions between said memory means and said processor means, and input/output (I/O) means for conducting operands between said digital computer system and devices external to said digital computer system, said processor means comprising:

arithmetic logic unit (ALU) means connected to said bus means for performing said operations,

addressing means connected to said bus means for providing addresses and for controlling the transfer of said operands and instructions between said memory means and said processor means, each of said addresses comprising

an object field for identifying a corresponding one of said objects,

an offset field for specifying a first number of information bits of offset relative to the start of said corresponding one of said objects, and

a length field for specifying a second number of information bits of said corresponding one of said objects following said first number of information bits to be transferred between said memory means and said processor means, and

microcode control means for storing sequences of microinstructions for controlling said processor means and responsive to said instructions for providing said sequences of microinstructions to said processor means,

said ALU means including

general register file means connected to said bus means for storing selected operands and selected addresses,

said general register file means comprising a plurality of vertically ordered registers vertically divided into three parallel-operating and addressed parts,

a first said part of said general register file means comprising first register file means for storing object fields of said addresses,

a second said part of said general register file means comprising second register file means for storing offset fields of said addresses and said selected operands, and

a third said part of said general register file means comprising third register file means for storing length fields of said addresses, and

address ALU means connected to said general register file means and to said bus means and responsive to first selected sequences of microinstructions for performing operations on said selected addresses,

each of said operands being referred to by a corresponding name of a plurality of names and said memory means including name table means for storing name table entries, each of said name table entries corresponding to one of said names and comprising (1) first data resolvable to provide a location in said memory means of an operand referred to by said corresponding name, and, (2) second data resolvable to identify the format of said operand referred to by said corresponding name,

said ALU means including means connected to said bus means and responsive to said names for reading said name table entries corresponding to said names from said name table means, and

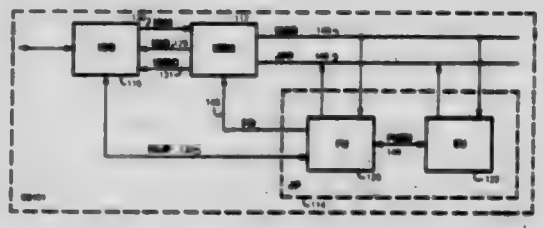
means connected to said reading means for resolving said name table entries and for providing addresses corresponding thereto to said memory means, each said address representing a location in said memory means of the operand referred to by its corresponding name.

4,493,024

DIGITAL DATA PROCESSING SYSTEM

Ward Baxter, II, Carlisle, Mass.; Gerald F. Clancy, Saratoga, Calif.; Ronald H. Gruner; Craig J. Mundie, both of Cary, N.C.; Brett L. Bachman, Boston, Mass.; Stephen R. Redfield, San Jose, Calif.; William N. Coder, Raleigh, N.C.; Thomas M. Jones, Chapel Hill, N.C.; David L. Housman, Cary, N.C.; Charles J. Young, Berlin, Mass., and Steven M. Haeffele, Cary, N.C., assignors to Data General Corporation, Westboro, Mass.

Filed May 22, 1981, Ser. No. 266,406
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 7 Claims



2. A digital computer system, comprising:

processor means for performing operations upon operands,

memory means for storing operands and instructions for directing the operations of said processor means,

said processor means responsive to the instructions directing said operations,

bus means for conducting instructions and operands between said memory means and said processor means, and

I/O means for conducting operands between said memory means and devices external to said digital computer system, said I/O means including:

channel means connected from said external devices for conducting operands to and from said external devices,

I/O bus means connected between said channel means and a selected part of said memory means for conducting operands between said channel means and said memory means, and

addressing means connected to said I/O bus means and responsive to the operation of said channel means and said memory means for providing addresses for controlling the reading of operands from said memory means and the writing of operands into said memory means,

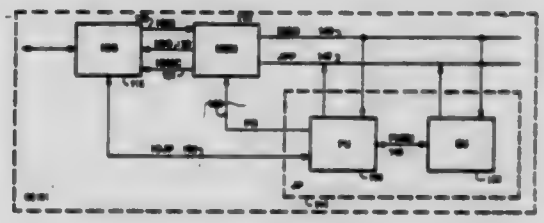
said memory means and said channel means responsive to said addresses for conducting operands between said memory means and said external devices.

4,493,025

DIGITAL DATA PROCESSING SYSTEM USING UNIQUE MEANS FOR COMPARING OPERATIONAL RESULTS AND LOCATIONS AT WHICH SUCH RESULTS ARE TO BE STORED

Brett L. Bachman, Boston, Mass.; James T. Nealon, Cary, N.C., and Charles J. Young, Berlin, Mass., assignors to Data General Corporation, Westboro, Mass.

Filed May 22, 1981, Ser. No. 266,412
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 1 Claim



1. In a digital computer system including processor means for performing at least arithmetic operations on operands, memory means for storing at least instructions for directing the arithmetic operations performed by said processor means, first bus means for conducting said instructions and the results of said arithmetic operations between said memory means and said processor means, and further bus means for conducting operands between devices external to said digital computer system and said digital computer system, said processor means comprising:

ALU means connected to said first bus means and responsive to said instructions for performing arithmetic operations on said operands,

addressing means connected to said first bus means and responsive to the operation of said ALU means for providing addresses specifying locations in said memory means to which the results of said arithmetic operations can be transferred,

each address including a length field, and

checking means responsive to the results of the operation of said ALU means to the length field of an address for comparing the number of data bits specified by said length field and the number of data bits in said results and indicating when the number of data bits specified by said length field is not equal to the number of data bits in said results.

4,493,026

SET ASSOCIATIVE SECTOR CACHE

Howard T. Olnowich, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 26, 1982, Ser. No. 382,040
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 7 Claims



1. In a data processing system including a main memory divided into sectors, each sector of the main memory including a plurality of data blocks, each data block including a plurality of data word locations, a cache memory and control means for temporarily storing selected ones of said plurality of data blocks, and a processor means connected to said main memory and to said cache memory and control means for processing data, for issuing memory addresses, and for fetching blocks of data from the cache memory or from said main memory in accordance with the issued memory addresses, said cache memory and control means comprising:

an initialization control for developing an output signal representing initialization control signals;

data array means for temporarily storing the selected ones of said plurality of data blocks;

tag array means for storing a plurality of address information therein indicative of the addresses in said main memory of the selected data blocks temporarily stored in said data array means, said address information including sector address data representative of a desired sector of said main memory wherein the data is stored, block address data representative of a desired data block of the desired sector wherein the data is stored, and validity bit data representative of the existance of the data in a desired word location of the desired data block; and

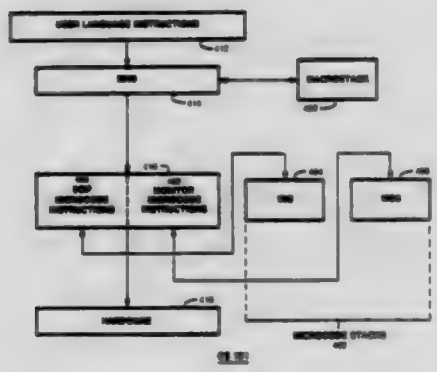
validity bit revision means connected to an output from said initialization control, connected to an output from said tag array means representative of said validity bit data of said address information stored therein, and responsive to a portion of the memory address issued by said processor means for revising and changing one or more of the validity bits of said validity bit data stored in said tag array means during an initialization period in response to said output signal from said initialization control and in accordance with said portion of the memory address issued by said processor means.

4,493,027

METHOD OF PERFORMING A CALL OPERATION IN A DIGITAL DATA PROCESSING SYSTEM HAVING MICROCODE CALL AND RETURN OPERATIONS

Lawrence H. Katz, Oregon City, Oreg.; Douglas M. Wells, Chapel Hill; Michael S. Richmond, Pittsboro, both of N.C.; Richard A. Belgard, Saratoga, Calif.; Walter A. Wallach, Jr., Raleigh, N.C.; David H. Bernstein, Ashland, Mass.; John K. Ahlstrom, Mountain View, Calif.; John F. Pilat, Raleigh; David A. Farber, Durham, both of N.C.; Richard G. Bratt, Wayland, Mass., and Brett L. Bachman, Boston, Mass., assignors to Data General Corporation, Westboro, Mass.

Filed May 22, 1981, Ser. No. 266,526
Int. Cl.³ G06F 3/00, 9/22, 9/36, 9/46
U.S. Cl. 364—200
1 Claim



1. In a digital computer system comprising processor means for performing operations in response to instructions, memory means responsive to signals from said processor means comprising means for storing data comprising at least said instructions, and means for conducting at least said data between said memory means and said processor means and said signals from said processor means to said memory means, and

wherein said instructions further comprise low-level instructions and high-level instructions, said processor means responds to a said high-level instruction by executing a sequence of said low-level instructions, said high-level instructions comprise operation codes specifying a sequence of said low-level instructions, names representing operands, and literal values containing integers,

said data further comprises (1) procedures comprising sequences of said high-level instructions, (2) pointers representing locations in said memory means, (3) name tables associated with said procedures comprising at least one name table entry comprising operand information for an operand represented by a said name in a said instruction in a said procedure associated with said name table, said operand information comprising at least information from which said operand's location in said memory means may be calculated, (4) procedure environment descriptors associated with said procedures comprising at least a name table pointer representing the location of a said name table associated with a said procedure, (5) procedure execution state areas containing data for individual executions of a said procedure by a user of said digital computer system, and (6) stacks comprising sequences of said procedure execution state areas for said procedures executed by said user,

said processor means contains at least (1) procedure control state comprising at least (a) the location of said high-level instruction currently being executed and (b) the location of said procedure execution state area for said procedure whose said instructions are currently being executed by said processor means, and (2) low-level instruction sequence control state comprising at least the location of said low-level instruction currently being executed and data required to execute said low-level instruction for said sequence of low-level instructions currently being executed by said processor means,

said high-level language instructions include at least (1) a call instruction comprising an operation code, a said name representing a said pointer to a called said procedure, a literal value specifying the number of arguments, and a said name representing each argument, which, when executed in a calling said procedure by said processor means, causes an execution of said called procedure for a said user to begin, and (2) a return instruction comprising only an operation code which, when executed by said processor means, causes an execution of a said called procedure for a said user to terminate and said execution of said calling procedure to resume,

said low-level instruction sequences comprise at least (1) a call instruction sequence for executing said call instruction, (2) a return instruction sequence for executing said return instruction, (3) a name resolution sequence executable by other said low-level instruction sequences for calculating the location in said memory means of a said operand represented by a said name from said operand information in said name table entry specified by said name, (4) a name evaluation sequence executable by other said low-level instruction sequences for obtaining the value of a said operand represented by a said name from said memory means and returning it to said processor means, (5) a general call sequence executable by other said low-level instruction sequences requiring a first certain said pointer to a certain said procedure and a second certain said pointer to certain data to be used in the execution of said certain procedure as input for causing said processor means to begin the execution of said procedure specified by said first certain pointer,

the method of executing a said call instruction comprising the steps of :

executing said name evaluation sequence to evaluate said name in said call instruction representing said pointer to said called procedure to obtain said pointer to said called procedure,

obtaining said integer from said literal value in said call instruction,

for as many said names as are specified by said literal value, for each said name, executing said name resolution sequence to resolve said name, using said calculated location to create a said pointer to said operand represented by said name, and placing said pointer on said stack,

calculating the location on said stack of said pointers obtained from said names, and producing a said pointer to said location, and

using said pointer to said called procedure as said first certain pointer and said pointer to said location on said stack of said pointers as said second certain pointer and executing said general call sequence, whereby said processing means responds to said general call sequence by executing further steps comprising

(a) saving state comprising at least said procedure control state on said procedure execution state area for said execution of said calling procedure,

(b) saving state comprising at least said low-level instruction sequence execution state for said call instruction sequence executing said general call sequence on said low-level instruction sequence state area associated with said procedure execution state area for said execution of said procedure,

(c) locating said procedure specified by said first certain pointer,

(d) making a said procedure execution area on said stack for said called procedure including at least said pointers obtained from said names,

(e) obtaining said procedure control state for said called procedure and loading said procedure control state into said processor means,

(f) causing the first said high-level instruction of said procedure specified by said first certain pointer to begin execution,

(g) on execution of a return instruction in said called procedure, reloading state comprising at least (1) said saved procedure control state from said calling procedure's execution state area and (2) said saved low-level instruction sequence control state from said calling

procedure's low-level instruction sequence state area into said processor means, and

(h) causing the next said low-level instruction of said call instruction sequence to be executed.

4,493,028

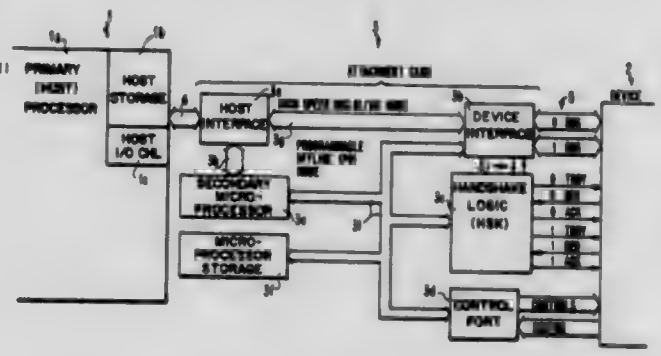
DUAL MODE I/O

Chester A. Heath, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 2, 1982, Ser. No. 345,161

Int. Cl.³ G06F *3/00, 15/06*

U.S. Cl. 364—200 9 Claims



1. A method of conducting distributed data processing operations in a data processing system containing primary and secondary subsystems, said secondary subsystem having at least one device attached thereto and operating as an I/O controller for transferring data between said primary subsystem and said device, each subsystem having a respective processing facility for performing logical data processing operations and having an associated memory facility to which it refers exclusively for fetching and storing data on which its logical data processing operations are conducted, said method comprising:

in a first discrete process involving interaction between the processing facilities of said primary and secondary subsystems, transferring a unit of primary command information from said primary subsystem to said memory facility associated with said secondary subsystem, said command information unit comprising program information defining a plurality of storage areas in the memory facility associated with said primary subsystem, said areas being potentially separate from each other and potentially having different data storage capacities;

in a second discrete process defined by said primary command unit, and involving interaction between said secondary subsystem and only the memory facility associated with said primary subsystem, transferring a program of secondary commands from said primary subsystem to said memory facility associated with said secondary subsystem, said secondary commands being defining data transfer operations between said memory facility associated with said secondary subsystem and both said at least one device and said plurality of storage areas, as well as logical processing operations to be conducted on data contained in said memory facility associated with said secondary subsystem;

in a third discrete process, in response to said secondary commands, performing any of the following operations: transferring sets of data in one or the other or both directions between said plurality of data storage areas and said memory of said secondary subsystem, transferring sets of data in one or the other or both directions between said memory of said secondary subsystem and said device, and performing a logical data processing operation on data contained in at least one of said transferred data sets.

4,493,029

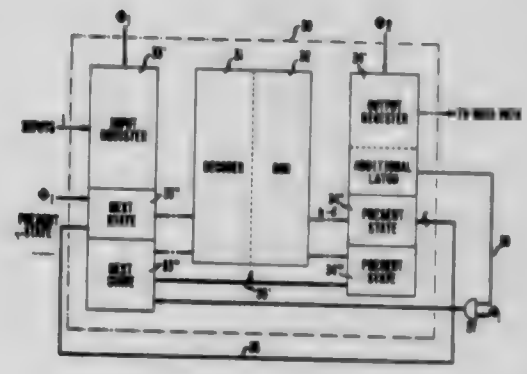
MICROPROCESSOR WITH PLA ADAPTED TO IMPLEMENT SUBROUTINES

Mark E. Thierbach, Lincroft, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 14, 1982, Ser. No. 378,403

Int. Cl.³ G06F *9/22*

U.S. Cl. 364—200 8 Claims



1. A finite state machine having at least first and second phases of operation, separate input and output means for applying inputs to and for generating outputs from said finite state machine during said first and second phases, respectively, first feedback means connected between said output means and said input means for applying to said input means data representative of a next state of said finite state machine, second feedback means also connected between said output means and said input means for applying to said input means data also representative of a next state of said finite state machine, said finite state machine also including control means responsive to a first signal for inhibiting said second feedback means, thus controllably storing data applied by said second feedback means.

4,493,030

PLURAL DATA PROCESSOR GROUPS CONTROLLING A TELECOMMUNICATIONS EXCHANGE

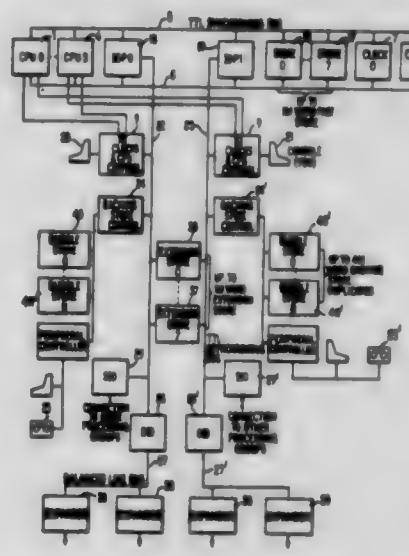
Stuart Barratt, and Anthony P. Lamb, both of Warwickshire, England, assignors to The General Electric Company p.l.c., England

Filed May 19, 1982, Ser. No. 379,617

Claims priority, application United Kingdom, May 29, 1981, 8116449

Int. Cl.³ G06F *15/16, 15/20*

U.S. Cl. 364—200 10 Claims



1. A data processing arrangement for use in the control of telecommunications exchange apparatus comprising

(A) a plurality of data processing groups

(i) each having a fast access data store individual to that group,

(B) a plurality of data processing units,

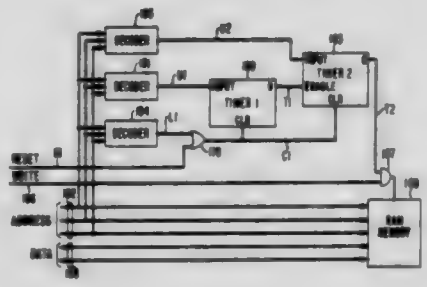
(C) a first data bus, all of said data processing units having direct access to said store by way of the first data bus and being of parallel operation on data stored therein,
(D) a second data bus, and
(E) first input/output means connected on one side to the first data bus and on the other side to the second data bus for transferring data signals between the data processing units and exchange apparatus,
(F) each of the data processing groups being dedicated to the processing of data originating from a predetermined group of apparatus in a controlled telecommunications exchange and for providing data signals to apparatus of that group, and
(G) each of the data processing groups having respective further input/output means which is accessed by way of said second data bus and which is directly connected to the respective further input/output means of each of the other data processing groups in the controlled telecommunications exchange to permit the interchange of data between the data processing groups.

4,493,031

MEMORY WRITE PROTECTION USING TIMERS

Vincent J. Silverio, Middletown, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 25, 1982, Ser. No. 411,270
Int. Cl.³ G06F 7/00
U.S. Cl. 364—200 10 Claims



1. A memory write-enable circuit comprising:
first means responsive to a first input signal for generating an enable signal, and
a second means responsive to said enable signal and to a second input signal received within a first predetermined time interval of said first input signal for generating a write-enable signal for enabling the writing of data into a memory.

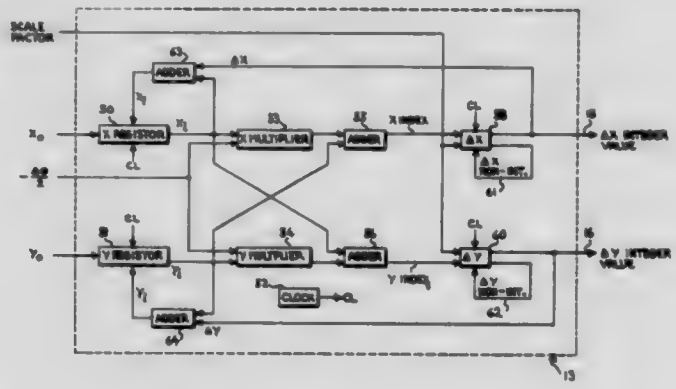
4,493,032

METHOD AND APPARATUS FOR POSITIONING USING CIRCULAR INTERPOLATION

Brian C. Johnson, Syracuse, N.Y., assignor to General Electric Company, Charlottesville, Va.

Filed Sep. 7, 1982, Ser. No. 415,745
Int. Cl.³ G05B 19/25
U.S. Cl. 364—169 17 Claims

8. In a numerical control system for a machine tool, apparatus for generating and distributing move control signals to mutually perpendicular X and Y axis drive mechanisms to effect incremental motion of the tool along a circular arced path, comprising:
means for providing input signals representative of the initial X and Y coordinates of said path, the change in arc angle $\Delta\theta$ per incremental move, and a scale factor indicative of a modulus proportional to the radius R of the circular arc;
means for determining, at any instant of time, a present X-coordinate distance of the tool from the arc center to produce an X_i signal indicative of such distance;
means for determining, at any instant of time, a present Y-coordinate distance of the tool from the arc center to produce a Y_i signal indicative of such distance;
first means receiving said X_i signal and said $\Delta\theta$ signal to produce a first product signal indicative of the product of X_i and a cosine function of $\Delta\theta$;
second means receiving said Y_i signal and said $\Delta\theta$ signal to produce a second product signal indicative of the product of Y_i and a cosine function of $\Delta\theta$;
first adder means receiving said first product signal and said Y_i signal for summing such signals to produce an X-index signal;



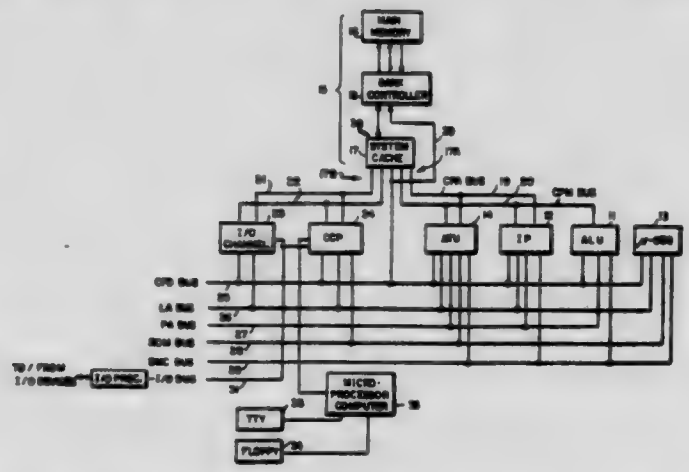
second adder means receiving said second product signal and said X_i signal for summing such signals to produce a Y-index signal;
an X-scaling means receiving said X-index signal and said scale factor for scaling said X-index by said scale factor to produce a move control signal causing an incremental movement of the tool by a distance ΔX in the X direction; and
a Y-scaling means receiving said Y-index signal and said scale factor for scaling said Y-index by said scale factor to produce a move control signal causing an incremental movement of the tool by a distance ΔY in the Y direction.

4,493,033

DUAL PORT CACHE WITH INTERLEAVED READ ACCESSES DURING ALTERNATE HALF-CYCLES AND SIMULTANEOUS WRITING

Michael L. Ziegler, Whitinsville, and Michael B. Drake, Chelmsford, both of Mass., assignors to Data General Corporation, Westboro, Mass.

Continuation of Ser. No. 143,974, Apr. 25, 1980, abandoned.
This application Dec. 6, 1982, Ser. No. 447,105
Int. Cl.³ G06F 9/00, 13/00
U.S. Cl. 364—200 7 Claims



1. A data processing system having a memory system, said memory system comprising
a main memory storage means for storing a first plurality of blocks of data words;
an intermediate cache storage system including
data store means for storing a second plurality of blocks of

data words corresponding to a predetermined number of said first plurality of blocks of data words stored in said main memory storage means;

first address and data ports providing access to said intermediate cache storage system by first selected data request sources; and

second address and data ports providing access to said intermediate cache storage system by second selected data request sources;

timing control means for enabling said first address and data ports for providing access to said intermediate cache storage system only by said first selected data request sources during a first portion of any data processing operating time cycle and for enabling said second address and data ports for providing access to said intermediate cache storage system only by said second selected data request sources during a second portion of any data processor operating time cycle; and

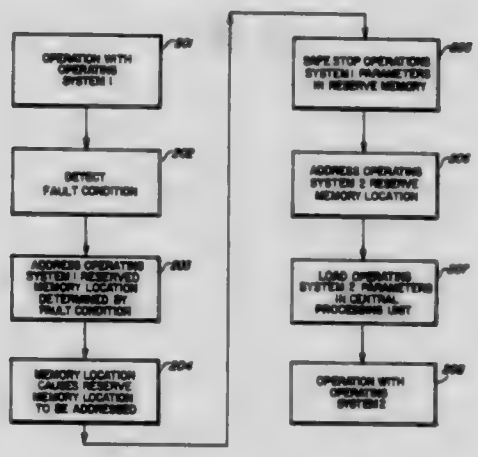
further control means connected between said main memory storage means and said intermediate cache storage system for controlling the sequential transfer of blocks of data words from said main memory storage system to said intermediate cache storage system, so that data words can be written into the data store means of said intermediate cache storage system during both said first and second portions of said data processing operating time cycle.

4,493,034

APPARATUS AND METHOD FOR AN OPERATING SYSTEM SUPERVISOR IN A DATA PROCESSING SYSTEM

Phillip A. Angelle, Glendale; Marion G. Porter, and James L. King, both of Phoenix, all of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Oct. 14, 1982, Ser. No. 434,344
Int. Cl.³ G06F 9/00
U.S. Cl. 364—200 17 Claims



1. A method of providing a supervisor for a data processing system utilizing a plurality of operating systems comprising the steps of:

(a) identifying a data processing system state requiring activation of a different operating system;

(b) safestoring contents of registers defining a state of a central processing unit of said data processing unit in a reserve memory associated with a currently active operating system;

(c) addressing a reserve memory associated with said different operating system,

(d) entering in said state defining registers of said central processing unit an address of said different operating system reserve memory, an address in a page table directory, data in registers of said central processing unit establishing a predetermined state of said data processing system, and data establishing a decor for said central processing unit determined by said different operating system; and

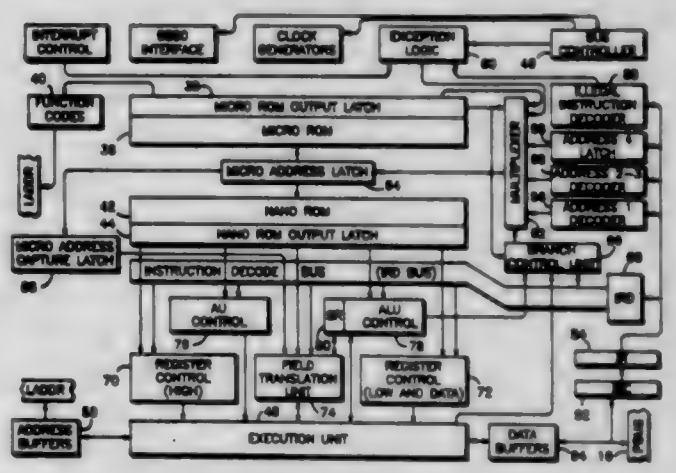
(e) initiating operation of said different operating system.

4,493,035

DATA PROCESSOR VERSION VALIDATION

Douglas B. MacGregor; William C. Meyer, both of Austin, Tex.; Marvin A. Mills, Jr., Indialantic, Fla., and John E. Zolnowsky, Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 7, 1982, Ser. No. 447,680
Int. Cl.³ G06F 15/16, 15/06
U.S. Cl. 364—200 3 Claims



1. In a data processor of a predetermined type and adapted for connection to a memory, comprising:

instruction execution control means for controlling the execution by said data processor of a plurality of instructions, at least one of said instructions being subject to the occurrance of an exception condition during the execution thereof; and

exception handling means coupled to said instruction execution control means and responsive to the occurrance of said exception condition during the execution of said one instruction, for storing in said memory a set of information indicative of the state of said instruction execution control means as of the time said exception condition occurs, said exception handling means retrieving from said memory said stored set of state information after said exception condition has been resolved, and, in response to receiving a control signal, restoring the state of said instruction execution control means using said retrieved set of state information;

the improvement comprising: validation means coupled to said exception handling means, for providing to said exception handling means for storage as a portion of said set of said state information a predetermined validation code indicative of said predetermined type of data processor, said validation means verifying that said set of state information retrieved by said exception handling means contains said predetermined validation code, and providing said control signal to said exception handling means only in response to verifying that said retrieved state information contains said predetermined validation code.

4,493,036

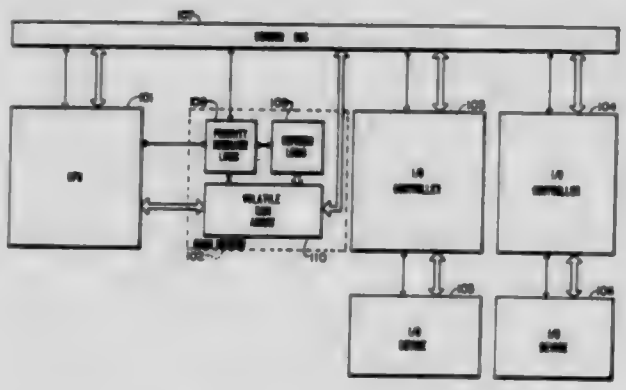
PRIORITY RESOLVER HAVING DYNAMICALLY ADJUSTABLE PRIORITY LEVELS

Daniel A. Boudreau, and Edward R. Salas, both of Billerica, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 14, 1982, Ser. No. 449,702
Int. Cl.³ G06F 9/46
U.S. Cl. 364—200 19 Claims

1. An apparatus for resolving priority between competing requests for a shared resource comprising:

A. a lowest priority level logic comprising:
  a. an ask means for receiving a request signal indicating that the lowest priority desires use of said shared resource,
  b. a grant means coupled to received an output of said ask means,
B. a highest priority level logic comprising:
  a. an ask means for receiving a request signal indicating that the highest priority level desires to use the shared resource,
  b. a late request inhibit means coupled to receive an output of said ask means,
  c. a grant means coupled to receive a output of said late request inhibit means,
C. a cycle initiate means coupled to receive an output of said lowest priority level grant means and an output of said highest priority level grant means to produce an initiate signal wherein said initiate signal ouput by said cycle initiate means indicates that at least one of said priority levels is requesting use of said shared resource,
D. an inverse priority control means coupled to said grant means and said late request inhibit means comprising:
  a. a receiving means for receiving a priority control signal which when in a normal state indicates that a normal priority resolution cycle is to occur and when in an inverse state indicates that an inverse priority resolution cycle is to occur,
  b. a means for generating a late request inhibit signal, and
  c. a means for generating a grant reset signal,



wherein during said normal priority resolution cycle said late request inhibit signal enables said request inhibit means to pass said request signal before said grant reset signal enables said grant means and wherein during said inverse priority resolution cycle said late request inhibit signal enables said late request inhibit means after said grant reset signal
E. a delay means for producing a delayed initiate signal by delaying the output of said cycle initiate means a sufficient time to allow any of said grant flip-flops to set that is going to set in a priority resolution cycle.
F. a lowest priority winner means coupled to receive said output of said priority grant means and the output of said delay means to produce a low win signal that indicates said lowest priority level has won use of said shared resource if no higher priority level grant flip-flop has been set once said delayed initiate signal is produced by said delay means, and
G. highest priority winner means coupled to receive said output of said highest priority grant means and said delayed initiate signal for producing a high win signal indicating that said highest priority level has won use of said shared resource if said highest priority grant means is set when said delayed initiate signal appears,

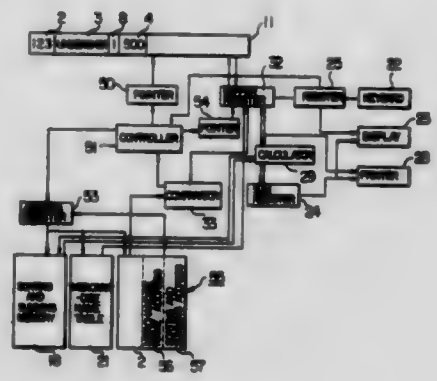
wherein said lowest priority level logic has the shortest path to said cycle initiate means and can initiate a shared resource cycle quicker than any other of said priority levels and wherein said initiate signal is produced before a final winner of the shared resource is determined.

4,493,037

RETAIL TERMINAL

Kazukiyo Takano, Seto, and Keigi Koga, Isehara, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 4, 1981, Ser. No. 327,628
Claims priority, application Japan, Dec. 10, 1980, 55-173281
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—405 2 Claims



1. A retail terminal for registering data from various items of merchandise, comprising:
(a) input means for inputting data for each item of merchandise, including at least a merchandise code, the cost of the merchandise, number of items of the merchandise, and function information;
(b) first register means for temporarily storing at least the data inputted from said input means;
(c) second register means for storing the merchandise data stored in said first register means for a plurality of items of the merchandise;
(d) memory means connected to said second register means for storing total cost and total number of items of the merchandise for the respective items of the merchandise;
(e) calculator means connected to said second register means and said memory means for calculating a sum amount of money and a total amount of the merchandise for each item of the merchandise;
(f) means for sequentially transferring the contents of said second register means to said first register means and for producing a visual output;
(g) control means for transferring the contents of said second register means to said first register means item by item based on said function information inputted from said input means and for clearing the merchandise data from said second register means item by item; and
(h) pointer means connected to said control means for pointing to a storage area of said second register means to be allocated to a particular item of the merchandise.

4,493,038

DATA RECORDING MACHINE

Michele Bovio, Brosso, and Walter Gillone, Ivrea, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Dec. 23, 1981, Ser. No. 333,937
Claims priority, application Italy, Dec. 24, 1980, 68977 A/80; Dec. 24, 1980, 68978 A/80
Int. Cl.³ G06F *11/00*
U.S. Cl. 364—405 17 Claims

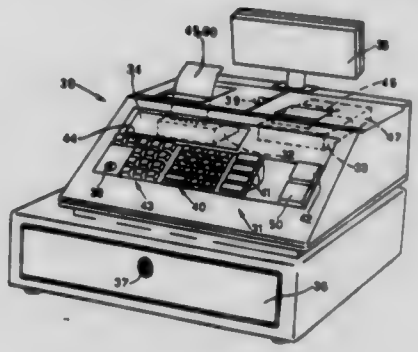
1. In a transactions recording machine comprising: a frame; a keyboard including numeric and service keys for entering and executing transactions and selector means actuatable for defining either a recording status for enabling the recording and execution of said transactions or a check status for reporting the recorded transactions; printing means for printing said transactions; and electronic means for controlling records, executions, reports and printing of said transactions, wherein said electronic means are removably mounted on said frame and include totalizing memory means for storing totals of said transactions, wherein said electronic means respond to one of said service keys in the record status of the machine for causing

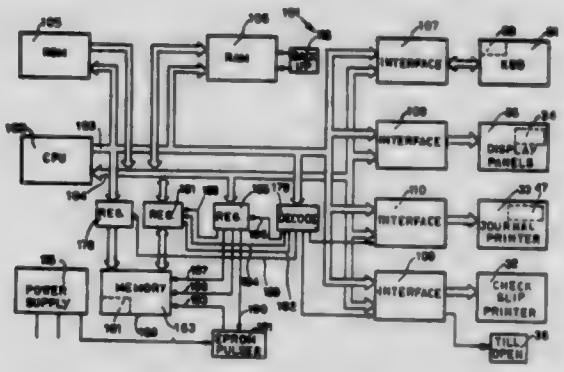
said printing means to print the executed transactions on till receipts and wherein said electronic means respond to the actuation of said selector means in said check status for the actuation of said selector means in said check status for causing said printing means to print the report of the recorded transactions on check slips, the improvement comprising:

counting means for counting signals in a purely incremental and non-manipulatable manner;

fixing means for permanently and non-manipulatably fixing said counting means to the machine frame;

incrementing means controlled by said electronic means and responsive to each actuation of said selector means in said





check status for incrementing the content of said counting means, whereby each actuation of the selector means in the check status is stored permanently and not cancellably;

means for reading-out the content of said counting means; and

means responsive to the actuation of said selector means in said check status and to the read-out content of said counting means for causing the printing on the check slip of the total of the previous actuations of said selector means in the check status and the content of said totalizing memory means.

4,493,039

APPARATUS AND METHOD FOR IMAGE REPRODUCTION OF MATERIALS USING THEIR MAGNETIC AND ELECTRIC PROPERTIES

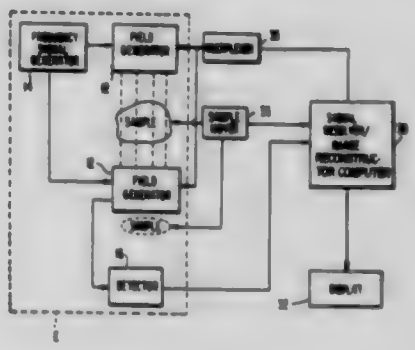
William D. Gregory, NE. Vienna, Va., assignor to President and Directors of Georgetown University, Washington, D.C.

Filed May 6, 1980, Ser. No. 147,297
Int. Cl.³ G06F *15/42*
U.S. Cl. 364—414 17 Claims

1. Apparatus for generating an image of a material using at least one of its magnetic, electric permeability and conductance properties under substantially hazard-free field conditions and without establishing physical contact with the material, said apparatus comprising:

(a) electromagnetic field generating means for generating a relatively low-strength substantially hazard-free electromagnetic field and for producing an output signal when the material to be investigated is brought within the influence of said electromagnetic field and out of physical contact with said electromagnetic field generating means, said output signal having a value which is reflective of said at least one of the magnetic, electric permeability and conductance properties of at least one volume element of said material, said at least one volume element being defined by at least one of intersecting field lines of said electromagnetic field and intersecting planes of said material;

(b) frequency generating means connected to said electromagnetic field generating means for producing a frequency signal comprising a plurality of pre-selected frequencies, said frequency signal being applied to said electromagnetic field generating means for generating said electromagnetic field;



(c) output signal resolving means connected to said electromagnetic field generating means for resolving said output signal into separate resolved component values including a resolved reactive component value and a resolved non-reactive component value to said at least one volume element of said material for each of said pre-selected frequencies; and

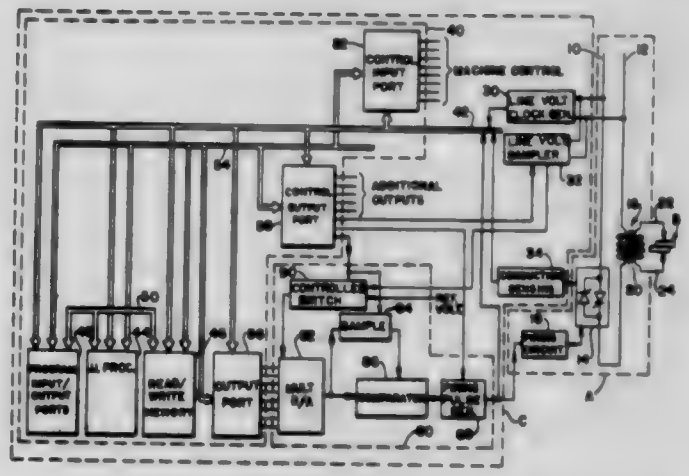
(d) image generating means connected to said output signal resolving means for generating a pictorial image of said material from at least one of said resolved component values for at least one volume element, said pictorial image being reflective of said at least one of the magnetic, electric permeability and conductance properties of said at least one volume element.

4,493,040

APPARATUS AND METHOD OF PHASE CONTROL FOR RESISTANCE WELDING AND OTHER RESISTIVE-INDUCTIVE LOADS

Peter W. Vanderbelst, Birmingham, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Jun. 1, 1982, Ser. No. 383,829
Int. Cl.³ G06G *7/64*; B23K *11/24*
U.S. Cl. 364—477 23 Claims



1. A computer-controlled welding apparatus comprising:

a phase-controllable contactor means for selectively conducting AC electric power to a welding load means, the

electric power including a plurality of cyclically occurring voltage half line cycles;

a line voltage clock generator for generating clocking signals at a preselected point in each of the voltage half line cycles of the AC electric power, the clocking signals being indicative of the beginning of each half line cycle;

a conduction sensing means for producing a conduction signal which indicates whether the contactor means is conducting welding power to the welding load means, the conduction sensing means being operatively connected with at least one of the contactor means and the load means;

a digital computer operatively connected with the line voltage clock generator and the conduction sensing means, the digital computer:

producing digital preselected weld current signals each indicating a preselected weld current to be conducted by the phase-controllable contactor means during one of the half line cycles, and

repeatedly between clocking signals producing real time digital present weld current signals indicating the weld current which would flow through the contactor means if the contactor were rendered conductive at a present time since the beginning of each of the half line cycles; and,

comparing means for comparing the preselected and a corresponding present weld current signals, the comparing means being operatively connected with the contactor means for selectively causing the contactor means to conduct welding power to the welding load means.

4,493,041

METHOD AND APPARATUS FOR DETERMINING THE WORKING RANGE OF A DOUBLE-ACTING CLAMPING CYLINDER FOR ACTUATING CHUCKING DEVICES ON MACHINE TOOLS

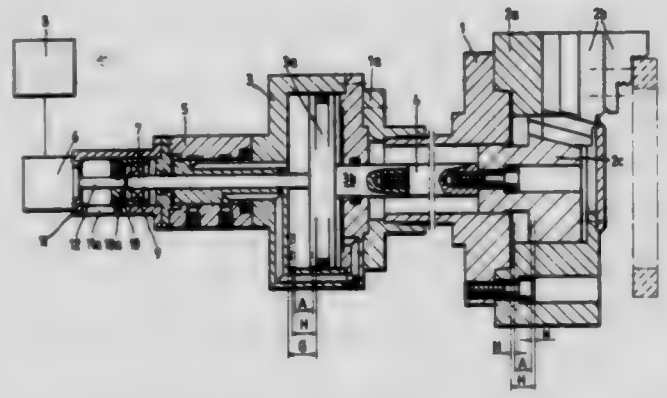
Herbert Antoni, Grevenbroich, Fed. Rep. of Germany, assignor to Paul Forkardt GmbH & Co, KG, Düsseldorf, Fed. Rep. of Germany

Filed Feb. 9, 1982, Ser. No. 347,201

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1981, 3105872

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—474 10 Claims



1. A method for determining and monitoring the working range of a double-acting clamping cylinder for actuation of an operating device, the latter comprising a supporting device, a centering device or a clamping device, respectively, on machine tools, and with control of a drive for effecting machining of a workpiece held by the operating device, comprising the steps of

providing a detecting means, actuating the latter and detecting a total stroke, including end positions thereof, of the operating device when actuating the clamping cylinder, said end positions being inside a total path of displacement of the clamping cylinder without the operating device,

providing a control device and storing in said control device said end positions of said total stroke, and

determining a working range of the clamping cylinder for the operating device by providing subtraction means and subtracting a post-tightening stroke associated with said operating device from the total stroke, said post-tightening stroke associated with the operating device being a predetermined distance so as to guarantee that a sufficient holding of the workpiece by the operating device has built-up, and

providing a length-measuring instrument and electrical means and continuously monitoring the total path of the clamping cylinder by continuously sending electrical signals corresponding to all respective positions of the clamping cylinder from said length-measuring instrument to said control device and providing means for and comparing the respective positions with said working range when operatively connecting the operating device and the workpiece, and

providing a blocking means and blocking the drive effecting the machining of the workpiece by the control device when the clamping cylinder is outside of said working range.

5. In an apparatus for determining and monitoring the working range of a double-acting clamping cylinder having a displaceable clamping cylinder piston for actuation of a respective operating device from time to time, the operating device comprising a supporting device, a centering device or a clamping device, respectively, on a machine tool, the apparatus having an actuating rod releasably connecting the clamping cylinder piston with the operating device, a monitoring means for detecting positions of said clamping cylinder piston of said clamping cylinder, said monitoring means operatively being connected with the clamping cylinder piston, the monitoring means sending electrical signals to a control means, the latter being connected with the monitoring means and for controlling drives for effecting the machining of workpieces adapted to be used with the operating device, the monitoring means establishing a working range of the clamping cylinder piston for the operating device, the working range defining an operating range of the clamping cylinder piston in connection with the operating device within a larger total path of stroke of the clamping cylinder piston, the control means blocking the drives for effecting the machining of the workpieces when the clamping cylinder piston is outside of the operating range, the improvement wherein

said monitoring means comprises a length-measuring means for monitoring the total path of the clamping cylinder piston continuously sending electrical signals to the control means as a function of the respective position of the clamping cylinder piston, and

said control means includes memory means for storing end positions of a total stroke, the latter being a first respective idle stroke of the clamping cylinder piston when operatively connected with the respective operating device without the workpieces, said end positions being respectively within the total path of the clamping cylinder piston and being detected by said length-measuring means and sent via the latter via respective of said electrical signals to said control means, and

said control means includes means for subtracting respective post-tightening strokes associated with the respective operating device from said end positions respectively so as to determine and for storing the respective working range with the respective operating device of the clamping cylinder piston, said post-tightening strokes associated with the respective operating device being predetermined distances so as to guarantee that a sufficient holding of the workpieces by the respective operating device has built-up, and

said control means includes means for comparing said electrical signals representative of the respective position at each time of said clamping cylinder piston with said respective working range when operatively connected with the respective operating device with the workpieces and means for blocking the drives for effecting the machining

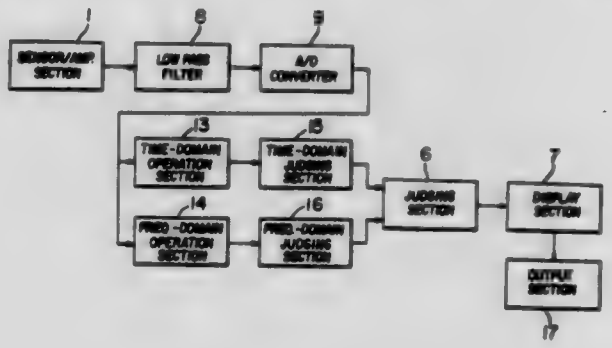
of the workpieces when the clamping cylinder piston is outside of the respective working range.

4,493,042

BEARING FAILURE JUDGING APPARATUS

Ichiji Shima; Hiroshi Teshima, both of Kansai Electric Power Company Incorporated, Sohgo Gijyutsu Kenkyusho, No. 1, Nakohji Ichinotsubo, Amagasaki-shi, Hyogo-Ken, Japan; Takayuki Koizumi, and Terue Uenmi, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo; Ichiji Shima and Hiroshi Teshima, both of Amagasaki, all of, Japan

Continuation-in-part of Ser. No. 119,201, Feb. 7, 1980, abandoned. This application Feb. 19, 1982, Ser. No. 350,249
Claims priority, application Japan, Apr. 16, 1979, 54-46427
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—507 6 Claims



1. A bearing failure judging apparatus comprising:
sensing means for sensing a signal produced from a bearing and producing a sensed signal output;
time domain extracting means for extracting features in the time domain of said sensed signal output from said sensing means and producing an output signal;
frequency domain extracting means for extracting features in the frequency domain of said sensed signal output and producing an output signal; and
judging means for judging the type of a failure occurring in the bearing on the basis of said output signal from said time domain extracting means and said output signal from said frequency domain extracting means,
wherein said judging means determines the type of failure to be scars when a repetitive period of pulsate waves appearing in said sensed signal output in the time domain is fixed, when there is a localization in the amplitudes of the pulsate waves, and when a frequency peak perculiar to the bearing member appears in the spectrum in the frequency domain of said sensed signal output.

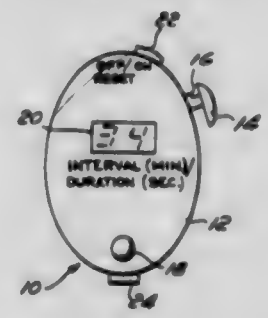
4,493,043

MEDICAL TIMING SYSTEM FOR USE DURING PREGNANCY AND METHOD OF USING SAME

Frank P. Forbath, 2880 Club House Rd., Costa Mesa, Calif. 92626

Filed Nov. 25, 1981, Ser. No. 325,037
Int. Cl.³ G06F *15/20*; G04F *7/06*
U.S. Cl. 364—569 20 Claims

1. A labor contraction duration and interval timer comprising:
a timing circuit that produces a timing signal;
an electrical input device having a first state and a second state;
a processor connected to said timing circuit and to said electrical input device, wherein:
said processor samples said timing signal when said input device is changed from the first state to the second state at the beginning of a contraction, and again samples said timing signal when said input device is changed from the second to the first state at the end of a contraction, and said processor automatically determines the length of time between the most recent input device state changes after the input device is changed from the second state to the first state, which time is the length of the measured contraction; and
said processor additionally automatically determines the length of time between the two most recent changes of the input device from the first state to the second state,



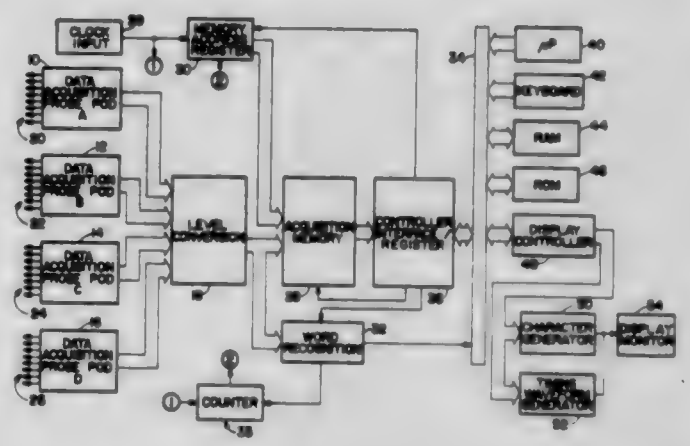
after the input device is changed from the first state to the second state, which time is the length of time between the beginning of one measured contraction and the beginning of the next measured contraction, or contraction interval; and
a device for reading out the determined contraction length and contraction interval data.

4,493,044

APPARATUS AND A METHOD OF ESTABLISHING THE CORRECT DISPLAY ORDER OF PROBE CHANNELS FOR A LOGIC ANALYZER

Hoeren Gerd H., Lake Oswego, and Steven R. Palmquist, Beaverton, both of Oreg., assignors to Tektronix, Beaverton, Oreg.

Filed Mar. 8, 1982, Ser. No. 355,968
Int. Cl.³ G05B *23/02*; G01R *29/02*
U.S. Cl. 364—579 10 Claims



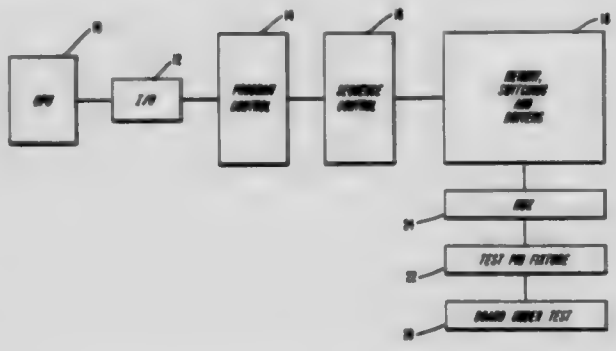
1. A method of establishing the correct order of probe channels of a logic analyzer, said logic analyzer indentifying each of said probe channels by providing a plurality of channel identifiers, said logic analyzer having connected thereto at least one probe pod, said pod having a plurality of probe tips extending therefrom for connection to a corresponding plurality of terminals of a product under test, each of said probe tips corresponding to one of said channel indentifiers, comprising the steps of:
connecting said probe tips to said terminals of said product under test;
determining the actual order of connection of said probe tips to said terminals of said product under test thereby determining a desired order of connection of said probe tips to said terminals; and
changing the order of individual channel identifiers to reflect said desired order of connection of said probe tips to said terminals.

4,493,045

TEST VECTOR INDEXING METHOD AND APPARATUS

John H. Hughes, Jr., Cohoes, N.Y., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Oct. 19, 1981, Ser. No. 312,839
Int. Cl.³ G06B 19/02, 23/02
U.S. Cl. 364—580 11 Claims



1. A system for generating a sequence of test vectors, comprising:

a first memory for storing a first set of test vectors and a second set of test vectors representing variables to be inserted in said first set of test vectors;

a second memory for storing test pattern instructions;

a test pattern controller responsive to the instructions stored in said second memory for addressing said first memory to access a test vector from said first set;

a vector data controller responsive to the instructions stored in said second memory for addressing said first memory to access a test vector from said second set; and

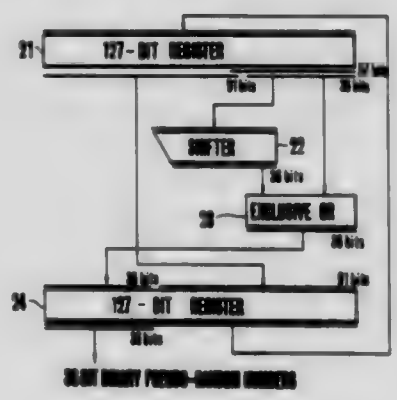
switching means for selectively applying address signals from said test pattern controller or said vector data controller to said first memory in accordance with instructions from said second memory.

4,493,046

APPARATUS FOR GENERATION OF BINARY PSEUDO-RANDOM NUMBERS

Tadashi Watanabe, Tokyo, Japan, assignor to Nippon Electric Co., Ltd, Japan

Filed May 24, 1982, Ser. No. 381,714
Claims priority, application Japan, May 26, 1981, 56-79518
Int. Cl.³ H03K 3/84; G06F 7/38
U.S. Cl. 364—717 2 Claims



1. Apparatus for generation of binary pseudo-random numbers of n bits by use of the maximum-length shift register sequence based on a primitive polynomial, $f(x)=x^p+x^q+1$, where p and q are positive integers satisfying the relation $p>q\geqq 1$, said apparatus comprising:

p-bit storage means;

(p−q) bit shift means for shifting the lowermost (p−q+m) bits of said p-bit storage means;

exclusive OR means for exclusive-ORing bit by bit the lowermost m ($m\geqq n$) bits of said p-bit storage means and m bits resulting from said shifting; and

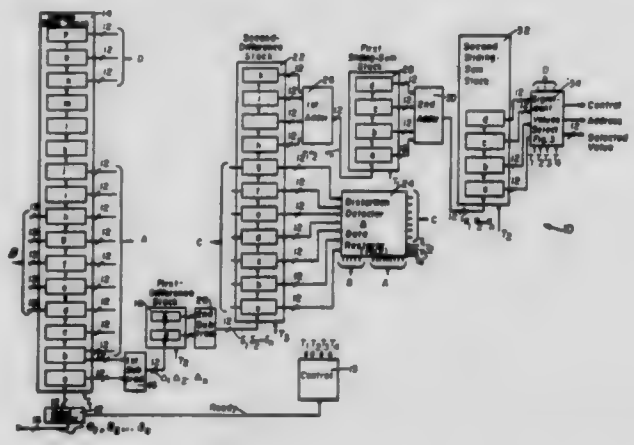
means for restoring the uppermost (p−m) bits of said p-bit storage means to the lowermost (p−m) bits of said p-bit storage means and exclusive-Ored results to the uppermost m bits of said p-bit storage means and for extracting the uppermost n bits of said p-bit storage means.

4,493,047

REAL TIME DATA SMOOTHER AND SIGNIFICANT VALUES SELECTOR

Mervin C. Worst, Sellersville, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 5, 1982, Ser. No. 365,816
Int. Cl.³ G06F 15/31
U.S. Cl. 364—724 6 Claims



1. An apparatus for distortion detection, data restoration and smoothing, and significant value selection for a discrete number of consecutive samples of real time digital data, comprising in combination:

first storage means formed to be connected to receive the samples for providing a first signal of consecutive first-differences of a plurality of the last received samples, a second signal (A) of a plurality of intermediate received samples, a third signal (D) of a plurality of the first received samples, and a ready signal indicative that said first storage means has received the samples;

second storage means connected to receive the first signal for providing a fourth signal of a plurality of last consecutive second-differences and a fifth signal of consecutive first-sliding-sums of a plurality of first consecutive second-differences;

restorer means connected to receive the second signal (A) and the fourth signal for providing to said first storage means a sixth signal (B) of a plurality of samples restored therein and strobe pulses, and to said second storage means a seventh signal (C) of a plurality of clear pulses;

third storage means connected to receive the fifth signal for providing an eighth signal of a plurality of consecutive second-sliding-sums;

selector means connected to receive the eighth signal and the third signal (D) for providing consecutive smoothed, restored samples; and

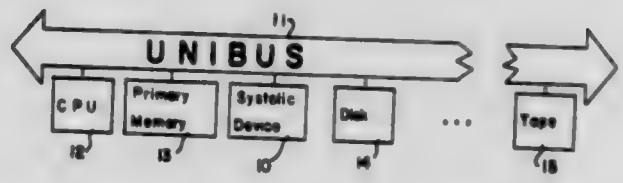
control means connected to receive the ready signal for providing control signals to control said first storage means, second storage means, restorer means, third storage means, and selector means.

4,493,048

SYSTOLIC ARRAY APPARATUSES FOR MATRIX COMPUTATIONS

Hsiang-Tsung Kung, and Charles E. Leiserson, both of Pittsburgh, Pa., assignors to Carnegie-Mellon University, Pittsburgh, Pa.

Continuation of Ser. No. 352,701, Feb. 26, 1982, abandoned, which is a continuation of Ser. No. 968,451, Dec. 11, 1978, abandoned. This application May 16, 1983, Ser. No. 494,659
Int. Cl.³ G06F 7/38
U.S. Cl. 364—754 14 Claims



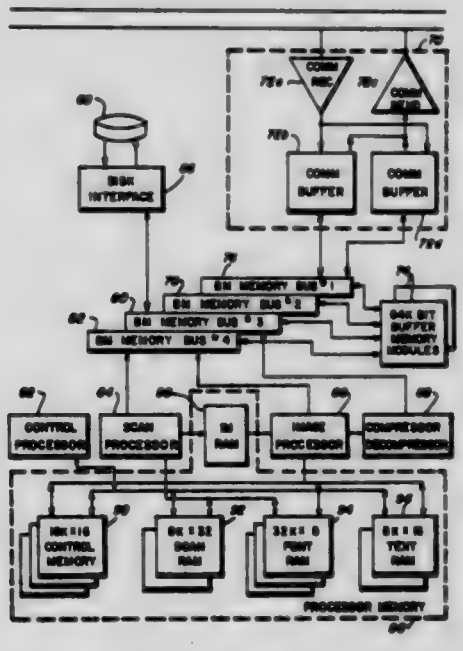
1. In a computer system having external handling means delivering input to be processed and receiving output and a plurality of processors forming a network receiving said input, the improvement comprising said plurality of processors being independent of a central control which sends control instructions to all processors simultaneously and being made up of boundry processors lying on the boundry of the network and being one of inner product step processors and processors capable of performing usual arithmetic operations including division and internal processors within the area surrounded by said boundry processors and being inner product step processors, said processors being assembled in a network by nearest neighbor connections in which a regular flow of data is maintained, synchronizing means connected to each processor rythmically feeding data into and out of processors in said network and between said network and said external handling means and connections between at least one of the boundry processors and said external handling means whereby data is fed therebetween.

4,493,049

SHARED RESOURCE CLUSTERED PRINTING SYSTEM

James M. Donohue, Brighton, N.Y., and Andrew T. Ling, Rancho Palos Verdes, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 5, 1981, Ser. No. 270,949
Int. Cl.³ G06F 3/12
U.S. Cl. 364—900 7 Claims



1. An apparatus for generating characters to be scanned in raster format from character input byte information including:

a character input device providing the input byte information,

a first memory for storing the character input byte information,

a character generator communicating with the first memory,

a buffer memory,

a buffer memory bus connected to the buffer memory and the memory storing the input byte information, and

an output marker, the output marker connected to the character generator, via the first memory,

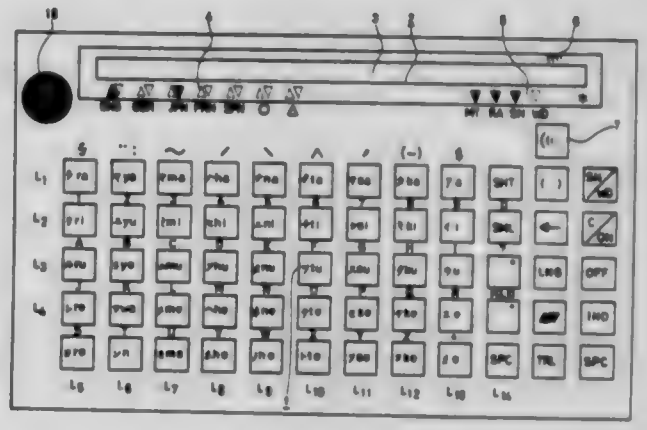
the character generator including a control processor connected to the character input device for sorting the character input byte information, a scan processor interconnected to the buffer memory and the first memory through the memory bus, the control processor providing scan line lists from the byte information, the scan processor transforming the scan line lists into coded field streams and a compressor for receiving the coded field streams and providing an output marker scanning format in the first memory whereby character input byte information is converted into output marker scanning format and stored in the first memory for directly driving the output marker.

4,493,050

ELECTRONIC TRANSLATOR HAVING REMOVABLE VOICE DATA MEMORY CONNECTABLE TO ANY ONE OF TERMINALS

Shintaro Hashimoto, Ikoma; Masafumi Morimoto, Yamatokoriyama; Tosuke Nakanishi, Nara; Hideo Yoshida, Kashihara, and Shigenobu Yanagiuchi, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 24, 1981, Ser. No. 286,466
Claims priority, application Japan, Jul. 31, 1981, 55-106886
Int. Cl.³ G06F 15/38
U.S. Cl. 364—900 3 Claims



1. An improved electronic translator wherein a first word or words in a first language are entered to obtain a second word or words in a second language that are the translated equivalent of the first word or words, the translator comprising

input means for entering the first word or words into the translator and for entering commands,

a permanently included first memory means for storing a plurality of words in the first language including the first word or words, the plurality of words being stored at respectively specific addresses,

second memory means for storing a like plurality of words in the second language including the second word or words, each of the plurality of words in the second memory means being stored at a specific address that is equivalent to the address of a corresponding word in the first memory means,

at least two connectors,

third memory means for storing voice data corresponding to the translated equivalents of at least some of the first word or words in another language, the third memory means being removably connected to the translator through one of the connectors,

first access means responsive to the input means for accessing the first memory means and the second memory means to retrieve the first word or words and the translated equivalent second word or words,

detection means responsive to the input means and the first access means for detecting which connector has the third memory means connected thereto, for detecting whether the voice data stored in the third memory means corresponds to second word or words in the second language, and for detecting whether the third memory means includes voice data equivalent to the second word or words,

indicator means responsive to the detection means for indicating whether voice data representing the second word or words in the second language is stored in the third memory means,

second access means responsive to the input means and the detection means for retrieving from the third memory means voice data representing the second word or words in the second language, and

voice generation means responsive to the second access means for producing an audible output of the second word or words by voice synthesization of the voice data.

4,493,051

COMMUNICATION LINE SCANNING DEVICE FOR A COMMUNICATION CONTROLLER

Bernard Breuzza, Nice; Jean Calvignac, LaGaude; Richard Dombricourt, Cagnes; Andre Masclet, and Jean-Pierre Sanche, both of Antibes, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

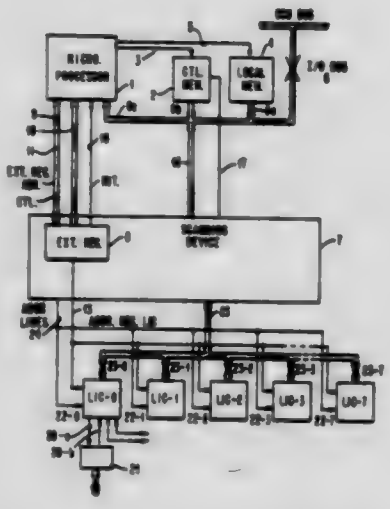
Filed Oct. 12, 1982, Ser. No. 433,609

Claims priority, application European Pat. Off., Oct. 28, 1981, 81430037.2

Int. Cl.³ G06F 3/04

U.S. Cl. 364—900

11 Claims



1. A line scanning device (7) working under control of a microprocessor (1) connected to a control memory (2) in which a storage location area is assigned to each line, said scanning device and the microprocessor being included in a line adapter (LA) provided for a communication controller (CC) which receives or sends message bits in series from or to terminals (T) connected to the lines, characterized in that it includes:

an addressable first storing means (306) in which a storage location area is assigned to each line,

an addressable second storing means (314) in which a storage location area is assigned to each line,

a control and address means (303) comprising first and second address counters (501 and 502) under the control of an elementary time counter, the first counter outputting during elementary time t of a line scanning, the line address information of the first storing means and the second counter outputting during a time equal to elementary time n+, with n equal to 4 or above, the address information of the second storing means, and control means (500, 503, 505) receiving said address information and the elementary time information to provide on outputs (324, 382) of the control and address means, read/write control and address information on times selected during the scanning period and, sequentially, the addresses of the lines being scanned,

a first processing and monitoring logic circuit (308) comprising means (617, 614) for deserializing/serializing bits, for receiving or sending a message bit on each scanning period, this circuit being connected on the one hand, to a bit exchange line which carries the bit received or to be transmitted to the scanned line (348) and during the other hand, to the first storing means through a first read bus (310) and a first write bus (312) and to the second storing means through a second write bus (322) so that the information in the address storage location area can be read, processed and re-written, modified or not, in the first or second storing means in response to the bit received or to be sent,

a second processing and monitoring logic circuit (316) comprising means (723, 724, 714, 719, 726, 725) for assembling characters into half-words and disassembling half-words into characters, connected on the one hand, to the control memory on an address bus (17) and a data bus (16) and on the other hand, to the second storing means on a read bus (318) and a write bus (320) and to the first storing means on a second write bus (322) in order to exchange the messages to be transmitted in cycle steal mode between the control memory and the addressed areas of the first and second storing means.

4,493,052

METHOD AND ARRANGEMENT FOR THE MONITORED TRANSFER OF CONTROL SIGNALS AT INTERFACES OF DIGITAL SYSTEMS

Gerhard Geiger, Schliersee, and Michael Strafner, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

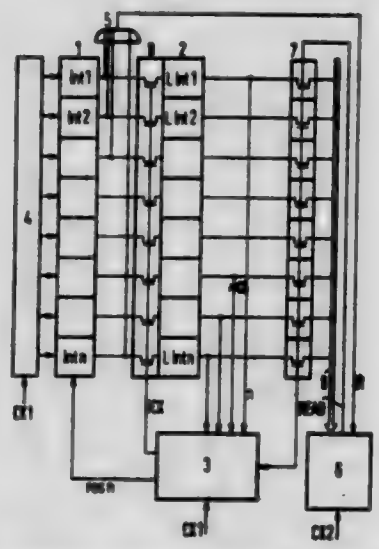
Filed Nov. 15, 1982, Ser. No. 441,854

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1981, 3145632

Int. Cl.³ G06F 1/00

U.S. Cl. 364—900

8 Claims



1. Method for monitored transfer of control signals at interfaces of digital systems wherein a request signal is transferred by a first system via a request line to a second system, information concerning the cause of the request signal is taken by the second system from a status register of the first system, and the status register is subsequently reset, which comprises providing the first system with both a first and a second status register; storing the information concerning the cause of the request signal in the first status register which has outputs connected to respective inputs of the second status register; connecting the second status register to the second system when a read signal

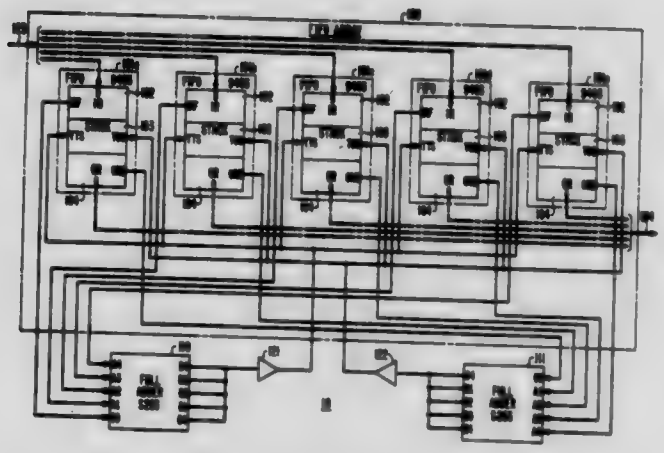
delivered by the second system is present; severing the connection between the first and the second status registers during the presence of the read signal and a subsequent clock cycle of the first system; monitoring by the second system of a readout of the second status register; and resetting respecive cells of the first status register after the second status register is read out.

4,493,053

MULTI-DEVICE APPARATUS SYNCHRONIZED TO THE SLOWEST DEVICE

Dennis J. Thompson, Geneva, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 10, 1982, Ser. No. 448,824
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—900 13 Claims



1. A synchronous apparatus comprising:

a plurality of devices for operating synchronouly, each device having an output terminal for selectively generating thereon a first signal to indicate readiness to operate and a second signal to indicate completion of operation, each device further having an input terminal for receiving thereon a third signal for causing the device to operate and a fourth signal for causing the device to stop operating; and

synchronizing means, having a plurality of input terminal means connected to the output terminals of the plurality of devices and output terminal means connected to the input terminals of the plurality of devices, adapted to initiate generating on its output terminal means the third signal upon sensing the first signal on all of its input terminal means and to continue to generate the third signal while the first signal is present on at least one of its input terminal means, the means further adapted to initiate generating on its output terminal means the fourth signal upon sensing the second signal on all of its input terminal means and for continuing to generate the fourth signal while the second signal is present on at least one of its input terminal means, thereby to synchronize the operation of the plurality of devices with the slowest of the plurality of devices.

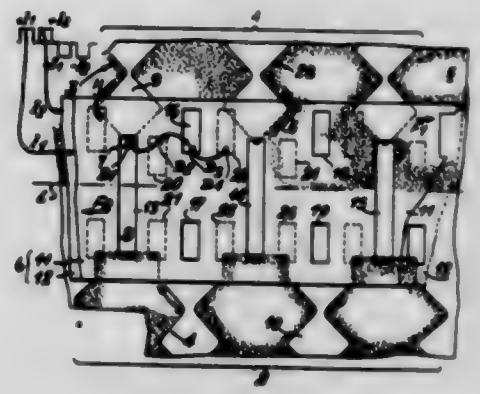
4,493,054

MAGNETIC BUBBLE STORE

Mokhtar Bouhra-Rind, Giza, Egypt; Jean-Marc Fedeli, Saint Egreve, France; Hubert Joave, Biviers, France, and Daniel Mauduit, Rives sur Fure, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 7, 1981, Ser. No. 251,759
Claims priority, application France, Apr. 18, 1980, 80 08764
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—36 5 Claims

1. A magnetic bubble store comprising at least a first and second series of longitudinally oriented minor shift registers and means for producing a displacement of the bubbles in said registers, said first series of minor registers being disposed on one side of a transverse boundary and said second series of minor registers being disposed on the other side of said transverse boundary with said transverse boundary being constituted by a major register, wherein the minor registers of each of said first and second series are constituted by motifs defined



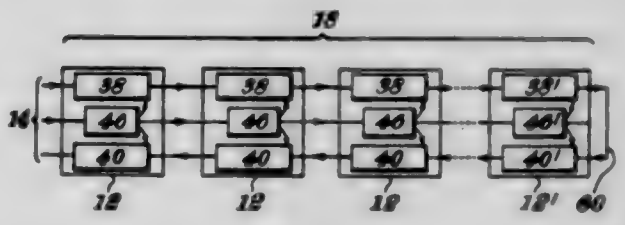
by ion implantation in a magnetic garnet layer, said motifs defining respectively on said one side and said other side of said boundary, complementary distributions of implanted areas and non-implanted areas.

4,493,055

WAFER-SCALE INTEGRATED CIRCUITS

Ismet M. F. M. Osman, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 14, 1981, Ser. No. 330,539
Claims priority, application United Kingdom, Dec. 12, 1980, 8039902
Int. Cl.³ G11C *7/00, 19/00*
U.S. Cl. 365—78 22 Claims



1. An integrated circuit comprising a data port and a plurality of data processing cells on a semiconducting wafer, at least some of said cells being connectable to neighbouring cells for data transfer to form a chain of cells starting at said port, the transfer of data between said cells in said chain being controlled by a clock signal and wherein each of said cells in said chain includes clock signal propagation means for propagating said clock signal from cell to cell along said chain.

4,493,056

RAM UTILIZING OFFSET CONTACT REGIONS FOR INCREASED STORAGE CAPACITANCE

Robert S. Mao, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1982, Ser. No. 394,055
Int. Cl.³ G11C *11/24, 11/40*
U.S. Cl. 365—149 6 Claims

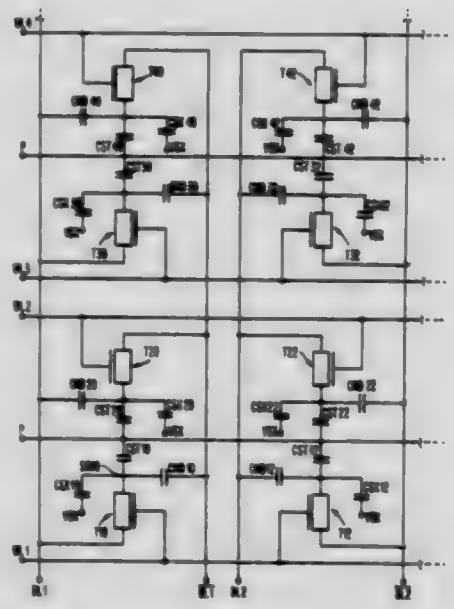
1. A memory cell comprising:

a transfer device having a control electrode and an offset contact region, the control electrode being electrically connected to a word line, the contact region being electrically connected to a first bit line;

a storage capacitance operatively connectable to said first bit line by selective actuation of the control electrode of said transfer device; and

a second bit line spaced apart from said first bit line and

capacitively coupled to said storage capacitance, wherein said second bit line substantially overlies said storage



capacitance and said control electrode, and said first bit line substantially overlies said contact region.

4,493,057

METHOD OF MAKING HIGH DENSITY SEMICONDUCTOR DEVICE SUCH AS FLOATING GATE ELECTRICALLY PROGRAMMABLE ROM OR THE LIKE

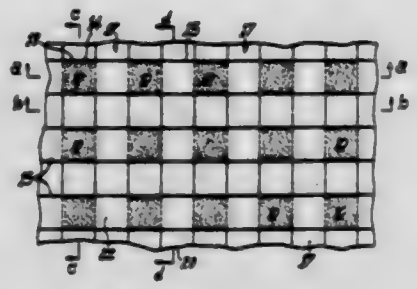
David J. McElroy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 110,052, Jan. 7, 1980, , which is a continuation-in-part of Ser. No. 923,876, Jul. 12, 1978, Pat. No. 4,184,207, which is a division of Ser. No. 762,613, Jan. 26, 1977, Pat. No. 4,151,021. This application Sep. 27, 1982, Ser. No. 424,124

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—182

14 Claims



1. A floating gate type semiconductor memory array comprising: a plurality of MOS transistor devices each having a source, a drain, a floating gate, and a control gate, the floating gate being isolated from the channel between source and drain by thin insulator and the control gate being isolated from the floating gate by thin insulator, the transistor devices being arranged in an array of rows and columns, with the columns of transistor devices being separated by elongated parallel heavily-doped regions in the semiconductor which define column lines; means connecting the control gates of all device in each row together to provide row lines; said elongated parallel heavily-doped semiconductor regions forming the source and drain regions of the transistor devices as well as connecting the sources and drains of all adjacent devices together to provide said column lines, one pair of opposite parallel edges of the floating gate in each transistor device being aligned with edges of the control gates of all transistor devices in each row, and the other pair of opposite parallel edges of the floating gate in each transistor device being aligned with edges of the elongated parallel heavily-doped regions.

4,493,058

INTEGRATED CIRCUIT FOR WRITING, READING AND ERASING MEMORY MATRICES WITH INSULATED-GATE FIELD-EFFECT TRANSISTORS HAVING NON-VOLATILE STORAGE BEHAVIOUR

Fritz G. Adam, Freiburg, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

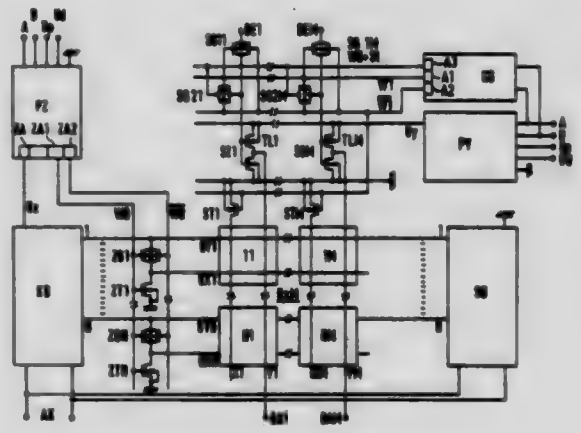
Filed Mar. 18, 1982, Ser. No. 359,536

Claims priority, application European Pat. Off., Apr. 1, 1981, 81102460.3

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—189

10 Claims



1. A memory arrangement comprising:

a memory matrix comprising a plurality of memory cells each connected to one of a first plurality of row selection lines and to one of a first plurality of column selection lines, each cell comprising insulated gate field effect transistors having a nonvolatile storage behavior; and

an integrated circuit formed in a semiconductor body for programming said memory matrix, said circuit comprising:

a first decoder having a first plurality of address inputs and a first plurality of outputs, each of said first plurality of outputs being coupled to a corresponding one of said first plurality of row selection lines, said first decoder being responsive to address signals at said first plurality of address inputs for establishing conductive paths from all of said first plurality of outputs to a first potential input except for a selected one of said first plurality of outputs and for causing the path from said selected one of said first plurality of outputs to said first potential input to be nonconductive, said first decoder comprising insulated gate field effect transistors of a first conductivity type arranged in said semiconductor body, said first potential input and said semiconductor body being coupled to a first potential;

a second decoder having a second plurality of address inputs and a second plurality of outputs, each of said second plurality of outputs being coupled to one of said first plurality of outputs by the corresponding one of said row selection lines, each of said second plurality of address inputs being coupled to a corresponding one of said first address inputs, said second decoder being responsive to said address signals for establishing a conductive path from a selected one of said second plurality of outputs to a second potential input and for causing the paths from the remaining ones of said second plurality of outputs to said second potential input to be nonconductive, said second decoder comprising insulated gate field effect transistors of a second conductivity type arranged within an insulating island of said first conductivity type in said subetrate, said second potential input being coupled to said insulating island; and

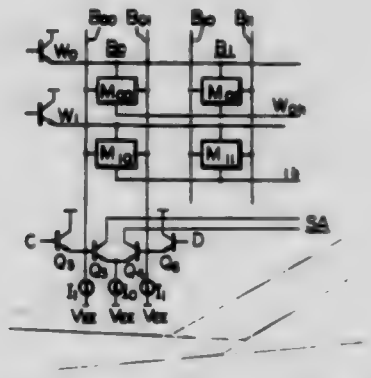
a row potential selection circuit having a potential output coupled to said second potential input.

4,493,059

CIRCUIT AND METHOD FOR WRITING IN A SEMICONDUCTOR MEMORY DEVICE

Hideaki Isogai, Higashifkurume, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 27, 1982, Ser. No. 343,163
Claims priority, application Japan, Jan. 29, 1981, 56-11973
Int. Cl.³ G11C 7/00, 11/40
U.S. Cl. 365—190 8 Claims



1. A method for writing in a semiconductor memory device comprising static memory cells connected at intersections of a plurality of word lines and pairs of bit lines, comprising the steps of:

writing by changing potentials of paired bit lines according to writing data of binary digits "1" and "0" and turning on one transistor of a memory cell while turning off the other transistor of the memory cell; and

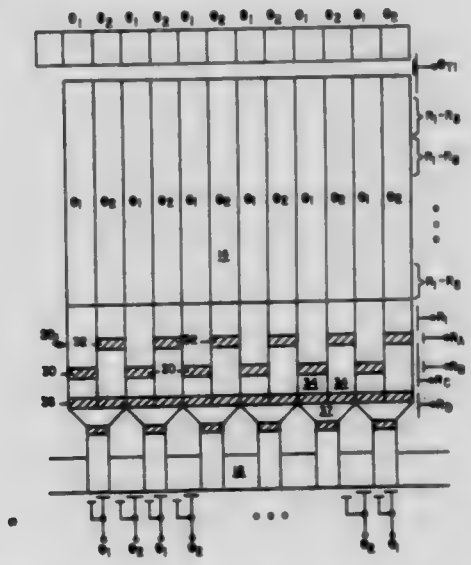
maintaining one of the paired bit lines at a low level while the other bit line is simultaneously maintained at a high level, where the period of maintenance of the high level is shorter than the period of maintenance of the low level.

4,493,060

SERIAL-PARALLEL-SERIAL CHARGED COUPLED DEVICE MEMORY AND A METHOD OF TRANSFERRING CHARGE THEREIN

Ramesh C. Varshney, San Jose, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Continuation of Ser. No. 241,780, Mar. 9, 1981, abandoned. This application Oct. 20, 1983, Ser. No. 543,228
Int. Cl.³ G11C 11/34
U.S. Cl. 365—238 2 Claims



1. An interface gate structure for transferring charge from the parallel to serial registers of a charge coupled device having at least first and second parallel charge transfer registers and a serial charge transfer output register comprising:

a first transfer gate (30) for coupling charge out of said first parallel register in response to a first signal (R_B) at a first time;

a second transfer gate (32) for coupling charge out of said second parallel register in response to a second output signal (R_A) at a second time;

a first storage gate (34) for receiving and storing charge transferred by said first (30) and said second (32) tranafer gates from said first and second parallel registers;

a second storage gate (37) for storing charge transferred from said first storage gate (34);

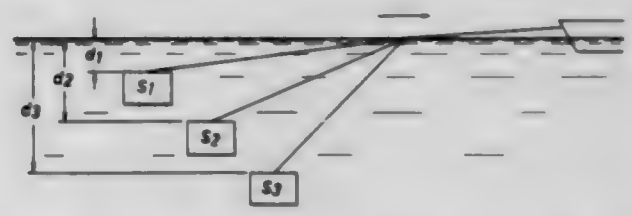
a third transfer gate (36) for transferring charge between said first storage gate (34) and said second storage gate (37) in response to a third signal (R_D) wherein said first transfer gate (30) and said second transfer gate (32) are offset to prevent concurrent charge transfer from said parallel registers into said first storage gate (34).

4,493,061

STACKED MARINE SEISMIC SOURCE

Clifford H. Ray, Houston, Tex., assignor to Fairfield Industries, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 291,269, Aug. 10, 1981, Pat. No. 4,441,174. This application May 21, 1982, Ser. No. 380,569
Int. Cl.³ G01V 1/36, 1/38
U.S. Cl. 367—23 7 Claims



1. A marine seismic wave source, including a plurality of individual gas expansible sources, each of said sources producing a primary shock wave into the water from the location where said source is positioned, each of said sources also producing an after-shock wave into the water a predetermined time after said primary shock wave, comprising:

a first of said individual sources towed at a first depth below the surface of the water, the negative portion of said primary wave from said first source being separated from the positive portion thereof dependent on the round-trip acoustical travel time of the source impulse to the water surface, the positive portion of the after shock wave therefrom occurring at a time after the primary shock wave dependent on the pressure of the water at said first depth, the negative portion of said after shock wave being separated from its positive portion by the same time separation that the negative portion of the primary wave is separated from its positive portion,

a second of said individual sources towed ahead of said first individual source at a second depth below the surface of the water greater than said first depth, the negative portion of said primary wave from said second source being separated from the positive portion thereof dependent on the round-trip acoustical travel time of the source impulse to the water surface, the positive portion of the after-shock wave therefrom occurring at a time after the primary shock wave dependent on the pressure of the water at said second depth, the negative portion of said after-shock wave being separated from its positive portion by the same time separation that the negative portion of the primary wave is separated from its positive portion,

the round-trip time for said second source being longer than the round-trip time for said first source, the pressure for said second source being greater than the pressure for said first source, thereby causing the relative time of arrival of said after shock for said second source to be shorter than for said first source,

said positive portions of the primary waves from said first and second sources occurring substantially simultaneously at a location below said second source before the negative portion of the primary wave from said first source occurs at said location, which is then followed by the negative

portion of the primary wave from said second source at said location, said primary and negative portions of said first source and second source after-shock waves occurring at respectively different times at said location,
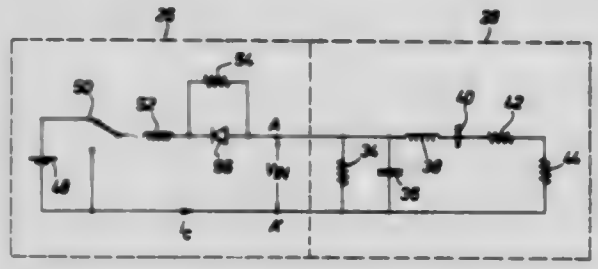
whereby, said positive portions of said primary shock wave energy accumulates and said negative portions of said primary shock wave energy and said positive and negative portions of said after-shock wave energy do not accumulate.

4,493,062

RESONANT FREQUENCY MODIFICATION OF PIEZOELECTRIC TRANSDUCERS

A. J. Mallett, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Dec. 12, 1983, Ser. No. 560,673
Int. Cl.³ G01V *1/40*
U.S. Cl. 367—32 3 Claims



1. An acoustic well tool incorporating a piezoelectric transmitter crystal having a diameter mode resonant frequency said transmitter being operated in a pulsed mode at an output frequency of operation below said diameter mode resonant frequency of said crystal, comprising:

(a) a piezoelectric crystal for generating acoustic pulses for propagation into the earth formations adjacent to a borehole; and

(b) a crystal loading circuit connected to said crystal and including a series inductor means, a series blocking diode connected to permit current flow in one direction through said inductor means and said crystal and to limit current flow in the other direction, and wherein said inductor means is connected to a voltage source, and switch means timed in operation to selectively connect said inductor means with said crystal to define a tank circuit having a capacitive component attributable to said crystal and an inductive component from said inductor means wherein the resonant frequency of the tank circuit is less than said diameter resonant frequency of the crystal and to disconnect said inductor means from said voltage source.

4,493,063

METHOD AND APPARATUS FOR SEISMIC GEOPHYSICAL EXPLORATION

Harold A. Tims, Bartlesville, Okla.; Sheldon E. Elliott, London, England; Orin C. Montgomery, and William N. Doggett, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 30, 1978, Ser. No. 955,745
Int. Cl.³ G01V *1/16*
U.S. Cl. 367—77 40 Claims

1. A seismic system for geophysical exploration comprising:

a plurality of remote geophone monitoring means, each of said remote geophone monitoring means being adapted to receive electrical signals from at least one geophone means; and

a central control means for generating electrical signals for initiating the operation of said plurality of remote geophone monitoring means;

each of said plurality of remote geophone monitoring means comprising:

means for sampling electrical signals, provided from at least one geophone means, and for converting the sampled electrical signals into digital seismic data;

a first data storage means;

means for providing said digital seismic data to said first data storage means to therein store said digital seismic data;

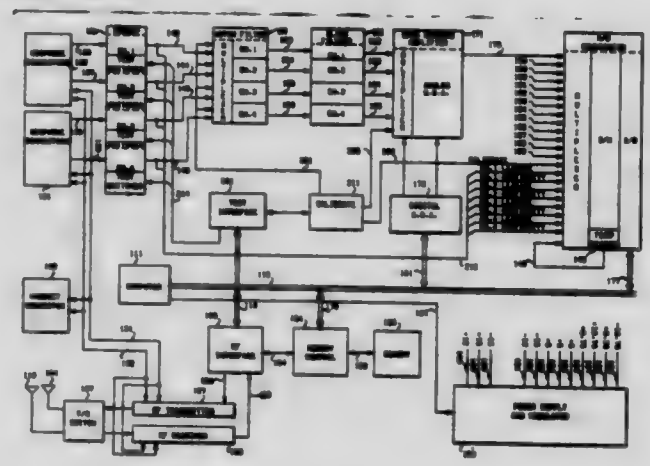
a first radio frequency transmitter means for transmitting said digital seismic data to said central control means in response to a transmit command from said central control means;

means for providing said digital seismic data from said first storage means to said first radio frequency transmitter means; and

a first radio frequency receiver means for receiving a command from said central control means;

said central control means comprising:

a second radio frequency transmitter means for transmitting commands to said plurality of remote geophone monitoring means;



a second radio frequency receiver means for receiving digital seismic data from said plurality of remote geophone monitoring means;

error detection means;

means for providing digital seismic data from said second radio frequency receiver means to said error detection means;

a second data storage means; and

means for providing digital seismic data from said error detection means to said second data storage means to therein store the digital seismic data provided from said error detection means,

wherein each of said remote geophone monitoring means additionally comprises:

means for conducting a self test in response to a test command from said central control means; and

means for providing test data, representative of the results of said self test, to said first radio frequency transmitter means to thereby transmit said test data to said central control means.

4,493,064

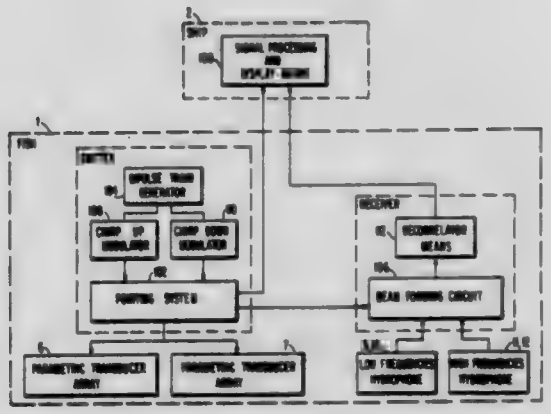
SONAR SYSTEM

Dominique Odero, Vincennes, and Guy Parent, Le Plessis Robinson, both of France, assignors to Sintra-Alcatel, Asnieres, France

Filed Jul. 19, 1982, Ser. No. 399,577
Claims priority, application France, Jul. 17, 1981, 81 13961
Int. Cl.³ G01S *15/02, 7/52*
U.S. Cl. 367—92 9 Claims

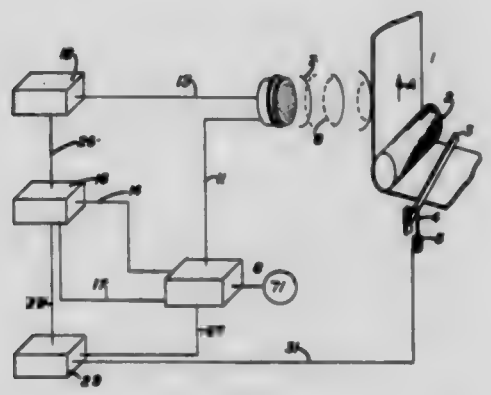
1. A sonar system, comprising: a vehicle capable of moving over the bottom of an extent of water; an emitter of acoustic pulses and a receiver of acoustic energy mounted on said vehicle, said emitter of acoustic pulses comprising at least two parametric transducer arrays each generating a scanning beam having a spot radiation pattern and steerable in a plurality of directions for forming a plurality of channels, said two transducer arrays being disposed laterally, one on each side of said

vehicle, and coupled channel-by-channel in an arrangement providing two diverging pointing directions at all times; and an



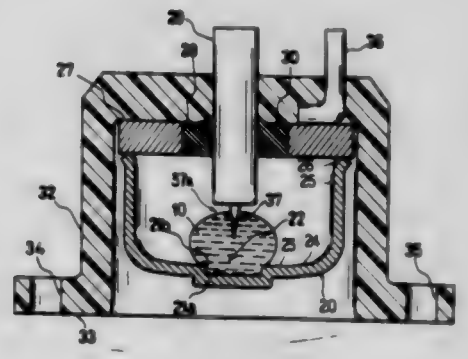
electronic pointing system for selecting and scanning through said channels.

4,493,065
WEB POSITION INDICATOR
Edward L. Sword, Jr., 2912 Chimney Rock La., Louisville, Ky.
Filed May 24, 1982, Ser. No. 381,916
Int. Cl.³ G01S *15/88*
U.S. Cl. 367—96 8 Claims



1. Apparatus for detection of a planar web within a selected space between first and second distances from a sonic signal generator where said sonic generator generates regularly repetitive ultra sonic signals of selected frequency, duration, and time spacing between signals and is disposed to direct said sonic signals toward said web so the signals are reflected from said web as reflected signals; signal receiver means to receive said reflected signals, time signal generating means to generate signal pulses during the time period between the generation of said ultra sonic signal and receipt of said reflected signals; counter means to receive said signal pulses and count said signal pulses during the time interval between the transmission of said ultra sonic signal and said reflected signal and provide said counted pulses as a binary number signal at counter output means indicative of the distance of said web from said signal generator; binary to decimal converter means having binary coded decimal number input and decimal outputs to receive said binary number signal and provide a decimal output; switch means provided at at least one of said decimal outputs to be selectively opened or closed to permit transmission of signals provided at said decimal output so the presence of said web within said selected space from said generator is reflected by signals at selected decimal outputs.

4,493,066
SEISMOSENSITIVE DEVICE
Susumu Ubukata, and Yasukazu Minetani, both of Nagoya, Japan, assignors to Susumu Ubukata, Nagoya, Japan
Filed Aug. 25, 1983, Ser. No. 526,498
Claims priority, application Japan, Jun. 10, 1983, 58-104576
Int. Cl.³ H01H *29/00*
U.S. Cl. 367—178 8 Claims

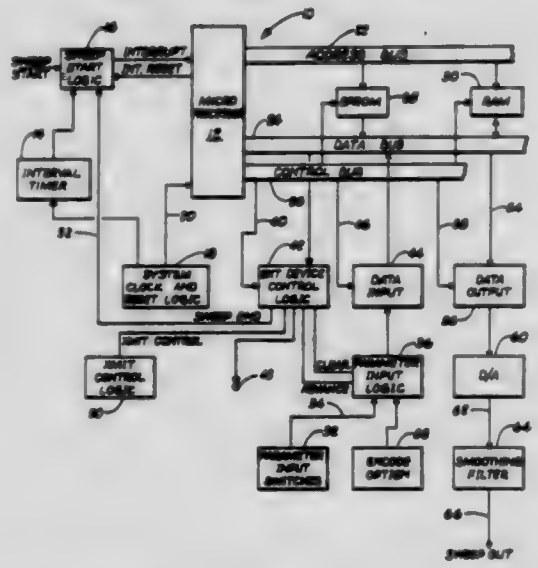


1. A seismosensitive device comprising:
(a) an enclosure having a bottom and being fabricated of an electro-conductive material, the enclosure sealing a mercury globule therewithin;
(b) a recess formed at the bottom of the enclosure for bedding a quantity of the mercury globule, the recess being defined by a bottom portion and a vertical uprise wall extending upwardly from the bottom portion,
(c) the enclosure bottom comprising a first annular low gradient surface extending outwardly from the side of the recess, the first annular surface being defined by a relatively small gradient, and
a second annular high gradient surface extending from and surrounding the external side of the first annular surface, the gradient of the second annular surface being larger than the gradient of the first annular surface to return the mercury globule into the recess;
(d) a first electrode means mounted in electrically insulated relation on the enclosure to contact the mercury globule and a second electrode electrically conductively connected to the enclosure;
(e) a shaped contact supported within the enclosure by the first electrode means, the contact projecting into the the mercury globule when the mercury globule is bedded in the recess;
whereby the mercury globule will tend to remain within the recess in the state of a coaxial alignment with the center of the recess.

4,493,067
SEISMIC VIBRATOR CONTROL SYSTEM
Bobby J. Thomas, and Billy J. Heath, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.
Filed Apr. 13, 1981, Ser. No. 253,207
Int. Cl.³ G01V *1/155, 1/143*
U.S. Cl. 367—189 12 Claims

4. Apparatus for constructing a seismic vibrator control signal, comprising:
means for storing a selected plurality of digital amplitude and binary parameter signals in addressable location;
input switch means providing binary coded decimal input of parameters relating to starting frequency, ending frequency, sweep time and sweep taper time of said control signal;
means for converting said binary coded decimal inputs to said binary parameter signals for input to said means for storing;
microprocessor means accessible to said means for storing and energizable to enable output of digital amplitude values in sequence controlled by said binary parameter

signals and in the form of a digital control signal of selected frequency and duration; and



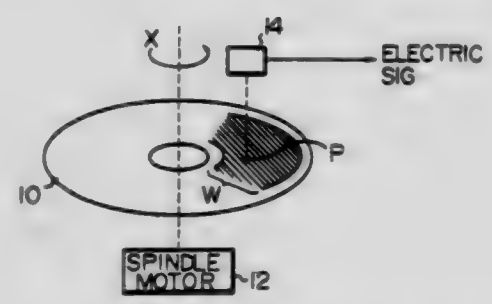
second means for converting said digital control signal to an analog control signal for energization of a seismic vibrator.

4,493,068

PICK-UP POINT DISLOCATION DETECTING DEVICE IN RECORDING A DISC PLAYER

Ryuichi Naito, and Hiroyuki Hirano, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 14, 1982, Ser. No. 398,218
Claims priority, application Japan, Jul. 15, 1981, 56-105247[U]
Int. Cl.³ G11B *21/10*; H04N *5/76*
U.S. Cl. 369—44
9 Claims



1. A detection device for detecting dislocation of a pick-up point of pick-up means incorporated in a disc player from a recorded region of a recording disc being played back in the disc player, said recording disc carrying on the recording surface thereof a track signal in the form of one or more circumferentially extending tracks which define said recording region, said pick-up means being positioned in the proximity of said recording surface of said recording disc for producing an electric signal containing said track signal while aligning said pick-up point onto a target track under the tracking servo control of said disc player, which comprises:

comparing means for comparing the intensity of said electric signal with a first reference level and for producing an output signal when the intensity of said electric signal falls below said first reference level; and

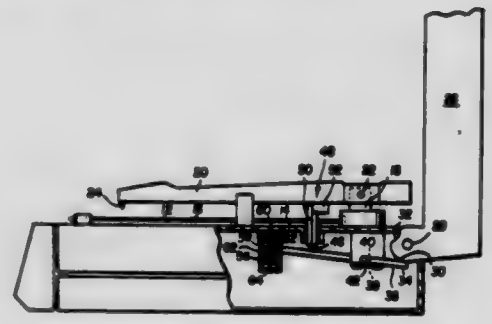
timer means for producing a dislocation signal when said output signal lasts longer than a first predetermined time period, said dislocation signal indicating dislocation of said pick-up point from said recorded region.

4,493,069

PHONOGRAPH

Gene L. Insley, East Aurora; Duane M. Seaburg, Oakfield, and Daniel S. Pearce, Buffalo, all of N.Y., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Jan. 27, 1983, Ser. No. 461,460
Int. Cl.³ G11B *1/04, 17/06*
U.S. Cl. 369—75.1
7 Claims



1. A phonograph having a rotatably mounted turntable for supporting a record comprising:

a tone arm assembly pivotally mounted on a spindle and having a needle at one end movable (1) into and out of engagement with a record upon pivotal movement of said tone arm assembly in a vertical plane, and (2) radially of the record across a record playing portion upon rotation of said tone arm assembly through a predetermined angle in a horizontal plane;

a hinged cover for the phonograph movable between open and closed positions; and

means coupling said cover to a portion of said tone arm assembly comprised of

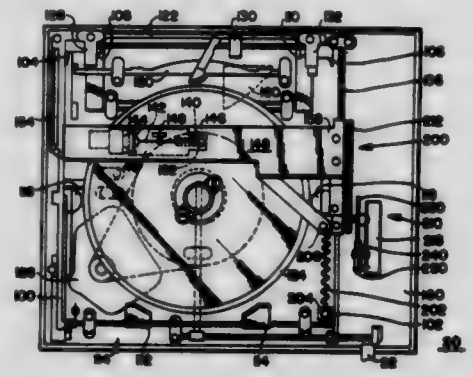
a cam coaxial with said cover hinge, a lifter member having (1) a vertically reciprocally movable post, and (2) a horizontally extending lifter bar for engaging said tone arm assembly, and a pivotal lever having one end engageable by said cam and an opposite end engageable with said post, whereby in any selected radial position of said tone arm assembly on said record playing portion movement to said cover to its closed position causes said needle to engage said record, and movement of said cover to its open position causes said needle to disengage said record.

4,493,070

VIDEO DISC PLAYER HAVING CARRIAGE DRIVE MECHANISM

William A. Dischert, Johnstown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 7, 1984, Ser. No. 607,880
Int. Cl.³ G11B *17/06, 21/04*
U.S. Cl. 369—77.2
8 Claims



1. A player for use with a record caddy; said player including a housing having an input slot into which an occupied record caddy is manually inserted in a first direction along a caddy insertion path for loading an enclosed record therein and into which an empty caddy is manually inserted for re-

trieving a loaded record therefrom; means for guiding caddy insertion into said housing along said caddy insertion path; a signal pickup for recovering prerecorded information from a rotatably-supported record during playback; a carriage for supporting said signal pickup; means for guiding said carriage along a second path lying substantially parallel to said caddy insertion path; apparatus for translating said carriage during playback away from a starting position along said carriage guiding means; the location of said caddy guiding means relative to that of said carriage guiding means being such that when an empty caddy is manually inserted into said player after playback for record retrieval, it engages said carriage to drive it back to said starting position; said carriage translating apparatus comprising:

(A) means coupled to said carriage for storing energy as an empty caddy engages said carriage to drive it back toward said starting position thereof in the caddy insertion direction; said energy storing means applying a force to said carriage in a sense urging its travel away from said starting position in a direction opposite to said caddy insertion direction; and

(B) a selectively-actuated speed control means coupled to said carriage for controlling the rate of movement of said carriage during playback as said energy storing means drives said carriage in said opposite direction away from said starting position; said selectively-actuated speed control means allowing an empty caddy to drive said carriage back to said starting position; said control means preventing said energy storing means from driving said carriage away from said starting position until said actuation thereof.

4,493,071

PICKUP CARTRIDGE

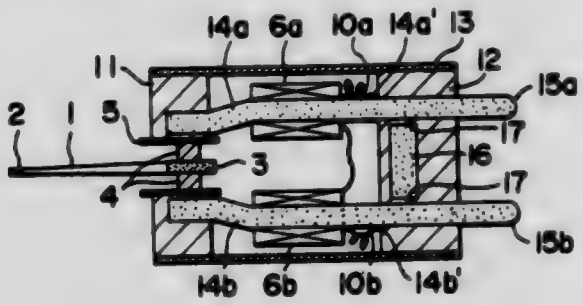
Yoshihisa Mori, Tokyo; Hachiniro Kobayashi, Machida, and Mitsuru Takashima, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 23, 1982, Ser. No. 351,427

Claims priority, application Japan, Mar. 18, 1981, 56-37744[U]

Int. Cl.³ H04R 11/12

U.S. Cl. 369—146 7 Claims



1. A pickup cartridge comprising:

pole pieces formed of magnetically and electrically conductive material;

a magnetic yoke cooperating with said pole pieces to form a magnetic flux path therewith and being electrically isolated from said pole pieces;

coils on said pole pieces, respectively, for producing an electrical signal in response to a varying magnetic flux in said pole pieces, said coils being electrically connected with said pole pieces, respectively;

means extending adjacent portions of said pole pieces for varying a magnetic flux in said pole pieces in accordance with information recorded on a record medium; and

output means extending from and electrically connected with other portions of said pole pieces for feeding said electrical signal from the cartridge through an electrical circuit which includes said pole pieces.

4,493,072

TURNTABLE DEVICE HAVING ROTARY RECORDING MEDIUM SIZE CHANGEOVER CAPABILITY IN A ROTARY RECORDING MEDIUM REPRODUCING APPARATUS

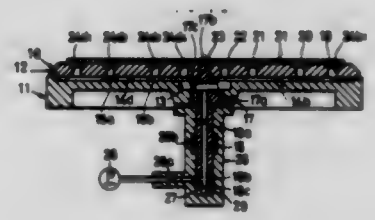
Norio Shibata, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jun. 3, 1981, Ser. No. 269,896

Claims priority, application Japan, Jun. 3, 1980, 55-76861[U]

Int. Cl.³ G11B 3/62

U.S. Cl. 369—271 7 Claims



1. A turntable device having rotary recording medium size changeover capability in a rotary recording medium reproducing apparatus, said turntable device comprising:

a turntable adapted to be driven in rotation, said turntable having an upper surface, a turntable sheet carried on said upper surface of said turntable,

said turntable sheet having an upper surface for carrying and supporting a rotary recording medium thereon for unitary rotation therewith:

a spindle for said turntable;

air suction means; and

communicating structure means for providing communication between said air suction means and enclosed spaces formed between said turntable sheet and said rotary recording medium;

said turntable sheet having holes provided at positions along different radial directions thereof according to different sizes of said rotary recording medium, said holes extending through said turntable sheet, and a plurality of suction grooves of predetermined patterns communicating with said holes, said turntable sheet being angularly adjustable to different angular positions on said turntable according to the size of said rotary recording medium,

said turntable having grooves of a pattern communicating with the holes of said turntable sheet at positions according to the size of said rotary recording medium, in accordance with different angular positions of said turntable sheet carried on the upper surface of said turntable according to the size of said rotary recording medium;

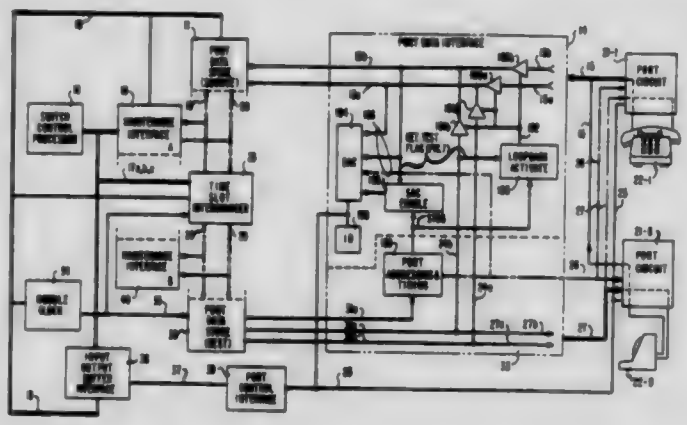
the arrangement of the grooves in the turntable and the holes in the turntable sheet being such that the angular adjustment of the turntable sheet as a unit will place the entire turntable sheet in a plurality of selected positions each of which corresponds to a particular diameter of recording medium and establishes selective communication between the holes in the sheet and the grooves in the turntable to provide suction at the upper surface of the turntable sheet over a diametral extent corresponding to the particular diameter of the recording medium.

4,493,073

MAINTENANCE OF STORED PROGRAM CONTROLLED SWITCHING SYSTEMS

Ronald K. Witmore, Lafayette, and Jerome J. Zelenski, Broomfield, both of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 30, 1982, Ser. No. 413,156
Int. Cl.³ H04J 3/14
U.S. Cl. 370—14 13 Claims



1. A switching system adapted to establish time division connections among a plurality of port circuits via individual time slot paths, comprising:

means for transporting a test vector along a selected one of said time slot paths, and

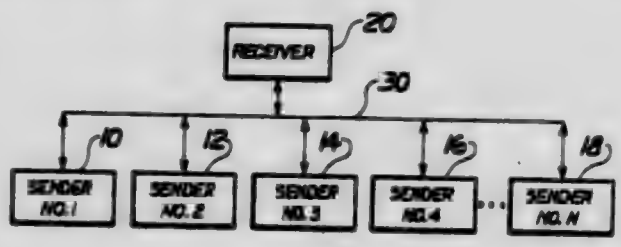
a plurality of signature analysis means disposed along said selected path, each of said signature analysis means being operative for providing a signature analysis of said test vector, whereby the location of a fault along said selected path can be determined by comparing each provided signature analysis with an expected signature analysis.

4,493,074

CONTENT INDUCED TRANSACTION OVERLAP COMMUNICATION SYSTEM

Chris J. Walter, Columbia; Colleen R. Wilson, Westminister, and Semyon Berkovich, Rockville, all of Md., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 3, 1982, Ser. No. 439,012
Int. Cl.³ H04J 3/00
U.S. Cl. 370—119 27 Claims



1. A method for transmitting data from a plurality of senders to a receiver over a single communication channel characterized by the steps of:

storing in a data register in each sender a multibit data word indicative of the data to be transmitted to the receiver, each bit having one of two possible states;

storing in a word boundary register in each sender the number of bits in said data word;

storing in a bit position register in each sender the number of bits in said data word;

transmitting the highest order data bit in said data register to said communication channel;

detecting the state of the communication channel by each Sender to determine when the state of the communication channel is the same as the state of the transmitted data bit;

transmitting the next highest data bit when the state of the channel is the same as the state of the transmitted data bit;

decrementing said word boundary register and bit position register for each transmitted data bit whose state was the same as the state of communication channel;

terminating the transmission of the remaining data bits by each sender whose transmitted data bit is different from the state of the communication channel;

waiting by each sender which has terminated the transmission of its remaining data bits until the transmission of the data word currently being transmitted is completed;

perform bit competition in response to the end of the transmitted data word to determine if the content of the senders bit position register is lexicographically indicative of the next smallest data word;

transmitting the remaining data bits to the communication channel when said bit competition affirms that its data word is indicative of the next lexicographically smallest data word; and

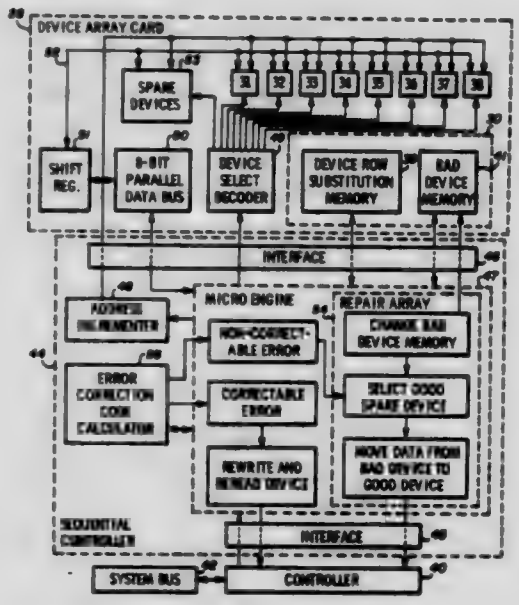
repeating said steps of detecting the state of the channel, transmitting the next highest data bit, terminating transmission, waiting by each sender, and performing bit competition until all of the senders have completed the sending of its stored data word.

4,493,075

SELF REPAIRING BULK MEMORY

James M. Anderson, Campbell; Thomas S. Knight, III, Sunnyvale; Dennis T. Kitagawa, and Ernesto Rey, both of San Jose, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 17, 1982, Ser. No. 379,202
Int. Cl.³ G11C 29/00; G06F 11/20
U.S. Cl. 371—10 16 Claims



1. A bulk memory system comprising in combination:

at least one array of storage devices, each of said devices having a multiplicity of memory cells arranged in a pattern of rows and columns;

data transfer means connected to all of the devices in the array;

row and column address supplying means connected to all of the devices in the array;

device selecting means operable to select and enable one device at a time, so as to connect said one device to the data transfer means, for the purpose of communicating with the memory cell addressed by said row and column address supplying means in the one device;

sequencing means connected to said address supplying means, operable to increment the address sequentially through successive memory cells so as to connect the successive cells to the data transfer means;

serial to parallel data conversion means connected to said transfer means so as to permit conversion of the serial bits

from said successive memory cells into parallel words; and

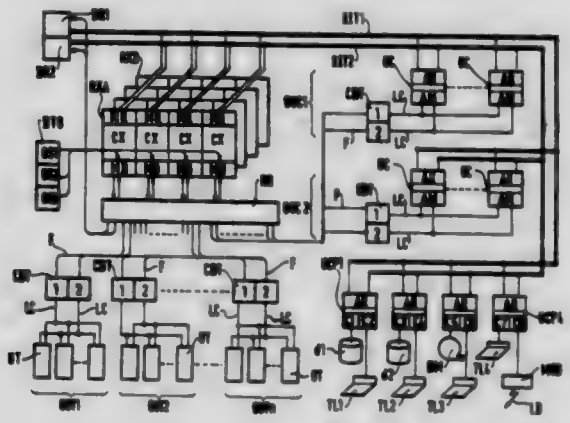
sequential controlling means connected to said address supplying means, said selecting means, said sequencing means, and said conversion means, responsive to external system requests for memory data to coordinate the enabling of devices and incrementing of addresses in such a way as to present parallel words to the external system.

4,493,076

SECURITY SYSTEM FOR A DISTRIBUTED CONTROL EXCHANGE

Abdel-Cader Khimèche, Chatenay Malabry, and Marc Kemler, Velizy-Villacoublay, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Sep. 20, 1982, Ser. No. 420,212
Claims priority, application France, Sep. 18, 1981, 81 17644
Int. Cl.³ G06F *11/20*
U.S. Cl. 371—11 8 Claims



1. A security system for distributed control exchange having a time-division switching network, the exchange comprising:

a switching network, comprising switches and markers, said markers controlling the switching network;

groups of terminal units, each terminal unit comprising a plurality of terminals controlled by a microprocessor and being connected to the switching network via multiplex links;

peripherals including at least dialog terminals and data links via modems; and

exchange control means comprising a plurality of interchangeable control units and a plurality of peripheral control units for controlling the peripherals;

the interchangeable and the peripheral control units being connected to one another by two point-to-point links and being connected to the switching network by multiplex links, and each control unit and each peripheral control unit including a controlling microprocessor;

wherein each peripheral control unit, each interchangeable control unit, each point-to-point link, each switch, each multiplex link, each terminal unit, each terminal, and each peripheral constitutes a security block capable of being independently monitored for faults and wherein the security system is comprised of a multi-stage fault monitoring and fault reaction system, comprising;

a first level comprising security means in each microprocessor for detecting faults and for taking decisions concerning current processing;

a second level comprising means for managing said security blocks and for switching over from one block to another and for re-configuring the links affected by the switch-over; and

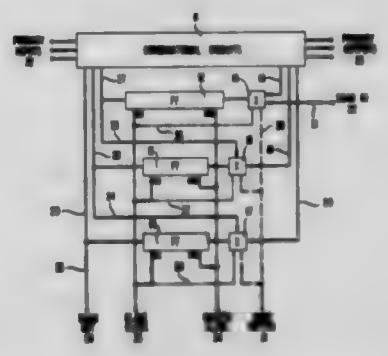
a third level comprising means for managing the microprocessors of the exchange control means and the two point-to-point links, said third level means comprising a pair of mass memories each containing a copy of the software needed to run the exchange, and a pair of peripheral control units for respectively controlling said mass memories.

4,493,077

SCAN TESTABLE INTEGRATED CIRCUIT

Vishwani D. Agrawal, New Providence, and Melvin R. Mercer, Warren, both of N.J., assignors to AT&T Laboratories, Murray Hill, N.J.

Filed Sep. 9, 1982, Ser. No. 416,271
Int. Cl.³ G01R *31/28*; G06F *11/00*
U.S. Cl. 371—25 9 Claims



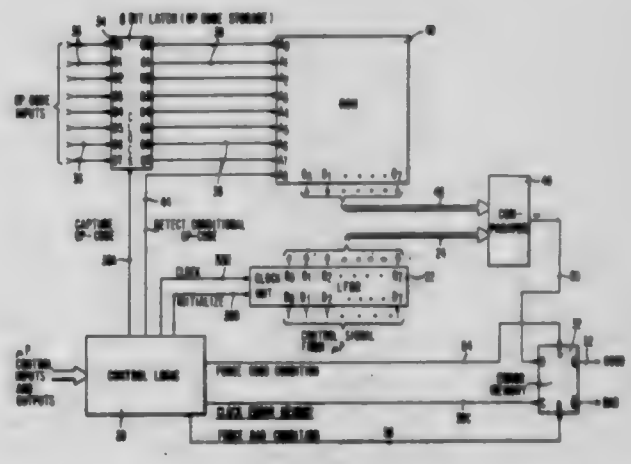
1. An integrated circuit adapted for scan testing and including combinational logic and storage elements normally interconnected for processing normal input data under control of a pair of control signals of which normally only one is active at a given time, comprising means responsive to a condition when both said control signals are active effectively to disconnect the storage elements from the associated combinational logic and to reconfigure the storage elements into one or more shift registers, and means for applying scan test data into said one or more shift registers and for passing such data therethrough for detection at an output.

4,493,078

METHOD AND APPARATUS FOR TESTING A DIGITAL COMPUTER

Stuart F. Daniels, Moorestown, N.J., assignor to Siemens Corporation, Iselin, N.J.

Filed Sep. 29, 1982, Ser. No. 428,036
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—25 29 Claims



1. A method for testing a digital computer having (a) processor means for executing instructions and (b) memory means, associated with said processor means, for storing the instructions to be executed by said processor means, said instructions being selected from a prescribed set of instructions, each separate instruction in said set being defined by a unique operation code; wherein said processor means includes a plurality of control signal outputs and means for generating control signals at said outputs upon execution of each instruction;

said method comprising the steps of

(a) detecting when an operation code for an instruction to be executed by said processor means is fetched from said memory means;

(b) monitoring said control signals appearing at said outputs during the execution of said instruction and producing a first signature code in response thereto, wherein one unique first signature code corresponds to each unique set of control signals;

(c) receiving the operation code of the instruction to be executed by said processor means and producing a second signature code in response thereto, said second signature code corresponding to what said first signature code would be if said processor means were operating properly;

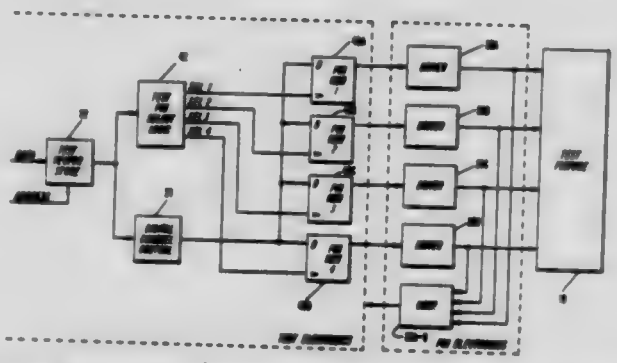
(d) comparing said first and said second signature codes and producing an output signal indicative of error if they are unequal.

4,493,079

METHOD AND SYSTEM FOR SELECTIVELY LOADING TEST DATA INTO TEST DATA STORAGE MEANS OF AUTOMATIC DIGITAL TEST EQUIPMENT

John H. Hughes, Jr., Cohoes, N.Y., assignor to Fairchild Camera & Instrument Corp., Clifton Park, N.Y.

Filed Aug. 18, 1982, Ser. No. 409,068
Int. Cl.³ G06F 11/00
U.S. Cl. 371—27
8 Claims



1. In a digital test system including a plurality of test pins and test data storage means individually associated with each of the test pins, a system for selectively loading test data into the test data storage means comprising:

means for associating a digital test pin selection signal with said test data; and,

control means responsive to the digital test pin selection signal for controlling the selective loading of said test data into test data storage means associated with a test pin designated by the test pin selection signal, whereby test data may be loaded into any of a plurality of test data storage means in any sequence.

4,493,080

ERROR CORRECTING CODE DECODER

Russell J. Campbell, Kanata, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

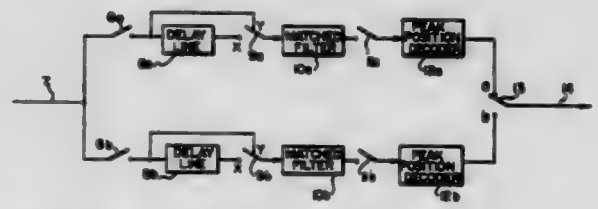
Continuation-in-part of Ser. No. 323,809, Nov. 23, 1981, abandoned. This application Sep. 23, 1982, Ser. No. 422,465
Claims priority, application Canada, Dec. 8, 1980, 366304
Int. Cl.³ G06F 11/10
U.S. Cl. 371—37
36 Claims

1. A coded signal decoder comprising:

(a) first means for concatenating a cyclic block coded input signal, having a period of a predetermined codeword, with itself,

(b) a first filter matched to a first predetermined code sequence of said signal connected to receive the concatenated signal,

(c) a first peak position decoder connected to receive an output signal from the matched filter for providing an indication of the position of an autocorrelation peak corresponding to said code sequence relative to the input signal code, whereby the particular code is designated.

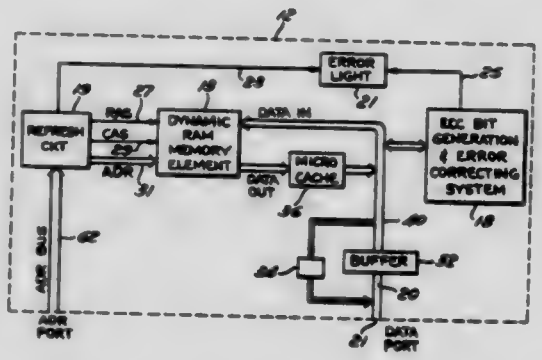


4,493,081

DYNAMIC MEMORY WITH ERROR CORRECTION ON REFRESH

Frederick W. Schmidt, Mission Viejo, Calif., assignor to Computer Automation, Inc., Irvine, Calif.

Continuation of Ser. No. 277,614, Jun. 26, 1981, abandoned. This application Jan. 11, 1984, Ser. No. 569,924
Int. Cl.³ G06F 11/10
U.S. Cl. 371—38
12 Claims



1. A memory for correcting stored data during refresh cycles including:

dynamic storage array means having data words stored in rows and columns of address locations, data inputs and outputs, address inputs, row address strobe inputs and column address strobe inputs, said storage array means for storing and retrieving data words at selected row and column addresses and for refreshing the data stored in a selected row at predetermined times and for receiving a selected data word from the row being refreshed during each refresh cycle and for correcting it and re-storing it at the same address and for presenting data at said data output from the address selected by signals at said address inputs;

an address bus for guiding memory address signals;

a clock;

refresh counter means coupled to said address inputs and to said clock for supplying sequential addresses to said address inputs during said refresh cycles;

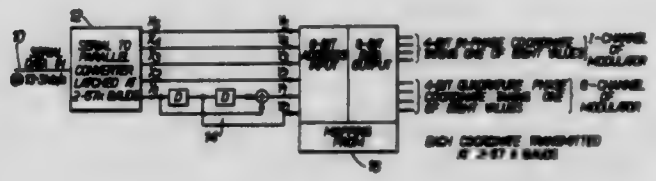
means coupled to said address bus and coupled to said row address strobe inputs for supplying said row address strobe signals to said row address strobe inputs; and

means coupled to said address bus and coupled to said refresh counter means for supplying column address strobe signals to said column address strobe inputs.

4,493,082
SOFT DECISION CONVOLUTIONAL CODE TRANSMISSION SYSTEMS

John Cumberton, Danbury, Conn.; Alan E. Foster, Groot-Bijgaarden, Belgium; Alexander S. Rae, Farnham, England; Vernon J. Fernandes, Tilehurst, England, and Michael R. Carter, Maidenhead, England, assignors to Plessey Overseas Limited, Ilford, England

Filed Nov. 13, 1981, Ser. No. 320,923
Claims priority, application United Kingdom, Nov. 14, 1980, 8036705
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—43 12 Claims

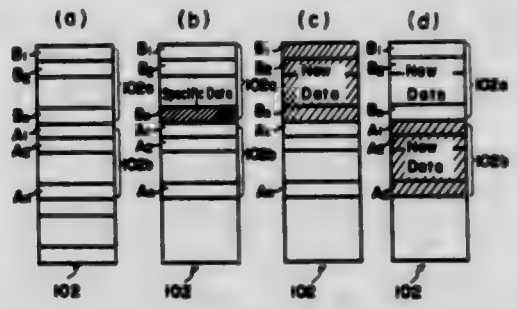


1. A transmission system for the transmission of data or digitized analogue information from a transmitter to a receiver including a transmitter containing a convolutional encoder and a signal mapping device connected thereto to produce a two dimensional coded output signal, and including a receiver containing a convolutional decoder with soft decision decoding, connected to a reverse mapping means to produce output data, said transmitter including a serial-to-parallel converter producing n binary outputs only one of which is fed to the convolutional encoder which produces two binary output bits which are combined with the n−1 remaining bits and fed to the signal mapping device to produce the two dimensional coded output signal, the n−1 bits defining a square within a grid, within which square the two bits produced by the convolutional encoder define the position of the signals to be transmitted.

4,493,083
SYSTEM FOR UPDATING DATA IN BUBBLE MEMORIES

Mitsuo Kinoshita, Hachioji, Japan, assignor to Fanuc Ltd., Tokyo, Japan

PCT No. PCT/JP81/00340, § 371 Date Jul. 27, 1982, § 102(e) Date Jul. 27, 1982, PCT Pub. No. WO82/01958, PCT Pub. Date Jun. 10, 1982
PCT Filed Nov. 18, 1981, Ser. No. 403,661
Claims priority, application Japan, Nov. 28, 1980, 55-167770
Int. Cl.³ G11C *29/00*; G06F *11/00*
U.S. Cl. 371—66 3 Claims



1. A data update method for updating data stored in a bubble memory with new data, the bubble memory having first and second data storage areas, the data update method in the bubble memory comprising the steps of:

writing initialization data in the first data storage area of the bubble memory before updating of the data;

updating the data, comprising the steps of:

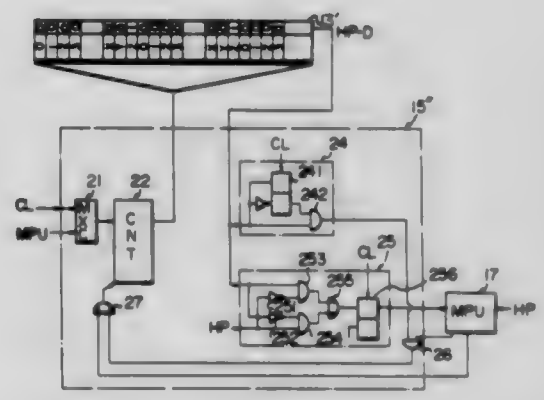
writing the new data into the first data storage area, the initializaton data being erased by completing the writing of the new data; and

writing the new data into the second data storage area.

4,493,084
BELT SYNCHRONOUS CHECK SYSTEM FOR A LINE PRINTER

Tomomichi Adachi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 8, 1982, Ser. No. 415,930
Claims priority, application Japan, Sep. 10, 1981, 56/142926
Int. Cl.³ B41J *1/20*
U.S. Cl. 371—67 5 Claims



1. A belt synchronous check system for a line printer including a type-belt having a plurality of character sets each of which has the same characters, the line printer further including first signal generating means for generating signals indicating the locations of individual characters, second signal generating means for generating signals indicating the reference marks of the character sets, and a belt image memory for storing the character codes of the characters, the belt synchronous check system comprising:

counter means, operatively connected to the first signal generating means and the belt image memory, for receiving and counting the signals from the first signal generating means and outputting a signal corresponding to the reference marks of the character sets in the belt image memory;

flag-generating means, provided in the belt image memory and operatively connected to said counter means, for generating flag bits corresponding to the reference marks of the character sets in dependence upon the signal from said counter means corresponding to the reference marks of the character sets;

determination means, operatively connected to said flag-generating means in the belt image memory and to the second signal generating means, for receiving the flag bits and for comparing the flag bits with the signals from the second signal generating means and providing an output signal if the flag bits and the signals from the second signal generating means are the same; and

control means, operatively connected to said determination means and said counter means, for receiving the output signal from said determination means and clearing said counter means.

4,493,085
AGILE BEAM LASER

George C. Valley, Los Angeles, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed May 19, 1982, Ser. No. 379,588
Int. Cl.³ H01S *3/00*, *3/098*
U.S. Cl. 372—19 14 Claims

1. Laser apparatus comprising:

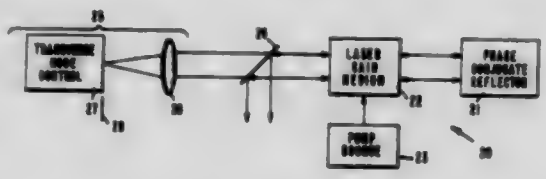
phase conjugate reflecting means for reflecting laser energy which is the phase conjugate of laser energy incident thereupon;

optical means for providing a plurality of selectable transverse lasing modes between said optical means and said

phase conjugate reflecting means, each of said plurality of transverse lasing modes having a predetermined wavefront tilt in the near field;

laser gain medium disposed between said optical means and said phase conjugate reflecting means for providing said laser energy which is reflected therebetween;

laser pumping means operatively connected to said lase gain medium for providing excitation energy for said laser medium; and



output coupling means disposed adjacent to said optical means in said near field for coupling a portion of said laser energy out of said laser apparatus as an output beam therefrom;

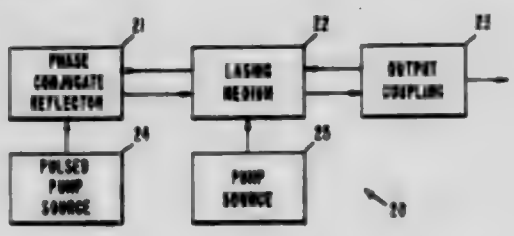
whereby said output beam is steerable in position determined by the particular transverse lasing mode selected by said optical means.

4,493,086

SYNCHRONOUSLY-PUMPED PHASE-CONJUGATE LASER

Ravinder K. Jain, Calabasas, and Concetto R. Giuliano, Malibu, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed May 20, 1982, Ser. No. 379,837
Int. Cl.³ H01S 3/00, 3/091
U.S. Cl. 372—21 20 Claims



1. Laser apparatus comprising a lasing medium disposed along an optical path, phase-conjugate reflecting means disposed at one end of said optical path adjacent to said lasing medium for reflecting laser energy which is the phase conjugate of laser energy incident thereupon, and output coupling means disposed at the other end of said optical path adjacent to said lasing medium in order to form a laser resonator between said phase-conjugate reflecting means and said output coupling means for reflecting a substantial portion of the laser energy incident thereupon to sustain laser operation and for transmitting a portion of the laser energy as an output beam, wherein the improvement comprises:

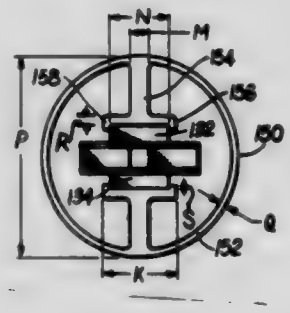
pumping means for applying laser pulses to said phase-conjugate reflecting means and to said lasing medium, said laser pulses having a relatively high peak power and relatively low average power, said laser pulses having a predetermined periodicity which matches the round-trip time for laser energy traversing said resonator, said laser pulses being applied to said phase-conjugate reflecting means and said lasing medium when the laser energy traversing said resonator is present therein.

4,493,087

RF EXCITED WAVEGUIDE GAS LASER

Katherine D. Laakmann, and Peter Laakmann, both of Laguna Niguel, Calif., assignors to Walwel, Inc., San Juan Capistrano, Calif.

Continuation of Ser. No. 103,162, Dec. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 78,343, Sep. 24, 1979, Pat. No. 4,373,202. This application May 27, 1982, Ser. No. 382,529
Int. Cl.³ H01S 3/03
U.S. Cl. 372—64 1 Claim



1. In a waveguide laser structure of the type having means for defining an elongated chamber of a specified length and of cross-sectional dimensions suitable for guiding laser light and for generating therein a laser exciting discharge and an active laser gas disposed in said chamber, said laser gas having a laser transition capable of providing stimulated emission of quanta of light energy at a desired wavelength, wherein the improvement comprises:

means for establishing an alternating electric field in said chamber to establish the laser-exciting discharge in said laser gas; and

an elongated generally cylindrical elastic metal tube housing of generally constant circular cross-sectional dimensions having a longitudinally extending axis therethrough and including a pair of elongated spaced-apart parallel shelves inwardly extending from diametrically opposed locations along interior portions of said tube along the length of said tube in a direction generally parallel to said longitudinal axis and wherein the inner distance between the spacing of such shelves is normally constant along said length but increases as opposed external forces are applied to the tube in a plane intermediate said shelves, wherein said shelves are configured and dimensioned to retain said means for defining an elongated chamber in compressive engagement along the entire chamber length absent such opposed forces.

4,493,088

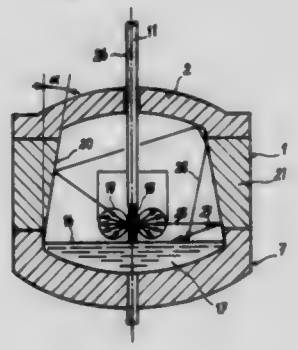
PLASMA MELTING FURNACE

Walter Lugscheider, Linz; Helmut D. Klichen, Asten; Ernst Riegler, Enns, and Ernst Zajicek, Ottensheim, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jan. 4, 1982, Ser. No. 336,901
Claims priority, application Austria, Jan. 13, 1981, 99/81
Int. Cl.³ F27D 1/00, 7/00
U.S. Cl. 373—22 3 Claims

1. In a plasma melting furnace of the type including a furnace interior having an axis, a furnace lining surrounding said furnace interior and having an inner surface, and at least one plasma burner penetrating said furnace lining to a point above the surface of a bath within said furnace interior, in particular a plasma burner projecting vertically into said furnace interior, the improvement which is characterized in that said inner

surface of said furnace lining is conical and inclined, converging upwardly at a convergent angle α, whereby heat radiation



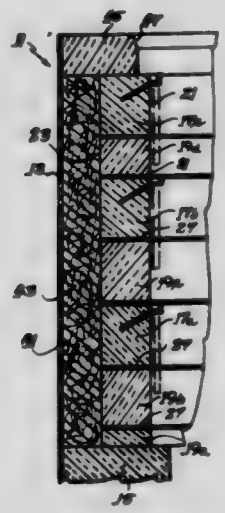
emanating from said plasma burner on a horizontal plane perpendicular to said axis is reflected into said bath.

4,493,089

ELECTRIC FURNACE INSULATION

R. Bruce Abell, Algonquin, Ill., assignor to Refractory Porodacts Co., Elgin, Ill.

Filed Mar. 21, 1983, Ser. No. 477,123
Int. Cl.³ H05B 3/66; F27D 1/00
U.S. Cl. 373—130 18 Claims



1. An electric resistance heated furnace which comprises an outer shell having a top opening for access to the interior thereof,

a plurality of prefabricated, form-retaining, self-supporting, integral insulation rings made of ceramic fibers bonded together with an inorganic binder to form a rigid one-piece body having substantially flat top and bottom surfaces and cylindrical interior and exterior surfaces, at least some of said integral rings having a plurality of holes provided therein which extend generally radially outward from said interior surface at circumferentially uniformly spaced-apart points, said holes being disposed so that the centerlines thereof are downwardly inclined from said interior surface and oriented at an angle of between about 25° and about 65° thereto, said integral rings having an outer diameter less than the inner diameter of said shell and being spaced therefrom to provide an annular region therebetween, said rings being stacked vertically one atop another with the interior surfaces thereof defining a cylindrical furnace cavity and with each said integral ring supporting the weight of the overlying rings,

fibrous insulation within said annular region,

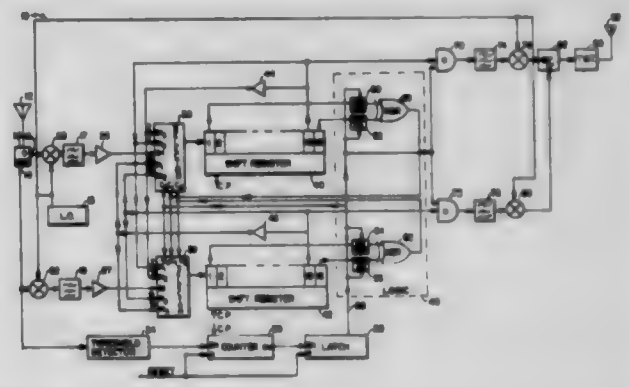
a plurality of high-temperature-resistant hangers each having a straight, elongated end section disposed in one of said holes, a short intermediate section formed at an angle of between about 115° and about 155° to said elongated end section, and an upturned interior end section at the other end of said intermediate section, and electric resistance ribbon heating elements hanging in depending loops from said intermediate sections.

4,493,090

MEMORY SYSTEM

Bruce E. Gordon, Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 27, 1982, Ser. No. 453,551
Int. Cl.³ H04B 13/00
U.S. Cl. 375—4 4 Claims



1. Apparatus comprising:

means for storing first and last samples of a recorded segment of a periodic signal;

means, responsive to the stored first and last samples, for producing a control signal indicative of the difference between the first and last samples; and

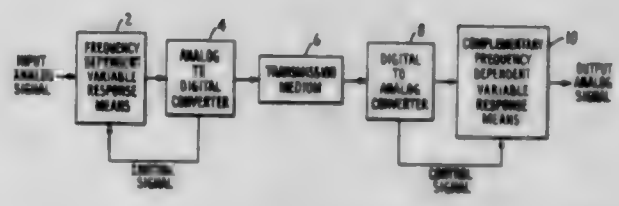
means, responsive to the control signal, for sequentially reading from the storing means a portion of the recorded segment, each sequentially read portion of the recorded segment having a phase shift relative to the phase shift of a preceding sequentially read segment related to the difference between the stored first and last samples, producing an output signal for a time duration greater than the recorded segment of the periodic signal and having the same frequency as the frequency of the periodic signal.

4,493,091

ANALOG AND DIGITAL SIGNAL APPARATUS

Kenneth J. Gundry, San Francisco, Calif., assignor to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

Filed May 5, 1982, Ser. No. 375,037
Int. Cl.³ H04B 12/02; H03G 7/00
U.S. Cl. 375—30 26 Claims



1. An analog to digital conversion system comprising:

analog to digital converter means having characteristics that adapt to an applied signal, said converter means including means for generating a control signal derived from said applied signal for controlling said characteristics, and

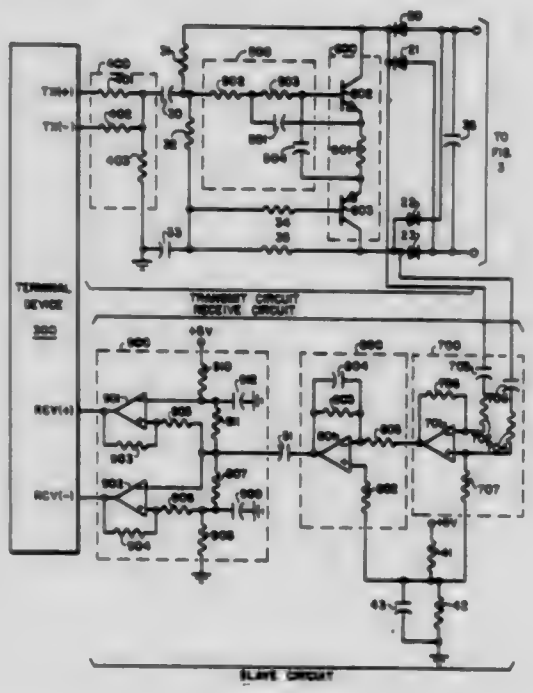
frequency dependent variable response means for processing a signal prior to its application to said converter means, said variable response means having the shape of its response characteristic varying in response to said control signal.

4,493,092

INTERFACE CIRCUIT FOR DIGITAL SIGNAL TRANSMISSION SYSTEM

Tallo D. Adams, Seminole, Fla., assignor to GTE Automatic Electric, Inc., Northlake, Del.

Filed Dec. 17, 1982, Ser. No. 450,615
Int. Cl.³ H04L 5/14
U.S. Cl. 375—36
24 Claims



1. An interface circuit for digital signal transmission system for use between first and second digital signaling devices, each device being operative to provide digital device signals of first, second and third characteristics, said digital signal transmission system comprising:

first and second line interface devices connected to said first and second digital signaling devices, respectively;

a transmission line connected between said first and second line interface devices;

each of said first and second line interface devices being operative in response to said digital device signal of said first characteristic to provide bias current in said transmission line; and each being further operative in response to said digital device signals of said second and third characteristics to modulate said bias current with modulation signals of first and second characteristics, respectively; and each of said first and second line interface devices being further operative in response to said bias current to provide a digital interface signal of a first characteristic and each being further operative in response to said modulation signals of said first and second characteristics to provide digital interface signals of second and third characteristics, respectively; said digital signaling devices each being further operative to receive said digital interface signals of said first, second and third characteristics.

4,493,093

ZERO OVERHEAD SYNC IN DATA RECORDING

Dominique H. Veillard, San Diego, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 8, 1982, Ser. No. 440,143
Int. Cl.³ H04L 7/02
U.S. Cl. 375—110
10 Claims

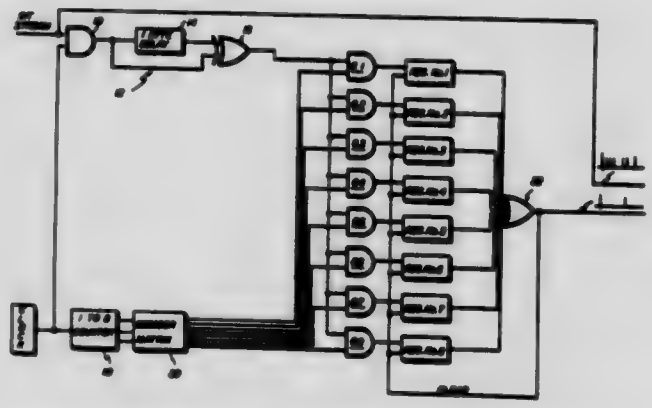
1. Apparatus adapted to receive a bit stream comprised of a succession of bytes which are each comprised of N bits per byte, there being no synchronizing data between said bytes to signify where one byte begins and another byte ends, said bits occurring at a predetermined bit rate,

said apparatus being further adapted to identify the start and end of said bytes and being comprised of:

(a) means for comparing on a byte-by-byte basis like order bits of said bit stream, and for producing a pulse each time any given order bit changes from one byte to the next byte, thereby to produce a succession of pulses,

(b) N means for accumulating counts in predetermined corresponding with said pulses,

(c) means for cyclically operating, one after the other, in timed relation to said bit stream, respective means for accumulating counts, and



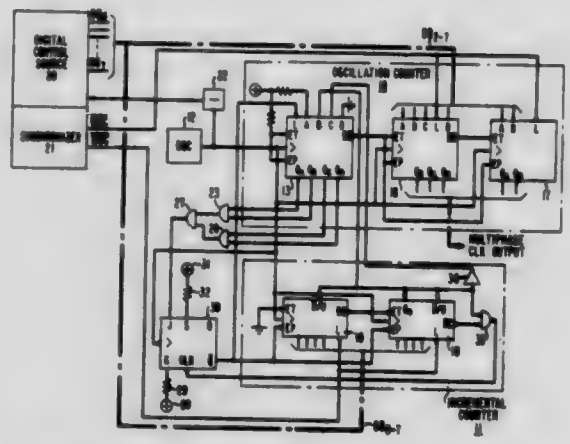
(d) means, cooperative with said means for accumulating counts, responsive to a predetermined threshold count in one of said means for accumulating counts, for producing a sync pulse when said threshold count is reached, thereby to signify that the bit occurring at the time of said threshold count corresponds in a certain timed relationship with the start of one byte and the end of another byte.

4,493,094

CLOCK PHASE CONTROL WITH TIME DISTRIBUTION OF PHASE CORRECTIONS

David J. Thomson, New Providence, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 26, 1982, Ser. No. 411,531
Int. Cl.³ H03K 5/135
U.S. Cl. 375—119
4 Claims



1. A clock phase control system comprising

a programmable clock oscillation counter, and

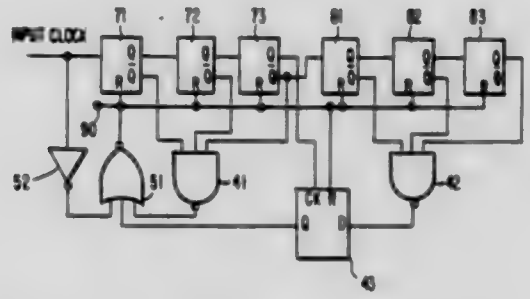
means, responsive to a single set of digital signals representing a phase error magnitude, for adjusting the phase of said oscillation counter in multiple periodic steps until a total adjustment equal to said magnitude has been achieved.

4,493,095

COUNTER HAVING A PLURALITY OF CASCADED FLIP-FLOPS

Akira Yamawa, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed May 14, 1982, Ser. No. 378,356
Claims priority, application Japan, May 14, 1981, 56-72503
Int. Cl.³ H03K *21/32, 21/34*
U.S. Cl. 377—107 17 Claims



1. A counter comprising

a first counter section including a plurality of cascaded flip-flops, said first counter section receiving and counting an input signal and producing a first output signal, said first counter section further including means for generating a second output signal having the same repetition frequency as said first output signal but having a phase opposite to said first output signal;

a second counter section including a plurality of cascaded flip-flops, said second counter section receiving and counting said second output signal from said first counter section;

a first detector producing a first partial output in response to a predetermined set of states of the flip-flops in said first counter section;

a second detector producing a second partial output in response to a predetermined set of states of the flip-flops in said second counter section; and

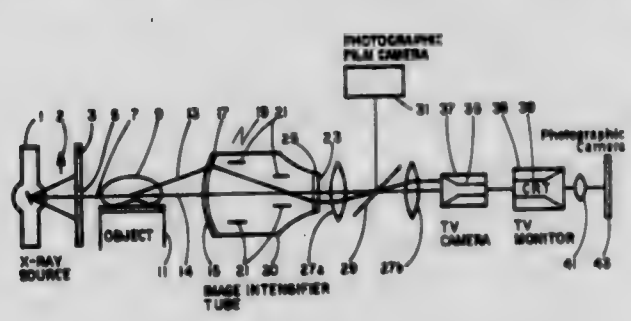
a third detector producing a count output in response to the concurrent existence of said first and second partial outputs.

4,493,096

METHOD OF X-RAY IMAGING USING SLIT SCANNING WITH CONTROLLED TARGET ERASE

Richard J. Rioks, Brookfield, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Dec. 17, 1982, Ser. No. 450,589
Int. Cl.³ A61B *6/00*; H04N *7/18*
U.S. Cl. 378—99 14 Claims



1. A method of imaging the internal features of an object undergoing examination, comprising the steps of:

(a) scanning said object with a substantially planar beam of x-ray radiation in a direction substantially orthogonal to the plane of said beam, such that a fraction of said radiation is transmitted through said object in accordance with the attenuative properties of the internal features thereof as primary imaging radiation;

(b) converting radiation emanating from said object, including said primary imaging radiation, to optical wavelength radiation suitable for detection by television camera means having a latent image storage element;

(c) erasing a predetermined region of said storage element immediately prior to exposing said region to said optical wavelength radiation, including that produced by said primary imaging radiation, wherein exposure of said storage element to said optical wavelength radiation in the course of a scan creates a complete latent image on said storage element of the internal features of said object scanned by said x-ray beam;

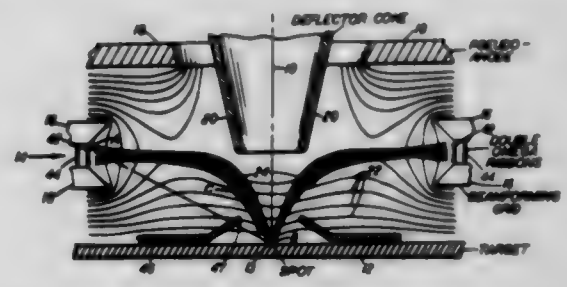
(d) reading out, upon completion of said step of scanning, said complete latent image so as to produce video signals suitable for displaying said latent image on television monitor means.

4,493,097

ELECTRON GUN ASSEMBLY

Robert H. Clayton, Ridgefield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Aug. 30, 1982, Ser. No. 412,461
Int. Cl.³ H01J *3/00*
U.S. Cl. 378—137 12 Claims



1. An electron gun assembly, having a system axis, for use in x-ray lithography comprising, in combination, an annular electron emitter assembly having its center substantially on said system axis, beam forming means encompassing said electron emitter assembly in a sandwich-like manner to form a bundle of electrons directed substantially radially inwardly toward said system axis, an anode target mounted substantially perpendicular to said system axis and in axially spaced relationship in a first direction with respect to the plane of said electron emitter assembly, deflector means having an elongated internal cavity disposed substantially concentrically about said system axis, said deflector means being mounted radially inwardly of said electron emitter assembly and axially near the plane of said electron emitter assembly, an annular pseudoanode mounted perpendicular to the system axis, said pseudoanode being radially outwardly disposed with respect to said deflector means and having its center disposed substantially on said system axis in axially spaced relationship in a direction opposite said first direction with respect to the plane of said electron emitter assembly, whereby electrons freed from said electron emitter assembly are drawn radially inwardly by the attractive electrostatic force generated by both said anode target and said pseudoanode and thereafter said deflector means deflects said electrons in an axial direction toward said anode target.

4,493,098

X-RAY COLLIMATOR

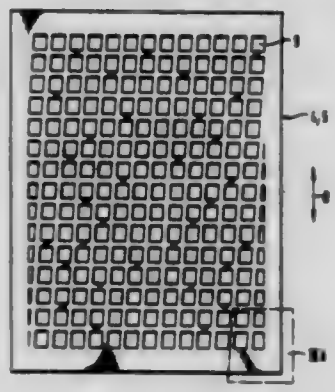
Esko Rihimäki, Espoo, and Osmi Korhola, Helsinki, both of Finland, assignors to Radiographic Screens Oy, 03, FIX

Filed Apr. 26, 1982, Ser. No. 372,203
Claims priority, application Finland, Apr. 29, 1981, 811339
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—146 9 Claims

1. In an X-ray device having a source of X-rays emitted from a focal point, first support means for supporting an object to be X-rayed and second support means for supporting film for receiving an X-ray image, the X-rays being emitted in an X-ray direction, an X-ray collimator comprising:

at least three perforated collimator plates each having a plurality of holes, at least one of said plates positioned between the focal point and the first support means and at least two of said plates positioned between the first and second support means, with said holes of each plate being at least as wide as a thickness of each plate; and

plate drive means connected to said at least three perforated plates for moving said plates in a collimator translation direction from a first extreme position to a second extreme position, said translation direction being substantially perpendicular to the X-ray direction, said plate drive means connected to said plates for maintaining said plates



parallel to each other and for maintaining said plurality of holes for each of said plates aligned with each other and aligned with respect to the focal point;

said plurality of holes of each of said plates being positioned on said plates to permit alignment of said holes with respect to the focal point;

said plurality of holes on each of said plates each being similar in shape to the other, said holes on each plate positioned in a plurality of rows and columns, said columns extending substantially perpendicular to said translation direction and said rows extending at an acute angle to said columns.

4,493,099

FM BROADCASTING SYSTEM WITH TRANSMITTER IDENTIFICATION

Johan M. Schmidt, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

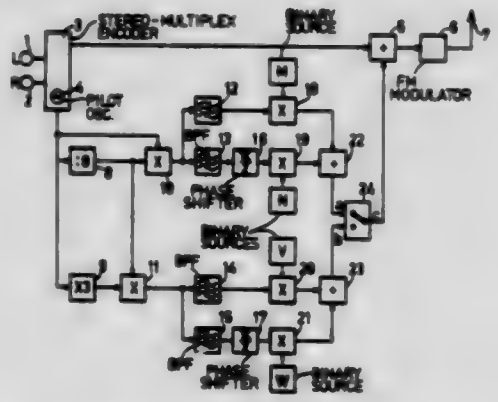
Filed Jan. 18, 1982, Ser. No. 340,165

Claims priority, application Netherlands, Jan. 29, 1981, 8100419

Int. Cl.³ H04H *5/00*

U.S. Cl. 381—14

4 Claims



1. An FM transmitter for an FM-broadcasting system for transmitting a multiplex signal which is frequency modulated on a main carrier wave comprising means for generating an audio-frequency first information signal and, in the case of a stereo transmission, a second information signal modulated on a suppressed stereo subcarrier wave, means for generating a stereo pilot signal whose frequency is situated between the frequency spectra of the two information signals, means for generating a first binary code signal which is phase-modulated on a first code subcarrier situated outside said frequency spectra, said code subcarrier being a harmonic of a subharmonic of the stereo pilot, which harmonic does not coincide with a harmonic of said pilot, characterized in that the transmitter further comprises means for generating at least a second binary code signal, which is independent of the first binary code signal and which is binary phase-modulated on a second code subcarrier, which two code subcarriers have frequencies which are situated symmetrically about the stereo pilot signal frequency or a harmonic thereof, the two resultants of the two code subcarriers being separated in phase by 90° and the two resultants of the subcarriers each being separated in phase from the stereo pilot signal by an odd integer multiple of $\pi/4$.

4,493,100

APPARATUS FOR CONTROLLING AIR CONDITIONER BY VOICE

Masakazu Moriyama, and Takao Saito, both of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushikik Kaisha, Toyota, Japan

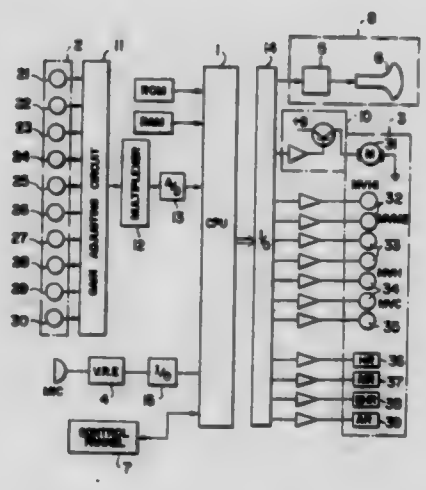
Filed Feb. 24, 1982, Ser. No. 351,883

Claims priority, application Japan, Mar. 9, 1981, 56-33471

Int. Cl.³ G10L *1/00*; G05D *23/00*

U.S. Cl. 381—43

14 Claims



1. Apparatus for controlling an air conditioner by voice command, the apparatus comprising:

(a) air mixing means for mixing cool air and hot air introduced to a space to adjust a temperature of air delivered from the air conditioner;

(b) voice recognizing means for recognizing a voice command and for delivering a command signal corresponding to the voice command, said voice command representing one of a command to increase the delivered air temperature and a command to decrease the delivered air temperature; and

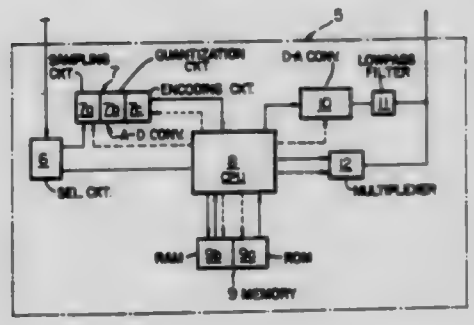
(c) control means for controlling said mixing means such that the delivered air temperature is stepwise increased in response to a command signal to increase the temperature and then is gradually decreased until the delivered air temperature is returned to a previously set level, and the delivered air temperature is stepwise decreased in response to a command signal to decrease the temperature and then is gradually increased until the delivered air temperature is returned to a previously set level.

4,493,101

ANTI-HOWL BACK DEVICE

Shigetaro Muraoka, 7-28, Ozuki 2-chome, Shinagawa-ku, Tokyo, and Mineo Sakamoto, 16-12, Saido 2-chome, Bunkyo-ku, Tokyo, both of Japan

Filed Oct. 14, 1982, Ser. No. 434,424
Claims priority, application Japan, Oct. 14, 1981, 56-163998
Int. Cl.³ H04B 15/00
U.S. Cl. 381—93 2 Claims



1. An anti-howl back device comprising:

a selector circuit for separating an input signal into a combination signal comprising a synchronous signal and an address signal and into an audio signal;

an A-D converter connected to said selector circuit for providing an A-D conversion of said audio signal;

a CPU connected to said A-D converter and said selector circuit;

a D-A converter connected to said CPU for providing a D-A conversion of signals which have been processed by said CPU;

a multiplexer for adding said combination signal comprising a synchronous signal and an address signal to an output signal from said D-A converter;

a memory system connected to said CPU for storing a program for operating said CPU and for storing data processed by said CPU;

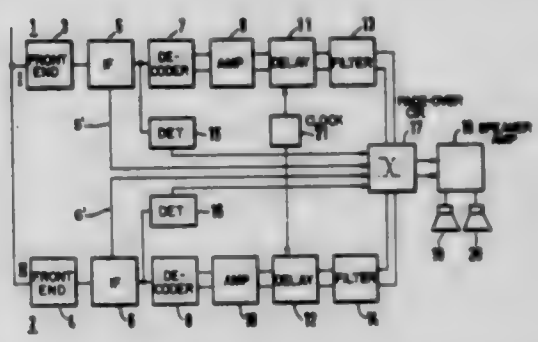
wherein said CPU makes a decision on the presence of said combination signal which is output from said selector circuit and, upon an affirmative result of such a decision, causes said A-D converter to carry out an A-D conversion of a sample of said audio signal obtained by a sampling performed in synchronism with said synchronous signal, and subtracts data fetched from an address in said memory system corresponding to said address signal which is combined with said synchronous signal from data which has been derived as a result of said A-D conversion, and stores new data corresponding to said subtraction in said memory system while concurrently feeding said new data to said D-A converter, and then causes said multiplexer to add an output from said D-A converter to said combination signal comprising said synchronous signal and said address signal and corresponding to the address of said new data that has been stored in said memory system; and, upon a negative result of such a decision, causes said A-D converter to carry out an A-D conversion of said audio sample and stores such new data thus obtained in said memory system while concurrently feeding such new data to said D-A converter, and then causes said multiplexer to add an output from said D-A converter to said combination signal comprising said synchronous signal and said address signal and corresponding to said address of said new data that has been stored in said memory system.

4,493,102

PROCESS AND APPARATUS FOR ALTERNATELY SWITCHING RADIO SIGNALS OVER RESPECTIVE AUDIO CHANNELS

Walter Weishaupt, and Wilfried Steins, both of Munich, Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 5, 1983, Ser. No. 482,002
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1982, 3212615
Int. Cl.³ H04B 7/08
U.S. Cl. 381—2 10 Claims



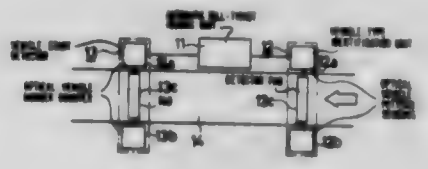
1. A process for switching over to alternate reproducing channels the reproduction of a first radio signal and a second radio signal of the same modulation content but of a different frequency mode, comprising the steps of, delaying the reproduction of the radio signals with respect to their reception by a first predetermined time period, detecting the occurrence of an interference in a corrupted one of said first and second radio signals, and decreasing the intensity of the corrupted one of said radio signal while increasing the intensity of the other interference-free radio signal to the same modulation during a second predetermined time period.

4,493,103

AUTOMATIC TOLL-TICKET ISSUING APPARATUS

Riichiro Yamashita, Takasago, and Osamu Satouchi, Kobe, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha

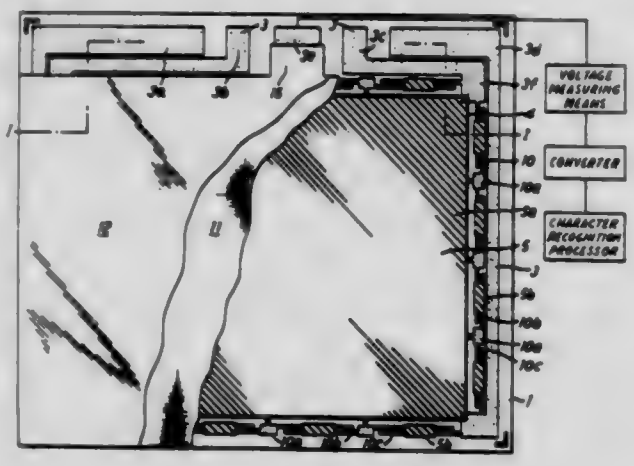
Filed Apr. 23, 1982, Ser. No. 371,246
Claims priority, application Japan, Apr. 28, 1981, 56-64732; May 13, 1981, 56-71765
Int. Cl.³ G09G 1/00; G06K 9/00
U.S. Cl. 382—1 6 Claims



1. An automatic toll-ticket issuing apparatus for location along a path of movement of vehicles in the forward direction comprises a vehicle-type identification unit for identifying the type of each oncoming vehicle, a toll-ticket issuing unit installed downstream along the vehicle path of movement from the identification unit, and a vehicle-start detector installed downstream along the vehicle path of movement from the issuing unit, said toll-ticket issuing unit comprising a plurality of toll-ticket issuing slots open at different heights, means for holding a stack of new, unused toll tickets including a hopper, means for feeding the tickets one by one out of the hopper, means for recording the vehicle-type information, interchange number, and other necessary information on each ticket being fed, conveying means for sequentially transporting recorded tickets, each to an issuing slot at the height determined in response to the vehicle-type information from the vehicle-type

identification unit, and means for retrieving and storing any ticket left unpulled from any issuing slot by any driver, in response to vehicle passage information.

4,493,104
CHARACTER RECOGNITION DEVICE
Lawrence J. Lukis, Grand Island, N.Y., and Gerard P. Dubig, London, England, assignors to Moore Business Forms, Inc., Grand Island, N.Y.
Filed Dec. 11, 1981, Ser. No. 329,807
Int. Cl.³ G06K 9/28
U.S. Cl. 382—13 6 Claims



1. A character recognition device comprising a writing pad having a pair of sheets and a layer of reticulated material with reticules, one of the sheets comprising an area of high resistivity and the other one of the sheets comprising a layer of conductive material, the sheets being normally electrically insulated from one another while being constructed and arranged to be brought into contact with one another by application of writing pressure by a writing implement upon the writing pad, the sheets being adapted to be connected to an electrical switching circuit whereby current is caused to flow through the pad along two alernate paths and to a recognition circuit to recognize written characters by virtue of the change in electrical voltages in the alternate paths, the high resistivity sheet and the conductive sheet being separated by the layer of reticulated material and the conductive material being elastomeric and being sufficiently elastic to deform through the reticules of the reticulated material to provide continuous electrical contact between the sheets through the whole length of a writing stroke with said writing implement.

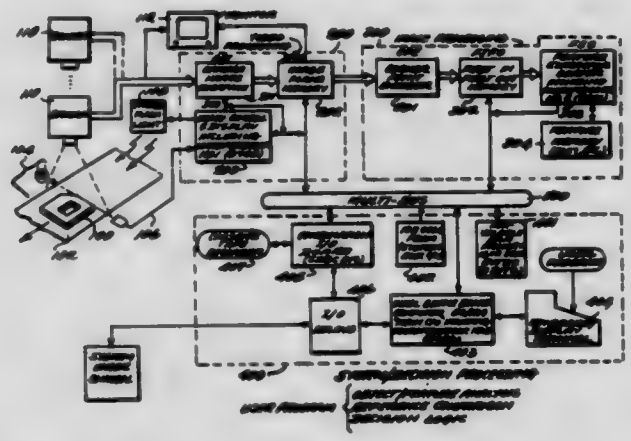
4,493,105
METHOD AND APPARATUS FOR VISUAL IMAGE PROCESSING
Donald L. Beall, North Syracuse; Harold W. Tomlinson, Jr., Liverpool, both of N.Y., and William G. Hart, Jr., Chagrin Falls, Ohio, assignors to General Electric Company, Orlando, Fla.
Filed Mar. 31, 1982, Ser. No. 363,664
Int. Cl.³ G06K 9/48
U.S. Cl. 382—21 22 Claims

1. A visual image processing system for digitally processing an electronic video image of an object within a pre-defined field of view so as to automatically identify closed edge contours of the object within such an image, said system comprising:

electronic video camera means for converting a predetermined visual field of view to a sequence of digital electronic video signals each of which represents a corresponding elemental picture element of such a visual field of view and for providing a new frame of such video signals in response to an input electronic command signal;

video processing means connected to said camera means and including an image plane memory means for temporarily storing video digital data produced in response to plural frames of said video signals and a first electronic control means for controlling said image plane memory means to accept said video digital data at a first data rate corresponding to the rate at which it is caused to occur by said camera means and to provide said video digital data at a second data rate, which may be different from said first data rate;

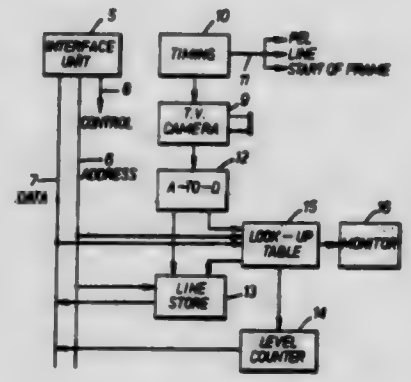
image processing means connected to receive successive frames of said temporarily stored video digital data from the image plane memory means and including: (a) corner point encoding means for identifying all contour corner points included in a given frame of said video digital data and for generating digital data representative thereof, (b)



feature extracting sorter means for automatically sorting said corner point digital data into separate closed linked sets, each set being representative of one closed edge contour of an object thus identified in said video image, and (c) a second electronic control means connected to control the operation of said corner point encoding means and said feature extracting sorter means; and

third electronic control means connected to coordinate said first and second electronic control means so as to collect successive frames of said video digital data in said image plane memory means and to subsequently supply such collected data to said image processing means when it is next available for processing another frame of similar data.

4,493,106
IMAGE DIGITIZING SYSTEMS
Hassan Farhangi, Manchester; Peter R. Miles, Cheadle, and Costas N. Daskalakis, Manchester, all of England, assignors to International Computers Limited, London, England
Filed Mar. 31, 1982, Ser. No. 363,764
Claims priority, application United Kingdom, Dec. 24, 1981, #138875
Int. Cl.³ G06K 9/00
U.S. Cl. 382—41 7 Claims



1. A system for digitising an image comprising:

means arranged repeatedly to scan an image and on each scan to output an analogue signal representing the image;

conversion means arranged periodically to convert the ana-

logue signal to a digital signal output from the conversion means, the successive values of which signal represent a display value for each individual picture element of the image;

counting means arranged to be operative during each of a plurality of scans to accumulate a count of the number of picture elements in the entire image whose display values meet a selected criterion;

selection means settable to select the said criterion; and

means for resetting the setting for the said selection means between scans of the said plurality in such a manner as to ensure that at the end of the said plurality of scans the sequence of counts accumulated during the said plurality of scans suffices to define a display-value histogram for the picture elements of the image.

4,493,107

METHOD AND DEVICE FOR IDENTIFYING DATA SUPPORTS

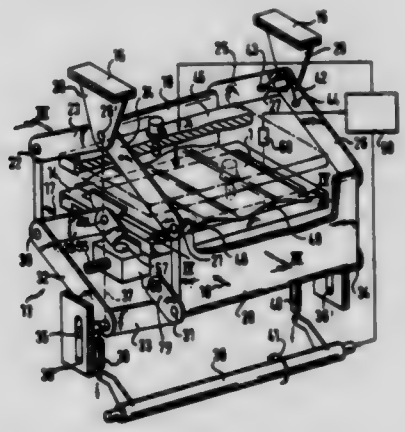
Hermann Stockburger, Kirschweg 7, D-7742 St. Georgen, and Hans-Georg Winderlich, Nicdere Str. 36, D-7730 Villingen, both of Fed. Rep. of Germany

Filed Mar. 24, 1981, Ser. No. 247,165

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1980, 3011317

Int. Cl.³ G06K 7/015

U.S. Cl. 382—58 4 Claims



1. A device for identifying a data support comprising:

means for engaging said data support;

means for moving an engaged data support into an automatic processing system including a detection system for detecting information on said data support along a linear detection path; and

aligning means for aligning said data support in a detection position, including members laterally engaging two opposed edges of said data support and movable in a reciprocating manner transversely to said linear detection path symmetrically with respect thereto, wherein said laterally engaging members are movable by a system of linked levers forming a parallelogram, said parallelogram lying generally normally with respect to a receiving plane for receiving a generally flat data support and having two linking points lying in fixed positions on a line extending through said linear detection path.

4,493,108

VIDEO IMAGE FIELD CUT PROCESSING

George B. Fryer, Mint Hill, and David A. Stepneski, Cabarrus County, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,563

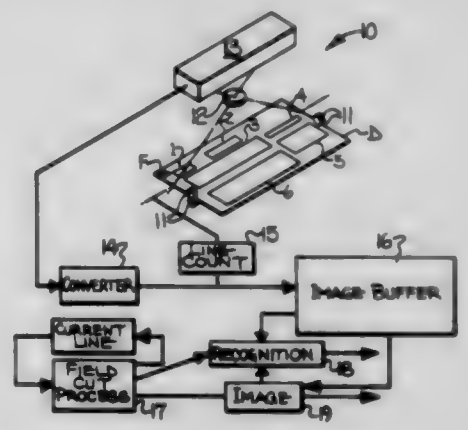
Int. Cl.³ G06K 9/20

U.S. Cl. 382—61 10 Claims

7. A process for dissecting into predetermined fields image data received from a document, comprising

storing at a plurality of memory addresses a series of control instructions, one for each field of image data to be processed from within an image source area, each of said control instructions comprising a forward pointer to the control instruction for the next field to be processed, a rearward pointer to a prior control instruction in the series, an initial scan line number, and a function controller for specifying the function to be performed on the image data, and said series of control instructions being initialized such that the instructions in said series are ordered in the sequence of their contained initial scan line numbers,

receiving successive scan lines of image data which collectively represent the image source area, together with an associated identifying sequence number for each scan line, and upon receipt of each scan line



(a) accessing the first of said control instructions,

(b) comparing the scan line sequence number of the scan line presented with the initial scan line number of the accessed control instruction and terminating processing of the presented scan line if said initial scan line number is greater than said presented scan line sequence number, otherwise

(c) performing the functions specified by said function controller of the accessed control instruction,

(d) accessing by use of the forward pointer of the accessed control instruction, a further control instruction, and

(e) repeating operations (b) through (d) until processing of the presented scan line is terminated.

4,493,109

FLEXIBLE BULK CONTAINER WITH INTEGRAL LIFTING LOOPS

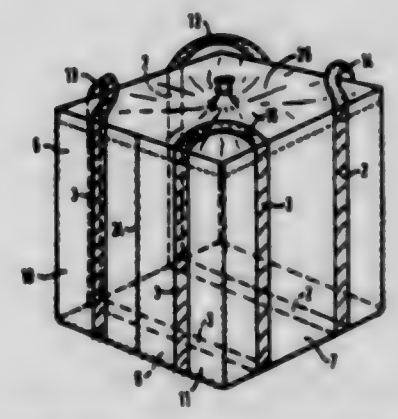
Frank Nattrass, Fallows End, Brearton, Harrogate, N. Yorkshire HG3 3BX, England

Filed Mar. 1, 1983, Ser. No. 471,017

Claims priority, application United Kingdom, Mar. 1, 1982, 8205961

Int. Cl.³ B65D 88/16, 90/00, 33/14, 33/02

U.S. Cl. 383—7 9 Claims



1. A flexible bulk container having a base and four side walls each joined to the base and to the two adjacent side walls, the container being formed from a single elongated strip of woven

fabric of width substantially equal to the side wall width, the strip having two spaced parallel reinforcing bands extending longitudinally thereof and forming an integral part of the fabric, each band extending the full length of the strip and lying between the longitudinal centre line and a respective longitudinal edge of the strip, the strip having been cut away to leave connecting sections between strip sections which strip sections form the side walls of the container, each connecting section comprising a length of reinforcing band, the strip having been folded and stitched to form the container and to locate the connecting sections so that each extends between adjacent side panels over a respective corner of the bag and forms a lifting loop at that corner of the bag.

4,493,110

BAG CONSTRUCTION

James R. Wilson, Northport, N.Y., assignor to Equitable Bag Co., Inc., Long Island City, N.Y.

Division of Ser. No. 182,799, Aug. 29, 1980, Pat. No. 4,362,526. This application Oct. 8, 1982, Ser. No. 433,540
Int. Cl.³ B65D *33/06, 33/24*
U.S. Cl. 383—27 2 Claims



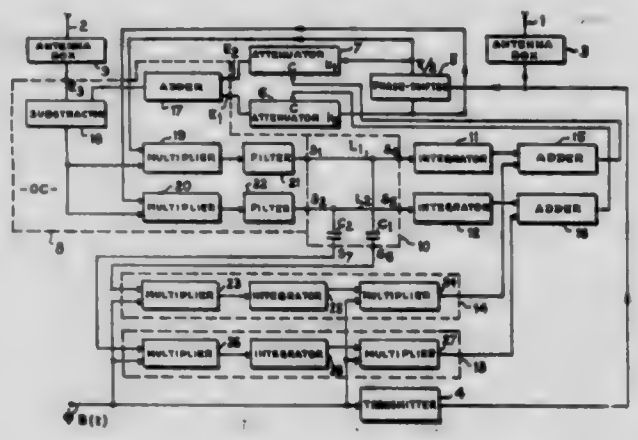
1. A plastic bag having front and rear panels connected by a horizontal bottom end and welded to one another along vertical edges extending upwardly from said bottom end to a location offset from the upper end of said rear panel, the rear panel having its upper end folded forward along a horizontal fold line and edge-welded to itself to form a top pocket that is substantially closed at its upper end and open along its bottom end, a handle extending through an opening in the closed upper end of the top pocket, a front pocket downwardly folded along a horizontal hinge line which is adjacent to the open bottom end of the top pocket, the front pocket comprising front-panel upper-end material folded forward against itself along a horizontal fold line at a location below said hinge line, the folded front-panel upper-end material being edge-welded to itself to define the front pocket closed on three sides and upwardly open along a horizontal alignment near said hinge line, the fold line of the front pocket being below the hinge line to substantially the same extent as the hinge line is below the closed upper end of the top pocket, whereby the front pocket can be upwardly swung to accept telescoping insertion of the top pocket, and an opening in the fold line of the front pocket through which the handle extends when the front pocket is telescoped over the top pocket.

4,493,111

ELECTRONIC ANTENNA DECOUPLING PROCESS AND DEVICE

Hervé Gamsa, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 15, 1982, Ser. No. 450,008
Claims priority, application France, Dec. 18, 1981, 81 23730
Int. Cl.³ H04B *1/44*
U.S. Cl. 455—79 6 Claims



1. An electronic antenna decoupling process for suppressing an intefering signal having a carrier frequency, modulated in frequency by a low frequency signal of amplitude $\phi' g(t)$, emitted by a transmitting antenna and received by a receiving antenna situated in the immediate vicinity of the receiving antenna, consisting of transforming the intefering signal emitted by the transmitting antenna by generating in a phase shifter two signals respectively in phase and in quadrature with the interfering signal, attenuating the in phase and in quadrature signal by means of first and second adjustable attenuators, respectively adding the in phase and in quadrature signals attenuated by said adjustable attenuators and substracting the result obtained from the signal received at the receiving antenna, multiplying the substraction result by the non attenuated in phase and in quadrature signals respectively and filtering the two multiplication results for applying the two results obtained to the input of two integrators for obtaining at the output of these two integrators two static control signals for respectively controlling the attenuators so as to cancel out the component of the carrier frequency of the interfering signal received and superimposing on each of the static control signals a signal whose amplitude is proportional, at all times, to the difference between the carrier frequency of the interfering signal and the instantaneous value of the frequency of its modulation signal $\phi' g(t)$.

4,493,112

ANTENNA TUNER DISCRIMINATOR

Warren B. Brueme, Dallas, Tex., assignor to Rockwell International Corporation, El Segundo

Filed Nov. 19, 1981, Ser. No. 322,822
Int. Cl.³ H04B *1/04*; H03H *7/40*
U.S. Cl. 455—123 8 Claims

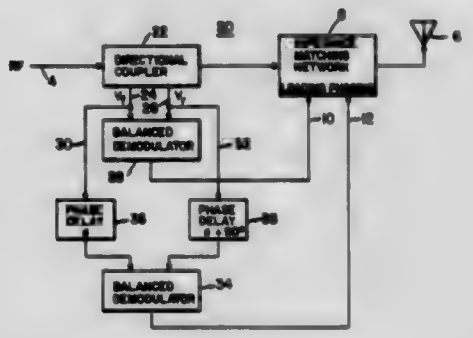
1. In the method of antenna tuning wherein loading and phasing control signals are supplied to an impedance matching network for matching an RF input impedance, an improved technique for supplying said loading and phasing control signals comprising:

sensing forward and reflected voltage samples V_f and V_r, respectively, on said RF input;

sensing the magnitude of the in-phase component of V_r relative to V_f and supplying a proportional amplitude as said loading control signal;

sensing the magnitude of the quadrature component of V_r relative to V_f and supplying a proportional amplitude as said phasing control signal;

such that the magnitude of each of said in-phase and quadrature V_r components is reduced to substantially zero to



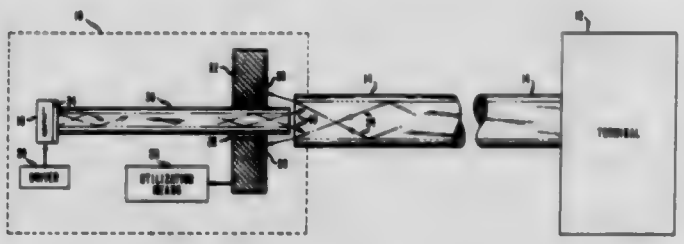
thus reduce the phasor amplitude of V_r to substantially zero and hence substantially eliminate reflected voltage.

4,493,113

BIDIRECTIONAL FIBER OPTIC TRANSMISSION SYSTEMS AND PHOTODIODES FOR USE IN SUCH SYSTEMS

Stephen R. Forrest, Chatham, and Richard L. Panock, Cranford, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 10, 1982, Ser. No. 416,467
Int. Cl.³ H04B 9/00
U.S. Cl. 455—606 11 Claims



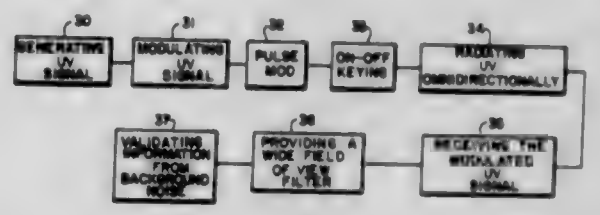
1. A bidirectional optical transmission system comprising
an optical transmission fiber, and
a transceiver coupled to each end of said fiber for transmission of outgoing radiation and detection of incoming radiation originating at a transceiver at the opposite end of said fiber, both outgoing and incoming radiation having the same wavelength
each transceiver including a semiconductor light-emitting device having a p-n junction for generating said outgoing radiation essentially parallel to said junction,
each transceiver further including a photodiode having a first active region of a first diameter and a first hole of a smaller second diameter extending through said photodiode in said first active region, said first active region being responsive to said incoming radiation for generating a signal photocurrent, and means for coupling said outgoing radiation through said first hole,
said transmission fiber being adapted to mix the modes of the radiation propagating therein, having a diameter much larger than that of said first hole, and having one end positioned adjacent said first active region so that said outgoing radiation is coupled through said first hole into said transmission fiber and said incoming radiation emanates from one end of said transmission fiber and is detected by said first active region to produce said signal photocurrent, said first hole being sufficiently small relative to said first active region so that an insignificant portion of said incoming radiation is coupled through said first hole, and
said coupling means comprising lens means effective to focus said outgoing radiation from said source to a point that lies approximately centrally within said first hole of said photodiode.

4,493,114

OPTICAL NON-LINE-OF-SIGHT COVERT, SECURE HIGH DATA COMMUNICATION SYSTEM

Myer Geller, San Diego; Thomas E. Keenan, La Mesa; Daniel E. Altman, San Diego, and Richard H. Patterson, Vista, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 2, 1983, Ser. No. 490,695
Int. Cl.³ H04B 9/00
U.S. Cl. 455—617 13 Claims



8. A method of communicating in the ultraviolet spectrum comprising:
generating an ultraviolet signal in the "solar blind" region in the tens of watts power range;
modulating the ultraviolet signal;
radiating the modulated ultraviolet signal omnidirectionally;
receiving the radiated modulated ultraviolet signal at a non-line-of-sight location anywhere within the range of the omnidirectionally radiated modulated ultraviolet signal; and
demodulating the received ultraviolet signal.

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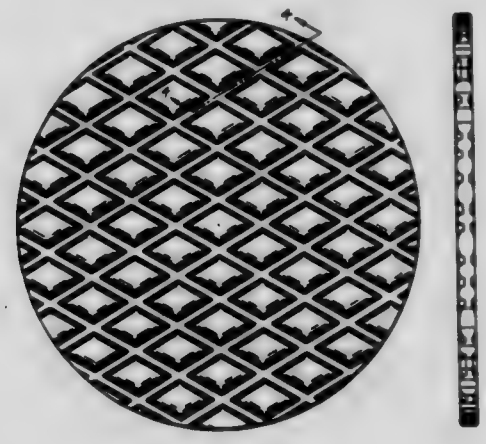
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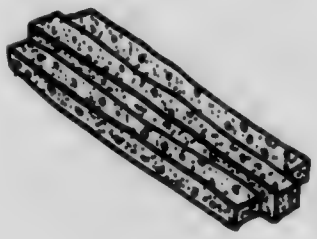
DESIGNS

JANUARY 8, 1985

277,044
PIZZA SHELL
Harvey G. Kuhlman, N56 W21466 Silver Spring Rd., Menomonee Falls, Wis. 53051
Filed Nov. 2, 1981, Ser. No. 317,244
Term of patent 14 years
U.S. Cl. D1—130



277,045
FORMED MEAT PRODUCT
Rene Arend, Chicago, Ill., assignor to Restaurant Technology, Inc.
Division of Ser. No. 228,193, Jan. 26, 1981, Pat. No. Des. 270,299. This application Sep. 30, 1982, Ser. No. 431,826
Term of patent 14 years
U.S. Cl. D1—199



277,046
BRASSIERE
Toshiko Taniyama, White Plains, N.Y., assignor to International Playtex, Inc., Stamford, Conn.
Filed Aug. 23, 1982, Ser. No. 410,210
Term of patent 14 years
U.S. Cl. D2—24



277,047
BRASSIERE
Flavia DiTullio, New York, N.Y., assignor to Consolidated Foods Corporation, Winston-Salem, N.C.
Filed Sep. 17, 1982, Ser. No. 419,462
Term of patent 14 years
U.S. Cl. D2—24

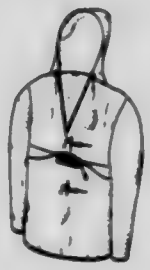


277,048
COMBINATION JACKET AND CARRIER BAG
Irwin Peyser, Bay Shore, N.Y., assignor to MV Corp., Bay Shore, N.Y.
Filed Jun. 23, 1982, Ser. No. 391,344
Term of patent 14 years
U.S. Cl. D2—184





277,049
COMBINATION JACKET AND CARRIER BAG
Irwin Peyser, Bay Shore, N.Y., assignor to MV Corp., Bay Shore, N.Y.
Filed Jun. 23, 1982, Ser. No. 391,345
Term of patent 14 years
U.S. Cl. D2—184





277,050
DUSTING GLOVE
Ilene G. Brusiloff, 28501 Franklin Rd., Franklin, Mich. 48034
Filed Jul. 8, 1982, Ser. No. 396,514
Term of patent 14 years
U.S. Cl. D2—361





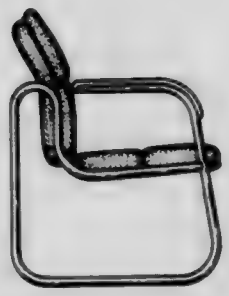
277,051
BELT BUCKLE
Peter Baron, 1150 E. Pico Blvd., Los Angeles, Calif. 90021
Filed Jan. 12, 1983, Ser. No. 446,338
Term of patent 14 years
U.S. Cl. D2—394



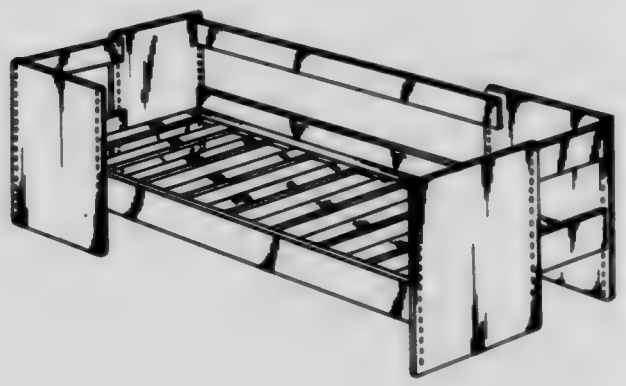
277,052
FRAME BELT BUCKLE
Peter Baron, 1150 E. Pico Blvd., Los Angeles, Calif. 90021
Filed Feb. 11, 1983, Ser. No. 446,341
Term of patent 14 years
U.S. Cl. D2—394



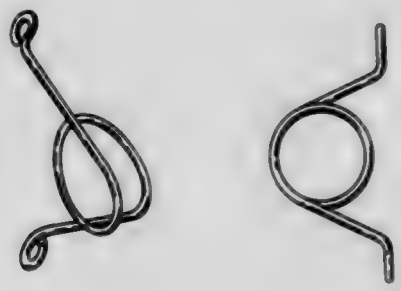
277,053
SEAT
Seymour W. Golden, 620 Cooper St., Delanco, N.J. 08075, and Robert N. Kohl, 6844 Sonder St., Philadelphia, Pa. 19149
Filed Apr. 27, 1982, Ser. No. 372,452
Term of patent 14 years
U.S. Cl. D6—373



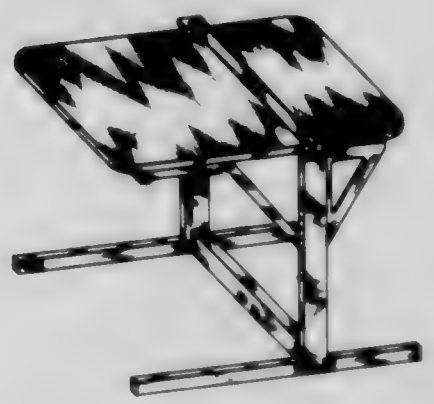
277,054
CONVERTIBLE BED
James R. Hull, 148 S. Westgate Ave., Los Angeles, Calif. 90049
Filed Apr. 12, 1982, Ser. No. 367,162
Term of patent 14 years
U.S. Cl. D6—393



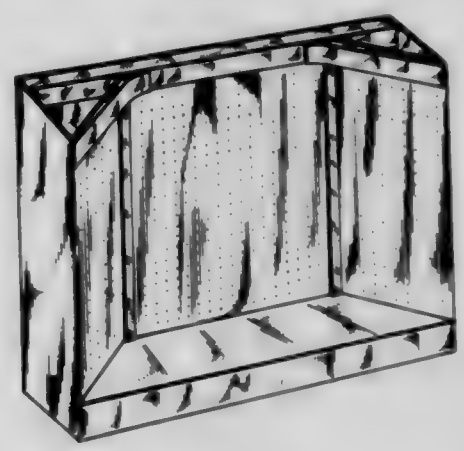
277,055
ANIMAL LEASH BRACKET
James W. Buchanan, 104 Chestnut Ave., Narberth, Pa. 19072
Filed Feb. 8, 1982, Ser. No. 346,433
Term of patent 14 years
U.S. Cl. D6—566



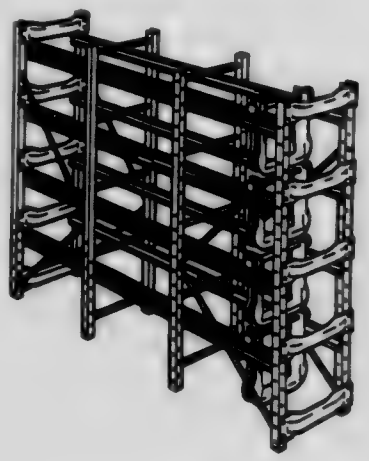
277,056
FOLDING TABLE
James H. Nicholson, Fair Oaks, Calif., assignor to Telic Systems, Inc., Fair Oaks, Calif.
Filed Jan. 31, 1983, Ser. No. 462,584
Term of patent 14 years
U.S. Cl. D6—420



277,057
MERCHANDISE DISPLAY STAND OR SIMILAR ARTICLE
Robert P. Franklin, Lake Hopatcong, N.J., assignor to Trans-World Manufacturing Corp., East Rutherford, N.J.
Filed Nov. 20, 1981, Ser. No. 323,234
The portion of the term of this patent subsequent to Dec. 25, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—480



277,058
STORAGE RACK FOR ELONGATE GOODS
Anna G. D. Tertsunen, Skiffe, Sweden, assignor to Electrolux Constructor Aktiebolag, Skiffe, Sweden
Filed Mar. 1, 1982, Ser. No. 353,854
Claims priority, application Sweden, Sep. 10, 1981, 81-1964
Term of patent 14 years
U.S. Cl. D6—468

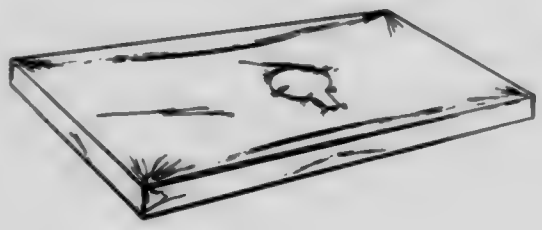


277,059
FACIAL PILLOW
Sheila T. Boone, 1129 SE. 34th, Portland, Oreg. 97214
Filed Aug. 13, 1979, Ser. No. 65,903
Term of patent 14 years
U.S. Cl. D6—601

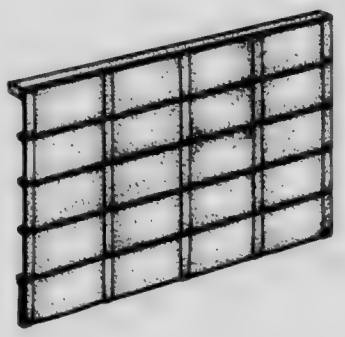




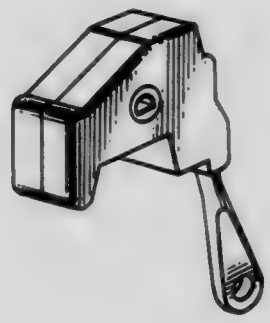
277,060
BED PAN MATTRESS
Gunnar A. Ulfven, P.O. Box 554, S-451 22 Uddevalla, Sweden
Filed Apr. 23, 1982, Ser. No. 371,275
Term of patent 14 years
U.S. Cl. 605



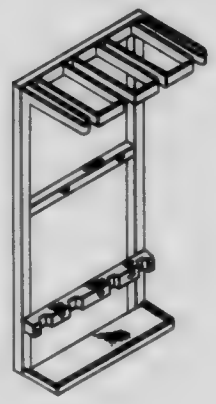
277,061
ROMAN SHADE
Anthony R. Picoy, 6185 Jarel Ct., Woodland Hills, Calif. 91367
Filed Jun. 24, 1982, Ser. No. 391,949
Term of patent 14 years
U.S. Cl. D6—575



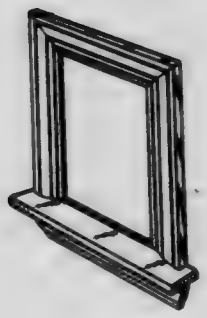
277,062
WORM GEAR UNIT FOR VENETIAN BLINDS OR THE LIKE
Hans R. Brolin, Mullajö, Sweden, assignor to AB Perma System, Mullajö, Sweden
Filed Mar. 8, 1982, Ser. No. 355,316
Claims priority, application Sweden, Jan. 15, 1982, 82-0077
Term of patent 14 years
U.S. Cl. D6—580



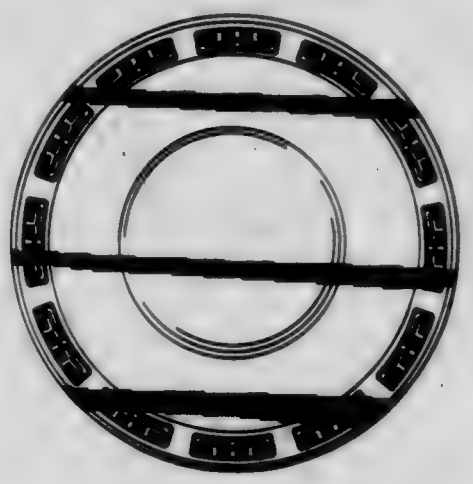
277,063
PICTURE FRAME
Richard F. Hauser, Mocksville, N.C., assignor to Trim, Inc., Mocksville, N.C.
Filed May 7, 1982, Ser. No. 375,719
Term of patent 14 years
U.S. Cl. D6—303



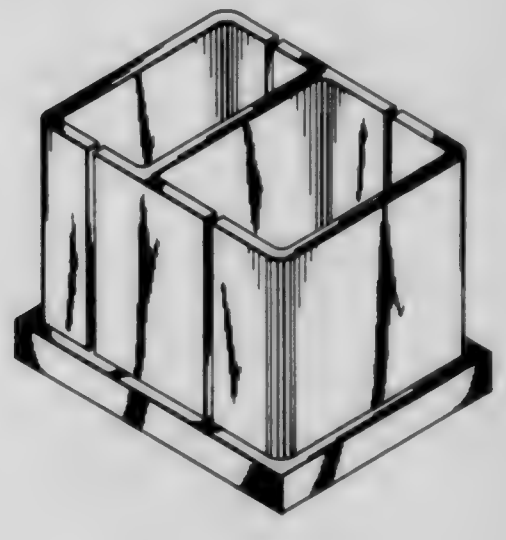
277,064
DISPLAY RACK FOR WATER SKIS
Robert R. Nagle, 128 N. Lott, Gibson City, Ill. 60936
Filed Oct. 28, 1982, Ser. No. 437,316
Term of patent 14 years
U.S. Cl. D6—467



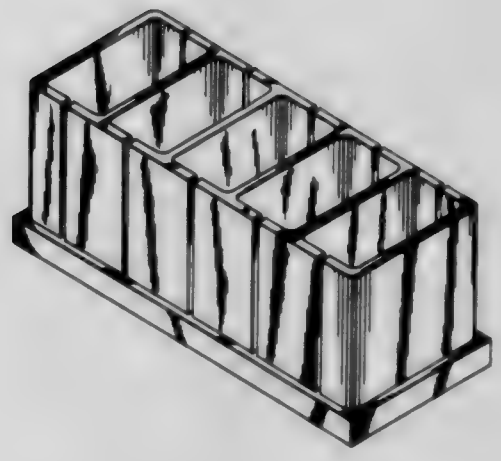
277,065
PLATE OR THE LIKE
Ming-Ter Chen, 1232-1236 E. Factory Pl., Los Angeles, Calif. 90013
Filed May 9, 1983, Ser. No. 492,885
Term of patent 14 years
U.S. Cl. D7—36

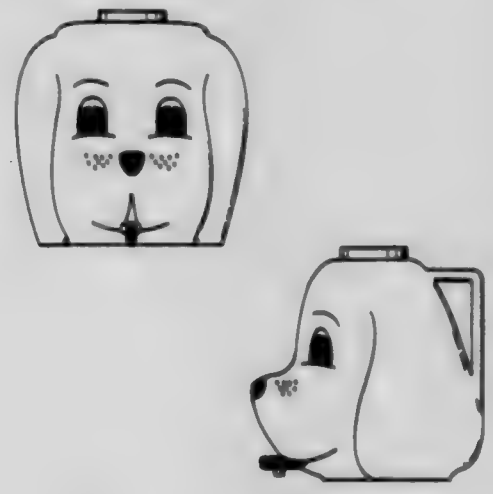


277,066
ROLL AND BAGEL SLICING JIG
Leonard Levine, 2978 Beechwood Blvd., Pittsburgh, Pa. 15217
Filed Jan. 3, 1983, Ser. No. 455,220
Term of patent 14 years
U.S. Cl. D7—43

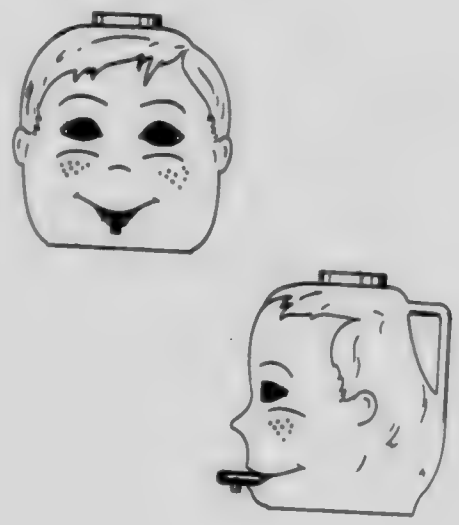


277,067
REFRIGERATOR BEVERAGE DISPENSER
Andra S. Ostergard, 4301 Norwood Rd., Baltimore, Md. 21218
Filed Sep. 29, 1982, Ser. No. 428,026
Term of patent 14 years
U.S. Cl. D7—382

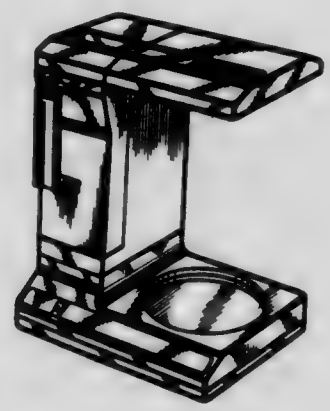


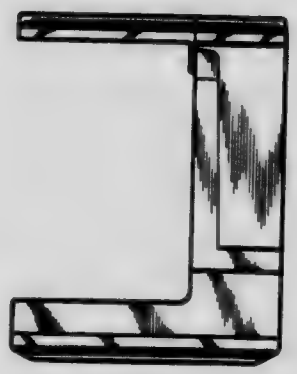


277,068
REFRIGERATOR BEVERAGE DISPENSER
Andre S. Ostergard, 4301 Norwood Rd., Baltimore, Md. 21218
Filed Sep. 29, 1982, Ser. No. 428,827
Term of patent 14 years
U.S. Cl. D7—302

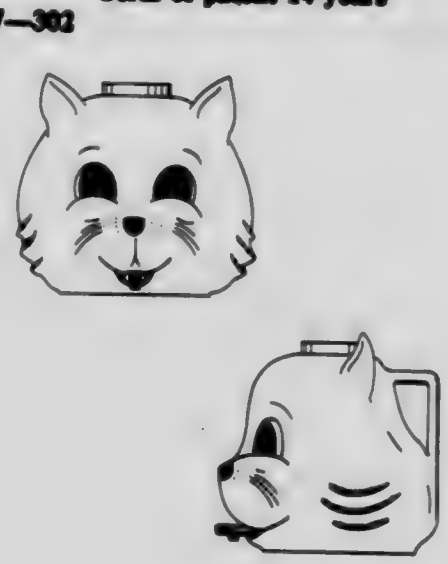


277,070
COFFEE MAKER
Marten F. Elkerbout, Peize, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 28, 1982, Ser. No. 393,201
Claims priority, application Netherlands, Jan. 6, 1982, 56438-02
Term of patent 14 years
U.S. Cl. D7—309



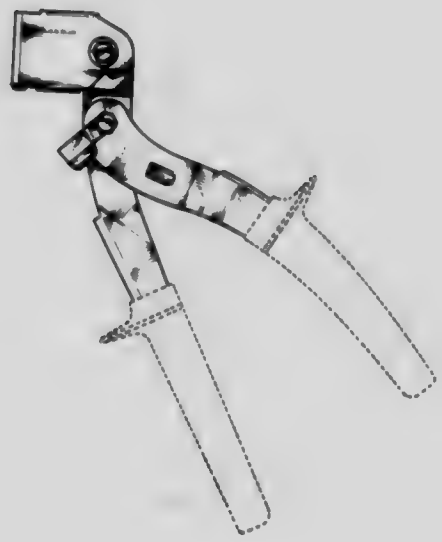


277,069
REFRIGERATOR BEVERAGE DISPENSER
Andre S. Ostergard, 4301 Norwood Rd., Baltimore, Md. 21218
Filed Sep. 29, 1982, Ser. No. 428,028
Term of patent 14 years
U.S. Cl. D7—302





277,071
HEAD FOR A PLUG GRIP
Roger Maingueux, Saint-Brice-Sous-Foret, France, assignor to Societe d'Exploitation des Etablissements Pierre-Grelsal, Saint-Brice-Sous-Foret, France
Filed Sep. 11, 1981, Ser. No. 301,283
Term of patent 14 years
U.S. Cl. D8—52



277,072
DISPENSER FOR FLOWABLE PRODUCTS
Joachim Czech, Jahnstrasse 19, D-8504 Donnestauf, Fed. Rep. of Germany
Filed Feb. 8, 1982, Ser. No. 346,896
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1981, 16AR1793/81
Term of patent 14 years
U.S. Cl. D9—366



277,073
DISPENSER FOR FLOWABLE PRODUCTS
Joachim Czech, Jahnstrasse 19, D-8504 Donnestauf, Fed. Rep. of Germany
Filed Feb. 8, 1982, Ser. No. 346,898
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1981, 16 AR 1793/81
Term of patent 14 years
U.S. Cl. D9—366



277,074
DISPENSER FOR FLOWABLE PRODUCTS
Joachim Czech, Jahnstrasse 19, D-8504 Donnestauf, Fed. Rep. of Germany
Filed Feb. 8, 1982, Ser. No. 346,899
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1981, 16 AR 1793/81
Term of patent 14 years
U.S. Cl. D9—366



277,075
PERFUME BOTTLE
Cecile Blain, P.O. Box 421, Chatsworth, Calif. 91311; Willy Liechti, and Elizabeth Broderick, both of 6527 Escondido Canyon Rd., Acton, Calif. 93510
Filed Aug. 24, 1982, Ser. No. 410,531
Term of patent 14 years
U.S. Cl. D9—310



277,076
BOTTLE
Frederick N. Blanchar, Boyertown, Pa., assignor to Drug Plastics & Glass Company, Boyertown, Pa.
Continuation-in-part of Ser. No. 270,767, Jun. 5, 1981,. This application Nov. 3, 1983, Ser. No. 548,544
Term of patent 14 years
U.S. Cl. D9—355



277,077
COSMETIC BOTTLE
Yoichi Kaneko, Tokyo, Japan, assignor to Shiseido Company Ltd., Tokyo, Japan
Filed Jun. 17, 1982, Ser. No. 378,548
Term of patent 14 years
U.S. Cl. D9—367



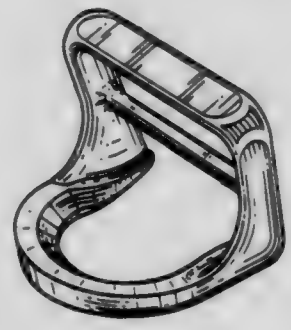
277,078
WINE BOTTLE
Pierre Deurbe, Bordeaux, France, assignor to Consortium Vinicole de Bordeaux et de la Gironde, Bordeaux, France
Filed Oct. 19, 1981, Ser. No. 312,681
Claims priority, application France, Jun. 2, 1981, 338
Term of patent 14 years
U.S. Cl. D9—378



277,079
BOTTLE OR SIMILAR ARTICLE
Veli T. Wirkkala, Helsinki, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland
Filed Sep. 20, 1982, Ser. No. 420,373
Claims priority, application Finland, Sep. 1, 1982, 744/82
Term of patent 14 years
U.S. Cl. D9—378



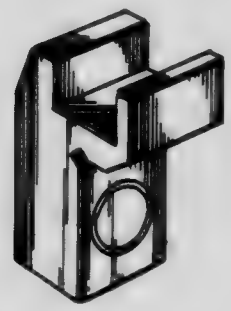
277,080
PORTABLE HANDLE FOR FLANGED-NECK CONTAINERS
Paul L. Gagnon, 5540 W. 5th, #105, Oxnard, Calif. 93030
Filed Jan. 21, 1983, Ser. No. 440,459
Term of patent 14 years
U.S. Cl. D9—434



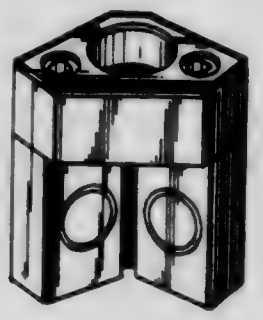
277,081
WATCH
Edward B. Harvey, Chattanooga, Tenn., assignor to E. B. Harvey & Co., Chattanooga, Tenn.
Filed Sep. 17, 1982, Ser. No. 419,509
Term of patent 14 years
U.S. Cl. D10—33



277,082
EDGE FINDER
Ibrahim Ibrahimpasic, 1566 Scott St., San Jose, Calif. 95126
Filed Aug. 19, 1982, Ser. No. 409,573
Term of patent 14 years
U.S. Cl. D10—61



277,083
EDGE FINDER
Ibrahim Ibrahimpasic, 1566 Scott St., San Jose, Calif. 95126
Filed Aug. 19, 1982, Ser. No. 409,575
Term of patent 14 years
U.S. Cl. D10—61



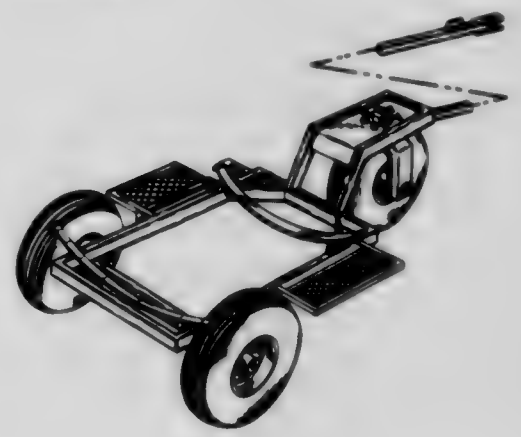
277,084
VACUUM TESTING DEVICE FOR SEALED CONTAINERS
Glen C. Jackson, 16430 - 236th SE., Issaquah, Wash. 98026
Filed Jun. 1, 1982, Ser. No. 383,708
Term of patent 14 years
U.S. Cl. D10—83



277,085
JEWELRY SETTING
William C. Liebrick, Warwick, and Charles A. Morvillo, East Greenwich, both of R.I., assignors to Lee's Manufacturing Company, Inc., North Providence, R.I.
Filed Sep. 27, 1982, Ser. No. 425,551
Term of patent 14 years
U.S. Cl. D11—92



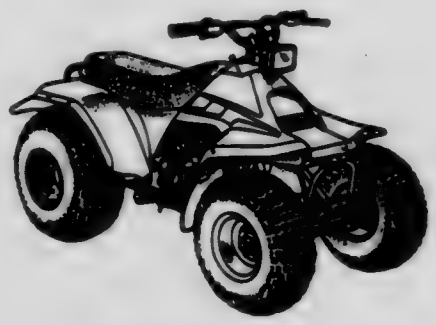
277,086
THREE-WHEELED TRAILER
Wayne C. Dudley, Parkersburg, Iowa 50665
Filed Feb. 24, 1982, Ser. No. 351,956
Term of patent 14 years
U.S. Cl. D12—101



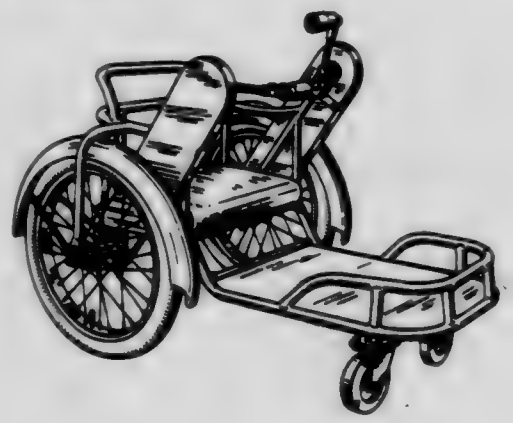
277,087
SNACK WAGON
Larry M. Fisher, Marietta, Ga., assignor to Carolyn P. Fisher, Mcaltrie, Ga.
Filed Jul. 12, 1982, Ser. No. 397,505
Term of patent 14 years
U.S. Cl. D12—162



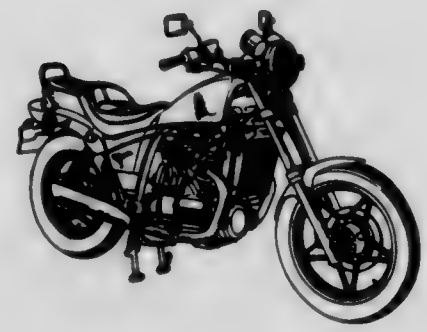
277,088
MOTOR-FOUR-WHEELER CYCLE
Tsuyoshi Murakami, Shizuoka, Japan, assignor to Suzuki Jidosha Kogyo Kabushiki Kaisha, Shizuoka, Japan
Filed May 26, 1982, Ser. No. 382,304
Claims priority, application Japan, Dec. 25, 1981, 56-50831
Term of patent 14 years
U.S. Cl. D12—107



277,089
HAND PROPELLED CHILD'S VEHICLE
Luigi Testi, 2363 Parent St., Windsor, Ontario, Canada N8W 2E6
Filed Sep. 27, 1982, Ser. No. 424,546
Claims priority, application Canada, Sep. 22, 1982, 22-09-82-4
Term of patent 14 years
U.S. Cl. D12—107



277,090
MOTORCYCLE
Masato Iwakura; Yasuaki Okushima, both of Asaka, and Masamoto Ito, Kumae, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 17, 1982, Ser. No. 450,729
Claims priority, application Japan, Jun. 22, 1982, 57-29085
Term of patent 14 years
U.S. Cl. D12—110



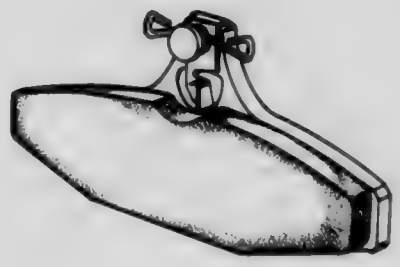
277,091
TIRE FOR A VEHICLE WHEEL
Nobuyuki Sakaki, Akashi, Japan, assignor to Dunlop Limited, London, England
Filed Jul. 19, 1982, Ser. No. 399,964
Claims priority, application Japan, Feb. 8, 1982, 57-5043
Term of patent 14 years
U.S. Cl. D12—136



277,092
VEHICLE TIRE
Hideaki Nagoyama, Kobegawa, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Jul. 13, 1982, Ser. No. 397,868
Term of patent 14 years
U.S. Cl. D12—146



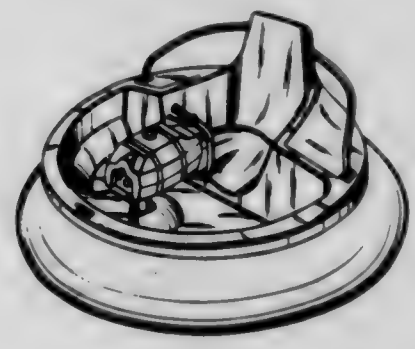
277,093
DISC BRAKE PAD UNIT
Dimitri Caplygin, Sydney, Australia, assignor to Girlock Limited, Belmore, Australia
Filed Mar. 30, 1982, Ser. No. 363,482
Term of patent 14 years
U.S. Cl. D12—180



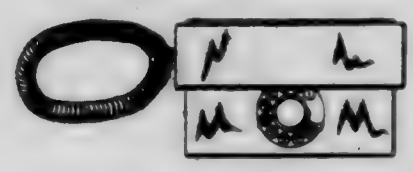
277,094
WHEEL COVER
Yung T. Hsieh, No. 2-16, Long Tran Village, Yung Kang Shing, Tainan, Taiwan
Filed Dec. 28, 1982, Ser. No. 454,033
Term of patent 14 years
U.S. Cl. D12—209

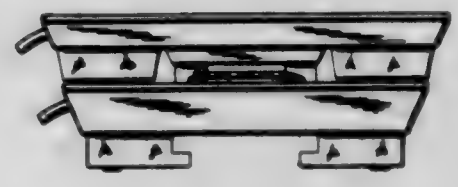


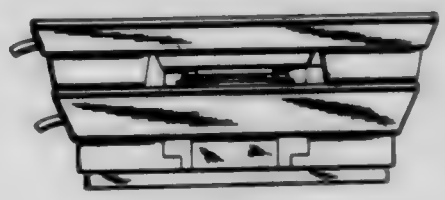
277,095
MOTORIZED BUMPER BOAT
Ralph V. Ball, Laguna Niguel, and John E. Pope, El Cajon, both of Calif., assignors to J & J Recreation, Inc., San Juan Capistrano, Calif.
Filed May 20, 1982, Ser. No. 380,122
Term of patent 14 years
U.S. Cl. D12—307



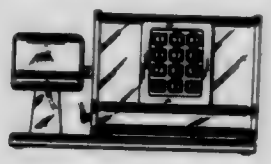
277,096
TELEPHONE
Myra Winkler, West Hartford, Conn., assignor to Teleconcepts, Inc., West Hartford, Conn.
Continuation-in-part of Ser. No. 337,470, Jan. 6, 1982,. This application Mar. 15, 1982, Ser. No. 358,422
Term of patent 14 years
U.S. Cl. D14—53

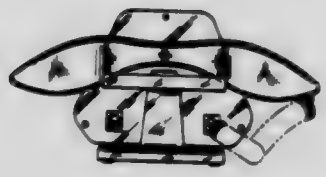




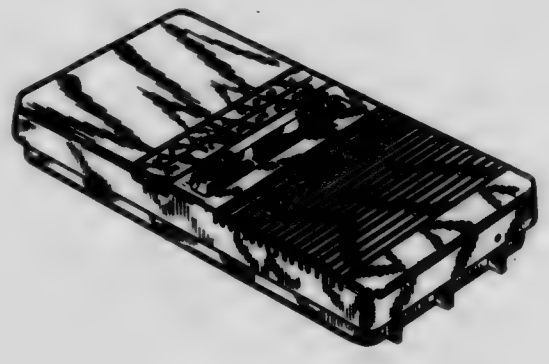


277,097
COMBINED TELEPHONE AND STAND THEREFOR
Myra Winkler, Hartford, Conn., assignor to Teleconcepts, Inc., West Hartford, Conn.
Filed Sep. 27, 1982, Ser. No. 424,450
Term of patent 14 years
U.S. Cl. D14—53

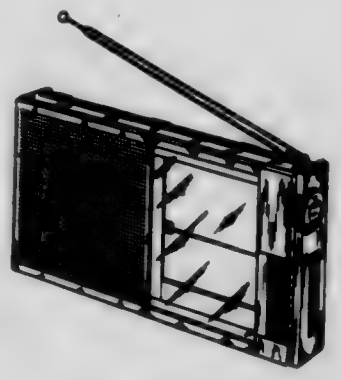




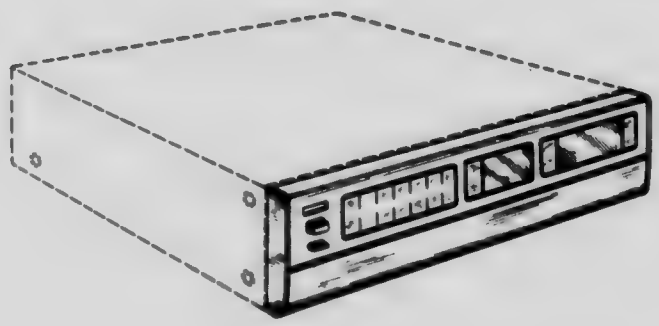
277,098
RADIO
Andrew Mark, Stamford, Conn., assignor to Salton, Inc., North Chicago, Ill.
Filed Apr. 9, 1984, Ser. No. 598,513
Term of patent 14 years
U.S. Cl. D14—68

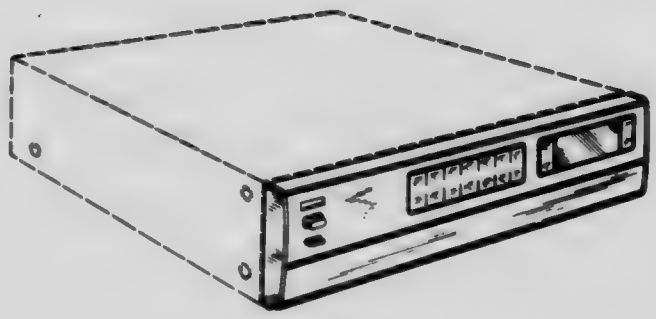


277,099
PORTABLE RADIO RECEIVER
Dieudonne G. Aelis, Hong Kong, Hong Kong, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 22, 1982, Ser. No. 401,054
Claims priority, application United Kingdom, Feb. 2, 1982, 1004912
Term of patent 14 years
U.S. Cl. D14—71

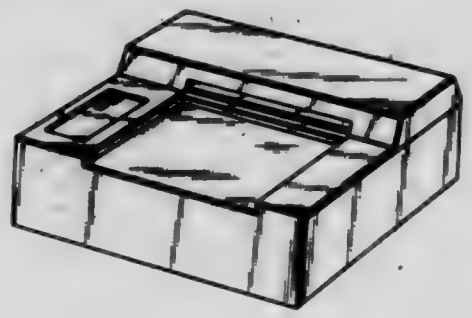


277,100
RECEIVER FRONT PANEL ASSEMBLY
Hari Matsuda, Evanston; Anthony J. Cascarano, Lake Forest, and Charles M. Schwimmer, Chicago, all of Ill., assignors to International Jensen Incorporated, Schiller Park, Ill.
Filed Jun. 2, 1982, Ser. No. 384,482
Term of patent 14 years
U.S. Cl. D14—76

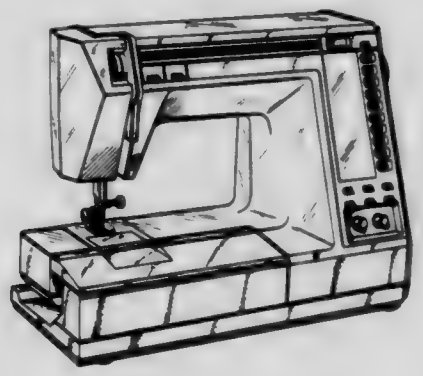




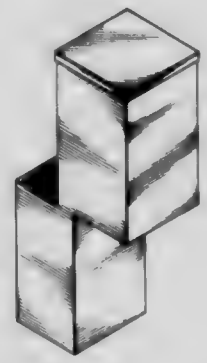
277,101
READER FOR IMAGE INFORMATION STORING/RETRIEVING MACHINE
Kunio Hara, Chiba, and Shigeki Yasutani, Kashiwa, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Jul. 2, 1982, Ser. No. 394,614
Claims priority, application Japan, Jan. 7, 1982, 57-00087
Term of patent 14 years
U.S. Cl. D14—107



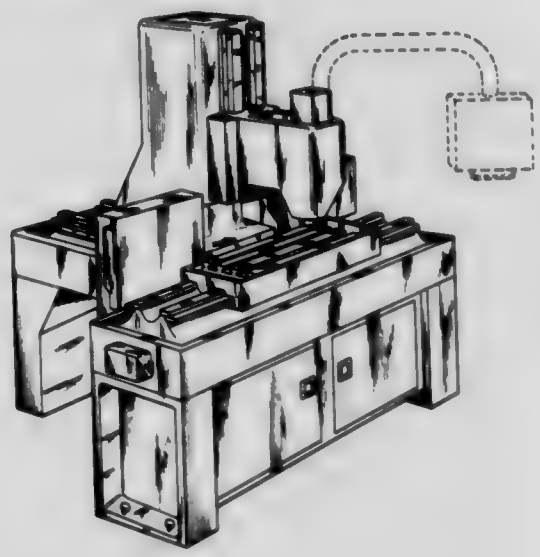
277,102
SEWING MACHINE
Nobufusa Kuroki, Machida, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan
Filed Apr. 8, 1981, Ser. No. 252,127
Term of patent 14 years
U.S. Cl. D15—70



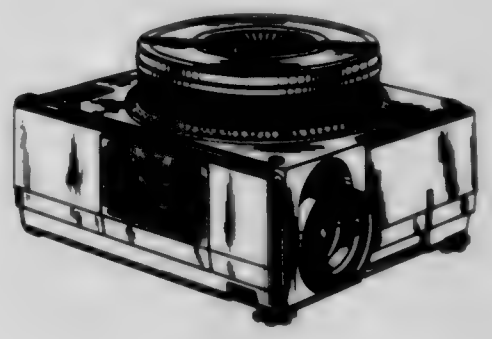
277,103
ICE MAKING MACHINE
Wayne H. Ripley, P.O. Box 2666, San Angelo, Tex. 76902
Filed Jun. 7, 1982, Ser. No. 386,207
Term of patent 14 years
U.S. Cl. D15—80



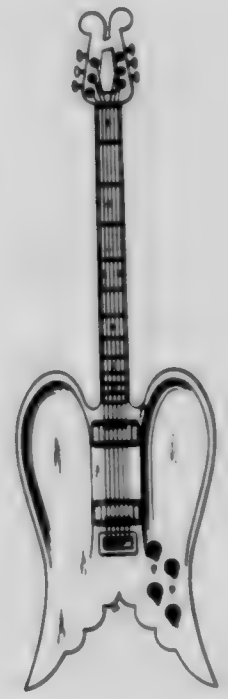
277,104
BED-TYPE MILLING MACHINE
Gerald V. Roch, Indianapolis, Ind., assignor to Hurco Manufacturing Co., Inc., Indianapolis, Ind.
Filed Nov. 8, 1982, Ser. No. 440,010
Term of patent 14 years
U.S. Cl. D15—131



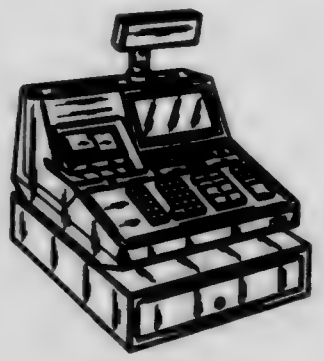
277,105
COMBINED SLIDE PROJECTOR AND SLIDE MAGAZINE
Kenneth Österlin, Nordhemsgatan 74, S-413 09 Göteborg, Sweden
Filed Dec. 7, 1982, Ser. No. 447,533
Claims priority, application Sweden, Jun. 30, 1982, 82-1744
Term of patent 14 years
U.S. Cl. D16—21



277,106
GUITAR
William H. Edwards, 8890 56th St., Temple Terrace, Fla. 33617
Filed Jul. 30, 1982, Ser. No. 403,344
Term of patent 14 years
U.S. Cl. D17—18



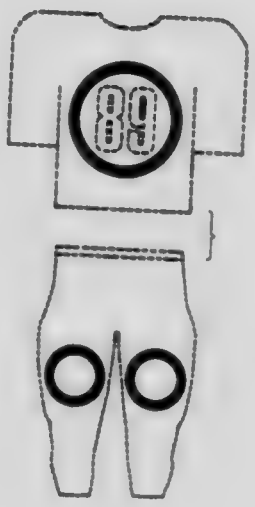
277,107
CASH REGISTER
Junichi Sakamoto, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Apr. 5, 1983, Ser. No. 482,317
Claims priority, application Japan, Oct. 5, 1982, 57-45649
Term of patent 14 years
U.S. Cl. D18—4



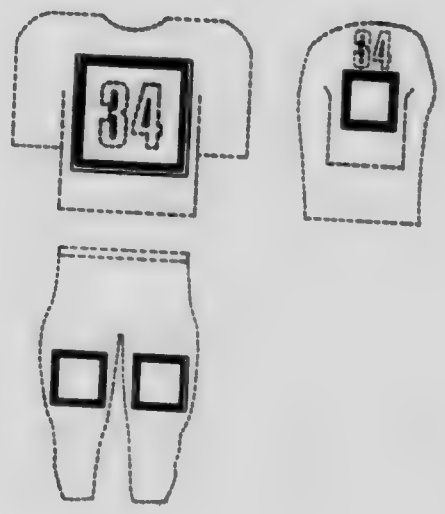
277,108
CIRCULAR SLIDE RULE
Lynn Lundquist, 10833 NE. Russell St., Portland, Oreg. 97220
Filed Sep. 30, 1982, Ser. No. 431,742
Term of patent 14 years
U.S. Cl. D18—10



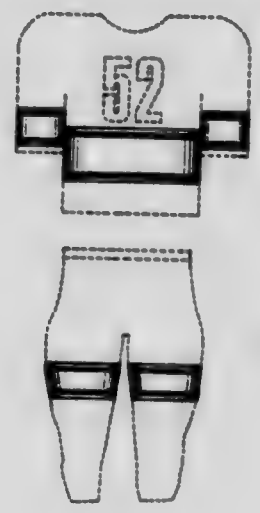
277,109
POSITION IDENTIFICATION INSIGNIA FOR FOOTBALL PLAYER'S UNIFORM
Ramon Gordon, 3 E. 10th St., New York, N.Y. 10003
Filed Feb. 17, 1982, Ser. No. 349,638
Term of patent 14 years
U.S. Cl. D20—11



277,110
POSITION IDENTIFICATION INSIGNIA FOR FOOTBALL PLAYER'S UNIFORM
Ramon Gordon, 3 E. 10th St., New York, N.Y. 10003
Filed Feb. 17, 1982, Ser. No. 349,639
Term of patent 14 years
U.S. Cl. D20—11



277,111
POSITION IDENTIFICATION INSIGNIA FOR FOOTBALL PLAYER'S UNIFORM
Ramon Gordon, 3 E. 10th St., New York, N.Y. 10003
Filed Feb. 17, 1982, Ser. No. 349,641
Term of patent 14 years
U.S. Cl. D20—11



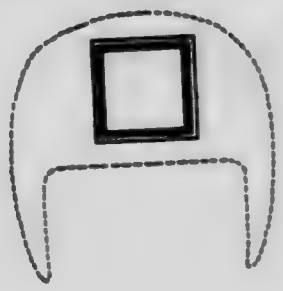
277,112
POSITION IDENTIFICATION INSIGNIA FOR FOOTBALL PLAYER'S HELMET
Ramon Gordon, 3 E. 10th St., New York, N.Y. 10003
Filed Feb. 17, 1982, Ser. No. 349,642
Term of patent 14 years
U.S. Cl. D20—11



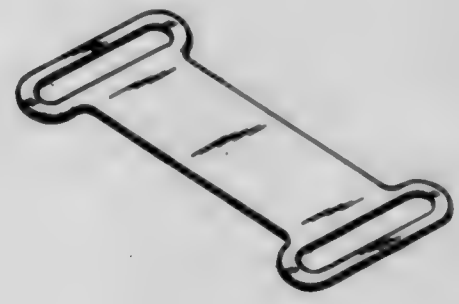
277,113
POSITION IDENTIFICATION INSIGNIA FOR FOOTBALL PLAYER'S HELMET
Ramon Gordon, 3 E. 10th St., New York, N.Y. 10003
Filed Feb. 17, 1982, Ser. No. 349,643
Term of patent 14 years
U.S. Cl. D20—11



277,114
POSITION IDENTIFICATION INSIGNIA FOR FOOTBALL PLAYER'S HELMET
Ramon Gordon, 3 E. 10th St., New York, N.Y. 10003
Filed Feb. 17, 1982, Ser. No. 349,644
Term of patent 14 years
U.S. Cl. D20—11



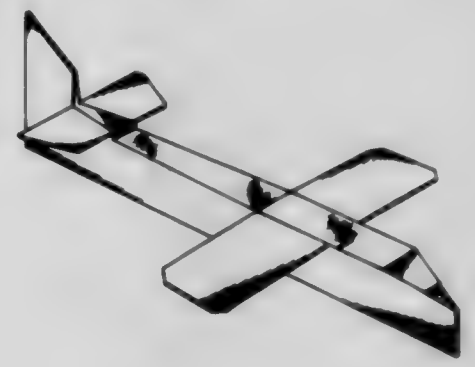
277,115
SPECTACLE TAG
Norman Liebman, Livingston, N.J., assignor to Arch Crown Tags, Inc., Newark, N.J.
Filed Nov. 24, 1980, Ser. No. 209,986
Term of patent 14 years
U.S. Cl. D20—27



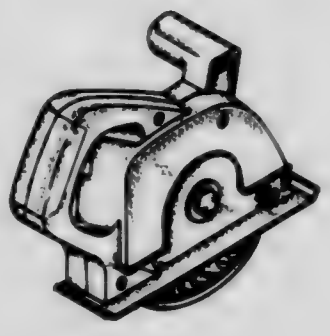
277,116
TOY VEHICLE
Joseph E. Johnston, San Rafael, Calif., assignor to Lucasfilm, Ltd., San Rafael, Calif.
Filed Sep. 30, 1982, Ser. No. 429,767
Term of patent 14 years
U.S. Cl. D21—87



277,117
KITE PLANE
Barnard R. Barrett, 308 Graham Ave., Lombard, Ill. 60148
Filed Oct. 27, 1982, Ser. No. 437,036
Term of patent 14 years
U.S. Cl. D21—89



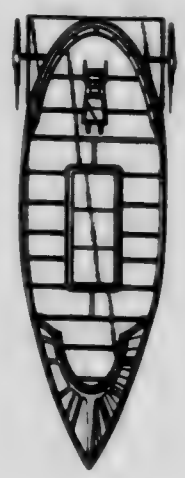
277,118
TOY CIRCULAR SAW
Ronald R. Klewitter, Hermann, Mo., assignor to Handi-Pac, Inc., Hermann, Mo.
Filed May 24, 1982, Ser. No. 381,873
Term of patent 14 years
U.S. Cl. D21—120



277,119
TOY HAMMER
Terry Pucnko, Cleveland, Ohio, assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,367
Term of patent 14 years
U.S. Cl. D21—120



277,120
TOY VEHICLE
Joseph E. Johnston, San Rafael, Calif., assignor to Lucas Film, Ltd., San Rafael, Calif.
Filed Sep. 30, 1982, Ser. No. 429,774
Term of patent 14 years
U.S. Cl. D21—130



277,121
TOY BEAR FIGURE
Ralph Shaffer, Columbia Station, and William Davidson, Lakewood, both of Ohio, assignors to American Greetings Corporation, Cleveland, Ohio
Filed Oct. 14, 1982, Ser. No. 434,207
Term of patent 14 years
U.S. Cl. D21—159



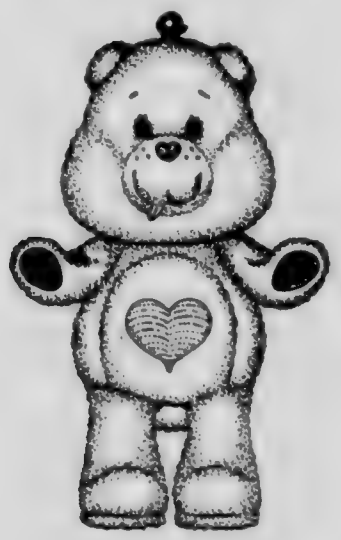
277,122
TOY BEAR FIGURE
Ralph Shaffer, Columbia Station, and William Davidson, Lakewood, both of Ohio, assignors to American Greetings Corporation, Cleveland, Ohio
Filed Oct. 14, 1982, Ser. No. 434,208
Term of patent 14 years
U.S. Cl. D21—159



277,123
TOY BEAR FIGURE
Ralph Shaffer, Columbia Station, and William Davidson, Lakewood, both of Ohio, assignors to American Greetings Corporation, Cleveland, Ohio
Filed Oct. 14, 1982, Ser. No. 434,209
Term of patent 14 years
U.S. Cl. D21—159



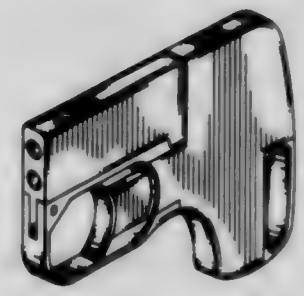
277,124
TOY BEAR FIGURE
Ralph Shaffer, Columbia Station, and William Davidson, Lakewood, both of Ohio, assignors to American Greetings Corporation, Cleveland, Ohio
Filed Oct. 14, 1982, Ser. No. 434,210
Term of patent 14 years
U.S. Cl. D21—59



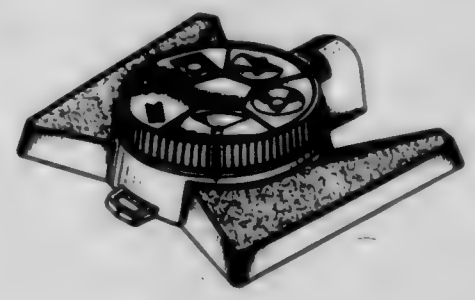
277,125
TOY BEAR FIGURE
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Term of patent 14 years
U.S. Cl. D21—159



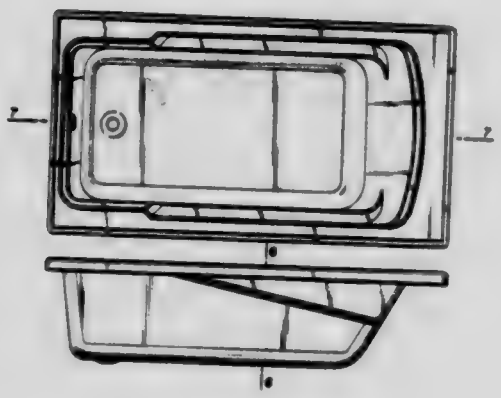
277,126
THIN FLAT SIDED HAND HELD WEAPON
Jody L. Numbers, 7908 E. Oak, Scottsdale, Ariz. 85257
Filed Aug. 9, 1982, Ser. No. 406,396
Term of patent 14 years
U.S. Cl. D22—1



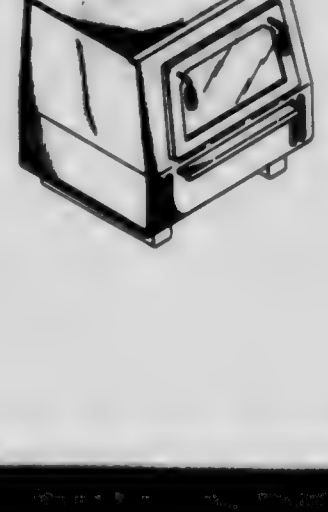
277,127
TURRET TOP SPRINKLER
Spencer L. Mackay, North Hollywood; Cleophus Price, Jr., Monrovia, and Harold F. Peckham, Claremont, all of Calif., assignors to Rain Bird Consumer Products Mfg. Corp., Duarte, Calif.
Filed Jan. 28, 1982, Ser. No. 343,443
Term of patent 14 years
U.S. Cl. D23—7



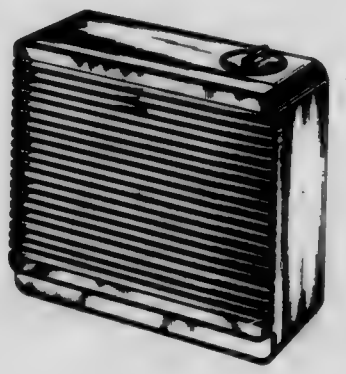
277,128
BATHTUB
Phillip D. Daniels, 4797 Lake Bluff, West Bloomfield Township, Mich. 48033
Filed Dec. 8, 1982, Ser. No. 447,952
Term of patent 14 years
U.S. Cl. D23—55



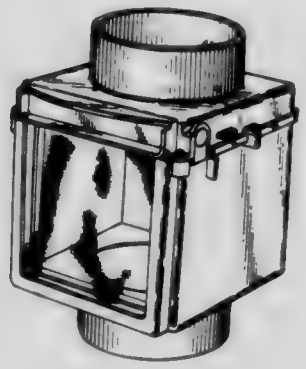
277,129
WOOD BURNING STOVE
Donavan R. Larson; Herbert A. F. Larson, and Gregory A. Larson, all of 31087 Peardonville Rd., #C, RR7, Abbotsford, British Columbia, Canada V2S 5W6
Filed Feb. 17, 1981, Ser. No. 234,679
The portion of the term of this patent subsequent to Oct. 8, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—97



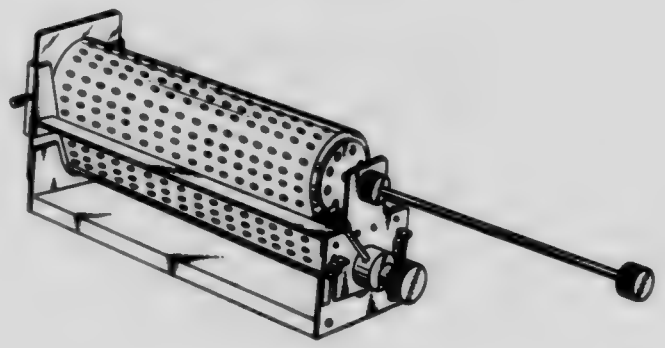
277,130
FAN-FORCED HEATER
Hans U. Schade, Neu-Ulm, Fed. Rep. of Germany, assignor to Elektro-Warmetechnik Siegfried Petz Co., Fed. Rep. of Germany
Filed Mar. 17, 1982, Ser. No. 359,178
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1981, MR VI532
Term of patent 14 years
U.S. Cl. D23—122



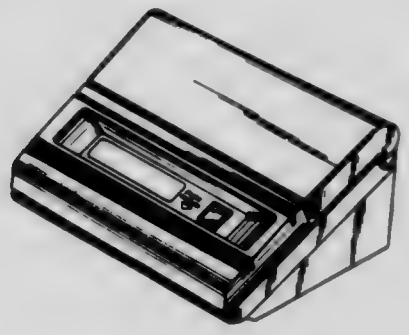
277,131
HOUSING FOR A CLOTHES DRYER VENT
Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502
Filed Sep. 5, 1980, Ser. No. 184,732
Term of patent 14 years
U.S. Cl. D23—151



277,132
SMALL ANIMAL HOLDER FOR USE WITH APPARATUS MEASURING BLOOD PRESSURE OF SMALL ANIMAL
Yoshimoto Hayashi; Atsuhiro Harima, and Tsune Tajima, all of Kawasaki, Japan, assignors to Hayashi Denki Co., Ltd., Kawasaki, Japan
Filed Apr. 8, 1982, Ser. No. 366,572
Claims priority, application Japan, Oct. 21, 1981, 56-46752
Term of patent 14 years
U.S. Cl. D24—8



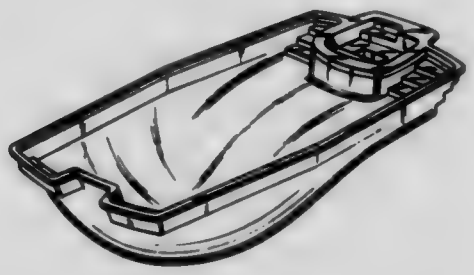
277,133
DIGITAL SPHYGMOMANOMETER
John T. Houlihan, Watertown, Conn., assignor to Timex Medical Products Corporation, Waterbury, Conn.
Filed Oct. 12, 1982, Ser. No. 433,947
Term of patent 14 years
U.S. Cl. D24—17



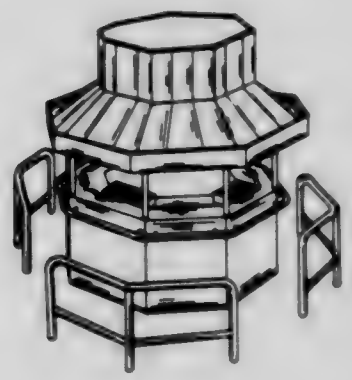
277,134
DENTAL SYRINGE
William B. Dragan, Burr St., RFD #1, Fairfield, Conn. 06430
Filed Nov. 6, 1981, Ser. No. 319,041
Term of patent 14 years
U.S. Cl. D24—24



277,135
COMBINATION FIBERGLASS SWIMMING POOL AND SPA
George P. Sullivan, P.O. Box 652, Hemet, Calif. 92343
Filed Nov. 15, 1982, Ser. No. 441,665
Term of patent 14 years
U.S. Cl. D24—38



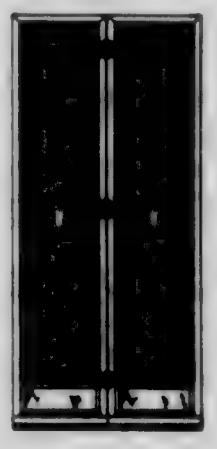
277,136
BARBECUE STAND OR THE LIKE
Stijn Van der Upwich, Hamlaan 3, Vlaarten, Netherlands
Filed Apr. 13, 1982, Ser. No. 367,835
Claims priority, application Netherlands, Oct. 13, 1981, 08965
Term of patent 14 years
U.S. Cl. D25—1



277,137
BARBECUE STAND OR THE LIKE
Stijn Van der Upwich, Hamlaan 3, Vlaarten, Netherlands
Filed Apr. 13, 1982, Ser. No. 368,058
Claims priority, application Netherlands, Oct. 13, 1981, 8096501
Term of patent 14 years
U.S. Cl. D25—1



277,138
SCREEN DOOR
Paul E. Hostetler, 3545 Hacienda St., Sarasota, Fla. 33578
Filed Oct. 13, 1982, Ser. No. 434,108
Term of patent 14 years
U.S. Cl. D25—49



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TO WHOM

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Tajima, Michio, 4,492,871, Cl. 250-459.100.
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Alderman, Robert J. Telephone hold circuit with improved self-limiting amplifier for injecting an audio signal during hold conditions. 4,492,822, Cl. 179-81.00R.

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Weingart, Brooks E., 4,492,310, Cl. 212-191.000.

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Dosinelli, Peter D., 4,492,035, Cl. 33-172.00B.

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Kaplan, Martin L., 4,492,652, Cl. 568-75.000.

Atkinson, Ivor B.; and Holdstock, Barry C., to CooperVision, Inc. Hydrogel contact lenses for permanent wear. 4,492,776, Cl. 523-108.000.

Atlantic Richfield Company: *See—*
Tanner, David P., 4,492,736, Cl. 428-446.000.
Yoo, Jin S.; and Radlowski, Cecelia A., 4,492,677, Cl. 423-244.000.
Yoo, Jin S.; and Radlowski, Cecelia A., 4,492,678, Cl. 423-244.000.

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Miller, Albert J., 4,492,952, Cl. 340-52.00F.

Aude, Thomas C., to Bechtel International Corporation. Apparatus and method for slack flow elimination in a slurry pipeline. 4,492,248, Cl. 137-236.00R.

Auer, Werner, to Teldix GmbH. Flywheel. 4,492,131, Cl. 74-574.000.

Augusta Developments Inc.: *See—*
Hanson, Gustaf H., 4,492,573, Cl. 433-11.000.

Austpole Pty., Ltd.: *See—*
Arnold, Victor, 4,492,496, Cl. 405-303.000.

Autzica AG: *See*—
Dubey, Pierre, 4,492,296, Cl. 194-100.00A.

Auth, David C. Non-sticking electrocautery system and forceps. 4,492,231, Cl. 128-303.170.

Averbuch, Marie-Therese; Durif-Varambon, Andre ; Gauthier, Sylviane; Nicolau, Ion F.; and Peuzin, Jean C., to Commissariat a l'Energie Atomique. Pyroelectric detector and vidicon. 4,492,857, Cl. 250-211.00R.

Avery, Carl F., to Marion Laboratories, Inc. Package for collecting cultures. 4,492,305, Cl. 206-210.000.

Avery International Corp.: *See*—
Allbright, Charles T.; and Culp, Dennis S., 4,492,724, Cl. 428-40.000.

Avery, Randall N., to Westinghouse Electric Corp. Reinforced tank wall structure for transformers. 4,492,314, Cl. 220-71.000.

Awertamp, John B. Fluid-operated oil or water well pump. 4,492,537, Cl. 417-404.000.

Ayerst, McKenna & Harrison, Inc.: *See*—
Gauthier, Jean A.; and Jirkovsky, Ivo L., 4,492,697, Cl. 424-248.400.

B. F. Goodrich Company, The: *See*—
Bynoe, Robert J., 4,492,064, Cl. 52-309.800.
Wootton, Gerald V., 4,492,613, Cl. 203-39.000.

B.M.H. Feedgear: *See*—
McLeod, Alasdair D., 4,492,299, Cl. 198-417.000.

Babcock, Ernest R. Buffing pad retainer. 4,491,999, Cl. 15-230.000.

Babcock & Wilcox Company, The: *See*—
Hammond, Charles W., 4,492,187, Cl. 122-390.000.
Pocock, Robert E., 4,492,559, Cl. 431-12.000.

Babies by Storm, Inc.: *See*—
Storm, Linda W., 4,492,326, Cl. 224-160.000.

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Watson, James M.; and Bailey, Darrell E., 4,492,675, Cl. 422-187.000.

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Bakker, William J. Paper roll rewinder. 4,492,345, Cl. 242-67.30R.

Baldwin, Jeffrey D., to Sundstrand Corporation. Compact resistor assembly for rotary electric machine. 4,492,887, Cl. 310-68.00R.

Ball, David C., to W. W. Sly Manufacturing Co., The. Bulk conveyor apparatus. 4,492,294, Cl. 193-25.00C.

Ball, William J.; Cotton, Leonard; and Stewart, David G., to British Petroleum Company Limited, The. Process for the production of oxygenated hydrocarbons by the catalytic conversion of synthesis gas. 4,492,772, Cl. 518-713.000.

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Hunt, Donald E., 4,492,210, Cl. 123-568.000.

Balzeit, Ralf: *See*—
Dinse, Wolfgang; Balzeit, Ralf; and Gesell, Reinhard, 4,492,984, Cl. 358-289.000.

BancTec, Incorporated: *See*—
Johnson, Gerald L.; Nolting, Eugene C.; and Allen, John H., 4,492,161, Cl. 101-109.000.

Bangerter, Richard M.: *See*—
Kennard, Lon H.; Hall, Duane O.; and Bangerter, Richard M., 4,492,820, Cl. 179-5.00P.

Bankar, Vilas G.; Stuchlik, Terry L.; and Werny, Frank, to Du Pont de Nemours, E. I., and Company. Trilobal filaments exhibiting high bulk and sparkle. 4,492,731, Cl. 428-362.000.

Bannerman, Wyburn G.; and Ludwig, Charles H., to Georgia-Pacific Corporation. Cohesive fibrous mat for in-transit particulate control. 4,492,729, Cl. 428-283.000.

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Bar, Alfredo, to Necchi Societa per Azioni. Starting relay-terminal box group for hermetic motor-driven compressors. 4,492,886, Cl. 310-68.00C.

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Barnhart, Gerald K. Fish lure. 4,492,054, Cl. 43-42.230.

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Campbell, Frank L.; Barnum, Dean C.; and Cores, William C., 4,492,275, Cl. 175-46.000.

Barone, Charles: *See*—
Hopmayer, Gary S.; and Barone, Charles, 4,493,018, Cl. 363-145.000.

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Barry, Jurgen: *See*—
Pross, Wilhelm; Barry, Jurgen; Muhlbock, Franz; and Hartmann, Klaus, 4,492,462, Cl. 356-39.000.

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Peterson, Robert R.; Schubert, Dale W.; and Cholakis, Peter N., 4,492,949, Cl. 338-114.000.

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Frank, Gerhard; Rudolf, Peter; Neubauer, Gerald; Duffner, Paul; Ohlinger, Manfred; Wilfinger, Hans J.; and Pfannebecker, Emil, 4,492,804, Cl. 564-493.000.
Rieber, Norbert; Boehm, Heinrich; and Adolphi, Heinrich, 4,492,689, Cl. 424-200.000.

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Bauer, Klaus: *See*—
Willms, Lothar; Huttelmaier, Thomas; Mildenberger, Hilmar; Bauer, Klaus; Burstell, Helmut; and Bieringer, Hermann, 4,492,398, Cl. 71-93.000.

Baugh, Benton F. Valve assembly. 4,492,359, Cl. 251-1.00A.

Baumann, Fritz; Kranzler, Ernst; Radke, Siegmund; Schilling, Rainer; Fuchs, Wolfgang; and Rieker, Werner, to Robert Bosch GmbH. Fixture for a wire in a wire-winding device for an electric machine. 4,492,344, Cl. 242-1.000.

Baur, Karl; and Karwat, Heinz, to Linde Aktiengesellschaft. Process for preventing the plugging of installations with metallic sulfides. 4,492,676, Cl. 423-210.000.

Baxter, Ward, II; Clancy, Gerald F.; Gruner, Ronald H.; Mundie, Craig J.; Bachman, Brett L.; Redfield, Stephen R.; Coder, William N.; Jones, Thomas M.; Houseman, David L.; Young, Charles J.; and Haeffele, Steven M., to Data General Corporation. Digital data processing system. 4,493,024, Cl. 364-200.000.

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Brunn, Horst; Hund, Franz; Rambold, Wolfgang; Krause, Peter; and von Szadkowski, Gerd, 4,492,600, Cl. 106-14.340.
Claussen, Uwe; Merten, Josef; Rohr, Harry; and Melchior, Bernd, 4,492,778, Cl. 523-137.000.
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Hohmann, Walter; and Wunderlich, Klaus, 4,492,790, Cl. 544-188.000.
Kramer, Wolfgang; Jautelat, Manfred; and Kranz, Eckart, 4,492,795, Cl. 548-341.000.
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Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, 4,492,800, Cl. 562-506.000.

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Weishaupt, Walter; and Steins, Wilfried, 4,493,102, Cl. 381-2.000.

BBC Brown, Boveri & Company, Limited: *See*—
Kaufmann, Meinolph; and Schad, Hanspeter, 4,492,432, Cl. 350-338.000.

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Beatrice Foods Co.: *See*—
Cooper, Stephen E.; and Leohner, Donald L., 4,492,714, Cl. 426-602.000.

Bechtel International Corporation: *See*—
Aude, Thomas C., 4,492,248, Cl. 137-236.00R.

Beckwith, Walter L., Jr., to Brown & Sharp Manufacturing Company. Magnetic ball bar gauge. 4,492,036, Cl. 33-180.00R.

Beede Electrical Instrument Co., Inc.: *See*—
Reenstra, Arthur L., 4,492,920, Cl. 324-146.000.

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Belgard, Richard A.: *See—*
Gavria, Edward S.; Bratt, Richard G.; Schleimer, Stephen I.; Pilat, John F.; Richmond, Michael S.; Wallach, Walter A., Jr.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Clancy, Gerald F.; Mundie, Craig J.; Jones, Thomas M.; Bachman, Brett L.; and Bernstein, David H., 4,493,023, Cl. 364-200.000.
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Belykh, Sergei I.; Moschensky, Anatoly D.; Davydov, Anatoly B.; Pershin, Gely G.; Smirnov, Boris A.; and Gromov, Mikhail V., to Vsesojuzny Nauchno-Issledovatelsky I Ispytatelny Institut Meditsinskoi Tekhniki. Device for uniting bone fragments. 4,492,226, Cl. 128-92.0BC.

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Benson, John; Hanel, Harold L.; and Freeman, Douglas A., to International Telephone and Telegraph Corporation. Powder actuated tool. 4,492,329, Cl. 227-10.000.

Bentley, Arthur P. Pressure balanced liquid elevating mechanism. 4,492,528, Cl. 417-241.000.

Benz, Michael, deceased (by Benz, Violet E., Executrix), to Benz, Violet E.; Benz, Michael J.; and Benz, Randy, a part interest to each. Humane animal trap. 4,492,055, Cl. 43-88.000.

Benz, Michael J.: *See—*
Benz, Michael, deceased, 4,492,055, Cl. 43-88.000.

Benz, Randy: *See—*
Benz, Michael, deceased, 4,492,055, Cl. 43-88.000.

Benz, Violet E.: *See—*
Benz, Michael, deceased, 4,492,055, Cl. 43-88.000.

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Bergmann, Ernest E., to AT&T Bell Laboratories. Polarization independent beam splitter. 4,492,436, Cl. 350-395.000.

Bergquist, Lyle E., to Martin Marietta Corporation. Ultra sensitive noble gas leak detector. 4,492,110, Cl. 73-40.700.

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Jelvestam, Roland E.; and Bergstrom, Par-Halan, 4,492,868, Cl. 250-345.000.

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Allen, Francis F., 4,492,341, Cl. 239-686.000.

Bernardon, Jean-Michel: *See—*
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Bertsch, Richard; Gunther, Dieter; and Steinbrenner, Ulrich, to Robert Bosch GmbH. Metering device for an internal combustion engine. 4,492,204, Cl. 123-489.000.

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Bettcher Industries, Inc.: *See—*
Bettcher, Louis A., 4,492,027, Cl. 30-276.000.

Bettcher, Louis A., to Bettcher Industries, Inc. Rotary hand knife. 4,492,027, Cl. 30-276.000.

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Bickl, Horst; Findeis, Gunter; and Treiber, Helmut, to Agfa-Gevaert AG. Method of and arrangement for copying a colored original. 4,492,458, Cl. 355-38.000.

Biegay, Jack M., to Allegheny Ludlum Steel Corporation. Method of welding steel strip. 4,492,849, Cl. 219-137.0WM.

Biemans, Arnoldus. Needle threading device. 4,492,325, Cl. 223-99.000.

Bieringer, Hermann: *See—*
Wilms, Lothar; Huttelmaier, Thomas; Mildenberger, Hilmar; Bauer, Klaus; Burstell, Helmut; and Bieringer, Hermann, 4,492,598, Cl. 71-93.000.

Biesehke, Martin, to Textron Inc. Wire clamp assembly. 4,492,422, Cl. 339-95.00R.

Bilsing, Alfred. Conveyor robot. 4,492,511, Cl. 414-744.00A.

Bilyeu, Delford D., to Grumman Emergency Products, Inc. Pneumatic fire pump pressure controller. 4,492,525, Cl. 417-34.000.

BIP Chemicals Limited: *See—*
Williams, Richard S.; and Daniels, Terry, 4,492,782, Cl. 524-293.000.

Bischoff, Martin: *See—*
Rutzen, Horst; Nikolaus, Peter; Bischoff, Martin; and Lehmann, Rudolf, 4,492,802, Cl. 564-292.000.

Bixler, Kenneth D.; Reifers, Richard F.; and Lord, Henry A., to Packaging Corporation of America. Multi-row egg cartons. 4,492,331, Cl. 229-2.5EC.

Bizzell, Gary D.; and Ekern, William F., to Lockheed Missiles & Space Company, Inc. Manifolded evaporator for pump-assisted heat pipe. 4,492,266, Cl. 165-104.260.

Bjork, Anders K.; Abramo, Aina L.; and Christensson, Erik G. Diphenylbutyl-1-acylpiperazines. 4,492,698, Cl. 424-250.000.

Blackmore, Keith D.: *See—*
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Blake, William W., to Caterpillar Tractor Co. Fluid control system for two independent actuators. 4,492,251, Cl. 137-596.160.

Blanchard, Gilbert; Brunelle, Jean-Pierre; and Prigent, Michel, to Pro-Catalyse. Pollution control catalyst for internal combustion engine exhaust system/catalytic converter and process for its preparation. 4,492,769, Cl. 502-262.000.

Blanchard, Gilbert; Brunelle, Jean-Pierre; and Prigent, Michel, to Procatalyse. Catalyst and use thereof in treating internal combustion engine exhaust gases. 4,492,770, Cl. 502-304.000.

Blaszczak, Larry C.; Kukolja, Stjepan; and Turner, Jan R., to Eli Lilly and Company. Benzothienylglycyl cephalosporin derivatives. 4,492,693, Cl. 424-246.000.

Blaszczak, Larry C.; and Turner, Jan R., to Eli Lilly and Company. Indolylglycyl cephalosporin derivatives. 4,492,694, Cl. 424-246.000.

Blattner, Hans; and Storni, Angelo, to Ciba-Geigy Corporation. Azatetracyclic carbonitriles. 4,492,691, Cl. 424-244.000.

Blease, James W.: *See—*
Tao, Luh C.; and Blease, James W., 4,492,637, Cl. 210-711.000.

Blom, Friedrich, to Windmoller & Holscher. Apparatus for splicing the trailing end of a web from an exhausted supply roll to the leading end of a web from a new supply roll. 4,492,609, Cl. 156-507.000.

Blomgren, Kenneth E.; and Oberhauser, Louis B. Method and apparatus for securing a wheelchair to a vehicle floor. 4,492,403, Cl. 296-65.00R.

Blumenberg, Gunther: *See—*
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Blunt, Thomas O.: *See—*
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Bock, Hans-Christian: *See—*
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Bock, Jan: *See—*
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Boehm, Heinrich: *See—*
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Boehm, Peter: *See—*
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Boeing Company, The: *See—*
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Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., to Miles Laboratories, Inc. Heterogenous specific binding assay employing an enzyme substrate as label. 4,492,751, Cl. 435-7.000.

Boise Cascade Corporation: *See—*
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Mayer, Thomas; Temple, Michael D.; Boling, Norman L.; and Rancourt, James D., 4,492,718, Cl. 427-160.000.

Bollinger, Viktor. Air conditioning system for heated rooms. 4,492,086, Cl. 62-3.000.

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Fox, John V., 4,492,273, Cl. 172-520.000.

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Divoux, Michel; Bonansea, Hubert; and Constant, Bernard, 4,492,509, Cl. 414-387.000.

Boots Company PLC, The: *See—*
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Bormann, Dieter: *See—*
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Boschi, Pier M.; Gozzo, Franco; and Longoni, Angelo, to Montedison S.p.A. Phosphoric and thiophosphoric esters of 5(3)-hydroxypyrazoles exerting an insecticidal action. 4,492,690, Cl. 424-200.000.
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Bosies, Elmar; Gall, Rudi; Weimann, Gunter; Bicker, Uwe; and Pahlke, Wulf, to Boehringer Mannheim GmbH. Phospholipid compound. 4,492,659, Cl. 260-925.000.
Bosin, Sanford D.: *See—*
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Bottka, Nicholas; Lessoff, Howard; and Hills, Marian E., to United States of America, Navy. Multi-color tunable semiconductor device. 4,492,434, Cl. 350-356.000.
Boucraut, Frantz M. J., to Petit Bateau Valton S.A. Apparatus for drying and stabilizing pieces of woven or knitted fabric. 4,492,045, Cl. 34-122.000.
Boudreau, Daniel A.; and Salas, Edward R., to Honeywell Information Systems Inc. Priority resolver having dynamically adjustable priority levels. 4,493,036, Cl. 364-200.000.
Boultinghouse, Harold D., to Phillips Petroleum Company. Adhesive for butadiene styrene copolymer. 4,492,784, Cl. 524-473.000.
Bourdet, Gilbert L.; and Franco, Michel A., to Agence Nationale de Valorisation de la Recherche. Apparatus and method for distance measurement by laser interferometry. 4,492,464, Cl. 356-4.500.
Bourgein, John. Wall mounted knife holder. 4,492,028, Cl. 30-296.00A.
Bouteille, Daniel; Petrimaux, Eric; and Burban, Jean-Luc, to Legris. Pressure relay adapted to signal the position of the movable member of a jack. 4,492,149, Cl. 92-5.00R.
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Boyanton, Walter L., to Innovative Research and Development Co. Chain link fence system. 4,492,364, Cl. 256-47.000.
Boylan, John F. Filter cleaning device. 4,492,003, Cl. 15-406.000.
Bradfield, James E.: *See—*
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Braswell, Richard R. Welders torch igniting device. 4,492,561, Cl. 431-128.000.
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Gavrin, Edward S.; Bratt, Richard G.; Schleimer, Stephen I.; Pilat, John F.; Richmond, Michael S.; Wallach, Walter A., Jr.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Clancy, Gerald F.; Mundie, Craig J.; Jones, Thomas M.; Bachman, Brett L.; and Bernstein, David H., 4,493,023, Cl. 364-200.000.
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Brazeway, Inc.: *See—*
Carr, Charles R., 4,492,851, Cl. 219-201.000.
Brechlin, Alfred, to Hoechst Aktiengesellschaft. Flexible laminatable photosensitive layer. 4,492,747, Cl. 430-96.000.
Brede, Uwe; Horr, Alfred; and Penner, Horst, to Dynamit Nobel Aktiengesellschaft. Partially combustible propellant charge igniter. 4,492,167, Cl. 102-470.000.
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Brewer, Robert A. Labeling keeper. 4,492,048, Cl. 40-2.00R.
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Bright, Gene M., to Pfizer Inc. Antibacterial cyclic ethers of 9-deoxo-9a-aza-9a-homoerythromycin A and intermediates therefor. 4,492,688, Cl. 424-180.000.
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Brister, Beryle D., 4,492,095, Cl. 62-293.000.
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Fieldus, Geoffrey H., 4,492,340, Cl. 239-265.250.
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Ball, William J.; Cotton, Leonard; and Stewart, David G., 4,492,772, Cl. 518-713.000.
Ball, William J.; Cotton, Leonard; and Stewart, David G., 4,492,773, Cl. 518-713.000.
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Brogardh, Torgny; Linge, Anders; and Sander, Lars, to Asea Aktiebolag. Optical measuring device with means for suppressing reflections. 4,492,860, Cl. 250-227.000.
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Brooks, Robert L.: *See—*
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Brown, David L.: *See—*
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Brown & Sharp Manufacturing Company: *See—*
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Brunn, Horst; Hund, Franz; Rambold, Wolfgang; Kresse, Peter; and von Szadkowski, Gerd, to Bayer Aktiengesellschaft. Corrosion-inhibiting paints and lacquers. 4,492,600, Cl. 106-14.340.
Bruno, Melle . Process for the continuous foaming of plastics. 4,492,664, Cl. 264-46.200.
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Moss, Elvis W., 4,492,347, Cl. 242-84.20R.
Staerzl, Richard E., 4,492,877, Cl. 307-95.000.
Brzezinski, Alex M.; Hershey, Harold J.; and Whitesell, Stephen R., to AT&T Bell Laboratories. Electroacoustic transducer. 4,492,825, Cl. 179-111.00R.
BS&B Safety System, Inc.: *See—*
Naumann, Leo J., 4,492,103, Cl. 72-55.000.
bso Steuerungstechnik GmbH: *See—*
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Buljan, Sergej-Tomislav, to GTE Products Corporation. Si_3N_4 ceramic articles having lower density outer layer, and method. 4,492,765, Cl. 501-97.000.
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Burghart, Bertram; Hassib, Gabor; and Flasch, Ernst, to Kernforschungszentrum Karlsruhe GmbH. Albedo dosimeter encapsulation. 4,492,872, Cl. 250-484.100.
Burke, James E., to Hoxid, Jack B. Fluid dispensing massage device. 4,492,223, Cl. 128-57.000.
Burke, John M., to Eaton Corporation. Process for cleaning metal working fluids for re-use. 4,492,636, Cl. 210-706.000.
Burkhardt, James L.; and McCann, John J., to Polaroid Corporation. Processor for enhancing video signals for photographic reproduction. 4,492,987, Cl. 358-332.000.
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Mayer, Thomas; Temple, Michael D.; Boling, Norman L.; and Rancourt, James D., 4,492,718, Cl. 427-160.000.
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Burton, Clement; Kremer, Andre; Stoup, Hubert; and Solvi, Marc. Centrifugal drum for metallurgical slag. 4,492,342, Cl. 241-67.000.
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Rasch, Hans; and Busch, Dieter, 4,492,077, Cl. 57-414.000.
Bush, Alvin A.: *See*—
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Bush, Harry: *See*—
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Bylin Heating Systems, Inc.: *See*—
Bylin, Robert O., 4,492,355, Cl. 248-206.500.
Bylin, Robert O., to Bylin Heating Systems, Inc. Magnetic mount for heating module. 4,492,355, Cl. 248-206.500.
Bynoe, Robert J., to B. F. Goodrich Company, The. Insulated roof construction. 4,492,064, Cl. 52-309.800.
Byrum, George W., to United States of America, Navy. Apparatus for measuring the spatial scalar variation of a magnetic field with three mutually orthogonal gradiometers on a moderately stable moving platform. 4,492,923, Cl. 324-207.000.
Byrd, James D.: *See*—
Junior, Kenneth E.; and Byrd, James D., 4,492,779, Cl. 523-138.000.
C. A. Weidmuller GmbH & Co.: *See*—
Wiener, Hans; and Undin, Hans, 4,492,026, Cl. 30-90.900.
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Marz, Horst F., 4,492,165, Cl. 102-313.000.
Cabrillat, Marie-Therese; and Lioux, Noel, to Commissariat a l'Energie Atomique. Fast neutron nuclear reactor. 4,492,667, Cl. 376-405.000.
Cadars, Patrick, to Valeo. Water box and expansion chamber device for a heat exchanger. 4,492,267, Cl. 165-104.320.
Cadillac Gage Company: *See*—
Appelblatt, Irving; and Krawiecki, Peter, 4,492,282, Cl. 180-68.100.
Cahuzac, Georges J. J., to Societe Nationale Industrielle Aerospatiale. Hollow reinforcements of revolution made by three-dimensional weaving method and machine for fabricating such reinforcements. 4,492,096, Cl. 66-11.000.
California Institute of Technology: *See*—
Kraljik, James G.; and Corcoran, William H., 4,492,588, Cl. 44-1.00R.
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Campbell, Frank L.; Barnum, Dean C.; and Corea, William C., to Chevron Research Company. Means and method for facilitating measurements while coring. 4,492,275, Cl. 175-46.000.
Campbell, Russell J., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Error correcting code decoder. 4,493,080, Cl. 371-37.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
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Tada, Tetsuya, 4,492,320, Cl. 222-398.000.
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Carr, Charles R., to Braseway, Inc. Swap action arrangement mounting an electric defroster heater to a finned refrigeration unit. 4,492,851, Cl. 219-201.000.
Carrico, Robert J.: *See*—
Bogusiaski, Robert C.; Carrico, Robert J.; and Christner, James E., 4,492,751, Cl. 435-7.000.
Carrier Corporation: *See*—
Jennings, William B.; Kozlowski, Robert M.; and Hayes, Richmond S., Jr., 4,492,269, Cl. 165-172.000.
Kuhn, Gerhard; and Jacobs, John J., 4,492,127, Cl. 74-50.000.
Martin, Gregory W., 4,492,327, Cl. 226-177.000.
Smorol, Michael E.; Witaszynski, Michael C.; and Woollis, Theodore L., 4,492,092, Cl. 62-181.000.
Whitwell, Robert J.; and Schafer, James P., 4,492,091, Cl. 62-180.000.
Carter, Michael R.: *See*—
Camberton, John; Foster, Alun E.; Rae, Alexander S.; Fernandes, Vernon J.; and Carter, Michael R., 4,493,082, Cl. 371-43.000.
Carter, Russell W., to Corn States Metal Fabricators, Inc. Valve unit for a mold vent. 4,492,554, Cl. 425-383.000.
Casella, Linda J., to Corning Glass Works. Use of hydrolyzed whey products in fermented sausages. 4,492,712, Cl. 426-59.000.
Casella, Linda J., to Corning Glass Works. Use of hydrolyzed whey products in comminuted meat products. 4,492,715, Cl. 426-646.000.
Caspers, Friedhelm, to Elektro-Physik & Erich Steingroever. Method and apparatus for the electronic measurement of the thickness of very thin electrically conductive films on a nonconductive substrate. 4,492,915, Cl. 324-58.50R.
Cassanas, Claude; Couot, Jean-Pierre; and Royer, Jacques, to U.S. Philips Corporation. Printer with inker on the platen roller. 4,492,164, Cl. 101-216.000.
Caterpillar Tractor Co.: *See*—
Blake, William W., 4,492,251, Cl. 137-596.160.
Cavitron, Inc.: *See*—
Warrin, George E.; and Perdreaux, Rene J., 4,492,574, Cl. 433-81.000.
Cellai, Stelvio S. Automatic self-propelled devices for travelling on a track cable. 4,492,168, Cl. 105-30.000.
CEM Cie Electro-Mecanique: *See*—
Leser, Jacques F., 4,492,477, Cl. 356-430.000.
Ceskoslovenska akademie ved: *See*—
Zverina, Karel; and Kroupa, Petr, 4,492,766, Cl. 501-104.000.
Chadwick, Lee S., II. Curvilinear polyhedral construction kit. 4,492,723, Cl. 428-7.000.
Chakrabarti, Jiban K.; Hotten, Terrence M.; and Steggles, David J., to Lilly Industries Limited. Triazolobenzodiazepine derivatives. 4,492,699, Cl. 424-250.000.
Cham, Edward J.; and Specht, Theodore R., to Westinghouse Electric Corp. Rectifier transformer. 4,493,016, Cl. 363-126.000.
Champion International Corporation: *See*—
Meeker, David M.; and Lillibridge, Harold R., 4,492,308, Cl. 206-610.000.
Roberts, Harry H., 4,492,333, Cl. 229-22.000.
Chang, Richard S.; Ling, John Y.; and Shoff, Daniel J., to Mattel, Inc. Teaching and entertainment device. 4,492,582, Cl. 434-169.000.
Chao, Allen C.; Huang, Barney K.; and Wang, James S. J. Method and apparatus for drying and handling sludge. 4,492,039, Cl. 34-4.000.
Chapelain, Jean-Pierre: *See*—
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Charles Stark Draper Laboratory, Inc., The: *See*—
Pruszenski, Anthony S., Jr., 4,492,859, Cl. 250-216.000.
Chauvin, John A. Method of automatic roux making. 4,492,713, Cl. 426-231.000.
Cheh, Christopher H.; and Glass, Roger W. Carbon dioxide removal method employing packed solid calcium hydroxide. 4,492,649, Cl. 252-630.000.
Chembakaffery, George M.: *See*—
Zapletal, Henry; Wentzek, Horst F.; and Chembakaffery, George M., 4,492,298, Cl. 198-409.000.
Chemische Fabrik Budenheim: *See*—
Frankenfeld, Klaus; Ruschke, Peter; Brodt, Peter; and Eich, Gerhard, 4,492,680, Cl. 423-321.00S.
Chen, C. N.: *See*—
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Cherbuy, Bernard: *See*—
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Chevron Research Company: *See*—
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Chikaraishi, Takayo; Tuchiya, Yosimasa; and Kawamo, Kazunori, to Nissan Motor Company, Limited; and Nissan Shatai Company, Limited. Sealing structure for automotive vehicle side doors. 4,492,405, Cl. 296-146.000.
Chinn, Bryan P.; Armour, John S.; Watson, Peter M. F.; and Donne, Graham L., to Secretary of State for Her Majesty's Government of the United Kingdom and Britain. Non-spill liquid fuel tanks. 4,492,244, Cl. 137-38.000.

Chiotasso, Pierre; and Dostes, Jacques, to Societe Spart. Automatic distributor-feeder with plural compartments for granular food for domestic animals. 4,492,183, Cl. 119-51.130.

Chiu, Kin-Chung R.: *See*—
Bean, John C.; Chiu, Kin-Chung R.; and Poate, John M., 4,492,371, Cl. 357-15.000.

Chiu, Robert C., to R&C Chiu International, Inc. Loudspeaker. 4,492,826, Cl. 179-115.5PS.

Chloride Silent Power Limited: *See*—
Wright, Michael L.; and Tilley, Alec R., 4,492,021, Cl. 29-623.100.

Chmela, Franz; Herzog, Walter; and Meier, Richard, to M.A.N. Maschinenfabrik. Spark-ignition air-compressing internal combustion engine. 4,492,194, Cl. 123-276.000.

Cholakis, Peter N.: *See*—
Peterson, Robert R.; Schubert, Dale W.; and Cholakis, Peter N., 4,492,949, Cl. 338-114.000.

Chometon, Pierre; and Dollfus, Jacques, to Commissariat a l'Energie Atomique. Device for damping shocks caused by moving heavy objects. 4,492,291, Cl. 188-377.000.

Chong, Ian, to General Drapery Services, Inc. Shading system. 4,492,261, Cl. 160-319.000.

Christensson, Erik G.: *See*—
Bjork, Anders K.; Abramo, Aina L.; and Christensson, Erik G., 4,492,698, Cl. 424-250.000.

Christine, David R.; and Terry, John F., Jr. Road repair spreader. 4,492,490, Cl. 404-108.000.

Christman, Jon D.: *See*—
Jacobs, Anthony S.; Riley, James E.; and Christman, Jon D., 4,492,390, Cl. 281-31.000.

Christner, James E.: *See*—
Bogusiaski, Robert C.; Carrico, Robert J.; and Christner, James E., 4,492,751, Cl. 435-7.000.

Chubachi, Noriyoshi, to Keisuke Honda. Ultrasonic nondestructive test apparatus. 4,492,117, Cl. 73-597.000.

Ciba-Geigy Corporation: *See*—
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Drabek, Josef, 4,492,705, Cl. 424-270.000.
Ghisalba, Oreste; Heinzer, Franz; and Kuenzi, Martin, 4,492,756, Cl. 435-253.000.
Maul, Rudolf; Otto, Eberhard; and Zinke, Horst, 4,492,661, Cl. 260-976.000.
Orban, Ivan; and Troxler, Eduard, 4,492,791, Cl. 544-198.000.

CIC Int'l. Corp.: *See*—
Levine, Morris M., 4,492,550, Cl. 425-142.000.

Cii Honeywell Bull (Societe Anonyme): *See*—
Voirin, Jean-Philippe; and Cherbuy, Bernard, 4,492,178, Cl. 118-653.000.

Citizen Watch Co., Ltd.: *See*—
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Clancy, Gerald F.: *See*—
Baxter, Ward, II; Clancy, Gerald F.; Gruner, Ronald H.; Mundie, Craig J.; Bachman, Brett L.; Redfield, Stephen R.; Coder, William N.; Jones, Thomas M.; Houseman, David L.; Young, Charles J.; and Haeffele, Steven M., 4,493,024, Cl. 364-200.000.
Gavria, Edward S.; Bratt, Richard G.; Schleimer, Stephen I.; Pilat, John F.; Richmond, Michael S.; Wallach, Walter A., Jr.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Clancy, Gerald F.; Mundie, Craig J.; Jones, Thomas M.; Bachman, Brett L.; and Bernstein, David H., 4,493,023, Cl. 364-200.000.

Clark, John I., to Pitney Bowes Inc. Postage printing apparatus having a movable print head and a rotating print drum and ribbon cartridge. 4,492,157, Cl. 101-71.000.

Clark, John I., to Pitney Bowes Inc. Postage printing apparatus having a movable print head and a hollow non-rotating support shaft. 4,492,158, Cl. 101-71.000.

Clark, John I., to Pitney Bowes Inc. Postage printing apparatus having a print head with a replaceable ribbon cartridge. 4,492,159, Cl. 101-71.000.

Clark, John I.; and Eckert, Alton B., to Pitney Bowes Inc. Postage printing apparatus having a movable print head and a variable speed drum rotation. 4,492,160, Cl. 101-71.000.

Clark, Kenneth M., to Hughes Aircraft Company. Method for optically finishing connector-mounted optical fibers. 4,492,060, Cl. 51-283.00R.

Clark, Robert F.: *See*—
Evans, Edwin R.; and Clark, Robert F., 4,492,786, Cl. 524-865.000.

Clarke, Herbert H., Jr.; and Reefman, William E. Self-arcing tank segments. 4,492,065, Cl. 52-595.000.

Claussen, Uwe, to Bayer Aktiengeiselischaft. Light-collecting systems using halogenated perylene derivatives as light converters. 4,492,648, Cl. 252-582.000.

Claussen, Uwe; Merten, Josef; Rohr, Harry; and Melchior, Bernd, to Bayer Aktiengesellschaft. Method for making fluorescent light-collectors. 4,492,778, Cl. 523-137.000.

Clayton, Robert H., to Perkin-Elmer Corporation, The. Electron gun assembly. 4,493,097, Cl. 378-137.000.

Clayton, Wilson A.; and Galperin, Alexander, to Leeds & Northrup Company. Fast response surface contact temperature sensor. 4,492,948, Cl. 338-25.000.

Clegg, John E. Solar collector. 4,492,424, Cl. 350-96.100.

Clegg, John E. Conical wide-field microscopic lens. 4,492,438, Cl. 350-432.000.

Clegg, John E. Monochromatic beam concentrator. 4,492,439, Cl. 350-432.000.

Clemson University: *See*—
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Cline, Harvey E., to General Electric Company. Diffraction grating wire arrays in series. 4,492,738, Cl. 428-611.000.

Cline, Harvey E., to General Electric Company. Eutectic fine wire arrays. 4,492,739, Cl. 428-611.000.

Cobb, Jack M., to Hughes Aircraft Company. Method for fabricating corrugated microwave components. 4,492,020, Cl. 29-600.000.

Coder, William N.: *See*—
Baxter, Ward, II; Clancy, Gerald F.; Gruner, Ronald H.; Mundie, Craig J.; Bachman, Brett L.; Redfield, Stephen R.; Coder, William N.; Jones, Thomas M.; Houseman, David L.; Young, Charles J.; and Haeffele, Steven M., 4,493,024, Cl. 364-200.000.

Colbert, Raymond O.; and Hellman, Bengt H., to AT&T Bell Laboratories. Power supply switching arrangement. 4,492,876, Cl. 307-66.000.

Collins, Thomas D., to Sonoco Products Company. Carton divider. 4,492,332, Cl. 229-15.000.

Collmeyer, Arthur J.; Hoel, Jeffrey H.; King, Paul F.; Stanley, Donald O.; and Sturgeon, Roger, to Calma Company. Graphics display system and method including preclipping circuit. 4,492,956, Cl. 340-723.000.

Colonna, William J.: *See*—
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Averbuch, Marie-Therese; Durif-Varambon, Andre ; Gasthier, Sylviane; Nicolau, Ion F.; and Peuzin, Jean C., 4,492,857, Cl. 250-211.00R.
Boshra-Riad, Mokhtar; Fedeli, Jean-Marc; Jouve, Hubert; and Mauduit, Daniel, 4,493,054, Cl. 365-36.000.
Cabrillat, Marie-Therese; and Lions, Noel, 4,492,667, Cl. 376-405.000.
Chometon, Pierre; and Dollfus, Jacques, 4,492,291, Cl. 188-377.000.
Gillier, Hugues; Redasse, Jean-Claude; and Renaut, Maurice, 4,492,116, Cl. 73-432.00R.

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Compagnie Industrielle des Telecommunications Cit-Alcatel: *See*—
Khimeche, Abdel-Cader; and Kemler, Marc, 4,493,076, Cl. 371-11.000.

Completion Tool Company: *See*—
Wood, Edward T., 4,492,383, Cl. 277-34.000.

Computer Automation, Inc.: *See*—
Schmidt, Frederick W., 4,493,081, Cl. 371-38.000.

Connaught Laboratories Limited: *See*—
Goosen, Matthews F. A.; and Sun, Anthony M. F., 4,492,684, Cl. 424-19.000.

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Conoco Inc.: *See*—
Fair, Delbert W.; and Buller, Paul L., 4,492,285, Cl. 181-114.000.
Thomas, Bobby J.; and Heath, Billy J., 4,493,067, Cl. 367-189.000.

Conolly, Ralph I., to Rolls-Royce Limited. Composite metallic and non-metallic articles. 4,492,737, Cl. 428-552.000.

Considine, William H. Method of making representations of, and method of and means for making, printed circuit boards. 4,492,460, Cl. 355-133.000.

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Divoux, Michel; Bonassea, Hubert; and Constant, Bernard, 4,492,509, Cl. 414-387.000.

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Murphy, Richard D.; and Coope, Daniel F., 4,492,865, Cl. 250-265.000.

Cooper, Clinton T. Method and apparatus for enhancing the fire combatant properties of safety cans. 4,492,319, Cl. 222-108.000.

Cooper, Gordon C.; and Dawson, Douglas, to Rolls-Royce Limited. Sealing plug. 4,492,381, Cl. 277-2.000.

Cooper Industries, Inc.: *See*—
Maros, Ronald R., 4,492,815, Cl. 174-78.000.
Workman, William, Jr., 4,492,146, Cl. 91-29.000.

Cooper, Penny S.; and Miller, Richard L., to Cooper, Penny S. Magazine page dehydrated foods in plastic bags. 4,492,306, Cl. 206-216.000.

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CooperVision, Inc.: *See*—
Atkinson, Ivor B.; and Holdstock, Barry C., 4,492,776, Cl. 523-108.000.

Copal Company Limited: *See*—
Kawada, Tetsuo; and Ozawa, Yoshio, 4,492,457, Cl. 355-38.000.

Corcoran, William H.: *See*—
Kralik, James G.; and Corcoran, William H., 4,492,588, Cl. 44-1.00R.

Corea, William C.: *See*—
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Corn States Metal Fabricators, Inc.: *See*—
Carter, Russell W., 4,492,554, Cl. 425-383.000.
Cornell, Dennis J.: *See*—
Waldhauser, Steven J.; and Cornell, Dennis J., 4,492,002, Cl. 15-320.000.
Cornelio, Francesco. Smoking blend effective to discourage the bad habit of smoking and cigarettes or the like obtained thereby. 4,492,239, Cl. 131-270.000.
Corning Glass Works: *See*—
Casella, Linda J., 4,492,712, Cl. 426-59.000.
Casella, Linda J., 4,492,715, Cl. 426-646.000.
Cosden Technology, Inc.: *See*—
Watson, James M.; and Bailey, Darrell E., 4,492,675, Cl. 422-187.000.
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Couot, Jean-Pierre: *See*—
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Courtet, Francois: *See*—
Picolet, Jean-Pierre; Rudloff, Jean-Loup; and Courtet, Francois, 4,492,225, Cl. 128-87.00R.
Cox, Larry. Magnetic holding apparatus. 4,492,367, Cl. 269-8.000.
Cozzi, Paolo; Pillan, Antonio; and Lovisolo, Pier P., to Farmitalia Carlo Erba S.p.A. N-Imidazolyl derivatives of 1,2,3,4-tetrahydro-naphthalene and indan. 4,492,707, Cl. 424-273.00R.
Crandell, Walter R., to Fast Heat Element Mfg. Co., Inc. Unitary heated nozzle assembly. 4,492,556, Cl. 425-549.000.
Crea, David A., to FMC Corporation. Recovery of phosphorus from waste ponds. 4,492,627, Cl. 209-3.000.
Creighton, Kenneth R. Hydraulic energy drill bit. 4,492,277, Cl. 175-329.000.
Croce, Carmen L.: *See*—
Apothaker, Richard L.; Reed, James; Croce, Carmen L.; and Wagner, Frederick B., III, 4,492,951, Cl. 338-316.000.
Crouch, Donald W.; and Sofianek, Joseph C., to General Electric Company. Guide means for the movable contact rod of a vacuum interrupter. 4,492,837, Cl. 200-144.00B.
Csanda, Ferenc: *See*—
Szekely, Tamas; Csanda, Ferenc; Nagy, Gabor; and Czerny, Gyozo, 4,492,494, Cl. 405-264.000.
Csemniczky, Janos; and Jozsa, Istvan, to Ganz-Mavag Mozdony-Vagon-es Gepgyar. Shaft pipe construction for regulating liquid delivery of submersible pumps. 4,492,532, Cl. 417-360.000.
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Culp, Dennis S.: *See*—
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Cumberton, John; Foster, Alun E.; Rae, Alexander S.; Fernandes, Vernon J.; and Carter, Michael R., to Plessey Overseas Limited. Soft decision convolutional code transmission systems. 4,493,082, Cl. 371-43.000.
Curley, John E., to PPG Industries, Inc. Method and apparatus for liquefying material with retainer means. 4,492,594, Cl. 65-134.000.
Curt G. Joa, Inc.: *See*—
Hirsch, John L.; and Freitag, Ludwig W., 4,492,608, Cl. 156-467.000.
Curtis, George F., to Maremont Corporation. Feeding mechanism for a gas operated machine gun. 4,492,145, Cl. 89-33.200.
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Kaufmann, Erich, 4,492,416, Cl. 384-474.000.
Dahlberg, Reinhard. Thermoelectrical arrangement. 4,492,809, Cl. 136-212.000.
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Iwata, Noboru, 4,492,538, Cl. 417-477.000.
Daiichi Seito Kabushiki Kaisha: *See*—
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Tsuda, Masaya; Yonemaru, Ken-Ichi; and Masuda, Yoshikazu, 4,492,977, Cl. 358-75.000.
Dalton, Betty J. Head covering for women with hair loss. 4,491,985, Cl. 2-171.000.
Dalton, Betty J. Head scarf for women with hair loss. 4,492,242, Cl. 132-53.000.
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Brezzo, Bernard; Calvignac, Jean; Dambricourt, Richard; Masclet, Andre; and Sanche, Jean-Pierre, 4,493,051, Cl. 364-900.000.
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Daniels, Stuart F., to Siemens Corporation. Method and apparatus for testing a digital computer. 4,493,078, Cl. 371-25.000.
Daniels, Terry: *See*—
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Daskalakis, Costas N.: *See*—
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Gavrin, Edward S.; Bratt, Richard G.; Schleimer, Stephen I.; Pilat, John F.; Richmond, Michael S.; Wallach, Walter A., Jr.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Clancy, Gerald F.; Mundie, Craig J.; Jones, Thomas M.; Bachman, Brett L.; and Bernstein, David H., 4,493,023, Cl. 364-200.000.
Katz, Lawrence H.; Wells, Douglas M.; Richmond, Michael S.; Belgard, Richard A.; Wallach, Walter A., Jr.; Bernstein, David H.; Ahlstrom, John K.; Pilat, John F.; Farber, David A.; Bratt, Richard G.; and Bachman, Brett L., 4,493,027, Cl. 364-200.000.
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Davis, Bennie I. Folding fishing net. 4,492,052, Cl. 43-12.000.
Davis, Bobby V. Mailbox signaling device. 4,492,335, Cl. 232-35.000.
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Dawson, Douglas: *See*—
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Deere & Company: *See*—
Jensen, Thomas C., 4,492,272, Cl. 172-178.000.
DeFreitas, Elaine C., to Wistar Institute of Anatomy and Biology, The. HLA D Typing assay. 4,492,760, Cl. 436-503.000.
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Rutzen, Horst; Nikolaus, Peter; Bischoff, Martin; and Lehmann, Rudolf, 4,492,802, Cl. 564-292.000.
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Mickelson, Nils P.; and De LaChapelle, Richard P., 4,493,003, Cl. 361-119.000.
Delano, Charles G. Technique for picking up and laying down pipe. 4,492,502, Cl. 414-22.000.
DeLeeuw, Cornelius; and Blunt, Thomas O., to General Electric Company. Force applying apparatus. 4,492,368, Cl. 269-32.000.
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Dell, Ronald M.: *See*—
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Stewart, Thomas L.; and Demny, Florian C., 4,492,639, Cl. 210-746.000.
Denckert, Lennart H. Electric distribution center. 4,492,419, Cl. 339-18.00C.
Denki Kagaku Kogyo Kabushiki Kaisha: *See*—
Kato, Masaaki; Miyoshi, Teruzo; Kibayashi, Iwao; Ikemi, Masahisa; Gomi, Haruo; Ishimatsu, Yoshiaki; Koizumi, Noriaki; and Yamada, Hideaki, 4,492,757, Cl. 435-280.000.
Denton, Robert K., Jr.; and Kumar, Narayan G., to Johnson & Johnson Dental Products Co. Heat treated barium or strontium glass. 4,492,777, Cl. 523-115.000.
De Poorter, Adriaan W.: *See*—
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Desaar, Rene . Porous nozzle for blowing gas through steel. 4,492,365, Cl. 266-220.000.
DeSantis, Michelangelo. Rotatable cooking device. 4,492,152, Cl. 99-397.000.
De Vizzi, Francesco: *See*—
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Deweck, Lionel, to Motorola, Inc. Infra-red receiver front end. 4,492,931, Cl. 330-294.000.
de Wit, Hendrik: *See*—
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de Wit, Hendrik C. Collapsible shopping cart. 4,492,388, Cl. 280-651.000.
DeWoolfson, Bruce H., to Environmental Products Corporation. Automated redemption center for metal containers. 4,492,295, Cl. 194-4.00C.
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Diamond Shamrock Chemicals Company: *See*—
Schick, Martin J.; and Kelley, Edwin L., 4,492,589, Cl. 44-51.000.
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Diaz, Zaida; and Miller, James H., to Shell Oil Company. Combined desiccation of substantially supercritical CO_2 . 4,492,592, Cl. 62-18.000.
Diaz, Zaida, to Shell Oil Company. Sequential liquid solid desiccation of supercritical and nearcritical CO2. 4,492,593, Cl. 62-18.000.
Dicker, David, to Transkrit Corporation. Tentless continuous mailer assembly. 4,492,334, Cl. 229-69.000.
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Diesel Kiki Co., Ltd.: *See*—
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Diesel Kiki Co., Ltd. (Japanese Corp.): *See*—
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DiGianvittorio, Fiorindo. Outdoor portable charcoal gas grill. 4,492,215, Cl. 126-9.00R.
Dignan, Donald J., to Eastern Company, The. Adjustable-grip latch. 4,492,394, Cl. 292-64.000.
Dimeff, John, to Mark Telephone Products, Inc. Circuit for linearization of transducer. 4,492,122, Cl. 73-708.000.
Dinse, Wolfgang; Balzeit, Ralf; and Gesell, Reinhard, to Dr.-Ing. Rudolf Hell GmbH. Drum scanners. 4,492,984, Cl. 358-289.000.
Dischert, William A., to RCA Corporation. Video disc player having carriage drive mechanism. 4,493,070, Cl. 369-77.200.
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Hajianpour, Mohamad-Ali, 4,492,222, Cl. 128-25.00R.
Divoux, Michel; Bonannea, Hubert; and Constant, Bernard, to Hotchkiss-Brandt Sogeme H.B.S. Object-conveying box, and object-sorting machine equipped with such boxes. 4,492,509, Cl. 414-387.000.
Dix, Joseph, to General Electric Company. Transport mechanism for ammunition. 4,492,144, Cl. 89-33.170.
DMB Enterprises, Inc.: *See*—
Hoagland, Merle R.; Hoagland, Robert M.; and Hoagland, Dean W., 4,492,506, Cl. 414-463.000.
Dmitriev, Stanislav P.; Ivanov, Andrei S.; Sviniin, Mikhail P.; and Fedotov, Mikhail T. Apparatus for electron beam irradiation of objects. 4,492,873, Cl. 250-492.300.
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Donohue, James M.; and Ling, Andrew T., to Xerox Corporation. Shared resource clustered printing system. 4,493,049, Cl. 364-900.000.
Donomoto, Tadashi; and Tanaka, Atsuo, to Toyota Jidosha Kabushiki Kaisha. Method for production of composite material using preheating of reinforcing material. 4,492,265, Cl. 164-493.000.
Dooley, Richard L. Internal combustion engine of improved efficiency. 4,492,212, Cl. 123-590.000.
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Dowty Mining Equipment Limited: *See*—
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Drabek, Jozef, to Ciba-Geigy Corporation. 3-Amidino-benzisothiazole-1,1-dioxides and their use for controlling pests. 4,492,705, Cl. 424-270.000.
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Drain, Leslie E.; and Negus, Clive R., to United Kingdom Atomic Energy Authority. Measurement of the size of particles. 4,492,467, Cl. 356-336.000.
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Duke University: *See*—
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Dulapa, Mark J.; and Glenn, William M., Jr., to Technicare Corporation. Articulated arm ultrasound imaging systems. 4,492,119, Cl. 73-621.000.
Dumbaugh, George D., to Kinergy Corporation. Sifter stroke screening unit. 4,492,629, Cl. 209-332.000.
Dumont, Philippe, to Dumont S.A. Oven with air convection combustion, more particularly for bakehouses. 4,492,216, Cl. 126-21.00A.
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Durack, David T., to Duke University. Complement assay method. 4,492,761, Cl. 436-519.000.
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Duszak, Francis J.; Modrak, James P.; and Deaver, Dick. Method and composition for maintaining and repairing asphalt-and rubber-containing surfaces. 4,492,781, Cl. 524-59.000.
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Eastern Company, The: *See*—
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Mizuno, William G., 4,491,988, Cl. 4-228.000.
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Caspers, Friedhelm, 4,492,915, Cl. 324-58.50R.
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Emms, Norman R., to Boots Company PLC, The. Tablet Dispenser. 4,492,316, Cl. 221-202.000.
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Ericsson, Sylve J. D. Silk-screen printing machine having an endless conveyor and registration for the printed on material. 4,492,163, Cl. 101-126.000.
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Essaut, Andre , to Societe de Conseils de Recherches et d'Applications Scientifiques. Isopropylamino pyrimidine derivative its preparation and therapeutic compositions containing the same. 4,492,701, Cl. 424-251.000.
Esser, R. Eric, to Gateway Plastics, Inc. Water pitcher. 4,492,323, Cl. 222-465.00R.
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Ewing, Peter D. Torque limiting set screw. 4,492,500, Cl. 411-5.000.
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Valint, Paul L., Jr.; and Bock, Jan, 4,492,785, Cl. 524-529.000.
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Farrell, Roscoe M.: *See—*
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Farris, Edward T.; and Matthews, J. Lester. Surgical implants with solid interiors and porous surfaces. 4,492,577, Cl. 433-201.000.
Fast Heat Element Mfg. Co., Inc.: *See—*
Crandell, Walter R., 4,492,556, Cl. 425-549.000.
Fataluminium S.p.A.: *See—*
Gaddi, Roberto, 4,492,264, Cl. 164-292.000.
Faure, Jean-Louis, to ASA S.A. Method for producing fiber spun yarns and the fiber spun yarns obtained with said method. 4,492,075, Cl. 57-5.000.
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Feroldi, Bruno, to Italimpianti Societa Italiana Impianti P.A. Method for eliminating the skid marks from workpieces heated in walking

beam furnaces and walking beam furnace for performing the said method. 4,492,565, Cl. 432-11.000.
Ferraris, Carlo, to Santoni & Co. SpA. Circular knitting machine for hosiery articles. 4,492,097, Cl. 66-108.00R.
Picken, William; Sears, Jerome; and Parfomak, Walter, to Allied Corporation. Permanent magnetic motor common leg impedance compensation means. 4,492,902, Cl. 318-254.000.
Fidel, Howard F.: *See*—
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Bickl, Horst; Findeis, Gunter; and Treiber, Helmut, 4,492,458, Cl. 355-38.000.
Finegan, Sean N.; McFee, James H.; and Swartz, Robert G., to AT&T Bell Laboratories. Growth substrate heating arrangement for UHV silicon MBE. 4,492,852, Cl. 219-405.000.
Finke, Scott C. Bitting rig apparatus for training horses. 4,492,073, Cl. 54-35.000.
Fischer, Franz: *See*—
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Fleisch, Jerome H.; Marshall, Winston S.; and Cullinan, George J., to Eli Lilly and Company. Quinoline quinones and anti-asthmatic use thereof. 4,492,704, Cl. 424-269.000.
Fleischer, Paul E.; Ganesan, Apparajan; and Laker, Kenneth R., to AT&T Bell Laboratories. Switched capacitor oscillator formed by a damped resonator with saturable feedback. 4,492,935, Cl. 331-135.000.
Fleisher, Martin; and Winawer, Sidney J., to Memorial Hospital for Cancer and Allied Diseases. Sampling system for stool analysis. 4,492,124, Cl. 73-864.440.
Fleming, Dennis J.: *See*—
Marcus, Konrad H.; and Fleming, Dennis J., 4,492,404, Cl. 296-97.00J.
Fletcher, Michael B., to Union Carbide Corporation. Method of fusing vanadium pentoxide powder. 4,492,587, Cl. 23-293.00R.
Flexibox Limited: *See*—
Morrison, Norman J., 4,492,583, Cl. 464-99.000.
Flis, Norman H. Liquid leveling device. 4,492,037, Cl. 33-367.000.
FMC Corporation: *See*—
Crea, David A., 4,492,627, Cl. 209-3.000.
Geis, Robert J., 4,492,304, Cl. 198-837.000.
Poock, Darwin N., 4,492,312, Cl. 212-264.000.
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Folkins, Jeffrey J.; Haque, Shahid; Loeb, Alfred M.; and Till, Henry R., to Xerox Corporation. Control system for regulating the dispensing of marking particles in an electrophotographic printing machine. 4,492,179, Cl. 118-689.000.
Forbath, Frank P. Medical timing system for use during pregnancy and method of using same. 4,493,043, Cl. 364-569.000.
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Forrest, Stephen R.; and Panock, Richard L., to AT&T Bell Laboratories. Bidirectional fiber optic transmission systems and photodiodes for use in such systems. 4,493,113, Cl. 455-606.000.
Forstrom, Bo; Luniewski, Tomas; and Wikefelt, Per, to LKB-Produkter. Device in a microtome for relative movement between the knife and specimen holder. 4,492,139, Cl. 83-727.000.
Foster, Alun E.: *See*—
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Foster, Raymond K. Drive/guide system for a reciprocating floor conveyor. 4,492,303, Cl. 198-750.000.
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Rodgers, James L.; and Fowler, Billy C., 4,492,819, Cl. 178-18.000.
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Frank, Gerhard; Rudolf, Peter; Neubauer, Gerald; Duffner, Paul; Ohlinger, Manfred; Wilfinger, Hans J.; and Pfannebecker, Emil, to BASF Aktiengesellschaft. Preparation of primary amines. 4,492,804, Cl. 564-493.000.
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Friedman, Arthur J., to Merck & Co., Inc. 3-Halo-2-thiopyrazines as antimicrobial agents. 4,492,700, Cl. 424-250.000.
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Fryer, George B.; and Stepneski, David A., to International Business Machines Corporation. Video image field cut processing. 4,493,108, Cl. 382-61.000.
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Funcik, Jack F.: *See*—
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Fung, Shun C., to Exxon Research and Engineering Co. Low temperature decoking process for reactivating iridium and selenium containing catalysts. 4,492,767, Cl. 502-35.000.
Furst, Andor; Keller, Peter; and Muller, Marcel, to Hoffmann-La Roche Inc. deA-steroids. 4,492,797, Cl. 549-265.000.
Furutsu, Akira, to Japan Beno't Co., Ltd. Fastener attacher. 4,492,330, Cl. 227-67.000.
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Ganem, Herve , to Thomson-CSF. Electronic antenna decoupling process and device. 4,493,111, Cl. 455-79.000.
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Garcia, Frank, Jr.; and Brown, David L., to Vetco Offshore, Inc. Valve seat with trapped O-ring. 4,492,362, Cl. 251-363.000.

Garczynski, John S.; Reed, Frank J.; Hahn, Jeffrey C.; and Dobson, John J., to Peripheral Dynamics, Inc. Badge reader with improved slide arrangement. 4,492,855, Cl. 235-458.000.

Garibov, Genrikh S.: *See*—
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Gavrin, Edward S.; Bratt, Richard G.; Schleimer, Stephen I.; Pilat, John F.; Richmond, Michael S.; Wallach, Walter A., Jr.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Clancy, Gerald F.; Mundie, Craig J.; Jones, Thomas M.; Bachman, Brett L.; and Bernstein, David H., to Data General Corporation. Digital data processing system having unique addressing means and means for identifying and accessing operands. 4,493,023, Cl. 364-200.000.

Gaylor, Marcia. Advertising display structure and sports facility. 4,492,049, Cl. 40-624.000.

Gebhard, Albert W., to Gerico, Inc. Infant security door gate assembly. 4,492,263, Cl. 160-228.000.

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Chong, Ian, 4,492,261, Cl. 160-319.000.

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Anderson, Thomas E.; Bush, Alvin A.; and Giorgis, John, 4,492,881, Cl. 307-270.000.
Aneja, Viney P., 4,492,807, Cl. 568-724.000.
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Cline, Harvey E., 4,492,738, Cl. 428-611.000.
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DeLeeuw, Cornelius; and Blunt, Thomas O., 4,492,368, Cl. 269-32.000.
Dix, Joseph, 4,492,144, Cl. 89-33.170.
Evans, Edwin R.; and Clark, Robert F., 4,492,786, Cl. 524-865.000.
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Klompas, Nicholas, 4,492,517, Cl. 415-139.000.
Laskaris, Evangelos T., 4,492,090, Cl. 62-55.000.
Latter, Bruce B., 4,492,017, Cl. 29-434.000.
Mendiratta, Ashok K.; and Morgan, Wayne F., 4,492,806, Cl. 568-723.000.
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Near, Timothy P., 4,492,874, Cl. 290-40.00B.
Pardini, Franco P.; and De Vizzi, Francesco, 4,492,836, Cl. 200-144.00R.
Rieke, Richard J., 4,493,096, Cl. 378-99.000.
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Barratt, Stuart; and Lumb, Anthony P., 4,493,030, Cl. 364-200.000.

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Hewson, Gordon, 4,492,069, Cl. 53-436.000.

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Graham, Donald E., 4,492,904, Cl. 318-444.000.
Herschelman, Fredric A., 4,492,384, Cl. 277-237.00R.
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Bannerman, Wyburn G.; and Ludwig, Charles H., 4,492,729, Cl. 428-283.000.

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Gebhard, Albert W., 4,492,263, Cl. 160-228.000.

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Dinse, Wolfgang; Balzeit, Ralf; and Gesell, Reinhard, 4,492,984, Cl. 358-289.000.

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Schlusener, Horst; and Hesse, Norbert, 4,492,410, Cl. 299-43.000.

GfK Gesellschaft fur Kohleverflussigung mbH: *See*—
Wurfel, Helmut, 4,492,623, Cl. 208-10.000.

Gg. Noell GmbH: *See*—
Schafer, Hans; and Gaschler, Michael, 4,492,087, Cl. 62-45.000.

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Gianotti, Tonio: *See*—
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Gibson, Donald D., to Ford Motor Company. Method for preparing blocks of glass for shipment. 4,492,071, Cl. 53-442.000.

Gilbertson, Thomas A. Hydraulic oil well pumping unit. 4,492,536, Cl. 417-401.000.

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Jacobson, Chester F., 4,492,024, Cl. 30-87.000.
Jacobson, Chester F., 4,492,025, Cl. 30-87.000.

Gillier, Hugues; Redasse, Jean-Claude; and Renaut, Maurice, to Commissariat a l'Energie Atomique. Apparatus for the optical observation of phenomena in mixtures. 4,492,116, Cl. 73-432.00R.

Gillone, Walter: *See*—
Bovio, Michele; and Gillone, Walter, 4,493,038, Cl. 364-405.000.

Ginn, Ian D.; Gleave, Leonard; and Woods, Leslie, to Metal Box Public Limited Company. Apparatus for handling thin sheets of material. 4,492,135, Cl. 83-155.000.

Giolito, Silvio L., to Stauffer Chemical Company. Low temperature stable tert-butylphenyl diphenyl phosphate. 4,492,660, Cl. 260-966.000.

Giorgis, John: *See*—
Anderson, Thomas E.; Bush, Alvin A.; and Giorgis, John, 4,492,881, Cl. 307-270.000.

Giuliano, Concetto R.: *See*—
Jain, Ravinder K.; and Giuliano, Concetto R., 4,493,086, Cl. 372-21.000.

Giulio, Folli; and Marino, Casadei. Automatic machine for forming shaped pieces of dough. 4,492,553, Cl. 425-308.000.

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Glaser, Roger M.: *See*—
Petrofsky, Jerrold S.; Glaser, Roger M.; Phillips, Chandler A.; and Petrofsky, Steven H., 4,492,233, Cl. 128-421.000.

Glass, Roger W.: *See*—
Cheh, Christopher H.; and Glass, Roger W., 4,492,649, Cl. 252-630.000.

Gleave, Leonard: *See*—
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Dulapa, Mark J.; and Glenn, William M., Jr., 4,492,119, Cl. 73-621.000.

Global Marine, Inc.: *See*—
Horton, Edward E., 4,492,270, Cl. 166-358.000.

Goko, Nobuaki: *See*—
Takashima, Ryokichi; Goko, Nobuaki; Uehara, Yumito; Nishihara, Yasuhiro; and Yamamoto, Hidetoshi, 4,492,787, Cl. 525-53.000.

Golan, Lawrence P.: *See*—
Norton, James P.; and Golan, Lawrence P., 4,492,184, Cl. 122-4.00D.

Gold, Calman: *See*—
Prescott, Robert C.; Gold, Calman; and Anderson, Eric V., 4,492,246, Cl. 137-85.000.

Goldfarb, Adolph E.; and Everitt, Delmar K., to Goldfarb, Adolph E. Ultracompact miniature toy vehicle with four-wheel drive and unusual climbing capability. 4,492,058, Cl. 446-462.000.

Goldmann, Siegfried; Boshagen, Horst; Stoltefuss, Jurgen; Schramm, Matthias; Thomas, Gunter; and Kazda, Stanislav, to Bayer Aktiengesellschaft. 4-(2-Subetituted phenyl)-1,4-dihydropyridine-3,5-dicarboxylic acid esters active on blood circulation. 4,492,703, Cl. 424-266.000.

Goldstein, Arnold S.: *See*—
Agers, Brian M.; and Goldstein, Arnold S., 4,492,009, Cl. 28-254.000.

Gomi, Haruo: *See*—
Kato, Masaaki; Miyoshi, Teruzo; Kibayashi, Iwao; Ikemi, Masahisa; Gomi, Haruo; Ishimatsu, Yoshiaki; Koizumi, Noriaki; and Yamada, Hideaki, 4,492,757, Cl. 435-280.000.

Goosen, Matthews F. A.; and Sun, Anthony M. F., to Connaught Laboratories Limited. Slow release injectable insulin composition. 4,492,684, Cl. 424-19.000.

Gordon, Bruce E., to Raytheon Company. Memory system. 4,493,090, Cl. 375-4.000.

Gorecki, James L., to Honeywell Inc. JFET Monolithic integrated circuit with input bias current temperature compensation. 4,492,972, Cl. 357-22.000.

Gorman, Esther M.; and Gorman, William W., Jr., to E-C Apparatus Corporation. Field-test method and apparatus for the detection of asbestos. 4,492,759, Cl. 436-72.000.

Gorman, Robert R.: *See*—
Masaki, Ichiro; Shulman, Burt H.; and Gorman, Robert R., 4,492,847, Cl. 219-124.340.

Gorman, William W., Jr.: *See*—
Gorman, Esther M.; and Gorman, William W., Jr., 4,492,759, Cl. 436-72.000.

Goto, Tadahiko; Oniki, Kiyoshi; Murakami, Satoshi; Yokooji, Mitsunori; Andou, Norio; and Shimojyo, Norio, to Yaskawa Electric Mfg. Co., Ltd. Electric motor. 4,492,906, Cl. 318-488.000.

Gould, Gerald, to Perkin-Elmer Corporation, The. Method and means for making a beryllium mirror. 4,492,669, Cl. 419-5.000.

Gozzo, Franco: *See*—
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Grabowski, Paul P., to Kraft, Inc. Knock-down plastic cheese curing container. 4,492,153, Cl. 99-460.000.

Gradeff, Peter S.; and Schreiber, Fred G., to Rhone-Poulenc, Inc. Tricyclopentadienyl cerium and process for preparing the same. 4,492,655, Cl. 260-429.200.

Graham, Donald E., to General Motors Corporation. Windshield wiper system with touch control. 4,492,904, Cl. 318-444.000.

Gramckow, Jurgen. Method and apparatus for producing non-rhizoming grasses. 4,492,172, Cl. 111-1.000.

Great Neck Saw Manufacturing, Inc.: *See*—
Mayes, Daniel J., 4,492,038, Cl. 33-379.000.

Green, David T., to United States Surgical Corporation. Surgical clip applying apparatus having fixed jaws. 4,492,232, Cl. 128-325.000.

Green, Melvin E., to Advance Process Supply Co. Scoop coater. 4,492,486, Cl. 401-131.000.

Greene, Reginald S.: *See*—
Spencer, John E.; Greene, Reginald S.; and Fisher, Terrence L., 4,492,443, Cl. 354-121.000.

Greenwood, Leon D.; and Thorsen, Thomas A., to Eaton Stamping Company. Recoil starter. 4,492,190, Cl. 123-185.00A.

Gregory, William D., to President and Directors of Georgetown University. Apparatus and method for image reproduction of materials using their magnetic and electric properties. 4,493,039, Cl. 364-414.000.

Grieco, Steven E., to Motorola, Inc. Temperature compensation circuit for oscillator with parabolic characteristic. 4,492,933, Cl. 331-66.000.

Grisbrook, Robert B. Compressors efficiency improvement. 4,492,529, Cl. 417-242.000.

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Belykh, Sergei I.; Moschensky, Anatoly D.; Davydov, Anatoly B.; Pershin, Gely G.; Smirnov, Boris A.; and Gromov, Mikhail V., 4,492,226, Cl. 128-92.0BC.

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Bilyeu, Delford D., 4,492,525, Cl. 417-34.000.

Grundig E.M.V.: *See*—
Zollner, Rainer, 4,492,351, Cl. 242-197.000.

Gruner, Ronald H.: *See*—
Baxter, Ward, II; Clancy, Gerald F.; Gruner, Ronald H.; Mundie, Craig J.; Bachman, Brett L.; Redfield, Stephen R.; Coder, William N.; Jones, Thomas M.; Houseman, David L.; Young, Charles J.; and Haeffele, Steven M., 4,493,024, Cl. 364-200.000.

Grunwald, Ronald P. Suture guide holder. 4,492,229, Cl. 128-303.00R.

Grynberg, Jack; Nelson, Leonard Y.; and Moody, Stephen E., to Mathematical Sciences Northwest, Inc. Method and apparatus for analyzing components of hydrocarbon gases recovered from oil, natural gas and coal drilling operations. 4,492,862, Cl. 250-255.000.

GTE Automatic Electric, Inc.: *See*—
Adams, Tello D., 4,493,092, Cl. 375-36.000.

GTE Business Communication Systems: *See*—
James, Miranda L.; and Teater, Albert, 4,492,823, Cl. 179-81.00R.

GTE Laboratories Incorporated: *See*—
Lapatovich, Walter P.; and Gibbs, George R., 4,492,898, Cl. 315-248.000.

GTE Products Corporation: *See*—
Buljan, Sergej-Tomislav, 4,492,765, Cl. 501-97.000.
Kuo, Samuel C., 4,492,964, Cl. 343-792.500.
Mickelson, Nils P.; and De LaChapelle, Richard P., 4,493,003, Cl. 361-119.000.
Snell, Richard G.; and Loughridge, Fredrick A., 4,492,814, Cl. 174-50.640.

Guess, Joe F.; and Pearce, Thomas, to Technicare Corporation. Pressurizing syringe. 4,492,317, Cl. 222-39.000.

Guillaume, Errick, to Hermes Precisa International S.A. Means for detecting the end of a ribbon for typewriters. 4,492,483, Cl. 400-208.000.

Guillon, Michel; Mondet, Jean; Papantoniou, Christos; and Vandenbossche, Claudine, to Societe Anonyme dite: L'Oreal. Cosmetic makeup containing colored pigments salified with amine functions. 4,492,686, Cl. 424-61.000.

Gulf Research & Development Company: *See*—
Kibby, Charles L.; and Kobylinski, Thaddeus P., 4,492,774, Cl. 518-713.000.

Gulf & Western Manufacturing Company: *See*—
Maleske, Michael W., 4,492,833, Cl. 200-61.780.

Gundry, Kenneth J., to Dolby Laboratories Licensing Corporation. Analog and digital signal apparatus. 4,493,091, Cl. 375-30.000.

Gunther, Dieter: *See*—
Bertsch, Richard; Gunther, Dieter; and Steinbrenner, Ulrich, 4,492,204, Cl. 123-489.000.

Haag, Laurent, to Eurofloor S.A. Composite product having a low-porosity support layer, and method of manufacture thereof. 4,492,606, Cl. 156-79.000.

Haar, Lucas H.: *See*—
Weiler, Rolf; Boehm, Peter; Haar, Lucas H.; and Timtner, Karlheinz, 4,492,081, Cl. 60-547.100.

Hass, George A.; Shih, Arnold; and Marrian, Christie R. K., to United States of America, Navy. Method for predicting the performance of cathode materials. 4,492,866, Cl. 250-305.000.

Haberfellner, Fritz; Mennicke, Stefan; and Prappacher, Gerd, to Brown, Boveri & Cie AG. Electrochemical storage cell. 4,492,742, Cl. 429-104.000.

Haddad, Theodore A.: *See*—
Phillips, Richard A.; and Haddad, Theodore A., 4,492,733, Cl. 428-412.000.

Haeffele, Steven M.: *See*—
Baxter, Ward, II; Clancy, Gerald F.; Gruner, Ronald H.; Mundie, Craig J.; Bachman, Brett L.; Redfield, Stephen R.; Coder, William N.; Jones, Thomas M.; Houseman, David L.; Young, Charles J.; and Haeffele, Steven M., 4,493,024, Cl. 364-200.000.

Hafner, V. Walter: *See*—
Morris, Earl L.; Hafner, V. Walter; and Hahn, Ron T., 4,492,430, Cl. 350-631.000.

Hagen, Rainer; and Hartwig, Jurgen, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Method for separating ethanol from an ethanol containing solution. 4,492,808, Cl. 568-916.000.

Haginomori, Eiichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Gas-insulated switchgear. 4,493,008, Cl. 361-341.000.

Hahn, Jeffrey C.: *See*—
Garczynski, John S.; Reed, Frank J.; Hahn, Jeffrey C.; and Dobson, John J., 4,492,855, Cl. 235-458.000.

Hahn, Ron T.: *See*—
Morris, Earl L.; Hafner, V. Walter; and Hahn, Ron T., 4,492,430, Cl. 350-631.000.

Haines, Robert E., to Star Industries, Inc. Thrust rod anchor for pipe joint restraint systems. 4,492,391, Cl. 285-114.000.

Hainsworth, Thomas E., to Bell & Howell Company. Materials handling system. 4,492,504, Cl. 414-273.000.

Haisma, Jan: *See*—
Joosten, Paul H.; Popma, Theo J. A.; Nabben, Hendrikus J. P.; Van Hal, Henricus A. M.; and Haisma, Jan, 4,492,721, Cl. 427-226.000.

Hajianpour, Mohamad-Ali, to Diversified Medical Systems, Inc. Knee exercise machine. 4,492,222, Cl. 128-25.00R.

Halcomb, Ronald G., to Rockwell International Corporation. Method for producing integrally stiffened fiber reinforced plastic panels. 4,492,607, Cl. 156-242.000.

Hall, Duane O.: *See*—
Kennard, Lon H.; Hall, Duane O.; and Bangerter, Richard M., 4,492,820, Cl. 179-5.00P.

Hallberg, John E., to PetroSystems International, Inc. Dual fuel system. 4,492,207, Cl. 123-527.000.

Halliburton Company: *See*—
Mallett, A. J., 4,493,062, Cl. 367-32.000.
Smith, Harry D., Jr., 4,492,863, Cl. 250-256.000.

Hamamatsu Terebi Kabushiki Kaisha: *See*—
Tsuchiya, Yutaka; Inuzuka, Eiji; and Shinoda, Yuji, 4,492,879, Cl. 307-248.000.

Hamel, Howard L. Electrical line reversal and protection system. 4,492,878, Cl. 307-127.000.

Hammerquist, Eric M.: *See*—
Hernandez, E. Norman; and Hammerquist, Eric M., 4,492,918, Cl. 324-83.00R.

Hammond, Charles W., to Babcock & Wilcox Company, The. Soot-blower apparatus. 4,492,187, Cl. 122-390.000.

Hanaoka, Masanori: *See*—
Ozaki, Tadashi; Hattori, Tadashi; Miura, Kazuhiko; Hanaoka, Masanori; and Hashiguchi, Yukihide, 4,492,109, Cl. 73-35.000.

Haneda, Satoshi; Itaya, Masahiko; and Tanaka, Minoru, to Knoshiroku Photo Industry Co. Ltd. Device for developing electrostatic latent images. 4,492,456, Cl. 355-3.0DD.

Hanel, Harold L.: *See*—
Benson, John; Hanel, Harold L.; and Freeman, Douglas A., 4,492,329, Cl. 227-10.000.

Haney, Keith M., to Walker-Neer Manufacturing Company Inc. Platform positioning system. 4,492,501, Cl. 414-22.000.

Hann, William; Bosin, Sanford D.; and White, Cecil. Plastic laminar digitally indexed dental die system. 4,492,578, Cl. 433-213.000.

Hansen, Peder M. Transmitting adaptive array antenna. 4,492,962, Cl. 343-369.000.

Hanson, Gustaf H., to Augusta Developments Inc. Orthodontic bracket. 4,492,573, Cl. 433-11.000.

Haque, Shahid: *See*—
Folkins, Jeffrey J.; Haque, Shahid; Loeb, Alfred M.; and Till, Henry R., 4,492,179, Cl. 118-689.000.
Hara, Akio; Miyake, Masaya; and Yazu, Shuji, to Sumitomo Electric Industries, Ltd. Process for the production of bonded hard alloys. 4,492,846, Cl. 219-121.0LC.
Harada, Nosomu, to Tokyo Shibaura Denki Kabushiki Kaisha. Solid state image-sensing device. 4,492,980, Cl. 358-213.000.
Harada, Shoji: *See*—
Oishi, Naoaki; Shimizu, Noriyuki; Shoji, Takashi; and Harada, Shoji, 4,492,730, Cl. 428-328.000.
Hargrave, Malcolm. Leaflet dispenser. 4,492,307, Cl. 206-449.000.
Harrington, Kent W.; Stevens, John L.; and Thorpe, Merle L., to TAFA Incorporated. Metal spray. 4,492,337, Cl. 239-81.000.
Harris Corporation: *See*—
Young, Lock R., 4,492,938, Cl. 333-111.000.
Harris, David J.; and Viss, Charles L., to Raytheon Company. Digital-to-analog converter. 4,492,954, Cl. 340-347.0DA.
Hart, William G., Jr.: *See*—
Beall, Donald L.; Tomlinson, Harold W., Jr.; and Hart, William G., Jr., 4,493,105, Cl. 382-21.000.
Hartmann, Klaus: *See*—
Pross, Wilhelm; Barry, Jurgen; Muhlbock, Franz; and Hartmann, Klaus, 4,492,462, Cl. 356-39.000.
Hartwig, Carl S. M.; and van Nederkassel, Ludovicus J., to Institut Cerac S.A. Compressor drive system. 4,492,526, Cl. 417-45.000.
Hartwig, Jurgen, to Pfaff AG Haushaltsmaschinen. Device for controlling the drive of a stepping motor, to adjust the lateral stitch bight and/or the feed length of a sewing machine. 4,492,909, Cl. 318-696.000.
Hartwig, Jurgen: *See*—
Hagen, Rainer; and Hartwig, Jurgen, 4,492,808, Cl. 568-916.000.
Hasegawa, Hideo, to Nissan Motor Company, Limited. Shift lever for an automotive transmission. 4,492,129, Cl. 74-473.00R.
Hasegawa, Shumpei; and Yamato, Akihiro, to Honda Motor Co., Ltd. Device for intake air temperature-dependent correction of air/fuel ratio for internal combustion engines. 4,492,206, Cl. 123-491.000.
Hasegawa, Takashi; Tsuchihashi, Koji; and Yamashita, Hiroshi, to Mitsubishi Chemical Industries Limited. Process for producing carbon material for de-sulfurization from a binder with a blend of non-coking and coking coal. 4,492,771, Cl. 502-420.000.
Hashiguchi, Yukihide: *See*—
Ozaki, Tadashi; Hattori, Tadashi; Miura, Kazuhiko; Hanaoka, Masanori; and Hashiguchi, Yukihide, 4,492,109, Cl. 73-35.000.
Hashimoto, Kiyokazu; and Hayashi, Keizi, to Matsushita Electric Industrial Co., Ltd. Dropout compensation system. 4,492,988, Cl. 358-336.000.
Hashimoto, Shintaro; Morimoto, Masafumi; Nakanishi, Tosaku; Yoshida, Hideo; and Yanagiuchi, Shigenobu, to Sharp Kabushiki Kaisha. Electronic translator having removable voice data memory connectable to any one of terminals. 4,493,050, Cl. 364-900.000.
Hashizume, Hiroyuki: *See*—
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Hassib, Gabor: *See*—
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Hatsuse, Toshikazu; and Kume, Kazunari, to Citizen Watch Co., Ltd. Small electronic timers. 4,492,479, Cl. 368-109.000.
Hattori, Tadashi: *See*—
Ozaki, Tadashi; Hattori, Tadashi; Miura, Kazuhiko; Hanaoka, Masanori; and Hashiguchi, Yukihide, 4,492,109, Cl. 73-35.000.
Hattori, Yoshiyuki: *See*—
Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,492,515, Cl. 415-53.00T.
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Seiranen, Martti; and Virta, Matti, 4,492,897, Cl. 315-219.000.
Hawkins, Kenneth R. Shatter-proof lighting fixture. 4,493,013, Cl. 362-307.000.
Hawley, Gil R., to Phillips Petroleum Company. Polyolefin polymerization process and catalyst. 4,492,768, Cl. 502-111.000.
Hayakawa, Daishiro; Akimoto, Masao; Narita, Katsumi; and Tani, Kenroku, to Matsushita Electric Industrial Co., Ltd. Comb filter. 4,492,928, Cl. 330-126.000.
Hayakawa, Kizo: *See*—
Yamanaka, Teruo; Hayakawa, Kizo; Suzuki, Yasuhiko; and Esaki, Michiru, 4,492,114, Cl. 73-117.300.
Hayashi, Aseo: *See*—
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Hashimoto, Kiyokazu; and Hayashi, Keizi, 4,492,988, Cl. 358-336.000.
Hayashi, Nobutoshi: *See*—
Takagi, Shigeru; and Hayashi, Nobutoshi, 4,492,079, Cl. 60-274.000.
Hayashi, Tsutomu, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for arranging oil pressure pump in motor-cycle. 4,492,284, Cl. 180-219.000.
Hayes, Allen L. Vaginal speculum protector. 4,492,220, Cl. 128-17.000.
Hayes, Ernest B.; and Cantell, Anthony S. Smoke filter. 4,492,240, Cl. 131-336.000.
Hayes, Richmond S., Jr.: *See*—
Jennings, William B.; Kozlowski, Robert M.; and Hayes, Richmond S., Jr., 4,492,269, Cl. 165-172.000.
Heath, Billy J.: *See*—
Thomas, Bobby J.; and Heath, Billy J., 4,493,067, Cl. 367-189.000.
Heath, Chester A., to International Business Machines Corporation. Dual mode I/O. 4,493,028, Cl. 364-200.000.
Hedrenius, Stig Erik T., to Saxcon Aktiebolag. Method to clean up oil spills or similar substances and a device to practice this method. 4,492,001, Cl. 15-320.000.
Heep Tung Manufactory Limited: *See*—
Luk, Ka-Shiu, 4,492,318, Cl. 222-79.000.
Hegler, Ralph-Peter: *See*—
Hegler, Wilhelm; and Hegler, Ralph-Peter, 4,492,551, Cl. 425-144.000.
Hegler, Wilhelm; and Hegler, Ralph-Peter, to Hegler, Wilhelm. Apparatus for the production of plastic pipes with transverse grooves. 4,492,551, Cl. 425-144.000.
Heidelberger, Walter; and Morsch, Joachim, to bso Steuerungstechnik GmbH. Control mechanism. 4,492,128, Cl. 74-471.0XY.
Heijnen, Andreas T.: *See*—
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Ip, Stephen H. C.: *See—*
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Iscar Ltd.: *See—*
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Feroldi, Bruno, 4,492,565, Cl. 432-11.000.
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Adam, Fritz G., 4,493,058, Cl. 365-189.000.
Belart, Juan, 4,492,082, Cl. 60-589.000.
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Weiler, Rolf; Boehm, Peter; Haar, Lucas H.; and Tintner, Karlheinz, 4,492,081, Cl. 60-547.100.
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Iwamoto, Tomio: *See*—
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Iwata, Noboru, to Daiichi Engineering Co., Ltd. Squeeze pump. 4,492,538, Cl. 417-477.000.
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Renfroe, Charles J.; and Davies, William, 4,492,401, Cl. 294-101.000.
J. T. Thorpe Company: *See*—
Hounsel, Mack A., 4,492,382, Cl. 277-12.000.
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Jackson, Leigh F.: *See*—
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Jacobs, Anthony S.; Riley, James E.; and Christman, Jon D., to Wessel Company, Inc., The. Combined airline ticket holder and advertising booklet. 4,492,390, Cl. 281-31.000.
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Kuhn, Gerhard; and Jacobs, John J., 4,492,127, Cl. 74-50.000.
Jacobson, Chester F., to Gillette Company, The. Razor blade assembly. 4,492,024, Cl. 30-87.000.
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Jain, Ravinder K.; and Giuliano, Concetto R., to Hughes Aircraft Company. Synchronously-pumped phase-conjugate laser. 4,493,086, Cl. 372-21.000.
James, Miranda L.; and Tester, Albert, to GTE Business Communication Systems. Dual timing circuit for telephone subscriber's instrument. 4,492,823, Cl. 179-81.00R.
Janutka, William J., to Eaton Corporation. Unpowered fast gate turn-off FET. 4,492,883, Cl. 307-571.000.
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Furutsu, Akira, 4,492,330, Cl. 227-67.000.
Jarrell, Michael S.: *See*—
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Jeco Company Limited: *See*—
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Jelvestam, Roland E.; and Bergstrom, Par-Halan. Device for measuring concentration of particles conveyed by a liquid. 4,492,868, Cl. 250-345.000.
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Scheidler, Herwig, 4,492,217, Cl. 126-39.00B.
Jenkins, Evans M., to Apollo Chemical Corporation. Transfer printing process for cellulose fabric. 4,492,584, Cl. 8-471.000.
Jennings, William B.; Kozlowski, Robert M.; and Hayes, Richmond S., Jr., to Carrier Corporation. Tube support assembly for a heat exchanger. 4,492,269, Cl. 165-172.000.
Jensen, Arthur S.; and Stull, Keefer S., Jr., to Westinghouse Electric Corp. Integrated circuit for chip op/amp interface. 4,492,882, Cl. 307-497.000.
Jensen, Borge: *See*—
Rasmussen, Ole-Bendt; and Jensen, Borge, 4,492,549, Cl. 425-131.100.
Jensen, Thomas C., to Deere & Company. Tillage implement and improved gang assembly therefor. 4,492,272, Cl. 172-178.000.
Jensen, Uffe L.; and Mortensen, Sten, to A/S Niro Atomizer. Method and apparatus for drying a pulverulent or particulate product. 4,492,040, Cl. 34-10.000.
Jetform Heisskanalnormalien und Zubehor GmbH, Firma: *See*—
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Jidosha Kiki Co., Ltd.: *See*—
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Jirkovsky, Ivo L.: *See*—
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John Zink Company: *See*—
Schwartz, Robert E.; and Keller, Michael R., 4,492,558, Cl. 431-4.000.
Johnson, Azel R.; Narayanan, Swami; and Woebcke, Herman N., to Stone & Webster Engineering Corp. Duocracking process for the production of olefins from both heavy and light hydrocarbons. 4,492,624, Cl. 208-78.000.
Johnson, Benjamin A. Digital meter using calculator components. 4,492,916, Cl. 324-60.0CD.
Johnson, Brian C., to General Electric Company. Method and apparatus for positioning using circular interpolation. 4,493,032, Cl. 364-169.000.
Johnson, Clark E., Jr., to Vertimag Systems Corporation. Noise reduction system. 4,492,990, Cl. 360-32.000.
Johnson, David E. Sail boom tent. 4,492,175, Cl. 114-39.000.
Johnson, Gerald L.; Nolting, Eugene C.; and Allen, John H., to Benc-Tec, Incorporated. High speed document encoding system. 4,492,161, Cl. 101-109.000.
Johnson, Gordon E.: *See*—
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Baile, George H.; and Johnson, John J., 4,492,415, Cl. 384-463.000.
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Jones, David G.; and Kwon, Oh K. Wear analysis equipment. 4,492,461, Cl. 356-38.000.
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Joosten, Paul H.; Popma, Theo J. A.; Nabben, Hendrikus J. P.; Van Hal, Henricus A. M.; and Haisma, Jan, to U.S. Philips Corporation. Method of providing magnesium fluoride layers. 4,492,721, Cl. 427-226.000.
Jou, W. F.; and Chen, C. N. Safety socket with easy fuse replacement device. 4,492,945, Cl. 337-229.000.

Jouve, Hubert: *See*—
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Jullien, Graham A., to Ogilvy, James J. Electronic candle system. 4,492,896, Cl. 315-153.000.

Jundt, Werner; and Reischl, Rolf. Method of controlling the air-fuel ratio in an internal combustion engine. 4,492,205, Cl. 123-489.000.

Jung, Frederic H.; and Davies, Gareth M., to Imperial Chemical Industries PLC; and ICI Pharma. Cephalosporin derivatives. 4,492,692, Cl. 424-246.000.

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Kutz, Heinrich; Ostlinning, Gunter; and Jung, Gerd, 4,492,105, Cl. 72-302.000.

Junior, Kenneth E.; and Byrd, James D., to Thiokol Corporation. Aramid polymer and powder filler reinforced elastomeric composition for use as a rocket motor insulation. 4,492,779, Cl. 523-138.000.

Kabelmetal Electro GmbH: *See*—
Rohner, Peter; Schippl, Klausdieter; Blumenberg, Gunther; Meyer, Werner; and Obert, Wolfgang, 4,492,089, Cl. 62-55.000.

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Higashi, Yoshihiro, 4,492,901, Cl. 318-85.000.
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Akazawa, Hiroyuki; and Yoshiie, Kazue, 4,492,484, Cl. 400-248.000.
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Kahil, John E.; Jaynes, Mark S.; and Bradfield, James E., to PA Incorporated. Method and apparatus for measuring defects in ferromagnetic tubing. 4,492,115, Cl. 73-151.000.

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Kali-Chemie AG: *See*—
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Kobuck, Richard M.; Miller, Richard A.; Kalkbrenner, Ralph W.; Kerrey, John S.; and Duncan, Robert, 4,492,844, Cl. 219-121.0LC.

Kallai-Sanfacon, Mary-Ann, to American Home Products Corporation. Method of lowering lipid levels. 4,492,706, Cl. 424-270.000.

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Koso, Takashi; Minegishi, Akira; and Kamai, Toshimitsu, 4,492,986, Cl. 358-330.000.

Kamimura, Tesuro; and Matsuki, Seiichiro, to Pioneer Electronic Corporation. Cassette tape recorder. 4,492,998, Cl. 360-132.000.

Kaminski, Joan M.: *See*—
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Kammiller, Neil A.; and Ivanov, Nedyalko V., to Reliance Electric Company. Single drive transformer with regenerative winding for p.w.m. supply having alternately conducting power devices. 4,493,017, Cl. 363-132.000.

Kamp, Anthony W., to Shell Oil Company. Down-hole drilling motor and method for directional drilling of boreholes. 4,492,276, Cl. 175-61.000.

Kan, Yasuhito; and Miyamoto, Koichi, to Canon Kabushiki Kaisha. Feeding device. 4,492,371, Cl. 271-21.000.

Kana, Eugene J.: *See*—
Woods, Arthur F.; Bush, Harry; and Kana, Eugene J., 4,492,392, Cl. 285-119.000.

Kanai, Tamaki; Yoshikawa, Hirofumi; Yamagishi, Takashi; Suzuki, Kenji; and Ohta, Yoshikatsu, to Teijin, Limited. Process for the production of slippery biaxially stretched polyester films. 4,492,719, Cl. 427-171.000.

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Kaplan, Martin L., to AT&T Laboratories. Reactions of aromatic compounds having two or more fused rings. 4,492,652, Cl. 568-75.000.

Kariya, Izumi: *See*—
Eguchi, Yasuhito; and Kariya, Izumi, 4,492,482, Cl. 400-120.000.

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Katz, Lawrence H.; Wells, Douglas M.; Richmond, Michael S.; Belgard, Richard A.; Wallach, Walter A., Jr.; Bernstein, David H.; Ahlstrom, John K.; Pilat, John F.; Farber, David A.; Bratt, Richard G.; and Bachman, Brett L., to Data General Corporation. Method of performing a call operation in a digital data processing system having microcode call and return operations. 4,493,027, Cl. 364-200.000.

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Kaufmann, Juergen, to Union Special Corporation. Thread control mechanism for sewing machines. 4,492,174, Cl. 112-248.000.

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Kawai, Yasuhiro, to Fuji Photo Film Co., Ltd. Image scanning system having a continuously rotating sub-scanning drum. 4,492,455, Cl. 355-3.00R.

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Kawamo, Kazunori: *See*—
Chikaraishi, Takayo; Tuchiya, Yosimasa; and Kawamo, Kazunori, 4,492,405, Cl. 296-146.000.

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Asano, Yuichiro; Hirahashi, Akira; Ohga, Suehisa; Yabe, Tadashi; Kurita, Kunio; and Momose, Atsushi, 4,492,472, Cl. 356-376.000.

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Keene, Douglas L.: *See*—
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Kelley, Edwin L.: *See*—
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Comeau, Paul E., 4,492,262, Cl. 160-126.000.
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Dumbaugh, George D., 4,492,629, Cl. 209-332.000.
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Knowles, Robert C.; and Marshall, Darrell R., to Microdyne Corporation. Automatic gain control system. 4,492,930, Cl. 330-284.000.
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Knutsen, Daniel P., to Boise Cascade Corporation. Pocket ventilation roll baffle assembly. 4,492,044, Cl. 34-114.000.
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Kokusan Kinzoku Kogyo Co., Ltd.: *See*—
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Koshii, Taro; and Yamashita, Mitsugu, to Toray Silicone Co., Ltd. Organopolysiloxane foam composition. 4,492,775, Cl. 521-77.000.
Kosova, Ghenz. Running shoe. 4,492,046, Cl. 36-27.000.
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Kraft, Inc.: *See*—
Grabowski, Paul P., 4,492,153, Cl. 99-460.000.
Kralik, James G.; and Corcoran, William H., to California Institute of Technology. Method for removing sulfur from fossil fuels. 4,492,588, Cl. 44-1.00R.
Kramer, Charles F., to Steel Heddle Manufacturing Company. Extruded heddle rod and cap. 4,492,256, Cl. 139-92.000.
Kramer, Wolfgang; Jautelat, Manfred; and Kranz, Eckart, to Bayer Aktiengesellschaft. Alkylcycloalkyl imidazolylmethyl ketones as fungicide intermediates. 4,492,795, Cl. 548-341.000.
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Krawiecki, Peter: *See*—
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Kreft, Wilfried, to Krupp Polysius AG. Method and apparatus for heat treatment of fine-grained material. 4,492,566, Cl. 432-14.000.
Kreitzberg, Jeffrey P., to Nelson Irrigation Corporation. Flow control nozzle. 4,492,339, Cl. 239-230.000.
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Kubota, Toru; Tamate, Masazi; and Sauzu, Masaaki, to Nissan Motor Company, Limited. Battery voltage drop alarm device for a battery forklift truck. 4,492,955, Cl. 340-636.000.
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Kuenzi, Martin: *See*—
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Kuhn, Gerhard; and Jacobs, John J., to Carrier Corporation. Motor-compressor unit. 4,492,127, Cl. 74-50.000.
Kukes, Simon G., to Phillips Petroleum Company. Hydrofining process for hydrocarbon containing feed streams. 4,492,626, Cl. 208-251.00H.
Kukolja, Stjepan: *See*—
Blaszczak, Larry C.; Kukolja, Stjepan; and Turner, Jan R., 4,492,693, Cl. 424-246.000.
Kulik, Alphonse C., to USM Corporation. Insole support plate mechanism. 4,491,996, Cl. 12-10.100.
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Kunst, Helmut: *See*—
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Kuo, Samuel C., to GTE Products Corporation. Groundplane mounted log-periodic antenna. 4,492,964, Cl. 343-792.500.
Kuraray Co., Ltd.: *See*—
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Rodgers, James L.; and Fowler, Billy C., 4,492,819, Cl. 178-18.000.
Kusakabe, Hiromi; and Ogawa, Atsushi, to Tokyo Shibaura Denki Kabushiki Kaisha. Amplitude modulation detector. 4,492,926, Cl. 329-205.00R.
Kutz, Heinrich; Ostlinning, Gunter; and Jung, Gerd, to SMS Schloemann-Siemag Aktiengesellschaft. Tightening device for the gripping jaws of a plate stretcher. 4,492,105, Cl. 72-302.000.
Kuwana, Hisashi: *See*—
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Kuypers, Martinus H., to Honeywell Inc. Clark cell with hydrophylic polymer layer. 4,492,622, Cl. 204-403.000.
Kuze, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Sealing material. 4,492,603, Cl. 148-31.500.
Kwon, Oh K.: *See*—
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Laarhoven, Johannes J.; van Dongeren, Jan P.; de Wit, Hendrik; and Smeets, Louis M., to Wavin B.V. Method of and apparatus for determining the state of ageing of plastic products. 4,492,867, Cl. 250-341.000.

Laird, William B. Furniture with removable padded cushions. 4,492,409, Cl. 297-440.000.

Laker, Kenneth R.: *See*—
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LaLonde, Paul D., to Donn Incorporated. Suspension ceiling grid system. 4,492,066, Cl. 52-668.000.

Lam, Yanta, to Meyer Manufacturing Company, Limited. Electrically heated cooking or food heating devices. 4,492,853, Cl. 219-432.000.

Lamy, Jean-Michel; and Le Bail, Albert, to Regie Nationale des Usines Renault. Device for filtering out vibrations and noise. 4,492,130, Cl. 74-473.00P.

Landa, Benzion, to Savin Corporation. Resilient-feed ball injector for microballistic printer. 4,492,300, Cl. 198-443.000.

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Landoll, Donald R.; Konga, David J.; and Belknap, Alfred R., 4,492,507, Cl. 414-475.000.

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Lange, Gerhard; and Boy, Jurgen, to Siemens Aktiengesellschaft. Surge arrester with a gas-filled housing. 4,493,004, Cl. 361-120.000.

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Lange, Gerhard; Boy, Jurgen; Hoene, Ernst-Ludwig; and Sippekamp, Oskar, to Siemens Aktiengesellschaft. Gas discharge overvoltage arrester with parallel-connected spark gap. 4,493,006, Cl. 361-124.000.

Lange, Hans: *See*—
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Lapatovich, Walter P.; and Gibbs, George R., to GTE Laboratories Incorporated. Mercury-free discharge lamp. 4,492,898, Cl. 315-248.000.

Larrive, Christopher, to Pirelli General plc. Manufacture of insulated electric cables. 4,492,662, Cl. 264-40.100.

Laskaris, Evangelos T., to General Electric Company. Cryostat for NMR magnet. 4,492,090, Cl. 62-55.000.

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Randen, Ilkka U.; Kiema, Mikko; and Porthen, Lauri S., 4,492,399, Cl. 294-74.000.

Latter, Bruce B., to General Electric Company. Method of assembling a rigid wire for driven rotational movement. 4,492,017, Cl. 29-434.000.

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Lavallee, Pierre A.: *See*—
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Law, Kock-Yee; Johnson, Gordon E.; and Lin, John W. P., to Xerox Corporation. Ablative infrared sensitive devices containing soluble naphthalocyanine dyes. 4,492,750, Cl. 430-494.000.

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Le Du, Jean-Claude: *See*—
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Lee, Charles C.; and Owen, Richard, to Minnesota Mining & Manufacturing Company. Laser diode printer. 4,492,970, Cl. 346-160.000.

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Lee, Leighton, II; O'Dell, Gerald W.; and Holtermann, Ludwig K., 4,492,360, Cl. 251-129.000.

Lee, Francis C.; Mills, Ross N.; Niweigha, Tiefa K.; and Taike, Frank E., to International Business Machines. Dynamic control of nonlinear ink properties for drop-on-demand ink jet operation. 4,492,968, Cl. 346-140.00R.

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Leeds & Northrup Company: *See*—
Clayton, Wilson A.; and Galperin, Alexander, 4,492,948, Cl. 338-25.000.

LeFebvre, Jacques, to Aluminium Pechiney. Process for plating a long span of metal with a metal layer. 4,492,615, Cl. 204-28.000.

Leggett & Platt, Incorporated: *See*—
Zapletal, Henry; Wentzek, Horst F.; and Chembakaffery, George M., 4,492,298, Cl. 198-409.000.

Legris: *See*—
Bouteille, Daniel; Petrimaux, Eric; and Burban, Jean-Luc, 4,492,149, Cl. 92-5.00R.

Lehmann, Rudolf: *See*—
Rutzen, Horst; Nikolaus, Peter; Bischoff, Martin; and Lehmann, Rudolf, 4,492,802, Cl. 564-292.000.

Lehto, Delbert L., to United States of America, Navy. Gauge for measuring high transient pressures. 4,492,121, Cl. 73-705.000.

Leighton, Joseph C., to Hughes Tool Company. Roof bit. 4,492,278, Cl. 175-410.000.

Leiserson, Charles E.: *See*—
Kung, Hsiang-Tsung; and Leiserson, Charles E., 4,493,048, Cl. 364-754.000.

Lekhtman, David; and Lekhtman, Gregory. Sporting and exercising spring shoe. 4,492,374, Cl. 272-114.000.

Lekhtman, Gregory: *See*—
Lekhtman, David; and Lekhtman, Gregory, 4,492,374, Cl. 272-114.000.

Leland Stanford Junior University: *See*—
Russo, Oscar; Wadsworth, Jeffrey; and Sherby, Oleg D., 4,492,671, Cl. 419-48.000.

Lemire, David H. Truck mounted ladder assembly. 4,492,286, Cl. 182-93.000.

Lent, Mark S., to McGraw-Edison Company. Liquid propane gas fuel system. 4,492,208, Cl. 123-527.000.

Leohner, Donald L.: *See*—
Cooper, Stephen E.; and Leohner, Donald L., 4,492,714, Cl. 426-602.000.

Leppink, Arie: *See*—
Breuers, Theo P. C.; Heijnen, Andreas T.; and Leppink, Arie, 4,492,138, Cl. 83-203.000.

Leroy, Daniel: *See*—
Mallen-Herrero, Jose; Leroy, Daniel; Zimmermann, Urs; and Charlat, Patrice, 4,492,541, Cl. 418-23.000.

Leser, Jacques F., to CEM Cie Electro-Mecanique. Process and apparatus for the detection of flaws in transparent sheets of glass. 4,492,477, Cl. 356-430.000.

Lessman, Gerald G.: *See*—
Miller, Richard A.; and Lessman, Gerald G., 4,492,843, Cl. 219-121.0LC.

Lessoff, Howard: *See*—
Bottka, Nicholas; Lessoff, Howard; and Hills, Marian E., 4,492,434, Cl. 350-356.000.

Levenez, Pierre. Window sill. 4,492,062, Cl. 52-97.000.

Levine, Morris M., to CIC Int'l. Corp. Extrusion apparatus. 4,492,550, Cl. 425-142.000.

Levitt, George; and Petersen, Wallace C., to Du Pont de Nemours, E. I., and Company. Herbicidal s-triazines. 4,492,599, Cl. 71-93.000.

Levy, Alvin C., to AT&T Bell Laboratories. Coated optical fiber. 4,492,428, Cl. 350-96.300.

Lewis, George K.; Sun, Franklin K.; Keene, Douglas L.; and Fidel, Howard F., to Irex Corporation. Dual function ultrasonic transducer assembly. 4,492,120, Cl. 73-625.000.

Lewis, Norris E.; and Miller, Michael B., to Litton Systems, Inc. Optical slip ring assembly. 4,492,427, Cl. 350-96.200.

Lex, August. Apparatus for inductively heating metallic medical and dental tools. 4,492,840, Cl. 219-10.570.

Leybold-Heraeus GmbH: *See*—
Reich, Gunther, 4,492,123, Cl. 73-755.000.
Reuter, Wolfgang, 4,492,423, Cl. 339-112.00L.

Lichtenstein, Joseph; and Vaillancourt, Vincent, to Whitman Medical Corporation. Sterile urine specimen collection. 4,492,258, Cl. 141-1.000.

Lienert, Gerold, to Rockwell International Corporation. Separating and feeding system for a shot peening machine. 4,492,102, Cl. 72-53.000.

Lillibridge, Harold R.: *See*—
Meeker, David M.; and Lillibridge, Harold R., 4,492,308, Cl. 206-610.000.

Lilly Industries Limited: *See*—
Chakrabarti, Jiban K.; Hotten, Terrence M.; and Steggles, David J., 4,492,699, Cl. 424-250.000.

Lin, John W. P.: *See*—
Law, Kock-Yee; Johnson, Gordon E.; and Lin, John W. P., 4,492,750, Cl. 430-494.000.

Lin, Stephen Y., to Reed Lignin, Inc. Dyestuffs and dyeing method using lignin adduct dispersant. 4,492,586, Cl. 8-528.000.

Linde Aktiengesellschaft: *See*—
Baur, Karl; and Karwat, Heinz, 4,492,676, Cl. 423-210.000.

Lindmayer, Joseph, to Solarex Corporation. Electrical contacts for a solar cell. 4,492,812, Cl. 136-256.000.

Ling, Andrew T.: *See*—
Donohue, James M.; and Ling, Andrew T., 4,493,049, Cl. 364-900.000.

Ling, Fu W.: *See*—
Lee, Yung W.; Ling, Fu W.; and Shapiro, Stanley, 4,492,602, Cl. 148-11.50C.

Ling, John Y.: *See*—
Chang, Richard S.; Ling, John Y.; and Shoff, Daniel J., 4,492,582, Cl. 434-169.000.

Linge, Anders: *See*—
Brogardh, Torgny; Linge, Anders; and Sander, Lars, 4,492,860, Cl. 250-227.000.

Linn Elektronik GmbH: *See*—
Linn, Horst, 4,492,572, Cl. 432-263.000.

Linn, Horst, to Linn Elektronik GmbH. Melting crucible. 4,492,572, Cl. 432-263.000.

Lions, Noel: *See*—
Cabrillat, Marie-Therese; and Lions, Noel, 4,492,667, Cl. 376-405.000.

Litton Industrial Products, Inc.: *See*—
MacDonald, Daniel J., 4,492,890, Cl. 310-184.000.

Litton Systems, Inc.: *See*—
Lewis, Norris E.; and Miller, Michael B., 4,492,427, Cl. 350-96.200.
Livingston, David R.: *See*—
McEntire, Edward E.; Sellstrom, Kathy B.; Nieh, Edward C. Y.; and Livingston, David R., 4,492,801, Cl. 564-135.000.
LKB-Produkter: *See*—
Forstrom, Bo; Luniewski, Tomas; and Wikefelt, Per, 4,492,139, Cl. 83-727.000.
Locher, Johannes: *See*—
Arnold, Winfried; Locher, Johannes; and Schelling, Bernd, 4,492,913, Cl. 323-282.000.
Lockheed Corporation: *See*—
Morrison, Robert A.; and Frink, Attila, 4,493,010, Cl. 361-385.000.
Lockheed Missiles & Space Company, Inc.: *See*—
Bizzell, Gary D.; and Ekern, William F., 4,492,266, Cl. 165-104.260.
Lockwood, George H., to Anthony Manufacturing Corp. Sequencing valve. 4,492,247, Cl. 137-119.000.
Loeb, Alfred M.: *See*—
Folkins, Jeffrey J.; Haque, Shahid; Loeb, Alfred M.; and Till, Henry R., 4,492,179, Cl. 118-689.000.
Loescher, Michael R., to Therm-O-Disc, Incorporated. Edge-actuated thermostat. 4,492,946, Cl. 337-365.000.
Lohr, Thomas E., to Allen Industries, Inc. Vehicle seat construction and method of making the same. 4,492,408, Cl. 297-344.000.
Lombard, Robert W. Coin counting and wrapping device. 4,492,243, Cl. 133-8.00A.
Longoni, Angelo: *See*—
Boschi, Pier M.; Gozzo, Franco; and Longoni, Angelo, 4,492,690, Cl. 424-200.000.
Loos, Jurgen: *See*—
Romic, Ivica; and Loos, Jurgen, 4,492,076, Cl. 57-22.000.
Lord, Henry A.: *See*—
Bixler, Kenneth D.; Reifers, Richard F.; and Lord, Henry A., 4,492,331, Cl. 229-2.5EC.
Lorence, Allan L.; Maring, Thomas L.; and Rawson, James L., deceased (by Oelwein State Bank, administrator), to Rawson Control Systems, Inc. Amusement helicopter. 4,492,372, Cl. 272-1.00C.
Lorenz, Dieter; and Olsen, Willi, to Siemens Aktiengesellschaft. Compressed gas insulated high voltage switching installation with single phase metallic encapsulation. 4,493,009, Cl. 361-341.000.
Lorenz, Manfred, to Bayer Aktiengesellschaft. Isoindolenine derivatives, processes for their preparation and their use as intermediate products for the preparation of dyestuffs. 4,492,796, Cl. 548-471.000.
Loughridge, Fredrick A.: *See*—
Snell, Richard G.; and Loughridge, Fredrick A., 4,492,814, Cl. 174-50.640.
Loviselo, Pier P.: *See*—
Cozzi, Paolo; Pillan, Antonio; and Loviselo, Pier P., 4,492,707, Cl. 424-273.00R.
Loyd's Industri A/S. Boks 609: *See*—
Tolfsen, Ulf, 4,492,007, Cl. 24-461.000.
Lucas Industries Limited: *See*—
Brown, David J.; Markin, Trevor L.; and Dell, Ronald M., 4,492,744, Cl. 429-217.000.
Warnock, Robert J., 4,492,289, Cl. 188-79.5GE.
Ludwig, Charles H.: *See*—
Bannerman, Wyburn G.; and Ludwig, Charles H., 4,492,729, Cl. 428-283.000.
Lugscheider, Walter; Kilches, Helmut D.; Riegler, Ernst; and Zajicek, Ernst, to Voest-Alpine Aktiengesellschaft. Plasma melting furnace. 4,493,088, Cl. 373-22.000.
Luk, Ka-Shin, to Hoop Tung Manufactory Limited. Water pistol. 4,492,318, Cl. 222-79.000.
Luk Lamellen und Kupplungsbau GmbH: *See*—
Maucher, Paul, 4,492,293, Cl. 192-89.00B.
Luke, Roger D.; Ingram, Wayne A.; and Jarrell, Michael S., to Siemens-Allis, Inc. One-piece, slam-type latch for snap-in installation. 4,492,396, Cl. 292-228.000.
Lukis, Lawrence J.; and Duhig, Gerard P., to Moore Business Forms, Inc. Character recognition device. 4,493,104, Cl. 382-13.000.
Lumb, Anthony P.: *See*—
Barratt, Stuart; and Lumb, Anthony P., 4,493,030, Cl. 364-200.000.
Lunden, Risto; and Ebeling, Olavi, to Oy Kontekla. Rain water roof outlet or similar for a building. 4,492,491, Cl. 405-119.000.
Luniewski, Tomas: *See*—
Forstrom, Bo; Luniewski, Tomas; and Wikefelt, Per, 4,492,139, Cl. 83-727.000.
Lutz, Walter; Steppan, Hartmut; and Erdmann, Fritz. Light-sensitive polycondensation product containing diazonium and dialdehyde groups, and light-sensitive recording material prepared therewith. 4,492,748, Cl. 430-175.000.
Luz, David W.; and Willis, Donald H., to RCA Corporation. Single controllable switch, push-pull inverter for a television receiver ferroresonant power supply. 4,492,900, Cl. 315-411.000.
Lyman Products Corporation: *See*—
Ramage, C. Kenneth, 4,492,010, Cl. 29-1.220.
M.A.N. Maschinenfabrik: *See*—
Chmela, Franz; Herzog, Walter; and Meier, Richard, 4,492,194, Cl. 123-276.000.
M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See*—
Neitz, Alfred, 4,492,193, Cl. 123-276.000.
M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See*—
Munnich, Wilhelm; and Batke, Manfred, 4,492,328, Cl. 226-197.000.
M.A.G. Engineering & Manufacturing Co., Inc.: *See*—
Allenbaugh, Howard M., 4,492,397, Cl. 292-341.180.
Maassen, Egbertus J. P.; and de Jong, Frederik J., to U.S. Philips Corporation. Electronic flash unit. 4,492,451, Cl. 354-416.000.
Mabille, Pierre, to Electro Medical Systems, S.A. Dental prophylactic apparatus. 4,492,575, Cl. 433-88.000.
MacCarthy, Patrick. Yo-yo with non-circular cross-sectional axle. 4,492,057, Cl. 446-250.000.
MacDonald, Daniel J., to Litton Industrial Products, Inc. Stator winding providing magnetomotive force wave of reduced harmonic content. 4,492,890, Cl. 310-184.000.
MacGregor, Douglas B.; Moyer, William C.; Mills, Marvin A., Jr.; and Zolnowsky, John E., to Motorola, Inc. Data processor version validation. 4,493,035, Cl. 364-200.000.
MacMillan Bloedel Limited: *See*—
Rosenberg, George N., 4,492,726, Cl. 428-192.000.
Magma Power Company: *See*—
McCabe, Barkman C.; and Zajac, Edward, 4,492,083, Cl. 60-641.500.
Magnetic Peripherals Incorporated: *See*—
Edwards, Michael W., 4,493,000, Cl. 361-92.000.
Magyar Tudomanyos Akademia Termeszettudomanyi Kutato Laboratorium: *See*—
Szekely, Tamas; Csanda, Ferenc; Nagy, Gabor; and Czerny, Gyozo, 4,492,494, Cl. 405-264.000.
Maho Werkzeugmaschinenbau Babel & Co.: *See*—
Weck, Manfred; Klingel, Hans; and Werntze, Georg, 4,492,513, Cl. 414-729.000.
Makino, Tomoatsu: *See*—
Yamamoto, Noboru; Okuda, Ryoichi; and Makino, Tomoatsu, 4,492,213, Cl. 123-644.000.
Makovic, Edward M. Air warming device to facilitate breathing. 4,492,228, Cl. 128-204.170.
Maleska, Michael W., to Gulf & Western Manufacturing Company. Door jamb switch. 4,492,833, Cl. 200-61.780.
Mallen-Herrero, Jose; Leroy, Daniel; Zimmermann, Urs; and Charlat, Patrice, to Compagnie de Construction Mecanique Sulzer. Rotary electrohydraulic device with axially sliding vanes. 4,492,541, Cl. 418-23.000.
Mallett, A. J., to Halliburton Company. Resonant frequency modification of piezoelectric transducers. 4,493,062, Cl. 367-32.000.
Mampaey, Jozef L.: *See*—
Vackier, Leo N.; Mampaey, Jozef L.; and Alaerts, Leo B., 4,492,177, Cl. 118-651.000.
Manderla, Henry J., to Anthes Equipment Limited. Truss shoring system and apparatus therefor. 4,492,358, Cl. 249-18.000.
Mannesmann AG: *See*—
Bathmann, Hans-Jurgen; Hoh, Bernhard; and Schulz, Siegmar, 4,492,118, Cl. 73-612.000.
Mansour, Maher L., to Ashland Oil, Inc. Curing chamber with constant gas flow environment and method. 4,492,041, Cl. 34-15.000.
Mao, Robert S., to International Business Machines Corporation. RAM Utilizing offset contact regions for increased storage capacitance. 4,493,056, Cl. 365-149.000.
Marchand, William C. Multi-stage vane stator for radial inflow turbine. 4,492,520, Cl. 415-150.000.
Marconi Company Limited, The: *See*—
Burns, John W., 4,492,939, Cl. 333-116.000.
Marcotte, Vincent C.: *See*—
Koopman, Nicholas G.; and Marcotte, Vincent C., 4,492,842, Cl. 219-85.00M.
Marcus, Konrad H.; and Fleming, Dennis J., to Prince Corporation. Visor actuating mechanism. 4,492,404, Cl. 296-97.00J.
Marcuse, Dietrich; and Presby, Herman M., to AT&T Bell Laboratories. Method for inspecting multilayer transparent rods. 4,492,463, Cl. 356-73.100.
Marelli, Ernesto, to Sparano, Ottorino. Ultrasonic apparatus, particularly for liquid processing. 4,492,338, Cl. 239-102.000.
Maremont Corporation: *See*—
Curtis, George F., 4,492,145, Cl. 89-33.200.
Zavodny, Eugene N., 4,492,290, Cl. 188-322.140.
Marentic, Michael J., to Interstate Electronics Corporation. Plasma display panel drive electronics improvement. 4,492,957, Cl. 340-777.000.
Maring, Thomas L.: *See*—
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Marino, Casadei: *See*—
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Avery, Carl F., 4,492,305, Cl. 206-210.000.
Mark Telephone Products, Inc.: *See*—
Dimeff, John, 4,492,122, Cl. 73-708.000.
Markin, Trevor L.: *See*—
Brown, David J.; Markin, Trevor L.; and Dell, Ronald M., 4,492,744, Cl. 429-217.000.
Maros, Ronald R., to Cooper Industries, Inc. Shielded jacketed flat cable and grounding clip for use therewith. 4,492,815, Cl. 174-78.000.
Marrakchi El Fellah, Abdellatif: *See*—
Huignard, Jean-Pierre; Herriau, Jean-Pierre; and Marrakchi El Fellah, Abdellatif, 4,492,468, Cl. 356-347.000.
Marrian, Christie R. K.: *See*—
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Marshall, Darrell R.: *See*—
Knowles, Robert C.; and Marshall, Darrell R., 4,492,930, Cl. 330-284.000.

Marshall, Winston S.: *See*—
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Martin, David O.; and Martin, Lawrence G., to Martin Door Manufacturing. End stile apparatus and method for an overhead door section. 4,492,067, Cl. 52-822.000.
Martin Door Manufacturing: *See*—
Martin, David O.; and Martin, Lawrence G., 4,492,067, Cl. 52-822.000.
Martin, Gregory W., to Carrier Corporation. Tube pulling apparatus. 4,492,327, Cl. 226-177.000.
Martin, H. Woods, to AE PLC. Centrifugal separator. 4,492,631, Cl. 210-127.000.
Martin, Lawrence G.: *See*—
Martin, David O.; and Martin, Lawrence G., 4,492,067, Cl. 52-822.000.
Martin Marietta Corporation: *See*—
Bergquist, Lyle E., 4,492,110, Cl. 73-40.700.
Purcell, William O., 4,492,166, Cl. 102-384.000.
Martin, Marshal H., to Indicator Controls Corporation. Solid state regulated power supply system for cold cathode luminous tube. 4,492,899, Cl. 315-308.000.
Martin, Richard T., to Applied Magnetics Corporation. Apparatus for indexing and registering a selected deposition mask to a substrate and method therefor. 4,492,180, Cl. 118-704.000.
Martinez, Arthur T.; and Kilstofte, Richard B., to T.A.D. Avanti, Inc. Slide selector switch. 4,492,828, Cl. 200-5.00R.
Maruko, Morihisa: *See*—
Hiratsuka, Kosai; Nakamura, Yoichi; Maruko, Morihisa; Matsuura, Yoshio; and Kurihara, Michio, 4,492,638, Cl. 210-728.000.
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Maryanchik, Mikhail A.: *See*—
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Marz, Horst F., to C-I-L Inc. Expandable explosive and stemming cartridge. 4,492,165, Cl. 102-313.000.
Masaki, Ichiro; Shulman, Burt H.; and Gorman, Robert R., to Unimation, Inc. Manipulator welding apparatus with sensing arrangements for weld slam tracking. 4,492,847, Cl. 219-124.340.
Masch, Helmut E.: *See*—
Morse, Hugh B.; and Masch, Helmut E., 4,492,070, Cl. 53-438.000.
Masclet, Andre: *See*—
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Massey-Ferguson Services N.V.: *See*—
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Massinger, Barry K.: *See*—
Smets, John E.; Smets, John S.; Smets, Robert D.; and Massinger, Barry K., 4,492,016, Cl. 29-432.000.
Maestron Scale Inc.: *See*—
Susor, William C., deceased, 4,492,280, Cl. 177-211.000.
Masuda, Akira: *See*—
Miyaki, Masahiko; Masuda, Akira; and Matsumura, Toshimi, 4,492,534, Cl. 417-386.000.
Masuda, Yoshikazu: *See*—
Tsuda, Masaya; Yonemaru, Ken-Ichi; and Masuda, Yoshikazu, 4,492,977, Cl. 358-75.000.
Masuhara, Toshiaki: *See*—
Yoshida, Isao; Okabe, Takeaki; Katsueda, Mineo; Nagata, Minoru; Masuhara, Toshiaki; Ashikawa, Kazutoshi; Kato, Hideaki; Ito, Mitsuo; Ohtaka, Shigeo; Minato, Osamu; and Sakai, Yoshio, 4,492,974, Cl. 357-23.000.
Masumoto, Hisayuki; and Shimomura, Masaichi, to Minolta Camera Kabushiki Kaisha. Zoom lens system. 4,492,437, Cl. 350-428.000.
Matarainen, Reino, to Valmet OY. Apparatus for on-machine supercalendering of paper. 4,492,612, Cl. 162-360.00R.
Mathematical Sciences Northwest, Inc.: *See*—
Grynberg, Jack; Nelson, Leonard Y.; and Moody, Stephen E., 4,492,862, Cl. 250-255.000.
Matsubara, Tooru, to Nissan Shatai Company, Limited. Retractable air deflector. 4,492,406, Cl. 296-217.000.
Matsui, Kazuma: *See*—
Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,492,515, Cl. 415-53.00T.
Matsuki, Seiichiro: *See*—
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Matsumoto, Yuuichi; Kawasaki, Kiyomitsu; and Ishitani, Masato, to Soda Aoromatic Company, Limited. Slowly releasing perfume compositions. 4,492,644, Cl. 252-522.00A.
Matsumura, Toshimi: *See*—
Miyaki, Masahiko; Masuda, Akira; and Matsumura, Toshimi, 4,492,534, Cl. 417-386.000.
Matsunaga, Tetsuzo: *See*—
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Matsuo, Seitaro; and Ono, Toshiro, to Nippon Telegraph & Telephone Public Corporation. Plasma deposition method and apparatus. 4,492,620, Cl. 204-192.00R.
Matsushita Electric Industrial Co., Ltd.: *See*—
Arai, Kazuo; and Shimamoto, Takeshi, 4,492,581, Cl. 434-128.000.
Hashimoto, Kiyokazu; and Hayashi, Keizi, 4,492,988, Cl. 358-336.000.
Hayakawa, Daishiro; Akimoto, Masao; Narita, Katsumi; and Tani, Kenroku, 4,492,928, Cl. 330-126.000.
Ishihara, Shin-ichiro; Hirao, Takashi; Mori, Koshiro; and Mochizuki, Motonori, 4,492,605, Cl. 148-174.000.
Ishihara, Shoichi; Yoneno, Hiroshi; and Yamamoto, Ryoichi, 4,492,725, Cl. 428-69.000.
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Takata, Manabu; Inoue, Shojiro; and Mori, Keiichi, 4,492,336, Cl. 236-20.00A.
Matsuura, Yoshio: *See*—
Hiratsuka, Kosai; Nakamura, Yoichi; Maruko, Morihisa; Matsuura, Yoshio; and Kurihara, Michio, 4,492,638, Cl. 210-728.000.
Mattei, Elisne. Air pressurizers/conditioners especially for work cabs in a polluted atmosphere. 4,492,151, Cl. 98-2.110.
Mattel, Inc.: *See*—
Chang, Richard S.; Ling, John Y.; and Shoff, Daniel J., 4,492,582, Cl. 434-169.000.
Matthews, J. Lester: *See*—
Farris, Edward T.; and Matthews, J. Lester, 4,492,577, Cl. 433-201.000.
Mattson, Fred P. Adaptor for external oil filter. 4,492,632, Cl. 210-168.000.
Matveen, Viktor I.: *See*—
Strekalou, Genrikhn; Shtyrin, Anatoly S.; Matveen, Viktor I.; Maryanchik, Mikhail A.; and Garibov, Genrikh S., 4,492,848, Cl. 219-127.000.
Maucher, Paul, to Luk Lamellen und Kupplungsbau GmbH. Diaphragm spring for use in friction clutches or the like. 4,492,293, Cl. 192-89.00B.
Mauduit, Daniel: *See*—
Boahra-Riad, Mokhtar; Fedeli, Jean-Marc; Jouve, Hubert; and Mauduit, Daniel, 4,493,054, Cl. 365-36.000.
Maul, Rudolf; Otto, Eberhard; and Zinke, Horst, to Ciba-Geigy Corporation. Process for producing triarylphosphites. 4,492,661, Cl. 260-976.000.
Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, to Bayer Aktiengesellschaft. Process for the preparation of 1,1-dichloroalkenes. 4,492,800, Cl. 562-506.000.
Mayer, Thomas; Temple, Michael D.; Boling, Norman L.; and Rancourt, James D., to Burroughs Corporation. Rotation coating of disk substrate with acrylate prepolymer. 4,492,718, Cl. 427-160.000.
Mayes, Daniel J., to Great Neck Saw Manufacturing, Inc. Top-view-reading level. 4,492,038, Cl. 33-379.000.
McAllister, George P.: *See*—
Robinson, Thomas D.; Sharp, Lewis A., Jr.; and McAllister, George P., 4,491,990, Cl. 4-607.000.
McCabe, Barkman C.; and Zajac, Edward, to Magma Power Company. Geothermal salinity control system. 4,492,083, Cl. 60-641.500.
McCann, John J.: *See*—
Burkhardt, James L.; and McCann, John J., 4,492,987, Cl. 358-332.000.
McClintock, John H., Jr.: *See*—
Kim, Dongsung R.; and McClintock, John H., Jr., 4,493,019, Cl. 364-200.000.
Kim, Dongsung R.; and McClintock, John H., Jr., 4,493,020, Cl. 364-200.000.
McCoy, James J., Jr., to Tenneco, Inc. Method and apparatus for controlling recirculation in a centrifugal pump. 4,492,516, Cl. 415-53.00T.
McCurdy, Robert: *See*—
Williams, Daniel W., 4,492,378, Cl. 273-142.0HA.
McElreath, Kenneth W.: *See*—
Fabian, Gordon R.; and McElreath, Kenneth W., 4,492,907, Cl. 318-586.000.
McElroy, David J., to Texas Instruments Incorporated. Method of making high density semiconductor device such as floating gate electrically programmable ROM or the like. 4,493,057, Cl. 365-182.000.
McEntire, Edward E.; Sellstrom, Kathy B.; Nieh, Edward C. Y.; and Livingston, David R., to Texaco Inc. Production of N-substituted (meth)acrylamides from (meth)acrylates and amines over a metal alkoxide catalyst. 4,492,801, Cl. 564-135.000.
McFee, James H.: *See*—
Finegan, Sean N.; McFee, James H.; and Swartz, Robert G., 4,492,852, Cl. 219-405.000.
McGrail, John F. Closure device for toilet seats. 4,491,989, Cl. 4-251.000.
McGraw-Edison Company: *See*—
Lent, Mark S., 4,492,208, Cl. 123-527.000.
Prescott, Robert C.; Gold, Calman; and Anderson, Eric V., 4,492,246, Cl. 137-85.000.
McLeod, Alasdair D., to B.M.H. Feedgear. Article turning device. 4,492,299, Cl. 198-417.000.
Meadowcraft Inc.: *See*—
Weaver, Henry; and Pawlush, Joseph C., 4,492,104, Cl. 72-56.000.
Meeker, David M.; and Lillibridge, Harold R., to Champion International Corporation. Quick opening envelope. 4,492,308, Cl. 206-610.000.
Mega International, Inc.: *See*—
Hopmayer, Gary S.; and Barone, Charles, 4,493,018, Cl. 363-145.000.
Meier, Richard: *See*—
Chmela, Franz; Herzog, Walter; and Meier, Richard, 4,492,194, Cl. 123-276.000.

Meinander, Paul O., to Oukeyhtio, A. Ahlstrom. Extended nip press with movable sealing strips. 4,492,611, Cl. 162-358.000.
Meinard, Colette: *See*—
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Meininger, Fritz: *See*—
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Claussen, Uwe; Merten, Josef; Rohr, Harry; and Melchior, Bernd, 4,492,778, Cl. 523-137.000.
Memorial Hospital for Cancer and Allied Diseases: *See*—
Fleisher, Martin; and Winawer, Sidney J., 4,492,124, Cl. 73-864.440.
Mendiratta, Ashok K.; and Morgan, Wayne F., to General Electric Company. Process for preparing alkali metal salts of hydroxyaromatic compounds. 4,492,806, Cl. 568-723.000.
Menini, Joseph: *See*—
Sick, Peter; and Menini, Joseph, 4,492,259, Cl. 141-198.000.
Mennicke, Stefan: *See*—
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Agrawal, Vishwani D.; and Mercer, Melvin R., 4,493,077, Cl. 371-25.000.
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Friedman, Arthur J., 4,492,700, Cl. 424-250.000.
Merk, Wolfgang: *See*—
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Merkel, Wulf; Bormann, Dieter; and Muschaweck, Roman, to Hoechst Aktiengesellschaft. Substituted pyrrolidinyl-benzoic acid derivatives and a process for their manufacture. 4,492,710, Cl. 424-274.000.
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Metal Box Public Limited Company: *See*—
Ginn, Ian D.; Gleave, Leonard; and Woods, Leslie, 4,492,135, Cl. 83-155.000.
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Lass, Yanta, 4,492,853, Cl. 219-432.000.
Meyer, Werner: *See*—
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Michaud, Horst; and von Seyerl, Joachim, to SKW Trostberg Aktiengesellschaft. Cyanuric chloride having improved shelf life. 4,492,679, Cl. 423-268.000.
Michel, Frederick A., to Standard Oil Company (Indiana). Premix-type burner distributer tip. 4,492,562, Cl. 431-177.000.
Michel, Karl H.; and Kastner, Ralph E., to Eli Lilly and Company. A54556 Antibiotics and process for production thereof. 4,492,650, Cl. 260-112.50R.
Mickelson, Nils P.; and De LaChapelle, Richard P., to GTE Products Corporation. Surge arrester assembly. 4,493,003, Cl. 361-119.000.
Microdyne Corporation: *See*—
Knowles, Robert C.; and Marshall, Darrell R., 4,492,930, Cl. 330-284.000.
Midland-Ross Corporation: *See*—
Vanderhelst, Peter W., 4,493,040, Cl. 364-477.000.
Midou, Nobuo: *See*—
Asano, Etuo; Suzuki, Yasuro; and Midou, Nobuo, 4,492,884, Cl. 310-45.000.
Miki, Yukio; and Egawa, Takeshi, to Minolta Camera Kabushiki Kaisha. Mounting device of optical unit. 4,492,429, Cl. 350-257.000.
Mildenberger, Hilmar: *See*—
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Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., 4,492,751, Cl. 435-7.000.
Miles, Peter R.: *See*—
Farhangi, Hassan; Miles, Peter R.; and Daskalakis, Costas N., 4,493,106, Cl. 382-41.000.
Milkovic, Miran, to General Electric Company. Current sensors. 4,492,919, Cl. 324-127.000.
Miller, Albert J., to Atlas Electronics International. Automotive driving condition alarm system. 4,492,952, Cl. 340-52.00F.
Miller, Bertram W. Method and apparatus for ascertaining color balance of photographic printing paper. 4,492,474, Cl. 356-404.000.
Miller, James H.: *See*—
Diaz, Zaida; and Miller, James H., 4,492,592, Cl. 62-18.000.
Miller, Michael B.: *See*—
Lewis, Norris E.; and Miller, Michael B., 4,492,427, Cl. 350-96.200.
Miller, Richard A.; and Lesmerises, Gerald G., to Westinghouse Electric Corp. Apparatus and method for laser machining in a non-reactive environment. 4,492,843, Cl. 219-121.0LC.
Miller, Richard A.: *See*—
Kobuck, Richard M.; Miller, Richard A.; Kalkbrenner, Ralph W.; Kerrey, John S.; and Duncan, Robert, 4,492,844, Cl. 219-121.0LC.
Miller, Richard L.: *See*—
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Mills, Marvin A., Jr.: *See*—
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Mills, Ross N.: *See*—
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Mimura, Yoshiyuki; Okada, Takao; and Toda, Akitoshi, to Olympus Optical Co., Ltd. Photosensitive member for electrophotography with mirror finished support. 4,492,745, Cl. 430-67.000.
Minami, Eiji, to Matsushita Electric Industrial Co., Ltd. Device for controlling and displaying the functions of an electric or electronic apparatus. 4,492,958, Cl. 340-825.250.
Minato, Osamu: *See*—
Yoshida, Isao; Okabe, Takeaki; Katsueda, Mineo; Nagata, Minoru; Masuhara, Toshiaki; Ashikawa, Kazutoshi; Kato, Hideaki; Ito, Mitsuo; Ohtaka, Shigeo; Minato, Osamu; and Sakai, Yoshio, 4,492,974, Cl. 357-23.000.
Minegishi, Akira: *See*—
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Ministry of International Trade & Industry: *See*—
Tajima, Michio, 4,492,871, Cl. 250-459.100.
Mink, George. Amplified motion transmitting device. 4,492,512, Cl. 414-744.00A.
Minnesota Mining & Manufacturing Company: *See*—
Lee, Charles C.; and Owen, Richard, 4,492,970, Cl. 346-160.000.
Minolta Camera Kabushiki Kaisha: *See*—
Ishikawa, Norio; and Omaki, Takanobu, 4,492,448, Cl. 354-406.000.
Masumoto, Hisayuki; and Shimomura, Masaichi, 4,492,437, Cl. 350-428.000.
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Mita Industrial Co. Ltd.: *See*—
Miyakawa, Nobuhiro; Higashiguti, Teruaki; Sano, Yumiko; and Funato, Masatomi, 4,492,746, Cl. 430-71.000.
Mitarai, Keiji: *See*—
Kunoi, Sadakatsu; Mitarai, Keiji; and Tsutsumi, Yukihiro, 4,492,803, Cl. 564-486.000.
Mitsuaki, Seki; Tazaki, Shigemitsu; and Shirato, Yoshiaki, to Canon Kabushiki Kaisha. Recording apparatus. 4,492,966, Cl. 346-33.00A.
Mitsubishi Chemical Industries Limited: *See*—
Hasegawa, Takashi; Tsuchihashi, Koji; and Yamashita, Hiroshi, 4,492,771, Cl. 502-420.000.
Takashima, Ryokichi; Goko, Nobuaki; Uehara, Yumito; Nishihara, Yasuhiro; and Yamamoto, Hidetoshi, 4,492,787, Cl. 525-53.000.
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Amagasa, Nobutada, 4,492,999, Cl. 361-21.000.
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Katayama, Kaneo, 4,492,094, Cl. 62-262.000.
Kitamura, Yutaka; Kitora, Yoshihisa; and Koyanagi, Masatoshi, 4,492,885, Cl. 310-62.000.
Ohnishi, Masaru; and Saito, Masayuki, 4,492,965, Cl. 346-1.100.
Shima, Ichiji; Teshima, Hiroshi; Koizumi, Takayuki; and Usami, Teruo, 4,493,042, Cl. 364-507.000.
Shimomura, Setsuhiro; and Kishimoto, Yuuji, 4,492,211, Cl. 123-585.000.
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Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Yamashita, Riichiro; and Satonishi, Osamu, 4,493,103, Cl. 382-1.000.
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Ichikawa, Souji, 4,492,033, Cl. 33-125.00C.
Nishina, Shingo; Takahashi, Seigo; and Ohtani, Shigeru, 4,492,034, Cl. 33-170.000.
Miura, Hideo, to Toyo Seikan Kaisha, Ltd. Baking and drying furnace for containers such as cans. 4,492,571, Cl. 432-225.000.
Miura, Kazuhiko: *See*—
Ozaki, Tadashi; Hattori, Tadashi; Miura, Kazuhiko; Hanaoka, Masanori; and Hashiguchi, Yukihide, 4,492,109, Cl. 73-35.000.
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Miyakawa, Nobuhiro; Higashiguti, Teruaki; Sano, Yumiko; and Funato, Masatomi, to Mita Industrial Co. Ltd. Electrophotographic photosensitive material with polyester binder. 4,492,746, Cl. 430-71.000.
Miyake, Masaya: *See*—
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Miyaki, Masahiko; Masuda, Akira; and Matsumura, Toshimi, to Nippondenso Co., Ltd. Fuel injection pump for internal combustion engine. 4,492,534, Cl. 417-386.000.
Miyamoto, Koichi: *See*—
Kan, Yasuhito; and Miyamoto, Koichi, 4,492,371, Cl. 271-21.000.
Miyano, Toshiyuki; and Ohmura, Hideo, to Tokyo Shibaura Denki Kabushiki Kaisha. Bundling apparatus. 4,492,072, Cl. 53-586.000.
Miyata, Hiroyasu; Yamaguchi, Akio; and Watanabe, Keizo, to Sanshin Electric Co., Ltd. Push-button tuner. 4,492,125, Cl. 74-10.330.
Miyazawa, Takashi, to Kirin Beer Kabushiki Kaisha. Defect detecting method and apparatus. 4,492,476, Cl. 356-428.000.
Miyoshi, Teruzo: *See*—
Kato, Masaaki; Miyoshi, Teruzo; Kibayashi, Iwao; Ikemi, Masahisa; Gomi, Haruo; Ishimatsu, Yoshiaki; Koizumi, Noriaki; and Yamada, Hideaki, 4,492,757, Cl. 435-280.000.

Mizokami, Kazunori, to Olympus Optical Co., Ltd. Photometric circuit having a plurality of photoelectric transducer elements capable of being selectively enabled for photometry. 4,492,858, Cl. 250-214.00P.
Mizrah, Tiberiu; Hoffmann, Matthias; Kaser, Peter; and Heilig, Klemens, to Swiss Aluminium Ltd. Process for manufacturing solid cathodes. 4,492,670, Cl. 419-9.000.
Mizuno, William G., to Economics Laboratory, Inc. In-tank toilet bowl cleaner dispenser. 4,491,988, Cl. 4-228.000.
Mizutani, Takayuki: *See*—
Yasuda, Haruo; Yoshida, Kunihiko; Iwai, Yasuro; and Mizutani, Takayuki, 4,492,850, Cl. 219-145.210.
Mizutani, Yasukazu: *See*—
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Mochida, Haruo; Nakakooji, Hiroshi; and Namazue, Hirotoshi, to Nissan Motor Company, Limited; and Kokusan Kinzoku Kogyo Co., Ltd. Keyless entry system for an automotive vehicle. 4,492,959, Cl. 340-825.560.
Mochizuki, Motonori: *See*—
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Mochizuki, Norihiro; and Hashizume, Hiroyuki, to Kayaba Kogyo Kabushiki Kaisha. Cam ring for vane pump. 4,492,545, Cl. 418-149.000.
Modrak, James P.: *See*—
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Molex Incorporated: *See*—
Schneider, Thomas E.; and Funcik, Jack F., 4,492,023, Cl. 29-861.000.
Molitor, Robert L. Static phase converter. 4,492,911, Cl. 318-779.000.
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Montedison S.p.A.: *See*—
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Morel, Andre ; and Morel, Jacques, to Etablissements Morel, Ateliers Electromecaniques de Favieres. Splice-protecting sleeve for electric cables or telephone cables. 4,492,816, Cl. 174-92.000.
Morel, Jacques: *See*—
Morel, Andre ; and Morel, Jacques, 4,492,816, Cl. 174-92.000.
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Mori, Hidetomo: *See*—
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Mori, Yoshihisa; Kobayashi, Hachisiro; and Takashima, Mitsuru, to Sony Corporation. Pickup cartridge. 4,493,071, Cl. 369-146.000.
Morimoto, Masafumi: *See*—
Hashimoto, Shintaro; Morimoto, Masafumi; Nakanishi, Tosaku; Yoshida, Hideo; and Yanagiuchi, Shigenobu, 4,493,050, Cl. 364-900.000.
Moriya, Michio, to Sumitomo Electric Industries, Ltd. Brake pressure control valve with a disabler for split braking system. 4,492,411, Cl. 303-6.00C.
Moriyama, Masakazu; and Saito, Takao, to Toyota Jidosha Kogyo Kabushikik Kaisha. Apparatus for controlling air conditioner by voice. 4,493,100, Cl. 381-43.000.
Moriyasu, Toshinori: *See*—
Suzuki, Shinichi; Sasaki, Masayuki; Moriyasu, Toshinori; and Arakawa, Takao, 4,492,452, Cl. 354-430.000.
Moroto, Seiro: *See*—
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Morrill, Giles W., to Morrill Motors of Virginia, Inc. Flexible conduit connection for motor. 4,492,357, Cl. 248-674.000.
Morrill Motors of Virginia, Inc.: *See*—
Morrill, Giles W., 4,492,357, Cl. 248-674.000.
Morris, Earl L.; Hafner, V. Walter; and Haba, Ron T., to Acorn Engineering Company. Security mirror replaceable from pipe chase. 4,492,430, Cl. 350-631.000.
Morris, Horton H.: *See*—
Young, Raymond H.; Morris, Horton H.; and Brooks, Robert L., 4,492,628, Cl. 209-5.000.
Morrison, Norman J., to Flexibox Limited. Membrane type couplings. 4,492,583, Cl. 464-99.000.
Morrison, Robert A.; and Frink, Attila, to Lockheed Corporation. Electronic packaging module utilizing phase-change conductive cooling. 4,493,010, Cl. 361-385.000.
Morsch, Joachim: *See*—
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Morse, Hugh B.; and Masch, Helmut E. Case loading apparatus and method. 4,492,070, Cl. 53-438.000.
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Moschensky, Anatoly D.: *See*—
Belykh, Sergei I.; Moschensky, Anatoly D.; Davydov, Anatoly B.; Pershin, Gely G.; Smirnov, Boris A.; and Gromov, Mikhail V., 4,492,226, Cl. 128-92.0BC.
Moser, Ulrich F., to Eurograph Gesellschaft fur Photomechanik mbH. Reprography camera. 4,492,454, Cl. 355-1.000.
Moser, Benjamin. Method of preparing microspheres for intravascular delivery. 4,492,720, Cl. 427-213.300.
Moss, Elvis W., to Brunswick Corporation. Anti-reverse mechanism. 4,492,347, Cl. 242-84.20R.
Mostek Corporation: *See*—
Holberg, Douglas R., 4,492,927, Cl. 330-9.000.
Motorola, Inc.: *See*—
Deweck, Lionel, 4,492,931, Cl. 330-294.000.
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MTU Motoren-und Turbinen-Union Muenchen GmbH: *See*—
Rossmann, Axel; and Huether, Werner, 4,492,522, Cl. 416-241.00R.
Mueller, Erwin, to Siemens Aktiengesellschaft. Electro-magnetic relay. 4,492,942, Cl. 335-202.000.
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Muller, Johannes; Kunst, Helmut; and Scondo, Christian, to Degussa Aktiengesellschaft. Salt bath for nitriding iron materials. 4,492,604, Cl. 148-15.500.
Muller, Kurt: *See*—
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Gavrin, Edward S.; Bratt, Richard G.; Schleimer, Stephen L.; Pilat, John F.; Richmond, Michael S.; Wallach, Walter A., Jr.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Clancy, Gerald F.; Mundie, Craig J.; Jones, Thomas M.; Bachman, Brett L.; and Bernstein, David H., 4,493,023, Cl. 364-200.000.
Munnich, Wilhelm; and Batke, Manfred, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Air-flow equipped turning bar for web material. 4,492,328, Cl. 226-197.000.
Munslow-Davies, Keith: *See*—
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Murakami, Satoshi: *See*—
Goto, Tadahiko; Onaki, Kiyoshi; Murakami, Satoshi; Yokooji, Mitsunori; Andou, Norio; and Shimojyo, Norio, 4,492,906, Cl. 318-488.000.
Murakami, Yoshihiko; and Ohta, Noboru, to Fuji P.S. Concrete Co., Ltd. Apparatus for slide forming of prestressed concrete. 4,492,552, Cl. 425-218.000.
Muramatsu, Toshihiko; Kobayashi, Akio; Kondo, Toshio; Isomura, Shigenori; and Eino, Tomomi, to Nippondenso Co., Ltd. Fuel injection control. 4,492,202, Cl. 123-478.000.
Murao, Mikio: *See*—
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Muraoka, Shigetaro; and Sakamoto, Mineo. Anti-howl back device. 4,493,101, Cl. 381-93.000.
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Murphy, Davis J.; and Phillips, Leslie N., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Materials suitable for thermosetting. 4,492,732, Cl. 428-404.000.
Murphy, Richard D.; and Coope, Daniel F., to NL Industries, Inc. Borehole influx detector and method. 4,492,865, Cl. 250-265.000.
Muschaweck, Roman: *See*—
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Muzyczko, Thaddeus M.: *See*—
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Nagata, Minoru: *See*—
Yoshida, Isao; Okabe, Takeaki; Katsueda, Mineo; Nagata, Minoru; Masuhara, Toshiaki; Ashikawa, Kazutoshi; Kato, Hideaki; Ito, Mitsuo; Obtaka, Shigeo; Mineto, Osamu; and Sakai, Yoshio, 4,492,974, Cl. 357-23.000.
Nagel, Harry H., to Heinemann Electric Company. Circuit breaker comprising parallel connected sections. 4,492,941, Cl. 335-13.000.
Nagpal, Krishen L., to Buffalo Color Corporation. Method for inhibiting the growth of fungi with phenyl glycine compounds. 4,492,683, Cl. 424-309.000.
Nagy, Gabor: *See*—
Szekely, Tamas; Csanda, Ferenc; Nagy, Gabor; and Czerny, Gyoso, 4,492,494, Cl. 405-264.000.
Naito, Ryuichi; and Hirano, Hiroyuki, to Pioneer Electronic Corporation. Pick-up point dislocation detecting device in recording a disc player. 4,493,068, Cl. 369-44.000.
Nakada, Akira: *See*—
Oya, Akiyoshi; Nakada, Akira; and Suzuki, Tutomu, 4,492,142, Cl. 84-1.030.
Nakahara, Takeshi: *See*—
Nakashima, Kazuhide; Saito, Takayuki; Nakahara, Takeshi; and Tanaka, Shigeo, 4,492,789, Cl. 525-531.000.
Nakai, Masaru: *See*—
Fujii, Kozo; Nishihira, Keigo; Sawada, Hiroyuki; Tanaka, Shuji; Nakai, Masaru; Yoshida, Hiroshi; and Inoue, Teruhiko, 4,492,792, Cl. 544-326.000.
Nakakooji, Hiroshi: *See*—
Mochida, Haruo; Nakakooji, Hiroshi; and Namazue, Hirotoshi, 4,492,959, Cl. 340-825.560.
Nakamura, Junichi: *See*—
Oinoue, Kenichi; Hayashi, Asao; Nakamura, Junichi; Ida, Masatoshi; Aoki, Masahiro; and Fukuoka, Kenji, 4,492,449, Cl. 354-407.000.
Nakamura, Takashi: *See*—
Ito, Yasuro; Higuchi, Yoshiro; Tsuji, Masanori; Yamamoto, Yasuhiro; Tada, Hiroshi; Kuroha, Kenji; Nakamura, Takashi; and Tomikawa, Koichi, 4,492,478, Cl. 366-28.000.
Nakamura, Toshiaki: *See*—
Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,492,515, Cl. 415-53.00T.
Nakamura, Yoichi: *See*—
Hiratsuka, Kosei; Nakamura, Yoichi; Maruko, Morihisa; Matsuura, Yoshio; and Kurihara, Michio, 4,492,638, Cl. 210-728.000.
Nakanishi, Nobuyasu: *See*—
Kosaka, Aaao; Watanabe, Shingo; and Nakanishi, Nobuyasu, 4,492,414, Cl. 303-116.000.
Nakanishi, Toaaku: *See*—
Hashimoto, Shintaro; Morimoto, Masafumi; Nakanishi, Toaaku; Yoshida, Hideo; and Yanagiuchi, Shigenobu, 4,493,050, Cl. 364-900.000.
Nakashima, Kazuhide; Saito, Takayuki; Nakahara, Takeshi; and Tanaka, Shigeo, to Hitachi Chemical Company, Ltd. Epoxy resin composition. 4,492,789, Cl. 525-531.000.
Nakasone, Seiken; Miyagi, Sadao; Aragaki, Takehiko; and Higa, Yasusi, to Daiichi Seito Kabushiki Kaisha; and Taito Kabushiki Kaisha. Process for clarifying and desalinating sugar cane syrup or molasses. 4,492,601, Cl. 127-48.000.
Nakatani, Hiroshi, to Murata Manufacturing Co., Ltd. Piezoelectric resonator device supported by anisotropic rubber conductor. 4,492,892, Cl. 310-345.000.
Namazue, Hirotoshi: *See*—
Mochida, Haruo; Nakakooji, Hiroshi; and Namazue, Hirotoshi, 4,492,959, Cl. 340-825.560.
Narayanan, Swami: *See*—
Johnson, Axel R.; Narayanan, Swami; and Woebcke, Herman N., 4,492,624, Cl. 208-78.000.
Narita, Katsumi: *See*—
Hayakawa, Daishiro; Akimoto, Masao; Narita, Katsumi; and Tani, Kenroku, 4,492,928, Cl. 330-126.000.
National Distillers and Chemical Corporation: *See*—
Brasa, Harry, 4,492,647, Cl. 252-373.000.
National Research Development Corporation: *See*—
Hopkins, Harold H., 4,492,441, Cl. 350-516.000.
Singleton, Terence, 4,492,224, Cl. 128-75.000.
National Semiconductor Corporation: *See*—
Anderson, James M.; Knight, Thomas S., III; Kitagawa, Dennis T.; and Rey, Ernesto, 4,493,075, Cl. 371-10.000.
Nattrass, Frank. Flexible bulk container with integral lifting loops. 4,493,109, Cl. 383-7.000.
Naumann, Leo J., to BS&B Safety System, Inc. Apparatus for manufacturing rupture disks. 4,492,103, Cl. 72-55.000.
Neal, Peter F., to Rolls-Royce Limited. Gas turbine engine bearing support structure. 4,492,518, Cl. 415-142.000.
Nealon, James T.: *See*—
Bachman, Brett L.; Nealon, James T.; and Young, Charles J., 4,493,025, Cl. 364-200.000.
Near, Timothy P., to General Electric Company. Synchronization fuel control for gas turbine-driven AC generator by use of maximum and minimum fuel signals. 4,492,874, Cl. 290-40.00B.
Nebelung, Hermann H.; and Knoth, Werner-Dieter, to Emhart Industries, Inc. Bottom plate mechanism for a mould of a glassware container manufacturing machine. 4,492,595, Cl. 65-263.000.
Nebu, Hideaki: *See*—
Ohmori, Yoshitaka; and Nebu, Hideaki, 4,492,250, Cl. 137-590.000.
Necchi Societa per Azioni: *See*—
Bar, Alfredo, 4,492,886, Cl. 310-68.00C.
Negus, Clive R.: *See*—
Drain, Leslie E.; and Negus, Clive R., 4,492,467, Cl. 356-336.000.
Neitz, Alfred, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Method of operating internal combustion engines. 4,492,193, Cl. 123-276.000.
Neile, Gunther, to Dr. Johannes Heidenhain GmbH. Coupling arrangement for length measuring device. 4,492,032, Cl. 33-125.00R.
Nelson Irrigation Corporation: *See*—
Kreitzberg, Jeffrey P., 4,492,339, Cl. 239-230.000.
Nelson, Leonard Y.: *See*—
Grynberg, Jack; Nelson, Leonard Y.; and Moody, Stephen E., 4,492,862, Cl. 250-255.000.
Neomed, Incorporated: *See*—
Taylor, Glenn N., 4,492,832, Cl. 200-52.00R.
Nettesheim, Daniel R.; and Kufrin, Fred W., to Schwaab Inc. Type band ink stamp. 4,492,162, Cl. 101-103.000.
Neubauer, Gerald: *See*—
Frank, Gerhard; Rudolf, Peter; Neubauer, Gerald; Duffner, Paul; Ohlinger, Manfred; Wilfinger, Hans J.; and Pfannebecker, Emil, 4,492,804, Cl. 564-493.000.
Nguyen-Dinh, Xuan: *See*—
Duhl, David N.; and Nguyen-Dinh, Xuan, 4,492,672, Cl. 420-448.000.
Nicia, Antonius J. A.; and Potters, Cornelis J. T., to U.S. Philips Corporation. Optical branch coupler. 4,492,426, Cl. 350-96.150.
Nicolas, Alain; and Chapelain, Jean-Pierre, to Thomson-CSF Telephone. Centralized arbitration process and centralized arbiter for multiprocessor system. 4,493,022, Cl. 364-200.000.
Nicolau, Ion F.: *See*—
Averbuch, Marie-Therese; Durif-Varambon, Andre ; Gauthier, Sylviane; Nicolau, Ion F.; and Peuzin, Jean C., 4,492,857, Cl. 250-211.00R.
Nieh, Edward C. Y.: *See*—
McEntire, Edward E.; Sellstrom, Kathy B.; Nieh, Edward C. Y.; and Livingston, David R., 4,492,801, Cl. 564-135.000.
Nikkan Industries Co., Ltd.: *See*—
Oishi, Naoaki; Shimizu, Noriyuki; Shoji, Takashi; and Harada, Shoji, 4,492,730, Cl. 428-328.000.
Nikolaus, Peter: *See*—
Rutzen, Horst; Nikolaus, Peter; Bischoff, Martin; and Lehmann, Rudolf, 4,492,802, Cl. 564-292.000.
Nilsson, Bruno Y., to Boliden Aktiebolag. Method and apparatus for ore prospecting utilizing an aerial transmitter and aerial receiver. 4,492,924, Cl. 324-330.000.
Ning, Tak H.: *See*—
Anantha, Narasipur G.; Ning, Tak H.; and Tsang, Paul J., 4,492,008, Cl. 29-571.000.
Nippon Electric Co., Ltd.: *See*—
Yazawa, Akira, 4,493,095, Cl. 377-107.000.
Nippon Electric Co., Ltd: *See*—
Watanabe, Tadashi, 4,493,046, Cl. 364-717.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Oya, Akiyoshi; Nakada, Akira; and Suzuki, Tutomu, 4,492,142, Cl. 84-1.030.
Nippon Hoso Kyokai: *See*—
Taketoshi, Kazuhisa; and Ogusu, Chihaya, 4,492,981, Cl. 358-217.000.
Nippon Soken, Inc.: *See*—
Ozaki, Tadashi; Hattori, Tadashi; Miura, Kazuhiko; Hanaoka, Masanori; and Hashiguchi, Yukihide, 4,492,109, Cl. 73-35.000.
Takagi, Shigeru; and Hayashi, Nobutoshi, 4,492,079, Cl. 60-274.000.
Nippon Steel Corporation: *See*—
Otabe, Norio; Shimakawa, Yoshiaki; and Uematsu, Hiroshi, 4,492,042, Cl. 34-35.000.
Nippon Telegraph & Telephone Public Corporation: *See*—
Matsuo, Seitaro; and Ono, Toshiro, 4,492,620, Cl. 204-192.00R.
Nippondenso Co., Ltd.: *See*—
Miyaki, Masahiko; Masuda, Akira; and Matsumura, Toshimi, 4,492,534, Cl. 417-386.000.
Muramatsu, Toshihiko; Kobayashi, Akio; Kondo, Toshio; Isomura, Shigenori; and Eino, Tomomi, 4,492,202, Cl. 123-478.000.
Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,492,515, Cl. 415-53.00T.
Yamamoto, Nobuo; Okuda, Ryoichi; and Makino, Tomoatsu, 4,492,213, Cl. 123-644.000.

Nisco, Dino; and Boveri, Sergio, to SANOFI. Benzamides, their salts, and pharmaceutical compositions containing them. 4,492,711, Cl. 424-285.000.

Nishihara, Yasuhiro: *See*—
Takashima, Ryokichi; Goko, Nobuaki; Uehara, Yumito; Nishihara, Yasuhiro; and Yamamoto, Hidetoshi, 4,492,787, Cl. 525-53.000.

Nishihira, Keigo: *See*—
Fujii, Kozo; Nishihira, Keigo; Sawada, Hiroyuki; Tanaka, Shuji; Nakai, Mamoru; Yoshida, Hiroshi; and Inoue, Teruhiko, 4,492,792, Cl. 544-326.000.

Nishina, Shingo; Takahashi, Seigo; and Ohtani, Shigeru, to Mitutoyo Mfg. Co., Ltd. Displacement measuring device. 4,492,034, Cl. 33-170.000.

Nishioka, Kimihiko, to Olympus Optical Co., Ltd. Finder optical system. 4,492,440, Cl. 350-445.000.

Niskin, Shale J. Multiple pulley sheave assembly with retainer pulleys. 4,492,363, Cl. 254-394.000.

Nissan Motor Company, Limited: *See*—
Chikaraishi, Takayo; Tuchiya, Yoshimasa; and Kawamo, Kazunori, 4,492,405, Cl. 296-146.000.
Hasegawa, Hideo, 4,492,129, Cl. 74-473.00R.
Kubota, Toru; Tamate, Masazi; and Sauzu, Masaaki, 4,492,955, Cl. 340-636.000.
Mochida, Haruo; Nakakooji, Hiroshi; and Namazue, Hirotoshi, 4,492,959, Cl. 340-825.560.
Ogawa, Naoki; and Toda, Akira, 4,492,189, Cl. 123-90.380.
Takahashi, Toru; and Ueno, Takashi, 4,492,195, Cl. 123-339.000.
Tanaka, Yoshiyuki, 4,492,101, Cl. 70-370.000.

Nissan Shatai Company, Limited: *See*—
Chikaraishi, Takayo; Tuchiya, Yoshimasa; and Kawamo, Kazunori, 4,492,405, Cl. 296-146.000.
Matsubara, Tooru, 4,492,406, Cl. 296-217.000.

Niweigha, Tiefa K.: *See*—
Lee, Francis C.; Mills, Ross N.; Niweigha, Tiefa K.; and Talke, Frank E., 4,492,968, Cl. 346-140.00R.

NL Industries, Inc.: *See*—
Murphy, Richard D.; and Coope, Daniel F., 4,492,865, Cl. 250-265.000.

Nogai, Akira, to Yoshida Kogyo K. K. Apparatus for manufacturing a continuous slide fastener stringer. 4,492,547, Cl. 425-111.000.

Noguchi, Takaharu: *See*—
Arai, Takao; and Noguchi, Takaharu, 4,492,997, Cl. 360-113.000.

Nolting, Eugene C.: *See*—
Johnson, Gerald L.; Nolting, Eugene C.; and Allen, John H., 4,492,161, Cl. 101-109.000.

Norris, Philip R., to Polaroid Corporation. Photographic film assemblage with means for establishing a gap between a pair of pressure-applying assemblies. 4,492,445, Cl. 354-180.000.

North American Van Lines, Inc.: *See*—
Gasper, John S., 4,492,499, Cl. 410-32.000.

Norton, James P.; and Golan, Lawrence P., to Exxon Research and Engineering Co. Solids cooling. 4,492,184, Cl. 122-4.00D.

Nowakowski, Robert J., to General Motors Corporation. Dual voltage motor vehicle electrical system. 4,492,912, Cl. 320-6.000.

Nu-Tech Industries, Inc.: *See*—
Knight, John H.; and Isaacson, Milton S., 4,492,903, Cl. 318-341.000.

Oakes, Martin C. Electrical switchgear. 4,492,831, Cl. 200-50.00A.

Oberhauser, Louis B.: *See*—
Blomgren, Kenneth E.; and Oberhauser, Louis B., 4,492,403, Cl. 296-65.00R.

Obert, Wolfgang: *See*—
Rohner, Peter; Schippl, Klausdieter; Blumenberg, Gunther; Meyer, Werner; and Obert, Wolfgang, 4,492,089, Cl. 62-55.000.

Obey, Richard P. Lid removal tool. 4,492,132, Cl. 81-3.10R.

Obrist, Albert, to Albert Obrist AG. Closure apparatus with magnetic coupling for screwing on a plastics screw closure. 4,492,068, Cl. 53-331.500.

Oce-Nederland B.V.: *See*—
Breuers, Theo P. C.; Heijnen, Andreas T.; and Leppink, Arie, 4,492,138, Cl. 83-203.000.

O'Dell, Gerald W.: *See*—
Lee, Leighton, II; O'Dell, Gerald W.; and Holtermann, Ludwig K., 4,492,360, Cl. 251-129.000.

Odero, Dominique; and Parent, Guy, to Sintra-Alcatel. Sonar System. 4,493,064, Cl. 367-92.000.

Oelwein State Bank, administrator: *See*—
Lorence, Allan L.; Maring, Thomas L.; and Rawson, James L., deceased, 4,492,372, Cl. 272-1.00C.

Oetiker, Hans. Earless clamp structure. 4,492,004, Cl. 24-20.00R.

Ogawa, Atsushi: *See*—
Kusakabe, Hiromi; and Ogawa, Atsushi, 4,492,926, Cl. 329-205.00R.

Ogawa, Hiroshi; and Tamai, Yasuo, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,492,734, Cl. 428-424.200.

Ogawa, Hiroshi; and Tamai, Yasuo, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,492,735, Cl. 428-424.200.

Ogawa, Naoki; and Toda, Akira, to Nissan Motor Company, Ltd. Rocker cover assembly. 4,492,189, Cl. 123-90.380.

Ogawa, Toshihisa: *See*—
Kawai, Yukio; Ogawa, Toshihisa; and Yoshida, Seietsu, 4,492,199, Cl. 123-440.000.

Ogilvy, James J.: *See*—
Jullien, Graham A., 4,492,896, Cl. 315-153.000.

Ogura, Mitsugi, to Tokyo Shibaura Denki Kabushiki Kaisha. MOS Dynamic memory cells and method of fabricating the same. 4,492,973, Cl. 357-23.000.

Ogusu, Chihaya: *See*—
Taketoshi, Kazuhisa; and Ogusu, Chihaya, 4,492,981, Cl. 358-217.000.

Ohga, Suehisa: *See*—
Asano, Yuichiro; Hirahashi, Akira; Ohga, Suehisa; Yabe, Tadashi; Kurita, Kunio; and Momose, Atsushi, 4,492,472, Cl. 356-376.000.

Ohkubo, Hiroyuki, to Sony Corporation. Magnetic sensor with two series-connected magnetoresistive elements and a bias magnet for sensing the proximity of a relatively movable magnetically permeable member. 4,492,922, Cl. 324-207.000.

Ohlinger, Manfred: *See*—
Frank, Gerhard; Rudolf, Peter; Neubauer, Gerald; Duffner, Paul; Ohlinger, Manfred; Wilfinger, Hans J.; and Pfannebecker, Emil, 4,492,804, Cl. 564-493.000.

Ohmori, Yoshitaka; and Nebu, Hideaki, to Honda Giken Kogyo Kabushiki Kaisha. Fuel tank for motor vehicles. 4,492,250, Cl. 137-590.000.

Ohmura, Hideo: *See*—
Miyano, Toshiyuki; and Ohmura, Hideo, 4,492,072, Cl. 53-586.000.

Ohnishi, Masaru; and Saito, Masayuki, to Mitsubishi Denki Kabushiki Kaisha. Thermal transfer printing method. 4,492,965, Cl. 346-1.100.

Ohnishi, Shunsaku: *See*—
Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,492,515, Cl. 415-53.00T.

Ohta, Noboru: *See*—
Murakami, Yoshihiko; and Ohta, Noboru, 4,492,552, Cl. 425-218.000.

Ohta, Yoshikatsu: *See*—
Kanai, Tamaki; Yoshikawa, Hirofumi; Yamagishi, Takashi; Suzuki, Kenji; and Ohta, Yoshikatsu, 4,492,719, Cl. 427-171.000.

Ohtaka, Shigeo: *See*—
Yoshida, Isao; Okabe, Takeaki; Katsueda, Mineo; Nagata, Minoru; Masuhara, Toshiaki; Ashikawa, Kazutoshi; Kato, Hideaki; Ito, Mitsuo; Ohtaka, Shigeo; Minato, Osamu; and Sakai, Yoshio, 4,492,974, Cl. 357-23.000.

Ohtani, Shigeru: *See*—
Nishina, Shingo; Takahashi, Seigo; and Ohtani, Shigeru, 4,492,034, Cl. 33-170.000.

Ohtsuki, Zenju: *See*—
Inami, Mamoru; Tanaka, Yoshiaki; and Ohtsuki, Zenju, 4,492,917, Cl. 324-77.00A.

Oinoue, Kenichi; Hayashi, Asao; Nakamura, Junichi; Ida, Masatoshi; Aoki, Masahiro; and Fukuoka, Kenji, to Olympus Optical Co. Ltd. Apparatus and technique for detecting and controlling the focusing of an optical system by image sharpness and lateral shift techniques. 4,492,449, Cl. 354-407.000.

Oishi, Naoaki; Shimizu, Noriyuki; Shoji, Takashi; and Harada, Shoji, to Showa Denko Kabushiki Kaisha; and Nikkan Industries Co., Ltd. Substrate of printed circuit. 4,492,730, Cl. 428-328.000.

Okabe, Takeaki: *See*—
Yoshida, Isao; Okabe, Takeaki; Katsueda, Mineo; Nagata, Minoru; Masuhara, Toshiaki; Ashikawa, Kazutoshi; Kato, Hideaki; Ito, Mitsuo; Ohtaka, Shigeo; Minato, Osamu; and Sakai, Yoshio, 4,492,974, Cl. 357-23.000.

Okada, Kazuo, to Kabushiki Kaisha Universale. Reel type slot machine. 4,492,379, Cl. 273-143.00R.

Okada, Shingo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Apparatus for removing ligating fittings on smoking casings. 4,492,137, Cl. 83-175.000.

Okada, Takao: *See*—
Mimura, Yoshiyuki; Okada, Takao; and Toda, Akitoshi, 4,492,745, Cl. 430-67.000.

Okano, Haruo; and Horiike, Yasuhiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Dry Etching method and device therefor. 4,492,610, Cl. 156-643.000.

Okaya Kogyo Kabushiki Kaisha: *See*—
Akazawa, Hiroyuki; and Yoshie, Kazue, 4,492,484, Cl. 400-248.000.

Okaya, Takuji: *See*—
Tanaka, Taku; Maruyama, Hitoshi; Okaya, Takuji; and Kajitani, Koichi, 4,492,783, Cl. 524-430.000.

Okuda, Ryoichi: *See*—
Yamamoto, Noboru; Okuda, Ryoichi; and Makino, Tomoatsu, 4,492,213, Cl. 123-644.000.

Okumura, Shigeo, to Yamaha Hatsudoki Kabushiki Kaisha; and Sanshin Kogyo Kabushiki Kaisha. Advancing mechanism for internal combustion engines. 4,492,198, Cl. 123-413.000.

Olnowich, Howard T., to International Business Machines Corporation. Set associative sector cache. 4,493,026, Cl. 364-200.000.

Olsen, Willi: *See*—
Lorenz, Dieter; and Olsen, Willi, 4,493,009, Cl. 361-341.000.

Olson, Scott B. Skate having an adjustable blade or wheel assembly. 4,492,385, Cl. 280-7.130.

Olympus Optical Co., Ltd.: *See*—
Kimura, Kenji, 4,492,856, Cl. 250-201.000.
Mimura, Yoshiyuki; Okada, Takao; and Toda, Akitoshi, 4,492,745, Cl. 430-67.000.
Mizokami, Kazunori, 4,492,858, Cl. 250-214.00P.
Nishioka, Kimihiko, 4,492,440, Cl. 350-445.000.
Oinoue, Kenichi; Hayashi, Asao; Nakamura, Junichi; Ida, Masatoshi; Aoki, Masahiro; and Fukuoka, Kenji, 4,492,449, Cl. 354-407.000.
Saito, Shoichi; and Shirako, Hideo, 4,492,417, Cl. 312-9.000.

Omaki, Takanobu: *See*—
Ishikawa, Norio; and Omaki, Takanobu, 4,492,448, Cl. 354-406.000.
Omata, Takashi, to Canon Kabushiki Kaisha. Projection printing apparatus for printing a photomask. 4,492,459, Cl. 355-43.000.
Oniki, Kiyoshi: *See*—
Goto, Tadahiko; Oniki, Kiyoshi; Murakami, Satoshi; Yokooji, Mitsunori; Andou, Norio; and Shimojyo, Norio, 4,492,906, Cl. 318-468.000.
Ono, Toshiro: *See*—
Matsuo, Seitaro; and Ono, Toshiro, 4,492,620, Cl. 204-192.00R.
Optilon W. Erich Heilmann GmbH: *See*—
Heimberger, Helmut, 4,492,098, Cl. 66-202.000.
Orban, Ivan; and Troxler, Eduard, to Ciba-Geigy Corporation. Process for the preparation of polyaminotriazines. 4,492,791, Cl. 544-198.000.
O'Reilly, Richard, to Air Products and Chemicals, Inc. Method and apparatus for recovering hydrogen from a feed comprising methane, ethylene, hydrogen and acetylene. 4,492,591, Cl. 62-17.000.
Ortho Diagnostics Systems Inc.: *See*—
Hoffman, Robert A.; and Ip, Stephen H. C., 4,492,752, Cl. 435-7.000.
Onoda, Noboru; Kanamori, Akira; Kimura, Takashi; Moroto, Seiro; Horie, Hideo; and Yoshinoe, Terubide, to Fujitsu Limited. Method and apparatus for controlling the stepping feed of an information medium. 4,492,991, Cl. 360-70.000.
Osakeybtio, A. Ahlstrom: *See*—
Meinander, Paul O., 4,492,611, Cl. 162-358.000.
Oshizawa, Hidekazu, to Diesel Kiki Co., Ltd. Electronically controlled fuel injection apparatus. 4,492,196, Cl. 123-357.000.
Osman, Ismet M. F. M., to Burroughs Corporation. Wafer-scale integrated circuits. 4,493,055, Cl. 365-78.000.
Ostlinning, Gunter: *See*—
Kutz, Heinrich; Ostlinning, Gunter; and Jung, Gerd, 4,492,105, Cl. 72-302.000.
Otabe, Norio; Shimakawa, Yoshiaki; and Uematsu, Hiroshi, to Nippon Steel Corporation. Method for drying coking coals to be charged in a coke oven. 4,492,042, Cl. 34-35.000.
Otani, Junji; Ikenoya, Yasuo; and Araki, Masafumi, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust gas recirculation system. 4,492,209, Cl. 123-568.000.
Otis, Douglas A., to Rostream Research Associates, Ltd. Magnetic recording tape and corresponding method providing indication of end-of-tape conditions. 4,492,993, Cl. 360-74.300.
Otto, Eberhard: *See*—
Masi, Rudolf; Otto, Eberhard; and Zinke, Horst, 4,492,661, Cl. 260-976.000.
Otto Tschenhagen GmbH & Co. KG: *See*—
Stahlkopf, Friedrich R. R., 4,492,535, Cl. 417-394.000.
Ovshinsky, Herbert C.; and Izu, Masatsugu, to Sovonics Solar Systems. Apparatus for continuously producing tandem amorphous photovoltaic cells. 4,492,181, Cl. 118-718.000.
Ovshinsky, Stanford R.; and Izu, Masatsugu, to Sovonics Solar Systems. Optimized doped and band gap adjusted photoresponsive amorphous alloys and devices. 4,492,810, Cl. 136-255.000.
Owen, Bruce R.; and Sarle, R. Charles, to Wallace Murray Corporation. Turbocharger exhaust gas by-pass valve. 4,492,519, Cl. 415-145.000.
Owen, Richard: *See*—
Lee, Charles C.; and Owen, Richard, 4,492,970, Cl. 346-160.000.
Owens-Corning Fiberglas Corporation: *See*—
Ritter, George W., II; and Adriana, Leonard J., 4,492,722, Cl. 427-226.000.
Oy Kontekla: *See*—
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Reemstra, Arthur L., to Beede Electrical Instrument Co., Inc. Electric indicator with return-to-zero feature and compensating coil to cancel the return-to-zero feature during measurement. 4,492,920, Cl. 324-146.000.
Refractory Poroducts Co.: *See*—
Abell, R. Bruce, 4,493,089, Cl. 373-130.000.
Regie Nationale des Usines Renault: *See*—
Lamy, Jean-Michel; and Le Bail, Albert, 4,492,130, Cl. 74-473.00P.
Reginier, Gilbert; Laubie, Michel; and Duhault, Jacques, to ADIR. Piperazine and homopiperazine compounds. 4,492,696, Cl. 424-249.000.
Reich, Gunther, to Leybold-Heraeus GmbH. Thermal conductivity vacuum gage. 4,492,123, Cl. 73-755.000.
Reifers, Richard F.: *See*—
Bixler, Kenneth D.; Reifers, Richard F.; and Lord, Henry A., 4,492,331, Cl. 229-2.5EC.
Reinfeld, Nyles V.; and Valentine, Michael J. Method and adjustable length mold for manufacturing a foamed packaging assembly. 4,492,663, Cl. 264-45.400.
Reinhold, Klaus, to Windmoller & Holscher. Burner for heating air and disposed in a passage through which air flows. 4,492,563, Cl. 431-264.000.
Reinholdt, Bernd; and Bock, Hans-Christian, to Weatherford Oil Tool GmbH. Apparatus for screwing pipes together. 4,492,134, Cl. 81-57.340.
Reischl, Rolf: *See*—
Jundt, Werner; and Reischl, Rolf, 4,492,205, Cl. 123-489.000.
Reliance Electric Company: *See*—
Kammiller, Neil A.; and Ivanov, Nedyalko V., 4,493,017, Cl. 363-132.000.
Remp, Thomas E., Jr.: *See*—
Dreyfuss, Wilfried; Remp, Thomas E., Jr.; and Muller, Kurt, 4,492,666, Cl. 264-261.000.
Renault Vehicules Industriels: *See*—
Baguelin, Yves, 4,492,192, Cl. 123-198.00F.
Renaut, Maurice: *See*—
Gillier, Hugues; Redasse, Jean-Claude; and Renaut, Maurice, 4,492,116, Cl. 73-432.00R.
Renfroe, Charles J.; and Davies, William, to J. C. Renfroe and Sons, Inc. Non-marring lifting clamp. 4,492,401, Cl. 294-101.000.
Reule, Hans; Ganzle, Hartmut; and Vogel, Horst H., to International Standard Electric Corporation. Electron-beam forming system for multi-beam cathode-ray tubes. 4,492,894, Cl. 313-414.000.
Reuter, Wolfgang, to Leybold-Heraeus GmbH. Rotatable heavy-current connector. 4,492,423, Cl. 339-112.00L.
Revere Copper and Brass, Inc.: *See*—
Lee, Yung W.; Ling, Fu W.; and Shapiro, Stanley, 4,492,602, Cl. 148-11.50C.
Rey, Ernesto: *See*—
Anderson, James M.; Knight, Thomas S., III; Kitagawa, Dennis T.; and Rey, Ernesto, 4,493,075, Cl. 371-10.000.
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Gradeff, Peter S.; and Schreiber, Fred G., 4,492,655, Cl. 260-429.200.
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Trebillon, Emile, 4,492,682, Cl. 423-626.000.
Rice, Verle L., to R. B. Industries, Inc. Collapsible stand for roller support. 4,492,354, Cl. 248-163.100.
Richmond, Michael S.: *See*—
Gavrin, Edward S.; Bratt, Richard G.; Schleimer, Stephen I.; Pilat, John F.; Richmond, Michael S.; Wallach, Walter A., Jr.; Bel-

gard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Clancy, Gerald F.; Mundie, Craig J.; Jones, Thomas M.; Bachman, Brett L.; and Bernstein, David H., 4,493,023, Cl. 364-200.000.

Katz, Lawrence H.; Wells, Douglas M.; Richmond, Michael S.; Belgard, Richard A.; Walloch, Walter A., Jr.; Bernstein, David H.; Ahlstrom, John K.; Pilat, John F.; Farber, David A.; Bratt, Richard G.; and Bachman, Brett L., 4,493,027, Cl. 364-200.000.

Richter, Bruno; and Brand, Bernhard, to Bruno Richter GmbH. Optical micrometer. 4,492,473, Cl. 356-386.000.

Riebel, Hans-Jochem: *See*—
Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, 4,492,800, Cl. 562-506.000.

Rieber, Norbert; Boelsa, Heinrich; and Adolphi, Heinrich, to BASF Aktiengesellschaft. Halogenated 1-hydroxypyrazoles and their use as pesticides. 4,492,689, Cl. 424-200.000.

Riegler, Ernst: *See*—
Lugscheider, Walter; Kilches, Helmut D.; Riegler, Ernst; and Zajicek, Ernst, 4,493,083, Cl. 373-22.000.

Riehn, Richard J., to General Electric Company. Method of X-ray imaging using slit scanning with controlled target erase. 4,493,096, Cl. 378-99.000.

Rieker, Werner: *See*—
Baumann, Fritz; Kranzler, Ernst; Radke, Siegmund; Schilling, Rainer; Fuchs, Wolfgang; and Rieker, Werner, 4,492,344, Cl. 242-1.000.

Riihimaki, Esko; and Korhola, Osmi, to Radiographic Screens Oy, FIX. X-Ray collimator. 4,493,098, Cl. 378-146.000.

Riley, James E.: *See*—
Jacobs, Anthony S.; Riley, James E.; and Christman, Jon D., 4,492,390, Cl. 281-31.000.

Rimmo, Helmut: *See*—
Zimmermehied, Klaus; and Rimmo, Helmut, 4,492,780, Cl. 524-45.000.

Riseman, Jacob: *See*—
Pliskin, William A.; and Riseman, Jacob, 4,492,717, Cl. 427-96.000.

Ritter, George W., II; and Adriana, Leonard J., to Owens-Corning Fiberglas Corporation. Preparation of glass-ceramic fibers. 4,492,722, Cl. 427-226.000.

RJR Archer, Inc.: *See*—
Hubert, Warren N., 4,492,548, Cl. 425-113.000.

Robert Bosch GmbH: *See*—
Arnold, Winfried; Locher, Johannes; and Schelling, Bernd, 4,492,913, Cl. 323-282.000.
Baumann, Fritz; Kranzler, Ernst; Radke, Siegmund; Schilling, Rainer; Fuchs, Wolfgang; and Rieker, Werner, 4,492,344, Cl. 242-1.000.
Bertsch, Richard; Gunther, Dieter; and Steinbrenner, Ulrich, 4,492,204, Cl. 123-489.000.
van Zanten, Anton, 4,492,108, Cl. 73-35.000.
Wolff, Gunter, 4,492,544, Cl. 418-107.000.

Roberts, Hardy G. Trailer safety device. 4,492,386, Cl. 280-507.000.

Roberts, Harry H., to Champion International Corporation. Single slice pie carton with slanted openable rear wall and blank for forming same. 4,492,333, Cl. 229-22.000.

Robinson, Thomas D.; Sharp, Lewis A., Jr.; and McAllister, George P., to Aquaris Industries, Incorporated. Shower door. 4,491,990, Cl. 4-607.000.

Rockwell International Corporation: *See*—
Bruene, Warren B., 4,493,112, Cl. 455-123.000.
Fabian, Gordon R.; and McElreath, Kenneth W., 4,492,907, Cl. 318-586.000.
Halcomb, Ronald G., 4,492,607, Cl. 156-242.000.
Liemert, Gerold, 4,492,102, Cl. 72-53.000.
Wells, Calvin G.; and Szabo, Steven B., 4,492,019, Cl. 29-447.000.

Rode, John E., to Temper-Ring Equipment Corporation. Method of axially positioning a rotating annular member supporting shaft within a support. 4,492,018, Cl. 29-437.000.

Rodgers, James L.; and Fowler, Billy C., to Kurta Corporation. Graphic tablet and method. 4,492,819, Cl. 178-18.000.

Rodrique, Leo J., to Rogers Corporation. Tactile membrane keyboard with asymmetrical tactile key elements. 4,492,829, Cl. 200-5.00A.

Roeland, Robert H.: *See*—
Ray, Valton O.; Roeland, Robert H.; Potter, Carl H.; and Szmulowicz, Yehuda I., 4,492,557, Cl. 425-72.00S.

Rogers Corporation: *See*—
Rodrique, Leo J., 4,492,829, Cl. 200-5.00A.

Rohm GmbH: *See*—
Bestecke, Siegmund; Schroder, Gunter; Ude, Werner; and Wunderlich, Winfried, 4,492,805, Cl. 568-012.000.

Rohner, Peter; Schippl, Klausdieter; Blumenberg, Gunther; Meyer, Werner; and Obert, Wolfgang, to Kabelmetal Electro GmbH. Flexible cryogenic conduit. 4,492,089, Cl. 62-55.000.

Rohr, Harry: *See*—
Claussen, Uwe; Merten, Josef; Rohr, Harry; and Melchior, Bernd, 4,492,778, Cl. 523-137.000.

Rolls-Royce Limited: *See*—
Conolly, Ralph I., 4,492,737, Cl. 428-552.000.
Cooper, Gordon C.; and Dawson, Douglas, 4,492,381, Cl. 277-2.000.
Neal, Peter F., 4,492,518, Cl. 415-142.000.
Peak, George; and Brett, Clive E., 4,492,521, Cl. 416-193.00A.
Williamson, Willie, 4,492,078, Cl. 60-39.310.

Romic, Ivica; and Loos, Jurgen, to W. Schlafhorst & Co. Preparation device for making a thread end ready for splicing. 4,492,076, Cl. 57-22.000.

Rooney, John O.; and Freeman, Ian B. High storage density disc data store employing controlled-angular-velocity rotary medium. 4,492,992, Cl. 360-73.000.

Rosenberg, George N., to MacMillan Bloedel Limited. High wet strength waferboard. 4,492,726, Cl. 428-192.000.

Rossmann, Axel; and Huether, Werner, to MTU Motoren-und Turbinen-Union Muenchen GmbH. Blade for a fluid flow engine and method for manufacturing the blade. 4,492,522, Cl. 416-241.00R.

Rosstream Research Associates, Ltd.: *See*—
Otis, Douglas A., 4,492,993, Cl. 360-74.500.

Rotaflex plc: *See*—
Stuart, Robert A., 4,492,420, Cl. 339-22.00R.

Roullet, Andre : *See*—
Albarello, Alain; Roullet, Andre ; and Pimentel, Alberto, 4,492,936, Cl. 332-19.000.

Roussel Uclaf: *See*—
Herve, Jean-Jacques; Suglia, Jean-Claude; and Meinard, Colette, 4,492,687, Cl. 424-174.000.

Rowe, Raymond A., to United States of America, Navy. Wave powered buoy generator. 4,492,875, Cl. 290-53.000.

Royer, Jacques: *See*—
Casseaux, Claude; Cousot, Jean-Pierre; and Royer, Jacques, 4,492,164, Cl. 101-216.000.

Ruano, Oscar; Wadsworth, Jeffrey; and Sherby, Oleg D., to Leland Stanford Junior University. Method for consolidation of iron-based alloy powder by cyclic phase transformation under pressure. 4,492,671, Cl. 419-48.000.

Radloff, Jean-Loup: *See*—
Picolet, Jean-Pierre; Radloff, Jean-Loup; and Courtet, Francois, 4,492,225, Cl. 128-57.00B.

Rudolf, Peter: *See*—
Frank, Gerhard; Rudolf, Peter; Neubeser, Gerald; Duffner, Paul; Oblinger, Manfred; Wilfinger, Hans J.; and Pfannebecker, Emil, 4,492,804, Cl. 564-493.000.

Ruhle, Philip G., to Westinghouse Electric Corp. Anti-rotation mass support system particularly for missile support. 4,492,143, Cl. 89-1.816.

Rupp, Werner; and Koch, Johannes, to L. Schuler GmbH. Overload protection in presses. 4,492,154, Cl. 100-53.000.

Ruschke, Peter: *See*—
Frankenfeld, Klaus; Ruschke, Peter; Brodt, Peter; and Eich, Gerhard, 4,492,680, Cl. 423-321.00S.

Russnyak, Andreas, to Azulab S.A. Amplifier circuit having a high-impedance input and a low-impedance output. 4,492,932, Cl. 330-300.000.

Rutherford, Dennis F.; and Blackmore, Keith D., to Dowty Mining Equipment Limited. Roof support for use in mines. 4,492,495, Cl. 405-294.000.

Rutzen, Horst; Nikolaus, Peter; Bischoff, Martin; and Lehmann, Rudolf, to Henkel Kommanditgesellschaft auf Aktien; and Degussa Aktiengesellschaft. Process for manufacture of quaternary ammonium compounds. 4,492,802, Cl. 564-292.000.

Ryder, Francis E.; and Ryder, Scott, to Ryder International Corporation. Contact lens disinfector. 4,492,854, Cl. 219-521.000.

Ryder International Corporation: *See*—
Ryder, Francis E.; and Ryder, Scott, 4,492,854, Cl. 219-521.000.

Ryder, Scott: *See*—
Ryder, Francis E.; and Ryder, Scott, 4,492,854, Cl. 219-521.000.

Rymal, Theodore R., Jr., to Texas Oil Spill Control, Inc. Bilge system. 4,492,630, Cl. 210-117.000.

S.B.F. Corporation: *See*—
Ware, Warren O.; Borst, Gary M.; and Abitz, Ronald E., 4,492,169, Cl. 108-6.000.

Saarbergwerke Aktiengesellschaft: *See*—
Splethoff, Heinz, 4,492,084, Cl. 60-648.000.

Sabel, Herbert J. Weight-loss motivation kit. 4,492,580, Cl. 434-127.000.

Sablev, Leonid P.: *See*—
Kljuchko, Gennady V.; Padalka, Valentin G.; Sablev, Leonid P.; and Stupak, Rimma L., 4,492,845, Cl. 219-121.00P.

Safrit, Sam C.; Farrell, Roscoe M.; and Bullin, Melvin C., to Kayser-Roth Hosiery, Inc. Sheer hosiery with a run-resistant toe and method. 4,492,099, Cl. 66-202.000.

Sairanen, Martti; and Virta, Matti, to Hanenkalliostie 6 A 4; and Porientie 3 E 48. Means for limiting and controlling the current of a discharge lamp. 4,492,897, Cl. 315-219.000.

Saito, Masayuki: *See*—
Ohnishi, Masaru; and Saito, Masayuki, 4,492,965, Cl. 346-1.100.

Saito, Shoichi; and Shirako, Hideo, to Olympus Optical Co., Ltd. Tape cassette storage box. 4,492,417, Cl. 312-9.000.

Saito, Takao: *See*—
Moriyama, Masakazu; and Saito, Takao, 4,493,100, Cl. 381-43.000.

Saito, Takeshi, to Victor Company of Japan, Ltd. Rotary recording medium reproducing apparatus. 4,492,996, Cl. 360-99.000.

Saito, Takayuki: *See*—
Nakashima, Kazuhide; Saito, Takayuki; Nakahara, Takeshi; and Tanaka, Shigeo, 4,492,789, Cl. 525-531.000.

Saitoh, Kazunori, to Pennsylvania Engineering Corporation; and Hotaka Engineering Co., Ltd. Method of removal of impure gases at the time of scrap preheating, and equipment for use of same. 4,492,567, Cl. 432-30.000.

Sakai, Yoshio: *See*—
Yoshida, Isao; Okabe, Takeshi; Katsuda, Mineo; Nagata, Minoru; Maeshara, Toshiaki; Ashikawa, Kazutoshi; Kato, Hideaki; Ito, Mitsuo; Ohtaka, Shigeo; Minato, Osamu; and Sakai, Yoshio, 4,492,974, Cl. 357-23.000.

Sakamoto, Mineo: *See*—
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Sakamoto, Seiichi: *See*—
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Salas, Edward R.: *See*—
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Salt Lake Communications, Inc.: *See*—
Kennard, Lon H.; Hall, Duane O.; and Bangerter, Richard M., 4,492,820, Cl. 179-5.00P.
Samuel Bingham Company: *See*—
Pala, Jerome; Karnell, Yale; and Muryczko, Thaddeus M., 4,492,012, Cl. 29-148.40D.
Sanche, Jean-Pierre: *See*—
Breuzo, Bernard; Calvignac, Jean; Dambricourt, Richard; Masclet, Andre; and Sanche, Jean-Pierre, 4,493,051, Cl. 364-900.000.
Sancon Aktiebolag: *See*—
Hedremius, Stig Erik T., 4,492,001, Cl. 15-320.000.
Sanden Corporation: *See*—
Iimori, Takayuki; Terauchi, Kiyoaki; and Sakamoto, Seiichi, 4,492,543, Cl. 418-55.000.
Sander, Lars: *See*—
Brogardh, Torgny; Linge, Anders; and Sander, Lars, 4,492,860, Cl. 250-227.000.
Sandhu, Jaswinder S., to RAJ Technology Partnership. Acoustic power meter. 4,492,107, Cl. 73-1.0DV.
Sandulyak, Alexandr V.; Garaschenko, Vyacheslav I.; and Yatskov, Nikolai V., to Ukrainsky Ordena Druzhby Narodov Institut Inzhenerov Vodnogo Khozyaistva. Separator for separating fluid media from minute particles of impurities. 4,492,633, Cl. 210-223.000.
Sandulyak, Alexandr V.; Garaschenko, Vyacheslav I.; and Korkhov, Oleg J., to Ukrainsky Institut Inzhenerov Vodnogo Khozyaistva. Method of determining the quantity of solid fraction of ferromagnetic matter in a fluid. 4,492,921, Cl. 324-204.000.
Sano, Yumiko: *See*—
Miyakawa, Nobuhiro; Higashiguti, Teruaki; Sano, Yumiko; and Funato, Masatomi, 4,492,746, Cl. 430-71.000.
SANOFI: *See*—
Nisato, Dino; and Boveri, Sergio, 4,492,711, Cl. 424-285.000.
Sanshin Electric Co., Ltd.: *See*—
Miyata, Hiroyasu; Yamaguchi, Akio; and Watanabe, Keizo, 4,492,125, Cl. 74-10.330.
Sanshin Kogyo Kabushiki Kaisha: *See*—
Okumura, Shigeo, 4,492,198, Cl. 123-413.000.
Yamamoto, Yasuo; and Kasuo, Isao, 4,492,197, Cl. 123-630.000.
Santo, Philip J. Mechanism for maintaining the shape of a floatation sleep system. 4,491,993, Cl. 5-451.000.
Santoni & Co. SpA: *See*—
Ferraris, Carlo, 4,492,097, Cl. 66-108.00R.
Sarantakis, Dimitrios, to American Home Products Corporation. Cyclic hexapeptides. 4,492,651, Cl. 260-112.50S.
Sarle, R. Charles: *See*—
Owen, Bruce R.; and Sarle, R. Charles, 4,492,519, Cl. 415-145.000.
Sasaki, Hisao: *See*—
Tani, Shigetaka; and Sasaki, Hisao, 4,492,510, Cl. 414-733.000.
Sasaki, Masayuki: *See*—
Suzuki, Shinichi; Sasaki, Masayuki; Moriyasu, Toshinori; and Arakawa, Takao, 4,492,452, Cl. 354-430.000.
Satake, Keigo: *See*—
Aoki, Katsumichi; Kanda, Yoichi; Satake, Keigo; and Shinkawa, Hiroyasu, 4,492,597, Cl. 71-92.000.
Sato, Masato; Katsuta, Hiroyuki; and Arai, Yoshio, to Fuji Xerox Co., Ltd. Beam scanning means for input/output unit. 4,492,985, Cl. 358-293.000.
Satonishi, Osamu: *See*—
Yamashita, Riichiro; and Satonishi, Osamu, 4,493,103, Cl. 382-1.000.
Sauzu, Masaaki: *See*—
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Savin Corporation: *See*—
Landa, Benzion, 4,492,300, Cl. 198-443.000.
Sawada, Hiroyuki: *See*—
Fujii, Kozo; Nishihira, Keigo; Sawada, Hiroyuki; Tanaka, Shuji; Nakai, Masaru; Yoshida, Hiroshi; and Inoue, Teruhiko, 4,492,792, Cl. 544-326.000.
Sayter, Andrew. Arena type game. 4,492,380, Cl. 273-411.000.
Scans Associates, Inc.: *See*—
Van Allen, Kent; and Bordato, James M., 4,492,281, Cl. 177-213.000.
Scarlet, Richard I.; Andrews, James B.; and Henning, William F., II, to EG&G, Inc. Method and apparatus for determining lane count error in a radio navigational system. 4,492,963, Cl. 343-464.000.
Schad, Hanspeter: *See*—
Kaufmann, Meinolph; and Schad, Hanspeter, 4,492,432, Cl. 350-338.000.
Schafer, Hans; and Gaechter, Michael, to Philipp Holzmann AG; and Gg. Noell GmbH. Container for storing refrigerated liquids. 4,492,087, Cl. 62-45.000.
Schafer, James P.: *See*—
Whitwell, Robert J.; and Schafer, James P., 4,492,091, Cl. 62-180.000.
Schatz, Jack M.; and Gajda, Robert S. Lower extremity exerciser. 4,492,376, Cl. 272-138.000.
Schaub, Erwin L., to Parker Hannifin Corporation. Pipe restraint device. 4,492,393, Cl. 285-236.000.
Scheidler, Herwig, to JENAer Glaswerk Schott & Gen. Panel assembly, particularly a glass or vitreous ceramic heater or cooker panel assembly. 4,492,217, Cl. 126-39.00B.
Scheler, Siegfried, to Hoechst Aktiengesellschaft. Diazotype materials with 2-hydroxy-naphthalene having sulfonamide substituent as coupler. 4,492,749, Cl. 430-180.000.
Schelling, Bernd: *See*—
Arnold, Winfried; Locher, Johannes; and Schelling, Bernd, 4,492,913, Cl. 323-282.000.
Schering Corporation: *See*—
Sherlock, Margaret H., 4,492,702, Cl. 424-256.000.
Schick, Martin J.; and Kelley, Edwin L., to Diamond Shamrock Chemicals Company. Anionic dispersants for aqueous slurries of carbonaceous materials. 4,492,589, Cl. 44-51.000.
Schick, Martin J.; and Kelley, Edwin L., to Diamond Shamrock Chemicals Company. Stabilizers for oil slurries of carbonaceous material. 4,492,590, Cl. 44-51.000.
Schilling, Rainer: *See*—
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Schippl, Klausdieter: *See*—
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Schlaak, Helmut F.: *See*—
Kersten, Ralf T.; Tietgen, Karl H.; and Schlaak, Helmut F., 4,492,425, Cl. 350-96.140.
Schleimer, Stephen I.: *See*—
Gavrin, Edward S.; Bratt, Richard G.; Schleimer, Stephen I.; Pilat, John F.; Richmond, Michael S.; Wallach, Walter A., Jr.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Clancy, Gerald F.; Mundie, Craig J.; Jones, Thomas M.; Bechman, Brett L.; and Bernstein, David H., 4,493,023, Cl. 364-200.000.
Schluesner, Horst; and Hesse, Norbert, to Gewerkschaft Eisenhutte Westfalia. Apparatus for controlling the position of a mineral mining machine. 4,492,410, Cl. 299-43.000.
Schmidt, Frederick W., to Computer Automation, Inc. Dynamic memory with error correction on refresh. 4,493,081, Cl. 371-38.000.
Schmidt, Johan M., to U.S. Philips Corporation. FM Broadcasting system with transmitter identification. 4,493,099, Cl. 381-14.000.
Schneider, Thomas E.; and Funcik, Jack F., to Molex Incorporated. Electrical harness fabrication method and apparatus. 4,492,023, Cl. 29-861.000.
Schock & Co. GmbH: *See*—
Schock, Karl; and Frank, Lothar, 4,492,063, Cl. 52-309.700.
Schock, Karl; and Frank, Lothar, to Schock & Co. GmbH. Extruded plastics material hollow profiled strip for window frames, window frames produced from this type of profiled strips and method for the production of a window frame of this type. 4,492,063, Cl. 52-309.700.
Schoenheimer, Marcus F.; Gaskell, Lionel A.; and Ackermann, Keith A., to Actrol Industries Pty. Ltd. Valve and system incorporating same. 4,492,219, Cl. 126-427.000.
Schonherr, Walter: *See*—
Steiner, Hermann; and Schonherr, Walter, 4,492,893, Cl. 313-318.000.
Schonwald, Siegfried, to Siemens Aktiengesellschaft. Compressor unit. 4,492,530, Cl. 417-271.000.
Schosek, William O., to Elephant Industries, Inc. Underground pipe or cable installation. 4,492,133, Cl. 81-57.300.
Schosek, William O., to Elephant Industries, Inc. Light weight underground pipe or cable installing device. 4,492,274, Cl. 175-19.000.
Schramm, Matthias: *See*—
Goldmann, Siegfried; Boshages, Horst; Stoltefuss, Jurgen; Schramm, Matthias; Thomas, Gunter; and Kanda, Stanislav, 4,492,703, Cl. 424-266.000.
Schreiber, Fred G.: *See*—
Gradeff, Peter S.; and Schreiber, Fred G., 4,492,655, Cl. 260-429.200.
Schreiber, Richard J.: *See*—
Kendall, Robert M.; Schreiber, Richard J.; and Kesselring, John P., 4,492,185, Cl. 122-32.000.
Schroder, Gunter: *See*—
Benecke, Siegmund; Schroder, Gunter; Ude, Werner; and Wunderlich, Winfried, 4,492,805, Cl. 568-012.000.
Schroder, Joris, to Inventio AG. Group control for elevators containing an apparatus for controlling the down-peak traffic. 4,492,288, Cl. 187-29.00R.
Schubert, Dale W.: *See*—
Peterson, Robert R.; Schubert, Dale W.; and Cholakis, Peter N., 4,492,949, Cl. 338-114.000.
Schulte, Wolfgang, to Jetform Heisskanalnormalien und Zubehor GmbH, Firma. Multiple hot runner injection head. 4,492,555, Cl. 425-548.000.
Schultz, Ward E.: *See*—
Smith, Harry D., Jr.; and Schultz, Ward E., 4,492,864, Cl. 250-259.000.
Schulz, Siegmar: *See*—
Bathmann, Hans-Jurgen; Hok, Bernhard; and Schulz, Siegmar, 4,492,118, Cl. 73-612.000.
Schwab Inc.: *See*—
Nettesheim, Daniel R.; and Kufris, Fred W., 4,492,162, Cl. 101-103.000.

Schwab, Hans-Georg; and Schwab, Ulrich, to Schwab Industrieprodukte GmbH. Device for the fastening of a cover to a container. 4,492,317, Cl. 206-813.000.
Schwab, Ulrich: *See*—
Schwab, Hans-Georg; and Schwab, Ulrich, 4,492,317, Cl. 206-813.000.
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Sheldrake, Leonard J., to General Motors Corporation. Motor vehicle battery rundown protection system. 4,493,001, Cl. 361-92.000.
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Diaz, Zaida; and Miller, James H., 4,492,592, Cl. 62-18.000.
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Kamp, Anthony W., 4,492,276, Cl. 175-61.000.
Stewart, Thomas L.; and Demny, Florian C., 4,492,639, Cl. 210-746.000.
Shell, William E.; Burnam, Michael H.; and Tokes, Zoltan A., to Immunex, Inc. Method and means for assessment and prediction of risk of subsequent ischemic cardiac events. 4,492,753, Cl. 435-17.000.
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Russo, Oscar; Wadsworth, Jeffrey; and Sherby, Oleg D., 4,492,671, Cl. 419-48.000.
Sherlock, Margaret H., to Schering Corporation. 1-Phenyl-1,8-naphthiridin-2(1H)-ones. 4,492,702, Cl. 424-256.000.
Shibata, Norio, to Victor Company of Japan, Ltd. Turntable device having rotary recording medium size changeover capability in a rotary recording medium reproducing apparatus. 4,493,072, Cl. 369-271.000.
Shih, Arnold: *See*—
Hess, George A.; Shih, Arnold; and Marrian, Christie R. K., 4,492,866, Cl. 250-305.000.
Shima, Ichiji; Teshima, Hiroshi; Koizumi, Takayuki; and Usami, Teruo, to Mitsubishi Denki Kabushiki Kaisha; Shima, Ichiji; and Teshima, Hiroshi. Bearing failure judging apparatus. 4,493,042, Cl. 364-507.000.
Shimakawa, Yoshiaki: *See*—
Otabe, Norio; Shimakawa, Yoshiaki; and Uematsu, Hiroshi, 4,492,042, Cl. 34-35.000.
Shimamoto, Takeshi: *See*—
Arai, Kazuo; and Shimamoto, Takeshi, 4,492,581, Cl. 434-128.000.
Shimizu, Noriyuki: *See*—
Oishi, Naoaki; Shimizu, Noriyuki; Shoji, Takashi; and Harada, Shoji, 4,492,730, Cl. 428-328.000.
Shimojyo, Norio: *See*—
Goto, Tadahiko; Ouiki, Kiyoshi; Murakami, Satoshi; Yokooji, Mitsunori; Andou, Norio; and Shimojyo, Norio, 4,492,906, Cl. 318-488.000.
Shimokawa, Ryushi: *See*—
Watanabe, Koji; Shiozawa, Kazuo; Suzuki, Kiziro; and Shimokawa, Ryushi, 4,492,450, Cl. 354-412.000.
Shimomura, Masaichi: *See*—
Matsumoto, Hisayuki; and Shimomura, Masaichi, 4,492,437, Cl. 350-428.000.
Shimomura, Setsuhiro; and Kishimoto, Yuuji, to Mitsubishi Denki Kabushiki Kaisha. Air-to-fuel ratio control system for internal combustion engine. 4,492,211, Cl. 123-585.000.
Shin-Etsu Chemical Co., Ltd.: *See*—
Endou, Morinobu; Takamizawa, Minoru; Honga, Tatsuhiko; and Kobayashi, Taishi, 4,492,681, Cl. 423-345.000.
Shinkawa, Hiroyasu: *See*—
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Shintaku, Yoshishige, to Ibuki Kogyo Co., Ltd. Horn speaker with reduced magnetic flux leakage. 4,492,827, Cl. 179-115.5SF.
Shionogi & Co., Ltd.: *See*—
Hirai, Kentaro, 4,492,794, Cl. 548-193.000.
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Shirasaki, Yuichi: *See*—
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Shirato, Yoshiaki: *See*—
Mitsuoki, Seki; Tazaki, Shigemitsu; and Shirato, Yoshiaki, 4,492,966, Cl. 346-33.00A.
Shoff, Daniel J.: *See*—
Chang, Richard S.; Ling, John Y.; and Shoff, Daniel J., 4,492,582, Cl. 434-169.000.
Shoher, Itzhak; and Whiteman, Aharon. Dental jacket crown, coping and method of construction. 4,492,579, Cl. 433-222.000.
Shoji, Takashi: *See*—
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Shore, David J., to Westinghouse Electric Corp. Thrust bearing starter apparatus. 4,492,481, Cl. 384-228.000.
Showa Denko Kabushiki Kaisha: *See*—
Oishi, Naoaki; Shimizu, Noriyuki; Shoji, Takashi; and Harada, Shoji, 4,492,730, Cl. 428-328.000.
Shtyrin, Anatoly S.: *See*—
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Shulman, Burt H.: *See*—
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Sick, Peter; and Menini, Joseph, to Sick, Peter. Apparatus for filling bottles. 4,492,259, Cl. 141-198.000.
Siemens Aktiengesellschaft: *See*—
Geiger, Gerhard; and Strafner, Michael, 4,493,052, Cl. 364-900.000.
Kanethe, Helmold; Moeller, Matthias; and Fischer, Franz, 4,492,813, Cl. 136-256.000.
Kersten, Ralf T.; Tietgen, Karl H.; and Schlaak, Helmut F., 4,492,425, Cl. 350-96.140.
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Lange, Gerhard; and Boy, Jurgen, 4,493,004, Cl. 361-120.000.
Lange, Gerhard, 4,493,005, Cl. 361-124.000.
Lange, Gerhard; Boy, Jurgen; Hoene, Ernst-Ludwig; and Sippekamp, Oskar, 4,493,006, Cl. 361-124.000.
Lorenz, Dieter; and Olsen, Willi, 4,493,009, Cl. 361-341.000.
Mueller, Erwin, 4,492,942, Cl. 335-202.000.
Ramlohr, Franz; and Spitaler, Wolfgang, 4,493,015, Cl. 363-63.000.
Rathgeber, Max, 4,492,953, Cl. 340-347.0AD.
Schoswald, Siegfried, 4,492,530, Cl. 417-271.000.
Siemens-Allis, Inc.: *See*—
Lake, Roger D.; Ingram, Wayne A.; and Jarrell, Michael S., 4,492,396, Cl. 292-228.000.
Siemens Corporation: *See*—
Daniels, Stuart F., 4,493,078, Cl. 371-25.000.
Silverio, Vincent J., to AT&T Bell Laboratories. Memory write protection using timers. 4,493,031, Cl. 364-200.000.
Simovits, Stephen S., Jr., to American Plasticraft Company. Variable resistance assembly with improved contactor knob. 4,492,950, Cl. 338-162.000.
Singleton, Terence, to National Research Development Corporation. Orthopaedic traction apparatus. 4,492,224, Cl. 128-75.000.
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Odero, Dominique; and Parent, Guy, 4,493,064, Cl. 367-92.000.
Sippekamp, Oskar: *See*—
Lange, Gerhard; Boy, Jurgen; Hoene, Ernst-Ludwig; and Sippekamp, Oskar, 4,493,006, Cl. 361-124.000.
Sitrick, David H., to Arrhythmia Research Technology, Inc. System and method for predicting ventricular tachycardia by derivative analysis. 4,492,235, Cl. 128-705.000.
Sjolund, John R., to Sundstrand Corporation. Nozzle and flapper with squeeze film damping. 4,492,245, Cl. 137-82.000.
SKF Industries, Inc.: *See*—
Beile, George H.; and Johnson, John J., 4,492,415, Cl. 384-463.000.
Skogen, Kermit J. Chimney cleaner. 4,492,000, Cl. 15-242.000.
SKW Trostberg Aktiengesellschaft: *See*—
Michael, Horst; and von Seyerl, Joachim, 4,492,679, Cl. 423-268.000.

Steyterman, Albertus A. S.; and Vink, Nicolaas G., to U.S. Philips Corporation. Device for displaying television pictures and deflection unit therefor. 4,492,943, Cl. 335-213.000.
Smeets, Louis M.: *See*—
Laarhoven, Johannes J.; van Dongeren, Jan P.; de Wit, Hendrik; and Smeets, Louis M., 4,492,867, Cl. 250-341.000.
Smetco, Inc.: *See*—
Smeets, John E.; Smeets, John S.; Smeets, Robert D.; and Messinger, Barry K., 4,492,016, Cl. 29-432.000.
Smeets, John E.; Smeets, John S.; Smeets, Robert D.; and Messinger, Barry K., to Smetco, Inc. Pallet assembly apparatus and method. 4,492,016, Cl. 29-432.000.
Smeets, John S.: *See*—
Smeets, John E.; Smeets, John S.; Smeets, Robert D.; and Messinger, Barry K., 4,492,016, Cl. 29-432.000.
Smeets, Robert D.: *See*—
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Smit, Gerard C., to Smitdesign B.V. Float control for a switch. 4,492,834, Cl. 200-84.00R.
Smitdesign B.V.: *See*—
Smit, Gerard C., 4,492,834, Cl. 200-84.00R.
Smith, Donald P. Thermal treatment apparatus. 4,492,839, Cl. 219-10.55R.
Smith, Francis H., to Vickers Limited. Measuring microscope. 4,492,470, Cl. 356-372.000.
Smith, Harry D., Jr., to Halliburton Company. Determining elemental concentrations and formation matrix type from natural gamma ray spectral logs. 4,492,863, Cl. 250-256.000.
Smith, Harry D., Jr.; and Schultz, Ward E., to Texaco Inc. Neutron well logging. 4,492,864, Cl. 250-259.000.
Smith, John D.: *See*—
Yapp, Robert E.; and Smith, John D., 4,492,080, Cl. 60-388.000.
Smith, Roderick L., to Energy-Adaptive Grinding, Inc. Control system for grinding apparatus. 4,492,061, Cl. 51-325.000.
Smorol, Michael E.; Witmeyaski, Michael C.; and Woollis, Theodore L., to Carrier Corporation. Combination refrigerant circuit and hot water preheater. 4,492,092, Cl. 62-181.000.
SMS Schloemann-Siemag Aktiengesellschaft: *See*—
Katz, Heinrich; Ostlinning, Gunter; and Jung, Gerd, 4,492,105, Cl. 72-302.000.
Snell, Richard G.; and Loughridge, Fredrick A., to GTE Products Corporation. Solder glass and electrical device employing same. 4,492,814, Cl. 174-50.640.
Snipes, Wallace: *See*—
Keith, Alec D.; and Snipes, Wallace, 4,492,685, Cl. 424-28.000.
Sobryco, Inc.: *See*—
Eriksen, Wilbur R.; and Payne, Harry E., Jr., 4,492,673, Cl. 422-85.000.
Societe Anonyme dite: L'Oreal: *See*—
Guillon, Michel; Mondet, Jean; Papantonion, Christos; and Vandenbossche, Claudine, 4,492,686, Cl. 424-61.000.
Societe de Conseils de Recherches et d'Applications Scientifiques: *See*—
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Societe Nationale Industrielle Aerospatiale: *See*—
Cahuzac, Georges J. J., 4,492,096, Cl. 66-11.000.
Societe Normande de Recherches et de Participation: *See*—
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Sofianek, Joseph C.: *See*—
Crouch, Donald W.; and Sofianek, Joseph C., 4,492,837, Cl. 200-144.00B.
Sojka, Bernward: *See*—
Trager, Ulrich; Sojka, Bernward; and Lange, Hans, 4,492,754, Cl. 435-28.000.
Solarex Corporation: *See*—
Lindmayer, Joseph, 4,492,812, Cl. 136-256.000.
Solomon, Robert A., to Am Fab, Inc. Locking mechanism for vertically adjustable table. 4,492,170, Cl. 108-148.000.
Solvi, Marc: *See*—
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Sommer, Karl; and Armbrecht, Norbert, to Hoechst Aktiengesellschaft. Water-soluble trisazo dyestuffs on the basis of a combination of naphthalene-, diphenylamine- and pyrazolone derivatives. 4,492,653, Cl. 534-796.000.
Sonoco Products Company: *See*—
Collins, Thomas D., 4,492,332, Cl. 229-15.000.
Sony Corporation: *See*—
Eguchi, Yasuhiro; and Kariya, Izumi, 4,492,482, Cl. 400-120.000.
Kono, Takashi; Minegishi, Akira; and Kamei, Toshimitsu, 4,492,986, Cl. 358-330.000.
Mori, Yoshihisa; Kobayashi, Hachiro; and Takashima, Mitsuru, 4,493,071, Cl. 369-146.000.
Ohkubo, Hiroyuki, 4,492,922, Cl. 324-207.000.
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Ovshinsky, Herbert C.; and Izu, Masatsugu, 4,492,181, Cl. 118-718.000.
Ovshinsky, Stanford R.; and Izu, Masatsugu, 4,492,810, Cl. 136-255.000.
Spademan, Richard G. Step-in side-clamp safety ski release system. 4,492,387, Cl. 280-624.000.
Sparano, Ottorino: *See*—
Marelli, Ernesto, 4,492,338, Cl. 239-102.000.
Spear, Woodrow. Overlay code selection system. 4,492,487, Cl. 402-79.000.
Specht, Theodore R.: *See*—
Chan, Edward J.; and Specht, Theodore R., 4,493,016, Cl. 363-126.000.
Specht, Victor J. Variable displacement gerotor pump. 4,492,539, Cl. 418-19.000.
Speckhart, Frank H. Infant health monitoring system. 4,492,279, Cl. 177-45.000.
Spector, Donald. Aroma disc for table lamp. 4,493,011, Cl. 362-96.000.
Spencer, John E.; Greene, Reginald S.; and Fisher, Terrence L., to Eastman Kodak Company. Camera mechanism. 4,492,443, Cl. 354-121.000.
Speno International S.A.: *See*—
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Spetsialnoe Konstruktorsko-Tekhnologicheskoe Bjuro "Energostalprokat": *See*—
Strekalov, Genrikh; Shtyrin, Anatoly S.; Matveev, Viktor I.; Maryanchik, Mikhail A.; and Garibov, Genrikh S., 4,492,848, Cl. 219-127.000.
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Spitzer, Wayne A., to Eli Lilly and Company. Antiviral benzimidazoles. 4,492,708, Cl. 424-273.00B.
Spliethoff, Heinz, to Saarbergwerke Aktiengesellschaft. Method for supplying remote heating circuits with heat from a thermal power plant. 4,492,084, Cl. 60-648.000.
Sprecker, Mark A.; Klemarczyk, Philip T.; and Belko, Robert P., to International Flavors & Fragrances Inc. Organoleptic use of cyclohexenyl-alpha-alkyl acrolein derivatives. 4,492,645, Cl. 252-522.00R.
Square D Company: *See*—
Selby, Donald W., 4,492,817, Cl. 174-152.00R.
Staats, Jean B. C. H.; and Declerck, Gebriel D., to U.S. Philips Corporation. Resistor having a positive temperature coefficient. 4,492,947, Cl. 338-22.00R.
Staerzl, Richard E., to Brunswick Corporation. Electrode apparatus for cathodic protection. 4,492,877, Cl. 307-95.000.
Stahl, Charles R.; and Perugi, Archie H., to General Electric Company. Gas turbine power plant. 4,492,085, Cl. 60-649.000.
Stahl, Ulf: *See*—
Esser, Karl; Stahl, Ulf; Tudrynski, Paul; and Kuck, Ulrich, 4,492,758, Cl. 435-317.000.
Stahlkopf, Friedrich R. R., to Otto Tuchenhagen GmbH & Co. KG. Diaphragm pump. 4,492,535, Cl. 417-394.000.
Stamboulian, Nazareth, to American Safety Equipment Corporation. Programmed pawl control means. 4,492,349, Cl. 242-107.40A.
Standard Oil Company (Indiana): *See*—
Howe, Arthur T., 4,492,743, Cl. 429-111.000.
Michel, Frederick A., 4,492,562, Cl. 431-177.000.
Stang Hydronics Inc.: *See*—
Dros, James B., 4,492,514, Cl. 415-1.000.
Stanley, Donald O.: *See*—
Collmeyer, Arthur J.; Hoel, Jeffrey H.; King, Paul F.; Stanley, Donald O.; and Sturgeon, Roger, 4,492,956, Cl. 340-723.000.
Star Industries, Inc.: *See*—
Haines, Robert E., 4,492,391, Cl. 285-114.000.
Stauffer Chemical Company: *See*—
Giolito, Silvio L., 4,492,660, Cl. 260-966.000.
Steel Heddle Manufacturing Company: *See*—
Kramer, Charles F., 4,492,256, Cl. 139-92.000.
Steggles, David J.: *See*—
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Steinbrenner, Ulrich: *See*—
Bertsch, Richard; Gunther, Dieter; and Steinbrenner, Ulrich, 4,492,204, Cl. 123-489.000.
Steiner, Alois, to Sulzer-Ruti Machinery Works Limited. Apparatus for guiding a fluid medium driven weft thread in the shed of a weaving machine and use of the apparatus at a multiple longitudinal traversing shed weaving machine. 4,492,254, Cl. 139-11.000.
Steiner, Alois, to Sulzer-Ruti Machinery Works Limited. Apparatus for guiding a fluid medium driven weft thread in the shed of a weaving machine and use of the apparatus at a multiple longitudinal traversing shed weaving machine. 4,492,255, Cl. 139-11.000.
Steiner, Hermann; and Schonherr, Walter, to Patent-Treuhand Gesellschaft fur elektrische Gluhlampen GmbH. Dual filament halogen cycle automotive-type incandescent lamp. 4,492,893, Cl. 313-318.000.
Steins, Wilfried: *See*—
Weishaupt, Walter; and Steins, Wilfried, 4,493,102, Cl. 381-2.000.
Stepnoski, David A.: *See*—
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Steppan, Hartmut: *See*—
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Stevens, John L.: *See*—
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Ball, William J.; Cotton, Leonard; and Stewart, David G., 4,492,772, Cl. 518-713.000.
Ball, William J.; Cotton, Leonard; and Stewart, David G., 4,492,773, Cl. 518-713.000.
Stewart, Thomas L.; and Denney, Florian C., to Shell Oil Company. Leak detection. 4,492,639, Cl. 210-746.000.
Stichz, Walter. Assembly line arrangement. 4,492,297, Cl. 198-345.000.
Stigsbrandt, Ake. Device for separating solid substances from liquids. 4,492,635, Cl. 210-519.000.
Stockburger, Hermann; and Winderlich, Hans-Georg. Method and device for identifying data supports. 4,493,107, Cl. 382-58.000.
Stockle, Bernd; and Pfendler, Klaus, to International Standard Electric Corporation. Apparatus for synchronizing the slats of motor driven window blinds. 4,492,908, Cl. 318-663.000.
Stoltefuss, Jurgen: *See*—
Goldmann, Siegfried; Boshagen, Horst; Stoltefuss, Jurgen; Schramm, Matthias; Thomas, Gunter; and Kazda, Stanislav, 4,492,703, Cl. 424-266.000.
Stomp, Hubert: *See*—
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Stone & Webster Engineering Corp.: *See*—
Johnson, Axel R.; Narayanan, Swami; and Woebcke, Herman N., 4,492,624, Cl. 208-78.000.
Storm, Linda W., to Babies by Storm, Inc. Sling-type infant carrier. 4,492,326, Cl. 224-160.000.
Storni, Angelo: *See*—
Blattner, Hans; and Storni, Angelo, 4,492,691, Cl. 424-244.000.
Strafner, Michael: *See*—
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Strekalov, Genrikhn; Shtyrin, Anatoly S.; Matveev, Viktor I.; Maryanchik, Mikhail A.; and Garibov, Genrikh S., to Spetsialnoe Konstruktorsko-Tekhnologicheskoe Bjuro "Energostalproekt". Spot arc welding apparatus. 4,492,848, Cl. 219-127.000.
Stroupe, Stephen D.: *See*—
Wang, Chao-Huei J.; Stroupe, Stephen D.; and Jolley, Michael E., 4,492,762, Cl. 436-537.000.
Struthers, Ralph C. Boron monoxide-hydrogen peroxide fuel cell. 4,492,741, Cl. 429-34.000.
Stuart, Robert A., to Rotaflex plc. Electrical supply systems. 4,492,420, Cl. 339-22.00R.
Stubb, Paul R. Method and apparatus for electrodeposition of materials. 4,492,621, Cl. 204-261.000.
Stuchlik, Terry L.: *See*—
Benkar, Vilas G.; Stuchlik, Terry L.; and Werny, Frank, 4,492,731, Cl. 428-342.000.
Stull, Keefer S., Jr.: *See*—
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Sturgeon, Roger: *See*—
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Suda, Kenichi; Tanaki, Katsuyuki; Tateishi, Kazushi; and Abe, Kohichiroh, to Tokyo Shibaura Denki Kabushiki Kaisha; and Teac Corp. Video tape recorder. 4,492,994, Cl. 360-85.000.
Sugimoto, Yasuhiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Voltage controlled oscillator with linear characteristic. 4,492,934, Cl. 331-117.00R.
Sugitani, Masami, to Murata Manufacturing Co., Ltd. Noise eliminator. 4,493,007, Cl. 361-307.000.
Suglia, Jean-Claude: *See*—
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Sulzer-Ruti Machinery Works Limited: *See*—
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Steiner, Alois, 4,492,255, Cl. 139-11.000.
Sumitomo Electric Industries, Ltd.: *See*—
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Moriya, Michio, 4,492,411, Cl. 303-6.00C.
Sunago, Katsuyoshi; and Iwamoto, Tomio, 4,492,230, Cl. 128-303.100.
Sumitomo, Hiroyuki: *See*—
Uehara, Haruo; and Sumitomo, Hiroyuki, 4,492,268, Cl. 165-166.000.
Sun, Anthony M. F.: *See*—
Goosen, Matthews F. A.; and Sun, Anthony M. F., 4,492,684, Cl. 424-19.000.
Sun, Franklin K.: *See*—
Lewis, George K.; Sun, Franklin K.; Keene, Douglas L.; and Fidel, Howard F., 4,492,120, Cl. 73-625.000.
Sunago, Katsuyoshi; and Iwamoto, Tomio, to Sumitomo Electric Industries, Ltd. Extension mechanism of adaptor for laser scalpel. 4,492,230, Cl. 128-303.100.
Sund, Lloyd P. Pickup roller spreader. 4,492,074, Cl. 56-364.000.
Sundberg, Hardy. Gas combustion control apparatus. 4,492,560, Cl. 431-12.000.
Sundstrand Corporation: *See*—
Baldwin, Jeffrey D., 4,492,887, Cl. 310-68.00R.
Sjoland, John R., 4,492,245, Cl. 137-82.000.
Susor, Rita M., executor: *See*—
Susor, William C., deceased, 4,492,280, Cl. 177-211.000.
Susor, William C., deceased (by Susor, Rita M., executor), to Mastrom Scale Inc. Weighing apparatus including load cells with intrinsic safety barrier. 4,492,280, Cl. 177-211.000.
Susumu Ubukata: *See*—
Ubukata, Susumu; and Mizutani, Yasukazu, 4,493,066, Cl. 367-178.000.
Suurkuusk, Jaak: *See*—
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Suzuki, Atsushi; Yamada, Hiromichi; Uchida, Yoko; Kohno, Hideki; and Yoshida, Minoru, to Hitachi Medical Corporation. Radiation detector. 4,492,869, Cl. 250-367.000.
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Kanai, Tamaki; Yoshikawa, Hirofumi; Yamagishi, Takashi; Suzuki, Kenji; and Ohta, Yoshikatsu, 4,492,719, Cl. 427-171.000.
Suzuki, Kiziro: *See*—
Watanabe, Koji; Shiozawa, Kazuo; Suzuki, Kiziro; and Shimokawa, Ryuichi, 4,492,430, Cl. 354-412.000.
Suzuki, Norihito: *See*—
Yamamoto, Takeshi; Suzuki, Norihito; Aoki, Toru; and Iwaki, Akio, 4,492,740, Cl. 428-629.000.
Suzuki, Shinichi; Sasaki, Masayuki; Moriyasu, Toshinori; and Arakawa, Takao, to Tokyo Shibaura Denki Kabushiki Kaisha. Picture blur-alarm device for a camera. 4,492,452, Cl. 354-430.000.
Suzuki, Takeshi; Murao, Mikio; Uchida, Masahiro; Kumagai, Chikanori; and Yotsui, Yasuhiko, to Kawasaki Jukogyo Kabushiki Kaisha. Calcining system provided with a planetary cooler. 4,492,570, Cl. 432-106.000.
Suzuki, Tutomu: *See*—
Oya, Akiyoshi; Nakada, Akira; and Suzuki, Tutomu, 4,492,142, Cl. 84-1.030.
Suzuki, Yasuhito: *See*—
Yamanaka, Teruo; Hayakawa, Kiso; Suzuki, Yasuhiko; and Ebuchi, Michiru, 4,492,114, Cl. 73-117.300.
Suzuki, Yasuro: *See*—
Asano, Etuo; Suzuki, Yasuro; and Midou, Nobuo, 4,492,884, Cl. 310-45.000.
Svens, Runar, to AB Nordstroms Linbanor. Feeding device for a vertical tube conveyor. 4,492,302, Cl. 198-671.000.
Sviniin, Mikhail P.: *See*—
Dmitriev, Stanislav P.; Ivanov, Andrei S.; Sviniin, Mikhail P.; and Fedotov, Mikhail T., 4,492,873, Cl. 250-492.300.
Swain, James C.; and Thomas, David L., to Diesel Kiki Co., Ltd. (Japanese Corp.). Wobble plate piston pump. 4,492,527, Cl. 417-222.000.
Swartz, Robert G.: *See*—
Finegan, Sean N.; McFee, James H.; and Swartz, Robert G., 4,492,852, Cl. 219-405.000.
Swedish Institute for Silicate Research: *See*—
Pompe, Robert, 4,492,665, Cl. 264-65.000.
Swisher, James A. Key for a lock of the plunger operated type. 4,492,100, Cl. 70-34.000.
Swiss Aluminium Ltd.: *See*—
Mizrah, Tiberiu; Hoffmann, Matthias; Kaser, Peter; and Heilig, Klemens, 4,492,670, Cl. 419-9.000.
Switzer, Jay A., to Union Oil Company of California. Heterojunction photovoltaic device. 4,492,811, Cl. 136-255.000.
Switzer, Robert D. Modular cartridge loading board system. 4,492,051, Cl. 42-87.000.
Sword, Edward L., Jr. Web position indicator. 4,493,065, Cl. 367-96.000.
Syntex (U.S.A.) Inc.: *See*—
Broadhead, James H., 4,492,407, Cl. 297-78.000.
Synthelabo: *See*—
Kaplan, Jean-Pierre; George, Pascal; and Bernardon, Jean-Michel, 4,492,695, Cl. 424-246.000.
Purcell, Thomas A., 4,492,709, Cl. 424-273.00R.
Szabo, Steven B.: *See*—
Wells, Calvin G.; and Szabo, Steven B., 4,492,019, Cl. 29-447.000.
Szekely, Tamas; Csanda, Ferenc; Nagy, Gabor; and Czerny, Gyozo, to Magyar Tudomanyos Akademia Termeszettudomanyi Kutato Laboratoriuma, /a/ nyi Kutat Laboratorium 03; and Foldmero es Talajvizgalo Vallalat. Process for stabilizing aqueous solutions used in the preparation of hydrophilic polymeric gelscs4,492,495E.a, Cl. 405-264.000.
Szmuilowicz, Yehuda I.: *See*—
Ray, Valton O.; Roeland, Robert H.; Potter, Carl H.; and Szmuilowicz, Yehuda I., 4,492,557, Cl. 425-72.00S.
T.A.D. Avanti, Inc.: *See*—
Martinez, Arthur T.; and Kilstofte, Richard B., 4,492,828, Cl. 200-5.00R.
Tada, Hiroshi: *See*—
Ito, Yasuro; Higuchi, Yoshiro; Tsuji, Masanori; Yamamoto, Yasuhiro; Tada, Hiroshi; Kuroha, Kenji; Nakamura, Takashi; and Tomikawa, Koichi, 4,492,478, Cl. 366-28.000.
Tada, Tetsuya, to Canyon Corporation. Dispenser with an air pump mechanism4,492,320, Cl. 222-398.000.
TAFA Incorporated: *See*—
Harrington, Kent W.; Stevens, John L.; and Thorpe, Merle L., 4,492,337, Cl. 239-81.000.

Taisei Corporation: *See*—
Ito, Yasuro; Higuchi, Yoshiro; Tsuji, Masanori; Yamamoto, Yasuhiro; Tada, Hiroshi; Kuroha, Kenji; Nakamura, Takashi; and Tomikawa, Koichi, 4,492,478, Cl. 366-28.000.

Taito Kabushiki Kaisha: *See*—
Nakamoto, Seikan; Miyagi, Sadao; Arugahi, Takehiko; and Higa, Yasusi, 4,492,601, Cl. 127-48.000.

Tajima, Michio, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Method for determining impurities in epitaxial silicon crystalsco4,492,871, Cl. 250-459.100.

Takagi, Shigeru; and Hayashi, Nobutoshi, to Nippon Soken, Inc. Method and apparatus for detecting degree of clogging in particle trapping member of internal combustion engineco4,492,079, Cl. 60-274.000.

Takahashi, Ihno, to Hitachi, Ltd. Fuel pumping apparatusco4,492,200, Cl. 123-450.000.

Takahashi, Seigo: *See*—
Nishina, Shingo; Takahashi, Seigo; and Otomi, Shigeru, 4,492,034, Cl. 33-170.000.

Takahashi, Toru; and Ueno, Takashi, to Nissan Motor Company, Limited. Method of feedback controlling engine idle speedco4,492,195, Cl. 123-339.000.

Takahashi, Toshio, to Eisai Co., Ltd. Method of detecting foreign matters mixed in a liquid contained in transparent receptacles and apparatus relevant theretoco4,492,475, Cl. 356-427.000.

Takaminawa, Minoru: *See*—
Badou, Morinobu; Takaminawa, Minoru; Honga, Tatsuhiko; and Kobayashi, Taishi, 4,492,681, Cl. 423-345.000.

Takano, Kazuhiyo; and Koga, Keigi, to Hitachi, Ltd. Retail terminalco4,493,037, Cl. 364-405.000.

Takashima, Mitsuru: *See*—
Mori, Yoshihiro; Kobayashi, Hachiro; and Takashima, Mitsuru, 4,493,071, Cl. 369-146.000.

Takashima, Ryoichi; Goto, Nobuaki; Uehara, Yumito; Nishihara, Yasuhiro; and Yamamoto, Hidetoshi, to Mitsubishi Chemical Industries Limited. Process for continuously producing propylene-ethylene block copolymerco4,492,787, Cl. 525-53.000.

Takata, Masabu; Inoue, Shojiro; and Mori, Keiichi, to Matsushita Electric Industrial Co., Ltd. Cooker with heating control systemco4,492,336, Cl. 236-20.00A.

Takei, Toshihiro: *See*—
Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,492,515, Cl. 415-53.00T.

Takeuchi, Kazuhisa; and Ogawa, Chikaya, to Nippon Hoso Kyokai. TV Camera tubeco4,492,981, Cl. 358-217.000.

Takeuchi, Eiji. Saber saw bladeco4,492,141, Cl. 83-852.000.

Takimoto, Hiroyuki; Kaniyoshi, Takashi; and Ushiro, Tatsuo, to Canon Kabushiki Kaisha. Video camera image tube burn-in prevention apparatusco4,492,982, Cl. 358-228.000.

Talke, Frank E.: *See*—
Lee, Francis C.; Mills, Ross N.; Niweigha, Tiefa K.; and Talke, Frank E., 4,492,968, Cl. 346-140.00R.

Tamai, Yasuo: *See*—
Ogawa, Hiroshi; and Tamai, Yasuo, 4,492,734, Cl. 428-424.200.
Ogawa, Hiroshi; and Tamai, Yasuo, 4,492,735, Cl. 428-424.200.

Tanaki, Katsuyuki: *See*—
Sada, Kenichi; Tanaki, Katsuyuki; Tateishi, Kazushi; and Abe, Kohichiroh, 4,492,994, Cl. 360-85.000.

Tanaka, Masaki: *See*—
Kubota, Toru; Tanaka, Masaki; and Sawa, Masaaki, 4,492,955, Cl. 340-636.000.

Tanaka, Akira: *See*—
Ziv, Avraham; and Tanaka, Akira, 4,492,348, Cl. 242-107.200.

Tanaka, Atsuo: *See*—
Donomoto, Tadashi; and Tanaka, Atsuo, 4,492,265, Cl. 164-493.000.

Tanaka, Masato: *See*—
Watanabe, Nobuhiko; and Tanaka, Masato, 4,492,989, Cl. 360-32.000.

Tanaka, Minoru: *See*—
Hamada, Satoshi; Inaya, Masahiko; and Tanaka, Minoru, 4,492,456, Cl. 355-3.0DD.

Tanaka, Osamu; Watanabe, Noboru; and Iiyama, Hiroshi, to Jeco Company Limited. Inclinometerco4,492,029, Cl. 33-366.000.

Tanaka, Shigeo: *See*—
Nakashima, Kazuhide; Saito, Takuyuki; Nakahara, Takeshi; and Tanaka, Shigeo, 4,492,789, Cl. 525-531.000.

Tanaka, Shuji: *See*—
Fujii, Kozo; Nishihira, Keigo; Sawada, Hiroyuki; Tanaka, Shuji; Naksi, Masaru; Yoshida, Hiroshi; and Inoue, Teruhiko, 4,492,792, Cl. 544-326.000.

Tanaka, Taku; Maruyama, Hitoshi; Okuya, Takuji; and Kajitani, Koichi, to Kuraray Co., Ltd. Binder for obtaining a ceramic molded green bodyco4,492,783, Cl. 524-430.000.

Tanaka, Yoshiaki: *See*—
Inami, Masaru; Tanaka, Yoshiaki; and Ohtsuki, Zenju, 4,492,917, Cl. 324-77.00A.

Tanaka, Yoshiyuki, to Nissan Motor Company, Limited. Lock cylinder attaching device for vehicle movable closure lockco4,492,101, Cl. 70-370.000.

Tang, Robert H., to PPG Industries, Inc. Dicyanomethyl ethyl peroxy dicarbonate polymerization initiatorsco4,492,656, Cl. 260-433.08RZ.

Tani, Kenroku: *See*—
Hayakawa, Daishiro; Akimoto, Masao; Narita, Katsumi; and Tani, Kenroku, 4,492,928, Cl. 330-126.000.

Taniguchi, Motoya; Ikeda, Minoru; and Komeyama, Yoshihiro, to Hitachi, Ltd. Precision parallel translation systemsco4,492,356, Cl. 248-346.000.

Tanii, Shigetaka; and Sasaki, Hiroo, to Toyama Machine Works, Ltd. Robot hand driving mechanismco4,492,510, Cl. 414-733.000.

Tanner, David P., to Atlantic Richfield Company. Process for forming microcrystalline silicon material and productsco4,492,736, Cl. 428-446.000.

Tao, Luh C.; and Blouse, James W., to University of Nebraska, The Board of Regents of the. Water separation processco4,492,637, Cl. 210-711.000.

Tateishi, Kazushi: *See*—
Sada, Kenichi; Tanaki, Katsuyuki; Tateishi, Kazushi; and Abe, Kohichiroh, 4,492,994, Cl. 360-85.000.

Taylor, Eric, to Paterson Product Ltd. Apparatus for developing photographic materialsco4,492,447, Cl. 354-312.000.

Taylor, Glenn N., to Neomed, Incorporated. Hand-controllable switching device for electrosurgical instrumentsco4,492,832, Cl. 200-52.00R.

Taylor, Robert L.: *See*—
Wadso, Ingemar; Swarkowsk, Jack; and Taylor, Robert L., 4,492,480, Cl. 374-33.000.

Tazaki, Shigemitsu: *See*—
Mitsuzaki, Seki; Tazaki, Shigemitsu; and Shirato, Yoshiaki, 4,492,966, Cl. 346-33.00A.

Teac Corp.: *See*—
Sada, Kenichi; Tanaki, Katsuyuki; Tateishi, Kazushi; and Abe, Kohichiroh, 4,492,994, Cl. 360-85.000.

Tester, Albert: *See*—
James, Miranda L.; and Tester, Albert, 4,492,823, Cl. 179-81.00R.

Technicare Corporation: *See*—
Dulapa, Mark J.; and Glenn, William M., Jr., 4,492,119, Cl. 73-621.000.
Guess, Joe F.; and Pearce, Thomas, 4,492,317, Cl. 222-39.000.

Teijin, Limited: *See*—
Kanai, Tanaki; Yoshikawa, Hirofumi; Yamagishi, Takashi; Suzuki, Kenji; and Ohta, Yoshikatsu, 4,492,719, Cl. 427-171.000.

Tektronix: *See*—
Hoeren Gerd H.; and Palmquist, Steven R., 4,493,044, Cl. 364-579.000.

Teldix GmbH: *See*—
Aser, Werner, 4,492,131, Cl. 74-574.000.

Temper-Ring Equipment Corporation: *See*—
Rode, John E., 4,492,018, Cl. 29-437.000.

Temple, Michael D.: *See*—
Mayer, Thomas; Temple, Michael D.; Boling, Norman L.; and Rancourt, James D., 4,492,718, Cl. 427-160.000.

Tenneco, Inc.: *See*—
McCoy, James J., Jr., 4,492,516, Cl. 415-53.00T.

Terasawa, Koji, to Canon Kabushiki Kaisha. Capping device for a multi-ink jet headco4,492,969, Cl. 346-140.00R.

Terauchi, Kiyoshi: *See*—
Iimori, Takayuki; Terauchi, Kiyoshi; and Sakamoto, Seiichi, 4,492,543, Cl. 418-55.000.

Terra Technology Corp.: *See*—
Hernandez, E. Norman; and Hammerquist, Eric M., 4,492,918, Cl. 324-83.00R.

Terry, John F., Jr.: *See*—
Christine, David R.; and Terry, John F., Jr., 4,492,490, Cl. 404-108.000.

Teshima, Hiroshi: *See*—
Shima, Ichiji; Teshima, Hiroshi; Koizumi, Takayuki; and Usami, Teruo, 4,493,042, Cl. 364-507.000.

Teske, Lothar. Bulk-storage apparatus with unloaderco4,492,508, Cl. 414-304.000.

Texaco Inc.: *See*—
McEntire, Edward E.; Sellstrom, Kathy B.; Nieh, Edward C. Y.; and Livingston, David R., 4,492,801, Cl. 564-135.000.
Smith, Harry D., Jr.; and Schultz, Ward E., 4,492,864, Cl. 250-259.000.

Texas Instruments Incorporated: *See*—
McElroy, David J., 4,493,057, Cl. 365-182.000.
Trotta, Patrick A.; and Zak, Paul A., 4,492,763, Cl. 501-40.000.

Texas Oil Spill Control, Inc.: *See*—
Rymal, Theodore R., Jr., 4,492,630, Cl. 210-117.000.

Textron Inc.: *See*—
Bieschke, Martin, 4,492,422, Cl. 339-95.00R.

Thaler, Arnold; Friedson, David; and Kin, Lai, to Windmere Corporation. Retractable curling brushco4,492,241, Cl. 132-37.00R.

Theriault, Gerald E., to RCA Corporation. Terminated switchco4,492,937, Cl. 333-103.000.

Therm-O-Disc, Incorporated: *See*—
Loescher, Michael R., 4,492,946, Cl. 337-365.000.

Thierbach, Mark E., to AT&T Bell Laboratories. Microprocessor with PLA adapted to implement subroutinesco4,493,029, Cl. 364-200.000.

Thiokol Corporation: *See*—
Junior, Kenneth E.; and Byrd, James D., 4,492,779, Cl. 523-138.000.

Thomas, Bobby J.; and Heath, Billy J., to Conoco Inc. Seismic vibrator control systemsco4,493,067, Cl. 367-189.000.

Thomas, David L.: *See*—
Swain, James C.; and Thomas, David L., 4,492,527, Cl. 417-222.000.

Thomas, Gunter: *See*—
Goldmann, Siegfried; Boshagen, Horst; Stoltefuss, Jurgen; Schramm, Matthias; Thomas, Gunter; and Kanda, Stanislav, 4,492,703, Cl. 424-266.000.

Thomas, Leslie D., to Westinghouse Electric Corp. Transmission system for TV signalsco4,492,978, Cl. 358-134.000.
Thomas, Paul M.; and Abrahamson, Daniel P., to Builders Equipment Company. High speed pushersco4,492,503, Cl. 414-152.000.
Thompson, Dennis J., to AT&T Bell Laboratories. Multi-device apparatus synchronized to the slowest devicesco4,493,053, Cl. 364-900.000.
Thomson-CSF: *See*—
Alberalio, Alain; Roullet, Andre ; and Piasenzal, Alberto, 4,492,936, Cl. 332-19.000.
de Chambost, Emmanuel; and Trotel, Jacques, 4,492,870, Cl. 250-398.000.
Gaucen, Herve , 4,493,111, Cl. 455-79.000.
Huignard, Jean-Pierre; Herrian, Jean-Pierre; and Marrakchi El Follah, Abdellatif, 4,492,468, Cl. 356-347.000.
Thomson-CSF Telephone: *See*—
Nicolas, Alain; and Chapelain, Jean-Pierre, 4,493,022, Cl. 364-200.000.
Thomson, David J., to AT&T Bell Laboratories. Clock phase control with time distribution of phase correctionsco4,493,094, Cl. 375-119.000.
Thor, Charles C. Coupling system for power take-off shaftsco4,492,292, Cl. 192-67.00R.
Thorpe, Merle L.: *See*—
Harrington, Kent W.; Stevens, John L.; and Thorpe, Merle L., 4,492,337, Cl. 239-81.000.
Thorsen, Thomas A.: *See*—
Greenwood, Leon D.; and Thorsen, Thomas A., 4,492,190, Cl. 123-185.00A.
Thomson-Paris: *See*—
Picolet, Jean-Pierre; Radioff, Jean-Loup; and Courtot, Francois, 4,492,225, Cl. 128-87.00R.
Tietgen, Karl H.: *See*—
Karsten, Ralf T.; Tietgen, Karl H.; and Schlaak, Helmut F., 4,492,425, Cl. 350-96.140.
Till, Henry R.: *See*—
Folkins, Jeffrey J.; Haque, Shahid; Losh, Alfred M.; and Till, Henry R., 4,492,179, Cl. 118-689.000.
Tilley, Alec R.: *See*—
Wright, Michael L.; and Tilley, Alec R., 4,492,021, Cl. 29-623.100.
Tims, Harold A.; Elliott, Sheldon E.; Montgomery, Orin C.; and Doggett, William N., to Phillips Petroleum Company. Method and apparatus for seismic geophysical explorationco4,493,063, Cl. 367-77.000.
Tintner, Karlheinz: *See*—
Weiler, Rolf; Boehm, Peter; Haar, Lucas H.; and Tintner, Karlheinz, 4,492,081, Cl. 60-547.100.
Toba, Yasuo, to Mitsubishi Denki Kabushiki Kaisha. Transformer windingco4,492,944, Cl. 336-69.000.
Toda, Akira: *See*—
Ogawa, Naoki; and Toda, Akira, 4,492,189, Cl. 123-90.380.
Toda, Akitoshi: *See*—
Mizuno, Yoshiyuki; Okada, Takao; and Toda, Akitoshi, 4,492,745, Cl. 430-67.000.
Tokes, Zoltan A.: *See*—
Shell, William E.; Barnum, Michael H.; and Tokes, Zoltan A., 4,492,753, Cl. 435-17.000.
Tokico Ltd.: *See*—
Tsuge, Kazuo, 4,492,533, Cl. 417-372.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Fujimori, Yasutomo, 4,492,469, Cl. 356-361.000.
Haginomori, Eiichi, 4,493,008, Cl. 361-341.000.
Harada, Nosomu, 4,492,980, Cl. 358-213.000.
Hitomi, Hisakazu, 4,492,914, Cl. 323-313.000.
Kusakabe, Hiromi; and Ogawa, Atsushi, 4,492,926, Cl. 329-205.00R.
Kuze, Takashi, 4,492,803, Cl. 148-31.500.
Miyano, Toshiyuki; and Ohmura, Hideo, 4,492,072, Cl. 53-586.000.
Ogura, Mitsugi, 4,492,973, Cl. 357-23.000.
Okuno, Haruo; and Horiike, Yasuhiro, 4,492,610, Cl. 156-643.000.
Suda, Kenichi; Tamaki, Katsuyuki; Tateishi, Kazushi; and Abe, Kokichiroh, 4,492,994, Cl. 360-85.000.
Sugimoto, Yasuhiro, 4,492,934, Cl. 331-117.00R.
Suzuki, Shinichi; Sasaki, Masayuki; Moriyasu, Toshinori; and Arakawa, Takao, 4,492,452, Cl. 354-430.000.
Tomita, Seiji; and Yokoyama, Hideo, 4,492,995, Cl. 360-96.500.
Tolfsen, Ulf, to Loyd's Industri A/S. Boks 609. Fastening means for safety beltsco4,492,007, Cl. 24-461.000.
Tomikawa, Koichi: *See*—
Ito, Yasuro; Higuchi, Yoshiro; Tsuji, Masanori; Yamamoto, Yasuhiro; Tada, Hiroshi; Kuroba, Kenji; Nakamura, Takashi; and Tomikawa, Koichi, 4,492,478, Cl. 366-28.000.
Tomita, Kazuo: *See*—
Igarashi, Kouhei; and Tomita, Kazuo, 4,492,112, Cl. 73-117.300.
Tomita, Seiji; and Yokoyama, Hideo, to Tokyo Shibaura Denki Kabushiki Kaisha. Tape cassette loading and ejection devicesco4,492,995, Cl. 360-96.500.
Tomlinson, Harold W., Jr.: *See*—
Beall, Donald L.; Tomlinson, Harold W., Jr.; and Hart, William G., Jr., 4,493,105, Cl. 382-21.000.
Toray Silicone Co., Ltd.: *See*—
Koshii, Taro; and Yamashita, Mitsuga, 4,492,775, Cl. 521-77.000.
Torii, Nobutoshi: *See*—
Isobe, Hajime; and Torii, Nobutoshi, 4,492,301, Cl. 198-472.000.
Tourasi, William. Collapsible bottlesco4,492,313, Cl. 215-1.00C.
Toyama Machine Works, Ltd.: *See*—
Tani, Shigetaka; and Sasaki, Hisao, 4,492,510, Cl. 414-733.000.
Toyo Seikan Kaisha, Ltd.: *See*—
Miura, Hideo, 4,492,571, Cl. 432-225.000.
Toyo Soda Manufacturing Co., Ltd.: *See*—
Kumoi, Sadakatsu; Mitarai, Keiji; and Tsutsumi, Yukihiro, 4,492,803, Cl. 564-486.000.
Toyoda Gosei Co., Ltd.: *See*—
Ozawa, Isao; Aono, Yukio; and Ueno, Masato, 4,492,368, Cl. 267-140.100.
Toyota Jidosha Kabushiki Kaisha: *See*—
Donomoto, Tadaaki; and Tanaka, Atsuo, 4,492,265, Cl. 164-493.000.
Igarashi, Kouhei; and Tomita, Kazuo, 4,492,112, Cl. 73-117.300.
Kawai, Yukio; Ogawa, Toshihiko; and Yoshida, Seietsu, 4,492,199, Cl. 123-440.000.
Komikai, Aano; Watanabe, Shingo; and Nakanishi, Nobuyasu, 4,492,414, Cl. 303-116.000.
Ozaki, Tadashi; Hattori, Tadashi; Miura, Kazuhiko; Hamada, Masanori; and Hashiguchi, Yukihide, 4,492,109, Cl. 73-35.000.
Toyota Jidosha Kogyo Kabushikik Kaisha: *See*—
Moriyama, Masakazu; and Saito, Taizo, 4,493,100, Cl. 381-43.000.
Trager, Ulrich; Sojka, Bernward; and Lange, Hans, to Boehringer Mannheim GmbH. Composition and method for the determination of hydrogen peroxideco4,492,754, Cl. 435-28.000.
Transkrit Corporation: *See*—
Dicker, David, 4,492,334, Cl. 229-69.000.
Trebillon, Emile, to Rhone-Poulenc Specialites Chimiques. Preparation of ultrapure boehmites and/or pseudo-boehmitesco4,492,682, Cl. 423-626.000.
Treiber, Helmut: *See*—
Bichl, Horst; Fladein, Gunter; and Treiber, Helmut, 4,492,458, Cl. 355-38.000.
Trotel, Jacques: *See*—
de Chambost, Emmanuel; and Trotel, Jacques, 4,492,870, Cl. 250-398.000.
Trotta, Patrick A.; and Zak, Paul A., to Texas Instruments Incorporated. Low dispersion infrared glassco4,492,763, Cl. 501-40.000.
Troxler, Eduard: *See*—
Orban, Ivan; and Troxler, Eduard, 4,492,791, Cl. 544-198.000.
Tsang, Paul J.: *See*—
Anantha, Narasipur G.; Ning, Tak H.; and Tsang, Paul J., 4,492,008, Cl. 29-571.000.
Tsuchihashi, Koji: *See*—
Hasegawa, Takashi; Tsuchihashi, Koji; and Yamashita, Hiroshi, 4,492,771, Cl. 502-420.000.
Tsuchiya, Yutaka; Izumiya, Eiji; and Shimoda, Yuji, to Hamamatsu Terebi Kabushiki Kaisha. Trigger circuitco4,492,879, Cl. 307-248.000.
Tsuda, Masaya; Yonemaru, Ken-Ichi; and Maruda, Yoshikazu, to Dainippon Screen Manufacturing Co., Ltd. Photomultiplier tube devicesco4,492,977, Cl. 358-75.000.
Tsuge, Kazuo, to Tokico Ltd. Air compressorco4,492,533, Cl. 417-372.000.
Tsuji, Masanori: *See*—
Ito, Yasuro; Higuchi, Yoshiro; Tsuji, Masanori; Yamamoto, Yasuhiro; Tada, Hiroshi; Kuroba, Kenji; Nakamura, Takashi; and Tomikawa, Koichi, 4,492,478, Cl. 366-28.000.
Tsutsumi, Yukihiro: *See*—
Kumoi, Sadakatsu; Mitarai, Keiji; and Tsutsumi, Yukihiro, 4,492,803, Cl. 564-486.000.
Tsuya, Yuko: *See*—
Watanabe, Tadahiko; Tsuya, Yuko; and Enomoto, Yuji, 4,492,764, Cl. 501-87.000.
Tuchiya, Yoshinao: *See*—
Chikamichi, Takayo; Tuchiya, Yoshinao; and Kawano, Kazunori, 4,492,405, Cl. 296-146.000.
Tudryasli, Paul: *See*—
Heer, Karl; Stahl, Ulf; Tudryasli, Paul; and Kuck, Ulrich, 4,492,758, Cl. 435-317.000.
Turner Electric Corporation: *See*—
Turner, John L., 4,492,835, Cl. 200-144.00B.
Turner, Jan R.: *See*—
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Wico Corporation: *See*—
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Wiener, Hans; and Undin, Hans, to C. A. Weidmuller GmbH & Co. Conductor separatorsus4,492,026, Cl. 30-90.900.

Wiesera, Heinz, to U.S. Philips Corporation. Piezoelectric actuator arrangement with adjustment for wearus4,492,891, Cl. 310-328.000.

Wikefelt, Per: *See*—
Forsstrom, Bo; Lunciewski, Tomas; and Wikefelt, Per, 4,492,139, Cl. 83-727.000.

Wikland, Klas R., to Pharos AB. Arrangement for checking dimensional accuracyus4,492,471, Cl. 356-375.000.

Wilfinger, Hans J.: *See*—
Frank, Gerhard; Rudolf, Peter; Neubauer, Gerald; Duffner, Paul; Ohlinger, Manfred; Wilfinger, Hans J.; and Pfannebecker, Emil, 4,492,804, Cl. 564-493.000.

Williams, Daniel W., to McCurdy, Robert. Game apparatusus4,492,378, Cl. 273-142.0HA.

Williams, Richard S.; and Daniels, Terry, to BIP Chemicals Limited. Moulding compounds based on polyesterus4,492,782, Cl. 524-293.000.

Williamson, Willie, to Rolls-Royce Limited. Gas turbine engine casingus4,492,078, Cl. 60-39.310.

Willis, Donald H.: *See*—
Luz, David W.; and Willis, Donald H., 4,492,900, Cl. 315-411.000.

Wilms, Lothar; Huttelmaier, Thomas; Mildenberger, Hilmar; Bauer, Klaus; Burstell, Helmut; and Bieringer, Hermann, to Hoechst Aktiengesellschaft. Sulfonylureas having heterocyclic substituents, and their use in agriculturesus4,492,598, Cl. 71-93.000.

Wilson, Colleen R.: *See*—
Walter, Chris J.; Wilson, Colleen R.; and Berkovich, Semyon, 4,493,074, Cl. 370-119.000.

Wilson, Frank G.; and Patton, William A., to Kendo Products Co., Inc. Scrubber mopsus4,491,998, Cl. 15-119.00A.

Wilson, James R., to Equitable Bag Co., Inc. Bag constructionus4,493,110, Cl. 383-27.000.

Winawer, Sidney J.: *See*—
Fleisher, Martin; and Winawer, Sidney J., 4,492,124, Cl. 73-864.440.

Winderlich, Hans-Georg: *See*—
Stockburger, Hermann; and Winderlich, Hans-Georg, 4,493,107, Cl. 382-58.000.

Windmere Corporation: *See*—
Thaler, Arnold; Friedson, David; and Kia, Lai, 4,492,241, Cl. 132-37.00R.

Windmoller & Holscher: *See*—
Blom, Friedrich, 4,492,609, Cl. 156-507.000.
Reinhold, Klaus, 4,492,563, Cl. 431-264.000.

Winkel, Robert J.: *See*—
Pelowski, Kenneth R.; and Winkel, Robert J., 4,493,002, Cl. 361-93.000.

Wistar Institute of Anatomy and Biology, The: *See*—
DeFreitas, Elaine C., 4,492,760, Cl. 436-503.000.

Witmore, Ronald K.; and Zelenski, Jerome J., to AT&T Bell Laboratories. Maintenance of stored program controlled switching systemsus4,493,073, Cl. 370-14.000.

Wittman, Frederick H. Convertible baby crib and playpenus4,491,992, Cl. 5-93.00R.

Wiwszynski, Michael C.: *See*—
Smorol, Michael E.; Wiwszynski, Michael C.; and Woollis, Theodore L., 4,492,092, Cl. 62-181.000.

Woebcke, Hermann N.: *See*—
Johnson, Axel R.; Narayanan, Swami; and Woebcke, Hermann N., 4,492,624, Cl. 208-78.000.

Wolcott, Dana W., to Eastman Kodak Company. Camera mechanismus4,492,444, Cl. 354-121.000.

Wolf, Robert A., to Radiant Heat, Inc. Clamping means for matrix in radiant gas burnersus4,492,564, Cl. 431-328.000.

Wolff, Gunter, to Robert Bosch GmbH. Gear machine with displaceable central housing partus4,492,544, Cl. 418-107.000.

Wolfram, Joachim W.: *See*—
Lee, John Y.; and Wolfram, Joachim W., 4,492,798, Cl. 562-406.000.

Wolkenstein, Robert, to Voest-Alpine Aktiengesellschaft. Sieve belt pressus4,492,155, Cl. 100-118.000.

Wood, Edward T., to Completion Tool Company. Inflatable well bore packer with pressure equalized rib cavitysus4,492,383, Cl. 277-34.000.

Wooda, Arthur F.; Bush, Harry; and Kana, Eugene J., to Poly Processing Company, Inc. Tank fittingsus4,492,392, Cl. 285-119.000.

Woods, Leslie: *See*—
Ginn, Ian D.; Gleave, Leonard; and Woods, Leslie, 4,492,135, Cl. 83-155.000.

Woollis, Theodore L.: *See*—
Smorol, Michael E.; Wiwszynski, Michael C.; and Woollis, Theodore L., 4,492,092, Cl. 62-181.000.

Wootton, Gerald V., to B. F. Goodrich Company, The. Recovery of components of a binary azeotropesus4,492,613, Cl. 203-39.000.

Workman, William, Jr., to Cooper Industries, Inc. Shut-off device for a fluid driven motorsus4,492,146, Cl. 91-29.000.

Wright, Michael L.; and Tilley, Alec R., to Chloride Silent Power Limited. Method of making cathode current collectors for sodium sulphur cellsus4,492,021, Cl. 29-623.100.

Wright State University: *See*—
Petrofsky, Jerrold S.; Glaser, Roger M.; Phillips, Chandler A.; and Petrofsky, Steven H., 4,492,233, Cl. 128-421.000.

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Wunderlich, Winfried: *See*—
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Wurfel, Helmut, to GfK Gesellschaft fur Kohleverflussigung mbH. Process for the hydrogenation of coal using a split feedus4,492,623, Cl. 208-10.000.

Wyatt, Erle L.: *See*—
Wyatt, Gordon F.; Wyatt, Willis G.; and Wyatt, Erle L., 4,492,389, Cl. 280-704.000.

Wyatt, Gordon F.; Wyatt, Willis G.; and Wyatt, Erle L. High-lift hydraulic axlesus4,492,389, Cl. 280-704.000.

Wyatt, Willis G.: *See*—
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Xerox Corporation: *See*—
Baston, Martin E.; Lavallee, Pierre A.; Araghi, Mehdi N.; Daniele, Joseph J.; and Yip, Kwok L., 4,492,435, Cl. 350-360.000.
Donohue, James M.; and Ling, Andrew T., 4,493,049, Cl. 364-900.000.
Folkins, Jeffrey J.; Haque, Shahid; Loeb, Alfred M.; and Till, Henry R., 4,492,179, Cl. 118-689.000.
Law, Kock-Yee; Johnson, Gordon E.; and Lin, John W. P., 4,492,750, Cl. 430-494.000.
Zoltner, John D., 4,492,321, Cl. 222-410.000.

Yabe, Tadashi: *See*—
Asano, Yuichiro; Hirahashi, Akira; Ohga, Susbiss; Yabe, Tadashi; Kurita, Kunio; and Momose, Atsushi, 4,492,472, Cl. 356-376.000.

Yamada, Hideaki: *See*—
Kato, Masaaki; Miyoshi, Teruzo; Kibayashi, Iwao; Ikemi, Masahisa; Gomi, Haruo; Ishimatsu, Yoshiaki; Koizumi, Noriaki; and Yamada, Hideaki, 4,492,757, Cl. 435-280.000.

Yamada, Hiromichi: *See*—
Suzuki, Atsushi; Yamada, Hiromichi; Uchida, Yoko; Kohno, Hideki; and Yoshida, Minoru, 4,492,869, Cl. 250-367.000.

Yamada, Shinjiro, to Mitsui Kinzoku Kogyo K.K. Automotive door latch system including a childproofing mechanismus4,492,395, Cl. 292-216.000.

Yamada, Yukio; Itahana, Hiroshi; and Kuwana, Hisashi, to Hitachi, Ltd. Gate turn-off thyristor stackus4,492,975, Cl. 357-76.000.

Yamagishi, Takashi: *See*—
Kanai, Tamaki; Yoshikawa, Hirofumi; Yamagishi, Takashi; Suzuki, Kenji; and Ohta, Yoshikatsu, 4,492,719, Cl. 427-171.000.

Yamaguchi, Akio: *See*—
Miyata, Hiroyasu; Yamaguchi, Akio; and Watanabe, Keizo, 4,492,125, Cl. 74-10.330.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Okumura, Shigeo, 4,492,198, Cl. 123-413.000.

Yamamoto, Hidetoshi: *See*—
Takashima, Ryokichi; Goko, Nobuaki; Uehara, Yumiko; Nishihara, Yasuhiro; and Yamamoto, Hidetoshi, 4,492,787, Cl. 525-53.000.

Yamamoto, Katsuichi, to Diesel Kiki Co., Ltd. Variable-displacement vane compressor with one or more ferromagnetic vanesus4,492,540, Cl. 418-23.000.

Yamamoto, Noboru; Okuda, Ryoichi; and Makino, Tomoatsu, to Nippondenso Co., Ltd. Ignition system for internal combustion enginesus4,492,213, Cl. 123-644.000.

Yamamoto, Ryoichi: *See*—
Ishihara, Shoichi; Yonezo, Hiroshi; and Yamamoto, Ryoichi, 4,492,725, Cl. 428-69.000.

Yamamoto, Takeshi; Suzuki, Norihito; Aoki, Toru; and Iwaki, Akio, to Konishiroku Photo Industry Co., Ltd. Support for lithographic printing plateus4,492,740, Cl. 428-629.000.
Yamamoto, Yasuhiro: *See*—
Ito, Yasuro; Higuchi, Yoshiro; Tsuji, Masanori; Yamamoto, Yasuhiro; Tada, Hiroshi; Karoba, Kenji; Nakamura, Takashi; and Tomikawa, Koichi, 4,492,478, Cl. 366-28.000.
Yamamoto, Yasuo; and Kanno, Isao, to Sanshin Kogyo Kabushiki Kaisha. Over-revolution preventing apparatus for internal combustion engineus4,492,197, Cl. 123-630.000.
Yamanaka, Teruo; Hayakawa, Kizo; Suzuki, Yasuhiko; and Eseki, Michiru. Apparatus for detecting combustion timingus4,492,114, Cl. 73-117.300.
Yamashita, Hiroshi: *See*—
Hasegawa, Takashi; Tsuchihashi, Koji; and Yamashita, Hiroshi, 4,492,771, Cl. 302-420.000.
Yamashita, Mitsugu: *See*—
Koshii, Taro; and Yamashita, Mitsugu, 4,492,775, Cl. 521-77.000.
Yamashita, Rikihiro; and Satomichi, Osamu, to Mitsubishi Jukogyo Kabushiki Kaisha. Automatic toll-ticket issuing apparatusus4,493,103, Cl. 382-1.000.
Yamato, Akihiro: *See*—
Hasegawa, Shunpei; and Yamato, Akihiro, 4,492,206, Cl. 123-491.000.
Yamazaki, Shunpei. Method of making non-crystalline semiconductor layerus4,492,716, Cl. 427-38.000.
Yanagiuchi, Shigenobu: *See*—
Hashimoto, Shintaro; Morimoto, Masafumi; Nakanishi, Tosaku; Yoshida, Hideo; and Yanagiuchi, Shigenobu, 4,493,050, Cl. 364-900.000.
Yapp, Robert E.; and Smith, John D., to Massey-Ferguson Services N.V. Tractor hydraulic control systemus4,492,080, Cl. 60-388.000.
Yaskawa Electric Mfg. Co., Ltd.: *See*—
Goto, Tadahiko; Ouiki, Kiyoshi; Murakami, Satoshi; Yokooji, Mitsunori; Andou, Norio; and Shimojyo, Norio, 4,492,906, Cl. 318-488.000.
Yasuda, Haruo; Yoshida, Kunihiko; Iwai, Yasuro; and Mizutani, Takayuki, to Ibiden Co., Ltd. Carbon rod assembly for arc gouging and blasting of metallic articleus4,492,850, Cl. 219-145.210.
Yasuzo, Kirita: *See*—
Kenji, Kubota; Kouji, Fukunaga; Yasuzo, Kirita; and Hidemune, Naito, 4,492,531, Cl. 417-279.000.
Yates, Harlan W. Actuator for mechanical apparatusus4,492,150, Cl. 92-13.600.
Yatskov, Nikolai V.: *See*—
Sandulyak, Alexandr V.; Garaschenko, Vyacheslav I.; and Yatskov, Nikolai V., 4,492,633, Cl. 210-223.000.
Yazawa, Akira, to Nippon Electric Co., Ltd. Counter having a plurality of cascaded flip-flopsus4,493,095, Cl. 377-107.000.
Yazu, Shuji: *See*—
Hara, Akio; Miyake, Masaya; and Yazu, Shuji, 4,492,846, Cl. 219-121.0LC.
Yip, Kwok L.: *See*—
Benton, Martin E.; Lavallee, Pierre A.; Araghi, Mehdi N.; Daniele, Joseph J.; and Yip, Kwok L., 4,492,435, Cl. 350-360.000.
Yokooji, Mitsunori: *See*—
Goto, Tadahiko; Ouiki, Kiyoshi; Murakami, Satoshi; Yokooji, Mitsunori; Andou, Norio; and Shimojyo, Norio, 4,492,906, Cl. 318-488.000.
Yokoyama, Hideo: *See*—
Tomita, Seiji; and Yokoyama, Hideo, 4,492,995, Cl. 360-96.500.
Yonemaru, Ken-Ichi: *See*—
Tsuda, Masaya; Yonemaru, Ken-Ichi; and Masuda, Yoshikazu, 4,492,977, Cl. 358-75.000.
Yoneno, Hiroshi: *See*—
Ishihara, Shoichi; Yoneno, Hiroshi; and Yamamoto, Ryoichi, 4,492,725, Cl. 428-69.000.
Yoo, Jin S.; and Radlowski, Cecelia A., to Atlantic Richfield Company. Preparative process for alkaline earth metal, aluminum-containing spinels and their use for reducing the sulfur oxide content of gasesus4,492,677, Cl. 423-244.000.
Yoo, Jin S.; and Radlowski, Cecelia A., to Atlantic Richfield Company. Preparative process for alkaline earth metal, aluminum-containing spinels and their use for reducing sulfur oxide content in gasesus4,492,678, Cl. 423-244.000.
Yoshida, Hideo: *See*—
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Yoshida, Hiroshi: *See*—
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Yoshida, Isao; Okabe, Takeaki; Katsuda, Mineo; Nagata, Minoru; Masuhara, Toshiaki; Ashikawa, Kazutoshi; Kato, Hideaki; Ito, Mitsuo; Obtaka, Shigeo; Minato, Osamu; and Sakai, Yoshio, to Hitachi, Ltd. DMOS With gate protection diode formed over base regionus4,492,974, Cl. 357-23.000.
Yoshida Kogyo K. K.: *See*—
Nogai, Akira, 4,492,547, Cl. 425-111.000.
Yoshida, Kunihiko: *See*—
Yasuda, Haruo; Yoshida, Kunihiko; Iwai, Yasuro; and Mizutani, Takayuki, 4,492,850, Cl. 219-145.210.
Yoshida, Minoru: *See*—
Suzuki, Atsushi; Yamada, Hiromichi; Uchida, Yoko; Kohno, Hideki; and Yoshida, Minoru, 4,492,869, Cl. 250-367.000.
Yoshida, Seietsu: *See*—
Kawai, Yukio; Ogawa, Toshihisa; and Yoshida, Seietsu, 4,492,199, Cl. 123-440.000.
Yoshida, Shigeru; Kosaki, Minoru; and Horie, Masakatsu, to Fujitsu Limited. System for decoding compressed datous4,492,983, Cl. 358-260.000.
Yoshiie, Kazue: *See*—
Akazawa, Hiroyuki; and Yoshiie, Kazue, 4,492,484, Cl. 400-248.000.
Yoshikawa, Hirofumi: *See*—
Kasai, Tamaki; Yoshikawa, Hirofumi; Yamaguchi, Takashi; Suzuki, Kenji; and Ohta, Yoshikatsu, 4,492,719, Cl. 427-171.000.
Yoshizoe, Teruhide: *See*—
Osada, Noboru; Kanamori, Akira; Kimura, Takashi; Moroto, Seiro; Horie, Hideo; and Yoshizoe, Teruhide, 4,492,991, Cl. 360-70.000.
Yotsui, Yasuhiko: *See*—
Suzuki, Takashi; Murao, Mikio; Uchida, Masahiro; Kumagai, Chikanori; and Yotsui, Yasuhiko, 4,492,570, Cl. 432-106.000.
Young, Charles J.: *See*—
Bachman, Brett L.; Nealon, James T.; and Young, Charles J., 4,493,025, Cl. 364-200.000.
Baxter, Ward, II; Clancy, Gerald F.; Gruner, Ronald H.; Mandia, Craig J.; Bachman, Brett L.; Redfield, Stephen R.; Coder, William N.; Jones, Thomas M.; Houseman, David L.; Young, Charles J.; and Hauffele, Steven M., 4,493,034, Cl. 364-200.000.
Young, Lawrence C., to Double E Company Inc. Positive retracting mechanical expansible shaftus4,492,346, Cl. 242-72.100.
Young, Lock K., to Harris Corporation. Symmetrically-configured variable ratio power combiner using septum polarizer and quarter-wave plateus4,492,938, Cl. 333-111.000.
Young, Raymond H.; Morris, Horton H.; and Brooks, Robert L., to Freeport Kaolin Company. Method of treating clay to improve its whitenessus4,492,628, Cl. 209-5.000.
Youssef, Nabil N. Wild bee nesting domicilesus4,491,994, Cl. 6-1.000.
Yuda, Lawrence F. Robotic gripper operator mechanismus4,492,400, Cl. 294-88.000.
Yueh, William R., to General Dynamics, Pomona Division. Noise-adaptive, predictive proportional navigation (NAPPN) guidance schemeus4,492,352, Cl. 244-3.150.
Yutaka, Otobe, to Honda Giken Kogyo Kabushiki Kaisha. Fuel supply control method for an internal combustion engine equipped with a supercharger, having a fail-safe function for abnormality in intake passage pressure sensor meansus4,492,203, Cl. 123-478.000.
Zajac, Edward: *See*—
McCabe, Barkman C.; and Zajac, Edward, 4,492,083, Cl. 60-641.500.
Zajicek, Ernst: *See*—
Lugscheider, Walter; Kilches, Helmut D.; Riegler, Ernst; and Zajicek, Ernst, 4,493,088, Cl. 373-22.000.
Zak, Paul A.: *See*—
Trotta, Patrick A.; and Zak, Paul A., 4,492,763, Cl. 501-40.000.
Zannoni, Cristiano, to Phillips Petroleum Company. Apparatus and method for drying particulate materialus4,492,043, Cl. 34-39.000.
Zapletal, Henry; Wentzek, Horst P.; and Chembakuffery, George M., to Leggett & Platt, Incorporated. Coil spring assembly machinesus4,492,298, Cl. 198-409.000.
Zaragoza, Antoine; and Zaragoza, Raymond. Scraper to rough down the surfaces of a coated finishous4,492,011, Cl. 29-81.00G.
Zaragoza, Raymond: *See*—
Zaragoza, Antoine; and Zaragoza, Raymond, 4,492,011, Cl. 29-81.00G.
Zavodny, Eugene N., to Maremont Corporation. Acceleration sensitive compression headus4,492,290, Cl. 188-322.140.
Zavodny, Arthur; and Krysicki, Jerzy, to Keystone Camera Corporation. Camera having film feed indicatorus4,492,446, Cl. 354-215.000.
Zelenski, Jerome J.: *See*—
Witmore, Ronald K.; and Zelenski, Jerome J., 4,493,073, Cl. 370-14.000.
Ziegler, Michael L.; and Druke, Michael B., to Data General Corporation. Dual port cache with interleaved read accesses during alternate half-cycles and simultaneous writingsus4,493,033, Cl. 364-200.000.
Zimmer, John. Apparatus for composting refuseus4,492,156, Cl. 100-229.000.
Zimmermann, Urs: *See*—
Mallea-Herrero, Jose; Leroy, Daniel; Zimmermann, Urs; and Charlat, Patrice, 4,492,541, Cl. 418-23.000.
Zimmern, Bernard. Global worm machine with seizure-preventing cellsus4,492,542, Cl. 418-46.000.
Zimmerschied, Klaus; and Rimo, Helmut, to Hoechst Aktiengesellschaft. Process for the preparation of a polymer dispersionus4,492,780, Cl. 524-45.000.
Zinke, Horst: *See*—
Maul, Radolf; Otto, Eberhard; and Zinke, Horst, 4,492,661, Cl. 260-976.000.
Ziv, Avraham; and Tanaka, Akira, to American Safety Equipment Corporation. Protractive force responsive safety belt locking apparatusus4,492,348, Cl. 242-107.200.
Zollner, Rainer, to Grundig E.M.V. Housing for tape cassettesus4,492,351, Cl. 242-197.000.
Zolnowsky, John E.: *See*—
MacGregor, Douglas B.; Moyer, William C.; Mills, Marvin A., Jr.; and Zolnowsky, John E., 4,493,035, Cl. 364-200.000.
Zoltner, John D., to Xerox Corporation. Apparatus for dispensing toner particles and sealing the storage chamber thereofus4,492,321, Cl. 222-410.000.
Zurkinden, Pierre. Sports ground covering with expanded clay particlesus4,492,728, Cl. 428-240.000.
Zverina, Karel; and Kroupa, Petr, to Ceskoslovenska akademie ved. Spray-coating materialus4,492,766, Cl. 501-104.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF JANUARY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Berman, Joel; and Weinreich, Stephen D., to Berman, Joel. Window shade roller assemblycuRe. 31,793, Cl. 160-309.000.

Burgdorf, Jochen; Klose, Karl-Heinz; and Storzel, Karl, to ITT Industries, Inc. Spot-type disc brakecuRe. 31,794, Cl. 188-73.350.

Colomer, Pierre, to Interfiltre S.A. Filter with automatic cleaningcuRe. 31,792, Cl. 134-181.000.

Dice, Harry E., Sr., to Hardesty, George K. C., a part interest. Pick-proof lockcuRe. 31,791, Cl. 70-421.000.

Hardesty, George K. C.: *See*—
Dice, Harry E., Sr., Re. 31,791, Cl. 70-421.000.

Interfiltre S.A.: *See*—
Colomer, Pierre, Re. 31,792, Cl. 134-181.000.

Isobe, Mitsuhide: *See*—
Nagano, Masashi; and Isobe, Mitsuhide, Re. 31,796, Cl. 474-82.000.

ITT Industries, Inc.: *See*—
Burgdorf, Jochen; Klose, Karl-Heinz; and Storzel, Karl, Re. 31,794, Cl. 188-73.350.

Kabushiki Kaisha Genvac: *See*—
Sakuma, Shinzo; and Warabi, Junichi, Re. 31,797, Cl. 200-144.00B.

Kabushiki Kaisha Meidensha: *See*—
Sakuma, Shinzo; and Warabi, Junichi, Re. 31,797, Cl. 200-144.00B.

Klose, Karl-Heinz: *See*—
Burgdorf, Jochen; Klose, Karl-Heinz; and Storzel, Karl, Re. 31,794, Cl. 188-73.350.

Nagano, Masashi; and Isobe, Mitsuhide, to Shimano Industrial Company Limited. Derailleur for bicycles and similar vehiclescuRe. 31,796, Cl. 474-82.000.

Reed, Martin R.: *See*—
Weber, Franz K.; and Reed, Martin R., Re. 31,798, Cl. 362-352.000.

Rohrbacher, Herbert E. Apparatus for rolling chain link fencecuRe. 31,795, Cl. 242-54.00R.

Sakuma, Shinzo; and Warabi, Junichi, to Kabushiki Kaisha Meidensha; and Kabushiki Kaisha Genvac. Arc-shield supporting structure of a vacuum power interruptercuRe. 31,797, Cl. 200-144.00B.

Shimano Industrial Company Limited: *See*—
Nagano, Masashi; and Isobe, Mitsuhide, Re. 31,796, Cl. 474-82.000.

Storzel, Karl: *See*—
Burgdorf, Jochen; Klose, Karl-Heinz; and Storzel, Karl, Re. 31,794, Cl. 188-73.350.

Warabi, Junichi: *See*—
Sakuma, Shinzo; and Warabi, Junichi, Re. 31,797, Cl. 200-144.00B.

Weber, Franz K.; and Reed, Martin R. Knockdown shade assembly for lighting fixturecuRe. 31,798, Cl. 362-352.000.

Weinreich, Stephen D.: *See*—
Berman, Joel; and Weinreich, Stephen D., Re. 31,793, Cl. 160-309.000.

LIST OF DESIGN PATENTEES

A. Ahlstrom Osakeyhtio: *See*—
Wirkkala, Veli T., 277,079, Cl. D9-378.000.

AB Perma System: *See*—
Brolin, Hans R., 277,062, Cl. D6-580.000.

American Greetings Corporation: *See*—
Shaffer, Ralph; and Davidson, William, 277,121, Cl. D21-159.000.
Shaffer, Ralph; and Davidson, William, 277,122, Cl. D21-159.000.
Shaffer, Ralph; and Davidson, William, 277,123, Cl. D21-159.000.
Shaffer, Ralph; and Davidson, William, 277,124, Cl. D21-99.000.
Shaffer, Ralph; and Davidson, William, 277,125, Cl. D21-159.000.

Aoija, Dieudonne G., to U.S. Philips Corporation. Portable radio receivercu277,099, 1-8-85, Cl. D14-71.000.

Arch Crown Tags, Inc.: *See*—
Liebman, Norman, 277,115, Cl. D20-27.000.

Arend, Rene, to Restaurant Technology, Inc. Formed meat productcu277,045, 1-8-85, Cl. D1-199.000.

Ball, Ralph V.; and Pape, John E., to J & J Recreation, Inc. Motorized bumper boatcu277,095, 1-8-85, Cl. D12-307.000.

Baron, Peter. Belt bucklecu277,051, 1-8-85, Cl. D2-394.000.

Baron, Peter. Frame belt buckleCu277,052, 1-8-85, Cl. D2-394.000.

Barrett, Bernard R. Kite planecu277,117, 1-8-85, Cl. D21-89.000.

Biesecker, Frederick N., to Drug Plastics & Glass Company. Bottlecu277,076, 1-8-85, Cl. D9-355.000.

Blais, Cecile; Liechti, Willy; and Broderick, Elizabeth. Perfume bottlecu277,075, 1-8-85, Cl. D9-310.000.

Boone, Sheila T. Facial pillowcu277,059, 1-8-85, Cl. D6-601.000.

Broderick, Elizabeth: *See*—
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Brolin, Hans R., to AB Perma System. Worm gear unit for venetian blinds or the likecu277,062, 1-8-85, Cl. D6-580.000.

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90.38 4,492,189
185 A 4,492,190
198 F 4,492,191
4,492,192
276 4,492,193
4,492,194
339 4,492,195
357 4,492,196
413 4,492,198
440 4,492,199
450 4,492,200
470 4,492,201
478 4,492,202
4,492,203
489 4,492,204
4,492,205
491 4,492,206
527 4,492,207
4,492,208
568 4,492,209
4,492,210
585 4,492,211
590 4,492,212
630 4,492,197
644 4,492,213

CLASS 126
24 R 4,492,214

CLASS 126
9 R 4,492,215
21 A 4,492,216
39 B 4,492,217
96 4,492,218
427 4,492,219

CLASS 127
48 4,492,601

CLASS 128
17 4,492,220
24.1 4,492,221
25 R 4,492,222
57 4,492,223
75 4,492,224
87 R 4,492,225
92 BC 4,492,226
165 4,492,227
204.17 4,492,228
303 R 4,492,229
303.1 4,492,230
303.17 4,492,231
325 4,492,232
421 4,492,233
577 4,492,234
705 4,492,235
781 4,492,236

CLASS 130
27 R 4,492,237

CLASS 131
94 4,492,238
270 4,492,239
336 4,492,240

CLASS 132
37 R 4,492,241
53 4,492,242

CLASS 133
8 A 4,492,243

CLASS 134
181 Re.31,792

CLASS 136
212 4,492,809
255 4,492,810
4,492,811
256 4,492,812
4,492,813

CLASS 137
38 4,492,244
82 4,492,245
85 4,492,246
119 4,492,247
236 R 4,492,248
515 4,492,249
590 4,492,250
596.16 4,492,251
625.43 4,492,252
849 4,492,253

CLASS 139
11 4,492,254
4,492,255
92 4,492,256
304 4,492,257

CLASS 141
1 4,492,258
198 4,492,259

CLASS 148
5 R 4,492,260

CLASS 148
11.5 C 4,492,602
15.5 4,492,604
31.5 4,492,603
174 4,492,605

CLASS 156
79 4,492,606
242 4,492,607
467 4,492,608
507 4,492,609
643 4,492,610

CLASS 159
126 4,492,262
228 4,492,263
309 Re.31,793
319 4,492,261

CLASS 162
358 4,492,611
360 R 4,492,612

CLASS 164
292 4,492,264
493 4,492,265

CLASS 165
104.26 4,492,266
104.32 4,492,267
166 4,492,268
172 4,492,269

CLASS 165
338 4,492,270

CLASS 172
43 4,492,271
178 4,492,272
520 4,492,273

CLASS 174
50.64 4,492,814
78 4,492,815
92 4,492,816
152 R 4,492,817

CLASS 178
19 4,492,274
46 4,492,275
61 4,492,276
329 4,492,277
410 4,492,278

CLASS 177
45 4,492,279
211 4,492,280
213 4,492,281

CLASS 178
18 4,492,818
4,492,819

CLASS 179
5 P 4,492,820
18 FA 4,492,821
81 B 4,492,824
81 R 4,492,822
4,492,823
111 R 4,492,825
115.5 PS 4,492,826
115.5 SF 4,492,827

CLASS 180
68.1 4,492,282
148 4,492,283
219 4,492,284

CLASS 181
114 4,492,285

CLASS 182
93 4,492,286

CLASS 188
33 4,492,287

CLASS 187
29 R 4,492,288

CLASS 188
73.35 Re.31,794
79.5 GE 4,492,289
322.14 4,492,290
377 4,492,291

CLASS 192
67 R 4,492,292
89 B 4,492,293

CLASS 198
25 C 4,492,294

CLASS 194
4 C 4,492,295
100 A 4,492,296

CLASS 196
345 4,492,297
409 4,492,298
417 4,492,299
443 4,492,300
472 4,492,301
671 4,492,302
750 4,492,303
837 4,492,304

CLASS 200
5 A 4,492,829
5 R 4,492,828
6 A 4,492,830
50 A 4,492,831
52 R 4,492,832
61.78 4,492,833
84 R 4,492,834
144 B Re.31,797
4,492,835

4,492,837
144 R 4,492,836
159 A 4,492,838

CLASS 203
39 4,492,613

CLASS 204
1 T 4,492,614
28 4,492,615
33 4,492,616
73 R 4,492,617
152 4,492,618
158 R 4,492,619
192 R 4,492,620
261 4,492,621
403 4,492,622

CLASS 205
210 4,492,305
216 4,492,306
449 4,492,307
610 4,492,308

CLASS 208
10 4,492,623
78 4,492,624
131 4,492,625
251 H 4,492,626

CLASS 209
3 4,492,627
5 4,492,628
332 4,492,629

CLASS 210
117 4,492,630
127 4,492,631
168 4,492,632
223 4,492,633
398 4,492,634
519 4,492,635
706 4,492,636
711 4,492,637
728 4,492,638
746 4,492,639

CLASS 211
65 4,492,309

CLASS 212
191 4,492,310
264 4,492,311
4,492,312

CLASS 215
1 C 4,492,313

CLASS 219
10.55 R 4,492,839
10.57 4,492,840
69 R 4,492,841
85 M 4,492,842
121 LC 4,492,843
4,492,844
4,492,846
121 P 4,492,845
124.34 4,492,847
127 4,492,848
137 WM 4,492,849
145.21 4,492,850
201 4,492,851
405 4,492,852
432 4,492,853
521 4,492,854

CLASS 220
71 4,492,314

CLASS 221
186 4,492,315
202 4,492,316

CLASS 223
39 4,492,317
79 4,492,318
108 4,492,319
398 4,492,320
410 4,492,321
420 4,492,322
465 R 4,492,323
529 4,492,324

CLASS 225
99 4,492,325

CLASS 234
160 4,492,326

CLASS 236
177 4,492,327
197 4,492,328

CLASS 237
10 4,492,329
67 4,492,330

CLASS 239
2.5 EC 4,492,331

15 4,492,332
22 4,492,333
69 4,492,334

CLASS 232
35 4,492,335

CLASS 235
458 4,492,855

CLASS 236
20 A 4,492,336

CLASS 239
81 4,492,337
102 4,492,338
230 4,492,339
265.25 4,492,340
686 4,492,341

CLASS 241
67 4,492,342
95 4,492,343

CLASS 242
1 4,492,344
34 R Re.31,795
67.3 R 4,492,345
72.1 4,492,346
84.2 R 4,492,347
107.2 4,492,348
107.4 A 4,492,349
118.4 4,492,350
197 4,492,351

CLASS 244
3.15 4,492,352
12.4 4,492,353

CLASS 248
163.1 4,492,354
206.5 4,492,355
346 4,492,356
674 4,492,357

CLASS 249
18 4,492,358

CLASS 250
201 4,492,856
211 R 4,492,857
214 P 4,492,858
216 4,492,859
227 4,492,860
237 G 4,492,861
255 4,492,862
256 4,492,863
259 4,492,864
265 4,492,865
305 4,492,866
341 4,492,867
345 4,492,868
367 4,492,869
398 4,492,870
459.1 4,492,871
484.1 4,492,872
492.3 4,492,873

CLASS 251
1 A 4,492,359
129 4,492,360
356 4,492,361
363 4,492,362

CLASS 252
46.3 4,492,640
48.4 4,492,641
49.6 4,492,642
311 4,492,643
522 A 4,492,644
522 R 4,492,645
528 4,492,646
573 4,492,647
582 4,492,648
630 4,492,649

CLASS 254
394 4,492,363

CLASS 256
47 4,492,364

CLASS 260
112.5 R 4,492,650
112.5 S 4,492,651
429.2 4,492,655
453 RZ 4,492,656
453.7 4,492,657
455 A 4,492,658
925 4,492,659
966 4,492,660
976 4,492,661

CLASS 264
40.1 4,492,662
45.4 4,492,663
46.2 4,492,664
65 4,492,665

261 4,492,666

CLASS 266
220 4,492,363

CLASS 267
140.1 4,492,366

CLASS 269
8 4,492,367
32 4,492,368
80 4,492,369
182 4,492,370

CLASS 271
21 4,492,371

CLASS 272
1 C 4,492,372
61 4,492,373
114 4,492,374
134 4,492,375
138 4,492,376

CLASS 273
84 R 4,492,377
142 HA 4,492,378
143 R 4,492,379
411 4,492,380

CLASS 277
2 4,492,381
12 4,492,382
34 4,492,383
237 R 4,492,384

CLASS 280
7.13 4,492,385
507 4,492,386
624 4,492,387
651 4,492,388
704 4,492,389

CLASS 281
31 4,492,390

CLASS 285
114 4,492,391
119 4,492,392
236 4,492,393

CLASS 290
40 B 4,492,874
53 4,492,875

CLASS 292
64 4,492,394
216 4,492,395
228 4,492,396
341.18 4,492,397

CLASS 293
120 4,492,398

CLASS 294
74 4,492,399
88 4,492,400
101 4,492,401
103 CG 4,492,402

CLASS 296
65 R 4,492,403
97 J 4,492,404
146 4,492,405
217 4,492,406

CLASS 297
78 4,492,407
344 4,492,408
440 4,492,409

CLASS 299
43 4,492,410

CLASS 303
6 C 4,492,411
32 4,492,412
92 4,492,413
116 4,492,414

CLASS 307
66 4,492,876
95 4,492,877
127 4,492,878
248 4,492,879
252 N 4,492,880
270 4,492,881
497 4,492,882
571 4,492,883

CLASS 310
45 4,492,884
62 4,492,885
68 C 4,492,886
68 R 4,492,887
71 4,492,888
87 4,492,889
184 4,492,890
328 4,492,891

345 4,492,892

CLASS 312
9 4,492,417
220 4,492,418

CLASS 313
318 4,492,893
414 4,492,894

CLASS 318
82 4,492,895
153 4,492,896
219 4,492,897
248 4,492,898
308 4,492,899
411 4,492,900

CLASS 318
83 4,492,901
254 4,492,902
341 4,492,903
444 4,492,904
470 4,492,905
488 4,492,906
586 4,492,907
663 4,492,908
696 4,492,909
772 4,492,910
779 4,492,911

CLASS 320
6 4,492,912

CLASS 323
282 4,492,913
313 4,492,914

CLASS 324
58.5 R 4,492,915
60 CD 4,492,916
77 A 4,492,917
83 R 4,492,918
127 4,492,919
146 4,492,920
204 4,492,921
207 4,492,922
4,492,923
330 4,492,924
418 4,492,925

CLASS 329
205 R 4,492,926

CLASS 330
9 4,492,927
126 4,492,928
253 4,492,929
284 4,492,930
294 4,492,931
300 4,492,932

CLASS 331
66 4,492,933
117 R 4,492,934
135 4,492,935

CLASS 332
19 4,492,936

CLASS 333
103 4,492,937
111 4,492,938
116 4,492,939
194 4,492,940

CLASS 336
13 4,492,941
202 4,492,942
213 4,492,943

CLASS 336
69 4,492,944

CLASS 337
229 4,492,945
365 4,492,946

CLASS 338
22 R 4,492,947
25 4,492,948
114 4,492,949
162 4,492,950
316 4,492,951

CLASS 339
18 C 4,492,419
22 R 4,492,420
59 R 4,492,421
95 R 4,492,422
112 L 4,492,423

CLASS 340
52 F 4,492,952
347 AD 4,492,953
347 DA 4,492,954
636 4,492,955
723 4,492,956
777 4,492,957

825.25 4,492,958
825.56 4,492,959

CLASS 343
5 DD 4,492,960
7.3 4,492,961
389 4,492,962
464 4,492,963
792.5 4,492,964

CLASS 346
1.1 4,492,965
33 A 4,492,966
135.1 4,492,967
140 R 4,492,968
4,492,969
160 4,492,970

CLASS 349
96.10 4,492,424
96.14 4,492,425
96.15 4,492,426
96.20 4,492,427
96.30 4,492,428
257 4,492,429
310 4,492,431
338 4,492,432
339 R 4,492,433
356 4,492,434
360 4,492,435
395 4,492,436
428 4,492,437
432 4,492,438
4,492,439
445 4,492,440
516 4,492,441
631 4,492,430

CLASS 353
10 4,492,442

CLASS 354
121 4,492,443
4,492,444
180 4,492,445
215 4,492,446
312 4,492,447
406 4,492,448
407 4,492,449
412 4,492,450
416 4,492,451
430 4,492,452
479 4,492,453

CLASS 355
1 4,492,454
3 DD 4,492,456
3 R 4,492,455
38 4,492,457
4,492,458
43 4,492,459
133 4,492,460

CLASS 356
4.5 4,492,464
38 4,492,461
39 4,492,462
73.1 4,492,463
152 4,492,465
334 4,492,466
336 4,492,467
347 4,492,468
361 4,492,469
372 4,492,470
375 4,492,471
376 4,492,472
386 4,492,473
404 4,492,474
427 4,492,475
428 4,492,476
430 4,492,477

CLASS 357
15 4,492,971
22 4,492,972
23 4,492,973
4,492,974
76 4,492,975

CLASS 358
11 4,492,976
75 4,492,977
134 4,492,978
153 4,492,979
213 4,492,980
217 4,492,981
228 4,492,982
260 4,492,983
289 4,492,984
293 4,492,985
330 4,492,986
332 4,492,987
336 4,492,988

CLASS 360
32 4,492,989
4,492,990
70 4,492,991

73 4,492,992
74.5 4,492,993
85 4,492,994
96.5 4,492,995
99 4,492,996
113 4,492,997
132 4,492,998

CLASS 361
21 4,492,999
92 4,493,000
4,493,001
93 4,493,002
119 4,493,003
120 4,493,004
124 4,493,005
4,493,006
307 4,493,007
341 4,493,008
4,493,009
385 4,493,010

CLASS 362
96 4,493,011
225 4,493,012
307 4,493,013
352 Re.31,799

CLASS 363
14 4,493,014
63 4,493,015
126 4,493,016
132 4,493,017
145 4,493,018

CLASS 364
169 4,493,032
200 4,493,019
4,493,020
4,493,021
4,493,022
4,493,023
4,493,024
4,493,025
4,493,026
4,493,027
4,493,028
4,493,029
4,493,030
4,493,031
4,493,033
4,493,034
4,493,035
4,493,036
405 4,493,037
4,493,038
414 4,493,039
474 4,493,041
477 4,493,040
507 4,493,042
569 4,493,043
579 4,493,044
580 4,493,045
717 4,493,046
724 4,493,047
754 4,493,048
900 4,493,049
4,493,050
4,493,051
4,493,052
4,493,053

CLASS 365
36 4,493,054
78 4,493,055
149 4,493,056
182 4,493,057
189 4,493,058
190 4,493,059
238 4,493,060

CLASS 366
28 4,492,478

CLASS 367
23 4,493,061
32 4,493,062
77 4,493,063
92 4,493,064
96 4,493,065
178 4,493,066
189 4,493,067

CLASS 368
109 4,492,479

CLASS 369
44 4,493,068
75.1 4,493,069
77.2 4,493,070
146 4,493,071
271 4,493,072

CLASS 370
14 4,493,073
119 4,493,074

CLASS 371
10 4,493,073
11 4,493,076
25 4,493,077
4,493,078
27 4,493,079
37 4,493,080
38 4,493,081
43 4,493,082
66 4,493,083
67 4,493,084
CLASS 372
19 4,493,085
21 4,493,086
64 4,493,087
CLASS 373
22 4,493,088
130 4,493,089
CLASS 374
33 4,492,480
CLASS 375
4 4,493,090
30 4,493,091
36 4,493,092
110 4,493,093
119 4,493,094
CLASS 376
405 4,492,667
440 4,492,668
CLASS 377
107 4,493,095
CLASS 378
99 4,493,096
137 4,493,097
146 4,493,098
CLASS 381
2 4,493,102
14 4,493,099
43 4,493,100
93 4,493,101
CLASS 383
1 4,493,103
13 4,493,104
21 4,493,105
41 4,493,106
58 4,493,107
61 4,493,108
CLASS 385
7 4,493,109
27 4,493,110
CLASS 394
228 4,492,481
463 4,492,415
474 4,492,416
CLASS 400
120 4,492,482
208 4,492,483
248 4,492,484
697.1 4,492,485
CLASS 406
131 4,492,486
CLASS 408
79 4,492,487
CLASS 409
113 4,492,488
319 4,492,489
CLASS 414
108 4,492,490
CLASS 415
119 4,492,491
160 4,492,492
172 4,492,493
264 4,492,494
294 4,492,495
303 4,492,496
CLASS 416
153 4,492,497
CLASS 417
115 R 4,492,498
CLASS 418
32 4,492,499
CLASS 431
5 4,492,500
CLASS 434
22 4,492,501
4,492,502
152 4,492,503
273 4,492,504
304 4,492,508
387 4,492,509
454 4,492,505
463 4,492,506
475 4,492,507
729 4,492,513
733 4,492,510
744 A 4,492,511
4,492,512
CLASS 435
1 4,492,514
53 T 4,492,515
4,492,516
139 4,492,517
142 4,492,518
145 4,492,519
150 4,492,520
CLASS 436
193 A 4,492,521
241 R 4,492,522
CLASS 437
13 4,492,523
18 4,492,524
34 4,492,525
45 4,492,526
222 4,492,527
241 4,492,528
242 4,492,529
271 4,492,530
279 4,492,531
380 4,492,532
372 4,492,533
386 4,492,534
394 4,492,535
401 4,492,536
404 4,492,537
477 4,492,538
CLASS 438
19 4,492,539
23 4,492,540
4,492,541
46 4,492,542
55 4,492,543
107 4,492,544
149 4,492,545
201 4,492,546
CLASS 419
5 4,492,669
9 4,492,670
48 4,492,671
CLASS 420
448 4,492,672
CLASS 422
85 4,492,673
101 4,492,674
187 4,492,675
CLASS 423
210 4,492,676
244 4,492,677
4,492,678
268 4,492,679
321 S 4,492,680
345 4,492,681
626 4,492,682
CLASS 424
19 4,492,684
28 4,492,685
61 4,492,686
174 4,492,687
180 4,492,688
200 4,492,689
4,492,690
244 4,492,691
246 4,492,692
4,492,693
4,492,694
4,492,695
248.4 4,492,697
249 4,492,696
250 4,492,698
4,492,699
4,492,700
251 4,492,701
256 4,492,702
266 4,492,703
269 4,492,704
270 4,492,705
4,492,706
273 B 4,492,708
273 R 4,492,707
4,492,709
274 4,492,710
285 4,492,711
309 4,492,683
CLASS 435
72 S 4,492,557
111 4,492,547
113 4,492,548
131.1 4,492,549
142 4,492,550
144 4,492,551
218 4,492,552
308 4,492,553
383 4,492,554
548 4,492,555
549 4,492,556
CLASS 436
59 4,492,712
231 4,492,713
602 4,492,714
646 4,492,715
CLASS 437
38 4,492,716
96 4,492,717
160 4,492,718
171 4,492,719
213.3 4,492,720
226 4,492,721
4,492,722
CLASS 438
7 4,492,723
40 4,492,724
69 4,492,725
192 4,492,726
216 4,492,727
240 4,492,728
283 4,492,729
328 4,492,730
362 4,492,731
404 4,492,732
412 4,492,733
424.2 4,492,734
4,492,735
446 4,492,736
552 4,492,737
611 4,492,738
4,492,739
629 4,492,740
CLASS 439
34 4,492,741
104 4,492,742
111 4,492,743
217 4,492,744
CLASS 438
67 4,492,745
71 4,492,746
96 4,492,747
175 4,492,748
180 4,492,749
494 4,492,750
CLASS 431
4 4,492,558
12 4,492,559
4,492,560
128 4,492,561
177 4,492,562
264 4,492,563
328 4,492,564
CLASS 432
11 4,492,565
14 4,492,566
30 4,492,567
4,492,568
72 4,492,569
106 4,492,570
225 4,492,571
263 4,492,572
CLASS 433
11 4,492,573
81 4,492,574
88 4,492,575
90 4,492,576
201 4,492,577
213 4,492,578
222 4,492,579
CLASS 434
127 4,492,580
128 4,492,581
169 4,492,582
CLASS 435
7 4,492,751
4,492,752
17 4,492,753
28 4,492,754
94 4,492,755
253 4,492,756
280 4,492,757
317 4,492,758
CLASS 436
72 4,492,759
503 4,492,760
519 4,492,761
537 4,492,762
CLASS 446
250 4,492,057
462 4,492,058
CLASS 455
79 4,493,111
123 4,493,112
606 4,493,113
617 4,493,114
CLASS 464
99 4,492,583
CLASS 474
82 Re.31,796
CLASS 501
40 4,492,763
87 4,492,764
97 4,492,765
104 4,492,766
CLASS 502
35 4,492,767
111 4,492,768
262 4,492,769
304 4,492,770
420 4,492,771
CLASS 518
713 4,492,772
4,492,773
4,492,774
CLASS 523
77 4,492,775
CLASS 525
108 4,492,776
115 4,492,777
137 4,492,778
138 4,492,779
CLASS 534
45 4,492,780
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	199	277,045		575	277,061		378	277,078		209	277,094			277,110	D22—	1	277,126
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For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced in the *Official Gazette* at 1039 O.G. 142 on Feb. 21, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983.

The current schedule of PCT fees is as follows:

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Apr. 13, 1984.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Jan. 3, 1985 and was announced in the *PCT Gazette* at No. 26/1984 page 3241 on Nov. 8, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1985 and were announced in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

The current schedule of PCT fees is as follows:

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Dec. 24, 1984.

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Commissioner of Patents and Trademarks.

Patent Cooperation Treaty (PCT) Update

Change in International Fees effective Jan. 1, 1985, change in international search fee charged by European Patent Office, and Listing of PCT Countries

I. Change in International Fees, Effective Jan. 1, 1985

On Sept. 28, 1984, the PCT Assembly in its twelfth session (eighth Extraordinary) held in Geneva, Switzerland, fixed new amounts for the various international fees set in Swiss francs in the Schedule of Fees annexed to the PCT Regulations, effective Jan. 1, 1985. The new amounts in Swiss francs reflect a 5% increase over the previous amounts. The U.S. dollar amounts, however, reflect an overall decrease from the previous amounts.

The PCT Assembly also fixed an upper limit on the number of designation fees which must be paid for a single PCT application at ten. Effective Jan. 1, 1985 designation fees must be paid only for the first ten (10) country or regional designations. There is no payment due for the eleventh and subsequent country or regional designations.

Effective Jan. 1, 1985, for the United States applicants filing PCT international applications in the United States Receiving Office, the amount of the International fees are as follows:

Basic Fee (first 30 pages)	$ 265.00
Basic Supplemental Fee (each page over 30)	5.00
Designation Fee (per country or region up to ten)	64.00
Designation Fee (for 11th and subsequent countries or regions)	No Charge

II. Change in international search fee charged by European Patent Office

A new amount of 690 U.S. dollars has been established for the search fee for an international search by the European Patent Office. The new amount is applicable as from Jan. 3, 1985.

III. Listing of PCT Member Countries

Listing of PCT Member Countries

	Country	Ratification or Accession	Date of Ratification or Accession	Date from which Country may be Designated
(1)	Central African Republic*	Accession	15 September 1971	01 June 1978
(2)	Senegal*	Ratification	08 March 1972	01 June 1978
(3)	Madagascar	Ratification	27 March 1972	01 June 1978
(4)	Malawi	Accession	16 May 1972	01 June 1978
(5)	Cameroon*	Accession	15 March 1973	01 June 1978
(6)	Chad*	Accession	12 February 1974	01 June 1978
(7)	Togo*	Ratification	28 January 1975	01 June 1978
(8)	Gabon*	Accession	06 March 1975	01 June 1978
(9)	United States of America	Ratification	26 November 1975	01 June 1978
(10)	Germany, Federal Republic of**	Ratification	19 July 1976	01 June 1978
(11)	Congo*	Accession	08 August 1977	01 June 1978
(12)	Switzerland**	Ratification	14 September 1977	01 June 1978
(13)	United Kingdom**	Ratification	24 October 1977	01 June 1978
(14)	France**	Ratification	25 November 1977	01 June 1978
(15)	Soviet Union	Ratification	29 December 1977	01 June 1978
(16)	Brazil	Ratification	09 January 1978	01 June 1978
(17)	Luxembourg**	Ratification	31 January 1978	01 June 1978
(18)	Sweden**	Ratification	17 February 1978	01 June 1978
(19)	Japan	Ratification	01 July 1978	01 October 1978
(20)	Denmark	Ratification	01 September 1978	01 December 1978
(21)	Austria**	Ratification	23 January 1979	23 April 1979
(22)	Monaco	Ratification	22 March 1979	22 June 1979
(23)	Netherlands**	Ratification	10 April 1979	10 July 1979
(24)	Romania	Accession	23 April 1979	23 July 1979
(25)	Norway	Ratification	01 October 1979	01 January 1980
(26)	Liechtenstein**	Accession	19 December 1979	19 March 1980
(27)	Australia	Accession	31 December 1979	31 March 1980
(28)	Hungary	Ratification	27 March 1980	27 June 1980
(29)	Democratic People's Republic of Korea (North Korea)	Accession	08 April 1980	08 July 1980
(30)	Finland	Ratification	01 July 1980	01 October 1980
(31)	Belgium**	Ratification	14 September 1981	14 December 1981
(32)	Sri Lanka	Accession	26 November 1981	26 February 1982
(33)	Mauritania*	Accession	13 January 1983	13 April 1983
(34)	Sudan	Accession	16 January 1984	16 April 1984
(35)	Bulgaria	Accession	21 February 1984	21 May 1984
(36)	Republic of Korea (South Korea)	Accession	10 May 1984	10 August 1984
(37)	Mali*	Accession	19 July 1984	19 October 1984

* Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI member countries. A designation of any country is an indication that all OAPI countries have been designated. Note: Only one designation fee is due regardless of the number of OAPI member countries designated.

** Member of European Patent Convention (EPC) regional patent system. Either national patents or European patents for member countries are available through PCT, except for France and Belgium, for which only European patents are available if PCT used. Note: Only one PCT designation fee is due if European regional patent protection is sought for one, several or all EPC member countries.

Dec. 24, 1984.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Jan. 12, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,309,774 through 4,310,924

Reissue Patents based on the above identified patents. No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

3,323,979, Re. S.N. 423,768, Filed Sept. 27, 1982, Cl. 162/167, METHOD OF IMPROVING THE DRAINAGE RATE IN FORMING PAPER BY INCORPORATING A REACTION PRODUCT OF POLYACRYLAMIDE, FORMALDEHYDE AND DIALKYLAMINE IN THE FURNISH, William A. Foster, Owner of Record: *Dow Chemical Co., Midland, Mich.,* Attorney or Agent: Richard G. Waterman, et al., Ex. Gp.: 173

4,334,674, Re. S.N. 525,775, Filed Feb. 21, 1984, Cl. 271/4 5, AUTOMATIC FEEDING DEVICE FOR COPYING MACHINES, Shoichi Ishii, Owner of Record: *Fuji Xerox Co., Ltd., Tokyo, Japan,* Attorney or Agent: Richard C. Sughrue, et al., Ex. Gp.: 312

4,338,776, Re. S.N. 629,268, Filed July 10, 1984, Cl. 57/246, PROCESS FOR THE PRODUCTION OF A CRIMPED CONTINUOUS MULTIFILAMENT YARN, Eberhard Krenzer, Owner of Record: *Barmag Barmer Maschinenfabrik Aktiengesellschaft, Remscheid-Lennep, Federal Republic of Germany,* Attorney or Agent: Charles B. Park, III, et al., Ex. Gp.: 245

4,348,550, Re. S.N. 648,691, Filed Sept. 7, 1984, Cl. 179/90B, SPOKEN WORD CONTROLLED AUTOMATIC DIALER, Frank C. Pirz, et al., Owner of Record: *Bell Telephone Laboratories, Inc., Murray Hill, N.J.,* Attorney or Agent: S. E. Hollander, Ex. Gp.: 261

4,358,883, Re. S.N. 672,353, Filed Nov. 16, 1984, Cl. 029/401.1, VEHICLE TOP STRUCTURE AND METHOD OF ASSEMBLY, Harold E. Gerring, Owner of Record: *Gerwin Vans, Inc., Bristol, Ind.,* Attorney or Agent: Thomas P. Jenkins, et al., Ex. Gp.: 326

4,359,340, Re. S.N. 672,240, Filed Nov. 15, 1984, Cl. 106/38.22, TIRE CURING BLADDER LUBRICANT, Louis F. Comper (Deceased), et al., Owner of Record: *Goodyear Tire & Rubber Co., Akron, Ohio,* Attorney or Agent: Richard H. Childress, Ex. Gp.: 157

4,359,432, Re. S.N. 671,973, Filed Nov. 16, 1984, Cl. 261/026, POST-MIX BEVERAGE DISPENSING SYSTEM SYRUP PACKAGE, VALVING SYSTEM, AND CARBONATOR THEREFOR, Jason K. Sedam, et al., Owner of Record: *The Coca-Cola Co., Atlanta, Ga.,* Attorney or Agent: Terrell C. Birch, et al., Ex. Gp.: 135

4,377,069, Re. S.N. 653,525, Filed Sept. 24, 1984, Cl. 060/547.1, BRAKE BOOSTER, Hideyuki Kobayashi, Owner of Record: *Aisin Seiki Kabushiki Kaisha, Aichi-Ken, Japan,* Attorney or Agent: Norman F. Oblon, et al., Ex. Gp.: 341

4,430,646, Re. S.N. 672,462, Filed Nov. 19, 1984, Cl. 340/630, FORWARD SCATTER SMOKE DETECTOR, Robert B. Enemark, Owner of Record: *American District Telegraph Co., Jersey City, N.J.,* Attorney or Agent: James H. Grover, Ex. Gp.: 268

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

National Inventors Expo

The Patent and Trademark Office, the National Council of Patent Law Associations and the National Inventors Hall of Fame Foundation, Inc., will sponsor the Thirteenth Annual National Inventors Expo in the Public Search Room on Saturday, Feb. 9, 1985 from 1:00 p.m. to 5:00 p.m. and Sunday, Feb. 10, 1985 from 10:00 a.m. to 5:00 p.m. The public is invited to view the exhibits on these days. Inventors will be inducted into the National Inventors Hall of Fame on Sunday, Feb. 10 at 2:00 p.m.

In order to assemble the exhibits it will be necessary to close the Search Room on Friday, Feb. 8, 1985 at 5:00 p.m. The removal of all personal property from the Search Room would be appreciated.

GERALD J. MOSSINGHOFF
Dec. 18, 1984. *Commissioner of Patents and Trademarks.*

Names of Registered Attorneys and Agents Reinstated on the Active Register

In the May 8, 1984 issue of the Official Gazette, there was published a list of names and addresses of persons whose names had been removed from the Registers of Patent Attorneys and Agents pursuant to the provisions of 37 CFR §1.347.

The following persons, whose names appeared in that list have been reinstated on the active Register of Attorneys or Register of Agents, in view of information which they have furnished to the Office of Enrollment and Discipline.

WILLIAM FELDMAN,
Dec. 18, 1984. *Director, Office of Enrollment and Discipline.*

Papageorge, Chris, Herzig, Schaap & Yanny, 9465 Wilshire Blvd., Suite 428, Beverley Hills, Calif. 90212.
Parad, Boris, International Harvester, 401 N. Michigan Ave., Suite 2300, Chicago, Ill. 60611
Parker, Albert M., American Flange & Mfg. Co., Inc., 1100 W. Blancke St., P.O. Box 167, Linden, N.J. 07036
Patterson, James H., Dorsey & Whitney, 2200 First Bank Place E., Minneapolis, Minn. 55402
Peacock, Frank A., Jones & Askew, P.O. Box 56326, Atlanta, Ga. 30343
Pellicano, Anthony, Morgan, Finnegan, Pine, Foley & Lee, 345 Park Ave., New York, N.Y. 10154
Peoples, Veo, Jr., Anheuser-Busch Co., Inc., One Busch Pl., St. Louis, Mo. 63118
Peters, Howard M., Burns, Doane, Swecker & Mathis, 233 Sansome St., Suite 1004, San Francisco, Calif. 94104
Pettis, David W., Jr., Duckworth, Allen, Dyer & Pettis, P.A., P.O. Box 1528, Tampa, Fla. 33601
Pitcher, David M., Staas & Halsey, 1825 K St., N.W., Suite 816, Washington, D.C. 20006
Plum, Leo A., Jr., Union Carbide Corp., Old Ridgebury Rd., Danbury, Conn. 06817
Pollock, Michael J., National Semiconductor Corp., 2900 Semiconductor Dr., Santa Clara, Calif. 95051
Polson, Allen E., 6 Broadview Dr., Barrington, R.I. 02806
Porter, George J., 2007 Gallatin St., Suite C, Huntsville, Ala. 35801
Price, Bradford R. L., Baxter Travenol Labs., Inc., One Baxter Pkwy., Deerfield, Ill. 60015
Puffer, Jack D., Boeing Vertol Co., P.O. Box 16858, Philadelphia, Pa. 19142
Quarton, Charles E., N.A.P. Consumer Electronics Corp., Interstate 40 & Straw Plains Pk., Knoxville, Tenn. 37914
Rajender, Shyamala, Lawrence Livermore National Lab., L-376, Box 808, Livermore, Calif. 94550
Ratner, Allan, Ratner & Prestia, 412 Leighton Bldg., Valley Forge, Pa. 19482
Reck, James R., Locite Corp., 705 N. Mountain Rd., Newington, Conn. 06111
Rich, James A., Alcan Aluminum Corp., 100 Erieview Plz., Cleveland, Ohio 44114
Rines, Robert H., Rines & Rines, 81 N. State St., Concord, N.H. 03301
Riteris, Andrew O., Michael, Best & Friedrich, 250 E. Wisconsin Ave., Milwaukee, Wis. 53202
Roberts, Kent B., Merchant, Gould, Smith, Edell, Welter & Schmidt, Suite 100 Northwestern National Bk. Bldg., St. Paul, Minn. 55101
Robertson, Frederick A., 704 Wimbledon La., Livermore, Calif. 94550
Robillard, George N., Finnegan, Henderson, Farabow, Garrett, & Dunner, 1775 K St., Suite 600, Washington, D.C. 20006
Rodgers, Walter M. Jr., 1114 Gas Light Tower, Peachtree Center, Atlanta, Ga. 30303
Rogers, L. Lawton III, 727 23rd St. S., Suite 218, Arlington, Va. 22202
Rohm, Benita Jill, 512 Springfield Ave., Cranford, N.J. 07016
Romney, Rita Maria, Eckert, Seamans, Cherin & Mellott, 600 Grant St., Pittsburgh, Pa. 15219
Ross, Edmund C., Jr., Hercules, Inc., Hercules Plz., Wilmington, Del. 19894
Rowe, Donald A., 7255 Marblehead Dr., Hudson, Ohio 44236
Ryan, Daniel D. III, Baxter Travenol Labs., Inc., One Baxter Pkwy., DF2-2E, Deerfield, Ill. 60015

Reference Collections of U.S. Patents Available for Public Use in

PATENT NOTICES

Certificates of Correction for the Week of Jan. 15, 1985

Re. 31,495	4,425,428	4,451,950	4,459,312
Re. 31,595	4,426,785	4,452,144	4,459,642
4,301,191	4,428,939	4,452,407	4,460,044
4,334,162	4,429,971	4,452,818	4,460,622
4,369,182	4,433,776	4,453,100	4,460,761
4,377,633	4,433,852	4,453,217	4,460,916
4,391,937	4,434,581	4,453,546	4,461,007
4,395,001	4,435,916	4,454,026	4,461,951
4,397,941	4,437,951	4,454,270	4,461,995
4,407,510	4,440,856	4,454,365	4,462,086
4,408,083	4,442,498	4,454,683	4,462,244
4,408,202	4,443,795	4,454,760	4,462,289
4,413,180	4,445,036	4,455,525	4,462,476
4,414,629	4,445,224	4,455,534	4,463,667
4,419,550	4,445,395	4,455,642	4,464,216
4,420,381	4,445,735	4,455,754	4,464,225
4,421,747	4,446,217	4,456,571	4,465,076
4,422,803	4,446,254	4,457,664	4,466,223
4,423,183	4,446,726	4,458,487	4,466,225
4,423,194	4,447,813	4,458,629	4,466,933
4,423,882	4,448,421	4,458,689	4,467,119
4,425,165	4,450,148	4,459,067	4,472,475
4,425,270	4,450,239	4,459,100	4,472,841

Disclaimers

Des. No. 253,752.—*Robert E. Dilgard, Jr.,* Cincinnati, Ohio. RADAR WARNING RECEIVER. Patent dated Dec. 25, 1979. Disclaimer filed Oct. 28, 1984, by the assignee, *Cincinnati Microwave, Inc.*

Hereby enters this disclaimer to the entire remaining term of said patent.

3,483,221.—*Max Wilhelm,* Allschwil, Switzerland, *Hans Ulrich Daeniker,* Clifton, N.J., and *Karl Schenjer,* Binningen and *Paul Schmidt,* Therwil, Switzerland. 1-(ISOPROPYLAMINO)-2-HYDROXY-3-(ALKENYLOXYPHENOXY)-PROPANES AND THE SALTS THEREOF. Patent dated Dec. 9, 1969. Disclaimer filed Oct. 22, 1984, by the assignee, *Ciba-Geigy Corp.*

Hereby enters this disclaimer to claims 1, 3, 6 and 7 of said patent.

4,464,155.—*Peter C. Collura,* Los Altos, *Boyd D. Goda,* Santa Clara, and *Harvey N. Palagi,* San Carlos, Calif. APPARATUS AND METHOD FOR FORMING AND DEBOWING CARTONS. Patent dated Aug. 7, 1984. Disclaimer filed Oct. 23, 1984, by the assignee, *Kliklok Corp.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 13, 15 and 16 of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 579-5001
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis-Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: University of Massachusetts Library	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 1, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	8-20-81
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	9-29-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	3-25-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	8-14-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—B. R. GRAY, Director	12-06-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	9-02-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-08-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	2-16-83
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	10-24-80
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	9-12-80
DESIGN, GROUP 290—K. L. CAGE, Director	9-20-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—(Vacant)	7-23-81
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	8-16-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	9-27-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	4-05-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	12-04-81

Expiration of patents: The patents within the range of numbers indicated below expire during December 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,355,744 to 3,360,799, inclusive

Plant Patents ..... Numbers 2,781 to 2,783 inclusive

REEXAMINATIONS

JANUARY 15, 1985

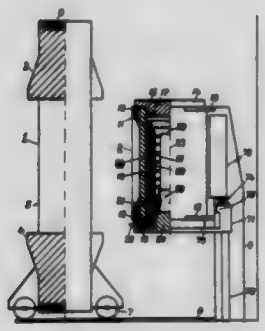
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,732,068 (296th)

CYLINDRICAL ELONGATED FURNACE FOR TREATING MATERIAL AT HIGH TEMPERATURE AND UNDER HIGH PRESSURE

Hans Larker, Robertsfors, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Västerås, Sweden

Reexamination Request No. 90/000,382, May 16, 1983.
Reexamination Certificate for Patent No. 3,732,068, issued May 8, 1973, Ser. No. 158,742, Jul. 1, 1971.
Claims priority, application Sweden, Jul. 10, 1970, 9594/70
Int. Cl.[3] F27B *3/02*
U.S. Cl. 432—120



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 4 is cancelled.

Claims 1–3, 5, and 6 are determined to be patentable as amended.

Claims 7–9, dependent on an amended claim, are determined to be patentable.

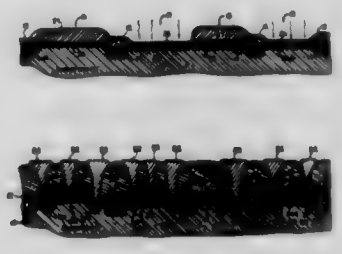
1. Vertical furnace, preferably for hot isostatic compaction of powder bodies, comprising a stand, a cylindrical pressure chamber suspended in the stand and comprising a high pressure cylinder and top and bottom end closures projecting into the pressure chamber, means forming a furnace chamber within the pressure cylinder and insulation arranged between the furnace chamber and the walls of the pressure chamber comprising an insulating part in the shape of a sealed lid which is formed of at least two separate parts each comprising a transverse portion and a cylindrical wall extending downwardly from the periphery of said transverse portion, said parts being closed in a gas-tight manner at the top and with insulation *material* filling the space between the transverse portions *and the space between said cylindrical walls, an annular part resting on said lower end closure, a heating element disposed within the insulating part, said at least two separate parts and said heating element at the lower ends thereof being secured to said annular part.*

B1 4,052,229 (297th)

PROCESS FOR PREPARING A SUBSTRATE FOR MOS DEVICES OF DIFFERENT THRESHOLDS

Richard D. Pashley, Mountain View, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Reexamination Request No. 90/000,036, Jul. 28, 1981.
Reexamination Certificate for Patent No. 4,052,229, issued Oct. 4, 1977, Ser. No. 700,043, Jun. 25, 1976.
Int. Cl.[3] H01L *21/265, 29/78*
U.S. Cl. 148—1.5



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–13 are cancelled.

[1. In the fabrication of MOS devices, a process for preparing a silicon substrate comprising the steps of:

a. forming a first masking means over a first area of said substrate;

b. subjecting said substrate to a first dopant such that portions thereof other than said first area of said substrate are doped with said first dopant;

c. forming a second masking means over a second area of said substrate, said second area being coextensive with a portion of said first area;

d. subjecting said substrate to a second dopant such that portions thereof other than said second area of said substrate are doped with said second dopant;

said steps (a) through (d) resulting in four host regions in said substrate each having a different doping level such that when a field-effect transistor is formed in each of said host regions each such transistor may have a different threshold voltage;

fabricating MOS devices in said host regions, each having a different threshold voltage.]

B1 4,272,435 (298th)

PROCESS FOR THE PREPARATION OF AZO COMPOUNDS FROM AMINO COMPOUNDS IN THE PRESENCE OF A PHASE TRANSFER CATALYST

Teruo Matsuda; Shigeo Wake, both of Niihama, and Tetsuya Shiosaki, Saijo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Reexamination Request No. 90/000,337, Mar. 7, 1983.
Reexamination Certificate for Patent No. 4,272,435, issued Jun. 9, 1981, Ser. No. 945,504, Sep. 25, 1978.
Claims priority, application Japan, Oct. 12, 1977, 52-122725; Dec. 19, 1977, 52-153363; Apr. 18, 1978, 53-46351
Int. Cl.[3] C07C *107/00, 107/02, 107/04*
U.S. Cl. 260—192

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

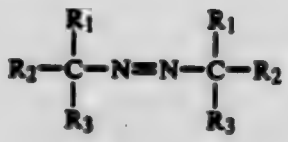
The patentability of claim 17 is confirmed.

Claims 1, 6, and 7 are determined to be patentable as amended.

Claims 2–5, 8–16 and 18, dependent on an amended claim, are determined to be patentable.

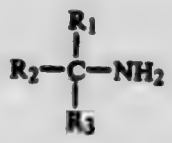
New claims 19 and 20 are added and determined to be patentable.

1. A process for producing an azo compound of the formula (I),



(I)

wherein each of R_1 and R_2 is selected from the group consisting of (1) C_1–C_8 aliphatic hydrocarbon unsubstituted or substituted with carboxyl, hydroxyl or alkoxy of the formula —OR_4 in which R_4 is C_1–C_4 aliphatic hydrocarbon, (2) C_3–C_8 alicyclic hydrocarbon, (3) C_6–C_{10} aromatic hydrocarbon and (4) C_4–C_{12} alicyclic hydrocarbon formed by combining R_1 and R_2 together with the adjacent carbon atom, and R_3 is selected from the group consisting of nitrile, ester of the formula —$COOR_4$ in which R_4 is C_1–C_4 aliphatic hydrocarbon, carboxylate of the formula —COOM in which M is an alkali metal or alkaline earth metal, and carboxyamido, by reacting an amino compound of the formula (II), having an ammonia content of 2.0% by weight or less,



(II)

wherein R_1, R_2 and R_3 are as defined above, with a metal *hypohalite* [hypohalide] of the formula (III),

$$M(OX)_n \quad \text{(III)}$$

wherein M is an alkali metal or alkaline earth metal, X is chlorine, bromine or iodine and n is the valence of the metal M, or with an alkyl hypohalite of the formula (IV),

$$R_5OX \quad \text{(IV)}$$

wherein R_5 is C_1–C_6 aliphatic hydrocarbon and X is as defined above, in the presence of an alkali, characterized in that said reaction is carried out using as a phase transfer catalyst at least one member selected from the group consisting of organic quaternary ammoniums, organic quaternary phosphoniums and macrocyclic polyethers in a heterogeneous medium comprising water and at least one organic solvent selected from the group consisting of nitriles and esters.

REISSUES

JANUARY 15, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,799

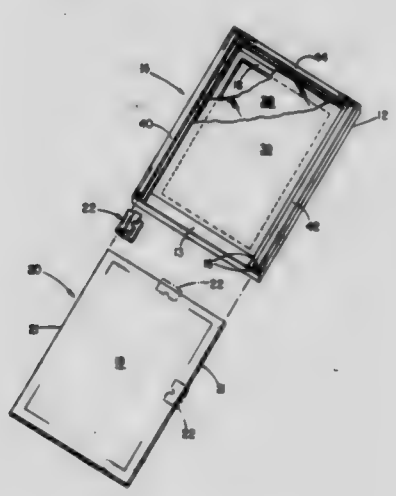
FRAME HANGER

Wayne H. Pankerian, West Somerville, Mass., assignor to M. W. Carr & Co., Inc., West Somerville, Mass.

Original No. 3,965,600, dated Jun. 29, 1976, Ser. No. 554,400, Mar. 3, 1975. Application for reissue Feb. 13, 1984, Ser. No. 579,256

Int. Cl.³ G09F *1/12*

U.S. Cl. 40—152.1 10 Claims



1. A picture frame assembly comprising:

a frame element having inwardly facing, opposed, recesses in opposite sides thereof in a common plane;

a rigid back plate having front and rear faces with its side edges and one edge receivable within said recesses; and

an integral hanging clip having:

a U-shaped retaining portion positioned between one of said recesses and one of said edges and retained thereby for sliding movement therealong; [and]

an offset hanging portion extending inwardly from said frame element and being outwardly spaced from the exterior face of said back plate for receiving an external hanging device between said clip and said back plate to support said frame assembly from a wall or the like; *and,*

a spacing portion intermediate and connected to said retaining portion and said offset hanging portion and extending generally transversely of said clip.

Re. 31,800

PROBE

Friedrich G. Lauterjung, Schalistrasse 6, 5000 Cologne 41, Fed. Rep. of Germany

Original No. 4,236,521, dated Dec. 2, 1980, Ser. No. 902,373, May 3, 1978. Application for reissue Sep. 30, 1982, Ser. No. 430,555

Claims priority, application Fed. Rep. of Germany, May 13, 1977, 2721548

Int. Cl.³ A61M *25/00*

U.S. Cl. 604—270 33 Claims

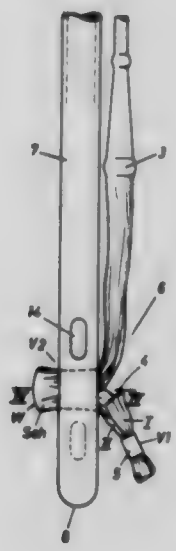
20. A probe means, particularly for enteral feeding of living creatures extending from the outside in an inserted condition at a target site in the creatures, comprising

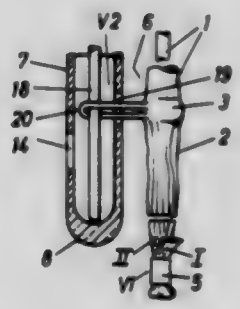
a probe tube having an insertion end range,

said insertion end range of said probe tube includes a balloon communicatingly connected to said probe tube, said balloon being adapted to be filled with liquid through said probe tube,

a pilot probe extending adjacent to said probe tube,

means operatively engaging said probe tube at said insertion end range by said pilot probe for initially inserting said probe tube and said balloon respectively into the creature and removably disengaging said pilot probe from said probe tube and from the creature from the outside, and





means for emptying said balloon in an inserted condition in the creature at the target site.

Re. 31,801

UREA-FORMALDEHYDE SOLUTION FOR FOLIAR FERTILIZATION

William P. Moore, Jr., Hopewell, Va., assignor to Hawkeye Chemical Company, Clinton, Iowa

Original No. 4,244,727, dated Jan. 13, 1981, Ser. No. 10,115, Feb. 7, 1979. Application for reissue Nov. 15, 1982, Ser. No. 441,953

Int. Cl.³ C05B *15/00*

U.S. Cl. 71—29 16 Claims

13. A clear, storage-stable, aqueous plant food solution comprising partially reacted urea and formaldehyde primarily as methylol ureas and with a ratio of between 1.5 and 2.0 mols urea per mol of formaldehyde, said solution having a nitrogen content not less than 10% and not appreciably more than 30% by weight and having a viscosity between 10 and 60 centipoise at 25° C., said solution being buffered to a pH between 7.5 and 9.8 by one or more buffering agents having a buffer capacity controlled so that between about 0.05 and 0.30 milliequivalents of phosphoric acid are required to decrease the pH of one gram of the solution to 7, and said solution being sufficiently reactive to allow further urea-formaldehyde reaction to form effective amounts of slow-releasing water-insoluble plant food nitrogen, without requiring addition of any materials, when the solution is applied to the foliage of plants or to soil having a pH ranging from about 5.0 to 7.5.

Re. 31,802

ROLLER GIN AND FEED SYSTEM INCORPORATING THE SAME

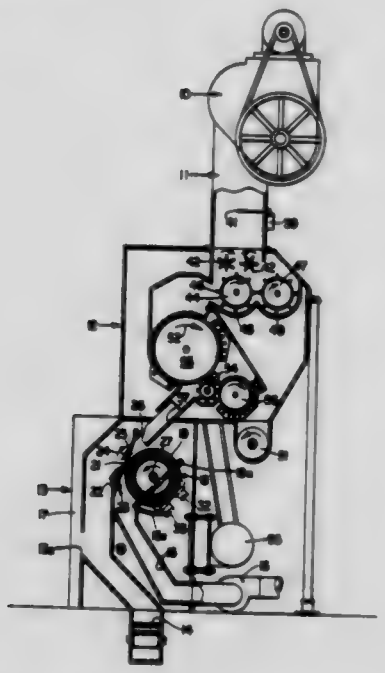
Robert R. Englett, Catoula; John M. Conner, Columbus; William A. Harmon, Columbus; James B. Hawkins, Columbus; William C. Pease, III, Columbus, and Donald W. Van Doorn, Columbus, all of Ga., assignors to Lummus Industries, Inc., Columbus, Ga.

Original No. 4,262,390, dated Apr. 21, 1981, Ser. No. 40,689, May 21, 1979. Application for reissue Feb. 23, 1983, Ser. No. 468,988

Int. Cl.³ D01B *1/06*

U.S. Cl. 19—50

13 Claims



12. In a cotton ginning system embodying at least one roller gin having a ginning roll and a ginning knife with means for mounting the ginning roll for movement into and out of ginning relation to the ginning knife, and a feeder having a pair of driven feed rolls disposed to feed seed cotton to the gin, the improvement comprising:

(a) means responsive to the absence of a predetermined minimum amount of seed cotton at the inlet of the feeder to produce a signal,

(b) means to stop the rotation of the feed rollers upon receiving the signal from the means of element (a), above, and

(c) means effective after the passage of a predetermined time to move the ginning roll away from the ginning knife in response to said signal.

Re. 31,803

METHOD FOR CATHODIC ELECTRODEPOSITION OF COATING COMPOSITIONS CONTAINING DIELS-ALDER ADDUCTS

Ivan H. Tsou, Bloomfield Hills, Mich., assignor to Wyandotte Paint Products Company, Troy, Mich.

Original No. 4,148,704, dated Apr. 10, 1979, Ser. No. 859,296, Dec. 12, 1977. Application for reissue Apr. 9, 1981, Ser. No. 252,666

Int. Cl.³ C25D *13/06*

U.S. Cl. 204—181 C

11 Claims

1. A method of electrocoating a film forming substance onto a substrate by employing an anode, a cathode and an electrolyte therebetween comprising the steps:

(1) Providing an aqueous electrolyte containing an organic coating composition comprising a dispersion, solution or suspension of a coating composition characterized by:

(a) the reaction product of a conjugated fatty acid ester and an acrylic containing monomer; and

(b) Formula A within the molecule and being the reaction product of reacting an amine with an oxirane ring; wherein Formula A is:

$$—CH_2—C(Z)—CH_2—N=$$

wherein Z is independently selected from the group consisting of hydrogen, hydroxyl, alkoxy of from one to 6 carbon atoms; acyloxy of from one to 6 carbon atoms; (=O), $-[OR']_nH$, $-[OR']_nOH$, and $-[OR'(CH_2OH)]_nOH$; wherein R' is a saturated alkylene of from 2 to 4 carbon atoms and n is a number from 1 to 6;

(2) Closing the circuit between the anode and the cathode; and

(3) Depositing the film forming composition onto the cathodic substrate.

Re. 31,804

ANIMAL FEED BLOCK CONTAINING FERROUS SULFATE AND MAGNESIUM OXIDE

Leroy V. Skoch, Glencoe; Bud G. Harmon, Kirkwood, and Charles W. Dickerson, Des Peres, all of Mo., assignors to Ralson Purina Company, St. Louis, Mo.

Original No. 4,171,386, dated Oct. 16, 1979, Ser. No. 893,736, Apr. 5, 1978. Application for reissue Jan. 26, 1984, Ser. No. 573,981

Int. Cl.³ A23K *1/02*

U.S. Cl. 426—658

10 Claims

1. A process for preparing an animal feed block which comprises mixing about 18 to 65% by weight molasses, about 4 to 9% by weight monobasic salt of phosphoric acid, about 0.5 to 5% by weight water absorbent clay and 5 to 20% water under high speed shearing action for an effective amount of time to disperse the clay, admixing 5 to 30% animal fat, about 8% by weight ferrous sulfate and about 3 to about 15% by weight magnesium oxide to obtain a viscous nutrient mixture that solidifies to form a hard weather resistant block within one hour at room temperature, said block having a water activity of from 0.8 to 0.9.

Re. 31,805

METHOD FOR MAKING POLYIMIDES

Tohru Takekoshi, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Original No. 4,324,882, dated Apr. 13, 1982, Ser. No. 188,755, Sep. 19, 1980. Application for reissue Jan. 16, 1984, Ser. No. 571,323

Int. Cl.³ C08G *73/10*

U.S. Cl. 528—206

13 Claims

1. A method for making polyimides which comprises

(1) effecting reaction between a $C_{(6-30)}$ aromatic organic dianhydride and a $C_{(2-20)}$ organic diamine in the presence of an effective amount of an alkali metal salt of an oxygenated phosphorus compound, selected from the group consisting of orthophosphates, dihydrogen orthophosphates, hypophosphates, pyrophosphates, metaphosphates, orthophosphites, [and] arylphosphonates and *arylphosphinates, and*

(2) recovering the resulting polyetherimide from the mixture of (1).

Re. 31,806

MONOLITHIC MULTI-EMITTING LASER DEVICE

Donald R. Scifres, Los Altos; William Streifer, and Robert D. Burnham, both of Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Original No. 4,255,717, dated Mar. 10, 1981, Ser. No. 956,307, Oct. 30, 1978. Application for reissue Mar. 8, 1983, Ser. No. 473,304

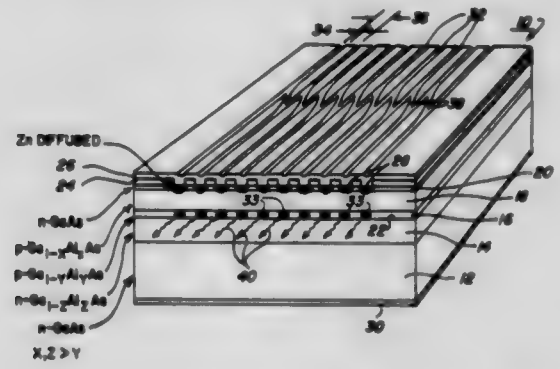
Int. Cl.³ H01S *3/19*

U.S. Cl. 372—50

57 Claims

1. In a monolithic laser device wherein one or more layers of semiconductor material are fabricated on a substrate, one of said layers forming [an] active [layer] *means* for light wave propagation and generation under lasing conditions, means for forward biasing said active [layer] *means* to produce a plurality of adjacent , *linear* light propagating and emitting portions

therein, light guiding regions in said device *intermediate of the ends of and* nonlinear relative to said emitting portions whereby [said] *the* light waves produced in one portion of said active [layer] *means* are deflected and coupled into one or more adjacent emitting portions of said active [layer]



means , said regions provided by a refractive index change with which [said] *the* light wave interacts while [said light wave is] within said regions and wherein said refractive index change is provided by the injected charge distribution determined by current confining means.

PLANT PATENTS

GRANTED JANUARY 15, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,388
PEACH PLANT
Raymond Goosen, 5327 Ave. 400, Dinuba, Calif. 93618
Filed Jul. 1, 1983, Ser. No. 509,878
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—43 1 Claim

1. A new and distinct variety of peach substantially as described and illustrated, which is characterized by a vigorous, regular bearing tree hardy for California conditions, very early ripening fruit with blush to dark red mottling and longitudinal red streaking over yellow ground color, large size for its early season, semi-free stone, and globose form, and which most closely resembles its parent plant, Springcrest (unpatented) and Maycrest (U.S. Plant Pat. No. 4,064), also an early maturing sport of Springcrest, but is distinguished therefrom by reaching commercial maturity 7 days earlier than Springcrest and 3 days earlier than Maycrest.

5,389
AZALEA NAMED NANCY MARIE
Richard A. Arneson, Sylmar, Calif., assignor to Geo. J. Ball Inc., West Chicago, Ill.
Filed Jun. 16, 1983, Ser. No. 504,961
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—55 1 Claim

1. The new and distinct variety of azalea plant, substantially as herein shown and described, characterized by its basically white flower petals each having a longitudinal midsection of pink coloration which presents a star-like appearance for the fully opened flower.

5,390
BEGONIA PLANT NAMED PIA ELISE
Holger Boll, Odense, Denmark, assignor to L. Daehnfeldt Ltd., Odense, Denmark
Filed Jun. 20, 1983, Ser. No. 506,212
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct cultivar of begonia named Pia Elise, as illustrated and described, comprising a flower color mutation of the cultivar Barbara, and particularly characterized by its large double, deep pink flowers which do not significantly fade under abnormal conditions, with the flower color pleasantly contrasting with dark green foliage; vigorous growth habit, and by its ease of manipulation for year around flower production, especially for larger containers and hanging baskets for interior decorating.

5,391
BEGONIA PLANT NAMED ELLEN
Erland V. Schelbeck, Odense, Denmark, assignor to L. Daehnfeldt Ltd., Odense, Denmark
Filed Jun. 20, 1983, Ser. No. 506,213
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct cultivar of begonia named Ellen, as described and illustrated, and particularly characterized by its large flower size and compound inflorescence, brilliant and uniform red flower color, fast propagation, rapid flowering, and its foliage which is infused with maroon in margins and underside.

PATENTS

GRANTED JAN. 15, 1985

ERRATA

For CLASS	See PATENT NO.
474–014	4,493,221
384–533	4,493,513
384–613	4,493,514
534–697	4,493,798
333–028	4,494,082
333–033	4,494,083
333–081	4,494,084

PATENTS

GRANTED JANUARY 15, 1985

GENERAL AND MECHANICAL

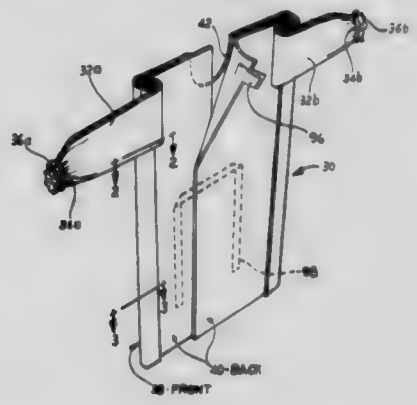
4,493,115
FIREARM RECOIL PROTECTION SYSTEM
Bruce R. Maier, and Lincoln R. Flannery, both of Columbia, Mo., assignors to P.A.S.T. Corporation, Columbia, Mo.
Filed Jun. 4, 1982, Ser. No. 384,922
Int. Cl.³ A41D *13/00*
U.S. Cl. 2—2 **16 Claims**



1. In a firearm recoil protection system of the type comprising an energy absorbing pad having a rest volume, a flexible envelope surrounding the pad, and means for positioning the envelope over a front portion of a shoulder of a user such that the envelope is situated to come between the shoulder of the user and the stock of a firearm held by the user, the improvement comprising:

an enclosed cavity defined by the envelope, said enclosed cavity shaped to receive and confine the pad, said cavity having a volume less than the rest volume of the pad such that the envelope compresses the pad to a volume less than its rest volume, thereby enhancing recoil protection provided by the confined pad.

4,493,116
METHOD FOR MANUFACTURING SLEEVED GARMENTS
Heinz K. Niethammer, Roswell, and Lawrence J. Montgomery, Atlanta, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Sep. 7, 1982, Ser. No. 415,660
Int. Cl.³ A41D *13/00*
U.S. Cl. 2—69 **25 Claims**



1. A method for manufacturing garments from continuous webs comprising the steps of:

making flattened pairs of left and right sleeves arranged in series from longitudinally moving superposed webs of sleeve material;

transferring said flattened sleeve pairs from series to parallel shingled arrangement with cuffs sequentially aligned;

attaching elastic to aligned cuffs of said shingled sleeves;

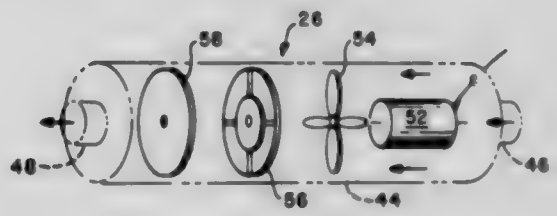
transferring sleeves having cuff elastic from said shingled arrangement to longitudinally spaced positions on a first moving web of garment body material and attaching shoulder ends of said sleeves to said web;

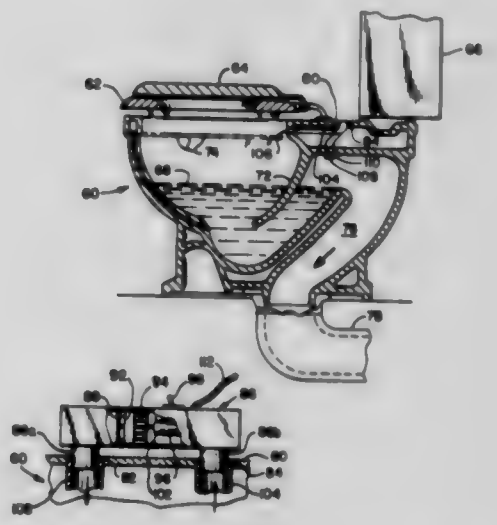
combining said first web and attached sleeves with a second moving web of garment body material superposed and moving with said first moving web;

attaching said first and second moving webs and shoulder ends of said sleeves along longitudinal side seam lines at the margins of said webs and attaching said moving webs along transverse shoulder seam lines; and

severing said moving webs including transverse cuts adjacent said shoulder seam lines to form garments.

4,493,117
CONTINUOUSLY DEODORIZED TOILET
Aldo Sguazzin, 115 Aspen Rd., Mastic Beach, N.Y. 11951
Filed Jul. 5, 1983, Ser. No. 510,558
Int. Cl.³ E03D *9/04*
U.S. Cl. 4—213 **2 Claims**





1. In a toilet having a bowl with a reservoir of water, a water closet, a region communicating with a sewer drain, and a top surface on said bowl supporting a pivoted seat, the improvement comprising a pair of spaced holes in said top surface adjacent said reservoir, a first conduit communicating the first of said holes with the interior of said bowl above the level of said reservoir, a second conduit communicating the second of said holes with said region, motor housing means mounted on said top surface, said housing means containing normally closed valve means for permitting flow of gases in only a forward direction and blocking flow of gases and liquid in the reverse direction, a fan, and a motor for driving said fan to direct flow through said valve in said forward direction, said valve means consisting of a flexible rubber diaphragm mounted on the downstream side of a grid the latter being bendable from its center and attached to said grid to allow flow of gases in one direction only, said housing means having electrical switch means for controlling operation of said motor, said housing means having connectors for insertion in said holes so that flow from said first conduit to said second conduit is in the forward

direction through said housing means whereby when said motor is energized while said toilet is in use, odor laden gases are continuously evacuated from the interior of said bowl, said housing means being readily removable by pulling said connectors out of said holes.

4,493,118

COLLAPSIBLE TOILET SHELTER

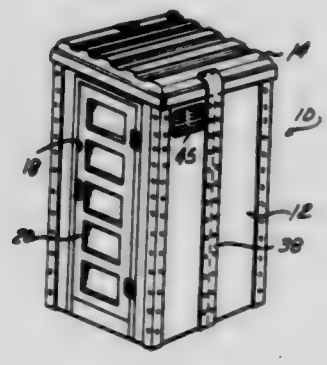
Earl J. Braxton, 50575 Ryan Rd., Utica, Mich. 48087

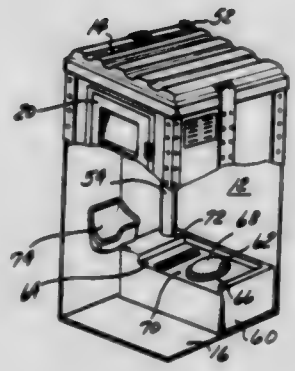
Continuation-in-part of Ser. No. 247,699, Mar. 26, 1981,. This application Feb. 24, 1983, Ser. No. 469,327

Int. Cl.³ A47K *11/02*; E04H *1/02*

U.S. Cl. 4—460

13 Claims





1. A collapsible toilet shelter comprising:

(A) a plurality of rigid, upstanding, rectangular, planar wall panels arranged vertical edge to vertical edge to form a closed loop;

(B) a continuous, flexible hinge strip permanently secured to the adjacent vertical side surfaces of each pair of adjacent panels and each extending the full height of the panels to visually and physically close the vertical gap between the panels, said hinge strips forming with said panels a continuous, vertical, articulated wall assembly permanently closed upon itself and foldably movable between

(1) an expanded condition in which it forms a closed rectangular toilet enclosure having a front wall, a back wall, and two side walls, and

(2) a collapsed condition in which it is folded flat upon itself for ease of shipment and storage;

(C) a door opening in said front wall of said enclosure;

(D) a door hingedly positioned in said door opening to provide access to said enclosure when opened and provide privacy for said enclosure when closed;

(E) a rigid rectangular base member, including a commode, adapted to be removably positioned within the bottom marginal portions of said wall panels, with said commode juxtaposed to said back wall of said enclosure, and operative when so positioned to maintain said panels in their expanded, enclosure forming condition; and

(F) a rigid rectangular roof member adapted to be removably positioned adjacent the top marginal portions of said panels and operative when so positioned to maintain said panels in their expanded, enclosure forming condition.

4,493,119

DEVICE FOR THE TREATMENT OF THE EYES WITH A WASHING OR BATHING LIQUID

Ludwig G. Baumann, Reckholder, CH-9527 Niederhelfenschwil, Switzerland

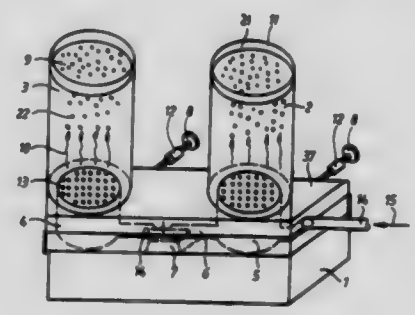
Filed Jan. 7, 1983, Ser. No. 456,406

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1982, 3200472

Int. Cl.³ A61H *33/00, 33/04*; E03C *1/05, 1/02*

U.S. Cl. 4—620

4 Claims





1. A device for treatment of eyes with a washing liquid comprising:

a. a container, two vertical, open topped eye bathing tubes supported by said container, each of said bathing tubes including means around said open tops to create a seal against the face of a user,

b. means located within each of said tubes to introduce gas bubbles into a body of liquid contained in said tubes,

c. support means on said container and located between said tubes to support the forehead of a user, said support means being located with respect to said tubes to support the forehead of a user when each of the user's eyes is in one of said tubes.

4,493,120

PLAYPEN

David Watts, 1326 Madison Ave., New York, N.Y. 10028

Filed Oct. 18, 1982, Ser. No. 434,767

Int. Cl.³ A47C *29/00*

U.S. Cl. 5—99 B

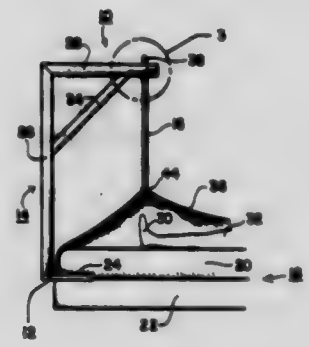
8 Claims



1. A portable and collapsible playpen or the like comprising a web-like flexible floor a pair of opposed side walls formed of web-like fabric held under tension by means of two segmented flexed poles, front and back walls secured to the ends of the side walls and held under tension by means of two horizontal cross members, said walls defining a substantially rectangular free standing enclosure, and hub means at either end of said enclosure for receiving and releasably retaining at least two segments of each of said poles.

4,493,121
BLANKET LIFTING DEVICE
Frank Williams, 1323 Whitney Bank Bldg., New Orleans, La. 70130

Filed Apr. 28, 1983, Ser. No. 489,479
Int. Cl.³ A47C 21/00
U.S. Cl. 5—505 3 Claims



1. A device for keeping a sheet or blanket off feet comprising:

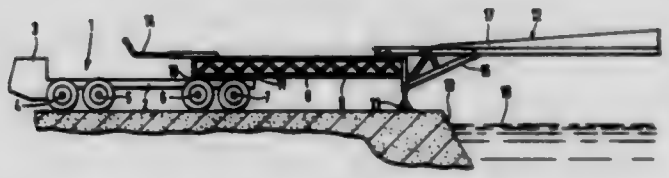
a frame having a generally horizontal member and a vertical member, said horizontal member being attached to and extending from one end of said vertical member;

support means for maintaining said frame in a stationary position, said vertical member being connected to said support means; and

a line extending from said frame and engaging said sheet or blanket, said line having a length sufficient to maintain said sheet or blanket in a position generally above said feet, said line attached to said horizontal member at one end, said line extending downwardly so as to engage said sheet or blanket, said line extending upwardly from said sheet or blanket and the other end of said line comprising a pin removably engaged a receptacle in said horizontal member, said line engaging said sheet or blanket so as to support said sheet or blanket a distance above and out of contact with said feet.

4,493,122
MOTOR VEHICLE FOR TRANSPORTING AND LAYING A FIXED BRIDGE
Theodor Echtler, Kaiserslautern; Martin Quinot, Seichenbach, and Werner Hannieger, Kaiserslautern, all of Fed. Rep. of Germany, assignors to IBEK Ingenieurbuero Echtler Kaiserslautern GmbH, Kaiserslautern, Fed. Rep. of Germany

Filed May 6, 1983, Ser. No. 492,198
Claims priority, application Fed. Rep. of Germany, May 8, 1982, 3217435
Int. Cl.³ E01D 15/12
U.S. Cl. 14—2.4 26 Claims



1. A motor vehicle for transporting and laying a fixed bridge, comprising:

(a) a ground supported vehicle including a chassis with a front and a rear;

(b) a slide frame longitudinally displacably mounted to said chassis and having a first travel position and a second extended position wherein a first end of sad slide frame is disposed a substantial distance from said vehicle rear and said slide frame has an upper and a lower surface;

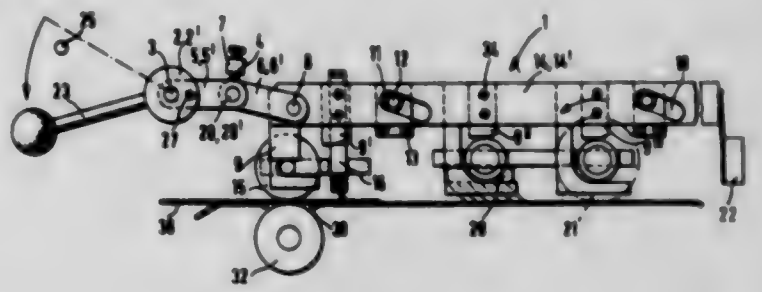
(c) a support leg secured generally to said first end having a ground engaging portion extending beyond said lower surface supporting said slide frame while in said extended position;

(d) a bridge member carried by said slide frame having a first position supported by said upper surface and a second position remote from said slide frame; and,

(e) bridge member laying and displacement means connected generally to said first end for displacing said bridge member and said laying means includes a rearwardly extending portion adapted for supporting said bridge member during displacement thereof whereby said laying means is adapted for being moved from a first bridge member supporting position to a second laying position for thereby laying said bridge member over an obstacle.

4,493,123
PRESSURE-CONTACT AND LIFT-OFF ARRANGEMENT
Hermann Idstein, Oestrich-Winkel, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 17, 1983, Ser. No. 552,778
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1982, 3243874
Int. Cl.³ G03D 5/06
U.S. Cl. 15—4 14 Claims



1. A pressure-contact and lift-off arrangement for working elements which are sequentially arranged in a processing unit for exposed printing materials, said unit including a table surface and wherein said printing materials are guided in continuous succession across said table surface where they are developed and cleaned, said arrangement comprising:

side plates, said working elements being located between said side plates;

guide members located on inner sides of said side plates, said working elements having ends supported, respectively, in said guide members;

supporting frames positioned on opposite sides, respectively, of said working elements, said supporting frames having elongated guide holes formed therein at an angle with respect to said table surface;

hold down members associated, respectively, with said guide members, said hold down members being connected to said supporting frames and positioned above said working elements;

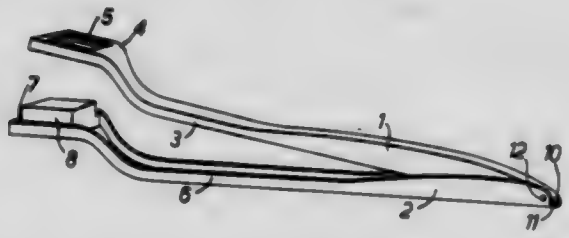
bearing members connected to said side plates and received in said holes, respectively, for guiding movement of said supporting frames between a raised position and a lowered position with respect to said side plates; and

means for raising and lowering said working elements in response to movement of said supporting frames guided by said holes.

4,493,124
TOILET CLEANING TOOL

Michael Agapiou, 163 Watford Rd., Harrow, Middlesex, HA1 3UA, England

Filed Oct. 26, 1982, Ser. No. 436,696
Claims priority, application United Kingdom, Oct. 27, 1981, 8132404
Int. Cl.³ A47L 25/00
U.S. Cl. 15—104.94 4 Claims

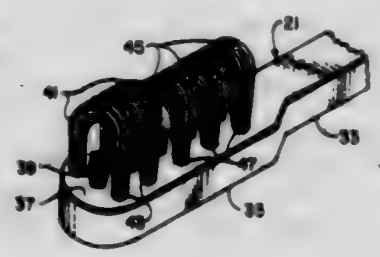


1. A toilet cleaning tool for cleaning a lavatory bowl of a toilet, which toilet cleaning tool comprises a disposable cleaning member and a body, the body having first and second parts which define a handle and between which the disposable cleaning member is releasably retained, the disposable cleaning member comprising a centre cleaning portion and a pair of flanges, the disposable cleaning member being water degradable whereby the disposable cleaning member can be disposed of by being flushed down the toilet, the first and second parts of the body being movable between open and closed positions, the first part of the body having an aperture through which the centre cleaning portion of the disposable cleaning member projects when the first and the second parts of the body are in their closed position in which they sandwich the pair of flanges of the disposable cleaning member to retain the disposable cleaning member in position, the second part of the body comprising a tray on which the disposable cleaning member rests, the tray being effective to support the disposable cleaning member and to force the centre cleaning portion of the disposable cleaning member through the aperture in the first part when the first and the second parts of the body are in their closed position, the tray being perforated to allow a good circulation of water to the disposable cleaning member, and the first and the second parts of the body being such that the disposable cleaning member is released for disposal merely by moving the first and the second parts of the body to their open position whereby the disposable cleaning member is able to fall off of the tray under the action of gravity.

4,493,125
TOOTHBRUSH WITH CURVED BRISTLES

George C. Collis, 313 W. 48th St., Minneapolis, Minn. 55409

Continuation-in-part of Ser. No. 175,424, Aug. 5, 1980, Pat. No. 4,382,309. This application Mar. 14, 1983, Ser. No. 474,805
Int. Cl.³ A46B 9/04
U.S. Cl. 15—167 A 19 Claims

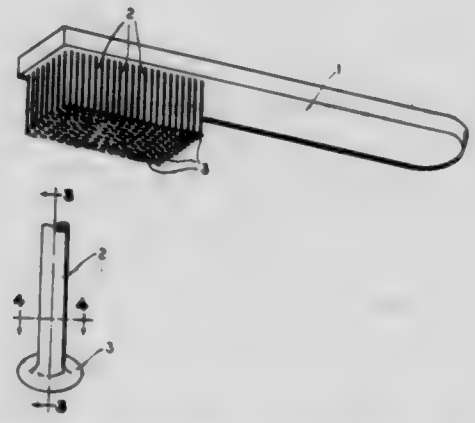


11. A toothbrush for brushing the buccal and lingual surfaces of teeth comprising
an elongated handle,
a bristle mounting head formed on the outer end of said handle having a bristle mounting face,
at least two rows of curved bristles,
the proximal ends of said bristles being mounted in said bristle mounting face,
at least some of said bristles having cross sections generally in the shape of a polygon with less than six sides,
the curved shape and mounting of said bristles being such that similarly positioned bristles in opposite bristle rows are symmetrically shaped and their distal extremities are nearly touching.

4,493,126
SCRAPING BRUSH

William C. Uy, 9 Queens Ct., Wilmington, Del. 19808

Filed Jan. 11, 1982, Ser. No. 338,587
Int. Cl.³ A46B 15/00
U.S. Cl. 15—186 1 Claim

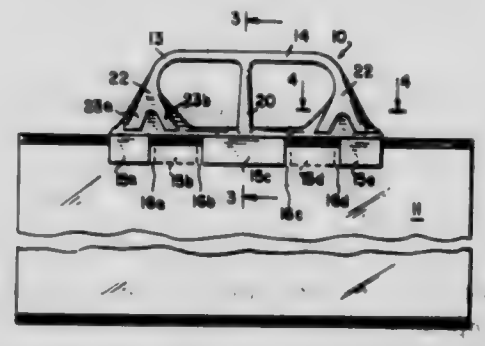


1. A scraping brush comprising a handle and a base, said base having a plurality of stiff wire bristles extending perpendicularly therefrom, each of said bristles having an integrally formed, thin, flat, disc shaped terminal end member thereon defining a flat circular face, the bottom plane of the flat circular face being perpendicular to the longitudinal axis of its integral bristle, the cross-sectional thickness of each of said disc shaped terminal end members tapering radially to a sharp point, the cross-sectional area of each of said disc shaped terminal end members being taken on a plane coinciding with the longitudinal axis of the bristle.

4,493,127
CARRYING HANDLE FOR HEAVY DUTY OLEFIN BAGS

Richard H. Blanke, Jr., Ladue, and Harold N. Cale, Chesterfield, both of Mo., assignors to Chase Bag Company, Greenwich, Conn.

Filed Aug. 16, 1982, Ser. No. 408,209
Int. Cl.³ B65D 25/28
U.S. Cl. 16—124 6 Claims



1. A molded plastic handle adapted to be sonically sealed to the upper, outer surfaces of a heavy duty olefin carrying bag for carrying 10 to 50 pounds of dry mix and like heavyweight material, comprising:
(a) a hand receiving portion having inwardly and outwardly flared ends;
(b) a depending slotted skirt portion below said hand receiving portion and connected to said flared ends, said depending skirt portion having depending alternate elements for

attachment to the outer surfaces of such olefin bag, said depending alternate elements being spaced apart to provide a slot between each pair of adjacent elements, and one said depending alternating element being disposed midway of said handle;

(c) each of said alternating elements being of a size and configuration not to overlap the alternating elements immediately adjacent thereto when secured to the upper surface of the olefin bag; and

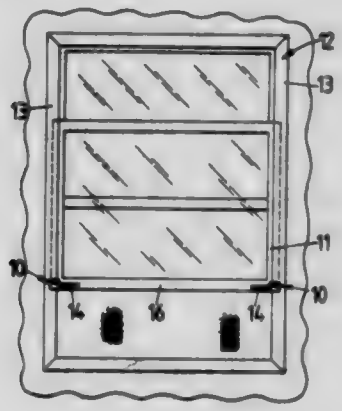
(d) a vertical strut integral with said hand receiving portion of the handle and connected to said midway depending element, whereby the interrupted skirt portion is prevented from flexing under load stress.

4,493,128

WINDOW SASH POSITIONER

Jon C. Corry, Hueytown, Ala., assignor to Mason Corporation, Birmingham, Ala.

Filed Jun. 20, 1983, Ser. No. 506,284
Int. Cl.³ E05D *13/08, 17/00*
U.S. Cl. 16—197 6 Claims



1. In a positioner for a movable window sash adapted for movement relative to a window frame having spaced apart side members,

(a) a guide bracket carried by said sash with one side of said guide bracket being in spaced relation to and facing at least one of said side members and extending in a plane which is inclined relative to a plane extending in the direction of movement of said sash with the opposite side of said guide bracket being parallel to said one side of said guide bracket,

(b) a wedge-like member having a first surface at one side thereof in sliding engagement with said one side of said guide bracket and a second surface at the opposite side thereof extending parallel to and facing said side member adjacent thereto with said wedge-like member being movable into and out of engagement with said side member adjacent thereto in response to sliding movement of said wedge-like member in a first direction and a second direction, respectively,

(c) an actuator mounted for sliding movement along said opposite side of said guide bracket and operatively connected to said wedge-like member to move said wedge-like member selectively in said first direction and said second direction, and

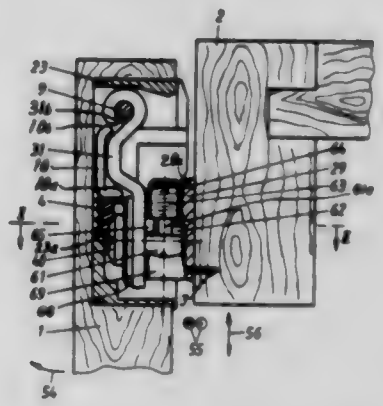
(d) resilient means urging said wedge-like member in said first direction and into engagement with said side member adjacent thereto.

4,493,129

DOOR HINGE FOR LATERAL AND HEIGHTH ADJUSTMENT

Alfred Gruss, Konsumstrasse 20, A-6973 Höchst/Vlbg., Austria

Filed Apr. 8, 1982, Ser. No. 366,765
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1981, 3114424
Int. Cl.³ E05D *7/04*
U.S. Cl. 16—238 10 Claims



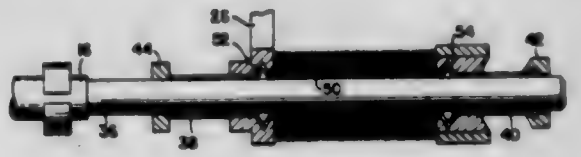
1. A door hinge for substantially concealed door-closed mounting with respect to a supporting frame member which enables dual-way direction of adjustment between a frame member and a door member which comprises, a hinge box having a back end adapted to be positioned and secured in a depthwise-inserted relation from a face portion of and within one of a frame member and a door member, a mounting plate adapted to be secured on an opposed face portion of the other of the members, a swing arm fully within the box, the swing arm having a back end portion pivotally mounted within said box to extend substantially parallel to the back of the box when the door member is in a closed position with respect to the frame member, a boss fixedly secured to the mounting plate so as to extend from said mounting plate towards said box to extend therewithin when the door member is in a closed position with respect to the frame member, said swing arm having a forward end portion extending into a cooperating position with respect to said boss, said boss having screw means cooperating with said forward end portion for mounting said swing arm in a two-way independently adjustable relation on and with respect to said boss to enable lateral as well as heighth adjustment between said box and said mounting plate after they have been secured in a mounted position on the door and frame members.

4,493,130

SHIRRED CASING ARTICLE METHOD AND APPARATUS

Algimantas P. Urbutis, Palos Heights, and Peter H. Jagel, Hinsdale, both of Ill., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 15, 1982, Ser. No. 434,559
Int. Cl.³ A22C *11/00*
U.S. Cl. 17—49 29 Claims



13. A method of making a shirred casing article comprising the steps of:

(a) locating a shirred, and at least partly compacted, strand of casing on a tubular core, the outside diameter of said core being of a size sufficient to permit an embracing engagement of said strand about the outer periphery of said core wherein said strand exerts radial inward forces

on said core and said core being sufficiently rigid to resist the forces generated by said compacted strand of casing:

(b) positioning elements on said core adjacent the ends of said strand so as to capture and restrain the axial growth of said strand with respect to said core, the positioning of said elements being accomplished so as to permit the subsequent deshirring of casing from said strand and over at least one of said elements.

24. Apparatus for forming a casing article comprising:

(a) a shaft for receiving a tubular core member:

(b) bearing means for supporting the ends of said shaft, at least one of said bearing means being removable to permit loading of said core onto said shaft;

(c) said shaft and core being adapted to receive a compacted strand of shirred casing which embraces about the outer periphery of said core; and

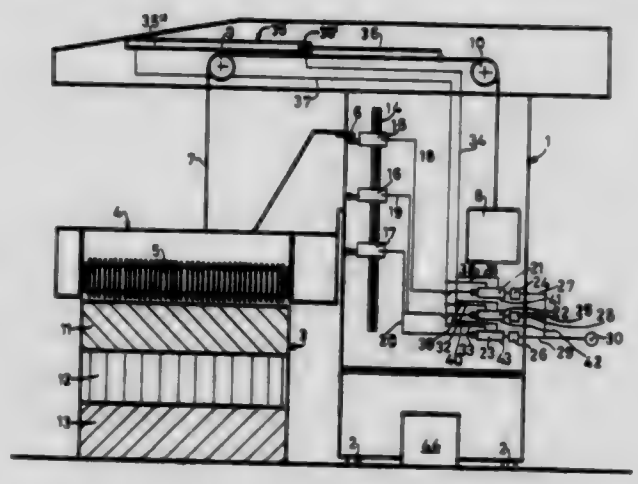
(d) means for forming capturing means from the material of said core and adjacent the ends of said strand for preventing longitudinal growth of said strand with respect to said core.

4,493,131

CONTROL DEVICE FOR OPENING FIBER BALES

Claudio Draggoni, Pavia, and Claudio Locatelli, Capriolo, both of Italy, assignors to Fratelli Marzoli & C. S.P.A., Palazzolo Sull'Oglio, Italy

Filed Dec. 7, 1982, Ser. No. 447,685
Claims priority, application Italy, Dec. 11, 1981, 25554 A/81
Int. Cl.³ D01G *13/00*
U.S. Cl. 19—80 R
3 Claims



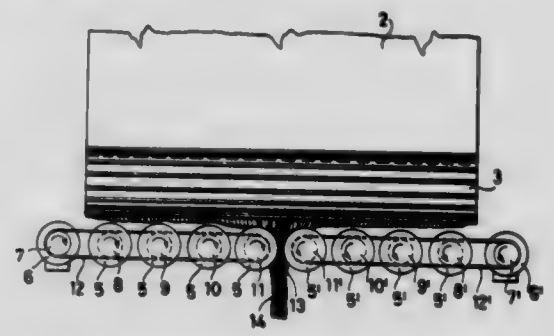
1. A device for controlling a machine for removing fibre staples from a set of staple bales of textile material, wherein the machine is horizontally reciprocable along said bale set and comprises a carriage reciprocable in a vertical direction and having a rotary bale opening reel arrangement to strip from said bales fibre staples to be pneumatically conveyed to subsequent processing steps, and wherein the device comprises a plurality of detectors spaced from one another in a vertical direction according to superimposed zones of said bales having sufficient compactness, means for actuating said detectors in response to vertical movement of said carriage, and means controlled by said detectors to cause said carriage and rotary bale opening reel arrangement to exert on said bales pressures of different magnitudes according to said zones of different compactness.

4,493,132

DEVICE FOR CONDENSING THE FLEECE EMERGING FROM A CARDING ENGINE

Claudio Draggoni, Pavia, and Claudio Locatelli, Capriolo, both of Italy, assignors to F. LLI Marzoli & C. S.p.A., Palazzolo Sull'Oglio, Italy

Filed Nov. 5, 1982, Ser. No. 439,540
Claims priority, application Italy, Nov. 5, 1981, 24886 A/81
Int. Cl.³ D01G *15/46*; D01H *5/72*
U.S. Cl. 19—106 R
5 Claims



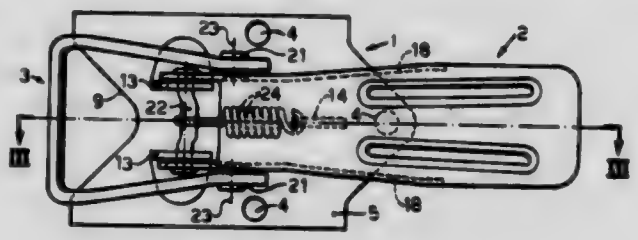
1. A device for condensing a fleece taken at an exit of a carding engine for cotton, wool, synthetic and man-made fibres by a fleece-doffer comprising a doffing cylinder, wherein the fleece taken from said fleece-doffer is conveyed to at least one discharge point for the formation of a sliver, comprising means for generating at least two air streams substantially parallel to the axis of said doffing cylinder in opposite directions on a fleece-discharge plane passing through said at least one discharge point, said means comprising a plurality of roller elements rotatably driven about respective axes arranged perpendicularly to said discharge plane, said roller elements having a subetantially concave lateral configuration and being arranged in at least two aligned and adjoining sets spaced apart parallely to said doffing cylinder and spaced therefrom, so that said fleece is conveyed by said air streams without contacting said roller elements.

4,493,133

LOCKING MEANS, PARTICULARLY FOR TRUCK PLATFORM FLAPS, AND THE LIKE

Weimar Nilsson, Karsnäs, S-561 90 Huskvarna, Sweden, assignor to Huskvarna Transtorthonstruktionar A.B., Huskvarna, Sweden

Filed Feb. 7, 1983, Ser. No. 464,577
Claims priority, application Sweden, Feb. 15, 1982, 8200901
Int. Cl.³ E05C *19/14*
U.S. Cl. 24—68 T
9 Claims



1. Locking means, particularly for a truck platform flap of the type which comprises a base plate, an one-armed lever pivotably journaled in said base plate and having the shape of a handle, a substantially U-shaped locking yoke which is connected to the handle and pivotable in relation thereto on an axis substantially parallel to the pivot axis of the handle between locking and unlocking positions, said locking yoke being adapted to engage a hook or a recess when in said locking position for holding the flap, and at least one spring for actuating the handle and the locking yoke, said spring having one end operatively secured to the base plate and the other end operatively secured to said handle to a point which is located so that the spring on one hand urges said handle to rotate in the direction towards its locking position when the handle is

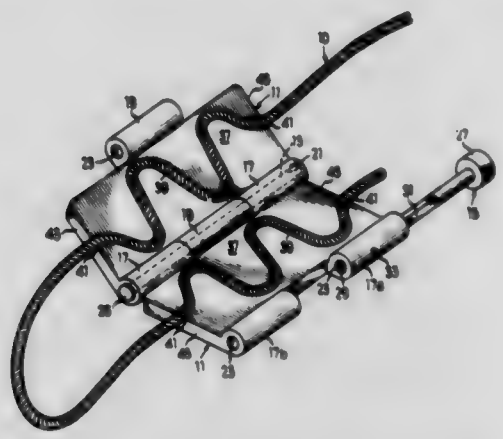
turned out from the base plate and is positioned on one side of a dead center position, and on the other hand urges said handle to rotate in the direction towards its open position when the handle is turned out from the base plate and is positioned on the other side of said dead center position.

4,493,134

ROPE CLAMPING DEVICE

Edward J. Karr, 3N430 Woodland Ave., West Chicago, Ill. 60185

Filed Nov. 22, 1982, Ser. No. 443,393
Int. Cl.³ F16B *2/02*; F16G *11/00*; H01R *13/58*
U.S. Cl. 24—132 WL 14 Claims



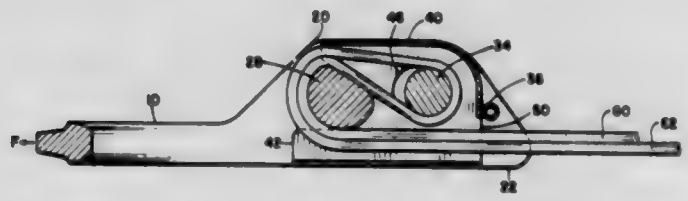
1. A rope, wire or cable clamping device comprising:
a first plate including a surface provided with a serpentine groove to receive and retain a segment of a rope, wire or cable to be clamped;
A second plate including a surface provided with a serpentine groove to receive and retain a different segment of a rope, wire or cable to be clamped;
said plates being adopted to be positioned with said surfaces in closely spaced face-to-face relation and means to releasably secure said plates in said position;
said grooves being of a depth that is less than the thickness of the segment to be clamped, positioning of said plates with said surfaces in said closely spaced face-to-face relationship compressing said segments to be clamped therebetween; and
wherein said plates are longitudinally elongated and said serpentine grooves are formed about a longitudinal cneter line thereof and extend for at least two 360° reversals of direction with respect to said centerline.

4,493,135

FITTING FOR CONNECTION WITH WEB-TYPE STRAPPING

Edward J. Crook, Jr., Tulsa, Okla., assignor to The Crosby Group, Inc., Tulsa, Okla.

Filed Mar. 28, 1983, Ser. No. 479,755
Int. Cl.³ A44B *11/00*
U.S. Cl. 24—197 5 Claims



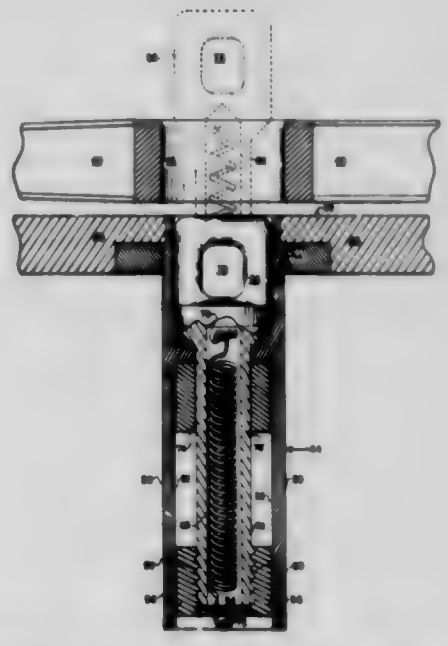
1. Apparatus to attach and adjust the length of fabric web type strap to a fitting which has rearwardly thereof two spaced parallel sides defining a top and bottom comprising:
a crossbar non-rotatably and non-movably affixed at a given position to and between said sides immediately rearward of said fitting, said crossbar of cross-section configuration having a curved surface adjoining a flat surface, the generation of said curved surface extending from its top forwardly to said bottom and rearwardly around to said flat surface which connects at its said top,
a cross-pin affixed to and between said sides rearwardly of and of parallel axis to said crossbar; and
a removable tension pin affixed to and between said sides rearwardly of and below said cross-pin.

4,493,136

PIVOTAL MONO WING CRUISE MISSILE WITH WING DEPLOYMENT AND FASTENER MECHANISM

Frederick D. Groetsge, Laramie, Wyo.; Samuel N. Conjerti, and Lockburn S. Shaw, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 182,335, Aug. 29, 1980,. This application Apr. 29, 1982, Ser. No. 373,086
Int. Cl.³ A44B *11/25*
U.S. Cl. 24—573 8 Claims



1. A retractable device for releasably attaching a first member to a second member comprising:
a cylinder having a cylinder housing, an interior cylinder wall, a first end and a second end having means for connecting to said second member;
a piston positioned in slideable engagement with said cylinder wall;
a connecting rod having a hollow core and having extended and retracted positions and having a first end connected to said piston and a second end having means for releasable engagement with a deployment actuating mechanism connected to said first member; and
spring means connected to said connecting rod and to said cylinder housing for biasing said connecting rod towards said cylinder second end, said spring means extending through said hollow core.

4,493,137

METHOD OF MAKING A DRIVE ELEMENT ASSEMBLY FOR INK JET PRINTING

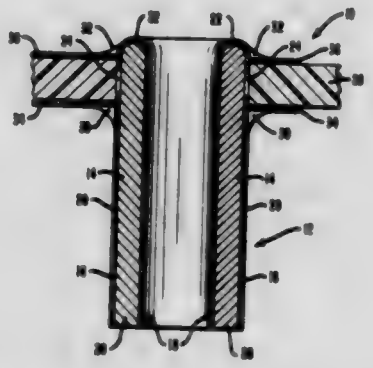
Leonhard Bader, Stadtbergen; Ferdinand Hermann, Neusess; Wilhelm Ruprich, and Hermann Winter, both of Augsberg, all of Fed. Rep. of Germany, assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 19, 1983, Ser. No. 533,399
Int. Cl.³ H04R *17/00*
U.S. Cl. 29—25.35 5 Claims

1. A method of making a print head for use in an ink jet printer device, which comprises the following steps:
(a) providing a piezoelectric drive element, comprising a hollow body made of a piezoelectric material, and a pair

of electrodes spaced apart and thereby electrically isolated from one another on an external face of said hollow body;

(b) fitting said piezoelectric drive element through a hole in a printed circuit board, so that a portion of said hollow



body extends through said hole and the space between said electrodes on said face is between the opposite sides of said circuit board; and

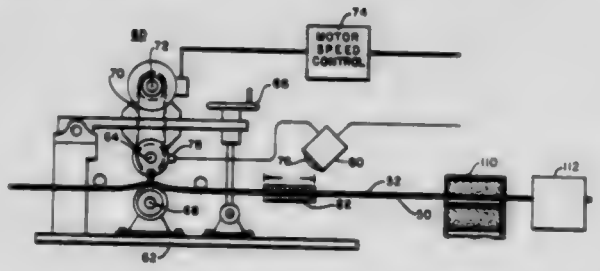
(c) respectively soldering said electrodes to opposite sides of said circuit board.

4,493,138

VAPOR COOLED ELECTRICAL INDUCTIVE APPARATUS

Richard D. Gibbs, Hermitage, and Roger C. Johnson, Sharpsville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 154,152, May 28, 1980, abandoned. This application May 28, 1983, Ser. No. 497,214
Int. Cl.³ B23Q *15/00*
U.S. Cl. 29—33 Q
4 Claims



1. Apparatus for forming precisely spaced grooves in the surface of a continuously moving, elongated, metallic conductor, comprising:

a frame;

grooving means for grooving said surface of said continuously moving, elongated, metallic conductor mounted on said frame;

support means for supporting said continuously moving, elongated, metallic conductor mounted on said frame opposite said grooving means and in close proximity thereto to support said moving elongated metallic conductor beneath said grooving means;

means moving the elongated metallic conductor between and past said grooving means and said support means;

means for varying the frequency of operation of said grooving means to cause said grooving means to form grooves at a predetermined spacing into said surface of said continuously moving elongated metallic conductor;

measuring means for measuring the space between the grooves in said surface of said continuously moving, elongated metallic conductor;

the measuring means including sensing means for sensing the forming of each groove;

a stroboscopic light mounted on the frame so as to illuminate a predetermined portion of the surface of the continuously moving elongated metallic conductor when said stroboscopic light flashes; and

a spacing scale mounted on the frame to cause said spacing scale to be illuminated concurrently with said predetermined portion of the surface of the continuously moving, elongated metallic conductor when said stroboscopic light flashes, and

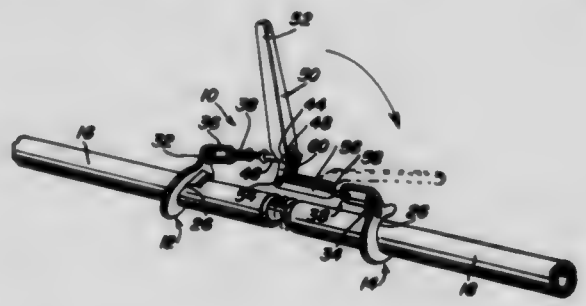
said stroboscopic light being electrically connected and responsive to said sensing means to cause said stroboscopic light to flash and momentarily illuminate said spacing scale and said predetermined portion of the surface of the continuously moving, elongated, metallic conductor, when said sensing means senses the forming of each groove, to obtain a momentary stationary image of said predetermined portion of the surface of the continuously moving, elongated, metallic conductor, opposite said spacing scale to permit measurement of the space between the grooves in the surface of the continuously moving, elongated metallic conductor.

4,493,139

BOILER PIPE ASSEMBLY TOOL

Gary W. McClure, Rte. 7, Box 228-A, South Charleston, W. Va. 25309

Filed Jul. 20, 1982, Ser. No. 400,134
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—267
9 Claims



1. Boiler pipe tool comprising a pair of rigid C-shaped jaws for engaging pipe sections at opposed circumferential portions thereof, a flexible means connected to each C-shaped jaw at a location adjacent one end of the jaw and a lever having a handle portion at one end, the other end of the lever being connected to the respective flexible means at spaced points to move the jaws toward each other in response to swinging the lever, said lever having an offset portion at the end to which the flexible means are attached for providing overcenter movement of the points of attachment when the lever is pivoted to a position to force the ends of the pipe sections together and locking the tool in position to enable welding without holding the lever of the tool.

4,493,140

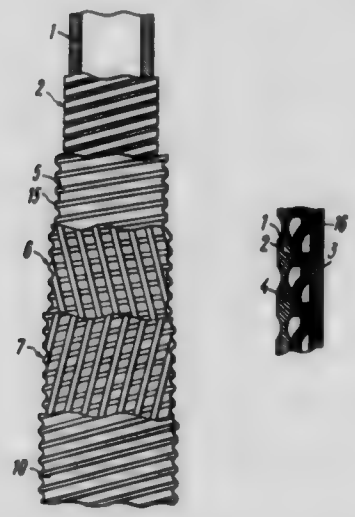
METHOD OF MANUFACTURING A FLEXIBLE PIPE

Gasan M. B. O. Abdullaev, ulitsa Serafikina, 27, blok 2; Faramaz G. O. Maxudov, ulitsa Gadzhibekova, 33/35; Dzhangir A. K. O. Kasimov, ulitsa Gadzhibekova, 38, kv. 39; Bakhtiyar M. R. O. Mamedov, prospekt Neftyanikov, 87, kv. 15; Gabil G. Aliev, ulitsa Gadzhieva, 42, blok 1, kv. 1; Yashar A. O. Gadzhiev, 4 mikroraion, ulitsa 7-va Binagadinskaya, 9, kv. 9; Rovshan I. O. Shakhmamedov, ulitsa Gubanova, 10, kv. 8, all of, Baku, and Alexei A. Ilyushin, Chistyeprudy, 9, kv. 44, Moscow, all of U.S.S.R.

PCT No. PCT/SU80/00153, § 371 Date May 12, 1981, § 102(e) Date May 6, 1981, PCT Pub. No. WO81/00746, PCT Pub. Date Mar. 19, 1981
Division of Ser. No. 261,206, May 12, 1981, Pat. No. 4,403,631. This PCT application Sep. 1, 1980, Ser. No. 492,598
Claims priority, application U.S.S.R., Sep. 12, 1979, 2780068
Int. Cl.³ B23P *11/02*
U.S. Cl. 29—446
1 Claim

1. A method for manufacturing a flexible pipe comprising an inner supporting pipe made from an elastic material, a power

frame formed by a shaped strip having a Z-shaped cross-sectional profile with two stepwise conjugated flanges, the strip being wound in a spiral fashion onto the supporting pipe such that the upper flange of each turn is disposed over the lower flange of the adjacent turn, an interlayer formed of an elastic material and superimposed onto the power frame, at least one pair of reinforcing layers including an upper and a lower layer, said reinforcing layers being formed by groups of power filaments, said filaments being parallel to one another and wound in opposed directions onto said interlayer, and an external protective shell formed of an elastic material, wherein each of said flanges is of a quadrangular cross-section and is of a height equal to one half of the height of the profile of the strip so that the upper flange of each turn rests directly on the lower flange of the adjacent turn, and the ends of the upper flanges as well as the ends of the lower flanges are aligned, the power filaments of each reinforcing layer being wound at angles of from about 0° to 20° to the axis of the pipe and wherein said inter-



layer is made from an elastic material and has a helical expansion disposed above the butt formed between the ends of the upper flanges of the turns of the strip, comprising the steps of superimposing said shaped strip, preliminarily bent in a spiral onto an inner supporting pipe defining a power frame on said support tube with said upper flange of each turn of said spiral disposed over said lower flange of the adjacent turn, and said lower flange being fixed to said support pipe, tensioning said power frame and said support tube to longitudinally stretch same, covering the longitudinally stretched power frame formed by the shaped strip with an interlayer of an elastic material with simultaneous fastening of said interlayer to the strip, winding on said longitudinally stretched power frame each of said groups of power filaments in opposite directions to form reinforcing layers, and superimposing an external protective shell, over said reinforcing layers, and releasing said tension to allow said stretched power frame and support tube to contract and compress said elastic interlayer.

4,493,141

METHOD OF JOINING SHEETS WITH A RIVET

John E. Krezak, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 218,819, Dec. 22, 1980,. This application Jan. 21, 1983, Ser. No. 460,065
Int. Cl.[3] B21D *39/00*; B23P *11/00*
U.S. Cl. 29—509 17 Claims

1. The method of fastening at least two work pieces with a fatigue resistant and sealing rivet, wherein one work piece has a shallow frusto-conical countersink to receive the rivet head, the countersink terminating in a generally cylindrical bore to receive the rivet shank,

the method comprising:

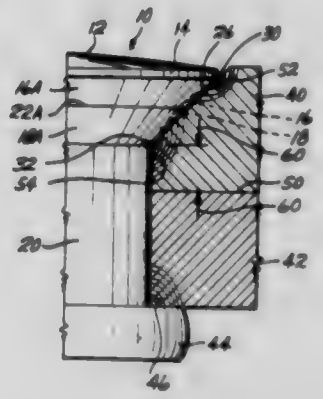
inserting a rivet shank into the bore and a rivet head into the countersink of the one work piece and inserting the rivet shank into a bore of a second work piece so that a shank end extends beyond the second work piece;

the rivet head having a distal frusto-conical portion and a proximate frusto-conical portion relative to said shank;

said proximate portion having a conical surface at a smaller angle relative to the shank axis than the conical surface of said distal portion relative to said axis;

the axial length of the proximate portion being slightly greater than the axial length of the distal portion;

said distal and proximate portions being adjoined at a common diameter;



said common diameter being the largest diameter of said proximate portion and the smallest diameter of said distal portion; and

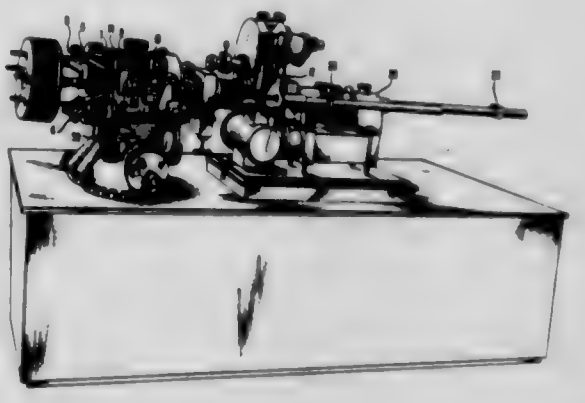
exerting forces on the rivet head and shank end to upset the shank end on the second work piece and to deform the proximate and distal portions radially along the common diameter and both sides thereof to form a continuous conical surface in pressure relationship with a continuous conical countersink surface.

4,493,142

III-V BASED SEMICONDUCTOR DEVICES AND A PROCESS FOR FABRICATION

James C. Hwang, Berkeley Heights, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 7, 1982, Ser. No. 376,178
Int. Cl.[3] H01L *21/203, 21/477*
U.S. Cl. 29—575 10 Claims



1. A process for producing a device, said device based on a III–V based semiconductor material comprising the steps of depositing said III–V based semiconductor material on a substrate characterized in that

(1) a passivating layer is formed on said substrate before said deposition,

(2) said passivating layer is removed in the presence of a flux of a volatile group V entity that repairs the surface of said substrate, wherein sufficient repair is essentially completed before said deposition is initiated to yield a surface exhibiting a reflection electron diffraction pattern having essentially continuous streaks,

(3) said repair of said substrate is accomplished at a repair

temperature above the passivating layer removal temperature and below the incongruent melting temperature of said semiconductor material wherein said flux is adequate to produce a repair of said surface which is sufficient to yield a stripped electron diffraction pattern, and

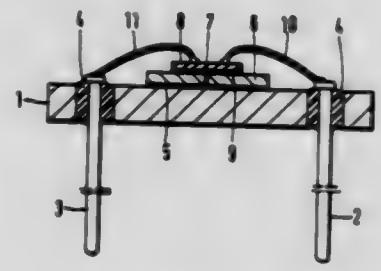
(4) performing said deposition by treating said substrate with a flow containing an entity corresponding to each atom composing said semiconductor material, wherein the total flux of the volatile entities in said flow is in excess to the total flux of the nonvolatile entities in said flow.

4,493,143

METHOD FOR MAKING A SEMICONDUCTOR DEVICE BY USING CAPILLARY ACTION TO TRANSPORT SOLDER BETWEEN DIFFERENT LAYERS TO BE SOLDERED

Herbert Maier, Heilbronn, Fed. Rep. of Germany, assignor to Telefunken Electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Oct. 23, 1981, Ser. No. 315,296
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1980, 3040867
Int. Cl.³ H01L *21/58*
U.S. Cl. 29—590 3 Claims



1. A method of producing a semiconductor arrangement comprising the steps of placing a thin solder wafer onto a casing support, placing a carrier member with a capillary opening onto said solder wafer so that said capillary opening is covered on the underside of the carrier member by said solder wafer, placing a semiconductor member on said carrier member above said capillary opening, and connecting said carrier member to said casing support and to said semiconductor member during a single soldering process wherein solder from said solder wafer rises due to said capillary opening and moistens the rear face of said semiconductor member.

4,493,144

METHOD OF ASSEMBLING A COMBINATION STARTER-PROTECTOR DEVICE

Lee O. Woods, Morrison, and Donald L. Haag, Sterling, both of Ill., assignors to General Electric Company, Fort Wayne, Ind.

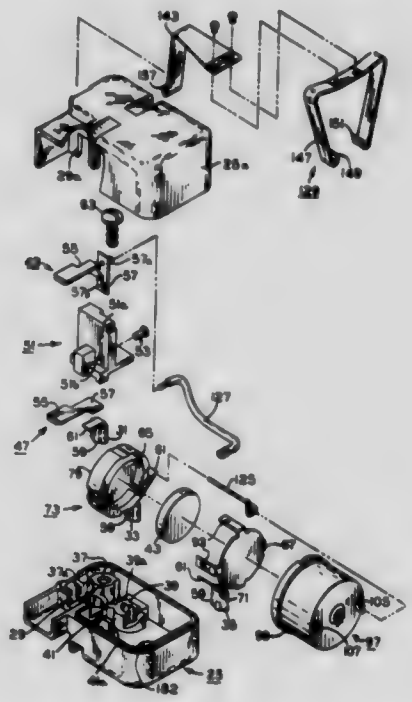
Division of Ser. No. 202,873, Oct. 31, 1980, Pat. No. 4,387,412.
This application Jul. 12, 1982, Ser. No. 397,275
The portion of the term of this patent subsequent to Dec. 2, 1997, has been disclaimed.
Int. Cl.³ H01H *11/06*
U.S. Cl. 29—622 22 Claims

15. A method of assembling a combination starter-protector device having a pair of casing members adapted to define a chamber therewithin and with at least one of the casing members defining an opening therethrough, a plurality of clustered apertures through the at least one casing member, a plurality of first terminals, a plurality of second terminals, a PTCR, a bimetal switch, and a terminal mounting piece, the method comprising the steps of:

arranging one of the first terminals and one of the second terminals in circuit relation with each other and mounting another of the first terminals to the terminal mounting piece;

associating the one second terminal with one of the apertures through the at least one casing member and extending the one first terminal in part through the opening of the at least one casing member;

disposing the terminal mounting piece in a position with respect to the at least one casing member so as to at least in part close the opening thereof and extending thereby the another first terminal in part through the opening of



the at least one casing member in spaced apart relation with the one first terminal; and

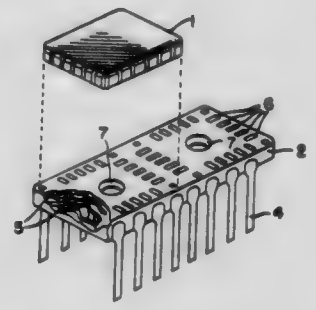
associating the other of the casing members generally in mating relation with the at least one casing member and the terminal mounting piece and enclosing thereby the chamber within the at least one casing member and the other casing member.

4,493,145

INTEGRATED CIRCUIT DEVICE HAVING EASILY CLEANED REGION BETWEEN MOTHER BOARD AND CHIP CARRIERS MOUNTED THEREON

Norio Honda, Aizuwakamatsu, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 201,484, Jun. 23, 1980, abandoned. This application Oct. 19, 1983, Ser. No. 542,570
Claims priority, application Japan, Nov. 8, 1978, 53-153950
Int. Cl.³ H05K *3/34*
U.S. Cl. 29—840 3 Claims



1. A method for making an integrated circuit device, comprising the steps of:

forming solder pads on the bottom side of a chip carrier;

forming corresponding solder pads on the top side of a mother board;

positioning the chip carrier on the mother board so that the solder pads of the chip carrier are adjacent the corresponding solder pads of the mother board;

heating the solder pads to melt the solder and join the corresponding solder pads; and

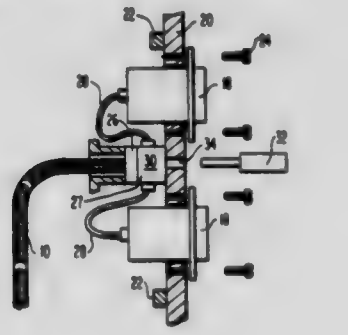
circulating solvent between the chip carrier and the mother board through an opening in the mother board.

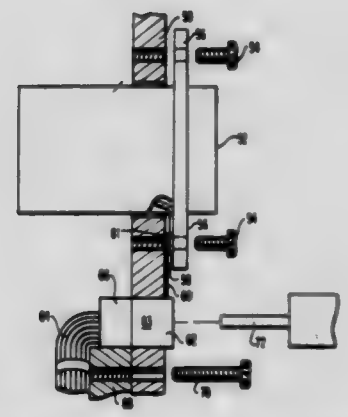
4,493,146

QUICK ATTACH DETACH INSTRUMENT PANEL METHOD

Michael J. Cronin, Sherman Oaks, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Division of Ser. No. 107,414, Dec. 26, 1979, Pat. No. 4,367,513.
This application Dec. 14, 1981, Ser. No. 330,212
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—857 4 Claims





4. A method of mounting an instrument within a panel comprising the steps of:

(a) providing a panel having an aperture adapted to receive an instrument and having one mating portion of a zero insertion force electrical connector electrically connected to electrical wiring behind the panel;

(b) providing an instrument having an electrical conductor terminating in the other mating portion of the zero insertion force electrical connector, the length of the conductor being such as to permit withdrawal of the instrument from the panel from the front thereof without disconnecting the zero insertion force connector;

(c) mating the two portions of the zero insertion force connector with the instrument not secured to the panel and in front of the panel and with the conductor extending through the aperture for the instrument;

(d) operating the zero insertion force connector from the front side of the panel to establish an electrical connection between the instrument and the electrical wiring behind the panel;

(e) inserting the instrument into the panel from the front thereof; and,

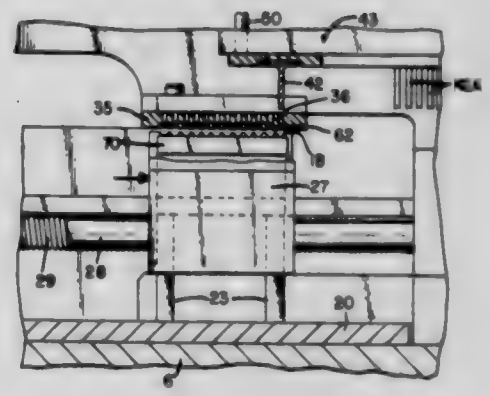
(f) mechanically securing the instrument to the panel from the front thereof.

4,493,147

APPARATUS FOR FABRICATION OF A CROSSOVER WIRE HARNESS

Johannes C. W. Bakermans, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 1, 1982, Ser. No. 432,211
Int. Cl.³ H01R *43/04*; B23P *19/00*
U.S. Cl. 29—861 9 Claims



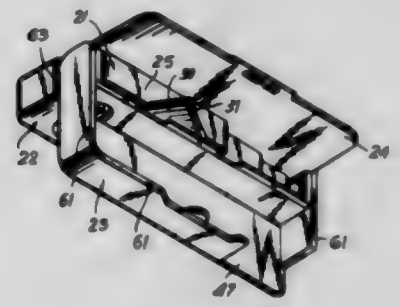
1. A method for fabricating a crossover wire harness comprising the steps of: feeding a plurality of electrical wires to a wire holder, holding the wires in the wire holder horizontally of their lengths without the wires crossing over one another, transporting an electrical connector assembly relative to the wire holder to align a respective wire position of the connector assembly with a selected held wire, transferring the selected held wire from the wire holder into the aligned wire position of the connector assembly, and holding the remaining wires by the wire holder elevated in respect to the connector assembly and the wires previously transferred thereto during transport of the connector assembly relative to the wire holder.

4,493,148

CORRUGATED CARTON CUTTER

Stanley L. Ruff, 9 Arbor Dr., New Rochelle, N.Y. 10804

Filed Oct. 3, 1983, Ser. No. 538,157
Int. Cl.³ B26B *29/02*
U.S. Cl. 30—2 27 Claims



1. An arrangement for holding a cutting blade having at least one cutting edge, particularly for use as a utility knife for opening filled boxes, especially of corrugated board which include associated adjacent box surfaces that meet at respective edges, comprising:

a support member for the blade having a major surface and a contact surface substantially normal to said major surface and operative for contacting one of the associated adjacent surfaces of the box during the cutting operation;

means for dismountably holding the blade on said major surface in an active position in which the cutting edge of the blade is at least partially situated beyond said contact surface of said holding member to penetrate into the re-

spective box next to said contact surface during the cutting operation;

a confining member having a distancing surface substantially parallel to and spaced a predetermined distance from the blade;

means for mounting said support member on said confining member for movement relative thereto between a first position in which said confining member confines the blade between itself and said major surface and said distancing surface extends beyond said contact surface to engage the other of the associated adjacent surfaces of the box during the cutting operation and thus to keep the cutting blade at said predetermined distance from the other adjacent surface, and a second position in which said support member extends beyond said distancing surface, and the blade is accessible; and

a cover for the cutting edge of the blade mounted on said confining member for displacement between an open position in which the cutting edge is exposed both in said first and second position of said support member and a closed position in which the cutting edge is covered when said support member is in said first position, and exposed beyond said cover when said support member is in said second position thereof, said cover including means for confining said blade between itself and said major surface, and means for keeping said support member in said second position thereof, in said closed position of said cover.

4,493,149

RECIPROCAL BLADE ASSEMBLY OF ELECTRIC SHAVER

Masao Tanahashi; Toshio Tanabe, and Kiyotaka Otsuka, all of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

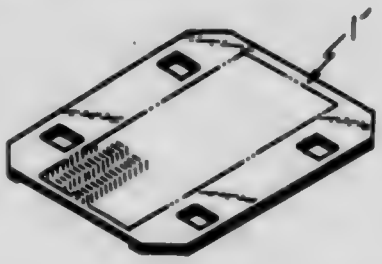
Continuation of Ser. No. 191,518, Sep. 29, 1980, abandoned. This application Sep. 14, 1982, Ser. No. 418,083

Claims priority, application Japan, Mar. 15, 1980, 55-33271; May 27, 1980, 55-70924

Int. Cl.³ B26B *19/04*

U.S. Cl. 30—43.92

2 Claims



1. A reciprocable blade assembly for an electric shaver comprising an outer blade made of a flexible steel foil having a plurality of hair inlet apertures and being bent from a flat shape into a substantially semi-cylindrical shape and fixed to the head part of said shaver to form a semi-cylindrical outer blade, and an inner cutter including a plurality of blades each having an arcuate cutting edge and integrally supported substantially parallel with each other so that said cutting edges contact the inner surface of the semi-cylindrical outer blade, said inner cutter being reciprocably mounted to slide along the inner surface of the outer blade in the direction of the longitudinal axis of said semi-cylindrical outer blade, said outer blade being provided with an elongated bent part recessed inwardly and extending in a direction parallel to said longitudinal axis of the semi-cylindrical outer blade, said bent part including side walls extending to adjacent surface parts of the outer blade on both sides of said bent part, said hair inlet apertures including a plurality of slit-shaped apertures disposed within said side walls and extending transversely of said direction and outwardly to said adjacent surface parts of the outer blade, said arcuate cutting edges of said blades of the inner cutter being provided with an edge defining an incision for receiving the recessed bent part of the outer blade, each of said slit-shaped apertures comprising a portion disposed in said side walls and intersecting at right angles the longitudinal axis of the outer blade and a portion disposed in said adjacent surface parts, said hair inlet apertures further comprise shorter slits disposed in said adjacent surface parts and longer slts longer than said shorter slits but shorter than the slit-shaped apertures disposed in the adjacent surface parts, said bent part of the outer blade being substantially V-shape in cross-section, and said incision of the respective inner cutter blades being substantially U-shaped having a bottom edge spaced from a tip end of said V-shaped bent part, restricting means being provided in said U-shaped incision of the inner cutter blades, said restricting means having a groove receiving the apex of said V-shaped bent part of the outer blade and opposing the apex through a slight clearance.

4,493,150

PIPE CUTTER WITH SPLIT RING FRAME AND ENCLOSED FEEDING MEANS

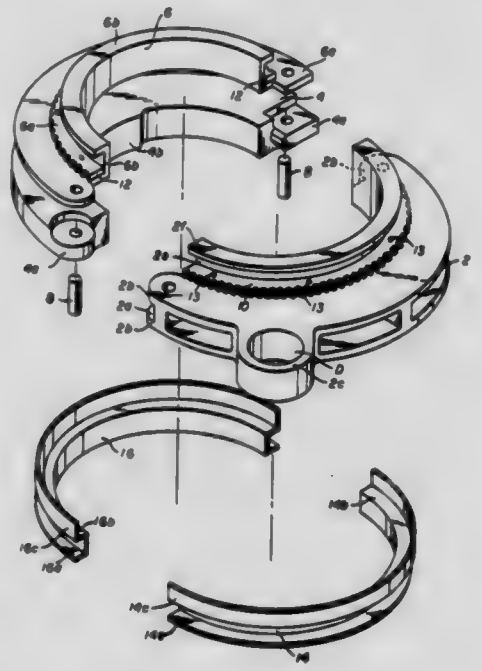
Carlos M. Garcia, 225 Sunnyside St., Apt. 15, Bldg. 14, Houston, Tex. 77076; I. Ely Reed, 4050 Heatherage Dr., Houston, Tex. 77084, and Dale K. McLeod, 5926 Pinewilde, Houston, Tex. 77066

Filed Nov. 5, 1982, Ser. No. 439,411

Int. Cl.³ B26D *3/16*

U.S. Cl. 30—97

3 Claims



1. An apparatus for cutting pipe comprising

a split ring frame;

means for attaching the frame to a pipe;

a split ring carrier rotatably mounted to the frame;

means for driving the split ring carrier about the frame;

a cutter arm;

means for pivotally attaching the cutter arm to one of the carrier rings;

a cutting tool movably attached to the cutter arm so that the cutting tool can move in the raidal direction relative to the pipe being cut;

feeding means for advancing the cutting tool towards the center of the pipe being cut, the feeding means being mounted in the cutting arm, frame and carrier so that the entire feeding means is interior of the outer periphery of the frame and carrier and exterior of the inner periphery of the frame and carrier, the feeding means being activated by rotation of the split ring carrier relative to the frame, said feeding means including a shaft which is rotatably attached to one of the carrier gear rings and the cutter arm, said shaft providing the means for pivotally attaching the cutter arm to one of the carrier rings;

a split feed gear ring with a plurality of outwardly projecting teeth mounted to the frame; and

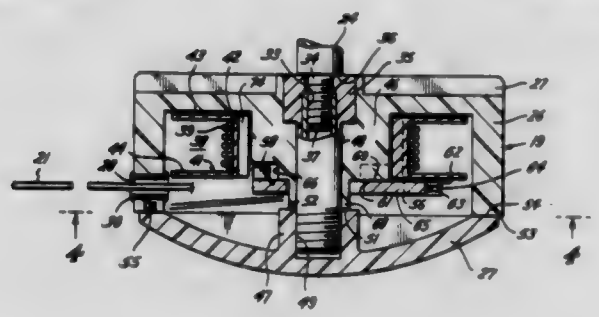
a feed pinion gear with a plurality of outwardly projecting teeth attached to the shaft, the teeth of said feed pinion gear meshing with the teeth of the feed gear ring as the split ring carrier rotates about the split ring frame.

4,493,151

APPARATUS FOR CUTTING VEGETATION

Albert W. Mitchell, Houston, Tex., assignor to Emerson Electric Co., St. Louis, Mo.

Continuation of Ser. No. 144,062, Apr. 28, 1980, abandoned. This application Jun. 25, 1982, Ser. No. 392,226
Int. Cl.³ A01D *50/00*
U.S. Cl. 30—276 26 Claims



1. An apparatus for cutting vegetation, comprising:

a rotatable head member,

at least one spool rotatably supported on said head member for rotation relative to said head member and having a coiled supply of cutting line wound about said spool;

guide means disposed on said head member for guiding an end portion of cutting line from said spool to the exterior of said head member whereby said end portion of said cutting line is extended from said head member by centrifugal force upon rotation of said head member;

means for rotatably driving said head member;

a control member engageable with a portion of said cutting line and movable between a first position and a second position on said head member and relative to said spool, said control member being engaged with said spool to restrain rotation of said spool relative to said head member while said control member is disposed in said first position and said second position and to release said spool for rotation relative to said head member while moving from said first position to said second position, thereby increasing the length of said end portion of said cutting line by a selected amount;

said control member being movable from said first position to said second position in response to a shortening of said end portion of said cutting line extending from said head member during rotation of said head member and being movable from said second position to said first position in response to an increase in length of said end portion of said cutting line extending from said head member and uncoiled from said spool during movement of said control member between said first and second positions.

4,493,152

LETTERING MACHINE

Osamu Ono, Tokyo, Japan, assignor to Nakaru Inc., Tokyo, Japan

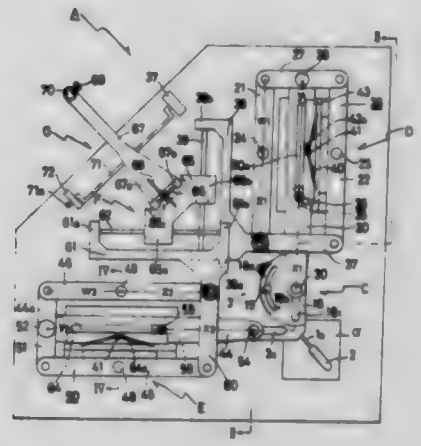
Filed Sep. 6, 1983, Ser. No. 529,677
Int. Cl.³ B43L *13/10*
U.S. Cl. 33—25 R 10 Claims

1. A lettering machine comprising:

a tracer support mechanism means supporting a tracer means at a corner such that said tracer means can be freely moved to trace a letter or the like engraved on a tracing pattern plate;

a parallelogrammic horizontal component transmission mechanism means coupled directly to said tracer support mechanism means and capable of transmitting the horizontal component of the tracing motion of said tracer means on an equal scale, an enlarged scale or a reduced scale;

a parallelogrammic vertical component transmission mechanism means coupled to said tracer support mechanism means and capable of transmitting the vertical component of the tracing motion of said tracer means on an equal scale, an enlarged scale or a reduced scale;



a resultant motion reproducing mechanism means coupled to said parallelogrammic horizontal and vertical component transmission mechanism means and capable of combining the horizontal and vertical components of tracer motion transmitted from said respective transmission mechanism means to reproduce the tracer motion on an equal scale, an enlarged scale or a reduced scale; and

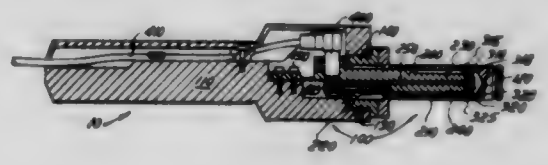
a writing tool support mechanism means coupled to said resultant motion reproducing mechanism means and capable of mounting a writing tool at a free end.

4,493,153

MEASURING APPARATUS AND METHOD OF MAKING

Robert L. Eakes, Clayton, Ohio, assignor to The Bendix Corporation, Cleveland, Ohio

Continuation of Ser. No. 205,206, Nov. 10, 1980, abandoned. This application Oct. 7, 1983, Ser. No. 540,096
Int. Cl.³ G01B *7/12*
U.S. Cl. 33—149 J 16 Claims



1. A measuring apparatus for measuring distance between two surfaces, said measuring apparatus comprising:

a housing;

contact tips for engaging the surface to be measured;

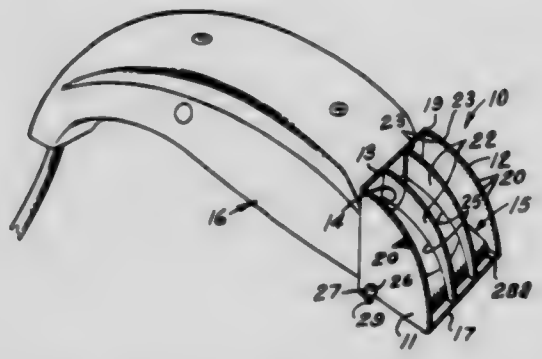
means for mounting the contact tips to the housing while allowing the tips to displace with respect to the housing in response to contact with the surfaces to be measured, said mounting means comprising a one-piece spring member mounted to the housing toward one end of the spring member, said spring member including a pair of flexible arms extending outwardly and coupled medially at an integral cross member, said arm pivoting about the cross member in response to movement of one of the tips; and

means for measuring the pivotal movement of the spring members as an indication of the displacement of said contact tips, thereby indicating the distance between the surfaces, said measuring means being coupled to the housing and at least one of said flexible arms.

4,493,154
TAPER GAUGE DEVICE FOR HAIR CLIPPERS

Gabriel E. Pascual, 1111 Bishop St., Room 1, Honolulu, Hi. 96813

Filed Jan. 18, 1982, Ser. No. 389,944
Int. Cl.³ B26B 19/38
U.S. Cl. 33—185 R
5 Claims



1. A device for causing hair clippers to make a tapered cut, comprising

a member adapted for operative attachment to a comb-type power driven hair clipper,

said member having a curved surface engageable with the hair at the back of a human head for rolling movement upwardly from the neck, and

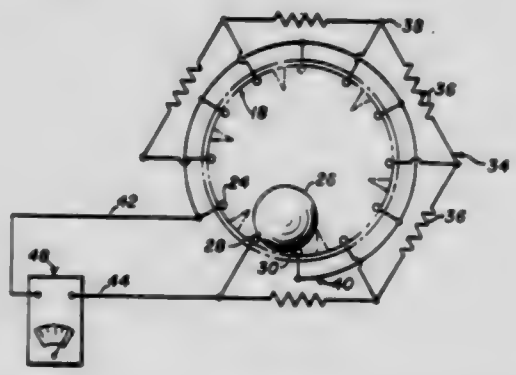
means formed for effecting a pivotal mounting of said member on said hair clipper with said curved surface extending beyond the cutting end of said hair clipper,

said curved surface being eccentric with respect to the axis of said pivotal mounting whereby pivoting of said member on said hair clipper as said curved surface is rolled upwardly against the back of the head causes the forward end of said clipper to move gradually further away from said head and thus increase the length of the hairs being cut.

4,493,155
APPARATUS FOR REMOTELY INDICATING ANGULAR POSITION

Joseph H. Comeau, Suffield; Joseph E. Kowles, Wethersfield; John P. Lareau, Granby; Kenneth R. Mayo, Enfield, and Herbert A. Runde, Windsor Locks, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 29, 1982, Ser. No. 427,241
Int. Cl.³ G01C 9/10
U.S. Cl. 33—366
5 Claims



1. Apparatus for remotely indicating the angular position of a probe about a rotational axis with respect to the horizontal, comprising:

a cage of substantially cylindrical shape mounted upon said probe and rotatable therewith, the centerline of the cylindrical cage being substantially parallel to said rotational axis;

a plurality of electrically conductive surfaces disposed upon the inner surface of the cage, each conductive surface being electrically isolated from each other conductive surface and from the cage, the number of surfaces being a multiple of two;

an electrically conductive rolling member of spherical configuration freely moveable within the cage under the influence of gravity for simultaneouly contacting one pair of adjacent conductive surfaces when the cage centerline is in a substantially horizontal orientation, the particular pair of surfaces contacted being dependent upon the relative position of the cage with respect to the gravitational vector;

a common conductor in electrical communication with alternate conductive surfaces;

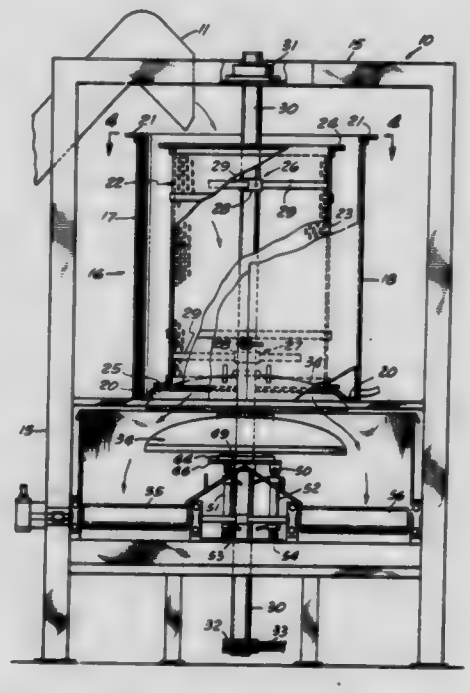
a plurality of resistors of known resistance forming a resistance grid, each individual resistor electrically located between adjacent alternate conductive surfaces not in electrical communication with the common conductor, with the exception of one pair of adjacent alternate conductive surfaces between which no resistor is disposed; and

an electrical measuring device, forming an electrical circuit in cooperation with the resistance grid, the common conductor, and the rolling member when the rolling member is simultaneously contacting an adjacent pair of conductive surfaces, for determining the total resistance present within the electrical circuit, whereby the particular pair of conductive surfaces in contact with the rolling member may be established and the angular position of said probe indicated.

4,493,156
PRODUCE SPIN DRYER

Robert L. Siegmann, 1270 North Grove, Anaheim, Calif. 92806

Filed Jun. 29, 1983, Ser. No. 508,822
Int. Cl.³ F26B 5/08
U.S. Cl. 34—8
2 Claims



1. In a method of drying produce by spinning the produce in a foraminous walled container having a removable bottom wall at a first rotative speed for centrifugally removing moisture from the produce, the improvement comprising the steps of:

reducing the speed of rotation below said first rotative speed and below the speed at which the produce is centrifugally held to the foraminous container;

removing the container bottom wall to allow the dried produce to fall from the container while it is rotating at the reduced speed; and

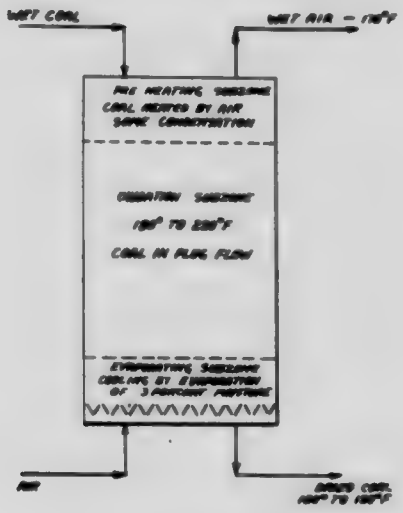
reciprocating the container about its axis of rotation while the container bottom wall is removed so as to shake loose any produce adhering to the foraminous container.

4,493,157

METHOD OF AUTOGENOUSLY DRYING COAL

Gordon R. Wicker, Lakewood, Colo., assignor to Amax Inc., Greenwich, Conn.

Filed Aug. 15, 1983, Ser. No. 523,377
Int. Cl.³ F26B 3/08
U.S. Cl. 34—10 4 Claims



1. A method of drying as-mined coal having a size two inches and less and containing about thirty percent moisture comprising:

(a) providing said coal in an autogenous drying zone having subzones consisting of a preheating, an oxidation and an evaporative cooling subzones,

(b) passing in a uniformly distributed manner, ambient air into said evaporative subzone such that the coal and said gas are moving countercurrent to each other, and exothermic oxidation of the coal occurs in the oxidation subzone to produce heated flowing gases and dried coal, whereby in the evaporative subzone the heated dried coal further dries by evaporating moisture therefrom and the heated gases in said preheating zone heat the incoming moist coal,

(c) removing the heated moisture laden gases from the preheating zone,

(d) removing the dried coal from the evaporative subzone, and

(e) regulating the movement of air relative to the coal in said autogenous drying zone to achieve by exothermic oxidation a temperature of the gases in the oxidation subzone of about 180° to 220° F. and not greater then about 250° F. and yielding dried coal containing from 5 to 15 percent moisture.

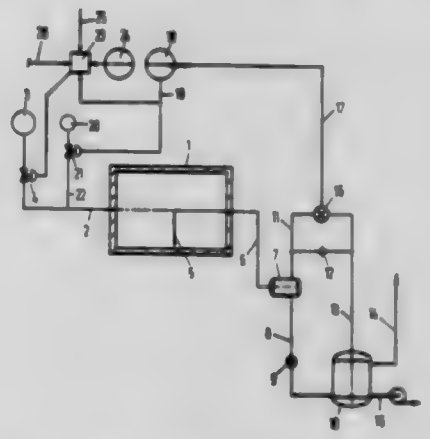
4,493,158

METHOD AND APPARATUS FOR REMOVING CONDENSATE FROM A CYLINDER, IN PARTICULAR A CYLINDER FOR DRYING PAPER

Rudi van Os, Ulestraten, Netherlands, assignor to Koninklijke Nederlandse Papierfabrieken N.V., Ak Maastricht, Netherlands

Filed Oct. 12, 1982, Ser. No. 433,914
Claims priority, application Netherlands, Oct. 13, 1981, 8104656
Int. Cl.³ F26B 3/24, 13/18
U.S. Cl. 34—41 7 Claims

1. A method for removing condensate from a cylinder, in particular a cylinder for drying paper to which a fluid under pressure is supplied via a first conduit and with which means are coupled for removing that fluid via a second discharge conduit, said method including the steps of: separating the fluid in the discharge conduit of the cylinder into a gaseous component and a liquid component and measuring and keeping constant the quantity of the gaseous component, said method being characterized in that a source of steam is coupled via a first controllable valve with the fluid supply conduit and a source of compressed air is coupled via a second controllable valve to said fluid supply conduit and said method being further characterized in that the quantity of gaseous components is kept constant by the steps of controlling the degree of opening of said first valve and, when said first valve has been opened to a predetermined position, by controlling the degree of opening



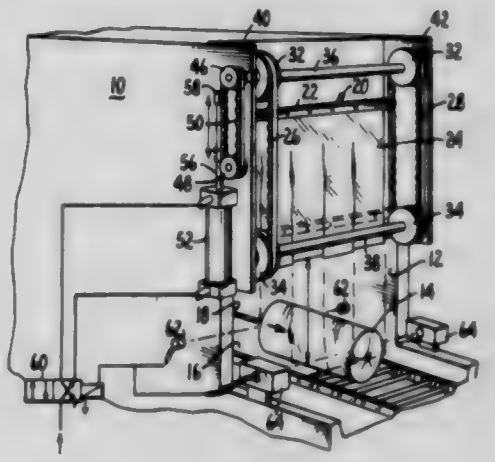
of said second valve when the measured quantity of gaseous components is too low and, when the measured quantity of gaseous components is too large, controlling the degree of opening of the second valve and, when said second valve is fully closed, controlling the degree of opening of said first valve.

4,493,159

SHRINK TUNNEL WITH MOVABLE GATE

Rudolph W. Schutz, Walnut Creek, and Rudolf R. Weis, Antioch, both of Calif., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Jun. 8, 1983, Ser. No. 502,405
Int. Cl.³ F26B 15/18
U.S. Cl. 34—43 6 Claims



1. In combination:

a shrink tunnel defining an interior for temporarily accomodating an article to be shrink wrapped while said article is conveyed through said tunnel and additionally defining an egress opening through which said article exits from said interior after being shrink wrapped;

a gate moveable between a first position whereat said gate substantially closes said opening and a second position whereat said opening is open and provides communication between the tunnel interior and the ambient atmosphere;

prime mover means operatively connected to said gate for moving said gate between said first and second positions;

sensing means operatively connected to said prime mover means for sensing the location of said article, said prime mover means moving the gate from the first position to the second position when the conveyed article is approaching said egress opening and returning the gate to

said first position after said article has exited from said egress opening; and

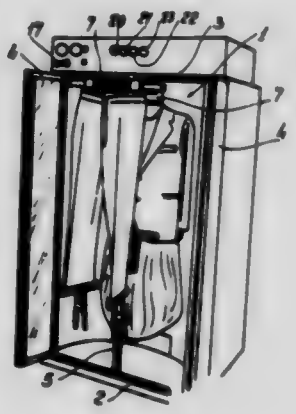
gate transport means mounted on said shrink tunnel and supporting said gate, said gate transport means operatively connected to said prime mover means and including a pair of spaced rotatable shafts, a pair of sheaves mounted on each of said shafts at spaced locations thereon whereby the sheaves mounted on one shaft are in general alignment with the sheaves mounted on the other of said shafts, and endless belts extending between said spaced shafts and disposed about the generally aligned sheaves thereof, said gate being affixed to said belts and movable therewith upon rotation of said shafts and sheaves by said prime mover means.

4,493,160

AUTOMATIC STEAM BOX FOR TEXTILE ARTICLES

Almiro Brembilla, and Sergio C. Pisani, both of Via Morosini, 16, 27029, Vigevano (Pavia), Italy

Filed Jul. 25, 1983, Ser. No. 516,719
Claims priority, application Italy, Aug. 2, 1982, 22693 A/82
Int. Cl.³ D06F *71/16*
U.S. Cl. 38—14 4 Claims



1. An apparatus for automatically carrying out the ironing cycle of a textile article or the like which ironing cycle comprises the steps of blowing hot steam through said article, providing for a rest period, ironing said article, circulating hot air through said article, drying said article by ventilation and exhausting the hot air, which apparatus comprises a box-like structure (1), a steam generator (18), a fan for providing ventilation, an exhauster for exhausting the hot air, said box-like structure including two bellows doors (4) mechanically driven to opening and closing positions, an upright (5), mechanically driven and rotatable alternately through a 180° angle, said upright bearing two radially extending arms (6) which are adapted to support said textile article, a plurality of timers (20, 21, 22, 23) for controlling said ironing cycle, said timers being capable of setting the duration of the step of blowing in steam, controlling the rest period, the ventilation step, the hot air exhausting period, said upright (5), upon rotation, being capable of closing said bellows doors (4), to start the ironing cycle, said article being located within said box-like structure supported by one of said radially extending arms, said doors being capable of opening at the end of said ironing cycle.

4,493,161

TRAP FOR FLYING INSECTS

Richard Soloway, 1025 Senwane Dr., Hewlett Harbor, N.Y. 11557, and Enzo Capalvo, 12 Hamilton Pl., Garden City, N.Y. 11530

Filed Dec. 20, 1982, Ser. No. 450,968
Int. Cl.³ A01M *1/00, 1/04*
U.S. Cl. 43—107 4 Claims

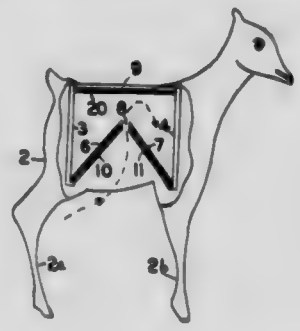
1. A flying insect trap comprising:

a hollow body having a bottom portion,

a plurality of legs connected to said body, said body having an aperture in its bottom portion,

a plurality of baffles mounted inside the body and extending upwardly and converging to form a small opening,

the body being shaped and colored to resemble the body of



an animal whereby the body provides a means for visually luring the insect to the trap,

the baffles being screens to let light shine through to attract flying insects towards the top.

4,493,162

SEED COATING COMPOSITION AND METHOD

Ervin C. Langan, Atchison, Kans., and Howard W. Christie, Raytown, Mo., assignors to W.E.F.C.O., Inc., Atchison, Kans.

Continuation-in-part of Ser. No. 190,490, Sep. 24, 1980, abandoned, which is a continuation-in-part of Ser. No. 115,181, Jan. 25, 1980, abandoned, which is a continuation-in-part of Ser. No. 10,301, Feb. 8, 1979, abandoned, which is a continuation-in-part of Ser. No. 824,052, Aug. 12, 1977, abandoned. This application Dec. 27, 1982, Ser. No. 453,797
Int. Cl.³ A01C *1/06*
U.S. Cl. 47—57.6 12 Claims

1. A seed treated for delay in germination after planting thereof, comprising:

a crop seed;

a coating on said seed for preventing normal germination of the seed for a period of time after planting thereof,

said coating including the dried, relatively rigid and water insoluble residue of a synthetic resin, and a filler material admixed with and incorporated into said synthetic resin which reacts with moisture and expands, the amount of said resin and filler being correlated for preventing germination for said period of time, and with said filler being present in an amount for slowly reacting with moisture from the earth after said seed is planted therein with consequent expansion of the filler material, and for causing said coating to rupture after a period of time from the planting of said treated seed by virtue of said filler material expansion, in order to then allow said seed to germinate.

4,493,163

HYDROPONIC CULTURE METHOD FOR ANIMAL FOOD AND DEVICE FOR CARRYING OUT SAID METHOD

Christian de Monbrison, Paris, France, assignor to Agro-Technics International Ltd., London, England

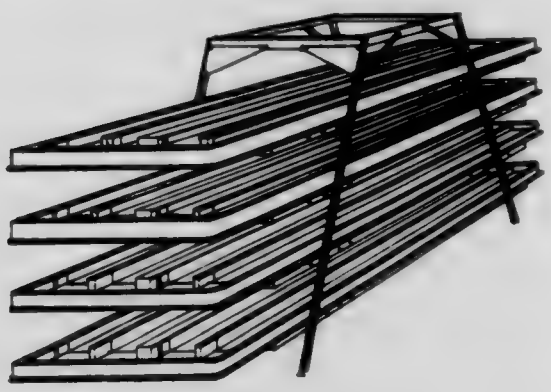
Filed Apr. 1, 1982, Ser. No. 364,180
Claims priority, application France, Apr. 2, 1981, 81 06666; Mar. 2, 1982, 82 03444
Int. Cl.³ A01G *9/02*
U.S. Cl. 47—61 3 Claims

1. A device for carrying out hydroponic culture for producing fodder for animal food from seeds which comprises a framework open to the atmosphere provided with supports on which rest a number of superimposed culture trays, each culture tray being provided with

(a) a double bottom having an upper and lower plate, an electrical heating device fixed within said double bottom, an insulating plate disposed between said heating device and said lower plate such that a layer of air is provided

between said heating device and said upper plate, wherein said upper plate is longitudinally inclined and carries horizontally leveled longitudinal ribs which support inner perforated trays containing said seeds, whereby a space is provided between said upper plate and the bottom of said inner trays, between said longitudinal ribs, such that water supplied in said space soaks or irrigates the seeds and roots contained in said inner trays or drains through a water draining system downstream of said inclined upper plate,

(b) a water supply piping system to introduce soaking water



or irrigating water in said culture tray at the bottom thereof,

(c) a draining system for draining said soaking water or irrigating water,

(d) programming means for controlling the water supply system and the draining system to regulate the soaking time, the irrigation time and the quantity of water supplied for soaking or irrigating, and

(e) means for controlling the heating system of said culture tray to maintain the seeds and roots at a constant temperature.

4,493,164

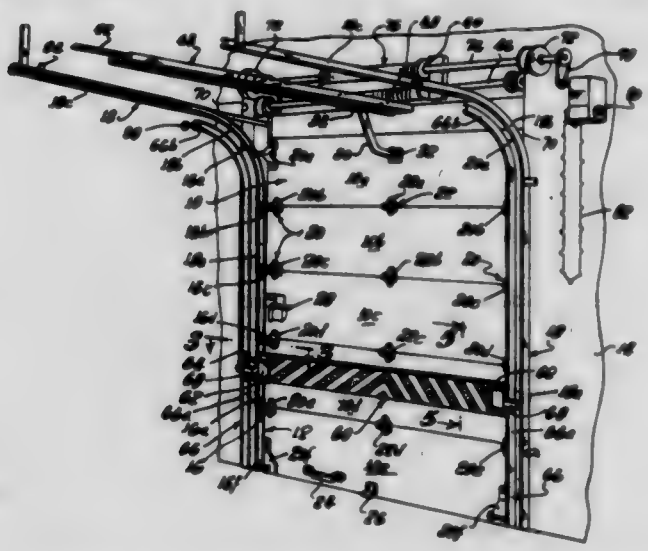
METHOD AND APPARATUS FOR DOOR PROTECTION

Richard P. Wagner, 825 Casa Loma Dr., Reno, Nev. 89503

Continuation of Ser. No. 196,450, Oct. 20, 1980, Pat. No. 4,356,668. This application Aug. 12, 1982, Ser. No. 407,470

Int. Cl.³ E06B 65/04

U.S. Cl. 49—65 2 Claims



1. Apparatus for preventing passage through a door opening comprising in combination: a structure containing a door opening; a door movable with relation to such door opening so that the entire door opening or any portion thereof may be closed depending upon the position of the movable door; door position detection means operable by means cooperable with said door so as to detect a predetermined position of closure of the door opening; barrier means independent of said door to prevent access through the door opening; and means activated by the said detection means to remove said barrier means from its position with relation to said door opening.

4,493,163

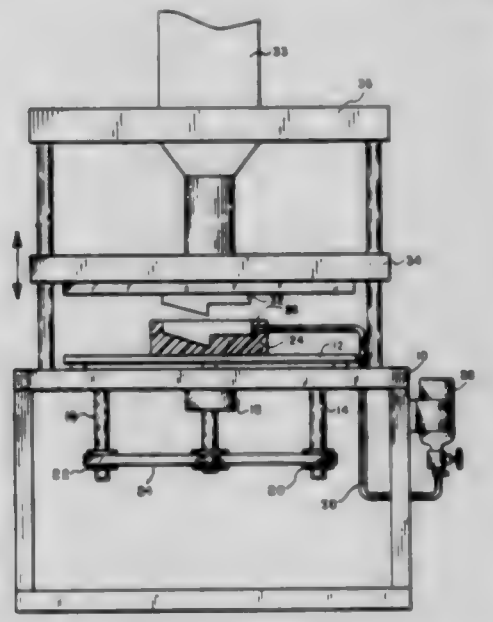
ORBITAL POLISHER WITH ELASTIC ABRASIVE

Martin C. Hannemann, Addison, and Elmer P. Hannemann, Bensenville, both of Ill., assignors to Hannemann Abrading Process Company, Addison, Ill.

Filed Mar. 10, 1983, Ser. No. 474,150

Int. Cl.³ B24B 19/00

U.S. Cl. 51—58 3 Claims



1. Apparatus for polishing workpieces, said apparatus comprising

a base member;

a first platen disposed on and supported by said base member and free to move in any direction in the horizontal plane with respect to said base member;

means coupled to said first platen for driving said first platen in horizontal oscillatory rotary motion with respect to said base member;

a resilient, non-abrasive polishing die fixed to the upper surface of said first platen;

a second platen mounted in a superimposed relation and adapted to be driven vertically with respect to said first platen;

means for mounting a workpiece to said second platen in substantial vertical alignment with said resilient polishing die;

vertical drive means for incrementally infeeding said workpiece and said polishing die into contact with one another while said first platen is driven in horizontal oscillatory motion;

means for injecting an elastic abrasive composition into said polishing die when said workpiece is in contact therewith.

4,493,166

ULTRA PRECISE TOOL FORMING APPARATUS

Howard G. Lange, Prospect Heights, and Francis M. Ray, Schaumburg, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Oct. 4, 1982, Ser. No. 432,475

Int. Cl.³ B24B 17/02

U.S. Cl. 51—100 R 6 Claims

1. An ultra precise apparatus for forming a complex profiled face on a tool blank, said apparatus comprising:

an abrading device;

spindle means comprising a journal for supporting said abrading device;

first gaseous lubricant bearing means for rotatably supporting said journal;

a platform supported (1) for rotation about a predetermined

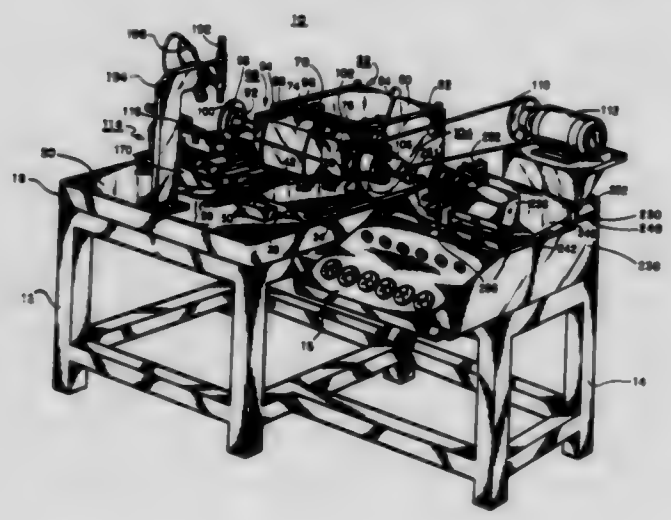
fixed pivot axis and (2) for displacement in a two-dimensional plane disposed perpendicular to said fixed pivot axis;

second gaseous lubricant bearing means for supporting said fixed platform for rotation about said pivot axis;

third gaseous lubricant bearing means for supporting said platform for displacement in said two-dimensional plane;

chuck means, mounted upon said platform, for holding said tool blank and for presenting said tool blank to said abrading device;

cam means disposed adjacent said platform and having a surface of a predetermined contour related to the profile of said complex profiled face to be formed on said tool blank;



cam follower means supported for engagement with said cam surface;

means responsive to displacement of said cam follower means by said cam surface for selectively positioning said platform in said two-dimensional plane along a platform axis orthogonally intersecting said fixed pivot axis; and

means for rotating said platform about said predeterminded fixed pivot axis and for effecting a relative travel between said cam follower means and said cam surface to selectively position said platform in said two-dimensional plane along said platform axis while said tool blank is presented to said abrading device, thereby causing said abrading device to generate said complex profiled face on said tool blank.

4,493,167

CHAMFERING MACHINES, PARTICULARLY FOR GLASS SHEETS

Luigi Bovone, Regione Persigotti, 15070 Belforte Monferrato (Alessandria), Italy

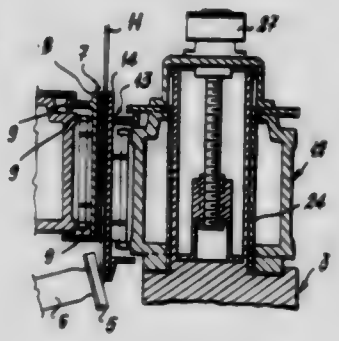
Continuation of Ser. No. 384,682, Jun. 3, 1982, abandoned. This application Jun. 12, 1984, Ser. No. 619,838

Claims priority, application Italy, Jun. 11, 1981, 22248 A/81

Int. Cl.³ B24B 9/10

U.S. Cl. 51—110

4 Claims



1. A chamfering machine for a work piece and particularly for a glass sheet, the machine comprising a front belt and a rear belt each having an upper and lower edge and a vertical or substantially vertical axis for gripping and conveying the glass sheet along a set of tools adapted to machine an edge of the glass sheet, and means for adjusting the height of the rear belt to vary the distance between the lower edges of the front and rear belt respectively so that work pieces of different sizes can be accommodated by the machine.

4,493,168

CALIBRATION GAUGE FOR COMPUTER-CONTROLLED LENS GENERATOR, OR THE LIKE

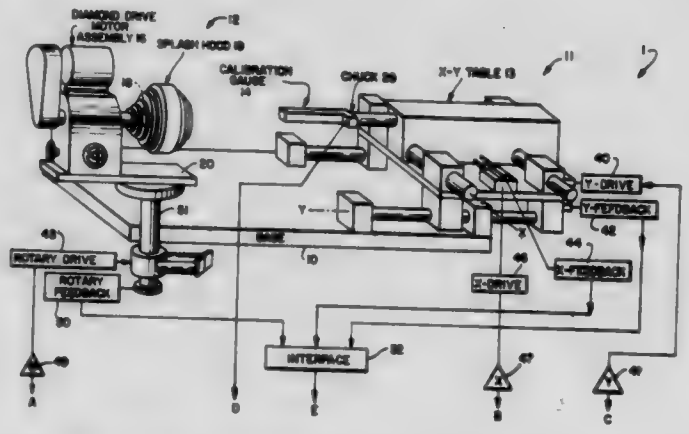
Edgar L. Field, Jr., Muskogee, Okla., assignor to Coburn Optical Industries, Inc., Muskogee, Okla.

Filed Jun. 16, 1983, Ser. No. 505,020

Int. Cl.³ B24B 49/10

U.S. Cl. 51—165.87

30 Claims



1. In a computer-controlled lens generating arrangement for generating a finished lens having desired parameters, comprising:

holding means for holding a lens to be ground,

grinding means for grinding said lens to generate said finished lens, and

control means for generating electrical control signals in accordance with said desired parameters to actuate said grinding means to generate said finished lens,

said grinding means comprising a grinding tool which is prone to become worn;

a calibration gauge having means for mounting in said holding means for providing data signals indicating needed corrective repositioning of said holding means in order to compensate for wear of said grinding tool.

4,493,169

ROLLING COVER MEANS FOR COVERING A GUIDEWAY FOR A SLIDING CARRIAGE OF A MACHINE TOOL

Fritz Loehrer, Bilch, Switzerland, assignor to Maag Gear-Wheel & Machine Company Limited, Zürich, Switzerland

Filed Dec. 2, 1982, Ser. No. 446,190

Claims priority, application Switzerland, Dec. 17, 1981, 8061/81

Int. Cl.³ B24B 55/00

U.S. Cl. 51—268

7 Claims

1. A rolling cover means for covering a guideway for a sliding carriage of a machine tool, comprising:

two rolling bands each affixed to said sliding carriage with one of its ends;

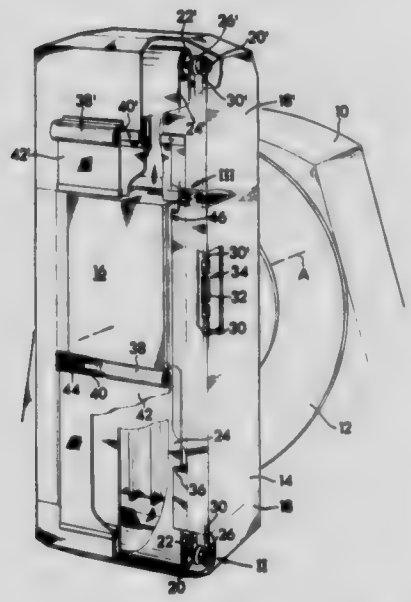
said rolling bands each extending away from said sliding carriage along said guideway in one respective direction;

said guideway having two ends;

two drums each of which is disposed at the region of a respective one of said ends of said guideway;

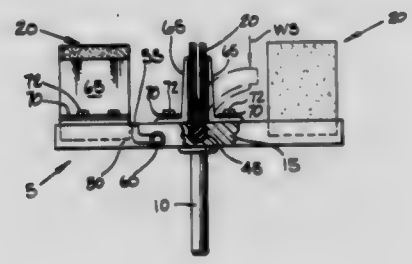
each of said drums being rotatably mounted for rotation about an axis extending transversely relative to a longitu-

dinal direction of said guideway and serving to wind-up and unwind a respective related one of said rolling bands;
two wheels each of which is rigidly coupled in torque-transmitting relationship to a respective one of said drums;
a tension member extending around both said wheels and capable of being rolled-off substantially free of slip from said wheels;



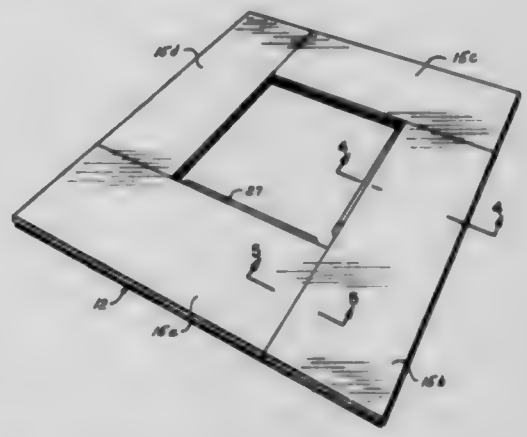
each of said wheels serving to wind-up said tension member;
said tension member terminating at both said wheels and extending around the same in a direction opposite to that of the rolling band at the drum associated with the related wheel; and
said tension member being structured to be elastically elongatable.

4,493,170
ABRADING TOOL
Randolph T. Hanger, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Nov. 19, 1981, Ser. No. 323,017
Int. Cl.[3] B24D *9/08*
U.S. Cl. 51—330 1 Claim



1. An abrading tool for providing a surface with a smooth finish having substantially no striations, comprising:
a hub having a planar face capable of being presented to said surface, said hub being rotatable about an axis of rotation oriented perpendicular to said planar face, said hub being provided with a plurality of keyways extending radially outwardly from said axis of rotation and being disposed proximate the periphery of said hub, each of said keyways communicating with said planar face through a slot extending radially outwardly from said axis of rotation;
a plurality of flexible abrasive pads carried by said hub and extending from said planar face, each of said pads comprising a plurality of abrasive sheets of material and a key attached to said abrasive sheets, the key of each of said pads being inserted in a respective one of said keyways and extending through said slot whereby the abrasive sheets of each of said pads extend along a plane that is substantially perpendicular to said planar face and passes through said axis of rotation;
a releasable ring circumscribing said hub for constraining the key of each of said pads within said keyways, and
L-shaped biasing means disposed only on one side of each of said pads for biasing the abrasive sheets of each of said pads towards a position that is substantially perpendicular to said planar face to enable the abrasive sheets of each of said pads to be urged, in use, towards said surface with a substantially equal force, said biasing means comprising a flexible elastomeric spring extending substantially coextensively with said abrasive sheets, said spring having a short base portion and an arm portion extending proximate said abrasive sheets, said base portion being substantially perpendicular to said arm portion and mounted to said planar face,
whereby during use of said tool, the abrasive sheets of each of said pads may be simultaneouly biased into contact with said surface to form a smooth finish having substantially no striations.

4,493,171
MONOLITHIC CEILING MODULES AND CEILING SYSTEM
Leo G. Stahlhut, Kirkwood, Mo., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Mar. 16, 1981, Ser. No. 244,228
Int. Cl.[3] E04B *5/52*; F21V *21/02*
U.S. Cl. 52—28 13 Claims

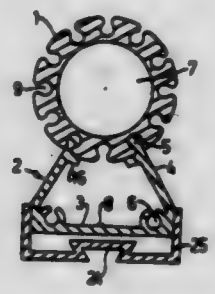


1. A ceiling module comprising
(a) ceiling-defining means for defining a rectangular ceiling area visible from below, and
(b) frame means, generally above said ceiling-defining means, for supporting said ceiling-defining means,
said ceiling module being characterized in that the major portion of said ceiling-defining means is a single sheet of material and in that said frame means comprise at least one panel of sheet material forming a rectangular overlay above said ceiling-defining means, said overlay being generally parallel with and spaced above said ceiling-defining means, said overlay being secured to said ceiling-defining means along the periphery of said ceiling-defining means and also at positions spaced inwardly from the peripery of said ceiling-defining means, said ceiling-defining means and said overlay forming a rigid, self-supporting ceiling-defining portion of said module without vertical support spines above said ceiling-defining portion for supporting said ceiling-defining portion wherein said frame means comprise four upper panels secured to each other to form said rectangular overlay, said upper panels also forming a central rectangular opening in said overlay, said overlay having a peripheral down-turned margin and a down-turned margin around said central opening, both said down-turned margins being secured to said ceiling-defining means.

4,493,172
CONNECTOR SYSTEM

Brian D. Jones, 6 Yorkton Rise, Mangere Bridge, Auckland, New Zealand

Filed Aug. 17, 1982, Ser. No. 408,899
Int. Cl.³ A47G 5/00
U.S. Cl. 52—220 8 Claims



1. A combination of inter-connecting extruded members comprising:

short lengths of connecting members each having a hollow interior, a periphery which is substantially circular in cross-section and a plurality of integral connecting means formed on said periphery;

an engaging member having engaging means;

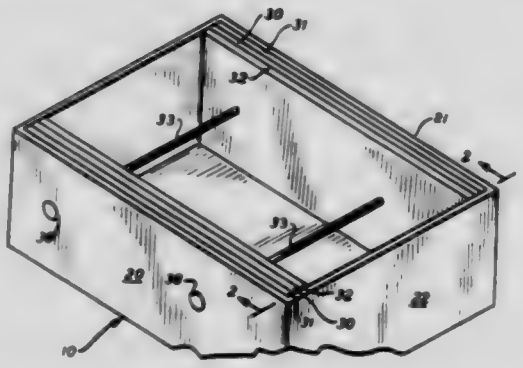
each connecting means comprising a locking groove running lengthwise along said connecting member, and each engaging means comprising a locking tongue running lengthwise along said engaging member, said groove and tongue inter-locking to prevent withdrawal except by sliding said members relative to each other in a direction parallel to their lengths; and

an extruded elongate intermediate member passing through the hollows of each of the lengths of connecting member and on which said lengths of connecting member are mounted, said engaging member inter-connecting with each of the lengths of connecting member, said intermediate member having a hollow interior provided with at least one securing portion, each securing portion comprising two projecting lips extending from the interior of the hollow of the intermediate member along the length of the intermediate member and which is circular in cross section over at least a major part of its circumference.

4,493,173
AUTOMATIC CABLE PASSAGE CLOSURE AND SEALING DEVICE

John E. Kohaut, West Orange, N.J., assignor to Raceway Components, Inc., Nutley, N.J.

Filed Jan. 23, 1981, Ser. No. 227,799
Int. Cl.³ H02G 3/22
U.S. Cl. 52—221 33 Claims



1. An automatic cable sealing device for positioning in a floor or other opening through which cables may be passed, to automatically protect and seal said cables therein on occurrence of excess heat or fire, said device comprising:

(a) a hollow casing, to be positioned in said opening,

(b) guide means in said casing,

(c) a first automatically sealing plate movably disposed on said guide means for movement of said plate therein, and

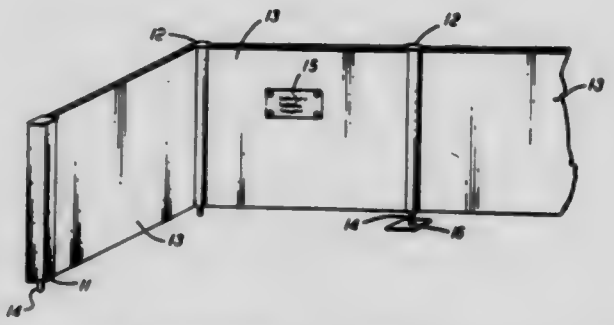
(d) a thermally activated expanding fire sealing coating on said plate,

whereby said sealing plate coating will automatically form and expand under pressure when exposed to fire or substantially highly elevated temperatures, automatically moving into position and flowing and closing said casing and closing onto and sealing said cables therein and sealing the floor or wall opening wherein the casing is positioned.

4,493,174
DISMOUNTABLE ROOM PARTITION

Robert A. Arens, Candia, N.H., assignor to Artafax Systems Limited, Inc., Manchester, N.H.

Filed Jun. 7, 1982, Ser. No. 385,681
Int. Cl.³ F04H 1/00
U.S. Cl. 52—243 17 Claims



1. A divider construction comprising a post and a panel mutually releasably engageable along elongated edges thereof;

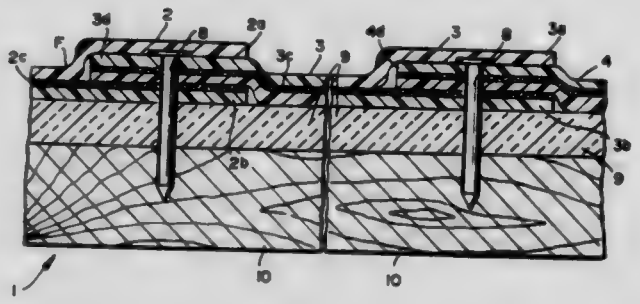
said panel comprising a major surface having an elongated edge covered at least in part with a first hooked fiber fabric, and

said post comprising a rigid elongated core member comprising a hollow tube, said member firmly covered on its outer surface with a looped fiber fabric complementary to said hooked fiber fabric and mutually releasably engageable therewith, said looped fiber fabric comprising an elastic pile or felt fabric sleeve pulled over said core and firmly affixed to the ends of said core by means of the ends of said sleeve being turned into the ends of the core and secured with end plugs.

4,493,175
ROOFING SYSTEM

Joseph C. Coppola, Jr., Lincoln Park, N.J., assignor to Pantasote Inc., Greenwich, Conn.

Filed Sep. 24, 1982, Ser. No. 423,430
Int. Cl.³ E04D 1/26, 1/28
U.S. Cl. 52—410 8 Claims



1. A roofing system, comprising a roof; a plurality of prefabricated elongated roofing members on said roof, each said prefabricated member comprising an elongated strip having a three-ply laminate body portion comprising outer plies of a polymeric material and an inner ply of a reinforcing material and integral opposed, first and second longitudinally extending

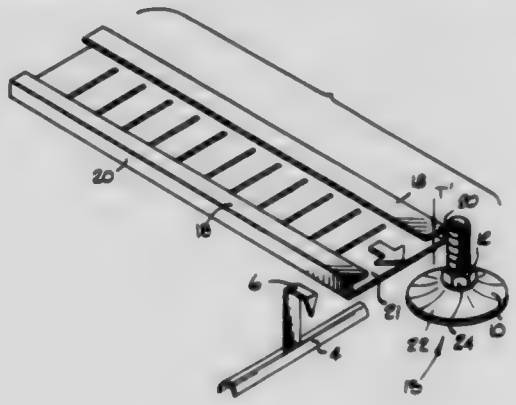
edge portions, said first edge portion comprising a one-ply cover means comprising one of said outer plies of said polymeric material and a two-ply body means comprising the other of said outer plies of said polymeric material laminated to said reinforcing material, and said second edge portion comprising said three-ply laminate; said three-ply second edge portion of a said member being between said cover means and said two-ply body means of an adjacent said member, and means for fastening a said second edge portion of one member and its associated body means of an adjacent member to said roof.

4,493,176

INSULATION MODULE MOUNTING MEANS

Anthony E. Cimochowski, Sedalia, Colo., assignor to Manville Service Corporation, Denver, Colo.

Division of Ser. No. 040,616, May 21, 1979, abandoned. This application May 26, 1981, Ser. No. 266,856
Int. Cl.³ E04B *1/80*
U.S. Cl. 52—508 5 Claims



1. In an apparatus for securing a fibrous insulation module to a wall of a furnace or the like, said apparatus including: a support beam mounted internally of the insulation module; a C-shaped channel member adapted to be mounted extending along one face of said insulation module, said C-shaped channel member having edges (20) extending generally parallel to one another and lips (18) extending inwardly from said edges toward one another and being generally co-planar, the distance between said edges defining a first dimension 'W' and the thickness of said lips defining a second dimension T'; tab means extending between said support means and said channel member for securing said channel member to said insulation module; a rounded mounting member having a center portion thereof in contact with said furnace wall, said mounting member having a principal dimension 'D' which is less than said first dimension 'W'; securing means for attaching said mounting member to said furnace wall; whereby said securing means may affix said mounting member to said furnace wall and thereafter said C-shaped channel may receive the principal dimension 'D' of said rounded mounting member by sliding said channel thereover from any direction, thereby securing said insulation module to said furnace wall, the improvement comprising:

a spacer attached to said center portion of said mounting member, said spacer extending from said mounting member a predetermined distance T away from said C-shaped channel member, said predetermined distance T being greater than said dimension T'.

4,493,177

COMPOSITE, PRE-STRESSED STRUCTURAL MEMBER AND METHOD OF FORMING SAME

Stanley J. Grossman, 3200 Marshall Ave., Ste. 217, Norman, Okla. 73069

Filed Nov. 25, 1981, Ser. No. 324,980
Int. Cl.³ E04C *3/26, 3/294*; B28B *9/04*
U.S. Cl. 52—745 11 Claims

1. A method of forming a composite, pre-stressed structural member of the type having an upper molded surface supported by a lower support member comprising:

connecting a lower support member to the upper side of a mold so that deflection of the mold causes deflection of the support member and such that support member connector means extend downwardly into said mold;

supporting the mold and lower support member so that deflection of the mold and lower support member can occur;



filling the mold with a moldable material which hardens to form a composite structural member with said lower support member; and

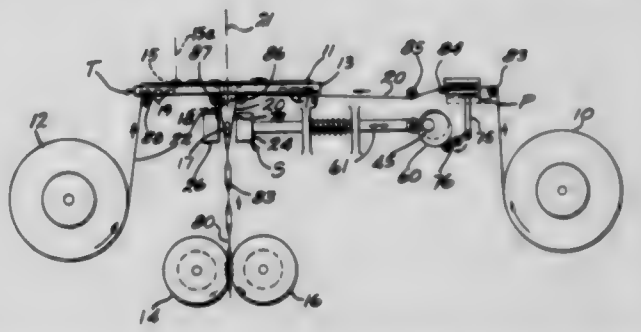
deflecting the mold during hardening of the moldable material such that the support memberr is placed in a stressed condition to form a composite, pre-stressed structural member upon hardening of the moldable material.

4,493,178

PACKAGING MACHINE

Leonard Buckner, Mount Eaton; William A. Foll, Sr., Wooster, and Stephen W. Pesho, Dalton, all of Ohio, assignors to Euclid Spiral Paper Tube Corp., Apple Creek, Ohio

Continuation of Ser. No. 242,365, Mar. 10, 1981, abandoned. This application Aug. 22, 1983, Ser. No. 525,235
Int. Cl.³ B65B *9/02, 61/26*
U.S. Cl. 53—131 1 Claim



1. A compact manually portable packaging machine weighing less than fifty pounds for making a continuous ribbon of interconnected packets with each packet containing one or more articles to be dispensed comprising; a unitary one-piece open type frame having spaced front and rear walls connected by a minimal plurality of intermediate transverse ribs to form a lightweight single unitary compact small one-piece frame of open construction allowing maximum air circulation with all of the elements of the machine being mounted on the frame; a first roll of a strip of flexible packaging material rotatably mounted on one end of the frame; a second coacting roll of a strip of flexible packaging material rotatably mounted on the other end of the frame opposite said first roll; coacting guide means on said frame for guiding the two strips of packaging material from said rolls together through said frame in parallel longitudinal surface-to-surface registry, said guide means including a plurality of prepositioned rods, with certain of said rods having thereon coacting spaced sleeves that are longitudinally adjustable on the rods to guide the strips therebetween; heat sealing means operatively disposed on the frame for heat sealing all opposed margins of the two coacting strips of packaging material together with the article(s) therebetween to form an air-tight cavity containing said article(s), coacting

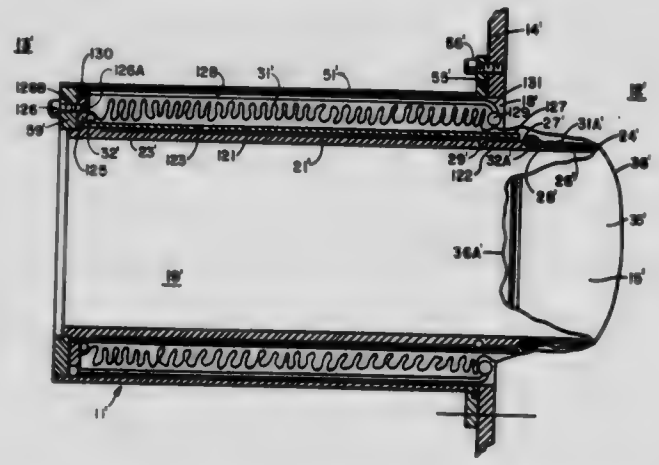
pull-down means for pulling said two strips of packaging material through said guide means in predetermined sequence, said pull-down means including a first pair of parallel spaced wheels rotatably mounted on the frame at a preselected point below said heat-sealing means, a second pair of parallel spaced wheels rotatably mounted on the frame opposite said first pair of wheels in coacting operative relation therewith, whereby said first and second pair of wheels coact to pull down on the heat-sealed longitudinal margins of the surface-to-surface disposed strips to pull the same through the machine; turntable means operatively mounted on the frame for feeding in predetermined sequence one or more articles between said two coacting strips of packaging material just before they come together in parallel longitudinal surface-to-surface registry, said turntable means including a flat planar horizontal table secured to the top of the frame, said table having a vertical open-ended chute emptying at a point between said strips just before they come together in surface-to-surface registry, a horizontal turntable disc rotatably mounted on said table for preselective circumferential rotation thereon, said disc having a plurality of spaced disc apertures formed adjacent to and around its circumferential periphery with each aperture registering with the chute as the disc is selectively rotated, whereby article(s) may be placed in said apertures and thereby fall down said chute one by one as the disc is preselectively rotated and thence fall between said strips and become heat-sealed therebetween by said heat-sealing means; said apertures of said disc being smaller than the chute, said heat-sealing means including a sealing back-up jaw block mounted on the frame at a point where said strips initially come together in surface-to-surface registry, said back-up jaw block having a heater element therein, a sealing jaw reciprocably mounted on the frame opposite said back-up jaw block for movement to and from the back-up jaw block and configured for preselected marginal contact therewith, said sealing jaw having a coacting heater element therein, said heater elements effecting predetermined temperatures in the back-up jaw block and in the sealing jaw, whereby when the sealing jaw is reciprocated against the back-up jaw block with the surface-to-surface disposed strips therebetween such strips are heat-sealed together around their margins; perforating means disposed on said heat-sealing means for forming transverse perforations on each transverse side of the cavity, said perforating means including a horizontally disposed serrated linear knife blade mounted adjacent the upper horizontal edge of said reciprocable sealing jaw, whereby when said sealing jaw is reciprocated against said back-up jaw block said blade contacts said back-up jaw block with the surface-to-surface disposed strips therebetween thereby cutting a linear row of serrations transversely across said strips; printing means in the form of a cam-operated stencil operatively mounted on the frame for imprinting a predetermined message on one of said strips before the two strips come together in parallel longitudinal surface-to-surface registry, said stencil including an inked stamp pad formed of very tight woven fibers effecting a dense porous ink pad to retain ink therein, said stamp pad containing a graphite added type ink of very high viscosity to effect maximum ink retention in the ink pad; and drive means for coactingly actuating said pull-down means, said turntable means, said heat seal means, said perforating means, and said printing means in predetermined coacting operative relationship to form a continuous ribbon of interconnected air-tight packets containing one or more articles to be dispensed, said drive means acting in coacting operative relationship with said one strip to cause said one strip to be stationary when said stencil is imprinting a message on such one strip, said chute being formed of anodized, hard-coated aluminum, the turntable disc being selectively rotated whereby of each of said disc apertures comes into complete registry with said chute at a point approximately sixty-two one thousandths of an inch in advance of the radial centerline of the chute to accommodate article(s) of certain configurations in passing effectively down the chute, said high viscosity ink being initially forced into the ink pad by means of vacuum and pressure, at least one of said strips being formed of clear thermoplastic material enabling visual inspection of the encased packaged article(s).

4,493,179

BAG-OUT MATERIAL HANDLING SYSTEM

Stephen B. Brak, Tinley Park, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 26, 1982, Ser. No. 352,749
Int. Cl.³ B65B *43/42*
U.S. Cl. 53—576 8 Claims



1. A bagging device for transferring material from a first chamber through an opening in a wall to a second chamber, said bagging device comprising:

an outer housing having open proximal and distal ends, said proximal end communicating with said opening;

an inner housing spaced concentrically within said outer housing so as to define an annular space therebetween, said inner housing having open proximal and distal ends so as to define a passage between said first and second chambers and wherein the circumference of the proximal end of said inner housing is smaller than the circumference of the remaining portion thereof;

means for sealably coupling the respective distal ends of said inner and outer housing in sealing said annular space at the distal portion thereof and wherein the proximal end portion of said annular space is open;

a rigid sleeve inserted in said annular space extending from the distal end to the proximal end of said inner housing and including seal means interposed between said sleeve and inner housing to seal and isolate the space therebetween from said second chamber; and

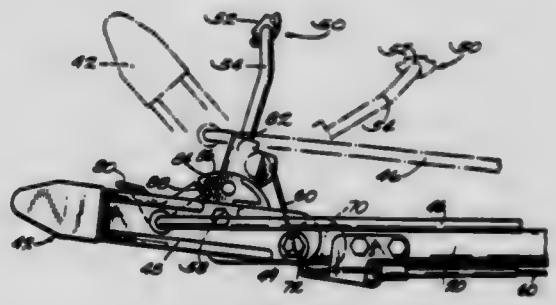
a pliable tube slidably engaged in sealed relationship with said sleeve and disposed thereon within said annular space, said pliable tube including a first closed end portion extending from the open proximal end portion of said annular space and over the proximal end of said inner housing in sealed relation thereto for receiving material from said first chamber through said inner housing, wherein the closed proximal portion of said tube is sealed and severed along said seal in providing a sealed container for handling said material while forming a second closed end portion extending over the proximal end of said inner housing in maintaining isolation between said first and second chambers and wherein the smaller circumference of the proximal end of the inner housing facilitates the removal of the remnants of a used tube and the installation of a replacement tube with the remnants of the used tube discharged into the sealed, installed replacement tube.

4,493,180

LAWN MOWER DEAD MAN CONTROL

Gerald H. Wick, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 30, 1982, Ser. No. 429,060
Int. Cl.³ A01D *69/00*
U.S. Cl. 56—11.3 16 Claims



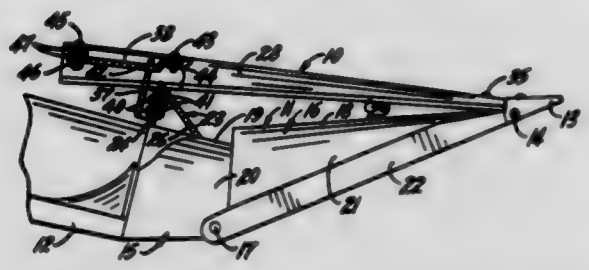
1. A lawn mower comprising a housing, a prime mover supported by said housing, a drive shaft driven by said prime mover, a cutter blade, clutch means driven by said drive shaft and engagable and disengagable with said cutter blade, a handle connected to said housing, control means movably attached to said handle about spaced first and second pivot axes, and linkage means for engaging and disengaging said clutch means in response to movement of said control means relative to said second pivot axis, said linkage means including a pulley rotatably attached to said handle and with said pulley having a periphery adjacent to said first pivot axis, and a longitudinally displaceable flexible member guided around said pulley and connecting said control means to said clutch means, whereby movement of said control means about said first pivot axis is ineffective to longitudinally displace said flexible member.

4,493,181

ATTACHMENT FOR THE SNOUTS OF COMBINES AND THE LIKE

George B. Glendenning, and Terry S. Glendenning, both of Davis Junction, Ill., assignors to Farmer's Factory Co., Lee, Ill.

Filed May 14, 1984, Ser. No. 609,589
Int. Cl.³ A01D *45/02*
U.S. Cl. 56—314 7 Claims



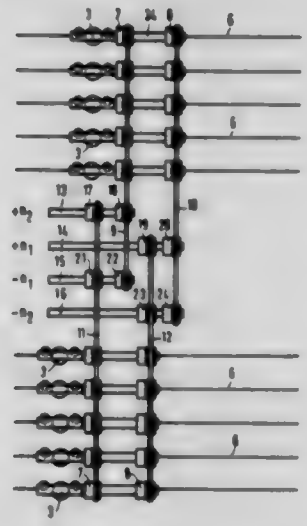
1. An attachment for the snout of a combine wherein the snout includes a forward portion having a pointed forward end and being hinged adjacent its rear to a rear portion fixed to the head of the combine and wherein the upper surfaces of said forward and rear portions are inclined upwardly and rearwardly at a predetermined angle from the front to the rear of the snout, said forward portion being adapted to swing up and down relative to said rear portion, said attachment having, in combination, a straight comparatively rigid member having a straight upper surface disposed above the upper surfaces of said forward and rear portions of said snout, said member extending rearwardly from said pointed forward end of said forward portion, means fastening the forward end of said member to said forward portion of said snout, said member being inclined upwardly and rearwardly at an angle greater than said predetermined angle whereby the spacing of the member above said snout increases progressively toward the rear of the snout, and slide means on said member and on said snout and supporting the rear of the member for sliding relative to said rear portion of the snout when said forward portion swings up and down.

4,493,182

DRIVING DEVICE FOR TWISTING HEADS OF AN SZ TWISTING MACHINE

Dieter Vogelsberg, Coburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 24, 1983, Ser. No. 478,519
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1982, 3211260
Int. Cl.³ H01B *13/04*
U.S. Cl. 57—293 12 Claims



1. A driving device for a twisting head of an SZ stranding machine for electrical or optical cables, by means of which the rotary motion of the twisting head is periodically changed in steps, the twisting head including first and second driving wheels rotatably supported on a rotatable hollow shaft; a twisting tool; first and second magnetic clutches, associated with the first and second driving wheels, with stators and rotors, and the rotors of said first and second magnetic clutches and said twisting tool firmly connected to the hollow shaft, comprising:

first means adapted to rotate at at least a first speed;

second means adapted to alternately rotate at at least second and third speeds;

means coupling said first means to said first driving wheel; and

means coupling said second means to said second driving wheel, whereby at least three motion states can be provided for predetermined time intervals.

7. A method of operating a driving device for a twisting head of an SZ stranding machine for electrical or optical cables, said twisting head having a hollow shaft; first and second driving wheels rotatably supported on said shaft; a twisting tool; first and second magnetic clutches one for each driving wheel each having a rotor, the rotors and said twisting tool firmly connected to said shaft, said driving device comprising: first drive means adapted to rotate at at least a first speed; second drive means adapted to rotate alternatingly at at least second and third speeds and means for coupling said first and second drive means to said first and second driving wheels respectively, comprising:

a. operating said second magnetic clutch to alternately rotate said twisting device at said second speed and third speed; and,

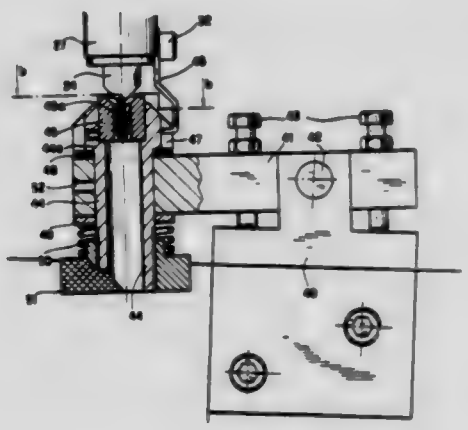
b. in between operating said second clutch to cause rotation at said second and third speeds, operating said first clutch to cause rotation at said first speed.

4,493,183

MACHINE FOR THE MANUFACTURE OF CHAINS, IN PARTICULAR OF THE TYPE KNOWN AS ROPE CHAIN IN THE GOLDSMITHERY INDUSTRY

Massimo Bucefuri, Arezzo, and Giuseppe Scortecci, Castiglion Fibocchi, both of Italy, assignors to ICM S.p.A. Italiana Costruzioni Metalmeccaniche, Castiglion Fibocchi, Italy

Filed Sep. 23, 1982, Ser. No. 422,057
Claims priority, application Italy, Jan. 15, 1982, 9307 A/82
Int. Cl.³ B21L 7/00
U.S. Cl. 59—16
11 Claims



1. A machine for the manufacture of chains, in particular of the type known as "rope chain" in the goldsmithery industry, comprising:

(a) a unit for feeding a metallic filiform material and for the formation of a coil from said material, each turn of said coil constituting a link for the chain;

(b) a link separation unit for cutting off coil turns from said coil;

(c) a chain linking unit for connecting said link to the already formed chain;

(d) link take-up means alvernatively cooperating with said link separation unit for keeping the link and with said chain linking unit, said means being displaceable from a take-up position to a linking position and viceversa;

said links separation unit comprising at least a pair of blades operating like scissors on a cutting plane substantially tangent to the internal profile of said coil and perpendicular to the branch of coil turn to be cut, means being provided for adjusting the inclination of said cutting plane with respect to the horizontal plane; said chain linking unit comprising a calibrated passage for the chain having a decreasing section with minimum diameter meter at the outlet end of said passage substantially equal to the diameter of the chain to be produced, said chain being kept within said passage by the pressure of the links against the inner wall thereof; said link take-up means in said linking position being aligned with said chain linking unit for connecting the link to the already formed chain and being adapted to partially rotate about the alignment axis while simultaneously advancing toward said passage so as to force the chain to pass therethrough, thereby causing the progressive approach of the ends of the links until said links are completely closed.

4,493,184

PRESSURIZED NACELLE COMPARTMENT FOR ACTIVE CLEARANCE CONTROLLED GAS TURBINE ENGINES

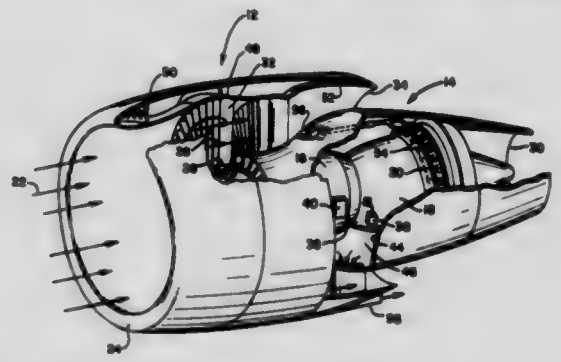
John P. Nikkanen, and James G. Griffin, both of West Hartford, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 7, 1983, Ser. No. 472,917
Int. Cl.³ F02C 7/18
U.S. Cl. 60—204
4 Claims

1. A method of operating an aircraft power plant installed on an aircraft and of the active clearance controlled type including a gas turbine engine housed within a nacelle compartment and a cooling air manifold extending around the engine including the steps of:

admitting active clearance control cooling air into said nacelle compartment and discharging the air against the engine;

maintaining the air pressure within said nacelle compartment



at altitude cruise conditions at a level which is on the order of one to two and one-half pounds per square inch (1–2½ psi) above the pressure of the air externally of the power plant;

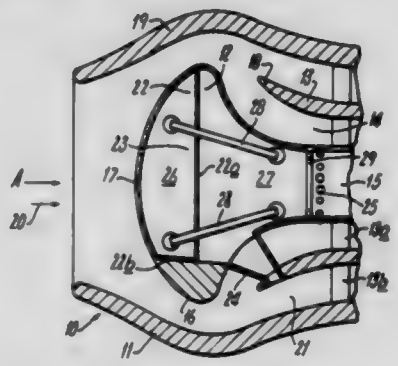
discharging air from said compartment in an aft direction relative to the aircraft on which the power plant is installed.

4,493,185

GAS TURBINE ENGINE AIR INTAKE

John R. Hobbs, Amersham, England, assignor to Rolls-Royce Limited, London, England

Continuation-in-part of Ser. No. 225,110, Jan. 14, 1981, abandoned. This application Mar. 25, 1983, Ser. No. 478,787
Claims priority, application United Kingdom, Feb. 9, 1980, 8004401
Int. Cl.³ F04D 29/70
U.S. Cl. 60—39.092
6 Claims



1. A gas turbine engine air intake comprising:

a duct having a circular cross-section shape;

a centre body having a hollow interior and having a circular cross-section shape, said centre body having a first portion coaxially positioned upstream of said duct, said first portion having a part thereof of greater diameter than said duct, said centre body further having a second portion aligned with said first portion and extending coaxially within said duct and defining therewith an annular air inlet, said first portion and said second portion having spaced confronting edges;

a first drain means positioned on said first portion of said centre body and providing communication between the exterior and hollow interior of said centre body, said first drain means being defined by said confronting edges of said aligned portions of said centre body so that said first drain means provide the only interruption of the otherwise continuous exterior of said centre body, and being positioned to direct at least some of any liquid droplets impacting and subsequently flowing across the exterior of

said first portion of said centre body into the hollow interior of said centre body;

means to reduce the air pressure within the hollow interior of said centre body whereby the flow of liquid droplets through said drain means is enhanced, said means to reduce the air pressure within said centre body comprising a plurality of apertures in said centre body interconnecting said annular air inlet with the interior of said centre body; and

a second drain means operatively associated with said centre body for draining liquid from the hollow interior of said centre body to a location remote from said engine air inlet.

4,493,186

STEAM POWER PLANT AND STEAM GENERATOR, ESPECIALLY SUITED FOR A STEAM POWER PLANT OF THIS TYPE

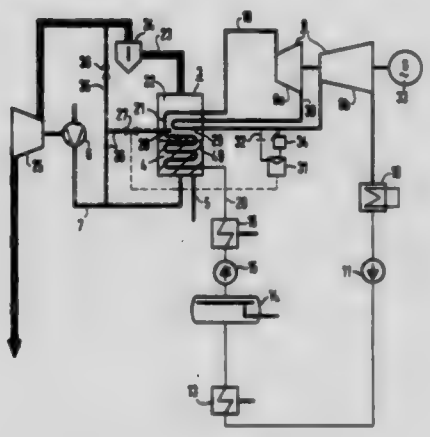
Werner Emmerger, Erlangen, and Reiner Engelhardt, Effeltrich, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Jul. 30, 1982, Ser. No. 403,793

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1981, 3132659

Int. Cl.³ F02C *6/04*

U.S. Cl. 60—39.182 1 Claim



1. Steam power plant, comprising:

a steam turbine having a high-pressure part and a low-pressure part;

a chargeable steam generator including a convection chamber, a waste gas discharge line, a single fluidized bed combustion chamber, a high-pressure heater, and an intermediate superheater having an inlet connected to said high-pressure part of said steam turbine, an outlet connected to said low-pressure part of said steam turbine, and a heating surface, said intermediate superheater being disposed in said convection chamber for influencing steam temperature at said outlet of said intermediate superheater;

a gas turbine connected in said waste gas discharge line downstream of said steam generator;

an air compressor connected to and driven by said gas turbine;

a combustion air supply line connected from said air compressor to said combustion chamber, said air supply line having a nozzle discharging into said convection chamber between said combustion chamber and said heating surface of said intermediate superheater, and said air supply line having an air valve for controlling air fed to said nozzle;

a regulator operatively connected to said air valve for controlling said air valve, a sensor being operatively connected to said regulator and disposed in vicinity of said outlet of said intermediate superheater for sensing the actual temperature of steam leaving said outlet, and a signal transmitter operatively connected to said regulator for giving said regulator a nominal value for the temperature of steam leaving said outlet, said regulator controlling said air valve causing the actual temperature to approach the nominal temperature at said outlet;

and a bypass line connected from said air supply line to said waste gas discharge line, said bypass line having another air control valve connected therein.

4,493,187

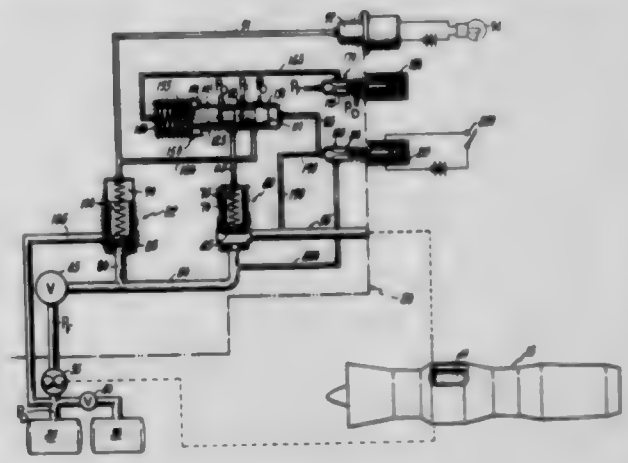
FUEL CONTROL

Kenneth P. Hansen, Enfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1982, Ser. No. 453,201

Int. Cl.³ F02C *9/26*

U.S. Cl. 60—39.281 5 Claims



1. In a fuel control for a gas turbine engine including a burner, fuel being supplied to said burner by a pump through a fluid pressure operated minimum pressure valve opened to allow fuel flow from said pump to said burner and closed to shut off said fuel flow, actuation of said minimum pressure valve being controlled by a sequence valve communicating with said minimum pressure valve by a fluid line, the improvement characterized by:

said sequence valve being connected to pump discharge pressure by a pump discharge line and including a moveable valve element, the position thereof controlling the pressure in said fluid line, thereby determining the actuation of said minimum pressure valve, and further including a fluid latch comprising a piston connected to said valve element and communicating with said pump discharge pressure at said sequence valve through a fluid passage, pressurization of said piston in a first direction by said fuel maintaining said sequence valve element in a latched condition for maintenance of said minimum pressure valve in an opened condition to sustain fuel flow from said pump to said burner.

4,493,188

DRIVE TRANSMISSION MEANS

Mervyn R. Marsh, 118 Star St., Carlisle W.A., Australia (6101)

PCT No. PCT/AU80/00107, § 371 Date Jul. 31, 1981, § 102(e) Date Jul. 31, 1981, PCT Pub. No. WO81/01729, PCT Pub. Date Jun. 25, 1981

PCT Filed Dec. 10, 1980, Ser. No. 287,748

Claims priority, application Australia, Dec. 10, 1979, PE1673

Int. Cl.³ F16D *31/04*

U.S. Cl. 60—468 7 Claims

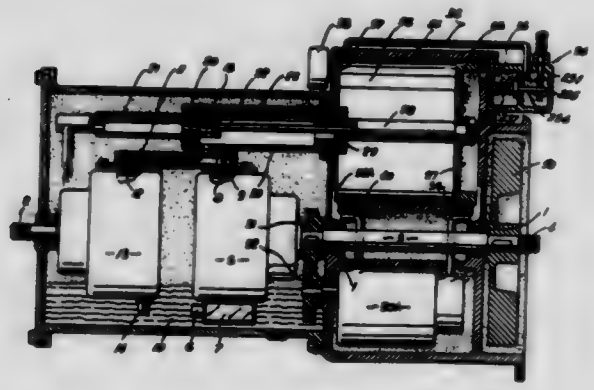
1. Drive transmission means for transmitting power from a prime-mover to a load, comprising:

a flywheel driven by the prime-mover,

a pump drivingly connected to the flywheel to place a hydraulic medium under pressure,

a hydraulic motor powered by said medium from the pump, means repetitively, and independently of the level of said

pressure, to unload the pump thereby permitting the prime-mover repetitively to accelerate the flywheel; and



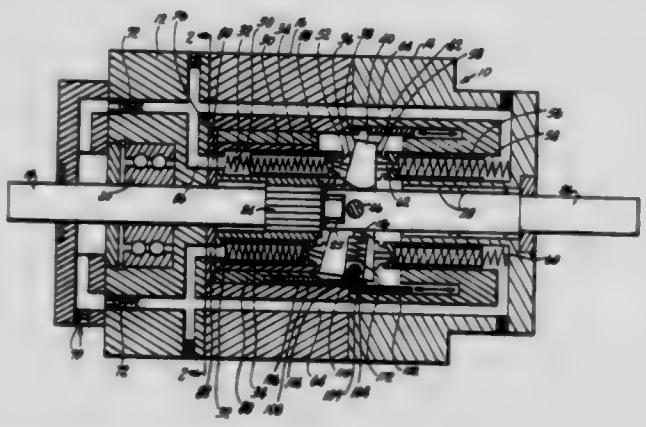
compensation means drivingly connected to the flywheel to power the hydraulic motor while said pump is unloaded.

4,493,189

DIFFERENTIAL FLOW HYDRAULIC TRANSMISSION

Harry F. Slater, 3491 Dover St., Napa, Calif. 94558

Filed Dec. 4, 1981, Ser. No. 327,409
Int. Cl.[3] F16D *39/00*
U.S. Cl. 60—489
12 Claims



1. A hydraulic transmission comprising:

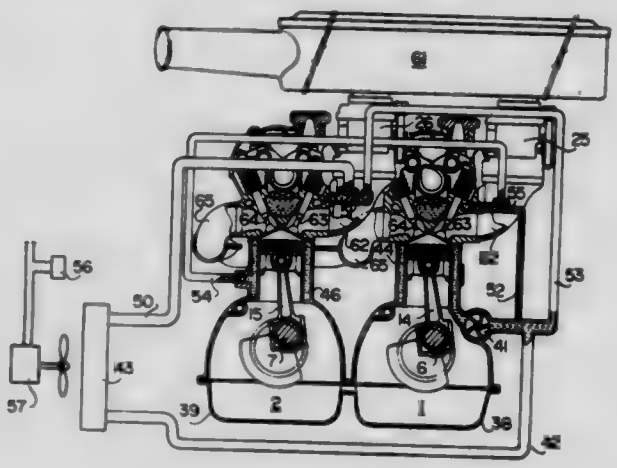
a fixed housing, an input shaft and output shaft journaled in the housing in coaxial alignment, a pump rotor in the housing secured to the input shaft, the rotor having a plurality of pump cylinders radially spaced around the axis of rotation of said shafts, the cylinders extending parallel to said axis of rotation, a pump piston in each pump cylinder movable in a direction parallel to said axis of rotation, the fixed housing having a plurality of stationary motor cylinders radially spaced around and extending parallel to said axis of rotation, a motor piston in each motor cylinder, a motor rotor pivotally connected to and rotating with the output shaft about the same axis of rotation as the output shaft and positioned axially between the pump cylinders and the motor cylinders, the motor rotor pivoting about a single axis extending perpendicular to said axis of rotation of the output shaft, the motor rotor having a pair of flat surfaces lying in respective planes extending at an acute angle to each other and parallel to said single pivot axis, means connected to each pump piston and motor piston slidably engaging the adjacent one of said flat surfaces, hydraulic means including a rotary valve member for fluid connecting a first group of pump cylinders to a first group of motor cylinders and a second group of pump cylinders to a second group of motor cylinders, rotation of the rotary valve switching the pump cylinders and motor cylinders successively from one of said groups to the other, and means rotatably coupling the rotary valve means to the output shaft, said means rotating the rotary valve means and the output shaft together as a unit.

4,493,190

COOLING SYSTEM FOR AN ENGINE HAVING A PLURALITY OF ENGINE UNITS

Toru Yamakawa, Hachioji, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP82/00296, § 371 Date Mar. 29, 1983, § 102(e) Date Mar. 29, 1983, PCT Pub. No. WO83/00528, PCT Pub. Date Feb. 17, 1983
PCT Filed Jul. 30, 1982, Ser. No. 483,954
Claims priority, application Japan, Jul. 31, 1981, 56-121182
Int. Cl.[3] F02D *25/00*; F02B *73/00*
U.S. Cl. 60—714
3 Claims



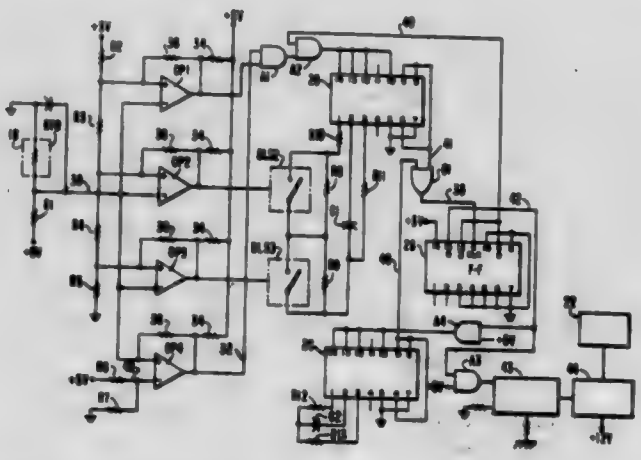
1. A cooling system for an internal combustion engine for a vehicle comprising a plurality of independent engine units including a primary engine unit and at least one auxiliary engine unit, an output shaft, a clutch for transmitting the output of said auxiliary engine unit to said output shaft in dependency on operational conditions, characterized in that a water pump is connected to water jackets of said primary engine unit, water jackets of said auxiliary engine unit are connected to water jackets of said primary engine unit in series, a radiator is connected to water jackets of said auxiliary engine unit in series, a bypass is provided to connect each water jacket to the water pump, means is provided to change the coolant circuit in dependency on the temperature of the coolant.

4,493,191

TRANSPORT REFRIGERATION SYSTEM WITH CONTROL FOR TOP FREEZING AVOIDANCE

Jay L. Hanson, Bloomington, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.

Filed Feb. 14, 1984, Ser. No. 579,928
Int. Cl.[3] F25B *49/00*; G05D *23/19*
U.S. Cl. 62—126
4 Claims



1. For a top freezing avoidance arrangement for a transport

refrigeration system in which air discharge temperature capable of causing top freezing of a fresh load are sensed and control the period of operation at a given refrigerating capacity in accordance with the level of temperature of the air discharged, a circuit arrangement for effecting said control comprising:

first voltage divider means including first temperature responsive resistance means sensing said discharge air temperature and second resistance means, said voltage divider means providing an analog signal in accordance with the sensed temperature;

a succession of comparators, each having one terminal connected to receive said analog signals;

second voltage divider means providing different reference signals to the other terminals of said comparators in accordance with preselected temperatures at which it is desired to change the digital output of said comparators from one state to another state;

first timer means including first oscillator means for generating first pulses at a rate dependent upon the state of the outputs from said comparators and first counter means connected to said first oscillator means to receive said pulses;

second timer means including second oscillator means for generating second pulses at a predetermined rate, and second counter means connected to said second oscillator means to receive saids second pulses;

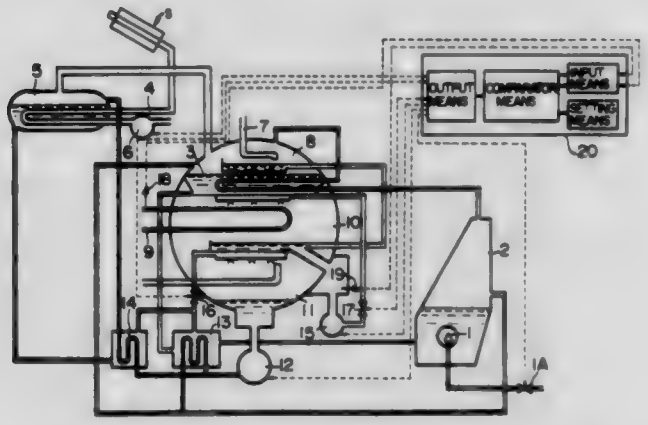
flip-flop means including a clock input connected through gate means to the outputs of said first and second timer means an operative, in response to a signal from said first timer means indicating a predetermined count, to clear the count of said first timer means, actuate counting of said second timer means and to signal for a reduction in refrigerating capacity and, operative, in response to a signal from said second timer means indicating a predetermined count of said second timer means, to clear the count of said second timer means, enable said first timer means to resume counting in accordance with the output states of said comparators, and to signal for a restoration of said refrigerating capacity.

4,493,192

OPERATION DEVICE FOR ABSORPTION COLD AND WARM WATER SYSTEM UTILIZING SOLAR HEAT

Yoso Hibino; Kohji Kamejima, both of Ibaraki, and Yasuaki Nara, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 11, 1983, Ser. No. 493,503
Claims priority, application Japan, May 12, 1982, 57-78285
Int. Cl.³ F25B *15/00, 27/00*
U.S. Cl. 62—141 9 Claims



1. An operation device for an absorption cold and warm water system utilizing solar heat, with the system comprising a low temperature heat source generator using as a heating source low temperature warm water provided by heating water by the solar heat, a high temperature generator using an ancillary heat source as a heating source when the cold and warm water system becomes short of solar heat, a low temperature generator, and evaporator, and a condenser; the operation device comprising:

a low temperature warm water pump for introducing low temperature warm water into said low temperature heat source generator;

solution adjusting and feeding means for adjusting quantities of a concentrated solution fed to an absorber and of a dilute solution fed to said generators and feeding the adjusted quantities of solutions to said absorber and said generators, respectively;

refrigerant adjusting means for adjusting a quantity of refrigerant which is caused to circulate in the evaporator; and

a first detection means for detecting the temperature of cold and warm water outputted from said cold and warm water system;

a second detection means for detecting the temperature of refrigerant; and

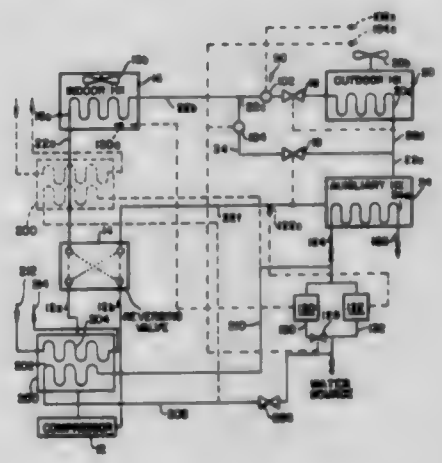
a control section for controlling the operation of said low temperature warm water pump, solution adjusting and feeding means and refrigerant adjusting means in dependence upon values detected by at least one of said first and second detection means, said control section being operative to continuously drive said low temperature warm water pump when the temperature of the low temperature warm water is higher than the temperature of the dilute solution in the low temperature heat source generator so as to enable a heating of the dilute solution by the low temperature warm water, and to effect control of said solution adjusting and feeding means and said refrigerant adjusting means, so as to prevent the temperatures of the cold and warm water, refrigerant and solution from exceeding predetermined levels in the process of controlling the temperatures of the cold and warm water fed to a load to a desired value through heating by the low temperature warm water, upon insufficient heating by the low temperature warm water, to cause a heating by the ancillary heat source.

4,493,193

REVERSIBLE CYCLE HEATING AND COOLING SYSTEM

Ralph H. Fisher, Newport News, Va., assignor to Rutherford C. Lake, Jr. and John E. Duberg, both of Newport News, Va., part interest to each

Continuation-in-part of Ser. No. 355,123, Mar. 5, 1982, Pat. No. 4,409,796. This application Oct. 17, 1983, Ser. No. 542,375
Int. Cl.³ F25B *13/00*
U.S. Cl. 62—160 9 Claims



1. A reversible mode heating and cooling system for heating and cooling an interior space, comprising:

(a) compressor means for compressing vaporous refrigerant;

(b) indoor heat exchange means arranged in heat exchange relationship with air in said interior space for condensing refrigerant and heating said air during the heating mode

and evaporating refrigerant and cooling said air during the cooling mode;

(c) refrigerant expansion means;

(d) outdoor heat exchange means arranged in heat exchange relationship with outdoor ambient air for evaporating refrigerant during the heating mode and condensing refrigerant during the cooling mode;

(e) refrigerant flow reversing means for providing mode means heating and cooling from the system by refrigerant flow direction selection;

(f) auxiliary heat exchange means for evaporating refrigerant during the heating mode, said auxiliary heat exchange means arranged in a series flow relationship with said outdoor heat exchange means and downstream thereof during the heating mode;

(g) refrigerant conduit means connecting said compressor means, indoor heat exchange means, refrigerant expansion means, outdoor heat exchange means, auxiliary heat exchange means and refrigerant flow reversing means in a series flow relationship to form a reversible heating and cooling system for transferring heat via a fluid refrigerant between said indoor heat exchange means and said outdoor and auxiliary heat exchange means;

(h) bypass refrigerant conduit means connected in a parallel flow relationship with said outdoor heat exchange means and in a series flow relationship with said auxiliary heat exchange means for selectively bypassing said outdoor heat exchange means and directing at least a part of said refrigerant flow through said auxiliary heat exchange means in parallel flow relationship with refrigerant flow through said outdoor heat exchange means;

(i) storage means for storing a heat exchange fluid;

(j) connecting means connecting said storage means and said auxiliary heat exchange means for circulating a heat exchange fluid and exchanging heat between said storage means and said auxiliary heat exchange means, said connecting means including reclamation heat exchange means for transferring heat between said refrigerant and said heat exchange fluid;

(k) first control means for controlling the extent of heat exchange fluid flow from said storage means to said auxiliary heat exchange means, said first control means including a first sensor disposed for sensing a system parameter during the heating mode and first valve means in said connecting means, said first control means including means for adjustably operating said first valve means in said connecting means to allow heat exchange fluid flow therethrough in response to the parameter sensed by said first sensor; and

(l) second control means for selectively allowing the flow of refrigerant through said bypass refrigerant conduit means, said second control means including a second sensor disposed for sensing a parameter correlatable to the capacity of said outdoor heat exchanger to add heat to the refrigerant during the heating mode and second valve means in said bypass refrigerant conduit means; said second control means including means for operating said second valve means in said bypass refrigerant conduit means to allow refrigerant flow therethrough in response to the parameter sensed by said second sensor.

4,493,194

APPARATUS FOR CONTROLLING THE OPERATION OF AN INDOOR FAN ASSOCIATED WITH AN AIR CONDITIONING UNIT

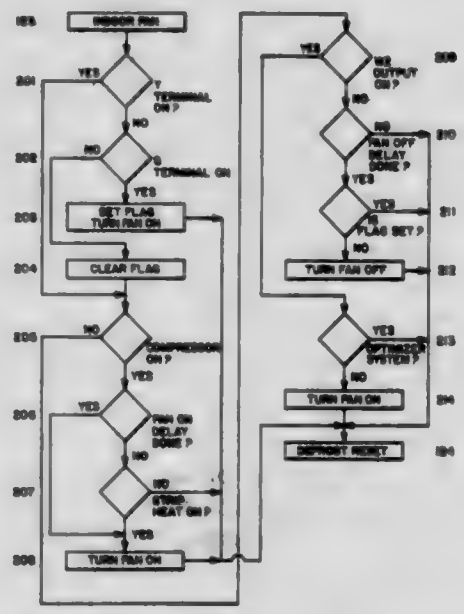
Mario F. Briccetti, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 362,789, Mar. 29, 1982, Pat. No. 4,449,375. This application Nov. 21, 1983, Ser. No. 553,619
Int. Cl.³ F25D *17/06*
U.S. Cl. 62—180 8 Claims

1. Apparatus for controlling the operation of an air conditioning system having a refrigeration circuit with a compressor, a microprocessor based control, a thermostat for sensing a need for heating or cooling including means for selectively operating an indoor fan continuously without regard to operation of the refrigeration circuit, said thermostat supplying a first signal to the microprocessor based control when fan operation is desired and a second signal to the microprocessor based control when compressor operation is desired which comprises:

means for energizing the indoor fan in response to the first signal from the thermostat;

means for energizing the compressor in response to the second signal from the thermostat;



means for setting an indicator when the first signal is sensed and the second signal is not sensed;

means for sensing if the thermostat is supplying a second signal and the compressor is not operating;

means for detecting if the indicator is set; and

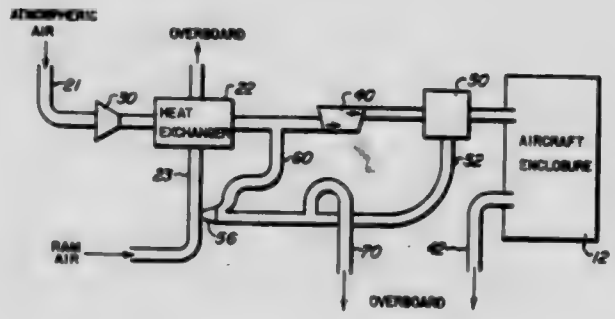
means for operating the fan continuously if the means for sensing determines the compressor is not operating and the thermostat is supplying a second signal and the means for detecting determines that the indicator is set.

4,493,195

AIR CONDITIONING SYSTEM WITH EVAPORATIVE COOLING APPARATUS

Philip F. Zalesak, Waldorf, and Ronald D. Moore, Lusby, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 11, 1983, Ser. No. 493,461
Int. Cl.³ F25D *9/00*
U.S. Cl. 62—402 5 Claims



1. An air-cycle, air conditioning system for an enclosure having a compressor arranged to sequentially pass compressed air through a heat exchanger for partially cooling the compressed air and then to an expansion cooling turbine for decompressing and further cooling the same for discharge into the enclosure; wherein the improvement comprises:

a condensate extractor interposed downstream of said expansion cooling turbine and disposed above said heat

exchanger to provide gravity actuation of extracted condensate;

a nozzle disposed beneath the condensate extractor to receive the condensate and direct it to impinge upon said heat exchanger thereby providing auxiliary evaporative cooling;

a water conduit connecting said nozzle to said condensate extractor for transporting the condensate therethrough; and

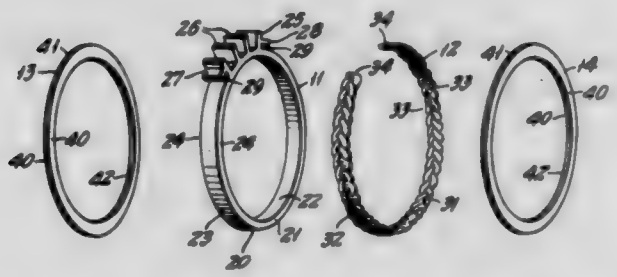
an air conduit through which said nozzle communicates with said compressor to receive compressed air for dispersing the condensate.

4,493,196

RING CONSTRUCTION AND METHOD OF MAKING SAME

Max Bogner, 291 Henry St., Paramus, N.J. 07652, and Larry Grua, 64 Cricket Dr., Roslyn, N.Y. 11576

Filed Sep. 15, 1983, Ser. No. 532,551
Int. Cl.³ A44C 9/00
U.S. Cl. 63—15 4 Claims



1. An improved ring construction comprising: a base element including a continuous annular member and an integral gem stone mounting on an outer surface of said annular member, said gem stone mounting forming a pair of oppositely disposed lip members forming recesses between said lip members and said outer surface of said annular member; an elongate decorative strip of metallic material mounted upon an outer surface of said annular member and having first and second ends respetively positioned beneath one of said lip members within one of said recesses; and a pair of outer planar ring members of larger diameter corresponding to the effective diameter of said braided material and overlying the longitudinal edges thereof, said ring members being interconnected to lateral edges of said annular member; whereby only an outer planar surface of said decorative strip is exposed to view.

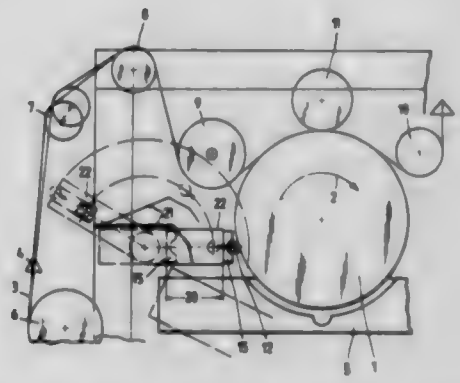
3. The method of making a finger ring having a gem stone mounting on an outer surface thereof, and a braided decorative member overlying portions of said ring on either side of said gem stone mounting, comprising the steps of: casting a main body element to include an annular member and an integral gem stone mounting on an outer surface thereof, said mounting including a pair of oppositely disposed lips each defining a channel formed between an undersurface of one of said lips and a respective portion of said outer surface of said annular member; forming an elongated decorative strip of width corresponding to that of said outer surface and of length such that the oppositely disposed ends thereof are seatable within a respective said channel when overlying said outer surface of said annular member; soldering said decorative strip in position upon said outer surface with said ends disposed within said channels; providing a pair of planar ring members of larger diameter corresponding to the outer diameter of said decorative strip, and an inner diameter corresponding to that of the inner diameter of said annular member; and soldering said planar ring members to said annular member to overlie the longitudinal edges of said strip.

4,493,197

FOULARD MACHINE

Hans E. Meller, Königsberger Str. 7a, D-8676 Schwarzenbeck, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 426,462
Claims priority, application Fed. Rep. of Germany, May 5, 1982, 3216726
Int. Cl.³ D06B 1/14
U.S. Cl. 68—202 11 Claims



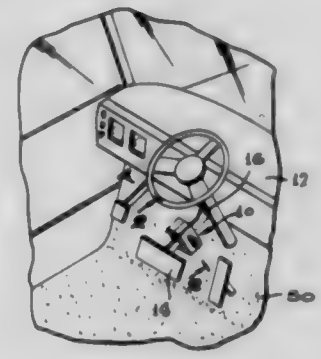
1. A foulard machine for applying liquor to a web of textile material comprising an enlacing roller coated with an elastic material; a trough for accommodating a liquor which is taken up out of said trough and applied to a web by the enlacing roller; a magnetic wiper which abuts against the circumference of the enlacing roller and wipes off any excess liquor, said wiper having on its contact surface abutting against the enlacing roller a plurality of adjacent recesses or indents and being held in abutment against the circumference of the enlacing roller over its entire length by means of magnetic forces; and a magnetic bar disposed parallel to said wiper on the side facing away from the enlacing roller; the wiper being pressed against the circumference of the enlacing roller; the wiper being spaced from the magnetic bar and pressed against said roller by forces of magnetic repulsion with the aid of the magnetic bar; the spacing between the magnetic wiper and the magnetic bar being infinitely adjustable.

4,493,198

ANTI-THEFT LOCK FOR PEDAL OPERATED APPARATUS

William B. Brown, 18700 Covello St., Reseda, Calif. 91335

Filed Sep. 3, 1982, Ser. No. 414,895
Int. Cl.³ F16H 57/00
U.S. Cl. 70—203 5 Claims



1. An anti-theft lock for pedal-operated apparatus having a pedal lever, said lock comprising:

first and second adjacent stop bodies, one of said stop bodies having a recess for receiving the pedal lever and the other of said stop bodies having a face thereon for abutment against an adjacent portion of the apparatus to limit actuation of the pedal lever to inhibit operation of the apparatus; and

locking means including a lock body having a shackle embracing the pedal lever and engaging both said first and

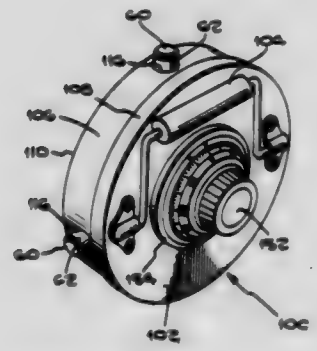
second stop bodies to hold together said stop bodies to hold the pedal lever therebetween.

4,493,199

UNIVERSAL BOLTWORKS MECHANISM FOR SAFE DOOR

Tim Uyeda, South San Gabriel, Calif., assignor to La Gard, Inc., Torrance, Calif.

Filed Sep. 21, 1982, Ser. No. 420,712
Int. Cl.³ E05B 15/16, 63/00
U.S. Cl. 70—333 R 16 Claims



1. A universal boltworks mechanism for use with a safe having a safe door mounted to a safe enclosure, said enclosure having a door frame, said safe door carrying a lock mechanism and multiple outwardly extending bolts for selectively engaging the door frame thereby locking the safe, said lock mechanism including a driving apparatus which rotates from a position associated with the safe being locked to a position associated with the safe being unlocked only in response to a preselected unlocking manipulation of said lock mechanism, the improved mechanism comprising a universal cam means driven by said lock mechanism driving apparatus for driving said multiple outwardly extending bolts to disengage the door frame in response to rotation of the driving apparatus to the unlocked position, said universal cam means being alternatively usable with safe doors of circular and quadrilateral configuration and comprising:

a cam member having a set of first multiple bolt driving portions on a first side thereof for use when said cam member is used in conjunction with a circular safe door and a set of second multiple bolt driving portions on a second side thereof for use when said cam member is used in conjunction with a quadrilateral safe door.

15. A universal boltworks mechanism for use with any dimension of circular safe door within a predetermined range of dimensions and, alternatively, for use with any dimension of rectangular safe door within a predetermined range of dimensions, said safe door having a centrally located interior bore of a predetermined diameter, a coaxial aperture of a predetermined diameter extending from the interior bore to the exterior surface, and multiple equiangularly displaced apertures extending radially outward from said interior bore, said universal boltworks mechanism comprising:

a lock mechanism having a manipulable portion accessable to the exterior of the safe door through said coaxial aperture;

cam driving means rotated by said lock mechanism whenever the manipulable portion has been manipulated in a predetermined manner associated with unlocking the safe;

multiple bolts each slidably mounted in one of said radial apertures for limited movement radially inward and outwardly with respect to the safe door and having a length corresponding to the dimension of the safe door such that said limited movement selectively engages the safe door frame thereby locking and unlocking the door, the radially inward portion of each bolt being provided with a bolt-associated pin;

a universal cam member integral with said cam driving means and having a lock mechanism protective fence portion extending circumferentially about the lock mechanism adjacent to and radially inward of said interior born, three equiangularly displaced inwardly spiraling grooves proximate the periphery of one side of the universal cam member for engaging three bolt-associated pins and thereby driving three bolts mounted equiangularly on a circular safe door, and four equiangularly displaced bolt driving apertures proximate the periphery of the other side of the universal cam member, each for engaging a pivot pin portion of a bolt driving link pivotedly mounted to a respective bolt and thereby driving four bolts mounted equiangularly on a square safe door; and

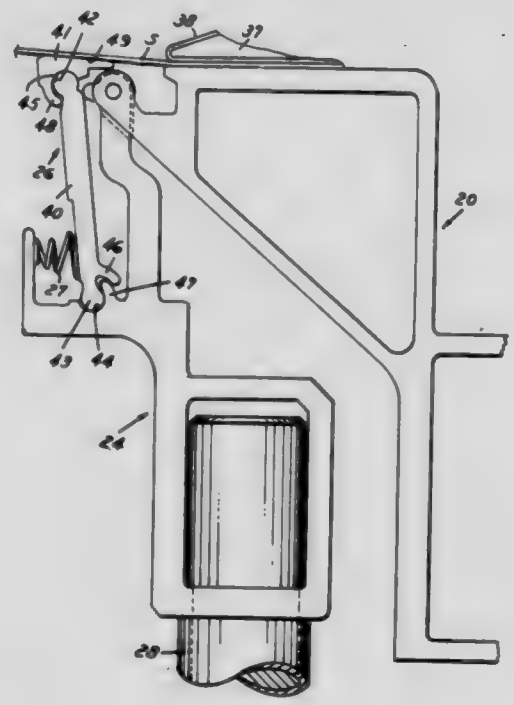
a cover plate for enclosing said boltworks mechanism within said interior bore and having break-away means for breaking away a portion of the cover plate whenever forces in excess of a predetermined threshold amount are experienced by any portion of the universal boltworks mechanism, said breaking away causing partial disassembly of the boltworks mechanism in a predetermined manner whereby the boltworks mechanism is substantially disabled in a door locked condition whenever the boltworks mechanism is drilled into, hammered upon, or blasted as in during an attempted theft of the safe contents.

4,493,200

PORTABLE SHEET BENDING BRAKE

James J. Rhoades, Garden City, Mich., assignor to Tapco Products Company, Inc., Detroit, Mich.

Filed Mar. 10, 1983, Ser. No. 474,206
Int. Cl.³ B21D 5/04
U.S. Cl. 72—319 7 Claims



1. A portable sheet bending brake comprising

a fixed member defining a clamping surface extending longitudinally,

a second bending member extending longitudinally,

means hinging said bending member to said fixed member,

an anvil member extending longitudinally of said sheet bending brake,

means for moving a said anvil member into and out of clamping position with said fixed member so that a workpiece can be clamped between said anvil and fixed member,

a floating compensator comprising a compensator member pivoted solely to the bending member and a workpiece engaging pad pivoted solely to the compensator member and compriaing the sole contact with the surface of the workpiece such that as the bending member is swung to bend a workpiece, the pad engages the surface of the workpiece and remains in contact with the workpiece at

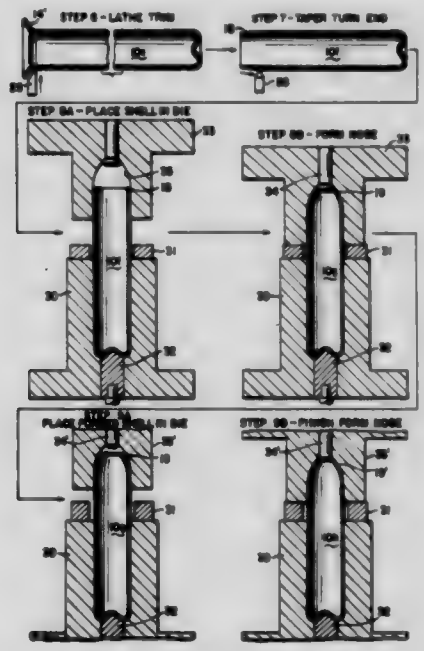
the same area by the relative pivotal action of the bending member, the compensator member and the pad.

4,493,201

METHOD OF MAKING A METAL BOTTLE FOR EXOTIC GASES UNDER PRESSURE

Donald J. Schmidt, DuBois, Pa., assignor to Alco Industries, Inc., Valley Forge, Pa.

Filed Jan. 21, 1983, Ser. No. 459,780
Int. Cl.³ B21D 22/00
U.S. Cl. 72—349 18 Claims



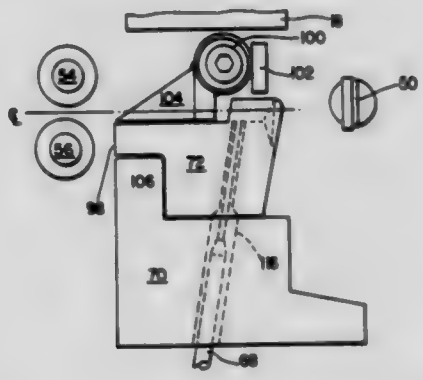
1. A method of forming a strong seamless one-piece metal bottle of substantially uniform wall thickness throughout for containing and dispensing gas under pressure which comprises: first forming a metal shell having a closed bottom end wall and a forwardly extending cylindrical side wall of substantially uniform wall thickness therealong that terminates in an open-end portion that substantially corresponds in diameter to the inner diameter of the cylindrical side wall, tapering the wall thickness of an adjacent portion from the main body of the side wall by reducing its thickness towards its open-end portion, and therafter turning-in and rounding the adjacent portion into a nose portion defining an open-end mouth of reduced diameter for receiving a ferrule or the like therein and in such a manner as to provide the nose portion with a wall of substantially uniform thickness along its extent that substantially corresponds to the thickness of the main body of the cylindrical side wall.

4,493,202

RAILROAD SPIKE FORGING MACHINE

Richard J. Stafford, Charlotte, N.C., assignor to Stafford Rail Products, Inc., Lancaster, S.C.

Filed Sep. 24, 1982, Ser. No. 422,811
Int. Cl.³ B21G 3/12, 3/16; B21K 1/72
U.S. Cl. 72—353 6 Claims



1. In a railroad spike forging machine of the type comprising a steel stock pointing roller assembly which longitudinally feeds pointed spike blanks along a centerline to a head forming station, where a gripper arm holds the blank in a main die as a heading die contacts and expands an unsupported leading edge of the spike blank against a recess in the leading edge of the main die, thereby to shape a spike head, the improvement which comprises;

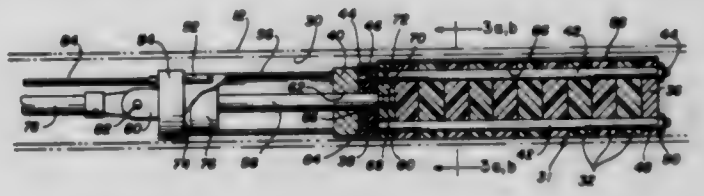
a main die of hardened tool steel having a first vertical dimension, a first transverse dimension and a first longitudinal dimension between its leading edge and a trailing edge, wherein a die zone is defined between said leading edge and an intermediate point of said first longitudinal dimension, said die zone comprising an upwardly open and longitudinally extending channel, having a second transverse dimension and a second vertical dimension, wherein further a transversely open wipe zone is defined between said intermediate point and the trailing edge of the die by a transversely extending wall surface which further comprises a symmetrical entrance to the die zone, at said intermediate point and a longitudinally and transversely extending channel entrance surface, said die surfaces together defining an open transverse relief for the channel, whereby a transverse wiping of the channel is enabled across said entire wipe zone of the die.

4,493,203

RESILIENT INTERNAL MANDREL

Lionel H. Wheeler, Houston, Tex.; Robert G. Goekler, Owasso, and Daniel G. Laddeke, Tulsa, both of Okla., assignors to Crutcher Resources Corporation, Houston, Tex.

Filed Jan. 26, 1983, Ser. No. 461,172
Int. Cl.³ B21D 9/01
U.S. Cl. 72—369 34 Claims



1. An internal mandrel for use with a pipe bender to bend a pipe, comprising:

a first end structure;

a deformable resilient material having a first face and a second face positioned on one side of the first end structure with the first face abutting the first end structure;

deformation means having a first portion and a second portion, said second portion abutting the second face of the deformable resilient material, said deformation means for moving said second portion relative to said first portion; and

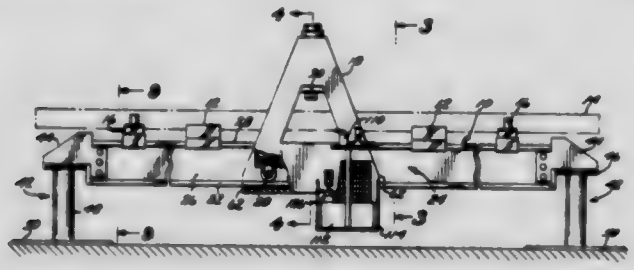
connector means forming a connector that is rigid in a direction parallel the length of the pipe, said rigid connector for extending between the first end structure and the first portion of the deformation means for supporting the first end structure and deformation means so that when the second portion moves relative to the first portion toward the second face of the deformable resilient material, the deformable resilient material is deformed between the second portion of the deformation means and the first end structure to expand the deformable resilient material to support the internal walls of the pipe proximate the bend.

4,493,204

SHAFT STRAIGHTENING PRESS WITH A TRAVELING RAM

Richard C. Merrel, Lakewood, Calif., assignor to Step Enterprises, El Toro, Calif.

Filed Jan. 21, 1983, Ser. No. 459,828
Int. Cl.³ B21D 9/05
U.S. Cl. 72—389
12 Claims



1. An improvement in a shaft straightening press, including a bed, a pair of V-blocks slidably engaging said bed and for supporting a shaft placed on said V-blocks, a pair of precision roller blocks slidably engaging said bed, said precision roller blocks selectably adjustable in a vertical direction with respect to said bed, a movable carriage slidably mounted on said bed and disposed between each one of said pair of precision roller blocks and said pair of V-blocks, said movable carriage including a ram for selectively contacting and exerting a force on said shaft to be straightened, said improvement comprising:

first means connected to said movable carriage for slidably and freely translating said carriage in a generally horizontal direction on said bed so that said movable carriage and ram can be selectively positioned with respect to said shaft disposed in a fixed position on said bed; and

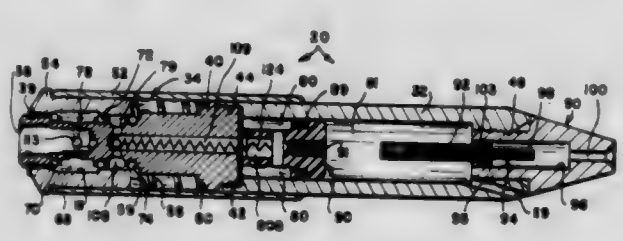
elevating means mounted on said carriage and operable to shift said carriage between a lowered position rendering said first means operable and an elevated position disabling said first means whereby said elevating means may be actuated to lower said carriage to render said first means operable so said carriage may be freely translated to move said ram to a selected position relative to said V-blocks, said elevating means then actuated to elevate said carriage to disable said first means to hold said carriage stationary relative to said bed.

4,493,205

PNEUMATICALLY DRIVEN RIVET INSERT TOOL

Carl Ramsey, Yellville, Ark., assignor to Micro Plastics Inc., Flippin, Ark.

Filed Sep. 29, 1982, Ser. No. 427,173
Int. Cl.³ B21D 31/00
U.S. Cl. 72—391
3 Claims



1. A pneumatic expansion rivet applicator tool comprising:

rigid, elongated, generally cylindrical body means adapted to be manually grasped by a workman, said body means having first and second internal cavities;

pneumatic coupling means associated with said body means for supplying air pressure to said first cavity;

fitting means associated with said body means for receiving the shank of an expansion rivet to be installed by said tool;

fluid flow passageway means interconnecting said first and second cavities;

valve means disposed interiorly of said body means for normally blocking and selectively unblocking said fluid flow passageway means thereby permitting gas to flow from said first cavity to pressurize said second cavity;

firing pin means for slidably, forcibly, contacting said expansion rivet shank when activated to install said rivet;

piston means for actuating said firing pin means in response to pressurization of said second cavity;

said body means including a substantially cylindrical main body portion and a manually actuable, tubular handle portion coaxially fitted to said main body portion and selectively axially displaceable with respect thereto, said handle portion operable as a trigger means when moved axially forwardly with respect to said main body portion for selectively actuating said valve means whereby to actuate said piston means and thus said firing pin means to thereby install a rivet;

first spring means for normally biasing said handle portion of said body means to a "fire" position; and,

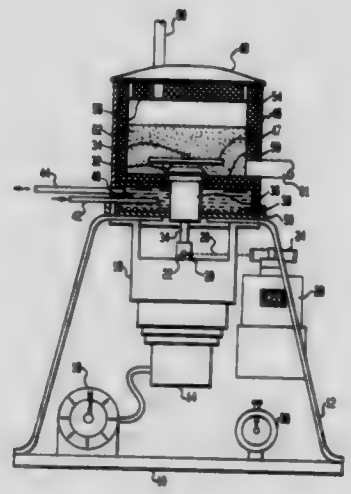
second spring means for normally biasing said piston means to a "fire" position.

4,493,206

EROSION TEST APPARATUS

Richard C. Johnson, and Allyn P. Norris, both of Dansville, N.Y., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed May 17, 1982, Ser. No. 378,537
Int. Cl.³ G01N 3/56
U.S. Cl. 73—7
35 Claims



1. Test apparatus for testing the erosion resistance of a specimen comprising:

an enclosure encompassing a test chamber;

an abrasive medium disposed in said enclosure;

spindle means attached to said enclosure, said spindle means having an inside end adapted to hold said specimen, said spindle means including: a shaft and thermal means for moderating temperature within said spindle means and sized to dissipate sufficiently the heat originating from said enclosure away from said spindle means to avoid distortions thereof, said thermal means including a heat exchanging jacket having a fluid chamber encircling said shaft;

cover means secured about said spindle means for shielding said specimen except at its periphery from erosion by said abrasive medium; and

motor means coupled to said spindle means for spinning said inside end at an adjustable angular speed within said medium, so that said specimen can be eroded at its periphery with a uniform particle impingement speed and with no substantial erosion occurring at radially inward locations shielded by said cover means.

4,493,207

METHOD AND APPARATUS FOR MEASURING THE RATE AT WHICH AIR INFILTRATES INTO AND OUT OF BUILDINGS

John C. Dempsey, Ellicottville, N.Y., assignor to Taggants, Inc., Kensington, Md.

Filed Jan. 19, 1982, Ser. No. 340,620
Int. Cl.³ G01M 3/20
U.S. Cl. 73—40.7 26 Claims



1. A method of measuring air infiltration rate into and out of an enclosed area comprising

placing tracer substance in the area,

emitting tracer gas at a substantially constant rate over a period of time,

sampling gaseous content of the area, and

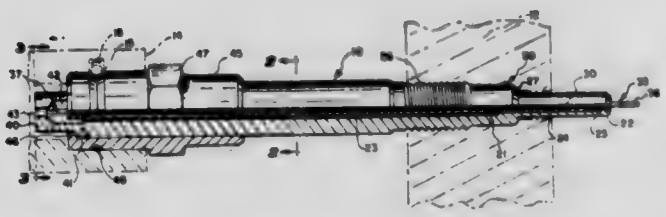
measuring tracer in the sample.

4,493,208

DUAL ENGINE PROBE

Donald D. Grover, Kenosha, Wis., assignor to Snap-on Tools Corporation, Kenosha, Wis.

Filed Dec. 29, 1982, Ser. No. 454,434
Int. Cl.³ G01M 15/00
U.S. Cl. 73—117.3 7 Claims



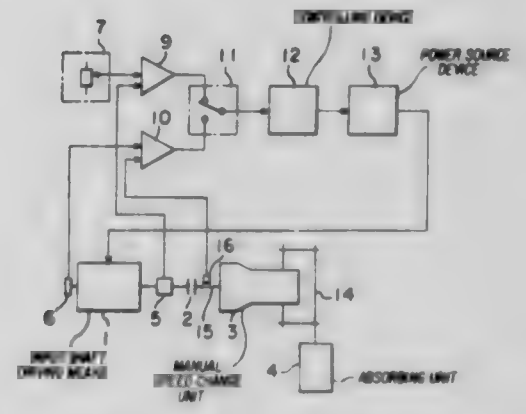
1. A probe for accessing timing event signals in an internal combustion engine including a selected cylinder which has a threaded opening, said probe being adapted to be inserted into the threaded opening, said probe comprising an elongated body including a bore extending therethrough and including front and rear ends, said bore having a reduced diameter portion adjacent to said front end, said elongated body including a shoulder at the rear end of said reduced diameter portion, a tube composed of light-transmitting material having a first end abutting said shoulder and having a second end protruding slightly beyond said rear end, a microwave conductor in said tube having a first end protruding from said front end and having a second end protruding slightly beyond said rear end, a tubular non-conductive shield disposed at said rear end in end-to-end relationship with said body, said shield including a front portion and a rear portion, said shield including in said front portion a cavity of a diameter greater than the diameter of said tube and receiving therein the second ends of said tube and said microwave conductor, said shield including in said rear portion a port of a diameter slightly greater than the diameter of said microwave conductor, and a sleeve encompassing portions of said shield and said body.

4,493,209

CONTROL SYSTEM IN A TEST DEVICE FOR TESTING A MANUAL SPEED CHANGE UNIT

Hiroshi Takeshita, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 3, 1983, Ser. No. 491,171
Claims priority, application Japan, May 11, 1982, 57-80476
Int. Cl.³ G01M 17/00, 13/02
U.S. Cl. 73—118 2 Claims



1. A control system for a test device for testing a vehicular manual speed change unit having an input shaft, comprising:

an input shaft driving means for forcibly driving said input shaft of said manual speed change unit;

a clutch located between said input shaft driving means and said input shaft;

detector means for detecting the revolution speed of said input shaft and outputting data indicating the change of speed of said manual speed change unit during the disconnection of said clutch; and

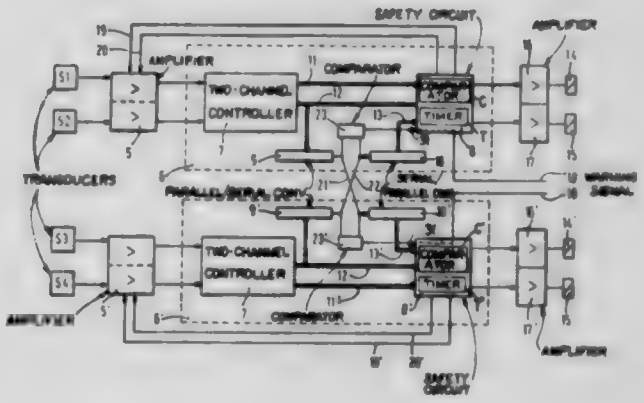
control means responsive to the output of said detector means for controlling the revolution speed of said input shaft driving means in order to provide a synchronization between the revolution speed of said input shaft and the revolution speed of said input shaft driving means when said clutch is in said disconnected connected state.

4,493,210

ANTI-BLOCK CONTROL SYSTEM TEST

Herbert Fries, Oberthal; Jürgen Gerstenmaier, Neckargmünd; Stefan Kircher, Ludwigsburg, and Jürgen Koch-Dücker, Edingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE82/00131, § 371 Date Feb. 22, 1983, § 102(e) Date Feb. 22, 1983, PCT Pub. No. WO83/00124, PCT Pub. Date Jan. 20, 1983
PCT Filed Jun. 22, 1982, Ser. No. 474,574
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1981, 3126102
Int. Cl.³ G01L 5/28
U.S. Cl. 73—121 10 Claims



1. Anti-wheel block control system for separately monitoring the wheels of a vehicle having

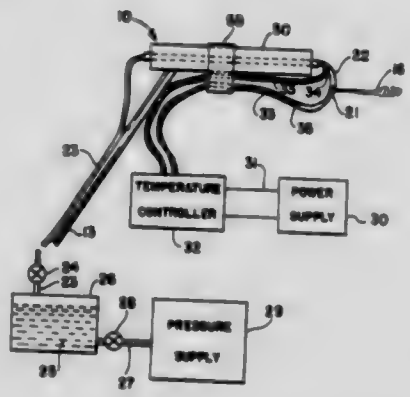
four identical control channels,
each control channel including
a sensor (S1, S2, S3, S4) sensing wheel behavior,
an evaluation circuit (6, 6') evaluating the output signals from the associated sensor,
and a brake control unit (16, 14; 17, 15; 16', 14'; 17', 15') coupled to and being controlled by the respective evaluation circuit,
one channel, each, being associated with a wheel brake of the vehicle;
a safety circuit means for monitoring the anti-wheel block system and for testing the operability of the anti-block control system at timed intervals in a test cycle and providing identical test signals, said identical test signals being coupled from the safety circuit means into all the channels;
comparator means (C, C') within the safety circuit means connected to and comparing—by pairs—signals occurring at corresponding locations within said channels based on said test signals, for correspondence with respect to one another, the comparator means generating a malfunction output control signal if the compared signals deviate from one another,
wherein, in accordance with the invention,
the safety circuit means comprises
separate safety circuits (8, 8') for each pair of channels including timing means for monitoring the temporal response time of the respective channels; and
means for testing the operability of both safety circuit means and connected to both pairs of channels including
at least one further comparator (23, 23'), being connected to the safety circuits (8, 8') for comparing, during the test cycle, agreement of the test signals separately generated for each channel pair,
said at least one further comparator (23, 23') generating a malfunction output signal if the test signals differ from one another.

4,493,211

CONTINUOUS LAMINAR SMOKE GENERATOR

Leonard M. Weinstein, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 30, 1983, Ser. No. 527,918
Int. Cl.³ G01M 9/00
U.S. Cl. 73—147
11 Claims



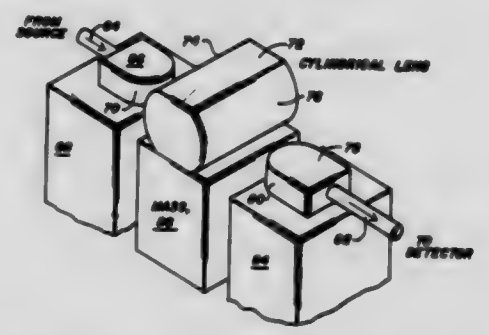
1. A smoke generator to produce smoke for visually indicating airflow comprising:
a fluid supply means;
a fluid capable of producing smoke within said fluid supply means;
a pressure supply means in connection with said fluid supply means for moving said fluid;
a feed tube means having a wall and a closed end, said feed tube means in fluid connection with said fluid supply means;
heating means for directly heating at least a portion of said feed tube; and
a smoke exit hole located in the wall of said directly heated portion of said feed tube such that the circumference of said exit hole does not coincide with the closed end of said feed tube.

4,493,212

FIBER OPTIC MASS SENSOR

Arthur R. Nelson, Stow, Mass., assignor to Aetna Telecommunications Laboratories, Westboro, Mass.

Filed Sep. 20, 1982, Ser. No. 420,361
Int. Cl.³ G01P 15/08
U.S. Cl. 73—517 R
8 Claims



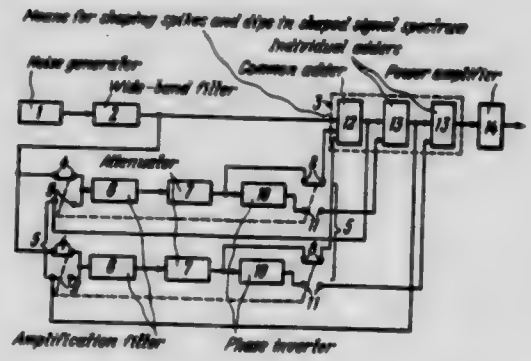
1. A system for sensing a parameter comprising:
a optical system having means for focusing light, said focusing means being positionally responsive to an environmental parameter;
means for applying light through said optical system with the light exiting said optical system varying in intensity in response to the position of the light focusing means of said optical system; and
means for detecting the amplitude of the light exiting from said optical system to provide an output indication of position of said optical system, said optical system having a focusing characteristic which controls the sensitivity of said system to said parameter, said focusing means including means for limiting the motion thereof such that said focusing means is sensitive to motion in a first direction to vary the light transmitted through said optical system and such that said system is relatively insensitive to motion in a second, orthogonal direction in the amount of light applied through said optical system.

4,493,213

RANDOM VIBRATIONS TESTING DEVICE

Yan S. Uretsky; Ravil V. Maekin, both of Kazan; Viktor G. Rygalin, Moscow; Dmitry A. Grechinsky, Moscow, and Viktor A. Klochko, Moscow, all of U.S.S.R., assignors to Nauchno-Issledovatelsky Institut Introskopii and Kazansky Aviatsionny Institut Imeni A. N Tupoleva, both of, U.S.S.R.

Filed Nov. 5, 1982, Ser. No. 439,618
Int. Cl.³ G01M 7/00
U.S. Cl. 73—664
2 Claims



1. A random vibrations testing device, comprising:
a noise generator having an output;

a wide-band filter having an output and an input connected to the output of said noise generator;

a switch having a first pair of switch contacts and a second pair of switch contacts;

narrow-band in-phase signal shaping channels connected in parallel to the output of said wide-band filter, each of said channels comprising said first pair of switch contacts connected to the output of said wide-band filter, a narrow-band amplification filter connected in series with said first pair of switch contacts, an attenuator connected in series with said narrow-band amplification filter, and said second pair of switch contacts connected in series with said attenuator; and

means for shaping spikes and dips in a shaped signal spectrum, said means being connected to the output of said wide-band filter and to said narrow-band in-phase signal shaping channels, said means including a common adder connected in common to said narrow-band in-phase signal shaping channels, said common adder shaping spikes in the shaped signal spectrum and having an output, one input connected to the output of said wide-band filter, and additional inputs respectively connected to said second pair of switch contacts of said channels, and additional individual adders for shaping dips in the shaped signal spectrum, each of said additional adders having an output and inputs, an input of a first said additional adders being connected to the output of said common adder, and the output of each of said additional adders, excluding the first of said additional adders, being connected to one of the inputs of the next-adjacent one of said additional adders.

4,493,214

TRANSDUCERS FOR PROVIDING AN ELECTRICAL SIGNAL REPRESENTATIVE OF PHYSICAL MOVEMENT

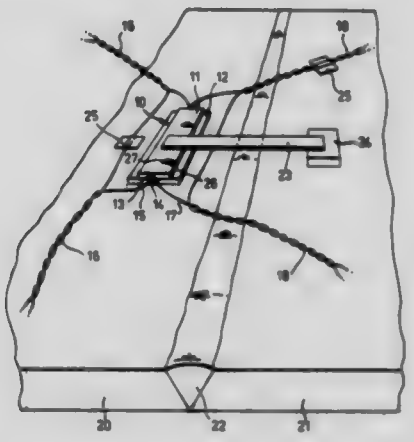
Peter F. Roach, Croft, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Oct. 6, 1982, Ser. No. 433,106

Claims priority, application United Kingdom, Oct. 8, 1981, 8130428

Int. Cl.³ G01B 7/16

U.S. Cl. 73—779 4 Claims



1. A transducer for providing an electrical signal representative of physical movement comprising a first support (11) for supporting a first mineral insulated conductor (15) of a first electrical circuit (16) alongside a second mineral insulated conductor (17) of a second electrical circuit (18) in a second support (12) so that inductive coupling exists between the conductors and so that the two supports can move relative to each other to change the spacing between the conductors characterised in that said supports are in the form of two plates (11, 12) in sliding face contact with parallel linear slots (13, 14) for the conductors (15, 17) in the contact faces of the plates.

4,493,215

VIBRATOR DAMPING FLOW METER

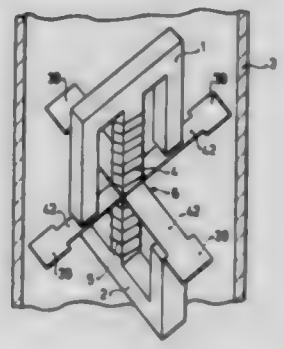
Theodor Gast, Berlin; Kurt Binder, Stuttgart, and Günter Hönig, Ditzingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 16, 1982, Ser. No. 388,890

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1981, 3124506

Int. Cl.³ G01F 1/20, 1/78

U.S. Cl. 73—861.18 18 Claims



1. Throughout meter for flowing media comprising an electromagnetically vibratory body having portions thereof located in a flow duct so as to be damped to an extent dependent on the flow throughput in the duct and a magnet system for exciting the vibrations of said body and for compensating for the damping of said vibrations, said meter further comprising the improvement wherein:

said vibratory body (6) is made of magnetically conducting material in cross shape with beams (42) carrying baffle members (39) at their ends, and

said magnet system is arranged to vibrate said beams in flexure so that the crossed beams vibrate with the ends of both beams vibrating in the same sense as the result of excitation alternately attracting in opposite directions first the ends of one beam and then the ends of the other, the one beam returning by spring action while the other is attracted.

4,493,216

METHOD AND APPARATUS FOR CONDUCTING FLOW MEASUREMENTS ON FLOWING MEDIA ACCORDING TO THE ULTRASONIC DOPPLER METHOD

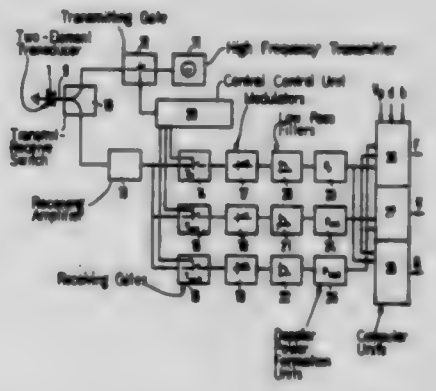
Dieter Hassler, Uttenreuth, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 426,617

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1981, 3147197

Int. Cl.³ G01F 1/66

U.S. Cl. 73—861.25 12 Claims



1. Method for conducting flow measurements on flowing media, in particular, blood in blood vessels, according to the ultrasonic Doppler method, said method comprising:

(a) selecting by means of different first and second ultrasonic beam configurations and by means of first and second signal gate adjustments, respectively, first and second Doppler signal collection regions of a flowing medium, which signal collection regions differ in perimeter, the first signal collection region being dependent upon the incident angle of the first ultrasonic beam configuration,

(b) measuring the powers (P_{m1} and P_p), of the Doppler signals arriving from the first and second signal collection regions,

(c) selecting by means of a third ultrasonic beam configuration and by means of a third signal gate adjustment, a third Doppler signal collection region of said flowing medium, which third signal collection region, compared with the first signal collection region, is dependent in a complementary fashion upon said incident angle,

(d) measuring the power (P_{m2}) of the Doppler signals originating from the third signal collection region, and

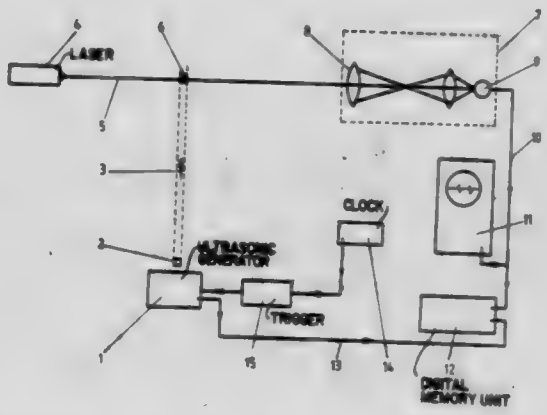
(e) relating the powers (P_{m1}, P_p and P_{m2}) resulting from steps (b) and (d), and known parameters of the signal collection regions with one another in such a fashion that, with cancellation of the angle-dependency, the flow cross-sectional area and/or the flow velocity directly results.

4,493,217

PROCESS AND APPARATUS FOR MEASURING TRAVEL TIME DIFFERENCES OF ULTRASONIC PULSES FOR THE DETERMINATION OF FLOW FIELDS

Rolf Engler, and Rudolf Wulf, both of Göttingen, Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V., Cologne, Fed. Rep. of Germany

Filed Aug. 17, 1982, Ser. No. 408,862
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1981, 3132526
Int. Cl.³ G01F *1/66*
U.S. Cl. 73—861.27 9 Claims



1. A process for determining flow field velocities in a gaseous media comprising the steps of transmitting at least one ultrasonic pulse and one laser beam through the media such that the laser beam intercepts and is modulated by the ultrasonic pulse, registering the laser beam with a receiver means, and registering the travel time of the ultrasonic pulse.

4,493,218

TRANSDUCER SYSTEM EMPLOYING A SPRING WITH LINEAR CHARACTERISTICS

James C. Kyle, 610 Woodwillow St., Roseburg, Oreg. 97470

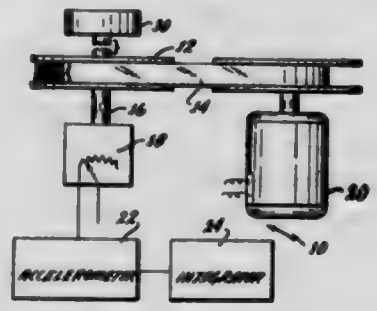
Filed Jan. 27, 1983, Ser. No. 461,631
Int. Cl.³ G01L *1/04*
U.S. Cl. 73—862 14 Claims

1. In combination,

a pulley,

a spring disposed on the pulley and having characteristics for producing a force substantially linearly related to the displacement of the spring relative to the pulley,

means for driving the spring to become wound on the pulley or to become unwound from the pulley, and



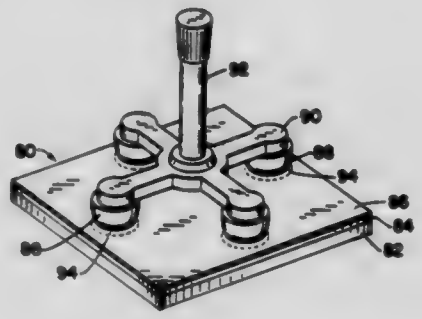
means for converting the displacement of the spring into a signal having characteristics linearly related to the displacement of the spring.

4,493,219

FORCE TRANSDUCER

Larry L. Sharp, Schaumburg, and Mark Kosinski, Chicago, both of Ill., assignors to Illinois Tool Works, Inc., Chicago, Ill.

Filed Aug. 2, 1982, Ser. No. 404,266
Int. Cl.³ G01L *5/22*; H01C *10/10*
U.S. Cl. 73—862.05 6 Claims



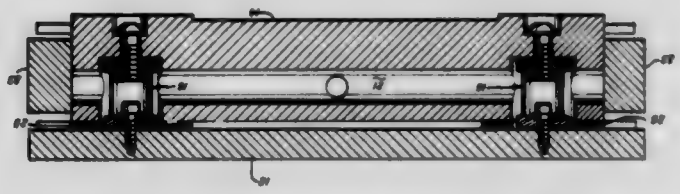
1. An energy conversion and transmission device comprising a first non-conductive substrate, a second non-conducting substrate, an actuator means and a spacer means; said first substrate being substantially flexibly resilient and having a first plurality of electrically resistive lands affixed thereto; said second substrate being substantially rigid and having a second plurality of electrically resistive lands affixed thereto; said spacer means being intermediate said first substrate and said second substrate and maintaining said substrates in spaced, substantially parallel relation; each of said first plurality of resistive lands being in facing relation with and in register with one of said second plurality of resistive lands, said spacer means having a plurality of apertures therethrough, each of said plurality of apertures being in register with one of said first plurality of resistive lands; said actuator means comprising a plurality of elastomeric actuators, each of said plurality of actuators being in register with one of said first plurality of resistive lands; said actuator means further comprising a common actuator carrier, each of said actuators being connected to said common actuator carrier; said actuator means further comprising a common control means, said common actuator carrier being connected to and responsive to said common control means.

4,493,220

FORCE MEASURING PLATFORM AND LOAD CELL THEREFOR USING STRAIN GAGES TO MEASURE SHEAR FORCES

Forest J. Carignan, Bedford, and Nathan H. Cook, Cambridge, both of Mass., assignors to Advanced Mechanical Technology, Inc., Newton, Mass.

Filed Nov. 23, 1982, Ser. No. 443,939
Int. Cl.³ G01L 1/18, 5/16
U.S. Cl. 73—862.66 8 Claims



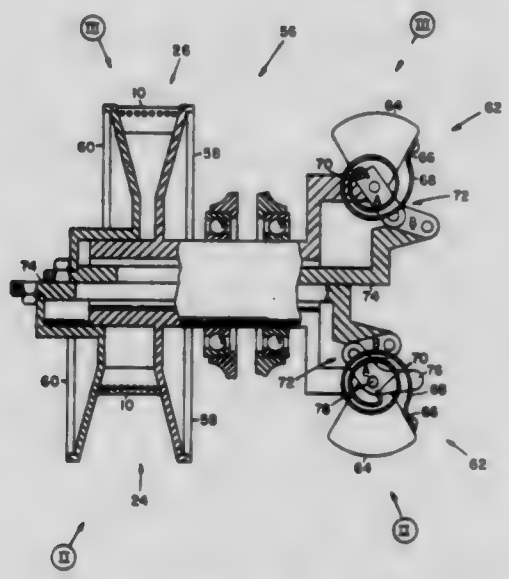
2. A force measuring apparatus comprising a plate supported on a plurality of load cells, each load cell comprising a cylindrical tubular column having a center axis perpendicular to the plate and having strain gages mounted thereon to measure tensile and compressive strain occurring at 45° to the axis of the load cell and associated with the shear strain due to force applied transverse to the center axis of the load cell, the strain gages of a plurality of load cells being interconnected to provide an indication of said force.

4,493,221

VARIABLE SPEED, BELT DRIVEN TRANSMISSION SYSTEM, SPEED SENSING DRIVER PULLEY AND METHOD

Richard F. Stieg, Boulder; John P. Dolan, Littleton; W. Spencer Worley, Aurora, and Tristan Juergens, Conifer, all of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Jan. 12, 1983, Ser. No. 457,338
Int. Cl.³ F16M 55/52; B60K 41/04
U.S. Cl. 474—14 5 Claims



1. A method for operating a driver pulley of a belt driven transmission in conjunction with an engine characterized by charted interrelationships between engine speed, engine torque and brake specific fuel consumption (BSFC); the transmission of the type with a driven pulley having axially separable pulley halves responsively operable to axial forces variable with engine speed for closing the driver pulley halves together; a V-belt entrained by the driver and driven pulleys; the driven pulley axial forces and driven axial forces cooperatively causing variable belt tensions for transmitting predetermined power loads between the driver and driven pulleys from (1) a maximum (speed down) ratio where the driver pulley halves are axially separated to a full open position and the driven pulley halves are positioned axially together to a full closed position by means of an actuator to (2) a minimum (speed up) ratio where the driver pulley halves are axially together to a full closed position and the driven pulley halves are axially separated to a full open position; comprising the steps of:

selecting a desired operating line for the transmission from the charted engine interrelationships where the line is monotonic in torque and has a slope from about 0.004 lb.-ft/rpm to about 0.060 lb.-ft/rpm;

determining the maximum torque at the driver pulley;

determining a family of driven pulley axial forces based on the maximum torque at the driver pulley;

determining a family of required driver pulley axial forces for traction ratio equilibrium of the driver and driven pulleys at selected torques on the operating line;

determining the speeds at which driver pulley axial forces for equilibrium are required to meet the selected torques on the operating line;

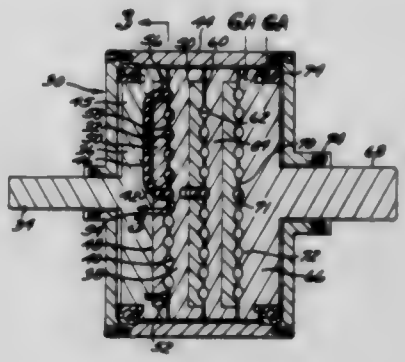
providing the required driver pulley axial forces by means of a torsional spring with a centrifugal weight attached to one end of the spring and an articulated linkage operatively interconnected to the other end of the torsional spring, the axial forces provided by winding the torsional spring and biasing the axial force to close the driver pulley.

4,493,222

GEARLESS SPEED AND TORQUE CONVERTER

Otto R. Heise, Poway, Calif., assignor to R&H Technology, Inc., Minneapolis, Minn.

Filed Apr. 21, 1982, Ser. No. 370,593
Int. Cl.³ F16H 3/00, 11/00, 15/00, 13/02
U.S. Cl. 74—216.3 28 Claims



1. A torque converter comprising:

a rotatable input shaft;

a first member mounted on the input shaft to rotate therewith, said first member having a surface having an Archimedes spiral groove of a first predetermined pitch incorporated in said surface;

a rotatable output shaft mounted coaxially with the input shaft;

a second member mounted on the output shaft to rotate therewith, the second member having a surface operatively interfacing with the surface of the first member, and having an Archimedes spiral groove of a second predetermined pitch incorporated in said surface;

ball means mounted between the respective surfaces of the first member and of the second member for being held between the respective Archimedes spiral grooves of the first and second members at a plurality of intersecting spaces of said spiral grooves, said ball means having substantially pure rolling contact with the Archimedes spiral grooves of the first and second members at said intersecting spaces, whereby said ball means move radially and circularly while said input shaft is rotated by an outside force and while being held in said plurality of intersecting spaces, whereby torque is transmitted from the input shaft to the output shaft, and

channel means provided in one of said first and second members for allowing said ball means to exit from the spiral grooves at a location radially remote from the input

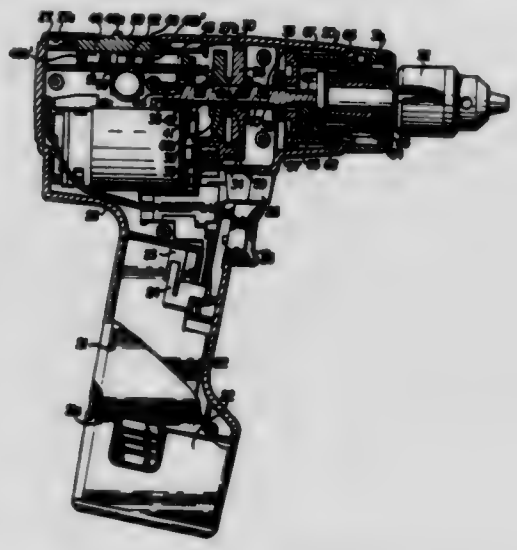
shaft and to reenter said spiral grooves in a location proximate to the input shaft, whereby the ball means are continuously circulated to enter the spiral grooves to move circularly and radially outwardly between said spiral grooves.

4,493,223

GEAR SHIFTING SPEED CHANGE APPARATUS FOR A ROTARY ELECTRIC TOOL

Ichiro Kishi, and Hisao Nakagawa, both of Shiga, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sep. 8, 1982, Ser. No. 415,981
Claims priority, application Japan, Oct. 5, 1981, 56-159273
Int. Cl.³ F16H *3/08*; F16D *21/00*; E21B *3/00*
U.S. Cl. 74—371 8 Claims



1. A gear shifting speed change apparatus for a rotary electric tool comprising:

a shaft having an axially extending keyway therein with a gear changing slide mounted for axial movement in said keyway;

said gear changing slide having a pair of axially spaced apart projections which extend radially outwardly beyond an outer periphery of said shaft;

a pair of speed change gears mounted on said shaft and freely rotatable in relation thereto, an axial distance between axially outer faces of said gears being less than an axial distance between said slide projections;

means to limit axial movement of said gears in relation to said shaft;

at least one axially inwardly extending recess on each said gear outer face;

means for axially sliding said gear changing slide in said keyway by using spring force so as to engage a recess of one of said gears and secure it for rotation with said shaft.

4,493,224

REMOTE MANUAL SHIFTING MECHANISM

Paul L. Speckman, Fredericksburg, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 4, 1982, Ser. No. 384,841
Int. Cl.³ B60K *20/00*; F16C *1/10*
U.S. Cl. 74—473 R 14 Claims

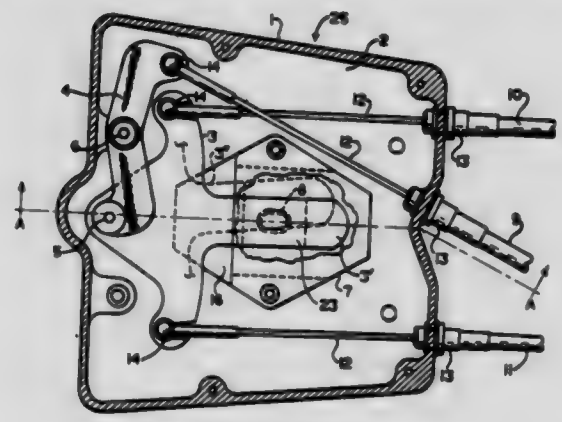
2. A remote manual shifting mechanism for engaging selected gear combinations of a motor transmission of the type having an opening through the casing thereof providing access to rail members therewithin whose positioning and movement enables the engagement of the particular gear combinations selected, said mechanism comprising;

a rotatable body member pivotally mounted to the transmission casing,

a slideable body member having one end thereof pivotally mounted to an end of the rotatable body member on one side of the rotatable mounting between the rotatable body member and the transmission casing, said slideable body member able to slide in opposite directions along a defined path with respect to the transmission casing and having an opposite end thereof that is able to move in opposite directions along an arcuate path that is generally transverse to the defined path,

a protuberance extending from said slideable body member opposite end through the opening in the transmission casing, said protuberance able to be positioned adjacent a particular rail member selected in response to the movement of said slideable body member opposite end along the arcuate path,

means connecting the control lever to the slideable body member in such a manner that movement of the control lever in opposite directions along a first axis causes said slideable body member to rotate about the pivotal mounting between the rotatable member and the slideable body member and cause the opposite end thereof to move along the arcuate path in the direction desired so as to position the protuberance adjacent the selected rail member and



movement of the control lever in one opposite direction along a second axis that is different from the first axis causes the slideable body member to slide in one direction along the defind path for a distance, sufficient to cause the protuberance to impinge upon and move the selected rail member sufficiently to engage the gear combination resulting from the movement of said rail member,

and means connecting the control lever to the rotatable body member on an opposite side of the pivotal mounting between the rotatable body member and the transmission casing, in such a manner that movement of the control lever along the second axis in a direction opposite to said one direction causes said rotatable body member to rotate and cause said slideable body member to slide in an opposite direction along the defined path for a distance sufficient to cause the protuberance to impinge upon and move the selected rail member sufficiently to engage the gear combination resulting from the movement of said rail member.

4,493,225

NECK-STRAIN ALLEVIATOR FOR BICYCLISTS

Giles Galahad, Denver, Colo., assignor to Chaldar, Inc., Denver, Colo.

Filed Sep. 30, 1982, Ser. No. 430,876
Int. Cl.³ B62K *21/16*
U.S. Cl. 74—551.3 3 Claims

1. A device for use to alleviate neck strain of bicyclists by providing hand-adjustability of bicycle handlebar position to bicycle handlebars within a handlebar cavity of a bicycle handlebar stem, the handlebar cavity securing the bicycle handlebars against mmovement when a bolt within a bolt cavity of the stem is tightened, the device being for use both with a stem having

a slot within the bolt cavity of the stem, the slot adapted to engage a fin of a bolt, the slot and the fin cooperatively interacting to prevent rotation of the bolt,

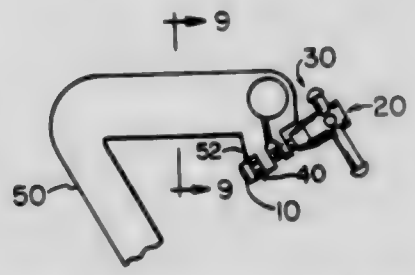
and with a stem having a ledge, the ledge adapted to abut

polygonal-head means of a bolt when the bolt is positioned within the bolt cavity of the stem, the ledge and the polygonal-head means cooperatively interacting to prevent rotation of the bolt;

the device comprising:

a finned threaded bolt, having a head and shank portion, and a fin, said fin attached to and extending between said head and shank portions, the fin engaging said slot within the bolt cavity of a stem when said finned threaded bolt is positioned within the bolt cavity, the slot and the fin cooperatively interacting to prevent rotation of the bolt;

a polygonal-sided slotted collar, having an interior slot, the interior slot engaging the fin of said finned threaded bolt when said collar is positioned upon said finned threaded bolt, thereby rendering said collar non-rotatable relative to said finned threaded bolt, the polygonal sides of said collar then serving as polygonal-head means for said finned threaded bolt, the polygonal-head means adapted



to abut said ledge of a stem, when said finned threaded bolt is positioned within the bolt cavity of the stem, the ledge and the polygonal-head means of said collar then cooperatively interacting to prevent rotation of said finned threaded bolt;

a handle-support, having therein means adapted to engage a handle, and having therein a threaded cavity receiving said finned threaded bolt, said handle-support threaded onto a protruding threaded end of said finned threaded bolt when said finned threaded bolt is positioned within the bolt cavity of the stem; and

a handle, engaged by said handle-support, adapted, when turned to transmit sufficient force to said handle-support when said handle-support is threaded onto said finned threaded bolt positioned within the bolt cavity of the stem, so as to thereby tighten or loosen said finned threaded bolt and thus thereby to tighten or loosen bicycle handlebars within the handlebar cavity of the stem.

4,493,226

CRANKSHAFT FOR SMALL RECIPROCATING MACHINES

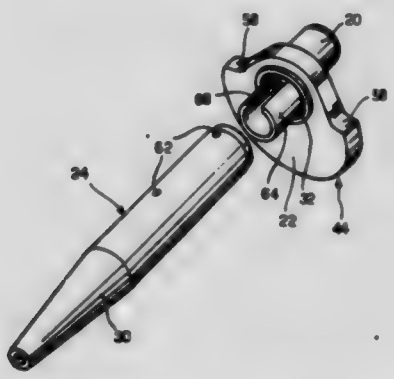
Norbert Andrione; Federigo Peruzzi, both of Turin, and Giancarlo Scandurra, Caorgnè, all of Italy, assignors to Aspera S.p.A., Castelnuovo Don Bosco, Italy

Filed Jul. 14, 1982, Ser. No. 398,146

Claims priority, application Italy, Aug. 3, 1981, 68090 A/81

Int. Cl.[3] F16C *3/04*

U.S. Cl. 74—598 2 Claims



1. A crankshaft for small reciprocating machines, particularly hermetic compressors for refrigerators of the type comprising a crankpin adapted to be connected to one end of a connecting rod, an eccentric having a flat sector formed with opposed faces and an elongated tubular element disposed in succession along the longitudinal direction of the crankshaft, said elongated tubular element being disposed non-coaxial with respect to the crankpin and acting partly as a journal and partly as a support for a rotary member such as a rotor of an electric motor wherein said crankpin and said eccentric are formed in a single sintered metal piece and the elongated tubular element is constituted by separate piece of soft steel tube, interfitting, complementary annular formations disposed on one of said faces of said eccentric and on one end of said tubular element and means for connecting said annular formations together, said annular formation on said one end of said tubular element being a terminal seat formed in the internal surface thereof and said annular formation disposed on said eccentric is an annular boss which is engaged in said seat and wherein said crankpin is tubular and has a longitudinal internal duct which opens through said eccentric and said boss has a longitudinal cut aligned with said duct to define a channel for conveying lubricating oil from the interior of said tubular element to said duct.

4,493,227

SELF-LOCKING DIFFERENTIAL GEAR UNIT; MORE SPECIALLY FOR MOTOR VEHICLES

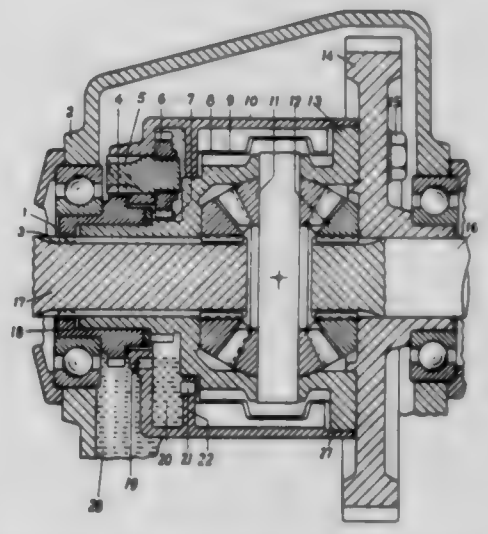
Leopold F. Schmid, Leharstrasse 8/9. OG., D-7000 Stuttgart 1, Fed. Rep. of Germany

Filed Feb. 4, 1982, Ser. No. 345,842

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1981, 3115035

Int. Cl.[3] F16H *1/44*; F16D *31/00, 57/00*

U.S. Cl. 74—711 5 Claims



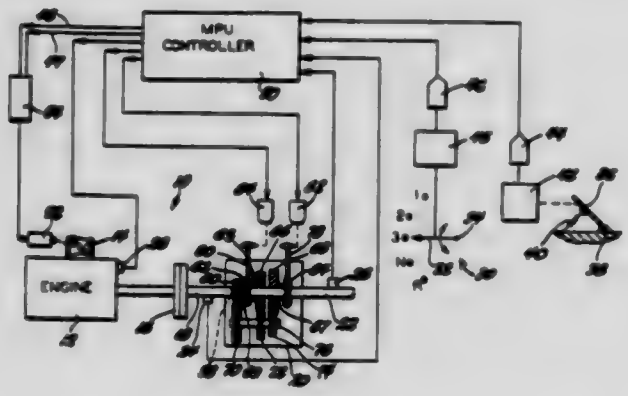
1. In a self-locking differential gear unit having a powered differential gear housing bearinged in an axle drive housing and within which two axle bevel wheels for driving two axle shafts are positioned, such bevel gear wheels meshing with differential gear wheels, and a non-positive coupling placed outside the differential gear housing for locking the differential gear unit, one half of said coupling being joined with the differential gear housing and the other coupling half being joined with one of the two axle shafts, the invention residing in that the two coupling halves take the form of blade rings of a hydrodynamic coupling and in that the gear unit has change speed gearing, such change speed gearing being designed for producing an increase in speed, on one of said axle shafts turning faster than the other, responsible for said one blade ring turning faster than the axle shaft driving the same.

4,493,228

THROTTLE CONTROL SYSTEM FOR AN AUTOMATIC SHIFT COUNTERSHAFT TRANSMISSION

William J. Vukovich, and Michael R. Grimes, both of Ypsilanti, Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 138,668, Mar. 31, 1980, abandoned. This application Dec. 10, 1981, Ser. No. 329,395
Int. Cl.³ B60K 41/18
U.S. Cl. 74—858
12 Claims



1. A method for bringing the setting of a power control means for a power source into correspondence with a manually actuated power control setting upon completion of a shifting mode of operation of a transmission that is driven by the power source wherein the power control means is regulated in accordance with (1) a manually actuated power control setting during non-shift modes of operation and (2) transmission shift requirements during shifting modes of operation, said method comprising the steps of:

generating a control signal as a function of the difference between the setting of said power control means and said manually actuated power control setting upon engagement of a desired gear ratio;

adjusting said power control means in a direction to bring its setting into correspondence with said manually actuated power control setting and at a rate corresponding to the value of said control signal; and

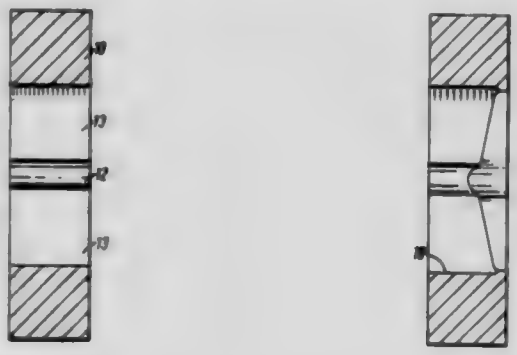
resuming regulation of said power control means in accordance with said manually actuated power control setting when the setting of said power control means substantially corresponds to said manually actuated power control setting.

4,493,229

FORMING OF EXTRUSION DIES

David E. Stewart, Down Hatherly, and George R. Nicholson, Swindon Village, both of England, assignors to Hobson Limited, Cheltenham, England

Filed May 25, 1983, Ser. No. 498,097
Claims priority, application United Kingdom, May 25, 1982, 8215216
Int. Cl.³ B21K 5/20; B21C 25/10, 25/02
U.S. Cl. 76—107 A
10 Claims



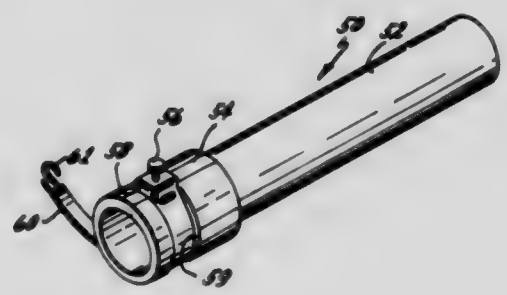
1. A method of forming an extrusion die comprising forming an extrusion aperture in a die piece, forcing a flowable material at least partly through the extrusion aperture so that the leading surface of the material becomes deformed in the extrusion direction, and then reshaping the die piece in such a manner that the axial bearing depth of the extrusion aperture at any location around its periphery corresponds to the deformation of the leading surface of the flowable material at that location.

4,493,230

APPARATUS TO OPEN AND CLOSE A METER RING

Enoch A. Hughes, 13404 Wheeler Ave., Sylmar, Calif. 91342

Filed Jan. 24, 1983, Ser. No. 460,181
Int. Cl.³ B25B 27/00
U.S. Cl. 81—3 R
11 Claims



1. An apparatus for opening and closing a meter ring wherein the ring includes end portions extending outwardly and with each end portion including at least one opening, including,

an elongated handle,

a head portion located at one end of the handle and with the head portion having a substantially cylindrical configuration,

the head portion including an outwardly extending lug located at a first circumferential position and an outwardly extending strap including hook at the end of the strap located at a second circumferential position,

the lug for insertion into the opening in one of the end portions to capture the head portion between the end portions and with rotation of the elongated handle forcing the head portion between the end portions to spread the meter ring, and

the hook at the end of the strap for insertion into the opening in the other of the end portions to have the strap extend across the end portions and with the head portion outside the one end portion and with rotation of the elongated handle forcing the head portion against the outside of the one end portion to force the end portions together to close the meter ring.

4,493,231

METHOD AND DEVICE FOR MACHINING BRAKE DISKS

Hans Wössner, Aldinger Str. 96, Stuttgart-50, D-7000, Fed. Rep. of Germany

PCT No. PCT/DE81/00194, § 371 Date Jul. 6, 1982, § 102(e) Date Jul. 6, 1982, PCT Pub. No. WO82/01678, PCT Pub. Date May 27, 1982
PCT Filed Nov. 7, 1981, Ser. No. 396,907
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1980, 8030325[U]
Int. Cl.³ B23B 3/22, 5/04, 19/02
U.S. Cl. 82—4 A
11 Claims

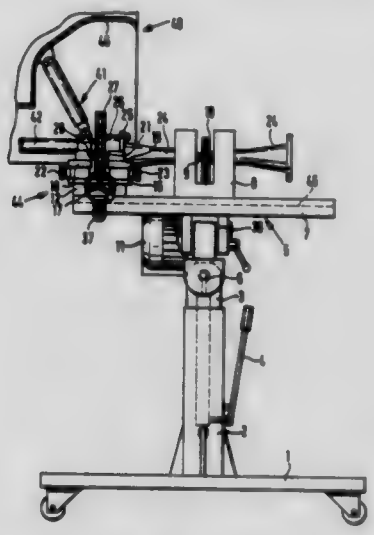
1. An apparatus for refacing a worn brake disk of a vehicle, the disk being fixed on an axle of said vehicle, the axle also having a wheel hub fixed thereto, the axle being resiliently mounted on a body of said vehicle, the apparatus comprising:

at least one refacing tool;

a displaceable tool carrier mounted on a longitudinal carrier for movably positioning the tool with respect to the disk;

a rotary drive means having a drive shaft for turning said axle; and,

a mounting means for supporting the tool, tool carrier and drive relative to said axle, the mounting means having a



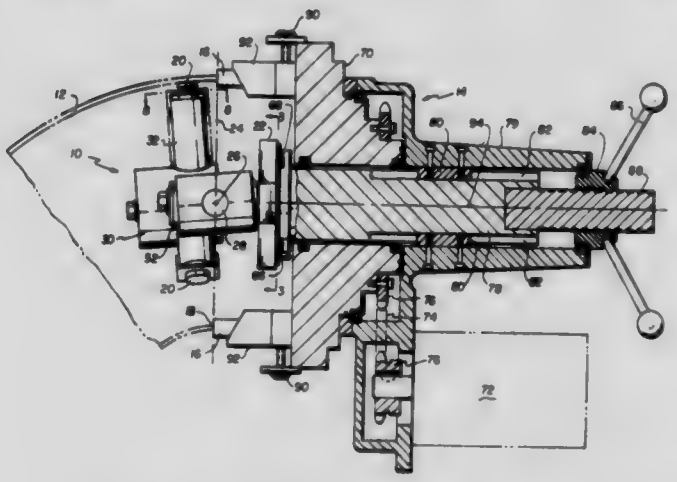
coupling and centering device for rigidly connecting the rotary drive to said wheel hub affixed to said axle and a chassis serving as a mobile carriage supporting the apparatus relative to the ground.

4,493,232

ADJUSTABLE MANDREL FOR PORTABLE LATHE

Lawson H. Nail, Folsom, Calif., assignor to TRI Tool, Inc., Rancho Cordova, Calif.

Filed Nov. 24, 1982, Ser. No. 444,153
Int. Cl.³ B23B 3/22, 5/16
U.S. Cl. 82—4 C 16 Claims



1. A mandrel for a portable lathe including at least one orbiting tool bit and having a cutting plane defined as the plane including the orbital path of movement of the tool bit or bits driven by the lathe during a turning procedure, comprising:

a mandrel housing having a longitudinal axis;

radially extendable securing leg means and actuator means for extending and retracting the leg means radially of the longitudinal axis for securing the mandrel within a hollow workpiece;

lathe support means having means pivotally secured to the housing limiting pivotal movement of same only about a single miter axis, said miter axis extending transversely of and intersecting said longitudinal axis, said lathe support means including means to receive and be attached to a portable lathe with said miter axis extending parallel to the cutting plane of such a lathe; and

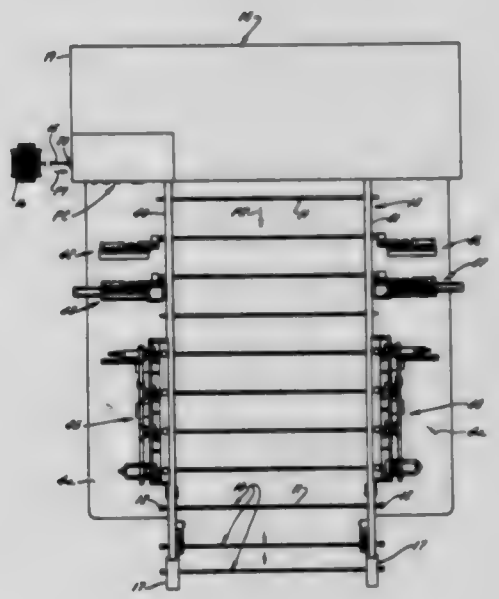
means for releaseably locking said lathe support means in fixed angular position relative to said miter axis.

4,493,233

APPARATUS FOR CUTTING AND CONVEYING SEGMENTS OF WIRE OR CABLE

Robert O. Dassel, Brookfield; James J. Berres, and Harold J. Keune, both of Milwaukee, all of Wis., assignors to Artos Engineering Company, New Berlin, Wis.

Filed Jun. 22, 1983, Ser. No. 507,231
Int. Cl.³ B26D 7/06
U.S. Cl. 83—71 19 Claims



19. Apparatus for repeatedly cutting segments from a strand of wire or cable and for conveying them to work stations so that either or both ends can be processed to provide a partly or fully finished wire lead or cord, said apparatus comprising:

a feed mechanism for moving the free end of said strand in incremental steps along a first path;

inboard and outboard laterally spaced apart conveyor units for moving segments cut from said strand in incremental steps along a second path transverse to the first path, each unit comprising a pair of endless flexible belts having separable soft-faced confronting flights;

a separator device for each conveyor unit to periodically separate and reclose the confronting flights at a location aligned with said first path;

a set of periodically closable and reopenable wire guide members on each side of each conveyor unit and aligned with said first path and operable by the associated separator device so that when the associated confronting flights are open the wire guide members are closed and vice-versa;

an independently openable elongated wire guide located between said conveyor units in alignment with the sets of wire guide members;

a cutter located between the feed mechanism and the set of wire guide members on the outside of the inboard conveyor unit;

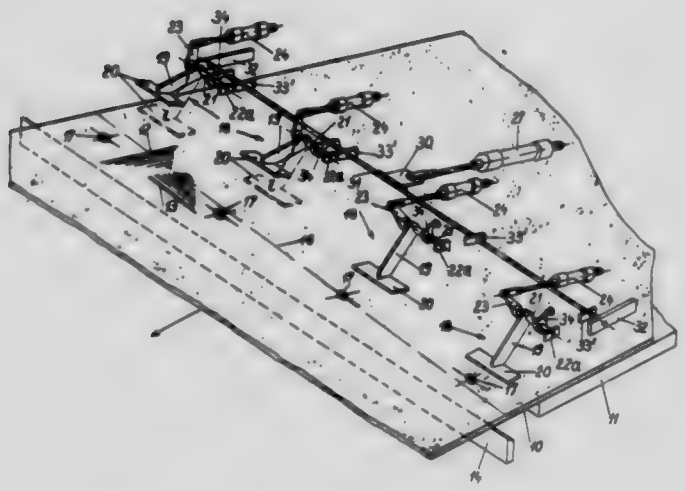
and drive mechanisms and a programmable controller for operating the feed mechanism, the conveyor units and their associated separator devices and wire guides, and the cutter in synchronism.

4,493,234

DEVICE FOR STRAIGHTENING AND CUTTING A TEXTILE STRIP

Hans Ziegler, Grossaitdorf; Siegfried Henze, Hohenroth; Rainer Dippert, Bad Königshofen; Martin Schmaus, Grosseibstadt, and Horst Golda, Sand, all of Fed. Rep. of Germany, assignors to Texpa-Arbter Maschinenbaugesellschaft mbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 250,200, Apr. 2, 1981, abandoned. This application Oct. 20, 1983, Ser. No. 544,070
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1980, 3013050
Int. Cl.³ B26D *5/42*
U.S. Cl. 83—175 6 Claims



1. A device for straightening and cutting a distorted strip article having a marking thereon, comprising:

means for feeding the strip article from a source of supply to a predetermined position for straightening;

means for straightening the article when in said predetermined position, said straightening means comprising a plurality of independently movable straightening elements disposed substantially transversely to the longitudinal direction of the strip article, a transport device for independently adjusting said straightening elements in the longitudinal direction of the strip article, means for pressing said straightening elements independently against the strip article as it is fed toward said predetermined position so that said straightening elements pressed against the strip article move with it toward said predetermined position, and sensor means for controlling said pressing means in response to control signals produced by the marking on the article, said transport device serving to align said straightening elements after they are pressed against the strip article substantially transversely to the longitudinal direction thereof to straighten the strip article when it is in said predetermined position;

means for cutting the article after it has been straightened by said straightening means;

said pressing means serving to move said straightening elements out of engagement with the strip article after it has been cut by said cutting means; and

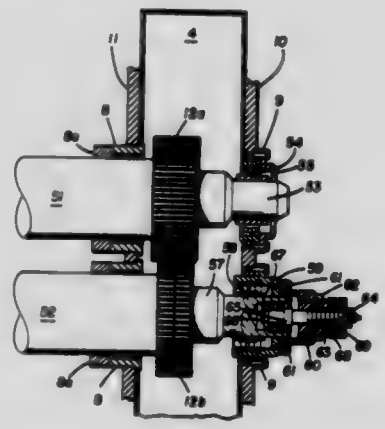
carriages supporting said straightening elements for movement in a substantially vertical plane, and means for movably supporting said carriages for movement between a first position wherein they are coupled with said transport device to be moved therewith to a starting position after the cutting of the strip article, and a second position wherein they are released from said transport device during the engagement of said straightening elements with the strip article.

4,493,235

AXIALLY ADJUSTABLE HELICAL CUTTING BLADES FOR ROTARY WEB SHEARING MACHINE

Merrill D. Martin, 2 Mall Ct., Oakland, Calif. 94608

Filed Apr. 15, 1983, Ser. No. 485,451
Int. Cl.³ B23D *25/12*
U.S. Cl. 83—303 6 Claims



1. In a rotary web shearing machine having at least a first roller and a second roller each of said rollers having positioned on their outer surfaces helical cutting blades arranged for co-acting with each other and means for driving said rollers in opposite directions of rotation so as to produce a cutting action between cutting edges on said blades;

said rollers being mounted on shafts in bearings positioned in bearing housing on a frame of said machine;

said means for driving said rollers in opposite directions comprising a first spur gear and a second spur gear positioned on opposite ends of said shafts on said first roller and said second roller respectively and meshing with each other;

said spur gears being of the backlash preventing type;

the total width of the tooth face of said first spur gear being less than the total width of the tooth face of said second spur gear;

said first shaft said first spur gear and said first roller being free to move in an axial direction simultaneously while said gears are in meah;

means for imparting an axial motion to said first shaft said first roller within its bearings, and said first spur gear;

means for holding said second roller in a fixed horizontal position within its bearings;

means for maintaining both of said rollers in simultaneous rotation and cutting action while imparting said simultaneous axial motion to said first shaft said first spur gear and said first roller;

thereby altering the clearance between the cutting edges of said blades while said blades are in cutting action with each other.

4,493,236

MAILING MACHINE TAPE KNIFE

William D. Toth, Milford, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 25, 1983, Ser. No. 516,837
Int. Cl.³ B26D *1/14*
U.S. Cl. 83—440.1 5 Claims

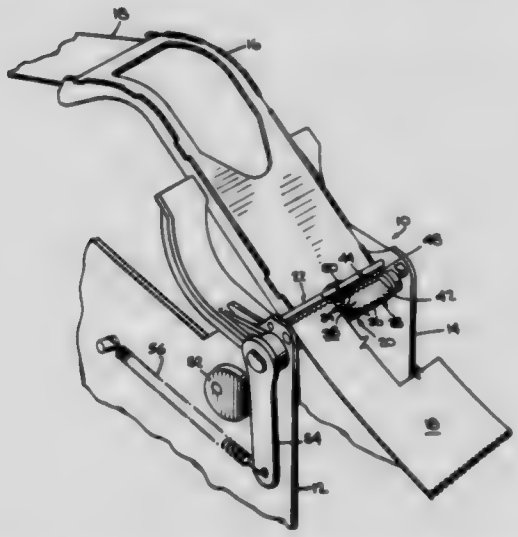
1. A device for cutting roll tape, including:

a frame;

a serrated rotary blade pivotably mounted in said frame, said rotary blade having a plurality of cutting teeth formed by grooves running perpendicular to the axis of the rotary blade and a flat surface cut across said rotary blade, said rotary blade having at least one continuous groove at each end of said serrated rotary blade adjacent said plurality of cutting teeth;

a serrated stationary blade pivotably mounted on said frame, said stationary blade having a plurality of cutting teeth,

said stationary blade cutting teeth being meshable with said cutting teeth on said rotary blade, said stationary blade also having at least one long tooth at each end of said stationary blade adjacent said plurality of short cutting teeth, said long teeth reaching the tangency of said



continuous grooves and riding therein, and wherein said cutting teeth are sufficiently shortened to provide the desired clearance at the cutting interface; and

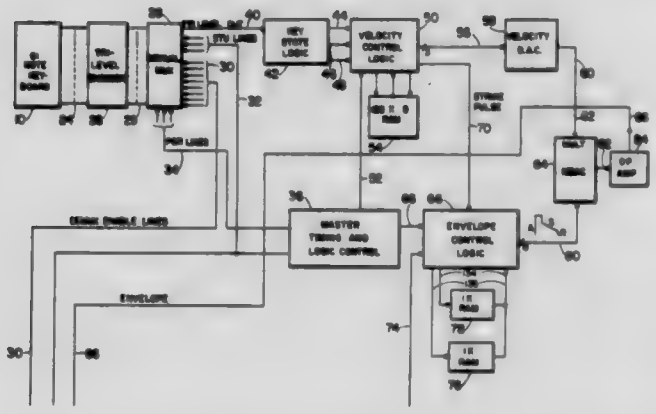
means for biasing said long teeth of said stationary blade into said continuous grooves of said rotary blade.

4,493,237

ELECTRONIC PIANO

Charles E. DeLong, Dubois, and Gary A. Eck, Otwell, both of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed Jan. 13, 1983, Ser. No. 503,529
Int. Cl.³ G01H *1/02*
U.S. Cl. 84—1.26 21 Claims



1. An electronic keyboard musical instrument comprising:

a keyboard having a plurality of playing keys adapted to be depressed, each of said keys having the capability of being selectively in a nominal undepressed state, a nominal partially depressed state, and a nominal fully depressed state,

multiplex means for multiplexing said keyboard and developing a plurality of time slots corresponding on a one-to-one basis to said keys and generating key state signals in said time slots each indicating whether the pertaining key is in its undepressed, partially depressed or fully depressed state,

velocity computing means time shared among the keys of the keyboard and responsive to the key state signals for computing, each time slot of a scan of the keyboard, velocity data correlated to the amount of time that the pertaining key, if partially depressed, has been in its partially depressed state, and storing said data in corresponding locations of a velocity memory assigned to the pertaining keys, said computing means accessing data in said velocity memory, updating said data on subsequent scans as long as the pertaining keys are still in their partially depressed states, and storing final values of said velocity data in the memory locations assigned to the keys as the pertaining keys reach their fully depressed states,

envelope generator means time shared among the keys of the keyboard responsive to the key state signals for computing and outputting envelopes for the fully depressed keys, each envelope comprising a plurality of discrete amplitude levels computed in the time slots of the pertaining keys during a respective plurality of scans of the manual, said envelope generator means storing data correlated to the amplitude level calculated during each time slot of the scan in locations of an envelope memory assigned to the pertaining keys to provide a reference for the amplitude level calculated on a subsequent scan,

said velocity computing means reading said final value velocity data out of said velocity memory onto an output in synchronism with the outputting of the envelope amplitude levels,

means for combining the read out velocity data and the output amplitude levels to produce on a time shared basis among the fully depressed keys envelopes scaled by the velocity data for the respective keys, and

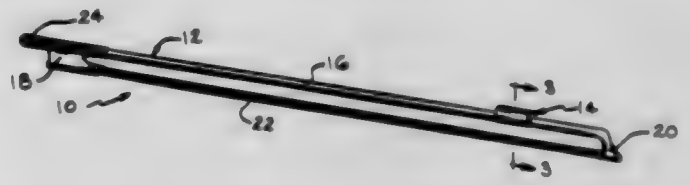
tone means responsive to the key state data and to the scaled envelopes for generating tones of frequencies corresponding to the fully depressed keys and having respective said envelopes.

4,493,238

VIOLIN BOW WITH ADJUSTABLE WEIGHT

Ruggiero Ricci, 2930 E. Delhi Rd., Ann Arbor, Mich. 48103

Filed Jan. 17, 1983, Ser. No. 458,236
Int. Cl.³ G10D *3/16*
U.S. Cl. 84—282 6 Claims



1. In combination with a bow for string type musical instruments wherein said bow includes an elongated rod section having a frog at one end and a tip at the opposite end, and hair mounted on and extending between said frog and said tip, said hair being engageable with the strings of a musical instrument during use, means for controlling the bounce characteristics of said bow on said strings comprising weight means adjustably mounted on said rod section intermediate said ends thereof for movement lengthwise of said rod section between a plurality of positions thereon.

4,493,239

RANGE CLEARANCE BY ENHANCING OXIDATION OF FERROUS ORDNANCE IN-SITU

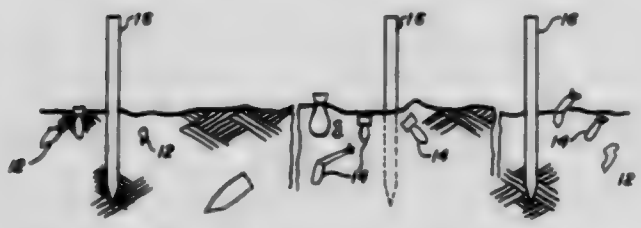
Marvin A. Pedersen, Fort Washington, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 19, 1982, Ser. No. 369,377
Int. Cl.³ F41F *5/02*
U.S. Cl. 89—1.13 17 Claims

1. A method of clearing a target range by rendering safe unexploded ordnance buried in the ground comprising the steps of:

adding electrolyte to the soil around buried unexploded ordnance to a depth below the deepest buried unexploded ordnance and maintaining it at a high moisture content for enhancing local galvanic action for accelerating destructive corrosion of metallic parts of the unexploded ord-

nance; applying direct current voltage through the soil for introducing stray currents therein, and



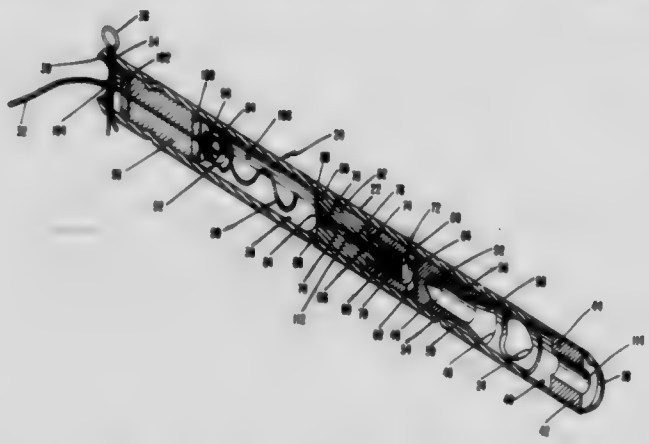
allowing time for destructive corrosion to occur to render the unexploded ordnance safe.

4,493,240

PARACHUTE LINE CUTTING DEVICE

Jeffery R. Norton, Spooner, Wis., assignor to Stresau Laboratory, Inc., Spooner, Wis.

Filed Feb. 1, 1983, Ser. No. 463,021
Int. Cl.³ B26D *5/12*; F42B *4/02*
U.S. Cl. 89—1.14 18 Claims



17. A method of severing a line which passes through a housing comprising the steps of:

frictionally igniting an ignition charge to generate hot gases within the housing;

allowing the hot gases to ignite a starter charge spaced from the ignition charge;

delaying detonation of an explosive charge by burning a delay charge between the starter charge and the explosive charge;

insulating the delay charge to impede heat transfer away from that charge; and

detonating the explosive charge to drive a knife toward an anvil with the line to be severed therebetween.

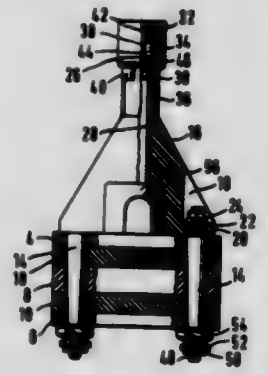
4,493,241

DEVICE OPERATING BY MEANS OF PYROTECHNIC CHARGES FOR RELEASING JOINTS SUBJECT TO LOAD

Rudolf Oliva, Cremlingen, and K. Ulf Schmidt, Brunswick, both of Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e. V., Cologne, Fed. Rep. of Germany

Filed Feb. 3, 1983, Ser. No. 463,926
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1982, 3208401
Int. Cl.³ F42B *3/00*
U.S. Cl. 89—1.14 5 Claims

1. A device, acting by means of a pyrotechnic charge, for the release of at least one joint between a plurality of constructional components subject to load, including a plurality of bolts acted on by transverse forces, the device comprising a housing to which the bolts are connected having a cylindrical bore therein, the axis of which lies substantially in the direction of the resultant of the forces necessary to release the joint by extracting said bolts, a piston supported on one of the constructional components and engaging in the cylindrical bore of said



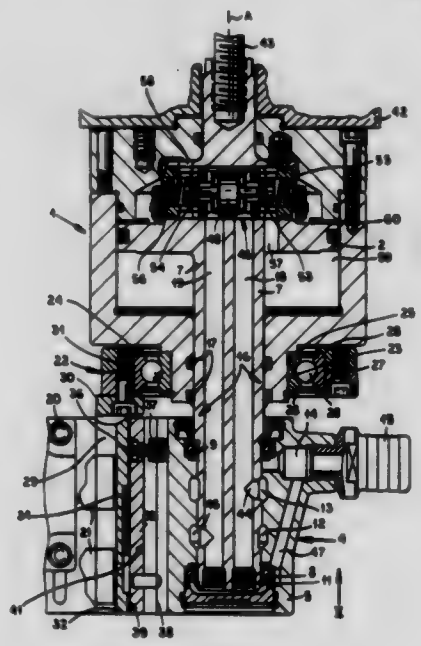
housing, a pyrotechnic charge positioned to act on said piston, and an ignition device for said pyrotechnic charge.

4,493,242

ACTUATOR FOR POWER CHUCK

Günter H. Röhm, Heinrich-Röhm-Str. 50, 7927 Sontheim, Fed. Rep. of Germany

Filed May 4, 1982, Ser. No. 374,879
Claims priority, application Fed. Rep. of Germany, May 6, 1981, 3117850
Int. Cl.³ F01B *31/12*
U.S. Cl. 91—1 10 Claims



1. A chuck actuator comprising:

a cylinder extending along a main axis;

a piston axially displaceable in said cylinder and forming therein two compartments, said piston having an axially backwardly extending stem also centered on said axis and formed with two respective intake passages each having one end opening into the respective compartment and another end opening at a respective location on said stem;

a connector rotatable about said axis on said stem and provided with respective fittings communicating with said locations;

means including first and second axially spaced bearings for preventing said connector from moving axially on said stem;

means for feeding fluid under pressure alternately to said fittings to pressurize and depressurize the respective compartments and thereby axially displace said piston in said cylinder, whereby said cylinder is connected to a chuck body and said piston to a chuck-actuating member for fluid actuation of said member;

an axially extending guide fixed on said connector;

an axially extending bar slidable axially in said guide; means including a third bearing distinct from the first and second

bearings for linking said bar to said cylinder for joint axial movement therewith but rotation relative thereto; and

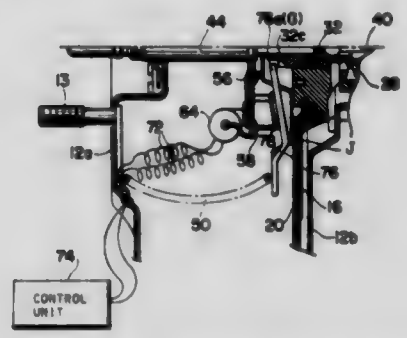
sensor means including at least one element carried on said bar and another element on said connector adjacent said guide and engageable with said one element in a predetermined axial position thereof relative to said connector for detecting when said elements are in said predetermined position.

4,493,243

VACUUM SUSPENDED TYPE SERVO DEVICE

Osamu Horibe, Atsugi, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 31, 1983, Ser. No. 499,251
Claims priority, application Japan, Jan. 16, 1982, 57-102162
Int. Cl.³ F15B 9/10
U.S. Cl. 91—369 B 6 Claims



1. A vacuum suspended type servo device comprising:

a housing;

a power piston movable in said housing;

an input member to which an input force is applied;

an output member to which the movement of said power piston is transmitted;

valve means operated by said input member to control the movement of said power piston;

force transmitting means interposed between said input member, said power piston, and said output member;

said force transmitting means including a reaction lever having a bent portion which is pivotally seated on said power piston to act as a fulcrum of said reaction lever;

a plunger member movable with said input member, said plunger member having a shoulder portion to which one end of said reaction lever is engaged when said reaction lever pivots to a certain degree;

a support member fixed to said output member to move therewith;

a reaction member movably supported by said support member, said reaction member including an elongated member which extends at an angle relative to said reaction lever and contacts at one side thereof with said reaction lever; and

moving means for moving said reaction member rotationally to shift the point of contact radially along said reaction lever.

4,493,244

PNEUMATIC DOOR OPERATOR

Rüdiger F. V. Stillfried, Barsinghausen, Fed. Rep. of Germany; Günter Seegers, West Bloomfield, Mich., and Günter Sebesta, Hemmingen, Fed. Rep. of Germany, assignors to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Jun. 9, 1982, Ser. No. 386,550
Int. Cl.³ F15B 11/08, 13/044
U.S. Cl. 91—420 2 Claims

1. An electropneumatic door control arrangement, for operating a door between first and second positions, and including a source of pressurized air, comprising,

(a) a pneumatic door operator including first and second control chambers separated by a piston operable to a first and a second position as pressurized air is supplied to said first and second chambers, respectively,

(b) piston coupling means for operating a door to first and second positions as said piston operates between said first and second positions, respectively,

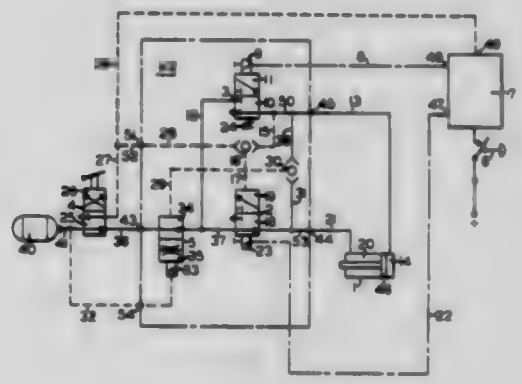
(c) a first and a second magnet valve, each having an electromagnet and a passage and a vent position and each in fluid communication with such pressurized air source, each valve is operable to the passage position when the associated electromagnet is energized,

(d) valve biasing means for biasing said second valve to said vent position when deenergized,

(e) manually controllable electrical switching means for alternately energizing said first and second magnet valve when operated sequentially at selected times between first and second conditions, respectively,

(f) said first magnet valve further in fluid communication with said door operator such that, when in said passage position, pressurized air is communicated to said first chamber, and when in said vent position, air is exhausted from said first chamber,

(g) said second magnet valve further in fluid communication with said door operator such that pressurized air is communicated to said second chamber and air is exhausted from said second chamber when said second magnet valve is energized or deenergized, respectively,



(h) said second magnet valve also in fluid communication with said first magnet valve such that, when said second magnet valve is energized, pressurized air is communicated to said first magnet valve to operate said first magnet valve to said vent position,

(i) a two position emergency valve in fluid communication with the air supply from such source, normally occupying a passage position so that pressurized air is communicated to both magnet valves, and when in the other emergency position, the supply of air is blocked from such source to both magnet valves and pressurized air is communicated to said switching means to inhibit energization of either magnet valve and to operate said first magnet valve to said vent position, and

(j) a two position choke valve connected between said emergency valve and said magnet valves, having a choke position and a normal non-choke position wherein pressurized air is freely communicated to said magnet valves, and

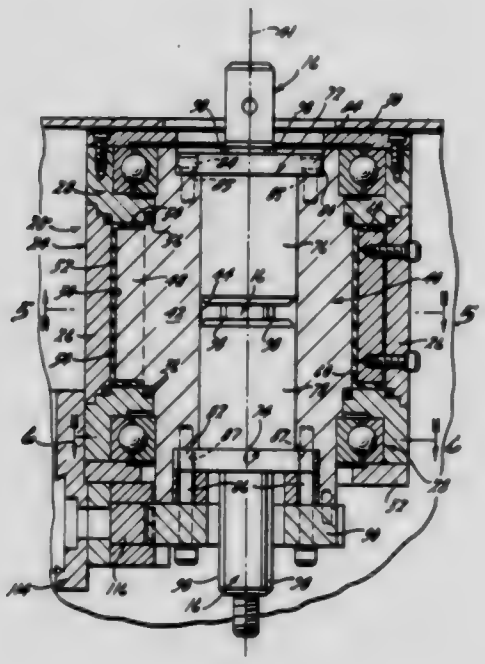
(k) choke operating means for responding to the blockage of air to both magnet valves with said emergency valve in its emergency position, said choke operating means operating said choke valve to its choke position for initially restricting the supply of air to said magnet valves when said emergency valve returns to its passage position, and for returning said choke valve to said non-choke position when a predetermined pressurized air value has been communicated through one of said magnet valves.

4,493,245

ROTARY AND LINEAR ACTUATING DEVICE

Jerry Kirsch, Grosse Pointe Farms; Kerry F. Kirsch, Livonia, and Kenneth J. Hornacek, Pontiac, all of Mich., assignors to Rimrock Corporation, Columbus, Ohio

Filed Apr. 22, 1983, Ser. No. 487,573
Int. Cl.³ F01B 21/00, 29/00; F15B 15/24
U.S. Cl. 92—2 8 Claims



1. In an actuating device of the type having a housing, a rotatable assembly disposed within said housing assembly for rotation about an axis, at least a portion of said rotatable assembly being radially spaced from an inside wall of said housing assembly, said rotatable assembly having at least one vane member protruding therefrom for rotational movement therewith, said movable vane member slidably and sealingly engaging said inside wall of said housing assembly, said housing assembly having at least one fixed vane member protruding therefrom in slidable and sealing engagement with said rotatable assembly, said fixed and movable vane members separating said space between said rotatable assembly and said inside wall into at least a pair of fluid pressure chambers, fluid pressurizing means for varying the relative fluid pressures in said chambers in order to selectively vary the rotary position of said rotatable assembly within said housing assembly, said rotatable assembly further including an elongated member extending generally coaxially through said rotatable assembly for rotational movement therewith, wherein said rotatable assembly includes a rotatable sleeve member having an opening extending substantially coaxially therethrough, linear bearing means coaxially received within said opening in said rotatable sleeve member for rotation therewith, said elongated member extending substantially coaxially through said linear bearing means, and ball spline means rotationally interconnecting said elongated member and said linear bearing means to allow linear axial movement of said elongated member relative to said housing assembly, the improvement comprising

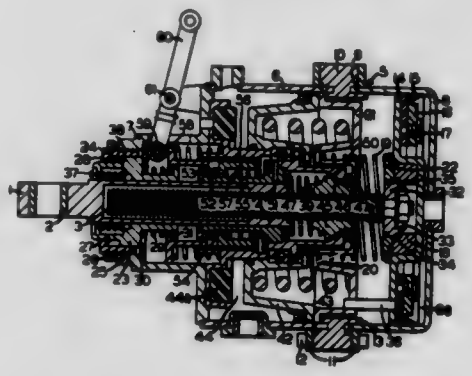
adjustment means for rotating said cylindrical members relative to each other and for fixedly securing said cylindrical members in their relatively rotated positions in order to adjust the amount of backlash in said ball spline means.

4,493,246

BRAKE CYLINDER WITH TWO PISTONS

Georges Dalibout, Gagny, France, assignor to WABCO Westinghouse Equipements Ferroviaires, Freinville-Sevran, France

PCT No. PCT/FR81/00132, § 371 Date Jun. 21, 1982, § 102(e) Date Jun. 21, 1982, PCT Pub. No. WO82/01405, PCT Pub. Date Apr. 29, 1982
PCT Filed Oct. 20, 1981, Ser. No. 395,071
Claims priority, application France, Oct. 21, 1980, 80 22449
Int. Cl.³ F01B 9/00
U.S. Cl. 92—13.8 6 Claims



1. A brake cylinder device comprising:

(a) a casing;

(b) a duty brake piston subject on one side thereof to the force of fluid pressure urging movement of said duty brake piston in a brake application direction;

(c) a screw-threaded rod;

(d) a non-rotatable thrust rod having an integral first nut member threadedly connected to said screw rod;

(e) first clutch means between said duty brake piston and said screw rod for locking said screw rod against rotation upon clutch engagement in response to movement of said duty brake piston in a brake application direction and for unlocking said screw rod upon clutch disengagement in response to movement of said duty brake piston in a brake release direction to thereby free said screw rod to rotate;

(f) means for urging said screw rod and said duty brake piston in said brake release direction;

(g) slack adjuster means for limiting axial displacement of said thrust rod in said brake release direction a predetermined distance, whereby continued axial displacement of said screw rod in said brake release direction corresponding to overtravel of said duty piston during said brake application induces rotation of said screw rod relative to said first nut member in a direction to effect lengthening of the axial dimension between said screw rod and said thrust rod;

(h) a parking/emergency brake piston subject on one side to the force of a spring urging movement thereof in said brake application direction, and subject on the opposite side to the force of fluid pressure normally sufficient to overcome the force of said spring to maintain said parking/emergency brake piston in a brake release position,

(i) a second nut member threadedly disposed on said screw rod for rotation thereon;

(j) second clutch means for inhibiting rotation of said second nut member during movement of said parking/emergency brake piston in said brake application direction to lock said second nut member axially in relation to said screw rod, such that the force of said spring acting through said parking/emergency brake piston is transmitted to said thrust rod, said second clutch means including:

(i) a first sleeve member that is connected to said parking/emergency brake piston in such a manner as to be rotatable relative thereto, said first sleeve member including a force transmitting surface; and

(ii) a force receiving surface formed on said second nut member so as to be engageable with said force transmitting surface upon movement of said parking/emergency

brake piston in said brake application direction to effect said locking of said second nut member;

(k) means for limiting axial movement of said second nut member relative to said parking/emergency brake piston so as to maintain a predetermined spacing between said force transmitting and receiving surfaces irrespective of the stroke of said duty brake piston, whereby the degree of expansion of said parking/emergency brake piston spring and thus the force exerted thereby on said one side of said parking/emergency brake piston is constant for a given reduction of fluid pressure from said opposite side of said parking/emergency brake piston;

(l) third clutch means normally having engagement for rotatably locking said first sleeve member against rotation; and

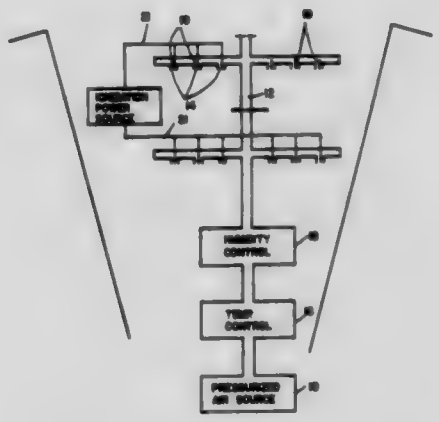
(m) means for effecting disengagement of said third clutch means upon movement of said parking/emergency brake piston in said brake application direction a distance exceeding said predetermined spacing between said force transmitting and receiving surfaces, thereby permitting said second nut member and said first sleeve member to rotate relative to said screw rod under the thrust of said spring, the direction of rotation being such as to permit said parking/emergency brake piston to be moved axially into engagement with an end stop on the casing of said brake cylinder device to thereby cage said spring and accordingly relieve the spring force from said thrust rod.

4,493,247

APPARATUS FOR IMPROVEMENT OF AIR QUALITY IN PASSENGER AIRPLANE CABINS

Mordechai Wachsman, Tel-Aviv, Israel, assignor to Amcor Ltd., Tel-Aviv, Israel

Filed Jun. 14, 1983, Ser. No. 504,264
Claims priority, application Israel, Jul. 12, 1982, 66297
Int. Cl.³ F24F 7/06
U.S. Cl. 98—1 11 Claims



1. Ventilation and air quality treatment apparatus for passenger aircraft comprising:

a source of pressurized air;

a conduit network coupled to said source of pressurized air and to a multiplicity of outlet devices, each of said outlet devices being adapted to be positioned adjacent to an individual passenger location;

said multiplicity of outlet devices each constructed so as to define a pressurized air flow pathway therein; and

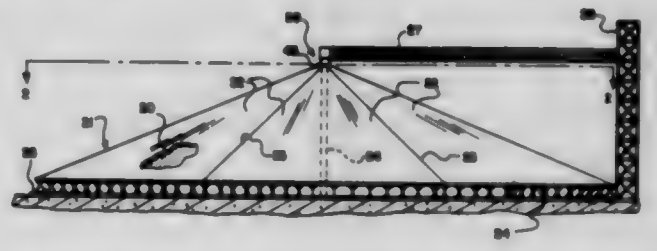
a plurality of individual ionization means each disposed in the air flow pathway of one of said outlet devices for providing ionization of the air passing therethrough.

4,493,248

STORAGE SYSTEM FOR GRANULAR MATERIALS

Paul P. Wolstenholme, c/o Super C Products Company, 229 S. Main St., P.O. Box 36, West Mansfield, Ohio 43358

Division of Ser. No. 395,547, Jul. 6, 1982, Pat. No. 4,454,807.
This application Oct. 17, 1983, Ser. No. 542,339
Int. Cl.³ B65G 3/00; B65D 88/16; A01F 25/14
U.S. Cl. 98—52 6 Claims



1. Method of storing a flowable granular material comprising the steps of:

positioning a pluraltiy of mating, flexible and impervious cover sections upon a support surface;

securing said cover sections together to define a cover having a centrally located opening;

grasping said cover in the region of said central opening and lifting the surrounding portion of said cover to a predetermined height; said cover sagging naturally from said height and being free to pull inwardly as necessary to accommodate said lifting;

introducing said granular material into said opening until said granular material comes into contact with said cover;

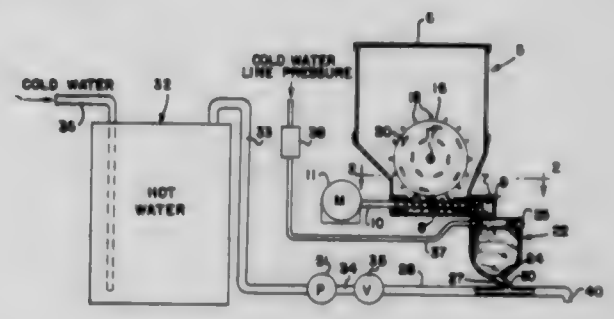
continuing said introduction to cause said granular product to lift said cover and carry it outwardly away from the point of said introduction, thereby defining a pile which extends along a normal angle or repose in an outward and downward direction from the point of said introduction and which is entirely covered by said cover throughout said introduction.

4,493,249

APPARATUS FOR DISSOLVING SOLUBLE COFFEE

Kenneth W. Stover, Springfield, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.

Filed Nov. 12, 1982, Ser. No. 440,979
Int. Cl.³ A47J 31/00
U.S. Cl. 99—275 6 Claims



1. Apparatus for dissolving soluble coffee particles in hot water to produce hot coffee beverage comprising, feeding means for discharging a stream of soluble dry coffee particles at a predetermined rate, a mixing receptacle having a bottom discharge opening and wherein said stream of soluble coffee particles is received and mixed with a stream of cool or cold water, means for delivering a stream of cool or cold water to said receptacle at a predetermined rate, a hot water conduit, means for causing a stream of hot water to flow at a predetermined rate in said hot water conduit, and a conduit connection between said bottom discharge opening of said mixing receptacle and said hot water conduit, said mixing receptacle being positioned to receive said stream of soluble coffee particles and having water inlet means adjacent its top which causes the cool or cold water delivered thereto to flow as a vortex-like stream

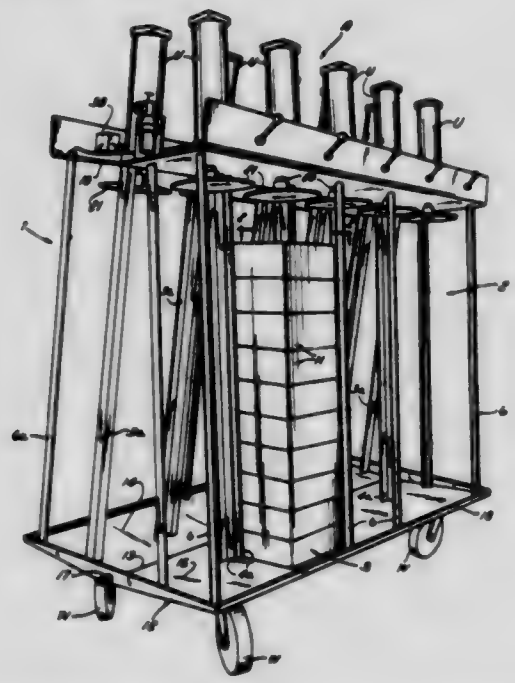
down the inner surface thereof while mixing with said soluble coffee particles, and said stream of hot water flowing in said hot water conduit being of such velocity and volume as to create suction in said conduit connection.

4,493,250

PORTABLE CHEESE PRESS FRAME ASSEMBLY

Gary R. Smith, Watertown, Wis., assignor to Kusel Equipment Company, Watertown, Wis.

Filed Jul. 22, 1980, Ser. No. 171,124
Int. Cl.³ A01J *25/10, 25/15*
U.S. Cl. 99—456 1 Claim



1. A portable cheese press frame assembly for being supported on a floor and for removably supporting hoops and for pressing the curd in said hoops to cause draining of the whey therefrom, said assembly comprising a frame including a generally vertical tubular frame member having an upper end and also having a lower end which opens below said hoops and at the lower end of said frame and adjacent said floor, a fluid circuit mounted on the upper end of said frame assembly, said assembly also including gas-operated cylinder and piston units mounted on the top of said frame and including an extensible piston member extending downwardly for pressing the curds in said hoop, control means carried by said assembly for actuating said cylinder and piston units in extending and contracting directions, said cylinder and piston units and said control means being located in said fluid circuit, a valve exhaust line in said circuit for receiving exhaust fluid from said control means, conduit means for discharging exhaust gases from said cylinder and piston units through said control means and through said valve exhaust line and into said upper end of said tubular frame member for discharge from the lower end thereof so as to ensure that said exhaust gases and impurities contained therein will not contaminate said hoops by contact therewith.

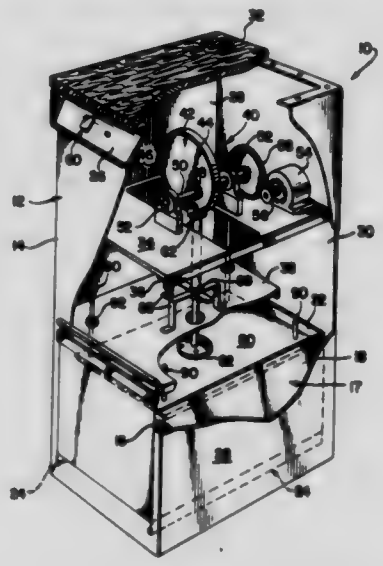
4,493,251

TRASH AND GARBAGE COMPACTOR

Richard Green, 19131 Delaware St. Apt. 18A, Huntington Beach, Calif. 92648

Filed Sep. 29, 1982, Ser. No. 427,913
Int. Cl.³ B30B *1/26*
U.S. Cl. 100—53 1 Claim

1. A trash-and-garbage-compactor apparatus comprising:
a housing having an upper portion and a lower portion defined by an intermediate partition and an opening formed in said lower portion of the front wall thereof;
a drawer slidably mounted within said lower portion of said housing so as to be selectively positioned between an open and a closed mode, said drawer defining a refuse receptacle;
means attached to said drawer to allow said drawer to be slidably positioned in either an open or a closed mode;
a frame structure provided within said housing;
cam means supported by said frame structure and positioned in said upper portion of said housing;
a pressure plate attached to said cam means and adapted to be received in said receptacle to compress said refuse disposed therein when said receptacle is in a closed mode; and
drive means mounted in said upper portion of said housing and operably connected to said cam means, wherein rotational movement of said cam means is transferred into an alternating rectilinear movement of said pressure plate;
wherein said cam means comprises:
a cam lobe driven by said drive means, and formed having a cylindrical disc including an annular peripheral ring, said disc being eccentrically attached to said drive means; and
a cam-follower means having one end engaging said annular peripheral ring of said cam lobe, and the opposite end thereof attached to said pressure plate, said cam-follower means comprising a ram rod having an overriding means;
wherein said engaging end of said ram rod comprises:
a yoke member;
a pair of oppositely disposed rollers attached to said yoke member to engage the inner surface of said annular ring on opposite sides of said disc member; and



a roller bearing mounted in said yoke member for engagement with the outer peripheral surface of said ring, whereby said ring is interposed between said rollers and said roller bearing; and
wherein said overriding means comprises said ram-rod which is formed having a first ram-rod member and a second ram-rod member, said first ram-rod member being formed as a tubular member adapted to slidably receive said second ram-rod member therein, and interposing a pre-loaded biasing spring between said first and second ram-rod members, said spring being positioned within said first tubular ram rod member for engagement with said second ram rod member, whereby said second ram rod member can slide within said first ram rod member after said pressure plate is prevented from reaching its downward maximum length of travel;
said pressure plate including a stabilizing means which comprises a plurality of stabilizer rods mounted to said pressure plate adjacent each corner thereof and slidably supported within said intermediate partition;
wherein said drive means comprises:
a motor;
a gear train operably connected to said motor;
a drive shaft rotated by said gear train, said cam lobe being eccentrically mounted to said drive shaft; and

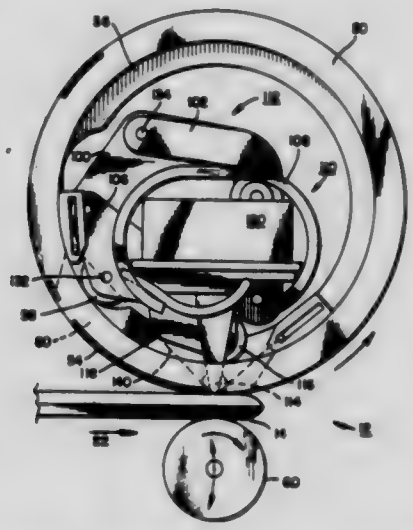
means mounted to said intermediate partition for vertical alignment of said ram rod.

4,493,252

POSTAGE PRINTING APPARATUS HAVING A MOVABLE PRINT HEAD IN A PRINT DRUM

John I. Clark, Milford, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 9, 1983, Ser. No. 473,414
Int. Cl.[3] B41F *11/00, 13/36*
U.S. Cl. 101—71 19 Claims



17. A postage meter printing apparatus for applying postage indicia to a mailpiece comprising:

(a) a rotary operating drum means for feeding the mailpiece through the postage meter, the drum means a nonrotary reciprocating impact matrix print head secured to a stationary support and located within the rotary drum means,

(b) a linkage means which cooperates with the rotary drum means to move the print head between a printing and non-printing position,

(c) means to cycle the drum means and activate the print head,

(d) means for maintaining the mailpiece against the drum means while the print head prints postage on the mailpiece, the means for maintaining being mounted adjacent the drum means, and

(e) means for controlling the means for maintaining including means for pivoting the mailpiece against the print head while printing takes place and to hold the mailpiece clear of the drum means as the mailpiece enters the postage meter before printing takes place.

4,493,253

VARIABLE IMPACT PRINTING MEANS

Arvindkumar C. Vyas, Waterloo, Canada, assignor to NCR Canada Ltee, Mississauga, Canada

Filed Nov. 23, 1983, Ser. No. 554,743
Int. Cl.[3] B41J *9/38, 9/42*
U.S. Cl. 101—93.03 11 Claims

1. Variable impact printing mechanism comprising in combination:

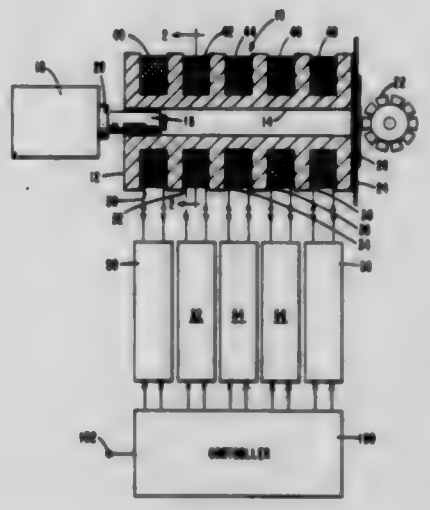
hammer means capable of moving in a generally linear path between a rest position and an operated position in which said hammer means cooperates with said print indicia element to effect printing upon a record medium;

support means capable of defining the path of the hammer means;

a plurality of electromagnetic coil means mounted in operative relation to said support means, each of said coil means being capable of incrementally affecting the movement of said hammer means along said path;

driving means for energizing each of said electromagnetic coil means; and

controller means comprising a microprocessor and look-up table means for controlling said driving means by predetermined control signal combinations in response to input data representing different print requirements to cause



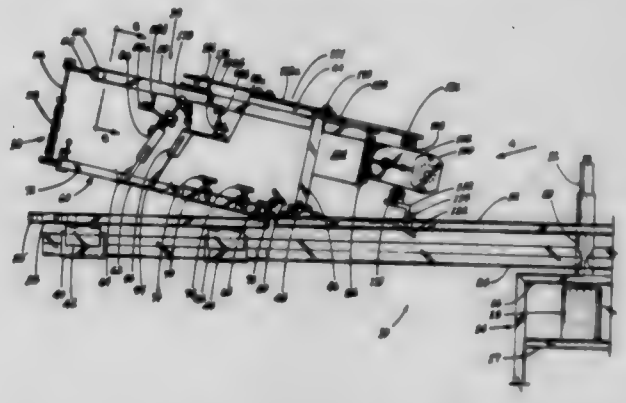
said plurality of electromagnetic coil means to act in combination to move said hammer means along said path at desired velocities, to provide varying printing impact forces in response to varying printing requirements.

4,493,254

SCREEN PRINTING MACHINE AND DRIVE SYSTEM THEREFOR

Benjamin J. Landesman, and David A. Landesman, both of St. Louis, Mo., assignors to Lawson Printing Machines Company, Inc., St. Louis, Mo.

Filed Oct. 31, 1983, Ser. No. 546,879
Int. Cl.[3] B41F *15/36, 15/10*
U.S. Cl. 101—123 15 Claims



1. In screen printing apparatus for entirely prime mover-driven screen printing of work presented for printing upon a work-receiving table, said apparatus comprising a screen printing unit including a squeegee support frame, a squeegee supported by and movable relative to said squeegee support frame, means presenting said squeegee support frame for pivotal movement in a vertical plane between raised and lowered positions, a screen frame, including a screen, carried by said squeegee support frame for being lowered into a printing position upon said work when said squeegee support frame is lowered, the improvement characterized by drive means including an upstanding drive shaft, a single prime mover for turning said drive shaft, a cam having first and second cam surfaces forming an angle therebetween, cam following means carried at a lower end of said drive shaft for alternately engaging said cam surfaces for causing alternate movement of said squeegee support frame between said raised and lowered positions, a crank at an upper end of said drive shaft swingable around said upstanding drive shaft, and connecting rod means interconnecting said squeegee and crank for reciprocating movement of said squeegee upon rotation of said drive shaft,

whereby said single prime mover produces not only cammed raising and lowering of said squeegee support frame but also said squeegee reciprocating movement.

4,493,255

MULTI-STATION SHEET ROTARY OFFSET PRINTING MACHINE

Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.—Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

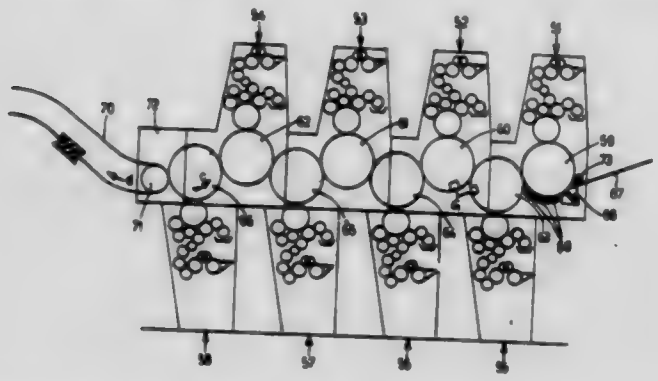
Filed Jan. 24, 1983, Ser. No. 460,498

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1982, 3203879

Int. Cl.³ B41F 7/02, 21/10

U.S. Cl. 101—183

20 Claims



1. Sheet-fed rotary offset printing machine system having

at least three first essentially identical modular printing stations (1, 2, 3, 4; 51–54) sequentially arranged in the path of feeding of the sheets,

each printing station module forming a unitary assembly and comprising

a plate cylinder (13; 14–16);

a blanket cylinder (17; 18–20; 59; 60–62);

an inker (5; 6–8) and a damper (9; 10–12);

all modular stations, except the last one in the sequential arrangement, further having a printing cylinder (21; 22, 23; 63; 64–66);

in which the axes of rotation of the blanket cylinders of all the modular printing stations are located in a first common plane (A), and the axes of rotation of the printing cylinders are all located in a second common plane (B), parallel to said first plane;

and wherein the blanket cylinders and the printing cylinders include sheet grippers (G);

the printing cylinder (e.g. 22) of any one modular station (e.g. 2) being in engagement with both the blanket cylinder of the station (2) of which it is a part, and with the blanket cylinder (e.g. 19) of an adjacent modular station (e.g. 3);

a theoretical connecting line (C) between the axes of rotation of any blanket cylinder and of the adjacent printing cylinder of the system has a plurality of respectively angled portions or legs defining, together, a zig-zag configuration, the individual portions or legs of which are inclined with respect to each other by an angle (α) of between about 70° to 175°; and

the sheet is transferred from the blanket cylinder of any one station to the blanket cylinder of any adjacent printing station directly by the printing cylinder between the adjacent stations.

4,493,256

VOLTAGE APPLICATOR FOR LIMITING CHARGE DISTRIBUTION IN ESA PRINTING EQUIPMENT

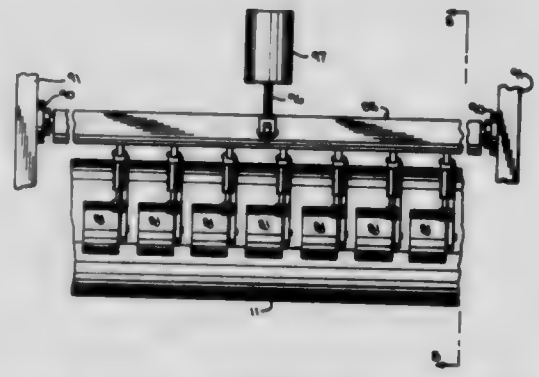
Bruce E. Hyllberg, Garnee, and George B. Brands, Wilmette, both of Ill., assignors to American Roller Company, Union Grove, Wis.

Filed Feb. 29, 1984, Ser. No. 584,614

Int. Cl.³ B41F 5/00

U.S. Cl. 101—216

9 Claims



1. A charging device for connection to a voltage source to apply an electrostatic-assist operating voltage across an impression roller and a printing design cylinder to produce an electrostatic charge in a nip region where the impression roller bears against the printing design cylinder and where, in a portion of the nip region, a web of print-receiving material is fed between the impression roller and the printing design cylinder, the charging device comprising:

a plurality of rolling conductive surfaces spaced along the length of the impression roller;

cylindrical core means for supporting the rolling conductive surfaces along the length of the impression roller, the cylindrical core means having electrically conductive journal shafts for connection to the voltage source; and

electrical connecting means coupled to the cylindrical core means for connecting selected ones of the rolling conductive surfaces in an electrical circuit between a first one of the journal shafts and the impression roller to couple the electrostatic-assist operating voltage to a portion of the impression roller contacted by the selected ones of the rolling conductive surfaces and to concentrate electrostatic charge in a corresponding portion of the nip region.

4,493,257

INKER FOR A PRINTING PRESS

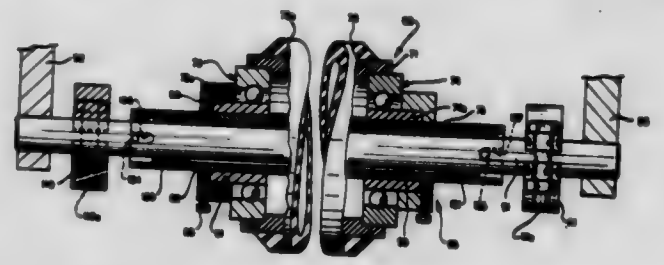
Vincent T. Kubert; John C. Frampton, and George Y. Ono, all of Arlington, Tex., assignors to Harris Graphics Corporation, Melbourne, Fla.

Filed Oct. 25, 1983, Ser. No. 545,177

Int. Cl.³ B41F 31/14; B41L 27/16

U.S. Cl. 101—349

10 Claims



1. An inker for applying ink to a lithographic printing plate having ink-respective and ink-rejecting areas, certain of said ink-receptive areas which are to print substantially the same color as the other of said ink-receptive areas being disposed in axially adjacent circumferential sections of the printing plate, which circumferential sections have different percentages of ink-receptive areas, said apparatus comprising a form roll having a cylindrical outer surface, means for applying an ink film to the entire cylindrical outer surface of said form roll,

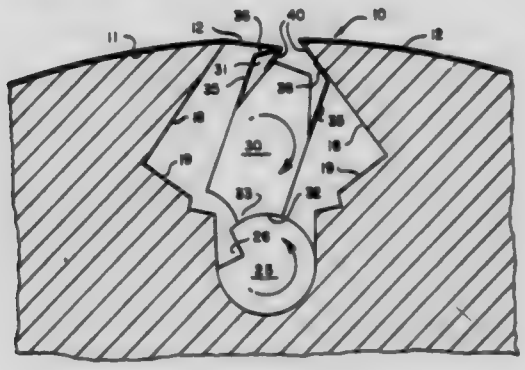
means for supporting said form roll so that said cylindrical outer surface has an ink-transferring engagement with the printing plate, and means for promoting the application of a smooth coating of ink to axially adjacent circumferential ink-receptive sections of the printing plate, said means for promoting the application of a smooth coating of ink including means for moving said form roll axially while the form roll is in said ink-transferring engagement with the printing plate to present ink from different axial portions of the form roll to the same circumferential section of the plate, a form roll shaft fixed against rotation about its own axis, a member extending along said shaft and axially slidable relative to said shaft, a pair of bearings interposed between said member and said form roll and supporting said form roll for rotation about said shaft, and means for clamping at least a part of said bearings to said member for axial movement along said shaft upon axial movement of said form roll.

4,493,258

INTERFACING CAM AND TOGGLE LOCKUP

Alan R. Wallschlaeger, Marion, and John F. Wade, Cedar Rapids, both of Iowa, assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Nov. 14, 1983, Ser. No. 551,526
Int. Cl.³ B41F *27/12*
U.S. Cl. 101—415.1 3 Claims



1. A plate clamping arrangement for a reversible printing cylinder comprising in combination: A plate roll for receiving a flexible printing plate having mounting tangs on each end thereof, said roll having a longitudinal groove formed thereof; a bottom surface in said groove having a circular radius of curvature; sidewalls in said groove defining a volume greater than the volume defined by said bottom surface; a circular cam situated within said plate roll groove, said circular cam having an arcuate surface with a radius of curvature substantially equal to the radius of curvature of said bottom surface, said arcuate surface mating with said bottom surface, said cam having a groove running along the length thereof; a bar-like toggle situated within the groove of said plate roll, said bar-like toggle having a pair of lower surfaces that mate with the arcuate surface of said cam; and a generally U-shaped spring mounted on said toggle having upper free ends for engaging a plate to hold it in position on said roll.

4,493,259

CONTROL CIRCUIT FOR IGNITING A LOW-OHM IGNITION CAPSULE

Klaus Münzel, Klingnau, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Sep. 7, 1982, Ser. No. 415,238
Claims priority, application Switzerland, Sep. 24, 1981, 6153/81
Int. Cl.³ F42C *11/06*
U.S. Cl. 102—218 6 Claims

1. A control circuit for igniting a low-ohm ignition capsule, comprising:

a voltage source;

power switch means connected in circuit with said low-ohm ignition capsule;

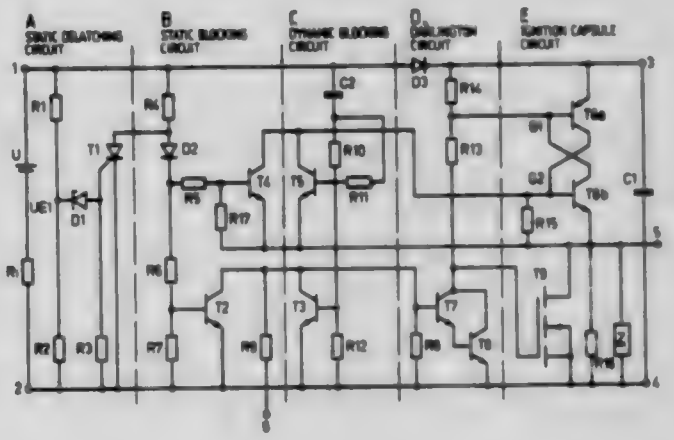
an ignition capacitor connected in circuit with said voltage source and chargeable by means of said voltage source;

said ignition capacitor being connected in circuit with said power switch means and with said ignition capsule;

a static blocking circuit for exerting a blocking action preventing ignition of the ignition capsule as long as the ignition capacitor is being charged;

said power switch means having a base;

said static blocking circuit containing a first transistor for connecting the base of said power switch means with ground;



a static delatching circuit which eliminates the blocking action of the static blocking circuit as soon as the ignition capacitor has been charged;

said static delatching circuit containing a Zener diode for disconnecting said static blocking circuit as soon as the voltage of the ignition capacitor has reached a threshold voltage of said Zener diode;

a dynamic blocking circuit for preventing an unintentional ignition of said ignition capsule during the intentional charging of the ignition capacitor upon malfunction of said ignition capacitor; and

said dynamic blocking circuit containing a capacitor.

4,493,260

ANNULAR SHAPED CHARGE FOR BREACHING MASONARY WALLS

John S. Foster, Richmond, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 8, 1983, Ser. No. 549,841
Int. Cl.³ F42B *1/02*
U.S. Cl. 102—307 4 Claims



1. A device for breaching masonary walls comprising:

a symmetrical container for insertion into a pilot hole in the wall having a first cylindrical cavity portion disposed at one end, a second cylindrical cavity portion disposed at a second end, and a third cavity portion disposed midway between said first and second cavity portions the shape of

the third cavity portion being defined by an annular concave portion of said container extending into said third cavity portion and defining a shaped charge liner adapted to collapse, invert, fragment, and create a jet of annular radially expandable fragments and explosive gases;

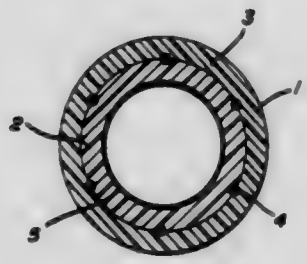
an explosive filling said cavity portions presenting two exposed surfaces at the first and second cavity portions for generating the explosive gases and a force for collapsing, inverting, and fragmenting the concave shaped charge liner; and, simultaneous detonation means associated with the explosive surfaces for simultaneous initiating detonation of said explosive in the first and second cavity portions.

4,493,261

REINFORCED EXPLOSIVE SHOCK TUBE

James R. Simon, Lachute, and David J. Welburn, Brownsburg, both of Canada, assignors to CXA Ltd./CXA LTEE, North York, Canada

Filed Nov. 2, 1983, Ser. No. 547,861
Int. Cl.³ F42D 3/00
U.S. Cl. 102—331 6 Claims



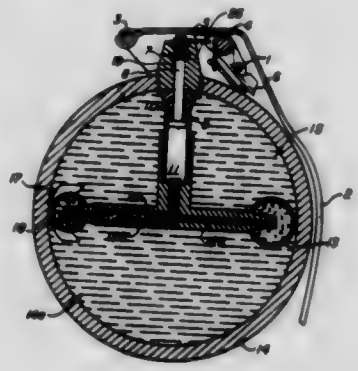
1. A low energy explosive shock tube comprising a bonded, two-ply, inner and outer layer plastic tube, the inner layer having high adhesion properties for a thin layer of powdered energy-producing material distributed on its inner surface and the outer layer having high resistance to mechanical damage and a plurality of lengthwise textile filaments of low elongation properties bonded at the interface of the said inner and outer tube layers.

4,493,262

FUEL AIR EXPLOSIVE DEVICE

Don S. Hutcheson, College Park, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 3, 1982, Ser. No. 438,683
Int. Cl.³ F42B 27/00; F42C 15/02
U.S. Cl. 102—363 11 Claims



1. A device adapted to explode a fuel air mixture comprising:

a container having a casing enclosing a liquid fuel for defining an explosive when mixed with air, and

a detonator and burster disposed within the container, said burster upon firing being adapted to burst the casing and force the fuel upward and outwardly to form a cloud of fuel air mixture;

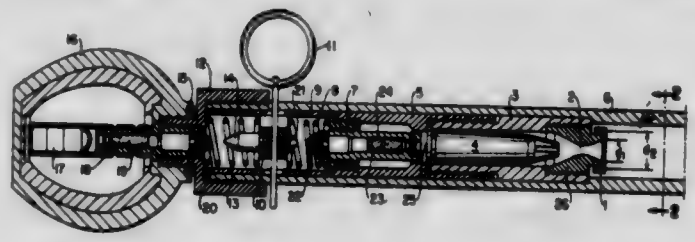
wherein the burster and detonator are emersed in the liquid fuel with a plunger-striker means, and when the plunger-striker means is released the burster is positioned at the bottom of the liquid fuel and the cloud detonator is positioned at the top of the fuel level in the container prior to firing.

4,493,263

BALLISTIC PROPULSION SYSTEM

Eustratios N. Carabateas, 10, Chlois Str., Kiffisia, Greece

Filed Sep. 29, 1982, Ser. No. 426,613
Claims priority, application Greece, Nov. 16, 1981, 66532
Int. Cl.³ F42B 27/00, 13/28
U.S. Cl. 102—483 8 Claims



1. A propulsion system and fuse for projectiles of the type launched from the end of a rifle, making use of gases generated by a ballistic cartridge within the rifle, comprising:

a housing including a propulsion tail portion having a nozzle with a rearmost opening of diameter d_1 and an annular seating surface with an outside diameter d_2 surrounding said rearmost opening;

ballistic cartridge means mounted inside said propulsion tail; and

diaphragm means mounted over said rearmost opening in contact with said seating surface, said diaphragm means being constructed to break away from said propulsion tail under the pressure of gases produced by the ballistic cartridge means mounted therein over an area having a diameter at least as great as d_2, said diaphragm means being also constructed to remain intact under pressures produced over a surface area having a diameter at least as small as d_1, said diaphragm means remaining intact and being forced against said seating surface under pressures produced by the ballistic cartridge within said rifle to achieve an initial propulsion of said projectile, said diaphragm means being broken away under the influence of gases produced by the ballistic cartridge within said propulsion tail, whereby additional propulsion of said projectile is produced.

4,493,264

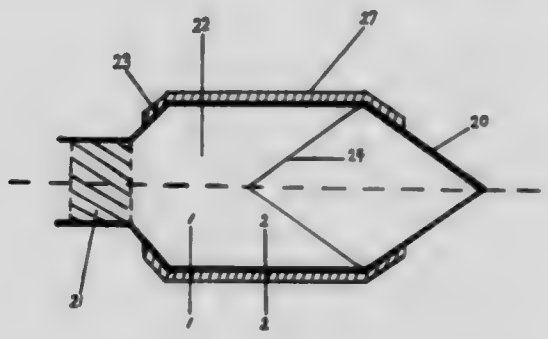
ELASTIC FRAGMENTATION SLEEVE

Robert L. Jameson, Aberdeen, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 27, 1982, Ser. No. 453,670
Int. Cl.³ F42B 13/18, 1/02
U.S. Cl. 102—491 5 Claims

1. In an improved device for use to augment the fragmentation of a high-explosive anti-tank missile having a body, the

improvement consisting essentially of a light-weight, hand-carried elastic base sleeve for use in the field to snugly and separably cover said body of said missile, a plurality of metal fragments, and means for adhering said fragments to said sleeve.

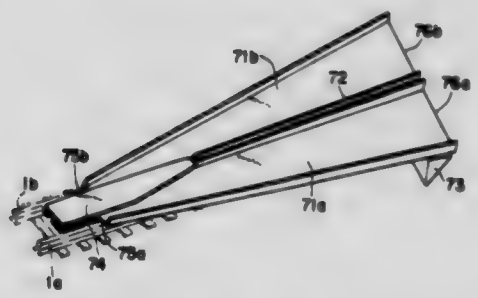


4,493,265

ELECTRIC RERAILER FOR A MODEL RAILWAY

Fukushiro Miura, 15-2 Moegino, Midori-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Jun. 21, 1982, Ser. No. 390,673
Claims priority, application Japan, Dec. 29, 1980, 55/185419
Int. Cl.³ B61K *5/06*; A63H *18/12*
U.S. Cl. 104;269 8 Claims



1. A rerailer adapted to allow a model motor-driven vehicle having an electric motor which is provided electric power via a pair of electrically-conductive wheels to become properly disposed on a pair of spaced-apart electrically-conductive rails so that a large diameter section of each wheel is adjacent an inner side of a respective one of the rails, the rerailer comprising:

(a) a rerailer base;

(b) a first conductor disposed on said rerailer base and having a first end and a second end, said first conductor having a flat electrically-conductive upper surface with a width tapering from said second end to said first end, said first end of said first conductor disposed adjacent to and in electrical contact with a first one of said pair of rails;

(c) a second conductor disposed on said rerailer base and having a first end and a second end, said second conductor having a flat electrically-conductive upper surface with a width tapering from said second end to said first end, said first end of said second conductor disposed adjacent to and in electrical contact with a second one of said pair of rails;

(d) insulating means disposed on said rerailer base and disposed between said first conductor and said second conductor for electrically insulating said first conductor from said second conductor; and

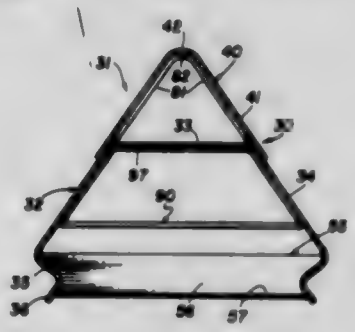
(f) guide means disposed on said rerailer base and disposed along said upper surface of said first conductor for guiding a first wheel of said pair of wheels along said upper surface of said first conductor and onto one of the pair of rails, and disposed along the upper surface of said second conductor for guiding a second wheel of said pair of wheels along the upper surface of said second conductor and onto the other of the pair of rails as the vehicle powered by the electric motor moves from said second ends to said first ends of said first and second conductors.

4,493,266

RAILWAY HOPPER CAR AND CENTER SILL CONSTRUCTION THEREFOR

Paul C. Augustine, Jr., Butler, Pa., assignor to General American Transportation Corporation, Chicago, Ill.

Filed Jun. 1, 1982, Ser. No. 383,819
Int. Cl.³ B61D *7/08*, *17/00*; B61F *1/00*
U.S. Cl. 105—255 30 Claims



1. A through center sill construction for a railway hopper car having draft and coupling mechanisms at each end thereof, said center sill construction comprising an elongated central section extending longitudinally of the associated car substantially from one of the draft and coupling mechanisms to the other and being substantially A-shaped in transverse cross section, said central section including an upper part having a transverse cross section substantially in the shape of an inverted V and a lower part having a transverse cross section generally in the shape of an open-bottom trapezoid, each of said upper and lower parts having a pair of upwardly converging inclined side walls, the side walls of said upper part being disposed in parallel integral relationship respectively with the side walls of said lower part, and two end sections respectively coupled to said central section at the opposite ends thereof for respectively housing the associated draft and coupling mechanisms.

19. A railway hopper car comprising a car body defining a plurality of hoppers therein; draft and coupling mechanisms coupled to said car body at each end thereof; and a through center sill construction extending throughout the length of said car body, said center sill construction including an elongated central section extending substantially from one of said draft and coupling mechanisms to the other, and being substantially A-shaped in transverse cross section, said central section extending upwardly into said hoppers and being positioned to shed associated lading, and two end sections respectively coupled to said central section at the opposite ends thereof for respectively housing said draft and coupling mechanisms.

24. A railway hopper car comprising a car body defining a plurality of hoppers therein; draft and coupling mechanisms coupled to said car body at each end thereof; and a through center sill construction extending throughout the length of said car body, said center sill construction including an elongated central section extending substantially from one of said draft and coupling mechanisms to the other, said central section being substantially A-shaped in transverse cross section and including sloping side walls converging upwardly to an apex and a horizontal wall interconnecting said side walls intermediate the upper and lower ends thereof and separating said central section into upper and lower portions, said apex of said central section extending upwardly into said hoppers and being positioned to shed associated lading, two end sections respectively coupled to said draft and coupling mechanisms for housing same, and two transition sections respectively coupled to the opposite ends of said central section, each of said transition sections including a transition member connected to the adjacent end section and to said lower portion of said central section and two reinforcing members respectively overlying and underlying said transition member and connected thereto

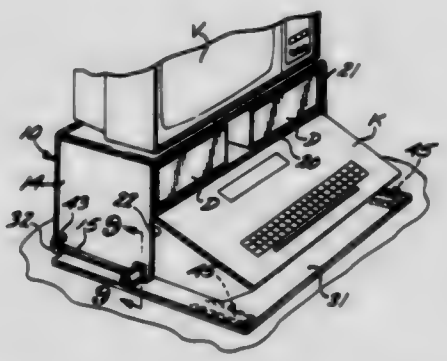
and to said central section and to the adjacent one of said end sections.

4,493,267

SECURABLE STORAGE ASSEMBLY FOR DATA PROCESSING DEVICE

Francis J. Jedzinlak, 2352 W. 227th St., Torrance, Calif. 90501

Filed Jan. 18, 1982, Ser. No. 340,115
Int. Cl.³ G06C 7/02
U.S. Cl. 108—50 3 Claims



1. A storage system for storing a complement of data processing devices comprising:

a slidably mounted support plate;

a shelf unit pivotally mounted on said support plate, said shelf unit including a bracket formed as an inverted U-shaped structure having vertical surfaces joined by a horizontal panel and a shelf attached below said horizontal panel, said shelf and bracket cooperating to form an upper and lower cavity conformed to receive data processing devices;

pivot means connected between said support plate and the free ends of said vertical panels for providing pivotal articulation of said shelf unit relative said support plate; and

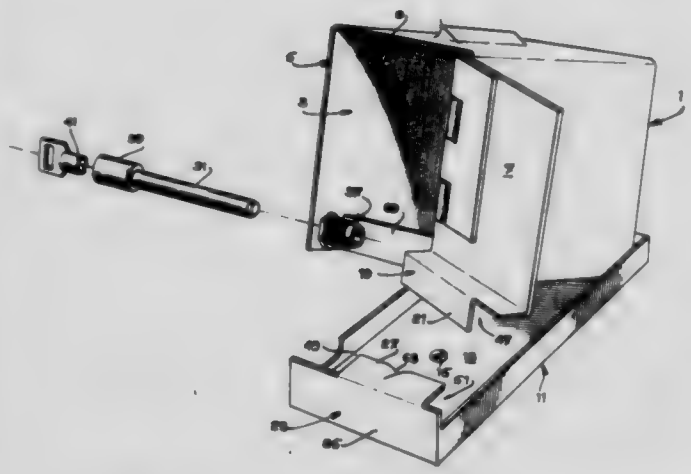
lock means for selectively engaging said shelf unit to said support plate and for restraining said unit against pivotal movement relative said support plate.

4,493,268

SAFE KEEPING BOX ASSEMBLY

Karl Sidler, 420 Touzin Ave., Dorval, Quebec, Canada H9S 2N2

Filed May 10, 1983, Ser. No. 493,241
Int. Cl.³ E05G 1/04
U.S. Cl. 109—52 10 Claims



1. A safety box assembly comprising:

(a) a container defining an enclosure for the safekeeping of valuables and having wall edges at one end defining an opening;

(b) a door hinged to said container for closing said opening;

(c) a mounting base having a bottom wall and means for fastening the bottom wall to a supporting surface;

(d) means to removably secure said container on said mounting base over said fastening means whereby to render said fastening means inaccessible, when said container is so secured, said securing means comprising, when said container is secured on the base;

a first bracket at the end of said door adjacent said mounting base, said first bracket having a door locking wall extending toward said base and located inside said enclosure in closed position of said door;

a second bracket upstanding from said bottom wall of said base and including a front wall closing off a lower part of said opening and disposed in space relationship with said door locking wall; said second bracket further including a container locking wall extending over and above said bottom wall between said door locking wall and said container locking wall; said door locking wall, said container locking wall and said front wall defining a locking area;

a locking rod slid into said locking area;

means on two opposed ones of said container wall edges to hold and releasably lock said locking rod within said locking area, and

releasable interlocking means at the end of said container away from said opening and at the corresponding end of said mounting base to hold said container end on said mounting base;

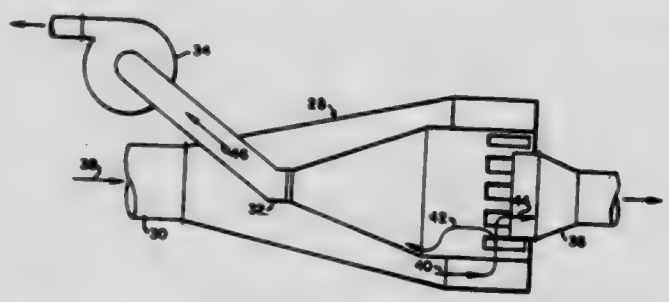
whereby with said locking rod in said locking area, opening of said door is prevented by abutment of said door locking wall against said locking rod and lifting of said container away from said mounting base is prevented by abutment of said locking rod against said container locking wall and operative engagement of said interlocking means, removal of said locking rod from said locking area freeing said door which can then be opened and freeing said container which can then be lifted from said mounting base.

4,493,269

DIRECT PULVERIZED FUEL FIRED SYSTEM

Richard L. Musto, Homewood, Ill., and Norichika Kai, San Paulo, Brazil, assignors to Combustion Engineering, Inc., Windsor, Conn.

Division of Ser. No. 442,558, Nov. 18, 1982,. This application Dec. 23, 1983, Ser. No. 564,661
Int. Cl.³ F23K 1/00
U.S. Cl. 110—106 4 Claims



1. In a direct fired system operative for purposes of effecting the pulverization and subsequent firing of solid fuels, said direct fired system including pulverizer means for pulverizing solid fuel material, classifier means for rejecting pulverized solid fuel particles that exceed preset specifications for fineness and for returning the rejected oversize particles to the pulverizer means for further pulverization, burner means for firing therewithin properly sized solid fuel particles, and means establishing a fluid flow path for a stream of hot gases and for the pulverized solid fuel particles from the pulverizer means to the classifier means and from the classifier means to the burner means, the improvement comprising classifier means consisting of a double cone classifier including a cone section, recirculation means having one end thereof positioned centrally of said cone section so as to be connected in fluid flow relation there-

with and having the other end thereof connected to the pulverizer means, said recirculation means including a receiver hood supported adjacent said cone section of said double cone classifier for receiving a portion of the stream of hot gases that enters said double cone classifier and that upon exiting from said double cone classifier has entrained therein the rejected oversize particles, said recirculation means further including a dust handling fan supported in mounted relation along the length of said recirculation means intermediate the ends thereof, said dust handling fan being operative to recirculate from said receiver hood directly back to the pulverizer means a portion of the stream of hot gases that enters said double cone classifier and that when received by said receiver hood has entrained therein the rejected oversize particles, said dust handling fan thereby effectuating the return of the rejected oversize particles to the pulverizer means for further pulverization therewithin while concomitantly preventing the circulation from said double cone classifier to the burner means of the entire stream of hot gases that enters said double cone classifier so as to improve the combustion ratio of solid fuel particles to hot gases at the burner means.

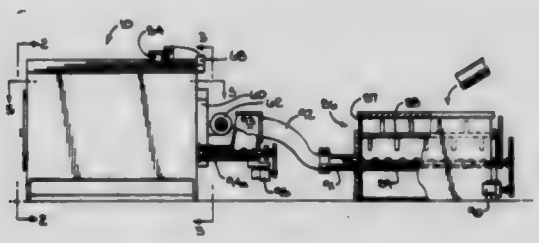
3. In a direct fired system operative for purposes of effecting the pulverization and subsequent firing of solid fuels, said direct fired system including pulverizer means for pulverizing solid fuel material, classifier means for rejecting pulverized solid fuel particles that exceed preset specifications for fineness and for returning the rejected oversize particles to the pulverizer means for further pulverization, burner means for firing therewithin properly sized fuel particles, and means establishing a fluid flow path for a stream of hot gases and for the pulverized solid fuel particles from the pulverizer means to the classifier means to the burner means, the improvement comprising classifier means consisting of a double cone classifier including an outlet portion, recirculation means connected at one end of fluid flow relation to said outlet portion and connected at the other end to the pulverizer means, said recirculation means including a dust handling fan supported in mounted relation along the length of said recirculation means intermediate the ends thereof, said dust handling fan being operative to recirculate from said outlet portion directly back to the pulverizer means a portion of the stream of hot gases that enters said double cone classifier and that upon exiting from said outlet portion of said double cone classifier has entrained therein the rejected oversize particles, said dust handling fan thereby effectuating the return of the rejected oversize particles to the pulverizer means for further pulverization therewithin while concomitantly preventing the circulation from said double cone classifier to the burner means of the entire stream of hot gases that enters said double cone classifier so as to improve the combustion ratio of solid fuel particles to hot gases at the burner means.

4,493,270

HEATING UNIT

Arthur P. Gasaroth, 1055 S. Barker Rd., Waukesha, Wis. 53186

Filed Nov. 10, 1983, Ser. No. 550,500
Int. Cl.³ F23N *5/18*
U.S. Cl. 110—188 18 Claims



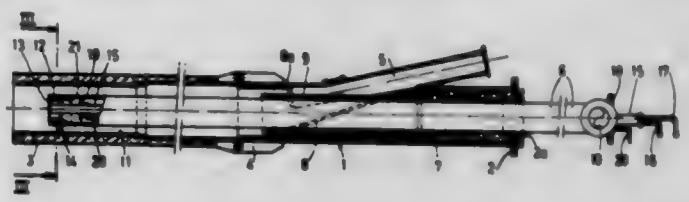
1. A heating unit which comprises:
A combustion chamber having an opening therein for admitting fuel into said combustion chamber;
a perforated burning platform disposed within said combustion chamber and spaced apart from the bottom of the combustion chamber for supporting fuel thereon;
first air forcing means carried in part by said combustion chamber for forcing air into the space beneath the burning platform where it flows upwardly through said perforated burning platform to achieve combustion of the fuel supported thereby;
second air forcing means including a perforated plenum which is positioned above the burning platform and spaced apart from the top of the combustion chamber, said second air forcing means being operable to direct air through said perforated plenum and downward against the fuel supported by said burning platform;
an exhaust outlet formed in the top of said combustion chamber and communicating with the space above said perforated plenum for dispelling the gaseous combustion by-products forced therethrough from the combustion chamber by the pressure of air forced by said first and second air forcing means; and
a heat exchanger surrounding said combustion chamber for recovering heat.

4,493,271

COAL OR MULTIFUEL BURNER

Gérard Ohayon, Loriol; Bernard Reverchon, Bouc Bel Air; Bernard Tourre, Ensues-la-Redonne, and Serge Vigier, Sausset-les-Pins, all of France, assignors to Lafarge Conseils et Etudes, Paris, France

Filed Feb. 22, 1983, Ser. No. 468,417
Claims priority, application France, Feb. 22, 1982, 82 02891
Int. Cl.³ F23K *5/00*
U.S. Cl. 110—262 1 Claim



1. A burner for use with pulverized solid fuels, said burner comprising a cylindrical tube through which an air/fuel mixture is ejected into the flame, characterized in that a coaxial cylindrical part is movably mounted within said cylindrical tube, the passageway for the air/fuel mixture consisting of the annular space between said cylindrical tube and said coaxial cylindrical part, said cylindrical part being movably axially from a position in which its outermost end lies adjacent to the outermost end of said cylindrical tube to a retracted position in which its outermost end lies inwardly relative to the outermost end of said cylindrical tube, whereby to permit adjustment of the axial momentum of a gas stream flowing through said burner, means for obliquely introducing the air/fuel into said cylindrical tube at a point remote from the outermost end thereof, said coaxial cylindrical part being provided with a shield in the area where the air/fuel mixture is introduced into said cylindrical tube, whereby to protect the cylindrical part from erosion by the particles of said solid fuel, a closed chamber positioned to the rear of the point where the air/fuel mixture is introduced, said chamber being bounded at one end by an end wall fitted with a snuffing box for the cylindrical part and at its opposite end by an inner wall through which the cylindrical part passes, means for placing said chamber under excess pressure, said inner wall being positioned essentially just behind the point at which the air/fuel mixture is introduced and forms an angle of not more than 10° with respect to the path of travel of the air/fuel mixture as it enters the cylindrical tube, said protective shield and said inner wall being carried by a supporting part fitted within the cylindrical tube and positioned to protect the inner surface of the cylindrical tube from erosion by the particles of fuel, said cylindrical part being provided with means for imparting rotational movement to a

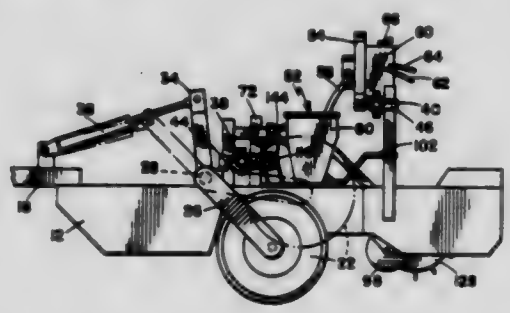
gas passing therethrough, together with a nozzle for injecting a liquid fuel, said cylindrical part being provided with a detachable blocking means adjacent its outermost end, said detachable blocking means being slidably mounted for movement relative to the nozzle for ejecting a liquid fuel, said cylindrical part having a frustoconical surface positioned to be engaged and closed by the blocking means when displaced toward the outermost end of the cylindrical part, thereby blocking the flow of gas through the cylindrical part.

4,493,272

AGRICULTURAL PLANTER WITH SLED FRAME, VACUUM DISPENSING AND GROUND DRIVE

Louis M. Roubotas, Sr., 673 Sycamore Dr., Brawley, Calif. 92227

Continuation of Ser. No. 931,185, Aug. 4, 1978, abandoned. This application Jul. 3, 1980, Ser. No. 165,671
Int. Cl.³ A01C 5/06, 7/04, 7/20
U.S. Cl. 111—59 11 Claims



1. An agricultural seed planting implement comprising in combination:

a frame, said frame including connecting means for connecting said frame to a tractor for movement therewith and a first tool bar extending transverse to the axis of movement of the frame,

an elongated jack shaft rotatably mounted on said frame and extending parallel to the tool bar,

ground drive means for driving the jack shaft proportional to the rate of movement of the implement over the ground,

seed distributor means detachably mounted on said tool bar including a vacuum metering device driven by said jack shaft for distributing seeds at selected spacings,

a vacuum fan in a position remote from said connecting means mounted on said frame for controlling the vacuum in said metering device,

and

hydraulic motor means mounted on said frame and driven by the hydraulic system of the tractor driving said vacuum fan wherein said distributor means includes a generally horizontally extending elongated frame having a forward end and a rearward end, and a pair of shanks fixed to and extending upward at a fixed angle from the forward end of said elongated frame for releasably and vertically adjustably connecting to said tool bar for supporting said elongated frame on said tool bar for movement as a unit therewith,

a seed hopper mounted on the top of said elongated frame, said vacuum metering device mounted on and beneath the elongated frame for receiving seeds from said hopper, and

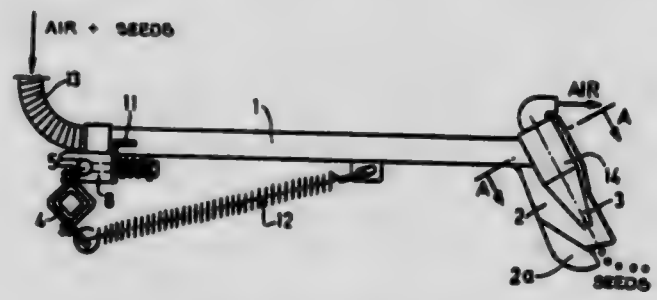
a seed planting shoe mounted on and extending beneath and forward of said elongated frame, and said distributor means moveable as a unit with said first tool bar.

4,493,273

PLANTING ASSEMBLY

Yves M. A. Gauchet, and Pierre G. Pailland, both of Montereau, France, assignors to Nodet-Gougis, Montereau, France

Filed Oct. 29, 1982, Ser. No. 437,902
Claims priority, application France, Nov. 18, 1981, 81 21609
Int. Cl.³ A01C 5/00, 7/20
U.S. Cl. 111—86 2 Claims



1. In a planting assembly having a frame fixedly mounting a cross-member carrying a horizontal pivot pin entending perpendicular to the direction of movement of the planting assembly, a tubular support arm for a plowshare and for pneumatically conveying seeds to be planted pivotally mounted at its front end to said horizontal pivot pin, a plowshare carried at the rear end of said support arm, the interior of the front end of said support arm being connected to means for supplying a stream of entraining compressed air and seeds, the interior of the rear end of said support arm being connected to a cyclone separator for separating the seeds from the stream of entraining compressed air, the cyclone separator having a lower end which is part of a conduit for planting seeds in a furrow cut by the plowshare, and resilient return means acting in a vertical plane to exert a substantially constant force against the plowshare to drive it into the ground, the improvement comprising:

a U-shaped yoke fixedly secured to the front end of said support arm, said yoke having a central portion and a pair of open-ended slotted legs positioned to engage said horizontal pivot pin to permit pivoting movement of said support arm in a vertical plane and permit lateral rocking of the support arm in a horizontal plane,

a rod slidably received in the central portion of said yoke, said rod terminating at one end in an eye surrounding said horizontal pivot pin with a clearance sufficient to permit lateral rocking of said support arm,

a coil spring surrounding said rod and extending between the central portion of said yoke and a stop at the opposite end of said rod, said coil spring acting to bias the slotted legs of said yoke into engagement with said horizontal pivot pin under a predetermined force, said coil spring permitting lateral rocking movement of said yoke relative to said horizontal pivot pin when said support arm is subjected to a lateral force exceeding the predetermined force of said coil spring.

4,493,274

FURROW FORMING APPARATUS FOR A SEED PLANTER

Edward L. Robinson, Jr., Naperville, and Tom G. Stamp, Downers Grove, both of Ill., assignors to International Harvester Company, Chicago, Ill.

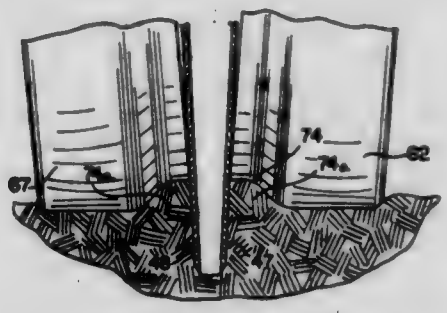
Filed May 28, 1980, Ser. No. 153,974
Int. Cl.³ A01C 5/06
U.S. Cl. 111—88 9 Claims

1. A furrow forming apparatus for a seed planter comprising:

(a) a frame, said frame being adapted to be attached for towing to a mobile power source;

(b) a pair of opposed, furrow forming disks rotatably mounted on said frame, with the disks substantially contacting each other at the approximate point of entry into the soil and diverging apart rearwardly and upwardly relative to the direction of travel; and

(c) a pair of gauge wheels mounted on said frame for regulating furrow depth, each wheel being located adjacent an outer surface of a disk and rotatably mounted on an axis rearward of the disk axis of rotation and including means



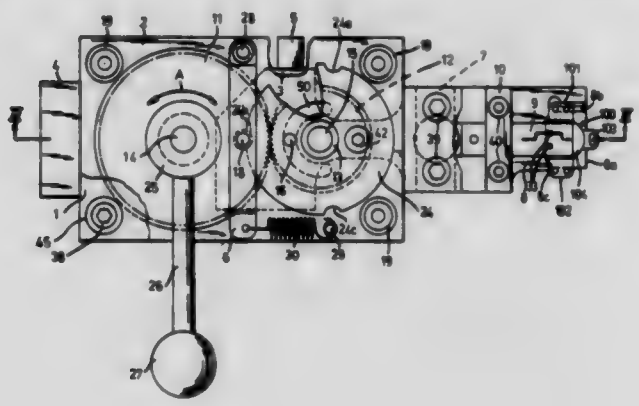
inward the outer periphery of the wheel and located immediately adjacent the disk to trap therebetween soil from the furrow to form a mound of soil along the upper edge of the furrow above the imprint of the wheel in the soil.

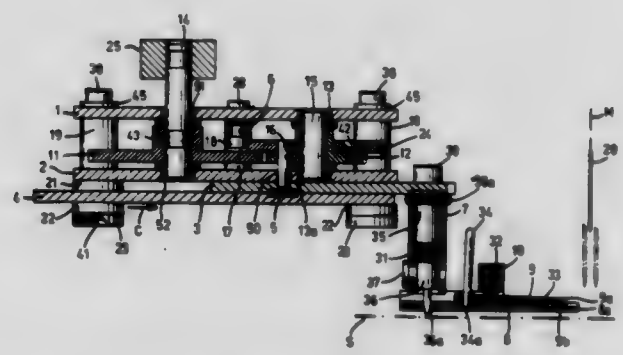
4,493,275

SEWING-MACHINE ATTACHMENT

Albert J. Fischer, Jewett City, Conn., assignor to William Prym Werke KG, Stolberg/Rheinland, Fed. Rep. of Germany

Filed Sep. 22, 1983, Ser. No. 534,586
Int. Cl.³ D05B 3/18
U.S. Cl. 112—105 13 Claims





1. An attachment for a sewing machine provided with a vertically reciprocable upright needle that is limitedly oscillatable in a vertical plane, relatively to a work table, about a midposition above said work table, comprising:

a base disposed at a fixed distance from said midposition;

a support on said base engageable with a fabric on said work table and with a finding on said fabric to be stitched thereto at a plurality of spaced-apart locations lying on a common circle, said support being displaceable in a horizontal plane along an arcuate path including a like plurality of working positions in which respective formations of a finding engaged by said support are aligned with said midposition for penetration by said needle; and

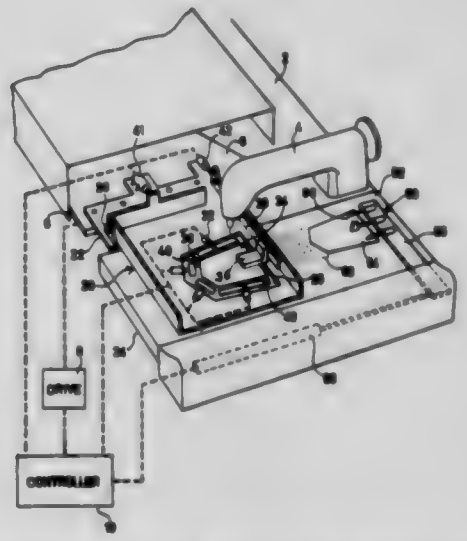
operating means coupled with said support by positively guided link means for displacing same parallel to itself along said path.

4,493,276

POCKET SETTER UNIT AND AUTOMATIC SEWING MACHINE INCLUDING SAME

Yaacov Sadeh, Beersheva, Israel, assignor to Beta Engineering & Development Ltd., Beersheva, Israel

Filed Jul. 22, 1982, Ser. No. 400,713
Claims priority, application Israel, Sep. 29, 1981, 63930
Int. Cl.³ D05B 21/00
U.S. Cl. 112—121.12 4 Claims



1. A sewing machine including: a main frame; a sewing head mounted thereon; a carriage displaceable with respect to said sewing head a loading table laterally of said sewing head; a pocket setter attached to said carriage to be displaced thereby with respect to the sewing head; said pocket setter including a holder for holding the pocket over the garment to which the pocket is to be fixed; said holder including means defining a free space around the portion of the pocket to be stitched to the garment, and a plurality of folding blades disposed around said free space, each of said folding blades including an actuator for moving the respective blade from a retracted position along one side of said free space, to an extended position in said free space so as to fold under the respective edge of the pocket and to enable the sewing head to apply stitching through the folded edges in said free space for sewing the pocket to the garment; a transfer device for transferring the unstitched pocket and the underlying garment laterally from said loading table to said pocket setter; said transfer device including a templet for receiving the pocket over the garment and for conveying both the pocket and the garment to said pocket setter unit; and a program controller controlling said carriage drive, said transfer device, said actuators for the folding blades of the pocket setter and said sewing head, all according to a selected stored program.

4,493,277

WORKPIECE POSITIONER FOR SEWING UNITS

Roberto Sauvito, Milan, Italy, assignor to Rockwell-Rimoldi S.p.A., Italy

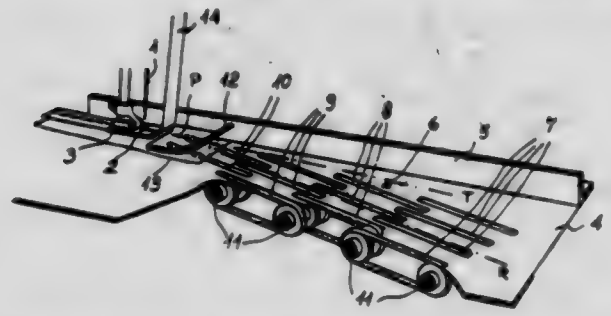
Filed Sep. 30, 1983, Ser. No. 537,768
Claims priority, application Italy, Jul. 4, 1983, 21456/83[U]
Int. Cl.³ D05B 35/10
U.S. Cl. 112—153 3 Claims

1. A workpiece positioner device for sewing units having a sewing machine with a presser foot and a stitching needle defining the unit's sewing zone, said workpiece positioner device comprising:

(a) a feed table (4) mounted on the sewing unit upstream of the sewing zone;

(b) a vertical guide wall (5) mounted on said feed table for guiding a workpiece along a line of feed extending parallel therewith; and

(c) a series of overlapping interfitting drive elements each having a portion of its periphery protruding beyond the upper surface of said feed table and located to move the



workpiece along a line of action (R) of the drive elements encountering the feed line (T) at a point (P) lying upstream of the sewing zone and in close proximity with the vertical guide wall 5.

4,493,278

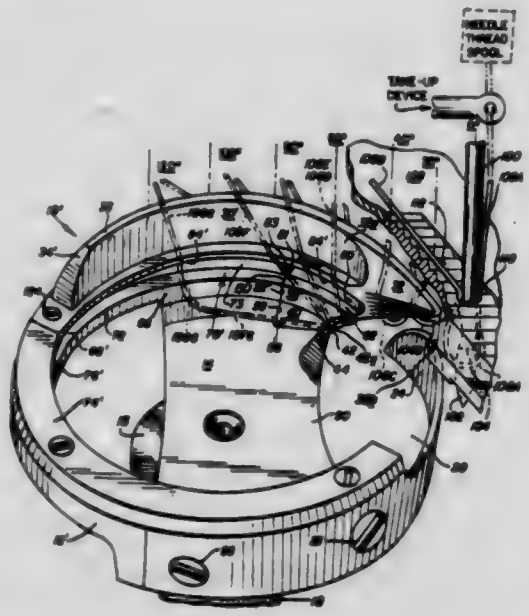
ROTARY LOOP TAKER FOR LOCK-STITCH SEWING MACHINE

Paul Badillo, Lakewood, Colo., assignor to Bakron Corp., Chicago, Ill.

Continuation-in-part of Ser. No. 355,228, Mar. 5, 1982, abandoned, which is a continuation-in-part of Ser. No. 292,036, Aug. 11, 1981, abandoned. This application May 31, 1983, Ser. No. 499,460

Int. Cl.³ D05B 57/08

U.S. Cl. 112—184 20 Claims



1. A rotary loop taker for rotation about a generally cylindrical bobbin case maintained in a substantially fixed position in a lock-stitch sewing machine below the take-up device of said machine, in which sewing machine the needle provides one of the two threads that form said lock-stitch, said needle thread being taken off the needle in the form of a loop by the loop seizing point of said rotary loop taker as the loop taker rotates about the bobbin case, the vertical midsection of the side wall of said bobbin case carrying a radially extending rib for engaging the loop taker as the latter rotates about said bobbin case, which comprises:

(a) a frame of substantially annular construction, said frame having a cut-away portion along one segment of its circumference to provide space for the needle thread to exit from the loop seizing point of the rotary loop taker as said thread is pulled off the loop seizing point by the take-up device, said cut-away portion being defined by opposing end walls of said frame facing upon said cut-away portion;

(b) a frame support member extending crosswise of said substantially annular frame, with one edge portion of said crosswise extending support member facing said cut-away portion of said frame,

said one edge portion of said crosswise extending support member and the one of said frame end walls that is at the trailing end of said cut-away portion during forward rotation of said frame defining a lug-receiving notch, said notch having a first wall that is generally parallel to the circumference of said frame and a second wall that is generally radially positioned with respect to said frame,

said notch extending inwardly from the outer circumference of said frame, extending along said frame in an angular direction opposite to the direction of forward rotation of the frame, and extending axially entirely through said crosswise extending support member;

(c) a shaft for said annular frame attached to said frame support member and extending at generally right angles thereto for rotating said frame about said bobbin case in a predetermined plane during operation of said sewing machine;

(d) a detachable loop seizing point mounted on said frame having generally the same curvature as said substantially annular frame, said detachable loop seizing point:

(i) being integrally formed from one end to its other end,

(ii) having a single continuously tapered, smoothly shaped, integrally formed forward end, said tapered forward end having its largest transverse dimensions in a base portion and tapering to its smallest transverse dimensions at its free end,

(iii) having a supporting lug that extends directly downward into said cut-away portion of said frame from immediately behind said base portion of said tapered forward end, the rearwardly facing surface of said supporting lug abutting at all times, throughout substantially the entire height of the lug, substantially the entire forwardly facing surface of the one of said frame end walls that is at the trailing end of said cut-away portion of said frame during forward rotation of the frame,

said downwardly extending supporting lug extending into said lug-receiving notch defined by said one edge portion of said crosswise extending support member and said frame end wall, in nesting relationship with said notch, with the inwardly facing surface of said lug abutting at all times substantially the entire outwardly facing surface of said first notch wall,

said tapered forward end extending forwardly of said downwardly extending supporting lug into said cut-away portion of said frame,

said lug forming a smoothly curved junction with said tapered forward end base portion, said smoothly curved junction being free of any joints or seams; and

(iv) having a rear portion extending rearwardly of said lug along said annular frame; and

(d) means for detachably securing said loop seizing point to said frame, said means being located entirely rearward of said tapered forward end of said loop seizing point.

4,493,279

COMBINATION NEEDLE AND ACCESSORY DRIVING STUD

Charles R. Odermann, Montville, N.J., assignor to The Singer Company, Stamford, Conn.

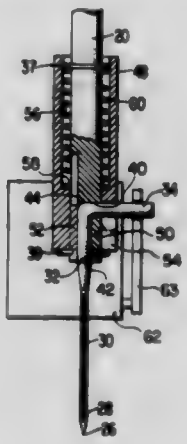
Continuation of Ser. No. 309,297, Oct. 7, 1981, abandoned. This application Nov. 14, 1983, Ser. No. 550,722

Int. Cl.³ D05B 69/02, 85/02

U.S. Cl. 112—220 2 Claims

1. A needle for a household sewing machine having a frame supporting a loop taker supported by said frame for cooperation with said needle in the formation of stitches, and an endwise reciprocable needle bar having an axial bore extending a distance along the length of said needle bar from one end thereof and a slot at least the length of said axial bore and extending into said needle bar to said axial bore, said axial bore terminating at a transverse bore extending through said needle

bar from said axial bore to the opposite side of said needle bar from said slot, and means supported by said needle bar for retaining said needle affixed thereto for cooperation with said loop taker in the formation of stitches, said needle comprising in a unitary construction; an elongated blade portion terminating at one end in a point; a thread carrying eyelet extending through said blade adjacent said point; said blade portion merging to a shank; said shank terminating in an elongated locator portion extending transversely of said shank, said shank



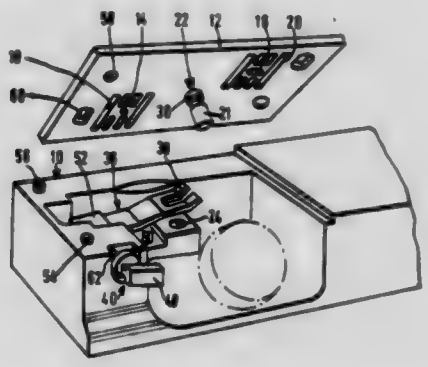
and said locator portion adapted to pass through said slot of said needle bar with said shank to be received in said axial bore and said elongated locator portion to be received in said transverse bore of said needle bar so as to facilitate insertion of said sewing needle into said needle bar and to fixedly angularly orient said thread carrying eyelet with said loop taker, said elongated locator portion also extending from said retaining means laterally of said longitudinal feed directions so as to permit its use as an accessory driving stud.

4,493,280

TWO-POSITION NEEDLE PLATE FOR SEWING MACHINES

Nereo Bianchi, Pavia, Italy, assignor to Necchi S.p.A., Pavia, Italy

Filed Sep. 29, 1982, Ser. No. 426,953
Claims priority, application Italy, Dec. 18, 1981, 42922 A/81
Int. Cl.³ D05B *73/12*
U.S. Cl. 112—260 4 Claims



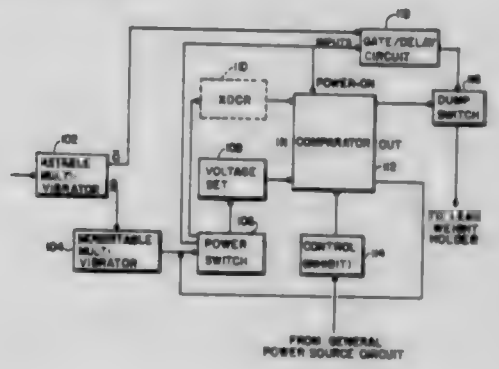
1. A two-position needle plate and base of a sewing machine, said plate being provided with two needle holes of different shape which can be brought alternatively into coincidence with the path of the vibrations of the needle by the rotation of said needle plate, and retaining and operating means by which said needle plate can be raised from its operating position in which it rests on the base to a height sufficient so that it can be rotated above said base without being disconnected from it and alternatively can be raised to a greater height so as to be disconnected and removed from said base, said retaining and operating means comprise a pin connected centrally to said needle plate and extending perpendicularly downward, a first spring element adapted to exert an upwardly vertical thrust on said pin, a second leaf spring element adapted to exert an action opposing the upward thrust of said first spring element, and a manual control member provided on said base in order to regulate the intensity of said opposing action exerted by said second leaf spring element.

4,493,281

SHALLOW DEPTH LEAD WEIGHT EJECTION CIRCUIT

Jeffrey L. Coleman, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 1, 1983, Ser. No. 481,520
Int. Cl.³ F42B *19/00*; B63G *9/04*
U.S. Cl. 114—20 R 10 Claims



1. A circuit for ejecting ballast weights when an underwater, self-powered vehicle fails during operations which comprises:

means, connected to receive a voltage level signal representing the actual depth of the submersible vehicle and a preset reference voltage level signal representing a predetermined depth limit, for comparing both voltage level signals and emitting output signals when the actual depth is greater than the depth limit;

means, connected to receive power from the submersible's basis power source, for forming a periodic signal with a predetermined period T;

means, connected to receive the periodic signal from the forming means, for establishing a short pulse signal output of duration t much less than T, and with the same period T;

means, connected to receive the output short pulsed signal from the establishing means and an output signal from the comparing means, for switching on power at its output, said output power being in the form of the short pulsed signals when no input occurs from the comparing means but being in a continuous form when the comparing means is transmitting a signal to said switching means, said switching means output connected to the comparing means for powering-up the comparing means during periods when the switching means emits output signals;

means, connected to the output of the switching means and connected to receive power from the submersible vehicles basic power source, for setting the preset reference voltage level at its output to be input to the comparing means;

means, connected to monitor the submersible vehicle's operational power circuit, for inhibiting operation of the comparing means when the operational power circuit is functioning properly, said inhibiting means having an output connected to the comparing means for transmitting the inhibiting signal;

means, connected to receive the periodic signal from the forming means and the signal output from the switching means, for gating a command signal of a predetermined delay at its output; and

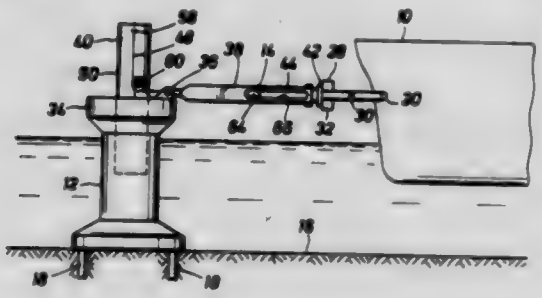
means, connected to the output of the comparing means and to the output of the gating means, for dumping the ballast, said dumping means being powered on by the signal output from the comparing means and being later activated to release the ballast by the command signal from the gating means.

4,493,282

COMBINATION MOORING SYSTEM

John E. Ortloff, Houston, Tex., assignor to Exxon Production Research Co., Houston, Tex.

Filed Mar. 18, 1983, Ser. No. 476,677
Int. Cl.³ B63B 21/00, 21/52
U.S. Cl. 114—230 15 Claims



1. An apparatus for mooring a floating vessel which is acted upon by a loading force induced by wind, waves, ice, or an ocean current, comprising:

a base;

mooring means connected between the vessel and said base and generally being located above the water surface, said mooring means having a mean position when the vessel is not acted upon by the loading force and being displaceable from its mean position to accommodate movement, induced by the loading force, of the vessel relative to said base;

buoy means partially located within said base and connected to said mooring means, said buoy means capable of being submerged, as said mooring means is displaced from its mean position by the loading force, to provide a buoyant restoring force for urging said mooring means toward its mean position; and

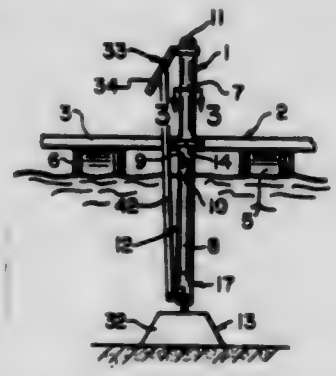
stop means attacted to said mooring means for limiting the excursion of said mooring means from its mean position.

4,493,283

FLOATING BOAT DOCK ANCHOR

Richard E. Elliott, 17 Hope Rd., Mineral City, Ohio 44646

Filed May 25, 1983, Ser. No. 497,760
Int. Cl.³ B63B 21/52
U.S. Cl. 114—263 9 Claims



1. An anchor construction for a floating dock including:

(a) post means adapted to be operatively connected to a floating dock for maintaining the dock in a desired position;

(b) a base adapted to rest on the bottom of a lake said base having ball means formed on the base for engagement by the post means;

(c) spherical-shaped socket means formed on the bottom of the post means for receiving the ball means therein to removably attach and lock the post means to the base;

(d) a flap pivotally mounted on the bottom of the post means and communicating with the socket means to enable the ball means to be locked on and unlocked from the socket means;

(e) lever means connected to the flap and extending upwardly along the post means; and

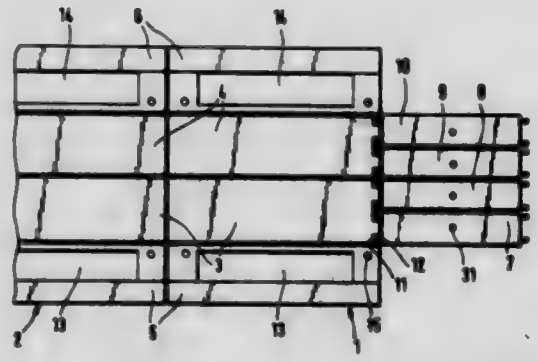
(f) an operating handle mounted on an upper portion of the post means and connected to the lever means for operating the flap from the dock for locking and unlocking the post means to and from the ball means on the base.

4,493,284

PONTOON FOR FLOATING BRIDGES AND FERRIES

Theodor Echtler, Kaiserslautern, Fed. Rep. of Germany, assignor to IBEK Ingenieurbuero Echtler Kaiserslautern GmbH, Kaiserslautern, Fed. Rep. of Germany

Filed Feb. 22, 1983, Ser. No. 468,648
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1982, 3206222
Int. Cl.³ B63C 1/02
U.S. Cl. 114—267 5 Claims



1. A pontoon assembly for floating bridges and the like, comprising:

(a) four pivotally interconnected articulable floats providing a pontoon assembly having a folded position and an unfolded position;

(b) said floats being generally rectangularly shaped and of substantially equal dimensions and having a length greatly exceeding the width;

(c) said floats when in said unfolded position providing an adjacent inner two floats and an outer two floats and each of said outer two floats is lengthwise connected to an outer edge portion of one of said two inner floats;

(d) each of said inner two floats has an upper surface when in said unfolded position for providing a vehicular roadway;

(e) a rectangular recess disposed in each of said outer two floats and having a length substantially equal to said float length and a width substantially equal to one-half said float width;

(f) at least two rectangular ramp parts having a length and width substantially corresponding to said recess length and width and each of said ramp parts removably positionable in one of said recesses;

(g) each of said ramp parts has a height corresponding to the depth of said associated recess whereby an upper surface of said ramp part is flush with an upper surface of the associated outer float for providing a personnel walkway when in said unfolded position and for permitting said floats to assume said folded position;

(h) each of said ramp parts has lugs extending outwardly lengthwise from the ends thereof; and,

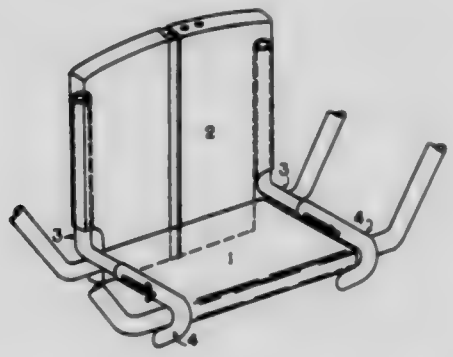
(i) each of said inner floats has a plurality of recesses disposed along the widthwise ends thereof and said inner floats recesses adapted for removably receiving therein said lugs of said ramp parts when said ramp parts are removed from said recesses for thereby providing a closed rampway.

4,493,285

ADJUSTABLE EXPANDABLE SLIP-ON CANOE BACK REST

Donald F. Williams, 53 E. Lakewood Dr., Fenton, Mo. 63026

Filed Feb. 16, 1983, Ser. No. 456,857
Int. Cl.³ B63B *17/00*
U.S. Cl. 114—363 1 Claim



1. An improvement in a canoe seat backrest which is a unique combination of three adjustments which, when taken all together only, provide for mounting this backrest to the seats of any number of different type canoes, regardless of the confines of the canoe or type seat, and which adjustments are:

A. a two-piece backrest wherein one piece has horizontal adjustment slots at top and bottom and the opposite overlapping piece has a corresponding hole at top and bottom, both pieces are then held together and adjustment in width is provided by means of bolts passing through both top and bottom holes and slots of overlapping two-piece backrest from front with nuts at back;

B. two tubular L-shaped supports of which upright leg of "L" of each support is mounted within a socket at each side of a complete backrest, thereby providing free rotation adjustment of each tubular support for mounting backrest within the angular confines of a canoe's aft seat;

C. two tubular hook-shaped arms, one for each side of a complete backrest, having opposite end of hook sized to slide inside the lower leg of the L-shaped tubing supports, thereby providing adjustment as the hook end of arms together with the lower part of backrest clamping engage the canoe seat.

4,493,286

METHOD AND APPARATUS FOR APPLYING A MULTI-COMPONENT ADHESIVE

William J. Carson, Sewickley, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jul. 25, 1983, Ser. No. 516,679
Int. Cl.³ B05D *1/02*; B05B *7/12, 7/26*
U.S. Cl. 118—677 19 Claims

1. An applicator for a multi-component liquid adhesive consisting of a mixture of a liquid resin and a liquid hardener comprising:

(a) a liquid resin reservoir;

(b) a liquid hardener reservoir;

(c) means for mixing liquid resin and liquid hardener to form a multi-component liquid adhesive;

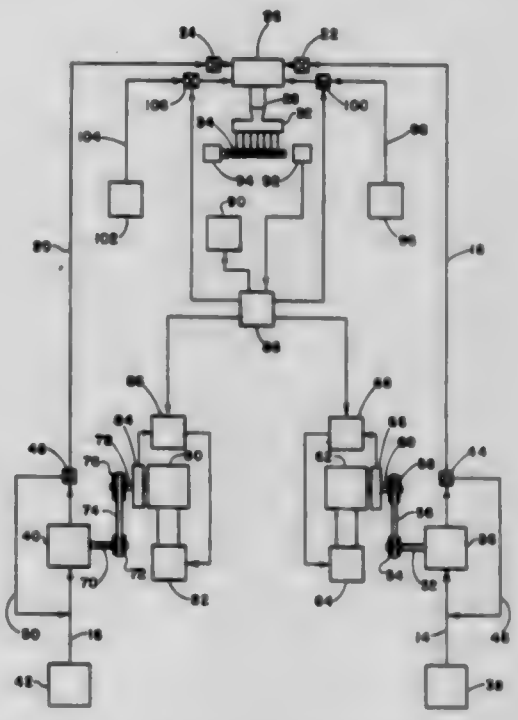
(d) an adhesive dispersing means;

(e) a liquid resin conduit means connecting the liquid resin reservoir to the means for mixing liquid resin and liquid hardener;

(f) a liquid hardener conduit means connecting the liquid hardener reservoir to the means for mixing liquid resin and liquid hardener and means for moving the hardener through said conduit means to the means for mixing liquid resin and liquid hardener;

(g) a resin pump for moving resin from the liquid resin reservoir through the resin conduit means to the means for mixing liquid resin and liquid hardener and a variable output capacity power source for driving said resin pump;

(h) means for sensing the instantaneous speed of the resin pump; and



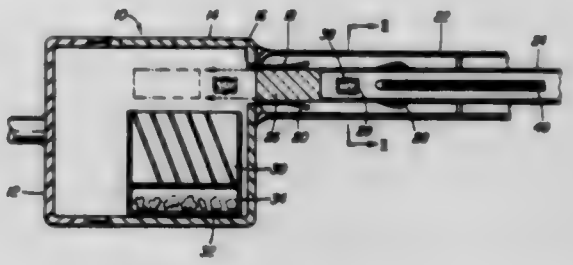
(i) means for varying the instantaneous power output of the power source for driving the resin pump such that said output is proportional to the instantaneous speed of said resin pump.

4,493,287

DIFFUSION EQUIPMENT

Anthony J. Springthorpe, Richmond, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Dec. 3, 1982, Ser. No. 446,441
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—719 8 Claims



1. Apparatus for use in diffusing a first material into a second material at high temperature, the apparatus comprising a first refractory vessel defining a first chamber for housing a semiconductor wafer, a second refractory vessel defining a second chamber, and a third refractory vessel defining a third chamber for housing a diffusion source, the first and second vessels having an opening therebetween, the third refractory vessel shaped to permit sliding thereof through the opening from the second vessel into the first vessel, a leading part of the third vessel being a close sliding fit within the opening, a trailing part of the third vessel having a positive sealing abutment with the opening, and an intermediate part of the third vessel having an aperture therein whereby with the leading part of the third refractory vessel within the opening, the third chamber is positioned inside the second chamber and is substantially isolated from the first chamber so that when the apparatus is heated diffusion species from the diffusion source cannot contact the wafer, and with the trailing part of the third vessel positively sealingly abutting the opening, the first chamber is united with the second chamber through said aperture so that diffusion species from the source can contact the wafer.

4,493,258

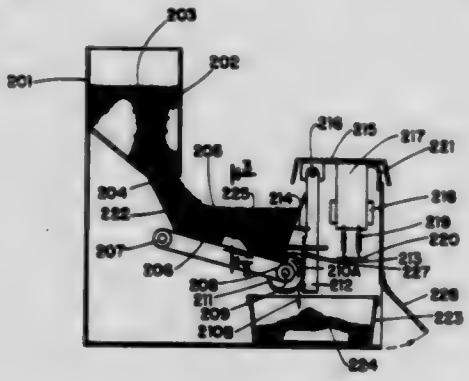
CONTINUOUS PET LITTER CLEANING APPARATUS

Donald van der Kolk, 229 Shore Rd., Mt. Sinai, N.Y. 11766

Filed Jul. 15, 1983, Ser. No. 513,817

Int. Cl.³ A01K *29/00*

U.S. Cl. 119—1 16 Claims



1. Apparatus for removing spent animal litter, comprising:

(a) a frame,

(b) a treadle moveably mounted to said frame for accepting an animal's weight and said treadle positioned to move under the force of said weight,

(c) an endless belt having an upper and a lower surface, said belt being positioned to support animal litter on its upper surface,

(d) a first roller having an axis of rotation positioned generally horizontally, said first roller being rotatably mounted to said frame for rotation about its axis of rotation and at a location to support one end of said endless belt,

(e) a second roller having an axis of rotation positioned generally horizontally, said second roller rotatably mounted to said frame for rotation about its axis of rotation and at a location to support the opposite end of said endless belt, at a lower elevation than said first roller,

(f) means connecting said treadle to one of said rollers to rotate said one of said roller as the treadle is moved under the weight of an animal, the rotation of said one of said rollers moving the upper surface of the belt and the litter on this surface, and

(g) a closure barrier connected to the frame and positioned over and generally orthogonal to a portion of the upper surface of the belt and transverse to the movement of the belt, the closure barrier having an opening adjacent to the upper surface of the belt to permit only the lower layer of litter adjacent to the belt to pass through the opening, thereby passing primarily spent litter located in the lower layer of litter, while retaining primarily unused litter located above the opening in the closure barrier.

4,493,289

FLEXIBLE CABLE ION DISPENSER FOR TREATMENT ZONES

Donald G. Saurenman, Whittier, Calif., assignor to Conean Pacific Incorporated, Whittier, Calif.

Continuation-in-part of Ser. No. 124,242, Feb. 25, 1980, Pat. No. 4,282,830. This application Mar. 9, 1981, Ser. No. 241,684

The portion of the term of this patent subsequent to Aug. 11, 1998, has been disclaimed.

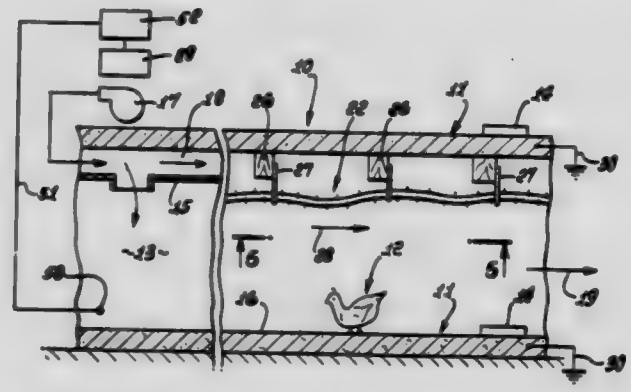
Int. Cl.³ A01K *31/00*

U.S. Cl. 119—21 23 Claims

1. Ion dispensing apparatus comprising

(a) a flexible cable including an elongated metallic core to which voltage is applicable, the cable including a protective sleeve of insulating material on and extending along and about the core, the sleeve defining a wall,

(b) and needles having shanks penetrating through said sleeve wall and extending sidewardly adjacent the core to make electrical contact therewith so as to receive application of said voltage, the needles having tips openly exposed outwardly of the cable to dispense ions into the atmosphere near the cable.



4,493,290

MILK YIELD RECORDING AND CONCENTRATE FEED RATION CALCULATION FOR DAIRY COWS

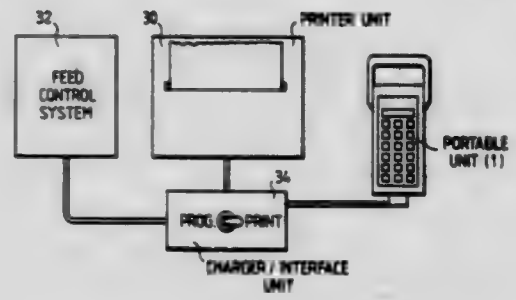
David W. Gibbard, Royston, England, assignor to Datsface Limited, England

Filed May 18, 1983, Ser. No. 495,775

Claims priority, application United Kingdom, May 27, 1982, 8215562

Int. Cl.³ A01K *5/00*

U.S. Cl. 119—51 R 19 Claims



7. Apparatus for determining feed concentrate rations for dairy cows, comprising:

a hand-holdable microprocessor based recorder having a keyboard, a solid state memory having a section in which cow identities are pre-recordable and a section in which identities of cows entering a milking parlour for a milking session are recorded, and a comparator unit for comparing entered cow identities with recorded cow identities in order to verify the latter,

a master processor unit to which the recorder is connectable to enable the master unit to record milk yields (Y) previously entered into the recorder via its keyboard in relation to the validated cow identities, the master unit having a temporary memory for storing the milk yields and a permanent memory for storing pre-determined values for "maintenance +" (M), lactation period (L(t)) and cow condition (C) in relation to cow identities, and including an arithmetic unit for programmed computation of feed concentrate ration (R) in relation to cow identities generally in accordance with the algorithm: $R=V(Y-M+L(t)+C)$,

means for displaying the computed feed rations in relation to cow identities.

4,493,291

GAS COOLER ARRANGEMENT

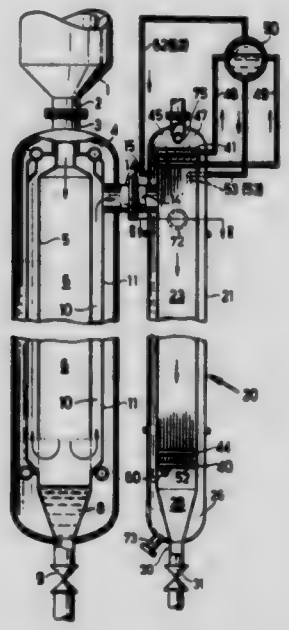
Jaroslav Zabelka, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Sep. 22, 1982, Ser. No. 421,313

Claims priority, application Switzerland, Oct. 26, 1981, 6812/81

Int. Cl.³ F22D 1/00

U.S. Cl. 122—7 R 14 Claims



1. A gas cooler arrangement for a coal gasification plant, said arrangement comprising

a first pressure vessel having a peripheral radiant cooling wall defining an axial downcomer chamber for receiving a flow of particle-laden gas and a surrounding cooling surface about said wall defining an annular riser chamber therebetween; and

a convection gas cooler connected at an upper end to a top of said annular riser chamber, said cooler including a vertically disposed second pressure vessel, a faller flue composed of vertically disposed heat-removing tubes, at least one riser flue composed of heat removing tubes, and an ash chamber connected to said flues at a bottom end of said second pressure vessel.

4,493,292

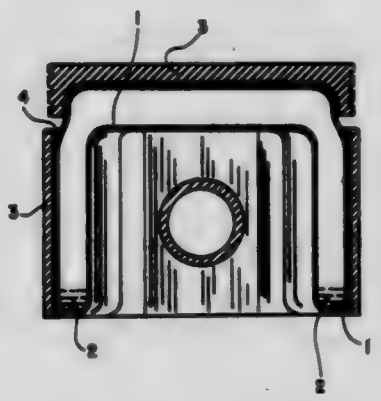
HEAT PIPED PISTON

Merle R. Showalter, Madison, Wis., assignor to Automotive Engine Associates, Madison, Wis.

Filed Jun. 9, 1983, Ser. No. 502,576

Int. Cl.³ F01P 9/02

U.S. Cl. 123—41.2 3 Claims



1. A piston adapted for use in a reciprocating piston internal combustion engine having a cylinder for carrying same,

said piston including a crown portion with a cylindrical skirt extending downwardly therefrom, a hole below the crown portion perpendicular to the vertical axis of the piston adapted to receive a wrist pin, said skirt having two thrust faces which function as bearings in interaction with a wall of the cylinder to take thrust forces generally perpendicular to both said wrist pin hole axis and said cylinder central axis, said thrust faces having opposed internal surfaces extending across its entire axial length, the crown portion having an internal surface connected to the internal surfaces of the thrust faces, and means for providing extremely rapid heat transfer from the piston crown portion to the piston skirt,

said means comprising:

a thin flexible hollow capsule partially filled with a liquid adapted for evaporation and condensation at piston operating temperatures said hollow capsule having surfaces shaped to fit closely against only the internal surface of the piston crown portion and the opposed internal surfaces of the thrust faces of said piston skirt, said hollow capsule being bonded to the said internal surfaces by a thin elastomeric layer of high thermal conductance whereby a high conductance heat transfer path is established between the piston crown and the piston skirt thrust faces, to provide generally isothermal conditions throughout the piston at all operating conditions.

4,493,293

HYDRODYNAMIC DEVICE

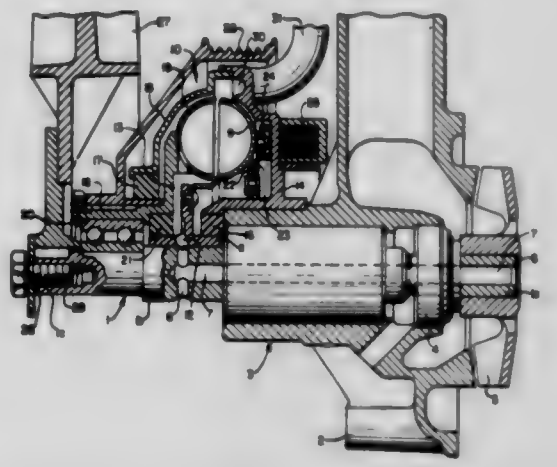
Jürgen Paul, Stuttgart; Andreas Braatz, Rutesheim, and Hans Hanke, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 9, 1983, Ser. No. 550,131

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1982, 3241835

Int. Cl.³ F01P 5/04, 5/12

U.S. Cl. 123—41.12 15 Claims



1. Apparatus for an internal combustion engine comprising

a cooling circuit having a fluid medium,

means for heating the fluid medium having a casing and comprising

turbine rotor means,

stator means,

shaft means to which a first one of said rotor means and stator means is rotatably mounted and to which a second one of said rotor means and stator means is fixed for non-rotation,

at least one of a water pump impeller and fan rotor mounted to said shaft means for non-rotation with respect thereto,

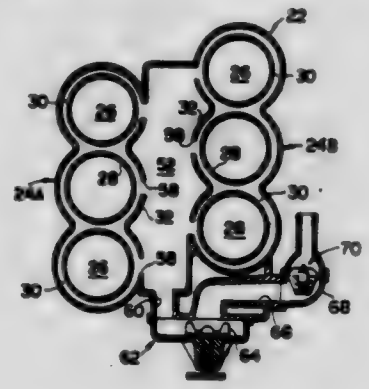
clutch means for engaging and releasing from rotation of one of said rotor means and stator means with respect to the casing,

means for actuating said clutch means to one of said engagement and release states to cause the shaft means and at least one of said fan rotor and pump impeller to effect a stationary condition with respect to the casing and to effect rotation with respect to the casing.

4,493,294
COOLING SYSTEM OF V-TYPE INTERNAL COMBUSTION ENGINE

Yukio Umemura, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 15, 1982, Ser. No. 449,987
Claims priority, application Japan, Dec. 22, 1981, 56-207571
Int. Cl.³ F01P 3/02
U.S. Cl. 123—41.33 8 Claims



1. A cooling system of a V-type internal combustion engine having a cylinder block with two angularly disposed first and second cylinder banks each having a plurality of engine cylinders, comprising:

means defining a coolant passage formed around each engine cylinder;

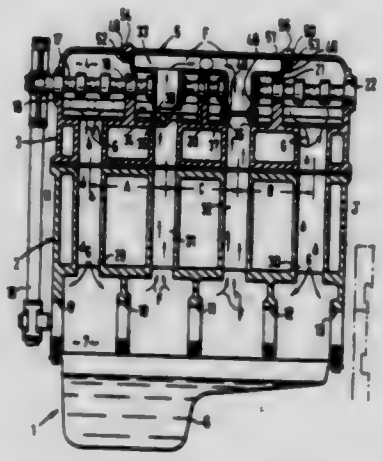
means defining a coolant gallery located between the first and second cylinder banks and extending along the row of engine cylinder of each cylinder bank, said coolant gallery being in communication with a coolant pump at an outlet member; and

a partition wall for separating said coolant gallery from each coolant passage formed around the engine cylinder of each cylinder bank, each partition wall being formed with a plurality of communication holes through each of which said coolant gallery is in direct communication with each coolant passage formed around each engine cylinder.

4,493,295
INTERNAL COMBUSTION ENGINE, ESPECIALLY FOR MOTOR VEHICLES

Herbert Ampferer, Bietigheim-Bissingen, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche A.G., Fed. Rep. of Germany

Filed Jul. 7, 1983, Ser. No. 511,477
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1982, 3225478
Int. Cl.³ F01M 13/00
U.S. Cl. 123—41.86 21 Claims

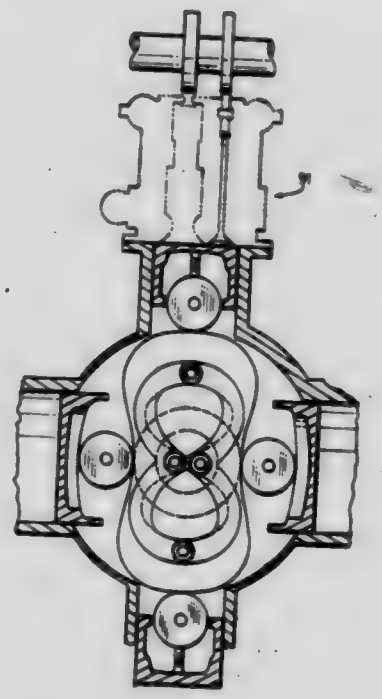


1. An internal combustion engine having a cylinder crankcase and cylinder head provided with a cover, said cylinder crankcase including a crank space and said cylinder head and cover delimiting a valve-actuating space, the engine comprising at least one oil return channel means for returning oil from said valve-actuating space to said crank space and at least one vent channel means for passage of venting medium from said crank space, said at least one oil return channel means and said at least one vent channel means extending between said crank space of the cylinder crankcase and said valve-actuating space formed by the cover and the cylinder head, said at least one oil return means and said at least one vent channel means being separate and disposed at a distance from one another, guide means disposed within said valve-actuating space for guiding venting medium from said at least one vent channel means, the at least one vent channel means air guide means cooperating inside of the valve-actuating space in such a manner that the venting medium flowing through the at least one vent channel means is guided substantially independently of medium flowing in the at least one oil return channel means.

4,493,296
THREE CYCLE ENGINE WITH VARYING COMBUSTION CHAMBER VOLUME

Gerald J. Williams, R.R. #2, Nolalu, Ontario, Canada P0T 2K0

Filed May 28, 1981, Ser. No. 268,019
Int. Cl.³ F02B 75/22
U.S. Cl. 123—55 AA 3 Claims



1. A three cycle, internal combustion engine, comprising in combination

a cylinder block having a number of cylinders,

a piston reciprocal in each of said cylinders,

a radial profiled power cam shaft provided with journals for rotatable support in said cylinder block,

a piston connecting means defining a means operatively connecting each said piston to said power shaft to convert its reciprocating motion to rotational motion of said power shaft,

a cylinder head means, disposed on top of said cylinder block and closing each of said cylinders to form a combustion chamber therein, said cylinder head means including charge admission port means and exhaust port means communicating with each said cylinder, and charge admission valve means to control opening and closing of said charge admission port means and exhaust valve means to control opening and closing of said exhaust port means,

valve actuation means between said power shaft and said valve means for actuating said valve means in relation with a position of said piston, with said charge admission port means open momentarily while the piston position is

in a top portion of said cylinder, and with said exhaust port means open during a greater portion of an upward stroke of said piston in said cylinder,

a charge pre-compressor, defining a positive displacement compressor means to compress an air charge to a pre-combustion pressure, said charge pre-compressor being operatively connected to said power shaft, and including means for introducing a combustible fuel into the air charge,

a charge transmission duct defining

communicating ducting between said charge pre-compressor and said charge admission port means,

a combustion chamber volume adjusting means, defining a means to vary the volume of said combustion chamber within limits,

said positive displacement compressor cooperating with said charge transmission duct to provide a sufficient compressed charge of air whereby the mass of the charge admitted into said combustion chamber essentially varies in accordance with the volume of the combustion chamber, thereby allowing control of the engine output by controlling said combustion chamber volume adjusting means,

an ignition means, igniting the charge in said combustion chamber immediately after said charge admission port means has closed, and wherein operation of said combustion chamber comprises three distinct cycles, a high pressure charging cycle, with the piston in the top portion of said cylinder immediately followed by an expansion cycle, carrying said piston to a bottom position in said cylinder, immediately followed by a positive exhaust expulsion cycle carrying said piston back to the top portion of its stroke in said cylinder and wherein said cylinder head means includes a static cylinder head and a telescoping head associated with each of said cylinders, each static cylinder head being disposed on a top end of one of said cylinders, and provided with a bore, coaxial with and communicating with said one cylinder, each static cylinder head containing said exhaust port means and said charge admission port means;

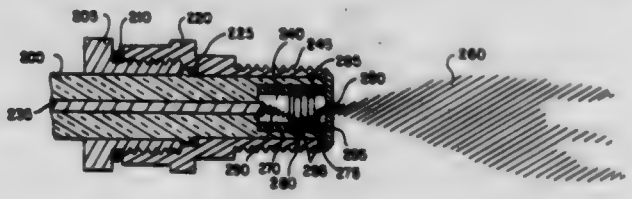
each telescoping head, being reciprocal within limits, within said bore of said associated static cylinder head, each telescoping head including said charge admission valve means and said exhaust valve means, said combustion chamber volume adjusting means including a screw threaded means engageable with each of said telescoping head for controlling position of each said telescoping head within said static cylinder head relative to a top position of said piston.

4,493,297

PLASMA JET IGNITION DEVICE

Michael E. McIlwain, Franklin; Jonathan F. Grant, Wayland; Zsolt Golenko, North Reading, all of Mass., and Alan D. Wittstein, Fairfield, Conn., assignors to Geo-Centers, Inc., Newton Upper Falls, Mass.

Filed Sep. 27, 1982, Ser. No. 424,856
Int. Cl.³ F02P 3/08
U.S. Cl. 123—143 B 15 Claims



1. In a plasma jet ignition device having an insulating material with a plasma cavity formed therein, a first electrode having an end inserted into said cavity, an orifice plate having an orifice therein comprising one side of said cavity and means for causing an arc discharge to occur within said cavity between said first electrode and said orifice plate, the improvement comprising,

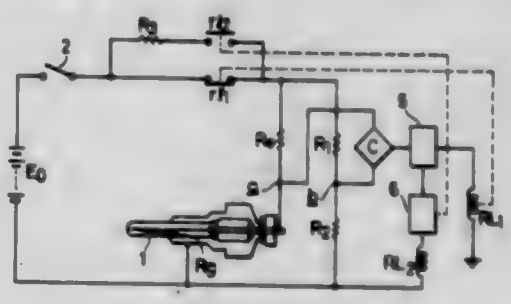
a solid fuel pellet inserted into said cavity, said pellet being responsive to said arc discharge for releasing a gaseous fuel into said cavity.

4,493,298

GLOW PLUG QUICK HEATING CONTROL DEVICE

Hideo Kawamura, Tokyo, Japan, assignor to Isuzu Motors, Ltd., Tokyo, Japan

Filed Jun. 22, 1982, Ser. No. 391,035
Claims priority, application Japan, Jun. 30, 1981, 56-102068; Aug. 10, 1981, 56-117646[U]
Int. Cl.³ F02B 9/08; F02P 19/00
U.S. Cl. 123—145 A 9 Claims



3. A control resistor for use with a glow plug, comprising:

a coil including at least two series connected resistance wires having different resistance/temperature characteristics wherein the resistance of said wires substantially equals the resistance of an element of said glow plug; and

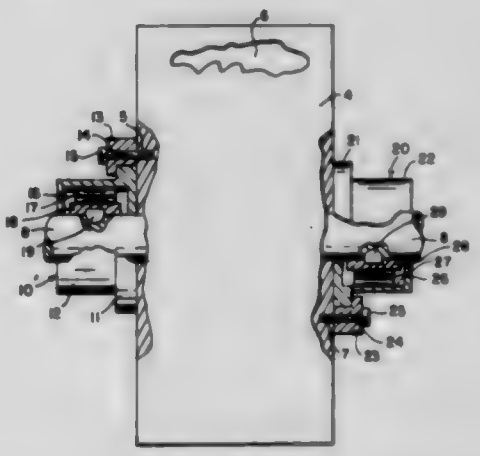
an insulating material surrounding said coil.

4,493,299

APPARATUS FOR GIVING ENGINES POSITIVE EFFECT

Louis Forde, 482 Berriman St., Brooklyn, N.Y. 11208

Continuation-in-part of Ser. No. 174,363, Aug. 1, 1980, abandoned, which is a continuation-in-part of Ser. No. 966,905, Dec. 6, 1978, abandoned. This application Sep. 16, 1982, Ser. No. 406,189
Int. Cl.³ F02N 15/10
U.S. Cl. 123—185 S 2 Claims



1. Apparatus for providing application controlling transmission pulses of an engine for giving positive effect comprising: base member means having a circular internal cavity about a central axis positively constant engagement means engaging periphery of said internal cavity of said base member simultaneously engaging the external periphery of a sleeve means for defining a rotatable interconnection of said base member with said sleeve means, and positively constant engagement means rotatably surrounds said sleeve means being secured to and surrounding portion of a crankshaft extending out of front of said engine, securing means for said base member includes an

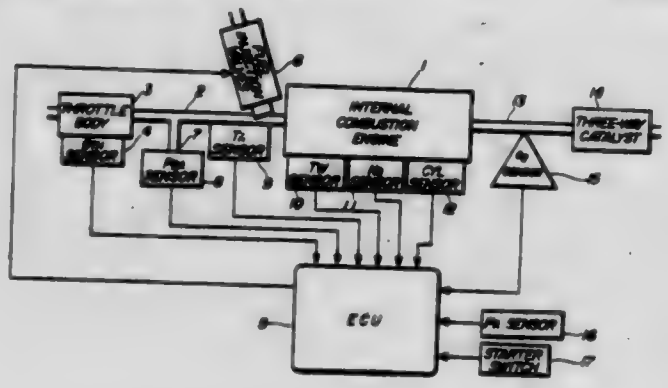
aperture in portion of block means, said block means further includes portion adjacent said base member positioned adjacent said engine, threadingly engaging means adapted in said aperture and threadingly engaging said engine whereby positive constant effective means is defined by said thread engaging means removably securing and mating said block means and said base member means together and with the front of said engine wherein there is a second base member means having a circular internal cavity about said central axis, a second positively constant engagement means engaging the external periphery of a second sleeve means for defining rotatable interconnection of said second base member with said second sleeve means, said second positively constant engagement means rotatably surrounds the second sleeve means being secured to and surrounding a second of said crankshaft extending out of the rear of said engine for receiving, simultaneously, rotational drive from said engine, said second base member is secured to the rear of the engine in the same manner as said base member is secured to the front of the engine.

4,493,300

METHOD OF CONTROLLING THE FUEL SUPPLY TO AN INTERNAL COMBUSTION ENGINE AT DECELERATION

Shunpei Hasegawa, Niiza, Japan, assignor to Honda Motor Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1984, Ser. No. 590,202
Claims priority, application Japan, Apr. 8, 1983, 58-61864
Int. Cl.³ F02D 5/02
U.S. Cl. 123—325 3 Claims



1. A method of controlling the fuel supply to an internal combustion engine having an intake passage, at deceleration of said engine, said method being adapted to interrupt the fuel supply to said engine when said engine is operating in a predetermined operating region in which is satisfied at least a condition that pressure in said intake passage is lower than a predetermined value, while said engine is decelerating, said method comprising the step of: (a) detecting a value of atmospheric pressure encompassing said engine; and (b) correcting said predetermined value of intake passage pressure in response to the detected value of said atmospheric pressure.

4,493,301

SYSTEM FOR REGULATING THE IDLE SPEED OF AN INTERNAL COMBUSTION ENGINE

Kaoihiro Abe, Higashimurayama, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1983, Ser. No. 552,659
Claims priority, application Japan, Nov. 19, 1982, 57-204376
Int. Cl.³ F02D 9/02, 31/00
U.S. Cl. 123—339 2 Claims

1. A system for regulating the idle speed of an internal combustion engine with an electronic fuel injection system having a bypass around a throttle valve of the engine and a solenoid operated control valve provided in the bypass to control the volume of air flow passing the bypass, comprising:

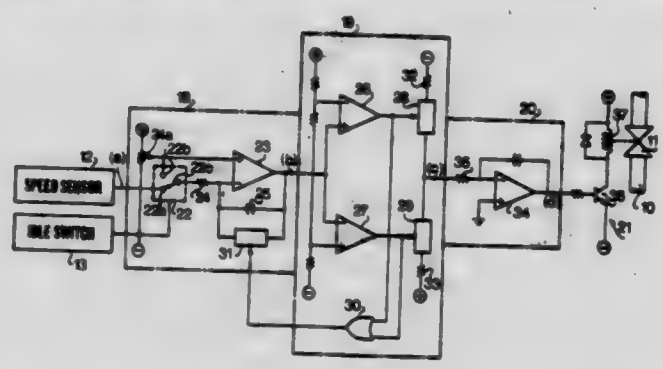
means for sensing the engine speed of said engine and for producing an engine speed voltage;

an idle switch responsive to the idle operation of said engine for producing an idle signal;

a reference voltage circuit for producing a reference voltage corresponding to a predetermined idle speed;

a first integrating circuit comprising an integrator for integrating the difference between said engine speed voltage and said reference voltage and for producing an output, and first switch means for causing said output to go to zero;

a control signal generating circuit comprising first and second comparators which are responsive said output of said first integrating circuit for producing switch actuating signals when said output reaches predetermined upper



limit voltage and lower limit voltage repectively, second and third switch means reponsive to said switch actuating signals for producing a positive going control signal and a negative going control signal, and gate means responsive to said switch actuating signals for operating said first switch means;

a second integrating circuit responsive to said positive and negative going control signals for producing a control voltage; and

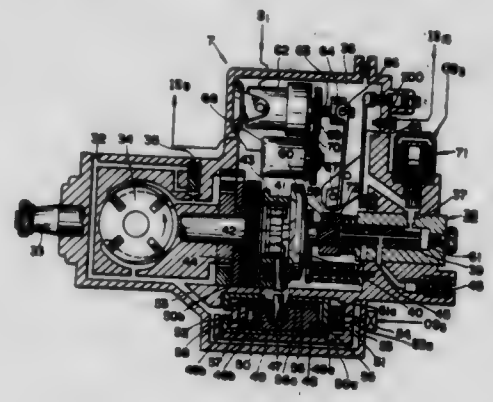
a driver responsive to said control voltage for energizing a solenoid of said solenoid operated control valve to actuate said control valve to regulate the idle speed to the predetermined idle speed.

4,493,302

FUEL INJECTION TIMING CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Yoshihisa Kawamura, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Dec. 28, 1982, Ser. No. 454,024
Claims priority, application Japan, Feb. 1, 1982, 57-13355; Feb. 3, 1982, 57-14755
Int. Cl.³ F02M 59/20
U.S. Cl. 123—357 13 Claims



1. A fuel injection timing control system for an internal combustion engine into which fuel is intermittently injected, the control system comprising:

(a) first means for controlling the timing of fuel injection by a closed-loop control;

(b) second means, fluidly-driven and using working fluid, for

adjustably determining the fuel injection timing, the second means constituting a part of the closed-loop conrol, wherein the response time and the stability of the closed-loop control depend on a condition of the working fluid;

(c) third means for sensing the condition of the working fluid and generating a signal indicative thereof; and

(d) fourth means, responsive to the signal from the third means, for adjusting the response time and the stability of the closed-loop control in accordance with the sensed condition of the working fluid to thereby prevent the influence of the working fluid condition on the response time and the stability of the closed-loop control, the fourth means being another part of the closed-loop control.

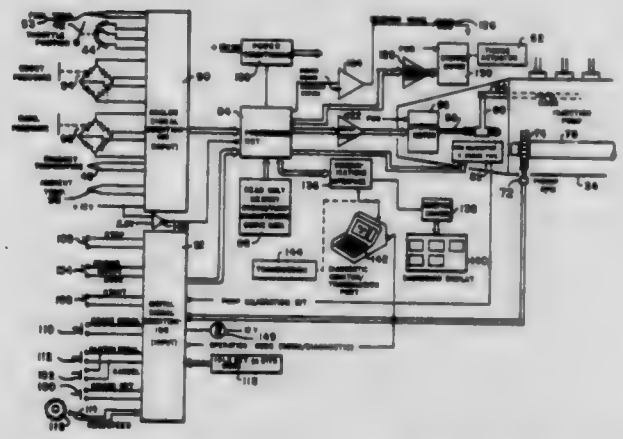
4,493,303

ENGINE CONTROL

Lionel D. Thompson; Harold E. Jenkins, both of Hagerstown, Md.; Richard A. Hickerson, Hedgesville, W. Va., and Russell E. Weaver, Sharpsburg, Md., assignors to Mack Trucks, Inc., Allentown, Pa.

Filed Apr. 4, 1983, Ser. No. 482,379
Int. Cl.³ F02D *31/00*
U.S. Cl. 123—357 80 Claims

MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 83 Pages)



1. An electronic control for controlling an engine, comprising

engine speed detecting means for generating an electrical engine speed signal corresponding to the speed of the engine,

actual rate-of-change determining means for deriving actual rate-of-change values from the engine speed signal corresponding to both increases and decreases in engine speed,

desired rate-of-change determining means responsive to a demand factor for deriving desired rate-of-change values corresponding to both increases and decreases in the demand factor,

to-be-effected rate-of-change determining means for deriving to-be-effected rate-of-change values corresponding to subtraction of the actual rate-of-change values from the respective desired rate-of-change values,

means responsive to the to-be-effected rate-of-change values for correspondingly increasing and decreasing an engine control value, and

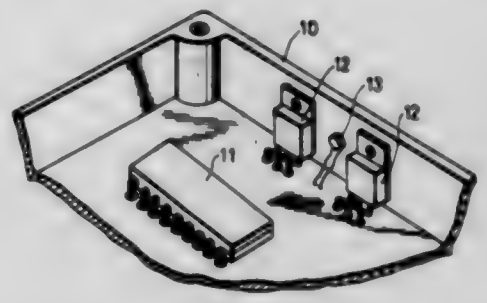
means responsive to the engine control value for controlling the engine.

4,493,304

TEMPERATURE MEASURING DEVICE FOR INTERNAL-COMBUSTION ENGINE

Tetsuo Nakajima, and Hirotaka Kamata, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1983, Ser. No. 559,605
Claims priority, application Japan, Dec. 27, 1982, 57-195636
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—479 2 Claims



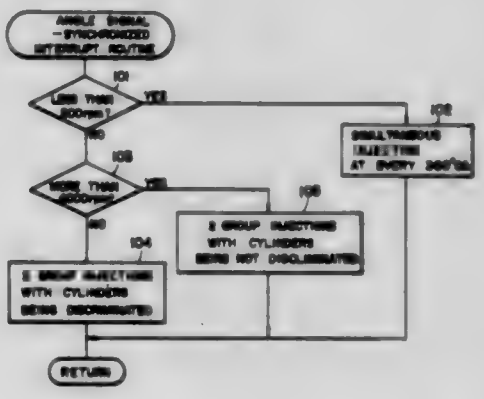
1. A temperature measuring device for an internal-combustion engine, comprising a main temperature sensor operative to measure the temperature of a member such as the cooling water which represents temperature of said internal-combustion engine, means to measure the engine data such as an engine rotation number and an opening angle of a throttle valve, an electronic control unit adapted to receive engine data resulting from said measurement, compute an engine control signal based on said engine data, and feed out the outcome of said computation, an auxiliary temperature sensor disposed near a heat generating member of said electronic control unit and adapted to be heated by said heat generating member, means for discriminating whether or not the output from said main temperature sensor falls within a prescribed range, and means operative, according to the outcome of the judgment by said discriminating means, to select the output of said main temperature sensor when said output of said main temperature sensor falls in said prescribed range or the output of said auxiliary temperature sensor when said output of said main temperature sensor deviates from said prescribed range and feed said selected output in the form of a temperature signal for control of said internal-combustion engine.

4,493,305

ELECTRONIC FUEL INJECTING METHOD AND DEVICE FOR INTERNAL COMBUSTION ENGINE

Toshiyuki Takimoto, and Keiji Aoki, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 1, 1982, Ser. No. 438,523
Claims priority, application Japan, Aug. 9, 1982, 57-138114
Int. Cl.³ F02D *5/02*
U.S. Cl. 123—490 7 Claims



1. An electronic fuel injecting method for an internal combustion engine with multi-point injection, wherein fuel injec-

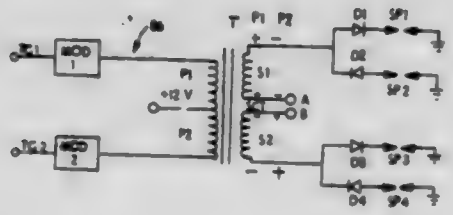
tion timings for plural groups of injectors are controlled in accordance with reference signals generated in the proximity of intake top dead center of a predetermined cylinder and angle signals generated at predetermined rotary angles, characterized in that, during a low rotational speed operation of the engine as detected by monitoring said angle signals, where said reference signals are detected with difficulty, simultaneous injections of all cylinders are performed in accordance with said angle signals, during a medium rotational speed operation of the engine with the cylinders being discriminated by said reference signal, group injections are performed in accordance with said reference signals and said angle signals, and, during a high rotational speed operation of the engine where noise signals caused by said angle signals are possibly mistaken for said reference signals with the cylinders being not discriminated by said reference signal, group injections are performed in accordance with said angle signals.

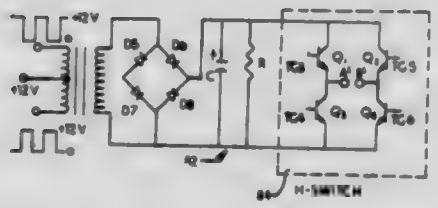
4,493,306

ENHANCED SPARK ENERGY DISTRIBUTORLESS IGNITION SYSTEM (B)

Joseph R. Asik, Bloomfield Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 450,932, Dec. 20, 1982, Pat. No. 4,462,380.
This application Feb. 23, 1984, Ser. No. 582,976
Int. Cl.³ F02P 3/04
U.S. Cl. 123—620 2 Claims





1. A distributorless ignition system with increased spark energy including:

a first ignition coil having a first primary winding and a first secondary winding;

a second ignition coil having a second primary winding and a second secondary winding;

a first ignition module coupled to said first primary winding;

a second ignition module coupled to said second primary winding;

a supplementary spark energy module coupled to said first and second secondary windings;

a first series combination of a first diode and a first spark plug connected to said first secondary winding;

a second series combination of a second diode and a second spark plug connected in parallel with said first series combination, said second diode being connected in opposite polarity to said first diode;

a third series combination of a third diode and a third spark plug connected to said second secondary winding;

a fourth series combination of a fourth diode and a fourth spark plug connected in parallel with said third series combination, said fourth diode being connected in opposite polarity to said third diode; and

said supplementary spark module including:

a diode bridge having two parallel paths each of two diodes in series;

a module coil coupled to points between the diodes in each of the parallel paths;

a resistor coupled in parallel with said two parallel paths;

a capacitor coupled in parallel to said two parallel paths;

a first pair of transistors coupled in parallel to said capacitor;

a second pair of transistors coupled in parallel to said capacitor;

said first and second pair of transistors each including the series connection of two collector-emitter paths of two transistors, one on either side of a first midpoint in said first pair and a second midpoint in said second pair;

said first midpoint being coupled to said first secondary winding; and

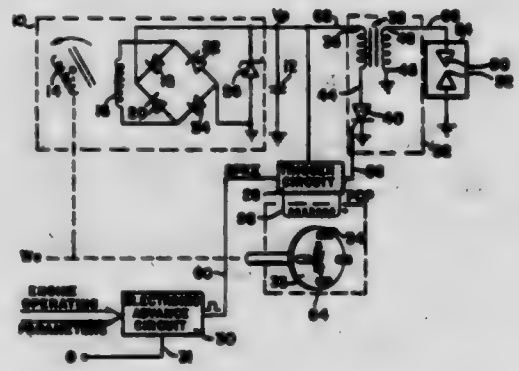
said second midpoint being coupled to said second secondary winding.

4,493,307

ADVANCE CONTROL FOR BREAKERLESS IGNITION SYSTEM

Lanh T. Trinh, San Diego, Calif., and Robert W. Loy, Granger, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jul. 25, 1983, Ser. No. 517,170
Int. Cl.³ F02P 5/00
U.S. Cl. 123—630 7 Claims



1. In a breakerless ignition system for an engine, said engine having a crankshaft, said ignition system having an ignition coil with a primary winding for receiving a controlled pulse of power and a secondary winding for transforming the power pulse into a high voltage capable of arcing across the gap between the electrodes of a spark plug; a controlled switch connected between a power source and the primary winding, said control switch including a control electrode; a mechanical activating means including a physical timing member rotatable with said crankshaft; and activating means, connected to the control electrode, for activating the controlled switch during a first time period ending at a maximum retard condition of said mechanical activating means in response to said physical timing member attaining a predetermined angular position; said system further comprising an electronic advance control including:

means for generating electronically timed pulses coincident with a scheduled firing advance for the controlled switch;

means, connected in parallel with the controlled switch activating means, for activating the controlled switch in response to said timed pulses;

means for delaying the deactivation of the controlled switch for a time period ending after said first time period ends.

4,493,308

RADIANT/CONDUCTIVE BROILER

James R. Hurley, East Weymouth; Edward F. Searight, Harvard, and Maurice Nunes, Arlington, all of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed Apr. 6, 1982, Ser. No. 366,026
Int. Cl.³ A47J 37/00
U.S. Cl. 126—41 R 11 Claims

1. A broiler for food products comprising:

an upper heating unit;

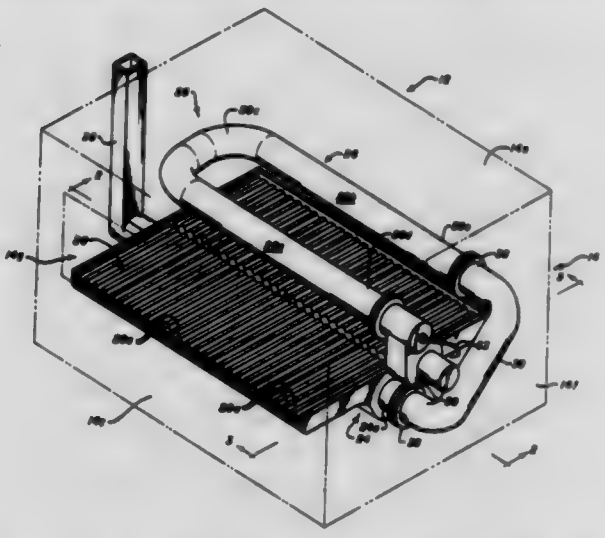
a burner connected to said upper heating unit and operable to deliver hot gases thereto;

a lower heating unit;

conduit means for delivering flue products from said upper heating unit to said lower heating unit; and

an exhaust in fluid communication with said lower heating unit;

said lower heating unit comprising a heat pipe assembly including an inlet for receiving flue products from said conduit means, an outlet, a cooking surface for supporting and transferring heat to said food products, gas conducting means for conveying hot gases from said inlet to said outlet, an evaporator operable to receive heat from said gas conducting means, and a condenser to deliver heat to said cooking surface, said gas conducting means including



an inner pipe with a plurality of openings in its wall, said inner pipe having one end in fluid communication with said conduit means and a closed end opposite said one end, and an outer pipe surrounding said inner pipe, one end of said outer pipe in fluid communication with said exhaust, the openings in the wall of said inner pipe permitting jets of hot gases to form and impinge on the interior surface of said outer pipe to thereby transfer heat to said outer pipe;

said upper heating unit positioned generally above and spaced from said cooking surface and including a tubular member having an inlet for receiving hot gases from said burner and an outlet for delivering flue products to said conduit means.

4,493,309

FUEL FIRED HEATING ELEMENT

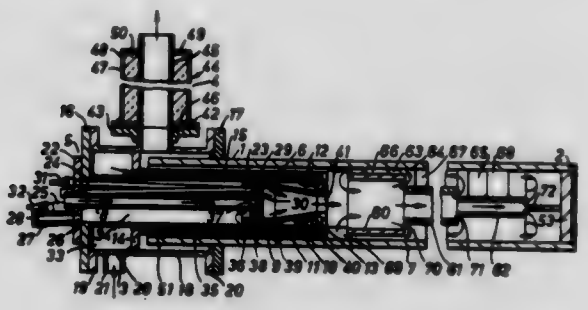
Philip J. Wedge, Cheswick Green, and Robert C. Bridson, Shirley, both of England, assignors to British Gas Corporation, London, England

Filed Sep. 27, 1983, Ser. No. 536,309

Claims priority, application United Kingdom, Sep. 29, 1982, 8227707

Int. Cl.³ F24C 3/00

U.S. Cl. 126—91 A 7 Claims



1. A fuel-fired heating element including a tubular housing having one end closed and an opening to provide an outlet for combustion products, a burner assembly received with clearance within the housing between the outlet and the closed end and arranged to direct its combustion products towards the closed end of the housing and a duct received with clearance within the housing to convey the combustion products leaving the burner as a central stream towards the closed end of the housing and as contiguous outer stream within the clearance between the duct and the housing in the opposite direction towards the burner assembly, the duct comprising a plurality of axially aligned tubes, each tube being spaced from the tube adjacent thereto and the tubes being so dimensioned that in a direction downstream of the burner assembly, the upstream tube has an internal diameter greater than the external diameter of the adjacent downstream tube to permit a part of the central stream to discharge into and directly against the flow of the outer stream through the space between corresponding tube pairs.

4,493,310

HEAT EXCHANGER

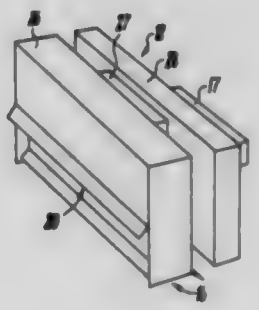
Malcolm B. McInnes, Burwood East, Australia, assignor to Pyrox Limited, Moorabbin, Australia

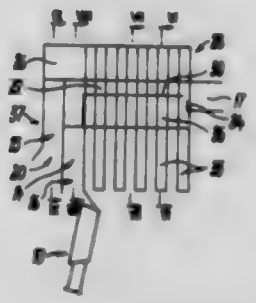
Filed Jun. 29, 1983, Ser. No. 509,207

Claims priority, application Australia, Jul. 1, 1982, PF4665

Int. Cl.³ F24C 3/04

U.S. Cl. 126—92 C 10 Claims





1. A heat exchanger for use in a heating apparatus having a source of heat in the form of a burner arrangement and a flue for discharging combustion products from the heating apparatus, the heat exchanger being arranged to be associated with the heat source so that heat is transferred from the heat source to a working fluid which in use is in heat exchanger relationship with the heat exchanger, said heat exchanger including a main passage having an inlet opening adapted to be located in proximity to the burner arrangement so as to receive substantially all the hot combustion products therefrom and to convey those products through a main portion of the heat exchanger in heat exchanger relationship with the working fluid and thence to the flue of the heating apparatus, a secondary passage having an inlet opening and arranged to receive in normal operation of the heating apparatus substantially all combustion products not received by the main passage and to convey those products to the flue, the secondary passage having an intake portion which extends upwardly from said secondary passage inlet opening and a transfer portion for communicating with the flue, the secondary passage providing a relatively direct flow path for combustion products passing therethrough to the flue, the main passage including an inlet duct which extends upwardly from said main passage inlet opening and which opens into a chamber, the main passage further including a transfer duct extending from said chamber to a further chamber portion, combustion products passing through the main

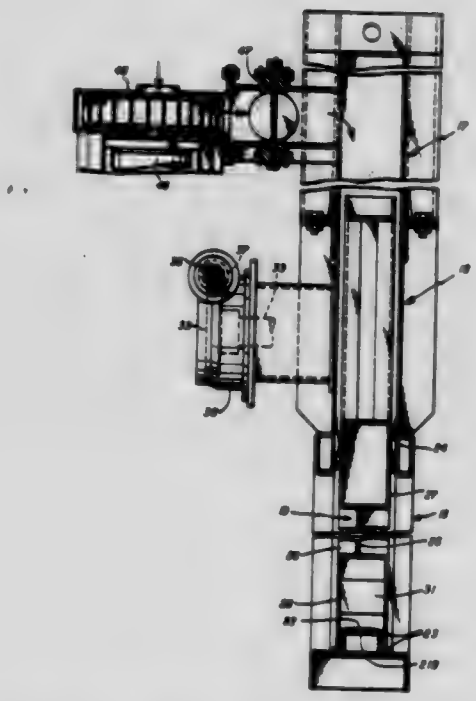
passage being discharged from said further chamber portion, the outside surface areas of the main passage providing at least a major portion of the heat exchanger surfaces over which working fluid is arranged to pass, the main passage providing an indirect path through the heat exchanger to the flue so that the secondary passage has a lower resistance to flow of combustion products therethrough than the main passage.

4,493,311

GUILLOTINE DAMPER

Lothar Bachmann, Auburn, Me., assignor to Bachmann Industries, Inc., Lewiston, Me.

Filed Oct. 19, 1983, Ser. No. 543,336
Int. Cl.³ F23L 13/06
U.S. Cl. 126—285 A
5 Claims



1. A guillotine damper to be incorporated in a duct system, said damper including a frame establishing a passageway through the damper, a blade, an airtight bonnet dimensioned to accommodate the blade and connected to said frame, said frame having a blade accommodating mouth opening into the bonnet, means operable to reciprocate said blade between an open damper position in which the blade is housed in the bonnet and a closed damper position in which the blade blocks the passageway through the frame, a guide attached to the frame and extending about and into the passageway therethrough from one end of the mouth to the other end thereof, said blade provided with a marginal channel coextensive with the guide and disposed and dimensioned to slide along and over corresponding portions of said guide, said frame provided with a resiliently flexible metal seal coextensive with and overlying said guide in a manner such as to be entrant of said channel and be compressed thereby into sealing engagement therewith as said damper is closed.

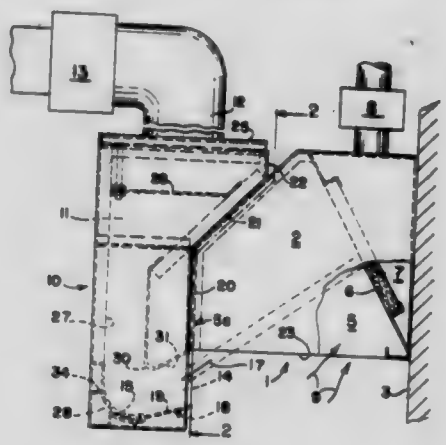
4,493,312

INDUCTION FLUID SUPPLY UNIT FOR EXHAUST HOOD APPARATUS

Michael L. Moon, West Bend, Wis., assignor to Maysteel Corporation, Mayville, Wis.

Filed Jan. 25, 1982, Ser. No. 342,247
Int. Cl.³ F23J 11/00
U.S. Cl. 126—299 D
4 Claims

1. An exhaust hood supply apparatus for injection air into an exhaust hood, an air supply plenum, a slot in said plenum having a substantially continuously curved bottom wall, a separate deflecting plate having a curved coupling wall mounted in abutting movable engagement with said bottom wall, said deflector plate having an extension portion projecting outwardly of said coupling wall to direct said air across the plenum, said curve coupling wall adapted to be pivotally moved over said bottom wall to establish a desired optimum positioning of said extension portion and correspondingly



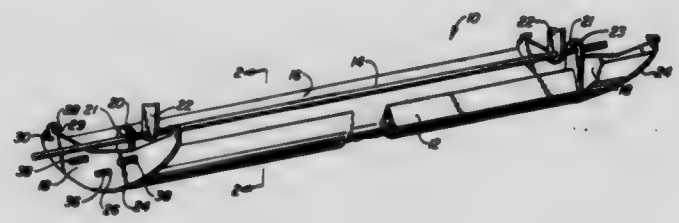
changing the total curved length of said curved bottom wall and said coupling wall, and wherein said curved coupling wall complements said curved bottom wall and said extension portion is a planar portion.

4,493,313

PARABOLIC TROUGH SOLAR COLLECTOR

James H. Eaton, 29 Sunrise Dr., Armonk, N.Y. 10504

Filed Apr. 29, 1982, Ser. No. 372,882
Int. Cl.³ F24J 3/02
U.S. Cl. 126—438
13 Claims



1. A solar collector, including:
(a) a receiver tube;
(b) a foil reflector;
(c) at least two means for forming the foil reflector into a semi-cylindrical parabolic arc having a centroid for focusing solar radiation onto the receiver tube, the forming means at spaced apart intervals along the solar collector;
(d) spreader means attached to at least two of the forming means in the optic shadow of the receiver tube for holding the forming means in spaced apart relation along the solar collector to maintain the parabolic shape of the foil reflector against bending moments and torque;
(e) means for applying the force of the spreader means against the forming means at the centroid of the parabolic arc; and
(f) means for supporting the receiver tube, foil reflector, forming means, and spreader means in cooperating relationship.

4,493,314

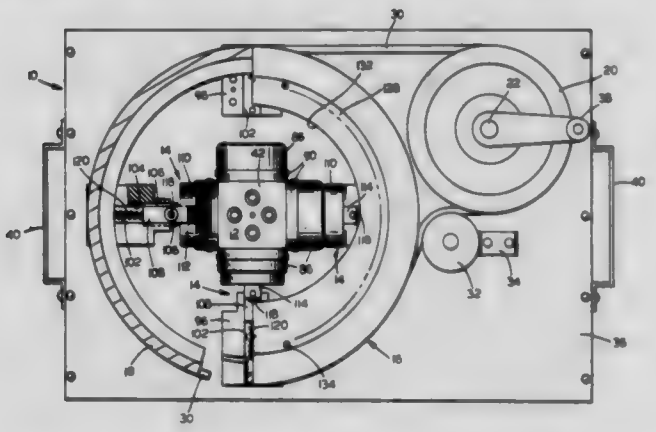
HEART PUMP

Clifton V. Edwards, II, Essex, Conn., assignor to Lundell Laboratories, Inc., Scottsdale, Ariz.

Filed Jun. 30, 1982, Ser. No. 393,765
Int. Cl.³ A61F 1/24
U.S. Cl. 128—1 D
18 Claims

1. A mechanical heart pump comprising: a body portion having an inlet thereinto and an outlet therefrom; a first conduit connected to said body portion for directing blood from a patient to said inlet; a second conduit connected to said body portion for directing blood from said outlet to a patient; said

body portion having a first and a second passage defined therethrough in generally parallel spaced independent relationship to each other, said first passage being disposed in communicative relationship with said inlet and said second passage being disposed in communicative relationship with said outlet, each of said passages having a first opening at one end thereof and a second opening at the opposite end thereof, a first passively distensible bladder sealingly secured to said body portion in circumscription about said first openings of said first and second passages a second passively distensible bladder sealingly secured to said body portion in circumscription about said second openings in said first and second passages; a plurality of check valves disposed in said passages one each adjacent each



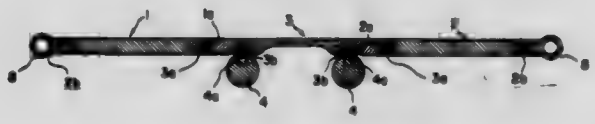
one of said openings and positioned, respectively, to prevent a back flow from said bladder toward said inlet and prevent a back flow from said outlet toward said bladder; force means operatively associated with said body portion, said force means having a driving means, a driven means, and force transmitting means operatively interposed between said driving means and said driven means, said driven means having an eccentric cam connected thereto in rotatable circumscription about said body portion for selectively engaging one of said bladders while disengaging the other of said bladders to provide a continuous flow of blood from said engaged bladder into said output while permitting a continuous flow of blood from said input into said disengaged bladder.

4,493,315

MASSAGE MEANS

Shoji Iwahashi, Kainan, Japan, assignor to Aisen Kogyo, Ltd., Wakayama, Japan

Filed Jul. 22, 1982, Ser. No. 401,049
Int. Cl.³ A61H 7/00
U.S. Cl. 128—60 9 Claims



1. A massage means comprising a rigid right hand bar, a rigid left hand bar and an intermediate bar disposed between and connected end-to-end to said rigid right hand bar and said rigid left hand bar, said intermediate bar, said right hand bar and said left hand bar each having a length which is longer than their width and a width that is greater than their thickness, said intermediate bar having thick end portions having the same thickness as said right and left hand bars separated by a mid-portion which is thinner and narrower than said end portions,

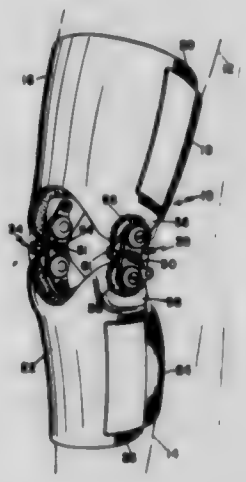
a pair of spherical pressing members with one each secured to said thick end portions of said intermediate bar perpendicular to its thickness, said mid-portion of said intermediate bar being resilient so that said mid-portion of said intermediate bar bends in a direction such that said spherical pressing members are moved in a direction toward each other when said right hand and left hand bars are moved in a longitudinal plane in a direction toward said pressing members.

4,493,316

ARTICULATING KNEE STABILIZER

Kenneth E. Reed; Bradley Mason, both of Carlsbad; Jeff Mason, Cardiff by the Sea, and Gregory R. Nelson, Carlsbad, all of Calif., assignors to DonJoy, Inc., Carlsbad, Calif.

Filed Mar. 10, 1983, Ser. No. 474,004
Int. Cl.³ A61F 3/00
U.S. Cl. 128—80 C 12 Claims



1. A human knee stabilizer comprising:

a first shell means attachable to the thigh of the wearer with a lower portion thereof disposed adjacent to at least one side of the knee joint;

a second shell means attachable to the calf of the wearer with an upper end portion thereof disposed adjacent to at least said one side of the knee joint;

and at least one hinge means operatively connecting said end portions of said first and second shell means on at least said one side of the knee for relative pivotal movement between said first and second shell means, said hinge means comprising:

link means pivotally connected to said first shell means at a first pivotal connection and to said second shell means at a second pivotal connection that is spaced from said first pivotal connection,

first and second gear means attached respectively to said first and second shell means and having meshing teeth that are actuate about the respective axes of said first and second pivotal connections, said gear means pivoting with their respective shell means, and

a pinion stop gear adjustably positionable about the arcuate periphery of at least one of said hinge gears with the teeth of said stop gear meshed with the teeth of the hinge gear, said pinion stop gear being engageable with the teeth of the other said hinge gear to stop pivotal movement between said shells at a selected relative pivotal position of said shells.

4,493,317

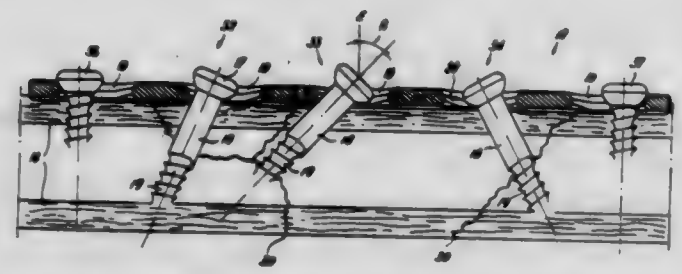
SURGICAL COMPRESSION PLATE AND DRILL GUIDE

Kaj Klaue, Sierre, Switzerland, assignor to Synthes Ltd. (U.S.A.), Wayne, Pa.

Filed Nov. 16, 1981, Ser. No. 321,602
Claims priority, application Switzerland, Nov. 20, 1980, 8599/80
Int. Cl.³ A61F 5/04; A61B 17/18
U.S. Cl. 128—92 D 11 Claims

1. A surgical device for the stabilization of broken bones and for use in compression osteosynthesis comprising an elongated plate having a top surface, a bottom surface for application to a bone and a plurality of elongated holes, each of said holes having surfaces along each side sloping inwardly and down-

wardly, the width of said holes transversely to their longitudinal axis being constant along their length and the length greater than the width by at least one third the width, there being an undercut surface on the bottom of each of said holes at both ends thereof, said holes being symmetrical about a center line across the width of the holes.



11. A drill guide for drilling holes in a bone said guide comprising a drill socket and a ball-shaped bearing, said socket being attached to said bearing in a position eccentric to the center of the ball.

4,493,318

LOCKING MECHANISM FOR USE WITH TWO ANESTHETIC EVAPORATORS

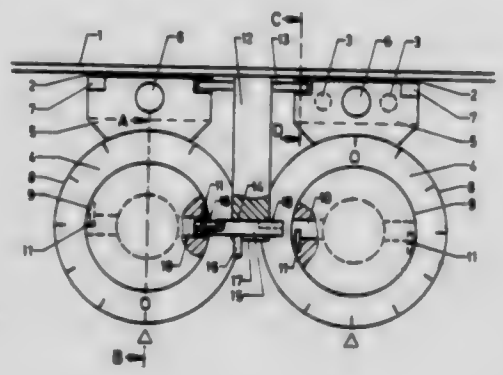
Helmut Mohr, Lübeck; Wolfgang Falb, Krummesse, and Carl F. Wallroth, Lübeck, all of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 18, 1983, Ser. No. 486,099

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1982, 3222047

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—200.19 4 Claims



1. A locking mechanism for use with two anesthetic evaporators, comprising first and second anesthetic evaporators, each evaporator having a rotatable opening valve disc, each disc having a radially extending opening therein, means for mounting said evaporators in side by side relationship such that said discs are separated by a predetermined distance and said respective radially extending openings are in alignment when rotated to face each other, an arm mounted to said mounting means and extending between said discs and having a transverse bore aligned with said respective radially extending openings when rotated to face each other, a cylindrical latch slidably mounted in said transverse bore and having a length slightly greater than said predetermined distance and an accommodation recess adjacent each end at a selected diametric location, a control pin mounted on each of said discs and entering into the opening of the associated disc at one diametric location, the distance between said control pins, when said openings are in alignment when rotated to face each other, being slightly greater than the length of said latch, each respective control pin being of a size to be accommodated within each respective accommodation recess of said latch when the opening of said disc and said control pin are aligned with the accommodation recess of said latch, said latch being positionable in said disc opening of either selected disc with the control pin being accommodated within the accommodation recess to lock the associated disk and to free the other disc for rotation for opening the associated evaporator, said latch also being positionable between said discs so that its respective ends enter into each of the openings of each of said discs to lock both of said disks.

4,493,319

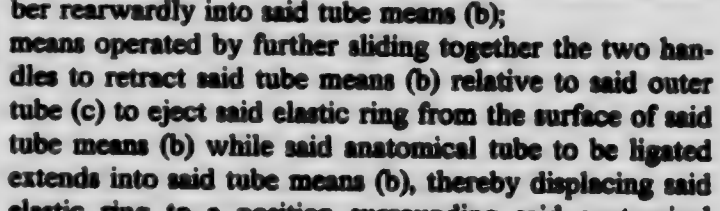
RING APPLICATOR HAVING FLOATING INNER TUBE

Todd J. Polk, Holland, and Jerry Poliani, Morrisville, both of Pa., assignors to Cabot Medical Corporation, Langhorne, Pa.

Continuation of Ser. No. 278,444, Jun. 29, 1981, abandoned. This application Aug. 8, 1983, Ser. No. 521,020

Int. Cl.³ A61B *17/00*

U.S. Cl. 128—303 A 15 Claims



1. In a surgical ligating instrument for tubal ligation by the application of an elastic ring to an anatomical tubular member, the combination which comprises:

a. an elongated inner member having a forward and a rearward end and having a grasping means at its forward end constructed and arranged for grasping said anatomical tubular member to be ligated;

b. handle-less, tube means freely slidably carried upon said inner member (a) with close sliding fit therebetween, said tube means (b) having an outer surface adjacent its forward end over which at least one elastic ring is adapted to fit in a tensioned condition;

said tube means (b) and all portions of the instrument fixedly attached thereto being free of any slot;

c. a slotless outer tube surrounding and having a close sliding fit around the tube means (b) so as to substantially isolate the tube means (b) from the anatomical environment;

d. releasable securing means for securing said tube means (b) in a forward position relative to said outer tube (c);

e. means, operated by sliding together forward and rearward handles, the forward handle being fixedly attached to the inner member (a), the rearward handle being attached to the outer tube (c), to retract said member (a) relative to said tube means (b) to draw said anatomical tubular member rearwardly into said tube means (b);

f. means operated by further sliding together the two handles to retract said tube means (b) relative to said outer tube (c) to eject said elastic ring from the surface of said tube means (b) while said anatomical tube to be ligated extends into said tube means (b), thereby displacing said elastic ring to a position surrounding said anatomical tubular member and effecting tubal ligation thereof; and

g. manually engagable stop means positioned to prevent further retraction of said tube means (b) relative to said outer tube (c) after said elastic ring has been ejected in response to said retraction of said tube means (b), wherein the instrument is free of any spring.

4,493,320

BIPOLAR ELECTROCAUTERY SURGICAL SNARE

Michael R. Treat, 792 Columbus Ave., Apt. 4E, New York, N.Y. 10025

Filed Apr. 2, 1982, Ser. No. 364,977

Int. Cl.³ A61B *17/39*

U.S. Cl. 128—303.15 7 Claims

1. A bipolar electrocautery surgical snare for endoscopic removal of growths within a body cavity, said snare comprising:

a unitary elongated electrically insulating flexible double-

lumen tubular member having a proximal end and a distal end;

a pair of elongated flexible electrically conductive uninsulated snare wires, each snare wire disposed within one of the respective lumina within said tubular member in slidable relation therewith, said snare wires being of a length greater than said tubular member such that each snare wire extends from both the proximal and distal ends of said tubular member;



an electrically insulating connector means disposed at the distal end of each of said snare wires; said connector means mechanically uniting but electrically insulating said distal ends of said snare wires to form a surgical snare loop extending from the distal end of said tubular member; and

means for electrically connecting the proximal ends of said snare wires to a bipolar electrocautery current source; and

actuator means for sliding the snare wires inwardly or outwardly through the tubular member to respectively expand or contract the surgical loop.

4,493,321

VENOUS VALVE CUTTER FOR THE INCISION OF VALVE LEAFLETS IN SITU

Robert P. Leather, Morehouse Corners Rd., Chatham, N.Y. 12037

Filed May 25, 1982, Ser. No. 381,699
Int. Cl.³ A61F *17/32*
U.S. Cl. 128—305 27 Claims



8. A device for cutting venous valve leaflet pairs comprised of:

an elongated cutting member having a forward end and a rearward end and adapted to pass through a vein forward end first without making continuous circumferential contact with the walls thereof, said cutting member having an exposed cutting blade on its forward end facing in the direction of intended movement through a vein;

elongate body means connected by a first rod to the cutting member at its forward end centrally of the cutting blade for centering the cutting member in a vein with its blade sufficiently exposed about the rod to cut enountered valve leaflet pairs as the cutting member is drawn through them; and

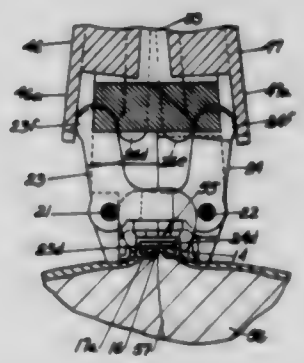
means including a second rod connected to the centering means for drawing the centering means and the cutting member through a vein.

4,493,322

SURGICAL STAPLING INSTRUMENT

Carl T. Becht, Cincinnati, Ohio, assignor to Senco Products, Inc., Cincinnati, Ohio

Filed Sep. 28, 1982, Ser. No. 425,542
Int. Cl.³ A61B *17/04*; B31B *1/00*
U.S. Cl. 128—334 R 10 Claims



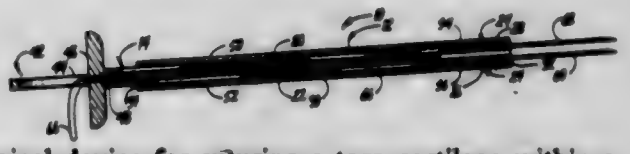
1. A surgical stapling instrument for forming and implanting surgical staples in the tissue of a patient, said instrument having a supply of surgical staples and an anvil, said surgical stapling instrument having a pair of formers pivotally mounted on said instrument to each side of said anvil for rotation only, said formers being swingable between a normal unactuated position and an actuated position wherein they form a surgical staple about said anvil and implant said surgical staple, each former being so configured as to form said staple about that side of said anvil opposite the side adjacent its pivotal mounting, a pair of levers pivotally mounted on said instrument, each lever contacting one of said staple formers, said levers being manually swingable laterally of said instrument between a normal unactuated position with said staple formers in said unactuated position and an actuated position with said staple formers in said actuated position and a resilient means to bias said staple formers and said levers to their respective unactuated positions.

4,493,323

SUTURING DEVICE AND METHOD FOR USING SAME

John P. Albright; Robert K. Martin, and John A. Dyson, all of Iowa City, Iowa, assignors to University of Iowa Research Foundation, Iowa City, Iowa

Filed Dec. 13, 1982, Ser. No. 436,607
Int. Cl.³ A61B *17/06*
U.S. Cl. 128—340 7 Claims



7. A surgical device for suturing a torn cartilege within a patient'knee comprising:

an elongated tubular member having an internal end adapted to be positioned in the proximity of the cartilege to be sutured and an external end;

said tubular member having an elongated bore extending longitudinally through said tubular member, said bore having opposite open ends;

plunger means telescopically fitted within said elongated bore for longitudinal sliding movement therein, said

plunger means comprising an elongated body member, and a plunger head;

said body member having a handle at one end thereof and being provided at the opposite end with a threaded opening having cylindrical sidewalls, said cylindrical sidewalls being provided with a tapered cam means which is within said opening;

said plunger head comprising a threaded end portion and a pair of spaced apart bifurcated members which are yieldably movable toward and away from one another;

a pair of spaced apart needles positioned in the space between said bifurcated members and having pointed ends protruding outwardly therefrom;

surgical thread being connected to both of said needles;

said plunger head being threadably insertable into said threaded opening whereby said cam means engages said bifurcated members and forces said bifurcated members toward one another so as to retentively engage said needles therebetween;

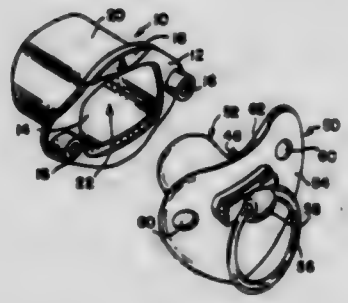
said bifurcated members being movable apart from one another when said plunger head is removed from said threaded opening so as to release said needles from retentive engagement between said bifurcated members.

4,493,324

PACIFIER COVER

Laverne Johnston, Simi Valley, Calif., assignor to Dan LaMere, Sherman Oaks, Calif., a part interest

Filed Jun. 17, 1983, Ser. No. 505,306
Int. Cl.³ A61J *17/00*
U.S. Cl. 128—360 9 Claims



1. A pacifier cover for covering and protecting the nipple which is supported by a nipple retaining member of the pacifier, wherein the nipple protrudes from the front face of the nipple retaining member and the nipple retaining member contains a multiplicity of holes, wherein the pacifier cover comprises:

a. a hollow cover portion containing an internal chamber therein;

b. said internal chamber opening into the front face of the pacifier cover;

c. the shape of the front face of the pacifier cover conforming to the shape of the front face of the nipple retaining member of said pacifier;

d. said front face of said pacifier cover containing a protrusion on the upper portion of its front face which conforms in shape to the upper surface of the nipple retaining member of the pacifier; and

e. said front face of said pacifier cover containing a multiplicity of male mating members each of which is aligned with a corresponding one of said holes in said nipple retaining member;

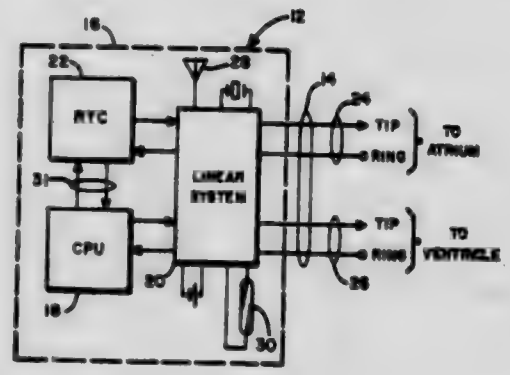
f. whereby when said pacifier cover is brought into engagement with said pacifier, said nipple is retained within said chamber, each of said male mating members is inserted into and retained within a corresponding one of said holes in said nipple retaining member, said protrusion on the upper portion of said front face of said pacifier cover engages the top surface of said nipple retaining member, and said front face of said pacifier cover is securely held against the front face of said nipple retaining member.

4,493,325

TACHYARRHYTHMIA PACER

Jerome T. Hartlaub, New Brighton, and Paul J. Beckmann, St. Paul, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed May 3, 1982, Ser. No. 374,457
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG 6 Claims



1. In a pacer of the type having at least one sense amplifier for detecting depolarization of cardiac tissue and, at least one output amplifier for providing electrical stimulation to the cardiac tissue; an improved tachyarrhythmia detection system compriaing:

timing means for determining time periods between successive cardiac depolarizations;

averaging means for calculating the average time period for a preselected number of said time periods producing a running average period;

means for calculating a running average threshold period from said running average period;

means for comparing a time period with said running average threshold period producing a first criteria detection signal if said time period is less than or equal to said running average threshold period;

means for comparing said time period to a preselected programmed threshold period and for producing a second criteria detection signal if said time period is less than or equal to programmed threshold period; and

means responsive to said first and second criteria detection signals for incrementing a tachy beat counter; and

means responsive to said tachy beat counter for initiating a tachyarrythmia treatment regime.

4,493,326

AUTOMATIC BLOOD PRESSURE SYSTEM WITH SERVO CONTROLLED INFLATION AND DEFLATION

Jeremy R. Hill, Weston, and Donald Malinouskas, Monroe, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Division of Ser. No. 81,551, Oct. 3, 1979, Pat. No. 4,328,810.
This application Jan. 29, 1982, Ser. No. 344,051
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—680 7 Claims

1. A blood pressure system for automatically measuring systolic and diastolic pressure in a patient, said system comprising:

blood pressure cuff means, adapted for attachment about a limb of the patient and capable of being inflated to occlude the artery of the limb during an inflation cycle and capable of being deflated during a deflation cycle;

pressure chamber means in fluid communication with said cuff means so that, at any given time, the pressure within said chamber is substantially the same as the pressure within said cuff means;

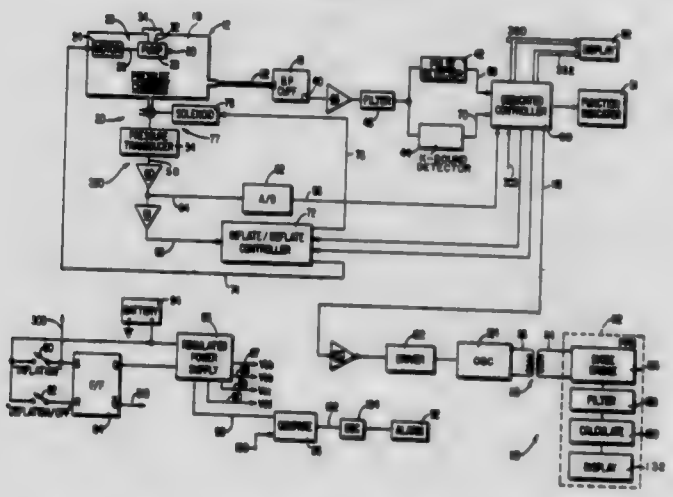
transducer means for producing an electrical signal indicative of the actual pressure within said chamber means;

error means receiving the electrical signal from said transducer means for producing an error signal indicative of

the difference between the actual rate of change of pressure within said chamber and a desired rate of change of pressure within said chamber;

pressure increasing means responsive to said error signal during said inflation cycle, said pressure increasing means comprising means for variably duty cycle modulating said error signal to produce a control signal and means responsive to said control signal for increasing the pressure within said chamber thereby inflating said cuff; and

pressure decreasing means responsive to said error signal during said deflation cycle, said pressure decreasing means comprising means for variably duty cycle modulating said error signal to produce a control signal and means responsive to said control signal for decreasing the pressure within said chamber thereby deflating said cuff.

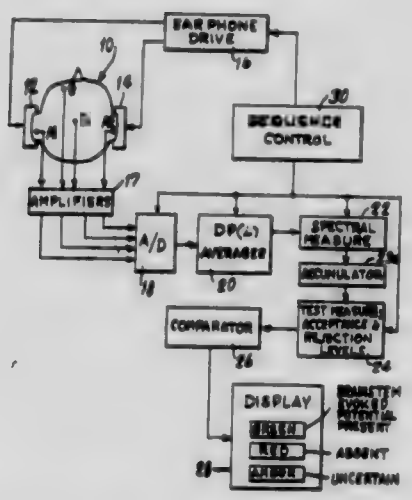


4,493,327

AUTOMATIC EVOKED POTENTIAL DETECTION

Michael Bergelson, Port Chester; Jacob Fridman, Kew Gardens, and Erwin R. John, Mamaroneck, all of N.Y., assignors to Neurometrics, Inc., New York, N.Y.

Filed Jul. 20, 1982, Ser. No. 400,150
Int. Cl.[3] A61B 5/04
U.S. Cl. 128—731 20 Claims



20. A method comprising the steps of:

(a) deriving a first brainwave in the absence of a stimulus;

(b) sampling the brainwave to produce digital samples DP(i) of the brainwave to form an epoch n=1, repeating to form an epoch n=2, and repeating to form a total of N epochs, where n=1, 2, . . . , N, and forming the N epochs into a group K;

(c) finding for the group K produced in the immediately preceding step an averaged waveform K;

(d) deriving a second brainwave for the same subject in the presence of the stimulus;

(e) repeating steps (b) and (c) for the second brainwave;

(f) repeating the sequence of steps (a) through (e) for successive first and second brainwaves to produce for each a respective sequence of groups K=2, K=3, . . . , K=K(min), and producing for each repetition a respective pair of averaged waveforms K, a respective spectral measure P(K) for the abeence of the stimulus and a respective spectral measure P'(K) for the presence of the stimulus;

(g) finding a test measure V(K) as a function of the difference between said spectral measure P(K) and P'(K) derived from said waveforms and of the variance thereof;

(h) finding an acceptance level Va(K) and a rejection level Vr(K) as respective functions of at least the number of groups K for which said spectral measures have been found;

(i) evaluating the test measure relative to said acceptance and rejection levels to determine if the difference between the first and second averaged waveforms, as reflected in said test measure V(K), is likely to correspond to the presence of a significant evoked potential in response to said stimulus, or to the absence of said potential, or to an uncertainty as to the presence or absence of said potential;

(j) in case the determination results in a finding of uncertainty, repeating the sequence of steps (a) through (i) using successively incremented values of K(min) in step (f) until step (i) yields a determination of either the likely presence of said potential or steps (a) through (i) have been repeated a selected maximum number of times such that K=K(max); and

(k) producing a tangible representation of said determination.

4,493,328

APPARATUS FOR TREATING SPASMODIC TORTICOLLIS

Iwao Saito, International House, 3701 Chestnut St., Philadelphia, Pa. 19014

Filed Jul. 2, 1982, Ser. No. 394,835
Int. Cl.[3] A61B 5/10
U.S. Cl. 128—782 8 Claims



1. An apparatus for treating spasmodic torticollis, comprising:

means for emitting a beam of light;

means for fastening said light emitting means to the head of a person being treated;

a photosensor which responds to a light beam from said light emitting means to change an output thereof;

means adapted to be attached to the trunk of a person for supporting said photosensor in a fixed position with respect to the trunk of the person so that said photosensor may receive a light beam from said light emitting means while the person holds his head in a mid position;

a switching circuit connected to said photosensor, which responds to an output from said photosensor to control a circuit output thereof;

an operant connected to said circuit, which responds to the output from said switching circuit to produce an effect on the person;

an accumulator connected to said circuit, which responds to the output from said switching circuit to produce an elec-

trical signal which is directly proportional to the time period during which said switching circuit is producing the circuit output; and

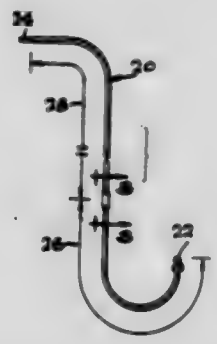
display means connected to said accumulator which responds to an electrical signal from said accumulator to provide a display indicative of the total time period during which the person has been able to hold his head in the mid position.

4,493,329

IMPLANTABLE ELECTRODE HAVING DIFFERENT STIFFENING AND CURVATURE MAINTAINING CHARACTERISTICS ALONG ITS LENGTH

Lynn Crawford, 27406 Diane Marie Cir., and William A. McArthur, 27544 Lovage Ct., both of, Saugus, Calif. 91350

Filed Aug. 19, 1982, Ser. No. 409,393
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—786 11 Claims



1. In a medical electrode for conducting an electrical stimulation pulse from a pulse generator to a location within a living body, said electrode being encased in an encasing material which is generally inert to body fluids and terminating in an exposed, electrically conductive electrode tip, an improved electrode comprising:

at least one spirally-wound continuous portion of a predetermined length one end of which is connected to the electrode tip, said spirals defining a cylinder having a predetermined diameter; and

at least one spirally-wound stiffening and curvature-maintaining portion having a length less than one half of said predetermined length, said stiffening and curvature-maintaining portion spirals defining a cylinder having substantially the same predetermined diameter as that defined by said continuous portion spirals, the spirals of said stiffening and curvature-maintaining portion being located in a juxtapositional relationship with respect to the spirals of a portion of said continuous portion, said stiffening and curvature-maintaining portion being located within the half of said continuous portion proximal to said electrode tip, said continuous portion and stiffening and curvature-maintaining portion combination providing greater stiffness and curvature maintenance than said continuous portion alone.

4,493,330

TOBACCO STRIPPER AND GRADING MACHINE

Norris Price, Rte. 1, Sargeisville, Tenn. 37873

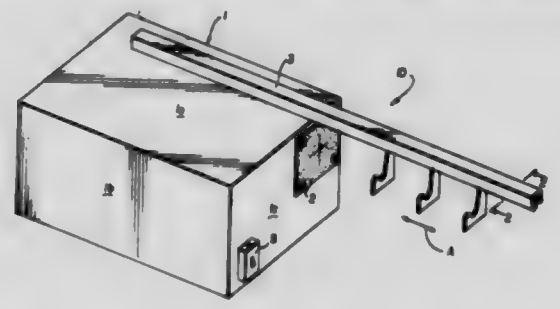
Filed Dec. 30, 1982, Ser. No. 454,578
Int. Cl.³ A01D *45/16*
U.S. Cl. 130—31 R 14 Claims

1. A device for grading into two or more grades and then stripping tobacco leaves or the like from the associated stalk, the device comprising:

support means supporting the stalk and including grading means movably mounted on said support means, said grading means including partitions which segregate respective groups of leaves on the stalk into corresponding grades,

stripping means positioned adjacent to one end of said support means adapted to allow the stalk to pass therethrough but retain the leaves still segregated into grades by said partitions, and

means for advancing the stalk through said stripping means,



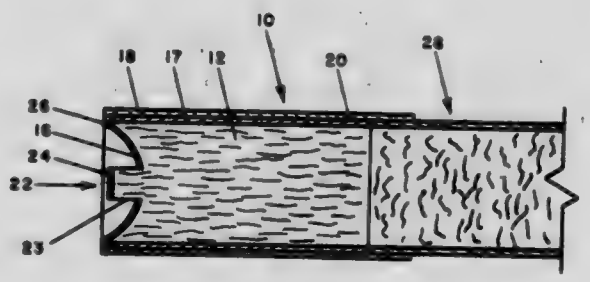
said grading means including said partitions with the respective groups of leaves being advanced toward said stripping means as the stalk advances and said grading means maintaining the groups of leaves segregated during stripping.

4,493,331

CIGARETTE FILTER

Harry S. Poreuski, Jr., Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Aug. 2, 1982, Ser. No. 404,107
Int. Cl.³ A24D *3/04*
U.S. Cl. 131—336 12 Claims



1. A filter for a cigarette comprising:

a filter rod fabricated of a smoke permeable material and being of generally cylindrical configuration having opposed smoke inlet and outlet ends;

said mouth end including a protrusion integral with and in smoke flow communication with the smoke permeable material and coaxially projecting outwardly from said filter rod, the peripheral wall of said protrusion being smoke permeable, the remaining portion of said mouth end of said filter rod being impermeable.

4,493,332

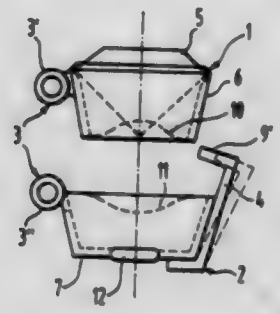
HAIR CLIP

Wolfgang Burger, Ritterstrasse 19, DE-3260 Rinteln 1, Fed. Rep. of Germany

Filed Feb. 7, 1983, Ser. No. 464,141
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1982, 8203375[U]
Int. Cl.³ A45D *8/00*
U.S. Cl. 132—46 A 6 Claims

1. A hair clip for use as a hair ornament comprised of an ornamental stone or element in a setting means, a clip member which is directly connected to the setting means and being sized and shaped to essentially lie hidden behind the ornamental stone and means for removably securing said clip member to said setting means with a limited quantity of hair being

retained therebetween wherein said clip member has a frusto-conical shape with tapered interior and exterior side walls and



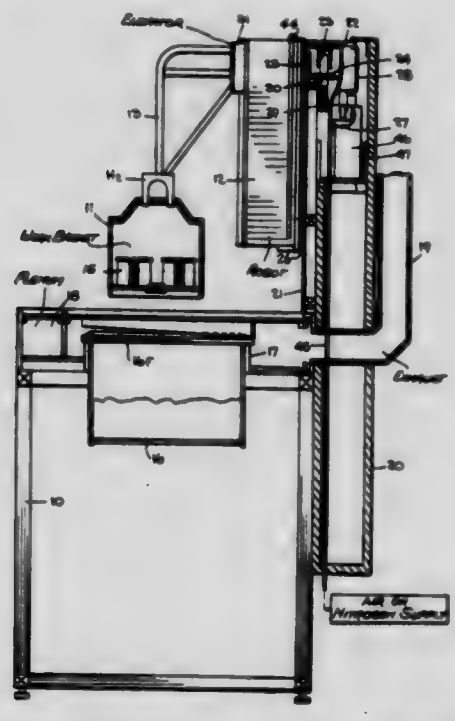
said setting means has a frusto-conical shape and is sized so as to fit within said clip member.

4,493,333

CORROSION-RESISTANT WORK TRANSFER SYSTEM

Howard M. Layton, New Fairfield, Conn., assignor to Interlab, Inc., Danbury, Conn.

Continuation-in-part of Ser. No. 443,894, Nov. 23, 1982, Pat. No. 4,466,454. This application May 13, 1983, Ser. No. 494,383
Int. Cl.³ B08B *3/04*
U.S. Cl. 134—76 9 Claims



1. In combination with a work station provided with a bench having a row of chemical processing stages thereon, each having a tank adapted to receive a handled basket carrying the work, the environment above the stages being chemically corrosive, and an automated work transfer system to convey said basket in a desired sequence to said stages, said system comprising:

A. An apron vertically mounted above said work bench at the rear thereof to provide a barrier between said corrosive environment and the region behind the apron; said apron at its rear supporting a horizontal track adjacent the top of the apron;

B. a robot assembly riding on said track, said assembly including a robot positioned in front of said apron, a plate extending from the upper end of the robot and projecting over the top of the apron into said rear region, load-bearing wheels supported by said plate and running on said track, a horizontal rack mounted below said track, and an external motor supported from said plate, the shaft of the motor having a pinion thereon which engages said rack to cause said assembly to travel along said track to a position in line with a selected tank in said row;

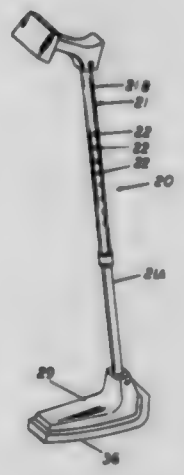
C. an elevator carriage which rides up and down the front face of the robot and is provided with a hoisting arm having a hand adapted to engage the handle of said basket, said carriage being driven by an internal motor disposed in said robot to cause the carriage to lower the basket into the selected tank and to thereafter lift the basket therefrom.

4,493,334

WALKING AID

Stephen Semeschik, 21 Lance Cir., Bldg. G, Bridgeport, Conn. 06606, and George Menei, 640 W. 231st St., Bronx, N.Y. 10463

Filed Sep. 30, 1982, Ser. No. 429,111
Int. Cl.³ A45B *9/00*; A61H *3/00*
U.S. Cl. 135—75 5 Claims



1. A walking aid comprising:

an elongated shaft capable of supporting a person's weight,

a foot pad simulating an anatomical foot having a toe portion,

a heel portion, and an arcuate sole portion extending between said toe and heel portion,

said shaft being fixedly connected to said foot pad at a point in line with said heel portion whereby said shaft is normally inclined upwardly and forwardly,

a handle means connected to the upper end of said shaft,

said handle means including a portion cantileverly supported on said shaft and projecting anteriorly of said shaft and upwardly of said shaft,

said handle having a relatively wide intermediate portion inclined upwardly and forwardly so as to position the wrist of the user in radial deviation and extension and whereby the user's weight is distributed on the hypothenar eminence of the user's hand,

and said handle means is positioned on said shaft relative to said foot pad so that said handle means together with the arcuate sole portion of said foot pad is on the arc of a circle to simulate the movement of an anatomical foot by imitating the phases of a normal gait such as a heel strike, foot flat and toe off, during use, and

said foot pad and connected shaft and handle means being balanced so that said aid is naturally maintained in an upright position.

4,493,335

SHEAR VALVE

Richard R. Watson, Bellaire, Tex., assignor to Gilmore Valve Company, Bellaire, Tex.

Filed Jul. 15, 1982, Ser. No. 398,758
Int. Cl.³ F16K *3/18*
U.S. Cl. 137—116.3 9 Claims

1. A valve comprising a hollow body providing a valve chamber and having a supply port, a regulated port, and a vent port;

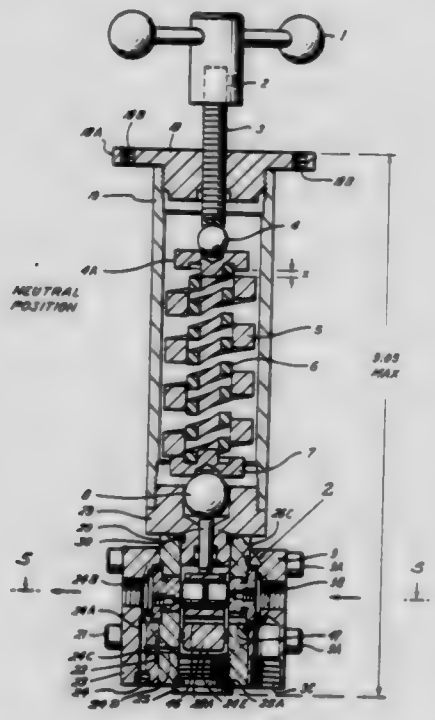
a valve member mounted for movement in said chamber of said body along a certain direction defining the valve axis;

said valve member having fluid passage means extending therethrough transversely of said axis;

mounting means mounting said valve member for said axial movement, said mounting means mounting said valve member for movement inside said body relative to said ports between

(a) a group of supply positions in which said regulated port and supply port are to varying degrees in communication through said passage means and said vent port is blocked off from said regulated port and supply port,

(b) at least one neutral position in which all three of said ports are blocked off from each other, and



(c) a group of vent positions in which said regulated port and vent port are to varying degrees in communication and said supply port is blocked off from said regulated port and vent port,

resilient means urging said valve member toward said group of supply positions, and

piston means to urge said valve member toward said group of vent positions,

said regulated port when said valve is in said supply positions communicating with said supply port solely through said passage means in said valve member without communicating with said chamber in the valve body in which said valve members moves, said chamber at all times being in communication with said vent port.

4,493,336

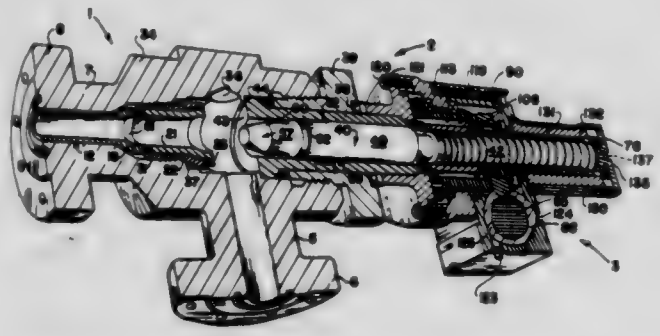
HYDRAULIC CHOKING DEVICE

Wesley E. Renfro, 2804 Broadmoor, Houma, La. 70360

Continuation-in-part of Ser. No. 160,972, Sep. 26, 1980, abandoned. This application Aug. 27, 1982, Ser. No. 412,131

Int. Cl.[3] F16K *1/08, 1/38, 1/42, 31/16*

U.S. Cl. 137—312 7 Claims



1. A hydraulic choking device to be installed on a high pressure fluid well member to control flow of fluids from wells which comprises:

(a) a choke housing assembly having:

(i) a choke housing body provided with an exit passageway having an exit opening at one end and a ball nose plug entrance opening at its opposite end, the passageway being provided with a cavity in its sidewall perpendicular to the passageway, and provided with a shoulder stud perpendicularly attached to the housing body and having a fluid entry passageway opening into the housing body passageway directly opposite the cavity, the shoulder stud being attachable to the fluid well member for the fluid entry passageway to receive the well fluids,

(ii) a wear sleeve assembly attached to the choke housing body passageway sidewall at the exit opening end and having an entry wear sleeve and a down stream wear sleeve, the entry wear sleeve having an outwardly flared opening to receive the fluids and direct them through the down stream wear sleeve which is also provided with a flared opening to receive the fluids and direct them through an opening of a ball nose plug seat;

(b) a choke actuator assembly having:

(i) a choke actuator body sealingly attached to said choke housing body and having a choke actuator passageway extending there through and aligned with said choke housing exit passageway,

(ii) sealing means positioned in circular grooves cut in the interior wall surface of said choke actuator body and extending out in sealing contact with said choke plug; and,

(c) a drive assembly having means to engage said choke plug body to move said choke plug in sealing contact with said wear sleeve assembly.

4,493,337

DEVICE ON A VALVE FOR SHUTTING OFF AND/OR CONTROLLING A FLOW OF LIQUID

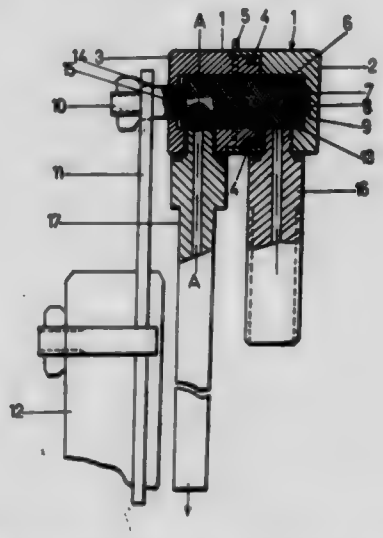
Egil S. Solvang, Postdamveien 15, N-Oslo 11, Norway

Continuation of Ser. No. 212,741, filed as PCT No. 80/00011, Apr. 1, 1980, published as WO 80/02171, Oct. 16, 1980, § 102(e) date Dec. 3, 1980, abandoned. This application Dec. 15, 1982, Ser. No. 450,147

Claims priority, application Norway, Apr. 6, 1979, 791170; 04011980, Apr. 1, 1980, PCT/NO80/00011

Int. Cl.[3] F16K *15/04, 5/06*

U.S. Cl. 137—449 2 Claims



1. An assembly for controlling the flow of water in a toilet tank cistern comprising:

a water-tight two-piece valve box in said cistern having a fluid inlet communicating with a source of pressurized fluid, a fluid outlet communicating with the cistern, and a cylindrical chamber for supporting a valve body permitting fluid communication between said inlet and said outlet;

a cylindrical valve body supported for axial rotation within

said chamber by means of a dowel at one end thereof engaging a recess in said valve box and a journal at the other end thereof passing through a corresponding aperture in said valve box, said valve body being of sufficiently small diameter to permit fluid communication between said inlet and said outlet;

a valve assembly comprising: a blind hole in said valve body positioned for alignment with said fluid outlet; a displaceable ball valve freely movable within said blind hole; said blind hole being of a depth so that it will at least hold the entire ball and the walls of said blind hole being such that the liquid under pressure is free to flow into a space in the blind hole behind the ball; and a valve seat adapted to receive said ball valve and form a closure therewith, said valve seat being positioned at the point of intersection of said cylindrical chamber and said fluid outlet;

a float device within the cistern operatively associated with the journal of said cylindrical valve body so that the raising or lowering of said float device rotates said valve body about its axis within said chamber between a first position wherein said blind hole overlies said fluid outlet and a plurality of other positions wherein said bore is displaced from said first position;

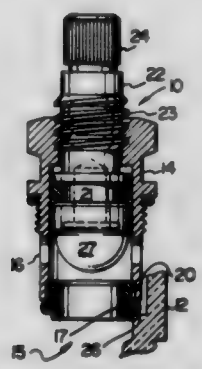
whereby when the valve body is displaced from its first position fluid enters the cylindrical chamber through the inlet, passes between the walls of the chamber and the cylindrical valve body, and exits from the chamber through the outlet, and when the valve body returns to its first position the low pressure in the outlet compared to the higher pressure in the chamber causes the ball valve to positively sit on the valve seat and close the outlet.

4,493,338

WASHERLESS FAUCET

Sigurdur G. Petursson, Mississauga, Canada, assignor to Waltec, Inc., Ontario, Canada

Filed Dec. 14, 1982, Ser. No. 449,770
Claims priority, application Canada, Jan. 27, 1982, 395006
Int. Cl.³ F16K *25/00*
U.S. Cl. 137—454.2 5 Claims



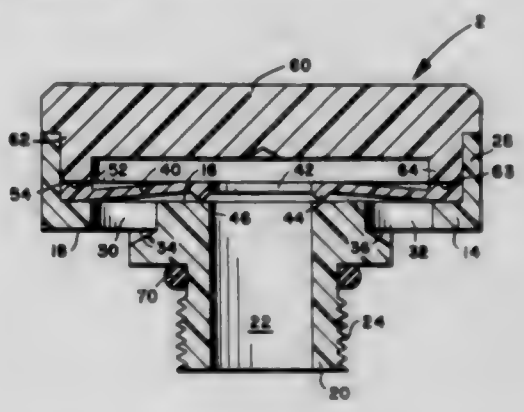
1. A removable cartridge for a fluid valve comprising a body member having an axial inlet opening at one end and at least one transverse outlet opening, a valve seat secured in said inlet opening, and valve means positioned in said body member for axial movement toward and away from said valve seat, said valve seat including a part extending beyond said body member adapted to receive an O-ring for providing a seal with a housing in which said cartridge is received, wherein said valve means includes a stem portion and a closure portion, said stem portion having male threads cooperating with female threads in said body member whereby rotation of said stem portion moves the valve means axially towards or away from said valve seat, said closure portion being rotatably mounted in said stem portion whereby said stem portion may be rotated without rotating said closure portion when it engages said valve seat, wherein said valve seat comprises an outer metallic portion having a first flat annular seat and an inner annular portion of resilient material providing a second seat and wherein said valve means has an outer flat annular portion engageable with said first seat and a second spherically shaped portion engageable with said second seat.

4,493,339

AIR VALVE FOR A BREATHING SYSTEM

George K. Porter, Jr., Maple Glen, Pa., assignor to Porter Instrument Company, Inc., Hatfield, Pa.

Filed May 5, 1982, Ser. No. 374,945
Int. Cl.³ F16K *17/164*
U.S. Cl. 137—510 2 Claims



1. An emergency air valve for a system for administering an anesthetic gas comprising:

a circular plate having a flat top surface and a bottom surface and a central opening therethrough for the passage of a gas, and

a resilient diaphragm overlying the top surface of the plate and having a central opening aligned with the opening in the plate,

said diagragm having an upper surface, a lower surface, an outer annular region and a flat intermediate region surrounding said central opening, said diaphragm capable of assuming a first undistorted position in which said intermediate region remains flat and a second distorted position in which said intermediate region is flexed, said diaphragm further includes a circular portion with a sharp edge depending from said lower surface and surrounding said central opening, said sharp edge adapted to contact the top of the plate surrounding the opening in the plate to effect a seal between the diaphragm and the top of the plate, said sharp edge being lower than the bottom surface of the diaphragm when said diaphragm is in its first position,

cap means mounted on the plate and bearing on the outer annular region of the diaphragm for securing the outer region of the diaphragm to the top surface of the plate at a substantial distance from said depending portion thereby distorting said intermediate region and urging the sharp edge toward the top surface of the plate and forming with the diaphragm a closed chamber above the diaphragm, said plate also forming with the diaphragm in its second distorted position a chamber below the diaphragm,

said plate having at least one other opening therethrough communicating the chamber below the diaphragm to the atmosphere.

4,493,340

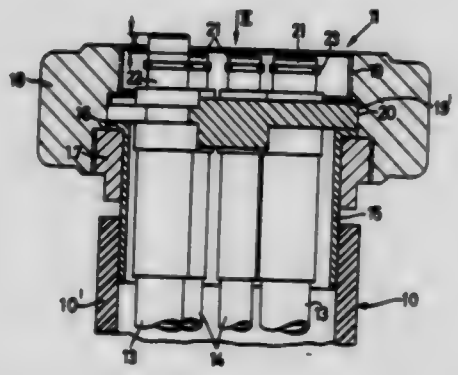
HYDRAULIC COUPLING

Walter Weirich, Dortmund, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 430,179
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1981, 3141475
Int. Cl.³ F16L *39/00*
U.S. Cl. 137—594 8 Claims

1. A hydraulic coupling for advanceable roof support assemblies and the like in an underground mine working, comprising,

in combination, a coupling device (11) and a connector (12), the coupling device comprising a casing (15, 17, 18), a holder (20) disposed within the casing, a plurality of plug pins (21, 22) held by the holder and housed within the casing, and the connector having a plurality of sockets (27, 28), the plug pins each being connected to a respective line (13, 14) of a multi-line hose (10) and the plug pins each being engageable within a socket of the connector to define a plurality of fluid passageways, wherein one of the passageways is provided with a non-return valve (30) for preventing fluid flow through said one passageway when the connector is separated from the coupling device, wherein each of the sockets constitutes part of a respective bore passing through the connector, wherein the non-return



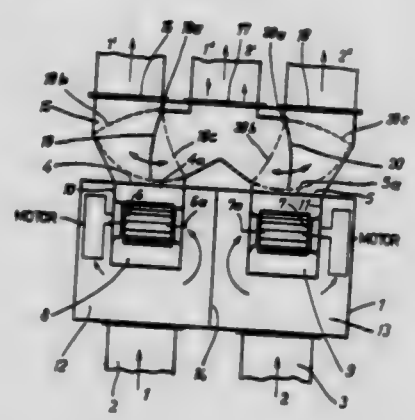
valve is positioned within a bore which defines part of the passageway associated with the valve, wherein one of the plug pins (22) is longer than the other plug pins and forms a valve-opening device which mates with the socket forming part of the passageway containing the non-return valve when the connector is joined to the coupling device, wherein said one plug pin constitutes an alignment pin for accurately aligning all of the plug pins within corresponding sockets of the connector, and wherein the non-return valve comprises an actuating plunger (37, 38) positioned within the bore which defines part of the passageway associated with the valve, the plunger being engageable with said one plug pin when the connector is joined to the coupling device.

4,493,341

BLOWER UNIT FOR AIR-CONDITIONING PLANT

Heinz Wieland, Waldenburg, Fed. Rep. of Germany, assignor to Wilhelm Gebhardt GmbH, Waldenburg, Fed. Rep. of Germany

Filed Nov. 17, 1982, Ser. No. 442,272
Int. Cl.³ F17D *1/04*
U.S. Cl. 137—597 10 Claims



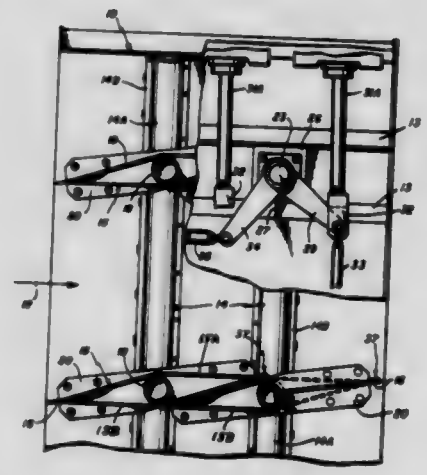
1. A blower unit comprising:
an outer housing defining a first and second chamber;
said outer housing having a first and second inlet and a first and second outlet being separated from each other and said inlets and outlets in communication with the respective first and second chambers;
first and second blowers having impellers and being fixedly mounted in an axially direction in said respective first and second chambers;
a distributor unit having a first and second inlet separated from each other and being connected to respective first and second separated outlets of said outer housing and having first, second, and third outlet connectors;
a first gate in said distributor unit for directing flow from said first inlet of said distributor unit into said first and third outlet connectors in an adjustable proportion; and
a second gate for directing flow from said second inlet of said distributor unit into said second and third outlet connectors.

4,493,342

DOUBLE LOUVER DAMPER

Lothar Bachmann, Auburn, Me., assignor to Bachmann Industries, Inc., Lewiston, Me.

Filed Oct. 24, 1983, Ser. No. 545,001
Int. Cl.³ E06B *7/092*
U.S. Cl. 137—601 7 Claims



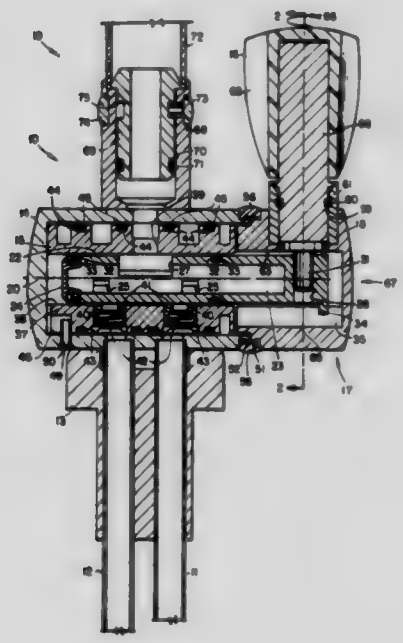
1. A double louver damper for a duct system to enable safe entry to be made therein, said damper including a rectangular frame dimensioned to be incorporated in the duct system, two series of the same number of blades of the same size and shape, means rotatably connecting each blade of each series to said frame with one series upstream relative to the other and with the axes of corresponding blades of the two series in the same plane, each blade in the form of an elongated diamond with its pivot axis at the center of the junction of first and second acutely angled portions including coplanar lengthwise and end sealing portions of the same radial extent and resiliently flexible sealing means, one for each series and attached to the frame to surround the flow path, and power operated means to pivot simultaneously all blades of both series between open and closed positions, in said closed position, the sealing portions of the blades of each series substantially in the same plane with the longitudinal and end sealing portions of adjacent blades overlapping and the corresponding portions of the remote blades and the end sealing portions of all blades in sealing engagement with the appropriate portions of the sealing means for that series, and the two series so spaced that in said open position the acutely angled first portions of one blade of each corresponding pair thereof so overlap the second portion of the other blade of that pair as to establish a closed streamlined figure the height of which is the maximum thickness of either blade.

4,493,343

SINGLE LEVER FAUCET ASSEMBLY

Don C. Arnold, Buffalo Grove, Ill., and Thomas J. Wilcox, East Troy, Wis., assignors to Indiana Brass, Inc., Frankfort, Ind.

Filed Apr. 13, 1983, Ser. No. 484,464
Int. Cl.³ F16K *11/02*
U.S. Cl. 137—625.17 12 Claims



1. A single lever faucet assembly, comprising:

a faucet base adapted to receive therein hot and cold water supply lines;

a valve cartridge received within said faucet base, said valve cartridge including

(a) a valve body, said valve body defining therein a cavity, said valve body further defining a pair of inlets communicating between said valve body cavity and said hot and cold water supply lines and an outlet communicating between said valve body cavity and the exterior of said valve body, and

(b) a valve spool axially rotatable and slidable within said valve body cavity along a first axis, said valve spool defining therein a mixing chamber, said valve spool further defining a first pair of inlets and an outlet, said valve spool inlets and outlet communicating between said mixing chamber and the exterior of said valve spool,

said valve cartridge for controlling the flow rate and temperature of water discharged through said valve body outlet and supplied from said hot and cold water supply lines by selective registry, partial registry or non-registry of said valve spool inlets with said valve body inlets;

a faucet spout mounted on said faucet base in such manner that said faucet spout is in flow communication with said valve body outlet;

a faucet control lever; and

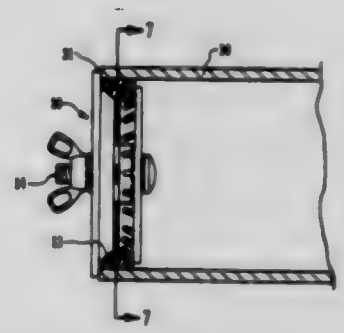
a linking means associated with said faucet control lever and said valve spool for linking said faucet control lever and said valve spool in such manner that the temperature and flow rate of water exiting said spout is independently controlled by separate-patterned movement of said faucet control lever, said linking means further for providing said faucet control lever with a square operating pattern of movement, the temperature of water exiting said spout being regulable by uniform movement of said faucet control lever at any set flow rate.

4,493,344

MECHANICAL PLUG DEVICE

Allen D. Mathison, Richfield; Dale E. Nelson, Minneapolis, and Lloyd G. Cherne, Edina, all of Minn., assignors to Cherne Industries, Inc., Minneapolis, Minn.

Filed Apr. 13, 1983, Ser. No. 484,172
Int. Cl.³ B65D *39/12*
U.S. Cl. 138—89 7 Claims



1. A mechanically hand operable mechanical plug device for the removable sealing of a conduit end, said device comprising:

(a) a narrow, elastomeric radially expandable O-ring having an essentially narrow outer circumferential surface for engaging the interior surface of a conduit, and an inner circumferential V-shaped cross section having inclined surfaces of a predetermined slope,

(b) specially parallel rigid plate members having interiorly facing tapered shoulders of the same said predetermined slope to engage the inclined surfaces of the O-ring, said narrow O-ring having a maximum body width of approximately twice the width of one said interiorly facing shoulders and having a circumferential outer surface width equal to or less than said O-ring body width, said plate members further comprising an inner circular plate member and an outer circular plate member, said inner plate member having a plurality of rib members extending radially from its tapered shoulders for gripping the inclined surface of the O-ring to prevent relative rotational movement between the inner plate member and the O-ring, said predetermined slopes of the O-ring inclined surfaces and the tapered shoulders of the inner and outer plate members being dependent upon the diametric dimensions of the O-ring and being in a range of 40 to 60 degrees as the diameter of the plug device varies to engage conduits of an inside diameter of approximately 1.5 to 8.0 inches, and,

(c) hand adjustable lateral force means operable on the parallel plate members, whereby, subsequent to the placement of the plug device into a conduit end, the positive adjustment of the lateral force means causes the sloped opposing shoulders to impart lateral forces to the inclined surfaces of the O-ring to, thereby, cause it to expand outwardly to seal a conduit, and, whereby, said narrow O-ring member reaches its sealing diameter before the inner and outer plate members make contact.

4,493,345

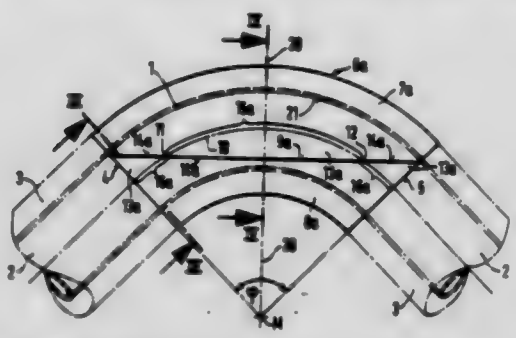
THERMAL INSULATION JACKET HAVING CURVED TUBE OR PIPE

Frank Ruechel, Ladenburg, Fed. Rep. of Germany, assignor to Isover Saint-Gobain, Neuilly-sur-Seine, France

Continuation of Ser. No. 255,338, Apr. 17, 1981, abandoned.
This application Jul. 22, 1983, Ser. No. 516,092
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1980, 3015013
Int. Cl.³ F16L *59/02*
U.S. Cl. 138—178 1 Claim

1. A jacket having a central axis and two opposite end surfaces with said jacket being formed of a thermal insulating material defined by two shell portions which interfit and register along individual partitioning surfaces to provide a complete

thermal insulation enclosure, said jacket having a curved outline along a plane of curvature and adapted to be received on a tube having a similarly curved outline and an axis both located in said plane of curvature and substantially coincident with the central axis of said jacket wherein said partitioning surfaces of each shell portion extend toward said tube in a direction substantially perpendicular to said plane of curvature and follow a path from one end surface of said jacket to the



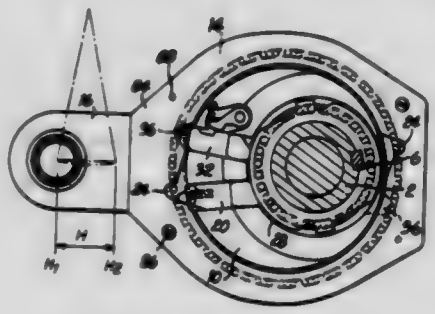
other end surface to intersect said coincident axes at two locations thereby to define at least one region in each shell portion which extends around the periphery of said tube throughout a distance greater than 180° and wherein the partitioning surface of each shell portion is defined by the surface of a circular cylinder in which the radius is greater than the radius of curvature of said tube and is substantially infinite such that each partitioning surface defined thereby is substantially planar.

4,493,346

COUPLING ARRANGEMENT USABLE IN A TEXTILE MACHINE

Francisco Speich, Gipf-Oberfrick, Switzerland, assignor to Textilma AG

Filed Dec. 30, 1981, Ser. No. 335,878
Claims priority, application Switzerland, Jan. 9, 1981, 103/81
Int. Cl.³ G05G *1/00*; F16D *13/04*, *11/06*; D03C *1/00*
U.S. Cl. 139—76
20 Claims



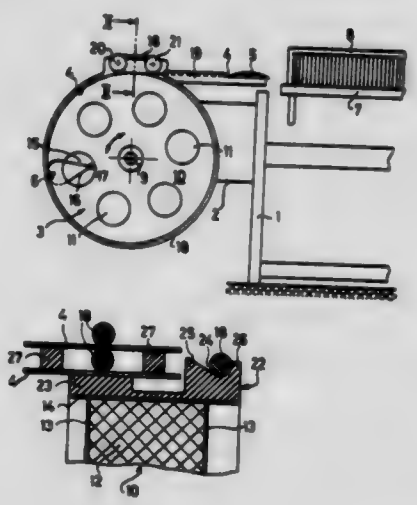
1. Coupling arrangement such as for a textile machine, comprising a drive shaft capable of intermittent rotation about the axis thereof, an eccentric hoop extending around said drive shaft, a connecting member extending around said drive shaft with said eccentric hoop located between said drive shaft and said connecting member and said connecting member being supported on said eccentric hoop, a coupling key movably guided on said eccentric hoop for movement in the direction of displacement thereof approximately radially of said drive shaft, a first coupling recess associated with said drive shaft, a second coupling recess associated with said connecting member with said first coupling recess being located radially inwardly from said second coupling recess, a shifting member arranged to displace said coupling key alternately between engagement with said first coupling recess or said second coupling recess, lead cams for guiding said coupling key and retaining said coupling key in the one of said first and second coupling recesses into which it is displaced, wherein the improvement comprises a retaining key movably guided on said eccentric hoop along a rectilinear direction of displacement extending approximately in the radial direction relative to said drive shaft and being movable independently of said coupling key, said retaining key relative to the axis of said drive shaft being spaced angularly from and being separate from said coupling key, a first retaining recess associated with said drive shaft and spaced angularly from said first coupling recess, a second retaining recess associated with said connecting member and spaced angularly from said second coupling recess, said first retaining recess being located radially inwardly from said second retaining recess, a first force application side on said retaining key extending at an acute angle relative to the direction of displacement of said retaining key, a corresponding first force application side in said first retaining recess, a second force application side in said retaining key having the same acute angle relative to the direction of displacement as said first force application side of said retaining key, a corresponding second force application side in said second retaining recess, a first control side on said retaining key extending at an acute angle relative to the direction of displacement of said retaining key with the acute angle of said first control side being larger than the acute angle of said first force application side relative to the direction of displacement, a corresponding first control side in said first retaining recess, a second control side of said retaining key having the same acute angle relative to the direction of displacement as said first control side of said retaining key, a corresponding second control side in said second retaining recess and said control surfaces on said retaining key and in said first and second retaining recesses provide a displacement of said retaining key out of the one of said first and second retaining recesses during operation of said coupling arrangement.

4,493,347

WEFT INSERTION DEVICE FOR A BAND-GRIPPER WEAVING MACHINE

Friedrich Lutz, Durnten, Switzerland, assignor to Ruti Machinery Works, Ltd., Ruti, Switzerland

Filed Sep. 9, 1982, Ser. No. 416,261
Claims priority, application Switzerland, Oct. 14, 1981, 6559/81
Int. Cl.³ D03D *47/00*
U.S. Cl. 139—449
11 Claims



1. A weft insertion device for use on a band-gripper weaving machine, said device comprising a driven, rotationally oscillating band wheel, a flexible insertion band having a gripper head and executing an oscillating movement into and out of a warp shed as the band unwinds from and winds onto an outer circumference of the band wheel respectively, guide means for preventing the insertion band from separating from the outer circumference of the band wheel, said guide means being a cable cut to an appropriate, fixed length and adapted to press against an outside surface of the insertion band, both ends of the cable being anchored to the band wheel, the circumference of the band wheel being smaller than a maximum excursion of the gripper head, the insertion band being wound around the circumference of the band wheel to the extent of more than 360° when the gripper head is in a position in which the gripper head is fully and maximally withdrawn from the warp shed,

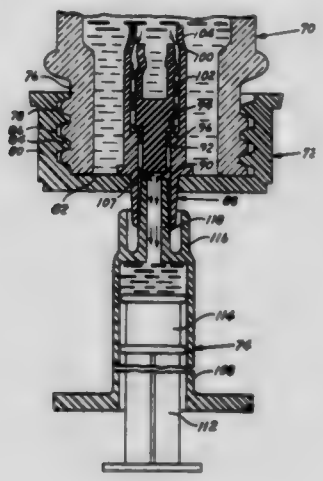
the cable pressing against the entire instantaneous length of the insertion band which is wound onto the band wheel, and in a winding overlap region of the insertion band, in which region two layers of the band are wound onto the band wheel, the outer layer of the insertion band rests on a first cable layer which presses against the inner layer of the insertion band, and said outer layer being held by a second cable layer on an outer surface of the outer band layer.

4,493,348

METHOD AND APPARATUS FOR ORALLY DISPENSING LIQUID MEDICATION

Joseph J. Lemmons, Colorado Springs, Colo., assignor to PUR-/ACC Corporation, Colorado Springs, Colo.

Continuation-in-part of Ser. No. 278,170, Jun. 29, 1981, abandoned. This application Jan. 5, 1983, Ser. No. 455,877
Int. Cl.³ B65B *1/04*
U.S. Cl. 141—1 5 Claims



3. A method for orally providing a patient with a desired amount of liquid medication, comprising the steps of:

providing a container having a neck with a threaded outer wall, said container housing liquid medication to be taken orally by the patient;

providing an integral one-piece coupling device having a bore, said coupling device including a skirt having an inner wall comprising threads;

matingly engaging said skirt and said neck using said threads of said inner wall and said threaded outer wall;

providing a valve member in said bore, said valve member being resiliently movable in a longitudinal direction between a first position wherein said valve member is in an open state and a second position wherein said valve member is in a closed state;

providing a syringe including a barrel and a plunger, said barrel having a tip extending from an end of said barrel;

inserting said tip of said syringe barrel into said bore;

contacting said valve member using said syringe barrel tip;

causing said valve member to move to its first position by moving said valve member in the longitudinal direction;

moving said plunger relative to said syringe barrel to cause said liquid medication to be received into said tip and then into said syringe barrel;

obtaining a desired amount of said liquid medication in said syringe barrel;

discontinuing the obtaining of said liquid medication into said syringe barrel; and

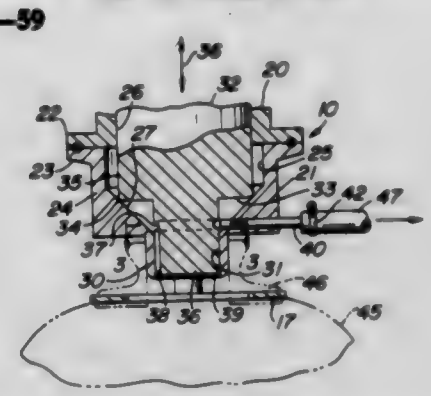
transferring said desired amount of liquid medication into the mouth of the patient.

4,493,349

LIQUID FILLING MACHINE

Daniel P. Pomponio, Sr., Cherry Hill, N.J., assignor to Precision Automation Co., Inc., Cherry Hill, N.J.

Filed Mar. 10, 1983, Ser. No. 473,779
Int. Cl.³ B65B *31/04*
U.S. Cl. 141—59 4 Claims



1. In a liquid filling machine, the combination comprising: a filling head for passing fill liquid to a container, a fill valve in said head for opening and closing said head to the passage to fill liquid, an outlet on said head downstream of said fill valve for hermetic communication with the container, a fluid conduit communicating with the interior of the filling head between said fill valve and outlet, and a vacuum source connected to said conduit for evacuating the container and filling head upstream to said fill valve prior to filling of the container, said filling head comprising an internally hollow member having an opening defining said outlet, said fill valve comprising a valve seat in said hollow member extending about said opening, and a valve member movable into and out of sealing engagement with said valve seat, said valve seat comprising a generally conical internal surface in said hollow member converging toward said opening for increasing the speed of fill liquid toward said opening, and said fluid conduit comprising a tubular member extending inwardly through and beyond said conical surface and terminating in an end surface lying in a plane generally longitudinally of the axis of said conical surface for effective protection of said end surface from fill liquid moving at increased speed and deflected by said tubular member away from said end surface.

4,493,350

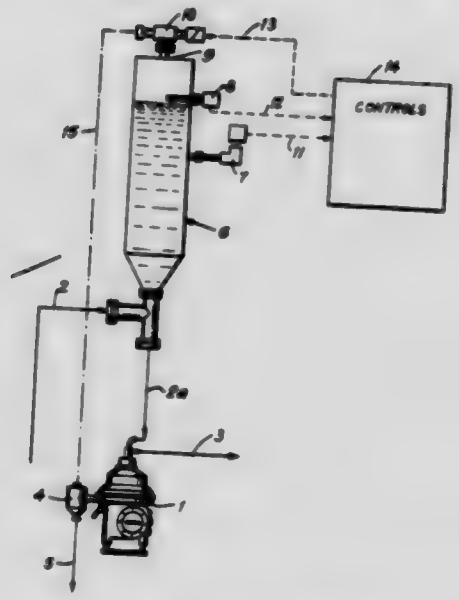
DEVICE FOR REMOVING AIR FROM HERMETIC, AUTOMATICALLY EMPTYING CENTRIFUGE DRUMS

Alfons G. Beikel, Ahlen, and Harald Jarosch, Warendorf, both of Fed. Rep. of Germany, assignors to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Filed Mar. 28, 1983, Ser. No. 479,784
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1982, 3213618
Int. Cl.³ B65B *31/04, 3/26*
U.S. Cl. 141—65 7 Claims

1. In a device for removing air from a system having a supply line and a removal line and including an air-removal valve in the supply line, the improvement comprising: an air-removal reservoir connected to the supply line and having a manometric switch and a level-sensitive switch thereto and having a head portion, wherein the air-removal valve is connected to the head portion of the reservoir and control means connected to the switches and the air-removal valve for opening the air-removal valve when the pressure in the reservoir exceeds a predetermined level and closing the air-removal

valve when the pressures drops below the level and maintaining the valve closed whenever the level of the liquid in the reservoir reaches the level of the level-sensitive switch regardless of the pressure level in the reservoir.

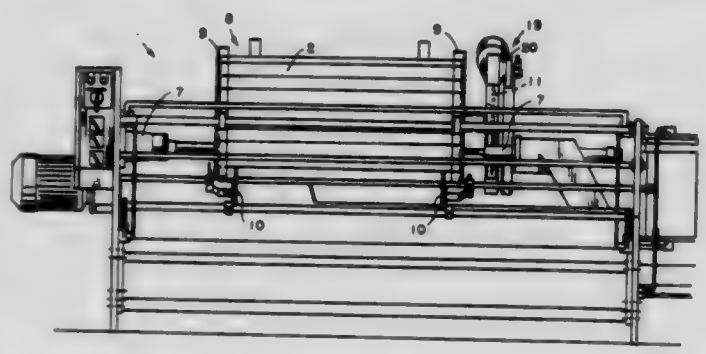


4,493,351

APPARATUS FOR COPY-MACHINING A WORKPIECE

Erich Schmidt, Mauerbach, Austria, assignor to MZW Maschinenfabrik Zackermann Pachtgesellschaft mbH, Austria

Filed Sep. 30, 1982, Ser. No. 429,433
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1981, 3138982
Int. Cl.³ B27C 5/00; B23Q 35/04
U.S. Cl. 144—3 R
9 Claims



1. In an apparatus for copying-machining a workpiece, including a disk miller assembly acting as a shaping tool and a grinding belt extending between return pulleys and acting as a surface finishing tool assembly, both said tool assemblies being mounted on pivot arms for pivotal displacement about pivot axes and adapted to be advanced along a rotating workpiece in sequence under the control of scanner means scanning a model, said disk miller rotating about an axis extending parallel to the rotary axis of the workpiece, the improvement wherein said grinding belt rotates between said pulleys adjacent to said disk miller with the axis of the pulleys being parallel to the rotary axis of the workpiece and with the pivot axis of the pivot arm of the grinding belt being co-axial with the pivot axis of the pivot arm of the disk miller.

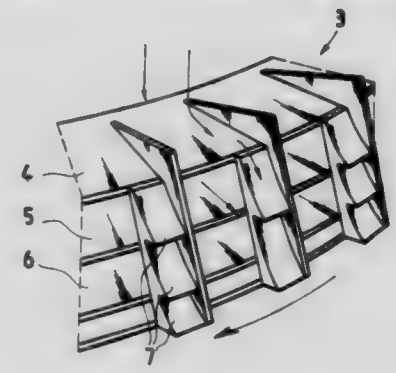
4,493,352

WOOD CHIP SHAVER

Matti Jaakonmäki, and Pentti Raura, both of Valko, Finland, assignors to Rauma-Repola Oy, Finland

Filed Jan. 10, 1983, Ser. No. 456,744
Claims priority, application Finland, Jan. 12, 1982, 820097
Int. Cl.³ B27C 1/00
U.S. Cl. 144—162 R
3 Claims

1. Wood chip shaver comprising a rotor, a vertical drive shaft for said rotor, said rotor being rotatable about said drive shaft, cutting blades disposed on a circle around the outside of said rotor, chip guide means carried by said rotor, and a plurality of chip guide plates carried by said rotor, said chip guide plates being disposed on top of each other.

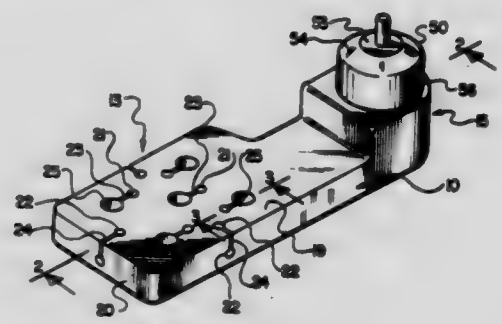


4,493,353

NAIL GUIDE AND SET

John Thomas, 2984 Canna St., Thousand Oaks, Calif. 91360

Filed Feb. 15, 1984, Ser. No. 580,564
Int. Cl.³ B25C 3/00
U.S. Cl. 145—46
18 Claims



1. A tool for use in driving nails into a workpiece comprising:

(a) a base member formed of resilient material having a generally flat bottom surface for being supported on the workpiece;

(b) guide means formed of rigid material in the base member having a central opening for receiving a nail for movement through the bottom portion of the central opening;

(c) a rigid cap member on the base member above the guide means having an aperture through it; and

(d) impact transmission means in the aperture of the cap means and extending into the opening in the guide means above the nail for transmitting impact from a hammer to the nail.

4,493,354

TIRE CHAIN

Henry G. St. Pierre, 311 E. Mountain St., Worcester, Mass. 01606

Filed Feb. 22, 1984, Ser. No. 582,294
Int. Cl.³ B60C 27/06
U.S. Cl. 152—242
10 Claims

1. Tire chain, comprising:

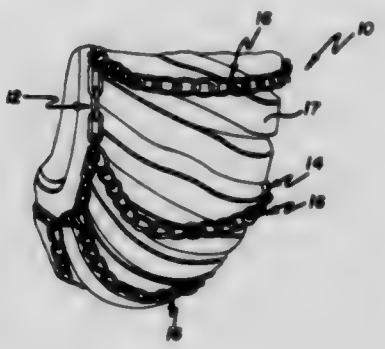
(a) two spaced, parallel side chains,

(b) a plurality of cross chains joining the side chains at spaced intervals,

(c) a hook element on each end of each cross chain, and

(d) a junction link in each side chain to which each hook element is connected, each hook element consisting of a bight lying in a first plane and two legs overlying the bight having free ends that are spaced from the bight a distance

less than the thickness of the junction link, the junction link having two spaced parallel notches to permit the entry of the junction link into the hook element between the said free ends and the bight.



4,493,355

VEHICLE TIRE

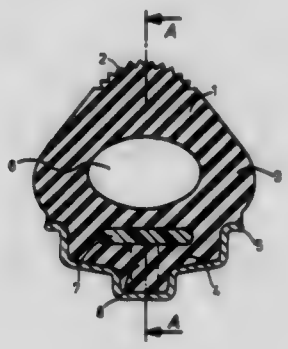
Jakob Ippen, Leverkusen, and Friedel Stüttgen, Pulheim, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 11, 1982, Ser. No. 338,356

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1981, 3101408

Int. Cl.³ B60C 7/00, 7/12

U.S. Cl. 152—329 8 Claims



1. A vehicle rim and vehicle tire consisting of a base, side walls and a tread merging with one another, characterized in that the tire has a continuous encircling empty space of substantially constant cross-section throughout located between the base and tread, the cross-section of the tread increases in thickness towards its zenith so that the moment of inertia of the tread is at least six times greater than that of the side walls, and the base of the tire inwardly of the encircling empty space contains an annular reinforcement of plastic material hardened after the tire is fitted on the rim to prevent the tire from being removed from the rim.

4,493,356

ROLLER SHUTTER INSTALLATION AND SAFETY APPARATUS

Bruno Hermann, deceased, late of Kelters-Dietlingen, Fed. Rep. of Germany (by Eleonore Hermann, heir), and Axel Hermann, Pforzheim, Fed. Rep. of Germany, assignors to Hermann Haus GmbH, Pforzheim, Fed. Rep. of Germany

Filed Aug. 26, 1983, Ser. No. 526,680

Int. Cl.³ E06B 9/209

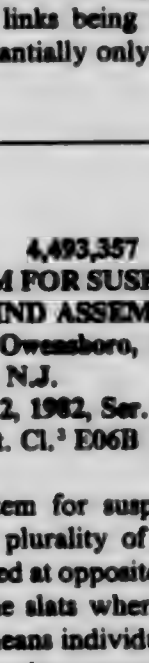
U.S. Cl. 160—133 28 Claims

1. In a roller shutter installation comprising

a roller shutter comprising a plurality of parallel horizontal slats, which are adapted to be pulled apart,

two channel-shaped shutter rails, each of which has mutually opposite legs and which are disposed on opposite sides of said roller shutter and adapted to receive ends of each of said slats, each of said rails having a vertical lower portion in which said ends of said slats are adapted to slide down to a position in which said shutter is in a closed position,

a safety apparatus for locking said roller shutter against being pushed up from said closed position, said safety apparatus comprising a locking device, which is connected at a first mounting point to one end of a first one of said slats and at a second mounting point to the corresponding end of a second one of said slats, which is disposed below said first slat when said shutter is in said closed position, said locking device being arranged to exert a wedging action on said mutually opposite legs of the adjacent one of said shutter rails in response to an upward pushing force exerted on said second slat when



said shutter is in said closed position, whereas said locking device permits said shutter to be raised from said closed position by an upwardly directed pulling force exerted on said slats and tending to move said first and second slats apart,

the improvement residing in that said locking device comprises a chain having a lower end portion connected to said second shutter slat at said second mounting point and

said chain consists of a plurality of flat links, each of which has mutually opposite, sharp end portions and is pivoted to adjacent ones of said links on respective axes which extend substantially in the longitudinal direction of said slats, each of said links being movable relative to said adjacent links substantially only about said axes.

4,493,357

SUSPENSION SYSTEM FOR SUSPENDING A VENETIAN BLIND ASSEMBLY

Richard N. Anderson, Owensboro, Ky., assignor to Hunter Douglas Inc., Totowa, N.J.

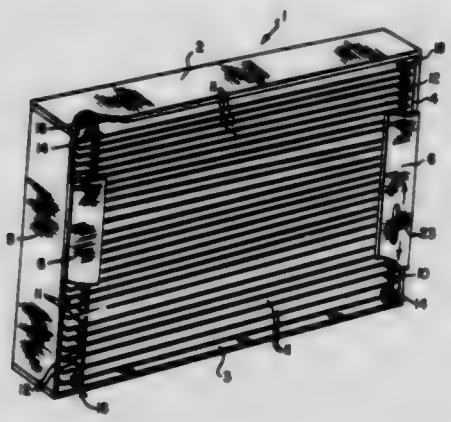
Filed Dec. 2, 1982, Ser. No. 446,386

Int. Cl.³ E06B 9/26

U.S. Cl. 160—174 10 Claims

1. A suspension system for suspending a venetian blind assembly comprising a plurality of slats between two fixed frame members positioned at opposite ends of the assembly and extending parallel to the slats where said system includes at least two slat support means individually and tiltably supporting said slats, a pivot member connected to at least one end of each slat support means, and a hanger means connecting at least one pivot member connected with a single slat support means to a fixed frame member, characterized in that said hanger means is pivotally connected at one end to a fixed frame

member and pivotally connected at its other end to a pivot member whereby said pivot member is pivotal about two axes



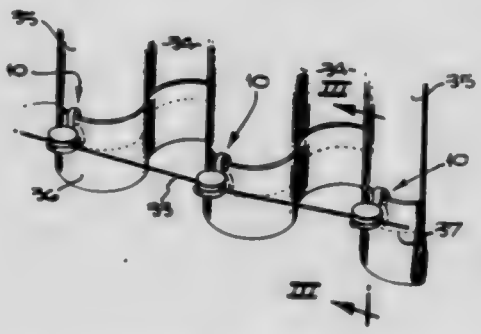
with respect to the fixed frame member with said two axes extending substantially parallel to the axes of tilt of said slats.

4,493,358

APPARATUS AND METHOD FOR RETAINING PLEATS IN HANGING DRAPERIES

Jeff A. Jacobson, 22 Woodbgrove, Irvine, Calif. 92714

Filed Apr. 17, 1981, Ser. No. 255,332
Int. Cl.[3] A47H *13/14*; F16G *11/00*
U.S. Cl. 160—349 R 1 Claim



1. Apparatus for maintaining a plurality of pleats formed in a hanging drapery hanging from a drapery rod or the like a predetermined distance apart, each of said pleats having a portion folded up from the bottom of said drapery having a hem comprising:

an elongated resilient cord extending along substantially the bottom of said pleats generally normally to the longitudinal axis of said pleats and generally parallel to the drapery rod from which the drapery hangs;

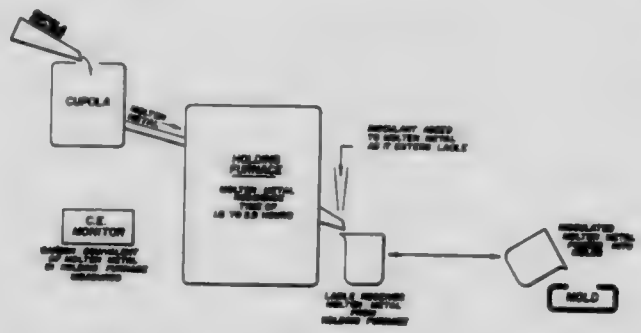
a plurality of fasteners coupled to both said cord and successive ones of said pleats at spaced locations along said cord, each of said fasteners including a generally circular pin receiving member having an aperture therethrough, an elongated first flexible member inter-connecting said pin receiving member to a generally circular first body member, said first body member having a shallow groove extending across the face thereof in a direction generally normal to the longitudinal axis of said first flexible member, at least one cord piercing element disposed in said groove, at least one protuberance receiving cavity also disposed in said first body member, an elongated second flexible member interconnecting said first body member to a second generally circular body member, said second elongated flexible member having its longitudinal axis coincident with the longitudinal axis of said first flexible member and being substantially shorter in length than said first flexible member, said second body member also having a shallow groove extending across the face thereof in a direction generally normal to the longitudinal axes of said first and second elongated flexible members, said last mentioned shallow groove also having at least one cord piercing element therein, and said second body member having at least one protuberance of a configuration generally the same as said protuberance receiving cavity and receivable therein when the face of said first and second body members are brought together by folding of said second flexible memeber, the depth of said cavity being generally related to the thickness of said protuberance and adapted to releasably snap together so that, when brought together by folding, said first and second body members form a cord holding body with said faces abutting against each other and said grooves aligning with each other, an elongated substantially rigid member extending from said second body member having its longitudinal axis essentially coincident with the longitudinal axes of said first and second elongated flexible members, said rigid member terminating in a generally rigid sharp point having a generally triangular cross-section with the apex thereof extending away from said rigid member and the base thereof being adjacent said rigid member having a width greater than the width of said rigid member thereby forming a shoulder, each of said first flexible members being folded over the top of each hem of said successive pleat so that each of said pin receiving members is disposed between the inside of the fold of said pleat and said drapery, each said fastener being folded about said second flexible member with said faces abutting against each other and said protuberance entering said cavity, said elongated resilient cord being disposed in said aligned grooves with said elements piercing said cord, the overall diameter of said aligned grooves being generally the same as the diameter of said cord, said sharp point piercing the fold hem of each of said pleats from the outside of said fold to the inside thereof and passing through said apertures in each of said pin receiving members, said shoulder abutting against the furthest side of said pin receiving member to retain said sharp point through said aperture yet permitting said sharp point to be removed from said aperture by pushing it in a reversed direction out of said aperture, the resilience of said pin receiving member permitting the same so that each of said fasteners are removably secured to successive pleats and each of said fasteners can be relocated along said cord to change the depth of said pleats.

4,493,359

METHOD FOR MAKING CAST IRON ENGINE BLOCKS AND THE LIKE

Joseph A. Bostater, Port Huron, Mich.; Angus J. MacGregor, Corunna, and Aaron A. Gesicki, Sarnia, both of Canada, assignors to American Motors (Canada) Inc., Brampton, Canada

Filed Jul. 17, 1981, Ser. No. 284,028
Int. Cl.[3] B22D *27/20*
U.S. Cl. 164—58.1 5 Claims



1. A method for manufacturing machinable grey iron castings comprising: continuously making molten grey iron in a cupola or the like metal remelting furnace, feeding the molten grey iron into a holding furnace, withdrawing molten grey iron from the holding furnace, inoculating the withdrawn molten grey iron with a nucleating agent and then pouring the inoculated molten grey iron, at a temperature of from about 1400° C. to 1500° C. into cored molds for cooling and solidification thereof thereby to form thin-walled castings for use as

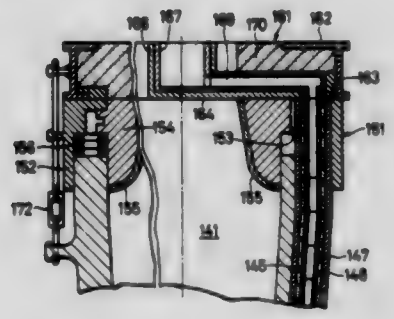
engine blocks and the like with nominal wall thicknesses of about 0.150 inch; the molten grey iron in said holding furnace being brought to and maintained at a relatively uniform temperature throughout its mass of from about 1420° C. to 1560° C. and from about 20° C. to 60° C. higher than the temperature of the molten metal when it is poured into the cored molds, the amount of molten grey iron in said holding furnace being from one and one-half to two and one-half times the amount withdrawn per hour from the holding furnace whereby the residence time of the molten grey iron in the holding furnace is from one and one-half to two and one-half hours; and the carbon equivalent of the molten grey iron in said holding furnace being monitored and being maintained below that desired for the molten grey iron when it is poured into the molds, the amount of nucleating agent with which the withdrawn molten grey iron is inoculated being such as to raise the carbon equivalent of the molten grey iron to that desired when the molten grey iron is poured into the cored molds.

4,493,360

APPARATUS FOR ROTARY CASTING INGOTS

Hiroyuki Takahashi, Yokosuka, and Tomohiro Ogata, Ohiso, both of Japan, assignors to Kanto Special Steel Works Ltd., Japan

Continuation of Ser. No. 228,810, Jan. 27, 1981, abandoned. This application Aug. 30, 1983, Ser. No. 527,510
Claims priority, application Japan, Jan. 27, 1980, 55-8017
Int. Cl.³ B22D *13/00*
U.S. Cl. 164—286 8 Claims



1. An apparatus for making ingots which comprises:
(a) a substantially cylindrical mold made of metal, including a vertical wall, said mold having an opening in the bottom thereof,
(b) a stool provided with a runner in which said mold is placed, said runner communicating with said bottom opening of said mold,
(c) a rotary table on which said stool is mounted, said rotary table being rotatable about a vertical axis and being equipped with means for rotating said table,
(c) a vertical fountain detachably mounted along its length on the outer surface of said vertical wall of said mold, said fountain communicating with said runner,
(d) said mold and said vertical fountain having respective outer walls having flat surfaces, and said fountain being fastened to said mold by bolts in such a manner that their respective flat surfaces closely contact each other; and
(e) a metal receiver communicating with the top of the fountain, the entrance of said receiver being vertically disposed and said entrance to said receiver, said stool and said rotary table all having a common vertical axis of rotation.

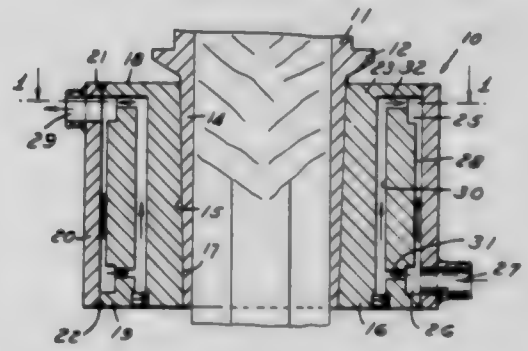
4,493,361

CONTINUOUS CASTING APPARATUS

Gus Sevastakis, 5645 Angola Rd., Toledo, Ohio 43615

Filed Dec. 7, 1981, Ser. No. 327,958
Int. Cl.³ B22D *11/124*
U.S. Cl. 164—443 15 Claims

11. In a continuous casting apparatus wherein molten metal flows through a die progressively and is solidified in the die and withdrawn from the die, a cooling assembly comprising:
a tubular cooling sleeve having an external surface and an internal surface, said internal surface being tapered and adapted to be complementary to an external tapered surface of the die and in substantial intimate surface contact with the external tapered surface of the die,
an annular cooling shell surrounding said cooling sleeve and having an outer surface and an inner surface thereof spaced from said sleeve, said cooling sleeve being formed with upper and lower flanges engaging the inner surface of said shell to define a circumferentially extending cooling chamber having an upper end,
said cooling sleeve being formed with an annular groove on the outer surface thereof at the upper and lower ends thereof, respectively, defining an upper annular plenum and lower annular plenum communicating with the upper end and the lower ends of said chamber,



at least one inlet to said lower plenum,
at least one outlet from said upper plenum,
said inlet and said outlet being spaced axially with the outlet being nearest the inlet end of the die into which the molten metal flows,
said cooling sleeve having a plurality of axially extending circumferentially spaced passages positioned intermediate the inner and outer surfaces thereof and having upper and lower ends and a first set of radial passages extending from the lower plenum to the lower ends of the axial passages and a second set of radial passages extending from the upper end of said axial passages to said upper plenum and, in turn, said outlet, a radial passage of said second set being provided for the upper end of each axial passage and a radial passage of said first set being provided for the lower end of each said axial passage.

4,493,362

PROGRAMMABLE ADAPTIVE CONTROL METHOD AND SYSTEM FOR DIE-CASTING MACHINE

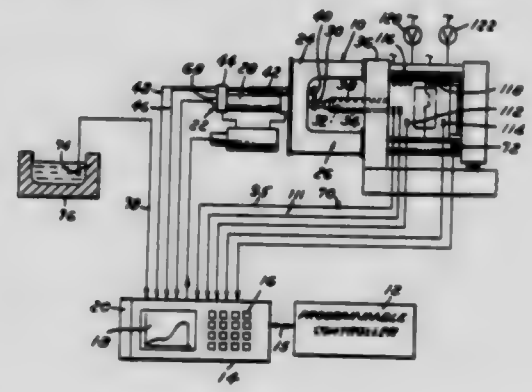
James I. Moore, Zeeland, and Philip J. Van Huis, Holland, both of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed May 27, 1982, Ser. No. 382,528
Int. Cl.³ B22D *17/32*
U.S. Cl. 164—457 8 Claims

1. A method of operating a pressure molding machine of the type having a material injection chamber with an outlet region leading to a die cavity runner which directs molten material to a die cavity for solidification during a dwell period and in which chamber an injection plunger reciprocates to inject molten material comprising the steps of selecting a predetermined desired temperature for molten material in the outlet region measuring the actual temperature of the molten material in the outlet region of the injection chamber just prior to a plunger shot; comparing the actual temperature and the previously established desired temperature and, if the actual temperature is below the desired temperature increasing the shot speed of the plunger accordingly and if the temperature is higher than the desired temperature reducing the shot speed of the plunger and if the actual temperature is at predetermined out-of-limits range from the desired temperature so that the

shot speed cannot be compensated, terminating the machine plunger shot cycle.

5. A control system for a machine of the type having a material injection chamber with an outlet region leading to a die cavity runner which directs molten material to a die having a cavity for solidification during a dwell period and in which chamber an injection plunger reciprocates to inject molten material comprising a programmable computer means, means selecting a predetermined desired temperature for molten material in the outlet region, said programmable computer



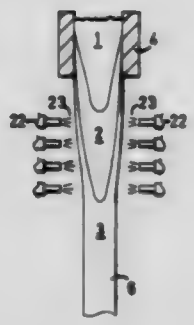
means including store means for registering said predetermined desired temperature, and sensing means for measuring the material temperature at the outlet region of the material injection chamber; the programmable computer means including means for instantaneously comparing the sensed actual material temperature with said stored predetermined desired temperature for molten material in the outlet region and either increasing or decreasing a shot speed command signal to adjust the shot speed of the machine in accordance with the difference between the actual temperature and selected temperature.

4,493,363

METHOD AT CONTINUOUS CASTING OF STEELS AND METAL ALLOYS WITH SEGREGATION TENDENCY AND APPARATUS FOR CARRYING OUT THE METHOD

Hasse Fredriksson, Stockholm, and Lars Tiberg, Fagersta, both of Sweden, assignors to Jernkontoret, Stockholm, Sweden

Filed Jul. 26, 1977, Ser. No. 819,214
Claims priority, application Sweden, Jul. 30, 1976, 7608617
Int. Cl.³ B22D *11/12, 11/124*
U.S. Cl. 164—476 2 Claims



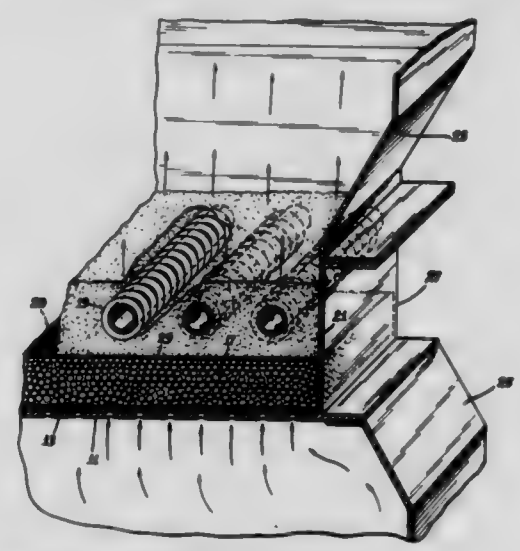
1. A method of preventing the formation of segregations in continuous casting of steel and metal alloys in a strand cast from molten metal, where the cast strand is formed from a molten metal introduced, through a casting chill and undergoing solidification to a rectangular cross-section solid strand, characterized by physically deforming the cast strand by action on its external surface, in successive steps from just below the chill to a point where the strand is fully solidified, controlling said deforming so that the cross-section area of the strand is reduced to an extent in each of said steps corresponding to the solidification shrinkage and cooling shrinkage of the strand at the position of said step, said physically deforming obtained by the action of subjecting the broad sides of said cast rectangular strand at the central portions thereof to forced cooling after it has left the chill used for casting, said deforming steps substantially avoiding upward and downward transport of melt in the strand from the chill to the point where the strand is fully solidified.

4,493,364

FROST CONTROL FOR SPACE CONDITIONING

Robert A. Macrias, Deerfield; Jaroslav Warna, North Riverside, and Vincent M. Huang, Skokie, all of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Nov. 30, 1981, Ser. No. 325,970
Int. Cl.³ F28D *13/00*
U.S. Cl. 165—1 48 Claims



26. A method of frost control on a low temperature outdoor ambient air heat exchanger functioning as an evaporator in the heating mode of a space conditioning apparatus comprising:

passing heat exchange medium of said space conditioning apparatus through an extended surface heat exchanger, said extended surface heat exchanger immersed in a fluidizable bed; and

passing said low temperature outdoor ambient air in thermal exchange relation to said heat exchanger at sufficient velocity to fluidize said bed thereby enhancing heat exchange between said heat exchange medium and ambient air and reducing tendency of frost formation by physical vibration and abrasive action.

46. A method of frost control on a low temperature outdoor ambient air heat exchanger functioning as an evaporator in the heating mode of a space conditioning apparatus comprising:

passing heat exchange medium of said space conditioning apparatus through an extended surface heat exchanger, said extended surface heat exchanger immersed in a fluidizable bed; and

passing said low temperature outdoor ambient air in thermal exchange relation to said heat exchanger through a plurality of non-fluidizable solid desiccant particles comprising a support bed on top of a distributor means for supporting said non-fluidizable support bed and for admitting and distributing said ambient air throughout said fluidizable bed at sufficient velocity to fluidize said bed thereby enhancing heat exchange between said heat exchange medium and ambient air and reducing tendency of frost formation by physical vibration and abrasive action.

4,493,365

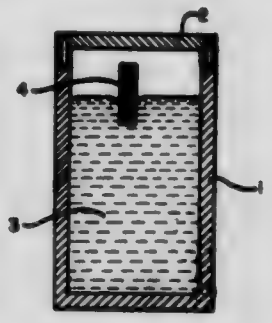
HEATING DEVICE WITH HEAT STORAGE

Francis Ortega, Brunoy, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 12, 1983, Ser. No. 494,146
Claims priority, application France, May 18, 1982, 82 08686
Int. Cl.³ F28D *17/00*; F24H *7/00*; C09K *5/00*
U.S. Cl. 165—10 A 5 Claims

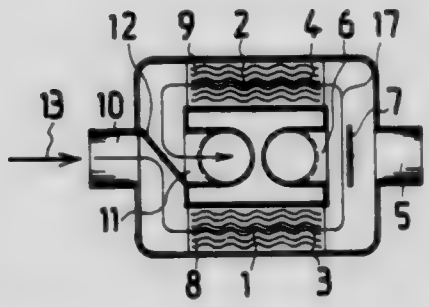
1. A heat storage device, which comprises a hermetically sealed metallic container; one or more molten alkali metal

fluorides and/or alkaline earth metal fluorides included in the metallic container; and a material having a carbon basis also included in the metallic container, said carbon-basis material



reacting with any oxygen present in the metallic container and thereby preventing corrosion of the metallic container by the molten fluorides.

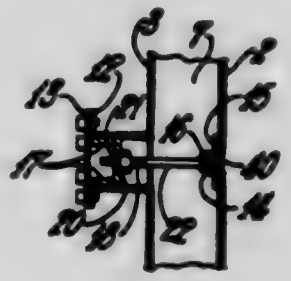
4,493,366
MEANS FOR RECOVERING HEAT FROM A ROOM SPACE, AND FOR VENTILATION
Heino Ekman, Kirkkoesanmi, Finland, assignor to Verdal Maskinverksted A/S, Finland
Filed Nov. 2, 1982, Ser. No. 438,463
Claims priority, application Finland, Nov. 3, 1981, 813454
Int. Cl.³ F28D *17/00*; F24F *7/00*
U.S. Cl. 165—54 2 Claims



1. Means for recovery of heat from air from a room and for ventilation of said room, comprising at least two heat accumulators to which outgoing air from said room delivers its heat and from which incoming air takes heat, a room air outflow duct and a room air inflow duct, each accumulator having one end thereof connected to said outflow and inflow ducts, the direction of flow of air in said ducts being always the same, a flap for controlling the flow of air in said outflow and inflow ducts, a fresh air intake duct and an outgoing exit duct, each accumulator having the opposite end thereof connected to said fresh air intake duct and said outgoing duct, the direction of flow of air in said fresh intake and outgoing exit ducts being always the same, and a second flap for controlling the flow of air in said fresh air intake and outgoing exit ducts, said flaps being synchronized with each other so that the flap associated with the room space outflow duct and inflow duct turns before the second flap, at least that much earlier that the fresh incoming air will circulate a little while through both heat accumulators and escape back to the outdoor atmosphere.

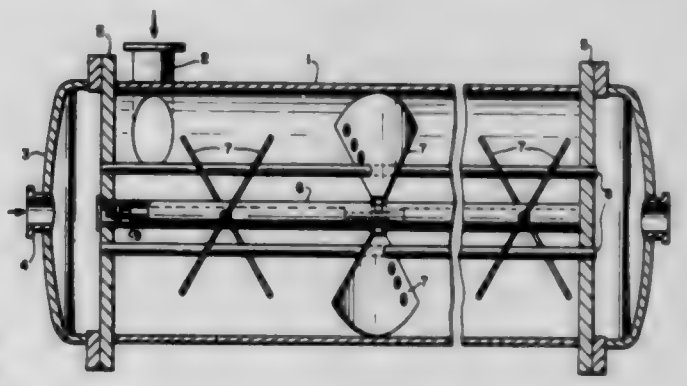
4,493,367
REPAIR OF DOUBLE SHELL HEAT EXCHANGERS
Eugene M. Haynes, Hebron, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Division of Ser. No. 237,201, Feb. 23, 1981, Pat. No. 4,430,788. This application Oct. 24, 1983, Ser. No. 544,927
Int. Cl.³ F28F *11/00*
U.S. Cl. 165—72 5 Claims

1. In a double shell apparatus comprising an inner shell and an outer shell with an annular space therebetween, the inner shell having an aperture therethrough, the improvement comprising an access opening in the outer shell, frame means positioned proximate said access opening, first cover means adapted to seal said aperture, said first cover means affixed to an extension means, said first cover means positioned in



contact with said inner shell and said extension means being biased against said frame means, and second cover means positioned proximate said access opening.

4,493,368
HELICAL FLOW HEAT EXCHANGER HAVING INDIVIDUALLY ADJUSTABLE BAFFLES
Rolf Grønnerud, Oslo, and Einar Bøe, Notodden, both of Norway, assignors to Norsk Hydro a.s., Oslo, Norway
Filed Jun. 8, 1982, Ser. No. 386,417
Claims priority, application Norway, Jun. 22, 1981, 812113
Int. Cl.³ F28F *9/22*
U.S. Cl. 165—159 8 Claims



1. A helical flow heat exchanger comprising:
a shell having an inlet and an outlet for circulating a medium through said shell;
tube sheets fixed to said shell adjacent opposite ends thereof;
a central pipe fixed to said tube sheets and extending through said shell;
a plurality of elongated tubes extending between said tube sheets through said shell;
a plurality of baffles supporting said tubes within said shell, said baffles being individually adjustable in a predetermined position and inclination with respect to said central pipe, to ensure a helical flow pattern of the medium through said shell and around said tubes; and
fastening means for connecting said baffles to said central pipe.

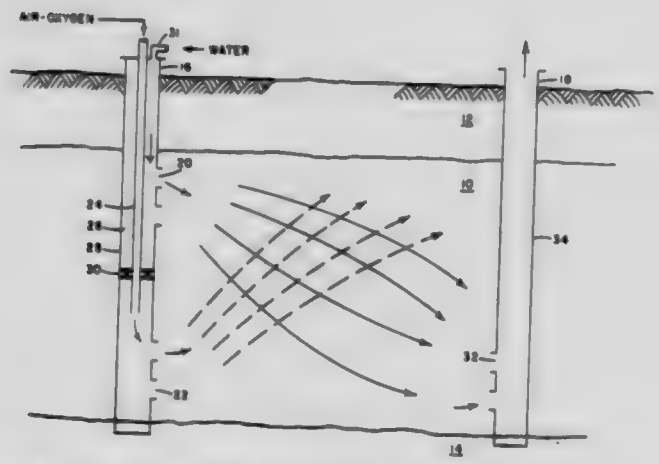
4,493,369
METHOD OF IMPROVED OIL RECOVERY BY SIMULTANEOUS INJECTION OF WATER WITH AN IN-SITU COMBUSTION PROCESS
Aziz S. Odeh, Dallas, and Billy J. Dotson, Grand Prairie, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.
Continuation of Ser. No. 259,330, Apr. 30, 1981, abandoned. This application Mar. 24, 1983, Ser. No. 478,596
Int. Cl.³ E21B *43/243*
U.S. Cl. 166—261 8 Claims

1. A method for recovering heavy oil from a subterranean,

permeable, heavy oil-bearing reservoir penetrated by an injection well and a production well, comprising:

(a) establishing a burning zone in the lower portion of said reservoir at the face of said injection well;

(b) injecting an oxygen-containing gas into the lower portion of said reservoir via said injection well to move said burning zone toward said producing well and to generate hot combustion gases;



(c) injecting a sufficient amount of water via an injection well into the upper portion of said reservoir to impede the flow of said hot combustion gases through the upper portion of the reservoir, to scavenge heat from the burned out portion of the formation, and to displace the oil through said reservoir towards the lower end of said production well; and

(d) recovering fluids including oil solely from the lower portion of said reservoir via said production well.

4,493,370

UREA AS A COSURFACTANT IN ENHANCED OIL RECOVERY PROCESSES

Paul R. Stapp, and Mary B. Chaney, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 27, 1983, Ser. No. 461,320
Int. Cl.[3] E21B *43/22*
U.S. Cl. 166—273 13 Claims

1. A surfactant composition consisting essentially of:

(a) water;

(b) sodium chloride;

(c) a petroleum sulfonate surfactant having an equivalent weight of from about 225 to about 600; and

(d) urea;

wherein said water is present in an amount of 100 parts by weight; said sodium chloride is present in an amount from 0.1–10 parts by weight, said petroleum sulfonate surfactant is present in an amount from 0.1–15 parts by weight, and said urea is present in an amount from 0.05–15 parts by weight.

9. A process for hydrocarbon recovery from a subterranean formation comprising:

(a) injecting a surfactant system consisting essentially of water, sodium chloride, a petroleum sulfonate surfactant having an equivalent weight from about 225 to about 600, and urea, into said formation via at least one injection well;

(b) thereby causing the so-injected surfactant system to move from the injection well toward the producing well thereby displacing the hydrocarbon present in the formation; and

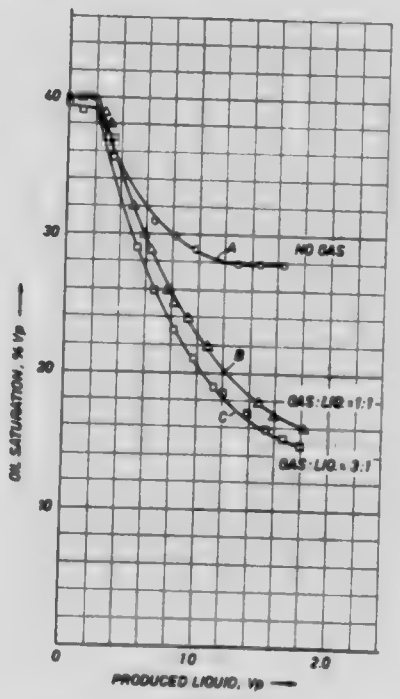
wherein said sodium chloride is present in an amount from 0.1–10 parts by weight, said petroleum sulfonate surfactant is present in an amount of from about 0.1 to about 15 parts by weight and said urea is present in an amount from about 0.05–15 parts by weight.

4,493,371

RECOVERING OIL BY INJECTING AQUEOUS ALKALI, COSURFACTANT AND GAS

Joseph Reisberg, Houston; Lawrence J. Bielamowicz, Bellaire, and David R. Thigpen, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 29, 1983, Ser. No. 518,711
Int. Cl.[3] E21B *43/22*
U.S. Cl. 166—274 6 Claims



1. An oil recovery process comprising:

injecting an oil-displacing fluid inclusive of gas and aqueous alkaline liquid into a subterranean reservoir containing an oil which is significantly acidic but forms monovalent cation soaps of only relatively low interfacial activity when reacted with an aqueous liquid containing a stoichiometric excess of dissolved alkaline material;

using as said oil-displacing fluid a mixture which, before or soon after entering the reservoir, is substantially homogeneous and contains significant proportions of (a) an aqueous alkaline solution containing kinds and amounts of dissolved inorganic alkaline material, polyalkoxyalcohol sulfate cosurfactant, and substantially neutral salt providing an alkalinity exceeding the stoichiometric requirement for neutralizing substantially all of the acidity of the reservoir oil and a total salinity which is substantially optimum for lowering the interfacial tension between the surfactant system which is formed by reaction with the reservoir oil at the reservoir temperature and (b) a fluid which is gaseous at the temperature and pressure encountered in the reservoir; and

recovering oil displaced by the injected fluid.

4,493,372

WELL COMPLETION SYSTEM AND PROCESS

Fred J. Radd; James B. Scott, both of Ponca City, Okla., and Robert B. Pan, Calgary, Canada, assignors to Conoco Inc., Ponca City, Okla.

Filed May 11, 1983, Ser. No. 493,468
Int. Cl.[3] E21B *33/14*
U.S. Cl. 166—285 2 Claims

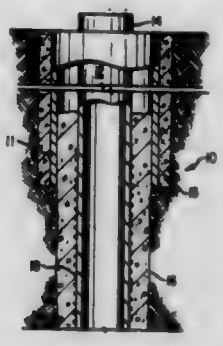
1. In a well extending to a subterranean location in the earth's crust, the combination comprising:

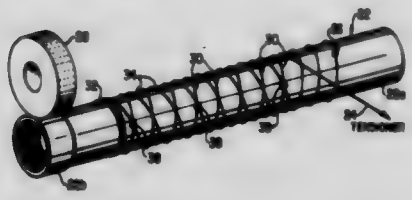
(a) a string of casing located in said well;

(b) a wrapping of metal wire about the outer surface of said casing in a conformation providing a plurality of helical turns which criss-cross one another; and

(c) a cement sheath in the annulus about said casing and encompassing said metal wire whereby said cement is bonded to said casing;

the combination further comprising a pluality of protrusion elements on said wire extending into said cement sheath,





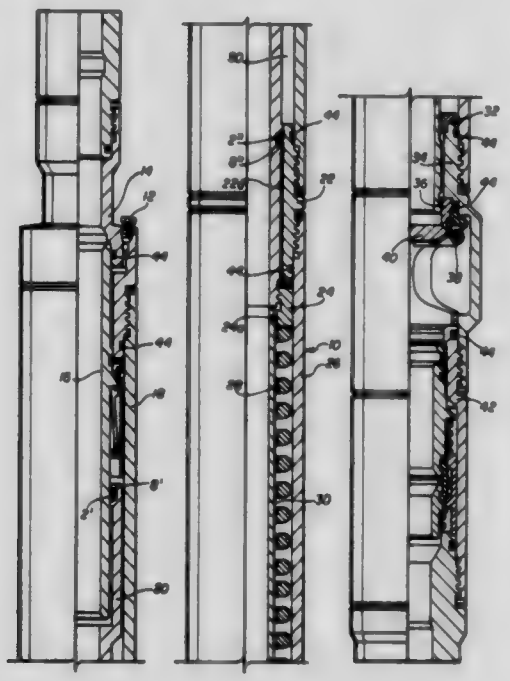
wherein said protrusion elements have a plurality of prongs in an angular configuration.

4,493,373

DYNAMIC SEAL FOR WELL TOOLS

Gerald D. Jackson, Broken Arrow, Okla., assignor to Baker Oil Tools, Inc., Orange, Calif.

Filed Aug. 15, 1983, Ser. No. 522,986
Int. Cl.³ E21B *34/10*; F16J *15/16*
U.S. Cl. 166—321 10 Claims



1. Sealing apparatus for establishing dynamic sealing integrity between two axially reciprocal concentric tubular members in a tool, comprising:

unitary elastomeric seal means encircling the inner and the two concentric tubular members for establishing dynamic sealing integrity therebetween during relative movement, the seal means having a T-shaped cross-section with base and tip sections, the base section being wider than the tip section;

a seal receptacle on one of the two concentric tubular members for receipt of the seal means, comprising a central annular groove dimensioned for receipt of the seal base and recessed ledges on each side of the central groove, the depth of the central groove being greater than the depth of the recessed ledges; and

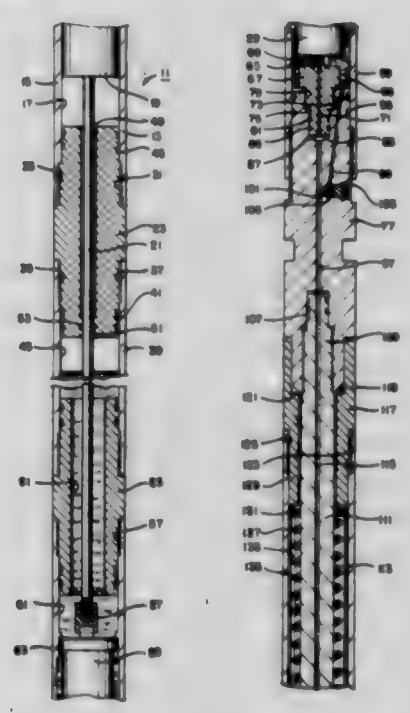
cylindrical means on opposite sides of the seal tip section, each overlapping at least a portion of the seal base section, the cylindrical means being supported by the recessed ledges, the cylindrical means extending beyond the periphery of the seal receptacle to reduce the radial gap between the two concentric tubular members above and below the sealing means for backing up the elastomeric seal means to decrease the axial extrusion of the T-shaped seal means due to temperature and pressure acting thereon; the cylindrical means contacting the other of the concentric tubular members to center the inner tubular member relative to the outer tubular member, uneven radial loads being applied to the cylindrical members rather than the elastomeric seal means whereby a uniform circumferential squeeze is maintained on the elastomeric seal means.

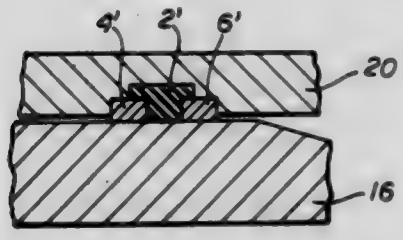
4,493,374

HYDRAULIC SETTING TOOL

Robert L. Magee, Jr., Fort Worth, Tex., assignor to Arlington Automatics, Inc., Grand Prairie, Tex.

Filed Mar. 24, 1983, Ser. No. 478,360
Int. Cl.³ E21B *23/06*, *33/129*
U.S. Cl. 166—382 10 Claims





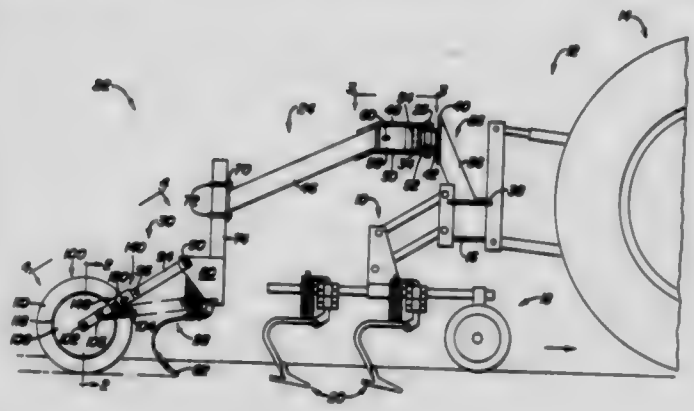
1. A setting tool of the type used to set downhole devices in a well bore, comprising:

an elongated tubular body, said body having an outer sleeve portion and an inner piston portion slidably received within said sleeve portion, said inner piston portion and said outer sleeve portion being engagable with said device to be set whereby opposite relative movement of said piston portion and said sleeve portion acts to set said device; and

hydraulic pump means carried within said tubular body communicating with said inner piston portion by fluid passage means within said tubular body and isolated from said well annulus for supplying pressurized hydraulic fluid to said inner piston portion of said setting tool to move said inner piston portion relative to said outer sleeve portion and thereby set said downhole device.

9. A method of setting a downhole device in a well bore, comprising the steps of:
engaging said device to be set with a setting tool having an outer sleeve portion and an inner piston portion slidably received within said sleeve portion, said device being engagable with said setting tool whereby opposite relative movement of said inner piston portion and outer sleeve portion acts to set said device;
lowering said setting tool and device to be set on a wireline to the desired setting depth within said well bore; and
supplying gradual hydraulic fluid pressure from a hydraulic pump to said inner piston portion of said setting tool through fluid passage means located within said tubular body and isolated from said well annulus to move said inner piston portion relative to said outer sleeve portion of thereby set said downhole dev. e.

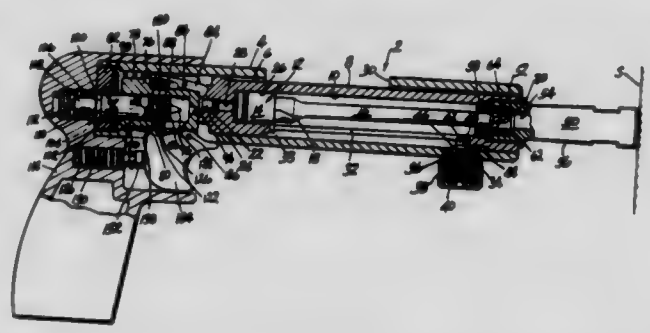
4,493,375
METHOD AND APPARATUS FOR FORMING AND REFORMING A FURROW
David C. Winter, Des Moines; Michael L. Pearson, and John D. Long, both of Ankeny, all of Iowa, assignors to Deere & Company, Moline, Ill.
Filed Sep. 7, 1982, Ser. No. 414,994
Int. Cl.³ A01B 35/18, 69/00, 79/00
U.S. Cl. 172—1
13 Claims



1. A device adapted for connection to an implement toolbar for forming a guidance furrow in the ground as the toolbar is towed forwardly through a field, said device comprising: a frame adapted for attachment to the toolbar; a shank attached to the frame and including ground-engaging shovel means for penetrating the surface of the ground; wheel means supported on the frame rearwardly adjacent the shank for rotation in, and forming of, the ground penetrated by the shovel means, said wheel means including an outermost circumferential portion having a generally V-shaped configuration for forming a V-shaped furrow, a circular band member supported radially inwardly with respect to the V-shaped portion, said band member extending transversely outwardly beyond the outermost circumferential portion and cooperative therewith to pack the edges of the furrow and to prevent loose soil from falling into the furrow, and means for averaging out abrupt transverse movements of the toolbar to prevent corresponding deviations in the formed furrow, said means for averaging including a bracket means for connection to the toolbar, vertical pivot means connecting the frame to the bracket means for permitting the frame to rock transversely with respect to, and to trail, the toolbar.

11. A method of forming a guidance furrow in the ground with respect to a transverse tool-carrying beam of a towed implement, said method including the steps of:
(a) towing the implement forwardly through the field;
(b) pivotally supporting a fore-and-aft extending wheel frame at its forward end from the beam in trailing relationship with respect to the implement;
(c) rotatably supporting a furrow-forming wheel from the aft end of the wheel frame in contact with the soil and permitting said wheel to trail with the wheel frame to average out abrupt movements of the beam in a direction transverse to the forward direction; and
(d) loosening the soil immediately forwardly of the furrow-forming wheel, said step of loosening including supporting a soil-penetrating shovel from the wheel frame for trailing therewith directly ahead of the furrow-forming wheel.

4,493,376
FASTENER DRIVING TOOL
Rowland J. Kopf, Southington, Conn., assignor to Uniset Corporation, Indianapolis, Ind.
Filed Jul. 2, 1982, Ser. No. 394,684
Int. Cl.³ B25D 9/11
U.S. Cl. 173—139
1 Claim



1. A powder-actuated fastener driving tool comprising:
(a) a housing having a bore;
(b) a barrel reciprocally slidably mounted in said housing bore, said barrel having a bore;
(c) a fastener driving piston reciprocally slidably mounted in said barrel bore;
(d) said barrel having an internally threaded bore at the muzzleward end portion of said barrel;
(e) a muzzle bushing threaded into said threaded bore of said barrel, said muzzle bushing having an external circumferential flange disposed in abutting contact with the muzzleward end surface of said barrel to limit the extent to which said muzzle bushing enters said threaded bore, whereby the breechward end of said threaded bore and the breechward end of said muzzle bushing remain in spaced apart relationship sufficient to protect the mating threads on said muzzle bushing and threaded bore from deformation which would otherwise occur in the event of piston overdrive; and
(f) said muzzle bushing including a bore having an enlarged counter-bore at the breechward end of said muzzle bushing and further comprising an annular buffer member mounted in the muzzleward end of said barrel bore and extending into said muzzle bushing counter-bore.

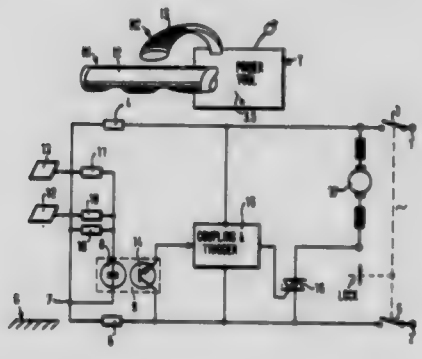
4,493,377
ELECTRONIC TWO-HAND SAFETY SYSTEM FOR POWER TOOLS
Klaus Günther; Friedrich Herzog; Kurt Paule, all of Stuttgart, and Fritz Schädlich, Leinfelden-Echterdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Oct. 22, 1981, Ser. No. 313,648
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043264
Int. Cl.³ F16P 3/20
U.S. Cl. 173—170
26 Claims

1. Operator safety system for power tools having
a power supply connection (1, 2);
a motor (17);
a controlled switch (16) coupled to the motor for selective connection of the motor to the power supply connection; and an operator touch-controlled switch including

at least one electrically responsive sensing surface (12, 13, 29, 53, 54, 74) requiring surface engagement of at least a portion thereof by a hand of the operator for activation thereof to enable the tool to operate,

and an energization and control circuit for said touch-controlled switch comprising

a voltge divider (4, 6; 22, 25; 40, 41, 43, 44; 65, 72, 66, 68) connected to the power supply connection, said voltage divider having a common junction or tap point (7, 23, 45, 67, 80);



a coupling circuit (10, 11; 28; 54, 58; 75) coupling the at least one sensing surface to the common junction;

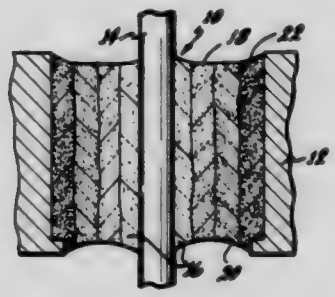
and an electrical recognition network (8, 18, 9; 27, 47, 48; 69, 73) coupled to the common junction and connected to and controlling the controlled switch (16) to ON condition and thus permit energization of the motor only if the at least one sensing surface is engaged by a hand of the operator.

4,493,378

TERMINAL ASSEMBLY

James C. Kyle, 24372 Via San Clemente, Mission Viejo, Calif. 92692

Filed Jul. 16, 1981, Ser. No. 284,129
Int. Cl.³ H01B 17/26; C03C 27/02
U.S. Cl. 174—152 GM 50 Claims



1. In combination,

a first electrically conductive member having a relatively high coefficient of thermal expansion,

a second electrically conductive member spaced from the first electrically conductive member and having a relatively low coefficient of thermal expansion, and

at least first and second layers of electrically insulating material respectively disposed between the first and second members in hermetically sealed relationship to each other and to the first and second members, the first layer of insulating material having a lower coefficient of thermal expansion than that of the first member,

the second layer of insulating material having a coefficient of thermal expansion less than that of the first layer of insulating material and greater than that of the second member,

the first and second layers of insulating material being partially amorphous and partially polycrystalline.

4,493,379

CABLE REAMING APPARATUS AND METHOD

James M. Reichman, Issequah; Thomas A. O'Hanlon, Tacoma, both of Wash., and Thomas J. Kendrew, Redwood City, Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Division of Ser. No. 196,847, Oct. 14, 1980, Pat. No. 4,385,667.
This application Feb. 25, 1983, Ser. No. 469,951
Int. Cl.³ E21B 7/00
U.S. Cl. 175—57 6 Claims



1. A method of replacing an existing underground cable comprising the steps of reaming through the soild around and along the length of said cable from one end of the latter to its other end; attaching one end of a replacement cable to one end of said existing cable; and after attaching said cables and reaming through said soil, pulling said existing cable out of the ground from its otherwise free end, thereby causing the attached replacement cable to move into the space previously occupied by the removed cable.

4,493,380

HYDRAULIC STRAIGHT HOLE DRILL COLLAR

Jimmy D. Townson, Odessa, Tex., assignor to Kenneth A. Freeman, Midland, Tex.

Filed Sep. 29, 1982, Ser. No. 427,137
Int. Cl.³ E21B 7/06
U.S. Cl. 175—61 18 Claims



1. In a rotary drill string having a bit connected at the lower end thereof by a drill string hook-up, said hook-up comprises a plurality of drill collars connected in the string at a location above the bit; each of said collars having an axial passageway formed therethrough, a pin at one terminal end and a box at the other terminal end of each collar by which the collars are connected together to form said hook-up, the improvement comprising:

said hook-up includes at least one upper collar having a longitudinally extending, outwardly opening slot formed along the sidewall thereof, said slot has a back wall spaced from the collar axial passageway, and opposed confronting sidewalls; there being an upper end of said slot which

terminates in spaced relationship respective to said box end, and a lower end of said slot which terminates in spaced relationship respective to said pin end;

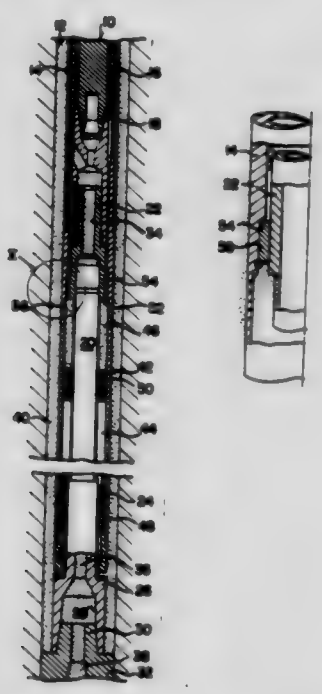
said hook-up further includes at least one lower collar having a continuous outer surface area uninterrupted by slots; so that said upper collar is placed at the point of tangency as the bit drills a crooked hole.

4,493,381

TURBODRILL WITH A REDUCED DRILLING FLUID PRESSURE ON A FLOATING PISTON

Masanemon Kajikawa, and Akio Ota, both of Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Apr. 18, 1983, Ser. No. 485,624
Int. Cl.[3] E21B *4/02*
U.S. Cl. 175—107 3 Claims



1. A turbodrill having rotary shaft means supported within a tubular housing and having a lower end extending therefrom for carrying a drill bit, a turbine within the housing for imparting rotation to the drill bit via the shaft means by being actuated by the flow of drilling fluid therethrough, a bearing rotatably supporting the shaft means adjacent said lower end thereof, seal means positioned below said bearing between said shaft means and said housing, and a floating piston positioned between the shaft means and the housing and defining an upper end of a lubricant chamber for containing a lubricant for lubricating the bearing, the floating piston also defining a lower end of a drilling fluid chamber above and opposed to the lubricant chamber for receiving part of the drilling fluid from the turbine, second seal means positioned between the shaft means and the housing above said drilling fluid chamber for restricting the inflow of the drilling fluid from the turbine to the drilling fluid chamber; and means defining a passageway through the housing for communicating the drilling fluid chamber with the outside of the housing; whereby the pressure of the drilling fluid in the drilling fluid chamber acting on the floating piston is made approximately equal to the pressure of the drilling fluid outside the housing.

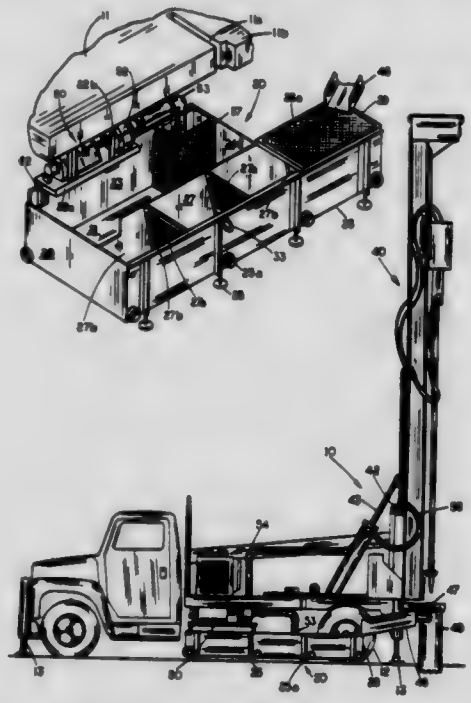
4,493,382

VEHICLE-MOUNTED EARTH DRILLING APPARATUS

Robert A. Collins, LeMars, Iowa, and Timothy A. Lewis, Aurora, Ill., assignors to Gus Pech Manufacturing Co., LeMars, Iowa

Filed Aug. 25, 1983, Ser. No. 526,378
Int. Cl.[3] E21B *7/02*
U.S. Cl. 175—206 17 Claims

1. A vehicle-mounted earth drilling apparatus of the type having an elongated mast mounted on said vehicle for pivotal movement from a horizontal storage position to a vertical operating position and means for circulating a liquid from a mud pit, into a hollow drill stem which is supported by the mast, into the hole being drilled, and back to the mud pit, the improvement comprising means for conforming the mud pit into a substantially flat-bottomed container having substantially vertical walls which compriae a closed polygon; substantially horizontal hinge means connecting the upper edge of one wall of the mud pit to a portion of the vehicle frame which is above the ground a distance approximately equal to the height of the connected wall of the mud pit; and means for conveying the liquid from the hole being drilled to the mud pit.

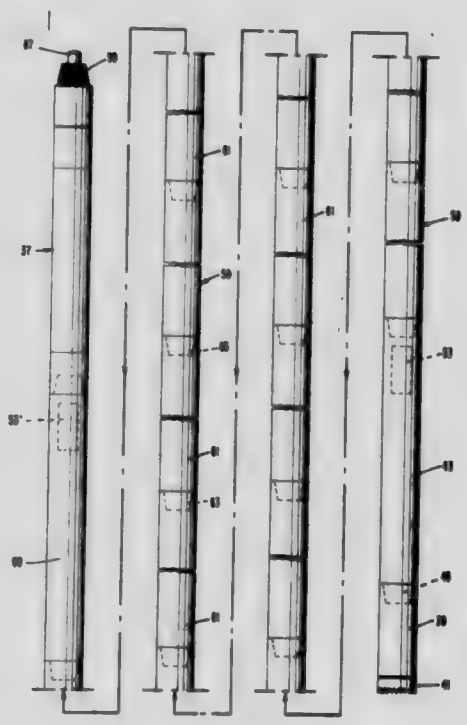


4,493,383

WELL CLEAN OUT TOOL

Robert M. Williams, and Bob Davis, both of Hobbs, N. Mex., assignors to Bull Dog Tool Inc., Hobbs, N. Mex.

Filed Jun. 7, 1983, Ser. No. 501,917
Int. Cl.[3] E21B *37/00*
U.S. Cl. 175—234 9 Claims



1. A well clean out tool comprising:

an elongated body having first and second ends and being adapted to be received within a well borehole, said elon-

gated body being comprised of a plurality of subs secured together;

a first sub at a lower portion of the body near the first end, the first sub having an inlet for receiving fluid and debris from the borehole, the first sub further including first flap valve means pivotally mounted within the first sub between a horizontal closed position and a vertical open position for permitting flow toward the second end and for preventing fluid flow toward the first end, said first flap valve being biased toward the closed position;

a second sub arranged above said first sub for receiving and retaining fluid and debris passing through said first sub;

a third sub arranged above said second sub, said third sub having second flap valve means for permitting flow toward the second end and for preventing flow toward the first end;

a fourth sub having a casing and being arranged above said third sub, said fourth sub including outlet means for returning fluid to the borehole, and pump means within said casing for drawing fluid into said inlet and through said first, second and third subs and out through said outlet means;

said pump means including an elongated piston having an internal bore, said piston being reciprocatingly driven in relation to said casing of the fourth sub;

third valve means at an end of the piston facing the third sub for permitting relatively free flow into the internal bore of said piston and preventing flow from said bore out through said end of the piston; and

the outlet means comprising a plurality of unrestricted openings through a longitudinal piston wall above said third valve means and closely adjaent said end of piston, an annular space between an outer surface of the piston and the casing, said outlet means further comprising unrestricted openings in the casing of the fourth sub near an upper end of the fourth sub, said openings being arranged to minimize a length of the fluid outflow path from the internal bore to the outside of the casing.

4,493,384

ELECTRONIC COUNTING SCALE

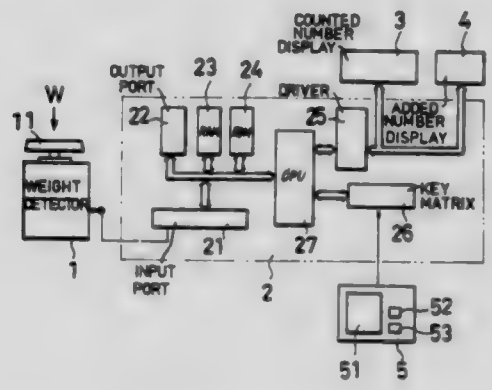
Shozo Yano, Kyoto; Akira Komoto, Shiga, and Yasuhiro Fujinaga, Kyoto, all of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Mar. 28, 1983, Ser. No. 479,338

Claims priority, application Japan, Mar. 31, 1982, 57-54239; Mar. 31, 1982, 57-54240; Mar. 31, 1982, 57-54243

Int. Cl.³ G01G *19/00, 19/22*

U.S. Cl. 177—25 10 Claims



1. An electronic counting scale comprising a weighing tray to be loaded with items whose number is to be counted, a weight measuring means for measuring a gravitational force acting on said items loaded on said tray and for outputting a digital weight value corresponding to said gravitational force, a central processing unit which includes an arithmetic organ for processing said digital weight value according to a predetermined program, a memory for storing various calculating formulae, various calculated values and said predetermined program, said various calculating formulae containing a maximum number calculating formula which gives, in consideration of the weight fluctuations of the items to be counted, a maximum addable number rounded to the nearest whole number for fractions equal to or over 0.5 without giving a counting error, a number displaying means for displaying the number of said items calculated by said arithmetic organ, and an informing means for informing whether an unknown number of items added to an already counted known number of items is equal to or exceeds said maximum addable number calculated according to said maximum addable number calculating formula.

4,493,385

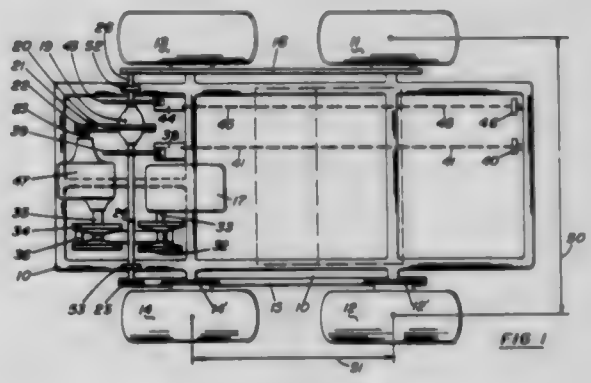
ALL TERRAIN VEHICLE

Samuel Shiber, P.O. Box 371, Mundelein, Ill. 60060

Filed May 25, 1983, Ser. No. 497,884

Int. Cl.³ B62D *11/08*

U.S. Cl. 180—6.2 2 Claims



1. An all terrain vehicle comprising in combination:

a frame,

four driven, non-steerable wheels, rotatably mounted on said frame, said wheels constituting a pair of front wheels and a pair of rear wheels, said wheels also constituting a pair of left wheels and a pair of right wheels, said right wheels being interconnected to rotate together and said left wheels being interconnected to rotate together,

an engine, mounted on said frame,

a torque responsive continuously variable transmission adapted to accept power from said engine,

a differential having an input for accepting power from said transmission and two outputs, a right output connected to said right pair of wheels and a left output connected to said left pair of wheels,

a split brake system allowing to selectively brake said right wheels or said left wheels,

a distance between said left pair of wheels to said right pair of wheels being larger than a distance between said front pair of wheels to said rear pair of wheels.

4,493,386

SINGLE CYLINDER TILT-CAB ANTI-TORSION APPARATUS

Lambertus J. Sonnebora, Oldenzaal, Netherlands, assignor to Applied Power Inc., Milwaukee, Wis.

Filed Mar. 7, 1983, Ser. No. 472,494

Int. Cl.³ B62D *33/06*

U.S. Cl. 180—89.15 7 Claims

1. In a single cylinder tilt-cab tractor comprising

(a) a chassis;

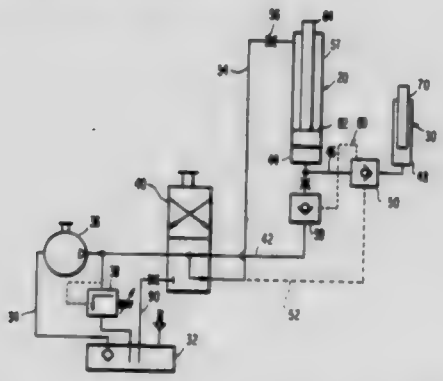
(b) a cab mounted on said chassis and pivotable with respect to said chassis about an axis near a front end of said chassis;

(c) a suspension assembly mounted between said chassis and cab at each of a left- and right-forward corner of said cab; and

(d) a single hydraulic cab tilting cylinder pivotably mounted between said chassis and said cab on one of the right side

or the left side of the cab and being operable to selectively tilt said cab between a normal running position and a raised service position, wherein the improvement comprises:

an auxiliary cylinder mounted upon one of said cab and said chassis and extending toward the other of said cab and said chassis opposite from the location of said single hydraulic cab tilting cylinder; and



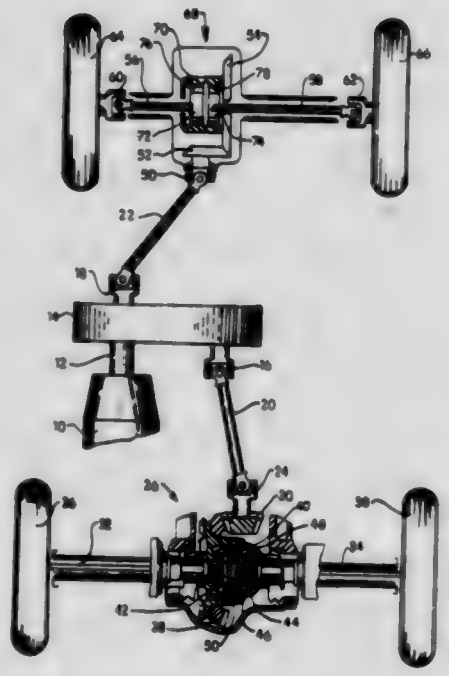
hydraulic means operable to extend said auxiliary cylinder into engagement with the other of said cab and said chassis prior to hydraulic actuation of said single hydraulic cab tilting cylinder to prevent said cab tilting cylinder from torsionally rolling the cab sideways into interfering contact with peripheral elements of the tractor engine during a cab raising or lowering operation.

4,493,387

CLUTCH DRIVEN FRONT AXLE FOURWHEEL DRIVE SYSTEM

W. H. R. Lake, Lathrup Village, and D. H. Grandinett, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 12, 1982, Ser. No. 407,534
Int. Cl.³ F16D *41/02*
U.S. Cl. 180—248
6 Claims



1. A system for driving the front and rear wheels of a vehicle from a transmission output shaft comprising:

front and rear driveshafts drivably connected to the transmission output shaft;

left and right rear axle shafts on which left and right rear wheels are carried;

a rear differential drivably connected to the rear driveshaft and to the rear axle shafts adapted to transmit motion therebetween such that the rear axle shafts turn at the same speed or at different speeds;

left and right front axle shafts on which left and right front wheels are carried;

overrunning clutches each having a driving member drivably connected to each of the front axle shafts adapted to transmit motion in the forward or reverse direction under driving torque from the driving member thereof to the front axle shafts and to allow free-running of the axle shafts in the forward or reverse direction relative to said driving member when driving torque is not applied; and

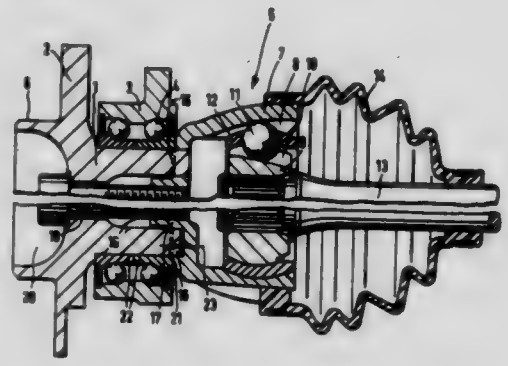
means drivably connecting the driving member of the clutches to the front driveshaft whereby the speed of the front axle shafts is less than the speed of the rear axle shafts.

4,493,388

BEARING ASSEMBLY FOR A VEHICLE WHEEL DRIVEN BY A ROTARY CONSTANT VELOCITY UNIVERSAL JOINT

Hans-Heinrich Welschof, Rodenbach, and Rudolf Beier, Offenbach am Main, both of Fed. Rep. of Germany, assignors to Löhr & Bromkamp GmbH, Offenbach am Main, Fed. Rep. of Germany

Filed Apr. 22, 1982, Ser. No. 370,863
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1981, 3116775
Int. Cl.³ B60K *17/24*
U.S. Cl. 180—258
5 Claims



1. In an assembly for the hub of a wheel of a motor vehicle including wheel bearing means having an inner and an outer wheel bearing ring, said inner bearing ring being in driving connection with said wheel hub, universal joint means for driving said wheel hub through said inner bearing ring,

said universal joint means including an inner joint member and an outer joint member, with said outer joint member being in driving connection with said inner bearing ring, and centrally located bolt means connected between said wheel hub and said outer joint member, the improvement comprising:

that said wheel bearing means and said universal joint means are constructed to comprise two separate units which can be operationally separated from each other without requiring disassembly of either of said units;

that said bolt means is arranged to extend therebetween to adjustably join said units together;

that said inner bearing ring and said outer joint member are supported against each other in opposed facing relationship;

that positive locking means are provided between said inner bearing ring and said outer joint member in order to connect them together in torque-transmitting relationship to effect a driving engagement between said universal joint means and said wheel hub;

that said positive locking means comprise projections formed in one of said inner bearing ring and said outer joint member and recesses formed in the other for receiving said projections;

that said positive locking means are structured to engage said inner bearing ring and said outer joint member with-

out circumferential play therebetween while allowing axial play therebetween; and

that said bolt means is in threaded engagement between said wheel hub and said outer joint member to enable adjustment of said axial play.

4,493,389

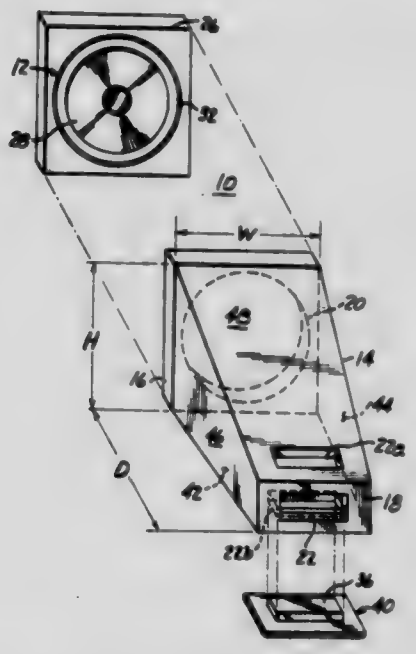
SPEAKER ASSEMBLY

Luis Del Rosario, 1363 N. Verdugo Rd., Glendale, Calif. 91208

Filed May 27, 1982, Ser. No. 382,429

Int. Cl.³ H05K *5/00*

U.S. Cl. 181—152 26 Claims



1. A loudspeaker assembly comprising:

a loudspeaker; and,

an enclosed housing having an area defining a loudspeaker port and an area defining at least one sound port, the loudspeaker port being adapted to mount the loudspeaker substantially outside of the housing in a sealed relationship to the front of the housing, the loudspeaker directing sound into the housing, and the sound port having a cross-sectional area less than the cross-sectional area of the loudspeaker port so that the pressure of the second energy emitted at the loudspeaker becomes increased when emitted through at least one of the sound ports;

wherein the sound port is in substantially sealed relationship to an at least partially enclosed space so that sound energy passed through the sound port enters the at least partially enclosed space; and

wherein the housing comprises an enclosed tapered housing having two ends, one end of greater cross-sectional area and the other end of lesser cross-sectional area, the end of greater cross-sectional area having an area defining the loudspeaker port and the end of lesser cross-sectional area having an area defining one of the at least one sound port; and

wherein the housing comprises four walls defining a rectangular cross section at the end of lesser cross-sectional area and a square cross section at the end of greater cross-sectional area, whereby the wall of greater cross-sectional area is adapted to receive a circular loudspeaker and said wall of lesser cross-sectional area is adapted to channel sound through an elongated opening.

4,493,390

APPARATUS FOR THE COMBINED PRODUCTION OF ELECTRICAL ENERGY AND HEAT

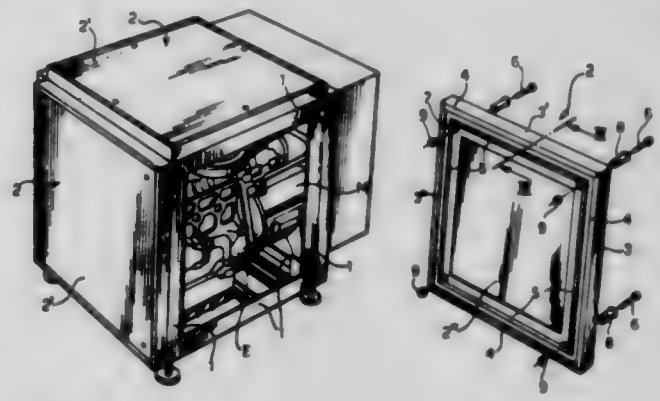
Roberto Pagano, Turin, and Alessandro Nassini, Bruino, both of Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Filed Feb. 10, 1983, Ser. No. 465,401

Claims priority, application Italy, Feb. 11, 1982, 52918/82[U]

Int. Cl.³ F01N *1/24*

U.S. Cl. 181—204 7 Claims



1. Apparatus for the combined production for electrical energy and heat, including a supporting framework constituted by sectional elements arranged at the edges of a parallelepiped and supporting an internal combustion engine, an electrical generator device coupled to the engine, and means for recovering the energy transformed into heat in the engine and in the electrical device; and further including thermally and acoustically insulating panels removably fixed to the framework and covering the side faces and the upper face of the parallelepiped defined by said framework, wherein each said panel is provided with a continuous peripheral gasket of elastomeric material having an essentially L-shaped transverse section with a first portion which covers the peripheral surface of the panel and a second portion which covers a portion of the face of the panel which, in the assembled condition, faces the framework, and wherein the said second portion of the gasket is provided with projecting first and second curved lips adjacent and parallel to the periphery of the panel, each said lip being concavely curved towards the other lip, wherein spacer elements project from the said face of each panel facing the framework to maintain the panel at a predetermined distance from the framework when the panel is fixed to the framework, whereby the curved lips of the gasket fitted to the panel are resiliently deformed against the framework and, together with the framework and the second portion of the gasket, define a sealed air chamber.

4,493,391

SAFETY LOWERING DEVICE

Preston J. Van Pattea, 15 Lynn Dr., Scotia, N.Y. 12302

Filed Jun. 1, 1982, Ser. No. 383,966

Int. Cl.³ A62B *1/16*

U.S. Cl. 182—6 6 Claims

1. A self-contained safety device for self-lowering a person, comprising

(a) an elongated high-strength safety webbing of sufficient strength to safely support the person;

(b) a reel housing said webbing which is adapted to be released from said reel;

(c) a generally figure 8 shaped member having first and second adjacent aligned apertures in a common plane;

(d) a seat for secure engagement of said person, said seat comprising a non-slip buckle means and two elongated high-strength seat webbings each of said seat webbings being looped to form first a leg hole and one-half of waist hole, one-end of each seat webbing being secured by passing through said second aperture of said generally figure 8 shaped member, with a intermediate portion thereof, being folded back upon itself forming said leg hole and one-half of said waist hole, and the opposite end

of each seat webbing being connected through said non-slip buckle means;

(e) a friction knot formed by passing said safety webbing through said second aperture and then through said first aperture of said generally figure 8 shaped member and



about the wall of said first aperture, said friction knot being formed from said safety webbing and being manipulatable to extend said webbing at a controlled rate, and

(f) means at the free end of said safety webbing for anchoring said safety webbing when the person is being lowered.

4,493,392

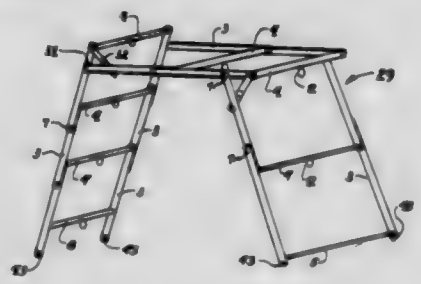
CONVERTIBLE FOLD-UP LADDER

Salvador Alimbau Marques, San Elias 21 3°, Barcelona 6, Spain

Continuation-in-part of Ser. No. 341,830, Jan. 22, 1982, Pat. No. 4,457,391, and a continuation-in-part of Ser. No. 417,382, Sep. 13, 1982, Pat. No. 4,429,766, and a continuation-in-part of Ser. No. 492,487, May 6, 1983, Pat. No. 4,448,283. This application Sep. 29, 1983, Ser. No. 537,276

Int. Cl.³ E06C 1/383

U.S. Cl. 182—27 19 Claims



1. A convertible fold-up, lean to ladder comprising a plurality of U-shaped modules having means movably connecting each module to the next adjacent module, at least a portion of a locking means provided in said modules adapted to lock said modules together in a substantially rigid manner, said locking means comprising a latch, a latch release means and an aperture to mate with said latch, said latch located in a first module and said aperture located in the module immediately adjacent said first module, said latch having a rounded end portion and positioned in mating alignment with said aperture when said ladder is in its extended mode, the length of said modules having a curved outer surface to facilitate entrance of said latch into said aperture, the horizontal arms of said U-shaped modules defining the rungs of said ladder, at least a section of the wider modules overlapping at their upper vertical portions with the bottom portions of the next adjacent narrower modules, and said locking means and said module hinge means provided within said overlapping portions.

4,493,393

MECHANIC'S REST

Hector Serber, 40 Old Ranch Rd., Novato, Calif. 94947

Filed Sep. 6, 1983, Ser. No. 529,518

Int. Cl.³ A47C 16/00

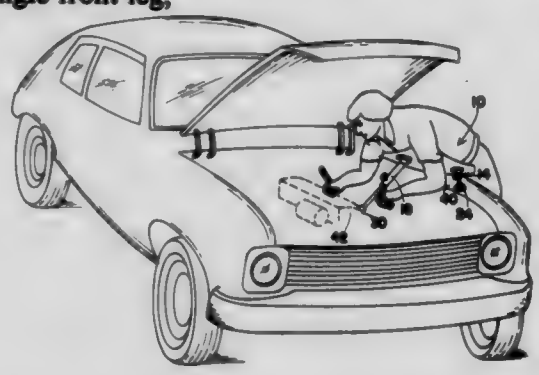
U.S. Cl. 182—129 9 Claims

1. A mechanic's rest comprising:

a chest support platform of a size to generally fit the frontal area of a typical human torso, gently concave and contoured on its upper surface to approximate the shape of such a torso with forward corners removed to facilitate arm movement;

cushioned lower support means attached to the underside of said chest support platform along the rear edge thereof;

a single front leg;



a ball and socket joint mounting said front leg to swivel to the underside of said chest support platform intermediate the sides thereof; and

extensible means for adjusting the length of said front leg.

4,493,394

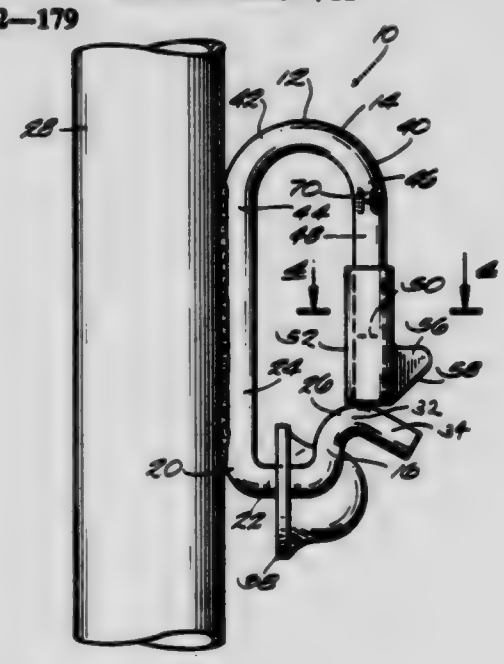
BRACE LOCK FOR SCAFFOLDING

Stig Karlsen, Burlington, Wis., assignor to Figgie International Inc., Willoughby, Ohio

Filed May 24, 1982, Ser. No. 381,021

Int. Cl.³ E04G 7/22

U.S. Cl. 182—179 2 Claims



1. A locking device for a scaffold brace comprising:

a generally C-shaped member 10 having a vertical leg 24 for attachment to a scaffold member, a lower U-shaped support portion having two upwardly extending vertical legs for supporting the scaffold brace thereon with the end of one support leg connected to the lower end of said vertical leg, a scaffold brace receiving end 34 extending horizontally and downward from the end of the other leg of said U-shaped support portion to facilitate the mounting of the scaffold brace onto said locking device, and an upper leg 12 connected to the upper end of said vertical leg and having a vertically depending latch retaining portion 48 on the end thereof positioned directly above said brace receiving end; and

a latch member 52 slidably mounted on said latch retaining portion and movable between a scaffold brace blocking position and a scaffold brace nonblocking position, said latch member having a tab member thereon to facilitate manual actuation thereof, said tab member having a cam surface thereon which cooperates with a scaffold brace when the brace is inserted onto said scaffold brace receiv-

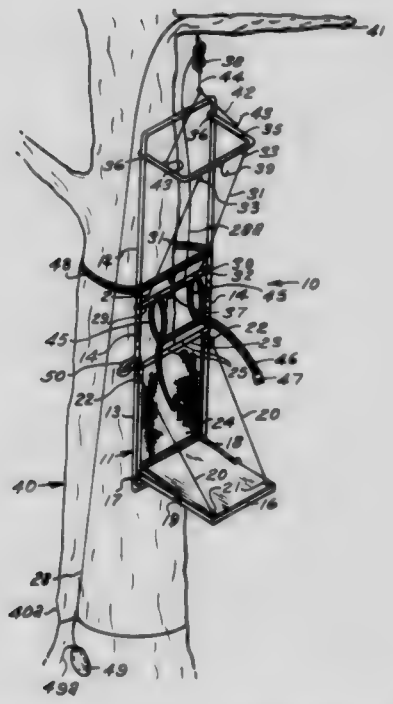
ing end to thereby facilitate mounting the brace onto the locking device.

4,493,395

TREE STAND FOR HUNTERS

Raymond G. Rittenhouse, 1392 SR 41 SW., Washington Court House, Ohio 43160

Filed Oct. 3, 1983, Ser. No. 538,536
Int. Cl.³ A01M *31/02*; A45F *3/26*; A47C *9/10*
U.S. Cl. 182—187 1 Claim



1. A tree stand for hunters, comprising, in combination, a frame, a plywood platform secured to said frame, a canvas seat attached to said frame, a safety belt secured to said frame, a block and tackle suspension unit attached to said frame, a tree securement belt looped around said frame, and a bow support device and a long gun support device secured to said frame; said frame including a pair of "U"-shaped, tubular members pivotally attached together by hinges and forming an upper and a lower portion, said platform being pivotally secured within said lower portion of said frame by pivot pin means, said seat being foldable above said platform and being secured, at one end, to a pivotable bar secured to said platform, and an opposite end of said seat is fixedly secured to a cross bar welded to said lower portion of the frame; and said suspension unit is attached to said upper portion of the frame and includes weight means for attaching said tree stand around a tree limb.

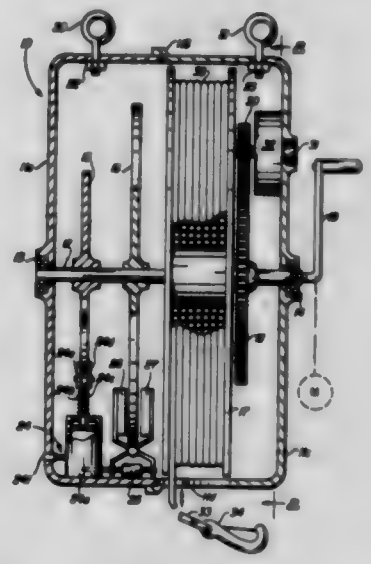
4,493,396

WINCH FOR SAFELY LOWERING A PERSON AT A CONTROLLED RATE

Joseph Borgia, V, 2723 Riverview Dr., Naples, Fla. 33942

Filed Mar. 14, 1983, Ser. No. 475,253
Int. Cl.³ A62B *1/12*
U.S. Cl. 182—238 3 Claims

1. A self-contained compact winch for use in safely lowering a person from an elevated position comprising:
- a drum-shaped cylindrical casing;
- a rotatable shaft within the casing mounted on a pair of bearings located on opposite sides of the drum-shaped casing;
- a spool axially affixed to the shaft;
- a cam plate axially affixed to the shaft;
- a brake disc axially affixed to the shaft;
- a first gear axially affixed to the shaft;
- an air pump mounted on the inside of the casing and having a piston rod actuated by the rotation of the cam plate;
- a disc brake assembly within said casing activated by the air pump engage said brake disc;
- a length of cable wound upon the spool with the free end of said cable depending from a hole in said casing;
- a centrifugally operated clutch mechanism mounted on the inside of the casing and including a second gear meshing with the first gear; and



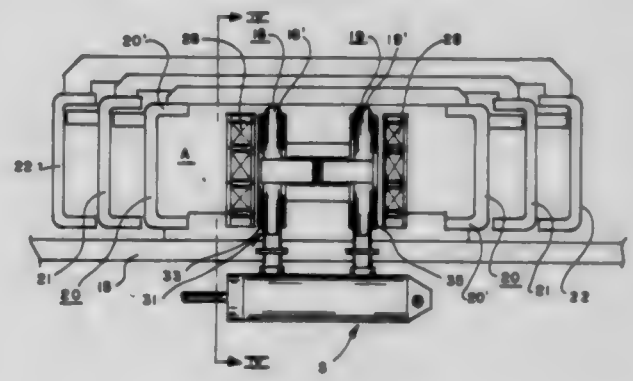
- means including a crank attached exteriorly of the casing to one end of the shaft for rewinding the cable onto the spool.

4,493,397

FORK LIFT TRUCKS

George L. Maes, Collierville, Tenn., assignor to Nissan Industrial Equipment Co., Memphis, Tenn.

Filed Aug. 6, 1982, Ser. No. 405,895
Int. Cl.³ B66B *9/20*
U.S. Cl. 187—9 E 3 Claims



1. A tensioning device for maintaining proper tension on a section of the hydraulic lines of a fork lift truck having a truck assembly; having a telescopic mast assembly, including a first mast member, a second mast member to which said first mast member is slidably attached, and a third mast member to which said second mast member is slidably attached and which is attached to said truck assembly; and having a piston including a first end for being operatively attached to said first mast member and including a second end for being operatively attached to said second mast member, said tensioning device comprising:
- (a) sheave means for guidingly receiving said section of said hydraulic lines; and
- (b) mounting means for mounting said sheave means to said first end of said piston of said telescopic mast assembly in such a manner that said section of said hydraulic lines is substantially maintained within the confines of said telescopic mast assembly regardless of the position of the mast assembly; said mounting means including a body member attached to said telescopic mast assembly, said body member including a first upwardly directed body portion and a second upwardly directed body portion; said mounting

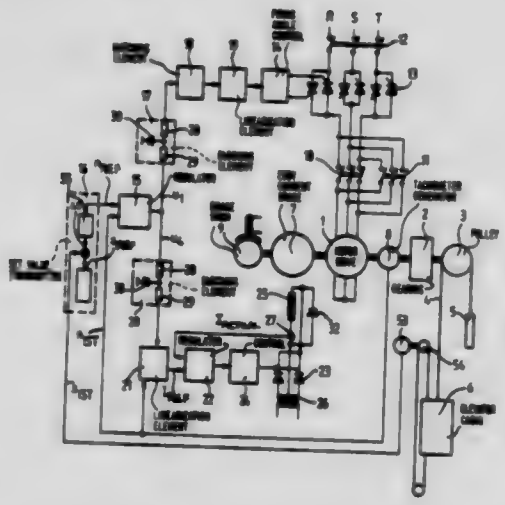
means including a head member, said head member including a first head portion slidably mounted on said first body portion and including a second head portion slidably mounted on said second body portion; said mounting means including a first spring member positioned between said first body portion and said first head portion, and a second spring member positioned between said second body portion and said second head portion, said first and second spring members being enclosed within said first and second head portions respectively.

4,493,398

DRIVE CONTROL FOR A TRANSPORTATION SYSTEM, ESPECIALLY AN ELEVATOR

Gerhard Kindler, Meggen, Switzerland, assignor to Ivantio AG, Hergiswil, Switzerland

Filed May 2, 1983, Ser. No. 490,779
Claims priority, application Switzerland, May 3, 1982, 2688/82
Int. Cl.³ B66B 1/24
U.S. Cl. 187—29 R 7 Claims



1. A drive control for a transportation system, especially for an elevator containing a drive motor coupled to an eddy current brake having an excitation winding and to a tachometer, said drive control comprising:

a reference value transmitter;

said reference value transmitter generating an increasing reference value during an acceleration phase and a decreasing reference value during a deceleration phase of said drive control;

a first regulator operatively connected with said reference value transmitter and having an input and an output;

said input being connected to said tachometer which supplies an actual value of the rotational speed of said drive motor to said first regulator;

a first control member for controlling a driving torque of said drive motor;

a first control circuit formed by said first regulator and said first control member;

a second control member for controlling a braking torque of said eddy current brake;

a second control circuit formed by said first regulator and said second control member;

said output of said first regulator being connected to said first control member and to said second control member;

a first blocking element for blocking the regulation of said drive motor;

a matching element for approximately matching the variation in said driving torque and in the rotational speed of the drive motor during said acceleration phase to the variation of said driving torque and said rotational speed of the drive motor during said deceleration phase;

a first linearization member;

said first blocking element, said matching element and said first linearization member being operatively connected in said first control circuit;

a second blocking element for blocking regulation of said eddy current brake;

a second linearization member;

a second regulator including a feedback loop for feeding back the current detected in said excitation winding of said eddy current brake to said second regulator;

said second blocking element, said second linearization member and said second regulator being connected in said second control circuit;

said first regulator being supplied with a regulation deviation determined by the difference of said reference value generated by said reference value transmitter and said actual value derived from said tachometer; and

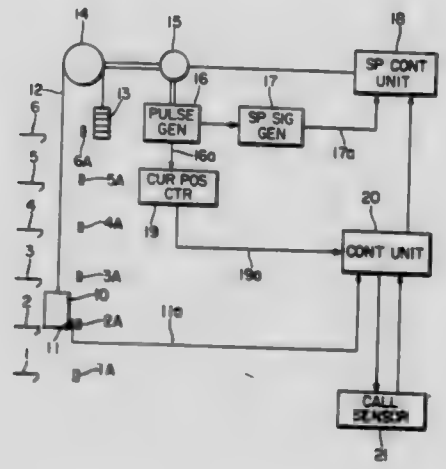
said travel of said elevator being automatically controlled as a function of said regulation deviation.

4,493,399

ELEVATOR CONTROL SYSTEM

Ryuichi Kajiyama, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 5, 1983, Ser. No. 492,007
Claims priority, application Japan, May 11, 1982, 57-78605
Int. Cl.³ B66B 1/18
U.S. Cl. 187—29 R 4 Claims



1. A control system for an elevator wherein the distance between the current elevator car position and the target position of a floor at which the car is to be halted is detected on the basis of a car position signal computed from car displacements and a preliminarily stored floor position signal for controlling the car speed, said system comprising:

means for sensing the floors of a building in which the car is mounted, said means issuing an output signal whenever the car has reached a floor;

means for detecting the current car position, said detecting means issuing an output representing the current position of the car; and

means for controlling the car speed on the basis of the outputs from said floor detecting means and said current position detecting means;

said control means including

(a) a read-only memory for storing floor data concerning respective floor positions of a building according to the building schedule;

(b) a read-write memory for storing floor data concerning respective floor positions to be used for the car speed control; and

processor means in said control means coupled to said memories (1) for transferring the floor data in said read-only memory to said read/write memory to be used for car speed control when the power is applied to said control means; (2) for causing the car to travel to a floor, the floor data of which is not corrected in said read.write memory, in such a manner that the car is caused to travel to a target

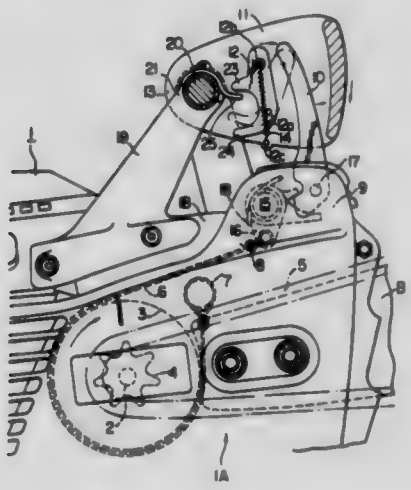
position a predetermined distance ahead of the floor position indicated by the floor data for said floor stored in said read/write memory; (3) for correcting the floor data concerning a target floor stored in said read/write memory by replacing said floor data with the prevailing car position output from said current position detecting means when the output from said floor detecting means has shown that the car has arrived at the target floor, and (4) for storing in said read/write memory the indication that the correction of the position data of said target floor is completed; the correction of the floor data in the read/-write memory being not made by the processor means if the current car position data corresponds to the actual floor position data.

4,493,400

EMERGENCY BRAKING DEVICE FOR CHAIN SAW

Akira Nagashima, Kawasaki, and Yasuo Saito, Fujisawa, both of Japan, assignors to Kioritz Corporation, Tokyo, Japan

Filed Apr. 5, 1982, Ser. No. 365,654
Claims priority, application Japan, Apr. 13, 1981, 56-54417
Int. Cl.[3] F16D *49/04*; B23D *57/02*
U.S. Cl. 188—77 W 2 Claims



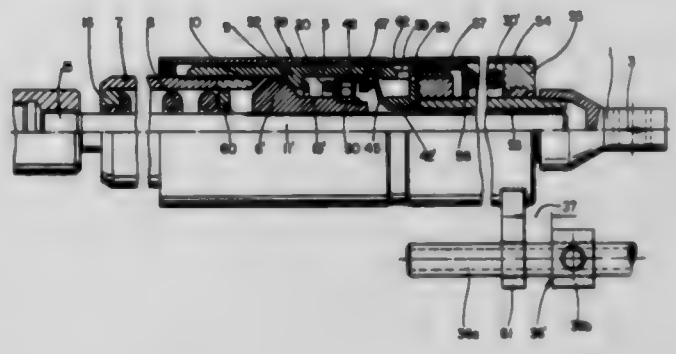
1. In a chain saw having a clutch drum (3) drivingly connected to a crank shaft (2) of an engine through a centrifugal clutch, and an emergency braking device, said braking device comprising: a braking band (6) wound around said clutch drum (3), said braking band (6) having one end fixed to the body of said chain saw; an actuating means (16) to which the other end of said braking band is fixed; an inertia member (11) disposed in the vicinity of a front handle (20) of said chain saw and surrounding a lever member (10) of said actuating means (16); a coil spring (18) for holding said braking band (6) and said lever member (10) at predetermined positions; a hit spring (14) overcoming the resistance of said coil spring (18) and causing the pivoting of said lever member (10) to tighten said braking band (6); a hit switch member (12) pivoted on said inertia member (11) adapted to hit said lever member (10); and a stopper plate (25) fixed to said front handle (20) for pushing said hit switch member (12); the pivoting of said hit switch member (12) being initiated by the inertia action of said inertia member (11) and being completed by the action of said hit spring (14) whereby said braking band (6) is tightened by the action of said lever member (10) to brake said clutch drum (3).

4,493,401

AUTOMATIC BRAKE RESETTING DEVICE

Nils B. L. Sander, Osby, Switzerland, and Julius Nedas, Eching, Fed. Rep. of Germany, assignors to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 117,984, Feb. 4, 1980, abandoned. This application Oct. 14, 1982, Ser. No. 434,375
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1979, 2904028
Int. Cl.[3] F16D *65/56, 65/66*
U.S. Cl. 188—199 6 Claims



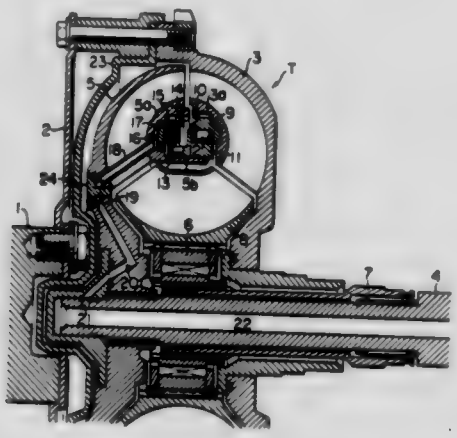
1. In an automatic brake resetting device particularly for railway vehicles, first and second rod members telescopingly displaceable with respect to each other and which transmit a braking force, a rotatable coupling element having a threaded shaft with a non-self locking thread thereon connected to one of said rod members, rotary coupling means between said rotatable coupling element and a non-rotatable portion of the other rod member and being actuated by axial displacement of said rotatable coupling element with respect to said non-rotatable rod member portion, a first spring acting upon said rotary coupling element in a direction to close said rotary coupling means, a control stop device slideably supported on a guide member and displaceable through a control distance, said guide member being so mounted as to be displaceable with respect to said rotatable coupling element a distance proportional to the brake stroke, a second spring operatively coupled to said control stop device, lever means for coupling said control stop device, said non-rotatable rod member portion and said rotatable coupling element to transmit force therebetween upon displacement of said rotatable coupling element in a direction to open said rotary coupling means, said lever means having such a transmission ratio to amplify force transmitted from said second spring to said rotatable coupling element, said lever means comprising a variable angle conical annular element coaxial to said rotatable coupling element, said annular element having inner and outer peripheral edge portions, the outer peripheral edge portion being operatively connected to the other rod member and the inner peripheral edge portion being operatively connected to said control stop device, and an annular portion of said annular element between said peripheral edge portions being operatively connected to said rotatable coupling element, said conical annular element having a longer lever arm between said inner peripheral edge and said coupling element connection, said conical annular element having a plurality of radial slots beginning at one peripheral edge and terminating short of the other peripheral edge, and an axial bearing on said rotatable coupling element and acted upon by said first spring, a coupling ring axially displaceable with respect to one of said rod members engaging said conical annular element and disposed on the side of said axial bearing away from said first spring, and an axially displaceable tubular element positioned radially outwardly of said axial bearing having on one end thereof a flange disposed between said first spring and said axial bearing and another end thereof connected to said coupling ring.

4,493,402

HYDRAULIC TORQUE CONVERTER FOR VEHICLES

Terao Hattori, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 19, 1982, Ser. No. 350,347
Claims priority, application Japan, Jun. 5, 1981, 56-86607
Int. Cl.³ B60K 41/28
U.S. Cl. 192—326
6 Claims



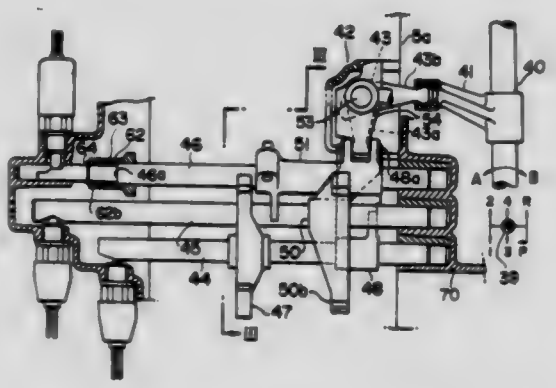
1. A hydraulic torque converter comprising:
(a) a pump wheel having an engine output shaft coupled thereto;
(b) a turbine wheel having a turbine output shaft connected thereto, wherein said turbine wheel is coupled to said pump wheel through a fluid coupling for the transmission of power therebetween;
(c) a one-way clutch means;
(d) an on-off clutch means connected in series with said one-way clutch means, said serially connected clutch means being disposed side-by-side in a space defined between opposed inner walls of said pump wheel and said turbine wheel for connection between said pump wheel and said turbine wheel; and
(e) means for operating said on-off clutch means, wherein when said on-off clutch means is engaged and said one-way clutch means is engaged, said turbine wheel is mechanically coupled to said pump wheel for the transmission of power thereto.

4,493,403

PARKING LOCK MECHANISM FOR A SHIFT LEVER

Toshio Takano, Hamuramachi, and Shinichiro Mura, Mitaka, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1982, Ser. No. 382,435
Claims priority, application Japan, May 30, 1981, 56-82763
Int. Cl.³ B60K 41/26
U.S. Cl. 192—4 A
4 Claims



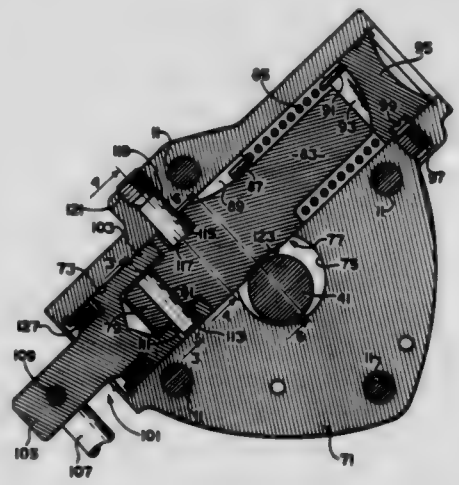
1. An improved parking lock mechanism for a vehicle having a clutch, a transmission including a transmission case, a shift lever, a link mechanism for transmitting the operation of said shift lever to shifter rails in said transmission for selecting change speed gears, and a parking position for said shift lever, the improvement comprising:
a shaft securely mounted on said transmission case;
a select lever rotatably and axially slidably mounted on said shaft;
interlocking means adapted to be slid together with said select lever;
first means for transmitting the operation of said shift lever to said select lever for rotating and sliding thereof;
a parking shifter rail provided for parking;
a fork secured to said parking shifter rail and operatively engaged with an end of said select lever so as to transmit the rotary movement of the select lever to the shifter rail;
a parking pawl operatively engaged with said parking shifter rail;
a parking gear secured to an output member of said transmission so as to be engaged with said parking pawl;
second means for converting the movement of said parking shifter rail to the movement of said parking pawl for engaging said pawl with said parking gear; and
third means provided in said interlocking means for locking said fork when said select lever is shifted to the parking position.

4,493,404

HYDRAULIC GEROTOR MOTOR AND PARKING BRAKE FOR USE THEREIN

Wayne B. Weaker, Hopkins, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 22, 1982, Ser. No. 443,512
Int. Cl.³ F16H 57/10; B60K 41/28
U.S. Cl. 192—4 A
14 Claims



1. A rotary fluid pressure device of the type including housing means defining fluid inlet means and fluid outlet means; an internal gear set associated with said housing means and including an internally-toothed member and an externally-toothed member eccentrically disposed within said internally-toothed member, one of said members having rotational movement about its axis, and one of said members having orbital movement about the axis of the other member, the teeth of said members interengaging to define expanding and contracting volume chambers during said movements; valve means operable in response to one of said movements to communicate fluid from said fluid inlet means to one of said expanding and contracting fluid chambers, and from the other of said fluid chambers to said fluid outlet means; shaft means operatively associated with one of said toothed members to have one of (a) pure rotational movement, and (b) both orbital and rotational movement, characterized by:
a lock member operably associated with said housing means and being disposed adjacent one of (a) said toothed member having said orbital movement, and (b) a portion of said shaft means engaging in orbital movement, said member and said portion defining imaginary orbit circles as at least

one of said member and said portion engage in said orbital movements, said lock member defining a lock surface and being movable between a first position in which said lock surface is disposed outside said orbit circles to permit normal orbital and rotational movement of said toothed members, and a second position in which said lock surface is disposed within at least one of said orbit circles to engage said one of (a) said toothed member and (b) said portion of said shaft means and prevent said orbital movement thereof, thereby preventing said rotational movement.

4,493,405

CLUTCH AND BRAKE WITH BEARING PROTECTION

Martin Roth, Taufkirchen, and Bernhard Stahn, Irschenhausen, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany

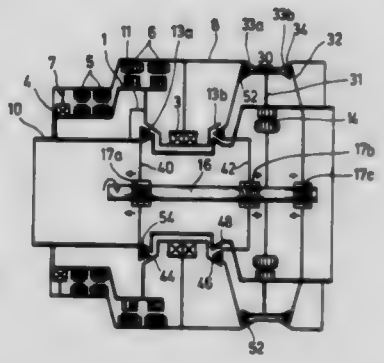
Filed Mar. 1, 1982, Ser. No. 353,619

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1981, 3107385

Int. Cl.³ F16D *67/02*

U.S. Cl. 192—18 R

11 Claims



1. A clutch and brake bearing protection comprising:

a housing;

a first shaft rotatably mounted to the housing;

at least one bearing connected between said housing and said first shaft for rotatably mounting said first shaft to said housing;

a second shaft coaxially mounted and at least partially extending within said first shaft adapted to drive a load with rotation of said second shaft, said second shaft being radially and axially free of said first shaft;

drive means connected to said first shaft for rotating said first shaft;

shaft coupling means connected to said first and second shafts movable into a first position for engaging said first shaft to said second shaft against relative axial and radial motion and to a second position for disengaging said first shaft from said second shaft and for permitting relative axial and radial motion between said first and second shafts;

a friction brake connected between said second shaft and said housing and associated with said coupling means for movement into a first position with said coupling means in its second position for engaging said second shaft with said housing to transmit forces from said second shaft to said housing when said first and second shafts are disengaged from each other;

said coupling means comprising a threaded spindle rotatably mounted in said second shaft, a nut threaded to said threaded spindle and a coupling member connected to said nut for movement, with rotation of said spindle into simultaneous engagement with at least a portion of said first and second shafts to engage said first and second shafts to each other, said friction brake connected to said nut and operable by said threaded spindle simultaneously with the operation of said coupling means for disengaging said first and second shafts simultaneously with the engagement of said second shaft with said housing, said friction brake having a brake shoe connected to said nut and movable to simultaneously engage at least a portion of said housing with said second shaft simultaneously.

4,493,406

VISCOUS BYPASS COUPLING FOR TORQUE CONVERTER

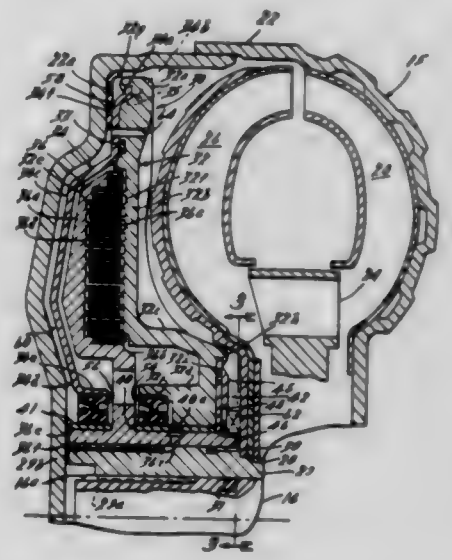
Warren G. Bopp, Farmington Hills, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 31, 1983, Ser. No. 499,617

Int. Cl.³ F16D *31/00*

U.S. Cl. 192—58 B

16 Claims



1. A viscous coupling of the type including a clutch assembly having an annular axially extending hub portion adapted for driving connection to a shaft, an annular, radially extending clutch portion extending radially outward of and joined to the hub portion by a bridge portion; an annular housing assembly having axially spaced, radially extending, annular side wall members defining a chamber containing the clutch portion and a viscous fluid for transmitting torque between the clutch hub portion and a radially outer peripheral portion of the housing assembly via spaced working means defined by mutually facing portions of the clutch portion and one of the side wall members; an annular axially, extending hub portion at the radially inner edge of the one side wall member journaled on the outer peripheral surface of the clutch hub portion; seal means cooperating between said annular housing assembly and said clutch hub portion; the improvement comprising:

thrust means reacting axial forces on said one side wall member for inhibiting changes in the axially spaced distance between said working means, said thrust means and said journal providing the sole support for radial and axial loads on said housing assembly and including:

a first thrust member extending radially outward from the inner edge of and contacting a radially extending surface of the member hub portion of said one side wall member for preventing axial movement of said hub portions relative to each other; and

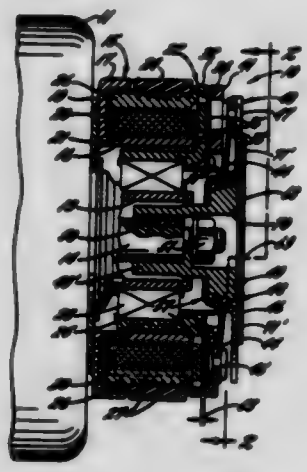
a second thrust member having a radially outer edge fixed to said one side wall member at a position radially outward of the radially outer edge of said first thrust member and extending radially inward to a position overlapping and sandwiching said first thrust member between said radially extending surfaces of said one side wall member and said second thrust member.

4,493,407

ARMATURE ASSEMBLY FOR AN ELECTROMAGNETIC CLUTCH

Paul P. Newton, Beloit, Wis., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed Dec. 14, 1981, Ser. No. 330,651
Int. Cl.³ F16D 3/12, 3/76, 27/10
U.S. Cl. 192—84 C 1 Claim



1. An armature assembly for an electromagnetic coupling, said assembly comprising a forwardly disposed mounting plate and a rearwardly disposed armature, means connecting said armature and said plate for rotation in unison while permitting said armature to move toward and away from said plate, a hole extending axially through said plate, the periphery of said hole being defined by a first set of circumferentially spaced teeth and by a first set of circumferentially spaced valleys which alternate with the teeth, a shaft having a hub formed on one end portion thereof, said hub having a second set of circumferentially spaced teeth and having a second set of circumferentially spaced valleys which alternate with the second teeth, said hub being telescoped into said hole with the teeth of each set being disposed within and spaced from the valleys of the other set, at least the teeth of one set and the valleys of the other set being flared outwardly in the forward direction, an annulus of elastomeric material disposed within said hole between said hub and the periphery of the hole and having alternating teeth and valleys interfitting with the teeth and valleys on the hub and in said hole, the cross section of said annulus being sized so that the annulus is pre-compressed between the hub and the hole at all points around the periphery of the annulus by forcing the hub inwardly, and means forcing and holding said hub inwardly to pre-compress said annulus and hold the entire annulus in a state of residual compressive stress when torque is applied and transmitted through the annulus between the mounting plate and the armature.

4,493,408

DAMPER DISC

Tamio Nagano, Hirakata, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Sep. 21, 1981, Ser. No. 304,260
Int. Cl.³ F16D 3/14
U.S. Cl. 192—106.2 3 Claims

1. A damper disc comprising a hub splineable to an output shaft, said hub having an outer periphery;

a radial flange formed on the outer periphery of the hub;

a pair of annular side plates disposed at both sides of the flange;

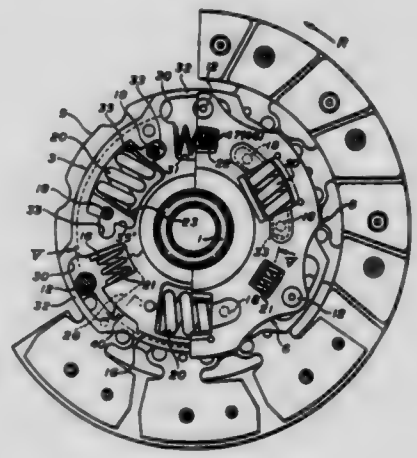
torsion springs disposed in alternating first and second openings formed in the flange and the side plates and registering in the axial direction of the disc, said side plates being connected to the flange by the springs, said first and second openings have side edges;

a pair of annular sub-plates disposed between the side plates and the flange;

stud pins connecting the sub-plates together;

recess formed at middle portions of the side edges of the first openings in the flange, each stud pin passing through said each recess with a space between the stud pin and the side edge of the recess corresponding to a torsion angle for first hysteresis torque, at least one said stud pins being positioned in one of said first openings adjacent the respective recess in a forward circumferential direction of travel when the disc is not undergoing torsion;

stop pins connecting the radially outer portions of the side



plates together, said stop pins being positioned radially outwardly of said first and second openings;

notches formed at radially outer edges of the second openings in the flange each having side edges, each stop pin passing through each notch with a space between the stop pin and the side edge of the notch corresponding to a maximum torsion angle;

first friction members arranged between the sub-plates and the flange, and having small frictional force; and

second friction members arranged between the sub-plates and the side plates, and having large frictional force.

4,493,409

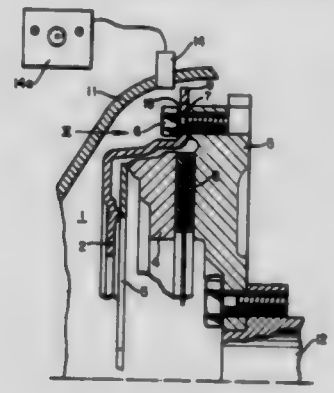
FRICTION CLUTCH

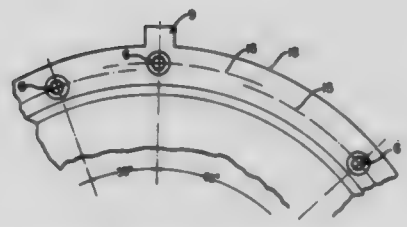
Klaus Steeg, Bühl, Fed. Rep. of Germany, assignor to Lak Lamellen und Kupplungsbau GmbH, Büh, Fed. Rep. of Germany

Continuation of Ser. No. 116,945, Jan. 30, 1980, abandoned, which is a continuation-in-part of Ser. No. 847,805, Nov. 2, 1977, abandoned. This application Jan. 18, 1982, Ser. No. 340,390
Int. Cl.³ F16D 65/00
U.S. Cl. 192—115 11 Claims

1. In a power unit, particularly in an ignition-operated combustion power unit, the combination of a rotary crankshaft; a flywheel on said crankshaft, said flywheel having a friction surface; a friction clutch adjacent to said flywheel and including a cover provided with a single marker constituting an ignition point indicator, resilient means between said cover and said flywheel, a pressure plate interposed between said resilient means and said flywheel and having a friction surface facing the friction surface of said flywheel, and a clutch disc between said friction surfaces; and cooperating torque transmitting means provided on said cover and said flywheel for connecting said cover with said flywheel in a single predetermined angular position relative to each other so that said marker is invariably

maintained in one and the same predetermined angular position with reference to said crankshaft and said flywheel whenever





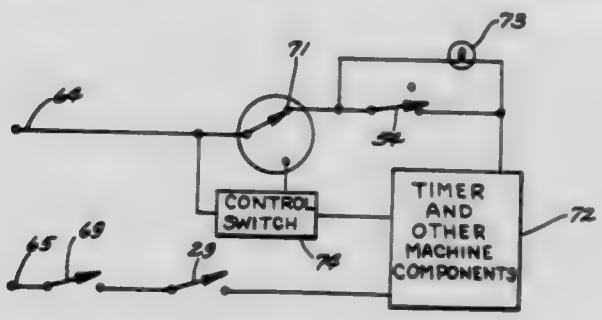
said torque transmitting means connects said cover and said flywheel to each other.

4,493,410

DOUBLE ACTUATION COIN SLIDE SYSTEM

Robert B. Nelson, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Dec. 27, 1982, Ser. No. 453,875
Int. Cl.³ G07F 5/12
U.S. Cl. 194—1 G 8 Claims



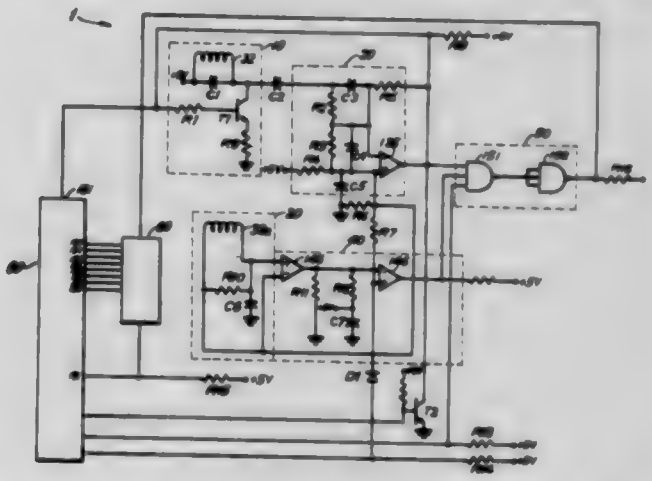
1. A double actuation coin slide system associated with a housing and operable for initiating an electrically energized vending operation, the combination comprising: a power source providing electrical power between a pair of electrical conductors for powering means for effecting said vending operation; first and second switch means associated with said electrical conductors, each of said first and second switch means being operable between power connecting first and power disconnecting second postures for cooperatively connecting or individually disconnecting electrical power from said power source to said vending effecting means with said first switch means being in said power disconnecting second posture during an off condition of said vending effecting means; and coin slide means mounted on said housing and movable from a coin receiving position to a position for initiating said vending operation, said coin slide means operable through a first coin slide insertion cycle for effecting actuation of said first switch means to said first posture and said second switch means to said power disconnecting second posture to maintain said power source disconnected from said vending effecting means and through a second coin slide insertion cycle for effecting actuation of said second switch means to said first posture while maintaining said first switch in said first posture to connect said power source and energize said vending effecting means whereby two coin slide insertion cycles are required for each vending operation.

4,493,411

SELF TUNING LOW FREQUENCY PHASE SHIFT COIN EXAMINATION METHOD AND APPARATUS

Frederic P. Heiman, Philadelphia, Pa., assignor to Mars, Inc., McLean, Va.

Filed Sep. 29, 1982, Ser. No. 428,467
Int. Cl.³ G07F 3/02
U.S. Cl. 194—100 A 25 Claims



1. A method for examining coins comprising the steps of storing information regarding the relationship between an acceptable phase shift and the frequency of a first signal comprising a low frequency electrical signal,

generating the first signal with a first inductor located on one side of a coin passageway,

monitoring the frequency of the first signal,

receiving a portion of the first signal which is transmitted across the coin passageway, said portion received with a second inductor located on the other side of the coin passageway, and producing a second signal,

measuring the phase shift between the first signal and the second signal when a coin is between the first and second inductors,

determining an acceptable phase shift for an acceptable coin based upon the monitored frequency of the first signal and the stored information, and

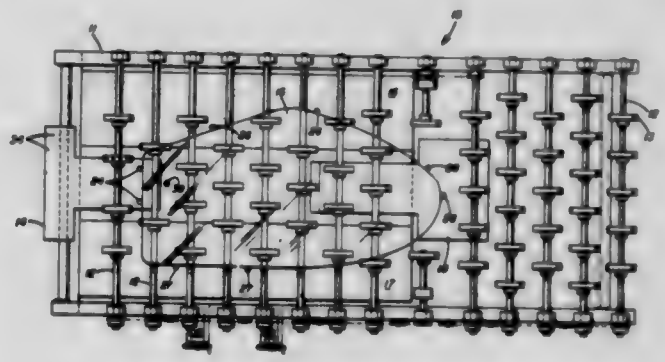
comparing the measured phase shift and the acceptable phase shift to determine if the coin is an acceptable coin.

4,493,412

GLASS SHEET POSITIONING APPARATUS FOR CONVEYOR PLATFORM

Richard J. Krehnovi, Mansfield, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 25, 1982, Ser. No. 392,393
Int. Cl.³ B65G 47/26
U.S. Cl. 198—434 8 Claims



1. An apparatus for positioning a sheet in a predetermined

location in a sheet pick-up station located on a platform, comprising:

a plurality of sheet engaging means;

stopping means disposed about one end of the sheet pick-up station for stopping the sheet in the sheet pick-up station;

a first table disposed on one side of the sheet pick-up station, said first table having holes arranged in a plurality of rows and columns for receiving at least one of said sheet engaging means;

a first means for reciprocating said first table between a sheet engaging position wherein at least one of said said sheet engaging means engages a side edge of the sheet on the platform, and a non-sheet engaging position;

a second table disposed on the opposite side of the sheet pick-up station, said second table having holes arranged in a plurality of rows and columns for receiving at least one of said sheet engaging means;

a second means for reciprocating said second table between a sheet engaging position wherein at least one of said sheet engaging means engages the opposite side edge of the sheet on the platform, and a non-sheet engaging position;

a third table disposed about the opposite end of the sheet pick-up station, said third table having holes arranged in a plurality of rows and columns for receiving at least one of said sheet engaging means;

a third means for reciprocating said third table vertically upwardly and downwardly relative to the platform, between a first position wherein said third table and said at least one of said sheet engaging means carried thereby are disposed below the plane of the platform, and a second position wherein said at least one of said sheet engaging means carried by said third table at least partially projects above the plane of the platform;

a fourth means for reciprocating said third table, when it is in its said second position, between a sheet engaging position wherein at least one of said sheet engaging means engages the end of the sheet on the platform, opposite said stopping means and a non-sheet engaging position; and

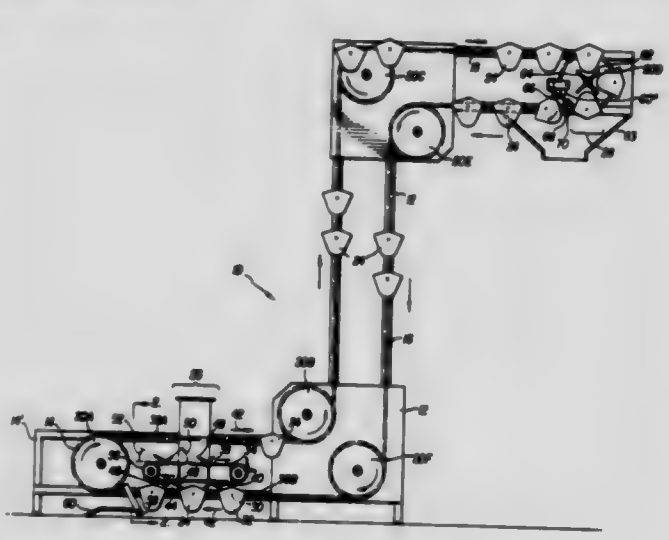
wherein said first, second, third and fourth reciprocating means cooperatively function to first move said first, second, and third tables, respectively into their said sheet engaging position, to position the sheet into the predetermined location, and to secondly move said first, second, and third tables, respectively, into their said non-sheet engaging position to provide clearance for the sheet to be manipulated.

4,493,413

BUCKET CONVEYOR ASSEMBLY

John C. Harrell, 721 Riverview Dr., Suffolk, Va. 23434

Filed Jan. 25, 1982, Ser. No. 342,434
Int. Cl.³ B65G *17/36*
U.S. Cl. 198—708 7 Claims



1. A bucket conveyor assembly comprising:

a bucket endless conveyor including an endless flexible means for carrying longitudinally-spaced buckets attached thereto in a closed path, said closed path being defined by pulley means located at corners of said closed path for engaging and guiding said endless flexible means, said main bucket endless conveyor including a substantially horizontal section having an upper flight traveling in a first direction and a vertically-spaced lower flight traveling in an opposite direction;

a cover endless conveyor comprising an endless flexible means for carrying longitudinally-spaced covers attached thereto in a closed path, said covers being of a sufficient size to span longitudinal spaces between said buckets, said cover endless conveyor being located inside said horizontal section of said bucket endless conveyor, between said upper and lower flights, and being positioned parallel to said lower flight;

driving means for driving said bucket endless conveyor and said cover endless conveyor in the same direction and at such speeds that said covers of a lower stretch of said cover endless conveyor are superimposed with spaces between said buckets on said lower flight of said bucket endless conveyor at a loading zone;

a bucket-loading means for gravity-feeding goods to be loaded between upper and lower flights of both said bucket endless conveyor and said cover endless conveyor into buckets on said lower flight of said bucket endless conveyor at said loading zone; and

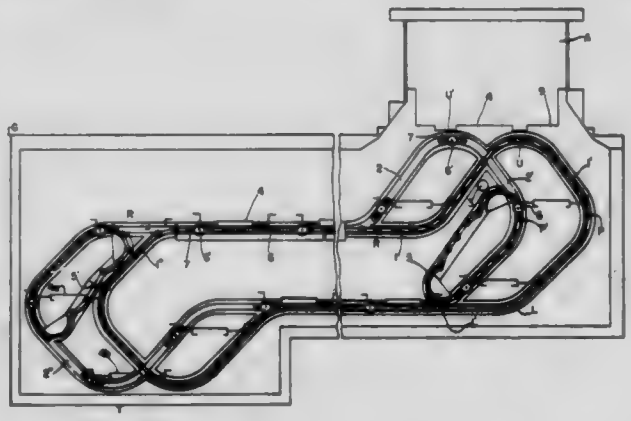
a bucket tilter downstream of said loading zone, but before said cover is lifted away from said space between said loaded buckets, for suddenly tilting said buckets forwardly.

4,493,414

CONVEYOR ELEVATOR APPARATUS

Jacob I. Nevo-Hacohen, 150 Longwood Ave., Brookline, Mass. 02146

Continuation of Ser. No. 284,441, Jul. 17, 1981, abandoned. This application Nov. 7, 1983, Ser. No. 549,226
Int. Cl.³ B65G *17/18*
U.S. Cl. 198—800 16 Claims



1. In conveyor elevator apparatus having a pair of substantially co-extensive main closed-loop channels and a pair of substantially co-extensive follower closed-loop channels, said pairs of channels being longitudinally staggered, each channel having upper and lower horizontal sections adapted for movement of platforms therealong in opposite horizontal directions, respectively, said main channels receiving main conveyors mounting successively spaced horizontal platforms supported near one end by attachment to the main conveyors and supported near the other end through follower means that ride in said follower channels, and so that each platform is supported at four points at all times, the combination of longitudinally staggered direction-changing transverse end portions at an end of each of the main and follower channels transversely connecting their respective upper and lower horizontal sections, each end portion defining two sloping sections and an adjacent vertical section by which the platforms move transversely

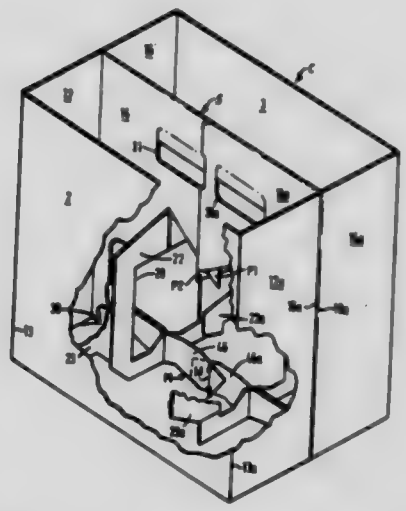
between the upper and lower horizontal sections; and a pair of auxiliary conveyor means disposed adjacent said direction-changing end portions of the follower channels, respectively, and engaging the follower means of the platforms at the vertical section and at least one of the sloping sections of each of those end portions so that the auxiliary conveyor means is compelled to move in synchronism with such follower means, the length of the auxiliary conveyor means being less than the length of the adjacent transverse end portions but sufficient always to engage the auxiliary conveyor means with the follower means of at least two platforms, with one such platform at said one of the sloping sections of an end portion when another is at the vertical section thereof, to enable each platform moving along a vertical section of an end portion to remain stable horizontally due to engagement of the auxiliary conveyor means with the follower means of a platform at said sloping sections of that end portion.

4,493,415

BASKET-STYLE ARTICLE CARRIER WITH MEDIAL SEPARATOR

Prentice J. Wood, Hapeville, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Jan. 28, 1983, Ser. No. 461,808
Int. Cl.³ B65D *75/00*
U.S. Cl. 206—175 4 Claims



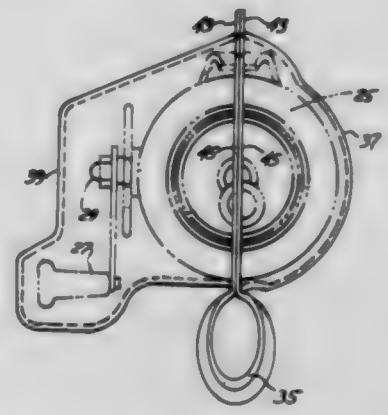
1. A blank (1) for forming a cellular basket-style carrier (c) which blank comprises a pair of central panels (2, 3) respectively providing side walls of the carrier, one of said central panels (2) having a base panel (5) hinged thereto for forming the base of the carrier and the other of said central panels (3) having a connecting flap (10) hinged thereto for joining the base panel to said other central panel, each of said central panels having a pair of end wall panels (12, 12*a*: 16, 16*a*) hinged thereto and each of said end wall panels having a medial panel (14, 14*a*: 18, 18*a*) hinged thereto, said medial panels together providing both a central longitudinal partition structure (S) of the carrier and transverse partition structures on either side of said longitudinal partition structure when the carrier is erected, the medial panels (18, 18*a*) associated with one of said central panels (2, 3) having a separator panel (46, 46*a*) hinged thereto for providing together a multi-ply separator (M) centrally of the carrier in the plane of said longitudinal partition structure, each of said transverse partition structures comprising a main transverse partition panel (22, 22*a*: 34, 34*a*) hinged to the medial panel, a supplementary transverse partition panel (23, 23*a*: 35, 35*a*) hinged to the main transverse partition panel, and an anchoring tab (24, 24*a*: 36, 36*a*) hinged to the supplementary transverse partition panel, characterized in that each of said separator panels is struck partially from the medial panel to which it is hinged and partially from the main transverse partition panel associated with that medial panel.

4,493,416

TAMPER PROOF REEL PACKAGE FOR A FISHING ROD

Kenneth Steinman, 1901 W. Lafayette Blvd., Detroit, Mich. 48216

Filed Jun. 20, 1983, Ser. No. 505,887
Int. Cl.³ B65D *85/00*
U.S. Cl. 206—315.11 1 Claim



1. A tamper proof anti-theft reel package for a fishing rod having a handle and a reel mounted thereon;
comprising a unit molded sheet of plastic material having an elongated tubular body adapted to extend around the rod handle;
a pair of opposed cup shaped reel enclosing halves extending from said tubular body as a continuation thereof, adapted to protectively enclose the reel;
each of said halves terminating in opposed engaging marginal flanges;
said marginal flanges being arranged outwardly of the front, rear and top of said cup shaped halves;
and fastening means peripherally interconnecting and securing said flanges together;
said cup shaped halves extending mid-way of the length of said body;
the opposed engaging marginal flanges upon said cap shaped halves for the reminder of the length of said body extending substantially to the top of said cup-shaped halves and forwardly thereof forming a stiffened flat mount card;
said latter flanges having registering apertures therethrough adapted to receive a pegboard;
said tubular body functioning as a hinge for enclosing said handle and upon opening of said body halves facilitating removal of the rod and reel from said package.

4,493,417

STORAGE DEVICE FOR FLAT RECORDING MEDIA

Peter Ackeret, Kumacht, Switzerland, assignor to IDN Inventions and Development of Novelties AG, Chur, Switzerland

Filed Dec. 23, 1983, Ser. No. 565,120
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1982, 3247796
Int. Cl.³ B65D *85/672*; A65D *6/06*; A47B *88/04*, *97/00*
U.S. Cl. 206—387 18 Claims



1. A storage device for flat recording media comprising:
(a) a housing having a bottom wall, a top wall, two elongate side walls, a rear wall, and an open front side;
(b) a slider member for receiving at least one recording medium, the slider member being movably mounted in the housing and having a base portion and a front wall;

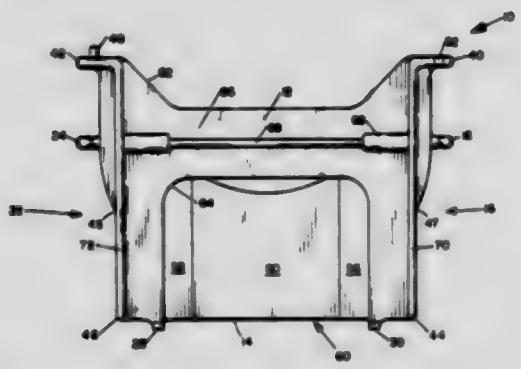
(c) means for biasing the slider member to an open position out of the housing;
(d) means for locking the slider member to a closed position within the housing against the bias of the biasing means; and
(e) lifting means for supporting and engaging underneath the recording medium, said lifting means when the device is in the open position raising the recording medium to a lifted position away from the base portion of the slider member and above the front wall of the slider member so that the recording medium is accessible for removal and insertion.

4,493,418

WAFER PROCESSING CASSETTE

Douglas M. Johnson, Waconia, Minn., assignor to Empak Inc., Chanhassen, Minn.

Filed Aug. 17, 1983, Ser. No. 523,851
Int. Cl.³ B65D 25/28, 85/30, 1/34; B65G 3/00
U.S. Cl. 206—454 3 Claims



1. Wafer cassette comprising:
a. plurality of opposing wafer dividers, each of said dividers including a rounded tooth geometrical configuration and being substantially rounded along the perimeter of a wafer for encompassing and conforming to the circumference of a wafer;
b. upper and lower opposing longitudinal horizontal supports supporting said wafer dividers;
c. plurality of opposing upper and lower edge members and opposing rounded vertical side members for supporting said wafer dividers;
d. rear-end member including a substantially downward arch providing an open top portion and secured to said side members; and,
e. open H-bar end front member, said H-bar end including opposing vertical reinforcing edge members, a horizontal H-bar member running therebetween, said horizontal H-bar member including a reinforcing sectioned cylindrical rod, a reduced cross-sectional portion therebetween, and an upper ramped portion and a lower rounded open portion about said H-bar whereby said open area of said H-bar end, said rear end, and between said wafer dividers divides for structural integrity and non-restricted open surface automated processing of wafers, thereby providing a structurally integral wafer cassette for integrated circuit automated processing of said wafers in a wafer cassette.

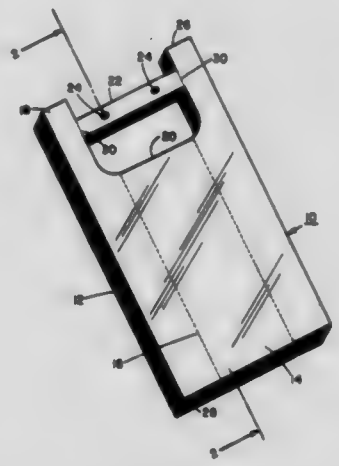
4,493,419

THERMOPLASTIC BAG AND BAG PACK

Randolph D. Prader, Fairport; Gordon L. Benoit, Macedon, and Robert T. Maddock, West Rush, all of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 3, 1983, Ser. No. 548,487
Int. Cl.³ B65D 1/34, 6/04
U.S. Cl. 206—554 7 Claims

1. A bag pack comprising a plurality of stacked thermoplastic film bag structures, each bag comprising a front and rear bag wall and an open mouth top portion, said open mouth portion being characterized by having handles which are integral extensions of said walls, said handles being located at opposite ends of said mouth portion, said handles being in association with but detachable from bag bonding means bonding said bag structures into a bag pack, said bonding means



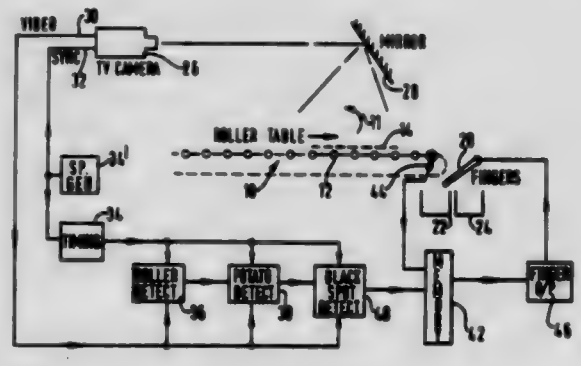
comprising at least one web detachably but continuously extending from one oppositely disposed handle to the other, said webs being thermally bonded together by way of at least one heat formed orifice also serving as a suspension means for said pack.

4,493,420

METHOD AND APPARATUS FOR DETECTING BOUNDED REGIONS OF IMAGES, AND METHOD AND APPARATUS FOR SORTING ARTICLES AND DETECTING FLAWS

Timothy J. Dennis, Colchester, England, assignor to Lockwood Graders (U.K.) Limited, United Kingdom

Filed Jan. 28, 1982, Ser. No. 343,574
Claims priority, application United Kingdom, Jan. 29, 1981, #8102752
Int. Cl.³ B07C 5/34; H04N 7/18
U.S. Cl. 209—587 19 Claims



17. Article sorting apparatus comprising:
conveying means for conveying through an inspection region articles having predominantly a first value of surface reflectivity but bearing occasional surface features having a second value of reflectivity which is substantially different from the first value;
means for illuminating each article in the inspection region;
sensing means responsive to radiation reflected from the article for scanning the inspection region to derive an image signal and for processing the derived image signal, said sensing means including:
(a) scanning means for scanning the image to produce a signal indicative of image intensity at a plurality of successive picture points;
(b) means for deriving difference values between neighboring points in a plurality of directions to determine the presence of positive-going and negative-going region boundaries;

(c) means for labelling successive picture points on the scan according to whether or not they lie within a predetermined number of successive picture points in a specified direction from a region boundary to thereby extend each of the said boundaries by the said predetermined number of picture points, said boundary extension being such that both positive-going and negative-going parallel boundaries are extended in the same direction; and

(d) time-shift means for applying time-shifts to the extended boundaries, the time-shift applied for a positive-going boundary being different from that applied for a negative-going boundary, to thereby superimpose the extended boundaries for a region lying wholly within the bounded region of the image thereby to generate an output signal;

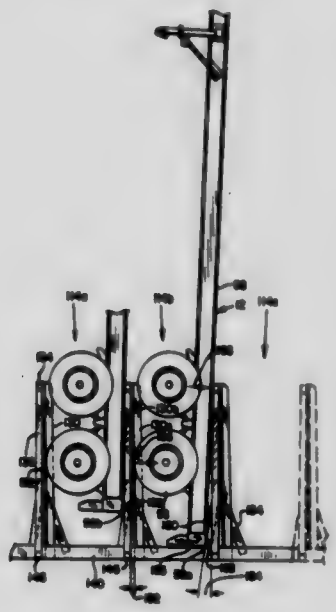
said article sorting apparatus further comprising deflection means responsive to the said output signal to cause the article bearing such feature to be routed differently from the other articles.

4,493,421

SIDE-LOADING CONTAINER CHASSIS STORAGE RACK

Randall W. Matthewson; Earl H. Benefiel, and Ronald A. Brudi, all of Longview, Wash., assignors to Brudi Equipment, Inc., Kelso, Wash.

Continuation-in-part of Ser. No. 300,261, Sep. 8, 1981, Pat. No. 4,427,117. This application Sep. 30, 1982, Ser. No. 429,039
Int. Cl.³ A47F 7/00
U.S. Cl. 211—13 9 Claims



1. A side-loading rack for storing wheeled container chassis having an elongated chassis frame projecting forwardly from rear, ground-engaging wheels, the rack comprising:

rack frame means defining a plurality of stalls, including first and second upright frame means spaced laterally apart to define a side of each stall and to form an opening on one side of the rack for receiving a container chassis sideways in a generally vertical orientation;

a first chassis support means at one side of each stall for supporting the rear wheels of the chassis on the first frame means above ground level;

a second chassis support means at the opposite side of each stall and at a level spaced above the first support means for supporting a forwardly-projecting portion of the container chassis frame in a generally upright position with the wheels of the chassis supported against the first support means; and

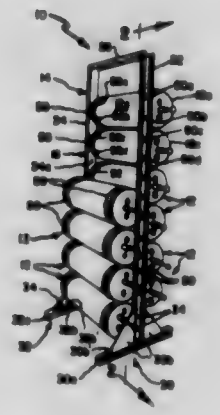
a third chassis support means at said opposite side of each stall and at a level below said first chassis support means for supporting a rear end portion of said chassis when said rear wheels and said forwardly-projecting portions of said chassis are supported, respectively, against said first and second chassis support means.

4,493,422

FIXTURE FOR MOUNTING CYLINDRICAL CAVITY FILTERS

Daniel P. Kaegebein, Depew, N.Y., assignor to TX RX Systems, Inc., Angola, N.Y.

Filed Jul. 19, 1982, Ser. No. 399,902
Int. Cl.³ A47F 7/00
U.S. Cl. 211—26 16 Claims



1. An assembly comprising:

at least one rigid cylindrical article having a given length;

a frame including a pair of mounting members and means positioning same in an essentially parallel relationship with facing surfaces of said mounting members spaced apart through a distance essentially corresponding to said given length; and

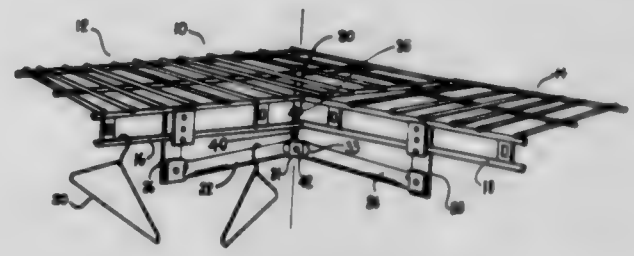
attachment means attaching opposite ends of said article one to each of said mounting members, said attachment means including at least two pairs of pins supported one pair on each of said mounting members projecting from said facing surfaces in an essentially aligned relationship with the pins of each pair spaced apart through a distance simultaneously engaging a cylindrical side surface of said article adjacent its ends, and strap means encircling said ends of said article and pairs of pins clamping said pairs of pins in engagement with said side surface.

4,493,423

CORNERING DEVICE FOR A GARMENT SUPPORT STRUCTURE

Oscar E. Kaeslin, 1444 SW. 27th Ct., Fort Lauderdale, Fla. 33315, and Monroe H. Schenker, 7622 Sierra Dr. West, Boca Raton, Fla. 33433

Filed Mar. 24, 1983, Ser. No. 478,363
Int. Cl.³ A47K 10/04
U.S. Cl. 211—123 4 Claims



1. A cornering device for a garment support structure, the garment support structure including first and second horizontal transverse assemblies, said horizontal transverse assemblies including planer shelving elements and pole elements, each pole element associated with a corresponding shelving element, the shelving elements and their respective pole elements having a mutual intersection near the corner of the walls to which said shelving and pole elements are normally secured, in which the present inventive cornering device comprises:

(a) first and second elongate rod elements having respective first and second ends;

(b) means for suspending the first end of each of said first and

second elongate rod elements at a fixed distance from and beneath the poles of said garment support structure; and

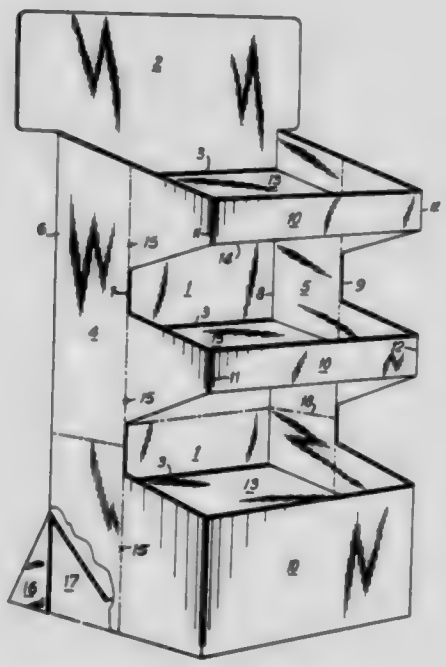
(c) means for mutually securing said second ends of both elongate rod elements at substantially the line of intersection between said first and second transverse assemblies, said securing means including means for securing said second ends of said rods at a vertical offset beneath said shelves in a desired parallel plane beneath the plane of said shelving, said offset corresponding, in terms of said plane, to the offset at which said first ends are secured beneath the poles of said garment support structure, said securing means further comprising means for defining an intersection of said first and second rod elements at an included acute angle in the range of 15° to 75°, whereby said rod elements will, at three points mutually defining a triangle, connect to the poles and shelves of the garment support structure to thereby define a plane parallel to the plane of said poles and shelving and at a distance therebelow defined by each of the three vertical offsets existing between the cornering device and the garment support structure and, further whereby, said acute angle of intersection of the first and second rod elements will enhance the ease of accessibility of garments hung in a corner area and will increase the number of germents that can, without sacrifice of accessibility, be supported within a corner area of the garment support structure.

4,493,424

FOLDABLE DISPLAY STAND

Irving Smith, 2078 White Plains Rd., Bronx, N.Y. 10462

Filed Oct. 9, 1981, Ser. No. 310,078
Int. Cl.³ A47F 5/11
U.S. Cl. 211—149 14 Claims



1. A foldable display stand comprising:

a back panel having a longitudinal slit therein;

a pair of side panels each having first and second opposing edges, the first edge of each side panel hingedly connected to opposing side edges of said back panel such that each of said side panels can be positioned in substantially the same plane as said pack panel;

a front panel having first and second opposing sides hingedly attached to said second edge of said side panels, said front panel being in a plane substantially parallel to said back panel;

a shelf hingedly attached to an edge of said front panel connecting said first and second sides of said front panel, said shelf extending from said front panel through said slit in said back panel, said shelf and slit being dimensioned such that the entire shelf can pass through said slit;

and biasing means for urging said side panels into substantially parallel planes.

9. A sheet for assembly into a foldable display stand having a vertical fold at about the midpoint thereof so as to divide the sheet into first and second sections;

said first section having a pair of spaced vertical fold lines so as to define a back panel therebetween and a pair of side panels attached to said back panel;

a horizontal slit in said back panel;

said second section having a pair of spaced vertical fold lines so as to define a front member therebetween and a pair a side members attached to said front member;

a pair of spaced horizontal scores in said front member;

a horizontal fold line between said pair of spaced horizontal scores and spaced therefrom; and

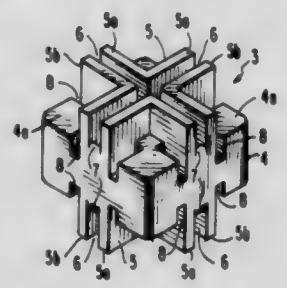
a pair of vertical scores extending along said pair of spaced vertical fold lines of said second section from one of said pair of spaced horizontal scores to said horizontal fold line.

4,493,425

RACK ASSEMBLY APPARATUS

Tsuknea Yoshida, 15-202 Nikko Danchi, 1-3 Nikko-cho, Fuchu-shi Tokyo, Japan

Filed May 12, 1983, Ser. No. 493,879
Int. Cl.³ A47B 47/00
U.S. Cl. 211—189 6 Claims



1. A rack assembly comprised of a plurality of connection members, transverse beams and panels wherein each connection member is comprised of a base having flat opposing surfaces, at least one pair of parallel, spaced apart panel support plates extending perpendicular from one of said flat surfaces to define a panel fitting groove therebetween, an engaging protuberance extending from said base adjacent an edge thereof and being located in said groove between said plates, at least one transverse beam fitting groove formed in said base adjacent one of said plates, an engaging protuberance located at the bottom of said transverse beam fitting groove, each of said panels having a rectilinear configuration with at least one engaging notch formed in an edge thereof in closely spaced relation to a corner thereof for engagement with the protuberance in the panel fitting groove when a corner of said panel is located in said panel fitting groove and said transverse beam having an engaging notch disposed adjacent each end thereof for engagement with said protuberance in said transverse beam fitting groove when an end of said transverse beam is disposed in said transverse beam fitting groove.

4,493,426

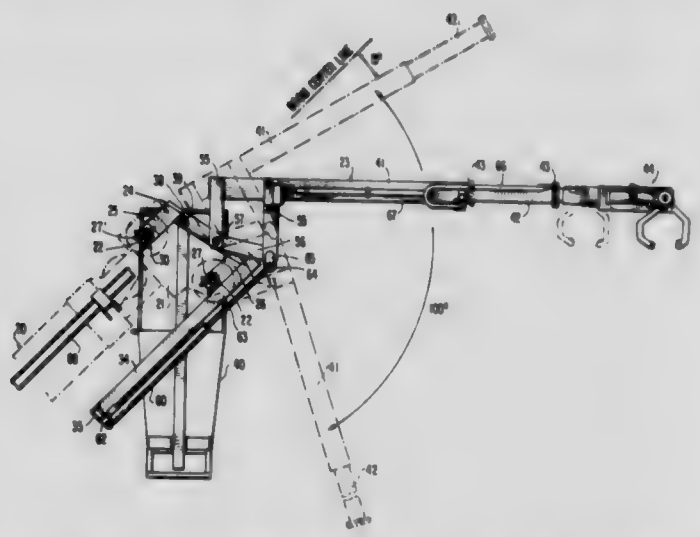
ATTACHMENT JIB FOR CRANES

Russell L. Sterner, Greencastle, Pa., assignor to Kidde, Inc., Saddle Brook, N.J.

Filed Oct. 13, 1981, Ser. No. 310,768
Int. Cl.³ B66C 23/04, 23/56; B65G 9/04
U.S. Cl. 212—261 4 Claims

1. An attachment jib for a crane boom comprising a support base adapted to be releasably coupled with a pair of existing parallel shafts on a crane boom, said support base comprising a frame having spaced opposite side arms adapted to straddle the nose block of a crane boom and the arms having engaging

elements at their ends adapted to be releasably locked in engagement with said existing projecting shafts on opposite sides of the nose block, a jib structure including at least one extensible and retractable section, a separate hydraulic cylinder inside said jib structure operable to extend and retract said section, a framework carrying the jib structure and projecting from one end thereof near the base of the jib structure, said framework comprising a box-like frame having one corner thereof pivotally connected to the support base between said side arms and



spaced from the longitudinal axis of the jib structure, an adapter element at the leading end of said jib structure adapted to be releasably coupled to a mating adapter element of various working devices, and hydraulic luffing cylinder means mounted on the support base and connected to a second corner of said box-like frame on one side of the support base in spaced relationship to the pivot axis of said box-like frame, whereby the attachment jib can be pivoted through a very wide luffing angle.

4,493,427

FLASK FOR STERILE LIQUIDS

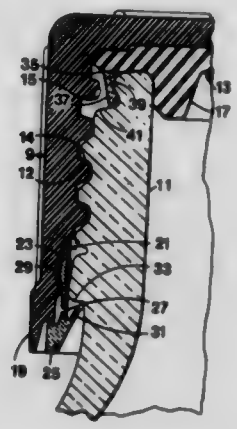
Alexander Wolkonsky, Fribourg, Switzerland, assignor to Stericric SA, Switzerland

Filed Jun. 8, 1983, Ser. No. 502,124

Claims priority, application Switzerland, Jun. 10, 1982, 3603/82

Int. Cl.³ B65D *41/34*

U.S. Cl. 215—230 9 Claims



1. A flask for sterile liquids capable of supporting a terminal sterilization of pharmaceutical quality, comprising a body provided with a neck, a tamper-proof closure comprising a cap screwed on the neck of the flask, and a locking ring formed in two parts axially superposed and joined by a breakable zone, one of the parts being axially carried away by the cap during opening of the flask and the other part being held axially by a shoulder formed on the neck, characterized in that the cap encloses a seal made of elastomeric material capable of withstanding sterilization of the flask without important deformation, said seal being inserted between the bottom of the cap and the edge of the neck; the seal is axially held by the cap and comprises a skirt applying itself against the inner surface of the neck in a bacteriologically sealproof manner along a height sufficient to ensure a bacteriological closure seal until the locking ring is broken; the locking ring in unbroken condition is completely concealed by the cap; a radial clearance is provided on either side of the locking ring, which is sufficient so that, after breaking of the locking ring, that part of the ring which is held by the neck shoulder falls and rests on a shoulder of the flask when the flask stands upright, and the said falling part is of a colour contrasting with that of the flask, and the length of the neck being sufficient for a segment of the neck to be visible between that part of the ring resting on the shoulder of the neck and the lower edge of the cap when the said cap is secured back on the neck.

4,493,428

FREIGHT CONTAINER, IN PARTICULAR FOR AIR FREIGHT

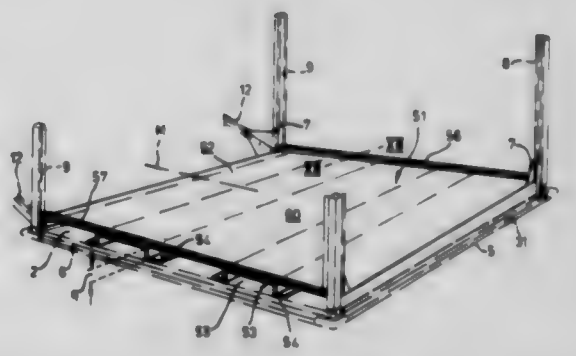
Gerhard J. Mittelmann, Öhningen, and Ricardo W. Liebherr, Engen, both of Fed. Rep. of Germany, assignors to Schweizerische Aluminium AG (Swiss Aluminium Ltd.), Chippis, Switzerland

Filed Oct. 21, 1983, Ser. No. 544,107

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1983, 3332797

Int. Cl.³ B65D *88/16*

U.S. Cl. 220—1.5 14 Claims



1. A freight container, in particular a lightweight container for air freight, comprising a support frame structure which is secured to a container bottom and which is formed from shaped bars or like strut members and which is at least partially covered or clad by a skin formed by sheet metal plates, fabric means or the like flat members, with a door being provided within at least one panel of the frame, characterized in that an intermediate bottom member having channel-like profile means at its underside is provided in the interior of the container on the bottom plate, and is releasably connected to the bottom plate and/or to the support frame structure.

4,493,429

ARRANGEMENT FOR OPENING AND CLOSING A COVER OF A TRANSPORT AND TREATMENT CONTAINER

Dieter Pistor, and Ludwig Maakst, both of Altdorf, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Dec. 21, 1982, Ser. No. 451,548

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1981, 3151244

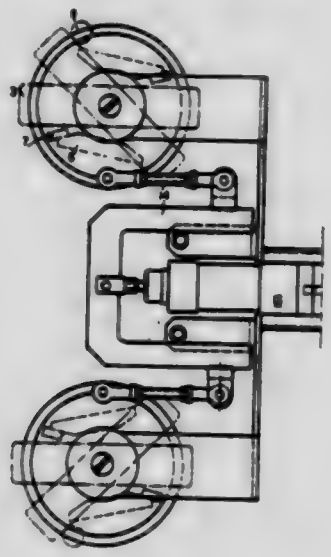
Int. Cl.³ B65D *55/00*

U.S. Cl. 220—211 22 Claims

1. An automatic arrangement for opening and closing a cover of a transport- and treatment container, comprising:

at least one toggle closure carrying the cover and engageable in said container to fix the cover on the latter, said toggle closure being movable between an open position in

which it removes the cover from the container and a closed position in which it applies the cover onto the container; and at least one gripping means having an axis and being turnable about its axis and arranged to move said toggle closure between said open and closed position, said gripping means being engageable with said toggle



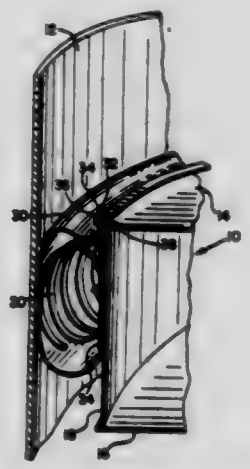
closure, said gripping means having two cams, and said toggle closure having cam-receiving means arranged so that said cams are positioned at opposite sides of said toggle closure and engaged in said cam-receiving means when said gripping means are turned to be engaged with said toggle closure.

4,493,430

FLOATING ROOF SEAL USING A COIL SPRING

Swan K. Sie, Middlesex, England, assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Oct. 4, 1982, Ser. No. 432,655
Int. Cl.³ B65D *88/46*
U.S. Cl. 220—224 3 Claims



1. In a vertical cylindrical liquid storage tank of imprecise circularity having a circular floating roof with an outer cylindrical vertical wall of smaller diameter than the tank thereby defining a vapor space between the roof wall and the tank wall, the improvement comprising:

a resilient seal located in and spanning the vapor space between the tank wall and the roof wall;

the seal including a vapor resistant flexible longitudinal strip of material having parallel longitudinal edges attached to the roof defining a horizontal pouch extending around the roof periphery; and

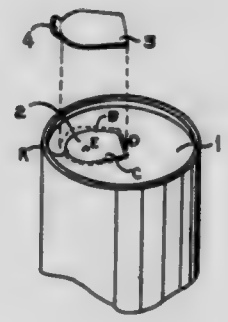
a horizontal coil spring, located in the pouch for the length of the vapor space, with one side of the spring in contact with, and jointed to, the roof wall by spaced apart clips.

4,493,431

CAN OPENING MEANS

Sung N. Cho, San 16-75, Dae Chi-Dong, Kang Nam-Ku, Seoul, Rep. of Korea

Filed Apr. 16, 1982, Ser. No. 369,252
Claims priority, application Rep. of Korea, Apr. 24, 1981, 2934
Int. Cl.³ B65D *17/34*
U.S. Cl. 220—269 6 Claims



1. A container comprising:

a top having a hole therein,

a segment for filling said hole, having one edge secured to said top,

said segment also being non-frangibly secured to said top at a discrete point spaced from said edge, and

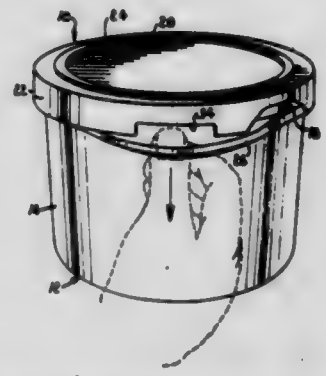
means for covering said segment and a portion of said top, for sealing said container.

4,493,432

TAMPER EVIDENT CLOSURE

Ernest L. Smith, Kansas City, Mo., assignor to Sealright Co., Inc., Kansas City, Mo.

Filed Dec. 7, 1983, Ser. No. 558,892
Int. Cl.³ B65D *17/34*
U.S. Cl. 220—270 7 Claims



1. A closure for an open topped food container having a top rim presenting a lip thereon, said closure comprising:

a lid having a size to cover the open top of the food container when applied thereto;

a skirt projecting from said lid at a location to substantially surround the container rim outwardly thereof when the lid is applied to the container;

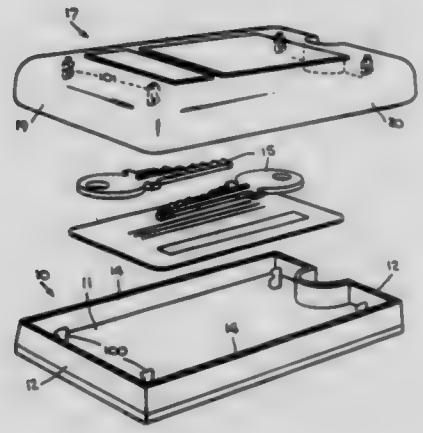
a detachable lock ring connected to said skirt along a weakened tear line establishing a hinge connection about which the lock ring can be folded inwardly to a locking position wherein said skirt encloses said lock ring and the lock ring engages the lip of the container rim to lock said lid on the container, whereby removal of the lid requires said lock ring to be torn away from said skirt along said tear line.

4,493,433

SELF-LOCKING PILFER PROOF TAMPER EVIDENT CONTAINER

Leonardo Sideri, 561 Broadway, New York, N.Y. 10012, and Enzo Del Brocco, Stamford, Conn., assignors to Leonardo Sideri, New York, N.Y.

Filed Apr. 10, 1984, Ser. No. 598,914
Int. Cl.³ B65D *41/16, 41/18, 49/12*
U.S. Cl. 220—306 9 Claims



1. A non-reusable self-locking container comprising:
a first panel including a surface, side walls extending generally orthagonally from said surface, and a first tab extending generally orthagonally from said surface within said side walls, said tab defining a cam and a locking surface
a second panel including a surface, walls extended generally orthagonally from said surface, and a second tab extending generally orthagonally from said surface within said walls, said tab defining a cam and a locking surface
said first and second cams being adapted to telescopically engage one another resiliently to flex one away from the other
said locking surfaces being adapted for mutual engagement permanently to lock said cams to one another
said side walls and walls being adapted to protect said cams and locking surfaces from disengagement
said first and second panels forming an enclosure which is permanently locked against entry upon completion of said telescoping movement, except by the permanent and visible destructon of said container.

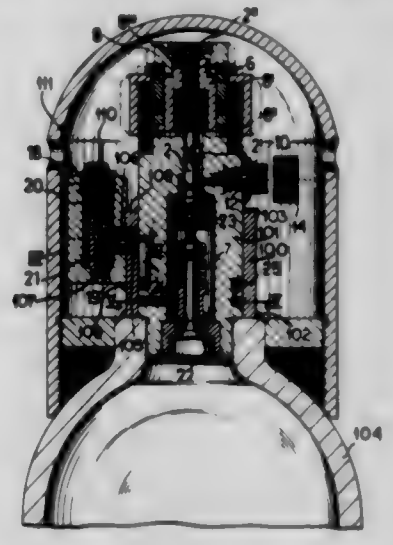
4,493,434

VALVE SYSTEM FOR PRESSURIZED VESSELS

Holger Bonsjean, Karlsruhe-Durlach; Willi Kamphausen, Erkelenz; Dieter Niephaus, Jülich, and Ove Nommensen, Aachen, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 227,768, Jan. 23, 1981, abandoned. This application Mar. 4, 1983, Ser. No. 472,061
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1980, 3002768
Int. Cl.³ F17C *13/04*
U.S. Cl. 222—3 18 Claims

1. A pressure-retentive valve system for a vessel under a fluid pressure, said valve system comprising:
a valve housing having a chamber communicating with the interior of said vessel and affixed thereto, said chamber being provided with an inner seat proximal to said vessel and an outer seat spaced from said inner seat;
an inner valve member received in said chamber and engageable with said inner seat;
a prestressed spring in said chamber bearing upon said inner member and urging same in the direction of said inner seat;
an outer valve member in said chamber having a valve plate engageable with said outer seat, said inner valve member having a respective valve plate subjected to the pressure of fluid in said vessel and urged thereby against the respective seat;
a threaded element rotatable on said housing and threadedly connected to said outer valve member for displacing same toward and away from said outer seat, said inner valve member having a stem received in the valve plate of said outer valve member and forming an abutment therewith with lost motion between said valve members for opening of said inner valve member, said inner valve member being closed by said spring against said inner seat; and
first and second actuators respectively for said outer and inner valve members acting upon said valve members through said element.

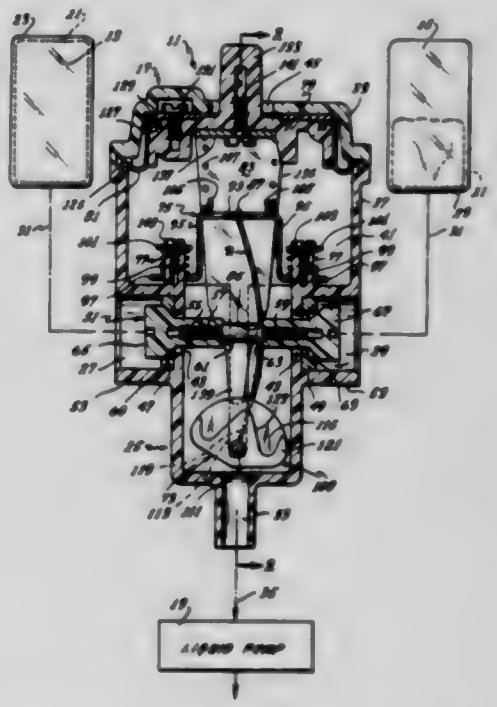


4,493,435

LIQUID DISPENSING SYSTEM AND AUTOMATIC SELECTOR THEREFOR

E. Dale Hartley, Malibu, Calif., assignor to Product Research And Development, Anaheim, Calif.

Filed Nov. 10, 1982, Ser. No. 440,532
Int. Cl.³ B67D *5/08, 35/22*
U.S. Cl. 222—52 20 Claims



1. A dispensing system with automatic storage means selection, said dispensing system comprising:
first storage means for storing a liquid to be dispensed;
second storage means for storing a liquid to be dispensed, each of said storage means being essentially closed to the atmosphere at least when such storage means has at least some of the liquid removed therefrom;
a pump having an intake side and a discharge side;

a pressure responsive selector coupled to both of said storage means and the intake side of said pump;

said selector including linearly reciprocable valve means movable between a first position in which the selector provides communication between said first storage means and said pump and blocks communication between said second storage means and said pump and a second position in which the selector provides communication between said second storage means and said pump and blocks communication between said first storage means and said pump; and

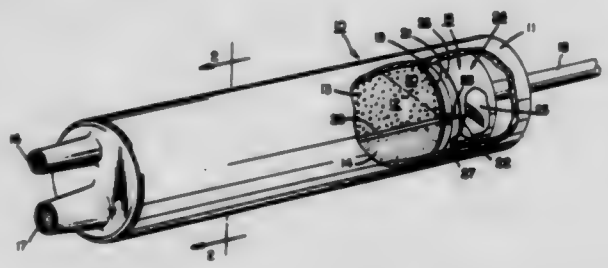
pressure responsive actuator means responsive to the pressure drop at the selector resulting from at least the partial arrest of the liquid flow from the storage means supplying liquid to the selector for moving the valve means from one of said positions to the other of said positions whereby liquid can be supplied from the other of said storage means through the selector to the pump and the storage means which previously supplied liquid to the selector can be replaced.

4,493,436

COMPARTMENTAL CARTRIDGE

Paul Brokaw, Cleveland, Ohio, assignor to Loctite Corporation, Newington, Conn.

Filed Mar. 16, 1983, Ser. No. 475,877
Int. Cl.³ B67D 5/52
U.S. Cl. 222—80 25 Claims



1. A cartridge for simultaneously dispensing at least two different materials, said cartridge comprising:

(a) an elongated hollow housing;

(b) at least one partition within said housing extending laterally and longitudinally thereof to divide the housing into at least two chambers each for holding one of said different materials;

(c) a plunger received in said housing for movement longitudinally thereof;

(d) a dispensing orifice in said housing for each of said chambers; the plunger comprising:

(e) piston means having a first face for acting on said materials to dispense them from said housing, said piston means including means for sealingly engaging said housing and said partition;

(f) severing means following said piston means and being spaced from said materials by said piston means, said severing means being adapted to sever said partition from said housing; and

(g) means for storing said severed partition so as not to interfere with the operation of said cartridge.

4,493,437

CAULKING GUN WITH CUTTER AND PIERCER

Kenneth S. Breeden, Louisville, Ky., assignor to Richard L. Caslin, Louisville, Ky.

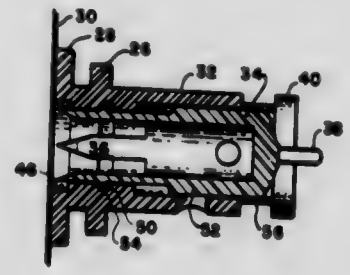
Filed Sep. 30, 1982, Ser. No. 429,950
Int. Cl.³ B67B 7/24
U.S. Cl. 222—82 17 Claims

1. In a caulking gun including a caulking tube-receiving barrel having a reciprocating plunger, and a pistol grip-type handle secured to one end of the barrel, a pivot means carried near the top portion of the handle, and a trigger member pivotally mounted on the pivot and adapted for operating the said plunger; the invention comprising:

a. the said handle being of hollow construction, as well as the said trigger member being of hollow construction and tending to telescope into the hollow handle when the trigger is squeezed;

b. a hole formed in one side wall of the handle near the said pivot means;

c. one side wall of the trigger that is nearest the said side wall of the handle with the hole in it having an open notched edge that is adjacent the said hole;



d. and a replaceable keen-edge blade positioned within the said trigger and within the said open notched edge, and an adjustable fastening means within the trigger for clamping the blade in place in the open notched edge of the trigger wall;

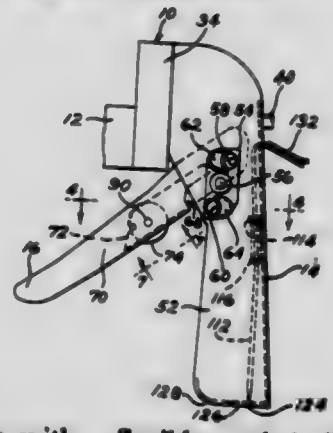
e. whereby the said hole in the handle in cooperation with the blade in the open notched edge of one wall of the trigger serve as a cutting means for the tip of the nozzle of a caulking tube when the trigger is squeezed, said open notched edge of the trigger wall being generally positioned within the hollow handle so the blade is shielded from exposure to the user's hand.

4,493,438

FLUID DISPENSER

Christopher C. Rutter, 21063 Cabot Blvd., Hayward, Calif. 94545

Filed Jul. 9, 1982, Ser. No. 396,622
Int. Cl.³ B67B 7/24
U.S. Cl. 222—83 5 Claims



1. In combination with a flexible, sealed, fluid-containing bag, a two-piece dispenser comprising:

a tubular sleeve having at its first end a flange attached to the exterior surface of the fluid-containing bag, the longitudinal axis of said sleeve being substantially perpendicular to said bag surface covering the bore of said sleeve at said first end;

a tubular barrel slidably positioned within the bore of said tubular sleeve, said barrel having a first end adjacent the first end of said sleeve and said sealed bag surface,

opening means comprising a plurality of flexible elongated blades formed in the end of said barrel adjacent its first end, said blades having sharpened tips for piercing

through the surface of said fluid-containing bag covering the bore of said sleeve;

locking means for preventing removal of said barrel from said tubular sleeve after said opening means has opened said fluid-containing bag, said locking means including a tooth radially extending from the outer surface of at least one of said flexible, elongated blades, and a first annular channel in the bore of said sleeve adjacent the first end thereof, said tooth being positioned to engage said channel when said barrel has been longitudinally moved toward the first end of said barrel and the tips of said elongated blades have pierced said fluid-containing bag; and

temporary locking means restricting the longitudinal movement of said barrel within said sleeve at the point where the tips of said blades are not in contact with the surface of said fluid-containing bag, said temporary locking means including a second annular channel having a substantially semicircular cross-section within the bore of said sleeve and displaced from said first annular channel toward the second end of said sleeve, said tooth radially extending from at least one of said flexible blades being in engagement with said second channel.

5. In combination with a flexible, sealed, fluid-containing bag, a fluid dispensing assembly including: a tubular sleeve having at its first end a flange attached to the exterior surface of the fluid-containing bag, the longitudinal axis of said sleeve being substantially perpendicular to said bag surface covering the bore of said sleeve at its first end, said sleeve having an annular channel with a substantially semicircular cross-section within the bore of said sleeve and displaced from said first end surface; and a removable tubular barrel adapted to slidably fit within the bore of said sleeve, said removable barrel comprising:

an inner tubular barrel having sharpened blades at the first end and a tube fitting at the second end thereof, said inner tubular barrel having an annular groove with a substantially semicircular cross-section, said groove being displaced from the tips of said sharpened blades by an amount less than the displacement of said annular sleeve channel;

an outer tubular sleeve having an exterior surface substantially corresponding to the bore of said tubular sleeve attached to said bag, said outer tubular sleeve having a plurality of small ball-retaining holes in communication between its outer and inner surfaces and in an annular pattern overlying the annular groove in said inner tubular barrel whereby the small balls are recessed from the outer surface of said outer tubular sleeve and lie in said annular groove; and

spring means connected between said outer tubular sleeve and said inner tubular barrel and operating to force the first end of said inner tubular barrel outward from the corresponding end of said outer tubular sleeve to cause said sharpened blades toward said fluid-containing bag and to force said small balls from their recessed position in said annular groove into engagement with said annular channel in the bore of said sleeve that is attached to said bag.

4,493,439

COLLAPSIBLE DISPENSING CONTAINER

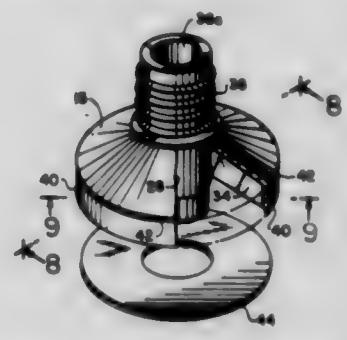
William Ledewitz, 31 Brookwood Dr., Woodbridge, Conn. 06525

Continuation-in-part of Ser. No. 284,826, Jul. 20, 1981, abandoned, which is a continuation-in-part of Ser. No. 208,663, Nov. 20, 1980, abandoned. This application Jan. 4, 1984, Ser. No. 568,281

Int. Cl.³ B65D *35/10*

U.S. Cl. 222—94 3 Claims

1. A collapsible container having a tubular body, a conical-shaped head portion affixed to one end thereof provided with a sloping shoulder portion and a peripheral flange portion, said flange portion extending parallel to the longitudinal axis of said tubular body and having a circumferential groove on an interior surface of said peripheral flange, a neck part provided with a threaded portion, a plurality of ribs extending parallel to the longitudinal axis of said tubular body and having the top edges thereof supporting said shoulder portion, a relatively thin, wafer-like apertured disc barrier member being supported and sealed in said head portion by said groove of said flange at said outer peripheral edge of said disc and by said neck part at the inner peripheral edge of said disc, said bottom edges of said



ribs being secured to the top surface of said disc, said neck part having a substantially central opening therein in communication with said tubular body, and said ribs extending laterally from said neck part to said flange portion and acting to strengthen the end of said collapsible tube having said head portion affixed thereto, while additionally supporting said barrier member, whereby a plurality of separate chambers are formed.

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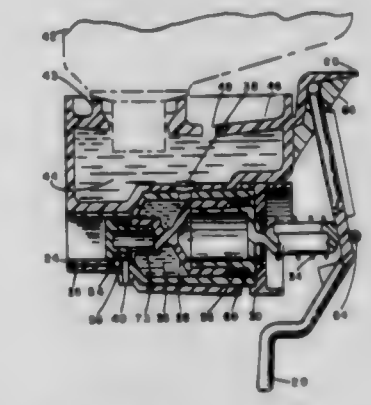
WALL-MOUNTED SOAP DISPENSER

John von Buelow, Woodland Hills, and Stephen G. Hauser, Tarzana, both of Calif., assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Aug. 8, 1983, Ser. No. 521,488

Int. Cl.³ B67D *1/16*; B65D *88/54*

U.S. Cl. 222—109 50 Claims



1. A dispenser for liquids, pastes, and creams capable of being mounted on a vertical surface comprising:

a manual pumping mechanism including,

a pump housing providing a reservoir for liquid,

a pump chamber within said pump housing having at least one connecting opening to said reservoir, having a smaller chamber segment nearer the front of said mechanism and a larger chamber segment behind and co-axial with said smaller chamber segment, having a dispensing opening in said smaller chamber segment,

a piston having a smaller piston segment and a larger piston segment behind and co-axial with said smaller piston segment, having a piston rod on the end of and co-axial with said larger piston segment, having grooves on each of said piston segments with gaskets fit into said grooves so as to form a sliding-contact fit between said chamber segments and said piston segments, said piston rod having at its end a crossbar,

a lever pivoted at its upper end from the rear side of said pump housing and attached near its middle to said piston rod, said lever having a slot adapted and con-

structed to fit said piston into said lever, said crossbar having a flat at one end, said lever having a stop on its back side adapted and constructed so that after inserting said crossbar through said slot and rotating said crossbar by ninety degrees, said flat rests against said stop,

a spring means forcing said lever toward the rear of said dispenser, and

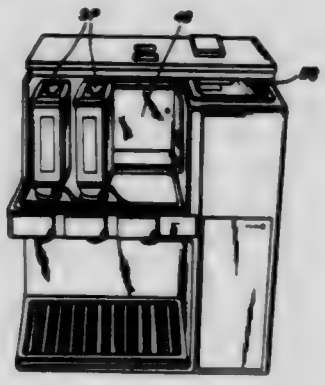
a means for attaching said mechanism to a vertical surface.

4,493,441

PORTABLE POST-MIX BEVERAGE DISPENSER UNIT

Jason K. Sedam, Dunwoody; Richard J. Mueller, Atlanta, and Andrew J. Holoubek, Stone Mtn., all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Nov. 12, 1981, Ser. No. 320,478
Int. Cl.³ B67D 1/00
U.S. Cl. 222—129.1 10 Claims



1. A post-mix beverage dispensing system comprising:

a main cabinet portion having top, front, back, side and bottom walls with open compartments formed therein housing various components of the post-mix beverage system, said compartments including:

a water supply compartment for housing a water reservoir and an entrance chute therefor extending to said front wall,

a carbonator compartment for housing a carbonator tank,

a syrup supply compartment for housing replaceable syrup containers adjacent said front wall, and

a CO_2 supply compartment for housing a CO_2 cylinder adjacent said front wall;

said top wall of said main cabinet having openings therein providing access to said water reservoir, entrance chute, carbonator compartment, and said syrup supply compartment;

said front wall also having openings therein providing access to said syrup compartment and said CO_2 supply compartment;

a first access panel normally covering the openings in said front and top walls providing access to said syrup supply compartment;

a second access panel normally covering said openings in said top wall providing access to said water compartment and said carbonator compartment;

a third access panel at least covering the opening in said front wall providing access to said CO_2 supply compartment, said third access panel being movable to uncover said opening in said front wall to provide access to said CO_2 supply compartment;

water supply conduit means connecting said water reservoir and said carbonator tank;

pump means for pumping water from said water reservoir to said carbonator tank;

CO_2 supply conduit means connecting said CO_2 cylinder to said carbonator tank; and

a refrigeration system including,

a compressor,

a condensor, and

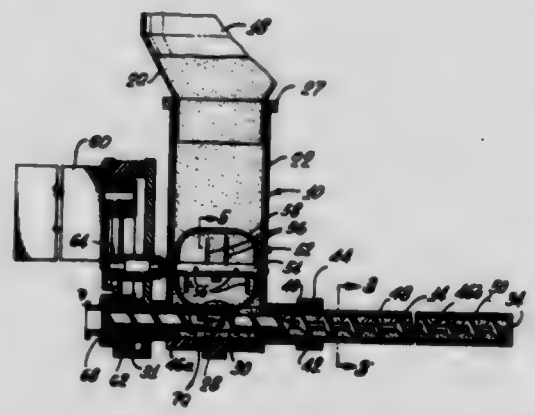
an evaporator coil, said evaporator coil having a main portion disposed in contact with said water reservoir for cooling said water, a second portion in heat transfer relationship with said carbonator tank, and a third portion in heat transfer relationship with said replaceable syrup containers.

4,493,442

VARIABLE RATE FOOD INGREDIENT DELIVERY APPARATUS

Harold W. Hanson, Jr., Newport Beach, Calif., assignor to Par-Way Manufacturing Co., Los Angeles, Calif.

Filed Jul. 13, 1981, Ser. No. 282,864
Int. Cl.³ G01F 11/20
U.S. Cl. 222—241 15 Claims



1. An apparatus for uniformly distributing a powdered or granular food product ingredient along a distribution zone of substantial length at a controlled variable rate comprising:

a hopper for holding a supply of said ingredient to be distributed;

a cylindrical tube extending from said hopper and communicating with the interior thereof, said tube having one or more openings through which said ingredient can pass arranged longitudinally therealong and extending throughout said distribution zone;

an auger disposed within said tube and said hopper to transport said ingredient from said hopper along said tube for distribution through said openings at a substantially uniform rate throughout said distribution zone, said auger including a central body having a relatively large diameter portion which extends into said hopper and a relatively small diameter portion which is disposed entirely within said tube extending along said distribution zone and not extending into said hopper, said auger further comprising a land extending around said central body and defining a generally helical flute to serve as an ingredient flow path, said flute having a relatively small cross-sectional area along said large diameter portion of said central body and a relatively large diameter portion along said small diameter portion of said central body; and

drive means for rotating said auger at a variable and adjustable speed to cause said ingredient to move longitudinally along said tube at a selected rate.

4,493,443

MULTIPOSITION VALVED DISPENSER

Ralph J. Bailey, 64 Derbyshire St., Derby, Conn. 06418

Filed Jun. 27, 1983, Ser. No. 508,045
Int. Cl.³ B67D 5/42
U.S. Cl. 222—400.8 16 Claims

1. A multiposition valved dispenser for use with a pump and tap assembly of the type used for kegs, comprising:

on said pump and tap assembly, means for coupling and a flexible tube connected to said means for delivery of the keg fluid by way of said tube,

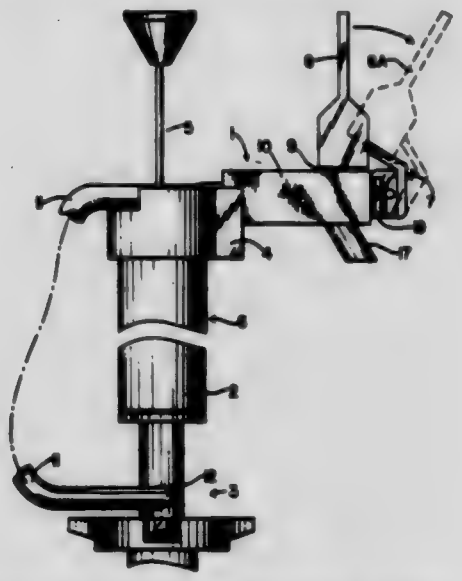
and further comprising;

a valve having means for effecting on states and an off state with respect to fluid flow, said valve including,

a housing, a spigot mounted on the housing for delivery of

the fluid by said dispenser and means for coupling said flexible tube to the housing for delivery of the fluid to the valve;

a first handle member rotably mounted on the valve for controlling the valve's on states by angular displacement of said handle away from a pre-determined off position with respect to the valve housing,



a second handle member detachably mounted on the first handle for moving same, and angled from said first handle so that said second handle establishes a new off position with respect to the valve housing, and

means for detachably mounting said valve housing on said pump and tap assembly.

4,493,444

SELF-CLOSING VALVE-AND-LID ASSEMBLY

Luigi Del Bon, 141, Feldstrasse, and Franco Del Bon, 139, Feldstrasse, both of 4663 Aarburg, Switzerland

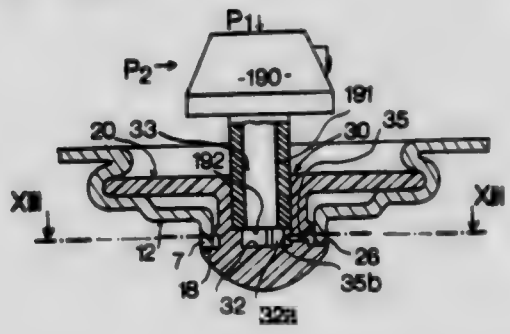
Continuation-in-part of Ser. No. 259,158, Apr. 30, 1981, Pat. No. 4,442,959, and Ser. No. 259,159, Apr. 30, 1981, Pat. No. 4,410,110. This application Feb. 9, 1982, Ser. No. 347,321

Claims priority, application European Pat. Off., Apr. 30, 1980, 81.105298; Switzerland, Aug. 5, 1980, 5912/80

The portion of the term of this patent subsequent to Apr. 17, 2001, has been disclaimed.

Int. Cl.³ B65D *83/14*

U.S. Cl. 222—402.22 22 Claims



14. A container lid being usable in a self-closing valve-and-lid assembly adapted for closing the open top end of a container fillable with pressurized product, which lid has a central axis, the periphery of said lid being adapted for sealing connection with a top rim of a container sidewall surrounding the said container top opening and extending in a plane generally transverse to said lid axis,

said lid having a central dome, a foot zone about said dome, a central opening in the middle of said dome and a collar portion protruding axially from said dome, about said central opening, and being rigid under conditions of filling product into, and discharging product from said container,

said lid having a flat lid part about said dome and extending generally in a main lid plane transverse to said central lid axis, between said periphery, being connectable to said top rim of said container sidewall, and said foot zone,

said dome having a top wall extending perpendicular to said lid axis and a circumferential sidewall which latter extends axially transverse to said main lid plane, and merges with said flat lid part in said foot zone,

said dome protruding upwardly from said flat lid part on the side of the latter adapted for being turned away from the interior of a container, and

said collar portion extending in axial direction upwardly from said dome top wall and having an annular rim, about said central dome opening, facing upwardly in axial direction.

4,493,445

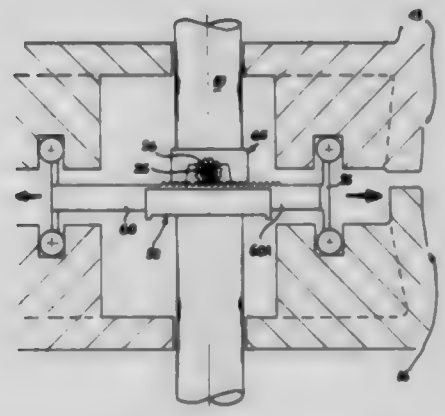
BODYFORMS

Eric R. Arthur, King's Lynn, England, assignor to A. E. Arthur Limited, King's Lynn, England

Filed Jun. 1, 1982, Ser. No. 383,831

Int. Cl.³ A41H *5/00*

U.S. Cl. 223—68 10 Claims



1. A bodyform comprising an upstanding central support, a plurality of pairs of opposed foamed plastics body sections around the central support, each body section having a recess, a locking adjustment mechanism for each pair of body sections, the mechanism being carried on the central support and adjustably supporting pairs of body sections, and an operating rod for each adjustment mechanism which projects laterally from the composite body formed by the body sections, the adjustment mechanism being arranged and coupled to the operating rod in such a manner that axial displacement of the operating rod in opposite directions respectively locks and unlocks the adjustment mechanism, while a rotational movement of the operating rod about its axis, in the unlocking condition of said rod, causes the adjustment mechanism to move the body sections of at least one opposed pair equally and oppositely relative the central support, thereby to adjust the dimensions of the relevant part of the composite body, each adjustment mechanism being connected in respective body sections by flanges which locate in the recesses and allow the body sections to be drawn toward and away from the central support.

4,493,446

MULTIPLE ROLL TAPE DISPENSER

Gary J. Wirth, Milwaukee, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.

Filed Aug. 1, 1983, Ser. No. 519,282

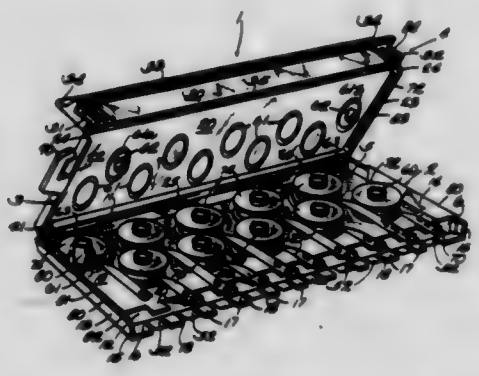
Int. Cl.³ B26D *1/02*

U.S. Cl. 225—21 8 Claims

1. A dispenser for a plurality of rolls of tape of the type having a layer of pressure sensitive adhesive compriaing, in combination:

(1) a base member including a divider wall separating the base member into a tape storage compartment and a tape dispensing compartment;

(2) a first cover member hinged to the base member and extending over the tape storage compartment when in a closed position;
(3) a second cover member hinged to the first cover member and extending over the tape dispensing compartment when in a closed position;
(4) the tape dispensing compartment including
(a) a plurality of flexible retention wings extending from the divider wall,
(b) a plurality of guard fingers spaced from the flexible retention wings, and



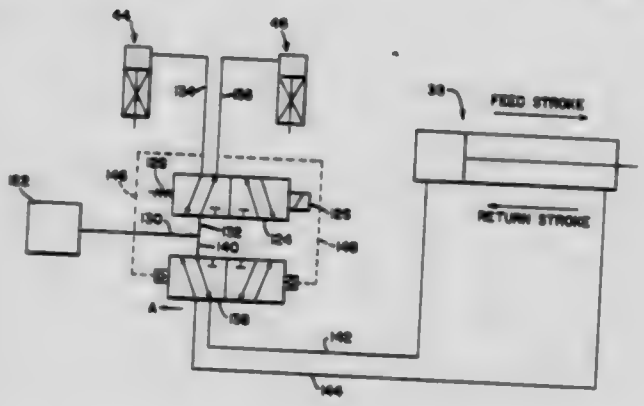
(c) tape cutting means extending across the guard fingers and spaced from the flexible retention wings;
wherein tape from a roll in the tape storage compartment of the dispenser is manually severable by drawing across a flexible retention wing and against the tape cutting means, following which its pressure sensitive adhesive layer is lightly adhered to a flexible retention wing and the tape has a free end portion extending therebeyond to be grasped for subsequent severance of the tape.

4,493,447

HIGH SPEED ARTICLE FEEDING APPARATUS

Harry J. Ledgerwood, Conway, Mo., assignor to Pitney Incorporated, Melville, N.Y.

Filed May 11, 1983, Ser. No. 493,608
Int. Cl.³ B65H *17/44, 17/36, 17/36*
U.S. Cl. 226—150 10 Claims



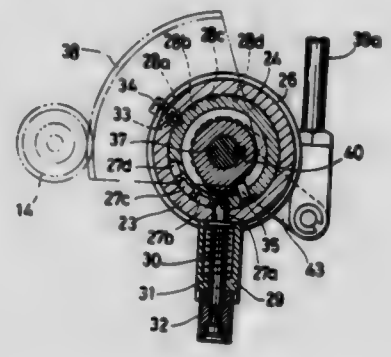
1. Feed apparatus for successively presenting articles to a work station for the performance of an operation thereon by a tool, said apparatus comprising:
(a) feeding means for conveying an article;
(b) first holding means including a fluid operated first actuator movable from a clamping position to an unclamping position to selectively clamp the article to the feeding means while it is being conveyed thereby and to subsequently release the article therefrom;
(c) second holding means including a fluid operated second actuator movable from a clamping position to an unclamping position to selectively hold the article in position at the work station while the operation is being performed thereon and subsequently release the article therefrom;
(d) said feeding means and said first and second holding means operable by a pressurized fluid control circuit, said circuit including a first directional control valve operatively connected to each of said first and said second holding means by first and second main flow conduits, respectively, to alternately operate the same, and a second directional control valve to operate said feeding means, said second directional control valve interconnected with said first and second main flow conduits of said first directional control valve by first and second pilot conduits, respectively, each said pilot conduit having a smaller flow area than the flow area of the respective main flow conduit, said second directional control valve operable thereby to cause said feeding means to execute a feeding stroke and a return stroke only after one of said first and second holding means, has been made operable and the other is made inoperable.

4,493,448

APPARATUS FOR ORIENTING AND PLACING A BUTTON FOR ATTACHMENT TO A GARMENT

Fumio Seki, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jan. 17, 1983, Ser. No. 458,544
Int. Cl.³ A41H *37/10*
U.S. Cl. 227—119 6 Claims



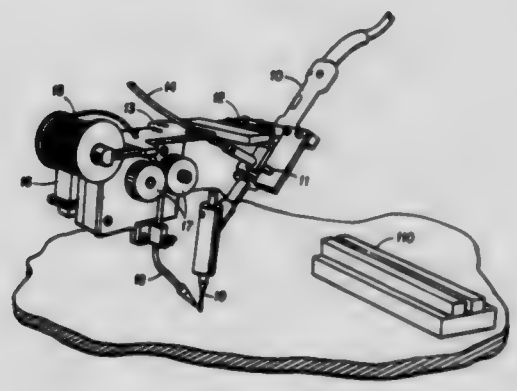
1. An apparatus for orienting and placing a button for attachment to a garment, comprising:
(a) a support;
(b) a guide mounted on said support and having a guide channel for guiding the button therethrough;
(c) a pusher slidably mounted in said guide for pushing the button through and out of said guide channel;
(d) a clinching die fixed to said support contiguous to one end of said guide for receiving thereon the button having been pushed out of said guide channel;
(e) a finger holder axially slidably and rotatably mounted on said clinching die and having at its upper end a pair of fingers for clamping the button on said clinching die, said finger holder having on its periphery a first gear;
(f) a second gear carried by said support and meshing with said first gear;
(g) a cylindrical holder secured to said support;
(h) an adjusting sleeve rotatably mounted in said cylindrical holder so as to be movable axially of said cylindrical holder to a limited extent;
(i) a shaft rotatably mounted inside said sleeve, said second gear being secured to said shaft;
(j) a fluid-pressurized cylinder operatively connected with said second gear for turning the latter through a predetermined angle; and
(k) means for adjustably regulating the extent to which said second gear is turned, said regulating means comprising a plurality of equidistantly spaced first recesses in a periphery of said sleeve, and a pin carried by said cylindrical holder and releaseably engageable with one of said first recesses which is chosen depending on the extent to which the button is to be turned.

4,493,449

SOLDERING TOOL FOR A ROBOT

William J. Kleiman, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 6, 1982, Ser. No. 447,041
Int. Cl.³ B23K 3/00, 37/02
U.S. Cl. 228—7 12 Claims



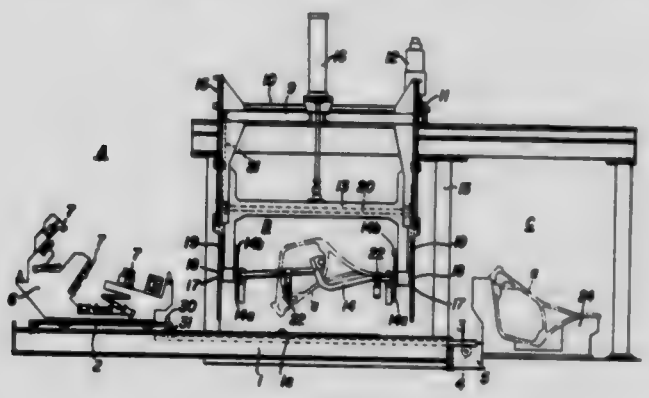
1. A soldering tool for a robot comprising:
a. a frame assembly for mounting said tool to said robot;
b. means for providing heat to a specified location on a workpiece, said heating means attached to said frame assembly;
c. means for guiding solder to said specified location upon command mounted on said frame assembly;
d. means for cleaning said heating means in cooperation with said robot; and
e. means for interconnection to said robot wherein said robot is for providing temperature control, timing control, and position control for said tool.

4,493,450

WELDING APPARATUS FOR VEHICLE BODY OF TWO-WHEELED VEHICLE

Katsutoshi Yazui, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 28, 1983, Ser. No. 461,924
Claims priority, application Japan, Jan. 29, 1982, 57-11803; Jan. 29, 1982, 57-11804; Mar. 30, 1982, 57-50058
Int. Cl.³ B23K 31/02
U.S. Cl. 228—49 R 3 Claims



1. A welding apparatus for a vehicle body of a two-wheeled vehicle comprising:
a machine base,
at least one lower jig carrier mounted on said machine for reciprocation between a first position and a second position ahead of said first position,
means on said machine base for reciprocating said lower jig carrier,
first clamping means for holding a workpiece on said lower jig carrier, said workpiece consisting of plural members which when welded at a first set and a second set of certain predetermined points constitutes said vehicle body,
a machine frame mounted over said machine base at said second position,
an upper jig carrier mounted on said machine frame for movement upwardly and downwardly relative to said machine base and for reciprocation between said second position and a third position ahead of said second position,
means on said machine frame for reciprocating said upper jig carrier,
means on said means for reciprocating for moving said upper jig carrier upwardly and downwardly,
second clamping means for holding said workpiece on said upper jig carrier,
means on said means for moving for reversibly changing the orientation of said upper jig carrier holding said workpiece by 180°, and
means at said second position for welding at least said first set of said certain predetermined points on said workpiece.

4,493,451

FILLING FISSURES IN METAL ARTICLES

Stephen D. Clark, Colne; Philip S. Wood, Barnoldswick, and Peter J. Fell, Steeton, Nr Keighley, all of England, assignors to Rolls-Royce Limited, London, England

Filed Oct. 5, 1982, Ser. No. 432,825
Claims priority, application United Kingdom, Oct. 17, 1981, 8131372
Int. Cl.³ B23P 6/04
U.S. Cl. 228—119 6 Claims

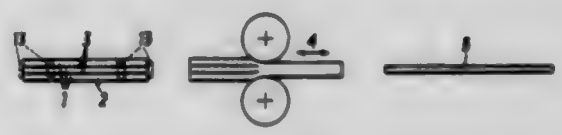
1. A method of filling a fissure in an article made from a superalloy including the steps of:
placing a powdered mixture of a superalloy, which is the same as the superalloy of the article, and a first brazing alloy of a given melting point in the fissure;
superimposing a further powdered brazing alloy thereon, said further brazing alloy having a higher melting point than the given melting point of the first brazing alloy of the powdered mixture;
heating the whole to a predetermined temperature and for a time period sufficient for melting the first brazing alloy of the powdered mixture so as to effect diffusion brazing of the powdered mixture of the superalloy and firt brazing alloy to provide a sinter with interstices; and
then further raising the temperature to effect melting of the further brazing alloy and filling therewith the interstices of the sinter which resulted from said diffusion brazing.

4,493,452

METHOD OF PRODUCING A PLATE OF STEEL

Thorwald Fastner; Max Mayrhofer, and Walter Taschner, all of Linz, Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Nov. 25, 1981, Ser. No. 324,837
Claims priority, application Austria, Dec. 2, 1980, 5879/80
Int. Cl.³ B23K 20/04
U.S. Cl. 228—158 9 Claims



1. A method of producing a plate of steel, in particular a plate having a thickness of more than 50 mm, by hot-rolling a prematerial in several passes, which method comprises the steps of
superposing at least two slabs of equal steel quality constituting said prematerial so as to obtain a pack,
securing said at least two slabs against displacement relative

to one another by applying stabilizing brackets on said pack, and

welding said at least two slabs by roll-bonding and reducing said pack in thickness.

4,493,453

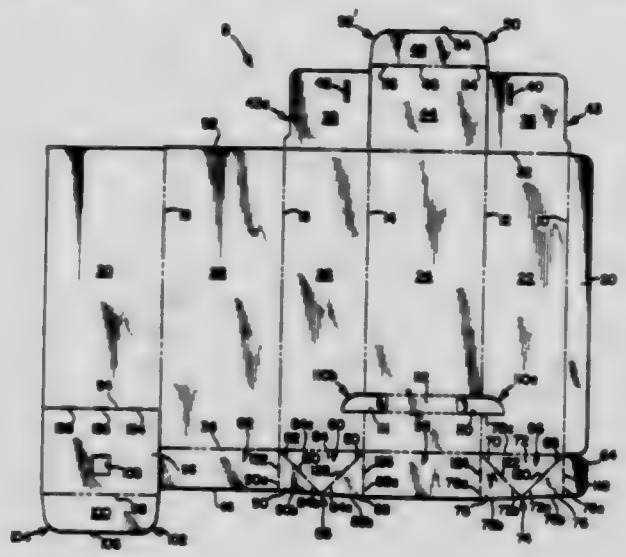
BOX FOR DISPLAY AND DISPENSING ARTICLES

Robert B. LeDrew, Newport News, Va., assignor to Williamsburg Packaging Corporation, Newport News, Va.

Filed Mar. 28, 1983, Ser. No. 479,813

Int. Cl.³ B65D 5/72; A47F 3/02

U.S. Cl. 229—17 B 24 Claims



3. A carton having a closure for one end thereof, comprising:

(a) said carton having four walls and with each of said four walls having a flap extension, each of said extensions having edges on either side thereof;

(b) each of said flap extensions being interconnected at its edges with adjacent flap extensions to form an endless series of flaps;

(c) said flaps forming first and second cooperating pairs of opposed flaps and each flap of said pairs having marginal edges;

(d) each flap of said first cooperating pair of flaps having a series of fold lines substantially forming three generally triangular sections, said three triangular sections including a generally shaped central isoceles triangle bounded on one side by a first triangle and on the other side by a second triangle and said first triangle being smaller than said second triangle;

(e) said second of said cooperating pairs of flaps having one flap of a width greater than the width of the opposite flap of said second cooperating pairs of flaps and said first triangle of each of said first cooperating pairs of flaps being adjacent the opposite flap of said second cooperating pair of flaps;

(f) each flap of said first cooperating pair of flaps having its marginal edges gradually increasing in width from one of said flaps of said second cooperating pair of flaps to the opposite flap of said second cooperating pair of flaps;

(g) said three generally triangular sections of each of said first cooperating pair of flaps being contiguous;

(h) said three generally triangular sections of each of said first cooperating pair of flaps meeting at an apex associated with said marginal edges of each of said first cooperating pair of flaps; and,

(i) whereby, when said second cooperating pair of flaps is folded inwardly prior to the folding of said first cooperating pair of flaps, said end closure will snap inwardly and remain below the plane of the bottom of said carton.

23. A blank for an insert, comprising:

(a) a flat member having first, second, third, fourth, fifth, sixth, seventh and eighth spaced parallel longitudinal score lines thereon defining a first wall member, a flat base, a second wall member, a third wall member, a first base member, a first wall support member, a connecting member, a second wall support member, and a second base member;

(b) said first wall support member having a plurality of first sized U-shaped slits defining a plurality of first sized flat fingers associated with said first wall support member;

(c) said second wall support member having a plurality of second sized U-shaped slits defining a plurality of second sized fingers associated with said second wall support member and said second sized fingers having a length exceeding said first sized fingers length for permitting interdigitation of said first and second fingers whereby said second sized fingers are prevented from passing through said first sized U-shaped slits to thereby maintain said first and second wall support members parallel when the insert is assembled;

(d) said first and said second wall members and said flat base having a transverse score line thereon defining an upper end thereof;

(e) said first and said second wall members and said flat base having a second transverse score line parallel to and spaced from said transverse score line for defining a lower end thereof;

(f) said first wall member having a first rectangular end wall extending from the upper end thereof and a second rectangular end wall extending from the lower end thereof;

(g) said flat base having an upper end wall extending from the upper end thereof and a lower end wall extending from the lower end thereof;

(h) said flat base upper end wall and said lower end wall each having a pair of angularly disposed score lines thereon; and,

(i) said second wall member having a first rectangular end wall extending from the upper end thereof and a second rectangular end wall extending on the lower end thereof.

4,493,454

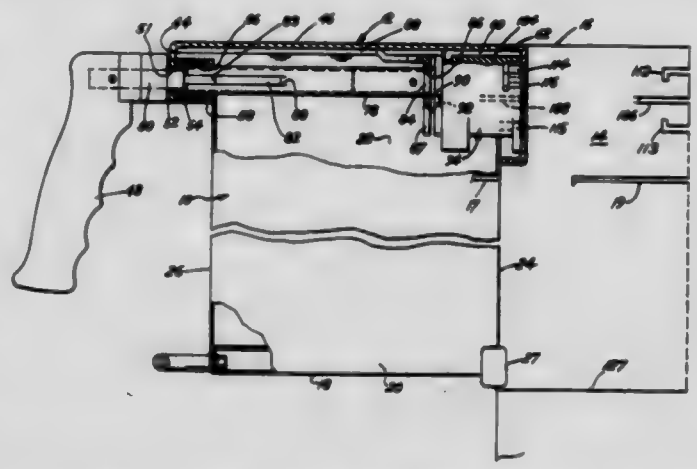
CASH COLLECTION RECEPTACLE

Charles W. Giebelhausen, Buffalo Grove, and Jose E. Davila, Bourbonnais, both of Ill., assignors to General Signal Corporation, Stamford, Conn.

Filed Sep. 27, 1982, Ser. No. 424,398

Int. Cl.³ G07B 15/00

U.S. Cl. 232—15 11 Claims



1. A collection receptacle for receiving cash from a farebox comprising in combination:

(a) a cashbox having an open top;

(b) a cover, said cover being pivotably attached to said cashbox at one edge of the top side of said cashbox and slidable with respect to the pivotal attachment to cover said top, said cover including means for interlocking with said cashbox when said cover is in the closed position to prevent pivotal movement of said cover in the closed position;

(c) a control handle attached to said cover, said handle being rotatable to two positions, one position preventing sliding

and pivotable movement of said cover when said cover is in the closed position and the other position permitting sliding and pivotal movement of said cover between the closed position and an open position, said handle including a shaft projecting therefrom and journaled through the cover; and

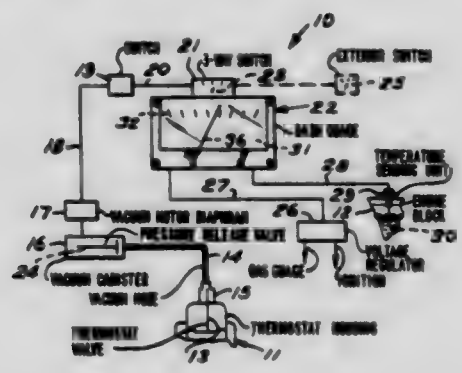
(d) a keyway member pivotally attached to the cashbox, said shaft slidably projecting through a key passage in the keyway member, a portion of said shaft including a key member cooperative with the opening to permit sliding movement of the shaft in the block only when the handle is oriented in a single position.

4,493,455

ADJUSTABLE THERMOSTAT VALVE SYSTEM FOR AUTOMOTIVE VEHICLES

Larry S. Pruett, P.O. Box 1358, Marietta, Ga. 30061

Filed Jun. 8, 1983, Ser. No. 502,108
Int. Cl.³ F01P 7/14
U.S. Cl. 236—34.5 1 Claim



1. An adjustable thermostat valve system for automotive vehicles, comprising, in combination, a valve housing mounted on an engine block, a vacuum operated valve stem in said housing operated by a vacuum hose secured at one end to a neck of said housing and to a vacuum canister at its other end, a vacuum motor diaphragm coupled to said vacuum canister by a cable, said diaphragm coupled to a relay switch coupled by cable to a three-way switch mounted on an electronic temperature gauge; a pressure release valve in said vacuum canister, cable to said temperature gauge being connected to a voltage regulator of said vehicle, and another cable to said temperature gauge being connected to a temperature sending plug threaded in said engine block; a face on said temperature gauge being calibrated in temperature degrees, a plurality of electric contacts at spaced locations along the calibrations of said face, a pointer arm in front of said face being engageable with said contacts for closing a circuit to said relay switch and causing said valve stem to insert and enable coolant circulation through a radiator of said vehicle; and a manually controlled knob on said three-way switch for electing a temperature at which said circuit between said temperature gauge and said relay switch is closable.

4,493,456

TEMPERATURE-RESPONSIVE AUTOMATIC VENTILATOR

Paul M. Saranzo, Jr., 214 Fairway Dr., and Dennis A. Beam, Westfield Rd., both of Shelby, N.C. 28150

Filed Sep. 30, 1982, Ser. No. 430,528
Int. Cl.³ F24F 13/14
U.S. Cl. 236—49 10 Claims

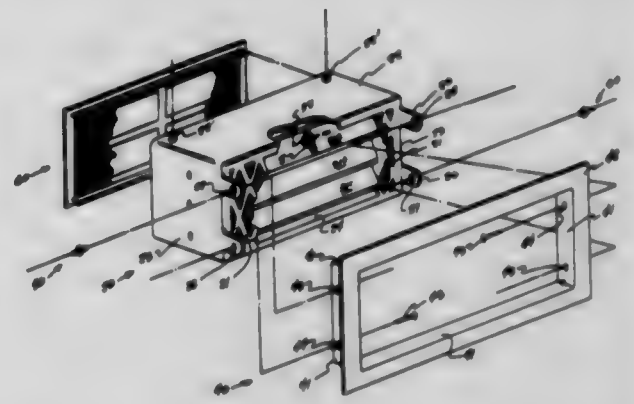
1. An improved foundation ventilator assembly comprising:

(a) a housing, said housing including side walls, a top wall and a bottom wall defining an air passageway therethrough;

(b) a collar associated with said housing, said collar having a first axially extending section with respect to said passageway and a second transversely extending section with respect to said passageway, at least one of said housing and said collar defining mounting means receiving openings therein, said openings including concentric portions of different diameter, said larger diameter portions being outside of said small diameter portions with respect to said air passageway,

(c) shutter means secured within said air passageway of said housing for pivotal movement thereabout, whereby when said shutter means are disposed transverse to a longitudinal axis through said passageway said passageway is closed and when disposed axial to said axis said passageway is open;

(d) means associated with said shutter means for pivoting same; and



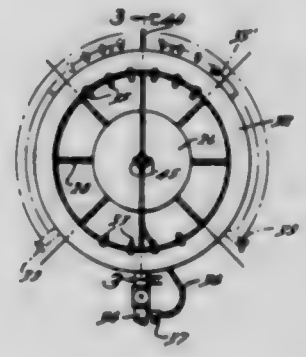
(e) mounting means receivable in said mounting means receiving openings and adapted for manipulation to secure a portion of same within said foundation in the absence of predrilled openings therein, said mounting means including a threaded element having a pressure plate threadably received thereabout, said pressure plate being receivable in said large diameter portions of said openings and having means associated therewith to preclude rotational movement of same, whereby said mounting means received in said openings may be rotated for movement into said foundation with pressure produced thereby being absorbed by said pressure plates and said assembly.

4,493,457

METHOD AND APPARATUS FOR MAKING ARTIFICIAL SNOW

James L. Dilworth, Petoskey, and Robert J. Brinks, Alanson, both of Mich., assignors to Nubs Nob, Inc., Harbor Springs, Mich.

Filed Apr. 18, 1983, Ser. No. 473,071
Int. Cl.³ A01G 15/00
U.S. Cl. 239—25 10 Claims



9. A method of making artificial snow including the steps of:

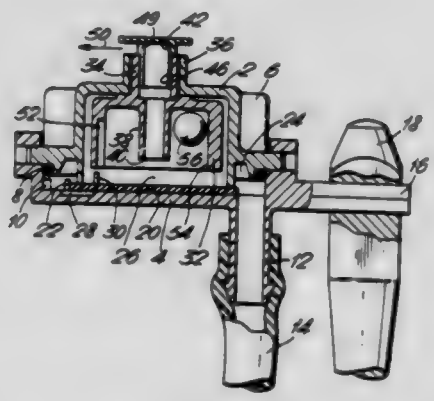
generating a substantially unidirectional high-volume current of air;

injecting into said air current at an obtuse angle relative to the direction of said air current a high-velocity water spray from a location substantially above said air current and from a location substantially within a first quadrant of said air current;

injecting into said air current at an obtuse angle relative to the direction of said air current a high-velocity water spray from a location substantially below said air current from a location substantially within a second quandrant of said air current, said second quadrant opposite said first quadrant and;

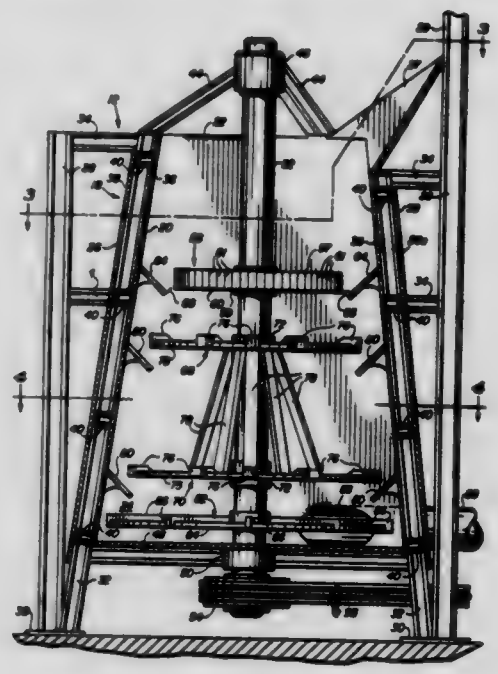
injecting into said air current a high-velocity nucleated ice crystal spray comprising a mixture of water and compressed air from a location approximately in the center of said unidirectional high-volume current of air.

4,493,458
ROTARY SPRINKLER
Dan Bron, 36 Palmach St., Haifa, Israel
Filed Dec. 3, 1981, Ser. No. 327,214
Claims priority, application Israel, Dec. 24, 1980, 61803
Int. Cl.³ B05B *3/02, 1/30*
U.S. Cl. 239—230
16 Claims



1. A pressure-regulated, rotating percussion sprinkler, comprising a two-part stationary housing, and an elastically stretchable diaphragm, the parts of said housing and said diaphragm being arranged so that said diaphragm divides the interior of said housing into a substantially peripheral inlet chamber and a central outlet chamber located above said diaphragm, said inlet chamber being provided with an inlet connector, the underside of said diaphram being accessible to the pressure prevailing in said inlet chamber, at least one substantially tangentially oriented passageway connecting said peripheral inlet chamber and said central outlet chamber, an inverted-cup-like rotor comprising a hollow shaft rotatably mounted in a first part of said two-part housing, and a tubular projection substantially aligned with said hollow shaft and extending inside said rotor, said cup-like rotor having a substantially annular peripheral wall, the inner surface of which is provided with at least one discontinuity constituted by a sudden and transient change of curvature and, in operation, serves as race for at least one spherical mass freely movable in the space delimited by said diaphragm and by the inside of said cup-like rotor, the bore of said hollow shaft terminating on the outside of said housing in at least one relatively narrow, nozzle-like opening producing a sprinkling jet, a flow of water introduced through said inlet connector entering said central outlet chamber via said tangentially oriented passageways producing a vortex flow and exiting said outlet chamber via said hollow shaft and said nozzle-like opening, said flow of water through said outlet chamber creating a pressure differential in said chamber relative to the pressure prevailing on the underside of said diaphragm to cause said diaphragm to bulge restricting the flow of water through said outlet chamber and seeking to equalize the pressure therein with that of said inlet pressure, wherein said vortex flow entrains said spherical mass, imparting to it an orbital movement upon and along said race, whereby, upon encountering, and prior to being carried by its angular momentum over said transient discontinuity, said spherical mass imparts an impulse-like, limited angular motion to said rotor and, thereby, to said sprinkling jet.

4,493,459
MULTI-PURPOSE CENTRIFUGAL MILL
Albert L. Burkett, 1451 E. Glenn, Tucson, Ariz. 85719
Filed Dec. 3, 1979, Ser. No. 99,524
Int. Cl.³ B02C *13/282*
U.S. Cl. 241—152 A
11 Claims



1. A multi-purpose centrifugal mill for comminution of frangible materials comprising:

(a) a housing assembly having an upper end which defines a head section and a lower end which defines a bottom discharge section and having a vertical bore, said housing having a tangential output port in the bottom discharge section thereof;

(b) a materials input chute formed at the head section of said housing assembly and disposed tangentially of the bore thereof;

(c) grinding means in the head section of said housing assembly for receiving the frangible materials from said input chute and grinding those materials to an approximate predetermined size, said grinding means including,

I. a wheel rotatably journaled in said housing and having grinding teeth formed on the periphery thereof,

II. an endless shelf baffle having a central opening, said shelf baffle mounted in the bore of said housing concentric with said wheel,

III. said wheel and the concentric opening of said shelf baffle being sized to form an annular opening therebetween which determined the approximate size of the materials which may pass therethrough; and

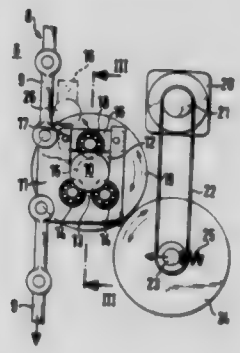
(d) comminution means in the bore of said housing assembly below said grinding means for receiving the frangible materials therefrom and exerting comminution forces thereon.

4,493,460
APPARATUS FOR DEPOSITING A WEB OF MATERIAL ON A TABLE
Albert Buss, Munsingen, Fed. Rep. of Germany, assignor to G. O. Stumpf GmbH & Co. Kommanditgesellschaft, Reutlingen, Fed. Rep. of Germany
Filed Mar. 29, 1982, Ser. No. 363,232
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1981, 3114874
Int. Cl.³ B65H *19/06, 19/12, 35/04*
U.S. Cl. 242—58.6
4 Claims

1. Apparatus for allowing the untensioned unwinding off and laying out of a web from a bolt of material carried on a spindle, comprising:

a. a cutting table on which the untensioned web is to be deposited for a cutting operation thereon;

b. a magazine, positioned adjacent to said cutting table, for movably supporting a plurality of bolts of web for movement of any one bolt in the magazine into and out of a common unwinding position, said magazine comprising a pair of side endless drive elements, with each side drive element being formed by an endless series of articulated elements which support at intervals therealong suspension elements for supporting the ends of each bolt of material, supporting the spindle for movement of the bolt into and out of an unwinding position, each suspension element comprising a bracket, a recess in said bracket for receiving the spindle of the bolt, said recess having an open top and



a closed bottom, supporting means provided in the bottom of the recess for supporting the end of a bolt of material, said supporting means comprising two bearings which are spaced apart by a distance which is less than the diameter of the bolt spindle, a cross-piece releasably secured to the bracket to close the top of the recess, and retaining means mounted on the crosspiece;

c. locking means for locking the spindle in the unwinding position; and

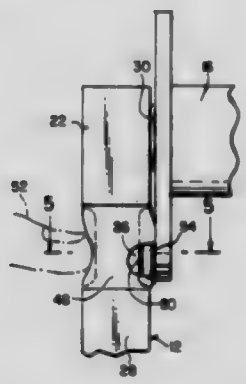
d. a common drive means, acting directly on the periphery of the bolt or on the spindle, when locked in said unwinding position, to rotate the bolt to unwind the web from the bolt.

4,493,461

KITE REEL

Jose R. Polanco, and George Spector, both of 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Jan. 10, 1983, Ser. No. 503,283
Int. Cl.³ B65H *75/40*
U.S. Cl. 242—96 1 Claim



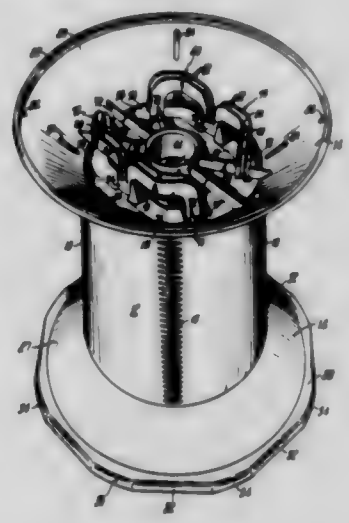
1. A kite reel for controlling a line which comprises:
(a) a handle having a transverse aperture near top;
(b) an axle at one end within the aperture of the handle;
(c) a spool rotatably mounted onto the axle;
(d) means for rotating the spool about the axis of the axle as the line is wound and unwound from the spool; and
(e) means for stopping rotation of the spool about axis of the axle wherein said means comprises an elastic bag mounted around a reduced circumference of the handle near the spool so that when the elastic bag is pressed by a finger it will bulge out to bear against the spool.

4,493,462

SPOOL WITH LIFTING HANDLES

Louis G. Ditton, Ft. Wayne, Ind., assignor to Essex Group, Inc., Fort Wayne, Ind.

Filed Apr. 18, 1984, Ser. No. 601,511
Int. Cl.³ B65H *75/40*
U.S. Cl. 242—118.61 6 Claims



1. A one-piece integrally molded plastic spool for the shipping, storage and handling of a substantial weight of metal wire comprising:

a substantially tubular barrel having a longitudinal axis;

an annular top end flange extending radially outwardly from one end of said barrel and an annular bottom end flange extending radially outwardly from the other end of said barrel to define with said barrel a space for wire wound about said barrel; said bottom end flange having a reinforced, substantially rigid portion for bearing the weight of wire wound about the barrel when said bottom end flange is seated upon a horizontal support surface;

an end plate located at said one end of the barrel and comprising a reinforced, substantially rigid disc extending radially inwardly from said one end of the barrel and having one side facing away from said barrel and an opposite inner side; and

first and second pairs of generally U-shaped finger-receiving handles formed integrally with said end plate and projecting axially outwardly from said one side of the end plate in diametrically opposed relationship around said longitudinal axis; said pairs of handles being substantially mirror images of each other through a plane coincident with said longitudinal axis and arranged to be engaged by right-hand and left-hand fingers, respectively, for two-handed lifting of the spool; said barrel being structurally interconnected with said end plate and said bottom end flange for transferring the weight of wire carried by the spool to said pairs of handles.

4,493,463

CABLE WINDING APPARATUS

Theodore Rivinius, 810 N. 2nd St. #9, Bismarck, N. Dak. 58501

Filed Jul. 25, 1983, Ser. No. 516,803
Int. Cl.³ B65H *54/28*
U.S. Cl. 242—158 F 12 Claims

1. An apparatus for guiding a cable in a substantially uniform manner on a rotatable drum, the apparatus being mounted on a base proximate the drum and the drum having a central axis and first and second spaced apart ends, the apparatus comprising:

bearing means fixedly mounted to the base;

an elongated support slidably engaging the bearing means such that the elongated support is movable substantially parallel to the axis of a drum with which the apparatus is used in a transverse direction;

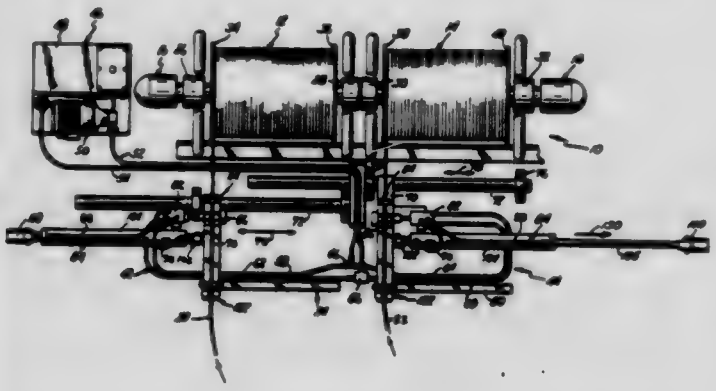
a guide support member having first and second ends, the

first end being disposed closer to such drum than the second end and the guide support member being fixedly attached to the elongated support proximate the first end;

first guide means for guiding a cable controlled by such drum, the first guide means being attached to the guide support member proximate the first end and being configured to permit the cable to move a limited distance in the transverse direction;

second guide means for guiding the cable, the second guide means being positioned on the guide support member proximate the second end in a substantially perpendicular relationship with the first guide means relative to the axis of such drum, the second guide means slidably engaging the cable on two sides;

hydraulic power means for providing hydraulic fluid;



actuator means fluidly connected to the hydraulic power means and having first and second ends with the first end being attached to the base and the second end being attached to the guide support member;

hydraulic valve means for directing the flow of hydraulic fluid from the power means to the actuator means; and

cable controlled means for actuating the hydraulic valve means movably mounted on the guide support member and normally engaging the cable extending from such drum, the means for actuating being operably connected to the hydraulic valve means such that transverse movement of the cable moves the means for actuating and activates the hydraulic valve means to direct flow to the actuator means so that the actuator means moves the guide support member in either a first or second transverse direction corresponding to the transverse movement of the cable.

4,493,464

PACKAGED STRAND

William A. Green, Swanton, Ohio; Joe E. Godfrey, and David S. Pletsch, both of Amarillo, Tex., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sep. 19, 1983, Ser. No. 533,698
Int. Cl.³ B65H *55/02, 49/00;* B65D *85/671*
U.S. Cl. 242—170 5 Claims

1. A package comprising:

(a) an unwindable wound body of strand;

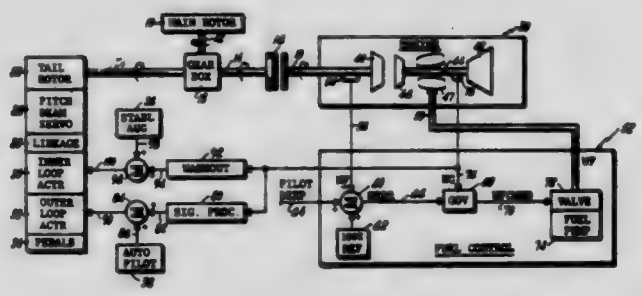
(b) a heat shrinkable, stretch membrane convolutely positioned about the wound body, said body and said membrane having been heated to place said membrane in conformance to the pluralities of undulations on said wound body, said body and said membrane having been heated to a temperature greater than the temperature at which said strand is thereafter unwound said temperature being in the range from about 110° F. to about 350° F.

4,493,465

HELICOPTER ENGINE TORQUE COMPENSATOR

James J. Howlett, North Haven, and Raymond D. Zagranski, Somers, both of Conn., assignors to Chandler Evans Inc., West Hartford, Conn.

Filed Apr. 16, 1982, Ser. No. 369,481
Int. Cl.³ B64C *27/78*
U.S. Cl. 244—17.13 2 Claims



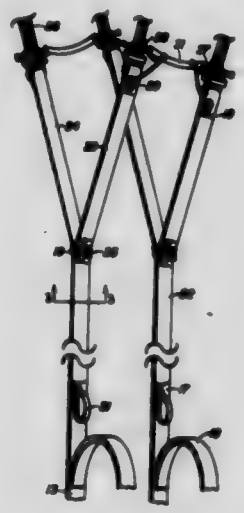
1. An engine torque compensation for a helicopter including a free turbine engine (20) for driving the main (10) and tail (22) rotors, a closed loop fuel control (52) for maintaining the rotor speed constant by providing a fuel rate signal (WF) in response to an engine output shaft speed signal (NF) and a gas generator speed signal (NG), and a heading hold system for varying the tail rotor pitch to maintain yaw, characterized in that the heading hold system is responsive to the gas generator speed signal (NG) for providing engine torque compensation.

4,493,466

RISER

Bruce W. Trenholm, and James G. Woolley, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 410,285, Aug. 23, 1982, abandoned.
This application Jun. 4, 1984, Ser. No. 617,139
Int. Cl.³ B64D *17/34*
U.S. Cl. 244—152 4 Claims



1. A riser assembly for use in a parachute having a canopy, the assembly comprising:

an elongated riser having a predetermined end which is disposed toward the canopy when the parachute is deployed;

a lanyard extending along the riser from said end;

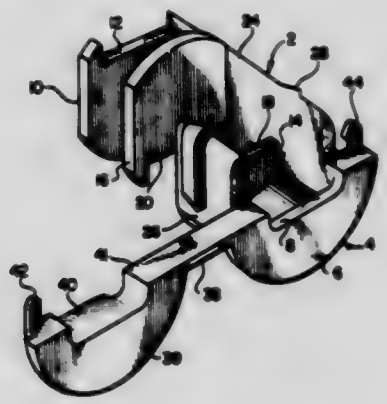
coupling link means terminating the riser at said end for attachment of a plurality of shroud lines thereto;

a connecting link terminating the lanyard for attachment of a control line thereto, said link being disposed, prior to deployment of the parachute, in a position alongside the riser and adjacent to said end, said link being substantially wider than the lanyard transversely of the riser; and

a sheath of elastic material extending along the riser oppositely of the lanyard and connected to the riser along a

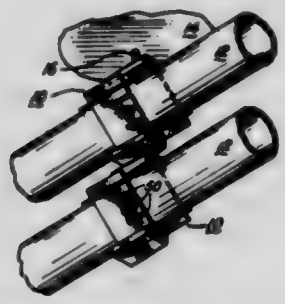
lateral edge thereof, the sheath terminating adjacent to said end and oppositely of said position therefrom, so that the sheath minimizes entanglement of the lanyard prior to deployment of the parachute and so that the sheath expands for passage of the connecting link when the lanyard is moved away from said end subsequent to such deployment.

4,493,467
STRAIN RELIEF
Jesus Borja, Chicago, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.
Filed Mar. 25, 1982, Ser. No. 361,656
Int. Cl.³ F16L 5/00
U.S. Cl. 248—56 2 Claims



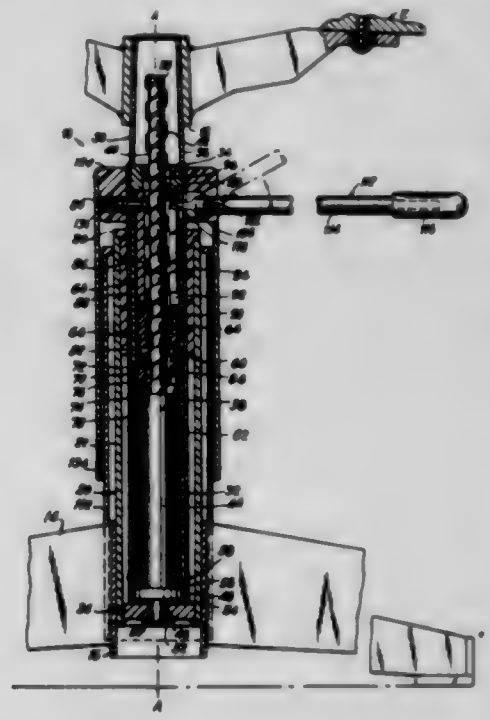
1. A one-piece plastic strain relief bushing for a power cord line comprising a longitudinally extending main body portion having a first end wall with a cord receiving notch at one end and having an end section at the other end including a second end wall with a cord receiving notch, a pair of spaced intermediate walls being integrally formed on said main body portion between said first and second end walls in parallel relation thereto, said intermediate walls each having a cord receiving edge that is disposed relative to said cord-receiving notches of said end walls in a manner that the cord-receiving edge portions of said notches and the cord-receiving edges of said intermediate walls cooperate with said first and second end walls to define a serpentine path for receiving a power line cord in a manner to impart an abrupt bend in the cord, said end section further including a locking portion hingedly connected to said second end wall adjacent to said cord-receiving notch for displacement between opened and closed positions, said locking portion having an edge portion which overlies said second cord-receiving notch when in said closed position to thereby define an opening through which said cord is positionable, and fastening means for selectively retaining said locking portion in said closed position.

4,493,468
ADJUSTABLE PIPE FASTENER
Thomas C. Roach, 5756 N. Fall Rd., LaPorte, Ind. 46350
Filed Jul. 5, 1983, Ser. No. 510,727
Int. Cl.³ F16L 3/10
U.S. Cl. 248—62 12 Claims



1. A pipe fastener for hanging or otherwise supporting pipe installations, comprising a top member having sides extending outwardly and disposed at substantially right angles to one another, a bottom member having sides extending outwardly and disposed at substantially right angles to one another, said top and bottom members being interconnected and forming an enclosure for receiving a pipe, an adjustment means for changing the size of said enclosure including a plurality of spaced parallel slots disposed in said first and second mentioned sides and extending inwardly at substantially right angles from one edge of said sides, and a means for securing said pipe within said enclosure.

4,493,469
HEIGHT ADJUSTMENT CONTROL ARRANGEMENT
Raymond E. Holcbaugh, Tupelo, Miss., assignor to Mohasco Corporation, Amsterdam, N.Y.
Filed Jan. 19, 1983, Ser. No. 459,044
Int. Cl.³ F16M 11/00
U.S. Cl. 248—406.1 20 Claims



1. A displacement adjustment control arrangement, comprising:

(a) a first mounting means, and a second mounting means displaceable in either direction along a longitudinal axis relative to the first mounting means in response to manual longitudinal displacement of the first and the second mounting means towards and away from each other; and

(b) user-operated adjusting means operatively connected to the first and the second mounting means for manually adjusting the extent of the longitudinal displacement, including

(1) a longitudinally-extending member having engaging portions,

(2) an adjustment member having complementary engaging portions which engage the engaging portions and mount the adjustment member on the longitudinally-extending member for movement along the same in response to the longitudinal displacement,

(3) keeper means movable between a locked position in which the keeper means lockingly engages the adjustment member and secures the same at one secured position on the longitudinally-extending member to thereby prevent the longitudinal displacement, and a released position in which the keeper means is disengaged from locking engagement with the adjustment member and enables the longitudinal displacement to move the adjustment member relative to the longitudinally-extending member to another secured position thereon that is spaced longitudinally from the one secured position,

(4) single stroke, manually-actuatable release means in force-transmitting relationship with the keeper means for manually moving the same in a single motion from the locked position to the released position, said release means including a handle means located within easy reach of a user, and

(5) keeper restoring means operatively connected to the keeper means for moving the same from the released position to another locked position in which the keeper means lockingly engages the adjustment member and secures the same at said other secured position on the longitudinally-extending member,

whereby the user may manually adjust the extent of the longitudinal displacement to any desired amount.

4,493,470

RAPID ACTION CLAMPING FOR COOPERATION WITH SLOT TRACKS

Hinrich Engel, Bremen, Fed. Rep. of Germany, assignor to Vereinigte Flugtechnische Werke GmbH, Bremen, Fed. Rep. of Germany

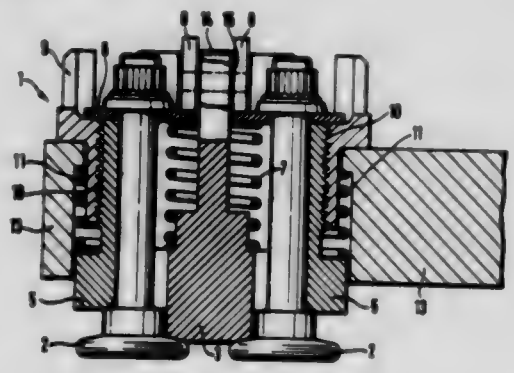
Filed Aug. 8, 1983, Ser. No. 521,458

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1982, 3232234

Int. Cl.³ A47B 97/00

U.S. Cl. 248—503.1

4 Claims



1. Rapid action clamping element for positioning and locking components in relation to a slot track comprising:

a latch housing being one of the components;

a base element resiliently held in and biased for engagement with the latch housing and having an external annular threading and provided for mounting two mushroom headed posts projecting in an aligned relationship from below the base element;

a cylindrical post disposed in between the two mushroom headed posts, the cylindrical post being spring biased;

a plate held against the base element on a side opposite the side from which the mushroom heads of the mushroom headed posts project, said two mushroom headed posts being secured to said plate, said plate having an opening through which an end of the cylindrical post projects;

a crown ring threaded upon said base element and having shoulder means provided for being positioned with respect to said latch housing so that the extent of threading the crown ring upon the base element determines the extent to which said mushroom headed posts project from said latch housing; and

handle means connected to said end of said cylindrical post and having two operating positions wherein in one operating position said cylindrical post is retracted while in the other position the cylindrical post is protracted, and the handle means rests in between the prongs of the crown ring for preventing said crown ring from turning.

4,493,471

SOUND SPEAKER STAND FOR ATTENUATING VIBRATIONS

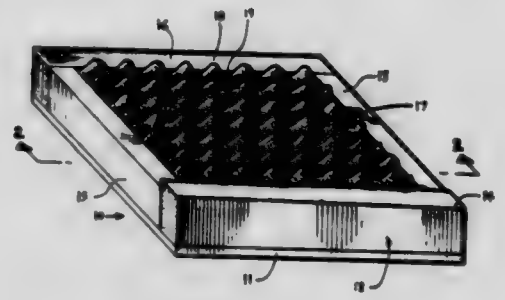
Donald E. McInnis, 1611 Elwood Dr., Los Gatos, Calif. 95030

Filed Feb. 14, 1983, Ser. No. 466,059

Int. Cl.³ F16M 13/00

U.S. Cl. 248—580

6 Claims



1. A speaker stand for supporting a speaker enclosure on a floor and wherein the speaker has a base forming a planar bottom surface, said stand comprising:

a rigid planar member having a top surface of sufficient size to support the base of the speaker enclosure;

a waffled cushion member fixed to the top surface of said base, said cushion member comprising a top layer of resilient material forming a plurality of peaks and valleys facing upward so as to form a plurality of closed, air pockets with the speaker bottom surface to attenuate vibratory motion transmitted therebetween, a plurality of resilient members of less resiliency than said cushion member supported to the opposite sides of said cushion member to support and stabilize said speaker enclosure while preventing the leveling of said peaks with the valleys of the cushion member.

4,493,472

MOULD USED FOR MAKING A RACKET FRAME

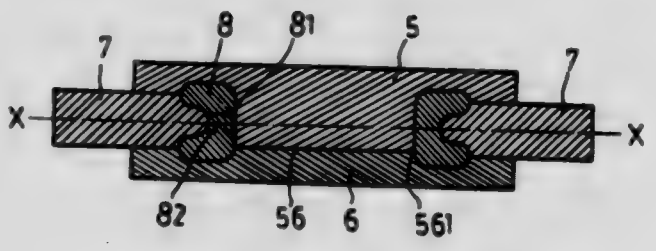
Kun N. Lo, No. 7-1, La. 246, Chung Hsan Rd., Sec. 3, Tan Tzu Hsiang, Taiwan

Filed Sep. 9, 1982, Ser. No. 416,401

Int. Cl.³ B29C 1/06, 1/14

U.S. Cl. 249—57

2 Claims



1. A racket frame mold for a racket frame having a looped head of generally U-shaped cross-section and round edges, upper, lower, inner and outer surfaces and a plurality of stringing holes therein; a throat section; and a shaft section, the racket frame mold comprising: an upper mold piece; a lower mold piece, the upper and lower mold pieces cooperating to form a space defining the upper, lower and inner surfaces of the looped head, the throat portion and the shaft portion of the racket frame; and an intermediate mold piece interjacent the upper and lower mold pieces for defining the outer surfaces of the looped head of the racket frame; a parting line between the upper and lower mold pieces being located intermediate the lower side of the stringing hole and the lower surface of the looped head of the racket frame.

4,493,473

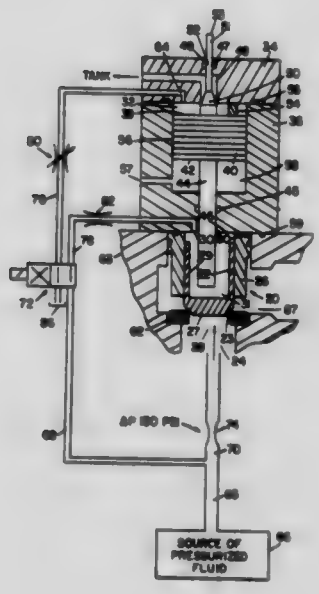
VALVE ARRANGEMENT

Felix Rexer, 109 Lille Rd., Nashua, N.H. 03062

Division of Ser. No. 284,477, Jul. 17, 1981,. This application Jan. 9, 1984, Ser. No. 569,236

Int. Cl.³ F16K *31/124*

U.S. Cl. 251—63.4 5 Claims



1. A poppet valve arrangement comprising:

a poppet valve having a first end wall and a first inlet fluid passageway and a second outlet fluid passageway;

said valve comprising a valving chamber, a poppet mounted in said valving chamber for movement between two extreme positions respectively toward, and away from, said first end wall for respectively opening and closing communication between said fluid passageways, said poppet having a predetermined cross-sectional working area exposed in said valving chamber;

positioning means for controlling the position of said poppet element between its extreme positions to control the volume of fluid flow between said passageways and comprising;

a. a piston having inner and outer faces each on an opposite side thereof;

b. a cylindrical wall receiving the piston in fluid sealed relation for forward and backward motion;

c. an outer end wall, an inner end wall, said outer end wall, said cylindrical wall, and one of said end faces defining a piston chamber, said piston chamber having an outlet port of predetermined area and an inlet port;

d. a spear carried by said piston and extending from said outer piston face, said spear having a portion with an area of its cross section transverse to the piston motion which diminishes with distance from said outer face, so that as said piston moves toward or away from said outer end wall, said portion correspondingly advances into and withdraws from said outlet port and the area of said outlet port available for fluid passage is correspondingly diminished or enlarged;

e. a pin controlled by said piston, normally spaced from said poppet, and fluid sealed from the piston chamber for exerting force on said poppet away from said first end wall, and;

f. means for applying fluid pressure selectively to a passageway of said poppet valve to apply pressure on said poppet.

4,493,474

ELECTROMAGNETIC VALVE UNIT

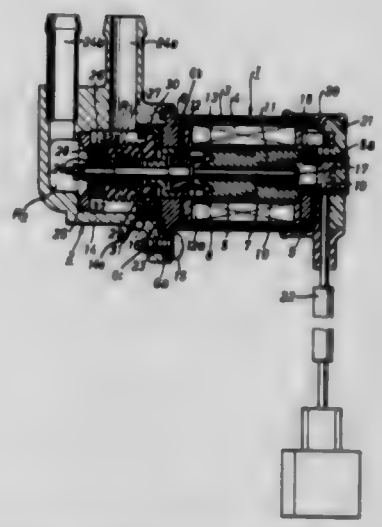
Tadashi Ohyama, Okazaki, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 20, 1982, Ser. No. 370,269

Claims priority, application Japan, Apr. 22, 1981, 56-58340[U]

Int. Cl.³ F16K *31/06*

U.S. Cl. 251—129 9 Claims



1. An electromagnetic valve unit including a flow control valve assembly for controlling the flow of fluid passing therethrough and operatively associated with an electromagnetic motor assembly for actuating said valve assembly in response to an electric current applied thereto from an electric control circuit, said motor assembly comprising:

a motor housing of magnetic material providing at one end thereof with a fitting face;

a solenoid coil concentrically assembled within said motor housing and connected to said electric control circuit;

a stationary core of magnetic material surrounded by said solenoid coil;

a yoke member of magnetic material fitted at its outer periphery to the fitting face of said motor housing and having a stepped portion arranged to be coaxial with said stationary core;

a shaft of non-magnetic material extending through the axes of said stationary core and said yoke member into said valve assembly;

first and second bearing means for axially slidably supporting said shaft, respectively, from said stationary core and said yoke member;

a movable core of magnetic material fixed to said shaft to be axially moved between said stationary core and said yoke member, said stationary core and said movable core having first and second confronting end faces;

a sleeve member of non-magnetic material surrounded by said solenoid coil and having positioned therewithin said stationary core and the stepped portion of said yoke member for alignment of said first and second bearing means;

resilient means for loading said shaft toward said valve assembly;

said valve assembly comprising:

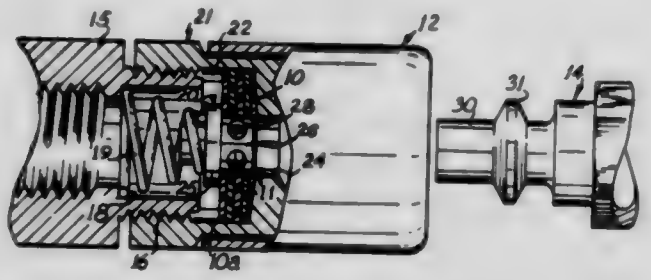
a valve housing secured to said motor housing through the outer periphery of said yoke member and being provided with first and second ports;

a valve seat member assembled within said valve housing to subdivide the interior of said valve housing into first and second chambers, respectively, in open communication with said first and second ports, said valve seat member being in surrounding relationship with said shaft; and

a valve element fixed to said shaft to cooperate with said valve seat member to control the flow of fluid between said first and second chambers in response to axial movement of said shaft wherein said valve assembly further comprises bellows means interposed in a fluid-tight man-

ner between said yoke member and said shaft for preventing the flow of fluid from the interior of said valve housing into said motor assembly.

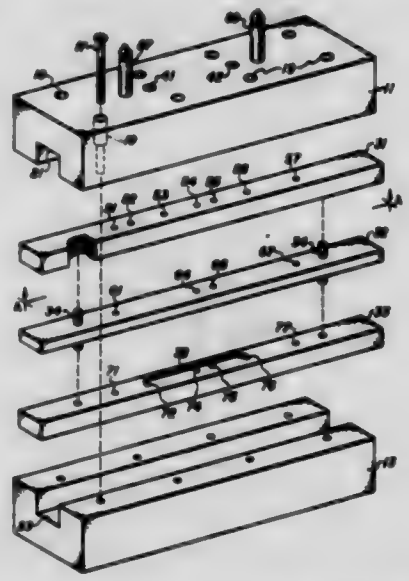
4,493,475
SEAL FOR QUICK DISCONNECT COUPLING
David M. Baird, 4285 Smithsonia Dr., Tucker, Ga. 30084
Filed Aug. 22, 1983, Ser. No. 525,155
Int. Cl.³ F16K 51/00
U.S. Cl. 251—149.1 3 Claims



1. In a quick disconnect coupling including a female member connected to a source of fluid under pressure, and a male member selectively receivable in said female member for receiving said fluid under pressure, said female member having a first bore in communication with said source of fluid under pressure, a second bore concentric with said first bore, a valve member in said first bore selectively movable to a first position wherein said valve member seals said first bore with respect to said second bore and to a second position, said male member including a valve operating member having a bore therethrough, said valve operating member being receivable within said second bore of said female member for urging said valve member to said second position wherein said valve member allows communication of said first bore with said bore through said valve operating member, the combination therewith of a seal comprising a plurality of washers, each washer of said plurality of washers having an outer periphery engaging the wall of said first bore and a central hole concentric with said second bore, said central hole in said washer being sized to receive said valve member when said valve member is in said first position, said central hole further being sized to receive said valve operating member of said male member and effect a fluid seal, the total thickness of said plurality of washers being sufficient to allow said valve operating member to move said valve member to said second position, each of said washers being formed of a plastic material.

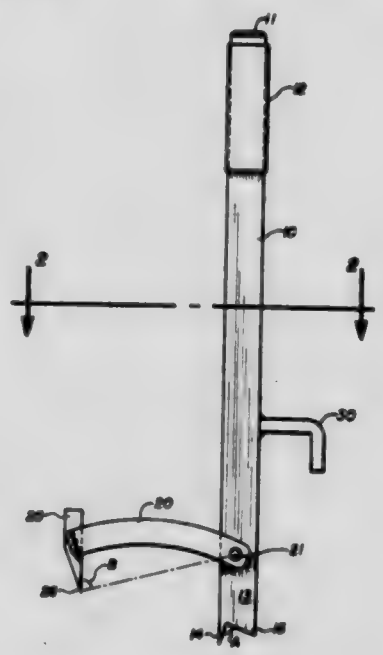
4,493,476
SLIDE VALVE FOR CONTROLLING FLUID FLOW
Reid A. Strickland, and Timothy J. Roller, both of 689 Ogden Parma Town Line Rd, Spencerport, N.Y. 14559
Filed Sep. 28, 1982, Ser. No. 425,897
Int. Cl.³ F16K 11/06, 3/314
U.S. Cl. 251—176 7 Claims

1. A slide valve for controlling fluid flow, comprising a body having two surfaces spaced from and parallel to each other, each of said surfaces having at least one port opening in such surface, a slide assembly slidable longitudinally in the space between said two parallel surfaces, said slide assembly being formed of at least two members overlying each other, one member of the assembly sliding along and being tightly engaged with one of said two parallel surfaces, another member of the assembly sliding along and being tightly engaged with the other of said two parallel surfaces, one member of the slide assembly being resilient and being compressed in a direction perpendicular to said two parallel surfaces so that the resilience thereof tends to hold the slide assembly tightly engaged with said two parallel surfaces of said body, and porting means in said members of said slide assembly for forming a connecting passage from a port in one of said surfaces to a port in the other of said surfaces when said slide assembly is in a predetermined longitudinal position in said body, said porting means including at least two ports extending through the thickness of one member of the slide assembly, and a channel forming a passageway



between one of said ports and another of said ports, said channel being formed along an inner surface of said one member and out of contact with said body.

4,493,477
CARPENTERS TOOL
Robert E. Greer, R.D. #3, Glen Rock, Pa. 17327
Filed Aug. 29, 1983, Ser. No. 527,268
Int. Cl.³ B66F 3/00
U.S. Cl. 254—15 5 Claims



1. A carpenter's tool for use in construction of wood-framed structures comprising:

(a) an elongated handle of rectangular transverse cross section having one end sharpened to form first and second wedges, each wedge having converging flat inner and outer faces, one side of the handle constituting the outer face of the first wedge, the side of the handle opposite said one side constituting the outer face of the second wedge, the angle between the faces of the first wedge being from about 18 degrees to about 25 degrees;

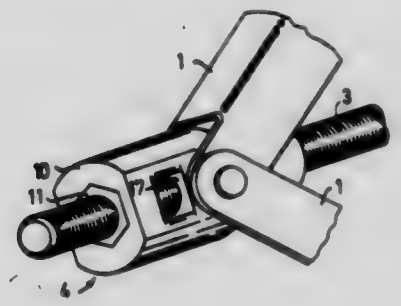
(b) a bar extending from said one side of the handle and pivoted to the handle adjacent the sharpened end for pivoting about a pivot axis perpendicular to the longitudinal axis of the handle; and

(c) a sharpened member at the outer extremity of the bar and generally at a right angle thereto, the tip of the member extending in the direction of the sharpened end of the handle,

the distance from the pivot axis to the tip of the sharpened

member being (i) about one to about three times the distance from said axis to the tip of the first wedge and (ii) about three to about six times the distance from the tip of the sharpened member to the bar.

4,493,478
JACK
Walter Fortgens, Gothenburg, Sweden, assignor to AB Volvo, Gothenburg, Sweden
Filed Nov. 30, 1982, Ser. No. 445,833
Claims priority, application Sweden, Dec. 8, 1981, 8107336
Int. Cl.³ B66F *3/00*
U.S. Cl. 254—126 7 Claims



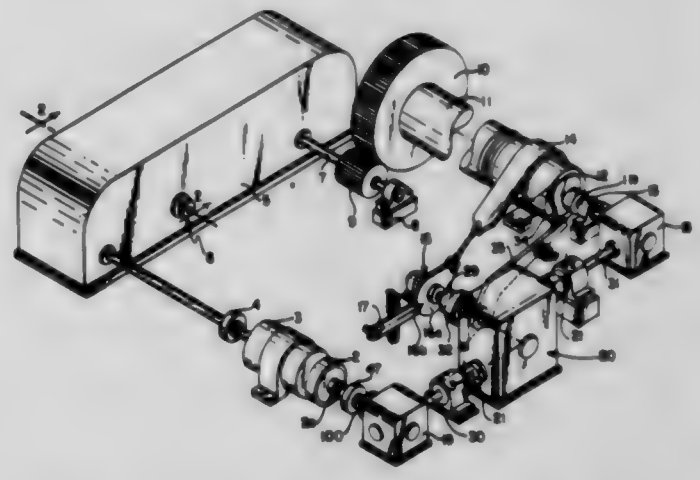
1. Jack, comprising an externally threaded rod and an internally threaded nut member engaging the threads of the rod, the displacement of the member along the rod as the rod is rotated relative to the nut member extending or retracting the jack, characterized in that the nut member consists of a threaded load-carrying main portion and a threaded axially unloaded portion separate therefrom, the thread of said axially unloaded portion being disposed after the thread of the main portion, as viewed when the nut member is moved relative to the rod to extend the jack, and that said main and unloaded nut portions have, firstly, interacting surfaces which during normal thread engagement between the main portion and the rod prevent rotation of said main and unloaded portions relative to each other but which permit axial relative movement between said main and unloaded portions, and secondly, axial stop surfaces facing each other, which during normal thread engagement are spaced axially from each other, said main and unloaded portions of the nut member being so arranged that said surfaces preventing relative rotation are out of contact with each other when the stop surfaces are in contact.

4,493,479
HOIST DRIVE SAFETY SYSTEM
Charles W. Clark, Seattle, Wash., assignor to Ederer Incorporated, Seattle, Wash.
Continuation of Ser. No. 205,009, Nov. 7, 1980, abandoned. This application Mar. 14, 1983, Ser. No. 475,684
Int. Cl.³ B66D *1/48*; B66B *1/26*
U.S. Cl. 254—274 29 Claims

13. A safety system in a hoist having a reversible electric input motor, a primary drive train including a gear reduction unit drivingly connected to the input motor, a drum drivingly connected to the gear reduction unit, and an emergency brake operatively coupled to the drum, comprising:

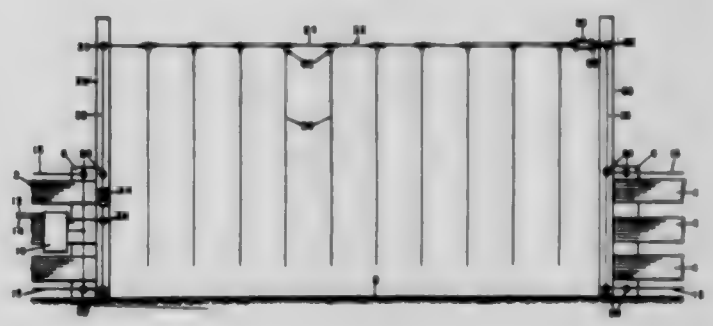
a mechanical out-of-sync detector having an output member and first and second input members, means coupling the first input member to the primary drive train, and means coupling the second input member to the drum, said reversible input motor causing each of said input members to rotate multidirectionally and simultaneously in all normal raising and lowering operating modes of said hoist, said output member moving upon an out-of-sync condition between said input members; and

a spring-set brake including spring means for setting the brake, mechanical trigger means for holding the brake against the brake-setting force of the spring means and releasing the spring means for setting the brake responsive to said motion of the output member, and mechanical link means coupled to the output member so that upon said movement of the output member of the detector, the



motion is transmitted via the mechanical link means to release the trigger means and allow the spring to set the brake.

4,493,480
ELECTRIFIED FENCE GATE
Bud Nichol, Box 188 - Star Rte., Winona, Mo. 65588
Filed Sep. 14, 1983, Ser. No. 531,865
Int. Cl.³ A01K *3/00*
U.S. Cl. 256—10 2 Claims



1. An electrified fence gate comprising:

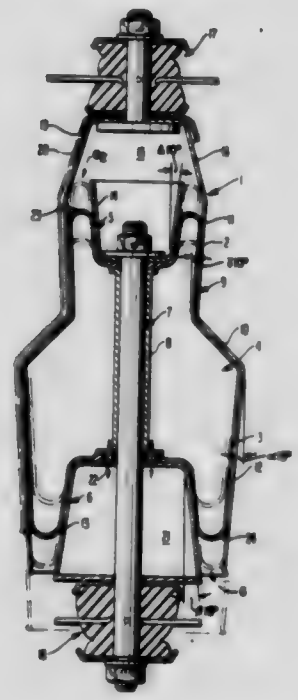
a. a single flexible electrically conductive support wire extending generally horizontally and spanning a gate opening of a fence above ground level, said support wire being secured at its ends to elements of said fence but being otherwise unsupported,

b. a series of flexible, electrically conductive gate wires each connected at its upper end to said support wire by means operable to permit free universal pivotal movement of the former relative to the latter, and additionally operable to permit swivelling of said gate wire about its own axis relative to said support wire.

4,493,481
PNEUMATIC SPRING FOR MOTOR VEHICLES
Josef Merkle, Esslingen, Fed. Rep. of Germany, assignor to Daimler-Benz AG, Fed. Rep. of Germany
Filed Nov. 13, 1978, Ser. No. 959,599
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1977, 2750667
Int. Cl.³ B60G *11/26*; F16F *3/00*, *9/04*
U.S. Cl. 267—64.27 23 Claims

1. A pneumatic spring for motor vehicles which includes

two supports, at least one closed spring volume, two spring surfaces of different sizes which are adapted to be subjected to pressure in opposite directions, the two spring surfaces each having an effective spring surface which is variable as a function of road clearance of the vehicle, and means for supporting the spring surfaces so as to be coaxial with respect to one another, characterized in that a casing is provided, two roll bellows are arranged in the casing and form the spring surfaces, the two roll bellows defining a common chamber form-



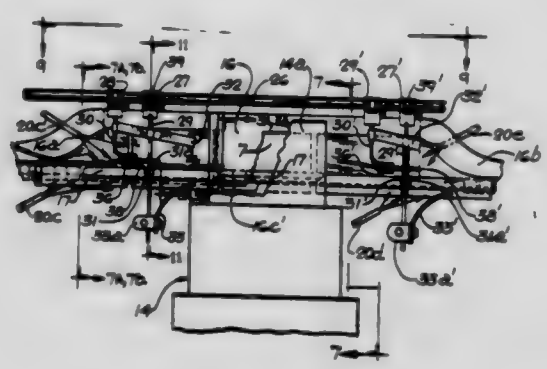
ing at least a portion of the spring volume of the pneumatic spring, the supporting means includes a pair of spring piston means associated with the respective roll bellows, the spring piston means having different diameters and providing support for the respective bellows on sides of the effective spring surfaces which face away from each other, means are provided for connecting the spring piston means together, and in that the spring piston means and the casing of the pneumatic spring form a portion of the two supports.

4,493,482

MOTION STABILIZING AND ALIGNING APPARATUS FOR MOVING FOLDED SIGNATURES THROUGH AN INK JET PRINTER

Edward R. Valenti, Oak Park; Thomas J. Adamczyk, Mount Prospect, and Larry W. Graham, Schaumburg, all of Ill., assignors to Alden Press, Inc., Elk Grove Village, Ill.

Filed Sep. 27, 1983, Ser. No. 536,289
Int. Cl.³ B65H *39/02*
U.S. Cl. 270—12 16 Claims



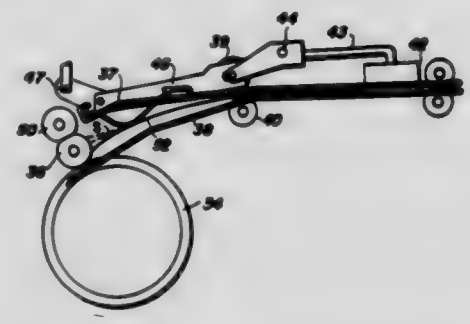
1. In a booklet-making system including a collating conveyor means having an inverted V-shaped top profile for receiving folded signatures to be draped thereover, said conveyor extending over a given path passing by spaced signature feeding stations having signature feeding means for sequentially draping and stacking folded signatures over longitudinally spaced points of the conveyor means, with the crotch of the fold of each signature resting on the apex of the conveyor means so as to form booklet-forming signature stacks having panels on opposite sides of their folds extending generally vertically downwardly therefrom, said conveyor means having horizontally projecting signature stack positioning and pushing means for engaging the trailing edges of the signature stacks draped on the conveyor means for positioning and aligning the same therealong, and a printing station where an ink jet printing means is to be located by said conveyor means following one of said signature feeding stations for projecting ink jets in selectively controlled patterns in synchronized relation with the speed of movement of the conveyor means to print customized information on the exposed face of a signature draped on said conveyor means, the improvement wherein there is provided signature raising means in the path of movement of the signature or stack of signatures to and past said printing station for raising the draped signature or stack of signatures involved to be printed upon and the fold thereof above the conveyor means involved, so that the signature or stack of signatures are not then supported by the conveyor means, and signature backing and aligning means opposite said printing station for receiving the fold of the raised signature or stack of signatures, and for acting as a backing support therefor to stabilize and align the same as it moves past said printing station.

4,493,483

INVERTER-REVERSER FOR A REPRODUCTION MACHINE

Roger G. Teumer, Fairport, and David M. Attridge, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 31, 1979, Ser. No. 7,862
Int. Cl.³ B65H *29/00*
U.S. Cl. 271—186 1 Claim



1. In a sheet handling apparatus for a reproduction apparatus arranged for two-sided copying having an arrangement for inverting a sheet to prepare the same for receiving an image on a second side thereof wherein the arrangement includes first and second feed rolls forming a first feed roll pair having a nip for moving a sheet in one direction and a third feed roll forming a second feed roll pair with the second roll having a nip for moving a sheet in the opposite direction, and a resilient stop means against which a sheet moving in said one direction contacts to deflect the same and effect the edge of the sheet opposite the stop means to be engaged by the second roll and be directed into the nip of the second feed roll pair, the improvement comprising:

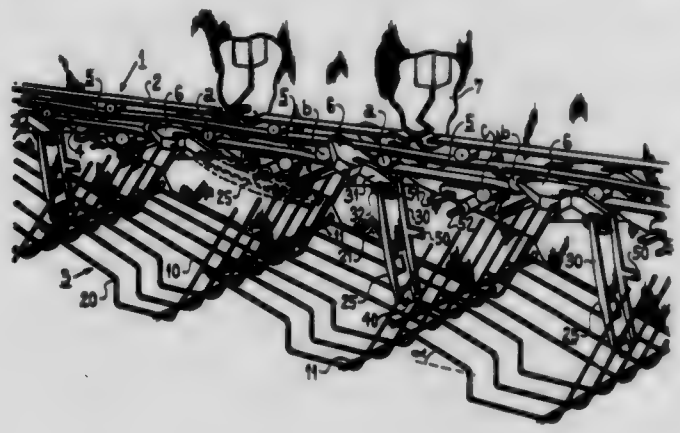
means movable into and out of the path of movement of a sheet of paper as the same is guided toward the second feed roll pair for controlling formation of a buckle on the sheet between said movable means and the stop means as the edge of the sheet opposite the stop means is carried around the second roll and into the feed nip of the secod roll pair, said movable means is weighted to form a relatively large buckle for very lightweight sheets and to form a very shallow buckle for sheets of heavyweight paper.

4,493,484

DEVICE FOR GUIDING AND RECEIVING LETTERS AT THE EXIT OF A MAIL-SORTING MACHINE AND A MACHINE EQUIPPED WITH SAID DEVICE

Jean Eyer, Paris, France, assignor to Hotchkiss-Brandt-Sogeme-H.B.S., Paris, France

Filed Sep. 29, 1982, Ser. No. 428,333
Claims priority, application France, Oct. 9, 1981, 81 19080
Int. Cl.[3] B65H *31/26, 29/68*
U.S. Cl. 271—220 10 Claims



1. A device for guiding and receiving letters at an exit of a mail-sorting machine, comprising:

a system for conveying letters in cooperating relation with at least one receiving compartment, wherein each compartment is designed in the form of a basket;

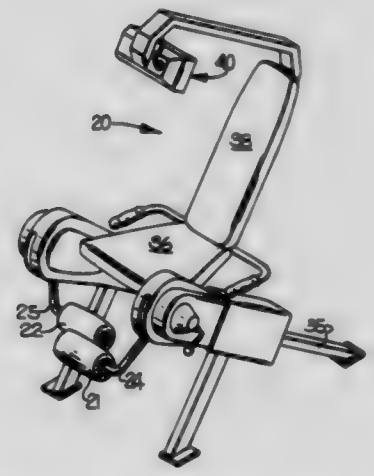
a pendulum articulated about an axis, said pendulum being positioned relative to said conveying system and basket such that said pendulum brakes and guides said letters towards the bottom of the selected basket in order to form a stack as soon as said letters pass out of said conveying system, said axis of articulation of each said pendulum being coupled with a flap having the function of deviating the letters discharged from said conveying system, wherein each said pendulum is constituted by a rigid arm terminating in a small tongue of flexible material and having a right-angled lug which cooperates with a proximity detector when the corresponding basket is full, wherein said device includes a locking system assigned to each basket and capable of stationarily maintaining the corresponding pendulum in a rest position.

4,493,485

EXERCISING APPARATUS AND METHOD

Arthur A. Jones, Lake Helen, Fla., assignor to Nautilus Sports/-Medical Industries, Inc., Lake Helen, Fla.

Continuation of Ser. No. 229,922, Jan. 30, 1981, abandoned. This application Jun. 24, 1983, Ser. No. 495,575
Int. Cl.[3] A63B *21/00*
U.S. Cl. 272—126 18 Claims



1. Exercise apparatus for providing a user with a range of exercise movements and recording a measure of the effort exerted, said apparatus including:

first body engaging means adapted to be contacted by a first portion of a user's body and to be moved therewith;

second body engaging means adapted to be contacted by a second portion of a user's body and to be moved therewith;

interconnecting means linking said first and second body engaging means in a force transmitting passive relationship for effecting predetermined coordinated movement of said first and second body engaging means with respect to one another, said interconnecting means converting positive musculature work applied to one of said body engaging means to negative musculature work supplied to said other body engaging means, there being substantially no other forces applied to and no resistive forces acting upon said body engaging means, whereby all forces and resistances are provided solely by the user and may be instantaneously varied by said user;

force sensing means operatively connected to said interconnecting means and producing an output signal proportional to the magnitude of the force applied to at least one of said body engaging means;

position sensing means operatively connected to said interconnecting means and producing an output signal proportional to the position of at least one of said body engaging means;

processing means responsive to said force sensing means and said position sensing means to provide an output signal proportional to the physical effort exerted by the user as represented by the applied forces and changes of position; and

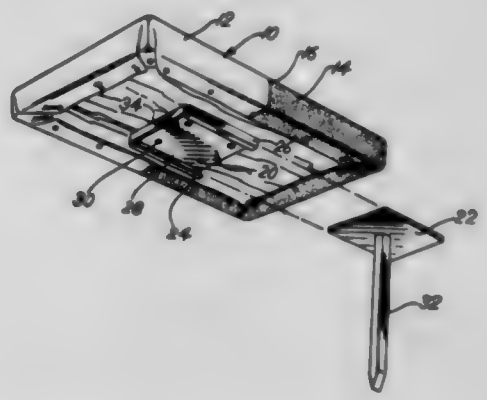
display means responsive to said processing means output signal to generate a cognizable display.

4,493,486

BALL BASE CONSTRUCTION AND ANCHOR

Charles C. Fuller, and James L. Hendrickson, both of Washington, Ill., assignors to Safe-Base, Inc., Washington, Ill.

Continuation of Ser. No. 242,160, Mar. 9, 1981, Pat. No. 4,398,714. This application Mar. 17, 1983, Ser. No. 476,048
The portion of the term of this patent subsequent to Aug. 16, 2000, has been disclaimed.
Int. Cl.[3] A63B *71/02*
U.S. Cl. 273—25 1 Claim



1. An improved ball base comprising, in combination:

a unitary base pad member having a rectangular shape and divided into only two substantially square equal sized subsections when viewed in a top plan view, the pad member further comprising a pad support and a pad cover, each of said subsections including visually distinctive and different coloring of the covering of each subsection, each subsection being substantially monochromatic; each subsection being substantially equal to the regulation size of a base pad, the subsections being integrally formed in a single rectangular pad with a single straight line having no lateral dimension demarking one subsection from

the other, each subsection having substantially the same thickness; and

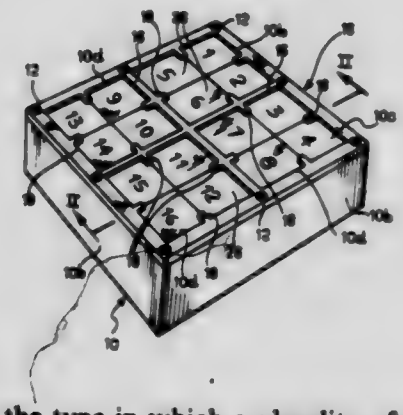
means for attaching the pad member to the ground to retain one subsection inside an imaginary line defined as the foul line and the other subsection simultaneously outside said line with the straight line demarking the subsections, being positioned coincident with the foul line, said means for attaching comprising cooperative means attached to the bottom center of the base, a rod means which projects into the ground, and means for slidably securing the rod means to the cooperative means whereby the rod means and the cooperative means slide relative to each other in a direction transverse to the straight line demarking the subsections, said means for attaching also defining means for preventing the straight line from becoming unaligned with the foul line by shifting the straight line to the outside of the foul line or twisting the straight line relative to the foul line, and including pad holding means engaging the pad and holding the pad rigidly with respect to the ground, whereby a runner may tag the outside subsection and a baseman can tag the inside subsection and the pad will remain substantially rigidly positioned.

4,493,487

INTERCHANGEABLE TILES PUZZLE

Donato Ferrigni, Via Giacosa 16, Settimo Torinese, Italy

Filed May 6, 1983, Ser. No. 492,330
Claims priority, application Italy, May 6, 1982, 53260/82[U]
Int. Cl.³ A63F *9/08*
U.S. Cl. 273—153 S 2 Claims



2. Puzzle of the type in which a plurality of members provided with identification means are moveable along predetermined paths from a disordered configuration into a configuration which is predetermined in dependence upon the identification means, wherein the puzzle comprises:

a substantially parallelepiped shaped box having a base wall and side walls bounding an open face;

a plurality of support elements housed within the box and moveable individually away from the open face perpendicular to the base wall;

respective resilient biasing means acting upon the support elements and urging them away from the base wall;

at least one tile provided with said identification means resting on each support element on that side thereof facing the open face of the box, and parallel thereto, and

stop means carried by the box for retaining the tiles against the action of the said resilient biasing means, so that the uppermost tiles are disposed in correspondence with the open face of the box, while the resilient biasing means allow each tile to be moved into correspondence with the support element of one of the adjacent tiles when said support element is pressed towards the base wall of the box;

wherein the open face of the box is rectangular and the box contains a single row of support elements and respective tiles; and

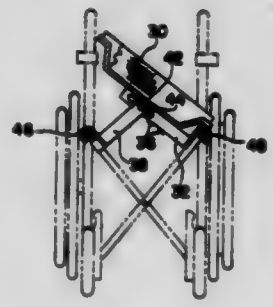
wherein the stop means comprise a frame attached to the edge of the side walls of the box and having two major sides projecting into the open face of the box to retain the tiles.

4,493,488

PRESSURE CONTROL WHEEL CHAIR SEAT

David J. Panaia, 36 Hunt Seat Dr., Chicopee, Mass. 01020, and Walter C. Lovell, 348 Mountain Rd., Wilbraham, Mass. 01095

Filed Feb. 16, 1982, Ser. No. 348,719
Int. Cl.³ B62B *11/00*
U.S. Cl. 280—42 9 Claims



1. A folding wheel chair including wheels, folding cross frames between the wheels of the chair, and tubular side frame members forming parts of the cross frames, a rigid wheel chair seat comprising a single rigid support having a flat bottom member and raised side edges, said cross frames being in a plane at right angles to the wheels, said flat bottom member having an underside,

first structural members attached to the underside of said flat bottom member, said first structural members having end portions,

second structural members having end portions, connection means for pivotally and slidably connecting said second frame members to said first frame members near the center of said support, said connection means including a pin in each of said second structural members for engaging a slot in each of said first structural members, and means located at the outer end portions of said first and second structural members for pivotably and releasably securing said structural members to said tubular side frame members,

wherein said structural members pivot about said connection while said outer end portions remain secured to said tubular side frame members when said seat is pivoted from a horizontal seating position to a vertical folded position in which said seat is generally parallel with and between the wheels of the wheel chair.

4,493,489

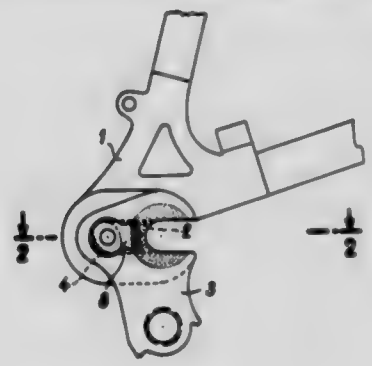
DEVICE FOR FIXING A DERAILLEUR ON A FRAME LUG

Roger Huret, deceased, late of Nanterre, France; by Alain P. B. Huret, legal representative, Bougival, and by Gerard Huret, legal representative, Fourqueux, both of France, assignors to Huret et ses Fils, Nanterre, France

Filed Mar. 17, 1982, Ser. No. 359,124
Claims priority, application France, Mar. 23, 1981, 81 05719
Int. Cl.³ B62M *9/06*; F16H *11/00*
U.S. Cl. 280—238 10 Claims

1. A device for fixing a derailleur support on a bicycle frame lug defining a slot, said device comprising wedging means which are rotatably mounted on the support with a high degree of friction between the support and the wedging means for cooperation with the frame lug for holding the support on

the lug by a wedging effect on the frame lug, and an elastically yieldable means which is carried by the support and is capable



of engaging in said slot of the frame lug for centering the support relative to the frame lug.

4,493,490

FRONT FORK FOR CYCLE

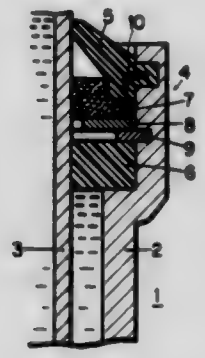
Toshio Ohma, Fukuroi, Japan, assignor to Showa Manufacturing Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1982, Ser. No. 433,710

Claims priority, application Japan, Dec. 28, 1981, 56-198917[U]

Int. Cl.³ B62K *25/06*

U.S. Cl. 280—276 6 Claims



1. A front fork for a cycle, including an inner cylinder fitted slidably in an outer cylinder with a dust seal and an oil seal forming a sliding fit with the outer circumference of the inner cylinder and fitted in the head portion of the outer cylinder and also including a lubricating device in the form of a guide interposed between the dust seal and the oil seal so as to slide on the outer circumference of the inner cylinder and impregnated with a lubricant.

4,493,491

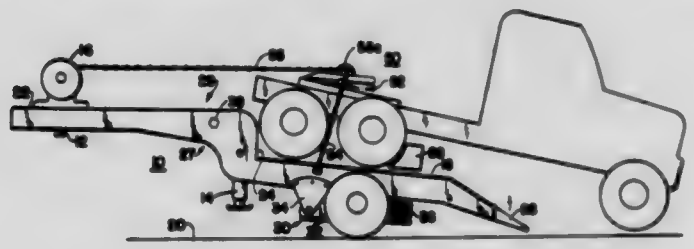
APPARATUS FOR TRANSPORTING TRUCK TRACTORS AND TRUCK UNITS

Richard L. Karlik, Morganville, N.J., assignor to Nappi Trucking Corp., Matawan, N.J.

Filed Mar. 10, 1983, Ser. No. 474,015

Int. Cl.³ B62D *53/04*

U.S. Cl. 280—402 6 Claims



1. Apparatus operative in conjunction with a truck tractor having a 5th wheel and a compressed air-braking system, for transporting about heavy duty truck, automotive, and like wheeled equipments, comprising:

a trailer having a platform portion a predetermined distance above a roadway, a downwardly sloping bed portion a lesser distance above said roadway and of a length to support the front or rear wheels of the truck, automotive and like equipment to be transported about, a substantially vertical wall section joining said platform and downwardly sloping bed portions, and a further downwardly sloping ramp portion connected to said bed portion and movable with respect thereto;

kingpin means cooperating with the platform portion of said trailer for coupling to the 5th wheel of said truck tractor in moving said trailer about on said roadway;

expandable air bag means interactively coupled between said trailer and the compressed air-braking system of said truck tractor, and controllably actuable with the compressed air therefrom to a first position to lower the height of said sloping bed portion and said sloping ramp portion with respect to said roadway so as to permit the loading and unloading of said front or rear wheels onto and from said downwardly sloping bed portion of said trailer, and controllably actuable to a second position to raise the height of said sloping bed portion and said sloping ramp portion with respect to said roadway so as to permit the moving about of said trailer on said roadway;

securement means interactively coupled between said trailer and the truck, automotive, and like wheeled equipments to be transported about for holding said equipments securely in place during the transportation thereof; and

winch means provided atop the platform portion of said trailer for assisting in the loading and unloading of said front or rear wheels onto and from said downwardly sloping bed portion of said trailer; and

wherein said winch means is of a construction sufficient to load said front or rear wheels of said truck, automotive, and like wheeled equipments a distance along said sloping bed portion so as to bear said front or rear wheels against the substantially vertical wall section of said trailer for further holding said truck, automotive, and like wheeled equipments in place during their transportation about.

4,493,492

FOLDABLE MULTI-FUNCTIONAL CARRIAGE

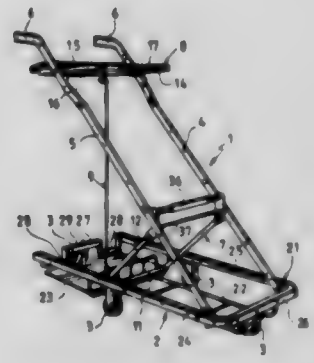
Tzvetanka Balabanova, 15 Rue du Parc Montsouris, 75014 Paris, France

Filed Mar. 23, 1982, Ser. No. 360,992

Claims priority, application France, Mar. 27, 1981, 81 06245

Int. Cl.³ B62B *3/02*

U.S. Cl. 280—651 18 Claims



1. A multi-functional carriage, particularly for use in performing cleaning and maintenance tasks in hospitals, said carriage comprising a rigid chassis having stop means, rollers supporting said rigid chassis and a foldable framework mounted on said rigid chassis so as to be foldable between an operative, unfolded position and an inoperative, folded position, said framework having at least two arms pivotally mounted on said chassis, and a strut frame pivotally mounted between said two arms so as to form a strut adapted to abut

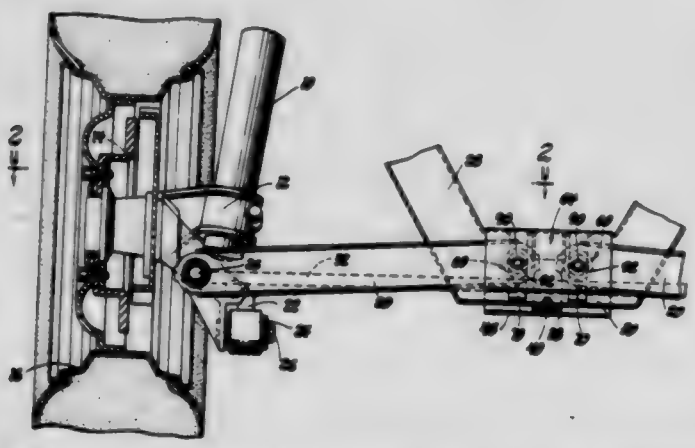
against said stop means to maintain said framework in its unfolded position, said two arms carrying therebetween support means for carrying articles or utensils on said carriage, said support means including at least wringer support means for supporting a removable, manually-operated wringing machine, said wringer support means being fixedly connected to said two arms adjacent the pivot points of said strut frame thereon.

4,493,493

ALIGNMENT ADJUSTMENT APPARATUS FOR VEHICLE WHEEL SUSPENSION

Terry L. Satchell, Rochester, and Robert E. Castance, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 18, 1982, Ser. No. 434,901
Int. Cl.³ B62D 17/00
U.S. Cl. 280—661
3 Claims



1. In wheel suspension for an automotive vehicle including a wheel carrier and a link extending for pivotal interconnection at one end thereof to support structure at a selected location on the vehicle chassis and at the other end thereof to the wheel carrier to control displacement of the latter relative the vehicle chassis, alignment adjustment mounting apparatus comprising bracket means affixed to the chassis support structure including opposed vertical walls having aligned generally horizontally extending slots adapted for reception therewithin of a fastener bolt, a connector element affixed to said one end of the control link centrally bored and received between said walls in axial alignment with said slots, a generally vertically oriented adjustment lever including intermediate its ends a bore axially aligned with said connector element, bolt fastener means extending through said connector element, said slots and said aligned bore of the adjustment lever, means on said support structure cooperating with one end of said adjustment lever to provide a fulcrum for rotation of the latter thereabout, and means at the other end of the adjustment lever adapted for reception of a hand tool for application of manual force to swing the adjustment lever about said fulcrum to bodily longitudinally carry said control link and in turn the wheel carrier relative the vehicle chassis to various wheel alignment positions.

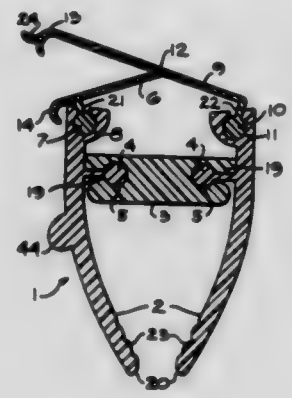
4,493,494

SKI POLE HANDLE

John A. Feagin, Jr., P.O. Box 2770, Jackson, Wyo. 83001

Filed Jul. 19, 1982, Ser. No. 399,269
Int. Cl.³ A63C 11/22
U.S. Cl. 280—821
6 Claims

1. A ski pole hand grip comprising an elongated palm and finger grip, generally oval in cross-section, having a top and a bottom and which has a longitudinal recess for receiving one end of a ski pole, a generally annular, web shaped, finger knuckle shield which is integrally attached to the grip and a generally annular, web shaped thumb shield integrally attached to the top of the grip and which encircles the thumb of the user whereby the finger knuckle shield and the thumb shield together restrain the relative angular positions of the thumb and fingers of a user to prevent the thumb from being bent back relative to the hand.



4,493,495

BINDING UNIT

Maynard W. Linn, 6336 N. Bergeron, Fresno, Calif. 93704

Filed Mar. 25, 1982, Ser. No. 362,021
Int. Cl.³ A63F 3/04; A44B 21/00
U.S. Cl. 281—45
22 Claims



1. A binding unit for loose-leaf sheet materials or the like of the type having an open position for insertion and a closed position wherein the loose-leaf materials are clamped therein comprising, in combination:

two legs, each of said legs having a free edge and a remote end spaced from said free edge, said free edges having cooperating material-engaging end portions;

a spline;

spline hinge means for coupling at least a first of said two legs to said spline in regions adjacent said remote end;

moving means coupled to at least said first of said two legs for moving said free edges between said closed position thereof and said open position thereof, said cooperating material-engaging end portions clampingly securing the loose-leaf sheet materials in said closed position, said moving means coupled to each of said two legs at said remote ends thereof to impart pivotal movement to said legs around said spline; and

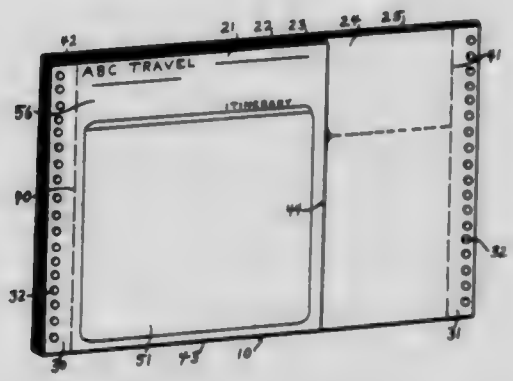
latch means having a portion thereof coupled to said moving means for selectively maintaining said moving means in a latched position thereof to provide said clampingly securing of the looseleaf materials by said cooperating material-engaging end portions, said latch means comprising a male member and a female member, and said male member of said latch means releasably securable in said female member in said latched position thereof.

4,493,496

CONTINUOUS FORM MULTIPLE PLY ASSEMBLY

Rudolph T. Kaiser, 15650 E. Eldorado Dr., Aurora, Colo. 80013

Filed Jun. 14, 1983, Ser. No. 504,332
Int. Cl.[3] B41L *3/00*; G09F *3/02*; B42D *15/00*
U.S. Cl. 282—11.5 A 4 Claims



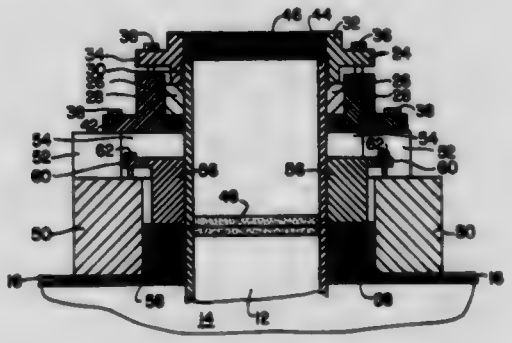
1. A multiple-ply assembly comprising an outer ply, an intermediate ply, and a back ply, having control margin strips along opposed longitudinal sides, the said control margin strips of all plies being separable from the remainder of the assembly by perforations, one longitudinal edge of the said outer ply being captured in one said control margin strip, the said outer ply extending partially across the lateral width of the assembly; both longitudinal edges of the said intermediate and back plies being caught in said control margin strips, the portion of the said intermediate ply which lies directly behind said outer ply being detachable from the remainder of the said intermediate ply by perforations, the said remainder being secured by peripheral adhesive means to the said back ply forming a pocket, the said back ply having longitudinal weakening lines marking out 3 longitudinal panels therein, one of the said panels containing the said pocket, the other 2 of the said panels containing a duplicate copy by carbon or carbonless means of information entered on the face of the said outer ply.

4,493,497

PIPE CONNECTION ASSEMBLY

Bobby E. Smith, 126 Back St. East, and Benjamin V. Smith, 130 Back St. East, both of Savannah, Ga. 31406

Filed Jun. 22, 1981, Ser. No. 275,579
Int. Cl.[3] F16L *57/00*
U.S. Cl. 285—13 2 Claims



1. A pipe connection assembly for connecting a grout input pipe with a second pipe which extends from and runs into a gearbox of a vertical auger boring unit that is used to drill holes to construct piles, said pipe connection assembly comprising:

a first packing assembly including a first packing, a first top packing ring and a first packing base ring, said first packing being encased by and located between said first top packing ring, said first packing base ring and said second pipe,

a second packing assembly including a second packing,

a second top packing ring and a second packing base ring, said second packing being encased by and located between said second top packing ring, said second packing base ring and said second pipe,

wherein said second packing assembly is spaced along said pipes from the first packing assembly such that there is an opening along said pipes between a portion of said first packing assembly and a portion of said second packing assembly,

said first and said second packing assemblies being located with respect to the pipe connection such that any fluid escaping from the connection would first contact the first packing assembly and said opening before contacting the second packing assembly,

said opening being between said first packing base ring and said second top packing ring,

wherein the first and second packing assemblies are attached to each other,

said second packing base ring has raised portions spaced along the top thereof, said first packing base ring being attached to said raised portions,

said second top packing ring is attached to the top of the non-raised portions of said second packing base ring such that the top of said second top packing ring is below the top of said raised portions,

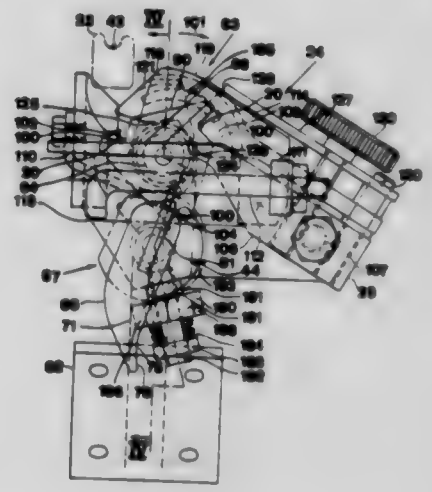
said second packing base ring being attached to the housing of the gearbox.

4,493,498

KNOTTER WITH AN IMPROVED GENEVA MECHANISM

Marc G. Vanteelant, Zedelgem, Belgium, assignor to Sperry Corporation, New Holland, Pa.

Filed Sep. 30, 1982, Ser. No. 431,517
Claims priority, application United Kingdom, Oct. 7, 1981, 8130247
Int. Cl.[3] A01D *59/04*; B65B *13/26*
U.S. Cl. 289—2 15 Claims



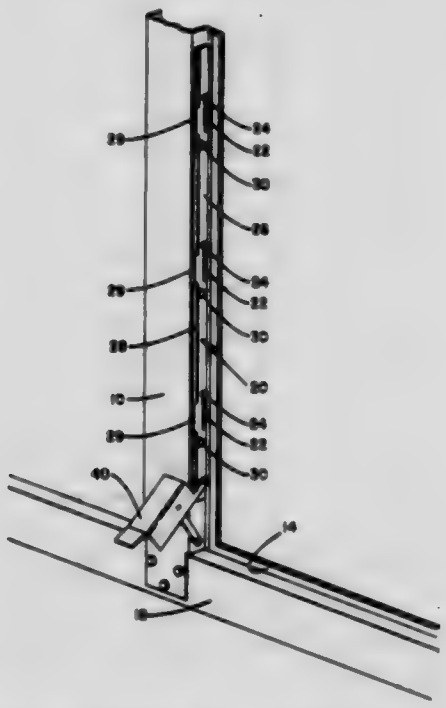
1. In a knotter having a twine holder operable to hold, during a knot-tying operation, a primary portion and a secondary portion of twine in which a knot is to be tied, a billhook rotatable through a first cycle and a second cycle during a knot-tying operation, the billhook being operable during the first cycle to position the primary and secondary portions of twine relative to each other in preparation for the knot-tying operation, the billhook being operable during the second cycle to tie the knot in the primary and secondary portions, the billhook comprising two jaws capable of being opened and closed, the improvement comprising: means contactable by the billhook during both the first and second cycles but operable to maintain the billhook jaws closed during the first cycle and to open and close the billhook jaws during the second cycle, and wherein the means contactable by the billhook comprises a cam mounted for rotation and being generally square in plan view with one pair of opposed corners being cut away so that, when one of the cut-away corners is contacted by the billhook,

the jaws thereof remain closed, and with the other pair of opposed corners being arranged so that, when one of them is contacted by the billhook, the jaws thereof are opened.

4,493,499
DOOR LATCH

Paul R. Steiglein, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 1, 1982, Ser. No. 438,131
Int. Cl.³ E05C 1/14
U.S. Cl. 292—158 10 Claims



1. Apparatus for securing, to a frame member, the swinging end of a hinged door in a closed position, said door including an end surface extending the thickness of the door and being in a plane generally tangent to an arc having the door hinge as its center of rotation which comprises:

at least one contact projection mounted to and extending from the door end surface, said contact projection including a contact face projecting from the end surface of the door and angled from a line parallel to the axis of rotation of the hinge;

a latch assembly including a base plate mounted to and slidable relative to the frame member and a rotatable contact means mounted thereon capable of being arranged in registration with the contact projection for securing the door in the closed position, said base plate having a front edge extending towards the door, said front edge defining at least one opening through which said at least one contact projection may pass when the door is rotated about the hinge and said latch assembly is in an open position; and

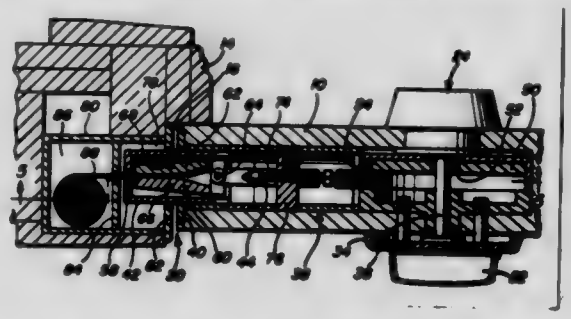
means for displacing the latch assembly between a closed position wherein the contact means is arranged in registration with the contact projection and an open position wherein the contact projection is not engaged by the contact means.

4,493,500
DEAD BOLT AND NIGHT CHAIN COMBINATION

Larry J. Streup, 10 Clark Rd., Oswego, Ill. 60543

Filed Mar. 25, 1983, Ser. No. 478,711
Int. Cl.³ E05C 17/36
U.S. Cl. 292—262 33 Claims

1. In a security door lock assembly comprising a relatively movable, door-mounted portion, a relatively stationary jamb-mounted portion adapted for cooperation with said movable portion, a flexible guard element, means yieldably retracting the element inwardly into said stationary portion, strike plate means having a recess in the stationary portion through which the guard element is extended externally of the stationary portion, coupling means fixed to the element and seated within the recess of the strike plate means to limit the retraction of the element inwardly into the stationary portion, latch means mounted in the movable portion and projected into the recess for latching engagement with the coupling means, and manually operable means mounted on the movable portion to selec-

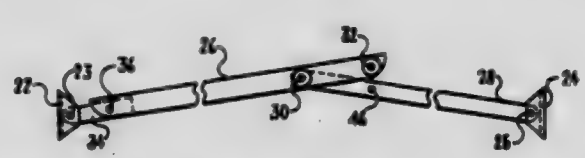


tively release the latch means from engagement with the coupling means, the improvement comprising a deadbolt mounted in the movable portion and displaceable by the manually operable means into the recess of the strike plate means, means mounting the latch means within the deadbolt for said projection into the recess, and means responsive to retraction of the deadbolt into the movable portion by the manually operable means for effecting said selective release of the latch means.

4,493,501
SECURITY LOCK FOR SLIDING DOORS OR WINDOWS

Earl E. Abel, 7703 S. 128th St., Seattle, Wash. 98178

Filed Apr. 15, 1983, Ser. No. 485,315
Int. Cl.³ E05C 17/34
U.S. Cl. 292—263 9 Claims



1. A locking mechanism for a sliding door or window which comprises:

a. a pair of anchor means, one of said anchor means adapted for mounting on a door frame and the other adapted for mounting on a door casing;

b. a first bar member in the form of an inverted generally U-shaped channel having opposed sidewall portions, said first bar being pivotally mounted at its proximal end to one of the anchor means;

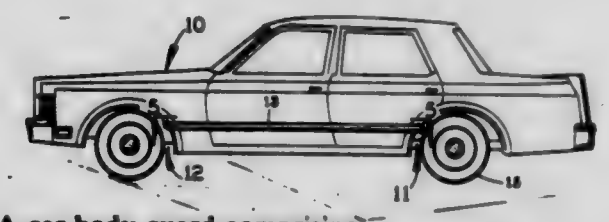
c. a second bar member having a cross section adapted to fit between the sidewall portions of the first bar member, said second bar member being pivotally mounted at its proximal end to the other anchor means,

said bar members having an overlapping zone where the second bar member is embraced with the channel between the side wall portions of the first bar member;

d. distal end and inner longitudinally displaced apertures formed through both sidewall portions of the first bar member in the area of the overlapping zone; and

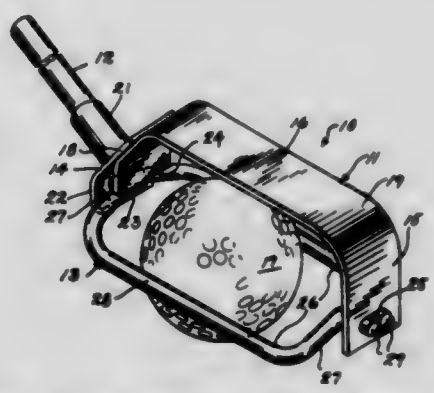
e. distal end and inner apertures formed through the second bar member in the area of the overlapping zone, said apertures having a longitudinal displacement corresponding to the apertures in the first bar member said apertures adapted for receiving removable pin means to connect the bar members, the second bar member being longitudinally positionable within the side wall portions of the first bar member so that the apertures can be aligned in different configurations.

4,493,502
CAR BODY GUARD
Valtin T. Campbell, Jr., P.O. Box 016777, Miami, Fla. 33101
Filed Sep. 6, 1983, Ser. No. 529,526
Int. Cl.³ B60R 19/00
U.S. Cl. 293—128 9 Claims



1. A car body guard comprising:
an elongated flexible strap wound up in a roll;
a housing enclosing the rolled-up strap and having an opening for passing said strap, said housing being shaped and dimensioned to be mounted in a wheel well on one side of the car body;
a fastener element on the outer end of said strap outside said housing to be grasped manually and pulled along said one side of the car body and attached to an attachment member in the other wheel well on that side of the car body;
and means for retracting the strap into said housing to a rolled-up condition upon separation of said fastener element from said attachment member in the other wheel well.

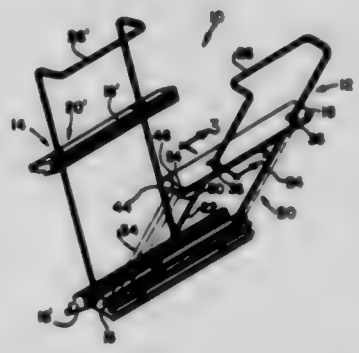
4,493,503
GOLF BALL RETRIEVER
John Jeninga, 114 Wisconsin St., Delavan, Wis. 53115
Filed Sep. 2, 1983, Ser. No. 529,169
Int. Cl.³ A63B 47/02
U.S. Cl. 294—19 A 7 Claims



1. In a golf ball retriever, a frame having longitudinally spaced, opposed frame portions, and a pair of transversely opposed, generally U-shaped bail members pivotally mounted to the frame between the opposed frame portions, said bail members being engageable with a stop provided on said frame to define a normal position for said members, and said bail members being pivotal from said normal position to pass a golf ball therebetween into the retriever and thereafter being pivotal under their own weight to return to normal position to entrap the golf ball in the retriever.

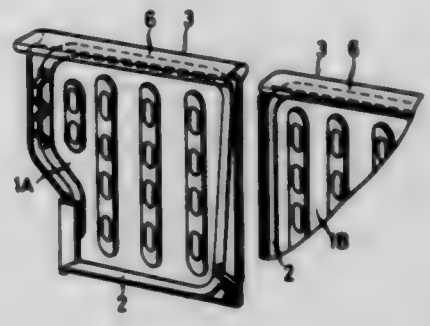
4,493,504
CARRIER FOR TRANSPORTING PAINTINGS AND OTHER SUBSTANTIALLY PLANAR ARTWORK
Robert L. MacHose, Rte. 1, Box 84, Zionsville, Pa. 18092
Filed Sep. 13, 1982, Ser. No. 417,481
Int. Cl.³ B65D 71/00
U.S. Cl. 294—146 6 Claims

1. A carrier for transporting paintings or other substantially planar artwork, comprising two assemblies, each assembly comprising:
a first elongated support member having a seat for receiving a first edge of a piece of artwork;
a second elongated support member having a seat for receiving a second edge of said artwork opposite said first edge, the second support member being positioned generally parallel to and spaced apart from the first support member with the seat of the second support member facing the seat of the first support member;
an elongated guide member comprising two generally parallel spaced apart guide rods extending through said support members in such a manner as to permit sliding adjustment of at least one support member on the guide rods so as to permit adjustment of the distance between the support members to conform to the corresponding dimension of said artwork so that in the adjusted position of said support members, the first and second edges of said artwork



are received within the respective seats of the support members;
retainer means for retaining the support members in the adjusted position to retain said artwork in place between the support members;
said carrier further comprising:
hinge means between the assemblies adjacent one end of the guide members permitting relative displacement of said assemblies between an open and a closed position;
spacer means on the guide member of at least one of the assemblies in the closed position to space the artwork in one of the assemblies from the other assembly or any artwork therein with sufficiently large clearance therebetween to avoid impingement by the other assembly or the artwork therein against the adjacent surface of said artwork.

4,493,505
REAR SEAT OF AN AUTOMOBILE
Takeshi Yamawaki, and Kunio Nishiyama, both of Okazaki, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Apr. 14, 1983, Ser. No. 485,110
Claims priority, application Japan, May 6, 1982, 57-65849[U]
Int. Cl.³ B60N 1/00
U.S. Cl. 296—63 8 Claims



1. A rear seat of an automobile, adapted to be selectively securing thereto as a separate type seat back, and divided into first and second sections in a widthwise direction of the auto-

mobile, the respective first and second sections being forwardly foldable independently of each other, or a bench type seat back being integral in the widthwise direction of the automobile and forwardly foldable, comprising:

a frame having a first and second main panel; and

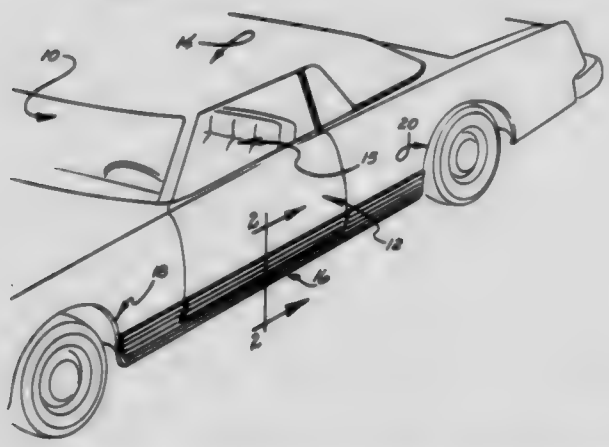
at least one reinforcement member for reinforcing an outer peripheral portion of said first and second main panel wherein said frame when utilized in said bench type seat back is of such an arrangement that said first and second main panels are integrally connected through said at least one reinforcement member to each other and when utilized in said separate type seat back, said first and second main panels are parallelly arranged.

4,493,506

VEHICLE ROCKER PANEL STRUCTURE

Michael P. Alexander, Grosse Ile, Mich., assignor to American Sunroof Corporation, Southgate, Mich.

Filed Mar. 29, 1982, Ser. No. 362,629
Int. Cl.³ B62D 27/02
U.S. Cl. 296—209 10 Claims



1. In a vehicle having an original rocker panel including at least one load-bearing member extending longitudinally along a lower side thereof, the improvement comprising:

an added first support member, positioned below and secured to the exterior of the original rocker panel member a lower portion of the added first support member extending laterally outward from the original rocker panel and the upper portion of the added first support member being secured directly to an exterior vertical surface of the original rocker panel.

4,493,507

TILTING TYPE SUNROOF

Kazuhisa Nagata, Okazaki; Keiji Mori, Toyota, and Asao Ogasawara, Hekinan, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 6, 1983, Ser. No. 492,329
Claims priority, application Japan, May 6, 1982, 57-75756
Int. Cl.³ B60J 7/08
U.S. Cl. 296—216 5 Claims

1. A tilting type sunroof comprising:

a roof panel having one end portion pivotably connected to the front edge portion of an opening formed in a motor vehicle roof;

brackets rigidly fixed to said roof panel adjacent each side edge thereof;

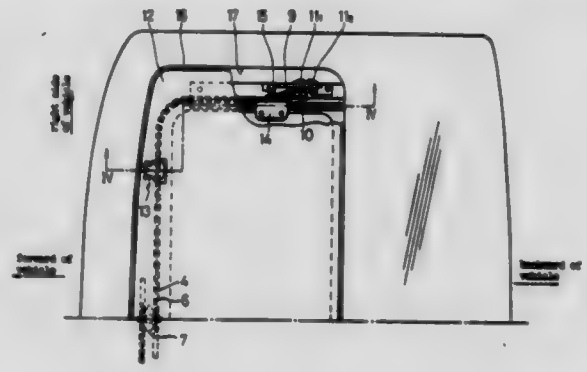
guide rails fixedly disposed along opposite side edges of said opening;

a shoe fitted in each of said guide rails for movement along the same;

a guide member secured to said edges of said opening adjacent each of said guide rails and having a guide groove which is inclined with respect to each of said guide rails;

a pair of links each having one end portion engaged with a guide groove formed in each of said brackets, having another end portion engaged with said guide groove in said guide member, and pivotably connected to said shoe at a position corresponding to the remaining one apex of a triangle where said engaged points constitute two apexes thereof; and

a means for driving said shoe to move along said guide rail;



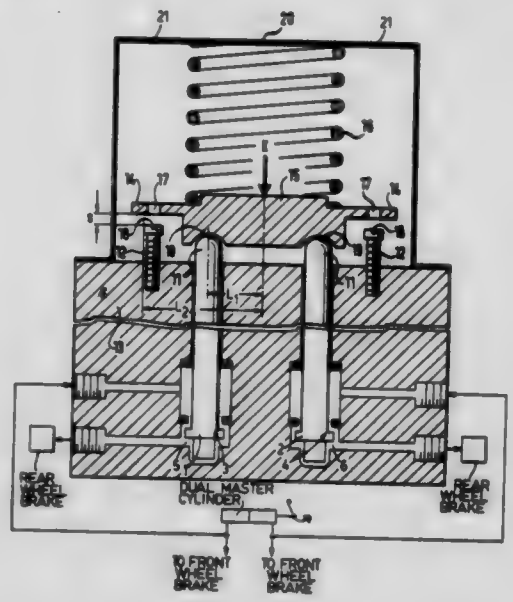
said guide groove in said guide member being formed with a large inclination angle in the region where said roof panel is opened to a large extent, during the movement of said another end portion of said lift link along said guide groove and with a small inclination angle in the region where said roof panel is closed, during the movement of said another end portion of said lift link.

4,493,508

DUAL-CIRCUIT PRESSURE CONTROL VALVE

Bernd Schopper, Hattersheim, and Peter Tandler, Falkenstein, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 231,692, Feb. 5, 1981, abandoned. This application Nov. 1, 1982, Ser. No. 438,195
Int. Cl.³ B60T 11/34, 8/26
U.S. Cl. 303—6 C 1 Claim



1. A dual-circuit pressure control valve having a change-over point determined from the outside by a control force for use in a hydraulic dual-circuit brake system of automotive vehicles comprising:

a housing having two parallel control valve actuating tappets projecting outwardly from and disposed along a common line in one end surface of said housing, each of said two actuating tappets enabling a control of pressure in a different one of said two brake circuits;

a common yoke having one surface abutting each of said two actuating tappets and the opposite surface acting upon by said control force, said yoke having two extensions each extending in opposite directions from said yoke along and parallel to said common line wherein said yoke is acted upon by said control force intermediate said two tappets

and wherein said control force is generated by an elongated helical spring held at one end by a spring bearing housing and acting at the other end on said yoke;

a pair of valves in said housing respectively cooperating with the inner ends of said tappets, each valve comprising a piston on the inner end of the associated tappet which is disposed in a cylindrical chamber which surrounds the inner end of the associated tappet, wherein outward movement of the associated tappet closes the piston against a valve seat surface of the respective chamber;

a pair of adjustable stops disposed in said one end surface between said yoke and said housing and along said common line, each of said pair of stops being spaced from an associated one of said two extensions by a predetermined distance when said valves are closed and each of said pair of stops being spaced from a different one of said two actuating tappets to cooperate with the associated one of said two extensions such that each of said two extensions moves into abutment with its associated one of said pair of stops when the associated one of said two actuating tappets has moved into said housing and wherein the valve closure travel of said valves is controlled by the predetermined spacing between the extensions of said yoke and said adjustable stops, each of said pair stops being an adjustable stop screw capable of being screwed to a predetermined depth into a corresponding bore in said one end surface of said housing, each of said two extensions including a bore opposite an associated one of said stop screws, said bore having a smaller diameter than the head of said associated one of said stop screws;

and access means for enabling a separate adjustment of each of said stop screws, said access means comprising a pair of openings in said spring bearing housing aligned with heads on said stop screws, whereby each of said stop screws may be screwed into or out of said corresponding bore by a tool inserted through said openings.

4,493,509

TWO-FLUID NONFLAMMABLE HYDRAULIC SYSTEM

Jerome R. Kilner, Bellevue; Eugene T. Raymond, Kent, and Steven M. Warren, Seattle, all of Wash., assignors to The Boeing Company, Seattle, Wash.

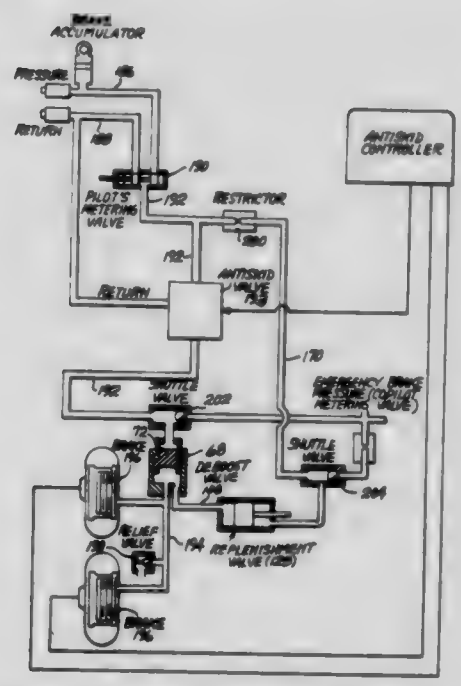
PCT No. PCT US 82/01335, § 371 Date Sep. 27, 1982, § 102(e) Date Sep. 27, 1982, PCT Pub. No. WO 84/01333, PCT Pub. Date Apr. 12, 1984

This PCT application filed Sep. 27, 1982, Ser. No. 451,655

Int. Cl.[3] B60T *11/10*

U.S. Cl. 303—13

28 Claims



1. An aircraft ground wheel braking system, comprising:

at least one ground wheel including a hydraulic brake;

a pressure transmitter comprising a housing and a piston movable in said housing, and dividing said housing into a first chamber on one side of the piston and a second chamber on the opposite side of the piston;

a brake control system including first conduit means containing a first relatively flammable hydraulic fluid at supply pressure, second conduit means containing first hydraulic fluid at return pressure, third conduit means connected to the first chamber of said pressure transmitter, and brake control valve means for switching between a first position in which the third conduit means is connected to the first conduit means, and a second position in which the third conduit means is connected to said second conduit means;

fourth conduit means interconnected between the second chamber of the pressure transmitter and the hydraulic brake; and

a relatively nonflammable second hydraulic fluid within said second chamber, said fourth conduit means and said hydraulic brake,

whereby movement of the brake control valve means into its first position will communicate supply pressure provided by the first hydraulic fluid to the piston of said pressure transmitter and said piston will transmit such pressure to the second hydraulic fluid, and the pressurized second hydraulic fluid will apply the hydraulic brake, and the first hydraulic fluid will be isolated from heat generated by the applied brake.

4,493,510

BRAKE PRESSURE CONTROL VALVE FOR TRACTOR-TRAILER VEHICLES

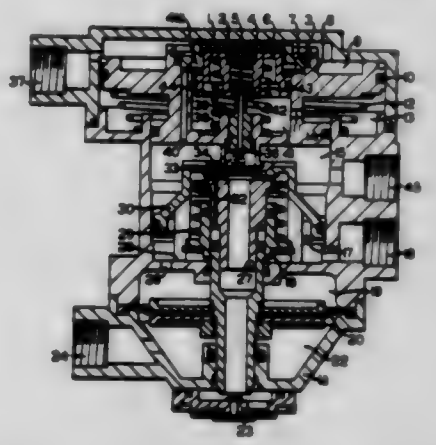
Karl-Heinz Deike, Pattensen; Hans-Joachim Schulz, Wedemark, and Jürgen Sandmann, Wennigsen, all of Fed. Rep. of Germany, assignors to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed May 18, 1983, Ser. No. 495,901

Int. Cl.[3] B60T *15/02*

U.S. Cl. 303—28

15 Claims



1. A brake pressure control valve for a vehicle braking system having a trailer brake control valve comprising, a relay piston responsive to a control pressure for controlling the operation of a first combination inlet and outlet valve in which the first inlet valve interconnects a fluid pressure inlet connection with a working chamber having a fluid pressure outlet connection and in which the first outlet valve interconnects said working chamber to an exhaust connection, said relay piston includes a piston surface which is acted upon by the control pressure fed to a control chamber, said relay piston includes a first partial surface which is acted upon by pressure fed to said working chamber and includes a second partial surface which is acted upon by pressure fed to an auxiliary control chamber, a second combination inlet and outlet valve in which the second inlet valve supplies pressure to said auxiliary control chamber in proportion to the control pressure, and in which the second outlet valve directly exhausts said auxiliary control chamber to atmosphere, said second combination inlet and outlet valve is arranged so that the fluid pressure supply to the second inlet valve is separated from the fluid pressure exhaust to the second outlet valve, the fluid pressure

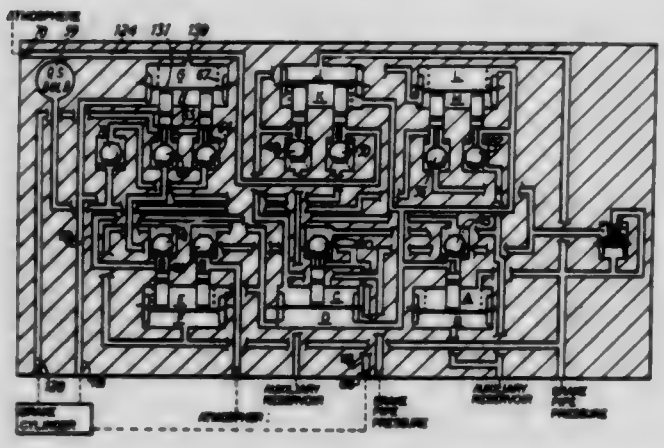
supply of the inlet valve is selectively connected with the control chamber and with the working chamber, and the fluid pressure exhaust of the outlet valve is directly connected to atmosphere, said second combination inlet and outlet valve is disposed within the relay piston, the second outlet valve of the second combination inlet and outlet valve is directly connected to the first outlet valve of the first combination inlet and outlet valve, said relay piston exhibits a first partial chamber and a second partial chamber which are separated by an operating piston, an extension disposed in the bottom of the first partial chamber and extending into the partial chamber as well as into the working chamber, the extension in the working chamber is an outlet valve seat for the first outlet valve of the first combination inlet and outlet valve, and the extension in the first partial chamber is an outlet valve seat for the second outlet valve of the second combination inlet and outlet valve, a circular shoulder is provided on the operating piston which functions as a second inlet valve seat for the second inlet valve of the second combination inlet and outlet valve, the second inlet valve seat includes a spring-loaded double valve body and which together with an outlet valve seat, forms the outlet valve of the second combination inlet and outlet valve, the second inlet valve is moved by the opeating piston to an open position while the second outlet valve assumes a closed position, a compression spring is disposed in the first partial chamber and has one end resting against the operating piston and has its other end resting on the bottom of the first partial chamber, the second partial chamber is connected with the working chamber by a passageway, the first partial chamber is connected with the auxiliary control chamber by a bore hole, and the first partial chamber is connected to atmosphere via the second outlet valve.

4,493,511

COMBINED BC PRESSURE-MAINTAINING VALVE AND QUICK SERVICE BULB EXHAUST VALVE

David J. Wickham, Chippenham, England, assignor to Westinghouse Brake and Signal Co. Ltd., Chippenham, England

Filed Sep. 8, 1982, Ser. No. 416,073
Claims priority, application United Kingdom, Sep. 11, 1981, 8127543
Int. Cl.³ B60T *15/52, 17/00*
U.S. Cl. 303—36 3 Claims



1. In a control valve assembly for a railway braking system which includes: a brake pipe pressure; a brake cylinder which is exhausted to release a brake and pressurized to apply the brake; and, a brake cylinder pressure-maintaining valve which, during brake application caused by reducing brake pipe pressure, takes air from a quick service bulb charged at the brake pipe pressure and feeds it into the brake cylinder until the pressure reaches a minimum brake application pressure; wherein the improvement comprises:

an exhaust means for employing the brake cylinder pressure-maintaining valve as a quick service exhaust valve for exhausting the pressure in the quick service bulb during brake release; and

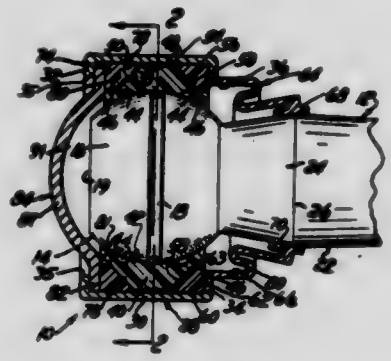
an opening means for immediately opening the brake cylinder pressure-maintaining valve on initiation of brake release.

4,493,512

SPHERICAL AND CYLINDRICAL BEARINGS AND METHOD OF MANUFACTURING

Joseph E. Smith, Jr., Birmingham, Mich., assignor to O & S Manufacturing Company, Whitmore Lake, Mich.

Continuation-in-part of Ser. No. 286,470, Jul. 24, 1981, Pat. No. 4,386,869. This application Mar. 9, 1982, Ser. No. 356,368
The portion of the term of this patent subsequent to Jun. 7, 2000, has been disclaimed.
Int. Cl.³ F16C *32/00*
U.S. Cl. 308—2 R 7 Claims



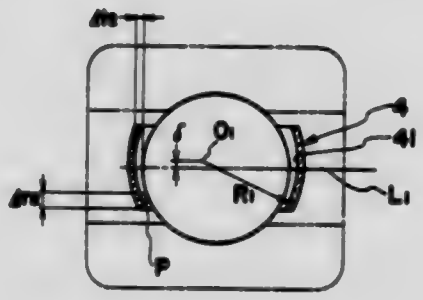
1. A bearing assembly comprising an inner member having a peripheral bearing surface of regular predetermined contour, a tubular shell, a split bearing ring disposed in said shell and having a bearing surface in sliding engagement with the peripheral bearing surface of said inner member, means in said shell holding said bearing ring and biasing said bearing ring in a direction urging the bearing surface of said bearing ring towards the peripheral bearing surface of said inner member, wherein the area of said bearing surfaces in mutual sliding engagement is less than the total area of one of said bearing surfaces.

4,493,513

BEARING CAGE FOR RETAINING ROLLING ELEMENTS

Hiroyuki Osawa, Kamakura, and Yasutaka Ishida, Fujisawa, both of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1983, Ser. No. 505,763
Claims priority, application Japan, Jun. 23, 1982, 57-93038[U]
Int. Cl.³ F16C *33/38, 33/42*
U.S. Cl. 384—533 7 Claims



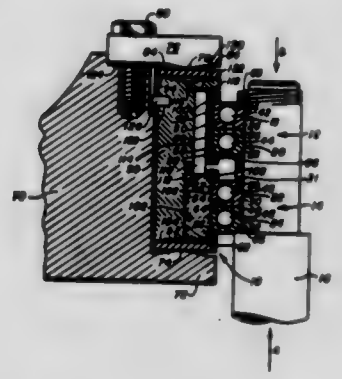
1. In a cage for retaining rolling elements of a rolling bearing, of the type wherein the cage has at least one pocket formed therein for retaining a rolling element, the improvement which comprises: at least a part of the inner face of each pocket has a curved surface of substantially similar configuration to the curved surface of the rolling element and the center of the curvature of the curved surface is positioned to deviate radially from the pitch circle of the rolling element at a predetermined distance.

4,493,514

MECHANISM FOR PROPORTIONATELY LOADING DUAL THRUST BEARING ASSEMBLIES AGAINST AXIAL THRUST LOADS

John W. Henry, IV, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 12, 1984, Ser. No. 588,182
Int. Cl.³ F16C 19/10, 19/28
U.S. Cl. 384—613 17 Claims



1. A mechanism for proportionately distributing bidirectional axial thrust loads acting on a rotating shaft, comprising:

a first thrust bearing assembly concentrically mounted on said rotating shaft and adapted to transmit a first portion of said bidirectional axial thrust loads acting on said rotating shaft;

a second thrust bearing assembly concentrically mounted on said rotating shaft and adapted to transmit a second portion of said bidirectional axial thrust loads acting on said rotating shaft;

a stationary support member disposed proximal said rotating shaft, said stationary support member further comprising first and second fulcrums;

a first annular load lever concentrically disposed about said rotating shaft and cooperating with said first fulcrum to alternately transmit said bidirectional axial thrust loads thereto;

a second annular load lever concentrically disposed about said rotating shaft and cooperating with said second fulcrum to alternately transmit said bidirectional axial thrust loads thereto;

a first thrust transfer member concentrically disposed about said rotating shaft and adapted to cooperate with said first thrust bearing assembly, a first segment of said first annular load lever and a first segment of said second annular load lever such that said first portion of said bidirectional axial thrust loads transmitted by said first thrust bearing assembly is alternately transmitted by said first thrust transfer member to said first segment of said first annular load lever and said first segment of said second annular load lever;

a second thrust transfer member concentrically disposed about said rotating shaft and adapted to cooperate with said second thrust bearing assembly and a second segment of said first annular load lever such that said second portion of said bidirectional axial thrust loads acting in a first axial direction transmitted by said second thrust bearing assembly is alternately transmitted by said second thrust transfer member to said second segment of said second annular load lever;

force transmitting means for transmitting said second portion of said bidirectional axial thrust loads in a second axial direction alternately transmitted to said second thrust transfer member by said second thrust bearing assembly; and

a third thrust transfer member concentrically disposed about said rotating shaft and adapted to cooperate with said force transmitting means and a second segment of said second annular load lever such that said second portion of said bidirectional axial thrust loads in said second axial direction is alternately transmitted by said force transmitting means to said second segment of said second segment of said second annular load lever by said third thrust transfer member,

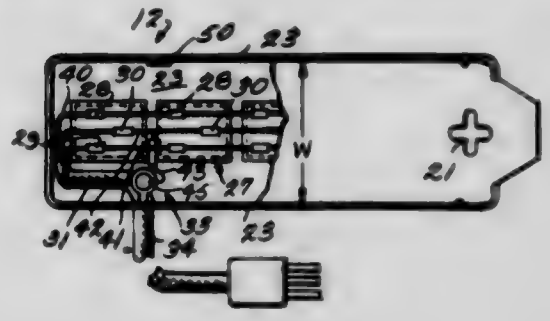
whereby when said rotating shaft is subjected to said bidirectional axial thrust loads in said first axial direction said first portion of said bidirectional axial thrust loads is transmitted to said first segment of said first annular load lever and said second portion of said bidirectional axial thrust loads is transmitted to said second segment of said first annular load lever to cause a first reaction force in said first fulcrum of said stationary support member equal in magnitude and in an opposed direction to said bidirectional axial thrust loads in said first direction and when said rotating shaft is subjected to said bidirectional axial thrust loads in said second direction said first portion of said bidirectional axial thrust loads is transmitted to said first segment of said second annular load lever and said second portion of said bidirectional axial thrust loads is transmitted to said second segment of said second annular load lever to cause a second reaction force in said second fulcrum of said stationary support member equal in magnitude and in an opposed direction to said bidirectional axial thrust loads in said second direction.

4,493,515

MULTIPLE ELECTRICAL OUTLET STRIP CONSTRUCTION

Charles A. Banks, Westville, N.J., assignor to SL Industries, Inc., Marlton, N.J.

Filed Apr. 15, 1982, Ser. No. 368,762
Int. Cl.³ H01R 9/00
U.S. Cl. 339—14 L 8 Claims



1. A cased electrical component comprising:

a metal casing;

an electrical component mounted within said metal casing;

an electrical cord leading into said casing from the exterior thereof and operatively connected to said electrical component; and

means for simultaneously providing passage of said electrical cord through said casing and providing grounding of said electrical component to said casing, comprising: means defining a cord-receiving opening in said casing; tabe means for forming a ground; said tab means formed from a portion of said metal casing and extending into said cord-receiving opening from said means defining said opening, and bendable out of the way of said cord; and an electrical wire attached to said electrical component and to said tab means.

4,493,516

ELECTRICAL DUCTING SYSTEM

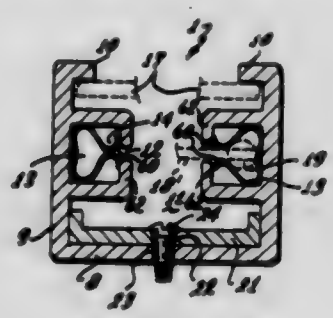
Gijsbertus Attema, Dillenburgstraat 1, Gorinchem, Netherlands

Continuation of Ser. No. 164,241, Jun. 30, 1980, abandoned.
This application Dec. 22, 1982, Ser. No. 452,297
Claims priority, application Netherlands, Jul. 2, 1979, 7905150; Oct. 1, 1979, 7907278
Int. Cl.³ H01R 25/14
U.S. Cl. 339—21 R 4 Claims

1. In an electrical current supply duct having one or more

insulating channels of substantially rectangular cross section including a bottom, a pair of side walls, a pair of flanges defining a narrow access slot into said insulating channel, and a current conductor mounted within each said insulating channel, the improvement comprising:

each of said current conductors being a hollow tubular structure of resilient electrically conductive material, said tubular structure having a pair of curved lips terminating in upper edges outward of said tubular structure and spaced from and extending towards said side walls, each lip having a convex surface facing one of said flanges, each said convex surface being movable into contact with one of said flanges upon attempted rotation of said conductor, said tubular structure having side portions curving outwardly to contact with said side walls and a bottom portion contacting the bottom of said insulating channel at least at two spaced apart points, to thereby restrain said conductor against movement within the insulating channel by said contact with the bottom, side walls and flanges of said channel, said lips being resiliently spreadable from each other so as to make spring contact with an electrical contact pin inserted either between said opposing convex surfaces or axially into said conductor, said conductor strip being held against rotation within said insulating channel by coaction between said side lobes, said spaced apart points and said lips with said side walls, said bottom and said flanges respectively of said insulating channel.



4,493,517

ELECTRICAL SOCKET CONNECTOR

Brian Hillary, Bognor Regis, England, assignor to WKR Limited, Bognor Regis, England

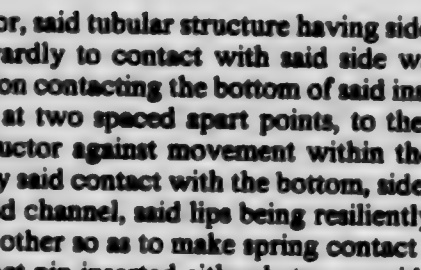
Continuation of Ser. No. 326,292, Dec. 1, 1981, abandoned. This application Apr. 2, 1984, Ser. No. 595,647

Claims priority, application United Kingdom, Dec. 3, 1980, 8038827

Int. Cl.³ H01R *13/453*

U.S. Cl. 339—42

11 Claims



1. An electrical socket connector to receive a multiple-pin shrouded plug, said socket connector comprising a body portion having at least live and neutral sockets and having a recess adapted to receive a shroud surrounding pins of a plug, and having shutters for the live and neutral sockets comprising a movable shutter member or members with spring biasing means biasing the shutter member or members outwardly towards a portion or portions of said recess, the shutter member or members, in the biased position, extending across the live and neutral sockets and the or each shutter member having a portion extending into said recess, said portion having a cam surface arranged for engagement by a shroud of a plug so as to be moved against the spring bias on insertion of a shrouded plug in a direction oriented at a nonzero angle with respect to the direction of movement of the shrouded plug, thereby to move the shutter member to an open position.

4,493,518

EXTRACTOR MEANS MULTI-PLANE INTERCONNECTION SYSTEM

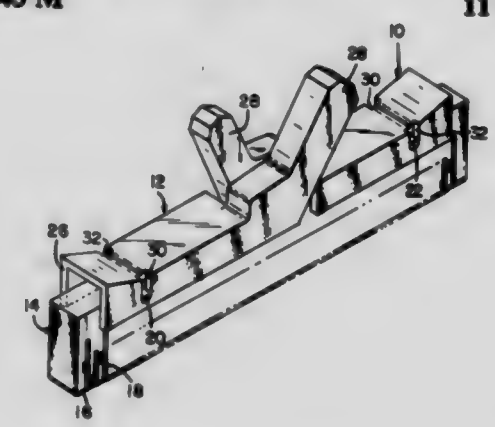
John C. Asick, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 4, 1983, Ser. No. 520,397

Int. Cl.³ H01R *13/62*

U.S. Cl. 339—45 M

11 Claims



5. Means for extracting an electrical connector plug from a mating electrical receptacle, said extraction means comprising

a pair of elongated hermaphroditic members each having oppositely directed first and second ends, each first end defining a handle and means to slidingly engage the other of said members, each said second end having means to pivotally engage said plug and means to engage said receptacle with a cam action, whereby activation of said handles causes rotation of said members about said pivots to extract said plug from said receptacle by cam action.

4,493,519

ADAPTER PLUG FOR CURRENT SUPPLY RAIL SYSTEMS

Kolbjorn Olsen, Trondenes, 9400 Harstad, Norway

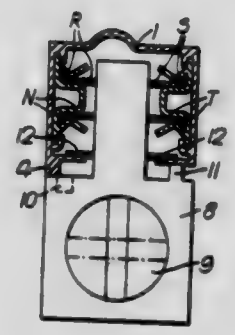
Filed Sep. 18, 1978, Ser. No. 943,226

Claims priority, application Norway, Sep. 30, 1977, 773349

Int. Cl.³ H01R *13/625, 13/629*

U.S. Cl. 339—75 M

6 Claims



6. An adaptor plug for connecting electrically powered devices to at least two different types of current supply rails, comprising:

a contact bearing portion having contact means which are movable and engage at least one current-carrying conductor inside a current supply rail;

release button means, disposed on a surface of the adaptor plug, to unlock said contact means when said release button means is depressed upon a correct connection with said current supply rail;

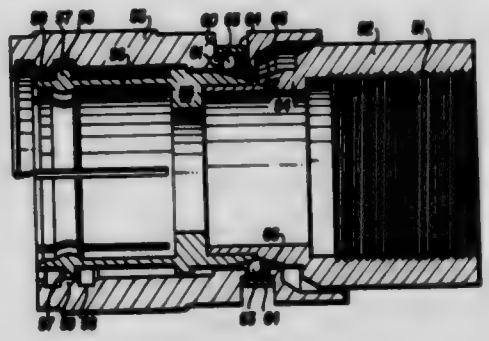
a guide rib disposed on said surface of the adaptor plug such that an outwardly facing side of said guide rib and an outwardly facing side of said release button means are equidistant from a central plane through said contact bearing portion.

4,493,520

ELECTRICAL PUSH-PULL CONNECTOR

Jeffrey N. Davies, Canterbury, England, assignor to Allied Corporation, Morris Township, N.J.

Filed Nov. 17, 1982, Ser. No. 442,333
Claims priority, application France, Dec. 10, 1981, 81 23254
Int. Cl.[3] H01R *13/62*
U.S. Cl. 339—91 P 5 Claims



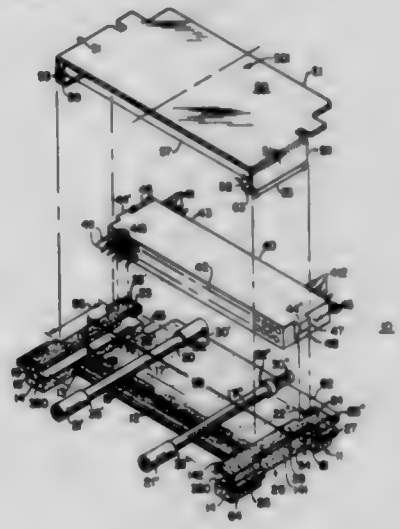
1. An electrical push-pull connector comprising a first and a second mating connector members, each having an insulating unit at least partially mounted inside a cylindrical body, and at least two electrical contact elements, the electrical contact elements of said first connector member being matable with the contact element of said second connector member, and being arranged so that they are respectively electrically connected when said first and said second connector members are mated, and mechanical means provided on said first connector member and adapted to permit the mating of said first and said second connector members, and their locking in said mating position; in which said mechanical means comprise a cylindrical exterior sleeve member, being coaxially mounted on said cylindrical body, and axially movable between a central locking position and two unlocking positions on both sides of said central locking position, a cylindrical interior sleeve member coaxially mounted on said body and having a plurality of resilient tongues extending axially towards the mating end of said first connector member, each of said tongues being provided with a first interior protrusion adapted to penetrate in an annular groove provided on said second connector member when said first and second connector members are mated, and each of said tongues being provided with a second exterior protrusion adapted to cooperate with a cam surface provided on the interior surface of said exterior axially movable sleeve member to permit the locking and the unlocking of said first and second connector members when they are mated, said exterior axially movable sleeve member having also means for bringing it back automatically into its central locking position, said means for bringing back automatically said exterior movable sleeve member into its central locking position including an open V groove provided on the peripheral surface of said body of said first connector member, said V groove being fairly wide and providing a zone of minimal diameter and two ramps provided by the lateral walls of the V groove, the width of said V groove being at least equal to the stroke of said exterior axially movable sleeve member; and spring means, mounted on said exterior axially movable sleeve member, said spring means providing a resilient ring means round said body of said first connector member, adjacent to said V groove, being biased towards its rest position where it is located in said zone of minimal diameter, and being mounted on said exterior axially movable sleeve member so that said rest position coincides with the locking position of said sleeve member, characterized in that the said spring means comprise a split ring obliged by its elasticity to adopt a position in which its diameter tends to become minimal, and a series of protuberant members placed at regular intervals in contact with the interior surface of the split ring, these protuberant members leaning against one or the other of the lateral walls of the V groove provided on the peripheral wall of the interior sleeve member.

4,493,521

CONNECTOR HOLDER ASSEMBLY

James F. Simon, Portsmouth, R.I., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 27, 1982, Ser. No. 453,400
Int. Cl.[3] H01R *13/621*
U.S. Cl. 339—92 M 11 Claims



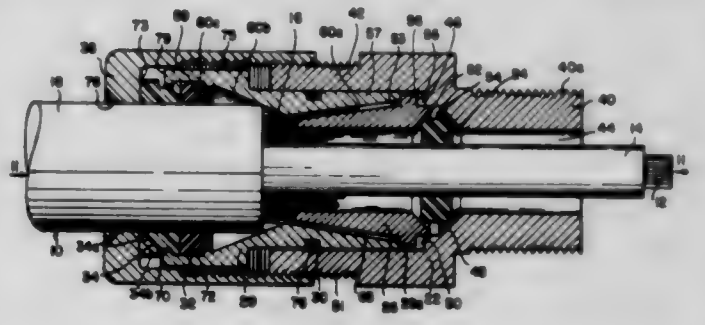
1. An electrical connector holder assembly comprising:
a frame comprising a continuous back plate and a first and second arm, each arm attached to an opposite end of said back plate and forming a recess therewith;
a first and second jackscrew extending through said first and second arms, respectively;
means for rotatably mounting said first and second jackscrew to said first and second arm, respectively;
a connector;
said mounting means comprising said connector positioned in said recess between and in contact with said jackscrews and adjacent to said back plate;
a removable cover for said connector on the opposite side of said connector from said back plate to retain said connector within said recess;
said cover being flexible but stiff and engaging said arms to retain said connector within the recess of said frame.

4,493,522

SEALED CABLE CONNECTOR

Joseph P. Law, Scotch Plains, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Nov. 1, 1982, Ser. No. 438,122
Int. Cl.[3] H01R *4/00, 17/18*
U.S. Cl. 339—94 C 16 Claims



1. A cable connector for attachment to an electrical cable having a conductive sheath and a plurality of conductors therein comprising:

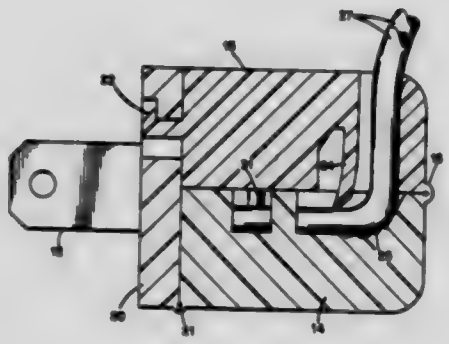
a body having a cable receiving end, a conductor egressing end and a central opening extending therethrough;
a conductive member supported in said body for engagement with said conductive sheath;
a gland nut for movable securement to said body;
a sealing member supported between said conductive member and said body for sealing said cable therebetween;
a clamping element for receiving said conductive member and forming therebetween a chamber for receipt of said conductive sheath, said clamping element further including a sealing ring for sealable engagement with said cable and a pushing element movably secured to said clamping element adjacent said first sealing ring for contact with said gland nut; and
retaining means for securing said sealing ring and said pushing element in said clamping element.

4,493,523

ADAPTIVE STRAIN RELIEF FOR WIRING DEVICES

Henry Leong, Kendall Park, and John Fiumefreddo, Colonia, both of N.J., assignors to Challenger Circle F, Inc., Trenton, N.J.

Filed Oct. 18, 1983, Ser. No. 541,801
Int. Cl.[3] H01R *13/58*
U.S. Cl. 339—105 1 Claim



1. A wiring device for terminating electrical cords comprised of:
a first segment;
a second segment pivotally arranged with said first segment and having an entry hole for receiving an end of an electric cord;
a serrated corner arranged on said first segment to be opposite said entry hole when said segments are in a closed position;
a flexible finger arranged on said second segment in proximity to said entry hole so that an electric cord inserted in said entry hole is locked between said finger and said serrated corner when said segments are in a closed position, thereby providing strain relief.

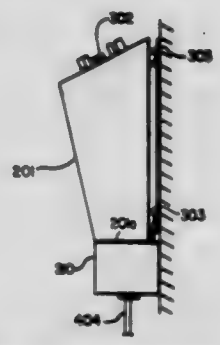
4,493,524

FACTORY DATA COLLECTION TERMINAL CONDUIT ENCLOSURE

Jay Kaplan, Wayland, and Ray Marchant, Westboro, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jun. 26, 1981, Ser. No. 277,784
Int. Cl.[3] G06F *1/00*; H01R *13/60*
U.S. Cl. 339—125 R 4 Claims

1. In a computer system comprising at least a data collection terminal, a central processing unit (CPU) and a bus having data and address lines between said CPU and said data collection terminal, said data collection terminal comprising:
(1) a conduit enclosure portion including,
(a) a back plate;
(b) a face plate unit having a front wall and opposing side walls and fastening means for fastening the face plate unit to said back plate unit to form a box-like enclosure with said back plate unit the fastening means allowing for sliding of the face plate unit relative to the back plate unit in a direction parallel to the front wall and side walls;
(c) a first signal plug means for coupling with said data and address lines; and
(d) mounting means incorporated in said back plate unit for mounting said conduit enclosure portion to a wall;
(2) a data collection portion including,



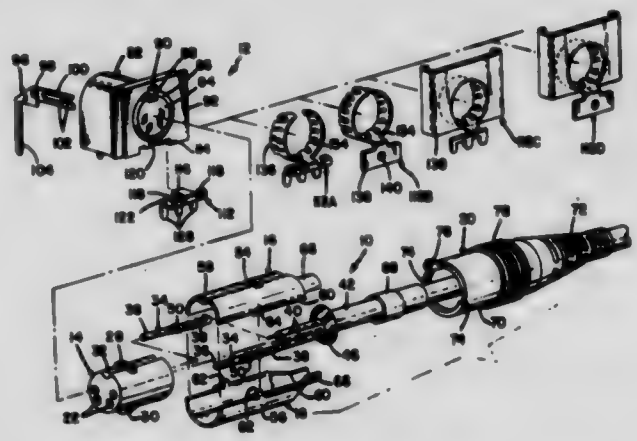
(a) second signal plug means attached to a bottom surface of said data collection portion for removable coupling with said first signal plug means for receiving said data and address lines; and
(b) bracket means for removably attaching said data collection portion to said wall.

4,493,525

ELECTRICAL PLUG CONNECTOR AND RECEPTACLE THEREFOR

Lawrence A. Hall, Harrisburg; Lisa S. Lightner; William B. Long, both of Camp Hill; Suel G. Shannon, Harrisburg, and Daniel E. Stahl, Hummelstown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 31, 1983, Ser. No. 462,278
Int. Cl.[3] H01R *13/648*
U.S. Cl. 339—143 R 12 Claims



1. An electrical connector of the plug type comprises a dielectric housing member in which electrical terminals are secured, contact sections of the electrical terminals extend outwardly from a front surface of the housing member and conductor-securing sections of the electrical terminals are to be connected to electrical conductors of a shielded cable, metal clamshell members are mounted on the housing member forming an outer contact surrounding the housing member and including a forward section covering the contact sections of the electrical terminals and a rear section for connection to a conductive shield of the shielded cable, an insulating sleeve for disposition onto the clamshell members and including a section for engagement with the cable, characterized in that:
said housing member has terminal-receiving passageways which have stop surfaces therein;
said conductor-securing sections are crimpable onto conductive cores of insulated electrical conductors of the shielded cable and said electrical terminals have latching members and stop sections for engagement with said stop surfaces in said terminal-receiving passageways to latch-

ably secure said electrical terminals in said terminal-receiving passageways;

said clamshell members have flanges along their edges in engagement with each other, lugs of one of the clamshell members disposed in recesses in the other clamshell member positioning said clamshell members together;

said insulating sleeve has internal recesses in which said flanges are disposed, said recesses being substantially larger than said flanges to permit said insulating sleeve to rotate relative to said outer contact within the confines of said recesses; and

said clamshell members have U-shaped rear sections which together form an annular member onto which an end of a shield of the shielded cable is to be positioned, and a ferrule member is positionable onto said annular member over the shield end and is crimpable thereon to electrically connect the shield to said outer contact and to secure the clamshell members together.

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JACK

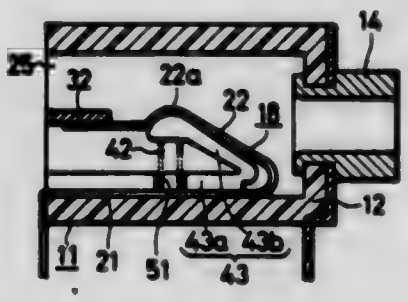
Toru Masuda, Higashiosaka, Japan, assignor to Hosiden Electronics Co., Ltd., Osaka, Japan

Filed Jan. 17, 1983, Ser. No. 458,518

Claims priority, application Japan, Feb. 27, 1982, 57/10728[U]

Int. Cl.³ H01R *17/18*

U.S. Cl. 339—183 1 Claim



1. A jack comprising:

a hollow rectangular prismatic body fabricated of an insulating material, said body having a front panel, right and left side panels and top and bottom panels, the front panel having a plug insertion hole therein;

a U-shaped contact piece formed of a resilient sheet metal and mounted in said body, one of the two legs of said U-shaped contact piece being adapted to move when engaged by a plug inserted into said body through said plug insertion hole and the other of said two legs being a stationary part which is fixed to an inner wall of said bottom panel, said two legs being interconnected by a bent portion of said U-shaped contact piece which is positioned toward said front panel with said movable and stationary legs of said contact piece extending from said bent portion in directions away from said plug insertion hole;

a sheet metal keep plate mounted on said stationary leg of said U-shaped contact piece to press said stationary leg against said bottom panel, said keep plate having an upright portion acting as a spring holder, said upright portion being made by cutting and bending a portion of said keep plate to stand upright, the distance between the tip of said spring holder and said movable leg of said contact piece being selected so that when a plug inserted into said body engages the movable leg of said contact piece a portion of said movable leg will be brought into contact with the tip of said spring holder, thereby preventing said movable leg from excessive displacement by the plug inserted into the body; and

a coiled spring held around said spring holder to bias said movable leg of said contact piece towards said top panel of said body, thereby to supplement the resiliency of said movable contact piece.

4,493,527

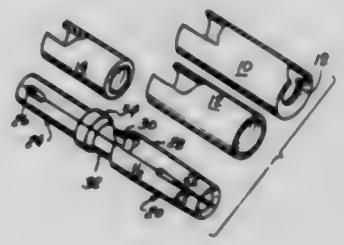
SOCKET CONTACT FOR ELECTRICAL CONNECTORS

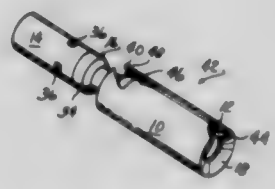
R. Amalia Piacitelli; Valentine J. Hemmer, both of Sidney, and Eric F. Shepler, Bainbridge, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Sep. 30, 1982, Ser. No. 429,721

Int. Cl.³ H01R *13/12*

U.S. Cl. 339—258 R 1 Claim





1. A socket contact for electrical connectors comprising an elongate formed metal contact liner sleeve having a front contact portion and a rear terminal portion, each of said portions located on a respective side of a midsection, a formed metal rear sleeve mounted over said terminal portion and secured thereto and a formed metal outer front sleeve mounted over said contact portion secured thereto and having a rear end adjacent the midsection of said contact liner sleeve characterized by an inner front sleeve mounted within said outer front sleeve having a greater wall thickness and of a shorter length than said outer front sleeve to form a rear facing end adjacent the midsection of said contact liner sleeve, said outer front sleeve having the rear end thereof formed over the rear facing end of said inner front sleeve to form a retention shoulder at the midsection of the socket contact.

4,493,528

FIBER OPTIC DIRECTIONAL COUPLER

Herbert J. Shaw, Stanford, and Ralph A. Bergh, Palo Alto, both of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

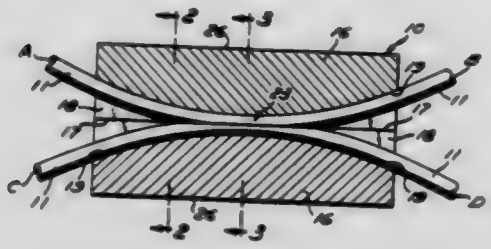
Filed Apr. 11, 1980, Ser. No. 139,511

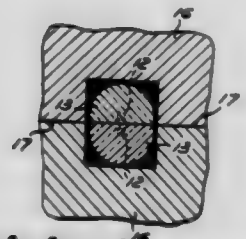
Int. Cl.³ G02B *7/26*

U.S. Cl. 350—96.15 10 Claims

1. In a fiber optic directional coupler: a pair of blocks having generally planar confronting faces in proximity to each other, generally aligned slots opening through the faces of the blocks and having bottom walls which converge toward the centers of the slots and diverge toward the edges of the blocks, and a strand of single mode fiber optic material mounted in each of the slots along a path corresponding to the bottom wall of the slot, the cladding on the confronting sides of the strands being removed even with the faces of the blocks to a predetermined distance to place the core portions in close proximity to each other to form a region of interaction in which light is transferred between the strands, the predetermined distance within

a predetermined critical zone, the critical zone defining a region sufficiently close to the core to permit evanescent cou-





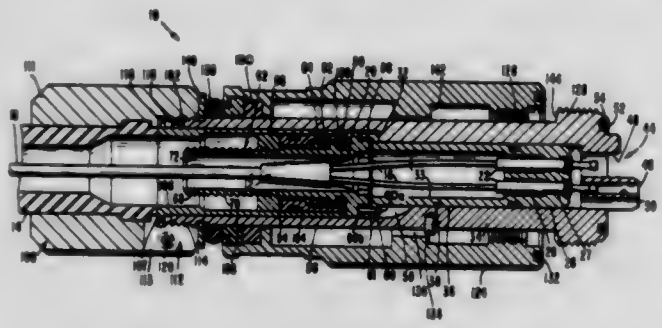
pling to occur and sufficiently far from the core to substantially eliminate losses due to mode perturbation.

4,493,529

ELECTROMAGNETIC ENERGY SIGNAL-CARRYING CONNECTOR HAVING SECURE STRAIN-RELIEF MECHANISM

John S. Doty, Yucaipa, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Jul. 30, 1982, Ser. No. 403,446
Int. Cl.[3] G02B 5/14
U.S. Cl. 350—96.20
12 Claims



12. A connector for cables having strength member filaments and electromagnetic energy signal-carrying means, and termination means therefor, comprising:

an enclosing structure having means for receipt of said termination means;

a strain relief having a body, first means securing said strength member filaments of said cables to said body and second means for maintaining the securing of said filaments to said body;

means coupled to said enclosing structure for securing said connector to a mating connector; and

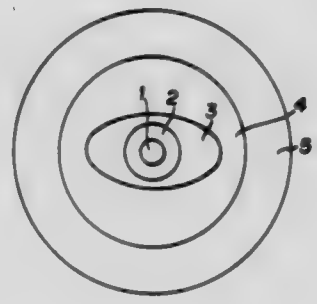
uncoupling prevention means positioned between said connector securing means and said first and second means to prevent uncoupling thereof when said connector securing means is used to secure together, or to disengage, said mating connectors.

4,493,530

SINGLE POLARIZATION OPTICAL FIBERS

Hiroshi Kajioka, Hitachi; Toshihide Tokunaga, Kitaibaraki, and Junkichi Nakagawa, Hitachi, all of Japan, assignors to Hitachi Cable, Ltd., Tokyo, Japan

Filed Jul. 2, 1982, Ser. No. 394,889
Claims priority, application Japan, Aug. 18, 1981, 56-129139
Int. Cl.[3] G02B 5/172
U.S. Cl. 350—96.34
8 Claims



7. A single polarization optical fiber comprising:

a circular core having a predetermined first refractive index;

a circular cladding positioned on the outside of said circular core and having a second refractive index smaller than said first refractive index;

an elliptical jacket positioned on the outside of said circular cladding containing F_2O for decreasing refractive index and P_2O_5 for lowering softening temperature and having an intermediate third refractive index between said first and second refractive indices; and

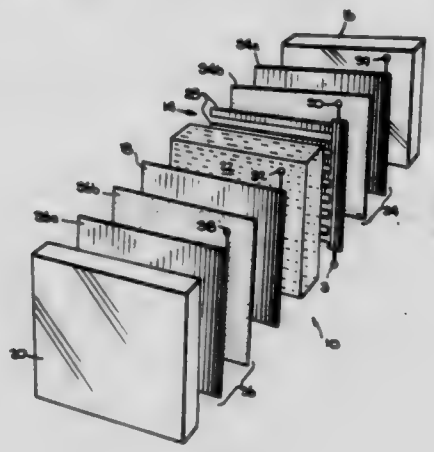
a support positioned on the outside of said elliptical jacket.

4,493,531

FIELD SENSITIVE OPTICAL DISPLAYS, GENERATION OF FIELDS THEREFOR AND SCANNING THEREOF

William Bohmer, Jackson Heights, N.Y.; Walter J. Betancourt, Oak Ridge, and Louis S. Hoffman, Morriston, both of N.J., assignors to Control Interface Company Limited, Randolph, N.J.

Continuation of Ser. No. 165,753, Jul. 3, 1980,. This application Apr. 1, 1983, Ser. No. 479,349
Int. Cl.[3] G02F 1/133, 1/137, 1/135, 1/01
U.S. Cl. 350—336
25 Claims



1. A field sensitive display device for forming a display when subjected to visible light comprising a field sensitive material, spaced electrodes for inducing a field, means for containing the field sensitive material with the spaced electrodes and the field sensitive material being relatively disposed so that a field induced by the spaced electrodes is capable of affecting the field sensitive material, a first of the spaced electrodes including an impedance portion and a plurality of conductive, substantially low impedance portions connected to different electrical locations of the impedance portion and extending therefrom, first

terminal means connected to the impedance portion for applying an electrical signal thereto, a first capacitance electrically coupled with each of the conductive substantially low impedance portions, a second of the spaced electrodes including a conductive substantially low impedance portion, second terminal means connected to the second electrode for applying an electrical signal thereto, a second capacitance electrically coupled with the conductive substantially low impedance portion of the second electrode, and additional terminal means connected to the first and second capacitances for applying at least one electrical signal thereto.

4,493,532

PLEOCHROIC AZO DYES, A LIQUID CRYSTAL COMPOSITION CONTAINING THE AZO DYES AND A DISPLAY DEVICE USING THE LIQUID CRYSTAL COMPOSITION

Masaharu Kaneko, Kanagawa; Tetsuo Ozawa, Tokyo; Tomio Yoneyama, Kanagawa; Shuji Imazeki, Ibaraki; Akio Mukoh, Ibaraki, and Mikio Sato, Ibaraki, all of Japan, assignors to Hitachi, Ltd. and Mitsubishi Chemical Industries, Ltd., both of Tokyo, Japan

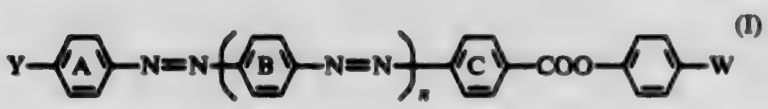
Filed Nov. 16, 1982, Ser. No. 442,057

Claims priority, application Japan, Nov. 16, 1981, 56-183366; Jan. 28, 1982, 57-12084; Feb. 10, 1982, 57-20130

Int. Cl.³ G02F *1/13*; C09K *3/34*; C09B *29/00, 31/00*; C09F *9/00*

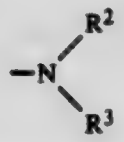
U.S. Cl. 350—349 **2 Claims**

1. A liquid crystal composition comprising a liquid crystal material selected from the group consisting of nematic liquid crystals, smectic liquid crystals and liquid crystals utilizing a cholesteric-nematic phase transition, and pleochroic azo dyes represented by the formula (I):

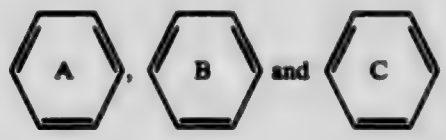


(I)

wherein Y represents alkoxy or



(wherein R^2 and R^3 each represents hydrogen, alkyl or alkoxyalkyl, and R^2 and R^3 may be connected to each other to form a nitrogen-containing ring together with the adjacent nitrogen); n represents 1 or 2; W represents alkyl containing 3 to 18 carbon atoms, alkoxyalkyl, cycloalkyl, aryl, cyano, halogen, acyloxy, carboxylic acid ester, and arylazo; and one of



represents a 1,4-naphthyl ring.

4,493,533

IMMERSION OIL CONTAINING ALIPHATIC THIO COMPOUNDS

Martin Petrzilka, Kaiseraugst; Inge Pracht, Riehen, and Urs Ruf, Biel-Benken, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

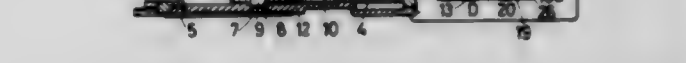
Filed Apr. 20, 1982, Ser. No. 370,120

Claims priority, application Switzerland, Apr. 27, 1981, 2730/81; Jan. 18, 1982, 272/82

Int. Cl.³ C07C *149/18*; G02B *1/04, 21/00*; C10M *3/32*

U.S. Cl. 350—418 **17 Claims**

1. In the combination for immersion oil optics of an immersion oil completely filling the space between the objective lens and a preparation or a cover glass over the preparation to be optically investigated, the improvement wherein the optical immersion oil comprises one or more aliphatic thio compounds of the formula



I

wherein R^1 denotes hydrogen, benzoyl or a group $-(CH_2)_{n2}-OR^3$ and R^2 denotes hydrogen or a group $-(CH_2)_{m2}-OR^4$, R^3 represents hydrogen or a group $-(CH_2)_{n3}-OH$ and R^4 represents hydrogen or a group $-(CH_2)_{m3}-OH$, the indices n_1, m_1, n_2, m_2, n_3 and m_3 signify whole numbers of 2 to 6 and the sums n_1+m_1 or n_2+m_2 or n_3+m_3 amount to at most 8,

or derivatives thereof in which one or more of the methylene groups is/are substituted by alkyl groups containing 1 to 4 carbon atoms.

4,493,534

FOCUS ADJUSTING DEVICE FOR CAMERA HAVING VARIFOCAL OPTICAL SYSTEM

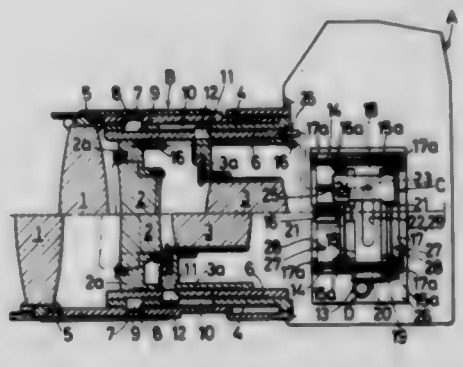
Makoto Ando, and Yukio Miki, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 24, 1982, Ser. No. 351,958

Claims priority, application Japan, Mar. 6, 1981, 56-32703

Int. Cl.³ G02B *7/10, 7/11*

U.S. Cl. 350—429 **8 Claims**



1. A camera for use with a lens barrel including a varifocal optical system having an optical axis and a focal length and in which a focusing position for a subject at a given distance alters with a movement of first lenses for varying said focal length and in which a movement of second lenses for focusing varies with said focal length, said camera comprising:

a camera body having a front portion on which said lens barrel is attached; and

a focus adjusting device provided in said camera body, wherein said focus adjusting device includes;

focus coupling means coupled with said lens barrel and movable parallel to the optical axis of said varifocal optical system for moving said second lenses for focusing;

a pivotable member pivoted about a fixed pivot on said camera body for pivoting movement in a plane parallel to said optical axis and having an elongated focus guiding slot extending away from said fixed pivot;

a focus guiding member engaging said focus guiding slot and coupled with said focus coupling means to move therewith parallel to said optical axis;

focal length information transmitting means coupled with said lens barrel for moving said focus guiding member along said focus guiding slot in accordance with the focal length of said varifocal optical system to vary the distance from said fixed pivot to said focus guiding member; and

focusing means for pivoting said pivotable member to vary the inclination of said focus guiding slot in said plane parallel to said optical axis, the pivoting movement of said pivotable member causing movement of

said focus coupling means parallel to said optical axis through engagement of said focus guiding member with said focus guiding slot and through coupling of said focus guiding member with said focus coupling means, such that movement of said focus coupling means in the direction parallel to said optical axis is determined by the inclination of said focus guiding slot and the distance from said fixed pivot to said focus guiding member.

4,493,535

HYBRID TRANSMISSIVE FOCALIZING OPTICAL SYSTEM

André Champeau, 7 Rue Pavis-de-Chavannes, 75017 Paris, France

Filed Sep. 11, 1981, Ser. No. 301,447
Claims priority, application France, Sep. 12, 1980, 80 19768
Int. Cl.³ G02B 3/08, 5/22
U.S. Cl. 350—452
9 Claims



1. A hybrid transmissive focalizing optical system for a solar generator comprising:

a support part made of glass;

a focalizing part of the Fresnel lens type of a plastic material chosen from the group consisting of the styrene homopolymers and copolymers;

a frame structure provided at the periphery of said support part and focalizing part;

an intermediary layer of a transparent material provided between said support part and focalizing part, said intermediary layer having a thixotropic structure imparting a controlled viscosity without flowing and having adhesive properties with respect to said glass support part and said focalizing part, said intermediary layer comprised of:

a base material chosen from the group consisting of the silicones, polyolefines, paraffinic derivatives and the mixtures thereof, and

a low concentration of a micro-powdered agent for adjusting the viscosity thereof,

an ultraviolet absorbing substance in a concentration within the concentration of 0.5 to 6 percent by weight.

4,493,536

INVERTED TELEPHOTO TYPE LENS SYSTEM

Yoshinobu Kudo, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 25, 1982, Ser. No. 362,031
Claims priority, application Japan, Mar. 31, 1981, 56-48684
Int. Cl.³ G02B 9/60, 13/04
U.S. Cl. 350—462
7 Claims

1. An inverted telephoto lens system of a 5-component, 5-element type, comprising from the object to the image side:

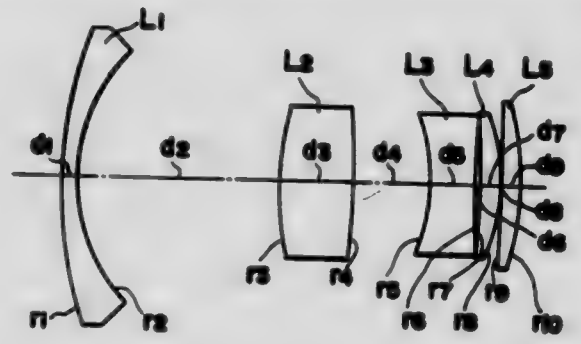
a first component consisting of a negative meniscus single lens element convex to the object side;

a second component consisting of a biconvex single lens element;

a third component consisting of a biconcave single lens element;

a fourth component consisting of a positive meniscus single lens element convex to the image side; and

a fifth component consisting of a positive single lens element, wherein the lens system fulfills the following conditions:



$N_1 > 1.69$

$0.72(d_6 + d_7 + d_8 + d_9) < d_5 < 2.2(d_6 + d_7 + d_8 + d_9)$

$0.14\ f < d_5 < 0.3\ f$

$0.26\ f < d_4 < 0.43\ f$

$0.12\ f < d_3 < 0.4\ f$

wherein:

N_1 represents the refractive index of the material of the first component;

d_i represents the i-th axial distance counted from the object side; and

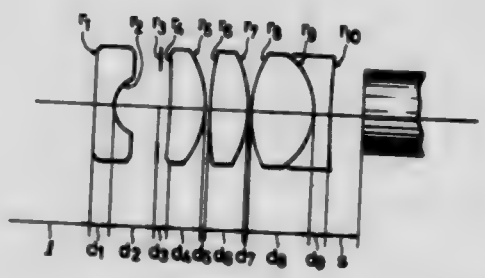
f represents the focal length of the whole lens system.

4,493,537

OBJECTIVE LENS SYSTEM FOR ENDOSCOPES

Kenichi Nakahashi, Hachiooji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 4, 1982, Ser. No. 439,293
Claims priority, application Japan, Nov. 10, 1981, 56-179027
Int. Cl.³ G02B 9/34, 13/04
U.S. Cl. 350—469
17 Claims



1. An objective lens system for endoscopes comprising a first negative meniscus lens component having a concave surface on the image side, an aperture stop, a second positive meniscus lens component, a third biconvex lens component and a fourth positive cemented doublet component consisting of a positive lens element and a negative lens element, said lens system being so designed as to satisfy the following conditions:

$$n_1 \geqq 1.51 \quad (1)$$

$$\nu_1 \geqq 55 \quad (2)$$

$$1.4 \leqq f_{234}/f \leqq 1.7 \quad (3)$$

$$1.3 \leqq \left| \left(\frac{1 - n_1}{r_2} \right) / \left(\frac{1 - n_2}{r_5} + \frac{1 - n_3}{r_7} \right) \right| \leqq 1.6 \quad (4)$$

$$\nu_3 \geqq 60 \quad (5)$$

$$|n_4 - n_5| \geqq 0.2 \quad (6)$$

wherein the reference symbol f represents total focal length of the entire lens system as a whole, the reference symbol f_{234} designates total focal length of said second, third and fourth lens components as a whole, the reference symbols r_2, r_5 and r_7 denote radii of curvature on the image side surface of said

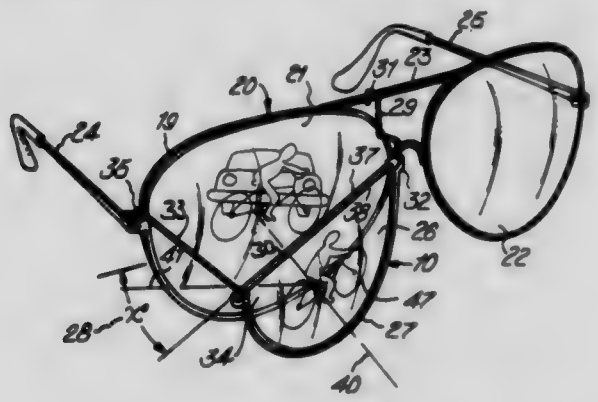
first lens component, image side surface of said second lens component and image side surface of said third lens component, the reference symbols n_1 through n_5 represent refractive indices of the respective lens elements and the reference symbols ν_1, ν_2 and ν_3 designate Abbe's numbers of said first, second and third lens components respectively.

4,493,538

LATERAL VIEW EXTENDER DEVICE

Peter M. Tolliver, 42 Varinna Dr., Rochester, N.Y. 14618

Filed Sep. 24, 1982, Ser. No. 423,231
Int. Cl.³ G02C 7/08, 9/04
U.S. Cl. 351—57 10 Claims



5. An Homonymous Hemianopsia lateral view extender device for use with eyeglasses having a pair of lenses and a nose bridge separating said pair of lenses, said device comprising:

(a) a dichroic half lens having the combined optical properties of a reflector and a see through lens, and

(b) means for fixing said dichroic half lens to said nose bridge of said eyeglasses in optical registry with one lens of said pair of lenses for providing at least one optical path through said one lens of said pair of lenses and said dichroic half lens and at least one other path over said dichroic half lens,

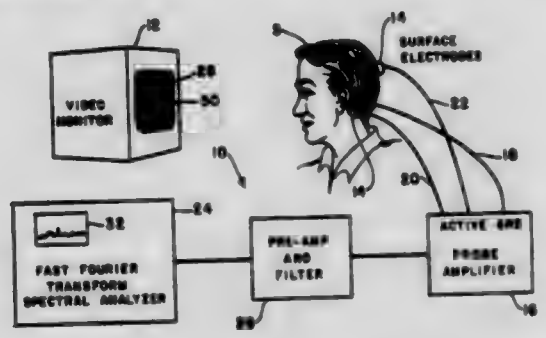
(i) said dichroic lens being angularly disposed with said one lens of said pair of lenses to form an interior angle between said dichroic lens and said one lens of said pair of lenses for providing a lateral optical path intersecting said one optical path.

4,493,539

METHOD AND APPARATUS FOR OBJECTIVE DETERMINATION OF VISUAL CONTRAST SENSITIVITY FUNCTIONS

Mark W. Cannon, Jr., Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 30, 1982, Ser. No. 394,040
Int. Cl.³ A61B 3/10, 3/02
U.S. Cl. 351—205 4 Claims



4. Apparatus for objectively determining a visual contrast sensitivity function of a human subject, comprising:

(a) a video monitor for generating a sine wave grating pattern being flickered at a predetermined rate;

(b) means for detecting and recording a steady state Fourier spectrum of the brain wave activity of the human subject;

(c) means for adjusting said grating pattern through a plurality of spatial frequencies; and

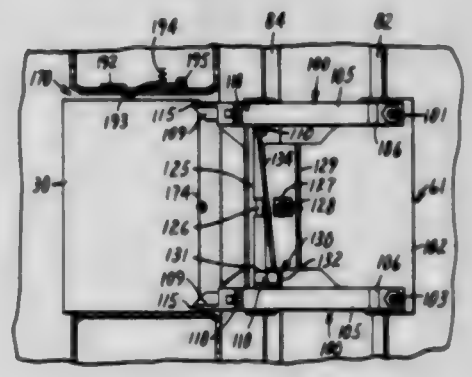
(d) means for adjusting said grating pattern in contrast level at each spatial frequency in order to distinguish a visual evoked potential component of each recorded spectrum from noise contained therein and to identify a contrast threshold of each grating pattern of a particular spatial frequency corresponding to the contrast level at which said visual evoked potential component of said spectrum becomes indistinguishable from the noise therein, whereby the inverse of each contrast threshold may be plotted against its corresponding spatial frequency to yield the visual contrast sensitivity function of the human subject.

4,493,540

TRANSPORT APPARATUS FOR MICROFICHE CARDS

John E. Burbank, III, Ridgefield, and John R. Montgomery, Fairfield, both of Conn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 11, 1983, Ser. No. 474,538
Int. Cl.³ G03B 23/08
U.S. Cl. 353—122 6 Claims



1. In a microfiche card storage and retrieval system comprising a tray for receiving and storing in generally parallel position a plurality of cards and having a card transport device for moving preselected ones of said cards into and out of said storage means and for moving the cards along an XY axis in a predetermined plane to position the cards at a reading station, the improvement comprising:

load-unload station means positioned in the plane of movement of said card by said card-transport device, said load-unload station means comprising a chute having an inlet side adapted for receiving a card inserted therein by the operator, stop means for restricting the movement of the card through the chute, and means opposite said inlet side of said chute for guiding a microfiche card handled by said card transport means for directing a card into said chute from the opposite side.

4,493,541

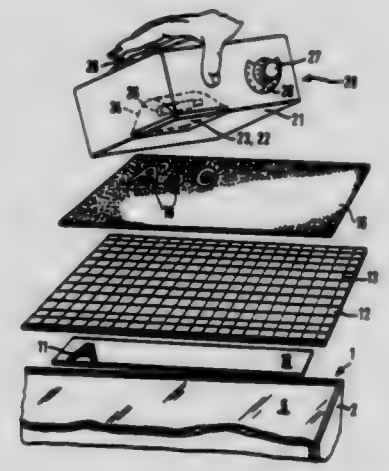
APPARATUS FOR PHOTOGRAPHICALLY PRODUCING CHARACTERS OR OTHER REPRESENTATIONS

Fred A. Goetschi, Haus zum Anker, CH-6354 Vitznau, Switzerland

Division of Ser. No. 245,516, Mar. 19, 1981, Pat. No. 4,409,305.
This application May 27, 1983, Ser. No. 499,082
Claims priority, application European Pat. Off., Sep. 23, 1980, 105701.9
Int. Cl.³ G03B 27/04; G03D 5/00
U.S. Cl. 354—5 23 Claims

1. Apparatus for photographically producing characters or other representations under daylight conditions, such as title set, comprising photo material in sheet form which is generally insensitive with respect to daylight including blue light and having a predetermined sensitivity with respect to shortwave

light, a source of shortwave light, a developer liquid suitable for said photo material, a transparent cover film which is non-transmissive with respect to said developer liquid and a record carrier film which has at least one transparent region in the form of a character, symbol, picture, photo or other like representation surrounded by a ground which is opaque with respect to shortwave light to thereby provide a photostencil-ing implement, characterized by said photo material being wetted with said developing liquid and covered with said transparent cover film, of said record carrier film being rela-



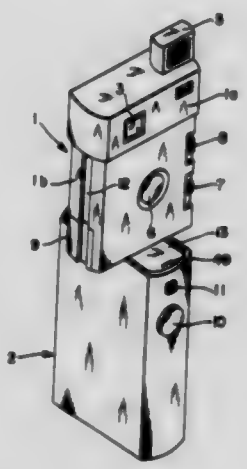
tively positioned on said cover film on the side thereof opposite to said photo material and such that said one transparent region is juxtaposed to where its projected image is to be produced on said photo material, said shortwave light source being positioned for irradiating said one transparent region with shortwave light so as to activate the photo material in the area juxtaposed to said one transparent region to thereby produce a corresponding image on the photo material which becomes immediately visible to the naked eye in daylight conditions.

4,493,542

PHOTOGRAPHIC CAMERA WITH HANDLE GRIP

Hiroshi Okmura; Atuso Kohno; Minoru Shiiba, and Tsutomu Tanaka, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 22, 1983, Ser. No. 525,426
Claims priority, application Japan, Aug. 20, 1982, 57-143345; Aug. 20, 1982, 57-143347
Int. Cl.³ G03B *29/00, 17/02*
U.S. Cl. 354—82
18 Claims



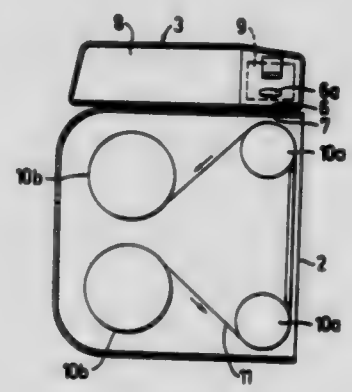
1. A photographic camera comprising a flattened camera body containing means for forming an image; and a flattened handle grip rotatably coupled to the bottom of said fastened camera body, said flattened handle grip being in alignment with the flattened camera body when the camera in not in use and being rotatable out of alignment with the flattened camera body through an angle of about 90° relative to the flattened camera body so as to be disposed transverse to the flattened camera body when the camera is in use.

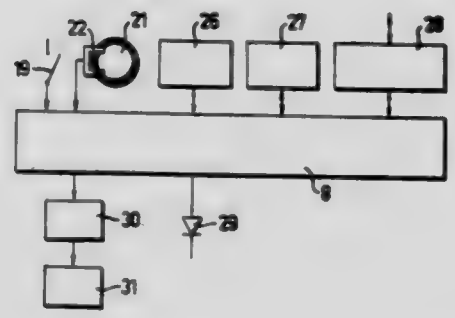
4,493,543

DEVICE FOR DATA RECORDING AT PHOTOGRAPHIC CAMERAS

Jan A. Lundberg, Torslanda; Göran T. L. Wallgren, Onsala, and Mats H. Martinsson, Gothenburg, all of Sweden, assignors to Victor Hasselblad Aktiebolag, Gothenburg, Sweden

Filed Mar. 4, 1983, Ser. No. 472,278
Claims priority, application Sweden, Apr. 14, 1982, 8202342
Int. Cl.³ G03B *17/24*
U.S. Cl. 354—109
3 Claims





1. In a camera including a camera body and a separate film magazine detachably attached to said camera body, the improvement comprising a device for recording data on the emulion side of a film operatively mounted in said film magazine, said device including:

(a) a housing;

(b) a microprocessor mounted in said housing and powered by a battery mounted in said housing;

(c) a character generator mounted in said housing and controlled by said microprocessor to generate preprogrammed character sequences;

(d) a hole in said housing and optical means for optically conveying said character sequences to said hole;

(e) said film magazine having a housing on which is detachably mounted said data recorded device;

(f) said film magazine housing having a hole therethrough adjacent a portion of said emulsion side of said film where it is desired to record said data thereon; and

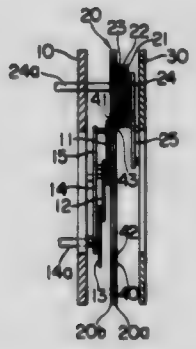
(g) said film magazine housing hole being aligned with said data recording device housing hole when said data recording device is mounted on said film magazine housing whereby actuation of said character generator results in characters generated thereby being recorded on said emulsion side of said film adjacent said hole in said film magazine housing.

4,493,544

FOCAL-PLANE SHUTTER

Kinio Uematsu, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed May 9, 1983, Ser. No. 492,719
Claims priority, application Japan, May 20, 1982, 57-85454
Int. Cl.³ G03B 9/40
U.S. Cl. 354—246 8 Claims



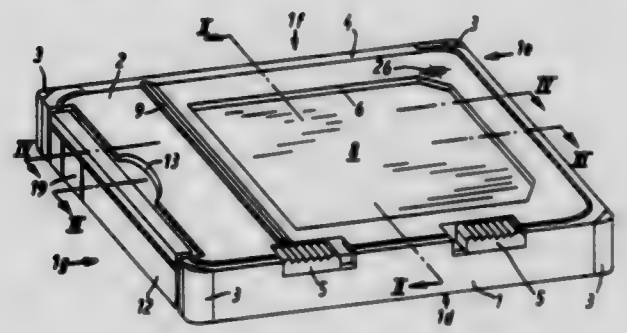
1. A focal-plane shutter comprising:
(a) first and second base plates disposed parallel to each other with a predetermined space therebetween, each of said base plates being formed with an opening at a position opposed to that of the other base plate to define an exposure aperture having first and second edges, said first base plate having a recess facing said second base plate and located along said second edge of said aperture;
(b) light-shielding means located within said space between said base plates, said light-shielding means including at least one substantially flat plate-shaped blade member for closing said aperture over at least part of the area thereof; and
(c) drive means for moving said blade member along said base plates between an opening position in which the blade member is retracted outside said first edge of said aperture and a closing position in which said blade member is located across said aperture with part of said blade member juxtaposed with said recess.

4,493,545

FILM CASSETTE

Walter Bauer; Heinrich Färber, and Jürgen Müller, all of München, Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 27, 1981, Ser. No. 315,435
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1980, 3040819
Int. Cl.³ G03B 17/32
U.S. Cl. 354—277 44 Claims



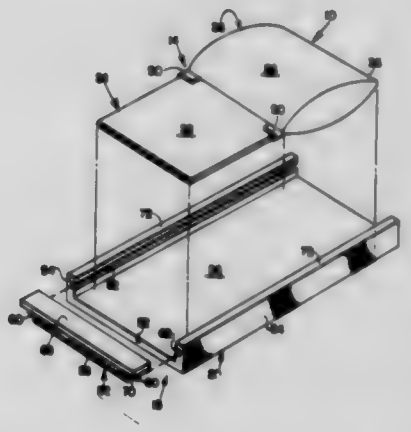
1. A film cassette, particularly for sheet film, comprising:
(a) a pair of cooperating cassette portions movable between an open position and a closed position in which said cassette portions define a film compartment, one of said cassette portions having a supporting wall for the film and the other of said cassette portions having a window which is superimposed with said film compartment in said closed position;
(b) a hinge connecting said cassette portions for pivotal movement between said open and closed positions;
(c) a light-blocking member for said window receivable by said other cassette portion and designed to seal said film compartment against light; and
(d) a resilient rim projecting from said other cassette portion and having an end face which is directed towards said supporting wall in said closed position and is arranged to press the film against the same in such position, said rim extending around said window.

4,493,546

PROCESSING APPARATUS AND METHOD FOR TREATING A FILM UNIT WITH A LIQUID

David V. Cronin, Peabody, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 7, 1983, Ser. No. 473,084
Int. Cl.³ G03D 9/00, 3/02
U.S. Cl. 354—324 24 Claims



1. Processing apparatus for treating a sheet-like film unit with a processing liquid, said apparatus comprising:
a liquid container having a compliant film unit receiving section and a communicating liquid reservoir section between which a volume of processing liquid, at least sufficient to have such a film unit immersed therein, is selectively distributed to establish a first condition whereby said receiving section is substantially dry and substantially all of the liquid is in said reservoir section and a second condition whereby said receiving section is flooded with liquid from said reservoir section to immersion treat such a film unit therein; and
pressure-applying means configured to act on the exterior of said compliant receiving section for selectively pressing portions of said receiving section against a wet immersion treated film unit therein to squeegee excess liquid from the film unit, said pressure-applying means also functioning to indirectly exert pressure on the liquid in said receiving section so the liquid flows into said reservoir section to change the distribution from said second condition to said first condition.

4,493,547

DATA RECORDING PHOTOGRAPHIC CAMERA

Mark E. Bridges, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

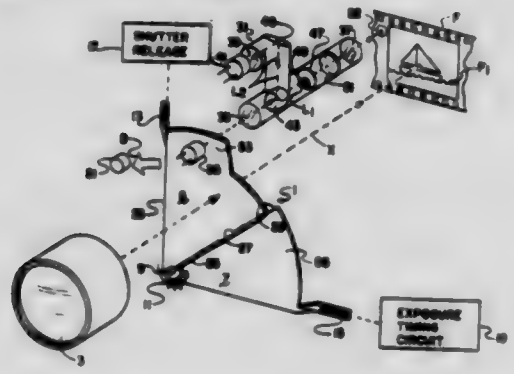
Filed Dec. 27, 1983, Ser. No. 565,317
Int. Cl.³ G03B 17/24
U.S. Cl. 354—424 5 Claims

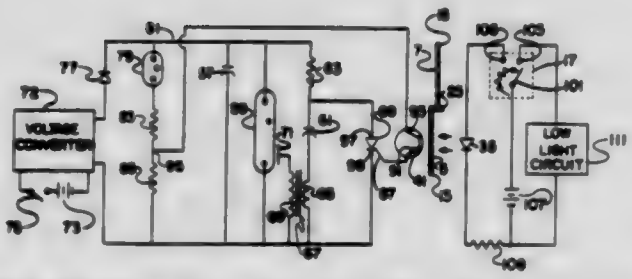
5. In a photographic camera of the type having (a) a data source for providing information relating to photographing a subject, (b) a light source for illuminating such information, (c) means for forming an illuminated image of the information on unexposed film in said camera to record the information on the film, (d) a shutter movable to initiate and terminate a film

exposure to photograph the subject, and (e) an electronic flash unit fireable to illuminate the subject, the improvement comprising:

photoelectric sensor means, responsive to incident light, for undergoing an electrical change;

means for directing light from said light source onto said photoelectric sensor means to cause said sensor means to undergo the electrical change;





light blocking means integral with said shutter, said light blocking means normally located between said light source and said photoelectric sensor means for preventing light from being directed onto said sensor means, though moving from between the two to permit light to be directed onto said sensor means as said shutter is moved to initiate a film exposure; and

means, responsive to said photoelectric sensor means undergoing the electrical change, for firing said flash unit.

4,493,548

APPARATUS FOR SUPPORTING FLEXIBLE MEMBERS

Antoun I. Ateya, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 26, 1982, Ser. No. 362,435
Int. Cl.³ G03G *15/20*
U.S. Cl. 355—3 FU 9 Claims

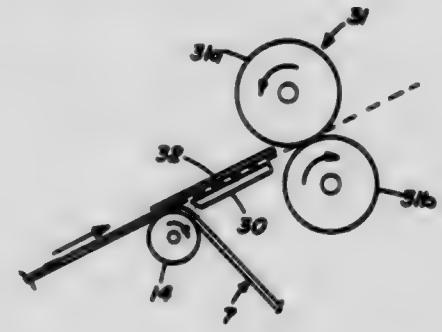
2. Apparatus for supporting a copy sheet carrying an unfused toner image which is subject to wrinkling as it is moved along a path to a fixing station, comprising:

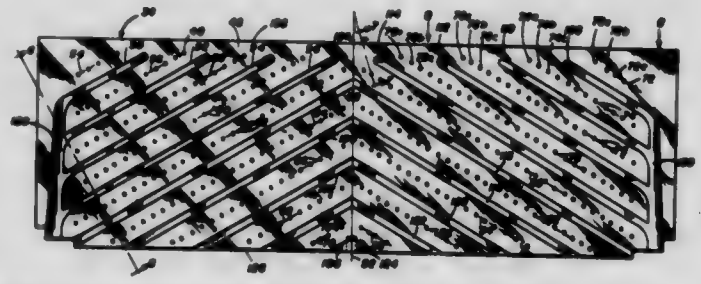
a support member located adjacent to said fixing station and having a surface extending along the path of movement of a copy sheet carrying an unfused toner image;

said support member having a plurality of passages with openings at said surfaces, said passages being arrayed in at least first and second rows (1) which are positioned with respect to each other on opposite sides across the width of said path, (2) which extend obliquely to said path, and (3) which diverge in the direction of said path, said respective passages of said first and second rows being oriented in an outward direction and in the direction of said path,

said support member further having at least (1) a first channel in said surface which is located along said path and which extends obliquely to said path and substantially parallel and adjacnet to said first row of passages and (2) a second channel in said surface which is located along said path and which extends obliquely to said path and substantially parallel and adjacent to said second row of passages, each of said channels having a curved edge adjacent to its respective row of passages, and

means for supplying a pressurized gaseous medium to said passages to effect a laminar flow of gaseous medium from said openings of said passages at said surface, along said surface and into said channels to be exhausted thereby outwardly with respect to said path, said flow of gaseous medium (1) supporting copy sheets of different sizes and





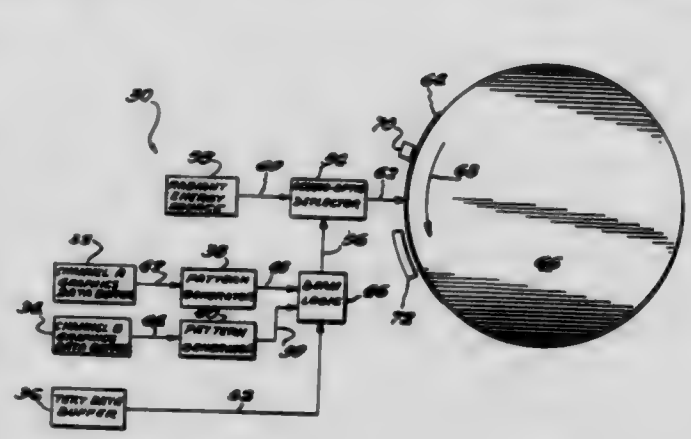
weights at a predetermined height above said surface; (2) tentering a supported sheet outwardly to prevent wrinkling and creasing thereof as it is moved along said path; and (3) delivering the leading edge of a supported sheet to a precise region of said fusing station.

4,493,549

OPTICAL SYSTEM FOR IMAGING AN ELECTROPHOTOGRAPHIC MEMBER

E. Raymond Thomas; Lysle D. Cahill, both of Dayton; John L. Tibbits, Centerville, all of Ohio; Kenneth D. Fraser, Scarboro, Canada; John F. Keane, Bellbrook, Ohio; Stanley C. Harting, Kettering, Ohio; George H. Kramer, Xenia, Ohio; Ronald J. Duke, Miamisburg, Ohio; Theodore A. Kenis, Dayton, Ohio; John C. Butler; Gary L. Frank, both of Centerville, Ohio, and John A. Lawson, Dayton, Ohio, assignors to Coulter Systems Corp., Bedford, Mass.

Division of Ser. No. 139,462, Apr. 11, 1980,. This application Oct. 4, 1983, Ser. No. 538,942
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R 6 Claims



1. A optical system for imaging on electrostatically charged electrophotographic member across an image line to form on said member a latent electrostatic image of charged and discharged areas, the member thereafter being used as a printing plate, the system comprising:

source means for supplying a source beam of radiant energy;

splitter means for splitting a reference beam of radiant energy from said source beam;

modulator means receiving electrical signals and capable of deflecting individual rays of radiant energy from the source beam in response to said signals, the individual rays forming a fine beam;

focus means transmitting said fine beam and reference beam therethrough and providing respective objects thereof;

alignment means for aligning said fine beam and reference beam vertically, one above the other;

raster mirror means that oscillates from side to side around a vertical axis, said raster mirror means for receiving said reference and fine beams in a straight line and reflecting said beams in straight lines that are swept from side to side in respective planes, the plane described by said fine beam including said scan line on said member, said rays striking said charged member and forming said latent image;

lens system means arranged between said raster mirror means and said member and transmitting said reference and fine beams means to and from said raster mirror means, said lens system means providing field flattening of the reference and fine beams transmitted therethrough to maintain at least a focused image of said object of said fine beam on said member across the length of the scan line; and

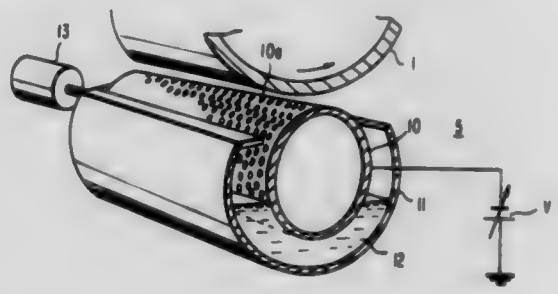
folding mirror means for directing said reference and fine beams to said raster mirror means and lens system means along paths perpendicular to the center of said member and below said plane including said image line, and said plane in which said reference beam is swept being above said plane in which said fine beam is swept.

4,493,550

DEVELOPMENT APPARATUS OF LATENT ELECTROSTATIC IMAGES

Yoshisuke Takekida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 6, 1983, Ser. No. 482,647
Claims priority, application Japan, Apr. 6, 1982, 57-56992; Apr. 8, 1982, 57-58595; Apr. 8, 1982, 57-58596
Int. Cl.³ G03G *15/10*
U.S. Cl. 355—10 8 Claims



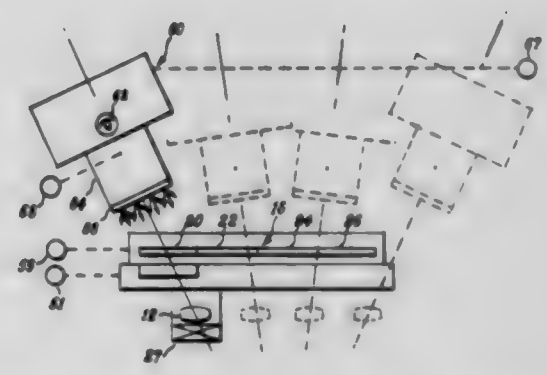
1. A development apparatus of latent electrostatic images comprising, a drum of photosensitive material on which the latent electrostatic images are formed, a tank for accommodating an electrically conductive liquid developer, and an electrically conductive sleeve disposed rotatably within said tank and having a plurality of depressions formed and arrayed on its outer circumferential surface in a zig-zag matrix, said sleeve being disposed closely adjacent said photo-sensitive drum but spaced therefrom a predetermined distance.

4,493,551

ILLUMINATION MEANS FOR 3-D PRINTING APPARATUS

Richard A. Fine, P.O. Box 6945, Marietta, Ga. 30065, and George F. Nason, III, 5568 Naylor Ct., Norcross, Ga. 30092

Filed Mar. 24, 1983, Ser. No. 478,325
Int. Cl.³ G03B *27/32, 35/14*
U.S. Cl. 355—22 5 Claims



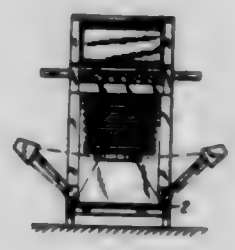
1. In apparatus for printing stereoscopic picture of the type including a multiplicity of image bands, each of said image band comprising a plurality N of condensed image segments from a corresponding plurality N of two-dimensional views of an object field taken from spaced vantage points, and a lenticular print film having a corresponding multiplicity of lenticules aligned with the image bands, said apparatus comprising a projecting lens with a light gate in registry therewith, film holder means for positioning sequentially negatives in a negative film strip series containing said N two-dimensional views in said light gate, means for moving said lens at a preselected speed in a direction for projecting respective negatives from a corresponding plurality N of projecting lens locations with the projected image of a selected element of each negative in substantial registry with a reference point, and for stopping said lens at each said lens location for positioning a successive negative in said series in said light gate, and illumination means movable along a predetermined path for exposing at each lens location the respective negative in said light gate for projecting the negative onto a segment of an image band of the print film, the improvement wherein said illumination means comprises a tiltable lamphouse for directing illumination through a negative in said light gate and said lens onto the print film, and control means for tilting said lamphouse at predetermined varying angles that vary proportionately with the distance of said lamphouse from the center of scan of said print film.

4,493,552

MODULAR PAGE COMPOSITION SYSTEM

Jack Walsh, 500 Pittsfield Rd., P.O. Box 1787, Lenox, Mass. 01240

Filed Mar. 28, 1983, Ser. No. 479,266
Int. Cl.³ G03B *27/62*
U.S. Cl. 355—75 4 Claims



1. Copy board for composing an assembly of translucent modules each bearing individual artwork thereon comprising a flat four sided plate of translucent material, means forming raised borders along two adjacent edges of said plate, means forming a first pair of spaced-apart parallel grooves in said plate, said grooves extending parallel to one raised border of

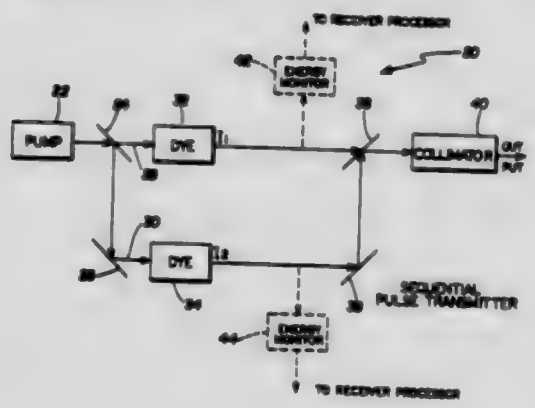
said plate each beginning at a point near the edge of a plate opposite to the other raised border thereof and extending a substantial distance toward said other border, means forming a second pair of spaced-apart parallel grooves in said plate, said second pair of grooves extending parallel to the other border of said plate each beginning at a point near the edge of the plate opposite to the one border thereof and extending a substantial distance toward said one border, a first guide having a pair of depending members on its underside, slidably mounted in said first pair of grooves for movement toward and away from one edge of the modules assembled in said copy board, and a second guide having a pair of depending members on its underside slidably mounted in said second pair of grooves for movement toward and away from another edge and said modules assembled on said copy board.

4,493,553

METHOD OF AND APPARATUS FOR MEASURING TEMPERATURE AND PRESSURE

Charles L. Korb, Potomac, and James E. Kalshoven, Jr., Laurel, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 28, 1982, Ser. No. 383,086
Int. Cl.³ G01J 5/58; G01L 11/00
U.S. Cl. 356—43
31 Claims



1. A remote atmospheric gas temperature measurement method, comprising the steps of:

generating a laser beam at a selected on-line wavelength of 12,999.95 wavenumbers wherein the gas exhibits relatively temperature sensitive and relatively pressure insensitive absorption characteristics;

transmitting said laser beam through a region containing the gas to be measured;

receiving said beam backscattered from at least two ranges;

measuring the energy of said received laser beam from said at least two ranges;

generating a second reference laser beam at a wavelength in the range of 13,000.50–13,001.50 wavenumbers whereat the gas exhibits a substantially non-absorption characteristic;

transmitting said second laser beam colinearly with said first laser beam;

receiving said second laser beam backscattered from said at least two ranges;

measuring the energy of said received second laser beam from said at least two ranges;

determining the fraction of beam energy absorbed by said gas between said at least two ranges using said energy measurements;

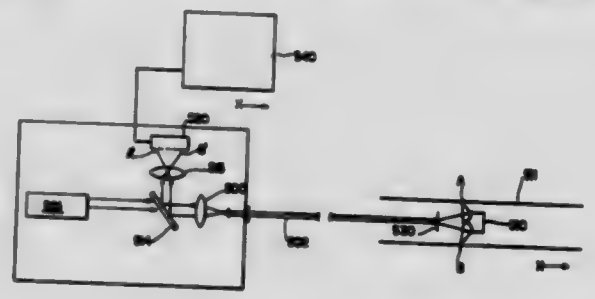
processing said determined fraction of beam energy absorbed to obtain a measurement of temperature between said at least two ranges.

4,493,554

METHOD AND APPARATUS FOR DETERMINING PHYSICAL CHARACTERISTICS OF OBJECTS AND OBJECT SURFACES

Timothy R. Pryor; Omer L. Hageniers; Walter J. Pastorius; Nicholas Liptay-Wagner, and Donald A. Clarke, all of Windsor, Canada, assignors to Diffracto, Windsor, Canada

Continuation of Ser. No. 15,792, Feb. 27, 1979, Pat. No. 4,305,661. This application Aug. 24, 1981, Ser. No. 295,577
The portion of the term of this patent subsequent to Dec. 15, 1998, has been disclaimed.
Int. Cl.³ G01N 21/17, 21/88; G01B 11/30
U.S. Cl. 356—241
28 Claims



1. A method for detecting defects in a bore surface comprising:

illuminating a circumference of a bore surface with light, said illumination being effected by directing light onto a curved mirror to concentrate light into an intense ring of light on the circumference of said bore surface; imaging the intense ring of light reflected from the circumference of said bore onto a circular photodetector array comprising a plurality of discrete photodetector elements, said elements being capable of generating output signals responsive to the intensity of light incident thereon, said imaging being effected with optical means comprising said curved mirror which collects reflected light from multiple angles;

scanning said circular array; and

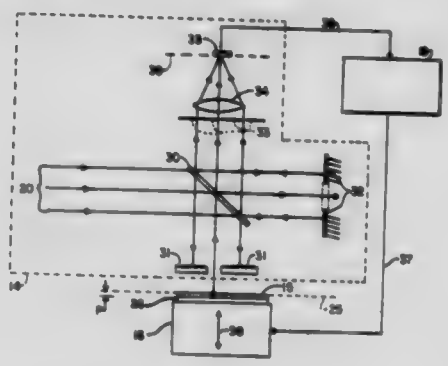
automatically analyzing the output of said array to detect defects in said bore surface.

4,493,555

HIGH SENSITIVITY FOCAL SENSOR FOR ELECTRON BEAM AND HIGH RESOLUTION OPTICAL LITHOGRAPHIC PRINTERS

George O. Reynolds, Wakan, Mass., assignor to Honeywell Inc., Waltham, Mass.

Filed Sep. 22, 1982, Ser. No. 421,686
Int. Cl.³ G01B 9/02
U.S. Cl. 356—358
11 Claims



1. A three slit interferometric focusing device for use in combination with an optical projection system having a desired plane of best focus, said focusing device comprising:

A. a substantially coherent source of illumination;

B. an optical beamsplitter positioned in the path of the beam of said source of illumination, said beamsplitter operative

to produce a first beam in a first direction and a second beam in a second direction;

C. a first movable surface coupled for movement to a position of best focus which is at a first distance from said beamsplitter and which is oriented to receive said first beam, said position corresponding to the plane of best focus of said optical projection system;

D. means for moving said first surface to said position of best focus;

E. a substantially reflective second surface having an opening which is substantially at the center of said second surface, said second surface located a distance from said beamsplitter substantially equal to said first distance and said second surface oriented to receive said second beam;

F. an energy detection system capable of measurement at the wavelength of said source of illumination;

G. an optically absorbing third surface having an opening which is substantially at the center of said third surface, said third surface placed between said optical beamsplitter and said first movable surface in the path of said first beam so as to substantially absorb a portion of said first beam and so as to enable the remaining portion of said first beam to be received by said third surface; and

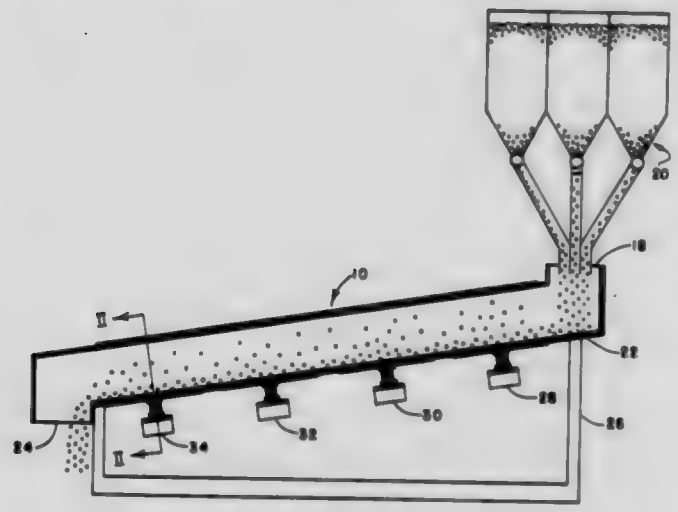
H. an optically opaque fourth surface with three substantially parallel slits, said fourth surface positioned between said optical beamsplitter and said energy detection system in order to pass a portion of said beam from said source to said detection system.

4,493,556

METHOD AND APPARATUS FOR MIXING PARTICULATE MATERIAL

Stanley R. Prew, Montoursville, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Feb. 18, 1983, Ser. No. 467,957
Int. Cl.³ B01F *11/00*
U.S. Cl. 366—114 11 Claims



1. An apparatus for mixing particulate material comprising:

(a) a downwardly inclined trough structure having a pair of rigid opposed longitudinal side walls and a flexible floor member interposed between said side walls and said flexible floor member having an upper and a lower side;

(b) upper inlet means for superimposing a continuous, longitudinally flowing layer of particulate material over the upper side of said flexible floor member;

(c) lower outlet means for continuously removing particulate material from said trough structure;

(d) reans for repeatedly impacting a restricted area of the lower side of the flexible floor member with sufficient energy to cause particulate material in said layer to be projected upwardly so as to become airborne above said layer; and

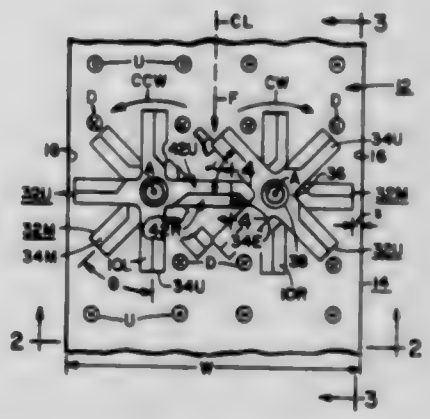
(e) means for directing said airborne particles in a transverse direction over said layer.

4,493,557

MIXING APPARATUS

Ashok L. Nayak, Corning, N.Y., and Paul F. Spremulli, Chapel Hill, N.C., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 1, 1982, Ser. No. 438,355
Int. Cl.³ B01F *7/00*
U.S. Cl. 366—300 16 Claims



1. An apparatus for mixing viscous material comprising: at least one pair of stirrers, said stirrers located adjacent one another in closely spaced intermeshing relationship and being mounted for rotation about parallel axes in opposing sense to each other, each of said stirres including: a shaft; a plurality of blades mounted on the shaft in parallel axially spaced-apart relation with each other, each blade lying in a corresponding tier perpendicular to the shaft axis, each stirrer having the same number and spacing of blades as said adjacent stirrer, and the blades in each tier of one stirrer being aligned side-by-side in coplanar relation with the blades in corresponding tiers of the adjacent stirrer; each blade including a plurality of evenly spaced radially extending vanes lying within the plane of its blade, each vane having working surface means operatively engaging the viscous material for pumping and stirring the same upon rotation of the stirrer; the vanes of each blade being circumferentially offset from vanes on a blade in an adjacent tier, such that the vanes in adjacent tiers of each stirrer are angularly offset from each other about the axis of the stirrer, and the vanes of one blade being advanced by a predetermined angle relative to the vanes of an adjacent blade in the same tier so that all of said vanes of one blade intermesh with the vanes of such adjacent blade; and each coplanar blade being a structural mirror image of an adjacent blade, such that upon rotation of said stirrers, each working surface means pumps the viscous material in the same relative direction.

4,493,558

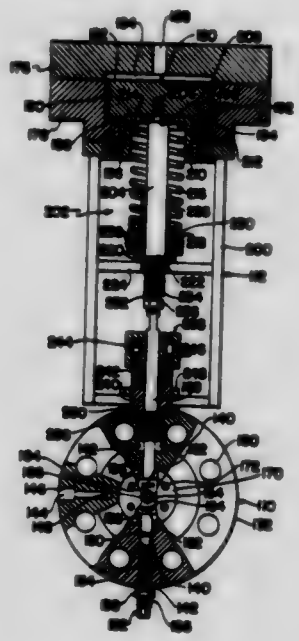
COMPENSATING VALVE SYSTEM FOR CONTROLLING ADJUSTABLE EMULSIFYING ORIFICE

Dennie B. Hudson, 15 Scott Dr., Morganville, N.J. 07751

Continuation-in-part of Ser. No. 386,193, Jun. 7, 1982,. This application Nov. 8, 1982, Ser. No. 439,931
Int. Cl.³ B01F *5/08*
U.S. Cl. 366—341 18 Claims

1. An apparatus for homogenizing a pair of fluid components within a conduit having upstream and downstream sides, at least one of said components comprising a hydrocarbon fuel, said apparatus comprising orifice means arranged within said conduit between said upstream sides for providing an adjustable orifice within a stream of said hydrocarbon fuel, said orifice means comprising a pair of spaced-apart elements defining an opening therebetween for homogenizing said pair of fluid components, and adjusting means in operative association with at least one of said pair of elements for continuously

varying the size of said opening for controlling the pressure of the homogenized pair of fluid components within the down-



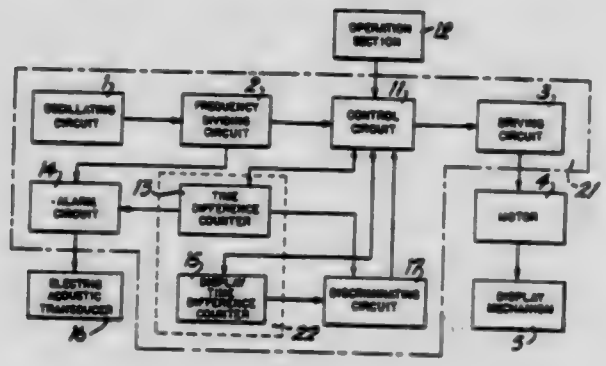
stream side of said conduit in response to downstream pressure changes thereof.

4,493,559

ANALOGUE ALARM ELECTRONIC TIMEPIECE

Takashi Ishida, and Masaharu Shida, both of Tokyo, Japan, assignors to Seiko Instruments & Electronics Ltd., Tokyo, Japan

Filed Feb. 7, 1980, Ser. No. 369,312
Claims priority, application Japan, Feb. 9, 1979, 54-13985
Int. Cl.³ G04B 23/02, 19/04
U.S. Cl. 368—74
4 Claims



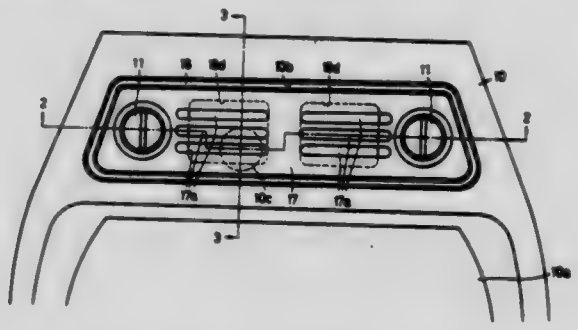
1. An analogue alarm electronic timepiece comprising: a motor; a driving circuit for applying drive signals to said motor for driving said motor; an operation section having switch means for setting an alarm time and a present time and for producing corresponding time signals; control means for receiving the time signals from said operation section and accordingly controlling the drive signals applied to said driving circuit; display means including a movable display member driven by said motor for indicating said alarm time and said present time; first means for counting and storing a count value representative of the difference between said present time and said alarm time under control of said control means; second means for counting and storing a count value representative of the difference between said present time and the display time indicated by said display member under control of said control means; first detecting means connected to said first means for detecting the difference between said present time and said alarm time and for producing a coincidence signal when the difference is zero; second detecting means connected to said second means for detecting the difference between said present and said display time; and an electronic acoustic transducer operative in response to the coincidence signal produced by said first detecting means for producing an alarm sound.

4,493,560

ACOUSTIC ALARM DEVICE FOR WATCHES

Satoru Fukutome; Hideo Hatanaka, and Motoyuki Saito, all of Tanashi, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Division of Ser. No. 164,769, Jun. 30, 1980, Pat. No. 4,351,041.
This application Jun. 28, 1982, Ser. No. 392,637
Claims priority, application Japan, Jun. 30, 1979, 54-89820; Jun. 30, 1979, 54-89821; Jun. 30, 1979, 54-89822
Int. Cl.³ G04C 23/02, 21/16
U.S. Cl. 368—88
1 Claim



1. In an alarm device for a watch including a watch case, a vibration plate for producing an alarm sound, and a watertight sealing packing for maintaining the inside of said vibration plate in a watertight state, the improvement which comprises:

a recess provided in an upper portion of the body of said watch case, said recess containing holes provided in the bottom thereof, threaded pipes fixedly disposed in said holes, each of said threaded pipes projecting from the bottom thereof, said watertight sealing packing being engaged with said recess and provided with holes for receiving the projected portion of said threaded pipes and said vibration plate being engaged with said watertight sealing packing and disposed adjacent to the bottom of said recess,

cover means provided for said vibration plate, said cover means having at least one sound emanating hole; and

screw means engaged in said threaded pipes for securing said vibration plate and said cover means to said recess, whereby the entirety of the alarm device is embedded in said recess.

4,493,561

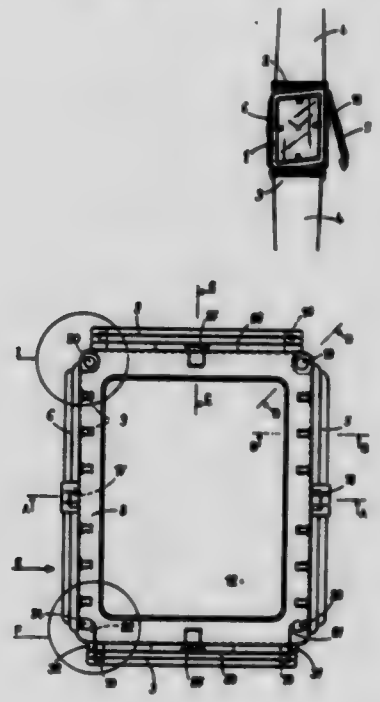
REVERSIBLE WRIST WATCH

Jean Bouchet, Troinex, Switzerland, assignor to Bouchet-Lasale S.A., Geneva, Switzerland

Filed Apr. 19, 1983, Ser. No. 486,305
Claims priority, application Switzerland, May 11, 1982, 2923/82
Int. Cl.³ A44C 5/00; G04B 37/00
U.S. Cl. 368—281
10 Claims

1. Reversible wrist watch, comprising a watch case made of two parts fixed one to the other and constituting each one of the faces of the reversible watch; means pivotally mounting the case along its six o'clock-noon axis on two bars perpendicular

to said axis each of which bars receives one end of a watch strap; the case comprising two lateral covers hinged each at



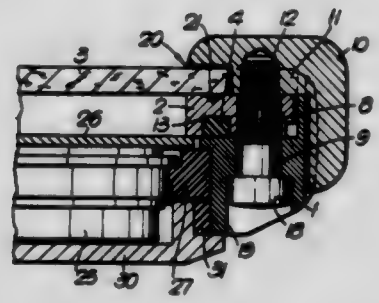
one of their ends to the case, said covers covering in service position the lateral edges of the watch case.

4,493,562

WATER TIGHT WATCH-CASE

Gaston Gagnebin, Bienne, Switzerland, assignor to Omega SA, Bienne, Switzerland

Filed Apr. 5, 1983, Ser. No. 482,376
Claims priority, application France, Apr. 13, 1982, 82 06703
Int. Cl.³ G04B 37/00
U.S. Cl. 368—294 7 Claims



1. A water tight watch case comprising:

a case band;

an annularly-shaped flange superposed onto the case band and a watch glass supported by the flange and extending across an opening of the annularly-shaped flange;

at least two claws each having a generally L-shape with a first leg of the L being positioned over and adjacent an upper surface of the watch glass and the second leg extending downwardly along the case band, the first leg of each claw being provided with a threaded portion adapted to fit into an opening provided in the watch glass; and,

for each claw a screw passing through an opening in said watch band to mesh with said threaded portion of said first leg inside the general outer periphery of said watch glass;

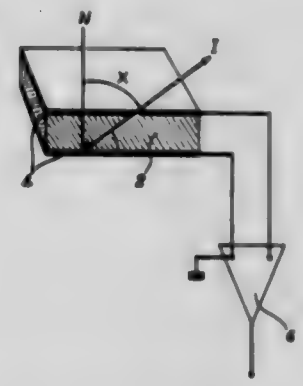
thereby to assure the fixing of the watch glass to the watch case.

4,493,563

PYROELECTRIC DETECTOR

Jean C. Peuzin, Eybens, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 3, 1982, Ser. No. 354,246
Claims priority, application France, Mar. 13, 1981, 81 05059
Int. Cl.³ G01J 5/02, 5/10, 5/48; G01K 7/32
U.S. Cl. 374—121 6 Claims



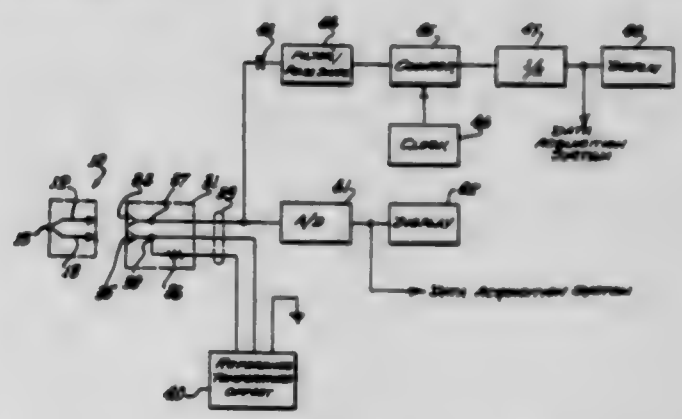
1. A pyroelectric detector with an optimized quality factor, comprising a dielectric material inserted between two parallel electrodes of a class other than (1) and m, the material being a monodomain ferroelectric monocrystal, the faces of the monocrystal in contact with the electrodes being inclined towards the polar axis of the monocrystal, the quality factor being the ratio p/εC, in which p is the pyroelectric coefficient of the dielectric material of the detector, ε is the principal dielectric permittivity along the polar axis of the material and C is the calorific capacity of the material, the perpendicular line to the faces of the monocrystal in contact with the electrodes being substantially contained in the plane of the major axes 1 and 3 and the angle X between said perpendicular line and the polar axis of the monocrystal being determined as a function of a parameter A equal to ϵ_1/ϵ_3, ϵ_1 and ϵ_3 respectively representing the minimum major dielectric permittivities of the dielectric material and respectively corresponding to major axes 1 and 3.

4,493,564

CLINICAL INSTRUMENT FOR MEASURING PULSE RATE AND BODY TEMPERATURE

Saul Epstein, 14558 Deervale Pl., Sherman Oaks, Calif. 91403

Filed Sep. 27, 1982, Ser. No. 424,602
Int. Cl.³ H01L 35/00; A61B 5/02
U.S. Cl. 374—179 9 Claims



1. A clinical instrument for measuring the pulse rate and body temperature of a patient which comprises:

(a) a sensor for sensing the temperature of tissue said sensor having an electrical output with a DC component responsive to the average temperature of said tissue and an AC component responsive to pulses of blood;

(b) means responsive to the DC component of the output of said sensor for providing an output representative of the temperature being sensed; and

(c) means responsive to the AC component of the output of

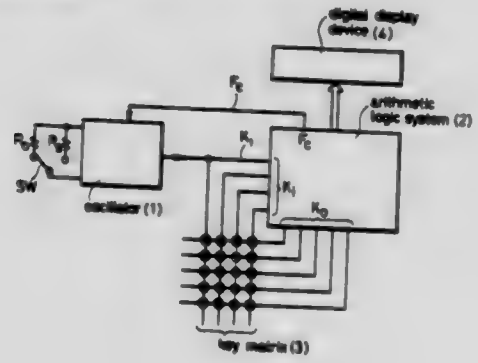
said sensor for providing an output representative of the pulse rate of said patient.

4,493,565

COMBINED THERMOMETER AND CALCULATOR

Masakazu Saka, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 21, 1982, Ser. No. 400,265
Claims priority, application Japan, Jul. 28, 1981, 56-118772
Int. Cl.³ G01K 7/00
U.S. Cl. 374—185
3 Claims



1. A combined electronic thermometer and calculator device, comprising:

an electronic calculator comprising key matrix input means, key signal input terminals for receiving key signals from said key matrix input means, logic means for performing arithmetic operations with data input via said input terminals, and display means for displaying the results of said arithmetic operations;

said device further comprising:

oscillating means for providing a first waveform signal at a first frequency dependent upon temperature;

dividing means for dividing said first waveform signal for providing a second waveform signal of a second frequency for defining a first period of time dependent upon temperature;

means for generating reference clock pulses at a third frequency which is greater than said second frequency;

means for counting said reference clock pulses during said first period of time to obtain a first count;

means for inputting a signal representing said first count of said clock pulses to said logic means;

means for generating a third waveform signal for defining a second period of time which is independent of temperature;

means for counting said reference clock pulses during said second period of time to obtain a second count;

means for inputting a signal representing said second count to said logic means;

said logic means comprising means for determining temperature based upon a ratio of said first and second counts; and

means for displaying temperature in said display means of said calculator.

4,493,566

FRONT TO BACK ADJUSTMENT FOR CARRIAGE ASSEMBLY

Ronald G. McMahon, and Donnie E. Hale, both of Garland, Tex., assignors to Constitronix, Inc., Garland, Tex.

Filed Jun. 10, 1982, Ser. No. 387,156
Int. Cl.³ B41J 11/20
U.S. Cl. 400—59
1 Claim

1. Apparatus for adjusting the relative position of a print mechanism to a platen on a printer frame comprising:

a. first and second parallel supports mounted to a printer frame in spaced apart relationship parallel to said platen,

b. a pulley support assembly mounted on one of said supports for movement parallel to said supports,

c. a bearing assembly slidably mounted on the other of said supports,

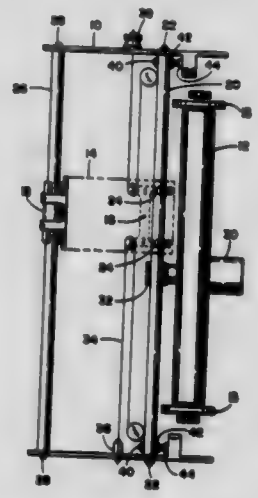
d. a carriage assembly for carrying a print mechanism thereon, said carriage assembly being mounted to said pulley support assembly and slidably attached to said bearing assembly to allow movement of said print mechanism towards or away from said bearing assembly while maintaining contact with said bearing,

e. an elongated cylindrical shaft extending from one side of said frame to the other and forming said one support,

f. means for releasably fastening each end of said shaft to said frame,

g. a horizontal slot in said frame for receiving each end of said shaft,

h. a threaded orifice in each end of said shaft,



i. a bolt passing through each slot for mating with each threaded orifice whereby tightening said bolts fastens each end of said shaft to said frame in a corresponding slot,

j. a bolt extending horizontally through said shaft in a direction perpendicular to said shaft's longitudinal axis,

k. an orifice in said frame for receiving said horizontal shaft bolt,

l. a first nut on said horizontal shaft bolt for locking said bolt to said shaft, and

m. a second nut on said horizontal shaft bolt for locking said bolt to said frame whereby loosening of said first and second nuts allows said horizontal shaft bolt to be turned thereby moving said shaft in said horizontal slot in a horizontal plane to move said print mechanism toward or away from said platen.

4,493,567

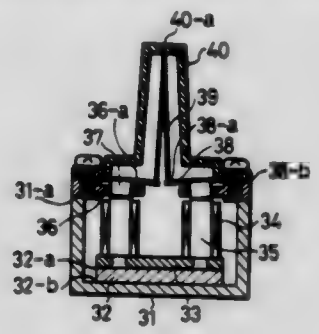
IMPACT DOT PRINTING HEAD

Ikuo Tada, Morioka, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Nov. 19, 1981, Ser. No. 323,032
Claims priority, application Japan, Nov. 19, 1980, 55-165507
Int. Cl.³ B41J 3/12
U.S. Cl. 400—124
4 Claims

1. An impact dot printing head comprising a permanent magnet formed into a generally disc shape from a material having a high energy product and arranged as a part of a common magnetic path of a plurality of magnetic circuits; a plurality of magnetic cores having coils wound thereon; an inner yoke contacting said cores, one pole side of said permanent magnet being coupled to a lower part of said inner yoke; an outer yoke substantially cup-shaped, the other pole side of said permanent magnet being coupled to an inner bottom surface of said outer yoke; an upper yoke coupled to an edge of the wall of said outer yoke and provided with openings in its positions aligned with said cores, elastic members fixed at their

ends; armatures fastened to said elastic members and rockably fitted in said openings of said upper yoke; and printing projections fixed to fore end parts of said elastic members; said armatures being attracted to said cores against said elastic members by magnetic fluxes of said permanent magnet through said



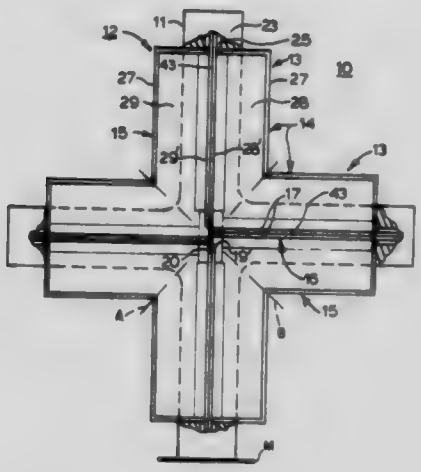
inner yoke, said cores, said outer yoke and said upper yoke; whereby during a printing operation a respective coil can be energized to cancel some of the magnetic flux of said permanent magnet and release the corresponding elastic member thereby to protrude the corresponding printing projection outwardly from the printing head.

4,493,568

DOT MATRIX PRINTHEAD EMPLOYING MOVING COILS

David A. Estabrooks, 6 Abbot Bridge Rd., Andover, Mass. 01810

Filed Feb. 22, 1983, Ser. No. 447,486
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—124 26 Claims



1. A dot matrix electromagnetic printing apparatus movable across a paper web supported by a platen comprising:

a plurality of elongated rectangular-shaped print wire actuators;

a print wire connected to each of said actuators, said print wire having a printing tip portion projecting beyond a first end of said actuator;

each of said print wire actuators including a rectangular-shaped current energizable coil for movement of said actuator in a first direction perpendicular to a corresponding magnetic field upon energization of said coil;

a support base;

a magnetic assembly comprising a plurality of magnetic element sets cooperating with said actuators each element set having a plurality of magnetic elements and being mounted on said support base;

selected ones of the elements of each of said element sets being spaced from each other to provide said magnetic field in a pair of thin elongated flux gaps therebetween for containing opposing sides of the coil of at least one of said print wire actuators;

said element sets being arranged for aligning each of said printing tip portions adjacent to one another and along at least one imaginary line;

said printing tip impacting a print position due to movement in said first direction, and said actuator moving in a second direction to return to a non-print position;

each of said actuators including means for supporting each of said actuators for movement of said printing tip portions in said first and second directions and for sustaining said impact at said print position;

each of said actuators being a thin elongated, planar rectangular shaped member, said coil being flat and generally rectangular;

said coil comprising two longitudinal coil portions, each of said coil portions arranged adjacent to the longitudinal sides of the actuator and linked by the magnetic flux path of said pole faces of opposite polarity;

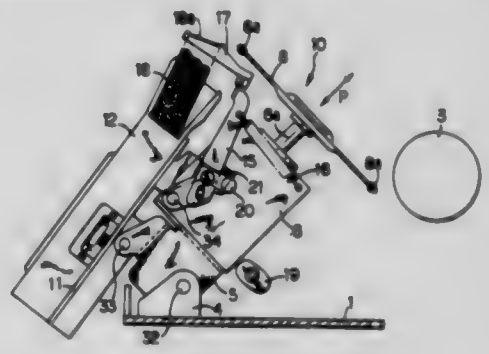
each magnetic element set comprising at least one permanent magnet and first and second pole pieces each having a first face of a large surface area engaging the pole faces of the permanent magnet, the free end faces of the pole pieces perpendicular to said first face being positioned adjacent to the longitudinal side portions of the coil and being thin and having a small surface area to concentrate the magnetic flux in said pole pieces to said thin elongated flux gaps.

4,493,569

TYPE WHEEL CHANGING MECHANISM IN A PRINTER

Hiroshi Kawahara, and Kazuo Nakamura, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Aug. 5, 1981, Ser. No. 290,301
Claims priority, application Japan, Aug. 11, 1980, 55-113603[U]
Int. Cl.³ B41J *1/24*
U.S. Cl. 400—144.2 13 Claims



1. A printer including a platen and a printing head which are movable relative to each other along a printing line on which characters are to be printed, said printing head having thereon: an electric drive motor; a rotor shaft rotated by said electric drive motor; a daisy-shaped type wheel which is mounted on one end of, and mountable and removable axially of, said rotor shaft; and a print hammer for striking toward said platen a type element selectively located at a printing position on said type wheel, wherein the improvement comprises:

printing head supporting means for supporting said printing head pivotally between a first position thereof at which said printing head is permitted to perform a printing operation, and a second position thereof at which said type wheel is mountable and removable;

printing head biasing means for biasing said printing head toward said second position thereof;

a manual member;

locking means for holding said printing head at said first position thereof against the biasing force of said printing head biasing means, said locking means being released by the operation of said manual member to permit said printing head to pivot to said second position thereof;

ribbon holding means, supported by said printing head, for

supporting and guiding an active portion of an inked ribbon between said selectively located type element and said platen; and

ribbon lifting means for operatively connecting said ribbon holding means to said printing head to move said ribbon holding means, in response to the pivoting movement of said printing head from said first position to said second position under the biasing force of said printing head biasing means, so as to put said active portion of said inked ribbon out of a path taken by said type wheel when mounted or removed.

4,493,570

CONTROL SYSTEM FOR IMPACT PRINTER

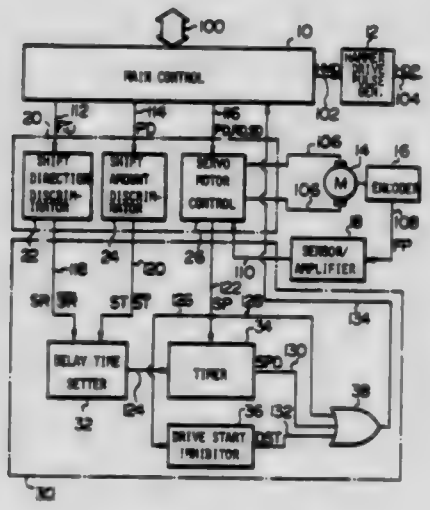
Shigeyuki Araki, Kemse, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 4, 1982, Ser. No. 432,622

Claims priority, application Japan, Oct. 14, 1981, 56-162802; Nov. 2, 1981, 56-174476

Int. Cl.³ B41J *1/30*

U.S. Cl. 400—144.2 11 Claims



1. An impact printing apparatus including a movable carriage, a rotary type element mounted on the carriage, drive means for driving the carriage to and stopping the carriage at a desired printing position and hammer means for hammering the type element for printing at the desired printing position, characterized by comprising:

delay means for controlling the hammer means to hammer the type element at the expiration of a variable delay time which begins when the carriage has been driven to the desired printing position by the drive means; and

control means responsive to a distance of movement of the carriage from a previous position to the desired printing position and setting the delay time of the delay means in accordance with a predetermined function thereof.

4,493,571

PRINT GUIDE MECHANISM

John T. Potter, Locust Valley, N.Y., assignor to Iqsad Company Incorporated, Locust Valley, N.Y.

Continuation-in-part of Ser. No. 310,189, Oct. 9, 1981, Pat. No. 4,440,038, and a continuation-in-part of Ser. No. 407,841, Aug. 13, 1982, Pat. No. 4,423,970, which is a continuation of Ser. No. 190,680, Sep. 24, 1980, abandoned. This application Mar. 18, 1983, Ser. No. 476,666

Int. Cl.³ B41J *1/30*; F16H *55/18*

U.S. Cl. 400—144.2 25 Claims

1. A print guide mechanism comprising:

a rotary print element;

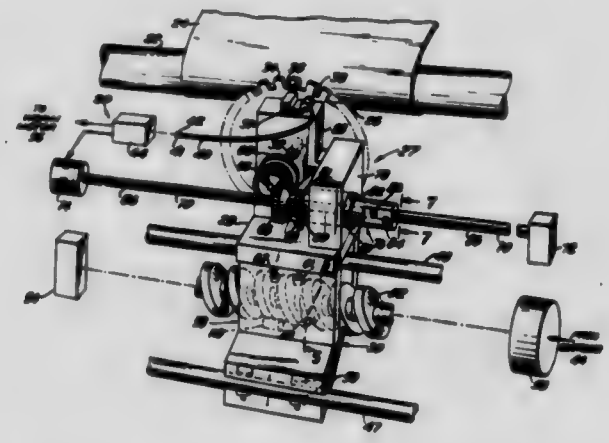
a right-angle drive for imparting rotation to said rotary print element for the selection of a character to be printed by a type section of said element;

a carriage for carrying said rotary print element in a direction transverse to a medium receiving the printing by said print element;

a shaft having longitudinal groove means extending transversely of said printing medium, said right-angle drive comprising a gear slidably disposed about said shaft for rotation therewith, said mechanism further comprising key means connecting said gear with said groove means for inhibiting backlash between said gear and said shaft;

said key means comprising linear bearing means for permitting translation of said key means along said shaft, rotationally locking said gear to said shaft;

said linear bearing means of said key means including screws angled relative to a diameter of said shaft for directing ball bearings to said linear bearing into contact with edges of said groove means;



means for rotating said shaft to a designated position for selection of a character to be printed, said rotation means being disposed at a stationary site distant from said movable carriage;

worm means for translating said carriage along said shaft, said worm means including a pair of beveled rollers carried by said carriage for mating with inclined surfaces of a worm of said worm means for inhibiting backlash between said worm means and said carriage; and

means for rotating a worm gear of said worm means to advance said carriage to a desired position for printing a character on said printing medium, and wherein said rotating means is located at a stationary site distant from said carriage.

4,493,572

LONG-LIFE INKED-RIBBON CASSETTE

William G. Van Ocker, Philadelphia; Ivan Pawlenko, Levittown; Donald F. Reider, Philadelphia; Charles J. Troebs, Philadelphia; Robert A. Clair, Philadelphia, and Stanley C. Crandall, Holland, all of Pa., assignors to Avery International Corp., Pasadena, Calif.

Filed Dec. 2, 1982, Ser. No. 446,249

Int. Cl.³ B41J *32/02, 31/16*

U.S. Cl. 400—196.1 11 Claims

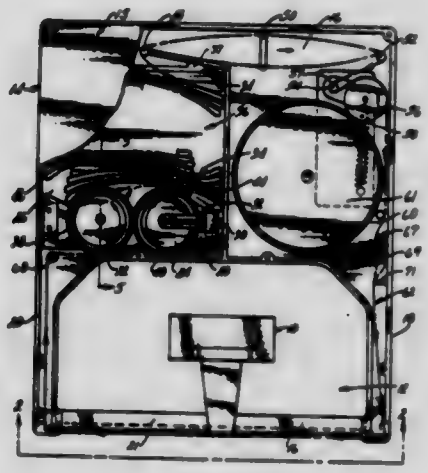
1. An inking cassette for use in a vertical position with an imprinter printing head having a line of travel, said inking cassette comprising:

a housing including a storage chamber for fan-folded, inked ribbon and an adjacent inking means adapted to be positioned above the printing head, said storage chamber having a lower and an upper end with an inlet being located at the lower end and an outlet being located at the upper end, a first leg extending downward from said inking means, and a second leg extending downward from said storage chamber, said first and second legs being arranged to be disposed on opposed sides of the printing head;

a continuous length of inked ribbon disposed in the housing

and passing from said first leg to said second leg for movement in a horizontal direction beneath the printing head;

a pair of cooperating nip rollers at the lower end of the storage chamber, said nip rollers having parallel, horizontally disposed axes when said cassette is in the vertical use position, each nip roller providing a textured elastomeric surface and engaging the ribbon therebetween, the rollers adapted to circulate the ribbon along a path from the first leg past the printing head to the second leg, upwards through the nip rollers, fan-folding said ribbon in said storage chamber and causing said ribbon to be removed from the storage chamber, inked by said inking means and back to said first leg, the storage chamber disposed vertically above the nip rollers when the cassette is vertically oriented for use with the printing head, the storage chamber containing a length of said ribbon in a fan-folded ribbon pack extending from the nip rollers to a position above the nip rollers and below the upper end of the storage chamber, to provide a head of ribbon weighing atop the nip rollers, and a dispensing pin providing a drag at an outlet at the upper end of said storage chamber;



a pair of dams positioned to contact opposed edges of the ribbon as the ribbon leaves the storage chamber, to prevent folds of the inked ribbon from passing together outwardly from said storage chamber over said dispensing pin; and

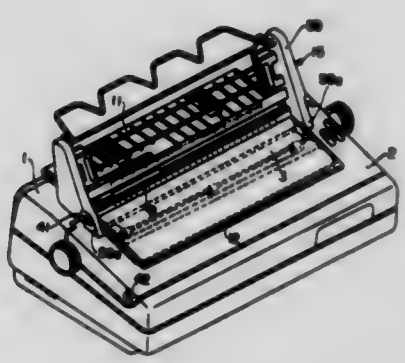
means to functionally amplify the drag on the ribbon between the dispensing pin and an end of the first leg to cause said ribbon to be taut when drawn by said nip rollers from said first leg to said second leg.

4,493,573

PRINTING APPARATUS

Masanori Hashimoto, Yokohama, and Shunichi Ogawa, Hatano, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Mar. 17, 1983, Ser. No. 476,222
Claims priority, application Japan, Mar. 19, 1982, 57-42831; Mar. 26, 1982, 57-41841
Int. Cl.³ B41J *13/14, 29/10*
U.S. Cl. 400—647.1 4 Claims



1. A printing apparatus comprising:

a printer body;

an upper cover secured to said printer body;

a front cover attached to the printer body by hinged portions on opposite sides of the front cover in a position forwardly of said upper cover and movable between an open position and closed position;

a platen interposed between said upper cover and said front cover;

means to selectively mount one or more of a group of components including a sound absorber, a printing sheet guide, a noise silencing cover and a page feeder;

a pair of brackets each removably inserted in one of two engaging holes formed on opposite sides of said upper cover, each of said brackets having a first engaging portion located on an inner side of said bracket and a second engaging portion located on an outer side of said bracket;

said sound absorber detachably inserted along said platen;

said printing sheet guide releasably brought into engagement at corners on opposite sides with said first engaging portions of said brackets so that the printing sheet guide can be set in a predetermined position or brought to a lying position when not in use;

said noise silencing cover releasably brought into engagement at forward ends of arms located on opposite sides of said noise silencing cover with said second engaging portions of said brackets to thereby cover a printing section in a manner to be freely opened and closed; and

said page feeder including engaging portions located on opposite sides of said page feeder which are inserted in positions at the front cover outwardly of the sound absorber and the noise silencing cover and inwardly of said hinged portions in such a manner that said engaging portions are releasably brought into engagment with a shaft of said platen;

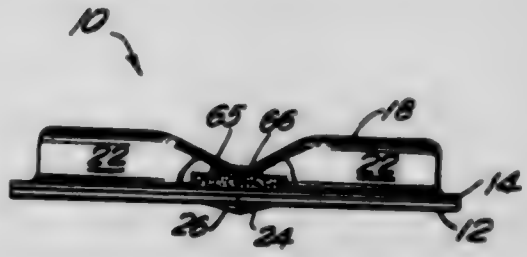
wherein said components to be optionally mounted on the printing apparatus can be mounted either singly or plurally in any arbitrarily selected combination as desired, and the front cover can be brought to an open position without removing the optionally mounted component or components for replacing a ribbon or a printing wheel with a new one.

4,493,574

DISPENSER PACKAGE HAVING FAULT LINE PROTRUSION

Sanford Redmond, 1385 York Ave., New York, N.Y. 10021, and Walter A. Mainberger, Wayne, N.J., assignors to Sanford Redmond, New York, N.Y.

Filed Nov. 18, 1982, Ser. No. 442,813
Int. Cl.³ A47L *13/17*
U.S. Cl. 401—132 16 Claims



1. A dispensing package for a flowable substance, said package including a relatively stiff substantially flat sheet and flexible sheet secured to one face of said relatively stiff substantially flat sheet, said flexible sheet forming a pocket adjacent said one face of said relatively stiff substantially flat sheet for containing a flowable substance, said relatively stiff substantially flat sheet having a fault line of predetermined length, protrusion means displacing at least a portion of said fault line out of the plane of said relatively stiff substantially flat sheet in a direction away from said one face for substantially maximally increasing the stress in said relatively stiff substantially flat sheet at the dis-

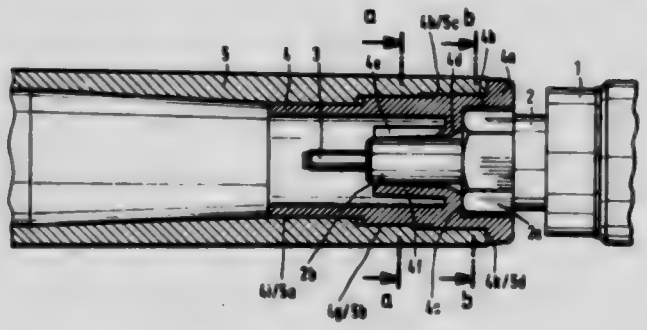
placed portion of said fault line, whereby upon bending said relatively stiff substantially flat sheet into a "V" about an axis extending along said fault line so that the arms of said "V" encapture said pocket, said fault line initially ruptures at the locus of said protrusion means to create at least one opening through which said flowable substance is dispensed in a directed flow, said protrusion means having a configuration which is substantially symmetrical on either side of said fault line and on either side of an axis normal to said fault line and in which the point of greatest displacement is located substantially on said fault line.

4,493,575

RELEASABLE PROTECTIVE HOLDER FOR A WRITING IMPLEMENT

Otto Mutschler, Ludolf-Krehl-Strasse 12, 6900 Heidelberg, Fed. Rep. of Germany

Filed Oct. 27, 1982, Ser. No. 437,104
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1981, 8136741
Int. Cl.³ B43K *13/00*
U.S. Cl. 401—195 4 Claims



1. A releasable protective holder for a tip of a writing or drafting implement including a polygonal part, a cylindrical part extending therefrom and a writing or drafting tube on the cylindrical part extending into the holder when the implement tip is held therein, the holder comprising

(a) a first receiving portion of a polygonal cross section keyed to the polygonal part, the first receiving portion including

(1) an annular bottom wall engaging an end face of the polygonal implement tip part, and

(b) a second, tubular receiving portion extending from the annular bottom wall of the first receiving portion to a free end thereof, the tubular receiving portion yieldingly surrounding the cylindrical part of the implement tip and defining

(1) a bore having at the free end of the bore a diameter smaller than the diameter of the cylindrical part for releasably clamping the implement tip in the protective holder.

4,493,576

OIL MOP

Jay Y. Suhh, 20125 Labrador, Chatsworth, Calif. 91311

Filed Mar. 10, 1983, Ser. No. 458,656
Int. Cl.³ A46B *11/04*
U.S. Cl. 401—283 3 Claims

1. An oil mop comprising in combination:

a. a rod frame formed of individual rods;

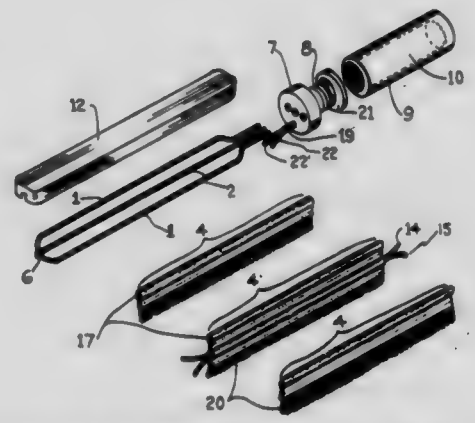
b. a hollow handle and ferrule assembly accommmodating one end of the rods of said rod frame and containing a wick filled tube;

c. single pouch wiping assemblies made up of oil insaturable, polymeric cloth panels with sewed-in saturable cord segments and incorporating one pouch for mounting on said rod frame;

d. double pouch wiping assemblies made up of oil insaturable polymeric cloth panels with sewed-in saturable cord segments and containing two pouches permitting the mounting on said rod frame and the containment of nonsaturable oil transmitting cords in and around the second pouch;

e. oil insaturable polymeric batting packed within the spaces between the mounted wiping assemblies to form an oil storing volume fed by a wick connecting a primary oil supply in the said hollow handle to the oil storing volume through said wick filled tube;

f. an oil resistant flexible cover drawn over the mounted single and double pouch wiping assemblies to prevent oil seepage from the top of the assembled mop and to serve as an auxiliary mop handle;



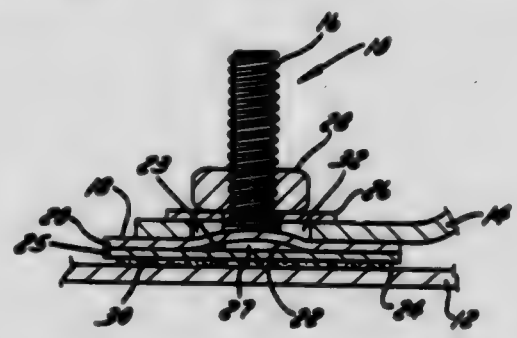
whereby oil from the primary oil supply in the hollow handle is drawn to the said oil storing volume by capillary action of said wick and hence to the second pouches of the two pouch wiping assemblies through said oil transmitting cords and finally to the saturable cord segments from where it can be brushed onto a surface being cleaned and produce, as it leaves the saturable cord segments, a concentration gradient which draws replacement oil from said oil storing volume, wicks and primary oil supply.

4,493,577

DOUBLE DISC STUD ASSEMBLY FOR THIN WALLED PANELS

Frank J. Cosenza, San Pedro, Calif., assignor to Rexnord Inc., Brookfield, Wis.

Filed Aug. 20, 1982, Ser. No. 410,096
Int. Cl.³ F16B *5/02*
U.S. Cl. 403—41 2 Claims



1. In a stud assembly of the type having a threaded shank fixedly attached perpendicular to one surface of a base member and a nut means rotatable along the threaded shank for securing a nonstructural panel to an attachment whereby the threaded shank is insertable through an aperture in the attachment device, the improvement comprises:

a disc member having a first surface joined to a surface of the base member opposite the first-mentioned base member surface, and a second surface opposite said first disc member surface; and

an adhesive means, disposed on at least a portion of said second surface of said disc member, for holding and securing the stud assembly to the nonstructural panel, with said disc member and the base member being joined at adjacent

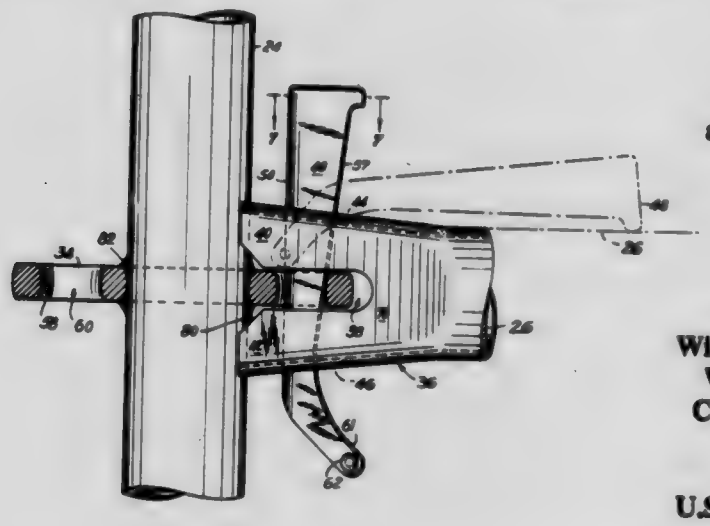
peripheries in a manner allowing a portion of the base member to resiliently, deform apart from said disc member and the nonstructural panel when the nut means is rotated to cause movement of the shank in an axial direction away from the nonstructural panel.

4,493,578

SCAFFOLDING CONNECTOR AND SYSTEM

Michael S. D'Alessio, Flushing, N.Y., assignor to Harsco Corporation, Camp Hill, Pa.

Filed Sep. 30, 1982, Ser. No. 431,115
Int. Cl.[3] F16B 7/00
U.S. Cl. 403—49 22 Claims



1. A scaffolding connector positioned at one end of a scaffolding cross-member and adapted to engage a bracket affixed to a scaffolding post and to be fastened to said bracket and against the convex surface of said post by a wedge inserted through a cutout in said bracket, said connector comprising being integrally formed from one end of a tubular member with a longitudinally extending cross-slot in said end of a width and depth to accommodate said bracket therein, said slot dividing said end into an upper limb and a lower limb, the free end of the connector being deformed from the tubular shape of the tubular member such that the two opposing sides of said connector which contain said cross-slot are gradually narrowed to the free terminal end of the connector while remaining spaced one side from the other to give a shape which is effective to strengthen and stiffen said limbs for supporting scaffolding loads and connection stresses, a pair of wedge holes with one hole formed in one limb and the other hole formed in the other limb so that said pair of holes aligns substantially perpendicularly to said slot, said pair of holes further being positioned and shaped so as to align with said bracket's cutout is potentially wedging relationship relative to said wedge when the bracket is positioned in the cross-slot of said connector with the free ends of said limbs abutting said post.

4,493,579

SUPPORT TUBE FOR A TUBULAR ASSEMBLY AND METHOD FOR THE MANUFACTURE THEREOF

Timo Rautakoura, Lapinlahti, Finland, assignor to Varpaja Oy, Varpaisjarvi, Finland

Filed Jan. 13, 1982, Ser. No. 339,179
Claims priority, application Finland, Jan. 22, 1981, 810173
Int. Cl.[3] F16B 7/00
U.S. Cl. 403—237 3 Claims

1. A support structure for a tubular assembly comprising:

a tube having one end formed into an arcuate recess arranged to receive a cross-tube, the edge of said arcuate recess being drawn into an integral protruding support, and



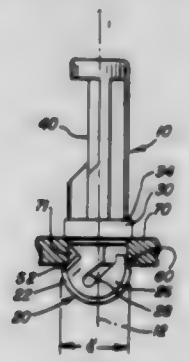
an anchoring bracket secured to one end of said tube, said anchoring bracket being of U shape and extending along the sides of said tube to form a welding bevel therewith.

4,493,580

RETAINING PRONG

William E. Ruehl, Wheeling, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Continuation of Ser. No. 391,787, Jun. 24, 1982, abandoned.
This application Jun. 4, 1984, Ser. No. 616,623
Int. Cl.[3] E04G 3/00
U.S. Cl. 403—252 3 Claims



1. A plastic fastener comprising:

a base;

a fastener means extending from one side of said base for attaching said fastener to a panel having an aperture, said fastener means having an axis perpendicular to said base, said fastener means including:

a collar having one side secured to said base and symmetrically disposed relative to said axis,

a trunk portion having one end extending from the other side of said collar,

a V-shaped notch on said trunk for engaging one side of said aperture,

first and second surfaces forming said V-shaped notch, said first surface being further from said base than said second surface, said first surface extending at an acute angle relative to said axis,

a resilient curved transition portion formed at the other end of said trunk, and having an outer curved surface,

a tip portion connected to said portion, said tip portion having a second notch for engaging an opposite side of said aperture, said second notch having a latching surface that extends at an acute angle to said axis, said tip portion separated from said trunk by a slot, said slot extending at an acute angle relative to said axis in the same general direction as said first surface extending from the opposite side of said base which provides a lever arm for moving said fastener from said skewed position to a final position

wherein said tip is resiliently deflected and said notches engage opposite sides of said aperture.

4,493,581

ECCENTRICALLY TIGHTENED LATCH DEVICE

Alva W. Bass, Arab, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 1, 1983, Ser. No. 471,078
Int. Cl.³ B25G *3/18*; F16B *21/00*
U.S. Cl. 403—323 5 Claims



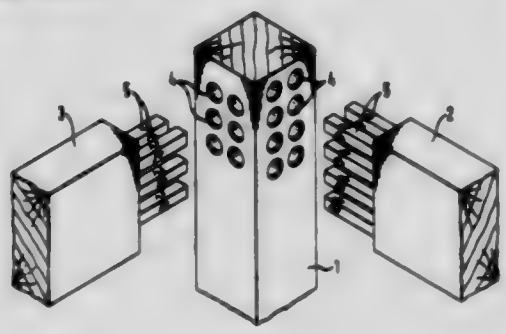
1. An eccentrically tightened latch device comprising a body strap having means at one end for securing to a part to be clamped, and an opening at the other end of said body strap, and eccentric member rotatably mounted in said opening of said body strap and a locking lever integrally secured to said eccentric member for rotating said eccentric member and causing said eccentric member to rotate and change its linear position relative to said body strap, said eccentric member having means thereon for connection to another body part for actuating the body part in the direction of the means on said body strap for securing the body strap to a body part, said locking lever having a stop and handle at the end opposite the end of said locking lever to said eccentric member for limiting motion of said locking lever toward said body strap, and said eccentric member having first and second diameter portions that are concentric and a pin portion that is mounted adjacent the circumference of the smaller of said two diameter portions to provide means for connection to said locking lever and to provide means for connection to the body part.

4,493,582

TENON JOINT FOR WOODEN FRAMES

Karl S. Drabeck, Bergleraschleife 3-7, 8481 Pleystein/Opf., Fed. Rep. of Germany

Filed Jan. 27, 1984, Ser. No. 574,454
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1983, 3303650
Int. Cl.³ F16B *12/44*
U.S. Cl. 403—382 18 Claims



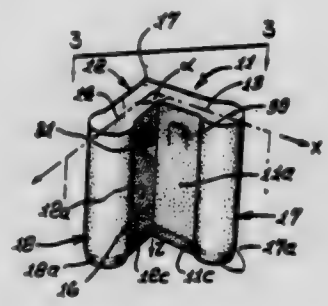
1. Joint construction comprising a first component having a plurality of rows of tenons of rectangular cross-section, each row including a plurality of tenons, and a second component having a plurality of bores of circular cross-section in which respective tenons of the first part are glued, wherein each side length of the cross-section of each tenon is less than the diameter of the associated bore, each diagonal of said tenon cross-section is greater than said diameter, and four gaps of sequentially-shaped cross-section between the edge surfaces of each tenon and the wall of the associated bore are substantially filled with glue.

4,493,583

LOCK-UP CORNER BRACKET FOR FRAME PARTS

Robert S. Wallace, Los Angeles, Calif., assignor to M. Bosley Wright, Owings Mills, Md.

Filed Sep. 26, 1983, Ser. No. 535,784
Int. Cl.³ G09F *1/12*
U.S. Cl. 403—402 9 Claims



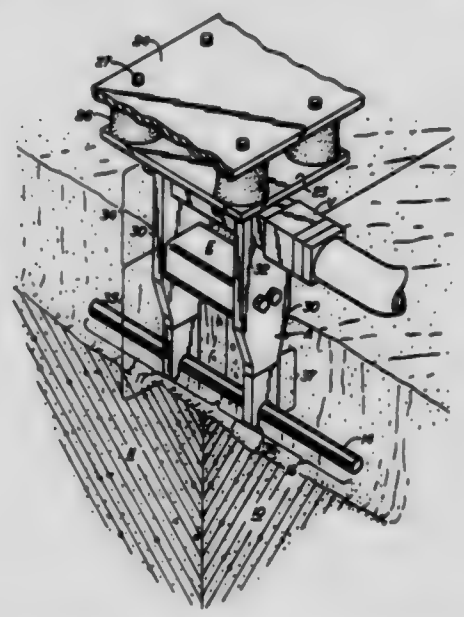
1. A lock-up corner bracket for frame parts, comprising
(a) the bracket having legs that extend in planes which define a corner angle,
(b) the legs having terminal enlargements that are elongated in parallel directions of forward insertion of the legs relatively into recesses formed in said parts, for retaining said parts in assembled relation,
(c) said enlargements being columnar,
(d) the forwardmost end portions of said legs and columnar enlargements being forwardly tapered,
(e) said tapered end portions of the legs and columnar enlargements terminating in a flat plane normal to said parallel directions.

4,493,584

APPARATUS AND PROCESS FOR DOWEL INSERTIONS

Ronald M. Guntert, Stockton, Calif., assignor to Guntert & Zimmerman Const. Div., Inc., Stockton, Calif.

Continuation of Ser. No. 331,864, Dec. 17, 1981, abandoned.
This application Jun. 14, 1984, Ser. No. 620,532
Int. Cl.³ E01C *23/04*
U.S. Cl. 404—74 16 Claims



1. Apparatus for inserting a dowel at an intended joint in a freshly placed concrete slab comprising:
a support member;
first and second dowel arms secured to and vertically depending from said support member, a lower portion of each of said dowel arms having the property of conducting a magnetic field, said dowel arms having lower ends configured to engage the dowel;
means, mounted between said lower portions of said dowel arms at a point spaced apart from said lower ends, for

applying a magnetic field to said lower portions to retain a dowel to said lower ends of said dowel arms;

means for inserting said dowel arms and the dowel retained by said dowel arms therewith into the freshly placed concrete slab; and

means for vibrating said dowel arms and the retained dowel therewith during their insertion into the freshly placed concrete slab, said vibrating means arranged and adapted to fluidize said freshly placed concrete during the insertion.

4,493,585

BITUMINOUS FINISHER

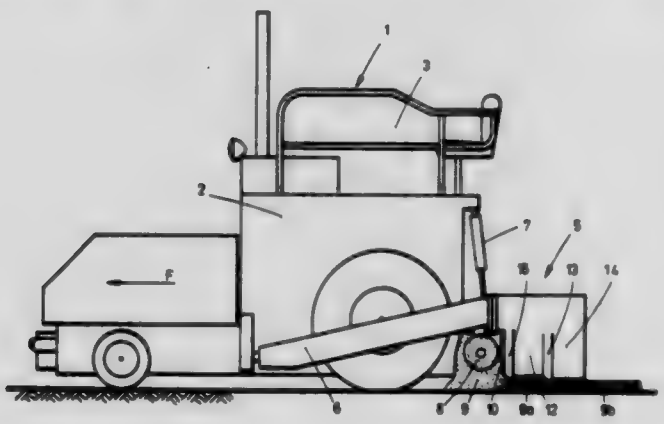
Heinrich Axer, Nettetal, Fed. Rep. of Germany, assignor to Joseph Vogele AG, Munich, Fed. Rep. of Germany

Filed Apr. 6, 1982, Ser. No. 366,004

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1981, 3114049; Mar. 18, 1982, 3209989; Mar. 18, 1982, 3209988

Int. Cl.³ E01C *19/34*

U.S. Cl. 404—102 16 Claims



16. A paving machine whereby a surface layer of paving material is compacted, comprising a substantially rigid frame member having downwardly facing means thereon whereby it is supported by a surface therebeneath, a compacting member confined to up and down motion relative to said frame member and having a flat bottom surface which engages material to be compacted to impose compacting force thereon, and force applying means connected between said frame member and said compacting member and reacting between them for intermittent application of force to the compacting member, characterized by:

said force applying means comprising

(1) a reciprocating element movable alternately up and down relative to said frame member and having a substantially rigid force transmitting connection with one of said members,

(2) substantially undamped resiliently yieldable means having a spring constant, said resiliently yieldable means being so connected between the other of said members and the reciprocating element as to react between said members through the reciprocating element and to maintain said compacting member at all times under a downward biasing force that varies in magnitude during up and down movement of the reciprocating element, and

(3) drive means on the frame member for imparting alternate up and down motion to said reciprocating element at a substantially constant frequency which is no lower than the natural frequency fixed by

(a) said spring constant and

(b) the mass of said frame member and components carried thereby that are constrained to vertical motion therewith,

so that the compacting member remains in constant engagement with material to be compacted.

4,493,586

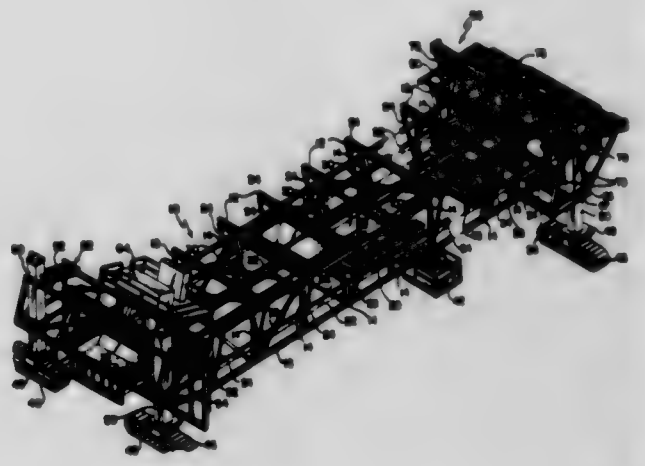
RIP-RAP LAYING MACHINE AND METHOD OF LAYING RIP-RAP

Lee W. Miles, Corinth, Miss.; Samuel W. Chambers, Boise, and Mathias F. Rice, Cascade, both of Id., assignors to Morrison-Knudsen Co., Inc., Boise, Id.

Filed Feb. 16, 1982, Ser. No. 348,781

Int. Cl.³ E02B *3/12*

U.S. Cl. 405—17 20 Claims



1. A rip-rap laying machine capable of distributing rip-rap on an acutely angled bank, comprising:

(a) a bridge defining a main structure for the machine;

(b) a plurality of tracks pivotally secured to the bridge through a mast, the tracks allowing movement of the bridge, each track including a mast which is:

(i) extensible to allow raising and lowering of the bridge relative to each track, and

(ii) pivotable relative to the bridge to allow the bridge to assume a plurality of angles relative to each track and to the bank;

(c) means attached to the bridge for pivoting the bridge relative to each mast to vary the angle between the respective track and the bridge;

(d) a dump hopper secured to the bridge to receive rip-rap;

(e) an upper pair of rails secured to the bridge and extending along substantially the entire length of the bridge;

(f) a lower pair of rails secured to the bridge and extending along substantially the entire length of the bridge subetantialy parallel with the upper pair of rails;

(g) a loading hopper for moving along the bridge along the upper pair of rails, for receiving rip-rap from the dump hopper, and for transporting and discharging the rip-rap to a rip-rap laying means; and

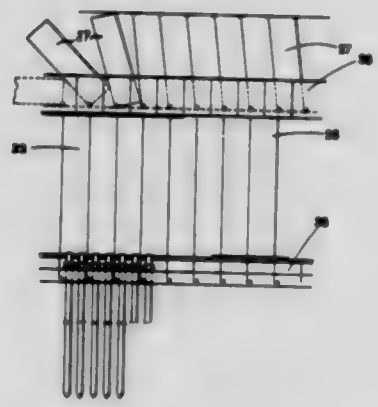
(h) a rip-rap laying means for moving along the bridge along the lower pair of rails, for receiving rip-rap from the loading hopper at any point along the length of the bridge, and for distributing the rip-rap along the bank.

4,493,587

SYSTEM FOR CREATING DAMS WITH MOBILE AND/OR PARTIALLY MOBILE WATER-RETAINING ELEMENTS

Antonio Ferrari, Via Celestino Lendri, Fumane (Verona), Italy

Filed Oct. 8, 1981, Ser. No. 309,744
Claims priority, application Italy, Feb. 18, 1981, 84961 A/81; Apr. 8, 1981, 84923 A/81
Int. Cl.³ E02B 7/40
U.S. Cl. 405—114
9 Claims



1. A system for creating dams comprising:

a series of foundation plinths arranged parallel to one another, each plinth having a first shoulder and a second shoulder which define a channel between the shoulders, the plinths being adapted for placement below a bottom of a body of water with only a portion of the first and second shoulders extending into the body of water and with substantially the entire channel disposed below the bottom;

a series of movable water-retaining elements pivotally secured to the plinths so as to pivot from a first substantially upright position to a second substantially horizontal position, the elements having a cross section shaped in the form of an inverted V when viewed in the first position along the channel in a direction perpendicular to a length of the plinths, the elements being arranged so that in the first position a substantially water tight seal is formed between the elements and so that in the second position the elements are disposed substantially within the channel with the elements being nested within an adjacent element, and;

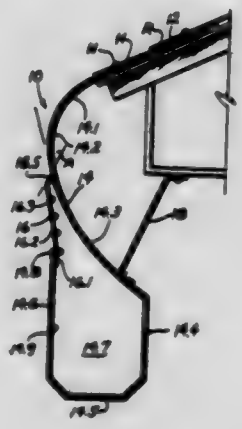
means for moving the movable elements from the first position to the second position.

4,493,588

NON-CLOGGING EAVES TROUGH

Gifford R. Duffy, 2051 - 211th Ave., N.E., Redmond, Wash. 98052

Filed Sep. 21, 1981, Ser. No. 303,829
Int. Cl.³ E02B 9/04; E04D 13/00
U.S. Cl. 405—119
9 Claims



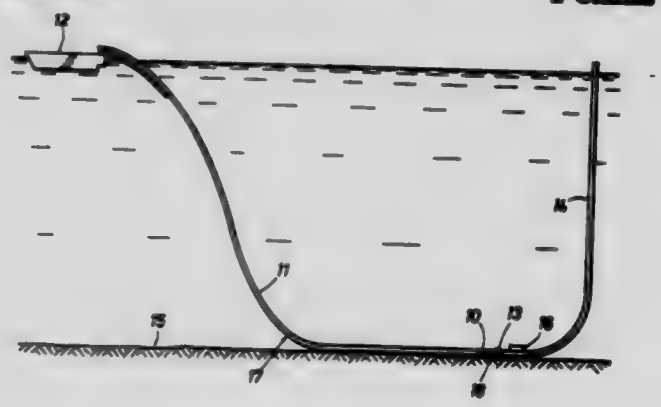
1. A non-clogging eaves trough comprising an elongated sheet formed with a flange attachable to a building, a continuous smoothly curved portion extending from the flange outwardly and downwardly and then downwardly and inwardly with respect to the vertical, a generally upwardly open trough section carried by and below the curved portion, the curved portion having an outermost reach extending outwardly of and overhanging the outermost extent of the trough section, and a generally vertical screen extending between the trough section and the smoothly curved portion and making a sharp angle with the latter portion, the screen engaging the smoothly curved portion below the outermost reach of the latter.

4,493,589

INTERNAL PIPELINE PLUG FOR DEEP SUBSEA OPERATIONS

John M. Ward, Katy, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 278,937, Jun. 30, 1981, Pat. No. 4,390,043.
This application Feb. 2, 1983, Ser. No. 463,212
The portion of the term of this patent subsequent to Nov. 23, 1999, has been disclaimed.
Int. Cl.³ F16L 1/04
U.S. Cl. 405—166
2 Claims



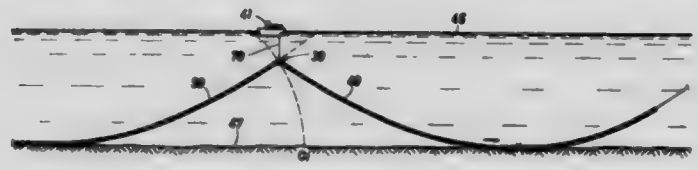
1. A method for laying a pipeline in an at least near neutral buoyancy condition comprising sealing a gas into at least part of a pipe string between a pipelay vessel at one end of the pipe string and a pressure releasable plug within the pipe string, connecting the pipe string to another pipe end, flooding the pipe string and releasing the plug with fluid pressure, and passing the plug out of the pipe string with the fluid pressure.

4,493,590

METHOD AND APPARATUS FOR ON SURFACE JOINING OF SUBMARINE PIPELINE SEGMENTS USING AN ECCENTRIC HINGE

Ray R. Ayers, and Dean P. Hemphill, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 106,820, Dec. 26, 1979, abandoned.
This application Jan. 15, 1982, Ser. No. 339,607
Int. Cl.³ F16L 1/04
U.S. Cl. 405—170
11 Claims



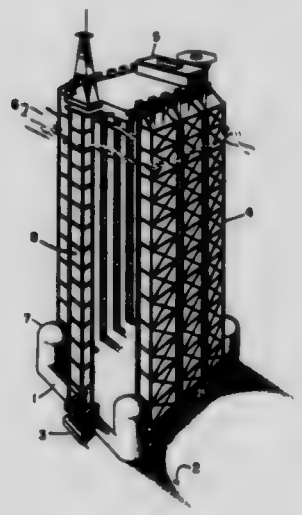
1. A method for the offshore joining of two pipe strings at least near the surface of the water, part of each pipe string laying on the seafloor during at least part of the time of joining, comprising suspending the two pipe strings from means above the seafloor and holding each pipe string in a "J" configuration while adjacently positioning the upper ends of the pipe strings with the lower ends of the pipe strings spaced apart, hinging the adjacent pipe ends together, and lowering the hinged pipe ends to the seafloor while simultaneously exerting axial tension on one of the pipe strings from a remote location.

4,493,591

FLOATABLE OFFSHORE PRODUCTION STRUCTURE AND METHOD FOR FABRICATION, TRANSPORT AND INSTALLATION OF SAME

Alex W. Francis, Jr., Tulsa, Okla., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 16, 1983, Ser. No. 466,803
Int. Cl.³ B63B *35/44*
U.S. Cl. 405—198
4 Claims



1. An offshore production installation for a subsea location, including,

a steel-reinforced concrete gravity structure which includes a caisson section for oil storage and has a regular geometric shape in plan and provides a horizontal upper support surface,

a framework permanently mounted on the upper horizontal surface of the gravity structure and vertically extending at least four support legs a predetermined distance above the gravity structure and providing access to a position within the framework and on top of the gravity structure,

a plurality of buoyancy chambers connected to the upper horizontal surface of the gravity structure at spaced locations where they will function to provide stability during flotation of the gravity structure,

a buoyant production deck nestable in the position provided within the support legs of the framework and on the upper horizontal surface of the gravity structure,

and jacking mechanism connecting the production deck to the support legs with which the production deck is moved between the upper horizontal surface of the gravity structure and a predetermined elevation above the gravity structure.

4,493,592

GROUTING METHOD

Lloyd C. Knox, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

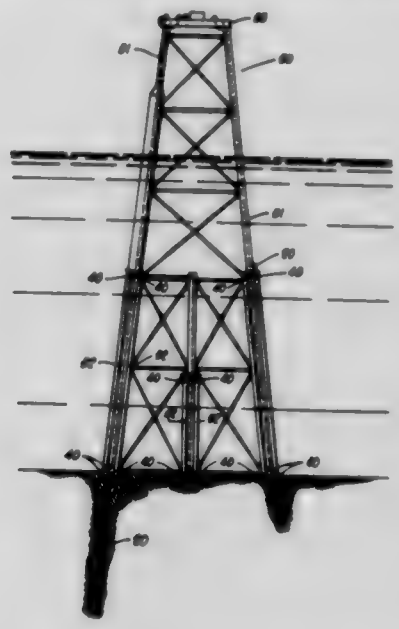
Filed Sep. 28, 1982, Ser. No. 425,346
Int. Cl.³ E02B *17/00*
U.S. Cl. 405—225
16 Claims

1. A method of grouting the annular space formed between either a jacket leg or pile sleeve and a pile driven therethrough of an offshore platform, or other similar annular space, said method comprising the steps of:

injecting an alkali silicate material which flocculates upon contact with sea water into said annular space;

confining substantially within said annular space the alkali silicate material which has flocculated upon contact with the sea water thereby forming an annular plug of flocculated alkali silicate material substantially within said annular space;

injecting cement or grout into said annular space; and



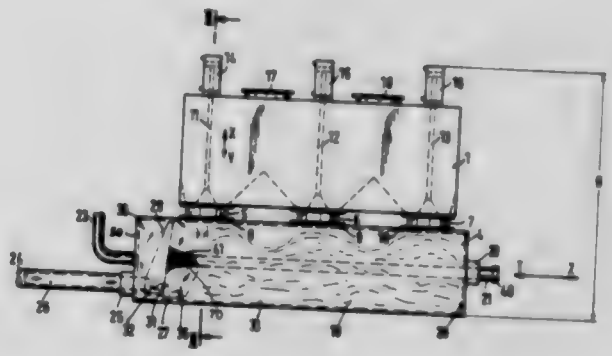
supporting the cement or grout injected into said annular space by the alkali silicate material which has flocculated until the cement or grout has set.

4,493,593

METHOD AND DEVICE FOR CONTINUOUS TRANSPORTING POWDERED, FINE-GRAINED AND COARSE-GRAINED MATERIALS

Heinrich Schlimbach, Essen, Fed. Rep. of Germany, assignor to Ferroplast Gesellschaft für Metall- und Kunststoffspezialmasse mbH, Hattingen, Fed. Rep. of Germany

Filed Jun. 29, 1982, Ser. No. 393,353
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1981, 3138657
Int. Cl.³ B65G *53/16*
U.S. Cl. 406—146
21 Claims



1. A device for continuous transporting materials in powder, fine-grained or coarse-grained state, particularly dam materials in underground mines, comprising at least one storage container containing a material to be transported, a conveyor located below said storage container and receiving the material discharged from said container, said conveyor including at least one tubular housing into which the material is discharged and having an axis; said housing having an inner peripheral wall; a gas pressure supply means connected to said housing and forming therein a pressure gas space; a separating member axially movable in said housing and having one side facing said pressure gas space and an opposite side facing a conveyor space containing said material; and a conveyor discharge pipe connected to said conveyor space, said separating member having a periphery and being formed with at least one opening connected to said conveyor discharge pipe, said separating member being peripherally spaced from said inner peripheral wall of said housing to form therebetween a through passage

continually connecting said pressure gas space with said conveyor space so that a pressure gas cushion of a variable size is formed in said conveyor space in the region of said opposite side; said pressure gas cushion being supplied with pressure gas from said pressure gas space whereby a material-pressure gas-mixture stream is formed; said separating member moving said gas pressure cushion axially of said housing against the material contained in said housing, whereby said mixture is continually discharged into said opening and then into said conveyor discharge pipe unless said housing is empty.

4,493,594

MILLING CUTTER

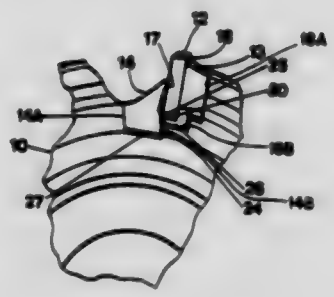
Minoru Okada, Yokosuka, Japan, assignor to Santrade Ltd., Luzern, Switzerland

PCT No. PCT/SE79/00140, § 371 Date Jan. 9, 1981, § 102(e) Date Jan. 9, 1981, PCT Pub. No. WO80/02812, PCT Pub. Date Dec. 24, 1980

Continuation of Ser. No. 229,563, Oct. 9, 1981, abandoned. This PCT application Jun. 19, 1979, Ser. No. 543,801

Int. Cl.[3] B23C 5/22

U.S. Cl. 407—41 4 Claims



1. In a rotary milling cutter of the type comprising a rotary cutter body having a plurality of circumferentially spaced apart recesses, and a plurality of cutter means mounted in said recesses, the improvement wherein:

each of said recesses includes a first and second supporting surfaces, and first and second reaction surfaces,

said first supporting surface extending generally radially inwardly from an outer periphery of said body,

said second supporting surface facing generally radially outwardly and defining a portion of a floor of said recess,

said first reaction surface spaced circumferentially from said first and second supporting surfaces and oriented generally radially, and

said second reaction surface extending generally radially inwardly from said second supporting surface and being situated opposite said first reaction surface to form therewith a clamp-receiving groove,

each of said cutter means comprises:

a supporting plate mounted in a respective one of said recesses and including

a first seating surface which engages said first supporting surface,

a stepped portion having a second seating surface which engages said second supporting surface, and

a side wall extending generally radially outwardly from said stepped portion to define therewith an insert-receiving pocket within said recess,

a cutter insert having first and second generally parallel side faces and an edge surface interconnecting said first and second side faces, the intersection of said edge surface and said first side face defining an edge portion of said insert,

said second side face engaging said side wall of said pocket,

said edge surface resting upon said stepped portion of said supporting body in engagement therewith,

clamping means disposed in said clamp-receiving groove for holding said insert in position relative to said cutter body, said clamping means including a first side face, and a second side face disposed opposite said first side face and engaging said first reaction surface,

securing means for securing said clamping means to said cutter body and arranged to move said clamping means in a generally radially inward direction toward a clamping position such that

said first side face of said clamping means bears against said first side face of said insert to define therewith a first area of contact,

said first side face of said clamping means bears against said second reaction surface to define therewith a second area of contact spaced radially inwardly from said first area of contact,

said first and second areas of contact being located such that an imaginary straight line interconnecting said first and second areas of contact intersects said edge surface of said insert;

said first supporting surface of said cutter body facing toward said second side face of said insert to absorb circumferentially directed forces of said clamping means,

said second supporting surface of said cutter body being disposed between said first and second areas of contact and facing toward said edge surface of said insert to absorb radial inward forces from said cutter means,

said first side face of said clamping means being arranged to bridge said edge portion of said insert intermediate said first and second areas of contact without contacting said edge portion, and

the distance between the radially innermost point of said first area of contact and said second supporting surface of said body being longer than the distance between said second supporting surface of said body and the radially innermost point of said second area of contact.

4,493,595

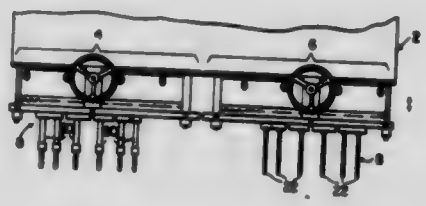
COMPACT MULTIPLE SPINDLE BORING HEAD WITH QUICK CHANGE TOOL SUPPORTS

Harold A. Klein, Shawnee, Kans., assignor to Colt Industries Operating Corp, New York, N.Y.

Continuation of Ser. No. 945,489, Sep. 25, 1978, abandoned. This application Nov. 21, 1980, Ser. No. 209,031

Int. Cl.[3] B23B 39/20

U.S. Cl. 408—46 15 Claims



1. Apparatus for simultaneously positioning a plurality of rotatable spindles comprising:

(a) a machine frame including a support plate having an upper and a lower surface arranged generally perpendicular to a machine axis, said support plate containing a plurality of lineal slots extending therethrough and arranged radially with respect to the machine axis and equally spaced angularly about said axis;

(b) a group of spindle assemblies, each said spindle assembly including a boring spindle journaled for rotation about a spindle axis;

(c) spindle mounting means for mounting each said boring

spindle on said machine for radial movement relative to a machine axis in a manner to maintain said spindle axes parallel to all other spindle axes and to said machine axis, said spindle mounting means including, for each said spindle assembly, bearing means comprising an upper bearing plate having a flat bearing surface in sliding contact with the upper surface of said support plate, a spindle housing formed on said upper bearing plate, said boring spindle being mounted within said spindle housing, and a lower bearing plate having a flat bearing surface in sliding contact with the lower surface of said support plate, said flat bearing surfaces extending across and on either side of each said slot in said support plate, means extending through said support plate to connect said upper and lower bearing plates and a slot guide connected to said bearing means and positioned within the slot across which said bearing surfaces extend; and

(d) spindle translating means interconnected between said machine frame and said spindle mounting means for simultaneously moving each said boring spindle relative to said machine axis along a lineal path between a first position in which each said boring spindle is spaced at a predetermined minimum radial distance from said machine axis and a second position in which each said boring spindle is spaced at a predetermined maximum radial distance from said machine axis while said spindle translating means maintains a fixed radial extent at all times relative to said machine axis as said boring spindles move between said first and second positions, said translating means insulating a rotatably mounted master ring gear surrounding said spindle assemblies, and a plurality of lead screw means extending between said master ring gear and said spindle assemblies, respectively, each said lead screw means being mounted to rotate about its longitudinal axis upon rotation of said master ring gear while maintaining a fixed position along its longitudinal axis relative to said machine axis, each said spindle assembly including threaded means mounted on said spindle housing for engaging an associated lead screw means to cause the associated boring spindle to move toward said first position when said lead screw means rotates in one direction and to move toward said second position when said lead screw means rotates in an opposite direction, said master ring gear being positioned above the upper surface of said support plate by a distance which exceeds the thickness of said upper bearing plates, and said elongated slots extending sufficiently to permit said upper bearing plates to move between said master ring gear and said support plate when said boring spindles are moved to said second position.

4,493,596

ROTARY MATERIAL REMOVING TOOL

Manfred Grunsky, Dreieichenhain; Reiner Sussmuth, Neu Isenburg; Dieter Dehn, Frankfurt am Main, and Günter Ischen, Oberhausen, all of Fed. Rep. of Germany, assignors to Stellram S.A., Nyon, Switzerland

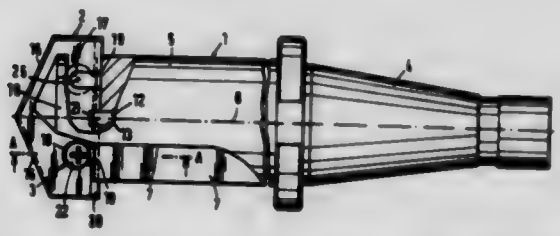
Filed Dec. 17, 1982, Ser. No. 450,678

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1982, 3204210

Int. Cl.³ B23B *51/00*

U.S. Cl. 408—233

17 Claims



1. A material removing tool, such as a milling cutter, comprising a rotary holder having a front portion provided with a transverse slot and including a pair of prongs having internal surfaces flanking said slot, said slot being disposed at least substantially centrally of said holder, said front portion having a bottom surface in said slot and said bottom surface including two mutually inclined sections having portions disposed at the opposite sides of the axis of said holder, each of said sections being adjacent to a different one of said internal surfaces and such sections making acute angles with the respective internal surfaces, at least one said prongs having a first bore communicating with said slot and having a first axis; a cutter disposed in said slot and having a rear surface adjacent said bottom surface and a second bore with a second axis parallel to said first axis, said rear surface having two mutually inclined sections each abutting against a different section of said bottom surface, said first axis being disposed between said second axis and said bottom surface and said cutter having a first annular surface surrounding said second bore; and means for coupling said cutter to said holder, including a shank extending into said first bore and a head having a larger diameter than said shank and extending into said second bore and having a second annular surface, at least a portion of at least one of said annular surfaces being at least subetantially conical and bearing against the other of said annular surfaces to thereby urge said rear surface against said bottom surface, said cutter further having a passage communicating with said second bore and extending to said rear surface to allow for extraction of said cutter from said slot while said coupling means extends into said slot.

4,493,597

NUT LOCK ASSEMBLY

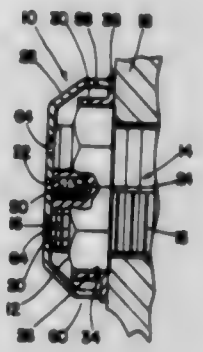
Jeffrey O. Rolf, Mentor, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 7, 1982, Ser. No. 415,066

Int. Cl.³ F16B *39/36*

U.S. Cl. 411—198

3 Claims



1. A nut lock system for positively removably retaining a nut having a plurality of flat surfaces on the outer periphery thereof on the externally threaded end of a shaft, said system comprising;

an internally threaded bore formed in the end of said externally threaded shaft, the internal threads of said internally threaded bore of the opposite hand as the external threads of said externally threaded end of said shaft;

a locking cup member including a hub portion having a centrally located axially extending aperture therethrough and a transversely extending flange portion, said aperture configured to closely conform to the outer periphery of said nut whereby said locking cup member may be slipped onto said nut for rotationally fixing said locking cup member to said nut, the outer periphery of said flange portion provided with a plurality of radially outwardly extending ramp type ratchet teeth, each of said teeth defining a generally radially outwardly extending shoulder surface and a radially outwardly inclined ramp surface, said inclined ramp surfaces extending radially outwardly in the opposite circumferential direction as the direction of rotation of said nut being tightened onto said shaft, and

a locking cap member comprising a resiliently deformable portion and an externally threaded stud portion fixed

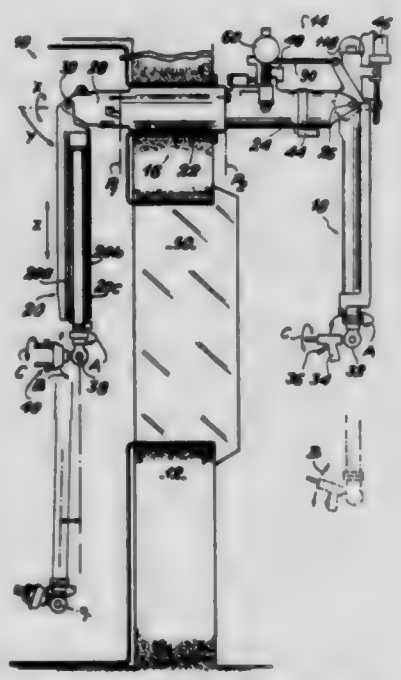
thereto, said externally threaded stud portion threadably receivable in said internally threaded bore formed in the end of said externally threaded shaft, said resiliently deformable portion comprising a generally flat transversely extending base section and outwardly extending finger section, the free ends of said finger section extending generally parallel to said stud portion and in the same direction, the free end of said finger section, in the nondeformed position thereof, separated from the rotational axis of said stud by a distance equal to or less than the radius defined by the most radially inwardly points of said shoulder surfaces of said ratchet teeth, said base section provided with a fitting for receipt of a tool engageable with the side of said base section opposite the side from which said externally threaded stud extends, said free end of said finger sections ratchetly engaged with the ratchet teeth on said locking cup member when said base section abuts the end of said shaft.

4,493,598

MASTER-SLAVE TYPE TELESCOPIC TELEMANIPULATOR

Charles Glachet; Daniel Francois, both of Vendome; Jean Tenté lier, Moree, and Christian Friòux, Vendome, all of France, assignors to La Calhene, Benzons and Commissariat a l'Energie Atomique, Paris, both of, France

Filed Jan. 18, 1983, Ser. No. 458,886
Claims priority, application France, Jan. 19, 1982, 82 00734
Int. Cl.³ B25J 3/00
U.S. Cl. 414—1 8 Claims



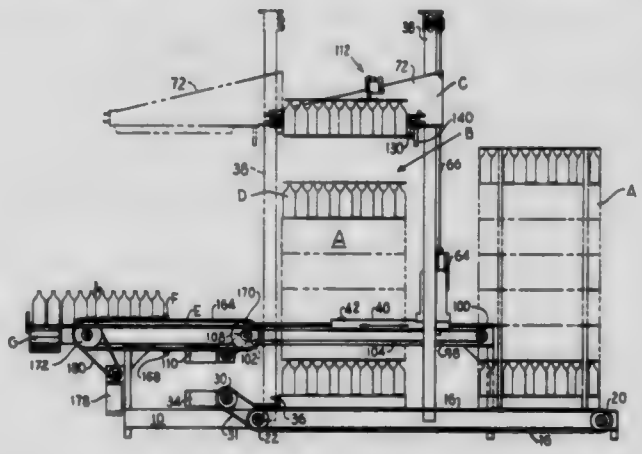
1. A telescopic telemanipulator comprising: A traversing block which traverses a compartment and which is mounted to rotate around its own axis; a telescopic master arm and a telescopic slave arm, such arms being articulated to the traversing block around two shoulder pivots orthogonal to the axis of the block; a control handle mounted at the free end of the master arm; a gripper member mounted at the free end of the slave arm; means for transmitting to the slave arm and the gripper member movements imparted to the master arm and the control handle; means for offsetting the slave arm in relation to the master arm, enabling the length and orientation of the slave arm around its shoulder pivot to be modified without modifying the corresponding coordinates of the master arm; and means for equilibrating the master arm and means for equilibrating the slave arm, wherein the means for equilibrating the slave arm comprise at least a first counterweight mounted on a first link articulated to the traversing block on the master arm side and in the opposite direction in relation to said master arm around a pivot parallel with the shoulder pivot of the master arm, means for displacing the first counterweight along the first link, said means for offsetting the length of the slave arm in relation to the length of the master arm simultaneously actuating said means for displacing the first counterweight and at least a second counterweight mounted on a second link articuluated to the traversing block on the master arm side and in the opposite direction in relation to said master arm around a pivot parallel with the shoulder pivot of the master arm, means for displacing the second counterweight along said second link, said means for transmitting to the slave arm any modification in the length of the master arm simultaneously actuating said means for displacing the second counterweight.

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ARTICLE DEPALLETIZER

Thomas S. Hartness, Rte. 12, Paris Mtn., Greenville, S.C. 29609, and Thomas P. Hartness, Rte. 2, Smith Dr., Greenville, S.C. 29607

Filed Dec. 2, 1982, Ser. No. 446,234
Int. Cl.³ B65G 59/02
U.S. Cl. 414—120 13 Claims



6. A device for depalletizing tiers of articles located on a pallet, one tier at a time, and depositing said articles on a receiving table comprising:

an elevator clamp means for moving a tier of articles which extends over said pallet including,

(i) four interdependent spaced side walls carried in a substantially rectangular configuration, each side wall having a first and a second end, and a clamping surface generally between said first and second ends for engaging said articles arranged in a rick-rack order;

(ii) means for selectively moving said walls betweeen a closed position and an opened position so that said first ends of said side walls move inwardly past the second ends of said side walls to provide a progressively reducing rectangular clamping area and a uniform clamping force for clamping and retaining said articles together in a rick-rack order to be picked up in said tier;

elevator means for lowering said elevator clamp in an opened position to a position wherein said side walls of said clamp encompass the top tier of articles on said pallet; and

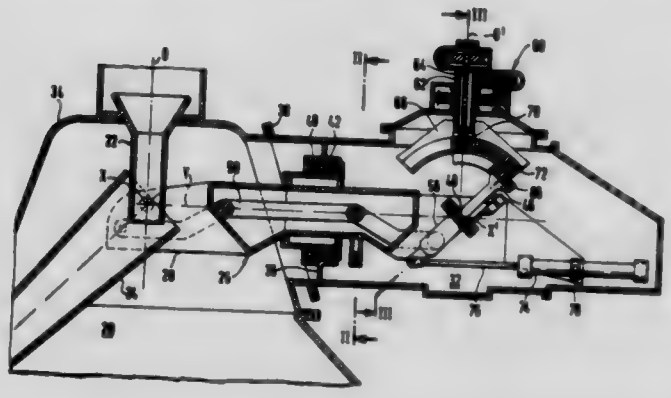
means for raising said elevator clamp with said tier of articles and moving said elevator clamp with said articles over a receiving table and depositing said articles on said receiving table

4,493,600

FURNACE CHARGING SYSTEM

Edouard Legille, Luxembourg, and Pierre Mailliet, Howald, both of Luxembourg, assignors to Paul Wurth S.A., Luxembourg, Luxembourg

Filed Apr. 14, 1982, Ser. No. 368,365
Claims priority, application Luxembourg, May 18, 1981, 83370
Int. Cl.³ F27B *1/20*
U.S. Cl. 414—208
19 Claims



1. Apparatus for controlling the movements of an elongated member positioned within an enclosure, the movable member having a first longitudinal axis and being pivotally supported ajacent its first end, the pivotal support permitting rotation of the member about a second axis transverse to the first longitudinal axis, the pivotal support defining a third axis which intersects the first and second axes, the pivotal support being rotatable about the third axis, said control apparatus comprising:

control means, said control means being located to the exterior of the enclosure, said control means including a control device defining a fourth axis, said control means further including means supporting said control device being supported for oscillatory movement about fifth and sixth axes which intersect said fourth axis whereby said control device has the same degree of freedom of movement as the elongated member which is to be controlled;

means for imparting movement to said control device to cause said control device fourth axis to undergo the angular movements with respect to said fifth and sixth axes it is desired to impart to the elongated member first axis respectively with respect to said second and third axes;

first actuator means for causing the elongated member to pivot about the second axis;

second actuator means for causing the pivotal support of the elongated member to pivot about the third axis;

means for sensing differences between the angular orientation of said control device fourth axis with respect to said fifth and sixth axes and respective of the angular orientation of the elongated member first axis with respect to the second and third axes and for generating signals commensurate with said differences in between control device and elongated member angular orientation; and

means responsive to said signals commensurate with differences in angular orientation for energizing respective of said first and second actuator means to null the angular orientation differences.

4,493,601

HIGH CAPACITY, SELF-UNLOADING FORAGE HOPPER

Amos G. Hill, Hesston, and Arlen J. Wiens, North Newton, both of Kans., assignors to Hesston Corporation, Hesston, Kans.

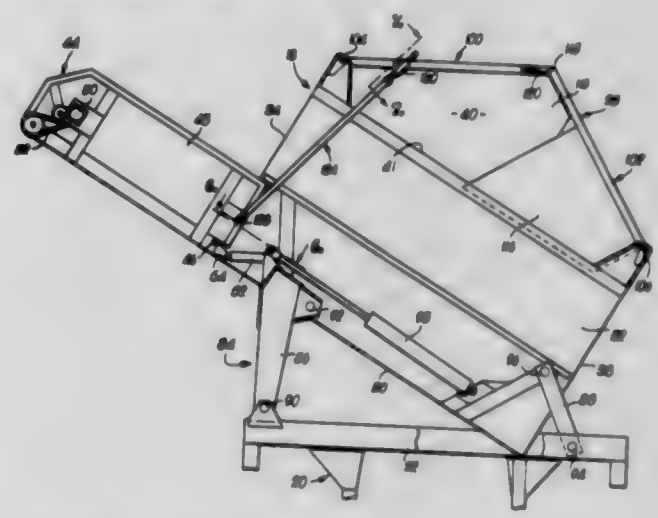
Filed Mar. 5, 1982, Ser. No. 354,938
Int. Cl.³ B60P *1/04*; A01D *90/00*
U.S. Cl. 414—491
6 Claims

1. A vehicle for use in transporting harvested crops comprising:

a mobile frame;

a crop receiving container carried by said frame and shiftable between an over-the-road travel condition in which the container is compacted to its minimum height and width dimensions and a field working condition for loading, collecting, and unloading harvested crops in which the container exceeds said minimum height and width dimensions,

said container including a top wall portion thereof which is shiftable into a high capacity position to expand the volume of said container when the latter is in said field working condition; and



means for unloading crops from the container while the latter is in said field-working condition,

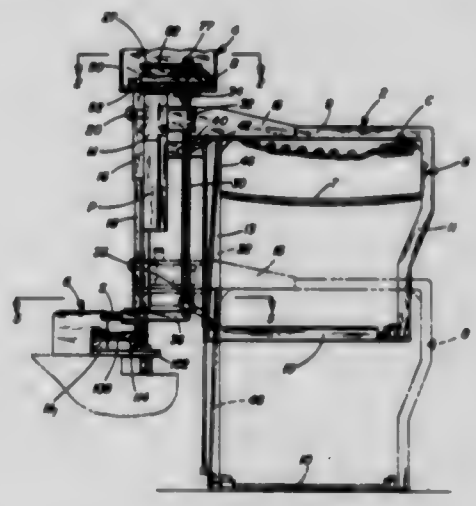
said unloading means including a discharge spout shiftable relative to said top wall portion between a standby position and an operating position, said top wall portion being provided with means coupling the top wall portion with said spout and responsive to shifting of said spout into and out of its operating position for effecting said shifting of the top wall portion into and out of its high volume position.

4,493,602

WHEELCHAIR LIFT APPARATUS

Charles F. Koerber, 8905 Mentor Ave., Mentor, Ohio 44060

Filed Jul. 30, 1981, Ser. No. 288,379
Int. Cl.³ B66B *9/20*
U.S. Cl. 414—541
10 Claims



1. The wheelchair lift apparatus of the type for wheeling a disabled person into and out of a vehicle such as a van of the like comprising a column support structure adapted to be fixedly mounted within said vehicle, a wheelchair lift structure mounted for vertical up and down movement on said column support structure and for pivotal movement on said column support structure in a generally horizontal plane about a vertical axis, first drive screw means mounted on said column support structure for raising and lowering said wheelchair lift

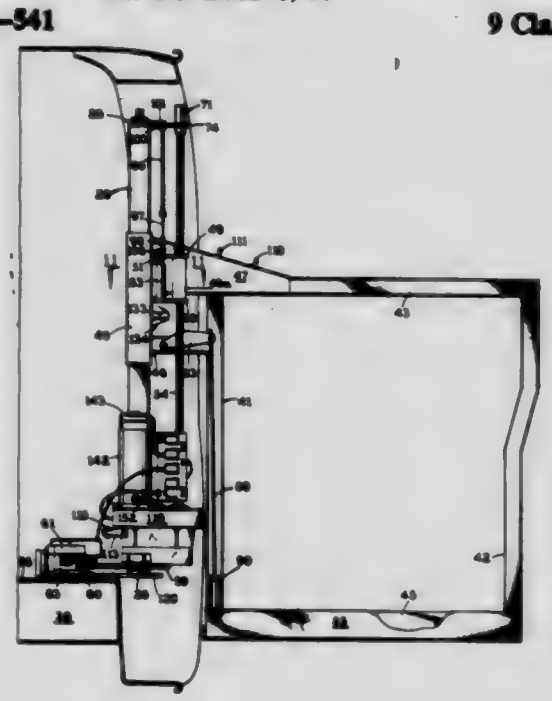
structure in a vertical direction, first motor means mounted on said support structure for operably driving said first drive screw means for raising and lowering said wheelchair lift structure in said vertical direction; second motor drive means mounted adjacent the bottom of said support structure for pivoting said wheelchair lift structure about the vertical axis of said support column structure in a generally horizontal plane, one-way brake means operably associated with said first motor means and with said first drive screw means for providing an automatic braking action on said drive screw means to prevent vertical downward dropping movement of said wheelchair lift structure upon actuation thereof, a second drive screw means operably connected to said second motor drive means and said support column structure for pivoting said support column structure about a vertical axis in a general horizontal plane and through an angle of approximately 90° into and out of said vehicle upon actuation of said second motor drive means, said second drive screw means is drivingly connected at one end to said second motor drive means and is journalled at its opposite end for rotation within a journal means disposed on said support column structure, and said journal means including a slip mechanism disposed for operable coaction with said second drive screw means for automatically controlling horizontal inward and outward pivotal movement of said wheelchair lift structure about the vertical axis of said support column structure.

4,493,603

WHEEL CHAIR LIFT APPARATUS

Claude E. Williams, and F. Alan Gates, both of 832 NW. 1st St., Fort Lauderdale, Fla. 33311

Filed Feb. 8, 1982, Ser. No. 346,552
Int. Cl.³ B60P *1/44*
U.S. Cl. 414—541 9 Claims



1. In a wheel chair lift platform comprising:
a horizontal lift platform;
a rotatable vertical support post;
a carriage slidable along said support post and operatively coupled to said support post to turn in usison with it;
means rigidly connecting said lift platform to said carriage for movement in unison with it;
a rotatable, vertical power driven lead screw for raising and lowering said carriage along said support post;
retractable retainer means operatively pivotally associated along the rear edge of said lift platform for movement between a retracted position in which it permits the wheel chair to move onto or off the platform and a raised position in which it retains the wheel chair on the lift platform;
motors for raising and lowering the aforesaid carriage along said rotatable post and for turning said post between its inner and outer positions; and
control means for connecting said disconnecting electrical power to said motors;
the improvement which comprises:
on-center retainer actuating train means operatively connected with said carriage such that said retainer actuating train means is operated from a retracted to a raised position when said carriage is supporting the weight of said lift platform;
reinforcing means associated with said retainer actuating train means such that said retainer actuating train means is capable of retaining a wheel chair positioned on the lift platform;
a lost motion coupling consisting of a ball nut threadedly engaging said lead screw;
said ball nut attached to a ball nut housing consisting of upper and lower horizontal elongated plates;
said plates attached to a cylindrical vertical guide post;
said post slidably coaxially disposed inside a vertical tubular cylindrical sleeve rigidly attached to said slidable carriage, where said guide post is longer than said sleeve by a short amount, such that said ball nut housing is vertically movable between an upper and lower position relative to said carriage by a distance equal to said short amount;
a first actuating generally vertical rod with its upper end in a loosely jointed connection attached to aforesaid ball nut housing and with its lower end pivotally attached to a lever at a point on said lever that is generally midway between the two ends of the lever;
said lever extending generally horizontally and radially from the axis of the aforesaid pivotable vertical post attached pivotally in a vertical plane to said carriage at the end of the lever nearest to said axis, and such that the end of the lever farthest away from said axis describes a vertical arch between an upper and lower position in unison with the upper and lower positions of the aforesaid ball nut housing;
a second actuating rod attached to the end of said lever farthest away from said axis in a loosely jointed connection and sloping generally downward to a point of rigid attachment to a stirrup positioned as an inverted U with its two prongs pointing downward in extension of said second actuating rod with the lower ends of said prongs pivotally attached to the apex closest to the rear edge of said platform of two actuators shaped as two obtuse triangles disposed in two parallel vertical planes where said actuators are attached pivotally in a vertical plane about a pivot pin disposed horizontally and parallel with the rear edge of said platform; and
through that apex of said triangular actuators that is nearest to the upper surface of said platform; and
through a hole in a vertical first projection, said first projection disposed in a vertical plane parallel with and between the vertical planes defining said actuators;
said projection, rigidly attached to the upper surface of said platform and such that the third apex of said triangular actuators can describe an arch of generally 90 degrees in the vertical plane as said actuators are pivoted from a generally horizontal position oriented toward the front edge of said platform to a generally vertical position, as said second actuation rod is operated between its upper and lower position by aforesaid lever;
an actuating bar, at one end generally horizontally oriented, disposed in a vertical plane perpendicular to the rear edge of said platform between said actuators attached at one end pivotally to the third apex of said triangular actuators and at the other end attached pivotally to a second projection attached to the upper surface of aforesaid retaining lip attached pivotably to the rear edge of said platform such that as the aforesaid two triangular actuators are pivoted between their horizontal and vertical positions,
said actuating bar will operate said retaining lip to pivot between its raised position and its retracted position in

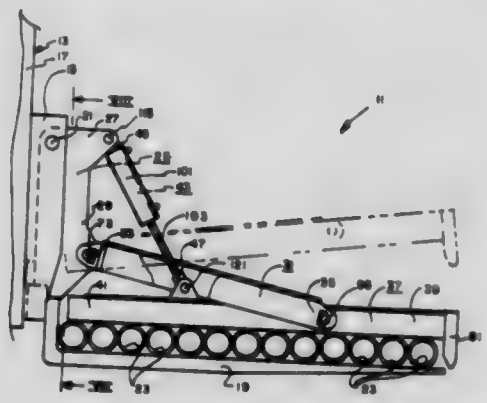
which it is generally co-planar with said platform and such that in its raised position the three points namely the point of attachment between said second projection and said actuating bar, the point of attachment between said triangular actuators and said first projection and the point of attachment between said actuating bar and said triangular actuators are disposed on a straight line thereby placing said two last-mentioned points on center with the first-mentioned point of attachment.

4,493,604

FORK LIFT CLAMP APPARATUS

Evo M. Walker, Louisville, Miss., assignor to Taylor Machine Works, Inc., Louisville, Miss.

Filed Oct. 14, 1982, Ser. No. 434,348
Int. Cl.³ B66F 9/18
U.S. Cl. 414—622 5 Claims



1. A clamp apparatus for use with a forklift truck of the type including a carriage, an L-shaped fork member, and a pivot rod for pivotally attaching said fork members to said carriage, said clamp apparatus comprising:

(a) a frame member for straddling said fork member and for being pivotally attached to said pivot rod, said frame member having an upper end and a lower end;

(b) a flapper arm having a first end and a second end, said first end being pivotally attached to said frame member substantially adjacent said lower end of said frame member;

(c) a clamp arm having a first end and a second end, a portion of said clamp arm located between said ends of said clamp arm being pivotally attached to said flapper arm substantially adjacent said second end of said flapper arm; and

(d) piston means having a first end and a second end, said first end of said piston means being attached to said frame member substantially adjacent said upper end of said frame member, said second end of said piston means being attached to said clamp arm substantially intermediate said first and second ends of said clamp arm, movement of said first and second ends of said piston means toward and away from one another causing said clamping arm to move between an opened position for allowing pipes and the like to be loaded onto and off-of said fork member and a closed position for clamping pipes and the like onto said fork member.

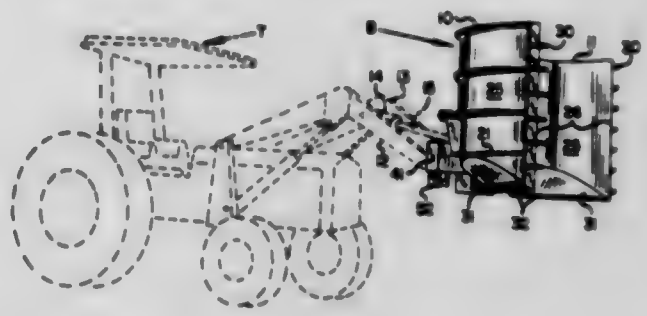
4,493,605

MATERIAL HANDLING APPARATUS FOR LOADERS

Steven R. Callen, 1167 Harrison, Astoria, Oreg. 97103

Filed Jun. 14, 1982, Ser. No. 388,273
Int. Cl.³ B65G 47/90
U.S. Cl. 414—726 9 Claims

1. A clamshell-type loader bucket adapted for mounting on a lifting boom on a tractor comprising a pair of bucket jaws pivotally mounted on vertical axes on one side of the bucket for opening and closing movements when the bucket is in vertical position, said bucket having an open top and a hopper bottom formed by inclined bevel plates on said jaws extending across the entire area of the bottom of the bucket arranged to force material upward in the bucket as the jaws close on said material, said bevel plates having scraper edges to scrape up said material from a flat supporting surface when the bucket is



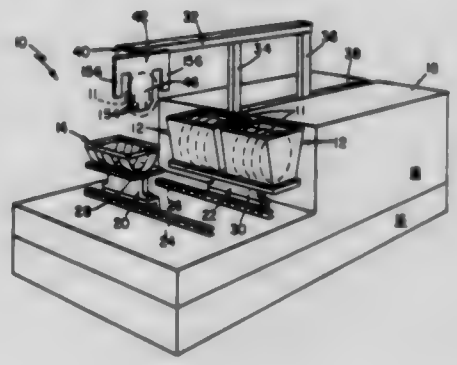
advanced across said surface in a vertical position by said tractor with said jaws wide open, said scraper edges extending in a horizontal plane across the entire width of said open jaws when the bucket is in said vertical position.

4,493,606

WAFER TRANSFER APPARATUS

Richard F. Foulke, Carlisle, and Steven M. Lord, Malden, both of Mass., assignors to Proconics International, Inc., Woburn, Mass.

Filed May 24, 1982, Ser. No. 381,292
Int. Cl.³ B65G 17/32
U.S. Cl. 414—787 32 Claims



1. Apparatus for placing a first element in a precise receptacle location on a second element, there being associated with said precise receptacle location some known variation in the shape of said second element, said apparatus comprising

a support member for supporting said first element while said member is translated toward said second element along a placement direction,

first transport means for moving said support member or said second element along a direction transverse to said placement direction, and

sensing means located on said support member for sensing the relative alignment along said transverse direction of said support member and said variation in shape,

said sensing means comprising

an energy-beam source adapted and positioned to direct an energy beam along a path that interacts with said variation in shape at least when said support member and receptacle location are aligned so that more of said beam is transmitted along said path when said member and receptacle location are aligned than when said member and receptacle are not aligned and

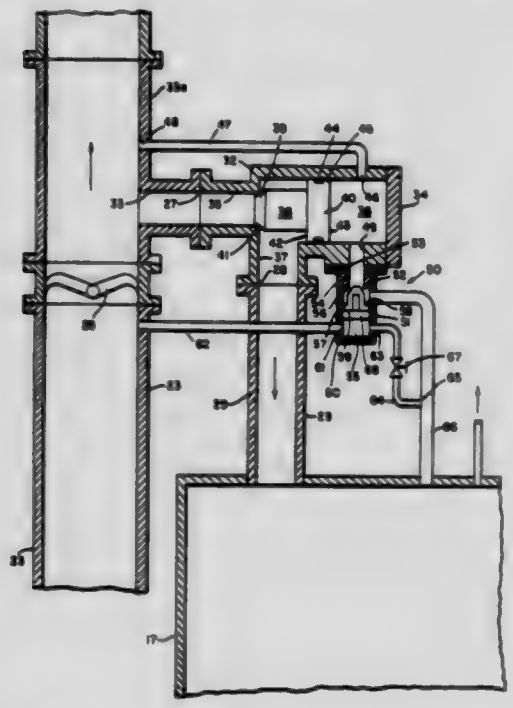
an energy beam sensor adapted and positioned to detect the difference in the amount of said beam transmitted along said path.

4,493,607

TEE-TYPE VALVE FOR SELF-PRIMING PUMP SYSTEM

Pellegrino E. Napolitano, Middletown, N.J., assignor to Hudson Engineering Company, Bayonne, N.J.

Filed Dec. 16, 1982, Ser. No. 450,442
Int. Cl.³ F04D 27/00
U.S. Cl. 415—11 4 Claims



1. In a self-priming pump system including a liquid pump, a suction tank in communication with the pump, a discharge line connected to the pump and including a first check valve positioned downstream of the pump a distance sufficient to provide a column of priming liquid, and a priming valve having an inlet in communication with the discharge line and an outlet in communication with the suction tank and positioned between the pump outlet and the first check valve, the priming valve responsive to liquid flow from the pump to automatically permit flow of the priming liquid from the discharge line to the suction tank when suction at the pump inlet is lost, the improvement comprising:

a. a second check valve positioned between the priming valve and the pump;

b. a piston connected to the priming valve slidably positioned within a cylinder, one face of said piston exposed directly to the discharge line static pressure, and the other face of said piston exposed via the priming valve to the discharge line static pressure;

c. a conduit connecting the one face of the piston to the suction tank;

d. a pilot valve blocking said conduit;

e. a bleed line communicating the rear of said pilot valve and the suction tank;

f. bleed valve means positioned in said bleed line to control the flow of fluid therethrough; and

g. a second conduit connecting the discharge line upstream of the second check valve to the rear of the pilot valve.

4,493,608

SURGE CONTROL IN COMPRESSOR

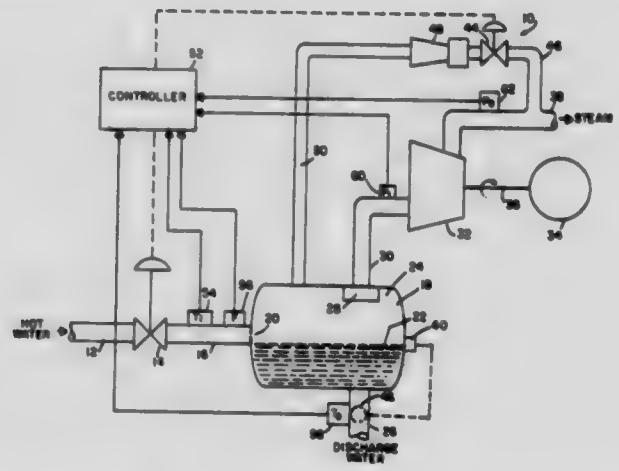
Deane B. Peel, Leominster, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Dec. 27, 1982, Ser. No. 453,535
Int. Cl.³ F04D 27/02
U.S. Cl. 415—11 8 Claims

1. In an apparatus for producing a high temperature, high pressure vapor from a lower vapor and liquid source including a flash tank having a hot liquid inlet, a vapor outlet and a liquid outlet; a compressor inlet connected to the vapor outlet of the flash tank; a control system for preventing the occurence of vapor surge within the compressor comprising:

an inlet liquid control valve positioned upstream from the flash tank hot liquid inlet;

a recycle control valve positioned in a conduit connecting the compressor discharge with the compressor inlet whereby vapor may be recirculated through the compressor to avoid surge; and,



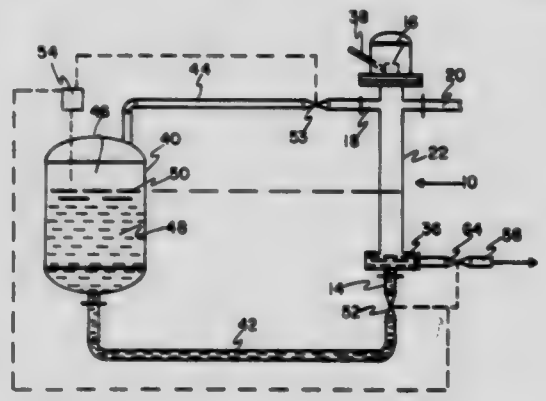
a programmable controller having programmed therein a surge limit line and receiving further operating inputs with respect to flash tank vapor flow and compressor discharge pressure; said controller providing control signals to the inlet and recycle control valves whereby said inlet valve is opened a preselected amount prior to causing the recycle valve to open.

4,493,609

PUMPING APPARATUS

George J. Morgan, Ossining, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Feb. 28, 1983, Ser. No. 470,364
Int. Cl.³ F04D 15/02
U.S. Cl. 415—20 5 Claims



1. An apparatus for pumping a liquid stored under pressure without pressure-induced, liquid leakage during seal failure comprising in combination:

(a) a vessel capable of containing a liquid under pressure;

(b) a vertical pump having an inlet port in communication with the vessel;

(c) a shaft housing of the pump and a conduit connected to the shaft housing, said conduit being connected to the vessel at the other end with both ends of the conduit being located above the level of the liquid to be contained within the vessel; and

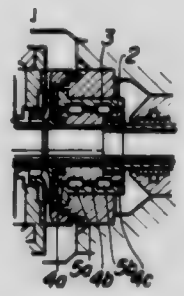
(d) a shaft seal on the shaft conveying rotary power to the impeller of the pump located within the pump above the point where the conduit is connected to the shaft housing and above the liquid level so that the vessel and the shaft housing is pressure-equalized during seal failure.

4,493,610

AXIAL THRUST BALANCING SYSTEM

Toshiki Iino, Ibaraki; Hiromi Kaneko, Mitsukaido; Michiyuki Takagi, Ibaraki, and Kazuhiro Komatsu, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 26, 1982, Ser. No. 436,715
Claims priority, application Japan, Oct. 28, 1981, 56-171431
Int. Cl.³ F01D 3/04
U.S. Cl. 415—104 1 Claim



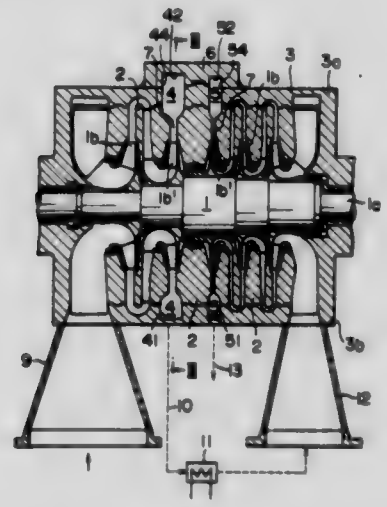
1. An axial thrust balancing system comprising a rotary shaft having an impeller mounted thereon, a sleeve secured to said rotary shaft on the discharge side of said impeller for rotation with the rotary shaft, a bush attached to a casing enclosing the sleeve and juxtaposed against the sleeve, an annular clearance defined between said sleeve and said bush, and at least one annular pressure chamber formed in a surface of at least one of the sleeve and the bush for dividing the clearance axially into a plurality of shorter clearances, said annular pressure chamber having an axial length over thirty-eight times as great as a radial width of said clearance and a depth of over 0.1 times as great as the axial length of the annular pressure chamber.

4,493,611

HORIZONTALLY SPLIT CASING OF TURBO MACHINE

Tadayoshi Funakoshi, and Kazuo Takeda, both of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 20, 1982, Ser. No. 437,360
Claims priority, application Japan, Oct. 23, 1981, 56/168682
Int. Cl.³ F01D 25/24
U.S. Cl. 415—199.1 8 Claims



1. A horizontally split casing of a turbo machine including a plurality of impellers arranged axially of a rotary shaft in a back-to-back relationship in order to provide two sets of compression stages whereby a fluid discharged from a last stage of one set of compression stages is introduced into a first stage of the other set of compression stages and the fluid is discharged from a last stage of the other set of compression stages, a common diaphragm means for the impellers of the last stages of the two sets of compression stages, and defuser means provided for each of the last stage impellers of the two sets of compression stages holding the diaphragm therebetween,

an upper half casing of a welded construction,

a lower half casing of a welded contrustion,

axially extending flanges formed on said upper half casing and said lower casing for enabling the casings to be connected together,

outlet nozzles respectively located at said upper half casing and said lower half casing,

scroll grooves located at one of said upper half casing and said lower half casing in such a manner so as to be connected to said diffusers of said two sets of compression stages for providing outlet scrolls,

cutouts formed in portions of the other half casing corresponding to the outlet scrolls,

a second casing attached to an outer peripheral surface of the other half casing in a manner to enclose said cutouts, and

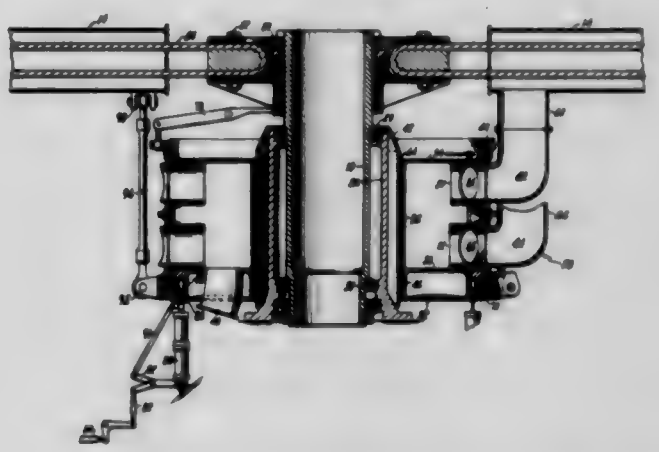
further scroll grooves formed on an inner peripheral surface of said second casing, said further scroll grooves being connected at one end thereof to said scroll groove formed in said one half casing and at the other end thereof to said outlet nozzles, and wherein said further scroll grooves are constructed such that a depth thereof gradually increases in a direction toward said outlet nozzles.

4,493,612

AXIALLY SLIDEABLE PLENUM FOR CIRCULATION CONTROL AIRCRAFT

Frank P. D'Anna, Shelton, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 30, 1982, Ser. No. 431,476
Int. Cl.³ B64C 27/18
U.S. Cl. 416—20 R 3 Claims



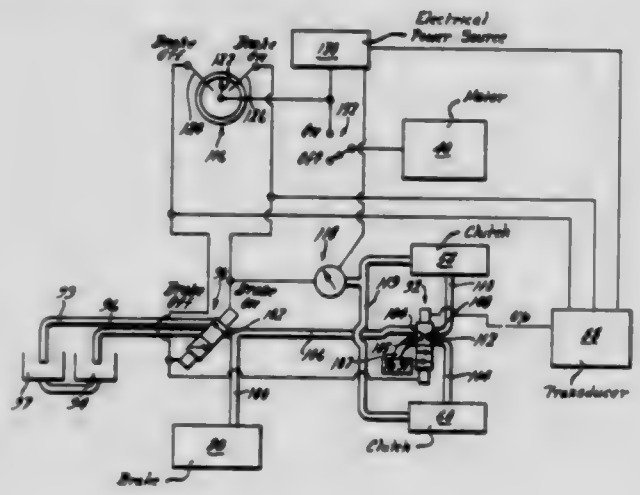
1. An aircraft utilizing a circulation control rotor system having a rotor drive shaft with rotor blades connected thereto and stationary means surrounding and supporting said drive shaft, a pneumatic system for supplying compressed air to said rotor blades including air storage means surrounding said rotor drive shaft, said air storage means including a nonrotating chamber surrounding said stationary means and having means permitting axial sliding with respect thereto and a rotatable chamber surrounding said nonrotating chamber and having means permitting rotary movement with respect thereto, said air storage means including means for admitting compressed air to said nonrotating chamber and means for conducting air from said rotatable chamber to said rotor blades, mechanical collective pitch control means connected to said air storage means to impact axial sliding thereto as the result of blade pitch change inputs and means connecting said air storage means to said rotor blades to change blade collective pitch in response to blade pitch change inputs.

4,493,613

OIL WELL PUMP DRIVE

Gordon M. Sommer, Boca Raton, Fla., assignor to Petroleum Recovery Systems, Inc., Warren, Mich.

Continuation-in-part of Ser. No. 327,718, Dec. 4, 1981, abandoned. This application Dec. 30, 1983, Ser. No. 567,006
Int. Cl.³ F04B 49/00
U.S. Cl. 417—15 12 Claims



1. An oil well pump assembly including means for pumping oil from an oil well through a well hole comprising a pumping rod and means for reciprocating said pumping rod in said well hole, counterbalance means for reducing the power needed to pump said oil, motor means, means for driving said reciprocating means, and means for driving said counterbalance means, the improvement comprising:

means for engaging said motor means alternately with said reciprocating driving means and said counterbalance driving means comprising:

oil shear clutch means operably associated with said reciprocating driving means to raise said reciprocating means, and

oil shear clutch means operably associated with said counterbalance driving means to raise said counterbalance means; and

oil shear brake means operably associated with said engaging means for stopping both said reciprocating means and said counterbalance means in a selected position for a selected amount of stroke dwell time;

said reciprocating driving means comprising a rotatable element and a first cable operably associated with said rotatable element and said counterbalance means comprising a rotatable element and a second cable operably associated with said rotatable element.

4,493,614

PUMP FOR A PORTABLE VENTILATOR

Raymond D. Cha, Boulder, and Marc A. Bergman, Lafayette, both of Colo., assignors to Lifecare Services, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 433,450, Oct. 8, 1982, abandoned. This application Sep. 27, 1983, Ser. No. 534,988
Int. Cl.³ F04B 49/06, 35/04; A61M 16/00
U.S. Cl. 417—22 24 Claims

1. A pump comprising:

a cylinder capable of containing a fluid and having at least one end wall, said cylinder having fluid inlet and outlet ports;

a piston disposed substantially within said cylinder for substantially, longitudinally reciprocating within said cylinder, the external diameter of said piston being substantially equal to the internal diameter of said cylinder, and said piston provided with an aperture substantially, longitudinally therethrough;

a rotatable shaft extending substantially longitudinally through said cylinder and through the aperture in said piston;

means disposed substantially within said cylinder for reciprocating said piston within said cylinder in response to the rotation of said shaft, said means including means for substantially preventing the rotation of said piston during its reciprocation within said cylinder wherein said rotation preventing means includes a collapsible hinge, and,

means for substantially preventing the flow of any fluid with in said cylinder from one longitudinal side of said piston to the other longitudinal side of said piston when said piston reciprocates within said cylinder.

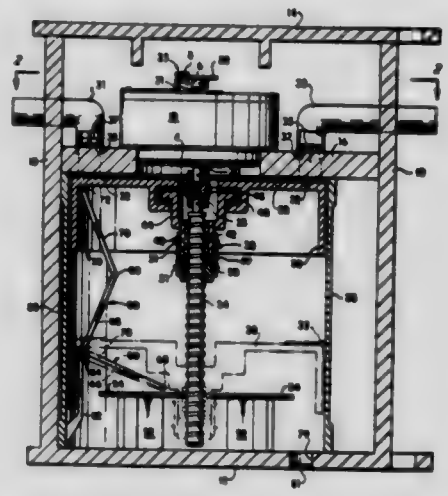
2. A pump comprising:

a cylinder capable of containing a fluid and having at least one end wall, said cylinder having fluid inlet and outlet ports;

a piston disposed substantially within said cylinder for substantially, longitudinally reciprocating within said cylinder, the external diameter of said piston being substantially equal to the internal diameter of said cylinder, and said piston provided with an aperture substantially, longitudinally therethrough;

a rotatable shaft extending substantially longitudinally through said cylinder and through the aperture in said piston;

means disposed substantially within said cylinder for reciprocating said piston within said cylinder in response to the rotation of said shaft;



means for substantially preventing the flow of any fluid within said cylinder from one longitudinal side of said piston when said piston reciprocates within said cylinder; and,

said pump further includes an electric motor for selectively rotating said shaft, a primary electric circuit, a secondary electric circuit operatively connected to said electric motor, and a transformer for transferring energy from said primary circuit to said secondary circuit by magnetic induction, said transformer disposed adjacent to an end wall of said cylinder wherein said transformer is fashioned substantially in the shape of a toroid and wherein siad transformer substantially surrounds said shaft.

9. A pump comprising:

a cylinder capable of containing a fluid and having at least one end wall, said cylinder having fluid inlet and outlet ports;

a piston disposed substantially within said cylinder for substantially, longitudinally reciprocating within said cylinder, the external diameter of said piston being substantially equal to the internal diameter of said cylinder, and said pion provided with an aperture substantially, longitudinally therethrough;

a rotatable shaft extending substantially longitudinally through said cylinder and through the aperture in said piston, said rotatable shaft being provided with a threaded exterior surface;

means disposed substantially within said cylinder for reciprocating said piston within said cylinder in response to the rotation of said shaft, said reciprocating means including a ball nut coupled to said piston and mounted on said shaft such that the ball nut translates along said shaft in response to the rotation of said shaft; and

means for substantially preventing the flow of any fluid within said cylinder from one longitudinal side of said piston to the other longitudinal side of said piston when said piston reciprocates within said cylinder, said flow preventing means including a second nut mounted on said shaft and having a threaded interior surface conforming substantially identically with the shaft threaded surface such that fluid flow along said shaft, between the second nut and said shaft, is substantially prevented and means for mounting said second nut to said ball nut wherein the second nut correspondingly translates integrally with the ball nut as a unit along said shaft in response to the rotation of said shaft.

4,493,615

ELECTRO-RHEOLOGICAL TRANSDUCER

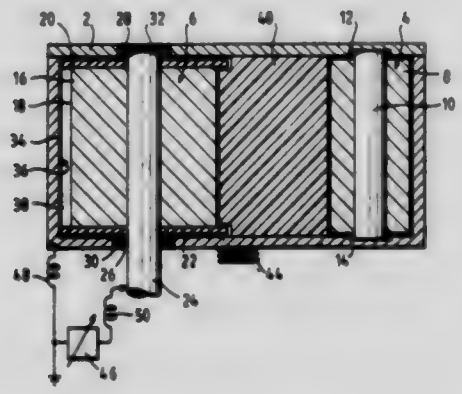
James E. Stangroom, Castleton, England, assignor to National Research Development Corp., London, England

Filed Dec. 2, 1983, Ser. No. 557,581

Claims priority, application United Kingdom, Dec. 3, 1982, 8234634

Int. Cl.[3] F04B *37/02*

U.S. Cl. 417—48 5 Claims



1. A transducer for use with an electro-rheological fluid characterised in that there is included—

at least two electrically conductive, movable conveying surfaces mutually disposed, in part, in parallel confrontation and defining therebetween a fluid transfer path;

a rotor connected to move with at least one of the conveying surfaces;

two fluid transfer ports each in fluid communication with a respective end of the fluid transfer path; and

an electrical connection means whereby control voltages are applicable to each of the two conveying surfaces.

4,493,616

PUMP ASSEMBLY AND OPERATING METHOD

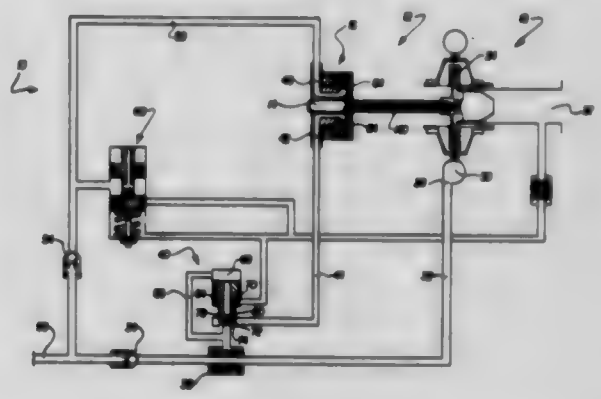
Thomas F. Bergin, Highland Heights, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Sep. 24, 1982, Ser. No. 422,596

Int. Cl.[3] F04B *23/14, 49/00;* F01C *1/00*

U.S. Cl. 417—53 10 Claims

1. A pump assembly comprising positive displacement pump means for supplying fluid under pressure to an outlet during operation of the pump assembly at a relatively low speed, said positive displacement pump means including a cam surface, a plurality of vanes, and pressure chamber means for holding fluid pressure to urge said vanes into engagement with said cam surface, centrifugal pump means for supplying fluid under pressure during operation of the pump assembly at a relatively high speed, said centrifugal pump means including a rotatable impeller, and biasing fluid pressure passage means for conducting fluid pressure from the outlet of said positive displacement pump means to said pressure chamber means, said biasing fluid pressure passage means including a passage formed in said



impeller and having a first end portion connected in fluid communication with the outlet of said positive displacement pump means and a second end portion connected in fluid communication with said pressure chamber means.

4,493,617

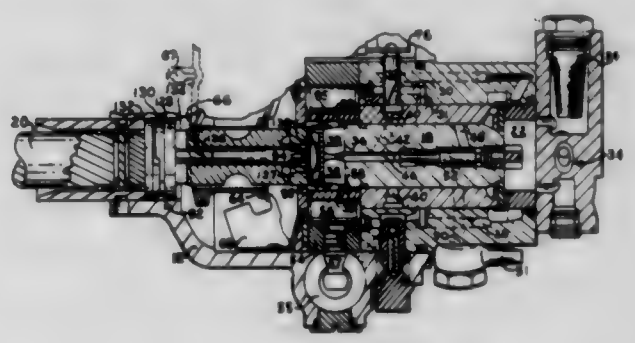
FUEL INJECTION PUMP WITH PLUNGER STROKE CONTROL

C. Eugene Brady, Avon, Conn.; Marcus J. Gottsche, Hampden, Mass., and Paul W. Stoll, West Suffield, Conn., assignors to Stanadyne, Inc., Windsor, Conn.

Filed Mar. 4, 1983, Ser. No. 472,074

Int. Cl.[3] F04B *49/00*

U.S. Cl. 417—214 20 Claims



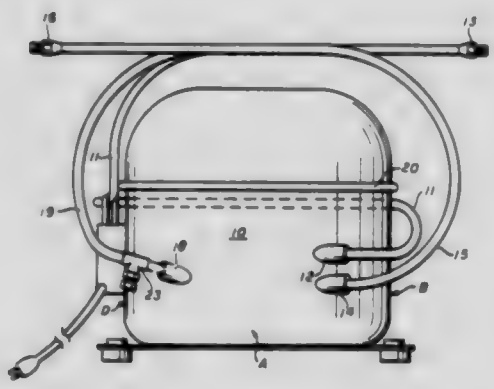
1. In a rotary fuel injection pump for an internal combustion engine having a housing, a rotor with a coaxial drive shaft rotatable in the housing, the rotor having a plurality of radially extending plunger bores and a plunger pump for each plunger bore having a pumping plunger reciprocably mounted in the bore to receive and then deliver a charge of fuel, a cam ring with a cam contour surrounding the rotor and engageable with the plunger pumps to translate the cam contour into reciprocable movement of the plungers, a plunger stroke limit mechanism for limiting the outward stroke of the plungers comprising an abutment member mounted for rotation with the rotor and for axial movement relative to the rotor and having an abutment for each plunger pump engageable by the respective pumping plunger for variably limiting the outward stroke of the plunger in accordance with the axial position of the abutment member and an adjustment mechanism for adjusting the axial position of the abutment member, the improvement wherein the rotor and abutment member have cooperating means permitting radial movement of the abutment member to automatically adjust to different radial displacement of the plungers within their bores.

4,493,618

HANDLE FOR COMPRESSOR UNITS

Eric W. Buzek; Eileen M. Buzek, and Frank R. Buzek, all of 6337 Willowdale, Houston, Tex. 77087

Filed Apr. 18, 1983, Ser. No. 485,460
Int. Cl.³ F04B 21/00
U.S. Cl. 417—234 3 Claims



1. A novel handle means for standard, light-weight refrigeration compressor units, comprising:

(a) a suction line forming an integral part of said handle means, said suction line engaging the suction outlet of said compressor unit, and appropriately encircling said compressor unit to conveniently dispose said suction outlet above and beyond the body of said compressor unit for easy joinder with desired compressor attachments,

(b) a discharge line forming an integral part of said handle means, said discharge line engaging the discharge outlet of said compressor unit, and appropriately encircling said compressor unit to conveniently dispose said discharge outlet above and beyond the body of said compressor unit for easy joinder with desired compressor attachments, and

(c) an oil drainage outlet line, said oil drainage outlet line engaging the oil drainage outlet of said compressor unit, and appropriately encircling said compressor unit to form an integral part of said handle means, said oil drainage outlet line also being disposed with a "tee" fitting near said drainage outlet of said compressor unit so as to enable the drainage of oil from said compressor unit, said suction line, discharge line and outlet line being appropriately bonded together to form a unitary structure.

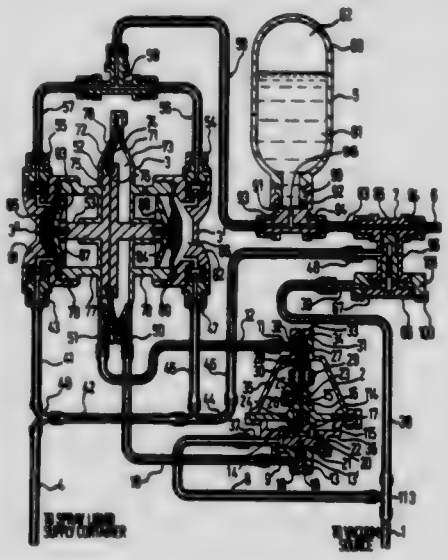
4,493,619

PRESSURE SYSTEMS FOR SPRAY LIQUIDS

Barry R. Marshall, Minster Lovell, and Paul A. Knight, Abingdon, both of England, assignors to Ambic Equipment Limited, Minster Lovell, England

Filed Oct. 28, 1981, Ser. No. 315,875
Claims priority, application United Kingdom, Feb. 10, 1981, 8103966
Int. Cl.³ F04B 49/00
U.S. Cl. 417—307 7 Claims

1. A pressure system for spray liquids comprising a vacuum input line for connection to a vacuum source, a pair of intermediate differential vacuum lines, a differential vacuum line switch powered from the said input vacuum line and operative to provide alternate vacuum pulses in said pair of differential vacuum lines, a spray liquid supply line for drawing spray liquid from a supply container, a spray liquid pressure line, a spray liquid pump driven from said pair of differential vacuum lines, for drawing spray liquid under pressure into said pressure line, a spray liquid pressure reservoir supplied from said spray liquid pressure line and an output spray line from the said reservoir, including a spray liquid pressure release valve having a liquid input connected to said liquid reservoir, a liquid output for returning liquid to said spray liquid supply container and a valve control vacuum line connected to said vacuum input line, said release valve being operative to release spray liquid from said pressure reservoir into said supply container when the pressure in said vacuum input line increases towards atmospheric pressure, in which the spray liquid pressure release valve has a displaceable liquid pressure release member biassed to a position in which the release valve permits return of liquid from the pressure reservoir to said liquid supply container, a chamber sealed by a diaphragm, said diaphragm being in contact with atmosphere on one face and abutting the



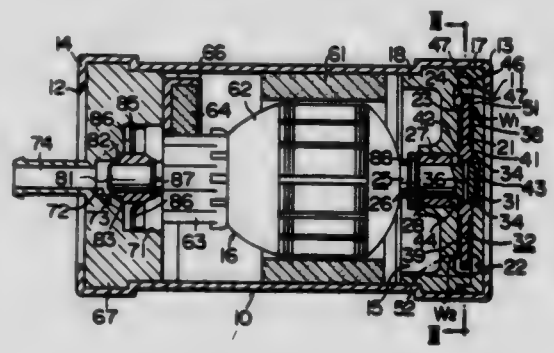
displaceable member on the other face, said vacuum input line being connected, by said control input line and a port, to the interior of said chamber and said displaceable member being urged to its non-release position by differential interior-vacuum and external-atmospheric pressure upon said seal diaphragm.

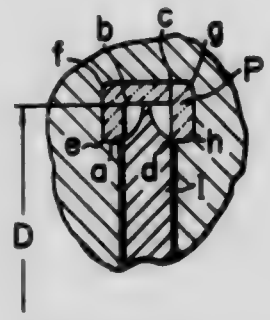
4,493,620

ELECTRICALLY OPERATED FUEL PUMP DEVICE

Toshihiro Takei, Kariya; Kazuma Matsui, Toyokashi; Yoshiyuki Hattori, Toyoake; Kiyohiko Watanabe, Kariya; Toshiaki Nakamura, Anjo, and Shunsaku Ohnishi, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 16, 1982, Ser. No. 358,785
Claims priority, application Japan, Mar. 20, 1981, 56-41096
Int. Cl.³ F04B 35/04; F04D 5/00
U.S. Cl. 417—366 6 Claims





1. An electrically operated fuel pump device for vehicles, comprising a regenerative pump component and an electric

motor component operatively connected to said regenerative pump component to actuate the same to discharge fuel at a pressure of at least 2 Kg/cm^2 and a flow rate of at least 40–150 l/hr, said regenerative pump component comprising:

a pump casing defining therein a pump chamber;

a closed vane type impeller operatively connected to said electric motor component and rotatable within said pump chamber, said impeller having an outer peripheral portion thereof cooperating with said pump chamber to define a pump flow passage, said impeller having in said outer peripheral portion a plurality of vane grooves formed in opposite axial end faces of said impeller in circumferentially spaced relation to each other; and

said impeller having its outer diameter within a range of approximately 20–65 mm, and a flow passage representative dimension defined by S/l being within a range of approximately 0.4–2 mm where S is a cross-sectional area of said pump flow passage and l is a cross-sectional peripheral length of said outer peripheral portion.

4,493,621

FUEL INJECTION PUMPING APPARATUS

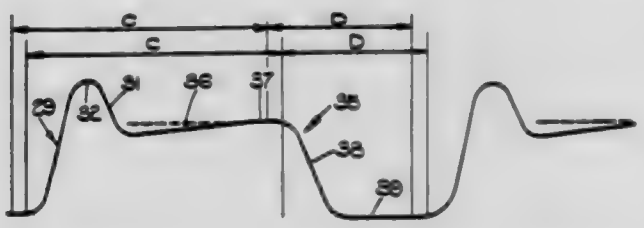
Ivor Feane, Greenford, England, assignor to Lucas Industries public limited company, Birmingham, England

Filed Sep. 28, 1982, Ser. No. 425,964

Claims priority, application United Kingdom, Oct. 30, 1981, 8132742

Int. Cl.^{3} F04B *19/02*; F02M *39/00*

U.S. Cl. 417—462 2 Claims



1. A fuel injection pumping apparatus for supplying fuel to an internal combustion engine comprising a housing, a rotary distributor member mounted in the housing and arranged to be driven in use, in synchronism with the associated engine, a bore formed in the distributor member and a pumping plunger therein, a delivery passage in the distributor member and a plurality of outlet ports in the housing, said outlet ports in use being connected to means for injecting fuel to the associated engine, said outlet ports being positioned such that the delivery passage registers in turn therewith as the distributor member rotates, inlet port means in the housing, a source of fuel under pressure connected to the inlet port means, inlet passage means connected to said bore, said inlet port means and said inlet passage means being arranged to allow fuel flow to said bore during at least part of the time said delivery passage is out of register with an outlet port, and cam means including a plurality of cam lobes for imparting inward movement to the plunger during part of the time the delivery passage is in register with an outlet port, each cam lobe comprising a leading flank extending to the crest of the lobe and a trailing flank extending from the crest of the lobe, said trailing flank including a first portion adjacent the crest which allows limited outward movement of the plunger, a second portion means and a third portion which extends to a base circle of the cam lobe, said second portion means extending from said first portion for a length substantially greater than said first portion and being directed inwardly to a degree which is gradual as compared to the slope of said first portion for gradually imparting a small and gradual inward movement to the plunger before the delivery passage has moved out of register with an outlet port for slightly and gradually pressurizing the fuel in the pumping apparatus and the outlet ports and collapsing cavities in the fuel contained in the passages in the distributor member and in the outlet ports without causing a rise in fuel pressure in the pumping apparatus significant enough to create pressure waves in the pumping apparatus or in the outlet ports.

4,493,622

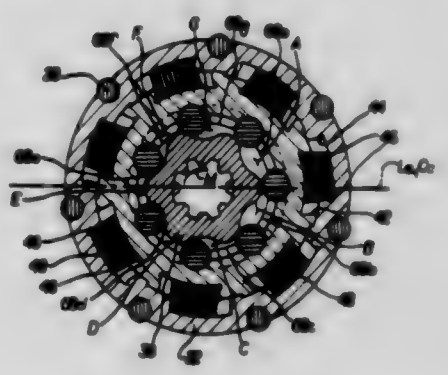
VARIABLE DISPLACEMENT MOTOR

Laurence L. Miller, West Lafayette, Ind., assignor to TRW Inc., Cleveland, Ohio

Filed Mar. 7, 1983, Ser. No. 472,858

Int. Cl.^{3} F03C *2/00*

U.S. Cl. 418—57 13 Claims



1. A hydraulic motor comprising:

an inlet port for receiving high pressure fluid and an exhaust port for exhausting low pressure fluid,

fluid displacement means comprising relatively rotatable and orbital gerotor gears, said gerotor gears having intermeshing teeth which define fluid chambers that expand and contract as the gerotor gears rotate and orbit relative to each other,

an output shaft,

means coupling one of said gerotor gears with said output shaft for applying a torque to said output shaft as said gerotor gears rotate and orbit relative to each other, and

commutation valve means for directing fluid from said inlet port to some of the fluid chambers defined by said gerotor gears and for directing fluid from other fluid chambers to said exhaust port according to the torque load imposed upon the output shaft,

said gerotor gears defining a center line of eccentricity which separates expanding chambers from the contracting chambers as the gears rotate and orbit,

said commutation valve means having a center line of commutation that separates the fluid chambers that are being communicated with said inlet port from the fluid chambers that are being communicated with said exhaust port as the gears rotate and orbit, and

means associated with said other of said gerotor gears for effecting a change in angular position of said other of gerotor gears with respect to said one of said gerotor gears in response to a change in a torque load on said output shaft for enabling a change in the orientation of the center line of eccentricity of the gear set relative to the center line of commutation of the commutation valve means to thereby change the displacement of said hydraulic motor.

4,493,623

OIL LUBRICATED MAIN DRIVE SHAFT FOR FUEL PUMP

James C. Nelson, Tolland, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.

Filed Feb. 22, 1983, Ser. No. 468,066

Int. Cl.^{3} F04C *1/08*

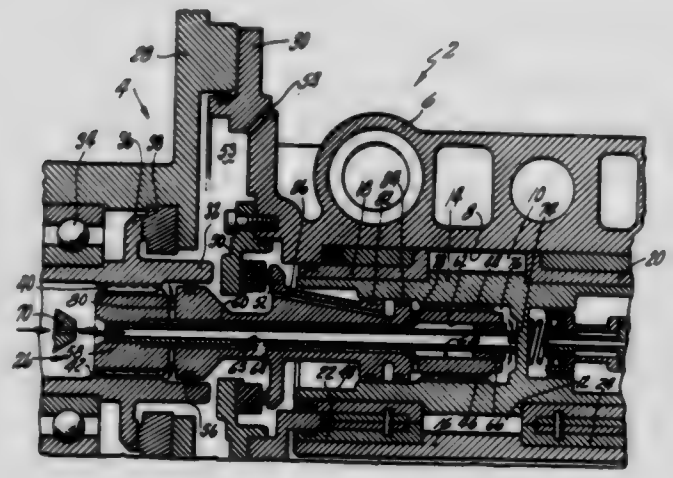
U.S. Cl. 418—94 4 Claims

1. In an improved fuel pump adapted to be connected to the gearbox of an engine, the pump being of the type comprising a housing having a pumping cavity therein, a rotating pump component mounted in the pumping cavity and a drive shaft having its outboard and inboard ends in respective engagement

with the gearbox and the rotating pump component, the improvement comprising:

lubricant supply passage means for directing lubricant from the gearbox through the drive shaft to the inboard end thereof;

lubricant return passage means for directing lubricant adjacent to the inboard end of the drive shaft back through the drive shaft to the gearbox;



a pair of spaced seals circumferentially mounted upon the drive shaft in engagement with the rotating component; and

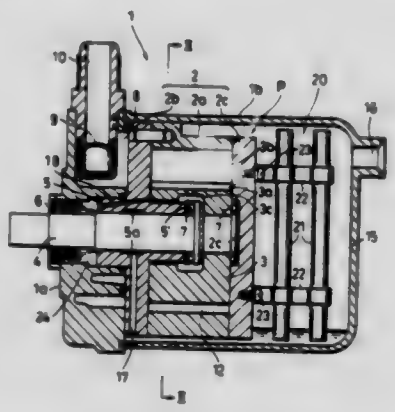
a drain passage in the drive shaft communicating with the outer periphery of the drive shaft at a location between the seals.

4,493,624

LUBRICATING OIL-SEPARATING DEVICE IN A REFRIGERANT COMPRESSOR FOR AIR CONDITIONING SYSTEMS

Masahiro Iio, Saitama, Japan, assignor to Diesel Kiki Co., Ltd., Saitama, Japan

Filed Aug. 30, 1983, Ser. No. 527,664
Claims priority, application Japan, Sep. 9, 1982, 57-136899[U]
Int. Cl.³ F04C 18/00, 29/02,
U.S. Cl. 418—98
10 Claims



1. In a refrigerant compressor for an air conditioning system, including a pump assembly for compressing refrigerant having lubricating oil mixed therein, said pump assembly having at least one pump outlet, at least one discharge valve disposed to close and open said pump outlet, a discharge pressure chamber disposed for communication through said at least one discharge valve with said at least one pump outlet to be supplied with said refrigerant compressed by said pump assembly and discharged through said at least one pump outlet, and a discharge port communicating with said discharge pressure chamber for discharging said compressed refrigerant to the outside of said compressor therethrough, said lubricating oil mixed in said refrigerant being used for lubrication of sliding parts of said compressor,

a lubricating oil-separating device mounted within said discharge pressure chamber for separating said lubricating oil from said refrigerant, said lubricating oil-separating device comprising:

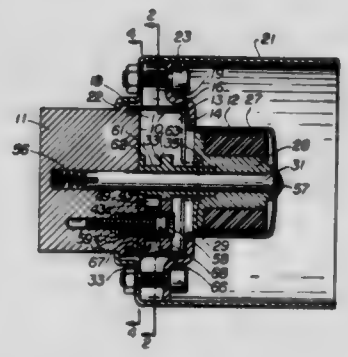
a plurality of tubes substantially vertically disposed within said discharge pressure chamber, said tubes each extending in a direction traversing a flow of said compressed refrigerant discharged through said pump outlet of said pump assembly and flowing in said discharge pressure chamber toward said discharge port, said tubes each having an open lower portion, at least one recess formed in a portion of a peripheral surface thereof facing substantially downstream of said flow of said compressed refrigerant, and an opening formed in said recess and communicating with the interior of said each tube.

4,493,625

GROOVED GEAR PUMP

Ferdinandus A. Pieters, Concord, Calif., assignor to Micropump Corporation, Concord, Calif.

Filed Aug. 6, 1982, Ser. No. 405,893
Int. Cl.³ F04B 17/00; F01C 1/18, 19/10; F04C 1/08
U.S. Cl. 418—126
5 Claims



1. In a pump of the type having first means defining:

a pump chamber having a face having a planar first surface,

a unitary drive gear and a unitary driven gear in said chamber each having planar second and third surfaces, said second surfaces bearing and sealing against said first surface, said gears meshing together at a mesh point,

second means for driving said drive gear,

an inlet duct in said face,

a concave shoe in said chamber overlying said inlet duct and a portion only of each of said gears including said mesh point,

third means mounting said shoe on said face, said shoe having:

a planar fourth surface sealing against said first surfaces and an outlet duct in said chamber remote from said shoe, the improvement which comprises

a first groove formed in said drive gear extending inward from the tips of the teeth of said drive gear to inside the root diameter of said teeth, the wall of said first groove closest to said second surface defining a planar fifth surface, said first groove dividing the teeth of said drive gear into a pumping first section and a second section,

a second groove formed in said driven gear extending inward from the tips of the teeth of said driven gear to inside the root diameter of said teeth, the wall of said second groove closest to said second surface defining a planar sixth surface, said second groove dividing the teeth of said drive gear into a pumping third section and a fourth section,

said second and fourth sections being located in said chamber,

said shoe further having a seventh surface sealing against portions of said fifth and sixth surfaces on either side of said mesh point,

an arcuate eighth surface sealing against some of the tips of said first and third sections adjacent said mesh point, and

whereby said first surface, said shoe, said first and third

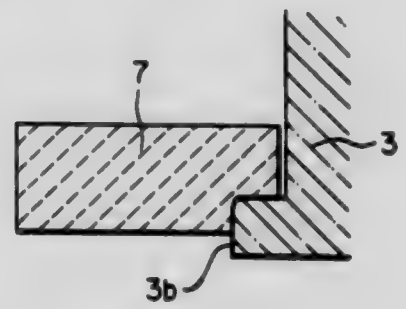
section and the bottoms of said grooves define a closed chamber around said inlet duct separate from said cavity said second and fourth sections being totally separated from said inlet duct by said shoe.

4,493,626

AUXILIARY RADIALLY SHIFTING MECHANISM FOR VANES IN A PUMP OF THE VANE TYPE

Tadashi Nomki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1982, Ser. No. 400,717
Int. Cl.³ F04C *2/00*
U.S. Cl. 418—260 1 Claim



1. In a pump of the vane type having
a cup-shaped cylinder with a suction port and a discharge port,
a rotor eccentrically and rotatably received within said cylinder,
a shaft means for driving said rotor,
a number of vanes radially shiftably disposed within said rotor and adapted to be rotated relative to said cylinder as said rotor rotates so as to have their radially outward ends abut against the inner periphery of said cylinder,
whereby fluid is sucked through said suction port and discharged through said discharge port under a pressure, and
a bracket to close said cylinder at its open end,
wherein the improvement comprises:
an auxiliary radially shifting mechanism for said vanes having a ring-shaped projection, provided on said bracket so as to protrude therefrom into direct radial contact with the vanes over the entire width of the protrusion and to be concentric with said cylinder but to be eccentric with said shaft means, the outer radial peripheral edge of said ring-shaped projection being rounded so that the mechanical strength of the vanes remains superior even if the pump is operating for a long time.

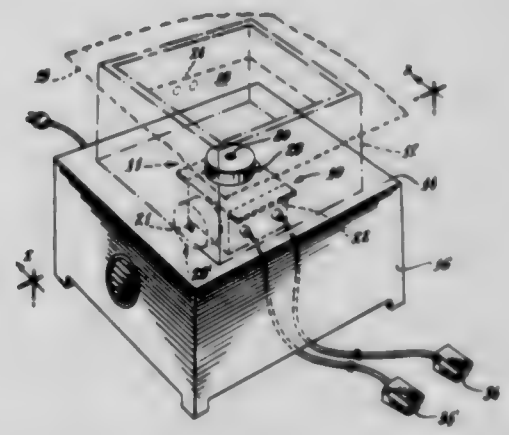
4,493,627

APPARATUS FOR MOLDING FOAM CUSHION PACKAGING

Michael P. O'Malley, Stratford, and Alfred R. Thibault, Naugatuck, both of Conn., assignors to International Packaging Systems Inc., Norwalk, Conn.

Filed Aug. 16, 1982, Ser. No. 408,453
Int. Cl.³ B29D *27/04*
U.S. Cl. 425—89 3 Claims

1. A vacuum and air release assembly for use in preforming a molded cushioning packaging material comprising:
a work station adapted to receive a form having the shape of an article to be enclosed within said molded cushioning packaging material,
a housing spaced from said work station to define a space to receive a cushioning foam material to surround said article,
said housing being generally in air tight sealing relationship with respect to said work station,
first blower means operatively associated with said work station to effectively impart a vaccum condition within said housing through an air access port in said work station,
second blower means operatively associated with said work station to blow air into said housing through said air access port,
means for selectively activating said first and second blower means,
means for injecting a foaming cushioning material into said space between said work station and the interior surface of



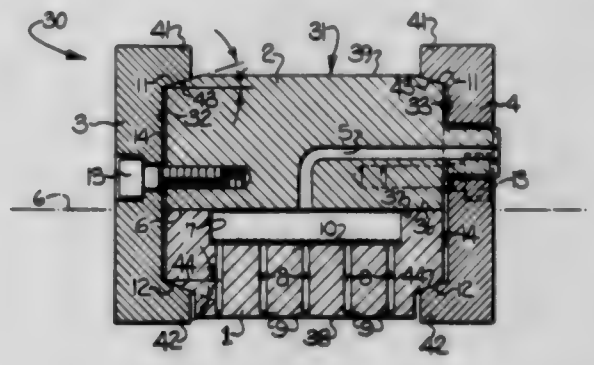
said housing about a separator sheet placed over said form on said work station,
whereby activation of said first blower means evacuates air from within said housing to cause said separator sheet to intimately contact said form so that said cushioning foam material completely surrounds said form and separator sheet in intimate contact therewith and activation of said second blower means after said cushioning foam material has set releases said forming cushioning foam material from contact with said work station.

4,493,628

MELT SPINNING APPARATUS

Erich Lenk, Remscheid, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Filed Jul. 12, 1983, Ser. No. 512,937
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1982, 3226479; Oct. 22, 1982, 3239064
Int. Cl.³ B29F *3/04*
U.S. Cl. 425—192 16 Claims



8. A melt spinning apparatus adapted for dividing a molten polymer into a plurality of streams to form synthetic filaments, and characterized by the substantial absence of leakage of the polymer, and comprising
a generally rectangular spin block having two opposite sides, said block including a spin plate having a plurality of ducts extending therethrough, and a cover plate overlying said spin plate, said spin plate and cover plate having opposing inner faces defining a transverse plane therebetween and oppositely directed outer faces, each outer face including a side edge surface portion extending along each of the two side edges thereof, with the two side edge surface

portions of at least one of the outer faces being inclined in opposite directions with respect to said transverse plane, said block further including cavity means disposed between the opposing faces of said spin plate and cover plate and communicating with said ducts so as to be adapted for supplying a molten polymer or the like thereto,

a pair of side plates disposed along respective opposite sides of said spin block, each of said plates including a pair of laterally extending shoulders, with each shoulder having a contact surface overlying a respective side edge surface portion of said spin plate and cover plate, and with the contact surfaces of said shoulders conforming to the inclination of the associated side edge surface portions, and

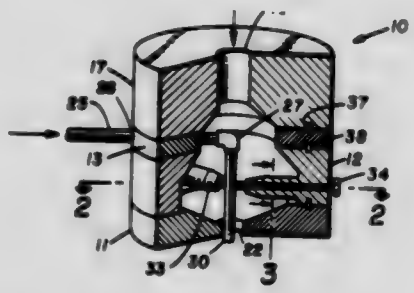
means operatively mounting said side plates to said spin block such that said side plates may be moved in a lateral direction toward or away from the associated side of said spin block, and such that upon lateral movement in a tightening direction the inclined side edge surface portions and cooperating contact surfaces act to bias the opposing faces of said spin plate and cover plate toward each other and thus oppose the tendency of the plates to separate by reason of the pressure of the molten polymer or the like in said cavity means, and to thereby avoid leakage.

4,493,629

MODULAR SPINNERETTE ASSEMBLY

Randal A. Goffe, St. Louis County, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 27, 1983, Ser. No. 565,264
Int. Cl.³ B29F *3/04*; B29D *23/04, 23/06*
U.S. Cl. 425—192 S 7 Claims



1. A modular spinnerette assembly for forming hollow fibers, comprising

(a) a spinnerette plate having a central bore for spinning a fiber from a solution of a polymeric material;

(b) a body member having an enlarged central opening for serving as a reservoir and passageway for said solution, said body member being stacked on the spinnerette plate;

(c) a plate element stacked on the boby member and having a central opening for the passage of said solution and also having a radial bore through one side thereof for the passage of a fluid;

(d) a tube leading from the bore in the plate element and terminating in the central bore in the spinnerette plate for injecting a fluid into the bore of the hollow fiber, said member being provided with means for centering the tube in the central bore in the spinnerette plate, said tube and said central bore cooperating to form a hollow fiber; and

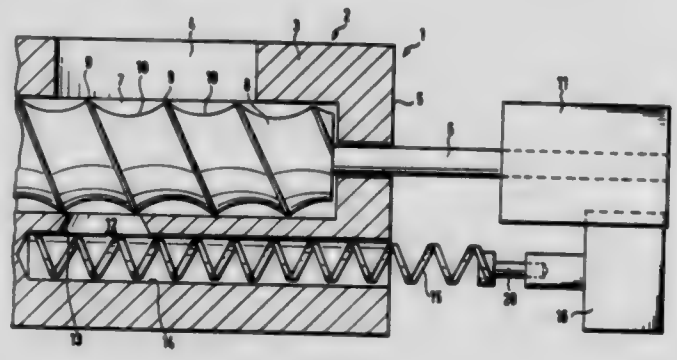
(e) means for holding the spinnerette plate, the body member and the plate element in stacked alignment said assembly having at least one passage, for carrying fluid, which tangentially enters a cavity portion of said assembly.

4,493,630

APPARATUS FOR DEWATERING AND PLASTIFYING MIXTURES FOR THE MANUFACTURE OF EXPLOSIVES

Dietmar Müller, Karlsruhe; Hiltmar Schubert, Walzbachtal, and Rudolf Kröhnert, Ettlingen, all of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft Zur Forderung der angewandten Forschung e.V., Munich, Fed. Rep. of Germany

Filed May 23, 1983, Ser. No. 496,868
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1982, 3225065
Int. Cl.³ B29F *3/03*
U.S. Cl. 425—203 6 Claims



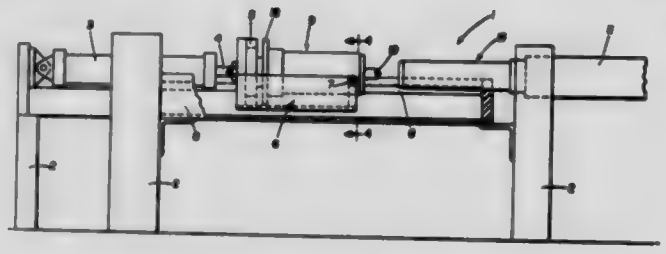
1. Apparatus for dewatering and plastifying a mixture of at least one explosive substance together with a quantity of water and extraneous solids, and comprising a housing having an axially extending extrusion opening and an inlet port in communication therewith for admitting the mixture in its wet condition, a screw extruder provided in said axially extending opening for kneading and conveying the mixture from said inlet port forwardly in a generally axial direction, said housing further including means defining an elongated duct terminating in a drain exterior to the housing, said housing including a drain port passageway connecting said axially extending opening with said elongated duct, said drain passageway diverging in a direction away from the axially extending extruder opening toward said elongated duct, and a helically shaped conveyor coil within said elongated duct, said coil having an interior forward end extending forwardly beyond said drain opening and having an exterior back end extending rearwardly beyond said drain opening and outside the housing, said exterior end adapted to be rotated externally of the housing so that water and solids contained in the water can be carried out of said elongated duct.

4,493,631

APPARATUS FOR PRODUCING VARIABLE-RATE SPRING

J. Robert Dieckmann; Michael L. Lauber, both of Akron, Ohio, and Mark R. Roodvoets, Spartanburg, S.C., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sep. 15, 1983, Ser. No. 532,419
Int. Cl.³ B29C *1/00*; B29H *3/08*
U.S. Cl. 425—292 8 Claims



1. Apparatus for producing an elastomeric spring

(1) a cylindrical mold supporting a sleeve,

(2) a first cap closing an end of said mold,

(3) an extrusion nozzle facing the open end of

(4) means to move one of said mold and nozzle coaxially

with respect to the other to position said nozzle within said mold near said first cap,

(5) means to extrusion-fill an elastomer into the sleeve in said mold,

(6) the pressure differential between said moving means and the extrusion-fill separating said mold and said nozzle axially,

(7) means to sever the extrudate at the open end of said mold,

(8) a second cap adapted to close the open end of said mold, said nozzle comprising an outer tube having an inner tube positioned to fit slidably about a stud extending centrally within said mold from said first cap.

4,493,632

SPACER IN METAL-MOLD VULCANIZER FOR RUBBER HOSE

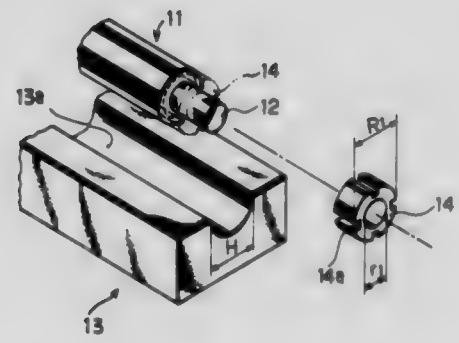
Yoshimi Hori; Takashi Ishida, both of Gifu, and Keizo Hayashi, Nagoya, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Dec. 23, 1982, Ser. No. 452,864

Claims priority, application Japan, Dec. 23, 1981, 56-192076[U]

Int. Cl.³ B29C *1/00*

U.S. Cl. 425—393 3 Claims



1. An annular spacer to be used during the vulcanization of an unvulcanized rubber hose in a metal mold having a substantially cylindrical body made of softer material than material of said mold so that said body is prevented from inflicting any damage upon a depression of said mold whereinto said unvulcanized rubber hose is inserted, an outside diameter of said body being greater than an inside diameter of said depression in said metal mold, an inside diameter of said body being greater than a diameter of a mandrel on which said unvulcanized rubber hose is wrapped so that said mandrel may be inserted in said body, said body defining grooves formed parallel to the axial direction of said spacer and extending into at least said outer surface of said body permitting gas, escaping from within said mold and said body, to be deflected toward said grooves during the vulcanization of said unvulcanized rubber hose.

4,493,633

APPARATUS FOR MOULDING AN ARTICLE FROM PLASTIC MATERIAL

Kjell M. Jakobsen, Skanör; Claes T. Nilsson, Löddeköpinge, and Lars G. Larsson, Höör, all of Sweden, assignors to PLM Aktiebolag, Malmo, Sweden

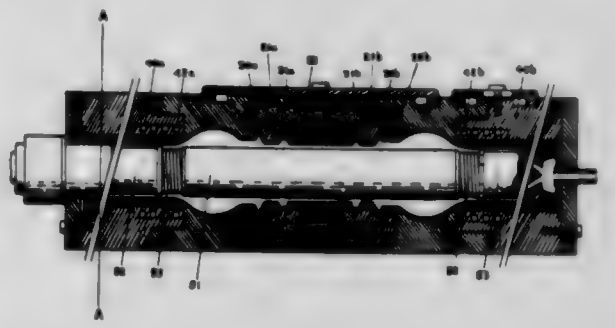
Division of Ser. No. 196,374, Oct. 14, 1980, Pat. No. 4,409,176. This application Jan. 14, 1983, Ser. No. 457,887

Claims priority, application Sweden, Jan. 30, 1980, 8000722

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—525 15 Claims

1. Apparatus for molding an article from a tube-shaped parison of thermoplastic material having an oriented portion which is of relatively high strength and resistant to stretching, said apparatus comprising mold means including a wall with a cylindrical mold surface provided with a plurality of axially spaced recesses therein, means for applying internal pressure to the parison to bring a plurality of regions of the oriented portion of the parison into contact with said cylindrical mold surface in axially spaced regions of the mold means adjoining said recesses such that the parison extends across the recesses without entering into contact with the mold wall at said recesses, means for relatively displacing said axially spaced regions of said mold means in axial direction to axially shift the plurality of axially spaced regions of the parison while concurrently applying the internal pressure to said parison and reducing the axial extent of said recesses to a final position in which said recesses are of ring-shape with a defined cross-sectional profile, the relative axial displacement of said regions of said mold means in combination with the reduction of the axial extent of the recesses and the internal pressure applied to the parison



causing said regions of the parisons in contact with the mold wall under the application of internal pressure to be correspondingly relatively axially displaced with said regions of the mold means while the portions of the oriented portions of the parison extending across said recesses are shaped into said recesses under said internal pressure, and means for halting the relative displacement of said axially spaced regions of the mold means substantially when said portions of the parison have entered said recesses and assumed the shape of said recesses in said final position without substantial stretching and change in wall thickness of said portions of said parison to form a hollow ring-shaped profile on said article.

4,493,634

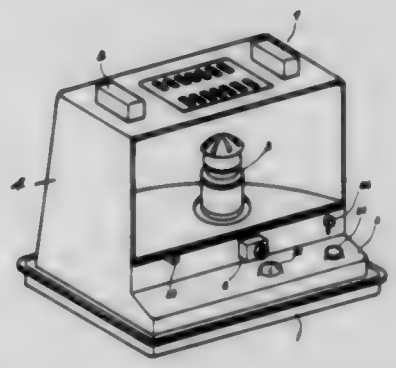
KEROSENE HEATING STOVE WITH TEMPERATURE AND CARBONIC OXIDE SENSORS

Jerry S. C. Yang, 5-1 Tay Pyng St., Shi Hwu Jeau, Jang Hush Shiann, Taiwan

Filed Apr. 28, 1982, Ser. No. 372,829

Int. Cl.³ F23N *5/00*

U.S. Cl. 431—33 11 Claims



1. An apparatus for heating a space, said apparatus comprising:

reservoir means for storing a quantity of combustible liquid;

wick means for producing a flame by burning said combustible liquid, a first portion of the length of said wick means being adapted for immersion into said combustible liquid, a second portion of the length of said wick means being adapted for burning said combustible liquid to produce said flame;

temperature sensing means for producing a signal indicative of the temperature of the air in said space; and

temperature regulating means, responsive to said tempera-

ture-indicative signal, for adjusting the height of said wick means in order to change the height of said flame so as to maintain constant temperature of said air in said space, said temperature regulating means, also reducing the height of said wick means to decrease the height of said flame in response to a warning signal;

carbonic oxide sensing means for producing said warning signal when the level of carbonic oxide produced by said flame accumulated in said space exceeds a predetermined level dangerous to a user; and

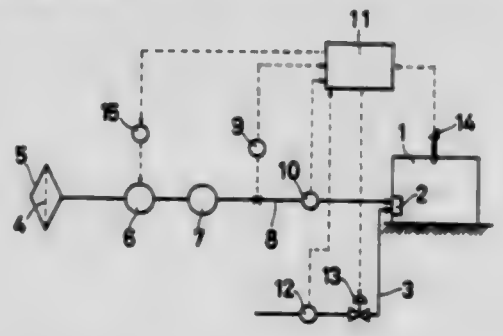
movable lid means, responsive to said warning signal, for covering said wick means to extinguish said flame when said warning signal is produced.

4,493,635

OXYGEN-ENRICHED AIR RATIO CONTROL DEVICE FOR COMBUSTION APPARATUS

Hirosato Ito, and Daizo Takeda, both of Osaka, Japan, assignors to Osaka Gas Company Limited, Osaka, Japan

Filed Feb. 10, 1983, Ser. No. 465,679
Claims priority, application Japan, Feb. 27, 1982, 57-27900[U]
Int. Cl.³ F23N *3/08*
U.S. Cl. 431—90 2 Claims



1. In a combustion apparatus of the type including a burner for burning combustion fuel and oxygen-enriched air, a fuel supply pipe for supplying combustion fuel to said burner, oxygen-enriched air generating means including an oxygen permeable selective membrane, an air supply pipe extending from said generating means to said burner, and a vacuum pump in said air supply pipe at a location downstream of said generating means for drawing air through said membrane, thereby enriching said air with oxygen, and supplying said air to said burner, the improvement of means for controlling the air-fuel ratio supplied to said burner, said controlling means comprising:

air flow meter means at said air supply pipe for determining the amount of air passing therethrough and for generating a signal representative thereof;

oxygen concentration analyzer means at said air supply pipe for determining the concentration of oxygen in said air passing therethrough and for generating a signal representative thereof;

fuel flow meter means at said fuel supply pipe for determining the amount of fuel passing therethrough and for generating a signal representative thereof; and

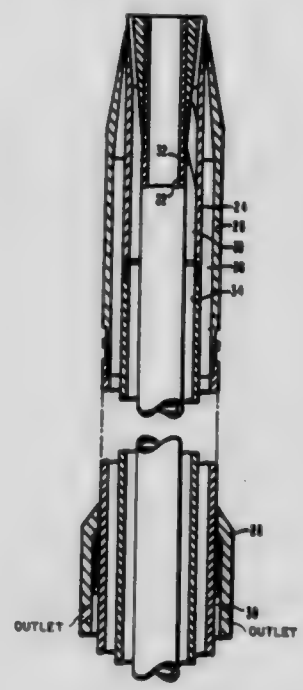
means, responsive to said signals from said air flow meter means, said oxygen concentration analyzer means and said fuel flow meter means, for calculating the actual air-fuel ratio supplied to said burner, and operatively connected to said vacuum pump for controlling the operation thereof to adjust said actual air-fuel ratio to equal a predetermined air-fuel ratio.

4,493,636

GASIFICATION SYSTEM

Gaurang B. Haldipur, Hempfield; Richard G. Anderson, Penn Hills, and Peter Cherish, Bethel Park, all of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 240,654, Mar. 5, 1981, Pat. No. 4,391,611.
This application Mar. 11, 1983, Ser. No. 474,360
Int. Cl.³ F23D *19/02*
U.S. Cl. 431—170 9 Claims



1. A fluidized bed gasification reactor of the type wherein particulate carbonaceous material is fed into a vertically disposed vessel housing a combusting fluidized bed to produce a combustible product gas and ash, comprising:

a first vertical cylindrical tube extending upwardly into said vessel and having an open upper end;

means for flowing a first fluid upwardly through said first tube and into said vessel;

a second vertical tube, having an open upper end, and concentric with and spaced about said first tube so as to form an inner annulus therebetween; said first and second tubes forming an annular passage of substantially constant cross-section over a substantial portion at their ends, said passage extending radially outwardly and at an angle of greater than 0° and less than 7½°;

means for flowing a second fluid upwardly through said inner annulus and into said vessel;

a third vertical tube, having an open upper end, and concentric with and spaced about said second tube so as to form a second annulus;

means for flowing a third fluid upwardly through said second annulus and into said vessel; and

wherein said second and third tubes are tapered to form narrowed upper ends.

4,493,637

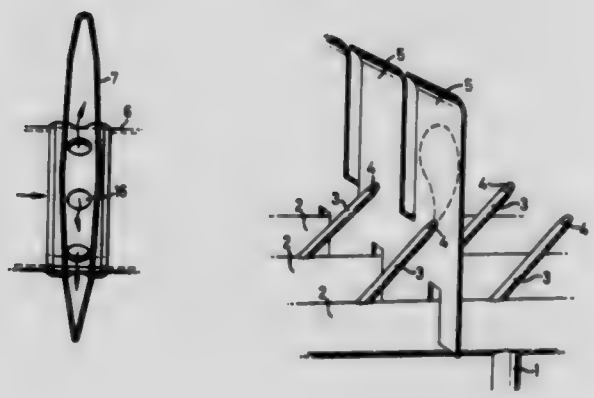
FOSSIL FUEL CATALYST GENERATOR

Robert Ganter, Mount Penn; Robert Whitmoyer, Selins Grove, and Palle Rye, Shillington, all of Pa., assignors to Thermics Corporation Liquidating Trust, Mount Penn, Pa.

Continuation of Ser. No. 287,014, Jul. 27, 1981, abandoned, which is a continuation of Ser. No. 12,411, Feb. 15, 1979, abandoned, which is a continuation-in-part of Ser. No. 878,130, Feb. 15, 1978, abandoned. This application Mar. 14, 1984, Ser. No. 589,041
Int. Cl.³ F23J *1/00*
U.S. Cl. 431—190 10 Claims

1. An apparatus for introducing a catalyst into a fuel-air mixture for combustion in stationary combustion apparatus comprising:

a container for holding water;
means for passing air through water in said container to produce processed air;
means for removing substantially all moisture in the form of mist from said processed air to produce processed air prior to removing said processed air from said container; and
means for removing said processed air from said container and for introducing said processed air removed from said container into a fuel-air mixture of stationary combustion apparatus, said means for removing substantially all moisture includes a baffle secured to the uppermost portion of said container upstream of and communicating with a container outlet, said baffle comprising a pair of plates having peripheral portions extending outwardly and downwardly from central portions thereof, said plates being spaced one above the other and attached together by radial vanes secured between said plates, said upper plate having means surrounding an opening for securing said baffle to said container adjacent said outlet, wherein a space is formed between said plates, said vanes and said securing means provides a tortuous path for processed air being removed from said container whereby substantially all moisture in the form of mist contained in said processed air is removed from said processed air.



4,493,638

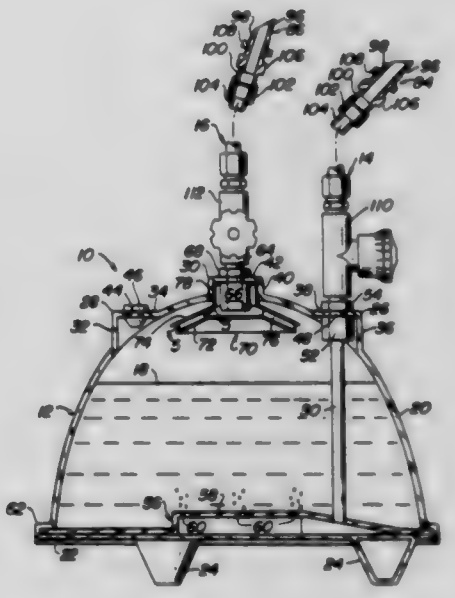
POST-AERATED BURNER FOR GROUND FLARE, AND GROUND FLARE INCORPORATING SAME

Roger S. Scammell, Yarmouth, England, assignor to The British Petroleum Company, p.l.c., London, England

Filed Feb. 12, 1982, Ser. No. 348,228
Claims priority, application United Kingdom, Feb. 18, 1981, 8105121
Int. Cl.[3] F23D *13/20*
U.S. Cl. 431—202 17 Claims

1. A burner comprising:
(a) a plurality of horizontally disposed fuel gas supply pipes;
(b) said supply pipes being streamlined to provide a relatively low resistance to upward air flow;
(c) each pipe having fuel gas outlets in the form of jets in the downstream face of the pipe;
(d) there being a plate adjacent to each jet,
(e) the jets and plate being adapted to give an angle of fuel gas impingement on the plate of from 1° to 55° so as to mix the fuel gas and surrounding air on the plate;
(f) the plate also having means for flame retention; and
(g) means for passing air upwardly past the jets and plates.

17. A burner comprising a fuel gas supply pipe being streamlined so as to present low resistance to upward air flow, the pipe having one or more outlets, a plate adjacent and at an angle to each outlet whereby the angle of fuel gas impingement on the plate is at an angle of 1° to 55°, means for passing air upwardly past the outlets and plates, and means for retaining the flame resulting from combustion of the fuel gas and air, said flame retaining means comprising the upper edge of the plate inclined into a horizontal position towards the fuel gas outlet.

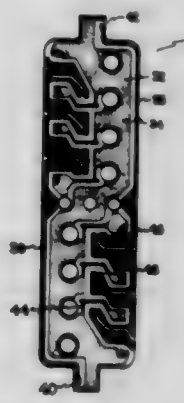


4,493,639

CONDUCTIVE INK FOR FLASHLAMP ARRAY CIRCUIT

Mary E. Suster, Chagrin Falls, Ohio, assignor to General Electric Company, Schenectady, N.Y.
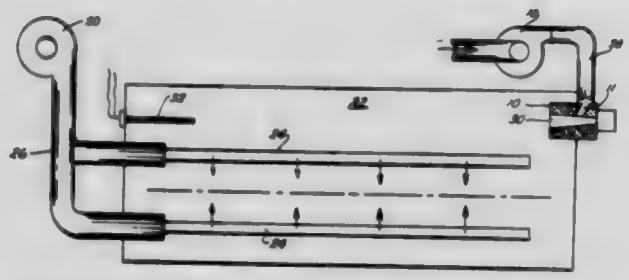
Continuation of Ser. No. 489,870, May 6, 1983, , which is a continuation of Ser. No. 205,412, Nov. 10, 1980, abandoned. This application Jan. 13, 1984, Ser. No. 570,415
Int. Cl.[3] F21K *5/00*; H01B *1/06*; G03B *15/02*
U.S. Cl. 431—359 3 Claims



1. An improved photoflash array having a plurality of high voltage type flash lamps connected to a lamp firing circuit pattern deposited on a circuit board with radiation-sensitive switches being connected in said circuit pattern for sequential firing of said flash lamps, wherein the improvement comprises using a non-metallic conductive ink coating for said circuit pattern which is a mixture containing at least 25% by weight in the dry solid coating of powdered carbon with up to approximately 50% by weight in said dry solid coating of a particulated electrically conductive material selected from the group consisting of graphite flakes and conductive carbon, along with an organic polymer binder, said conductive ink exhibiting greater electrical conductivity together with increased electrostatic flash out protection of the flash lamp being provided by combination of said conductive ink with common electrical

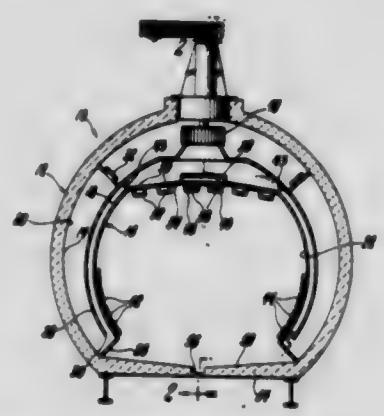
grounding circuit means having greater width than the width of the circuit pattern being employed to apply firing pulses to the associated flash lamps.

4,493,640
SOLVENT REDUCING OVEN
Lester A. Hanson, Parma, Mich., assignor to Blu-Surf, Inc., Parma, Mich.
Filed Oct. 21, 1983, Ser. No. 544,203
Int. Cl.³ F27B 9/28; F24H 1/00
U.S. Cl. 432—72 6 Claims



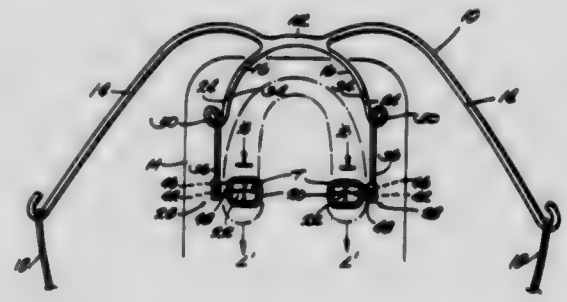
1. A solvent reducing drying oven comprising:
an elongated housing having product advancing means for conveying product therethrough to allow solvents to be driven off the product;
burner means with its discharge oriented into said oven for combusting solvents and supplying the resultant heat to said oven;
vaporized solvent ducting and advancing means from said housing for advancing vaporized combustible solvents from said housing, including passages into said burner means oriented at an acute angle toward and relative to the discharge outlet from said burner means for pressurized combustion of the solvents, and transfer of the resultant heat to said oven.

4,493,641
BAKE OVEN WITH MANIFOLD
Gordon F. Hubbert, Plymouth, Mich., assignor to Gladd Industries, Inc., Plymouth, Mich.
Filed Jan. 9, 1984, Ser. No. 569,500
Int. Cl.³ F27B 9/00, 3/22
U.S. Cl. 432—120 17 Claims



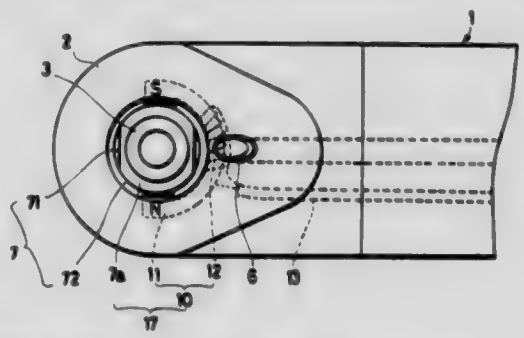
1. A paint bake oven (10) comprising: an outer insulated housing (12) including an inner wall surface (14); an inner housing (16) disposed within said outer housing (12) and having an outer wall surface (18) spaced from said inner wall surface (14) to define a gas flow channel (20) therebetween, said inner housing (16) having an inner product passageway (22); gas supply means (24) disposed above said inner housing (16) for supplying a gas flow to said gas flow channel (20); gas exhaust means for exhausting gas from said product passageway (22); and characterized by gas flow control means for directing the gas flow along a flow path from said gas supply means (24) downwardly along said inner wall surface (20) of said outer housing (12) and then upwardly over said outer wall surface (18) of said inner housing (16) to uniformly distribute the gas flow over said inner housing (16).

4,493,642
ORTHODONTIC DEVICE AND ASSOCIATED ORTHODONTIC METHOD
Glendon J. Bogdon, 3044 S. 92nd St., Milwaukee, Wis. 53227
Filed Dec. 27, 1982, Ser. No. 453,460
Int. Cl.³ A61C 7/00
U.S. Cl. 433—5 31 Claims



1. An orthodontic device comprising
a face bow member including generally diverging outer arms adapted for connection to an orthodontic headpiece and inner arms extending between said outer arms and adapted to project into the mouth of the user.
a first member associated with each of said inner arms,
first means connecting each of said first members to said associated inner arm for imparting to each of said first members a generally horizontal force directed outwardly toward the cheek side of the user's mouth, and for rotation of each of said first members about an axis fixed relative to said associated inner arm,
a second member associated with each of said first members, each of said second members being adapted for engagement with a tooth, and
second means removably connecting each of said second members to said associated first member for imparting to each of said second members said generally horizontal force imparted to said associated first member, and for transmitting rotation of said first member into arcuate movement of said second member about said axis, whereby arcuate movement of each of said second members applies a rotational force to the tooth and serves to tip the root of the tooth engaged by said second member in the direction of said arcuate movement.

4,493,643
DENTAL HANDPIECE HAVING NON-CONTACT ROTATIONAL SPEED DETECTION DEVICE
Akifumi Tachibana, Kyoto, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan
Filed Dec. 30, 1982, Ser. No. 454,687
Claims priority, application Japan, Feb. 9, 1982, 57-17979
Int. Cl.³ A61C 1/00, 3/00
U.S. Cl. 433—27 5 Claims



1. A dental handpiece having therein a non-contact rotational speed detection device, which device comprises:

cylindrical rotor made of a magnetic material provided with discontinuities around its circumference: and

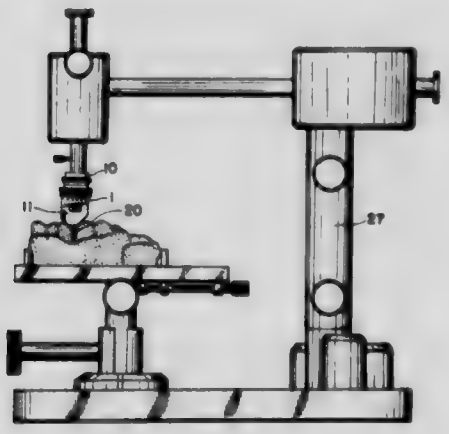
an electromagnetic induction pulse generator comprising a permanent magnet provided close to said cylindrical rotor in a head of said dental handpiece and a coil wound around said permanent magnet, whereby the pulse generator generates an induction voltage proportionate to the product of the number of said discontinuities and the rotational speed;

4,493,644

DEVICE FOR MEASURING AND SCRAPING OPERATIONS IN THE FIELD OF PRESTORATIVE DENTISTRY

Minoru Ai; Akira Manabe, both of Tokyo; Yoshimasa Igarashi, Sagamihara, and Katsuya Mizuno, Tokyo, all of Japan, assignors to Sankin Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1983, Ser. No. 548,000
Claims priority, application Japan, Nov. 5, 1982, 57-193526
Int. Cl.³ A61C *3/00*
U.S. Cl. 433—75 9 Claims



1. In a device for measuring an inclination angle of the tapered surface of a plaster die duplicated from the prepared tooth, said plaster die being mounted on a surveyor utilized in the "conus crown" telescope technology, and scraping a wax pattern on the plaster die so as to fabricate a tapered conical crown with an adequate inclination angle to retain a partial denture, the improvement consisting in that said device essentially comprises;

a rotary ring having a lower end face which is cut to a predetermined inclination angle, said rotary ring having a number of calibration lines impressed over the peripheral surface thereof,

core means onto which said rotary ring is rotatably fitted, tool holding means inserted into the core means so as to turn about a support shaft, said tool holding means having a pair of lateral projections each of which upper face extends at the same inclination angle as that of the lower inclined end face of the rotary ring,

a lock ring for inhibiting rotation of the rotary ring when the tool holding means is to be fixedly held,

resilient means for normally thrusting downward the rotary ring so that the lower inclined end face of the rotary ring comes in slidable contact with both the upper faces of the lateral projections of the tool holding means, and

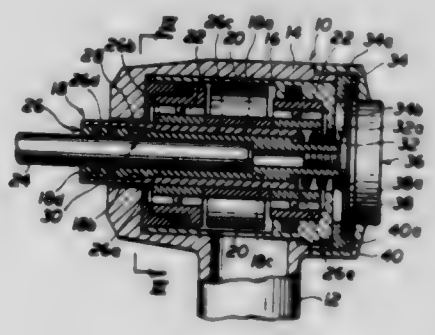
fitting means firmly fitting the device to the surveyor, said fitting means serving also as a cover for the device.

4,493,645

DEVICE FOR OPENING AND CLOSING A CHUCK FOR A DENTAL HANDPIECE

Takesuke Nakanishi, Kanuma, Japan, assignor to Nakanishi Dental Mfg., Co., Ltd., Kanuma, Japan

Filed Jun. 30, 1983, Ser. No. 509,809
Claims priority, application Japan, Jul. 2, 1982, 57-101183
Int. Cl.³ A61C *1/14*
U.S. Cl. 433—127 7 Claims



1. A dental handpiece having means for opening and closing a chuck, comprising:

a handle portion;

a powerhead assembly supported on said handle portion;

a hollow driving shaft having a plurality of radial turbine blades around the periphery thereof and journalled only for rotation in said handle portion, said driving shaft having adjacent a forward end a large diameter front portion and a small diameter rear portion and a forwardly outwardly tapering portion joining said front and rear portions;

a hollow cylindrical chuck axially slidably positioned in said hollow driving shaft, said cylindrical chuck having a large diameter front peripheral surface and a small diameter rear peripheral surface and a forwardly outwardly tapering outer peripheral surface joining said front and rear peripheral surfaces, said surfaces corresponding to said large diameter front portion, said small diameter rear portion and said forwardly outwardly tapering portion, respectively, said cylindrical chuck having a plurality of radial openings opening through said forwardly outwardly tapering surface at equally spaced positions therearound;

a disc-shaped chucking die slidably positioned in each said radial opening and having a peripherally stepped flat bottom portion projecting slightly into the interior of said cylindrical chuck;

a helical compression spring around said cylindrical chuck and having one end engaged with a rear portion of said cylindrical chuck and the other end engaged with a rearwardly facing surface of said driving shaft for urging said cylindrical chuck rearwards; and

a chuck pusher in said powerhead assembly at the rear end of said cylindrical chuck and normally disengaged from said cylindrical chuck and engageable with said cylindrical chuck for sliding said cylindrical chuck within said driving shaft against said helical spring to release said chucking dies.

4,493,645

DEVICE FOR FIXING A TRANSMISSION ASSEMBLY IN THE BODY OF AN ANGLED DENTAL TOOL

Bernard Lacour, 16 Chemin de Brulefoin, 25000 Besancon; Hubert Eavrard, Chemin du Moulin, Auxon Dessus, 25870 Geneuille; Roger Gaillard, Busy, 25320 Montferrand le Chateau, and Jean C. Boinot, 22 H, rue de Fontaine Ecu, 25000 Besancon, all of France

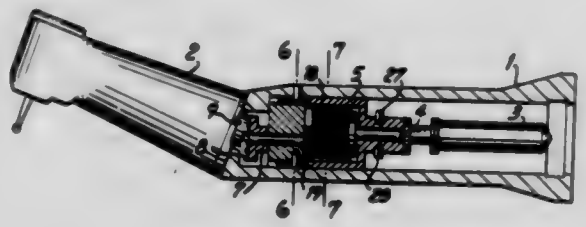
Filed Jul. 26, 1982, Ser. No. 401,611

Claims priority, application France, Aug. 3, 1981, 81 15144; Dec. 1, 1981, 81 22616

Int. Cl.³ A61C 1/12

U.S. Cl. 433—133

1 Claim



1. A contra angle combination comprising, a contra angle head having a driven spindle for driving a rotary-driven dental tool mounted on the head, said spindle having a driven pinion gear rigidly fixed thereto on an end of said spindle for receiving driving input thereto to rotate said spindle, a drive transmission assembly having a driving shaft with an end pinion gear rigidly fixed thereto for meshing only with several teeth thereof with some teeth of the first-mentioned pinion gear, when the transmission assembly is coupled to the contra angle head and is at rest, the axes of rotation of said first-mentioned gear being at an oblique angle so that only partial meshing occurs when said drive transmission assembly is coupled to said contra angle head, and is at rest, an elongated housing having a socket for receiving and housing the drive transmission assembly, a bayonet coupling releasably holding the drive transmission assembly in said socket of said housing, a second bayonet coupling for detachably coupling said housing to said contra angle head, said drive transmission shaft having an externally toothed element at an opposite end to the pinion gear thereon, an internally toothed element fitting over and circumferentially of the externally toothed element for detachably coupling thereto, and another shaft fixed to said internally toothed element and extending axially therefrom for driving the internally toothed element thereby to drive the pinion gear connected to said drive transmission, whereby the pinion gears can be driven at speeds only partially dependent on the gear ratio between the pinion gears.

4,493,647

WEATHER RADAR SIMULATOR

Dennis A. Cowdrey, Fulborough, England, assignor to The Singer Company, Binghamton, N.Y.

Filed Mar. 29, 1982, Ser. No. 362,710

Claims priority, application United Kingdom, Jul. 30, 1981, 8123416

Int. Cl.³ G01S 7/24

U.S. Cl. 434—2

5 Claims

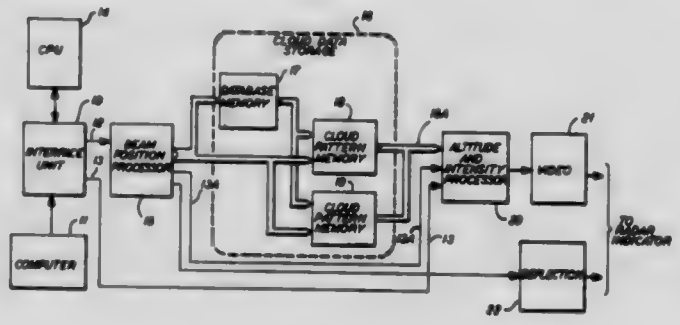
1. A weather radar simulator, comprising:

beam positioning means arranged in operation to generate for each of a plurality of directions of a simulated radar beam, address signals representing the spatial coordinates of points on the simulated radar beam;

storage means for storing weather information in respect of cells of a region in which the radar beam is assumed to propogate;

the stored information being addressed by said address signals for read-out of said weather information in respect of cells through which the beam passes;

said storage means comprises first storage means with storage locations, addressed by the higher order parts of the address signals, each containing a code word specifying a weather pattern for a respective multicell location of the region, second storage means with a plurality of groups of memory locations, each group having memory locations each containing weather information in respect of a respective cell, and addressing means responsive to code words read from said first storage means to select a corresponding one of the groups and responsive to the lower order parts of said address signals to select a cell with that group; and



processing means responsive to the read-out weather information to calculate, for each beam direction, the corresponding beam attenuation to form a video signal for supply to a radar display indicator.

4,493,648

TERRESTRIAL GLOBE

Hajime Suzuki, 5-39-9 Kamikitazawa, Setagaya-ken, Tokyo, Japan

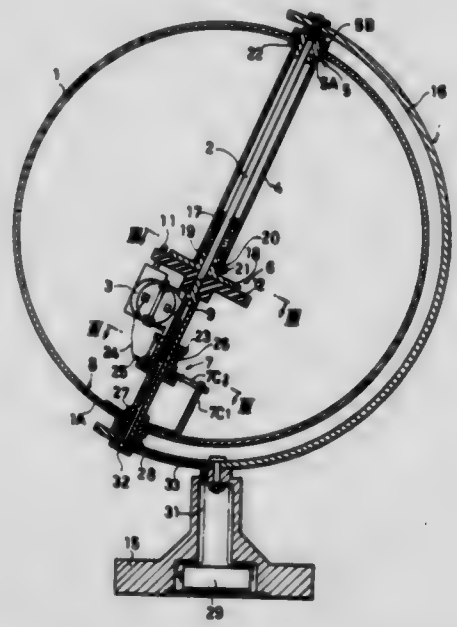
Filed May 11, 1983, Ser. No. 493,718

Claims priority, application Japan, May 17, 1982, 57-70615[U]; Mar. 15, 1983, 58-36306[U]

Int. Cl.³ G09B 27/08

U.S. Cl. 434—136

4 Claims



1. In a support for a rotatable globe, particularly a terrestrial globe, of the type including:

a support;

a pivot carried by the support;

a globe supported by the pivot;

a stationary shaft carried by said support and extending into the globe through an aperture therein;

a drive motor positioned within said globe and supported by said stationary shaft;

a drive member positioned within said globe and journaled for rotation about said stationary shaft, the drive member being driven by said drive motor; and,

means for interconnecting said drive member and said globe

and supporting said globe for rotation about a diametral axis thereof upon energization of said drive motor;

the improvement comprising:

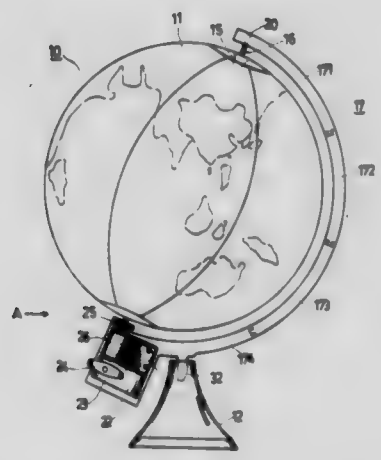
switching means for said motor associated with said drive member and which is actuated to energize said motor upon manual rotation of said globe in a forward direction, and, which is actuated oppositely to de-energize said motor upon reverse manual rotation of said globe.

4,493,649

COLLAPSIBLE GLOBE ASSEMBLY

Wen H. Tsung, No. 106, Teh-An St., Chu-Tong Cheng, Hsin-Chu, Taiwan

Filed Feb. 7, 1983, Ser. No. 464,665
Int. Cl.[3] G09B *27/08*
U.S. Cl. 434—138 4 Claims



1. A globe assembly comprising:

a hollow sphere of flexible material having two inflating passages on the wall thereof at diametrically opposite positions; two plug members for obstructing said passages, said plug members each including a pin member; a bowed support arm having end portions with pin holes for receiving said pin members for rotation therein; a stand for supporting said bowed support arm; a driving mechanism provided at a lower end portion of said bowed arm and having an output shaft; and a pair of gears mounted respectively to said output shaft and said pin member at the lower end of said bowed arm, said gears being engageable and disengageable from each other; whereby the sphere can be rotated either by hand or by the driving mechanism.

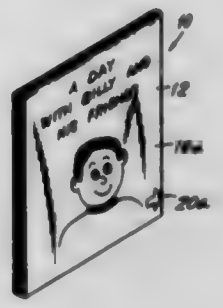
4,493,650

FOLD-OUT GARMENT BOOK

F. William Kaufmann, III, and Alan Zwiebel, both of New York, N.Y., assignors to Random House, Inc., New York, N.Y., a part interest

Filed Feb. 17, 1984, Ser. No. 581,399
Int. Cl.[3] G09B *17/00*; B42D *1/00*
U.S. Cl. 434—178 12 Claims

1. A fold-out garment book comprising a sheet folded to define a plurality of panels which form pages of a book, said pages including printing thereon in a predetermined sequence, said sheet being unfolded as said pages are viewed in sequence, said unfolded sheet including an opening therein to permit wearing of said sheet as a costume, said panels presented when said sheet is worn in unfolded condition including printing





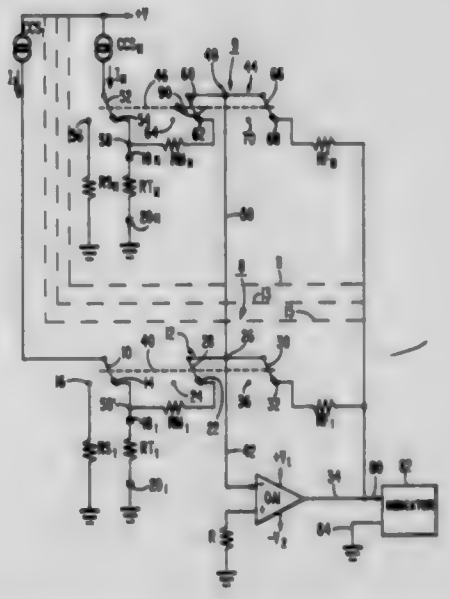
thereon to define said costume, whereby a book which unfolds to a costume is provided.

4,493,651

STATISTICAL TEACHING APPARATUS

Allan E. White, Hightstown; David E. Coleman, Kendall Park, and Steven R. Miller, Cranbury, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 5, 1984, Ser. No. 586,272
Int. Cl.[3] G09B *19/00*
U.S. Cl. 434—188 10 Claims



1. A statistical teaching apparatus for statistically evaluating a plurality of elements comprising:

means for selectively measuring a given characteristic of one or more selected elements of a selected group of said elements;

means for selectively averaging said measured characteristics of said elements in said selected group;

means for selectively coupling said one or more elements to said means for measuring and to said means for averaging to respectively measure the characteristic of any selected element and to provide the average of the characteristics of said selected group; and

means for indicating the measured value of said selected

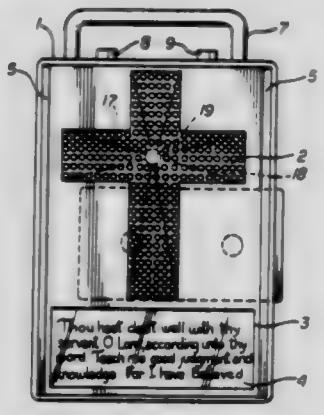
element characteristic and the average of said characteristic values of said selected group.

4,493,652

INSPIRATIONAL TEACHING APPARATUS

Nettie Mike, Rte. 4, Box 66B, Hammond, La.

Filed Apr. 21, 1983, Ser. No. 487,022
Int. Cl.³ G09B *19/00*; G09F *19/00*
U.S. Cl. 434—245 9 Claims



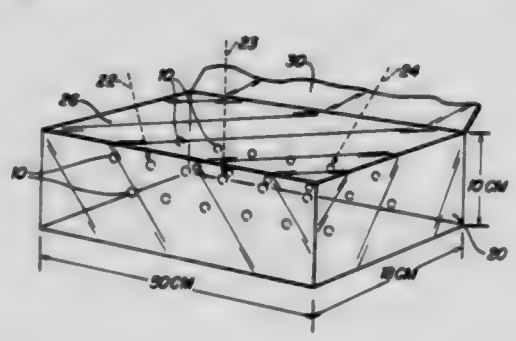
1. A device for teaching a person inspirational verses comprising:
a housing;
shutters pivotally connected to said housing;
exhibiting means mounted in said housing behind said shutters for showing a seemingly mobile inspirational symbol upon opening of said shutters;
display means located behind said shutters for exhibiting a selected one of a plurality of inspirational phrases;
audio means in said housing to verbalize said displayed inspirational phrase; and
system control means for changing from said selected displayed inspirational phrase to another inspirational phrase, for closing and opening said shutters, for exhibiting said inspirational symbol, for displaying said inspirational phrase, and for actuating said audio means.

4,493,653

BIOPSIABLE ULTRASOUND PHANTOM

Cheston W. Robbins, Englewood, Colo., and Robert M. Kelly, Mountain View, Calif., assignors to Technicare Corporation, Solon, Ohio

Filed Sep. 27, 1983, Ser. No. 536,419
Int. Cl.³ G09B *23/28*
U.S. Cl. 434—262 12 Claims



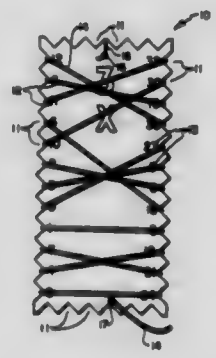
1. A phantom for ultrasonic imaging and suitable for simulating a biopsy procedure comprising:
a main structure of tissue equivalent material which exhibits acoustic properties resembling those of human tissue, and through which a biopsy needle may be inserted and ultrasonically imaged during a simulated biopsy procedure; and
at least one relatively smaller body, suspended within said main structure of tissue equivalent material, and formed of an outer casing containing a substance which may be aspirated during a simulated biopsy procedure, said body representing a tissue mass viable for biopsy and exhibiting acoustic properties resembling those of such a tissue mass during ultrasonic imaging.

4,493,654

EDUCATIONAL DEVICE

Marion W. Stuart, 2122 E. 6550 South, Uintah, Utah 84405

Filed Apr. 2, 1984, Ser. No. 595,719
Int. Cl.³ G09B *3/12*
U.S. Cl. 434—347 9 Claims



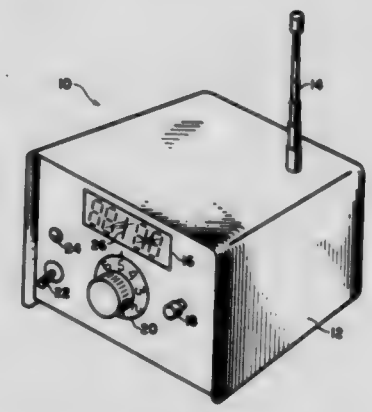
1. Educational device for teaching informational relationships, comprising in combination:
card means having at least two mutually opposing edges, a face and a rear side, each edge having a plurality of notches along the length thereof;
a plurality of problems arranged respectively next to said notches along one of said opposing edges of the face of said card;
a plurality of answers arranged respectively next to said notches along the opposite one of said opposing card edges, said answers comprising correct solutions to each of said corresponding problems on the opposing card edge;
elongate string means for extending from a notch on one edge to another notch on the opposing edge of said card means; and
a plurality of line indicators on said rear side of said card corresponding to the placement of said string means across said card rear side representing the correct answers to said problems.

4,493,655

RADIO-CONTROLLED TEACHING DEVICE

James W. Groff, P.O. Box 38, Morgan Hill, Calif. 95037

Filed Aug. 5, 1983, Ser. No. 520,705
Int. Cl.³ G09B *7/00*
U.S. Cl. 434—351 12 Claims



1. A radio-controlled teaching device comprising in combination: a teacher transmitter unit containing tone generation means, timing means associated with and controlling the duration of tones generated by said tone generation means, manual switching means operatively connected to said timing means for actuating said timing means and said tone generation means

at selected points during oral reading of textual material or test material, counting and readout means operatively associated with said timing means for counting and displaying the number of times said tone generation means are actuated, manual reset means operatively connected to said counting and readout means for selectively resetting said readout means to zero, and a radio transmitter operatively coupled to the output of said tone generation means for transmitting tones generated by said tone generation means; and a plurality of portable student receiver units containing a battery power supply, a radio receiver tuned to the carrier frequency of said transmitter, a tone decoder operatively connected to the output of said radio receiver, a first timing means operatively connected to and actuated by the output of said tone decoder for providing a short time period during which a student is expected to respond at said selected points during oral reading of textual or test material, a response switch which is momentarily closed by the student at said selected points during oral reading of textual or test material, a second timing means operatively connected to and actuated by said response switch for providing a brief time period when said response switch is closed, a first logic gate and a second logic gate operatively connected to said first and second timing means wherein a "right" pulse is conducted by said first logic gate when said response switch is momentarily closed during said short time period of said first timing means and, wherein a "wrong" pulse is conducted by said second logic gate when said response switch is momentarily closed when said short time period of said first timing means is not occuring, a third timing means operatively connected to the outputs of said first logic gate and second logic gate and actuated by said "right" pulse or "wrong" pulse for momentarily disabling said second timing means and said first logic gate and second logic gate when said response switch is momentarily closed, a first counter operatively connected to the output of said first logic gate, whereby a said "right" pulse advances said first counter one count when said "right" pulse occurs, a second counter operatively connected to said second logic gate, whereby said "wrong" pulse advances said second counter one count when said "wrong" pulse occurs, first decoder/drivers and liquid crystal readouts operatively connected to the outputs of said first counter for displaying the current count of said first counter, and second decoder/drivers and liquid crystal readouts operatively connected to the outputs of said second counter for displaying the current count of said second counter.

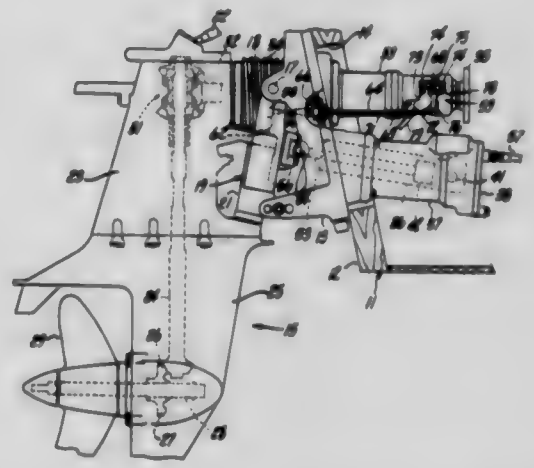
4,493,656

TILT-UP ANGLE SENSING SYSTEM FOR INBOARD-OUTBOARD DRIVES

Seiji Inoue, and Norimichi Harada, both of Shizuoka, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Continuation of Ser. No. 378,849, May 17, 1982, abandoned. This application Mar. 15, 1984, Ser. No. 589,952
Claims priority, application Japan, Jun. 26, 1981, 56-99478
Int. Cl.³ B63H *5/12*
U.S. Cl. 440—2 **5 Claims**

1. A position sensing unit for an outboard drive to indicate its angular position relative to the transom of a boat including power means for adjusting the angular position of the outboard drive comprising sensing means comprising a sensing abutment member carried by said outboard drive and movable therewith, angle reading means positioned on the opposite side of said transom from said sensing means, said angle reading means comprising an input element supported for movement and a signal producing element for providing a signal indicative of the position of said input element, and connecting means comprising a slidably supported element passing through the transom and independent of the power means for transferring a position signal to said input element, said slidably supported element having a first end abuttingly engaged with said abutment member, and means providing a mechanical connection between said input element and the end of said slidably supported element for positioning said input element of angle



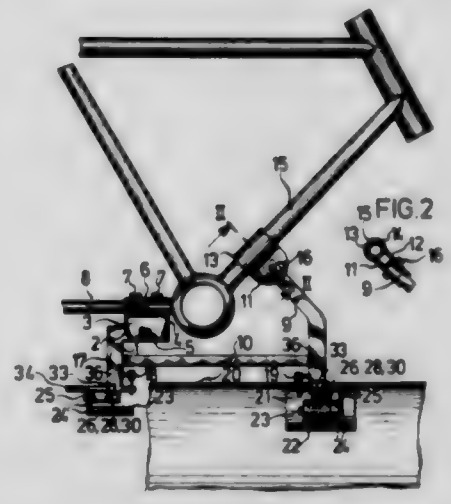
reading means in response to the position of said sensing abutment member.

4,493,657

DEVICE FOR CONVERTING A CYCLE INTO A TREADLE-OPERATED WATER CYCLE

Ernst Zeitler, Linnestrasse 3, 8500 Nuernberg 70, Fed. Rep. of Germany

Filed Jul. 20, 1982, Ser. No. 400,018
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1981, 3129051
Int. Cl.³ B63H *16/12*
U.S. Cl. 440—27 **3 Claims**



1. A bicycle watercraft comprising a conventional bicycle having a frame and said frame including an inclined bar extending upwardly and forwardly from the pedal hub of the frame and a rear wheel fork extending horizontally rearwardly of the pedal hub, a base framework rigidly holding and bodily supporting the frame of the bicycle, said base framework comprising a forward frame bar having a lower vertical portion and an upper rearwardly inclined portion which is substantially perpendicular to said inclined bar of the bicycle frame, a two-part clamp pivotally attached to said inclined portion near the top thereof and clampingly embracing said inclined bar of the bicycle frame, said base framework further comprising a rear angle bar having a horizontal portion and a vertical portion depending from the horizontal portion, a connecting horizontal longitudinal bar extending between the vertical portion of said forward frame bar and the vertical portion of the rear angle bar and being rigidly joined with each, said forward frame bar, rear angle bar and connecting horizontal longitudinal bar being disposed in a common vertical plane with the bicycle frame, said connecting horizontal longitudinal bar lying beneath said pedal hub, a second two-part clamp pivotally attached to the horizontal portion of the rear angle bar and

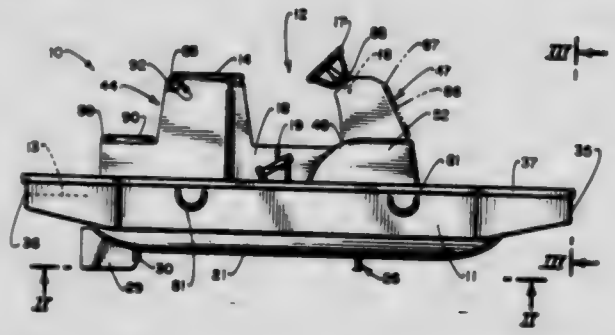
clampingly embracing said rear wheel fork of the bicycle frame, said first-named and second two-part clamps being pivotal on the base framework in said common vertical plane, horizontal transverse outrigger arms connected with the base framework and extending laterally outwardly from opposite sides thereof, a pair of laterally spaced floats secured to the outer end portions of the outrigger arms for buoyantly supporting the latter with said base framework and bicycle, and rider-operated propulsion and steering means for the bicycle watercraft including a propeller frictionally driven by the rear wheel of the bicycle.

4,493,658

PADDLE BOAT

Clifford F. Hildebrand, Peterson, Minn., assignor to Dean C. Hidebrau, Sacramento, Calif.

Filed Dec. 16, 1982, Ser. No. 450,335
Int. Cl.³ B63H *16/12*
U.S. Cl. 440—30 7 Claims



1. In a foot pedal actuated paddle boat having a hull, a deck, a pair of longitudinal buoyant pontoons, one on each side of the bottom of the hull, a pair of spaced paddle blade housings in the hull having similar paddle blades therein, a rudder, the improvement comprising:

a driver's seat elevated from said deck and mounted upon a storage compartment disposed upon said deck,

a single set of pedals coupled to said blades for rotating same by a chain driven rotatable shaft having a pair of spaced hubs fixedly mounted thereon for rotation therewith in said paddle blade housings, each of said hubs having a plurality of paddle blades fixedly secured thereto rotatable in each of said paddle blade housings, the paddle blade housings being disposed forward of said seat,

a steering wheel disposed in front of said seat operably connected to said rudder for rotating same,

said paddle blade housings including apertures therethrough at the top thereof, rearwardly of the front of said boat for preventing vacuum buildup due to excessive pedalling followed by cessation of pedalling, and wherein each paddle blade is arcuate in the lateral cross-section, and wherein the radial orientation of said blades on one hub are non-synchronized with the radial orientation of the blades extending from the other hub whereby when one set of blades is in the water during operation of the boat, the other set of blades trail out of the water.

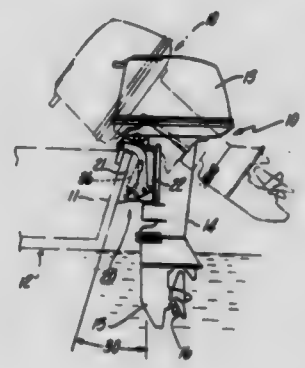
4,493,659

TILT-LOCK MECHANISM

Takashi Iwashita, Hamakita, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha and Sanshin Kogyo Kabushiki Kaisha, both of, Japan

Filed Dec. 2, 1981, Ser. No. 326,553
Claims priority, application Japan, Dec. 3, 1980, 55-171374
Int. Cl.³ B63H *5/12*
U.S. Cl. 440—61 11 Claims

1. In a marine vessel having a hull and an outboard drive unit carrying propelling means for propelling said vessel through the water pivotably attached thereto for movement about a generally horizontally extending tilt axis from a normal position wherein the propelling means is positioned beneath the water and a tilted up position wherein said propelling means is out of the water, a mechanism for damping the relative pivotal movement between said drive unit and said vessel about said tilt axis, said mechanism defining at least two fluid chambers and having restricted communication means for restrictively passing fluid between said chambers for damping the relative



pivotal movement of said drive unit and said vessel, the improvement comprising fluid bypass means for selectively overriding said restricted communication means, thereby allowing free relative pivotal movement of said drive unit and said vessel about said tilt axis.

4,493,660

SHIP HAVING AT LEAST ONE PROPELLER NOZZLE UNIT WITH RUDDER IN OPTIMUM POSITION

Willi Becker, and Karl Johannsen, both of Hamburg, Fed. Rep. of Germany, assignors to Willi Becker Ingenieurbüro GmbH, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 18,313, Mar. 7, 1979, abandoned. This application Jun. 22, 1981, Ser. No. 275,607
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1978, 2809662
Int. Cl.³ B63H *1/28*
U.S. Cl. 440—67 13 Claims



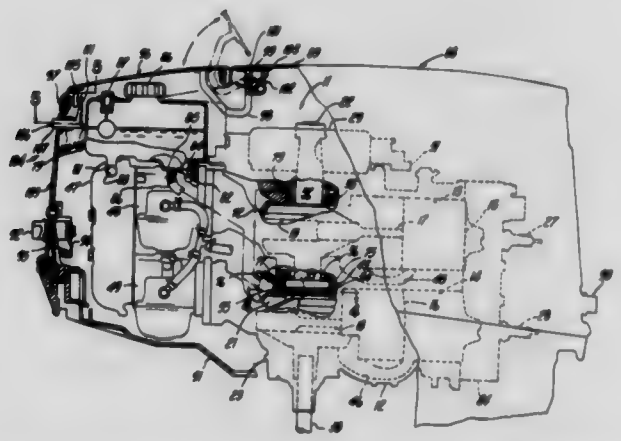
1. Propulsion assembly for use on a ship having an elongated ship's body, said assembly comprising two propellers arranged to be mounted on the ship's body in laterally spaced relation and including an axially elongated propeller shaft for each said propeller having a front end and a rear end with said propeller located at the rear end thereof, said propeller shaft having an axis extending approximately horizontally, a nozzle-type shroud laterally enclosing each said propeller and having an axis extending in the same general direction as the axis of the associated said propeller shaft, means for mounting each said shroud for rotation about an upwardly extending first axis disposed approximately perpendicularly to the axis of the associated said propeller shaft, wherein the improvement comprises that said means for mounting said shroud is arranged for rotating said nozzle-type shroud for limited pivotal movement about a second axis extending perpendicularly of the upwardly extending first axis of said nozzle-type shroud and approximately perpendicularly to the axis of said propeller shaft, a rudder located downstream from each of said nozzle-type shrouds relative to the normal forward movement of a ship's body in the wake of the associated said propeller, said rudder has a zero position, said rudder having an upwarldy extending pivot axis offset laterally from the prolongation of the associated said propeller shaft, and in the zero position said rudder being disposed at least at the same angle with the prolongation

of said propeller shaft as said nozzle-type shroud is pivoted relative thereto, and each said nozzle-type shroud having an angular adjustment relative to the elongated approximiately horizontal axis of the associate said propeller shaft of at least two degrees, said means for mounting each said shroud comprises an upwardly extending shaft for each said shroud, a ball-type joint connected to the lower end of said shaft and to said shroud, said upwardly extending shaft arranged to extend into the ship's body, means arranged to be located within the ship's body for rotating said shaft about the axis thereof, means connected to said ball-type joint for rotating said joint about a horizontal axis for pivoting said shroud about a horizontal axis extending perpendicularly of the axis of said shaft, and means arranged for locking said shroud in position for achieving a maximum of the integral of the velocity field established across the entry area in the direction of the nozzle axis, and said locking means is associated with said shaft locking said shaft against rotation about the axis thereof and for locking said shroud against pivotal movement around the horizontal axis extending perpendicualrly of the axis of said shaft.

4,493,661
OUTBOARD ENGINE

Tomio Iwai, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha and Sanshin Kogyo Kabushiki Kaisha, both of, Japan

Continuation of Ser. No. 281,418, Jul. 8, 1981, abandoned. This application Sep. 2, 1983, Ser. No. 528,996
Claims priority, application Japan, Jul. 12, 1980, 55-95282
Int. Cl.³ B63H *21/26*
U.S. Cl. 440—77 20 Claims



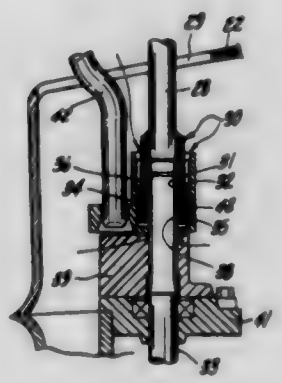
1. In a lubricating system for a two-cycle, crankcase compression internal combustion engine having a cylinder block, a cylinder head affixed to said cylinder block, a crankshaft supported for rotation within a crankcase affixed to said cylinder block about a vertically extending axis by at least vertically spaced upper bearing means and lower bearing means, the improvement comprising an oil supply tank mounted externally of said cylinder head, cylinder block and crankcase, oil pump means supported externally of said cylinder head, cylinder block and crankcase and driven directly by said crankshaft, means for delivering oil from said external oil supply tank to said oil pump means and conduit means extending from said oil pump means to at least said upper bearing means for positively lubricating said upper bearing means.

4,493,662
SHAFT CONNECTING DEVICE FOR BOAT PROPELLERS

Michihiro Taguchi, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha and Sanshin Kogyo Kabushiki Kaisha, both of, Japan

Filed Apr. 28, 1982, Ser. No. 373,026
Int. Cl.³ B63H *21/28*
U.S. Cl. 440—83 5 Claims

1. In a transmission control shaft connection for the outboard drive of a marine engine or the like comprising a first shaft, a second shaft and a coupling member affixed to said first shaft and operatively connected to said second shaft for disconnectably coupling said shafts together, the improvement comprising a seal member affixed to and carried by, and rotatable with said coupling member, sealingly engaged with said

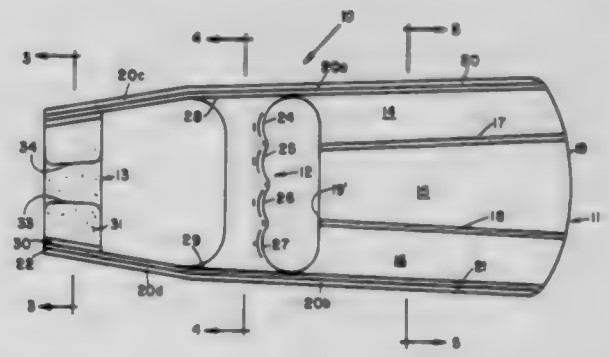


second shaft and enclosing the operative connection between said shafts for protecting the operative connection from the ingress of foreign matter, said second shaft, said coupling member and said member being axially movable relative to said first shaft for removal for service.

4,493,663
ONE-HANDED PADDLE

Raymond W. Richmond, P.O. Box 187, Con Can, Tex. 78838

Filed Jan. 10, 1983, Ser. No. 456,552
Int. Cl.³ B63H *16/04*
U.S. Cl. 440—101 3 Claims

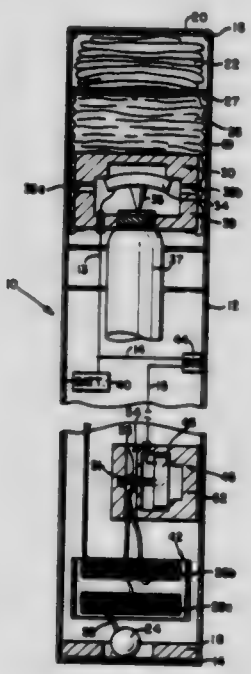


1. A one-handed paddle comprising:
a blade portion, a hand grip portion and a arm brace portion;
said arm brace portion including rearwardly extending flexible arm members at each side thereof which are connected with the hand grip portion and blade portion;
said arm members flexing to allow insertion of a user's arm in the arm brace portion;
the arm brace portion including a generally U-shaped member lined with a resilient member made of a resilient cushioning material which releasably retains and cushions a user's arm in the arm brace portion; and
said resilient cushioning material including arm retaining extension members forming an opening for the arm retaining portion smaller than a user's arm for releasably securing a user's arm in the arm brace portion.

4,493,664
SONOBUOY FLOAT INFLATION AND DEPTH SELECTION INITIATORS

John R. Dale, Pennsburg, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 3, 1982, Ser. No. 373,943
Int. Cl.³ B63B *21/00*
U.S. Cl. 441—7
2 Claims



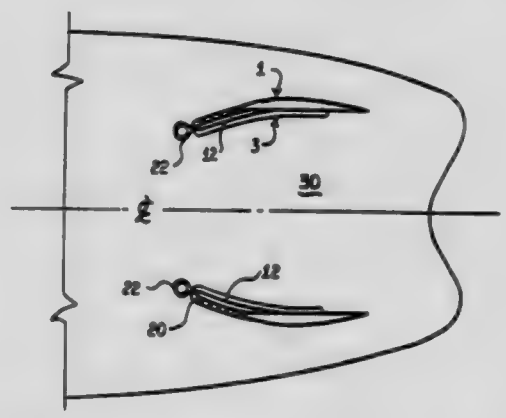
1. A buoy comprising in combination:
a casing;
deployable means releasably stored within said casing, said deployable means comprises an inflatable float;
shape-memory means, transformable to a predetermined shape by heating, mounted within said casing and operatively connected to release said deployable means adjacent thereto for deployment thereof when transformed, said shape-memory means comprises actuator means mounted within said casing, connected to the float, and having a cavity, an input port leading into the cavity, and two output ports communicating between the cavity and the float, pressurized gas means connected to the input port and having a rupturable seal for retaining the gas, and shape-memory lance means disposed within the cavity for penetrating the seal when heated, said shape-memory lance means comprises
a shape-memory alloy,
a coil wrapped around the alloy, and
a lance secured to the alloy, said alloy having a first shape positioning the lance to penetrate the seal and a second shape when heated such that the lance penetrates the seal; and
condition responsive means within said casing for heating and transforming said shape-memory means, said condition responsive means comprises energizing means electrically connected to the shape-memory lance means for heating the shape-memory alloy.

4,493,665
HYDROFOIL

Edward M. Liddle, 9784 Rim Park Way, San Diego, Calif. 92124

Filed Jun. 7, 1982, Ser. No. 385,303
Int. Cl.³ A63C *15/05*
U.S. Cl. 441—79
13 Claims

1. A hydrofoil comprising:
(a) a fin means,
(b) an elongated fin flange affixed to a base of the fin means,
(c) a fin box means defining an elongated, laterally curved open channel" adapted to receive the fin flange at a plurality of locations along the length of the open channel, the fin box being affixed to a hull,
(d) a longitudinal groove defined by the fin flange,
(e) a longitudinal groove defined by a wall of the open channel and adapted to align with the fin flange groove when the fin flange is disposed in the open channel such that the two grooves in alignment form a generally closed channel,

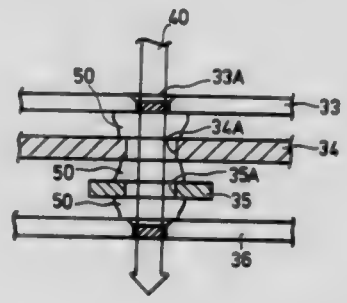


(f) a fastening rod adapted to be inserted into the closed channel for the purpose of holding the two grooves in alignment and thereby inhibiting transversal movement of the fin flange with respect to the fin box, and
(g) means to inhibit longitudinal movement of the fin flange with respect to the fin box.

4,493,666
ELECTRODE CONSTRUCTION AND METHOD OF MAKING THE SAME

Kinzo Nonomura, Hirakata; Masanori Watanabe, Katano, and Yoshinobu Takesako, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 16, 1981, Ser. No. 312,077
Claims priority, application Japan, Oct. 20, 1980, 55-147221
Int. Cl.³ H01J *9/14*
U.S. Cl. 445—24
1 Claim



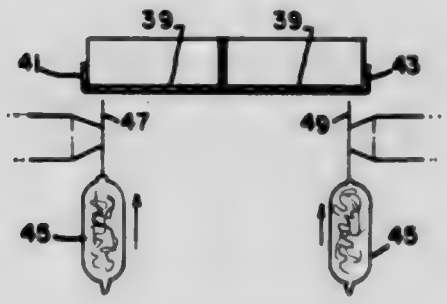
1. A method for making an electrode construction for a flat-type display device comprising the steps of:
photolithographically forming a composite electrode comprising numerous strip electrodes each connected to the other by connecting means substantially adjacent each end of said strip electrodes and at least one intermediate position;
bonding said composite electrode to another electrode of higher rigidity so that they are in stacked relationship with each other; and
cutting out said connecting means by means of a high energy beam, wherein each said connecting means corresponding to said at least one intermediate position is located over aperature means in said another electrode to allow the passing through of said high energy beam during the cutting, and thereby obtaining electrically isolated but mechanically rigidly held parallel strip electrode members.

4,493,667

MULTILAMP PHOTOFLASH ARRAY FABRICATION

Donald E. Armstrong, Williamsport, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Mar. 18, 1982, Ser. No. 359,467
Int. Cl.³ H01J 9/00
U.S. Cl. 445—28 8 Claims



1. A process for fabricating a multilamp photoflash array having a support member with a printed circuit on the inner surface thereof and a plastic reflector unit having one surface with a plurality of lamp-receiving cavities comprising the steps of:

positioning a photoflash lamp having a pair of outwardly extending electrically conductive leads on the side of said reflector unit opposite from each of said lamp-receiving cavities with said electrically conductive leads adjacent said reflector unit;

heating said electrically conductive leads to a temperature sufficient to melt said plastic reflector unit;

contacting said plastic reflector unit with said heated electrically conductive leads to cause said leads to pass through said plastic reflector unit;

cooling said electrically conductive leads and plastic reflector unit to cause said leads to become embedded in said plastic reflector unit;

bending said electrically conductive leads about the closest end of said plastic reflector unit to cause each of said lamps to nest within one of said cavities of said reflector unit and to provide exposed electrically conductive leads immediately adjacent the surface of said reflector unit opposite from lamp-receiving cavities; and

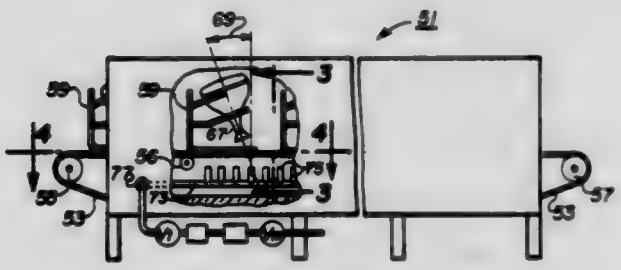
affixing said plastic reflector unit to said support member in a manner to cause said exposed electrically conductive leads immediately adjacent the surface of said reflector unit opposite from said lamp-receiving cavities to electrically contact said printed circuit.

4,493,668

METHOD FOR COMBINED BAKING-OUT AND PANEL-SEALING OF A PARTIALLY-ASSEMBLED CRT

Joseph J. Pisciuski, Leola; Randolph H. Axelrod, and James Mount, both of Lancaster, all of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 17, 1983, Ser. No. 458,653
Int. Cl.³ C03B 23/20
U.S. Cl. 445—40 8 Claims



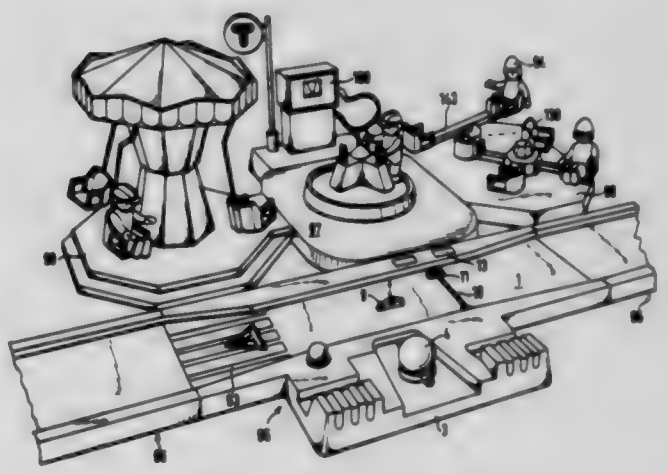
1. In a method for fabricating a cathode-ray tube including heat-sealing a glass faceplate panel to a glass funnel, said funnel having an open, relatively-narrow neck attached to the narrow end thereof, and, at the same time, baking-out substantial amounts of organic matter from coatings on surfaces inside said panel and said funnel, said heat-sealing and baking-out being conducted at elevated temperatures in a substantially-quiescent atmosphere, said method including a heating-up period and a cooling-down period, the improvement comprising intermittently directing jets of oxygen-containing gas into the neck of said funnel at least during the heating-up period, and wherein the longitudinal axis of said neck is at an acute angle with respect to the direction of flow of said jets.

4,493,669

MOTORIZED TOY

Hermann Neuhierl, Waldstrasse 36, D-8510 Fürth/Bayern, Fed. Rep. of Germany

Filed Apr. 9, 1982, Ser. No. 366,982
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1981, 3114838; May 30, 1981, 3121564; May 30, 1981, 3121568; Aug. 17, 1981, 3132299; Sep. 18, 1981, 3137208; Dec. 19, 1981, 3150466; Dec. 24, 1981, 3151459; Feb. 3, 1982, 3203627; Feb. 3, 1982, 3203574; Mar. 9, 1982, 3208338
Int. Cl.³ A63H 18/00
U.S. Cl. 446—103 59 Claims



1. A motorised toy comprising: at least one toy self-propelled vehicle having a pin mounted thereon which pin projects from the vehicle, said vehicle including driving means which acts on at least one pair of supporting wheels mounted on said vehicle; at least one station section including a track portion which can be installed in the course of a track, said station section having a stopping arrangement mounted thereon including a start member and lever means for moving said start member between at least two positions and whereby it can be brought into operative connection with the pin on the vehicle, causing the vehicle to stop in a defined position in the station section said station section having mounted thereon an axle arranged at right angles to the track portion and underneath the latter, with at least one rotary component which projects upwardly out of the track portion and which can be rotated by one of said driven wheels when the toy vehicle stops in the defined position, there being an engagement component at one end of the axle; and at least one toy object which has movable parts and which can be connected with said station section in a fixed but detachable manner so that, by way of an engagement component thereof, it is in contact with the engagement component of the station section whereby the movable parts can be moved via the engagement components when said toy vehicle has stopped in the station section in the defined position, wherein: the vehicle has a lever which can be moved between at least a forward and a reverse travel position and which acts accordingly on the vehicle's driving means; said start member having a slot corresponding to the dimensions of the pin on the vehicle extending transversely of the track portion, into which slot the pin of the vehicle engages in at least one of the positions of the start member in order to stop the vehicle, irrespective of the vehicle's travel direction, in the

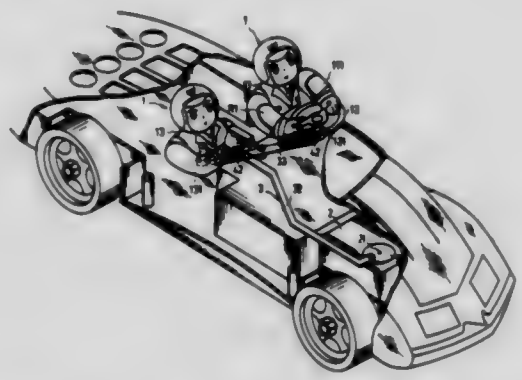
defined position, and wherein in at least one other position of the lever of the stopping arrangement, the pin on the vehicle and the slot in the start member are disengaged.

4,493,670

SIMULTANEOUS FOLLOWING MEANS FOR DRIVER AND FOLLOWER IN A TOY CAR

Ta-Lang Wang, 1st Fl., No. 27, Lane 432, Wu-Hsing St., Taipei, Taiwan

Filed Dec. 21, 1983, Ser. No. 563,697
Int. Cl.[3] A63H *17/25*
U.S. Cl. 446—288 2 Claims



1. A simultaneous following means for driver and follower in a toy car comprising:

a doll pair comprised of a driver, a steering wheel and a follower wherein the movable arms of the driver are placed on the steering wheel and there is a spindle at the center of the bottom of the steering wheel and the follower respectively passing through the shell of the car to the interior of the car;

a driving means which generate kinetic energy output at low speed;

a linkage transmission mechanism comprised of an eccentic wheel, a link and a double bar-oscillating arm to transmit the kinetic energy generated by the driving means to the double bar-oscillating arm for swinging said arm; and

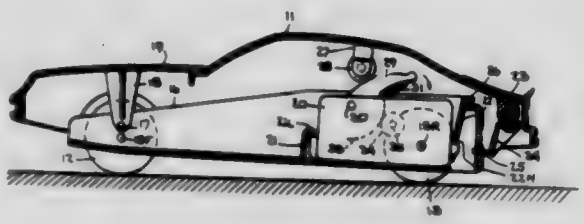
a following mechanism which upon the swinging of the said double bar-oscillating arm, drive the spindles of the steering wheel and the follower for rotation in normal or reverse direction at a small degree to cause the steering wheel and follower for simultaneous swinging.

4,493,671

TOY VEHICLE HAVING SPRING-OPERATED MOTOR

Melvin R. Kennedy, New York, N.Y.; Dietmar Nagel, Chester, N.J., and Avi Arad, Westport, Conn., assignors to Buddy L Corporation, New York, N.Y.

Filed May 6, 1981, Ser. No. 260,588
Int. Cl.[3] A63H *29/00*
U.S. Cl. 446—464 10 Claims



1. A toy vehicle whose spring-operated motor requires little strength to fully charge, said vehicle comprising:

A. a chassis supporting front and rear wheels;

B. a car body resting on the chassis, the front of the body being hingedly connected on a pivot axis to the front end of the chassis whereby the rear thereof is raisable with respect to the rear end of the chassis within predetermined upper and lower limits, said body having a stop attached thereto having fingers which engage a ledge projecting from the rear wall of the chassis to define said upper limit;

C. a spring-operated motor seated on the chassis and concealed by the body, said motor having a spiral spring coupled by a transmission to said rear wheels;

D. a pivotally-mounted crank arm operatively coupled to the underside of the roof of the car body at a point intermediate the front and rear wheels and spring-biased to normally hold the arm erect to maintain the body at its upper limit, whereby when the body is repeatedly depressed manually by a hand grasping the body near the rear thereof, the hinged body is caused to swing about its pivot axis and the crank arm undergoes a pumping action; and

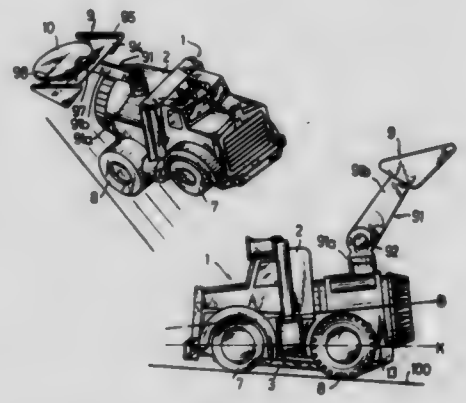
E. means coupling said crank arm to the inner end of the spiral spring to effect winding thereof each time the arm is pumped.

4,493,672

TOY VEHICLE ASSEMBLY

Masumi Terui, Matsudo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1983, Ser. No. 476,821
Claims priority, application Japan, Dec. 29, 1982, 57-201733
Int. Cl.[3] A63H *29/00*
U.S. Cl. 446—464 19 Claims



1. A toy vehicle assembly adapted to receive a removable weighted member comprising:

a housing member having a configuration which simulates a vehicle, including an upper body shell and a lower frame member;

a front wheel assembly attached to said housing member;

a rear wheel assembly including an axle and a pair of wheels attached to said housing member, and

a support member for supporting said weighted member attached to the rear wheel assembly side of said housing member, wherein said support member includes an arm member with a weighted member holder for holding said weighted member provided at one end of the arm member, the other end of the arm member being movably attached to said upper body shell of the housing member, the arm member being rotatable about a plurality of axes in directions different from each other, wherein said weighted member holder includes a weighted member holding plate attached to said support member having a first bracket and a pair of retaining projections provided on a first surface of the holding plate, whereby said weighted member can be removably supported on the first surface of said holding plate by the holding plate, the first bracket, and the pair of retaining projections.

4,493,673

TORSIONAL VIBRATION DAMPER UNIT

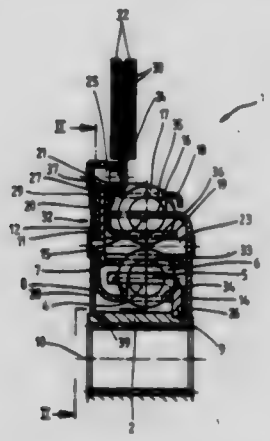
Peter Anders, Schweinfurt, and Bernhard Schierling, Unterpleichfeld, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 429,522

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1981, 3142942

Int. Cl.³ F16D *3/14, 13/64;* F16F *15/12*

U.S. Cl. 464—66 21 Claims



1. In a torsional vibration damper unit, such as for clutch discs comprising

(a) a torque output member (2) having an axis of rotation (10);

(b) a torque input member (30) mounted for angular movement with respect to said torque output member (2) about said axis of rotation (10);

(c) a torque output transmission unit (4, 9) fixed to said torque output member (2) for common rotation therewith about said axis of rotation (10);

(d) a torque input transmission unit (18, 21; 19, 20) fixed to said torque input member (30) for common rotation therewith about said axis of rotation (10);

(e) an intermediate torque transmission unit (17, 11; 8, 12; 15, 14) mounted for angular movement about said axis of rotation (10) with respect to said torque output transmission unit (4, 9) and said torque input transmission unit (18, 21; 19, 20);

(f) at least one first torque transmitting spring unit (6) in torque transmitting arrangement between said torque output transmission unit (4, 9) and said intermediate torque transmission unit (7, 11; 8, 12; 15, 14), said first torque transmitting spring unit (6) having a working line substantially tangential with respect to said axis of rotation (10);

(g) at least one second torque transmitting spring unit (17) in torque transmitting arrangement between said intermediate torque transmission unit (7, 11; 8, 12; 15, 14) and said torque input transmission unit (18, 21; 19, 20), said second torque transmitting spring unit (17) having a working line substantially tangential with respect to said axis of rotation (10)

the improvement comprising:

said first torque transmitting spring unit (6) and said second torque transmitting spring unit (17) are received in three respective radially aligned openings (5, 33, 34; 16, 35, 36) of a plurality of torque transmitting sleeve units (4, 7, 8; 15, 18, 19), at least one (4) of said torque transmitting sleeve units being a part of said torque output transmission unit (4, 9), at least one (18, 19) of said torque transmitting sleeve units being a part of said torque input transmission unit (18, 21; 19, 20) and at least one (15, 7, 8) of said torque transmitting sleeve units being a part of said intermediate torque transmission unit (7, 11; 8, 12; 15, 14), said first torque transmitting spring unit (6) is received by radially aligned openings (5, 33, 34) of three first torque transmitting sleeve units (4, 7, 8) surrounding said axis of rotation (10), namely a first middle sleeve unit (4) and two first side sleeve units (7, 8), said first side sleeve units (7, 8) being arranged radially outwardly and radially inwardly of said first middle sleeve unit (4), respectively, said first middle sleeve unit (4) being a part of one of said torque output transmission unit (4, 9) and said intermediate torque transmission unit (7, 11; 8, 12; 15, 14), said two first side sleeve units (7, 8) being parts of the other of said torque output transmission unit (4, 9) and said intermediate torque transmission unit (7, 11; 8, 12; 15, 14); said second torque transmitting spring unit (17) is received by radially aligned openings (16, 35, 26) of three second torque transmitting sleeve units (15, 18, 19) surrounding said axis of rotation (10), namely a second middle sleeve unit (15) and two second side sleeve units (18, 19), said second side sleeve units (18, 19) being arranged radially outwardly and radially inwardly of said second middle sleeve unit (15), respectively, said second middle sleeve unit (15) being a part of one of said torque input transmission unit (18, 21; 19, 20) and said intermediate torque transmission unit (7, 11; 8, 12; 15, 14), said two second side sleeve units (18, 19) being parts of the other of said torque input transmission unit (18, 21; 19, 20) and said intermediate torque transmission unit (7, 11; 8, 12; 15, 14);

said torque output member (2) is a central hub member (2) and said torque input member (30) is surrounding said central hub member (2) radially outwardly thereof,

said three first torque transmitting sleeve units (4, 7, 8) and said three second torque transmitting sleeve units (15, 18, 19) are located radially between said central hub member (2) and said torque input member (30), said three second torque transmitting sleeve units (15, 18, 19) being located radially outwardly of said three first torque transmitting sleeve units (4, 7, 8),

said first middle sleeve unit (4) comprises a radially inwardly directed flange (9) fixed to said hub member (2) for common rotation therewith adjacent a first axial end thereof;

said second middle sleeve unit (15) comprises a radially inwardly directed flange (14) adjacent said first axial end of said hub member (2);

said first side sleeve units (7, 8) comprise respective radially outwardly directed flanges (11, 12) adjacent the second axial end of said hub member (2);

the radially outwardly directed flanges (11, 12) of said first side sleeve units (7, 8) are interconnected with said radially inwardly directed flange (14) of said second middle sleeve unit (15) by substantially axially extending interconnecting members (23);

said second side sleeve units (18, 19) comprise respective radially outwardly directed flanges (21, 20) fixed to said torque input member (30) which are axially adjacent said second end of said hub member (2);

said first middle sleeve unit (4) with its radially inwardly directed flange (9) defining said torque output transmission unit (4, 9);

said first side sleeve units (7, 8) with their radially outwardly directed flanges (11, 12) and said second middle sleeve unit (15) with its radially inwardly directed flange (14) defining said intermediate torque transmission unit (7, 11; 8, 12; 15, 14);

said second side sleeve units (18, 19) with their radially outwardly directed flanges (21, 20) defining said torque input transmission unit (18, 21; 19, 20).

4,493,674

VIBRATION DAMPER ASSEMBLY

Kazuhisa Tamura, Hirakata, and Masahiko Koshiso, Higashi-Osaka, both of Japan, assignors to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Sep. 22, 1982, Ser. No. 421,338

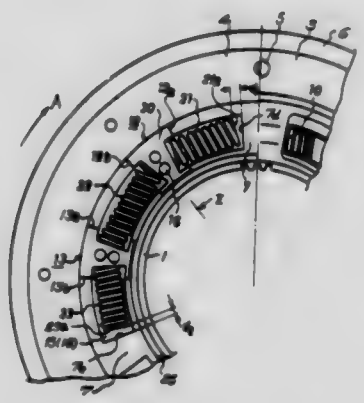
Claims priority, application Japan, Jan. 27, 1982, 57-10387[U]

Int. Cl.³ F16D *3/14*

U.S. Cl. 464—68 5 Claims

1. A vibration damper assembly comprising an output hub

having circumferentially spaced plural radial arms and arcuate openings between the arms; input covers disposed at both sides of the hub and having openings axially faced to the openings in the hub defining sets of openings; plural torsion springs arranged circumferentially tandem in each set of the openings in the hub and the covers; and floating spacers arranged between the torsion springs and circumferentially slidably supported by rail portions formed by radially outer and inner edges of the openings in the hub, each said spacer having portions overlapping said inner and outer edges;



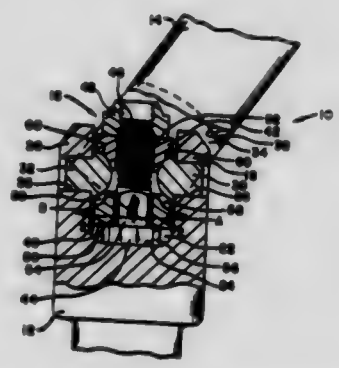
each of the floating spacers comprising a middle slider which is slidable and in contact with the rail portions forming radially outer and inner edges of the opening in the hub, and a pair of end plates fixed by a rivet to both face surfaces of the middle slider, said overlapping portions of each spacer being formed by portions of each end plate slidably holding the rail portions from both sides thereof.

4,493,675

UNIVERSAL JOINT

Scott D. Wisthuff, South Bend, Ind., and Edgar A. Behrmann, Niles, Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 22, 1983, Ser. No. 487,556
Int. Cl.³ F16D 3/24
U.S. Cl. 464—136
2 Claims



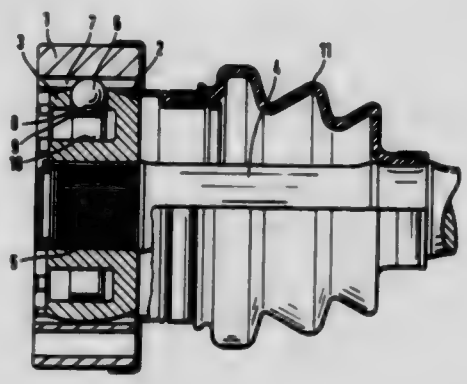
1. A universal joint comprising a first member and a second member rotatable together about their individual axes which are angularly disposed with respect to each other, each of the members carrying a pair of ball studs, a pair of washer-like seats engageable with the ball studs and a nut and bolt assembly cooperating with the pair of washer-like seats to retain the latter in engagement with the ball studs, characterized in that said nut and bolt assembly cooperates with one of said pair of washer-like seats to define a nonrotatable interface and said one washer-like seat is disposed in opposition to said first member to prevent rotation of said one washer-like seat when the nut and bolt assembly are being assembled to engage the pair of washer-like seats with the ball studs, said one washer-like seat cooperating with at least one of said ball studs during assembly to permit said pair of washer-like seats to fully engage said ball studs in the absence of a holding tool preventing rotation of said nut and bolt assembly, said first member defines a cavity receiving said nut and bolt assembly, and said bolt includes a head engageable with a bottom wall of said cavity when said one washer-like seat is engaging said head and in opposition with said one ball stud.

4,493,676

ROTARY CONSTANT VELOCITY JOINT

Werner Krude, Seigburg-Kaldauen, Fed. Rep. of Germany, assignor to Uni-Cardan Aktiengesellschaft

Filed Feb. 17, 1983, Ser. No. 467,212
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1982, 3206437
Int. Cl.³ F16D 3/22, 3/84
U.S. Cl. 464—141
9 Claims



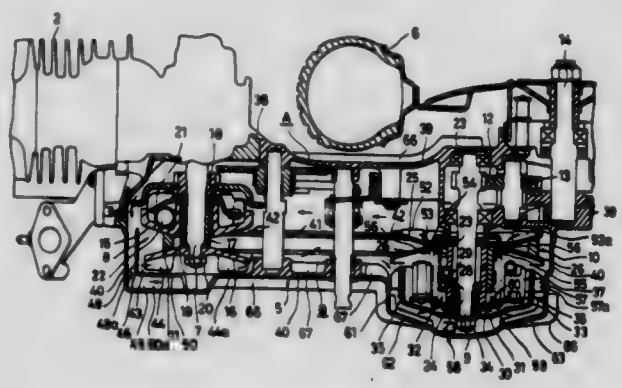
1. A rotary constant velocity universal joint, comprising:
an outer joint member and an inner joint member arranged on the interior of said outer joint member;
radially extending recesses formed in one of said inner and outer joint members;
torque transmitting balls arranged within said radially extending recesses so as to be radially movable therein;
grooves formed in the other of said joint members adapted to have said torque transmitting balls engaged therein for effecting torque transmission between said inner and outer joint members; and
an annular resilient member arranged in engagement with said balls and structured to apply thereto a radially directed biasing spring force urging said balls within said recesses into torque transmitting engagement with said grooves.

4,493,677

BELT TRANSMISSION HAVING CIRCULATED AIR COOLING FUNCTION

Yasuo Ikenoya, Kawagoe, Japan, assignor to Honda Motor Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1982, Ser. No. 454,455
Claims priority, application Japan, Dec. 29, 1981, 56-194809[U]; Dec. 29, 1981, 56-194812[U]; Dec. 29, 1981, 56-194813[U]; Feb. 25, 1982, 57-29329; Mar. 1, 1982, 57-28618[U]
Int. Cl.³ F16H 57/04
U.S. Cl. 474—93
17 Claims



1. A belt transmission comprising: a drive pulley; a driven

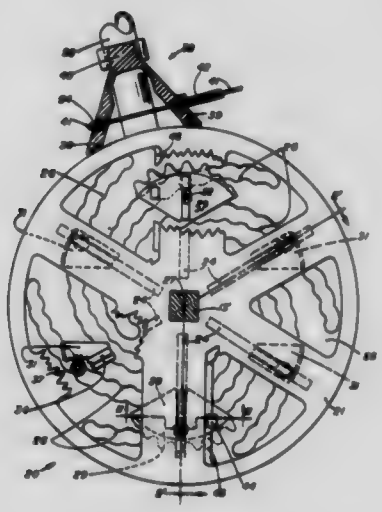
pulley; a belt engaging with said drive pulley and said driven pulley; a casing accommodating said drive pulley, said driven pulley and said belt; fan means provided on at least one of said drive pulley and said driven pulley for rotation in unison therewith; means partitioning the interior of said casing into a first chamber and a second chamber, said first and second chambers extending at least between said drive pulley and said driven pulley; and means communicating said first chamber and said second chamber with each other; said fan means, said partitioning means and said communication means being arranged such that rotation of said fan means causes a gas in said casing to be circulated in said casing through said first and second chambers to effect heat exchange with said drive pulley, said driven pulley, said fan means and said belt, whereby one of said first and said second chamber serves as going passage, and the other as a return passage, respectively.

4,493,678

EXPANDIBLE SPROCKET

Royce H. Husted, Wheaton, Ill., assignor to Samuel Shiber, Mundelein, Ill.

Continuation-in-part of Ser. No. 310,506, Oct. 13, 1981, abandoned. This application Jun. 11, 1982, Ser. No. 387,618
Int. Cl.³ F16H *55/30, 55/54*
U.S. Cl. 474—164 8 Claims



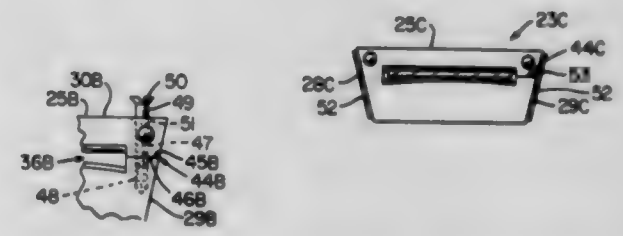
1. A variable sprocket comprising in combination:
an axle,
a drive flange mounted on said axle,
an indexing flange rotatably mounted on said axle opposite of said drive flange and having a plurality of spiral-wavy-cams,
two sprocket-segment-planets, said sprocket-segment-planet having leading teeth which provide initial contact with a chain and additional chain engaging teeth for subsequent engagement with said chain, at least a portion of said leading teeth is removed such that their profile is reduced relative to the profile of said chain engaging teeth,
at least two idler-planets sandwiched between said flanges,
coupling means for transmitting tangential forces between said spiral-wavy-cams and said drive flange,
cam follower attached to said planets for engaging with and following said spiral-wavy-cams,
said spiral-wavy-cams comprising a series of alternating depressions and hills which move the planets closer and further to and from said axle, respectively, as said planets slides along said spiral-wavy-cams,
said chain made of links and having a pitch equalling the length of said chain divided by the number of said links, said chain wrapping approximately one half of the periphery of said variable-sprocket, tension in said chain generating tangential loads on said sprocket-segment-planets which are transmitted through said coupling means to said drive flange, tension in said chain also generating radial loads on said planets which are transmitted by said cam follower to said spiral-wavy-cams forcing and securing the cam follower in said depression, the location of said planets when their cam follower are seated in said depressions and when both sprocket-segment-planets are engaged with said chain is such that the length of chain which is trapped between said sprocket-segment-planets is a whole number of pitches.

4,493,679

BELT CONSTRUCTION, TRANSVERSE BELT ELEMENT THEREFOR AND METHOD OF MAKING THE SAME

Joseph P. Miranti, Jr., Porter Township, Christian County, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Oct. 25, 1982, Ser. No. 436,745
Int. Cl.³ F16G *5/00*
U.S. Cl. 474—201 10 Claims



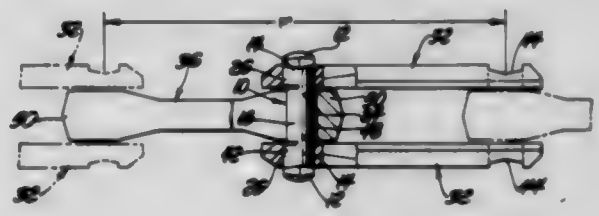
1. In an endless power transmission belt construction comprising an endless flexible carrier means, and a plurality of transverse belt elements assembled on said carrier means, each said belt element having peripheral face means and a medial slot means passing therethrough and receiving part of said carrier means therein, each said belt element having a slit means in said peripheral face means thereof that leads to said slot means thereof and a hinge means spaced from said slit means that permits said belt element to have said slit means thereof opened sufficiently to permit at least part of said carrier means to be received therethrough for subsequent positioning in said slot means thereof and thereafter be moved to a closed position to prevent at least that part of said carrier means from escaping through said slit means, each said belt element having two adjacent surfaces defining said slit means thereof therebetween, the improvement wherein each belt element has fastening means securing said adjacent surfaces thereof against each other so that said slit means thereof is maintained in said closed position thereof.

4,493,680

WEAR COMPENSATING LINK PIN

Frank F. Hoffmann, St. Clair, Mich., assignor to Florkey's Conveyor Service, Inc., Warren, Mich.

Filed Dec. 2, 1982, Ser. No. 446,429
Int. Cl.³ F16G *13/07*
U.S. Cl. 474—230 6 Claims



1. A link pin for connecting a pair of side links to a center link disposed therebetween, said link pin comprising:
retaining means at each end thereof for retaining said link pin within the side and center links; and
a shaft portion disposed between said retaining means and including a pair of end portions and a central portion therebetween and a central axis extending therethrough and first and second offset axes being parallel to said central axis and disposed on each side thereof, said shaft portion including a central protrusion extending from said

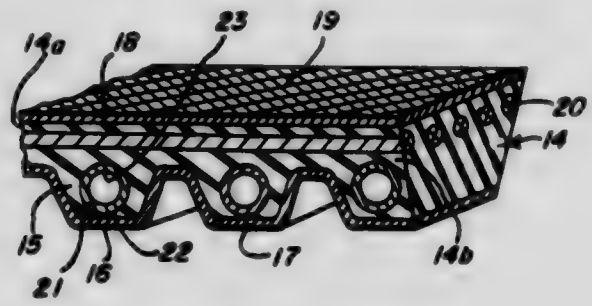
central portion and radially outwardly from said first offset axis and said end portions, said central protrusion having an outer arcuate surface defining an arc circumscribed about said first offset axis and a lateral protrusion extending from each of said end portions and radially outwardly from said second offset axis and said central portion in a direction opposite to said central protrusion, each of said lateral protrusions having an outer surface defining an arc circumscribed about said second offset axis.

4,493,681

REINFORCED COG BELT

Hiroshi Takano, Miki, Japan, assignor to Mitsuboshi Belting Ltd., Kobe, Japan

Filed Sep. 29, 1982, Ser. No. 428,418
Claims priority, application Japan, Jan. 26, 1982, 57-9299[U]
Int. Cl.³ F16G 5/10
U.S. Cl. 474—265 19 Claims



1. A V-section cog belt comprising:

an elongated V-section rubber body having longitudinally spaced, inner cogs defining an inner surface and side edges;

tensile cords extending longitudinally of the belt outwardly of said cogs;

tubular rigid metal reinforcement members extending transversely across the belt in said cogs in outwardly spaced relationship to said inner surface thereof, said members being hollow and opening to said side edges for passing cooling air therethrough during driving operation of the belt; and

a fabric layer covering said inner surface of the rubber body inwardly of said reinforcement members.

4,493,682

APPARATUS AND METHOD FOR FORMING AND DEBOWING CARTONS WITH PINCHING WHEELS

John W. Bryson, Los Altos, and William H. Hittenberger, San Mateo, both of Calif., assignors to Kliklok Corporation, Greenwich, Conn.

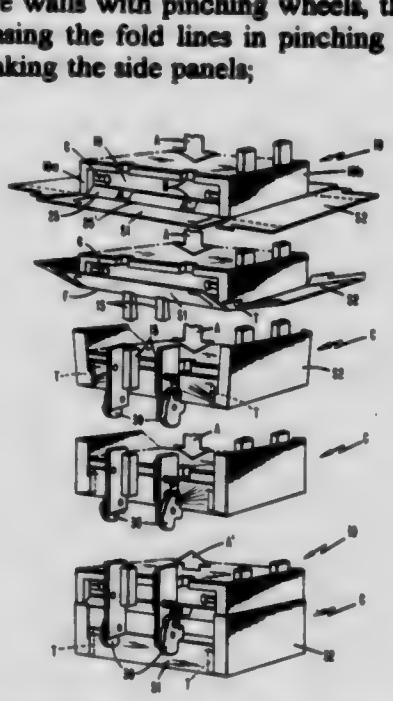
Filed Jan. 5, 1982, Ser. No. 337,167
Int. Cl.³ B31B 1/50, 3/26
U.S. Cl. 493—174 17 Claims

14. A method for debowing side panels of an erected carton formed from flat cut carton blanks having a bottom panel and fold lines between the bottom panel and side panels, said side panels including side panel locks for maintaining the cartons in the erect condition, said carton blanks being formed on an apparatus including pinching wheels and a forming head for receiving and directing the carton blank with reciprocating moving means through a die having forming guides, comprising the steps of:

(a) erecting the carton blank to a partially erected position by moving the forming head in a descending forming stroke in response to reciprocating means,

(b) passing the partially erected carton through the side forming guides so as to allow the carton side panels to engage the forming guides and bend upwardly into upright position relative to the bottom panel, said side panels thereby engaging side walls of the forming head;

(c) pinching the erected carton side panels inwardly from the fold lines into cutout openings formed in the forming head side walls with pinching wheels, thereby capturing and creasing the fold lines in pinching engagement and overbreaking the side panels;



(d) discontinuing the pinching step during continued descending movement of the forming head, thereby enabling the side panels to assume a debowed position relative to the carton bottom panel; and

(e) stripping the erected carton from the forming head by engaging the upper edges of the carton side panels with the pinching wheels prior to the ascending return stroke of the forming head.

4,493,683

METHOD OF MANUFACTURING BAG-LIKE PACKAGING BLANKS PROVIDED WITH CLOSURE RIBBONS

Jan Jostler, Halmstad, Sweden, assignor to Joker System Aktiebolaget, Halmstad, Sweden

PCT No. PCT/SE82/00014, § 371 Date Sep. 7, 1982, § 102(e) Date Sep. 7, 1982, PCT Pub. No. WO82/02514, PCT Pub. Date Aug. 5, 1982
PCT Filed Jan. 18, 1982, Ser. No. 425,073
Claims priority, application Sweden, Jan. 20, 1981, 8100289
Int. Cl.³ B65D 33/28
U.S. Cl. 493—225 11 Claims



1. A method of manufacturing bag-like packaging blanks of flexible material provided with respective closure ribbons, said method comprising feeding a belt of packaging blanks arranged one after the other and capable of being separated from each other, engaging the belt with guide devices to open the packaging blanks by moving opposing side walls of the blank belt away from one another at the upper edges of the belt, each of the walls of the belt having, in the vicinity of the upper edge of the packaging blanks, at least one channel extending in the longitudinal direction of the blank belt, in which channel is

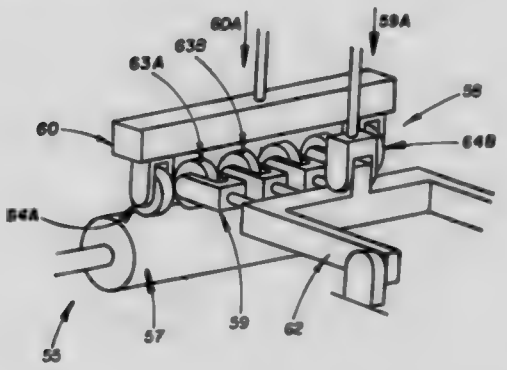
arranged at least one closure ribbon which has been shortened in length, the blank belt being further provided with opposed strip-like areas in the vicinity of the upper edges, which join the packaging blanks together and provide suspension regions adapted to be engaged by the guide devices for guiding the blanks thereon, to open the blanks as the belt advances while concurrently increasing the distance between two adjacent packaging blanks so that parts of the closure ribbons are drawn out of the channels in the packaging blanks and are exposed between adjacent blanks joining the thus exposed closure ribbons between the adjacent blanks and cutting the now joined ribbons to form endless closure ribbons in each packaging blank.

4,493,684

METHOD FOR MAKING PARTIALLY SEPARATED MULTIBAGS

Roderick A. Bolton, Clarkson, Canada, assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Filed Jul. 7, 1983, Ser. No. 511,696
Claims priority, application Canada, Oct. 4, 1982, 412722
Int. Cl.³ B65B *43/04*
U.S. Cl. 493—234 **9 Claims**



1. A method for making a supply of partially separated multibag units, comprising:
(a) passing a perforated chain of side-sealed bags through a first set of driven nip rollers; then
(b) passing said chain directly to a second set of nip rollers, having a partial nip of selected width less than the width of said chain; while
(c) driving said second nip rollers at a speed greater than said first nip rollers sufficient to partially separate the bags at their respective lines of perforation; and while
(d) cyclically completing the nip of said second nip rollers at predetermined intervals corresponding to the number of bags desired in each multibag unit.

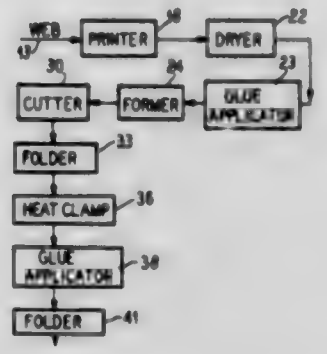
4,493,685

METHOD OF MAKING TUBULAR BAG

Robert H. Blamer, Westmont, Ill., assignor to Bagcraft Corporation of America, Chicago, Ill.

Division of Ser. No. 242,267, Mar. 10, 1981, Pat. No. 4,461,031. This application Sep. 15, 1982, Ser. No. 418,549
Int. Cl.³ B31B *23/60*
U.S. Cl. 493—235 **5 Claims**

1. A method of making a tubular bag, comprising:
(a) on one side of a web, printing a first band of thermosetting glue transversely to the length of the web;
(b) on the opposite side of the web, printing a second band and a third band of thermosetting glue in registry with the ends of said first band;
(c) drying said printed glue with heat at a temperature below that of the softening temperature of said thermosetting glue;
(d) applying glue to a marginal edge of said web;
(e) forming said web as a tube with the marginal edges of the web overlapping and glued together as a back seam;
(f) severing an increment of said tube at said bands without heating said bands,
(g) folding said web along a line extending centrally through said glue bands; and



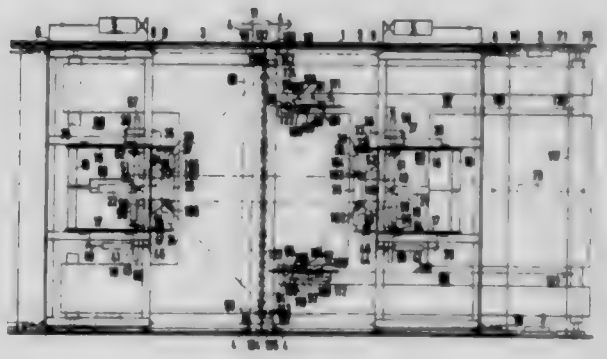
(h) simultaneously clamping together and heating said bands to fuse the bag layers together at said bands.

4,493,686

APPARATUS FOR PULLING TUBE ENDS OPEN TO FORM BASE SQUARES OF CROSS-BOTTOM SACKS

Ulrich Eckelt, Tecklenburg, and Alois Winnemöller, Rheine, both of Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Nov. 2, 1982, Ser. No. 438,655
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1981, 3143772
Int. Cl.³ B31B *1/52*
U.S. Cl. 493—256 **16 Claims**



1. Apparatus for pulling tube ends open to form base squares in the production of large cross-bottom sacks, comprising table plates which are disposed in the machine frame parallel to the plane of the pulled-open bases and which are separated from one another by a gap through which the tubular web is feedable by feeding means in a plane substantially perpendicular to the table plates, and suckers disposed at both sides of the edges of the tubular web end for pulling the edges apart, characterised in that the suckers (25–28) are secured to carriages (9) which are movable in parallel guides (3, 7) of the frame (1) and which can be moved by drive means (4, 10, 11, 12, 13) from their position in which they are pushed together to the pulled-open position of the base.

4,493,687

ARRANGEMENT FOR THE RAISING AND TRANSPORTING OF PACKING CONTAINER BLANKS

Göte L. Bernle, Malmö , Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Mar. 2, 1982, Ser. No. 354,023
Claims priority, application Sweden, Mar. 13, 1981, 8101604
Int. Cl.³ B31B *1/76*
U.S. Cl. 493—310 **19 Claims**

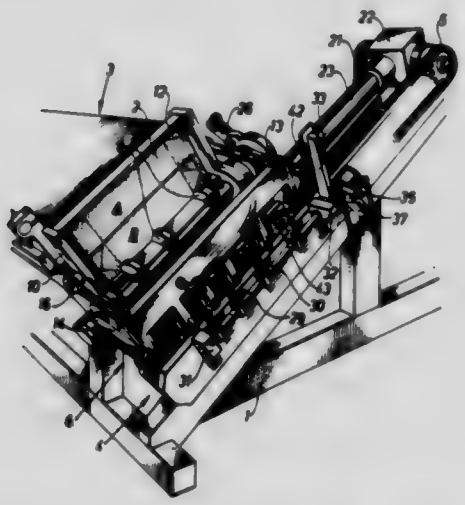
1. An arrangement for transporting and simultaneously unfolding container blanks, comprising:

a magazine for holding a plurality of flattened container blanks;

conveyor means for conveying away the container blanks after they have been unfolded;

a carrier device for transporting the flattened container blanks one at a time from the magazine to the conveyor means, the carrier device being relatively reciprocated along a substantially arc-shaped path of movement between a first position at an outlet end of the magazine and a second position above the conveyor; and,

an unfolding structure for unfolding the container blanks while they are being transported by the carrier device, including a carrier plate and a parallelogram-type support



for the carrier plate, the carrier plate being of a width substantially corresponding to a width of the magazine, the support including two parallel first arms both of which pivot about a first swivelling axis and two parallel second arms both of which pivot about a second swivelling axis, the second axis being parallel to the first axis, wherein the carrier plate is maintained in a substantially vertical orientation throughout the substantially arc-shaped path of movement of the carrier device and wherein a return movement of the carrier plate is unhindered by the unfolded packing containers due to the unfolded packing containers positioned interiorly of the width of the carrier plate within the arc-shaped path of movement of the carrier plate.

4,493,688

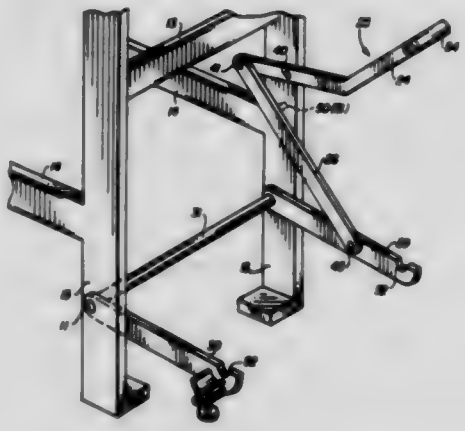
PAPER ROLL FEED RACK FOR PROCESSING MACHINE

Earnest B. Bunch, Jr., 9619 N. 21st Dr., Phoenix, Ariz. 85021

Filed Sep. 30, 1982, Ser. No. 428,937

Int. Cl.[3] B65H *45/00*

U.S. Cl. 493—413 1 Claim



1. In combination with apparatus for producing continuous form stationery by creasing a strip of paper along transverse lines of weakening formed therealong, said apparatus

a frame,

means, mounted on said frame, for alternately distributing said successive lines of weakening in said paper in substantially opposite directions,

roller means mounted on said frame for drawing said paper from a supply thereof and dispensing said paper into said distributing means,

means carried by said frame for urging said distributed paper into a creased condition, and

means for receiving and transporting said creased paper,

means for removably securing said paper supply in position to dispense paper during the operation of said paper processing apparatus, said securing means comprising, in combination,

(a) a carriage movably connected to said frame and shaped and dimensioned to receive and support said paper supply,

(b) linkage means connected to said carriage and said frame for moving said carriage between at least two operative positions,

(i) a first operative position with said paper supply positioned on and supported by said carriage, and

(ii) a second operative position with said paper supply positioned with respect to said carriage such that said carriage receives and supports said paper supply roll when said carriage is moved to said first operative position, and

(c) means operatively associated with said linkage means for actuating said linkage means to displace said carriage from said first to said second operative position.

4,493,689

PROCESS AND EQUIPMENT FOR MAKING ZIGZAG FOLDS IN LOOPS OF A CONTINUOUS FEED OF FLEXIBLE SHEETING

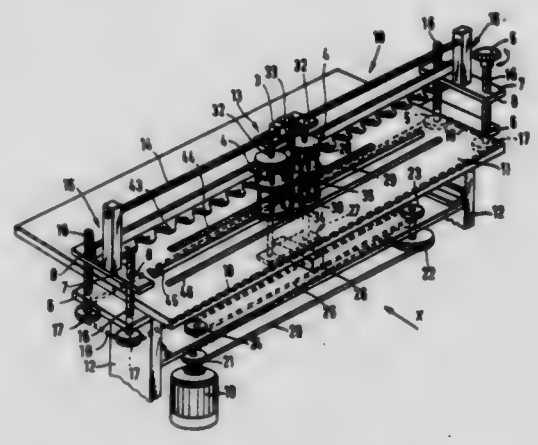
Hans Affüpper, Krautstrasse 55, 5600 Wuppertal 2, Fed. Rep. of Germany

Filed Mar. 10, 1982, Ser. No. 356,740

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1981, 3114395

Int. Cl.[3] B65H *29/46*

U.S. Cl. 493—415 16 Claims



1. Apparatus for making zig-zag folds in loops of continuous feed of flexible sheeting such as textile sheeting or the like, comprising:

layering means operative to receive a feed of the flexible sheeting and means for moving said layering means back and forth along a path perpendicular to the direction of feed;

said layering means comprising a pair of rolls rotating in the same direction, and having a sheet feed slot between said rolls;

means for mounting said rolls in spaced relationship to each other, with said space being wider than the thickness of the sheeting so that the sheeting lies against only the rearward roll, seen in the direction of movement of the layering means, as the layering means moves back and forth;

means operative to co-rotate both of said rolls in the same

first direction as the layering means moves in one direction along said path, and operative to co-rotate both of said rolls in the same second direction as the layering means moves in the other direction along said path; and

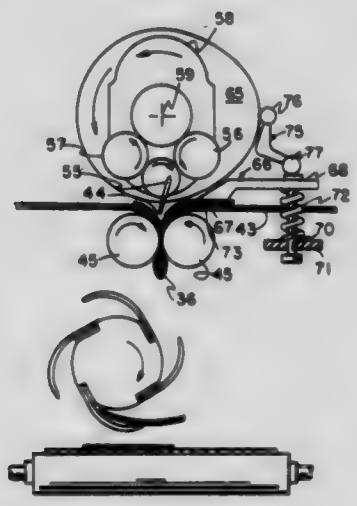
said directions of rotation moving the circumference of the rearward roll in a direction opposite to the movement of the layering means along said path, so that the rearward roll feeds the sheeting in zig-zag folds as the layering means moves back and forth.

4,493,690

CAM ACTIVATED ANTI-DOG-EAR DEVICE

Josef W. Niemiro, Berwyn, and Eugene Skipor, Elmwood Park, both of Ill., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jan. 20, 1983, Ser. No. 459,563
Int. Cl.³ B65H *45/18*
U.S. Cl. 493—444 10 Claims



1. In an apparatus for quarter folding a half-folded newspaper having folded edges along two sides thereof and loose edges along the remaining two sides thereof, which apparatus includes:

a pair of cooperating fold rolls; a surface located above the fold rolls to receive half-folded newspapers, the surface having a slot through which a newspaper can be moved;

a cage assembly mounted on a shaft for rotation above the newspaper supporting surface;

a tucker blade carried on the rotating cage and movable to tuck a newspaper through the slot in the supporting surface during each revolution of the cage assembly, the combination comprising:

cam means mounted for rotation with the shaft carrying the cage assembly; presser means having a face portion overlaying the surface of the newspaper supporting table immediately adjacent the slot in the table; and means operably connecting said cage assembly shaft means to said presser means whereby said face portion can be moved toward the supporting table to contact the loose edges of each newspaper when it is being drawn downwardly by the fold rolls.

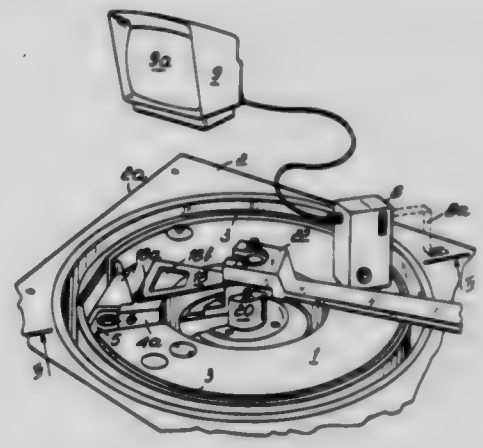
4,493,691

DEVICE FOR PERFORMING PLASMAPHERESIS BY CENTRIFUGATION

Alessandro Calari, Mirandola, Italy, assignor to Dideco S.P.A., Mirandola, Italy

Filed Mar. 14, 1983, Ser. No. 474,925
Claims priority, application Italy, Mar. 25, 1982, 20399 A/82
Int. Cl.³ B04B *15/00*
U.S. Cl. 494—10 6 Claims

1. A device for performing plasmapheresis by centrifugation, comprising a body, a rotor rotatably supported by said body and having at its center a support for a connector coupling of the type including a stationary connector block and a rotary connector block in rigid rotatory relationship with the rotor and wherefrom the conveying lines for whole blood, red cells, and plasma extend, supported on said body, a TV camera defining an optical axis, and connected to a TV display, formed on said rotor, a circumferential groove with a widening adapted to accommodate a bag which receives whole blood at one end, and having, at the other end, a substantially tetrahedral shape and being accommodated in the space portion defined between two blocks of a transparent material removably



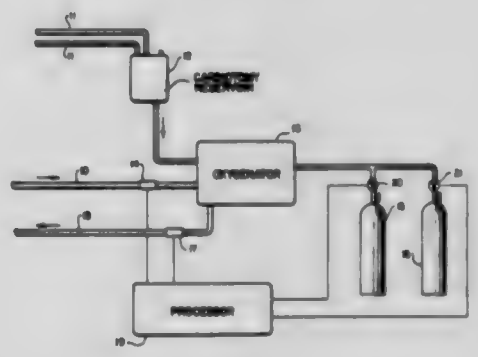
inserted in said widening, and provided with two lines extending substantially from said other end for letting out red cells and plasma, respectively, below said rotor there being provided two stroboscopic flash lights located to face a circular path followed during rotation of said rotor by an opening provided in the rotor through the bottom of said widening, one of said stroboscopic flash lights being arranged at the machine front and the other at any position spaced therefrom and overlaid by said TV camera and in alignment with said optical axis thereof, said optical axis intersecting said circular path.

4,493,692

BLOOD GAS CONCENTRATION CONTROL APPARATUS AND METHOD

Charles C. Reed, 5934 Hornwood, Houston, Tex. 77081

Filed Sep. 29, 1982, Ser. No. 426,777
Int. Cl.³ A61M *1/03*
U.S. Cl. 604—4 20 Claims



1. An apparatus for regulating the concentrations of oxygen and carbon dioxide dissolved in blood in an extracorporeal blood circuit, said apparatus comprising:

means for collecting blood from a patient for extracorporeal treatment;

means for monitoring in the extracorporeal blood circuit the concentrations of oxygen and carbon dioxide in the blood prior to extracorporeal treatment;

means for oxygenating the blood;

means for adjusting the concentration of carbon dioxide in the blood;

means for monitoring in the extracorporeal blood circuit the concentrations of oxygen and carbon dioxide in the blood after extracorporeal treatment; and

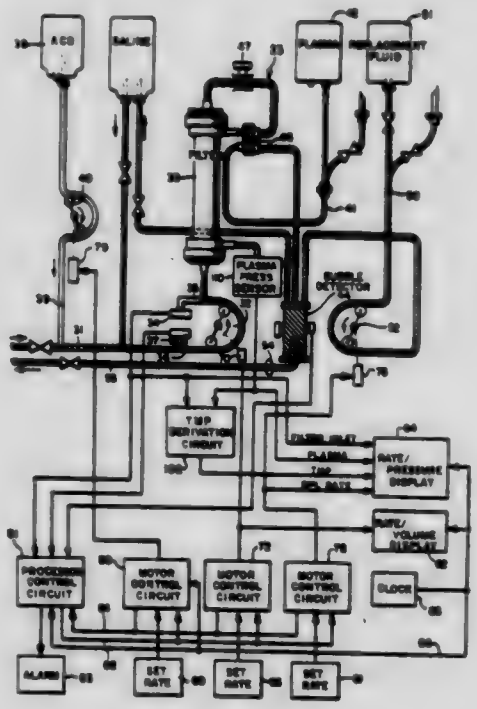
means for returning the blood to the patient after extracorporeal treatment.

4,493,693

TRANS-MEMBRANE PRESSURE MONITORING SYSTEM

Arnold C. Bilstad, Deerfield; John T. Foley, Wheeling, and Walker P. Woodworth, Vernon Hills, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jul. 30, 1982, Ser. No. 403,362
Int. Cl.³ A61A *1/03*; B01D *19/00*
U.S. Cl. 604—6 17 Claims



1. A trans-membrane pressure monitoring system for use in conjunction with a fluid fractionation system of the type having a microporous membrane filter device including an inlet for whole fluid and an outlet for separated fluid component, comprising:

a first electrical transducer having an inlet port responsive to an applied pressure for producing a first pressure-indicative signal;

first pressure coupling means for establishing a pressure communication channel between said inlet port of said first electrical transducer and one side of said filter device;

a second electrical transducer having an inlet port responsive to an applied pressure for producing a second pressure-indicative signal;

second pressure coupling means for establishing a pressure communication channel between said inlet port of said second electrical transducer and the other side of said filter device;

each of said pressure coupling means including a first conduit portion integral with the associated side of said filter device, and a second conduit portion disconnectable from said first portion and integral with respective one of said transducers;

each of said coupling means further including in said first portion of a microporous barrier plug means for providing a determined integration constant in the associated one of said channels;

differential pressure derivation means responsive to said first and second pressure signals for producing an output signal indicative of the differential pressure across the membrane; and

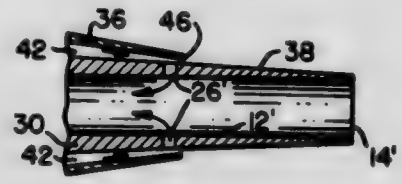
display means responsive to said output signal for displaying said differential pressure in operator readable format.

4,493,694

SURGICAL PRE-ASPIRATOR

David G. Wuchinich, New York, N.Y., assignor to Cooper Lasersonics, Inc., Santa Clara, Calif.

Continuation of Ser. No. 197,869, Oct. 17, 1980, abandoned, which is a continuation of Ser. No. 825,217, Apr. 10, 1979, abandoned. This application May 25, 1984, Ser. No. 614,691
Int. Cl.³ A61B *17/20*
U.S. Cl. 604—22 4 Claims



1. An ultrasonic surgical apparatus, comprising:

a hollow concentric surgical tool having a longitudinal axis;

means for ultrasonically vibrating said tool for fragmenting body material at a surgical site;

said tool having an internal suction passage formed along said longitudinal axis for connection to a source of suction;

said suction passage defining a suction port at an open end of said suction passage for aspirating fragmented body material from the surgical site into said suction passage;

a sleeve concentrically spaced about and free from contact with said tool, said sleeve extending longitudinal along said tool to substantially the end of said tool adjacent said suction port so as to define a fluid supply passage about said tool for connection to a fluid supply source;

said sleeve further defining an open annular orifice around said tool at an end face of said sleeve;

said tool further having at least one pre-aspirating orifice means formed through a wall portion of said tool disposed within said sleeve for admitting at least some fluid into said suction passage; and

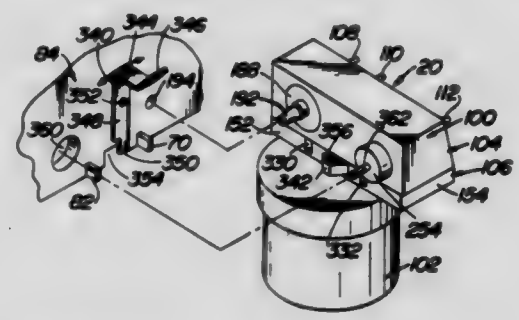
said pre-aspirating orifice means, said suction source, said fluid supply passage and said suction passage each dimensioned to provide means for pre-aspirating substantially all of said fluid through said at least one pre-aspirating orifice so as to prevent substantially all of said fluid flowing from said fluid supply source from reaching said surgical site.

4,493,695

OPTHALMIC MICROSURGICAL SYSTEM CASSETTE ASSEMBLY

Kenneth P. Cook, Blue Bell, Pa., assignor to Site Microsurgical Systems, Inc., Horsham, Pa.

Filed Jun. 1, 1982, Ser. No. 383,635
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—27 22 Claims



14. A opthalmic microsurgical system comprising:

a console including a source of vacuum and control means;

remotely connected means adapted to be disposed in the vicinity of the surgery situs and including an inlet;

first conduit means coupled to said inlet and said vacuum source for carrying material away from said surgery situs; and,

a cassette assembly means arranged for releasable securement to said console;

said control means including first means cooperating with said cassette assembly means for selectively isolating said vacuum source from said first conduit means;

said cassette assembly means comprising:

a body portion;

a collection vessel;

first port means communicating with said first conduit means;

second port means communicating with said vacuum source;

first flexible occludable means on said cassette coupled between said first and second port means and cooperating with said first means in response to a first signal to isolate said vacuum source from said first conduit means;

said collection vessel being coupled to said first conduit means to collect material extracted from said surgery situs.

4,493,696

HEMODIALYSIS CANNULAR FOR SUBCLAVIAN INSERTION

Peter R. Uldall, Willowdale, Canada, assignor to Allentyne Limited, Willowdale, Canada

Continuation of Ser. No. 160,316, Jun. 17, 1980, abandoned. This application May 4, 1984, Ser. No. 608,257
Claims priority, application Canada, Dec. 28, 1979, 342787
Int. Cl.³ A61M 5/00
U.S. Cl. 604—43 9 Claims



1. A double lumen cannula suitable for insertion into a large vein such as the subclavian vein of a patient for blood removal therefrom and blood return thereto, said cannula comprising

an elongated flexible tubular outer member comprising a main elongated portion of first cross section, an integral convergent section having a smooth continuous outer surface and a flexible distal end portion having a second cross section which is smaller than said first cross section

a plurality of blood flow apertures, spaced apart from one another in the side wall of said main portion of said first cross section adjacent the convergent section;

at least one blood flow aperture disposed centrally in the tip of said flexible distal end portion;

an elongated flexible tubular inner member having an opening at each end and having a cross section smaller than said first cross section, the inner member being disposed within the outer member, the distal end of said inner member being disposed in substantially sealing end contact with the convergent section of the outer member so as to form, with the outer member, a pair of concentrically arranged discrete fluid flow lumens, the inner lumen constituted by said inner member and said distal end portion of the outer member, the outer lumen constituted by the main portion and the convergent section of the outer member;

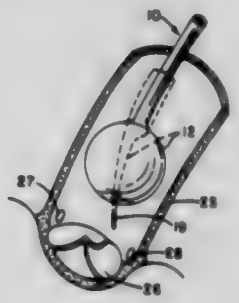
the inner member being releasable and withdrawable from within the outer member.

4,493,697

METHOD AND APPARATUS FOR PUMPING BLOOD WITHIN A VESSEL

Horst E. Krause, P.O. Box 617, Freeport, Tex. 77541, and Edwin L. Stanley, 2566 S. Patterson Blvd., Dayton, Ohio 45409

Continuation-in-part of Ser. No. 037,766, May 10, 1979, Pat. No. 4,284,073, which is a continuation of Ser. No. 841,017, Oct. 11, 1977, Pat. No. 4,154,227. This application Aug. 14, 1981, Ser. No. 292,991
The portion of the term of this patent subsequent to May 15, 1996, has been disclaimed.
Int. Cl.³ A61M 1/03
U.S. Cl. 604—50 15 Claims



1. A method for perfusing a body organ or tissue with blood or a blood substitute, comprising the steps of connecting the organ or tissue to pump means with a conduit, and pulsating the blood or blood subetitute within the tissue or organ by operating the pump means at a frequency substantially greater than the normal pulsation frequency of the heart to produce an amplified dynamic pressure wave form in the blood or blood substitute within the microcirculatory vessels to increase the penetration of the blood or blood substitute into the body tissue or organ.

4,493,698

METHOD OF PERFORMING OPTHALMIC SURGERY UTILIZING A LINEAR INTRA-OCULAR SUCTION DEVICE

Carl C. T. Wang, Piedmont, Calif.; Steve Charles, Memphis, Tenn., and Joseph T. Buckingham, Moraga, Calif., assignors to Cooper Medical Devices, San Leandro, Calif.

Division of Ser. No. 203,143, Nov. 3, 1980, Pat. No. 4,395,258. This application Feb. 28, 1983, Ser. No. 470,209
Int. Cl.³ A61M 31/00
U.S. Cl. 604—51 4 Claims

1. A method for performing ophtalmic surgery comprising the following steps:

adapting a cannula to be inserted into the surgical zone;

inserting the cannula into the surgical zone;

maintaining a debris receptacle at a selectable vacuum level for receiving material from the surgical zone, including the steps of

(1) decreasing the vacuum level of the receptacle through an exhaust valve by automatically and continuously communicating between a transducer, a conduit and a exhaust valve such that the exhaust valve is automatically opened when there is an excessive vacuum level detected in the receptacle,

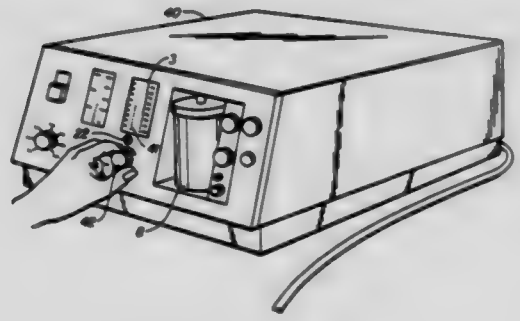
(2) increasing the vacuum level of said receptacle by automatically and continuously communicating between the transducer and the conduit to automatically open the conduit between the vacuum supply and the receptacle to increase the vacuum level of the recepta-

cle when an insufficient vacuum level is detected in the receptacle,

(3) maintaining a first potentiometer at a predetermined level to represent the maximum vacuum level at which said receptacle may be maintained,

(4) periodically setting a second potentiometer at a value representing a percentage of the value of the first potentiometer where the percentage value is the vacuum level at which the receptacle is maintained for a given application,

(5) communicating with the vacuum supply and the exhaust valve for comparing the percentage value of the second potentiometer with the detected vacuum level of the pressure transducer to open the conduit and the exhaust valve in response to an insufficient and an excessive level, respectively, in the debris receptacle;



maintaining a vacuum supply at a predetermined level for varying the vacuum level of the debris receptacle in order that the debris receptacle may be maintained at a selectable vacuum level;

communicating between a vacuum supply, a debris receptacle, and the cannula with a conduit to selectively increase and decrease the vacuum level of the receptacle when the vacuum of said receptacle is greater or lesser than a predetermined selectable vacuum level; and

automatically and continuously monitoring the vacuum level of said receptacle with a pressure transducer in order that any variance in the vacuum level of said receptacle may be instantaneously corrected by either increasing or decreasing the vacuum level of said receptacle.

4,493,699

CONTRACEPTIVE METHODS

Ronald E. Zimmerman, Danville; Philip J. Burck, Indianapolis; C. David Jones, Indianapolis, and Arvind L. Thakkar, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 8, 1982, Ser. No. 366,889
The portion of the term of this patent subsequent to Apr. 28, 1998, has been disclaimed.
Int. Cl.³ A61K *9/02*
U.S. Cl. 604—55 9 Claims

1. A method of contraception in a female mammal which comprises continuously introducing within the vaginal cavity of said female, over a prolonged period of time at a controlled rate, a contraceptively effective amount of an alkyl or alkenyl sulfate salt of the formula:

$$R—OSO_3—M$$

wherein R is:

(a) C_{11}–C_{30} straight chain alkyl or alkenyl;

(b) C_{10}–C_{30} branched chain alkyl or alkenyl, the α-carbon of which is not branched; or

(c) C_{13}–C_{30} branched chain alkyl or alkenyl, the α-carbon of which is branched;

or of an alkyl or alkenyl sulfoalkylalkanoate salt of the formula

$$R^2—\overset{O}{\overset{\|}{C}}O—(CH_2)_nSO_3M \qquad II$$

wherein R^2 is alkenyl or straight chain alkyl of from 9–13 carbon atoms or a branched chain alkyl of from 9–17 carbon atoms; and n is 2, 3 or 4;

or of an alkyl sulfonate salt of the formula

$$R^1SO^3M \qquad III$$

wherein R^1 is straight or branched alkyl of from 11–16 carbon atoms; and M is a pharmaceutically acceptable non-toxic cation; by means of a biologically compatible prolonged release carrier therefor whereby the compound is transported into the uterine fluids with sperm during or after coitus.

4,493,700

PROTECTIVE SHEATH FOR AN ARTIFICIAL INSEMINATION GUN, IN PARTICULAR FOR BOVINES

Robert Cassou, 1 rue Clémenceau; Maurice Cassou, Rue Clémenceau, and Bertrand Cassou, Saint Symphorien des Bruyeres, all of 61300 L'Aigle, France

Filed Sep. 28, 1982, Ser. No. 425,287
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—55 4 Claims



1. A cylindrical flexible protective sheath insertable into an animal during use with an artificial insemination gun, the sheath having a substantially constant wall thickness throughout the length of the sheath and having an open insemination end portion of a narrowed shape and an opposite sheath-fixing end portion having a very short length relative to the total length of the sheath and a free inside diameter substantially larger than a constant free inside diameter that the sheath has between said end portions.

4,493,701

WOUND DRAINAGE DEVICE OF RESILIENT SIDEWALLS WITH A CONSTANT RATE OF RECOVERY

Matthew W. Bootman, Goleta; Peter Schillke, and Stephen W. Laguette, both of Santa Barbara, all of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Aug. 19, 1982, Ser. No. 409,671
Int. Cl.³ A61M *1/06*
U.S. Cl. 604—73 23 Claims

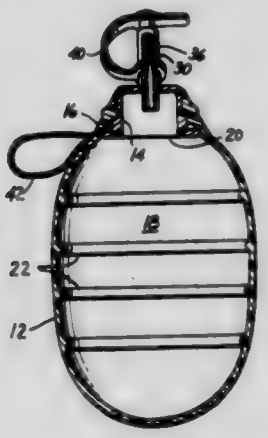
1. A wound drainage reservoir comprising:

a container having a resilient sidewall defining a chamber within the container, which sidewall includes resilient means for providing a substantially constant rate of recovery for the sidewall to its original configuration after having been collapsed, and an opening extending through the sidewall to the chamber;

a helmet extending through the opening having an outwardly extending lip extending circumferentially around the helmet, which lip engages an inside surface of a portion of the sidewall of the container which surrounds the

opening the helmet further having an indented portion which projects outwardly from the opening;

a collar means encircling and bonded to a portion of the helmet which projects outwardly from the opening for sealing such portion of the sidewall between the lip of the helmet and such collar means;



a first inlet means on the helmet for providing a first fluid-flow conduit to the chamber;

a second inlet means on the helmet for providing a second fluid-flow conduit to the chamber;

a drainage outlet means on the helmet for providing a fluid-flow conduit from the chamber; and

a plurality of ribs extending laterally along the sidewall.

4,493,702

PARENTERAL ADMINISTRATION USING OSMOTICALLY MOTIVATED DELIVERY SYSTEM

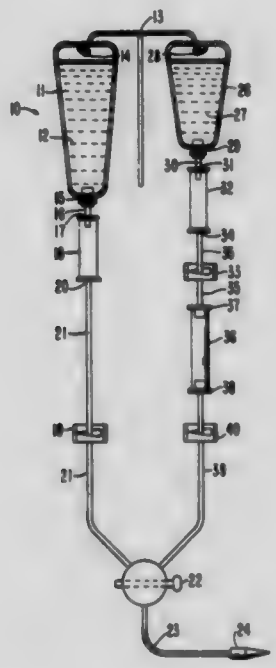
John Urquhart, Palo Alto, and Felix Theeuwes, Los Altos, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 325,206, Nov. 27, 1981, Pat. No. 4,432,756. This application Oct. 17, 1983, Ser. No. 542,466

The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.

Int. Cl.³ A61M 5/00

U.S. Cl. 604—80 **3 Claims**



1. A parenteral delivery set for administering a beneficial agent formulation to a warm-blooded animal, the delivery set comprising:

(a) a primary tube for the flow of a parenterally acceptable fluid therethrough;

(b) a secondary tube for the flow of a parenterally acceptable fluid therethrough;

(c) a formulation chamber having means for establishing communication with the secondary tube, the formulation chamber comprising:

(1) a wall that surrounds an internal lumen;

(2) an inlet in the wall for letting a parenterally acceptable fluid enter the formulation chamber;

(3) a beneficial agent osmotic delivery device in the formulation chamber, the delivery device comprising:

(i) a wall formed of a semipermeable composition that surrounds and forms a compartment, (ii) a beneficial agent in the compartment, and (iii) a passageway in the wall of the delivery device connecting the compartment with the formulation chamber;

(4) an outlet in the wall for letting an agent formulation leave the formulation chamber;

(d) a common tube having means for communicating with the primary tube for receiving parenterally acceptable fluid from the primary tube, and for communicating with the secondary tube for receiving parenterally administrable agent formulation from the secondary tube.

4,493,703

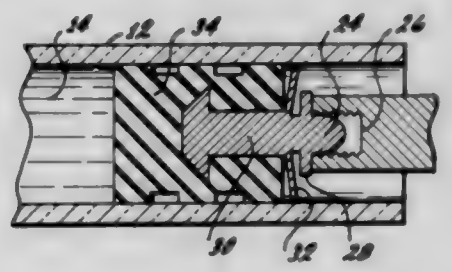
HYPODERMIC SYRINGE CARTRIDGE WITH NON-RETRACTABLE DRIVE PISTON

Ida M. Butterfield, Santa Maria, Calif., assignor to Butterfield Group, Santa Maria, Calif.

Continuation-in-part of Ser. No. 542,084, Oct. 17, 1983, abandoned, which is a continuation of Ser. No. 363,927, Mar. 31, 1982, abandoned. This application May 14, 1984, Ser. No. 609,520

Int. Cl.³ A61M 5/00

U.S. Cl. 604—110 **2 Claims**



1. An insert, part of which is permanently embedded within the drive piston that is pushed by an actuating rod within the tubular member of a hypodermic syringe to expel fluid from the hypodermic syringe, characterized in that said insert simultaneously serves the dual purposes of preventing retraction of the drive piston from any position along the tubular member to which the drive piston has been advanced and of preventing penetration of the drive piston by a hypodermic needle, thereby rendering the hypodermic syringe pilfer-proof, said insert comprising:

a resilient element spanning the bore of the tubular member when inside the tubular member, impenetrable by a hypodermic needle, and extending radially when removed from the tubular member to a diameter greater than the bore of the tubular member so that peripheral portions of said resilient element are forced to bow rearward when the drive piston is inserted into the tubular member from the rear;

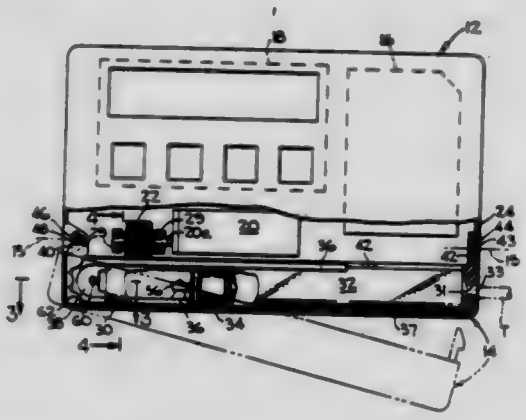
said peripheral portions frictionally contacting the inside wall of the tubular member, the friction between said peripheral portions and the inside wall resisting rearward motion of the drive piston at all positions of the drive piston within the tubular member so that any attempt to pull the drive piston toward the rear of the tubular member will force said peripheral portions to jam even more tightly against the inside wall of the tubular member, thereby preventing retraction of the drive piston at all positions of the drive piston within the tubular member.

4,493,704

PORTABLE FLUID INFUSION APPARATUS

Robert W. Beard, Placerville, and Russell F. Kirk, Sunnyvale, both of Calif., assignors to OXIMETRIX, Inc., Mountain View, Calif.

Filed Nov. 29, 1982, Ser. No. 445,276
Int. Cl.³ A61M 5/20
U.S. Cl. 604—154
24 Claims



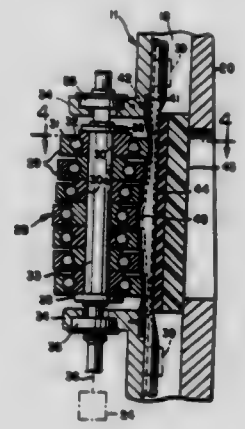
1. Portable fluid infusion apparatus comprising a syringe for holding a predetermined quantity of an injectable liquid to be delivered to a patient, a piston within the body of the syringe for ejecting liquid therefrom, a flexible member connected to said piston within the body of the syringe and extending in a path bent sharply away from the axis of the syringe, and means for driving the flexible member into the body of the syringe in a controlled manner for dispelling said liquid from the syringe.

4,493,706

LINEAR PERISTALTIC PUMPING APPARATUS AND DISPOSABLE CASETTE THEREFOR

Alexander S. Borsanyi, Newport Beach, and Donald E. Bobo, Fountain Valley, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Aug. 12, 1982, Ser. No. 407,440
Int. Cl.³ A61M 5/00
U.S. Cl. 604—153
16 Claims





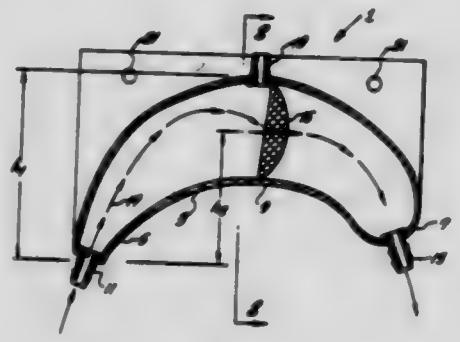
1. A linear peristaltic pump apparatus comprising a housing having an opening therein; a shaft rotatably supported within said housing adjacent said opening; means for rotating said shaft; a series of bearing assemblies within said housing each having concentric inner and outer bearing members; said inner member being eccentrically mounted upon said shaft with the centers of said inner members being arranged to describe a helix about the axis of said shaft; an elastomeric membrane secured to said housing about said opening and covering said opening; said membrane extending along and tangentially engaging the outer members of said bearing assemblies along a first linear zone of contact; a casette removably and externally supported by said housing adjacent to said membrane and comprising a rigid frame and a generally straight section of elastomeric tubing supported thereby; means provided by said housing for orienting said frame with said section of tubing lying in the same plane as said first zone of contact; and platen means provided by said housing and engagable with said section of elastomeric tubing to urge the same into engagement with the opposite side of said membrane along a second linear zone of contact parallel with said first zone of contact.

4,493,705

BLOOD RESERVOIR

Lucas S. Gordon, and Jeanne Pierson, both of Irvine, Calif., assignors to Bentley Laboratories, Inc., Los Angeles, Calif.

Filed Aug. 10, 1982, Ser. No. 406,962
Int. Cl.³ A61M 1/03; B01D 19/02
U.S. Cl. 604—122
10 Claims



1. A blood reservoir comprising:
a substantially inverted U shaped reservoir chamber having first and second U legs joined by a U midsection;
a substantially cylindrical inlet at the base of said first U leg said inlet aligned such that its centerline projects upwardly from the centerline of said first U leg;
an outlet at the base of said second U leg; and a vent at the uppermost portion of the U midsection.

4,493,707

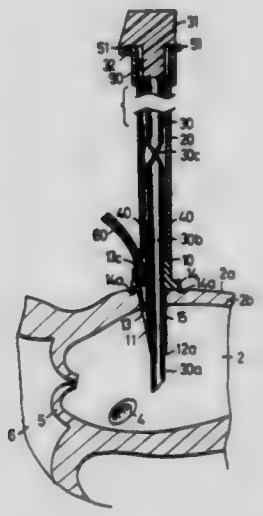
TUBAGE USED FOR INTUBATION

Yoshihisa Ishihara, Hiroshima, Japan, assignor to Japan Medical Supply Co. Ltd., Hiroshima, Japan

Filed Apr. 4, 1983, Ser. No. 482,090
Claims priority, application Japan, Feb. 10, 1983, 58-017476[U]
Int. Cl.³ A61M 5/00
U.S. Cl. 604—164
11 Claims

1. A tubage for use in an intubation which comprises:
a first tubular body having a first conduit and a second

conduit formed respectively to extend in the longitudinal direction of said first tubular body, a flange portion extending in the direction substantially perpendicular to said longitudinal direction, and a side hole formed to open to the first conduit at a predetermined distance from said flange portion;



a flexible second tubular body connected at its one end to one end of said first conduit so as to communicate with said first conduit;

a hollow needle removably received by said first conduit and by said flexible second tubular body; and

a liquid seal means provided between the inner surface of said second tubular body and the outer surface of said hollow needle.

4,493,708

INTRAVASCULAR CATHETER ASSEMBLY

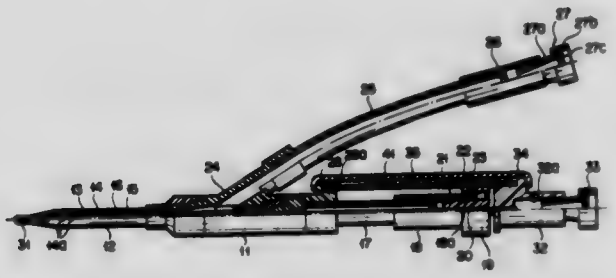
Yasuhiko Sugisawa, Fujinomiya, Japan, assignor to Terumo Corporation, Tokyo, Japan

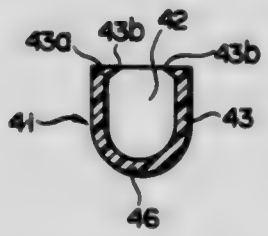
Filed Sep. 21, 1982, Ser. No. 420,814

Claims priority, application Japan, Dec. 10, 1981, 56-182852[U]

Int. Cl.³ A61M *25/00*

U.S. Cl. 604—165 15 Claims





2. An intravascular catheter or cannula assembly comprising:

catheter means including a catheter hub and a flexible catheter tube which has a longitudinal bore and a proximal end of which is fixed to said catheter hub;

cannula means including a hollow cannula body which is detachably inserted into said longitudinal bore and a distal end of which is arranged to project from a distal end of said catheter tube, and a cannula hub which supports said cannula body at a proximal end thereof;

means for regulating a length of the distal end of said cannula body projecting from the distal end of said catheter tub, said cannula projecting length regulating means including a cannula positioning rod, a proximal end of which is fixed on an outer surface of said cannula hub through a fixing member and a distal end of which projects parallel to said cannula body and a rod stopper means which is mounted on an outer surface of said catheter hub to abut against a distal end of said cannula positioning rod, thereby regulating the length of the distal end of said cannula body projecting from the distal end of said catheter tube; and

preventing means for preventing axial movement of said cannula means when said cannula body is inserted into said longitudinal bore of said catheter tube, said cannula axial movement preventing means having a side wall and a bottom wall defining a groove which tightly detachably receives said fixing member and said rod stopper means, said side wall and said bottom wall extending along the axial direction of said cannula positioning rod, said side wall having a thin projection which extends inwardly from an upper end of said side wall so as to snap in said fixing member and said rod stopper means into said groove.

4,493,709

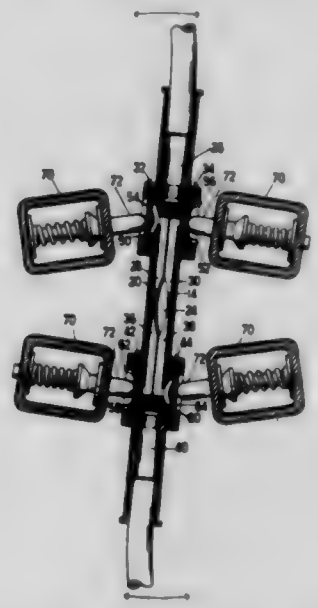
METERING DEVICE FOR INTRAVENOUS FLUIDS

Gordon E. Smith, Carrollton, Tex., assignor to Quest Medical, Inc., Carrollton, Tex.

Filed Jan. 25, 1982, Ser. No. 342,100

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—246 8 Claims



1. A metering device for monitoring and controlling the flow of intravenous fluid at a preselected overall volumetric flow rate comprising:

a metering chamber (14) having a fixed accurately preselected volume equal to a standard drop size no greater than 0.1 milliliters;

a pressure transmitting member (20) dividing the metering chamber (14) into first and second compartments (22, 24);

respective inlet and outlet tubes (28, 30, 36, 38) connected to each of the first and second compartments (22, 24) in the metering chamber (14);

valve means (32, 34, 42, 44) connected to each of the respective inlet and outlet tubes (28, 30, 36, 38) connected to each of the first and second compartments (22, 24) in the metering chamber (14);

main inlet (26) and outlet (40) tubes, each of which connects to the respective inlet tubes (28, 30) or outlet tubes (36, 38) connected to the two compartments (22, 24) in the meter-

ing chamber (14) the main outlet tube (40) being free from downstream rate-control occlusions; and

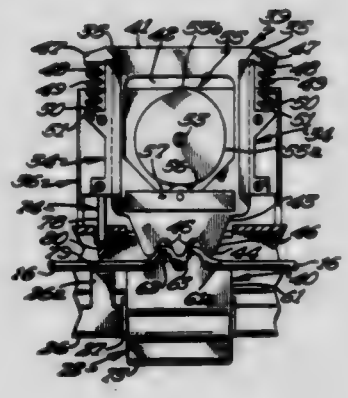
timing and valve operator means for controlling the operation of the valve means (32, 34, 42, 44) so as to repetitively and alternatively allow fluid flow into and out of each of the two compartments (22, 24) formed in the metering chamber (14) for a time period sufficiently long to allow the compartments to completely fill and empty alternatively, the volume of each of the compartments (22, 24) being equal in volume to the volume of the metering chamber (14) when that compartment is filled so that a pulse of fluid precisely equal to the standard drop size in volume is introduced into the main outlet tube (40) and into the patient upon each switching of the valve means (32, 34, 42, 44) by the timing and valve operator means; the timing and valve operator means constructed so that the time period between valve means operations is equal to the quotient of the metering chamber volume divided by the preselected overall volumetric flow rate, the time period thus being independent both of the instantaneous flow rate and of the positioning of the pressure transmitting member.

4,493,710

INTRAVENOUS DRIP RATE CONTROL DEVICE

Roger A. King, and John E. Arnold, Jr., both of Minneapolis, Minn., assignors to Ivy Medical, Inc., Minneapolis, Minn.

Filed Nov. 14, 1983, Ser. No. 550,803
Int. Cl.[3] A61M 5/00
U.S. Cl. 604—250 7 Claims



1. An intravenous drip rate controller device for use in controlling the drip rate of a solution from an intravenous container mounted on an intravenous pole stand and having a drip chamber connected in fluid flow relation with said intravenous chamber, a flexible elastic drip tube connected to the drip chamber and extending downwardly therefrom, and a drip rate sensing means positioned in proximity to the drip chamber for sensing each intravenous drip and generating an electrical signal in response to each drip indicative of the drip rate, said device comprising:

a support structure mounted on said intravenous pole stand,

a control valve on said support for controlling the drip rate of the solution including opposed valve members each having projections and recesses arranged in interdigitating relation with the projections and recesses on the other valve member to define undulating clamping surfaces,

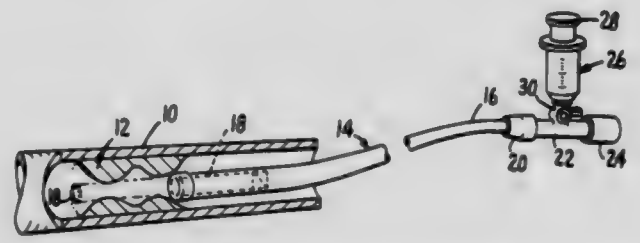
means supporting one of said valve members for shifting movement of said one valve member toward and away from the other valve member whereby when said one valve member is shifted toward the other valve member, a portion of the drip tube extending horizontally between and along said undulating clamping surfaces of the valve members will be engaged and stretched in a direction longitudinally of the tube by the interdigitating projections and recesses defining the undulating clamping surfaces to progressively reduce the opening in that length of the drip tube engaged by the undulating clamping surfaces to thereby reduce the drip rate through the stretched portion, and when one said valve member is shifted away from the other valve member, the tension on the elastic drip tube will be progressively relaxed to permit the drip tube to return to its original unstretched condition and thereby increase the drip rate of the solution passing therethrough.

4,493,711

TUBULAR EXTRUSION CATHETER

Albert K. Chin, San Francisco, Calif., and Thomas J. Fogarty, 770 Welch Rd., Palo Alto, Calif. 94304, assignors to Thomas J. Fogarty, Palo Alto, Calif.

Filed Jun. 25, 1982, Ser. No. 392,279
Int. Cl.[3] A61M 25/00
U.S. Cl. 604—271 5 Claims



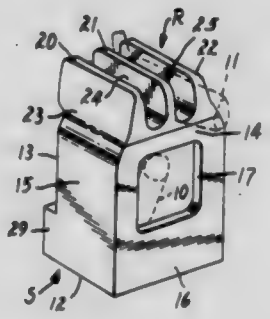
1. A catheter comprising an elongated flexible tubular catheter body, a non-elastomeric flexible tube of a generally uniform diameter over the entire length thereof at least one to two times that of the outer diameter of the catheter body, said tube having first and second initially open ends, the first end being closed by being folded externally several times upon itself and then turned outside-in so as to be secured within the tube, and then being inserted into said body, the second end being turned inside-out and being sleeved over and secured to the distal end of said body, said folded and closed first end being adapted to remain folded and closed upon the application of pressurized fluid thereto through the catheter body to cause the eversion of said tube from said body and said folded and closed end being adapted at the end of eversion movement of said tube to flip to an inside-out condition and open under continued application of pressurized fluid.

4,493,712

FOOT SOAKER AND RESTER

Ronald J. Kampff, 3033 Toledo Ave. S., St. Louis Park, Minn. 55416

Filed Sep. 28, 1982, Ser. No. 424,895
Int. Cl.[3] A61F 7/00
U.S. Cl. 604—293 7 Claims



1. A device comprising a first part adapted to receive a foot of a human and hold enough liquid to cover said foot, and a second part adapted to support the other foot of said human in a generally upright position of limited turning movement while said first named foot is in the liquid housed by said first part,

wherein said parts are separable, and means for maintaining said parts in connected spaced apart relationship,

and wherein said first part has an upwardly facing top surface and said second part has a downwardly facing bottom surface opposing said top surface and adapted to engage and be supported by said top surface, and

wherein said means for maintaining said parts in spaced apart relationship comprises spacer means insertable between said parts and adapted to engage said top and bottom surfaces whereby said spacer means is supported by said first part and supports said second part.

4,493,713

ADDED FEATURE TO DISPOSABLE DIAPERS

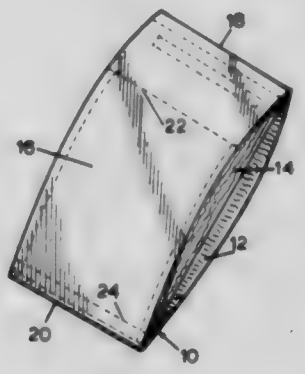
Alexander P. Izzo, 10 Printer Ct., Huntington Station, N.Y. 11746

Filed Jul. 22, 1982, Ser. No. 400,627
Int. Cl.³ A61F *13/16*
U.S. Cl. 604—385 7 Claims

1. A disposable diaper, comprising: an absorbant layer having opposing sides;

a backing sheet attached to one side of the absorbant layer; and

a removable bag having opposing first and second ends, a storage pouch on one surface thereof, and retained onto the opposite side of said absorbant layer so as to cover said absorbant layer and have said absorbant layer sandwiched between said backing sheet and said bag, said bag being attached to said backing sheet by said first and second ends with said pouch facing said absorbant layer, whereby said bag must be separated from the absorbant layer and removed to expose said absorbant layer for application of



the diaper onto a person, said bag once removed now being available for disposal into the storage pouch of said bag of a diaper which is now soiled.

CHEMICAL

4,493,714

ULTRATHIN FILM, PROCESS FOR PRODUCTION THEREOF, AND USE THEREOF FOR CONCENTRATING A SPECIFIED GAS IN A GASEOUS MIXTURE

Fumio Ueda; Eiichi Hashimoto; Takeyoshi Yamada, and Koh Mori, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed May 4, 1983, Ser. No. 491,536

Claims priority, application Japan, May 6, 1982, 57-74476; Sep. 17, 1982, 57-160810; Sep. 17, 1982, 57-160811; Sep. 17, 1982, 57-160814

Int. Cl.³ B01D 53/22

U.S. Cl. 55—16 21 Claims

1. An ultrathin film composed substantially of silicon-containing polyurea comprising polyaddition bonded units derived from

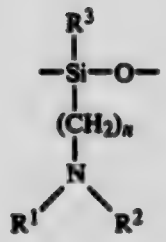
(A) at least one polyamine selected from the group consisting of silicon-containing polyamines having in the molecule at least two units of the following formula



(I)

wherein R^3 represents a monovalent hydrocarbon group or a fluorocarbon group, R^1 and R^2 are identical or different and represent a hydrogen atom or a monovalent hydrocarbon group which may have a primary or secondary amino group, or R^1 and R^2 may be bonded to each other to form an alkylene group interrupted by the nitrogen atom forming the secondary amino group, and n is an integer of 1 to 10, provided that R^1 and R^2 are not simultaneously aliphatic, alicyclic or aromatic groups free from the amino group,

not all, but at least one, of the units of formula (I) forming a unit represented by the following formula



(I)-a

wherein R^1, R^2, R^3 and n are as defined, the free bond from the silicon atom is bonded directly to another carbon atom or another oxygen atom, and the free bond from the oxygen is bonded directly to another siloxane atom,

and hydrocarbon-type polyamines containing at least two primary or secondary amino groups in the molecule, and

(B) at least one polyisocyanate compound selected from the group consisting of silicon-containing polyisocyanates having at least 2 isocyanate groups in the molecular chains and hydrocarbon-type polyisocyanates having at least 2 isocyanate groups in the molecular chains;

provided that when the polyisocyanate compound is the hydrocarbon-type polyisocyanate alone, at least one of the selected polyamines is a silicon-containing polyamine containing in the molecule at least one unit of formula (I)-a in which the free bond from the silicon atom is bonded to a monovalent hydrocarbon group.

4,493,715

REMOVAL OF CARBON DIOXIDE FROM OLEFIN CONTAINING STREAMS

John P. Hogan; Charles R. Nease, both of Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 451,291, Dec. 20, 1982, abandoned. This application Mar. 30, 1984, Ser. No. 595,134

Int. Cl.³ B01D 53/04

U.S. Cl. 55—68 6 Claims

1. A method for removing low concentrations of CO_2 from a gaseous olefin stream of at least C_2 to C_4 olefins which comprise passing said gaseous olefin stream containing CO_2 into contact with a regenerable, calcined adsorbent consisting essentially of from 1 to 6 weight percent of an alkali metal oxide selected from the group consisting of sodium, potassium and lithium on alumina, said regenerable, calcined adsorbent having been made by (a) contacting alumina with an alkali metal compound selected from the group consisting of sodium, potassium or lithium compounds which are convertible to the metal oxide on calcination, (b) drying the resulting alkali metal compound, treated alumina, and (c) thereafter calcining the dried treated alumina.

4,493,716

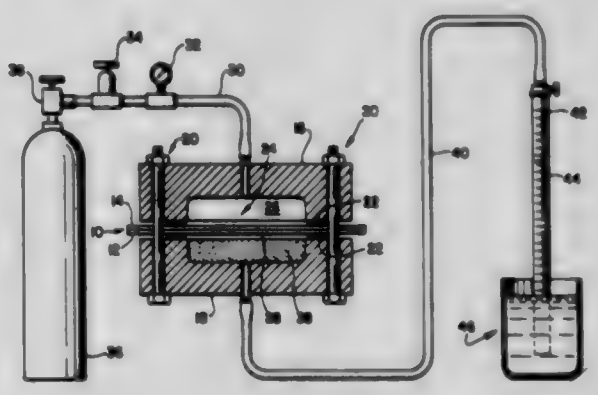
APPARATUS FOR THE SEPARATION OF HYDROGEN SULFIDE FROM A GAS MIXTURE

Robert H. Swick, Newcastle, Del., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Filed Oct. 12, 1982, Ser. No. 433,889

Int. Cl.³ B01D 53/22

U.S. Cl. 55—158 15 Claims



1. A flexible layered membrane for use in separating hydrogen sulfide from a mixture of gases in a continuous flow-through process, said membrane comprising:

a. a fine textured support layer permeable at least to hydrogen sulfide and having pores occludable by a very thin coating; and

b. a selective permeability pellicle of cured polysulfide polymer having a separation factor favoring hydrogen sulfide adhered to a surface of said support layer and occluding the pores thereof.

13. Apparatus for removing hydrogen sulfide from a mixture of gases, comprising:

a. a flexible layered membrane including:

(i) a fine textured support layer permeable at least to hydrogen sulfide gas and having pores occludable by a very thin coating; and

(ii) a selective permeability pellicle of cured polysulfide polymer having a separation factor favoring hydrogen sulfide adhered to a surface of said support layer occluding the pores thereof;

b. means for conducting said mixture of gases under pressure along one surface of said layered membrane; and

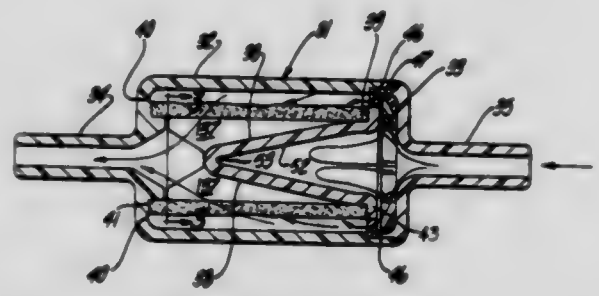
c. means for removing gas emerging from the surface of said layered membrane opposite said one surface thereof.

4,493,717

IN-LINE DISPOSABLE FILTER

L. Joseph Berger, Jr., 19661 Beverly Rd., and Denis D. Gueguierre, 320 Argyle, both of Birmingham, Mich. 48009

Filed May 6, 1982, Ser. No. 375,536
Int. Cl.[3] B01D *50/00, 46/24*
U.S. Cl. 55—330 8 Claims



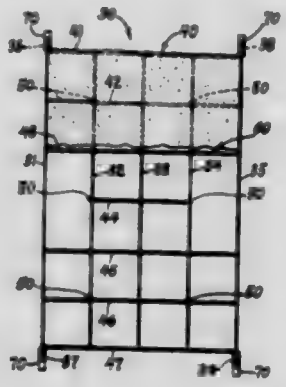
1. A filter assembly including:
(a) a filter housing having a fluid inlet and a fluid outlet,
(b) a filter tube mounted within said filter housing between said inlet and outlet, and
(c) a ribbed support structure permanently mounted within said housing and supporting said tube along substantially its entire length,
(d) said housing comprising a female portion and a male portion permanently joined together,
(e) an annular recess at one end of said female portion, said male portion having an annular ledge at one thereof and extending into said annular recess,
(f) said ribbed support structure being connected to the interior of said filter housing and comprising a plurality of axially and radially extending ribs supporting said filter tube and having axially tapered wall portions between said ribs, a support structure end wall provided at one end of said ribbed support structure, said end wall having a plurality of annular serrations provided thereon, said serrations engaging an end of said filter tube, and a plurality of radial projections, said radial projections being located between said annular recess and said annular ledge.

4,493,718

PAINT SPRAY FILTER SYSTEM

Randy Schweizer, Park Ridge, Ill., assignor to Chemco Manufacturing Co., Inc., Skokie, Ill.

Filed Mar. 31, 1983, Ser. No. 480,783
Int. Cl.[3] B01D *39/04*
U.S. Cl. 55—491 2 Claims



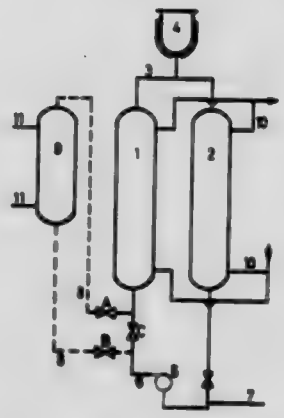
1. A paint spray filter for use in a paint spray booth characterized by a pair of substantially parallel side panels, an end panel interconnecting said side panels, a top panel overlying said side panels and said end panel, means defining access to said booth from the front of said booth, and frame means disposed intermediate said end panel and said access, comprising:
a grid comprising a plurality of parallel vertical members including a first pair of said vertical members defining the vertical edges of said grid and being substantially twenty-four inches apart, and a second pair of said vertical members being located substantially twelve inches apart and substantially six inches from respective ones of said first pair of said vertical members; a plurality of parallel horizontal members including a first pair of said horizontal members defining the horizontal edges of said grid, and being substantially thirty-six inches apart, and a second pair of said horizontal members being located substantially eighteen inches apart and substantially six inches from respective ones of said first pair of said vertical members, and another one of said horizontal members located substantially midway between said second pair of said horizontal members;
a plurality of attachment spikes secured to said grid, extending outwardly and upwardly therefrom, four of said spikes being located at the intersections of said second pair of said vertical members and said second pair of horizontal members, and two of said spikes being located at the intersections of said second pair of said vertical members and said other one of said horizontal members;
a sheet of fiberglass filter material having a first face substantially covering said grid and being secured thereto by said attachment spikes, and a fully exposed second face; and
support means extending from the corners of said grid and adapted to cooperate with said frame means of said booth for maintaining said paint spray filter in said booth, whereby said paint spray filter defines a barrier separating said booth into an exhaust area located between said barrier and said end panel, and a spraying area located between said barrier and said access.

4,493,719

METHOD OF SEPARATION BY FRACTIONAL CRYSTALLIZATION FROM A LIQUID MIXTURE

Klaus Wintermantel, Dossenheim; Dieter Stockburger, Gruenstadt, and Hugo Fuchs, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 764,536, Feb. 1, 1977, abandoned. This application Mar. 25, 1983, Ser. No. 479,005
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1976, 2606364
Int. Cl.[3] B01D *9/02*
U.S. Cl. 62—532 5 Claims



1. An improved method of separation by fractional crystallization in which a liquid mixture is repeatedly passed in turbulent flow through an indirectly cooled crystallization zone, which crystallization zone is kept full of liquid mixture, and a layer of crystals is crystallized on the walls of the crystallization zone, the liquid remaining after deposition of the layer of crystals on the wall of the crystallization zone being removed, whereupon the surface of the layer of crystals is washed and the crystals are melted by passing through the crystallization zone a melt of similar composition to that of the crystals, wherein the improvement comprises:
carrying out the crystallization in a cascade of two crystalli-

zation zones the liquid mixture rising in the first zone and descending in the second zone, said zones being connected to a loop,

maintaining the liquid mixture throughout the entire crystallization at a temperature equal to or less than the equilibrium temperature of said liquid mixture, wherein the ratio of rate of growth to mass transfer coefficient at the interface is controlled such that it remains constant or diminishes during crystallization and

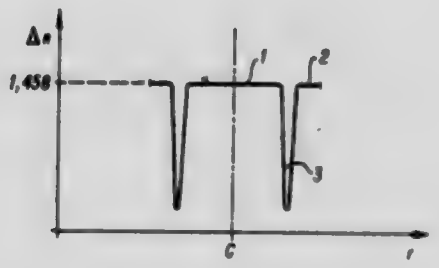
continuing the crystallization until a frozen fraction of from 70 to 98% is achieved, said frozen fraction being the percentage of the cross-section of the crystallization zone which is filled with the crystalline product.

4,493,720

PROCESS FOR PRODUCING DOPED VITREOUS SILICA FOR PREPARING A PREFORM FOR AN OPTICAL FIBRE

Francis Gauthier, and Jean Gombert, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 7, 1983, Ser. No. 464,556
Claims priority, application France, Feb. 9, 1982, 82 02053
Int. Cl.³ C03C *15/00*; C03B *37/01, 23/00*
U.S. Cl. 65—3.12 21 Claims



1. A process for the production of doped vitreous silica and the preparation of a preform for an optical fiber, which process comprises:

(a) melting a dopant-containing batch mixture of oxides and carbonates, which is capable of forming a glass, having a composition such that a separation of phases in the resultant glass is induced by annealing the resultant glass, and such that said separated phases have an interconnected structure due to spinodal decomposition, and refining the molten glass resulting from the melting to obtain a homogeneous, bubble-free glass melt;

(b) forming or shaping said melt and hardening it, to provide a homogeneous glass;

(c) annealing said homogeneous glass, thereby producing a spinodal structure by phase separation, and wherein there is formed a hard phase of silica and at least one doping oxide, and a soft phase comprising the oxides of at least boron and sodium, said phases being interconnected;

(d) etching said glass with one or more mineral acids, thereby dissolving said soft phase to obtain a porous glass consisting essentially of said hard phase;

(e) rinsing said porous glass with distilled water to eliminate elements from said soft phase;

(f) drying said glass by slowly raising the temperature, such that an open porosity is obtained which is 60% higher than the initial porosity;

(g) producing a powder from said porous glass; and

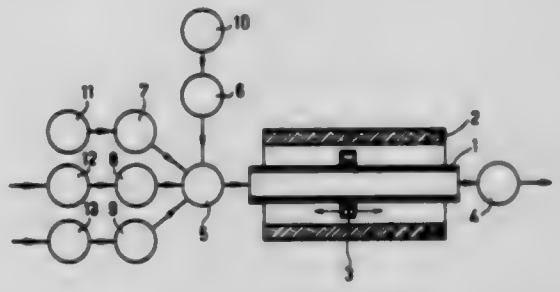
(h) forming a fiber preform from the powder, by deposition of said powder, on a surface as a glass.

4,493,721

METHOD OF MANUFACTURING OPTICAL FIBRES

Cornelis P. Auwerda, and Gerrit J. Koel, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 5, 1983, Ser. No. 482,351
Claims priority, application Netherlands, Apr. 6, 1982, 8201453
Int. Cl.³ C03B *20/00*
U.S. Cl. 65—3.12 6 Claims



1. A method of manufacturing an optical fiber comprising the steps of:

providing a glass tube having an inner wall;

etching the inner wall of the tube with a fluorine compound; and then

depositing core glass on the etched inner wall of the tube to form a coating, said core glass being formed by reacting gaseous glass-forming compounds in a nonisothermal plasma;

collapsing the coated tube to form a solid rod; and

drawing the solid rod into a fiber;

characterized in that the step of etching consist essentially of the steps of:

passing a gaseous hydrogen-free fluorine compound through the tube;

forming a nonisothermal plasma in the tube while passing the fluorine compound through the tube; and

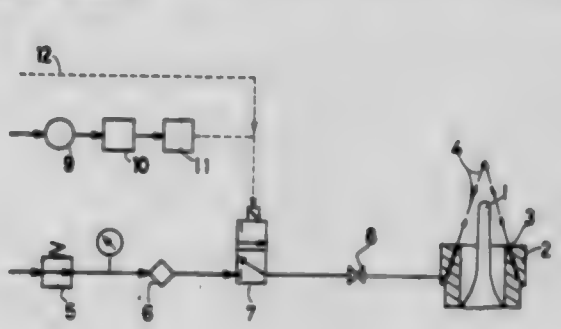
reciprocating the plasma along the length of the tube.

4,493,722

METHOD OF PRODUCING GLASS BOTTLES

Hiroyuki Ono, Nishinomiya, Japan, assignor to Yamamura Glass Co., Ltd., Nishinomiya, Japan

Filed Aug. 25, 1982, Ser. No. 411,186
Claims priority, application Japan, Sep. 8, 1981, 56-141869
Int. Cl.³ C03C *21/00*; C03B *9/193*
U.S. Cl. 65—30.14 8 Claims



1. In a method of producing glass bottles including the steps of feeding a molten glass mass or gob into a blank mold while the blank mold substantially encloses the plunger to provide a substantially closed position, press-molding said gob with a plunger by advancing the plunger into the gob to form a parison, retracting the plunger from the parison, opening the blank mold and inverting said parison for transfer to a blow mold in which it is blown for molding and closing the blank mold into said closed position, the improvement comprising forming an air curtain to enclose the entire plunger within said air curtain for a period of time beginning in the later stages of inverting said formed parison and continuing until blank mold closing

without impinging upon said formed parison with said air curtain, thereby preventing foreign matter from adhering to the plunger.

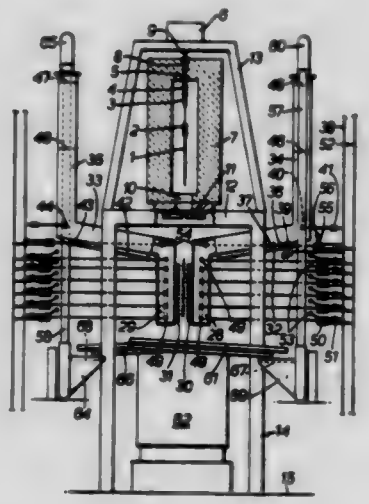
2. A method as in claim 1, wherein to further increase the mechanical strength of glass bottles, said method is combined with a method of forming a compressive stress surface layer by replacing the Na ions in the glass by ions having greater radii than said Na ions.

4,493,723

METHOD OF AND APPARATUS FOR THERMALLY TOUGHENING GLASS

John Evason, Merseyside, England, assignor to Pilkington Brothers P.L.C., Merseyside, United Kingdom

Filed Jan. 26, 1983, Ser. No. 461,123
Claims priority, application United Kingdom, Feb. 1, 1982, 8202768; Oct. 11, 1982, 8229004
Int. Cl.³ C03B 27/04
U.S. Cl. 65—114 7 Claims



1. A method of thermally toughening glass, comprising quenching a vertically-suspended glass sheet in a gas-fluidised bed of particulate material, projecting streams of particles towards both surfaces of the sheet from two vertical arrays of nozzles when the glass sheet is immersed in the fluidised bed, supplying each of those arrays with a flow from a falling supply of aerated particulate material, and supplying additional gas into the flows adjacent the nozzles to regulate the velocity of projection of the streams of particles into the fluidised bed.

4. Apparatus for thermally toughening glass, comprising:

a tank for containing a fluidised bed of particulate material;

means for immersing glass to be toughened in a fluidised bed in the tank;

a container for a supply body of aerated particulate material;

projecting means adapted to be located in said tank for projecting streams of particles into the fluidised bed towards the glass;

supply means connecting said container to said projecting means; and

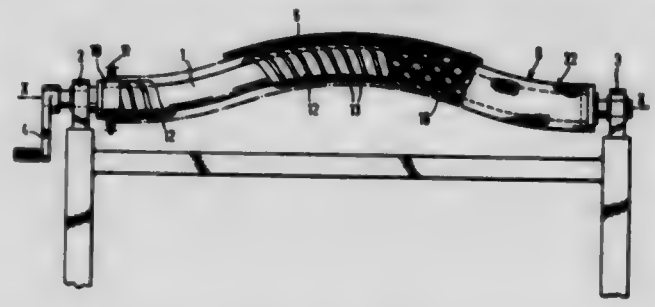
gas permeable means in said supply means adjacent said projecting means for the supply of additional gas into said aerated particulate material thereby to regulate the gas pressure in the supply of aerated particulate material to said projecting means.

4,493,724

APPARATUS FOR BENDING GLASS SHEETS

Norbert Schwarzenberg; Heinz Ueberwolf; Friedrich Halbersch-midt, all of Herzogenrath, and Joseph Andi, Aachen, all of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, Aubervilliers, France

Filed Sep. 30, 1983, Ser. No. 537,593
Claims priority, application France, Oct. 11, 1982, 82 16970
Int. Cl.³ C03B 13/16
U.S. Cl. 65—273 7 Claims



1. In apparatus for bending glass, a roller rotatably mounted on a curved portion of a rod, said roller member comprising a tubular metal winding and a flexible sheath of metal meshing both coaxial to the rod and affixed at their ends to each other so that said tubular metal winding and flexible sheath can be rotated together about said rod.

4,493,725

FERTILIZER PRODUCT WITH SUSTAINED ACTION AND PROCESS THEREFOR

Sang H. Moon; Jae M. Park, and Sung S. Suh, all of Seoul, Rep. of Korea, assignors to Korea Advanced Institute of Science and Technology, Seoul, Rep. of Korea

Filed May 17, 1983, Ser. No. 495,531
Int. Cl.³ C05D 9/00, 9/02
U.S. Cl. 71—62 14 Claims

1. A fertilizer product in granular form with sustained action comprising a granular fertilizer material coated with a coating material having 1 to 50% by weight of a silicate or silicic acid ester based on the weight of the fertilizer material to be treated, 0.001 to 1.0 part by weight of a metal or non-aqueous metallic compound, 0.001 to 1.0 part by weight of an aqueous metallic compound, 0.001 to 1.0 part by weight of an inorganic mineral, and an optionally high molecular weight organic compound, wherein all parts are based on the weight of the silicate or silicic acid ester used.

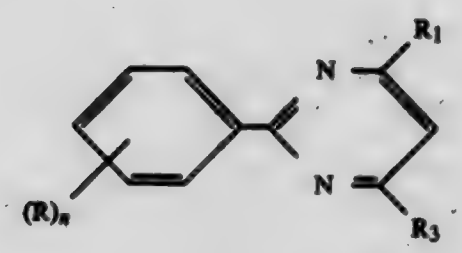
4,493,726

PHENYLPYRIMIDINES AS ANTIDOTES FOR PROTECTING CULTIVATED PLANTS AGAINST PHYTOTOXIC DAMAGE CAUSED BY HERBICIDES

Kurt Burdeska, Basel, Switzerland; Guglielmo Kabas, deceased, late of Aesch, Switzerland (by Anni Kabas-Maskalinski, heir); Hans-Georg Brunner, Lausen, and Werner Föry, Basel, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

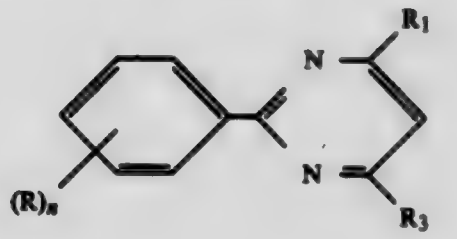
Continuation-in-part of Ser. No. 331,853, Dec. 17, 1981, abandoned. This application Apr. 20, 1983, Ser. No. 486,651
Claims priority, application Switzerland, Dec. 23, 1980, 9522/80; Apr. 8, 1981, 2363/81
Int. Cl.³ A01N 57/10, 43/48; C07D 239/02
U.S. Cl. 71—87 29 Claims

1. In a herbicidal composition the improvement which reduces damage to cultivated plants by said composition, which improvement comprises the admixture in said composition of a compound of the formula:



wherein
each of R_1 and R_3 independently of the other is chloro, bromo or fluoro;
each R independently is hydrogen, methyl, chloro, bromo, fluoro, methoxy, nitro, hydroxy, trifluoromethyl, ethynyl, amino, acetamido, carboxy, carbomethoxy or acetamidosulfonyl; and
n is 1 or 2,
wherein the ratio of herbicide to said compound is from 100:1 to 1:5.

10. In the method of controlling weed growth in cultivated plants through the application of a herbicide, the improvement which comprises applying to the cultivated plants, their seeds or seedlings, or to the environs of their growth an amount of a compound of a formula:



wherein
each of R_1 and R_3 independently of the other is chloro, bromo or fluoro;
each R independently is hydrogen, methyl, chloro, bromo, fluoro, methoxy, nitro, hydroxy, trifluoromethyl, ethynyl, amino, acetamido, carboxy, carbomethoxy or acetamidosulfonyl; and
n is 1 or 2,
which amount is sufficient to protect said cultivated plants from the action of said herbicide.

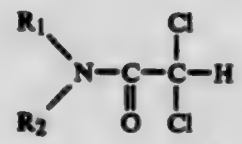
4,493,727

PLANT GROWTH REGULATING METHOD

István Tóth, Sajóbábony; József Nagy, Miskolc; Zsolt Dombay, Miskolc; Erzsebet Grega née Tóth, Miskolc; Ibolya Horváth, Szeged; László Vigh, Szeged, and Tibor Farkas, Szeged, all of Hungary, assignors to Északmagyarországi Vegyiművek, Sajóbábony, Hungary

Filed Nov. 3, 1982, Ser. No. 438,746
Int. Cl.³ A01N *37/18, 43/46*
U.S. Cl. 71—088 11 Claims

1. A method of stimulating the growth and green weight of millet or sorghum plants growing upon a plant site, comprising applying to said site 0.1 to 4.0 kg/ha of a compound of formula (I)



(I)

wherein
R_1 and R_2 are identical or different and each is hydrogen, a C_{1-4} straight or branched alkyl group, cyclohexyl, phenyl, chlorophenyl, C_1–C_4 alkylphenyl, benzyl or C_1–C_4 alkylbenzyl group, or R_1 and
R_2 together with the N atom form a hexamethyleneimino ring in a composition containing said compound together with a solid or liquid carrier and at least one surface-active agent.

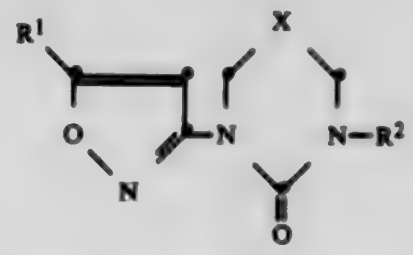
4,493,728

PLANT GROWTH INHIBITING OXAZOLYL-SUBSTITUTED TRIAZINONE AND OXADIAZINONE DERIVATIVES, COMPOSITIONS, AND METHOD OF USE

Kurt H. Pilgram, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

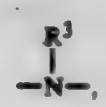
Filed Jun. 27, 1983, Ser. No. 507,874
Int. Cl.³ A01N *43/64, 43/88*; C07D *413/04*
U.S. Cl. 71—92 7 Claims

1. A compound of the formula



(I)

wherein R^1 contains from three to five carbon atoms and is one of alkyl, alkenyl, alkynyl, alkoxyalkyl, alkylthioalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, cycloalkyl, and alkylcycloalkyl, R^2 is alkyl, alkoxy, (mono- or polyhalo)alkyl of from one to three carbon atoms, cycloalkyl of from three to six carbon atoms, or alkenyl of from three to five carbon atoms, and X is —O— or



wherein R^3 is alkyl of from one to three carbon atoms, cyclopropyl or 1-methylcyclopropyl.

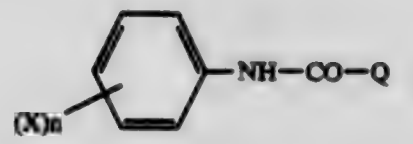
4,493,729

N-PHENYLCARBAMOYL-PYRIDINE COMPOUNDS

Francois de Reinach Hirtzbach, Lyons, and Dominique Ambroni, Charbonnieres les Bains, both of France, assignors to Rhone-Poulenc Agrochimie, Lyons, France

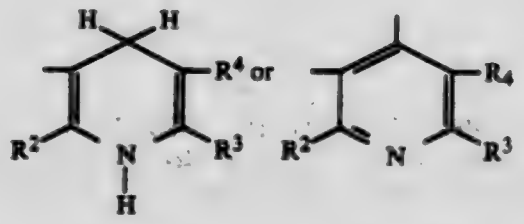
Filed Jul. 14, 1981, Ser. No. 283,136
Claims priority, application France, Jul. 16, 1980, 80 15993; Jul. 16, 1980, 80 15994
Int. Cl.³ C07D *211/90, 213, 56*; A01N *43/40*
U.S. Cl. 71—94 15 Claims

1. N-phenylcarbamoyl pyridine derivatives of the general formula:



(I)

wherein X represents a halogen atom or a lower alkyl, lower alkoxy, lower alkenyl, lower alkenyloxy, lower alkyl substituted by one or more halogen atoms, nitro or an amino group unsubstituted or subetituted by one or two lower alkyl groups, which may be the same or different, or by a group —CO—R^1 (wherein R^1 represents a lower alkyl, lower alkoxy, mono(-lower)alkylamino group or di(lower)alkylamino group wherein the lower alkyl groups may be the same or different), n represents an integer from 1 to 5 inclusive, it being understood that when n represents an integer from 2 to 5 inclusive, atoms or groups represented by X may be the same or different, and Q represents a group of the general formula:



(IIA) (IIB)

wherein R^2 and R^3 may be the same or different and each represents a hydrogen atom or a lower alkyl group, and R^4 represents a group —COR^5, wherein R^5 represents a hydroxy or OR^6 group, wherein R^6 represents a lower alkyl group and, when R^5 represents a hydroxy group, agriculturally-acceptable inorganic and organic salts thereof, and when Q represents a group of general formula IIB, wherein R^2, R^3 and R^4 are as hereinbefore defined, agriculturally acceptable acid addition salts thereof.

7. A method for the control of the growth of weeds at a locus which comprises applying to the locus an effective amount of a compound according to claims 1, 2, 3, or 4, or an agriculturally acceptable salt or acid addition salt thereof.

4,493,730

PHENOXYPYRIDINE USEFUL AS A HERBICIDE

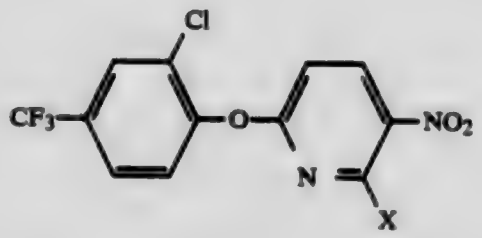
Fumio Kimura, and Takahiro Haga, both of Shiga, Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

Filed Sep. 10, 1982, Ser. No. 416,744

Int. Cl.³ A01N *43/40*; C07D *213/61, 213/64*

U.S. Cl. 71—94 14 Claims

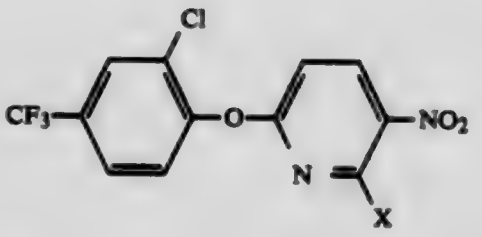
1. A phenoxypyridine compound represented by the formula (I):



(I)

wherein X represets hydrogen atom, alkyl group having 1 to 4 carbon atoms, alkoxy group having 1 to 4 carbon atoms, amino group, cyano group, hydroxy group, fluorine atom, chlorine atom, bromine atom, iodine atom, or 2-chloro-4-trifluoromethylphenoxy group.

8. A herbicidal composition comprising an effective amount of a phenoxypyridine compound represented by the formula (I):



(I)

wherein X represents hydrogen atom, alkyl group having 1 to 4 carbon atoms, alkoxy group having 1 to 4 carbon atoms, amino group, cyano group, hydroxy group, fluorine atom, chlorine atom, bromine atom, iodine atom, or 2-chloro-4-trifluoromethylphenoxy group, as an active ingredient and an agriculturally acceptable adjuvant.

4,493,731

HERBICIDAL AGENTS

Gerhard Hörlein, Frankfurt am Main; Hubert Schönowsky, Rödermark; Hermann Bieringer, Eppstein, and Peter Langelüddeke, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

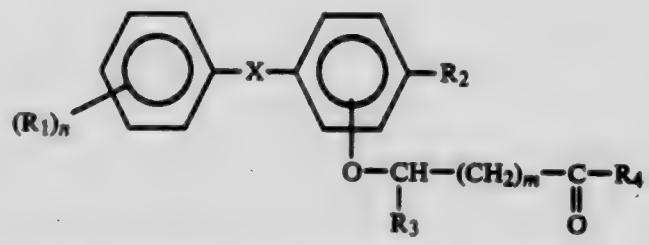
Continuation of Ser. No. 941,921, Sep. 13, 1978, abandoned, which is a division of Ser. No. 816,700, Jul. 18, 1977, Pat. No. 4,134,753. This application Sep. 16, 1980, Ser. No. 187,791

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1976, 2632581

Int. Cl.³ A01N *37/18*; C07C *103/22*

U.S. Cl. 71—118 21 Claims

1. A compound of the formula



in which R_1 is halogen, (C_1–C_4)-alkyl, NO_2 or CN, R_2 is NO_2, CN or CF_3, n is 1 to 3, m is zero to 2, X is O or S, R_3 is (C_1–C_4)-alkyl and R_4 is amino, hydrazino, (C_1–C_4)-alkylamino, di-(C_1–C_4)-alkylamino or phenylamino in which phenyl may be substituted by halogen, CF_3, CH_3, OH and/or (C_1–C_2)-alkoxycarbonyl.

4,493,732

METHOD FOR IMPLEMENTING PYRO-METALLURGICAL PROCESSES

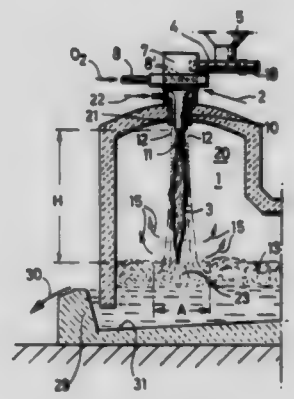
Gerhard Melcher, Cologne, and Wolfgang Wuth, Berlin, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Mar. 29, 1983, Ser. No. 480,021

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1982, 3212100

Int. Cl.³ C22B *5/12*

U.S. Cl. 75—24 6 Claims



1. A single step method for the pyrometallurgical treatment of finely divided particles of sulfidic and/or oxidic ore or concentrates with an oxygen-containing reactive gas which comprises:

mixing said particles and said reactive gas in substantially stoichiometric proportions under superatmospheric pressure in a mixing zone to form a pressurized suspension,

passing said pressurized suspension through an acceleration nozzle at a confined molten bath,

surrounding said suspension with an annular flame as it issues from said acceleration nozzle to spontaneously ignite said suspension and form a concentrated particle stream having an angle of spread not more than about 16°, and

generating sufficient energy in said particle stream to induce convective currents in the molten bath where it is impacted by said particle stream.

4,493,733

CORROSION-RESISTANT NON-MAGNETIC STEEL RETAINING RING FOR A GENERATOR

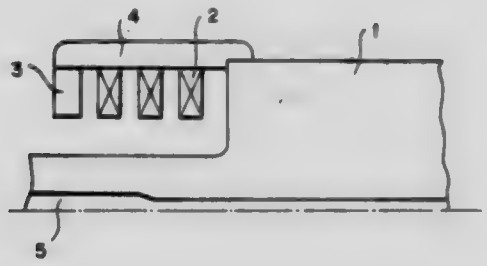
Masao Yamamoto, Tokyo; Takashi Yebisuya, Kawasaki; Mituo Kawai, and Koichi Tajima, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 359,245, Mar. 18, 1982, abandoned. This application Sep. 28, 1983, Ser. No. 536,236

Claims priority, application Japan, Mar. 20, 1981, 56-39478; Mar. 20, 1981, 56-39481

Int. Cl.³ C22C *38/58*

U.S. Cl. 75—126 B 6 Claims



1. A non-magnetic, crevice corrosion resistant steel retaining ring for a generator consisting essentially of, in terms of weight percentage, 0.4% or less of carbon, above 0.3% but up to 1% of nitrogen, 2% or less of silicon, 12 to 20% of chromium, 13 to 25% of manganese, the balance consisting substantially of iron, the total content of the chromium and manganese being at least 30%, said retaining ring manufactured by cold working and having a magnetic permeability less than 1.1.

4,493,734

CONDITIONING OF CRUDE PIGMENT IN A SALT FREE CORN SYRUP BASED MEDIUM

Thomas R. Flatt, Ridgewood, N.J., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed May 23, 1983, Ser. No. 497,379

Int. Cl.³ C09C *1/00, 3/00;* C09B *1/00*

U.S. Cl. 106—309 14 Claims

1. In a process for conditioning a crude pigment by subjecting it to shear the improvement which comprises conditioning it in the presence of an agent selected from the group consisting of corn syrup, corn syrup solids and molasses in a high shear mixing device in the absence of any solid grinding aid.

4,493,735

DEVICE AND METHOD FOR FORMING A FLUIDIZED BED

Erwin Flaschel, Chavannes-Renens, and Albert Renken, St-Sulpice, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jul. 12, 1982, Ser. No. 397,434

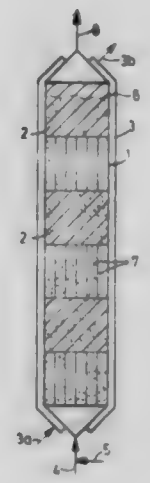
Claims priority, application Switzerland, Jul. 17, 1981, 4707/81

Int. Cl.³ B01J *8/20, 8/34*

U.S. Cl. 134—25.1 7 Claims

1. A method of forming a fluidized bed of solid particles in a reactor having superposed static mixing elements, each element with parallel flow channels extending at an angle to a longitudinal direction of the reactor and with successive mixing elements being rotated through an angle around the reactor therein, said method comprising the steps of

introducing an amount of solid particles and feeding continuously at least one flowable medium into the reactor at a rate sufficient to form a stable fluidized bed of the solid particles and flowable medium within the static mixing elements;



passing the solid particles and flowable medium through the superposed static mixing elements to obtain a transverse mixing of the solid particles and flowable medium; and

taking off the flowable medium at the top of the reactor.

4,493,736

TARNISH-RESISTANT COPPER ALLOY AND METHOD OF PREPARATION

William R. Adams, Hampden, Mass., assignor to Trindium Corporation of America, Sauquoit, N.Y.

Filed Oct. 5, 1983, Ser. No. 538,806

Int. Cl.³ C22C *9/01;* C22F *1/08*

U.S. Cl. 148—2 2 Claims

1. An alloy which consists essentially of

(a) from about 9 to about 11 percent by weight of aluminum;

(b) from about 0.75 to about 1.25 percent by weight of nickel;

(c) from about 0.01 to about 0.1 percent by weight of indium; and

(d) from about 87.65 to about 90.24 percent by weight of copper.

2. A method of alloying copper, aluminum, nickel and indium to enhance the tarnish-resistance of the alloy, which comprises;

(1) providing a melt of the nickel and a portion of the copper;

(2) adding the aluminum and indium to the molten mixture of copper and nickel, said aluminum being in the form of an alloy with the remainder of the copper;

(3) thoroughly melting the mixture of (2) above;

(4) cooling the melt (3) to solidify an alloy consisting essentially of 9–11 wt.% Al, 0.75–1.25 wt.% Ni, 0.01–0.1 wt.% In and 87.64–90.24 wt.% Cu; and

(5) hot-rolling the solid to reduce its thickness to from 1/7 to 1/18 of its original thickness.

4,493,737

METHOD FOR FABRICATING URANIUM ALLOY ARTICLES WITHOUT SHAPE MEMORY EFFECTS

John G. Banker, Boulder, Colo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 21, 1980, Ser. No. 151,849

Int. Cl.³ C22F *1/18*

U.S. Cl. 148—11.5 R 3 Claims

1. A method for fabricating a configured article of uranium alloy consisting essentially of uranium, 5 to 23 wt.% niobium, and 0 to 10 wt.% zirconium by plastic deformation so as to obviate the shape memory effects characteristic of the alloy when the configured article is subsequently heated to a temperature greater than about 100° C., said method comprising the

steps of heating the alloy in an inert atmosphere to a temperature above the gamma transformation temperature of the alloy, quickly forming the heating alloy into a desired article configuration with matched dies each maintained at a temperature substantially below the martensitic transformation temperature of the alloy, completing the formation of the alloy into said configuration prior to cooling of the alloy to a temperature below which the alloy is subjected to an alpha phase transformation, cooling said alloy, and maintaining the alloy in said configuration with said dies until said alloy cools to ambient temperature.

4,493,738

BRAZING ALLOY COMPOSITION

Owen N. Collier, Henley-on-Thames, and Gordon L. Selman, Reading, both of England, assignors to Johnson Matthey PLC, London, England

Continuation-in-part of Ser. No. 261,378, May 7, 1981, abandoned, which is a continuation of Ser. No. 102,160, Dec. 10, 1979, abandoned, which is a continuation of Ser. No. 940,456, Sep. 7, 1978, abandoned. This application Feb. 28, 1983, Ser. No. 470,545

Claims priority, application United Kingdom, Sep. 16, 1977, 7738738

Int. Cl.³ B23K *35/34*

U.S. Cl. 148—24

6 Claims

1. A brazing alloy composition which is in the solid phase at room temperatures comprising 50–95% by weight of a particulate brazing alloy, balance a flux and a thermoplastic material, wherein the flux contains a reactive component selected from the group consisting of the fluoroborates, the silicofluorides and the aluminofluorides and wherein the thermoplastic material comprises a petroleum wax which melts in the approximate temperature range 50° C. to 125° C.

4,493,739

PROCESS FOR PRODUCING A GRAIN-ORIENTED ELECTROMAGNETIC STEEL SHEET OR STRIP HAVING A LOW WATT LOSS AND A GRAIN-ORIENTED ELECTROMAGNETIC STEEL STRIP HAVING UNIFORM MAGNETIC PROPERTIES

Koichi Fujiwara; Tomohiko Sakai; Yoneo Yamada, and Kazutaka Higashino, all of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

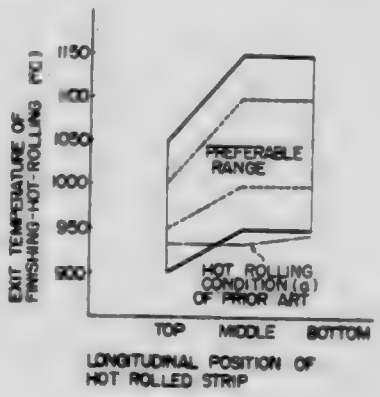
Filed Aug. 4, 1982, Ser. No. 405,107

Claims priority, application Japan, Aug. 5, 1981, 56-121862

Int. Cl.³ H01F *1/04*

U.S. Cl. 148—111

6 Claims



1. A process for producing a grain-oriented electromagnetic steel sheet or strip having a low watt loss, wherein:

a silicon steel slab containing not more than 0.085% by weight of carbon, from 2.0% to 4.0% by weight of silicon, from 0.030% to 0.090% by weight of manganese, and from 0.010% to 0.060% by weight of sulfur, the balance being essentially iron and unavoidable impurities, is hot-rolled, cold-rolled and final-annealed, wherein

final cold-rolling is carried out at a reduction ratio of from 50% to 80%;

said silicon steel slab additionally contains from 0.02% to 0.2% by weight of copper;

the exit temperature of the finishing-hot-rolling step is controlled so that the size of Cu_2S particles formed by said copper and said sulfur is uniform along the full length of a hot-rolled strip; and

temperature of the top portion of the hot-rolled strip is in the range of from 900° C. to 1050° C., and temperature of the middle and bottom portions thereof is in the range of from 950° C. to 1150° C.

4,493,740

METHOD FOR FORMATION OF ISOLATION OXIDE REGIONS IN SEMICONDUCTOR SUBSTRATES

Tadao Komeda, Ikoma, Japan, assignor to Matsushita Electric Industrial Company, Limited, Japan

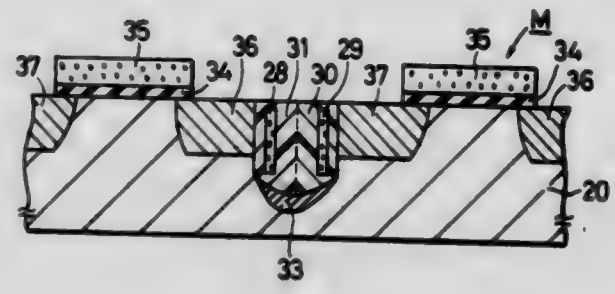
Filed Jun. 1, 1982, Ser. No. 384,030

Claims priority, application Japan, Jun. 1, 1981, 56-84693; Apr. 8, 1982, 57-58833

Int. Cl.³ H01L *21/265, 21/76*

U.S. Cl. 148—187

18 Claims



1. In a method for the formation of isolation oxide regions in a semiconductor substrate, the improvement comprising:

(a) forming an oxidation-inhibiting film on one surface of a semiconductor substrate of one conductivity type;

(b) removing selected areas of said oxidation-inhibiting film through an etching mask in said semiconductor substrate in portions beneath the selected areas to a given depth, thereby forming recesses in said semiconductor substrate;

(c) forming a thin layer of a semiconductor material capable of being oxidized into a corresponding growing oxide over the one surface of the semiconductor substrate;

(d) removing the thin layer of the semiconductive material from the semiconductor substrate while leaving thin layers of the semiconductive material only on side surfaces of each recess so that a central portion of the bottom of each recess is exposed; and

(e) subjecting the thin layers to oxidation for converting the semiconductive material into the corresponding oxide until the recesses are each completely filled with the oxide whereby dielectric isolation regions are formed in the respective recesses.

4,493,741

AMINE SALTS AS BONDING AGENTS

Marjorie E. Ducote, Huntsville, and Henry C. Allen, Decatur, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 25, 1983, Ser. No. 488,249

Int. Cl.³ C06B *45/10*

U.S. Cl. 149—19.4

10 Claims

1. In a solid propellant composition employing a high solids loading of an inorganic oxidizer and aluminum metal fuel and a binder system comprised of hydroxy-terminated polybutadiene, a plasticizing agent, a polyisocyanate curing agent, and a bonding agent, the improvement achieved from preventing in situ ammonia generation during the mixing and curing cycles

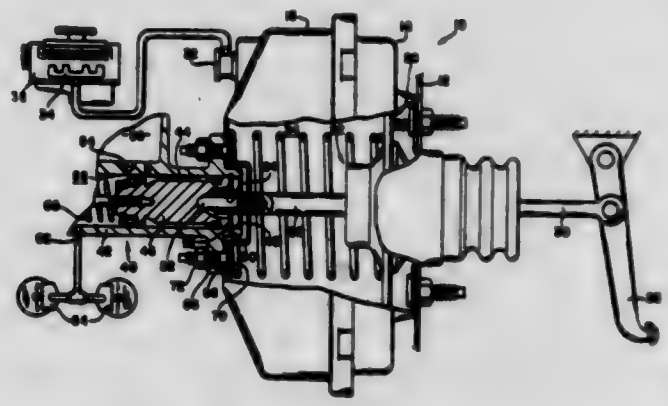
of said propellant composition by employing as said agent a polyamine salt adduct bonding agent wherein said polyamine salt adduct bonding agent functions to minimize in situ ammonia formation, to decrease mixing time for propellant processing, and to increase reproducibility of the mechanical properties in the cured propellant, said polyamine salt adduct bonding agent being an adduct of an ammonium salt selected from the group consisting of ammonia perchlorate, ammonium nitrate, ammonium sulfate, and ammonium formate, and a polyamine compound selected from the group consisting of cyanoethyl substituted tetraethylene pentamine, and the glycidol reaction product of cyanoethyl substituted tetraethylene pentamine, said polyamine salt adduct bonding agent further defined as being the reaction product formed from reacting together said ammonium salt and said polyamine compound in a reaction to produce said polyamine salt adduct bonding agent as a recovered product having from about 25 to about 36 percent of the reactive amine groups of said polyamine compound reacted with the ammonium ion of said ammonium salt.

4,493,742

METHOD FOR ADJUSTING A VACUUM BRAKE BOOSTER OUTPUT MEMBER RELATIVE TO A MASTER CYLINDER PISTON

James B. Putt, Granger, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 23, 1984, Ser. No. 592,652
Int. Cl.³ B32B 7/04
U.S. Cl. 156—91 7 Claims



1. A method for adjusting a vacuum brake booster output member relatve to a master cylinder piston member comprising the steps of providing a plunger disposed between the members, the plunger cooperating with one of the members to define a cavity, disposing a bonding material in the cavity before the master cylinder is coupled to the vacuum brake booster, the plunger substantially defining a passage leading to the bonding material, disposing the members adjacent each other to adjust the position of the plunger in the cavity and communicate an excess amount of bonding material outwardly of the cavity via the passage, and holding the members in a desired adjusted position until the bonding material sets and fixes the plunger to the one member in its adjusted position so that the plunger also engages the other member to form a rigid link between the members.

4,493,743

SHEET LAMINATING MACHINE

Thorkild Lunding, Dannike, Sweden, assignor to Kinds Industri AB, Atvidaberg, Sweden

PCT No. PCT/SE82/00146, § 371 Date Jan. 3, 1983, § 102(e) Date Jan. 3, 1983, PCT Pub. No. WO82/03822, PCT Pub. Date Nov. 11, 1982
PCT Filed May 3, 1982, Ser. No. 459,646
Claims priority, application Sweden, May 4, 1981, 8102774
Int. Cl.³ B32B 31/00
U.S. Cl. 156—555 7 Claims

1. A sheet laminating machine for uniting two or several sheets in aligned and superposed relationship to form a multi-ply sheet, said machine comprising an upper sheet-deposit unit for feeding and positioning the top sheet or sheets, a lower sheet-deposit unit for feeding and positioning the bottom sheet, means designed to apply glue to the upper face of the bottom sheet, means for registering the sheets, presser means and a discharge unit, said registering means consists of an upper registering plate which is designed to guide the top sheets from



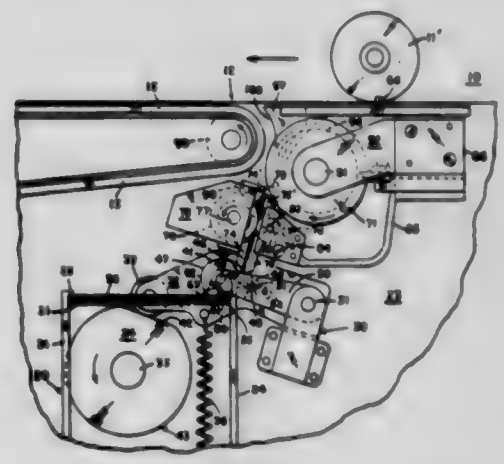
the upper sheet-deposit unit up to the plane of advancement of the bottom sheets, and of a lower registering plate which is designed to guide the lower sheets in underneath a registering roller, characterized in that said roller resting, in its starting position, on the lower registering plate and being mounted on a shaft with some play, said shaft extending transversely of the plane of advancement of the sheets and being mounted so as to be vertically movable.

4,493,744

LABELING MACHINES

Helmut Voltmer, Park Ridge; Alfred F. Schweamer, Totowa, and John D. Spano, Hasbrouck Heights, all of N.J., assignors to NJM, Inc., Fairfield, N.J.

Continuation-in-part of Ser. No. 382,940, May 28, 1982,. This application May 25, 1983, Ser. No. 498,138
Int. Cl.³ B65C 9/08
U.S. Cl. 156—568 5 Claims



1. In a labeling machine, a hopper for carrying a stack of labels, a label applying station, and means for successively and positively feeding labels from said hopper to said applying station comprising:

a rotatable turret provided with suction means located adjacent to the leading edge of the terminal label in said hopper and adapted to lift by vacuum such leading label edge out of said hopper and then to mechanically withdraw such label from said hopper;

means for reciprocating said turret in displacement from an opening in said hopper, said reciprocating means including a cam and a cam-follower arm carring said turret, said cam follower arm being operatively driven by said cam during a rotation of said cam, the radius of said cam varying to provide for reciprocating motion of said turret relative to an end portion of said stack of labels, thereby to provide for engagement of said turret periodically with a new label;

a first guide means defining a given path of travel for the label, a first pressure roll cooperating with said turret to mechanically draw such label from the hopper and to

advance the leading edge thereof into the entry end of said first guide means, said turret being constructed of varying radius to provide for a periodic variation in pressure provided against said label by said first pressure roll;

a rotatable feed roll and a second pressure roll located to coactively engage the label intermediate the ends of its given path through said first guide means and prior to the release of the label by said turret and said first pressure roll, a rotatable adhesive activation roll located to receive the label on its peripheral surface as the label is discharged from said first guide means, said turret and its coacting first pressure roll, said feed roll and its coacting second pressure roll, and said adhesive activation roll each imparting to the label during their mechanical feed thereof, a corresponding given linear velocity, and means for transferring the label from said glue activation roll to said applying station without substantially diminishing such given linear velocity thereof; and wherein

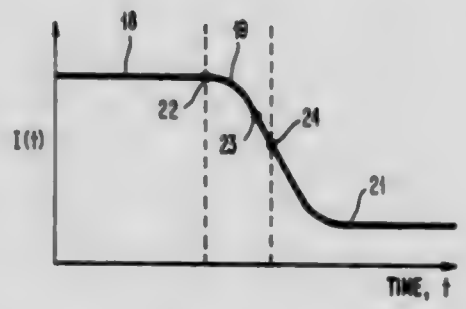
said adhesive activation roll is void of glue, and wherein said labels are coated with an adhesive.

4,493,745

OPTICAL EMISSION SPECTROSCOPY END POINT DETECTION IN PLASMA ETCHING

Lee Chen, Poughkeepsie; Henri A. Khoury, Yorktown Heights, both of N.Y., and Harlan R. Seymour, Morton Grove, Ill., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 31, 1984, Ser. No. 575,611
Int. Cl.[3] B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—626 7 Claims



1. A method of etching a layer of material to end point, comprising the steps of:

monitoring an intensity of emission of a species produced during an etching process;

detecting a time at which a change in such intensity of emission occurs;

calculating a time period extending in length from the time of said change to end point; and

terminating the etching process at the conclusion of said time period, whereby said layer of material is etched to end point.

4,493,746

METHOD FOR REDUCTION OF OXIDES AND IMPROVING POROSITY OF METALIZED ZIRCONIUM OXIDE CERAMICS

Larry T. Reed, Richardson, Tex., assignor to Axia Incorporated, Oak Brook, Ill.

Filed Mar. 23, 1984, Ser. No. 592,624
Int. Cl.[3] C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—644 16 Claims

1. A method for increasing the porosity of thick film deposited sintered metallic coatings comprising:

(a) placing a part which has a sintered metallic coating in an acid solution;

(b) heating said solution to a temperature below its boiling point; and

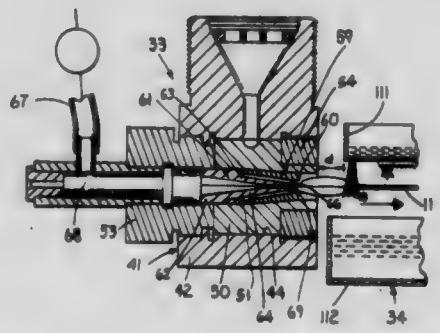
(c) maintaining said part in said heated solution for a period of time sufficient to increase the porosity of the metallized coating to a predetermined amount.

4,493,747

METHOD FOR INSULATING CONDUCTORS WITH A CRYSTALLINE PLASTIC MATERIAL

William M. Kanotz, Baldwin; William C. Vesperman, Bel Air, and Max K. Wilson, Cockeysville, all of Md., assignors to AT&T Technologies, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 342,990, Jan. 27, 1982, abandoned. This application Sep. 2, 1983, Ser. No. 528,667
Int. Cl.[3] B32B *31/14*
U.S. Cl. 156—64 10 Claims



1. A method of extruding a crystalline plastic material, said method including the steps of:

determining the thermal energy which is released by a sample of the plastic material over a predetermined temperature range at the onset of crystallization as the sample of the plastic material is cooled after having been melted, cooled and remelted; then

providing a die having an exit orifice which communicates through a land of the die with a cavity of the die and a core tube having a free end recessed within the land of the die and having a passageway aligned within the die orifice;

providing a flow passage for the plastic material between a wall which defines the die cavity and an outer surface of the core tube, said flow passage converging to the die land and being configured in accordance with the relative value of the thermal energy which is released by the plastic material at the onset of crystallization;

advancing a conductor along a path through the passageway of the core tube and the die orifice;

flowing the plastic material along the flow passage and through the die orifice; and

controlling the step of advancing the conductor to control the drawdown of the plastic material on the conductor.

4,493,748

PROCESS OF MAKING RAISED LINE IMPRINTED DISPLAY MOUNTS

Carroll N. Cross, Rte. 2, Box 741, Maitland, Fla. 32751

Filed Jan. 6, 1984, Ser. No. 568,814
Int. Cl.[3] B32B *31/20*
U.S. Cl. 156—79 8 Claims

1. A process of making raised line imprinted display mounts comprising the steps of:

selecting a foam polymer sheet having a thin polymer laminate covering; and

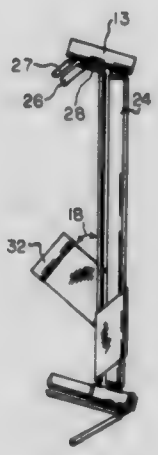
heat stamping the laminate covering surface of said foam polymer sheet with a heated die surface under a predetermined pressure and at a predetermined temperature to produce a raised surface stamping of the heated die surface on the laminate covering.

4,493,749

COMPOSITE VEHICLE FRAMES AND METHOD OF MANUFACTURING COMPOSITE VEHICLE FRAMES

David C. Brezina, 2035 W. Berwyn Ave., Chicago, Ill. 60625

Filed Sep. 30, 1982, Ser. No. 428,596
Int. Cl.[3] B62K *3/04*
U.S. Cl. 156—187 3 Claims



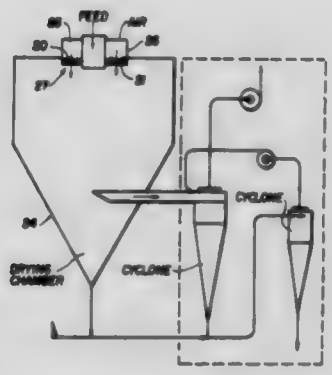
1. A method of constructing structural frameworks in which a rigid tubular sub-frame comprising a series of round cross-section tubes, in which the structural elements are comprised of a multiplicity of tubes, the main structural members comprising at least two parallel tubes of differing diameter, and the secondary structural members comprising at least two nearly parallel tubes, wherein said sub-frame provides for the application of resin impregnated fiber sheet by wrapping said sheet around the tubular, members of said subframe at an angle of less than 90° relative to the axis of said tubular member.

4,493,750

THERMODYNAMIC CONDITIONING OF AIR OR ANY OTHER GAS TO INCREASE THE OPERATING EFFICIENCY OF DIVERSE ENERGY CONSUMING SYSTEMS

James F. Olmsted, 4620 26th St., N., Arlington, Va. 22207; Sherwood F. Webster, 7832 Via Marina, Scottsdale, Ariz. 85258, and Richard L. Heise, 133 E. Garfield, Tempe, Ariz. 85281

Filed Jul. 16, 1982, Ser. No. 398,977
Int. Cl.[3] B01D *1/14, 3/06;* F24C *9/00;* F26B *3/02*
U.S. Cl. 159—48.1 11 Claims



1. A method of treating gas for use in diverse energy consuming systems to improve the efficiency of such systems and reduce energy consumption and air pollution, comprising the steps of causing a moving stream of gas possessing kinetic energy to impinge against the upstream side of a foraminous barrier having a multitute of dis-similar adjacent nozzle orifices and thereby convert its kinetic energy substantially into internal energy within the gas, then compressing the gas through said nozzle orifices of the foraminous barrier to further increase its internal energy and to reduce the pressure of the gas at the time of downstream adiabatic expansion of the gas and substantially increasing both its intensity of turbulence and scale of turbulence in a space downstream of the foraminous barrier, where the gas is enabled to mix in such space with another substance therein and to very rapidly transfer unusually high latent heat to said substance so as to vaporize, dry or oxidize it at unusually low temperature, the foraminous barrier consisting of a single pair of screen sections arranged in face-to-face contact with their interstices and apertures randomly arranged to form said multitude of dis-similar adjacent nozzle orifices, and the upstream screen section being of a coarser mesh than the downstream screen section in the approximate mesh number ratio of 0.375:1.

4,493,751

POLYOXYMETHYLENE FIBRIDS, A PROCESS FOR THEIR PRODUCTION AND THEIR USE

Harald Cherdron, Wiesbaden; Wolfgang Gordon, Hofheim am Taunus, and Friedrich Kloos, Mainz, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 209,015, Nov. 21, 1980, abandoned. This application Sep. 9, 1982, Ser. No. 416,154
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1979, 2947490
Int. Cl.[3] D21H *5/12*
U.S. Cl. 162—157.2 6 Claims

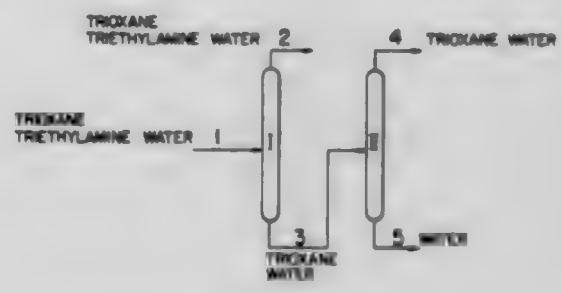
1. Highly branched polyoxymethylene fibrids with a reduced specific viscosity of 0.4 to 2.0 dl/g, a specific surface area of 50 to 200 m^2/g, said specific surface area being measured at 140° C. in butyrolactone, which contains 2% by weight of diphenylamine, in a concentration of 0.5 g/100 ml, a freeness of 30° to 80° SR, a length of about 0.1 mm to 5 mm and an apparent diameter of about 1 to 200 μm.

4,493,752

PROCESS FOR RECOVERING TRIOXANE BY PLURAL DISTILLATION

Takeshi Naito; Junzo Masamoto, both of Kurashiki; Toshiyuki Iwaisako, Fuji, and Kazuhiko Matsuzaki, Kurashiki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1982, Ser. No. 371,461
Claims priority, application Japan, Apr. 27, 1981, 56-62406
Int. Cl.[3] B01D *3/14;* C07D *323/06*
U.S. Cl. 203—71 6 Claims



1. A process for recovering trioxane from an aqueous solution containing trioxane and triethylamine by distillation which comprises feeding an aqueous solution containing trioxane and triethylamine to a first distillation column of a distillation apparatus comprising a first and a second distillation column, distilling out triethylamine, trioxane and water as an overhead from the first distillation column, withdrawing an aqueous solution containing the major part of the trioxane present in the feed solution from the bottom of the first distillation column, feeding the withdrawn solution to the second distillation column and taking out substantially the whole quantity of the trioxane fed to the second distillation column from the overhead of the second distillation column and withdrawing water from the bottom thereof.

4,493,753

METHOD FOR PRODUCING SEPARATING NOZZLE ELEMENTS FOR THE SEPARATION OF FLUID MIXTURES

Erwin Becker; Wolfgang Ehrfeld, both of Karlsruhe; Dietrich Münchmeyer, Weingarten; Hans Betz, and Anton Heuberger, both of Munich, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

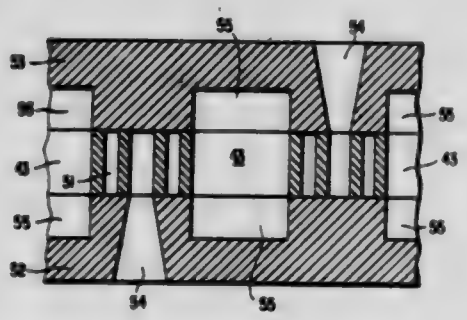
Filed Jun. 9, 1983, Ser. No. 502,721

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1982, 3221981

Int. Cl.³ C25D *1/02, 1/20*

U.S. Cl. 204—9

11 Claims



1. A method for producing a separating nozzle element composed of a separating body and two cover plates between which the body is interposed, the separation nozzle element being used for the separation of gaseous or vaporous mixtures, comprising:

providing a layer of a material whose abiiity to be removed from the layer can be altered by irradiation with radiation of a selected type, the thickness of the layer being approximately equal to the thickness of the separating body;

irradiating the layer, starting at one surface, with radiation which is of the selected type and which has a penetration depth into the material of the layer which is less than thickness of the layer, in a pattern corresponding to the cross-section of the separating body;

removing from the layer material which is more easily removable as a result of said irradiation to form a mold of the separating body; and

filling the mold with structure material which is compatible with the mixtures to be separated and removing the material constituting the mold to create the separating body;

wherein said irradiation and said removal of material which is more easily removable comprise removing material at successively increasing distances from the one surface while causing the radiation to penetrate the material at successively increasing distances from the one surface as a result of the removal of the material.

4,493,754

ELECTRODES FOR PALLADIUM ELECTROPLATING PROCESS

Joseph A. Abys, Bridgewater, and Yutaka Okinaka, Madison, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

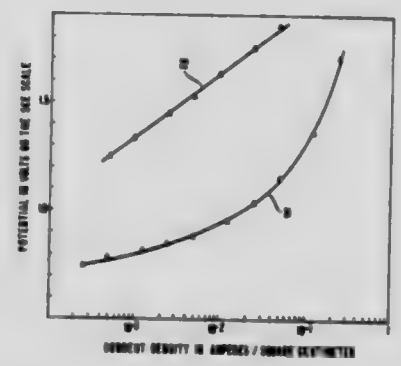
Filed Dec. 30, 1983, Ser. No. 567,348

Int. Cl.³ C25D *3/52*

U.S. Cl. 204—47

8 Claims

1. A process for electroplating palladium comprising the step of passing current through an anode, plating solution and cathode, said plating solution comprising a source of palladium and complexing agent said complexing agent consisting essentially of at least one aliphatic polyamine with up to 20 carbon



atoms characterized in that the surface of the anode comprises 8 ferrite.

4,493,755

ELECTROLYTIC PREPARATION OF ORTHOALKYL-2-HALO-N-ACYLANILIDES

Richard D. Goodin, St. Louis, and John P. Clupp, Kirkwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 7, 1983, Ser. No. 530,135

Int. Cl.³ C25B *3/00*

U.S. Cl. 204—73 R

21 Claims

1. The process of producing orthoalkyl N-acylanilides which comprises electrolyzing an sulfonium salt at the cathode in an electrolysis medium at a cathode potential sufficiently negative and under conditions to effect reduction of the sulfonium salt and production of an ortho-alkyl-N-acylanilide.

4,493,756

PROCESS FOR CLEANING METAL FILTERS

Peter J. Degen, Huntington, and Thomas C. Gsell, Sea Cliff, both of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Filed Jun. 21, 1983, Ser. No. 506,364

Int. Cl.³ C25F *1/00, 1/06*

U.S. Cl. 204—141.5

26 Claims

1. A process for cleaning a porous metal filter comprising electrolyzing said filter in an electrolytic system subjected to an imposed or applied current using said filter as an electrode of said system, and rinsing said filter to remove electrolyte and to flush any residual contaminants from said filter.

4,493,757

DEVICE FOR APPLYING BLOT-SHAPED COVERINGS BY ELECTRO-PLATING

Harry C. Piepers, Eindhoven, Netherlands, assignor to Galentan, A.G., Zug, Switzerland

Filed Mar. 1, 1982, Ser. No. 353,151

Claims priority, application Netherlands, Mar. 7, 1981, 8101106

Int. Cl.³ C25D *17/06*

U.S. Cl. 204—206

15 Claims

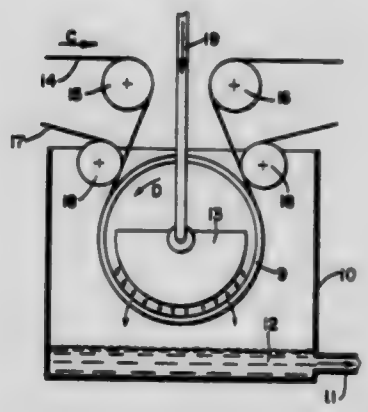
1. A device for applying blot-shaped coverings to a metal or metallized tapes by electro-plating, comprising:

a guide member along which a metal and/or metallized tape can be guided;

an endless masking member co-operating with the tape and the guide member and having passages, the shapes of which match the desired blot-shaped coverings, said masking member being formed by independent segments, each of which having at least one passage;

sealing means being arranged between said segments, and

the structure of said sealing means being such that while maintaining the sealing relationship between said segments, said segments move relative to one another in the direction of length of said masking member; and wherein said masking members form a periphery of a wheel.

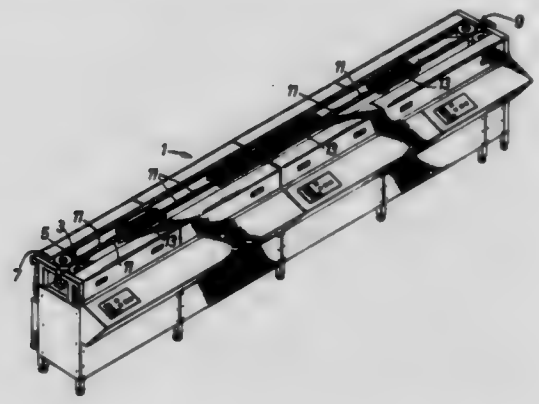


4,493,758

ANODE STRUCTURE FOR A PLATING CELL

Byran Murria, Kilmacolm, Scotland; Robert Willis, Godalming, and Jeffrey Page, Woking, both of England, assignors to OMI International Corporation, Warren, Mich.

Filed Nov. 1, 1983, Ser. No. 547,598
Claims priority, application United Kingdom, Nov. 1, 1982, 8231144; Nov. 1, 1982, 8231145; May 11, 1983, 8312912
Int. Cl.³ C25D *17/00, 17/12*
U.S. Cl. 204—224 R 6 Claims



1. An anode assembly suitable for a plating cell, the assembly comprising a pair of anode structures, each anode structure having a support and at least two thin elongate electrically conducting members in side by side relationship held by the support and wherein, in at least part of the assembly, the anode structures are not parallel to each other.

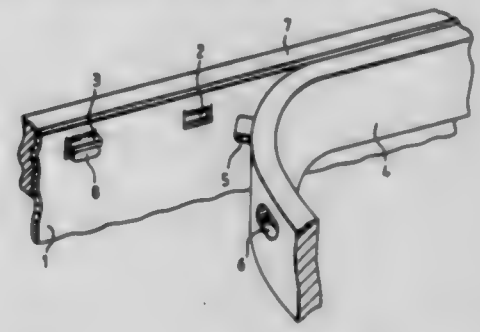
4,493,759

ELECTROLYTIC CELL

Thomas W. Boulton, and Brian J. Derwent, both of Frodsham, England, assignors to Imperial Chemical Industries PLC, Hertfordshire, England

Filed May 16, 1983, Ser. No. 494,887
Claims priority, application United Kingdom, May 19, 1982, 8214532
Int. Cl.³ C25B *9/02, 11/02, 13/02*
U.S. Cl. 204—252 21 Claims

1. An electrolytic cell comprising at least one anode and at least one cathode, a separator positioned between an anode and adjacent cathode and dividing the cell into separate anode and cathode compartments, and at least one gasket of an electrically insulating material positioned between adjacent anodes and cathodes, characterized in that the gasket has a plurality of projections and recesses on or in a surface thereof adapted to co-operate with corresponding recesses and projections in or on a surface of an anode and/or of a cathode adjacent thereto.

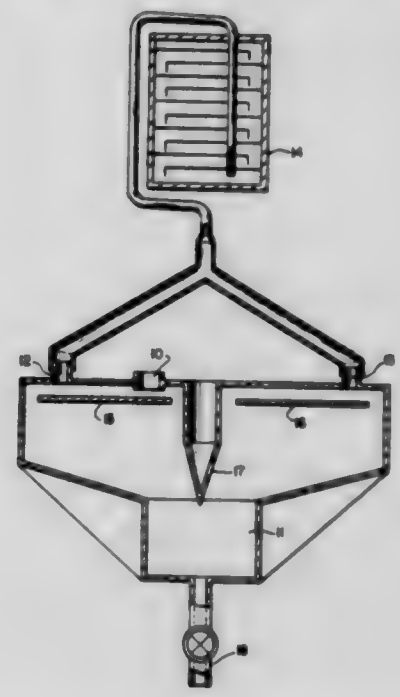


4,493,760

ELECTROLYTIC CELL HAVING NONPOROUS PARTITION

Giuseppe Bianchi, Milan, Italy, assignor to Industrie Zanussi S.p.A., Pordenone, Italy

Filed Dec. 7, 1983, Ser. No. 559,025
Claims priority, application Italy, Dec. 23, 1982, 24931 A/82
Int. Cl.³ C25B *13/02, 1/26*
U.S. Cl. 204—278 7 Claims



1. An electrolytic cell for the production of chlorine gas by the electrolysis of a sodium chloride solution, particularly for the formation of chlorine water in a washing machine or a dishwasher, said cell comprising:

a cell body including therein a cathode compartment having a cathode electrode for the formation of hydrogen gas during electrolysis and an anode compartment having an anode electrode for the formation of chlorine gas during electrolysis;

means for charging sodium chloride solution into said compartments;

means for discharging hydrogen and chlorine gas from said compartments;

means for discharging from sid compartments solutions resulting from electrolysis;

means for providing physical and electrolytic communication between the bottoms of said compartments while preventing physical and elecrolytic communication above said bottoms, said providing and preventing means comprising a nonporous partition; and

said electrodes extending in generally horizontal planes in the respective said compartments at levels above a lower end of said partition.

4,493,761

CATALYTIC HYDROLIQUEFACTION USING A CR-MO-GROUP VIII CATALYST

Albert L. Hensley, Jr., Munster, Ind., and Leonard M. Quick, Bridgewater Township, Somerset County, N.J., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 5, 1983, Ser. No. 558,093
Int. Cl.³ C10G *1/08*
U.S. Cl. 208—10 19 Claims

1. A method for recovering upgraded liquid products from a solid carbonaceous material, comprising: contacting the solid carbonaceous material with hydrogen under hydrogenation conditions comprising a temperature in the range of from about 300° C. to about 500° C. in the presence of a hydrocarbon conversion catalyst consisting essentially of a molybdenum component and a chromium component on a porous refractory inorganic oxide support selected from the group consisting of alumina, silica, silica-alumina, stabilized alumina, phosphated alumina, stabilized phosphated alumina, fluorided alumina, alumina-aluminum phosphate, boria-alumina, magnesia-alumina, boria and magnesia, and having a surface area of from about 150 m^2/gm to about 300 m^2/gm, a total pore volume, as determined by nitrogen desorption measurement, of from about 0.4 cc/gm to about 0.8 cc/gm, with an average pore diameter of from about 100 Å to about 200 Å, with each metal component being in the form of the elemental metal, its oxide or sulfide or a mixture thereof, with the molybdenum component at a concentration of from about 3 wt % to about 30 wt %, calculated as MoO_3 and based on the weight of the catalyst, and with the chromium component at a concentration of from about 2 wt % to about 20 wt %, calculated as Cr_2O_3 and based on the weight of the catalyst, and wherein, when the carbonaceous material is coal, coke, lignite or biomass, the carbonaceous material is also contacted with a hydrogen-donor solvent.

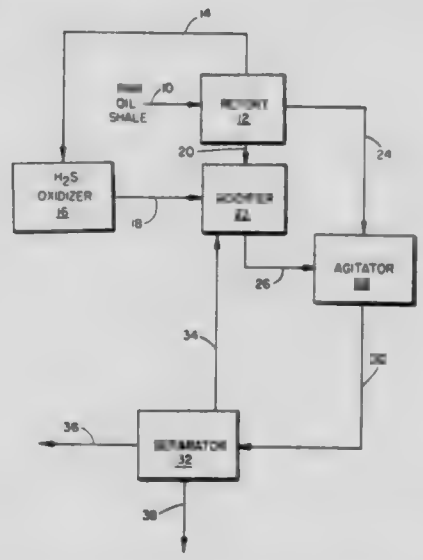
12. A method for recovering upgraded liguid products from a solid carbonaceous material, comprising: contacting the solid carbonaceous material with hydrogen under hydrogenation conditions comprising a temperature in the range of from about 300° C. to about 500° C. in the presence of a hydrocarbon conversion catalyst consisting essentially of a molybdenum component, a chromium component and at least one of a cobalt component and a nickel component on a porous refractory inorganic oxide support selected from the group consisting of alumina, silica, silica-alumina, stabilized alumina, phosphated alumina, stabilized-phosphated alumina, fluorided alumina, alumina-aluminum phosphate, boria-alumina, magnesia-alumina, boria and magnesia and having a surface area of from about 150 m^2/gm to about 300 m^2/gm, a total pore volume, as determined by nitrogen desorption measurement, of from about 0.4 cc/gm to about 0.8 cc/gm, with an average pore diameter of from about 100 Å to about 200 Å, with each metal component being wherein each of the cobalt component and nickel component that is present is in the form of the elemental metal, its oxide or sulfide or a mixture thereof, with the molybdenum component at a concentration of from about 3 wt % to about 30 wt %, calculated as MoO_3, and based on the weight of the catalyst, with the chromium component at a concentration of from about 2 wt % to about 20 wt %, calculated as Cr_2O_3 and based on the weight of the catalyst, and with each of the cobalt component and nickel component that is present is at a concentration of from about 0.5 wt % to about 10 wt %, calculated as CoO or NiO, respectively, and based on the weight of the catalyst, and wherein, when the carbonaceous material is coal, coke, lignite or biomass, the carbonaceous material is also contacted with a hydrogendonor solvent.

4,493,762

METHOD FOR REDUCING THE NITROGEN CONTENT OF SHALE OIL WITH SPENT OIL SHALE AND SULFURIC ACID

Leslie R. Rudnick, Trenton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 2, 1983, Ser. No. 490,905
Int. Cl.³ C10B *53/06*; C10G *1/00*
U.S. Cl. 208—11 R 24 Claims



1. A method of reducing the nitrogen content of shale oil comprising:

(a) retorting oil shale under oil shale retorting conditions and producing spent shale, hydrogen sulfide containing gas, and a nitrogen containing shale oil therefrom;

(b) extracting the hydrogen sulfide from the gas resulting from the retorting of the oil shale and oxidizing the hydrogen sulfide to sulfuric acid;

(c) removing and acidifying the spent retorted shale with the sulfuric acid resultant from the retort's hydrogen sulfide;

(d) agitating the shale oil and acidified spent shale together for about 5 to about 180 minutes which acidified spent shale extracts and reduce the nitrogen content of the shale oil; and

(e) separating the agitated shale oil from the acidified oil shale.

4,493,763

PRETREATMENT OF OIL-SHALE FOR ENHANCED ARSENIC REMOVAL

Richard P. Rhodes, Westfield, and Frank Hershkowitz, Liberty Corner, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 15, 1983, Ser. No. 513,824
Int. Cl.³ C10G *1/00*
U.S. Cl. 208—11 R 4 Claims

1. A method for pretreating oil-shale such that upon subsequent conversion, the resulting oil-shale liquids have substantially less arsenic than if the oil-shale had not been so pretreated, the method comprising subjecting the oil-shale to a temperature from about 250° C. to just below the temperature at which the oil-shale begins to retort, for an effective amount of time and in a reducing environment wherein the reducing agent is selected from hydrogen, carbon monoxide, and mixtures thereof to cause reduction of the oxidation state of the arsenic compounds of the oil-shale.

4,493,764

SEPARATELY SUPPORTED POLYMETALLIC REFORMING CATALYST

Charles T. Kresge, Sewell; Sowmithri Krishnamurthy, Cherry Hill, and William D. McHale, Swedesboro, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 525,778, Aug. 24, 1983,. This application Jun. 8, 1984, Ser. No. 618,791

Int. Cl.[3] C10G *35/06*

U.S. Cl. 208—138 5 Claims

1. A reforming process which comprises contacting a reforming charge stock under reforming conditions with a catalyst composition made up of a mixture of two components one component comprising a minor proportion of platinum and rhenium on a carbon dioxide treated support and the second component comprising a minor proportion of iridium and rhenium on a separate carbon dioxide treated support.

4,493,765

SELECTIVE SEPARATION OF HEAVY OIL USING A MIXTURE OF POLAR AND NONPOLAR SOLVENTS

Robert B. Long, Atlantic Highlands, and Fred A. Caruso, Elizabeth, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jun. 6, 1983, Ser. No. 501,197

Int. Cl.[3] C01G *21/04, 21/06*

U.S. Cl. 208—309 19 Claims

1. A process for the selective separation of a hydrocarbon feedstock containing low molecular weight polars, saturates, aromatics, and asphaltenes which comprises: (a) contacting the feedstock with a nonpolar solvent having an overall solubility parameter of less than about 8.0 and a polar solvent having an overall solubility parameter greater than about 11.0 in amounts such that the volume average overall solubility parameter for the mixture of polar and nonpolar solvents is between about 9.5 and 10.0, said contacting taking place at, or the resulting mixture being subjected to, a temperature from about 5° to about 20° C. below the critical solution temperature of the mixture so as to form a two-phase mixture consisting of a first extract phase comprising a minor amount of the nonpolar solvent, a major amount of the polar solvent and containing a substantial portion of said low molecular weight polars and a first raffinate phase comprising a minor amount of the polar solvent and a major amount of the nonpolar solvent;

(b) separating the first extract phase from the first raffinate phase;

(c) cooling the separated first raffinate phase by at least about 30° C. to produce a final extract phase comprising the substantial remainder of both the polar solvent and the low molecular weight polars; a final raffinate comprising the nonpolar solvent, saturates, and aromatics; and an asphaltene containing phase; and

(d) separating the final extract phase, the final raffinate phase and the asphaltene-containing phase formed in step (c).

4,493,766

ROTATING SORTER FOR FIBER MATERIAL SUSPENSIONS

Walter Musselmann; Herbert Kinzler, and Josef Trä, all of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

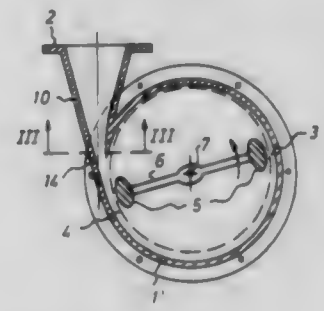
Filed May 24, 1982, Ser. No. 381,242

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1981, 3121855

Int. Cl.[3] B07B *1/20*

U.S. Cl. 209—362 8 Claims

1. A rotating sorter for eliminating minuscule pollutants from fiber material suspensions of the type including a generally vertically disposed fixed housing having a fixed filter basket therein, said generally vertically disposed fixed housing and said fixed filter basket forming therebetween a generally ring-shaped sorting space for receiving fiber material suspensions to be sorted, a rotatable axle member generally vertically disposed in said filter basket and having a plurality of sorter vanes radially extending therefrom to rotate therewith, the remote end portions of said sorter vanes being in close proximity to said filter basket, wherein quality material is sorted into the interior of said filter basket and the delivery of fiber material suspension to be filtered occurs substantially tangentially to said filter basket and substantially perpendicular to the axis of rotation of said rotatable axle member, the improvement comprising:



an inlet member communicating with said sorting space through a generally vertically disposed slit at the interface of said inlet member and said sorting space, said slit having a relatively high ratio of its height to its width,

said sorting space extending from said generally vertically disposed slit substantially the entire circumference of said generally vertically disposed fixed housing and narrowly tapering spirally in a plane along the entire circumference and in a direction of flow of fiber material suspension to be sorted.

4,493,767

CONVEYOR BELT FOR TRANSPORTING SLAG MATERIAL FROM A FILTERING APPARATUS

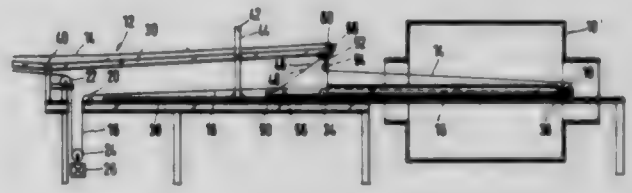
Guido Monteyne, Beukenlaan 28, 9971 Lembeke, Belgium

Filed Feb. 10, 1984, Ser. No. 578,818

Claims priority, application Luxembourg, Apr. 28, 1983, 84782

Int. Cl.[3] B01D *33/06*

U.S. Cl. 210—236 11 Claims



1. A conveyor belt assembly used in conjunction with a rotary drum filtration apparatus, said conveyor belt assembly passing longitudinally through the drum, said conveyor belt assembly comprising:

fixed supporting framework means associated with a conveyor belt;

a first movable frame section having said conveyor belt thereon and being slidably mounted on said supporting framework means whereby said conveyor belt may be moved between an operative position inside said drum and a retracted position outside said drum; and

a second movable frame section having said conveyor belt thereon and being pivotably mounted on said supporting framework means, said second frame section capable of being pivoted upwardly into a raised position thereby providing a space for said first frame section to be slidably positioned thereunder.

4,493,768

TWIN PUSHER CENTRIFUGE INCLUDING ROTATABLE PUSHER

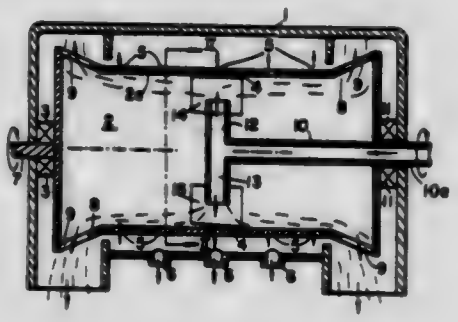
Vaclav Kuhr, Oberengstringen; Bruno Müllhaupt, Schlieren, and Hansjoachim Pascheda, Männedorf, all of Switzerland, assignors to Sulzer-Escher Wyss Ltd., Zurich, Switzerland

Filed Aug. 29, 1983, Ser. No. 527,563

Claims priority, application Switzerland, Sep. 6, 1982, 5278/82

Int. Cl.³ B04B 3/02

U.S. Cl. 210—360.2 9 Claims



1. A twin pusher centrifuge comprising:
a rotatable sieve drum having a lengthwise axis and two oppositely situated end portions;
means for rotating said sieve drum about said lengthwise axis at a predetermined rotational speed;
a product infeed for infeeding a product to be processed into the inside of said sieve drum;
said sieve drum being provided with product discharge outlets at said two end portions;
a pusher arranged approximately centrally within said sieve drum and means for rotating said pusher about said lengthwise axis of said sieve drum at a rotational speed which is different from said rotational speed of said sieve drum, in order to simultaneoulsy convey the product infed into said sieve drum by said product infeed in respective directions extending towards both of said product discharge outlets;
said pusher comprising at least one first pushing surface extending at a first inclination relative to said lengthwise axis and the circumferential direction of said sieve drum and being directed towards the product discharge outlet of a first one of said two end portions of the sieve drum;
said pusher further comprising at least one second pushing surface extending at a second inclination relative to said lengthwise axis and the circumferential direction of said sieve drum and being directed to the product discharge outlet at a second one of said two end portions of the sieve drum;
said product infeed comprising infeed pipes each of which is connected to a related one of said at least one first and second pushing surfaces;
each one of said infeed pipes opening to the rear of the related one of said at least one first pushing surface and said at least one second pushing surfaces with respect to the related one of said two end portions and synchronously rotating with said related one of said at least one first pushing surface and second pushing surface; and
said at least one first pushing surface being arranged such that said at least one first pushing surface displaces said product at the inside of said sieve drum in a direction towards the product discharge outlet at the first one of said two end portions of the sieve drum and that said at least one second pushing surface displaces said product at said inside of said sieve drum in an opposite direction towards the product discharge outlet at the second one of said two end portions of the sieve drum, when said pusher is rotated relative to said sieve drum.

4,493,769

TWIN PUSHER CENTRIFUGE

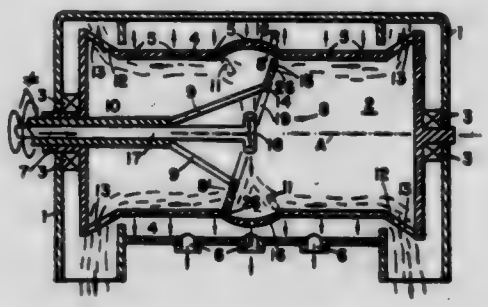
Hansjoachim Pascheda, Männedorf; Bruno Müllhaupt, Schlieren, and Vaclav Kuhr, Oberengstringen, all of Switzerland, assignors to Sulzer-Escher Wyss Ltd., Zürich, Switzerland

Filed Aug. 29, 1983, Ser. No. 527,564

Claims priority, application Switzerland, Sep. 6, 1982, 5277/82

Int. Cl.³ B04B 3/02

U.S. Cl. 210—360.2 18 Claims



1. A twin pusher centrifuge comprising:
a centrifuge housing;
a sieve drum defining a lengthwise axis and arranged in said housing;
said sieve drum having two oppositely located ends and an inner wall;
means for rotating said sieve drum about said lengthwise axis thereof at a predetermined rotational speed;
said sieve drum being provided with product discharge outlets at said two oppositely located ends;
at least one product infeed;
a pusher floor member located approximately at a central region of said sieve drum;
means for rotating said pusher floor member about said lengthwise axis at a rotational speed which is different from said predetermined rotational speed of said sieve drum;
said pusher floor member possessing an outer edge portion facing said inner wall of said sieve drum;
said outer edge portion circumferentially extending adjacent said inner wall of said sieve drum and defining a plane which is inclined relative to the lengthwise axis of the sieve drum and further defining at least two axial extreme positions in order to push a product fed-in through said at least one product infeed along said inner wall of said sieve drum to said product discharge outlets at said two oppositely located ends of said sieve drum, when said pusher floor member and said sieve drum are rotated relative to each other;
supporting webs for supporting said pusher floor member;
said pusher floor member containing a substantially central opening which at most is interrupted by said supporting webs; and
said at least one product infeed extending into said substantially central opening and opening approximately at said substantially central opening in order to substantially uniformly supply said product towards both sides of said outer edge portion of said pusher floor member.

4,493,770

METHOD AND SYSTEM OF GENERATING HEAT BY BIOLOGICAL DECOMPOSITION OF ORGANIC REFUSE

Guy Mollliet, Grabs, Switzerland, assignor to UTB Umwelttechnik Buchs AG, Buchs, Switzerland

Filed Nov. 26, 1982, Ser. No. 444,796

Claims priority, application European Pat. Off., Nov. 28, 1981, 81 109992.8

Int. Cl.³ C02F 11/02, 11/04, 3/30

U.S. Cl. 210—603 11 Claims

1. Method of generating heat and biologically decomposing organic refuse, to obtain a sludge or slurry free from toxic or

pathogenic contents, in which the refuse is introduced into an aeration vessel (11), including the steps of

introducing a gas containing oxygen into the refuse in the aeration vessel to oxidize the refuse and retain the refuse in the vessel, the refuse, upon oxidation, generating heat and heating the refuse;

removing the then hot aerated refuse, in form of an aqueous suspension or slurry from the vessel (11);

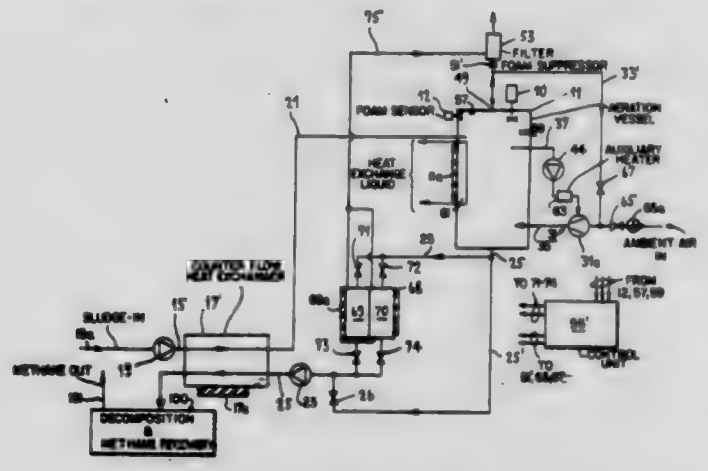
conducting the thus removed still hot refuse to a holding vessel (68; 69, 70) having at least two chambers (69, 70);

storing the aqueous suspension or slurry in the holding vessel for a period of time sufficient to degas the suspension or slurry and to reliably kill all toxic bacteria or harmful contents;

then conducting the degassed refuse in the aqueous suspension or slurry to a decomposition and methane recovery container (100) for further decomposing the contents of the degassed aqueous suspension or slurry and for recovering methane therefrom,

and wherein said conducting and storing steps comprise

selectively sequentially conducting the still hot refuse to respective separate ones of the chambers, alternately, and storing the aqueous suspension in the chambers, and then, alternately, conducting the degassed refuse from the respective chambers to the decomposition and methane recovery container, to permit alternate filling of the respective chambers, while isolating at least one of the chambers from the aeration vessel (11) and subsequent selective withdrawal of the degassed contents thereof.



4. Biological heat generating and refuse treatment apparatus, to recover heat upon decomposition of organic refuse, particularly garbage, sludge, and the like, in an aqueous suspension or slurry, and to obtain detoxified and harmless material, comprising

an aeration vessel (11) having means (31; 65) for introducing oxygen to the refuse;

controlled inlet means (15, 19) connected for introduction of said refuse into the aeration vessel (11), the organic refuse, upon introduction into the vessel, being heated by biological decomposition;

outlet means (25) connected to said aeration vessel, located remotely from the inlet means for removing said organic refuse which became hot upon biological decomposition in the vessel (11);

a degassing chamber means (68; 69, 70) connected to said outlet means (25) of said aeration vessel (11) for storing a portion of the still hot biologically decomposed contents of the aeration vessel, withdrawn therefrom, for a time sufficient to provide for degassing thereof; and

a decomposition and methane recovery container (100) connected to said degassing chamber means (68; 69, 70) downstream thereof, for further decomposing the contents from said degassing chamber means and for recovering methane therefrom;

wherein the degassing chamber means comprises at least two chambers (69, 70);

and valves (71, 72, 73, 74) selectively connecting one of said chambers (69 or 70) in the outlet (25) between the aeration vessel (11) and the decomposition and methane recovery container, for alternate filling of the respective chambers, while isolating at least one of the chambers from the aeration vessel (11), and subsequent selective withdrawal of the degassed contents thereof.

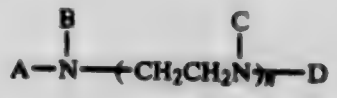
4,493,771

SCALE INHIBITING WITH COMPOUNDS CONTAINING QUATERNARY AMMONIUM AND METHYLENEPHOSPHONIC ACID GROUPS

David A. Wilson, Richwood, and Wilfred W. Wilson, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 489,442, Apr. 28, 1983, Pat. No. 4,459,241.
This application Mar. 6, 1984, Ser. No. 586,596
Int. Cl.³ C02F 5/14
U.S. Cl. 210—700 7 Claims

1. A process for inhibiting scale formation in an aqueous solution containing alkaline earth metal ions which comprises adding to said aqueous solution a threshold amount of a compound having the formula



wherein the A, B, C and D substituents are independently selected from the group consisting of hydrogen, methylenephosphonic acid or salt thereof and 2-hydroxy-3 (trialkylammonium halide) propyl wherein each alkyl has from 1 to 5 carbon atoms, n is 0 to 15, and wherein said substituents include at least one methylenephosphonic acid group, or salt thereof, and at least one 2-hydroxy-3 (trialkylammonium halide) propyl group.

4,493,772

FILTER FOR REMOVING WATER FROM WATER-CONTAINING OIL AND METHOD FOR THE SAME

Koji Tanaka, Okayama, Japan, assignor to Japan Exlan Company Limited, Osaka, Japan

Filed Dec. 28, 1981, Ser. No. 335,275
Claims priority, application Japan, Dec. 29, 1980, 55-185970
Int. Cl.³ B01D 39/04
U.S. Cl. 210—799 11 Claims

1. A water-removing filter for removing water from a water-containing oil, which comprises an assembly of fibers formed from a polymer having a SP value (solubility parameter) of at least 10.0 and, as a binder for impregnating and forming the fiber assembly, a polymeric aqueous emulsion having a surface tension of at least 50 dynes/cm, wherein the density of the filter is from 0.05 to 0.9 g/cm³.

5. A method of separating and removing water from water-containing oil, which comprises passing the oil through a filter comprising an assembly of fibers formed from a polymer having a SP value (solubility parameter) of at least 10.0 and, as a binder for impregnating and forming the fiber assembly, a polymeric aqueous emulsion having a surface tension of at least 50 dynes/cm, wherein the density of the filter is from 0.05 to 0.9 g/cm³.

4,493,773

LOW PHOSPHATE, SOFTENING LAUNDRY DETERGENT CONTAINING ETHOXYLATED NONIONIC, ALKYLPOLYSACCHARIDE AND CATIONIC SURFACTANTS

Thomas E. Cook, and Ernest W. Dolle, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 376,877, May 10, 1982, abandoned.
This application Jan. 27, 1984, Ser. No. 574,633
Int. Cl.³ C11D *1/62, 1/835;* D06M *13/18, 13/46*
U.S. Cl. 252—8.8 9 Claims

1. A low phosphate laundry detergent composition providing softening and/or antistatic benefits, having a pH in the laundry solution of greater than about 7, comprising from about 20% to about 80% by weight of a surfactant mixture consisting essentially of:

(a) an ethoxylated alcohol or alkylphenol nonionic detergent surfactant having an HLB of from 6 to about 14, or a mixture of such surfactants;

(b) an alkylpolysaccharide detergent surfactant of the formula $RO(C_2H_4O)_t$ (glycosyl)$_x$, where R is an alkyl containing from about 10 to about 18 caron atoms; t is from 0 to about 10; and x is a number from about 1½ to about 3; and

(c) a quaternary ammonium cationic surfactant having 2 chains which contain an average of from about 16 to about 22 carbon atoms, or a mixture of such surfactants; the weight ratio of (a) to (b) being from about 3:1 to about 1:3, and the weight ratio of (a)+(b) to (c) being in the range of from about 3:1 to about 9:1.

4,493,774

METHOD FOR IMPROVING INJECTIVITIES OF BIOPOLYMER SOLUTIONS

James R. Bragg, Houston, Tex., assignor to Exxon Production Research Co., Houston, Tex.

Filed Feb. 18, 1982, Ser. No. 349,951
Int. Cl.³ C09K *3/00*
U.S. Cl. 252—8.55 D 18 Claims

6. A method for treating an aqueous heteropolysaccharide solution prior to injecting it into a subterranean oil-bearing reservoir, said heteropolysaccharide having been produced by the action of bacteria of the genus Xanthomonas upon carbohydrates and having a concentration in the range of about 0.005 weight percent to about 20 weight percent in said solution, which comprises pumping said solution through a colloid mill until a 600 ml sample thereof is capable of passing through a 47 mm diameter 1.2 micron filter in no more than about 10 minutes at a 40 psi pressure drop across said filter, said solution having a viscosity after shearing which is substantially the same as before shearing.

4,493,775

METHOD AND COMPOSITION FOR CORROSION

M. Dewayne Coffey, South Jenks; Mary Y. Kelly, and Weldon C. Kennedy, Jr., both of Tulsa, all of Okla., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 30, 1983, Ser. No. 537,887
Int. Cl.³ C09K *3/00*
U.S. Cl. 252—8.55 C 21 Claims

1. A corrosion inhibitor composition comprising:

(A) The product of the reaction of

(1) cyclohexylamine or an inertly-substituted derivative thereof, a salt of either of these, or mixtures thereof, with

(2) per mole of component (1), greater than about 10 moles of formaldehyde or an amount of paraformaldehyde which is sufficient to release greater than about 10 moles of formaldehyde, or a mixture thereof, and

(3) acetophenone, an inertly-substituted derivative thereof, or a mixture thereof, in an amount which is from about 3 moles per mole of component (A) (1) to an amount which is about equimolar to component (A) (2), and

(4) from zero to about 10 weight percent, based on the sum of the weights of components (A) (1), (A) (2) and (A) (3), of at least one aliphatic carboxylic acid having from 1 to about 20 carbon atoms; and

(B) a combination of

(1) at least one acetylenic alcohol, and

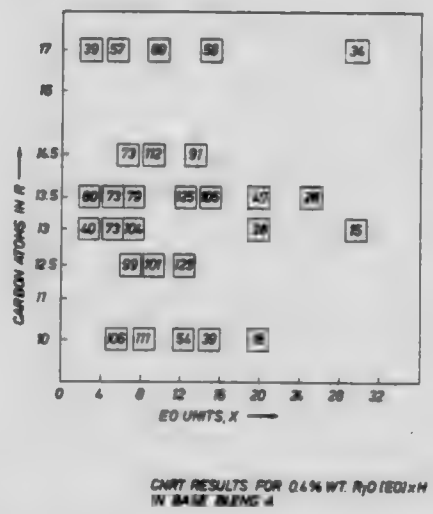
(2) additional, unreacted formaldehyde.

4,493,776

LUBRICATING OIL COMPOSITION WITH SUPPLEMENTAL RUST INHIBITOR

Robert B. Rhodes, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 30, 1982, Ser. No. 429,959
Int. Cl.³ C10M *1/28, 1/54*
U.S. Cl. 252—25 8 Claims



CMRT RESULTS FOR 0.4% WT. $R_1O(EO)_xH$ IN BASE BLEND 4

1. A lubricating oil composition for internal combustion engines comprising:

a major amount of a hydrocarbon oil of lubricating viscosity and a minor amount of conventional additives, including at least one overbased detergent additive for rust protection and at least one ashless dispersant, and an effective amount of a supplemental rust inhibitor containing at least one compound selected from each of the groups consisting of

(A) $R_1O[C_2H_4O]_xH$ and $R_2O[C_3H_6O]_yH$ with (B) $R_3O[C_2H_4O]_x[C_3H_6O]_yH$ and $R_4O[C_3H_6O]_y[C_2H_4O]_xH$, wherein R_1, R_2, R_3 and R_4 are hydrocarbyl radicals selected from alkyl, aryl, alkaryl, and arylalkyl groups or combinations thereof having from about 10 to 15 carbon atoms and wherein x and y may vary independently in the range from 3 to 8.

4,493,777

WATER-BASED HYDRAULIC FLUIDS

Kenneth L. Snyder, Jr., and James Peters, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 20, 1982, Ser. No. 451,132
Int. Cl.³ C10M *3/04, 3/12*
U.S. Cl. 252—49.3 21 Claims

1. A substantially oil-free hydraulic fluid or metalworking composition which maintains an essentially Newtonian and shear stable viscosity comprising an aqueous liquid and a thickening amount of a substantially water-swellable synthetic addition copolymer comprising the reaction product of (1) at least one water-soluble ethylenically unsaturated monomer in an amount sufficient to provide swellability to said copolymer, (2) at least one water-insoluble ethylenically unsaturated monomer in an amount sufficient to control the degree of swellability of said copolymer, and (3) at least one crosslinking monomer in an amount sufficient to control the degree of swellabil-

ity of said copolymer while imparting mechanical reinforcement to said copolymer; such that the viscosity of said composition approaches that of an oil-based hydraulic fluid or metal-working composition.

4,493,778

WATER-BASED MAGNETIC COATING COMPOSITION

Sikandar Iqbal, San Jose, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Filed Jul. 14, 1982, Ser. No. 397,986
Int. Cl.³ H01F *1/28*
U.S. Cl. 252—62.54 20 Claims

1. In an aqueous coating composition for forming a magnetic recording layer, this layer including magnetic pigment material and a water-based polymeric matrix therefor, this matrix including binder material comprising high molecular weight poly blends of hard and soft polymers adapted to form "interpenetrating elastomeric networks" in the presence of the magnetic pigment;

the improvement comprising the use of sufficient polyacrylic latex polymer, as a dispersant in an aqueous solution to which the pigment is added, to adequately stabilize the pigment material, after mixing, and bond it to the binder material with little or no migration to the surface of the finished recording layer, and also so as to avoid flocculation and aggravated foaming.

4,493,779

PROCESS FOR THE PREPARATION OF FERRITE MAGNETIC PARTICULATE FOR MAGNETIC RECORDING

Kouzi Kamiyama, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 14, 1984, Ser. No. 580,162
Claims priority, application Japan, Feb. 16, 1983, 58-24254
Int. Cl.³ C04B *35/26*
U.S. Cl. 252—62.59 3 Claims

1. A process for the preparation of a hexagonal ferrite magnetic particulate for magnetic recording having the formula $RFe_{12-2x}M_xM^1_xO_{19}$ wherein R is at least one metal atom selected from the group consisting of barium, strontium and lead, M is at least one divalent metal atom selected from the group consisting of cobalt, nickel and zinc, M^1 is at least one tetravalent metal atom selected from the group consisting of titanium, zirconium and hafnium, and x is a number from 0.6 to 1.0 which comprises steps of:

(1) melting a starting material mixture containing basic components for said hexagonal ferrite, and a glass-forming component,

(2) rapidly cooling the resulting molten mixture to obtain an amorphous material,

(3) heat-treating said amorphous material to form ferrite crystals, and

(4) removing components other than the ferrite crystals from the materials resulting from said heat-treatment;

characterized in that said starting material mixture contains a glass-forming component comprising a B_2O_3 component and a SiO_2 component in which the molar ratio of $SiO_2/(B_2O_3+SiO_2)$ is, 0.05 to 0.8, said ferrite having a higher saturation magnetization than the ferrite of the same particle size prepared as above absent the SiO_2 component.

4,493,780

WATER-BASED HYDRAULIC FLUIDS HAVING IMPROVED LUBRICITY AND CORROSION INHIBITING PROPERTIES

Ellen S. Schwartz, Warren, Mich., and Cline A. Tincher, Homewood, Ill., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 249,200, Mar. 30, 1981, Pat. No. 4,390,439. This application May 20, 1983, Ser. No. 496,467
The portion of the term of this patent subsequent to Jun. 28, 2000, has been disclaimed.
Int. Cl.³ C09K *3/00;* C10M *3/04*
U.S. Cl. 252—73 14 Claims

1. A hydraulic fluid concentrate characterized by improved anti-wear and corrosion inhibiting properties comprising water, neodecanoic acid in the amount of about 0.3 to 20.0 percent by weight of said concentrate, a polyether thickener having a molecular weight of about 1000 to about 75,000 prepared by reacting ethylene oxide or ethylene oxide and at least one lower alkylene oxide having 3 to 4 carbon atoms with at least one active hydrogen-containing polyhydric alcohol initiator and at least one glycidyl ether having a carbon chain length of about 12 to about 18 aliphatic carbon atoms and wherein said glycidyl ether is present in the amount of about 1 to about 20 percent by weight based upon the total weight of said polyether thickener, and conventional hydraulic fluid additives.

4,493,781

POWDERED CLEANSING COMPOSITION

Francis E. Chapman, and Robert B. Harris, both of Racine County, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Apr. 6, 1981, Ser. No. 251,564
Int. Cl.³ C09K *3/22*
U.S. Cl. 252—88 8 Claims

1. A particulate textile fiber or fabric cleaning composition, having a high affinity for textile soil normally resistant to vacuum removal and adapted for distribution without dusting to natural or synthetic textile fibers or fabric and for expeditious removal therefrom, which comprises:

(a) from about 5 to 50% by weight of an aqueous volatile solvent in amounts sufficient to control dusting and to provide uniformity in said particulate composition;

(b) from about 10 to 95% by weight of an inert, highly absorbent carrier in sufficient amounts to cooperate in removing textile soil and to form a central wetted core; and

(c) from about 15 to 90% by weight of a natural or synthetic aluminosilicate zeolite in sufficient amounts to effectively remove textile fiber or fabric soil, said zeolite formulated to become anchored to said central core to resist dusting.

4,493,782

CLEANSING COMPOSITIONS COMPRISING ETHOXYLATED ALCOHOL MONOESTERS OF PHOSPHORIC ACID

Stanley C. Williamson, Des Moines, Iowa, assignor to Amchem Products, Inc., Ambler, Pa.

Filed Jul. 7, 1983, Ser. No. 511,690
Int. Cl.³ C11D *1/34, 3/36*
U.S. Cl. 252—95 8 Claims

1. A cleansing composition containing

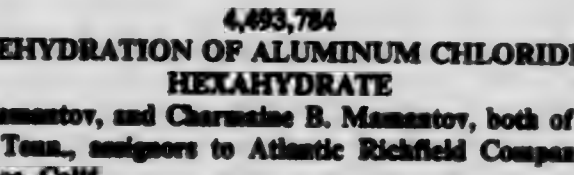
(a) from about 0.1 to about 20% by weight of a mixture of monoesters of phosphoric acid of the formula



wherein n has a value from about 7 to about 11 and m has

a value from about 2 to about 4, wherein said mixture contains at least 95% of said monoesters,

(b) from about 2 to about 3% by weight of an ester of the formula



4,493,783

CLEANING AGENT FOR OPTICAL SURFACES

Kai C. Su; Leslie F. Stebbins, both of Roswell, Ga., and Rajkumar P. Bhatia, Arlington, Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 255,861, Apr. 20, 1981, abandoned. This application Feb. 28, 1983, Ser. No. 470,181

Int. Cl.³ C11D 7/26; A61K 7/00

U.S. Cl. 252—174.23 19 Claims

1. An aqueous ophthalmic cleansing composition for cleaning a soft contact lens comprising an effective amount of a substantially spherical particulate polymer for removal of proteinaceous and lipid deposits on said soft contact lens, said particulate polymer selected from the group consisting of polyethylene, cellulose acetate butyrate, polycarbonate, poly 11-undecamide, polyvinyl chloride and mixtures thereof wherein said particulate polymers have a particle size in the range from about twenty microns to about one hundred microns, a carrier in which said particulate polymer is suspended, said carrier having a viscosity sufficient to keep the particulate polymer in suspension and a preservative, to provide an isotonic cleansing composition.

4,493,784

DEHYDRATION OF ALUMINUM CHLORIDE HEXAHYDRATE

Gleb Mamantov, and Charmaine B. Mamantov, both of Knoxville, Tenn., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 30, 1984, Ser. No. 575,109

Int. Cl.³ C09K 3/00; C01F 7/58

U.S. Cl. 252—182 10 Claims

1. A process for dehydrating aluminum chloride hexahydrate which comprises:

(a) contacting the hexahydrate with a melt consisting essentially of a chlorobasic mixture of least one alkali metal chloride and aluminum chloride at a temperature within the range of about 160° to 250° C. to form gaseous HCl and an oxychloroaluminate-containing reaction mixture;

(b) contacting said reaction mixture with gaseous HCl at a temperature within the range of about 160° to 250° C. to form and release water from the reaction mixture; and

(c) recovering an alkali metal chloride/aluminum chloride melt enriched in $AlCl_3$.

4,493,785

ANTHRAQUINONE COMPOUNDS

David F. Newton, Oldham, and David J. Thompson, Manchester, both of England, assignors to Imperial Chemical Industries PLC, London, England

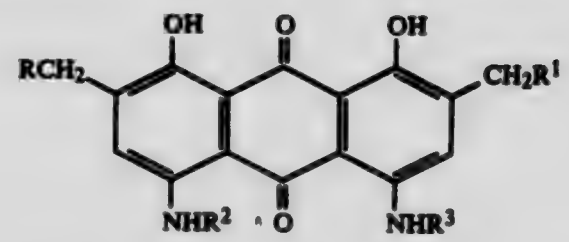
Filed Apr. 6, 1983, Ser. No. 482,714

Claims priority, application United Kingdom, Apr. 7, 1982, 8210260; Aug. 18, 1982, 8223726

Int. Cl.³ C09K 3/34; G02F 1/13; C07C 97/26, 49/74

U.S. Cl. 252—299.1 8 Claims

1. A compound of the formula:



I

wherein

R & R^1, each independently, represents C_{4-7}-n-alkyl; and

R^2 & R^3, each independently, represents H or C_{1-4}-alkyl.

8. A mixture of pleochroic dyes containing a first compound according to claim 1 in which both R and R^1 represent n-butyl or n-hexyl and both R^2 and R^3 represent H, a second compound according to claim 1 in which both R and R^1 represent n-butyl or n-hexyl and R^2 and R^3 represent C_{1-4}-alkyl and a third compound according to claim 1 in which both R and R^1 represent n-butyl or n-hexyl, R^2 represents H and R^3 represents C_{1-4} alkyl.

4,493,786

TRANSLUCENT SOAPS AND PROCESSES FOR MANUFACTURE THEREOF

David P. Joshi, Plainfield, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Sep. 2, 1982, Ser. No. 414,443

Int. Cl.³ C11D 9/48, 9/50, 13/08, 13/14

U.S. Cl. 252—368 20 Claims

1. A translucent soap cake which comprises about 45 to 90% of mixed tallow and coconut oil soaps which are soaps of a base selected from the group consisting of lower alkanolamine and alkali metal hydroxide, and mixtures thereof, with from about 40 to 90% of the soap being a tallow soap and about 60 to 10% of the soap being a coconut oil soap, about 1 to 10% of lanolin fatty acids, about 2 to 12% of a polyol of 3 to 6 carbon atoms and 2 to 6 hydroxyl groups, and about 5 to 25% of water.

4,493,787

SEMI-CONDUCTIVE COMPOSITIONS, BASED ON ETHYLENE-VINYL ACETATE COPOLYMERS, HAVING ADHESION TO AND STRIPPABILITY FROM CROSSLINKED POLYOLEFIN SUBSTRATES

Seibo Taniguchi, Yokohama, and Yuichiro Sakuma, Nagareyama, both of Japan, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 20, 1982, Ser. No. 398,770

Claims priority, application Japan, Oct. 8, 1981, 56-159446

Int. Cl.³ H01B 1/06

U.S. Cl. 252—511 15 Claims

1. A semi-conductive composition comprising an ethylene-vinyl acetate copolymer containing 15 to 30 percent by weight vinyl acetate and having a melt index of 1 to 50 g/10 min. or a chlorinated product thereof containing 3 to 40 percent by weight chlorine, carbon black, a silicone compound selected from the group consisting of silicone oils, silicone rubbers and silicone block copolymers which are liquid at normal temperatures, in an amount of about 0.3 to about 5 parts by weight and an interface crosslink inhibitor selected from the group consisting of a phenol, a quinone, a thiazole and a thiuram sulfide in an amount of about 0.01 to about 1.5 parts by weight, said parts by weight based on 100 parts by weight of said copolymer.

4,493,788

FOAMABLE ELECTROCONDUCTIVE POLYOLEFIN RESIN COMPOSITIONS

Akira Fujie, and Minoru Hisamatsu, both of Suzuka, Japan, assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 10, 1982, Ser. No. 406,817
Int. Cl.³ H01B 1/06
U.S. Cl. 252—511 5 Claims

1. An electroconductive polyolefin resin foam containing 70 to 95 percent by weight of a polyolefinic resin and 5 to 30 percent by weight of an electrically-conductive, hollow particulate furnace black having a specific surface area of at least 900 square meters per gram.

4,493,789

ELECTROCONDUCTIVE PASTE AND PROCESS FOR PRODUCING ELECTROCONDUCTIVE METALLIZED CERAMICS USING THE SAME

Tamotsu Ueyama, and Takao Yamada, both of Katsuta, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 248,676, Mar. 30, 1981, abandoned.
This application Mar. 8, 1983, Ser. No. 473,213
Claims priority, application Japan, Mar. 31, 1980, 55-42391; Mar. 31, 1980, 55-42392
Int. Cl.³ H01B 1/06
U.S. Cl. 252—514 25 Claims

1. A highly electroconductive paste for metallizing comprising:

(a) 100 parts by weight of high-melting point metal powder selected from the group consisting of tungsten powder, molybdenum powder, molybdenum-manganese powder, platinum powder and mixtures thereof,

(b) 0.1 to 3 parts by weight of an additive which is one or more sintering promoters for alumina and alumina ceramics selected from the group consisting of magnesium oxide, calcium oxide, silicon oxide, aluminum oxide and mixtures thereof, and which can fill vacant spaces among particles of said metal powder and can shrink and condense said metal powder without proceeding sintering of said metal powder,

(c) a binding agent, and

(d) a solvent.

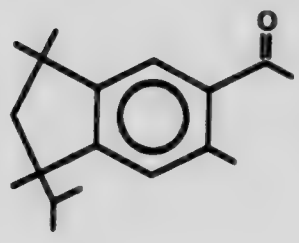
4,493,790

ORGANOLEPTIC USE OF ISOPROPYL TETRAMETHYLINDANES

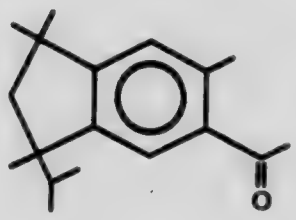
Mark A. Sprecker, Sea Bright; Robert P. Belko, Woodbridge, and Roger E. Greene, Oakhurst, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 431,999, Sep. 30, 1982, Pat. No. 4,466,908.
This application Oct. 12, 1983, Ser. No. 541,263
The portion of the term of this patent subsequent to Aug. 21, 2001, has been disclaimed.
Int. Cl.³ C11B 9/00
U.S. Cl. 252—522 R 2 Claims

1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of adding to said perfume composition, cologne or perfumed article an aroma augmenting or enhancing quantity of a product consisting essentially of a mixture of compounds having the structures:

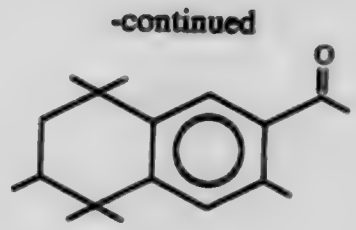


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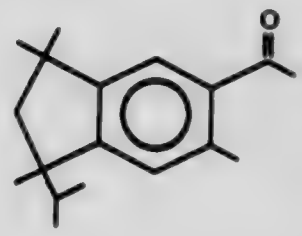


and

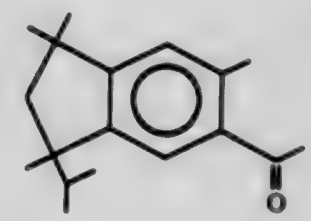
-continued



wherein a major proportion of the mixture consists of the compound having the structures:

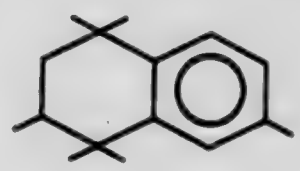


and

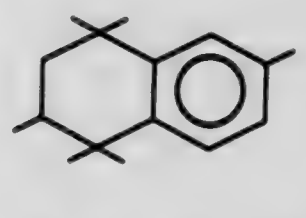


produced according to the process consisting of the steps of:

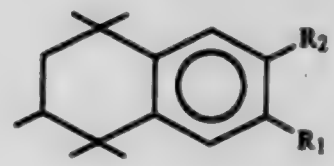
(i) first rearranging hexamethyl tetralin with an aluminum chloride catalyst according to the reactions:



and



said first reaction taking place in the presence of tetrachloro ethylene solvent which is saturated with aluminum trichloride, said reaction taking place in the presence of an excessive aluminum chloride, the weight ratio of aluminum chloride:tetrachloro ethylene varying from about 35:100 up to about 60:100, the temperature of said first reaction varying from about −10° C. up to +10° C. and the time of reaction varying from about 0.5 hours up to about 10 hours, the weight ratio of tetrachloro ethylene:-hydrocarbon reactant having the structure:



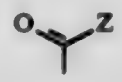
wherein one of R_1 or R_2 is hydrogen and the other of R_1 or R_2 is methyl varying from about 100:75 down to about 100:25; and

(ii) acylating the resulting product with a compound having the structure:

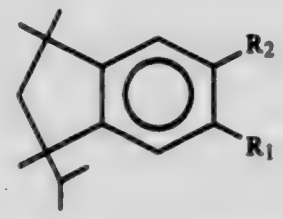


wherein Z represents a moiety selected from the group consisting of acetoxy, chloro and bromo, the reaction being carried out at a temperature of from about −10° up

to about +20° C.; the mole ratio of compound having the structure:

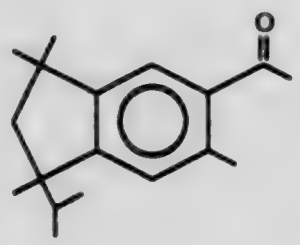


to the compound defined according to the structure:

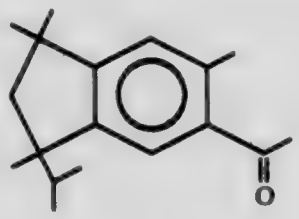


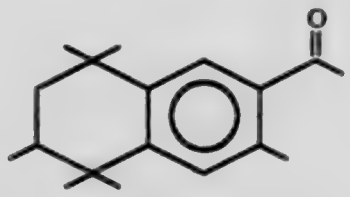
wherein one of R_1 or R_2 is hydrogen and the other of R_1 or R_2 is methyl varying from about 0.5:1 up to 1:0.5; and then

(iii) subjecting the resulting reaction product to fractional distillation whereby a mixture of compounds having the structures:

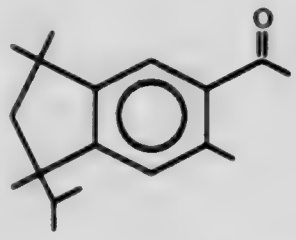


and

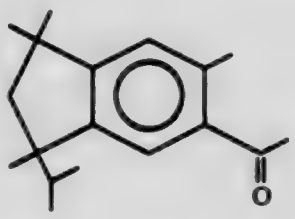




is isolated with the major part of said mixture being compounds having the structures:



and



4,493,791

SUBSTITUTED METHYL ISOPROPYL OXOCYCLOHEXANE DERIVATIVES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

Philip T. Klemarczyk, Old Bridge, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 343,571, Apr. 26, 1982, Pat. No. 4,451,403.
This application Oct. 12, 1983, Ser. No. 541,264
Int. Cl.[3] A61K *7/40*
U.S. Cl. 252—522 R 3 Claims

1. A process for augmenting or enhancing the aroma of a perfume composition, cologne or perfumed article comprising the step of admixing with said perfume composition, cologne or perfumed article, an aroma augmenting or enhancing quantity of a product produced according to the process of:

(a) reacting isobutyraldehyde with acetone in the presence of a catalyst selected from the group consisting of an alkali metal hydroxide, an alkaline earth metal hydroxide, aluminum chloride, sulfuric acid and pyrrolidinium acetate in the presence of an inert solvent, the mole ratio of isobutyraldehyde:acetone varying from about 1.5:0.5 up to 0.5:1.5 isobutyraldehyde:acetone, the reaction temperature varying from about 25° C. up to about 120° C., thereby forming a mixture of compounds defined according to the structure:



wherein in the mixture, one of the dashed lines is a carbon-carbon double bond and the other of the dashed lines is a carbon-carbon single bond;

(b) then dimerizing the resulting mixture of ketones to form a mixture of cyclic dimers, the dimerization reaction being carried out at a temperature in the range of from about 25° C. up to about 120° C. at atmospheric pressure in the presence of a hydrocarbon solvent or an inert alkanol solvent and in the presence of a catalyst selected from the group consisting of alkali metal hydroxides, alkaline earth metal hydroxides, aluminum chloride and pyrrolidinium acetate; and then

(c) reacting the resulting ketone dimer mixture with hydrogen in the presence of a hydrogenation catalyst selected from the group consisting of palladium, palladium on a carbon support, palladium on a calcium carbonate support or palladium on a barium sulfate support at a hydrogen pressure of from 50 psig up to 10 atmospheres, the mole ratio of hydrogen:ketone dimer reactant being in the range of from 1:1 hydrogen:ketone dimer up to about 3:1 hydrogen:ketone dimer, the reaction being carried out in an inert solvent and the reaction temperature varying from about 20° C. up to about 100° C.

2. A process for augmenting or enhancing the aroma of a perfume composition, cologne or perfumed article comprising the step of adding to said perfume composition, cologne or perfumed article, an aroma augmenting or enhancing quantity of a product produced according to the process comprising the steps of:

(a) reacting acetone with isobutyraldehyde in the presence of a catalyst selected from the group consisting of alkali metal hydroxides, alkaline earth metal hydroxides, aluminum chloride, sulfuric acid and pyrrolidinum acetate in the presence of an inert solvent, the mole ratio of isobutyraldehyde:acetone varying from 1.5:0.5 up to 0.5:1.5 isobutyraldehyde:acetone the temperature of reaction varying from about 25° C. up to about 120° C. and the concentration of catalyst in the reaction mass varying from about 50 grams per liter up to about 400 grams per liter whereby a mixture of compounds is formed defined according to the structure:

wherein in the mixture in each of the compounds, one of the dashed lines is a carbon-carbon double bond and the other of the dashed lines is a carbon-carbon single bond; and then

(b) dimerizing the resulting product to form a cyclic ketone dimer, said dimerization reaction being carried out at a temperature in the range of from about 25° C. up to about 120° C. at atmospheric pressure in the presence of a hydrocarbon solvent or an inert alkanol solvent and in the presence of a catalyst selected from the group consisting of alkali metal hydroxides, alkaline earth metal hydroxides, aluminum chloride and pyrrolidinium acetate; and then

(c) reacting the resulting ketone dimer with an alkali metal borohydride whereby the ketone moiety is reduced to a carbinol moiety in the presence of a lower alkanol solvent which is inert in the reaction mass, the concentration of alkali metal borohydride in the reaction mass varying from about 20 grams per liter of reaction mass up to about 50 grams per liter of reaction mass, the concentration of ketone dimer in the mixture varying from 200 grams per liter up to about 800 grams per liter and the reaction temperature being in the range of from 40° C. up to 70° C.

3. The process of claim 2 wherein in the process for producing the product there exists the additional step of reacting the resultant carbinol mixture with acetic anhydride at a temperature in the range of from 90° C. up to about 120° C., the mole ratio of acetic anhydride:alcohol reactant mixture varying from about 1:0.5 up to about 2:1 alcohol:acetic anhydride.

4,493,792

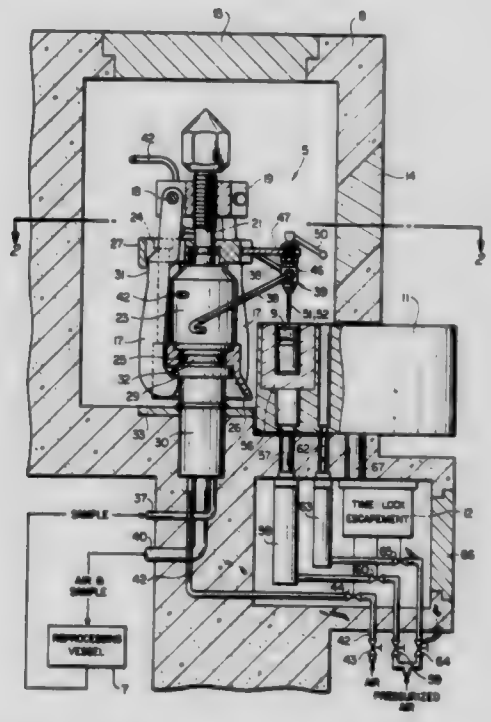
METHOD AND APPARATUS FOR MINIMIZING DIVERSION OF RADIOACTIVE SAMPLES FROM A NUCLEAR FUEL SAMPLING SYSTEM

Walter A. Graf, Jr., Saratoga, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jul. 11, 1980, Ser. No. 168,792

Int. Cl.³ G21F *7/06*

U.S. Cl. 252—627 **12 Claims**



1. Apparatus for minimizing diversion of radioactive samples from a nuclear fuel sampling system, comprising:

(a) means for drawing a radioactive sample from a vessel containing nuclear fuel;

(b) a shielded enclosure surrounding the sample drawing means and having solid walls for shielding personnel from exposure to radiation and for preventing direct physical access to the sample drawing means;

(c) a tray located in a wall of the shielded enclosure for translating a sample vessel supported thereby between a sampling position in the shielded enclosure and a second position outside of the shielded enclosure, said tray being configured so that only one sample vessel can be translated between said positions;

(d) means for moving a sample vessel within the shielded enclosure between its supported position by the tray and a spaced position for receiving a radioactive sample from the sample drawing means;

(e) means interlocking said sample drawing means and said vessel moving means with said tray such that a sample can only be drawn and said vessel can only be moved from its supported position to its spaced position when said tray is in its sampling position; and

(f) means connected to the tray for periodically immobilizing the tray in its secured position for a period of time sufficient to minimize diversion of radioactive samples.

4,493,793

SOLUBLE IMMUNOASSAY REAGENT COMPRISING LECTIN COVALENTLY BONDED TO REACTIVE COMPONENT

Albert E. Chu, San Mateo, Calif., assignor to E-Y Laboratories, San Mateo, Calif.

Division of Ser. No. 972,921, Dec. 26, 1978, Pat. No. 4,371,515. This application Aug. 14, 1981, Ser. No. 292,739

Int. Cl.³ C07G *7/00*; G01N *33/48, 33/54, 33/68, 33/78*; A61K *39/29, 39/106, 35/78*

U.S. Cl. 260—112 R **5 Claims**

1. A soluble immunoassay reagent reaction product comprising a lectin covalently bonded to one reactive component capable of reacting with a corresponding component to form an immunological conjugate pair, said lectin including at least one free reactive receptor site having specificity for at least one type of sugar, said reactive component being selected from the group consisting of antigens, antibodies, and biologically reactive haptens, said antigens being selected from the group consisting of albumin, carcinoembryonic antigen, choriogonadotropin, haptoglobin, hepatits B surface antigen, IgE, IgG, IgM, insulin, placental lactogen, pregnancy-associated macroglobulin, and vibris cholerae-exotoxin lipopolysaccharide; said biologically reactive haptens being selected from the group consisting of cortisol, estrogens, progesterone, l thyrotropin, opiates, amphetamine, barbituate, methadone, benzoyl ecogonine (cocaine metabolite), diphenylhydantoin, primidone, digoxin, and thyroxine.

4,493,794

PEPTIDE, PROCESS FOR PREPARATION THEREOF AND USE THEREOF

Yoshihiko Kitaura, Sakurai; Osamu Nakaguchi, Toyonaka; Keiji Hemmi, Suita; Satoshi Yonishi, Kadoma; Hidekazu Takeno, Tenri; Satoshi Okada, Takatsuki, and Masashi Hashimoto, Takarazuka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

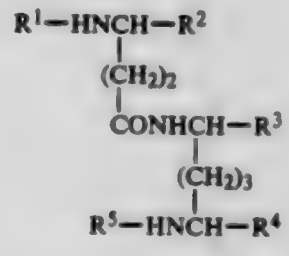
Filed Dec. 9, 1981, Ser. No. 328,997

Claims priority, application United Kingdom, Dec. 31, 1980, 8041627; Apr. 14, 1981, 8111797

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **3 Claims**

1. A compound of the formula or its pharmaceutically acceptable salt:



wherein

R^1 is heptanoyl, stearoyl, 2-hydroxypropionyl or 2-acetylpropionyl,

R^2 is carboxy or benzylcarboxy,

R^3 is carbamoyl or 1-carboxyethylcarbamoyl,

R^4 is carbamoyl, and

R^5 is hydrogen, t-butoxycarbonyl or benzyloxycarbonyl.

4,493,795

SYNTHETIC PEPTIDE SEQUENCES USEFUL IN BIOLOGICAL AND PHARMACEUTICAL APPLICATIONS AND METHODS OF MANUFACTURE

John J. Nestor, Jr., San Jose; John G. Moffatt, Los Altos, and Hardy W. Chan, Belmont, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Oct. 17, 1983, Ser. No. 542,633
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 E 4 Claims

1. The polypeptide which has the amino acid sequence, H-Tyr-Gly-Ala-Ser-Asp-Ser-Asn-Val-Tyr-Asp-Leu-Cys-OH, and the pharmaceutically acceptable salts thereof.

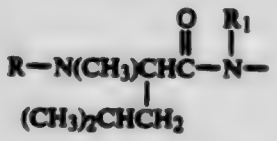
4,493,796

DIDEMNINS A, B, C, AND DERIVATIVES THEREOF, AS ANTIVIRAL AGENTS

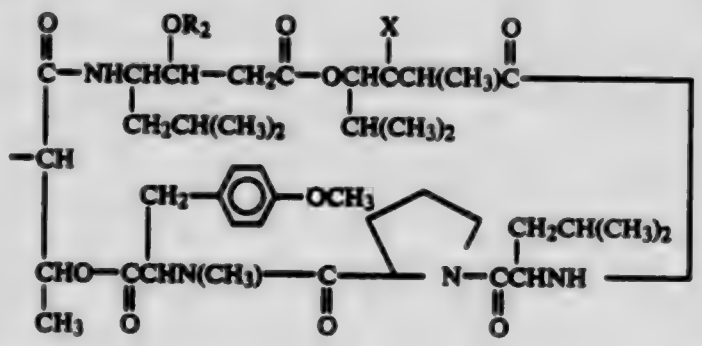
Kenneth L. Rinehart, Jr., Urbana, Ill., assignor to Board of Trustees, Univ. of Ill., Urbana, Ill.

Continuation-in-part of Ser. No. 461,346, Jan. 27, 1983, which is a continuation-in-part of Ser. No. 217,768, Dec. 18, 1980, which is a continuation-in-part of Ser. No. 186,932, Sep. 12, 1980, abandoned. This application Mar. 13, 1984, Ser. No. 589,199
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R 14 Claims

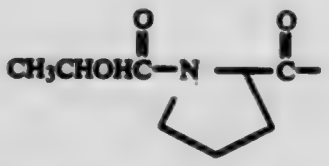
1. A didemnin of the Formula I



I

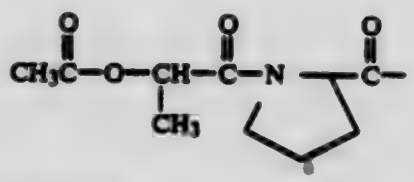


wherein R is
(a) hydrogen,
(b) —$COCH_3$,
(c) a side chain of Formula II,



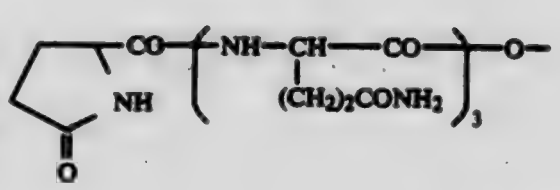
II

(d) a side chain of Formula III,

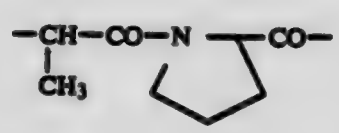


III

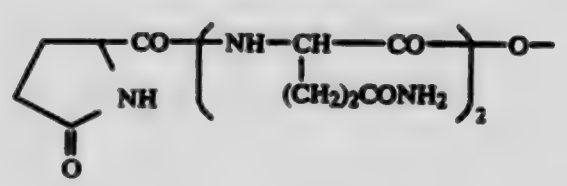
(e) $CH_3CHOHC(O)$—,
(f) a side chain of Formula IV,



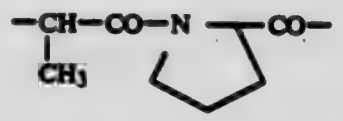
IV



(g) a side chain of Formula V,



V



(h) $CH_3CH_2(CO)$—,
(i) $(CH_3)_2CHCH_2CH(NH_2)C(O)$—, or
(j) a side chain of the formula VI,



VI

wherein R_1 is hydrogen; or R and R_1 taken together form methylene (—CH_2—); wherein R_2 is
(a) hydrogen, or
(b) —$COCH_3$; and
wherein X is
(a) =O, or
(b) H, —OH,
or an acylate thereof.

4,493,797

APPARATUS AND METHOD INVOLVING SUPERCRITICAL FLUID EXTRACTION

Michael M. Avedesian, 128 Beacon Hill Rd., Beaconsfield, Quebec, Canada (H9W 1S9)

Filed Dec. 22, 1983, Ser. No. 564,500
Int. Cl.³ C07G *1/00*
U.S. Cl. 530—507 10 Claims

1. A method to extract lignin from a black liquor containing lignin comprising (2) dissolving a black liquor containing lignin in a supercritical fluid, at about or above critical temperature and pressure, (b) separating the black liquor depleted from said lignin from the supercritical fluid containing lignin.

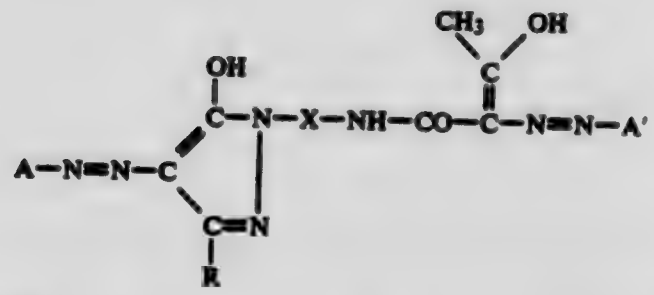
4,493,798

METAL COMPLEXES OF DISAZO DYES

Fabio Beffa, Riehen, Switzerland, assignor to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Sep. 8, 1981, Ser. No. 299,690
Claims priority, application Switzerland, Sep. 19, 1980, 7060/80
Int. Cl.³ C09B *45/00*
U.S. Cl. 534—697 11 Claims

1. A metal complex dye containing a disazo dye of the formula



in which A and A′ independently of one another are each the radical of a diazo component of the benzene or naphthalene series, at least one of the groups A or A′ carrying a metallizable hydroxyl or carboxyl group in the o-position relative to the azo group, and X is phenylene, naphthylene, C_2–C_4-alkylene, sulfophenylene, sulfonaphthylene, halophenylene, halonaphthylene, C_1–C_4-alkylphenylene, C_1–C_4-alkylnaphthylene, C_1–C_4-alkoxyphenylene or C_1–C_4-alkoxynaphthylene and R is C_1–C_4-alkyl, COO—Q or $CONQQ_1$, in which Q and Q_1 are each hydrogen or C_1–C_4-alkyl.

4,493,799

SYNTHESIS OF SUCCINONITRILES

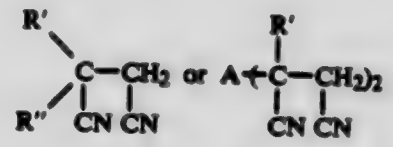
Edmund P. Woo, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 214,612, Dec. 9, 1980, abandoned. This application Sep. 28, 1982, Ser. No. 425,788

Int. Cl.³ C07C *121/28, 121/60, 120/02*

U.S. Cl. 260—465 H 8 Claims

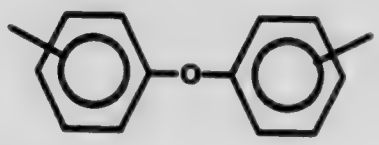
1. A process for preparing a succinonitrile corresponding to the formula:



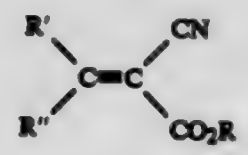
wherein:

R′ and R″ are independently each occurrence hydrogen or a substituent of up to about 10 carbons selected from the group consisting of aryl, alkyl, aralkyl and amino-, cyano-, nitro-, hydroxy-, carboxy-and acetoxy-substituted derivatives thereof; and

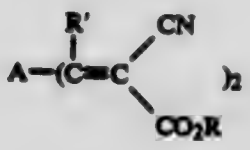
A is C_{1-6} alkylene, phenylene or



comprising contacting an α-cyanoacrylate ester corresponding to the formula:



or



wherein

R′, R″ and A are as previously defined, and

R is a substituent of up to about 10 carbons selected from the group consisting of aryl, alkyl and aralkyl,

with an alkali metal cyanide in a ratio of from about 1 to about 1.1 equivalents of cyanide reactant for each equivalent of α-cyanoacrylate ester reactant in a solvent mixture comprising water and a member selected from the group consisting of aliphatic and aromatic hydroxyl-containing compounds having up to about 20 carbons, chlorinated hydrocarbons and aprotic polar solvents at an elevated temperature.

4,493,800

PROCESS FOR PREPARING A TRIFLUOROMETHYLBENZENE DERIVATIVES

Yasuhiro Furutaka, Takatsuki, and Sadaaru Ishii, Osaka, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

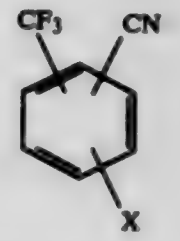
Filed Jun. 21, 1983, Ser. No. 506,358

Claims priority, application Japan, Jun. 23, 1982, 57-108822; Jun. 23, 1982, 57-108823

Int. Cl.³ C07C *120/04*

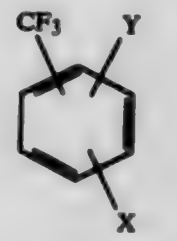
U.S. Cl. 260—465 D 4 Claims

1. A process for preparing trifluoromethylbenzonitrile derivative of the formula:



(I)

wherein X is hydrogen, lower alkyl, halogenated lower alkyl, lower alkoxy, nitro, hydroxyl, amino, cyano, carboxyl or sulfon, which comprises reacting a trifluoromethylhalogenobenzene derivative of the formula:



(II)

wherein X is as defined above, and Y is halogen with copper(I) cyanide in a solvent selected from the group consisting of hexamethylphosphoric triamide, N-methylpyrrolidone and mixture thereof in the presence of a catalyst selected from the group consisting of (A) bromine, (B) iodine, (C) a combination of bromine or iodine and metallic copper and (D) copper(II) bromide.

4,493,801

PREPARATION OF TERTIARY ALCOHOLS

Franz Merger, Frankenthal, and Gerhard Nestler, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

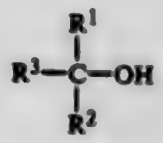
Filed Nov. 2, 1981, Ser. No. 317,001

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1980, 3045378

Int. Cl.³ C07C *121/34, 67/00*

U.S. Cl. 260—468.6 10 Claims

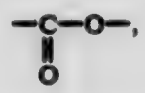
1. A process for the preparation of a tertiary alcohol of the formula



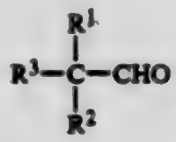
I

where R^1, R^2 and R^3 can be identical or different and each is alkyl of 1 to 8 carbon atoms, and at least one of the members

R^1, R^2 and R^3 is substituted by cyano, or the carbon chain in at least one of the members R^1, R^2 and R^3 is interrupted by



the oxy group being oriented in the direction of the aldehyde group, which process comprises: reacting a tertiary aldehyde of the formula



II

where R^1, R^2 and R^3 have the above meanings, with free oxygen or air at an elevated temperature of about 60° to 160° C. and in a reaction medium consisting essentially of the reaction components and, as optional additional components, an organic solvent and/or a heavy metal salt catalyst selected from the group consisting of $NiCl_2$, $Ni(OCOCH_3)_2$, VCl_3, $CrCl_3$ and their corresponding complex compounds; and

separating and recovering the desired tertiary alcohol I.

4,493,802

PREPARATION OF O,O'-DITHIODIBENZOIC ACIDS

Hagen Jaedicke, Ludwigshafen, and Peter Tonne, Neustadt, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

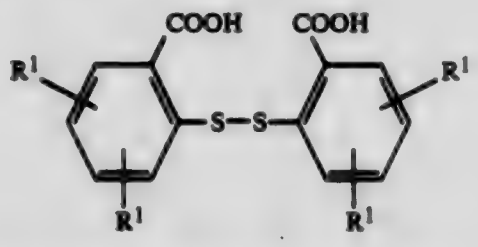
Filed Jan. 5, 1983, Ser. No. 455,806

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1982, 3201904

Int. Cl.³ C07C *143/52, 149/40*

U.S. Cl. 260;507 R 20 Claims

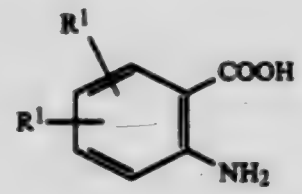
1. In a process for the preparation of o,o'-dithiodibenzoic acid of the formula



I

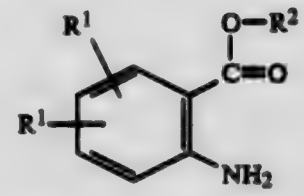
where the individual radicals R^1 may be identical or different and are each hydrogen, halogen, nitro, $—SO_3H$ or alkyl of 1 to 6 carbon atoms, by reaction of a diazotized anthranilic acid derivative with sulfur dioxide in the presence of an acid, water and a catalyst for destroying the diazonium salt, the improvement which comprises:

reacting a diazonium salt of an anthranilic acid of the formula



II

or a diazonium salt of an anthranilate of the formula



III

where R^1 has the above meanings and R^2 is alkyl of 1 to 8 carbon atoms, with said sulfur dioxide in the presence of said acid and water and in the presence of a copper salt as the essential catalyst destroying the diazonium salt in a 1st stage at from 20° to 50° C. and then in a 2nd stage at from 80° to 100° C.

4,493,803

PROCESS FOR THE PREPARATION OF VINYLPHOSPHONIC ACID DIESTERS AND VINYLPHOSPHONIC ACID

Hans-Jerg Kleiner, Kronberg, and Walter Dürsch, Königstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 380,351, May 20, 1983, abandoned, and a continuation-in-part of Ser. No. 380,352, May 20, 1983, abandoned. This application Jun. 24, 1983, Ser. No. 507,510

Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3120438; May 22, 1981, 3120437

Int. Cl.³ C07F *9/38, 9/40*

U.S. Cl. 260—968 4 Claims

1. A method for making a vinylphosphonic acid diester of the formula

$$CH_2=CH—P(O)(OR)_2$$

wherein R is C_1–C_4-alkyl, which method comprises heating a dialkyl-2-acetoxyethane-phosphonate of the formula

$$CH_3COOCH_2CH_2P(O)(OR)_2$$

at a temperature from 150° C. to 270° C. in the presence of an acidic or basic catalyst to form a vinylphosphonic acid monoester, and then reacting this monoester with an orthoester of the formula

$$R^1C(OR)_3,$$

wherein R^1 is hydrogen, C_1–C_4-alkyl, or C_1-C_4-alkoxy, at a temperature from 30° to 200° C.

2. A method as in claim 1 wherein said phosphonate is heated to a temperature from 170° to 230° C.

4,493,804

VARIABLE VENTURI-TYPE CARBURETOR

Norihiko Nakamura; Takaaki Itoh; Takashi Katou, all of Mishima; Yozo Ota, Chiryu, and Toshiharu Morino, Mie, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Aisan Industry Co., Ltd., both of, Japan

Continuation of Ser. No. 404,831, Aug. 3, 1982, abandoned. This application Jun. 7, 1984, Ser. No. 617,844

Claims priority, application Japan, Dec. 31, 1981, 56-209790

Int. Cl.³ F02M *9/06*

U.S. Cl. 261—44 C 6 Claims

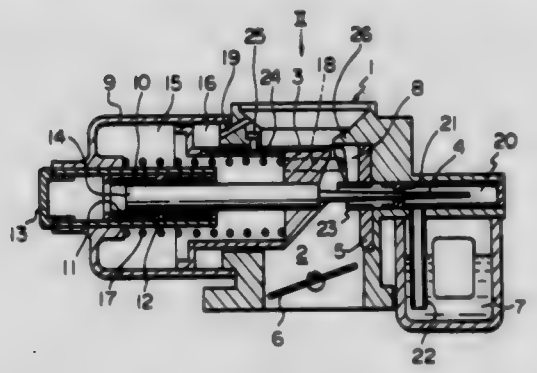
1. A variable venturi-type carburetor comprising:

an axially-extending intake passage formed in the carburetor and having an inner wall of an approximately circular cross section;

a suction piston transversely moveable in said intake passage from one side to another side thereof in response to a change in the amount of air flowing within said intake passage, said suction piston having a tip face which defines

a venturi portion in said intake passage and has an upstream end portion; and

a raised wall projecting from said another side of said intake passage immediately upstream of the upstream end portion of said suction piston, said raised wall having a substantially straight tip edge arcately merging at the opposite ends thereof with the inner wall of said intake passage for defining an approximately D-shaped air inlet mouth of said intake passage upstream of said suction piston, the



upstream end portion of the tip face of said suction piston having an approximately V-shaped cross section which expands toward said venturi portion, the straight tip edge and arcuate merging ends of said raised wall cooperating with the V-shaped upstream end to define an approximately isosceles triangular air inlet opening, said inlet opening gradually reducing in area as the suction piston approaches said another side when the amount of air flowing within said intake passage is reduced.

4,493,805

METHOD AND OVEN FOR MANUFACTURING A LIGHT CONSTRUCTION ELEMENT, PARTICULARLY A COVER PLATE

Gustav-Adolf Sporkenbach, Lister Meile 21, D-3 Hannover 1, Fed. Rep. of Germany, and Dieter Suetterlin, Frick, Switzerland, assignors to Keller Holding AG, Pfungen, Switzerland and Gustav-Adolf Sporkenbach, Hanover, Fed. Rep. of Germany, a part interest

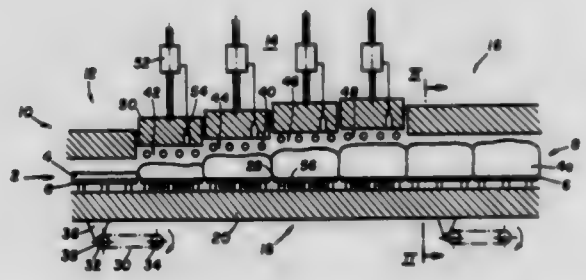
PCT No. PCT/CH82/00067, § 371 Date Dec. 20, 1982, § 102(e) Date Dec. 20, 1982, PCT Pub. No. WO82/03885, PCT Pub. Date Nov. 11, 1982

PCT Filed May 10, 1982, Ser. No. 456,015

Claims priority, application Switzerland, May 8, 1981, 2986/81

Int. Cl.³ B29H *7/20*

U.S. Cl. 264—25 12 Claims



1. A method of manufacturing a light construction element, particularly a cover plate, comprising the steps of:

mold-free shaping a blank comprising a first layer in the form of a massive, dimensionally-stable body composed of a first clay material which is expandable on firing, a second layer composed of a second clay material which is non-expandable under the conditions of said firing of said first clay material, and an interface between said first layer and said second layer;

arranging the mold-free blank thus obtained such that said second layer forms a lower layer and supporting said mold-free blank by means of said lower layer thereof; and

firing said mold-free blank while supporting the same by means of said lower layer thereof;

whereby said first layer composed of said first clay material is expanded and sintered to said second layer composed of said second clay material which is non-expandable under the conditions of said firing, at said interface formed between said first layer and said second layer.

4,493,806

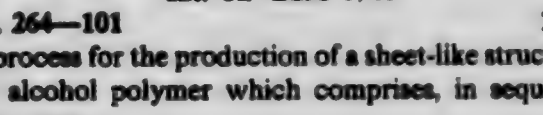
RECYCLING OF CONTAMINATED PLASTIC

Christopher Hatzikelis, R.R. #1, Palgrave, Ontario, Canada; Ciro Maloola, 1390 Beaufort Dr., Burlington, Ontario, Canada, and Cesare C. Cosentino, 45 Grandview Ave., Thornhill, Ontario, Canada

Filed May 29, 1981, Ser. No. 268,385

Int. Cl.³ B02C *19/00, 23/00;* B29B *3/00*

U.S. Cl. 264—28 5 Claims



1. The method of recycling polyvinyl chloride plastic formed material having in intimate adherent relation therewith a layer of polyester film said film normally having the property as a contaminant of causing undue discolouration of said polyvinyl chloride upon the melting thereof, comprising the step of chilling the material to a temperature in the range of minus 150° F. to minus 200° F. to severely embrittle the material , mechanically pulverizing the chilled material to a powder form having said contaminant dispersed therewith to provide a reclaimed colourable material, and forming said reclaimed material into a desired shape.

4,493,807

PROCESS FOR PRODUCING SHEET-LIKE STRUCTURES FROM VINYL ALCOHOL POLYMERS

Rudolf Vyvial, Ludwigshafen; Christof Taubitz, Wachenheim; Lothar Schlemmer, Maxdorf; Gerhard Bleckmann, Lampertheim; Manfred Zaerger, Sinsheim; Heinrich Krieger, Telgte, and Heino Thiele, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 22, 1982, Ser. No. 443,615

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1981, 3147326

Int. Cl.³ B29F *3/03*

U.S. Cl. 264—101 17 Claims

1. A process for the production of a sheet-like structure from a vinyl alcohol polymer which comprises, in sequence, the following steps:

separately feeding into a self-cleaning multi-screw extruder, in the direction of product flow, first the vinyl alcohol polymer and then an amount of water which is insufficient to dissolve the polymer under standard conditions of temperature and pressure,

and, while transporting them through the extruder,

mixing the vinyl alcohol polymer and the water at temperatures in the range of from 20° to 100° C. to achieve uniform distribution of the polymer and the water,

melting the polymer/water mixture and homogenizing the melt at temperatures in the range of from 80° to 200° C.,

devolatilizing the homogeneous melt to remove any excess water and to adjust the water content of the melt to the water content desired in the end product without the extrudability of the melt being adversely affected hereby and to remove other undesirable volatile constituents, and

discharging the melt from the extruder while simultaneously shaping it into the sheet-like structure,

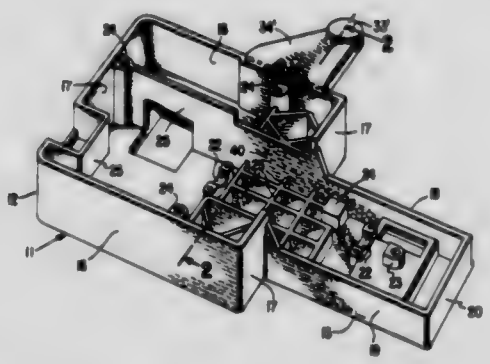
wherein the stated temperatures being the barrel temperatures of the extruder.

4,493,808

METHOD OF MOLDING A SEWING MACHINE FRAME OF FIBER REINFORCED COMPOSITION

Robert Sedlatschek, Bridgewater, and Leo E. McGann, Cranford, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Jun. 4, 1982, Ser. No. 384,946
Int. Cl.³ B29D 3/02
U.S. Cl. 264—108
3 Claims



1. The method of molding with fiber reinforced thermosetting composition a sewing machine bed having a main section and extending from said main section a work supporting channel section having one open side, the method comprising:

(a) providing a mold formed with a cavity having the shape of said joined main and channel sections;

(b) injecting the fiber reinforced thermosetting composition into said mold while in a fluid state;

(c) arranging the orientation of the fibers comprising the reinforcing of said solidified composition largely parallel to the length of said channel section at the juncture of said main and channel sections of said article by the technique of gating the mold so as to control the flow of glass fiber reinforced thermosetting composition to occur generally transversely across said channel section of said mold cavity at the juncture of said main channel sections therof;

(d) effecting solidification and cure of said injected fiber reinforced composition within said mold.

4,493,809

URANIUM THORIUM HYDRIDE NUCLEAR FUEL

Masoud T. Simnad, La Jolla, Calif., assignor to GA Technologies Inc., San Diego, Calif.

Filed Mar. 8, 1982, Ser. No. 355,361
Int. Cl.³ G21C 3/60
U.S. Cl. 376—171
2 Claims

1. A fuel for a nuclear reactor comprising between about 5 and 10 percent by weight uranium in the form of fine particles and at least about 90 percent by weight thorium hydride, having a hydrogen to thorium atom ratio of at least about 2, in which said uranium particles are dispersed, the thorium moiety being substantially entirely fertile ^{232}Th and the relative amounts of uranium and thorium hydride providing that during the active life of the fuel, sufficient ^{233}U will be bred from said thorium moiety so that said bred ^{233}U will contribute substantially to the neutron population the hydrogen moiety providing effective moderation of fission neutrons.

4,493,810

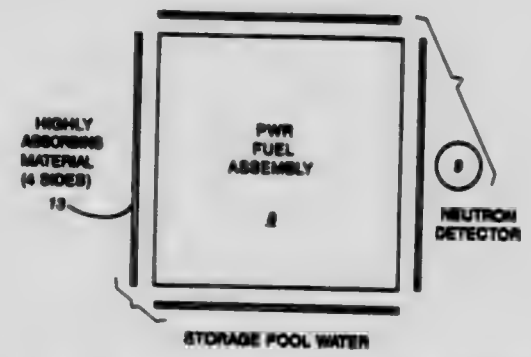
METHOD AND APPARATUS FOR MEASURING REACTIVITY OF FISSILE MATERIAL

David M. Lee, Los Alamos, and Lloyd O. Lindquist, Santa Fe, both of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 7, 1982, Ser. No. 415,616
Int. Cl.³ G21C 17/00
U.S. Cl. 376—254
14 Claims

1. A nondestructive, non-invasive method of determining at least one quantity selected from the group consisting of fissile content, reactivity, and burnup of a fissile material contained within a multiplying system bounded by an arbitrarily chosen physical boundary, wherein said multiplying system comprises (a) said fissile material which emits neutrons and has fissionable components and (b) a second material which comes in contact with said fissile material, said method using no external neutron-emitting interrogation source, said method comprising:

(a) making a first measurement N_A of emitted particle-count rate of at least one type of emitted particle selected from the group consisting of neutrons and gamma rays, wherein said at least one type of emitted particle is emitted by said fissile material, wherein said first measurement is made by



using at least one suitable detector, and wherein a first reflector material is positioned adjacent to said multiplying system while said first measurement is made;

(b) making a second measurement N_B of emitted particle-count rate of said at least one type of emitted particle emitted by said fissile material, wherein said second measurement is made by using at least one suitable detector, wherein a second reflector material replaces said first reflector material and is reproducibly positioned adjacent to said multiplying system while said second measurement is made; and then

(c) using the equation

$$\frac{N_A - N_B}{N_A} = M_B \Delta k_{eff},$$

wherein M_B is the multiplication and Δk_{eff} is the change in the effective multiplication constant k_{eff}, determine the local multiplication or average multiplication, and wherein said multiplying system is not changed during the time period in which steps 1(a) and 1(b) are performed.

4,493,811

PREAMPLIFIER FOR A WIDE RANGE NEUTRON FLUX MONITORING SYSTEM

Eiji Seki, Yokohama; Ichiro Tai, Tokyo; Shimpey Shirayama, Yokohama; Toshiaki Itoh, Kawasaki; Yorimasa Endo, Tokorozawa, and Toshiki Fukushima, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 20, 1983, Ser. No. 515,588
Claims priority, application Japan, Jul. 26, 1982, 57-129810
Int. Cl.³ G21C 17/00
U.S. Cl. 376—254
4 Claims

1. A preamplifier for a wide range neutron flux monitoring system, which is supplied with wide range neutron flux level signals from a neutron detector provided in a reactor, comprising:

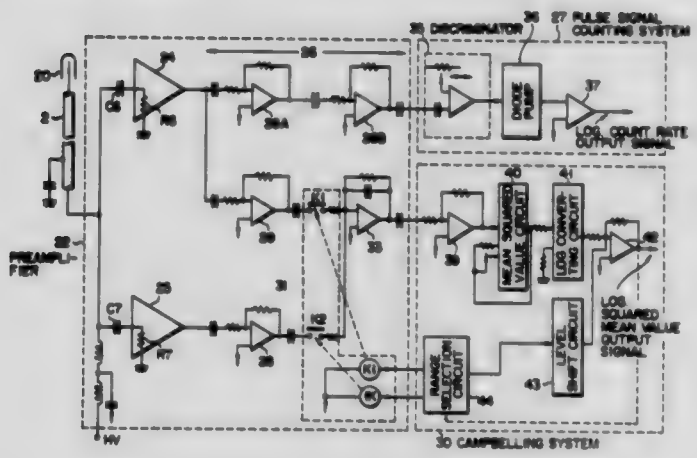
a first amplifier for a high frequency band which includes a low input impedance circuit receiving at the input terminal thereof said wide range neutron flux level signals;

a second amplifier for a low frequency band which includes a high input impedance circuit receiving at the input terminal thereof said wide range neutron flux level signals;

a third amplifier for amplifying the pulse signals supplied

from the output terminal of said first amplifier and for supplying the output signals therefrom to a pulse signal counting system;

a fourth amplifier for a low frequency band which receives the output signals from said second amplifier and amplifies Campbell signals of a first frequency range, said Campbell signals being included in said output signals from said second amplifier;



a fifth amplifier for a high frequency band which receives the output signals from said first amplifier and amplifies Campbell signals of a second frequency range, said Campbell signals being included in said output signals from said first amplifier; and

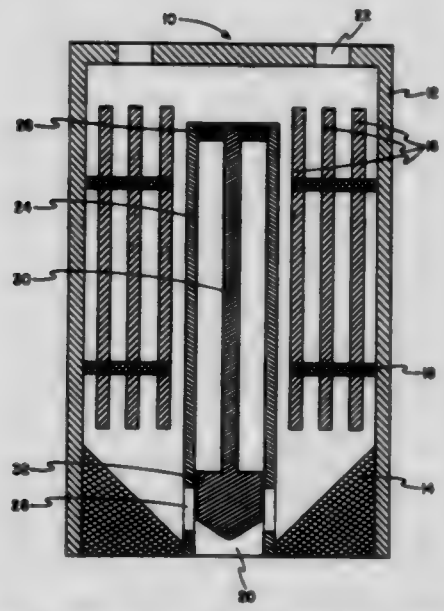
switching means for selectively switching the output signals from said fourth and fifth amplifiers to a Campbelling system.

4,493,812

NUCLEAR RADIATION ACTUATED VALVE

David W. Christiansen, Kennewick, and Dixon P. Schively, Richland, both of Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 19, 1982, Ser. No. 340,621
Int. Cl.³ G21C *7/32*
U.S. Cl. 376—352 8 Claims



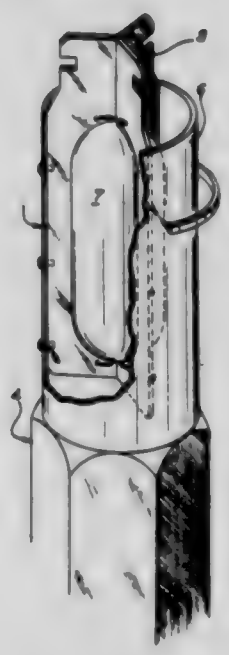
1. A valve for controlling fluid flow in a nuclear reactor comprising: a tube having an opening in the wall thereof adjacent one end of said tube, a rod coaxially mounted within said tube and having a piston at one end thereof adjacent said opening, said piston adapted to at least partially block said opening to define the effective size thereof, means connecting the other end of said rod to the other end of said tube, said tube and said rod formed of materials, respectively, having different nuclear radiation swelling properties whereby exposure to nuclear radiation during reactor operation causes differential swelling and consequent relative movement between said tube and said rod to displace said piston and vary the effective size of said opening.

4,493,813

NEUTRON PROTECTION DEVICE

Pierre Loriot, Venelles; Michel Rouda, and Jean Rousseau, both of Aix en Provence, all of France, assignors to Commissariat a l'Energie Atomique, France

Filed Sep. 14, 1982, Ser. No. 418,165
Claims priority, application France, Sep. 30, 1981, 81 18413
Int. Cl.³ G21C *3/04*
U.S. Cl. 376—409 11 Claims



1. In a nuclear reactor fuel assembly comprising a foot and an assembly body connected to the foot having an upper part and a lower part, an upper neutron protection device comprising:

a wall of substantially hollow shape and having an inner face and an outer face, said wall being fixed to said assembly body at the upper part thereof,

at least one container comprising:

a closed outer cylindrical envelope,

an inner cylindrical envelope placed within said outer cylindrical envelope and whose thickness is smaller than the thickness of the outer envelope,

a deformable tube located inside said inner cylindrical envelope and defining a space between said deformable tube and said inner cylindrical envelope, said space being incompletely filled with a product having a high neutron absorption cross-section, said at least one container being disposed within said wall and maintained by at least one spacing plate which is fixed to the inner face of the wall.

4,493,814

HIGH URANIUM UTILIZATION FUEL ROD FOR LIGHT WATER REACTORS

Charles L. Beard, Jr., Murrysville, and Thomas M. Camden, Apollo, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 11, 1982, Ser. No. 377,117
Int. Cl.³ G21C *3/28*
U.S. Cl. 376—428 4 Claims

1. A fuel rod for a fuel assembly for a light water nuclear reactor, said rod having a cladding tube and comprising:

a plurality of pellets comprising UO_2 retained within said cladding tube in axially stacked relationship, said stacked pellets comprising blanket pellets, low density fuel pellets and standard fuel pellets;

said blanket pellets positioned at both ends of said pellet stack and comprising UO_2 having added thereto a relatively low enrichment of U-235 as oxide;

said standard fuel pellets comprising U-235 enriched UO_2 pellets of the type normally used in light water nuclear reactors; and



said low density fuel pellets positioned intermediate said standard pellets and said blanket pellets, said low density fuel pellets comprising U-235 enriched UO_2 but having a lower linear uranium loading than that of said standard fuel pellets.

4,493,815

SUPPORTING AND FILTERING BIOCHEMICAL TEST PLATE ASSEMBLY

George G. Feruwood, San Anselmo, and Samuel Burd, Oakland, both of Calif., assignors to Bio-Rad Laboratories, Inc., Calif.

Filed Jul. 28, 1983, Ser. No. 518,231
Int. Cl.[3] B01D *25/04*; G01N *33/48*
U.S. Cl. 422—101 5 Claims

1. A biochemical test plate assembly for use in both filter assays and static blot assays, said assembly comprising:

an upper planar template having upper and lower surfaces and containing a plurality of discrete apertures communicating an array of openings in said upper surface with an array of openings in said lower surface,

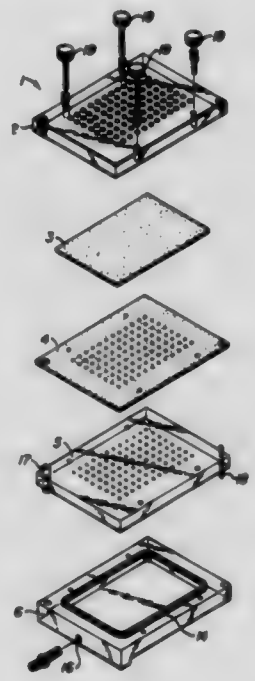
a microporous film underlying said upper template and having dimensions sufficiently large to encompass said array of openings in the lower surface of said upper template,

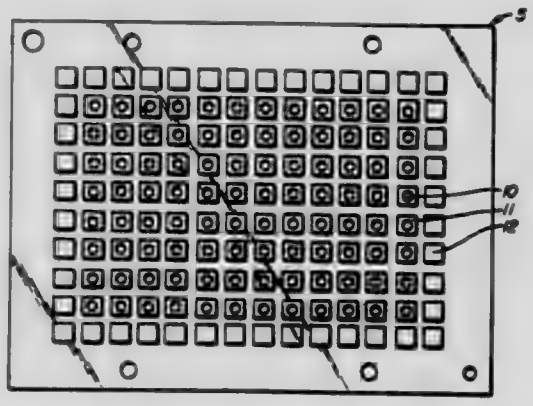
a gasket underlying said microporous film, having dimensions sufficiently large to encompass said array of openings in the lower surface of said upper template, and having an array of discrete apertures in alignment with said lower surface openings of said upper template,

a lower planar template underlying said gasket, having an array of discrete apertures in alignment with said lower surface openings of said upper template, each of said apertures terminating at its upper end in a flat boss extending upward from said lower template, the uppermost surfaces of said bosses being coplanar and parallel to said lower template,

a base plate underlying said lower template having a central recess of dimensions sufficiently large to encompass said array of apertures in said lower template, said recess defining an enclosed chamber below said lower template,

means for forming a substantially air-tight seal around said enclosed chamber between said lower template and said base plate,





means for securing said upper template, film, gasket, lower template and base plate together to seal said gasket against said bosses, and

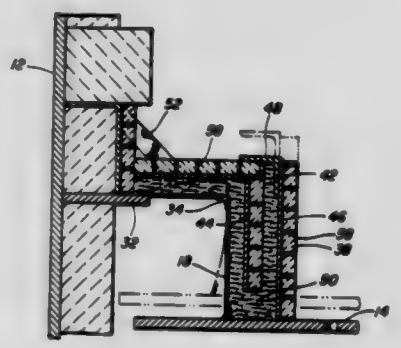
means for applying a vacuum to said enclosed chamber.

4,493,816

INSULATION SYSTEM FOR PROCESS VESSEL

Donald E. Becker, 129 Whitworth, Ponca City, Okla. 74601; Alan C. Hayes, Rte. 1, Box 70, Shepherd, Mont. 59079, and Joseph W. Porter, 1612 Natalie, Billings, Mont. 59101

Filed Nov. 12, 1982, Ser. No. 441,027
Int. Cl.[3] B01J *8/44*; F27B *15/04*
U.S. Cl. 422—143 7 Claims



1. In a reaction vessel which contains a vertically extending section and a horizontally extending section including a means for supporting a reaction mass thereabove, and a sealing member which attaches said vertically extending section to said horizontally extending section, the improvement comprising:

(a) a first insulation supporting member attached to said horizontally extending section, wherein said first supporting member extends substantially parallel to and spaced apart from a portion of said sealing member;
(b) a second insulation supporting member attached to said vertically extending section, wherein said second supporting member extends substantially parallel to and spaced apart from said sealing member and is movable relative to said first supporting member;
(c) compressible insulation material between said sealing member and said second insulation supporting member; and
(d) compressible insulation material between said first and second insulation supporting members.

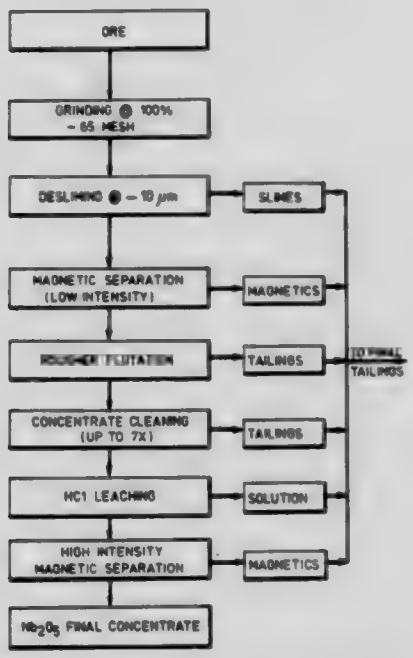
2. In a regenerator vessel of a fluid catalytic cracking unit which includes a vertically extending section and a horizontally extending perforated grid floor in the lower portion thereof, and a sealing member which attaches said vertically extending section to said grid floor, the improvement comprising:
(a) a first insulation supporting member attached to said grid floor and extending substantially parallel to and spaced apart from a portion of said sealing member;
(b) a second insulation supporting member attached to said vertically extending section and extending substantially parallel to and spaced apart from said sealing member and being movable relative to said first insulation supporting member;
(c) compressible insulation material between said sealing member and said second insulation supporting member; and
(d) compressible insulation material between said first and second insulation supporting members.

4,493,817

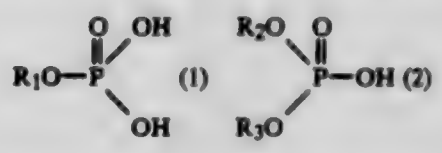
PROCESS FOR RECOVERING PYROCHLORE MINERAL CONTAINING NIOBIUM AND TANTALUM

Rudy Bliss, Chicoutimi Nord, Canada, assignor to Teck Corporation, Vancouver and Soquem-Societe Quebecoise d'Exploration Miniere, St. Foy, both of, Canada

Filed Jul. 6, 1983, Ser. No. 511,253
Int. Cl.³ B01D *11/00*
U.S. Cl. 423—62 13 Claims



1. Process for recovering a concentrate of pyrochlore mineral containing niobium and tantalum from an ore containing pyrochlore mineral particles containing Ta_2O_5 in a weight ratio of Ta_2O_5:Nb_2O_5 of at least about 0.04:1 and gangue materials, said process comprising the steps of: forming an aqueous pulp of the ore in a small particle size suitable for froth flotation; conditioning the pulp by bringing into admixture therewith (a) a collector selected from the group of monofunctional and difunctional phosphoric acid esters of the formulae



and mixtures thereof wherein R_1, R_2, and R_3 are independently selected from the group consisting of alkyl groups of about 8 to 16 carbon atoms, in an amount sufficient to collect said pyrochlore present in the pulp to provide a concentrate froth relatively rich in said pyrochlore mineral containing niobium and tantalum, and (b) an acid-reacting compound compatible with said ore, gangue and collector in an amount sufficient to modify the pH of the pulp to a pH in the range about 1.5 to about 6.5; subjecting the conditioned pulp to froth flotation; and recovering a concentrate froth relatively rich in said pyrochlore mineral containing niobium and tantalum.

4,493,818

PHOSGENE REMOVAL PROCESS

James R. Gross, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 440,104, Nov. 8, 1982, abandoned. This application Jan. 27, 1984, Ser. No. 574,315
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—240 10 Claims

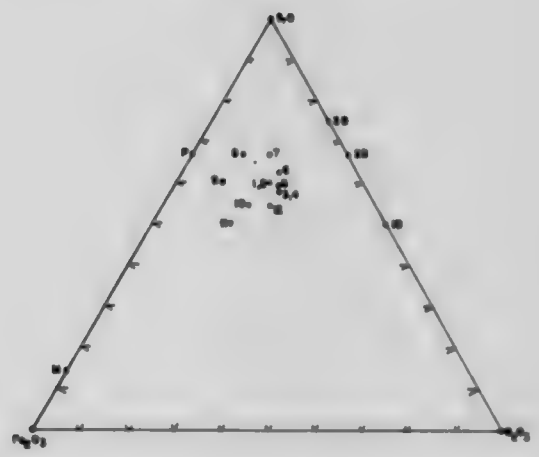
1. A process for removing phosgene from an off gas containing phosgene which comprises contacting said off gas with an aqueous solution comprising 1 to 25 weight percent of an alkali metal hydroxide and an amount effective to remove phosgene of a tertiary amine compound having 3–20 carbon atoms.

4,493,819

CERAMIC STRONTIUM FERRITE BORATE

Howard L. Glass, Orange, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 3, 1983, Ser. No. 519,797
Int. Cl.³ C01B *33/20*
U.S. Cl. 423—277 1 Claim



1. A compound of the formula

$$Sr_3Fe_2O_{7-x}B_2O_3,$$

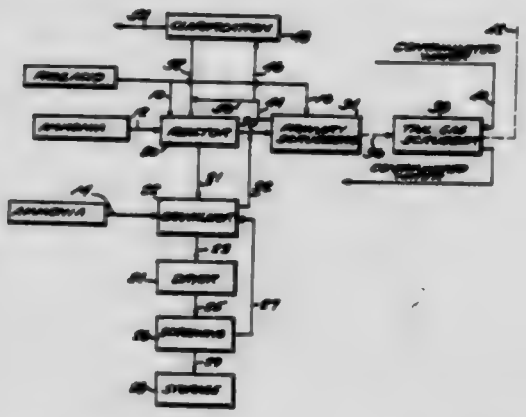
wherein said compound has a cubic crystal structure of lattice constant approximately 15.2 angstroms, wherein x can vary from zero to two to account for the variation in oxygen content associated with the variable valence of iron.

4,493,820

PROCESS FOR PARTIAL REMOVING OF IMPURITIES FROM A WET PROCESS PHOSPHORIC ACID

Herbert J. Clausen, Apollo Beach, Fla., assignor to Gardinier, Inc., Tampa, Fla.

Filed Oct. 1, 1982, Ser. No. 432,297
Int. Cl.³ C01B 25/28; C02B 7/00
U.S. Cl. 423—310
6 Claims



1. Process for the partial removal of impurities including Fe_2O_3 AL_2O_3, and MgO, in a primary scrubber liquid produced in the primary scrubbers of an ammonium phosphate plant comprising the steps of,

(a) discharging the primary scrubber liquid containing impurities from the primary scrubbers, said liquid having a N:P mole ratio of between about 0.5 and about 1.2, and a P_2O_5 content between about 27% and about 40%, and,

(b) clarifying all or part of said discharged primary scrubber liquid to remove at least a portion of said impurities.

6. Process for the partial removal of impurities including Fe_2O_3 AL_2O_3, and MgO, from the primary scrubber liquid produced in the primary scrubbers of an ammonium phosphates plant comprising the steps of,

(a) reacting ammonia with phosphoric acid in a reactor to produce an ammonium phosphate slurry and reaction off-gases,

(b) discharging said slurry into a granulator wherein recycled dry granules of ammonium phosphate are wetted with slurry,

(c) ammoniating said wetted granules in said granulator,

(d) drying said wetted granules of step (c),

(e) sizing said dried granules into product size granules and off-size granules,

(f) recycling at least a portion said off-size granules to said granulator for wetting with said slurry,

(g) cooling said product size granules,

(h) scrubbing the reaction off-gas and the off-gases obtained in steps (c) (d) and (g) in a primary scrubber with phosphoric acid thereby removing ammonia, and ammonium phosphates dust, to form a primary scrubber liquid having a N:P mole ratio of between about 0.5 and about 1.2, and a P_2O_5 content between about 27% and about 40%,

(i) discharging said primary scrubber liquid from said primary scrubber,

(j) clarifying all or part of said flows to remove said impurities and form a clarified primary scrubber liquid,

(k) discharging said impurities, and

(l) feeding at least a portion of said clarified liquid into said reactor.

4,493,821

PRESERVATIVE AND FIXATIVE PREPARATIONS FOR BIOLOGICAL SYSTEMS

James S. Harrison, 12 Sioux La., Ringwood, N.J. 07456

Filed Feb. 4, 1982, Ser. No. 345,589
Int. Cl.³ G01N 31/00, 33/52; C09K 3/00, 15/00
U.S. Cl. 424—3
31 Claims

1. A fixative and preservative composition for histological, cytological and proteinaceous preparations which comprises as a principal active fixative and preservative component, a mixture of from about 10 to about 75% by weight of pyrrolid-2-one, from about 10 to about 50% by weight of a polyol, from about 1 to about 20% by weight of a urea and from about 1 to about 10% by weight of a zinc salt of a nonoxidizing organic or inorganic acid, the relative percentages of said ingredients being selected from within the respective ranges so that their sum is 100% of said mixture.

17. A device for fixing and preserving histological, cytological and proteinaceous preparations comprising a base strip of material which is non-absorbent to and insoluble in water and carrying thereon at least one deposition area in which area is carried the evaporative residue of a fixative and preservative composition according to claim 1.

4,493,822

DOSAGE UNITS

Geoffrey D. Tovey, Harpenden, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 270,181, Jun. 3, 1981, Pat. No. 4,376,111.
This application Feb. 10, 1983, Ser. No. 465,394
Claims priority, application United Kingdom, Dec. 4, 1980, 997904; Dec. 5, 1980, 8038993; Apr. 28, 1981, 8112987
Int. Cl.³ A61K 9/00, 9/44, 47/00
U.S. Cl. 424—15
10 Claims

1. An orally administrable pharmaceutical dosage unit comprising a solid main body having at least two main faces, each of said main faces having tilting means such that the most stable position of said dosage unit on a horizontal flat surface is a tilted position, said tilting means being free of any cutting edge formations.

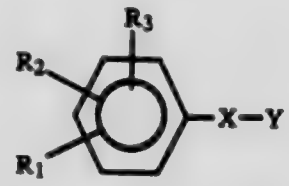
4,493,823

TOPICAL COSMETIC PREPARATIONS FOR THE TREATMENT OF OILY HAIR AND SEBORRHEIC SKIN

Hinrich Möller; Siegfried Wallat, both of Monheim; Friedhelm Bartnik, and Wolfgang Pittermann, both of Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Nov. 10, 1981, Ser. No. 319,915
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1980, 3047106
Int. Cl.³ A61K 7/06, 7/09, 31/36, 31/235
U.S. Cl. 424—70
6 Claims

1. A process of treating oily hair and seborrheic skin which comprises administering to an individual in need of such treatment an effective amount of a topical cosmetic preparation comprising from about 0.01 to 20 percent by weight, based upon the weight of the total preparation, of at least one compound of the formula



(I)

wherein R_1, R_2, and R_3, any of which may be the same or different, each represent hydrogen, hydroxyl, or —OR_4, where R_4 is an alkyl of from 1 to 6 carbon atoms or a benzyl, or two of the groups R_1, R_2, and R_3 represent methylenedioxy; X is an alkylene of from 1 to 3 carbon atoms; and Y is —COOH, —$CONR_5R_6$, or —$COOR_7$, where R_5 and R_6 each represent hydrogen, alkyl of from 1 to 6 carbon atoms, or benzyl and R_7 is an alkyl of from 1 to 6 carbon atoms or a benzyl, where each of the benzyl and alkylene may have one or more non-interfering substituents selected from the group

consisting of lower alkyl, halogen, nitro, lower alkanoyl, lower alkoxy, and methylenedioxy.

4,493,824

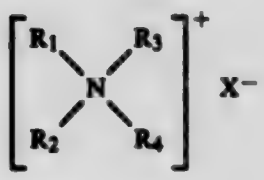
HAIR RINSE COMPOSITION

Yoshiaki Abe, Tokyo, Japan, assignor to Kao Soap Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 200,399, Oct. 24, 1980, abandoned. This application Aug. 4, 1982, Ser. No. 405,280
Claims priority, application Japan, Jan. 9, 1980, 55-1112
Int. Cl.³ A45D 7/00; A61K 7/06, 7/08
U.S. Cl. 424—70 1 Claim

1. A hair rinse composition consisting essentially of the following three components (A), (B) and (C):

(A) 0.1 to 20 percent by weight of one or more quaternary ammonium salts represented by the general formula (I):



where two of R_1, R_2, R_3 and R_4 are each a long chain alkyl group having 8 to 20 carbon atoms and the rest of them are each an alkyl group having 1 to 3 carbon atoms, a benzyl group or a polyoxyethylene group consisting of a total of not more than 10 molar monomer units; and X is a halogen atom;

(B) 0.1 to 20 percent by weight of a dimethylpolysiloxane represented by the following formula:

$$(CH_3)_3SiO[(CH_3)_2SiO]_{x_1}Si(CH_3)_3$$

(where, x_1 is an integer of 3 to 650); and

(C) 0.1 to 30 percent by weight of polyethylene glycol having an average molecular weight of 200 to 100,000.

4,493,825

PURIFIED AND ANTIGENICALLY SELECTIVE VACCINES FOR DOMESTIC ANIMALS

Kenneth B. Platt, and David E. Reed, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Ames, Iowa

Filed Oct. 5, 1982, Ser. No. 432,967
Int. Cl.³ A61K 39/00, 39/12, 39/02
U.S. Cl. 424—88 8 Claims

1. The method of preparing a purified antigenically selective vaccine for a domestic animal, comprising:

(a) preparing by in vitro microorganism culture an aqueous admixture of the desired animal disease immunizing agent together with other antigenic protein and culture residue substances, said immunizing agent being selected from the class consisting of pathogenic microorganisms and immunizing antigenic protein derived therefrom;

(b) complexing the IgG antibodies specific for the said immunizing agent with micro-particles having outer surfaces containing protein A selectively binding to the Fc region of the IgG antibodies so that the antibody Fab regions of the resulting first complex are oriented for binding reaction;

(c) reacting said immunizing agent in said aqueous admixture with said first complex to form a second complex;

(d) recovering said second complex from said aqueous admixture in purified form; and

(e) preparing a parenteral vaccine from said second complex by suspending an immunologically effective amount thereof in a parenterally-injectable liquid carrier for animal vaccines, said second complex containing said IgG antibodies in complexed relationship with said immunizing agent.

4,493,826

GENTAMICIN-GLEPTOFERRON COMPOSITIONS

James G. Strayer, Waterloo, Nebr., assignor to Schering Corporation, Madison, N.J.

Continuation-in-part of Ser. No. 342,295, Jan. 25, 1982, abandoned. This application Feb. 16, 1983, Ser. No. 466,998
Int. Cl.³ A61K 35/74, 31/70, 31/71
U.S. Cl. 424—118 16 Claims

1. A stable injectable pharmaceutical composition comprising (a) about 1 to 10 milligrams per milliliter of gentamicin, (b) about 250 to 1000 milligrams per milliliter of gleptoferron containing iron and (c) water; wherein the weight ratio of iron to gentamicin is about 40 to 1.

4,493,827

METHOD OF INDUCING SLEEP

Ronald Valle, 44 Fitch St., Carteret, N.J. 07008

Filed Nov. 14, 1983, Ser. No. 551,144
Int. Cl.³ A61K 31/135, 31/161, 33/02
U.S. Cl. 424—166 3 Claims

1. A method of inducing sleep in a patient who is mentally or physically exhausted which comprises administering to a patient in need of such sleep inducing a pharmaceutically effective combination of the following compounds in the following daily dosages:

Acetaminophen—100–1,000 mg/day,
Phenylephrine hydrochloride—1–10 mg/day,
Phenylpropanolamine—5–30 mg/day,
Phenyltoloxamine dihydrogen citrate—5–30 mg/day,
Ammonium chloride—50–1,000 mg/day.

4,493,828

USE OF THYROTROPIN RELEASING HORMONE AND RELATED PEPTIDES AS POULTRY GROWTH PROMOTANTS

Frederick Leung, and Roger M. Weppelman, both of Scotch Plains, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 26, 1982, Ser. No. 402,018
Int. Cl.³ A61K 37/02
U.S. Cl. 424—177 3 Claims

1. A method of promoting growth in poultry immediately following the exponential growth phase which comprises the daily administration to the poultry during the period from the fourth to the eighth week of life of from one to ten micrograms/bird/day of a compound of the formula:

$$M_1—M_2—M_3$$

or a pharmaceutically acceptable salt thereof, wherein

M_1 is L-pyroglutamyl (Glp), L-cycloserinyl (CSer), L-cyclothreoninyl, (CTHr), N-formyl-L-proline (HCO-Pro), L-Glutamic acid-5-methyl ester (Glu(OMe)), L-Proline (Pro), L-2-ketopiperidine-6-carbonyl (Kpc), D-2-ketopiperidine 6-carbonyl (D-Kpc), or L-2-ketoimidazolidine-4-carbonyl (Kic);

M_2 is L-histidyl (His), D-histidyl (D-His), L-leucine (Leu), L-@-methylhistidine (MeHis), L-phenylalanine (Phe), L-β-(pyrazolyl-1)alanine (Pyr(1)ala), L-β-(thienyl-2)alanine (Thi), L-im-N-methylhistidine (His(N Me)), L-β-(pyrazolyl-3)alanine (Pyr(3)ala), L-methionine (Met), or L-im-N (CH_2COOH)histidine (His(N CH_2COOH); and

M_3 is L-prolinamide (Pro-NH_2), N-(6-aminohexyl-L-prolinamide (Pro-$NH(CH_2)_6NH_2$), 2-methyl-L-alaninamide (MeAla-NH_2), N-methyl-L-prolinamide (Pro-NHMe), N-ethyl-L-prolinamide (Pro-NHEt), L-prolylglycinamide (Pro-Gly-NH_2), L-azetedinecarboxylic acid amide (Azet), L-prolyl-L-alaninamide (Pro-Ala-NH_2), N-hexyl-L-prolylamide (Pr-$NH(CH_2)_6Me$), N-cyclohexyl-L-prolinamide (Pro-NH-cyclo-hexyl), L-thiazolidine-4-carboxamide (Tca-NH_2), L-piperidine-2-carboxamide (Pc-NH_2), or Methyl L-piperidine-2-carboxylate (Pc-OMe).

4,493,829

BIO-AVAILABLE SUCCINYLATED PROTEIN-IRON DERIVATIVES WHICH DO NOT CAUSE GASTRIC LESIONS, METHOD OF PREPARATION AND RELATED PHARMACEUTICAL COMPOUNDS

Giancarlo Sportoletti; Piergiuseppe Pagella, and Pietro Cremonesi, all of Milan, Italy, assignors to Italfarmaco S.p.A., Milan, Italy

Filed Feb. 24, 1983, Ser. No. 469,282
Claims priority, application Italy, Mar. 2, 1982, 19908 A/82
Int. Cl.³ C07G 7/04
U.S. Cl. 424—177 11 Claims

1. A bio-available succinyl ferro-protein derivative obtained by reacting a succinylated animal or vegetable protein with ferro ions.

4,493,830

METHOD FOR THE TREATMENT OF IDIOPATHIC HEADACHE ATTACKS, IN PARTICULAR MIGRAINE AND CLUSTER HEADACHE

Federigo Sicuteri, Florence, Italy, assignor to Istituto Farmacologico Serono of Rome, Italy

Filed Apr. 26, 1984, Ser. No. 604,133
Claims priority, application Italy, May 4, 1983, 48225 A/83
Int. Cl.³ A61K 37/00; C07C 103/52
U.S. Cl. 424—177 6 Claims

1. Method for the treatment of idiopathic headache attacks characterized by the fact of administering a therapeutically efficacious quantity of Somatostatin.

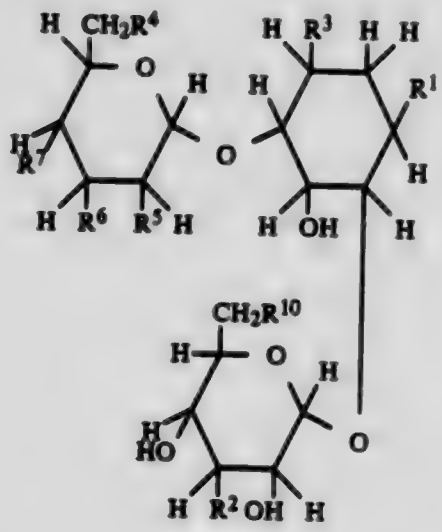
4,493,831

AMINOGLYCOSIDE DERIVATIVES

Takao Takaya, Kawanishi; Noboyoshi Yasuda, Nishinomiya; Hideo Tsutsumi, Toyonaka, and Keiji Matsuda, Takatsuki, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Sep. 30, 1983, Ser. No. 537,967
Claims priority, application United Kingdom, Oct. 25, 1982, 8230421; Apr. 18, 1983, 8310436
Int. Cl.³ A61K 31/71; C07H 15/22
U.S. Cl. 424—180 18 Claims

1. Aminoglycoside derivatives of the formula:



wherein

at least one of R^1, R^2, R^3 and R^4 is C_8–C_{24} alkanoylamino, C_8–C_{24} alkenoylamino, C_8–C_{20} alkoxycarbonylamino, C_8–C_{18} alkylaminocarbonylamino, C_8–C_{20} alkoxy C_1–C_6alkanoylamino or C_8–C_{18} alkylthiocarbonylamino, each of which is unsubstituted or substituted with hydroxy, amino, carboxy, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 alkylthio, halogen, nitro, acylamino, aryloxy, C_1–C_6 alkanoyloxy, or C_8–C_{24} alkanoyloxy, and the others are amino or acylamino,

R^5 is hydroxy, amino or acylamino,

R^6 and R^7 are each hydroxy or hydrogen, and

R^{10} is hydroxy or phosphonoxy; or

pharmaceutically acceptable salts thereof.

8. A pharmaceutical composition comprising an anti-viral effective amount of compound of claim 1 or pharmaceutically acceptable salt thereof and a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

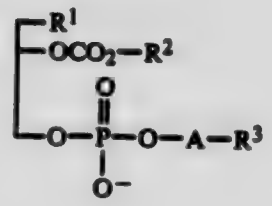
4,493,832

CERTAIN GLYCEROL-PHOSPHORYL CHOLINE DERIVATIVES, COMPOSITIONS CONTAINING SAME AND METHOD OF USING SAME

Tsutomu Teraji, Osaka; Eishiro Todo, Toyonaka; Norihiko Shimazaki, Suita; Teruo Oku, Osaka, and Takayuki Namiki, Minoo, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jun. 24, 1982, Ser. No. 391,918
Claims priority, application United Kingdom, Jul. 3, 1981, 8120612
Int. Cl.³ C07F 9/141, 9/143; A61K 31/685
U.S. Cl. 424—199 7 Claims

1. A compound of the formula:



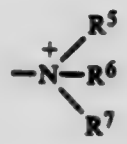
wherein

R^1 is $C_{1\text{-}20}$ alkyl, $C_{1\text{-}20}$ alkoxy, $C_{16\text{-}20}$ alkylthio or phenyl(lower)alkoxy;

R^2 is lower alkyl or phenyl(lower)alkyl;

A is lower alkylene; and

R^3 is a group of the formula:



in which R^5, R^6 and R^7 are each hydrogen or lower alkyl; and pharmaceutically acceptable salt thereof.

7. A method for treating hypertension which comprises administering an effective amount of the compound of claim 1 to a human being.

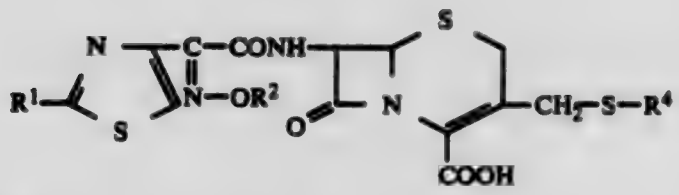
4,493,833

SYN-ISOMER OF 3,7-DISUBSTITUTED-3-CEPHEM-4-CARBOXYLIC ACID COMPOUNDS

Takao Takaya, Kawanishi; Takashi Masugi, Toyonaka; Hisashi Takasugi, Osaka, and Hiromu Kochi, Sakai, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 77,557, Sep. 21, 1979, Pat. No. 4,304,770, which is a continuation of Ser. No. 941,541, Sep. 12, 1978, abandoned, which is a continuation-in-part of Ser. No. 767,700, Feb. 11, 1977, Pat. No. 4,166,115. This application Aug. 25, 1981, Ser. No. 296,117
Claims priority, application United Kingdom, Apr. 12, 1976, 14916/76; Jun. 7, 1976, 23490/76; Japan, Oct. 19, 1976, 51-125826; United Kingdom, Aug. 31, 1978, 35195/78; Sep. 4, 1978, 35435/78; Belgium, Aug. 24, 1979, 6/46.924; Aug. 30, 1979, 0/196.949
Int. Cl.³ A61K 31/545; C07D 501/56
U.S. Cl. 424—246 7 Claims

1. Syn-isomer of 3,7-disubstituted-3-cephem-4-carboxylic acid compounds of the formula:



wherein

R^1 is amino or a protected amino,

R^2 is ethyl, cyclopentyl, carboxymethyl or 3-isoxazolylmethyl;

R^4 is 1-allyl-1H-tetrazol-5-yl, and pharmaceutically acceptable salts thereof.

6. A compound, which is 7-[2-methoxyimino-2-(2-aminothiazol-4-yl)acetamido]-3-(4-allyl-4H-1,2,4-triazol-3-yl)thiomethyl-3-cephem-4-carboxylic acid (syn isomer).

7. An antibacterial composition comprising an effective amount of a compound of claim 1 or pharmaceutically acceptable salt thereof in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,493,834

CEPHEM COMPOUNDS

Takao Takaya, Kawanishi; Yoshikazu Inoue, Amagasaki; Nobuyoshi Yasuda, and Masayoshi Murata, both of Mino, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

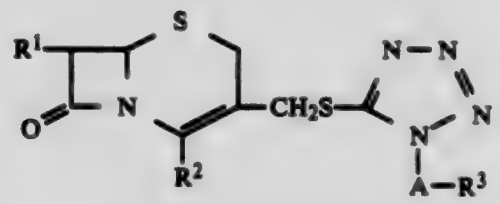
Division of Ser. No. 209,988, Nov. 24, 1980, Pat. No. 4,420,477. This application Jul. 26, 1983, Ser. No. 517,448

Claims priority, application United Kingdom, Nov. 30, 1979, 7941417

Int. Cl.³ C07D *501/36*; A61K *31/545*

U.S. Cl. 424—246 10 Claims

1. A cephem compound of the formula:



wherein

R^1 is amino;

R^2 is carboxy or a protected carboxy group;

A is hydroxy (lower) alkylene, amino (lower)alkylene, protected amino (lower) alkylene, lower alkenylene, hydroxyimino (lower alkylene, lower alkoxyimino (lower) alkylene, or lower alkenyloxyimino (lower) alkylene; and

R^3 is carboxy or a protected carboxy group,

and pharmaceutically acceptable salts thereof.

4,493,835

1,3,4-THIADIAZINES

Rodney B. Hargreaves, Poynton, and Bernard J. McLoughlin, Macclesfield, both of England, assignors to Imperial Chemical Industries PLC, London, England

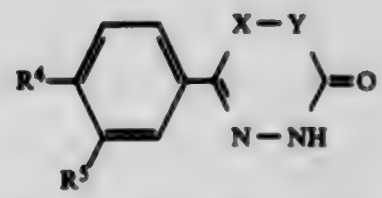
Filed Oct. 26, 1982, Ser. No. 436,802

Claims priority, application United Kingdom, Nov. 12, 1981, 8134176

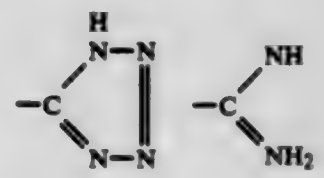
Int. Cl.³ C07D *285/16*; A61K *31/54*

U.S. Cl. 424—246 8 Claims

1. A heterocyclic compound of the formula



wherein X is —S— and Y is —CR^1R^2— wherein R^1 and R^2, which may be the same or different, each is hydrogen or alkyl of up to 4 carbon atoms; wherein R^4 and R^5, which may be the same or different, each is hydrogen (but provided that R^4 and R^5 are not both hydrogen), or each has the formula:



—$CONHNH_2$

—$CONR^6OR^7$

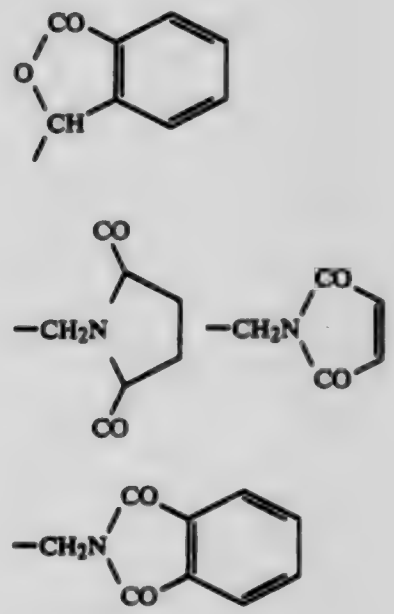
—$CONR^7R^8$

—$COOR^9$

wherein R^6 and R^7, which may be the same or different, each is hydrogen, alkyl of up to 4 carbon atoms or arylalkyl of up to 10 carbon atoms; and wherein R^8 and R^9, which may be the same or different, each has the formula:

—CH_2—OCO—R^{11}

—CH_2—OCO—OR^{11}



—$(CH_2)_mOH$

—CH_2O—A—OR^{11}

—A—$NR^{12}R^{13}$

—A—$COOR^{12}$

—A—$CONR^{12}R^{13}$

wherein m is an integer from 2 to 4, A is alkylene of from 1 to 4 carbon atoms, R^{11} is alkyl of up to 4 carbon atoms and R^{12} and R^{13}, which may be the same or different, each is hydrogen or alkyl of up to 4 carbon atoms; or a salt thereof where appropriate.

5. A pharmaceutical composition having cardiotonic or antihypertensive activity comprising as active ingredient at

least one heterocyclic compound, claimed in claim 1, in association with a pharmaceutically-acceptable diluent or carrier therefor.

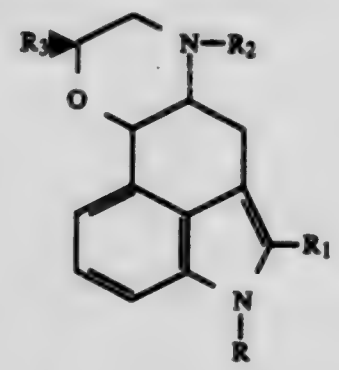
4,493,836

9-OXALYSERGIC ACID DERIVATIVES AND USES THEREOF

Lucien Nedelec, Le Raincy; André Pierdet, Villecomble, and Patrick Fauveau, Livry-Gargan, all of France, assignors to Roussel Uclaf, Paris, France

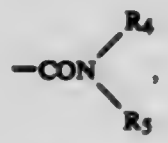
Filed May 10, 1983, Ser. No. 493,355
Claims priority, application France, May 12, 1982, 82 08249
Int. Cl.³ A61K *31/535*; C07D *498/04*
U.S. Cl. 424—248.4 17 Claims

1. A compound selected from the group consisting of



I

wherein R is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, R_1 is selected from the group consisting of hydrogen, chlorine and bromine, R_2 is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms, aralkyl of 7 to 12 carbon atoms and cycloalkylalkyl of 4 to 7 carbon atoms, R_3 is selected from the group consisting of $—CH_2OH$, alkylthiomethyl with 1 to 4 alkyl carbon atoms, $—CH_2CN$, —COOH, —COOAlk and



Alk is alkyl of 1 to 5 carbon atoms, R_4 is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, R_5 is alkyl of 1 to 4 carbon atoms or R_4 and R_5 together with the nitrogen form a saturated heterocycle optionally containing another heteroatom and their non-toxic, pharmaceutically acceptable acid addition salts.

10. A method of inducing antihypertensive and dopaminergic agonist activity in warm-blooded animals comprising administering to warm-blooded animals an amount of at least one compound of claim 1 sufficient to cause antihypertensive and dopaminergic activity.

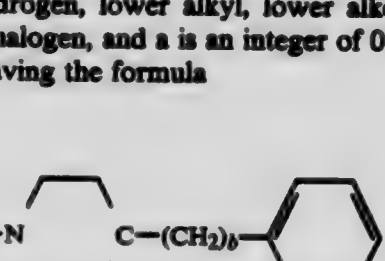
4,493,837

THEOBROMINE DERIVATIVES

Hachiro Sugimoto, Noda; Sachiyuki Hamano, Tokyo; Tadao Shoji, Kagamihara; Takeru Kaneko, Hatogaya, and Takeshi Uzuo, Shiki, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

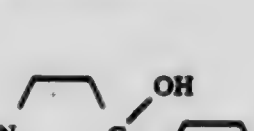
Continuation of Ser. No. 126,616, Mar. 3, 1980, abandoned. This application Oct. 20, 1982, Ser. No. 435,518
Claims priority, application Japan, Mar. 5, 1979, 54-24570
Int. Cl.³ C07D *473/10*; A61K *31/52*
U.S. Cl. 424—253 18 Claims

1. A compound having the formula

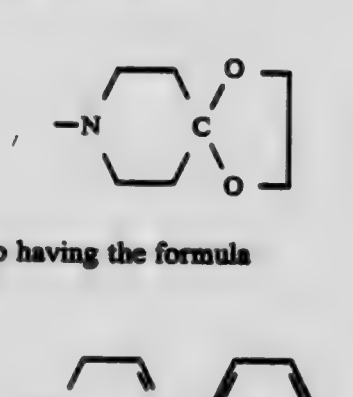


wherein Z is a member selected from the group consisting of

A. a group having the formula



wherein m is the integer 2 or the integer 3, and R_1 is pyridyl or a group having the formula



wherein X_1 and X_2, which can be the same or different, each is hydrogen, lower alkyl, lower alkoxy, trifluoromethyl or halogen, and a is an integer of 0 to 3;

B. a group having the formula

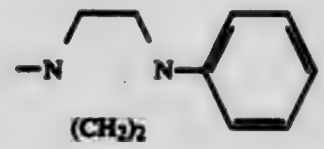
C. a group having the formula



D. a group having the formula

and E. a group having the formula

and n is an integer of 2 to 8, with the proviso that when Z is



n is an integer of 3 to 8, and pharmaceutically acceptable acid addition salts thereof.

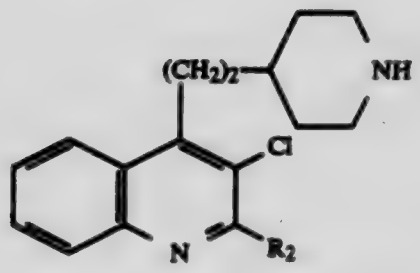
4,493,838

MEDICAMENTS CONTAINING DERIVATIVES OF 3-CHLORO-QUINOLINE

Alain A. Champseix, Orsay, and Gérard R. Le Fur, Plessis Robinson, both of France, assignors to Pharmuka Industrie, Gennevilliers, France

Division of Ser. No. 237,784, Feb. 24, 1981, Pat. No. 4,405,789.
This application Sep. 29, 1982, Ser. No. 426,543
Claims priority, application France, Mar. 7, 1980, 80 05152
Int. Cl.³ A61K *31/47*
U.S. Cl. 424—258 4 Claims

1. A medicament containing as active principle an effective amount of a compound for the treatment of anxiety states and psychoneurotic states, said compound corresponding to the formula:



in which R_2 represents hydrogen, alkyl having 1 to 4 carbon atoms or phenyl, or a salt of said compound with a pharmaceutically acceptable acid, and a pharmaceutically acceptable carrier.

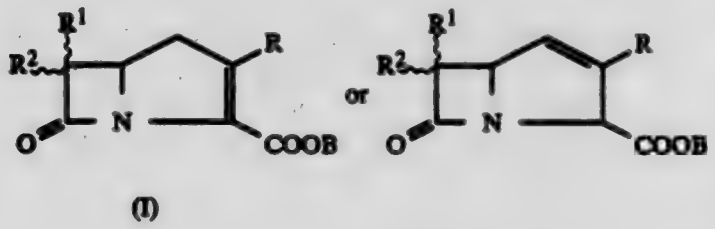
4,493,839

1-CARBAPENEM-3-CARBOXYLIC ESTERS AS ANTI-INFLAMMATORY AGENTS

James B. Doherty, New Milford; Morris Zimmerman, Watchung, and Bonnie M. Ashe, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 24, 1982, Ser. No. 380,989
Int. Cl.³ C07D *487/04;* A61K *31/40*
U.S. Cl. 424—263 6 Claims

1. A method of treating anti-inflammatory conditions comprising the administration to a mammalian species in need of such treatment a therapeutic effective amount of a pharmaceutical composition containing an active compound of formula:



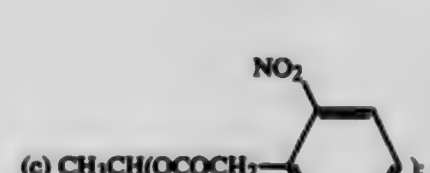
(I)

wherein

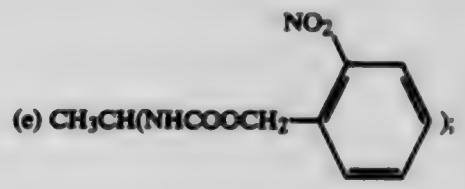
R^1 and R^2 are the same or different and are

(a) hydrogen;

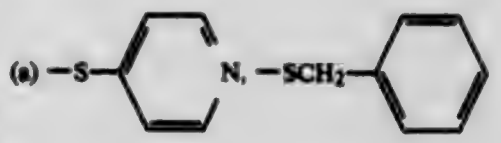
(b) $CH_3CH(OH)$— or $CH_2(OH)$—;



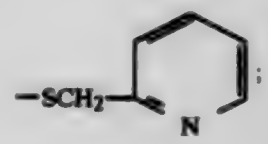
(d) when R^1 and R^2 are joined together, CH_3CH═; or

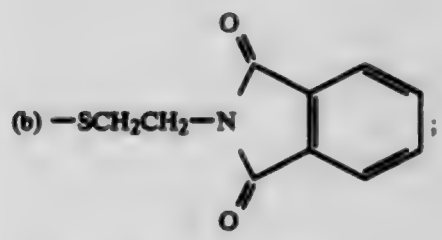


R is

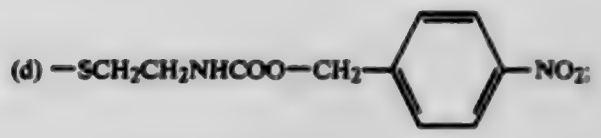


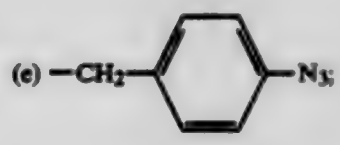
or





(c) —SCH_2CH_2OH;





or

(f) hydrogen;

B is benzyl or benzyl substituted with NO_2.

4,493,840

ANTISECRETORY GUANIDINE DERIVATIVES, AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Tobias O. Yellin, Wallingford, Pa., and David J. Gilman, Macclesfield, England, assignors to Imperial Chemical Industries PLC, London, England and ICI Americas, Inc., Wilmington, Del.

Division of Ser. No. 83,361, Oct. 10, 1979, Pat. No. 4,309,435.
This application Oct. 26, 1981, Ser. No. 314,558
Claims priority, application United Kingdom, Oct. 16, 1978, 40704/78
Int. Cl.³ C07D *277/20;* A61K *31/425*
U.S. Cl. 424—269 10 Claims

1. A guanidine derivative of the formula I:

$$Het^1—(CH_2)_m—Y^1—(CH_2)_n—NR^1—A—NR^2—(CH_2)_q—Y^2—(CH_2)_p—Het^2 \quad I$$

in which

Y^1 and Y^2, which may be the same or different, are oxygen or sulphur atoms, direct bonds or methylene or sulphinyl radicals;

m and p, which may be the same or different, are 0 to 4 and n and q, which may be the same or different, are 1 to 4,

provided that when Y^1 or Y^2 is an oxygen or sulphur atom or a sulphinyl radical, m or p respectively is 1 to 4 and provided that when Y^1 or Y^2 is an oxygen atom or a sulphinyl radical, n or q respectively is 2 to 4;

one of R^1 and R^2 is a hydrogen atom and the other is a hydrogen atom or an alkyl radical of 1 to 6 carbon atoms;

A is a 3,4-dioxocyclobuten-1,2-diyl radical or a radical of the formula C═Z in which Z is a sulphur or oxygen atom or a radical of the formula NCN, NNO_2, $CHNO_2$, $NCONH_2$, $C(CN)_2$, $NCOR^3$, NCO_2R^3, NSO_2R^3 or NR^4 in which R^3 is an alkyl radical of 1 to 6 carbon atoms, an aryl radical of 6 to 12 carbon atoms or an alkylphenyl radical of 7 to 12 carbon atoms and R^4 is a hydrogen atom or an alkyl radical of 1 to 6 carbon atoms;

Het^1 is an oxazol-4-yl, thiazol-4-yl or imidazol-4-yl radical substituted in the 2-position by a radical of the formula III: or Het^1 is a 1,2,4-thiadiazol-3-yl or 1,2,4-oxadiazol-3-yl radical substituted in the 5-position by a radical of the formula III, in which R^5 is a hydrogen atom, an alkyl radical of 1 to 10 carbon atoms, an alkanoyl radical of 1 to 6 carbon atoms or an aroyl radical of 7 to 11 carbon atoms;

Het^2 is an unfused 5-membered monocyclic heterocyclic ring containing at least one nitrogen atom and wherein nitrogen is the only hetero atom in the ring and which is optionally substituted an alkyl or alkoxy radical of 1 to 6 carbon atoms, a hydroxy, trifluoromethyl, hydroxymethyl or amino radical or by a halogen atom,

provided that when R^1 and R^2 are both hydrogen atoms and A is C═NH, Y^1 and/or Y^2 is a sulphur atom, and that when R^1 and R^2 are both hydrogen atoms, A is C═NH and Het^2 is imidazole, the number of atoms in the chain represented by formula V:

$$(CH_2)_q—Y^2—(CH_2)_p \quad V$$

is at least four; and the pharmaceutically-acceptable acid-addition salts thereof.

4,493,841

BLOOD-PLATELET AGGREGATION INHIBITING 4,5,7,8-TETRAHYDRO-4,4,8,8-TETRAMETHYL-2-THIENYL-1H-THIEPINO[4,5-d]IMIDAZOLE DERIVATIVES

Romano Derungs, Riehen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

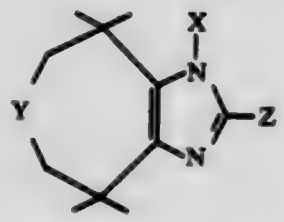
Division of Ser. No. 254,826, Apr. 16, 1981, Pat. No. 4,382,945. This application Feb. 7, 1983, Ser. No. 464,444

Claims priority, application Switzerland, Apr. 29, 1980, 3304/80; Feb. 16, 1981, 1057/81

Int. Cl.³ A61K *31/415*; C07D *495/04*

U.S. Cl. 424—273 R 9 Claims

1. A compound of the formula

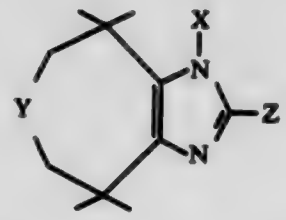


I

wherein X is hydrogen or C_{1-4}-alkyl, Y is sulfur, sulfinyl or sulfonyl and Z is thienyl, optionally substituted by methyl or fluorine,

or physiologically compatible acid addition salt thereof.

8. A method of inhibiting blood platelet aggregation which comprises administering to a warm blooded animal in need thereof an effective blood-platelet aggregation inhibiting amount of a compound of formula



I

wherein X is hydrogen or C_{1-4}-alkyl, Y is sulfur, sulfinyl or sulfonyl and Z is thienyl, optionally substituted by methyl or fluorine,

or physiologically compatible acid addition salt thereof.

4,493,842

FUNGICIDAL N-(PHENYL-LOWER ALKANOYL-)-IMIDAZOLE DERIVATIVES, COMPOSITION, AND METHOD OF USE

Kunihiko Furuzawa, Takarazaka; Yuji Funaki, Toyonaka; Yoshio Hisada, Amagasaki, and Kazuo Izumi, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

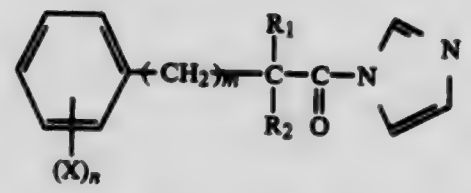
Filed May 13, 1983, Ser. No. 494,349

Claims priority, application Japan, May 21, 1982, 57-87034; May 25, 1982, 57-89483; Nov. 17, 1982, 57-202597; Nov. 22, 1982, 57-205306

Int. Cl.³ A01N *43/50*; C07D *233/58, 233/60*

U.S. Cl. 424—273 R 7 Claims

1. N-acylimidazole represented by the formula:



wherein X is halogen atom, or alkyl, alkoxy, lower alkylthio, halogen-substituted alkyl, phenyl, phenoxy, cyano, phenyl lower alkoxy or nitro group, R_1 and R_2, which may be the same or different, are hydrogen or halogen atom, or alkyl, lower alkenyl, lower alkoxy, trifluoromethyl, lower cycloalkyl lower alkyl or lower alkoxy lower alkyl group, or R_1 and R_2, taken together, may form lower alkylene or halogen-substituted lower alkylene group, m is 0 or 1, n is 0, 1 or 2, and when n is 2, the $(X)_2$ groups may a form methylenedioxy group.

4,493,843

INDOLE AND INDOLINE CARBOXYLIC ACID COMPOUNDS AND METHOD OF USE

Michael J. Ashton; Andrew W. Bridge, both of Chelmsford; Robert F. Chapman, Benfleet; Garry Fenton, Romford; Anthony H. Loveless, Hornchurch, and David Riddell, Billericay, all of England, assignors to May & Baker Limited, Essex, England

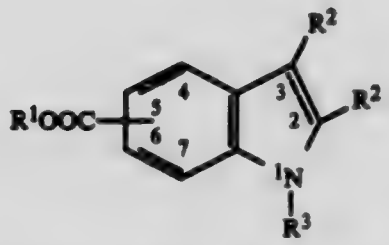
Continuation of Ser. No. 274,211, Jun. 16, 1981, abandoned. This application May 21, 1982, Ser. No. 380,838

Claims priority, application United Kingdom, Jun. 18, 1980, 8019948

Int. Cl.³ C07D *209/12*; A61K *31/40*

U.S. Cl. 424—274 34 Claims

1. Indole and indoline compound of the formula:



wherein ═══ indicates a double bond or a single bond between carbon atoms, R^1 represents hydrogen or alkyl of 1 through 6 carbon atoms and one of the symbols R^2 represents alkyl of 9 through 24 carbon atoms and the other symbol R^2 represents alkyl of 1 through 24 carbon atoms or hydrogen, and R^3 represents alkyl of 1 through 6 carbon atoms or hydrogen, and pharmaceutically acceptable salts thereof.

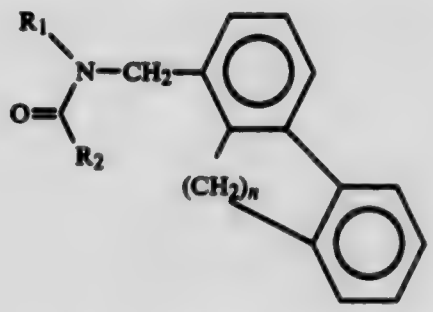
4,493,844

INSECTICIDAL 2,2'-BRIDGED(1,1'-BIPHENYL)-3-YLMETHYL CARBOXAMIDES

Ernest L. Plummer, Yardley, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed Aug. 19, 1982, Ser. No. 409,751
The portion of the term of this patent subsequent to May 29, 2001, has been disclaimed.
Int. Cl.³ C07C *103/737*; A01N *37/18*
U.S. Cl. 424—275 10 Claims

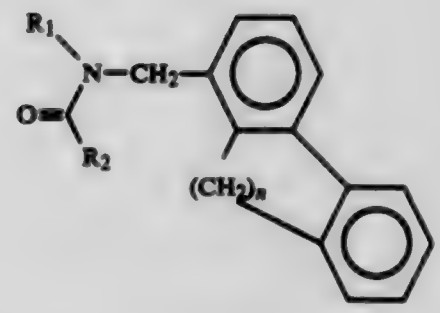
1. Insecticidal 2,2'-bridged[1,'-biphenyl]-3-ylmethyl carboxamides of the formula



wherein n is 2–4, R_1 is hydrogen or lower alkyl, and R_2 is selected from the group consisting of 3-(2,2-dihaloethenyl)-2,2-dimethylcyclopropyl; 3-(cyclopentylidenemethyl)-2,2-dimethylcyclopropyl; 3-(2-methyl-1-propenyl)-2,2-dimethylcyclopropyl; 3-(1,2-dibromo-2,2-dichloroethyl)-2,2-dimethylcyclopropyl; 3-(1,2,2,2-tetrabromoethyl)-2,2-dimethylcyclopropyl; 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-di-methylcyclopropyl; 3-(3-chloro-2,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropyl; 3-(2,3-dichloro-3,3-difluoro-1-propenyl)-2,2-dimethylcyclopropyl; 2,2,3,3-tetramethylcyclopropyl; 2,2-dichloro-3,3-dimethylcyclopropyl; 4-chloro-α-(1-methylethyl)phenylmethyl; 4-difluoromethoxy-α-(1-methylethyl)phenylmethyl; 3-(1,3-butadienyl)-2,2-dimethylcyclopropyl; 2,2-dimethyl-3-(oximinomethyl)cyclopropyl; 2-(2-chloro-α,α,α-trifluoro-p-toluidino)-3-methylbutyl; 3-(2,3,4,5-tetrahydro-2-oxothien-3-ylidenemethyl)-2,2-dimethylcyclopropyl; 2,2-dichloro-1-(4-ethoxyphenyl)cyclopropyl; 4-halo-α-(1-cyclopropyl)phenylmethyl; spiro[2,2-dimethylcyclopropane-1,1'-[1H]-indene]-3-yl; spiro[3-(2,2-dichloroethenyl)cyclopropane-1,1'-cyclohexane]-2-yl; spiro[3-(2,2-dichloroethenyl)cyclopropane-1,1'-cyclobutane]-2-yl; 3-phenyl-2,2-dimethylcyclopropyl; 3-(4-halophenyl)-2,2-dimethylcyclopropyl; 3-(4-methoxyphenyl)-2,2-dimethylcyclopropyl; 3-(4-ethoxyphenyl)-2,2-dimethylcyclopropyl; and 3-(3,4-methylenedioxyphenyl)-2,2-dimethylcyclopropyl.

9. A method of controlling insects or acarids which comprises applying to the locus where control is desired an insecticidally or acaricidally effective amount of at least one compound of the formula

I



wherein n is 2–4, R_1 is hydrogen or lower alkyl, and R_2 is selected from the group consisting of 3-(2,2-dihaloethenyl)-2,2-dimethylcyclopropyl; 3-(cyclopentylidenemethyl)-2,2-dimethylcyclopropyl; 3-(2-methyl-1-propenyl)-2,2-dimethylcyclopropyl; 3-(1,2-dibromo-2,2-dichloroethyl)-2,2-dimethylcyclopropyl; 3-(1,2,2,2-tetrabromoethyl)-2,2-dimethylcyclopropyl; 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropyl; 3-(3-chloro-2,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropyl; 3-(2,3-dichloro-3,3-difluoro-1-propenyl)-2,2-dimethylcyclopropyl; 2,2,3,3-tetramethylcyclopropyl; 2,2-dichloro-3,3-dimethylcyclopropyl; 4-chloro-α-(1-methylethyl)phenylmethyl; 4-difluoromethoxy-α-(1-methylethyl)phenylmethyl; 3-(1,3-butadienyl)-2,2-dimethylcyclopropyl; 2,2-dimethyl-3-(oximinomethyl)cyclopropyl; 2-(2-chloro-α,α,α-trifluoro-p-toluidino)-3-methylbutyl; 3-(2,3,4,5-tetrahydro-2-oxothien-3-ylidenemethyl)-2,2-dimethylcyclopropyl; 2,2-dichloro-1-(4-ethoxyphenyl)cyclopropyl; 4-halo-α-(1-cyclopropyl)phenylmethyl; spiro[2,2-dimethylcyclopropane-1,1'-[1H]-indene]-3-yl; spiro[3-(2,2-dichloroethenyl)cyclopropane-1,1'-cyclohexane]-2-yl; spiro[3-(2,2-dichloroethenyl)cyclopropane-1,1'-cyclobutane]-2-yl; 3-phenyl-2,2-dimethylcyclopropyl; 3-(4-halophenyl)-2,2-dimethylcyclopropyl; 3-(4-methoxyphenyl)-2,2-dimethylcyclopropyl; 3-(4-ethoxyphenyl)-2,2-dimethylcyclopropyl; and 3-(3,4-methylenedioxyphenyl)-2,2-dimethylcyclopropyl.

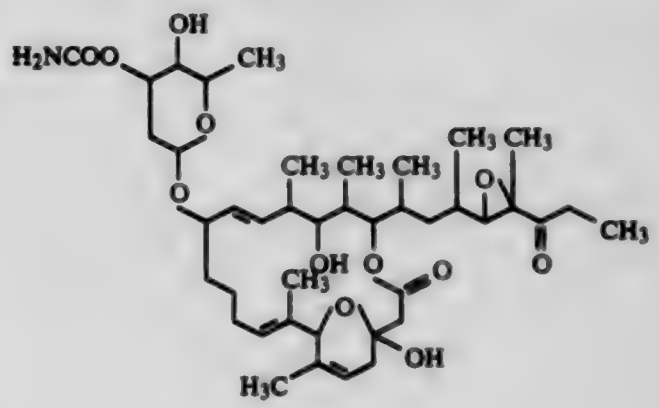
4,493,845

ANTIBIOTIC AM-3603

Satoshi Omura, Tokyo; Yoshitake Tanaka, Machida; Yuzuru Iwai, Narita; Yoko Takahashi, Tokyo, and Akira Nakagawa, Fuchu, all of Japan, assignors to Kitasato Kenkyusho, Tokyo, Japan

Continuation-in-part of Ser. No. 298,695, Sep. 2, 1981, abandoned. This application Oct. 18, 1982, Ser. No. 434,818
Claims priority, application Japan, Sep. 5, 1980, 55-123283
Int. Cl.³ C07D *491/08*
U.S. Cl. 424—279 7 Claims

1. A substance designated as AM-3603 having antibiotic activity represented by the following formula:



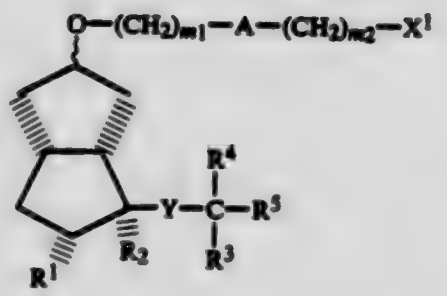
4,493,846

BICYCLOOCTANE DERIVATIVES

Keiichi Ono, Osaka; Akihiko Sugie, Toyonaka; Hajime Kawakami, Takarazuka; Shunsuke Semi, Toyonaka; Atsuyuki Kojima, Takarazuka, and Junki Katsube, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 13, 1981, Ser. No. 243,570
Claims priority, application Japan, Mar. 21, 1980, 55/36720; Jul. 8, 1980, 55/93664
Int. Cl.³ C07C *69/608, 69/616, 61/13, 61/28*
U.S. Cl. 424—308 20 Claims

1. A compound of the formula



wherein

X^1 is COOH, C_1–C_4 alkoxycarbonyl, phenoxycarbonyl, phenylalkyloxycarbonyl, (C_1–C_4 alkoxy)methoxycarbonyl, (C_2–C_5 alkanoyloxy)methoxycarbonyl, (C_3–C_7 cycloalkyloxy)carbonyl, phenylcarbonylmethoxycarbonyl, or (hydroxy C_1–C_4 alkoxy)carbonyl,

Y is ethylene or vinylene,

R^1 is —H, —OH, —OC_1–C_4 alkanoyl, —O—benzoyl, or —O—(C_1–C_4 alkoxy)alkyl,

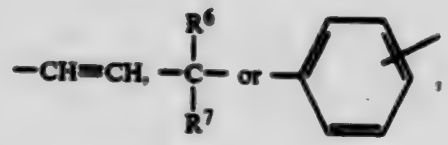
R^2 is H or R^1 or R^2, when taken together, are a single linkage forming a double bond between the carbon atoms to which they are linked,

R^3 is OH, —OC_1–C_4 alkanoyl, —O—benzoyl, or —O(C_1–C_4 alkoxy)alkyl,

R^4 is H or C_1–C_4 alkyl,

R^5 is H, C_3–C_8 alkenyl, C_3–C_8 alkynyl, C_1–C_8 alkyl, C_3–C_7 cycloalkyl or a group of the formula —$(CH_2)_n$—B where n is 1 or 2 and B is C_1–C_4 alkoxy, C_3–C_7 cycloalkyl, phenyl, phenoxy, phenyl substituted with any of a halogen atom, C_1–C_4 alkyl, CF_3, or C_1–C_4 alkoxy; or phenoxy substituted with any of a halogen atom, C_1–C_4 alkyl, CF_3, or C_1–C_4 alkoxy;

A is



wherein

R^6 and R^7 are each independently H or C_1–C_4 alkyl;

m_1 is 1 or 2, and

m_2 is 0, 1 or 2, and

an effective, anti-ulcerogenic non-toxic pharmaceutically acceptable salt thereof.

20. A pharmaceutical composition for the treatment of ulcers comprising

an anti-ulcerogenic effective amount of a compound of claim 1 and

a pharmaceutically acceptable carrier or diluent.

4,493,847

FAT EMULSION CONTAINING PROSTAGLANDIN E_1 AND METHOD FOR PRODUCTION THEREOF

Yutaka Mizushima, Tokyo; Hironaka Aihara, Kitamoto; Susumu Otomo, Konosu; Kazumasa Yokoyama, Toyonaka; Hiroyuki Okamoto, Akashi, and Tadakazu Suyama, Kyoto, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Tokyo and The Green Cross Corporation, Osaka, both of, Japan

Filed Jun. 13, 1983, Ser. No. 503,599
Claims priority, application Japan, Jun. 18, 1982, 57-104814
Int. Cl.³ A61K *31/19*
U.S. Cl. 424—317 13 Claims

1. A fat emulsion containing prostaglandin E, which comprises 5–50%(W/V) of soybean oil, an effective amount of prostaglandin E_1, 1–50 parts by weight of a phospholipid for 100 parts by weight of the soybean oil, and a proper amount of water.

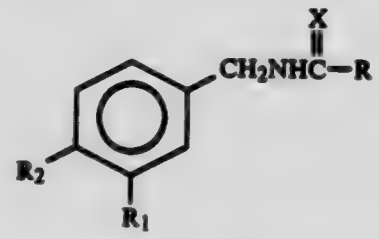
4,493,848

COMPOSITIONS AND METHODS USEFUL FOR PRODUCING ANALGESIA

Thomas R. LaHann, Cleves, Ohio, and Brian L. Buckwalter, Yardley, Pa., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 14, 1983, Ser. No. 514,206
Int. Cl.³ A61K *31/165*
U.S. Cl. 424—324 14 Claims

1. A method for producing analgesia in humans or lower animals, which comprises administering to said human or lower animal a safe and effective amount of a monoalkenamide compound or pharmaceutically-acceptable salt thereof, or mixtures thereof, of the formula:



wherein X is O or S; R is straight or branched, cis-monounsaturated alkenyl having from 11 to 23 carbon atoms; R_1 is H, OH, or OCH_3; R_2 is OH, or a short-chain ester; and wherein at least one of R_1 and R_1 is OH or OCH_3.

4,493,849

PROCESS FOR PREPARING A NON-CHALKY, ORGANOLEPTICALLY PLEASING CHEWING GUM COMPOSITION

Thomas J. Carroll, Astoria; Michael Rubin, West Nyack; Dominic J. Piccolo, Brooklyn, all of N.Y., and Michael Glass, Fairlawn, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Oct. 21, 1983, Ser. No. 544,330
Int. Cl.³ A23G *3/30*
U.S. Cl. 426—3 19 Claims

1. The process of making a non-chalky organoleptically pleasant chewing gum composition which comprises:

(a) forming a premix comprising particulate lecithin present in the amount of about 2 to about 7%, and an agglomerated mixture of dicalcium phosphate dihydrate and a sweetener, said dicalcium phosphate dihydrate being present in the amount of about 50 to about 70% and said sweetener being present in the amount of about 25 to about 30%, all percents being based on the total weight of the premix;

(b) mixing the premix of (a) with an effective amount of corn syrup, coloring agent and additional sweetener;

(c) further mixing the resultant mixture of (b) with a gum base to obtain a homogeneous mass.

4,493,850

METHOD OF TREATING AND CONSERVING FILLED DOUGH FOOD PRODUCTS

Mario Floravanti, Via Zaccoli, 26, Milano, Italy

Continuation of Ser. No. 444,435, Nov. 24, 1982, abandoned, which is a continuation-in-part of Ser. No. 202,707, Oct. 31, 1980, abandoned. This application May 11, 1984, Ser. No. 608,935

Int. Cl.[3] A21D *6/00, 15/04;* A23L *1/10*

U.S. Cl. 426—283 3 Claims

1. A method of treating and preserving filled dough products in the form of filled dough shells selected from the group of ravioli, tortellini, cappelletti and canelloni, which comprises the steps of subjecting filled dough shells to a high moisture environment at a high temperature, ranging from 70° C. to 100° C. range to provide surface gelling, subsequently drying the shells until the dough thereof reaches a moisture content level of 23 to 28 percent to prevent crumbling of the dough shells, packaging said dried dough shells under vacuum, and subjecting said packaged filled dough shells to a high temperature in the 70° C. to 100° C. range for a predetermined period of time sufficient to preserve the filled dough shells.

4,493,851

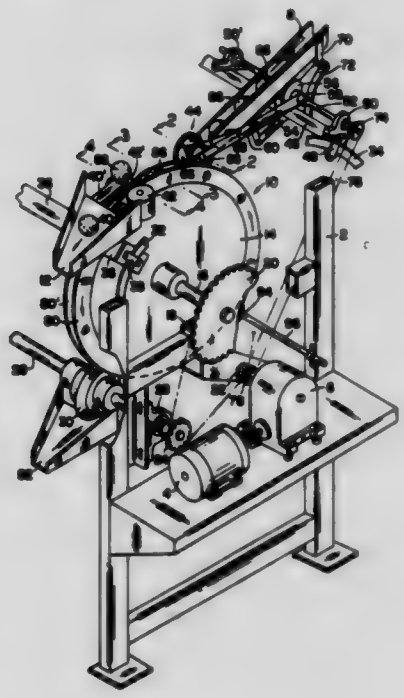
METHOD FOR SEPARATING THE PULP FROM THE SKIN OF TOMATOES

Jesus A. Silvestrini, Mendoza, Argentina, assignor to IMDEC S.R.L., Mendoza, Argentina

Division of Ser. No. 253,373, Apr. 13, 1981, Pat. No. 4,355,572. This application Aug. 23, 1982, Ser. No. 410,248

Int. Cl.[3] A23N *7/00*

U.S. Cl. 426—482 7 Claims



1. A method of separating pulp from the skin of tomatoes, comprising the steps of

gripping the outer surface of said skin on opposite sides of a plane extending generally through said fruit, by a pair of generally opposed, resiliently deflectable members;

carrying said fruit around at least a portion of a continuously circular path;

then producing a cut through a portion of said skin remote from said gripping contact and in a plane extending generally through said fruit; and

urging said pulp away from said gripped skin through said cut in said skin by the centrifugal force imparted by said movement around said continuously circular path, whereby the pulp is separated from the skin.

4,493,852

1,1-BIS (THIOALKYL) ALKYL-2,4-DIENE AS A FLAVORING AGENT

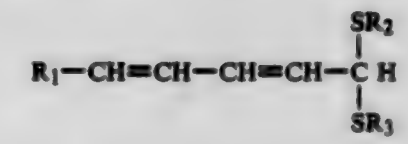
Paul R. Zanno, Hopewell Junction; Thomas H. Parliment, New City; Robert J. Soukup, New City, and Richard P. McNaught, New City, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 304,394, Sep. 21, 1981, abandoned. This application Apr. 20, 1984, Ser. No. 602,095

Int. Cl.[3] A23L *1/231*

U.S. Cl. 426—535 6 Claims

1. A foodstuff selected from a group consisting of soup, meat and stuffing mix comprising an amount of a flavoring compound within the range of 0.1 to 100 part ppm of the foodstuff, said flavoring compound having the following structure:



wherein R_1 is an alkyl group of 1 to 7 carbon atoms; and R_2 and R_3 are an alkyl group of 1 to 3 carbon atoms.

4,493,853

CHOCOLATE PRODUCTS WITH INCREASED PROTEIN CONTENT AND PROCESS FOR THE PRODUCTION OF SUCH TYPE PRODUCTS

Gábor Vajda; László Ravasz; Béla Karácsonyi, and Gábor Tabajdi, all of Budapest, Hungary, assignors to Központi Váltó- és Hitelbank RT. Innovációs Alap, Budapest, Hungary

Filed Jan. 31, 1983, Ser. No. 462,726

Claims priority, application Hungary, Feb. 1, 1982, 289/82

Int. Cl.[3] A23G *1/00*

U.S. Cl. 426—582 12 Claims

1. A process for the preparation of a chocolate product with increased protein content, which comprises the steps of:

(a) melting and processing cheese,

(b) mixing said melted processed cheese with a quickly melted chocolate melt in a ratio of 1:1-1.5,

(c) homogenizing the resulting mass with vigorous stirring at 50 degrees Centigrade or higher,

(d) optionally adding granulous substance to said homogenized mass,

(e) allowing the homogenized mass rapidly to solidify to a product, and

(f) finally immersing the product in chocolate or plain chocolate mass.

4,493,854

PRODUCTION OF DEFATTED SOYBEAN PRODUCTS BY SUPERCRITICAL FLUID EXTRACTION

John P. Friedrich, Green Valley, and Arthur C. Eldridge, Morton, both of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 20, 1983, Ser. No. 534,015

Int. Cl.[3] A23L *1/20;* C11B *1/10*

U.S. Cl. 426—629 12 Claims

1. A method for preparing a flavorful, defatted soybean protein product from raw soybean material comprising the steps of:

a. contacting said soybean material at a moisture content above 6.5% dry weight basis with a carbon dioxide solvent under supercritical conditions such that the characteristic raw grassy flavor is reduced without a substantial reduction in the protein solubility, wherein said conditions include a pressure of at least 690 bar and a temperature of

at least 81° C., and thereby extracting the lipids from said soybean material;

b. separating the lipid-containing carbon dioxide solvent resulting from step (a) from a substantially lipid-free soybean residue; and

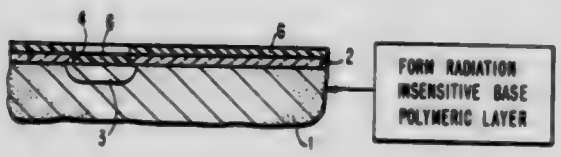
c. recovering said residue as a nutritious, organoleptically acceptable product characterized by a substantially reduced raw grassy flavor as compared to that of the raw soybean material.

4,493,855

USE OF PLASMA POLYMERIZED ORGANOSILICON FILMS IN FABRICATION OF LIFT-OFF MASKS

Harbans S. Sachdev, and Krishna G. Sachdev, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1982, Ser. No. 452,549
Int. Cl.³ B05D 3/06
U.S. Cl. 427—41
6 Claims



1. A method for forming a patterned metal coating on an oxidized monocrystalline silicon substrate having at least one via hole in said oxide to expose surface adjacent portions of said substrate, and with said substrate having at least one integrated circuit formed therein in electrical communication with said via hole, comprising:

A. blanket depositing a first film of a solvent soluble organic polymer over the oxidized surface and said exposed portions of said substrate, with said first polymeric film being subject to reactive ion etching in an oxygen containing ambient;

B. plasma polymerizing over said first film a second oxygen barrier film of an organosilicon polymer film, with said second film being subject to etching in a fluorine containing ambient;

C. heat treating said second film for about 10 to about 30 minutes at a temperature in the range of about 85° C. to about 300° C. to cross-link said second film,

D. depositing over said second film a resist layer subject to etching in an oxygen containing ambient, including exposing and developing said resist to form a pattern of openings at least one of which is in register with a corresponding one of said via holes, and expose therebetween the corresponding portions of said second film;

E. reactive ion etching in a fluroine containing ambient the exposed portions of said second to replicate said pattern of openings in said second film and expose corresponding portions of said first film;

F. reactive ion etching in an oxygen containing ambient the said exposed portions of said first film to replicate said pattern of openings through said first film and remove said resist from remaining portions of said second film whereby said second film is treated by an oxygen plasma;

G. depositing a blanket coating of a conductive film on said substrate inclusive of said openings over said substrate; and

H. subjecting composite structure to said solvent to solvate said polymeric first film and concurrently lifting-off all superimposed films thereon so as to retain said metal film on the said exposed portions of said substrate.

4,493,856

SELECTIVE COATING OF METALLURGICAL FEATURES OF A DIELECTRIC SUBSTRATE WITH DIVERSE METALS

Ananda H. Kumar, and Kris V. Srikrishnan, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 18, 1982, Ser. No. 359,469
Int. Cl.³ B05D 3/00, 3/02, 3/12, 5/00
U.S. Cl. 427—57
19 Claims



1. A method for selectively depositing brazeable and solderable coatings over an existing metallurgical pattern on surfaces of a dielectric substrate comprising:

(A) sequentially blanket coating said substrate, inclusive of said pattern, with two discrete levels of diverse metals having a differential in melting points and forming alloy systems of said metals with alloys thereof brazeable and solderable, bondable to said pattern, and non-wetting to the bare surfaces of said substrate wherein said diverse metals form a continuous series of solid solutions whose solidus curve lies intermediate the melting points of the substantially pure component metals, said blanket coating carried out so that the metal having the lower melting point is disposed adjacent said substrate, and using a thickness of the deposited metals that in conjunction with the heating rate of subsequent step (B) allows formation of a temporary liquid layer next to the substrate surface at or below the peak heat treatment temperature while the top portions of the composite film remain unmolten;

(B) heating said substrate at said heating rate to a temperature above the melting point of the lower melting component metal but not exceeding the solidus temperature of any resultant completely homogenized alloy corresponding to the amounts of metals deposited;

(C) cooling said substrate to (a) solidify said liquid layer, delaminate the solidified composite metal film on the bare surfaces of said substrate and (c) concurrently bond said solidified liquid layer to said pattern to form a brazeable or solderable coating thereon; and

(D) removing said delaminated composite film from the bare surface areas of said substrate to retain a bonded cladding comprised of said metals on said metallurgical pattern.

4,493,857

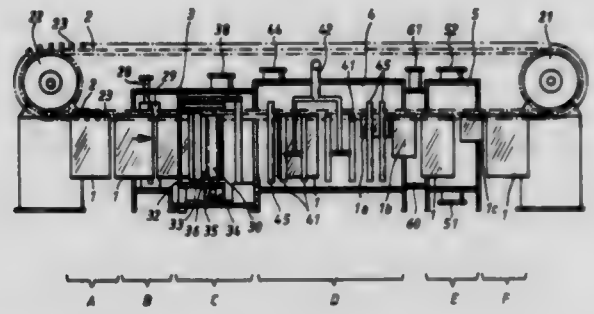
METHOD FOR APPLYING A COATING TO A THIN BOARD

Rolf Knigge, Hamburg, and Wolfgang Albies, Pinneberg, both of Fed. Rep. of Germany, assignors to Howaldtswerke-Deutsche Werft Aktiengesellschaft Hamburg und Kiel, Hamburg, Fed. Rep. of Germany

Filed Dec. 10, 1982, Ser. No. 448,813
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1981, 3149588
Int. Cl.³ B05D 1/28
U.S. Cl. 427—96
4 Claims

1. A method for applying a coating to the surface of a thin rigid board and subsequently drying the coating, comprising bringing the board in a vertical position and affixing one edge of it to conveying means; conveying and treating said board in a vertical position in a coating unit and a subsequent drying unit, and compensating any pressure and heating directed to one vertical surface of said board by equal pressure and heating

directed to the opposite surface by providing pressure means and heating means symmetrically on both sides of the path of



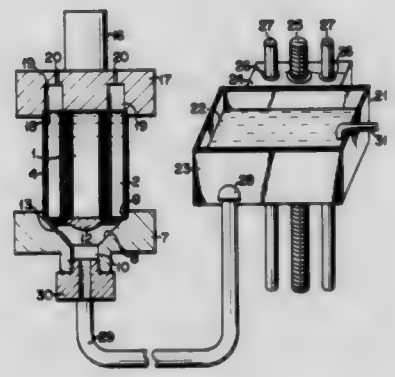
said board so that a plane and vertical position of the surface is substantially maintained during treatment.

4,493,858

METHOD FOR INSULATING SLOTS IN ROTORS OF ELECTRICAL ROTATING MACHINES

Hiroshi Nishizawa; Tadayuki Seto, and Takashi Ishikawa, all of Mie, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 29, 1982, Ser. No. 428,331
Claims priority, application Japan, May 26, 1982, 57-89169
Int. Cl.³ B05D 5/12
U.S. Cl. 427—104 10 Claims



1. A method for insulating slots in a rotor of an electrical rotating machine, said rotor comprising a rotor core assembly formed of laminated rotor punchings each having said slots, said method comprising the steps of:

removing punching oil from the inner surface of said rotor core assembly by heating only the interior of said slots to a high temperature while axially compressing said rotor core assembly;

applying a liquid electric insulating paint to the inner wall surfaces of said slots by introducing said paint only into said slots and then discharging said paint from said slots while axially compressing said rotor core assembly;

applying a negative pressure to the lower ends of said slots to remove said paint collected at said lower ends of said slots; and

heating at least the interior of said slots to bake said paint on the inner wall surfaces of said slots.

4,493,859

METHOD FOR MARKING HOT PIPE

Robert J. Krantz, Hermitage, Pa., assignor to Cyclops Corporation, Sharon, Pa.

Filed Sep. 13, 1982, Ser. No. 417,546
Int. Cl.³ B05D 1/12
U.S. Cl. 427—193 6 Claims

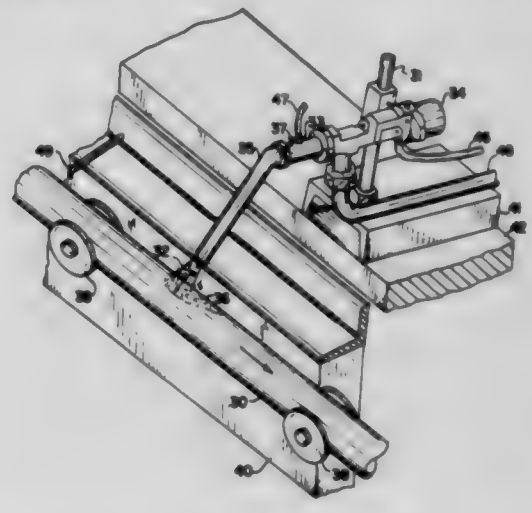
1. A method of marking a hot metal workpiece using glass particles having a melting point comprising the steps of:

(a) providing a hot metal workpiece covered with mill scale and at a temperature not less than the melting point of the glass particles,

(b) identifying a place on said work piece to be marked,

(c) applying a controlled flow of the glass particles to the place on the hot metal workpiece,

(d) allowing the particles to melt and produce a fusion coating on the place on the workpiece which coating absorbs mill scale, and



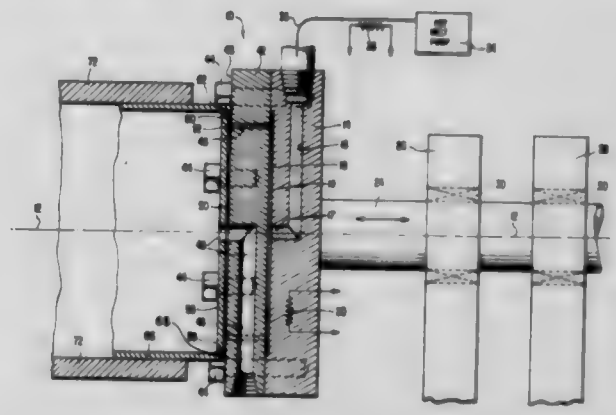
(e) cooling the workpiece at least until the coating cracks and at least a portion of the coating falls off the workpiece thereby removing the mill scale from that portion of the workpiece covered by the fallen portion of the coating and leaving bare metal.

4,493,860

APPLYING AN ADHESIVE STRIP TO A CONTAINER INTERIOR

Kevin M. Callahan, Rockledge, Pa., assignor to International Paper Company, New York, N.Y.

Filed Dec. 9, 1982, Ser. No. 448,103
Int. Cl.³ B05D 7/22
U.S. Cl. 427—230 6 Claims



5. A method of affixing an annularly continuous strip of adhesive to the interior rim or edge of an open ended container, the method including the steps of placing the rim of the open end of the container against a flat abutment surface, moving a mass of an adhesive radially outwardly along an annularly continuous channel until the adhesive strikes the interior surface of the container adjacent said edge, causing the adhesive to then flow in a generally axial direction along a portion of the interior surface of the container, whereby an annularly continuous strip or band of adhesive of uniform radial thickness is formed on the container wall interior.

4,493,861

PROCESS FOR ACTIVATING SUBSTRATE SURFACES FOR CURRENTLESS METALLIZATION

Kirkor Sirinyan, Leverkusen; Henning Giesecke, Cologne; Gerhard D. Wolf, Dormagen; Harold Ebneth, and Rudolf Merten, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 13, 1982, Ser. No. 449,043

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3150985

Int. Cl.³ B05D *3/10*

U.S. Cl. 427—304

8 Claims

1. Process for the activation of substrate surfaces for currentless metallization, comprising wetting the surface to be metallized with a palladium-II organic compound dissolved in a solvent, removing the solvent and reducing the palladium-II organic compound adhering to the surface to be metallized, wherein

(a) the organic moiety of the palladium-II organic compounds is an oligomeric, prepolymeric or polymeric compound of conjugated dienes or an unsaturated polyester and

(b) the complex is formed by reaction of organic metallic compounds with said oligomeric, prepolymeric or polymeric compound, said reaction being accompanied by ligand exchange.

4,493,862

ORNAMENTAL ASSEMBLY AND METHOD

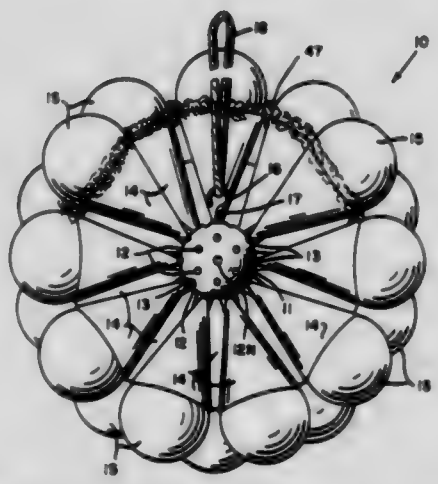
James C. Allbert, and Helen M. Allbert, both of 151 Pleasant View Rd., Derby, Conn. 06418

Filed Feb. 24, 1984, Ser. No. 582,391

Int. Cl.³ A41G *1/04*; A47G *33/00*

U.S. Cl. 428—10

20 Claims



1. An enlarged ornamental assembly of substantially spherical shape comprising a plurality of elongate decorative elements having similar dimensions and a small central support core designed to receive and support said decorative elements in radial extension in all directions therefrom, said central support core comprising a plurality of geometrically-located retainer means which extend radially thereto in all directions and which are substantially-uniformly spaced over the surface of said core, said elongate decorative elements each comprising a hollow conical body portion having a narrow attachment end received and supported in radial extension by a said retainer means of said core, and an enlarged decorative end spaced from said attachment end adjacent the frustrum of the conical body portion, there being a sufficient number of retainer means and elongate decorative elements to support enough decorative ends of sufficient dimensions to provide an enlarged decorative sphere surface comprising said decorative ends closely-spaced from or contacting each other to substantially completely hide the small central support core.

4,493,863

CAMOUFLAGE MATERIAL WITH PARTIAL APERTURES FORMING CURLED TONGUES AND METHOD OF MAKING THE SAME

Lars G. Karlsson, Gamleby, Sweden, assignor to Dieb Barracuda AB, Laholm, Sweden

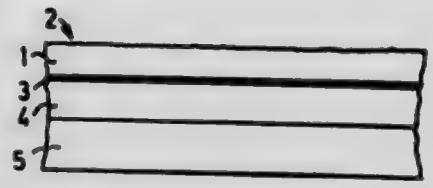
Filed Jan. 6, 1984, Ser. No. 568,733

Claims priority, application Sweden, Jan. 14, 1983, 8300175

Int. Cl.³ F41H *3/00*

U.S. Cl. 428—17

13 Claims



1. Camouflage material in the form of a three-dimensional camouflage-coloured apertured sheet, characterized in that there is included in the sheet a supporting layer on which there is laminated a layer of a plastics material initially having internal tensional stresses, said sheet having variously oriented, unconnected, curved slits going through the sheet, the slits forming apertures in said sheet and forming tongues which, due to the action of the internal tensional stresses in said plastics material that are activated when said sheet is slitted, are curled outwards from the general plane of the sheet away from the supporting layer to which said plastics material is secured.

4,493,864

COATED PIPE AND METHOD OF MAKING SAME

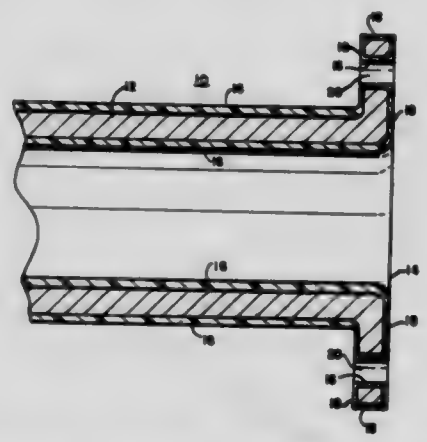
Ian D. M. Thomson, Plumsteadville, Pa., assignor to Arbonite Corporation, Doylestown, Pa.

Filed Jul. 1, 1982, Ser. No. 394,092

Int. Cl.³ B32B *7/02, 15/00*; D03D *49/06*

U.S. Cl. 428—36

2 Claims



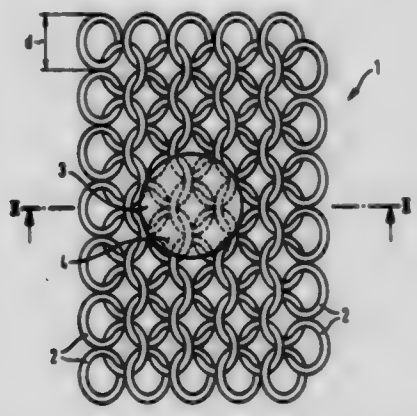
1. A protectively coated flanged pipe comprising a pipe section and at least one flange section, wherein the surface of said pipe section is coated with a first relatively lower durometer protective resin coating and, the surface of said flange section is coated with a second relatively higher durometer protective resin coating said pipe is composed of carbon or stainless steel and said protective coatings are PVC wherein the durometer of said first coating is about 45–80 shore A and the durometer of said second coating is about 86–94 shore A.

4,493,865

PROTECTIVE MITTEN MADE OF METAL RING FABRIC

Gerhard Kalsmann; Gerhard Schlalhauf, and Emil Brandauer, all of Mühlacker, Fed. Rep. of Germany, assignors to Friedrich Munch GmbH & Co. K.G., Mühlacker, Fed. Rep. of Germany

Filed Oct. 14, 1983, Ser. No. 541,995
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1982, 3238499
Int. Cl.³ D04B *1/28*
U.S. Cl. 428—82 29 Claims



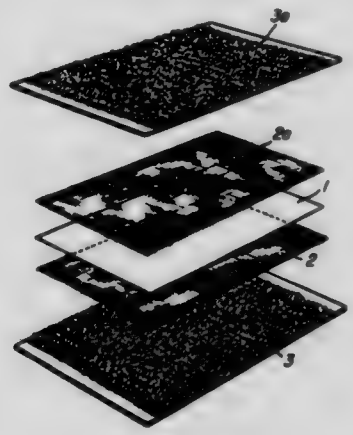
1. In a protective mitten comprising a metal ring fabric, the improvement residing in that said fabric comprising at least one portion which is embedded in elastomeric material and at least one area which is free of elastomeric material.

4,493,866

COSMETIC TOWEL

Yoon H. Kim, 19812 50th W. #614, Lynnwood, Wash. 98036

Filed Nov. 1, 1983, Ser. No. 547,570
Int. Cl.³ A47L *17/00*; B32B *7/04*
U.S. Cl. 428—101 7 Claims



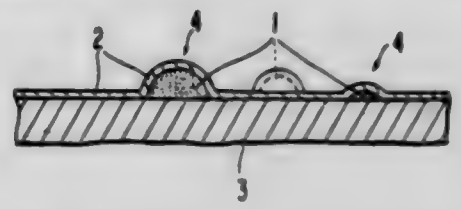
1. A cosmetic towel or the like comprising:
a planar piece of smooth, slick fabric,
two pieces of gauze-like material, one of each of said two pieces of gauze-like material being layered on each side of said smooth fabric, and
two pieces of towel, one each of said two pieces of towel being layered on each side of said gauze-like material, said layers of smooth fabric, gauze-like material and towel being stitched together around the edges with sewing thread or the like, the arrangement being such that each of the gauze layers is in movable relationship with the face of the smooth fabric with which it is superposed.

4,493,867

STRETCH FILM FOR WRAPPING AND A RESIN COMPOSITION THEREFOR

Takao Yazaki, and Masataka Noro, both of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 143,260, Apr. 24, 1980, abandoned. This application Mar. 16, 1982, Ser. No. 358,731
Claims priority, application Japan, Apr. 24, 1979, 54-49801
Int. Cl.³ B32B *3/30, 27/06*
U.S. Cl. 428—161 13 Claims



1. A stretch film comprising a resin composition composed of
(A) a resin selected from the group consisting of (i) an ethylene-vinyl acetate copolymer resin having a vinyl acetate content of from about 5 to 25% by weight and (ii) a polybutadiene resin,
(B) a binder, and
(C) a lubricant, wherein the strecth film has a surface structure such that particles of binder (B) are scattered on the surface of the film layer composed of resin (A) containing residual amounts of binder (B) and lubricant (C) which do not migrate to the surface and the surface of the film layer and the entire surface of the particles of binder (B) are covered by lubricant (C) to form convex protubernances having a diameter of from 0.1 to 5μ and wherein the stretch film has a static friction coefficient of not more than 0.55 and an adhesive strength of not less than 200 g/2 cm^2.

4,493,868

HIGH BULK BONDING PATTERN AND METHOD

Gary H. Meitner, Winneconne, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 330,288, Dec. 14, 1982, abandoned. This application Jan. 17, 1983, Ser. No. 458,502
Int. Cl.³ B32B *5/14*
U.S. Cl. 428—171 23 Claims

1. A high-loft nonwoven material having a basis weight in the range of from about 2 oz/yd to about 6 oz/yd comprising a web of thermoplastic filaments having an irregular and essentially nonrepeating pattern of bond areas of varying bond sizes and densities comprising a combination of bond patterns resulting in an average bond density of at least 40 bonds per square inch and an average total bond area percent coverage less than 40%.

4,493,869

FRAGRANCE-RELEASING MICROCAPSULES ON A SEE-THROUGH SUBSTRATE

Norman P. Sweeny, North Oaks, Minn.; Keith E. Relyea, St. Joseph, Wis., and Wayne L. Brastad, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 11, 1983, Ser. No. 540,502
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—201 10 Claims

1. A fragrance releasing article comprising:
(A) a transparent or translucent organic polymeric carrier layer,
(B) on one side of said carrier layer a pressure-sensitive or water-moistenable adhesive layer, and
(C) on the other side of said carrier layer a printed image applied to said carrier layer, and
(D) a non-opacifying fragrance releasing layer comprising

microcapsules carrying a volatile, fragrant liquid therein and an organic binder resin adhering the microcapsules to the printed carrier layer.

4,493,870

FLEXIBLE LAYERED PRODUCT

Cornelius M. F. Vrouenraets, Dieren, and Doetze J. Sikkema, Ellecom, both of Netherlands, assignors to Akzo nv, Arnhem, Netherlands

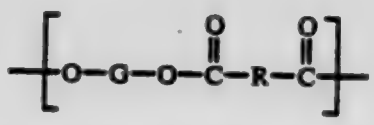
Filed Dec. 1, 1983, Ser. No. 556,999

Claims priority, application Netherlands, Dec. 2, 1982, 8204675

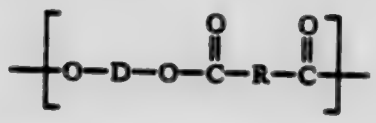
Int. Cl.³ B32B *7/00*

U.S. Cl. 428—245 9 Claims

1. Flexible layered product for use in waterproof garments or tents of a textile material covered with a waterproof material having a water vapour transmission rate of at least 1000 g/m² day, characterized in that the textile material is covered with a film of a copolyether ester consisting of a plurality of recurrent intralinear long-chain ester units and short-chain ester units which are randomly joined head-to-tail through ester bonds, said long-chain ester units corresponding to the formula:



said short-chain ester units corresponding to the formula:



where G is a divalent radical remaining after removal of terminal hydroxyl groups from at least one long-chain glycol having a molecular weight in the range of 800 to 6000 and an atomic ratio of carbon to oxygen in the range of 2.0 to 4.3, at least 70% by weight of the long-chain glycol having a carbon to oxygen ratio in the range of 2.0 to 2.4, R is a divalent radical remaining after removal of carboxyl groups from at least one carboxylic acid having a molecular weight less than 300, and D is a divalent radical remaining after removal of hydroxyl groups from at least one diol having a molecular weight less than 250, at least 80 mole % of the dicarboxylic acid used consisting of terephthalic acid or the ester forming equivalents thereof and at least 80 mole % of the low molecular weight diol consisting of 1,4-butanediol or the ester forming equivalents thereof, the sum of the mole percentages of the dicarboxylic acid which is not terephthalic acid or the ester forming equivalents thereof and of the low molecular weight diol which is not 1,4-butanediol or the ester forming equivalents thereof is not higher than 20 and the short-chain ester units form 50–75% by weight of the copolyether ester.

4,493,871

RESILIENT POLYURETHANE FOAM WITH IMPROVED RESISTANCE TO IGNITION

Peter G. Edgerley, and Sidney R. D. Oldland, both of Welwyn Garden City, England, assignors to Imperial Chemical Industries PLC, England

Continuation of Ser. No. 304,053, Sep. 21, 1981, abandoned, which is a continuation-in-part of Ser. No. 207,706, Nov. 17, 1980, abandoned, and a continuation-in-part of Ser. No. 260,840, May 5, 1981, abandoned, which is a continuation-in-part of Ser. No. 207,706, Nov. 17, 1980, abandoned. This application Jan. 10, 1983, Ser. No. 456,727

Claims priority, application United Kingdom, Nov. 12, 1980, 8036318; Sep. 3, 1980, 8028397

Int. Cl.³ B32B *3/06, 3/26, 27/00*

U.S. Cl. 428—308.4 8 Claims

1. A combination passing a flame test carried out according to BS 5852: Part 1, said combination comprising a resilient polyurethane foam and an upholstery covering material wherein said foam has on at least one surface thereof at least one coating of at least one vinylidene shloride copolymer containing at least 82% to 95% by weight of vinylidene chloride units, or a composition thereof, wherein the vinylidene chloride copolymer or composition thereof is substantially absent from the interior of the foam, and the amount of chlorine in the at least one vinylidene chloride copolymer or composition thereof is at least 60% by weight based on the weight of the at least one vinylidene chloride copolymer.

4,493,872

POLYESTER FILM COATED WITH METAL ADHESION PROMOTING COPOLYESTER

F. Gene Funderburk, Taylors; E. C. Culbertson, Greer, and Robert G. Posey, Taylors, all of S.C., assignors to American Hoechst Corporation, Somerville, N.Y.

Filed Dec. 5, 1983, Ser. No. 558,126

Int. Cl.³ B32B *15/08, 27/08, 27/36*

U.S. Cl. 428—332 26 Claims

1. An oriented self-supporting plastic film having a continuous copolyester polymeric coating on one or both sides thereof, said film prepared by melt extruding a substantially amorphous plastic film and thereafter orienting the film by stretching in one or two directions and heat setting the film, said copolyester coating being applied to said film as an aqueous dispersion prior to stretching in one direction or subsequent to stretching in one direction but prior to stretching in two directions, said copolyester coating consisting essentially of the polyester condensation product of the following monomers or their polyester forming equivalents:

(A) about 65 to 95 mole percent of isophthalic acid;

(B) about 0 to 30 mole percent of at least one aliphatic dicarboxylic acid of the formula $HOOC(CH_2)_nCOOH$, wherein n ranges from about 1–11;

(C) about 5 to about 15 mole percent of at least one sulfomonomer containing an alkali metal sulfonate group attached to a dicarboxylic aromatic nucleus; and

(D) stoichiometric quantities of about 100 mole percent of at least one copolymerizable aliphatic or cycloaliphatic alkylene glycol having about from 2 to 11 carbon atoms,

said film exhibiting improved adhesion to a metal coating applied by vapor deposition techniques onto one or both of said copolyester coated sides.

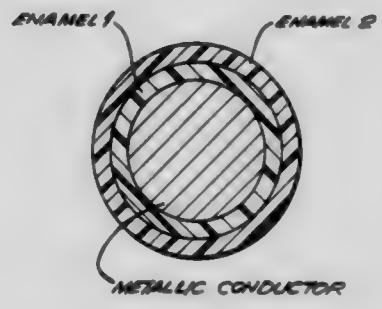
2. The film of claim 1 wherein said copolyester coating has a dry thickness within the range of about 10^{-7} to about 10^{-5} inch.

4,493,873

CORONA-RESISTANT WIRE ENAMEL COMPOSITIONS AND CONDUCTORS INSULATED THEREWITH

John J. Keane, Ballston, and Denis R. Pauze, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 374,844, May 5, 1982,. This application Mar. 30, 1983, Ser. No. 480,627
Int. Cl.³ B32B 9/00, 15/00, 27/00; H01B 7/00
U.S. Cl. 428—372 3 Claims



1. An electrical conductor insulated with corona-resistant two-stage insulation system comprising: a first insulating layer disposed peripherally around said conductor formed of a cured polyester, polyamideimide or polyesterimide resin; and a second insulating layer disposed peripherally around said first layer formed of a cured polyamide resin, wherein the resins forming said first and second layers are different, and wherein either said first layer or said second layer further comprises from about 1% to about 35% by weight of alumina particles of a finite size of less than approximately 0.1 micron, disposed within said resin by high shear mixing.

4,493,874

PRODUCTION OF A MAGNETIC POWDER HAVING A HIGH DISPERSIBILITY

Osamu Kubo, Yokohama; Tadashi Ido, Ebina; Tutomu Nomura, Yokohama, and Tatsumi Maeda, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 8, 1983, Ser. No. 473,200
Int. Cl.³ C04B 35/26
U.S. Cl. 428—403 10 Claims

1. A method for manufacturing a hexagonal ferrite magnetic powder for high density magnetic recording comprising:

melting a mixture of hexagonal ferrite-forming components and a glass-forming component;

rapidly cooling the resultant molten mixture to obtain an amorphous material;

thermally treating the amorphous material to precipitate fine particles of the magnetic hexagonal ferrite therein; and

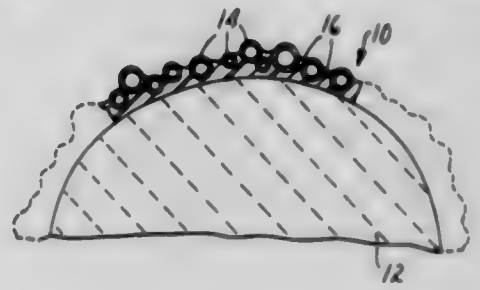
dissolving the amorphous material containing the precipitated fine particles such that a glass matrix of the glass-forming component remains on each of said fine particles in an amount of 0.01 to 0.3% by weight based on the weight of the particles, to obtain the hexagonal ferrite magnetic powder having a particle size of 0.01–0.3 μm, said hexagonal ferrite magnetic powder when mixed with a paint and coated on a non-magnetic base material effecting a recording medium that exhibits a higher squareness ratio and/or a higher surface gloss than a recording medium having coated thereon said hexagonal ferrite magnetic powder containing either less than 0.01 or more than 0.3% by weight of said glass matrtix.

4,493,875

PROPPANT FOR WELL FRACTURES AND METHOD OF MAKING SAME

Warren R. Beck, and Richard B. Castle, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 9, 1983, Ser. No. 559,965
Int. Cl.³ B32B 1/00, 3/14, 7/02
U.S. Cl. 428—403 18 Claims



1. A composite particle which is useful as a proppant and comprises

(a) a high-strength core having a density of at least 2.2 g/cc, and

(b) a thin void-containing coating of a density less than 0.8 g/cc, which composite particle has an overall average diameter from 0.2 to 3 mm.

4,493,876

CORROSION INHIBITION

Kevin Birkett; Edward G. Scovell, both of Manchester, and Glyn R. John, Warrington, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Apr. 16, 1984, Ser. No. 600,383
Claims priority, application United Kingdom, May 4, 1983, 8312211; Jan. 31, 1984, 8402491
Int. Cl.³ C09D 5/08
U.S. Cl. 428—457 8 Claims

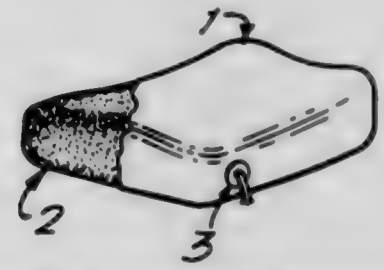
1. A process for the inhibition of corrosion of metals selected from the group consisting of iron, zinc, copper, tin and aluminium which comprises treating the metal with a 2-hydroxy-5-alkylbenzaldoxime wherein the 5-alkyl substituent contains from 7 to 13 carbon atoms and wherein the benzaldoxime ring is unsubstituted or carries a substitutent selected from the group consisting of halogen and nitro.

4,493,877

SUPPORT MEMBER

John S. Burnett, 51 Coldharbour La., Bushey, Herts., England

Filed Feb. 5, 1981, Ser. No. 231,829
Claims priority, application United Kingdom, Feb. 7, 1980, 8004084; Mar. 14, 1980, 8008654
Int. Cl.³ A47C 13/00
U.S. Cl. 428—542.8 7 Claims



1. In a device for conforming to the shape of and for supporting a body, comprising an airtight bag containing a granular material, means enabling the bag to be maintained in an evacuated condition, the bag and the material therein being so arranged that when the bag is not evacuated the granular material will flow to allow the bag to assume a shape conforming to

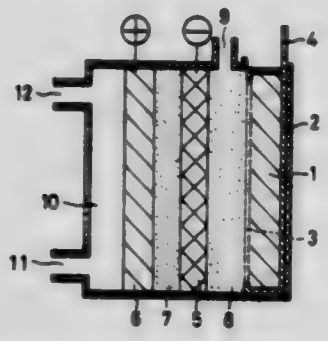
the shape of a body to be supported and that when the bag is subsequently evacuated the granular material forms a rigid support in the conformed shape by virtue of compression of the particles against one another, the improvement that the granular material has a surface which can be rendered adhesive whereby, when in said conformed shape, the granules adhere to one another to form a permanently rigid structure in said conformed shape independently of maintenance of the evacuated condition.

4,493,878

FUEL ELEMENT FOR LIQUID FUEL CELL AND A LIQUID FUEL CELL

Tatuso Horiba; Kazuo Iwamoto; Hidejiro Kawana, all of Hitachi; Kazunori Fujita, Tokkai, and Kohki Tamura, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 7, 1983, Ser. No. 482,723
Claims priority, application Japan, Apr. 23, 1982, 57-67416
Int. Cl.³ H01M 6/36, 8/04
U.S. Cl. 429—12
18 Claims



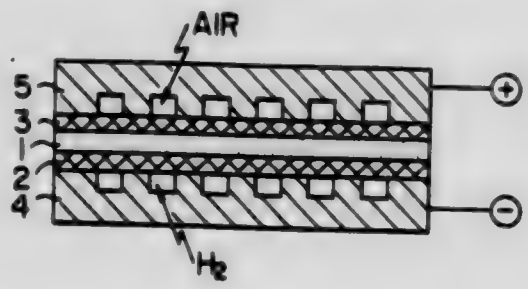
1. A fuel element for supplying liquid fuel to a fuel cell comprising: a non-fluid material binding a fuel in a non-fluidized state within an outer wrapping or cartridge, whereby the fuel element may be removably positioned within a fuel cell to provide liquid fuel to the fuel cell.

4,493,879

FUEL CELL

Toshiki Kabara; Shimpei Matsuda, both of Ibaraki; Kenzo Ishii, Hitachi; Seizi Takeuchi, Hitachiota; Jinichi Imahashi, and Akio Houji, both of Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Company, Ltd., both of Tokyo, Japan

Filed Mar. 11, 1982, Ser. No. 357,278
Claims priority, application Japan, Mar. 18, 1981, 56-37844; Mar. 18, 1981, 56-37845; Mar. 18, 1981, 56-37846
Int. Cl.³ H01M 4/86
U.S. Cl. 429—41
8 Claims



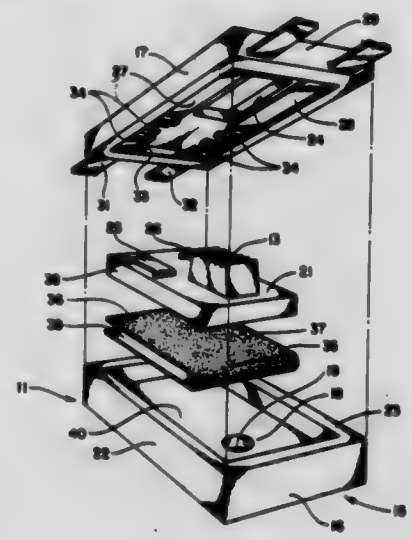
1. In a fuel cell comprising a pair of gas diffusion electrodes and a matrix retaining phosphoric acid electrolyte, disposed between said gas diffusion electrodes, the improvement wherein said matrix comprises one or more metal oxides being electron-insulative and insoluble in phosphoric acid for enlarging the retention of phosphoric acid within said matrix and one or more polymeric binders, wherein the one metal oxide is a complex oxide containing zirconium and selenium, phosphorus, or silicon.

4,493,880

BATTERY SWITCH

Jeffrey S. Land, Roseville, Minn., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Dec. 19, 1983, Ser. No. 562,953
Int. Cl.³ H01M 2/20
U.S. Cl. 429—97
9 Claims



1. A switch for use in controlling operation of a metal-air battery having air-depolarizable cells, means for housing the cells, and terminals connected to the cells, said switch comprising:

wall means defining a vent opening for admitting air to the battery cells in the housing;

a slide;

means for guiding the slide for movement in a preselected path adjacent said wall means;

electrical switch means constructed to be closed as a result of said slide being disposed in a first position in said path and open as a result of said slide being disposed in a second position in said path;

means for connecting said switch means to the battery cell terminals;

a flexible closure; and

means for causing the closure to be sealed to said wall means across said vent opening when the slide is in said second position, and opening said vent opening and thereby permitting air flow through said vent opening as a result of movement of the slide from said second position to said first position.

4,493,881

ELECTROPHOTOGRAPHIC METHOD FOR PRODUCING BLACK AND COLOR SEPARATION IMAGES

John D. Mitchell, Webster, and Stephen Michel, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 20, 1983, Ser. No. 506,255
Int. Cl.³ G03G 13/01
U.S. Cl. 430—42
5 Claims

1. An electrophotographic method for forming a color separation image and a black separation image comprising:

(a) providing an original containing false-color information corresponding to the black separation image desired, and color information corresponding to the color separation image desired, the false-color information being capable of selectively absorbing actinic light in a first wavelength region, W_1, of the spectrum, and the color information being capable of selectively absorbing actinic light in a second wavelength region, W_2, of the spectrum;

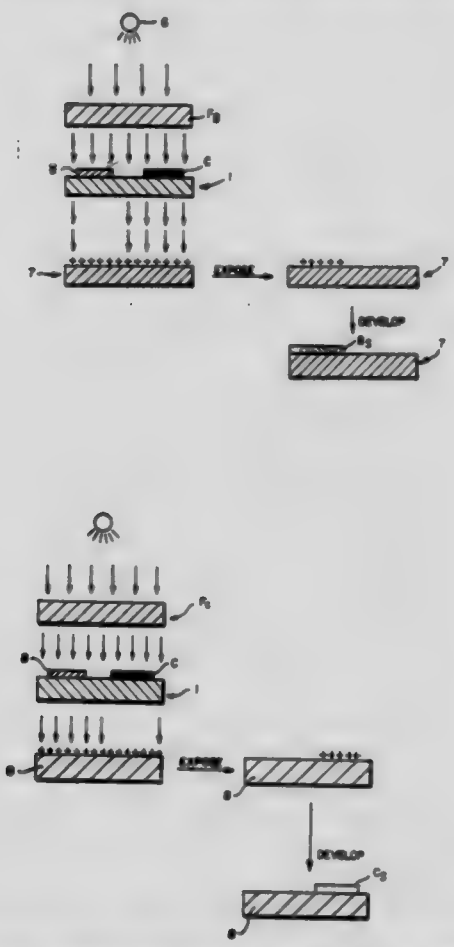
(b) forming a black separation image by:

(i) illuminating the original either with light having wavelengths within the W_1 region only, or with light having wavelengths in both the W_1 and W_2 wavelength regions which is filtered after illuminating the original to exclude all light except that having W_1 wavelengths, thereby forming a first pattern of light corresponding to the false-color information;

(ii) exposing a first photoreceptor charged to a given polarity to the first pattern of light to form a first electrostatic image of said polarity; and

(iii) developing the first electrostatic image with a black or neutral toner; and

(c) forming a nonoverlapping color separation image by:



(i) illuminating the original either with light having wavelengths within the W_2 region only, or with light having wavelengths in both the W_1 and W_2 wavelength regions which is filtered after illuminating the original to exclude all light except that having W_2 wavelengths, thereby forming a second pattern of light corresponding to the color information;

(ii) exposing a second photoreceptor charged to the same polarity as said first photoreceptor to the second pattern of light to form a second electrostatic image of said polarity; and

(iii) developing the second electrostatic image with a colored toner.

4,493,882

IMAGE FORMATION METHOD AND APPARATUS

Shozo Kaneko, Tokyo; Yasuyuki Tamura, Kawasaki, and Toru Takahashi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1982, Ser. No. 444,972
Int. Cl.³ G03G *21/00*
U.S. Cl. 430—97 14 Claims

1. An image formation method comprising the steps of:

developing an image bearing member with a first one component conductive developer retained by first retaining means; and

rubbing the surface of the image bearing member bearing a developed image with a second one component conductive developer retained by second retaining means and maintained at a potential to remove the developer which forms a fog in the non-image area of the image bearing member.

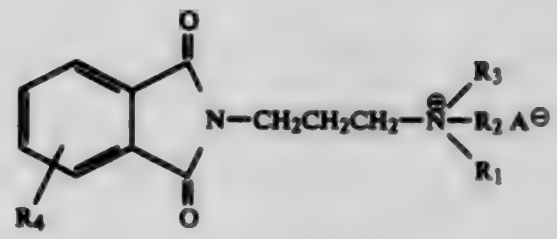
4,493,883

ELECTROPHOTOGRAPHIC TONER COMPOSITIONS CONTAINING NOVEL IMIDE CHARGE CONTROL ADDITIVES

Robert J. Gruber, Rochester, N.Y.; Doretta Agostine, Jenkintown, Pa.; Paul C. Julien, West Webster, and Raymond A. Yourd, III, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 21, 1984, Ser. No. 581,926
Int. Cl.³ G03G *9/08*
U.S. Cl. 430—110 24 Claims

1. An improved positively charged toner composition comprised of resin particles, pigment particles, and an imide charge enhancing additive of the following formula:



wherein R_1, R_2, and R_3, are alkyl groups of from 1 carbon atom to about 25 carbon atoms, R_4 is selected from the group consisting of hydrogen, nitro, halogen, amino and alkyl and A is an anion.

4,493,884

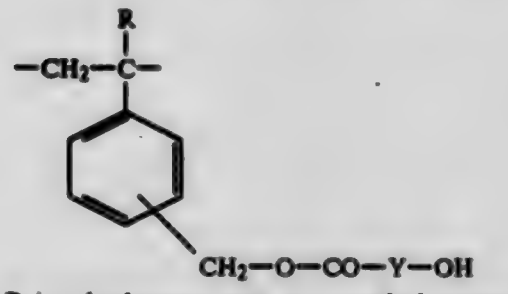
LIGHT-SENSITIVE COMPOSITION

Teruo Nagano, Kanagawa, and Akira Nagashima, Shizuoka, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 23, 1983, Ser. No. 497,282
Claims priority, application Japan, May 21, 1982, 57-85765
Int. Cl.³ G03C *1/60*; G03F *7/08*
U.S. Cl. 430—192 12 Claims

1. A light-sensitive composition, comprising:

90 to 5 wt % of a high molecular compound as a homopolymer or a copolymer having in its molecular structure a structure unit represented by the general formula (I):



(I)

wherein R is a hydrogen atom or a methyl group, and Y is a phenylene group, a substituted phenylene group, a naphthylene group or a substituted naphthylene group in admixture with 10 to 50 wt % based on the light-sensitive composition, of a light-sensitive o-naphthoquinone-diazide compound.

4,493,885

PHOTOGRAPHIC MATERIAL WITH METAL COMPLEXED DYES

Shinsaku Fujita; Yukio Maekawa, and Shigetoshi Ono, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

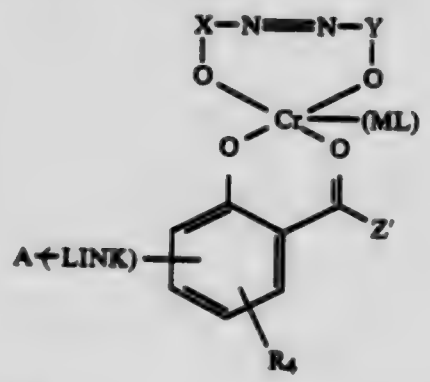
Continuation of Ser. No. 285,245, Jul. 20, 1982, abandoned, which is a continuation of Ser. No. 111,067, Jan. 10, 1980, abandoned, which is a continuation-in-part of Ser. No. 962,729, Nov. 21, 1978, abandoned, which is a continuation of Ser. No. 774,173, Mar. 3, 1977, abandoned. This application May 10, 1983, Ser. No. 491,788

Claims priority, application Japan, Mar. 3, 1976, 51-22779; United Kingdom, Mar. 2, 1977, 8879/77

Int. Cl.³ G03C 5/54, 1/40

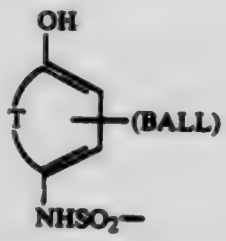
U.S. Cl. 430—223 10 Claims

1. A color photographic material for the diffusion transfer process comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a redox compound of high solubility in organic solvents which is dispersed in a hydrophilic colloid using ethyl acetate, cyclohexanone, 2-methoxy methanol or acetone, and a solvent which is substantially insoluble in water and has a boiling point of higher than about 200° C. at normal pressure, the solvent which is substantially insoluble in water and having a boiling point of higher than about 200° C. at normal pressure remaining in the color photographic material, said redox compound releasing a diffusible metal complex having coordinated therewith a dye or a precursor thereof and a cyclic or chain multidenate ligand by reaction with the oxidation product of a developing agent, wherein the redox compound is a dye releasing compound having formula (VIIIa)



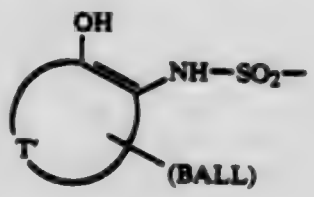
(VIIIa)

wherein A represents a redox compound represented by formula (VIIa) or (VIIb)



(VIIa)

wherein T represents the atoms necessary to complete a benzene nucleus or a naphthalene nucleus; when T represents the atoms necessary to complete the naphthalene nucleus (BALL) may be connected to either of the rings of the naphthalene nucleus; and (BALL) represents a photographically inert ballast group which renders the compound non-diffusible;



(VIIb)

wherein T' has the same meaning as T in formula (VIIa) and (BALL) is as described above;

X represents an arylene group; Y represents an arylene group for a 5-membered or 6-membered nitrogen-containing heterocyclic ring; (ML) represents a monodentate ligand having a nitrogen atom or an oxygen atom as a coordination atom; (LINK) represents a divalent linking group; R_4 represents a lower alkyl group, a lower alkoxy group, a halogen atom or a hydrogen atom; and Z' represents a hydroxy group.

4,493,886

COMPOSITION AND METHOD FOR FORMING AMORPHOUS CHALCOGENIDE FILMS FROM SOLUTION

Imants R. Lauks, Sewell, N.J., assignor to University Patents, Inc., Norwalk, Conn.

Division of Ser. No. 377,222, May 11, 1982, Pat. No. 4,439,464. This application Mar. 27, 1984, Ser. No. 593,773

Int. Cl.³ G03C 5/00

U.S. Cl. 430—270 8 Claims

1. In a photolithographic process comprising the steps of forming a radiation-sensitive amorphous chalcogenide film on a substrate and employing said film as a resist in delineating a pattern on said substrate, the improvement wherein said film formation is effected by the steps comprising:

(a) coating onto said substrate in a non-vacuumized environment a solution containing a glass-forming chalcogenide compound dissolved in a non-aqueous vaporizable solvent, said solution being substantially free from particulate or crystallizable material; and

(b) evaporating the solvent from the coating so as to form an amorphous chalcogenide film substantially free from particulate and microstructure.

4,493,887

OPTICAL RECORDING ELEMENT

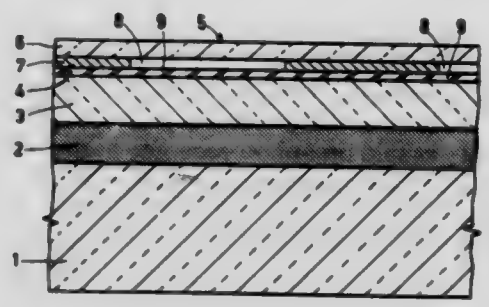
Winfried L. Peeters; Johannes J. Poujeé, and Jan W. D. Martens, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 14, 1983, Ser. No. 458,124

Claims priority, application Netherlands, Nov. 5, 1982, 8204291

Int. Cl.³ G03C 1/495, 1/80

U.S. Cl. 430—275 9 Claims



1. A optical recording element comprising a transparent supporting plate, a recording layer situated on one surface of said supporting plate, an optically readable reflecting optical structure comprising reflection areas situated alternately at a higher level and a lower level situated on the same side of said supporting plate as said recording layer, said optical structure comprising a layer of synthetic resin, containing a spiral-like groove or a groove built up from concentric circles, and a reflection layer provided over the entire surface of said synthetic resin layer, characterized in that the recorded layer is situated between the transparent supporting plate and the optically readable reflecting optical structure and the reflection layer of the reflecting optical structure is situated of said synthetic resin layer remote from the recording layer.

4,493,888

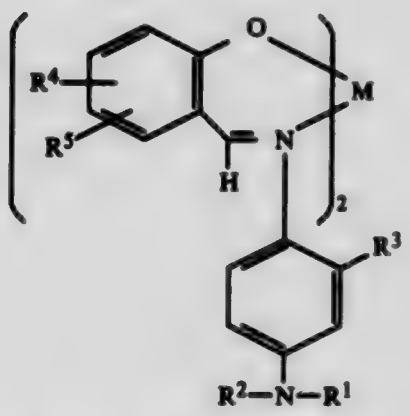
SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Katsusuke Endo; Eiichi Kato; Nobutaka Ohki, and Takatoshi Ishikawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 15, 1983, Ser. No. 514,216
Claims priority, application Japan, Jul. 15, 1982, 57-123309
Int. Cl.³ G03C 5/24, 1/02
U.S. Cl. 430—405 8 Claims

1. A method for forming a photographic image, comprising the steps of:

providing a silver halide photographic light-sensitive material comprising a support base having position thereon a diffusion resistant coupler, a light-sensitive silver halide and organic metal complex represented by the following general formula (I):



wherein M represents a divalent metal atom; R^1 and R^2, which may be the same or different, each represents an alkyl group having from 1 to 5 carbon atoms, a hydroxyalkyl group having from 1 to 5 carbon atoms, an alkoxyalkyl group having from 2 to 10 carbon atoms or an alkylsulfonamidoalkyl group having from 2 to 10 carbon atoms, or R^1 or R^2 may be bonded to each other to form a heterocyclic ring together with the nitrogen atom; R^3, represents a hydrogen atom, an alkyl group having from 1 to 5 carbon atoms or an alkoxy group having from 1 to 5 carbon atoms; and R^4 and R^5, which may be the same or different, each represents a hydrogen atom, a halogen atom, a hydroxy group, an amino group, a carboxylic acid group, a sulfonic acid group, an alkoxycarbonyl group, an alkyl group or an alkoxy, or R^4 and R^5 may be bonded to each other to form a 5-membered or 6-membered ring;

imagewise exposing the material;

developing the material with an activator solution comprising an alkaline processing solution having a pH of from 7 to 14.

4,493,889

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Yuji Mihara; Satoshi Nagaoka, and Masaki Okazaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 23, 1984, Ser. No. 573,181
Claims priority, application Japan, Jan. 24, 1983, 58-9613
Int. Cl.³ G03C 1/02
U.S. Cl. 430—572 17 Claims

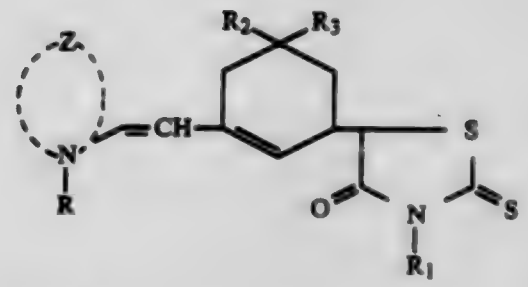
1. A silver halide photographic light-sensitive material, comprising:

a support having thereon

a red-sensitive silver halide photographic emulsion layer comprising

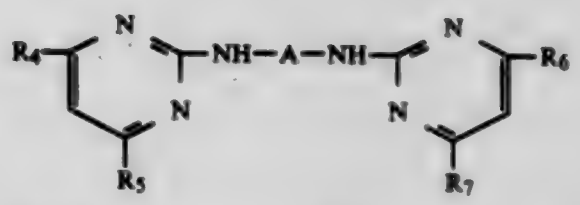
a tetramethine melocyanine dye represented by the general formula (I) and

a compound represented by the general formula (II)



(I)

wherein R and R_1 each represents an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group or an allyl group, and at least one of R and R_1 represents an alkyl group containing a sulfo group or an alkyl group containing a carboxyl group, R_2 and R_3 each represented an alkyl group, Z represents a nonmetal atomic group necessary to complete a 5-membered or 6-membered heterocyclic nucleus containing nitrogen,



(II)

wherein A represents a divalent aromatic residue, R_4, R_5, R_6 and R_7 independently represent a hydrogen atom, a hydroxy group, a lower alkyl group, an alkoxy group, an aryloxy group, a halogen atom, a heterocyclic group, an alkylthio group, a heterocyclylthio group, an arylothio group, an amino group, a substituted or unsubstituted alkylamino group, a substituted or unsubstituted arylamino group, a heterocyclylamino group, a substituted or unsubstituted aralkylamino group, an aryl group or a mercapto group, and at least one of A, R_4, R_5, R_6 and R_7 represents a group substituted with at least one sulfo group.

4,493,890

ACTIVATED APOGLUCOSE OXIDASE AND ITS USE IN SPECIFIC BINDING ASSAYS

David L. Morris, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 246,591, Mar. 23, 1981, abandoned. This application Aug. 2, 1982, Ser. No. 404,427
Int. Cl.³ G01N 33/54; C12N 9/96
U.S. Cl. 435—7 33 Claims

1. A method for increasing the ability of apoglucose oxidase to combine with flavin adenine dinucleotide and derivatives thereof to form active glucose oxidase comprising the step of interacting apoglucose oxidase with anti-glucose oxidase.

4,493,891

DETERMINATION OF OXIDIZED α-1-PROTEINASE INHIBITOR IN SERUM OR PLASMA

James Travis, Athens, Ga., assignor to University of Georgia Research Foundation, Inc., Athens, Ga.

Filed Jul. 27, 1982, Ser. No. 402,442
Int. Cl.³ C12Q 1/38; C12N 9/99
U.S. Cl. 435—23 13 Claims

1. A method for determining percent of oxidized α-1-proteinase inhibitor present in an unknown sample of serum or plasma comprising:

(a) assaying a first portion of the unknown sample of serum or plasma for enzymatic activity of an enzyme inhibitable by α-1-proteinase inhibitor;

(b) assaying a second portion of the unknown sample of serum or plasma for enzymatic activity of an elastase;

(c) selecting known standards and determining activity for

both the enzyme inhibitable by α-1-proteinase inhibitor and the elastase in said standards;

(d) determining an oxidized ratio, K_o, of the unknown sample of serum or plasma wherein

$$K_o = \frac{T_k - T_u}{E_k - E_u}$$

wherein T_k=Enzymatic activity of the enzyme inhibitable by α-1-proteinase inhibitor in the standard solution of said enzyme;

wherein T_u=Enzymatic activity of the enzyme inhibitable by α-1-proteinase inhibitor of an unknown solution comprising the standard solution of said enzyme and the unknown sample of serum or plasma;

wherein E_k=Enzymatic activity of the elastase in the standard solution of the elastase; and

wherein E_u=Enzymatic activity of the elastase of an unknown solution comprising the standard solution of the elastase and the unknown sample of serum or plasma;

(e) determining a reduced ratio, K_R, of a standard reduced sample of serum or plasma, wherein

$$K_R = \frac{T_k - T_r}{E_k - E_r};$$

wherein T_k=Enzymatic activity of the enzyme inhibitable by α-1-proteinase inhibitor in the standard solution of said enzyme;

wherein T_r=Enzymatic activity of the enzyme inhibitable by α-1-proteinase inhibitor in a known solution comprising the standard solution of said enzyme and the standard reduced sample of serum or plasma;

wherein E_k=Enzymatic activity of the elastase in the standard solution of the elastase; and

wherein E_r=Enzymatic activity of the elastase in a known solution comprising the standard solution of the elastase and the standard reduced sample of serum or plasma;

(f) substituting the reduced ratio and the oxidized ratio into an equation

$$X = \left(1 - \frac{K_R}{K_o}\right) 100$$

and solving the equation for X, whereby X is the percent of oxidized α-1-proteinase inhibitor.

4,493,892

SOLVENT SYSTEM FOR PEROXIDASE INHIBITOR REAGENT FOR FECAL OCCULT BLOOD DETERMINATIONS

Martin Fleisher, Glen Cove, N.Y., assignor to Memorial Hospital for Cancer & Allied Diseases, New York, N.Y.

Filed Dec. 20, 1982, Ser. No. 451,526

Int. Cl.³ C12Q *1/28*; G01N *33/72*

U.S. Cl. 435—28 13 Claims

1. In a process for determining the presence of fecal occult blood in a test sample which comprises inhibiting peroxidase enzyme interferences by partially denaturing the peroxidase enzyme protein using a protein-hydrogen bond cleaving agent, and simultaneously removing metals necessary for efficient peroxidase enzyme activity, and thereafter using a guaiac-peroxidase test matrix to determine fecal occult blood;

the improvement comprising

dissolving said protein-hydrogen bond cleaving agent in an alcohol-water solvent formed of approximately 20 to 50% by volume of methanol, ethanol, isopropanol or n-butanol in water; and thereafter adding said agent to the sample.

8. In a process for determining the presence of fecal occult blood in a test sample which comprises inhibiting peroxidase enzyme interferences by partially denaturing the peroxidase enzyme protein using protein-hydrogen bond cleaving agent, and simultaneously removing metals necessary for efficient peroxidase enzyme activity, and thereafter using a guaiac-peroxidase test matrix to determine fecal occult blood by the development of a blue color based on the phenolic oxidation of guaiac by hemoglobin in the presence of hydrogen peroxide,

the improvement comprising

adding a weak acid having an acid strength approximately the same as acetic acid to the reaction before developing the color.

4,493,893

PROCESS FOR CLONING THE GENE CODING FOR A THERMOSTABLE ALPHA-AMYLASE INTO *ESCHERICHIA COLI* AND *BACILLUS SUBTILIS*

Jonathan R. Mielenz, and Susan Mickel, both of LaGrange Park, Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Continuation of Ser. No. 225,287, Jan. 15, 1981, abandoned. This application Mar. 11, 1983, Ser. No. 472,646

Int. Cl.³ C12N *15/00, 1/00, 9/26*; C12P *21/00*

U.S. Cl. 435—172.3 22 Claims

1. A process for constructing a chimeric plasmid having a gene coding for a thermostable alpha-amylase which comprises:

(a) cutting naturally-occurring plasmid DNA present in a strain of *B. stearothermophilus* having a gene coding for a thermostable alpha-amylase to obtain a linear DNA sequence containing the alpha-amylase coding gene;

(b) cutting a suitable vector to obtain a second linear DNA sequence; and

(c) joining the linear DNA sequences of Steps (a) and (b).

4,493,894

POLYSACCHARIDE BEADS

Yutaka Miyashiro, Nara; Masao Ogawa, Osaka; Yoshio Yamazaki, Toyonaka, and Seizi Igarasi, Ashiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 958,641, Nov. 8, 1978, abandoned, which is a division of Ser. No. 734,352, Oct. 20, 1976, Pat. No. 4,143,201. This application Sep. 16, 1980, Ser. No. 187,974

Claims priority, application Japan, Oct. 21, 1975, 50-127196; May 24, 1976, 51-60438

Int. Cl.³ A61K *31/71*

U.S. Cl. 435—178 13 Claims

1. In a chemical method comprising the employment of a polysaccharide matrix packed in a column the improvement according to which the matrix material is a water-insoluble β-1,3-glucan gel which is shaped in the form of beads with a diameter within the range of about 5 to 1000μ.

4,493,895

MICROBIAL DEGRADATION OF OBNOXIOUS ORGANIC WASTES INTO INNOCUOUS MATERIALS

Joseph F. Colaruotolo, Grand Island, N.Y.; Ronald H. Olsen, Ann Arbor, Mich., and Peter A. Vandenbergh, Sarasota, Fla., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Division of Ser. No. 305,079, Sep. 24, 1981,. This application Jul. 30, 1982, Ser. No. 404,344

Int. Cl.³ C12R *1/38*; C07G *17/00*; C12N *15/00, 1/20, 1/00*

U.S. Cl. 435—262 19 Claims

1. A process for microbial degradation of halogenated organic chemical waste which comprises applying to the locus of said halogenated organic chemical waste strains of microorganisms capable of degrading said halogenated organic chemicals to carbon dioxide, water, and a salt said strains being a member of the group consisting of *Pseudomonas cepacia* var.

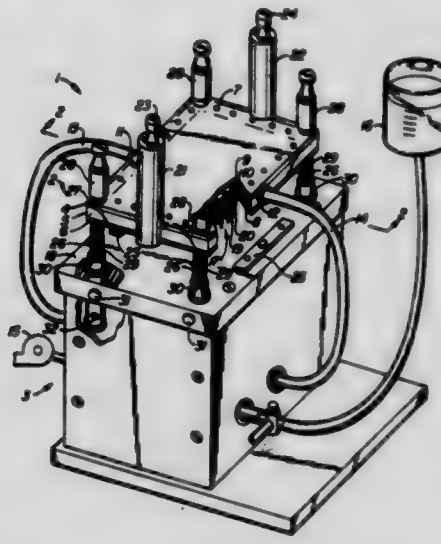
niagarous ATCC 31945, ATCC 31941, ATCC 31942, ATCC 31940, ATCC 31943, ATCC 31944, ATCC 31939, and mutants thereof and monitoring removal of the contaminants from the locus of the application.

4,493,896

DUAL CHAMBER MICROPLATE WASHER

George B. La Motte, III, Larkspur, and Samuel Burd, Oakland, both of Calif., assignors to Bio-Rad Laboratories, Inc., Calif.

Filed Oct. 14, 1982, Ser. No. 434,309
Int. Cl.³ C12M *1/00, 1/32;* B01L *3/00*
U.S. Cl. 435—287 8 Claims



1. An apparatus for the filling and evacuation of all wells simultaneously of a multiwell microplate, said apparatus comprising:

a distribution head comprising three parallel plates designated, respectively, an upper plate, a middle plate, and a lower plate, said plates spaced apart to form gaps therebetween and thereby define two enclosed chambers designated, respectively, an upper chamber and a lower chamber with said middle plate forming a common boundary therebetween, said lower plate having affixed therein a plurality of tubes spaced apart from each other, each said tube passing through said lower plate and perpendicular thereto, said tubes forming a rectangular array such that, when said distribution head is superimposed over said microplate, a pair of said tubes is aligned with each well of said microplate, the portions of each tube of said pair which extends below said lower plate being of unequal length thereby defining a more extended tube and a less extended tube, said less extended tube extending upward through said lower chamber and said middle plate to terminate above the upper surface of said middle plate inside the interior of said upper chamber, and said more extended tube providing an open passage from its lower end to the interior of said lower chamber,

a support for said microplate, said support comprising a substantially flat horizontal surface containing guide means adapted to secure said microplate in a predetermined position on said support surface,

means for aligning said distribution head above said support with said upper, middle, and lower plates of said distribution head and said support surface in parallel relation, and for narrowing and widening the distance between said distribution head and said support surface while substantially maintaining said parallel relation,

stop means for setting a minimum spacing distance between said distribution head and said support surface such that when said distance is at said minimum, the exposed end of the more extended tube of each said tube pair is sufficiently close to the bottom of the corresponding well in said microplate to permit evacuation of substantially all liquid from said well,

means for applying a vacuum to said chamber communicating with said more extended tube, and

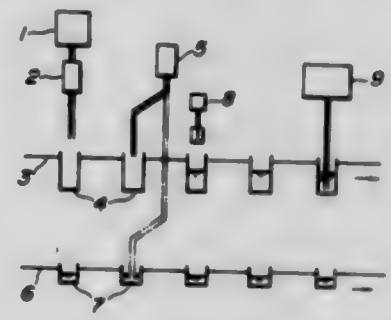
means for supplying pressurized fluid to the chamber communicating with said less extended tube.

4,493,897

METHOD FOR MEASURING AN ELECTROLYTE IN AN AUTOMATIC BIOCHEMICAL ANALYZING APPARATUS WHEREIN A FLAME PHOTOMETER IS ASSEMBLED

Takashi Tabata, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Jul. 7, 1981, Ser. No. 281,217
Claims priority, application Japan, Jul. 9, 1980, 55-93570; Jul. 9, 1980, 55-93571
Int. Cl.³ G01N *35/02;* G01J *3/30;* G01N *21/72*
U.S. Cl. 436—47 3 Claims



1. A method for measuring an electrolyte concentration in an automatic biochemical analyzing apparatus comprising the steps of:

(a) providing a series of sample cups, said sample cups each containing a sample;

(b) ordering a sample pipetting and delivering means to remove a sample from a first sample cup and transfer said sample to a first reaction cup;

(c) ordering said sample pipetting and delivering means not to remove a sample from a second sample cup and not to transfer said sample from said second sample cup to a second reaction cup;

(d) ordering a reagent liquid delivering means successively to deliver reagent liquid to each reaction cup in said series of reaction cups;

(e) successively supplying the contents of each reaction cup to a flame photometer;

(f) successively analyzing the contents of each reaction cup in said flame photometer;

wherein said reagent liquid delivering means is ordered to deliver a first reagent liquid to said first reaction cup and a second reagent liquid to a second reaction cup, said second reagent liquid comprises a standard sample reagent liquid being prepared by diluting a standard electrolyte solution having a known concentration with said first reagent liquid, said standard sample reagent liquid having a dilution ratio identical to a dilution ratio created when said sample removed from said first sample cup is tranferred to said first reaction cup and diluted with said first reagent liquid, said standard sample reagent liquid being measured by said flame photometer to determine the concentration thereof, a calibrating factor being determined by dividing the concentration of said standard electrolyte solution by the concentration of said standard sample reagent liquid whereby said flame photometer is calibrated by multiplying a measured value of the contents of said first reaction cup by said calibration factor;

whereby said flame photometer is maintained in a subetantially stable operating condition.

4,493,898

METHOD FOR DETECTING AND MONITORING CANCER

Stephen I. Selisky, Fort Wayne, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Apr. 25, 1983, Ser. No. 488,133
Int. Cl.³ G01N *31/02, 33/48, 33/68*
U.S. Cl. 436—64 10 Claims

1. A method for diagnosing and monitoring cancer in humans which comprises mixing benzenesulfonic acid, benzylsulfonic acid, a lower-alkylbenzenesulfonic acid or a lower-alkylbenzylsulfonic acid with human serum in an amount effective to precipitate components insoluble in the resulting acidic liquid phase without substantially affecting sialic acid level in the liquid phase, determining the sialic acid content of the acidic supernatant, and comparing said sialic acid content with the sialic acid content of healthy human sera after identical treatment.

4,493,899

METHOD OF TESTING FOR PARTICULAR ANTIBODIES IN THE SERUM OF A PATIENT

Lloyd H. Smith, Davis, and Raymond L. Teplitz, Pasadena, both of Calif., assignors to City of Hope, Duarte, Calif.

Filed Oct. 16, 1981, Ser. No. 312,159
Int. Cl.³ G01N *33/54, 33/56;* C12Q *1/44, 1/68*
U.S. Cl. 436—508 33 Claims

1. In a method of testing for particular antibodies in the serum of a patient,

providing a support,

attaching DNA to the support,

applying the serum to the supported DNA to obtain an attachment of the particular antibodies in the serum to the DNA with substantially no attachment of the particular antibodies in the serum to the support, and

providing an assay to determine if the particular antibodies have been attached to the DNA.

4,493,900

LOW MELTING ENAMEL FRITS

Atsushi Nishino, Neyagawa; Masaki Ikeda; Kunio Kimura, both of Hirakata, and Hajime Oyabe, Kawanishi, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Japan

Filed Feb. 4, 1983, Ser. No. 463,937
Claims priority, application Japan, Feb. 8, 1982, 57-19243
Int. Cl.³ C03C *7/02, 7/06*
U.S. Cl. 501—26 9 Claims

1. A low melting enamel frit comprising 31 to 39 weight percent of SiO_2, 13 to 21 weight percent of B_2O_3, 14 to 22 weight percent of Na_2O, 1 to 5 weight percent of K_2O, 13 to 20 weight percent of ZnO, 2 to 10 weight percent of F_2, and 2 to 9 weight percent of at least one intermediate oxide selected from the group consisting of Al_2O_3, TiO_2 and ZrO_2, each intermediate oxide not exceeding 5 weight percent, provided that the SiO_2/B_2O_3 ratio by weight is in the range of 1.5 to 3.0:1;

the total amount of ZnO, Al_2O_3, TiO_2 and ZrO_2 is in the range of 17 to 25 weight percent;

the $ZnO/(ZnO+Al_2O_3+TiO_2+ZrO_2)$ ratio by weight is in the range of 0.65 to 0.90:1;

the total amount of Na_2O+K_2O is in the range of 16 to 23 weight percent;

the $(ZnO+Al_2O_3+TiO_2+ZrO_2)/(Na_2O+K_2O)$ ratio by weight is in the range of 0.85 to 1.2:1;

the $(SiO_2+B_2O_3+F_2)/(Na_2O+K_2O+ZnO)$ ratio by weight is in the range of 1.3 to 2.0:1;

said composition being substantially free from lead and phosphorous, said frit capable of being fired at temperatures lower than the A_1 transformation point of iron.

4,493,901

REGENERATION PROCESS OF AN AROMATIZATION CATALYST CONTAINING A GROUP VIII METAL ON A ZEOLITE

Jean R. Bernard, Solaize, and Michèle Breysse, Caluire, both of France, assignors to Elf France, Paris, France

Filed Sep. 3, 1982, Ser. No. 414,675
Claims priority, application France, Sep. 9, 1981, 81 17064
Int. Cl.³ B01J *23/96, 29/38;* C07C *5/393;* C10G *35/085*
U.S. Cl. 502—37 6 Claims

1. A process for the regeneration of an aromatization catalyst formed of zeolite-L having exchangeable cations of which at least 90% are alkali metal ions and containing platinum which process comprises:

(a) treating said catalyst with hydrogen;

(b) subjecting said catalyst obtained from step (a) to calcination;

(c) subjecting the thereby calcined catalyst to oxychlorination; and

(d) subsequently subjecting said catalyst to reactivation with hydrogen, wherein after oxychlorination the catalyst is cooled by an air stream containing water at a temperature not exceeding 200° C., the weight proportion of said water with respect to the weight of catalyst being about 10%.

5. A process according to claim 1 wherein the temperature of the water is atmospheric temperature and the catalyst is ground prior to calcination.

6. A process according to claim 1, wherein said oxychlorination step comprises introducing an air stream containing CCl_4, the quantity of said CCl_4 being about 1% by weight with respect to the weight of said catalyst.

4,493,902

FLUID CATALYTIC CRACKING CATALYST COMPRISING MICROSPHERES CONTAINING MORE THAN ABOUT 40 PERCENT BY WEIGHT Y-FAUJASITE AND METHODS FOR MAKING

Stanley M. Brown, Scotch Plains; Vincent A. Durante, East Brunswick; William J. Reagan, Englishtown, and Barry K. Speronello, River Edge, all of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Filed Feb. 25, 1983, Ser. No. 469,765
Int. Cl.³ B01J *21/16, 29/08*
U.S. Cl. 502—65 62 Claims

1. A fluid catalytic cracking catalyst comprising microspheres containing at least about 40% by weight Y-faujasite and having less than about 0.20 cc/g. of pores having diameters in the range of 20–100Å, said microspheres having the following characteristics:

(a) a deactivated activity at least about 1.5 times that of standard commercial catalyst;

(b) a severely deactivated activity at least about 1.5 times that of standard commercial catalyst;

(c) a coke yield no greater than about that of standard commercial catalyst at 70% conversion; and

(d) an EAI no more than about 5.0 times that of standard commercial catalyst.

24. A fluid catalytic cracking catalyst comprising microspheres containing more than about 40% by weight Y-faujasite, less than about 0.7 by weight Na_2O, more than about 4% by weight REO, and having a SiO_2/Al_2O_3 molar ratio of about 1.7–3.4, less than about 0.20 cc/g. of pores having diameters in the range of 20–100Å, less than about 0.30 cc/g. of pores having diameters in the range of 600–20,000Å, a surface area of about 300–750m^2/g. and a bulk density of the 200/270 mesh fraction of about 0.8–1.2 g/cc., said microspheres comprising:

(a) a non-zeolitic component comprising the zeolite crystallization process residue of calcined clay, said calcined clay comprising about 30–60% by weight metakaolin and about 40–70% by weight kaolin clay that had been calcined at least substantially through its characteristic exotherm; and

(b) Y-faujasite having, in the sodium form, a crystalline unit cell size of less than about 24.73Å.

37. The method for making a fluid catalytic cracking catalyst comprising the steps of:

(a) forming an aqueous slurry of finely divided hydrous kaolin clay and finely divided kaolin clay that has been calcined at least substantially through its characteristic exotherm;

(b) spray drying the aqueous slurry to obtain microspheres comprising a mixture of hydrous kaolin clay and kaolin clay that has been calcined at least substantially through its characteristic exotherm;

(c) calcining the microspheres obtained in step (b) at a temperature and for a time sufficient to convert the hydrous kaolin clay in the microspheres substantially to metakaolin and to obtain microspheres of calcined clay comprising a mixture of about 30–60% by weight metakaolin and about 40–70% by weight kaolin clay that has been calcined at least substantially through its characteristic exotherm;

(d) mixing the microspheres obtained in step (c) with one or more sources of sodium silicate and water to obtain an alkaline slurry of microspheres of calcined clay in an aqueous solution containing sodium silicate, said sodium silicate being provided in an amount so that microspheres having a SiO_2/Al_2O_3 molar ratio of about 1.7–3.4 are obtained in step (h) below;

(e) adding zeolite initiator to the kaolin clay that has been calcined at least substantially through its characteristic exotherm before step (f) below;

(f) heating the slurry of microspheres of calcined clay to a temperature and for a time sufficient to crystallize at least about 40% by weight Y-faujasite in the microspheres, said Y-faujasite being in the sodium form;

(g) separating the microspheres containing at least about 40% by weight Y-faujasite from at least a major portion of its mother liquor;

(h) replacing sodium cations in the microspheres separated in step (g) with ammonium or rare earth cations or both.

4,493,903

POLYMERIZATION PROCESS FOR DRAG REDUCING SUBSTANCES

Mark P. Mack, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Division of Ser. No. 262,870, May 12, 1981, Pat. No. 4,433,123, which is a continuation-in-part of Ser. No. 7,088, Jan. 29, 1979, abandoned, which is a continuation-in-part of Ser. No. 953,144, Oct. 20, 1978, abandoned. This application Nov. 7, 1983, Ser. No. 549,359

Int. Cl.³ C08F 4/64

U.S. Cl. 502—121 3 Claims

1. A catalyst for the polymerization of γ-olefins containing from 2 to 30 carbon atoms, to form non-crystalline, hydrocarbon-soluble polymers; comprising,

(a) titanium trichloride of the general formula $TiCl_3.mAlCl_3$ wherein m is from 0.00 to 1.00, which is selected from the group consisting of products produced by;

(1) reducing titanium tetrachloride with aluminum,

(2) reducing titanium tetrachloride with hydrogen,

(3) reducing titanium tetrachloride with an organometallic compound, or

(4) milling titanium tetrachloride with a Group II metal, in conjunction with

(b) a ketone,

(c) a compound selected from the group consisting of Group IA or IIA metal halides, transition metals, quaternary ammonium halide or sulfate salts, alkaline earth phosphates and alkyl alkali metal sulfates,

(d) an organo-aluminum halide of the formula AlR_nX_{3-n} where R is a hydrocarbon radical, X is halogen and n is 2 or 3, and

(e) a catalyst modifier of the formula $PR_1R_2R_3$ or $P(OR_1)(OR_2)(OR_3)$ wherein R_1, R_2, and R_3 are, independently, aryl, alkyl, aralkyl, or alkaryl.

4,493,904

CATALYST AND METHOD FOR PREPARATION OF DRAG REDUCING SUBSTANCES

Mark P. Mack, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

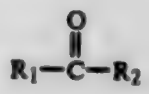
Division of Ser. No. 278,264, Jun. 29, 1981, Pat. No. 4,415,714, Continuation-in-part of Ser. No. 7,125, Jan. 29, 1979, abandoned, Continuation-in-part of Ser. No. 606, Jan. 2, 1979, abandoned. This application Aug. 22, 1983, Ser. No. 525,525

Int. Cl.³ C08F 4/64

U.S. Cl. 502—122 13 Claims

1. An improved Ziegler/Natta catalyst for the polymerization of α-olefins containing from 2 to 30 carbon atoms, to form non-crystalline, hydrocarbon-soluble polymers said catalyst containing a titanium halide, wherein titanium has a valence less than maximum, and an organoaluminum compound, the improvement comprising modifying the catalyst by adding

(1) cyclic or acyclic ketone(s) of the general formula



wherein R_1 and R_2 are, independently, aryl, alkyl, cycloalkyl, alkaryl, and aralkyl, each containing from 1 to 20 carbon atoms, and wherein R_1 and R_2 can be joined through a covalent bond, and

(2) a monoether of the formula R_3OR_4 wherein R_3 and R_4 are, independently, aryl, alkyl, aralkyl, cycloalkyl, alkaryl, each containing from 1 to 20 carbon atoms.

4. A catalyst as described in claim 1 comprising:

(a) titanium trichloride of the general formula $TiCl_3.nAlCl_3$ wherein n is from 0.00 to 0.50, which is selected from the group consisting of products produced by;

(1) reducing titanium tetrachloride with aluminum,

(2) reducing titanium tetrachloride with hydrogen,

(3) reducing titanium tetrachloride with an organo-metallic compound, or

(4) milling titanium tetrachloride with a Group III metal salt, in conjunction with

(b) a saturated acyclic ketone, and/or a saturated cyclic ketone,

(c) a compound selected from the group consisting of Group IA or IIA metal halides, transition metals, quanternary ammonium halide or sulfate salts, alkaline earth phosphates and alkyl alkali metal sulfates,

(d) a catalyst modifier of the formula R_3OR_4 wherein R_3 and R_4 are, independently, aryl, alkyl, aralkyl, or alkaryl containing up to 20 carbon atoms each.

4,493,905

FLUID BED CATALYST FOR SYNTHESIS GAS CONVERSION AND UTILIZATION THEREOF FOR PREPARATION OF DIESEL FUEL

Harold Beuther, Cheswick; Charles L. Kibby, Gibsonia; T. P. Kobylinski, Prospect, and Richard B. Pannell, Allison Park, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Division of Ser. No. 310,977, Oct. 13, 1981, Pat. No. 4,413,064. This application Oct. 11, 1983, Ser. No. 540,662

Int. Cl.³ B01J 23/40, 27/24, 23/10, 23/62

U.S. Cl. 502—325 18 Claims

1. A process for the preparation of a catalyst useful in the fluidized bed conversion of synthesis gas, which consisting essentially of contacting finely divided alumina with (A) an aqueous impregnation solution of a cobalt salt, and thereafter (B) a nonaqueous, organic impregnation solution of a ruthenium salt and a salt of a Group IIIB or IVB metal.

4,493,906

CATALYST FOR THE SELECTIVE HYDROGENATION OF ACETYLENES

Mark C. Conviller, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 473,293, Mar. 8, 1983, Pat. No. 4,440,956, which is a continuation-in-part of Ser. No. 436,250, Oct. 25, 1982, abandoned, which is a continuation-in-part of Ser. No. 299,688, Sep. 8, 1981, abandoned. This application Dec. 5, 1983, Ser. No. 558,128

Int. Cl.³ B01J *21/04, 23/72*

U.S. Cl. 502—346 3 Claims

1. A catalyst for removing α-acetylenes from liquid hydrocarbon streams consisting essentially of finely divided copper metal dispersed on an aluminum oxide support, said support being a gamma alumina as defined by the Joint Committee on Powder Diffraction Standards, #29-63, of high purity having a surface area of between about 68 and about 350 square meters per gram, and 98 to 40 percent of the pores have a pore diameter between about 40Å and 120Å and not more than 25 percent nor less than 2 percent have, a pore diameter between 1000Å to 10,000Å, a silicon content as SiO_2 of less than about 0.15 weight %, a sodium content as Na_2O of less than about 0.15 weight %, a sulfur content less than about 0.01 weight % and an iron content as Fe_2O_3 of less than about 0.06 weight %, said gamma alumina may contain up to 35% by weight of alpha alumina.

4,493,907

METHOD OF USING HIGHER CONCENTRATION SULFURIC ACID FOR STRIPPING AND PRECIPITATION OF ADSORBED MAGNESIUM

Harold N. Hedrick, Brandon, and Solon G. Whitney, Bartow, both of Fla., assignors to American Petro Mart, Inc., Bartow, Fla.

Continuation-in-part of Ser. No. 386,768, Jun. 10, 1982, abandoned, which is a continuation-in-part of Ser. No. 275,651, Jun. 22, 1981, abandoned. This application Mar. 23, 1983, Ser. No. 478,167

Int. Cl.³ B01D *15/06*; B01J *49/00*

U.S. Cl. 521—26 12 Claims

1. In a folded bed ion exchange system for removing magnesium ions from aqueous phosphoric acid prepared by the wet process from phosphate rock, the method of regenerating a cation exchange resin loaded with adsorbed magnesium ions and precipitating the stripped magnesium ions, comprising:

(a) sequentially introducing increments of said loaded resin into the bottom portion of a regeneration column while sequentially removing regenerated increments of said resin from the top portion of said column, said increments sequentially moving upwardly in said column from the bottom to the top thereof;

(b) introducing an aqueous sulfuric acid (H_2SO_4) regenerating solution into the top portion of said column at a concentration of 40% or higher H_2SO_4 by weight and passing said regenerating solution downwardly within said column, the H_2SO_4 concentration of said regenerating solution progressively decreasing as said solution flows downwardly through the upwardly moving resin increments, whereby the most recently introduced increment in the column bottom portion is in contact with an H_2SO_4 solution of relatively low concentration while the increment in the top portion prior to its removal is in contact with an H_2SO_4 solution of relatively high concentration;

(c) removing a magnesium ion-containing sulfuric acid solution of reduced H_2SO_4 concentration from the lower portion of said column, said removal acid concentration being at least 10 to 20% lower than the introduction concentration and below a concentration at which the magnesium ions precipitate; and

(d) precipitating magnesium sulfate from said removed solution by increasing the H_2SO_4 concentration of said solution to a sufficiently high H_2SO_4 concentration to cause the magnesium sulfate to form a solid crystalline compound.

4,493,908

STABLE DISPERSIONS OF POLYMERS IN POLYFUNCTIONAL COMPOUNDS HAVING A PLURALITY OF ACTIVE HYDROGENS

Thomas E. Fisk, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 467,409, Feb. 17, 1983,. This application Feb. 17, 1984, Ser. No. 581,405

Int. Cl.³ C08G *18/10*; C08L *75/00*

U.S. Cl. 521—137 15 Claims

1. A stable improved copolymer dispersion which comprises:

(A) a polyahl having dispersed therein;

(B) an addition copolymerizate of (1) a monomeric adduct of (a) an active ethylenicallyunsaturated halogiyoxylyl monomer and (b) a monoahl or a polyahl with (2) at least one other ethylenically unsaturated monomer; or

(C) (1) an addition copolymer of a halogiyoxylyl monomer with at least one other ethylenically unsaturated monomer and (2) a monoahl or polyahl; or

(D) a mixture of (B) and (C); or

(E) a mixture of (B) and/or (C) and a polymer of at least one other ethylenically unsaturated monomer.

4,493,909

POLY-N,N-HYDROXYALKYLAMIDES OF POLYBASIC CARBOXYLIC ACIDS AND A PROCESS FOR THE PRODUCTION THEREOF

Peter Haas, Haan, and Hans Hettel, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

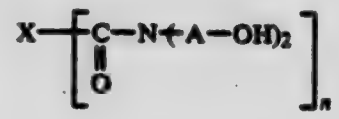
Filed Jun. 7, 1982, Ser. No. 386,129

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1981, 3124885; Dec. 18, 1981, 3150269

Int. Cl.³ C08G *18/14, 18/18, 18/20*

U.S. Cl. 521—166 16 Claims

1. A process for the production of an open-cell polyurethane foam in which a compound having at least two isocyanate-reactive hydrogen atoms and a molecular weight of from 400 to 10,000 and a polyisocyanate are reacted in the presence of a catalyst, a blowing agent and 0.1 to 10 wt. % cell-opening component (based on mixture with compound having at least two isocyanate-reactive hydrogen atoms) said cell-opening component corresponding to the formula



in which

n represents an integer from 2 to 6;

X represents a single bond (where n=2), an n-functional C_1–C_{10}-straight chain or branched alkane radical optionally subetituted by a hydroxyl group, a C_4–C_6-cycloalkane radical optionally containing O, S or N—CH_3 in the ring, or an n-functional C_6–C_{20} aryl radical optionally subetituted by one or more hydroxyl groups; and

A represents a straight chain or branched C_2–C_6-akylene group optionally containing an OH group.

4,493,910
FLUORINE-CONTAINING HYDROGEL-FORMING POLYMERIC MATERIALS

Brian J. Tighe, Birmingham, and Howard J. Gee, Derbyshire, both of England, assignors to Kelvin Lenses Limited, Manchester, England

Division of Ser. No. 309,581, Oct. 9, 1981, Pat. No. 4,433,111. This application Jun. 24, 1983, Ser. No. 507,729
Claims priority, application United Kingdom, Oct. 14, 1980, 8033137; Oct. 14, 1980, 8033061
Int. Cl.³ C08F 214/18; G02C 7/04
U.S. Cl. 523—106 13 Claims

1. A contact lens consisting essentially of a copolymer and at least 63% by weight water wherein the copolymer is a crosslinked fluorine-containing polymeric material suitable for use in biomedical applications, containing units derived either by simultaneous copolymerisation and crosslinking or by copolymerisation and subsequent crosslinking of the following monomers:

(1) to 40 mole % of an amide of acrylic or methacrylic acid;

(2) 25 to 55 mole % of an N-vinyl lactam of the N-vinyl pyrrolidone type;

(3) 5 to 20 mole % of a hydroxyalkyl ester of acrylic or methacrylic acid;

(4) 1 to 10 mole % of acrylic or methacrylic acid; and (5) at least about 5 up to about 10 mole % of a hydrophobic monomer component comprising two monomer types a) and b) as follows:

(a) a fluorine-containing olefine, or fluorine-containing unsaturated alcohol, carboxylic acid or ester or a non-fluorine-containing unsaturated alcohol which, after copolymerisation of monomer (1) to (5), is esterified using a fluorine-containing aliphatic carboxylic acid or derivative thereof; and

(b) a non-fluorine-containing polymerisable hydrophobic vinyl monomer which is at least one monomer selected from vinyl aromatic hydrocarbons of the styrene type and hydrophobic esters of acrylic or methacrylic acid;

the monomers (1) to (5) totalling 100 mole %, the crosslinking having been effected with crosslinking amounts of a crosslinking agent, which, in the case of simultaneous copolymerisation and crosslinking, is an ester of a diol and acrylic or methacrylic acid or is divinylbenzene, or, in the case of crosslinking subsequent to copolymerisation, is a latent crosslinking agent which is a diamide of an unsaturated aliphatic carboxylic acid, an anhydride of an aliphatic or aromatic carboxylic acid, a diepoxide or dicumyl peroxide, the crosslinking agent having been used in an amount of up to 5 weight % based on the total weight of monomers (1) to (5).

4,493,911
NONADHESIVE IMPRESSION MATERIAL

Werner Schmitt; Robert Purrmann, both of Starnberg, and Peter Jochum, Hechendorf, all of Fed. Rep. of Germany, assignors to Espe Fabrik pharmazeutischer Praparate, GmbH, Seefeld, Fed. Rep. of Germany

Filed Dec. 9, 1983, Ser. No. 559,703
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1982, 3246654
Int. Cl.³ C08K 5/20; C08L 79/00; A61K 6/10
U.S. Cl. 523—109 10 Claims

1. A nonadhesive impression material comprising a polyether compound with terminal aziridino groups which crosslink when combined with a polymerization initiator and an adhesion reducing amount of oleic acid ethanolamide.

8. A method of making a dental impression comprising the use of a nonadhesive impression material comprising a polyether compound with terminal aziridino groups which crosslink when combined with a polymerization initiator and an adhesion reducing amount of oleic acid ethanolamide.

4,493,912
ELECTROMAGNETIC WAVE ATTENUATING COMPOSITION

Charles D. Dudgeon, Clifton Park, N.Y., and Maynard R. Winstead, Peabody, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 15, 1983, Ser. No. 523,306
Int. Cl.³ C09D 5/32, 3/72, 3/80
U.S. Cl. 523—137 12 Claims

1. A method of making a water-based electromagnetic wave attenuating composition comprising the steps of:

(a) providing an aqueous dispersion of a carboxylated acrylic or an aliphatic urethane resin;

(b) adding an aqueous dispersion of an anionic surfactant or a trifunctional aziridine compound slowly to the aqueous dispersion of item (a) above; and

(c) adding nickel powder to the mixed mixture of item (b) above and blending such powder into the mixed mixture under low shear conditions,

wherein the nickel powder has a chain-like structure and has an average particle size of from about 2.2 to about 2.8 microns, an apparent density of from about 0.5 to about 0.65 g/cc and a specific surface area of about 0.68 m2/g.

4,493,913
FLAME RESISTANT RESIN COMPOSITION

Kazushi Hirobe; Satoshi Tonoki, and Masahiko Nishigaki, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 16, 1982, Ser. No. 450,277
Claims priority, application Japan, Dec. 19, 1981, 56-205812; May 15, 1982, 57-82153; Nov. 1, 1982, 57-192200
Int. Cl.³ C08K 3/32, 3/02, 9/10, 9/04
U.S. Cl. 523—205 3 Claims

1. A flame resistant resin composition comprising:

(a) a modified polyethylene terephthalate having a heating crystallization temperature of not more than 120° C.,

(b) 1 to 70 parts of red phosphorus coated with a thermosetting resin, and

(c) 0.1 to 200 parts of a filler, said modified polyethylene terephthalate being a polycondensation product of a dicarboxylic acid component containing at least 90% by mole of terephthalic acid and a diol component containing at least 90% by mole of ethylene glycol and being modified with a modifier selected from the group consisting of a polyoxyalkylene compound, a low molecular organic ester and an ionic copolymer, and said parts of (b) and (c) being parts by weight per 100 parts by weight of (a).

4,493,914
STABILIZED DISPERSION OF CROSS-LINKED POLYMER PARTICLES

Mohinder S. Chattha, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Feb. 23, 1983, Ser. No. 468,902
Int. Cl.³ C08J 3/26; C08K 5/01, 5/06; C08L 63/10
U.S. Cl. 523—436 13 Claims

1. A stable dispersion containing crosslinked polymer particles characterized in that they are formed by reactions comprising addition polymerization of:

(a) between about 0.5 and about 20 weight percent each of a first and second monomer selected from (i) first and second ethylenically unsaturated monomers each bearing functionality capable of crosslinking reaction with the other or (ii) first and second monomers, wherein said first monomer bears ethylenic unsaturation and functionality capable of crosslinking reaction with other functionality present on said second monomer, said second monomer bearing at least two functional groups of said other functionality and bearing no ethylenic unsaturation; and

(b) between about 99 and about 60 weight percent of at

least one other monoethylenically unsaturated monomer.

in the presence of (I) an organic liquid which is a solvent for the polymerizable monomers, but a non-solvent for the resultant polymer, and (II) polymeric dispersion stabilizer, wherein the reaction is carried out at elevated temperatures such that the dispersion polymer is first formed and then is crosslinked, said dispersion stabilizer comprising, on the average, more than one long hydrocarbon chain and at least one vinyl unsaturation and being the reaction product of:

(A) an adduct bearing pendant hydroxyl groups and being the reaction product of:

(a) long chain hydrocarbon molecules bearing a carboxyl group and no other reactive group; and

(b) polyepoxide resin having (i) at least two epoxide groups and (ii) a number average molecular weight of between about 140 and 3000, reacted in amounts so as to provide greater than about 1.0 mole of said long chain hydrocarbon molecules bearing a carboxyl group for each mole of said polyepoxide resin; and

(B) ethylenically unsaturated monoisocyanates, wherein said adduct and said ethylenically unsaturated monoisocyanates are reacted in amounts so as to provide at least about 1.0 mole of said monoisocyanate for each mole of said polyepoxide resin employed in said stabilizer formation.

13. Crosslinked polymer particles obtained by removal of said solvent from said dispersion formed in claim 1.

4,493,915

LIGHT STABLE THERMOPLASTIC POLYPHENYLENE ETHER RESIN COMPOSITIONS COMPRISING PURPLE ANTHRAPYRIDONE DYE OR YELLOW QUINOPHTALONE DYE

Johannes H. G. M. Lohmeijer, Hoogerheide, Netherlands, assignor to General Electric Company, Selkirk, N.Y.

Filed Oct. 27, 1983, Ser. No. 546,136

Claims priority, application Netherlands, Oct. 29, 1982, 8204181

Int. Cl.³ C08K 5/34; C08L 71/04

U.S. Cl. 524—87 6 Claims

1. A thermoplastic polyphenylene ether resin composition having improved resistance to discoloration upon exposure to light, comprising:

a polyphenylene ether base polymer; and

at least one dye capable of bleaching upon exposure to light in an amount effective for compensating for a change in color of said polyphenylene ether base polymer upon exposure to said light wherein said compensating dye is selected from the group consisting of purple anthrapyridone dye or yellow quinophtalone dye.

4,493,916

METHOD FOR EXTENSION OF POT LIFE IN CURING REACTIONS

Roland Sandin, Tumba, Sweden, assignor to Forsvarets Forskningsanstalt, Stockholm, Sweden

PCT No. PCT/SE82/00437, § 371 Date Aug. 18, 1983, § 102(e) Date Aug. 18, 1983, PCT Pub. No. WO83/02282, PCT Pub. Date Jul. 7, 1983

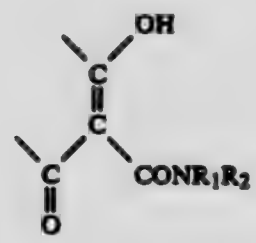
PCT Filed Dec. 22, 1982, Ser. No. 527,517

Claims priority, application Sweden, Dec. 22, 1981, 8107725

Int. Cl.³ C08L 75/04

U.S. Cl. 524—217 6 Claims

1. Method to extend the so-called pot life in production processes where a prepolymer is cured and where the curing reaction is catalyzed in an undesirable way by transition metals being present, characterized in that there is added before the curing reaction a compound, whose structural formula comprises the metal-binding part



wherein each of R_1 and R_2 is hydrogen or a hydrocarbon group.

4,493,917

BLEND OF POLYMERS, ITS PREPARATION AND ITS APPLICATION TO THE MANUFACTURE OF COMPONENTS OF ELECTROCHEMICAL REACTORS

Christian Bailleux, Paris; Michel Bernard, Pont-Ste-Maxence; Bernard Dupont, Creil; Guy Lozach, Chantilly, and Jean-Pierre Mata, Paris, all of France, assignors to Electricite de France, Paris, France

Filed Nov. 3, 1983, Ser. No. 548,532

Claims priority, application France, Nov. 3, 1982, 82 18408

Int. Cl.³ C08L 27/12, 27/18, 81/04, 81/06

U.S. Cl. 524—394 14 Claims

1. A blend of polymers, which is produced by extrusion and/or injection at a temperature between approximately 250° C. and approximately 320° C., of a particulate mixture of a heat-stable material consisting of a polysulfone resin or polyphenylene sulfide and a chemically inert and hydrophobic fluorocarbon polymer resin as a filler, the concentration of said fluorocarbon in said mixture being in a range to produce a network of interconnected and interpenetrated fibers of said fluorocarbon within a matrix of said heat-stable material upon said extrusion and/or injection.

4,493,918

SILICATE FILLED POLYOLEFIN RESIN COMPOSITES

Fred J. Meyer, Chelsea, and Seymour Newman, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 239,858, Feb. 3, 1981, , which is a continuation of Ser. No. 970,839, Dec. 18, 1978, abandoned, which is a continuation-in-part of Ser. No. 849,288, Nov. 7, 1977, abandoned, which is a continuation in part of Ser. No. 783,505, Mar. 31, 1971, abandoned. This application Sep. 7, 1982, Ser. No. 414,998

The portion of the term of this patent subsequent to Aug. 21, 2001, has been disclaimed.

Int. Cl.³ C08K 5/02

U.S. Cl. 524—451 38 Claims

1. A composite made by a process which comprises:

A. providing a blend consisting essentially of melt forming resin made from monomers comprising olefinic hydrocarbon monomers, a silane free or substantially silane free silicate and a strengthening amount of an additive that is a minor amount by weight of the resin and silicate, the additive consisting essentially of one or more chlorinated hydrocarbons having a molecular weight of about 250–10,000 and about 60–80% by weight chlorine;

B. maintaining said blend as a melt at a temperature in a range between 170°–300° C. for a time sufficient to strengthen the composite; and

C. subsequently passing said blend to a cooling zone, directly or indirectly, and cooling said blend, being free of silane or substantially free of silane, to below said melt temperature.

4,493,919

POLYMER BLEND COMPOSITION COMPRISING TWO BLOCK POLYMERS A VINYL AROMATIC COPOLYMER AND A POLYESTER

Daniel P. Durbin, Sugarland; Robert G. Lutz, Spring, and Richard L. Danforth, Missouri City, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 8, 1983, Ser. No. 502,407
The portion of the term of this patent subsequent to Mar. 22, 2000, has been disclaimed.
Int. Cl.³ C08L 53/02
U.S. Cl. 524—505 9 Claims

1. A thermoplastic molding composition comprising:
(a) from about 10 to about 85 percent by weight of a selectively hydrogenated block copolymer comprising at least two monoalkenyl arene polymer end blocks A and at least one substantially completely hydrogenated conjugated diene polymer mid block B, the weight percent of blocks A comprising between 8 and 65 percent by weight of said block copolymers wherein at least 80% of the aliphatic double bonds in block B are hydrogenated and no more than about 25% of the alkenyl aromatic double bonds in block A are hydrogenated;
(b) from about 10 to about 80 percent by weight of a vinyl aromatic copolymer comprising a vinyl aromatic compound and an α, β-unsaturated cyclic anhydride; and
(c) from about 10 to about 80 percent by weight of a thermoplastic polyester having a molecular weight in excess of about 20,000, a melting point over about 120° C., and which polyester is selected from the he group consisting of a condensation product of a dicarboxylic acid and a glycol, polypivalolactone and polycaprolactone;
(d) from about 1 to about 50 percent by weight of a hydrogenated diblock copolymer comprising a monoalkenyl arene polymer and a hydrogenated conjugated diene polymer.

4,493,920

POLYMER COMPOSITIONS

Bi Le-Khac, Westchester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 27, 1983, Ser. No. 566,064
Int. Cl.³ C08L 51/08, 69/00
U.S. Cl. 525—67 22 Claims

1. A polymer composition comprising in weight percent, from about 1 to about 99 of a thermoplastic polycarbonate based on bis-(hydroxyaryl) alkanes and from about 99 to about 1 of a random terpolymer of recurring units of a monovinyl aromatic monomer, recurring units of a maleimide monomer and recurring units of an α, β ethylenically unsaturated cyclic anhydride monomer.

4,493,921

IMPACT RESISTANT BLEND

John M. Wefer, Newtown, Conn., assignor to Uniroyal, Inc., Middlebury, Conn.

Continuation of Ser. No. 423,397, Sep. 24, 1982, abandoned. This application Mar. 2, 1984, Ser. No. 584,298
Int. Cl.³ C08L 67/02, 69/00
U.S. Cl. 525—67 9 Claims

1. A blend of
(a) poly(1,4-butylene terephthalate) resin,
(b) polycarbonate resin, and
(c) graft copolymer of at least one monomer on an ethylene-propylene-non-conjugated diene rubber spine, the proportions of (a), (b) and (c) expressed in parts by weight per 100 parts of (a), (b) and (c) being as follows:
(a) 20–90
(b) 5–60
(c) 5–50,
the said monomer being selected from styrene/acrylonitrile, styrene/methyl methacrylate or methyl methacrylate, in an amount of about 5–75% by weight of the graft copolymer (c), the said graft (c) being an inverted composition in which the rubber is a discontinuous phase.

4,493,922

IMPACT-RESISTANT THERMOPLASTIC MOLDING MATERIAL

Adolf Echte, Ludwigshafen, and Hermann Gausepohl, Mutterstadt, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 296,894, Aug. 27, 1981, abandoned. This application Jan. 25, 1984, Ser. No. 573,853
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1980, 3035570
Int. Cl.³ C08L 55/02, 53/02, 51/04
U.S. Cl. 525—71 1 Claim

1. An impact-resistant thermoplastic molding material which essentially contains
A. polystyrene as the matrix and
B. uniformly dispersed therein, two elastomeric polymers or copolymers (b_1) and (b_2), predominantly composed of 1,3-dienes, in an amount of from 3 to 30% by weight, calculated as polybutadiene and based on the matrix, the polymers or copolymers being present as particles of different mean size (different d_{50} of the cumulative mass distribution), namely
(b_1) as particles of 0.2–0.6 μm, in a proportion of 60–95% by weight, based on polybutadiene, and
(b_2) as particles of 2–8 μm, in a proportion of 40–5% by weight, based on polybutadiene, with or without
C. conventional additives, in effective amounts, in which final molding material the polymer or copolymer (b_1) has a capsule particle morphology and the polymer or copolymer (b_2) has a cell particle morphology, a coil particle morphology or a cell and coil particle morphology.

4,493,923

HIGH NOTCHED IMPACT TOUGHNESS PROPYLENE POLYMER COMPOSITIONS

J. Douglas McCullough, Jr., Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 27, 1984, Ser. No. 593,998
Int. Cl.³ C08L 53/00, 23/16, 23/04
U.S. Cl. 525—88 39 Claims

1. A composition having a melt flow between about 5 and about 50 dg/min (ASTM D1238-Condition L), and a high notched impact value, said composition being obtained by peroxide-contacting the blend of 50–95% by weight of an impact-improved propylene-ethylene copolymer, 2 to 45% by weight of a high density ethylene homopolymer, and 2–45% by weight of a linear low density ethylene copolymer and 1 to 30% by weight of a rubber selected from the group consisting of ethylene-propylene rubber and ethylene-propylene-diene monomer rubber, wherein:
(a) said impact-improved propylene-ethylene copolymer has a melt flow (ASTM D1238-Condition L) of about 0.5 to 15 dg/min and an elastomeric propylene-ethylene copolymer content of 5–50% by weight, the copolymer fraction having an ethylene content of 30–95% by weight, which propylene polymer is the product of sequential polymerization of propylene and a propylene-ethylene mixture over a titanium halide-containing coordination catalyst;
(b) said high density ethylene homopolymer has a density in the range from 0.941 to 0.965 g/cc and a melt index (ASTM D1238 Cond. E) in the range from 0 to 20 dg/min;
(c) said linear low density ethylene copolymer is the product of polymerization of ethylene with up to 15 mole percent of at least one C_3–C_8 alpha olefin monomer over a transition metal-based coordination catalyst and which has a density in the range from 0.912 to 0.935 g/cc and a melt index (ASTM D 1238-Condition E) in the range from 1 to 16; and
(d) the weight ratio of high density ethylene homopolymer to linear low density ethylene copolymer is between 80:20 and 20:80.

4,493,924

WATER-CURABLE, SILANE MODIFIED CHLOROSULFONATED OLEFINIC POLYMERS AND A PROCESS FOR THE PREPARATION THEREOF

Mahmood R. Rifi, Kendall Park, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 10, 1983, Ser. No. 501,301
Int. Cl.³ C08F 8/00, 8/38
U.S. Cl. 525—102 34 Claims

1. A composition of matter comprising a chlorosulfonated olefinic polymer and a hydrolyzable silane having a cyclic oxygen, cyclic sulfur or cyclic nitrogen functionality.

4,493,925

RUBBER COMPOSITIONS AND METHOD FOR TREATING RUBBER WITH HYDROXYMETHYL SULFINIC SALTS

Chester D. Trivette, Jr., Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 20, 1982, Ser. No. 409,786
Int. Cl.³ C08C 4/00, 19/20
U.S. Cl. 525—353 37 Claims

1. A composition comprising diene rubber containing a modifying amount of a salt of hydroxymethylsulfinic acid and also containing carbon black or a non-black filler selected from clay, talc, silica and calcium carbonate.

31. A composition comprising polyisoprene containing a modifying amount of a salt of hydroxymethylsulfinic acid.

4,493,926

DISSOCIATING IONICALLY CROSS-LINKED SILOXANE POLYMERS

Robert E. Williams, Jr., Scotia, and John R. Campbell, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 4, 1984, Ser. No. 568,019
Int. Cl.³ C08F 283/00
U.S. Cl. 525—474 11 Claims

1. A method of solubilizing zwitterionic siloxane polymers having ionic cross-links provided by zwitterions of the formulas:

$$-\overset{|}{NH^+}-R-COO^- \text{ and } -\overset{|}{NH^+}-R-SO_3^-$$

wherein R is a divalent hydrocarbon radical of from 2 to 20 carbon atoms, said method comprising adding a base to a combination of said ionically cross-linked zwitterionic siloxane polymers and an organic solvent, said base being capable of dissociating the ionic cross-links without attacking the siloxane polymer backbone.

4,493,927

CONDENSATION POLYMERS OF SULFUR COMPOUNDS AND NORBORNENYL COMPOUNDS

Kathleen M. McCreedy, Midland, and Kenneth R. Hilton, Harrison, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 22, 1983, Ser. No. 564,522
Int. Cl.³ C08G 75/00
U.S. Cl. 528—381 11 Claims

1. A condensation polymer comprising the product of a (1) sulfide salt containing from 1 to about 5 sulfur atoms and (2) a dihaloacetate substituted compound having alicyclic unsaturation in an amount sufficient to improve the high temperature char of the polymer when said polymer is subject to a heat source; and wherein said polymer comprises a backbone containing carbon atom(s) alternating with sulfur atom(s) in recurring units.

4,493,928

CROSSLINKED CHITIN DERIVATIVES

Junichi Koshugi, Tokyo, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi, Japan

Division of Ser. No. 132,787, Mar. 24, 1980, Pat. No. 4,373,096.
This application Jun. 22, 1982, Ser. No. 390,832
Claims priority, application Japan, Apr. 6, 1979, 54-41812
Int. Cl.³ C08B 37/08
U.S. Cl. 536—20 4 Claims

4. A process for preparing a crosslinked derivative of chitin comprising,

crosslinking chitin or regenerated chitin by a crosslinking agent selected from the group consisting of compounds repesented by the general formula:

$$X-(CH_2)_n-\underset{\diagdown\ \diagup}{CH}-CH_2 \text{ or } X-(CH_2)_n-\underset{|}{CH}-\underset{|}{CH_2}$$
$$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad Y \qquad\quad Y \quad Z$$

wherein
X is an atom of chlorine or bromine;
Y is an atom of oxygen or sulfur;
Z is a hydroxyl- or a thiol group and
n is an integer of 1, 2 or 3,

carboxylating the thus crosslinked chitin or crosslinked regenerated chitin with an etherifying agent selected halogenocarboxylic acids represented by the formula, $X-(CH_2)_n-COOH$ wherein X represents an atom of chlorine or bromine and
n is an integer of 1, 2 or 3, and

de-acetylating the thus carboxylated crosslinked chitin with an aqueous 4 to 15N alkali solution at a temperature of 65° to 150° C. for 0.1 to 48 hours to obtain said crosslinked derivative of chitin of a degree of crosslinking of 0.01 to 0.3, a degree of carboxylation of 0.1 to 0.9 and a degree of de-acetylation of 0.1 to 1.0 per N-acetylglucosamine unit.

4,493,929

PREPARATION OF 2-ALKYLPYRIMIDINES

Richard G. Pews, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 301,684, Sep. 14, 1981, abandoned. This application Jan. 18, 1983, Ser. No. 458,812
Int. Cl.³ C07D 239/26
U.S. Cl. 544—242 5 Claims

1. A process for making 2-alkylpyrimidines which comprises dehydrogenating a 2-isopropyl- or 2-tertiarybutyltetrahydropyrimidine in a vapor phase reactor in the absence of oxygen and in which no water is added over a supported noble metal catalyst.

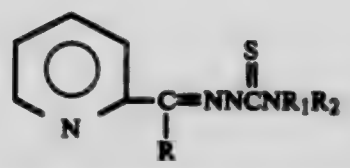
4,493,930

MEDICINAL 2-ACETYL- AND 2-PROPIONYLPYRIDINE THIOSEMICARBAZONES AND PREPARATION THEREOF

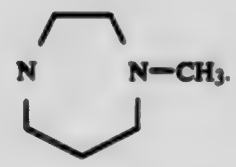
Daniel L. Klayman, Chevy Chase; John P. Scovill, Rockville; Joseph F. Bartosevich; Carl J. Mason, both of Silver Spring, all of Md., and T. Scott Griffin, Orange, Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 4,247, Jan. 4, 1979, Pat. No. 4,317,776.
This application Oct. 14, 1981, Ser. No. 311,371
Int. Cl.³ C07D 401/12; A61K 31/495
U.S. Cl. 544—360 11 Claims

1. A compound of the formula



or a pharmaceutically-acceptable acid addition salt thereof wherein R is methyl or ethyl; and R_1 and R_2 are taken together with the nitrogen atom to which they are attached to form a heterocyclic ring selected from the group consisting of homopiperazinyl; homopiperazinyl substituted with alkyl; piperazinyl; or piperazinyl substituted with alkyl, dialkyl, phenyl, COO alkyl, trifluoromethylphenyl, halophenyl, benzyl, or pyridyl; or



4,493,931

PROCESS FOR THE PREPARATION OF β-CYCLO-SUBSTITUTED ETHYLAMINES

Isaac Chekroun, Toulouse, and Alain Heymes, Sisteron, both of France, assignors to Sanofi, Toulouse, France

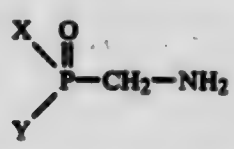
Filed Jun. 29, 1982, Ser. No. 393,383
Claims priority, application France, Jun. 30, 1981, 81 13065
Int. Cl.³ C07D *213/18*; C07C *85/24, 87/28, 333/28*
U.S. Cl. 546—329 **11 Claims**

1. A multi-step process for the preparation of β-cyclo-substituted ethylamines of the formula:



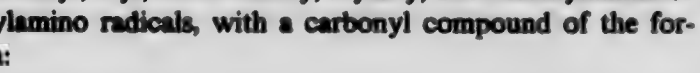
(I)

in which Ar is selected from the group consisting of thienyl, furfuryl, pyridyl, phenyl and mono- or disubstituted thienyl, furfuryl, pyridyl, naphthyl and phenyl, wherein the substituent is selected from the group consisting of halogen nitro, amino, cyano, carboxyl, lower alkyl, haloloweralkyl, lower alkoxy, haloloeralkoxy and phenyl, which comprises condensing a compound of the formula:



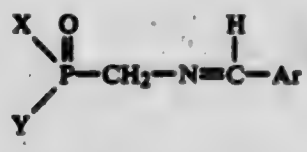
(II)

in which X and Y, which may be the same or different, are lower alkyl, aryl, lower alkoxy, aryloxy, diloweralkylamino or diarylamino radicals, with a carbonyl compound of the formula:



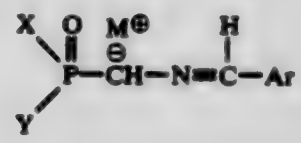
(III)

in which Ar is as hereinbefore defined, to give a compound of the formula:



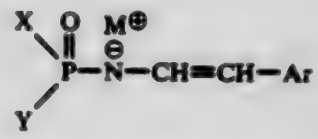
(IV)

in which X, Y and Ar are as hereinbefore defined, treating the resultant compound with a base of the formula B^-M^+ to give a carbanion of the formula:



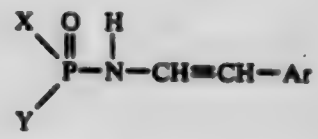
(V)

in which the X, Y and Ar are as hereinbefore described and M is alkyl, alkaline earth or alkali metals, heating the resulting compound so as to form a compound of the formula:



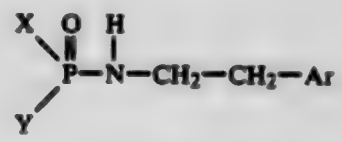
(VI)

in which X, Y, M^+ and Ar are as hereinbefore described, treating the compound formed with water so as to yield a compound of the formula:



(VII)

in which X, Y and Ar are as hereinbefore described, treating the resulting compound with a reducing agent to give a compound of the formula:



(VIII)

in which X, Y and Ar are as hereinbefore described, and then reacting the resulting compound with an acid to give a compound of formula (I).

4,493,932

CHLORINE EXCHANGE FOR FLUORINE IN 2-FLUORO-PYRIDINE COMPOUNDS

John A. Werner, Antioch, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 13, 1982, Ser. No. 417,724
Int. Cl.³ C07D *213/26*
U.S. Cl. 546—345 **9 Claims**

1. A method of exchanging a chlorine atom for a fluorine atom at the 2-position of a 2-fluoropyridine compound which comprises contacting a 2-fluoropyridine compound with an effective amount of HCL in the absence of a catalyst at a pressure of from about 5 psig to about 400 psig and an elevated temperature of from about 50° C. to about 200° C.

4,493,933

MANUFACTURE OF ANTIBIOTICS

Alastair C. Brodie, Ickenham, England, assignor to Glaxo Group Limited, London, England

Filed Nov. 12, 1982, Ser. No. 441,247
Claims priority, application United Kingdom, Nov. 13, 1981, 8134358
Int. Cl.³ C07D *277/40*
U.S. Cl. 548—194 **5 Claims**

1. Crystalline (Z)-2-(2-t-butoxycarbonylprop-2-oxyimino)-2-(2-triphenylmethylaminothiazol-4-yl)acetic acid in association with 0.1 to 0.6 moles of dioxan per mole of acid.

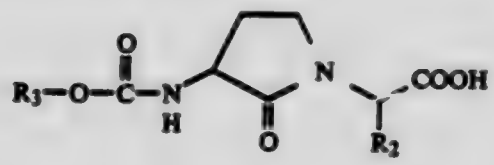
ELECTRICAL

4,493,934
2(3-AMINO-2-OXOPYRROLIDIN-1-YL) ACETIC ACID AND N-ACYLATED DERIVATIVES THEREOF

Daniel F. Veber, Ambler, and Roger M. Freidinger, Hatfield, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 80,844, Oct. 1, 1979, Pat. No. 4,377,515.
This application Sep. 22, 1982, Ser. No. 421,594
Int. Cl.³ C07D *207/273*
U.S. Cl. 548—550 3 Claims

1. A compound of the formula:



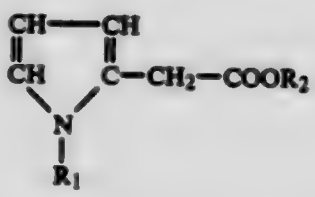
wherein:
R_2 is C_{1-4} alkyl; and
R_3 is C_{1-12} alkyl; or C_{1-4} aralkyl.

4,493,935
PREPARATION OF 1H-PYRROL-2-ACETIC ACID ESTERS

Winfried Orth, Hasloch, and Werner Fickert, Mannheim, both of Fed. Rep. of Germany, assignors to Ratgerswerke Aktiengesellschaft, Fed. Rep. of Germany

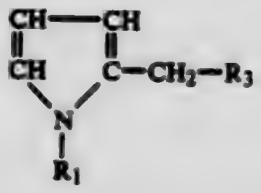
Continuation-in-part of Ser. No. 338,330, Jan. 11, 1982, abandoned. This application Feb. 2, 1984, Ser. No. 576,202
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1981, 3145510
Int. Cl.³ C07D *207/337*
U.S. Cl. 548—562 11 Claims

1. A process for the preparation of esters of 1H-pyrrol-2-acetic acids of the formula

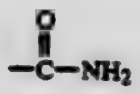


I

wherein R_1 is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms and R_2 is selected from the group consisting of alkyl of 1 to 4 carbon atoms and aralkyl of 1 to 4 alkyl carbon atoms comprising reacting a compound of the formula



wherein R_3 is selected from the group consisting of —CN and —



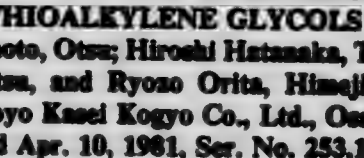
in water with a saponification base wherein the saponification base is added gradually to the 1H-pyrrol-2-acetonitrile and/or 1H-pyrrol-2-acetamide to selectively saponify the same to obtain a substantially isomer free salt of 1H-pyrrol-2-acetic acid, adding alkali metal bicarbonate to the solution to keep the pH of the solution at about 10.2 to 10.5 and reacting the salt of 1H-pyrrol-2-acetic acid without isolation and without removal of any water with a solution of an alkylating or aralkylating agent to introduce the R_2 group in an organic water-insoluble solvent in the presence of a phase transfer agent to obtain the ester of formula I.

4,493,936
2-CYANO-TETRAHYDROFURAN-5-METHANOLS

Willy D. Kollmeyer, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 388,048, Jun. 14, 1982, Pat. No. 4,439,225.
This application Jan. 9, 1984, Ser. No. 569,379
Int. Cl.³ C07D *307/22*
U.S. Cl. 549—474 4 Claims

1. A compound of the formula



wherein R^1 and R^2 each independently is a hydrogen atom or an alkyl group containing 1 to 6 carbon atoms.

4,493,937
2-DIMETHYLAMINO-2-PARAHYDROXYPHENYL SODIUM ACETATE, PREPARATION PROCESS AND APPLICATION THEREOF TO PRODUCTION OF PARAHYDROXYBENZYL CYANIDE

Philippe Gallois, Fosses, and Yani Christidis, Paris, both of France, assignors to Societe Francaise Hoechst, Puteaux, France

Filed Dec. 9, 1982, Ser. No. 448,093
Claims priority, application France, Dec. 23, 1981, 81 24104
Int. Cl.³ C07C *99/00*
U.S. Cl. 562—444 4 Claims

1. A process for preparing a crystallized 2-dimethylamino-2-parahydroxphenyl acetic compound comprising hot reacting parahydroxymandelic acid with an excess of dimethylformamide in the presence of a catalytic quantity of a strong acid and crystallizing the resulting product whereby pure crystallized 2-dimethylamino-2-parahydroxyphenylacetic acid is obtained, and reacting said product with a hydrochloride agent whereby the corresponding hydrochloride compound is obtained; or reacting said acid product with sodium hydroxide and crystallizing the resulting product whereby the corresponding sodium crystallized acetate is obtained.

4,493,938
METHOD FOR THE PRODUCTION OF THIOALKYLENE GLYCOLS

Kunihiro Shimamoto, Otsu; Hiroshi Hatanaka, Takasago; Shinichiro Seki, Otsu, and Ryozo Orita, Himeji, all of Japan, assignors to Toyo Kasei Kogyo Co., Ltd., Osaka City, Japan

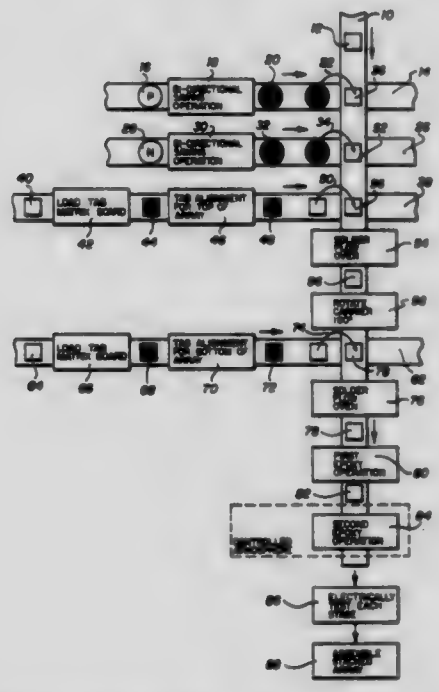
Filed Apr. 10, 1981, Ser. No. 253,144
Claims priority, application Japan, Apr. 15, 1980, 55-49745
Int. Cl.³ C07C *149/00, 148/04*
U.S. Cl. 568—62 7 Claims

1. A method for the production of thioalkylene glycols which consists essentially of introducing hydrogen sulfide into a reaction system containing a reaction solvent containing mainly a thioalkylene glycol, which is the same as the thioalkylene glycol produced, and an anion exchange resin as a catalyst, said hydrogen sulfide being introduced in amounts sufficient to saturate the thioalkylene glycol solvent and then introducing alkylene oxide in amounts sufficient to react with the hydrogen sulfide to produce the objective thioalkylene glycol, said hydrogen sulfide being maintained in the reaction system in amounts sufficient to saturate the thioalkylene glycol solvent as well as to react with the alkylene oxide and wherein the reaction is carried out at a temperature in the range of 0° to 100° C. and at a pressure in the range of 1 to 10 kg/cm^2, said reaction solvent being used in amounts sufficient to remove the heat of reaction from the reaction system, thus controlling the reaction temperature so as to operate the system under relatively constant and stable reaction temperature conditions.

4,493,939
METHOD AND APPARATUS FOR FABRICATING A THERMOELECTRIC ARRAY

T. Allen Bineke, Plano, and Terry J. Hendricks, Garland, both of Tex., assignors to Varo, Inc., Garland, Tex.

Filed Oct. 31, 1983, Ser. No. 547,066
Int. Cl.³ H01L *35/28*
U.S. Cl. 136—212 43 Claims



1. A method of fabricating a thermoelectric device comprising:

simultaneously depositing a plurality of first conductivity type thermoelements in a matrix member in a first spaced apart configuration;

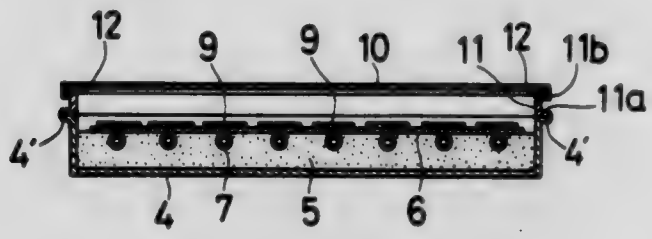
simultaneously depositing a plurality of second conductivity type thermoelements in the matrix member in a second spaced apart configuration to form an alternately disposed array of first and second conductivity type thermoelements within the matrix member; and

depositing and securing in a predetermined pattern a plurality of conductive members on opposite sides of said array of first and second type thermoelements in order to connect the thermoelements in series.

4,493,940
SUNLIGHT-INTO-ENERGY CONVERSION APPARATUS

Daizo Takaoka, Takatsuki, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Aug. 9, 1983, Ser. No. 521,604
Claims priority, application Japan, Aug. 13, 1982, 57-141525
Int. Cl.³ H01L *31/04;* F24J *3/02*
U.S. Cl. 136—248 8 Claims

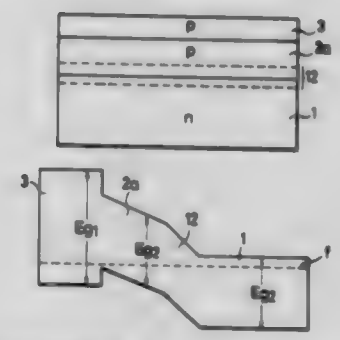


1. A sunlight-into-electrical and thermal energy conversion apparatus of the type comprising a cubiform container open at the top, a heat insulating material disposed in said container, a heat collecting plate received in said container, said heat collecting plate having a heating medium tube on its lower surface in thermal communication with said heat insulating material and solar cells on its upper surface, and a glass plate secured to said container over the open top thereof, the improvement comprising a metal sealing collar disposed between the glass plate and the periphery of the open top of the cubiform container, frit glass between said glass plate and said sealing collar for sealing said collar to said glass plate, the coefficients of thermal expansion of the metal collar and the glass plate being about equal, and the sealing collar and the periphery of the open top of the cubiform container being sealed together by welding or soldering.

4,493,941
HETERO-FACE SOLAR CELL AND METHOD OF MANUFACTURING THE SAME

Yoshinori Yukimoto, and Kotaro Mitsui, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1983, Ser. No. 525,903
Claims priority, application Japan, Aug. 24, 1982, 57-148062
Int. Cl.³ H01L *31/06, 31/18*
U.S. Cl. 136—255 5 Claims



1. A solar cell, comprising:

a semiconductor substrate of a first conductivity type;

a first semiconductor layer of a second conductivity type formed on said semiconductor substrate, said first semiconductor layer having a forbidden band-gap equivalent to that of said semiconductor substrate;

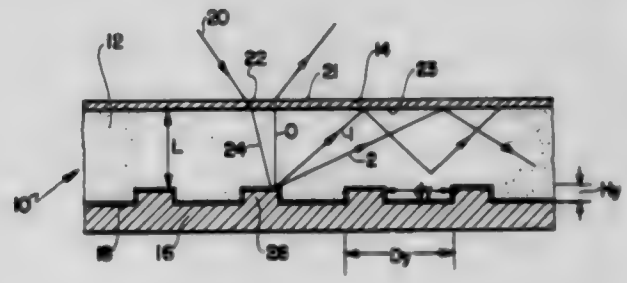
a second semiconductor layer of said second conductivity type having a forbidden band-gap wider than that of said first semiconductor layer formed on said first semiconductor layer;

an impurity concentration of a second conductivity type impurity being gradiently distributed in said first semiconductor layer so as to form an accelerative electric field in the direction of the junction between said first semiconductor layer and said substrate, said impurity concentration gradiently decreasing from the surface mating with said second semiconductor layer to the junction with said substrate.

4,493,942
SOLAR CELL WITH TWO-DIMENSIONAL REFLECTING DIFFRACTION GRATING

Ping Sheng, Skillman, and Robert S. Stepleman, Scotch Plains, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jan. 18, 1983, Ser. No. 458,885
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—259 7 Claims



1. A solar cell comprising:

(a) an active layer of semiconductor material having a pair of opposed surfaces,

(b) a two-dimensional diffraction grating fixed to one of said surfaces of said active layer, coated with a layer of reflecting material at the interface between said grating and said active material, the profile of the interface between said grating and said active layer being described by $H(x,y)=\alpha(X)+\beta(y)$ where H(x,y) is the height of the grating measured from a reference plane having independent x and y axes and $\alpha(x)$ and $\beta(y)$ are periodic rectangular-wave functions in x and y, respectively.

4,493,943

ELECTRICAL INSULATING OIL AND OIL-FILLED ELECTRICAL APPLIANCES

Atsushi Sato, Tokyo; Keiji Endo, Yokohama; Shigenobu Kawakami, Ichikawa; Hitoshi Yanagishita, and Shozo Hayashi, both of Yokohama, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Japan

Filed Sep. 16, 1983, Ser. No. 533,263

Claims priority, application Japan, Sep. 16, 1982, 57-161520; Jul. 12, 1983, 58-126559

Int. Cl.³ H01B *3/24, 9/06;* H01F *27/12;* H01G *4/22*

U.S. Cl. 174—25 C

15 Claims

1. An electrical insulating oil comprising:

(a) at least one member of diarylalkanes, and

(b) at least one member selected from the group of monoolefins, diolefins and mixtures thereof having two condensed or noncondensed aromatic nuclei, excluding bicyclic monoolefins of unsaturated dimers and unsaturated codimers of styrenes such as styrene, α-methylstyrene and their monomethyl nuclear substituted compounds.

4,493,944

SOLDER GLASS AND ELECTRICAL DEVICE EMPLOYING SAME

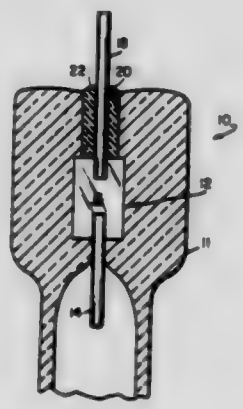
Richard G. Snell, Topsfield, and Fredrick A. Longbridge, Ipswich, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jan. 4, 1984, Ser. No. 568,029

Int. Cl.³ H01T *5/00;* H05K *5/06*

U.S. Cl. 174—50.64

2 Claims



2. A seal for electrical devices comprising a body of substantially fused silica and at least one electrically conductive member sealed therein, said member comprising a proximal portion projecting within said body, an intermediate thin foil portion hermetically sealed within said body, and a distal portion projecting exteriorly of said body, and a capillary passage surrounding said distal portion and extending to said intermediate portion, said capillary passage being substantially filled with a solder glass comprising: about 65 weight percent Sb_2O_3; about 30 weight percent B_2O_3; and about 5 weight percent PbO.

4,493,945

THERMAL PROTECTIVE SYSTEM

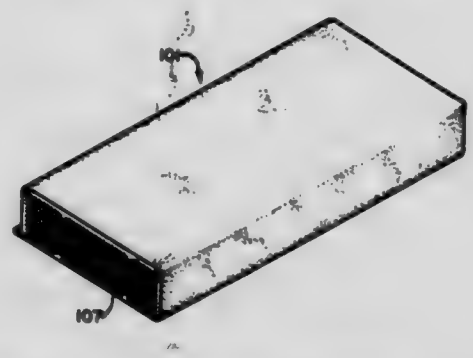
Rubin Feldman, St. Louis County, Mo., assignor to Thermal Science, Inc., St. Louis, Mo.

Filed Aug. 23, 1982, Ser. No. 410,454

Int. Cl.³ H02G *3/04;* B32B *3/30*

U.S. Cl. 174—68 C

20 Claims



1. A thermal protective structure applied over a substrate, the thermal protective structure comprising a mesh support structure having a plurality of spacers formed integrally therein and an active thermal protective material applied to the support structure, the active thermal protective material forming a continuous layer which is held, through the major part of its extent, spaced from the substrate by the spacers and responding to thermal extremes to protect the substrate.

17. In combination, a metal cable tray containing a plurality of electrical cables extending in a first direction, and a thermal protective structure applied as an envelope around the cable tray, the thermal protective structure comprising a mesh support structure having a plurality of spacers formed integrally therein, said spacers comprising stiffening ridges, said integral spacers extending transverse to said first direction, and an active thermal protective material applied in a continuous layer to the support structure, the active thermal protective material being held, through the major part of its extent, spaced from the cable tray by the integral spacers and responding to thermal extremes to protect the cable tray.

4,493,946

DEVICE FOR CONNECTING TOGETHER THE OUTER CONDUCTORS OF TWO COAXIAL PAIRS

Jean Duret, Lyons, France, assignor to Les Cables de Lyon, Lyons, France

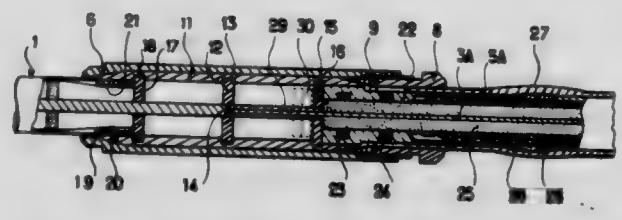
Continuation of Ser. No. 123,245, Feb. 21, 1980, abandoned. This application Mar. 9, 1983, Ser. No. 471,905

Claims priority, application France, Feb. 23, 1979, 79 04658

Int. Cl.³ H02G *15/18*

U.S. Cl. 174—88 C

2 Claims



1. A device for connecting together the outer conductors of two coaxial pairs with respective axial conductors (3) and outer conductors (4), at least one of said pairs being a length of coaxial cable, said device including two metal half-shells (11), said half-shells having externally chamfered ends (10) which are provided with longitudinal slots, said half-shells being disposed between the ends of the outer conductors, a sleeve (5) covering said half-shells and having one end (7) tapped and threaded, and a clamping screw (8) fitted onto the corresponding outer conductor and being screwed into said one end of the sleeve and bearing on a conical ring (9) to clamp said one end of each half-shell, the improvement wherein the inside of the other end of said sleeve is machined to give it a fustoconical profile (19) whose conical shape substantially matches that of

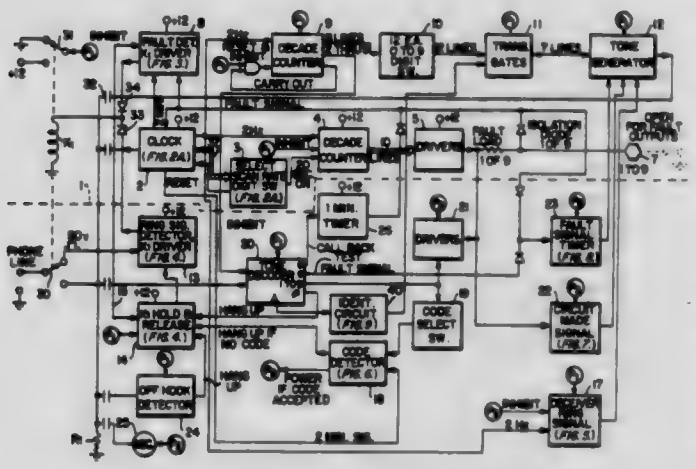
the corresponding chamfered ends (20) of the half-shells, and wherein said device connects said coaxial cable to a flexible lead repeater comprising a coaxial pair of smaller diameter, and wherein said device includes a metal end member (22) to the smaller diameter coaxial pair side which fits into the ends of the half-shells, said end member being provided with internal gas-tight seals (23) and an adhesive heat-shrinkable sheath (27) which surrounds the end of said end member which is opposite to the half-shells.

4,493,947

SECURITY DEVICE UTILIZING CONVENTIONAL TELEPHONE LINES

John H. Loveless, 2566 Salem Bottom Rd., Westminster, Md. 21157

Filed Oct. 6, 1981, Ser. No. 309,227
Int. Cl.³ H04M *11/04*
U.S. Cl. 179—2 A 15 Claims



1. A security device connected to telephone lines and to at least one sensor, comprising:

monitoring means for monitoring said at least one sensor to determine a status of each said at least one sensor and to detect when said status of any sensor is a fault status;

preselecting means operable by a user of the security device for preselecting at least one telephone number to be called upon occurrence of said fault status;

automatic call-up means for automatically calling said preselected telephone number to report any said fault status;

answering circuit means for receiving and answering an incoming telephone call received over said telephone lines, and responsive to reception of a user input transmitted over the telephone lines and designating a selected said at least one sensor to be monitored for monitoring said at least one sensor, and for transmitting the status of said selected at least one sensor over the telephone lines; and

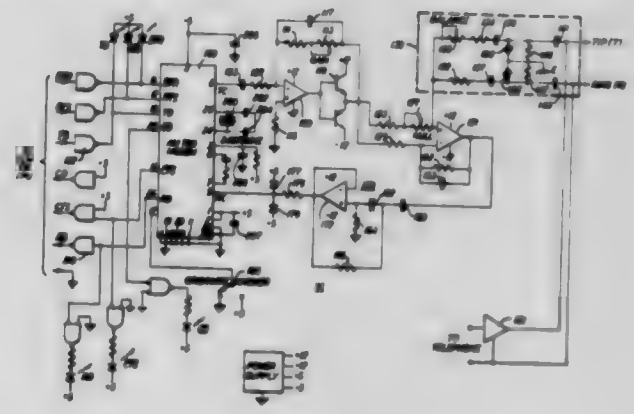
identification circuit means responsive to a received user query, requesting the identity of the security device, for transmitting identification information over the telephone line; wherin said identification circuit means comprises a counter for counting through a plurality of count outputs, a digital switch having multiple stages, each preset with a digit of an identifier, and a tone generator for selectively generating a pluraliyt of tones, said multiple stages of said digital switch being responsive in turn to respective count outputs for sequentially activating said tone generator to generate corresponding sequential tones, whereby to transmit said identification information.

4,493,948

TRANSPARENT SECONDARY INFORMATION TRANSMISSION SYSTEM FOR AN INFORMATION TRANSMISSION SYSTEM

John M. Suss, Absecon, N.J., and Carmine Capani, Bronx, N.Y., assignors to The Intelsplex Corporation, Atlantic City, N.J.

Filed Jun. 27, 1983, Ser. No. 508,126
Int. Cl.³ H04M *11/06*
U.S. Cl. 179—2 A 30 Claims

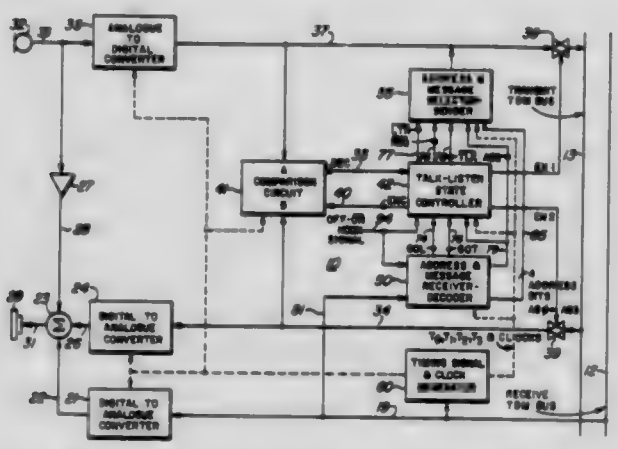


1. A condition monitoring system adapted to be connected in a telephone system comprising circuit means for monitoring at least one condition at a first location in the telephone system and providing a first signal representative of the condition, first means adapted to be coupled to a pair of ring and tip lines of the telephone system at the first location and to earth ground for transmitting substantially said first signal simultaneously on both said ring and tip lines such that substantially no signal is produced across said ring and tip lines from transmission of said first signal on both said ring and tip lines, second means adapted to be coupled to the ring and tip lines at the second location and earth ground for transmitting substantially a second signal simultaneously on both said ring and tip lines such that substantially no signal is produced across said ring and tip lines from transmission of said second signal on both said ring and tip lines and for receiving said first signal at said second location in the telephone system and generating a signal responsive to a predetermined condition of said first signal, said first means further comprising balanced modulator/demodulator means for receiving said second signal from said second location transmitted on said ring and tip lines, said first balanced modulator/demodulator means further comprising modulator means for converting said first signal into a modulated signal, amplifier means for increasing the amplitude of said modulated signal so as to produce an amplified modulated signal, said amplified modulated signal present on an output of said amplifier means, said output coupled to telephone line coupling means, said telephone line coupling means comprising resistor/capacitor circuit means coupled to both said ring and tip lines of said telephone system for coupling said amplified modulated signal to both said ring and tip lines and further comprising means for adjusting said amplified modulated signal so that said amplified modulated signal is substantially undetected across said ring and tip lines but may be detected across either of said ring and tip lines and earth ground, whereby said first means for transmitting is substantially transparent to said telephone system, and further comprising duplexer means coupled to the output of said amplifier means and to said telephone line coupling means, said duplexer means having an output coupled to filter means, said duplexer means allowing said second signal received by said telephone line coupling means to be coupled to said filter means, and further comprising demodulator means for converting said received signals into a demodulated signal, said filter means coupled to said demodulator means, said demodulated signal coupled to said circuit means for controlling said circuit means.

4,493,949
PARALLEL OPERATION OF TELEPHONE EQUIPMENT ON A DIGITAL LOOP

Laurence J. Retallack, Ottawa, and Cornelis W. Reedyk, Nepean, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Mar. 12, 1981, Ser. No. 242,843
Int. Cl.³ H04M 3/56
U.S. Cl. 179—18 BC 24 Claims



1. A digital station apparatus for connection to a subscriber's digital telephone loop, having both receive channels and transmit channels, said apparatus characterized by:

terminal means for receiving digital signals from said receive channels;

first switch means for selectively passing first digital signals from a first channel of said transmit channels;

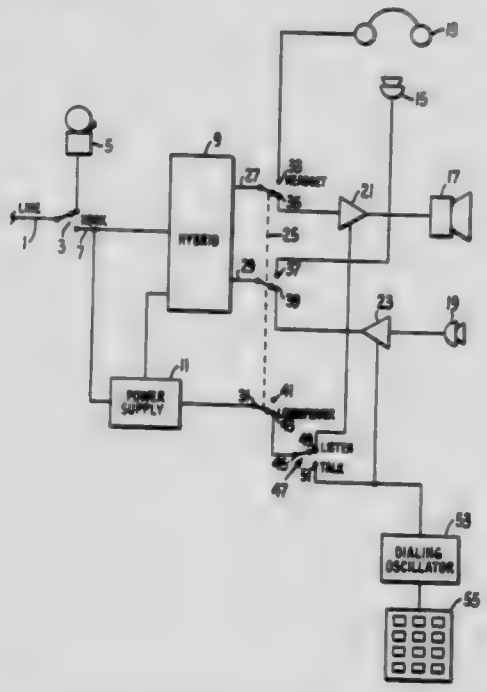
second switch means for selectively passing second digital signals to said first channel of said transmit channels such that said first and second switch means operate in unison and one said switch means is open when the other said switch means is closed; and

a comparison means for comparing said first digital signals and said second digital signals, when said first switch means is closed, and for producing a signal indicative of said comparison.

4,493,950
LOUDSPEAKER TELEPHONE

Thomas M. Lott, 55 W. Santa Inez Ave., San Mateo, Calif. 94402

Filed Dec. 17, 1982, Ser. No. 434,865
Int. Cl.³ H04M 9/08
U.S. Cl. 179—81 B 1 Claim



1. A line powered telephone receiver and transmitter which is capable of being operated in a handset mode and in a loudspeaker mode comprising in combination:

(a) a lightweight headphone and first microphone,

(b) a loud speaker and second microphone,

(c) an amplifier for said loudspeaker,

(d) an amplifier for said second microphone,

(e) a hybrid circuit for separating incoming from outgoing signals,

(f) a power supply operated by telephone line current,

(g) a three pole double throw switch,

(h) a single pole double throw switch

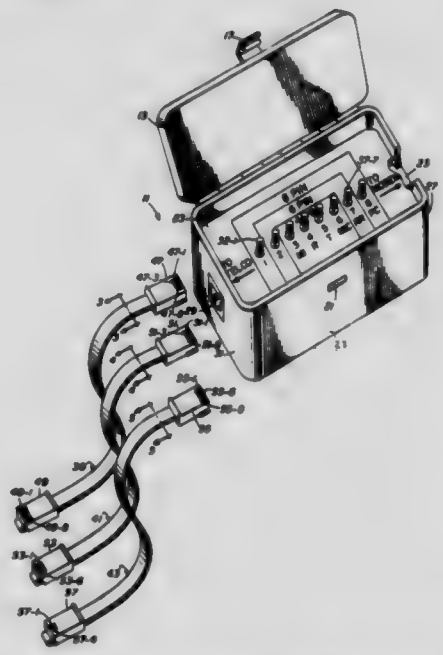
(i) said three pole switch having one position connecting said headset and said first microphone to said hybrid circuit and a second position connecting said power supply to the center pole of the single pole switch and said hybrid circuit to the loudspeaker and second microphone, and

(j) said second switch having a listen position activating said loudspeaker amplifier and a talk switch actuating said second microphone amplifier.

4,493,951
DEVICE FOR USE IN TESTING A MODEM COUPLED TO A TELEPHONE LINE BY MODULAR CONNECTORS

Edward Sanderson, 40 Crestwood Dr.; Laurence S. Sanderson, 13 Mayflower Rd., both of Framingham, Mass. 01701, and Robert S. Kalinowski, Jr., 22 C Beacon Village, Burlington, Mass. 01803

Filed Apr. 18, 1983, Ser. No. 486,260
Int. Cl.³ H04B 3/46
U.S. Cl. 179—175.3 F 9 Claims



1. A device for use in testing the wiring integrity and/or determining the location of system faults for a modem and/or an associated telephone line which are coupled together through a modular plug on the modem and a modular jack on the telephone line, the device comprising:

a. a housing,

b. a first multi-contact modular jack mounted on said housing and adapted to receive said modular plug on said modem,

c. a second multi-contact modular jack mounted on said housing,

d. a set of conductors connecting the contacts on said second multi-contact modular jack with the contacts on said first multi-contact modular jack,

e. a test pin connected to each conductor and projecting outward therefrom, and

f. a connector cable having a first multi-contact modular plug on one end adapted to be plugged into said second multi-contact modular jack and a second multi-contact modular plug on the other end adapted to be plugged into said modular jack on said telephone line,

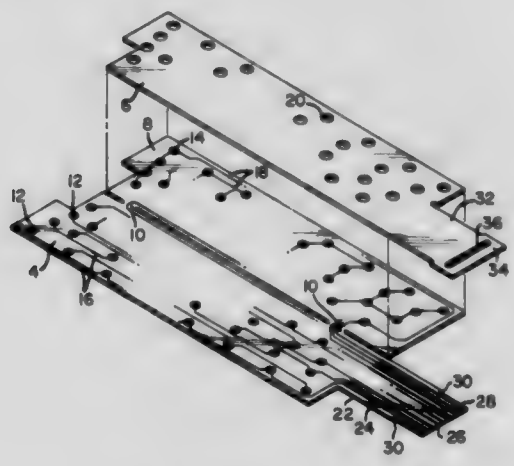
g. whereby, said device may be coupled in series between said modem and said telephone line and tests conducted through said test pins.

4,493,952

MEMBRANE SWITCH HAVING INTEGRAL SWITCH TAIL INSULATOR

Richard H. Kaleida, Salem, Mass., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 29, 1983, Ser. No. 527,042
Int. Cl.³ H01H *13/70*; H05K *1/00*
U.S. Cl. 200—5 A 12 Claims



1. A membrane switch assembly of the type having three parallel layers, the three layers comprising first and second parallel insulating supports having opposed first and second surfaces and a spacer between the first and second surfaces, at least one of the supports being a flexible layer, opposed switch electrodes at switch sites on the first and second surfaces and openings in the spacer at the switch sites, circuit conductors on the one support which is a flexible layer extending between and among the switch electrodes of the one support, an integral tail extending from the one support, the tail having a free end and having an end portion which is adjacent to the free end, the circuit conductors having lead portions which extend onto one surface of the tail and substantially to the free end of the tail, and a tail insulator in covering and insulating relationship to the lead portions, the tail insulator extending to the end portion of the tail so that contact portions of the lead conductors on the end portion of the tail are exposed, the membrane switch assembly being characterized in that:

the assembly comprises a second flexible layer, the second flexible layer being one of the layers other than the flexible membrane which has the integral tail,

the second flexible layer has an integral tail insulator extending therefrom, the tail insulator being substantially coextensive with the tail and being in covering relationship to the one surface of the tail, the tail insulator having a free end, a slot is provided in the tail insulator adjacent to the free end of the tail insulator, the slot extending normally of the side edges of the tail insulator, the free end of the tail being threaded through the slot, the end portion of the tail extending beyond the slot and beside the tail insulator whereby the contact portions only of the lead portions of the conductors are exposed,

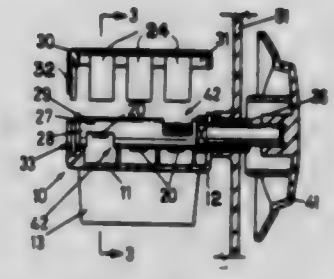
the tail and the tail insulator having opposed edges at the slot in the tail insulator, the opposed edges preventing movement of the tail insulator along the tail towards the second flexible layer whereby the tail and the tail insulator are maintained in side-by-side relationship with the tail insulator in covering relationship to the lead portions of the conductors.

4,493,953

SWITCH

Damon J. F. Bound, St. Marys, Australia, assignor to F. F. Seeley Nominees Pty. Ltd., South Australia, Australia

Filed Aug. 15, 1983, Ser. No. 523,158
Claims priority, application Australia, Aug. 23, 1982, PF5516
Int. Cl.³ H01H *19/60, 3/42*
U.S. Cl. 200—6 B 4 Claims



1. A switch comprising a body and a cap, and resilient latch means depending from the cap and engaging latch surfaces on the body thereby retaining the cap to the body,

the body containing terminal recesses which themselves house respective terminal plates, each said terminal recess being defined by surfaces having lugs projecting therefrom into that recess, said terminal plates being engaged and retained by said lugs in their respective said recesses, said body also supporting a switch shaft bearing, there being a switch actuating shaft rotatable in said bearing and projecting from the body, a plurality of contact fingers on one of said terminal plates and respective contact members on each other said plate, said switch actuating shaft having transversely extending slots therein, each of which, when aligned with a respective said contact finger, permits movement of that contact finger into electrical contact with a said contact member, said movement being effected by resilience of that contact finger,

the cap engaging the switch shaft and terminal plates when assembled to the body, and further retaining the switch shaft and terminal plates in their positions within the body.

4,493,954

ROTARY SWITCH WITH INTERNAL ROTOR INTERCONNECTING CIRCUIT PATHS FOR SURFACE CONTACTS

David J. Kimmel, and John H. Lauterbach, both of Clearwater, Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 6, 1983, Ser. No. 456,070
Int. Cl.³ H01H *19/58, 21/78*
U.S. Cl. 200—11 R 12 Claims

1. A rotary switch of the type comprising:

a housing of insulative material defining a cavity;

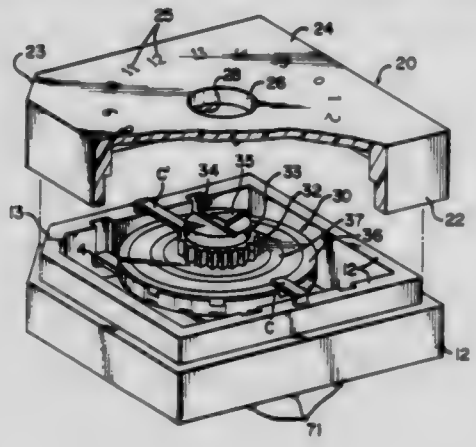
a substantially cylindrical rotor mounted for relative rotation within said cavity of said housing;

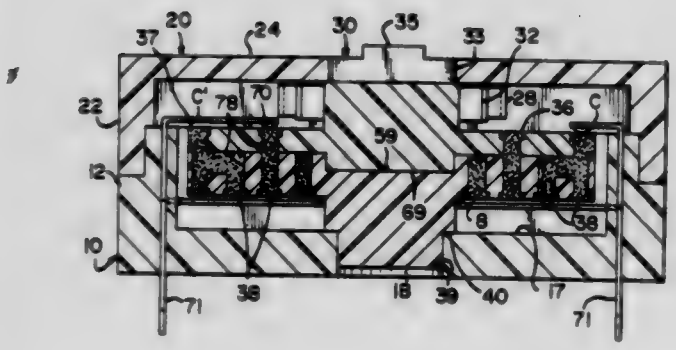
a plurality of fixed contacts mounted to extend radially into said cavity and from said housing;

a plurality of integral surface contacts in said rotor which selectively engage said fixed contacts in said housing, incremental rotation of said rotor causing different sets of surface contacts to selectively engage said fixed contacts, characterized in that said rotor is a disc having opposed first and second planar surfaces, said first planar surface having a plurality of said surface contacts thereon, said surface contacts lying on circles concentric with the central axis of said disc, said surface contacts on said circles further lying along radii common to each said circle, a number of said fixed contacts corresponding to the number of said circles making engagement with said surface contacts along said radii, said radii corresponding to the number of incremental positions of said rotor, and circuit paths extending through and within said rotor intercon-

necting respective surface contacts on the faces of said rotor.

2. A rotary switch as in claim 1 characterized in that at least one of said surface contacts is a circular bus which is in constant engagement with a certain one of said fixed contacts regardless of the incremental position of said rotor, said circular bus being electrically continuous with at least some of said remaining surface contacts by means of said circuit paths.





4,493,955

CONTROL MECHANISM FOR AN ELECTRIC MOTOR ASSEMBLY

Charles D. Wielgus, Crystal Lake, Ill., assignor to Colman OEM, Inc., Rockford, Ill.

Filed Apr. 18, 1983, Ser. No. 486,203
Int. Cl.³ H01H *43/10*
U.S. Cl. 200—38 R 4 Claims

1. A control mechanism in combination with an electric motor assembly which is intermittently operated through cycles of similar duration and in which an output shaft is connected to the electric motor through a gear train located in a housing,

a cam surface formed on the output shaft,

a switch block assembly located on the gear train housing,

a first arm extending from the switch block assembly and having a contact near the free end thereof,

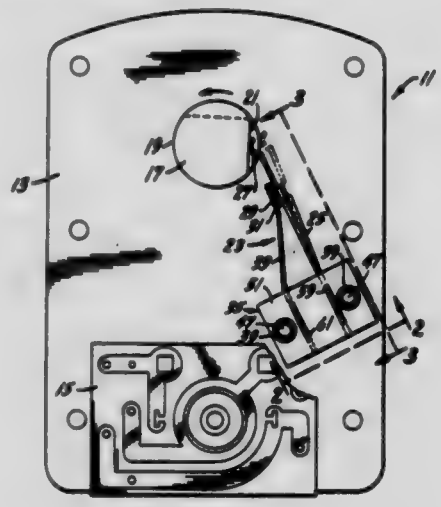
a second arm extending from the switch block assembly and intersecting the free end of the first arm,

the second arm having a cam follower portion which rides on the cam surface of the output shaft and a contact portion which is positioned to be moved into and out of engagement with the contact of the first arm,

the cam surface of the output shaft being contoured so that the contacts of the first and second arms are disengaged when the output shaft begins a cycle of rotation and these contacts are engaged when the output shaft completes a cycle of rotation,

said switch block assembly including a base portion formed integrally with the gear train housing,

the base portion having a pair of posts and a center block located between the posts, and



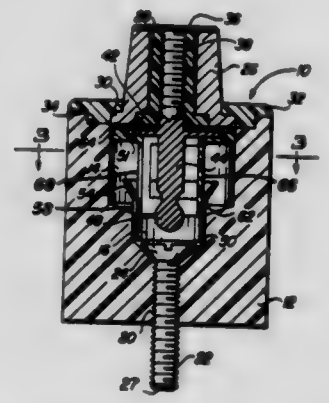
a switch top portion including a pair of blocks, a cross member connecting the blocks, a passage formed in each block which passages are adapted to receive the posts of the base portion with the cross member resting on the center block of the base portion and slots formed in the cross member and located between the base portion and the blocks, with the slots positioned to receive quick connect terminals extending therethrough.

4,493,956

IMPACT SWITCH

Richard E. Yeoman, 2125 Portola La., Westlake Village, Calif. 94014

Filed Aug. 29, 1983, Ser. No. 527,289
Int. Cl.³ H01H *35/14, 29/20*
U.S. Cl. 200—61.47 13 Claims



1. An impact switch assembly, comprising:

(a) a non-conductive housing having a cavity therein,

(b) a first conductive terminal secured to said housing,

(c) a second conductive terminal secured to said housing,

(d) moveable terminal bridging means disposed in said cavity adapted to electrically interconnect said first and second terminals, comprising:

(1) a moveable electrical conductor secured to said housing and disposed in said cavity,

(2) a pool of liquid mercury disposed in said cavity and adapted to electrically connect said second terminal with said conductor,

(3) control means for moving said conductor into and out of electrical contact with said first terminal,

(4) said conductor being positioned to allow the electrical connection of the first terminal and pool of mercury,

(e) whereby an electrical circuit is completed between said terminals when the pool of mercury contacts the conduc-

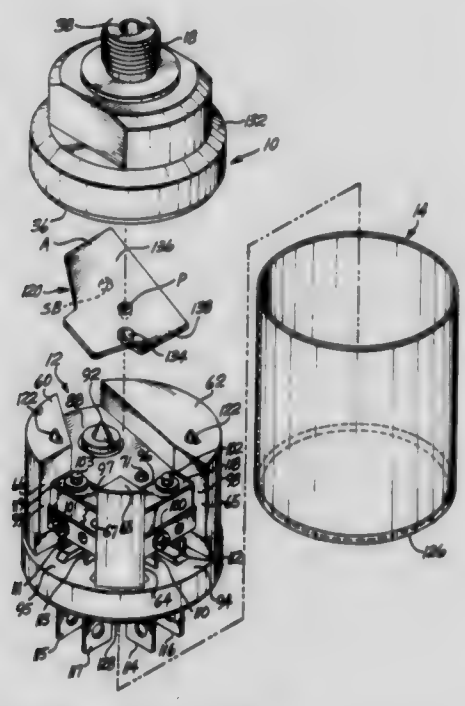
tor and second terminal only when said conductor is in contact with said first terminal.

4,493,957

MULTIMODAL PRESSURE SWITCH

Wayde H. Watters, East, Wash., assignor to Red Dot Corporation, Seattle, Wash.

Filed Mar. 11, 1983, Ser. No. 474,702
Int. Cl.³ H01H 35/24, 3/32
U.S. Cl. 200—81 R 20 Claims



1. A switch mechanism comprising:
a snap-action switch which in use forms a part of an electrical circuit, said switch having a reciprocating operator;
a movable member with a first side facing toward the reciprocating operator, and a second side essentially opposite said first side;
support means for supporting the movable member by making supporting contact with at least two support points on said second side;
a biasing member which makes point contact with said first side of the movable member at a location that is offset from both the reciprocating operator and said support points;
means for mounting the biasing member for reciprocating movement along a line that includes its point of contact with the movable member and that extends generally transversely of the movable member;
spring means for biasing the biasing member toward the movable member and the movable member into contact with the support means and into a spaced relationship with the reciprocating operator;
a load applying member which makes point contact with said second side of the movable member at a location spaced toward the reciprocating operator from both the biasing member and said support points;
means for supporting the load applying member for movement along a line that includes its point of contact with the movable member and that extends generally transversely of the movable member; and
fulcrum means positioned to contact said first side of the movable member at a location spaced toward the reciprocating operator from the load applying member;
with the relative spacing of the reciprocating operator, said support points, the point of contact between the biasing member and the movable member, the point of contact between the load applying member and the movable member, and the fulcrum means being such that a first movement of the load applying member toward the movable member will pivot the movable member in position about a first axis that includes said support points, to depress the biasing member, compress the spring means, and move the movable member into contact with the reciprocating operator to depress said operator and operate the snap-action switch, and a subsequent additional movement of the load applying member in the same direction will cause the movable member to pivot in position about the fulcrum means, to further depress the biasing member, further compress the spring means, and move the movable member out of contact with the reciprocating operator.

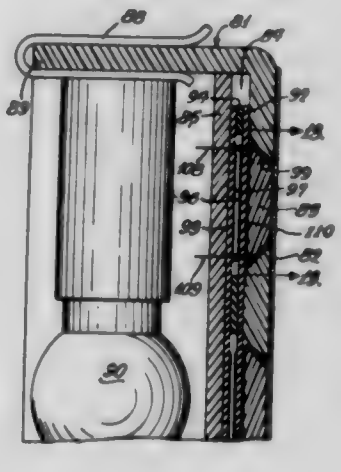
13. A switch mechanism as described in claim 1, further comprising means for receiving a pressure signal and applying it against the load applying member to cause said movements of the load applying member.

4,493,958

ILLUMINATED MEMBRANE SWITCH

Lawrence E. Hamilton, Chicago, and Renzo N. Rutili, Evanston, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed Sep. 28, 1982, Ser. No. 536,637
Int. Cl.³ H01H 9/18
U.S. Cl. 200—314 9 Claims



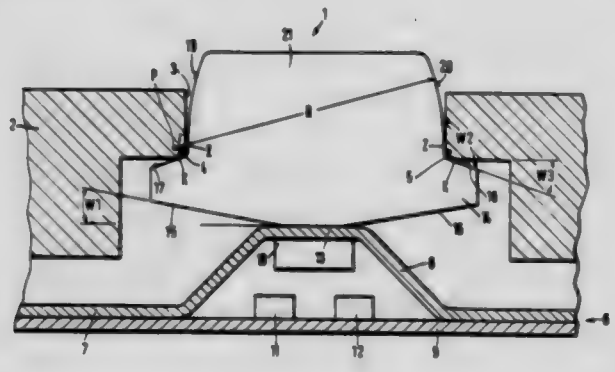
1. An illuminated membrane switch assembly, comprising; a first transparent flexible film member having a conductive area on one side thereof, a second transparent flexible film member adjacent and normally spaced from the one side of the first film member, said second film member having a conductive area on the side thereof adjacent the first film member and including spaced switch contacts positioned to be electrically closed when simultaneously contacted by the conductive area on the first film member when one of the film members is pressed into engagement with the other film member, a movable switch actuator member mounted adjacent one of the first and second film members having a width greater than the conductive areas and having indicia thereon on the side thereof opposite the first and second film members, a source of light, transmission means for transmitting light from the source through the first and second film members into the side of the actuator member toward the first and second film members, and means for preventing light from passing through the conductive areas into the actuator member.

4,493,959

KEYBOARD WITH IMPROVED KEY DESIGN PERMITTING TILTING ABOUT EITHER SIDE

Hans-Joachim Viebrantz, Bad Neustadt/Saale, Fed. Rep. of Germany, assignor to Preh Elektrofeinmechanische Werke Jakob Preh Nachf., GmbH & Co., Bad Neustadt/Salle, Fed. Rep. of Germany

Filed Mar. 7, 1983, Ser. No. 472,637
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1982, 3208559
Int. Cl.³ H01H *13/14*
U.S. Cl. 200—340
8 Claims



1. A keyboard comprising a supporting plate with recesses therein and keys arranged in said recesses, a contact plate positioned below said keys and resilient contact means positioned on said contact plate below each said key for providing a resilient force against said key when it is pressed down against said contact means to make an electrical contact, characterized in that:

each said recess comprises an opening in said plate, said plate having a pair of corners on opposite sides at the bottom of said opening,

each said key has a top portion which normally extends up through said opening and has opposite lateral surfaces which curve inwardly from said opening in going from bottom to top, and a base portion which extends below said corners and has opposite stopper surfaces which extend laterally outwardly and downward from said opening, said lateral surfaces and stopper surfaces on each side of said key defining obtuse angles which normally abut respective ones of said corners, the bottom of said base portion being in contact with said contact means, whereby when said key is pressed down at an angle it tilts about a tilting axis formed at the contact point of one of said stopper surfaces with the respective one of said corners.

4,493,960

CERAMIC BLINDERS FOR A MICROWAVE OVEN QUARTZ LAMP

Robert A. Mittelstaedt, Burnsville, and Gregory W. Macheeney, Oakdale, both of Minn., assignors to Micro-Quartz Technology Corp., Minneapolis, Minn.

Filed Aug. 12, 1982, Ser. No. 407,377
Int. Cl.³ H05B *6/80, 3/44*
U.S. Cl. 219—10.55 B
1 Claim

1. In a combination microwave/convection/broiling oven having a cavity, a heat-exchanger/fan, one or more quartz lamps mounted adjacent thereto, each having a quartz tube and a resistance element, and blinder means for directing the propagation of infrared radiation from said quartz lamps, the improvement comprising:



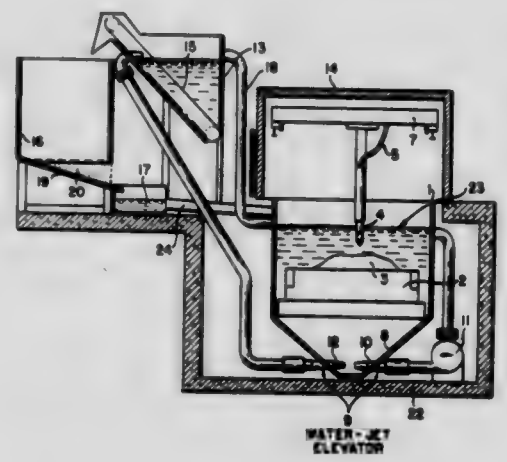
said blinder means comprised of a half-tube of ceramic paper mounted on the interior of said quartz tube.

4,493,961

APPARATUS FOR ELECTROHYDROBLASTING TRIMMING OF CASTINGS

Valery V. Prikhodko, and Boris V. Kostyrkin, both of Nikolaev, U.S.S.R., assignors to Proektno-Konstructorskoe Bjuro Elektrogidravliki Adademii Nauk Ukrainskoi SSR, Nikolaev, U.S.S.R.

Filed Apr. 13, 1982, Ser. No. 367,957
Int. Cl.³ B08B *3/10*; B23P *1/06*
U.S. Cl. 219—69 R
11 Claims



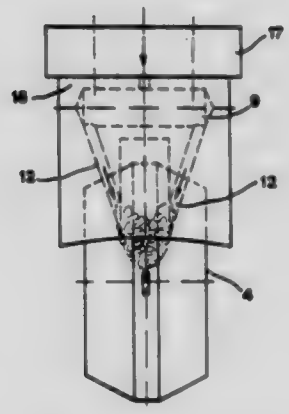
1. An apparatus for electrohydroblasting trimming of castings, comprising: a bath in which the castings being trimmed are placed; a working fluid filling said bath, said working fluid having an electrical conductivity required for the electrohydroblasting trimming; a bottom part of said bath which narrows; a working electrode immersed in said working fluid and defining a spark gap with the surface of the castings being trimmed; means for providing current pulses to said spark gap, whereby electrohydroblasting discharges occur in said working fluid so as to remove molding sand from the surface of the castings; means for moving said working electrode with respect to the surface of the castings being trimmed, said electrode being secured to said means; said means for moving the electrode being installed over said bath; a hydraulic elevator for removing sludge formed as a result of removal of molding sand, which is provided in said bottom part of said bath; a tank for settling the solid fraction from said working fluid, communicating with said hydraulic elevator for the transfer of the sludge from said bath to said tank.

4,493,962

APPARATUS AND METHOD TO SUPPRESS OXIDATION DURING RESISTANCE WELDING

Wolfgang Weil, Hattsteinstr. 3, D-7843 Heitersheim, Fed. Rep. of Germany; Andres Lanz, Obere Dorfstrasse 80, CH-8968 Mutschellen, Switzerland; Max Vogt, 25 Sunset Pl., Singapore 21, Singapore; Paul Meier, Dorngasse 55, CH-8967 Widen; Martin Kaul, Langlicherstr. 204, CH-5454 Bellikon, both of Switzerland, and Hanspeter Fankhauser, 400 Birch La., Irvington, N.Y. 10533

Continuation of Ser. No. 212,593, Dec. 3, 1980, Pat. No. 4,396,821. This application Jan. 17, 1983, Ser. No. 458,754
The portion of the term of this patent subsequent to Jul. 26, 2000, has been disclaimed.
Int. Cl.³ B23K *11/08*
U.S. Cl. 219—64 5 Claims



1. In a resistance roller welding machine for seam welding two can components movable in a predetermined direction, including oxidation suppression means operable for at least partially suppressing oxidation of the hot welding seam,

the improvement comprising

gas supply means forming part of said oxidation suppression means having an opening operative for discharging an agitated inert gas therethrough to a location downstream of and near said welding seam, as seen along said predetermined direction,

said gas supply means defining an expansion chamber for agitating and cooling said inert gas prior to discharging it through said opening,

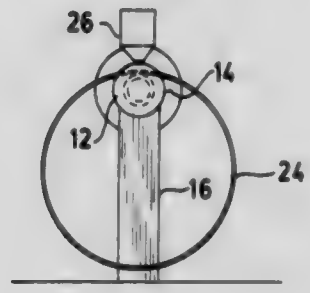
said location including a section free of any sealing means and extending between said can components and said gas supply means within which section there is created an impinging region wherein said inert gas impinges on said hot welding seam and another region wherein said inert gas is in contact with the surrounding atmosphere.

4,493,963

MANDREL MACHINE

Roman Arnoldy, P.O. Box 40472, Houston, Tex. 77240

Filed Sep. 9, 1982, Ser. No. 416,403
Int. Cl.³ B23K *9/04*
U.S. Cl. 219—76.1 7 Claims



1. A machine supporting and rotating a cylindrical or oval metal plate having an opening therethrough which is to have welded to it cladding material, corrosion-resistant material or hardfacing material, welding means being disposed above the machine for welding the material to the plate, the machine comprising

a rotatable substantially cylindrical mandrel for inserting into and supporting the plate, the longitudinal axis of the mandrel disposed horizontally,

the mandrel being receivable within the opening in the plate, the horizontal axis of the mandrel spaced from the horizontal axis of the plate so that the two axes are offset and non-coincident,

the mandrel protruding into the opening in the plate and the outer diameter of the mandrel being less than the inner diameter of the plate so that the mandrel contacts less than the entire inner surface of the plate's opening,

the mandrel contactingly supporting the plate so that no other apparatus is needed to brace or support the plate, and the mandrel holding the plate beneath the welding means so that upon rotation of the mandrel the plate is rotated by the mandrel, the plate being rotated about its horizontal axis past the welding means for welding the material to the plate,

the mandrel supporting the plate to uniformly maintain the distance between the welding means and the part of the plate being welded, and

beam means connected to the mandrel for supporting the mandrel.

6. A method for welding cladding, corrosion-resistant, or hardfacing material to a cylindrical or oval metal plate having an opening therethrough, the method comprising

positioning a rotatable substantially cylindrical mandrel in proximity to welding means, the mandrel's longitudinal axis being positioned horizontally,

placing the plate on the mandrel so that the plate's longitudinal axis is positioned horizontally and so that the mandrel protrudes into the plate's opening contactingly supporting the plate, the mandrel's and plate's horizontal axes being offset and noncoincident, the mandrel contacting less than the entire inner surface of the plate's opening,

rotating the mandrel, thereby rotating the supported plate past the welding means and uniformly maintaining the distance between the welding means and the part of the plate being welded, and

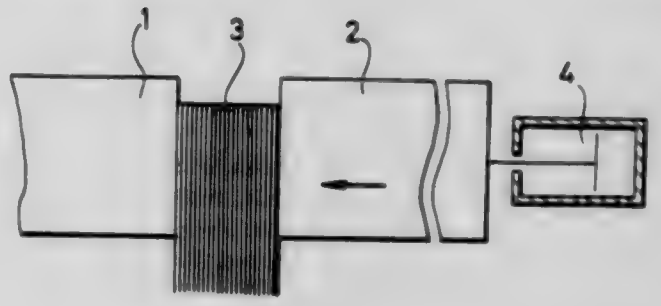
welding the material to the plate.

4,493,964

METHOD OF JOINING ELECTRICALLY CONDUCTIVE MEMBERS

Saito Shigemasa, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 54,052, Jul. 2, 1979, abandoned. This application Sep. 9, 1981, Ser. No. 300,532
Claims priority, application Japan, Jun. 30, 1978, 53-80048; Jun. 30, 1978, 53-80049
Int. Cl.³ B23K *11/20*
U.S. Cl. 219—78.02 5 Claims



1. A solid phase bonding method for joining a plurality of electrically conductive members, made from copper, silver, an alloy of copper or silver, a copper-coated material, silver-coated material or a like material which is used as an electrical switch contact or other conductive element, said method com-

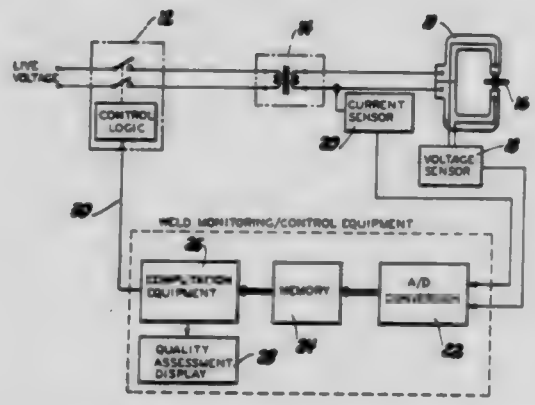
prising the steps of inserting said conductive members in stacked relationship between two carbon electrodes with no adhesive materials between said conductive members, said carbon electrodes having confronting parallel surfaces and disposed in an air atmosphere, heating said conductive members up to a bonding temperature in a period of time on the order of ten seconds, where said bonding temperature falls in a range between 0.4 TM and 0.8 TM where TM represents the melting temperature of any of said conductive members, and maintaining the temperature of said conductive members in the vicinity of said bonding temperature for one to three minutes by feeding electric current between said electrodes while said conductive members are pressurized at a pressure substantially between 0.02 kg/mm^2 and 1 kg/mm^2 between said electrodes.

4,493,965

METHOD AND APPARATUS FOR PREDICTING AND CONTROLLING THE QUALITY OF A RESISTANCE SPOT WELD

Albert F. Houchens, Rochester, Mich.; Dixon Cleveland, Vienna; Basil A. Decina, Jr., McLean, both of Va.; Dale K. Watney, Troy, Mich.; James R. Havens, Sterling Heights, Mich., and Gregory L. Nagel, Royal Oak, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 25, 1983, Ser. No. 498,061
Int. Cl.^{3} B23K *11/00*
U.S. Cl. 219—109 12 Claims



1. A method of predicting the quality of a resistance spot weld comprising the steps of:

measuring the weld resistance and power,

determining from the resistance characteristic and the electrical power the onset of melting,

deriving from the measured power the total energy put into the weld and the energy put into the weld after the onset of melting and

assessing the degree of weld growth by determining the ratio of energy put into the weld after the onset of melting to the total energy and comparing the ratio to an empirical standard ratio representing a good weld whereby the quality of the weld is predicted as good when the measured ratio equals or exceeds the standard ratio.

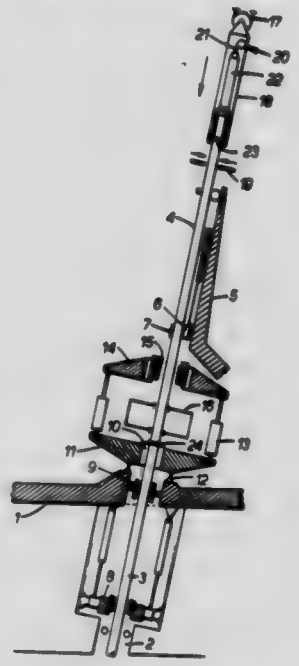
4,493,966

INTERNAL MANDREL USED IN AN OPERATION OF BUTT JOINING TWO LENGTHS OF TUBING BY WELDING

Bruno de Sivry, Paris; Bernard Sudreau, Puteaux; Michel Jegousse, St Herblain, and Yves Le Hir, Nantes, all of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed May 11, 1982, Ser. No. 376,999
Claims priority, application France, May 13, 1981, 81 09479
Int. Cl.^{3} B23K *15/00*
U.S. Cl. 219—121 EC 15 Claims

1. Internal mandrel used in carrying out an operation of butt joining two lengths of tubing by welding the ends of said lengths of tubing, which are disposed facing one another and which then define a junction region, said mandrel comprising sensing means capable of detecting the longitudinal position of one of said ends and centering means capable of centering said two ends relative to one another, and welding means for carrying out of the welding operation, the improvement wherein the sensing means (29) and the centering means (28) are disposed in a first matching zone (25) of the mandrel (22) and the welding means (32, 33, 34) are disposed in a second welding zone (26)



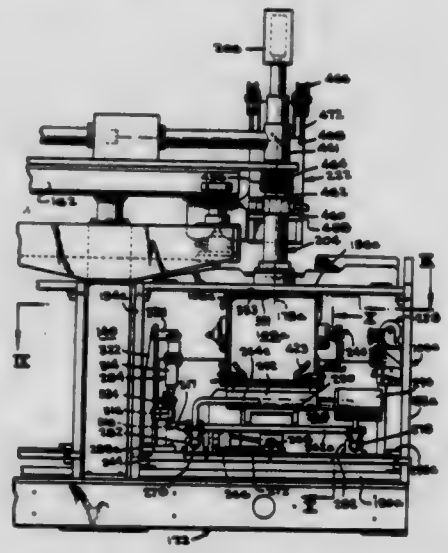
of the mandrel (22), said second zone being separated longitudinally from the matching zone (25), and said mandrel (22) further provided with means for longitudinal displacement of the mandrel (22) inside the lengths of tubing (3,4) by a step equal to the distance from the welding zone (26) to the matching zone (25).

4,493,967

RIGID SUPPORT FOR LASER MACHINING APPARATUS

Donald L. Wolfe, Allison Park, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 1, 1982, Ser. No. 414,191
Int. Cl.^{3} B23K *27/00*
U.S. Cl. 219—121 LC 18 Claims



1. Apparatus for laser machining, comprising:

(a) rigid bed means resting on a support surface for defining a first substantially planar, reference surface;

(b) laser means for emitting a laser beam;

(c) means affixed to said reference surface for rigidly mounting said laser means with respect to said reference surface;

(d) a platform;

(e) work piece housing means affixed to said reference sur-

face for defining and disposing a second, substantially planar sealing surface with respect to said first reference surface;

(f) a machining chamber for receiving the work piece and having an upper opening defining a third, substantially planar peripheral surface, said machining chamber being disposed on said platform;

(g) adjustable means for positioning said platform and said machining chamber mounted thereon so that said third peripheral surface is disposed substantially parallel with respect to said second sealing surface and spaced therefrom a distance sufficiently small to ensure the integrity of the machining environment within said machining chamber; and

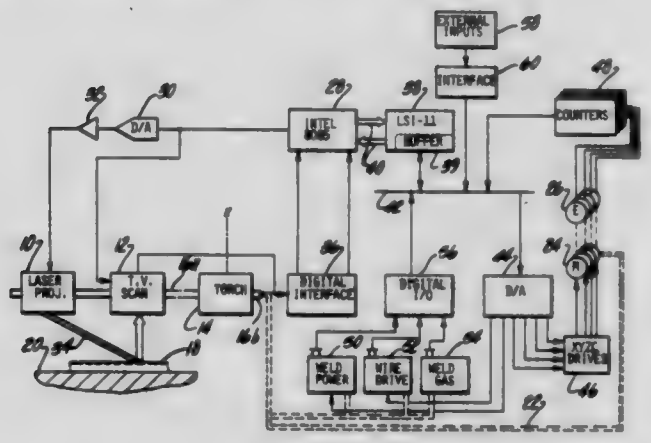
(h) fastening means for directly affixing said platform to said work piece housing means once said third peripheral surface has been so positioned with respect to said second sealing surface.

4,493,968

ADAPTIVE WELDER WITH LASER TV-SCANNER

Ronald D. Brown, Mapleton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 13, 1983, Ser. No. 513,533
Int. Cl.³ B23K 9/12
U.S. Cl. 219—124.34 12 Claims



1. In an adaptive welding apparatus:

means (10) for projecting a spot of monochromatic light onto a work surface defining a weld groove at an angle of incidence less than 90° and causing said spot to move repetitively along a spot scan path extending laterally across the weld groove and at a first repetition rate;

means (12) for repetitively scanning the spot scan path at a second repetition rate higher than the first rate to detect variations in reflected intensity of the spot along said scan path;

means (36) for producing a series of digital output signals in response to locations of peak intensity reflections in a three-axis position coordinate reference; and

processor means (28) for producing signals representing the weld groove profile along the spot scan path in response to receiving the digital output signals.

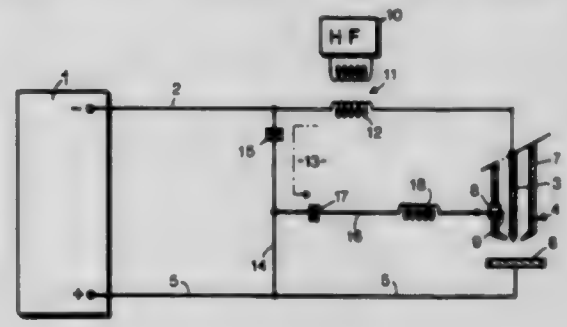
4,493,969

HIGH-FREQUENCY ARC STRIKING DEVICE AND AUXILIARY ELECTRODE OF AN ELECTRIC WELDING OR CUTTING ARC

Pierre Legrand, Pontoise, and Michel Arnout, Franconville, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Nov. 9, 1983, Ser. No. 550,242
Claims priority, application France, Nov. 12, 1982, 8219007
Int. Cl.³ B23K 9/06
U.S. Cl. 219—130.4 11 Claims

1. A device for striking an electric arc between a non-consumable main electrode and a workpiece to be welded or cut under a gaseous atmosphere which is conducted through a nozzle surrounding the main electrode, said device comprising said main electrode, said nozzle, an auxiliary electrode carried by said nozzle, a first arc striking circuit connecting said main electrode to said auxiliary electrode, a high frequency-high voltage generator connected to said arc striking circuit, a



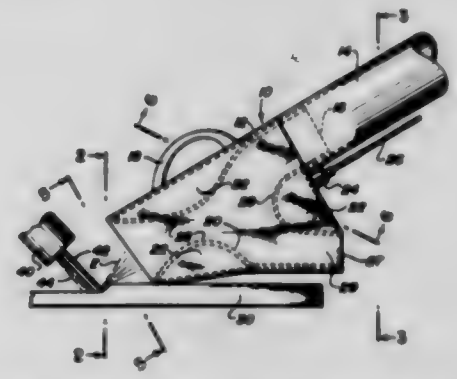
second arc striking circuit connecting one of said electrodes to said workpiece, said high frequency-high voltage generator being connected to said second arc striking circuit and said first arc striking circuit having dc blocking means and an HF impedance which is distinctly higher than the impedance of said second arc striking circuit.

4,493,970

SLAG AND FUME COLLECTOR FOR AIR CARBON-ARC CUTTING AND GOUGING TORCHES

Perry J. Rieppel, Worthington, and William J. Coughlin, Lancaster, both of Ohio, assignors to Arcair Company, Lancaster, Ohio

Filed Jan. 17, 1983, Ser. No. 458,600
Int. Cl.³ B23K 9/32
U.S. Cl. 219—137.41 6 Claims



6. A method for collecting heated solid or molten metal and/or slag generated by the air carbon-arc cutting and gouging process comprising the steps of:

directing said hot or molten metal and/or slag at a refrigerated surface containing a layer of ice in the absence of hot or molten metal striking said surface;

maintaining said refrigerated surface to continuously replace the layer of ice so that as the heated or molten metal and/or slag strikes the surface steam is liberated from the surface;

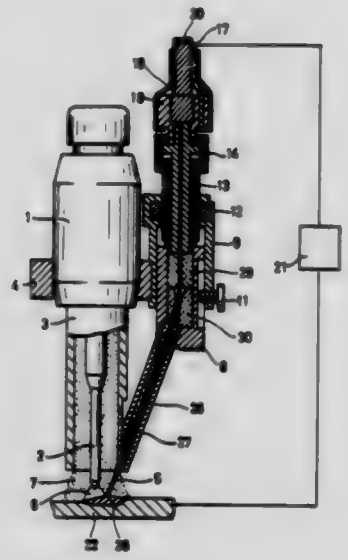
utilizing said liberated steam to cool and form discrete particles of said metal and/or slag by cooling and subdividing the metal and/or slag into granular form.

4,493,971

HOT WIRE TYPE ELECTRIC ARC WELDING TORCH

Akiyoshi Nawa, and Takao Shimizu, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 3, 1983, Ser. No. 455,178
Claims priority, application Japan, Jan. 8, 1982, 57-1111[U]
Int. Cl.³ B23K 9/00
U.S. Cl. 219—137.52
8 Claims



1. A hot wire type electric arc welding apparatus, comprising:

a non-consumable electrode;

a shielding-gas nozzle surrounding said non-consumable electrode, said shielding-gas nozzle discharging a shielding gas around said electrode;

a welding torch containing said non-consumable electrode and said shielding-gas nozzle;

a wire feeding unit located substantially parallel to said welding torch for feeding a wire through a first guide bore therein;

means for heating and melting said wire;

a first guide connected to said wire feeding unit, said first guide being inclined toward said welding torch, said first guide having an insulated portion for feeding said wire to said workpiece;

an insulative spacer for guiding said wire from said wire feeding unit to said first guide, said insulative spacer having a second guide bore which forms an angle with said first guide bore for bending said wire, said insulative spacer having a tapered bore portion formed at each of wire inlet and outlet sides thereof.

4,493,972

ELECTRICALLY HEATED APPARATUS EMPLOYING A PTC HEATER FOR LIQUIFYING A ROD OF BINDING MATERIAL

Heinrich W. Steinel, 4, Tannenweg, D-4840 Rheda-Wiedenbrueck, and Hans Siwon, 1, Erlenweg, D-8201 Obing, both of Fed. Rep. of Germany

Filed Dec. 22, 1981, Ser. No. 333,459
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1980, 3049343; Apr. 14, 1981, 3115047
Int. Cl.³ H05B 1/02, 3/02; B67D 5/62; H01C 7/02
U.S. Cl. 219—230
14 Claims

1. Apparatus for liquifying a rod of binding material by application of heat, comprising:

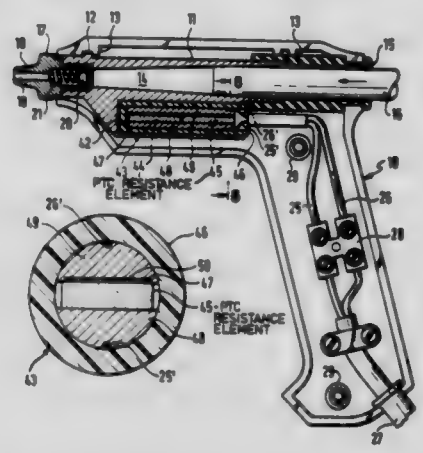
a heating member having a first channel and a second channel; said first channel extending in a predetermined direction from an inlet adapted to receive a rod of liquifiable binding material to an outlet for discharging liquified material from the rod, said second channel extending in said predetermined direction;

electrical heating means disposed within said second channel for creating in said first channel a temperature at least equal to the temperature required to liquify the rod, said electrical heating means comprising an elongated cartridge enclosing a positive temperature coefficient resistance means extending in said predetermined direction;

said positive temperature coefficient resistance means includes at least one PTC resistor;

said cartridge includes an electrically insulated and elastic housing for receiving said at least one PTC resistor;

at least two pressure bodies disposed within said housing on opposite sides of said at least one PTC resistor;



spring means disposed between one of said pressure bodies and said at least one PTC resistor for applying pressure to said at least one PTC resistor and to said at least two pressure bodies; and

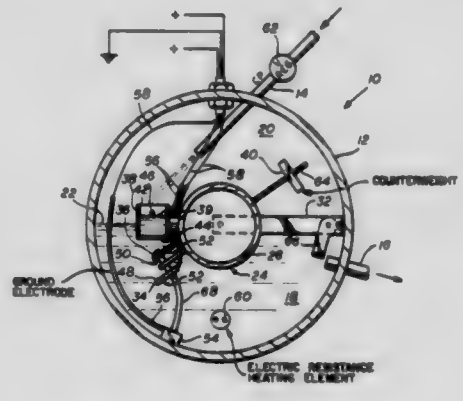
said heatable member being of a size relative to each of said first and second channels to minimize the mass and heat sink characteristics of said heatable member.

4,493,973

FLOW CONTROLLED ELECTRODE TYPE LIQUID HEATER

Andrew H. Muhl, 2109 Huldy, Houston, Tex. 77019

Filed Oct. 31, 1983, Ser. No. 547,022
Int. Cl.³ H05B 3/60; F22B 1/30
U.S. Cl. 219—286
11 Claims



1. An electrode type liquid heater comprising:

a tank including an inlet and an outlet disposed so that in ordinary operation of the heater said tank is partially filled with electrically conductive tank liquid and there is an airspace filled with a body of electrically nonconductive gas above said tank liquid:

a movable heating assembly within said tank;

a plurality of spaced electrodes within said tank, at least one of which is carried by said heating assembly:

means for applying a voltage differential across said plurality of spaced electrodes;

said movable heating assembly including a surface for developing, in response to discharge of inlet liquid from said inlet onto said surface, an immersing force for causing said movable heating assembly to move from a normal position, in which said at least one electrode carried thereby is out of the tank liquid, to an immersed position, in which

said at least one electrode carried thereby is at least partially immersed in the tank liquid;

said movable heating assembly including means for causing said heating assembly to be returned to and maintained in said normal position upon termination of the discharge of the inlet liquid onto said surface; and

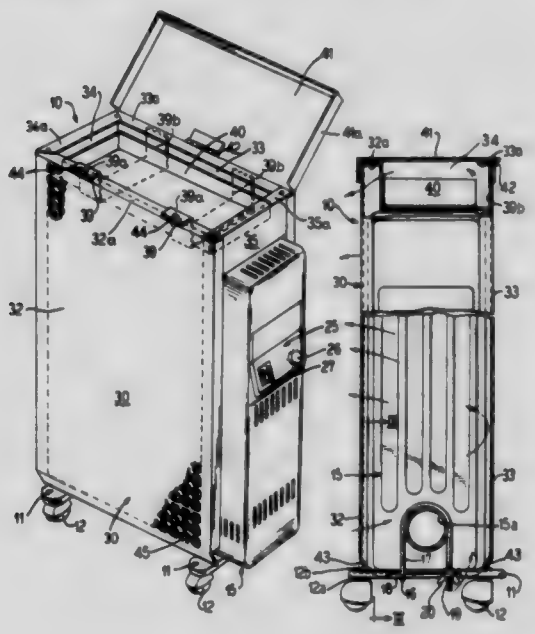
said surface being positioned at least partially in the airspace and said inlet being positioned to discharge inlet liquid onto said surface.

4,493,974

SNAP-FIT SHEET METAL COVER FOR PORTABLE OIL-FILLED RADIATORS AND METHOD OF MANUFACTURE

Jerome S. Ganek, Downers Grove, and Lee G. Ganek, St. Charles, both of Ill., assignors to Ciracco Metal Fabricating Co., Inc., Countryside, Ill.

Filed Jan. 12, 1983, Ser. No. 457,021
Int. Cl.³ F24H 7/02, 9/02
U.S. Cl. 219—341 13 Claims



1. In combination, an oil filled electric radiator supporting structure having a supporting frame structure including castors supporting the same, an oil filled electric radiator mounted in supported assembly on the frame structure, means securing the radiator to said frame structrue, a radiator control panel at one end of said radiator, and a radiator cover structure mounted on the radiator and fitted about said control panel, the cover structure having a cover comprised of cold rolled steel having a thickness in the range of 0.033"–0.038", the cover including downwardly extending parallel sides on opposite sides of the radiator for permitting air flow to circulate to and from the radiator, one of said sides being perforated, the sides having yieldable confronting converging bottom ends extended beneath said radiator on its opposite sides, the bottom ends being spaced apart a distance narrower than the width of the radiator so as to yieldably engage against the sides of the radiator for holding the cover and its sides in snug assembly with the radiator and its frame structure and with said bottom ends of the sides also bodily engaged against said frame structure to support the cover on said frame structure.

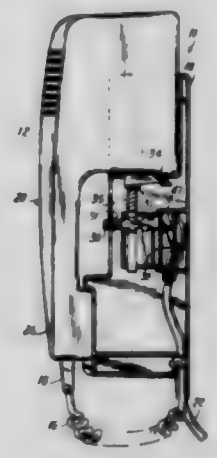
4,493,975

HANG-UP HAIR DRYER

Katsumi Yamamoto, Chiba, Japan, assignor to Yamada Electric Industries Co., Ltd., Chiba, Japan

Filed Sep. 30, 1982, Ser. No. 430,731
Int. Cl.³ H01H 3/16; H02H 3/00; H05B 1/00
U.S. Cl. 219—370 18 Claims

1. An electric appliance system comprising an appliance adapted to be held in an operator's hand, a support housing means adapted to receive said appliance, a power input extending from said support having means for receiving electric energy from a voltage source, a two-pole switch means housed in said support housing means and connected to said power input for enabling application of said electric energy to said appliance, a power cord extending between said switch means and appliance for applying electric energy to said appliance, and a manually operable control means operatively coupled to said switch means for controlling said switch means, wherein



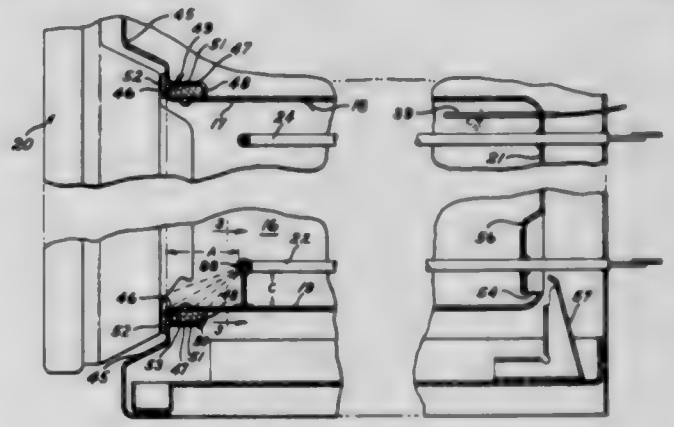
said power cord is connected and disconnected from said power input when said switch means is in the ON and OFF positions, respectively, said appliance including terminals connected across said voltage source and bearing load current when said two-pole switch means is in a closed ON position, said terminals each being electrically isolated from said voltage source when said two-pole switch means is in the open OFF position.

4,493,976

PYROLYTIC OVEN CLEANING SYSTEM

Arthur C. Wilson, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed May 2, 1983, Ser. No. 490,326
Int. Cl.³ F24C 15/32; A21B 1/22; F27D 11/02
U.S. Cl. 219—396 4 Claims



1. A heating-cleaning oven in which food is cooked during a cooking operation and the food by-products to be removed are pyrolytically decomposed during a high temperature cleaning operation, comprising:

a housing defining an oven cavity having vertical side walls, top, bottom and vertical rear walls, and an open front opening for access to the cavity of the oven, a door pivotally connected adjacent a lower portion of said oven cavity for movement between a generally vertical closed position and a generally horizontal open position;

a first heating means arranged adjacent the top wall of said cavity and a second heating means arranged adjacent the bottom wall of said oven for establishing said cooking operation, as well as said second heating means including a front portion arranged in spaced relationship in an area of said bottom wall adjacent said front opening, said front

portion being arranged a distance from said area effective to maintain said area at a temperature sufficient to pyrolytically decompose said food by-products from said area during said high temperature heat cleaning operation;

an oven temperature control means including means operable at cooking temperature ranges for controlling energization of said heating means during cooking operation of said oven and means operable at high test cleaning temperature range for controlling energization of said heating means during heat cleaning operations;

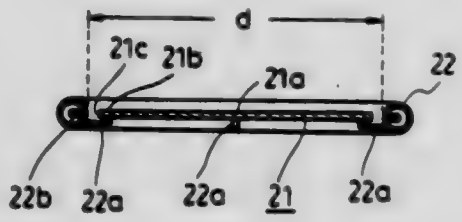
control means for said heating means selectively operable to control the heating means to effect the high temperature heat cleaning operation and means for energizing said first heating means to raise the temperature of said oven interior to a heat-cleaning temperature range of between about 750° and about 950° and for de-energizing said first heating means when said oven is in said heat-cleaning range and for energizing said second heating means to insure that said heat-cleaning temperature range is maintained in said area of said bottom wall adjacent said front opening of said oven during said heat cleaning operation.

4,493,977

METHOD FOR HEATING SEMICONDUCTOR WAFERS BY A LIGHT-RADIANT HEATING FURNACE

Tetsuji Arai, Kobe; Yoshiki Mimura, and Hiroshi Shimizu, both of Yokohama, all of Japan, assignors to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1983, Ser. No. 490,014
Claims priority, application Japan, Sep. 30, 1982, 57-169889
Int. Cl.³ H05B *1/00*
U.S. Cl. 219—411 5 Claims



1. A method for heating semiconductor wafers by a light-radiant heating furnace wherein the light-radiant heating furnace includes a main heater and a subsidiary heater, said main heater comprising tubular lamps arranged substantially in a plane so as to form a plane light source unit which is capable of irradiating light onto a semiconductor wafer transported and placed in the light-radiant heating furance to heat mainly a central major part thereof, and said subsidiary heater having a ring shape which extends along a peripheral portion of the semiconductor wafer to heat principally the peripheral portion, the method comprising determining actuation curves for said main heater and said subsidiary heater, and actuating said main heater and said subsidiary heater repeatedly in accordance with their respective actuation curves in synchronization with intermittent transportation of the semiconductor wafers into said light-radiant heating furnace.

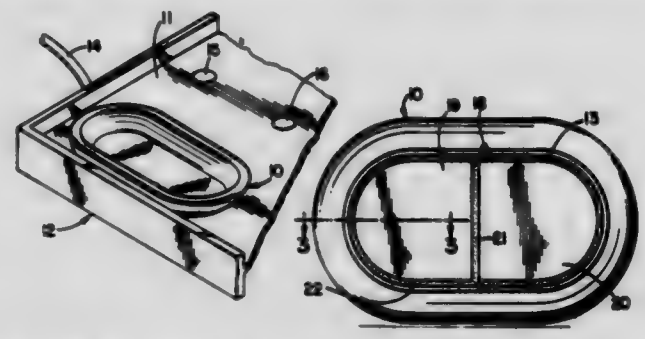
4,493,978

SERVING DISH WITH HEATING MEANS

Roger A. Starnes, 10230 Belladrum Dr., Alpharetta, Ga. 30201

Filed Jul. 11, 1983, Ser. No. 512,550
Int. Cl.³ F27D *11/02*
U.S. Cl. 219—438 3 Claims

1. A serving dish with heating means, said serving dish including a ceramic dish having a bottom, and a ridge surrounding said bottom, an electric heating element comprising an electric resistance element, electrically insulative material substantially covering said electric resistance element, said electrically insulative material defining holes therein for positioning electrical contact points for said electric resistance element, said electric heating element being disposed substantially against said bottom of said ceramic dish and generally coextensive therewith, a bottom plate substantially covering said heating element, said bottom plate comprising a pair of electrically conductive half-plates, said pair of half-plates being electrically separated from each other, each half-plate of said



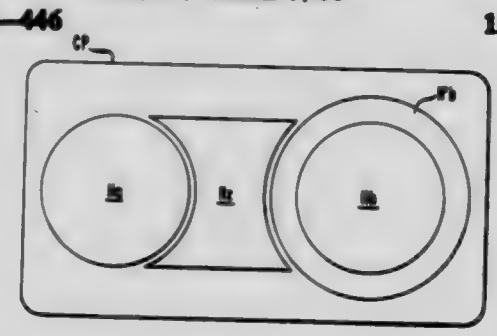
pair of half-plates being electrically connected to one contact point of said electrical contact points for said electric resistance element, adhesive means fixing said heating element to said bottom and for fixing said bottom plate to said heating element, and sealing means surrounding both said half-plates for sealing said bottom plate with respect to said serving dish for encapsulating said heating element.

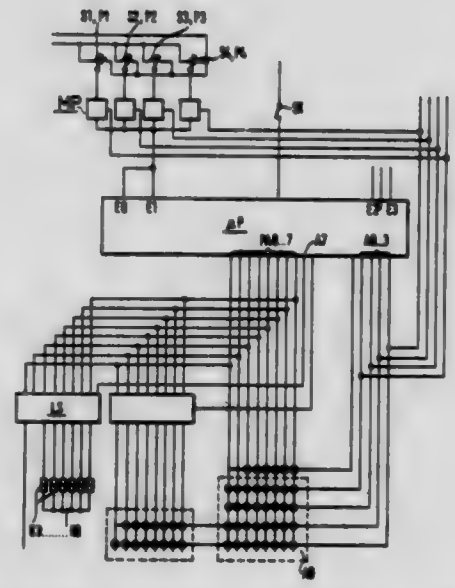
4,493,979

CONTROL CIRCUIT ASSEMBLY FOR HEATING ELEMENTS IN COOKING PLATES

Walter Bredel; Norbert Schenetin, both of Traunreut, and Helmut Waigand, St. Georgen, all of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeraete GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 9, 1983, Ser. No. 465,055
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1982, 3204598
Int. Cl.³ H05B *3/68*
U.S. Cl. 219—446 12 Claims





1. Control circuit assembly, comprising a cooking plate having at least two individual cooking regions being electrically connectible in common for cooking together, heating

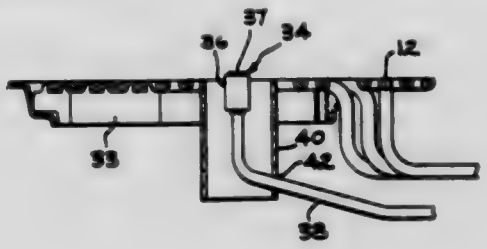
elements being disposed in said cooking regions of said cooking plate and having inputs, current circuits connected to said heating elements, an electronic control device connected to said inputs of said heating elements for producing variable heating power outputs, heating power control devices respectively associated with said heating elements, and switching elements disposed in said current circuits for selectively connecting each of said respective heating elements in said individual cooking regions to one of said heating power control devices in a first switching mode, and for connecting said heating elements of said individual cooking regions together to one of said heating power control devices while disconnecting the other heating power control devices for said respective heating elements with which they are associated in a second switching mode.

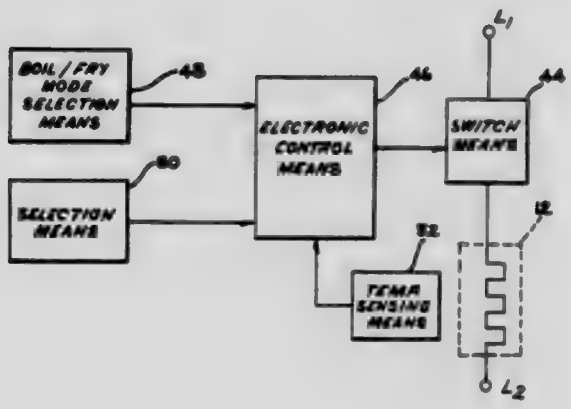
4,493,980

POWER CONTROL ARRANGEMENT FOR AUTOMATIC SURFACE UNIT

Thomas R. Payne, and David A. Schneider, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Mar. 5, 1984, Ser. No. 596,052
Int. Cl.³ H05B 1/02
U.S. Cl. 219—450 14 Claims





1. A surface unit power control arrangement for a cooking appliance comprising:

at least one surface unit for supporting and heating a cooking utensil placed thereon and adapted for energization by an external power supply;

temperature sensing means for sensing the temperature of a utensil supported on said surface unit;

user operable input selector means enabling a user to select a Fry mode, and to select for said mode one of a plurality of different heat settings; each heat setting having associated with it a predetermined steady state surface unit power level and a predetermined steady state temperature range;

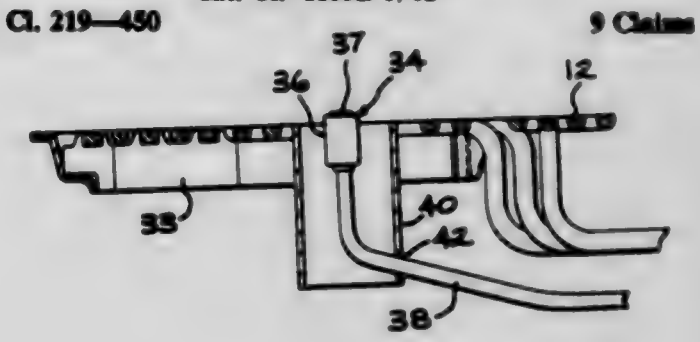
electronic control means responsive to said temperature sensing means and said input means for controlling energization of said surface unit in accordance with the sensed utensil temperature and selected heat setting, said control means being operative in said Fry mode to generate an error signal which is a function of the difference between said sensed temperature and said steady state temperature range, and wherein said control means operates said surface unit at an applied power level which exceeds the steady state power level for the selected heat setting by a number of power levels determined as a function of said error signal, the applied power level approaching said steady state power level for the selected heat setting as said error signal approaches zero, whereby the utensil is rapidly brought to the selected temperature range with minimal overshoot.

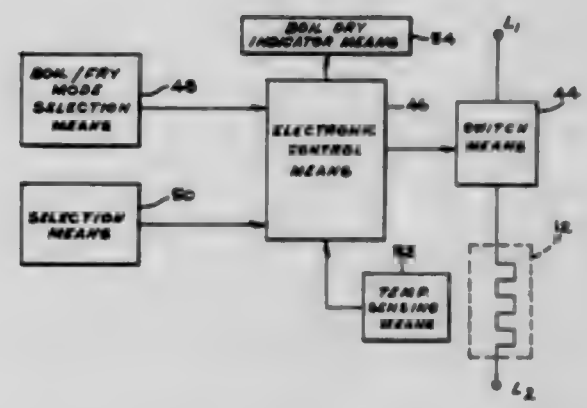
4,493,981

BOIL DRY PROTECTION SYSTEM FOR COOKING APPLIANCE

Thomas R. Payne, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 5, 1984, Ser. No. 586,351
Int. Cl.³ H05B 1/02
U.S. Cl. 219—450 9 Claims





1. A boil dry detection arrangement for a cooking appliance having at least one surface unit for supporting a cooking utensil thereon while heating the contents thereof, said arrangement comprising:

control means for controlling the energization of the surface unit by an external power supply;

temperature sensing means for sensing the temperature of the utensil supported on the surface unit;

indicator means responsive to said control means for generating a user discernible signal indicative of a boil dry condition;

said control means including means responsive to said temperature sensing means for determining the rate of change of the sensed utensil temperature and detecting a rate of change greater than a predetermined reference rate, said reference rate characterizing a boil dry condition;

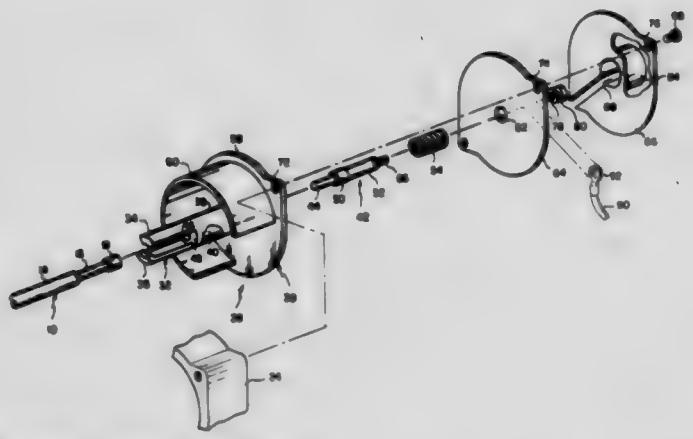
said control means being operative upon detection of a rate of increase greater than said reference rate to de-energize the surface unit and to trigger said indicator means to generate said user discernible signal.

4,493,982

HOLDER APPARATUS FOR HEATER ELEMENT

John A. Romensky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 21, 1983, Ser. No. 534,522
Int. Cl.³ F24H 3/00
U.S. Cl. 219—469
3 Claims



1. A fuser station comprising:
a fuser roller;
a heater element concentrically located within said roller, said element having at least one end with a generally cylindrical electrical contact;
holder apparatus including a body of heat and electrically insulating material, said body having a first end with at least two resilient arms having inner surfaces spaced from each other which define a receptacle for said generally cylindrical contact end of said heater element, the gripping force effected solely by the resiliency of said arms gripping the contact end of said element to provide the sole support for said heater element during insertion and removal of said heater element relative to said fuser roller; said body having a second end integral with said first end, said second end having a recess which is axially aligned with and which communicates with said receptacle; said body further having a cup-shaped segment including a member integral with and extending radially from said second end and at least partially cylindrical mounting member concentric with said end;
a support member rotatably mounting said fuser roller, said support member having a recess which is dimensioned to provide a slip fit for said mounting member of said body, said cup-shaped segment of said body providing a grip for manually gripping said body to insert and remove said body from said support member; and
said holder apparatus also including an electrical terminal slidably mounted in said recess in said second end of said body, said terminal having a portion extending into said receptacle and engaging the electrical contact of said heater element.

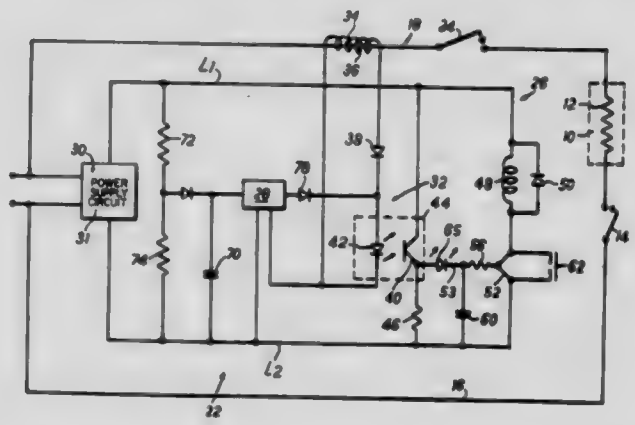
4,493,983

CURRENT DETECTOR IN COMBINATION WITH AN ELECTRICAL APPARATUS

Russell H. Taggert, 23 Orpinent Ave., Dersley Park, Springs, Transvaal, South Africa

Continuation of Ser. No. 229,631, Jan. 29, 1981, abandoned. This application Apr. 20, 1983, Ser. No. 486,665
Claims priority, application South Africa, Feb. 1, 1980, 80/0596; Oct. 21, 1980, 80/6444
Int. Cl.³ H05B 1/02
U.S. Cl. 219—494
12 Claims

1. A device for incorporation into the power supply circuit of an electrical apparatus comprising:
a power supply line forming part of said circuit,
a first switch which is in the power supply line and which may be open or closed depending upon extraneous conditions,
a second switch which is in the power supply line in series with the said first switch and which is movable from an open first condition to a second closed condition on application of power to switch moving means therein and being held in said second condition as long as power is applied to the switch moving means,
a signal emitter adapted to emit a power signal of short duration and being connected to the switch moving means so that on emission of the said power signal the switch will



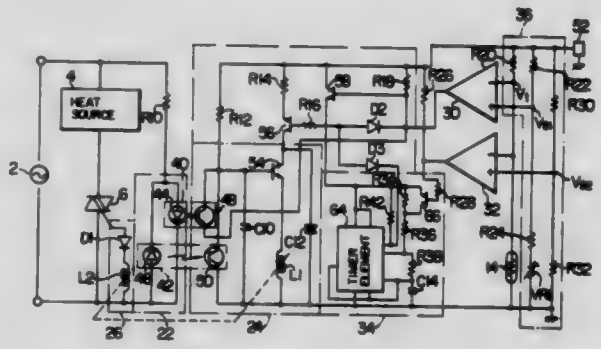
be moved to said second condition for the duration of the power signal, and
current detector means comprising a coil that is in electromagnetic but not electrical connection with the said power supply line for detecting when a current flows in said power supply line and being connected to the switch moving means to supply power thereto when current flows in the line.

4,493,984

TEMPERATURE CONTROL DEVICE FOR FIXING HEAT SOURCE OF COPYING MACHINE

Koji Yamauchi, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 7, 1983, Ser. No. 464,209
Claims priority, application Japan, Feb. 8, 1982, 57-17507
Int. Cl.³ H05B 1/02
U.S. Cl. 219—501
2 Claims



1. A temperature control device for a fixing heat source of a copy machine including:
an a.c. power source;
a heat source generating heat by being energized by power supplied from said a.c. power source thereby fixing an image transferred onto a copying sheet;
at least one temperature sensor for sensing the temperature of said heat source to provide a temperature-indicative signal; and
control means for controlling the power supplied from said a.c. power source to said heat source in response to the temperature-indicative signal applied from said temperature sensor,
said control means comprising:
a trigger pulse generating circuit detecting the zero-cross

point of the a.c. waveform supplied from said a.c. power source thereby generating a trigger pulse signal in synchronism with the zero-cross point;

a power supply circuit permitting supply of the power from said a.c. power source to said heat source in response to said trigger pulse signal; and

a control signal generating circuit generating a control signal for controlling said trigger pulse generating circuit, said control signal generating circuit being composed of a first reference setting means for setting a first reference voltage according to a first predetermined temperature lower than a fixing temperature, a second reference setting means for setting a second reference voltage according to a second predetermined temperature corresponding to the fixing temperature, a first comparator for comparing said temperature-indicative signal provided from the temperature sensor with the first reference voltage provided from the first reference setting means, a second comparator for comparing said temperature-indicative signal provided from the temperature sensor with the second reference voltage provided from the second reference setting means, an ON-OFF signal generating circuit controlled at an actuating condition by the output signal of the first comparator, for controlling an ON-OFF duty factor by the output of the second comparator, and a signal processor for controlling said trigger pulse generating circuit by receiving the output of the first comparator and the output signal of the ON-OFF signal generating circuit, whereby said power supply circuit supplies a full-wave current from said a.c. power source to the heat source until the temperature sensor detects said first predetermined temperature, and a half-wave current from said a.c. power source to the heat source until said temperature sensor detects said second predetermined temperature after said first predetermined temperature has been detected, and then after the second predetermined temperature has been detected by the temperature sensor, the duty factor of the half-wave current is reduced to maintain the temperature of the heat source at a constant value.

4,493,985

WELDING SLEEVE

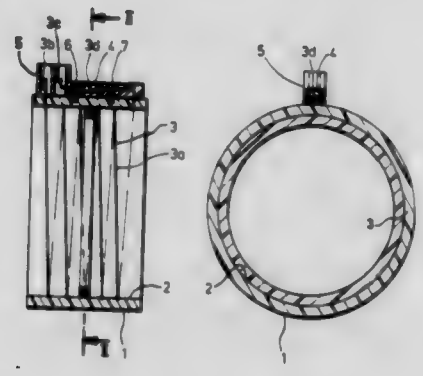
Hans Keller, Richen, Switzerland, assignor to Geberit A.G., Jona, Switzerland

Filed Apr. 27, 1983, Ser. No. 489,253

Claims priority, application Switzerland, May 12, 1982, 2948/82

Int. Cl.³ H05B *3/58*

U.S. Cl. 219—535 11 Claims



1. A welding sleeve for connecting pipes formed of thermoplastic material comprising an axially extending sleeve member having an inner surface and an outer surface with the inner surface arranged to contact the pipes to be connected, an electrical conductor is located in said sleeve member in the form of a resistance heating wire having a pair of opposite ends, said opposite ends arranged for conveying current through said heating wire, said resistance heating wire is arranged in said sleeve member for heating the inner surface of said sleeve for transmitting the heat to the pipes to be connected, characterized in that said resistance heating wire includes a predetermined melting material located between the opposite ends of said resistance heating wire so that said material melts through approximately when the heat energy required for welding said sleeve to the pipes to be connected has been developed and causes the termination of the flow of current through said electrical conductor and thereby the discontinuance of heating said sleeve by said resistance heating wire.

4,493,986

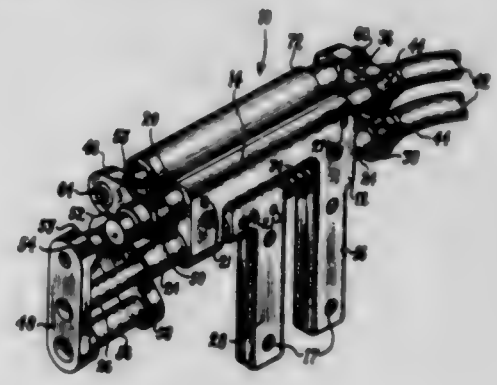
PISTOL GRIP ELECTRICAL BRAZING TOOL

Daniel L. Carter, Armuchee, and Homer H. Hall, Rome, both of Ga., assignors to General Electric Company, King of Prussia, Pa.

Filed Jun. 28, 1983, Ser. No. 508,756

Int. Cl.³ B23K *1/04*

U.S. Cl. 219—85 D 8 Claims



1. A pistol grip electrical brazing tool comprising, in combination:

an L-shaped member formed of structurally rigid insulating material having a depending handle portion and an elongated, longitudinally extending barrel portion, said barrel portion having an upper longitudinal passageway therethrough and a pair of longitudinally aligned lower passageways separated by a recessed section of said barrel portion;

an elongated upper support element accommodated in said upper passageway;

an elongated lower support element accommodated in said aligned second passageways, said lower support element being exposed at said recessed section of said barrel portion;

a trigger formed of structurally rigid insulating material affixed to the exposed portion of said lower portion element for disposal in parallel relation to said handle portion;

a spring acting between said handle portion and said trigger to bias said handle portion and trigger apart;

separate electrically conductive, laterally extending first links affixed to the rearward ends of said upper and lower support elements;

separate electrically conductive, laterally extending second links affixed to the forward ends of said upper and lower support elements;

electrodes removably affixed to said second links in longitudinally opposed relation;

brazing cable connectors affixed to said first links;

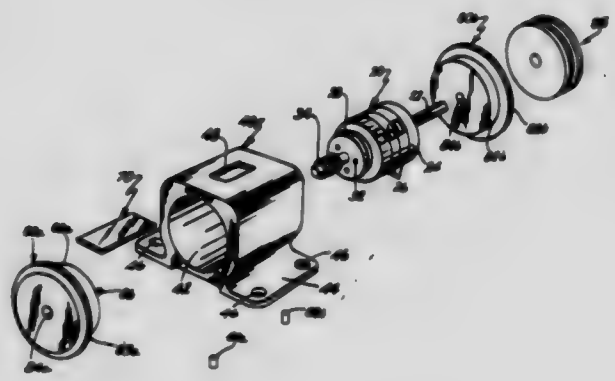
separate heavy current carrying conductors electrically connected between lateral extensions of said first and second links for shunting brazing currents between said electrodes and said cable connectors from said upper and lower support elements; and

means affixing one of said support elements to said barrel portion such that squeezing said handle portion and trigger together against the bias of said spring reciprocates the other of said support elements to bring said electrodes into opposed engaging relation with a workpiece to be brazed.

4,493,987
COUNTER

James A. Kammeraad, Holland, Mich., assignor to K-Line Industries, Inc., Holland, Mich.

Filed Jan. 31, 1983, Ser. No. 462,612
Int. Cl.³ G06C 5/02
U.S. Cl. 235—1 D
1 Claim



1. A counter comprising:

a counter barrel having a shaft, a plurality of display rings having digits contained thereon, and an index drum having an aperture on its face;

an extruded housing having a base and an upper surface, said housing having a central bore therethrough within which said barrel is positioned and an affixation plate extending from either side of the base thereof for affixing said counter in its working environment;

a drain hole through said base of said housing, said hole being in communication at one end with the central bore and at the other end with the outside environment;

a window in said upper surface of said housing, said window being rectangular in shape and having a length and width substantially smaller than the length and width of said upper surface, the size of said window being dimensioned so as to display therethrough a single row of digits on said display rings;

a frusto-triangular cutout in communication with said central bore and located below said upper surface of said housing, said cutout having a length coextensive with the length of said upper surface, the apices thereof defining a pair of slots, the longitudinal axis of each of said slots being parallel to the longitudinal axis of said upper surface, whereby said slots provide a flat rectangular area below said upper surface and the window located therein;

a transparent pane having a length and width substantially the same as the length and width of said rectangular area defined by said cutout, said pane being inserted into and supported by said slot, said pane thereby being positioned directly below said upper surface of said housing;

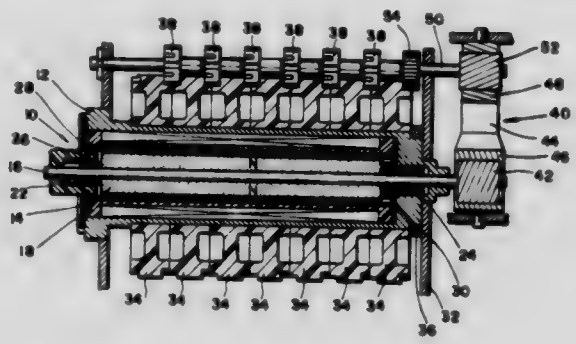
a pair of end caps, each of said caps having an interior tubular section matching generally in configuration the configuration of said central bore, said tubular sections being telescopically inserted into said bore during assembly of said counter; an exterior flange section overlying the extremities of said housing when said counter is assembled with said interior tubular sections resting within the extremities of said bore; and means thereon for receiving and supporting opposite ends of the shaft; and

a stop pin integrally formed to the inner face of one of said end caps and extending perpendicularly therefrom, said stop pin being inserted into said aperture in said face of said index drum, whereby said stop pin, upon being inserted into said aperture, prevents said counter barrel from rotating as said display rings are rotated.

4,493,988
ODOMETER USING AN ELECTRIC MOTOR DISPOSED WITHIN ANNULAR FIGURE WHEELS

Etsuo Ichimura, Omiya, Japan, assignor to Kanto Seiki Co., Limited, Omiya, Japan

Filed Jun. 22, 1981, Ser. No. 275,713
Claims priority, application Japan, Jul. 11, 1980, 55-97936[U]; Feb. 16, 1981, 56-20297[U]; Apr. 3, 1981, 56-48178[U]
Int. Cl.³ G01C 22/02
U.S. Cl. 235—96
9 Claims



1. In an odometer for a vehicle:

a first essentially cylindrical hollow housing;

a rotor having a shaft, said rotor being rotatably disposed within said hollow housing and forming part of an electric motor;

a plurality of rotatable annular figure wheels slidably disposed on the external periphery of said housing, said housing being arranged to pass through all of said figure wheels;

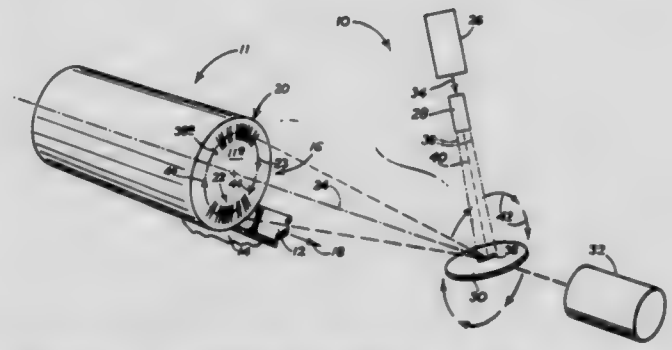
a gear train drivingly interconnecting said shaft and said plurality of figure wheels for rotating said figure wheels in response to the rotation of said rotor, said gear train including drive pinions which interconnect adjacent figure wheels, said drive pinions being located on the external periphery of said figure wheels; and

means for inducing said rotor to rotate in response to an electronic signal indicative of vehicle speed.

4,493,989
CONTAINER END-CODE REDEMPTION SCANNING

Alfred A. Hampson, 2687 SW. Buena Vista Pl., Portland, Oreg. 97201; Thomas B. Hutchins, deceased, late of Portland, Oreg., and by Nancy K. Hutchins, executrix, 310 NW. Bryswood La., Portland, Oreg. 97229

Filed Apr. 28, 1982, Ser. No. 372,735
Int. Cl.³ G06K 7/10
U.S. Cl. 235—464
12 Claims



1. Apparatus for enabling scanning of, for the purpose of recovering information from, an electromagnetic-wave-readable code patch on the lid of a carbonated beverage container, where such patch is formed of plural, spaced, linear code elements having a predetermined length, said apparatus comprising

means defining a scanning zone adapted to receive such a container with the lid thereof exposed for viewing,

means disposed adjacent said scanning zone for producing a defined beam of electromagnetic radiation, and

beam-impingement sweep-effecting means operatively interposed between said beam-producing means and any can in said zone for effecting impingement of the beam with the lid of such can, and relative rotary movement therebetween to cause the region of beam/lid impingement to sweep relatively and generally centrally over the elements in such a patch,

the region of beam/lid impingement being elongated and linear in form with a length less than the predetermined length of the code elements, and moving relative to a lid viewable in said zone in such a manner that, while sweeping over a code element, the region's long axis substantially parallels the long axis of the element.

4,493,990

APPARATUS FOR AUTOMATICALLY ADJUSTING A DEFLECTION UNIT

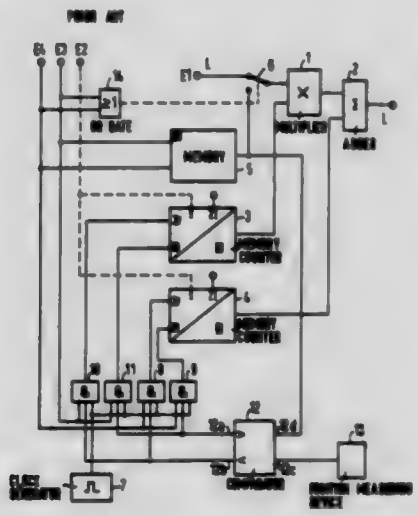
Gunther Koszytorz, Penzberg; Herbert Lacks, Erlangen; Gerhard Schlosser, Weiher, and Joachim Vath, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 425,909

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1981, 3142152

Int. Cl.³ G01J 1/20

U.S. Cl. 250—201 **9 Claims**



1. An apparatus for automatically adjusting the characteristic of a deflection unit with respect to its origin and slope, the apparatus comprising:

multiplier means having a first input for receiving a reference value for the deflection unit, said multiplier means further having a second input and an output;

first memory means for storing information pertaining to a first value, said first memory means having an output connected to said second input of said multiplier means;

adder means having first and second inputs and an output for providing a signal responsive to the sum of signals at said first and second inputs, said output of said multiplier means being connected to said first input of said adder means;

second memory means for storing information pertaining to a second value, said second memory means having an output connected to said second input of said adder means;

position measuring means for producing a position measuring signal responsive to the position of the deflection unit;

first command receiving means for receiving a "zero-adjustment command;"

second command receiving means for receiving a "slope-adjustment command;"

clock means for producing signals for selectably incrementing and decrementing said first and second values in said first and second memory means;

comparator means having first and second inputs and first and second outputs for producing respective signals at said first and second outputs responsive to comparisons of signals at said first and second inputs, said position measuring means being connected to said first input of said comparator means, said second input of said comparator means receiving a signal corresponding to a zero value as a first adjustment reference value whens "zero-adjustment command" is present at said first command receiving means, and for receiving a second adjustment reference value when a "slope-adjustment command" is present at said second command receiving means, said comparator means producing at said second output said respective signal when said signal at said first input from said position measuring means is smaller than said respective signal at said second input;

means responsive to said "zero-adjustment command" for causing said first adjustment reference value having a value of zero to be provided as said reference value for the deflection unit, causing said second value in said second memory means to be incremented in response to said clock means when said respective signal is present at said first output of said comparator means, and further causing said second value in said second memory means to be decremented in response to said clock means when said respective signal is present at said second output of said comparator means until said first and second outputs of said comparator means are clear of said respective signals; and

means responsive to said "slope-adjustment command" for causing said second adjustment reference value to be provided as said reference value for the deflection unit, causing said first value in said first memory means to be incremented in response to said clock means when said respective signal is present at said first output of said comparator means, and further causing said first value in said first memory means to be decremented in response to said clock means when said respective signal is present at said second output of said comparator means until said first and second outputs of said comparator means are clear of said respective signals.

4,493,991

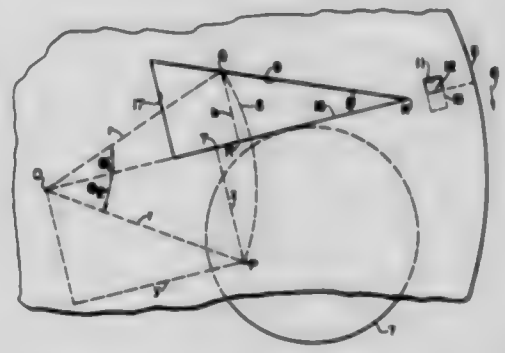
TECHNIQUES FOR LOCATING BEAMS WITHIN LARGE AREA DETECTORS

John G. Gualtieri, Oceanport, and John R. Vig, Colts Neck, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 6, 1982, Ser. No. 395,232

Int. Cl.³ G01J 1/20

U.S. Cl. 250—203 R **4 Claims**



1. A method of determining the point of impingement of a narrow beam on a detector having an area that is large relative to the beam, comprising the steps of: passing said beam through a planar chopper located between the beam source and said detector, said planar chopper rotating at a constant angular velocity around an axis normal to the plane of said detector and offset at a fixed position from the field of view of said detector, said chopper having a triangular aperture therein with the leading edge thereof including a triangle leg which

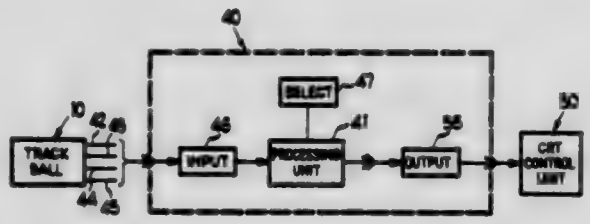
extends along a radius of said chopper for a length that is longer than the widest dimension of said detector, said aperture being located such that it sweeps over the entire field of view of said detector once during each revolution of said chopper, measuring the time duration of signal output from said detector passing through said aperture for each revolution of said chopper and determining from this duration and the geometry of said chopper aperture and said detector the radial distance of said point of impingement from the axis of rotation of said chopper, measuring the elapsed time with no signal output from the start of the scanning of said field of view by said triangular aperture to the start of the detected signal in the output of said detector, and determining from said elapsed time the angular position of said point of impingement relative to said chopper and aperture geometry.

4,493,992

ADAPTER CIRCUIT FOR TRACKBALL DEVICE

David A. Geller, Chicago, Ill., assignor to Wico Corporation, Niles, Ill.

Filed Aug. 23, 1982, Ser. No. 410,261
Int. Cl.³ H01J 40/14
U.S. Cl. 250—221 29 Claims



3. An adapter for converting the output signals from a trackball-type position control device to a form compatible with an input port designed to receive the output of a joystick-type position control device, the trackball device output signals comprising four pulse trains, with a set of two pulse trains for each of two components of rotation of the trackball respectively about orthogonal axes, wherein for each set of pulse trains the pulse repetition rate is related to the speed of rotation of the trackball about the corresponding axis and the phase relationship of the two pulse trains is related to the direction of rotation of the trackball about the corresponding axis, said adapter comprising: input means for receiving the output signals of the trackball device; and processor means operating under stored program control and connected to said input means and having two n-bit parallel output ports respectively corresponding to 2 orthogonal axes, where n is an integer greater than one, said processor means being responsive to each set of pulse trains for producing at one of said output ports n-bit parallel coded digital signals representative of a position along the corresponding axis.

4,493,993

APPARATUS FOR OPTICALLY DETECTING INK DROPLETS

Franz X. Kneusuller, Glenside, and Edwin R. Phillips, Rosemont, both of Pa., assignors to Sperry Corporation, New York, N.Y.

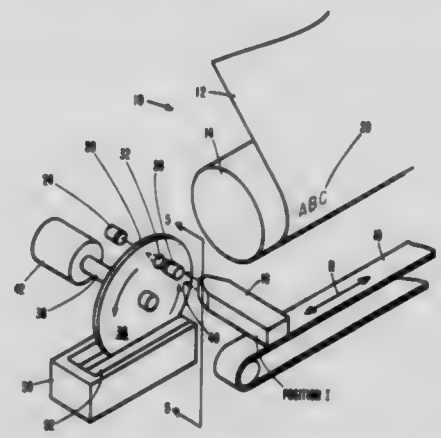
Filed Nov. 22, 1982, Ser. No. 443,405
Int. Cl.³ G01V 9/04
U.S. Cl. 250—222.1 13 Claims

1. An apparatus for optically detecting ink droplets comprising:

light emitting means operably connected to said apparatus for emitting a light signal;

light receiving means operably connected to said apparatus receiving said light signal;

light relaying means operable for relaying said light signal from said emitting to said receiving means, said relaying means movable from a first position wherein ink is deposited thereon to a second position wherein said deposited ink interrupts relay of said light signal.

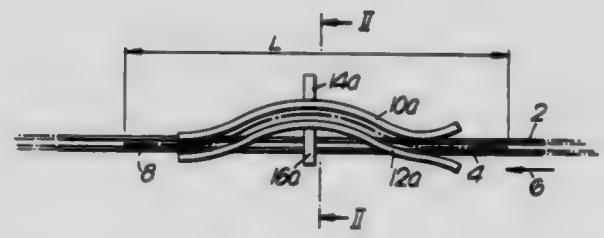


4,493,994

DETECTING THE CONDITION OF A SHEET

Graham H. Hilton, Lovedean, England, assignor to De La Rue Systems Limited, London, England

Filed Oct. 27, 1982, Ser. No. 436,920
Claims priority, application United Kingdom, Oct. 27, 1981, 8132363
Int. Cl.³ G01V 9/04
U.S. Cl. 250—223 R 5 Claims



1. A method of detecting the condition of a rectangular sheet, comprising: feeding the sheet through a checking station, the direction of feeding being along the length or the width of the sheet; deflecting a portion of a side edge of the sheet at the checking station relatively to the remainder of a zone of the sheet lying adjacent to a line through the checking station transverse to the direction of feeding, the direction of deflection of the deflected portion being orthogonal to the line and to the direction of feeding, so that the deflected portion is stretched along the direction of feeding; and subjecting the deflected portion to a beam of radiation directed towards sensing means and intercepted by the deflected portion, whereby any substantial tear from the side edge into the deflected portion will be opened, and will be revealed by the sensing means receiving radiation through the opened tear.

4,493,995

FIBER OPTICAL MEASURING DEVICE WITH A FREQUENCY SENSITIVE TRANSDUCER

Morgan Adolfsson; Torgny Brogardh; Christer Ovren, and Anders Persson, all of Västerås, Sweden, assignors to Asea Aktiebolag, Västerås, Sweden

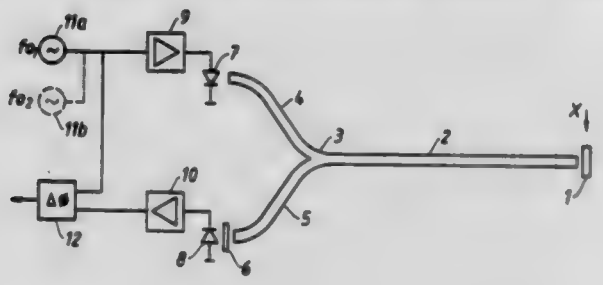
Filed May 7, 1982, Ser. No. 376,142
Claims priority, application Sweden, May 8, 1981, 8102889
Int. Cl.³ G02B 5/14
U.S. Cl. 250—227 25 Claims

1. A fiber optical measuring device for measuring a physical quantity comprising:

a measuring transducer comprising a sensor material having at least one optical property dependent on the modulating frequency of light supplied thereto;

an electronic unit; and

light-conducting fiber means connecting the measuring transducer to the electronic unit;
the electronic unit including
light source means for transmitting excitation light via the fiber means to the sensor material;
modulating means arranged so that said excitation light is modulated at at least one modulating frequency within a



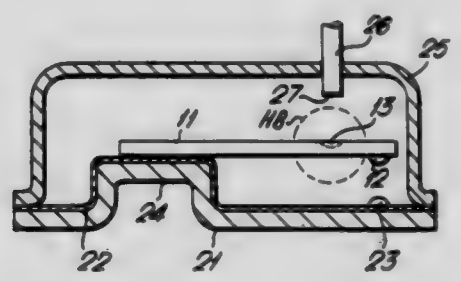
frequency range in which said optical property of the sensor material is influenced by the physical quantity to be measured, the light emanating from the sensor having at least one component dependent upon the physical quantity to be measured; and
means for detecting said component of the modulated light emanating from the sensor material in response to excitation light at said one modulating frequency.

4,493,996

SEMICONDUCTOR SWITCH DEVICE

Henley F. Sterling, Great Dunmow, England, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jul. 1, 1982, Ser. No. 394,341
Claims priority, application United Kingdom, Jul. 2, 1981, 8120464
Int. Cl.³ G02B 5/14
U.S. Cl. 250—227 5 Claims



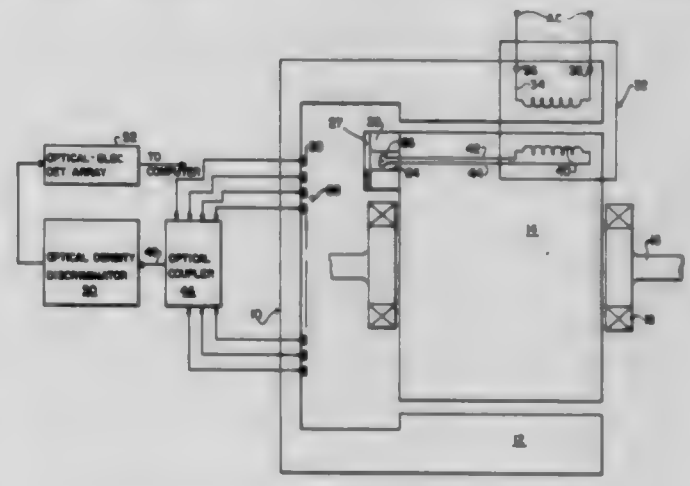
1. An opto-electrical contact unit, comprising:
a movable member carrying one or more contacts;
at least one contact disposed in registration with the contacts on the movable member;
a pn junction formed on said movable member;
a short circuit current loop connected across said pn junction;
means for providing a magnetic field in the region of said junction; and
means for subjecting said junction to electromagnetic radiation, whereby said electromagnetic radiation causes the junction to induce a current circulating through said short circuit loop, said current forming a magnetic field which interacts with the firstmentioned magnetic field to cause the movable member to bend so that an electrical contact may be made between the contacts that are in registration with each other.

4,493,997

FIBER OPTIC SENSOR FOR SHAFT STATE

Arnold Schindel, Fairlawn, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Sep. 1, 1982, Ser. No. 413,922
Int. Cl.³ G01D 5/34
U.S. Cl. 250—231 SE 2 Claims



1. An optical shaft state sensor comprising:
an input shaft;
a rotating member connected to the input shaft;
a stationary member located adjacent the rotating member;
a light source mounted to a surface of the rotating member at a distance R from the axis of the shaft;
at least one plurality of optic fibers arranged in a generally circular pattern on a stationary member surface confronting the rotating member surface to which the light source is mounted, each fiber located at a distance R from the axis of the shaft so that the light source is in selective optical alignment with the fibers as the shaft rotates;
means for discriminating which of the fibers is illuminated by the light source at any point in time;
means including an optical coupler and an optical cable bundle for optically coupling the optic fibers to the discriminating means;
a rotary transformer having a primary winding mounted to the stationary member and a secondary winding mounted to the rotating member;
means connecting the secondary winding to the light source;
AC input terminals connected to the primary winding for providing power for the light source;
detecting means including a detector array of a computer and located at a point remote from the discriminating means and having an optical input therefrom for converting data at the optical input to corresponding electrical data; and
slit means located adjacent the light source for producing a narrow light beam for impinging upon the optic fibers.

4,493,998

METHOD FOR MONITORING DRILLING MATERIALS FOR GAMMA RAY ACTIVITY

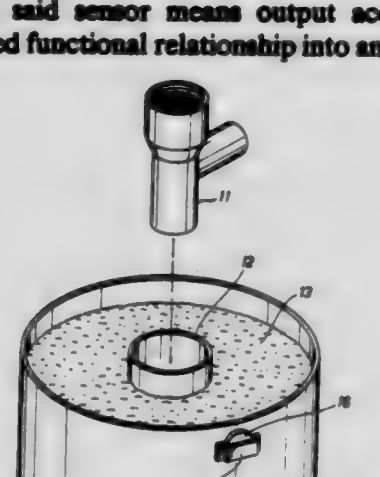
Harry D. Smith, Jr.; Dan M. Arnold, and Ward E. Schultz, all of Houston, Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 2, 1982, Ser. No. 364,837
Int. Cl.³ G01V 5/00
U.S. Cl. 250—252.1 10 Claims

1. A method of quantitatively determining the amount of background gamma ray radioactivity which would be detected in a gamma ray sensitive logging tool in a wellbore due to the presence of naturally occurring radioactive materials in drilling fluid comprising the steps of:
(a) placing a sized sample of drilling fluid in a container;
(b) positioning a sensor means in said container at a position where said sensor means is exposed to gamma radiation

from said sample to form an output indicative of gamma ray radioactivity of said sample; and

(c) converting said sensor means output according to a predetermined functional relationship into an output value



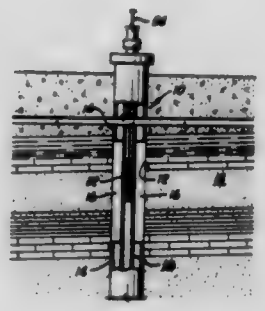
indicative of the gamma radiation background which the drilling fluid would induce in a gamma ray measuring logging device as a function of drilling fluid density and wellbore diameter.

4,493,999

METHOD OF ENERGY RESOLVED GAMMA-RAY LOGGING

Gary L. Catchen, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Dec. 10, 1981, Ser. No. 329,441
Int. Cl.³ G01V *5/00*; G21H *5/02*
U.S. Cl. 250—260 3 Claims



1. A radioactive logging method for evaluating a well bore and its surrounding formation in which gamma-ray-emitting elements may be naturally present, comprising the steps of,

injecting cobalt-58 into the formation; and

traversing the well bore with a gamma-ray-detection system which is tuned to detect gamma-ray-emission of the 811 keV energy level.

4,494,000

IMAGE DISTORTION-FREE, IMAGE ROTATION-FREE ELECTRON MICROSCOPE

Kazuo Shii, Ibaraki; Hiroyuki Kobayashi, Katsuta; Morioki Kubonoe, Katsuta, and Shigeto Isakozawa, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

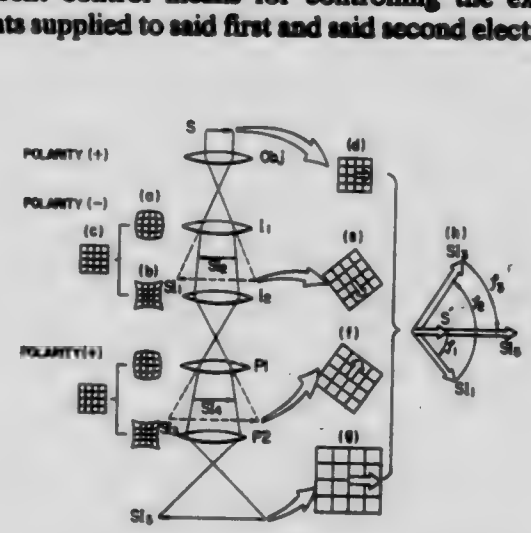
Filed Jun. 29, 1982, Ser. No. 393,332
Claims priority, application Japan, Jul. 1, 1981, 56-101195
Int. Cl.³ G01N *23/00*
U.S. Cl. 250—311 21 Claims

1. An electron microscope, comprising:

means for emitting an electron beam along a beam axis and for irradiating a specimen on said beam axis with said electron beam so that said electron beam is transmitted through said specimen;

an electron lens system having means for magnifying said transmitted electron beam, said lens system being disposed along said beam axis and including a first electron lens, a first electron lens group constituted by at least two electron lenses of the same polarity which is opposite from the polarity of said first electron lens, and a second electron lens group constituted by at least two electron lenses of a same polarity as said first electron lens which is opposite to that of said first electron lens group; and

lens current control means for controlling the excitation currents supplied to said first and said second electron lens



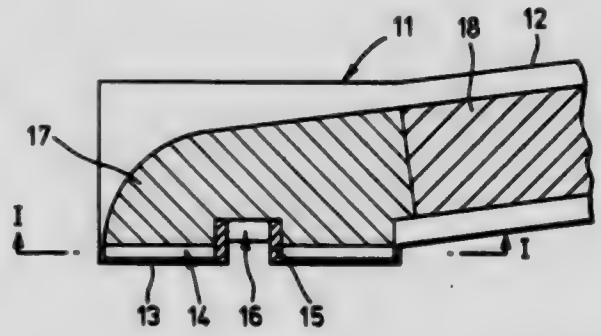
groups so that given lens members belonging to said first and second electron lens groups, respectively, serve as reduction lenses in a range of low magnifications, and the lenses of said first and second electron lens groups as a whole operate as a magnifying lens system in a range of high magnifications, said lens current control means including means for controlling said excitation currents in such a manner that the difference between the excitation currents supplied to said first and second electron lens group is maintained substantially constant when the magnification of the microscope is changed, whereby image and rotational distortions in the image produced by the electron beam transmitted through said specimen are compensated over a wide range of magnifications.

4,494,001

DETECTION OF CONCEALED MATERIALS

Peter F. Peck, Wantage, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Jul. 15, 1980, Ser. No. 168,359
Claims priority, application United Kingdom, Jul. 30, 1979, 7926435
Int. Cl.³ G01N *23/00*
U.S. Cl. 250—358.1 2 Claims



1. A device for searching for low atomic number materials especially organic materials concealed by metal such as steel up to 12 millimeters thick, said device comprising a cylindrical end housing with a cylindrical side arm attached thereto, which side arm provides a convenient handle for holding the device, an annular scintillation crystal disposed close to a side

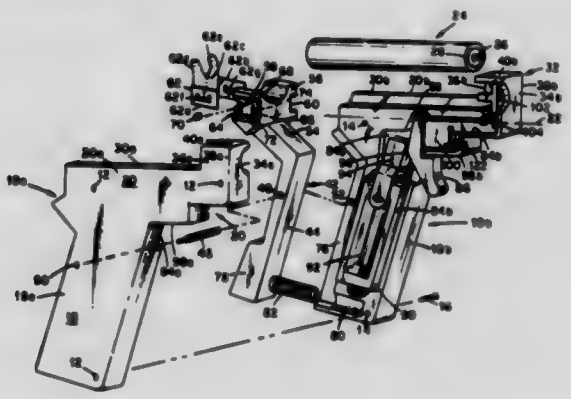
wall of the housing, a short cylindrical collimator disposed within the central circular aperture of the said scintillation crystal, a capsule containing a radioactive material source of γ radiation mounted in said collimator at the end thereof remote from said side wall, the capsule having a tungsten alloy backing which shields against radiation emanating from the source in the direction away from the said side wall, a photomultiplier, a light guide providing an optical path for directing the light from scintillations in the scintillation crystal onto said photomultiplier, first and second ratemeter to both of which is fed the backscatter count provided by the output of the photomultiplier, said ratemeters having different rates of response to change in count rate, and a detector means for subtracting the output of one ratemeter from the output of the other ratemeter such that, under steady count rate conditions, the outputs of the ratemeters will become balanced and the detector means will provide a zero indication, and such that when the backscatter count rate changes, a difference between the ratemeter outputs which diminishes with time appears as a result of the different rates of response of the ratemeters to the change, an audible indicator device being connected to said detector means such that said differences will cause a change in the pitch of an audible indicator tone produced by said audible indicator device.

4,494,002

PISTOL-SHAPED DOSIMETER CHARGER

Robert A. Maples, Powell, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 24, 1983, Ser. No. 460,502
Int. Cl.³ G01T *1/142*
U.S. Cl. 250—377 8 Claims



1. An assembly for charging a cylindrical radiation dosimeter, comprising:

a hand-held, pistol-shaped housing including a handgrip and an elongate stock having a rear section which extends across one end of said handgrip and a forward section which projects laterally from said handgrip and terminates in a free end;

dosimeter abutment means attached to and projecting laterally from the free end of said stock, said dosimeter, when in a charging position on said assembly, extending lengthwise of said stock and one of its ends engaging said dosimeter abutment means;

a dosimeter clamping lever pivotally connected to said housing on the side of said handgrip remote from the laterally projecting section of said stock and including a lower section which extends lengthwise of said handgrip and an upper section which extends across and projects laterally from the adjacent end of said stock, the pivotal axis of said dosimeter clamping lever being perpendicular to the longitudinal axis of said stock;

means mounted on said housing for resiliently urging the upper section of said dosimeter clamping lever toward said dosimeter abutment means on said stock and against the other end of said dosimeter when the dosimeter is in said charging position on said assembly; and

manually actuated charging means carried by said housing for applying an electric current to said dosimeter when it is in said charging position on said assembly.

4,494,003

METHOD OF DETECTING GAMMA RADIATION BY PLACING GLASS DOPED WITH IRON IN AN ENVIRONMENT SUBJECT TO GAMMA RADIATION AND THEN MEASURING ANY COLOR CHANGED IN THE DOPED GLASS AS A FUNCTION OF GAMMA RADIATION

Adolph G. Hager, Pt. Pleasant; Gerald L. Freeman, Freehold Township, Monmouth County; James P. Rush, Union; Louis E. Branovich, Howell, and Stanley DuBenke, Lincroft, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 7, 1983, Ser. No. 472,441
Int. Cl.³ G01T *1/06*
U.S. Cl. 250—474.1 2 Claims

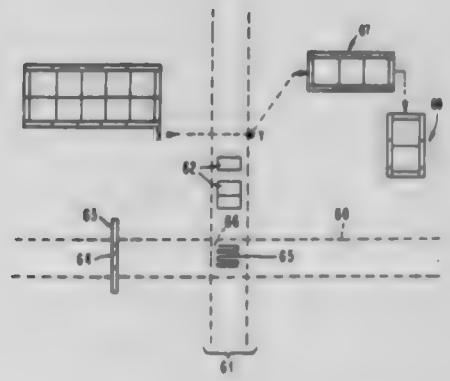
1. Method of detecting gamma radiation comprising placing iron doped glass in an environment subject to gamma radiation and then measuring any color change in the doped glass as a function to gamma radiation.

4,494,004

ELECTRON BEAM SYSTEM

John L. Mauer, IV, Sherman, Conn.; Michel S. Michail, Wappingers Falls, and Ollie C. Woodard, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 210,898, Nov. 28, 1980, abandoned.
This application Jul. 1, 1983, Ser. No. 510,385
Int. Cl.³ H01J *37/302*
U.S. Cl. 250—492.2 16 Claims



1. In an electron beam system adapted for writing patterns within a writing field comprising:

means for defining an electron beam of predetermined cross section and density;

means for focusing said beam on a target area within the writing field;

means for successively directing the beam, while blanked, along a path of a plurality of subfields of the writing field by a first deflection means until it reaches a preselected subfield; and

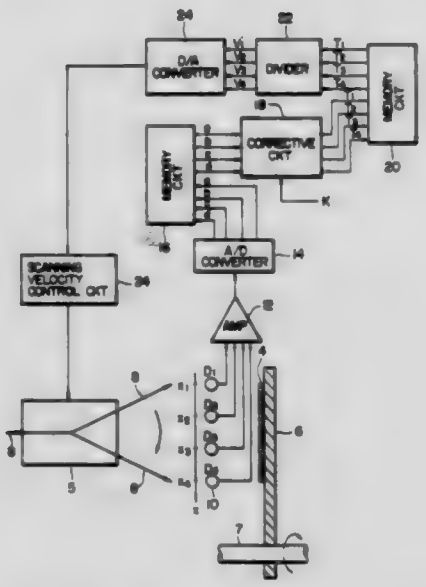
means for vectoring the beam, while blanked, to a preselected area within said subfield with a second deflection means, whereat the beam is unblanked and a predetermined pattern is written in the preselected area by the beam while the target area is stationary.

4,494,005

BEAM SCANNING CONTROL DEVICE FOR ION IMPLANTATION SYSTEM

Atsushi Shibata, and Yukichi Ueno, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 242,612, Mar. 11, 1981, abandoned. This application Feb. 28, 1984, Ser. No. 584,386
Claims priority, application Japan, Mar. 11, 1980, 55-31337
Int. Cl.³ G01N *23/00*
U.S. Cl. 250—492.2 10 Claims



1. A beam scanning control method for ion implantation, which comprises the steps of:

(1) generating an ion beam,

(2) scanning the ion beam in a predetermined direction in a predetermined range of scanning angle of the ion beam,

(3) arranging a plurality of detectors to space them apart from one another in the predetermined direction in the predetermined range of scanning angle of the ion beam, and

(4) calculating scanning rates of the ion beam at a plurality of scanning positions of the ion beam to substantially satisfy $\Sigma a = \Sigma b = \Sigma c = \ldots = \Sigma n = K$ (constant) in the following equations:

$$T_1a_1 + T_2a_2 + T_3a_3 + \ldots + T_na_n = \Sigma a$$
$$T_1b_1 + T_2b_2 + T_3b_3 + \ldots + T_nb_n = \Sigma b$$
$$T_1c_1 + T_2c_2 + T_3c_3 + \ldots + T_nc_n = \Sigma c$$
$$\vdots$$
$$T_1n_1 + T_2n_2 + T_3n_3 \quad \ldots + T_nn_n = \Sigma n$$

where T_1, T_2, T_3 . . . and T_n are the lengths of implantation time of the ion beam at the plurality of scanning positions of the ion beam, and a_1, a_2, a_3, . . . and a_n; b_1, b_2, b_3, . . . and b_n; c_1, c_2, c_3, . . . and c_n; and n_1, n_2, n_3, . . . and n_n are output signals of the detectors at each of the plurality of scanning positions of the ion beam.

4,494,006

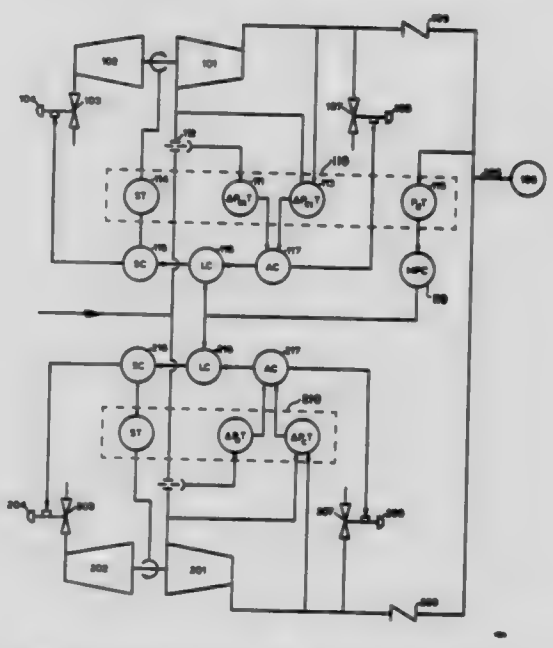
METHOD AND APPARATUS FOR CONTROLLING A MULTICOMPRESSOR STATION

Naum Staroselsky, and Saul Mirsky, both of Des Moines, Iowa, assignors to Compressor Controls Corporation, Des Moines, Iowa

Filed Sep. 15, 1982, Ser. No. 418,224
Int. Cl.³ F02C *6/10*; F04B *41/06*
U.S. Cl. 290—4 9 Claims

1. A method of controlling a compressor station receiving gas from an upstream process, compressing the gas and delivering it to a process downstream thereof, said compressor station having a station control means to adjust the station performance to the demand of a process located upstream or downstream, said compressor station including also a plurality of dynamic compressors driven by a plurality of respective prime movers, each of said dynamic compressors having a variable performance, a main control means associated with each of said compressors for changing its performance and a surge control means associated with each respective compressor for maintaining said respective compressor along a surge control line having a predetermined equation and located a predetermined distance from the respective surge limit of each respective compressor; said method comprising:

transforming said predetermined equation of each respective surge control line into a variable criterion representing a



relative distance between each respective compressor's operating point and its surge control line, said variable criterion reaching a predetermined value when said relative distance reaches zero value;

simultaneously changing the set points for all of said respective criterions representing the relative distance between each respective compressor's operating point and its surge control line by changing an output of said station control means to control the performance of said compressor station; and

keeping said set points equal and maintaining said criterion substantially equal at substantially all times for each of said respective compressors.

4,494,007

WIND MACHINE

Everett E. Gaston, Monroe, Nebr., assignor to Gaston Manufacturing, Inc., Monroe, Nebr.

Filed Sep. 2, 1982, Ser. No. 414,385
Int. Cl.³ F03D *7/00, 7/06, 3/00*; H02P *9/04*
U.S. Cl. 290—44 5 Claims

1. A wind-driven machine comprising:

a support tower having a rotating output shaft;

a plurality of wind-driven blades mounted for orbiting about said rotating output shaft to impart torque thereto;

each of said wind-driven blades having a blade axle about which it rotates;

means for adjusting the angle of said wind-driven blades with respect to their axles as said wind changes in velocity, whereby the speed of rotation of said rotating output shaft is controlled;

said means for adjusting the angle comprising control-vane means adapted to rotate about a control-vane-means axle so as to be substantially aligned with the direction of the wind;

a sprocket-and-chain assembly connecting said control-vane means to said wind-driven blade axles to adjust said wind-

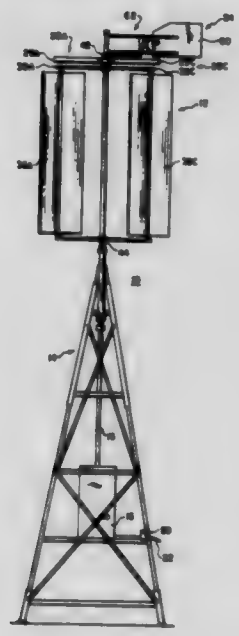
driven blade axles in position as said wind-driven blades orbit about said output shaft;

said means for adjusting including wind-responsive means adjusted to shift said sprocket-and-chain assembly in orientation about said control-vane-axle means, whereby the orientation of said wind-driven blades with respect to their axles is shifted as they orbit about said rotating output shaft;

brake-lever means for shifting the orientation of said sprocket-and-chain assembly by ninety degrees, whereby said blades are disoriented and orbiting is terminated;

said control-vane means having an angled portion of sufficient size to compensate for the friction of rotation about the axles of the wind-driven blades;

wind-gust-buffering means connected to said wind-responsive means for preventing shifting of said sprocket-and-



chain assembly of ninety degrees by gusts of wind less than four minutes in duration;

said rotating output shaft being adapted to be connected to a speed increaser;

said speed increaser having a low-speed end and a high-speed end;

said high-speed end having less surface-contact area with moving oil than said low-speed end;

a synchronous generator;

means connecting said speed increaser to said synchronous generator;

said synchronous generator having a field winding;

said field winding being adapted to be connected to a source of exciting frequency of sixty cycles per second, and

output means for said synchronous for supplying power at the frequency of said exciting-frequency source.

4,494,008

WIND-DRIVEN GENERATOR

Bennie N. Patton, 8227 Westridge Rd., Fort Wayne, Ind. 46825

Filed Mar. 3, 1983, Ser. No. 471,751
Int. Cl.[3] F01D *23/00*
U.S. Cl. 290—44 11 Claims

1. A device for converting the kinetic energy of wind into useful work comprising:

a relatively fixed base;

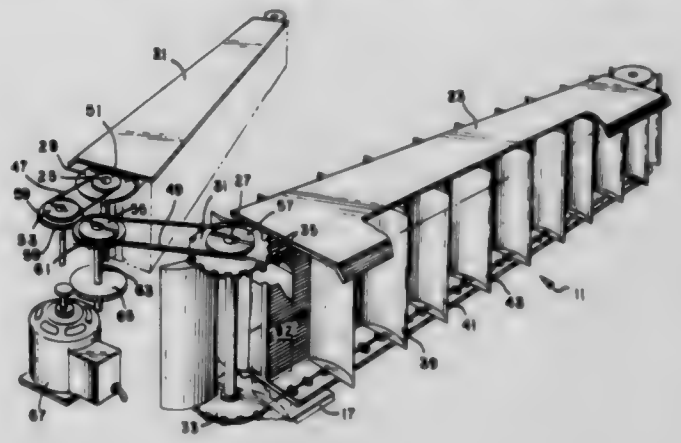
a platform supported on the base for free pivotal movement in a horizontal plane;

first and second elongated arms each supported on the platform near one arm end, each arm being pivotally supported on the base for limited movement between positions where the arms are nearly perpendicular to one another and positions where the arms are nearly parallel to one another;

cogwheel means journalled near opposed ends of each arm;

endless support means extending along each arm between opposed cogwheel means;

a plurality of vanes distributed along each endless support means and responsive to incident wind to move the end-



less support means and impart a rotary motion to the cogwheel means; and

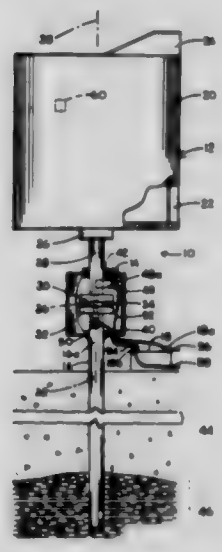
electrical generating means coupled to the cogwheel means and responsive to rotation thereof to provide an electrical output.

4,494,009

METHOD AND APPARATUS FOR CAPTURING AN ELECTRICAL POTENTIAL GENERATED BY A MOVING AIR MASS

Tex Yuki, Pleasant Valley Rte., Box 21, Baker, Oreg. 97814

Filed Sep. 19, 1983, Ser. No. 533,237
Int. Cl.[3] F03D *5/04;* H02P *9/04*
U.S. Cl. 290—55 4 Claims



1. An earth-air electrical current friction generator which comprises

conductive earth means extending subsurface into a water table,

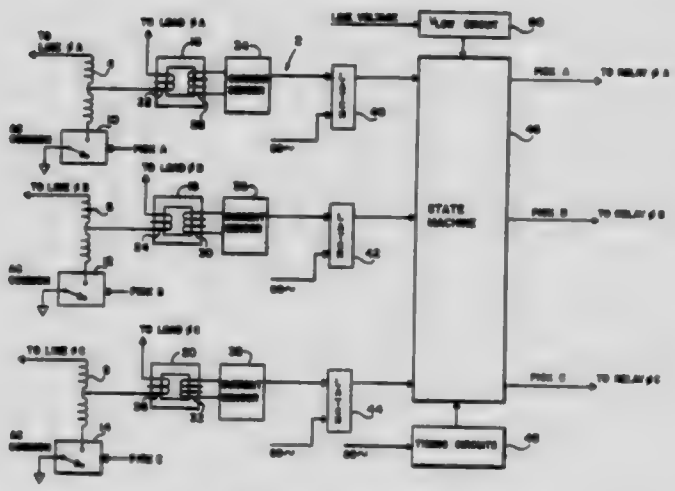
conductive airfoil means operatively associated with said earth means extending above surface into an air mass responsive to airflow to produce an electrical potential relative to said earth means,

isolation means electrically insulating said airfoil means from said earth means, said isolation means including a rotatable airfoil mounting means which allows said airfoil means to rotate in such an air mass and which supports said airfoil means above surface,

an electrical system, and

means for connecting said airfoil means and said earth means to said electrical system for conduction thereto of an electrical current.

4,494,010
PROGRAMMABLE POWER CONTROL APPARATUS RESPONSIVE TO LOAD VARIATIONS
Albert J. Donnelly, Santa Ana, Calif., assignor to Standun Controls, Inc., Santa Ana, Calif.
Filed Aug. 9, 1982, Ser. No. 406,138
Int. Cl.³ H02J 3/00
U.S. Cl. 307—33 7 Claims



1. In an AC system of the type having a device for selectively reducing and increasing voltage applied to a load, an apparatus for sensing an increase in load current and for responding thereto by causing the load voltage device to increase load voltage for a selected period of time; the apparatus comprising:

means associated with said AC system for sensing load current in said system and for developing a signal indicative of a load current increase, and means connected to said load voltage device and responsive to said signal for causing an increase in load voltage for a selected period of time, said associated means comprising:

a transformer having a primary winding connected in series with said load, and a secondary winding, and

an amplifier circuit,

said transformer secondary winding being connected to said amplifier circuit for generating said signal indicative of load current increase,

said amplifier circuit comprising a reference voltage source, and a comparator circuit for generating said signal indicative of load current increase only when said current increase exceeds a predetermined threshold corresponding to said reference voltage,

said amplifier circuit also comprising means for varying the amplifier circuit gain whereby the amount of load current increase needed to exceed said threshold may be selectively varied.

4,494,011
HIGH VOLTAGE NANOSECOND PULSE GENERATOR
Stephen J. Davis, 3576 La Mesa, Hayward, Calif. 94542
Filed Mar. 15, 1982, Ser. No. 358,021
Int. Cl.³ H03K 3/02
U.S. Cl. 307—106 5 Claims

1. Apparatus for generating pulse power of at least one half megawatt over a time interval of substantially two nanoseconds with short risetime, the apparatus comprising:

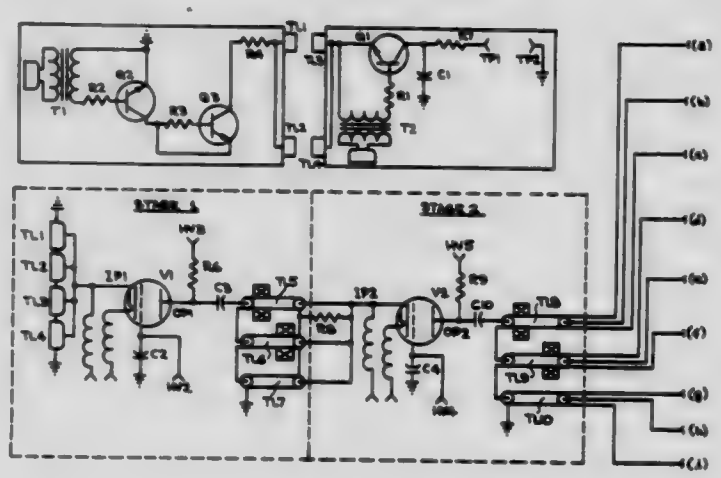
a high voltage avalanche source to provide up to two kilowatts power over a time interval of no more than one nanosecond in response to an input pulse for the apparatus;

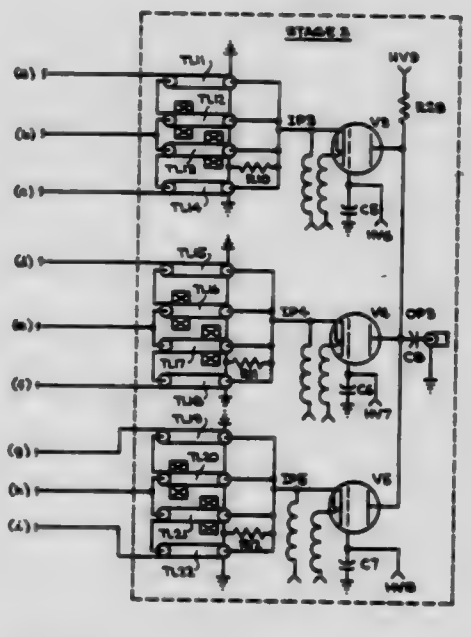
a first triode amplifier tube and circuit, with tube cathode electrically connected to the avalanche source output, with tube grid being grounded across a low capacitance capacitor and being further coupled to a first negative voltage source of at least 80 volts, and with tube anode being resistively connected to a voltage source of at least 8 kilovolts;

a first broadband voltage step-down transformer allowing a step-down of substantially 3:1, connected at its input end across an anode capacitor to the anode of the first triode tube;

a second triode amplifier tube and circuit, with tube cathode connected to the output of the first voltage step-down transformer, with tube grid being grounded across a second low capacitance capacitor and being further coupled to a second negative voltage source of at least 80 volts, and with the tube anode being resistively connected to a voltage source of at least 8 kilovolts;

second, third and fourth, substantially identical broadband voltage step-down transformers, arranged in parallel with each such transformer being connected to its input end





across a common second anode capacitor to the anode of the second triode tube;

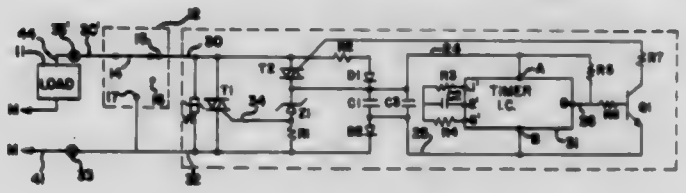
third, fourth and fifth, substantially identical triode amplifier tube and circuits, with tube cathodes being connected, respectively, to the outputs of the second, third and fourth voltage step-down transformers, with the third, fourth and fifth tube grids being grounded across third, fourth and fifth low capacitance capacitors, respectively, with the third, fourth and fifth tube grids being coupled to third, fourth and fifth sources of negative voltages, respectively, of voltage each substantially 80 volts, and with the anodes of the third, fourth and fifth triode tubes being resistively connected to a common voltage source of at least 8 kilovolts; and

with the anodes of the third, fourth and fifth triode tubes being coupled across a common third capacitor to the output point of the apparatus.

4,494,012
SWITCH TIMER

Charles W. Coker, Los Gatos, Calif., assignor to Intermatic Incorporated, Spring Grove, Ill.

Continuation-in-part of Ser. No. 314,963, Oct. 26, 1981, abandoned. This application Nov. 7, 1983, Ser. No. 549,721
Int. Cl.³ H01H 43/04
U.S. Cl. 307—132 E 8 Claims



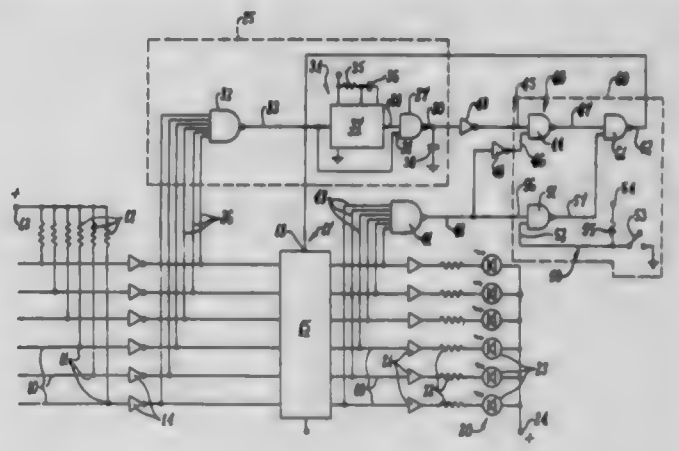
1. A controller to be connected across a first conductor extending to one terminal of a load device whose other terminal is connected to one of a pair of AC power lines having the applied voltage thereacross and a second conductor extending to the other power line, said controller comprising: parts support means adapted to be mounted in or upon a standard wall switch box, said parts support means having extending therefrom first and second controller input lead means to be respectively connected to said first and second conductors; said parts support means having mounted thereon a threeposition manually operable switch having a movable pole and stationary timer-on, power-off and load-on contacts to which said movable pole can make selective sequential engagement, a handle secured to said movable pole and projecting forwardly from said parts support means to project through a vertical slot in a cover plate and adapted to be moved vertically by the operator into any one of three stable positions where said movable pole selectively contacts one of said stationary contacts, said load-on contact being connected to said second controller input lead means and said movable pole being connected to said first controller input lead means so that when said movable pole is moved to said load-on contact the load device becomes energized, a timer which when energized supplies a control signal for a preset period of time, DC voltage producing means coupled between said timer-on contact and said second input lead means for developing a DC voltage to energize said timer, said DC voltage means including rectifier means and voltage storage means which is charged through the rectifier means when the AC applied voltage is coupled thereto, said timer having power input terminals coupled to said storage means to be energized therefrom, and power switch means having terminals connected between said timer-on contact and said second input lead means and adapted when in a low impedance condition to couple AC power to the load through said controller input lead means, said power switch means having a control terminal to which said control signal is coupled to effect a low impedance condition between said terminals which then interconnects said timer-on contact and second controller input lead means.

4,494,013
GATING CIRCUIT WITH SPURIOUS SIGNAL PREVENTION MEANS

Christopher J. Ludowyk, Melbourne, Australia, assignor to The Commonwealth of Australia, Canberra, Australia

PCT No. PCT/AU82/00011, § 371 Date Oct. 5, 1982, § 102(e) Date Oct. 5, 1982, PCT Pub. No. WO82/02808, PCT Pub. Date Aug. 19, 1982
PCT Filed Feb. 5, 1982, Ser. No. 438,875
Claims priority, application Australia, Feb. 6, 1981, PE7500
Int. Cl.³ H03K 17/56, 19/20
U.S. Cl. 307—241 9 Claims

1. A gating circuit including: a plurality of monitoring input lines each of which is arranged to receive an input signal of predetermined minimum duration in response to a predetermined change of condition of an externally monitored parameter; a main gate coupled to the monitoring input lines and having a plurality of output lines, a respective one output line being provided for each monitoring input line, the main gate also including an enabling input and being operable when an enabling signal is applied to said enabling input to apply a signal to the respective output line in response to said input signal of minimum duration being applied to one of the monitoring input lines; an input signal verifier circuit including a plurality of verifier input lines each coupled to a respective one of the monitoring input lines, the verifier circuit also including

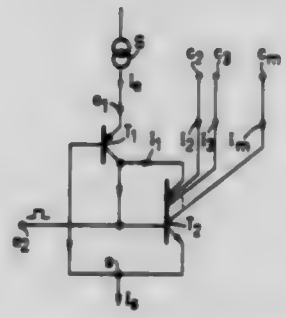


a verifier gate arranged to receive a direct gate input signal when any one of the monitoring input lines has said minimum duration input signal thereon and to receive a delayed gate input signal after a predetermined time delay less than said minimum duration when any monitoring input line has said input signal thereon, the verifier gate having a verifier output line coupled to said enabling input, the verifier gate being operable to provide said enabling signal on said verifier output line if, and only if, the direct and delayed gate input signals are being received thereby simultaneously.

4,494,014
ANALOGUE CURRENT SWITCH BIPOLAR INJECTION TECHNOLOGY

Joël A. Pelletier, Les Essarts le Roi, and Robert Breuillard, Deuil la Barre, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 24, 1982, Ser. No. 391,265
Claims priority, application France, Jul. 3, 1981, 81 13141
Int. Cl.³ H03K 17/60, 19/091
U.S. Cl. 307—254 9 Claims



1. An analogue current-switching element comprising an integrated circuit injection logic gate of the I^2L type, that includes an injection transistor and a switching transistor, said element comprising a signal input coupled to an emitter of the injection transistor, a switching-signal input coupled to a base of the switching transistor, said switching transistor comprising a plurality of collectors, means coupling one of said collectors to the base of said switching transistor and other ones of said collectors to respective ones of a plurality of current inputs, a switching signal either turning on said switching transistor whereby a current supplied by a current source and injected at said signal input is reflected to said plurality of current inputs, or turning off said transistor whereby said

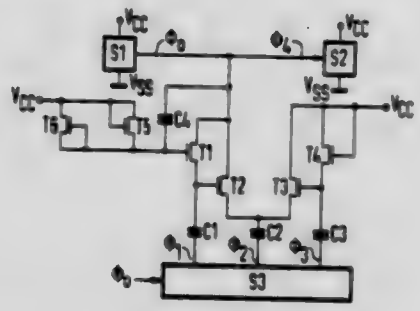
injected current is diverted towards the switching-signal input, and means connecting the base of said injection transistor to the emitter of said switching transistor to form a signal output junction point such that, in said turned-on state, said injected current is transferred to said signal output with a specific transfer coefficient which is a function of the characteristics of said transistors of the I^2L gate.

4,494,015

PULSE ENHANCEMENT CIRCUIT FOR DIGITAL INTEGRATED CIRCUIT

Focko Frieling, Munich; Ewald Michael, Haar, and Wolfgang Nikutta, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 8, 1982, Ser. No. 347,031
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1981, 3105147
Int. Cl.³ H03K *5/01, 5/02, 5/135*
U.S. Cl. 307—268 4 Claims



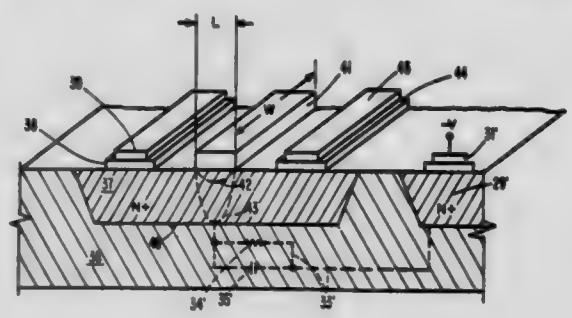
1. In an integrated digital MOS semiconductor circuit with a first circuit section serving as a pulse generator (S1) and a second circuit section (S2) serving as a pulse receiver, the input of which is controlled by two-level pulses supplied in part by first pulse signal (ϕ_0) from the first circuit section, the first pulse signal being fed at the same time via the source-drain path of a first transistor (T1) to a first terminal of a first capacitor (C1) and further, via a second transistor (T2) to a first terminal of a second capacitor (C2) which is connected via a third transistor (T3) to a supply potential (V_{CC}) which operates together with a reference potential (v_{SS}) to supply the first circuit section (S1) and the second circuit section (S2), the gate of the second transistor (T2) being connected to the source terminal of the first transistor (T1) and to the first terminal of the first capacitor (C1); said transistors (T1, T2, T3) being latching MOS field-effect transistors; the second terminals of the first capacitor (C1) and of the second capacitor (C2) each receiving digital pulse signals (ϕ_1, ϕ_2) supplied by a third circuit section; said third circuit section being responsive to the pulse signal of said first circuit section; the pulse pulse signal ϕ_1 being applied to the second terminal of the first capacitor (C1) and the pulse signal ϕ_2 being applied to the second terminal of the second capacitor (C2) and wherein the pulse signal ϕ_0 supplied by the first circuit section (S1) as well as the digital pulse signals ϕ_1 and ϕ_2 have simultaneous trailing edges, the leading edge of the pulse signal ϕ_0 delivered by the first circuit section (S1) occurring before the leading edges of the pulse signals ϕ_1 and ϕ_2, and the leading edge of the pulse signal ϕ_2 occurring no sooner than the leading edge of the pulse signal ϕ_1, the improvement comprising that the gate of the first transistor (T1) is connected to the supply potential (V_{CC}) through two further transistors (T5, T6) of the same type as the aforesaid transistors (T1 to T3); that a third capacitor (C4) is connected between the gate and the drain of the first transistor (T1); and that the gate of the first transistor (T1) is connected to the source terminals of the two further transistors (T5, T6) and to the gate of one of said further transistors (T6), the remaining terminals of said two further transistors (T5, T6) being connected to the supply potential (V_{CC}).

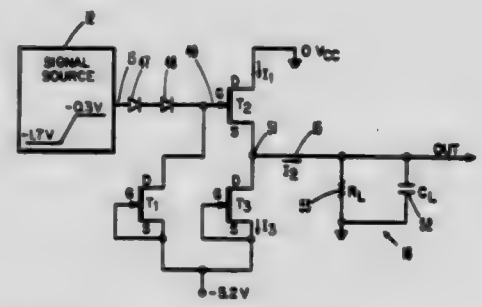
4,494,016

HIGH PERFORMANCE MESFET TRANSISTOR FOR VLSI IMPLEMENTATION

Stephen A. Ransom, Huntingdon Valley, and Todd K. Stickel, Chalfont, both of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Jul. 26, 1982, Ser. No. 401,484
Int. Cl.³ H03K *19/017, 19/094, 19/20*
U.S. Cl. 307—450 10 Claims





8. A GaAs depletion mode transistor device connected in a power amplifier circuit, comprising:

said depletion mode transistor device having gate, source and drain terminals,

a uniform depth N+ ion implant region under said gate, source and drain terminals,

said N+ ion implant region having a uniform heavy dopant concentration greater than 2.5×10^{17} up to 5×10^{18} atoms per cubic centimeter providing a high threshold voltage,

said drain terminal being connected to a V_{CC} voltage source,

said source terminal being coupled to a reference source voltage,

an output line connected to said source terminal,

a high capacitive load connected to said source terminal and said output line, and

a low power digital input signal source connected to said gate terminal, whereby low current digital input signals applied to said gate terminal are translated to said output line as high current output signal.

4,494,017

COMPLEMENTARY DECODE CIRCUIT

Frank A. Montegari, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 29, 1982, Ser. No. 363,166
Int. Cl.³ H03K *19/086, 19/20, 19/013*
U.S. Cl. 307—463 19 Claims

13. A decode circuit having n inputs for accepting n binary inputs where n is a positive integer, said decode circuit having 2^n output terminals, said decode circuit comprising:

2^n logic circuits, each of said 2^n logic circuits being similar one to another and having a like number of components, each of said 2^n logic circuits including n+2 transistors, at least one transistor of said n+2 transistors of each of said 2^n logic circuits being a PNP transistor;

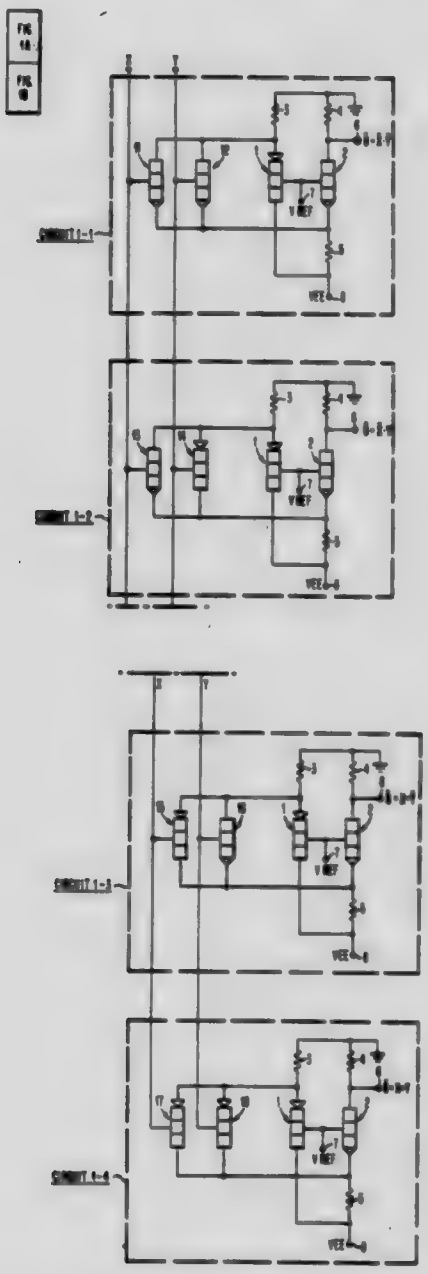
each of said 2^n logic circuits having n inputs respectively connected to said n inputs of said decode circuit;

each of said 2^n logic circuits having an output connected to a predetermined one of said 2^n output terminals of said decode circuit;

and said decode circuit being further characterized in that a decode function is accomplished in a single logic level, each of said 2^n logic circuits having an input circuit portion and output circuit portion;

each said input circuit portion of said 2^n logic circuits comprising n transistors, each of said n transistors of each of said 2^n input circuit portions having an emitter, base and collector;

each of said input circuit portions having k transistors of a first conductivity type and a n-k transistors of a second conductivity type, where k has a distinct positive integer value for each of said 2^n logic circuits and k is an integer having a range of 0 through n, each base of said n transistors of each input circuit portion being connected to a predetermined one of said n inputs of said logic circuit;



each of said input circuit portions of said 2^n logic circuits having first passive circuit means connecting in common said collectors of said k transistors of said first conductivity type and said emitters of said n-k transistors of said second conductivity type and second passive circuit means connecting in common said emitters of said k transistors of said first conductivity type and said collectors of said n-k transistors of said second conductivity type;

each of said output circuit portions of said 2^n logic circuits comprising, a first transistor of a first conductivity type having an emitter, base and collector and a second transistor of a second conductivity type having an emitter, base and collector, said emitter of said transistor of said second conductivity type being connected to said first passive circuit means of said input circuit portion, said emitter of said transistor of said first conductivity type being connected to said second passive circuit means of said input circuit portion, a first resistor connected between the emitter of said second transistor and a first source of potential, a second resistor connected between said collector of said first transistor and said first source of reference potential, a third resistor connected between said emitter of said first transistor and a third source of potential, said collector of said second transistor being connected to said third source of potential, said base of said first transistor and said base of said second transistor being connected to a second source of potential and said output terminal of said logic circuit being connected to said collector of said first transistor.

4,494,018

BOOTSTRAPPED LEVEL SHIFT INTERFACE CIRCUIT WITH FAST RISE AND FALL TIMES

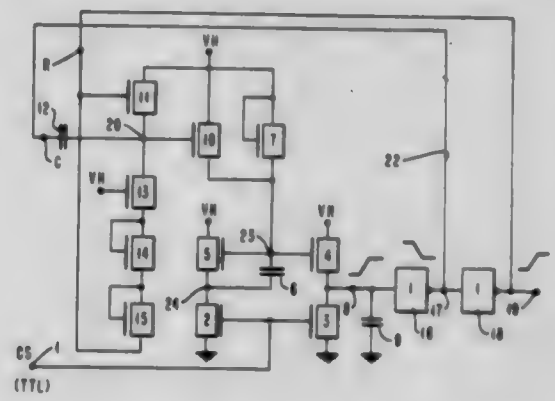
Rainer Clemen, South Burlington, Vt., and Werner Haug, Böblingen, Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 3, 1982, Ser. No. 374,113

Claims priority, application European Pat. Off., May 13, 1981, 81103660.7

Int. Cl.³ H03K *19/094, 5/02, 19/20*

U.S. Cl. 307—482 6 Claims



1. In an input circuit having an input node and an output node, for a monolithically integrated semiconductor storage of field effect transistors, which input circiut is controlled with low signal levels applied to its input node and which input circuit for level conversion uses bootstrap means, and which input circuit contains a dynamically operating charge-up circuit for charging up a bootstrapping node of the bootstrap means to the operating voltage, the improvement in the charge-up circuit comprises:

a coupling capacitor having an input node and an output node;

a first inverter having its input connected to the output node of the input circuit and its output connected to the input node of the coupling capacitor;

first and second FET's, the gate of the first FET and the source of the second FET being connected to the output node of said coupling capacitor, the drain of said first and second FET's being connected in common to a voltage source;

a discharge circuit having one end connected to the output node of the coupling capacitor, the opposite end of the discharge circuit being connected to the gate of the second FET;

a second inverter having its input connected to the output of the first inverter and its output connected to the gate of the second FET;

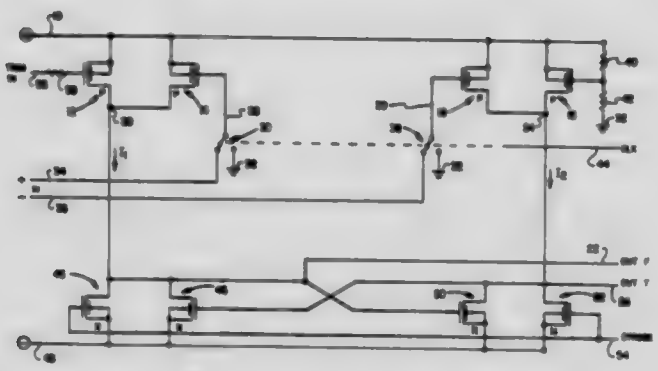
said first FET having its source connected to the said bootstrapping node of the bootstrap means, whereby the charge-up circuit causes the bootstrap means to be maintained at full operating voltage.

4,494,019

LOW LEVEL SIGNAL COMPARATOR APPARATUS

James L. Brown, Toddville, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 18, 1982, Ser. No. 409,373
Int. Cl.³ H03K 5/24
U.S. Cl. 307—491 5 Claims



1. The method of compensating comparator apparatus imbalances comprising the steps of:

periodically detecting the current amplitude of a first analog input signal as compared to the current amplitude of a second analog input signal;

outputting one of two logic values as a feedback signal indicative of which of said first and second analog input signals is larger;

periodically adjusting the current flow through one of first and second grounded input voltage detection devices toward identical values as a function of said feedback signal;

comparing input signals between the periodic adjustments of the input voltage detection devices; and

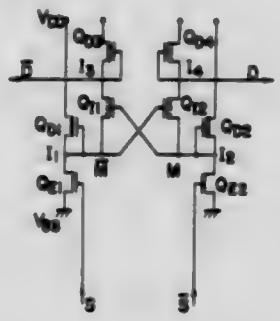
outputting a result signal indicative of the comparison of input signals between said periodic adjustments.

4,494,020

HIGH SENSITIVITY SENSE AMPLIFIER USING DIFFERENT THRESHOLD VALUED MOS DEVICES

Satoshi Kouishi, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 13, 1983, Ser. No. 484,468
Int. Cl.³ H03K 5/24; G01R 19/165; G11C 7/06
U.S. Cl. 307—530 5 Claims



1. A sense amplifier comprising:

(a) a first inverter comprising a series circuit of a first transistor which is a driving transistor and which has a first input terminal and a second transistor which is a load transistor;

(b) a second inverter comprising a series circuit of a third transistor which is a driving transistor and which has a second input terminal and a fourth transistor which is a load transistor;

(c) a third inverter comprising a series circuit of a fifth transistor which is a driving transistor and to which is applied as an input the output of said second inverter and a sixth transistor which is a load transistor, the junction between said fifth and sixth transistor being a first output terminal;

(d) a fourth inverter comprising a series circuit of a seventh transistor which is a driving transistor and to which is applied as an input the output of said first inverter and an eighth transistor which is a load transistor, the junction between said seventh and eighth transistor being a second output terminal;

(e) each of said load transistors of said first through fourth inverters having a terminal connected to a first power supply means;

(f) said first and third transistors in said first and second inverters having terminals connected to a second power supply means;

(g) said fifth transistor in said third inverter having a terminal to which is applied as a power supply the output from said first inverter while said seventh transistor in said fourth inverter having a terminal to which is applied as a power supply the output from said second inverter;

(h) said first and third transistors having a first threshold voltage, said second and fourth transistors having a second threshold voltage, said fifth and seventh transistors having a third threshold voltage, and said sixth and eighth transistors having a fourth threshold voltage; and

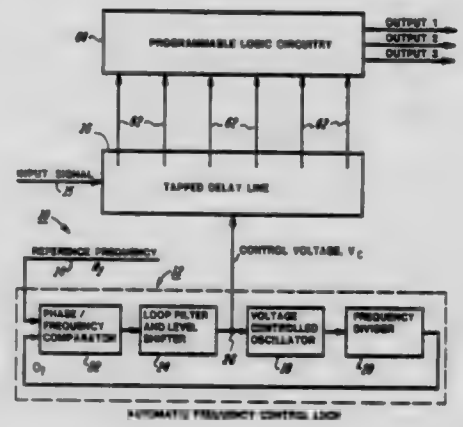
external input signals being applied to said first and second input terminals whereby output signals are derived from said first and second output terminals.

4,494,021

SELF-CALIBRATED CLOCK AND TIMING SIGNAL GENERATOR FOR MOS/VLSI CIRCUITRY

Alan G. Bell; Richard F. Lyon, and Gaetano Borriello, all of Palo Alto, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1982, Ser. No. 412,490
Int. Cl.³ H03K 5/06, 17/284; H03L 7/08
U.S. Cl. 307—591 8 Claims



1. A self-calibrated clock and timing signal generator to provide arbitrary digital waveforms of preselected edge resolution comprising

multistage means to produce a time delayed signal of preselectable edge resolution from a plurality of outputs between successively coupled delay stages comprising said multistage means, the delay per stage of said multistage means being equal so that the selection of any one of said outputs is representative of a predetermined amount of delay provided to an input signal to said multistage means and

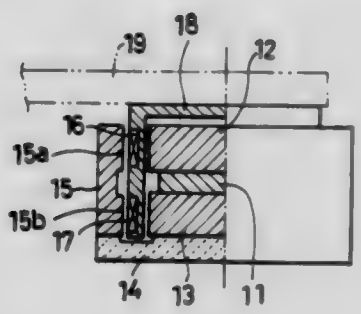
calibrating means including a voltage control oscillator having a plurality of delay stages, each of identical structure to each of said multistage means delay stages, said calibrating means to develop a control signal and apply said control signal to said multistage means to continuously maintain said predetermined amount of delay per stage.

4,494,022

ELECTROMAGNETIC FORCE-TRANSDUCER

Toshio Kawara, Kyoto, and Yoshifumi Shibahara, Shiga, both of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Mar. 23, 1984, Ser. No. 592,583
Claims priority, application Japan, Jun. 10, 1983, 58-104729
Int. Cl.[3] H02K *41/00*; G01G *3/14*
U.S. Cl. 310—14 6 Claims



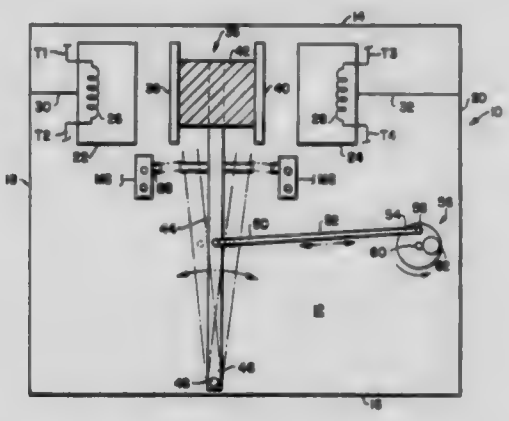
1. An electromagnetic force-transducer comprising a magnetic circuit and an electromagnetic coil kept movable in the static-magnetic field provided by said magnetic circuit, and being devised to have said electromagnetic coil produce an electromagnetic force with a current supplied thereto, said magnetic circuit containing a permanent magnet and comprising an inner magnetic path positioned inside said electromagnetic coil and an outer magnetic path surrounding said electromagnetic coil, said electromagnetic coil consisting of two coaxial parallel windings mechanically connected to each other with a distance kept therebetween, and one of said two coaxial parallel windings being supplied with a first magnetic field intersecting the same radially by said magnetic circuit, while the other of said two coaxial parallel windings being supplied with a second magnetic field intersecting the same in the direction anti-parallel to said first magnetic field by said magnetic circuit.

4,494,023

MAGNETIC MOTOR MACHINE

Raymond Cook, Box 2A, Besia, W. Va. 24727

Continuation of Ser. No. 330,522, Dec. 14, 1981, abandoned.
This application Nov. 28, 1983, Ser. No. 555,413
Int. Cl.[3] H02K *7/00*
U.S. Cl. 310—21 2 Claims



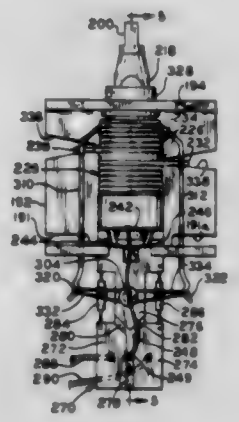
1. A magnetic motor machine comprising:
a housing having side walls, end walls and top and bottom walls;
a pair of electromagnets secured in spaced apart relationship to insulating braces attached to said side walls within the housing;
power supply means energizing each of said electromagnets;
means associated with said power supplies for alternatively connecting said power supplies to said electromagnets whereby said electromagnets are alternatively energized;
a yoke reciprocable between said electromagnets and comprising metallic faces having an insulation block therebetween;
a support shaft attached at one end to said insulation block of said yoke and attached at its opposite end to a fixed bearing;
said fixed bearing comprising a rod extending between said end walls and rigidly fixed thereto;
an output shaft fixed at one end to said support shaft midway between the yoke and the fixed bearing, the opposite end attached to an eccentric; and
offset stub shaft means on the eccentric extending to the exterior of the housing and rotated in response to reciprocation of said yoke and said output shaft whereby machinery external of said magnetic motor may be operated.

4,494,024

ONE SHOT SPRING ACTIVATED MOTOR

Gerald W. Braun, Avilla, Ind., assignor to Magnavox Government and Industrial Electronics Company, Fort Wayne, Ind.

Filed Nov. 28, 1983, Ser. No. 555,517
Int. Cl.[3] H02K *7/00*; H01H *29/00*
U.S. Cl. 310—75 A 12 Claims



1. Motor apparatus comprising
an elongated motor shaft having a shaft axis;
first means for supporting said shaft for rotation from an initial rotative position about said axis;
second mechanical means for applying a first torque in a first rotational direction from said initial rotative position to said shaft;
third mechanical means for applying a second torque in a second rotational direction from said initial rotative position to said shaft;
fourth means for selectively releasing the torque of one of said second and third means to impart rotation to said shaft in either said first and second rotational directions from said initial rotative position.

4,494,025

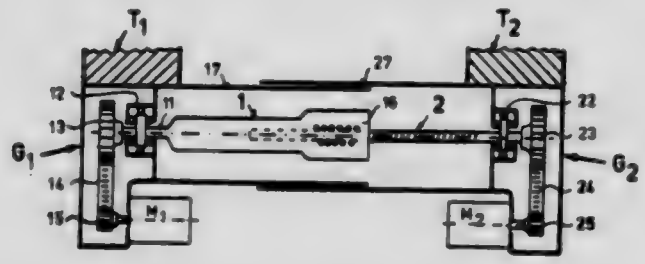
LINEAR DRIVE DEVICE WITH TWO MOTORS

Hans Fickler, Weidstrasse 18, CH 8542 Wiesendangen, Switzerland

Filed Apr. 23, 1984, Ser. No. 603,235
Claims priority, application Switzerland, Apr. 29, 1983, 2303/83
Int. Cl.[3] H02K *7/06, 7/20*; F16H *21/16*
U.S. Cl. 310—80 7 Claims

1. A linear drive device with a screw spindle and a nut with two drive motors, characterized by the fact that one motor (M_2) drives the screw spindle (2) via a first intermediate drive

and the other motor (M_1) drives the nut (16) by means of a hollow shaft (1) via a second intermediate drive (13–15) and



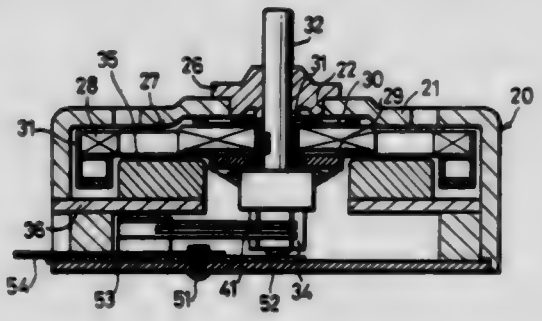
that the two intermediate drives have a very slight but precisely defined difference in their transmission ratio.

4,494,026

BRUSH-MOUNTING STRUCTURE OF MINIATURE MOTOR

Masaru Abe, Kakuda, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1983, Ser. No. 509,719
Claims priority, application Japan, Jul. 1, 1982, 57-99876[U]
Int. Cl.³ H02K 9/00
U.S. Cl. 310—89 3 Claims



1. In a motor having a case carrying a bearing in an upper wall portion and having an open bottom, a rotary shaft rotatably held by said bearing and carrying a rotor, a permanent magnet fixed within said case so as to oppose said rotor in proximity thereto, and brushes lying in contact with a commutator mounted on said rotor shaft; means for mounting said brushes within said motor, said means including a bracket made of a metal plate and held across the open bottom of said case, said bracket having a plastic film lying thereover, and terminal plates each secured onto said plastic film and having upstanding bent portions holding said brushes, said terminal plates being secured by rivets formed of insulating material and extending through said plastic film and said bracket.

4,494,027

DYNAMOELECTRIC MACHINE WITH SELF-ADJUSTING BEARING

Charles W. Otto, DeKalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 377,554, May 12, 1982, Pat. No. 4,466,165. This application May 18, 1984, Ser. No. 611,580
Int. Cl.³ H02K 5/00, 5/16
U.S. Cl. 310—89 5 Claims

1. A dynamoelectric machine adapted for connection across a power source comprising:

a stator having winding means associated therewith for excitation when the dynamoelectric machine is connected across the power source;

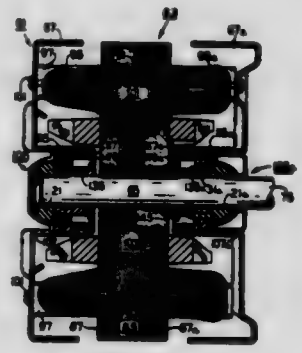
a rotor arranged in magnetic coupling relation with said stator so as to be rotatable upon the excitation of said winding means;

a shaft rotatably mounted with said rotor;

at least one thrust device associated with at least one of said rotor and said shaft so as to be rotatable therewith;

at least one sheet metal end shield mounted in association with said stator and including a partial spherical bearing seating surface deformed from said at least one sheet metal end shield, and at least a pair of keys deformed from said at least one sheet metal end shield so as to extend generally radially with respect to said partial spherical bearing seating surface, respectively;

a lubrication and bearing system including a bearing having a body of sintered metal material with a plurality of capillary passage means for lubricant flow extending therethrough defined between the interstices of the sintered metal material, a pair of opposite ends on said bearing body, a partial spherical bearing surface extending peripherally about said bearing body at least adjacent one of said opposite ends and engaged in at least limited self adjusting relation with said partial spherical bearing seating surface on said at least one sheet metal end shield, a bore in said bearing body extending generally axially between said opposite ends thereof and arranged in journaling engagement with a part of said shaft, at least a pair of keyways in said bearing body intersecting with said one opposite end and extending between said bore and said partial spherical bearing surface, respectively, said at least key pair deformed from said at least one sheet metal end shield being received within said at least keyway pair in antirotational engagement with said bearing body, a generally cylindric surface extending peripherally about said bearing body between said partial spherical bearing surface and the other of said opposite ends of said bearing body, at least



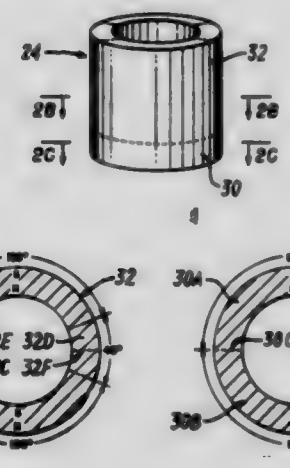
one notch in said bearing body intersecting with said other opposite end thereof and extending between said bore and said cylindric surface, said other opposite end defining a thrust surface on said bearing body arranged in thrust transfer relation with said thrust device on said shaft and being mechanically worked to at least in part close at least some of said capillary passage means associated with said thrust surface and thereby predeterminately regulate lubricant flow through said capillary passage means terminating at said thrust surface, a lubricant feeder wick associated with said bearing body and having at least one part disposed within said at least one slot and extending into lubricant wiping engagement with both said shaft part within said bore and said thrust device on said shaft, a lubricant storage wicking material arranged in lubricant transfer relation with said lubricant feeder wick, and means connected with said at least one sheet metal end shield generally radially outwardly of said partial spherical bearing seating surface formed thereon and extending generally toward said rotor for containing said lubricant storage wicking material, the lubricant being transferred from said lubricant storage wicking material through both said capillary passage means in said bearing body and said lubricant feeder wick into said bore of said bearing body to lubricate said shaft part journaled therein and also through said at least one part of said lubricant feeder wick to said thrust device to establish a hydrodynamic film of the lubricant between said thrust surface on said bearing body and said thrust device.

4,494,028

INTEGRAL COAXIAL COMMUTATION AND ROTOR MAGNETS AND APPARATUS AND METHOD FOR MAKING SAME

Fred A. Brown, Woodstock, N.Y., assignor to Rotron Incorporated, Woodstock, N.Y.

Filed Sep. 30, 1982, Ser. No. 428,828
Int. Cl.³ H02K 23/04
U.S. Cl. 310—156 12 Claims



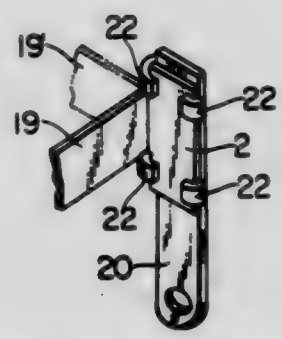
1. An integral annuair field and commutation magnet for a brushless DC motor formed on a single piece of permanently magnetized material and including a first annular field magnet portion at a first location and a second annular commutation magnet portion at a second location axially displaced from the first location, said field magnet portion having magnetized and unmagnetized sectors, said unmagnetized sectors being substantially unmagnetized portions of the magnetic material of said piece, being adjacent to magnetized sectors of the field magnet portion and integral therewith and having a substantial angular length.

4,494,029

BRUSHGEAR

Michio Hoshino, Kashiwa, and Riyouichi Someya, Matsudo, both of Japan, assignors to Mabuchi Motor Co., Ltd., Japan

Filed Aug. 16, 1983, Ser. No. 523,417
Claims priority, application Japan, Aug. 30, 1982, 57-130936[U]
Int. Cl.³ H02K 13/00
U.S. Cl. 310—239 13 Claims



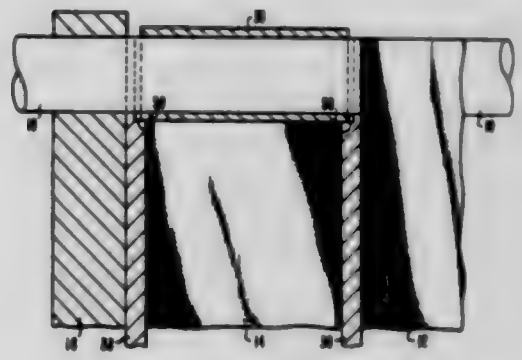
1. Brushgear having brushes, each comprising a terminal and a brush arm, made of electrically conductive metal strips and joined together into one piece, said brushes being held in position on a side plate of a motor case made of a synthetic resin, by being inserted into terminal holes provided on said motor case side plate; characterized in that said terminal has a terminal strip and joining members provided integrally with said terminal strip at an end of said terminal strip, and said brush arm has a brush base and a brush strip; the brush base being at least partly wrapped by said joining members which joining members are in a folded and depressed condition against said brush base; said terminal strip extending at a substantially right angle with respect to said brush strip with said terminal and said brush arm joined at a joined portion comprising said brush base and joining members; and the joined portion of said joining members and said brush base being inserted into one of the terminal holes.

4,494,030

APPARATUS FOR PREVENTING OVERFLUX DAMAGE TO STATOR CORES

Arthur Mulach, Delmont, and Raymond Calfo, Braddock Hills, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 4, 1981, Ser. No. 318,231
Int. Cl.³ H02K 1/12
U.S. Cl. 310—256 3 Claims



1. A dynamoelectric machine, comprising:

a stator member comprising a frame structure, a cylindrical stator core structure and at least one building bolt axially disposed along the outside surface of said stator core structure and generally parallel to the central axis of said cylindrical stator core structure, said stator core structure comprising a plurality of laminations;

means for preventing electrical communication between said building bolt and a preselected number of said laminations, said preventing means comprising an insulative cylinder disposed about said building bolt proximate said preselected number of laminations;

a first layer of plates disposed between said preselected number of laminations and the remainder of said stator core laminations, said first layer of plates being shaped to receive said insulative cylinder; and

a second layer of plates disposed adjacent said preselected number of laminations on the opposite axial side of said preselected number of laminations from said first layer of plates, said preselected number of laminations being disposed between said first and second layers of plates, said second layer being shaped to receive said insulative cylinder, said first and second layers of plates being made of stainless steel and being thicker than said laminations.

4,494,031

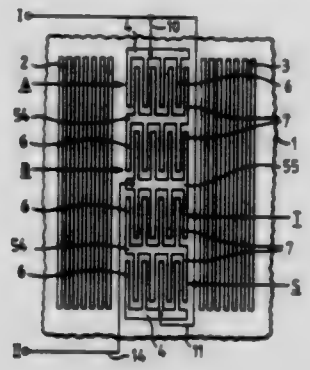
HIGH POWER ACOUSTIC WAVE ARRANGEMENT WITH N^2 PARALLEL-SERIES CONNECTED ACOUSTIC WAVE DEVICES

Christopher S. Barnes, Reigate; Paul A. Moore, Hove, and Philip D. White, Chessington, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 16, 1983, Ser. No. 475,800
Claims priority, application United Kingdom, Mar. 24, 1982, 8208659
Int. Cl.³ H03H 9/25; H01L 41/08
U.S. Cl. 310—313 B 17 Claims

1. An acoustic wave device arrangement comprising at least one piezo-electric substrate including N^2 acoustic wave devices in which at the same operating frequency each of the devices have substantially the same electrical impedance and transfer characteristics, where N is an integer greater than unity, each device having at least one pair of terminals for coupling power into and out of said device, said N^2 devices

being electrically connected in a parallel-series arrangement comprising N groups each of which comprises N of said devices with the corresponding pairs of terminals being electrically connected in series, the corresponding pairs of terminals



in each group being electrically connected in parallel with the corresponding pairs of terminals in the other group or groups whereby at said operating frequency the device arrangement has substantially the same electrical impedance and transfer characteristics as each of the individual N^2 devices.

4,494,032

TRANSDUCER PLATE FOR ELECTRO-ACOUSTIC TRANSDUCERS

Erwin Martin, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

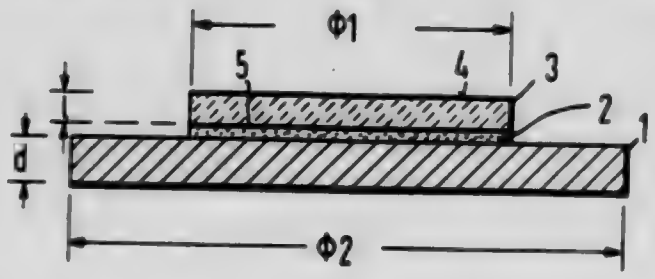
Filed Aug. 18, 1983, Ser. No. 524,267

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1982, 3232177

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—324

6 Claims



1. In a transducer plate for electro-acoustic transducers for telephone apparatus formed by a piezoelectric ceramic layer provided with electrodes on both sides and connected with a support plate, the improvement wherein the transducer plate required for a microphone, a receiver or tone ringer has a transducer plate diameter between 40 and 45 mm, a ceramic diameter between 25 and 35 mm, a transducer plate thickness between 100 and 250 microns, and a ceramic thickness between 50 and 150 microns.

4,494,033

THIN LEAD SUSPENSION FOR A PIEZOELECTRIC RESONATOR

William C. Morse, Newbury, and John B. Phaneuf, Haverhill, both of Mass., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Mar. 25, 1983, Ser. No. 478,934

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—352

11 Claims

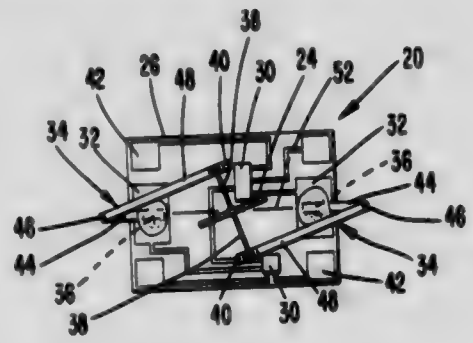
1. A first electrical device for supporting a second electrical device, which comprises:

a substrate having a pair of spaced contact pads formed on the substrate in a plane of the substrate adjacent opposite edges of the substrate; and

a pair of unitary leads having inner end portions bonded to respective ones of the contact pads on the substrate so as to extend essentially in the plane of the substrate;

each of the pair of unitary leads further including a reverse-bent first intermediate portion extending from the inner end portion of the lead outward beyond an adjacent one of the edges of the substrate and also projecting in a direction essentially perpendicular to the substrate out of the plane of the substrate;

each of the pair of unitary leads also including a second intermediate portion extending from the reverse-bent first intermediate portion of the lead in spaced opposed relationship to the substrate and terminating in an outer free end portion of the lead; and



the second intermediate portions of the unitary leads being bent transversely with respect to the first intermediate portions of the leads in opposite directions essentially parallel to the substrate such that the second intermediate portions and the outer free end portions of the leads are disposed on respective opposite sides of a plane extending from an imaginary line interconnecting the contact pads on the substrate, and such that the second intermediate portions of the leads extend essentially parallel to one another with the outer free end portions of the leads in opposed spaced relationship for the reception of the second electrical device therebetween.

4,494,034

MAGNETRON FILAMENT HAVING A QUADRILATERAL CROSS-SECTION

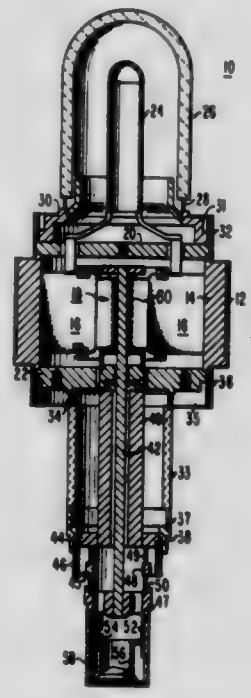
Robert F. Keller, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 9, 1982, Ser. No. 448,402

Int. Cl.³ H01J *1/15, 19/08;* H01K *1/02*

U.S. Cl. 313—341

5 Claims



1. In a magnetron having an evacuated envelope including

therein a high temperature cathode assembly and an anode electorde surrounding said cathode assembly, wherein the improvement comprises

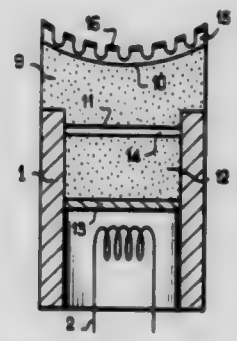
said high temperature cathode assembly being formed of a helically wound filament having a quadrilateral cross-section, wherein one of said surfaces of said wound filament is wider than the others, the wider surface facing said anode electrode, the wider surface of said wound filament being held in tension and the oppositely disposed surface being placed in compression, said quadrilateral cross-section thereby increasing the strength and sag resistance of said wound filament.

4,494,035

THERMOELECTRIC CATHODE FOR A HYPERFREQUENCY VALVE AND VALVES INCORPORATING SUCH CATHODES

Pierre Pallisel, and Arvind Shroff, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 4, 1981, Ser. No. 318,316
Claims priority, application France, Nov. 7, 1980, 80 23894
Int. Cl.[3] H01J *1/14, 19/06;* H01K *1/04*
U.S. Cl. 313—346 R 11 Claims



1. A thermoelectronic cathode comprising a cylindrical casing separated by a wall in two portions, the lower portion containing a heating filament and the upper portion forming a cavity chamber containing a porous body impregnated with emissive material covered by a non-impregnated body, wherein a conducting metal in powder form having a high melting point is provided between the impregnated porous body and the non-impregnated porous body, and wherein the porosity of the non-impregnated body is between 16 and 21% and the porosity of the impregnated body is between 16 and 50%.

4,494,036

ELECTRON BEAM WINDOW

Armand P. Neukermans, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

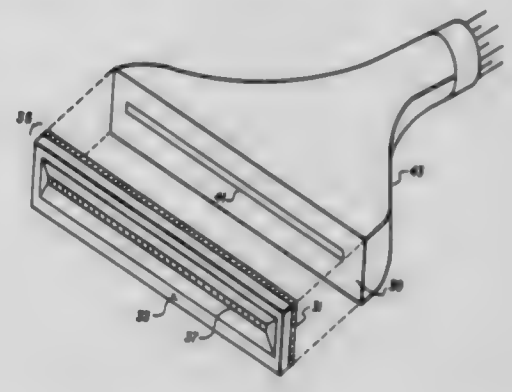
Division of Ser. No. 443,709, Nov. 22, 1982, Pat. No. 4,455,561. This application Mar. 19, 1984, Ser. No. 590,934
Int. Cl.[3] H01J *33/04*
U.S. Cl. 313—420 4 Claims

1. A device for injecting electrons into an atmosphere having a pressure of one atmosphere or higher comprising:

an evacuated CRT assembly;

a faceplate having a hole therein, attached to said CRT assembly; and

a vacuum window covering said hole, said vacuum window comprising a film of material selected from the group



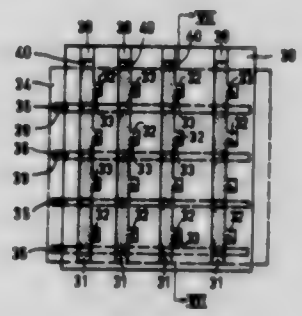
consisting of SiC, B_4N, BN, Si_3N_4, and Al_4C_3, said film having an internal stress of less than 2×10^9 dynes/cm^2.

4,494,037

GAS DISCHARGE DISPLAY DEVICE HAVING ANODIZED AND UNANODIZED ELECTRODE SURFACE AREAS

Gerhard H. F. de Vries, Geldrop, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 270,679, Jun. 4, 1981, Pat. No. 4,389,277. This application Sep. 9, 1982, Ser. No. 416,182
Int. Cl.[3] H01J *17/49, 61/067*
U.S. Cl. 313—584 4 Claims



1. A gas discharge display device comprising an envelope of a first and second glass plate having a gas discharge space therebetween, a first pattern of aluminum electrodes on said first glass plate in facing relationship to a second pattern of electrodes on said second glass plate, a gas filled area between said first and second pattern of electrodes, and a plurality of small surface elements constituting cathode areas formed on surface portions of said first pattern of aluminum electrodes which are anodized except for said cathode areas.

4,494,038

GAS DISCHARGE DEVICE

Donald K. Wedding; Michael E. Fein, both of Toledo; Roger E. Ernsthausen, Luckey, and Bernard J. Byrum, Toledo, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 556,777, Mar. 10, 1975, , which is a continuation of Ser. No. 417,961, Nov. 21, 1973, abandoned, which is a continuation-in-part of Ser. No. 300,784, Oct. 25, 1972, abandoned, which is a division of Ser. No. 249,207, May 1, 1972, abandoned, which is a continuation-in-part of Ser. No. 173,294, Aug. 19, 1971, abandoned. This application Jan. 19, 1976, Ser. No. 650,382
The portion of the term of this patent subsequent to Nov. 21, 1995, has been disclaimed.
Int. Cl.[3] H01J *17/49*
U.S. Cl. 313—587 18 Claims

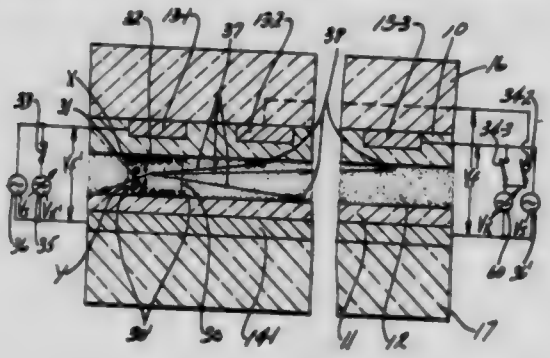
1. A plasma display panel comprising:

(a) a first and a second dielectric substrate, said first and second substrates being spaced from each other and sealed, a discharge gas contained within said sealed sub-

strates forming a discharge gas space, at least one of said substrates being transparent;

(b) first and second electrodes mounted on said first and second substrates, respectively;

(c) a first and a second dielectric film covering said first and



said second electrodes, respectively, said films facing said discharge gas space; and

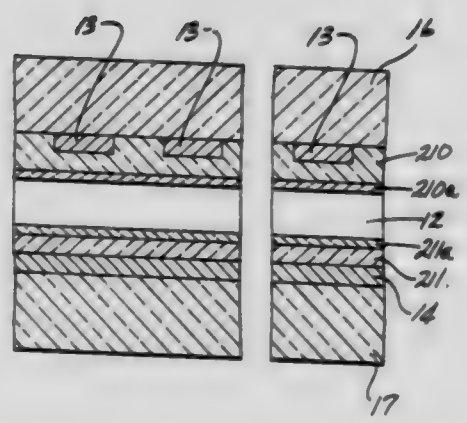
(d) a surface reinforcing film only on one of said dielectric films, said reinforcing film having a major component made from an oxide of a rare earth element selected from the group consisting of CeO_2 and La_2O_3.

4,494,039

GYROTRON TRAVELING-WAVE DEVICE INCLUDING QUARTER WAVELENGTH ANTI-REFLECTIVE DIELECTRIC LAYER TO ENHANCE MICROWAVE ABSORPTION

Kyung J. Kim, Burke, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 19, 1982, Ser. No. 435,155
Int. Cl.³ H01J 25/00
U.S. Cl. 315—4 13 Claims



waveguide enclosing a medium through which said electron beam travels;

a plurality of parallel highly lossy dielectric suppressor rings surrounding said electron beam and located adjacent to the inner surface of said waveguide, said suppressor rings acting to absorb parasitic radiation produced by said electron beam; and

an anti-reflective layer for matching the impedance of said suppressor rings to said medium and for reducing reflections of incident radiation from the surfaces of said suppressor rings located on the surfaces of said plurality of suppression rings, said anti-reflective layer being formed of a dielectric material having a dielectric constant determined according to the equation:

$$\epsilon_{layer} = \sqrt{(\epsilon_{medium})\,(\epsilon_{substrate})}$$

where ϵ_{layer} is the dielectric constant of said coating layer, ϵ_{medium} is the dielectric constant of said medium, and $\epsilon_{substrate}$ is the dielectric constant of said suppressor rings.

10. A method for reducing parasitic oscillations within a gyrotron traveling-wave device comprising the steps of:

providing a hollow waveguide drift tube positioned between an electron gun and a cavity in said gyrotron, said drift tube surrounding an electron beam passing between said electron gun and said cavity;

forming a plurality of parallel highly lossy dielectric suppressor rings adjacent to the inner surface of said drift tube, said suppressor rings surrounding said electron beam to absorb parasitic radiation produced by said electron beam; and

forming an anti-reflective dielectric layer on the surfaces of said plurality of suppressor rings, said anti-reflective layer matching the impedance of said suppressor rings to a medium enclosed within said drift tube and reducing reflections of incident radiation from the surfaces of said suppressor rings,

said anti-reflective layer is formed of a material having a dielectric constant determined according to the equation:

$$\epsilon_{layer} = \sqrt{(\epsilon_{medium})\,(\epsilon_{substrate})}$$

where ϵ_{layer} is the dielectric constant of the anti-reflective layer, ϵ_{medium} is the dielectric constant of said medium, and $\epsilon_{substrate}$ is the dielectric constant of said suppressor rings.

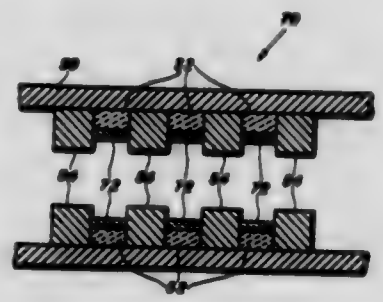
4,494,040

RADIO FREQUENCY QUADRUPOLE RESONATOR FOR LINEAR ACCELERATOR

Alfred Moretti, Downers Grove, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 19, 1982, Ser. No. 435,181
Int. Cl.³ H01J 25/10
U.S. Cl. 315—5.41 7 Claims

1. An RFQ resonator for a linear accelerator comprising a cylinder member with a longitudinal axis, an even plurality of modulating, elongated resonating members extending in an axial direction, supported in the cylinder and arranged to form an LC resonant circuit with the inductance being formed along the length of the resonating members to provide a low resonant frequency useful for accelerating heavy particles in the linear

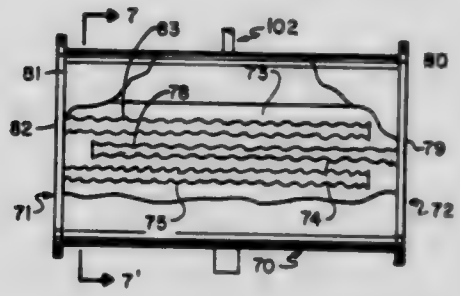


1. A drift tube

for use between an electron gun and a cavity in a gyrotron traveling-wave device comprising:

a hollow waveguide positioned to surround an electron beam passing from said electron gun to said cavity, said

accelerator, the capacitance of the LC circuit being based on the equation



$$\cos^{-1}\left(\frac{2\pi l}{\lambda}\right) = \frac{2C_{12}}{C_{11}}$$

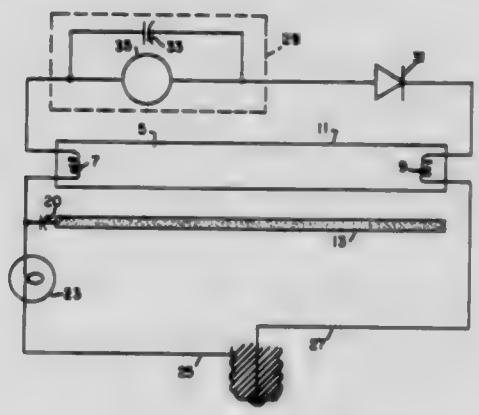
where l is the length of the resonator, λ is the wavelength of the wave, C_{12} is the capacitance between adjacent members and C_{11} is the capacitance between one member and other members and ground, the adjacent resonating members being alternately shorted or open with respect to one end of said cylinder member and power means connected to the cylinder member for generating a multipole electrical field in the vicinity of said axis and a magnetic field transverse to said axis.

4,494,041

INCANDESCENT BALLAST ASSEMBLY

William J. Roche, Merrimac, and John W. Anderson, Jr., Ipswich, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Feb. 2, 1983, Ser. No. 463,226
Int. Cl.³ H01J 7/44
U.S. Cl. 315—49 8 Claims



1. An incandescent ballast assembly for a fluorescent lamp having a filament winding at each end and a longitudinal axis extending between the filament windings, said ballast assembly comprising:

starter and unidirectional conduction device means connected in series with said filament windings at each end of said fluorescent lamp;

starting aid means extending along the longitudinal axis of and contacting said fluorescent lamp;

an incandescent lamp series connected to a filament at one end of said fluorescent lamp;

a pair of terminals formed for connection to a potential source and connected to said incandescent lamp and to said filament at the other end of said fluorescent lamp; and

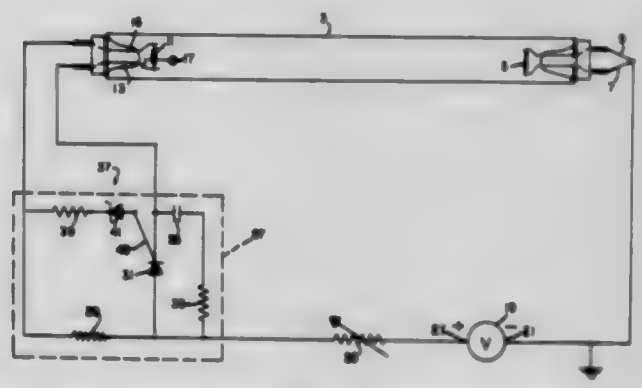
impedance means coupling said starting aid means to a junction of said incandescent lamp and to said filament at said one end of said fluorescent lamp.

4,494,042

MERCURY TARGET SENSING AND LOCATING APPARATUS

William J. Roche, Merrimac, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Apr. 16, 1982, Ser. No. 368,939
Int. Cl.³ H01J 7/44, 13/46, 19/78, 29/96
U.S. Cl. 315—56 12 Claims



1. Apparatus for coupling a fluorescent lamp to a DC potential source, said fluorescent lamp having a first coil at one end, a second coil with a pair of connected electrical leads at the opposite end with a mercury dispensing target affixed to one of said pair of electrical leads, said apparatus formed for selectively applying energy from said DC potential source to said electrical lead having said mercury dispensing target affixed thereto and comprising:

means for coupling said DC potential source to said first coil of said fluorescent lamp;

a ballast connected to said DC potential source; and

voltage discriminator means coupling said ballast to said second coil of said fluorescent lamp, said voltage discriminator means including an impedance coupling said ballast to one and a rectifier coupling said ballast to the other one of said pair of electrical leads and a voltage dependent switch coupled to said rectifier and to the junction of said impedance and to one of said pair of electrical leads whereby energy from said ballast is selectively coupled by said impedance or said rectifier to said electrical lead having said mercury dispensing target affixed thereto in accordance with the development of a voltage across said second coil of a value less than or greater than the breakdown voltage of said voltage dependent switch.

4,494,043

IMPLODING PLASMA DEVICE

Charles H. Stallings, Pleasanton; Richard L. Schneider, Hayward, both of Calif.; Frederick K. Childers, Winchester, Mass.; Stephen M. Matthews, Oakland, Calif.; Ian S. Roth, Ithaca, N.Y.; Heikki I. Helava, and Ray M. Stringfield, Jr., both of Oakland, Calif., assignors to Physics International Company, San Leandro, Calif.

Filed Jul. 2, 1981, Ser. No. 280,066
Int. Cl.³ H01J 7/24
U.S. Cl. 315—111.41 5 Claims

2. An imploding plasma device comprising

an ionizable material,

an anode,

a cathode spaced apart from said anode comprising a nozzle adapted to inject said ionizable material toward said anode, said injected ionizable material defining a hollow cylindrical column,

means for generating a high voltage pulse of electrical current,

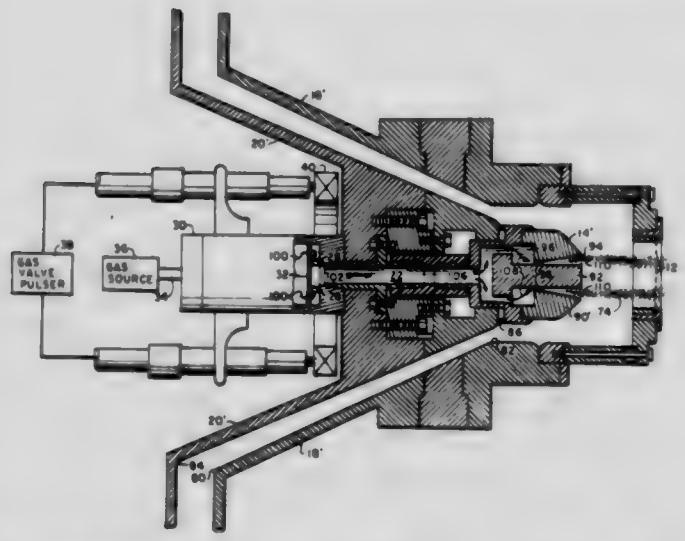
means for connecting said means for generating a high voltage pulse of electrical current to said anode and said cathode comprising

a cathode feed conductor having one end connected to said cathode and the other end connected to one side of said

means for generating a high voltage pulse of electrical current,

said cathode feed conductor comprising a generally radially planar first conductor having an outer diameter connected to one side of said means for generating a high voltage pulse and an inner diameter connected to said cathode,

an anode feed conductor having one end connected to said anode and the other end connected to the other side of said means for generating a high voltage pulse of electrical current



said anode feed conductor comprising a generally radially planar second conductor having an outer diameter connected to the other side of said means for generating a high voltage pulse of electrical current and an inner diameter connected to said anode,

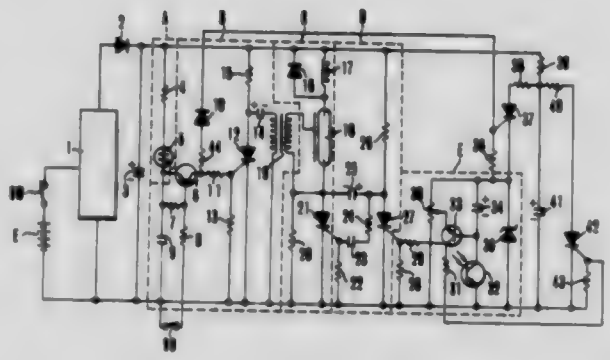
said generally radially planar first conductor being spaced apart from said generally radially planar second conductor.

4,494,044

COMPUTER TYPE ELECTRONIC FLASH DEVICE

Hiroyuki Katsuka, Saitama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 8, 1982, Ser. No. 386,231
Claims priority, application Japan, Jun. 18, 1981, 56-94443
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—151 1 Claim



1. A computer type electronic flash device comprising:

(a) flash illuminating means for producing light energy;

(b) light measuring means for receiving the light of the flash illuminating means as reflected by an object to be photographed, and for producing a flash terminating signal;

(c) first control means operative in response to the flash terminating signal to render said flash illuminating means inoperative;

(d) a power source having a charged capacitor, the capacitor supplying electric power to the light measuring means concurrently with the commencement of the operation of said flash illuminating means; and

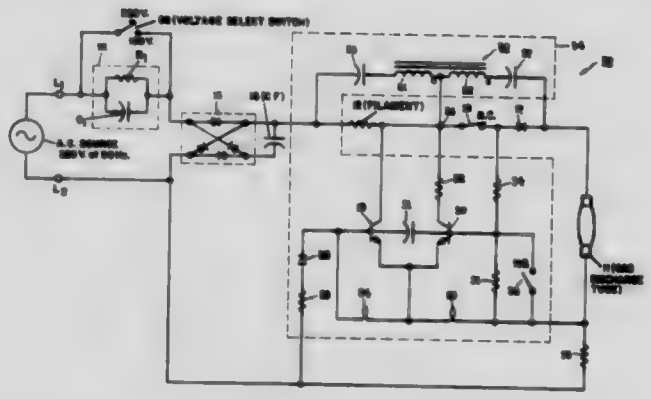
(e) second control means for rendering said power source inoperative in response to said flash terminating signal, the second control means having a resistor connected in parallel to the capacitor in response to said flash terminating signal.

4,494,045

BALLAST CIRCUIT FOR A 220-VOLT IMPROVED LIGHTING UNIT

John M. Davenport, Lyndhurst, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 26, 1983, Ser. No. 488,849
Int. Cl.³ H05B *41/16, 41/24*
U.S. Cl. 315—247 4 Claims



1. In a lighting unit having a gas discharge tube as the main light source, a filament as a supplementary light source and in serial arrangement with said discharge tube and a starting circuit for the gas discharge tube, a resistive ballast circuit for the gas discharge tube being adapted to accept across its first and second input terminals an applied alternating current (A.C.) voltage having a typical value of 220 volts at a frequency of 50 Hz, said ballast circuit having an output stage comprised of a parallel arrangement of a full-wave rectifier and a filter capacitor both for developing a D.C. operating voltage for the gas discharge tube, said full-wave rectifier having two input nodes one of which is connected to one of said input terminals and two output nodes connected across said output stage, said output stage being capable of accepting across its first and second output terminal said arrangement of said filament and said gas discharge tube, said ballast circuit further comprising a resistor-capacitor network at its input stage connected between one of the input terminals and the other input node of the full-wave rectifier;

said resistor-capacitor network having values selected so as to reduce the A.C. voltage by a factor in the range of about 2 to about 1 in the development of said D.C. operating voltage of said gas discharge tube.

4,494,046

SINGLE CATHODE BEAM MODE FLUORESCENT LAMP FOR DC USE

A. Bowman Budinger, Westford; Wojciech W. Byszewski, Arlington, and Joseph M. Proud, Wellesley Hills, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Continuation of Ser. No. 337,047, Jan. 4, 1982,. This application Jan. 20, 1984, Ser. No. 572,600
Int. Cl.³ H05B *41/16, 41/24*
U.S. Cl. 315—260 6 Claims

1. A single electrode beam mode fluorescent lamp comprising:

a light transmitting envelope enclosing a fill material which emits ultraviolet radiation upon excitation;

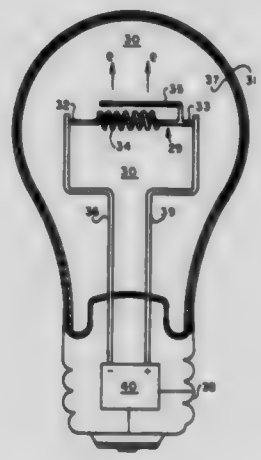
a phosphor coating, which emits visible light upon absorption of ultraviolet radiation, on an inner surface of said envelope;

a single electrode having first and second ends located within said envelope, said electrode including a thermionic cathode and an integral anode;

means for coupling a D.C. voltage between said first and second ends of said electrode with said first end electrically positive with respect to said second end;

said thermionic cathode for emitting electrons in response to said D.C. voltage;

said integral anode for accelerating electrons and forming an electron beam, said anode including a linear conductive wire segment and being L-shaped and connected to said first end of said electrode and extending in spaced relation to said cathode;



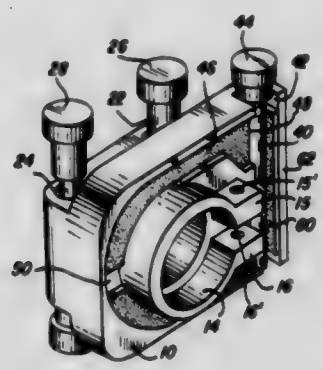
a drift region within said envelope through which said electron beam drifts after passing said anode, so that the electrons in said drift region collide with the atoms of said fill material, thereby causing excitation of a portion of said fill material atoms and emission of ultraviolet radiation and causing ionization of another portion of said fill material atoms thereby yielding secondary electrons, said secondary electrons causing emission of additional ultraviolet radiation.

4,494,047

CONVERGENCE DEVICE FOR COLOR-PRODUCING CATHODE RAY TUBE

Walter A. Schwalm, 745 Barberry La., Lake Forest, Ill. 60045

Filed Jun. 10, 1982, Ser. No. 387,174
Int. Cl.³ H01J 29/70, 29/76
U.S. Cl. 315—368 10 Claims



1. A purity adjustment device for a color television tube which includes an electron beam gun for developing three electron beams disposed on the screen in linear array, which comprises:

a base member;

means for connecting said base member to the color television tube;

a manually-adjustable rod formed of magnetic material carried by said base member, said manually-adjustable rod being rotatable and including a plurality of pole pairs disposed along it;

a pair of pole pieces extending from said manually-adjustable rod and curving in a manner to provide substantially straight magnetic lines of force across said color television tube, said pole pieces each having one end which is adjacent to said manually-adjustable rod and each is adapted to extend from said one end past the neck of the color television tube and to curve toward the other pole piece but being spaced from the other pole piece; and

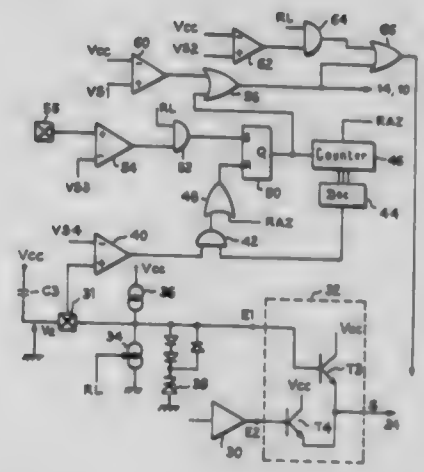
a third pole piece abutting said manually-adjustable rod and sandwiching said manually-adjustable rod between said third pole piece and said first and second pole pieces.

4,494,048

SCANNING CONTROL CIRCUIT FOR A TELEVISION RECEIVER, WITH GRADUAL STARTUP

Michel Van Den Driessche, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 26, 1982, Ser. No. 444,799
Claims priority, application France, Nov. 27, 1981, 81 22271
Int. Cl.³ H01J 29/70, 29/76
U.S. Cl. 315—408 5 Claims



1. In a television receiver comprising a switched mode power supply and a scanning control circuit, said power supply circuit comprising a power switching element (T2) and a pulse-width modulator (24, 26) having an input for receiving a modulating voltage and an output for providing pulses of modulated width, wherein said scanning control circuit comprises, in view of ensuring gradual start-up of scanning:

supply terminals for receiving a low voltage supply (Vcc),

a capacitor (C3) having a first plate and a second plate which are connected to said supply terminals in such a way that upon starting up of the receiver, said first plate will follow the rising potential of one supply terminal,

a voltage limiter (38) to limit the voltage on said capacitor first plate to a predetermined value Vz,

an analogic voltage transmission device (32) having a first input connected to said capacitor first plate, a second input for receiving a control voltage which may vary between predetermined limits, and an output which is connected to the input of said pulse width modulator, said voltage transmission device being designed so that its output will transmit either the voltage on its first input or the voltage on its second input, depending on the relative magnitude of these voltages, the transmitted voltage being the one which corresponds to the narrower pulse width at the output of the pulse width modulator,

the value of Vz being such that it corresponds to a pulse width narrower than the minimum pulse width that may be produced by the modulator when said modulator receives the said control voltage from the transmission device,

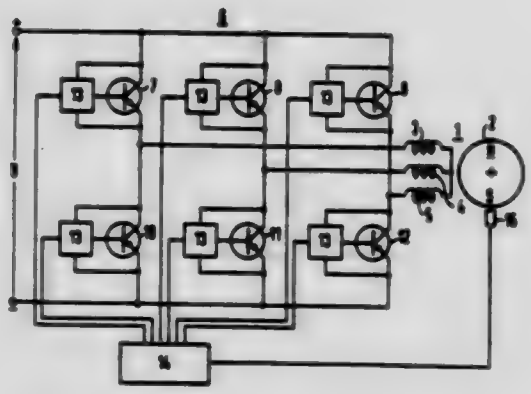
means (34) for progressively altering the electrical charge of said capacitor so as to vary the potential of its first plate in a sense corresponding to an increase of the pulse width defined by this voltage.

4,494,049

COMMUTATING DEVICE FOR AN ELECTRIC MOTOR SUPPLIED FROM A D-C VOLTAGE SOURCE

Wilhelm Leitgeb, Bad Neustadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 425,907
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1981, 3142142
Int. Cl.³ H02K 23/00
U.S. Cl. 318—138
1 Claim



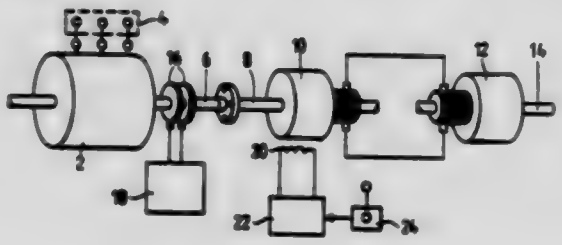
1. A commutating device for an electric motor comprising:
(a) a plurality of transistor switches each having two switching terminals and a control terminal arranged in a bridge circuit;
(b) means for detecting rotor position and developing an output signal corresponding thereto;
(c) means for generating from said outputs signal a control signal for each transistor switch; and
(d) a control circuit associated with each transistor coupled across said two switching terminals to obtain therefrom a control voltage, said control circuit receiving one of said control signals and responsive thereto to couple said control voltage to the control terminals of said transistor, said control circuit comprising:
(i) a voltage regulator for regulating the control voltage obtained from across said terminals;
(ii) a capacitor for storing said voltage;
and
(iii) a further transistor for coupling said capacitor voltage to said control terminals in response to a control signal.

4,494,050

SYSTEM FOR SUPRESSION OF UNDERDAMPED OSCILLATIONS IN AC POWER DRAWN BY SYNCHRONOUS MOTORS DRIVING WARD-LEONARD GENERATORS

Noel R. Godfrey, Gordon; Larry S. Parkes, Engadine, and Richard H. Treacy, Wollstonecraft, all of Australia, assignors to The Broken Hill Proprietary Company Limited, Australia

Filed Oct. 11, 1983, Ser. No. 540,617
Claims priority, application Australia, Oct. 10, 1982, PF6343/82
Int. Cl.³ H02P 5/24
U.S. Cl. 318—158
10 Claims



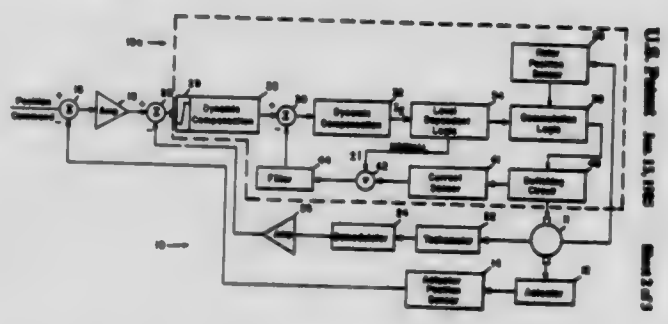
1. A method of reducing the amplitude of oscillations in input electrical power to a drive system, the system including a synchronous motor the output shaft of which is coupled to drive a dc generator which is in turn coupled electrically to a dc motor, the output shaft of which is coupled to a mechanical load, said generator including a generator field exciter, said method including the steps of generating a control signal for controlling said generator field exciter, at least one component of the control signal having been derived from the dc motor and related to its instantaneous power and is passed through a notch filter the frequency response of which generally provides reciprocal compensation for the frequency response of the ratio of input electrical power to the synchronous motor to the mechanical power on its output shaft, and applying the control signal to said exciter to thereby reduce oscillations in input electrical power to the synchronous motor.

4,494,051

MULTI-QUADRANT BRUSHLESS DC MOTOR DRIVE

David A. Bailey, Torrance, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Mar. 5, 1982, Ser. No. 354,963
Int. Cl.³ H02K 29/02
U.S. Cl. 318—254
37 Claims



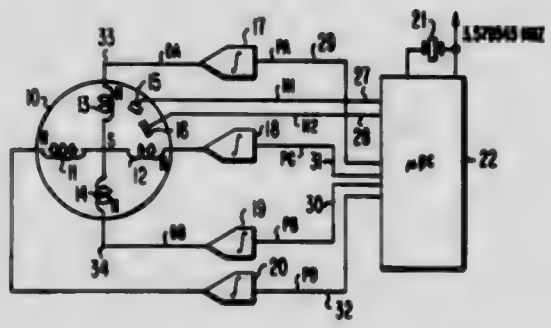
1. Apparatus for controlling the current and torque of a brushless DC motor comprising:
a brushless DC motor having a plurality of windings;
a plurality of solid state power switches respectively connected to said windings for selectively applying power to develop current therein;
means for determining the states and order of switching between states of said solid state switches in response to a current error signal;
means for deriving a current feedback signal indicative of current in the motor windings; and
means for combining the current feedback signal with an applied current command signal to develop the error signal.

4,494,052

DC MOTOR SERVO SYSTEM

Kevin C. Kelleher, Palm Harbor, Fla.; Ned J. Kiser, and Todd J. Christopher, both of Indianapolis, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 5, 1982, Ser. No. 405,441
Int. Cl.³ H02P 5/06
U.S. Cl. 318—254
12 Claims



1. A system for controlling a brushless DC motor of the type having two or more stator coils which are successively energized to impart rotation to a rotor including a permanent

magnet having a plurality of alternating North and South poles comprising:

first and second sensor elements mounted in fixed relation to the stator coils for providing first and second bilevel signals representing the relative position of the rotor magnet poles with respect to the stator coils, said bilevel signals having a predetermined phase relationship;

a reference signal having a frequency to which the rotation rate of said rotor is to be synchronized;

control signal generating means responsive to said first and second bilevel signals for generating pulsed control signals the phases of which are determined by the state of said first and second bilevel signals and the durations of which are substantially determined by successive transitions of said bilevel signals when the system is operating in a spin up mode, and being further responsive to said reference signal for synchronizing motor speed thereto in a locked speed mode, said control signal generating means generating an error signal related to the difference between rotor frequency and said reference signal frequency by performing successive time measurements between a prescribed transition of said first bilevel signal and a prescribed transition of said reference frequency, and processing said error signal in accordance with the function

$$H(z) = \frac{(1 - AZ^{-1})(1 - BZ^{-1})}{(1 - CZ^{-1})(1 - DZ^{-1})}$$

where Z connotes the conventional Z transform and the factors A, B, C, and D are constants which are positive real or zero, the magnitude of the processed error signal determining the phase relationship of said control signals in the locked speed mode and determining the duration of said pulsed control signals by varying the leading edges thereof relative to the trailing edges of said control signals which are determined responsive to state transitions of said first and second bilevel signals in said locked speed mode; and

driver circuits responsive to said pulsed control signals for energizing respective ones of said stator coils, said driver circuits designed to provide stator coil drive current of either polarity, the duration of which is proportional to the duration of said control signals.

4,494,053

WINDING VOLTAGE BALANCING CIRCUIT FOR BRUSHLESS DC MOTOR

Makoto Gotou, Nishinomiya, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 29, 1982, Ser. No. 445,174

Claims priority, application Japan, Nov. 27, 1981, 56-191392; Nov. 27, 1981, 56-191393; Nov. 28, 1981, 56-191582; Nov. 28, 1981, 56-191583

Int. Cl.³ H02K *29/00*

U.S. Cl. 318—254 12 Claims

1. A brushless DC motor comprising:

a field flux generating means having a plurality of N and S poles;

multiphase coils for generating a force by the interaction between a current flowing through said multiphase coils and fluxes of said field flux generating means;

a DC voltage sourcr for supplying a current to said multiphase coils;

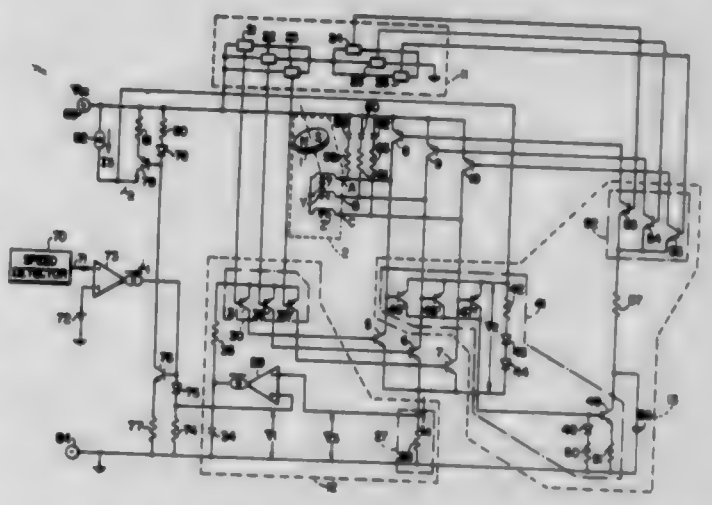
a plurality of first output transistors;

a plurality of second output transistors, each of the current-input terminals of said multiphase coils being connected to a corresponding one of said plurality of first output transistors and to a corresponding one of said plurality of second output transistors so as to supply said multiphase coils with a current by activating at least one of said first output transistors and at least one of said second output transistors at the same time;

a position detecting means for providing a set of output signals corresponding to the relative position between said filed flux generating means and said multiphase coils;

a first distributing means for selectively activating said plurality of first output transistors corresponding to the output signals of said position detecting means so as to supply said multiphase coils with a current according to a command signal; and

a second distributing means for selectively activating said



plurality of second output transistors corresponding to the output signals of said position detecting means,

wherein said second distributing means has a voltage drop controlling means for detecting voltage drops across said first output transistors in each activated period and for controlling output currents of said second output transistors so as to maintain the voltage drops across said first output transistors in each activated period at a predetermined value.

4,494,054

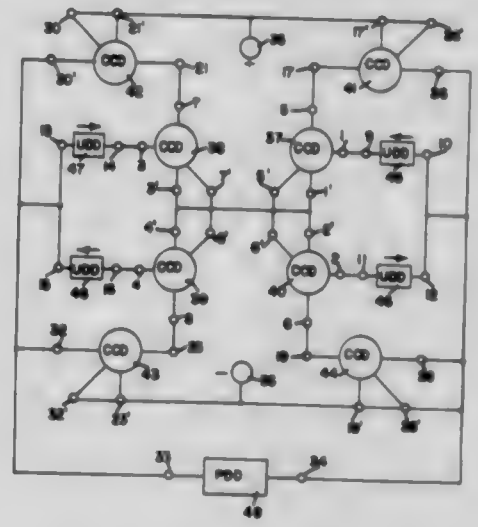
ELECTRIC POWER DELIVERY SYSTEM AND METHOD

Gerald N. Pellegrini, 7 Ventura Rd., Worcester, Mass. 01604

Filed Apr. 13, 1983, Ser. No. 484,178

Int. Cl.³ H02P *5/16*

U.S. Cl. 318—254 48 Claims



1. A method for supplying and controlling the delivery of electric power to an electric power converting device, said device comprising input terminals of differing electrical potentials, and said device converting electric power to some other form of useful power through the agency of an electrical system, said system comprising an electrical apparatus and an electrical power source and sink, said method comprising the acts of;

(a) controlling the source electric current which flows from said source to a higher electrical potential input terminal, where said higher terminal is one of said input terminals,

by the sole agency of the potential of same said higher terminal,

or

(b) controlling the sink electric current which flows from a lower electrical potential input terminal to said sink, where said lower terminal is one of said input terminals, by the sole agency of the potential of same said lower terminal,

or

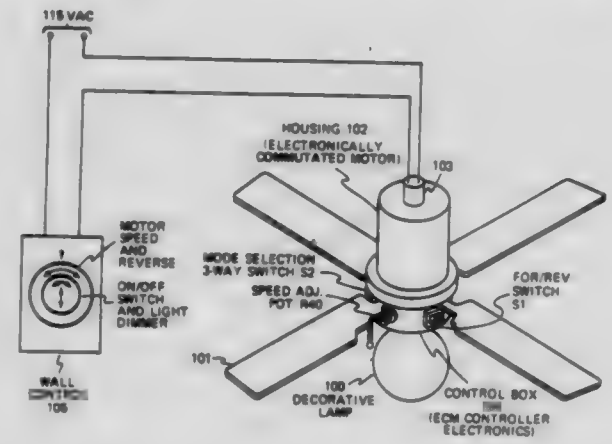
(c) controlling the electric current which flows from said source to said higher terminal then through said device to said lower terminal then to said sink, by the sole agency of the potentials of same said higher and said lower terminals.

4,494,055

CONTROL CIRCUIT FOR AN ELECTRONICALLY COMMUTATED MOTOR INCLUDING REVERSING; METHOD OF OPERATING AN ECM INCLUDING REVERSING

Ricky F. Bitting, Raleigh, N.C.; William Pell, North Syracuse, and Thomas A. Brown, Fulton, both of N.Y., assignors to General Electric Company, Fort Wayne, Ind.

Filed Jun. 9, 1983, Ser. No. 502,594
Int. Cl.[3] H02P *6/02*
U.S. Cl. 318—254
25 Claims



1. In a motor control circuit for an electronically commutated reversible motor adapted to be energized from a power source, said motor having a multistage winding assembly, and a magnetic assembly, the two arranged for mutual relative rotation, said motor in a given state of a multistate energization sequence having an unenergized winding stage in which an induced back emf is integrated over time to determine the instant at which the mutual relative angular position has been attained suitable for commutation to the next state of sequence, and wherein in said given state at least one other winding stage is energized in the appropriate sense to cause relative rotation, the combination comprising

power input terminals for connection to a power supply suitable for motor operation;

first adjustable voltage reduction means for serially connecting a motor via said input terminals to the power supply to provide a variable output voltage suitable for variable speed or torque operation;

means for producing a substantially smooth control voltage dependent on said variable output voltage, said control voltage, upon passing through an intermediate value corresponding to a useful limit of said adjustable means, continuing monotonically toward a final value, and

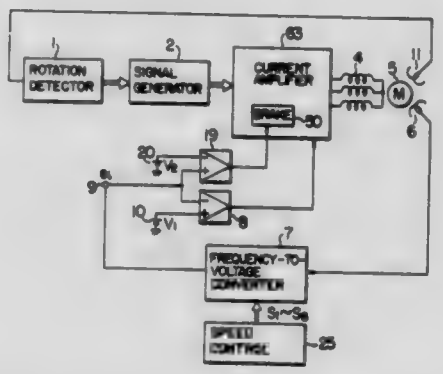
means responsive to a value of said control voltage between said intermediate and final values for generating a signal for changing the direction of motor rotation.

4,494,056

MOTOR DRIVING CIRCUIT

Hideo Nishijima; Katsumi Sera; Isao Fukushima, and Yasunori Kobori, all of Katsuta, Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Engineering, Ltd., both of Tokyo, Japan

Filed Mar. 30, 1983, Ser. No. 480,372
Claims priority, application Japan, Mar. 31, 1982, 57-51345
Int. Cl.[3] H02P *3/20*
U.S. Cl. 318—269
12 Claims



1. A motor driving circuit with a decelerating function comprising:

a group of motor driving coils;

position detecting means for detecting the rotational position of a motor;

signal generating means responsive to an output of said position detecting means for generating a motor driving signal;

motor driving means for changing over a first and a second group of switching elements provided between said group of motor driving coils and a first electric source potential and between said group of motor driving coils and a second electric source potential, respectively, so as to supply said group of motor driving coils with a current in alternating directions;

speed control means responsive to a speed setting command for providing a speed control signal; and

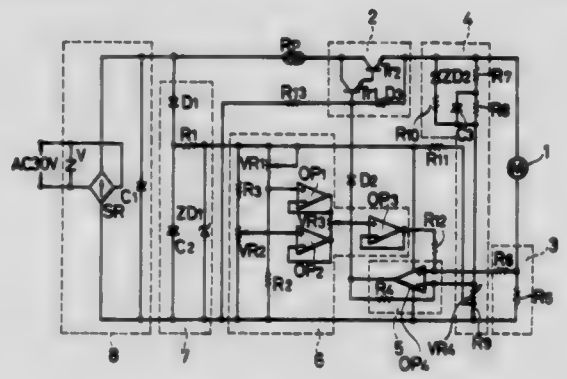
braking control means responsive to said speed control signal for making conductive all the switching elements of selected one of said first and second groups so as to short-circuit said group of motor driving coils.

4,494,057

SPEED CONTROL SYSTEM FOR SMALL MEDICAL MOTORS

Toshihiro Hotta, Kyoto, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Dec. 2, 1982, Ser. No. 446,318
Claims priority, application Japan, Dec. 5, 1981, 56-181421[U]
Int. Cl.[3] G05B *5/00*
U.S. Cl. 318—317
6 Claims



1. A speed control system for a small medical motor used for

dental handpieces and medical apparatuses which is responsive to an applied motor drive voltage and current from a direct current power supply, comprising:

a drive voltage regulator circuit connected in series with said motor;

a current detection circuit for generating a current detection signal in accordance with motor current;

a voltage detection circuit for generating a voltage detection signal in accordance with the motor voltage coupled in parallel to said motor and which comprises:

a dividing means for dividing a portion of the drive voltage;

a speed-up limiting circuit having a gradually increasing speed-load characteristic connected in series with said dividing means and comprising:

a zener diode;

at least two division resistors connected in parallel to said zenor diode; and

a capacitor connected in parallel to one of said division resistors; and

a speed control circuit which controls the drive voltage regulation circuit in accordance with the voltage and current detection signals of both detection circuits, said speed control circuit having positive and negative feedback inputs with said voltage detection signal coupled to said negative feedback input and said current detection signal coupled to said positive feedback input;

whereby the current detection signal of said current detection circuit is positive-fedback and the voltage detection signal of said voltage detection circuit is negative-fedback to said speed control circuit to keep motor speed at a gradually increasing speed-load characteristic set by said speed-up limiting circuit.

4,494,058

MOTOR CONTROL FOR DATA DISC ROTATING SYSTEMS

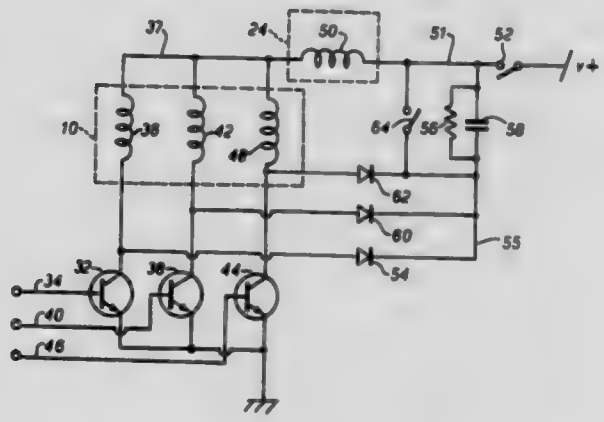
Eugenio Berti, San Jose, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 21, 1982, Ser. No. 451,669

Claims priority, application United Kingdom, Dec. 31, 1981, 8139206

Int. Cl.³ H02K *7/102*

U.S. Cl. 318—372 **12 Claims**



1. An apparatus for rotating an informational data storage disc in a disc data store wherein a motor has a plurality of stator windings, each having a first end coupled to a common point, in turn coupled to a power supply point via a choke and each having a second end selectably couplable to a power supply return through a corresponding plurality of selectably operable stator switches, said apparatus comprising:

energy absorbing circuit means, coupled intermediately between said second ends of said windings and said power supply point, for absorbing inductive recoil energy from said windings; and

ganged double switch means, including a first section operable when said double switch means is in a first position for coupling said power supply point to a power supply rail for the operation of said motor and a second section operable when said double switch means is in a second position for shunting said energy absorbing circuit means to thereby pass dynamo currents, generated in said windings in consequence of the rotation of said motor, through said choke to act as a brake upon the rotation of said motor.

4,494,059

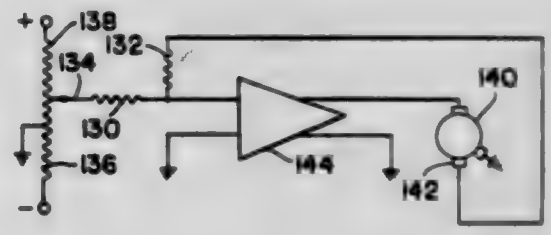
STRUCTURE FOR AND METHOD OF SURFACE CONDITIONING SENSING AND INDICATING AND MOTOR SPEED CONTROL

Robert W. Kearns, 9725 Lookout Pl., Gaithersburg, Md. 20760

Continuation of Ser. No. 957,775, Nov. 6, 1978, which is a continuation of Ser. No. 814,000, Jul. 8, 1977, which is a continuation of Ser. No. 565,478, Apr. 7, 1975, which is a continuation of Ser. No. 340,557, Mar. 12, 1973, Pat. No. 3,876,919, which is a division of Ser. No. 487,795, Jun. 8, 1970, Pat. No. 3,721,115, which is a continuation of Ser. No. 666,703, Sep. 11, 1967, abandoned. This application Jan. 9, 1980, Ser. No. 110,714

Int. Cl.³ H02P *1/04*

U.S. Cl. 318—443 **12 Claims**



1. A motor-signal generator system comprising a direct current motor including a commutator and having three brushes contacting the commutator, an energy source, a first electrically conductive circuit means connected to two of said three brushes for energizing said motor-signal generator and a second electrically conductive circuit means connected to the third and one other of said three brushes for deriving a signal generated within the motor-signal generator when the motor is rotationally displaced, said signal having an alternating current component, said second electrically conductive circuit means including means for obtaining the alternating current component of said signal.

4,494,060

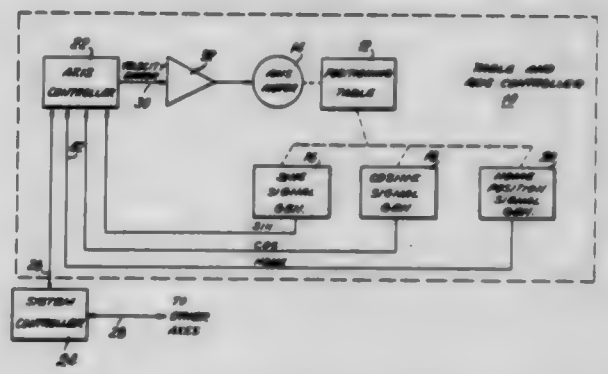
AXIS CONTROLLER FOR ROBOTIC ACTUATOR

Anwar Chitayat, Northport; Robert C. Goldstein, Patchogue, and Mustansir A. Faizullabhoy, Stony Brook, all of N.Y., assignors to Anorad Corporation, Hauppauge, N.Y.

Filed Mar. 2, 1983, Ser. No. 471,237

Int. Cl.³ G05B *19/42*

U.S. Cl. 318—568 **18 Claims**



1. A position processor for a robotic controller of the type employing first and second sensed position signals having a phase relationship, said phase relationship containing informa-

tion about a position of an object within a cycle of position, said object being movable over a plurality of cycles of position, comprising:

means for comparing phases of said first and second sensed position signals to produce a reported position within a cycle of position;

means for producing a predicted position of said object including full cycles of position and a position within a cycle of position;

means for differencing said predicted position within a cycle of position and said reported position to produce a position error signal; and

means responsive to said position error signal for accumulating a smoothed position signal representing said position of said object.

4,494,061

CONTROL APPARATUS

Arthur Kaye, Preston, England, assignor to British Aerospace Public Limited Company, London, England

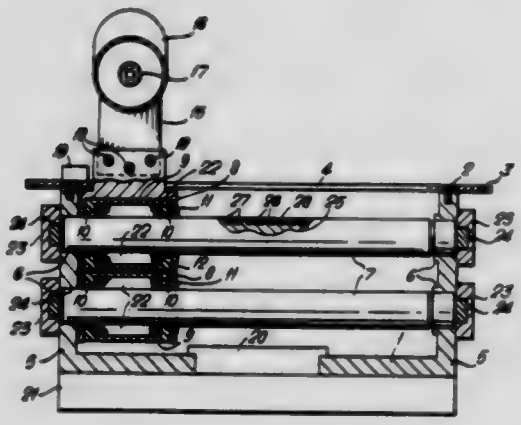
Continuation of Ser. No. 242,564, Mar. 11, 1981, abandoned. This application Jun. 27, 1984, Ser. No. 625,187

Claims priority, application United Kingdom, Mar. 15, 1980, 8008846; Sep. 26, 1980, 8031102

Int. Cl.³ G05B 11/01

U.S. Cl. 318—628

13 Claims



1. A control device for enabling an operator to control associated apparatus to which, in use, the control device is connected, the control device comprising:

a fixed support member;

a control member supported by the support member and movable with respect thereto by said operator;

output means connected to the control member and operable for transmitting to said associated apparatus control signals indicative of the position of said control member relative to the support member;

an electrical stepper motor of which the stator part is connected to said support member and the mover part is connected to said control member; and

motor energization means which is connected to said stepper motor and which is operable for energizing said motor to generate, at least while said control member is at one or more discrete positions in its range of movement relative to the support member, an attractive force between the stator and mover parts of the motor tending to resist manual movement of the control member.

4,494,062

CIRCUIT ASSEMBLY FOR CHARGING AN ACCUMULATION BATTERY WITH PULSATING DIRECT CURRENT

Kurt Härri, Oberkulm, Switzerland, assignor to Gebrüder Zehnder A.G., Grüniehen, Switzerland

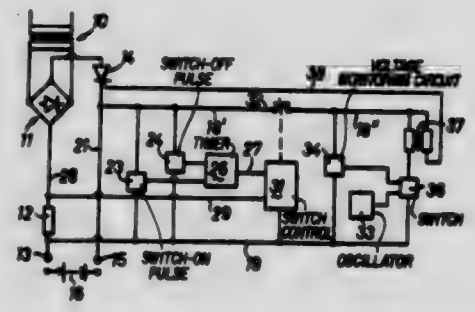
Filed Jun. 4, 1982, Ser. No. 384,948

Claims priority, application Switzerland, Jun. 17, 1981, 3976/81

Int. Cl.³ H02J 7/04

U.S. Cl. 320—40

3 Claims



1. A device for charging an accumulator type battery comprising:

a current source for providing a charging current;

terminal means for connecting said device to said battery;

a controllable current valve means connected between said current source and said battery for controlling said charging current to said battery;

a series resistor connected to said current source for providing a reference voltage proportional to said charging current;

a control pulse generating means connected to said terminal means and said controllable current valve means for generating control pulses to said controllable valve means in relationship to the voltage of said battery;

electrically actuated switch means connected to said control pulse generating means for electrically connecting and disconnecting said control pulse generating means and said controllable current valve means; and

energizing means connected to said electrically actuated switch means including presettable timer means for supplying a deenergizing signal to said electrically actuated switch at a preset time after a predetermined delay, said delay resets upon said charging current generating a predetermined reference voltage in said series resistor.

4,494,063

SATELLITE DUAL BUS POWER SYSTEM

Patrick J. Callen, Yardley, Pa., and Philip R. Pierce, Point Pleasant Beach, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 23, 1982, Ser. No. 452,773

Int. Cl.³ H02J 7/00

U.S. Cl. 320—56

5 Claims

4. A satellite power distribution system, comprising, in combination:

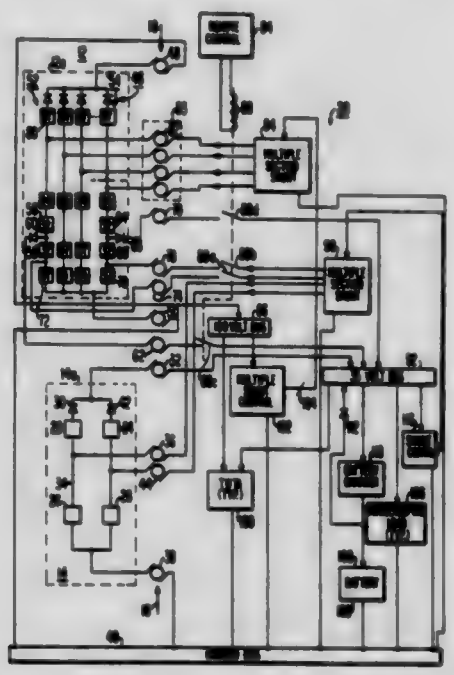
first and second means, each for producing electrical energy of first and second higher and lower values respectively in response to the application of solar energy thereto, which solar energy is not always present;

first and second power distribution means including separate first and second power distribution busses coupled respectively to said first and second means for producing electrical energy;

means for selectively coupling said first electrical energy producing means to said second power distribution means, said second power distribution means, when so coupled receiving electrical energy from said first electrical energy producing means; and

electrical energy storage means coupled to said second power distribution bus for receiving, when said solar

energy is present, electrical energy from said second electrical energy producing means, and, when coupled to said first electrical energy producing means, for receiving



energy from said first electrical energy producing means and for providing power to only said second distribution bus when said solar energy is not present.

4,494,064

DIRECT CURRENT INRUSH LIMITING CIRCUIT

John C. Harkness, 2006 Wellesley, St. Paul, Minn. 55105, assignor to Sperry Corporation, New York, N.Y.

Filed Oct. 25, 1982, Ser. No. 436,550
Int. Cl.³ G05F *1/44*
U.S. Cl. 323—277 8 Claims

1. A circuit for controlling the inrush of direct current from a supply voltage upon connection to an uncharged capacitive load, said circuit comprising:

series current regulating means for, responsively to a control signal, regulating the direct current flow from said supply voltage to said capacitive load;

series current sensing means at the connection of said supply voltage to said capacitive load for developing a sense signal proportional to the direct current flow from said supply voltage to said capacitive load;

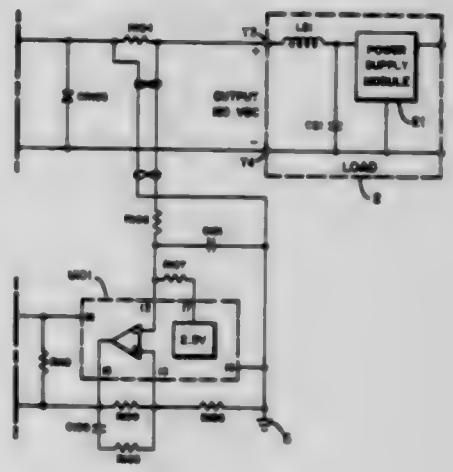
feedback loop control means for, resonsively to said sense signal, developing said control signal so as to cause said series current regulating means to cyclically oscillate from conduction to non-conduction of said direct current flow until such time as said capacitive load is substantially fully charged whereupon said control signal is developed so as to cause said series current regulating means to conduct a normal, quiescent, current flow;

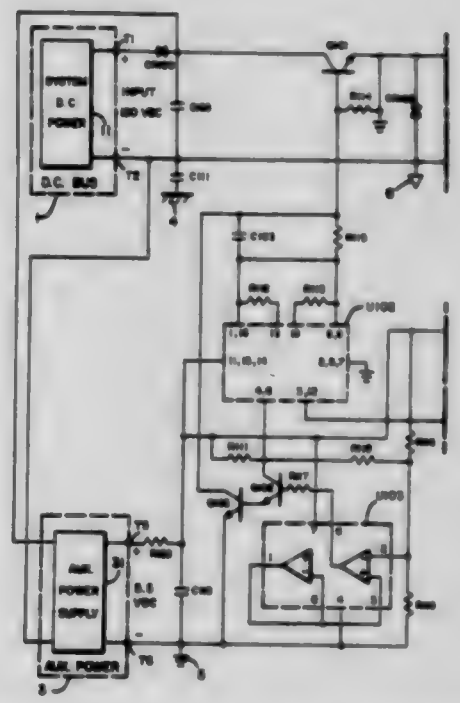
freewheeling diode means, in parallel with said capacitive load, for and so oriented for, conducting current into said load when said series current regulating means are non-conducting of said direct current flow from said supply voltage to said capacitive load while not conducting any appreciable current when said normal, quiescent, current flow is obtained;

means for ensuring that when the circuit is supplied with insufficient voltage for reliable correct operation then said series current regulating means will be maintained non-conductive of said direct current flow from said supply voltage to said capacitive load; and

wherein said capacitive load is possessed of at least such small series inductance as will preclude that direct current conducted by said series current regulating means from said supply voltage to said capacitive load should increase so essentially instantaneously that said feedback loop control means responsive to said series current sensing means should not have sufficient time to respond for control of said series current regulating means, and such as will ensure that some current should flow to said load through said freewheeling diode means when said series current regulating means are non-conducting;

whereby said direct current from said voltage supply to said capacitive load does flow alternately through said series





current regulating means and said freewheeling diode means in charging said capacitive load;

whereby said direct current inrush upon connection of a supply voltage to an uncharged capacitive load is limited;

whereby if said circuit is unpowered or underpowered its operation is to isolate said capacitive load from said supply voltage.

4,494,065

ELECTRIC CAPACITY MEASUREMENT OF ERRATICALLY SHORTED CAPACITORS

Harvey S. Benson, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed Nov. 8, 1982, Ser. No. 440,007
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—61 R 15 Claims

11. A method for determining the average clearance between concentric cylindrical components having an inner cylindrical component and an outer cylindrical component includes the steps of:

placing said inner cylindrical component into said outer cylindrical component, said inner and outer cylindrical components having a close contiguous relationship;

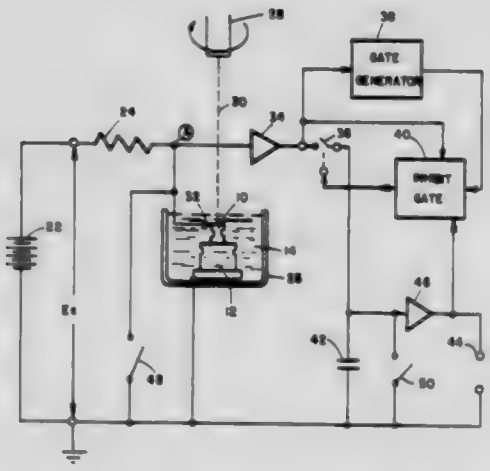
inserting between said inner cylindrical component and said

outer cylindrical component a dielectric fluid of known permittivity;

applying a known current between said inner cylindrical component and said outer cylindrical component;

moving said inner cylindrical component with respect to said outer cylindrical component to permit intermittent interruption of electrical contact between said inner and outer cylindrical components and thereby permitting voltage charging between said inner cylindrical component and said outer cylindrical component;

communicating said voltage charge magnitude to a voltage storage means;



storing of said voltage charge magnitude in said voltage storage means being stopped upon either (1) reestablishing said electrical contact, or (2) passage of a predetermined time interval;

repeating said preceding steps to achieve a peak charge voltage magnitude by comparing each voltage charge magnitude with said magnitude in said voltage storage means; and

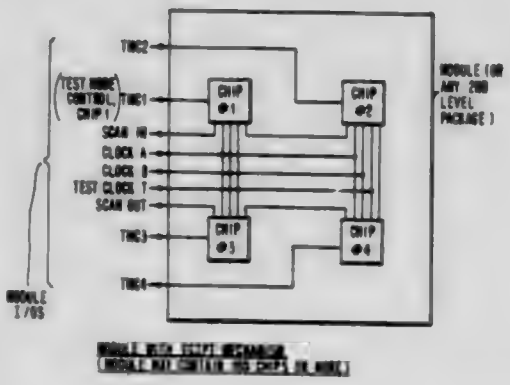
calculating said average clearance from said peak charge voltage magnitude.

4,494,066

METHOD OF ELECTRICALLY TESTING A PACKAGING STRUCTURE HAVING N INTERCONNECTED INTEGRATED CIRCUIT CHIPS

Prabhakar Goel, and Maurice T. McMahon, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 280,050, Jul. 2, 1981, Pat. No. 4,441,075.
This application Jul. 29, 1983, Ser. No. 518,590
Int. Cl.³ G01R *31/28*; G06F *11/00*
U.S. Cl. 324—73 R 2 Claims



1. A method for performing an electrical test of a packaging structure containing n interconnected integrated circuit chips, said method being accomplished while said n interconnected chips remain interconnected and without the use of a mechanical probe structure, each of said n integrated circuit chips including test circuit means, said test circuit means including scan-in scan-out circuit means, said scan-in scan-out circuit means of each of said n interconnected integrated circuit chips including shift register latch circuit means, said test circuit means of each of said n integrated circuit chips further including control circuit means, said control circuit means cooperating with said scan-in scan-out circuit means of each of said n interconnected integrated circuit chips, said control circuit means being controllable to place all but any selected one of said n interconnected integrated circuit chips in a "test" mode, said selected one of said n interconnected integrated circuit chips being a chip under test, said packaging structures and said method being characterized in that electrical contact to said packaging structure and each of said n interconnected integrated circuit chips is only provided through a plurality of accessible packaging contacts, said packaging structure including wiring for interconnecting said n interconnected integrated circuit chips one with another and said accessible packaging contacts, said wiring of said packaging structure including wiring for connecting said scan-in scan-out circuit means of said test circuit means of each of said n integrated circuit chips into a single packaging structure scan-in scan-out circuit means, said method including in the order recited the following steps:

(a) electrically contacting only said plurality of accessible packaging contacts determine the electrical integrity of the packaging structure scan-in scan-out circuit means wherein the term electrical integrity is defined as determining whether or not said packaging structure scan-in scan-out circuit means is electrically defective;

(b) electrically contacting only said plurality of accessible packaging contacts determine the electrical integrity of said packaging structure wiring wherein the term electrical integrity is defined as determining whether or not said packaging structure wiring is electrically defective; and

(c) electrically contacting only said plurality of accessible packaging contacts determine the electrical integrity of any selected one of said n interconnected integrated circuit chips, wherein step (c) of said method includes the following sub-steps in the order recited,

(1) placing a binary value in said packaging structure scan-in scan-out circuit means,

(2) placing each chip of said n interconnected integrated circuit chips, except said any selected one of said n integrated circuit chips, in a "test mode", whereby said selected one of said n inteconnected integrated cuircut chips is a "chip under test (CUT)",

(3) employing at least the binary value placed in said packaging structure scan-in scan-out circuit means impress a bianry value on the integrated circuit chip under test, and

(4) employing at least the packaging structure scan-in scan-out circuit means obtain and examine a binary output from said chip under test to determine the electrical integrity of said chip under test, wherein the term electrical integrity is defined as determining whether or not said integrated circuit chip under test is electrically defective.

4,494,067

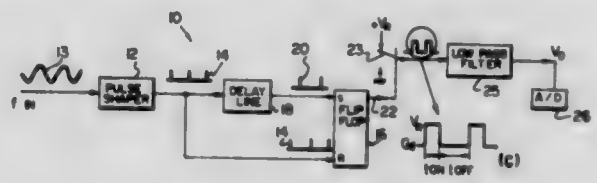
FAST FREQUENCY MEASURING SYSTEM

Andrzej Baranczewski, Gloucester, Canada, assignor to Canadian Patents & Development Limited, Ottawa, Canada

Filed Sep. 28, 1982, Ser. No. 425,919
Claims priority, application Canada, Jan. 18, 1982, 394,358
Int. Cl.³ G01R *23/14*
U.S. Cl. 324—79 D 10 Claims

1. A frequency measuring system comprising a frequency counter for producing a coarse digital reading of an input signal frequency, means for producing a digital vernier reading of said input signal frequency, and means for combining the coarse reading and vernier reading to produce a final frequency reading, said means for producing a digital vernier reading comprising a frequency to voltage converter having an input terminal for receiving said input signal frequency, and

means for converting said input signal to first and second trains of pulses, said second train of pulses being delayed with respect to said first train of pulses, said first and second trains of pulses being applied to first and second inputs of a phase detector, said phase detector having an output voltage proportional to the phase difference between said first and second trains of pulses and varying with changes in the frequency of the input signal, said system further comprising analog means for producing a time average of said output voltage and an analog to



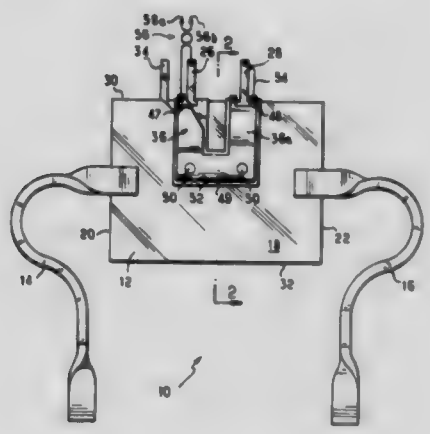
digital converter for converting said time average of said output voltage to a digital reading, wherein said converter has an output which repeats every ΔF of the frequency of the input signal, said system comprising a further frequency to voltage converter for producing a second output displaced by a constant fraction of ΔF with respect to the output of the first converter, and means for switching from one output to the other to avoid discontinuities occurring every ΔF in each output.

4,494,068

MEASUREMENT SHUNT WITH COMPENSATION FOR INDUCED ERROR VOLTAGES

Antony Ley, Bievres; Roland Allench, Antony, and Alain Bazin, Villejuif, all of France, assignors to Enertec, Montrouge, France

Continuation of Ser. No. 207,822, Nov. 17, 1980, abandoned. This application Apr. 27, 1983, Ser. No. 488,522
Claims priority, application France, Nov. 28, 1979, 79 29222
Int. Cl.³ G01R *1/20*; H01C *5/00*
U.S. Cl. 324—126 **11 Claims**



1. A measurement shunt comprising:

a resistance formed from a plate of electrically conductive material, first and second current terminals and voltage terminal means connected to the plate, the voltage terminal means being disposed on a common edge of the plate at spaced apart points thereon, the resistance proving at the voltage terminal means a voltage representative of an electric current applied to the shunt at said current terminals and passing through the resistance; and

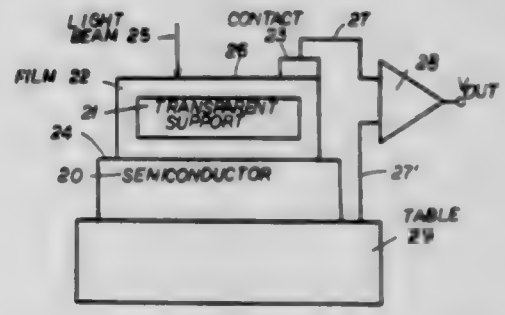
inductor means for developing a stray variable magnetic field induced voltage that is equal in magnitude and opposite in polarity to any stray variable magnetic field induced error voltage in said plate, the inductor means being formed from an electrically conductive material and having first and second ends disposed in the vicinity of the voltage terminal means, the inductor means extending from its first and second ends towards the interior of the surface of the plate in a plane substantially parallel to and adjacent the plate, electrical insulation means between said inductor means and said plate, the inductor means being connected electrically in series with a path in the plate via the voltage terminal means and between first and second measurement terminals, the inductor means providing, in the presence of a variable magnetic field, a voltage free of induced error voltage at the measurement terminals.

4,494,069

OPTICAL SCANNING METHOD OF TESTING MATERIAL DEFECTS

Hung C. Lin, 8 Schindler Ct., Silver Spring, Md. 20903

Filed Sep. 14, 1981, Ser. No. 302,150
Int. Cl.³ G01R *1/06*
U.S. Cl. 324—158 R **11 Claims**



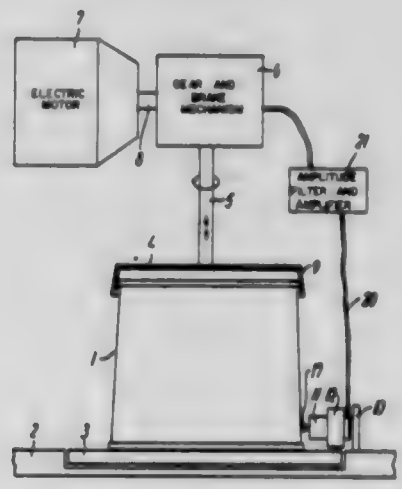
1. A method of detecting defects in a material comprising the steps of placing an at least partially transparent probe on said material, said probe forming a potential barrier with said material, scanning a light spot over said probe, producing a photovoltaic effect where said light spot is incident, sensing said photovoltaic effect corresponding to said light spot position.

4,494,070

APPARATUS FOR POSITIONING RECEPTACLES OF FERROMAGNETIC MATERIAL AND HAVING A WELDING SEAM

Pierre-René Peronard, Virum, Denmark, assignor to Dansk Svejsemaskine Fabrik A/S, Denmark

Filed Jan. 7, 1982, Ser. No. 337,949
Claims priority, application Denmark, Jan. 20, 1981, 249/81
Int. Cl.³ G01B *7/14*
U.S. Cl. 324—208 **1 Claim**



1. An apparatus for positioning receptacles having a substantially cylindrical side wall of ferromagnetic material and a longitudinal welding seam in a predetermined angular position, which apparatus comprises:

(a) means for rotating the receptacle about the cylinder axis thereof;

(b) first means for detecting the welding seam, the first means including a magnetic probe having a tip of ferro-

magnetic material, a housing, the tip of the probe projecting from the housing, and a permanent magnet disposed in the housing for producing a magnetic field extending outside the probe between the tip and the housing;

(c) means for mounting the probe, the mounting means including spring means for elastically urging the probe towards the cylindrical receptacle wall so as to bring the tip into engagement therewith and for movement in a direction towards and away from the cylindrical wall of the receptacle, and permitting ejection of the probe outwardly from the wall when the tip engages the welding seam to create an air gap of sufficient duration for producing a variation in the strength in the field exceeding a predetermined threshold value;

(d) second means for detecting the variation in the strength of the field created by ejection of the probe; and

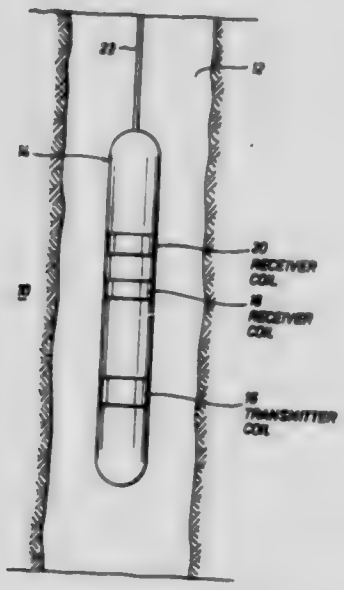
(e) means for stopping the rotational movement of the receptacle a predetermined number of degrees, including zero degrees, after the detection of the variation in the strength of the field created by ejection of the probe.

4,494,071

DETERMINATION OF WATER SATURATION IN EARTH FORMATIONS INDEPENDENT OF LITHOLOGY

Walter H. Ferti, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 20, 1982, Ser. No. 340,911
Int. Cl.³ G01V 3/12, 3/30; E21G 49/00
U.S. Cl. 324—338
1 Claim



1. A method for determining the water saturation of subsurface earth formation of complex lithology substantially independent of salinity contrasts, comprising the steps of:

traversing a borehole with a logging instrument having a transmitter injecting electromagnetic energy in the frequency range from 10 mHz to 200 mHz into the formations and first and second longitudinally spaced receivers for detecting the amplitude and phase of said electromagnetic energy;

generating a first electrical measurement functionally related to the propagation time of said electromagnetic energy through said formations;

injecting into said formations an aqueous solution containing a surface active agent to displace substantially all the residual fluids in said formations surrounding said borehole, wherein said surface active agent is selected from the group consisting of ampolytie, cationic and nonionic;

injecting into said formations water to displace said aqueous solution in a sufficient amount and to render said formations surrounding said borehole substantially water saturated;

traversing said borehole with said logging instrument and generating a second electrical measurement functionally related to the propagation time of said electromagnetic energy through said water saturated formations;

said first measurement determined in accordance with the relationship

$$t_{EP1}=\phi S_w t_{EPW}+\phi(1-S_w)t_{EPHC}+(1-\phi)t_{EPM}$$

and said second measurement determined in accordance with the relationship

$$t_{EP2}=\phi t_{EPW}+(1-\phi)t_{EPM}$$

were t_{EP1} and t_{EP2} are log-derived electromagnetic energy propagation time, ϕ is reservoir porisity, ϕSwt_{EPW} is water filled porosity, $\phi(1-Sw)t_{EPHC}$ is hydrocarbon filled porosity and $(1-\phi)t_{EPM}$ is the rock matrix; and

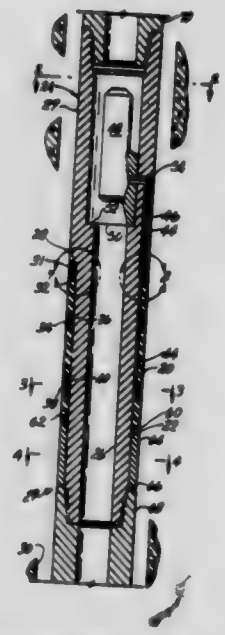
combining said first and said second electrical measurements to determine the water saturation of said formations substantially independent of salinity contrasts.

4,494,072

WELL LOGGING APPARATUS WITH REPLACEABLE SENSOR CARRYING INSULATING SLEEVE DISPOSED IN ROTATION RESTRAINED POSITION AROUND A DRILL STRING

John D. Jeter, Iowa Park, Tex., and Henry S. More, Carmichael, Calif., assignors to Exploration Logging, Inc., Sacramento, Calif.

Division of Ser. No. 141,769, Apr. 21, 1980, Pat. No. 4,356,629.
This application Aug. 23, 1982, Ser. No. 410,374
Int. Cl.³ G01V 3/18; E21B 49/00, 17/02
U.S. Cl. 324—347
15 Claims



1. Well logging apparatus comprising:

an elongated housing having a longitudinal opening extending through it;

means at each end of the housing for securing it in a drill string in a well;

a replaceable insulating sleeve having a longitudinal opening through it disposed around the housing;

longitudinally extending mating grooves and splines on the sleeve and housing for preventing rotation of the sleeve relative to the housing and permitting the sleeve to slide longitudinally relative to the housing when the sleeve is replaced;

means on the housing at one end of the sleeve and engaging the said one end of the sleeve and housing to prevent the sleeve from sliding longitudinally relative to the housing in one direction;

removable means at the other end of the sleeve disposed and arranged to hold the sleeve in compression to make a snug fit of the sleeve on the housing and prevent the sleeve

from sliding longitudinally relative to the housing while the apparatus is in the well,

the grooves and splines on the sleeve and housing tapering inwardly toward the removable means to provide a close slip-fit of the sleeve on the housing; and

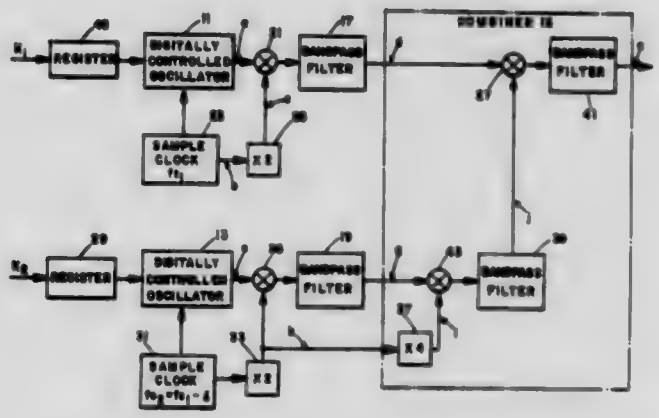
sensing means on the sleeve for measuring a characteristic of formations penetrated by the well.

4,494,073

FREQUENCY GENERATOR USING COMPOSITE DIGITALLY CONTROLLED OSCILLATORS

Aldino D. Sorgi, San Diego, Calif., assignor to Cubic Corporation, San Diego, Calif.

Filed Sep. 27, 1982, Ser. No. 423,605
Int. Cl.³ H03K 3/80; H03B 21/02
U.S. Cl. 328—14 7 Claims



1. A frequency generator capable of producing a large number of evenly spaced frequencies over a wide band, comprising:

a first digitally controlled oscillator that oscillates at a first frequency;

first register means for applying a digital input to said first digitally controlled oscillator;

first clock means for sampling said first digitally controlled oscillator at a first sampling frequency;

first frequency multiplying means connected to said first clock means for providing a first multiplied frequency that is a multiple of said first sampling frequency;

first mixing means electrically connected to said first digitally controlled oscillator and said first frequency multiplying means for mixing said first digitally controlled oscillator output frequency and said first multiplied frequency;

first filter means electrically connected to said first mixing means for passing a first selected band of frequencies;

a second digitally controlled oscillator for oscillating at a second frequency;

second register means for applying a digital input to said second digitally controlled oscillator;

second clock means for sampling said second digitally controlled oscillator at a second sampling frequency that is different than said first sampling frequency;

second frequency multiplying means for providing a second multiplied frequency that is a multiple of said second sampling frequency;

second mixing means electrically connected to said second digitally controlled oscillator and said second frequency multiplying means for mixing said second digitally controlled oscillator output frequency and said second multiplied frequency;

second filter means electrically connected to said second mixing means for passing a second selected band of frequencies; and

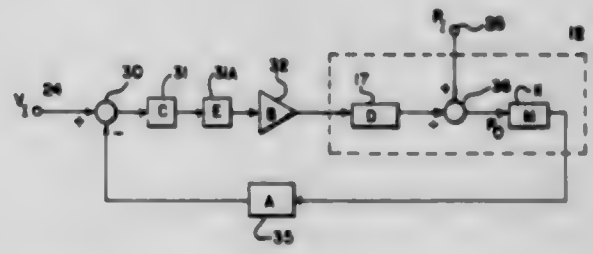
combiner means for combining said first selected band of frequencies and said second selected band of frequencies and producing through output filter means any one of a large band of closely and evenly spaced frequencies in accordance with the selection at the first and second register means.

4,494,074

FEEDBACK CONTROL

Amar G. Bose, Wayland, Mass., assignor to Bose Corporation, Framingham, Mass.

Filed Apr. 28, 1982, Ser. No. 372,472
Int. Cl.³ H03F 1/32
U.S. Cl. 330—109 7 Claims



1. In a feedback control system for providing a controlled output signal in response to an input control signal having components including amplifying means having an input and output for amplifying a signal applied to said input and arranged in a closed loop with feedback means for coupling said output to said input and the amplifying means characterized by open loop gain and phase margin between said input and output when the feedback path therebetween is interrupted, the improvement comprising,

means for establishing the open loop gain of said amplifying means substantially uniform at a significant level over a predetermined frequency range bounded substantially at at least one end by a break frequency,

said amplifying means including means for establishing the change in said open loop gain as a function of frequency outside said predetermined frequency range in a region from said break frequency to a critical frequency where said open loop gain is substantially unity with magnitude of slope of said open loop gain greater than 6 decibels per octave for a significant portion of said region while maintaining the phase margin in said region sufficient to ensure stability,

thereby providing high gain over said predetermined frequency range while avoiding oscillation and minimizing the error between said controlled output signal and a desired controlled output signal designated by said input control signal.

4,494,075

VOLUME CONTROL CIRCUIT

Kozo Yoshihisa, and Isamu Okui, both of Fukaya, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 21, 1982, Ser. No. 341,340
Claims priority, application Japan, Jan. 28, 1981, 56-12076
Int. Cl.³ H03G 3/30; H03F 3/45
U.S. Cl. 330—254 10 Claims

1. A volume control circuit having a pair of reference potential lines, an input terminal and an output terminal, said volume control circuit comprising:

(a) input means coupled to said input terminal for converting an input signal applied to said input terminal to 1st and 2nd currents, said 1st current containing a 1st signal component and said 2nd current containing a 2nd signal component whose phase has an antiphase relation with the phase of said 1st signal component;

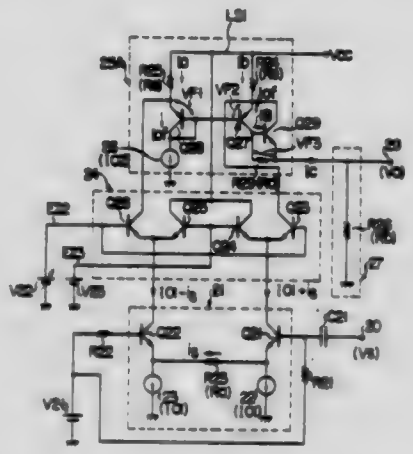
(b) 1st divider means coupled to said input means and responsive to a volume control signal, for current-dividing said 1st current and providing a 1st divided current, the current division ratio of said 1st divider means being

changed with the magnitude of said volume control signal;

(c) 2nd divider means coupled to said input means and responsive to said volume control signal, for current-dividing said 2nd current and providing a 2nd divided current, the current division ratio of said 2nd divider means being changed with the magnitude of said volume control signal;

(d) circuit means coupled to said 1st and 2nd divider means for providing an output current corresponding to said 1st and 2nd divided currents, said circuit means including 1st and 2nd transistors of 1st conductivity type, a 3rd transistor of 2nd conductivity type which is opposed to said 1st conductivity type, and a current feeder;

wherein the emitter electrode of said 2nd transistor is coupled to said 2nd divider means and to one of said reference potential line, the base and collector electrodes of said 2nd



transistor are coupled through said current feeder to the other of said reference potential lines, the base electrode of said 1st transistor is coupled to the base electrode of said 2nd transistor, the emitter electrode of said 1st transistor is coupled to said 1st divider means and to said one of reference potential line, the collector electrode of said 1st transistor is coupled to the base electrode of said 3rd transistor, the collector electrode of said 3rd transistor is coupled to the emitter electrode of said 1st transistor, the emitter electrode of said 3rd transistor provides said output current;

and wherein said 1st and 2nd transistors form a current mirror, and said 1st and 3rd transistors form an inverted Darlington; and

(e) output means coupled to said circuit means and to said output terminal, for converting said output current to an output signal which is obtained from said output terminal.

4,494,076

SIGNAL INPUT CIRCUIT WITH CONTROLLED INPUT SIGNAL ATTENUATION

Heinz Rinderle, Heilbronn, Fed. Rep. of Germany, assignor to TELEFUNKEN electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Mar. 22, 1983, Ser. No. 478,523

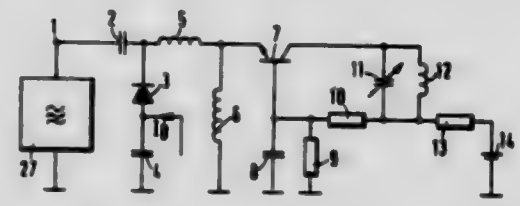
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1982, 3210453

Int. Cl.³ H03G *3/18*

U.S. Cl. 330—284 **29 Claims**

1. A signal input circuit comprising an input terminal for connection to an input signal source to receive an alternating current input signal, a control member for the controllable attenuation of the input signal and firmly set reactances for the selection of the input signal, wherein said reactances are connected and dimensioned to constitute means for establishing a circuit point in said circuit at which said circuit has a large impedance compared to the impedance of the signal source, and said control member is connected to said means to act upon this circuit point.

29. A signal input circuit comprising: an input terminal connectable to a source of an alternating current input signal; an amplifier component for amplifying the input signal; a circuit impedance reference point, a reactance network comprising fixed value reactances connected between said input termi-



nal and said amplifier component for conducting the input signal from said terminal to said amplifier component, said reactance network constituting means forming a series resonant circuit unit and establishing a circuit point in said input circuit at which the impedance relative to said impedance reference point is high compared to the impedance of the input signal source; and a control member connected to act upon said circuit point for controllably attenuating the input signal.

4,494,077

AMPLIFIER SYSTEM SWITCHABLE BETWEEN TWO AMPLIFYING OPERATIONS

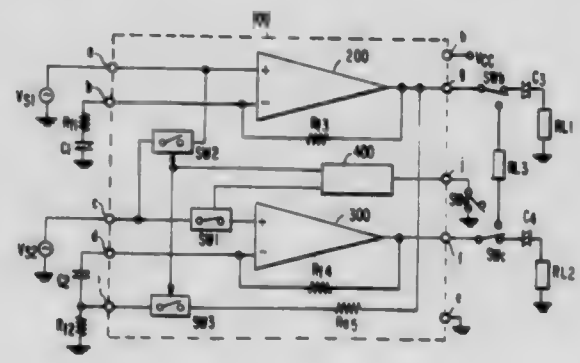
Hirokazu Fukaya, and Haruo Niki, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1982, Ser. No. 446,131

Claims priority, application Japan, Dec. 2, 1981, 56-194151; Mar. 8, 1982, 57-36140

Int. Cl.³ H03F *3/68*

U.S. Cl. 330—295 **23 Claims**



1. An amplifier comprising:

first and second input terminals;

first and second output terminals;

a first amplifying circuit having a non-inverting input and an output;

first means for coupling said first input terminal to said non-inverting input of said first amplifying circuit;

second means for coupling the output of said first amplifying circuit to said first output terminal;

a second amplifying circuit having a non-inverting input, an inverting input and an output;

first switch-means for selectively coupling said second input terminal to either one of said first means and said non-inverting input of said second amplifying circuit;

third means for coupling the output of said second amplifying circuit to said second output terminal;

second switch means for selectively connecting said second means to said inverting input of said second amplifying circuit;

a switch controlling circuit controlling said first and second switch means between a first state in which said second input terminal and said second means are coupled respectively to said first means and said inverting input of said

second amplifying circuit and a second state in which said first switch means couples said second input terminal to said non-inverting input of said second amplifying circuit and said second switch means disconnects said second means from said inverting input of said second amplifying circuit;

first and second loads;

a third load having first and second ends; and

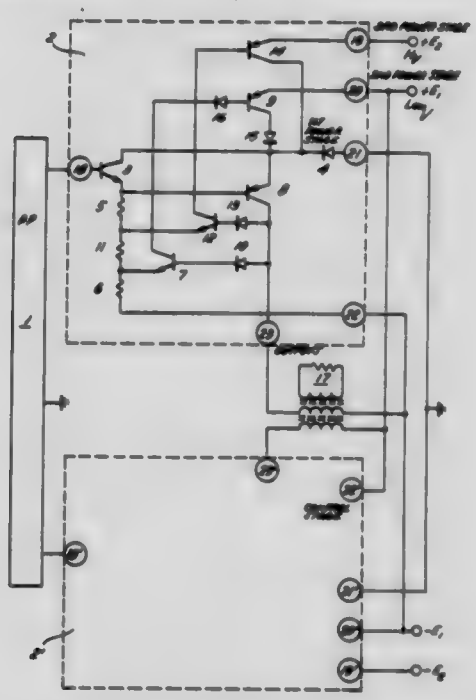
third switch means for selectively connecting said first output terminal and said second output terminal to said first load and said second load, respectively, or to said first and second ends of said third load, respectively.

4,494,078

CLASS BC POWER AMPLIFIER

Vassil B. Vassilev, and Vassil M. Sofiyanski, both of Sofia, Bulgaria, assignors to V M E I "Lenin", Sofia, Bulgaria

Filed Apr. 29, 1981, Ser. No. 258,808
Claims priority, application Bulgaria, Apr. 29, 1980, 47571
Int. Cl.[3] H03F *3/30*
U.S. Cl. 330—297 18 Claims



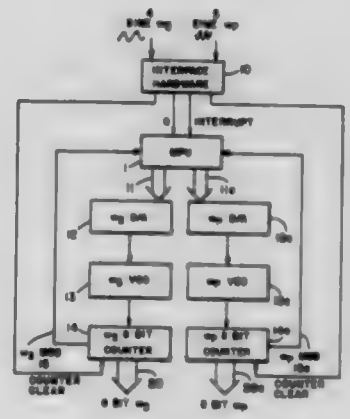
1. A class BC power amplifier having a symmetrical push-pull preamplifier and a pair of symmetrical branches coupled, respectively, to the outputs of said push-pull preamplifier, each of said branches including a first power stage, operating in class B, coupled to the output of said branch, a control stage coupled to the respective output of said push-pull preamplifier for controlling said first power stage, a second power stage, operating in class C, coupled to said first power stage, and a first comparative stage coupled between said control stage and said branch output for controlling said second power stage, characterized in that each branch branch of said power amplifier further comprises a third power stage, operating in class C, also coupled to said first power stage, and a second comparative stage coupled between said control stage and said branch output for controlling said third power stage; a low voltage supply source and high voltage supply source, each of said supply sources having a grounded center point and a positive and a negative pole, the positive pole of said low voltage supply source being coupled to said second power stage of one of said branches and to the control stage of the other of said branches, the negative pole of said low voltage supply source being coupled, conversely, to the control stage of said one branch and to the second power stage of said other branch, and the positive and negative poles of said high voltage supply source being coupled respectively, to the third power stages of said one and said other branches.

4,494,079

MICROPROCESSOR CONTROLLED PHASE LOCKED LOOPS

David O. Light, Jr.; Frank Hayes, III, both of Huntsville, and Joseph R. McGinty, Madison, all of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 9, 1981, Ser. No. 328,892
Int. Cl.[3] H03K *7/00, 5/26*
U.S. Cl. 331—1 A 5 Claims



1. In a control system in which a digital counter is phase-locked to a reference frequency, an improvement comprising a processing unit connected to said digital counter for controlling the rate at which said counter counts; said reference frequency being divided into cycles and connected to said processing unit such that said processing unit can sense the start of a cycle, the half cycle point and the end of a cycle of said reference frequency; the most significant bit output of said counter being connected to said processing unit; said processing unit causing said counter to clear at the end of each cycle; and said processing unit sensing the output of said most significant bit at the half cycle point, and causing said counter to increase its rate of count if the output of the most significant bit is digital zero and causing said counter to decrease its rate of count if the most significant bit is a digital one.

4,494,080

VOLTAGE-CONTROLLED OSCILLATOR WITH INDEPENDENT GAIN AND FREQUENCY CONTROLS

Mark G. Call, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 16, 1981, Ser. No. 321,508
Int. Cl.[3] H03K *3/03;* H03J *7/04;* H03K *3/282*
U.S. Cl. 331—8 5 Claims

1. An improved phase-locked loop comprising:

comparator means for comparing a first and a second signal, wherein said first signal is a signal for establishing a phase standard, for generating an error signal indicative of any phase difference between said first and second signals;

filter means having an input coupled to receive the error signal from said comparator means for generating a first control signal;

a first circuit means for generating a second control signal, said first circuit means including:

(a) a supply voltage source having first and second terminals;

(b) a current mirror circuit means coupled to one of said voltage source terminals and having an output for supplying said second control signal; and

(c) a resistor coupling the input of said current mirror circuit means to the other of said voltage source terminals;

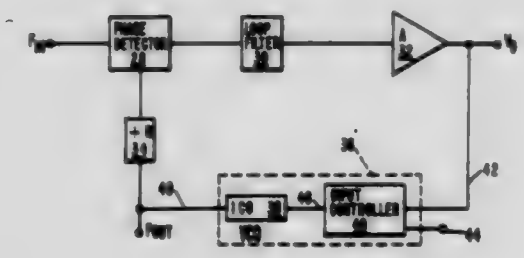
an oscillator for producing an output signal with a frequency and gain determined by an input signal thereto;

means for deriving said second signal for said comparator means from said oscillator output signal;

a second circuit means responsive to said first control signal

from said filter means for selectively producing a third control signal for controlling the gain of said oscillator;

means combining said second and third control signals into a summing/difference signal; and



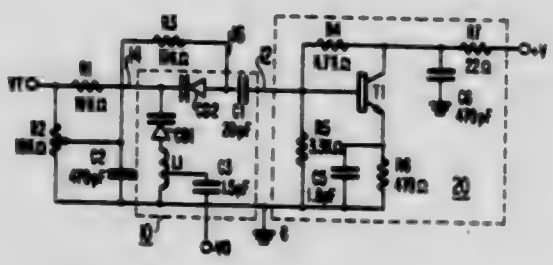
means for deriving the input signal to said oscillator from said summing/difference signal whereby said phase-locked loop has its free-run frequency set by the first circuit means and the gain set by the second circuit means.

4,494,081

VARIABLE FREQUENCY U. H. F. LOCAL OSCILLATOR FOR A TELEVISION RECEIVER

Jeffrey G. Lee, Noblesville, and David J. Carlson, Indianapolis, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed May 24, 1982, Ser. No. 381,735
Int. Cl.³ H03L 7/00; H03B 5/18
U.S. Cl. 331—36 C 9 Claims



1. An oscillator including amplifying means for exhibiting gain of at least unity including means for providing regenerative feedback to make said amplifying means oscillate, and a resonant circuit coupled to said amplifying means to control the frequency at which said amplifying means oscillates, wherein said resonant circuit is responsive to a control potential to control said frequency, said resonant circuit comprising:

first and second capacitance means having respective pairs of first and second electrodes between which respective capacitances are exhibited, said first electrodes of said pairs of electrodes being of the same type and said second electrodes of said pairs of electrodes being of the same type, the value of said capacitances being controllable responsive to respective potentials developed across said capacitance means, said first and second capacitance means being connected in series with their respective first electrodes connected together;

an inductance to which said first and second capacitance means are connected to form a tuned circuit; and

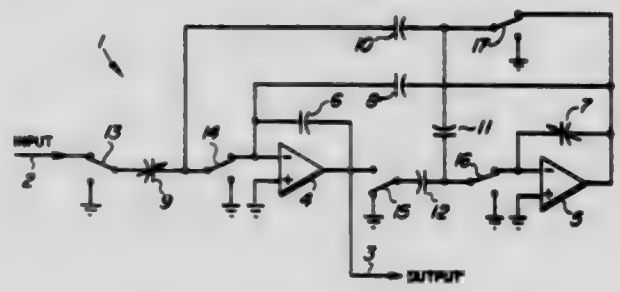
means for developing said potentials across said capacitance means including means for applying said control potential to said first electrodes of each of said first and second capacitance means so as to change the capacitances thereof in the same sense with respect to each other in response to changes of said control signal; and adjustable means connected to said second electrode of said second capacitance means for causing the potential at said second electrode of said second capacitance means to differ from the potential at said second electrode of said first capacitance means by an adjustable amount to cause said potential developed across said first capacitance means to differ in predetermined relationship from said potential developed across said second capacitance means.

4,494,082

SWITCHED-CAPACITOR VARIABLE EQUALIZER

Jeffrey H. Bennett, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Aug. 25, 1982, Ser. No. 411,416
Int. Cl.³ H04B 3/14
U.S. Cl. 333—28 R 10 Claims



1. A variable equalizer comprising an active switched-capacitor biquadratic filter including two amplifiers each having an unswitched capacitor coupled between an output and an inverting input of the amplifier, a diagonally-switched capacitor coupled between the output of a first one of the amplifiers and the inverting input of a second one of the amplifiers, a through-switched capacitor coupled between the output of the second amplifier and the inverting input of the first amplifier, switched-capacitor means coupled between an input of the equalizer and the inverting input of at least one of the amplifiers, means for varying the capacitance of the unswitched capacitor coupled between the output and the inverting input of one of the amplifiers thereby to vary the equalizer characteristics, and means for deriving an output of the equalizer from the output of the other of the amplifiers.

4,494,083

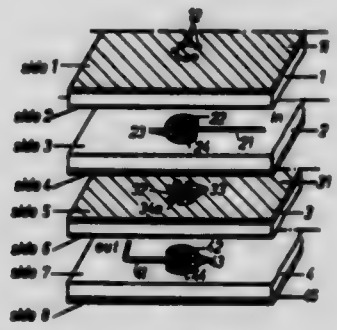
IMPEDANCE MATCHING STRIPLINE TRANSITION FOR MICROWAVE SIGNALS

Lars G. Josefsson, Askim; Bengt T. Svensson, Mölndal, and Lars F. Moeschlin, Frölunda, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jun. 4, 1982, Ser. No. 384,976
Claims priority, application Sweden, Jun. 30, 1981, 8104097
Int. Cl.³ H01P 5/00
U.S. Cl. 333—33 4 Claims

1. An impedance matching coaxial transition for microwave signals comprising first and second laminates, at least one intermediate laminate between the first and second laminates, an input conductor from a stripline circuit on the first laminate, an output conductor to a stripline circuit on the second laminate, each of said laminates having a conducting region on one side thereof, a center through-plated hole in each of said first and intermediate laminates, a conducting collar for each hole

on each laminate on at least one side of the respective laminate, a plurality of further through plated holes in each of said laminates, the further through-plated holes in the first and intermediate laminates respectively surrounding said center holes therein, each of said further holes being in conducting connection with another hole in said plurality of holes by a first conducting region on one side of the respective laminate and by a second conducting region on the other side of said laminate, said collar and said second conducting region defining a slightly elevated area on the respective side of each laminate,



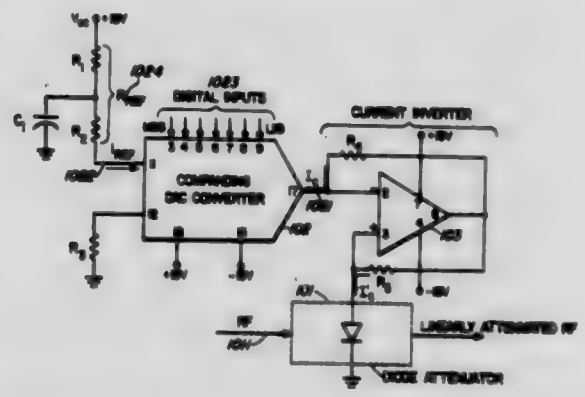
said center through-plated hole in said first laminate forming a first conducting structure together with the corresponding center hole in said intermediate laminate and said elevated area of the respective side of each laminate and defining a conducting connection between said input and output conductors, said plurality of through-plated holes in each of the laminates forming a second conducting structure together with the corresponding plurality of through-plated holes in the other laminates and defining the return conductor of the coaxial transition.

4,494,084

PIN DIODE LINEAR ATTENUATOR CONTROLLED BY A COMPANDING DAC

Richard S. Hughes, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 1, 1982, Ser. No. 353,752
Int. Cl.³ H03H *11/24*
U.S. Cl. 333—81 R **1 Claim**



1. A digitally controlled linear radio frequency attenuator, comprising:

a companding digital to analog converter having a digital input and an approximated exponential analog current sink output;

a current inverter having an input effectively coupled to said exponential analog current sink output, and having an output which provides an output control current which is the inverse of the current appearing at the inverter input; and

a PIN diode having a radio frequency input, a linearly attenuated radio frequency output, a control current input and a logarithmic radio frequency attenuation characteristic for use as a radio frequency attenuator, effectively coupled to said current inverter output;

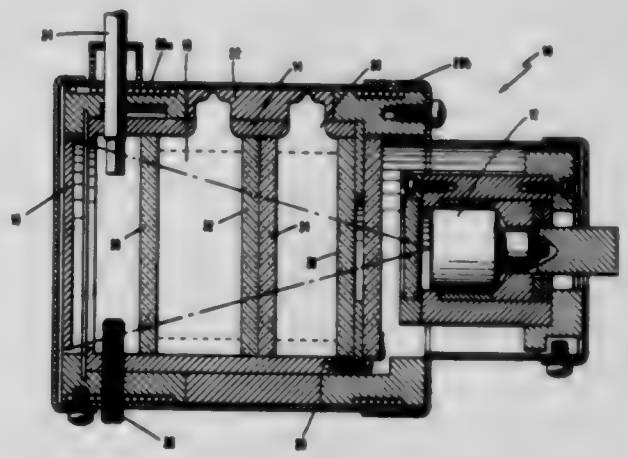
whereby a digital input signal to the companding digital to analog converter provides an approximated exponential current sink output which is inverted by the current inverter and provided to the PIN diode to control the logarithmic radio frequency attenuation characteristic to thereby linearly attenuate a radio frequency signal applied to the radio frequency input in response to the digital input to the companding digital to analog converter.

4,494,085

MINIATURIZED ATOMIC FREQUENCY STANDARD HAVING BOTH FILTER CELL AND ABSORPTION CELL IN RESONATOR CAVITY

Seymour Goldberg, Boston, Mass., assignor to EG&G, Inc., Wellesley, Mass.

Filed Apr. 28, 1982, Ser. No. 372,834
Int. Cl.³ H03L *7/26*
U.S. Cl. 331—94.1 **13 Claims**



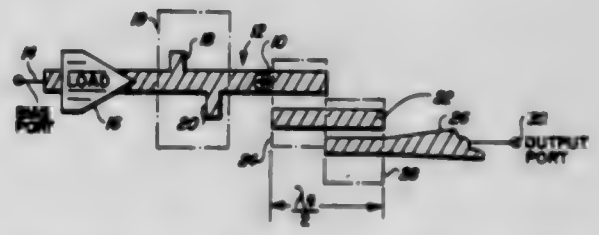
1. In an optical-physics package for use with an atomic frequency standard including a light source, a microwave cavity, and an absorption cell positioned within said cavity to be irradiated by said light source, the improvement comprising a filter cell also positioned within said microwave cavity between said absorption cell and said light source.

4,494,086

TRANSMISSION LINE OSCILLATOR HAVING INDEPENDENTLY ADJUSTABLE Q AND INPUT RESISTANCE

Michael Dydyk, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 30, 1982, Ser. No. 403,760
Int. Cl.³ H03B *5/18, 7/12, 9/14*; H01P *7/08*
U.S. Cl. 331—96 **17 Claims**



1. A transmission line microwave oscillator having two degrees of freedom and including an active device for producing microwave oscillations, an input impedence as seen by the active device having a real portion, Rin, and the oscillator having an external quality factor, Q_{EXT}, the oscillator comprising:

resonant means electromagnetically coupled to the active device such that Rin is adjustable by changing the electromagnetic coupling between the active device and said resonant means; and

an output transmission line electromagnetically coupled to said resonant means such that the Q_{EXT} is adjustable by

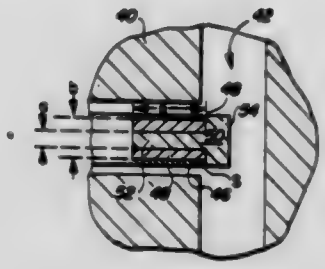
changing the electromagnetic coupling between said output transmission line and said resonant means.

4,494,087

COMBINER PROBE PROVIDING POWER FLATNESS AND WIDE LOCKING BANDWIDTH

Michael Dydyk, Scottsdale; Norman K. Enlow, Mesa, and Joseph R. Tuzzolino, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 2, 1982, Ser. No. 414,231
Int. Cl.³ H03B 5/18; H01P 7/06
U.S. Cl. 331—107 DP 9 Claims



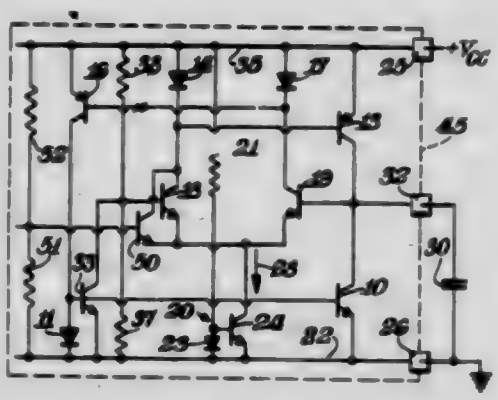
7. A resonant combiner comprising:
a resonant cavity;
active device means coupled to said cavity for providing oscillatory power in said cavity; and
at least one power combiner probe coupling oscillatory power from said cavity to an external load, said probe including an end positioned in said cavity whereby a capacitive reactance is produced, and said probe further including an inductance providing an inductive reactance coupled to and substantially cancelling the capacitive reactance.

4,494,088

OSCILLATOR WITH CAPACITOR CHARGED AND DISCHARGED BY CURRENT PROPORTIONAL TO A REFERENCE CURRENT

Walter S. Gontowski, Jr., Thompson, Conn., and George E. Rollins, Holden, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Jul. 26, 1982, Ser. No. 401,505
Int. Cl.³ H03K 3/282, 4/52
U.S. Cl. 331—111 2 Claims



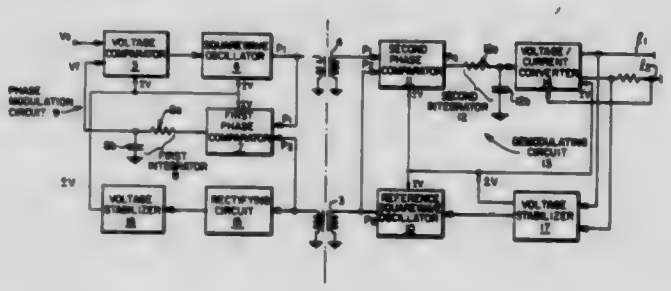
1. A stable silicon integrated oscillator circuit for connection to a discrete capacitor comprising:
a pair of DC power supply busses;
a charger current-mirror circuit having an output branch connected in a series circuit with said capacitor which series circuit is connected between said pair of DC supply busses;
a discharger current-mirror circuit having an output branch connected in parallel with said capacitor;
a current source for producing a reference current; and
a switching circuit portion comprising a pair of differentially-connnected transistors, said current source being connected between one of said power supply busses and the emitters of said differentially-connected transistors, the input branches of said charger and discharger current mirror circuits being respectively connected in the collector circuits of one and another of said pair of differentially-connected transistors; yet another transistor being parallel connected, collector-to-collector and emitter-to-emitter, with said one transistor; first and second resistive voltage dividers connected across said pair of DC busses having high and low intermediate voltage points, respectively, being connected to the bases of said one and yet another transistors, respectively, for determining the high peak and low peak values of the oscillating voltage across said capacitor, respectively; and a transistor switch means for shunting a portion of said first divider to reduce the voltage at said high intermediate voltage point during intervals when said capacitor discharges.

4,494,089

PULSE PHASE MODULATOR/DEMODULATOR SYSTEM

Taizo Yagi, Kyoto, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed Mar. 15, 1982, Ser. No. 358,607
Claims priority, application Japan, Apr. 22, 1981, 56-61681
Int. Cl.³ H03K 7/04, 9/04
U.S. Cl. 332—14 4 Claims



1. A two-wire type converter, comprising a first system located nearby a detecting element and electrically insulated from a second system located far from said detecting element, said first and second systems electrically insulated by means of a first insulated transformer and a second insulated transformer;
said first system comprising a phase modulation circuit including a voltage comparator for comparing a signal voltage with a feedback voltage of said detecting element; a square wave oscillator connected to said voltage comparator for controlling the phase of a square wave signal output therefrom in dependence upon an output of said voltage comparator; a first phase comparator connected to said square wave oscillator and said first insulated transformer for detecting a phase difference between said square wave signal output from said square wave oscillator and a reference square wave signal obtained through said first insulated transformer; a first integrator circuit connected to said first phase comparator for integrating an output from said first phase comparator and generating said feedback voltage fed to said voltage comparator;
said second system comprising a demodulation circuit including a reference square wave oscillator connected to said first insulated transformer for generating said reference square wave signal; a second phase comparator for detecting a phase difference between said reference square wave signal output from said reference square wave signal oscillator and said square wave signal output from said square wave oscillator obtained through said second insulated transformer; a second integrator circuit connected to said second phase comparator for integrating an output from said second phase comparator and a voltage/current converter connected to said second integrator for con-

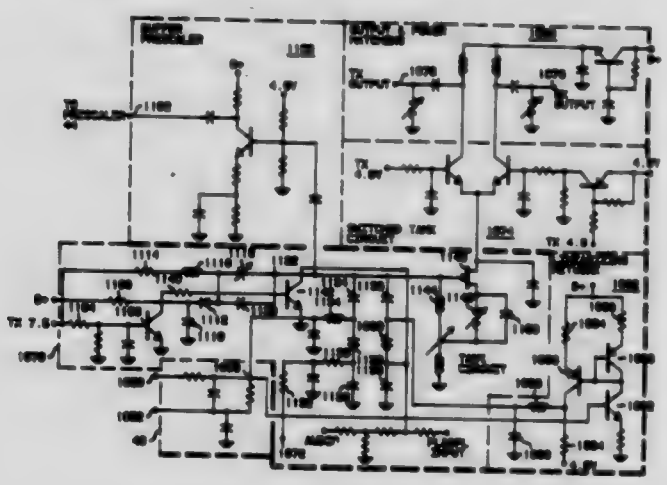
verting a voltage signal output from said second integrator circuit to a current signal which is output to a two-wire type transmission channel.

4,494,090

FREQUENCY MODULATION SYSTEM FOR A FREQUENCY SYNTHESIZER

Marc H. Popek, Tamarac, and Jose I. Suarez, Miami, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 251,645, Apr. 6, 1981, abandoned. This application May 25, 1984, Ser. No. 614,692
Int. Cl.[3] H03C 3/08, 3/09
U.S. Cl. 332—16 T 9 Claims



1. A frequency modulator including a voltage controlled oscillator which includes a main varactor diode coupled to a frequency resonating circuit to produce an output frequency in response to a control voltage, comprising:

a secondary varactor diode of an appreciably lower voltage to frequency sensitivity ratio than said main varactor diode coupled to said main varactor diode;

modulation input means coupled to said secondary varactor diode to enable modulation of the resonating output frequency; and

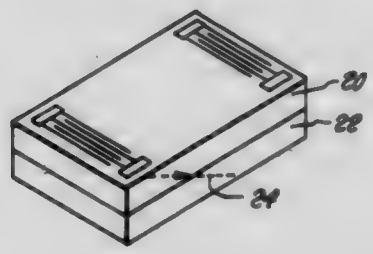
linearizing means coupled to said second varactor diode tracking the main varactor diode capacitance to provide constant carrier modulation deviation.

4,494,091

DAMPING PACKAGE FOR SURFACE ACOUSTIC WAVE DEVICES

Jeffrey H. Goll, Dallas, Tex., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 9, 1983, Ser. No. 492,517
Int. Cl.[3] H03H 9/25, 9/42, 9/64
U.S. Cl. 333—151 8 Claims



1. A SAW device having one surface along which acoustic waves are intended to travel and a second surface opposite to said one surface;

a backing layer on said second surface;

said backing layer having substantially the same acoustic impedance as the crystal substrate of said SAW device for a family of bulk modes, and

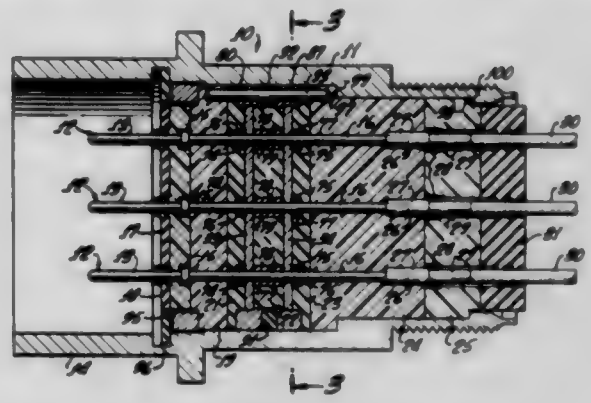
being fabricated of an acoustically lossy material.

4,494,092

FILTER PIN ELECTRICAL CONNECTOR

Alan L. Griffin, Redlands, Calif., assignor to The Deutsch Company Electronic Components Division, Banning, Calif.

Filed Jul. 12, 1982, Ser. No. 397,603
Int. Cl.[3] H03H 7/01; H01R 13/66, 23/22
U.S. Cl. 333—182 20 Claims



1. A filter pin electrical connector device comprising

at least one electrical contact,

an electrically conductive shell,

insert means holding said contact in said shell, and capacitor means,

said capacitor means including two disc means in axially spaced relationship with each other and transverse with respect to and having openings receiving said contact,

each of said disc means including a body of a dielectric material and first and second laminae of electrically conductive material positioned in a spaced relationship with each other in said dielectric material,

said laminae being transverse with respect to said electrical contact,

said first laminae extending to a position adjacent said opening and being electrically connected to said contact for receiving an undesired signal therefrom, said second laminae extending to adjacent the periphery of said disc means and being electrically connected to said shell for conducting a signal to said shell,

a ring of electrically conductive material around each of said discs,

each of said rings having a shoulder, each of said discs abutting one of said shoulders for thereby positioning said discs relative to said shell,

means electrically connecting said second laminae to said rings, and means electrically connecting said rings to said shell.

4,494,093

LOCKABLE TUNING MECHANISM WITH REDUCED BACKLASH

David D. Owlett, Belmont, Calif., assignor to GTE Communications Systems Corporation, Phoenix, Ariz.

Filed Nov. 1, 1982, Ser. No. 437,935
Int. Cl.[3] H01P 7/04, 7/06, 1/28
U.S. Cl. 333—232 12 Claims

1. Apparatus comprising:

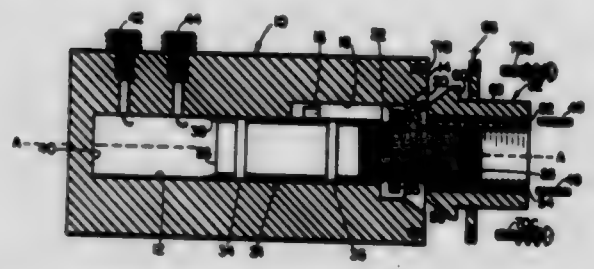
an enclosure supporting electro-magnetic waves and having an opening in one wall thereof;

a tuning probe having its circumference threaded over at least a portion of the length thereof, said probe extending through said opening in said wall and into the interior of said enclosure;

a lock ring having a threaded bore extending therethrough, being threaded onto said probe, and having at least a pair

of holes therein with axes at least generally parallel to the axis of the bore therein;

a tuning knob having a threaded bore extending therethrough, and being threaded onto said probe so as to establish a predetermined spacing between said knob and ring; said knob also having at least a pair of holes therein with axes that are generally parallel to the axis of the bore therein and located in the same orientation as associated holes in said ring so that they may be axially aligned; said holes extending all the way through one of and only part way through the other of said knob and ring; the holes in the one and other of said knob and ring also being threaded and having a diameter that is greater than that of the threaded holes, respectively;



screw means threaded through each of the holes in said one of and extending into the associated blind hole of said other of said knob and ring;

means for securely-rotatably mounting said knob on said enclosure wall for preventing axial movement of said knob; and

means for preventing rotation of said probe in said enclosure;

rotation of said knob and ring providing axial movement of said probe in said enclosure to a desired position; threading said screw means into the blind holes in the other of said knob and ring for causing the ends of said screw means to firmly contact the bottoms of the blind holes binding the threads on said probe, knob and ring for preventing further rotation of the knob and further axial movement of said probe.

4,494,094

HIGH FREQUENCY WAVEGUIDE

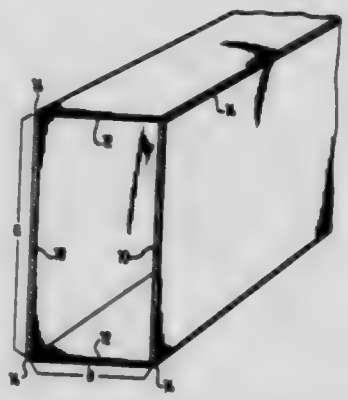
Georg Spinner, Feldkirchen-Westerham, and Franz X. Pitschi, Rottach-Egern, both of Fed. Rep. of Germany, assignors to Spinner GmbH Elektrotechnische Fabrik, Fed. Rep. of Germany

Filed Nov. 3, 1982, Ser. No. 438,940

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1981, 3143773

Int. Cl.³ H01P *3/12*

U.S. Cl. 333—239 3 Claims



1. A high frequency waveguide comprising a tube of rectangular cross-section having a first pair of plates parallel to each other and forming a first pair of opposite walls; a second pair of plates parallel to each other and forming a second pair of opposite walls of said rectangular tube;

the plates of said first pair of opposite walls being of the same thickness with respect to each other and the plates of said second pair of opposite walls being of the same thickness with respect to each other;

the second pair of opposite walls being transversely smaller in the cross-sectional dimension of said rectangular tube than the first pair of opposite walls;

the plates forming said second pair of opposite walls being of the order of half the thickness of the plates forming the first pair of opposite walls.

4,494,095

HIGH FREQUENCY CIRCUIT SHIELDING STRUCTURE HAVING TUNING COILS DOUBLE SHIELDED

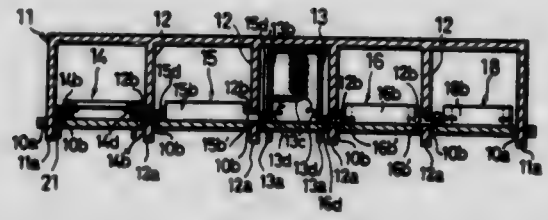
Tasuku Noji, Soma, and Torao Hiyama, Haramachi, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 430,981

Claims priority, application Japan, Nov. 20, 1981, 56/186422

Int. Cl.³ H04B *1/08*; H05K *5/04*

U.S. Cl. 334—85 7 Claims



1. An assembly structure for a high frequency circuit apparatus including:

at least one first high frequency circuit block;

a metallic chassis on which said first high frequency circuit block is disposed;

a second high frequency circuit block formed by placing a high frequency circuit element inside a metallic case having one of its surfaces opened;

means formed integrally with said first high frequency circuit block for connecting it electrically with another high frequency circuit block; and

a shield case having one of its surfaces opened and divided into compartments by shield plates shielding said high frequency circuit blocks from one another;

said second high frequency circuit block being fitted to said metallic chassis in such a fashion that the open surface thereof is sealed by said metallic chassis;

said shield case being fitted to said metallic chassis in such a fashion that said compartments thereof separate said high frequency circuit blocks from one another.

4,494,096

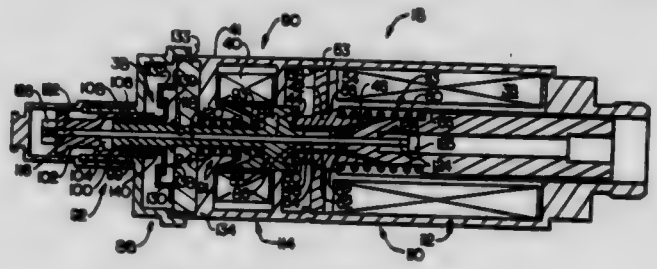
LATCHING SOLENOID

Joe E. Funnell, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 9, 1984, Ser. No. 608,597

Int. Cl.³ H01H *9/20*

U.S. Cl. 335—170 15 Claims



1. A latching solenoid, comprising:

a body having first and second end portions and a bore extending therethrough, said bore having first and second

portions adjacent said first and second end portions, respectively;

a member having a bifurcated end portion and being moveable within said bore between a first position, at which said bifurcated end portion is adjacent said first portion of said bore, and a second position, at which said bifurcated end portion is adjacent said second portion of said bore;

a plunger having a first end portion and being moveable between a first position at which said first end portion is in contact with one of said first portion of said bore and said bifurcated end portion of said member, and a second position, at which said first end portion of said plunger is spaced from said bore and said member;

first means for controllably moving said plunger between said first and second positions; and

second means for controllably moving said member between said first and second positions.

4,494,097

ELECTROMAGNETIC DEFLECTION UNIT

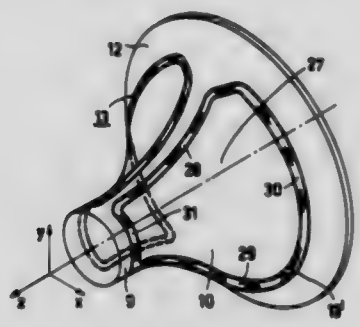
Wilhelmus L. L. Leenders, Son, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 1, 1984, Ser. No. 575,956

Claims priority, application Netherlands, Feb. 14, 1983, 8300543

Int. Cl.³ H01F 5/02

U.S. Cl. 335—213 15 Claims



1. An electromagnetic deflection unit for a television display tube comprising a first deflection coil of the saddle type and a second deflection coil disposed coaxially with respect to the first, each coil comprising two diametrically opposed coil units, wherein the first deflection coil is wound against a surface of a first hollow moulding, which surface has a compound curvature such that it is concave in a first direction and convex in a direction transverse to the first direction, and which surface is provided with a layer of contact adhesive, each coil unit of the first deflection coil comprising a number of turns of wire which are laid around each other in a single layer or a plurality of superimposed layers on said surface of the first moulding, the wire having a coating of contact adhesive and the turns of said single layer being fixed throughout their length to the layer of contact adhesive on said surface, or the turns of the layer which is adjacent said surface being fixed throughout their length to the layer of contact adhesive on said surface and the turns of each further layer being fixed to the turns of the preceding layer.

4,494,098

SOLENOID DEVICE

Hideo Haneda, and Minoru Yamanaka, both of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Toyota, Japan

Filed Jan. 6, 1984, Ser. No. 568,567

Claims priority, application Japan, Jan. 7, 1983, 58-1000

Int. Cl.³ H01F 7/08

U.S. Cl. 335—230 11 Claims

1. A solenoid device comprising:

a shaft,

a permanent magnet,

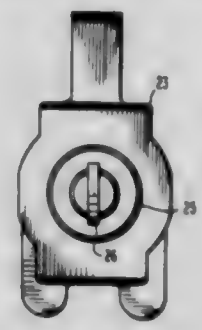
two magnetic cores disposed on the sides of the north and south poles, respectively, of the permanent magnent, the permanent magnet being sandwiched between the cores such that these constitute a magnetic plunger fixed to the shaft,

two field coils for producing magnetic flux along the shaft,

a magnetic yoke body for forming a magnetic flux path along the outsides of the coils,

a magnetic center plate disposed between the coils and having an annular magnetic flux path portion through which the magnetic plunger extends, the center plate further having flange portions that constitute magnetic flux paths between the annular magnetic flux path portion and the yoke body, and

two magnetic yoke end plates each of which is coupled to



the yoke body and has an annular wall protruding into respective one of the coils in such a way that the end surfaces of the end plates are opposed to the end surfaces of the annular magnetic flux path portions,

the width A of the annular magnetic flux path portion in the direction of the axis of the shaft, the distance B between the end surfaces of the magnetic flux path portion and the respective end surfaces of the yoke end plates, the thickness C of the permanent magnet in the direction of polarization, and the length D of the magnetic cores in the direction of the axis of the shaft satisfying the following relations:

$A > C$ and $D \geq B$.

4,494,099

HIGH-FREQUENCY COIL STRUCTURE

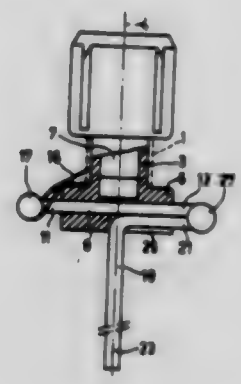
Pieter R. Prija, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 1, 1984, Ser. No. 575,955

Claims priority, application Netherlands, Feb. 11, 1983, 8300513

Int. Cl.³ H01F 5/00

U.S. Cl. 335—299 5 Claims



1. A high-frequency coil comprising a coil winding (1) which is provided on a coil form (3) whose axis (4) extends perpendicularly to a base (5) which comprises wire-shaped connection contacts (9) which extend perpendicularly to the axis and which are embedded in the material of the base so that both their ends (11, 13) project from the base, at least one lead (15) of the coil winding being connected to the first end (11), while the second end (13) serves to establish electrical contact with the coil, said coil comprising connection pins (19), each of which comprises a first end portion (21) which extends parallel

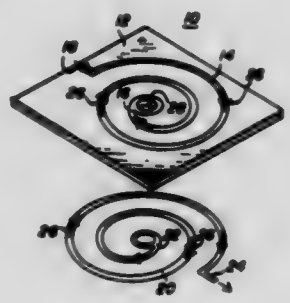
to the second end (13) of one of the connection contacts (9) and which is electrically connected thereto, and also comprises a second end portion (23) which extends perpendicularly to the first end portion and parallel to the axis (4) of the coil form (3).

4,494,100

PLANAR INDUCTORS

Robert E. Stengel, Pompano Beach, and Charles W. Nejdl, Ft. Lauderdale, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 12, 1982, Ser. No. 397,298
Int. Cl.³ H01F *5/00*
U.S. Cl. 336—200 8 Claims



1. An inductor comprising:
a generally flat substrate of electrically insulating material;
a first substantially flat spiral coil disposed on one side of said substrate and having an inner end and an outer end;
trimmable shorting means, disposed on said one side of said substrate, for electrically shorting portions of said first coil to facilitate adjustment of said inductor by selectively trimming said shorting means;
a second substantially flat spiral coil disposed on the opposite side of said substrate and having an inner and an outer end;
said inner ends of said first and second coils being joined through said substrate forming a continuous coil with said first coil spiraling in and said second coil spiraling out;
said first and second coils being spiraled in the same direction as viewed from the outer end of each coil when each coil is viewed individually with said substrate oriented to position the viewed coil on the viewed side of said substrate so that an additive mutual inductive effect is achieved between said first and second coils resulting in an inductance greater than that of the sum of the inductance of the first and second coils; and
said outer ends of said continuous coil providing terminals for the inductor.

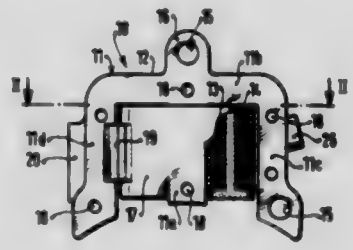
4,494,101

ELECTRICAL WINDING ON FIXED-MOUNT LAMINATED IRON CORE SUBJECT TO SHAKING

Emil Buchschmid, Rosstal; Friedrich Horn, Lichtenau; Bruno Nieberl, Zirndorf; Hans-Jörg Schmidt, Feucht, and Manfred Weyerich, Oberasbach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 28, 1983, Ser. No. 470,253
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1982, 8208150[U]
Int. Cl.³ H01F *27/26*
U.S. Cl. 336—210 16 Claims

1. Electrical winding for a magneto comprising a core of stacked sheet iron laminations, having a yoke and a plurality of legs and mounted on a base by fastening means passing through mounting holes, and a cup casing for the winding slipped onto a leg of said core, in which casing said winding is embedded,
said laminations respectively having interfitting deformations of at least one set of identically shaped deformations by which they are force-fitted together face-to-face,
one of said core legs being free of mounting holes and encompassing at least one said set of lamination deformations, and



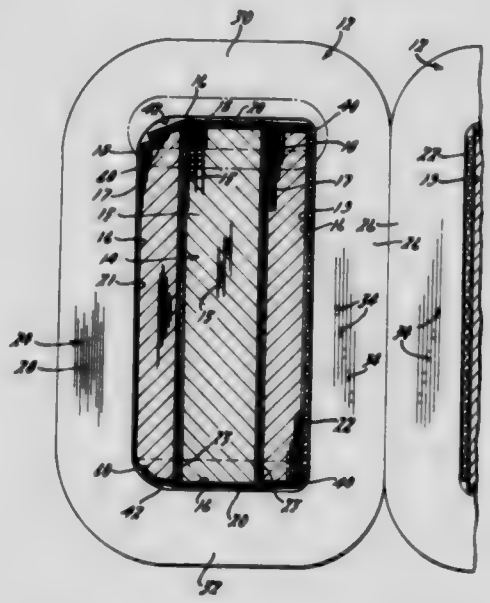
said cup casing having outward protuberations grasping said core leg which is free of mounting holes, on opposite sides thereof, so as to prevent spreading apart of said laminations in the neighborhood of said protuberations.

4,494,102

TRANSFORMER CORE AND METHOD AND APPARATUS FOR FORMING SAME

John L. Fisher, and Joe E. Curtis, Jr., both of Lexington, Ky., assignors to Kuhlman Corporation, Troy, Mich.

Filed Aug. 31, 1982, Ser. No. 413,288
Int. Cl.³ H01F *27/24*
U.S. Cl. 336—212 26 Claims

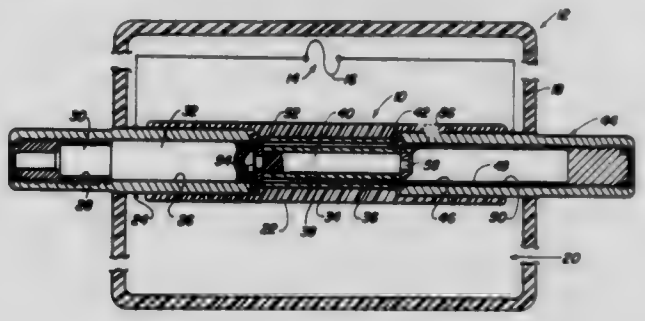


1. In an electrical transformer having electrical conductor windings and a magnetic core, said magnetic core having a pair of spaced-apart yoke portions and a pair of spaced-apart leg portions, said yoke portions and said leg portions having inner surfaces defining a window opening for receiving at least a portion of said windings extending therethrough, a first of said leg portions forming a pair of first arcuate window opening corners at its intersections with said spaced-apart yoke portions, a second of said leg portions forming a pair of second arcuate window opening corners at its intersections with said spaced-apart yoke portions, extensions of the inner surfaces of said first leg portion and said yoke portions defining a pair of first excluded areas with said first arcuate window opening corners with said first excluded areas being generally adjacent opposite ends of the inner surface of said first leg portion, and extensions of the inner surfaces of said second leg portion defining a pair of second excluded areas with said second arcuate window opening corners with said second excluded areas being generally adjacent opposite ends of the inner surface of said second leg portion, the improvement wherein at least one of said first excluded areas is greater than at least one of said second excluded areas.

4,494,103
HIGH-SPEED, MULTI-BREAK ELECTRICAL SWITCH

John M. Jarosz, Skokie, and William R. Panas, Glenview, both of Ill., assignors to S&C Electric Company, Chicago, Ill.

Continuation of Ser. No. 179,367, Aug. 18, 1980, abandoned.
This application Nov. 9, 1983, Ser. No. 550,201
Int. Cl.³ H01H *33/06*
U.S. Cl. 337—282 26 Claims





1. An electrical switch for opening a current path which includes the switch, the switch comprising:

a series of alternating first and second switch cells, wherein each first switch cell comprises

a first conductive body having a first insulated bore therethrough, and

a first insulative body normally conformally located in the first bore and conformally movable therethrough; and

each second switch cell comprises

a second insulative body having a second bore therethrough, the first and second bores having substantially the same cross-section, and

a second conductive body having an insulative layer thereon and being normally conformally located in the second bore and conformally movable therethrough;

means for mounting the alternating series of cells end-to-end so that the first and second bores align;

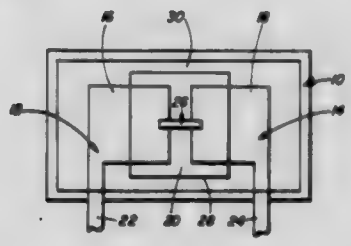
severable metallic means for electrically interconnecting the second conductive body of each second cell to the first conductive body of each first cell adjacent thereto; and

means for conjointly moving the first insulative bodies and the second conductive bodies to simultaenously sever the severable means, arcing between the first and second conductive bodies being constricted between either the first and second insulative bodies or the insulated bore and the insulative layer.

4,494,104
THERMAL FUSE

Edward S. B. Holmes, Almonte, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jul. 18, 1983, Ser. No. 514,444
Int. Cl.³ H01H *37/76, 85/04*
U.S. Cl. 337—403 11 Claims



1. A fuse comprising:

(i) a substrate;

(ii) a pair of electrodes disposed upon the substrate and spaced apart to define a gap between them;

(iii) a fuse link extending across said gap in intimate relationship with the substrate and interconnecting said electrodes electrically;

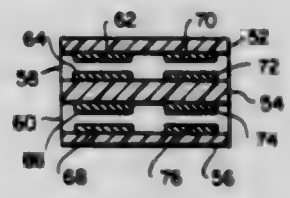
(iv) a film of solder intimately overlying said fuse link and at least part of at least one of said electrodes, the solder, when molten, being capable of dissolving said fuse link;

the arrangement being such that when its melting point is exceeded the solder will melt, dissolve the fuse link and retreat from the gap thereby severing the electrical connection between the electrodes.

4,494,105
TOUCH-CONTROLLED CIRCUIT APPARATUS FOR VOLTAGE SELECTION

V. Dean House, Orem, Utah, assignor to Spectra-Symbol Corporation, Salt Lake City, Utah

Filed Mar. 26, 1982, Ser. No. 362,475
Int. Cl.³ H01C *10/10*
U.S. Cl. 338—114 49 Claims



1. A pressure contact control apparatus comprising:

a first member having a first elongated electrically resistive surface on at least a part of a first side thereof;

a second member having a first elongated electrically conductive surface on a first side thereof;

at least one further surface on said first side of said first member having predetermined electrical conductivity characteristics, said further surface being spaced apart from said first resistive surface;

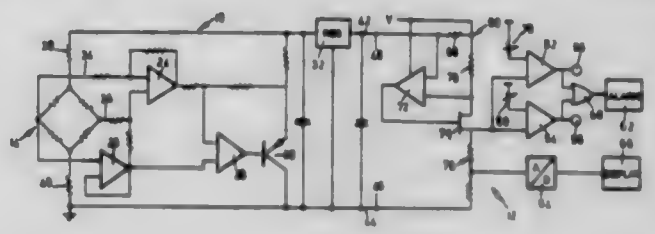
means for supporting the first and second members such that the first conductive surface is presented in closely spaced proximity with respect to both said first resistive surface and said further surface; and

wherein one of the first and second members is sufficiently flexible to permit electrical contact between a selected one of (a) the first conductive surface and the first resistive surface and (b) the first conductive surface and said further surface in response to application of localized pressure to at least one of the first and second members.

4,494,106
PRESSURE MONITOR

Guy L. B. Smith, Transvaal; Derik Howard, Johannesburg, and Anton B. Goedhals, Transvaal, all of South Africa, assignors to Grathnail Development Company Limited, Jersey, Channel Islands

Filed Feb. 18, 1982, Ser. No. 349,757
Claims priority, application South Africa, Feb. 18, 1981, 81/1063
Int. Cl.³ B60C *23/00*
U.S. Cl. 340—58 6 Claims



1. An apparatus for continuously providing a measurement

of pressure in a tire of a vehicle, comprising: signal generating means; signal processing means; current supply means connected to said signal generating means and to said signal processing means; said current supply means supplying a first electrical current to said signal generating means and a second electrical current to said signal processing means, said current supply means having a circuit connection so that said first and second electrical currents are always in a substantially fixed ratio to each other; said signal generating means including transducer means for generating a first signal which is dependent on the pressure inside the tire; and a control means connected to said transducer means and to said current supply means, said control means being responsive to the first signal for varying said first electrical current in dependence on said tire pressure; said signal processing means monitoring said second electrical current thereby to provide a continuous indication of said tire pressure.

4,494,107

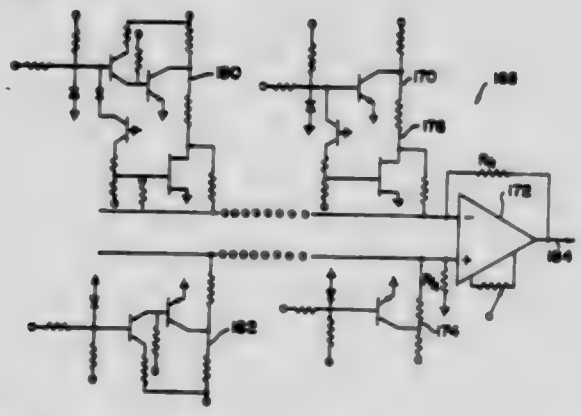
DIGITAL TO ANALOG CONVERTER

Robert W. Kearns, 20524 Rutherford Ave., Detroit, Mich. 48235, and James G. H. Quan, 14871 Lesure, Detroit, Mich. 48227

Continuation of Ser. No. 781,817, Mar. 28, 1977, abandoned, which is a continuation of Ser. No. 651,321, Jan. 21, 1976, abandoned, which is a continuation of Ser. No. 367,286, Jun. 5, 1973, abandoned, which is a continuation of Ser. No. 873,192, Nov. 3, 1969, abandoned. This application Apr. 2, 1981, Ser. No. 250,482

Int. Cl.³ H03K *13/02*; H03F *3/45*

U.S. Cl. 340—347 DA 1 Claim



1. A digital-to-analog converter comprising a primary analog input network for receiving a part of a digital word and converting it into an analog signal, a secondary analog input network for receiving another part of the digital word and converting it into an analog signal with the maximum digital input word put into the secondary analog input network being nominally slightly less than the least change in the portion of the digital word input to the primary analog input network and an unbalanced differential amplifier connected to receive the output from the primary analog input network at one input terminal thereof and for receiving the output from the secondary analog input network at the other input terminal thereof in which the maximum amount of unbalance of the differential amplifier is nominally equal to the maximum analog signal from the secondary analog input network.

4,494,108

ADAPTIVE SOURCE MODELING FOR DATA FILE COMPRESSION WITHIN BOUNDED MEMORY

Glen G. Langdon, Jr., San Jose, and Jorma J. Rissanen, Los Gatos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

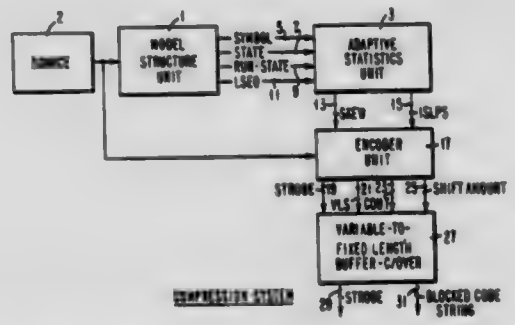
Continuation of Ser. No. 319,542, Nov. 9, 1981, abandoned. This application Jun. 5, 1984, Ser. No. 617,303

Int. Cl.³ H03K *13/00*

U.S. Cl. 340—347 DD 2 Claims

1. A machine implementable method for dynamically selecting conditioning states thereby enabling an efficient compression with fixed preselected implementation complexity in the adaptive compression of a symbol string generated from an N distinguishable symbol alphabet MARKOV type symbol source with adaptation in the run on piecewise stationary source statistics, the method steps comprising within a single pass process:

ascertaining the first $(k-1)<N$ symbols appearing M times, initially treating all symbols as a single conditioning state,



and thereafter distinguishing and removing at most k symbols as their occurrence count exceeds M where M varies according to the remaining number of states yet to be ascertained;

pairing each of the conditioning states with each symbol and determining the associated conditional symbol probability distribution; and

passing parameters indicative of the distribution to an extrinsic compression coding process.

4,494,109

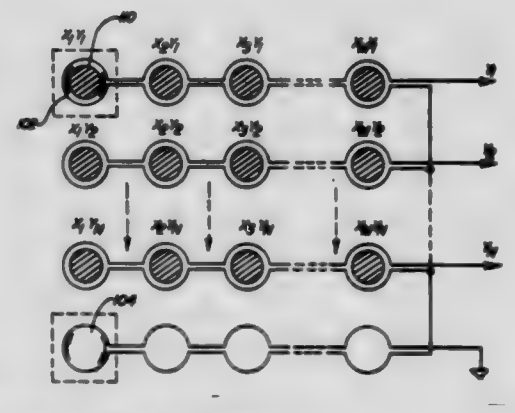
NONCONTACTING KEYBOARD EMPLOYING A TRANSFORMER ELEMENT

Victor M. Bersin, 105 E. Berkshire La., Mount Prospect, Ill. 60056

Continuation-in-part of Ser. No. 946,346, Sep. 2, 1978, Pat. No. 4,300,127. This application Jan. 28, 1981, Ser. No. 229,175

Int. Cl.³ G06F *3/02*

U.S. Cl. 340—365 L 16 Claims



1. A switch array comprising:

a plurality of transformers each having a primary winding and a secondary winding, said transformers being physically arranged to form a matrix comprising horizontal rows and vertical columns, said primary windings lying in a first plane and said secondary windings lying in a second plane parallel and in close proximity to said first plane with each of said primary windings being opposite to and aligned with one of said secondary windings;

first means for interconnecting said primary windings into a plurality of series chains of windings along said vertical columns;

a reference potential;

second means for interconnecting said secondary windings into a plurality of series chains of windings along said horizontal rows with each of said horizontal rows having a first and second output;

third means for interconnecting said first output of each of said horizontal rows together and for connecting said second output of one of said horizontal rows to said reference potential so that signals generated on said second

output of the remaining rows is equivalent to the signals present on secondary windings of that row minus the signals present on the secondary windings of said one row; and

a plurality of mutual inductance changing actuators associated with and adapted to be selectively positioned relative to all of said plurality of transformers except for the transformers comprising said one row.

4,494,110

KEYBOARD MODULES FOR USE IN DATA TERMINALS

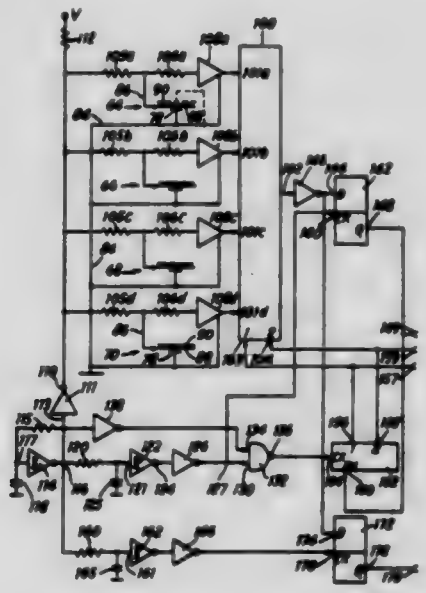
Antony J. Wakeling, and Alan D. Thompson, both of Fleet, England, assignors to Schlumberger Electronic (U.K.) Ltd., Farnborough, England

Filed Mar. 3, 1982, Ser. No. 354,410

Claims priority, application United Kingdom, Mar. 6, 1981, 8107181

Int. Cl.³ G06F *3/02*

U.S. Cl. 340—365 R 7 Claims



1. A keyboard module for use in a manually operable data terminal for communicating with a data processor, the module comprising:

a keyboard having a plurality of manually selectable keys, each of which represents a respective message or part of a message to be communicated to the processor, each key including first and second terminals, with each key being selectively actuable by movement of its second terminal to contact its respective first terminal, and wherein said first terminals are interconnected and directly grounded; and

a circuit connected to said first and second terminals and responsive to manual selection by touch without actuation of any key to produce a first output signal indicative of which key is selected, and further responsive to actuation of the selected key to produce a second output signal, said circuit including:

a pulse generator for generating a first train of pulse; a plurality of first delay circuits each including a respective one of said keys and connected to receive and delay the first train of pulses; and second and third delay circuits connected to receive and delay the first train of pulses so as to produce second and third trains of pulses each delayed by a respective and different time interval with respect to the first train, the delay time interval for the second train being intermediate respective first and second delays produced by each first delay circuit when its respective key is respectively not touched and touched and the delay time interval for the third train being greater than said second delay; said circuit being arranged to receive said first train via said first delay circuits and said second and third trains, and to produce said first or second output signal respectively when it receives a pulse of said second or third train respectively without having first received the corresponding pulse of said first train;

whereby the first output signal indicates that a desired key has been correctly selected and the second output signal enables the respective message or part of a message represented by the selected key to be communicated to the processor.

4,494,111

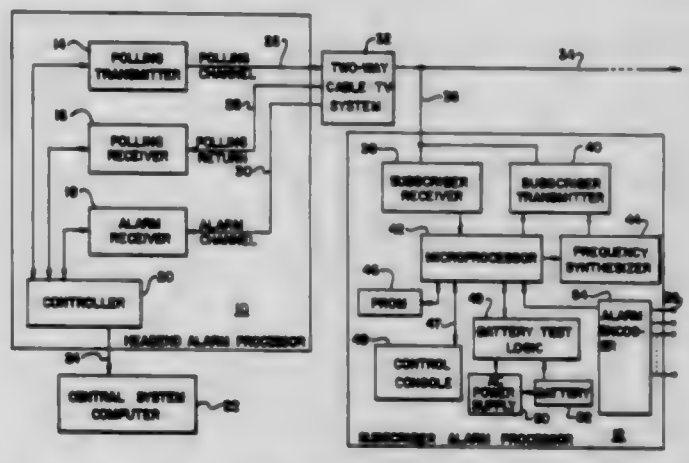
FREQUENCY AGILE SECURITY APPARATUS

Joseph D. Rocci, Lansdale; Stephen E. Crook, Horsham, and Marc Kauffman, Elkins Park, all of Pa., assignors to General Instrument Corporation, New York, N.Y.

Filed Dec. 7, 1981, Ser. No. 328,301

Int. Cl.³ G08B *1/08*; H04N *1/00*

U.S. Cl. 340—533 6 Claims



1. A subscriber security apparatus for use in conjunction with a cable communication system and headend apparatus including means for transmitting first and second command messages modulating a first radio frequency signal, and means for receiving from said subscriber security apparatus a polling return message modulating a second radio frequency signal and an alarm message modulating a third radio frequency signal, said subscriber security apparatus having an address associated therewith, said subscriber security apparatus comprising:

means for receiving said first and second command messages;

frequency control means for setting the respective frequencies of said second and third radio frequency signals;

means responsive to said means for receiving said first command message including an address specified in said first command message, and coupled to said frequency control means for setting the frequency of said second radio frequency signal to a value specified in said first command message, when said address of said subscriber security apparatus matches said address specified in said received first command message; and

means responsive to said means for receiving said second command message including an address specified in said second command message, and coupled to said frequency control means, for setting the frequency of said third radio frequency signal to a value specified in said second message, when said address of said subscriber security apparatus matches said address specified in said received second command message.

4,494,112

ULTRASENSITIVE APPARATUS AND MONITORING METHOD FOR DETECTING CHANGE IN FLUID FLOW

Stephen F. Strelb, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 184,559, Sep. 5, 1980, Pat. No. 4,433,329. This application Aug. 18, 1982, Ser. No. 409,377

The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.

Int. Cl.³ G06B *21/00*

U.S. Cl. 340—606 8 Claims

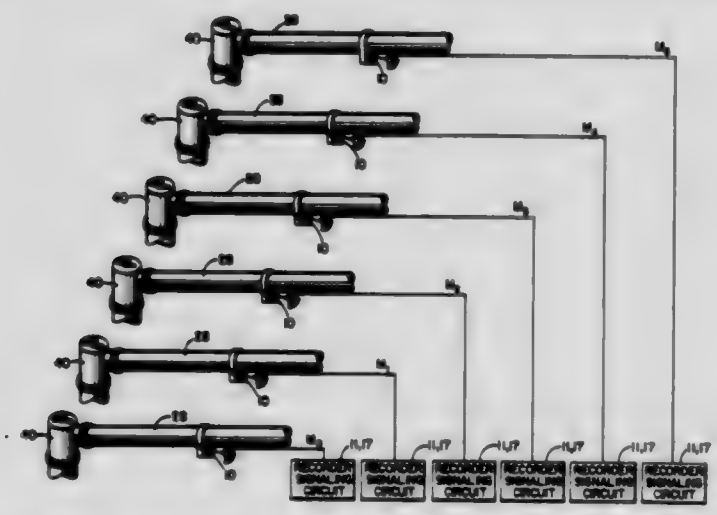
1. Method of providing detection of fluid flow in a series of relief flowlines at a central control center, wherein activation

of a series of control valves controlling discharge can be pinpointed, comprising:

(a) positioning at least one of a series of transducer-meters for sensing heat flux in a selected location that is (i) radially disposed exterior to at least one of said flowlines in heat conducting contact therewith while maintaining integrity of said at least one flowline radially intact and (ii) linearly disposed along said one flowline closely adjacent to at least one of said series of control valves so that fluid discharge through said at least one control valve can be accurately detected;

(b) simultaneously feeding signals from said one of transducer-meters to a corresponding series of recorder and signaling circuits located at said central control center wherein a single operator can monitor all recorder and signaling circuits subtantially unaided;

(c) for each of said series of meters, continuously recording at an associated recorder and signaling circuit, a baseline



signal constant with time but above a predetermined threshold level, said baseline signal being indicative of a NO-FLOW steady state temperature condition within said at least one flowline at said selected location;

(d) monitoring change in fluid flow interior of said one flowline at said selected location by generating and recording a transient cascaded output signal proportional to transient heat flux detected exterior of said one flowline; at said control center, said recorded transient signal deviating in amplitude from said prior recorded baseline signal whereby said change in fluid flow can be accurately indicated thereby indicating the occurrence of said transient cascaded signal output at said control center so as to pinpoint location of one or more of said series of control valves undergoing discharge.

4,494,113

METHOD AND APPARATUS FOR SELF-CONTROL IN DISTRIBUTED PRIORITY COLLISION

Hiromasa Yamaoka; Yuzaburo Iwase, and Kazuhisa Matsunaga, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 10, 1982, Ser. No. 356,891

Claims priority, application Japan, Mar. 13, 1981, 56-35378; Jun. 3, 1981, 56-84377

Int. Cl.³ H04Q 9/00

U.S. Cl. 340—825.5 9 Claims

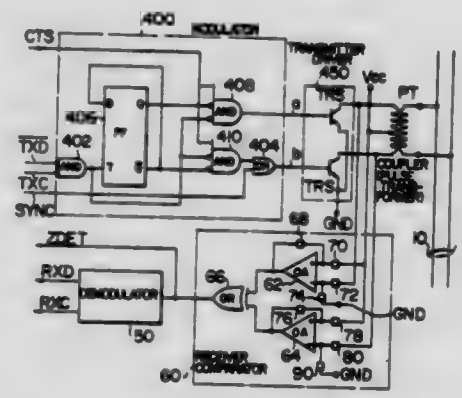
1. A signal transmission method for self-controlling priority among a plurality of distributed self-control apparatuses each connected to a common transmission time in a multidrop manner, wherein when request-to-send signals are provided from the apparatuses through said common transmission line, each of the apparatuses is allowed to use the common transmission line in turn in accordance with each priority level, comprising the steps of:

(a) assigning a priority time different from each other to a request-to-send (RTS) signal from each of the apparatuses,

(b) assigning another time shorter than any one of the different priority times to an interrupt request-to-send (IRTS) signal from each of the apparatuses, the another time being the same in all of the apparatuses,

(c) counting a clock signal to measure a first period wherein the transmission line is not used.

(d) granting a data transmission through the common transmission line from an apparatus when detecting a logical product signal obtained by ANDing the IRTS signal of the apparatus and a time coincidence detection signal issued when the value counted in the step (c) arrives at a predetermined value corresponding to the another time of the step (b), and if another IRTS signal from another apparatus is not issued,



(e) granting a data transmission through the common transmission line from an apparatus in accordance with the order of the priority time assigned to the request-to-send (RTS) signal when a plurality of the IRTS signals are issued.

(f) granting a data transmission through the common transmission line from an apparatus in accordance with the order of the priority time assigned to the request-to-send (RTS) signal when none of the IRTS signals is issued, and

(g) resetting the counted values counted in the step (c) in the other apparatuses in response to a data transmission signal from the granted apparatus.

4,494,114

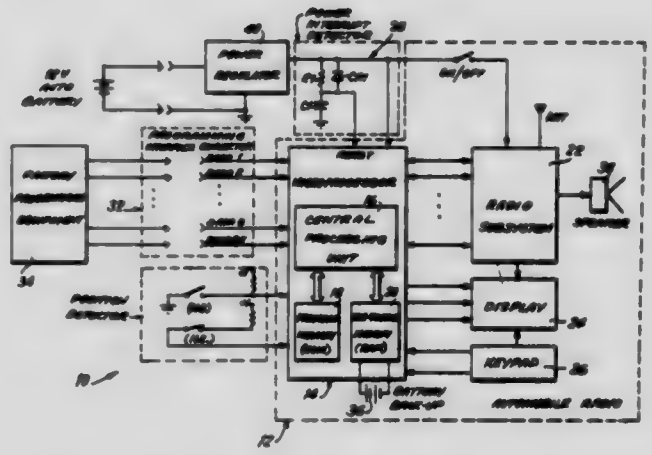
SECURITY ARRANGEMENT FOR AND METHOD OF RENDERING MICROPROCESSOR-CONTROLLED ELECTRONIC EQUIPMENT INOPERATIVE AFTER OCCURRENCE OF DISABLING EVENT

Norman Kaish, Whitestone, N.Y., assignor to International Electronic Technology Corp., Far Rockaway, N.Y.

Filed Dec. 5, 1983, Ser. No. 558,115

Int. Cl.³ G08B 13/06; G06F 7/00

U.S. Cl. 340—825.31 31 Claims



1. A lock-out security arrangment for rendering electronic equipment having a normal operation inoperative after a disabling event has occurred, and for maintaining the equipment inoperative after the disabling event has terminated, comprising:

(a) a microprocessor having an internal, non-volatile, protected memory accessed solely by the microprocessor and

protected from interrogation external to the microprocessor, said microprocessor being operative for executing a program stored in the internal memory, said program having an operational routine for controlling the normal operation of the equipment, and a security routine for controlling the security of the equipment;

(b) said security routine having means for distinguishing between an initial execution of the security routine and a subsequent execution of the security routine;

(c) means responsive to the initial execution of the security routine, for storing a first code in a secured manner in the internal memory of the microprocessor such that the stored first code is protected from interrogation external to the microprocessor;

(d) code entry means operatively connected to the microprocessor, for entering a second code to the microprocessor;

(e) said security routine having code validity means for comparing the second code entered using the code entry means to the stored first code whose identity is protected from external interrogation;

(f) enabling means responsive to a completed initial execution, or to the subsequent execution, of the security routine, for enabling the microprocessor to execute the operational routine after the first code has been stored in the internal memory of the microprocessor, and for maintaining the equipment normally operational until the disabling event has occurred;

(g) detector means operatively connected to the microprocessor, for detecting when the disabling event has occurred; and

(h) disabling means responsive to the detector means and operatively connected to the microprocessor, for disabling the equipment from normal operation after the disabling event has occurred, said disabling means being further operative for maintaining the equipment disabled, even after the disabling even has terminated, until the second code matches the stored first code.

4,494,115

CONTROLLER FOR A LOCKED CARRIER DISTRIBUTED MULTIPLEXED TELEMETRY SYSTEM

Norman H. Gholson, Long Beach, Miss., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 15, 1981, Ser. No. 283,418
Int. Cl.³ H04Q *11/04*
U.S. Cl. 340—825.65 6 Claims



1. A controller for a locked carrier distributed multiplexed telemetry system comprising:

means for detecting the presence of a pilot signal;

means for counting each time said pilot signal cycles from off to on, a particular command to be executed being determined by the count of said counting means; and

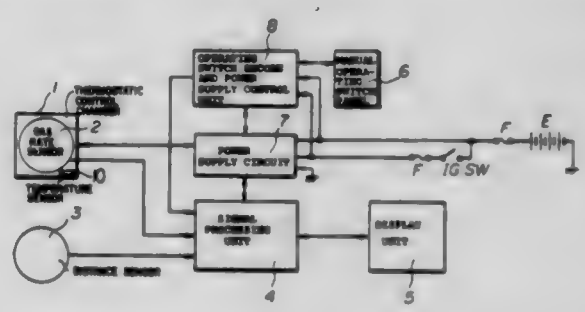
means for resetting said counting means when a d.c. power supply input is cycled from off to on.

4,494,116

APPARATUS FOR VISUALLY INDICATING A CURRENT TRAVEL ROUTE OF A VEHICLE

Katsutoshi Tagami; Tsuneo Takahashi, both of Saitama; Shinichiro Yasui, Tokyo; Masao Sagisawa, Saitama, and Fumitaka Takahashi, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 2, 1981, Ser. No. 298,633
Claims priority, application Japan, Sep. 4, 1980, 55-122892; Sep. 4, 1980, 55-122893; Sep. 4, 1980, 55-122895
Int. Cl.³ G08G *1/12*; G01P *15/00*
U.S. Cl. 340—995 5 Claims



1. In a visual travel route indicating apparatus for use in a vehicle wherein a current location point in terms of two-dimensional coordinates per a given unit distance of travel of the vehicle is arithmetically obtained from a current output from a distance sensor for detecting a current distance of travel of the vehicle with respect to a starting point and a current output from a gas rate sensor for detecting a current azimuthal deviation generated by the vehicle during a turning operation, the thus-obtained data on a current location of the vehicle changing from time to time as the vehicle travel progresses being stored in sequence so as to be appropriately processed for visually displaying a finite yet continuous path of travel of the vehicle, said indicating apparatus including at least a power source;

an improvement comprising:

a thermostatic control chamber, said gas rate sensor being isolated within the atmosphere of said thermostatic control chamber so as to permit heating thereof to a desired constant temperature;

power supply circuit means for detecting the on/off state of an ignition switch of said vehicle;

said power supply circuit means including relay means, operatively connected with said power source, for directly supplying power from said source to said thermostatic control chamber when said ignition switch is detected to be closed; and

self-holding circuit means operatively cooperating with said relay means for holding said relay means so as to supply power to said thermostatic control chamber when said ignition switch is detected to be opened.

4,494,117

DUAL SENSE, CIRCULARLY POLARIZED HELICAL ANTENNA

H. Paris Coleman, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 19, 1982, Ser. No. 399,519
Int. Cl.³ H04B *7/00*
U.S. Cl. 343—365 9 Claims

7. An orthogonal mode helical antenna comprising:

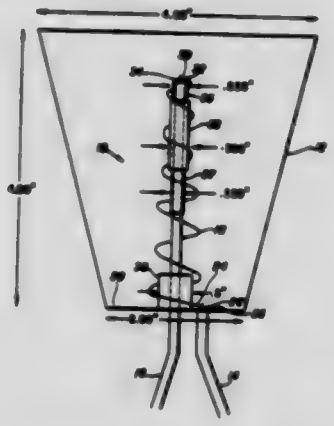
a helical antenna element with a base and a top;

a ground positioned at the base of said helical antenna element;

a first feed line that is a co-axial cable terminating at said ground plane and electrically coupled to the base of said helical antenna element;

a second feed line that is a co-axial cable passing through said ground plane and terminating at the top of said helical

antenna element and electrically connected thereto wherein said second feed line is substantially aligned along the axis of symmetry of said helical antenna element;



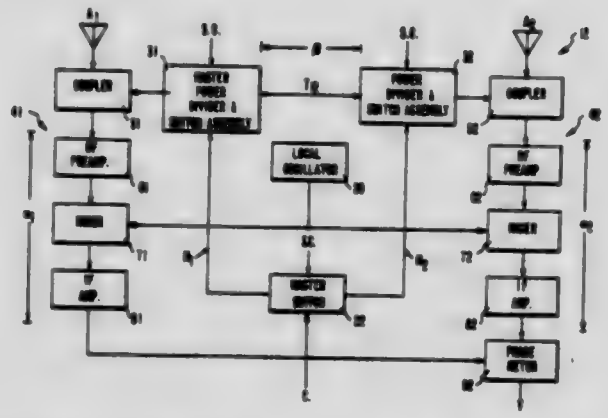
and a metal cone with its narrow end attached to said ground plane and with said helical antenna element positioned within said metal cone wherein said metal cone and said helical antenna element have a common axis of symmetry.

4,494,118

DIRECTION FINDING INTERFEROMETER INTERNAL CALIBRATION SYSTEM

Ross E. Graves, Santa Fe, N. Mex., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Aug. 18, 1983, Ser. No. 524,274
Int. Cl.³ G01S 5/02
U.S. Cl. 343—424
5 Claims



1. An internal calibration system for use with a direction finding interferometer having a plurality or receiving antenna elements, a local oscillator, at least one phase meter, and a plurality of channel receiving means associated with each said receiving antenna element, each said channel receiving means including a radio-frequency preamplifier, a mixer connected to both said radio-frequency preamplifier and said local oscillator, and an internal intermediate-frequency amplifier connected to said mixer and one of said at least one phase meter, said internal calibrations system comprising:

plural power dividers, each power divider having an input and first and second outputs, each power divider being associated with one of said channel receiving means, the second output of each power divider being operatively connected to the associated of said channel receiving means;

a master switch operatively connected to said power dividers for directing a calibrate signal to selected of said power dividers;

a signal source for providing the calibrate signal to said master switch;

at least one inter-channel transmission line switchably connected to the first output of each of two of said power dividers; and

secondary switching means associated with each power divider to permit the calibrate signal to bypass said power divider while passing from one of said at least one inter-channel transmission line to the associated channel receiving means.

4,494,119

DISTRESS RADIOLOCATION METHOD AND SYSTEM

Fred Wimbush, Toronto, Canada, assignor to 122923 Canada Limited, Toronto, Canada

Filed Aug. 4, 1983, Ser. No. 520,327
Int. Cl.³ H04B 7/185; G01S 5/02
U.S. Cl. 343—457
25 Claims



1. A system for locating a signal source transmitting a short duration signal from an unknown location within an area of coverage, said system comprising:

receiving means at a plurality of known geographical locations for receiving the short duration signal, said receiving means including measuring means for developing a numerical representation of a magnitude of the received signal at each known location; and

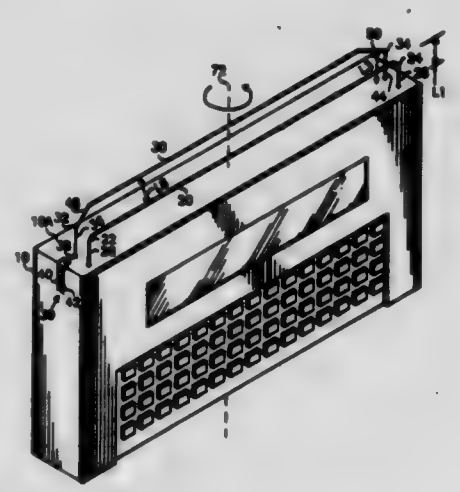
calculating means for numerically calculating, from the numerical representations and the known locations, the geographical location of the signal source.

4,494,120

TWO ELEMENT LOW PROFILE ANTENNA

Oscar M. Garay, North Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 29, 1983, Ser. No. 489,894
Int. Cl.³ H01Q 1/48
U.S. Cl. 343—702
3 Claims



1. A low profile antenna comprising:

a counterpoise of electrically conductive material having a surface;

a passive element oriented substantially parallel to said counterpoise surface and situated at a predetermined first distance above said counterpoise surface, said passive element having first and second opposed ends each of which is electrically connected to said counterpoise surface; and

an active element situated adjacent and spaced apart from

said passive element in a plane substantially parallel to said counterpoise surface and at a second predetermined distance above said counterpoise surface and including a middle portion and first and second end portions, each of said portions exhibiting a respective predetermined length,

said middle portion being oriented substantially parallel to said passive element;

said first end portion extending angularly away from one end of said middle portion toward a first locus adjacent to the first end of said passive element at which point is designated the antenna feed-point, said feedpoint being separated from said counterpoise surface,

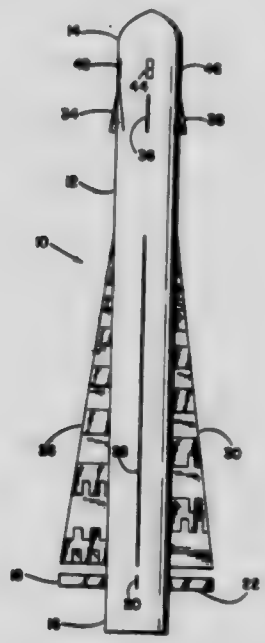
said second end portion extending from the remaining end of said middle portion toward a second locus adjacent to the second end of said passive element at which point said second end portion is electrically connected to said counterpoise surface.

4,494,121

DIRECTION FINDING ANTENNA

Carlton H. Walter; Peter Bohley, both of Columbus, Ohio, and Robert P. Couture, Irvine, Calif., assignors to Interstate Electronics Corporation, Calif.

Filed May 10, 1982, Ser. No. 376,292
Int. Cl.[3] G09F 9/30
U.S. Cl. 343—708 17 Claims



1. A direction finding antenna system for use on an aerospace vehicle, said antenna system comprising:

a plurality of log periodic monopole antennas, wherein each of said antennas includes a plurality of antenna stubs arranged in a substantially log periodic sequence, wherein said stubs are mounted on an aerodynamic wing on the outside of said vehicle in order to conserve space inside said missile, and wherein at least one of said stubs undulates so as to produce lower resonant frequencies for said stubs; and

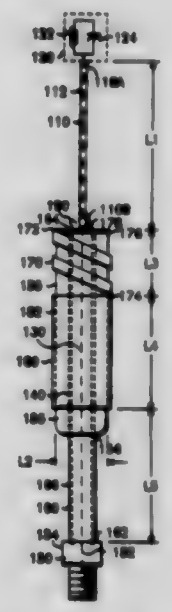
a feedline for each of said antennas and connected to said stubs so that adjacent ones of said stubs are electrically out of phase, so that performance of said plurality of said antennas is preferentially enhanced in a forward direction towards the nose of said vehicle thus improving the ability of said missile to track a target.

4,494,122

ANTENNA APPARATUS CAPABLE OF RESONATING AT TWO DIFFERENT FREQUENCIES

Oscar M. Garay, N. Lauderdale, and Quirino Balzano, Plantation, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 22, 1982, Ser. No. 452,166
Int. Cl.[3] H01Q 9/16
U.S. Cl. 343—722 5 Claims



1. An antenna exhibiting first and second predetermined resonant frequencies comprising:

a helically configured electrically conductive element having opposed ends, one end of said element being electrically coupled to a feed port;

a first electrically conductive, cylindrically shaped member having opposed ends, one end of said member being electrically coupled to the remaining end of said element, such that when radio frequency energy is applied to said feed port, said element and said first member cooperate to resonate at a first frequency;

a second electrically conductive member having opposed ends, one end of said second member being electrically coupled to said feedport;

said first and second members and said element being substantially aligned so as to share a common axis between the respective ends thereof, and

resonant circuit means, electrically coupled to the remaining end of said second member, such that when radio frequency energy is applied to said feed port, said second member and said resonant circuit means cooperate to resonate at a second resonant frequency.

4,494,123

SELF-ERECTING COMPOSITE ANTENNA STRUCTURE

Larry A. Moore, and John S. Walker, both of Scottsdale, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

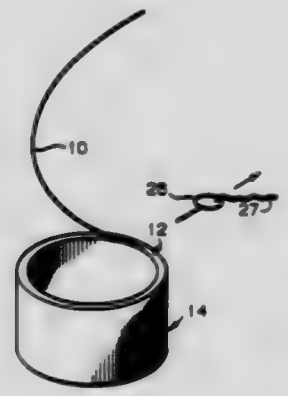
Continuation of Ser. No. 399,076, Jul. 16, 1982, abandoned, which is a continuation of Ser. No. 190,675, Sep. 25, 1980, abandoned. This application Aug. 8, 1983, Ser. No. 520,766
Int. Cl.[3] H01Q 9/30, 1/08
U.S. Cl. 343—900 6 Claims

1. An antenna having a stored mode and an erected mode, said antenna comprising:

a solid, electrically conductive rod including a flexible material and a plurality of stiff fibers embedded in said flexible material so as to impart to said rod a flexural modulus of elasticity in a range of about 17.4×10^6 psi to about 20.6×10^6 psi and an average tensile strength in a range from about 280,000 psi to about 315,000 psi, said rod being capable of coiling into at least one complete loop in the stored mode and erecting into a vertical cantilever in the

form of a substantially unbent column in the erected mode; and

base means having said rod connected thereto adjacent one end, said base means including a portion constructed to receive said rod coiled into at least one complete loop in the stored mode and said base means serving to anchor the one end in the erected mode.

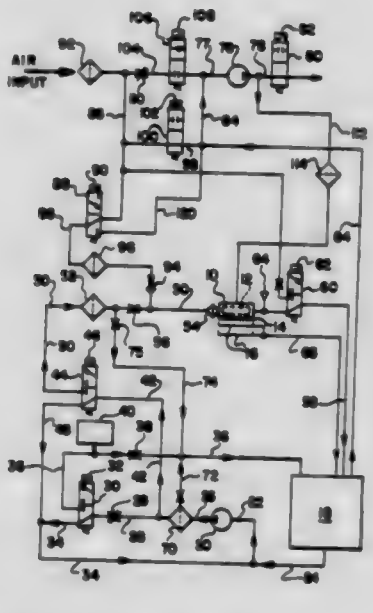


4,494,124

INK JET PRINTER

Michael J. Platt, Englewood, and Theodore F. Williams, Beavercreek, both of Ohio, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 1, 1983, Ser. No. 528,481
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—1.1
24 Claims



16. A method of supplying ink to the print head of a printer for producing a plurality of jet drop streams emanating therefrom, said printer having a source of ink, an ink supply line connected to said print head and having a supply valve thereon for opening and closing said supply line, a pump with an inlet for receiving fluid from said source and an outlet connected to said ink supply line, and an ink return line for conveying ink from said print head to said source and including outlet valve means thereon for opening and closing ink flow therethrough, comprising the steps of:

opening said supply valve to initiate ink flow from said pump through said supply line to said print head;

connecting a first ink recirculation line, including a fixed restriction thereon and accumulator means upstream thereof, between said pump outlet and said source, thereby rapidly increasing ink pressure in said first recirculation line, said ink supply line, and said print head;

closing said outlet valve when ink within said print head reaches a predetermined pressure thereby sending a pressure wave through said print head to initiate jet drop streams therefrom; and

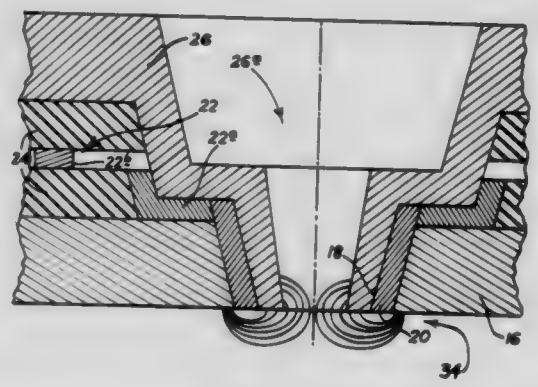
disconnecting said first ink recirculation line from said pump outlet.

4,494,125

DIFFERENTIAL-PERMEABILITY FIELD-CONCENTRATING MAGNETIC READ/WRITE HEAD

Gilbert D. Springer, Sunnyvale, Calif., assignor to Ferix Corporation, Fremont, Calif.

Continuation of Ser. No. 381,922, May 26, 1982, abandoned.
This application Mar. 7, 1983, Ser. No. 472,924
Int. Cl.³ G01D *15/12*
U.S. Cl. 346—74.5
10 Claims



1. In an imaging system of the type employing a magnetic image-storage medium having a magnetizable facial expanse which is placeable operatively in an image-producing zone within the system, a magnetic read/write head comprising

selectively excitable thin-film magnetic pole means disposed adjacent said zone, and arranged to confront closely such a facial expanse, said pole means including inner and outer, substantially circularly symmetric pole portions characterized by different magnetic permeabilities, with that of said outer portion being greater than that of said inner portion,

said pole means being excitable to produce thereadjacent a pair of opposite-polarity magnetic poles having geometries effective to establish, in such an expanse when so placed in said zone, a defined magnetized region characterized by plural, multi-directionally oriented magnetic vectors distributed generally with spherical geometry with respect to the expanse, and further characterized by a magnetic flux density in that part of the region which becomes magnetized through adjacency with said outer pole portion that is greater than that of the part of the region which becomes magnetized through adjacency with said inner pole portion, and

means operatively connected to said pole means for exciting the same.

4,494,126

THERMAL RECORDING HEAD DRIVE DEVICE

Hidemasa Todoh, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 10, 1983, Ser. No. 465,412
Claims priority, application Japan, Feb. 12, 1982, 57-19750
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH
11 Claims

1. A thermal recording head drive device in which a plurality of heat generating resistance elements are arranged in an array over a recording width, comprising:

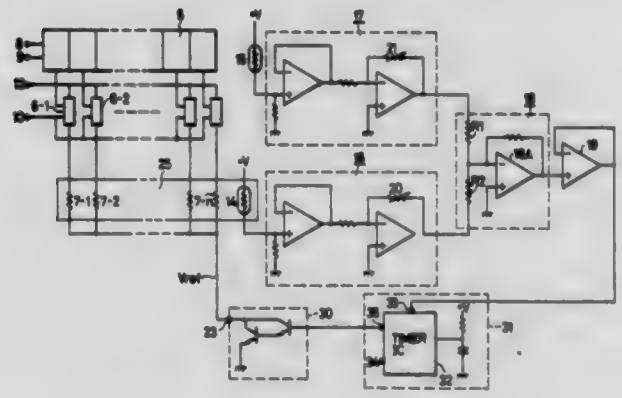
an analog shift register which receives an analog input signal the amplitude of which varies according to densities of picture elements to be recorded, said analog shift register shifting said analog signal input bit by bit according to a clock signal to provide parallel outputs corresponding to an entire line of picture elements to be recorded;

current control circuit means for controlling currents flowing in respective ones of said heat generating resistance

elements, said current control circuit means being connected in series with respective ones of said heat generating resistance elements, and said current control circuits receiving said parallel outputs of said shift register;

voltage control circuit means connected in series between a common connection terminal of series circuits of said heat generating resistance element and respective current control circuit means and a power source terminal;

means for detecting a temperature at at least one predetermined position in said device the temperature of which



affects a recording density of picture elements recorded by the recording head drive device; and

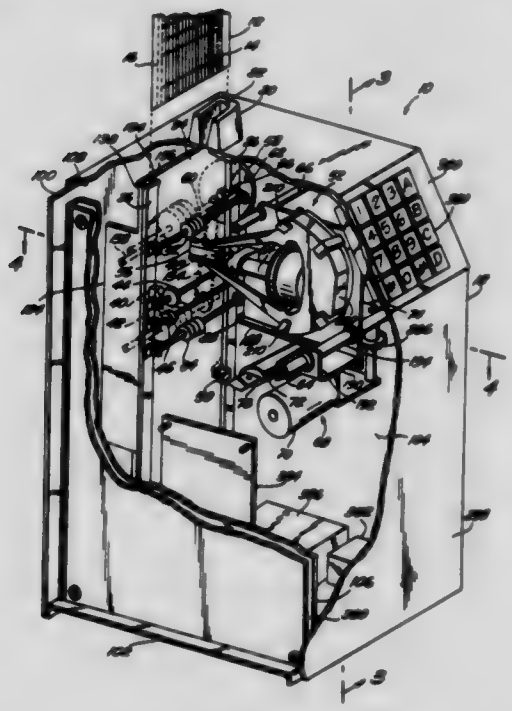
means for controlling a predetermined parameter of said voltage control circuit according to the detected temperature, wherein after analog signals representing an entire line of picture elements to be recorded have been stored in said analog shift register, currents are applied through said heat generating resistance elements for a predetermined period of time according to the corresponding outputs of said shift register and to said parameter of said voltage control circuit means.

4,494,127

APPARATUS AND METHOD FOR RECORDING BOTH MACHINE-READABLE AND PRINTED INFORMATION

Olin B. King, Huntsville, Ala., assignor to SCI Systems, Inc., Huntsville, Ala.

Continuation of Ser. No. 417,507, Sep. 13, 1982, abandoned, and Ser. No. 189,966, Sep. 23, 1980, abandoned. This application Jan. 30, 1984, Ser. No. 574,950
Int. Cl.³ G07C *1/14*
U.S. Cl. 346—82 20 Claims



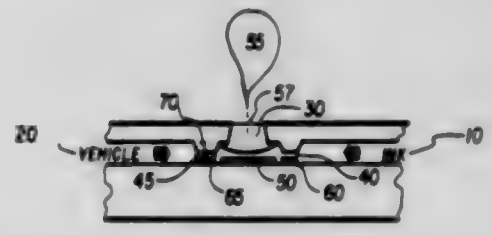
1. A method for recording both magnetic and printed information on a record card, said method comprising the steps of: moving said card into a housing in a first direction past a stationary transducer adapted for reading and recording magnetic information on said card; moving said card in the opposite direction out of said housing; positioning a printer for printing characters on said card in a line substantially parallel to the direction of motion of said card, so that the movement of said card past said transducer creates a corresponding movement of said card past said printer; and controlling the timing at which both said transducer and said printer record information in correspondence with said movements so that both said magnetic and said printed information are spaced along said member by said movements and said printer records information during motion of said card in said opposite direction.

4,494,128

GRAY SCALE PRINTING WITH INK JETS

John L. Vaught, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 17, 1982, Ser. No. 419,299
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—140 R 7 Claims



1. A binary fluid flow valve comprising:

a capillary; and

a heat source coupled to the capillary for boiling fluid in the capillary, to create a stationary vapor bubble which stops the fluid from flowing in the capillary.

4,494,129

ELECTROSTATIC PRINTING APPARATUS

Vladimir Gretchev, Thornhill, Canada, assignor to Delphax Systems, Mississauga, Canada

Filed Dec. 3, 1982, Ser. No. 446,821
Claims priority, application Canada, 391,543
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—154 7 Claims

1. Apparatus for controlling the operation of a matrix of ion deposition points of an electrostatic printer, the ion deposition points being defined by the intersection of a plurality of first electrodes with a plurality of second electrodes to provide a pattern of charge on a rotatable electrostatically chargeable surface corresponding to an image represented by a digital raster scan signal, the plurality of first electrodes being parallel to the axis of rotation and the plurality of second electrodes being located transverse to said plurality of first electrode in a common plane, the apparatus comprising:

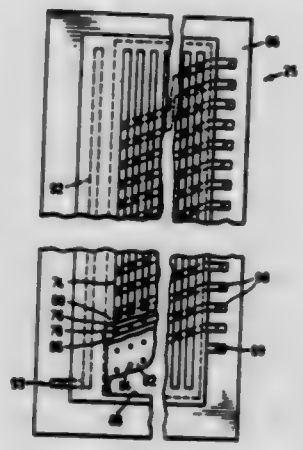
data reformatting means for receiving a digital raster scan input signal, said data reformatting means processing the digital input signal into a plurality of data groups, each data group having the same number of bits, the number of bits being the same as the number of second electrodes, and the number of groups being the same as the number of first electrodes, memory means connected to the data reformatting means for storing the data groups, motion control means responsive to the rotation of the chargeable surface to initiate a scanning operation to energize, in a predetermined sequence, the matrix of ion deposition points,

first electrode energizing means connected to said motion control means to energize said plurality of first electrodes successively during said scanning operation in accordance with the data groups stored in the memory means

second electrode energizing means for energizing said plurality of second electrodes in accordance with the data in a

respective one of said data groups during the energization of the corresponding first electrodes,

said energization being continuously performed in accor-



dance with the data in the memory means whereby, in use, a pattern of charge is deposited on said rotatable electrostatically changeable surface corresponding to the image read by the digital raster scan signals.

4,494,130

LASER PRINTER

Yutaka Kaneko, Yokohama, and Yokata Takashi, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Japan

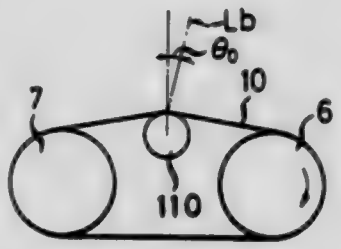
Filed Jul. 15, 1982, Ser. No. 398,630

Claims priority, application Japan, Jul. 15, 1981, 56-109273; Oct. 31, 1981, 56-174735

Int. Cl.³ G01D *15/14*

U.S. Cl. 346—160

10 Claims



1. In a laser printer of the type having:

a photosensitive member of the endless belt type trained over support means and driven for travel while having its position of travel regulated by said support means, said support means including one drive roller and at least one follower roller and serving as regulating means;

means for charging the surface of the photosensitive belt;

a scanning and exposing device including a laser beam irradiating means, a modulating means for modulating said laser beam in accordance with image signals, and means for deflecting the path of said laser beam to be incident on the surface of the photosensitive belt; and

means for developing an electrostatic latent image formed on the surface of the photosensitive belt by scanning thereof by the laser beam;

the improvement comprising:

said means for deflecting being arranged such that the laser beam is incident on the surface of a portion of the photosensitive belt in contact with the regulating means or in the vicinity thereof, the angle of incidence of the laser beam being a non-zero angle with respect to a normal to the surface of the photosensitive belt;

said charging means being located in juxtaposed relation to the flat tension side of the photosensitive belt; and

said developing means being located in juxtaposed relation to a portion of the photosensitive belt in contact with said drive roller.

4,494,131

JOSEPHSON JUNCTION ELEMENT AND METHOD OF MAKING THE SAME

Hiroshi Ohta, Wako, Japan, assignor to Rikagaku Kenkyusho, Japan

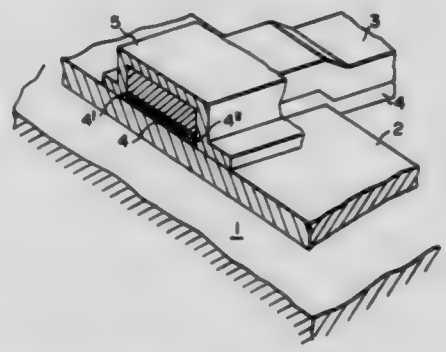
Continuation-in-part of Ser. No. 151,693, May 20, 1980, Pat. No. 4,366,494. This application Oct. 27, 1981, Ser. No. 315,505

Claims priority, application Japan, Oct. 31, 1980, 55-153464; Dec. 20, 1980, 55-181045; Dec. 20, 1980, 55-181046; Dec. 20, 1980, 55-181047

Int. Cl.³ H01L *27/12, 45/00, 49/02, 39/22*

U.S. Cl. 357—5

6 Claims



1. A Josephson junction element comprising a lower strip-like superconductor thin film, an upper strip-like superconductor thin film arranged at an angle to and in crossing relation to said lower superconductor thin film at a crossing area, an insulator layer arranged between said upper and lower superconductor thin films at a region within the crossing area thereof, and a weak link extending across the sides of said insulator layer and at least one of the superconducting thin films at the respective opposite edges of the crossing area and connecting the upper and lower superconductor thin films with each other.

4,494,132

SEMICONDUCTOR OPTO-ELECTRONIC SWITCH

Erhard Kohn, Leingarten, Fed. Rep. of Germany, assignor to Telefunken Electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Jan. 19, 1982, Ser. No. 340,733

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1981, 3105050

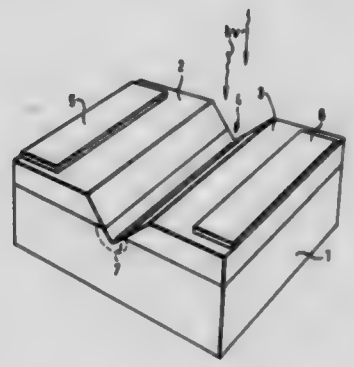
Int. Cl.³ H01L *27/12, 29/06, 29/04, 27/14*

U.S. Cl. 357—30

11 Claims

1. An opto-electronic component comprising: a semiconductor substrate; a semiconductor layer having a higher conductivity then said substrate directly disposed on a surface of said substrate; a V-shaped groove extending from the surface of said semiconductor layer through said semiconductor layer at least to said surface of said substrate and subdividing said

semiconductor layer into two separate semiconductor regions; a respective ohmic contact electrode disposed on the outer surface of each of said two semiconductor regions; and said substrate is sensitive to irradiation of the portion of its said



surface exposed by said groove to produce a conductive connection within said substrate and between said two semiconductor regions, whereby upon such irradiation current can flow between said contact electrodes when a voltage is applied across said contact electrodes.

4,494,133

INFRARED SENSITIVE PHOTO DIODE

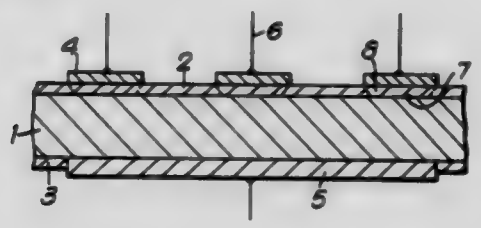
Anthony B. Dean; Robin F. C. Farrow, both of Malvern, England; Piero Migliorato, Rome, Italy; Anthony M. White, and Gerald M. Williams, both of Malvern, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jun. 7, 1982, Ser. No. 386,082

Claims priority, application United Kingdom, Jun. 23, 1981, 8119440

Int. Cl.³ H01L *27/14*

U.S. Cl. 357—30 **12 Claims**



1. An infra red sensitive photo diode comprising:
a substrate of $Cd_xHg_{1-x}Te$ of a first conductivity type,
a layer of CdTe of a second conductivity type on the substrate, the substrate and layer forming a p-n heterojunction, and
a plurality of electrical terminals respectively connected to the substrate and to the layer.

4,494,134

HIGH VOLTAGE SEMICONDUCTOR DEVICES COMPRISING INTEGRAL JFET

Eric J. Wildi, Clifton Park, and Michael S. Adler, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 1, 1982, Ser. No. 394,346

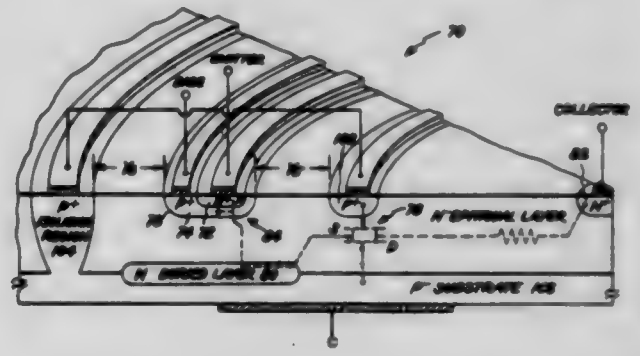
Int. Cl.³ H01L *27/02*

U.S. Cl. 357—43 **8 Claims**

1. In a semiconductor device of the type including a bulk substrate of one dopant type, a layer of opposite dopant type disposed atop the substrate, an isolation region of same dopant type as the substrate integrally connected to the substrate and adjoining the periphery of the layer, a first region of the opposite dopant type extending into the layer from the interior of the upper surface thereof, and a second region of the one dopant type extending into the layer from the upper surface thereof and surrounding the first region, the improvement comprising

(a) a third highly doped region of the opposite dopant type disposed between the layer and the substrate, beneath the second region and surrounding the first region;

(b) a fourth region of the one dopant type extending into the layer from the upper surface thereof, the fourth region



surrounding the first region and, in turn, being surrounded by the second region; and

(c) means for biasing the fourth region to a potential proximate that of the substrate so as to increase the maximum attainable voltage between the first and second regions when the semiconductor device is in a current-blocking state.

4,494,135

PROGRAMMABLE READ ONLY MEMORY CELL HAVING AN ELECTRICALLY DESTRUCTIBLE PROGRAMMATION ELEMENT INTEGRALLY FORMED WITH A JUNCTION DIODE

Michel Moussie, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

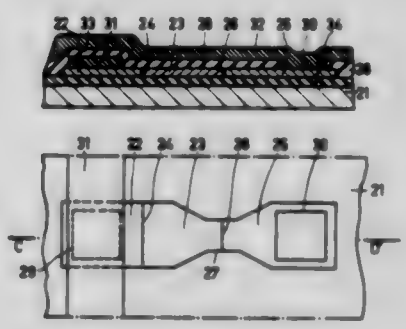
Continuation of Ser. No. 154,251, May 29, 1982, abandoned, which is a continuation of Ser. No. 946,261, Sep. 27, 1978, abandoned. This application Sep. 28, 1982, Ser. No. 425,147

Claims priority, application France, Apr. 6, 1976, 78 10208; Sep. 30, 1977, 77 29477

The portion of the term of this patent subsequent to Oct. 21, 1997, has been disclaimed.

Int. Cl.³ H01L *29/04, 27/10, 45/00*; G11C *17/06*

U.S. Cl. 357—59 **4 Claims**



1. A semiconductor device comprising a programmable read-only memory having a plurality of programmable memory cells, which comprises:
a semiconductor body;
a thermally and electrically insulating layer on said body;
a thin layer of polycrystalline semiconductor material extending on said insulating layer and having regions of opposite type conductivity and a necked-down region;
at least one first p-n junction diode formed between said regions of opposite type conductivity in said thin layer of polycrystalline semiconductor material; and
an electrically destructible programmation element integrally formed with each said first p-n junction diode in said thin layer of polycrystalline semiconductor material to form a programmable memory cell, said programmation element comprising a second shortable p-n junction

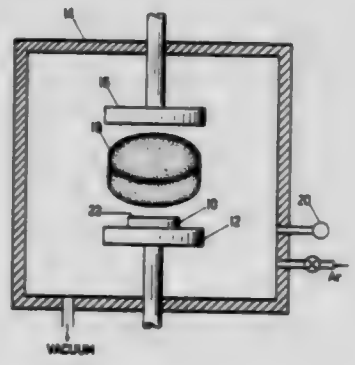
diode formed in said necked-down region of said thin layer and having two semiconductor regions of opposite conductivity type which form the junction, said second diode being connected back-to-back and in series with said first diode, the connected-together regions of said first and second diodes comprising a common region of said thin layer.

4,494,136

SEMICONDUCTOR DEVICE HAVING AN AMORPHOUS METAL LAYER CONTACT

John H. Perepezko, and John D. Wiley, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 81,859, Oct. 4, 1979, Pat. No. 4,350,994. This application Sep. 17, 1982, Ser. No. 419,589
The portion of the term of this patent subsequent to Sep. 21, 1999, has been disclaimed.
Int. Cl.³ H01L *29/12, 23/54*
U.S. Cl. 357—67 16 Claims



1. A metallization device characterized by resistance to corrosion and suitably for high temperature applicantions which comprises

a base selected from the group consisting of semiconductor devices, insulators, ohmic contacts, Schottky barrier contacts, rectifying contacts, metal interconnects, bonded lead wires and gate metallizations and,

bonded to the surface of said base, a layer of a metal elected from the group consisting of a transition metal, a transition metal/normal metal alloy and a transition metal/metalloid alloy, said layer being in an amorphous state.

4,494,137

INTEGRATED INTERFACE CIRCUIT BETWEEN THE RGB MATRIX AND THE VIDEO OUTPUT STAGES OF COLOR-TELEVISION SETS

Laurin C. Freyberger, Bahlingen, and Bernd Novotny, Gundelfingen, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jun. 16, 1982, Ser. No. 388,824
Claims priority, application European Pat. Off., Jul. 8, 1981, 81105292
Int. Cl.³ H04N *9/12, 9/535*
U.S. Cl. 358—27 20 Claims

1. In a color television or the like, the combination comprising:

an RGB matrix having a plurality of output amplifiers, each of said output amplifiers being associated with one of the plurality of chrominance channels and providing a video signal circuit at its output; each having a low output impedance;

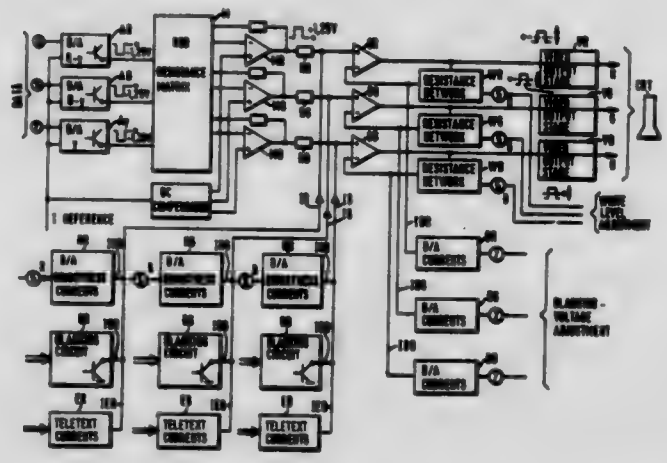
a plurality of video output stages for driving a picture tube or the like;

a plurality of interface circuits, each of said interface circuits coupling the output of one of said plurality of output amplifiers to an input of a corresponding one of said plurality of video output stages, each of said plurality of interface circuits comprising:

an operational amplifier having first and second complementary inputs and an output, said output being coupled to said input of said corresponding one of said plurality of video output stages;

a low-value resistor coupled between the output of said one of said plurality of output amplifiers and said first input;

an adjustable resistance network coupled between said second input and said operational amplifier output for white level adjustment;



blanking voltage adjustment means for supplying a blanking voltage control current to said second input;

brightness means for coupling a brightness control current to said first input; and

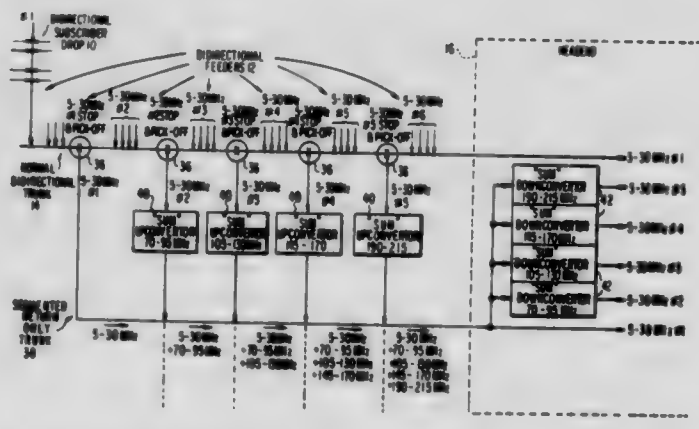
blanking means for coupling a blanking control current to said first input.

4,494,138

SEGMENTED UPSTREAM MANAGEMENT FOR CABLE TELEVISION

Richard L. Shimp, Harrisonburg, Va., assignor to ComSonics, Inc., Harrisonburg, Va.

Filed May 11, 1983, Ser. No. 493,614
Int. Cl.³ H04N *7/10*
U.S. Cl. 358—86 6 Claims



1. A segmented upstream management system for a bidirectional coaxial network, said network including at least one bidirectional trunk and a plurality of bidirectional feeders connected to said trunk, each of said feeders having a plurality of drops, said bidirectional trunk being connected to a hub or headend site from which broad band communication signals eliminate for transmission to each of said drops and to which narrow band communication signals propagate from each of said drops, said management system comprising:

a plurality of rerouting devices spaced along said bidirectional trunk at selected intervals so as to divide the number of said drops connected to said trunk by said feeders into groups, each of said groups including a predetermined number of said drops, each of said rerouting devices being operative to divert said narrow band communication signals to an output port thereof;

a plurality of upconverters each connected to an output port of a corresponding one of said rerouting devices, each of said upconverters translating said narrow band communication signals from the output port of its corresponding rerouting device to a different one of a plurality of predetermined higher frequency bands;

a return only trunk connected between said hub or headend site and the outputs of each of said upconverters; and

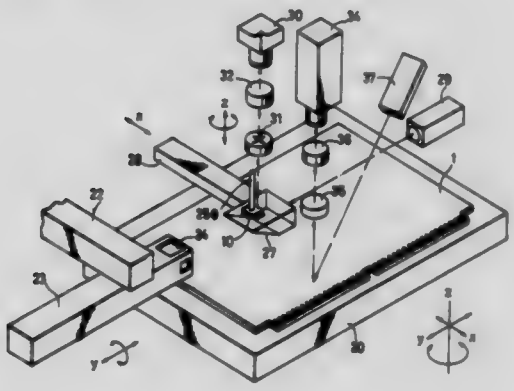
a plurality of synchronous down converters at said hub or headend site connected to said return only trunk, each of said down converters translating a different one of said plurality of predetermined higher frequency bands to the original narrow band communications signals corresponding to one of said groups, temporal dependence of said narrow band communications signals being preserved by said upconverters and said synchronous down converters.

4,494,139

AUTOMATIC ASSEMBLY SYSTEM

Yoshihiro Shima, Kodaira; Seiji Kashioka, Hachioji; Takeshi Uno, Sayama, and Kunio Suzuki, Chigasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 30, 1982, Ser. No. 363,456
Claims priority, application Japan, Apr. 3, 1981, 56-49313
Int. Cl.³ H04N 7/18
U.S. Cl. 358—101 34 Claims



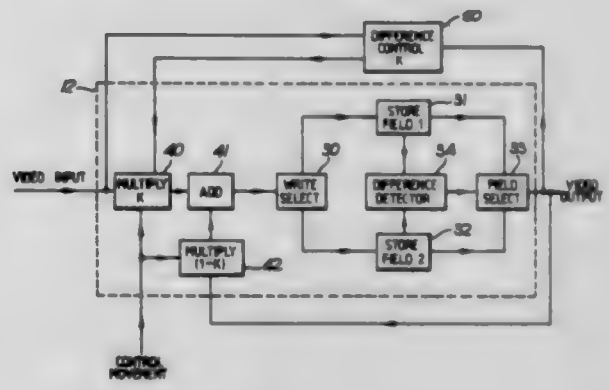
1. An automatic assembly system wherein parts supplied from a feeder are held by a holder means and are automatically mounted onto predetermined positions of a circuit board; comprising a first image pickup device which images at least a portion of said circuit board, said first image pickup device has a fixed field of view and receives images of a plurality of places on said circuit board, a second image pickup device which images at least a portion of the part held by the holder means, said second image pickup device has a movable field of view and receives images of a plurality of places on said part held by the holder means with said holder means kept fixed, a signal processor means which processes an output of said first image pickup device to detect a deviation of said circuit board from a reference position and which also processes an output of said second image pickup device to detect a magnitude of deviation between said part and the predetermined position of said circuit board, said signal processor means processes the plurality of input images from said first and second image pickup devices so as to detect the respective positional deviations of said circuit board and said part, and a positioning device which operates under control of said signal processor so as to adjust said predetermined position of said circuit board to a position opposing to said part and also to move said part toward said circuit board.

4,494,140

T.V. APPARATUS FOR MOVEMENT CONTROL

Peter C. Michael, Basingstoke, England, assignor to Micro Consultants Limited, Berkshire, England

Filed Jan. 19, 1982, Ser. No. 340,619
Claims priority, application United Kingdom, Jan. 22, 1981, 8101916
Int. Cl.³ H04N 7/18, 7/12, 5/21
U.S. Cl. 358—105 13 Claims



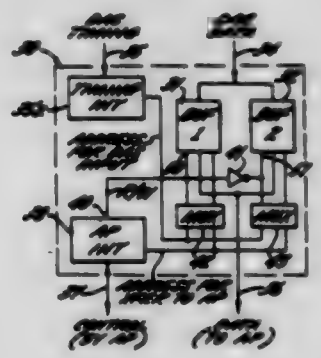
1. A video processing system comprising frame storage means for storing incoming picture information from first and second fields, means for determining any difference in the picture information attributable to movement, control means for reducing the movement content made available from the frame storage means to reduce bandwidth requirements, and feedback means for providing at least a part of the previously stored information for use with at least part of the incoming information to provide residual persistence for moving portions of the picture, said feedback means including an arithmetic processor for manipulating the stored and incoming information in selected proportions determined by the control means.

4,494,141

DUAL PURPOSE ARRAY PROCESSOR FOR A CT SCANNER

Richard A. Altekruse, Sussex, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Sep. 30, 1982, Ser. No. 428,761
Int. Cl.³ H04N 7/13, 7/18
U.S. Cl. 358—111 2 Claims



1. In a CT scanner having a host computer and an array processor interconnected to cooperate in producing CT images from acquired detector data, the improvement comprising, a data acquisition system associated with the detector and having the ability to produce detector data at a rate faster than the maximum continuous input data rate of the host computer, means interfacing said array processor to the data acquisition system including timing means controllable by the data acquisition system at its data rate and control means for responding to array processor instructions, digital filter means in the array processor for compressing the data acquisition system data to produce a filtered data rate compatible with the host computer,

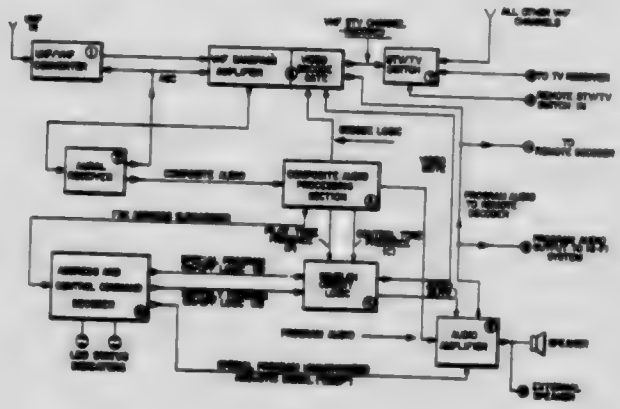
and means for transferring the compressed data to the host computer for storage and further processing.

4,494,142

METHOD OF AND APPARATUS FOR SCRAMBLED TELEVISION PROGRAM ADDRESSABLE SUBSCRIPTION SELECTION AND DECODING

Kantilal Mistry, Freehold, N.J., assignor to Blonder-Tongue Laboratories, Inc., Old Bridge, N.J.

Filed Nov. 20, 1981, Ser. No. 323,280
Int. Cl.³ H04N 7/16; H04K 1/02, 1/04
U.S. Cl. 358—118 22 Claims



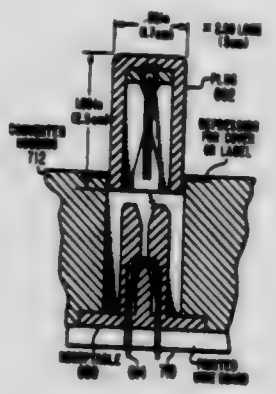
1. A method of subscription scrambled television decoding of ordinary scrambled programs transmitted with a pilot-tone-controlled control signal and of special subscription scrambled programs transmitted with a different control signal, that comprises, receiving the scrambled ordinary programs and decoding the same in response to said pilot-tone-controlled control signal; locking out the unsubscribed decoding of special scrambled programs upon receiving said different control signal, but with continued decoding of the ordinary scrambled programs; detecting transmitted unique address information for a special program subscribing receiver; checking the address information to insure its correctness; and thereupon pre-setting in a memory an over-ride of said different control signal; and, in response to said over-ride, enabling the receiving-decoding of said special programs when transmitted and received.

4,494,143

TELEVISION DESCRAMBLER WITH SECURITY PLUG HAVING FOLDED FLEXIBLE PRINTED CIRCUIT BOARD PROVIDING TIER TAG MEMORY

Richard B. Lovick, Glendale, and William L. Firestone, Sepulveda, both of Calif., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 29, 1982, Ser. No. 363,246
Int. Cl.³ H04N 7/16; H04K 1/04; H01R 33/30, 13/62
U.S. Cl. 358—122 3 Claims



1. An improved security arrangement for a television signal decoder, comprising:

receiving means for receiving scrambled television signals, said scrambled signals including identification tier tags indicative of the nature of the program then being received:

tier tag sensing means coupled to said receiving means for sensing said tier tags;

controllable descrambling means coupled to said receiving means for descrambling said scrambled television signals when said controllable descrambling means is enabled;

memory means associated with said decoder, the contents of said memory means establishing the tiers of programs to which said decoder will respond; and

comparison means coupled to said tier tag sensing means and to said memory means for enabling said descrambling means when said tier tags are in a particular relationship with the contents of said memory for decoding said scrambled television signals;

wherein the improvement lies in that said memory means comprises;

first mating means coupled to said comparison means;

second mating means adaptable for being physically mated with said first mating means for establishing electrical connections therewith; and

electrical circuit means interconnected with said second mating means, the nature of said electrical circuit means being predetermined to establish said particular relationship for enabling said descrambling means for programs of particular natures of which said decoder is to respond; and

wherein

said first mating means comprises a multielement receptacle having spring contacts disposed on two sides of a channel;

said second mating means comprises a multielement plug having contacts formed on a folded flexible printed circuit board for mating with said receptacle contacts, said board being secured at the fold thereof to one end of a housing, the opposite end of said housing having an opening to enable insertion of said board into said channel upon mating of said plug and receptacle;

said electrical circuit means comprises a pattern of conductors disposed on said folded flexible printed circuit board; and wherein

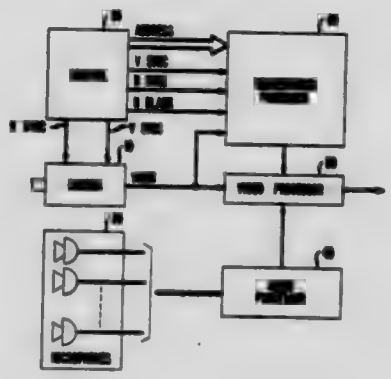
said receptacle includes a divider for bifurcating said channel such that when said plug and receptacle are mated said divider separates the ends of said folded flexible circuit board so as to bring said plug contacts into contact with said receptacle contacts.

4,494,144

REDUCED BANDWIDTH VIDEO TRANSMISSION

Earl F. Brown, Piscataway, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 28, 1982, Ser. No. 392,745
Int. Cl.³ H04H 7/12
U.S. Cl. 358—133 12 Claims



7. Apparatus for reducing the bandwidth of video camera signals comprising:

means for dividing the image represented by said video signals into segments; and

means for automatically altering said video signals in accor-

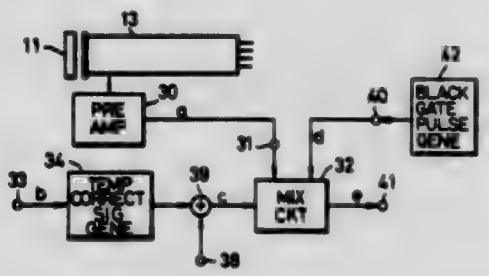
dance with an attribute of said image within said segments to reduce said bandwidth of video camera signals to be transmitted.

4,494,145

TEMPERATURE COMPENSATION CIRCUIT IN A PICKUP TUBE DEVICE

Seigo Kokufukata, and Tetsuya Sekido, both of Tokyo, Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Sep. 10, 1982, Ser. No. 416,645
Claims priority, application Japan, Sep. 16, 1981, 56-145786
Int. Cl.³ H04N 5/14
U.S. Cl. 358—163 6 Claims



1. A temperature compensation circuit in a pickup tube device comprising a pickup tube, a bias lighting device provided at the front surface of said pickup tube for irradiating a bias light, a circuit for generating a shading compensation signal, and a circuit for supplying a black gate pulse, said temperature compensation circuit comprising:

a temperature compensation signal generating circuit for generating a temperature compensation signal for cancelling variation in a signal current component from said pickup tube due to variation in the bias light obtained from said bias lighting device which is in accordance with temperature variation;

means for obtaining a multiplexed compensation signal by multiplexing the temperature compensation signal generated by said temperature compensation signal generating circuit with said shading compensation signal; and

a mixing circuit for mixing said multiplexed compensation signal,

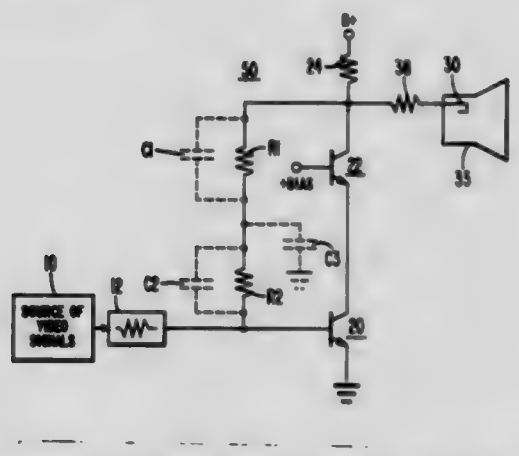
an output signal of said pickup tube, and said black gate pulse.

4,494,146

WIDEBAND KINESCOPE DRIVER AMPLIFIER

Satpreand V. Naimpally, Indianapolis, and James C. Tallant, II, Hamilton, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 21, 1983, Ser. No. 515,851
Int. Cl.³ H04N 5/14, 5/68; H03K 5/00
U.S. Cl. 358—184 8 Claims



1. In a video signal processing system including an image reproducing device for displaying video information in response to video signals supplied thereto from a source of video signals, a driver amplifier stage for supplying said video signals to said image reproducing device comprising:

an input signal path;

an amplifier with a signal input for receiving input video signal from said source conveyed via said input signal path, and a signal output from which amplified video signals are provided to said image reproducing device; and

a degenerative feedback path coupled from said amplifier output to said input signal coupling path, wherein for improving the high frequency response of said amplifier said feedback path includes plural resistors connected in series, said plural resistors coacting with parasitic capacitances associated with the signal output of said amplifier stage and with said feedback path; and wherein

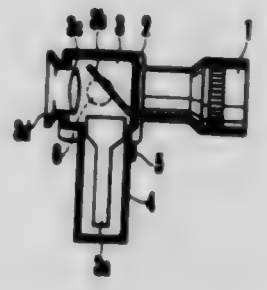
for reducing the magnitude of an unwanted ringing characteristic associated with said improved high frequency response said plural resistors are selected to exhibit mutually different values with a prescribed mutual ratio, and the one of said plural resistors having a value larger than another of said plural resistors is located nearest to said amplifier output.

4,494,147

VIDEO CAMERA

Yoshio Komine, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1982, Ser. No. 364,889
Claims priority, application Japan, Apr. 16, 1981, 56-57449
Int. Cl.³ H04N 5/26
U.S. Cl. 358—209 1 Claim



1. A video camera comprising:

a lens system for forming an object image;

image pick up means for converting the object image into an electrical signal;

a cathode ray tube responsive to the electrical signal for producing a display;

finder means for visually recognizing an image picture displayed on said cathode ray tube;

reflecting optical means, disposed between said cathode ray tube and said finder means, for directing the image picture on said cathode ray tube to said finder means;

a grip casing for supporting the camera and for holding said cathode ray tube, said reflecting optical means and said finder means;

a first casing for holding said image pick up means and said lens system;

rotary connecting means for rotatably connecting said first casing and said grip casing and for including an opening through which a cable for transmitting the electrical signal obtained in said image pick up means to the cathode ray tube passes; and

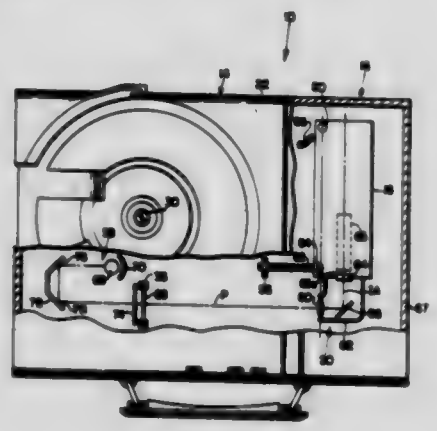
a limiting member for limiting the rotation angle of said rotary connecting means between the position at which a longitudinal direction of said first casing is almost parallel to that of said grip casing and that at which the longitudinal direction of said first casing is almost vertical to that of said grip casing.

4,494,148

COMPACT VIDEO SLIDE PROJECTOR

Thomas A. Svatek, Carlisle, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 30, 1982, Ser. No. 430,524
Int. Cl.³ H01J 29/89
U.S. Cl. 358—226 2 Claims



1. A compact video slide projector for providing video image signals that represent an image recorded on a slide transparency, said projector comprising:

a housing;

a slide holder located in an optical image projection path extending along a first direction within said housing;

a light source for illuminating a slide in said holder to project an optical image of the recorded image on the slide along said projection path;

an elongated video camera, including an optical image input section at one end thereof, for receiving optical image bearing light provided along an input axis directed to said input section and being substantially parallel to the long dimension of said camera, and for converting the received image light into representative video signals that are available at a camera output;

means for mounting said camera in said housing so its long dimension extends in a second direction substantially perpendicular to said first direction with said input section closest to said projection path so that said input axis and said projection path are substantially mutually perpendicular;

optical means between said holder and said input section for directing image light from said projection path along said input axis so that an optical image of the recorded image on the slide in said holder is provided to said camera input section; and

a slide changing mechanism for selectively moving slides into and out of said holder, said slide changing mechanism being located within an included angle space bounded along two sides by said elongated camera and said projection path having said holder therein.

4,494,149

FACSIMILE COMMUNICATION DATA RECORDING APPARATUS FOR FACSIMILE TRANSCEIVER

Nobora Furakawa, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

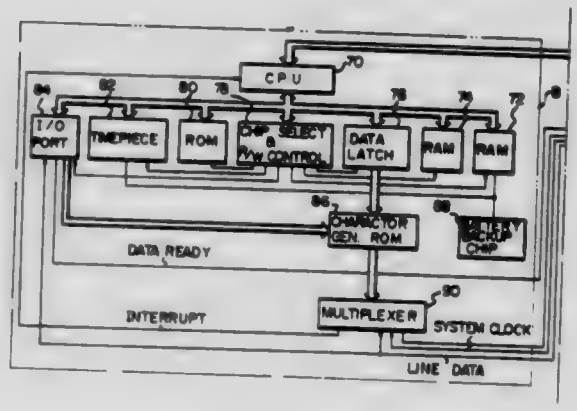
Filed Sep. 14, 1981, Ser. No. 301,666
Claims priority, application Japan, Sep. 22, 1980, 55-131974; Sep. 22, 1980, 55-131975; Sep. 22, 1980, 55-131976
Int. Cl.³ H04N 1/32
U.S. Cl. 358—257 12 Claims

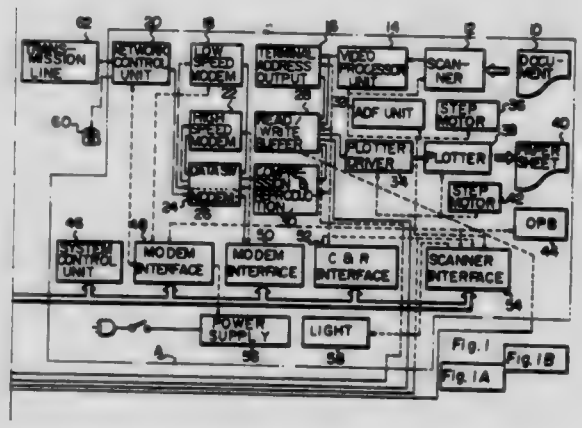
1. A facsimile communication data recording apparatus for a facsimile transceiver having a transmitter and a receiver provided with a printing means, comprising:

a central processing unit connected to the facsimile transceiver for controlling reading/writing operation of administrant data which is generated by the facsimile transceiver during operation thereof;

memory means connected to the central processing unit for storing the administrant data at each time of communication by the facsimile transceiver; and

control means for controlling the memory means and the printing means such that the administrant data stored in





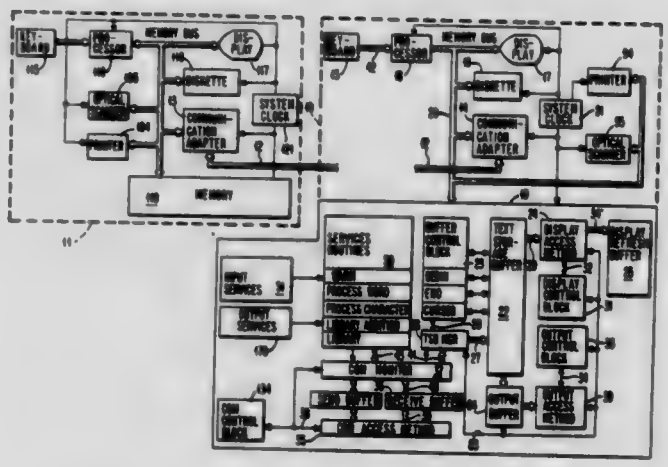
the memory means are read by the central processing unit and printed out by the printing means when an amount of the administrant data stored in the memory means reaches a predetermined value.

4,494,150

WORD AUTOCORRELATION REDUNDANCY MATCH FACSIMILE COMPRESSION FOR TEXT PROCESSING SYSTEMS

Norman F. Brickman, Potomac, and Walter S. Rosenbaum, Bethesda, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 13, 1982, Ser. No. 397,704
Int. Cl.³ H04N 7/12
U.S. Cl. 358—260 11 Claims



1. A method for encoding and transmitting a text document

from a first information processing system to a second remote information processing system comprising the steps of:

(a) storing a library of addressable text strings in said first information processing system;

(b) storing an identical library of addressable text strings in said second remote information processing system;

(c) comparing each text string in a text document to be transmitted to the library in said first information processing system;

(d) transmitting only the library address and the page location of each text string that compares equal to a library text string;

(e) storing each text string that compares unequal in the library memory of said first information processing system;

(f) transmitting each text string that compares unequal to said second remote information processing system for storage in its library memory; and

(g) reconstructing the text document at the second remote information processing system using the transmitted library addresses and page locations.

4,494,151

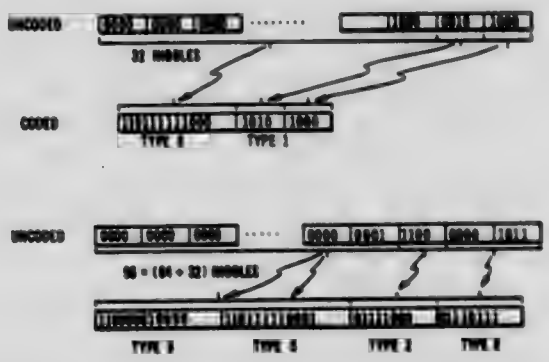
4-PIXEL RUN-LENGTH CODE FOR DATA COMPRESSION

Henry H. Liao, Rossmore, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 54,389, Jul. 2, 1979, abandoned, and Ser. No. 150,780, May 19, 1980, abandoned. This application Feb. 9, 1982, Ser. No. 347,203

Int. Cl.³ H04N *7/12*

U.S. Cl. 358—261 20 Claims



1. A method for the compression of serial binary data comprising the steps of:

separating said serial data into bit nibbles,

counting the run length of all-zero nibbles received prior to receiving a terminating nibble,

converting the run length of all-zero nibbles into a first code word portion,

converting the terminating nibble data pattern into a second code word portion, the more common terminating nibble data patterns being compressed into second code words of shorter length than the original data,

generating a plurality of flag bits to identify the format of said code word, and

combining the first and second code word portions and said flag bits into a code word a multiple of n bits long.

4,494,152

CHARACTER AND IMAGE DATA READING SYSTEM

Masami Kurata, and Takashi Okmori, both of, Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1981, Ser. No. 332,778

Claims priority, application Japan, Jan. 12, 1981, 56-2121

Int. Cl.³ H04N *1/10*

U.S. Cl. 358—293 9 Claims

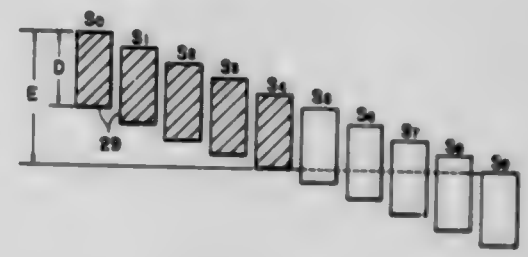
1. A character and image data reading system for a character and image data reading apparatus, comprising:

a solid image pickup element having a light receiving window for reading character and image data therethrough; and

an auxiliary scanning mechanism for moving said light receiving window relative to an original by a predetermined distance during an integration period of said solid image pickup element, and predetermined distance being equal to or longer than a first calculated length which is obtained by subtracting a length in the auxiliary scanning direction of said light receiving window from an auxiliary scanning width for one line and said predetermined distance being shorter than said auxiliary scanning width for one line;

said solid image pickup element reading chaacter and image data while said light receiving window is being moved in the auxiliary scanning direction, when said first calculated length in the auxiliary scanning direction of said light receiving window is shorter than the auxiliary scanning width for one line; and,

memory means for receiving character and image data read by said solid image pickup element during said integration period.



4,494,153

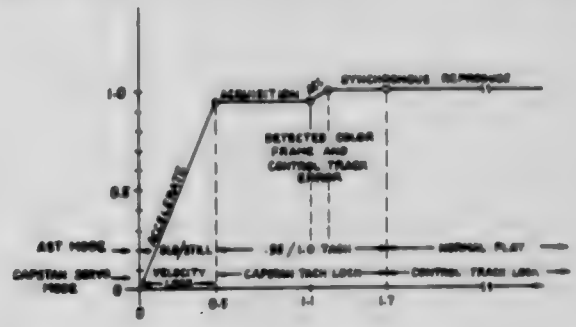
METHOD OF OPERATING A SIGNAL REPRODUCTION APPARATUS FOR EFFECTING SYNCHRONOUS REPRODUCTION OF RECORDED SIGNALS

Raymond F. Ravizza, Cupertino, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 278,859, Jun. 29, 1981, abandoned, which is a division of Ser. No. 28,302, Apr. 9, 1979, Pat. No. 4,308,560, which is a division of Ser. No. 889,451, Mar. 23, 1978, Pat. No. 4,163,993. This application Jun. 30, 1983, Ser. No. 509,978

Int. Cl.³ H04N *9/44, 9/491;* G11B *21/10*

U.S. Cl. 358—324 12 Claims



1. A method of operating a signal recording and reproducing apparatus in a manner whereby generally continuously and noise-free transfers of color video signal information are provided while reproducing color video signal information from a magnetic tape and during the transition from a first mode wherein the tape is being transported at a speed substantially different than normal speed to a second mode wherein the tape is transported at normal speed in an apparatus of the type which has rotational means for scanning the magnetic tape along a plurality of adjacent discrete tracks, the rotation means including at least one movable means carrying transducing means, the movable means effecting movement of the transducing means in opposite directions relative to a nominal posi-

tion along a path generally transverse to the direction of the tracks in response to signals being applied thereto, the color video signal having luminanace, color subcarrier, horizontal line synchronizing, vertical field synchronizing and color burst synchronizing components, the method comprising the steps of:

generating positioning signals and applying the same to said movable means to have said transducing means accurately follow a subject track when said apparatus is operating in any one of said first and second modes and during the transition from the first to the second mode;

changing the speed at which said tape is being transported from said different speed to a predetermined speed between said different speed and said normal speed;

initially adjusting the head to track position relationship to effect a transitory condition of synchronous reproduction of the signal information with respect to a reference synchronizing signal when the speed of said tape reaches said predetermined speed, the condition of synchronous reproduction occurring when the head to track position relationship is maintained so that the color subcarier to vertical sync phase relationship corresponds to that of the reference synchronizing signal;

changing the speed of the tape from said predetermined speed to said normal speed;

maintaining the speed of said tape at the normal transport speed upon the tape reaching said normal transport speed;

detecting the reproduced signal information when the tape reaches the normal transport speed to indicate whether synchronous reproduction has been maintained; and

readjusting the head to track position relationship to effect synchronous reproduction of the signal information if the detecting step indicates synchronous reproduction has not been maintained.

4,494,154

PICKUP CONTROL DEVICE AND METHOD FOR FAST OR SLOW REPRODUCTION IN A DISK READING SYSTEM

Toru Akiyama, Saitama, Japan, assignor to Universal Pioneer Corporation, Tokyo, Japan

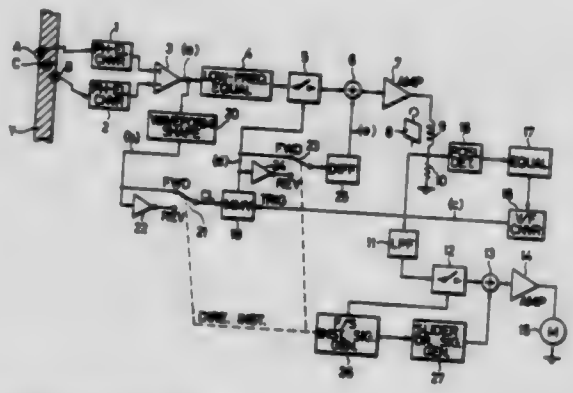
Filed Jul. 23, 1981, Ser. No. 286,221

Claims priority, application Japan, Aug. 4, 1980, 55-110414[U]

Int. Cl.³ G11B *7/00, 21/08, 21/10;* H04N *5/76*

U.S. Cl. 358—342

2 Claims



1. A pickup control for a data reading device comprising:

pickup means including a source of a first laser beam for reading data stored on a disk-shaped recording medium, a source of at least one second laser beam for detecting departure of said first laser beam from a center line of a track recorded on said disk-shaped recording medium, a slider means for moving radially between a circumferential edge and center of said disk-shaped recording medium said first and second laser beams, and a tracking mirror rotatably secured to said slider means for reflecting said first and second laser beams to a surface of said disk-shaped recording medium;

tracking servo means including a light sensor means which responds to a reflection of said second laser beam from said disk-shaped recording medium by outputting a tracking error signal corresponding to a direction and distance of departure of said first laser beam from said center line;

tracking mirror drive means for rotating said tracking mirror in response to said tracking error signal to cause said first laser beam to accurately track said center line;

slider drive means for moving radially said pickup means by said slider means in response to said tracking error signal to cause said first laser beam to accurately track said center line;

first switch means for disconnecting said tracking mirror drive means and said slider drive means from receiving said tracking error signal;

means for converting said tracking error signal into a position detecting signal which upon reaching a predetermined value triggers said first switch means to disconnect said tracking mirror drive means and said slider drive means from receiving said tracking error signal;

means for converting said position detecting signal into a first component of a differentiation output signal which when applied to said tracking mirror drive means for a predetermined time causes said tracking mirror to rotate toward a regular position at the middle of the arc along which said tracking mirror rotates in an opposite direction to which said tracking mirror is initially rotated in response to said tracking error signal;

means for providing said differential output signal to said tracking mirror drive means at the same time that said first switch means is triggered to prevent transmission of said tracking error signal to said tracking mirror drive means;

means for triggering said first switch means to restore transmission of said tracking error signal to said tracking mirror drive means following triggering to prevent said transmission when said first laser beam is accurately tracking said center line;

means for producing a braking second component of said differentiation output signal to said tracking mirror drive means to force said tracking mirror to cease rotating toward said regular position following said application of said first component when said first laser beam is accurately tracking said center line;

means for providing one of fast and slow reproduction signals to said slider drive means to appropriately change the relative position of said pickup means to said disk-shaped recording medium causing said first laser beam to depart from said center line; and

second switch means for disconnecting said slider means from receiving said tracking error signal when said one of fast and slow reproduction signals is provided to said slider drive means without interrupting transmission of said tracking error signals to said tracking mirror drive means and for reconnecting said slider drive means upon cessation of said one of fast and slow reproduction signals.

4,494,155

ADAPTIVE REDUNDANCE IN DATA RECORDING

Dominique H. Veillard, San Diego, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 8, 1982, Ser. No. 440,144

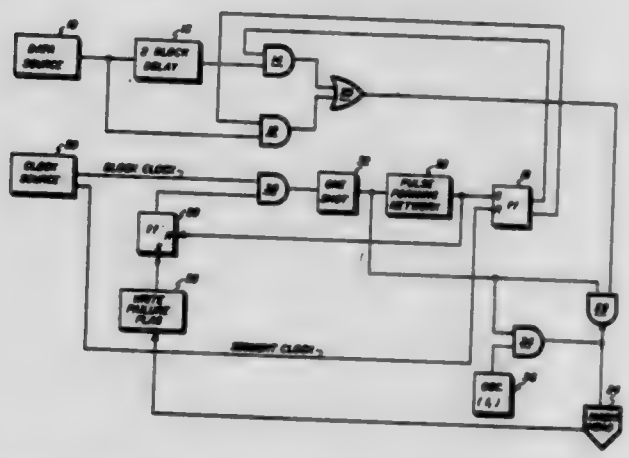
Int. Cl.³ G11B *5/09*

U.S. Cl. 360—47

18 Claims

1. Apparatus for assuredly recording source data in a magnetic medium having surface defects therein that are, statistically, no greater than a given length and which are, statistically, separated by more than a certain distance, said data being formatted in segments that, as recorded in said magnetic medium at a nominal recording speed, have lengths that are no greater than the length of said certain distance, each said segment being comprised of said data formatted in blocks thereof, each said data block being of a length, as recorded in said magnetic medium, that is at least as great as said given length, and each said segment, further, having at least two less data

blocks per segment than said segment would otherwise be capable of containing, said apparatus comprising
(a) magnetic head means,
(b) means for producing a flag signal,
(c) a first data processing path for processing said data,
(d) a second data processing path for processing said data, said second data processing path having, in comparison to that of said first data processing path, means therein for delaying the feedthrough of data therein for a duration corresponding to the time between the start and end of at least two data blocks,
(e) means for producing a write failure signal signifying whether data has been recorded within said magnetic medium, and
(f) switching means cooperative with said means for producing a write failure signal



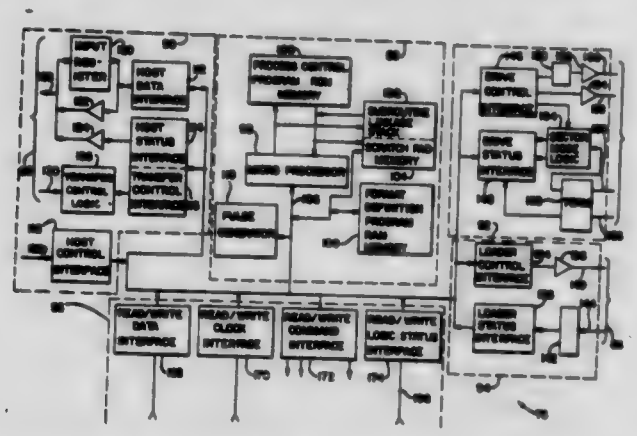
(1) for applying the data of said first data processing path to said magnetic head means in the absence of a write failure signal and
(2) for applying, in response to said write failure signal, said flag signal briefly to said magnetic head means, and thereafter applying the data of said second data processing path to said magnetic head means,
whereby, during playback of the data so recorded in said magnetic medium, the format of the data processed by either or both said data processing paths may be reconstituted, said played-back flag signal serving to signify that the recorded data of the data block just preceding the played-back flag signal is defective, but that correct data may be found in the recorded block just following such flag signal.

4,494,156

SELECTABLE FORMAT COMPUTER DISK COPIER MACHINE

Eric M. Kadison; Subhash C. Batra, both of Mission Viejo, and Gad E. Meir, San Jose, all of Calif., assignors to Media Systems Technology, Irvine, Calif.

Filed May 14, 1982, Ser. No. 378,484
Int. Cl.³ G11B *5/09, 5/86*
U.S. Cl. 360—48 8 Claims



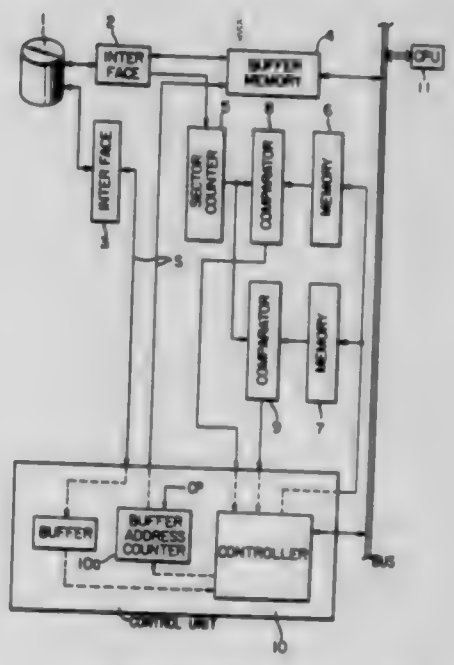
1. A selectable format disk drive controller for controlling the operation of a computer disk drive in reading and writing operations, said controller comprising:
means for process control program storage for permanently storing a process control program;
means for format definition program storage for storing a format definition program so that the contents of said format definition program may be changed in order to select the format for use with said disk drive; and
means for processing connected to both said means for program storage so that steps of said process control program may be executed to use steps of said format definition program in order to control the operation of said disk drive in reading and writing operations.

4,494,157

INFORMATION READOUT APPARATUS

Kenzo Ina, and Teruya Hara, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1982, Ser. No. 405,568
Claims priority, application Japan, Aug. 21, 1981, 56-130205
Int. Cl.³ G11B *5/09*
U.S. Cl. 360—48 5 Claims



1. An information readout apparatus operable with a magnetic disc having a plurality of sectors, comprising:
means for reading data from the magnetic disc;
memory means for storing data read from the magnetic disc; and
control means for writing the data read from the magnetic disc in said memory means in a predetermined sequence when a current sector being read from said magnetic disc is between a start address and an end address thereon, and for reading the written data from said memory means in a different sequence from the writing sequence as required.

4,494,158

MUTING APPARATUS

Kenji Fujibayashi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1982, Ser. No. 353,885
Claims priority, application Japan, Mar. 10, 1981, 56-34297
Int. Cl.³ G11B *15/18*
U.S. Cl. 360—69 6 Claims

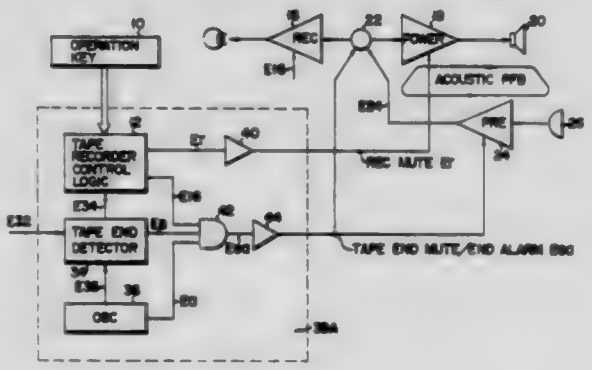
1. An electronic apparatus having an alarm function for indicating a prescribed mode, comprising:
first means arranged to detect said prescribed mode, for supplying a first signal indicative of said prescribed mode on a single signal line, said first signal having a given potential before the detection of said prescribed mode and

wherein said first signal includes an AC component after the detection of said prescribed mode;

second means responsive to said first signal, for generating a second signal when said first signal is at said given potential wherein said second signal is generated in the absence of said prescribed mode;

third means coupled to said single signal line, for generating an alarm sound corresponding to the AC component of said first signal when said first signal includes said AC component, said third means being arranged in acoustic feedback loop relation with respect to said second means wherein howling is produced when an output from said third means is processed by said second means; and

said second means including fourth means coupled to said single signal line, for causing said acoustic feedback loop to be cut off when said first signal on said signal line includes said AC component, so that the howling otherwise caused by the formation of said acoustic feedback loop is suppressed, said fourth means including:



resistor means arranged to be coupled to a power supply, for generating a bias potential from the potential of said power supply;

capacitor means coupled to said resistor means, to provide a time constant sufficiently large to retard a rapid increase of said bias potential during a period of repetition of said AC component; and

switch means coupled to said capacitor means and responsive to said first signal, for decreasing said bias potential relatively rapidly upon receipt of the AC component of said first signal; and

said second means further including amplifier means responsive to said bias potential from said resistor means, for generating said second signal, said amplifier means being disabled from generating said second signal when said switch means receives said AC component and said bias potential is fixed under a certain decreased value.

4,494,159

MAGNETIC HEAD-POSITIONING DEVICE FOR MAGNETIC DISC DRIVE

Chitoshi Takayama; Hideo Hirao; Hideya Yokouchi, and Teruhiko Iida, all of Nagano, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo and Takaji Kogya Kabushiki Kaisha, Nagano, both of, Japan

Filed Oct. 5, 1982, Ser. No. 432,885

Claims priority, application Japan, Oct. 9, 1981, 56-161583

Int. Cl.³ G11B *5/55*

U.S. Cl. 360—78 **17 Claims**

1. A magnetic head-positioning device for a magnetic disc drive, comprising:

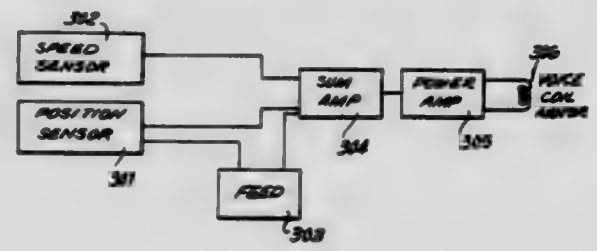
a voice coil motor for transferring a magnetic head to a predetermined track position to stop there;

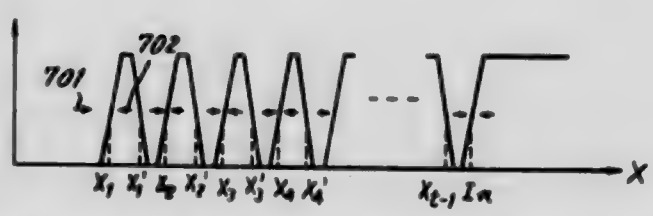
a position sensor for detecting the track position and a median position between a track and an adjacent track;

a feed circuit for transferring said magnetic head to an adjacent track position by accelerating said voice coil motor to said median position between said track and said adjacent track;

a speed sensor for detecting the speed of said voice coil motor;

a summing amplifier for summing outputs of said position sensor, said feed circuit and speed sensor; and





means for driving said voice coil motor, said means for driving providing output driving signals in response to the output of said summing amplifier, said head-positioning device when driven being moved from one track to the next adjacent track.

4,494,160

MAGNETIC HEAD AND METHOD OF MANUFACTURING A MAGNETIC HEAD

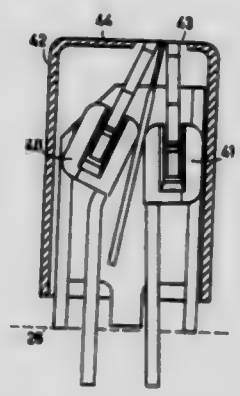
Jan Bakker, Heerlen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 20, 1981, Ser. No. 323,618

Claims priority, application Netherlands, Dec. 11, 1980, 8006715

Int. Cl.³ G11B *5/22, 5/10, 5/11, 5/12*

U.S. Cl. 360—129 **1 Claim**



1. A multitrack magnetic head which comprises:

a first magnetic core, the first cone including first and second core parts which define a first transducing gap;

a second magnetic core arranged adjacent the first core, the second core including third and fourth core parts which define a second transducing gap;

a first core support for supporting the first and third core parts;

a second core support for supporting the second and fourth core parts, the first and second core supports being secured together, and

a screening plate disposed between the first and the second magnetic cores,

characterized in that the first and the second core supports comprise, respectively, first and second base plates each having a substantially flat major portion, the core parts being secured to the major portions of the respective base plates, and that the screening plate is secured directly to

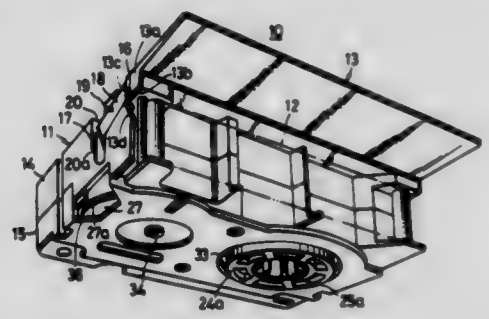
the major portions of the first and the second base plates so that the supports are secured together by the plate.

4,494,161

TAPE CASSETTE

Haruki Ogata, Sagamihara; Kimio Ogawa, and Hiroyuki Umeda, both of Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jan. 15, 1982, Ser. No. 339,675
Claims priority, application Japan, Jan. 20, 1981, 56-7566
Int. Cl.³ G11B *23/08, 15/66*
U.S. Cl. 360—132
5 Claims



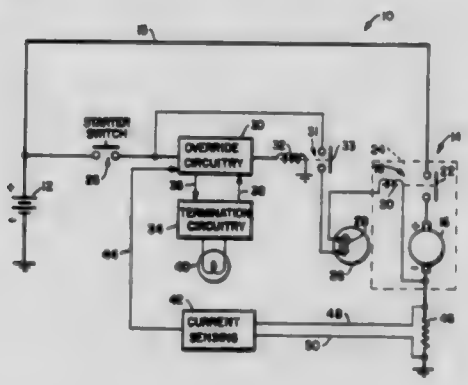
1. A tape cassette comprising:
a cassette case having top and bottom surfaces;
a tape accommodated within said cassete case, said tape having a front tape path part extending along the front surface of said cassette case when said tape cassette is not used;
a lid pivotally supported to rotate around a pair of stationary pivots in a vicinity of a corner part of said cassette case, said lid being rotatable between an open state and a closed state, in said open state said lid being positioned approximately in a plane including the top surface or the bottom surface of the cassette case, in said closed state said lid covering the tape at said front tape path part; and
positioning means for urging said lid to move in a lid opening direction when said lid is opened to a rotational position exceeding an intermediate point of rotation and for urging said lid to move in a lid closing direction when said lid is closed to a rotational position exceeding the intermediate point of the rotation, so that said lid is maintained in the open state and the closed state, respectively.

4,494,162

STARTER THERMAL OVERLOAD PROTECTION SYSTEM

Francis R. Eyler, Hanover, Pa., assignor to Harsco Corporation, Harrisburg, Pa.

Filed Oct. 30, 1981, Ser. No. 316,640
Int. Cl.³ H02H *5/04*
U.S. Cl. 361—29
2 Claims



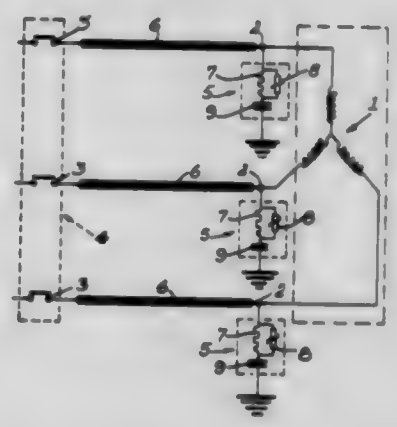
1. In an internal combustion engine starting system of the type including a power source, an electric starter including motor windings within a housing, and a manually operable starter switch for selectively energizing the starter from the power source, a device for protecting the electric starter from overheating during extended cranking periods, said device comprising:
override circuitry electrically interposed between the starter switch and the starter, said override circuitry arranged to limit energization of the starter and consequent engine cranking to a predetermined timing sequence of alternating ON intervals and OFF intervals even though the operator continuously operates the starter switch, the predetermined timing sequence being selected so as to allow sufficient time for motor winding heat to dissipate into the starter housing to prevent excessive winding temperatures, and current sensing circuitry for sensing current drawn by the electric starter and for modifying the ON to OFF time ratio of said override circuitry as an inverse function of sensed starter current.

4,494,163

ELECTRIC SWITCHING SURGE PROTECTION

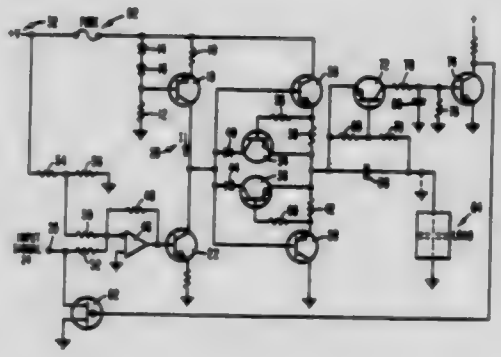
Christopher P. Yelland, Montroux, and Rapha E. Pretorius, Pretoria, both of South Africa, assignors to Yelland Engineering (Proprietary) Ltd., South Africa

Filed Aug. 2, 1982, Ser. No. 404,296
Claims priority, application South Africa, Aug. 4, 1981, 81/5341
Int. Cl.³ H02H *1/04, 9/04*
U.S. Cl. 361—56
20 Claims



1. An electric surge protector for use in a switch controlled, AC electric load circuit which is operable at a voltage of at least 1 kV and which comprises a load and a load cable connecting the load to switch means, the electric surge protector comprising:
an RC network connectable between earth and a phase of the load circuit, the RC network comprising:
a linear cable terminating resistance component having a substantially linear V-I characteristic;
a non-linear resistance component connected in parallel with the linear resistance component and having a predetermined knee-point voltage value; and
a capacitance component connected in series with the parallel connected linear and non-linear resistance components, the capacitance component being operative to decouple the resistance components at least partially from the circuit at power supply frequency but to couple the combined resistive impedance of the parallel connected linear and non-linear resistance components effectively into the circuit at frequencies associated with wavefront rise times of up to 2.0 microseconds and the capacitance component further being operative to increase the rise time of that portion of a steep fronted surge which exceeds the knee-point voltage value of the non-linear resistance component.

4,494,164
OVERLOAD PROTECTION DEVICE
Stan L. Neal, Belmont, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Apr. 2, 1982, Ser. No. 364,729
Int. Cl.³ H02H 9/02
U.S. Cl. 361—101 11 Claims



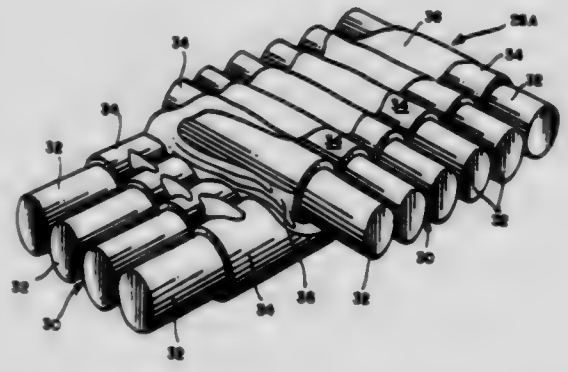
1. Apparatus for sensing and limiting a. c. current to a reactive load from a signal source receiving an input signal comprising:

reactive impedance means for coupling a. c. current from the signal source to the reactive load, wherein a potential difference is developed across said reactive impedance means in response to said a. c. current;

switching means, responsive to the potential difference across said reactive impedance means, for switching from a first state to a second state in response to the potential difference being in excess of a preselected amount, and switching back to said first state in response to the potential difference being less than said preselected amount;

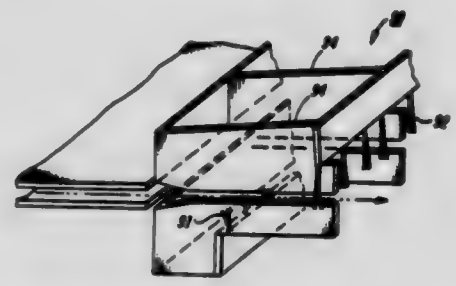
control means responsive to the state of said switching means for connecting the input signal to the signal source when the switching means is in said first state, and for removing the input signal from the signal source when the switching means is in said second state.

4,494,165
FILAMENT COMPOSITE STRUCTURES PROVIDING LIGHTNING STRIKE AND ELECTROMAGNETIC PROTECTION
Mahendra Maheshwari, Lincoln, Nebr., assignor to Brunswick Corporation, Skokie, Ill.
Filed Nov. 13, 1980, Ser. No. 206,479
Int. Cl.³ H02G 15/08; H05F 1/02
U.S. Cl. 361—117 19 Claims



1. A single, fully integrated laminated structure providing protection against lightning strike damage and electromagnetic interference, said structure comprising a lower area fabricated of filament composite material and only a surface area fabricated entirely of metallic-coated filaments, both areas and each area with the other being intermixed with epoxy resin, said structure being integrally formed in one piece by simultaneous curing of the whole integrated structure, said surface area providing a conductive barrier to disperse the current from lightning strike and electromagnetic sources.

4,494,166
PRINTING MACHINE WITH STATIC ELIMINATION SYSTEM
Philip A. Billings, Fairport, and William S. Franks, Jr., Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Sep. 21, 1982, Ser. No. 421,000
Int. Cl.³ H05F 3/00
U.S. Cl. 361—214 1 Claim



1. A printing machine for producing copies from page images, comprising in combination:

printing means for printing said page images on copy sheets;

input means for feeding copy sheets toward said printing means;

output means for receiving said copy sheets after page images have been applied thereto by said printing means;

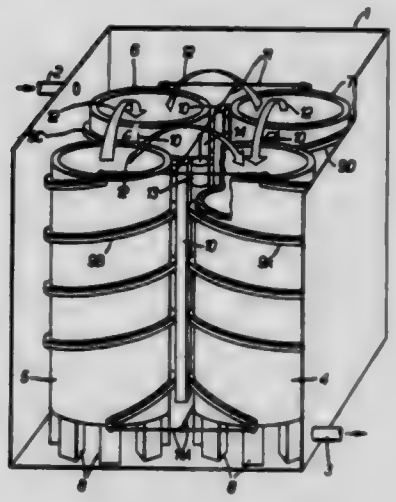
paper path means for channeling copy sheets from said input means to said output means; and

static eliminator means positioned within said paper path for discharging static electricity from sheets passing through said paper path to a predetermined level, said static eliminator means including at least first and second carbon fiber brushes with said first carbon fiber brush located in a noncontacting position below the sheets and said second carbon fiber brush located above the sheets in a contacting position downstream from said first carbon brush, and wherein said first and second carbon fiber brushes are mounted in a plastic baffle assembly having a major portion of its area open with respect to sheets passing therethrough and ribs that serve as the sole support for the sheets, said first and second carbon fiber brushes having a major portion of their fibers positioned within the open area and between the ribs of said baffle assembly.

4,494,167
INDUCTOR
Robert B. Molyneux-Berry, Danbury, England, assignor to The Marconi Company Limited, Chelmsford, England
Filed Apr. 2, 1982, Ser. No. 364,965
Claims priority, application United Kingdom, Apr. 3, 1981, 8110602
Int. Cl.³ H01H 9/22
U.S. Cl. 361—270 19 Claims

1. An inductor arranged within a conductive enclosure, comprising: two equal coils wound in opposite directions and positioned adjacent each other, the coils having axes that are substantially parallel and having adjacent ends that are connected directly together so that the coils are connected electrically in parallel, the coils being mounted in the enclosure so

that the lines of magnetic force produced when the coils are energized form closed loops which link both coils without the agency of magnetic materials and which substantially avoid intersecting the walls of the enclosure.

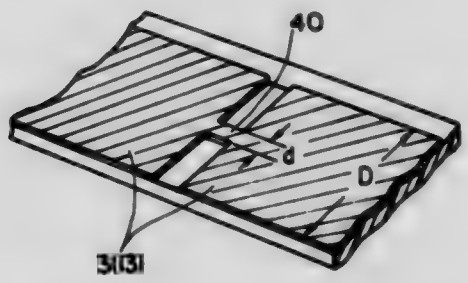


4,494,168

ROLL TYPE CAPACITOR HAVING SEGMENTED METALLIZED AREAS

Nobuyuki Kume; Harumi Yoshino, both of Matsue, and Miyuki Nagaoka, Hirata, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Japan

Filed Jan. 6, 1982, Ser. No. 337,400
Claims priority, application Japan, Jan. 7, 1981, 56-1525; Jan. 7, 1981, 56-1527
Int. Cl.³ H01G 1/017, 1/015
U.S. Cl. 361—273 10 Claims



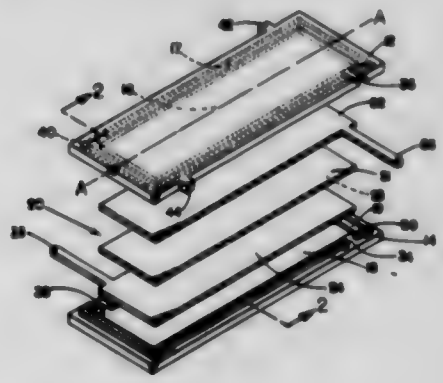
1. A metallized capacitor having a pair of electrodes, comprising, a pair of first and second laminated dielectric films convolutely wound into a roll, a plurality of first metallized areas on said first dielectric film, a plurality of second metallized areas on said second dielectric film, said first and second metallized areas being longitudinally spaced apart by separations of 0.1 mm to 5.0 mm, the interval between successive ones of said separations being 10 mm to 500 mm, said first dielectric film having a first non-metallized longitudinal marginal area on one edge thereof, said second dielectric film having a second non-metallized longitudinal marginal area on one edge thereof which is opposite to the first non-metallized marginal area, said first metallized areas extending transversely from said first non-metallized marginal area to the opposite edge of the first dielectric film so that it can be connected to one of said electrodes, said second metallized areas extending transversely from said second non-metallized marginal area to the opposite edge of the second dielectric film so that it can be connected to the other electrode, means provided on the opposite ends of said roll for electrically connecting the first and second metallized areas in parallel relationship to said electrodes, respectively, an electrically resistive region in each of said separations, said resistive region being formed by a metallized portion connected between adjacent metallized areas, said metallized portion having a transverse dimension smaller than one-tenth of the transverse dimension of the metallized areas.

4,494,169

DECOUPLING CAPACITOR AND METHOD OF MANUFACTURE THEREOF

William A. Watson, Mesa, Ariz., assignor to Rogers Corporation, Rogers, Conn.

Filed Nov. 14, 1983, Ser. No. 551,466
Int. Cl.³ H01G 1/14, 7/00, 9/00
U.S. Cl. 361—306 53 Claims



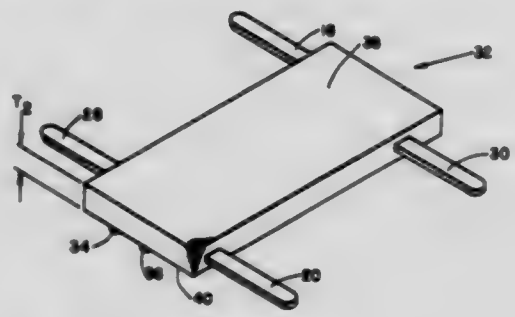
1. A capacitor including:
a first molded housing segment;
a first border segment around the periphery of said first molded housing segment;
a second molded housing segment;
a second border segment around the periphery of said second molded housing segment;
said first and second border segments being in facing and abutting contact and being bonded together;
a recess in at least one of said molded housing segments;
said first and second molded housing segments cooperating to define within said border segments an interior cavity having opposed first and second face surfaces, said first face surface being on said first molded housing segment and said second face surface being on said second molded housing segment;
first electrically conductive means associated with said first face surface;
second electrically conductive means associated with said second face surface;
a flat dielectric element in said cavity, said dielectric element having first and second opposed faces, with a first electrically conductive layer on said first face and a second electrically conductive layer on said second face;
said first electrically conductive means being physically and electrically connected to at least part of said first electrically conductive layer and said second electrically conductive layer and said second electrically conductive means being connected to at least part of said second electrically conductive layer;
said first electrically conductive means including a first terminal pin extending therefrom;
said second electrically conductive means including a second terminal pin extending therefrom;
moisture barrier means in said first and second border segments; and
passage means in at least one of said border segments for passage of said first and second terminal pins.

4,494,170

DECOUPLING CAPACITOR AND METHOD OF MANUFACTURE THEREOF

Donald P. Schilling, Woodstock, Conn., assignor to Rogers Corporation, Rogers, Conn.

Filed Nov. 14, 1983, Ser. No. 551,469
Int. Cl.³ H01G 1/14, 7/00/9/00
U.S. Cl. 361—306 11 Claims



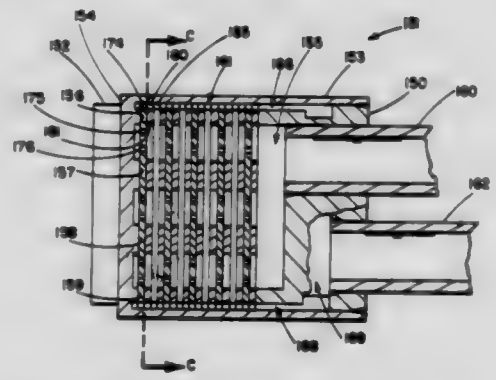
7. A decoupling capacitor including:
a capacitive element having first and second opposed electrically conductive face surfaces thereon;
a plurality of active terminal pins mechanically and electrically connected to said opposed first and second face surfaces of the capacitive element;
a first layer of insulating material molded around said capacitive element, with said active terminal pins projecting therefrom;
a plurality of dummy pins positioned in cavities formed in said first layer of insulating material; and
a second layer of insulating material molded around said first layer of insulating material and mechanically locking said dummy pins in position.

4,494,171

IMPINGEMENT COOLING APPARATUS FOR HEAT LIBERATING DEVICE

Timothy J. Bland, and Richard E. Niggemann, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Aug. 24, 1982, Ser. No. 411,059
Int. Cl.³ H05K 7/20
U.S. Cl. 361—386 33 Claims



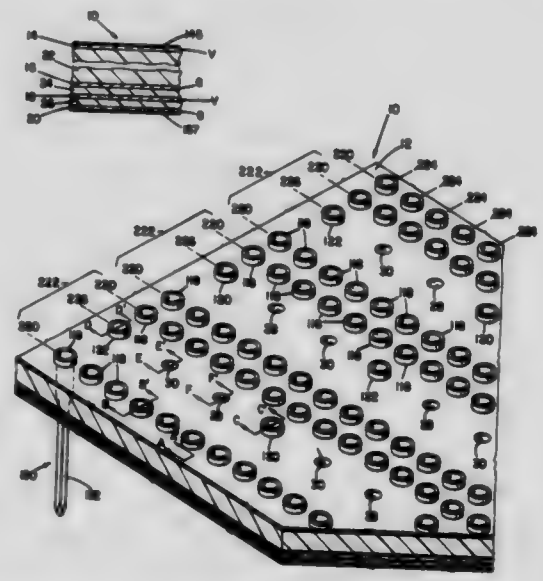
1. An impingement cooling apparatus including a heat liberating device, the impingement cooling apparatus including in combination:
a housing having an end of said housing in intimate contact with said device,
a stack of plates fitted within and parallel to said housing end, one of said plates being an impingement orifice plate adjacent said end of said housing where said device is located, said orifice plate having impingement orifice regions characterized by coolant flow impingement orifices passing therethrough, said orifice plate having coolant drainage return means adjacent said impingement orifice regions,
the remaining plates positioned adjacent said orifice plate and between said orifice plate and a coolant inlet means and a drainage means, each of said plates having at least one opening therethrough, each said opening cooperating with the opening on an adjacent plate to form an inlet channel means between said coolant inlet means and said orifice plate to thereby allow the establishment of a coolant flow path to said orifice plate to thereby supply coolant through said orifice to impinge at right angles upon said end of said housing to provide impingement cooling of said heat liberating device,
said coolant being returned via said coolant drainage return means adjacent said impingement orifice regions and a return channel means from said orifice plate to said drainage means whereby a drainage flow path is established such that coolant after impinging upon said end of said housing passes back past said stack of plates to said drainage means and is free from cross-flow with said coolant flow path delivered through said inlet channel means to said impingement plate to thereby provide maximum heat transfer from said device to said coolant.

4,494,172

HIGH-SPEED WIRE WRAP BOARD

Burton Leary, Hingham, and Shaun Silverio, Beverly, both of Mass., assignors to Mupac Corporation, Brockton, Mass.

Filed Jan. 28, 1982, Ser. No. 343,576
Int. Cl.³ H05K 1/02
U.S. Cl. 361—400 22 Claims



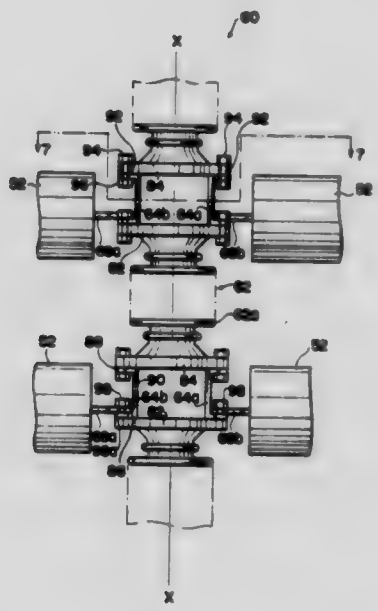
1. A multilayer panel board comprising
a first electrically conductive layer extending across said board for carrying a first voltage to a plurality of points across said board,
second and third electrically conductive layers for carrying a second voltage different from said first voltage, said first conductive layer being positioned between said second and third conductive layers,
first and second electrically insulative layers separating said first conductive layer respectively from said second and third conductive layers by a distances small enough to produce a large distributed capacitance between said first conductive layer and said second and third conductive layers,
a fourth electrically conductive layer extending across said board for carrying said first voltage, said fourth conductive layer being positioned on the other side of said second conductive layer from said first conductive layer.
a third electrically insulative layer separating said fourth conductive layer from said second conductive layer, and
a plurality of electrical connections between said first and fourth conductive layers, and between said second and third conductive layers, said electrical connections being distributed regularly across said board, for increasing the current carrying capacity of, and for enhancing the uniformity of said first and second voltages across, said board.

4,494,173

THREE-DIMENSIONAL INSULATING STRUCTURE FOR HIGH VOLTAGE COMPONENTS

Hiroo Ikekame, and Yasuo Karasawa, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 16, 1982, Ser. No. 418,607
Claims priority, application Japan, Sep. 26, 1981, 56-151368
Int. Cl.³ H02B 1/04
U.S. Cl. 361—429 3 Claims



1. A high voltage apparatus with a three-dimensional structure comprising:

a plurality of electric units, each having a first horizontal lead and a second horizontal lead;

a frame having at least a first insulating column and a second insulating column vertically oriented and horizontally spaced from said first insulating column, said electric units being mounted in a plurality of vertical stages between said first and second insulating columns;

wherein each of said first and second insulating columns includes a plurality of insulators in a substantially vertically linear arrangement at intervals each including an upper flat flange and a lower flat flange placed substantially parallel to said upper flange,

a plurality of pairs of metallic spacers, each pair of said metallic spacers being arranged between said each of said plurality of insulators to couple each of said plurality of insulators thereby to form each of said first and second insulating columns, and including a first metallic spacer and a second metallic spacer arranged at a distance from and insulated from said first metallic spacer, each of said first and second metallic spacers including an upper wall, a lower wall placed substantially parallel to said upper wall and a side wall coupling said upper and lower walls at both ends thereof, and

connecting means for connecting said upper and lower walls to said lower and upper flat flanges respectively and for attaching said electric units to said lower wall of said first and second metallic spacers;

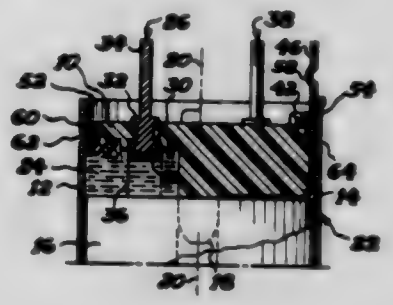
wherein each of said electric units is mounted substantially horizontally bewtween said first and second insulating columns such that said first horizontal lead of each of said electric units is mounted on each of said first metallic spacers of said first insulating column and said second horizontal lead of each of said electric unit is mounted on each of said second metallic spacers of said second insulating column.

4,494,174

WET-ELECTROLYTE CAPACITOR PACKAGE

Walter W. Schroeder, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Sep. 27, 1982, Ser. No. 424,808
Int. Cl.³ H01G 9/00; H05K 1/14
U.S. Cl. 361—433 6 Claims



1. A wet-electrolyte capacitor package for mounting to a printed circuit board comprising:

a cylindrical metal cam having one open end;

a wet electrolyte combined within said can;

an anodized film-forming anode covered by said electrolyte;

a plastic cover of disk shape being fitted within the open end of said can;

a seal between the periphery of said cover and can;

a metal terminal being sealed in a hole provided therefor in said cover, said terminal having a lead portion extending away and in an axial direction with respect to said can, said anode being electrically connected to said terminal;

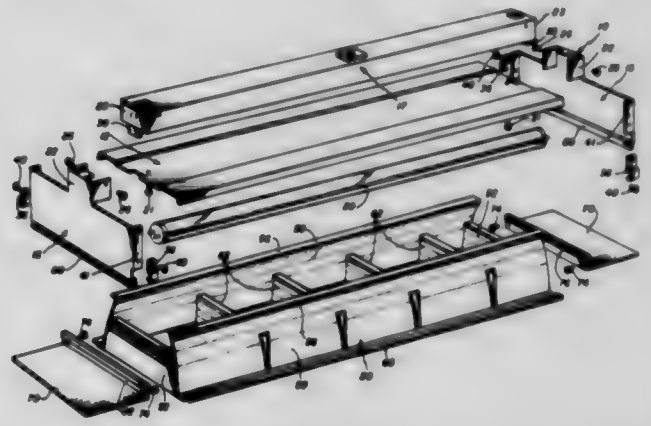
at least three separate elongate metal pieces being affixed at separate locations to the inner lip of said can and extending in an axial direction away from said cover to serve as a means for said mounting, each of said separate elongate metal pieces having a foot portion that is bent radially inward and at right angles to said axial direction, each one of said foot portions being snugly fitted into an outward and radially facing cavity provided therefor in said cover near said cover periphery.

4,494,175

RECESSED LIGHTING FIXTURE WITH IMPROVED LOUVER MOUNTING

Mahmoud A. Gawad, Montreal, and John Grandine, St-Laurent, both of Canada, assignors to GTE Products Corporation, Stamford, Conn.

Filed Jan. 9, 1984, Ser. No. 569,002
Int. Cl.³ F21S 1/02
U.S. Cl. 362—150 14 Claims



1. A recessed lighting fixture adapted for use in association with a suspended ceiling structure having a grid support comprised of spacedly positioned grid members, said lighting fixture comprising a fixture housing having means at the top thereof for supporting a pair of spaced lamp socket members, said housing open at the bottom thereof, a relatively thin, deflectable top plate member secured to said housing or form-

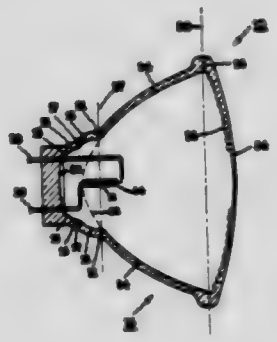
ing a part thereof and defining an optically reflecting surface disposed adjacent said lamp socket members, means securing said fixture housing to said grid support between said spacedly positioned grid members, and louver means having a top portion adapted to contact said deflectable top plate member and a bottom portion including longitudinally extending sides for resting upon and being supported by a respective one of said spacedly positioned grid members, said louver means not fixedly attached to said suspended ceiling structure, said bottom portions of said louver means being insertable on each of said grid members in sequence, one and then the other, said deflectable top plate member deflecting upwardly in a pivotal manner upon said contact with said top portion of said louver means during said insertion of said louver means on said grid members to facilitate said insertion and thereafter exerting a substantially downward force on said louver means to assist in maintaining said louver means in position on said grid members, whereby said louver means is supported in said fixture housing without the use of supporting springs, latches or the like.

4,494,176

LAMPS HAVING MULTIPLE AND AIMED PARABOLIC SECTIONS FOR INCREASED USEFUL LIGHT OUTPUT

Robert W. Sands, Hudson; Joseph P. Marella, Chardon, and Thomas F. Fink, Jr., Macedonia, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 14, 1984, Ser. No. 589,903
Int. Cl.[3] F21V *7/00*
U.S. Cl. 362—297 14 Claims



1. A reflector lamp comprising a concave reflector and a finite light source having its geometric center located approximately at the focal point of the concave reflector, said concave reflector comprising a primary parabolic reflective section and at least first and second additional parabolic sections, said first and second additional parabolic sections being reflective and having a subetantially common focal point confocal with the focal point of said concave reflector, said first and second additional parabolic sections being so aligned relative to said finite light source as to be effective to reflect light rays impinging on the surfaces to thereof onto said primary parabolic reflective section and thereby directing said light rays in an improved columnated beam pattern.

4,494,177

ARTICULATED TASK LAMP

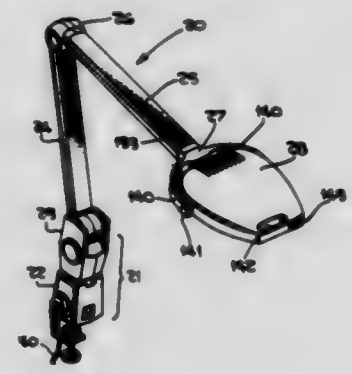
Charles Matthews, San Clemente, Calif., assignor to Plan Hold Corp., Irvine, Calif.

Filed Apr. 20, 1983, Ser. No. 486,741
Int. Cl.[3] F21V *21/18*
U.S. Cl. 362—402 11 Claims

1. Counterbalanced support means for a drafting table lamp in which a base means is provided with a lower base portion adapted to be clamped to a drafting table and with an upper base portion pivoted on the lower base portion about first and second axes, counterbalance means in the upper base portion including a crank member pivoted about a third axis transverse to one of the first and second torsion axes, a torsion spring means biasing said crank member, a thrust link member connected to one end of the crank member, a lower tubular support arm pivotally mounted on the upper base portion about a fourth axis, and an upper support arm pivotally connected about a fifth axis to the lower support arm and carrying a lamp provided with a pivotal connection to the upper support arm, comprising in combination:

a compensating link in said upper base portion having a pivotal connection at one end to one end of said thrust link member;

said compensating link having a pivotal connection between its ends to said upper base portion;



a link member having a pivotal connection to the other end of said compensating link and extending within and through said tubular lower tubular support arm;

said pivotal connection of said upper support arm to the end of said lower support arm about said fifth axis comprising;

a crank arm pivoted about said fifth axis and having a pivotal connection to the upper end of said link member;

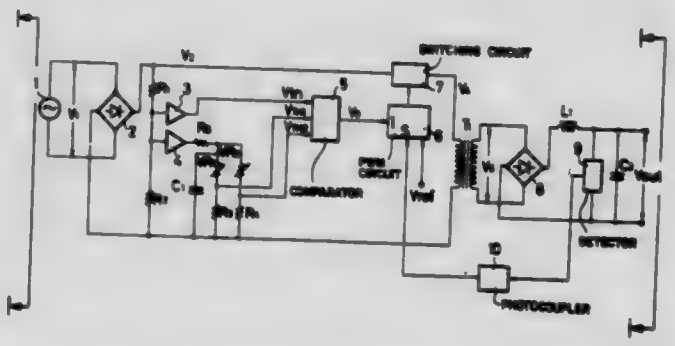
said crank arm having a driving connection acting about said fifth axis to the upper support arm for transmitting counterbalancing forces from the torsion spring means through the compensating link, and link member to the upper support arm.

4,494,178

POWER SUPPLY CIRCUIT

Kazumi Ishima, Kashiwa, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Nov. 17, 1982, Ser. No. 442,266
Claims priority, application Japan, Nov. 19, 1981, 56-185696
Int. Cl.[3] H02M *3/335*
U.S. Cl. 363—21 18 Claims



1. A power supply circuit for converting an a.c. input voltage into a d.c. output voltage comprising:

first rectifying means which receives said a.c. input voltage and supplies across its first and second outputs a first rectified voltage rectified from said a.c. input voltage;

a transformer having a primary winding and a secondary winding;

switching means connected between the first output of said first rectifying means and one end of the primary winding the other end of which is connected to the second output of said first rectifying means;

second rectifying means connected to receive the voltage induced across the secondary winding of said transformer

for supplying across its first and second outputs a second rectified voltage;

first filter means for filtering said second rectified voltage to generate said d.c. output voltage;

level-shift means connected to receive said first rectified voltage for producing a varying voltage which is proportional to said first rectified voltage, a first threshold voltage and a second threshold voltage which is lower in level than said first threshold voltage;

comparator means connected to receive said varying voltage and said first and second threshold voltages for supplying a comparator output signal which is either high or low depending upon whether said varying voltage is inbetween said first and second threshold voltages or not; and

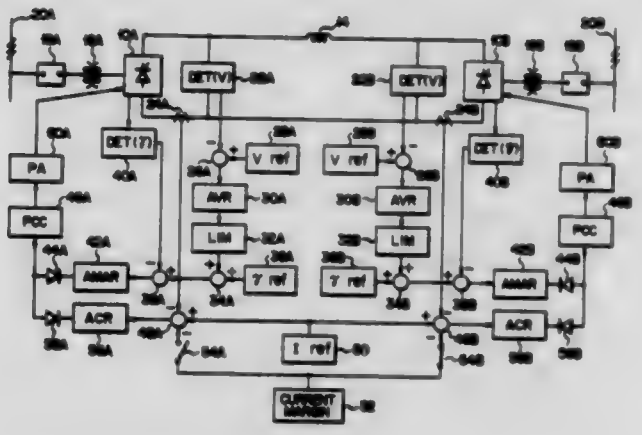
pulse width modulating means having a first input for receiving a detecting signal indicating the level of said d.c. output voltage, a second input for receiving a reference signal and a third input for receiving said comparator output signal, said pulse width modulating means supplying a pulse width modulated output signal to said switching means only when said comparator output signal received is high.

4,494,179

CONTROL DEVICE FOR A CONVERTER

Haruhisa Inokuchi, and Takumi Sakai, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 7, 1983, Ser. No. 464,695
Claims priority, application Japan, Feb. 26, 1982, 57-29902
Int. Cl.³ H02J 3/36
U.S. Cl. 363—35 4 Claims



1. A control device for a converter used in a DC transmission system, comprising:

automatic voltage regulator means for generating a first control angle signal to keep DC voltage of said DC transmission system constant;

automatic margin-angle regulator means for generating a second control angle signal for making a margin-angle of the converter equal to a margin-angle predetermined by said first control angle signal from said automatic voltage regulator means;

automatic current regulator means for generating a third control angle signal for keeping DC current flowing through said DC transmission system constant; and

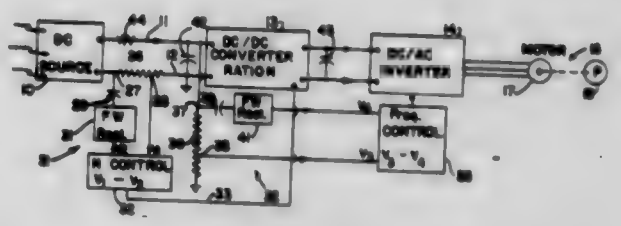
switch circuit means for supplying said second control angle signal from said automatic margin-angle regulator means to the converter when the converter functions as an inverter and supplying said third control angle signal from said automatic current regulator means to the converter when the converter functions as a rectifier.

4,494,180

ELECTRICAL POWER MATCHING SYSTEM

August L. Streater, Bluffton, and Daniel T. Dwyer, Fort Wayne, both of Ind., assignors to Franklin Electric Co., Inc., Bluffton, Ind.

Filed Dec. 2, 1983, Ser. No. 557,070
Int. Cl.³ H02M 5/45
U.S. Cl. 363—37 20 Claims



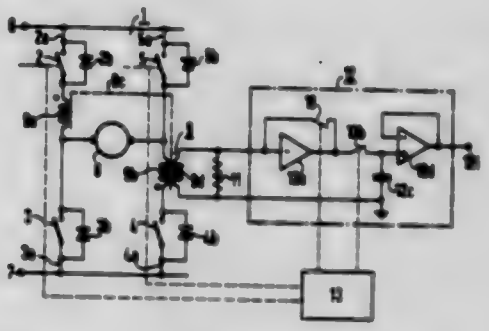
1. Apparatus for operating a system at the maximum power transfer point, the system including an adjustable load, a direct current power source that has a nonlinear voltage-current characteristic and lines connecting the load to the source, said apparatus comprising first means adapted to be connected to said lines for producing a relatively small change in the current in said source and said lines, second means adapted to be connected to said lines for sensing the source DC current and said change in current, third means adapted to be connected across said source and sense said source DC voltage and the change in voltage caused by said change in current, and fourth means connected to said second and third means and adapted to be connected to said adjustable load to vary said load to maintain the relation $V/I = -\Delta V/\Delta I$, where V and I are the direct current voltage and current of the source, and ΔV and ΔI are the changes in the voltage and current.

4,494,181

CIRCUIT ARRANGEMENT FOR DETERMINING THE POLARITY AND MAGNITUDE OF THE LOAD CURRENT IN A REVERSIBLE D-C CONTROLLER OR CHOPPER

Franz Ramlohr; Werner Pohl, and Walter Kölner, all of Vienna, Austria, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 14, 1982, Ser. No. 449,757
Claims priority, application Austria, Dec. 21, 1981, 5488/81
Int. Cl.³ H02M 7/02
U.S. Cl. 363—63 7 Claims



1. In a circuit arrangement for determining the polarity of the load current in a reversible d-c controller having a bridge circuit which is connected across a d-c supply voltage source, said bridge circuit having four bridge arms, respective pairs of said bridge arms being diagonally disposed in said bridge circuit, load current flowing to or from the d-c supply voltage source through the diagonally disposed bridge arms, each of said bridge arms including an antiparallel circuit comprising first electronic switch means and bypass diode means wherein two pairs of bridge arms respectively connected to the same bus of said supply voltage source each form a bypass circuit in which a measuring sensor is provided, said first electronic switch means controlled so that the load current circulates in

successive time intervals in alternating fashion in the two bypass circuits, the improvement comprising:

a current transformer having two primary windings provided as measuring sensors, said primary windings connected in opposite winding sense in respective ones of said bypass circuits in two of said diagonally disposed bridge arms, said current transformer having a secondary winding connected across a load resistor;

operational amplifier means having said secondary winding coupled to the inverting and the non-inverting inputs thereof, the output of said operational amplifier means being coupled to the inverting input, the non-inverting input of said operational amplifier means coupled to further electronic switch means to reference potential;

digital logic means coupled to said first electronic switch means; and

said further electronic switch means controlled by said digital logic means in dependence on the control signals from said first electronic switch means so that said further electronic switch means causes said operational amplifier means to operate as an inverting amplifier in every time interval in which the load current circulates in the same predetermined bypass circuit.

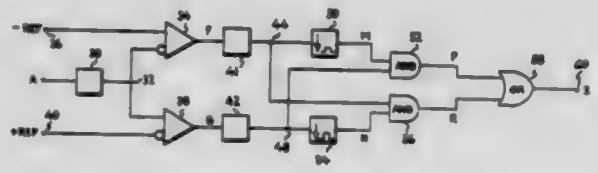
4,494,182

COMMUTATION DETECTION APPARATUS AND METHOD

William D. Brackman, Jr., Salem, Va., assignor to General Electric Company, Salem, Va.

Filed Jan. 14, 1983, Ser. No. 458,109
Int. Cl.³ H02M *1/08*
U.S. Cl. 363—63 8 Claims





1. For use with a power conversion system of the type employing a plurality of controlled switching elements for controlling the electrical power supplied from a power source to a load, circuit means for determining an instant in time when each of said switching devices is rendered non-conductive comprising:

means to provide a first signal indicative of the instantaneous voltage supplied to said load from said source;

(b) means responsive to said first signal to produce a second signal proportional to the derivative, with respect to time, of the said first signal;

(c) means to provide first and second reference signals;

(d) first and second comparator means responsive to said second signal and, respectively, to said first and second reference signals to selectively provide first and second output signals indicative of prescribed changes in said second signal; and,

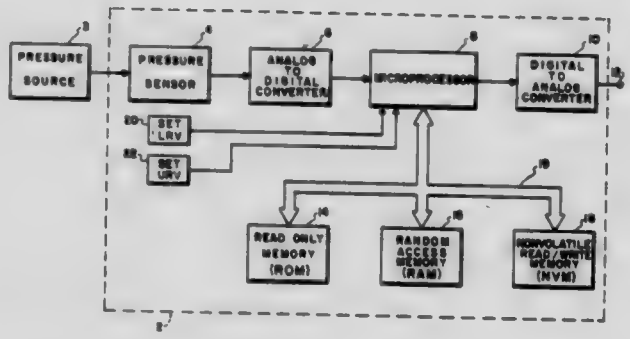
(e) logic means responsive to said first and second output signals to provide a final output signal indicating said instant in time.

4,494,183

PROCESS VARIABLE TRANSMITTER HAVING A NON-INTERACTING OPERATING RANGE ADJUSTMENT

Stephen J. Bayer, Fitzwatertown, and Arthur M. Olsen, Pennsburg, both of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 17, 1982, Ser. No. 389,633
Int. Cl.³ G06F *15/20*; G01R *35/00*
U.S. Cl. 364—154 8 Claims



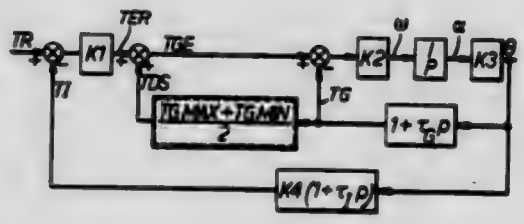
5. A method of changing the range of a process variable transmitter having a computing means for computing a transmitter output signal including the steps of applying a first predetermined process variable input to said computing means, applying a first control signal to said computing means to produce a first transmitter output signal as a lower range value, applying a second process variable input to said computing means, and applying a second control signal to said computing means to produce a second transmitter output signal as an upper range value by calculating the difference between the lower and upper range values.

4,494,184

PROCESS AND DEVICE FOR SERVO-CONTROL

Philippe Crevel, Angers, France, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 22, 1981, Ser. No. 333,498
Claims priority, application France, Dec. 22, 1980, 80 27232
Int. Cl.³ G06F *15/20*; B60H *3/00*
U.S. Cl. 364—178 13 Claims



1. Device for servo-controlling a first magnitude TI depending on at least one controllable parameter θ, said device comprising:

a first sensor means for furnishing a measuring signal representative of said first magnitude TI;

a second sensor means for furnishing a measuring signal representative of a second magnitude TG which varies as a function of said parameter θ;

an adjusting member for furnishing a reference signal representative of a reference value TR;

means for servo-controlling the value of said parameter θ and varying the second magnitude TG;

means for calculating a value TGE by which said second magnitude TG must be servo-controlled;

control means acting on said means for servo-controlling to vary said second magnitude TG by said calculated value;

said means for calculating comprising: means for monitoring variations in time of said second magnitude TG; means for determining both a maximum value TGEMX and a minimum value TGEMIN of said second magnitude TG,

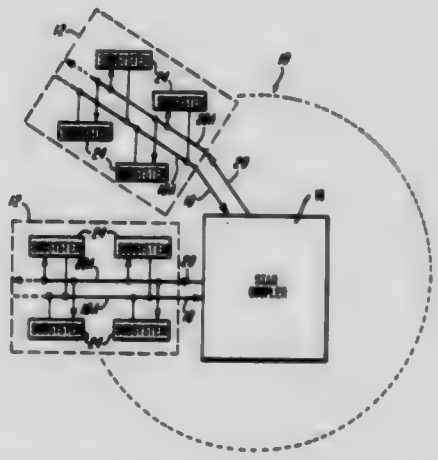
during previous n half-period time variation of the second magnitude TG, n being a whole number; means for calculating a value TER as a function of the deviation between the reference value TR and the first magnitude TI, and calculating a value TDS equal to the arithmetic mean between said previously determined maximum value TGEMX and said minimum value TGEMIN of the second magnitude TG; and means for providing the value TGE as being equal to TDS+TER.

4,494,185

DATA PROCESSING SYSTEM EMPLOYING BROADCAST PACKET SWITCHING

Robert O. Gunderson, Poway; James C. Kocol, and David B. Schuck, both of Escondido, all of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Apr. 16, 1981, Ser. No. 254,850
Int. Cl.[3] G06F *13/00*
U.S. Cl. 364—200 20 Claims



1. In a data processing system having a plurality of subsystems and employing broadcast packet switching for delivering a message from one of said subsystems to another of said subsystems over a system bus, said system bus including a star coupler and pairs of first and second transmission lines, with said pairs of transmission lines linked by said star coupler so that a message from one of said subsystems may be carried along said first transmission line in one of said pairs of transmission lines to said star coupler and passed through said star coupler to said second transmission line in all of said pairs of transmission lines, the improvement wherein:

plural subsystems are each separately connected along at least one of said pairs of transmission lines so that said first transmission line in that one of said pairs carries signals transmitted by any one of its connected subsystems to said star coupler and said second transmission line in that one of said pairs carries signals to be received at all of its connected subsystems, and so that the number of subsystems in said data processing system is greater than the number of pairs of transmission lines linked by said star coupler; and

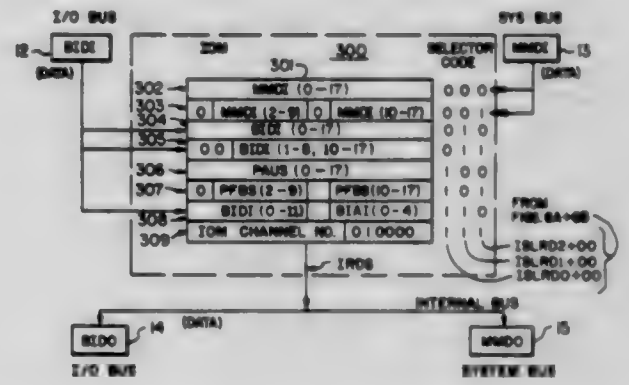
each of said connected subsystems comprises a processor and a local memory each operatively connected to said one of said pairs of transmission lines, said local memory for storing data to be processed by said processor.

4,494,186

AUTOMATIC DATA STEERING AND DATA FORMATTING MECHANISM

Gary J. Goss, Acton, Mass.; Richard P. Kelly, and Thomas L. Murray, Jr., both of Nashua, N.H., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Continuation of Ser. No. 089,316, Jul. 20, 1979, , which is a continuation of Ser. No. 741,009, Nov. 11, 1976,. This application Jul. 24, 1981, Ser. No. 286,444
Int. Cl.[3] G06F *3/00*
U.S. Cl. 364—200 5 Claims



1. In a computing system having at least one main memory, one central processing unit, and a plurality of input/output devices, apparatus for transferring information including format control signals, between said units comprising, in combination:

a first electrical bus coupled to transfer information as parallel bits including said format control signals to and from each of said plurality of input/output devices and between any two of said plurality of input/output devices;

a second electrical bus coupled to transfer information as parallel bits including said format control signals to and from either said main memory or said central processing unit and between said main memory and said central processing unit; and

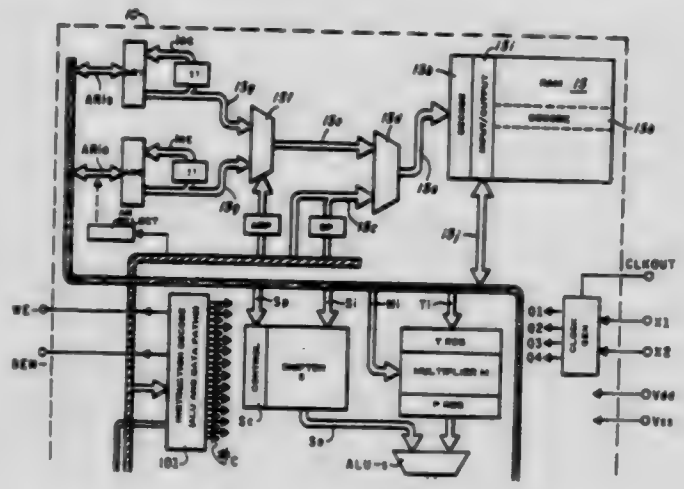
formatting means having a single input/output port connected to said first and second electrical buses, said formatting means controlling the bidirectional transfer of information between one of said plurality of input/output devices and either said main memory or said central processing unit and including decoding logic circuitry responsive to said format control signals, received from the second electrical bus, including a predetermined format control signal in a first state to generate a first set of predetermined selection signals, said formatting means further comprising a plurality of multiplexer circuits, each associated with a bit of the first electrical bus, responsive to said first set of said predetermined selection signals and to the parallel bits on the second electrical bus to change the format of information passing from either said central processing unit or said main memory through said second electrical bus to said one of said plurality of input/output devices through said first electrical bus, said format being selected from a first of a plurality of formats determined by said format control signals,

said decoding logic circuitry responsive to said format control signals, received from the second electric bus, including said predetermined format control signal in a second state to generate a second set of predetermined selection signals, said multiplexer circuits being responsive to said second set of said predetermined selection signals and to the parallel bits on the second electrical bus to change the format of information passing from either said central processing unit or said main memory through said second electrical bus to said one of said plurality of said input-/output devices through said first electrical bus, said format being selected from a second of said plurality of formats determined by said format control signals.

4,494,187
MICROCOMPUTER WITH HIGH SPEED PROGRAM MEMORY

Richard D. Simpson, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 22, 1982, Ser. No. 350,960
Int. Cl.³ G05F 13/00
U.S. Cl. 364—200 10 Claims



1. A microcomputer device formed in a single integrated circuit comprising:

(a) an arithmetic/logic unit having data input and data output to perform operations in response to commands;

(b) storage means for storage of data to be supplied to said data input of the arithmetic/logic unit and received from said data output, and for storage of address;

(c) bus means coupled to the storage means and to the data input and data output of the arithmetic/logic unit for selectively transferring data from the storage means to said data input of the arithmetic/logic unit and from the data output of the arithmetic/logic unit to said storage means, under control of commands;

(d) control means having an input, said control means generating said commands in response to instruction words received at said input of the control means; and

(e) program memory means having an address input and a memory output, said program memory means storing said instruction words and supplying an instruction work to the memory output for transfer to the control means in response to an address from the storage means,

(f) the program memory means including an array of rows and columns of memory cells with column lines connected to the columns of cells,

(g) and precharging means connected to precharge the column lines before each operating cycle to a level below a supply voltage level and determined by the voltage on the column lines.

4,494,188
METHOD OF PROCESSING AN OPERATING SYSTEM IN A MULTI-PROCESSOR SYSTEM

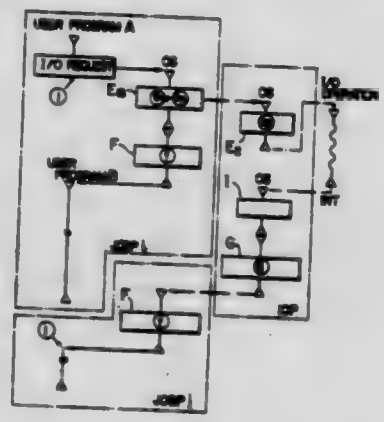
Keiichi Nakane, Kokubunji; Toshiro Kamiuchi, Kodaira, and Hiroaki Nakanishi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 5, 1982, Ser. No. 365,312
Claims priority, application Japan, Apr. 3, 1981, 56-49312
Int. Cl.³ G06F 9/00, 15/16
U.S. Cl. 364—200 6 Claims

1. A method of controlling the execution of a control program known as an operating system for controlling the execution of user's programs in a multi-processor system having a plurality of processors and a memory for storing said control program and said user's programs to be executed by each of said processors, said control program and said user's programs including operating system process execution instructions for initiating operating system control, said memory being connected to said plurality of processors for use in common therewith, said control program being divided into a plurality of subprograms which are concurrently executable to perform respective operating system processes and said memory further storing supervising data including status data prepared for each of said operating system processes, said method comprising:

a first step in which, when a given operating system process execution instruction contained in said user's programs or said control program is executed in any of said processors, the status data in said memory corresponding to the operating system process designated by said operating system process execution instruction is changed from wait-state data to ready-state data;

a second step in which, when any one of said processors is executing one of said user's programs, such processor intermittently interrupts the execution of the user's pro-



gram to read out from said memory said status data and to detect the presence of the ready-state data relating to any operating system process;

a third step in which when said ready-state data relating to an operating state process is present and detected, any of said processors detecting said ready-state data executes the ready-state operating system process relating thereto, while any of said processors which detect no ready-state data resumes executing the interrupted user's program; and

a fourth step in which, when the execution of a ready-state operating system process is completed by a processor, that processor executing said ready-state operating system process again reads out from said memory said status data to detect the presence of other ready-state data relating to another ready-state operating system process.

4,494,189
METHOD AND MEANS FOR SWITCHING SYSTEM CONTROL OF CPUS

George H. Bean, Hyde Park, and Peter H. Gum, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 26, 1982, Ser. No. 371,754
Int. Cl.³ G06F 9/10
U.S. Cl. 364—200 24 Claims

1. A method of switching the control of a CPU in a MP or UP data processing system among a plurality of system control programs (SCPs), a next instruction to be executed by the CPU a particular SCP of the plural SCPs to control the CPU being located by an instruction address in PSW (program status word) means in the CPU, each SCP requiring a hardware-to-software interface area (PSA) in a main storage of the system for storing old PSW values and obtaining new PSW values for the PSW means, comprising the CPU controlled steps of:

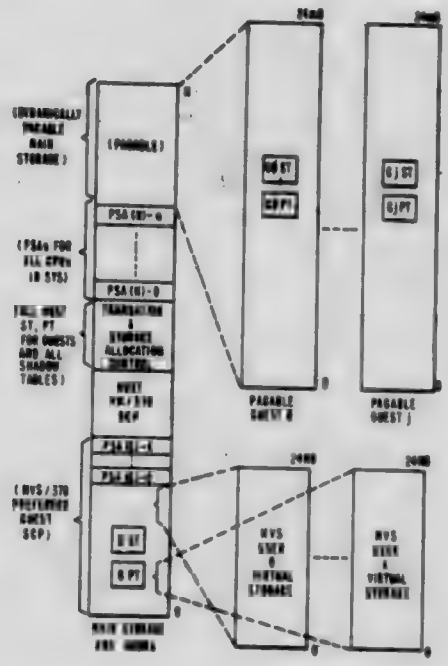
sensing an event occurring in, or signalled to, the CPU that selects a preset state in the CPU,

identifying which SCP is currently controlling the CPU to indicate the currently controlling SCP,

determining from the selected preset state in the CPU and respond to the event sensed by the sensing step, the particular SCP not required to be a SCP that operated the CPU immediately prior to the currently controlling SCP,

loading a prefix register by hardware/microcode means in the CPU with a prefix value fetched from main storage for locating the PSA of a particular SCP determined by the determining step to be the next SCP to control the CPU when the identifying step indicates the particular SCP is not in control of the CPU,

interrupting the CPU operation after the loading step is



executed by storing a value in the PSW means into, and by loading the PSW means with a new PSW value from, fields associated with the sensed event in the PSA located by the address in the prefix register,

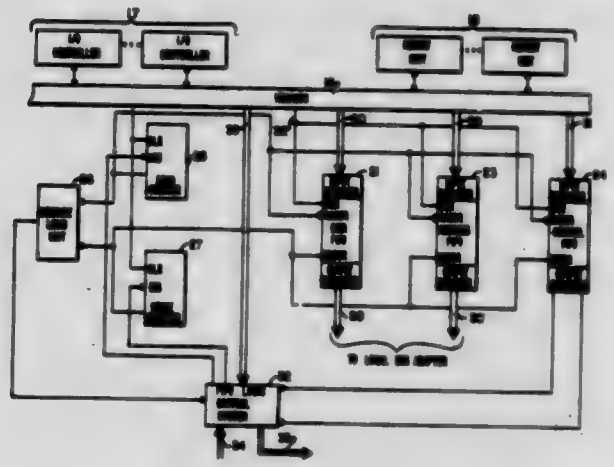
whereby the loading step executes a CPU control switch for changing the control of the CPU from the currently controlling SCP to the particular SCP which is to control the CPU for responding to the event.

4,494,190

FIFO BUFFER TO CACHE MEMORY

Arthur Peters, Sudbury, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed May 12, 1982, Ser. No. 377,299
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 6 Claims



1. A data processing system comprising a plurality of units including a central processor unit (CPU), a subordinate processor (SUB), an input/output unit (I/O), a system memory and a common electrical bus coupled to each of the units for providing a path for the transfer of information between any of said units during specified periods of time, the system further comprising:

a local bus coupled to the CPU and subordinate processor unit;

a cache memory and memory management unit coupled to the local bus; and

a bus adapter coupled to the cache memory and memory management unit and to the common electrical bus, the bus adapter comprising:

(a) first means coupled to the common electrical bus for monitoring information being transmitted from one of said plurality of units to another;

(b) second means coupled to said first means for detecting which information is pertinent to the local bus because it is addressed to a unit on the local bus or it is to be written into the system memory; and

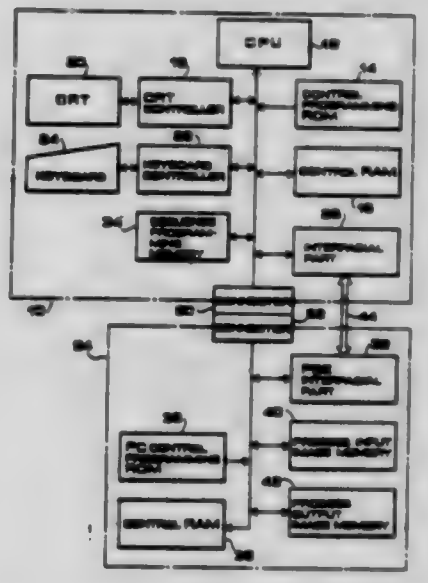
(c) third means including a first-in-first out buffer (FIFO) coupled to the common electrical bus and to said second means for intercepting information from the common electrical bus and forwarding only that information which is detected as pertinent to the cache memory and memory management unit.

4,494,191

SIMULATION UNIT SHARING THE SAME CPU AS A PROGRAMMING CONTROL UNIT

Yoshifumi Itoh, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1982, Ser. No. 390,880
Claims priority, application Japan, Jun. 25, 1981, 56-98748
Int. Cl.³ G06F *9/00*
U.S. Cl. 364—200 2 Claims



1. A programming system fitted with CRT comprising:

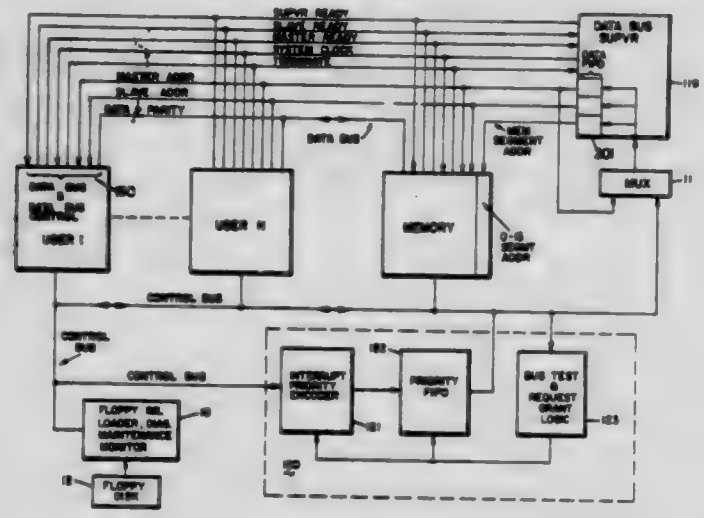
a programming control unit fitted with CRT being composed of a central processing unit (CPU), a control programming ROM and a controlling RAM being connected to said central processig unit, a CRT and a keyboard connected with said central processing unit through a CRT controller and a keyboard controller, respectively, and an interfacial part for connecting said programming control unit with a simulation unit, a connector for the connection of said CPU to said simulation unit, and a sequence programming memory; and

said simulation unit being composed of a control programming ROM for said programmable controller, a control RAM, and respective memories corresponding to a process input image memory, said simulation unit including an interfacial part and means for connecting said interfacial part to said interfacial part of said programming control unit, and a connector, and means for connecting said connector to said connector of said programming control unit.

4,494,192
HIGH SPEED BUS ARCHITECTURE

Eugene K. Low, Sunnyvale, and Harvey W. Wallace, San Jose, both of Calif., assignors to Sperry Corporation, New York, N.Y.

Filed Jul. 21, 1982, Ser. No. 400,493
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—200 19 Claims



1. A bus architecture system for selectively connecting a plurality of user devices to each other, comprising,

priority interrupt encoder means (121) for receiving and prioritizing interrupt signals from one or more of said user devices when one or more of said user devices attempt to access another user device,

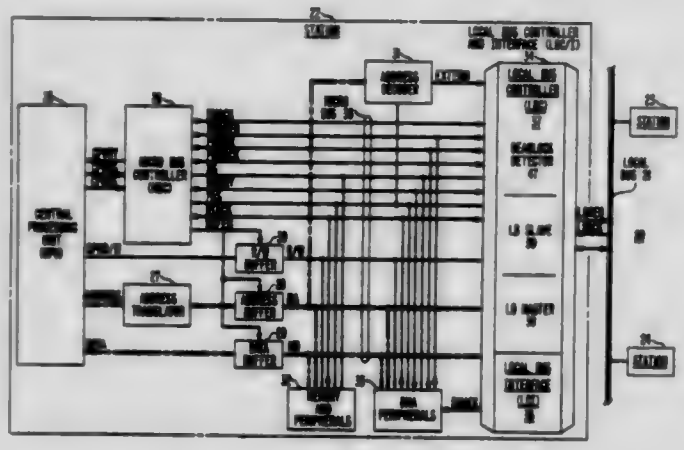
control bus means interconnecting each of said user devices, and

test means (123) connected to said control bus means and said encoder means for determining when said encoder means can gain access to said control bus means as a function of the status of said control bus means so that one user device can gain access to another user device.

4,494,193
DEADLOCK DETECTION AND RESOLUTION SCHEME

David J. Brahm, Naperville; James M. Grim, Warrenville; Edward L. Hepler, Woodridge, and John M. Sullivan, Lisle, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 30, 1982, Ser. No. 430,396
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—200 44 Claims



1. A communication system comprising:

a communication medium;

a first and a second station adapted to access the medium for communication, the second station further adapted for access by the first station;

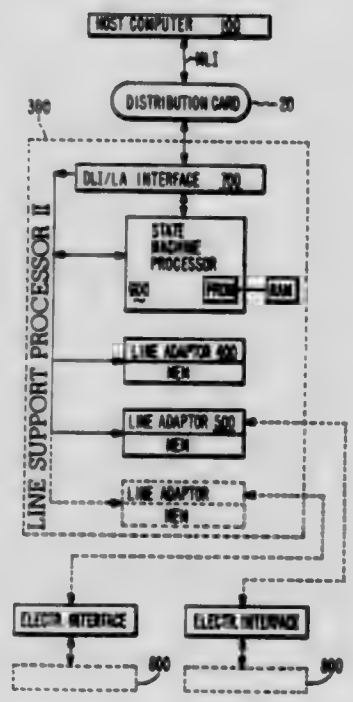
means for detecting access by the first station of the second station while the second station is accessing the medium; and

means responsive to the detecting means for pausing the access by the second station and for continuing the access by the second station when the first station ceases accessing the second station.

4,494,194
LINE SUPPORT PROCESSOR FOR DATA TRANSFER SYSTEM

Craig W. Harris, El Toro; Lyle O. Jevons, Jr., Mission Viejo, and Richard A. Loakora, Dana Point, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sep. 30, 1982, Ser. No. 430,575
Int. Cl.³ G06F *13/00, 3/00*
U.S. Cl. 364—200 3 Claims



1. In a data-comm subsystem wherein a line support processor controls data transfer operations between a host computer and remote data terminals, and said line support processor includes a plurality of line adapters, a data link interface unit and a microprocessor, said microprocessor including program data in an internal PROM and in external RAM storage means and having an I/O bus and output control registers providing control data and information data to said line adapters, said line support processor comprising:

(a) a plurality of line adapters, operatively controlled by said microprocessor, and wherein each line adapter includes:

(a1) USART control component means for transmission of or reception of data between a remote terminal and said microprocessor;

(a2) timing means for setting baud rate of data transfers and for protocol timing signals;

(a3) gating means, connected to said USART control component means and said timing means, for signaling said microprocessor for service, and for activating a discrete bit line of said I/O bus;

(a4) designate logic means, receiving control signals from said gating means and from said microprocessor, for selecting a particular line adapter and a particular register in said USART means or said timing means;

(b) said microprocessor operating to enable a data transfer path from a requesting USART/timing means to said I/O bus for transfer of data to said microprocessor and including:

(b1) means to scan said I/O bus lines to identify the activated bit line which designates a particular line adapter;

(b2) means to select which input line of each of a plurality of multiplexors will be connected for throughput;

(c) said enabled data transfer path including:

(c1) driver-controller bus means for connecting a selected USART/timing means via a data transfer bus to a group of said multiplexors for data transfer to said microprocessor;

(c2) a data transfer bus connected to a group of n said multiplexors for parallel-transfer of n bits of data;

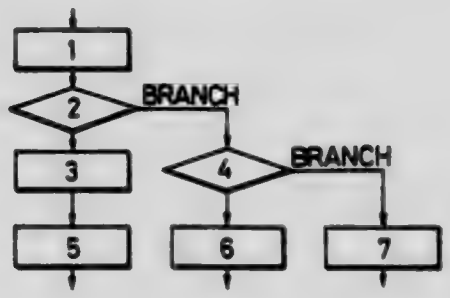
(c3) a plurality of groups of said multiplexors wherein each group of n said multiplexors connects n bits from said data transfer bus to said I/O bus.

4,494,195

MICROINSTRUCTION CONTROLLED DATA PROCESSOR

Kouki Noguchi; Takashi Tsunehiro, both of Kokubunji, and Hideo Nakamura, Nishitama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 26, 1982, Ser. No. 444,711
Claims priority, application Japan, Dec. 2, 1981, 56-192933
Int. Cl.³ G06F *9/26*
U.S. Cl. 364—200 4 Claims



1. A microinstruction controlled data processor comprising:

an address register;

storage means adapted to be driven in each of predetermined cycles for reading out a predetermined number of microinstructions on the basis of the page address which is stored in said register, a first field of each of said microinstructions containing a page address for addressing the subsequent microinstruction which is to be read out after said predetermined cycles in view of the read-out cycles of the respective microinstructions, a second field of a general instruction other than a branch-on-condition instruction containing a displacement address for addressing said subsequent microinstruction, and a second field of said branch-on-condition instruction containing information for addressing a branch condition;

means for selecting one of the read-out plural microinstructions upon each of said read-out operations;

setting means made synchronous with said selecting operation for setting said register with the first and second fields of said selected instructions with a delay of said predetermined number of cycles from the timing at which the page address for reading out said selected instructions is set in said address register;

means for detecting on the basis of the second field of said selected branch instruction whether the branch addressed by said branch instruction succeeds or not when said selected microinstruction is the branch instruction; and

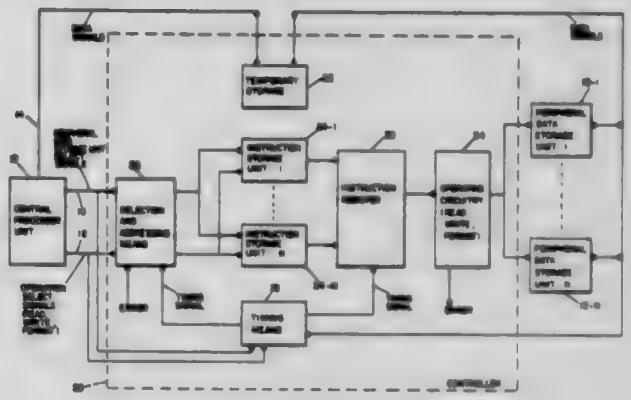
address generating means partly for generating the displacement address for addressing the microinstruction to be selected in a subsequent cycle at each end of said selecting operations and partly for feeding the same to said selecting means, said displacement address being generated by said selecting means on the basis of both the output of said detecting means during said predetermined number of cycles until the time for the processing operation and the displacement address existing in said address reigister at the time for the processing operation.

4,494,196

CONTROLLER FOR PERIPHERAL DATA STORAGE UNITS

Michael T. Greer, North Andover, Mass., assignor to Wang Laboratories, Inc., Lowell, Mass.

Continuation of Ser. No. 265,257, May 19, 1981, abandoned.
This application Sep. 7, 1983, Ser. No. 530,191
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 3 Claims



1. In a data processing system having a central processing unit and a plurality of peripheral data storage units, said peripheral units employing disparate operating control signals and operating at disparate characteristic data signal processing frequencies, said central processing unit providing read, write, format, and storage unit select control signals,

a controller connected to said central processing unit and to said peripheral data storage units, and configured to transfer, in response to control signals from said central processing unit, data signals between said central processing unit and any of said peripheral storage units,

said controller including

temporary data storage means for holding data signals temporarily, while being transferred between said central processor and any of said peripheral storage units,

means for transferring data signals between said temporary data storage means and any of said peripheral units or said central processing unit,

instruction storage means for storing instructions for read, write, and format operations effecting transfer of data between said temporary storage unit and said peripheral storage units,

selection and addressing means for providing selected address signals to said instruction storage means,

operating circuitry means for providing signals to control said peripheral data storage units,

instruction register means for receiving instructions from said instruction storage means and providing selected input signals to said operating circuitry means,

timing means for providing periodic timing signals controlling the rate of processing of sequential instructions, wherein

instructions stored in said instruction storage means are stored in blocks of contiguous addresses, each block containing exclusively the instructions for carrying out a read, write, or format function for a specific peripheral unit, the instructions within each block being stored at addresses in a sequential order corresponding without exception to the temporal order of implementing the instructions for the function and peripheral unit corresponding to the block,

said selection and addressing means transmits in response to a signal from said central processor a sequence of address signals to said instruction storage unit beginning with an initial address selected in accordance with said read, write, format, and storage unit select control signals, said initial address being the first address of the block of contiguous addresses relating to the function specified by the read, write, and unit select control signals, and

said timing means includes means responsive to said control

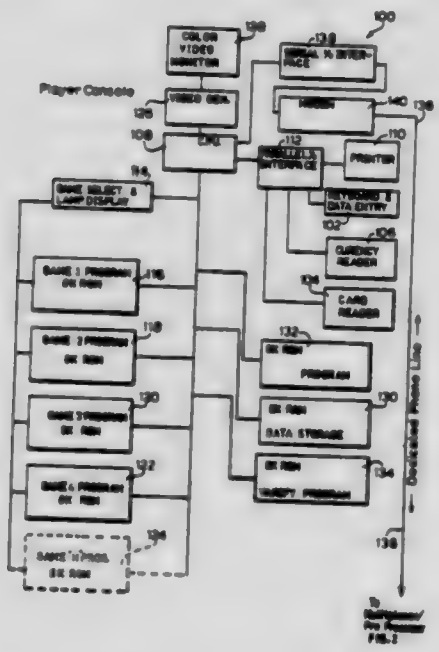
signals provided by said central processing unit and specifying a particular one of said peripheral units and a particular one of said functions for selecting periodic timing signals repeated at the characteristic rate of operation of any of said peripheral units, said timing signals being applied to increment the current instruction of the instruction register.

4,494,197

AUTOMATIC LOTTERY SYSTEM

Seymour Troy, P.O. Box 5027, Fort Lauderdale, Fla. 33310, and Kenneth E. Mallenix, P.O. Box 14521, Gainesville, Fla. 32601

Continuation of Ser. No. 215,150, Dec. 11, 1980, abandoned.
This application Feb. 22, 1984, Ser. No. 581,218
Int. Cl.³ G06F *15/28, 15/44;* G06G *7/48*
U.S. Cl. 364—412 43 Claims



1. A lottery system free of player skill which is preprogrammed so as to be preset as to when a winning play will occur, said system comprising:

a central processor;

a plurality of playing means remote from the central processor but communicating therewith;

said playing means being capable of supplying data corresponding to a particular play by a player on a particular playing means to the central processor;

a means of determining an amount played;

a means of identifying a particular player;

the central processor being capable of directing data to a particular playing means and having a data storage means capable of storing data directed to it by the playing means; and

said central processor having preprogrammed means capable of preselecting what particular play will be a winning play based upon a pre-established standard for winning plays not dependent upon any external factors and outside events and acknowledging a winning play to the particular means.

4,494,198

GUN FIRE CONTROL SYSTEMS

Gordon R. Smith; John H. Stewart, both of Glasgow, and Ralph H. Bagnall-Wild, Helensburgh, all of Scotland, assignors to Barr & Stroud Limited, Glasgow, Scotland

Filed Feb. 26, 1982, Ser. No. 352,696
Claims priority, application United Kingdom, Mar. 12, 1981, 8107756
Int. Cl.³ G06F *15/58;* G06G *7/80*
U.S. Cl. 364—423 7 Claims

1. A gun fire control system comprising

means for presenting a command signal representing a range value to a system operator,

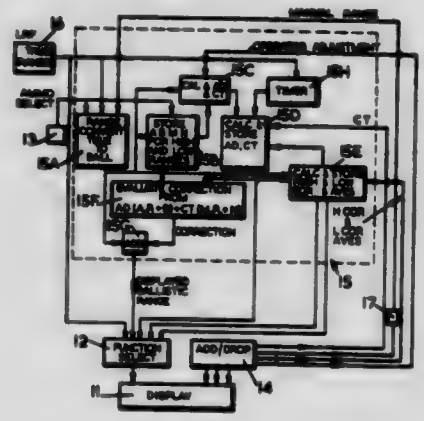
manually-operable means for providing a range correction input by a system operator as a measure of the extent by which a projectile misses a target sighted according to the command signal,

a rangefinder for establishing a true range value to the target,

first memory means preprogrammed with true range to standard ballistic range conversion data and responsive to receipt of a true range value to output the corresponding standard ballistic range value from said conversion data,

second memory means preprogrammed with preset correction coefficients,

first calculating means for evaluating air density and charge temperature parameters according to the outputs of said



manually-operable means, said first memory means and said second memory means,

second calculating means for evaluating a correction factor utilising the parameter values evaluated by said first calculating means, the standard ballistic range value output by said first memory means and the correction coefficients from said second memory means,

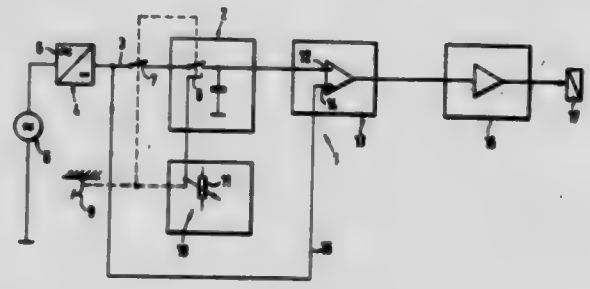
combining means for combining the standard ballistic range value output by said first memory means and the correction factor output by said second calculating means to provide a corrected ballistic range value for delivery to said presenting means and against which to sight the target for firing a subsequent projectile.

4,494,199

BRAKE SYSTEM, ESPECIALLY FOR A MOTOR VEHICLE

Ulrich Lehmann, Weissach, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Sep. 16, 1982, Ser. No. 418,682
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1981, 3137207
Int. Cl.³ B60T *8/00*
U.S. Cl. 364—426 11 Claims



1. A brake system which includes a control installation storing data representing a characteristic curve of vehicular deceleration for influencing the deceleration of a motor vehicle and at least one friction brake means, comprising

measuring means for sensing the position of a brake pedal,

means operatively connecting the control installation and the brake means for effecting deceleration of the vehicle in

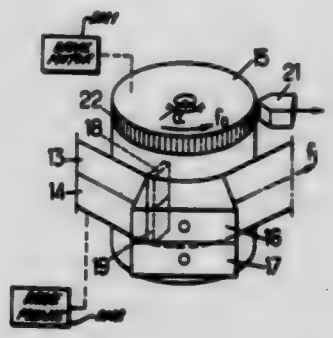
accordance with said stored characteristic curve and in response to the measuring means.

4,494,200

PROCESS AND APPARATUS FOR FIXING THE POSITION OF A MOVING VEHICLE ON A MAP

Do Man Lam, Velizy, France, assignor to Matra, France

Filed Jan. 11, 1982, Ser. No. 338,627
Claims priority, application France, Jan. 14, 1981, 81 00571
Int. Cl.³ G06F *15/50*
U.S. Cl. 364—449 11 Claims



7. A navigation apparatus for fixing the position of a vehicle moving in a predetermined direction on a map, comprising:

a map having a first part and a second part providing two different representations of the distribution of the same parameter representative of a predetermined ground condition in the vehicle and over an area whose width to the left and right of said path is at least equal to the greatest possible expected deviation of the vehicle from its theoretical path, the transparency $\bar{i}$ at each point of said area in said first part being in direct relation to the value of said parameter at the point and the transparency i at each point of said area in said second part being to the value of said parameter at that point;

means onboard the vehicle for measuring successive values of said parameter at respective successive locations of the vehicle along its actual path of movement,

means for storing said actual values over a predetermined distance p,

first and second lighting means located on one side of said first and second parts, respectively, for directing light of controllable intensities through said first and second parts, respectively,

first light sensor means, located on the other side of said first part, for accumulating the light received from said first lighting means through an associated band of said first part of length p located at a predetermined transverse offset distance from an expected location of said vehicle along said theoretical path,

second light sensor means, located on the other side of said second path, for accumulating the light received from said second lighting means through an associated band of said second part located at said predetermined transverse offset distance from said theoretical path and at the same predetermined distance from said expected location as said band of said first part,

first and second control means, operatively connected to said storing means, for controlling one of said lighting means such that the intensity of the light directed through a particular point along said distance p is in direct relation to the stored value of said parameter at said point and for controlling the other lighting means such that the intensity of the light therefrom is in reverse relation to said stored value;

means for varying the location of the associated bands on the map;

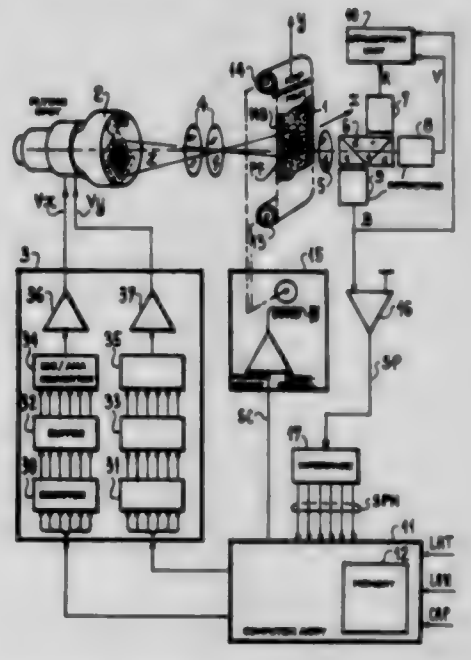
and correlation means connected to said first and second light sensor means for determining the transverse position and longitudinal position of the associated bands for which correlation between the light intensities is optimized and which corresponds to the actual true position of the moving vehicle.

4,494,201

MOVING-MAP DISPLAY WITH RECORDING ON PHOTOGRAPHIC FILM

Jean-Claude Raymond; Gilles Bertrand, and Roland Gabenon, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 27, 1982, Ser. No. 372,332
Claims priority, application France, Apr. 27, 1981, 81 08346
Int. Cl.³ G06F *15/50*
U.S. Cl. 364—449 10 Claims



1. A moving-map display with recording of a map on a photographic film carried by spools, comprising:

a video image reader using a line-by-line scanner which scans a map image formed on said film,

a computer for generating position servo-control data to control scanning of the film image of the basis of heading, longitude and latitude parameters of a vehicle carrying the moving-map display,

said computer comprising means for electronically correcting said servo-control data to take account both rotation due to the heading and translations in x transverse with respect to the film to be produced as a function of the longitude, as well as a servo-control in y of the film in the longitudinal direction by rotation of the spools as a function of the latitude,

said film comprising successive images forming said recorded map, lateral perforations, and coded inscriptions between the perforations, said coded inscriptions corresponding to numbering of said images,

said computer also comprising means for controlling said image reader to produce a cyclic lateral scan in y at the location of a row of said perforations to produce longitudinal position information and permit the calculation of fine resetting data in y to be transmitted to the servo-control based on the position of said perforations relative to said inscriptions, and

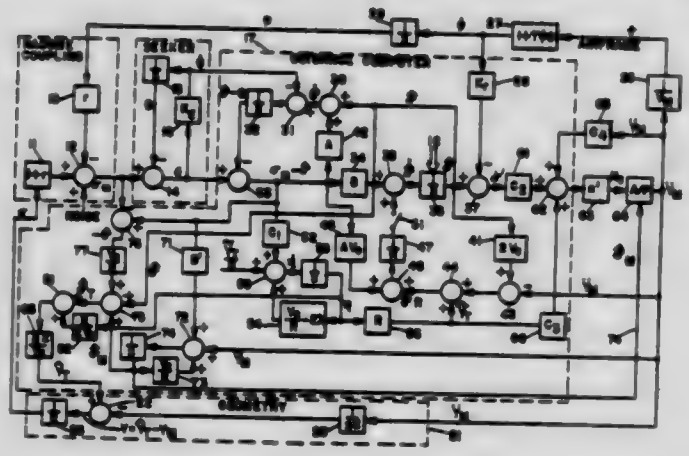
displaying means comprising a cathode-ray indicator for displaying a corrected video image corresponding to the map image scanned by said reader based on the corrected control data.

4,494,202

FOURTH ORDER PREDICTIVE, AUGMENTED PROPORTIONAL NAVIGATION SYSTEM TERMINAL GUIDANCE DESIGN WITH MISSILE/TARGET DECOUPLING

William R. Yeoh, Claremont, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Sep. 22, 1982, Ser. No. 421,538
Int. Cl.³ G05B 13/02; G06G 7/80
U.S. Cl. 364—462
15 Claims



1. A method for terminal guidance of a missile to intercept a target, said method being a fourth order scheme employing a predictive proportional navigation system including an autopilot, an inertial reference unit (IRU) and a noise adaptive guidance computer, said system including noise and radome error compensation, said computer having an adaptive guidance filtering system, said proportional navigation system having input values for the range R and the closing velocity V_c between missile and target, line of sight (LOS) angle σ, antenna electrical boresight error angle ϵ, angle θ between the antenna axis and the missile axis, the rate of change θ of the angle θ, and time varying noise-adaptive time constants τ_d and τ_c, where $\epsilon=\sigma_m-\theta$, said system deriving a value of LOS angle σ_m, an estimate of LOS angle σ and a residual LOS angle $\sigma_m-\sigma$, the output of said filtering system being a smoothed line of sight rate σ, actual missile lateral acceleration being detected by said IRU, the output of said IRU being a measure of actual lateral acceleration Y_M, said method comprising the steps of:

applying the boresight error angle ϵ to a first combining point;

multiplying the residual LOS angle output from said first combining point by a gain A to provide the value $A(\sigma_m-\sigma)$;

combining the value $A(\sigma_m-\sigma)$ with the LOS rate σ at a second combining point to provide an estimated LOS rate σ;

combining said estimated LOS rate σ with said rate σ to provide the value $\sigma-\sigma$;

integrating the value $\sigma-\sigma$ to provide $\sigma-\theta$;

feeding back the value $\sigma-\theta$ to said first combining point;

combining said value $\sigma-\theta$ with the angle ϵ to provide the value $\sigma_m-\sigma$ at the input to said filtering system;

multiplying the residual LOS angle by a gain B to provide the value $B(\sigma_m-\sigma)$;

multiplying the LOS rate σ by $2V_c$;

combining said multiplied LOS rate with acceleration term Y_M at a third combining point to provide the term $2V_c\sigma-Y_M$;

feeding back said term $2V_c\sigma-Y_M$ to a fourth combining

multiplying the residual LOS angle by AV_c to provide the value $AV_c(\sigma_m-\sigma)$;

feeding forward said value $AV_c(\sigma_m-\sigma)$ to a fifth combining point;

multiplying the residual LOS angle by a gain C_1 to provide the term $C_1(\sigma_m-\sigma)$;

combining the term $C_1(\sigma_m-\sigma)$ with target acceleration and range input values to provide an estimated target lateral acceleration value Y_T;

feeding forward said value Y_T to said fourth combining point;

combining Y_T with the value $2V_c\sigma-Y_M$ at said fourth combining point to provide an estimated LOS acceleration term σR;

combining the values $AV_c(\sigma_m-\sigma)$ and σR at said fifth combining point to provide the value

$$2V_c\sigma-Y_M+Y_T+AV_c(\sigma_m-\sigma);$$

dividing the immediately preceding value by the range R to provide the value

$$\eta+\frac{2\sigma}{T_{go}}-\frac{\gamma_M}{V_cT_{go}}+\frac{A}{T_{go}}(\sigma_m-\sigma);$$

combining the immediately preceding value with the value $B(\sigma_m-\sigma)$ at a sixth combining point to provide the corrective and predictive term

$$\sigma=\eta+\frac{2\sigma}{T_{go}}-\frac{\gamma_M}{V_cT_{go}}+\left(B+\frac{A}{T_{go}}\right)(\sigma_m-\sigma);$$ then

integrating the term σ to provide the smoothed LOS rate σ;

multiplying the residual LOS angle by gain B' to provide the term $B'(\sigma_m-\sigma)$;

combining $B'(\sigma_m-\sigma)$ with missile lateral acceleration value σ_M and missile velocity estimate σ_mV_c/R at an eighth combining point to provide the output term

$$\frac{\sigma_mV_c}{R}-\gamma_M+B'(\sigma_m-\sigma);$$

integrating the immediately preceding value to provide the estimated missile LOS rate component σ_M;

applying said LOS rate estimate σ_M to said autopilot to provide body angle information;

combining said LOS estimated rate σ in a ninth combining point with missile LOS rate σ_M and a function of estimated LOS $-\sigma V_c/R$ to provide the output σ_T, the target estimated LOS rate component;

combining said target LOS rate component in a tenth combining point with a function of change in LOS rate due to target acceleration $\rho R/2V_c$;

multiplying the output of said tenth combining point by R^2/V_c to provide the estimated target lateral displacement Y_T;

twice integrating said missile lateral acceleration term Y_M to provide missile lateral displacement Y_M;

combining said target and missile lateral displacements in an eleventh combining point to provide the miss distance Y evaluated at intercept, $Y=Y_T-Y_M$;

dividing said miss distance Y by range R to provide system input, LOS angle σ;

gains A, B, B' and C_1 are noise-adaptive and dependent upon time-to-go, while the guidance filter output σ is also range dependent and includes both corrective and predictive terms; where

$$A=(1/\tau_d)+(1/\tau_c),$$

$$B=1/(\tau_d\tau_c),$$

and

$$B'=KB,$$

and C_1 noise adaptively varies inversely proportional to τ_d;

multiplying a function of said guidance filter output σ by a

gain C_2 and applying that product to a seventh combining point;

multiplying the estimated target lateral acceleration term Y_T by a gain C_3 which is a function of target bandwidth λ_T and T_{go}, the value C_3Y_T being fed forward to said seventh combining point;

multiplying said seventh combining point output $C_3Y_T+C_2\sigma$ by the navigation ratio n' which is a function of control effort weighting factor γ and T_{go}; and

applying the immediately preceding term to said autopilot as command acceleration to modify the position of the missile control surfaces and to account for target lateral acceleration, employing optimal guidance Law C to define gains C_2 and C_3 and navigation ratio n', thereby providing nearly optimal miss distance and low sensitivity to radome error.

4,494,203

METHOD FOR CORRECTING THE DEVIATION OF A PREDETERMINED STOP POSITION IN A LOOM

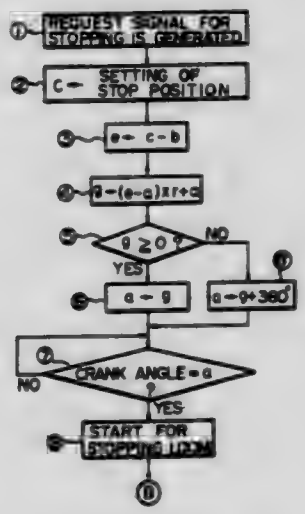
Hajime Suzuki, Anjo; Shinichiro Matsuyama, and Akio Arakawa, both of Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Apr. 13, 1982, Ser. No. 367,959

Claims priority, application Japan, Apr. 18, 1981, 56-57822

Int. Cl.³ D03D *51/44*; G05B *19/26*

U.S. Cl. 364—470 3 Claims



1. A method for braking a rotatable shaft coupled to the driving mechanism of a loom, so that the shaft stops at a predetermined crank angular stop position during successive braking operations occurring at randomly spaced time intervals by means of a braking device cooperating with and being connected with a motor for driving said loom, said method comprising the steps of:

(a) determining the positional deviation between the actual stop position obtained during the last conducted braking operation and said predetermined stop position and storing the value of said positional deviation in a read/store enable memory, said positional deviation being determined according to the relation

$$e \leftarrow c-b$$

where the symbol c denotes a crank angle, as digital data, corresponding to the predetermined stop position, the symbol b denotes a crank angle, as digital data, corresponding to an angular range through which the braking operation is completed, and the symbol e denotes resultant digital data derived from the operation of "c−b", indicating the positional deviation;

(b) reading the positional deviation from said read/store enable memory and determining a resultant crank angle numerical value according to the relationship

$$g \leftarrow (e-a)\gamma+a$$

where the symbol a denotes a crank angle, as digital data, at which the braking operation commences, the symbol γ has a value less than 1 and denotes a predetermined correction factor, and the symbol g denotes a resultant crank angle digital value;

(c) determining whether the resultant crank angle value g is positive or negative;

(d) determining the crank angle value a' at which the next succeeding braking operation is to be initiated, (i) according to the relationship $a' \leftarrow g$ when g is positive and (ii) according to the relationship $a' \leftarrow g+360°$ when g is negative, thereby effecting correction of the position for commencing the braking operation;

(e) initiating said next succeeding braking operation by means of said braking device immediately when the crank angle coincides with the crank angle value a'; and

(f) repeating steps (a) through (e) automatically every time the next following braking operation is performed.

4,494,204

CARDING MACHINE OR ROLLER CARD

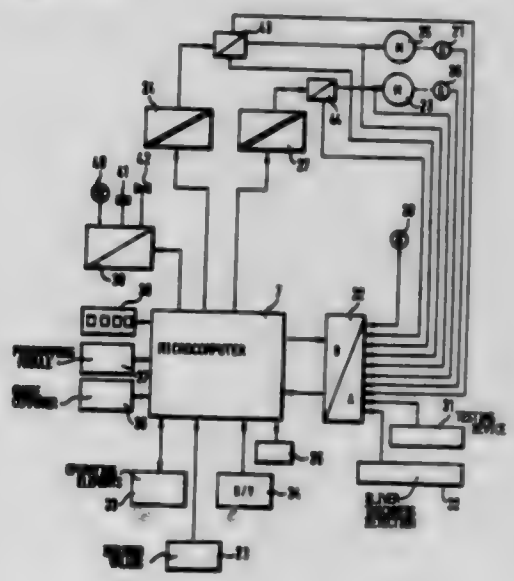
Fritz Hösel, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed May 20, 1982, Ser. No. 380,294

Claims priority, application Fed. Rep. of Germany, May 20, 1981, 3120133

Int. Cl.³ G06F *15/46*; D01G *15/40, 15/48*; D01H *5/42*

U.S. Cl. 364—470 24 Claims



1. Apparatus for forming fiber material into a length of sliver, comprising: carding means, comprising a carding cylinder, a feed roller and a doffer, for receiving such fiber material and forming it into the length of sliver; sensing means for monitoring the operation of said carding means and providing signals representative of that operation; analog/digital converter means connected to said sensing means for receiving the signals provided by said sensing means and converting those signals into digital representations of the operation of said carding means; a digital electronic control unit connected to receive the digital representations formed by said analog/digital converter means and including a microprocessor having memories, means for generating digital representations of desired values of selected operating parameters of said carding means, and means performing operational, regulating, control and display functions, said control unit being arranged to provide digital signals for regulating the operation of said carding means; digital/analog converter means connected to said control unit for deriving analog signals corresponding to the digital signals provided by said control unit; and controllable regulator means controlled by the analog signals derived by said digital/analog converter means for regulating the operation of said carding means; said control unit supplying

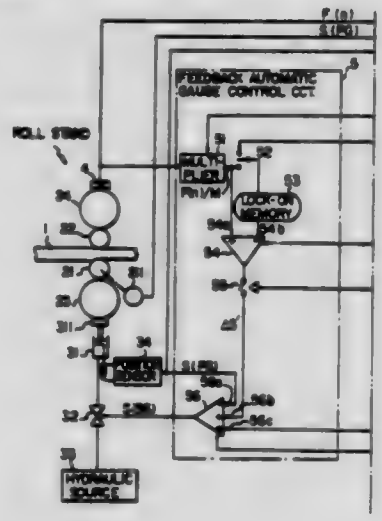
signals via said converter means to said regulator means for matching the speeds of said carding cylinder, said feed roller and said doffer to one another.

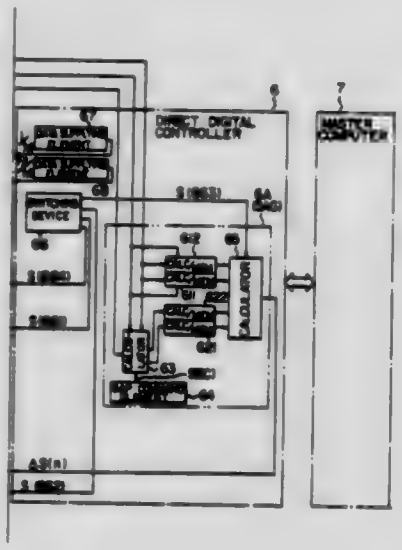
4,494,205

METHOD OF ROLLING METAL

Osamu Dairiki; Hamio Ookuma, and Hiroyuki Asano, all of Oita, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 23, 1981, Ser. No. 333,782
Claims priority, application Japan, Dec. 26, 1980, 55-185616
Int. Cl.³ G05B *13/04*; B21B *37/00*
U.S. Cl. 364—472 4 Claims





1. A method of rolling metal for producing a metal plate or a metal sheet having a desired range of thickness through a sequence of rolling passes, said method comprising the steps of:

detecting variations in deformation resistance of the metal which is being rolled along a longitudinal direction of the metal;

estimating, on the basis of the detected variations in the deformation resistance of the metal of at least one preceding pass, the variations in deformation resistance and a resulting variations in rolling force in the finishing pass along the longitudinal direction of the metal using a rolling force estimation equation and a deformation resistance estimation equation;

calculating and physically forming a distribution of thickness of the metal before the entrance of the finishing pass along the longitudinal direction of the metal, using said estimated variations in deformation resistance and in rolling force; and

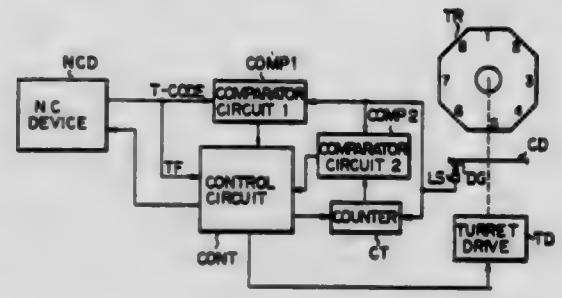
rolling the metal so as to obtain the distribution of the thickness of the metal necessary to cancel the variation in the rolling force at the entrance of the finishing pass.

4,494,206

CONTROL DEVICE FOR INDEXING A STEPPING ROTATABLE MEMBER

Ryuji Imazeki, and Katsuaki Kasumi, both of Hachioji, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

PCT No. PCT/JP81/00161, § 371 Date Mar. 10, 1982, § 102(e) Date Mar. 10, 1982, PCT Pub. No. WO82/00264, PCT Pub. Date Feb. 4, 1982
PCT Filed Jul. 10, 1981, Ser. No. 359,672
Claims priority, application Japan, Jul. 10, 1980, 55-93225
Int. Cl.³ G06F *15/46*; G05B *19/29*
U.S. Cl. 364—474 4 Claims



1. A control device for indexing stepping rotatable member comprising:

a stepping rotatable member which can stop at a plurality of angular positions;

an indexable rotative drive apparatus which rotates said stepping rotatable member;

means for generating different positional code signals at every stop position of said stepping rotatable member;

means for generating incremental strobe signals at every stop position of said stepping rotatable member;

a control circuit which controls the operation of said indexable rotative drive apparatus;

a numeric means for supplying indexing command values;

a first comparator circuit which detects a coincidence between an indexing command value and said code signal;

a counter, which can be preset by said control circuit and which counts said strobe signals; and

a second comparator circuit which detects a coincidence between a count signal of said counter and said code signal value, such that said control circuit supplies a rotation command to said indexable rotative drive apparatus when said indexing command is supplied thereto from said numeric means, supplies a stop command to said rotative drive apparatus when said first comparator circuit detects a coincidence, and outputs an "end of indexing signal" to said numeric means when both said first and second comparator circuits detect coincidences.

4,494,207

DUAL TURBINE CONTROLLER

Hsiao-Nan L. Chang, and John A. Cline, both of Leominster, Mass., assignors to General Electric Company, Lynn, Mass.

Filed Apr. 15, 1982, Ser. No. 368,737
Int. Cl.³ G06F *15/46*; H02P *9/04*
U.S. Cl. 364—494 3 Claims

1. In a control system effective to produce a control signal for controlling a turbine having a shaft rotating at a speed controllable by a position of a valve, said valve being responsive to said control signal, said control system including primary and secondary controllers; the control system including means for producing a speed command signal, a speed feedback signal and a valve position feedback signal, each of said controllers, comprising:

means for producing a speed error signal proportional to a difference between said speed command and speed feedback signals;

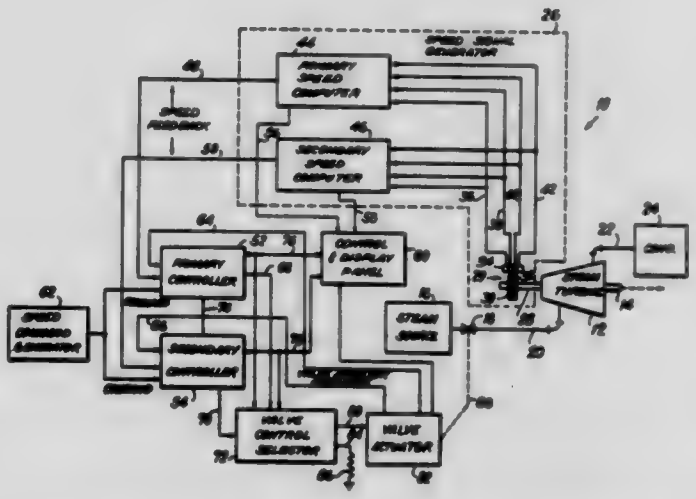
a valve command generator responsive to said speed error to produce a valve command signal;

means for producing a valve drive signal in response to a

difference between said valve command and valve position feedback signals;

a comparison circuit receiving at least some of said speed feedback, speed error, valve command, valve position feedback and valve drive signals;

means for communicating said, valve command, valve position feedback and valve drive signals in each one of said primary and secondary controllers to the comparison circuit in the other one thereof, the comparison circuit in each of said primary and secondary controllers being



effective to detect differences between inputs from its own and from the other controller and, upon determining that said differences may indicate that its controller is bad, producing a one bad signal indicative of this fact; and,

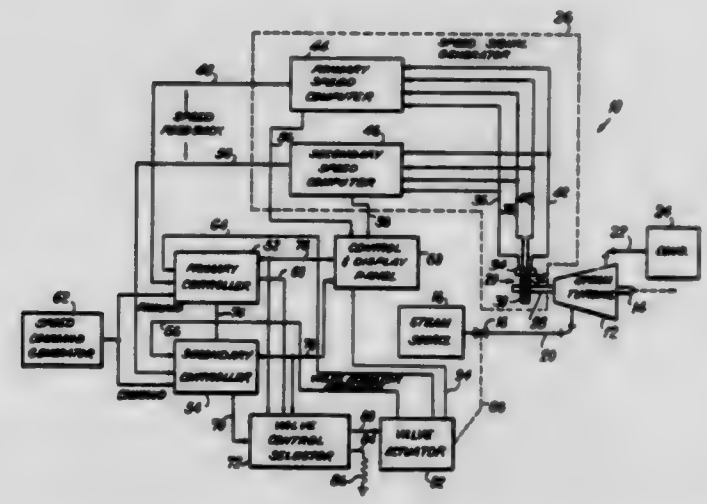
a system mathematical model responsive to at least some of inputs and outputs of said controller effective to predict correct responses of said controller to said inputs, said system mathematical model being effective to produce a controller bad signal when its controller produces outputs inconsistent with its inputs.

4,494,208

BUMPLESS SWITCHING OF VALVE DRIVE IN A TURBINE CONTROL SYSTEM

Haino-Nan L. Chang, Leominster, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Apr. 15, 1982, Ser. No. 368,738
Int. Cl.[3] G06F *15/46*; H02P *9/04*
U.S. Cl. 364—494 5 Claims



1. Apparatus for applying a first control signal from a first controller to a device for controlling speed and for transferring a second control signal from a second controller to said device for controlling speed with minimum discontinuity during said transferring, comprising:

a control selector receiving said first and second control signals;

a termination effective to terminate an unused one of said first and second control signals in a load having characteristics similar to said device for controlling;

means in said control selector for applying a used one of said first and second control signals to said device for controlling and an unused one of said first and second control signals to said load;

means for delaying said unused one by a predetermined amount to produce a delayed control signal;

means effective, upon detection of a fault in the controller providing said used control signal, to subetitute said delayed control signal therefor;

means for initializing the controller producing the previously unused control signal to force it to produce a control signal closely equalling a previously good control signal from the previously used controller; and

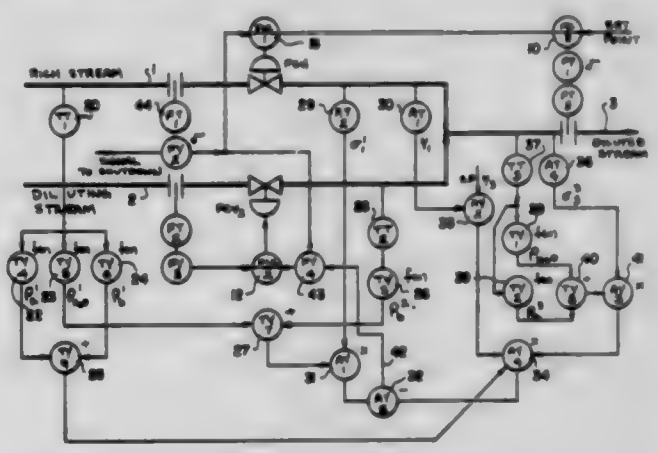
means for transferring the previously used control signal to said termination and the previously unused control signal to said device for controlling speed.

4,494,209

BLENDING CONTROL SYSTEM

Suresh C. Agarwal, Euclid, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Jun. 7, 1982, Ser. No. 385,423
Int. Cl.[3] G06F *15/46*
U.S. Cl. 364—502 3 Claims



1. An apparatus for controlling the blending of a rich stream having a primary and a secondary component and a diluting stream to form a blended stream comprising:

(a) means connected to the rich stream for obtaining the values V_1, the volumetric flow rate of the rich stream; $\sigma_1{}^1$, the specific gravity of the rich stream; y_1, the concentration of primary component in the rich stream; $P_1{}^1a$, the density of primary components in the rich stream; $P_b{}^1$, the density of secondary component in the rich stream; and $P^1{}_{H2O}$, the density of water in the rich stream;

(b) means connected to the diluting stream for regulating the volumetric flow rate V_2 of the diluting stream;

(c) means connected to the blended stream for obtaining the values of $\sigma_1{}^3$, the specific gravity of the blended stream; y_3, the concentration of primary component in the blended stream; $P^3{}_a$, the density of primary component in the blended stream; and $P^3{}_{H2O}$, the density of water in the blended stream;

(d) logic means connected to the means connected to the rich, diluting and blended stream for obtaining a value V_2 corresponding to a desired volumetric flow rate of the diluting stream and for applying that value to the means for regulating the volumetric flow rate of the diluting stream; and

(e) wherein said logic means is operable according to the following:

$$\frac{P_3}{P_1} = \frac{P^1_{H2O}}{P_0^1} \frac{P_o^1}{P_o^3} \sigma_3^3 \frac{y_1}{y_3} - \sigma \left| \frac{P^1_{H2O}}{P_0^2} \right.$$

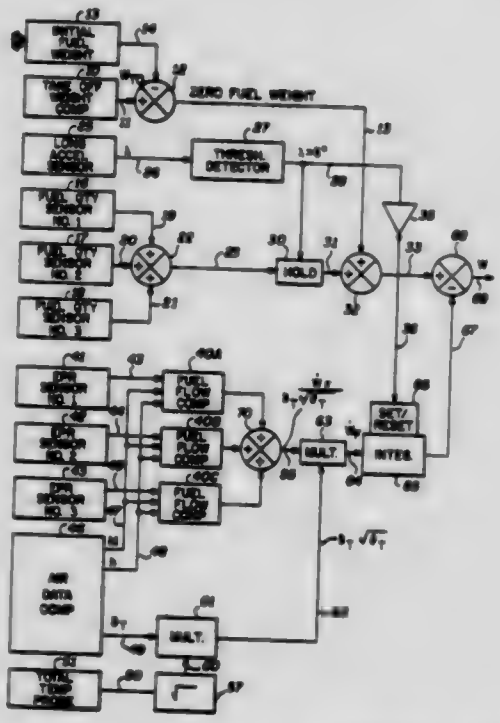
wherein P_0^2 is the density of secondary component in the diluting stream, the apparatus including means connected to the diluting stream for generating P_0^2.

4,494,210

ENROUTE WEIGHT COMPUTER FOR AIRCRAFT

Harry Miller, Scottsdale, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Dec. 21, 1981, Ser. No. 333,097
Int. Cl.³ G01G 19/00; G06F 11/30; G08G 5/00
U.S. Cl. 364—567 7 Claims



1. In an engine powered aircraft, an apparatus for providing a continuous measure of the total in-flight weight comprising:

means for supplying a first total in-flight aircraft weight measure dependent upon the sum of zero fuel weight of the aircraft and weight of fuel in fuel tanks as derived from fuel level sensors disposed within said fuel tanks, and

means independent of said fuel level sensors for computing and providing a measure of the weight of fuel supplied to the aircraft engines,

wherein said independent fuel weight measure providing means comprises:

computer means responsive to an engine operation parameter, aircraft speed and aircraft altitude for providing a measure of the rate of fuel flow to said engine,

integrator means responsive to said fuel flow measure for providing a measure of the weight of fuel being consumed by said engine,

means responsive to aircraft flight conditions, said flight conditions render said fuel level sensors inaccurate, and

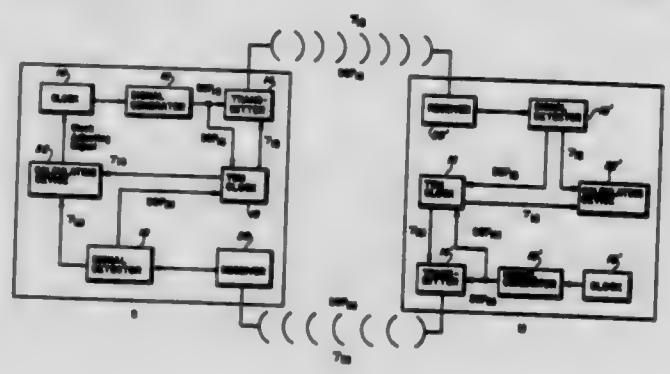
means responsive to said last-mentioned means for holding said fuel level sensor derived fuel weight measure and for subtracting from said sensor derived measure said computed fuel weight measure to thereby provide a second total in-flight aircraft weight measure during said aircraft flight conditions.

4,494,211

BALANCED SYSTEM FOR RANGING AND SYNCHRONIZATION BETWEEN SATELLITE PAIRS

Jay W. Schwartz, Potomac, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 24, 1982, Ser. No. 444,139
Int. Cl.³ G06F 11/00
U.S. Cl. 364—571 17 Claims



1. A balanced ranging and synchronization (R & S) system for synchronizing a clock on a slave platform (S) to a master platform (M) and for measuring the distance between M and S comprising:

an M clock, positioned on M, for generating an M clock output signal;

an S clock, positioned on S, for generating a S clock output signal;

M signal transmitting means on M, interconnected with said M clock, for transmitting an M timing signal in response to a predetermined M clock output signal;

S signal transmitting means on S, interconnected with said S clock, for transmitting an S timing signal in response to a predetermined S clock output signal;

M receiving means on M for receiving signals, including said S timing signal, from S;

S receiving means on S for receiving signals, including said M timing signal, from M;

M time difference measuring (TDM) means, interconnected with said M clock and said M receiving means, for measuring the M time difference between the transmission of said M timing signal and the reception of said S timing signal and for encoding said M time difference in an M time difference output signal;

S time difference measuring (TDM) means, interconnected with said S clock and said S receiving means, for measuring the S time difference between the transmission of said S timing signal and the reception of said M timing signal and for encoding said S time difference in an S time difference output signal;

S calculating means, interconnected with said S TDM means, said S receiving means and said S clock and with inputs including said M and S time difference output signals, for calculating the asynchronism between said M clock and said S clock, and for generating an S clock adjusting output signal for advancing or retarding said S clock so that said S clock is synchronized with said M clock.

4,494,212

VARIABLE GAIN AMPLIFIER

William C. Maelhser, Lagrange Park, Ill., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation of Ser. No. 354,408, Mar. 3, 1982, abandoned. This application Jul. 6, 1984, Ser. No. 628,547
Int. Cl.³ G06F 15/20
U.S. Cl. 364—571 8 Claims

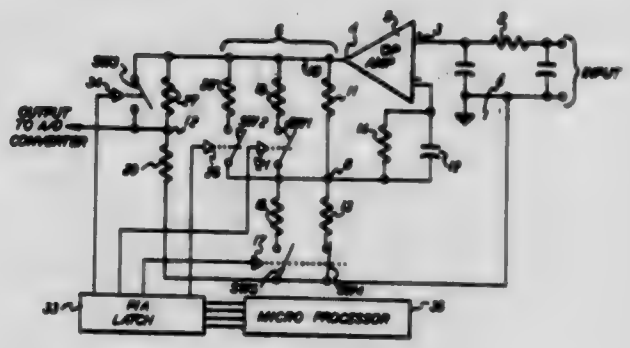
1. A variable gain amplifier, having a plurality of selectable gain ranges, comprising, in combination:

operational amplifier means,

a multipath resistor feedback network connected to said operational amplifier means,

semiconductor switch means for switching said multipath resistor feedback network into a selected one of the paths in said feedback network,

an analog to digital converter connected to the output of said feedback network,



microprocessor means for controlling said semiconductor switch means corresponding to the selected gain range,

said microprocessor means storing in memory a correction factor for each of said gain ranges, and

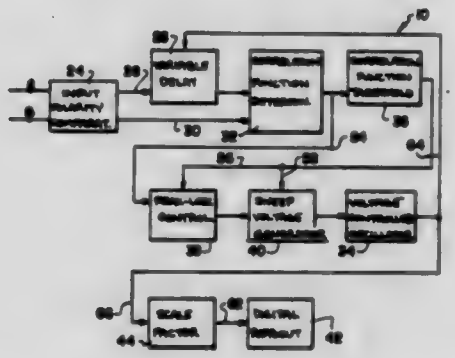
said microprocessor means applying the correction factor corresponding to the selected gain range to the output of said analog to digital converter to provide a corrected gain.

4,494,213

DEDICATED CORRELATOR

William L. Thompson, Chardon, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Jun. 11, 1982, Ser. No. 387,642
Int. Cl.³ G06G 7/19; G01F 1/66; G01J 1/00
U.S. Cl. 364—604 12 Claims



1. A correlator for establishing correlation of two noise signals having positive and negative polarity components comprising:

an input polarity comparator for each signal, for generating a pulse wave for each signal having a high level upon the occurrence of one of the positive and negative polarity components and a low level upon the occurrence of the other of the positive and negative polarity components;

variable delay means connected for receiving one of the pulse waves and delaying that one of the pulse waves by a variable delay amount;

wave correlation means for receiving the other of the pulse waves and the delayed one of the pulse waves and generating a correlation signal which is high with correlation between the delayed and other pulse waves and low with low correlation thereof;

sweep means connected to said variable delay means for varying the delay amount in an increasing and decreasing direction;

peak lock means connected to said sweep means and to said wave correlation means for determining whether the correlation signal is increasing or decreasing and with a decreasing correlation signal, controlling said sweep means to change the direction of variation thereof so that a particular delay amount corresponding to a maximum correlation signal is obtained;

scaling means connected to said sweep means for receiving the particular delay amount and generating a readable signal therefrom; and

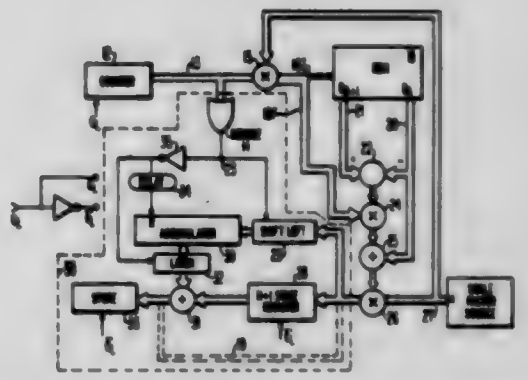
a correlation signal threshold means connected between said wave correlation means and peak lock means for permitting operation of said peak lock means only when said correlation signal rises above a selected level.

4,494,214

APPARATUS FOR GENERATING SCALED WEIGHTING COEFFICIENTS FOR SAMPLED DATA FILTERS

Francis S. Bernard, Brooklyn, N.Y.; Steven M. Elisca, Ocean, and Eric P. Batterman, North Brunswick, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 3, 1983, Ser. No. 463,613
Int. Cl.³ G06F 15/31
U.S. Cl. 364—724 13 Claims



1. Apparatus for generating scaled weighting coefficients for sampled data filters from a set of N standard weighting coefficients, comprising:

means for storing said standard coefficients, wherein said standard coefficients are indexed in a predetermined sequence;

a terminal for applying a scale factor "a";

means for generating a sequence of numbers corresponding to the index values of the standard coefficients;

means coupled to said terminal and to said means for generating a sequence of numbers for generating the products of the scale factor times each of said numbers of said sequence wherein each product has an integer part K and a fractional part F;

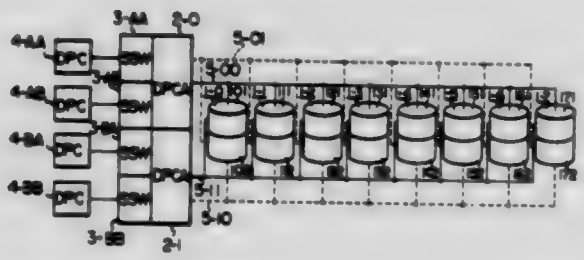
means coupled to said means for storing said standard coefficients, to said terminal and responsive to said products for calculating a value for each number in said sequence according to the equation

$$H'(I)=a[(H(K+1)-H(K))F+H(K)]$$

where H'(I) equals a scaled coefficient for a number in said sequence I, H(K) is a standard coefficient with index K and H(K+1) is a standard coefficient with index K+1; and

means coupled to said calculating means for storing the scaled coefficients H'(I).

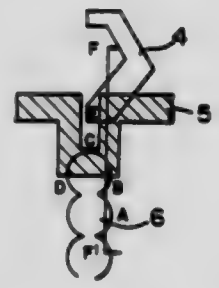
4,494,215
DISK SYSTEM
Takashi Kaiko, Tamaki, and Hajime Sugiura, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Oct. 27, 1982, Ser. No. 437,159
Claims priority, application Japan, Oct. 30, 1981, 56-17389
Int. Cl.³ G06F 13/00
U.S. Cl. 364—900 6 Claims



1. A disk system, comprising:
a plurality of disk units, each having at least one primary logical volume and one secondary logical volume to which individual machine numbers are assigned;
a plurality of disk controllers;
a plurality of string switching means, each operatively connected to one of said disk controllers, for communicating status information;
two disk control adapters with a cross-call function, connected between said string switching means and said disk units;
double access path means connected between said disk control adapters and said disk units, for connecting said disk units to said disk control adaptors, one of said disk controllers setting an assign bit so as to cause one logical volume of a disk unit to perform a stand-alone operation, the assign bit being reset when another of said disk controllers issues an unconditional reserve command for another logical volume of the disk unit;
a plurality of means, operatively connected to said disk controllers, with one means provided for one logical volume, for storing whether or not a stand-alone operation is performed on the corresponding logic volume and for producing an output;
decoder means, operatively connected to said disk controllers, for decoding the destination of said unconditional reserve command;
a plurality of interruption signal generating means, each operatively connected to one of said storing means and to said decoder means, said interruption signal generating means for issuing an interruption request signal to the corresponding disk controller when said decoder means designates one of said storing means which represents said stand-alone operation; and
notification means (9), operatively connected to one of said disk controllers, to said interruption signal generating means and to said decoder means, for issuing a notification signal for representing the issuance of said interruption request signal to the corresponding disk controller.

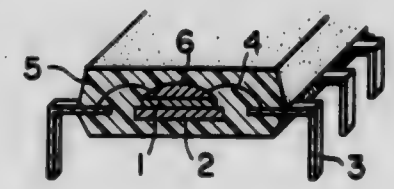
4,494,216
MAGNETIC BUBBLE MEMORY DEVICE
Ryo Suzuki; Tadashi Ikeda, both of Kodaira; Masatoshi Takeshita, and Naoki Kodama, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 20, 1982, Ser. No. 451,093
Claims priority, application Japan, Dec. 18, 1981, 56-203715
Int. Cl.³ G11C 19/08
U.S. Cl. 365—36 6 Claims

1. A magnetic bubble memory device comprising:
a bubble supporting layer for holding and propagating bubbles of cylindrical magnetic domain;
a first bubble propagation path for propagating the magnetic bubbles in accordance with a driving magnetic field rotating in the plane of said bubble supporting layer, said bubble propagation path being formed in a pattern by ion implantation on the surface of said bubble supporting layer;
a second bubble propagation path for propagating the magnetic bubbles in accordance with said driving magnetic field, said bubble propagation path being formed of a plurality of magnetically soft elements disposed above said bubble supporting layer; and
bubble transfer means for connecting a point on said first bubble propagation path to an end of said second bubble propagation path and for transferring out a bubble of cylindrical magnetic domain having been propagated to



said point through said first bubble propagation path to the end of said second bubble propagation path, said bubble transfer means including a hairpin-shaped conducting layer disposed between said first and second bubble propagation paths and at least in overlapping relation with said point of said first bubble propagation path, said conducting layer being arranged for being supplied with a predetermined amount of electric current for blocking the bubble of cylindrical magnetic domain at said point of said first bubble propagation path until the bubble is repulsed from said point by said driving magnetic field to enable transfer.

4,494,217
SEMICONDUCTOR MEMORIES WITH α SHIELD
Hiroshi Suzuki, Hitachi; Goro Tanaka, Fujisawa; Akio Nishikawa, Hitachi; Junji Makai, Hitachi; Mikio Sato, Hitachi; Daisuke Makino, Hitachi, and Yoshiaki Wakashima, Kawasaki, all of Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Company, Ltd., both of Tokyo, Japan
Filed Jan. 5, 1981, Ser. No. 222,612
Claims priority, application Japan, Jan. 9, 1980, 55-587
Int. Cl.³ G11C 5/00, 11/34
U.S. Cl. 365—53 17 Claims

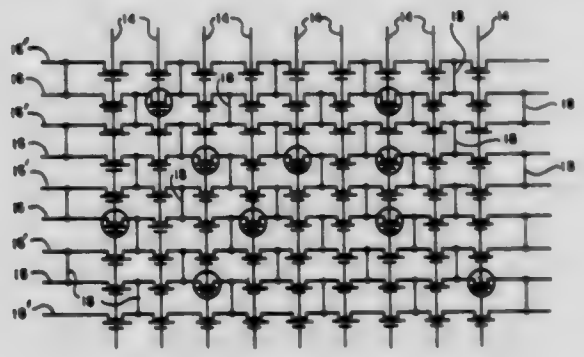


1. In a semiconductor memory device comprising semiconductor memory elements having such a degree of integration in memory circuits as to produce soft errors by incident α-rays, a resin package which packages the memory elements, and an α-rays shielding layer made from a resinous material interposed between the surface of the memory elements and the resin package, said α-shielding layer containing uranium and thorium in a total amount of 1 part per billion or less and having a thickness of at least 40 μm.

4,494,218
READ ONLY MEMORY USING SERIES CONNECTED DEPLETION TRANSISTORS AS BUS LINES

Kenneth L. Naiff, Hauppauge, N.Y., assignor to General Instrument Corporation, Clifton, N.J.

Filed Jun. 1, 1982, Ser. No. 383,755
Int. Cl.³ G11C 5/02, 5/06, 17/00
U.S. Cl. 365—104 16 Claims

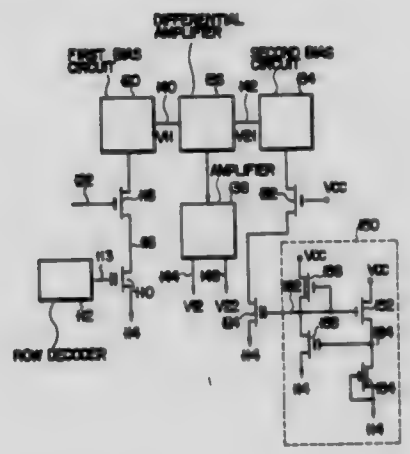


3. A circuit suitable for use as a read only memory comprising first and second spaced groups of series connected transistors, each of said first and second groups defining a sub-circuit which is conductive under normal operating conditions, a third group of series connected potential transistors interposed between said first and second groups, selected ones of said potential transistors being potentially conductive and others being non-conductive under normal operating conditions, means for operably connecting each of said potential transistors in said third group between said first and second groups, means for applying a potential difference between said first and second groups and means for applying a voltage, capable of rendering conductive a potentially conductive transistor, to a potential transistor, such that the presence of an operative electrical connection between said first and second groups can be sensed when said energizing voltage is applied.

4,494,219
NONVOLATILE READ ONLY MEMORY DEVICE

Sumio Tanaka, and Shigeyoshi Watanabe, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jan. 29, 1982, Ser. No. 344,050
Claims priority, application Japan, Feb. 5, 1981, 56-14986
Int. Cl.³ G11C 7/00
U.S. Cl. 365—189 9 Claims

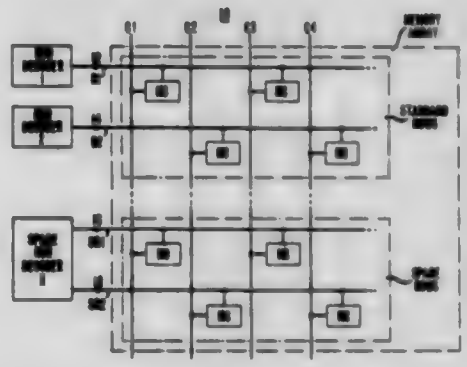


1. A nonvolatile read only memory comprising:
a word line
a nonvolatile memory cell transistor connected at the gate to said word line;
first and second MOS transistors;
first bias circuit for biasing through said first MOS transitor a common read-out node connected to the drain of said memory cell transistor;
a reference cell transistor for detecting a threshold voltage of said memory cell transistor;
a constant potential circuit for applying to the gate of said reference cell transistor a constant voltage which is higher than the threshold voltage of said reference cell transistor and independent of a power source voltage for reading out;
a second bias circuit for biasing through said second MOS transistor the output of said reference cell transistor; and
a differential amplifier for amplifying a difference between voltage signals from said first and second bias circuits.

4,494,220
FOLDED BIT LINE MEMORY WITH ONE DECODER PER PAIR OF SPARE ROWS

Austin C. Dumbri, Easton, and Frank J. Procyk, Center Valley, both of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 24, 1982, Ser. No. 444,239
Int. Cl.³ G11C 11/40
U.S. Cl. 365—200 6 Claims



1. A semiconductor memory comprising:
an array of standard memory cells arranged in a folded bit line configuration of even and odd rows and columns and an array of spare memory cells arranged in a folded bit line configuration of rows;
a single separate standard row decoder circuit being coupled to each even and to each odd row of standard memory cells, each standard decoder circuit including means for decoupling same from the associated row of standard memory cells;
a single separate spare row decoder circuit being coupled to one even and to one odd row of spare memory cells, each spare decoder circuit includes first means for decoupling same from one or both of the associated rows of spare memory cells; and
each spare row decoder circuit includes second means for providing same with the address of a standard row decoder circuit which has been decoupled from the associated row because of a defect of that row or of the memory cells associated therewith such that the spare row is effectively substituted for the standard row.

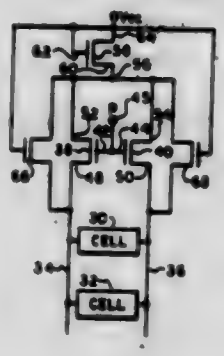
4,494,221
BIT LINE PRECHARGING AND EQUILIBRATING CIRCUIT

Kim C. Hardee, and Rahul Sud, both of Colorado Springs, Colo., assignors to Inmos Corporation, Colorado Springs, Colo.

Filed Mar. 3, 1982, Ser. No. 354,193
Int. Cl.³ G11C 7/00
U.S. Cl. 365—203 26 Claims

18. A method of precharging a pair of bit lines in a semiconductor memory in response to a precharging pulse, the memory having first and second precharging transistors each corresponding to respective first and second bit lines in a pair and each having a gate coupled to receive the precharging pulse, the method comprising the steps of:
turning on only the first precharging transistor in response to

the precharging pulse to apply precharging voltage to only one bit line of the pair; and subsequently



turning on the second precharging transistor to apply precharging voltage to the other bit line of the pair.

4,494,222

PROCESSOR SYSTEM USING ON-CHIP REFRESH ADDRESS GENERATOR FOR DYNAMIC MEMORY

Lionel S. White, and G. R. Mohan Rao, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

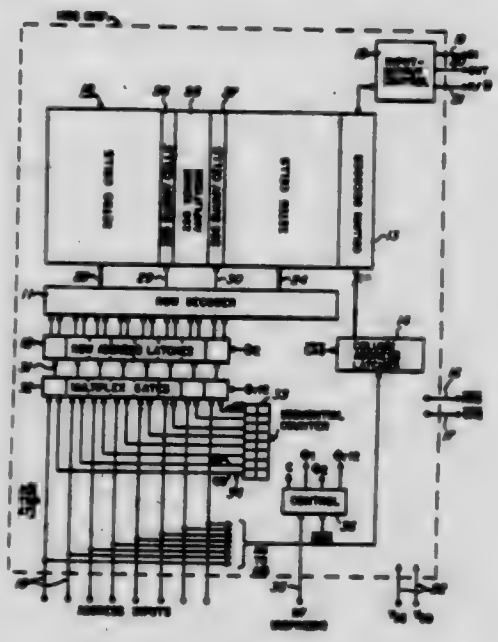
Continuation-in-part of Ser. No. 135,048, Mar. 28, 1980, Pat. No. 4,344,157, which is a continuation-in-part of Ser. No. 918,891, Jun. 26, 1978, Pat. No. 4,207,618. This application Jul. 26, 1982, Ser. No. 401,688

The portion of the term of this patent subsequent to Aug. 10, 1999, has been disclaimed.

Int. Cl.[3] G11C *11/40*

U.S. Cl. 365—222

11 Claims



1. A processing system comprising:

(a) a semiconductor memory device comprising an array of rows and columns of memory cells in a single integrated circuit formed in a semiconductor body, the memory device having a refresh address counter included within said body for generating row addresses along with means for changing the address in the counter to produce a sequence for row addresses including all of the rows within a refresh period and having addressing means for alternatively receiving an address from inputs to the device or from the counter and for accessing the array using said address; and

(b) processing means external to the integrated circuit for generating address signals and coupling them to the inputs of the integrated circuit.

4,494,223

SEQUENTIALLY CLOCKED SUBSTRATE BIAS GENERATOR FOR DYNAMIC MEMORY

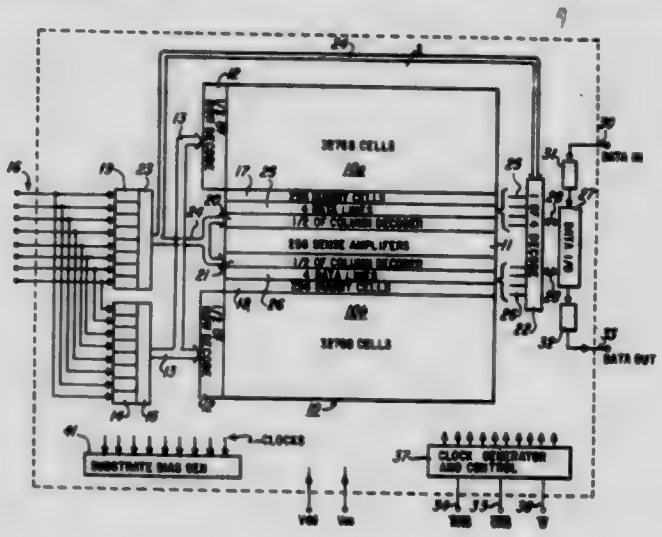
Chitranjan N. Reddy, and G. R. Mohan Rao, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 16, 1982, Ser. No. 418,899

Int. Cl.[3] G11C *13/00, 11/40*

U.S. Cl. 365—233

18 Claims



7. A substrate bias generator constructed in a semiconductor chip with a memory circuit or the like which has a plurality of separate sequentially-occuring clock voltages, comprising:

a plurality of separate injector circuits each individually driven by a separate one of said clock voltages to supply substrate bias to said semiconductor chip correlated in time with the clock voltages.

4,494,224

PIPE MEASURING METHOD AND APPARATUS

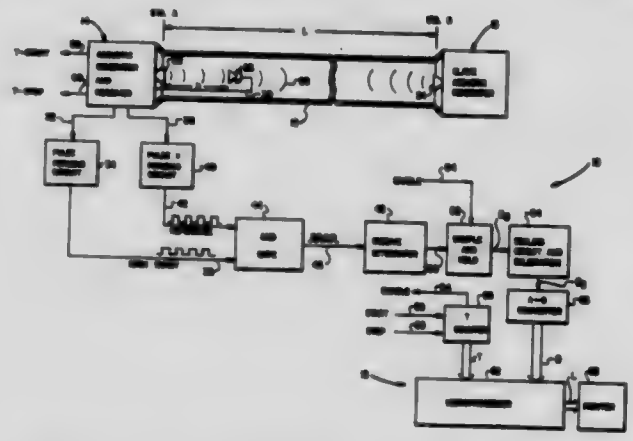
David J. Morrell, 4330 N. Grandview, No. 1506; Donald G. DeVault, 2731 Chestnut Ave., and William K. Sands, Jr., 2607 Beechwood St., all of Odessa, Tex. 79762

Filed Jul. 16, 1982, Ser. No. 398,972

Int. Cl.[3] G01S *15/12*

U.S. Cl. 367—2

7 Claims



1. Apparatus for measuring the distance L between two stations in a propagation medium comprising, in combination:

master acoustical transducer means for emitting a burst of acoustical pulses and for receiving acoustical signals in said medium at one of said stations;

slave acoustical transducer means for emitting an acoustical signal in said medium at said other station in response to reception of said burst of acoustical pulses emitted by said master acoustical transducer means;

means for computing the time T which elapses during the interval starting with the emission of said burst of acoustical pulses by said master transducer means and ending with the reception by said master transducer means of an

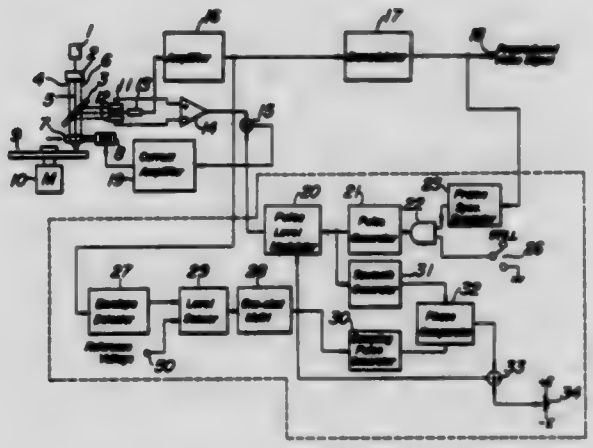
acoustical signal emitted in response thereto by said slave transducer means;
reference acoustical transducer means for receiving said burst of acoustical pulses at a predetermined distance D from said master acoustical transducer means;
means for generating a first electrical pulse train signal corresponding with said burst of acoustical pulses emitted by said master transducer means;
means for converting said burst of acoustical pulses received by said reference acoustical transducer means into a second electrical pulse train signal;
gate means having first and second inputs coupled to said pulse train signal generating means for receiving said first and second electrical pulse train signals, respectively, said gate means having an output for conducting a pulse train signal characterized by pulses having a width proportional to the duration of coincidence of pulses in said first and second electrical pulse train signals;
integrator means coupled to the output of said gate means for producing a phase angle factor ϕ proportional to the integrated sum of the output pulse train signal of said gate means; and,
computing means coupled to said time computing means and to said integrating means for computing the ratio $L=KfDT/\phi$ where:
L=length between the two stations;
K=calibration constant;
f=pulse repetition frequency of the acoustical burst;
D=distance between the master transducer and the reference transducer;
T=round trip propagation time of sound wave between master transducer and the slave transducer; and,
ϕ=phase angle factor.

4,494,225

OPTICAL DISC REPRODUCING APPARATUS

Kenji Kimura, Tachikawa, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Apr. 5, 1982, Ser. No. 365,311
Claims priority, application Japan, Apr. 10, 1981, 56-53120
Int. Cl.³ H04N *5/76*; G11B *17/00*
U.S. Cl. 369—44 10 Claims



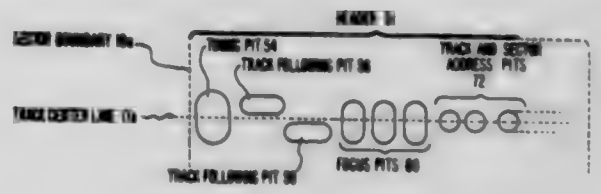
1. In an apparatus for reproducing information recorded on an optical disc as an information signal along spiral or concentric tracks wherein the apparatus includes means for emitting a light beam, means for focusing the light beam onto the optical disc as a light spot, means for rotating the optical disc at a given speed, means for moving said light spot with respect to said disc to produce a light beam modulated in accordance with the information signal in said tracks, means for receiving the modulated light beam to form a reproduced signal, means for producing a returning signal, and means for moving the light spot on said optical disc in response to said returning signal to cause said light spot to repeatedly trace a single track, the improvement in said apparatus comprising:
means responsive to said reproduced signal for generating a first signal representing the actual movement of the light spot with respect to said tracks;
means responsive to said first signal for generating a control signal having a value representing light spot movement by one track pitch; and
means for adjusting the magnitude of said returning signal in response to said control signal so that said returning signal moves said light spot by one track pitch.

4,494,226

THREE BEAM OPTICAL MEMORY SYSTEM

Robert L. Hazel, Thousand Oaks, and Edward V. LaBudde, Newbury Park, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 15, 1981, Ser. No. 311,629
The portion of the term of this patent subsequent to Aug. 30, 2000, has been disclaimed.
Int. Cl.³ G11B *21/12*
U.S. Cl. 369—45 16 Claims



1. In an optical recording and reproducing system, the combination comprising:
an optical recording medium having at least one track;
recording means including an optical recording radiation beam for recording optical holes in a predetermined arrangement in a track of said recording medium;
reading means including at least one optical reading radiation beam for reading optical holes in a track of said recording medium, said reading beam having an intensity such that the beam will not disturb the integrity of previously recorded optical holes; and
means providing for relative movement of said beams along said track;
said beams being provided in a manner such that said recording beam traverses the same portions of said medium as said reading beam during said relative movement so that the reflected reading beam is able to provide an advance indication of the suitability of the track for recording by said recording beam; and
means responsive to the reflected reading beam and operative during recording by said recording beam for detecting whether previously recorded optical holes are present ahead of said recording beam and if so for preventing said recording beam from recording over said previously recorded optical holes.

4,494,227

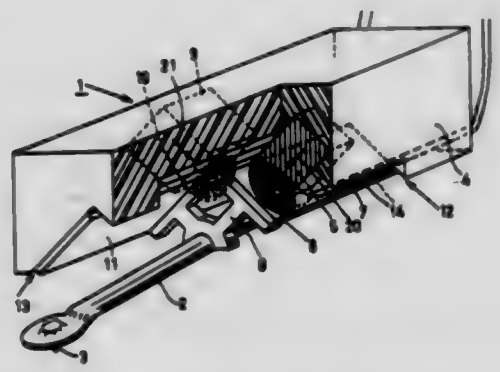
STEREO PHONO PICK-UP AND/OR CUTTER

Casper E. G. M. M. van Vroonhoven, and Kolmpe van Wijk, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 29, 1982, Ser. No. 363,354
Claims priority, application Netherlands, Apr. 13, 1981, 8101794
Int. Cl.³ H04R *9/16*
U.S. Cl. 369—147 12 Claims

1. A cartridge for scanning and/or recording information in two orthogonal directions of vibration in a track of a record carrier, comprising:
a cartridge stationary part,
a stylus holder, mounted to said stationary part for movement in said two orthogonal directions in a plane perpendicular to the track of a record carrier, and having an end and a stylus carried at said end,
two transducers, each having a magnetic circuit including a

respective transducer magnet part having a magnetic axis and a respective transducer coil part having a coil axis, said axes of the respective parts of a transducer being substantially coincident, one of the respective parts of each transducer being mounted for movement relative to the other part along the respective axis, and



a coupling member for connecting the movable part of each transducer to the stylus holder for movement along the respective transducer part axis corresponding to a respective one said orthogonal directions,

characterized in that each coil is a flat coil defining a plane, the plane being spaced from the respective magnet.

4,494,228

ORTHOGONAL CODE DIVISION MULTIPLE ACCESS COMMUNICATIONS SYSTEMS

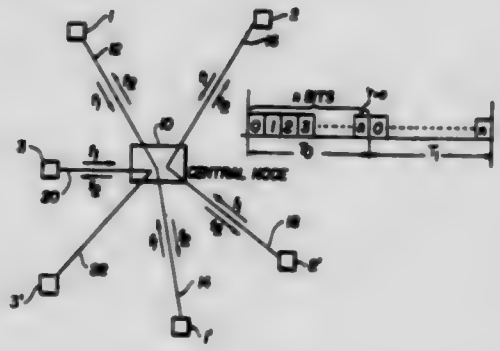
Frank S. Gutleber, Little Silver, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 12, 1982, Ser. No. 407,409

The portion of the term of this patent subsequent to Oct. 6, 1998, has been disclaimed.

Int. Cl.³ H03K 13/01; H04J 1/04

U.S. Cl. 370—18 21 Claims



6. An orthogonal code division multiple access communication system, including a plurality of users comprising in combination:

a plurality of transceivers utilized by said users and being simultaneously operable during the same time period with different multiplexed noise codes which compress to an impulse upon autocorrelation and additionally having crosscorrelation functions equal to zero at a time when said noise codes autocorrelate to an impulse.

4,494,229

INTERCONNECTING APPARATUS FOR A DISTRIBUTED SWITCHING TELEPHONE SYSTEM

Charles H. Jolissaint, Sunnyvale, Calif., assignor to Rolm Corporation, Santa Clara, Calif.

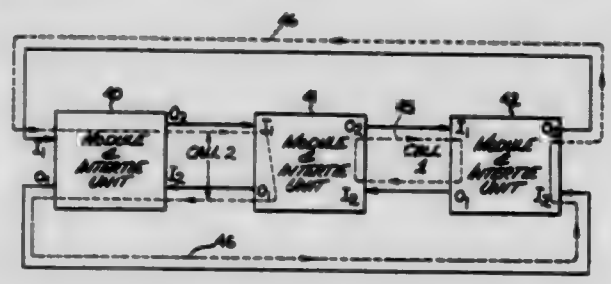
Continuation of Ser. No. 054,008, Jul. 2, 1979, abandoned. This application Dec. 16, 1981, Ser. No. 331,383

Int. Cl.³ H04Q 11/04

U.S. Cl. 370—58 8 Claims

1. In a time division telphone switching system employing a plurality of switching modules, each of said modules interconnecting with a plurality of communication lines such as station lines and trunk lines, said modules for concentrating signals on said lines into time division multiplex digital signals and for switching said signals between said lines, an improved interconnecting system for interconnecting said modules comprising:

a plurality of intertie units, one for each of said modules, each of said units having a first and second intertie input port for receiving signals from other units and a first and second intertie output port for communicating signals to other of said units, each of said units being coupled to receive and communicate signals to its respective switching module;



first interconnecting lines for interconnecting said second output port of said first of said units to said first input port of the second of said units and for connecting said second output port of said second of said units to said first input port of said third of said units, and for connecting the second output port of the last of said units to said first input port of said first unit;

second interconnecting lines for connecting said second input port of said first unit to said first output port of said second unit and for connecting said second input port of said second unit to said first output port of said third unit, and for connecting said second input port of said last unit to said first output port of said first unit;

whereby efficient and reliable interconnections between said modules is realized.

4,494,230

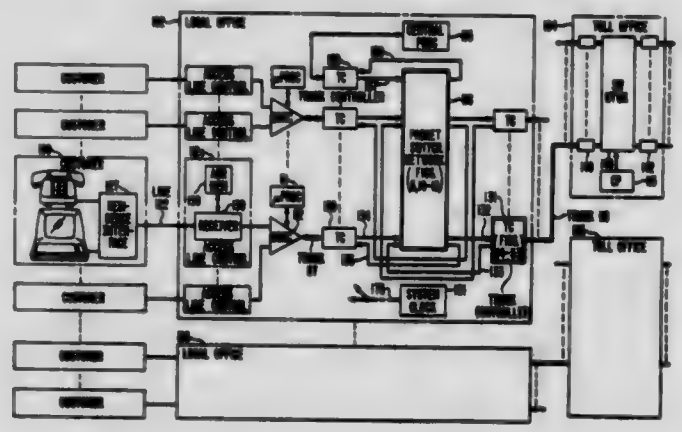
FAST PACKET SWITCHING SYSTEM

Jonathan S. Turner, Evanston, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 25, 1982, Ser. No. 393,112

Int. Cl.³ H04J 6/00

U.S. Cl. 370—60 46 Claims



1. A fast packet switching system for switching packets for a plurality of messages from a plurality of transmission links comprising;

a packet switching network having a plurality of interconnected packet switch nodes,

a plurality of distributed controllers each for interfacingly connecting an individual one of said transmission links to one of said packet switch nodes and comprising,

memory means for storing translation information for controlling the routing of packets of one of said messages communicated over said one of said links through a plurality of said switch nodes to another of said controllers, and

means for concatenating translation information stored in said memory means with said packets of said one of said messages to produce a plurality of address bits,

and

said one of said switch nodes comprising

a plurality of input conductors,

a plurality of output conductors,

a plurality of output conductors,

means responsive to a predetermined number of said plurality of address bits from one of said input conductors for routing a received packet of said one of said messages from said one of said input conductors to one of said output conductors defined by said predetermined number of address bits, and

means for repositioning said predetermined number of address bits in said plurality of address bits in the routing of said received packet to said defined one of said output conductors.

4,494,231

TIME DIVISION SWITCHING SYSTEM FOR CIRCUIT MODE AND PACKET MODE CHANNELS

Serge Slawy, Kergavant; Olivier F. Louvet, 22, av. de Normandie Kerubel, and Jean L. Dauphin, 70, Residence Corlay, all of Lannion, France (22300)

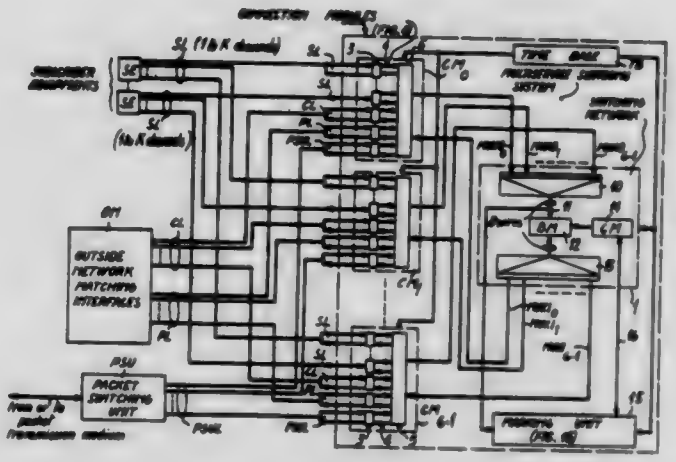
Filed Jan. 15, 1982, Ser. No. 339,880

Claims priority, application France, Jan. 23, 1981, 81 01327

Int. Cl.³ H04J 6/00

U.S. Cl. 370—60

17 Claims



1. A time division digital switching system for switching channels with a predetermined rate, said channel having circuit mode channels and packet mode channels conveying useful information words with a predetermined number of bits, said system comprising:

G first multiplexing means, each multiplexing a group of I reception channels into an outgoing multiplexed signal, G first demultiplexing means each demultiplexing an incoming multiplexed signal into a group of I emission channels, of said multiplexed signals having a recurrent frame including I useful information words assigned to said multiplexed channels, where G and I are integers greater than one; and

means for bidirectionally switching said circuit mode channels and said packet mode channels between lines carrying said incoming and outgoing multiplexed signals; each of said first multiplexing means comprising:

means for introducing working information words into predetermined time intervals, each of the information words defining a multiframe and being included in one of I consecutive frames of said outgoing multiplexed signal words, each of said information words having said predetermined number of bits respectively assigned to said I reception channels, said incoming multiplexed signals also conveying said frames and multiframes; and

means for detecting flag/packet transitions in said packet mode reception channels to replace the working information word by a flag/packet transition indicating word in a frame of said outgoing multiplexed signal having the same rank in the multiframe as that in said packet mode reception channel in which a flag/packet transition has been detected;

said switching means comprising means receiving the working information words multiplexed in the multiframes of said outgoing multiplexed signals for detecting the transition indicating word to switch the channel having a detected transition over to a free packet mode channel in an incoming multiplexed signal.

4,494,232

STATISTICAL MULTIPLEXER WITH DYNAMIC BANDWIDTH ALLOCATION FOR ASYNCHRONOUS AND SYNCHRONOUS CHANNELS

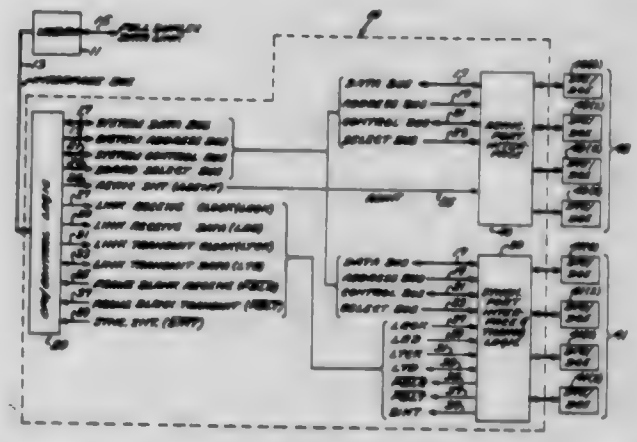
William A. Dumbreckon, Miami; Michael B. Marshall, Ft. Lauderdale; Larry S. Greenstein, Miami, and Alex Dowsie, Cooper City, all of Fla., assignors to Racal-Milgo, Inc., Miami, Fla.

Filed Dec. 4, 1981, Ser. No. 327,495

Int. Cl.³ H04J 6/02

U.S. Cl. 370—80

12 Claims



1. Multiplexer apparatus for use with a data link and having a means for interfacing with a plurality of asynchronous data devices, and a means for generating asynchronous data frames in response to data from the asynchronous data devices, said multiplexer apparatus comprising:

synchronous data port means for interfacing with a plurality of synchronous data equipment, said synchronous data port means providing bidirectional communication with said synchronous data equipment;

control means for allocating link bandwidth to any one of the synchronous data equipment in response to the need for any one of the synchronous data equipment to have bandwidth, and for deallocating bandwidth from any one of the synchronous data equipment when bandwidth is no longer required, said control means further generating control frames for transmission over the data link; and

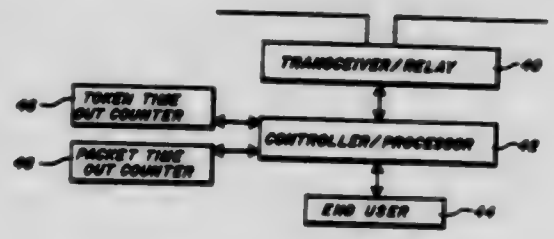
means for interleaving synchronous data bits from the synchronous data equipment having bandwidth with asynchronous data frames and with said control frames to form composite link data.

4,494,193

METHOD AND APPARATUS FOR THE DETECTION AND REGENERATION OF A LOST TOKEN IN A TOKEN BASED DATA COMMUNICATIONS NETWORK

Richard G. Bahr, Framingham, and Paul B. Cohen, Ashland, both of Mass., assignors to Prime Computer, Inc., Natick, Mass.

Filed Feb. 14, 1983, Ser. No. 466,109
Int. Cl.³ H04Q 9/00
U.S. Cl. 370—86 10 Claims



1. In a token-passing, ring-based data communications network, a method for the detection and regeneration of a lost token comprising the steps of

monitoring the communication network at each node having a pending packet transmission for detecting the loss of the token,

transmitting, at each monitoring node detecting the loss of the token, a data packet without a token, said data packet uniquely identifying the transmitting node as the source,

stripping, at each such transmitting node, all incoming data from the network,

transmitting a new token upon successful receipt of its transmitting data packet by the node which transmitted it, and

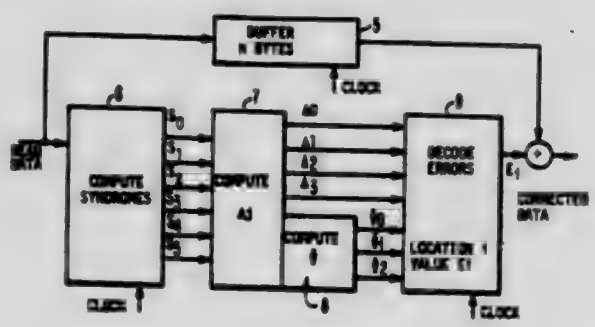
instituting a node transmission arbitration method if the transmitted data packet is not received within a predetermined time out period.

4,494,234

ON-THE-FLY MULTIBYTE ERROR CORRECTING SYSTEM

Arvind M. Patel, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1982, Ser. No. 454,393
Int. Cl.³ G06F 11/10
U.S. Cl. 371—38 19 Claims



1. A multibyte error correcting system operable to detect up to t errors in a selected codeword containing up to 2^b character positions, where each character is represented by a byte consisting of a unique combination of "b" binary bits, by processing 2t syndrome bytes, each containing "b" bits which were generated by combining write check bytes and read check bytes generated respectively when data is written into and read from a storage medium, said check bytes corresponding to the modulo 2 sum of bit positions of said codeword that were selected systematically in accordance with a parity check matrix reflecting the roots $\alpha^a, \alpha^{a+1}, \alpha^{a+2}, \ldots, \alpha^{a+2t-1}$ of a generator polynomial where α is an element of the finite field of 2^b elements, said system including:

syndrome generating means for generating 2t syndrome bytes from said selected codeword as it is read from the storage medium into said system;

clocking means for effecting concurrent serial transfer of each byte of said selected codeword read out of said system and each byte of the next codeword read from the storage medium into said system during each clock cycle; and

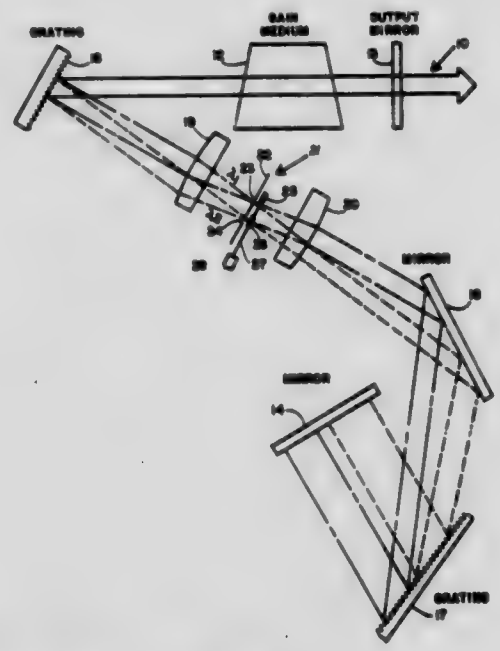
error correcting means responsive to said 2t syndrome bytes for correcting during said serial byte transfer from said system up to t erroneous bytes in said selected codeword as said next codeword is entered into said system whereby said selected codeword and said next codeword are processed in a continuous stream of serial bytes.

4,494,235

MULTIPLE WAVELENGTH LASER

Steve Guch, Jr., Saratoga; Phillip J. Gardner, Cupertino, both of Calif.; Leonard W. Braverman, Moorestown, N.J., and Robert W. Jones, San Jose, Calif., assignors to GTE Government Systems Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 536,566, Sep. 27, 1983, , which is a continuation-in-part of Ser. No. 257,056, Apr. 24, 1981,. This application May 3, 1984, Ser. No. 606,543
Int. Cl.³ H01S 3/098
U.S. Cl. 372—23 9 Claims



1. A laser system comprising;

a lasing medium pumped to produce a laser beam,

feedback and output reflectors spaced from opposite ends, respectively, of said medium and defining the laser cavity for circulating said laser beam along its axis and between said reflectors, and

a wavelength selection assembly in said cavity comprising:

means to disperse said laser beam into a plurality of sub-beams having axes different from each other and from said beam axis and to focus the sub-beams on a focal plane whereby optically to transform to the focal plane the spatial distribution of the sub-beams at infinity,

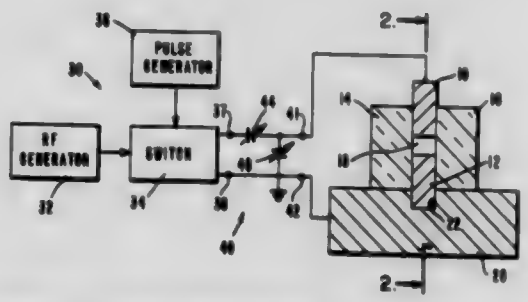
a mask in said focal plane having a plurality of apertures at the foci, respectively, of said sub-beams, and

means for selectively opening at least one of said apertures and closing others whereby the laser resonates at the wavelength of the sub-beam passing through said one aperture.

4,494,236
PULSED RF PUMPED WAVEGUIDE LASER

Leroy V. Sutter, Jr., Culver City, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Jul. 26, 1979, Ser. No. 61,082
Int. Cl.³ H01S 3/10
U.S. Cl. 372—25 6 Claims

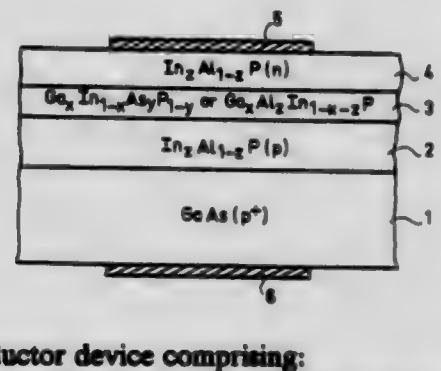


1. A waveguide laser comprising:
means defining an elongated chamber of cross-sectional dimensions suitable for guiding laser light;
a laser gas disposed in said chamber; and
means for providing an excitation electric field in said chamber along a direction transverse to the length thereof to establish a laser-exciting discharge in said laser gas, said excitation electric field consisting of a series of bursts of an alternating electric field at a frequency ranging from about 30 MHz to about 3 GHz, said bursts having a duration ranging from about 0.1 μsec. to about 10 μsec. and a repetition rate ranging from about 500 Hz to about 100 kHz.

4,494,237
SHORTWAVE SEMICONDUCTOR LASER

Marie-Antoinette Di Forte Poisson; Jean-Pierre Hirtz; Jean-Pascal Duchemin, and Baudouin de Cremoux, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 16, 1982, Ser. No. 388,995
Claims priority, application France, Jun. 19, 1981, 81 12143
Int. Cl.³ H01S 3/19
U.S. Cl. 372—45 6 Claims



1. A semiconductor device comprising:
a GaAs substrate of a predetermined conductivity type and at least the following epitaxial layers: a first confinement layer of the same conductivity type as the substrate, an active layer and a second confinement layer of opposite conductivity type, the confinement layers being constituted by materials having a wider forbidden band than that of the active layer, the material constituting the active layer being formed of an alloy corresponding to the formula:

$$Ga_xIn_{1-x}As_yP_{1-y}$$

where x has a value between zero and one, y has a zero value or a value between zero and one, x and y being determined with respect to each other by the relation varified to within 1%:

$$y=(0.42x-0.22)/(0.01x+0.19)$$

and the confinement layers being formed of an alloy corresponding to the formula:

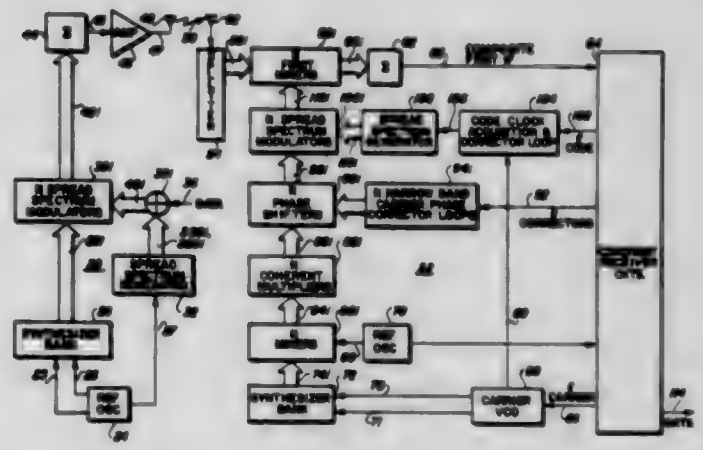
$$In_zAl_{1-z}P$$

with: $0.45 \leqq z \leqq 0.49$.

4,494,238
MULTIPLE CHANNEL DATA LINK SYSTEM

Edward J. Groth, Jr., Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 30, 1982, Ser. No. 393,833
Int. Cl.³ H04B 7/02
U.S. Cl. 375—1 32 Claims



23. A receiver for receiving a plurality of coherently related radio frequency signals, the plurality of radio frequency signals being one of contiguous and non-contiguous, the radio frequency signals each being modulated with an information bearing signal, said information bearing signals being identical each to every other information bearing signal, the receiver comprising:
a single dynamic, carrier tracking, phase locked loop for maintaining all of the received signals coherent;
means coupled into said phase locked loop for coherently and simultaneously combining at least two of the received radio frequency signals; and
means coupled into said phase locked loop for detecting said combined signals, said means for detecting being responsive to said combined radio frequency signals subsequent to said combining.

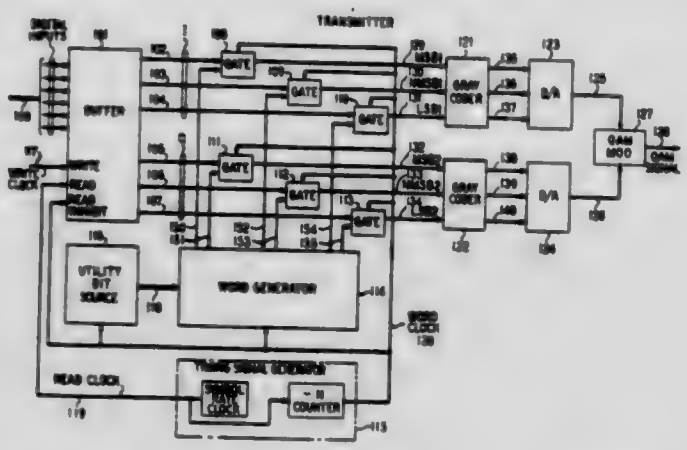
4,494,239
FRAME SYNCHRONIZATION AND PHASE AMBIGUITY RESOLUTION IN QAM TRANSMISSION SYSTEMS

Gary D. Martin, Andover, Mass., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 26, 1982, Ser. No. 382,176
Int. Cl.³ H03C 5/00; H04B 15/00
U.S. Cl. 375—39 16 Claims

1. Apparatus for use in a QAM system wherein at least two channels of nondifferentially encoded data modulate the amplitudes of quadrature-related carriers, said data being sensitive to rotational effects of phase ambiguity, said apparatus being characterized by
means (114, 115) for forming multibit words (F_I,F_Q) each comprising at least one framing bit having a predetermined value, and
means (115, 108, 109, 110, 111, 112, 113) for inserting said words at selected times within said channels with said framing bit in a predetermined bit position, said words inserted together at each of said selected times forming a data point in a symmetrical subset of data points in a signal space diagram, all of the subset data points have said

predetermined value in said predetermined bit position for each of said words inserted together, whereby the framing



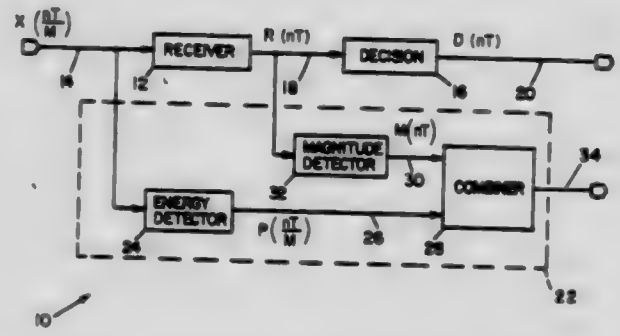
bit value is insensitive to the rotational effects of phase ambiguity.

4,494,240

MODEM END OF MESSAGE DETECTOR

John L. Payton, Dedham, Mass., assignor to Codex Corporation, Mansfield, Mass.

Filed Jan. 3, 1983, Ser. No. 455,306
Int. Cl.³ H03K 5/20
U.S. Cl. 375—75 7 Claims



1. In modem apparatus having receiver circuitry which demodulates a received carrier into a sequence of received signals and decodes each said signal into a signal point drawn from a predetermined signal point alphabet, said received carrier being modulated in accordance with a sequence of said signal points representing a message,

that improvement comprising circuitry for estimating the receipt of the end of said message by testing each said received signal against a predetermined end-of-message condition and wherein said signal point alphabet includes a non-data signal point for indicating the end of said message, and said end-of-message condition comprises said received signal being within a predetermined distance of said non-data signal point.

4,494,241

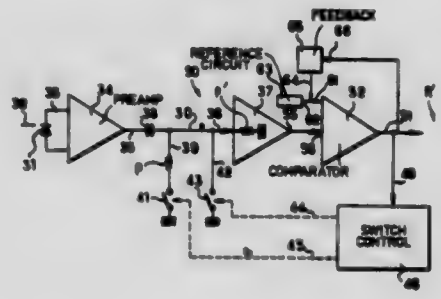
INSTALLATION FOR THE TRANSMISSION OF INFORMATIONS BY AN OPTICAL BUS LINE

Jean-Jacques Mayoux, Boulogne Billancourt, France, assignor to Electronique Marcel Dassault, Paris, France

Filed Jan. 13, 1981, Ser. No. 224,810
Claims priority, application France, Jan. 14, 1980, 80 00729
Int. Cl.³ H03K 9/02
U.S. Cl. 375—76 15 Claims

1. Apparatus for wave shaping signals transmitted as successive electrical input pulse trains, comprising centering means for substantially centering each input pulse train with respect to a reference level regardless of the pulse amplitude of the input pulse train or of any preceding input pulse train, and wave shaping means for producing a wave-shaped signal in response to said centered pulse train, said centering means comprising

a capacitor-resistor circuit including a capacitor, a resistor joined to said capacitor, and a first switch in series with the resistor forming a resistor path to ground, a low pass filter and limiter amplifier having an input connected to a junction of said capacitor and said resistor, and envelope detector means delivering an envelope signal covering the duration of each train, but with a time lag after the beginning of the train, the time lag being shorter than the duration of any pulse in the train, said first switch being controlled to open in response to said envelope signal, with said capacitor and resistor having values selected such that said capacitor-resistor circuit charges the capacitor thereof to substantially half the amplitude of the first incoming pulse of the train, and the voltage across the capacitor thereafter provides a centering of the remaining pulses of the train about said reference voltage.

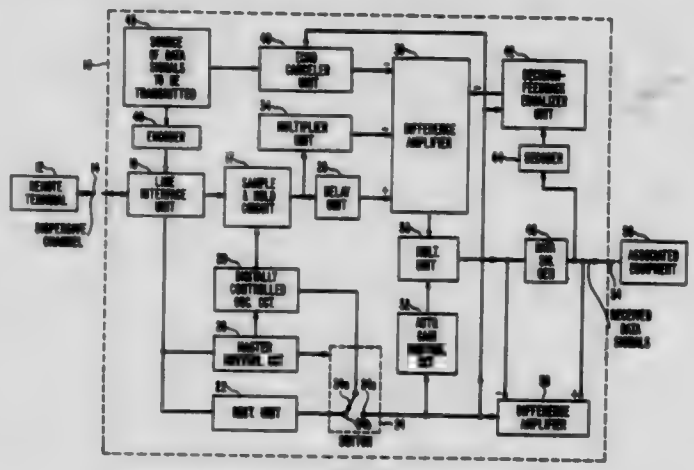


4,494,242

TIMING RECOVERY IN A BAUD-RATE SAMPLED-DATA SYSTEM

Christine H. Ehrenhard, New York, N.Y., and Noah L. Gottfried, Franklin Lakes, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 30, 1982, Ser. No. 413,157
Int. Cl.³ H04L 7/00
U.S. Cl. 375—118 8 Claims



1. In combination in a baud-rate sampled-data terminal adapted to be connected to a dispersive channel,

means responsive to data pulses from said channel for sampling each such pulse at said baud-rate to provide a relatively low-amplitude sampled level representative of a low-amplitude non-zero point on the precursor of said pulse and a relatively high-amplitude sampled level representative of the peak or a near-peak point of said same pulse,

means responsive to the output of said sampling means for delaying each of said sampled levels by one sampling interval,

means also responsive to the output of said sampling means

for multiplying each of said sampled levels by a fixed factor that is the ratio of said low-amplitude level to said high-amplitude level when sampling of pulses is occurring in a prespecified correctly timed manner, and

means for comparing the delayed low-amplitude level with the multiplied version of the high-amplitude level to provide an indication of whether or not sampling is occurring in the prespecified manner.

4,494,243

FREQUENCY DIVIDER PRESETTABLE TO FRACTIONAL DIVISORS

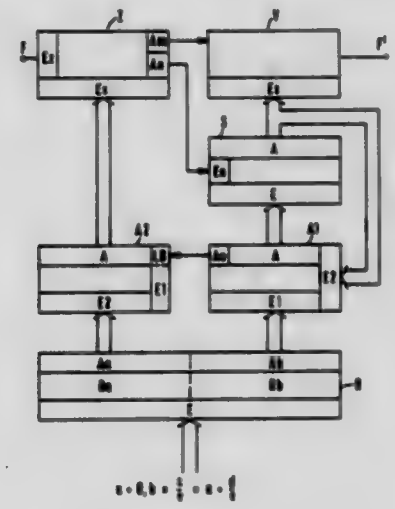
Herbert Elmis, Deuzlingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Nov. 16, 1982, Ser. No. 442,055

Claims priority, application European Pat. Off., Nov. 26, 1981, 81-10-9922.5

Int. Cl.³ H03K *21/36*; G06F *7/68*

U.S. Cl. 377—48 1 Claim



1. Frequency divider presettable to fractional divisors (c/e) and including a counter (Z) presettable to integers,

characterized by the following features:

Those stages (Rb) of a divisor register (R) holding the fractional parts (b) of the divisor (c/e) in decimal point representation (a+0.b) are connected to the first input (E1) of a first adder (A1) having its output (A) coupled to the input of a buffer memory (S);

the output of the buffer memory (S) is coupled to the second input (E2) of the first adder (A1) and to the set input (Es) of a digitally adjustable delay line (V) whose setting-step width is equal to the period (T) of the divider input signal (F) divided by the nominator (e) of the divisor (c/e), and whose input is connected to the maximum-count output (Am) of the counter (Z), and

the overflow (Ao) of the first adder (A1) is coupled to the least significant digit (LB) of the first input (E1) of a second adder (A2), whose second input (E2) is connected to those stages (Ra) of the divisor register (R) holding the integral parts (a) of the divisor (c/e), and whose output (A2) is coupled to the set input (Es) of the counter (Z), and the enable input (En) of the buffer memory (S) is connected to one of the count outputs (An) of the counter (Z), which lie before the maximum-count output (An).

4,494,244

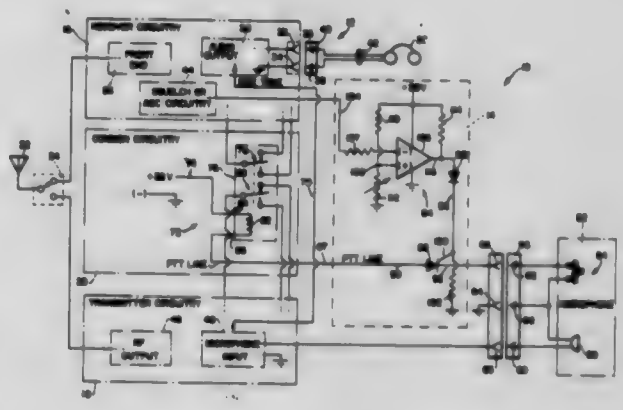
STEP-OFF DEVICE FOR AIRCRAFT VOICE COMMUNICATION SYSTEM

Alfred Arndt, R.D. 4 Box 346, and John G. Rutty, R.D. 5, Box 292, both of Hanover, Pa. 17331

Filed Feb. 14, 1983, Ser. No. 466,318

Int. Cl.³ H04B *1/44*

U.S. Cl. 455—78 8 Claims



5. A step-off device for retrofit connection to a voice communication radio of the type including radio receiver circuitry providing a received audio signal; radio transmitter circuitry; the radio receiver circuitry and the radio transmitter circuitry being selectively operable on any one of a plurality of predetermined radio frequency channels; and including ground connection-activated push-to-talk circuitry for manually activating the transmitter circuitry and deactivating the receiver circuitry; the push-to-talk circuitry in turn being of the type including a voltage supply line providing supply voltage with reference to a circuit reference node, a controlled switching element having an output portion operably connected for selectively activating the transmitter circuitry and deactivating the receiver circuitry and having a control input portion with a pair of input terminals for activating the output portion when at least a predetermined input current level flows through the input portion between the input terminals, a connection between one of the pair of switching element input terminals and the voltage supply line, and a push-to-talk control terminal connected to the other of the pair of switching element input terminals and arranged for connection to a manually-operable push-to-talk switch for completing a series electrical circuit to the circuit reference node for activating the controlled switching element; said step-off device comprising:

a thyristor having a pair of main terminals and a gate terminal for triggering conduction between said main terminals, said thyristor main terminals being electrically interposed in series between the push-to-talk control terminal and the push-to-talk switch such that the transmitter circuitry can be activated only when said thyristor is conducting;

a triggering circuit having an input connected to sense the received audio signal and having an output connected to said thyristor gate terminal, said triggering circuit operable to supply a gating signal to said thryistor gate terminal only when the received audio signal level is below a predetermined threshold level; and

a power supply circuit for supplying operating voltage to said triggering circuit, said power supply circuit including a connection to the push-to-talk control terminal for deriving voltage from the voltage supply line through the control input portion of the controlled switching element during those periods of operation when the controlled switching element is not actuated, and including a series-connected current-limiting impedance for limiting current through said power supply circuit to a level below the predetermined input current level of the controlled switching element.

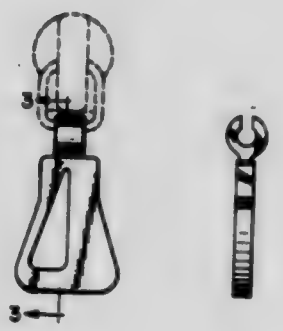
DESIGNS

JANUARY 15, 1985

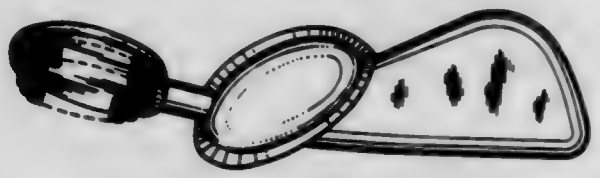
277,139
HAIR RETAINER HEAD WEAR
Florence R. DeFalco, 436 Cherry Hill Rd., Dyer, Ind. 46311
Filed Dec. 22, 1982, Ser. No. 439,771
Term of patent 14 years
U.S. Cl. D2—249



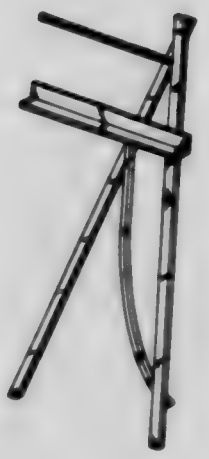
277,140
PULL TAB FOR SLIDE FASTENER
Shunji Abe, Milan, Italy, assignor to Yoshida Kogyo K. K., Tokyo, Japan
Filed Dec. 7, 1981, Ser. No. 328,259
Claims priority, application Japan, Jun. 5, 1981, 56-24291
Term of patent 14 years
U.S. Cl. D2—415



277,141
TOOTHBRUSH
James O'Halloran, Tortola, V.I., assignor to Radius Corporation, New York, N.Y.
Filed Sep. 30, 1982, Ser. No. 430,122
Term of patent 14 years
U.S. Cl. D4—111



277,142
FOLDING MUSIC STAND
John E. Scofield, P.O. Box 1184, Greenwich, Conn. 06830
Filed Sep. 13, 1982, Ser. No. 417,137
Term of patent 14 years
U.S. Cl. D6—419



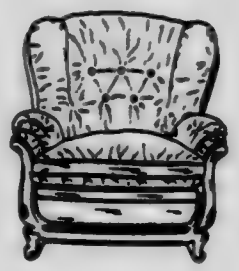
277,143
CHAIR
Charles D. Heimboldt, Caledonia Township, Kent County, Mich., assignor to Haworth Mfg., Inc., Holland, Mich.
Filed Sep. 29, 1980, Ser. No. 191,601
The portion of the term of this patent subsequent to Nov. 27, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—366



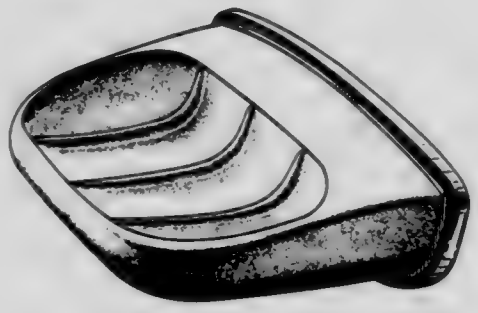
277,144
CHAIR
Edsel E. Murry, Christiana, Tenn., assignor to Samsonite Corporation, Denver, Colo.
Filed May 27, 1982, Ser. No. 382,798
The portion of the term of this patent subsequent to Jul. 31, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—366



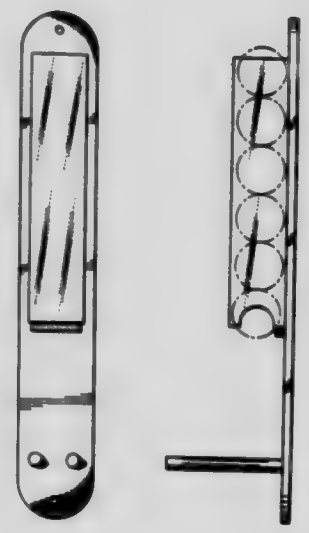
277,145
SEAT
Gianbattista Giudici, Seveso, Italy, assignor to Altena Salotti s.r.l., Cabiate, Italy
Filed Sep. 3, 1982, Ser. No. 414,539
Claims priority, application Italy, Mar. 9, 1982, 21081 8/82
Term of patent 14 years
U.S. Cl. D6—381



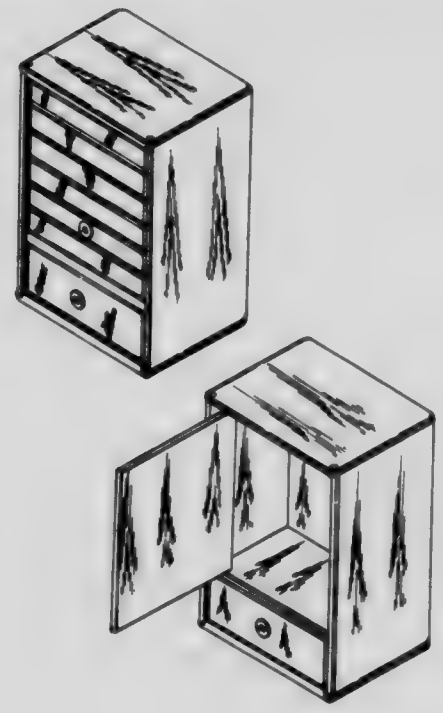
277,146
WALL-MOUNTED SOAP DISH
Jerzy Boroch, Saint Ismier, France, assignor to Allibert S.A., Grenoble, France
Filed Apr. 15, 1982, Ser. No. 368,823
Claims priority, application France, Oct. 15, 1981, DM/000-978
Term of patent 14 years
U.S. Cl. D6—540



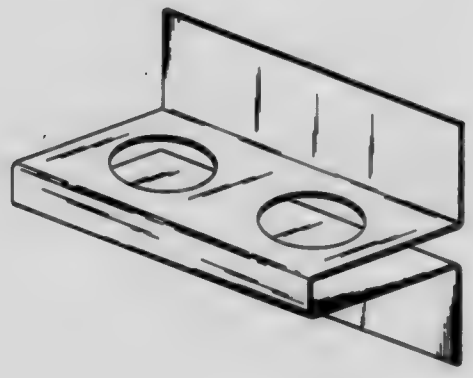
277,147
WALL MOUNTED STORAGE RACK FOR A TABLE TENNIS SET
Kenneth S. Shellman, Sr., 3615 E. 3rd. St., Dayton, Ohio 45403
Filed Sep. 29, 1982, Ser. No. 428,014
Term of patent 14 years
U.S. Cl. D6—515



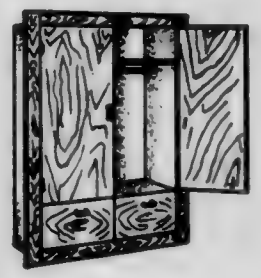
277,148
WALL MOUNTED CABINET
James J. Palka, Arlington Heights, Ill., assignor to Pace Industries Inc., Chicago, Ill.
Filed Apr. 22, 1982, Ser. No. 370,954
Term of patent 14 years
U.S. Cl. D6—560



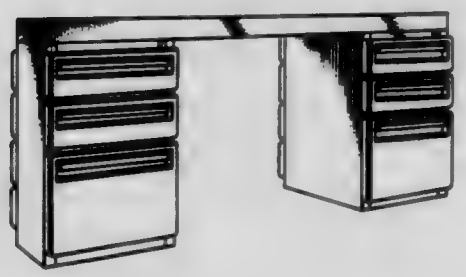
277,149
SHELF
Ronald W. Hind, 7 Graybridge Dr., St. Louis, Mo. 63124
Filed May 5, 1982, Ser. No. 375,310
Term of patent 14 years
U.S. Cl. D6—574



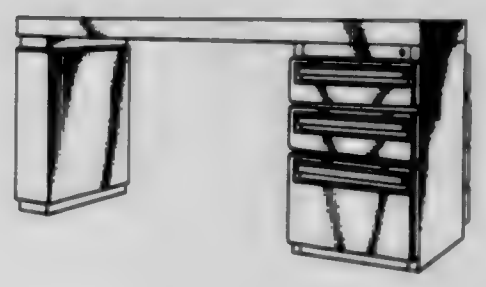
277,150
RECESSED WARDROBE CABINET
David L. Tebbe, St. Clair, and Steven R. Shelton, Union, both of Mo., assignors to Lane Craft Industries, Inc., St. Louis, Mo.
Filed Jan. 22, 1982, Ser. No. 341,326
Term of patent 14 years
U.S. Cl. D6—446



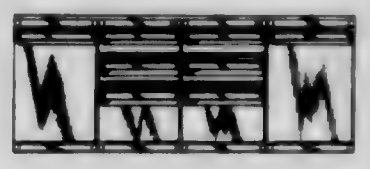
277,151
DESK
Bruce R. Hannah, Cold Spring, N.Y., assignor to Knoll International, Inc., New York, N.Y.
Division of Ser. No. 153,870, May 28, 1980, Pat. No. Des. 270,409. This application Feb. 22, 1983, Ser. No. 468,376
Term of patent 14 years
U.S. Cl. D6—423

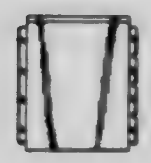


277,152
DESK
Bruce R. Hannah, Cold Spring, N.Y., assignor to Knoll International, Inc., New York, N.Y.
Division of Ser. No. 153,870, May 28, 1980, Pat. No. Des. 270,409. This application Feb. 22, 1983, Ser. No. 468,375
Term of patent 14 years
U.S. Cl. D6—423

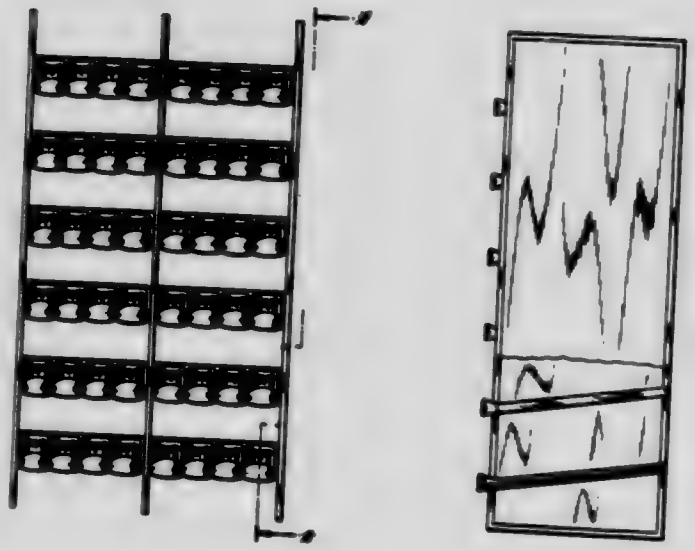


277,153
CREDENZA
Bruce R. Hannah, Cold Spring, N.Y., assignor to Knoll International, Inc., New York, N.Y.
Division of Ser. No. 153,870, May 28, 1980, Pat. No. Des. 270,409. This application Feb. 22, 1983, Ser. No. 468,378
Term of patent 14 years
U.S. Cl. D6—446





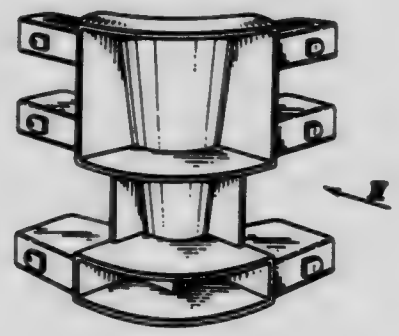
277,154
COMBINED OIL CAN DISPLAY AND DISPENSER RACK
Donald D. Naegewitz, Milwaukee, Wis., assignor to DCI Marketing, Milwaukee, Wis.
Filed Mar. 29, 1982, Ser. No. 362,764
Term of patent 14 years
U.S. Cl. D6—408



277,155
DISPLAY UNIT FOR A VIDEO GAME SYSTEM OR THE LIKE
Sydney Edson, East Meadow, N.Y., assignor to Atari, Inc., Sunnyvale, Calif.
Filed Aug. 25, 1982, Ser. No. 411,797
Term of patent 14 years
U.S. Cl. D6—467



277,156
CORNER CONNECTOR FOR USE IN THE CONSTRUCTION OF A DRAWER
Terence Hardy, Nether Heage, England, assignor to L. B. (Plastics) Limited, Belper, England
Filed May 24, 1982, Ser. No. 381,283
Claims priority, application United Kingdom, Nov. 26, 1981, 1033817
Term of patent 14 years
U.S. Cl. D6—510



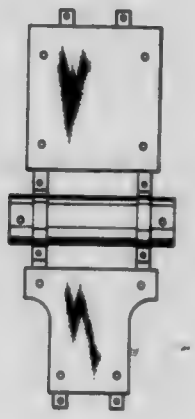
277,157
CRIB END
Henry W. Mower, Stevens Point, Wis.; Allen Seymour, Clayton, Ohio; Jerome P. Kozlatek, Hinckley, Ohio, and Joseph G. Lendvay, Ravenna, Ohio, assignors to Questor Corp., Tampa, Fla.
Filed Jun. 24, 1982, Ser. No. 391,944
Term of patent 14 years
U.S. Cl. D6—506



277,158
UTILITY CUSHION

Charles R. Baylor, 2808 Billy B. St., Arlington, Tex. 76010, and Curtis Cannon, 3041 Walnut Hill La. Apt. 1226, Irving, Tex. 75062

Filed Jun. 23, 1982, Ser. No. 391,147
Term of patent 14 years
U.S. Cl. D6—596



277,159
UPPER SURFACE DECORATION FOR A PLATE OR SIMILAR ARTICLE

Simone Colquitt, Bronxville, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.

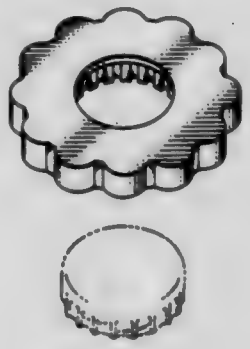
Filed May 17, 1982, Ser. No. 379,171
Term of patent 14 years
U.S. Cl. D7—39



277,160
BOTTLE OPENER

Howard J. Antone, 12284 Adine Ct., Glen Ellen, Calif. 95442

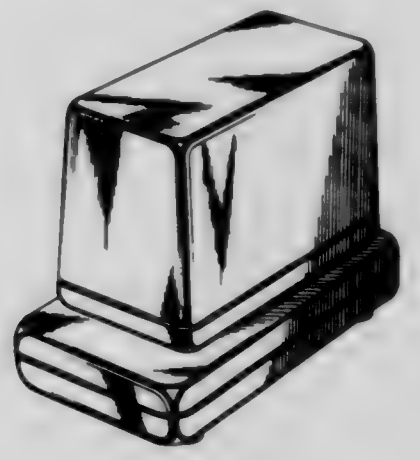
Filed Jun. 7, 1982, Ser. No. 385,458
Term of patent 14 years
U.S. Cl. D8—40



277,161
POWERED STAPLER

David B. Miller, Old Greenwich, Conn.; Paul Olesen, Bellmore, and Ion Stoica, New York, both of N.Y., assignors to Swingline Inc., Long Island City, N.Y.

Filed Oct. 5, 1982, Ser. No. 432,800
Term of patent 14 years
U.S. Cl. D8—49



277,162
STAPLER

John J. Power, Westbury, and Gerald T. Washington, Queens Village, both of N.Y., assignors to Swingline Inc., Long Island City, N.Y.

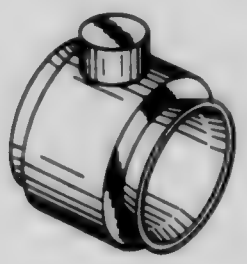
Filed Oct. 4, 1982, Ser. No. 432,555
Term of patent 14 years
U.S. Cl. D8—50



277,163
COMBINED CABLE CONNECTOR AND CRIMPING TOOL

Charles P. Lankford, III, 33985 Hummingbird Dr., Elizabeth, Colo. 80107

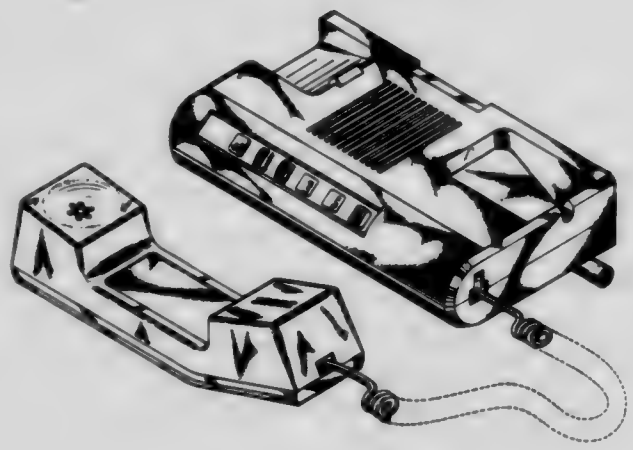
Filed May 4, 1982, Ser. No. 374,719
Term of patent 14 years
U.S. Cl. D8—51



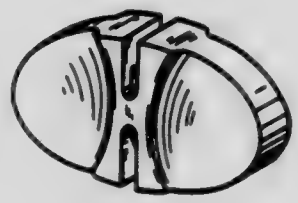
277,164
CONTROL CONSOLE FOR A MOBILE TELEPHONE WITH HANDSET
Ernest M. Bevilacqua, Wilton, Conn., assignor to Oki Electric Overseas Corporation, Hackensack, N.J.
Filed Sep. 7, 1982, Ser. No. 415,219
Term of patent 14 years
U.S. Cl. D6—53



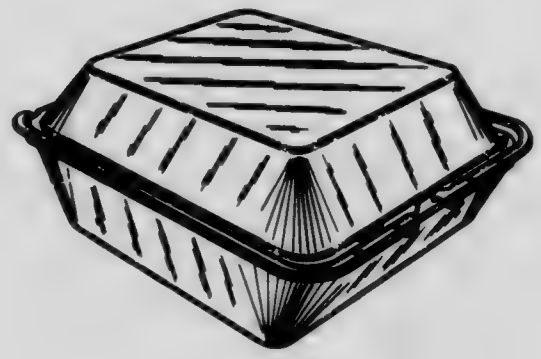
277,165
SUPPORT CLAMP
William A. DeVroom, Glendora, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Aug. 31, 1981, Ser. No. 297,654
Term of patent 14 years
U.S. Cl. D6—72



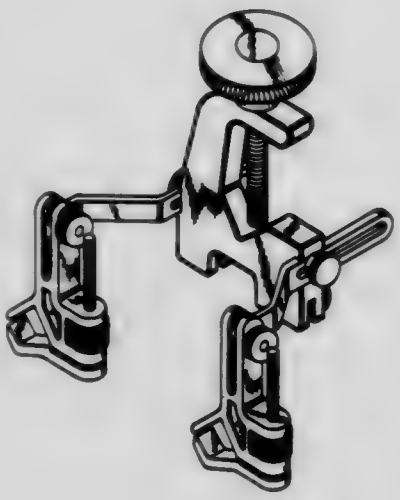
277,166
DUAL KNIFE SHARPENER WITH DUAL HANDLE
Daniel D. Call, Athens, Wis., assignor to Oy Fiskars AB, Helsinki, Finland
Filed Dec. 29, 1982, Ser. No. 454,440
Term of patent 14 years
U.S. Cl. D8—93



277,167
PACKAGING CONTAINER
Kenneth B. Dart, Okemos, Mich., assignor to Dart Container Corporation, Mason, Mich.
Division of Ser. No. 246,029, Mar. 20, 1981,. This application Sep. 19, 1983, Ser. No. 533,574
Term of patent 14 years
U.S. Cl. D9—347

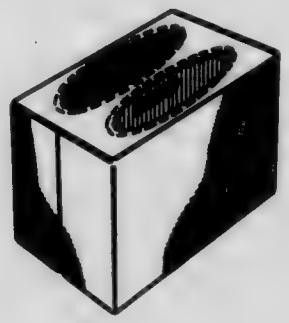


277,168
PAD HOLDING INSERT FOR AN AUDIO CASSETTE CLEANER
Eivind Clausen, and James D. Allsop, both of Bellingham, Wash., assignors to Allsop, Inc., Bellingham, Wash.
Filed Jan. 7, 1982, Ser. No. 337,771
Term of patent 14 years
U.S. Cl. D6—394

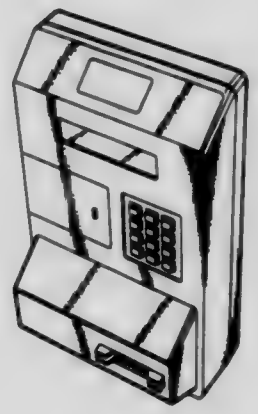




277,169
DISPENSING CARTON FOR SHEET MATERIAL
John M. Ito, Cheltenham, Canada, and James D. Cotton, Livonia, Mich., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Apr. 1, 1982, Ser. No. 364,386
Term of patent 14 years
U.S. Cl. D9—418



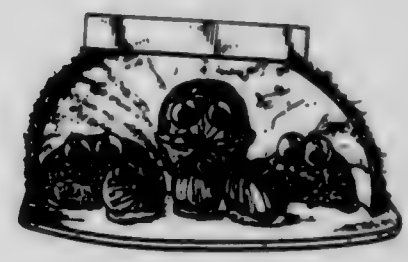
277,170
COMBINED TIME RECORDER AND DATA COLLECTION SYSTEM
Yoshihiko Sugiyama, Nara, and Ken Kawamura, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 27, 1982, Ser. No. 452,987
Claims priority, application Japan, Jul. 20, 1982, 57-33012
Term of patent 14 years
U.S. Cl. D10—41



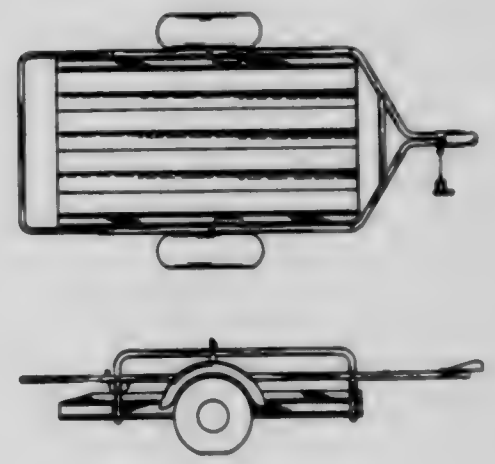
277,171
BRACELET OR THE LIKE
Marina Bulgari, Athens, Greece, assignor to Zoldia Anstalt, Vaduz, Liechtenstein
Filed Dec. 30, 1981, Ser. No. 335,747
Claims priority, application Italy, Jul. 2, 1981, 35897/81[U]
Term of patent 14 years
U.S. Cl. D11—3



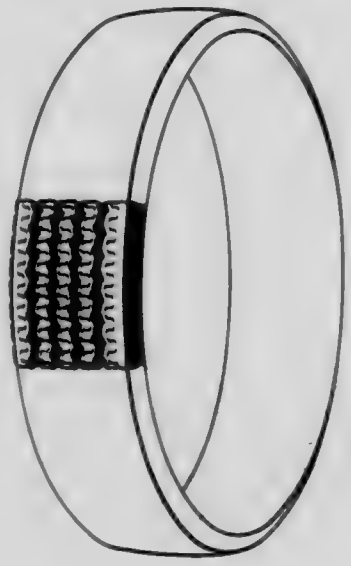
277,172
ORNAMENT FOR TABLE OR OTHER SUPPORTING SURFACE
Frank Dooley, Villa Coolins, Ilsham Marine Dr.; Lawrence Dooley, 45 Broadley Dr., and Kevin Burnett, 11a Braddons Hill Rd. West, all of Torquay, Devon, England
Filed Jul. 14, 1982, Ser. No. 398,270
Claims priority, application United Kingdom, Jan. 15, 1982, 1004528
Term of patent 14 years
U.S. Cl. D11—158



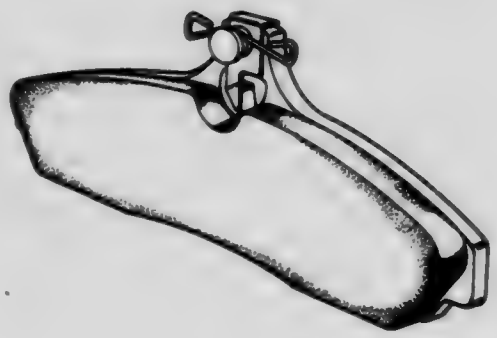
277,173
TRAILER
Allan G. Jenkins, 16 Catalina Crescent, Milford, Auckland, New Zealand
Filed Sep. 15, 1982, Ser. No. 418,481
Claims priority, application New Zealand, Mar. 25, 1982, 17601
Term of patent 14 years
U.S. Cl. D12—101



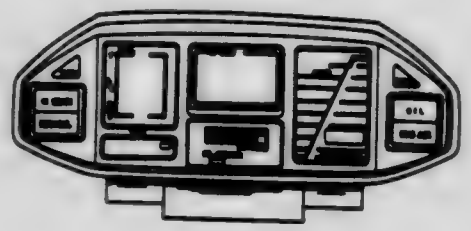
277,174
TIRE TREAD AND BUTTRESS
A. Robert Casimire, Akron, and Bill J. Wallet, Marshallville, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Sep. 17, 1982, Ser. No. 419,335
Term of patent 14 years
U.S. Cl. D12—142



277,175
DISC BRAKE PAD UNIT
Dimitri Caplygin, Sydney, Australia, assignor to Girlock Limited, Belmore, Australia
Filed Mar. 30, 1982, Ser. No. 363,483
Term of patent 14 years
U.S. Cl. D12—180



277,176
INSTRUMENT PANEL AND HOUSING FOR A MOTORCYCLE
Katsusuke Kosuge, Chofu, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 5, 1982, Ser. No. 405,704
Claims priority, application Japan, Feb. 5, 1982, 57-4642
Term of patent 14 years
U.S. Cl. D12—192



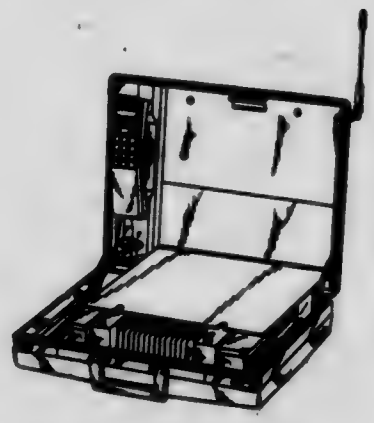
277,177
CONTINUOUS ELECTRICAL TRACK SYSTEM
Michael Humphreys, London, England, assignor to Electrak International, Ltd., London, England
Filed Feb. 3, 1982, Ser. No. 345,319
Claims priority, application United Kingdom, Aug. 6, 1981, 1001839
Term of patent 14 years
U.S. Cl. D13—13



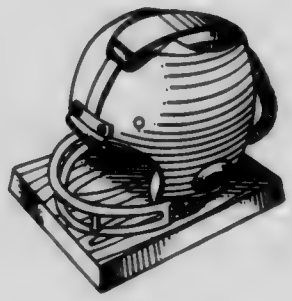
277,178
RECORD PLAYER
Masakatsu Morita, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 25, 1982, Ser. No. 392,204
Claims priority, application Japan, Dec. 29, 1981, 56-58767
Term of patent 14 years
U.S. Cl. D14—17



277,179
PORTABLE RADIO TELEPHONE OR THE LIKE
Guenter Specht, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Jun. 17, 1982, Ser. No. 389,262
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1981, MR.BD9NR.12782
Term of patent 14 years
U.S. Cl. D14—53

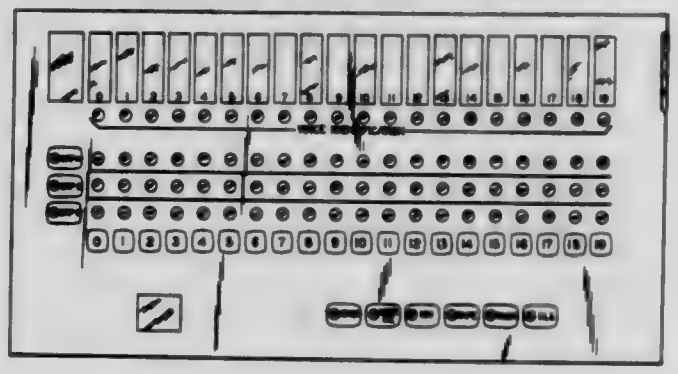


277,180
TELEPHONE
Bernard A. Paul, 788 Greenview Ave., Des Plaines, Ill. 60016
Filed Jun. 1, 1982, Ser. No. 383,910
Term of patent 14 years
U.S. Cl. D14—53



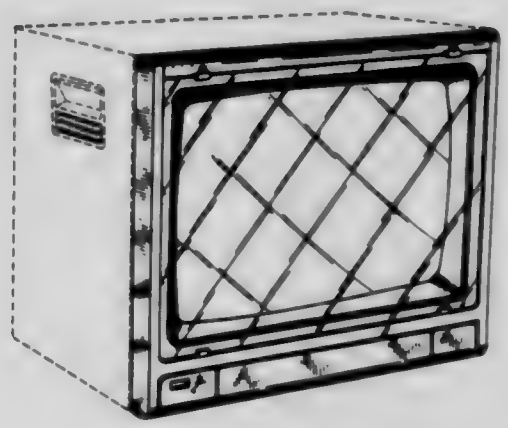


277,181
TELECONFERENCING TELEPHONE SET CONTROL PANEL
Henry J. Heim, College Point, N.Y., and Alfred R. Ender, Lawrenceville, N.J., assignors to AT&T Technologies, Inc., New York, N.Y.
Filed Mar. 31, 1982, Ser. No. 364,368
Term of patent 14 years
U.S. Cl. D14—60

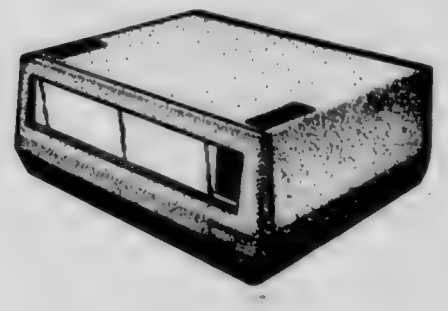




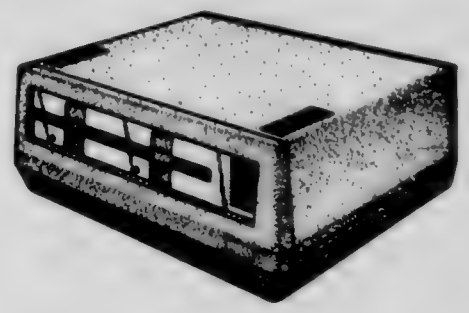
277,182
VIDEO MONITOR FRONT PANEL ASSEMBLY
Hari Matzuia, Evanston; Anthony J. Cascarano, Lake Forest, and Charles M. Schwimmer, Chicago, all of Ill., assignors to International Jensen Incorporated, Schiller Park, Ill.
Filed Jun. 2, 1982, Ser. No. 384,398
Term of patent 14 years
U.S. Cl. D14—84



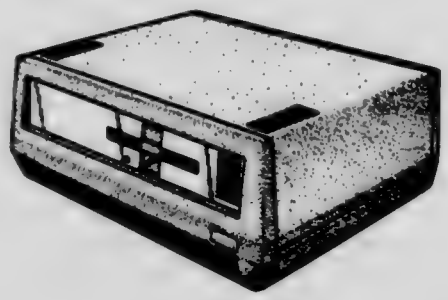
277,183
COMPUTER CONSOLE
David P. Moriconi, Ben Lomond, Calif., assignor to Victor Technologies, Inc., Scotts Valley, Calif.
Filed Sep. 30, 1982, Ser. No. 429,771
Term of patent 14 years
U.S. Cl. D14—100



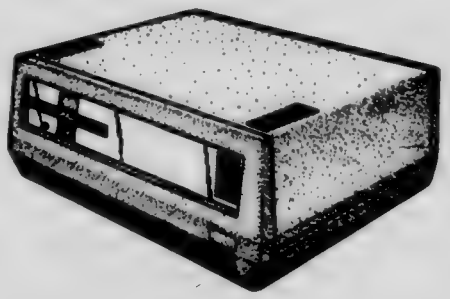
277,184
COMPUTER CONSOLE
David P. Moriconi, Ben Lomond, Calif., assignor to Victor Technologies, Inc., Scotts Valley, Calif.
Filed Sep. 30, 1982, Ser. No. 429,773
Term of patent 14 years
U.S. Cl. D14—100



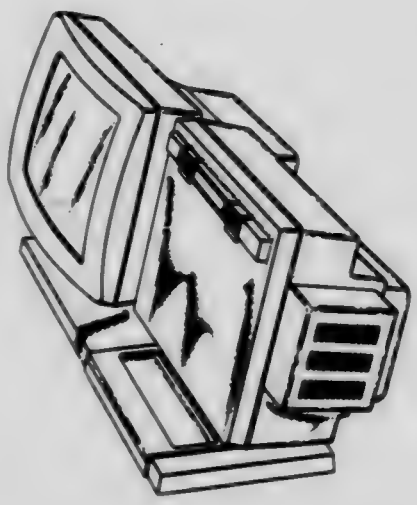
277,185
COMPUTER CONSOLE
David P. Moricoui, Ben Lomond, Calif., assignor to Victor Technologies, Inc., Scotts Valley, Calif.
Filed Sep. 30, 1982, Ser. No. 432,058
Term of patent 14 years
U.S. Cl. D14—100



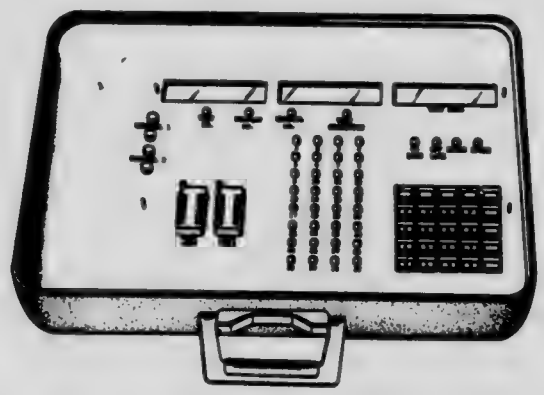
277,186
COMPUTER CONSOLE
David P. Moricoui, Ben Lomond, Calif., assignor to Victor Technologies, Inc., Scotts Valley, Calif.
Filed Sep. 30, 1982, Ser. No. 432,059
Term of patent 14 years
U.S. Cl. D14—100



277,187
COMPUTER OR SIMILAR ARTICLE
Matthew H. L. Sanders, Cupertino; Leroy B. Keely, Sunnyvale; William G. Moggridge, and Michael J. Nuttall, both of Palo Alto, all of Calif., assignors to Convergent Technologies, Inc., Santa Clara, Calif.
Filed Oct. 20, 1980, Ser. No. 198,969
Term of patent 14 years
U.S. Cl. D14—106



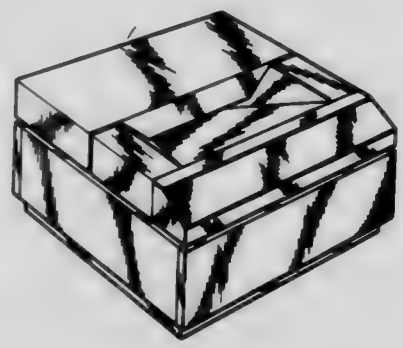
277,188
PORTABLE PROGRAMMING AND TESTING TOOL
John C. Doane, Glastonbury, and William J. Alkoy, Simsbury, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.
Filed Feb. 25, 1982, Ser. No. 352,481
Term of patent 14 years
U.S. Cl. D14—107



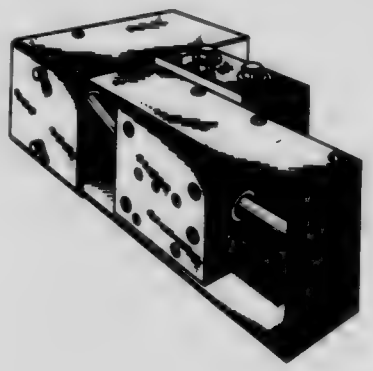
277,189
MEMORY UNIT CARTRIDGE FOR ELECTRONIC COMPUTERS
Mikio Shibata, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Mar. 15, 1982, Ser. No. 357,860
Claims priority, application Japan, Sep. 19, 1981, 56/41252
Term of patent 14 years
U.S. Cl. D14—114



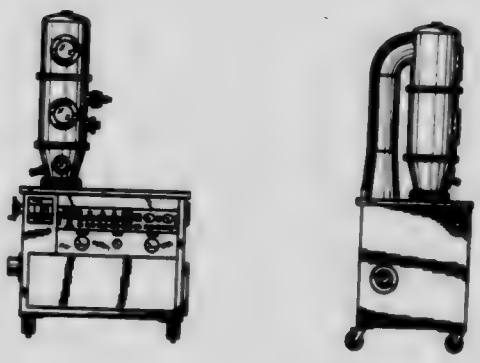
277,190
DOCUMENT SHREDDER
Kenneth G. Sadler, Horsham, England, assignor to Ofrex Group Limited, London, England
Filed Apr. 12, 1982, Ser. No. 367,590
Claims priority, application United Kingdom, Nov. 7, 1981, 1003489
Term of patent 14 years
U.S. Cl. D15—127



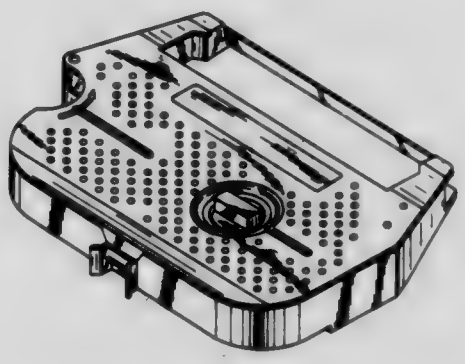
277,191
CARRIAGE MOUNTED TOOL OSCILLATOR
Ralph Farmer, Junction City, and David E. Johnson, Pataskala, both of Ohio, assignors to Arcair Company, Lancaster, Ohio
Filed Jan. 25, 1982, Ser. No. 342,037
Term of patent 14 years
U.S. Cl. D15—138



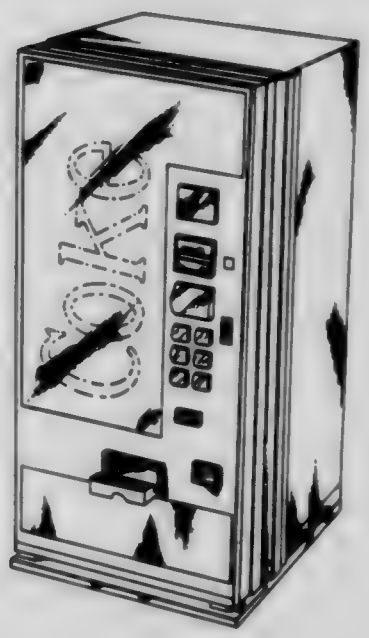
277,192
COMBINED GRANULATOR, DRYER AND COATER
Reinhard Nowak, Binzen, Fed. Rep. of Germany, assignor to Glatt GmbH, Binzen Kr. Lörrach, Fed. Rep. of Germany
Filed Mar. 16, 1982, Ser. No. 358,624
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1981, MR IV/2474
Term of patent 14 years
U.S. Cl. D15—144



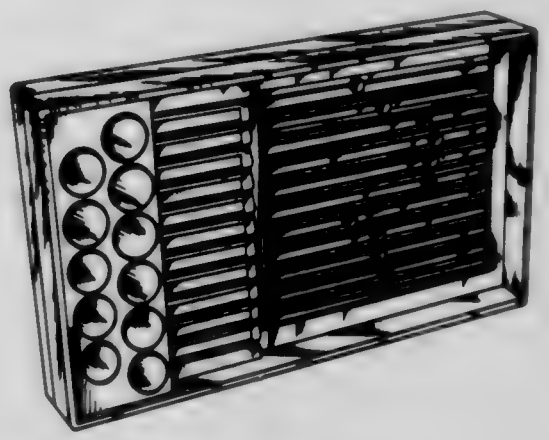
277,193
RIBBON CARTRIDGE FOR TYPEWRITER
Tetsuma Asahi, Kodaira, Japan, assignor to Silver Seiko Limited, Japan
Filed Dec. 9, 1982, Ser. No. 448,194
Claims priority, application Japan, Jun. 30, 1982, 57-29501
Term of patent 14 years
U.S. Cl. D18—12



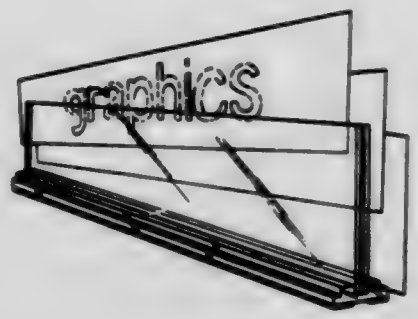
277,194
VENDING MACHINE
G. Marie Bachmann, Stone Mountain; Charles L. Davis, and Annis R. Morgan, Jr., both of Atlanta, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.
Continuation-in-part of Ser. No. 236,182, Feb. 20, 1981, Pat. No. Des. 266,377. This application Dec. 4, 1981, Ser. No. 327,458
Term of patent 14 years
U.S. Cl. D20—5



277,195
TWO SIDED IN-OUT PANEL AND MESSAGE HOLDER
Arthur A. Lahmer, 8036 Modesto Dr., Delta, British Columbia, Canada (V4C 4B1)
Filed Sep. 23, 1982, Ser. No. 422,204
Term of patent 14 years
U.S. Cl. D20—18



277,196
SIGN SUPPORT BRACKET
Gordon W. Esson, 1326 Larkmoor, Berkley, Mich. 48072
Filed Oct. 7, 1982, Ser. No. 433,313
Term of patent 14 years
U.S. Cl. D20—43



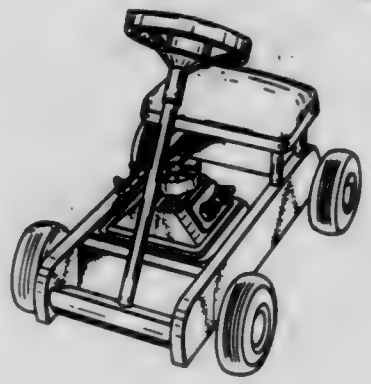
277,197
TOY SQUIRREL RATTLE
Terry Paczko, Cleveland, Ohio, assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,664
Term of patent 14 years
U.S. Cl. D21—65



277,198
TOY KITTEN RATTLE
Terry Paczko, Cleveland, Ohio, assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,665
Term of patent 14 years
U.S. Cl. D21—65



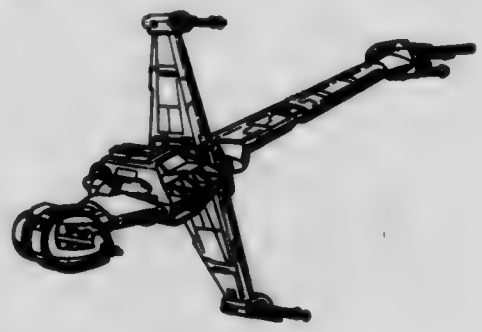
277,199
RIDING TOY
Douglas R. Miller, Hamburg, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 27, 1983, Ser. No. 461,607
Term of patent 14 years
U.S. Cl. D21—78



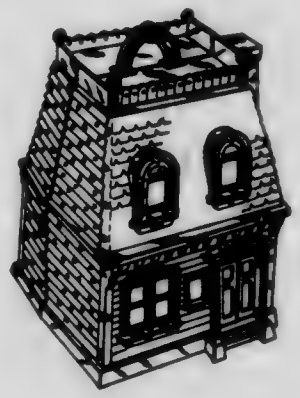
277,200
TOY SPACECRAFT
Joseph E. Johnston, San Rafael, Calif., assignor to Lucasfilm, Ltd., San Rafael, Calif.
Filed Nov. 12, 1982, Ser. No. 440,922
Term of patent 14 years
U.S. Cl. D21—87



277,201
TOY SPACECRAFT
Joseph E. Johnston, San Rafael, and William T. George, Kentfield, both of Calif., assignors to Lucasfilm, Ltd., San Rafael, Calif.
Filed Nov. 12, 1982, Ser. No. 440,923
Term of patent 14 years
U.S. Cl. D21—87



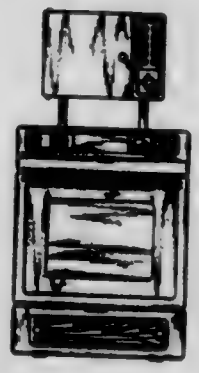
277,202
TOY DOLLHOUSE
Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039, and George Kress, Scotch Plains, N.J., assignors to Mel Appel, Livingston, N.J.
Filed Sep. 30, 1982, Ser. No. 431,745
Term of patent 14 years
U.S. Cl. D21—114



277,203
TOY PLIERS
Terry Pacuko, Cleveland, Ohio, assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,670
Term of patent 14 years
U.S. Cl. D21—120



277,204
TOY STOVE OR SIMILAR ARTICLE
John R. Nottingham, 4875 Stacy Ct., Richmond Heights, Ohio 44143, and John W. Spirk, Jr., 2533 Euclid Heights Blvd., Cleveland Heights, Ohio 44106
Filed Jun. 11, 1982, Ser. No. 387,284
Term of patent 14 years
U.S. Cl. D21—122



277,205
TOY TRACKWAY
Toshio Suzuki, and Takashi Maezono, both of Tokyo, Japan, assignors to Toybox Corporation, Tokyo, Japan
Filed Aug. 23, 1982, Ser. No. 410,639
Claims priority, application Japan, Feb. 26, 1982, 57-7656
Term of patent 14 years
U.S. Cl. D21—143



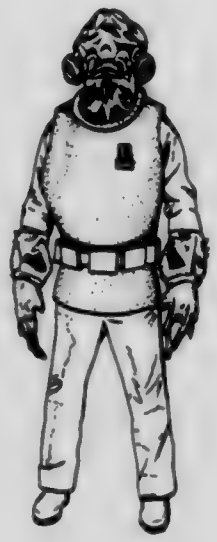
277,206
TOY FIGURE
David L. Carson, Lagunitas, Calif., assignor to Lucasfilm, Ltd., San Rafael, Calif.
Filed Sep. 27, 1982, Ser. No. 423,990
Term of patent 14 years
U.S. Cl. D21—148



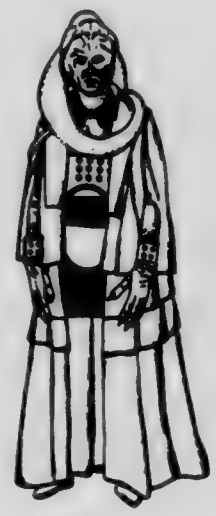
277,207
TOY FIGURE
Nilo D. Rodis-Jamero, San Rafael, Calif., assignor to Lucasfilm, Ltd., San Rafael, Calif.
Filed Sep. 27, 1982, Ser. No. 434,135
Term of patent 14 years
U.S. Cl. D21—148



277,208
TOY FIGURE
Philip A. Tippett, Oakland, Calif., assignor to Lucasfilm, Ltd., San Rafael, Calif.
Filed Sep. 28, 1982, Ser. No. 426,036
Term of patent 14 years
U.S. Cl. D21—148



277,209
TOY FIGURE
Philip A. Tippett, Oakland, Calif., assignor to Lucasfilm, Ltd., San Rafael, Calif.
Filed Sep. 28, 1982, Ser. No. 426,038
Term of patent 14 years
U.S. Cl. D21—148



277,210
TOY FIGURE
Kenneth R. Ralston, Petaluma, Calif., assignor to Lucasfilm, Ltd., San Rafael, Calif.
Filed Sep. 28, 1982, Ser. No. 426,039
Term of patent 14 years
U.S. Cl. D21—148



277,211
TOY FIGURE
Philip A. Tippett, Oakland, Calif., assignor to Lucasfilm, Ltd., San Rafael, Calif.
Filed Sep. 30, 1982, Ser. No. 432,032
Term of patent 14 years
U.S. Cl. D21—148



277,212
TOY FIGURE
Anthony J. McVey, Mill Valley, Calif., assignor to Lucasfilm, Ltd., San Rafael, Calif.
Filed Sep. 30, 1982, Ser. No. 432,060
Term of patent 14 years
U.S. Cl. D21—148



277,213
TOY FIGURE
Philip A. Tippett, Oakland, Calif., assignor to Lucasfilm, Ltd., San Rafael, Calif.
Filed Sep. 30, 1982, Ser. No. 432,159
Term of patent 14 years
U.S. Cl. D21.148



277,214
TOY FIGURE
Joseph E. Johnston, San Rafael, Calif., assignor to Lucasfilm, Ltd., San Rafael, Calif.
Filed Sep. 30, 1982, Ser. No. 432,162
Term of patent 14 years
U.S. Cl. D21—148



277,215
TOY FIGURE
Joseph E. Johnston, San Rafael, Calif., assignor to Lucasfilm, Ltd., San Rafael, Calif.
Filed Sep. 30, 1982, Ser. No. 432,163
Term of patent 14 years
U.S. Cl. D21—148



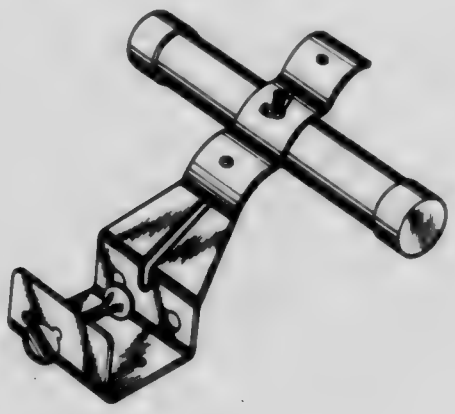
277,216
TOY CARROT
Terry Paczko, Cleveland, Ohio, assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,144
Term of patent 14 years
U.S. Cl. D21—155



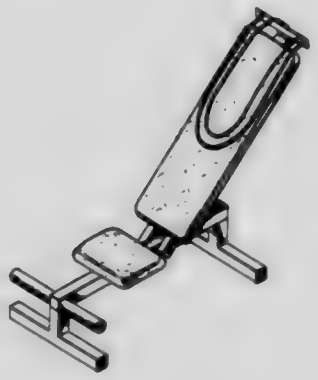
277,217
DOLL
Yoshiharu Ogawa, Tokyo, Japan, assignor to Kabushiki Kaisha Washino Design and Dai Nippon Insatsu Kabushiki Kaisha, both of Tokyo, Japan
Filed Sep. 23, 1982, Ser. No. 422,207
Term of patent 14 years
U.S. Cl. D21—174



277,218
EXERCISE FOR ATTACHMENT TO DOOR OR THE LIKE
Robert S. Hinds, 1803 Regent St., Madison, Wis. 53705
Filed Aug. 12, 1981, Ser. No. 292,205
Term of patent 14 years
U.S. Cl. D21—191



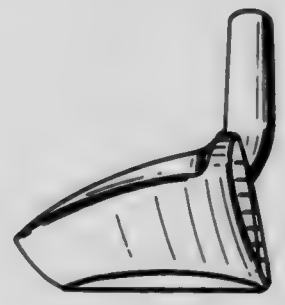
277,219
ABDOMINAL EXERCISE BENCH
Martin W. Johnson, R.R. #1, Box 95, Portland, N. Dak. 58274
Filed Sep. 29, 1982, Ser. No. 430,735
Term of patent 14 years
U.S. Cl. D21—191



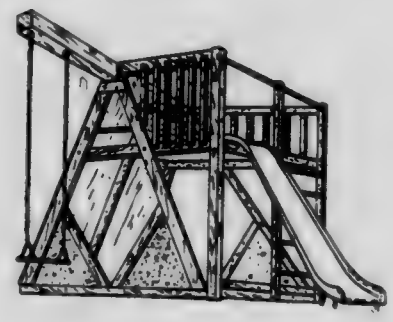
277,220
WALK SIMULATING EXERCISE CUSHION
Neil J. Herburger, 980 Victoria Pl., Dubuque, Iowa 52001
Filed Jun. 14, 1982, Ser. No. 388,075
Term of patent 14 years
U.S. Cl. D21—192



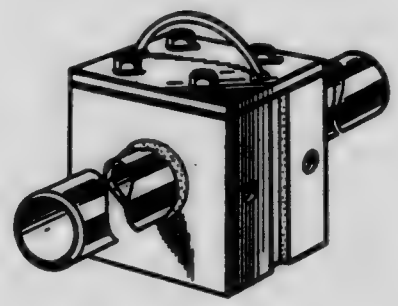
277,221
GOLF CLUB HEAD
Masashi Kobayashi, Matsudo, Japan, assignor to Maruman Golf Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 6, 1982, Ser. No. 365,920
Claims priority, application Japan, Nov. 11, 1981, 56-50192
Term of patent 14 years
U.S. Cl. D21—214



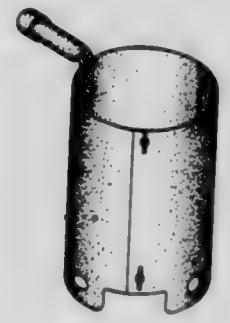
277,222
PLAY CENTER
Barry D. Mower, 3790 Riverdale Rd., and Brent R. Allen, 5125 S. 1250, both of West Ogden, Utah 84403
Filed Jul. 26, 1982, Ser. No. 401,658
Term of patent 14 years
U.S. Cl. D21—244



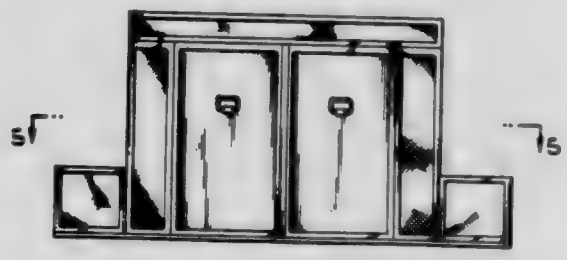
277,223
GAS PRESSURE DIFFERENTIAL-MEASURING SYSTEM ORIFICE FITTING
Adam F. Gall, and Howard P. McJunkin, Jr., both of Charleston, W. Va., assignors to McJunkin Corporation, Charleston, W. Va.
Filed Oct. 25, 1982, Ser. No. 436,459
Term of patent 14 years
U.S. Cl. D23—1



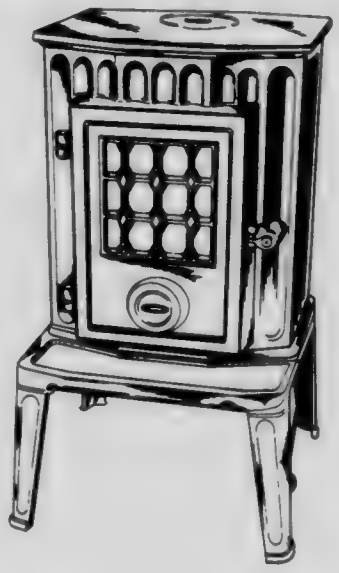
277,224
CHARCOAL STARTER
Frank C. Cole; Marvin G. Kern, both of St. Louis, and Robert Meiner, Creve Coeur, all of Mo., assignors to Crandien Martin Mfg., Co., St. Louis, Mo.
Filed Dec. 31, 1981, Ser. No. 336,181
Term of patent 14 years
U.S. Cl. D23—90.1



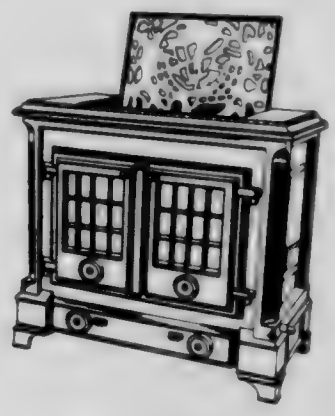
277,225
FIREPLACE CROSS-CIRCULATING AIR HEATER
Bunyan B. Cagle, 1700 Towson Ave., Fort Smith, Ark. 72901
Filed Sep. 13, 1982, Ser. No. 417,500
Term of patent 14 years
U.S. Cl. D23—95



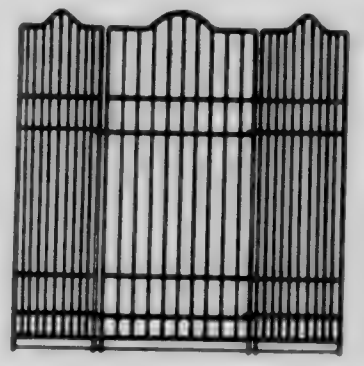
277,226
STOVE
Henry T. Creffield, Shrewsbury, England, assignor to Glynwed Limited, Sheldon, England
Filed Feb. 27, 1981, Ser. No. 239,083
Term of patent 14 years
U.S. Cl. D23—97



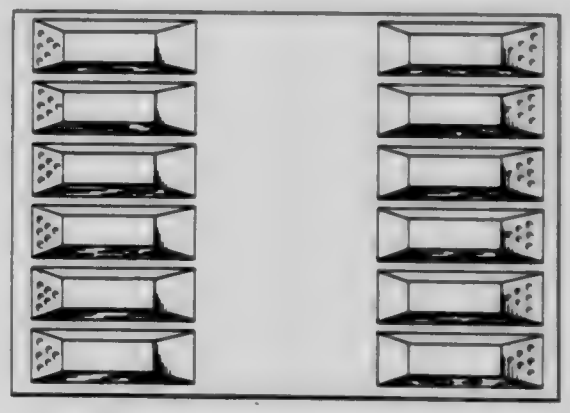
277,227
STOVE
Vance Smith, Randolph, Vt., assignor to Glynwed Limited, Sheldon, England
Filed Feb. 27, 1981, Ser. No. 239,085
Term of patent 14 years
U.S. Cl. D23—97



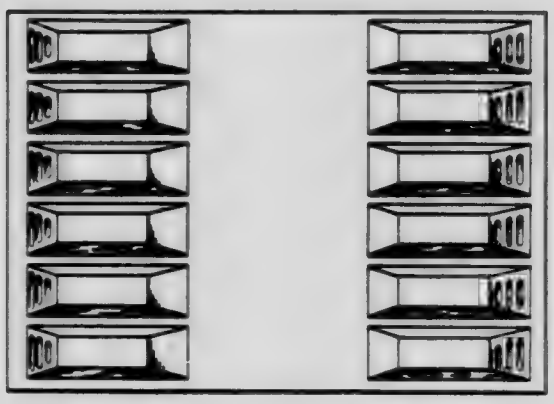
277,228
HEATER ENCLOSURE
Thomas C. Biesch, Okemos, Mich., assignor to General Aluminum Products, Inc., Charlotte, Mich.
Filed Nov. 8, 1982, Ser. No. 439,887
Term of patent 14 years
U.S. Cl. D23—138.2



277,229
ROOF RIDGE VENTILATOR
Jerry R. Williamson, and Keith A. Muters, both of P.O. Box 159, Woodburn, Oreg. 97071
Filed Sep. 13, 1982, Ser. No. 417,446
Term of patent 14 years
U.S. Cl. D23—153



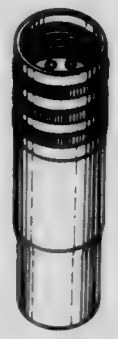
277,230
ROOF RIDGE VENTILATOR
Jerry R. Williamson, and Keith A. Maters, both of P.O. Box 199, Woodburn, Oreg. 97071
Filed Sep. 13, 1982, Ser. No. 417,447
Term of patent 14 years
U.S. Cl. D23—153



277,231
PERIODONTIC STIMULATOR
Gerald Rosenbaum, Paramus, N.J., assignor to Perio Products, Inc., Fort Lee, N.J.
Filed Sep. 27, 1982, Ser. No. 424,882
Term of patent 14 years
U.S. Cl. D24—10



277,232
(1) CONNECTING ELEMENT FOR COUPLING A DENTIST'S DRILL AND HOSES WITH COOLING WATER AND COMPRESSED AIR AS WELL AS (2) AND (3) ACCESSORIES THEREFOR
Peter L. Rasch, Riskær 2, 2760 Måløv, Denmark
Filed Nov. 24, 1981, Ser. No. 324,638
Claims priority, application Denmark, May 29, 1981, 600/81
Term of patent 14 years
U.S. Cl. D24—16



277,233
FACE DEPILATING APPARATUS
Serge Brun, Lyons, France, assignor to Calor S.A., Lyons, France
Filed Mar. 23, 1982, Ser. No. 361,075
Claims priority, application France, Oct. 2, 1981, 813389
Term of patent 14 years
U.S. Cl. D24—26



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TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF JANUARY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Arthur Limited: *See*—
Arthur, Eric R., 4,493,445, Cl. 223-68.000.

AB Volvo: *See*—
Fortgens, Walter, 4,493,478, Cl. 254-126.000.

Abdullaev, Gasan M. B. O.; Maxudov, Faramaz G. O.; Kasimov, Dzhangir A. K. O.; Mamedov, Bakhtiyar M. R. O.; Aliev, Gabil G.; Gadzhiev, Yashar A. O.; Shakhmamedov, Rovshan I. O.; and Iljushin, Alexei A. Method of manufacturing a flexible pipe. 4,493,140, Cl. 29-446.000.

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Abe, Yoshiaki, to Kao Soap Co., Ltd. Hair rinse composition. 4,493,824, Cl. 424-70.000.

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Adams, William R., to Trindium Corporation of America. Tarnish-resistant copper alloy and method of preparation. 4,493,736, Cl. 148-2.000.

Adler, Michael S.: *See*—
Wildi, Eric J.; and Adler, Michael S., 4,494,134, Cl. 357-43.000.

Adolfsson, Morgan; Brogardh, Torgny; Ovren, Christer; and Persson, Anders, to Asea Aktiebolag. Fiber optical measuring device with a frequency sensitive transducer. 4,493,195, Cl. 250-227.000.

Advanced Mechanical Technology, Inc.: *See*—
Carignan, Forest J.; and Cook, Nathan H., 4,493,220, Cl. 73-862.660.

Aetna Telecommunications Laboratories: *See*—
Nelson, Arthur R., 4,493,212, Cl. 73-517.00R.

Affupper, Hans. Process and equipment for making zigzag folds in loops of a continuous feed of flexible sheeting. 4,493,689, Cl. 493-415.000.

Agapiou, Michael. Toilet cleaning tool. 4,493,124, Cl. 15-104.940.

Agarwal, Suresh C., to Babcock & Wilcox Company, The. Blending control system. 4,494,209, Cl. 364-502.000.

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Bauer, Walter; Farber, Heinrich; and Muller, Jurgen, 4,493,545, Cl. 354-277.000.

Agostine, Doretta: *See*—
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Agro-Technics International Ltd.: *See*—
de Monbrison, Christian, 4,493,163, Cl. 47-61.000.

Ai, Minoru; Manabe, Akira; Igarashi, Yoshimasa; and Mizuno, Katsuya, to Sankin Kogyo Kabushiki Kaisha. Device for measuring and scraping operations in the field of prestorative dentistry. 4,493,644, Cl. 433-75.000.

Aihara, Hironaka: *See*—
Mizushima, Yutaka; Aihara, Hironaka; Otomo, Susumu; Yokoyama, Kazumasa; Okamoto, Hiroyuki; and Suyama, Tadakazu, 4,493,847, Cl. 424-317.000.

Aisan Industry Co., Ltd.: *See*—
Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; Ota, Yozo; and Morino, Toshiharu, 4,493,804, Cl. 261-44.00C.

Aisen Kogyo, Ltd.: *See*—
Iwahashi, Shoji, 4,493,315, Cl. 128-60.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Haneda, Hideo; and Yamanaka, Minoru, 4,494,098, Cl. 335-230.000.
Nagata, Kazuhisa; Mori, Keiji; and Ogasawara, Asao, 4,493,507, Cl. 296-216.000.
Ohyama, Tadashi, 4,493,474, Cl. 251-129.000.

Akiyama, Toru, to Universal Pioneer Corporation. Pickup control device and method for fast or slow reproduction in a disk reading system. 4,494,154, Cl. 358-342.000.

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Vrouenraets, Cornelius M. F.; and Sikkema, Doetze J., 4,493,870, Cl. 428-245.000.

Albien, Wolfgang: *See*—
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Albright, John P.; Martin, Robert K.; and Dyson, John A., to University of Iowa Research Foundation. Suturing device and method for using same. 4,493,323, Cl. 128-340.000.

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Uldall, Peter R., 4,493,696, Cl. 604-43.000.

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Urquhart, John; and Theeuwes, Felix, 4,493,702, Cl. 604-80.000.

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Wicker, Gordon R., 4,493,157, Cl. 34-10.000.

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American Motors (Canada) Inc.: *See*—
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American Roller Company: *See*—
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American Sunroof Corporation: *See*—
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AMP Incorporated: *See*—
Asick, John C., 4,493,518, Cl. 339-45.00M.
Bakermans, Johannes C. W., 4,493,147, Cl. 29-861.000.
Hall, Lawrence A.; Lightner, Linn S.; Long, William B.; Shannon, Suel G.; and Stahl, Daniel E., 4,493,525, Cl. 339-143.00R.
Kaleida, Richard H., 4,493,952, Cl. 200-5.00A.
Kimmel, David J.; and Lauterbach, John H., 4,493,954, Cl. 200-11.00R.

Ampex Corporation: *See*—
Noel, Stan L., 4,494,164, Cl. 361-101.000.
Ravizza, Raymond F., 4,494,153, Cl. 358-324.000.

Ampferer, Herbert, to Dr. Ing. h.c.F. Porsche A.G. Internal combustion engine, especially for motor vehicles. 4,493,295, Cl. 123-41.860.

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Anderson, John W., Jr.: *See*—
Roche, William J.; and Anderson, John W., Jr., 4,494,041, Cl. 315-49.000.

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Haldipur, Gaurang B.; Anderson, Richard G.; and Cherish, Peter, 4,493,636, Cl. 431-170.000.

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Andrione, Norbert; Peruzzi, Federigo; and Scandurra, Giancarlo, to Aspera S.p.A. Crankshaft for small reciprocating machines. 4,493,226, Cl. 74-598.000.

Anorad Corporation: *See*—
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Arad, Avi: *See*—
Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Avi, 4,493,671, Cl. 446-464.000.

Arai, Tetsuji; Mimura, Yoshiki; and Shimizu, Hiroshi, to Ushio Denki Kabushiki Kaisha. Method for heating semiconductor wafers by a light-radiant heating furnace. 4,493,977, Cl. 219-411.000.

Arakawa, Akio: *See*—
Suzuki, Hajime; Matsuyama, Shinichiro; and Arakawa, Akio, 4,494,203, Cl. 364-470.000.

Araki, Shigeyuki, to Ricoh Company, Ltd. Control system for impact printer. 4,493,570, Cl. 400-144.200.

Arbonite Corporation: *See*—
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Arndt, Alfred; and Rutty, John G. Step-off device for aircraft voice communication system. 4,494,244, Cl. 455-78.000.

Arnold, Dan M.: *See*—
Smith, Harry D., Jr.; Arnold, Dan M.; and Schultz, Ward E., 4,493,998, Cl. 250-252.100.

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King, Roger A.; and Arnold, John E., Jr., 4,493,710, Cl. 604-250.000.

Arnoldy, Roman. Mandrel machine. 4,493,963, Cl. 219-76.100.

Arnout, Michel: *See*—
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Arens, Robert A., 4,493,174, Cl. 52-243.000.

Arthur, Eric R., to A. E. Arthur Limited. Bodyforms. 4,493,445, Cl. 223-68.000.

Artos Engineering Company: *See*—
Dusel, Robert O.; Berres, James J.; and Keene, Harold J., 4,493,233, Cl. 83-71.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
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Ashe, Bonnie M.: *See*—
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Ashton, Michael J.; Bridge, Andrew W.; Chapman, Robert F.; Fenton, Garry; Loveless, Anthony H.; and Riddell, David, to May & Baker Limited. Indole and indoline carboxylic acid compounds and method of use. 4,493,843, Cl. 424-274.000.

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Andrione, Norbert; Peruzzi, Federigo; and Scandurra, Giancarlo, 4,493,226, Cl. 74-598.000.

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Abys, Joseph A.; and Okinaka, Yutaka, 4,493,754, Cl. 204-47.000.
Brahm, David J.; Grinn, James M.; Hepler, Edward L.; and Sullivan, John M., 4,494,193, Cl. 364-200.000.
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Kanotz, William M.; Vesperman, William C.; and Wilson, Max K., 4,493,747, Cl. 156-64.000.
Morse, William C.; and Phaneuf, John B., 4,494,033, Cl. 310-352.000.

Ateya, Antoun I., to Eastman Kodak Company. Apparatus for supporting flexible members. 4,493,548, Cl. 355-3.0FU.

Atlantic Richfield Company: *See*—
Le-Khac, Bi, 4,493,920, Cl. 525-67.000.
Mamantov, Gleb; and Mamantov, Charmaine B., 4,493,784, Cl. 252-182.000.

Attema, Gijsbertus. Electrical ducting system. 4,493,516, Cl. 339-21.00R.

Attridge, David M.: *See*—
Teumer, Roger G.; and Attridge, David M., 4,493,483, Cl. 271-186.000.

Audi, Joseph: *See*—
Schwarzenberg, Norbert; Ueberwolf, Heinz; Halberschmidt, Friedrich; and Audi, Joseph, 4,493,724, Cl. 65-273.000.

Augustine, Paul C., Jr., to General American Transportation Corporation. Railway hopper car and center sill construction therefor. 4,493,266, Cl. 105-255.000.

Automotive Engine Associates: *See*—
Showalter, Merle R., 4,493,292, Cl. 123-41.200.

Auwerda, Cornelis P.; and Koel, Gerrit J., to U.S. Philips Corporation. Method of manufacturing optical fibres. 4,493,721, Cl. 65-3.120.

Avedesian, Michael M. Apparatus and method involving supercritical fluid extraction. 4,493,797, Cl. 530-507.000.

Avery International Corp.: *See*—
Van Ocker, William G.; Pawlenko, Ivan; Reider, Donald F.; Troebs, Charles J.; Clair, Robert A.; and Crandall, Stanley C., 4,493,572, Cl. 400-196.100.

Axelrod, Randolph H.: *See*—
Piascinski, Joseph J.; Axelrod, Randolph H.; and Mount, James, 4,493,668, Cl. 445-40.000.

Axer, Heinrich, to Joseph Vogele AG. Bituminous finisher. 4,493,585, Cl. 404-102.000.

Axia Incorporated: *See*—
Reed, Larry T., 4,493,746, Cl. 156-644.000.

Ayers, Ray R.; and Hemphill, Dean P., to Shell Oil Company. Method and apparatus for on surface joining of submarine pipeline segments using an eccentric hinge. 4,493,590, Cl. 405-170.000.

Babcock & Wilcox Company, The: *See*—
Agarwal, Suresh C., 4,494,209, Cl. 364-502.000.
Thompson, William L., 4,494,213, Cl. 364-604.000.

Bachmann Industries, Inc.: *See*—
Bachmann, Lothar, 4,493,311, Cl. 126-285.00A.
Bachmann, Lothar, 4,493,342, Cl. 137-601.000.

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Bader, Leonhard; Hermann, Ferdinand; Ruprich, Wilhelm; and Winter, Hermann, to NCR Corporation. Method of making a drive element assembly for ink jet printing. 4,493,137, Cl. 29-25.350.

Badillo, Paul, to Bakron Corp. Rotary loop taker for lock-stitch sewing machine. 4,493,278, Cl. 112-184.000.

Bagcraft Corporation of America: *See*—
Blamer, Robert H., 4,493,685, Cl. 493-235.000.

Bagnall-Wild, Ralph H.: *See*—
Smith, Gordon R.; Stewart, John H.; and Bagnall-Wild, Ralph H., 4,494,198, Cl. 364-423.000.

Bahr, Richard G.; and Cohen, Paul B., to Prime Computer, Inc. Method and apparatus for the detection and regeneration of a lost token in a token based data communications network. 4,494,233, Cl. 370-86.000.

Bailey, David A., to Garrett Corporation, The. Multi-quadrant brushless DC motor drive. 4,494,051, Cl. 318-254.000.

Bailey, Ralph J. Multiposition valved dispenser. 4,493,443, Cl. 222-400.800.

Bailleux, Christian; Bernard, Michel; Dupont, Bernard; Lozach, Guy; and Mata, Jean-Pierre, to Electricite de France. Blend of polymers, its preparation and its application to the manufacture of components of electrochemical reactors. 4,493,917, Cl. 524-394.000.

Baird, David M. Seal for quick disconnect coupling. 4,493,475, Cl. 251-149.100.

Baker Oil Tools, Inc.: *See*—
Jackson, Gerald D., 4,493,373, Cl. 166-321.000.

Bakermans, Johannes C. W., to AMP Incorporated. Apparatus for fabrication of a crossover wire harness. 4,493,147, Cl. 29-861.000.

Bakker, Jan, to U.S. Philips Corporation. Magnetic head and method of manufacturing a magnetic head. 4,494,160, Cl. 360-129.000.

Bakron Corp.: *See*—
Badillo, Paul, 4,493,278, Cl. 112-184.000.

Balabanova, Tzvetanka. Foldable multi-functional carriage. 4,493,492, Cl. 280-651.000.

Balzano, Quirino: *See*—
Garay, Oscar M.; and Balzano, Quirino, 4,494,122, Cl. 343-722.000.

Banker, John G., to United States of America, Energy. Method for fabricating uranium alloy articles without shape memory effects. 4,493,737, Cl. 148-11.50R.

Banks, Charles A., to SL Industries, Inc. Multiple electrical outlet strip construction. 4,493,515, Cl. 339-14.00L.

Barmag Barmer Maschinenfabrik AG: *See*—
Lenk, Erich, 4,493,628, Cl. 425-192.000.

Barnes, Christopher S.; Moore, Paul A.; and White, Philip D., to U.S. Philips Corporation. High power acoustic wave arrangement with N^2 parallel-series connected acoustic wave devices. 4,494,031, Cl. 310-313.00B.

Barr & Stroud Limited: *See*—
Smith, Gordon R.; Stewart, John H.; and Bagnall-Wild, Ralph H., 4,494,198, Cl. 364-423.000.

Barszczewski, Andrzej, to Canadian Patents & Development Limited. Fast frequency measuring system. 4,494,067, Cl. 324-79.00D.

Bartnik, Friedhelm: *See*—
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Bartosevich, Joseph F.: *See*—
Klayman, Daniel L.; Scovill, John P.; Bartosevich, Joseph F.; Mason, Carl J.; and Griffin, T. Scott, 4,493,930, Cl. 544-360.000.

BASF Aktiengesellschaft: *See*—
Echte, Adolf; and Gausepohl, Hermann, 4,493,922, Cl. 525-71.000.
Jaedicke, Hagen; and Tonne, Peter, 4,493,802, Cl. 260-507.00R.
Merger, Franz; and Nestler, Gerhard, 4,493,801, Cl. 260-465.600.
Vyvial, Rudolf; Taubitz, Christof; Schlemmer, Lothar; Bleckmann, Gerhard; Zuerger, Manfred; Krieger, Heinrich; and Thiele, Heino, 4,493,807, Cl. 264-101.000.
Wintermantel, Klaus; Stockburger, Dieter; and Fuchs, Hugo, 4,493,719, Cl. 62-532.000.

BASF Wyandotte Corporation: *See*—
Schwartz, Ellen S.; and Tincher, Cline A., 4,493,780, Cl. 252-73.000.

Bass, Alva W., to United States of America, Army. Eccentrically tightened latch device. 4,493,581, Cl. 403-323.000.

Batra, Subhash C.: *See*—
Kadison, Eric M.; Batra, Subhash C.; and Meir, Gad E., 4,494,156, Cl. 360-48.000.

Batterman, Eric P.: *See*—
Bernard, Francis S.; Eliscu, Steven M.; and Batterman, Eric P., 4,494,214, Cl. 364-724.000.

Bauer, Walter; Farber, Heinrich; and Muller, Jurgen, to AGFA-Gevaert Aktiengesellschaft. Film cassette. 4,493,545, Cl. 354-277.000.

Baumann, Ludwig G. Device for the treatment of the eyes with a washing or bathing liquid. 4,493,119, Cl. 4-620.000.

Baxter Travenol Laboratories, Inc.: *See*—
Bilstad, Arnold C.; Foley, John T.; and Woodworth, Walker P., 4,493,693, Cl. 604-6.000.

Bayer Aktiengesellschaft: *See*—
Haas, Peter; and Hettel, Hans, 4,493,909, Cl. 521-166.000.
Ippen, Jakob; and Stuttgen, Friedel, 4,493,355, Cl. 152-329.000.
Sirinyan, Kirkor; Giesecke, Henning; Wolf, Gerhard D.; Ebneth, Harold; and Merten, Rudolf, 4,493,861, Cl. 427-304.000.

Bayer, Stephen J.; and Olsen, Arthur M., to Honeywell Inc. Process variable transmitter having a non-interacting operating range adjustment. 4,494,183, Cl. 364-154.000.

Bazin, Alain: *See*—
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Beam, Dennis A.: *See*—
Sarazen, Paul M., Jr.; and Beam, Dennis A., 4,493,456, Cl. 236-49.000.

Bean, George H.; and Gum, Peter H., to International Business Machines Corporation. Method and means for switching system control of CPUs. 4,494,189, Cl. 364-200.000.

Beard, Charles L., Jr.; and Camden, Thomas M., to Westinghouse Electric Corp. High uranium utilization fuel rod for light water reactors. 4,493,814, Cl. 376-428.000.

Beard, Robert W.; and Kirk, Russell F., to OXIMETRIX, Inc. Portable fluid infusion apparatus. 4,493,704, Cl. 604-154.000.

Beaujean, Holger; Kamphausen, Willi; Niephaus, Dieter; and Nommensen, Ove, to Kernforschungsanlage Julich GmbH. Valve system for pressurized vessels. 4,493,434, Cl. 222-3.000.

Becht, Carl T., to Senco Products, Inc. Surgical stapling instrument. 4,493,322, Cl. 128-334.00R.

Beck, Warren R.; and Castle, Richard B., to Minnesota Mining and Manufacturing Company. Proppant for well fractures and method of making same. 4,493,875, Cl. 428-403.000.

Becker, Donald E.; Hayes, Alan C.; and Porter, Joseph W. Insulation system for process vessel. 4,493,816, Cl. 422-143.000.

Becker, Erwin; Ehrfeld, Wolfgang; Munchmeyer, Dietrich; Betz, Hans; and Heuberger, Anton, to Kernforschungszentrum Karlsruhe GmbH. Method for producing separating nozzle elements for the separation of fluid mixtures. 4,493,753, Cl. 204-9.000.

Becker, Willi; and Johannsen, Karl, to Willi Becker Ingenieurburo GmbH. Ship having at least one propeller nozzle unit with rudder in optimum position. 4,493,660, Cl. 440-67.000.

Beckmann, Paul J.: *See*—
Hartlaub, Jerome T.; and Beckmann, Paul J., 4,493,325, Cl. 128-419.0PG.

Beffa, Fabio, to Ciba Geigy Corporation. Metal complexes of disazo dyes. 4,493,798, Cl. 534-697.000.

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Beier, Rudolf: *See*—
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Beikel, Alfons G.; and Jarosch, Harald, to Westfalia Separator AG. Device for removing air from hermetic, automatically emptying centrifuge drums. 4,493,350, Cl. 141-65.000.

Belko, Robert P.: *See*—
Sprecker, Mark A.; Belko, Robert P.; and Greene, Roger E., 4,493,790, Cl. 252-522.00R.

Bell, Alan G.; Lyon, Richard F.; and Borriello, Gaetano, to Xerox Corporation. Self-calibrated clock and timing signal generator for MOS/VLSI circuitry. 4,494,021, Cl. 307-591.000.

Bendix Corporation, The: *See*—
Esken, Robert L., 4,493,153, Cl. 33-149.00J.
Piscitelli, R. Amelia; Hemmer, Valentine J.; and Shepler, Eric F., 4,493,527, Cl. 339-258.00R.
Putt, James B., 4,493,742, Cl. 156-91.000.
Trinh, Lanh T.; and Loy, Robert W., 4,493,307, Cl. 123-630.000.
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Matthewson, Randall W.; Benefiel, Earl H.; and Brudi, Ronald A., 4,493,421, Cl. 211-13.000.

Bennett, Jeffrey H., to Northern Telecom Limited. Switched-capacitor variable equalizer. 4,494,082, Cl. 333-28.00R.

Benoit, Gordon L.: *See*—
Prader, Randolph D.; Benoit, Gordon L.; and Maddock, Robert T., 4,493,419, Cl. 206-554.000.

Benson, Harvey S., to Southwest Research Institute. Electric capacity measurement of erratically shorted capacitors. 4,494,065, Cl. 324-61.00R.

Bentley Laboratories, Inc.: *See*—
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Bergelson, Michael; Fridman, Jacob; and John, Erwin R., to Neurometrics, Inc. Automatic evoked potential detection. 4,493,327, Cl. 128-731.000.

Berger, L. Joseph, Jr.; and Guequierre, Denis D. In-line disposable filter. 4,493,717, Cl. 55-330.000.

Bergh, Ralph A.: *See*—
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Bergin, Thomas F., to TRW Inc. Pump assembly and operating method. 4,493,616, Cl. 417-53.000.

Bergman, Marc A.: *See*—
Chu, Raymond D.; and Bergman, Marc A., 4,493,614, Cl. 417-22.000.

Bernard, Francis S.; Eliscu, Steven M.; and Batterman, Eric P., to RCA Corporation. Apparatus for generating scaled weighting coefficients for sampled data filters. 4,494,214, Cl. 364-724.000.

Bernard, Jean R.; and Breysse, Michele, to Elf France. Regeneration process of an aromatization catalyst containing a Group VIII metal on a zeolite. 4,493,901, Cl. 502-37.000.

Bernard, Michel: *See*—
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Bernin, Victor M. Noncontacting keyboard employing a transformer element. 4,494,109, Cl. 340-365.00L.

Bernle, Gote L., to Tetra Pak International AB. Arrangement for the raising and transporting of packing container blanks. 4,493,687, Cl. 493-310.000.

Berres, James J.: *See*—
Dusel, Robert O.; Berres, James J.; and Keene, Harold J., 4,493,233, Cl. 83-71.000.

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Bertrand, Gilles: *See*—
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Beta Engineering & Development Ltd.: *See*—
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Betz, Hans: *See*—
Becker, Erwin; Ehrfeld, Wolfgang; Munchmeyer, Dietrich; Betz, Hans; and Heuberger, Anton, 4,493,753, Cl. 204-9.000.

Beuther, Harold; Kibby, Charles L.; Kobylinski, T. P.; and Pannell, Richard B., to Gulf Research & Development Company. Fluid bed catalyst for synthesis gas conversion and utilization thereof for preparation of diesel fuel. 4,493,905, Cl. 502-325.000.

Bhatia, Rajkumar P.: *See*—
Su, Kai C.; Stebbins, Leslie F.; and Bhatia, Rajkumar P., 4,493,783, Cl. 252-174.230.

Bianchi, Giuseppe, to Industrie Zanussi S.p.A. Electrolytic cell having nonporous partition. 4,493,760, Cl. 204-278.000.

Bianchi, Nereo, to Necchi S.p.A. Two-position needle plate for sewing machines. 4,493,280, Cl. 112-260.000.

Bielamowicz, Lawrence J.: *See*—
Reisberg, Joseph; Bielamowicz, Lawrence J.; and Thigpen, David R., 4,493,371, Cl. 166-274.000.

Bieringer, Hermann: *See*—
Horlein, Gerhard; Schonowsky, Hubert; Bieringer, Hermann; and Langeluddeke, Peter, 4,493,731, Cl. 71-118.000.

Billings, Philip A.; and Franks, William S., Jr., to Xerox Corporation. Printing machine with static elimination system. 4,494,166, Cl. 361-214.000.

Bilstad, Arnold C.; Foley, John T.; and Woodworth, Walker P., to Baxter Travenol Laboratories, Inc. Trans-membrane pressure monitoring system. 4,493,693, Cl. 604-6.000.

Binder, Kurt: *See*—
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Bio-Rad Laboratories, Inc.: *See*—
Fernwood, George G.; and Burd, Samuel, 4,493,815, Cl. 422-101.000.
La Motte, George B., III; and Burd, Samuel, 4,493,896, Cl. 435-287.000.

Birkett, Kevin; Scovell, Edward G.; and John, Glyn R., to Imperial Chemical Industries PLC. Corrosion inhibition. 4,493,876, Cl. 428-457.000.

Bisa, Rudy, to Teck Corporation; and Soquem-Societe Quebecoise d'Exploration Miniere. Process for recovering pyrochlore mineral containing niobium and tantalum. 4,493,817, Cl. 423-62.000.

Bitting, Ricky F.; Peil, William; and Brown, Thomas A., to General Electric Company. Control circuit for an electronically commutated motor including reversing; method of operating an ECM including reversing. 4,494,055, Cl. 318-254.000.

Blamer, Robert H., to Bagcraft Corporation of America. Method of making tubular bag. 4,493,685, Cl. 493-235.000.

Bland, Timothy J.; and Niggemann, Richard E., to Sundstrand Corporation. Impingement cooling apparatus for heat liberating device. 4,494,171, Cl. 361-386.000.

Blanke, Richard H., Jr.; and Cale, Harold N., to Chase Bag Company. Carrying handle for heavy duty olefin bags. 4,493,127, Cl. 16-124.000.

Blaske, T. Allen; and Hendricks, Terry J., to Varo, Inc. Method and apparatus for fabricating a thermoelectric array. 4,493,939, Cl. 136-212.000.

Bleckmann, Gerhard: *See*—
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Blonder-Tongue Laboratories, Inc.: *See*—
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Board of Trustees, Univ. of Ill.: *See*—
Rinehart, Kenneth L., Jr., 4,493,796, Cl. 260-112.50R.

Bobo, Donald E.: *See*—
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Boe, Einar: *See*—
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Boeing Company, The: *See*—
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Kilner, Jerome R.; Raymond, Eugene T.; and Warren, Steven M., 4,493,509, Cl. 303-13.000.
Krezak, John E., 4,493,141, Cl. 29-509.000.

Bogdon, Glendon J. Orthodontic device and associated orthodontic method. 4,493,642, Cl. 433-5.000.

Bogner, Max; and Grun, Larry. Ring construction and method of making same. 4,493,196, Cl. 63-15.000.

Bohley, Peter: *See*—
Walter, Carlton H.; Bohley, Peter; and Couture, Robert P., 4,494,121, Cl. 343-708.000.

Bohmer, William; Betancourt, Walter J.; and Hoffman, Louis S., to Control Interface Company Limited. Field sensitive optical displays, generation of fields therefor and scanning thereof. 4,493,531, Cl. 350-336.000.

Boinot, Jean C.: *See*—
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Bolton, Roderick A., to W. R. Grace & Co., Cryovac Div. Method for making partially separated multibags. 4,493,684, Cl. 493-234.000.

Bootman, Matthew W.; Schillke, Peter; and Laguette, Stephen W., to American Hospital Supply Corporation. Wound drainage device of resilient sidewalls with a constant rate of recovery. 4,493,701, Cl. 604-73.000.

Bopp, Warren G., to Eaton Corporation. Viscous bypass coupling for torque converter. 4,493,406, Cl. 192-58.00B.

Borgia, Joseph, V. Winch for safely lowering a person at a controlled rate. 4,493,396, Cl. 182-238.000.

Borja, Jesus, to Illinois Tool Works, Inc. Strain relief. 4,493,467, Cl. 248-56.000.

Borriello, Gaetano: *See*—
Bell, Alan G.; Lyon, Richard F.; and Borriello, Gaetano, 4,494,021, Cl. 307-591.000.

Borsanyi, Alexander S.; and Bobo, Donald E., to American Hospital Supply Corporation. Linear peristaltic pumping apparatus and disposable casette therefor. 4,493,706, Cl. 604-153.000.

Bosch-Siemens Hausgeraete GmbH: *See*—
Bredel, Walter; Schenetin, Norbert; and Waigand, Helmut, 4,493,979, Cl. 219-446.000.

Bose, Amar G., to Bose Corporation. Feedback control. 4,494,074, Cl. 330-109.000.

Bose Corporation: *See*—
Bose, Amar G., 4,494,074, Cl. 330-109.000.

Bostater, Joseph A.; MacGregor, Angus J.; and Gesicki, Aaron A., to American Motors (Canada) Inc. Method for making cast iron engine blocks and the like. 4,493,359, Cl. 164-58.100.

Bouchet, Jean, to Bouchet-Lassale S.A. Reversible wrist watch. 4,493,561, Cl. 368-281.000.

Bouchet-Lassale S.A.: *See*—
Bouchet, Jean, 4,493,561, Cl. 368-281.000.

Boulton, Thomas W.; and Derwent, Brian J., to Imperial Chemical Industries PLC. Electrolytic cell. 4,493,759, Cl. 204-252.000.

Bound, Damon J. F., to F. F. Seeley Nominees Pty. Ltd. Switch. 4,493,953, Cl. 200-6.00B.

Bovone, Luigi. Chamfering machines, particularly for glass sheets. 4,493,167, Cl. 51-110.000.

Braatz, Andreas: *See*—
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Brackman, William D., Jr., to General Electric Company. Commutation detection apparatus and method. 4,494,182, Cl. 363-63.000.

Brady, C. Eugene; Gottsche, Marcus J.; and Stoll, Paul W., to Stanadyne, Inc. Fuel injection pump with plunger stroke control. 4,493,617, Cl. 417-214.000.

Bragg, James R., to Exxon Production Research Co. Method for improving injectivities of biopolymer solutions. 4,493,774, Cl. 252-8.55D.

Brahm, David J.; Grinn, James M.; Hepler, Edward L.; and Sullivan, John M., to AT&T Bell Laboratories. Deadlock detection and resolution scheme. 4,494,193, Cl. 364-200.000.

Brak, Stephen B., to United States of America, Energy. Bag-out material handling system. 4,493,179, Cl. 53-576.000.

Brandauer, Emil: *See*—
Kuhlmann, Gerhard; Schleihauf, Gerhard; and Brandauer, Emil, 4,493,865, Cl. 428-52.000.

Brands, George B.: *See*—
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Branovich, Louis E.: *See*—
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Braun, Gerald W., to Magnavox Government and Industrial Electronics Company. One shot spring activated motor. 4,494,024, Cl. 310-75.00A.

Braverman, Leonard W.: *See*—
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Braxton, Earl J. Collapsible toilet shelter. 4,493,118, Cl. 4-460.000.

Bredel, Walter; Schenetin, Norbert; and Waigand, Helmut, to Bosch-Siemens Hausgeraete GmbH. Control circuit assembly for heating elements in cooking plates. 4,493,979, Cl. 219-446.000.

Breeden, Kenneth S., to Caslin, Richard L. Caulking gun with cutter and piercer. 4,493,437, Cl. 222-82.000.

Brembilla, Almiro; and Pisani, Sergio C. Automatic steam box for textile articles. 4,493,160, Cl. 38-14.000.

Breuillard, Robert: *See*—
Pelletier, Joel A.; and Breuillard, Robert, 4,494,014, Cl. 307-254.000.

Breysse, Michele: *See*—
Bernard, Jean R.; and Breysse, Michele, 4,493,901, Cl. 502-37.000.

Brezina, David C. Composite vehicle frames and method of manufacturing composite vehicle frames. 4,493,749, Cl. 156-187.000.

Briccetti, Mario F., to Carrier Corporation. Apparatus for controlling the operation of an indoor fan associated with an air conditioning unit. 4,493,194, Cl. 62-180.000.

Brickman, Norman F.; and Rosenbaum, Walter S., to International Business Machines Corporation. Word autocorrelation redundancy match facsimile compression for text processing systems. 4,494,150, Cl. 358-260.000.

Bridge, Andrew W.: *See*—
Ashton, Michael J.; Bridge, Andrew W.; Chapman, Robert F.; Fenton, Garry; Loveless, Anthony H.; and Riddell, David, 4,493,843, Cl. 424-274.000.

Bridges, Mark E., to Eastman Kodak Company. Data recording photographic camera. 4,493,547, Cl. 354-424.000.

Bridson, Robert C.: *See*—
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Brinks, Robert J.: *See*—
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British Aerospace Public Limited Company: *See*—
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British Gas Corporation: *See*—
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British Petroleum Company, p.l.c., The: *See*—
Scammell, Roger S., 4,493,638, Cl. 431-202.000.

Brodie, Alastair C., to Glaxo Group Limited. Manufacture of antibiotics. 4,493,933, Cl. 548-194.000.

Brogardh, Torgny: *See*—
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Brokaw, Paul, to Loctite Corporation. Compartmental cartridge. 4,493,436, Cl. 222-80.000.

Broken Hill Proprietary Company Limited, The: *See*—
Godfrey, Noel R.; Parkes, Larry S.; and Treacy, Richard H., 4,494,050, Cl. 318-158.000.

Bron, Dan. Rotary sprinkler. 4,493,458, Cl. 239-230.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Kawahara, Hiroshi; and Nakamura, Kazuo, 4,493,569, Cl. 400-144.200.

Brown, Earl F., to AT&T Bell Laboratories. Reduced bandwidth video transmission. 4,494,144, Cl. 358-133.000.

Brown, Fred A., to Rotron Incorporated. Integral coaxial commutation and rotor magnets and apparatus and method for making same. 4,494,028, Cl. 310-156.000.

Brown, James L., to Rockwell International Corporation. Low level signal comparator apparatus. 4,494,019, Cl. 307-491.000.
Brown, Ronald D., to Caterpillar Tractor Co. Adaptive welder with laser TV-scanner. 4,493,968, Cl. 219-124.340.
Brown, Stanley M.; Durante, Vincent A.; Reagan, William J.; and Speronello, Barry K., to Engelhard Corporation. Fluid catalytic cracking catalyst comprising microspheres containing more than about 40 percent by weight Y-faujasite and methods for making. 4,493,902, Cl. 502-65.000.
Brown, Thomas A.: *See—*
Bitting, Ricky F.; Peil, William; and Brown, Thomas A., 4,494,055, Cl. 318-254.000.
Brown, William B. Anti-theft lock for pedal operated apparatus. 4,493,198, Cl. 70-203.000.
Brown & Williamson Tobacco Corporation: *See—*
Porenski, Harry S., Jr., 4,493,331, Cl. 131-336.000.
Brudi Equipment, Inc.: *See—*
Matthewson, Randall W.; Benefiel, Earl H.; and Brudi, Ronald A., 4,493,421, Cl. 211-13.000.
Brudi, Ronald A.: *See—*
Matthewson, Randall W.; Benefiel, Earl H.; and Brudi, Ronald A., 4,493,421, Cl. 211-13.000.
Brunner, Hans-Georg: *See—*
Burdeska, Kurt; Kabas, Guglielmo, deceased; Brunner, Hans-Georg; and Fory, Werner, 4,493,726, Cl. 71-87.000.
Brunswick Corporation: *See—*
Maheshwari, Mahendra, 4,494,165, Cl. 361-117.000.
Brustad, Wayne L.: *See—*
Sweeny, Norman P.; Relyea, Keith E.; and Brustad, Wayne L., 4,493,869, Cl. 428-201.000.
Bryson, John W.; and Hittenberger, William H., to Kliklok Corporation. Apparatus and method for forming and debowing cartons with pinching wheels. 4,493,682, Cl. 493-174.000.
Bucefari, Massimo; and Scortecci, Giuseppe, to ICM S.p.A. Italiana Costruzioni Metalmeccaniche. Machine for the manufacture of chains, in particular of the type known as rope chain in the goldsmithery industry. 4,493,183, Cl. 59-16.000.
Buchschmid, Emil; Horn, Friedrich; Nieberl, Bruno; Schmidt, Hans-Jorg; and Weyerich, Manfred, to Robert Bosch GmbH. Electrical winding on fixed-mount laminated iron core subject to shaking. 4,494,101, Cl. 336-210.000.
Buckingham, Joseph T.: *See—*
Wang, Carl C. T.; Charles, Steve; and Buckingham, Joseph T., 4,493,698, Cl. 604-51.000.
Buckner, Leonard; Foll, William A., Sr.; and Pesho, Stephen W., to Euclid Spiral Paper Tube Corp. Packaging machine. 4,493,178, Cl. 53-131.000.
Buckwalter, Brian L.: *See—*
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Buddy L Corporation: *See—*
Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Avi, 4,493,671, Cl. 446-464.000.
Budinger, A. Bowman; Byszewski, Wojciech W.; and Proud, Joseph M., to GTE Laboratories Incorporated. Single cathode beam mode fluorescent lamp for DC use. 4,494,046, Cl. 315-260.000.
Bull Dog Tool Inc.: *See—*
Williams, Robert M.; and Davis, Bob, 4,493,383, Cl. 175-234.000.
Bunch, Earnest B., Jr. Paper roll feed rack for processing machine. 4,493,688, Cl. 493-413.000.
Bunn-O-Matic Corporation: *See—*
Stover, Kenneth W., 4,493,249, Cl. 99-275.000.
Burbank, John E., III; and Montgomery, John R., to Minnesota Mining and Manufacturing Company. Transport apparatus for microfiche cards. 4,493,540, Cl. 353-122.000.
Burck, Philip J.: *See—*
Zimmerman, Ronald E.; Burck, Philip J.; Jones, C. David; and Thakkar, Arvind L., 4,493,699, Cl. 604-55.000.
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Fernwood, George G.; and Burd, Samuel, 4,493,815, Cl. 422-101.000.
La Motte, George B., III; and Burd, Samuel, 4,493,896, Cl. 435-287.000.
Burdeska, Kurt; Kabas, Guglielmo, deceased (by Kabas-Maskulinski, Anni, heir); Brunner, Hans-Georg; and Fory, Werner, to Ciba Geigy Corporation. Phenylpyrimidines as antidotes for protecting cultivated plants against phytotoxic damage caused by herbicides. 4,493,726, Cl. 71-87.000.
Burger, Wolfgang. Hair clip. 4,493,332, Cl. 132-46.00A.
Burkett, Albert L. Multi-purpose centrifugal mill. 4,493,459, Cl. 241-152.00A.
Burnett, John S. Support member. 4,493,877, Cl. 428-542.800.
Burroughs Corporation: *See—*
Berti, Eugenio, 4,494,058, Cl. 318-372.000.
Harris, Craig W.; Jevons, Lyle O., Jr.; and Loskorn, Richard A., 4,494,194, Cl. 364-200.000.
Hazel, Robert L.; and LaBudde, Edward V., 4,494,226, Cl. 369-45.000.
Buss, Albert, to G. O. Stumpf GmbH & Co. Kommanditgesellschaft. Apparatus for depositing a web of material on a table. 4,493,460, Cl. 242-58.600.
Butler, John C.: *See—*
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Butterfield, Ida M., to Butterfield Group. Hypodermic syringe cartridge with non-retractable drive piston. 4,493,703, Cl. 604-110.000.
Buzek, Eileen M.: *See—*
Buzek, Eric W.; Buzek, Eileen M.; and Buzek, Frank R., 4,493,618, Cl. 417-234.000.
Buzek, Eric W.; Buzek, Eileen M.; and Buzek, Frank R. Handle for compressor units. 4,493,618, Cl. 417-234.000.
Buzek, Frank R.: *See—*
Buzek, Eric W.; Buzek, Eileen M.; and Buzek, Frank R., 4,493,618, Cl. 417-234.000.
Byrum, Bernard J.: *See—*
Wedding, Donald K.; Fein, Michael E.; Ernsthausen, Roger E.; and Byrum, Bernard J., 4,494,038, Cl. 313-587.000.
Byszewski, Wojciech W.: *See—*
Budinger, A. Bowman; Byszewski, Wojciech W.; and Proud, Joseph M., 4,494,046, Cl. 315-260.000.
Cabot Medical Corporation: *See—*
Polk, Todd J.; and Polizzi, Jerry, 4,493,319, Cl. 128-303.00A.
Cahill, Lysle D.: *See—*
Thomas, E. Raymond; Cahill, Lysle D.; Tibbits, John L.; Fraser, Kenneth D.; Keane, John F.; Harting, Stanley C.; Kramer, George H.; Duke, Ronald J.; Kessis, Theodore A.; Butler, John C.; Frank, Gary L.; and Lawson, John A., 4,493,549, Cl. 355-3.00R.
Calari, Alessandro, to Dideco S.P.A. Device for performing plasmapheresis by centrifugation. 4,493,691, Cl. 494-10.000.
Cale, Harold N.: *See—*
Blanke, Richard H., Jr.; and Cale, Harold N., 4,493,127, Cl. 16-124.000.
Calfo, Raymond: *See—*
Mulach, Arthur; and Calfo, Raymond, 4,494,030, Cl. 310-256.000.
Call, Mark G., to International Business Machines Corporation. Voltage-controlled oscillator with independent gain and frequency controls. 4,494,080, Cl. 331-8.000.
Callahan, Kevin M., to International Paper Company. Applying an adhesive strip to a container interior. 4,493,860, Cl. 427-230.000.
Callen, Patrick J.; and Pierce, Philip R., to RCA Corporation. Satellite dual bus power system. 4,494,063, Cl. 320-56.000.
Camden, Thomas M.: *See—*
Beard, Charles L., Jr.; and Camden, Thomas M., 4,493,814, Cl. 376-428.000.
Campbell, John R.: *See—*
Williams, Robert E., Jr.; and Campbell, John R., 4,493,926, Cl. 525-474.000.
Campbell, Valtin T., Jr. Car body guard. 4,493,502, Cl. 293-128.000.
Canadian Patents & Development Limited: *See—*
Barszczewski, Andrzej, 4,494,067, Cl. 324-79.00D.
Cannon, Mark W., Jr., to United States of America, Air Force. Method and apparatus for objective determination of visual contrast sensitivity functions. 4,493,539, Cl. 351-205.000.
Canon Kabushiki Kaisha: *See—*
Ina, Kenzo; and Hara, Teruya, 4,494,157, Cl. 360-48.000.
Kaneko, Shuzo; Tamura, Yasuyuki; and Takahashi, Tohru, 4,493,882, Cl. 430-97.000.
Kataoka, Hiroyuki, 4,494,044, Cl. 315-151.000.
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Carabateas, Eustratios N. Ballistic propulsion system. 4,493,263, Cl. 102-483.000.
Carignan, Forest J.; and Cook, Nathan H., to Advanced Mechanical Technology, Inc. Force measuring platform and load cell therefor using strain gages to measure shear forces. 4,493,220, Cl. 73-862.660.
Carlson, David J.: *See—*
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Carrier Corporation: *See—*
Briccetti, Mario F., 4,493,194, Cl. 62-180.000.
Stenglein, Paul R., 4,493,499, Cl. 292-158.000.
Carroll, Thomas J.; Rubin, Michael; Piccolo, Dominic J.; and Glass, Michael, to Warner-Lambert Company. Process for preparing a non-chalky, organoleptically pleasing chewing gum composition. 4,493,849, Cl. 426-3.000.
Carson, William J., to Koppers Company, Inc. Method and apparatus for applying a multi-component adhesive. 4,493,286, Cl. 118-677.000.
Carter, Daniel L.; and Hall, Homer H., to General Electric Company. Pistol grip electrical brazing tool. 4,493,986, Cl. 219-85.00D.
Caruso, Fred A.: *See—*
Long, Robert B.; and Caruso, Fred A., 4,493,765, Cl. 208-309.000.
Caslin, Richard L.: *See—*
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Cassou, Bertrand: *See—*
Cassou, Robert; Cassou, Maurice; and Cassou, Bertrand, 4,493,700, Cl. 604-55.000.
Cassou, Maurice: *See—*
Cassou, Robert; Cassou, Maurice; and Cassou, Bertrand, 4,493,700, Cl. 604-55.000.
Cassou, Robert; Cassou, Maurice; and Cassou, Bertrand. Protective sheath for an artificial insemination gun, in particular for bovines. 4,493,700, Cl. 604-55.000.
Castle, Richard B.: *See—*
Beck, Warren R.; and Castle, Richard B., 4,493,875, Cl. 428-403.000.

Catchen, Gary L., to Conoco Inc. Method of energy resolved gamma-ray logging. 4,493,999, Cl. 250-260.000.
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Brown, Ronald D., 4,493,968, Cl. 219-124.340.
Fuzzell, Joe E., 4,494,096, Cl. 335-170.000.
Chaldar, Inc.: *See—*
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Chambers, Samuel W.: *See—*
Miles, Lee W.; Chambers, Samuel W.; and Rice, Mathias F., 4,493,586, Cl. 405-17.000.
Champeau, Andre . Hybrid transmissive focalizing optical system. 4,493,535, Cl. 350-452.000.
Champseix, Alain A.; and Le Fur, Gerard R., to Pharmindustrie. Medicaments containing derivatives of 3-chloro-quinoline. 4,493,838, Cl. 424-258.000.
Chan, Hardy W.: *See—*
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Chandler Evans Inc.: *See—*
Howlett, James J.; and Zagranski, Raymond D., 4,493,465, Cl. 244-17.130.
Nelson, James C., 4,493,623, Cl. 418-94.000.
Chaney, Mary B.: *See—*
Stapp, Paul R.; and Chaney, Mary B., 4,493,370, Cl. 166-273.000.
Chang, Hsiao-Nan L.; and Cline, John A., to General Electric Company. Dual turbine controller. 4,494,207, Cl. 364-494.000.
Chang, Hsiao-Nan L., to General Electric Company. Bumpless switching of valve drive in a turbine control system. 4,494,208, Cl. 364-494.000.
Chapman, Francis E.; and Harris, Robert B., to S. C. Johnson & Son, Inc. Powdered cleansing composition. 4,493,781, Cl. 252-88.000.
Chapman, Robert F.: *See—*
Ashton, Michael J.; Bridge, Andrew W.; Chapman, Robert F.; Fenton, Garry; Loveless, Anthony H.; and Riddell, David, 4,493,843, Cl. 424-274.000.
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Chase Bag Company. *See—*
Blanke, Richard H., Jr.; and Cale, Harold N., 4,493,127, Cl. 16-124.000.
Chattha, Mohinder S., to Ford Motor Company. Stabilized dispersion of cross-linked polymer particles. 4,493,914, Cl. 523-436.000.
Chekroun, Isaac; and Heymes, Alain, to Sanofi. Process for the preparation of β-cyclo-substituted ethylamines. 4,493,931, Cl. 546-329.000.
Chemco Manufacturing Co., Inc.: *See—*
Schweizer, Randy, 4,493,718, Cl. 55-491.000.
Chen, Lee; Khoury, Henri A.; and Seymour, Harlan R., to International Business Machines Corporation. Optical emission spectroscopy end point detection in plasma etching. 4,493,745, Cl. 156-626.000.
Cherdron, Harald; Gordon, Wolfgang; and Kloos, Friedrich, to Hoechst Aktiengesellschaft. Polyoxymethylene fibrids, a process for their production and their use. 4,493,751, Cl. 162-157.200.
Cherish, Peter: *See—*
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Cherne Industries, Inc.: *See—*
Mathison, Allen D.; Nelson, Dale K.; and Cherne, Lloyd G., 4,493,344, Cl. 138-89.000.
Cherne, Lloyd G.: *See—*
Mathison, Allen D.; Nelson, Dale K.; and Cherne, Lloyd G., 4,493,344, Cl. 138-89.000.
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Chin, Albert K.; and Fogarty, Thomas J., to Fogarty, Thomas J. Tubular extrusion catheter. 4,493,711, Cl. 604-271.000.
Chitayat, Anwar; Goldstein, Robert C.; and Faizullabhoy, Mustansir A., to Anorad Corporation. Axis controller for robotic actuator. 4,494,060, Cl. 318-568.000.
Cho, Sung N. Can opening means. 4,493,431, Cl. 220-269.000.
Christiansen, David W.; and Schively, Dixon P., to United States of America, Energy. Nuclear radiation actuated valve. 4,493,812, Cl. 376-352.000.
Christidis, Yani: *See—*
Gallois, Philippe; and Christidis, Yani, 4,493,937, Cl. 562-444.000.
Christie, Howard W.: *See—*
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Christopher, Todd J.: *See—*
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Chu, Albert E., to E-Y Laboratories. Soluble immunoassay reagent comprising lectin covalently bonded to reactive component. 4,493,793, Cl. 260-112.00R.
Chu, Raymond D.; and Bergman, Marc A., to Lifecare Services, Inc. Pump for a portable ventilator. 4,493,614, Cl. 417-22.000.
Chupp, John P.: *See—*
Goodin, Richard D.; and Chupp, John P., 4,493,755, Cl. 204-73.00R.
Ciba Geigy Corporation: *See—*
Beffa, Fabio, 4,493,798, Cl. 534-697.000.
Burdeska, Kurt; Kabas, Guglielmo, deceased; Brunner, Hans-Georg; and Fory, Werner, 4,493,726, Cl. 71-87.000.
Cimochowski, Anthony E., to Manville Service Corporation. Insulation module mounting means. 4,493,176, Cl. 52-508.000.
Ciracco Metal Fabricating Co., Inc.: *See—*
Ganek, Jerome S.; and Ganek, Lee G., 4,493,974, Cl. 219-341.000.
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Fukutome, Satoru; Hatanaka, Hideo; and Saito, Motoyuki, 4,493,560, Cl. 368-88.000.
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Smith, Lloyd H.; and Teplitz, Raymond L., 4,493,899, Cl. 436-508.000.
Clair, Robert A.: *See—*
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Clark, Charles W., to Ederer Incorporated. Hoist drive safety system. 4,493,479, Cl. 254-274.000.
Clark, John I., to Pitney Bowes Inc. Postage printing apparatus having a movable print head in a print drum. 4,493,252, Cl. 101-71.000.
Clark, Stephen D.; Wood, Philip S.; and Fell, Peter J., to Rolls-Royce Limited. Filling fissures in metal articles. 4,493,451, Cl. 228-119.000.
Clarke, Donald A.: *See—*
Pryor, Timothy R.; Hageniers, Omer L.; Pastorius, Walter J.; Liptay-Wagner, Nicholas; and Clarke, Donald A., 4,493,554, Cl. 356-241.000.
Clausen, Herbert J., to Gardinier, Inc. Process for partial removing of impurities from a wet process phosphoric acid. 4,493,820, Cl. 423-310.000.
Clemen, Rainer; and Haug, Werner, to International Business Machines Corporation. Bootstrapped level shift interface circuit with fast rise and fall times. 4,494,018, Cl. 307-482.000.
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Codex Corporation: *See—*
Payton, John L., 4,494,240, Cl. 375-75.000.
Coffey, M. Dewayne; Kelly, Mary Y.; and Kennedy, Weldon C., Jr., to Dow Chemical Company, The. Method and composition for corrosion. 4,493,775, Cl. 252-8.55C.
Cohen, Paul B.: *See—*
Bahr, Richard G.; and Cohen, Paul B., 4,494,233, Cl. 370-86.000.
Coker, Charles W., to Intermatic Incorporated. Switch timer. 4,494,012, Cl. 307-132.00E.
Colaruotolo, Joseph F.; Olsen, Ronald H.; and Vandenbergh, Peter A., to Occidental Chemical Corporation. Microbial degradation of obnoxious organic wastes into innocuous materials. 4,493,895, Cl. 435-262.000.
Coleman, David E.: *See—*
White, Allan E.; Coleman, David E.; and Miller, Steven R., 4,493,651, Cl. 434-188.000.
Coleman, H. Paris, to United States of America, Navy. Dual sense, circularly polarized helical antenna. 4,494,117, Cl. 343-365.000.
Coleman, Jeffrey L., to United States of America, Navy. Shallow depth lead weight ejection circuit. 4,493,281, Cl. 114-20.00R.
Colgate-Palmolive Company: *See—*
Joshi, David P., 4,493,786, Cl. 252-368.000.
Collier, Owen N.; and Selman, Gordon L., to Johnson Matthey PLC. Brazing alloy composition. 4,493,738, Cl. 148-24.000.
Collins, Robert A.; and Lewis, Timothy A., to Gus Pech Manufacturing Co. Vehicle-mounted earth drilling apparatus. 4,493,382, Cl. 175-206.000.
Collis, George C. Toothbrush with curved bristles. 4,493,125, Cl. 15-167.00A.
Colman OEM, Inc.: *See—*
Wielgus, Charles D., 4,493,955, Cl. 200-38.00R.
Colt Industries Operating Corp: *See—*
Klein, Harold A., 4,493,595, Cl. 408-46.000.
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Francis, Alex W., Jr., 4,493,591, Cl. 405-198.000.
Musto, Richard L.; and Kai, Norichika, 4,493,269, Cl. 110-106.000.
Comeau, Joseph H.; Kowles, Joseph E.; Lareau, John P.; Mayo, Kenneth R.; and Runde, Herbert A., to Combustion Engineering, Inc. Apparatus for remotely indicating angular position. 4,493,155, Cl. 33-366.000.
Commissariat a l'Energie Atomique: *See—*
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Loriot, Pierre; Rendu, Michel; and Rousseau, Jean, 4,493,813, Cl. 376-409.000.

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Commonwealth of Australia, The: *See—*
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Compagnie Francaise des Petroles: *See—*
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Compressor Controls Corporation: *See—*
Staroselsky, Naum; and Mirsky, Saul, 4,494,006, Cl. 290-4.000.

ComSonics, Inc.: *See—*
Shimp, Richard L., 4,494,138, Cl. 358-86.000.

Conjerti, Samuel N.: *See—*
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Conoco Inc.: *See—*
Catchen, Gary L., 4,493,999, Cl. 250-260.000.
Mack, Mark P., 4,493,903, Cl. 502-121.000.
Mack, Mark P., 4,493,904, Cl. 502-122.000.
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Consan Pacific Incorporated: *See—*
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Contitronix, Inc.: *See—*
McMahon, Ronald G.; and Hale, Donnie E., 4,493,566, Cl. 400-59.000.

Control Interface Company Limited: *See—*
Bohmer, William; Betancourt, Walter J.; and Hoffman, Louis S., 4,493,531, Cl. 350-336.000.

Cook, Kenneth P., to Site Microsurgical Systems, Inc. Opthalmic microsurgical system cassette assembly. 4,493,695, Cl. 604-27.000.

Cook, Nathan H.: *See—*
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Cook, Raymond. Magnetic motor machine. 4,494,023, Cl. 310-21.000.

Cook, Thomas E.; and Dolle, Ernest W., to Procter & Gamble Company, The. Low phosphate, softening laundry detergent containing ethoxylated nonionic, alkylpolysaccharide and cationic surfactants. 4,493,773, Cl. 252-8.800.

Cooper LaserSonics, Inc.: *See—*
Wuchinich, David G., 4,493,694, Cl. 604-22.000.

Cooper Medical Devices: *See—*
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Coppola, Joseph C., Jr., to Pantasote Inc. Roofing system. 4,493,175, Cl. 52-410.000.

Corning Glass Works: *See—*
Nayak, Ashok L.; and Spremulli, Paul F., 4,493,557, Cl. 366-300.000.

Corry, Jon C., to Mason Corporation. Window sash positioner. 4,493,128, Cl. 16-197.000.

Cosentino, Cesare C.: *See—*
Hatzikelis, Christopher; Madonia, Ciro; and Cosentino, Cesare C., 4,493,806, Cl. 264-28.000.

Cosenza, Frank J., to Rexnord Inc. Double disc stud assembly for thin walled panels. 4,493,577, Cl. 403-41.000.

Coughlin, William J.: *See—*
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Coulter Systems Corp.: *See—*
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Couture, Robert P.: *See—*
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Couvillion, Mark C., to Dow Chemical Company, The. Catalyst for the selective hydrogenation of acetylenes. 4,493,906, Cl. 502-346.000.

Cowdrey, Dennis A., to Singer Company, The. Weather radar simulator. 4,493,647, Cl. 434-2.000.

CPC International Inc.: *See—*
Mielenz, Jonathan R.; and Mickel, Susan, 4,493,893, Cl. 435-172.300.

Crandall, Stanley C.: *See—*
Van Ocker, William G.; Pawlenko, Ivan; Reider, Donald F.; Troebs, Charles J.; Clair, Robert A.; and Crandall, Stanley C., 4,493,572, Cl. 400-196.100.

Crawford, Lynn; and McArthur, William A. Implantable electrode having different stiffening and curvature maintaining characteristics along its length. 4,493,329, Cl. 128-786.000.

Cremonesi, Pietro: *See—*
Sportoletti, Giancarlo; Pagella, Piergiuseppe; and Cremonesi, Pietro, 4,493,829, Cl. 424-177.000.

Crevel, Philippe, to Motorola, Inc. Process and device for servo-control. 4,494,184, Cl. 364-178.000.

Cronin, David V., to Polaroid Corporation. Processing apparatus and method for treating a film unit with a liquid. 4,493,546, Cl. 354-324.000.

Cronin, Michael J., to Lockheed Corporation. Quick attach detach instrument panel method. 4,493,146, Cl. 29-857.000.

Crook, Edward J., Jr., to Crosby Group, Inc., The. Fitting for connection with web-type strapping. 4,493,135, Cl. 24-197.000.

Crook, Stephen E.: *See—*
Rocci, Joseph D.; Crook, Stephen E.; and Kauffman, Marc, 4,494,111, Cl. 340-533.000.

Crosby Group, Inc., The: *See—*
Crook, Edward J., Jr., 4,493,135, Cl. 24-197.000.

Cross, Carroll N. Process of making raised line imprinted display mounts. 4,493,748, Cl. 156-79.000.

Crown Zellerbach Corporation: *See—*
Schutz, Rudolph W.; and Weis, Rudolf R., 4,493,159, Cl. 34-43.000.

Crutcher Resources Corporation: *See—*
Wheeler, Lionel H.; Goekler, Robert G.; and Luddeke, Daniel G., 4,493,203, Cl. 72-369.000.

Cubic Corporation: *See—*
Sorgi, Aladino D., 4,494,073, Cl. 328-14.000.

Culbertson, E. C.: *See—*
Funderburk, F. Gene; Culbertson, E. C.; and Posey, Robert G., 4,493,872, Cl. 428-332.000.

Cullen, Steven R. Material handling apparatus for loaders. 4,493,605, Cl. 414-726.000.

Cupani, Carmine: *See—*
Sues, John M.; and Cupani, Carmine, 4,493,948, Cl. 179-2.00A.

Curtis, Joe E., Jr.: *See—*
Fisher, John L.; and Curtis, Joe E., Jr., 4,494,102, Cl. 336-212.000.

Custance, Robert E.: *See—*
Satchell, Terry L.; and Custance, Robert E., 4,493,493, Cl. 280-661.000.

CXA Ltd./CXA LTEE: *See—*
Simon, James R.; and Welburn, David J., 4,493,261, Cl. 102-331.000.

Cyclops Corporation: *See—*
Krantz, Robert J., 4,493,859, Cl. 427-193.000.

Daikin Kogyo Co., Ltd.: *See—*
Furutaka, Yasuhisa; and Ishii, Sadamu, 4,493,800, Cl. 260-465.00D.

Daimler-Benz AG: *See—*
Merkle, Josef, 4,493,481, Cl. 267-64.270.

Daimler-Benz Aktiengesellschaft: *See—*
Paul, Jurgen; Braatz, Andreas; and Hanke, Hans, 4,493,293, Cl. 123-41.120.

Dairiki, Osamu; Ookuma, Humio; and Asano, Hiroyuki, to Nippon Steel Corporation. Method of rolling metal. 4,494,205, Cl. 364-472.000.

Dale, John R., to United States of America, Navy. Sonobuoy float inflation and depth selection initiators. 4,493,664, Cl. 441-7.000.

D'Alessio, Michael S., to Harsco Corporation. Scaffolding connector and system. 4,493,578, Cl. 403-49.000.

Dalibout, Georges, to WABCO Westinghouse Equipements Ferroviaires. Brake cylinder with two pistons. 4,493,246, Cl. 92-13.800.

Dambrackas, William A.; Marshall, Michael B.; Greenstein, Larry S.; and Downie, Alex, to Racal-Milgo, Inc. Statistical multiplexer with dynamic bandwidth allocation for asynchronous and synchronous channels. 4,494,232, Cl. 370-80.000.

Danforth, Richard L.: *See—*
Durbin, Daniel P.; Lutz, Robert G.; and Danforth, Richard L., 4,493,919, Cl. 524-505.000.

D'Anna, Frank P., to United Technologies Corporation. Axially slideable plenum for circulation control aircraft. 4,493,612, Cl. 416-20.00R.

Dansk Svejsemaskine Fabrik A/S: *See—*
Peronard, Pierre-Rene, 4,494,070, Cl. 324-208.000.

Dataface Limited: *See—*
Gibbard, David W., 4,493,290, Cl. 119-51.00R.

Dauphin, Jean L.: *See—*
Slawy, Serge; Louvet, Olivier F.; and Dauphin, Jean L., 4,494,231, Cl. 370-60.000.

Davenport, John M., to General Electric Company. Ballast circuit for a 220-volt improved lighting unit. 4,494,045, Cl. 315-247.000.

Davies, Jeffrey N., to Allied Corporation. Electrical push-pull connector. 4,493,520, Cl. 339-91.00P.

Davila, Jose E.: *See—*
Giebelhausen, Charles W.; and Davila, Jose E., 4,493,454, Cl. 232-15.000.

Davis, Bob: *See—*
Williams, Robert M.; and Davis, Bob, 4,493,383, Cl. 175-234.000.

Davis, Stephen J. High voltage nanosecond pulse generator. 4,494,011, Cl. 307-106.000.

Dayco Corporation: *See—*
Miranti, Joseph P., Jr., 4,493,679, Cl. 474-201.000.

De La Rue Systems Limited: *See—*
Hilton, Graham H., 4,493,994, Cl. 250-223.00R.

Dean, Anthony B.; Farrow, Robin F. C.; Migliorato, Piero; White, Anthony M.; and Williams, Gerald M., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Infrared sensitive photo diode. 4,494,133, Cl. 357-30.000.

Decina, Basil A., Jr.: *See—*
Houchens, Albert F.; Cleveland, Dixon; Decina, Basil A., Jr.; Watney, Dale K.; Havens, James R.; and Nagel, Gregory L., 4,493,965, Cl. 219-109.000.

de Cremoux, Baudouin: *See—*
Di Forte Poisson, Marie-Antoinette; Hirtz, Jean-Pierre; Duchemin, Jean-Pascal; and de Cremoux, Baudouin, 4,494,237, Cl. 372-45.000.

Deere & Company: *See—*
Winter, David C.; Pearson, Michael L.; and Long, John D., 4,493,375, Cl. 172-1.000.

Degen, Peter J.; and Gsell, Thomas C., to Pall Corporation. Process for cleaning metal filters. 4,493,756, Cl. 204-141.500.

Dehn, Dieter: *See*—
Grunsky, Manfred; Sussmuth, Reiner; Dehn, Dieter; and Ischen, Gunter, 4,493,596, Cl. 408-233.000.

Deike, Karl-Heinz; Schulz, Hans-Joachim; and Sandmann, Jurgen, to WABCO Fahrzeugbremsen GmbH. Brake pressure control valve for tractor-trailer vehicles. 4,493,510, Cl. 303-28.000.

Del Bon, Franco: *See*—
Del Bon, Luigi; and Del Bon, Franco, 4,493,444, Cl. 222-402.220.

Del Bon, Luigi; and Del Bon, Franco. Self-closing valve-and-lid assembly. 4,493,444, Cl. 222-402.220.

Del Brocco, Enzo: *See*—
Sideri, Leonardo; and Del Brocco, Enzo, 4,493,433, Cl. 220-306.000.

DeLong, Charles E.; and Eck, Gary A., to Kimball International, Inc. Electronic piano. 4,493,237, Cl. 84-1.260.

Delphax Systems: *See*—
Gretchev, Vladimir, 4,494,129, Cl. 346-154.000.

Del Rosario, Luis. Speaker assembly. 4,493,389, Cl. 181-152.000.

de Monbrison, Christian, to Agro-Technics International Ltd. Hydroponic culture method for animal food and device for carrying out said method. 4,493,163, Cl. 47-61.000.

Dempsey, John C., to Taggents, Inc. Method and apparatus for measuring the rate at which air infiltrates into and out of buildings. 4,493,207, Cl. 73-40.700.

Dennis, Timothy J., to Lockwood Graders (U.K.) Limited. Method and apparatus for detecting bounded regions of images, and method and apparatus for sorting articles and detecting flaws. 4,493,420, Cl. 209-587.000.

de Reinach Hirtzbach, Francois; and Ambrosi, Dominique, to Rhone-Poulenc Agrochimie. N-Phenylcarbamoyl-pyridine compounds. 4,493,729, Cl. 71-94.000.

Derungs, Romano, to Hoffmann-La Roche Inc. Blood-platelet aggregation inhibiting 4,5,7,8-tetrahydro-4,4,8,8-tetramethyl-2-thienyl-1H-thiepino[4,5-d]imidazole derivatives. 4,493,841, Cl. 424-273.00R.

Derwent, Brian J.: *See*—
Boulton, Thomas W.; and Derwent, Brian J., 4,493,759, Cl. 204-252.000.

de Sivry, Bruno; Sudreau, Bernard; Jegousse, Michel; and Le Hir, Yves, to Compagnie Francaise des Petroles. Internal mandrel used in an operation of butt joining two lengths of tubing by welding. 4,493,966, Cl. 219-121.0EC.

Deutsch Company Electronic Components Division, The: *See*—
Griffin, Alan L., 4,494,092, Cl. 333-182.000.

Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V.: *See*—
Engler, Rolf; and Wulf, Rudolf, 4,493,217, Cl. 73-861.270.
Oliva, Rudolf; and Schmidt, K. Ulf, 4,493,241, Cl. 89-1.140.

DeVault, Donald G.: *See*—
Morrell, David J.; DeVault, Donald G.; and Sands, William K., Jr., 4,494,224, Cl. 367-2.000.

de Vries, Gerhard H. F., to U.S. Philips Corporation. Gas discharge display device having anodized and unanodized electrode surface areas. 4,494,037, Cl. 313-584.000.

Diab Barracuda AB: *See*—
Karlsson, Lars G., 4,493,863, Cl. 428-17.000.

Dideco S.P.A.: *See*—
Calari, Alessandro, 4,493,691, Cl. 494-10.000.

Dieckmann, J. Robert; Lauber, Michael L.; and Roodvoets, Mark R., to Firestone Tire & Rubber Company, The. Apparatus for producing variable-rate spring. 4,493,631, Cl. 425-292.000.

Diesel Kiki Co., Ltd.: *See*—
Iio, Masahiro, 4,493,624, Cl. 418-98.000.

Diffracto: *See*—
Pryor, Timothy R.; Hageniers, Omer L.; Pastorius, Walter J.; Liptay-Wagner, Nicholas; and Clarke, Donald A., 4,493,554, Cl. 356-241.000.

Di Forte Poisson, Marie-Antoinette; Hirtz, Jean-Pierre; Duchemin, Jean-Pascal; and de Cremoux, Baudouin, to Thomson-CSF. Short-wave semiconductor laser. 4,494,237, Cl. 372-45.000.

Dilworth, James L.; and Brinks, Robert J., to Nubs Nob, Inc. Method and apparatus for making artificial snow. 4,493,457, Cl. 239-25.000.

Dippert, Rainer: *See*—
Ziegler, Hans; Henze, Siegfried; Dippert, Rainer; Schnaus, Martin; and Golda, Horst, 4,493,234, Cl. 83-175.000.

Ditton, Louis G., to Essex Group, Inc. Spool with lifting handles. 4,493,462, Cl. 242-118.610.

Dr. Ing. h.c.F. Porsche AG: *See*—
Lehmann, Ulrich, 4,494,199, Cl. 364-426.000.

Dr. Ing. h.c.F. Porsche A.G.: *See*—
Ampferer, Herbert, 4,493,295, Cl. 123-41.860.

Doherty, James B.; Zimmerman, Morris; and Ashe, Bonnie M., to Merck & Co., Inc. 1-Carbapenem-3-carboxylic esters as anti-inflammatory agents. 4,493,839, Cl. 424-263.000.

Dolan, John P.: *See*—
Stieg, Richard F.; Dolan, John P.; Worley, W. Spencer; and Juergens, Tristan, 4,493,221, Cl. 474-14.000.

Dolle, Ernest W.: *See*—
Cook, Thomas E.; and Dolle, Ernest W., 4,493,773, Cl. 252-8.800.

Dombay, Zsolt: *See*—
Toth, Istvan; Nagy, Jozsef; Dombay, Zsolt; Grega nee Toth, Erzsebet; Horvath, Ibolya; Vigh, Laszlo ; and Farkas, Tibor, 4,493,727, Cl. 71-088.000.

DonJoy, Inc.: *See*—
Reed, Kenneth E.; Mason, Bradley; Mason, Jeff; and Nelson, Gregory R., 4,493,316, Cl. 128-80.00C.

Donnelly, Albert J., to Standum Controls, Inc. Programmable power control apparatus responsive to load variations. 4,494,010, Cl. 307-33.000.

Dotson, Billy J.: *See*—
Odeh, Aziz S.; and Dotson, Billy J., 4,493,369, Cl. 166-261.000.

Doty, John S., to Hughes Aircraft Company. Electromagnetic energy signal-carrying connector having secure strain-relief mechanism. 4,493,529, Cl. 350-96.200.

Dow Chemical Company, The: *See*—
Coffey, M. Dewayne; Kelly, Mary Y.; and Kennedy, Weldon C., Jr., 4,493,775, Cl. 252-8.55C.
Couvillion, Mark C., 4,493,906, Cl. 502-346.000.
Fisk, Thomas E., 4,493,908, Cl. 521-137.000.
Fujie, Akira; and Hisamatsu, Minoru, 4,493,788, Cl. 252-511.000.
Gross, James R., 4,493,818, Cl. 423-240.000.
McCreedy, Kathleen M.; and Hilton, Kenneth R., 4,493,927, Cl. 528-381.000.
Pews, Richard G., 4,493,929, Cl. 544-242.000.
Snyder, Kenneth L., Jr.; and Peters, James, 4,493,777, Cl. 252-49.300.
Werner, John A., 4,493,932, Cl. 546-345.000.
Wilson, David A.; and Wilson, Wilfred W., 4,493,771, Cl. 210-700.000.
Woo, Edmund P., 4,493,799, Cl. 260-465.00H.

Downie, Alex: *See*—
Dambrackas, William A.; Marshall, Michael B.; Greenstein, Larry S.; and Downie, Alex, 4,494,232, Cl. 370-80.000.

Drabsch, Karl S. Tenon joint for wooden frames. 4,493,582, Cl. 403-382.000.

Dragagna, Claudio; and Locatelli, Claudio, to Fratelli Marzoli & C. S.P.A. Control device for opening fiber bales. 4,493,131, Cl. 19-80.00R.

Dragagna, Claudio; and Locatelli, Claudio, to F. LLI Marzoli & C. S.p.A. Device for condensing the fleece emerging from a carding engine. 4,493,132, Cl. 19-106.00R.

Dragerwerk Aktiengesellschaft: *See*—
Mohr, Helmut; Falb, Wolfgang; and Wallroth, Carl F., 4,493,318, Cl. 128-200.190.

Dresser Industries, Inc.: *See*—
Fertl, Walter H., 4,494,071, Cl. 324-338.000.

Duberg, John E.: *See*—
Fisher, Ralph H., 4,493,193, Cl. 62-160.000.

DuBuske, Stanley: *See*—
Hager, Adolph G.; Freeman, Gerald L.; Rush, James P.; Branovich, Louis E.; and DuBuske, Stanley, 4,494,003, Cl. 250-474.100.

Duchemin, Jean-Pascal: *See*—
Di Forte Poisson, Marie-Antoinette; Hirtz, Jean-Pierre; Duchemin, Jean-Pascal; and de Cremoux, Baudouin, 4,494,237, Cl. 372-45.000.

Ducote, Marjorie E.; and Allen, Henry C., to United States of America, Army. Amine salts as bonding agents. 4,493,741, Cl. 149-19.400.

Dudgeon, Charles D.; and Winstead, Maynard R., to General Electric Company. Electromagnetic wave attenuating composition. 4,493,912, Cl. 523-137.000.

Duffy, Gifford R. Non-clogging eaves trough. 4,493,588, Cl. 405-119.000.

Duke, Ronald J.: *See*—
Thomas, E. Raymond; Cahill, Lysle D.; Tibbits, John L.; Fraser, Kenneth D.; Keane, John F.; Harting, Stanley C.; Kramer, George H.; Duke, Ronald J.; Kessis, Theodore A.; Butler, John C.; Frank, Gary L.; and Lawson, John A., 4,493,549, Cl. 355-3.00R.

Dumbri, Austin C.; and Procyk, Frank J., to AT&T Bell Laboratories. Folded bit line memory with one decoder per pair of spare rows. 4,494,220, Cl. 365-200.000.

Dupont, Bernard: *See*—
Bailleux, Christian; Bernard, Michel; Dupont, Bernard; Lozach, Guy; and Mata, Jean-Pierre, 4,493,917, Cl. 524-394.000.

Durante, Vincent A.: *See*—
Brown, Stanley M.; Durante, Vincent A.; Reagan, William J.; and Speronello, Barry K., 4,493,902, Cl. 502-65.000.

Durbin, Daniel P.; Lutz, Robert G.; and Danforth, Richard L., to Shell Oil Company. Polymer blend composition comprising two block polymers a vinyl aromatic copolymer and a polyester. 4,493,919, Cl. 524-505.000.

Duret, Jean, to Les Cables de Lyon. Device for connecting together the outer conductors of two coaxial pairs. 4,493,946, Cl. 174-88.00C.

Dursch, Walter: *See*—
Kleiner, Hans-Jerg; and Dursch, Walter, 4,493,803, Cl. 260-968.000.

Dusel, Robert O.; Berres, James J.; and Keene, Harold J., to Artos Engineering Company. Apparatus for cutting and conveying segments of wire or cable. 4,493,233, Cl. 83-71.000.

Dwyer, Daniel T.: *See*—
Streater, August L.; and Dwyer, Daniel T., 4,494,180, Cl. 363-37.000.

Dydyk, Michael, to Motorola, Inc. Transmission line oscillator having independently adjustable Q and input resistance. 4,494,086, Cl. 331-96.000.

Dydyk, Michael; Enlow, Norman K.; and Tuzzolino, Joseph R., to Motorola, Inc. Combiner probe providing power flatness and wide locking bandwidth. 4,494,087, Cl. 331-107.0DP.

Dyson, John A.: *See*—
Albright, John P.; Martin, Robert K.; and Dyson, John A., 4,493,323, Cl. 128-340.000.

E-Y Laboratories: *See*—
Chu, Albert E., 4,493,793, Cl. 260-112.00R.

Eastman Kodak Company: *See*—
Ateya, Antoun I., 4,493,548, Cl. 355-3.0FU.
Bridges, Mark E., 4,493,547, Cl. 354-424.000.
Mitchell, John D.; and Michel, Stephen, 4,493,881, Cl. 430-42.000.
Piatt, Michael J.; and Williams, Theodore F., 4,494,124, Cl. 346-1.100.
Romansky, John A., 4,493,982, Cl. 219-469.000.
Veillard, Dominique H., 4,494,155, Cl. 360-47.000.

Eaton Corporation: *See*—
Bopp, Warren G., 4,493,406, Cl. 192-58.00B.
Rolf, Jeffrey O., 4,493,597, Cl. 411-198.000.
Speelman, Paul L., 4,493,224, Cl. 74-473.00R.
Wenker, Wayne B., 4,493,404, Cl. 192-4.00A.

Eaton, James H. Parabolic trough solar collector. 4,493,313, Cl. 126-438.000.

Ebneth, Harold: *See*—
Sirinyan, Kirkor; Giesecke, Henning; Wolf, Gerhard D.; Ebneth, Harold; and Merten, Rudolf, 4,493,861, Cl. 427-304.000.

Echte, Adolf; and Gausepohl, Hermann, to BASF Aktiengesellschaft. Impact-resistant thermoplastic molding material. 4,493,922, Cl. 525-71.000.

Echtler, Theodor; Quinot, Martin; and Hunsinger, Werner, to IBEK Ingenieurbuero Echtler Kaiserslautern GmbH. Motor vehicle for transporting and laying a fixed bridge. 4,493,122, Cl. 14-2.400.

Echtler, Theodor, to IBEK Ingenieurbuero Echtler Kaiserslautern GmbH. Pontoon for floating bridges and ferries. 4,493,284, Cl. 114-267.000.

Eck, Gary A.: *See*—
DeLong, Charles E.; and Eck, Gary A., 4,493,237, Cl. 84-1.260.

Eckelt, Ulrich; and Winnemoller, Alois, to Windmoller & Holscher. Apparatus for pulling tube ends open to form base squares of cross-bottom sacks. 4,493,686, Cl. 493-256.000.

Ederer Incorporated: *See*—
Clark, Charles W., 4,493,479, Cl. 254-274.000.

Edgerley, Peter G.; and Oldland, Sidney R. D., to Imperial Chemical Industries PLC. Resilient polyurethane foam with improved resistance to ignition. 4,493,871, Cl. 428-308.400.

Edwards, Clifton V., II, to Lundell Laboratories, Inc. Heart pump. 4,493,314, Cl. 128-1.00D.

EG&G, Inc.: *See*—
Goldberg, Seymour, 4,494,085, Cl. 331-94.100.

Ehrenbard, Christine H.; and Gottfried, Noah L., to AT&T Bell Laboratories. Timing recovery in a baud-rate sampled-data system. 4,494,242, Cl. 375-118.000.

Ehrfeld, Wolfgang: *See*—
Becker, Erwin; Ehrfeld, Wolfgang; Munchmeyer, Dietrich; Betz, Hans; and Heuberger, Anton, 4,493,753, Cl. 204-9.000.

Eisai Co., Ltd.: *See*—
Sugimoto, Hachiro; Hamano, Sachiyuki; Shoji, Tadao; Kaneko, Takeru; and Uzuo, Takeshi, 4,493,837, Cl. 424-253.000.

Ekman, Heinz, to Verdal Maskinverksted A/S. Means for recovering heat from a room space, and for ventilation. 4,493,366, Cl. 165-54.000.

Eldridge, Arthur C.: *See*—
Friedrich, John P.; and Eldridge, Arthur C., 4,493,854, Cl. 426-629.000.

Electric Power Research Institute, Inc.: *See*—
Graf, Walter A., Jr., 4,493,792, Cl. 252-627.000.
Reichman, James M.; O'Hanlon, Thomas A.; and Kendrew, Thomas J., 4,493,379, Cl. 175-57.000.

Electricite de France: *See*—
Bailleux, Christian; Bernard, Michel; Dupont, Bernard; Lozach, Guy; and Mata, Jean-Pierre, 4,493,917, Cl. 524-394.000.

Electronique Marcel Dassault: *See*—
Mayoux, Jean-Jacques, 4,494,241, Cl. 375-76.000.

Elf France: *See*—
Bernard, Jean R.; and Breysse, Michele, 4,493,901, Cl. 502-37.000.

Eli Lilly and Company: *See*—
Zimmerman, Ronald E.; Burck, Philip J.; Jones, C. David; and Thakkar, Arvind L., 4,493,699, Cl. 604-55.000.

Eliscu, Steven M.: *See*—
Bernard, Francis S.; Eliscu, Steven M.; and Batterman, Eric P., 4,494,214, Cl. 364-724.000.

Elliott, Richard E. Floating boat dock anchor. 4,493,283, Cl. 114-263.000.

Elmis, Herbert, to ITT Industries, Inc. Frequency divider presettable to fractional divisors. 4,494,243, Cl. 377-48.000.

Emerson Electric Co.: *See*—
Mitchell, Albert W., 4,493,151, Cl. 30-276.000.
Stahlhut, Leo G., 4,493,171, Cl. 52-28.000.

Empak Inc.: *See*—
Johnson, Douglas M., 4,493,418, Cl. 206-454.000.

Emsperger, Werner; and Engelhardt, Reiner, to Kraftwerk Union Aktiengesellschaft. Steam power plant and steam generator, especially suited for a steam power plant of this type. 4,493,186, Cl. 60-39.182.

Endo, Katsusuke; Kato, Eiichi; Ohki, Nobutaka; and Ishikawa, Takatoshi, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 4,493,888, Cl. 430-405.000.

Endo, Keiji: *See*—
Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Yanagishita, Hitoshi; and Hayashi, Shozo, 4,493,943, Cl. 174-25.00C.

Endo, Yorimasa: *See*—
Seki, Eiji; Tai, Ichiro; Shirayama, Shimpey; Itoh, Toshiaki; Endo, Yorimasa; and Fukushima, Toshiki, 4,493,811, Cl. 376-254.000.

Enertec: *See*—
Ley, Antony; Allesch, Roland; and Bazin, Alain, 4,494,068, Cl. 324-126.000.

Engel, Hinrich, to Vereinigte Flugtechnische Werke GmbH. Rapid action clamping for cooperation with slot tracks. 4,493,470, Cl. 248-503.100.

Engelhard Corporation: *See*—
Brown, Stanley M.; Durante, Vincent A.; Reagan, William J.; and Speronello, Barry K., 4,493,902, Cl. 502-65.000.

Engelhardt, Reiner: *See*—
Emsperger, Werner; and Engelhardt, Reiner, 4,493,186, Cl. 60-39.182.

Engler, Rolf; and Wulf, Rudolf, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Process and apparatus for measuring travel time differences of ultrasonic pulses for the determination of flow fields. 4,493,217, Cl. 73-861.270.

Enlow, Norman K.: *See*—
Dydyk, Michael; Enlow, Norman K.; and Tuzzolino, Joseph R., 4,494,087, Cl. 331-107.0DP.

Epstein, Saul. Clinical instrument for measuring pulse rate and body temperature. 4,493,564, Cl. 374-179.000.

Ernsthausen, Roger E.: *See*—
Wedding, Donald K.; Fein, Michael E.; Ernsthausen, Roger E.; and Byrum, Bernard J., 4,494,038, Cl. 313-587.000.

Esken, Robert L., to Bendix Corporation, The. Measuring apparatus and method of making. 4,493,153, Cl. 33-149.00J.

Espe Fabrik pharmazeutischer Praparate, GmbH: *See*—
Schmitt, Werner; Purrmann, Robert; and Jochum, Peter, 4,493,911, Cl. 523-109.000.

Essex Group, Inc.: *See*—
Ditton, Louis G., 4,493,462, Cl. 242-118.610.

Estabrooks, David A. Dot matrix printhead employing moving coils. 4,493,568, Cl. 400-124.000.

Eszakmagyarorszagi Vegyimuvek: *See*—
Toth, Istvan; Nagy, Jozsef; Dombay, Zsolt; Grega nee Toth, Erzsebet; Horvath, Ibolya; Vigh, Laszlo ; and Farkas, Tibor, 4,493,727, Cl. 71-088.000.

Euclid Spiral Paper Tube Corp.: *See*—
Buckner, Leonard; Foll, William A., Sr.; and Pesho, Stephen W., 4,493,178, Cl. 53-131.000.

Euvrard, Hubert: *See*—
Lacour, Bernard; Euvrard, Hubert; Gaillard, Roger; and Boinot, Jean C., 4,493,646, Cl. 433-133.000.

Evason, John, to Pilkington Brothers P.L.C. Method of and apparatus for thermally toughening glass. 4,493,723, Cl. 65-114.000.

Ex-Cell-O Corporation: *See*—
Moore, James I.; and Van Huis, Philip J., 4,493,362, Cl. 164-457.000.

Exploration Logging, Inc.: *See*—
Jeter, John D.; and More, Henry S., 4,494,072, Cl. 324-347.000.

Exxon Production Research Co.: *See*—
Bragg, James R., 4,493,774, Cl. 252-8.55D.
Ortloff, John E., 4,493,282, Cl. 114-230.000.

Exxon Research and Engineering Co.: *See*—
Long, Robert B.; and Caruso, Fred A., 4,493,765, Cl. 208-309.000.
Rhodes, Richard P.; and Hershkowitz, Frank, 4,493,763, Cl. 208-11.00R.
Sheng, Ping; and Stepleman, Robert S., 4,493,942, Cl. 136-259.000.

Eyer, Jean, to Hotchkiss-Brandt-Sogeme-H.B.S. Device for guiding and receiving letters at the exit of a mail-sorting machine and a machine equipped with said device. 4,493,484, Cl. 271-220.000.

Eyler, Francis R., to Harsco Corporation. Starter thermal overload protection system. 4,494,162, Cl. 361-29.000.

F. F. Seeley Nominees Pty. Ltd.: *See*—
Bound, Damon J. F., 4,493,953, Cl. 200-6.00B.

F. LLI Marzoli & C. S.p.A.: *See*—
Dragagna, Claudio; and Locatelli, Claudio, 4,493,132, Cl. 19-106.00R.

Faizullabhoy, Mustansir A.: *See*—
Chitayat, Anwar; Goldstein, Robert C.; and Faizullabhoy, Mustansir A., 4,494,060, Cl. 318-568.000.

Falb, Wolfgang: *See*—
Mohr, Helmut; Falb, Wolfgang; and Wallroth, Carl F., 4,493,318, Cl. 128-200.190.

Fankhauser, Hanspeter: *See*—
Weil, Wolfgang; Lanz, Andres; Vogt, Max; Meier, Paul; Kaul, Martin; and Fankhauser, Hanspeter, 4,493,962, Cl. 219-64.000.

Farber, Heinrich: *See*—
Bauer, Walter; Farber, Heinrich; and Muller, Jurgen, 4,493,545, Cl. 354-277.000.

Farkas, Tibor: *See*—
Toth, Istvan; Nagy, Jozsef; Dombay, Zsolt; Grega nee Toth, Erzsebet; Horvath, Ibolya; Vigh, Laszlo ; and Farkas, Tibor, 4,493,727, Cl. 71-088.000.

Farmer's Factory Co.: *See*—
Glendenning, George B.; and Glendenning, Terry S., 4,493,181, Cl. 56-314.000.

Farrow, Robin F. C.: *See*—
Dean, Anthony B.; Farrow, Robin F. C.; Migliorato, Piero; White, Anthony M.; and Williams, Gerald M., 4,494,133, Cl. 357-30.000.

Fastner, Thorwald; Mayrhofer, Max; and Taschner, Walter, to Voest-Alpine Aktiengesellschaft. Method of producing a plate of steel. 4,493,452, Cl. 228-158.000.

Fauveau, Patrick: *See*—
Nedelec, Lucien; Pierdet, Andre ; and Fauveau, Patrick, 4,493,836, Cl. 424-248.400.

Feagin, John A., Jr. Ski pole handle. 4,493,494, Cl. 280-821.000.
Fein, Michael E.: *See*—
Wedding, Donald K.; Fein, Michael E.; Ernsthausen, Roger E.; and Byrum, Bernard J., 4,494,038, Cl. 313-587.000.
Feldman, Rubin, to Thermal Science, Inc. Thermal protective system. 4,493,945, Cl. 174-68.00C.
Fell, Peter J.: *See*—
Clark, Stephen D.; Wood, Philip S.; and Fell, Peter J., 4,493,451, Cl. 228-119.000.
Fenne, Ivor, to Lucas Industries public limited company. Fuel injection pumping apparatus. 4,493,621, Cl. 417-462.000.
Fenton, Garry: *See*—
Ashton, Michael J.; Bridge, Andrew W.; Chapman, Robert F.; Fenton, Garry; Loveless, Anthony H.; and Riddell, David, 4,493,843, Cl. 424-274.000.
Ferix Corporation: *See*—
Springer, Gilbert D., 4,494,125, Cl. 346-74.500.
Fernwood, George G.; and Burd, Samuel, to Bio-Rad Laboratories, Inc. Supporting and filtering biochemical test plate assembly. 4,493,815, Cl. 422-101.000.
Ferrari, Antonio. System for creating dams with mobile and/or partially mobile water-retaining elements. 4,493,587, Cl. 405-114.000.
Ferrigni, Donato. Interchangeable tiles puzzle. 4,493,487, Cl. 273-153.00S.
Ferroplast Gesellschaft fur Metall- und Kunststoffepzeucnisse mbH: *See*—
Schlimbach, Heinrich, 4,493,593, Cl. 406-146.000.
Fertl, Walter H., to Dresser Industries, Inc. Determination of water saturation in earth formations independent of lithology. 4,494,071, Cl. 324-338.000.
Fiat Auto S.p.A.: *See*—
Pagano, Roberto; and Nannini, Alessandro, 4,493,390, Cl. 181-204.000.
Fichtel & Sachs AG: *See*—
Anders, Peter; and Schierling, Bernhard, 4,493,673, Cl. 464-66.000.
Fickert, Werner: *See*—
Orth, Winfried; and Fickert, Werner, 4,493,935, Cl. 548-562.000.
Fickler, Hans. Linear drive device with two motors. 4,494,025, Cl. 310-80.000.
Field, Edgar L., Jr., to Coburn Optical Industries, Inc. Calibration gauge for computer-controlled lens generator, or the like. 4,493,168, Cl. 51-165.870.
Figgie International Inc.: *See*—
Karlsen, Stig, 4,493,394, Cl. 182-179.000.
Fine, Richard A.; and Nason, George F., III. Illumination means for 3-D printing apparatus. 4,493,551, Cl. 355-22.000.
Fink, Thomas F., Jr.: *See*—
Sands, Robert W.; Marella, Joseph P.; and Fink, Thomas F., Jr., 4,494,176, Cl. 362-297.000.
Fioravanti, Mario. Method of treating and conserving filled dough food products. 4,493,850, Cl. 426-283.000.
Firestone Tire & Rubber Company, The: *See*—
Dieckmann, J. Robert; Lauber, Michael L.; and Roodvoets, Mark R., 4,493,631, Cl. 425-292.000.
Firestone, William L.: *See*—
Lovick, Richard B.; and Firestone, William L., 4,494,143, Cl. 358-122.000.
Fischer, Albert J., to William Prym Werke KG. Sewing-machine attachment. 4,493,275, Cl. 112-105.000.
Fischer, Hermann, to M.A.N.—Roland Druckmaschinen Aktiengesellschaft. Multi-station sheet rotary offset printing machine. 4,493,255, Cl. 101-183.000.
Fisher, John L.; and Curtis, Joe E., Jr., to Kuhlman Corporation. Transformer core and method and apparatus for forming same. 4,494,102, Cl. 336-212.000.
Fisher, Ralph H., to Lake, Rutherford C., Jr.; and Duberg, John E., part interest to each. Reversible cycle heating and cooling system. 4,493,193, Cl. 62-160.000.
Fisk, Thomas E., to Dow Chemical Company, The. Stable dispersions of polymers in polyfunctional compounds having a plurality of active hydrogens. 4,493,908, Cl. 521-137.000.
Fiumefreddo, John: *See*—
Leong, Henry; and Fiumefreddo, John, 4,493,523, Cl. 339-105.000.
Flannery, Lincoln R.: *See*—
Maier, Bruce R.; and Flannery, Lincoln R., 4,493,115, Cl. 2-2.000.
Flaschel, Erwin; and Renken, Albert, to Sulzer Brothers Limited. Device and method for forming a fluidized bed. 4,493,735, Cl. 134-25.100.
Flatt, Thomas R., to Mobay Chemical Corporation. Conditioning of crude pigment in a salt free corn syrup based medium. 4,493,734, Cl. 106-309.000.
Fleisher, Martin, to Memorial Hospital for Cancer & Allied Diseases. Solvent system for peroxidase inhibitor reagent for fecal occult blood determinations. 4,493,892, Cl. 435-28.000.
Florkey's Conveyor Service, Inc.: *See*—
Hoffmann, Frank F., 4,493,680, Cl. 474-230.000.
FMC Corporation: *See*—
Plummer, Ernest L., 4,493,844, Cl. 424-275.000.
Fogarty, Thomas J.: *See*—
Chin, Albert K.; and Fogarty, Thomas J., 4,493,711, Cl. 604-271.000.
Foley, John T.: *See*—
Bilstad, Arnold C.; Foley, John T.; and Woodworth, Walker P., 4,493,693, Cl. 604-6.000.
Foll, William A., Sr.: *See*—
Buckner, Leonard; Foll, William A., Sr.; and Pesho, Stephen W., 4,493,178, Cl. 53-131.000.
Ford Motor Company: *See*—
Asik, Joseph R., 4,493,306, Cl. 123-620.000.
Chattha, Mohinder S., 4,493,914, Cl. 523-436.000.
Lake, W. H. R.; and Grandinett, D. H., 4,493,387, Cl. 180-248.000.
Meyer, Fred J.; and Newman, Seymour, 4,493,918, Cl. 524-451.000.
Forde, Louis. Apparatus for giving engines positive effect. 4,493,299, Cl. 123-185.00S.
Forsvarets Forskningsanstalt: *See*—
Sanden, Roland, 4,493,916, Cl. 524-217.000.
Fortgens, Walter, to AB Volvo. Jack. 4,493,478, Cl. 254-126.000.
Fory, Werner: *See*—
Burdeska, Kurt; Kabas, Guglielmo, deceased; Brunner, Hans-Georg; and Fory, Werner, 4,493,726, Cl. 71-87.000.
Foster, John S., to United States of America, Navy. Annular shaped charge for breaching masonary walls. 4,493,260, Cl. 102-307.000.
Foster Wheeler Energy Corporation: *See*—
Johnson, Richard C.; and Norris, Allyn P., 4,493,206, Cl. 73-7.000.
Foulke, Richard F.; and Lord, Steven M., to Proconics International, Inc. Wafer transfer apparatus. 4,493,606, Cl. 414-787.000.
Frampton, John C.: *See*—
Kubert, Vincent T.; Frampton, John C.; and Ono, George Y., 4,493,257, Cl. 101-349.000.
Francis, Alex W., Jr., to Combustion Engineering, Inc. Floatable off-shore production structure and method for fabrication, transport and installation of same. 4,493,591, Cl. 405-198.000.
Francois, Daniel: *See*—
Glachet, Charles; Francois, Daniel; Tentelier, Jean; and Frioux, Christian, 4,493,598, Cl. 414-1.000.
Frank, Gary L.: *See*—
Thomas, E. Raymond; Cahill, Lysle D.; Tibbits, John L.; Fraser, Kenneth D.; Keane, John F.; Harting, Stanley C.; Kramer, George H.; Duke, Ronald J.; Kessis, Theodore A.; Butler, John C.; Frank, Gary L.; and Lawson, John A., 4,493,549, Cl. 355-3.00R.
Franklin Electric Co., Inc.: *See*—
Streater, August L.; and Dwyer, Daniel T., 4,494,180, Cl. 363-37.000.
Franks, William S., Jr.: *See*—
Billings, Philip A.; and Franks, William S., Jr., 4,494,166, Cl. 361-214.000.
Fraser, Kenneth D.: *See*—
Thomas, E. Raymond; Cahill, Lysle D.; Tibbits, John L.; Fraser, Kenneth D.; Keane, John F.; Harting, Stanley C.; Kramer, George H.; Duke, Ronald J.; Kessis, Theodore A.; Butler, John C.; Frank, Gary L.; and Lawson, John A., 4,493,549, Cl. 355-3.00R.
Fratelli Marzoli & C. S.P.A.: *See*—
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Fraunhofer-Gesellschaft Zur Forderung der angewandten Forschung e.V.: *See*—
Muller, Dietmar; Schubert, Hiltmar; and Krohnert, Rudolf, 4,493,630, Cl. 425-203.000.
Fredriksson, Hasse; and Tiberg, Lars, to Jernkontoret. Method at continuous casting of steels and metal alloys with segregation tendency and apparatus for carrying out the method. 4,493,363, Cl. 164-476.000.
Freeman, Gerald L.: *See*—
Hager, Adolph G.; Freeman, Gerald L.; Rush, James P.; Branovich, Louis E.; and DuBuske, Stanley, 4,494,003, Cl. 250-474.100.
Freeman, Kenneth A.: *See*—
Townson, Jimmy D., 4,493,380, Cl. 175-61.000.
Freidinger, Roger M.: *See*—
Veber, Daniel F.; and Freidinger, Roger M., 4,493,934, Cl. 548-550.000.
Freyberger, Laurin C.; and Novotny, Bernd, to ITT Industries, Inc. Integrated interface circuit between the RGB matrix and the video output stages of color-television sets. 4,494,137, Cl. 358-27.000.
Fridman, Jacob: *See*—
Bergelson, Michael; Fridman, Jacob; and John, Erwin R., 4,493,327, Cl. 128-731.000.
Friedrich, John P.; and Eldridge, Arthur C., to United States of America, Agriculture. Production of defatted soybean products by supercritical fluid extraction. 4,493,854, Cl. 426-629.000.
Friedrich Munch GmbH & Co. K.G.: *See*—
Kuhlmann, Gerhard; Schleihauf, Gerhard; and Brandauer, Emil, 4,493,865, Cl. 428-52.000.
Frieling, Focko; Michael, Ewald; and Nikutta, Wolfgang, to Siemens Aktiengesellschaft. Pulse enhancement circuit for digital integrated circuit. 4,494,015, Cl. 307-268.000.
Fries, Herbert; Gerstenmaier, Jurgen; Kircher, Stefan; and Koch-Ducker, Jurgen, to Robert Bosch GmbH. Anti-block control system test. 4,493,210, Cl. 73-121.000.
Frioux, Christian: *See*—
Glachet, Charles; Francois, Daniel; Tentelier, Jean; and Frioux, Christian, 4,493,598, Cl. 414-1.000.
Fuchs, Hugo: *See*—
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Fuji Electric Co., Ltd.: *See*—
Shigemasa, Saito, 4,493,964, Cl. 219-78.020.
Fuji Jukogyo Kabushiki Kaisha: *See*—
Abe, Kunihiro, 4,493,301, Cl. 123-339.000.

Takano, Toshio; and Mura, Shinichiro, 4,493,403, Cl. 192-4.00A.
Yamakawa, Toru, 4,493,190, Cl. 60-714.000.

Fuji Photo Film Co., Ltd.: *See*—
Endo, Katsusuke; Kato, Eiichi; Ohki, Nobutaka; and Ishikawa, Takatoshi, 4,493,888, Cl. 430-405.000.
Fujita, Shinsaku; Maekawa, Yukio; and Ono, Shigetoshi, 4,493,885, Cl. 430-223.000.
Kamiyama, Kouzi, 4,493,779, Cl. 252-62.590.
Mihara, Yuji; Nagaoka, Satoshi; and Okazaki, Masaki, 4,493,889, Cl. 430-572.000.
Nagano, Teruo; and Nagashima, Akira, 4,493,884, Cl. 430-192.000.
Ohmura, Hiroshi; Kohno, Atsuo; Shiiba, Minoru; and Tanaka, Tsutomu, 4,493,542, Cl. 354-82.000.

Fuji Xerox Co., Ltd.: *See*—
Kurata, Masami; and Ohmori, Takashi, 4,494,152, Cl. 358-293.000.
Todoh, Hidemasa, 4,494,126, Cl. 346-76.0PH.

Fujibayashi, Kenji, to Olympus Optical Co., Ltd. Muting apparatus. 4,494,158, Cl. 360-69.000.

Fujie, Akira; and Hisamatsu, Minoru, to Dow Chemical Company, The. Foamable electroconductive polyolefin resin compositions. 4,493,788, Cl. 252-511.000.

Fujinaga, Yasuhiro: *See*—
Yano, Shozo; Komoto, Akira; and Fujinaga, Yasuhiro, 4,493,384, Cl. 177-25.000.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; Takeno, Hidekazu; Okada, Satoshi; and Hashimoto, Masashi, 4,493,794, Cl. 260-112.50R.
Takaya, Takao; Yasuda, Nobuyoshi; Tsutsumi, Hideo; and Matsuda, Keiji, 4,493,831, Cl. 424-180.000.
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,493,833, Cl. 424-246.000.
Takaya, Takao; Inoue, Yoshikazu; Yasuda, Nobuyoshi; and Murata, Masayoshi, 4,493,834, Cl. 424-246.000.
Teraji, Tsutomu; Todo, Eishiro; Shimazaki, Norihiko; Oku, Teruo; and Namiki, Takayuki, 4,493,832, Cl. 424-199.000.

Fujita, Kazunori: *See*—
Horiba, Tatsuo; Iwamoto, Kazuo; Kawana, Hidejiro; Fujita, Kazunori; and Tamura, Kohki, 4,493,878, Cl. 429-12.000.

Fujita, Shinsaku; Maekawa, Yukio; and Ono, Shigetoshi, to Fuji Photo Film Co., Ltd. Photographic material with metal complexed dyes. 4,493,885, Cl. 430-223.000.

Fujitsu Fanuc Limited: *See*—
Imazeki, Ryoji; and Kusumi, Katsuaki, 4,494,206, Cl. 364-474.000.

Fujitsu Limited: *See*—
Honda, Norio, 4,493,145, Cl. 29-840.000.
Koike, Takashi; and Sugiura, Hajime, 4,494,215, Cl. 364-900.000.

Fujiwara, Koichi; Sakai, Tomohiko; Yamada, Yoneo; and Higashine, Kazutaka, to Nippon Steel Corporation. Process for producing a grain-oriented electromagnetic steel sheet or strip having a low watt loss and a grain-oriented electromagnetic steel strip having uniform magnetic properties. 4,493,739, Cl. 148-111.000.

Fukaya, Hirokazu; and Niki, Haruo, to Nippon Electric Co., Ltd. Amplifier system switchable between two amplifying operations. 4,494,077, Cl. 330-295.000.

Fukushima, Isao: *See*—
Nishijima, Hideo; Sera, Katsumi; Fukushima, Isao; and Kobori, Yasunori, 4,494,056, Cl. 318-269.000.

Fukushima, Toshiki: *See*—
Seki, Eiji; Tai, Ichiro; Shirayama, Shimpey; Itoh, Toshiaki; Endo, Yorimasa; and Fukushima, Toshiki, 4,493,811, Cl. 376-254.000.

Fukutome, Satoru; Hatanaka, Hideo; and Saito, Motoyuki, to Citizen Watch Co., Ltd. Acoustic alarm device for watches. 4,493,560, Cl. 368-88.000.

Fuller, Charles C.; and Hendrickson, James L., to Safe-Base, Inc. Ball base construction and anchor. 4,493,486, Cl. 273-25.000.

Funaki, Yuji: *See*—
Furuzawa, Kunihiko; Funaki, Yuji; Hisada, Yoshio; and Izumi, Kazuo, 4,493,842, Cl. 424-273.00R.

Funakoshi, Tadayoshi; and Takeda, Kazuo, to Hitachi, Ltd. Horizontally split casing of turbo machine. 4,493,611, Cl. 415-199.100.

Funderburk, F. Gene; Culbertson, E. C.; and Posey, Robert G., to American Hoechst Corporation. Polyester film coated with metal adhesion promoting copolyester. 4,493,872, Cl. 428-332.000.

Furukawa, Noboru, to Ricoh Company, Ltd. Facsimile communication data recording apparatus for facsimile transceiver. 4,494,149, Cl. 358-257.000.

Furutaka, Yasuhisa; and Ishii, Sadamu, to Daikin Kogyo Co., Ltd. Process for preparing trifluoromethylbenzene derivatives. 4,493,800, Cl. 260-465.00D.

Furuzawa, Kunihiko; Funaki, Yuji; Hisada, Yoshio; and Izumi, Kazuo, to Sumitomo Chemical Company, Limited. Fungicidal N-(phenyl-lower alkanoyl-)-imidazole derivatives, composition, and method of use. 4,493,842, Cl. 424-273.00R.

Fuzzell, Joe E., to Caterpillar Tractor Co. Latching solenoid. 4,494,096, Cl. 335-170.000.

G. O. Stumpf GmbH & Co. Kommanditgesellschaft: *See*—
Buss, Albert, 4,493,460, Cl. 242-58.600.

GA Technologies Inc.: *See*—
Simnad, Massoud T., 4,493,809, Cl. 376-171.000.

Gabanou, Roland: *See*—
Reymond, Jean-Claude; Bertrand, Gilles; and Gabanou, Roland, 4,494,201, Cl. 364-449.000.

Gadzhiev, Yashar A. O.: *See*—
Abdullaev, Gasan M. B. O.; Maxudov, Faramaz G. O.; Kasimov, Dzhangir A. K. O.; Mamedov, Bakhtiyar M. R. O.; Aliev, Gabil G.; Gadzhiev, Yashar A. O.; Shakhmamedov, Rovshan I. O.; and Iljushin, Alexei A., 4,493,140, Cl. 29-446.000.

Gagnebin, Gaston, to Omega SA. Water tight watch-case. 4,493,562, Cl. 368-294.000.

Gaillard, Roger: *See*—
Lacour, Bernard; Euvrard, Hubert; Gaillard, Roger; and Boinot, Jean C., 4,493,646, Cl. 433-133.000.

Galahad, Giles, to Chaldar, Inc. Neck-strain alleviator for bicyclists. 4,493,225, Cl. 74-551.300.

Galentan, A.G.: *See*—
Piepers, Harry C., 4,493,757, Cl. 204-206.000.

Gallois, Philippe; and Christidis, Yani, to Societe Francaise Hoechst. 2-Dimethylamino-2-parahydroxyphenyl sodium acetate, preparation process and application thereof to production of parahydroxybenzyl cyanide. 4,493,937, Cl. 562-444.000.

Gamroth, Arthur P. Heating unit. 4,493,270, Cl. 110-188.000.

Ganek, Jerome S.; and Ganek, Lee G., to Ciracco Metal Fabricating Co., Inc. Snap-fit sheet metal cover for portable oil-filled radiators and method of manufacture. 4,493,974, Cl. 219-341.000.

Ganek, Lee G.: *See*—
Ganek, Jerome S.; and Ganek, Lee G., 4,493,974, Cl. 219-341.000.

Ganter, Robert; Whitmoyer, Robert; and Rye, Palle, to Thermics Corporation Liquidating Trust. Fossil fuel catalyst generator. 4,493,637, Cl. 431-190.000.

Garay, Oscar M., to Motorola, Inc. Two element low profile antenna. 4,494,120, Cl. 343-702.000.

Garay, Oscar M.; and Balzano, Quirino, to Motorola, Inc. Antenna apparatus capable of resonating at two different frequencies. 4,494,122, Cl. 343-722.000.

Garcia, Carlos M.; Reed, I. Ely; and McLeod, Dale K. Pipe cutter with split ring frame and enclosed feeding means. 4,493,150, Cl. 30-97.000.

Gardinier, Inc.: *See*—
Clausen, Herbert J., 4,493,820, Cl. 423-310.000.

Gardner, Phillip J.: *See*—
Guch, Steve, Jr.; Gardner, Phillip J.; Braverman, Leonard W.; and Jones, Robert W., 4,494,235, Cl. 372-23.000.

Garrett Corporation, The: *See*—
Bailey, David A., 4,494,051, Cl. 318-254.000.

Gast, Theodor; Binder, Kurt; and Honig, Gunter, to Robert Bosch GmbH. Vibrator damping flow meter. 4,493,215, Cl. 73-861.180.

Gaston, Everett E., to Gaston Manufacturing, Inc. Wind machine. 4,494,007, Cl. 290-44.000.

Gaston Manufacturing, Inc.: *See*—
Gaston, Everett E., 4,494,007, Cl. 290-44.000.

Gates, F. Alan: *See*—
Williams, Claude E.; and Gates, F. Alan, 4,493,603, Cl. 414-541.000.

Gates Rubber Company, The: *See*—
Stieg, Richard F.; Dolan, John P.; Worley, W. Spencer; and Juergens, Tristan, 4,493,221, Cl. 474-14.000.

Gauchet, Yves M. A.; and Paillaud, Pierre G., to Nodet-Gougis. Planting assembly. 4,493,273, Cl. 111-86.000.

Gausepohl, Hermann: *See*—
Echte, Adolf; and Gausepohl, Hermann, 4,493,922, Cl. 525-71.000.

Gauthier, Francis; and Gombert, Jean, to Thomson-CSF. Process for producing doped vitreous silica for preparing a preform for an optical fibre. 4,493,720, Cl. 65-3.120.

Gawad, Mahmoud A.; and Graudins, John, to GTE Products Corporation. Recessed lighting fixture with improved louver mounting. 4,494,175, Cl. 362-150.000.

Geberit A.G.: *See*—
Keller, Hans, 4,493,985, Cl. 219-535.000.

Gebruder Zehnder A.G.: *See*—
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Gee, Howard J.: *See*—
Tighe, Brian J.; and Gee, Howard J., 4,493,910, Cl. 523-108.000.

Geller, David A., to Wico Corporation. Adapter circuit for trackball device. 4,493,992, Cl. 250-221.000.

General American Transportation Corporation: *See*—
Augustine, Paul C., Jr., 4,493,266, Cl. 105-255.000.

General Dynamics, Pomona Division: *See*—
Yueh, William R., 4,494,202, Cl. 364-462.000.

General Electric Company: *See*—
Altekruse, Richard A., 4,494,141, Cl. 358-111.000.
Bitting, Ricky F.; Peil, William; and Brown, Thomas A., 4,494,055, Cl. 318-254.000.
Brackman, William D., Jr., 4,494,182, Cl. 363-63.000.
Carter, Daniel L.; and Hall, Homer H., 4,493,986, Cl. 219-85.00D.
Chang, Hsiao-Nan L.; and Cline, John A., 4,494,207, Cl. 364-494.000.
Chang, Hsiao-Nan L., 4,494,208, Cl. 364-494.000.
Davenport, John M., 4,494,045, Cl. 315-247.000.
Dudgeon, Charles D.; and Winstead, Maynard R., 4,493,912, Cl. 523-137.000.
Keane, John J.; and Pauze, Denis R., 4,493,873, Cl. 428-372.000.
Lohmeijer, Johannes H. G. M., 4,493,915, Cl. 524-87.000.
Otto, Charles W., 4,494,027, Cl. 310-89.000.
Paul, Duane B., 4,493,608, Cl. 415-11.000.
Payne, Thomas R.; and Schneider, David A., 4,493,980, Cl. 219-450.000.
Payne, Thomas R., 4,493,981, Cl. 219-450.000.
Sands, Robert W.; Marella, Joseph P.; and Fink, Thomas F., Jr., 4,494,176, Cl. 362-297.000.
Suster, Mary E., 4,493,639, Cl. 431-359.000.
Wildi, Eric J.; and Adler, Michael S., 4,494,134, Cl. 357-43.000.
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Wilson, Arthur C., 4,493,976, Cl. 219-398.000.
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Weirich, Walter, 4,493,340, Cl. 137-594.000.
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Gibbs, Richard D.; and Johnson, Roger C., to Westinghouse Electric Corp. Vapor cooled electrical inductive apparatus. 4,493,138, Cl. 29-33.00Q.
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Goffe, Randal A., to Monsanto Company. Modular spinnerette assembly. 4,493,629, Cl. 425-192.00S.
Golda, Horst: *See*—
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Green, Richard. Trash and garbage compactor. 4,493,251, Cl. 100-53.000.
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Greer, Michael T., to Wang Laboratories, Inc. Controller for peripheral data storage units. 4,494,196, Cl. 364-200.000.
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Gretchev, Vladimir, to Delphax Systems. Electrostatic printing apparatus. 4,494,129, Cl. 346-154.000.
Griffin, Alan L., to Deutsch Company Electronic Components Division, The. Filter pin electrical connector. 4,494,092, Cl. 333-182.000.
Griffin, James G.: *See*—
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Klayman, Daniel L.; Scovill, John P.; Bartosevich, Joseph F.; Mason, Carl J.; and Griffin, T. Scott, 4,493,930, Cl. 544-360.000.
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Groff, James W. Radio-controlled teaching device. 4,493,655, Cl. 434-351.000.
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Groth, Edward J., Jr., to Motorola, Inc. Multiple channel data link system. 4,494,238, Cl. 375-1.000.
Groutage, Frederick D.; Conjerti, Samuel N.; and Shaw, Lockburn S., to United States of America, Navy. Pivotal mono wing cruise missile with wing deployment and fastener mechanism. 4,493,136, Cl. 24-573.000.
Grover, Donald D., to Snap-on Tools Corporation. Dual engine probe. 4,493,208, Cl. 73-117.300.
Gruber, Robert J.; Agostine, Doretta; Julien, Paul C.; and Yourd, Raymond A., III, to Xerox Corporation. Electrophotographic toner compositions containing novel imide charge control additives. 4,493,883, Cl. 430-110.000.
Grun, Larry: *See*—
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Grunsky, Manfred; Susmuth, Reiner; Dehn, Dieter; and Ischen, Gunter, to Stellram S.A. Rotary material removing tool. 4,493,596, Cl. 408-233.000.
Gsell, Thomas C.: *See*—
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GTE Communications Systems Corporation: *See*—
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GTE Government Systems Corporation: *See*—
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Budinger, A. Bowman; Byszewski, Wojciech W.; and Proud, Joseph M., 4,494,046, Cl. 315-260.000.
GTE Products Corporation: *See*—
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Gum, Peter H.: *See*—
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Gunderson, Robert O.; Kocol, James C.; and Schuck, David B., to NCR Corporation. Data processing system employing broadcast packet switching. 4,494,185, Cl. 364-200.000.
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Gunther, Klaus; Hornung, Friedrich; Paule, Kurt; and Schadlich, Fritz, to Robert Bosch GmbH. Electronic two-hand safety system for power tools. 4,493,377, Cl. 173-170.000.
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Collins, Robert A.; and Lewis, Timothy A., 4,493,382, Cl. 175-206.000.
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Haag, Donald L.: *See*—
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Haas, Peter; and Hettel, Hans, to Bayer Aktiengesellschaft. Poly-N,N-hydroxyalkylamides of polybasic carboxylic acids and a process for the production thereof. 4,493,909, Cl. 521-166.000.
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Hageniers, Omer L.: *See*—
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Hager, Adolph G.; Freeman, Gerald L.; Rush, James P.; Branovich, Louis E.; and DuBuske, Stanley, to United States of America, Army. Method of detecting gamma radiation by placing glass doped with iron in an environment subject to gamma radiation and then measuring any color changed in the doped glass as a function of gamma radiation. 4,494,003, Cl. 250-474.100.
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Hall, Lawrence A.; Lightner, Linn S.; Long, William B.; Shannon, Suel G.; and Stahl, Daniel E., to AMP Incorporated. Electrical plug connector and receptacle therefor. 4,493,525, Cl. 339-143.00R.
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Hamilton, Lawrence E.; and Rutili, Renzo N., to Stewart-Warner Corporation. Illuminated membrane switch. 4,493,958, Cl. 200-314.000.
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Haneda, Hideo; and Yamanaka, Minoru, to Aisin Seiki Kabushiki Kaisha. Solenoid device. 4,494,098, Cl. 335-230.000.
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Hanke, Hans: *See*—
Paul, Jurgen; Braatz, Andreas; and Hanke, Hans, 4,493,293, Cl. 123-41.120.
Hansen, Kenneth P., to United Technologies Corporation. Fuel control. 4,493,187, Cl. 60-39.281.
Hanson, Harold W., Jr., to Par-Way Manufacturing Co. Variable rate food ingredient delivery apparatus. 4,493,442, Cl. 222-241.000.
Hanson, Jay L., to Thermo King Corporation. Transport refrigeration system with control for top freezing avoidance. 4,493,191, Cl. 62-126.000.
Hanson, Lester A., to Blu-Surf, Inc. Solvent reducing oven. 4,493,640, Cl. 432-72.000.
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Harkness, John C., to Sperry Corporation. Direct current inrush limiting circuit. 4,494,064, Cl. 323-277.000.
Harrell, John C. Bucket conveyor assembly. 4,493,413, Cl. 198-708.000.
Harri, Kurt, to Gebruder Zehnder A.G. Circuit assembly for charging an accumulation battery with pulsating direct current. 4,494,062, Cl. 320-40.000.
Harris, Craig W.; Jevons, Lyle O., Jr.; and Loskorn, Richard A., to Burroughs Corporation. Line support processor for data transfer system. 4,494,194, Cl. 364-200.000.
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Harrison, James S. Preservative and fixative preparations for biological systems. 4,493,821, Cl. 424-3.000.
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D'Alessio, Michael S., 4,493,578, Cl. 403-49.000.
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Hartlaub, Jerome T.; and Beckmann, Paul J., to Medtronic, Inc. Tachyarrhythmia pacer. 4,493,325, Cl. 128-419.0PG.
Hartley, E. Dale, to Product Research And Development. Liquid dispensing system and automatic selector therefor. 4,493,435, Cl. 222-52.000.
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Hasegawa, Shumpei, to Honda Motor Co., Ltd. Method of controlling the fuel supply to an internal combustion engine at deceleration. 4,493,300, Cl. 123-325.000.
Hashimoto, Eiichi: *See*—
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Hashimoto, Masanori; and Ogawa, Shunichi, to Ricoh Company, Ltd. Printing apparatus. 4,493,573, Cl. 400-647.100.

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Hatanaka, Hideo: *See*—
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Takei, Toshihiro; Matsui, Kazuma; Hattori, Yoshiyuki; Watanabe, Kiyohiko; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,493,620, Cl. 417-366.000.

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Hayes, Frank, III: *See*—
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Haynes, Eugene M., to Owens-Corning Fiberglas Corporation. Repair of double shell heat exchangers. 4,493,367, Cl. 165-72.000.

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Heiman, Frederic P., to Mars, Inc. Self tuning low frequency phase shift coin examination method and apparatus. 4,493,411, Cl. 194-100.00A.

Heine, Otto R., to R&H Technology, Inc. Gearless speed and torque converter. 4,493,222, Cl. 74-216.300.

Heise, Richard L.: *See*—
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Helava, Heikki I.: *See*—
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Fuller, Charles C.; and Hendrickson, James L., 4,493,486, Cl. 273-25.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Moller, Hinrich; Wallat, Siegfried; Bartnik, Friedhelm; and Pittermann, Wolfgang, 4,493,823, Cl. 424-70.000.

Henry, John W., IV, to United States of America, Navy. Mechanism for proportionately loading dual thrust bearing assemblies against axial thrust loads. 4,493,514, Cl. 384-613.000.

Hensley, Albert L., Jr.; and Quick, Leonard M., to Standard Oil Company (Indiana). Catalytic hydroliquefaction using a Cr-Mo-Group VIII catalyst. 4,493,761, Cl. 208-10.000.

Henze, Siegfried: *See*—
Ziegler, Hans; Henze, Siegfried; Dippert, Rainer; Schnaus, Martin; and Golda, Horst, 4,493,234, Cl. 83-175.000.

Hepler, Edward L.: *See*—
Brahm, David J.; Grinn, James M.; Hepler, Edward L.; and Sullivan, John M., 4,494,193, Cl. 364-200.000.

Hermann, Axel: *See*—
Hermann, Bruno, deceased; and Hermann, Axel, 4,493,356, Cl. 160-133.000.

Hermann, Bruno, deceased (by Hermann, Eleonore, heir); and Hermann, Axel, to Hermann Haus GmbH. Roller shutter installation and safety apparatus. 4,493,356, Cl. 160-133.000.

Hermann, Eleonore, heir: *See*—
Hermann, Bruno, deceased; and Hermann, Axel, 4,493,356, Cl. 160-133.000.

Hermann, Ferdinand: *See*—
Bader, Leonhard; Hermann, Ferdinand; Ruprich, Wilhelm; and Winter, Hermann, 4,493,137, Cl. 29-25.350.

Hermann Haus GmbH: *See*—
Hermann, Bruno, deceased; and Hermann, Axel, 4,493,356, Cl. 160-133.000.

Hershkowitz, Frank: *See*—
Rhodes, Richard P.; and Hershkowitz, Frank, 4,493,763, Cl. 208-11.00R.

Hesston Corporation: *See*—
Hill, Amos G.; and Wiens, Arlen J., 4,493,601, Cl. 414-491.000.

Hettel, Hans: *See*—
Haas, Peter; and Hettel, Hans, 4,493,909, Cl. 521-166.000.

Heuberger, Anton: *See*—
Becker, Erwin; Ehrfeld, Wolfgang; Munchmeyer, Dietrich; Betz, Hans; and Heuberger, Anton, 4,493,753, Cl. 204-9.000.

Hewlett-Packard Company: *See*—
Neukermans, Armand P., 4,494,036, Cl. 313-420.000.
Vaught, John L., 4,494,128, Cl. 346-140.00R.

Heymes, Alain: *See*—
Chekroun, Isaac; and Heymes, Alain, 4,493,931, Cl. 546-329.000.

Hibino, Yozo; Kamejima, Kohji; and Nara, Yasuaki, to Hitachi, Ltd. Operation device for absorption cold and warm water system utilizing solar heat. 4,493,192, Cl. 62-141.000.

Hickerson, Richard A.: *See*—
Thompson, Lionel D.; Jenkins, Harold E.; Hickerson, Richard A.; and Weaver, Russell E., 4,493,303, Cl. 123-357.000.

Hidebran, Dean C.: *See*—
Hildebrand, Clifford F., 4,493,658, Cl. 440-30.000.

Higashine, Kazutaka: *See*—
Fujiwara, Koichi; Sakai, Tomohiko; Yamada, Yoneo; and Higashine, Kazutaka, 4,493,739, Cl. 148-111.000.

Hildebrand, Clifford F., to Hidebran, Dean C. Paddle boat. 4,493,658, Cl. 440-30.000.

Hill, Amos G.; and Wiens, Arlen J., to Hesston Corporation. High capacity, self-unloading forage hopper. 4,493,601, Cl. 414-491.000.

Hill, Jeremy R.; and Malinouskas, Donald, to United States Surgical Corporation. Automatic blood pressure system with servo controlled inflation and deflation. 4,493,326, Cl. 128-680.000.

Hillary, Brian, to WKR Limited. Electrical socket connector. 4,493,517, Cl. 339-42.000.

Hilton, Graham H., to De La Rue Systems Limited. Detecting the condition of a sheet. 4,493,994, Cl. 250-223.00R.

Hilton, Kenneth R.: *See*—
McCreedy, Kathleen M.; and Hilton, Kenneth R., 4,493,927, Cl. 528-381.000.

Hirao, Hideo: *See*—
Takayama, Chitoshi; Hirao, Hideo; Yokouchi, Hideya; and Iida, Teruhiko, 4,494,159, Cl. 360-78.000.

Hirobe, Kazushi; Tonoki, Satoshi; and Nishigaki, Masahiko, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Flame resistant resin composition. 4,493,913, Cl. 523-205.000.

Hirtz, Jean-Pierre: *See*—
Di Forte Poisson, Marie-Antoinette; Hirtz, Jean-Pierre; Duchemin, Jean-Pascal; and de Cremoux, Baudouin, 4,494,237, Cl. 372-45.000.

Hisada, Yoshio: *See*—
Furuzawa, Kunihiko; Funaki, Yuji; Hisada, Yoshio; and Izumi, Kazuo, 4,493,842, Cl. 424-273.00R.

Hisamatsu, Minoru: *See*—
Fujie, Akira; and Hisamatsu, Minoru, 4,493,788, Cl. 252-511.000.

Hitachi Cable, Ltd.: *See*—
Kajioka, Hiroshi; Tokunaga, Toshihide; and Nakagawa, Junkichi, 4,493,530, Cl. 350-96.340.

Hitachi Chemical Company, Ltd.: *See*—
Kahara, Toshiki; Matsuda, Shimpei; Ishii, Kenzo; Takeuchi, Seizi; Imahashi, Jinichi; and Honji, Akio, 4,493,879, Cl. 429-41.000.
Suzuki, Hiroshi; Tanaka, Goro; Nishikawa, Akio; Mukai, Junji; Sato, Mikio; Makino, Daisuke; and Wakashima, Yoshiaki, 4,494,217, Cl. 365-53.000.
Ueyama, Tamotsu; and Yamada, Takao, 4,493,789, Cl. 252-514.000.

Hitachi, Ltd.: *See*—
Funakoshi, Tadayoshi; and Takeda, Kazuo, 4,493,611, Cl. 415-199.100.
Hibino, Yozo; Kamejima, Kohji; and Nara, Yasuaki, 4,493,192, Cl. 62-141.000.
Horiba, Tatsuo; Iwamoto, Kazuo; Kawana, Hidejiro; Fujita, Kazunori; and Tamura, Kohki, 4,493,878, Cl. 429-12.000.
Iino, Toshiki; Kaneko, Hiromi; Takagi, Michiyuki; and Komatsu, Kazuhiro, 4,493,610, Cl. 415-104.000.
Kahara, Toshiki; Matsuda, Shimpei; Ishii, Kenzo; Takeuchi, Seizi; Imahashi, Jinichi; and Honji, Akio, 4,493,879, Cl. 429-41.000.
Kaneko, Masaharu; Ozawa, Tetsuo; Yoneyama, Tomio; Imazeki, Shuji; Mukoh, Akio; and Sato, Mikio, 4,493,532, Cl. 350-349.000.

Nakane, Keiichi; Kamiuchi, Toshiro; and Nakanishi, Hiroaki, 4,494,188, Cl. 364-200.000.
Nishijima, Hideo; Sera, Katsumi; Fukushima, Isao; and Kobori, Yasunori, 4,494,056, Cl. 318-269.000.
Noguchi, Kouki; Tsunehiro, Takashi; and Nakamura, Hideo, 4,494,195, Cl. 364-200.000.
Shibata, Atsushi; and Ueno, Yukichi, 4,494,005, Cl. 250-492.200.
Shii, Kazuo; Kobayashi, Hiroyuki; Kubozoe, Morioki; and Isakozawa, Shigeto, 4,494,000, Cl. 250-311.000.
Shima, Yoshihiro; Kashioka, Seiji; Uno, Takeshi; and Suzuki, Kunio, 4,494,139, Cl. 358-101.000.
Suzuki, Hiroshi; Tanaka, Goro; Nishikawa, Akio; Mukai, Junji; Sato, Mikio; Makino, Daisuke; and Wakashima, Yoshiaki, 4,494,217, Cl. 365-53.000.
Suzuki, Ryo; Ikeda, Tadashi; Takeshita, Masatoshi; and Kodama, Naoki, 4,494,216, Cl. 365-36.000.
Yamaoka, Hiromasa; Iwasa, Yuzaburo; and Matunaga, Kazuhisa, 4,494,113, Cl. 340-825.500.
Yamauchi, Koji, 4,493,984, Cl. 219-501.000.

Hitachi Microcomputer Engineering, Ltd.: *See*—
Nishijima, Hideo; Sera, Katsumi; Fukushima, Isao; and Kobori, Yasunori, 4,494,056, Cl. 318-269.000.

Hittenberger, William H.: *See*—
Bryson, John W.; and Hittenberger, William H., 4,493,682, Cl. 493-174.000.

Hiyama, Torao: *See*—
Noji, Tasuku; and Hiyama, Torao, 4,494,095, Cl. 334-85.000.

Hobbs, John R., to Rolls-Royce Limited. Gas turbine engine air intake. 4,493,185, Cl. 60-39.092.

Hobson Limited: *See*—
Stewart, David E.; and Nicholson, George R., 4,493,229, Cl. 76-107.00A.

Hoechst Aktiengesellschaft: *See*—
Cherdron, Harald; Gordon, Wolfgang; and Kloos, Friedrich, 4,493,751, Cl. 162-157.200.
Horlein, Gerhard; Schonowsky, Hubert; Bieringer, Hermann; and Langeluddeke, Peter, 4,493,731, Cl. 71-118.000.
Idstein, Hermann, 4,493,123, Cl. 15-4.000.
Kleiner, Hans-Jerg; and Dursch, Walter, 4,493,803, Cl. 260-968.000.

Hoffman, Louis S.: *See*—
Bohmer, William; Betancourt, Walter J.; and Hoffman, Louis S., 4,493,531, Cl. 350-336.000.

Hoffmann, Frank F., to Florkey's Conveyor Service, Inc. Wear compensating link pin. 4,493,680, Cl. 474-230.000.

Hoffmann-La Roche Inc.: *See*—
Derungs, Romano, 4,493,841, Cl. 424-273.00R.
Petrzilka, Martin; Pracht, Inge; and Ruf, Urs, 4,493,533, Cl. 350-418.000.

Hogan, John P., to Phillips Petroleum Company. Removal of carbon dioxide from olefin containing streams. 4,493,715, Cl. 55-68.000.

Holmes, Edward S. B., to Northern Telecom Limited. Thermal Fuse. 4,494,104, Cl. 337-403.000.

Holobaugh, Raymond E., to Mohasco Corporation. Height adjustment control arrangement. 4,493,469, Cl. 248-406.100.

Holoubek, Andrew J.: *See*—
Sedam, Jason K.; Mueller, Richard J.; and Holoubek, Andrew J., 4,493,441, Cl. 222-129.100.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Hattori, Torao, 4,493,402, Cl. 192-326.000.
Nakajima, Tetsuo; and Kumata, Hirotaka, 4,493,304, Cl. 123-479.000.
Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; Sugimura, Masao; and Takahashi, Fumitaka, 4,494,116, Cl. 340-995.000.
Yuzui, Katsutoshi, 4,493,450, Cl. 228-49.00R.

Honda Motor Co., Ltd.: *See*—
Hasegawa, Shumpei, 4,493,300, Cl. 123-325.000.
Ikenoya, Yasuo, 4,493,677, Cl. 474-93.000.

Honda, Norio, to Fujitsu Limited. Integrated circuit device having easily cleaned region between mother board and chip carriers mounted thereon. 4,493,145, Cl. 29-840.000.

Honeywell Inc.: *See*—
Bayer, Stephen J.; and Olsen, Arthur M., 4,494,183, Cl. 364-154.000.
Reynolds, George O., 4,493,555, Cl. 356-358.000.

Honeywell Information Systems Inc.: *See*—
Goss, Gary J.; Kelly, Richard P.; and Murray, Thomas L., Jr., 4,494,186, Cl. 364-200.000.
Kaplan, Jay; and Marchant, Ray, 4,493,524, Cl. 339-125.00R.
Peters, Arthur, 4,494,190, Cl. 364-200.000.

Honig, Gunter: *See*—
Gast, Theodor; Binder, Kurt; and Honig, Gunter, 4,493,215, Cl. 73-861.180.

Honji, Akio: *See*—
Kahara, Toshiki; Matsuda, Shimpei; Ishii, Kenzo; Takeuchi, Seizi; Imahashi, Jinichi; and Honji, Akio, 4,493,879, Cl. 429-41.000.

Hori, Yoshimi; Ishida, Takashi; and Hayashi, Keizo, to Toyoda Gosei Co., Ltd. Spacer in metal-mold vulcanizer for rubber hose. 4,493,632, Cl. 425-393.000.

Horiba, Ltd.: *See*—
Yagi, Taizo, 4,494,089, Cl. 332-14.000.

Horiba, Tatsuo; Iwamoto, Kazuo; Kawana, Hidejiro; Fujita, Kazunori; and Tamura, Kohki, to Hitachi, Ltd. Fuel element for liquid fuel cell and a liquid fuel cell. 4,493,878, Cl. 429-12.000.

Horibe, Osamu, to Nissan Motor Company, Limited. Vacuum suspended type servo device. 4,493,243, Cl. 91-369.00B.

Horlein, Gerhard; Schonowsky, Hubert; Bieringer, Hermann; and Langeluddeke, Peter, to Hoechst Aktiengesellschaft. Herbicidal agents. 4,493,731, Cl. 71-118.000.

Horn, Friedrich: *See*—
Buchschmid, Emil; Horn, Friedrich; Nieberl, Bruno; Schmidt, Hans-Jorg; and Weyerich, Manfred, 4,494,101, Cl. 336-210.000.

Hornacek, Kenneth J.: *See*—
Kirsch, Jerry; Kirsch, Kerry F.; and Hornacek, Kenneth J., 4,493,245, Cl. 92-2.000.

Hornung, Friedrich: *See*—
Gunther, Klaus; Hornung, Friedrich; Paule, Kurt; and Schadlich, Fritz, 4,493,377, Cl. 173-170.000.

Horvath, Ibolya: *See*—
Toth, Istvan; Nagy, Jozsef; Dombay, Zsolt; Grega nee Toth, Erzsebet; Horvath, Ibolya; Vigh, Laszlo ; and Farkas, Tibor, 4,493,727, Cl. 71-088.000.

Hosel, Fritz, to Trutzschler GmbH & Co. KG. Carding machine or roller card. 4,494,204, Cl. 364-470.000.

Hoshino, Michio; and Someya, Riyouichi, to Mabuchi Motor Co., Ltd. Brushgear. 4,494,029, Cl. 310-239.000.

Hosiden Electronics Co., Ltd.: *See*—
Masuda, Toru, 4,493,526, Cl. 339-183.000.

Hotchkiss-Brandt-Sogeme-H.B.S.: *See*—
Eyer, Jean, 4,493,484, Cl. 271-220.000.

Hotta, Toshihiro, to Kabushiki Kaisha Morita Seisakusho. Speed control system for small medical motors. 4,494,057, Cl. 318-317.000.

Houchens, Albert F.; Cleveland, Dixon; Decina, Basil A., Jr.; Watney, Dale K.; Havens, James R.; and Nagel, Gregory L., to General Motors Corporation. Method and apparatus for predicting and controlling the quality of a resistance spot weld. 4,493,965, Cl. 219-109.000.

House, V. Dean, to Spectra-Symbol Corporation. Touch-controlled circuit apparatus for voltage selection. 4,494,105, Cl. 338-114.000.

Howaldtswerke-Deutsche Werft Aktiengesellschaft Hamburg und Kiel: *See*—
Knigge, Rolf; and Albien, Wolfgang, 4,493,857, Cl. 427-96.000.

Howard, Derik: *See*—
Smith, Guy L. B.; Howard, Derik; and Goedhals, Anton B., 4,494,106, Cl. 340-58.000.

Howlett, James J.; and Zagranski, Raymond D., to Chandler Evans Inc. Helicopter engine torque compensator. 4,493,465, Cl. 244-17.130.

Huang, Vincent M.: *See*—
Macriss, Robert A.; Wurm, Jaroslav; and Huang, Vincent M., 4,493,364, Cl. 165-1.000.

Hubbert, Gordon F., to Gladd Industries, Inc. Bake oven with manifold. 4,493,641, Cl. 432-120.000.

Hudson, Dannie B. Compensating valve system for controlling adjustable emulsifying orifice. 4,493,558, Cl. 366-341.000.

Hudson Engineering Company: *See*—
Napolitano, Pellegrino E., 4,493,607, Cl. 415-11.000.

Hughes Aircraft Company: *See*—
Doty, John S., 4,493,529, Cl. 350-96.200.
Graves, Ross E., 4,494,118, Cl. 343-424.000.
Sutter, Leroy V., Jr., 4,494,236, Cl. 372-25.000.

Hughes, Enoch A. Apparatus to open and close a meter ring. 4,493,230, Cl. 81-3.00R.

Hughes, Richard S., to United States of America, Navy. Pin diode linear attenuator controlled by a companding DAC. 4,494,084, Cl. 333-81.00R.

Hunsinger, Werner: *See*—
Echtler, Theodor; Quinot, Martin; and Hunsinger, Werner, 4,493,122, Cl. 14-2.400.

Hunter Douglas Inc.: *See*—
Anderson, Richard N., 4,493,357, Cl. 160-174.000.

Huret, Alain P. B., legal representative: *See*—
Huret, Roger, deceased; Huret, Alain P. B., legal representative; and Huret, Gerard, legal representative, 4,493,489, Cl. 280-238.000.

Huret et ses Fils: *See*—
Huret, Roger, deceased; Huret, Alain P. B., legal representative; and Huret, Gerard, legal representative, 4,493,489, Cl. 280-238.000.

Huret, Gerard, legal representative: *See*—
Huret, Roger, deceased; Huret, Alain P. B., legal representative; and Huret, Gerard, legal representative, 4,493,489, Cl. 280-238.000.

Huret, Roger, deceased; by Huret, Alain P. B., legal representative; and by Huret, Gerard, legal representative, to Huret et ses Fils. Device for fixing a derailleur on a frame lug. 4,493,489, Cl. 280-238.000.

Hurley, James R.; Searight, Edward F.; and Nunes, Maurice, to Thermo Electron Corporation. Radiant/conductive broiler. 4,493,308, Cl. 126-41.00R.

Huskvarna Transtortkonstruktionar A.B.: *See*—
Nilsson, Weimar, 4,493,133, Cl. 24-68.00T.

Husted, Royce H., to Shiber, Samuel. Expandible sprocket. 4,493,678, Cl. 474-164.000.

Hutcheson, Don S., to United States of America, Navy. Fuel air explosive device. 4,493,262, Cl. 102-363.000.

Hutchins, Nancy K., executrix: *See*—
Hampson, Alfred A.; Hutchins, Thomas B., deceased; and Hutchins, Nancy K., executrix, 4,493,989, Cl. 235-464.000.

Hutchins, Thomas B., deceased: *See*—
Hampson, Alfred A.; Hutchins, Thomas B., deceased; and Hutchins, Nancy K., executrix, 4,493,989, Cl. 235-464.000.

Hwang, James C., to AT&T Bell Laboratories. III-V Based semiconductor devices and a process for fabrication. 4,493,142, Cl. 29-575.000.

Hyllberg, Bruce E.; and Branda, George B., to American Roller Company. Voltage applicator for limiting charge distribution in ESA printing equipment. 4,493,256, Cl. 101-216.000.

IBEK Ingenieurbuero Echtler Kaiserslautern GmbH: *See*—
Echtler, Theodor; Quinot, Martin; and Hunsinger, Werner, 4,493,122, Cl. 14-2.400.
Echtler, Theodor, 4,493,284, Cl. 114-267.000.

Ichimura, Etsuo, to Kanto Seiki Co., Limited. Odometer using an electric motor disposed within annular figure wheels. 4,493,988, Cl. 235-96.000.

ICI Americas, Inc.: *See*—
Yellin, Tobias O.; and Gilman, David J., 4,493,840, Cl. 424-269.000.

ICM S.p.A. Italiana Costruzioni Metalmeccaniche: *See*—
Bucefari, Massimo; and Scortecci, Giuseppe, 4,493,183, Cl. 59-16.000.

IDN Inventions and Development of Novelties AG: *See*—
Ackeret, Peter, 4,493,417, Cl. 206-387.000.

Ido, Tadashi: *See*—
Kubo, Osamu; Ido, Tadashi; Nomura, Tutomu; and Maeda, Tatsumi, 4,493,874, Cl. 428-403.000.

Idstein, Hermann, to Hoechst Aktiengesellschaft. Pressure-contact and lift-off arrangement. 4,493,123, Cl. 15-4.000.

Igarashi, Yoshimasa: *See*—
Ai, Minoru; Manabe, Akira; Igarashi, Yoshimasa; and Mizuno, Katsuya, 4,493,644, Cl. 433-75.000.

Igarasi, Seizi: *See*—
Miyashiro, Yutaka; Ogawa, Masao; Yamazaki, Yoshio; and Igarasi, Seizi, 4,493,894, Cl. 435-178.000.

Iida, Teruhiko: *See*—
Takayama, Chitoshi; Hirao, Hidec; Yokouchi, Hideya; and Iida, Teruhiko, 4,494,159, Cl. 360-78.000.

Iino, Toshiki; Kaneko, Hiromi; Takagi, Michiyuki; and Komatsu, Kazuhiro, to Hitachi, Ltd. Axial thrust balancing system. 4,493,610, Cl. 415-104.000.

Iio, Masahiro, to Diesel Kiki Co., Ltd. Lubricating oil-separating device in a refrigerant compressor for air conditioning systems. 4,493,624, Cl. 418-98.000.

Ikeda, Masaki: *See*—
Nishino, Atsushi; Ikeda, Masaki; Kimura, Kunio; and Oyabu, Hajime, 4,493,900, Cl. 501-26.000.

Ikeda, Tadashi: *See*—
Suzuki, Ryo; Ikeda, Tadashi; Takeshita, Masatoshi; and Kodama, Naoki, 4,494,216, Cl. 365-36.000.

Ikekame, Hiroo; and Karasawa, Yasuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Three-dimensional insulating structure for high voltage components. 4,494,173, Cl. 361-429.000.

Ikenoya, Yasuo, to Honda Motor Co., Ltd. Belt transmission having circulated air cooling function. 4,493,677, Cl. 474-93.000.

Iljushin, Alexei A.: *See*—
Abdullaev, Gasan M. B. O.; Maxudov, Faramaz G. O.; Kasimov, Dzhangir A. K. O.; Mamedov, Bakhtiyar M. R. O.; Aliev, Gabil G.; Gadzhiev, Yashar A. O.; Shakhmamedov, Rovshan I. O.; and Iljushin, Alexei A., 4,493,140, Cl. 29-446.000.

Illinois Tool Works, Inc.: *See*—
Borja, Jesus, 4,493,467, Cl. 248-56.000.
Ruehl, William E., 4,493,580, Cl. 403-252.000.
Sharp, Larry L.; and Klosinski, Mark, 4,493,219, Cl. 73-862.050.

Imahashi, Jinichi: *See*—
Kahara, Toshiki; Matsuda, Shimpei; Ishii, Kenzo; Takeuchi, Seizi; Imahashi, Jinichi; and Honji, Akio, 4,493,879, Cl. 429-41.000.

Imazeki, Ryoji; and Kusumi, Katsuaki, to Fujitsu Fanuc Limited. Control device for indexing a stepping rotatable member. 4,494,206, Cl. 364-474.000.

Imazeki, Shuji: *See*—
Kaneko, Masaharu; Ozawa, Tetsuo; Yoneyama, Tomio; Imazeki, Shuji; Mukoh, Akio; and Sato, Mikio, 4,493,532, Cl. 350-349.000.

IMDEC S.R.L.: *See*—
Silvestrini, Jesus A., 4,493,851, Cl. 426-482.000.

Imperial Chemical Industries PLC: *See*—
Birkett, Kevin; Scovell, Edward G.; and John, Glyn R., 4,493,876, Cl. 428-457.000.
Boulton, Thomas W.; and Derwent, Brian J., 4,493,759, Cl. 204-252.000.
Edgerley, Peter G.; and Oldland, Sidney R. D., 4,493,871, Cl. 428-308.400.
Hargreaves, Rodney B.; and McLoughlin, Bernard J., 4,493,835, Cl. 424-246.000.
Newton, David F.; and Thompson, David J., 4,493,785, Cl. 252-299.100.
Yellin, Tobias O.; and Gilman, David J., 4,493,840, Cl. 424-269.000.

Ina, Kenzo; and Hara, Teruya, to Canon Kabushiki Kaisha. Information readout apparatus. 4,494,157, Cl. 360-48.000.

Indiana Brass, Inc.: *See*—
Arnold, Don C.; and Wilcox, Thomas J., 4,493,343, Cl. 137-625.170.

Industrie Zanussi S.p.A.: *See*—
Bianchi, Giuseppe, 4,493,760, Cl. 204-278.000.

Inmos Corporation: *See*—
Hardee, Kim C.; and Sud, Rahul, 4,494,221, Cl. 365-203.000.

Inokuchi, Haruhisa; and Sakai, Takami, to Tokyo Shibaura Denki Kabushiki Kaisha. Control device for a converter. 4,494,179, Cl. 363-35.000.

Inoue, Seiji; and Harada, Norimichi, to Yamaha Hatsudoki Kabushiki Kaisha. Tilt-up angle sensing system for inboard-outboard drives. 4,493,656, Cl. 440-2.000.

Inoue, Yoshikazu: *See*—
Takaya, Takao; Inoue, Yoshikazu; Yasuda, Nobuyoshi; and Murata, Masayoshi, 4,493,834, Cl. 424-246.000.

Institute of Gas Technology: *See*—
Macrias, Robert A.; Wurm, Jaroslav; and Huang, Vincent M., 4,493,364, Cl. 165-1.000.

Inteleplex Corporation, The: *See*—
Sues, John M.; and Cupani, Carmine, 4,493,948, Cl. 179-2.00A.

Interlab, Inc.: *See*—
Layton, Howard M., 4,493,333, Cl. 134-76.000.

Intermatic Incorporated: *See*—
Coker, Charles W., 4,494,012, Cl. 307-132.00E.

International Business Machines Corporation: *See*—
Bean, George H.; and Gum, Peter H., 4,494,189, Cl. 364-200.000.
Brickman, Norman F.; and Rosenbaum, Walter S., 4,494,150, Cl. 358-260.000.
Call, Mark G., 4,494,080, Cl. 331-8.000.
Chen, Lee; Khoury, Henri A.; and Seymour, Harlan R., 4,493,745, Cl. 156-626.000.
Clemen, Rainer; and Haug, Werner, 4,494,018, Cl. 307-482.000.
Goel, Prabhakar; and McMahon, Maurice T., 4,494,066, Cl. 324-73.00R.
Kumar, Ananda H.; and Srikrishnan, Kris V., 4,493,856, Cl. 427-57.000.
Langdon, Glen G., Jr.; and Rissanen, Jorma J., 4,494,108, Cl. 340-347.0DD.
Mauer, John L., IV; Michail, Michel S.; and Woodard, Ollie C., 4,494,004, Cl. 250-492.200.
Montegari, Frank A., 4,494,017, Cl. 307-463.000.
Patel, Arvind M., 4,494,234, Cl. 371-38.000.
Sachdev, Harbans S.; and Sachdev, Krishna G., 4,493,855, Cl. 427-41.000.

International Electronic Technology Corp.: *See*—
Kaish, Norman, 4,494,114, Cl. 340-825.310.

International Flavors & Fragrances Inc.: *See*—
Klemarczyk, Philip T., 4,493,791, Cl. 252-522.00R.
Sprecker, Mark A.; Belko, Robert P.; and Greene, Roger E., 4,493,790, Cl. 252-522.00R.

International Harvester Company: *See*—
Robinson, Edward L., Jr.; and Stamp, Tom G., 4,493,274, Cl. 111-88.000.

International Packaging Systems Inc.: *See*—
O'Malley, Michael P.; and Thibault, Alfred R., 4,493,627, Cl. 425-89.000.

International Paper Company: *See*—
Callahan, Kevin M., 4,493,860, Cl. 427-230.000.

Interstate Electronics Corporation: *See*—
Walter, Carlton H.; Bohley, Peter; and Couture, Robert P., 4,494,121, Cl. 343-708.000.

Iowa State University Research Foundation: *See*—
Platt, Kenneth B.; and Reed, David E., 4,493,825, Cl. 424-88.000.

Ippen, Jakob; and Stuttgen, Friedel, to Bayer Aktiengesellschaft. Vehicle tire. 4,493,355, Cl. 152-329.000.

Iqbal, Sikandar, to Memorex Corporation. Water-based magnetic coating composition. 4,493,778, Cl. 252-62.540.

Iquad Company Incorporated: *See*—
Potter, John T., 4,493,571, Cl. 400-144.200.

Isakozawa, Shigeto: *See*—
Shii, Kazuo; Kobayashi, Hiroyuki; Kubozoe, Morioki; and Isakozawa, Shigeto, 4,494,000, Cl. 250-311.000.

Ischen, Gunter: *See*—
Grunsky, Manfred; Sussmuth, Reiner; Dehn, Dieter; and Ischen, Gunter, 4,493,596, Cl. 408-233.000.

Ishida, Takashi; and Shida, Masaharu, to Seiko Instruments & Electronics Ltd. Analogue alarm electronic timepiece. 4,493,559, Cl. 368-74.000.

Ishida, Takashi: *See*—
Hori, Yoshimi; Ishida, Takashi; and Hayashi, Keizo, 4,493,632, Cl. 425-393.000.

Ishida, Yasutaka: *See*—
Osawa, Hiroyuki; and Ishida, Yasutaka, 4,493,513, Cl. 384-533.000.

Ishihara Sangyo Kaisha, Ltd.: *See*—
Kimura, Fumio; and Haga, Takahiro, 4,493,730, Cl. 71-94.000.

Ishihara, Yoshihisa, to Japan Medical Supply Co. Ltd. Tubage used for intubation. 4,493,707, Cl. 604-164.000.

Ishii, Kenzo: *See*—
Kahara, Toshiki; Matsuda, Shimpei; Ishii, Kenzo; Takeuchi, Seizi; Imahashi, Jinichi; and Honji, Akio, 4,493,879, Cl. 429-41.000.

Ishii, Sadamu: *See*—
Furutaka, Yasuhisa; and Ishii, Sadamu, 4,493,800, Cl. 260-465.00D.

Ishikawa, Takashi: *See*—
Nishizawa, Hiroshi; Sato, Tadayuki; and Ishikawa, Takashi, 4,493,858, Cl. 427-104.000.

Ishikawa, Takatoshi: *See*—
Endo, Katsusuke; Kato, Eiichi; Ohki, Nobutaka; and Ishikawa, Takatoshi, 4,493,888, Cl. 430-405.000.

Ishima, Kazumi, to Ricoh Company, Ltd. Power supply circuit. 4,494,178, Cl. 363-21.000.

Isover Saint-Gobain: *See*—
Ruechel, Frank, 4,493,345, Cl. 138-178.000.

Istituto Farmacologico Serono of Rome: *See*—
Sicuteri, Federigo, 4,493,830, Cl. 424-177.000.

Italfarmaco S.p.A.: *See—*
Sportoletti, Giancarlo; Pagella, Piergiuseppe; and Cremonesi, Pietro, 4,493,829, Cl. 424-177.000.

Ito, Hirosato; and Takada, Daizo, to Osaka Gas Company Limited. Oxygen-enriched air ratio control device for combustion apparatus. 4,493,635, Cl. 431-90.000.

Itoh, Takaaki: *See—*
Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; Ota, Yozo; and Morino, Toshiharu, 4,493,804, Cl. 261-44.00C.

Itoh, Toshiaki: *See—*
Seki, Eiji; Tai, Ichiro; Shirayama, Shimpey; Itoh, Toshiaki; Endo, Yorimasa; and Fukushima, Toshiki, 4,493,811, Cl. 376-254.000.

Itoh, Yoshifumi, to Mitsubishi Denki Kabushiki Kaisha. Simulation unit sharing the same CPU as a programming control unit. 4,494,191, Cl. 364-200.000.

ITT Industries, Inc.: *See—*
Elmis, Herbert, 4,494,243, Cl. 377-48.000.
Freyberger, Laurin C.; and Novotny, Bernd, 4,494,137, Cl. 358-27.000.
Schopper, Bernd; and Tandler, Peter, 4,493,508, Cl. 303-6.00C.
Sterling, Henley F., 4,493,996, Cl. 250-227.000.

Iventio AG: *See—*
Kindler, Gerhard, 4,493,398, Cl. 187-29.00R.

Ivy Medical, Inc.: *See—*
King, Roger A.; and Arnold, John E., Jr., 4,493,710, Cl. 604-250.000.

Iwahashi, Shoji, to Aisen Kogyo, Ltd. Massage means. 4,493,315, Cl. 128-60.000.

Iwai, Tomio, to Yamaha Hatsudoki Kabushiki Kaisha; and Sanshin Kogyo Kabushiki Kaisha. Outboard engine. 4,493,661, Cl. 440-77.000.

Iwai, Yuzuru: *See—*
Omura, Satoshi; Tanaka, Yoshitake; Iwai, Yuzuru; Takahashi, Yoko; and Nakagawa, Akira, 4,493,845, Cl. 424-279.000.

Iwaisako, Toshiyuki: *See—*
Naito, Takeshi; Masamoto, Junzo; Iwaisako, Toshiyuki; and Matsuzaki, Kazuhiko, 4,493,752, Cl. 203-71.000.

Iwamoto, Kazuo: *See—*
Horiba, Tatsuo; Iwamoto, Kazuo; Kawana, Hidejiro; Fujita, Kazunori; and Tamura, Kohki, 4,493,878, Cl. 429-12.000.

Iwasa, Yuzaburo: *See—*
Yamaoka, Hiromasa; Iwasa, Yuzaburo; and Matunaga, Kazuhisa, 4,494,113, Cl. 340-825.500.

Iwashita, Takashi, to Yamaha Hatsudoki Kabushiki Kaisha; and Sanshin Kogyo Kabushiki Kaisha. Tilt-lock mechanism. 4,493,659, Cl. 440-61.000.

Izumi, Kazuo: *See—*
Furuzawa, Kunihiko; Funaki, Yuji; Hisada, Yoshio; and Izumi, Kazuo, 4,493,842, Cl. 424-273.00R.

Izuzo Motors, Ltd.: *See—*
Kawamura, Hideo, 4,493,298, Cl. 123-145.00A.

Izzo, Alexander P. Added feature to disposable diapers. 4,493,713, Cl. 604-385.000.

J. M. Voith GmbH: *See—*
Musselmann, Walter; Kinzler, Herbert; and Tra, Josef, 4,493,766, Cl. 209-362.000.

Jaakonmaki, Matti; and Raura, Pentti, to Rauma-Repola Oy. Wood chip shaver. 4,493,352, Cl. 144-162.00R.

Jackson, Gerald D., to Baker Oil Tools, Inc. Dynamic seal for well tools. 4,493,373, Cl. 166-321.000.

Jacobson, Jeff A. Apparatus and method for retaining pleats in hanging draperies. 4,493,358, Cl. 160-349.00R.

Jaedicke, Hagen; and Tonne, Peter, to BASF Aktiengesellschaft. Preparation of o,o'-dithiodibenzoic acids. 4,493,802, Cl. 260-507.00R.

Jagel, Peter H.: *See—*
Urbutis, Algimantas P.; and Jagel, Peter H., 4,493,130, Cl. 17-49.000.

Jakobsen, Kjell M.; Nilsson, Claes T.; and Larsson, Lars G., to PLM Aktiebolag. Apparatus for moulding an article from plastic material. 4,493,633, Cl. 425-525.000.

Jameson, Robert L., to United States of America, Army. Elastic fragmentation sleeve. 4,493,264, Cl. 102-491.000.

Japan Exlan Company Limited: *See—*
Tanaka, Koji, 4,493,772, Cl. 210-799.000.

Japan Medical Supply Co. Ltd.: *See—*
Ishihara, Yoshihisa, 4,493,707, Cl. 604-164.000.

Jarosch, Harald: *See—*
Beikel, Alfons G.; and Jarosch, Harald, 4,493,350, Cl. 141-65.000.

Jarosz, John M.; and Panas, William R., to S&C Electric Company. High-speed, multi-break electrical switch. 4,494,103, Cl. 337-282.000.

Jedziniak, Francis J. Securable storage assembly for data processing device. 4,493,267, Cl. 108-50.000.

Jegousse, Michel: *See—*
de Sivry, Bruno; Sudreau, Bernard; Jegousse, Michel; and Le Hir, Yves, 4,493,966, Cl. 219-121.0EC.

Jeninga, John. Golf ball retriever. 4,493,503, Cl. 294-19.00A.

Jenkins, Harold E.: *See—*
Thompson, Lionel D.; Jenkins, Harold E.; Hickerson, Richard A.; and Weaver, Russell E., 4,493,303, Cl. 123-357.000.

Jernkontoret: *See—*
Fredriksson, Hasse; and Tiberg, Lars, 4,493,363, Cl. 164-476.000.

Jeter, John D.; and More, Henry S., to Exploration Logging, Inc. Well logging apparatus with replaceable sensor carrying insulating sleeve disposed in rotation restrained position around a drill string. 4,494,072, Cl. 324-347.000.

Jevons, Lyle O., Jr.: *See—*
Harris, Craig W.; Jevons, Lyle O., Jr.; and Loskorn, Richard A., 4,494,194, Cl. 364-200.000.

Jochum, Peter: *See—*
Schmitt, Werner; Purrmann, Robert; and Jochum, Peter, 4,493,911, Cl. 523-109.000.

Johannsen, Karl: *See—*
Becker, Willi; and Johannsen, Karl, 4,493,660, Cl. 440-67.000.

John, Erwin R.: *See—*
Bergelson, Michael; Fridman, Jacob; and John, Erwin R., 4,493,327, Cl. 128-731.000.

John, Glyn R.: *See—*
Birkett, Kevin; Scovell, Edward G.; and John, Glyn R., 4,493,876, Cl. 428-457.000.

Johnson, Douglas M., to Empak Inc. Wafer processing cassette. 4,493,418, Cl. 206-454.000.

Johnson Matthey PLC: *See—*
Collier, Owen N.; and Selman, Gordon L., 4,493,738, Cl. 148-24.000.

Johnson, Richard C.; and Norris, Allyn P., to Foster Wheeler Energy Corporation. Erosion test apparatus. 4,493,206, Cl. 73-7.000.

Johnson, Roger C.: *See—*
Gibbs, Richard D.; and Johnson, Roger C., 4,493,138, Cl. 29-33.00Q.

Johnston, Laverne, to LaMere, Dan, a part interest. Pacifier cover. 4,493,324, Cl. 128-360.000.

Joker System Aktiebolaget: *See—*
Jostler, Jan, 4,493,683, Cl. 493-225.000.

Jolissaint, Charles H., to Rolm Corporation. Interconnecting apparatus for a distributed switching telephone system. 4,494,229, Cl. 370-58.000.

Jones, Arthur A., to Nautilus Sports/Medical Industries, Inc. Exercising apparatus and method. 4,493,485, Cl. 272-126.000.

Jones, Brian D. Connector system. 4,493,172, Cl. 52-220.000.

Jones, C. David: *See—*
Zimmerman, Ronald E.; Burck, Philip J.; Jones, C. David; and Thakkar, Arvind L., 4,493,699, Cl. 604-55.000.

Jones, Robert W.: *See—*
Guch, Steve, Jr.; Gardner, Phillip J.; Braverman, Leonard W.; and Jones, Robert W., 4,494,235, Cl. 372-23.000.

Josefsson, Lars G.; Svensson, Bengt T.; and Moeschlin, Lars F., to Telefonaktiebolaget L M Ericsson. Impedance matching stripline transition for microwave signals. 4,494,083, Cl. 333-33.000.

Joseph Vogele AG: *See—*
Axer, Heinrich, 4,493,585, Cl. 404-102.000.

Joshi, David P., to Colgate-Palmolive Company. Translucent soaps and processes for manufacture thereof. 4,493,786, Cl. 252-368.000.

Jostler, Jan, to Joker System Aktiebolaget. Method of manufacturing bag-like packaging blanks provided with closure ribbons. 4,493,683, Cl. 493-225.000.

Juergens, Tristan: *See—*
Stieg, Richard F.; Dolan, John P.; Worley, W. Spencer; and Juergens, Tristan, 4,493,221, Cl. 474-14.000.

Julien, Paul C.: *See—*
Gruber, Robert J.; Agostine, Doretta; Julien, Paul C.; and Yourd, Raymond A., III, 4,493,883, Cl. 430-110.000.

K-Line Industries, Inc.: *See—*
Kammerzad, James A., 4,493,987, Cl. 235-1.00D.

Kabas, Guglielmo, deceased: *See—*
Burdeska, Kurt; Kabas, Guglielmo, deceased; Brunner, Hans-Georg; and Fory, Werner, 4,493,726, Cl. 71-87.000.

Kabas-Maskulinski, Anni, heir: *See—*
Burdeska, Kurt; Kabas, Guglielmo, deceased; Brunner, Hans-Georg; and Fory, Werner, 4,493,726, Cl. 71-87.000.

Kabushiki Kaisha Daikin Seisakusho: *See—*
Nagano, Tamio, 4,493,408, Cl. 192-106.200.
Tamura, Kazuhisa; and Koshimo, Masahiko, 4,493,674, Cl. 464-68.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Kajikawa, Masauemon; and Ota, Akio, 4,493,381, Cl. 175-107.000.

Kabushiki Kaisha Morita Seisakusho: *See—*
Hotta, Toshihiro, 4,494,057, Cl. 318-317.000.
Tachibana, Akifumi, 4,493,643, Cl. 433-27.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Takayama, Chitoshi; Hirao, Hideo; Yokouchi, Hideya; and Iida, Teruhiko, 4,494,159, Cl. 360-78.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Suzuki, Hajime; Matsuyama, Shinichiro; and Arakawa, Akio, 4,494,203, Cl. 364-470.000.

Kadison, Eric M.; Batra, Subhash C.; and Meir, Gad E., to Media Systems Technology. Selectable format computer disk copier machine. 4,494,156, Cl. 360-48.000.

Kaegebein, Daniel P., to TX RX Systems, Inc. Fixture for mounting cylindrical cavity filters. 4,493,422, Cl. 211-26.000.

Kaealin, Oscar E.; and Schenker, Monroe H. Cornering device for a garment support structure. 4,493,423, Cl. 211-123.000.

Kahara, Toshiki; Matsuda, Shimpei; Ishii, Kenzo; Takeuchi, Seizi; Imahashi, Jinichi; and Honji, Akio, to Hitachi, Ltd.; and Hitachi Chemical Company, Ltd. Fuel cell. 4,493,879, Cl. 429-41.000.

Kai, Norichika: *See—*
Musto, Richard L.; and Kai, Norichika, 4,493,269, Cl. 110-106.000.

Kaish, Norman, to International Electronic Technology Corp. Security arrangement for and method of rendering microprocessor-controlled electronic equipment inoperative after occurrence of disabling event. 4,494,114, Cl. 340-825.310.

Kajikawa, Masauemon; and Ota, Akio, to Kabushiki Kaisha Komatsu Seisakusho. Turbodrill with a reduced drilling fluid pressure on a floating piston. 4,493,381, Cl. 175-107.000.

Kajioka, Hiroshi; Tokunaga, Toshihide; and Nakagawa, Junkichi, to Hitachi Cable, Ltd. Single polarization optical fibers. 4,493,530, Cl. 350-96.340.

Kajiyama, Ryuichi, to Mitsubishi Denki Kabushiki Kaisha. Elevator control system. 4,493,399, Cl. 187-29.00R.

Kaleida, Richard H., to AMP Incorporated. Membrane switch having integral switch tail insulator. 4,493,952, Cl. 200-5.00A.

Kalinowski, Robert S., Jr.: *See*—
Sanderson, Edward; Sanderson, Laurence S.; and Kalinowski, Robert S., Jr., 4,493,951, Cl. 179-175.30F.

Kalshoven, James E., Jr.: *See*—
Korb, Charles L.; and Kalshoven, James E., Jr., 4,493,553, Cl. 356-43.000.

Kaluza, Rudolph T. Continuous form multiple ply assembly. 4,493,496, Cl. 282-11.50A.

Kamejima, Kohji: *See*—
Hibino, Yozo; Kamejima, Kohji; and Nara, Yasuaki, 4,493,192, Cl. 62-141.000.

Kamiuchi, Toshiro: *See*—
Nakane, Keiichi; Kamiuchi, Toshiro; and Nakanishi, Hiroaki, 4,494,188, Cl. 364-200.000.

Kamiyama, Kouzi, to Fuji Photo Film Co., Ltd. Process for the preparation of ferrite magnetic particulate for magnetic recording. 4,493,779, Cl. 252-62.590.

Kammeraad, James A., to K-Line Industries, Inc. Counter. 4,493,987, Cl. 235-1.00D.

Kampff, Ronald J. Foot soaker and rester. 4,493,712, Cl. 604-293.000.

Kamphausen, Willi: *See*—
Beaujean, Holger; Kamphausen, Willi; Niephaus, Dieter; and Nommensen, Ove, 4,493,434, Cl. 222-3.000.

Kanamuller, Franz X.; and Phillips, Edwin R., to Sperry Corporation. Apparatus for optically detecting ink droplets. 4,493,993, Cl. 250-222.100.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Hirobe, Kazushi; Tonoki, Satoshi; and Nishigaki, Masahiko, 4,493,913, Cl. 523-205.000.

Kaneko, Hiromi: *See*—
Iino, Toshiki; Kaneko, Hiromi; Takagi, Michiyuki; and Komatsu, Kazuhiro, 4,493,610, Cl. 415-104.000.

Kaneko, Masaharu; Ozawa, Tetsuo; Yoneyama, Tomio; Imazeki, Shuji; Mukoh, Akio; and Sato, Mikio, to Hitachi, Ltd.; and Mitsubishi Chemical Industries, Ltd. Pleochroic azo dyes, a liquid crystal composition containing the azo dyes and a display device using the liquid crystal composition. 4,493,532, Cl. 350-349.000.

Kaneko, Shuzo; Tamura, Yasuyuki; and Takahashi, Tohru, to Canon Kabushiki Kaisha. Image formation method and apparatus. 4,493,882, Cl. 430-97.000.

Kaneko, Takeru: *See*—
Sugimoto, Hachiro; Hamano, Sachiyuki; Shoji, Tadao; Kaneko, Takeru; and Uzuo, Takeshi, 4,493,837, Cl. 424-253.000.

Kaneko, Yutaka; and Takashi, Yokata, to Ricoh Company, Ltd. Laser printer. 4,494,130, Cl. 346-160.000.

Kanotz, William M.; Vesperman, William C.; and Wilson, Max K., to AT&T Technologies, Inc. Method for insulating conductors with a crystalline plastic material. 4,493,747, Cl. 156-64.000.

Kanto Seiki Co., Limited: *See*—
Ichimura, Etsuo, 4,493,988, Cl. 235-96.000.

Kanto Special Steel Works Ltd.: *See*—
Takahashi, Hiroyuki; and Ogata, Tomohiro, 4,493,360, Cl. 164-286.000.

Kao Soap Co., Ltd.: *See*—
Abe, Yoshiaki, 4,493,824, Cl. 424-70.000.

Kaplan, Jay; and Marchant, Ray, to Honeywell Information Systems Inc. Factory data collection terminal conduit enclosure. 4,493,524, Cl. 339-125.00R.

Karacsonyi, Bela: *See*—
Vajda, Gabor; Ravasz, Laszlo ; Karacsonyi, Bela; and Tabajdi, Gabor, 4,493,853, Cl. 426-582.000.

Karasawa, Yasuo: *See*—
Ikekame, Hiroo; and Karasawa, Yasuo, 4,494,173, Cl. 361-429.000.

Karlik, Richard L., to Nappi Trucking Corp. Apparatus for transporting truck tractors and truck units. 4,493,491, Cl. 280-402.000.

Karlsen, Stig, to Figgie International Inc. Brace lock for scaffolding. 4,493,394, Cl. 182-179.000.

Karlsson, Lars G., to Diab Barracuda AB. Camouflage material with partial apertures forming curled tongues and method of making the same. 4,493,863, Cl. 428-17.000.

Karr, Edward J. Rope clamping device. 4,493,134, Cl. 24-132.0WL.

Kashioka, Seiji: *See*—
Shima, Yoshihiro; Kashioka, Seiji; Uno, Takeshi; and Suzuki, Kunio, 4,494,139, Cl. 358-101.000.

Kasimov, Dzhangir A. K. O.: *See*—
Abdullaev, Gasan M. B. O.; Maxudov, Faramaz G. O.; Kasimov, Dzhangir A. K. O.; Mamedov, Bakhtiyar M. R. O.; Aliev, Gabil G.; Gadzhiev, Yashar A. O.; Shakhmamedov, Rovshan I. O.; and Iljushin, Alexei A., 4,493,140, Cl. 29-446.000.

Kataoka, Hiroyuki, to Canon Kabushiki Kaisha. Computer type electronic flash device. 4,494,044, Cl. 315-151.000.

Kato, Eiichi: *See*—
Endo, Katsusuke; Kato, Eiichi; Ohki, Nobutaka; and Ishikawa, Takatoshi, 4,493,888, Cl. 430-405.000.

Katou, Takashi: *See*—
Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; Ota, Yozo; and Morino, Toshiharu, 4,493,804, Cl. 261-44.00C.

Katsube, Junki: *See*—
Ono, Keiichi; Sugie, Akihiko; Kawakami, Hajime; Sami, Shunsuke; Kojima, Atsuyuki; and Katsube, Junki, 4,493,846, Cl. 424-308.000.

Kauffman, Marc: *See*—
Rocci, Joseph D.; Crook, Stephen E.; and Kauffman, Marc, 4,494,111, Cl. 340-533.000.

Kaufmann, F. William, III; and Zwiebel, Alan, to Random House, Inc., a part interest. Fold-out garment book. 4,493,650, Cl. 434-178.000.

Kaul, Martin: *See*—
Weil, Wolfgang; Lanz, Andres; Vogt, Max; Meier, Paul; Kaul, Martin; and Fankhauser, Hanspeter, 4,493,962, Cl. 219-64.000.

Kawahara, Hiroshi; and Nakamura, Kazuo, to Brother Kogyo Kabushiki Kaisha. Type wheel changing mechanism in a printer. 4,493,569, Cl. 400-144.200.

Kawai, Mituo: *See*—
Yamamoto, Masao; Yebisuya, Takashi; Kawai, Mituo; and Tajima, Koichi, 4,493,733, Cl. 75-126.00B.

Kawakami, Hajime: *See*—
Ono, Keiichi; Sugie, Akihiko; Kawakami, Hajime; Sami, Shunsuke; Kojima, Atsuyuki; and Katsube, Junki, 4,493,846, Cl. 424-308.000.

Kawakami, Shigenobu: *See*—
Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Yanagishita, Hitoshi; and Hayashi, Shozo, 4,493,943, Cl. 174-25.00C.

Kawamura, Hideo, to Izuzo Motors, Ltd. Glow plug quick heating control device. 4,493,298, Cl. 123-145.00A.

Kawamura, Yoshihisa, to Nissan Motor Company, Limited. Fuel injection timing control system for an internal combustion engine. 4,493,302, Cl. 123-357.000.

Kawana, Hidejiro: *See*—
Horiba, Tatsuo; Iwamoto, Kazuo; Kawana, Hidejiro; Fujita, Kazunori; and Tamura, Kohki, 4,493,878, Cl. 429-12.000.

Kawara, Toshio; and Shibahara, Yoshihumi, to Shimadzu Corporation. Electromagnetic force-transducer. 4,494,022, Cl. 310-14.000.

Kaye, Arthur, to British Aerospace Public Limited Company. Control Apparatus. 4,494,061, Cl. 318-628.000.

Kazansky Aviatsionny Institut Imeni A. N Tupoleva: *See*—
Uretsky, Yan S.; Mnekin, Ravil V.; Rygalin, Viktor G.; Grechinsky, Dmitry A.; and Klochko, Viktor A., 4,493,213, Cl. 73-664.000.

Keane, John F.: *See*—
Thomas, E. Raymond; Cahill, Lysle D.; Tibbits, John L.; Fraser, Kenneth D.; Keane, John F.; Harting, Stanley C.; Kramer, George H.; Duke, Ronald J.; Kessis, Theodore A.; Butler, John C.; Frank, Gary L.; and Lawson, John A., 4,493,549, Cl. 355-3.00R.

Keane, John J.; and Pauze, Denis R., to General Electric Company. Corona-resistant wire enamel compositions and conductors insulated therewith. 4,493,873, Cl. 428-372.000.

Kearns, Robert W. Structure for and method of surface conditioning sensing and indicating and motor speed control. 4,494,059, Cl. 318-443.000.

Kearns, Robert W.; and Quan, James G. H. Digital to analog converter. 4,494,107, Cl. 340-347.0DA.

Keene, Harold J.: *See*—
Dusel, Robert O.; Berres, James J.; and Keene, Harold J., 4,493,233, Cl. 83-71.000.

Kelleher, Kevin C.; Kiser, Ned J.; and Christopher, Todd J., to RCA Corporation. DC Motor servo system. 4,494,052, Cl. 318-254.000.

Keller, Hans, to Geberit A.G. Welding sleeve. 4,493,985, Cl. 219-535.000.

Keller Holding AG: *See*—
Sporkenbach, Gustav-Adolf; and Suetterlin, Dieter, 4,493,805, Cl. 264-25.000.

Keller, Robert F., to RCA Corporation. Magnetron filament having a quadrilateral cross-section. 4,494,034, Cl. 313-341.000.

Kelly, Mary Y.: *See*—
Coffey, M. Dewayne; Kelly, Mary Y.; and Kennedy, Weldon C., Jr., 4,493,775, Cl. 252-8.55C.

Kelly, Richard P.: *See*—
Goss, Gary J.; Kelly, Richard P.; and Murray, Thomas L., Jr., 4,494,186, Cl. 364-200.000.

Kelly, Robert M.: *See*—
Robbins, Cheston W.; and Kelly, Robert M., 4,493,653, Cl. 434-262.000.

Kelvin Lenses Limited: *See*—
Tighe, Brian J.; and Gee, Howard J., 4,493,910, Cl. 523-108.000.

Kendrew, Thomas J.: *See*—
Reichman, James M.; O'Hanlon, Thomas A.; and Kendrew, Thomas J., 4,493,379, Cl. 175-57.000.

Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Avi, to Buddy L Corporation. Toy vehicle having spring-operated motor. 4,493,671, Cl. 446-464.000.

Kennedy, Weldon C., Jr.: *See*—
Coffey, M. Dewayne; Kelly, Mary Y.; and Kennedy, Weldon C., Jr., 4,493,775, Cl. 252-8.55C.

Kernforschungsanlage Julich GmbH: *See*—
Beaujean, Holger; Kamphausen, Willi; Niephaus, Dieter; and Nommensen, Ove, 4,493,434, Cl. 222-3.000.

Kernforschungszentrum Karlsruhe GmbH: *See*—
Becker, Erwin; Ehrfeld, Wolfgang; Munchmeyer, Dietrich; Betz, Hans; and Heuberger, Anton, 4,493,753, Cl. 204-9.000.

Kessis, Theodore A.: *See—*
Thomas, E. Raymond; Cahill, Lysle D.; Tibbits, John L.; Fraser, Kenneth D.; Keane, John F.; Harting, Stanley C.; Kramer, George H.; Duke, Ronald J.; Kessis, Theodore A.; Butler, John C.; Frank, Gary L.; and Lawson, John A., 4,493,549, Cl. 355-3.00R.

Khoury, Henri A.: *See—*
Chen, Lee; Khoury, Henri A.; and Seymour, Harlan R., 4,493,745, Cl. 156-626.000.

Kibby, Charles L.: *See—*
Beuther, Harold; Kibby, Charles L.; Kobylinski, T. P.; and Pannell, Richard B., 4,493,905, Cl. 502-325.000.

Kidde, Inc.: *See—*
Sterner, Russell L., 4,493,426, Cl. 212-261.000.

Kilner, Jerome R.; Raymond, Eugene T.; and Warren, Steven M., to Boeing Company, The. Two-fluid nonflammable hydraulic system. 4,493,509, Cl. 303-13.000.

Kim, Kyung J., to United States of America, Navy. Gyrotron traveling-wave device including quarter wavelength anti-reflective dielectric layer to enhance microwave absorption. 4,494,039, Cl. 315-4.000.

Kim, Yoon H. Cosmetic towel. 4,493,866, Cl. 428-101.000.

Kimball International, Inc.: *See—*
DeLong, Charles E.; and Eck, Gary A., 4,493,237, Cl. 84-1.260.

Kimberly-Clark Corporation: *See—*
Meitner, Gary H., 4,493,868, Cl. 428-171.000.
Niethammer, Heinz K.; and Montgomery, Lawrence J., 4,493,116, Cl. 2-69.000.

Kimmel, David J.; and Lauterbach, John H., to AMP Incorporated. Rotary switch with internal rotor interconnecting circuit paths for surface contacts. 4,493,954, Cl. 200-11.00R.

Kimura, Fumio; and Haga, Takahiro, to Ishihara Sangyo Kaisha, Ltd. Phenoxypyridine useful as a herbicide. 4,493,730, Cl. 71-94.000.

Kimura, Kenji, to Olympus Optical Co., Ltd. Optical disc reproducing apparatus. 4,494,225, Cl. 369-44.000.

Kimura, Kunio: *See—*
Nishino, Atsushi; Ikeda, Masaki; Kimura, Kunio; and Oyabu, Hajime, 4,493,900, Cl. 501-26.000.

Kindler, Gerhard, to Iventio AG. Drive control for a transportation system, especially an elevator. 4,493,398, Cl. 187-29.00R.

Kinds Industri AB: *See—*
Lunding, Thorkild, 4,493,743, Cl. 156-555.000.

King, Olin B., to SCI Systems, Inc. Apparatus and method for recording both machine-readable and printed information. 4,494,127, Cl. 346-82.000.

King, Roger A.; and Arnold, John E., Jr., to Ivy Medical, Inc. Intravenous drip rate control device. 4,493,710, Cl. 604-250.000.

Kinzler, Herbert: *See—*
Musselmann, Walter; Kinzler, Herbert; and Tra, Josef, 4,493,766, Cl. 209-362.000.

Kioritz Corporation: *See—*
Nagashima, Akira; and Saito, Yasuo, 4,493,400, Cl. 188-77.00W.

Kircher, Stefan: *See—*
Fries, Herbert; Gerstenmaier, Jurgen; Kircher, Stefan; and Koch-Ducker, Jurgen, 4,493,210, Cl. 73-121.000.

Kirk, Russell F.: *See—*
Beard, Robert W.; and Kirk, Russell F., 4,493,704, Cl. 604-154.000.

Kirsch, Jerry; Kirsch, Kerry F.; and Hornacek, Kenneth J., to Rimrock Corporation. Rotary and linear actuating device. 4,493,245, Cl. 92-2.000.

Kirsch, Kerry F.: *See—*
Kirsch, Jerry; Kirsch, Kerry F.; and Hornacek, Kenneth J., 4,493,245, Cl. 92-2.000.

Kiser, Ned J.: *See—*
Kelleher, Kevin C.; Kiser, Ned J.; and Christopher, Todd J., 4,494,052, Cl. 318-254.000.

Kishi, Ichiro; and Nakagawa, Hisao, to Matsushita Electric Works, Ltd. Gear shifting speed change apparatus for a rotary electric tool. 4,493,223, Cl. 74-371.000.

Kitasato Kenkyusho: *See—*
Omura, Satoshi; Tanaka, Yoshitake; Iwai, Yuzuru; Takahashi, Yoko; and Nakagawa, Akira, 4,493,845, Cl. 424-279.000.

Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; Takeno, Hidekazu; Okada, Satoshi; and Hashimoto, Masashi, to Fujisawa Pharmaceutical Co., Ltd. Peptide, process for preparation thereof and use thereof. 4,493,794, Cl. 260-112.50R.

Klaue, Kaj, to Synthes Ltd. (U.S.A.). Surgical compression plate and drill guide. 4,493,317, Cl. 128-92.00D.

Klayman, Daniel L.; Scovill, John P.; Bartosevich, Joseph F.; Mason, Carl J.; and Griffin, T. Scott, to United States of America, Army. Medicinal 2-acetyl- and 2-propionylpyridine thiosemicarbazones and preparation thereof. 4,493,930, Cl. 544-360.000.

Kleiman, William J., to Rockwell International Corporation. Soldering tool for an robot. 4,493,449, Cl. 228-7.000.

Klein, Harold A., to Colt Industries Operating Corp. Compact multiple spindle boring head with quick change tool supports. 4,493,595, Cl. 408-46.000.

Kleiner, Hans-Jerg; and Dursch, Walter, to Hoechst Aktiengesellschaft. Process for the preparation of vinylphosphonic acid diesters and vinylphosphonic acid. 4,493,803, Cl. 260-968.000.

Klemarczyk, Philip T., to International Flavors & Fragrances Inc. Substituted methyl isopropyl oxocyclohexane derivatives, organoleptic uses thereof and process for preparing same. 4,493,791, Cl. 252-522.00R.

Kliklok Corporation: *See—*
Bryson, John W.; and Hittenberger, William H., 4,493,682, Cl. 493-174.000.

Klochko, Viktor A.: *See—*
Uretsky, Yan S.; Mnekin, Ravil V.; Rygalin, Viktor G.; Grechinsky, Dmitry A.; and Klochko, Viktor A., 4,493,213, Cl. 73-664.000.

Klockner-Humboldt-Deutz AG: *See—*
Melcher, Gerhard; and Wuth, Wolfgang, 4,493,732, Cl. 75-24.000.

Kloos, Friedrich: *See—*
Cherdron, Harald; Gordon, Wolfgang; and Kloos, Friedrich, 4,493,751, Cl. 162-157.200.

Klosinski, Mark: *See—*
Sharp, Larry L.; and Klosinski, Mark, 4,493,219, Cl. 73-862.050.

Knigge, Rolf; and Albien, Wolfgang, to Howaldtswerke-Deutsche Werft Aktiengesellschaft Hamburg und Kiel. Method for applying a coating to a thin board. 4,493,857, Cl. 427-96.000.

Knight, Paul A.: *See—*
Marshall, Barry R.; and Knight, Paul A., 4,493,619, Cl. 417-307.000.

Knorr-Bremse GmbH: *See—*
Sander, Nils B. L.; and Nadas, Julius, 4,493,401, Cl. 188-199.000.

Knox, Lloyd C., to Halliburton Company. Grouting method. 4,493,592, Cl. 405-225.000.

Kobayashi, Hiroyuki: *See—*
Shii, Kazuo; Kobayashi, Hiroyuki; Kubozoe, Morioki; and Isakozawa, Shigeto, 4,494,000, Cl. 250-311.000.

Kobori, Yasunori: *See—*
Nishijima, Hideo; Sera, Katsumi; Fukushima, Isao; and Kobori, Yasunori, 4,494,056, Cl. 318-269.000.

Kobylinski, T. P.: *See—*
Beuther, Harold; Kibby, Charles L.; Kobylinski, T. P.; and Pannell, Richard B., 4,493,905, Cl. 502-325.000.

Koch-Ducker, Jurgen: *See—*
Fries, Herbert; Gerstenmaier, Jurgen; Kircher, Stefan; and Koch-Ducker, Jurgen, 4,493,210, Cl. 73-121.000.

Kochi, Hiromu: *See—*
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,493,833, Cl. 424-246.000.

Kocol, James C.: *See—*
Gunderson, Robert O.; Kocol, James C.; and Schuck, David B., 4,494,185, Cl. 364-200.000.

Kodama, Naoki: *See—*
Suzuki, Ryo; Ikeda, Tadashi; Takeshita, Masatoshi; and Kodama, Naoki, 4,494,216, Cl. 365-36.000.

Koel, Gerrit J.: *See—*
Auwerda, Cornelis P.; and Koel, Gerrit J., 4,493,721, Cl. 65-3.120.

Koerber, Charles F. Wheelchair lift apparatus. 4,493,602, Cl. 414-541.000.

Kohaut, John E., to Raceway Components, Inc. Automatic cable passage closure and sealing device. 4,493,173, Cl. 52-221.000.

Kohn, Erhard, to Telefunken Electronic GmbH. Semiconductor optoelectronic switch. 4,494,132, Cl. 357-30.000.

Kohno, Atsuo: *See—*
Ohmura, Hiroshi; Kohno, Atsuo; Shiiba, Minoru; and Tanaka, Tsutomu, 4,493,542, Cl. 354-82.000.

Koike, Takashi; and Sugiura, Hajime, to Fujitsu Limited. Disk system. 4,494,215, Cl. 364-900.000.

Kojima, Atsuyuki: *See—*
Ono, Keiichi; Sugie, Akihiko; Kawakami, Hajime; Sami, Shunsuke; Kojima, Atsuyuki; and Katsube, Junki, 4,493,846, Cl. 424-308.000.

Kokufukata, Seigo; and Sekido, Tetsuya, to Victor Company of Japan, Ltd. Temperature compensation circuit in a pickup tube device. 4,494,145, Cl. 358-163.000.

Kollmeyer, Willy D., to Shell Oil Company. 2-Cyano-tetrahydrofuran-5-methanols. 4,493,936, Cl. 549-474.000.

Kolzer, Walter: *See—*
Ramlohr, Franz; Pohl, Werner; and Kolzer, Walter, 4,494,181, Cl. 363-63.000.

Komatsu, Kazuhiro: *See—*
Iino, Toshiki; Kaneko, Hiromi; Takagi, Michiyuki; and Komatsu, Kazuhiro, 4,493,610, Cl. 415-104.000.

Komeda, Tadao, to Matsushita Electric Industrial Company, Limited. Method for formation of isolation oxide regions in semiconductor substrates. 4,493,740, Cl. 148-187.000.

Komine, Yoshio, to Canon Kabushiki Kaisha. Video camera. 4,494,147, Cl. 358-209.000.

Komoto, Akira: *See—*
Yano, Shozo; Komoto, Akira; and Fujinaga, Yasuhiro, 4,493,384, Cl. 177-25.000.

Koninklijke Nederlandse Papierfabrieken N.V.: *See—*
van Os, Rudi, 4,493,158, Cl. 34-41.000.

Konishi, Satoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. High sensitivity sense amplifier using different threshold valued MOS devices. 4,494,020, Cl. 307-530.000.

Kopf, Rowland J., to Uniset Corporation. Fastener driving tool. 4,493,376, Cl. 173-139.000.

Koppers Company, Inc.: *See—*
Carson, William J., 4,493,286, Cl. 118-677.000.
Prew, Stanley R., 4,493,556, Cl. 366-114.000.

Korb, Charles L.; and Kalshoven, James E., Jr., to United States of America, National Aeronautics and Space Administration. Method of and apparatus for measuring temperature and pressure. 4,493,553, Cl. 356-43.000.

Korea Advanced Institute of Science and Technology: *See—*
Moon, Sang H.; Park, Jae M.; and Suh, Sung S., 4,493,725, Cl. 71-62.000.

Koshimo, Masahiko: *See*—
Tamura, Kazuhisa; and Koshimo, Masahiko, 4,493,674, Cl. 464-68.000.

Koshugi, Junichi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Cross-linked chitin derivatives. 4,493,928, Cl. 536-20.000.

Kostyrkin, Boris V.: *See*—
Prikhodko, Valery V.; and Kostyrkin, Boris V., 4,493,961, Cl. 219-69.00R.

Koszytorz, Gunther; Lucke, Herbert; Schloeser, Gerhard; and Vath, Joachim, to Siemens Aktiengesellschaft. Apparatus for automatically adjusting a deflection unit. 4,493,990, Cl. 250-201.000.

Kowles, Joseph E.: *See*—
Comeau, Joseph H.; Kowles, Joseph E.; Lareau, John P.; Mayo, Kenneth R.; and Runde, Herbert A., 4,493,155, Cl. 33-366.000.

Kozponti Valto- es Hitelbank RT. Innovacios Alap: *See*—
Vajda, Gabor; Ravasz, Laszlo ; Karacsonyi, Bela; and Tabajdi, Gabor, 4,493,853, Cl. 426-582.000.

Kraftwerk Union Aktiengesellschaft: *See*—
Emsperger, Werner; and Engelhardt, Reiner, 4,493,186, Cl. 60-39.182.

Kramer, George H.: *See*—
Thomas, E. Raymond; Cahill, Lysle D.; Tibbits, John L.; Fraser, Kenneth D.; Keane, John F.; Harting, Stanley C.; Kramer, George H.; Duke, Ronald J.; Kessis, Theodore A.; Butler, John C.; Frank, Gary L.; and Lawson, John A., 4,493,549, Cl. 355-3.00R.

Krantz, Robert J., to Cyclops Corporation. Method for marking hot pipe. 4,493,859, Cl. 427-193.000.

Krause, Horst E.; and Stanley, Edwin L. Method and apparatus for pumping blood within a vessel. 4,493,697, Cl. 604-50.000.

Krehnovi, Richard J., to PPG Industries, Inc. Glass sheet positioning apparatus for conveyor platform. 4,493,412, Cl. 198-434.000.

Kresge, Charles T.; Krishnamurthy, Sowmithri; and McHale, William D., to Mobil Oil Corporation. Separately supported polymetallic reforming catalyst. 4,493,764, Cl. 208-138.000.

Krezak, John E., to Boeing Company, The. Method of joining sheets with a rivet. 4,493,141, Cl. 29-509.000.

Krieger, Heinrich: *See*—
Vyvial, Rudolf; Taubitz, Christof; Schlemmer, Lothar; Bleckmann, Gerhard; Zuerger, Manfred; Krieger, Heinrich; and Thiele, Heino, 4,493,807, Cl. 264-101.000.

Krishnamurthy, Sowmithri: *See*—
Kresge, Charles T.; Krishnamurthy, Sowmithri; and McHale, William D., 4,493,764, Cl. 208-138.000.

Krohnert, Rudolf: *See*—
Muller, Dietmar; Schubert, Hiltmar; and Krohnert, Rudolf, 4,493,630, Cl. 425-203.000.

Krude, Werner, to Uni-Cardan Aktiengesellschaft. Rotary constant velocity joint. 4,493,676, Cl. 464-141.000.

Kubert, Vincent T.; Frampton, John C.; and Ono, George Y., to Harris Graphics Corporation. Inker for a printing press. 4,493,257, Cl. 101-349.000.

Kubo, Osamu; Ido, Tadashi; Nomura, Tutomu; and Maeda, Tatsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Production of a magnetic powder having a high dispersibility. 4,493,874, Cl. 428-403.000.

Kubozoe, Morioki: *See*—
Shii, Kazuo; Kobayashi, Hiroyuki; Kubozoe, Morioki; and Isakozawa, Shigeto, 4,494,000, Cl. 250-311.000.

Kubr, Vaclav; Mulhaupt, Bruno; and Paschedag, Hansjoachim, to Sulzer-Escher Wyss Ltd. Twin pusher centrifuge including rotatable pusher. 4,493,768, Cl. 210-360.200.

Kubr, Vaclav: *See*—
Paschedag, Hansjoachim; Mulhaupt, Bruno; and Kubr, Vaclav, 4,493,769, Cl. 210-360.200.

Kudo, Yoshinobu, to Minolta Camera Kabushiki Kaisha. Inverted telephoto type lens system. 4,493,536, Cl. 350-462.000.

Kuhlman Corporation: *See*—
Fisher, John L.; and Curtis, Joe E., Jr., 4,494,102, Cl. 336-212.000.

Kuhlmann, Gerhard; Schleihauf, Gerhard; and Brandauer, Emil, to Friedrich Munch GmbH & Co. K.G. Protective mitten made of metal ring fabric. 4,493,865, Cl. 428-52.000.

Kumar, Ananda H.; and Srikrishnan, Kris V., to International Business Machines Corporation. Selective coating of metallurgical features of a dielectric substrate with diverse metals. 4,493,856, Cl. 427-57.000.

Kumata, Hirotaka: *See*—
Nakajima, Tetsuo; and Kumata, Hirotaka, 4,493,304, Cl. 123-479.000.

Kume, Nobuyuki; Yoshino, Harumi; and Nagaoka, Miyuki, to Matsushita Electric Industrial Company, Limited. Roll type capacitor having segmented metallized areas. 4,494,168, Cl. 361-273.000.

Kurata, Masami; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Character and image data reading system. 4,494,152, Cl. 358-293.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Koshugi, Junichi, 4,493,928, Cl. 536-20.000.

Kusel Equipment Company: *See*—
Smith, Gary R., 4,493,250, Cl. 99-456.000.

Kusumi, Katsuaki: *See*—
Imazeki, Ryoji; and Kusumi, Katsuaki, 4,494,206, Cl. 364-474.000.

Kyle, James C. Transducer system employing a spring with linear characteristics. 4,493,218, Cl. 73-862.000.

Kyle, James C. Terminal assembly. 4,493,378, Cl. 174-152.0GM.

La Calhene: *See*—
Glachet, Charles; Francois, Daniel; Tentelier, Jean; and Frioux, Christian, 4,493,598, Cl. 414-1.000.

La Gard, Inc.: *See*—
Uyeda, Tim, 4,493,199, Cl. 70-333.00R.

LaBudde, Edward V.: *See*—
Hazel, Robert L.; and LaBudde, Edward V., 4,494,226, Cl. 369-45.000.

Lacour, Bernard; Euvrard, Hubert; Gaillard, Roger; and Boinot, Jean C. Device for fixing a transmission assembly in the body of an angled dental tool. 4,493,646, Cl. 433-133.000.

Lafarge Conseils et Etudes: *See*—
Ohayon, Gerard; Reverchon, Bernard; Tourre, Bernard; and Vigier, Serge, 4,493,271, Cl. 110-262.000.

Laguette, Stephen W.: *See*—
Bootman, Matthew W.; Schillke, Peter; and Laguette, Stephen W., 4,493,701, Cl. 604-73.000.

LaHann, Thomas R.; and Buckwalter, Brian L., to Procter & Gamble Company, The. Compositions and methods useful for producing analgesia. 4,493,848, Cl. 424-324.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Legrand, Pierre; and Arnout, Michel, 4,493,969, Cl. 219-130.400.

Lake, Rutherford C., Jr.: *See*—
Fisher, Ralph H., 4,493,193, Cl. 62-160.000.

Lake, W. H. R.; and Grandinett, D. H., to Ford Motor Company. Clutch driven front axle fourwheel drive system. 4,493,387, Cl. 180-248.000.

Lam, Do Mau, to Matra. Process and apparatus for fixing the position of a moving vehicle on a map. 4,494,200, Cl. 364-449.000.

LaMere, Dan: *See*—
Johnston, Laverne, 4,493,324, Cl. 128-360.000.

La Motte, George B., III; and Burd, Samuel, to Bio-Rad Laboratories, Inc. Dual chamber microplate washer. 4,493,896, Cl. 435-287.000.

Landesman, Benjamin J.; and Landesman, David A., to Lawson Printing Machines Company, Inc. Screen printing machine and drive system therefor. 4,493,254, Cl. 101-123.000.

Landesman, David A.: *See*—
Landesman, Benjamin J.; and Landesman, David A., 4,493,254, Cl. 101-123.000.

Langan, Ervin C.; and Christie, Howard W., to W.E.F.C.O., Inc. Seed coating composition and method. 4,493,162, Cl. 47-57.600.

Langdon, Glen G., Jr.; and Rissanen, Jorma J., to International Business Machines Corporation. Adaptive source modeling for data file compression within bounded memory. 4,494,108, Cl. 340-347.0DD.

Lange, Howard G.; and Ray, Francis M., to Zenith Electronics Corporation. Ultra precise tool forming apparatus. 4,493,166, Cl. 51-100.00R.

Langeluddeke, Peter: *See*—
Horlein, Gerhard; Schonowsky, Hubert; Bieringer, Hermann; and Langeluddeke, Peter, 4,493,731, Cl. 71-118.000.

Lanz, Andres: *See*—
Weil, Wolfgang; Lanz, Andres; Vogt, Max; Meier, Paul; Kaul, Martin; and Fankhauser, Hanspeter, 4,493,962, Cl. 219-64.000.

Lareau, John P.: *See*—
Comeau, Joseph H.; Kowles, Joseph E.; Lareau, John P.; Mayo, Kenneth R.; and Runde, Herbert A., 4,493,155, Cl. 33-366.000.

Larsson, Lars G.: *See*—
Jakobsen, Kjell M.; Nilsson, Claes T.; and Larsson, Lars G., 4,493,633, Cl. 425-525.000.

Lauber, Michael L.: *See*—
Dieckmann, J. Robert; Lauber, Michael L.; and Roodvoets, Mark R., 4,493,631, Cl. 425-292.000.

Lauks, Imants R., to University Patents, Inc. Composition and method for forming amorphous chalcogenide films from solution. 4,493,886, Cl. 430-270.000.

Lauterbach, John H.: *See*—
Kimmel, David J.; and Lauterbach, John H., 4,493,954, Cl. 200-11.00R.

Law, Joseph P., to Thomas & Betts Corporation. Sealed cable connector. 4,493,522, Cl. 339-94.00C.

Lawson, John A.: *See*—
Thomas, E. Raymond; Cahill, Lysle D.; Tibbits, John L.; Fraser, Kenneth D.; Keane, John F.; Harting, Stanley C.; Kramer, George H.; Duke, Ronald J.; Kessis, Theodore A.; Butler, John C.; Frank, Gary L.; and Lawson, John A., 4,493,549, Cl. 355-3.00R.

Lawson Printing Machines Company, Inc.: *See*—
Landesman, Benjamin J.; and Landesman, David A., 4,493,254, Cl. 101-123.000.

Layton, Howard M., to Interlab, Inc. Corrosion-resistant work transfer system. 4,493,333, Cl. 134-76.000.

Lea, Jeffrey G.; and Carlson, David J., to RCA Corporation. Variable frequency U. H. F. local oscillator for a television receiver. 4,494,081, Cl. 331-36.00C.

Leary, Burton; and Silverio, Shaun, to Mupac Corporation. High-speed wire wrap board. 4,494,172, Cl. 361-400.000.

Leather, Robert P. Venous valve cutter for the incision of valve leaflets in situ. 4,493,321, Cl. 128-305.000.

Ledewitz, William. Collapsible dispensing container. 4,493,439, Cl. 222-94.000.

Ledgerwood, Harry J., to Plessey Incorporated. High speed article feeding apparatus. 4,493,447, Cl. 226-150.000.

LeDrew, Robert B., to Williamsburg Packaging Corporation. Box for display and dispensing articles. 4,493,453, Cl. 229-17.00B.

Lee, David M.; and Lindquist, Lloyd O., to United States of America, Energy. Method and apparatus for measuring reactivity of fissile material. 4,493,810, Cl. 376-254.000.

Le Fur, Gerard R.: *See*—
Champeix, Alain A.; and Le Fur, Gerard R., 4,493,838, Cl. 424-258.000.

Legille, Edouard; and Mailliet, Pierre, to Paul Wurth S.A. Furnace charging system. 4,493,600, Cl. 414-208.000.
Legrand, Pierre; and Arnout, Michel, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. High-frequency arc striking device and auxiliary electrode of an electric welding or cutting arc. 4,493,969, Cl. 219-130.400.
Le Hir, Yves: *See*—
de Sivry, Bruno; Sudreau, Bernard; Jegousse, Michel; and Le Hir, Yves, 4,493,966, Cl. 219-121.0EC.
Lehmann, Ulrich, to Dr. Ing. h.c.F. Porsche AG. Brake system, especially for a motor vehicle. 4,494,199, Cl. 364-426.000.
Leitgeb, Wilhelm, to Siemens Aktiengesellschaft. Commutating device for an electric motor supplied from a d-c voltage source. 4,494,049, Cl. 318-138.000.
Le-Khac, Bi, to Atlantic Richfield Company. Polymer compositions. 4,493,920, Cl. 525-67.000.
Leland Stanford Junior University, Board of Trustees of the: *See*—
Shaw, Herbert J.; and Bergh, Ralph A., 4,493,528, Cl. 350-96.150.
Lemmons, Joseph J., to PUR/ACC Corporation. Method and apparatus for orally dispensing liquid medication. 4,493,348, Cl. 141-1.000.
Lenders, Wilhelmus L. L., to U.S. Philips Corporation. Electromagnetic deflection unit. 4,494,097, Cl. 335-213.000.
Lenk, Erich, to Barmag Barmer Maschinenfabrik AG. Melt spinning apparatus. 4,493,628, Cl. 425-192.000.
Leong, Henry; and Fiumefreddo, John, to Challenger Circle F, Inc. Adaptive strain relief for wiring devices. 4,493,523, Cl. 339-105.000.
Les Cables de Lyon: *See*—
Duret, Jean, 4,493,946, Cl. 174-88.00C.
Leung, Frederick; and Weppelman, Roger M., to Merck & Co., Inc. Use of thyrotropin releasing hormone and related peptides as poultry growth promotants. 4,493,828, Cl. 424-177.000.
Lew, Eugene K.; and Wallace, Harvey W., to Sperry Corporation. High speed bus architecture. 4,494,192, Cl. 364-200.000.
Lewis, Timothy A.: *See*—
Collins, Robert A.; and Lewis, Timothy A., 4,493,382, Cl. 175-206.000.
Ley, Antony; Allesch, Roland; and Bazin, Alain, to Enertec. Measurement shunt with compensation for induced error voltages. 4,494,068, Cl. 324-126.000.
Liao, Henry H., to Xerox Corporation. 4-Pixel run-length code for data compression. 4,494,151, Cl. 358-261.000.
Liddle, Edward M. Hydrofoil. 4,493,665, Cl. 441-79.000.
Liebherr, Ricardo W.: *See*—
Mittelmann, Gerhard J.; and Liebherr, Ricardo W., 4,493,428, Cl. 220-1.500.
Lifecare Services, Inc.: *See*—
Chu, Raymond D.; and Bergman, Marc A., 4,493,614, Cl. 417-22.000.
Light, David O., Jr.; Hayes, Frank, III; and McGinty, Joseph R., to United States of America, Army. Microprocessor controlled phase locked loops. 4,494,079, Cl. 331-1.00A.
Lightner, Linn S.: *See*—
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Lo, Kun N. Mould used for making a racket frame. 4,493,472, Cl. 249-57.000.
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Loehrer, Fritz, to Maag Gear-Wheel & Machine Company Limited. Rolling cover means for covering a guideway for a sliding carriage of a machine tool. 4,493,169, Cl. 51-268.000.
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Ludowyk, Christopher J., to Commonwealth of Australia, The. Gating circuit with spurious signal prevention means. 4,494,013, Cl. 307-241.000.
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Mack, Mark P., to Conoco Inc. Catalyst and method for preparation of drag reducing substances. 4,493,904, Cl. 502-122.000.
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McClure, Gary W. Boiler pipe assembly tool. 4,493,139, Cl. 29-267.000.
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McCullough, J. Douglas, Jr., to Shell Oil Company. High notched impact toughness propylene polymer compositions. 4,493,923, Cl. 525-88.000.
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Merrel, Richard C., to Step Enterprises. Shaft straightening press with a traveling ram. 4,493,204, Cl. 72-389.000.
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Miles, Lee W.; Chambers, Samuel W.; and Rice, Mathias F., to Morrison-Knudsen Co., Inc. Rip-rap laying machine and method of laying rip-rap. 4,493,586, Cl. 405-17.000.
Miller, Harry, to Sperry Corporation. Enroute weight computer for aircraft. 4,494,210, Cl. 364-567.000.
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Minnesota Mining and Manufacturing Company: *See*—
Beck, Warren R.; and Castle, Richard B., 4,493,875, Cl. 428-403.000.
Burbank, John E., III; and Montgomery, John R., 4,493,540, Cl. 353-122.000.
Sweeny, Norman P.; Relyea, Keith E.; and Brustad, Wayne L., 4,493,869, Cl. 428-201.000.
Minolta Camera Kabushiki Kaisha: *See*—
Ando, Makoto; and Miki, Yukio, 4,493,534, Cl. 350-429.000.
Kudo, Yoshinobu, 4,493,536, Cl. 350-462.000.
Miranti, Joseph P., Jr., to Dayco Corporation. Belt construction, transverse belt element therefor and method of making the same. 4,493,679, Cl. 474-201.000.
Mirsky, Saul: *See*—
Staroselsky, Naum; and Mirsky, Saul, 4,494,006, Cl. 290-4.000.
Mistry, Kantilal, to Blonder-Tongue Laboratories, Inc. Method of and apparatus for scrambled television program addressable subscription selection and decoding. 4,494,142, Cl. 358-118.000.
Mitchell, Albert W., to Emerson Electric Co. Apparatus for cutting vegetation. 4,493,151, Cl. 30-276.000.
Mitchell, John D.; and Michel, Stephen, to Eastman Kodak Company. Electrophotographic method for producing black and color separation images. 4,493,881, Cl. 430-42.000.
Mitsubishi Chemical Industries, Ltd.: *See*—
Kaneko, Masaharu; Ozawa, Tetsuo; Yoneyama, Tomio; Imazeki, Shuji; Mukoh, Akio; and Sato, Mikio, 4,493,532, Cl. 350-349.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Itoh, Yoshifumi, 4,494,191, Cl. 364-200.000.
Kajiyama, Ryuichi, 4,493,399, Cl. 187-29.00R.
Nawa, Akiyoshi; and Shimizu, Takao, 4,493,971, Cl. 219-137.520.
Nozaki, Tadashi, 4,493,626, Cl. 418-260.000.
Takeshita, Hiroshi, 4,493,209, Cl. 73-118.000.
Yukimoto, Yoshinori; and Mitsui, Kotaro, 4,493,941, Cl. 136-255.000.
Mitsuboshi Belting Ltd.: *See*—
Takano, Hiroshi, 4,493,681, Cl. 474-265.000.
Mitsubushi Petrochemical Co., Ltd.: *See*—
Yazaki, Takao; and Noro, Masataka, 4,493,867, Cl. 428-161.000.
Mitsui, Kotaro: *See*—
Yukimoto, Yoshinori; and Mitsui, Kotaro, 4,493,941, Cl. 136-255.000.
Mittelmann, Gerhard J.; and Liebherr, Ricardo W., to Schweizerische Aluminium AG (Swiss Aluminium Ltd.). Freight container, in particular for air freight. 4,493,428, Cl. 220-1.500.
Mittelsteadt, Robert A.; and Machesney, Gregory W., to Micro-Quartz Technology Corp. Ceramic blinders for a microwave oven quartz lamp. 4,493,960, Cl. 219-10.55B.
Miura, Fukushiro. Electric rerailer for a model railway. 4,493,265, Cl. 104-269.000.
Miyashiro, Yutaka; Ogawa, Masao; Yamazaki, Yoshio; and Igarasi, Seizi, to Takeda Chemical Industries, Ltd. Polysaccharide beads. 4,493,894, Cl. 435-178.000.
Mizuno, Katsuya: *See*—
Ai, Minoru; Manabe, Akira; Igarashi, Yoshimasa; and Mizuno, Katsuya, 4,493,644, Cl. 433-75.000.
Mizushima, Yutaka; Aihara, Hironaka; Otomo, Susumu; Yokoyama, Kazumasa; Okamoto, Hiroyuki; and Suyama, Tadakazu, to Taisho Pharmaceutical Co., Ltd.; and Green Cross Corporation, The. Fat emulsion containing prostaglandin E_1 and method for production thereof. 4,493,847, Cl. 424-317.000.
Mnekin, Ravil V.: *See*—
Uretsky, Yan S.; Mnekin, Ravil V.; Rygalin, Viktor G.; Grechinsky, Dmitry A.; and Klochko, Viktor A., 4,493,213, Cl. 73-664.000.
Mobay Chemical Corporation: *See*—
Flatt, Thomas R., 4,493,734, Cl. 106-309.000.

Mobil Oil Corporation: *See*—
Kresge, Charles T.; Krishnamurthy, Sowmithri; and McHale, William D., 4,493,764, Cl. 208-138.000.
Odeh, Aziz S.; and Dotson, Billy J., 4,493,369, Cl. 166-261.000.
Prader, Randolph D.; Benoit, Gordon L.; and Maddock, Robert T., 4,493,419, Cl. 206-554.000.
Rudnick, Leslie R., 4,493,762, Cl. 208-11.00R.

Moeschlin, Lars F.: *See*—
Josefsson, Lars G.; Svensson, Bengt T.; and Moeschlin, Lars F., 4,494,083, Cl. 333-33.000.

Moffatt, John G.: *See*—
Nestor, John J., Jr.; Moffatt, John G.; and Chan, Hardy W., 4,493,795, Cl. 260-112.50E.

Mohasco Corporation: *See*—
Holobaugh, Raymond E., 4,493,469, Cl. 248-406.100.

Mohr, Helmut; Falb, Wolfgang; and Wallroth, Carl F., to Dragerwerk Aktiengesellschaft. Locking mechanism for use with two anesthetic evaporators. 4,493,318, Cl. 128-200.190.

Moilliet, Guy, to UTB Umwelttechnik Buchs AG. Method and system of generating heat by biological decomposition of organic refuse. 4,493,770, Cl. 210-603.000.

Moller, Hinrich; Wallat, Siegfried; Bartnik, Friedhelm; and Pittermann, Wolfgang, to Henkel Kommanditgesellschaft auf Aktien. Topical cosmetic preparations for the treatment of oily hair and seborrheic skin. 4,493,823, Cl. 424-70.000.

Molyneux-Berry, Robert B., to Marconi Company Limited, The. Inductor. 4,494,167, Cl. 361-270.000.

Monsanto Company: *See*—
Goffe, Randal A., 4,493,629, Cl. 425-192.00S.
Goodin, Richard D.; and Chupp, John P., 4,493,755, Cl. 204-73.00R.
Trivette, Chester D., Jr., 4,493,925, Cl. 525-353.000.

Montegari, Frank A., to International Business Machines Corporation. Complementary decode circuit. 4,494,017, Cl. 307-463.000.

Monteyne, Guido. Conveyor belt for transporting slag material from a filtering apparatus. 4,493,767, Cl. 210-236.000.

Montgomery, John R.: *See*—
Burbank, John E., III; and Montgomery, John R., 4,493,540, Cl. 353-122.000.

Montgomery, Lawrence J.: *See*—
Niethammer, Heinz K.; and Montgomery, Lawrence J., 4,493,116, Cl. 2-69.000.

Moon, Michael L., to Maysteel Corporation. Induction fluid supply unit for exhaust hood apparatus. 4,493,312, Cl. 126-299.00D.

Moon, Sang H.; Park, Jae M.; and Suh, Sung S., to Korea Advanced Institute of Science and Technology. Fertilizer product with sustained action and process therefor. 4,493,725, Cl. 71-62.000.

Moore, James I.; and Van Huis, Philip J., to Ex-Cell-O Corporation. Programmable adaptive control method and system for die-casting machine. 4,493,362, Cl. 164-457.000.

Moore, Larry A.; and Walker, John S., to Motorola, Inc. Self-erecting composite antenna structure. 4,494,123, Cl. 343-900.000.

Moore, Paul A.: *See*—
Barnes, Christopher S.; Moore, Paul A.; and White, Philip D., 4,494,031, Cl. 310-313.00B.

Moore, Ronald D.: *See*—
Zalesak, Philip F.; and Moore, Ronald D., 4,493,195, Cl. 62-402.000.

More, Henry S.: *See*—
Jeter, John D.; and More, Henry S., 4,494,072, Cl. 324-347.000.

Moretti, Alfred, to United States of America, Energy. Radio frequency quadrupole resonator for linear accelerator. 4,494,040, Cl. 315-5.410.

Morgan, George J., to Stauffer Chemical Company. Pumping apparatus. 4,493,609, Cl. 415-20.000.

Mori, Keiji: *See*—
Nagata, Kazuhisa; Mori, Keiji; and Ogasawara, Asao, 4,493,507, Cl. 296-216.000.

Mori, Koh: *See*—
Ueda, Fumio; Hashimoto, Eiichi; Yamada, Takeyoshi; and Mori, Koh, 4,493,714, Cl. 55-16.000.

Morino, Toshiharu: *See*—
Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; Ota, Yozo; and Morino, Toshiharu, 4,493,804, Cl. 261-44.00C.

Morrell, David J.; DeVault, Donald G.; and Sands, William K., Jr. Pipe measuring method and apparatus. 4,494,224, Cl. 367-2.000.

Morris, David L., to Miles Laboratories, Inc. Activated apoglucose oxidase and its use in specific binding assays. 4,493,890, Cl. 435-7.000.

Morrison-Knudsen Co., Inc.: *See*—
Miles, Lee W.; Chambers, Samuel W.; and Rice, Mathias F., 4,493,586, Cl. 405-17.000.

Morse, William C.; and Phaneuf, John B., to AT&T Technologies, Inc. Thin lead suspension for a piezoelectric resonator. 4,494,033, Cl. 310-352.000.

Motorola, Inc.: *See*—
Crevel, Philippe, 4,494,184, Cl. 364-178.000.
Dydyk, Michael, 4,494,086, Cl. 331-96.000.
Dydyk, Michael; Enlow, Norman K.; and Tuzzolino, Joseph R., 4,494,087, Cl. 331-107.0DP.
Garay, Oscar M., 4,494,120, Cl. 343-702.000.
Garay, Oscar M.; and Balzano, Quirino, 4,494,122, Cl. 343-722.000.
Groth, Edward J., Jr., 4,494,238, Cl. 375-1.000.
Moore, Larry A.; and Walker, John S., 4,494,123, Cl. 343-900.000.
Popek, Marc H.; and Suarez, Jose I., 4,494,090, Cl. 332-16.00T.
Stengel, Robert E.; and Nejdl, Charles W., 4,494,100, Cl. 336-200.000.

Mount, James: *See*—
Piascinski, Joseph J.; Axelrod, Randolph H.; and Mount, James, 4,493,668, Cl. 445-40.000.

Moussie, Michel, to U.S. Philips Corporation. Programmable read only memory cell having an electrically destructible programmation element integrally formed with a junction diode. 4,494,135, Cl. 357-59.000.

Mueller, Richard J.: *See*—
Sedam, Jason K.; Mueller, Richard J.; and Holoubek, Andrew J., 4,493,441, Cl. 222-129.100.

Muellner, William C., to Perkin-Elmer Corporation, The. Variable gain amplifier. 4,494,212, Cl. 364-571.000.

Muhl, Andrew H. Flow controlled electrode type liquid heater. 4,493,973, Cl. 219-286.000.

Mukai, Junji: *See*—
Suzuki, Hiroshi; Tanaka, Goro; Nishikawa, Akio; Mukai, Junji; Sato, Mikio; Makino, Daisuke; and Wakashima, Yoshiaki, 4,494,217, Cl. 365-53.000.

Mukoh, Akio: *See*—
Kaneko, Masaharu; Ozawa, Tetsuo; Yoneyama, Tomio; Imazeki, Shuji; Mukoh, Akio; and Sato, Mikio, 4,493,532, Cl. 350-349.000.

Mulach, Arthur; and Calfo, Raymond, to Westinghouse Electric Corp. Apparatus for preventing overflux damage to stator cores. 4,494,030, Cl. 310-256.000.

Mulhaupt, Bruno: *See*—
Kubr, Vaclav; Mulhaupt, Bruno; and Paschedag, Hansjoachim, 4,493,768, Cl. 210-360.200.
Paschedag, Hansjoachim; Mulhaupt, Bruno; and Kubr, Vaclav, 4,493,769, Cl. 210-360.200.

Mullenix, Kenneth E.: *See*—
Troy, Seymour; and Mullenix, Kenneth E., 4,494,197, Cl. 364-412.000.

Muller, Dietmar; Schubert, Hiltmar; and Krohnert, Rudolf, to Fraunhofer-Gesellschaft Zur Forderung der angewandten Forschung e.V. Apparatus for dewatering and plastifying mixtures for the manufacture of explosives. 4,493,630, Cl. 425-203.000.

Muller, Jurgen: *See*—
Bauer, Walter; Farber, Heinrich; and Muller, Jurgen, 4,493,545, Cl. 354-277.000.

Munchmeyer, Dietrich: *See*—
Becker, Erwin; Ehrfeld, Wolfgang; Munchmeyer, Dietrich; Betz, Hans; and Heuberger, Anton, 4,493,753, Cl. 204-9.000.

Munzel, Klaus, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Control circuit for igniting a low-ohm ignition capsule. 4,493,259, Cl. 102-218.000.

Mupac Corporation: *See*—
Leary, Burton; and Silverio, Shaun, 4,494,172, Cl. 361-400.000.

Mura, Shinichiro: *See*—
Takano, Toshio; and Mura, Shinichiro, 4,493,403, Cl. 192-4.00A.

Murata, Masayoshi: *See*—
Takaya, Takao; Inoue, Yoshikazu; Yasuda, Nobuyoshi; and Murata, Masayoshi, 4,493,834, Cl. 424-246.000.

Murray, Thomas L., Jr.: *See*—
Goss, Gary J.; Kelly, Richard P.; and Murray, Thomas L., Jr., 4,494,186, Cl. 364-200.000.

Murrin, Byran; Willis, Robert; and Page, Jeffrey, to OMI International Corporation. Anode structure for a plating cell. 4,493,758, Cl. 204-224.00R.

Musselmann, Walter; Kinzler, Herbert; and Tra, Josef, to J. M. Voith GmbH. Rotating sorter for fiber material suspensions. 4,493,766, Cl. 209-362.000.

Musto, Richard L.; and Kai, Norichika, to Combustion Engineering, Inc. Direct pulverized fuel fired system. 4,493,269, Cl. 110-106.000.

Mutschler, Otto. Releasable protective holder for a writing implement. 4,493,575, Cl. 401-195.000.

MZW Maschinenfabrik Zuckermann Pachtgesellschaft mbH: *See*—
Schmidt, Erich, 4,493,351, Cl. 144-3.00R.

Nadas, Julius: *See*—
Sander, Nils B. L.; and Nadas, Julius, 4,493,401, Cl. 188-199.000.

Nagano, Tamio, to Kabushiki Kaisha Daikin Seisakusho. Damper disc. 4,493,408, Cl. 192-106.200.

Nagano, Teruo; and Nagashima, Akira, to Fuji Photo Film Co., Ltd. Light-sensitive composition. 4,493,884, Cl. 430-192.000.

Nagaoka, Miyuki: *See*—
Kume, Nobuyuki; Yoshino, Harumi; and Nagaoka, Miyuki, 4,494,168, Cl. 361-273.000.

Nagaoka, Satoshi: *See*—
Mihara, Yuji; Nagaoka, Satoshi; and Okazaki, Masaki, 4,493,889, Cl. 430-572.000.

Nagashima, Akira; and Saito, Yasuo, to Kioritz Corporation. Emergency braking device for chain saw. 4,493,400, Cl. 188-77.00W.

Nagashima, Akira: *See*—
Nagano, Teruo; and Nagashima, Akira, 4,493,884, Cl. 430-192.000.

Nagata, Kazuhisa; Mori, Keiji; and Ogasawara, Asao, to Aisin Seiki Kabushiki Kaisha. Tilting type sunroof. 4,493,507, Cl. 296-216.000.

Nagel, Dietmar: *See*—
Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Avi, 4,493,671, Cl. 446-464.000.

Nagel, Gregory L.: *See*—
Houchens, Albert F.; Cleveland, Dixon; Decina, Basil A., Jr.; Watney, Dale K.; Havens, James R.; and Nagel, Gregory L., 4,493,965, Cl. 219-109.000.

Nagy, Jozsef: *See*—
Toth, Istvan; Nagy, Jozsef; Dombay, Zsolt; Grega nee Toth, Erzsebet; Horvath, Ibolya; Vigh, Laszlo ; and Farkas, Tibor, 4,493,727, Cl. 71-088.000.

Naiff, Kenneth L., to General Instrument Corporation. Read only memory using series connected depletion transistors as bus lines. 4,494,218, Cl. 365-104.000.

Naimpally, Saiprasad V.; and Tallant, James C., II, to RCA Corporation. Wideband kinescope driver amplifier. 4,494,146, Cl. 358-184.000.

Naito, Takeshi; Masamoto, Junzo; Iwaisako, Toshiyuki; and Matsuzaki, Kazuhiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for recovering trioxane by plural distillation. 4,493,752, Cl. 203-71.000.

Nakagawa, Akira: *See*—
Omura, Satoshi; Tanaka, Yoshitake; Iwai, Yuzuru; Takahashi, Yoko; and Nakagawa, Akira, 4,493,845, Cl. 424-279.000.

Nakagawa, Hisao: *See*—
Kishi, Ichiro; and Nakagawa, Hisao, 4,493,223, Cl. 74-371.000.

Nakagawa, Junkichi: *See*—
Kajioka, Hiroshi; Tokunaga, Toshihide; and Nakagawa, Junkichi, 4,493,530, Cl. 350-96.340.

Nakaguchi, Osamu: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; Takeno, Hidekazu; Okada, Satoshi; and Hashimoto, Masashi, 4,493,794, Cl. 260-112.50R.

Nakahashi, Kenichi, to Olympus Optical Co., Ltd. Objective lens system for endoscopes. 4,493,537, Cl. 350-469.000.

Nakajima, Tetsuo; and Kumata, Hirotaka, to Honda Giken Kogyo Kabushiki Kaisha. Temperature measuring device for internal-combustion engine. 4,493,304, Cl. 123-479.000.

Nakamura, Hideo: *See*—
Noguchi, Kouki; Tsunehiro, Takashi; and Nakamura, Hideo, 4,494,195, Cl. 364-200.000.

Nakamura, Kazuo: *See*—
Kawahara, Hiroshi; and Nakamura, Kazuo, 4,493,569, Cl. 400-144.200.

Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; Ota, Yozo; and Morino, Toshiharu, to Toyota Jidosha Kabushiki Kaisha; and Aisan Industry Co., Ltd. Variable venturi-type carburetor. 4,493,804, Cl. 261-44.00C.

Nakamura, Toshiaki: *See*—
Takei, Toshihiro; Matsui, Kazuma; Hattori, Yoshiyuki; Watanabe, Kiyohiko; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,493,620, Cl. 417-366.000.

Nakane, Keiichi; Kamiuchi, Toshiro; and Nakanishi, Hiroaki, to Hitachi, Ltd. Method of processing an operating system in a multi-processor system. 4,494,188, Cl. 364-200.000.

Nakanishi Dental Mfg., Co., Ltd.: *See*—
Nakanishi, Takasuke, 4,493,645, Cl. 433-127.000.

Nakanishi, Hiroaki: *See*—
Nakane, Keiichi; Kamiuchi, Toshiro; and Nakanishi, Hiroaki, 4,494,188, Cl. 364-200.000.

Nakanishi, Takasuke, to Nakanishi Dental Mfg., Co., Ltd. Device for opening and closing a chuck for a dental handpiece. 4,493,645, Cl. 433-127.000.

Nakuru Inc.: *See*—
Ono, Osamu, 4,493,152, Cl. 33-25.00R.

Nall, Lawson H., to TRI Tool, Inc. Adjustable mandrel for portable lathe. 4,493,232, Cl. 82-4.00C.

Namiki, Takayuki: *See*—
Teraji, Tsutomu; Todo, Eishiro; Shimazaki, Norihiko; Oku, Teruo; and Namiki, Takayuki, 4,493,832, Cl. 424-199.000.

Nannini, Alessandro: *See*—
Pagano, Roberto; and Nannini, Alessandro, 4,493,390, Cl. 181-204.000.

Napolitano, Pellegrino E., to Hudson Engineering Company. Tee-type valve for self-priming pump system. 4,493,607, Cl. 415-11.000.

Nappi Trucking Corp.: *See*—
Karlik, Richard L., 4,493,491, Cl. 280-402.000.

Nara, Yasuaki: *See*—
Hibino, Yozo; Kamejima, Kohji; and Nara, Yasuaki, 4,493,192, Cl. 62-141.000.

Nason, George F., III: *See*—
Fine, Richard A.; and Nason, George F., III, 4,493,551, Cl. 355-22.000.

National Research Development Corp.: *See*—
Stangroom, James E., 4,493,615, Cl. 417-48.000.

Nauchno-Isaledovatelsky Institut Introskopii: *See*—
Uretsky, Yan S.; Mnekin, Ravil V.; Rygalin, Viktor G.; Grechinsky, Dmitry A.; and Klochko, Viktor A., 4,493,213, Cl. 73-664.000.

Nautilus Sports/Medical Industries, Inc.: *See*—
Jones, Arthur A., 4,493,485, Cl. 272-126.000.

Nawa, Akiyoshi; and Shimizu, Takao, to Mitsubishi Denki Kabushiki Kaisha. Hot wire type electric arc welding torch. 4,493,971, Cl. 219-137.520.

Nayak, Ashok L.; and Spremulli, Paul F., to Corning Glass Works. Mixing apparatus. 4,493,557, Cl. 366-300.000.

NCR Canada Ltd. - NCR Canada Ltee: *See*—
Vyas, Arvindkumar C., 4,493,253, Cl. 101-93.030.

NCR Corporation: *See*—
Bader, Leonhard; Hermann, Ferdinand; Ruprich, Wilhelm; and Winter, Hermann, 4,493,137, Cl. 29-25.350.
Gunderson, Robert O.; Kocol, James C.; and Schuck, David B., 4,494,185, Cl. 364-200.000.

NEC Corporation: *See*—
Takekida, Yoshisuke, 4,493,550, Cl. 355-10.000.

Necchi S.p.A.: *See*—
Bianchi, Nereo, 4,493,280, Cl. 112-260.000.

Nedelec, Lucien; Pierdet, Andre ; and Fauveau, Patrick, to Uclaf, Rousel. 9-Oxalysergic acid derivatives and uses thereof. 4,493,836, Cl. 424-248.400.

Nejdl, Charles W.: *See*—
Stengel, Robert E.; and Nejdl, Charles W., 4,494,100, Cl. 336-200.000.

Nelson, Arthur R., to Aetna Telecommunications Laboratories. Fiber optic mass sensor. 4,493,212, Cl. 73-517.00R.

Nelson, Dale K.: *See*—
Mathison, Allen D.; Nelson, Dale K.; and Cherne, Lloyd G., 4,493,344, Cl. 138-89.000.

Nelson, Gregory R.: *See*—
Reed, Kenneth E.; Mason, Bradley; Mason, Jeff; and Nelson, Gregory R., 4,493,316, Cl. 128-80.00C.

Nelson, James C., to Chandler Evans Inc. Oil lubricated main drive shaft for fuel pump. 4,493,623, Cl. 418-94.000.

Nelson, Robert B., to Maytag Company, The. Double actuation coin slide system. 4,493,410, Cl. 194-1.00G.

Nestler, Gerhard: *See*—
Merger, Franz; and Nestler, Gerhard, 4,493,801, Cl. 260-465.600.

Nestor, John J., Jr.; Moffatt, John G.; and Chan, Hardy W., to Syntex (U.S.A.) Inc. Synthetic peptide sequences useful in biological and pharmaceutical applications and methods of manufacture. 4,493,795, Cl. 260-112.50E.

Neuhierl, Hermann. Motorized toy. 4,493,669, Cl. 446-103.000.

Neukermans, Armand P., to Hewlett-Packard Company. Electron beam window. 4,494,036, Cl. 313-420.000.

Neurometrics, Inc.: *See*—
Bergelson, Michael; Fridman, Jacob; and John, Erwin R., 4,493,327, Cl. 128-731.000.

Nevo-Hacohen, Jacob I. Conveyor elevator apparatus. 4,493,414, Cl. 198-800.000.

Newman, Seymour: *See*—
Meyer, Fred J.; and Newman, Seymour, 4,493,918, Cl. 524-451.000.

Newton, David F.; and Thompson, David J., to Imperial Chemical Industries PLC. Anthraquinone compounds. 4,493,785, Cl. 252-299.100.

Newton, Paul P., to Warner Electric Brake & Clutch Company. Armature assembly for an electromagnetic clutch. 4,493,407, Cl. 192-84.00C.

Nichol, Bud. Electrified fence gate. 4,493,480, Cl. 256-10.000.

Nicholson, George R.: *See*—
Stewart, David E.; and Nicholson, George R., 4,493,229, Cl. 76-107.00A.

Nieberl, Bruno: *See*—
Buchschmid, Emil; Horn, Friedrich; Nieberl, Bruno; Schmidt, Hans-Jorg; and Weyerich, Manfred, 4,494,101, Cl. 336-210.000.

Niemiro, Josef W.; and Skipor, Eugene, to Rockwell International Corporation. Cam activated anti-dog-ear device. 4,493,690, Cl. 493-444.000.

Niephaus, Dieter: *See*—
Beaujean, Holger; Kamphausen, Willi; Niephaus, Dieter; and Nommensen, Ove, 4,493,434, Cl. 222-3.000.

Niethammer, Heinz K.; and Montgomery, Lawrence J., to Kimberly-Clark Corporation. Method for manufacturing sleeved garments. 4,493,116, Cl. 2-69.000.

Niggemann, Richard E.: *See*—
Bland, Timothy J.; and Niggemann, Richard E., 4,494,171, Cl. 361-386.000.

Niki, Haruo: *See*—
Fukaya, Hirokazu; and Niki, Haruo, 4,494,077, Cl. 330-295.000.

Nikkanen, John P.; and Griffin, James G., to United Technologies Corporation. Pressurized nacelle compartment for active clearance controlled gas turbine engines. 4,493,184, Cl. 60-204.000.

Nikutta, Wolfgang: *See*—
Frieling, Focko; Michael, Ewald; and Nikutta, Wolfgang, 4,494,015, Cl. 307-268.000.

Nilsson, Claes T.: *See*—
Jakobsen, Kjell M.; Nilsson, Claes T.; and Larsson, Lars G., 4,493,633, Cl. 425-525.000.

Nilsson, Weimar, to Huskvarna Transtortkonstruktionar A.B. Locking means, particularly for truck platform flaps, and the like. 4,493,133, Cl. 24-68.00T.

Nippon Electric Co., Ltd.: *See*—
Fukaya, Hirokazu; and Niki, Haruo, 4,494,077, Cl. 330-295.000.

Nippon Kogaku K.K.: *See*—
Uematsu, Kimio, 4,493,544, Cl. 354-246.000.

Nippon Petrochemicals Company, Limited: *See*—
Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Yanagishita, Hitoshi; and Hayashi, Shozo, 4,493,943, Cl. 174-25.00C.

Nippon Seiko Kabushiki Kaisha: *See*—
Osawa, Hiroyuki; and Ishida, Yasutaka, 4,493,513, Cl. 384-533.000.

Nippon Steel Corporation: *See*—
Dairiki, Osamu; Ookuma, Humio; and Asano, Hiroyuki, 4,494,205, Cl. 364-472.000.
Fujiwara, Koichi; Sakai, Tomohiko; Yamada, Yoneo; and Higashine, Kazutaka, 4,493,739, Cl. 148-111.000.

Nippondenso Co., Ltd.: *See*—
Takei, Toshihiro; Matsui, Kazuma; Hattori, Yoshiyuki; Watanabe, Kiyohiko; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,493,620, Cl. 417-366.000.

Nishigaki, Masahiko: *See*—
Hirobe, Kazushi; Tonoki, Satoshi; and Nishigaki, Masahiko, 4,493,913, Cl. 523-205.000.

Nishijima, Hideo; Sera, Katsumi; Fukushima, Isao; and Kobori, Yasunori, to Hitachi, Ltd.; and Hitachi Microcomputer Engineering, Ltd. Motor driving circuit. 4,494,056, Cl. 318-269.000.

Nishikawa, Akio: *See*—
Suzuki, Hiroshi; Tanaka, Goro; Nishikawa, Akio; Mukai, Junji; Sato, Mikio; Makino, Daisuke; and Wakashima, Yoshiaki, 4,494,217, Cl. 365-53.000.

Nishino, Atsushi; Ikeda, Masaki; Kimura, Kunio; and Oyabu, Hajime, to Matsushita Electric Industrial Company, Limited. Low melting enamel frits. 4,493,900, Cl. 501-26.000.

Nishiyama, Kunio: *See*—
Yamawaki, Takeshi; and Nishiyama, Kunio, 4,493,505, Cl. 296-63.000.

Nishizawa, Hiroshi; Sato, Tadayuki; and Ishikawa, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for insulating slots in rotors of electrical rotating machines. 4,493,858, Cl. 427-104.000.

Nissan Industrial Equipment Co.: *See*—
Maes, George L., 4,493,397, Cl. 187-9.00E.

Nissan Motor Company, Limited: *See*—
Horibe, Osamu, 4,493,243, Cl. 91-369.00B.
Kawamura, Yoshihisa, 4,493,302, Cl. 123-357.000.
Umemura, Yukio, 4,493,294, Cl. 123-41.330.

NJM, Inc.: *See*—
Voltmer, Helmut; Schwenzer, Alfred F.; and Spano, John D., 4,493,744, Cl. 156-568.000.

Nodet-Gougis: *See*—
Gauchet, Yves M. A.; and Paillaud, Pierre G., 4,493,273, Cl. 111-86.000.

Noel, Stan L., to Ampex Corporation. Overload protection device. 4,494,164, Cl. 361-101.000.

Noguchi, Kouki; Tsunehiro, Takashi; and Nakamura, Hideo, to Hitachi, Ltd. Microinstruction controlled data processor. 4,494,195, Cl. 364-200.000.

Noji, Tasuku; and Hiyama, Torao, to Alps Electric Co., Ltd. High frequency circuit shielding structure having tuning coils double shielded. 4,494,095, Cl. 334-85.000.

Nommensen, Ove: *See*—
Beaujean, Holger; Kamphausen, Willi; Niephaus, Dieter; and Nommensen, Ove, 4,493,434, Cl. 222-3.000.

Nomura, Tutomu: *See*—
Kubo, Osamu; Ido, Tadashi; Nomura, Tutomu; and Maeda, Tatsumi, 4,493,874, Cl. 428-403.000.

Nonomura, Kinzo; Watanabe, Masanori; and Takesako, Yoshinobu, to Matsushita Electric Industrial Co., Ltd. Electrode construction and method of making the same. 4,493,666, Cl. 445-24.000.

Noro, Masataka: *See*—
Yazaki, Takao; and Noro, Masataka, 4,493,867, Cl. 428-161.000.

Norris, Allyn P.: *See*—
Johnson, Richard C.; and Norris, Allyn P., 4,493,206, Cl. 73-7.000.

Norsk Hydro a.s.: *See*—
Gronnerud, Rolf; and Boe, Einar, 4,493,368, Cl. 165-159.000.

Northern Telecom Limited: *See*—
Bennett, Jeffrey H., 4,494,082, Cl. 333-28.00R.
Holmes, Edward S. B., 4,494,104, Cl. 337-403.000.
Retallack, Laurence J.; and Reedyk, Cornelis W., 4,493,949, Cl. 179-18.0BC.
Springthorpe, Anthony J., 4,493,287, Cl. 118-719.000.

Norton, Jeffery R., to Stresau Laboratory, Inc. Parachute line cutting device. 4,493,240, Cl. 89-1.140.

Novotny, Bernd: *See*—
Freyberger, Laurin C.; and Novotny, Bernd, 4,494,137, Cl. 358-27.000.

Nozaki, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Auxiliary radially shifting mechanism for vanes in a pump of the vane type. 4,493,626, Cl. 418-260.000.

Nubs Nob, Inc.: *See*—
Dilworth, James L.; and Brinks, Robert J., 4,493,457, Cl. 239-25.000.

Nunes, Maurice: *See*—
Hurley, James R.; Searight, Edward F.; and Nunes, Maurice, 4,493,308, Cl. 126-41.00R.

O & S Manufacturing Company: *See*—
Smith, Joseph E., Jr., 4,493,512, Cl. 308-2.00R.

Occidental Chemical Corporation: *See*—
Colaruotolo, Joseph F.; Olsen, Ronald H.; and Vandenbergh, Peter A., 4,493,895, Cl. 435-262.000.

Odeh, Aziz S.; and Dotson, Billy J., to Mobil Oil Corporation. Method of improved oil recovery by simultaneous injection of water with an in-situ combustion process. 4,493,369, Cl. 166-261.000.

Odermann, Charles R., to Singer Company, The. Combination needle and accessory driving stud. 4,493,279, Cl. 112-220.000.

Ogasawara, Asao: *See*—
Nagata, Kazuhisa; Mori, Keiji; and Ogasawara, Asao, 4,493,507, Cl. 296-216.000.

Ogata, Haruki; Ogawa, Kimio; and Umeda, Hiroyuki, to Victor Company of Japan, Ltd. Tape cassette. 4,494,161, Cl. 360-132.000.

Ogata, Tomohiro: *See*—
Takahashi, Hiroyuki; and Ogata, Tomohiro, 4,493,360, Cl. 164-286.000.

Ogawa, Kimio: *See*—
Ogata, Haruki; Ogawa, Kimio; and Umeda, Hiroyuki, 4,494,161, Cl. 360-132.000.

Ogawa, Masao: *See*—
Miyashiro, Yutaka; Ogawa, Masao; Yamazaki, Yoshio; and Igarasi, Seizi, 4,493,894, Cl. 435-178.000.

Ogawa, Shunichi: *See*—
Hashimoto, Masanori; and Ogawa, Shunichi, 4,493,573, Cl. 400-647.100.

O'Hanlon, Thomas A.: *See*—
Reichman, James M.; O'Hanlon, Thomas A.; and Kendrew, Thomas J., 4,493,379, Cl. 175-57.000.

Ohayon, Gerard; Reverchon, Bernard; Tourre, Bernard; and Vigier, Serge, to Lafarge Conseils et Etudes. Coal or multifuel burner. 4,493,271, Cl. 110-262.000.

Ohki, Nobutaka: *See*—
Endo, Katsusuke; Kato, Eiichi; Ohki, Nobutaka; and Ishikawa, Takatoshi, 4,493,888, Cl. 430-405.000.

Ohma, Toshio, to Showa Manufacturing Co., Ltd. Front fork for cycle. 4,493,490, Cl. 280-276.000.

Ohmori, Takashi: *See*—
Kurata, Masami; and Ohmori, Takashi, 4,494,152, Cl. 358-293.000.

Ohmura, Hiroshi; Kohno, Atsuo; Shiiba, Minoru; and Tanaka, Tsutomu, to Fuji Photo Film Co., Ltd. Photographic camera with handle grip. 4,493,542, Cl. 354-82.000.

Ohnishi, Shunsaku: *See*—
Takei, Toshihiro; Matsui, Kazuma; Hattori, Yoshiyuki; Watanabe, Kiyohiko; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,493,620, Cl. 417-366.000.

Ohta, Hiroshi, to Rikagaku Kenkyusho. Josephson junction element and method of making the same. 4,494,131, Cl. 357-5.000.

Ohyama, Tadashi, to Aisin Seiki Kabushiki Kaisha. Electromagnetic valve unit. 4,493,474, Cl. 251-129.000.

Okada, Minoru, to Santrade Ltd. Milling cutter. 4,493,594, Cl. 407-41.000.

Okada, Satoshi: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; Takeno, Hidekazu; Okada, Satoshi; and Hashimoto, Masashi, 4,493,794, Cl. 260-112.50R.

Okamoto, Hiroyuki: *See*—
Mizushima, Yutaka; Aihara, Hironaka; Otomo, Susumu; Yokoyama, Kazumasa; Okamoto, Hiroyuki; and Suyama, Tadakazu, 4,493,847, Cl. 424-317.000.

Okazaki, Masaki: *See*—
Mihara, Yuji; Nagaoka, Satoshi; and Okazaki, Masaki, 4,493,889, Cl. 430-572.000.

Okinaka, Yutaka: *See*—
Abys, Joseph A.; and Okinaka, Yutaka, 4,493,754, Cl. 204-47.000.

Oku, Teruo: *See*—
Teraji, Tsutomu; Todo, Eishiro; Shimazaki, Norihiko; Oku, Teruo; and Namiki, Takayuki, 4,493,832, Cl. 424-199.000.

Okui, Isamu: *See*—
Yoshihisa, Kozo; and Okui, Isamu, 4,494,075, Cl. 330-254.000.

Oldland, Sidney R. D.: *See*—
Edgerley, Peter G.; and Oldland, Sidney R. D., 4,493,871, Cl. 428-308.400.

Oliva, Rudolf; and Schmidt, K. Ulf, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e. V. Device operating by means of pyrotechnic charges for releasing joints subject to load. 4,493,241, Cl. 89-1.140.

Olmsted, James F.; Webster, Sherwood F.; and Heise, Richard L. Thermodynamic conditioning of air or any other gas to increase the operating efficiency of diverse energy consuming systems. 4,493,750, Cl. 159-48.100.

Olsen, Arthur M.: *See*—
Bayer, Stephen J.; and Olsen, Arthur M., 4,494,183, Cl. 364-154.000.

Olsen, Kolbjorn. Adapter plug for current supply rail systems. 4,493,519, Cl. 339-75.00M.

Olsen, Ronald H.: *See*—
Colaruotolo, Joseph F.; Olsen, Ronald H.; and Vandenbergh, Peter A., 4,493,895, Cl. 435-262.000.

Olympus Optical Co., Ltd.: *See*—
Fujibayashi, Kenji, 4,494,158, Cl. 360-69.000.
Kimura, Kenji, 4,494,225, Cl. 369-44.000.
Nakahashi, Kenichi, 4,493,537, Cl. 350-469.000.
Tabara, Takashi, 4,493,897, Cl. 436-47.000.

O'Malley, Michael P.; and Thibault, Alfred R., to International Packaging Systems Inc. Apparatus for molding foam cushion packaging. 4,493,627, Cl. 425-89.000.

Omega SA: *See*—
Gagnebin, Gaston, 4,493,562, Cl. 368-294.000.

OMI International Corporation: *See*—
Murrin, Byran; Willis, Robert; and Page, Jeffrey, 4,493,758, Cl. 204-224.00R.

Omura, Satoshi; Tanaka, Yoshitake; Iwai, Yuzuru; Takahashi, Yoko; and Nakagawa, Akira, to Kitasato Kenkyusho. Antibiotic AM-3603. 4,493,845, Cl. 424-279.000.

Ono, George Y.: *See*—
Kubert, Vincent T.; Frampton, John C.; and Ono, George Y., 4,493,257, Cl. 101-349.000.

Ono, Hiroyuki, to Yamamura Glass Co., Ltd. Method of producing glass bottles. 4,493,722, Cl. 65-30.140.

Ono, Keiichi; Sugie, Akihiko; Kawakami, Hajime; Sami, Shunsuke; Kojima, Atsuyuki; and Katsube, Junki, to Sumitomo Chemical Company, Limited. Bicyclooctane derivatives. 4,493,846, Cl. 424-308.000.

Ono, Osamu, to Nakuru Inc. Lettering machine. 4,493,152, Cl. 33-25.00R.

Ono, Shigetoshi: *See*—
Fujita, Shinsaku; Maekawa, Yukio; and Ono, Shigetoshi, 4,493,885, Cl. 430-223.000.

Ookuma, Humio: *See*—
Dairiki, Osamu; Ookuma, Humio; and Asano, Hiroyuki, 4,494,205, Cl. 364-472.000.

Orita, Ryozo: *See*—
Shimamoto, Kunihiro; Hatanaka, Hiroshi; Seki, Shinichiro; and Orita, Ryozo, 4,493,938, Cl. 568-62.000.

Ortega, Francis, to U.S. Philips Corporation. Heating device with heat storage. 4,493,365, Cl. 165-10.00A.

Orth, Winfried; and Fickert, Werner, to Rutgerswerke Aktiengesellschaft. Preparation of 1H-pyrrol-2-acetic acid esters. 4,493,935, Cl. 548-562.000.

Ortloff, John E., to Exxon Production Research Co. Combination mooring system. 4,493,282, Cl. 114-230.000.

Osaka Gas Company Limited: *See*—
Ito, Hirosato; and Takada, Daizo, 4,493,635, Cl. 431-90.000.

Osawa, Hiroyuki; and Ishida, Yasutaka, to Nippon Seiko Kabushiki Kaisha. Bearing cage for retaining rolling elements. 4,493,513, Cl. 384-533.000.

Ota, Akio: *See*—
Kajikawa, Masauemon; and Ota, Akio, 4,493,381, Cl. 175-107.000.

Ota, Yozo: *See*—
Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; Ota, Yozo; and Morino, Toshiharu, 4,493,804, Cl. 261-44.00C.

Otomo, Susumu: *See*—
Mizushima, Yutaka; Aihara, Hironaka; Otomo, Susumu; Yokoyama, Kazumasa; Okamoto, Hiroyuki; and Suyama, Tadakazu, 4,493,847, Cl. 424-317.000.

Otsuka, Kiyotaka: *See*—
Tanahashi, Masao; Tanabe, Toshio; and Otsuka, Kiyotaka, 4,493,149, Cl. 30-43.920.

Otto, Charles W., to General Electric Company. Dynamoelectric machine with self-adjusting bearing. 4,494,027, Cl. 310-89.000.

Outboard Marine Corporation: *See*—
Wick, Gerald H., 4,493,180, Cl. 56-11.300.

Ovren, Christer: *See*—
Adolfsson, Morgan; Brogardh, Torgny; Ovren, Christer; and Persson, Anders, 4,493,995, Cl. 250-227.000.

Owens-Corning Fiberglas Corporation: *See*—
Green, William A.; Godfrey, Joe E.; and Pietsch, David S., 4,493,464, Cl. 242-170.000.
Haynes, Eugene M., 4,493,367, Cl. 165-72.000.

Owens-Illinois, Inc.: *See*—
Wedding, Donald K.; Fein, Michael E.; Ernsthausen, Roger E.; and Byrum, Bernard J., 4,494,038, Cl. 313-587.000.

Owlett, David D., to GTE Communications Systems Corporation. Lockable tuning mechanism with reduced backlash. 4,494,093, Cl. 333-232.000.

OXIMETRIX, Inc.: *See*—
Beard, Robert W.; and Kirk, Russell F., 4,493,704, Cl. 604-154.000.

Oyabu, Hajime: *See*—
Nishino, Atsushi; Ikeda, Masaki; Kimura, Kunio; and Oyabu, Hajime, 4,493,900, Cl. 501-26.000.

Ozawa, Tetsuo: *See*—
Kaneko, Masaharu; Ozawa, Tetsuo; Yoneyama, Tomio; Imazeki, Shuji; Mukoh, Akio; and Sato, Mikio, 4,493,532, Cl. 350-349.000.

P.A.S.T. Corporation: *See*—
Maier, Bruce R.; and Flannery, Lincoln R., 4,493,115, Cl. 2-2.000.

Pagano, Roberto; and Nannini, Alessandro, to Fiat Auto S.p.A. Apparatus for the combined production of electrical energy and heat. 4,493,390, Cl. 181-204.000.

Page, Jeffrey: *See*—
Murrin, Byran; Willis, Robert; and Page, Jeffrey, 4,493,758, Cl. 204-224.00R.

Pagella, Piergiuseppe: *See*—
Sportoletti, Giancarlo; Pagella, Piergiuseppe; and Cremonesi, Pietro, 4,493,829, Cl. 424-177.000.

Paillaud, Pierre G.: *See*—
Gauchet, Yves M. A.; and Paillaud, Pierre G., 4,493,273, Cl. 111-86.000.

Pall Corporation: *See*—
Degen, Peter J.; and Gsell, Thomas C., 4,493,756, Cl. 204-141.500.

Palluel, Pierre; and Shroff, Arvind, to Thomson-CSF. Thermoelectric cathode for a hyperfrequency valve and valves incorporating such cathodes. 4,494,035, Cl. 313-346.00R.

Pan, Robert B.: *See*—
Radd, Fred J.; Scott, James B.; and Pan, Robert B., 4,493,372, Cl. 166-285.000.

Panaia, David J.; and Lovell, Walter C. Pressure control wheel chair seat. 4,493,488, Cl. 280-42.000.

Panas, William R.: *See*—
Jarosz, John M.; and Panas, William R., 4,494,103, Cl. 337-282.000.

Pannell, Richard B.: *See*—
Beuther, Harold; Kibby, Charles L.; Kobylinski, T. P.; and Pannell, Richard B., 4,493,905, Cl. 502-325.000.

Pantasote Inc.: *See*—
Coppola, Joseph C., Jr., 4,493,175, Cl. 52-410.000.

Par-Way Manufacturing Co.: *See*—
Hanson, Harold W., Jr., 4,493,442, Cl. 222-241.000.

Park, Jae M.: *See*—
Moon, Sang H.; Park, Jae M.; and Suh, Sung S., 4,493,725, Cl. 71-62.000.

Parkes, Larry S.: *See*—
Godfrey, Noel R.; Parkes, Larry S.; and Treacy, Richard H., 4,494,050, Cl. 318-158.000.

Parliment, Thomas H.: *See*—
Zanno, Paul R.; Parliment, Thomas H.; Soukup, Robert J.; and McNaught, Richard P., 4,493,852, Cl. 426-535.000.

Paschedag, Hansjoachim; Mulhaupt, Bruno; and Kubr, Vaclav, to Sulzer-Escher Wyss Ltd. Twin pusher centrifuge. 4,493,769, Cl. 210-360.200.

Paschedag, Hansjoachim: *See*—
Kubr, Vaclav; Mulhaupt, Bruno; and Paschedag, Hansjoachim, 4,493,768, Cl. 210-360.200.

Pascual, Gabriel E. Taper gauge device for hair clippers. 4,493,154, Cl. 33-185.00R.

Pastorius, Walter J.: *See*—
Pryor, Timothy R.; Hageniers, Omer L.; Pastorius, Walter J.; Liptay-Wagner, Nicholas; and Clarke, Donald A., 4,493,554, Cl. 356-241.000.

Patel, Arvind M., to International Business Machines Corporation. On-the-fly multibyte error correcting system. 4,494,234, Cl. 371-38.000.

Patton, Bennie N. Wind-driven generator. 4,494,008, Cl. 290-44.000.

Paul, Duane B., to General Electric Company. Surge control in compressor. 4,493,608, Cl. 415-11.000.

Paul, Jurgen; Braatz, Andreas; and Hanke, Hans, to Daimler-Benz Aktiengesellschaft. Hydrodynamic device. 4,493,293, Cl. 123-41.120.

Paul Wurth S.A.: *See*—
Legille, Edouard; and Mailliet, Pierre, 4,493,600, Cl. 414-208.000.

Paule, Kurt: *See*—
Gunther, Klaus; Hornung, Friedrich; Paule, Kurt; and Schadlich, Fritz, 4,493,377, Cl. 173-170.000.

Pauze, Denis R.: *See*—
Keane, John J.; and Pauze, Denis R., 4,493,873, Cl. 428-372.000.

Pawlenko, Ivan: *See*—
Van Ocker, William G.; Pawlenko, Ivan; Reider, Donald F.; Troebe, Charles J.; Clair, Robert A.; and Crandall, Stanley C., 4,493,572, Cl. 400-196.100.

Payne, Thomas R.; and Schneider, David A., to General Electric Company. Power control arrangement for automatic surface unit. 4,493,980, Cl. 219-450.000.

Payne, Thomas R., to General Electric Company. Boil dry protection system for cooking appliance. 4,493,981, Cl. 219-450.000.

Payton, John L., to Codex Corporation. Modem end of message detector. 4,494,240, Cl. 375-75.000.

Pearson, Michael L.: *See*—
Winter, David C.; Pearson, Michael L.; and Long, John D., 4,493,375, Cl. 172-1.000.

Peck, Peter F., to United Kingdom Atomic Energy Authority. Detection of concealed materials. 4,494,001, Cl. 250-358.100.

Pedersen, Marvin A., to United States of America, Navy. Range clearance by enhancing oxidation of ferrous ordnance in-situ. 4,493,239, Cl. 89-1.130.

Peeters, Winfried L.; Ponjee, Johannes J.; and Martens, Jan W. D., to U.S. Philips Corporation. Optical recording element. 4,493,887, Cl. 430-275.000.

Peil, William: *See*—
Bitting, Ricky F.; Peil, William; and Brown, Thomas A., 4,494,055, Cl. 318-254.000.

Pellegrini, Gerald N. Electric power delivery system and method. 4,494,054, Cl. 318-254.000.

Pelletier, Joel A.; and Breuillard, Robert, to U.S. Philips Corporation. Analogue current switch bipolar injection technology. 4,494,014, Cl. 307-254.000.

Perepezko, John H.; and Wiley, John D., to Wisconsin Alumni Research Foundation. Semiconductor device having an amorphous metal layer contact. 4,494,136, Cl. 357-67.000.

Perkin-Elmer Corporation, The: *See*—
Muellner, William C., 4,494,212, Cl. 364-571.000.

Peronard, Pierre-Rene, to Dansk Svejsemaskine Fabrik A/S. Apparatus for positioning receptacles of ferromagnetic material and having a welding seam. 4,494,070, Cl. 324-208.000.

Persson, Anders: *See*—
Adolfsson, Morgan; Brogardh, Torgny; Ovren, Christer; and Persson, Anders, 4,493,995, Cl. 250-227.000.

Peruzzi, Federigo: *See*—
Andrione, Norbert; Peruzzi, Federigo; and Scandurra, Giancarlo, 4,493,226, Cl. 74-598.000.

Pesho, Stephen W.: *See*—
Buckner, Leonard; Foll, William A., Sr.; and Pesho, Stephen W., 4,493,178, Cl. 53-131.000.

Peters, Arthur, to Honeywell Information Systems Inc. FIFO buffer to cache memory. 4,494,190, Cl. 364-200.000.

Peters, James: *See*—
Snyder, Kenneth L., Jr.; and Peters, James, 4,493,777, Cl. 252-49.300.

Petroleum Recovery Systems, Inc.: *See*—
Sommer, Gordon M., 4,493,613, Cl. 417-15.000.

Petrzilka, Martin; Pracht, Inge; and Ruf, Urs, to Hoffmann-La Roche Inc. Immersion oil containing aliphatic thio compounds. 4,493,533, Cl. 350-418.000.

Petursson, Sigurdur G., to Waltec, Inc. Washerless faucet. 4,493,338, Cl. 137-454.200.

Peuzin, Jean C., to Commissariat a l'Energie Atomique. Pyroelectric detector. 4,493,563, Cl. 374-121.000.

Pews, Richard G., to Dow Chemical Company, The. Preparation of 2-alkylpyrimidines. 4,493,929, Cl. 544-242.000.

Phaneuf, John B.: *See*—
Morse, William C.; and Phaneuf, John B., 4,494,033, Cl. 310-352.000.

Pharmindustrie: *See*—
Champseix, Alain A.; and Le Fur, Gerard R., 4,493,838, Cl. 424-258.000.
Phillips, Edwin R.: *See*—
Kanamuller, Franz X.; and Phillips, Edwin R., 4,493,993, Cl. 250-222.100.
Phillips Petroleum Company: *See*—
Hogan, John P., 4,493,715, Cl. 55-68.000.
Stapp, Paul R.; and Chaney, Mary B., 4,493,370, Cl. 166-273.000.
Physics International Company: *See*—
Stallings, Charles H.; Schneider, Richard L.; Childers, Frederick K.; Matthews, Stephen M.; Roth, Ian S.; Helava, Heikki I.; and Stringfield, Ray M., Jr., 4,494,043, Cl. 315-111.410.
Piascinski, Joseph J.; Axelrod, Randolph H.; and Mount, James, to RCA Corporation. Method for combined baking-out and panel-sealing of a partially-assembled CRT. 4,493,668, Cl. 445-40.000.
Piatt, Michael J.; and Williams, Theodore F., to Eastman Kodak Company. Ink jet printer. 4,494,124, Cl. 346-1.100.
Piccolo, Dominic J.: *See*—
Carroll, Thomas J.; Rubin, Michael; Piccolo, Dominic J.; and Glass, Michael, 4,493,849, Cl. 426-3.000.
Piepers, Harry C., to Galentan, A.G. Device for applying blot-shaped coverings by electro-plating. 4,493,757, Cl. 204-206.000.
Pierce, Philip R.: *See*—
Callen, Patrick J.; and Pierce, Philip R., 4,494,063, Cl. 320-56.000.
Pierdet, Andre : *See*—
Nedelec, Lucien; Pierdet, Andre ; and Fauveau, Patrick, 4,493,836, Cl. 424-248.400.
Pierson, Jeanne: *See*—
Gordon, Lucas S.; and Pierson, Jeanne, 4,493,705, Cl. 604-122.000.
Pieters, Ferdinandus A., to Micropump Corporation. Grooved gear pump. 4,493,625, Cl. 418-126.000.
Pietsch, David S.: *See*—
Green, William A.; Godfrey, Joe E.; and Pietsch, David S., 4,493,464, Cl. 242-170.000.
Pilgram, Kurt H., to Shell Oil Company. Plant growth inhibiting oxazolyl-substituted triazinone and oxadiazinone derivatives, compositions, and method of use. 4,493,728, Cl. 71-92.000.
Pilkington Brothers P.L.C.: *See*—
Evason, John, 4,493,723, Cl. 65-114.000.
Pisani, Sergio C.: *See*—
Brembilla, Almiro; and Pisani, Sergio C., 4,493,160, Cl. 38-14.000.
Piscitelli, R. Amelia; Hemmer, Valentine J.; and Shepler, Eric F., to Bendix Corporation, The. Socket contact for electrical connectors. 4,493,527, Cl. 339-258.00R.
Pistor, Dieter; and Mankut, Ludwig, to Schering Aktiengesellschaft. Arrangement for opening and closing a cover of a transport and treatment container. 4,493,429, Cl. 220-211.000.
Pitney Bowes Inc.: *See*—
Clark, John I., 4,493,252, Cl. 101-71.000.
Toth, William D., 4,493,236, Cl. 83-440.100.
Pitschi, Franz X.: *See*—
Spinner, Georg; and Pitschi, Franz X., 4,494,094, Cl. 333-239.000.
Pittermann, Wolfgang: *See*—
Moller, Hinrich; Wallat, Siegfried; Bartnik, Friedhelm; and Pittermann, Wolfgang, 4,493,823, Cl. 424-70.000.
Plan Hold Corp.: *See*—
Matthews, Charles, 4,494,177, Cl. 362-402.000.
Platt, Kenneth B.; and Reed, David E., to Iowa State University Research Foundation. Purified and antigenically selective vaccines for domestic animals. 4,493,825, Cl. 424-88.000.
Plessey Incorporated: *See*—
Ledgerwood, Harry J., 4,493,447, Cl. 226-150.000.
PLM Aktiebolag: *See*—
Jakobsen, Kjell M.; Nilsson, Claes T.; and Larsson, Lars G., 4,493,633, Cl. 425-525.000.
Plummer, Ernest L., to FMC Corporation. Insecticidal 2,2'-bridged(1,1'-biphenyl)-3-ylmethyl carboxamides. 4,493,844, Cl. 424-275.000.
Pohl, Werner: *See*—
Ramlohr, Franz; Pohl, Werner; and Kolzer, Walter, 4,494,181, Cl. 363-63.000.
Polanco, Jose R.; and Spector, George. Kite reel. 4,493,461, Cl. 242-96.000.
Polaroid Corporation: *See*—
Cronin, David V., 4,493,546, Cl. 354-324.000.
Svatek, Thomas A., 4,494,148, Cl. 358-226.000.
Polizzi, Jerry: *See*—
Polk, Todd J.; and Polizzi, Jerry, 4,493,319, Cl. 128-303.00A.
Polk, Todd J.; and Polizzi, Jerry, to Cabot Medical Corporation. Ring applicator having floating inner tube. 4,493,319, Cl. 128-303.00A.
Pomponio, Daniel P., Sr., to Precision Automation Co., Inc. Liquid filling machine. 4,493,349, Cl. 141-59.000.
Ponjee, Johannes J.: *See*—
Peeters, Winfried L.; Ponjee, Johannes J.; and Martens, Jan W. D., 4,493,887, Cl. 430-275.000.
Popek, Marc H.; and Suarez, Jose I., to Motorola, Inc. Frequency modulation system for a frequency synthesizer. 4,494,090, Cl. 332-16.00T.
Porenski, Harry S., Jr., to Brown & Williamson Tobacco Corporation. Cigarette filter. 4,493,331, Cl. 131-336.000.
Porter, George K., Jr., to Porter Instrument Company, Inc. Air valve for a breathing system. 4,493,339, Cl. 137-510.000.
Porter Instrument Company, Inc.: *See*—
Porter, George K., Jr., 4,493,339, Cl. 137-510.000.
Porter, Joseph W.: *See*—
Becker, Donald E.; Hayes, Alan C.; and Porter, Joseph W., 4,493,816, Cl. 422-143.000.
Posey, Robert G.: *See*—
Funderburk, F. Gene; Culbertson, E. C.; and Posey, Robert G., 4,493,872, Cl. 428-332.000.
Potter, John T., to Iquad Company Incorporated. Print guide mechanism. 4,493,571, Cl. 400-144.200.
PPG Industries, Inc.: *See*—
Krehnovi, Richard J., 4,493,412, Cl. 198-434.000.
Pracht, Inge: *See*—
Petrzilka, Martin; Pracht, Inge; and Ruf, Urs, 4,493,533, Cl. 350-418.000.
Prader, Randolph D.; Benoit, Gordon L.; and Maddock, Robert T., to Mobil Oil Corporation. Thermoplastic bag and bag pack. 4,493,419, Cl. 206-554.000.
Precision Automation Co., Inc.: *See*—
Pomponio, Daniel P., Sr., 4,493,349, Cl. 141-59.000.
Preh Elektrofeinmechanische Werke Jakob Preh Nachf., GmbH & Co.: *See*—
Viebrantz, Hans-Joachim, 4,493,959, Cl. 200-340.000.
Pretorius, Rapha E.: *See*—
Yelland, Christopher P.; and Pretorius, Rapha E., 4,494,163, Cl. 361-56.000.
Prew, Stanley R., to Koppers Company, Inc. Method and apparatus for mixing particulate material. 4,493,556, Cl. 366-114.000.
Price, Norris. Tobacco stripper and grading machine. 4,493,330, Cl. 130-31.00R.
Prijs, Pieter R., to U.S. Philips Corporation. High-frequency coil structure. 4,494,099, Cl. 335-299.000.
Prikhodko, Valery V.; and Kostyrkin, Boris V., to Proektno-Konstructorskoe Bjuro Elektrogidravliki Adademii Nauk Ukrainskoi SSR. Apparatus for electrohydroblasting trimming of castings. 4,493,961, Cl. 219-69.00R.
Prime Computer, Inc.: *See*—
Bahr, Richard G.; and Cohen, Paul B., 4,494,233, Cl. 370-86.000.
Proconics International, Inc.: *See*—
Foulke, Richard F.; and Lord, Steven M., 4,493,606, Cl. 414-787.000.
Procter & Gamble Company, The: *See*—
Cook, Thomas E.; and Dolle, Ernest W., 4,493,773, Cl. 252-8.800.
LaHann, Thomas R.; and Buckwalter, Brian L., 4,493,848, Cl. 424-324.000.
Procyk, Frank J.: *See*—
Dumbri, Austin C.; and Procyk, Frank J., 4,494,220, Cl. 365-200.000.
Product Research And Development: *See*—
Hartley, E. Dale, 4,493,435, Cl. 222-52.000.
Proektno-Konstructorskoe Bjuro Elektrogidravliki Adademii Nauk Ukrainskoi SSR: *See*—
Prikhodko, Valery V.; and Kostyrkin, Boris V., 4,493,961, Cl. 219-69.00R.
Proud, Joseph M.: *See*—
Budinger, A. Bowman; Byszewski, Wojciech W.; and Proud, Joseph M., 4,494,046, Cl. 315-260.000.
Pruett, Larry S. Adjustable thermostat valve system for automotive vehicles. 4,493,455, Cl. 236-34.500.
Pryor, Timothy R.; Hageniers, Omer L.; Pastorius, Walter J.; Liptay-Wagner, Nicholas; and Clarke, Donald A., to Diffracto. Method and apparatus for determining physical characteristics of objects and object surfaces. 4,493,554, Cl. 356-241.000.
PUR/ACC Corporation: *See*—
Lemmons, Joseph J., 4,493,348, Cl. 141-1.000.
Purdue Research Foundation: *See*—
Sallay, Stephen I., 4,493,898, Cl. 436-64.000.
Purrmann, Robert: *See*—
Schmitt, Werner; Purrmann, Robert; and Jochum, Peter, 4,493,911, Cl. 523-109.000.
Putt, James B., to Bendix Corporation, The. Method for adjusting a vacuum brake booster output member relative to a master cylinder piston. 4,493,742, Cl. 156-91.000.
Pyrox Limited: *See*—
McInnes, Malcolm B., 4,493,310, Cl. 126-92.00C.
Quan, James G. H.: *See*—
Kearns, Robert W.; and Quan, James G. H., 4,494,107, Cl. 340-347.0DA.
Quest Medical, Inc.: *See*—
Smith, Gordon E., 4,493,709, Cl. 604-246.000.
Quick, Leonard M.: *See*—
Hensley, Albert L., Jr.; and Quick, Leonard M., 4,493,761, Cl. 208-10.000.
Quinot, Martin: *See*—
Echtler, Theodor; Quinot, Martin; and Hunsinger, Werner, 4,493,122, Cl. 14-2.400.
R&H Technology, Inc.: *See*—
Heine, Otto R., 4,493,222, Cl. 74-216.300.
Racal-Milgo, Inc.: *See*—
Dambrackas, William A.; Marshall, Michael B.; Greenstein, Larry S.; and Downie, Alex, 4,494,232, Cl. 370-80.000.
Raceway Components, Inc.: *See*—
Kohaut, John E., 4,493,173, Cl. 52-221.000.
Radd, Fred J.; Scott, James B.; and Pan, Robert B., to Conoco Inc. Well completion system and process. 4,493,372, Cl. 166-285.000.
Ramey, Carl, to Micro Plastics Inc. Pneumatically driven rivet insert tool. 4,493,205, Cl. 72-391.000.

Ramlohr, Franz; Pohl, Werner; and Kolzer, Walter, to Siemens Aktiengesellschaft. Circuit arrangement for determining the polarity and magnitude of the load current in a reversible d-c controller or chopper. 4,494,181, Cl. 363-63.000.

Random House, Inc.: *See*—
Kaufmann, F. William, III; and Zwiebel, Alan, 4,493,650, Cl. 434-178.000.

Ransom, Stephen A.; and Stickel, Tedd K., to Sperry Corporation. High performance MESFET transistor for VLSI implementation. 4,494,016, Cl. 307-450.000.

Rao, G. R. Mohan: *See*—
Reddy, Chitranjan N.; and Rao, G. R. Mohan, 4,494,223, Cl. 365-233.000.
White, Lionel S.; and Rao, G. R. Mohan, 4,494,222, Cl. 365-222.000.

Rauma-Repola Oy: *See*—
Jaakonmaki, Matti; and Raura, Pentti, 4,493,352, Cl. 144-162.00R.

Raura, Pentti: *See*—
Jaakonmaki, Matti; and Raura, Pentti, 4,493,352, Cl. 144-162.00R.

Rautakoura, Timo, to Varpaja Oy. Support tube for a tubular assembly and method for the manufacture thereof. 4,493,579, Cl. 403-237.000.

Ravasz, Laszlo : *See*—
Vajda, Gabor; Ravasz, Laszlo ; Karacsonyi, Bela; and Tabajdi, Gabor, 4,493,853, Cl. 426-582.000.

Ravizza, Raymond F., to Ampex Corporation. Method of operating a signal reproduction apparatus for effecting synchronous reproduction of recorded signals. 4,494,153, Cl. 358-324.000.

Ray, Francis M.: *See*—
Lange, Howard G.; and Ray, Francis M., 4,493,166, Cl. 51-100.00R.

Raymond, Eugene T.: *See*—
Kilner, Jerome R.; Raymond, Eugene T.; and Warren, Steven M., 4,493,509, Cl. 303-13.000.

Raytheon Company: *See*—
Simon, James F., 4,493,521, Cl. 339-92.00M.

RCA Corporation: *See*—
Bernard, Francis S.; Eliscu, Steven M.; and Batterman, Eric P., 4,494,214, Cl. 364-724.000.
Callen, Patrick J.; and Pierce, Philip R., 4,494,063, Cl. 320-56.000.
Kelleher, Kevin C.; Kiser, Ned J.; and Christopher, Todd J., 4,494,052, Cl. 318-254.000.
Keller, Robert F., 4,494,034, Cl. 313-341.000.
Lea, Jeffrey G.; and Carlson, David J., 4,494,081, Cl. 331-36.00C.
Lovick, Richard B.; and Firestone, William L., 4,494,143, Cl. 358-122.000.
Naimpally, Saiprasad V.; and Tallant, James C., II, 4,494,146, Cl. 358-184.000.
Piascinski, Joseph J.; Axelrod, Randolph H.; and Mount, James, 4,493,668, Cl. 445-40.000.
White, Allan E.; Coleman, David E.; and Miller, Steven R., 4,493,651, Cl. 434-188.000.

Reagan, William J.: *See*—
Brown, Stanley M.; Durante, Vincent A.; Reagan, William J.; and Speronello, Barry K., 4,493,902, Cl. 502-65.000.

Red Dot Corporation: *See*—
Watters, Wayde H., 4,493,957, Cl. 200-81.00R.

Reddy, Chitranjan N.; and Rao, G. R. Mohan, to Texas Instruments Incorporated. Sequentially clocked substrate bias generator for dynamic memory. 4,494,223, Cl. 365-233.000.

Redmond, Sanford; and Mainberger, Walter A., to Redmond, Sanford. Dispenser package having fault line protrusion. 4,493,574, Cl. 401-132.000.

Reed, Charles C. Blood gas concentration control apparatus and method. 4,493,692, Cl. 604-4.000.

Reed, David E.: *See*—
Platt, Kenneth B.; and Reed, David E., 4,493,825, Cl. 424-88.000.

Reed, I. Ely: *See*—
Garcia, Carlos M.; Reed, I. Ely; and McLeod, Dale K., 4,493,150, Cl. 30-97.000.

Reed, Kenneth E.; Mason, Bradley; Mason, Jeff; and Nelson, Gregory R., to DonJoy, Inc. Articulating knee stabilizer. 4,493,316, Cl. 128-80.00C.

Reed, Larry T., to Axia Incorporated. Method for reduction of oxides and improving porosity of metalized zirconium oxide ceramics. 4,493,746, Cl. 156-644.000.

Reedyk, Cornelis W.: *See*—
Retallack, Laurence J.; and Reedyk, Cornelis W., 4,493,949, Cl. 179-18.0BC.

Reichman, James M.; O'Hanlon, Thomas A.; and Kendrew, Thomas J., to Electric Power Research Institute, Inc. Cable reaming apparatus and method. 4,493,379, Cl. 175-57.000.

Reider, Donald F.: *See*—
Van Ocker, William G.; Pawlenko, Ivan; Reider, Donald F.; Troebs, Charles J.; Clair, Robert A.; and Crandall, Stanley C., 4,493,572, Cl. 400-196.100.

Reisberg, Joseph; Bielamowicz, Lawrence J.; and Thigpen, David R., to Shell Oil Company. Recovering oil by injecting aqueous alkali, cosurfactant and gas. 4,493,371, Cl. 166-274.000.

Relyea, Keith E.: *See*—
Sweeny, Norman P.; Relyea, Keith E.; and Brustad, Wayne L., 4,493,869, Cl. 428-201.000.

Rendu, Michel: *See*—
Loriot, Pierre; Rendu, Michel; and Rousseau, Jean, 4,493,813, Cl. 376-409.000.

Renfro, Wesley E. Hydraulic choking device. 4,493,336, Cl. 137-312.000.

Renken, Albert: *See*—
Flaschel, Erwin; and Renken, Albert, 4,493,735, Cl. 134-25.100.

Retallack, Laurence J.; and Reedyk, Cornelis W., to Northern Telecom Limited. Parallel operation of telephone equipment on a digital loop. 4,493,949, Cl. 179-18.0BC.

Reverchon, Bernard: *See*—
Ohayon, Gerard; Reverchon, Bernard; Tourre, Bernard; and Vigier, Serge, 4,493,271, Cl. 110-262.000.

Rexer, Felix. Valve arrangement. 4,493,473, Cl. 251-63.400.

Rexnord Inc.: *See*—
Cosenza, Frank J., 4,493,577, Cl. 403-41.000.

Reymond, Jean-Claude; Bertrand, Gilles; and Gabanou, Roland, to Thomson-CSF. Moving-map display with recording on photographic film. 4,494,201, Cl. 364-449.000.

Reynolds, George O., to Honeywell Inc. High sensitivity focal sensor for electron beam and high resolution optical lithographic printers. 4,493,555, Cl. 356-358.000.

Rhoades, James J., to Tapco Products Company, Inc. Portable sheet bending brake. 4,493,200, Cl. 72-319.000.

Rhodes, Richard P.; and Hershkowitz, Frank, to Exxon Research and Engineering Co. Pretreatment of oil-shale for enhanced arsenic removal. 4,493,763, Cl. 208-11.00R.

Rhodes, Robert B., to Shell Oil Company. Lubricating oil composition with supplemental rust inhibitor. 4,493,776, Cl. 252-25.000.

Rhone-Poulenc Agrochimie: *See*—
de Reinach Hirtzbach, Francois; and Ambrosi, Dominique, 4,493,729, Cl. 71-94.000.

Ricci, Ruggiero. Violin bow with adjustable weight. 4,493,238, Cl. 84-282.000.

Rice, Mathias F.: *See*—
Miles, Lee W.; Chambers, Samuel W.; and Rice, Mathias F., 4,493,586, Cl. 405-17.000.

Richmond, Raymond W. One-handed paddle. 4,493,663, Cl. 440-101.000.

Ricoh Company, Ltd.: *See*—
Araki, Shigeyuki, 4,493,570, Cl. 400-144.200.
Furukawa, Noboru, 4,494,149, Cl. 358-257.000.
Hashimoto, Masanori; and Ogawa, Shunichi, 4,493,573, Cl. 400-647.100.
Ishima, Kazumi, 4,494,178, Cl. 363-21.000.
Kaneko, Yutaka; and Takashi, Yokata, 4,494,130, Cl. 346-160.000.

Riddell, David: *See*—
Ashton, Michael J.; Bridge, Andrew W.; Chapman, Robert F.; Fenton, Garry; Loveless, Anthony H.; and Riddell, David, 4,493,843, Cl. 424-274.000.

Rieppel, Perry J.; and Coughlin, William J., to Arcair Company. Slag and fume collector for air carbon-arc cutting and gouging torches. 4,493,970, Cl. 219-137.410.

Rifi, Mahmoud R., to Union Carbide Corporation. Water-curable, silane modified chlorosulfonated olefinic polymers and a process for the preparation thereof. 4,493,924, Cl. 525-102.000.

Rikagaku Kenkyusho: *See*—
Ohta, Hiroshi, 4,494,131, Cl. 357-5.000.

Rimrock Corporation: *See*—
Kirsch, Jerry; Kirsch, Kerry F.; and Hornacek, Kenneth J., 4,493,245, Cl. 92-2.000.

Rinderle, Heinz, to TELEFUNKEN electronic GmbH. Signal input circuit with controlled input signal attenuation. 4,494,076, Cl. 330-284.000.

Rinehart, Kenneth L., Jr., to Board of Trustees, Univ. of Ill. Didemnins A, B, C, and derivatives thereof, as antiviral agents. 4,493,796, Cl. 260-112.50R.

Rissanen, Jorma J.: *See*—
Langdon, Glen G., Jr.; and Rissanen, Jorma J., 4,494,108, Cl. 340-347.0DD.

Rittenhouse, Raymond G. Tree stand for hunters. 4,493,395, Cl. 182-187.000.

Rivinius, Theodore. Cable winding apparatus. 4,493,463, Cl. 242-158.00F.

Roach, Peter F., to United Kingdom Atomic Energy Authority. Transducers for providing an electrical signal representative of physical movement. 4,493,214, Cl. 73-779.000.

Roach, Thomas C. Adjustable pipe fastener. 4,493,468, Cl. 248-62.000.

Robbins, Cheston W.; and Kelly, Robert M., to Technicare Corporation. Biopsiable ultrasound phantom. 4,493,653, Cl. 434-262.000.

Robert Bosch GmbH: *See*—
Buchschmid, Emil; Horn, Friedrich; Nieberl, Bruno; Schmidt, Hans-Jorg; and Weyerich, Manfred, 4,494,101, Cl. 336-210.000.
Fries, Herbert; Gerstenmaier, Jurgen; Kircher, Stefan; and Koch-Ducker, Jurgen, 4,493,210, Cl. 73-121.000.
Gast, Theodor; Binder, Kurt; and Honig, Gunter, 4,493,215, Cl. 73-861.180.
Gunther, Klaus; Hornung, Friedrich; Paule, Kurt; and Schadlich, Fritz, 4,493,377, Cl. 173-170.000.

Robinson, Edward L., Jr.; and Stamp, Tom G., to International Harvester Company. Furrow forming apparatus for a seed planter. 4,493,274, Cl. 111-88.000.

Rocci, Joseph D.; Crook, Stephen E.; and Kauffman, Marc, to General Instrument Corporation. Frequency agile security apparatus. 4,494,111, Cl. 340-533.000.

Roche, William J.; and Anderson, John W., Jr., to GTE Products Corporation. Incandescent ballast assembly. 4,494,041, Cl. 315-49.000.

Roche, William J., to GTE Products Corporation. Mercury target sensing and locating apparatus. 4,494,042, Cl. 315-56.000.

Rockwell International Corporation: *See—*
Brown, James L., 4,494,019, Cl. 307-491.000.
Glass, Howard L., 4,493,819, Cl. 423-277.000.
Kleiman, William J., 4,493,449, Cl. 228-7.000.
Niemiro, Josef W.; and Skipor, Eugene, 4,493,690, Cl. 493-444.000.
Wallschlaeger, Alan R.; and Wade, John F., 4,493,258, Cl. 101-415.100.

Rockwell-Rimoldi S.p.A.: *See—*
Sanvito, Roberto, 4,493,277, Cl. 112-153.000.

Rogers Corporation: *See—*
Schilling, Donald P., 4,494,170, Cl. 361-306.000.
Watson, William A., 4,494,169, Cl. 361-306.000.

Rohm, Gunter H. Actuator for power chuck. 4,493,242, Cl. 91-1.000.

Rolf, Jeffrey O., to Eaton Corporation. Nut lock assembly. 4,493,597, Cl. 411-198.000.

Roller, Timothy J.: *See—*
Strickland, Reid A.; and Roller, Timothy J., 4,493,476, Cl. 251-176.000.

Rollins, George E.: *See—*
Gontowski, Walter S., Jr.; and Rollins, George E., 4,494,088, Cl. 331-111.000.

Rolls-Royce Limited: *See—*
Clark, Stephen D.; Wood, Philip S.; and Fell, Peter J., 4,493,451, Cl. 228-119.000.
Hobbs, John R., 4,493,185, Cl. 60-39.092.

Rolm Corporation: *See—*
Jolissaint, Charles H., 4,494,229, Cl. 370-58.000.

Romansky, John A., to Eastman Kodak Company. Holder apparatus for heater element. 4,493,982, Cl. 219-469.000.

Roodvoets, Mark R.: *See—*
Dieckmann, J. Robert; Lauber, Michael L.; and Roodvoets, Mark R., 4,493,631, Cl. 425-292.000.

Rosenbaum, Walter S.: *See—*
Brickman, Norman F.; and Rosenbaum, Walter S., 4,494,150, Cl. 358-260.000.

Roth, Ian S.: *See—*
Stallings, Charles H.; Schneider, Richard L.; Childers, Frederick K.; Matthews, Stephen M.; Roth, Ian S.; Helava, Heikki I.; and Stringfield, Ray M., Jr., 4,494,043, Cl. 315-111.410.

Roth, Martin; and Stahn, Bernhard, to Messerschmitt-Bolkow-Blohm GmbH. Clutch and brake with bearing protection. 4,493,405, Cl. 192-18.00R.

Rotron Incorporated: *See—*
Brown, Fred A., 4,494,028, Cl. 310-156.000.

Rouhotas, Louie M., Sr. Agricultural planter with sled frame, vacuum dispensing and ground drive. 4,493,272, Cl. 111-59.000.

Rousseau, Jean: *See—*
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Rubin, Michael: *See—*
Carroll, Thomas J.; Rubin, Michael; Piccolo, Dominic J.; and Glass, Michael, 4,493,849, Cl. 426-3.000.

Rudnick, Leslie R., to Mobil Oil Corporation. Method for reducing the nitrogen content of shale oil with spent oil shale and sulfuric acid. 4,493,762, Cl. 208-11.00R.

Ruechel, Frank, to Isover Saint-Gobain. Thermal insulation jacket having curved tube or pipe. 4,493,345, Cl. 138-178.000.

Ruehl, William E., to Illinois Tool Works, Inc. Retaining prong. 4,493,580, Cl. 403-252.000.

Ruf, Urs: *See—*
Petrzilka, Martin; Pracht, Inge; and Ruf, Urs, 4,493,533, Cl. 350-418.000.

Ruff, Stanley L. Corrugated carton cutter. 4,493,148, Cl. 30-2.000.

Runde, Herbert A.: *See—*
Comeau, Joseph H.; Kowles, Joseph E.; Lareau, John P.; Mayo, Kenneth R.; and Runde, Herbert A., 4,493,155, Cl. 33-366.000.

Ruprich, Wilhelm: *See—*
Bader, Leonhard; Hermann, Ferdinand; Ruprich, Wilhelm; and Winter, Hermann, 4,493,137, Cl. 29-25.350.

Rush, James P.: *See—*
Hager, Adolph G.; Freeman, Gerald L.; Rush, James P.; Branovich, Louis E.; and DuBuske, Stanley, 4,494,003, Cl. 250-474.100.

Rutgerswerke Aktiengesellschaft: *See—*
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Ruti Machinery Works, Ltd.: *See—*
Lutz, Friedrich, 4,493,347, Cl. 139-449.000.

Rutili, Renzo N.: *See—*
Hamilton, Lawrence E.; and Rutili, Renzo N., 4,493,958, Cl. 200-314.000.

Rutter, Christopher C. Fluid dispenser. 4,493,438, Cl. 222-83.000.

Rutty, John G.: *See—*
Arndt, Alfred; and Rutty, John G., 4,494,244, Cl. 455-78.000.

Rye, Palle: *See—*
Ganter, Robert; Whitmoyer, Robert; and Rye, Palle, 4,493,637, Cl. 431-190.000.

Rygalin, Viktor G.: *See—*
Uretsky, Yan S.; Mnekin, Ravil V.; Rygalin, Viktor G.; Grechinsky, Dmitry A.; and Klochko, Viktor A., 4,493,213, Cl. 73-664.000.

S&C Electric Company: *See—*
Jarosz, John M.; and Panas, William R., 4,494,103, Cl. 337-282.000.

S. C. Johnson & Son, Inc.: *See—*
Chapman, Francis E.; and Harris, Robert B., 4,493,781, Cl. 252-88.000.

Sachdev, Harbans S.; and Sachdev, Krishna G., to International Business Machines Corporation. Use of plasma polymerized organosilicon films in fabrication of lift-off masks. 4,493,855, Cl. 427-41.000.

Sachdev, Krishna G.: *See—*
Sachdev, Harbans S.; and Sachdev, Krishna G., 4,493,855, Cl. 427-41.000.

Sadeh, Yaacov, to Beta Engineering & Development Ltd. Pocket setter unit and automatic sewing machine including same. 4,493,276, Cl. 112-121.120.

Safe-Base, Inc.: *See—*
Fuller, Charles C.; and Hendrickson, James L., 4,493,486, Cl. 273-25.000.

Saint-Gobain Vitrage: *See—*
Schwarzenberg, Norbert; Ueberwolf, Heinz; Halberschmidt, Friedrich; and Audi, Joseph, 4,493,724, Cl. 65-273.000.

St. Pierre, Henry G. Tire chain. 4,493,354, Cl. 152-242.000.

Saito, Iwao. Apparatus for treating spasmodic torticollis. 4,493,328, Cl. 128-782.000.

Saito, Motoyuki: *See—*
Fukutome, Satoru; Hatanaka, Hideo; and Saito, Motoyuki, 4,493,560, Cl. 368-88.000.

Saito, Yasuo: *See—*
Nagashima, Akira; and Saito, Yasuo, 4,493,400, Cl. 188-77.00W.

Saka, Masakazu, to Sharp Kabushiki Kaisha. Combined thermometer and calculator. 4,493,565, Cl. 374-185.000.

Sakai, Takami: *See—*
Inokuchi, Haruhisa; and Sakai, Takami, 4,494,179, Cl. 363-35.000.

Sakai, Tomohiko: *See—*
Fujiwara, Koichi; Sakai, Tomohiko; Yamada, Yoneo; and Higashine, Kazutaka, 4,493,739, Cl. 148-111.000.

Sakuma, Yuichiro: *See—*
Taniguchi, Seiho; and Sakuma, Yuichiro, 4,493,787, Cl. 252-511.000.

Sallay, Stephen I., to Purdue Research Foundation. Method for detecting and monitoring cancer. 4,493,898, Cl. 436-64.000.

Sami, Shunsuke: *See—*
Ono, Keiichi; Sugie, Akihiko; Kawakami, Hajime; Sami, Shunsuke; Kojima, Atsuyuki; and Katsube, Junki, 4,493,846, Cl. 424-308.000.

Sanden, Roland, to Forsvarets Forskningsanstalt. Method for extension of pot life in curing reactions. 4,493,916, Cl. 524-217.000.

Sander, Nils B. L.; and Nadas, Julius, to Knorr-Bremse GmbH. Automatic brake resetting device. 4,493,401, Cl. 188-199.000.

Sanderson, Edward; Sanderson, Laurence S.; and Kalinowski, Robert S., Jr. Device for use in testing a modem coupled to a telephone line by modular connectors. 4,493,951, Cl. 179-175.30F.

Sanderson, Laurence S.: *See—*
Sanderson, Edward; Sanderson, Laurence S.; and Kalinowski, Robert S., Jr., 4,493,951, Cl. 179-175.30F.

Sandmann, Jurgen: *See—*
Deike, Karl-Heinz; Schulz, Hans-Joachim; and Sandmann, Jurgen, 4,493,510, Cl. 303-28.000.

Sands, Robert W.; Marella, Joseph P.; and Fink, Thomas F., Jr., to General Electric Company. Lamps having multiple and aimed parabolic sections for increased useful light output. 4,494,176, Cl. 362-297.000.

Sands, William K., Jr.: *See—*
Morrell, David J.; DeVault, Donald G.; and Sands, William K., Jr., 4,494,224, Cl. 367-2.000.

Sankin Kogyo Kabushiki Kaisha: *See—*
Ai, Minoru; Manabe, Akira; Igarashi, Yoshimasa; and Mizuno, Katsuya, 4,493,644, Cl. 433-75.000.

Sanofi: *See—*
Chekroun, Isaac; and Heymes, Alain, 4,493,931, Cl. 546-329.000.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Iwai, Tomio, 4,493,661, Cl. 440-77.000.
Iwashita, Takashi, 4,493,659, Cl. 440-61.000.
Taguchi, Michihiro, 4,493,662, Cl. 440-83.000.

Santrade Ltd.: *See—*
Okada, Minoru, 4,493,594, Cl. 407-41.000.

Sanvito, Roberto, to Rockwell-Rimoldi S.p.A. Workpiece positioner for sewing units. 4,493,277, Cl. 112-153.000.

Sanyo Electric Co., Ltd.: *See—*
Takaoka, Daizo, 4,493,940, Cl. 136-248.000.

Sarazen, Paul M., Jr.; and Beam, Dennis A. Temperature-responsive automatic ventilator. 4,493,456, Cl. 236-49.000.

Satchell, Terry L.; and Custance, Robert E., to General Motors Corporation. Alignment adjustment apparatus for vehicle wheel suspension. 4,493,493, Cl. 280-661.000.

Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Yanagishita, Hitoshi; and Hayashi, Shozo, to Nippon Petrochemicals Company, Limited. Electrical insulating oil and oil-filled electrical appliances. 4,493,943, Cl. 174-25.00C.

Sato, Mikio: *See—*
Kaneko, Masaharu; Ozawa, Tetsuo; Yoneyama, Tomio; Imazeki, Shuji; Mukoh, Akio; and Sato, Mikio, 4,493,532, Cl. 350-349.000.
Suzuki, Hiroshi; Tanaka, Goro; Nishikawa, Akio; Mukai, Junji; Sato, Mikio; Makino, Daisuke; and Wakashima, Yoshiaki, 4,494,217, Cl. 365-53.000.

Sato, Tadayuki: *See—*
Nishizawa, Hiroshi; Sato, Tadayuki; and Ishikawa, Takashi, 4,493,858, Cl. 427-104.000.

Saurenman, Donald G., to Consan Pacific Incorporated. Flexible cable ion dispenser for treatment zones. 4,493,289, Cl. 119-21.000.

Scammell, Roger S., to British Petroleum Company, p.l.c., The. Post-aerated burner for ground flare, and ground flare incorporating same. 4,493,638, Cl. 431-202.000.
Scandurra, Giancarlo: *See*—
Andrione, Norbert; Peruzzi, Federigo; and Scandurra, Giancarlo, 4,493,226, Cl. 74-598.000.
Schadlich, Fritz: *See*—
Gunther, Klaus; Hornung, Friedrich; Paule, Kurt; and Schadlich, Fritz, 4,493,377, Cl. 173-170.000.
Schenetin, Norbert: *See*—
Bredel, Walter; Schenetin, Norbert; and Waigand, Helmut, 4,493,979, Cl. 219-446.000.
Schenker, Monroe H.: *See*—
Kaeslin, Oscar E.; and Schenker, Monroe H., 4,493,423, Cl. 211-123.000.
Schering Aktiengesellschaft: *See*—
Pistor, Dieter; and Mankut, Ludwig, 4,493,429, Cl. 220-211.000.
Schering Corporation: *See*—
Strayer, James G., 4,493,826, Cl. 424-118.000.
Schierling, Bernhard: *See*—
Anders, Peter; and Schierling, Bernhard, 4,493,673, Cl. 464-66.000.
Schilling, Donald P., to Rogers Corporation. Decoupling capacitor and method of manufacture thereof. 4,494,170, Cl. 361-306.000.
Schillke, Peter: *See*—
Bootman, Matthew W.; Schillke, Peter; and Laguette, Stephen W., 4,493,701, Cl. 604-73.000.
Schindel, Arnold, to Singer Company, The. Fiber optic sensor for shaft state. 4,493,997, Cl. 250-231.0SE.
Schively, Dixon P.: *See*—
Christiansen, David W.; and Schively, Dixon P., 4,493,812, Cl. 376-352.000.
Schleihauf, Gerhard: *See*—
Kuhlmann, Gerhard; Schleihauf, Gerhard; and Brandauer, Emil, 4,493,865, Cl. 428-52.000.
Schlemmer, Lothar: *See*—
Vyvial, Rudolf; Taubitz, Christof; Schlemmer, Lothar; Bleckmann, Gerhard; Zuerger, Manfred; Krieger, Heinrich; and Thiele, Heino, 4,493,807, Cl. 264-101.000.
Schlimbach, Heinrich, to Ferroplast Gesellschaft fur Metall- und Kunststoffepzeucnisse mbH. Method and device for continuous transporting powdered, fine-grained and coarse-grained materials. 4,493,593, Cl. 406-146.000.
Schlosser, Gerhard: *See*—
Koszytorz, Gunther; Lucke, Herbert; Schlosser, Gerhard; and Vath, Joachim, 4,493,990, Cl. 250-201.000.
Schlumberger Electronic (U.K.) Ltd.: *See*—
Wakeling, Antony J.; and Thompson, Alan D., 4,494,110, Cl. 340-365.00R.
Schmid, Leopold F. Self-locking differential gear unit; more specially for motor vehicles. 4,493,227, Cl. 74-711.000.
Schmidt, Donald J., to Alco Industries, Inc. Method of making a metal bottle for exotic gases under pressure. 4,493,201, Cl. 72-349.000.
Schmidt, Erich, to MZW Maschinenfabrik Zuckermann Pachtgesellschaft mbH. Apparatus for copy-machining a workpiece. 4,493,351, Cl. 144-3.00R.
Schmidt, Hans-Jorg: *See*—
Buchschmid, Emil; Horn, Friedrich; Nieberl, Bruno; Schmidt, Hans-Jorg; and Weyerich, Manfred, 4,494,101, Cl. 336-210.000.
Schmidt, K. Ulf: *See*—
Oliva, Rudolf; and Schmidt, K. Ulf, 4,493,241, Cl. 89-1.140.
Schmitt, Werner; Purrmann, Robert; and Jochum, Peter, to Espe Fabrik pharmazeutischer Praparate, GmbH. Nonadhesive impression material. 4,493,911, Cl. 523-109.000.
Schnaus, Martin: *See*—
Ziegler, Hans; Henze, Siegfried; Dippert, Rainer; Schnaus, Martin; and Golda, Horst, 4,493,234, Cl. 83-175.000.
Schneider, David A.: *See*—
Payne, Thomas R.; and Schneider, David A., 4,493,980, Cl. 219-450.000.
Schneider, Richard L.: *See*—
Stallings, Charles H.; Schneider, Richard L.; Childers, Frederick K.; Matthews, Stephen M.; Roth, Ian S.; Helava, Heikki I.; and Stringfield, Ray M., Jr., 4,494,043, Cl. 315-111.410.
Schonowsky, Hubert: *See*—
Horlein, Gerhard; Schonowsky, Hubert; Bieringer, Hermann; and Langeluddeke, Peter, 4,493,731, Cl. 71-118.000.
Schopper, Bernd; and Tandler, Peter, to ITT Industries, Inc. Dual-circuit pressure control valve. 4,493,508, Cl. 303-6.00C.
Schroeder, Walter W., to Sprague Electric Company. Wet-electrolyte capacitor package. 4,494,174, Cl. 361-433.000.
Schubert, Hiltmar: *See*—
Muller, Dietmar; Schubert, Hiltmar; and Krohnert, Rudolf, 4,493,630, Cl. 425-203.000.
Schuck, David B.: *See*—
Gunderson, Robert O.; Kocol, James C.; and Schuck, David B., 4,494,185, Cl. 364-200.000.
Schultz, Ward E.: *See*—
Smith, Harry D., Jr.; Arnold, Dan M.; and Schultz, Ward E., 4,493,998, Cl. 250-252.100.
Schulz, Hans-Joachim: *See*—
Deike, Karl-Heinz; Schulz, Hans-Joachim; and Sandmann, Jurgen, 4,493,510, Cl. 303-28.000.
Schutz, Rudolph W.; and Weis, Rudolf R., to Crown Zellerbach Corporation. Shrink tunnel with movable gate. 4,493,159, Cl. 34-43.000.
Schwalm, Walter A. Convergence device for color-producing cathode ray tube. 4,494,047, Cl. 315-368.000.
Schwartz, Ellen S.; and Tincher, Cline A., to BASF Wyandotte Corporation. Water-based hydraulic fluids having improved lubricity and corrosion inhibiting properties. 4,493,780, Cl. 252-73.000.
Schwartz, Jay W., to United States of America, Navy. Balanced system for ranging and synchronization between satellite pairs. 4,494,211, Cl. 364-571.000.
Schwarzenberg, Norbert; Ueberwolf, Heinz; Halberschmidt, Friedrich; and Audi, Joseph, to Saint-Gobain Vitrage. Apparatus for bending glass sheets. 4,493,724, Cl. 65-273.000.
Schweizer, Randy, to Chemco Manufacturing Co., Inc. Paint spray filter system. 4,493,718, Cl. 55-491.000.
Schweizerische Aluminium AG (Swiss Aluminium Ltd.): *See*—
Mittelmann, Gerhard J.; and Liebherr, Ricardo W., 4,493,428, Cl. 220-1.500.
Schwenzer, Alfred F.: *See*—
Voltmer, Helmut; Schwenzer, Alfred F.; and Spano, John D., 4,493,744, Cl. 156-568.000.
SCI Systems, Inc.: *See*—
King, Olin B., 4,494,127, Cl. 346-82.000.
Scortecci, Giuseppe: *See*—
Bucefari, Massimo; and Scortecci, Giuseppe, 4,493,183, Cl. 59-16.000.
Scott, James B.: *See*—
Radd, Fred J.; Scott, James B.; and Pan, Robert B., 4,493,372, Cl. 166-285.000.
Scovell, Edward G.: *See*—
Birkett, Kevin; Scovell, Edward G.; and John, Glyn R., 4,493,876, Cl. 428-457.000.
Scovill, John P.: *See*—
Klayman, Daniel L.; Scovill, John P.; Bartosevich, Joseph F.; Mason, Carl J.; and Griffin, T. Scott, 4,493,930, Cl. 544-360.000.
Sealright Co., Inc.: *See*—
Smith, Ernest L., 4,493,432, Cl. 220-270.000.
Searight, Edward F.: *See*—
Hurley, James R.; Searight, Edward F.; and Nunes, Maurice, 4,493,308, Cl. 126-41.00R.
Sebesta, Gunter: *See*—
Stillfried, Rudiger F. V.; Seegers, Gunter; and Sebesta, Gunter, 4,493,244, Cl. 91-420.000.
Sedam, Jason K.; Mueller, Richard J.; and Holoubek, Andrew J., to Coca-Cola Company, The. Portable post-mix beverage dispenser unit. 4,493,441, Cl. 222-129.100.
Sedlatschek, Robert; and McGann, Leo E., to Singer Company, The. Method of molding a sewing machine frame of fiber reinforced composition. 4,493,808, Cl. 264-108.000.
Seegers, Gunter: *See*—
Stillfried, Rudiger F. V.; Seegers, Gunter; and Sebesta, Gunter, 4,493,244, Cl. 91-420.000.
Seiko Instruments & Electronics Ltd.: *See*—
Ishida, Takashi; and Shida, Masaharu, 4,493,559, Cl. 368-74.000.
Seki, Eiji; Tai, Ichiro; Shirayama, Shimpey; Itoh, Toshiaki; Endo, Yorimasa; and Fukushima, Toshiki, to Tokyo Shibaura Denki Kabushiki Kaisha. Preamplifier for a wide range neutron flux monitoring system. 4,493,811, Cl. 376-254.000.
Seki, Fumio, to Yoshida Kogyo K.K. Apparatus for orienting and placing a button for attachment to a garment. 4,493,448, Cl. 227-119.000.
Seki, Shinichiro: *See*—
Shimamoto, Kunihiro; Hatanaka, Hiroshi; Seki, Shinichiro; and Orita, Ryozo, 4,493,938, Cl. 568-62.000.
Sekido, Tetsuya: *See*—
Kokufukata, Seigo; and Sekido, Tetsuya, 4,494,145, Cl. 358-163.000.
Selman, Gordon L.: *See*—
Collier, Owen N.; and Selman, Gordon L., 4,493,738, Cl. 148-24.000.
Semanchik, Stephen; and Mezei, George. Walking aid. 4,493,334, Cl. 135-75.000.
Senco Products, Inc.: *See*—
Becht, Carl T., 4,493,322, Cl. 128-334.00R.
Sera, Katsumi: *See*—
Nishijima, Hideo; Sera, Katsumi; Fukushima, Isao; and Kobori, Yasunori, 4,494,056, Cl. 318-269.000.
Serber, Hector. Mechanic's rest. 4,493,393, Cl. 182-129.000.
Sevastakis, Gus. Continuous casting apparatus. 4,493,361, Cl. 164-443.000.
Seymour, Harlan R.: *See*—
Chen, Lee; Khoury, Henri A.; and Seymour, Harlan R., 4,493,745, Cl. 156-626.000.
Sguazzin, Aldo. Continuously deodorized toilet. 4,493,117, Cl. 4-213.000.
Shakhmamedov, Rovshan I. O.: *See*—
Abdullaev, Gasan M. B. O.; Maxudov, Faramaz G. O.; Kasimov, Dzhangir A. K. O.; Mamedov, Bakhtiyar M. R. O.; Aliev, Gabil G.; Gadzhiev, Yashar A. O.; Shakhmamedov, Rovshan I. O.; and Iljushin, Alexei A., 4,493,140, Cl. 29-446.000.
Shannon, Suel G.: *See*—
Hall, Lawrence A.; Lightner, Linn S.; Long, William B.; Shannon, Suel G.; and Stahl, Daniel E., 4,493,525, Cl. 339-143.00R.
Sharp Kabushiki Kaisha: *See*—
Saka, Masakazu, 4,493,565, Cl. 374-185.000.
Sharp, Larry L.; and Klosinski, Mark, to Illinois Tool Works, Inc. Force transducer. 4,493,219, Cl. 73-862.050.
Shaw, Herbert J.; and Bergh, Ralph A., to Leland Stanford Junior University, Board of Trustees of the. Fiber optic directional coupler. 4,493,528, Cl. 350-96.150.

Shaw, Lockburn S.: *See*—
Groutage, Frederick D.; Conjerti, Samuel N.; and Shaw, Lockburn S., 4,493,136, Cl. 24-573.000.
Shell Oil Company: *See*—
Ayers, Ray R.; and Hemphill, Dean P., 4,493,590, Cl. 405-170.000.
Durbin, Daniel P.; Lutz, Robert G.; and Danforth, Richard L., 4,493,919, Cl. 524-505.000.
Kollmeyer, Willy D., 4,493,936, Cl. 549-474.000.
McCullough, J. Douglas, Jr., 4,493,923, Cl. 525-88.000.
Pilgram, Kurt H., 4,493,728, Cl. 71-92.000.
Reisberg, Joseph; Bielamowicz, Lawrence J.; and Thigpen, David R., 4,493,371, Cl. 166-274.000.
Rhodes, Robert B., 4,493,776, Cl. 252-25.000.
Ward, John M., 4,493,589, Cl. 405-166.000.
Sheng, Ping; and Stepleman, Robert S., to Exxon Research and Engineering Co. Solar cell with two-dimensional reflecting diffraction grating. 4,493,942, Cl. 136-259.000.
Shepler, Eric F.: *See*—
Piscitelli, R. Amelia; Hemmer, Valentine J.; and Shepler, Eric F., 4,493,527, Cl. 339-258.00R.
Shibahara, Yoshihumi: *See*—
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Shibata, Atsushi; and Ueno, Yukichi, to Hitachi, Ltd. Beam scanning control device for ion implantation system. 4,494,005, Cl. 250-492.200.
Shiber, Samuel. All terrain vehicle. 4,493,385, Cl. 180-6.200.
Shiber, Samuel: *See*—
Husted, Royce H., 4,493,678, Cl. 474-164.000.
Shida, Masaharu: *See*—
Ishida, Takashi; and Shida, Masaharu, 4,493,559, Cl. 368-74.000.
Shigemasa, Saito, to Fuji Electric Co., Ltd. Method of joining electrically conductive members. 4,493,964, Cl. 219-78.020.
Shii, Kazuo; Kobayashi, Hiroyuki; Kubozoe, Morioki; and Isakozawa, Shigeto, to Hitachi, Ltd. Image distortion-free, image rotation-free electron microscope. 4,494,000, Cl. 250-311.000.
Shiiba, Minoru: *See*—
Ohmura, Hiroshi; Kohno, Atsuo; Shiiba, Minoru; and Tanaka, Tsutomu, 4,493,542, Cl. 354-82.000.
Shima, Yoshihiro; Kashioka, Seiji; Uno, Takeshi; and Suzuki, Kunio, to Hitachi, Ltd. Automatic assembly system. 4,494,139, Cl. 358-101.000.
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Kawara, Toshio; and Shibahara, Yoshihumi, 4,494,022, Cl. 310-14.000.
Yano, Shozo; Komoto, Akira; and Fujinaga, Yasuhiro, 4,493,384, Cl. 177-25.000.
Shimamoto, Kunihiro; Hatanaka, Hiroshi; Seki, Shinichiro; and Orita, Ryozo, to Toyo Kasei Kogyo Co., Ltd. Method for the production of thioalkylene glycols. 4,493,938, Cl. 568-62.000.
Shimazaki, Norihiko: *See*—
Teraji, Tsutomu; Todo, Eishiro; Shimazaki, Norihiko; Oku, Teruo; and Namiki, Takayuki, 4,493,832, Cl. 424-199.000.
Shimizu, Hiroshi: *See*—
Arai, Tetsuji; Mimura, Yoshiki; and Shimizu, Hiroshi, 4,493,977, Cl. 219-411.000.
Shimizu, Takao: *See*—
Nawa, Akiyoshi; and Shimizu, Takao, 4,493,971, Cl. 219-137.520.
Shimp, Richard L., to ComSonics, Inc. Segmented upstream management for cable television. 4,494,138, Cl. 358-86.000.
Shirayama, Shimpey: *See*—
Seki, Eiji; Tai, Ichiro; Shirayama, Shimpey; Itoh, Toshiaki; Endo, Yorimasa; and Fukushima, Toshiki, 4,493,811, Cl. 376-254.000.
Shoji, Tadao: *See*—
Sugimoto, Hachiro; Hamano, Sachiyuki; Shoji, Tadao; Kaneko, Takeru; and Uzuo, Takeshi, 4,493,837, Cl. 424-253.000.
Showa Manufacturing Co., Ltd.: *See*—
Ohma, Toshio, 4,493,490, Cl. 280-276.000.
Showalter, Merle R., to Automotive Engine Associates. Heat piped piston. 4,493,292, Cl. 123-41.200.
Shroff, Arvind: *See*—
Palluel, Pierre; and Shroff, Arvind, 4,494,035, Cl. 313-346.00R.
Sicuteri, Federigo, to Istituto Farmacologico Serono of Rome. Method for the treatment of idiopathic headache attacks, in particular migraine and cluster headache. 4,493,830, Cl. 424-177.000.
Sideri, Leonardo; and Del Brocco, Enzo, to Sideri, Leonardo. Self-locking pilfer proof tamper evident container. 4,493,433, Cl. 220-306.000.
Sidler, Karl. Safe keeping box assembly. 4,493,268, Cl. 109-52.000.
Sie, Swan K., to Chicago Bridge & Iron Company. Floating roof seal using a coil spring. 4,493,430, Cl. 220-224.000.
Siegmann, Robert L. Produce spin dryer. 4,493,156, Cl. 34-8.000.
Siemens Aktiengesellschaft: *See*—
Frieling, Focko; Michael, Ewald; and Nikutta, Wolfgang, 4,494,015, Cl. 307-268.000.
Hasaler, Dieter, 4,493,216, Cl. 73-861.250.
Koszytorz, Gunther; Lucke, Herbert; Schlosser, Gerhard; and Vath, Joachim, 4,493,990, Cl. 250-201.000.
Leitgeb, Wilhelm, 4,494,049, Cl. 318-138.000.
Martin, Erwin, 4,494,032, Cl. 310-324.000.
Ramlohr, Franz; Pohl, Werner; and Kolzer, Walter, 4,494,181, Cl. 363-63.000.
Vogelsberg, Dieter, 4,493,182, Cl. 57-293.000.
Sikkema, Doetze J.: *See*—
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Silverio, Shaun: *See*—
Leary, Burton; and Silverio, Shaun, 4,494,172, Cl. 361-400.000.
Silvestrini, Jesus A., to IMDEC S.R.L. Method for separating the pulp from the skin of tomatoes. 4,493,851, Cl. 426-482.000.
Simnad, Massoud T., to GA Technologies Inc. Uranium thorium hydride nuclear fuel. 4,493,809, Cl. 376-171.000.
Simon, James F., to Raytheon Company. Connector holder assembly. 4,493,521, Cl. 339-92.00M.
Simon, James R.; and Welburn, David J., to CXA Ltd./CXA LTEE. Reinforced explosive shock tube. 4,493,261, Cl. 102-331.000.
Simpson, Richard D., to Texas Instruments Incorporated. Microcomputer with high speed program memory. 4,494,187, Cl. 364-200.000.
Singer Company, The: *See*—
Cowdrey, Dennis A., 4,493,647, Cl. 434-2.000.
Odermann, Charles R., 4,493,279, Cl. 112-220.000.
Schindel, Arnold, 4,493,997, Cl. 250-231.0SE.
Sedlatschek, Robert; and McGann, Leo E., 4,493,808, Cl. 264-108.000.
Sirinyan, Kirkor; Giesecke, Henning; Wolf, Gerhard D.; Ebneth, Harold; and Merten, Rudolf, to Bayer Aktiengesellschaft. Process for activating substrate surfaces for currentless metallization. 4,493,861, Cl. 427-304.000.
Site Microsurgical Systems, Inc.: *See*—
Cook, Kenneth P., 4,493,695, Cl. 604-27.000.
Siwon, Hans: *See*—
Steinel, Heinrich W.; and Siwon, Hans, 4,493,972, Cl. 219-230.000.
Skipor, Eugene: *See*—
Niemiro, Josef W.; and Skipor, Eugene, 4,493,690, Cl. 493-444.000.
SL Industries, Inc.: *See*—
Banks, Charles A., 4,493,515, Cl. 339-14.00L.
Slater, Harry F. Differential flow hydraulic transmission. 4,493,189, Cl. 60-489.000.
Slawy, Serge; Louvet, Olivier F.; and Dauphin, Jean L. Time division switching system for circuit mode and packet mode channels. 4,494,231, Cl. 370-60.000.
Smith, Benjamin V.: *See*—
Smith, Bobby E.; and Smith, Benjamin V., 4,493,497, Cl. 285-13.000.
Smith, Bobby E.; and Smith, Benjamin V. Pipe connection assembly. 4,493,497, Cl. 285-13.000.
Smith, Ernest L., to Sealright Co., Inc. Tamper evident closure. 4,493,432, Cl. 220-270.000.
Smith, Gary R., to Kusel Equipment Company. Portable cheese press frame assembly. 4,493,250, Cl. 99-456.000.
Smith, Gordon E., to Quest Medical, Inc. Metering device for intravenous fluids. 4,493,709, Cl. 604-246.000.
Smith, Gordon R.; Stewart, John H.; and Bagnall-Wild, Ralph H., to Barr & Stroud Limited. Gun fire control systems. 4,494,198, Cl. 364-423.000.
Smith, Guy L. B.; Howard, Derik; and Goedhals, Anton B., to Grathnail Development Company Limited. Pressure monitor. 4,494,106, Cl. 340-58.000.
Smith, Harry D., Jr.; Arnold, Dan M.; and Schultz, Ward E., to Halliburton Company. Method for monitoring drilling materials for gamma ray activity. 4,493,998, Cl. 250-252.100.
Smith, Irving. Foldable display stand. 4,493,424, Cl. 211-149.000.
Smith, Joseph E., Jr., to O & S Manufacturing Company. Spherical and cylindrical bearings and method of manufacturing. 4,493,512, Cl. 308-2.00R.
Smith Kline & French Laboratories Limited: *See*—
Tovey, Geoffrey D., 4,493,822, Cl. 424-15.000.
Smith, Lloyd H.; and Teplitz, Raymond L., to City of Hope. Method of testing for particular antibodies in the serum of a patient. 4,493,899, Cl. 436-508.000.
Snap-on Tools Corporation: *See*—
Grover, Donald D., 4,493,208, Cl. 73-117.300.
Snell, Richard G.; and Loughridge, Fredrick A., to GTE Products Corporation. Solder glass and electrical device employing same. 4,493,944, Cl. 174-50.640.
Snyder, Kenneth L., Jr.; and Peters, James, to Dow Chemical Company, The. Water-based hydraulic fluids. 4,493,777, Cl. 252-49.300.
Societe Francaise Hoechst: *See*—
Gallois, Philippe; and Christidis, Yani, 4,493,937, Cl. 562-444.000.
Sofiyanski, Vassil M.: *See*—
Vassilev, Vassil B.; and Sofiyanski, Vassil M., 4,494,078, Cl. 330-297.000.
Soloway, Richard; and Capalvo, Enzo. Trap for flying insects. 4,493,161, Cl. 43-107.000.
Solvang, Egil S. Device on a valve for shutting off and/or controlling a flow of liquid. 4,493,337, Cl. 137-449.000.
Someya, Riyouichi: *See*—
Hoshino, Michio; and Someya, Riyouichi, 4,494,029, Cl. 310-239.000.
Sommer, Gordon M., to Petroleum Recovery Systems, Inc. Oil well pump drive. 4,493,613, Cl. 417-15.000.
Sonneborn, Lambertus J., to Applied Power Inc. Single cylinder tilt-cab anti-torsion apparatus. 4,493,386, Cl. 180-89.150.
Soquem-Societe Quebecoise d'Exploration Miniere: *See*—
Biss, Rudy, 4,493,817, Cl. 423-62.000.
Sorgi, Aladino D., to Cubic Corporation. Frequency generator using composite digitally controlled oscillators. 4,494,073, Cl. 328-14.000.
Soukup, Robert J.: *See*—
Zanno, Paul R.; Parliment, Thomas H.; Soukup, Robert J.; and McNaught, Richard P., 4,493,852, Cl. 426-535.000.
Southwest Research Institute: *See*—
Benson, Harvey S., 4,494,065, Cl. 324-61.00R.

Spano, John D.: *See—*
Voltmer, Helmut; Schwenzer, Alfred F.; and Spano, John D., 4,493,744, Cl. 156-568.000.
Spector, George: *See—*
Polanco, Jose R.; and Spector, George, 4,493,461, Cl. 242-96.000.
Spectra-Symbol Corporation: *See—*
House, V. Dean, 4,494,105, Cl. 338-114.000.
Speelman, Paul L., to Eaton Corporation. Remote manual shifting mechanism. 4,493,224, Cl. 74-473.00R.
Speich, Francisco, to Textilma AG. Coupling arrangement usable in a textile machine. 4,493,346, Cl. 139-76.000.
Speronello, Barry K.: *See—*
Brown, Stanley M.; Durante, Vincent A.; Reagan, William J.; and Speronello, Barry K., 4,493,902, Cl. 502-65.000.
Sperry Corporation: *See—*
Harkness, John C., 4,494,064, Cl. 323-277.000.
Kanamuller, Franz X.; and Phillips, Edwin R., 4,493,993, Cl. 250-222.100.
Lew, Eugene K.; and Wallace, Harvey W., 4,494,192, Cl. 364-200.000.
Miller, Harry, 4,494,210, Cl. 364-567.000.
Ransom, Stephen A.; and Stickel, Tedd K., 4,494,016, Cl. 307-450.000.
Vansteelant, Marc G., 4,493,498, Cl. 289-2.000.
Spinner, Georg; and Pitschi, Franz X., to Spinner GmbH Elektrotechnishe Fabrik. High frequency waveguide. 4,494,094, Cl. 333-239.000.
Spinner GmbH Elektrotechnishe Fabrik: *See—*
Spinner, Georg; and Pitschi, Franz X., 4,494,094, Cl. 333-239.000.
Sporkenbach, Gustav-Adolf; and Suetterlin, Dieter, to Keller Holding AG; and Sporkenbach, Gustav-Adolf, a part interest. Method and oven for manufacturing a light construction element, particularly a cover plate. 4,493,805, Cl. 264-25.000.
Sportoletti, Giancarlo; Pagella, Piergiuseppe; and Cremonesi, Pietro, to Italfarmaco S.p.A. Bio-available succinylated protein-iron derivatives which do not cause gastric lesions, method of preparation and related pharmaceutical compounds. 4,493,829, Cl. 424-177.000.
Sprague Electric Company: *See—*
Gontowski, Walter S., Jr.; and Rollins, George E., 4,494,088, Cl. 331-111.000.
Schroeder, Walter W., 4,494,174, Cl. 361-433.000.
Sprecker, Mark A.; Belko, Robert P.; and Greene, Roger E., to International Flavors & Fragrances Inc. Organoleptic use of isopropyl tetramethylindanes. 4,493,790, Cl. 252-522.00R.
Spremulli, Paul F.: *See—*
Nayak, Ashok L.; and Spremulli, Paul F., 4,493,557, Cl. 366-300.000.
Springer, Gilbert D., to Ferix Corporation. Differetial-permeability field-concentrating magnetic read/write head. 4,494,125, Cl. 346-74.500.
Springthorpe, Anthony J., to Northern Telecom Limited. Diffusion equipment. 4,493,287, Cl. 118-719.000.
Srikrishnan, Kris V.: *See—*
Kumar, Ananda H.; and Srikrishnan, Kris V., 4,493,856, Cl. 427-57.000.
Stafford Rail Products, Inc.: *See—*
Stafford, Richard J., 4,493,202, Cl. 72-353.000.
Stafford, Richard J., to Stafford Rail Products, Inc. Railroad spike forging machine. 4,493,202, Cl. 72-353.000.
Stahl, Daniel E.: *See—*
Hall, Lawrence A.; Lightner, Linn S.; Long, William B.; Shannon, Suel G.; and Stahl, Daniel E., 4,493,525, Cl. 339-143.00R.
Stahlhut, Leo G., to Emerson Electric Co. Monolithic ceiling modules and ceiling system. 4,493,171, Cl. 52-28.000.
Stahn, Bernhard: *See—*
Roth, Martin; and Stahn, Bernhard, 4,493,405, Cl. 192-18.00R.
Stallings, Charles H.; Schneider, Richard L.; Childers, Frederick K.; Matthews, Stephen M.; Roth, Ian S.; Helava, Heikki I.; and Stringfield, Ray M., Jr., to Physics International Company. Imploding plasma device. 4,494,043, Cl. 315-111.410.
Stamp, Tom G.: *See—*
Robinson, Edward L., Jr.; and Stamp, Tom G., 4,493,274, Cl. 111-88.000.
Stanadyne, Inc.: *See—*
Brady, C. Eugene; Gottsche, Marcus J.; and Stoll, Paul W., 4,493,617, Cl. 417-214.000.
Standard Oil Company (Indiana): *See—*
Hensley, Albert L., Jr.; and Quick, Leonard M., 4,493,761, Cl. 208-10.000.
Standum Controls, Inc.: *See—*
Donnelly, Albert J., 4,494,010, Cl. 307-33.000.
Stangroom, James E., to National Research Development Corp. Electro-rheological transducer. 4,493,615, Cl. 417-48.000.
Stanley, Edwin L.: *See—*
Krause, Horst E.; and Stanley, Edwin L., 4,493,697, Cl. 604-50.000.
Stapp, Paul R.; and Chaney, Mary B., to Phillips Petroleum Company. Urea as a cosurfactant in enhanced oil recovery processes. 4,493,370, Cl. 166-273.000.
Starnes, Roger A. Serving dish with heating means. 4,493,978, Cl. 219-438.000.
Staroselsky, Naum; and Mirsky, Saul, to Compressor Controls Corporation. Method and apparatus for controlling a multicompressor station. 4,494,006, Cl. 290-4.000.
Stauffer Chemical Company: *See—*
Morgan, George J., 4,493,609, Cl. 415-20.000.
Stebbins, Leslie F.: *See—*
Su, Kai C.; Stebbins, Leslie F.; and Bhatia, Rajkumar P., 4,493,783, Cl. 252-174.230.
Steeg, Klaus, to Luk Lamellen und Kupplungsbau GmbH. Friction clutch. 4,493,409, Cl. 192-115.000.
Steinel, Heinrich W.; and Siwon, Hans. Electrically heated apparatus employing a PTC heater for liquifying a rod of binding material. 4,493,972, Cl. 219-230.000.
Steinman, Kenneth. Tamper proof reel package for a fishing rod. 4,493,416, Cl. 206-315.110.
Stellram S.A.: *See—*
Grunsky, Manfred; Sussmuth, Reiner; Dehn, Dieter; and Ischen, Gunter, 4,493,596, Cl. 408-233.000.
Stengel, Robert E.; and Nejdl, Charles W., to Motorola, Inc. Planar inductors. 4,494,100, Cl. 336-200.000.
Stenglein, Paul R., to Carrier Corporation. Door latch. 4,493,499, Cl. 292-158.000.
Step Enterprises: *See—*
Merrel, Richard C., 4,493,204, Cl. 72-389.000.
Stepleman, Robert S.: *See—*
Sheng, Ping; and Stepleman, Robert S., 4,493,942, Cl. 136-259.000.
Stericric SA: *See—*
Wolkonsky, Alexander, 4,493,427, Cl. 215-230.000.
Sterling, Henley F., to ITT Industries, Inc. Semiconductor switch device. 4,493,996, Cl. 250-227.000.
Sterner, Russell L., to Kidde, Inc. Attachment jib for cranes. 4,493,426, Cl. 212-261.000.
Stewart, David E.; and Nicholson, George R., to Hobson Limited. Forming of extrusion dies. 4,493,229, Cl. 76-107.00A.
Stewart, John H.: *See—*
Smith, Gordon R.; Stewart, John H.; and Bagnall-Wild, Ralph H., 4,494,198, Cl. 364-423.000.
Stewart-Warner Corporation: *See—*
Hamilton, Lawrence E.; and Rutili, Renzo N., 4,493,958, Cl. 200-314.000.
Stickel, Tedd K.: *See—*
Ransom, Stephen A.; and Stickel, Tedd K., 4,494,016, Cl. 307-450.000.
Stieg, Richard F.; Dolan, John P.; Worley, W. Spencer; and Juergens, Tristan, to Gates Rubber Company, The. Variable speed, belt driven transmission system, speed sensing driver pulley and method. 4,493,221, Cl. 474-14.000.
Stillfried, Rudiger F. V.; Seegers, Gunter; and Sebesta, Gunter, to WABCO Fahrzeugbremsen GmbH. Pneumatic door operator. 4,493,244, Cl. 91-420.000.
Stockburger, Dieter: *See—*
Wintermantel, Klaus; Stockburger, Dieter; and Fuchs, Hugo, 4,493,719, Cl. 62-532.000.
Stoll, Paul W.: *See—*
Brady, C. Eugene; Gottsche, Marcus J.; and Stoll, Paul W., 4,493,617, Cl. 417-214.000.
Stover, Kenneth W., to Bunn-O-Matic Corporation. Apparatus for dissolving soluble coffee. 4,493,249, Cl. 99-275.000.
Strayer, James G., to Schering Corporation. Gentamicin-gleptoferron compositions. 4,493,826, Cl. 424-118.000.
Streater, August L.; and Dwyer, Daniel T., to Franklin Electric Co., Inc. Electrical power matching system. 4,494,180, Cl. 363-37.000.
Streib, Stephen F., to Chevron Research Company. Ultrasensitive apparatus and monitoring method for detecting change in fluid flow. 4,494,112, Cl. 340-606.000.
Stresau Laboratory, Inc.: *See—*
Norton, Jeffery R., 4,493,240, Cl. 89-1.140.
Strickland, Reid A.; and Roller, Timothy J. Slide valve for controlling fluid flow. 4,493,476, Cl. 251-176.000.
Stringfield, Ray M., Jr.: *See—*
Stallings, Charles H.; Schneider, Richard L.; Childers, Frederick K.; Matthews, Stephen M.; Roth, Ian S.; Helava, Heikki I.; and Stringfield, Ray M., Jr., 4,494,043, Cl. 315-111.410.
Stroup, Larry J. Dead bolt and night chain combination. 4,493,500, Cl. 292-262.000.
Stuart, Marion W. Educational device. 4,493,654, Cl. 434-347.000.
Stuttgen, Friedel: *See—*
Ippen, Jakob; and Stuttgen, Friedel, 4,493,355, Cl. 152-329.000.
Su, Kai C.; Stebbins, Leslie F.; and Bhatia, Rajkumar P., to Alcon Laboratories, Inc. Cleaning agent for optical surfaces. 4,493,783, Cl. 252-174.230.
Suarez, Jose I.: *See—*
Popek, Marc H.; and Suarez, Jose I., 4,494,090, Cl. 332-16.00T.
Sud, Rahul: *See—*
Hardee, Kim C.; and Sud, Rahul, 4,494,221, Cl. 365-203.000.
Sudreau, Bernard: *See—*
de Sivry, Bruno; Sudreau, Bernard; Jegousse, Michel; and Le Hir, Yves, 4,493,966, Cl. 219-121.0EC.
Sues, John M.; and Cupani, Carmine, to Inteleplex Corporation, The. Transparent secondary information transmission system for an information transmission system. 4,493,948, Cl. 179-2.00A.
Suetterlin, Dieter: *See—*
Sporkenbach, Gustav-Adolf; and Suetterlin, Dieter, 4,493,805, Cl. 264-25.000.
Sugie, Akihiko: *See—*
Ono, Keiichi; Sugie, Akihiko; Kawakami, Hajime; Sami, Shunsuke; Kojima, Atsuyuki; and Katsube, Junki, 4,493,846, Cl. 424-308.000.
Sugimoto, Hachiro; Hamano, Sachiyuki; Shoji, Tadao; Kaneko, Takeru; and Uzuo, Takeshi, to Eisai Co., Ltd. Theobromine derivatives. 4,493,837, Cl. 424-253.000.

Sugimura, Masao: *See*—
Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; Sugimura, Masao; and Takahashi, Fumitaka, 4,494,116, Cl. 340-995.000.

Sugisawa, Yasuhiko, to Terumo Corporation. Intravascular catheter assembly. 4,493,708, Cl. 604-165.000.

Sugiura, Hajime: *See*—
Koike, Takashi; and Sugiura, Hajime, 4,494,215, Cl. 364-900.000.

Suh, Sung S.: *See*—
Moon, Sang H.; Park, Jae M.; and Suh, Sung S., 4,493,725, Cl. 71-62.000.

Suhh, Jay Y. Oil mop. 4,493,576, Cl. 401-283.000.

Sullivan, John M.: *See*—
Brahm, David J.; Grinn, James M.; Hepler, Edward L.; and Sullivan, John M., 4,494,193, Cl. 364-200.000.

Sulzer Brothers Limited: *See*—
Flaschel, Erwin; and Renken, Albert, 4,493,735, Cl. 134-25.100.
Zabelka, Jaroslav, 4,493,291, Cl. 122-7.00R.

Sulzer-Escher Wyss Ltd.: *See*—
Kubr, Vaclav; Mulhaupt, Bruno; and Paschedag, Hansjoachim, 4,493,768, Cl. 210-360.200.
Paschedag, Hansjoachim; Mulhaupt, Bruno; and Kubr, Vaclav, 4,493,769, Cl. 210-360.200.

Sumitomo Chemical Company, Limited: *See*—
Furuzawa, Kunihiko; Funaki, Yuji; Hisada, Yoshio; and Izumi, Kazuo, 4,493,842, Cl. 424-273.00R.
Ono, Keiichi; Sugie, Akihiko; Kawakami, Hajime; Sami, Shunsuke; Kojima, Atsuyuki; and Katsube, Junki, 4,493,846, Cl. 424-308.000.

Sundstrand Corporation: *See*—
Bland, Timothy J.; and Niggemann, Richard E., 4,494,171, Cl. 361-386.000.

Sussmuth, Reiner: *See*—
Grunsky, Manfred; Sussmuth, Reiner; Dehn, Dieter; and Ischen, Gunter, 4,493,596, Cl. 408-233.000.

Suster, Mary E., to General Electric Company. Conductive ink for flashlamp array circuit. 4,493,639, Cl. 431-359.000.

Sutter, Leroy V., Jr., to Hughes Aircraft Company. Pulsed rf pumped waveguide laser. 4,494,236, Cl. 372-25.000.

Suyama, Tadakazu: *See*—
Mizushima, Yutaka; Aihara, Hironaka; Otomo, Susumu; Yokoyama, Kazumasa; Okamoto, Hiroyuki; and Suyama, Tadakazu, 4,493,847, Cl. 424-317.000.

Suzuki, Hajime. Terrestrial globe. 4,493,648, Cl. 434-136.000.

Suzuki, Hajime; Matsuyama, Shinichiro; and Arakawa, Akio, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method for correcting the deviation of a predetermined stop position in a loom. 4,494,203, Cl. 364-470.000.

Suzuki, Hiroshi; Tanaka, Goro; Nishikawa, Akio; Mukai, Junji; Sato, Mikio; Makino, Daisuke; and Wakashima, Yoshiaki, to Hitachi, Ltd.; and Hitachi Chemical Company, Ltd. Semiconductor memories with α shield. 4,494,217, Cl. 365-53.000.

Suzuki, Kunio: *See*—
Shima, Yoshihiro; Kashioka, Seiji; Uno, Takeshi; and Suzuki, Kunio, 4,494,139, Cl. 358-101.000.

Suzuki, Ryo; Ikeda, Tadashi; Takeshita, Masatoshi; and Kodama, Naoki, to Hitachi, Ltd. Magnetic bubble memory device. 4,494,216, Cl. 365-36.000.

Svatek, Thomas A., to Polaroid Corporation. Compact video slide projector. 4,494,148, Cl. 358-226.000.

Svensson, Bengt T.: *See*—
Josefsson, Lars G.; Svensson, Bengt T.; and Moeschlin, Lars F., 4,494,083, Cl. 333-33.000.

Sweeny, Norman P.; Relyea, Keith E.; and Brustad, Wayne L., to Minnesota Mining and Manufacturing Company. Fragrance-releasing microcapsules on a see-through substrate. 4,493,869, Cl. 428-201.000.

Swick, Robert H., to W. L. Gore & Associates, Inc. Apparatus for the separation of hydrogen sulfide from a gas mixture. 4,493,716, Cl. 55-158.000.

Syntex (U.S.A.) Inc.: *See*—
Nestor, John J., Jr.; Moffatt, John G.; and Chan, Hardy W., 4,493,795, Cl. 260-112.50E.

Synthes Ltd. (U.S.A.): *See*—
Klaue, Kaj, 4,493,317, Cl. 128-92.00D.

Tabajdi, Gabor: *See*—
Vajda, Gabor; Ravasz, Laszlo ; Karacsonyi, Bela; and Tabajdi, Gabor, 4,493,853, Cl. 426-582.000.

Tabara, Takashi, to Olympus Optical Company Limited. Method for measuring an electrolyte in an automatic biochemical analyzing apparatus wherein a flame photometer is assembled. 4,493,897, Cl. 436-47.000.

Tachibana, Akifumi, to Kabushiki Kaisha Morita Seisakusho. Dental handpiece having non-contact rotational speed detection device. 4,493,643, Cl. 433-27.000.

Tada, Ikuo, to Alps Electric Co., Ltd. Impact dot printing head. 4,493,567, Cl. 400-124.000.

Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; Sugimura, Masao; and Takahashi, Fumitaka, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for visually indicating a current travel route of a vehicle. 4,494,116, Cl. 340-995.000.

Taggents, Inc.: *See*—
Dempsey, John C., 4,493,207, Cl. 73-40.700.

Taggert, Russell H. Current detector in combination with an electrical apparatus. 4,493,983, Cl. 219-494.000.

Taguchi, Michihiro, to Yamaha Hatsudoki Kabushiki Kaisha; and Sanshin Kogyo Kabushiki Kaisha. Shaft connecting device for boat propellers. 4,493,662, Cl. 440-83.000.

Tai, Ichiro: *See*—
Seki, Eiji; Tai, Ichiro; Shirayama, Shimpey; Itoh, Toshiaki; Endo, Yorimasa; and Fukushima, Toshiki, 4,493,811, Cl. 376-254.000.

Taisho Pharmaceutical Co., Ltd.: *See*—
Mizushima, Yutaka; Aihara, Hironaka; Otomo, Susumu; Yokoyama, Kazumasa; Okamoto, Hiroyuki; and Suyama, Tadakazu, 4,493,847, Cl. 424-317.000.

Tajima, Koichi: *See*—
Yamamoto, Masao; Yebisuya, Takashi; Kawai, Mituo; and Tajima, Koichi, 4,493,733, Cl. 75-126.00B.

Takada, Daizo: *See*—
Ito, Hirosato; and Takada, Daizo, 4,493,635, Cl. 431-90.000.

Takagi, Michiyuki: *See*—
Iino, Toshiki; Kaneko, Hiromi; Takagi, Michiyuki; and Komatsu, Kazuhiro, 4,493,610, Cl. 415-104.000.

Takahashi, Fumitaka: *See*—
Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; Sugimura, Masao; and Takahashi, Fumitaka, 4,494,116, Cl. 340-995.000.

Takahashi, Hiroyuki; and Ogata, Tomohiro, to Kanto Special Steel Works Ltd. Apparatus for rotary casting ingots. 4,493,360, Cl. 164-286.000.

Takahashi, Tohru: *See*—
Kaneko, Shuzo; Tamura, Yasuyuki; and Takahashi, Tohru, 4,493,882, Cl. 430-97.000.

Takahashi, Tsuneo: *See*—
Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; Sugimura, Masao; and Takahashi, Fumitaka, 4,494,116, Cl. 340-995.000.

Takahashi, Yoko: *See*—
Omura, Satoshi; Tanaka, Yoshitake; Iwai, Yuzuru; Takahashi, Yoko; and Nakagawa, Akira, 4,493,845, Cl. 424-279.000.

Takaji Kogya Kabushiki Kaisha: *See*—
Takayama, Chitoshi; Hirao, Hideo; Yokouchi, Hideya; and Iida, Teruhiko, 4,494,159, Cl. 360-78.000.

Takano, Hiroshi, to Mitsuboshi Belting Ltd. Reinforced cog belt. 4,493,681, Cl. 474-265.000.

Takano, Toshio; and Mura, Shinichiro, to Fuji Jukogyo Kabushiki Kaisha. Parking lock mechanism for a shift lever. 4,493,403, Cl. 192-4.00A.

Takaoka, Daizo, to Sanyo Electric Co., Ltd. Sunlight-into-energy conversion apparatus. 4,493,940, Cl. 136-248.000.

Takara Co., Ltd.: *See*—
Terui, Masumi, 4,493,672, Cl. 446-464.000.

Takashi, Yokata: *See*—
Kaneko, Yutaka; and Takashi, Yokata, 4,494,130, Cl. 346-160.000.

Takasugi, Hisashi: *See*—
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,493,833, Cl. 424-246.000.

Takaya, Takao; Yasuda, Nobuyoshi; Tsutsumi, Hideo; and Matsuda, Keiji, to Fujisawa Pharmaceutical Co., Ltd. Aminoglycoside derivatives. 4,493,831, Cl. 424-180.000.

Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, to Fujisawa Pharmaceutical Co., Ltd. Syn-isomer of 3,7-disubstituted-3-cephem-4-carboxylic acid compounds. 4,493,833, Cl. 424-246.000.

Takaya, Takao; Inoue, Yoshikazu; Yasuda, Nobuyoshi; and Murata, Masayoshi, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,493,834, Cl. 424-246.000.

Takayama, Chitoshi; Hirao, Hideo; Yokouchi, Hideya; and Iida, Teruhiko, to Kabushiki Kaisha Suwa Seikosha; and Takaji Kogya Kabushiki Kaisha. Magnetic head-positioning device for magnetic disc drive. 4,494,159, Cl. 360-78.000.

Takeda Chemical Industries, Ltd.: *See*—
Miyashiro, Yutaka; Ogawa, Masao; Yamazaki, Yoshio; and Igarasi, Seizi, 4,493,894, Cl. 435-178.000.

Takeda, Kazuo: *See*—
Funakoshi, Tadayoshi; and Takeda, Kazuo, 4,493,611, Cl. 415-199.100.

Takei, Toshihiro; Matsui, Kazuma; Hattori, Yoshiyuki; Watanabe, Kiyohiko; Nakamura, Toshiaki; and Ohnishi, Shunsaku, to Nippondenso Co., Ltd. Electrically operated fuel pump device. 4,493,620, Cl. 417-366.000.

Takekida, Yoshisuke, to NEC Corporation. Development apparatus of latent electrostatic images. 4,493,550, Cl. 355-10.000.

Takeno, Hidekazu: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; Takeno, Hidekazu; Okada, Satoshi; and Hashimoto, Masashi, 4,493,794, Cl. 260-112.50R.

Takesako, Yoshinobu: *See*—
Nonomura, Kinzo; Watanabe, Masanori; and Takesako, Yoshinobu, 4,493,666, Cl. 445-24.000.

Takeshita, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Control system in a test device for testing a manual speed change unit. 4,493,209, Cl. 73-118.000.

Takeshita, Masatoshi: *See*—
Suzuki, Ryo; Ikeda, Tadashi; Takeshita, Masatoshi; and Kodama, Naoki, 4,494,216, Cl. 365-36.000.

Takeuchi, Seizi: *See*—
Kahara, Toshiki; Matsuda, Shimpei; Ishii, Kenzo; Takeuchi, Seizi; Imahashi, Jinichi; and Honji, Akio, 4,493,879, Cl. 429-41.000.

Takimoto, Toshiyuki; and Aoki, Keiji, to Toyota Jidosha Kabushiki Kaisha. Electronic fuel injecting method and device for internal combustion engine. 4,493,305, Cl. 123-490.000.

Tallant, James C., II: *See*—
Naimpally, Saiprasad V.; and Tallant, James C., II, 4,494,146, Cl. 358-184.000.

Tamura, Kazuhisa; and Koshimo, Masahiko, to Kabushiki Kaisha Daikin Seisakusho. Vibration damper assembly. 4,493,674, Cl. 464-68.000.

Tamura, Kohki: *See*—
Horiba, Tatsuo; Iwamoto, Kazuo; Kawana, Hidejiro; Fujita, Kazunori; and Tamura, Kohki, 4,493,878, Cl. 429-12.000.

Tamura, Yasuyuki: *See*—
Kaneko, Shuzo; Tamura, Yasuyuki; and Takahashi, Tohru, 4,493,882, Cl. 430-97.000.

Tanabe, Toshio: *See*—
Tanahashi, Masao; Tanabe, Toshio; and Otsuka, Kiyotaka, 4,493,149, Cl. 30-43.920.

Tanahashi, Masao; Tanabe, Toshio; and Otsuka, Kiyotaka, to Matsushita Electric Works, Ltd. Reciprocal blade assembly of electric shaver. 4,493,149, Cl. 30-43.920.

Tanaka, Goro: *See*—
Suzuki, Hiroshi; Tanaka, Goro; Nishikawa, Akio; Mukai, Junji; Sato, Mikio; Makino, Daisuke; and Wakashima, Yoshiaki, 4,494,217, Cl. 365-53.000.

Tanaka, Koji, to Japan Exlan Company Limited. Filter for removing water from water-containing oil and method for the same. 4,493,772, Cl. 210-799.000.

Tanaka, Sumio; and Watanabe, Shigeyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Nonvolatile read only memory device. 4,494,219, Cl. 365-189.000.

Tanaka, Tsutomu: *See*—
Ohmura, Hiroshi; Kohno, Atsuo; Shiiba, Minoru; and Tanaka, Tsutomu, 4,493,542, Cl. 354-82.000.

Tanaka, Yoshitake: *See*—
Omura, Satoshi; Tanaka, Yoshitake; Iwai, Yuzuru; Takahashi, Yoko; and Nakagawa, Akira, 4,493,845, Cl. 424-279.000.

Tandler, Peter: *See*—
Schopper, Bernd; and Tandler, Peter, 4,493,508, Cl. 303-6.00C.

Taniguchi, Seiho; and Sakuma, Yuichiro, to Union Carbide Corporation. Semi-conductive compositions, based on ethylene-vinyl acetate copolymers, having adhesion to and strippability from croslinked polyolefin substrates. 4,493,787, Cl. 252-511.000.

Tapco Products Company, Inc.: *See*—
Rhoades, James J., 4,493,200, Cl. 72-319.000.

Taschner, Walter: *See*—
Fastner, Thorwald; Mayrhofer, Max; and Taschner, Walter, 4,493,452, Cl. 228-158.000.

Taubitz, Christof: *See*—
Vyvial, Rudolf; Taubitz, Christof; Schlemmer, Lothar; Bleckmann, Gerhard; Zuerger, Manfred; Krieger, Heinrich; and Thiele, Heino, 4,493,807, Cl. 264-101.000.

Taylor Machine Works, Inc.: *See*—
Walker, Evo M., 4,493,604, Cl. 414-622.000.

Technicare Corporation: *See*—
Robbins, Cheston W.; and Kelly, Robert M., 4,493,653, Cl. 434-262.000.

Teck Corporation: *See*—
Biss, Rudy, 4,493,817, Cl. 423-62.000.

Teijin Limited: *See*—
Ueda, Fumio; Hashimoto, Eiichi; Yamada, Takeyoshi; and Mori, Koh, 4,493,714, Cl. 55-16.000.

Telefonaktiebolaget L M Ericsson: *See*—
Josefsson, Lars G.; Svensson, Bengt T.; and Moeschlin, Lars F., 4,494,083, Cl. 333-33.000.

Telefunken Electronic GmbH: *See*—
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Teplitz, Raymond L.: *See*—
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Terui, Masumi, to Takara Co., Ltd. Toy vehicle assembly. 4,493,672, Cl. 446-464.000.

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Reddy, Chitranjan N.; and Rao, G. R. Mohan, 4,494,223, Cl. 365-233.000.
Simpson, Richard D., 4,494,187, Cl. 364-200.000.
White, Lionel S.; and Rao, G. R. Mohan, 4,494,222, Cl. 365-222.000.

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Ziegler, Hans; Henze, Siegfried; Dippert, Rainer; Schnaus, Martin; and Golda, Horst, 4,493,234, Cl. 83-175.000.

Textilma AG: *See*—
Speich, Francisco, 4,493,346, Cl. 139-76.000.

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Zimmerman, Ronald E.; Burck, Philip J.; Jones, C. David; and Thakkar, Arvind L., 4,493,699, Cl. 604-55.000.

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Ganter, Robert; Whitmoyer, Robert; and Rye, Palle, 4,493,637, Cl. 431-190.000.

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Hurley, James R.; Searight, Edward F.; and Nunes, Maurice, 4,493,308, Cl. 126-41.00R.

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Hanson, Jay L., 4,493,191, Cl. 62-126.000.

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Wakeling, Antony J.; and Thompson, Alan D., 4,494,110, Cl. 340-365.00R.

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Di Forte Poisson, Marie-Antoinette; Hirtz, Jean-Pierre; Duchemin, Jean-Pascal; and de Cremoux, Baudouin, 4,494,237, Cl. 372-45.000.
Gauthier, Francis; and Gombert, Jean, 4,493,720, Cl. 65-3.120.
Palluel, Pierre; and Shroff, Arvind, 4,494,035, Cl. 313-346.00R.
Reymond, Jean-Claude; Bertrand, Gilles; and Gabanou, Roland, 4,494,201, Cl. 364-449.000.
Van Den Driessche, Michel, 4,494,048, Cl. 315-408.000.

Thomson, Ian D. M., to Arbonite Corporation. Coated pipe and method of making same. 4,493,864, Cl. 428-36.000.

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Tiberg, Lars: *See*—
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Ikekame, Hiroo; and Karasawa, Yasuo, 4,494,173, Cl. 361-429.000.
Inokuchi, Haruhisa; and Sakai, Takami, 4,494,179, Cl. 363-35.000.
Konishi, Satoshi, 4,494,020, Cl. 307-530.000.
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Nishizawa, Hiroshi; Sato, Tadayuki; and Ishikawa, Takashi, 4,493,858, Cl. 427-104.000.
Seki, Eiji; Tai, Ichiro; Shirayama, Shimpey; Itoh, Toshiaki; Endo, Yorimasa; and Fukushima, Toshiki, 4,493,811, Cl. 376-254.000.
Tanaka, Sumio; and Watanabe, Shigeyoshi, 4,494,219, Cl. 365-189.000.

Yamamoto, Masao; Yebisuya, Takashi; Kawai, Mituo; and Tajima, Koichi, 4,493,733, Cl. 75-126.00B.
Yoshihisa, Kozo; and Okui, Isamu, 4,494,075, Cl. 330-254.000.
Tolliver, Peter M. Lateral view extender device. 4,493,538, Cl. 351-57.000.
Tonne, Peter: *See*—
Jaedicke, Hagen; and Tonne, Peter, 4,493,802, Cl. 260-507.00R.
Tonoki, Satoshi: *See*—
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Toth, Istvan; Nagy, Jozsef; Dombay, Zsolt; Grega nee Toth, Erzsebet; Horvath, Ibolya; Vigh, Laszlo ; and Farkas, Tibor, to Eszak-magyarorszagi Vegyimuvek. Plant growth regulating method. 4,493,727, Cl. 71-088.000.
Toth, William D., to Pitney Bowes Inc. Mailing machine tape knife. 4,493,236, Cl. 83-440.100.
Toung, Wen H. Collapsible globe assembly. 4,493,649, Cl. 434-138.000.
Tourre, Bernard: *See*—
Ohayon, Gerard; Reverchon, Bernard; Tourre, Bernard; and Vigier, Serge, 4,493,271, Cl. 110-262.000.
Tovey, Geoffrey D., to Smith Kline & French Laboratories Limited. Dosage units. 4,493,822, Cl. 424-15.000.
Townson, Jimmy D., to Freeman, Kenneth A. Hydraulic straight hole drill collar. 4,493,380, Cl. 175-61.000.
Toyo Kasei Kogyo Co., Ltd.: *See*—
Shimamoto, Kunihiro; Hatanaka, Hiroshi; Seki, Shinichiro; and Orita, Ryozo, 4,493,938, Cl. 568-62.000.
Toyoda Gosei Co., Ltd.: *See*—
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Tra, Josef: *See*—
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Travis, James, to University of Georgia Research Foundation, Inc. Determination of oxidized α-1-proteinase inhibitor in serum or plasma. 4,493,891, Cl. 435-23.000.
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Godfrey, Noel R.; Parkes, Larry S.; and Treacy, Richard H., 4,494,050, Cl. 318-158.000.
Treat, Michael R. Bipolar electrocautery surgical snare. 4,493,320, Cl. 128-303.150.
Trenholm, Bruce W.; and Woolley, James G., to United States of America, Navy. Riser. 4,493,466, Cl. 244-152.000.
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Nall, Lawson H., 4,493,232, Cl. 82-4.00C.
Trindium Corporation of America: *See*—
Adams, William R., 4,493,736, Cl. 148-2.000.
Trinh, Lanh T.; and Loy, Robert W., to Bendix Corporation, The. Advance control for breakerless ignition system. 4,493,307, Cl. 123-630.000.
Trivette, Chester D., Jr., to Monsanto Company. Rubber compositions and method for treating rubber with hydroxymethyl sulfinic salts. 4,493,925, Cl. 525-353.000.
Troebs, Charles J.: *See*—
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Troy, Seymour; and Mullenix, Kenneth E. Automatic lottery system. 4,494,197, Cl. 364-412.000.
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Hosel, Fritz, 4,494,204, Cl. 364-470.000.
TRW Inc.: *See*—
Bergin, Thomas F., 4,493,616, Cl. 417-53.000.
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Turner, Jonathan S., to AT&T Bell Laboratories. Fast packet switching system. 4,494,230, Cl. 370-60.000.
Tuzzolino, Joseph R.: *See*—
Dydyk, Michael; Enlow, Norman K.; and Tuzzolino, Joseph R., 4,494,087, Cl. 331-107.0DP.
TX RX Systems, Inc.: *See*—
Kaegebein, Daniel P., 4,493,422, Cl. 211-26.000.
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Ueda, Fumio; Hashimoto, Eiichi; Yamada, Takeyoshi; and Mori, Koh, to Teijin Limited. Ultrathin film, process for production thereof, and use thereof for concentrating a specified gas in a gaseous mixture. 4,493,714, Cl. 55-16.000.
Uematsu, Kimio, to Nippon Kogaku K.K. Focal-plane shutter. 4,493,544, Cl. 354-246.000.
Ueno, Yukichi: *See*—
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Ueyama, Tamotsu; and Yamada, Takao, to Hitachi Chemical Company, Ltd. Electroconductive paste and process for producing electroconductive metallized ceramics using the same. 4,493,789, Cl. 252-514.000.
Uldall, Peter R., to Allentyne Limited. Hemodialysis cannular for subclavian insertion. 4,493,696, Cl. 604-43.000.
Umeda, Hiroyuki: *See*—
Ogata, Haruki; Ogawa, Kimio; and Umeda, Hiroyuki, 4,494,161, Cl. 360-132.000.
Umemura, Yukio, to Nissan Motor Co., Ltd. Cooling system of V-type internal combustion engine. 4,493,294, Cl. 123-41.330.
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Union Carbide Corporation: *See*—
Rifi, Mahmoud R., 4,493,924, Cl. 525-102.000.
Taniguchi, Seiho; and Sakuma, Yuichiro, 4,493,787, Cl. 252-511.000.
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United Kingdom Atomic Energy Authority: *See*—
Peck, Peter F., 4,494,001, Cl. 250-358.100.
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United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
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United States Borax & Chemical Corporation: *See*—
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Agriculture: *See*—
Friedrich, John P.; and Eldridge, Arthur C., 4,493,854, Cl. 426-629.000.
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Cannon, Mark W., Jr., 4,493,539, Cl. 351-205.000.
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Bass, Alva W., 4,493,581, Cl. 403-323.000.
Ducote, Marjorie E.; and Allen, Henry C., 4,493,741, Cl. 149-19.400.
Goll, Jeffrey H., 4,494,091, Cl. 333-151.000.
Gualtieri, John G.; and Vig, John R., 4,493,991, Cl. 250-203.00R.
Gutleber, Frank S., 4,494,228, Cl. 370-18.000.
Hager, Adolph G.; Freeman, Gerald L.; Rush, James P.; Branovich, Louis E.; and DuBuske, Stanley, 4,494,003, Cl. 250-474.100.
Jameson, Robert L., 4,493,264, Cl. 102-491.000.
Klayman, Daniel L.; Scovill, John P.; Bartosevich, Joseph F.; Mason, Carl J.; and Griffin, T. Scott, 4,493,930, Cl. 544-360.000.
Light, David O., Jr.; Hayes, Frank, III; and McGinty, Joseph R., 4,494,079, Cl. 331-1.00A.
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Banker, John G., 4,493,737, Cl. 148-11.50R.
Brak, Stephen B., 4,493,179, Cl. 53-576.000.
Christiansen, David W.; and Schively, Dixon P., 4,493,812, Cl. 376-352.000.
Haldipur, Gaurang B.; Anderson, Richard G.; and Cherish, Peter, 4,493,636, Cl. 431-170.000.
Lee, David M.; and Lindquist, Lloyd O., 4,493,810, Cl. 376-254.000.
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Moretti, Alfred, 4,494,040, Cl. 315-5.410.
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Weinstein, Leonard M., 4,493,211, Cl. 73-147.000.
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Coleman, H. Paris, 4,494,117, Cl. 343-365.000.
Coleman, Jeffrey L., 4,493,281, Cl. 114-20.00R.
Dale, John R., 4,493,664, Cl. 441-7.000.
Foster, John S., 4,493,260, Cl. 102-307.000.
Gholson, Norman H., 4,494,115, Cl. 340-825.650.
Groutage, Frederick D.; Conjerti, Samuel N.; and Shaw, Lockburn S., 4,493,136, Cl. 24-573.000.
Henry, John W., IV, 4,493,514, Cl. 384-613.000.
Hughes, Richard S., 4,494,084, Cl. 333-81.00R.
Hutcheson, Don S., 4,493,262, Cl. 102-363.000.
Kim, Kyung J., 4,494,039, Cl. 315-4.000.
Pedersen, Marvin A., 4,493,239, Cl. 89-1.130.
Schwartz, Jay W., 4,494,211, Cl. 364-571.000.
Trenholm, Bruce W.; and Woolley, James G., 4,493,466, Cl. 244-152.000.
Zalesak, Philip F.; and Moore, Ronald D., 4,493,195, Cl. 62-402.000.
U.S. Philips Corporation: *See*—
Auwerda, Cornelis P.; and Koel, Gerrit J., 4,493,721, Cl. 65-3.120.
Bakker, Jan, 4,494,160, Cl. 360-129.000.
Barnes, Christopher S.; Moore, Paul A.; and White, Philip D., 4,494,031, Cl. 310-313.00B.

de Vries, Gerhard H. F., 4,494,037, Cl. 313-584.000.
Lenders, Wilhelmus L. L., 4,494,097, Cl. 335-213.000.
Moussie, Michel, 4,494,135, Cl. 357-59.000.
Ortega, Francis, 4,493,365, Cl. 165-10.00A.
Peeters, Winfried L.; Ponjee, Johannes J.; and Martens, Jan W. D., 4,493,887, Cl. 430-275.000.
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United Technologies Corporation: *See—*
D'Anna, Frank P., 4,493,612, Cl. 416-20.00R.
Hansen, Kenneth P., 4,493,187, Cl. 60-39.281.
Nikkanen, John P.; and Griffin, James G., 4,493,184, Cl. 60-204.000.

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Akiyama, Toru, 4,494,154, Cl. 358-342.000.

University of Georgia Research Foundation, Inc.: *See—*
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University of Iowa Research Foundation: *See—*
Albright, John P.; Martin, Robert K.; and Dyson, John A., 4,493,323, Cl. 128-340.000.

University Patents, Inc.: *See—*
Lauks, Imants R., 4,493,886, Cl. 430-270.000.

Uno, Takeshi: *See—*
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Urbutis, Algimantas P.; and Jagel, Peter H., to Union Carbide Corporation. Shirred casing article method and apparatus. 4,493,130, Cl. 17-49.000.

Uretsky, Yan S.; Mnekin, Ravil V.; Rygalin, Viktor G.; Grechinsky, Dmitry A.; and Klochko, Viktor A., to Nauchno-Issledovatelsky Institut Introskopii; and Kazansky Aviatsionny Institut Imeni A. N Tupoleva. Random vibrations testing device. 4,493,213, Cl. 73-664.000.

Urquhart, John; and Theeuwes, Felix, to ALZA Corporation. Parenteral administration using osmotically motivated delivery system. 4,493,702, Cl. 604-80.000.

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Arai, Tetsuji; Mimura, Yoshiki; and Shimizu, Hiroshi, 4,493,977, Cl. 219-411.000.

UTB Umwelttechnik Buchs AG: *See—*
Moilliet, Guy, 4,493,770, Cl. 210-603.000.

Uy, William C. Scraping brush. 4,493,126, Cl. 15-186.000.

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Uzuo, Takeshi: *See—*
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Vajda, Gabor; Ravasz, Laszlo ; Karacsonyi, Bela; and Tabajdi, Gabor, to Kozponti Valto- es Hitelbank RT. Innovacios Alap. Chocolate products with increased protein content and process for the production of such type products. 4,493,853, Cl. 426-582.000.

Valenti, Edward R.; Adamczyk, Thomas J.; and Graham, Larry W., to Alden Press, Inc. Motion stabilizing and aligning apparatus for moving folded signatures through an ink jet printer. 4,493,482, Cl. 270-12.000.

Valle, Ronald. Method of inducing sleep. 4,493,827, Cl. 424-166.000.

Vandenbergh, Peter A.: *See—*
Colaruotolo, Joseph F.; Olsen, Ronald H.; and Vandenbergh, Peter A., 4,493,895, Cl. 435-262.000.

Van Den Driessche, Michel, to Thomson-CSF. Scanning control circuit for a television receiver, with gradual startup. 4,494,048, Cl. 315-408.000.

van der Kolk, Donald. Continuous pet litter cleaning apparatus. 4,493,288, Cl. 119-1.000.

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Van Ocker, William G.; Pawlenko, Ivan; Reider, Donald F.; Troebs, Charles J.; Clair, Robert A.; and Crandall, Stanley C., to Avery International Corp. Long-life inked-ribbon cassette. 4,493,572, Cl. 400-196.100.

van Os, Rudi, to Koninklijke Nederlandse Papierfabrieken N.V. Method and apparatus for removing condensate from a cylinder, in particular a cylinder for drying paper. 4,493,158, Cl. 34-41.000.

Van Patten, Preston J. Safety lowering device. 4,493,391, Cl. 182-6.000.

Vansteelant, Marc G., to Sperry Corporation. Knotter with an improved Geneva mechanism. 4,493,498, Cl. 289-2.000.

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Varo, Inc.: *See—*
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Vaught, John L., to Hewlett-Packard Company. Gray scale printing with ink jets. 4,494,128, Cl. 346-140.00R.

Veber, Daniel F.; and Freidinger, Roger M., to Merck & Co., Inc. 2(3-Amino-2-oxopyrrolidin-1-yl) acetic acid and n-acylated derivatives thereof. 4,493,934, Cl. 548-550.000.

Veillard, Dominique H., to Eastman Kodak Company. Adaptive redundance in data recording. 4,494,155, Cl. 360-47.000.

Verdal Maskinverksted A/S: *See—*
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Vereinigte Flugtechnische Werke GmbH: *See—*
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Viebrantz, Hans-Joachim, to Preh Elektrofeinmechanische Werke Jakob Preh Nachf., GmbH & Co. Keyboard with improved key design permitting tilting about either side. 4,493,959, Cl. 200-340.000.

Vig, John R.: *See—*
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Toth, Istvan; Nagy, Jozsef; Dombay, Zsolt; Grega nee Toth, Erzsebet; Horvath, Ibolya; Vigh, Laszlo ; and Farkas, Tibor, 4,493,727, Cl. 71-088.000.

Vigier, Serge: *See—*
Ohayon, Gerard; Reverchon, Bernard; Tourre, Bernard; and Vigier, Serge, 4,493,271, Cl. 110-262.000.

Voest-Alpine Aktiengesellschaft: *See—*
Fastner, Thorwald; Mayrhofer, Max; and Taschner, Walter, 4,493,452, Cl. 228-158.000.

Vogelsberg, Dieter, to Siemens Aktiengesellschaft. Driving device for twisting heads of an SZ twisting machine. 4,493,182, Cl. 57-293.000.

Vogt, Max: *See—*
Weil, Wolfgang; Lanz, Andres; Vogt, Max; Meier, Paul; Kaul, Martin; and Fankhauser, Hanspeter, 4,493,962, Cl. 219-64.000.

Voltmer, Helmut; Schwenzer, Alfred F.; and Spano, John D., to NJM, Inc. Labeling machines. 4,493,744, Cl. 156-568.000.

von Buelow, John; and Hauser, Stephen G., to United States Borax & Chemical Corporation. Wall-mounted soap dispenser. 4,493,440, Cl. 222-109.000.

Vrouenraets, Cornelius M. F.; and Sikkema, Doetze J., to Akzo nv. Flexible layered product. 4,493,870, Cl. 428-245.000.

Vukovich, William J.; and Grimes, Michael R., to General Motors Corporation. Throttle control system for an automatic shift countershaft transmission. 4,493,228, Cl. 74-858.000.

Vyas, Arvindkumar C., to NCR Canada Ltd. - NCR Canada Ltee. Variable impact printing means. 4,493,253, Cl. 101-93.030.

Vyvial, Rudolf; Taubitz, Christof; Schlemmer, Lothar; Bleckmann, Gerhard; Zuerger, Manfred; Krieger, Heinrich; and Thiele, Heino, to BASF Aktiengesellschaft. Process for producing sheet-like structures from vinyl alcohol polymers. 4,493,807, Cl. 264-101.000.

W.E.F.C.O., Inc.: *See—*
Langan, Ervin C.; and Christie, Howard W., 4,493,162, Cl. 47-57.600.

W. H. Brady Co.: *See—*
Wirth, Gary J., 4,493,446, Cl. 225-21.000.

W. L. Gore & Associates, Inc.: *See—*
Swick, Robert H., 4,493,716, Cl. 55-158.000.

W. R. Grace & Co., Cryovac Div.: *See—*
Bolton, Roderick A., 4,493,684, Cl. 493-234.000.

WABCO Fahrzeugbremsen GmbH: *See—*
Deike, Karl-Heinz; Schulz, Hans-Joachim; and Sandmann, Jurgen, 4,493,510, Cl. 303-28.000.
Stillfried, Rudiger F. V.; Seegers, Gunter; and Sebesta, Gunter, 4,493,244, Cl. 91-420.000.

WABCO Westinghouse Equipements Ferroviaires: *See—*
Dalibout, Georges, 4,493,246, Cl. 92-13.800.

Wachsman, Mordechai, to Amcor Ltd. Apparatus for improvement of air quality in passenger airplane cabins. 4,493,247, Cl. 98-1.000.

Wade, John F.: *See—*
Wallschlaeger, Alan R.; and Wade, John F., 4,493,258, Cl. 101-415.100.

Wagner, Richard P. Method and apparatus for door protection. 4,493,164, Cl. 49-65.000.

Waigand, Helmut: *See—*
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Wakashima, Yoshiaki: *See—*
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Wakeling, Antony J.; and Thompson, Alan D., to Schlumberger Electronic (U.K.) Ltd. Keyboard modules for use in data terminals. 4,494,110, Cl. 340-365.00R.

Walker, Evo M., to Taylor Machine Works, Inc. Fork lift clamp apparatus. 4,493,604, Cl. 414-622.000.
Walker, John S.: *See*—
Moore, Larry A.; and Walker, John S., 4,494,123, Cl. 343-900.000.
Wallace, Harvey W.: *See*—
Lew, Eugene K.; and Wallace, Harvey W., 4,494,192, Cl. 364-200.000.
Wallace, Robert S., to M. Bouley Wright. Lock-up corner bracket for frame parts. 4,493,583, Cl. 403-402.000.
Wallat, Siegfried: *See*—
Moller, Hinrich; Wallat, Siegfried; Bartnik, Friedhelm; and Pittermann, Wolfgang, 4,493,823, Cl. 424-70.000.
Wallgren, Goran T. L.: *See*—
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Wallroth, Carl F.: *See*—
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Wallschlaeger, Alan R.; and Wade, John F., to Rockwell International Corporation. Interfacing cam and toggle lockup. 4,493,258, Cl. 101-415.100.
Walsh, Jack. Modular page composition system. 4,493,552, Cl. 355-75.000.
Waltec, Inc.: *See*—
Petursson, Sigurdur G., 4,493,338, Cl. 137-454.200.
Walter, Carlton H.; Bohley, Peter; and Couture, Robert P., to Interstate Electronics Corporation. Direction finding antenna. 4,494,121, Cl. 343-708.000.
Wang, Carl C. T.; Charles, Steve; and Buckingham, Joseph T., to Cooper Medical Devices. Method of performing opthalmic surgery utilizing a linear intra-ocular suction device. 4,493,698, Cl. 604-51.000.
Wang Laboratories, Inc.: *See*—
Greer, Michael T., 4,494,196, Cl. 364-200.000.
Wang, Ta-Lung. Simultaneous following means for driver and follower in a toy car. 4,493,670, Cl. 446-288.000.
Ward, John M., to Shell Oil Company. Internal pipeline plug for deep subsea operations. 4,493,589, Cl. 405-166.000.
Warner Electric Brake & Clutch Company: *See*—
Newton, Paul P., 4,493,407, Cl. 192-84.00C.
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Watanabe, Kiyohiko: *See*—
Takei, Toshihiro; Matsui, Kazuma; Hattori, Yoshiyuki; Watanabe, Kiyohiko; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,493,620, Cl. 417-366.000.
Watanabe, Masanori: *See*—
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Watanabe, Shigeyoshi: *See*—
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Watney, Dale K.: *See*—
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Watson, Richard R., to Gilmore Valve Company. Shear valve. 4,493,335, Cl. 137-116.300.
Watson, William A., to Rogers Corporation. Decoupling capacitor and method of manufacture thereof. 4,494,169, Cl. 361-306.000.
Watters, Wayde H., to Red Dot Corporation. Multimodal pressure switch. 4,493,957, Cl. 200-81.00R.
Watts, David. Playpen. 4,493,120, Cl. 5-99.00B.
Weaver, Russell E.: *See*—
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Webster, Sherwood F.: *See*—
Olmsted, James F.; Webster, Sherwood F.; and Heise, Richard L., 4,493,750, Cl. 159-48.100.
Wedding, Donald K.; Fein, Michael E.; Ernsthausen, Roger E.; and Byrum, Bernard J., to Owens-Illinois, Inc. Gas discharge device. 4,494,038, Cl. 313-587.000.
Wedge, Philip J.; and Bridson, Robert C., to British Gas Corporation. Fuel fired heating element. 4,493,309, Cl. 126-91.00A.
Wefer, John M., to Uniroyal, Inc. Impact resistant blend. 4,493,921, Cl. 525-67.000.
Weil, Wolfgang; Lanz, Andres; Vogt, Max; Meier, Paul; Kaul, Martin; and Fankhauser, Hanspeter. Apparatus and method to suppress oxidation during resistance welding. 4,493,962, Cl. 219-64.000.
Weinstein, Leonard M., to United States of America, National Aeronautics and Space Administration. Continuous laminar smoke generator. 4,493,211, Cl. 73-147.000.
Weirich, Walter, to Gewerkschaft Eisenhutte Westfalia. Hydraulic coupling. 4,493,340, Cl. 137-594.000.
Weis, Rudolf R.: *See*—
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Welburn, David J.: *See*—
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Welschof, Hans-Heinrich; and Beier, Rudolf, to Lohr & Bromkamp GmbH. Bearing assembly for a vehicle wheel driven by a rotary constant velocity universal joint. 4,493,388, Cl. 180-258.000.
Wenker, Wayne B., to Eaton Corporation. Hydraulic gerotor motor and parking brake for use therein. 4,493,404, Cl. 192-4.00A.
Weppelman, Roger M.: *See*—
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Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See*—
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Werner, John A., to Dow Chemical Company, The. Chlorine exchange for fluorine in 2-fluoro-pyridine compounds. 4,493,932, Cl. 546-345.000.
Westfalia Separator AG: *See*—
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Westinghouse Brake and Signal Co. Ltd.: *See*—
Wickham, David J., 4,493,511, Cl. 303-36.000.
Westinghouse Electric Corp.: *See*—
Beard, Charles L., Jr.; and Camden, Thomas M., 4,493,814, Cl. 376-428.000.
Gibbs, Richard D.; and Johnson, Roger C., 4,493,138, Cl. 29-33.00Q.
Mulach, Arthur; and Calfo, Raymond, 4,494,030, Cl. 310-256.000.
Wolfe, Donald L., 4,493,967, Cl. 219-121.0LC.
Weyerich, Manfred: *See*—
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Wheeler, Lionel H.; Goekler, Robert G.; and Luddeke, Daniel G., to Crutcher Resources Corporation. Resilient internal mandrel. 4,493,203, Cl. 72-369.000.
White, Allan E.; Coleman, David E.; and Miller, Steven R., to RCA Corporation. Statistical teaching apparatus. 4,493,651, Cl. 434-188.000.
White, Anthony M.: *See*—
Dean, Anthony B.; Farrow, Robin F. C.; Migliorato, Piero; White, Anthony M.; and Williams, Gerald M., 4,494,133, Cl. 357-30.000.
White, Lionel S.; and Rao, G. R. Mohan, to Texas Instruments Incorporated. Processor system using on-chip refresh address generator for dynamic memory. 4,494,222, Cl. 365-222.000.
White, Philip D.: *See*—
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Whitney, Solon G.: *See*—
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Wick, Gerald H., to Outboard Marine Corporation. Lawn mower dead man control. 4,493,180, Cl. 56-11.300.
Wicker, Gordon R., to Amax Inc. Method of autogenously drying coal. 4,493,157, Cl. 34-10.000.
Wickham, David J., to Westinghouse Brake and Signal Co. Ltd. Combined BC pressure-maintaining valve and quick service bulb exhaust valve. 4,493,511, Cl. 303-36.000.
Wico Corporation: *See*—
Geller, David A., 4,493,992, Cl. 250-221.000.
Wieland, Heinz, to Wilhelm Gebhardt GmbH. Blower unit for air-conditioning plant. 4,493,341, Cl. 137-597.000.
Wielgus, Charles D., to Colman OEM, Inc. Control mechanism for an electric motor assembly. 4,493,955, Cl. 200-38.00R.
Wiens, Arlen J.: *See*—
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Wilcox, Thomas J.: *See*—
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Wildi, Eric J.; and Adler, Michael S., to General Electric Company. High voltage semiconductor devices comprising integral JFET. 4,494,134, Cl. 357-43.000.
Wiley, John D.: *See*—
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William Prym Werke KG: *See*—
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Williams, Claude E.; and Gates, F. Alan. Wheel chair lift apparatus. 4,493,603, Cl. 414-541.000.
Williams, Donald F. Adjustable expandable slip-on canoe back rest. 4,493,285, Cl. 114-363.000.
Williams, Frank. Blanket lifting device. 4,493,121, Cl. 5-505.000.
Williams, Gerald J. Three cycle engine with varying combustion chamber volume. 4,493,296, Cl. 123-55.0AA.
Williams, Gerald M.: *See*—
Dean, Anthony B.; Farrow, Robin F. C.; Migliorato, Piero; White, Anthony M.; and Williams, Gerald M., 4,494,133, Cl. 357-30.000.
Williams, Robert E., Jr.; and Campbell, John R., to General Electric Company. Dissociating ionically cross-linked siloxane polymers. 4,493,926, Cl. 525-474.000.
Williams, Robert M.; and Davis, Bob, to Bull Dog Tool Inc. Well clean out tool. 4,493,383, Cl. 175-234.000.
Williams, Theodore F.: *See*—
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Williamsburg Packaging Corporation: *See*—
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Williamson, Stanley C., to Amchem Products, Inc. Cleansing compositions comprising ethoxylated alcohol monoesters of phosphoric acid. 4,493,782, Cl. 252-95.000.

Willis, Robert: *See—*
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Wilson, Arthur C., to General Electric Company. Pyrolytic oven cleaning system. 4,493,976, Cl. 219-398.000.
Wilson, David A.; and Wilson, Wilfred W., to Dow Chemical Company, The. Scale inhibiting with compounds containing quaternary ammonium and methylenephosphonic acid groups. 4,493,771, Cl. 210-700.000.
Wilson, Max K.: *See—*
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Wilson, Wilfred W.: *See—*
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Wimbush, Fred, to 122923 Canada Limited. Distress radiolocation method and system. 4,494,119, Cl. 343-457.000.
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Wintermantel, Klaus; Stockburger, Dieter; and Fuchs, Hugo, to BASF Aktiengesellschaft. Method of separation by fractional crystallization from a liquid mixture. 4,493,719, Cl. 62-532.000.
Wirth, Gary J., to W. H. Brady Co. Multiple roll tape dispenser. 4,493,446, Cl. 225-21.000.
Wisconsin Alumni Research Foundation: *See—*
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Wisthuff, Scott D.; and Behrmann, Edgar A., to Bendix Corporation, The. Universal joint. 4,493,675, Cl. 464-136.000.
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Wolfe, Donald L., to Westinghouse Electric Corp. Rigid support for laser machining apparatus. 4,493,967, Cl. 219-121.0LC.
Wolkonsky, Alexander, to Stericric SA. Flask for sterile liquids. 4,493,427, Cl. 215-230.000.
Wolstenholme, Paul P. Storage system for granular materials. 4,493,248, Cl. 98-52.000.
Woo, Edmund P., to Dow Chemical Company, The. Synthesis of succinonitriles. 4,493,799, Cl. 260-465.00H.
Wood, Philip S.: *See—*
Clark, Stephen D.; Wood, Philip S.; and Fell, Peter J., 4,493,451, Cl. 228-119.000.
Wood, Prentice J., to Mead Corporation, The. Basket-style article carrier with medial separator. 4,493,415, Cl. 206-175.000.
Woodard, Ollie C.: *See—*
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Woods, Lee O.; and Haag, Donald L., to General Electric Company. Method of assembling a combination starter-protector device. 4,493,144, Cl. 29-622.000.
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Wossner, Hans. Method and device for machining brake disks. 4,493,231, Cl. 82-4.00A.
Wuchinich, David G., to Cooper LaserSonics, Inc. Surgical pre-aspirator. 4,493,694, Cl. 604-22.000.
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Yagi, Taizo, to Horiba, Ltd. Pulse phase modulator/demodulator system. 4,494,089, Cl. 332-14.000.
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Taguchi, Michihiro, 4,493,662, Cl. 440-83.000.
Yamakawa, Toru, to Fuji Jukogyo Kabushiki Kaisha. Cooling system for an engine having a plurality of engine units. 4,493,190, Cl. 60-714.000.
Yamamoto, Katsumi, to Yamada Electric Industries Co., Ltd. Hang-up hair dryer. 4,493,975, Cl. 219-370.000.
Yamamoto, Masao; Yebisuya, Takashi; Kawai, Mituo; and Tajima, Koichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Corrosion-resistant non-magnetic steel retaining ring for a generator. 4,493,733, Cl. 75-126.00B.
Yamamura Glass Co., Ltd.: *See—*
Ono, Hiroyuki, 4,493,722, Cl. 65-30.140.
Yamanaka, Minoru: *See—*
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Yamaoka, Hiromasa; Iwasa, Yuzaburo; and Matunaga, Kazuhisa, to Hitachi, Ltd. Method and apparatus for self-control in distributed priority collision. 4,494,113, Cl. 340-825.500.
Yamauchi, Koji, to Hitachi, Ltd. Temperature control device for fixing heat source of copying machine. 4,493,984, Cl. 219-501.000.
Yamawaki, Takeshi; and Nishiyama, Kunio, to Toyota Jidosha Kabushiki Kaisha. Rear seat of an automobile. 4,493,505, Cl. 296-63.000.
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Yang, Jerry S. C. Kerosene heating stove with temperature and carbonic oxide sensors. 4,493,634, Cl. 431-33.000.
Yano, Shozo; Komoto, Akira; and Fujinaga, Yasuhiro, to Shimadzu Corporation. Electronic counting scale. 4,493,384, Cl. 177-25.000.
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Yelland, Christopher P.; and Pretorius, Rapha E., to Yelland Engineering (Proprietary) Ltd. Electric switching surge protection. 4,494,163, Cl. 361-56.000.
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Yellin, Tobias O.; and Gilman, David J., to Imperial Chemical Industries PLC; and ICI Americas, Inc. Antisecretory guanidine derivatives, and pharmaceutical compositions containing them. 4,493,840, Cl. 424-269.000.
Yeoman, Richard E. Impact switch. 4,493,956, Cl. 200-61.470.
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Yonishi, Satoshi: *See—*
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; Takeno, Hidekazu; Okada, Satoshi; and Hashimoto, Masashi, 4,493,794, Cl. 260-112.50R.
Yoshida Kogyo K.K.: *See—*
Seki, Fumio, 4,493,448, Cl. 227-119.000.
Yoshida, Tsukasa. Rack assembly apparatus. 4,493,425, Cl. 211-189.000.
Yoshihisa, Kozo; and Okui, Isamu, to Tokyo Shibaura Denki Kabushiki Kaisha. Volume control circuit. 4,494,075, Cl. 330-254.000.
Yoshino, Harumi: *See—*
Kume, Nobuyuki; Yoshino, Harumi; and Nagaoka, Miyuki, 4,494,168, Cl. 361-273.000.

LIST OF REISSUE PATENTEES

Yourd, Raymond A., III: *See*—
Gruber, Robert J.; Agostine, Doretta; Julien, Paul C.; and Yourd, Raymond A., III, 4,493,883, Cl. 430-110.000.

Yueh, William R., to General Dynamics, Pomona Division. Fourth order predictive, augmented proportional navigation system terminal guidance design with missile/target decoupling. 4,494,202, Cl. 364-462.000.

Yukimoto, Yoshinori; and Mitsui, Kotaro, to Mitsubishi Denki Kabushiki Kaisha. Hetero-face solar cell and method of manufacturing the same. 4,493,941, Cl. 136-255.000.

Yukl, Tex. Method and apparatus for capturing an electrical potential generated by a moving air mass. 4,494,009, Cl. 290-55.000.

Yuzui, Katsutoshi, to Honda Giken Kogyo Kabushiki Kaisha. Welding apparatus for vehicle body of two-wheeled vehicle. 4,493,450, Cl. 228-49.00R.

Zabelka, Jaroslav, to Sulzer Brothers Limited. Gas cooler arrangement. 4,493,291, Cl. 122-7.00R.

Zagranski, Raymond D.: *See*—
Howlett, James J.; and Zagranski, Raymond D., 4,493,465, Cl. 244-17.130.

Zalesak, Philip F.; and Moore, Ronald D., to United States of America, Navy. Air conditioning system with evaporative cooling apparatus. 4,493,195, Cl. 62-402.000.

Zanno, Paul R.; Parliment, Thomas H.; Soukup, Robert J.; and McNaught, Richard P., to General Foods Corporation. 1,1-Bis (thioalkyl) alkyl-2,4-diene as a flavoring agent. 4,493,852, Cl. 426-535.000.

Zeitler, Ernst. Device for converting a cycle into a treadle-operated water cycle. 4,493,657, Cl. 440-27.000.

Zenith Electronics Corporation: *See*—
Lange, Howard G.; and Ray, Francis M., 4,493,166, Cl. 51-100.00R.

Ziegler, Hans; Henze, Siegfried; Dippert, Rainer; Schnaus, Martin; and Golda, Horst, to Texpa-Arbter Maschinenbaugesellschaft mbH. Device for straightening and cutting a textile strip. 4,493,234, Cl. 83-175.000.

Zimmerman, Morris: *See*—
Doherty, James B.; Zimmerman, Morris; and Ashe, Bonnie M., 4,493,839, Cl. 424-263.000.

Zimmerman, Ronald E.; Burck, Philip J.; Jones, C. David; and Thakkar, Arvind L., to Eli Lilly and Company. Contraceptive methods. 4,493,699, Cl. 604-55.000.

Zuerger, Manfred: *See*—
Vyvial, Rudolf; Taubitz, Christof; Schlemmer, Lothar; Bleckmann, Gerhard; Zuerger, Manfred; Krieger, Heinrich; and Thiele, Heino, 4,493,807, Cl. 264-101.000.

Zwiebel, Alan: *See*—
Kaufmann, F. William, III; and Zwiebel, Alan, 4,493,650, Cl. 434-178.000.

122923 Canada Limited: *See*—
Wimbush, Fred, 4,494,119, Cl. 343-457.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF JANUARY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Brunham, Robert D.: *See*—
Scifres, Donald R.; Streifer, William; and Brunham, Robert D., Re. 31,806, Cl. 372-50.000.

Conner, John M.: *See*—
Einglett, Robert R.; Conner, John M.; Harmon, William A.; Hawkins, James B.; Pease, William C., III; and Van Doorn, Donald W., Re. 31,802, Cl. 19-50.000.

Dickerson, Charles W.: *See*—
Skoch, Leroy V.; Harmon, Bud G.; and Dickerson, Charles W., Re. 31,804, Cl. 426-658.000.

Einglett, Robert R.; Conner, John M.; Harmon, William A.; Hawkins, James B.; Pease, William C., III; and Van Doorn, Donald W., to Lummus Industries, Inc. Roller gin and feed system incorporating the same. Re. 31,802, Cl. 19-50.000.

General Electric Company: *See*—
Takekoshi, Tohru, Re. 31,805, Cl. 528-206.000.

Harmon, Bud G.: *See*—
Skoch, Leroy V.; Harmon, Bud G.; and Dickerson, Charles W., Re. 31,804, Cl. 426-658.000.

Harmon, William A.: *See*—
Einglett, Robert R.; Conner, John M.; Harmon, William A.; Hawkins, James B.; Pease, William C., III; and Van Doorn, Donald W., Re. 31,802, Cl. 19-50.000.

Hawkeye Chemical Company: *See*—
Moore, William P., Jr., Re. 31,801, Cl. 71-29.000.

Hawkins, James B.: *See*—
Einglett, Robert R.; Conner, John M.; Harmon, William A.; Hawkins, James B.; Pease, William C., III; and Van Doorn, Donald W., Re. 31,802, Cl. 19-50.000.

Lauterjung, Friedrich G. Probe. Re. 31,800, Cl. 604-270.000.

Lummus Industries, Inc.: *See*—
Einglett, Robert R.; Conner, John M.; Harmon, William A.; Hawkins, James B.; Pease, William C., III; and Van Doorn, Donald W., Re. 31,802, Cl. 19-50.000.

M. W. Carr & Co., Inc.: *See*—
Paskerian, Wayne H., Re. 31,799, Cl. 40-152.100.

Moore, William P., Jr., to Hawkeye Chemical Company. Urea-formaldehyde solution for foliar fertilization. Re. 31,801, Cl. 71-29.000.

Paskerian, Wayne H., to M. W. Carr & Co., Inc. Frame hanger. Re. 31,799, Cl. 40-152.100.

Pease, William C., III: *See*—
Einglett, Robert R.; Conner, John M.; Harmon, William A.; Hawkins, James B.; Pease, William C., III; and Van Doorn, Donald W., Re. 31,802, Cl. 19-50.000.

Ralson Purina Company: *See*—
Skoch, Leroy V.; Harmon, Bud G.; and Dickerson, Charles W., Re. 31,804, Cl. 426-658.000.

Scifres, Donald R.; Streifer, William; and Brunham, Robert D., to Xerox Corporation. Monolithic multi-emitting laser device. Re. 31,806, Cl. 372-50.000.

Skoch, Leroy V.; Harmon, Bud G.; and Dickerson, Charles W., to Ralson Purina Company. Animal feed block containing ferrous sulfate and magnesium oxide. Re. 31,804, Cl. 426-658.000.

Streifer, William: *See*—
Scifres, Donald R.; Streifer, William; and Brunham, Robert D., Re. 31,806, Cl. 372-50.000.

Takekoshi, Tohru, to General Electric Company. Method for making polyimides. Re. 31,805, Cl. 528-206.000.

Tsou, Ivan H., to Wyandotte Paint Products Company. Method for cathodic electrodeposition of coating compositions containing diels-alder adducts. Re. 31,803, Cl. 204-181.00C.

Van Doorn, Donald W.: *See*—
Einglett, Robert R.; Conner, John M.; Harmon, William A.; Hawkins, James B.; Pease, William C., III; and Van Doorn, Donald W., Re. 31,802, Cl. 19-50.000.

Wyandotte Paint Products Company: *See*—
Tsou, Ivan H., Re. 31,803, Cl. 204-181.00C.

Xerox Corporation: *See*—
Scifres, Donald R.; Streifer, William; and Brunham, Robert D., Re. 31,806, Cl. 372-50.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Allmanna Sverska Elektriska Aktiebolaget: *See*—
Larker, Hans, B1 3,732,068, Cl. 432-120.000.

Intel Corporation: *See*—
Pashley, Richard D., B1 4,052,229, Cl. 148-1.500.

Larker, Hans, to Allmanna Sverska Elektriska Aktiebolaget. Cylindrical elongated furnace for treating material at high temperature and under high pressure. B1 3,732,068, 1-15-85, Cl. 432-120.000.

Matsuda, Teruo; Wake, Shigeo; and Shiozaki, Tetsuya, to Sumitomo Chemical Company, Limited. Process for the preparation of azo compounds from amino compounds in the presence of a phase transfer catalyst. B1 4,272,435, 1-15-85, Cl. 260-192.000.

Pashley, Richard D., to Intel Corporation. Process for preparing a substrate for MOS devices of different thresholds. B1 4,052,229, 1-15-85, Cl. 148-1.500.

Shiozaki, Tetsuya: *See*—
Matsuda, Teruo; Wake, Shigeo; and Shiozaki, Tetsuya, B1 4,272,435, Cl. 260-192.000.

Sumitomo Chemical Company, Limited: *See*—
Matsuda, Teruo; Wake, Shigeo; and Shiozaki, Tetsuya, B1 4,272,435, Cl. 260-192.000.

Wake, Shigeo: *See*—
Matsuda, Teruo; Wake, Shigeo; and Shiozaki, Tetsuya, B1 4,272,435, Cl. 260-192.000.

LIST OF DESIGN PATENTEES

Abe, Shunji, to Yoshida Kogyo K. K. Pull tab for slide fastener. 277,140, 1-15-85, Cl. D2-415.000.

Aikey, William J.: *See*—
Doane, John C.; and Aikey, William J., 277,188, Cl. D14-107.000.

Allen, Brent R.: *See*—
Mower, Barry D.; and Allen, Brent R., 277,222, Cl. D21-244.000.

Allibert S.A.: *See*—
Boroch, Jersy, 277,146, Cl. D6-540.000.

Allsop, Inc.: *See*—
Clausen, Eivind; and Allsop, James D., 277,168, Cl. D8-394.000.

Allsop, James D.: *See*—
Clausen, Eivind; and Allsop, James D., 277,168, Cl. D8-394.000.

Altena Salotti s.r.l.: *See*—
Giudici, Gianbattista, 277,145, Cl. D6-381.000.

American Hospital Supply Corporation: *See*—
DeVroom, William A., 277,165, Cl. D8-72.000.

Antone, Howard J. Bottle opener. 277,160, 1-15-85, Cl. D8-40.000.

Appel, Mel; and Kress, George, to Appel, Mel. Toy dollhouse. 277,202, 1-15-85, Cl. D21-114.000.
Arcair Company: *See*—
Farmer, Ralph; and Johnson, David E., 277,191, Cl. D15-138.000.
Asahi, Tetsuma, to Silver Seiko Limited. Ribbon cartridge for typewriter. 277,193, 1-15-85, Cl. D18-12.000.
AT&T Technologies, Inc.: *See*—
Heim, Henry J.; and Ender, Alfred R., 277,181, Cl. D14-60.000.
Atari, Inc.: *See*—
Edson, Sydney, 277,155, Cl. D6-467.000.
Bachmann, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., to Coca-Cola Company, The. Vending machine. 277,194, 1-15-85, Cl. D20-5.000.
Baylor, Charles R.; and Cannon, Curtis. Utility cushion. 277,158, 1-15-85, Cl. D6-596.000.
Bevilacqua, Ernest M., to Oki Electric Overseas Corporation. Control console for a mobile telephone with handset. 277,164, 1-15-85, Cl. D8-53.000.
Blesch, Thomas C., to General Aluminum Products, Inc. Heater enclosure. 277,228, 1-15-85, Cl. D23-138.200.
Boroch, Jersy, to Allibert S.A. Wall-mounted soap dish. 277,146, 1-15-85, Cl. D6-540.000.
Brun, Serge, to Calor S.A. Face depilating apparatus. 277,233, 1-15-85, Cl. D24-26.000.
Bulgari, Marina, to Zoldia Anstalt. Bracelet or the like. 277,171, 1-15-85, Cl. D11-3.000.
Burnett, Kevin: *See*—
Deeley, Frank; Deeley, Lawrence; and Burnett, Kevin, 277,172, Cl. D11-158.000.
Cagle, Bunyan B. Fireplace cross-circulating air heater. 277,225, 1-15-85, Cl. D23-95.000.
Call, Daniel D., to Oy Fiskars AB. Dual knife sharpener with dual handle. 277,166, 1-15-85, Cl. D8-93.000.
Calor S.A.: *See*—
Brun, Serge, 277,233, Cl. D24-26.000.
Cannon, Curtis: *See*—
Baylor, Charles R.; and Cannon, Curtis, 277,158, Cl. D6-596.000.
Caplygin, Dimitri, to Girlock Limited. Disc brake pad unit. 277,175, 1-15-85, Cl. D12-180.000.
Carson, David L., to Lucasfilm, Ltd. Toy figure. 277,206, 1-15-85, Cl. D21-148.000.
Cascarano, Anthony J.: *See*—
Matsuda, Hari; Cascarano, Anthony J.; and Schwimmer, Charles M., 277,182, Cl. D14-84.000.
Casimiro, A. Robert; and Wallet, Bill J., to Firestone Tire & Rubber Company, The. Tire tread and buttress. 277,174, 1-15-85, Cl. D12-142.000.
Clausen, Eivind; and Allsop, James D., to Allsop, Inc. Pad holding insert for an audio cassette cleaner. 277,168, 1-15-85, Cl. D8-394.000.
Coca-Cola Company, The: *See*—
Bachmann, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., 277,194, Cl. D20-5.000.
Cole, Frank C.; Kern, Marvin G.; and Meiner, Robert, to Crunden Martin Mfg., Co. Charcoal starter. 277,224, 1-15-85, Cl. D23-90.100.
Colquitt, Simone, to Syracuse China Corporation. Upper surface decoration for a plate or similar article. 277,159, 1-15-85, Cl. D7-39.000.
Convergent Technologies, Inc.: *See*—
Sanders, Matthew H. L.; Keely, Leroy B.; Moggridge, William G.; and Nuttall, Michael J., 277,187, Cl. D14-106.000.
Cotton, James D.: *See*—
Ito, John M.; and Cotton, James D., 277,169, Cl. D9-418.000.
Creffield, Henry T., to Glynwed Limited. Stove. 277,226, 1-15-85, Cl. D23-97.000.
Crunden Martin Mfg., Co.: *See*—
Cole, Frank C.; Kern, Marvin G.; and Meiner, Robert, 277,224, Cl. D23-90.100.
Dai Nippon Insatsu Kabushiki Kaisha: *See*—
Ogawa, Yoshiharu, 277,217, Cl. D21-174.000.
Dart Container Corporation: *See*—
Dart, Kenneth B., 277,167, Cl. D9-347.000.
Dart, Kenneth B., to Dart Container Corporation. Packaging container. 277,167, 1-15-85, Cl. D9-347.000.
Davis, Charles L.: *See*—
Bachmann, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., 277,194, Cl. D20-5.000.
DCI Marketing: *See*—
Nasgowitz, Donald D., 277,154, Cl. D6-408.000.
Deeley, Frank; Deeley, Lawrence; and Burnett, Kevin. Ornament for table or other supporting surface. 277,172, 1-15-85, Cl. D11-158.000.
Deeley, Lawrence: *See*—
Deeley, Frank; Deeley, Lawrence; and Burnett, Kevin, 277,172, Cl. D11-158.000.
DeFalco, Florence R. Hair retainer head wear. 277,139, 1-15-85, Cl. D2-249.000.
DeVroom, William A., to American Hospital Supply Corporation. Support clamp. 277,165, 1-15-85, Cl. D8-72.000.
Doane, John C.; and Aikey, William J., to Otis Elevator Company. Portable programming and testing tool. 277,188, 1-15-85, Cl. D14-107.000.
Eason, Gordon W. Sign support bracket. 277,196, 1-15-85, Cl. D20-43.000.
Edson, Sydney, to Atari, Inc. Display unit for a video game system or the like. 277,155, 1-15-85, Cl. D6-467.000.
Electrak International, Ltd.: *See*—
Humphreys, Michael, 277,177, Cl. D13-13.000.
Ender, Alfred R.: *See*—
Heim, Henry J.; and Ender, Alfred R., 277,181, Cl. D14-60.000.
Farmer, Ralph; and Johnson, David E., to Arcair Company. Carriage mounted tool oscillator. 277,191, 1-15-85, Cl. D15-138.000.
Firestone Tire & Rubber Company, The: *See*—
Casimiro, A. Robert; and Wallet, Bill J., 277,174, Cl. D12-142.000.
Gall, Adam F.; and McJunkin, Howard P., Jr., to McJunkin Corporation. Gas pressure differential-measuring system orifice fitting. 277,223, 1-15-85, Cl. D23-1.000.
General Aluminum Products, Inc.: *See*—
Blesch, Thomas C., 277,228, Cl. D23-138.200.
George, William T.: *See*—
Johnston, Joseph E.; and George, William T., 277,201, Cl. D21-87.000.
Girlock Limited: *See*—
Caplygin, Dimitri, 277,175, Cl. D12-180.000.
Giudici, Gianbattista, to Altena Salotti s.r.l. Seat. 277,145, 1-15-85, Cl. D6-381.000.
Glatt GmbH: *See*—
Nowak, Reinhard, 277,192, Cl. D15-144.000.
Glynwed Limited: *See*—
Creffield, Henry T., 277,226, Cl. D23-97.000.
Smith, Vance, 277,227, Cl. D23-97.000.
Hannah, Bruce R., to Knoll International, Inc. Desk. 277,151, 1-15-85, Cl. D6-423.000.
Hannah, Bruce R., to Knoll International, Inc. Desk. 277,152, 1-15-85, Cl. D6-423.000.
Hannah, Bruce R., to Knoll International, Inc. Credenza. 277,153, 1-15-85, Cl. D6-446.000.
Hardy, Terence, to L. B. (Plastics) Limited. Corner connector for use in the construction of a drawer. 277,156, 1-15-85, Cl. D6-510.000.
Haworth Mfg., Inc.: *See*—
Helmholdt, Charles D., 277,143, Cl. D6-366.000.
Heim, Henry J.; and Ender, Alfred R., to AT&T Technologies, Inc. Teleconferencing telephone set control panel. 277,181, 1-15-85, Cl. D14-60.000.
Helmholdt, Charles D., to Haworth Mfg., Inc. Chair. 277,143, 1-15-85, Cl. D6-366.000.
Herburger, Neil J. Walk simulating exercise cushion. 277,220, 1-15-85, Cl. D21-192.000.
Hind, Ronald W. Shelf. 277,149, 1-15-85, Cl. D6-574.000.
Hinds, Robert S. Exercise for attachment to door or the like. 277,218, 1-15-85, Cl. D21-191.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Komuro, Katsusuke, 277,176, Cl. D12-192.000.
Humphreys, Michael, to Electrak International, Ltd. Continuous electrical track system. 277,177, 1-15-85, Cl. D13-13.000.
International Jensen Incorporated: *See*—
Matsuda, Hari; Cascarano, Anthony J.; and Schwimmer, Charles M., 277,182, Cl. D14-84.000.
Ito, John M.; and Cotton, James D., to Kimberly-Clark Corporation. Dispensing carton for sheet material. 277,169, 1-15-85, Cl. D9-418.000.
Jenkins, Allan G. Trailer. 277,173, 1-15-85, Cl. D12-101.000.
Johnson, David E.: *See*—
Farmer, Ralph; and Johnson, David E., 277,191, Cl. D15-138.000.
Johnson, Martin W. Abdominal exercise bench. 277,219, 1-15-85, Cl. D21-191.000.
Johnston, Joseph E., to Lucasfilm, Ltd. Toy spacecraft. 277,200, 1-15-85, Cl. D21-87.000.
Johnston, Joseph E.; and George, William T., to Lucasfilm, Ltd. Toy spacecraft. 277,201, 1-15-85, Cl. D21-87.000.
Johnston, Joseph E., to Lucasfilm, Ltd. Toy figure. 277,214, 1-15-85, Cl. D21-148.000.
Johnston, Joseph E., to Lucasfilm, Ltd. Toy figure. 277,215, 1-15-85, Cl. D21-148.000.
Kabushiki Kaisha Washino Design: *See*—
Ogawa, Yoshiharu, 277,217, Cl. D21-174.000.
Kawamura, Ken: *See*—
Sugiyama, Yoshihiko; and Kawamura, Ken, 277,170, Cl. D10-41.000.
Keely, Leroy B.: *See*—
Sanders, Matthew H. L.; Keely, Leroy B.; Moggridge, William G.; and Nuttall, Michael J., 277,187, Cl. D14-106.000.
Kern, Marvin G.: *See*—
Cole, Frank C.; Kern, Marvin G.; and Meiner, Robert, 277,224, Cl. D23-90.100.
Kimberly-Clark Corporation: *See*—
Ito, John M.; and Cotton, James D., 277,169, Cl. D9-418.000.
Knoll International, Inc.: *See*—
Hannah, Bruce R., 277,151, Cl. D6-423.000.
Hannah, Bruce R., 277,152, Cl. D6-423.000.
Hannah, Bruce R., 277,153, Cl. D6-446.000.
Kobayashi, Masashi, to Maruman Golf Kabushiki Kaisha. Golf club head. 277,221, 1-15-85, Cl. D21-214.000.
Komuro, Katsusuke, to Honda Giken Kogyo Kabushiki Kaisha. Instrument panel and housing for a motorcycle. 277,176, 1-15-85, Cl. D12-192.000.
Koziatek, Jerome P.: *See*—
Mower, Henry W.; Seymour, Allen; Koziatek, Jerome P.; and Lendvay, Joseph G., 277,157, Cl. D6-506.000.
Kress, George: *See*—
Appel, Mel; and Kress, George, 277,202, Cl. D21-114.000.
L. B. (Plastics) Limited: *See*—
Hardy, Terence, 277,156, Cl. D6-510.000.

Lahmer, Arthur A. Two sided in-out panel and message holder. 277,195, 1-15-85, Cl. D20-18.000.
Lane Craft Industries, Inc.: *See*—
Tebbe, David L.; and Shelton, Steven R., 277,150, Cl. D6-446.000.
Lankford, Charles P., III. Combined cable connector and crimping tool. 277,163, 1-15-85, Cl. D8-51.000.
Lendvay, Joseph G.: *See*—
Mower, Henry W.; Seymour, Allen; Koziatek, Jerome P.; and Lendvay, Joseph G., 277,157, Cl. D6-506.000.
Lucasfilm, Ltd.: *See*—
Carson, David L., 277,206, Cl. D21-148.000.
Johnston, Joseph E., 277,200, Cl. D21-87.000.
Johnston, Joseph E.; and George, William T., 277,201, Cl. D21-87.000.
Johnston, Joseph E., 277,214, Cl. D21-148.000.
Johnston, Joseph E., 277,215, Cl. D21-148.000.
McVey, Anthony J., 277,212, Cl. D21-148.000.
Ralston, Kenneth R., 277,210, Cl. D21-148.000.
Rodis-Jamero, Nilo D., 277,207, Cl. D21-148.000.
Tippett, Philip A., 277,208, Cl. D21-148.000.
Tippett, Philip A., 277,209, Cl. D21-148.000.
Tippett, Philip A., 277,211, Cl. D21-148.000.
Tippett, Philip A., 277,213, Cl. D21-148.000.
Maezono, Takashi: *See*—
Suzuki, Toshio; and Maezono, Takashi, 277,205, Cl. D21-143.000.
Maruman Golf Kabushiki Kaisha: *See*—
Kobayashi, Masashi, 277,221, Cl. D21-214.000.
Matsuda, Hari; Cascarano, Anthony J.; and Schwimmer, Charles M., to International Jensen Incorporated. Video monitor front panel assembly. 277,182, 1-15-85, Cl. D14-84.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Morita, Masakatsu, 277,178, Cl. D14-17.000.
Sugiyama, Yoshihiko; and Kawamura, Ken, 277,170, Cl. D10-41.000.
McJunkin Corporation: *See*—
Gall, Adam F.; and McJunkin, Howard P., Jr., 277,223, Cl. D23-1.000.
McJunkin, Howard P., Jr.: *See*—
Gall, Adam F.; and McJunkin, Howard P., Jr., 277,223, Cl. D23-1.000.
McVey, Anthony J., to Lucasfilm, Ltd. Toy figure. 277,212, 1-15-85, Cl. D21-148.000.
Meiner, Robert: *See*—
Cole, Frank C.; Kern, Marvin G.; and Meiner, Robert, 277,224, Cl. D23-90.100.
Miller, David B.; Olesen, Paul; and Stoica, Ion, to Swingline Inc. Powered stapler. 277,161, 1-15-85, Cl. D8-49.000.
Miller, Douglas R., to Quaker Oats Company, The. Riding toy. 277,199, 1-15-85, Cl. D21-78.000.
Moggridge, William G.: *See*—
Sanders, Matthew H. L.; Keely, Leroy B.; Moggridge, William G.; and Nuttall, Michael J., 277,187, Cl. D14-106.000.
Morgan, Annis R., Jr.: *See*—
Bachmann, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., 277,194, Cl. D20-5.000.
Moriconi, David P., to Victor Technologies, Inc. Computer console. 277,183, 1-15-85, Cl. D14-100.000.
Moriconi, David P., to Victor Technologies, Inc. Computer console. 277,184, 1-15-85, Cl. D14-100.000.
Moriconi, David P., to Victor Technologies, Inc. Computer console. 277,185, 1-15-85, Cl. D14-100.000.
Moriconi, David P., to Victor Technologies, Inc. Computer console. 277,186, 1-15-85, Cl. D14-100.000.
Morita, Masakatsu, to Matsushita Electric Industrial Co., Ltd. Record player. 277,178, 1-15-85, Cl. D14-17.000.
Mower, Barry D.; and Allen, Brent R. Play center. 277,222, 1-15-85, Cl. D21-244.000.
Mower, Henry W.; Seymour, Allen; Koziatek, Jerome P.; and Lendvay, Joseph G., to Questor Corp. Crib end. 277,157, 1-15-85, Cl. D6-506.000.
Murry, Edsel E., to Samsonite Corporation. Chair. 277,144, 1-15-85, Cl. D6-366.000.
Muters, Keith A.: *See*—
Williamson, Jerry R.; and Muters, Keith A., 277,229, Cl. D23-153.000.
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Ofrex Group Limited: *See*—
Sadler, Kenneth G., 277,190, Cl. D15-127.000.
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Olesen, Paul: *See*—
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Oy Fiskars AB: *See*—
Call, Daniel D., 277,166, Cl. D8-93.000.
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Palka, James J., 277,148, Cl. D6-560.000.
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Shelton, Steven R.: *See*—
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Yoshida Kogyo K. K.: *See*—
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Boll, Holger, to L. Daehnfeldt Ltd. Begonia plant named Pia Elise. 5,390, 1-15-85, Cl. 68.000.
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ISSUED JANUARY 15, 1985

NOTE.—First number, class; second number, subclass; third number, patent number

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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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January 22, 1985

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

January 22, 1985 Volume 1050 Number 4

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JANUARY 22, 1985 U.S. PATENT AND TRADEMARK OFFICE

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1050 O.G. on Jan. 15, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Jan. 3, 1985 and was announced in the *PCT Gazette* at No. 26/1984 page 3241 on Nov. 8, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1985 and were announced in the *Official Gazette* at 1050 O.G. on Jan. 15, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	690.00
International fees	
Basic fee (first 30 pages)	265.00
Basic Supplemental fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	64.00
Designation fee for 11th and subsequent designations	no charge

Dec. 24, 1984.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Jan. 19, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,310,925 through 4,312,075
Reissue Patents based on the above identified patents.	

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f))	$ 200.00
By other than a small entity	$ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f))	$ 50.00
By other than a small entity	$ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely [payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the

indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

No Issues This Publication.

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Issues This Publication.

DEPARTMENT OF COMMERCE

Patent and Trademark Office
37 CFR Part 1

Proposed Rules for Miscellaneous Patent Provisions

AGENCY: Patent and Trademark Office, Commerce

ACTION: Notice of Proposed rulemaking

SUMMARY: The Patent and Trademark Office proposes to amend the rules of practice in patent cases, Part I of Title 37, Code of Federal Regulations, to provide rules and procedures for the miscellaneous patent provisions enacted into law by Public Laws 98-620 and 98-622, on November 8, 1984, in which statutory invention registrations, changes in appeals to the courts, prior art and joint inventor provisions and PCT international application filing and processing procedures were established or amended. These proposed changes provide specific rules and procedures for the new and amended provisions.

DATES: Comments must be submitted on or before February 8, 1985; a public hearing will be held on February 8, 1985, at 1:30 p.m. Requests to present oral testimony should be received on or before February 4, 1985.

ADDRESSES: Address written comments and requests to present oral testimony to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: R. Franklin Burnett, Room 3-11A13. The hearing will be held in Room 11C10, on the 11th floor of Building 3, Crystal Plaza, located at 2021 Jefferson Davis Highway, Arlington, Virginia. Written comments and a transcript of the public hearing will be available for public inspection in Room 11A13 of Building 3, Crystal Plaza at 2021 Jefferson Davis Highway, Arlington, Virginia.

FOR FURTHER INFORMATION CONTACT: R. Franklin Burnett by telephone at (703) 557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: This proposed rule change is designed primarily to establish a set of rules and procedures for the various requirements of Public Laws 98-620 and 98-622 concerning appeals to the courts, statutory invention registrations, rejections based on prior art and double patenting, and filing of international applications under the Patent Cooperation Treaty.

BACKGROUND INFORMATION: Most of the proposed rule changes contained herein are necessary as a result of Public Laws 98-620 or 98-622, both of which were signed by President Reagan on November 8, 1984. The following is a summary of the purposes of the various statutory amendments.

Amended 35 U.S.C. 103 - Unpublished knowledge of prior art.

Public Law 98-622 changes a complex body of case law which discourages communication among members of research teams working in corporations, universities or other organizations. It amended

35 U.S.C. section 103 by adding a new sentence which provides that subject matter developed by another which qualifies as "prior art" only under subsections 102(f) or (g) of 35 U.S.C. is not to be considered when determining whether an invention sought to be patented is obvious under 35 U.S.C. 103, provided the subject matter and the claimed invention were commonly owned at the time the invention was made.

"Prior art" is the existing body of technical information against which the patentability of an invention is judged. Publicly known information is always considered in determining whether an invention would have been obvious. However, under In re Bass, 474 F.2d 1276, 177 USPQ 178 (CCPA 1973), and In re Clemens, 622 F.2d 1029, 206 USPQ 289 (CCPA 1980), an earlier invention which is not public could have been treated under 35 U.S.C. 102(g), and possibly under 102(f), as prior art with respect to a later invention made by another employee of the same organization.

New technology often is developed by using background scientific or technical information known within an organization but unknown to the public. Public Law 98-622, by disqualifying such background information from prior art, encourages communication among members of research teams, and leads to more public dissemination through patents of the results of team research.

The subject matter that is disqualified as prior art under 35 U.S.C. 103 is strictly limited to subject matter that qualifies as prior art only under 35 U.S.C. 102(f) or 102(g). If the subject matter qualifies as prior art under any other subsection--e.g., subsection 102(a), 102(b) or 102(e)--it will not be disqualified as prior art under the amendment to section 103.

The contents of a patent of the same or different ownership as an application, continues to be available as prior art against the application under section 103 by virtue of section 102(e) as of the application filing date of the patent. If subject matter becomes potential prior art under section 102(e) because a patent application is filed on such subject matter before a commonly owned claimed invention is made the subject matter of a later application the two applications may be combined into a single application and such subject matter (with the abandonment of the two applications) would no longer constitute potential prior art under section 102(e) or under section 103 since it would not "be described in a patent" while the application is pending.

It is important to recognize that the amendment to the law applies only to consideration of prior art for purposes of section 103. It does not apply to or affect subject matter which qualifies as prior art under section 102. A patent applicant urging that subject matter is disqualified has the burden of establishing that it was commonly owned at the time the claimed invention was made.

Public Law 98-622 was not intended to permit anyone other than the inventor to be named in a patent application or patent. Also, the amendment was not intended to enable appropriation of the invention of another.

The Patent and Trademark Office has withdrawn the Commissioner's Notice of January 9, 1967, "Double Patenting", 834 O.G. 1615 (Jan. 31, 1967), to the extent that it does not authorize a double patenting rejection where different inventive entities are present. The Office is reinstituting, in appropriate circumstances, the

practice of rejecting claims in commonly owned applications of different inventive entities on the ground of double patenting. See 130 Cong. Rec. H10527, column 3 (daily ed. Oct. 1, 1984)(statement of Rep. Kastenmeier); In re Rogers, 394 F.2d 566, 567 n. 4, 157 USPQ 569, 570 n. 4 (CCPA 1964). This is in accordance with existing case law and prevents an organization from obtaining two or more patents with different expiration dates covering nearly identical subject matter. See In re Zickendraht, 319 F.2d 225, 138 USPQ 22 (CCPA 1963) ("The doctrine is well established that claims in different applications need be more than merely different in form or content; and that patentable distinction must exist to entitle applicants to a second patent") and In re Christensen, 330 F.2d 652, 141 USPQ 295 (CCPA 1964)("...the correct procedure for double patenting cases is to analyze the claims to determine the inventions defined therein, and then decide whether such inventions, as claimed are patentably distinct and therefore qualified to be claimed in separate patents"). In accordance with established patent law doctrines, double patenting rejections can be overcome in certain circumstances by disclaiming, pursuant to the existing provisions of 37 CFR 1.321, the terminal portion of the term of the later patent and including in the disclaimer a provision that the patent shall be enforceable only for and during the period the patent is commonly owned with the application or patent which formed the basis for the rejection, thereby eliminating the problem of extending patent life.

Information learned from or transmitted to persons outside the organization is not disqualified as prior art.

The term "subject matter" will be construed broadly, in the same manner the term is construed in the remainder of §103. The term "another" as used in §103 means any inventive entity other than the inventor and would include the inventor and any other persons. The term "developed" is to be read broadly and is not limited by the manner in which the development occurred. The term "commonly owned" means wholly owned by the same person, persons, or organization at the time the invention was made.

Amended 35 U.S.C. 116 - Joint inventor filing

35 U.S.C. 116 as amended by Public Law 98-622 recognizes the realities of modern team research. A research project may include many inventions. Some inventions may have contributions made by individuals who are not involved in other, related inventions.

Amended 35 U.S.C. 116 allows inventors to apply for a patent jointly even though (i) they did not physically work together or at the same time, (ii) each did not make the same type or amount of contribution, or (iii) each did not make a contribution to the subject matter of every claim of the patent. Items (i) and (ii) adopt the rationale stated in decisions such as Monsanto v. Kamp, 269 F. Supp. 818, 154 USPQ 259 (D.D.C. 1967). Item (iii) adopts the rationale of cases such as SAB Industrie AB v. Bendix Corp., 199 USPQ 95 (E.D. Va. 1978).

Like other patent applications, jointly-filed applications are subject to the requirements of 35 U.S.C. 121 that an application be directed to only a single invention. If more than one invention is included in the application, the Patent and Trademark Office may require the application to be restricted to one of the inventions. In such a case, a "divisional" application complying with 35 U.S.C. 120 would be entitled to the benefit of the earlier filing date of the original application.

It is possible that different claims of an application or patent may have different dates of invention even though the patent covers only one independent and distinct invention within the meaning of 35 U.S.C. 121. When necessary, the Patent and Trademark Office or a court may inquire of the patent applicant or owner concerning the inventors and the invention dates for the subject matter of the various claims.

Amended 35 U.S.C. 120 - Benefit of prior U.S. application

35 U.S.C. 120 was amended by Public Law 98-622 to provide that an application can obtain the benefit of the filing date of an earlier application when not all inventors named in the joint application are the same as those named in the earlier application. This amendment permits greater latitude in filing "divisional" applications. For example, if the previously filed application named inventors A and B as the inventors, a later application by either A or B could be filed during the pendency of the previously filed application and claim benefit of the previously filed application. In order for a claim to be entitled to the benefit of an earlier pending application, the subject matter of the claim of the later application would have to be disclosed in the earlier application.

Similarly, if inventor A filed an application on an invention and during the pendency of that application made an improvement on the subject matter of the application as a joint inventor with inventor B, the joint application filed on behalf of inventors A and B could claim the benefit of A's previously filed sole application to the extent that the later filed joint application contained claims directed solely to A's subject matter which was disclosed in the earlier filed pending application in the manner provided by the first paragraph of section 112 of title 35, U.S.C.

Likewise, an application filed by inventors A and C could claim the benefit of an earlier filed pending application of inventors A and B, to the extent that the requirements of section 120 could be met.

Like other patent applications, jointly-filed applications will continue to be subject to the requirement of 35 U.S.C. 121 that an application be directed to only a single invention. If more than one invention is included in the application, the Patent and Trademark Office may require the application to be restricted to one of the inventions. In such a case, a "divisional" application would be entitled to the benefit of the earlier filing date of the original application.

New 35 U.S.C. 157 - Statutory Invention Registration (SIR)

This section which is effective on May 8, 1985, establishes an optional procedure by which an inventor may secure protection which is strictly defensive in nature.

Under current law, there is no simple, practical method by which an inventor can protect his or her ability to exploit the invention without obtaining a patent. The new procedure confers on an inventor the same defensive rights that a patent provides to prevent others from patenting the invention. However, it does not permit the holder to exclude others from making, using or selling the invention.

Due to the fact that a SIR does not grant an exclusive right to an inventor, it is not necessary to subject a SIR to the lengthy examination process required for the granting of a patent. Such an

examination is necessary if the SIR is subject to an interference proceeding to determine priority of invention. In all other instances, the Patent and Trademark Office will only review the application for adherence to formal printing and fee payment requirements and to ensure that the requirements of 35 U.S.C. 112 are satisfied.

An applicant desiring to have a SIR published will be required to file a regular complete application for a patent and to execute a request including a waiver of enforcement of patent rights. This waiver of the claimed invention will be effective at the time of publication. The original application can be abandoned in favor of a continuation or a continuation-in-part application for a patent, claiming the filing date of the earlier filed application, by filing an express abandonment of the original application and a timely petition to withdraw the request for a SIR prior to publication of the SIR, thereby providing the applicant with flexibility during the pendency period of the application. Until the SIR is published the application remains an application for a patent. However, the holder of a SIR will not be able to file a reissue application to recapture the rights to exclusive use that were waived by the initial publication of the SIR.

The waiver of the right to receive a patent, required of all applicants electing to receive a SIR, applies to those remedies provided for the enforcement of a patent under section 183 and sections 271 through 289 of title 35, United States Code. The waiver also applies to remedies under other titles of the United States Code including sections 1337 and 1337a of title 19, section 2356 of title 22, and section 1498 of title 28. This waiver of enforcement applies only to the claimed subject matter of the SIR and not to any foreign patent arising from an application which might have served as the basis of a priority claim under the Paris Convention for the Protection of Industrial Property. Likewise, the waiver does not prevent the holder of a SIR from asserting any defenses provided in sections 271 through 289 of title 35, U.S.C. with respect to a charge of infringement of any other patent.

The Commissioner of Patents and Trademarks can refuse to accept the waiver in certain cases. For example, the waiver could not be accepted if the waiver is not a waiver of all the previously mentioned rights. The Commissioner also has discretion to set time limits on the waiver. This would allow the Commissioner to limit the ability of an inventor to keep inventions secret through a series of continuing patent applications followed by a conversion to a SIR.

The waiver of patent rights in the SIR to the subject matter claimed therein may affect the patentability of a claim in other related applications, particularly divisional applications, since the waiver of patent rights would be effective for all inventions claimed in the SIR and would be effective as a waiver of the right of the inventor to obtain a patent on the invention claimed in the same application or any other application, but not in any patent issued before the date the SIR is published. Where an application containing generic claims is published as a SIR, the waiver in that application applies to any other related applications, including divisions, continuations, and continuations-in-part, to the extent that the same invention claimed in the SIR is also claimed in the other related application.

The Patent and Trademark Office will apply standards similar to those which it applies in making determinations of "same invention" and "obvious type" double patenting for purposes of determining whether or not a waiver by an inventor to claims in a SIR precludes patenting by the same inventor to subject matter in any other related application.

Therefore, the waiver would preclude patenting of an invention claimed by an inventor in a related application which is the same as, or not patentably distinct from, the invention claimed by the same inventor in the SIR. When making this determination it is the claimed subject matter of the SIR which is compared to the claimed subject matter of the related application. Where the subject matter claimed in the related application is not patentably distinct from the subject matter waived in the SIR, the claims of the related application will be rejected on the grounds of double patenting as being precluded by the waiver in the SIR and cannot be overcome by a terminal disclaimer. If a divisional application is filed and published as a SIR claiming only a method, publication thereof will not normally effect a waiver on an application for a patent claiming only an apparatus. The waiver in a SIR would not affect any rights in a patent which issued prior to the date of publication of the SIR, but would preclude an already issued patent from being broadened by reissue if the rights to the subject matter to which broadened claims relate have been waived by publication of the SIR. The waiver applies to any rights of the same inventor in any application pending when the SIR is published even if the inventor is a joint applicant in the pending application and was a sole applicant in the application published as a SIR. The waiver would not affect the rights of any other inventor even though those rights are commonly owned by the same person.

The holder of a SIR containing the required waiver will be left without the offensive rights associated with a patent. In other respects a SIR will be the same as a patent, including the application which is published as a SIR serving as the basis for a priority claim in a foreign application under the Paris Convention. A SIR will be treated the same as a U.S. patent for all defensive purposes. The application, and the SIR published therefrom, could become involved in an interference; the SIR would be a "constructive reduction to practice" under 35 U.S.C. 102(g); it will be "prior art" under all applicable sections of 35 U.S.C. 102 including section 102(e); and it will be classified, cross-referenced and placed in the search files, disseminated to foreign patent offices, stored in the Patent and Trademark Office computer tapes, made available in commercial data bases, and announced in the Official Gazette of the Patent and Trademark Office. A published SIR is intended to be a fully viable publication for defensive purposes, usable as a reference as of its filing date in the same manner as a patent. A SIR will also serve as a basis to initiate or participate in an interference or priority proceeding under 35 U.S.C. 291 in a manner similar to a patent and can be used as a reference in defense of an infringement suit.

A SIR is based on a regularly filed application for a patent. Therefore, the filing date of the application will be a sufficient basis for a priority claim in a foreign application. Article 4, section A(3) of the Paris Convention states:

> "By a regular national filing is meant any filing that is adequate to establish the date on which the application was filed in the country concerned, whatever may be the subsequent fate of the application."

After a SIR is published, markings such as "patent pending" are improper under section 292 of title 35 of the United States Code.

The SIR will serve as a replacement for the current "defensive publication program" which was established by regulation under 37 CFR 1.139. Although publication under the "defensive publication program" was intended to provide rights similar to those of the SIR, publication under that program has been held not to be available as evidence of prior knowledge as of its filing date under section 102(a) of title 35, U.S.C. (Ex parte Osmond, 191 USPQ 334 (P.T.O. Bd. App. 1976)). The use of a "defensive publication" as a reference to prevent a patent from issuing on a subsequent application is therefore limited. A SIR, on the other hand, will have a clear statutory basis in title 35, U.S.C. The SIR will be "prior art" and a "constructive reduction to practice" under section 102(a) and section 102(g), respectively, as of the filing date of the application on which it is based.

A SIR will not be subject to reexamination under sections 302 to 307 of title 35, United States Code.

The Commissioner is authorized to issue SIRs for defensive purposes, but is not required to do so. The Commissioner has discretion in determining whether or not a SIR should be issued on a particular application. In circumstances where the subject matter is obviously not an invention, is too informal to print, and so forth, the Commissioner has the right to refuse to publish the SIR.

SIRs will be published sooner than patents because no substantive examination will normally be required for SIRs. To the extent that examination is required, it will be conducted in the same manner as in any other patent application. Maintenance fees will not be charged for SIRs.

Since the fees set by the Commissioner for the new SIR procedure under section 157 of title 35, U.S.C. are not established under section 41(a) or (b) of that title, they are not subject to reduction if the applicant has small entity status.

If the fee for publication is not paid at the time of filing of the waiver of the right to receive a patent, the Commissioner may set a period within which the fee must be paid to prevent abandonment of the application. Such a period would be subject to petitions and fees for extensions of time. If abandonment should occur, the application may be revived.

In the final analysis, the SIR procedures set forth in the law should give inventors a limited form of protection more cheaply than they could get by obtaining a patent. The procedure will allow the government and the private sector to make inventions public knowledge. Last, the SIR would be particularly useful to those with limited resources such as universities and small businesses, who have a new, less expensive alternative to the traditional patenting of inventions.

Amended 35 U.S.C. 361, 366, 371, 372 and 376 - Miscellaneous provisions relating to the applications under the Patent Cooperation Treaty.

Section 361(d) of title 35, United States Code, was amended effective May 8, 1985, to provide a one-month grace period from the date

of filing an international application for payment of the basic international fee and the transmittal and search fees.

Section 366 of title 35, United States Code, was amended, effective May 8, 1985, to clarify the effect of withdrawal of an international application on claims for the benefit of its filing date.

The withdrawal of an international application designating the United States will not deprive an applicant of the right to claim the benefit of the filing date of such an international application in a later filed application, provided the claim for benefit is made before that international application is withdrawn. Stated otherwise, this clarifies that withdrawing the designation of the United States in an international application is comparable to abandoning a national application as far as a claim for an earlier filing date is concerned.

National Stage

As a general proposition, the amendments made to 35 U.S.C. 371 set forth a legislative scheme, effective May 8, 1985, to provide greater flexibility in the Patent and Trademark Office for the handling of international applications. In addition, by relaxing the requirements which international applicants must satisfy by the commencement of the national stage, the amendments give international applicants benefits similar to those given national applications by section 111, 35 U.S.C. as amended by Public Law 97-247 with respect to the time for filing the national fee and oath or declaration.

Section 372(b) of title 35, United States Code, is amended, effective May 8, 1985, to authorize the Commissioner to require a verification of the translation of an international application or any other document pertaining thereto if the application or other document was filed in a language other than English. An authorization for the Commissioner to require verification in appropriate cases is necessary since subsection (c)(2) of section 371 was amended to remove the requirement that the translation be verified in all cases.

Section 372(c) of title 35, United States Code, was deleted thereby discontinuing the requirement for payment of a special fee to maintain claims in an international application which were not searched by an international searching authority. This deletion was made to place international applications processed in the national stage on the same footing as purely national applications.

Section 376(a) of title 35, United States Code, was also amended by Public Law 98-622 to delete mention of the special fee in order to conform with the amendment of section 372(c).

DISCUSSION OF SPECIFIC RULES

Some of the rules to which changes are proposed in this Notice have been changed effective February 11, 1985, by a notice of final rulemaking published on December 12, 1984, at 49 Fed. Reg. 48416-48471. The amendments contained in this notice are being proposed to the rules as they will be effective on February 11, 1985.

Section 1.11, if amended as proposed, would add a reference to published statutory invention registrations in paragraph (a) to indicate that they are available to the public. The portion of present §1.11(a) which deals with interferences would be transferred to a new paragraph and rewritten.

The proposed amendment to paragraph (b) would delete reference to §1.139, which is proposed to be deleted in favor of the SIR, and would insert language which would cover opening to the public defensive publications published under §1.139 as well as other applications laid open to the public such as the previously published abstracts and abbreviatures.

Section 1.11, if amended as proposed, would delete the word "general" before public as unnecessary.

New paragraph (e) of §1.11, if added as proposed, would cover the availability to the public of all interferences, including those which involved a statutory invention registration. This paragraph applies to interferences declared under the new rules which become effective on February 11, 1985, 49 F.R. 48416, (Dec. 12, 1984) as well as the rules formerly in effect. The term "award of priority" is intended to refer to those decisions of the Board of Patent Interferences, or Board of Patent Appeals and Interferences, awarding priority in interferences conducted under the former rules. The term "judgment" refers to judgments entered by the Board of Patent Appeals and Interferences in interferences conducted under the new rules.

Section 1.14, if amended as proposed, would delete reference to §1.139 since that section is proposed to be deleted.

Section 1.17 paragraph (h), if amended as proposed would include the petition fee required by proposed new §1.295.

Section 1.17, if amended as proposed, would also add new paragraphs (n) and (o) to establish fees for publication of statutory invention registrations. Paragraph (n) would provide a fee for publication of a statutory invention registration where no first examiner's action pursuant to §1.104 has been issued in the application. The fee for publication is proposed to be $400.00. The amount paid for basic filing fees under §1.16(a), (f) or (g) would be credited against this amount. For example, if a $300.00 filing fee was paid, only $100.00 additional would be required for publication of a statutory invention registration.

The proposed addition of paragraph (o) to §1.17 is similar to the addition of paragraph (n) but relates to publication of applications, which have received any examiner's action pursuant to §1.104, as a statutory invention registration. The substantially higher fee proposed in paragraph (o) is necessary in view of the expenditure of Office resources examining the application prior to the filing of the request for a statutory invention registration.

Section 1.19, if amended as proposed, would provide in paragraph (a)(1) a reference to the cost of a printed copy of a statutory invention registration and in paragraph (e) would provide reference to statutory invention registrations listed by subclass.

Section 1.20, if amended as proposed, would delete the requirement to pay maintenance fees in all plant patents in view of the amendment in Public Law 98-622. Paragraph 1.20(m), if amended as proposed, would provide that non-timely payment of maintenance fees may be accepted in patents based on applications filed prior to August 27, 1982, in accordance with Public Law 98-622.

Public Law 98-622 provides that no maintenance fees are charged for plant patents, regardless of when filed. Without this provision that no maintenance fees be charged for plant patents, plant patent owners whose applications were filed between the dates of enactment

of Public Law 96-517 and Public Law 97-247 (December 12, 1980 to August 27, 1982) would be subject to payment of maintenance fees, while plant patent owners whose applications were filed outside those dates would not be subject to such fees. Public Law 98-622 eliminates that inconsistency.

Section 1.45, if amended as proposed, would reflect the change made by Public Law 98-622 in 35 U.S.C. 116. The existing paragraph is proposed to be designated as paragraph (a). Proposed new paragraph (b) incorporates the wording added to 35 U.S.C. 116 by Public Law 98-622. Proposed new paragraph (c) would indicate that each named inventor listed in an application must have made a contribution, individually or jointly, to the subject matter of at least one claim of the application and that the application will be considered to be a joint application under 35 U.S.C. 116.

Section 1.48, if amended as proposed, would add a new paragraph (b) which would provide for deleting the names of persons originally properly included as inventors, but whose invention is no longer being claimed in the application. Such a situation would arise where claims have been amended or deleted because they are unpatentable or as a result of a requirement for restriction of the application to one invention, or for other reasons. Public Law 98-622 and proposed §1.48(b) change the result reached in Ex parte Lyon, 146 USPQ 222, 1965 Dec. Comm'r. Pat. 362 (Bd. App. 1964).

Section 1.60, if amended as proposed, would include wording which would permit an application to be filed under this section only if it were filed by "the same inventive entity", i.e., the same inventors, who filed and signed the oath or declaration in the prior application. This addition is necessary in view of the new provisions of 35 U.S.C. 120, as amended by Public Law 98-622, which permit continuing applications to be filed by different inventors. Under §1.60 the same inventive entity is required since the oath or declaration from the prior application is relied upon.

Section 1.61 is proposed to be amended to incorporate the ability to file the translation, oath or declaration, and national fee after the 20 month deadline set forth in PCT Article 22(1) for entering the national phase in the United States Patent and Trademark Office.

Public Law 98-622 amended 35 U.S.C. 371(a) to provide greater flexibility for the PTO handling international applications. Also, 35 U.S.C. 371(a), by relaxing the requirements which international applicants must satisfy by the commencement of the national stage, gives international applicants benefits similar to those given national applicants under 35 U.S.C. 111 by P.L. 97-247 with respect to the time for filing the national fee and oath or declaration.

Paragraph (b) of §1.61 is proposed to be amended to delete the 2 month time period to conform with the decision concerning PCT Article 22(2) adopted by the Assembly of the International Patent Cooperation Union (PCT Union) on February 3, 1984. The amendment to the Article takes effect on January 1, 1985.

PCT Article 22(2) as amended, reads as follows:

> "Where the International Searching Authority makes a declaration, under Article 17(2)(a), that no international search report will be established, the time limit for performing the acts referred to in paragraph (1) of this Article shall be the same as that provided in paragraph (1)."

The proposed additional wording to paragraph (b) of §1.61 would set forth the ability to comply with the requirements for entering the national phase before the Patent and Trademark Office as a Designated Office within 22 months of the priority date. If the national fee or oath or declaration is submitted later than 20 months after the priority date, a surcharge as proposed in §1.445(a)(5) is required to be paid. If a required English translation of the international application is filed later than 20 months after the priority date, a processing fee as proposed in §1.445(a)(6) is required to be paid.

Proposed new paragraph (c) of §1.61 would provide that any amendments under PCT Article 19 which are not received along with any necessary English translation by the end of 20 months from the priority date will be considered as cancelled. This change is required in view of amended §371(d) of 35 U.S.C.

Paragraph (d) is proposed to be added to §1.61 in view of §372(b) of title 35, United States Code, as amended by Public Law 98-622, which authorizes the Commissioner to require a verification of the translation of an international application or any other document pertaining thereto if the application or other document was filed in a language other than English. An authorization for the Commissioner to require verification in appropriate cases was necessary since subsection (c)(2) of 35 U.S.C. 371 was amended to remove the requirement that the translation be verified in all cases.

Section 1.62, if amended as proposed, would include wording which would permit an application to be filed under this section only if it were filed by the same inventive entity, i.e., the same inventors, who filed and signed the oath or declaration in the prior application. This addition is necessary in view of the new provisions of 35 U.S.C. 120, as amended by Public Law 98-622, which permit continuing applications to be filed by different inventors. Under §1.62 the same inventive entity is required since the application file and the oath or declaration from the prior application are relied upon.

Section 1.78 is proposed to be amended to provide in paragraph (a) that the inventorship in the continuing application may be different from the inventorship in the prior copending application and that the prior application must disclose the invention claimed in at least one claim of the later filed application in the manner provided by the first paragraph of 35 U.S.C. 112. The requirement that at least one claim be fully supported in the prior application to be entitled to priority benefit is not new, but is included to serve as a reminder that information such as foreign patenting, publication, or public use or sale in the United States which occurred more than one year prior to the filing date of the later application is available as prior art where the claims of the continuation-in-part application are not fully supported by the disclosure of the parent application so as to be entitled to an earlier effective filing date under 35 U.S.C. 120. See In re Ruscetta, 255 F. 2d 687, 118 USPQ 101 (CCPA 1958); In re van Langenhoven, 458 F. 2d 132, 173 USPQ 426 (CCPA 1972), and Chromalloy American Corp. v. Alloy Surfaces Co., Inc., 339 F. Supp. 859, 173 USPQ 295 (D.Del. 1972).

Paragraph (c) as proposed to be amended would provide for the reply to an examiner's inquiry as to first inventor of conflicting claims in commonly owned applications or an application and a patent to be either (1) a statement that the inventions were both commonly owned

at the time of the invention of the application in which the request for information is being made or (2) an indication of the first inventor. Proposed new paragraph (d) provides for making a double patenting rejection where an application claims an invention which is not patentably distinct from an invention claimed in a commonly-owned patent with the same or different inventive entities. An obviousness-type double patenting rejection could be overcome by the assignee by submitting a terminal disclaimer complying with §1.321(b).

Section 1.101, if amended as proposed, would delete reference to applications filed under §1.139 since this section is proposed to be removed.

Section 1.103, if amended as proposed, would refer in paragraph (d) to a request "for a defensive publication" rather than a request "filed under §1.139" since §1.139 is proposed to be removed. Paragraph (d), if amended as proposed, would also refer to "patent interference proceedings under Subpart E" rather than to "proceedings under §1.201(b)" since §1.201(b) has been removed.

Section 1.104, if amended as proposed, would add a new paragraph (e) to specify the nature of the showing necessary before the examiner would consider co-pending applications to be owned by, or subject to an obligation of assignment to, the same person for purposes of 35 U.S.C. 102(f)/103, 102(g)/103, and proposed paragraph (d) of §1.106. The proposed rule would permit the necessary showing to be made in different alternative ways. The necessary showing would be considered by the examiner to be present if the application files refer to assignments which are recorded in the Patent and Trademark Office in accordance with §1.331 as long as the assignments conveyed the entire rights in the applications to the same person or organization. A second alternative which could be used under the proposed rule, if assignments have not been recorded, would permit the examiner to consider copies of unrecorded assignments filed in each of the applications by the applicants as long as the unrecorded assignments convey the entire rights in the applications to the same person or organization. A third alternative contained in the proposed rule would permit an affidavit or declaration to be filed by the common owner stating that there is common ownership and stating facts which explain why the affiant or declarant believes there is common ownership. Under this alternative, sufficient facts would have to be presented in order to enable the examiner to conclude that a prima facie case of common ownership exists. The fourth alternative contained in the proposed rule would permit other evidence to be used which would establish common ownership of the applications, e.g., a court decision determining the owner. The terms "person" and "organization" in the rule would include circumstances where the ownership resided in more than one person and/or organization as long as the applications are owned jointly by the same owners. Paragraph (e), if added as proposed, would also provide that where the common owner is a corporation or other organization an affidavit or declaration averring common ownership may be signed by an official of the corporation or organization who is empowered to act on behalf of the corporation or organization. A mere power of attorney to prosecute a patent application would not make an individual an official of the corporation or organization or empower the individual to act on behalf of the corporation or organization.

The proposed wording of §1.106(d) amends the rule to reflect the change in 35 U.S.C. 103 and refers to the "entire" rights to the subject matter and the claimed invention to make it clear that the

term "commonly owned" means wholly owned by the same person, persons, or organization.

If the person, persons, or organization owned less than 100 percent of the subject matter which would otherwise be prior art to the claimed invention, or less than 100 percent of the claimed invention, then common ownership would not exist. Common ownership requires that the person, persons, or organization own 100 percent of the subject matter and 100 percent of the claimed invention. As long as principal ownership rights to either the subject matter or the claimed invention reside in different persons or organizations common ownership does not exist. A license of the claimed invention to another by the owner where basic ownership rights are retained would not defeat ownership. The requirement for common ownership at the time the claimed invention was made is intended to preclude obtaining ownership of subject matter after the claimed invention was made in order to disqualify that subject matter as prior art against the claimed invention. The question of whether common ownership exists at the time the claimed invention was made is to be determined on the basis of the evidence presented and the facts of the particular case in question. Actual ownership of the subject matter and the claimed invention by the same individual or organization or a legal obligation to assign both the subject matter and the claimed invention to the same individual or organization must be in existence at the time the claimed invention was made in order for the subject matter to be disqualified as prior art. A moral or unenforceable obligation would not evidence common ownership.

The burden of establishing that subject matter is disqualified as prior art under the section is intended to be placed and reside upon the person or persons urging that the subject matter is disqualified. For example, the examiner would normally make what appears to be a proper 35 U.S.C. 102(f)/103 or 102(g)/103 rejection and the burden would be on the patent applicant to establish that subject matter is disqualified as prior art because it was commonly owned at the time the claimed invention was made. To place the burden upon the patent examiner would not be appropriate since evidence as to common ownership at the time the claimed invention was made might not be available to the patent examiner, but such evidence, if it exists, should be readily available to the patent applicant or the patentee.

Section 1.108, if amended as proposed, would delete the reference to filing a request under §1.139, which is proposed to be removed, and insert in its place a reference to a defensive publication.

A new section 1.110 is proposed to be added which would allow the examiner or other Office official to make inquiry as to the invention date, inventors and ownership at the time the invention was made when necessary for purposes of an Office proceeding.

Section 1.131 is proposed to be amended to require that affidavits to overcome a rejection of a claim on a cited patent or publication be by the inventor or inventors of the subject matter of that claim.

Section 1.193, if amended as proposed, would change from twenty days to one month the time for filing a reply brief in response to an examiner's answer which raises new points of argument. This amendment is intended to simplify the docketing of this time period and make it consistent with the time period fixed for requesting an oral hearing in §1.194(b).

Section 1.293, if added as proposed, would provide who may file a request for a statutory invention registration (SIR) and the requirements of such a request in accordance with 35 U.S.C. 157 added by Public Law 98-622. Paragraph (a) of proposed §1.293 would indicate that a request for publication of a statutory invention registration in a complete pending patent application for an original patent may be filed and be signed by the applicant, and any assignee of record, or the attorney or agent of record in the application. Proposed paragraph (b) would set forth the requirements for a request for a statutory invention registration. Such a request must include:

(1) a waiver of the applicant's right to receive a patent. This waiver would become effective upon the date of publication. Therefore, it would be possible to petition to withdraw a request for publication of a statutory invention registration until such time that publication could not be terminated;

(2) payment of the fee for publication of a statutory invention registration as set forth in proposed §1.17(n) or (o). The fee is proposed to be set at two levels to reflect the amount of resources used by the Patent and Trademark Office;

(3) a statement that the application meets the disclosure requirements of 35 U.S.C. 112. This provision is considered desirable in order to prevent publication of defective and insufficient disclosures; and

(4) a statement that the application complies with the formal requirements of the rules of practice relating to printing. This provision is required in order to provide the printer with drawings and specification which are suitable for printing in substantially the same format as a patent.

Paragraph (c) of §1.293, if added as proposed, would define the effects of a waiver filed with a request for a statutory invention registration. The waiver would be effective, upon publication of the SIR, to waive the inventor's right to receive a patent on the invention claimed in the SIR in any application for an original patent which is pending on, or filed after, the date of publication of the SIR. The waiver would affect pending or later applications the inventor filed as a joint inventor with others, but would not affect an application of another person, even if the application and the SIR were commonly owned. The waiver would affect a reissue application of an earlier patent of the inventor only to the extent that the reissue application sought to enlarge the scope of the claims.

Section 1.294, if added as proposed, would provide in paragraph (a) for a review of the request for publication of a statutory invention registration and the patent application to which it is directed. The request would be examined to determine if the requirements of §1.293 have been met. The application to which the request is directed will be examined to determine (1) if the subject matter of the application is appropriate for publication, (2) if the requirements for publication are met, and (3) if the requirements of 35 U.S.C. 112 and §1.293 are met. Under 35 U.S.C. 157, the Commissioner is authorized to publish a statutory invention registration, but is not required to do so. Thus, the Commissioner has discretion in determining whether or not a statutory invention registration should be issued on a particular patent. In circumstances where the subject matter was obviously not a patentable invention, was too informal to print, and so

forth, the request to publish the statutory invention registration would be refused.

Paragraph (b) of proposed §1.294 provides for notifying applicant of the results of the examination of the request for publication of the statutory invention registration. Paragraph (c) of proposed §1.294 provides for the issuance of a notice of the intent to issue a statutory invention registration once the request has been examined and approved.

Section 1.295, if added as proposed, would provide for the review of a final refusal to publish a statutory invention registration. The review would be by petition to the Commissioner for matters other than those arising from a rejection pursuant to 35 U.S.C. 112 and by appeal for a rejection pursuant to 35 U.S.C. 112.

Section 1.296, if added as proposed, would provide that a request for a statutory invention registration which has been filed may be withdrawn only after filing and approval of a petition pursuant to §1.183 accompanied by the fee set forth in §1.17(h). Normally, it would be expected that an applicant wishing to withdraw a request for a SIR in order to prosecute the application would accompany the petition to withdraw the SIR by an express abandonment of that application and file a continuing application for purposes of examination.

Section 1.297, if added as proposed, would provide for the publication of the statutory invention registration and of the notice of its publication in the Official Gazette.

Sections 1.301, 1.302 and 1.304, if amended as proposed, would delete the requirement to give reasons for appeal when filing an appeal to the Court of Appeals for the Federal Circuit in accordance with §414(a) of Public Law 98-620 which amended 35 U.S.C. 142, 143 and 144.

Section 1.378, if amended as proposed, would delete from paragraph (a) the limitation that only applications filed on or after August 27, 1982 may have the maintenance fee accepted after expiration of the patent. This change follows the change made by §404(b) of Public Law 98-622.

Section 1.431 is proposed to be amended to provide for the later payment directly to the Receiving Office of the basic fee portion of the international fee and the transmittal and search fees within one month of the filing of an international application. The proposed rule follows §361(d) of title 35, U.S.C. as amended by Public Law 98-622, to provide a one-month grace period from the date of filing of an international application for the payment of the basic international fee and the transmittal and search fees.

It should be noted that the designation fees continue to be required by 12 months after the priority date and that no subsequent grace period is provided in the Receiving Office for designation fees.

Proposed new paragraphs 1.431(d) and (e) would incorporate into the regulations the provisions of PCT Rule 16 bis. Under these provisions the Receiving Office will charge any unpaid or insufficient fees to a deposit account maintained by the International Bureau. The applicant would then be notified by the International Bureau and be given one month to reimburse the amount charged plus a surcharge of 50%. The surcharge would not be less than 248 Swiss

francs or more than 624 Swiss francs under the current fee schedule.

Section 1.445, if amended as proposed, would clarify paragraph (a)(4) to clearly indicate that the national fee is credited by an amount of $250 only one time where a $500 search fee has been paid to the Patent and Trademark Office to act as an international searching authority. This is consistent with current practice. The special fee provisions in paragraph (a)(5) are proposed to be deleted in view of §402(g) of Public Law 98-622 which deleted the fee in 35 U.S.C. 376(a)(5). The proposed wording of §1.445(a)(5) would set forth the surcharge required for filing of a national fee or oath or declaration later than 20 months from the priority date. Paragraph (a)(6) of §1.445, if added as proposed, would require a fee of $20.00 for filing an English translation of an international application later than 20 months after the priority date. This would make the practice in international applications consistent with that in national applications where a fee of $20.00 is charged under §1.17(k) for processing an application filed with a specification in a non-English language.

Section 1.446, if amended as proposed, would clarify the refund of a portion of the $500 search fee toward payment of the national fee.

Section 1.451, if amended as proposed, would correct a rule citation in paragraph (b) and amend paragraph (c) to provide for supplying a copy of the priority document to the Receiving Office in conformance with revised PCT Rule 17.1.

Section 1.461 is proposed to be amended to delete provisions which relate to the applicant transmitting the record copy to the International Bureau. Provisions for such alternative transmittal are deleted from PCT Rule 22, effective January 1, 1985. Accordingly, since the PCT rules will no longer provide for such transmittal, the provisions therefor in the U.S. rules are also being proposed for deletion.

ENVIRONMENTAL, ENERGY, AND OTHER CONSIDERATIONS: The proposed rule change will not have a significant impact on the quality of the human environment or conservation of energy resources.

The proposed rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce certified to the Small Business Administration that the proposed rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354). In fact, the proposed rule change will benefit small entities since the statutory invention registration procedures will provide a new, less expensive alternative to the traditional patenting of inventions in appropriate circumstances. Further, the ability to join multiple inventors in a single application in appropriate circumstances will be of particular benefit to small entities. Other changes, such as the elimination of the reasons for appeal, will also be beneficial to all inventors. See a "section-by-section" analysis submitted for the Record by Representative Kastenmeier during discussion of H.R. 6286 on the

floor of the House in which the following statement appears (130 Cong. Rec. H1057 (1984), column 1):

> "Last, the SIR would be particularly useful to those with limited resources such as universities and small businesses, who have a new less expensive alternative to the traditional patenting of inventions."

These proposed rules, therefore, would have no significant adverse economic impact on small entities.

The Patent and Trademark Office has determined that this proposed rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The information collection requirement contained in these proposed rules has been submitted to OMB for review under Section 3504(h) of the Paperwork Reduction Act. Comments relating to this requirement should be directed to the Office of Information and Regulatory Affairs of OMB, Attention: Desk Officer for Commerce, Patent and Trademark Office.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations (government agencies), Conflict of interests, Courts, Inventions and patents, Lawyers.

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, Pub. L. 98-620 and 98-622, the Patent and Trademark Office is proposing to amend Title 37 of the Code of Federal Regulations as set forth below. All proposed additions are printed between arrows and all deletions are shown between brackets.

1. Section 1.11 is proposed to be amended by revising paragraphs (a) and (b) and adding new paragraph (e) to read as follows:

§1.11 Files open to the public.

(a) After a patent has been issued ▶or a statutory invention registration has been published◀, the specification, drawings and all papers relating to the case in the file of the patent ▶or statutory invention registration◀ are open to inspection by the [general] public, and copies may be obtained upon paying the fee therefor. [After entry of a judgement in an interference by the Board of Patent Appeals and Interferences as to all parties, the file of any interference which involved a patent, or an application on which a patent has issued, is similarly open to public inspection and procurement of copies.] See §2.27 for trademark files.

(b) All reissue applications▶,◀[and] all applications in which the Office has accepted a request [filed under §1.139] ▶to open the complete application to inspection by the public◀, and related papers in the application file, are open to

inspection by the [general] public, and copies may be furnished upon paying the fee therefor. The filing of reissue applications will be announced in the Official Gazette. The announcement shall include at least the filing date, reissue application and original patent numbers, title, class and subclass, name of the inventor, name of the owner of record, name of the attorney or agent of record, and examining group to which the reissue application is assigned.

* * * * *

▶(e) The file of any interference which involved a patent, a statutory invention registration, or an application on which a patent has issued, is open to inspection by the public, and copies may be obtained upon paying the fee therefor, if: (1) the interference has terminated, or (2) an award of priority or judgment has been entered as to all parties and all counts.◀

2. Section 1.14 is proposed to be amended by revising paragraph (b) to read as follows:

§1.14 Patent applications preserved in secrecy.

* * * * *

(b) Except as provided in §1.11(b) abandoned applications are likewise not open to public inspection, except that if an application referred to in a U.S. patent, or in an application [which is open to inspection pursuant to §1.139]▶ in which the applicant has filed an authorization to open the complete application to the public ◀ , is abandoned and is available, it may be inspected or copies obtained by any person on written request, without notice to the applicant.

* * * * *

3. Section 1.17 is proposed to be amended by revising paragraph (h) and by adding new paragraphs (n) and (o) to read as follows:

§1.17 Patent application processing fees.

* * * * *

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph.....$120.00

§1.47 - for filing by other than all the inventors or a person not the inventor

§1.48 - for correction of inventorship

§1.182 - for decision on questions not specifically provided for

§1.183 - to suspend the rules

▶§1.295 - for review of refusal to publish a statutory invention registration◀

§1.377 - for review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of patent

§1.378(e)-for reconsideration of decision on petition refusing to accept delayed payment of maintenance fee in expired patent

§1.644(e)-for petition in an interference

§1.644(f)-for request for reconsideration of a decision on petition in an interference

§1.666(c)-for late filing of interference settlement agreement

§§5.12, 5.13, & 5.14 -for expedited handling of foreign filing license

§5.15 - for changing the scope of a license

§5.25 - for retroactive license

* * * * *

▶(n) For publication of a statutory invention registration prior to the mailing of the first examiner's action pursuant to §1.104.....$400.00 reduced by the amount of the application basic filing fee paid ◀

▶(o) For publication of a statutory invention registration after the mailing of the first examiner's action pursuant to §1.104.....$800.00 reduced by the amount of the application basic filing fee paid ◀

4. Section 1.19 is proposed to be amended by revising paragraphs (a) and (e) to read as follows:

§1.19 Document supply fees.

The Patent and Trademark Office will supply copies of the following documents upon payment of the fees indicated:

(a) Uncertified copies of Office documents:

(1) Printed copy of a patent, including a design patent, ▶ statutory invention registration, ◀ or defensive publication document, except color plant patent.....$ 1.00

* * *

* * * * *

(e) List of patents in subclass:

(1) For list of all United States patents ▶and statutory invention registrations◀ in a subclass, per 100 [patent] numbers or fraction thereof..... 2.00

(2) For list of United States patents ▶ and statutory invention registrations ◀ in a subclass limited by date or [patent] number, per 50 [patent] numbers or fraction thereof..... 2.00

5. Section 1.20 is proposed to be amended by revising paragraphs (e), (f), (g) and (m) to read as follows:

§1.20 Post-issuance fees.

* * * * *

(e) For maintaining an original or reissue patent, except a design ▶ or plant ◀ patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant.....$200.00

(f) For maintaining an original or reissue patent, except a design ▶ or plant ◀ patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant..... 400.00

(g) For maintaining an original or reissue patent, except a design ▶ or plant ◀ patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 12 years; the fee is due by eleven years and six months after the original grant..... 600.00

* * * * *

(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee [on a patent based on an application filed on or after August 27, 1982,] where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable..... 500.00

6. Section 1.45 is proposed to be revised by labeling the existing paragraph as (a) and by adding new paragraphs (b) and (c) to read as follows:

§1.45 Joint inventors.

▶(a)◀ * * * * *

▶(b) Inventors may apply for a patent jointly even though

(i) they did not physically work together or at the same time,

(ii) each inventor did not make the same type or amount of contribution, or

(iii) each inventor did not make a contribution to the subject matter of every claim of the application.◀

▶(c) If multiple inventors are named in an application, each named inventor must have made a contribution, individually or jointly, to the subject matter of at least one claim of the application and the application will be considered to be a joint application under 35 U.S.C. 116.◀

7. Section 1.48 is proposed to be amended by labeling the current paragraph as paragraph (a) and by adding a new paragraph (b) to read as follows:

§1.48 Correction of inventorship.

▶(a)◀ * * * * *

▶(b) If the correct inventors are named in the application when filed and the prosecution of the application results in the amendment or cancellation of claims so that less than all of the originally named inventors are the actual inventors of the invention being claimed in the application, an amendment shall be filed deleting the names of the person or persons who are not inventors of the invention being claimed. The amendment must be diligently made and shall be accompanied by:

(1) a petition including a statement of facts verified by the originally named inventors establishing that the invention of the person or persons being deleted is no longer being claimed in the application,

(2) an oath or declaration by each actual inventor or inventors as required by §1.63,

(3) the fee set forth in §1.17(h), and

(4) the written consent of any assignee.◀

8. Section 1.60 is proposed to be revised to read as follows:

§1.60 Continuation or divisional application for invention disclosed in a prior application.

(a) A continuation or divisional application (filed under the conditions specified in 35 U.S.C. 120 or 121 and §1.78(a)), which discloses and claims only subject matter disclosed in a prior application ▶of the same inventive entity◀ may be filed as a separate application before the patenting or abandonment of or termination of proceedings on the prior application.

(b) An applicant may omit signing of the oath or declaration in a continuation or divisional application if (1) the prior application was a complete application as set forth in §1.51(a) [and]▶,◀ (2) applicant files a true copy of the prior complete application as filed including the specification (including claims), drawings, oath or declaration showing the [applicant's] signature ▶ of the same inventive entity◀ or an indication it was signed, and any amendments referred to in the oath or declaration filed to complete the prior application▶, and (3) the applicant in the continuation or divisional application is the same inventive entity as in the prior application◀. The copy of the prior application must be accompanied by a statement that the application papers filed are a true copy of the prior application and that no amendments referred to in the oath or declaration filed to complete the prior application introduced new matter therein.

Such statement must be by the applicant or applicant's attorney or agent and must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. Only amendments reducing the number of claims or adding a reference to the prior application (§1.78(a)) will be entered before calculating the filing fee and granting the filing date.

9. Section 1.61 is proposed to be amended by revising paragraphs (a) and (b) and adding paragraphs (c) and (d) to read as follows:

§1.61 Filing of applications in the United States of America [at] ▶as◀ a Designated Office.

(a) To maintain the benefit of the international filing date and obtain an examination as to the patentability of the invention in the United States, the applicant shall furnish to the U.S. Patent and Trademark Office not later than the expiration of 20 months from the priority date: (1) a copy of the international application with any amendments ▶under PCT Art. 19◀, unless it has been previously [furnished] ▶communicated◀ by the International Bureau or unless it was originally filed in the U.S. Patent and Trademark Office; (2) a [verified] translation of the international application and a translation of any amendments ▶under PCT Art. 19◀ into the English language, if originally filed [elsewhere] in another language; (3) the national fee (see §1.445(a)(4)); and (4) an oath or declaration of the inventor (see §1.70).

(b) [Where an International Searching Authority has made a declaration that no international search report will be established because the international application relates to subject matter which it is not required to search, or because the application fails to comply with the prescribed requirements to such an extent that a meaningful search could not be carried out, the time for performing the acts referred to in paragraph (a) of this section is 2 months from the mailing date of the declaration to the applicant.]▶ If the translation of the international application, oath or declaration, and national fee have not been submitted by the applicant within twenty (20) months from the priority date, such requirements may be met within twenty-two (22) months from the priority date. The payment of the surcharge set forth in §1.445(a)(5) is required as a condition for accepting the national fee or the oath or declaration later than 20 months after the priority date. The payment of the processing fee set forth in §1.445(a)(6) is required for acceptance of an English translation later than 20 months after the priority date. Failure to comply with these requirements will result in abandonment of the application. The provisions of §1.136 do not apply to the 22 month period of this section.◀

▶(c) If a copy of the amendments under PCT Art. 19 is not communicated by the International Bureau or a copy thereof and any necessary English translation thereof is not received by the end of 20 months from the priority date, such failure will be regarded as cancellation of the amendments under PCT Art. 19 in the international application.◀

▶(d) Verification of the translation of the international application or any other document pertaining to an international application may be required where it is considered necessary,

if the international application or other document was filed in a language other than English.◀

10. Section 1.62 is proposed to be amended by revising paragraph (a) to read as follows:

§1.62 File wrapper continuing procedure.

(a) A continuation, continuation-in-part, or divisional application, which uses the specification, drawings and oath or declaration from a prior complete application (§1.51(a)) ▶ of the same inventive entity which is ◀ to be abandoned, may be filed before the payment of the issue fee, abandonment of, or termination of proceedings on the prior application. The filing date of an application filed under this section is the date on which a request is filed for an application under this section including identification of the Serial Number, filing date, and applicant's name of the prior complete application.

* * * * *

11. Section 1.78 is proposed to be amended by revising paragraphs (a) and (c) and by adding a new paragraph (d) to read as follows:

§1.78 Claiming benefit of earlier filing date and cross-references to other applications.

(a) An application may claim an invention disclosed in [the same applicant's] ▶a◀ prior filed copending national application or international application designating the United States of America. In order for an application to claim the benefit of a prior filed copending national application, the prior application must ▶ name as an inventor at least one inventor named in the later filed application and disclose the named inventor's invention claimed in at least one claim of the later filed application in the manner provided by the first paragraph of 35 U.S.C. 112. In addition, the prior application must ◀ be (1) complete as set forth in §1.51, or (2) entitled to a filing date as set forth in §1.53(b) and include the basic filing fee set forth in §1.16; or (3) entitled to a filing date as set forth in §1.53(b) and have paid therein the processing and retention fee set forth in §1.21(l) within the time period set forth in §1.53(d). Any application claiming the benefit of a prior filed copending national or international application must contain or be amended to contain in the first sentence of the specification following the title a reference to such prior application, identifying it by serial number and filing date or international application number and international filing date and indicating the relationship of the applications. Cross-references to other related applications may be made when appropriate. (See §1.14(b)).

* * * * *

(c) Where two or more applications, or an application and a patent naming different inventors and owned by the same party contain conflicting claims, ▶ and there is no statement of record indicating that the claimed inventions were commonly owned at the time the inventions were made, ◀ the assignee may be called upon to state ▶whether the claimed inventions were commonly owned at the time the inventions were made, and if not, indicate◀ which named inventor is the prior inventor. In addition to making said statement, the assignee may also

explain why an interference should ▶ or should not ◀ be declared [or that no conflict exists in fact].

▶(d) Where an application claims an invention which is not patentably distinct from an invention claimed in a commonly owned patent with the same or a different inventive entity, a double patenting rejection will be made in the application. An obviousness-type double patenting rejection may be obviated by filing a terminal disclaimer in accordance with §1.321(b).◀

12. Section 1.101 is proposed to be amended by revising paragraph (a) to read as follows:

§1.101 Order of examination.

(a) Applications filed in the Patent and Trademark Office and accepted as complete applications are assigned for examination to the respective examining groups having the classes of inventions to which the applications relate. Applications shall be taken up for examination by the examiner to whom they have been assigned in the order in which they have been filed except for those applications in which examination has been advanced pursuant to §1.102 [and those applications in which the Office has accepted a request for waiver of patent rights filed under §1.139]. International applications which have complied with the requirements of 35 U.S.C. 371(c) will be taken up for action based on the date on which such requirements were met. However, unless a request has been filed under 35 U.S.C. 371(f), no action may be taken prior to 21 months from the priority date.

* * * * *

13. Section 1.103 is proposed to be amended by revising paragraph (d) to read as follows:

§1.103 Suspension of action.

* * * * *

(d) Action on applications in which the Office has accepted a request [filed under §1.139] ▶to publish a defensive publication◀will be suspended for the entire pendency of these applications except for purposes relating to ▶ patent interference◀proceedings [under §1.201(b)]▶ under Subpart E◀ .

14. Section 1.104 is proposed to be amended by adding a new paragraph (e) to read as follows:

§1.104 Nature of examination; examiner's action.

* * * * *

▶(e) Co-pending applications will be considered by the examiner to be owned by, or subject to an obligation of assignment to, the same person if (1) the application files refer to assignments recorded in the Patent and Trademark Office in accordance with §1.331 which convey the entire rights in the applications to the same person or organization; or (2) copies of unrecorded assignments which convey the entire rights in the applications to the same person or organization are filed in each of the applications; or (3) an affidavit or declaration by the common owner is filed which states that there is commmon ownership

and states facts which explain why the affiant or declarant believes there is common ownership; or (4) other evidence is submitted which establishes common ownership of the applications. In circumstances where the common owner is a corporation or other organization an affidavit or declaration may be signed by an official of the corporation or organization empowered to act on behalf of the corporation or organization.◀

15. Section 1.106 is proposed to be amended by adding a new paragraph (d) to read as follows:

§1.106 Rejection of claims.

* * * * *

▶(d) Subject matter which is developed by another person which qualifies as prior art only under 35 U.S.C. 102(f) or (g) may be used as prior art under 35 U.S.C. 103 against a claimed invention unless the entire rights to the subject matter and the claimed invention were commonly owned by the same person or organization or subject to assignment to a common owner at the time the claimed invention was made.◀

16. Section 1.108 is proposed to be revised to read as follows:

§1.108 Abandoned applications not cited.

Abandoned applications as such will not be cited as references except those which have [become abandoned as a result of the filing and acceptance of a request under §1.139] ▶ been opened to inspection by the public following a defensive publication ◀ .

17. Section 1.110 is proposed to be added to read as follows:

▶§1.110 Inventorship and date of invention of the subject matter of individual claims.

When more than one inventor is named in an application or patent, the Patent and Trademark Office, when necessary for purposes of an Office proceeding, may require an applicant, patentee, or owner to identify the inventive entity of the subject matter of each claim in the application or patent. Where appropriate, the invention dates of the subject matter of each claim and the ownership of the subject matter on the date of invention may be required of the applicant, patentee or owner. See also §§1.78(c) and (d).◀

18. Section 1.131 is proposed to be amended by revising paragraph (a) to read as follows:

§1.131 Affidavit or declaration of prior invention to overcome cited patent or publication.

(a) When any claim of an application or a patent under reexamination is rejected on reference to a domestic patent which substantially shows or describes but does not claim the rejected invention, or on reference to a foreign patent or to a printed publication, and the [applicant] ▶ inventor of the subject matter of the rejected claim ◀ or the owner of the patent under reexamination shall make oath or declaration as to facts showing a completion of the invention in this country before the filing date of the application on which the domestic patent issued, or before the date of the foreign

patent, or before the date of the printed publication, then the patent or publication cited shall not bar the grant of a patent to the [applicant] ▶ inventor ◀ or the confirmation of the patentability of the claims of the patent, unless the date of such patent or printed publication is more than one year prior to the date on which the [applicant's] ▶ inventor's ◀ or patent owner's application was filed in this country.

* * * * *

19. Section 1.193 is proposed to be amended by revising paragraph (b) to read as follows:

§1.193 Examiner's answer.

* * * * *

(b) The appellant may file a reply brief directed only to such new points of argument as may be raised in the examiner's answer, within [twenty days] ▶ one month ◀ from the date of such answer. However, if the examiner's answer states a new ground of rejection appellant may file a reply thereto within two months from the date of such answer; such reply may include any amendment or material appropriate to the new ground.

* * * * *

20. A new section 1.293 is proposed to be added to read as follows:

▶ §1.293 Statutory invention registration.

(a) An applicant for an original patent may request, at any time during the pendency of applicant's pending complete application, that the specification and drawings be published as a statutory invention registration. Any such request must be signed by (1) the applicant and any assignee of record or (2) an attorney or agent of record in the application.

(b) Any request for publication of a statutory invention registration must include the following parts:

(1) a waiver of the applicant's right to receive a patent on the invention effective upon the date of publication of the statutory invention registration;

(2) the required fee for filing a request for publication of a statutory invention registration as provided for in §1.17(n) or (o);

(3) a statement that, in the opinion of the requester, the application to which the request is directed meets the requirements of 35 U.S.C. 112; and

(4) a statement that, in the opinion of the requester, the application to which the request is directed complies with the formal requirements of this part for printing as a patent.

(c) A waiver filed with a request for a statutory invention registration will be effective, upon publication of the statutory invention registration, to waive the inventor's right to receive a patent on the invention claimed in the statutory

invention registration, in any application for an original patent which is pending on, or filed after, the date of publication of the statutory invention registration. A waiver filed with a request for a statutory invention registration will not affect the rights of any other inventor even if the subject matter of the statutory invention registration and an application of another inventor are commonly owned. A waiver filed with a request for a statutory invention registration will not affect any rights in a patent to the inventor which issued prior to the date of publication of the statutory invention registration unless a reissue application is filed seeking to enlarge the scope of the claims of the patent.◀

21. A new section 1.294 is proposed to be added to read as follows:

▶§1.294 Examination of request for publication of a statutory invention registration and patent application to which the request is directed.

(a) Any request for a statutory invention registration will be examined to determine if the requirements of §1.293 have been met. The application to which the request is directed will be examined to determine (1) if the subject matter of the application is appropriate for publication, (2) if the requirements for publication are met, and (3) if the requirements of 35 U.S.C. 112 and §1.293 of this part are met.

(b) Applicant will be notified of the results of the examination set forth in paragraph (a) of this section. If the requirements of §1.293 and this section are not met by the request filed, the notification to applicant will set a period of time within which to comply with the requirements in order to avoid abandonment of the application. If the application does not meet the requirements of 35 U.S.C. 112, the notification to applicant will include a rejection under the appropriate provisions of 35 U.S.C. 112. The periods for response established pursuant to this section are subject to the extension of time provisions of §1.136. After response by the applicant, the application will again be considered for publication of a statutory invention registration. If the requirements of §1.293 and this section are not timely met, the refusal to publish will be made final. If the requirements of 35 U.S.C. 112 are not met, the rejection pursuant to 35 U.S.C. 112 will be made final.

(c) If the examination pursuant to this section results in approval of the request for a statutory invention registration the applicant will be notified of the intent to publish a statutory invention registration.◀

22. A new section 1.295 is proposed to be added to read as follows:

▶§1.295 Review of decision finally refusing to publish a statutory invention registration.

(a) Any requester who is dissatisfied with the final refusal to publish a statutory invention registration for reasons other than compliance with 35 U.S.C. 112 may obtain review of the refusal to publish the statutory invention registration by filing a petition to the Commissioner accompanied by the fee set forth in §1.17(h) within one month or such other time as

is set in the decision refusing publication. Any such petition should comply with the requirements of §1.181(b).

(b) Any requester who is dissatisfied with the final rejection of claims pursuant to 35 U.S.C. 112 may obtain review of the final rejection by filing an appeal to the Board of Patent Appeals and Interferences pursuant to §1.191. If the rejection pursuant to 35 U.S.C. 112 is reversed, the request for a statutory invention registration will be approved and the registration published if all of the other provisions of §1.293 and this section are met.◀

23. A new section 1.296 is proposed to be added to read as follows:

▶§1.296 Withdrawal of request for publication of statutory invention registration.

A request for a statutory invention registration, which has been filed, may be withdrawn only after filing and approval of a petition pursuant to §1.183 accompanied by the fee set forth in §1.17(h). ◀

24. A new section 1.297 is proposed to be added to read as follows:

▶§1.297 Publication of statutory invention registration.

(a) If the request for a statutory invention registration is approved the statutory invention registration will be published. The statutory invention registration will be mailed to the requester at the correspondence address as provided for in §1.33(a). A notice of the publication of each statutory invention registration will be published in the Official Gazette.

(b) Each statutory invention registration published will include a statement relating to the attributes of a statutory invention registration. The statement will read as follows:

A statutory invention registration published pursuant to 35 U.S.C. 157 has all of the attributes specified for patents in title 35, United States Code, except those specified in 35 U.S.C. 183 and sections 271 through 289. A statutory invention registration does not have any of the attributes specified for patents in any other provision of law other than title 35, United States Code. The invention with respect to which a statutory invention registration is published is not a patented invention for purposes of the marking provisions of 35 U.S.C. 292.◀

25. Section 1.301 is proposed to be revised to read as follows:

§1.301 Appeal to U.S. Court of Appeals for the Federal Circuit.

Any applicant or any owner of a patent involved in a reexamination proceeding dissatisfied with the decision of the Board of Patent Appeals and Interferences, and any party to an interference dissatisfied with the decision of the Board of Patent Appeals and Interferences, may appeal to the U.S. Court of Appeals for the Federal Circuit. The appellant must take the following steps in such an appeal: (a) In the Patent and Trademark Office [give notice]▶file a written notice of appeal directed◀ to the Commissioner [and file the reasons of appeal] (see §§1.302 and

1.304);▶ and ◀ (b) in the [court] ▶ Court ◀, file a copy of the notice [and reasons] of appeal and pay the fee for appeal, as provided by the rules of the [court] ▶ Court ◀. The certified list ▶of documents and any original or certified copies of such documents◀ required by [the rules of] the Court will be transmitted to the Court by the Patent and Trademark Office.

26. Section 1.302 is proposed to be revised to read as follows:

§1.302 Notice [and reasons] of appeal.

(a) When an appeal is taken to the U.S. Court of Appeals for the Federal Circuit, the appellant shall give notice thereof to the Commissioner[, and file in the Patent and Trademark Office] within the time specified in §1.304[, his or her reasons of appeal specifically set forth in writing].

(b) In interferences, the notice [and reasons] must be served as provided in §1.646.

27. Section 1.304 is proposed to be amended by revising paragraph (a) to read as follows:

§1.304 Time for appeal or civil action.

(a) The time for filing the notice [and reasons] of appeal to the U.S. Court of Appeals for the Federal Circuit (§1.302) or for commencing a civil action (§1.303) is sixty days from the date of the decision of the Board of Patent Appeals and Interferences. If a request for reconsideration or modification of the decision is filed within the time provided under §1.197(b) or §1.658(b), the time for filing an appeal or commencing a civil action shall expire at the end of the sixty-day period or thirty days after action on the request, whichever is later. Except for an appeal from or commencing a civil action after a decision of the Board of Patent Appeals and Interferences in a reexamination proceeding or an interference proceeding, the time periods set forth herein are subject to the provisions of §1.136. See §1.550(c) for extensions of time to appeal or commence a civil action in a reexamination proceeding. See §1.645(a) for extensions of time to appeal or commence a civil action in an interference. An examiner-in-chief, upon a showing of excusable neglect, may extend the time for seeking judicial review of a decision of the Board of Patent Appeals and Interferences in an interference case when a request is untimely filed after expiration of the time prescribed by this section.

* * * * *

28. Section 1.378 is proposed to be amended by revising the title and paragraph (a) to read as follows:

§1.378 Acceptance of delayed payment of maintenance fee in expired patent to reinstate patent [based on application filed on or after August 27, 1982].

(a) The Commissioner may accept the payment of any maintenance fee due on a patent [based on an application filed on or after August 27, 1982,] after expiration of the patent if, upon petition, the delay in payment of the maintenance fee is shown to the satisfaction of the Commissioner to have been unavoidable and if the surcharge required by §1.20(m) is paid as

a condition of accepting payment of the maintenance fee. If the Commissioner accepts payment of the maintenance fee upon petition, the patent shall be considered as not having expired, but will be subject to the conditions set forth in 35 U.S.C. 41(c)(2).

* * * * *

29. Section 1.431 is proposed to be amended by revising paragraphs (b)(3)(iii) and (c) and by adding new paragraphs (d) and (e) to read as follows:

§1.431 International application requirements.

* * * * *

(b)(3) * * *

(iii) The name of the applicant, as prescribed (note §[1.422] ▶§1.421-1.424◀);

(c) Payment of the basic portion of the international fee (PCT Rule 15.2) and the transmittal and search fees (§1.445) [shall]▶may◀ be made in full at the time the international application papers required by paragraph (b) of this section are deposited ▶or within one month thereafter◀. Failure to make full payment [on the same date as]▶within one month of◀ the deposit of the international application papers required by [sub]paragraph (b) of this section will result in the [international application being considered withdrawn (PCT Art. 14(3)(a))]▶fees being charged to the International Bureau under the provisions of paragraph (d) of this section and PCT Rule 16 bis◀.

▶(d) The United States Receiving Office will charge to the International Bureau in accordance with PCT Rule 16 bis and will consider as having been timely paid:

(i) the transmittal fee, the basic fee portion of the international fee, or the search fee where these fees have not been fully paid by the applicant within one month of the date of deposit of the international application, and

(ii) the designation fee, or the amount necessary to cover all the designations made in the request which have not been paid by the applicant within one year from the priority date.◀

▶(e) The International Bureau will notify applicant of any amount charged under paragraph (d) of this section and invite the applicant to pay directly to the International Bureau within one month from the date of the notification, the amount charged, augmented by a surcharge of 50%, provided the surcharge will not be less, and will not be more, than the amounts indicated in the Schedule of Fees appended to the PCT Rules. If the payment needed to cover the transmittal fees, the basic fee, the search fee, one designation fee and the surcharge is not timely made to the International Bureau, the International Bureau will notify the Receiving Office which will declare the international application withdrawn under PCT Article 14(3)(a). If the applicant makes timely payment of the fees referred to in the previous sentence, but the amount paid is not sufficient to cover all the designation fees, the

Receiving Office will declare any designations not paid withdrawn under PCT Article 14(3)(b) in accordance with PCT Rule 16 bis. 2(c).◀

30. Section 1.445 is proposed to be amended by revising paragraphs (a)(4) and (5) and adding paragraph (a)(6) to read as follows:

§1.445 International application filing and processing fees.

(a) * * *

(4) The national fee, that is, the amount set forth as the filing fee under §1.16(a) through (d) credited ▶ one time only◀ by an amount of $250 where an international search fee ▶of $500.00 ◀ has been paid on the corresponding international application to the United States ▶ Patent and Trademark Office ◀ as an International Searching Authority. Where the amount of the credit is in excess of that required for the national fee, a request for a refund of the excess under §1.446(b) may be filed at the time of paying the national fee. Only one such credit is permitted based on a single ▶ $500.00◀ international search fee.

(5) [A special fee when required (see 35 U.S.C. 372(c)--$10 per claim.] ▶ Surcharge for filing the national fee or oath or declaration later than 20 months from the priority date---$100.00.◀

▶(6) For filing an English translation of an international application later than 20 months after the priority date (§1.61(b))----$20.00◀

* * * * *

31. Section 1.446 is proposed to be amended by revising the title and paragraph (b) to read as follows:

§1.446 Refund of international application filing and processing fees.

* * * * *

(b) Refund of a portion of the search fee ▶ toward payment of the national fee◀ may be made ▶ one time ◀ to the extent set forth in §1.445(a)(4) if requested at the time of paying the national fee ▶ provided that a $500 search fee has been paid◀.

* * * * *

32. Section 1.451 is proposed to be amended by revising paragraphs (b) and (c) to read as follows:

§1.451 The priority claim and priority document in an international application.

* * * * *

(b) Whenever the priority of an earlier United States national application is claimed in an international application, the applicant may request in a letter of transmittal accompanying the international application upon filing with the United States Receiving Office ▶ or in a separate letter filed in the Receiving Office not later than 16 months after the

priority date ◀, that the Patent and Trademark Office prepare a certified copy of the national application for transmittal to the International Bureau (PCT Art. 8 and PCT Rule 17). The fee for preparing a certified copy is stated in §1.19(a) ▶(3)◀ [(4)] and (b)(1).

(c) If a certified copy of the priority document is not submitted together with the international application on filing, or, if the priority application was filed in the United States and a request and appropriate payment for preparation of such a certified copy do not accompany the international application on filing ▶or are not filed within 16 months of the priority date◀, the certified copy of the priority document must be [transmitted directly] ▶furnished◀ by the applicant to the International Bureau ▶ or to the United States Receiving Office◀within the time limit specified in PCT Rule 17.1(a).

33. Section 1.461 is proposed to be amended by deleting paragraph (b) and by revising paragraph (a) to read as follows:

§1.461 Procedures for transmittal of record copy to the International Bureau.

(a) Transmittal of the record copy of the international application to the International Bureau shall be made[, at the option of the applicant, either] by the United States Receiving Office [or by the applicant]. [Subject to paragraph (b) of this section, any applicant who chooses to make such transmittal personally shall notify the United States Receiving Office to that effect in writing, by way of a notice filed together with the international application. Such notice shall also state whether the applicant wishes to collect the record copy at the United States Receiving Office or to have the record copy mailed directly to him. The record copy of an international application which was filed without being accompanied by such notice will be transmitted to the International Bureau by the United States Receiving Office (PCT Rule 22).]

(b) [An applicant may transmit the record copy to the International Bureau as provided in PCT Rule 22.2 only if the international application is filed with the United States Receiving Office before the expiration of 11 months from the priority date.]▶(reserved)◀

* * * * *

DEC 18 1984
Date

Gerald J. Mossinghoff
Commissioner of Patents and Trademarks

PATENT NOTICES

Certificates of Correction for the Week of Jan. 22, 1985

Re. 31,361	4,419,681	4,447,426	4,459,480
Re. 31,619	4,421,402	4,447,823	4,459,538
D. 275,099	4,421,880	4,448,356	4,459,788
4,024,575	4,422,035	4,448,689	4,461,074
4,131,903	4,430,247	4,448,839	4,461,873
4,169,543	4,430,344	4,450,484	4,462,088
4,217,374	4,430,395	4,451,906	4,462,240
4,226,898	4,430,889	4,453,119	4,462,932
4,235,023	4,431,581	4,453,216	4,463,871
4,374,953	4,431,937	4,453,951	4,464,085
4,375,770	4,436,742	4,454,038	4,465,573
4,384,899	4,439,311	4,454,488	4,465,961
4,384,989	4,439,337	4,456,373	4,467,566
4,396,997	4,439,505	4,457,106	4,469,366
4,404,460	4,440,362	4,457,557	4,469,426
4,405,380	4,440,503	4,457,935	4,469,748
4,405,911	4,443,297	4,458,061	4,469,867
4,407,290	4,444,147	4,458,404	4,471,122
4,414,431	4,446,170	4,458,706	
4,418,165	4,446,577	4,459,279	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 579-5001
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis-Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: University of Massachusetts Library	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 22, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	8-20-81
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	9-29-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	8-11-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	4-21-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—B. R. GRAY, Director	3-28-83
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	10-06-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-08-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. PORLENZA, Director	2-18-83
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	2-23-82
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	9-12-80
DESIGN, GROUP 290—K. L. CAGE, Director	9-17-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—(Vacant)	4-17-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	12-13-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	11-1-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	9-02-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	12-04-81

Expiration of patents: The patents within the range of numbers indicated below expire during December 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,355,744 to 3,360,799, inclusive
Plant Patents ..... Numbers 2,781 to 2,783 inclusive

REISSUES

JANUARY 22, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,807

TRUSS-WEB CONNECTOR

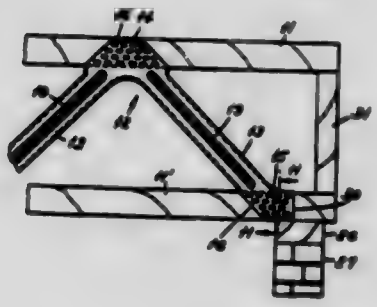
James Knowles, 1275 Club Dr., Bloomfield Hills, Mich. 48013

Original No. 4,078,352, dated Mar. 14, 1978, Ser. No. 727,906, Sep. 30, 1976. Continuation-in-part of Ser. No. 576,031, May 9, 1975, Pat. No. 4,002,116. Application for reissue Mar. 13, 1980, Ser. No. 130,032

Int. Cl.³ E04C *3/02*

U.S. Cl. 52—693

22 Claims



1. In a sheet metal truss web-connector for interconnecting a pair of parallel, horizontally arranged, wooden elongated chord members of roughly rectangular cross-section, i.e., having coplanar opposite side faces and upper and lower faces, for thereby forming a truss-like joist, the improvement comprising:

said connector web being formed of substantially flat, rigid, sheet metal formed in a V-shape to provide a flat apex portion and two elongated diverging legs with enlarged end portions, all in substantially the same plane;

each leg of said connector web including a central integral, bent, narrow rib formed along the center of thereof and extending substantially the full length thereof, each rib being approximately V-shaped in cross-section with its apex displaced from said plane in a first direction and being substantially aligned with the central axis of its respective leg;

each enlarged end extending outwardly at its outer edge in a direction transverse of the central axis of its corresponding leg;

a plurality of pointed fastening teeth struck out and extending normal to each of said apex and end portions for embedding into coplanar sides of said chord members so that the connector web may be applied against and is located only along a side of chord members, i.e., in a generally vertical plane, and being otherwise free of securement to the inner and outer faces of the chord member;

the opposite edges of each of said legs being formed with roughly parallel, integral, continuous, narrow edge flanges extending substantially the full lengths thereof and extending in a direction opposite to said first direction, and

the inner edge flange of each leg extending in a substantially straight line to form the interior edge of its respective enlarged end.

Re. 31,808

NOVELTY YARN PRODUCTION

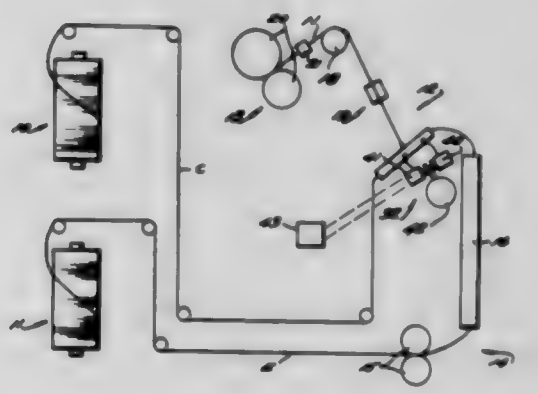
Joe F. London, Jr., Greensboro, and Charles D. Pugh, Raleigh, both of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Original No. 4,311,000, dated Jan. 19, 1982, Ser. No. 71,027, Aug. 29, 1979. Application for reissue Feb. 4, 1983, Ser. No. 464,045

Int. Cl.³ D02G *1/16, 3/36*

U.S. Cl. 57—6

12 Claims



1. A jet for producing novelty yarn comprising

a body member;

a first yarn port in said body member for the introduction of a core yarn;

a second yarn port in said body member for the introduction of an effect yarn, said second yarn port being substantially in-line with said first yarn port, a common passageway being provided;

a third yarn port in said body member for the passage of a combined yarn comprising the combined effect and core yarns, said third yarn [being substantially transverse to] *port intersecting* said common passageway, all of said yarn ports being in operative communication in said common passageway within said body member;

a first fluid introduction port formed in said body member and in operative communication with said second yarn port;

a second fluid introduction port formed in said body member and in operative communication with at least one of said yarn ports; and

valve means for controlling the supply of fluid to said first and second fluid introduction ports to cause fluid to be introduced thereinto to produce a novelty yarn by acting upon at least said effect yarn.

Re. 31,809

EXTERNAL AXIAL FIXATION UNIT

Giuseppina Danieletto; Giovanni De Bastiani, both of Verona; Giovanni Faccioli, Monzambano; Lodovico R. Brivio, Castenedolo; Roberto Aldegheri, San Giovanni Lupatoto, and Andrea Cavazzana, Verona, all of Italy, assignors to Orthofix S.r.l., Verona, Italy

Original No. 4,312,336, dated Jan. 26, 1982, Ser. No. 93,897, Nov. 13, 1979. Application for reissue Apr. 6, 1983, Ser. No. 482,586

Claims priority, application Italy, Nov. 10, 1978, 84949 A/78; Apr. 5, 1979, 84930 A/79

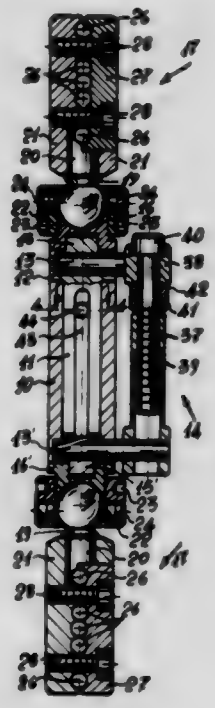
Int. Cl.³ A61F *5/04*

U.S. Cl. 128—92 A

22 Claims

1. [Apparatus for the external setting or securing of the parts of a fractured bone, said apparatus comprising] *Orthopedic apparatus, comprising* an elongate central body member

which is comprised of two *telescopically related* parts adapted to be mutually displaceable parallel to the longitudinal axis of said member and rotatably fixed at all times with respect to each other, [whereby] each part of said central body member [supports] *supporting* a clamping device for pins adapted to be inserted into a part of the bone, further including a pressing and tensioning device in engagement with both said two parts of said central body member, [wherein said two parts of said central body member are telescopically inserted one within the other, wherein] each of said clamping devices [is] *being* mounted on a respective one of said parts of said central body



member through a respective ball joint having a center of rotation which substantially lies on the longitudinal axis of said central body member, and securing devices for fixing the mutual rotative position of said parts of said central body member when said two parts of said central body member are being mutually longitudinally displaced and for fixing both the mutual rotative and longitudinal positions of said parts of said central body member after said mutual longitudinal displacement, [wherein] said pressing and tensioning device [is] *being* removably connected to the parts of the central body member, and wherein said pins, at least in the section insertable in the bone, [have] *having* an external thread.

Re. 31,810

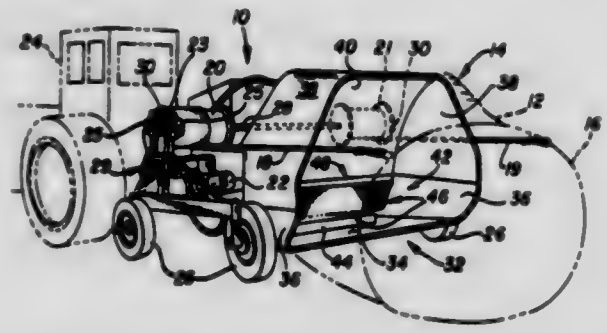
AGRICULTURAL BAG LOADING APPARATUS BRAKING MECHANISM

Richard H. Lee, Astoria, Oreg., assignor to Ag-Bag Corporation, Astoria, Oreg.

Original No. 4,308,901, dated Jan. 5, 1982, Ser. No. 115,440, Jan. 25, 1980. Application for reissue Dec. 13, 1982, Ser. No. 449,151

Int. Cl.³ B65B *1/04*

U.S. Cl. 141—114 **18 Claims**



16. An improved brake mechanism for deploying an attachment means between the filled end of an agricultural bag and an agricultural bag loading apparatus in response to the loading of material into said agricultural bag, said improvement comprising:

drum means rotatably mounted on said loading apparatus, said drum means deploying the attachment means upon rotation of said drum means in one direction, wherein said attachment means includes a cable wrapped around said drum means in a single layer to prevent excessive wear of said cable;

a first brake portion forming one end of said drum means;

a second brake portion attached to said loading apparatus; and

actuation means causing said second brake portion to resist motion between said second brake portion and said first brake portion.

Re. 31,811

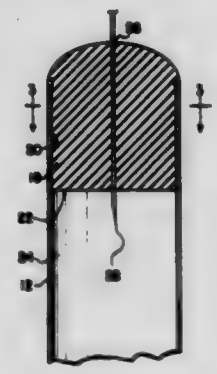
BASEBALL BAT WITH MODIFIED INTERNAL AIR PRESSURE

Ronald Foreman, 315 Hidden River Rd., Narberth, Pa. 19072

Original No. 4,241,919, dated Dec. 30, 1980, Ser. No. 973,039, Dec. 26, 1978. Application for reissue Aug. 10, 1981, Ser. No. 291,563

Int. Cl.³ A63B *59/06*

U.S. Cl. 273—72 A **12 Claims**



6. In a metallic bat construction of the type comprising sidewalls and closed first and second ends defining an interior space and capable of maintaining a quantity of confined gas therewithin, the improvement comprising

gas passage means in the bat construction in fluid communication with the interior space to pass gas therethrough,

the confined gas being characterized by a pressure that is other than atmospheric, and

the said pressure being appropriate to produce a natural frequency of free vibration of such frequency and amplitude in the bat that when coupled with the excitation frequency caused by the impact of the bat striking a ball, resonance results.

Re. 31,812

CATALYTIC HYDROFORMYLATION OF OLEFINS

Emile Kuntz, Lyons, France, assignor to Rhone-Poulenc Industries, Paris, France

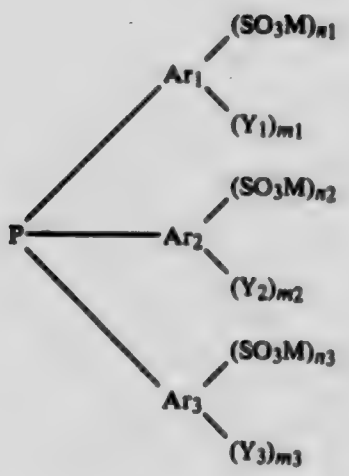
Original No. 4,248,802, dated Feb. 3, 1981, Ser. No. 696,909, Jun. 17, 1976. Application for reissue Jun. 29, 1982, Ser. No. 393,439

Claims priority, application France, Jun. 20, 1975, 75 19407; Apr. 29, 1976, 76 12672

Int. Cl.³ C07C *45/50*

U.S. Cl. 568—454 **37 Claims**

1. In a process for the hydroformylation of [linear or branched chain ethylenically unsaturated aliphatic olefins having from 2 to 20 carbon atoms to their corresponding aldehydes] *an olefin to its corresponding aldehyde*, in liquid phase, comprising reacting an olefin with carbon monoxide and hydrogen, the improvement which comprises conducting the hydroformylation reaction in the presence of an aqueous solution of at least one water-soluble phosphine having the following structural formula:



(I)

in which:

Ar_1, Ar_2 and Ar_3, which may be identical or different, represent carbocyclic aryl groups having from 6 to 10 carbon atoms,

Y_1, Y_2 and Y_3, which may be identical or different, each represents a radical selected from the group consisting of linear or branched chain alkyl radicals having from 1 to 4 carbon atoms, alkoxy radicals having from 1 to 4 carbon atoms, halogen atoms, the —OH radical, the —C≡N radical, the $—NO_2$ radical, and the radical of the formula $—NR_1R_2$, in which R_1 and R_2, which may be identical or different, represent a linear or branched chain alkyl radical having from 1 to 4 carbon atoms,

M is an inorganic or organic cationic radical selected from the group consisting of the cations derived from the alkali metals, the alkaline earth metals, lead, zinc and copper, NH_4^+, and $N(R_3R_4R_5R_6)^+$ wherein R_3, R_4, R_5 and R_6, which may be identical or different, each represents a linear or branched chain alkyl radical having from 1 to 4 carbon atoms,

m_1, m_2 and m_3 are identical or different integers between 0 and 5 and

n_1, n_2 and n_3 are identical or different integers between 0 and 3, at least one of the numbers n_1, n_2 or n_3 being greater than or equal to 1,

said aqueous solution of the sulfonated aryl phosphate additionally comprising a member selected from the group consisting of metallic rhodium and a rhodium containing compound.

Re. 31,813

PRINT WIRE SOLENOID

Philip E. Fugate, Dayton, and Kenneth L. Roy, Centerville, both of Ohio, assignors to Ledex, Inc., Vandalia, Ohio

Original No. 4,272,748, dated Jun. 9, 1981, Ser. No. 116,718, Jan. 30, 1980. Continuation-in-part of Ser. No. 908,153, May 22, 1978, Pat. No. 4,200,401. Application for reissue Jun. 8, 1983, Ser. No. 502,377

Int. Cl.³ H01F 7/08

U.S. Cl. 335—271 **3 Claims**

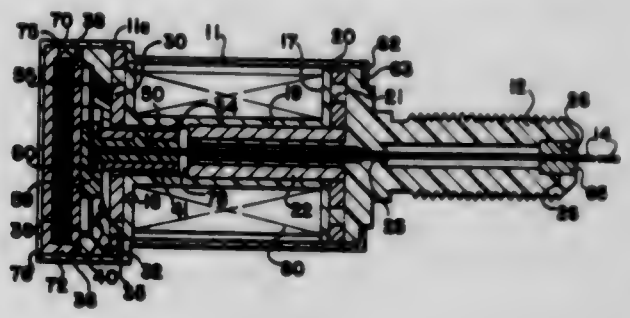
1. In a high speed axial type solenoid suitable for use as a printing solenoid and the like, having an axially movable armature therein, the improvement comprising:

means in said solenoid defining a datum plane,

solenoid armature impact plate [means] *formed of relatively incompressible material* positioned at said plane and defining a rest position for the armature,

a *fixed* solenoid wall,

means defining a *single* quantity of energy absorbing elastomeric material positioned between said wall and said plate [means], *with one surface thereof in contact with said wall and an opposite surface in contact with said plate*, and



means at said datum plane engaging said plate [means] and normally retraining said material in precompression.

Re. 31,814

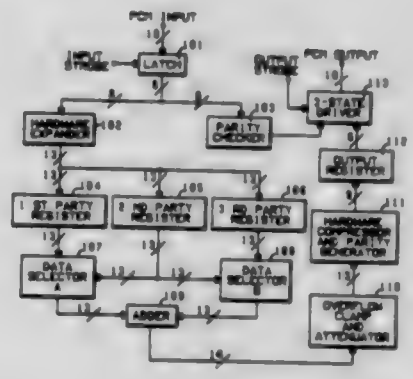
THREE-PARTY CONFERENCE CIRCUIT FOR DIGITAL TIME-DIVISION-MULTIPLEX COMMUNICATION SYSTEMS

Barry D. Lubin, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Original No. 4,301,531, dated Nov. 17, 1981, Ser. No. 54,391, Jul. 2, 1979. Application for reissue Jun. 28, 1982, Ser. No. 392,976

Int. Cl.³ H04M 3/56

U.S. Cl. 370—62 **24 Claims**



1. A conference circuit for combining digitized speech signals received from groups of three parties in corresponding *consecutive* channels of an incoming time-division-multiplex (TDM) highway, having a predetermined number of channels, to provide combined speech signals for transmission to the parties in corresponding *consecutive* channels of an outgoing TDM highway, having a predetermined number of channels, said conference circuit comprising:

first, second and third register means [repetitively] *sequentially* coupled one after another to the incoming TDM highway for storing [the] *different* speech signals from [every third channel] *successive groups of three channels*;

multiplexing means coupled to the first, second and third register means for *sequentially* selecting *the speech signals in* different pairs of the register means, said multiplexing means selecting the *speech signals in the* [second] *first* and [third] *second* register means [when] *after* speech signals *of the first two channels in a group of three channels* are [being] stored in the [first] *the* [first] *second* and third register means [when] *after* speech signals *of the first channel in the next group of three channels* are [being] stored in the [second] *first* register means;

means for combining the speech signals from each selected pair of register means; and

means for applying the combined speech signals to *consecutive channels of* the outgoing TDM highway.

PLANT PATENTS

GRANTED JANUARY 22, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,392

MINIATURE ROSE PLANT

Leslie E. Strawn, 10422 Morningside Ave., Garden Grove, Calif. 92643

Filed Mar. 9, 1983, Ser. No. 473,581
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of miniature rose plant, hardy, dwarf, bushy, upright, much branched habit, substantially as illustrated and described, characterized by buds and flowers which are in a color hue similar to Thanksgiving (Hybrid Tea—Rose—U.S. Plant Pat. No. 2,524 — expired) and giving a coloring effect of Mars orange flowers with buds being of Mars orange tinted brown and resembling Sheri Anne (Miniature Rose—U.S. Plant Pat. No. 3,826) in form and size, having buds and flowers of a distinct and unusual appearance as compared to other miniature rose plants; said flowers being fully double, having unique cupped form; and further characterized by its vigor, abundant foliage and ease of propagation from softwood cuttings and by budding, and with an abundance of flowers.

5,393

BOUGAINVILLEA PLANT

Jake W. Rice, and Patricia A. Rice, both of Box 133, Sutherland Springs, Tex. 78161

Filed Jan. 7, 1983, Ser. No. 456,440
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—54 1 Claim

1. A new and distinct variety of Bougainvillea plant, substantially as herein shown and described, characterized particularly as to novelty by its variegated leaves having green centers and cream colored outside edges, lavender throated cream-colored blooms, denseness of leaves, fineness of stems, compact growth, and cascading branches.

5,394

CARNATION NAMED ODEON

J. F. Sarneel, Nieuwveen, Netherlands, assignor to M. Lek en Zonen, B.V., Nieuwveen, Netherlands

Filed Jun. 29, 1983, Ser. No. 508,864
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—70 1 Claim

1. A new and distinct carnation cultivar, substantially as herein shown and described, charcterized by its year round production of generally orange colored, medium sized blossoms, and by its continuous profuse production of blooms substantially the year round.

5,395

CARNATION NAMED CAPPELLO

J. F. Sarneel, Nieuwveen, Netherlands, assignor to M. Lek en Zonen, B.V., Nieuwveen, Netherlands

Filed Jun. 29, 1983, Ser. No. 508,865
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—72 1 Claim

1. The new and distinct carnation cultivar, substantially as herein shown and described, characterized by its profuse year round production of medium sized, bright pink blossoms.

PATENTS

GRANTED JAN. 22, 1985

ERRATA

For CLASS	See PATENT NO.
038–102	4,494,344
137–414	4,494,345
383–005	4,494,592
272–134	4,494,662
139–435	4,494,888
534–651	4,495,098
534–651	4,495,099
534–651	4,495,100
427–384	4,495,156
524–507	4,495,159
514–017	4,495,178
514–009	4,495,179
514–046	4,495,180
514–167	4,495,181
514–226	4,495,182
514–220	4,495,183
514–238	4,495,184
514–242	4,495,185
514–255	4,495,186
514–250	4,495,187
514–260	4,495,188
514–258	4,495,189
514–262	4,495,190
514–383	4,495,191
514–318	4,495,192
514–385	4,495,193
514–323	4,495,194
514–406	4,495,195
514–427	4,495,196
514–210	4,495,197
514–456	4,495,198
514–467	4,495,199
514–560	4,495,201
514–721	4,495,202
514–732	4,495,203
429–105	4,495,266
252–088	4,495,336
364–424	4,495,457
382–001	4,495,642

PATENTS

GRANTED JANUARY 22, 1985

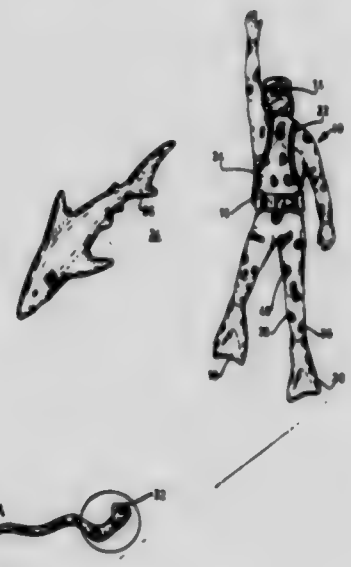
GENERAL AND MECHANICAL

4,494,245

TECHNIQUES FOR REPELLING PREDATORY ANIMALS BY THE USE OF APOSEMATIC PATTERNS AND COLORATION

Noel M. Burkhead, Rte. 3, Box 272, Salem, Va. 24153, and Paul J. Weldon, 4513 Hillview Rd., Knoxville, Tenn. 37916

Filed Sep. 20, 1982, Ser. No. 419,979
Int. Cl.[3] A41D *13/00*; A42B *3/00*; A01M *00/00*
U.S. Cl. 2—2 11 Claims



1. A method of passively repelling a predatory organism from a target organism by the use of aposematic patterns and coloration comprising the steps of:

determining a coloration pattern having at least two distinct colors and which elicits an avoidance response in a selected species of predatory organisms; and

applying the determined coloration pattern to selected items adjacent the target organism.

9. Water apparel for passively repelling predatory sharks from a person comprising a garment having applied thereto aposematic patterns and coloration patterns having at least two distinct colors and which elicit an avoidance response in sharks.

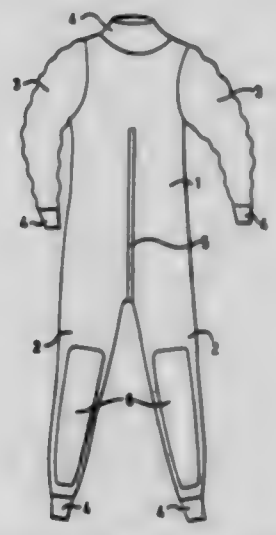
4,494,246

PROTECTIVE CLOTHING

Anthony A. C. Tillbrook, Hillair, Coopersale La., Theydon Garnon, Epping, Essex, England

Filed May 24, 1982, Ser. No. 381,558
Claims priority, application United Kingdom, May 27, 1981, 8116186; Sep. 9, 1981, 8127200; Dec. 7, 1981, 8136787
Int. Cl.[3] A62B *17/00*; B63C *11/04*
U.S. Cl. 2—2.1 R 6 Claims

1. In a dry suit for use in aquatic sports, the suit being of the type comprising a one piece garment to cover the legs, arms and body of a user and having leg portions, a body portion, and arm portions, said suit being sealed against entry of water, the leg portions and at least the lower part of the body portion being made of a flexible, expanded rubber or rubber-like material arranged to fit closely to the user's legs and body; wherein the improvement comprises the arm portions being made of a



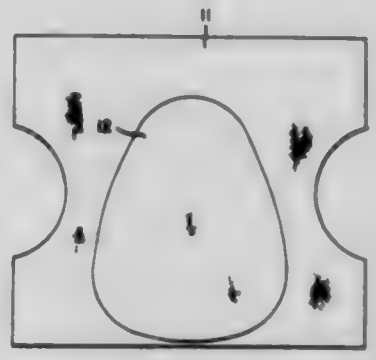
thin and flexible waterproof fabric different from the said flexible expanded material and adapted to be loose fitting.

4,494,247

KNEE/ELBOW GUARD TREATED TO INCREASE DURABILITY AND A PROCESS FOR PRODUCING SAME

Michael J. Kelly, Seattle, Wash., assignor to Trace Athletic Corporation, Bellevue, Wash.

Filed Dec. 28, 1981, Ser. No. 334,872
Int. Cl.[3] A41D *13/06*
U.S. Cl. 2—24 6 Claims



1. A protective article with enhanced durability for use on a human limb, comprising:

a protective guard element which includes an outer fabric section, wherein a selected portion of the fabric section is treated with a protective material in such a manner that a thin film of said protective material is fixed to the selected portion of the fabric section, the protective material having a coefficient of friction which is substantially lower than that of conventional fabrics used for the fabric section, such as nylon.

4,494,248

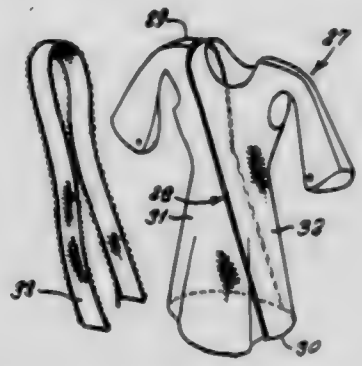
FABU PATIENT GOWN

Percy E. A. Holder, 188 Veronica Pl., Brooklyn, N.Y. 11226

Filed Jul. 22, 1982, Ser. No. 379,183
Int. Cl.[3] A41B *1/12*
U.S. Cl. 2—69 3 Claims

1. A divided garment, comprising in combination a plurality of panels detachably attached together by fastener means along mating edges of said panels and an insert panel selectively inserted at said fastener means for enlarging said garment,

wherein one of said plurality of panels comprises a single diagonal panel, which divides said garment diagonal from one



shoulder to the hem line on the opposite side of said shoulder as needed.

4,494,249

GLOVE

Erik Hansson, Box 137, Sandviken, Sweden S-811 23

PCT No. PCT/SE82/00441, § 371 Date Aug. 3, 1983, § 102(e) Date Aug. 3, 1983, PCT Pub. No. WO83/02217, PCT Pub. Date Jul. 7, 1983

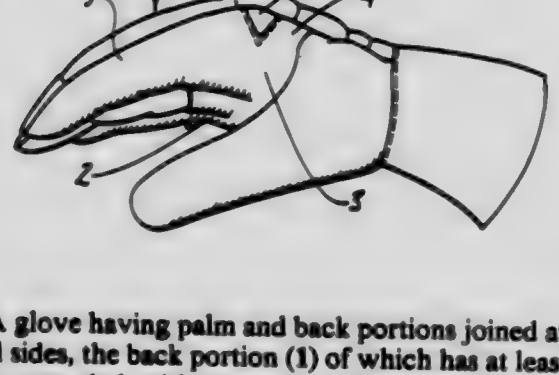
PCT Filed Dec. 29, 1982, Ser. No. 519,919

Claims priority, application Sweden, Dec. 30, 1981, 8107841

Int. Cl.³ A41D *19/00*

U.S. Cl. 2—161 R

10 Claims



1. A glove having palm and back portions joined at opposite lateral sides, the back portion (1) of which has at least one part that is extended with respect to corresponding parts of the palm portion (2) of the glove to adapt the glove to the form of a hand in its rest position with curved fingers, material portions (4, 5; 25, 26; 32, 33, 45) associated with at least one material piece (3; 19, 20; 30, 31, 40) forming the palm portion of the glove projecting upwardly along at least one side of the glove in an area, in which joints of the hand are intended to be located, characterized in that the upwardly projecting material portions (4, 5; 25, 26; 32, 33, 45) in the vicinity of said joint area is incised and assembled with respect to the rest of the glove so as to form at said incision (13, 15, 16; 21; 46) a local curvature in the palm portion in the stress-free condition of the glove.

4,494,250

MODIFIED ANGLE, BIAS CROTCH, FRONT POCKET PANTS

Mark T. Sheppard, and Lynda J. Timbers, both of 105 E St., Roseville, Calif. 95678

Filed Jun. 6, 1983, Ser. No. 501,604

Int. Cl.³ A41D *1/06*

U.S. Cl. 2—227

13 Claims

1. In a garment formed from a plurality of flexible interconnected planar panels comprising:

a first panel being generally rectangular having a cut out section on the upper right corner thereof;

a second panel being a mirror image of said first panel, said first and second panels when interconnected forming the rear of said garment;

a third flexible panel comprising a first generally rectangular portion having a cut out section at the upper corner thereof, an elongated tapered section extending downwardly from the right side of said first rectangular portion integral therewith, the outer edge of said tapered section extending downwardly inwardly toward the central longtitudinal axis of said third panel, a second generally rectangular portion extending downwardly from the left side of said first rectangular portion integral therewith, the lower edge of said second rectangular portion terminating at a point above the lower edge of said tapered section, said second rectangular portion being spaced from said tapered section and separated therefrom;

a fourth panel in a mirror image of said third panel;

a fifth panel being generally rectangular having a cut out section at the upper right corner thereof, said third and fifth panels when interconnected forming the front left portion of said garment; and

a sixth panel being a mirror image of said fifth panel, said fourth and sixth panels when interconnected forming the front right portion of said garment, with said front left portion and said front right portion, when interconnected, forming the front of said garment.

13. A method for forming a garment from flexible material including the steps of:

cutting a first rectangular panel from said material and cutting a section out of the upper right corner thereof;

cutting a mirror image of said first panel from said material;

cutting a third rectangular panel from said material;



cutting a section out of the upper left corner of said third panel;

cutting a tapered elongated section on the bottom right portion of said third panel and a rectangular portion on the lower left spaced from the tapered section;

cutting a fourth panel that is a mirror image of said third panel from said material;

cutting a fifth rectangular panel from said material and cutting a section out of the upper right corner thereof;

cutting a sixth panel from said material that is a mirror image of said fifth panel;

sewing together the upper top edges of said third and fifth panels with said third panel overlying said fifth panel and exposing the upper left corner of said fifth panel;

sewing the left vertical edges together of the third and fifth panels;

sewing the bottom horizontal edge of said third panel to the left bottom horizontal edge of the fifth panel;

sewing the right vertical edge of the third panel to a point along generally the vertical longitudinal axis of said fifth panel;

sewing the left vertical edge of the tapered section of the third panel to the outer edge of the cut out section of the fifth panel;

sewing the fourth and sixth panels in like manner as said aforementioned third and fifth panels thereby forming the front portion of the garment;

sewing the right vertical edge of the first panel to the left vertical edge of the second panel; and

sewing the first panel to one of the outer vertical edges of the front portion of the garment and the second panel to the other outer vertical edge of the front portion.

4,494,251

EYE PROTECTOR

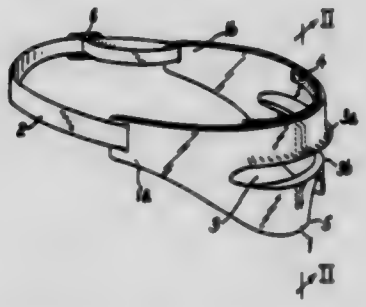
Leslie Ainsworth, Flat 2, 2, King's Gardens, Hove, Sussex BN3 2PE, and Harold Ainsworth, Radbrook Hall Hotel, Radbrook Rd., Shrewsbury, Shropshire, SY3 9BR, both of England

Filed Apr. 30, 1982, Ser. No. 374,595

Claims priority, application United Kingdom, Apr. 30, 1981, 8113353; Oct. 8, 1981, 8130444

Int. Cl.³ A61F *9/02*

U.S. Cl. 2—425 4 Claims



1. A squash player's eye protector comprising a slitted screen of transparent plastics material and means to support the screen across the face of a squash player to overlie the eye region of a player's face, said screen being formed with a first rigid thickened region on the outwardly facing surface of the screen defining the upper extremity of the salt and a second rigid thickened region on the outwardly facing surface of the screen defining the lower extremity of the slit, said first and second thickened regions being spaced apart at widest part of said slit by a distance which is at least 20 mm but which is less than the diameter of a squash ball, and the first thickened region defining the upper extremity of the slit projects forwardly further than the second thickened region.

4,494,252

LARYNGEAL PROSTHESIS

Samir M. Chaoui, Placentia, Calif., assignor to Bear Medical Systems, Inc., Riverside, Calif.

Filed Aug. 22, 1983, Ser. No. 525,306

Int. Cl.³ A61F *1/20*

U.S. Cl. 3—1.3 27 Claims

1. A laryngeal prosthesis for a tracheostomized patient having a surgically-formed pseudoglottis between the trachea and the hypopharynx, said prosthesis comprising:

a housing;

a fitting adapted for sealingly attaching said housing to the exterior of the tracheostoma formed in said patient's neck;

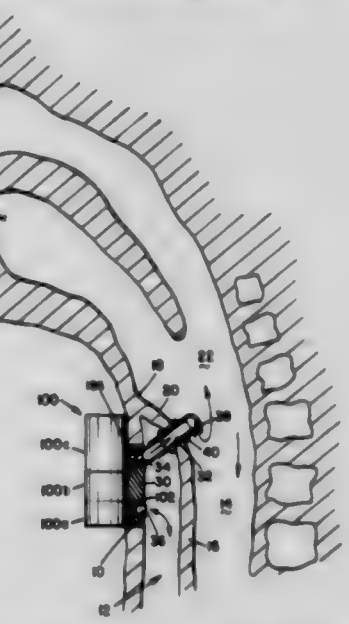
first passage means adapted for communicating between said housing and the trachea through said fitting;

inhalation valving means in said housing for permitting the flow of air from outside said housing in said housing and through said first passage means;

second passage means adapted for communicating between said housing and the hypopharynx of said patient;

exhalation valving means in said housing for permitting the flow of exhaled air received from said first passage means toward said second passage means;

first pressure-responsive means in said housing downstream from said exhalation valving means and upstream from said second passage means for (a) generating an audible tone in response to air pressures only within a predetermined pressure range, and (b) permitting the passage of exhaled air from said exhalation valving means to said second passage means only in response to air pressures below a preselected pressure, said preselected pressure being at least approximately equal to the upper limit of said predetermined pressure range; and



second pressure responsive means for allowing the passage of air from said exhalation valving means to said second passage means only in response to air pressures above said preselected pressure.

4,494,253

CARDIOVASCULAR VALVE PROSTHESIS

Demetrio Bicer, Warnes St. No. 2682, Buenos Aires, Argentina

Continuation-in-part of Ser. No. 312,906, Oct. 19, 1981, abandoned

This application Jan. 3, 1984, Ser. No. 567,806

Claims priority, application Argentina, Oct. 28, 1980, 283040

Int. Cl.³ A61F *1/22*

U.S. Cl. 3—1.5 8 Claims



1. A cardiovascular valvular prosthesis comprising in combination

an annular support having an outer circumferential groove carrying a textile ring

the interior circumference of said annular support having an intermediate support arm and a pair of fingers integrally formed with said annular support and extending into the inner space thereof

said support arm lying on a radius of said annular support and terminating short of the center thereof in a rounded contact surface

said fingers lying on a chord of said annular support between a diameter of the support and the terminus of said support arm, said chord being normal to said radius and in a plane parallel to the plane of said annular support and spaced from a similar parallel plane through said support arm, the ends of said fingers being curved toward the terminus of said support arm and forming rounded contact surfaces

an occluding disc mounted for free axial rotation and partial angular displacement within said annular support solely by

point contact with the contact surface of said support arm on one side and the contact surfaces of said fingers on the other side, the area of said contacts when the valve is closed being substantially the same as the area of said contacts when the valve is open

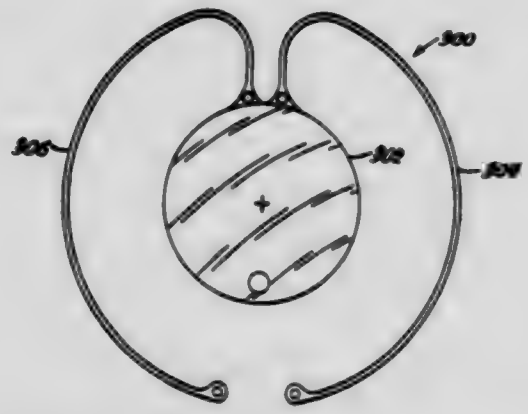
the distance between the contact surface of said fingers and the contact surface of said support arm being such as to permit the disc to be disposed, when in open position, at a maximum angle of between 85° and 90° with respect to its closed position, thereby providing passages through said support and around the disc which facilitate free fluid flow with minimum turbulence.

4,494,254

INTRAOCULAR LENS

Osvaldo Lopez, 2765 Greenwood Rd., Northbrook, Ill. 60062

Filed May 3, 1982, Ser. No. 373,860
Int. Cl.³ A61F 1/16, 1/24
U.S. Cl. 3—13 7 Claims



3. An intraocular lens, comprising:

a transparent lens element selected from the group consisting essentially of polymethylmethacrylate, hydrophilic acrylate, polyhydroxethylmethacrylate, silicone rubber and glass, said lens element having a periphery and defining a center and at least one instrument-receivable aperture; and

comet-shaped loop means extending generally about said periphery of said lens element and defining a generally circular arc of contact about said lens element for contacting the posterior chamber of an eye after extracapsular cataract extraction, said comet-shaped loop means comprising symmetrical stabilizers including a clockwise flexible convex stabilizing element and a counterclockwise flexible convex stabilizing arm, said stabilizing element and arm each being of optical medical grade plastic and extending arcuately in different directions from said periphery of said lens element for slightly less than 180 degrees to substantially fixedly stabilize said lens in a selected optical position, said stabilizing element and said arm each having an inner attached end fixedly connected to and engaging said lens element and an outer unattached free end positioned generally symmetrically opposite said inner attached end, and said attached ends being spaced from and cooperating with each other to define an access space therebetween.

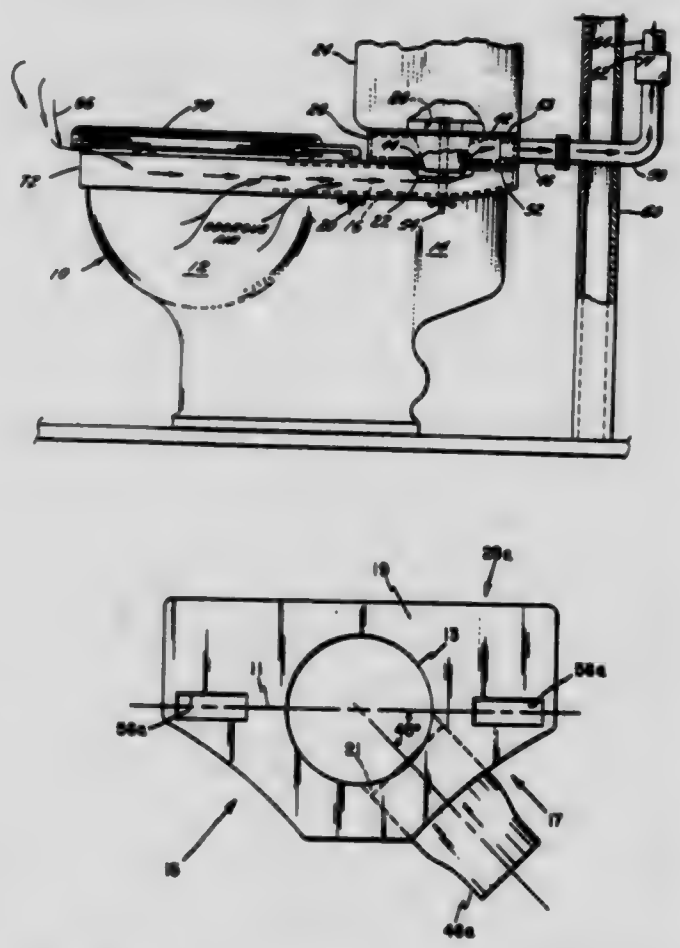
4,494,255

VENTILATED TOILET DEVICE

Charles E. Drummond, 861 Chamberlain Ct., New Haven, Ind. 46774

Continuation-in-part of Ser. No. 373,869, May 3, 1982, abandoned. This application Nov. 29, 1983, Ser. No. 555,936
Int. Cl.³ E03D 9/04
U.S. Cl. 4—213 5 Claims

1. In a flush type toilet having a toilet stool with front and rear portions and a flush water supply tank superposed over the rear portion, said front portion being a bowl and the rear portion including a water passage for conveying flush water from the supply tank to the bowl, the improvement comprising a generally flat aperture unitary spacer interposed between he rear portion and supply tank with the spacer aperture forming a path for flush water from the tank to the rear portion water passage, said spacer having opposite, spaced and parallel mounting surfaces engageable with said supply tank and said rear portions, a horizontally extending air vent opening in said spacer between said surfaces communicating with the spacer aperature, an air vent passage in said spacer between and parallel to said surfaces extending from the opening so that the air vent is positioned beneath the supply tank to allow the supply



tank to be positioned immediately adjacent a wall of the bathroom without interference between the wall and air vent, two mounting holes in said spacer on diametrically opposite sides respectively, of said aperture, said mounting holes being elongated in a direction parallel to a line drawn therebetween, said passage having an axis that extends at an acute angle with respect to said line and means for conveying air from the vent to a location remote from the toilet thereby drawing air from around and within the toilet bowl by way of the water passage and spacer aperture in a direction counter to the direction of normal flush water flow through the water passage and into the bowl.

4,494,256

MOTORIZED POOL COVER

Carl T. Radtke; Ewald A. Kaiser, both of Chicago; Siegfried M. Biedermann, Cary, and Rick J. Chapman, Vernon Hills, all of Ill., assignors to IBG International, Prairie View, Ill.

Filed Oct. 4, 1982, Ser. No. 432,775
Int. Cl.³ E04H 3/19
U.S. Cl. 4—502 5 Claims

1. An apparatus for covering a swimming pool or the like comprising:

a cover sheet for covering the pool,

a reel for the cover sheet for winding the cover thereon to expose the pool and for unwinding the cover sheet therefrom to cover the pool,

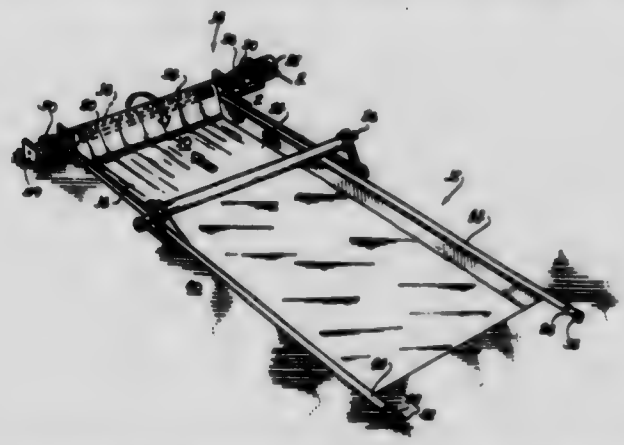
motor drive means for driving the reel means to wind the

cover sheet thereon and to uncover the pool when the reel is turned thereby in a first direction,

cables driven by said motor drive means and connected to the sheet for pulling the cover from the reel and to extend the cover sheet to cover the pool, and

cable drum means at each end of the reel driven by said motor drive means and having surfaces varying in diameter for winding of cables thereon and compensating for the reduction in diameter of the cover sheet and preventing slack from developing in the cable or the cover sheet and manually operated independent adjustment means for adjusting the tension in the cables on the respective cable drum means to take up slack in a cable at each end of the reel, a spirally, grooved surface on the conical surface for receiving the cable therein,

reel biasing means biasing the reel means in one direction, and drum biasing means biasing the cable drum means in an opposite direction, said biasing means preventing slack from occurring in the cover sheet or the cable means.

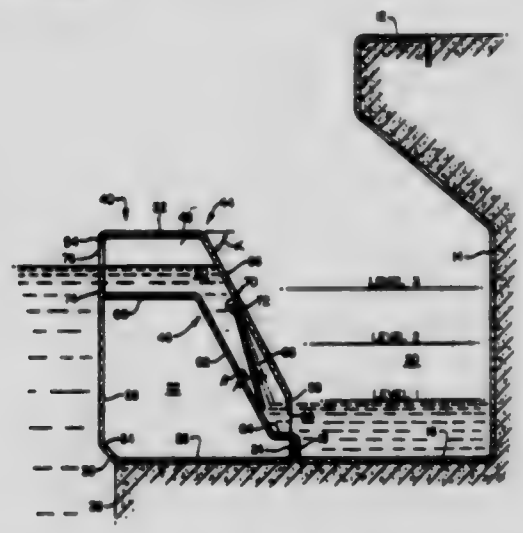


4,494,257

FLOW CONTROL DEVICE

Howard W. Petrish, 9688 Shirley Dr., Allison Park, Pa. 15101

Filed Apr. 7, 1983, Ser. No. 482,749
Int. Cl.³ E04H 3/16
U.S. Cl. 4—508 25 Claims



1. A skimming device for removing water from the surface of a swimming pool, said pool including a gutter conduit having a trough disposed at an elevation lower than the normal level of the water in the pool, said gutter having a pool-side wall with an upper edge disposed above the normal level of the water in the pool, the device comprising:

a housing in said gutter wall defining a flow passage with an inlet opening into the pool and an outlet opening into the gutter trough, said passage having a downwardly-inclined portion adjacent to said outlet; and

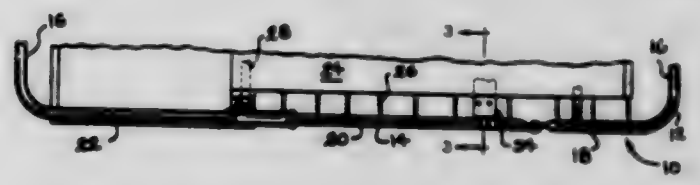
a plate pivotally disposed within said inclined portion of the passage such that under its own weight the lower edge of the plate contacts the lower surface of said passage a control the flow through said passage, said plate responsive to the level of water within the trough to reduce flow through said passage and to stop flow through said passage when the level of water in the trough exceeds a predetermined height.

4,494,258

SOFA BED MECHANISM

Theodore J. Blevins, and Paul R. Swiderski, both of Georgetown, Ky., assignors to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Sep. 7, 1982, Ser. No. 415,084
Int. Cl.³ A47C 17/04
U.S. Cl. 5—29 3 Claims



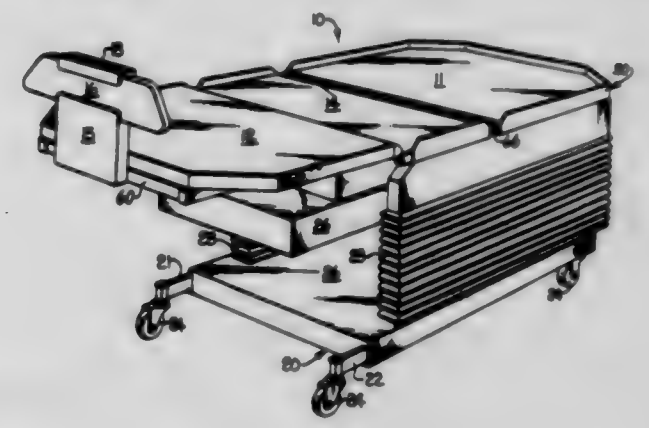
1. In a sofa bed mechanism which includes a foldable bed frame having side and end rails, a back support slat secured to and extending between said side rails at a position substantially underlying the upper back area of an occupant in a sleeping position on said bed frame, a fabric deck secured to said side rails and extending across said bed frame at a position above said support slat, said back support slat being bowed upwardly in its natural state and being movable downwardly under load so that it yieldably resists said load and exerts an outwardly directed force on said side rails tending to keep said deck substantially taut between said side rails, said back support slat being positioned directly beneath said deck and being of substantial width to thereby spread the reaction force of the slat against a bed occupant for occupant comfort purposes.

4,494,259

ADJUSTABLE BED

Robert E. Miller, Charlotte, N.C.; Joseph L. Russo; Richard Sonder, both of New York, N.Y., and Abraham H. Soni, Stillwater, Okla., assignors to Simmons Universal Corporation, New York, N.Y.

Filed Nov. 25, 1981, Ser. No. 325,048
Int. Cl.³ A61G 7/06
U.S. Cl. 5—66 4 Claims



1. In an adjustable bed having

mattress supporting portions for supporting a mattress for an occupant in a variety of positions and including a head portion at a head end of the bed, a foot portion at a foot end of the bed, and a thigh portion between the head and foot portions,

base frame means for supporting the mattress supporting portions, and

position controlling mechanism operatively interconnecting the mattress supporting portions and the base frame means,

an improvement in said position controlling mechanism which facilitates movement of the bed into a variety of positions and comprising:

upper frame means having a head end and a foot end and operatively connected with said mattress supporting portions for moving said portions relative to said base frame means and one another and comprising lifting frame means operatively connected with said lifting arm means for movement vertically relative to said base frame means, and moving frame means mounted on said lifting frame means for movement longitudinally relative thereto,

lifting arm means operatively connecting said upper frame means and said base frame means for moving said head and foot ends of said upper frame means vertically relative to said base frame means and thereby for moving said mattress supporting positions, and

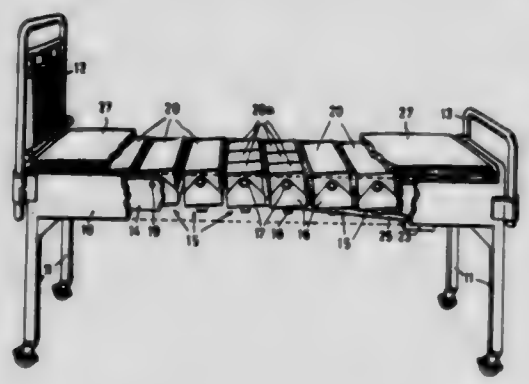
motor means operatively connected with said upper frame means and with said lifting arm means for moving said upper frame means and said lifting arm means and thereby for positioning said mattress supporting portions in a desired position, said motor means comprising a foot drop motor mounted on said moving frame means for movement therewith and operatively connected with said foot portion of said mattress supporting portions for pivoting said foot portion relative to said thigh portion.

4,494,260

BODY SUPPORT

Peter J. Olds, 81 Adelaide St., Maryborough, Queensland, 4650, and Richard S. Blakeway, 81 Spitfire Crescent, Strathpine, Queensland, 4500, both of Australia

Filed Mar. 21, 1983, Ser. No. 447,322
Claims priority, application Australia, Mar. 25, 1982, PF3304
Int. Cl.[3] A61G 7/10
U.S. Cl. 5—446
3 Claims



1. A body support of the type having a plurality of resiliently yieldable support members mounted transversely of a substantially horizontal frame, and drive means for moving the support members in unison to vary the pressure on parts of a body supported thereby, wherein;

the support members are blocks of substantially rectangular cross-section,

the support members are mounted on a series of carriers mounted on the frame for oscillation about a transverse axis, said carriers being of shallow box-like form adapted to receive removably the bottom parts of said support members, said carriers being further provided with elevated ends pivoted near to their tops to said frame for oscillation about axes through the upper parts of said support members, and wherein

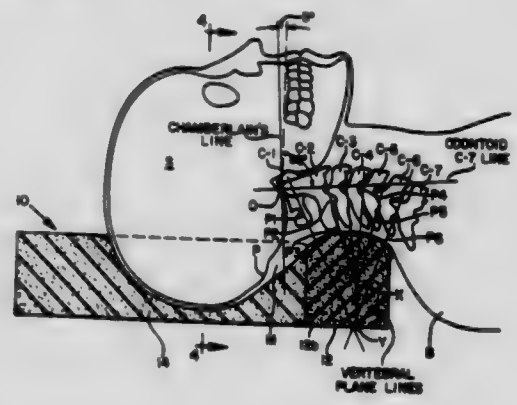
the drive means is adapted to oscillate the carriers and the support members mounted thereon in unison to tilt the upper surfaces of the support members alternately in opposite directions from substantially horizontal.

4,494,261

HEAD AND NECK CUSHION

Winston G. Morrow, Lake Oswego, Oreg., assignor to Spinal Dynamics, Inc., Lake Oswego, Oreg.

Filed Dec. 22, 1980, Ser. No. 218,719
Int. Cl.[3] A47G 9/00
U.S. Cl. 5—436
4 Claims



1. A pillow for supporting the head and neck of a person lying in a supine position, comprising:

an elongated resilient first pillow member for positioning under and transversely of the neck; and

a flat resilient second pillow member affixed along one side of the first pillow member for positioning under the head;

the first pillow member having an upper support surface convexly curved and having a firmness such that the curvature of the neck is induced to conform to the cervical lordosis of a standing person;

the second pillow member having a planar upper surface and a compressibility such that the head is supported at an elevation in which Chamberlain's line is disposed in at least a vertical position;

said one side of the first pillow member meeting the second pillow member at a right angle to said planar upper surface, so that the first pillow member supports the neck without applying pressure lengthwise of the neck to the base of the head, the head being supported by the second pillow member at an elevation determined substantially entirely by the firmness of the second pillow member, the second pillow member comprising at least two coplanar portions affixed side by side along the transverse first pillow member, each portion having a different firmness so that a user can shift the pillow laterally to select one of said portions to support the head, the first pillow member having a uniform cross-sectional shape and firmness along its length to provide a constant measure of support to the neck regardless of lateral position of the pillow under the user's neck and head.

4,494,262

WATERBED MATTRESS COVER

Carl L. Robertson, 3104 Carlton Way, Oklahoma City, Okla. 73120

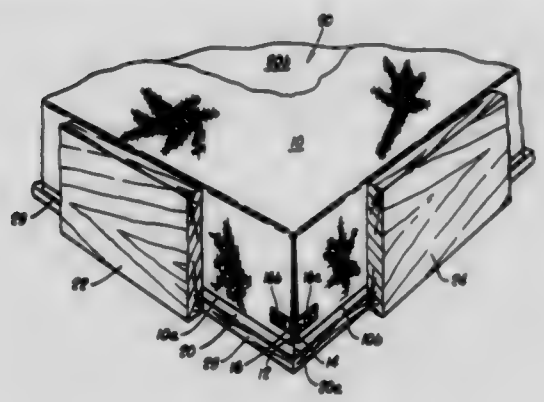
Filed Apr. 25, 1983, Ser. No. 488,026
Int. Cl.[3] A47G 9/00
U.S. Cl. 5—451
7 Claims

1. A mattress cover for a waterbed mattress comprising:

a flexible fabric panel of rectangular configuration and having four rectangularly notched corners at each corner of the panel, the notching at each corner of the panel being rectangular in shape and formed by intersecting cuts projecting inwardly from, and normal to, two intersecting sides of the rectangular fabric panel; and

an elastomeric retainer band extending across each of the notches at each corner of the panel, and each of said bands having its opposite ends connected to parts of the panel on opposite sides of the respective rectangular notch, each of said bands projecting normal to the sides of the notch and

functioning to elastomerically draw said notch sides into parallelism and adjacent to each other when said flexible fabric panel is placed on a waterbed mattress with the notches at each of corners of the mattress.

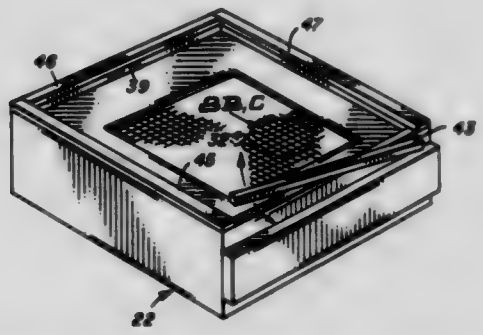


4,494,263

POLLEN TRAP FOR BEEHIVES WITH BEE FLIGHT CONTROL

Royden Brown, 4343 E. Keim Dr., Phoenix, Ariz. 85253

Filed May 5, 1983, Ser. No. 491,773
Int. Cl.³ A01K *47/06*
U.S. Cl. 6—4 R
3 Claims



1. A pollen trap for collecting pollen from bees as they enter a beehive comprising:

a frame having an open top and dimensioned to fit as one of the axially positioned parts of a vertically stacked beehive,

a drawer slidably arranged in said frame to assume a substantially horizontal position in the beehive,

said drawer having a bottom surface comprising a first screen, the mesh size of which is smaller than the pollen dropped thereon by the bees,

a second screen mounted in said frame above said drawer and having a mesh size smaller than the size of the pollen carrying bees for prohibiting them from entering the drawer,

a third screen mounted on said frame above said second screen and forming an elongated space therebetween,

said third screen having a mesh opening causing bees crawling through said third screen to divest their legs of a substantial portion of the pollen carried thereon,

an entranceway for the pollen carrying bees into the pollen trap positioned adjacent the front of said drawer and connected with the space between said second screen and said third screen, and

a means mounted in said entranceway for selectively closing said entranceway to bar entrance into the beehive of the pollen carrying bees,

said entranceway comprising an elongated opening extending laterally of the movement of the drawer in the pollen trap, and

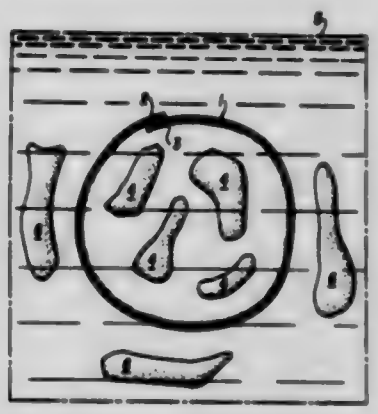
said means comprising a single elongated bar pivotally mounted at its midpoint in said entranceway for closing said entranceway when pivotally mounted to a given position, said bar having a length substantially equal to the length of said elongated opening so that when the bar is rotated past said given position, bees can enter the hive at each end of the bar.

4,494,264

ELEMENT PERMITTING TO WASH DIFFERENT TEXTILE ARTICLES IN THE SAME BATH AND WASHING METHOD USING SAID ELEMENT

Daniel Wattiez, Lozanne, and Jean-Claude Heanion, Mons-en-Baroeul, both of France, assignors to Institut Textile De France, Bourlogne sur Seine, France

Filed Jul. 11, 1983, Ser. No. 512,529
Claims priority, application France, Jul. 20, 1982, 82 12851
Int. Cl.³ D06F *35/00*
U.S. Cl. 8—150
8 Claims



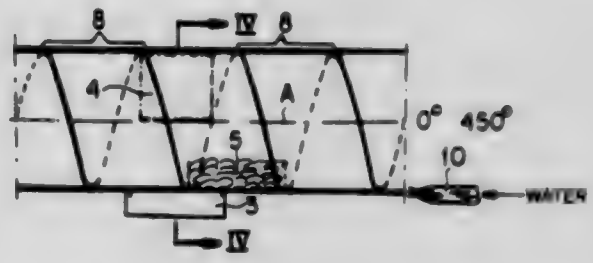
1. An element permitting to simultaneously wash in the same bath two types of textile articles, the articles of the first type being dyed with dyes which are liable to run in the bath and to settle on the articles of the second type, wherein said element is in the form of a filtering envelope in which one of the two types of textile articles are enclosed, said envelope being made from a material which has a tinctorial affinity for the dyes liable to run in the washing bath, greater than the tinctorial affinity of the type of articles on which the running dye is liable to settle, and the porosity of said envelope being such that the washing water can traverse it freely while allowing a long enough contact with the washing for the dyes to settle on that envelope, and thus preventing the dye from re-depositing.

4,494,265

METHOD OPERATING A TUNNEL-TYPE BATCH WASHING MACHINE

Herbert Schmidt, Arolsen, and Hans Steinort, Hildesheim-Itzum, both of Fed. Rep. of Germany, assignors to Senkingwerk GmbH KG, Hildesheim, Fed. Rep. of Germany

Filed Jul. 10, 1980, Ser. No. 168,458
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1979, 2927874
Int. Cl.³ D06F *21/02, 37/08*
U.S. Cl. 8—159
4 Claims



1. A method of operating a tunnel-type batch washing machine having an outer tunnel-forming housing tube centered on a horizontal axis and a helical wash screw rotatable in said tube about said axis and having a plurality of flights defining axially spaced compartments, said method comprising the steps of:

flowing a liquid axially in one direction through said housing;

holding respective batches of articles to be washed in said compartments between said flights;

oscillating said screw back and forth about said axis through substantially more than 360° and thereby agitating said articles in said liquid;

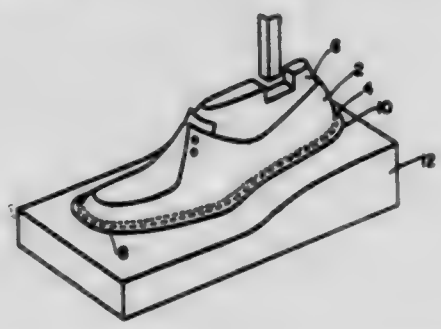
periodically rotating said screw about said axis through substantially more than 720° in a rotational direction to advance said batches axially opposite said one direction.

4,494,266

MOLDED SHOE

Hans Bartneck, 5291 Autumn Wood Dr., Cincinnati, Ohio 45242

Division of Ser. No. 145,560, May 1, 1980, Pat. No. 4,333,193.
This application Mar. 17, 1982, Ser. No. 358,919
The portion of the term of this patent subsequent to Jun. 8, 1999, has been disclaimed.
Int. Cl.³ A43D 9/00; A43C 13/08; A43B 9/10
U.S. Cl. 12—142 RS 1 Claim



1. An integrally molded upper and shoe sole made by the following steps in sequence:

(a) stitching a full sole socklining to a shoe upper at a given distance from the lower peripheral edge of the upper, said distance defining a mold engaging lip of said upper;

(b) mounting said upper with stitched socklining on a shoe last to conform said full sole socklining and upper to said last;

(c) supporting the lasted upper and socklining in an upper mold;

(d) filling a lower mold with an expanding, foaming resin for forming a sole; and

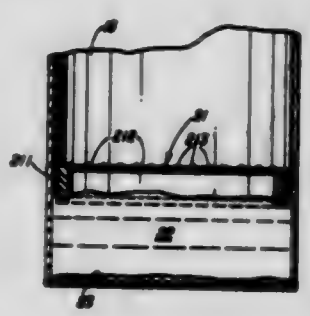
(e) mounting said upper mold over said lower mold with said mold engaging lip of said upper secured resiliently between the edges of said upper and lower molds for a time sufficient to cure said resin to the underside of said lasted full sole socklining and upper and contour said upper, said socklining and said sole to said last.

4,494,267

BRUSH CLEANER AND ARTIST'S KIT

C. Thomas Fredley, 1119 N. 46th St., Phoenix, Ariz. 85008

Filed Nov. 8, 1982, Ser. No. 440,002
Int. Cl.³ A46B 17/06
U.S. Cl. 15—104.92 5 Claims



1. Brush cleaning apparatus comprising in combination:

means for inertially removing fluid from the bristles of a brush, comprising means for intercepting the path of the bristles of a moving brush so as to abruptly affect the speed of movement of the bristles to inertially disperse fluid therefrom by a series of abrupt reversals of inertial forces;

collection means coupled to a said means for inertially removing fluid from the bristles of a brush for collecting fluid so removed, said collection means comprising an open top container comprised of an upright walled enclosure;

wherein said means for intercepting the path of the bristles of a moving brush comprises splatter bar means coupled across a pair of walls of said upright walled enclosure and separated on either side from the other walls of said walled enclosure by spaces through which the brush may be moved to cause the bristles to intercept said splatter bar and experience an abrupt reversal of the inertial forces acting on the moving brush;

a liquid thinner containing vessel for washing the bristles of a brush;

float means for floating on the liquid thinner contained within said vessel, said float means being disposed to sink within said liquid thinner when the bristles of a brush are drawn into contact with said float means;

said float means further comprising a surface bearing a plurality of orifices through which said liquid thinner may flow as seen float means is submerged when in contact with the bristles of a brush and as said float means rises to the surface of said liquid when the bristles of a brush are removed from contacting said float means; and

said surface further comprising a plurality of vertically disposed raised elements for separating the bristles of a brush brought into contact with said float means.

4,494,268

PAINT BRUSHES

Alan C. Chu, 2437 E. Lincoln Ave., Anaheim, Calif. 92806

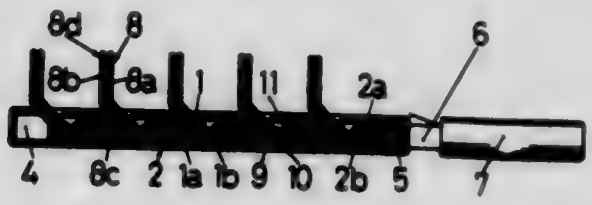
Filed May 2, 1983, Ser. No. 466,121
Int. Cl.³ A46B 7/04
U.S. Cl. 15—176 2 Claims



1. A paint brush comprising a handle and a bristle portion detachably secured to said handle, said handle having an open hollow wall portion at the end adjacent said detachable bristle portion, said hollow wall portion of the handle having two apertures formed in and through said wall portion, each aperture formed opposite to each other, the bristles of the bristle portion being fixedly mounted in a retaining member which is removably mounted within said hollow wall portion of the handle, said retaining member being formed with a pair of opposing resilient arms, each arm being formed at each free end thereof with a transversely extending projection, said arms extending upwardly away from and outwardly from the extent of the bristles such that when the retaining member is mounted within said hollow handle portion, the arms spring outwardly and each projection respectively engages into each aperture of said wall portion, and when pressure is inwardly applied to said projections through said apertures so that each projection

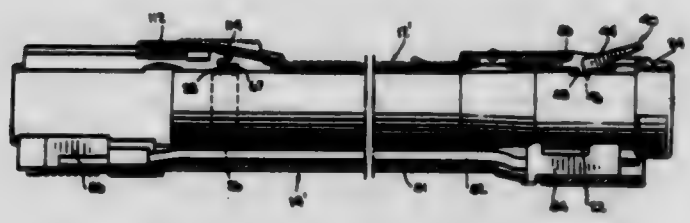
is forced out of engagement therewith, the bristle portion may be removed from within said hollow wall portion of said handle.

4,494,269
HAIRBRUSH DEVICE
Seigo Makabe, 543 Toyase, Niigata, Japan
Filed Jul. 1, 1980, Ser. No. 165,022
Int. Cl.³ A46B 9/10
U.S. Cl. 15—203 5 Claims



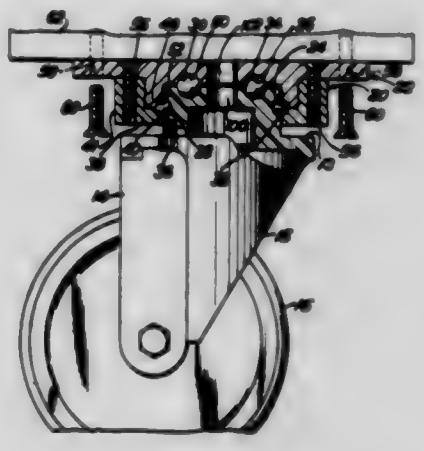
1. A collapsible hairbrush comprising:
a brush body having a hollow interior region comprising an upper cover and a lower base;
a movable flat board which is shorter in length than said hollow interior region and is provided in the hollow interior region so as to move freely back and forth;
a plurality of transverse axles rotatably provided in equal intervals on the movable flat board;
a handle coupled to a base end of the movable flat board by means of a connecting part, said handle and connecting part being axially aligned with said base;
a plurality of guide holes provided in the upper cover so as to form longitudinal slits through which brush tips extend, said brush tips comprising upper long legs and lower short legs, said brush tips forming an obtuse angle between said long and short legs, the bottom ends of the short legs being secured to said axles;
said guide holes having a front wall and a back wall;
a stopper mounted on said connecting part, said stopper being movable within said connecting part so it can be slide inside said hollow brush body, said stopper being movable away from said connecting part when outside of said brush body so as to prevent the handle from being moved in a direction towards said brush body;
whereby said axles may be moved longitudinally back and forth by the handle so that the brush tips are raised up and down by being engaged with the front and rear walls of the guide holes and so that the brush tips can be locked in the raised position when said stopper abuts said brush body.

4,494,270
VACUUM CLEANER WAND
William P. Ritzau, Old Greenwich; Aveo J. Casselli, Norwalk, both of Conn., and Gene S. Fleischer, Spring Valley, N.Y., assignors to Electrolux Corporation, Stamford, Conn.
Filed Mar. 25, 1983, Ser. No. 478,857
Int. Cl.³ A47L 9/24
U.S. Cl. 15—377 8 Claims



2. A wand for connecting a vacuum cleaner and a power nozzle, said wand comprising: a sheath having first and second ends; an upper wand assembly removably received in said first end of said sheath, said upper wand assembly having a first end and a second end, said first end of said upper wand assembly being adapted to be detachably connected to a hose handle of such a vacuum cleaner; a lower wand assembly having a first end removably received in said second end of said sheath and in releasable locking engagement with said second end of said upper wand assembly, and having a second end adapted to be connected to a power nozzle; said upper wand assembly having a hole formed therein adjacent said second end thereof; said first end of said lower wand assembly being adapted to be received in said second end of said sheath and telescoped about said second end of said upper wand assembly; leaf spring means having one end secured to said first end of said lower wand assembly and having adjacent its other end a button for engaging said hole in said upper wand assembly for detachably connecting said upper and lower wand assemblies; and cam means adjacent said second end of said upper wand assembly when said upper and lower wand assemblies are in said releasable locking engagement, said cam means being movable axially of said upper wand assembly from a position remote from said other end of said leaf spring means to an axial position between said other end of said leaf spring means and said button and a radial position between said leaf spring means and said upper wand assembly to space said other end of said leaf spring means radially away from said upper and lower wand assemblies to disengage said button from said upper wand assembly.

4,494,271
CASTER HAVING A THREE PIECE ENCAPSULATING BEARING ASSEMBLY
Morton J. Perlis, Miami Beach, and Richard P. Garneau, Davie, both of Fla., assignors to Perlis Materials Handling Development Co., Miami, Fla.
Filed Nov. 30, 1981, Ser. No. 326,053
Int. Cl.³ B60B 33/00
U.S. Cl. 16—21 32 Claims



1. A caster comprising:
a neck at the top portion of the caster,
a platform at and about the lower portion of said neck,
leg means depending from said platform for securing a wheel thereto,
a rotatable wheel journaled to said leg means,
a ball bearing retaining plate normally about said neck and adjacent to said platform,
a top plate about said neck and above and releasably secured to said ball bearing retaining plate,
complementary annual grooves in adjacent portions of said neck, said ball bearing retaining plate and said top plate forming an annular raceway, and
ball bearings encapsulated in said annular ball bearing raceway,
said ball bearing plate includes a rim extending inwardly for sliding engagement with said neck with its annular groove in its inner and uppermost end adjacent said groove in said neck, and an outer annular sleeve extending upwardly from said rim and spaced from and about said neck to form an annular chamber therebetween, and wherein the length of said neck from below its groove to said shoulder is

greater than the height of said ball bearing rim for positioning said ball bearing retaining rim on said platform so that its groove is below said neck groove to facilitate loading of the ball bearings prior to said top plate being releasably secured thereto, and

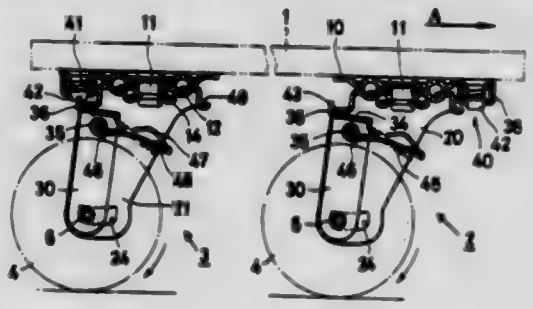
said top plate includes an inner annular sleeve depending therefrom with its annular groove in the lower and inner end thereof and wherein said inner annular sleeve slidably extends into said annular chamber when said plates are releasably secured together for encapsulating said ball bearings in said annular raceway.

4,494,272

REVERSIBLE CASTER DEVICE HAVING BRAKE MECHANISM

Natsuo Morita, 1983-1 Oboka Takadacho, Numazu-shi, Shizuoka-ken, Japan

Filed Jul. 13, 1982, Ser. No. 397,831
Claims priority, application Japan, Jul. 21, 1981, 56-112932; Oct. 26, 1981, 56-158257[U]; Jun. 14, 1982, 57-100720
Int. Cl.³ B60B *33/02*
U.S. Cl. 16—35 R 18 Claims



1. A caster device for a travelling body, comprising:

a base mounted upon the lower surface of said travelling body;

a first frame mounted upon said base so as to be rotatable about a first axis;

a second frame pivotably mounted upon said first frame about a second axis;

a wheel rotatably supported upon said second frame;

first locking means mounted upon said base;

second locking means mounted upon said second frame for cooperating with said first lockinhg means so as to permit or prevent rotational movement of said first frame about said first axis; and

braking means mounted upon said second frame for engaging said wheel, yet permitting rotation thereof, and for permitting said first and second locking means to be engaged so as to prevent said rotational movement of said first frame about said first axis in response to a first directional movement of said travelling body along a surface upon which said wheel is rotating, said braking means also engaging said wheel for stopping rotation thereof and for causing pivotal movement of said second frame and disengagement of said first and second locking means so as to permit said rotational movement of said first frame about said first axis in response to a second directional movement of said travelling body along said surface upon which said wheel is rotating in which said second directional movement is the reverse of said first directional movement.

4,494,273

SWING CONTROL HINGE

Albert E. Strasa, 1643 W. 8th St., Erie, Pa. 16505

Filed Sep. 27, 1982, Ser. No. 423,817
Int. Cl.³ E05F *3/20*
U.S. Cl. 16—50 14 Claims

1. A swing control hinge comprising a first butt (1),

a second butt (2),

pivot means (5, 6, or 15) swingably connecting said first butt (1) to said second butt (2) to swing about an axis (A),

said first butt (1) being adapted to be connected to a door (24) having means to accelerate said door (24) toward closed postion,

said second butt (2) being adapted to be connected to a door stile (23), a first cam member (5),

means supporting said first cam member (5) on said first butt (1), a second cam member (6),

means supporting said second cam member (6) on said second butt (2),

a first flat cam surface (26) on said first cam member (5),

said first cam surface being deposed in a plane perpendicular to said axis (A),

first lobe means (18,) on said first cam member (5),

said first lobe means (18) having a first flat inclined surface (7) extending from said first flat cam surface (26) toward said second cam member (6),

a first flat cam surface (26) on said second cam member (6),

said first cam surface being disposed in a plane perpendicular to said axis (A),

second lobe means (18) on said second cam member (6) having an inclined flat surface (7) extending from said first flat surface (26) on said second cam member (6) toward said first cam member (5),

resilient means (14) supported on said hinge between said first cam member (5) and said pivot means (15),

said first butt (1) being adapted to swing with said door (24) from an open position through a first predetermined path and a second predetermined path toward a closed position,

said first flat cam surface (26) on said first cam member (5)



being adapted to engage said second lobe means (18) on said second cam member (6) as said door swings through said first predetermined path whereby no compressive force is exerted on said resilient means as said door swings through said first predetermined path,

said first flat inclined surface (7) of said first lobe means (18) engaging said first flat inclined surface (7) on said second cam member (6) when said door swings through said second predetermined path whereby the compressive force on said resilient means is increased to decelerate the door; wherein said first lobe means (18) has a second flat surface (9) disposed in a plane parallel to said first flat surface (26) and spaced therefrom,

said lobe means on said second cam member is adapted to move along said second flat surface as said door moves through a third path, maintaining compression on said resilient member (14), wherein said first cam member (5) has a third flat surface (27) coplaner with said first flat surface and said first lobe means has a second inclined surface extending from said second flat surface (9) radially outwardly of said first cam member to said third flat surface,

said second lobe means has a second flat surface (9) disposed in a plane parallel to said first flat surface and spaced therefrom,

said second cam has a third flat surface (27) disposed in a common place with said first flat surface,

said second lobe means further comprising a second inclined surface extending from said second flat surface (9) to said third flat surface (27),

said first cam member and said second cam member being slidable along said axis,

the second flat surfaces (9) on the first cam member (5)

engage the second flat surfaces (9) on the second cam member (6) introducing no additional compression on the resilient means (14) during the third path of movement of the door and at the end of the third path, as the surface (9) on the first cam member (5) passes the surface (9) on the second cam member (6), the second inclined surface (25) on the second cam member (6) thereby accelerating the door through a fourth path of movement toward a final latching position.

4,494,274

COOKWARE WITH COVERS HAVING METAL HANDLES

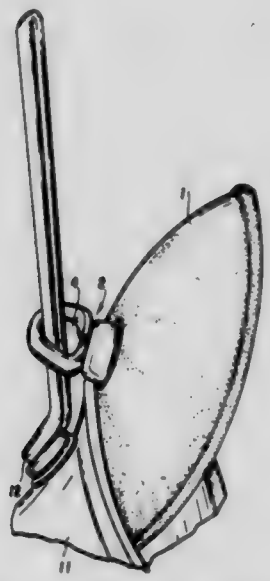
Heida L. Thurlow, 10814 Riverview, Houston, Tex. 77042

Filed Dec. 8, 1982, Ser. No. 447,740

Claims priority, application Fed. Rep. of Germany, May 28, 1982, 3220156

Int. Cl.³ B65D *25/28*

U.S. Cl. 16—110 A 5 Claims



1. A cooking and frying utensil comprising a utensil structure and a utensil cover, a cover holder, first attachment means attaching said cover holder to said utensil cover, said cover holder comprising a first hollow dished-out thin-walled metal hollow body providing an enlarged surface area for facilitating cooling of said first hollow body by the surrounding atmosphere, said first hollow body having an inside surface and an outside surface, said first hollow body also having a first rim held abuttingly against said utensil cover by said first attachment means, a metal ring element joined to said outside surface of said first hollow body, said ring element having an outer wall and an inner wall, said ring element having a central opening bounded by said inner wall, a handle holder, second attachment means attaching said handle holder to said utensil structure, said handle holder comprising a second hollow dished-out thin-walled metal hollow body providing an enlarged surface area for facilitating cooling of said second hollow body by the surrounding atmosphere, said second hollow body having an inside surface and an outside surface, said second hollow body also having a second rim held abuttingly against said utensil structure by said second attachment means, and a metal handle element joined to said outside surface of said handle holder, said handle element being of an elongated U-shaped configuration having two spaced legs, said handle element being constructed to have an overall width less than that of said central opening of said ring element such that said utensil cover is supportable on said utensil structure by sliding said ring element onto said handle element.

4,494,275

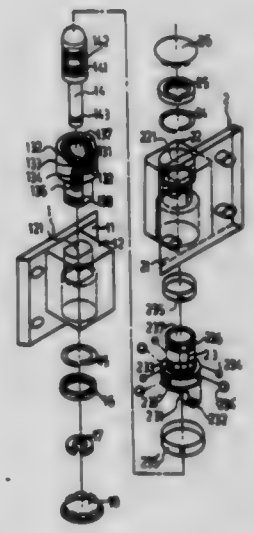
SWINGING DOOR HINGE ASSEMBLY HAVING A ROLLING MEMBER

Chen Hai-Shan, Taipei, Taiwan, assignor to Sun Longitude Corporation, Taipei, Taiwan

Filed Jul. 23, 1982, Ser. No. 401,217

Int. Cl.³ E05F *1/04*

U.S. Cl. 16—314 6 Claims



1. A swinging door hinge assembly comprising a primary hinge and a secondary hinge,

said primary hinge including a left side primary piece to be attached to an upper portion of a door jamb and a right side primary piece to be attached to an upper portion of a door; a base sleeve of the left side primary hinge piece fixedly supporting a staircase-shaped axle seat, an axle rod being installed in a center hole of said staircase-shaped axle seat; during the assembling of said left and right side primary hinge pieces, a top end of said axle rod being insertable into an axle hole of the right side primary hinge piece; a rolling member associated with a lug under said axle rod being disposed in the staircase-shaped groove on top of said staircase-shaped axle seat; wherein upon the door being opened clockwise or counter-clockwise, the lug drives said right side primary hinge piece to rotate over said left side primary hinge to cause said rolling member of said lug under the axle rod to roll upwards along said staircase-shaped groove; wherein said door is able to be closed slowly while said rolling member rolls downwards along said staircase-shaped groove; and

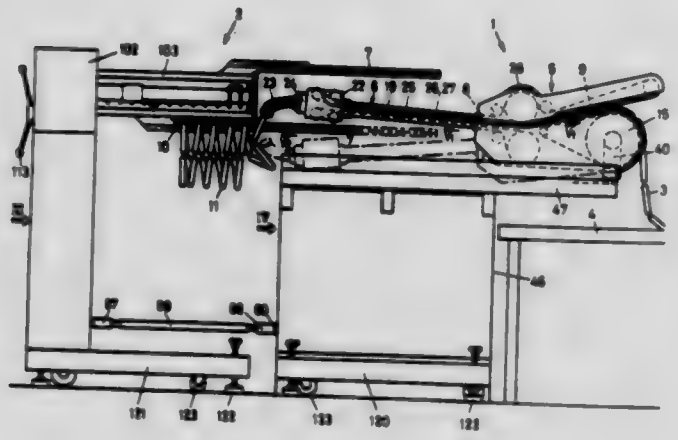
said secondary hinge comprises a left side secondary hinge piece attachable to the lower portion of the door jamb and a right side secondary hinge piece attachable to the lower portion of the door; an axle rod being inserted into a base sleeve of said left side secondary hinge piece; an upper portion of said axle rod being positioned in an inner eccentric axle bushing to be inserted inside an outer eccentric axle bushing; wherein upon assembling the left and right secondary hinge pieces together, said outer eccentric axle bushing being positioned in an axle hole of said right side secondary hinge piece; wherein in opening or closing the door, said right side secondary hinge piece is rotated on said left side secondary hinge piece, and the axle bushing of said right side secondary hinge piece rotates around said outer eccentric axle bushing; by means of mutual rotation of said inner and outer eccentric axle bushings, a co-axis being formed automatically with said primary hinge, wherein the staircase-shaped groove on the top surface of the staircase-shaped axle seat of said primary hinge is gradually and slantingly raised in height from 0° position to either the clockwise or counter-clockwise direction; and upon reaching a point about 80°, there is a flat surface; and at the points approximately 0° and 90°, a depression on a less slanted slope is furnished, a spring and a retarding pin being installed in said depression.

4,494,276

FEEDING MACHINE AND RECEIVING DEVICE FOR APPORTIONED SAUSAGE CHAINS

Bruno Trottmann, Gossau, Switzerland, assignor to C. Hoegger & Cie. AG, Gossau, Switzerland

Filed Mar. 4, 1982, Ser. No. 354,675
Claims priority, application Switzerland, Mar. 5, 1981, 1482/81
Int. Cl.³ A22C 15/00
U.S. Cl. 17—1 F
18 Claims



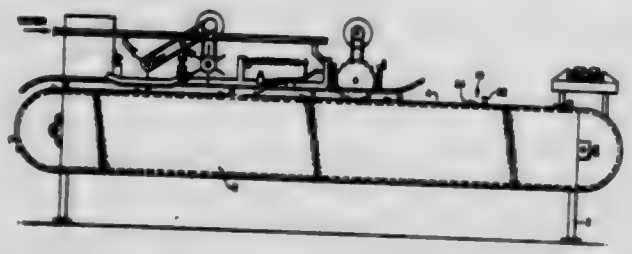
1. Feeding machine and receiving device for apportioned sausage chains, characterized by: the feeding machine (1) having a sausage conveying device (5) with a feeding arm (6) which is driven in conically circular movements around a smoking rod (7), the conveying device being provided with endless conveyer belts (8, 9, 19) between which a sausage chain (3) can be transported from a feeding end to a discharging end, the smoking rod being clamped into the receiving device and being movable in a longitudinal direction along a center axis of the cone defined by the conically circular movement of the feeding arm, and the feeding machine and the receiving device being coupled with each other such that the conically circular movement of the feeding arm and the longitudinal movement of the smoking rod can be adjusted relative to each other.

4,494,277

CRAB HOLDER FOR PROCESSING MACHINE

Calvert B. Tolley, and Andrew T. Tolley, both of Wingate, Md., assignors to Sea Savory, Inc., Cambridge, Md.

Continuation-in-part of Ser. No. 169,150, Jul. 15, 1980, Pat. No. 4,380,094. This application Sep. 30, 1982, Ser. No. 431,284
Int. Cl.³ A22C 29/00
U.S. Cl. 17—71
6 Claims



1. As a new article of manufacture, a two-part holder for supporting a crab in its upstream-downstream movement through the successive work stations of a crab processing machine, comprising:

(a) a first holder part adapted to be in the upstream position in use, having a flat bottom surface, a flat upstream wall at a right angle to the bottom surface, a flat upper surface parallel to the bottom surface and extending downstream a distance shorter than that of the bottom surface, thus forming an upstanding part extending transversely of the holder part which is divided into equal parts by a central opening extending in the upstream-downstream direction, and an inclined downstream facing surface connecting the downstream edges of the upper surface and the bottom, which is concave both transversely and in the upstream direction, and

(b) a second holder part adapted to be in the downstream position in use, having a flat bottom surface, a flat downstream located wall, and an inclined upstream facing surface at least the central part of which has a depression in it,

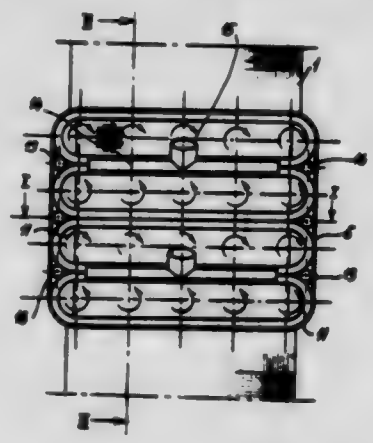
the two holder parts being adapted to be placed in close upstream-downstream proximity to form a single support for the body of a crab with the carapace positioned upwardly.

4,494,278

APPARATUS FOR THE PRODUCTION OF A FIBROUS WEB

Karl K. K. Kroyer, Le Schuylkill, 19, Blvd. de Suisse, Apt. No. 1, Bloc B, 3. etage, Monte Carlo, Monaco, and Torben Rasmussen, Brondby Strand, Denmark, assignors to Karl Kristian Kobs Kroyer, Monte Carlo, Monaco

Continuation of Ser. No. 211,856, Dec. 1, 1980, abandoned, which is a continuation of Ser. No. 958,482, Nov. 7, 1978, abandoned. This application Mar. 9, 1982, Ser. No. 356,477
Claims priority, application Denmark, Nov. 8, 1977, 4956/77
Int. Cl.³ D01G 25/00; D04H 1/00
U.S. Cl. 19—304
7 Claims



1. An apparatus for producing a uniform and strongly adherent air-laid fibrous web, said apparatus comprising a fiber distributor, a suction box positioned below said fiber distributor and a movable foraminous forming wire located therebetween, said fiber distributor including

a housing which has a perforated bottomwall which faces said movable foraminous forming wire,

at least two rows of stirring means positioned in said housing, each row extending transversely of said housing, and each stirring means including an impeller which is rotatable in a plane parallel to the perforated bottom wall of said housing,

means for rotating the impellers of the stirring means in each row in the same direction but oppositely to the direction of the rotation of the impellers in the adjacent row(s),

at least one partition means extending transversely across said housing, a separate partition means acting to separate adjacent rows of stirring means, each partition means including a vertically-extending portion which has a bottom edge which is spaced apart from the perforated bottom wall of said housing and a top edge,

overhang elements which extend in opposite directions away from the top edge of each partition means and towards the adjacent rows of stirring means, and

at least one discharge means for discharging an air stream containing dry, defibrated fibrous material downwardly toward the top edge of a partition means, a separate discharge means being associated with alternate partition means, each discharge means acting to supply the dry, defibrated material to zones on each side of the associated partition means such that it is stirred, then spread in a sausage-shaped configuration on the perforated bottom

wall therebelow, and then deposited on the foraminous forming wire therebelow, the overhang elements of the partition means acting to prevent dry, defibrated material from being stirred upwardly thereabove.

4,494,279

JEWELRY CHAIN CLASP ASSEMBLY

Howard M. Kilgus, Reboboth, Mass., assignor to Excell Manufacturing Company, Providence, R.I.

Filed May 24, 1983, Ser. No. 498,459
Int. Cl.³ A44C 5/00
U.S. Cl. 24—336 6 Claims



1. A clasp assembly for detachably interconnecting first and second ends of a jewelry chain and the like comprising:

(a) an elongated substantially flat bar member having first and second ends, the first end of said bar member being connected to said first chain end, said bar member having an aperture therein adjacent the second end thereof;

(b) a resiliently depressible tongue element integrally struck in said bar member, said tongue element extending generally towards said first bar member end and terminating in an upwardly disposed free terminal end, said bar member sized to permit an element having an aperture dimensioned slightly greater than the internal cross-sectional dimensions of said bar member to pass freely over said second bar member end and onto said chain without removal of said bar member first end from said chain, with said tongue element preventing inadvertent removal of the element from the chain; and

(c) a fastener element connected to said second chain end, said fastener element having a connecting loop portion which is receivable in said bar member aperture to detachably interconnect said fastener element to said bar member.

4,494,280

METHOD AND MACHINE TOOL FOR A CIRCULAR MACHINING OF ECCENTRIC SHAFT PORTIONS

Gottfried Blaimschein, Steyr, Austria, assignor to GFM Gesellschaft für Fertigungstechnik und Maschinenbau Gesellschaft m.b.H., Steyr, Austria

Filed Jul. 20, 1982, Ser. No. 400,110
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1981, 3132560
Int. Cl.³ B23C 3/06
U.S. Cl. 29—6 18 Claims

1. In a method of machining a shaft workpiece with an externally cutting tool to form said shaft workpiece with an eccentric portion having a predetermined circular cross-section, comprising the steps of

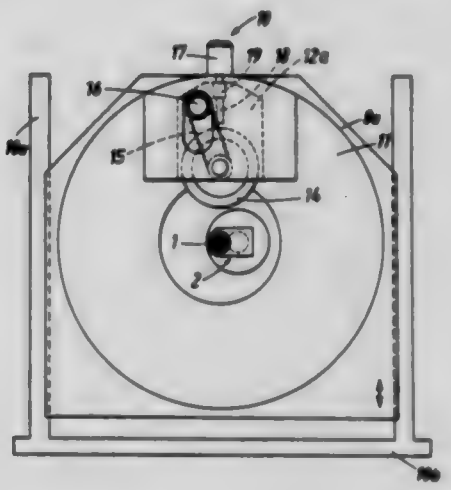
moving said tool relative to said shaft workpiece in the longitudinal direction of the latter to position said tool adjacent to a predetermined portion of said shaft workpiece,

moving said tool transversely to the longitudinal direction of said shaft workpiece to engage said tool with said shaft workpiece, and

machining said predetermined portion of said shaft workpiece with said tool while imparting to said tool and said shaft workpiece a feed movement relative to each other whereby said tool is moved around said shaft workpiece along a predetermined circular path,

the improvement residing in that

after said tool has thus been positioned, said tool and said predetermined portion of said shaft workpiece are moved relative to each other in a direction which is transverse to said longitudinal direction to a position in which the center of said predetermined cross-section of said eccentric portion coincides with the center of said circular path,



said tool is subsequently moved to engage said predetermined portion of said shaft workpiece,

said tool which engages said predetermined portion of said shaft workpiece is driven to machine said predetermined portion of said shaft workpiece,

said shaft workpiece is held in position as it is machined by said tool, and

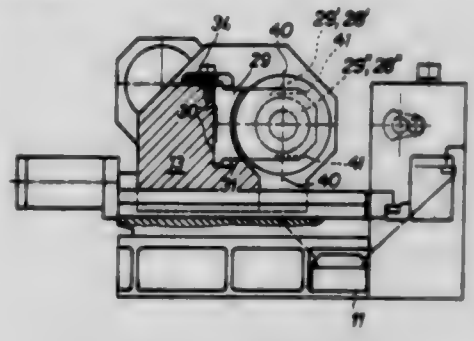
said tool is moved around said shaft workpiece along said circular path as said predetermined portion of said shaft workpiece is machined by said tool.

4,494,281

CRANKSHAFT MILLING MACHINE

Karlheinz Schmid, Neckartenzlingen, Fed. Rep. of Germany, assignor to Gebrueder Heller Maschinenfabrik GmbH, Nuertingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 290,526, Aug. 6, 1981, abandoned, which is a division of Ser. No. 064,068, Aug. 6, 1979, Pat. No. 4,309,134. This application Jan. 16, 1984, Ser. No. 571,338
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1978, 2836341
Int. Cl.³ B21K 1/08; B23C 3/06
U.S. Cl. 29—6 4 Claims



1. A crankshaft milling machine comprising milling slide means, drive spindle means rotatably supported in said milling slide means, exchangeable milling tool means including an arbor and a plurality of disk milling cutters operatively held on said arbor, means for maintaining said disk milling cutters at axial spacings from one another along said arbor of said exchangeable milling tool means, bearing means rotatably supporting said arbor of said exchangeable milling tool means at least at two axially spaced locations in said milling slide means,

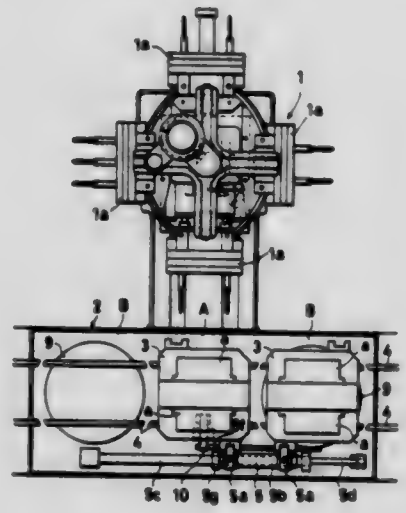
said bearing means comprising only one axial bearing located between two adjacent disk milling cutters of said plurality of disk milling cutters, mounting means for mounting the milling tool means exchangeably on the milling slide means independently of the drive spindle means and along a common axis of rotation, and clutch means operatively interposed between said drive spindle means and said exchangeable milling tool means, said clutch means comprising cooperating surface means including clutch surface means and complementary surface means formed in the drive spindle means and in said milling tool means, said cooperating surface means being oriented generally parallel to the common axis of rotation, said clutch means further comprising means for engaging said cooperating surface means thereby transmitting torque but not axial forces, said mounting means together with said clutch means permitting the removal of said exchangeable milling tool means as a unit including said arbor and disk milling cutters.

4,494,282

JIG TABLE APPARATUS FOR A MACHINE TOOL

Jinsei Ida, Sayama; Yoslo Hagimoto, Niiza; Masao Takahashi, Kawagoe, and Saburo Azuma, Iruma, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1982, Ser. No. 344,879
Claims priority, application Japan, Jan. 30, 1981, 56/11659
Int. Cl.³ B23Q *41/02*
U.S. Cl. 29—33 P
7 Claims



4. A jig table apparatus for use with a machine tool, comprising:

an elongated base member disposed laterally adjacent the machine tool;

at least one pair of right and left jig tables, each having a workpiece;

a transfer member disposed on said base member and having means for cooperative engagement with said jig tables for shifting them to the right or left, along the length of said base member, such that said jig tables are shifted to a working station or a work attaching and detaching station on said base member;

an elevating table, provided at said working station for supporting one of said jig tables thereon, and having means for providing upward and downward movement thereof;

a rotatable turntable, provided at said attaching and detaching station for supporting one of said jig tables thereon and having means for the rotation of the jig table thereof; and

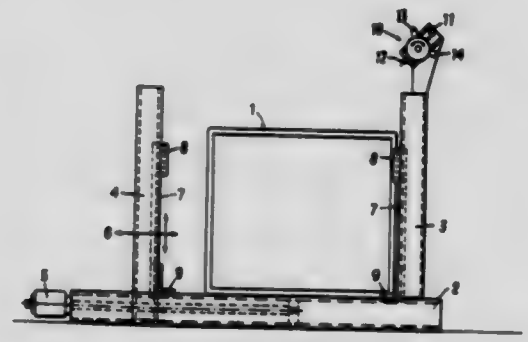
at least one claw member, pivotally attached to said transfer member and engageable with each of said jig tables, such that said claw member engages or disengages a corresponding jig table responsive to the movement of said elevating table.

4,494,283

DEVICE FOR FILLING SPACING MOUNTING FRAMES WITH HYGROSCOPIC MATERIAL

Peter Lisec, Bahnhofstrasse 34, Amstetten-Hausmening, Austria

Filed Aug. 25, 1982, Ser. No. 413,227
Claims priority, application Austria, Apr. 19, 1982, 1506/82
Int. Cl.³ B65B *7/28*; E06B *1/16*
U.S. Cl. 29—33 K
9 Claims



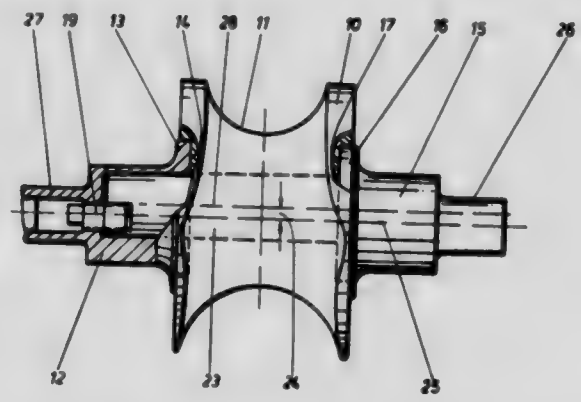
1. Device for filling spacing mounting frames of insulating glass with hygroscopic material, the spacing mounting frames having corners that are formed integrally by bending from a single hollow profiled bar, comprising a mounting support (8,18) in the form of two substantially vertical upstanding columns (3,4) having means for supporting between them the spacing mounting frame (1) to be filled and at least one multi-purpose tool (10) having means (12) for forming an opening in the outer wall of the spacing mounting frame, a nozzle (13) for feeding the hygroscopic material into the spacing mounting frame (1) and a nozzle (14) for supplying material used for sealing the inlet opening.

4,494,284

ROLL

Helmut Post, Mettmann, Fed. Rep. of Germany, assignor to Schmolz & Bickenbach, Düsseldorf, Fed. Rep. of Germany

Filed May 22, 1981, Ser. No. 266,617
Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3019921
Int. Cl.³ B21B *27/02*
U.S. Cl. 29—123
14 Claims



1. A multi-part roll comprising a hollow cylindrical axially extending roll body with a pair of ends spaced apart in the axial direction, one journal connected in a form-locking manner into one of the ends of said roll body, another journal connected in a form-locking manner into the other end of said roll body, said journals having aligned longitudinal axes defining the axis of rotation of said roll and the axis of the connection of said journals and said roll body disposed in spaced relation to the axis of rotation of said roll, at least one of said journals having an axially extending extension thereon projecting at least partially into said roll body for connecting said journals together, said extension on said journal extends through said roll body forming a support axis and is attached at its free end to the

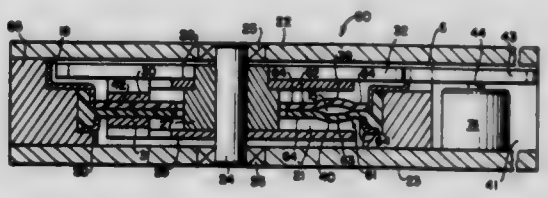
other said journal, a thread bolt rigidly and detachably connects said two journals to one another via said extension, and said thread bolt having a right-hand thread and left-hand thread.

4,494,285

METHOD OF MAKING A MEMBER DEFINING A LUMEN FOR A PERISTALTIC PUMP AND MEMBER PRODUCED BY SAID METHOD

Matthew O'Boyle, Somers, Conn., assignor to Windsor Medical, Inc., Enfield, Conn.

Continuation-in-part of Ser. No. 408,198, Aug. 16, 1982,. This application Apr. 25, 1983, Ser. No. 488,454
Int. Cl.[3] B23P *15/00*
U.S. Cl. 29—156.4 R 11 Claims



1. A method of making a member defining a lumen for a peristaltic pump, which pump includes a housing member defining a cavity and having at least one opening in the walls thereof to receive the lumen defining member said lumen defining member having complementary upper and lower portions with flanges extending on both sides of said portions of said lumen defining member, comprising the steps of:

providing said housing member with separate means for locking material of the member defining a lumen thereto,

substantially closing the cavity of said housing member with mould defining means configured to form one of said complementary concave upper and lower portions of said lumen defining member, including flanges extending on defining member.

introducing into said cavity in a plastic state the material to form said one of said portions of said lumen defining member and allowing said material to set such that said one of said portions of said lumen defining member is locked to said housing member by said locking means, and

providing the other of said complementary portions of said lumen defining member and bonding said other portion to said one portion at the flanges extending on both sides of said lumen.

4,494,286

CONNECTING ROD ARRANGEMENT

Vernon R. Kaufman, Cedarburg, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Oct. 25, 1982, Ser. No. 437,363
Int. Cl.[3] B23P *15/10*
U.S. Cl. 29—156.5 A 5 Claims

1. The method of fabricating and assembling a connecting rod for coupling a crankshaft and piston comprising:

casting an aluminum connecting rod blank having an opening near each end thereof;

machining one of the openings to a preferred size;

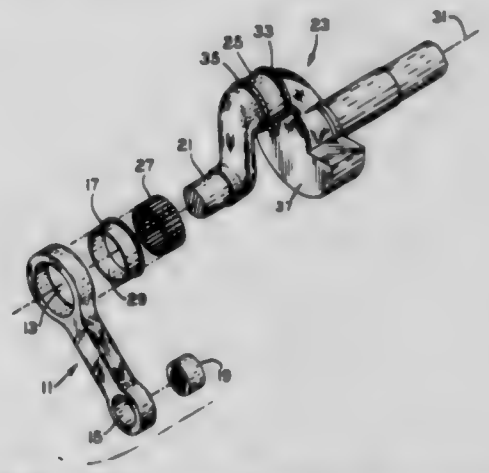
pressing a sleeve into the machined opening for frictional engagement with said rod, said sleeve having an inner surface;

forming a crankshaft having two shoulders on the offset crankpin portion thereof for defining a race portion therebetween;

machining said race portion;

wrapping a strip of rollers about said machined race portion; and

passing the sleeve over the crankshaft and the rollers for concentric alignment with the rollers and race portion;



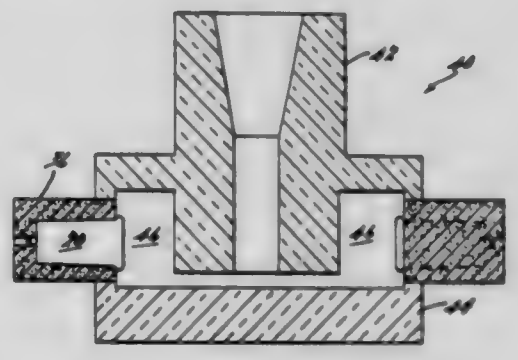
whereby the rollers are confined by the race portion of the crankshaft, the inner surface of the sleeve and the shoulders of the crankshaft.

4,494,287

METHOD OF MANUFACTURING A TURBINE ROTOR

Gerald S. Cruzen, Gregory; Said Izadi, Walled Lake, and Peter Nagy, West Bloomfield, all of Mich., assignors to Williams International Corporation, Walled Lake, Mich.

Filed Feb. 14, 1983, Ser. No. 466,166
Int. Cl.[3] B21K *3/04;* B23P *15/02, 15/04*
U.S. Cl. 29—156.8 R 3 Claims



1. A method of making a turbine rotor comprising the steps of:

A. arranging in a circular orientation a plurality of blades having dovetails on the root portions at the radially inner ends thereof on an inner circular blade support that envelopes said dovetails,

B. filling the spaces between said blades outwardly of said root portions with a frangible material,

C. removing said inner blade support from said blade dovetails,

D. casting a metallic ring about said dovetails to fully encompass same,

E. removing said frangible material from about said blades,

F. machining the radially inner surface of said ring to expose a base of said root portions of said blades,

G. providing a diffusion bonding material on at least the inner surface of said ring and exposed blades or the outer surface of said hub,

H. assembling said ring and exposed blades on a central metallic hub, and

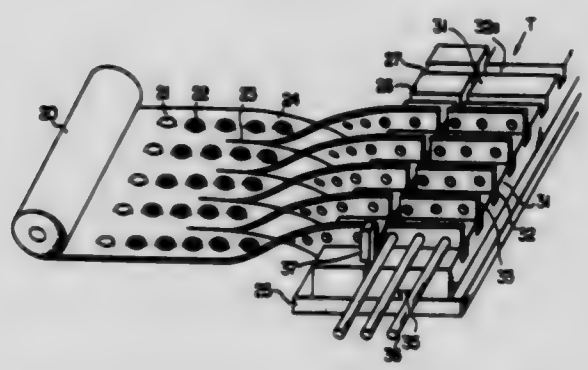
I. heating the assembled blades, ring and hub to effect diffusion of said bonding materials into said ring, exposed blade and hub.

4,494,288

METHOD OF PRODUCTION OF CROSS-FIN TYPE HEAT EXCHANGER

Teruhisa Nagai, and Takemi Naito, both of Yasai, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 31, 1981, Ser. No. 289,108
Claims priority, application Japan, Aug. 8, 1980, 55-108326
Int. Cl.³ B23P *15/26*
U.S. Cl. 29—157.3 A 6 Claims



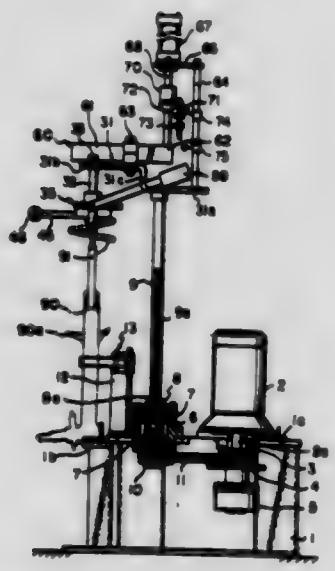
1. A method of producing a cross-fin type heat exchanger, the method comprising the steps of:
forming a plurality of openings in a plate for accommodating a pipe therein,
cutting said plate in a longitudinal direction into a plurality of strips of a width equal to a predetermined fin width
twisting said plurality of strips through 90°,
setting the the twisted strips on a jig in such a manner that the plurality of openings are aligned in a straight line and the strips are spaced apart from one another by a predetermined fin pitch,
inserting a plurality of pipes in said openings in said strips in such a manner that each pipe extends through the openings in the adjacent strips set on the jig,
securing said pipes to said strips so that the strips serve as fins, and
cutting said strips in a direction perpendicular to the longitudinal direction at any desired time following the setting step.

4,494,289

COIL SPRING COMPRESSOR FOR ASSEMBLING AUTOMOTIVE SUSPENSION

Tsuyoshi Matsuura, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 23, 1983, Ser. No. 468,873
Claims priority, application Japan, Mar. 17, 1982, 57-38439[U]
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—227 5 Claims



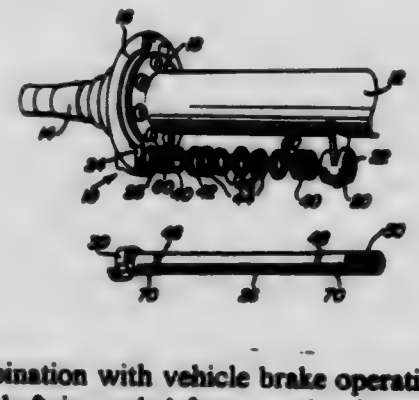
1. An improved coil spring compressor for use in the assembly of automotive suspension systems, said coil spring compressor being of the type in which a movable head plate is provided above a base for movement toward and away from said base to compress a coil spring mounted on a suspension strut which forms part of the suspension system to be assembled and which is secured to said base, wherein the improvement comprises:
a pair of spaced guide bars connected to and pending from said movable head plate;
a slidable carriage mounted on said guide bars for sliding movement; and
a pair of compressing assemblies mounted on said carriage opposite with one another at both sides of said coil spring, each of said compressing assemblies comprising a pair of compressor arms pivoted to the carriage and provided, respectively, with a finger mount at the inner free end thereof, compressing finger assemblies adjustably attached to the corresponding finger mounts, and means for independently adjusting relative positions of the finger assemblies to the associated finger mounts, one of said compressor arms being provided with an operating handle, said compressor arms being interconnected with each other so that on actuating said one arm by said handle the finger assemblies on both arms conjointly extend toward the coil spring to engage between any desired successive turns of the coil spring.

4,494,290

SPLIT BUSHING AND TOOL KIT

Seth E. Rutledge, P.O. Box 3311, St. Petersburg, Fla. 33731

Filed Dec. 8, 1981, Ser. No. 328,679
Int. Cl.³ B25B *27/14, 9/02*; F16C *33/04*
U.S. Cl. 29—280 2 Claims



1. In combination with vehicle brake operating mechanism including a shaft journaled from a pair of spaced supporting journals in the form of bosses each of which receives replaceable bushing, a longitudinally split bushing received in each boss and being axially inserted therein and removed therefrom by axial movement on the shaft, each bushing being constructed of plastic material sufficiently resilient and pliable when heated to enable the split bushing to be spread apart for lateral assembly of the bushing onto the shaft or lateral removal therefrom without removing the shaft from the bosses, a tool for connection with the end of the bushing for removing it axially from the boss, said bushing including a pair of axially converging sockets in an end edge thereof, said tool including a pair of converging fingers movable toward and away from each other to enable engagement with the sockets and means on the tool to retain the fingers in adjacent relations to lock them in the sockets thereby rigidly connecting the tool to the bushing, said sockets being in the form of inwardly converging blind bores communicating with the end edge of the bushing in circumferentially spaced relation to each other and with both sockets being on the same side of the longitudinal split in the bushing, said tool including a generally U-shaped wire member terminating in said inwardly converging fingers having the same angle of convergence as the sockets, said finger retaining means including a sliding band on the U-shaped wire member for movement toward the fingers when the fingers are engaged with the sockets thereby locking the fingers in the sockets with

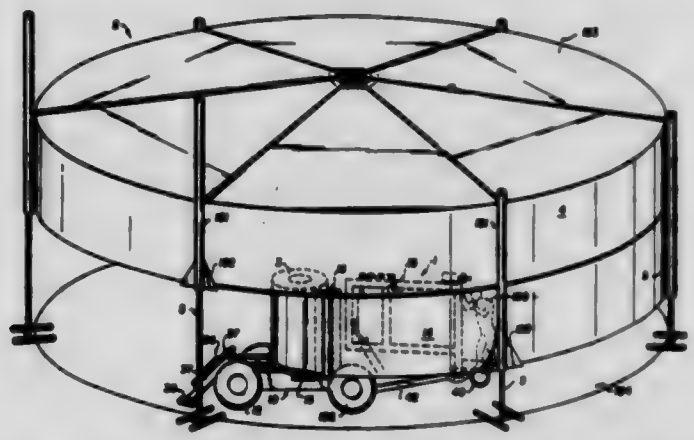
the tool extending axially of the bushing and parallel to the shaft for exerting axial force on the bushing when removing the bushing from the boss or inserting the bushing into the boss.

4,494,291

APPARATUS FOR CONSTRUCTING CYLINDRICAL STORAGE TANKS

Alex J. Morrison, R.R. 1, Gibbons, Alberta, Canada (T0A 1N0)

Filed Jun. 15, 1981, Ser. No. 273,764
Int. Cl.³ B23K *31/02*
U.S. Cl. 29—281.4 22 Claims



1. An apparatus for constructing cylindrical tanks from coiled strip steel, wherein the tank walls are constructed at substantially ground level and are vertically supported on a support structure, comprising:

a wheeled frame assembly comprising a chassis frame attached to the wheels and a pivoting frame pivotally mounted on the chassis frame for both side-to-side and forward-to-back tilting movement relative to the chassis frame;

means for so pivoting the pivoting frame;

a turntable assembly, rotatably mounted on the pivoting frame, for substantially vertically supporting the coiled strip steel; and

fitting frame means, mounted on the pivoting frame for movement therewith and positioned to receive the strip steel from the turntable assembly, for substantially vertically supporting and guiding the strip steel into alignment with the tank wall expected to be supported thereabove.

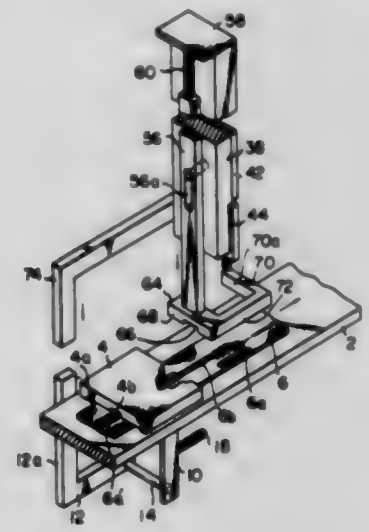
4,494,292

METHOD FOR SECURING BOTTOM END STOP TO FASTENER CHAIN

Yoshiyuki Toishi, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Dec. 13, 1982, Ser. No. 449,514
Claims priority, application Japan, Dec. 29, 1981, 56-214770
Int. Cl.³ B21D *53/50*; A41H *37/06*
U.S. Cl. 29—408 3 Claims

1. A method for securing a bottom end stop to an indefinite length of fastener chain including alternating engaged fastener element portions and space portions where fastener elements are removed, comprising the steps of feeding said indefinite length of fastener chain in a longitudinal direction, protruding a chain stopper into each space portion downstream of one of said fastener element portions as the fastener chain is being fed to arrest the move of the fastener chain as said engaged element portion upstream of said space portion abuts said chain stopper, passing said engaged element portions through a guide means adjacent said chain stopper for slidably engaging the opposed lateral side edges of the engaged fastener elements to prevent fastener element separation upstream of said chain stopper, resiliently pressing down on one of said space portion or element portion downstream of said space portion with an element stopper means, pulling said chain stopper out of said space portion to thereby allow the fastener chain to move in said longitudinal direction until said engaged element portion upstream of said space portion abuts against a stop wall of said element stopper, and securing a bottom end stop to the end of



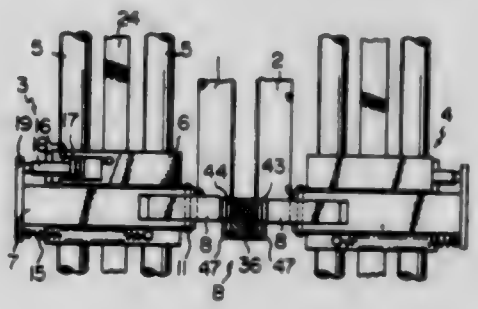
said engaged element portion upstream of the space portion adjacent said stop wall while said fastener chain is prevented from moving.

4,494,293

METHOD AND APPARATUS FOR ATTACHING PIN FITTINGS TO SLIDE FASTENER HAVING SEPARABLE END STOP

Koichi Kawakami, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jul. 7, 1983, Ser. No. 511,565
Claims priority, application Japan, Jul. 10, 1982, 57-120180
Int. Cl.³ B21D *53/50*; A41H *37/06*
U.S. Cl. 29—408 4 Claims



1. A method of attaching pin fittings to a slide fastener having a separable end stop, comprising holding a pin fitting for a pin or box pin by a pin fitting holder, moving a stringer tape gripped by a gripper for introducing a core portion of the tape into said pin fitting, and deforming said pin fitting to secure it to said core portion, characterized in that a first fastener element of a fastener element row affixed to said stringer is abutted against an end portion of the pin fitting under pressure, whereby said core portion is positioned when inserted into said pin fitting.

4,494,294

METHOD OF MANUFACTURE OF HYDRAULIC CYLINDERS UTILIZING BRONZE OVERLAYS FOR ENGAGING SURFACES

James O. Sims, Rte. #2, Box 246, Hartselle, Ala. 35640

Continuation of Ser. No. 310,630, Oct. 13, 1981, Pat. No. 4,435,893. This application Jul. 11, 1983, Ser. No. 512,537
The portion of the term of this patent subsequent to Mar. 13, 2001, has been disclaimed.
Int. Cl.³ B23P *17/00, 15/00*
U.S. Cl. 29—412 9 Claims

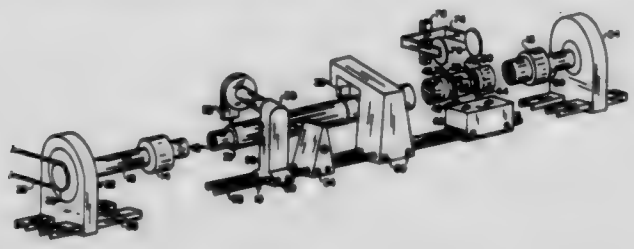
1. The process of manufacturing components of a fluid-operated cylinder, which cylinder comprises a pair of circular

members, an outer, hollow, bearing member and an inner piston member, including the following steps:

rotating a cylindrical steel member about its central axis;

fusing onto the rotating steel member a continuous layer of bronze, said bronze being applied by deposition from a bronze wire;

monitoring the thickness of said bronze layer and controlling the depth of said layer, including the deposition to a minimum thickness of 0.031 inch;



machining the surface of said bronze layer to a selected diameter and finish; and

cutting a series of spaced grooves through said bronze layers into the steel of said steel member, said grooves being cut to selected depths and widths;

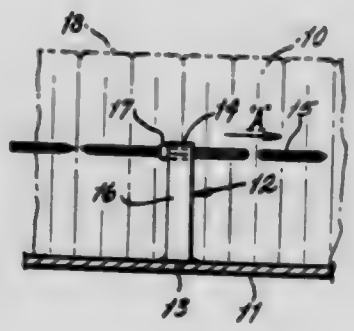
whereby a discrete one of said circular members of a said cylinder is fabricated.

4,494,295

METHOD OF INSTALLING FURNACE WALL LINING

Thomas M. Herring, Ballwin, Mo., assignor to Christy Firebrick Company, St. Louis, Mo.

Filed Nov. 29, 1982, Ser. No. 445,210
Int. Cl.³ B23P *11/00*
U.S. Cl. 29—432
10 Claims



1. A method of installing ceramic fiber modules in a shell comprising the steps of:

(a) attaching in a predetermined pattern a plurality of brackets to an inside wall of the shell so as to define a series of spaces to receive ceramic fiber modules, each of the brackets having one end attached to the shell and a guide formed on the free end,

(b) placing a ceramic fiber module into the space defined between adjacent brackets so as to project into the interior of the shell area a greater distance than the bracket guide,

(c) inserting retaining means through one of said bracket guides into the body of said module contained between said adjacent brackets such that a portion of said retaining means remain in the space between said one bracket and the next adjacent bracket, and

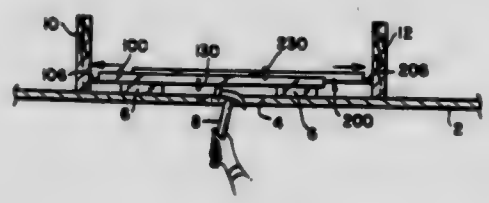
(d) placing a second ceramic fiber module into said latter space and impaling the same on the portion of said retaining means remaining in said space.

4,494,296

FIXTURE SUPPORT INSTALLATION METHOD

Fred K. Grimes, Tallahassee, Fla., assignor to Lance Austin Enterprises, Inc., Tallahassee, Fla.

Division of Ser. No. 344,008, Jan. 29, 1982, Pat. No. 391,428, which is a continuation-in-part of Ser. No. 321,630, Nov. 16, 1981, abandoned. This application Jul. 5, 1983, Ser. No. 510,770
Int. Cl.³ B23P *11/00*
U.S. Cl. 29—432
6 Claims



1. A method of installing a fixture support on a pair of spaced structural members through a small hole in a wall member which is supported on and conceals the structural members, and support having:

a pair of elongated lances slidably interconnected for relative longitudinal sliding movement, each of the lances being shorter than the distance between the structural members;

member engaging means at the distal end of each of said lances for engaging the structural members and supporting the lances thereon when the lances are driven longitudinally in opposite directions against the structural members; and

striking means associated with said lances intermediate the ends thereof;

the method comprising the steps of:

inserting said interconnected lances through said hole into the space behind said wall member and between said structural members;

orienting said lance transversely of said structural members;

extending said lances until the member engaging means of each lance abuts its respective structural member; and

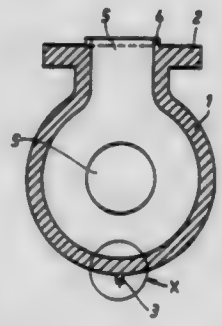
inserting a striking tool through sale hole and striking the striking means associated with said lances with said tool in longitudinally opposite directions to force said member engaging means into engagement with said structural members.

4,494,297

METHOD OF PRODUCING CASTINGS WITH MEANS TO FACILITATE BURR REMOVAL

Sten Larsson, Eskilstuna, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed Sep. 29, 1982, Ser. No. 427,305
Claims priority, application Sweden, Oct. 6, 1981, 8105884
Int. Cl.³ B22D *11/126, 11/128*
U.S. Cl. 29—527.6
7 Claims



1. In a method of producing a metal casting which comprises the steps of employing a casting mold having two mold sections contacting one another along a parting line, pouring a solidifiable melt into said mold, allowing the solidifiable melt to solidify into a metal casting, removing the solidified metal

casting from said mold, said solidified casting including a first undesired burr thereon, and then removing said first undesired burr from said casting, the improvement wherein at least one of said mold sections is shaped in the vicinity of said parting line so that, in a first region of the casting that solidifies within said parting line, said first undesired burr is produced in a form which includes a first substantially uninterrupted flange projecting outwardly from said region of the casting, and wherein said step of removing said first undesired burr from said casting includes removing said first flange and thus said first undesired burr from said casting by employing an industrial robot to effect relative movement between said first flange and a flange-removing means.

4,494,298

AUTOMATIC ASSEMBLING APPARATUS

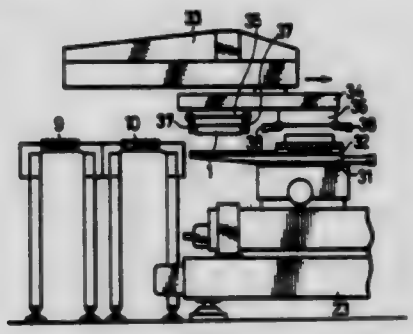
Tamiaki Matsuura; Takeshi Aiba; Takashi Fukushima; Masanori Nishimura; Hiroshi Ohtsuki, all of Kanagawa; Fujio Yabuki, Saitama, and Tomio Kusakabe, Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 21, 1982, Ser. No. 380,997

Claims priority, application Japan, May 23, 1981, 56-78335

Int. Cl.³ B23Q *7/04*; B23B *13/00*

U.S. Cl. 29—563 10 Claims



1. An automatic assembling apparatus comprising:

first and second parallel conveyer means for each independently transferring at least one carrier means in a first direction;

assembly station means located alongside said conveyer means and including movable table means and work means by which various assembling operations are performed with respect to said at least one carrier means while the latter is on said table means; and

carrier loading means movable between a first position in opposing relation to said movable table means and a second position in opposing relation to said conveyer means, said carrier loading means including first and second chucking means in opposing relation to said first and second parallel conveyer means, respectively, when said carrier loading means is at the second position for each slelectively picking up and releasing said at least one carrier means on the respective conveyer means and in opposing relation to said movable table means of the respective assembly station means when said carrier loading means is at the first position for each selectively picking up and releasing said at least one carrier means on said movable table means.

4,494,299

METHOD OF MANUFACTURING SOLID ELECTROLYTIC CAPACITORS

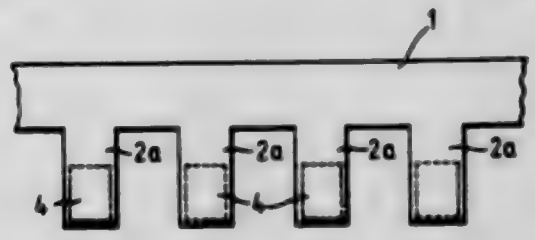
Robert W. Franklin, Paignton, and Peter F. Briscoe, Littlebury Green, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 30, 1982, Ser. No. 445,622

Claims priority, application United Kingdom, Dec. 1, 1981, 8136165

Int. Cl.³ H01G *9/00*

U.S. Cl. 29—570 4 Claims



1. A method of manufacturing electrolytic capacitors comprising the steps of:

forming groups of elongate formations each having a plurality of teeth distributed along its length on a substrate of a valve metal;

applying a layer of a valve metal powder to one side of each of the teeth;

sintering the valve metal powder to form a valve metal layer;

anodizing the substrate and the metal layer to form a dielectric film;

separating each of the groups from the substrate;

manganizing the respective groups of formations at a predetermined region of each of the teeth;

immersing part of the teeth into a bath of conductive material to form a first termination thereon;

turning the respective groups so that the teeth extend in a direction opposite to that assumed during said immersing step;

immersing a portion of the remainder of each of the groups into a bath of a conductive material to form a second termination thereon to such an extent to leave a gap between the terminations; and

filling the gap with an insulation material.

4,494,300

PROCESS FOR FORMING TRANSISTORS USING SILICON RIBBONS AS SUBSTRATES

Guenter H. Schwuttke, and Kuei H. Yang, both of Poughkeepsie, N.Y., assignors to International Business Machines, Inc., Hopewell Junction, N.Y.

Filed Jun. 30, 1981, Ser. No. 280,148

Int. Cl.³ H01G *7/00*; H01L *11/14*

U.S. Cl. 29—571 5 Claims



1. A process of forming a semiconductor monolithic structure comprising:

providing a semicrystalline ribbon of silicon having a thick-

ness substantially less than 0.5 millimeters and having a suitable defect structure which favors strain-induced recrystallization;

thermally forming a silicon dioxide layer on a surface of said ribbon;

forming an active device layer of polysilicon over said oxide layer; and

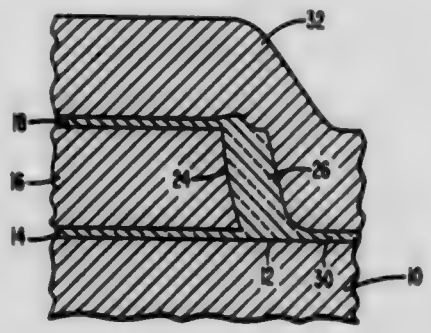
annealing said polysilicon layer to induce localized melting and recrystallization of said polysilicon layer whereby uniform crystals of larger grain size than those initially formed are effected in the polysilicon layer due to said defect structure in said semicrystalline ribbon.

4,494,301

METHOD OF MAKING SEMICONDUCTOR DEVICE WITH MULTI-LEVELS OF POLYCRYSTALLINE SILICON CONDUCTORS

Lorenzo Parsons, Somerset, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 1, 1983, Ser. No. 528,451
Int. Cl.³ H01L *21/90*
U.S. Cl. 29—571 8 Claims



1. A method of making a semiconductor device having multi-levels of polycrystalline silicon conductors comprising the steps of

(a) forming on the surface of a substrate of single crystalline silicon a first layer of silicon oxide,

(b) forming on said first silicon oxide layer a first layer of polycrystalline silicon,

(c) forming on said first polycrystalline silicon layer a second layer of silicon oxide,

(d) forming on said second silicon oxide layer an oxidation resistant masking layer,

(e) removing portions of said masking layer, second silicon oxide layer and first polycrystalline silicon layer to define the first polycrystalline silicon layer and provide it with at least one exposed side edge,

(f) subjecting the device, with unremoved portions of said masking layer remaining over unremoved portions of said second silicon oxide layer, to heat and oxygen to thermally grow a silicon oxide layer over the exposed side edge of the defined first polycrystalline silicon layer,

(g) separately from step (f) providing a third layer of silicon oxide of a desired thickness on a portion of said surface of the substrate adjacent said side edge of the first polycrystalline silicon layer, and

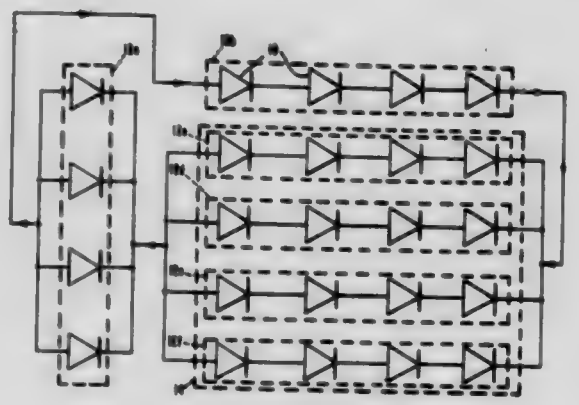
(h) forming a second layer of polycrystalline silicon on the second silicon oxide layer to overlap the first polycrystalline silicon layer, on the silicon oxide layer over the side edge of the first polycrystalline silicon layer and over the third silicon oxide layer to overlap a portion of said surface of the substrate.

4,494,302

ACCELERATED ANNEALING OF GALLIUM ARSENIDE SOLAR CELLS

Ronald C. Knechtli, Woodland Hills; Robert Y. Loo, Los Angeles, and G. Sanjiv Kamath, Malibu, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Division of Ser. No. 246,360, Mar. 23, 1981, Pat. No. 4,395,293.
This application May 16, 1983, Ser. No. 494,610
Int. Cl.³ H01L *31/18*
U.S. Cl. 29—575 4 Claims



1. Apparatus for annealing out radiation damage effects in GaAs solar cells in a panel comprising a plurality of n solar cells exposed to solar radiation, which comprises:

(a) means for forming a number m of identical sections, each containing n/m solar cells;

(b) means for providing a forward bias current to one section, said means comprising

(1) means for combining m−2 sections in a group such that the solar cells in each section are connected in series and the sections are connected in parallel, leaving said one section and one remaining section,

(2) means for combining the solar cells of the one remaining section in parallel,

(3) means for combining the one remaining section in series with the group, and

(4) means for combining the one remaining section and the group in series with said one section, thereby forming an annealing combination;

(c) means for heating said one section; and

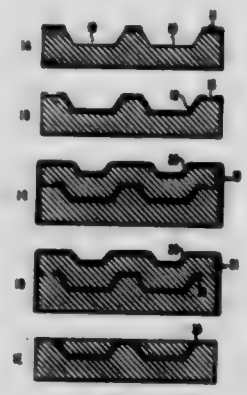
(d) means for reforming and cycling the combination through each of the other sections.

4,494,303

METHOD OF MAKING DIELECTRICALLY ISOLATED SILICON DEVICES

George K. Celler, New Providence, N.J.; David J. Lischner, Salisbury, Pa., and McDonald Robinson, Chester, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 31, 1983, Ser. No. 480,825
Int. Cl.³ H01L *21/76*
U.S. Cl. 29—576 W 9 Claims



1. A process for producing dielectrically isolated electronic

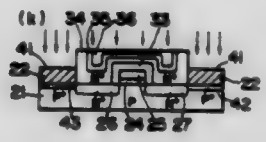
devices in a semiconductor body comprising single crystal silicon, comprising the steps of depositing a layer of silicon on a dielectric material and converting said deposited silicon layer into a single crystal silicon region, CHARACTERIZED IN THAT said dielectric material is at least 1 μm thick and is formed on the surfaces of a cavity in said semiconductor body, said deposited silicon extends continuously to a single crystal silicon nucleation region and said conversion to said single crystal silicon region is effected by first melting all of said deposited silicon layer to form a molten region extending to said single crystal nucleation region and then inducing recrystallization.

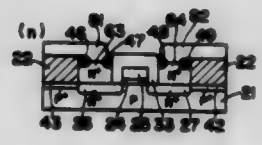
4,494,304

FORMING CHAN-STOPS BY SELECTIVELY IMPLANTING IMPURITY IONS THROUGH FIELD-OXIDE LAYER DURING LATER STAGE OF MOS-DEVICE FABRICATION

Kentaro Yoshioka, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1984, Ser. No. 585,584
Claims priority, application Japan, Mar. 4, 1983, 58/34426
Int. Cl.³ H01L *21/265, 29/78*
U.S. Cl. 29—578 7 Claims





1. A method of manufacturing a MOS type semiconductor device comprising the steps of:

forming a relatively thick oxide film on a semiconductor substrate;

removing a portion of said oxide film to expose a portion of said semiconductor substrate which is used to form an active region;

forming a polycrystalline silicon gate electrode on said exposed portion of said semiconductor substrate;

forming diffused layers being of a conductivity type opposite to that of said semiconductor substrate in said exposed portion thereof;

forming an oxide film on said polycrystalline silicon gate electrode;

depositing a polycrystalline silicon film, a silicon nitride film and a resin film on said polycrystalline silicon gate electrode to form a flat surface such that the flat surface of the active region would lie at a level lower than an upper surface of said relatively thick oxide film;

etching off said relatively thick oxide film to have a predetermined thickness by utilizing said polycrystalline silicon film, said silicon nitride film, and said resin film as a mask;

implanting ions of an impurity into said semiconductor substrate to form channel stop layers;

and

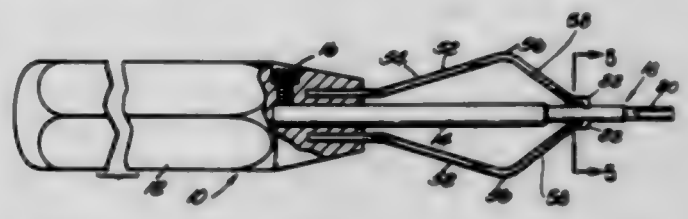
exposing said polycrystalline silicon film on said diffused layers to form electrodes.

4,494,305

CONTACT EXTRACTION TOOL

Sohrab Safai, Irvine, Calif., assignor to International Business Machines Corporation, New York, N.Y.

Filed Nov. 26, 1982, Ser. No. 444,644
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—764 9 Claims



1. A contact extraction tool for use in a connector with a contact that is releasably lockable in a bore within a connector body by a resilient retention element extending between the wall of said bore and said contact, said tool comprising:

a handle and a forward portion having a tubular tip section to be inserted into said bore over said contact to release said retention element from its locking position, said forward portion including a hollow section behind said tip section;

an opening in the wall of said hollow section; and

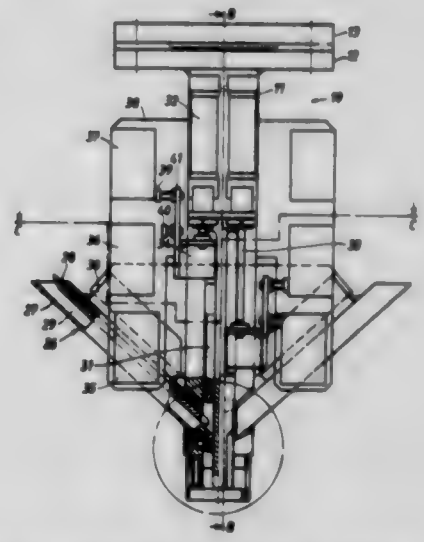
contact gripping means having a manual actuating section outside of said forward portion between said handle and said hollow section, said gripping means having a forward jaw movable laterally through said opening toward one side of said hollow section to firmly grip the contact therebetween when said actuating section is engaged by an operator and while the tip section is releasing said retention element.

4,494,306

TOOL FOR ASSEMBLY OF HALVES OF A VALVE STEM KEY FOR RETAINING VALVE SPRINGS

Karl Isaacson, Västerås, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed Dec. 23, 1982, Ser. No. 452,718
Claims priority, application Sweden, Dec. 28, 1981, 8107789
Int. Cl.³ B23Q *7/10*
U.S. Cl. 29—809 5 Claims



1. A tool for the automatic assembly of the two halves of a grooved split valve stem key around a grooved valve stem and within the bore of a washer retaining a valve-closing spring in a combustion engine, characterized in that the tool comprises

connecting means for connecting the tool to a carrying member,

a rod extending from said connecting means,

said rod provided with a pressure element intended for compression of a valve spring,

magazines carried by said rod for a number of retainer halves for cooperating with the valve stem key,
a first channel in connection with said magazines for transporting said retainer halves from the magazines,
said rod provided with means forming a second transport channel in connection with said first transport channel for transporting said halves to an assembly position,
stop means for temporarily retaining a pair of said retainer halves in said second channel,
guide members within said second transport channel for conducting said retainer halves past the grooved portion of a valve stem,
transportation and positioning members for positioning and holding said retainer halves in an assembly position while the compression of a valve spring is reduced, and
operating means upon said rod for operating said transportation and positioning members.

4,494,307

METHOD OF MANUFACTURING ELECTRIC CABLE HAVING COMPRESSED MINERAL INSULATION AND A TITANIUM SHEATH

Jean-Claude Bourget, Issy-les-Moulineaux, France, assignor to Les Cables de Lyon, Clichy, France

Filed Jan. 4, 1983, Ser. No. 455,630
Claims priority, application France, Jan. 8, 1982, 82 00176
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—825 5 Claims

1. A method of manufacturing electric cable by interposing a compressed mineral oxide insulation between a titanium sheath and at least one titanium inner conductor and reducing the diameter of the cable so constituted, the improvement comprising:
preparing a titanium sheath preform whose diameter is very much greater than that of the finished cable,
then lengthening the preform by successive mechanical deformation operations and performing annealing operations on the preform between said mechanical deformation operations, and wherein the preform is lengthened by about 35% between successive annealing operations;
wherein the titanium used contains not more than: 0.03% nitrogen; 0.25% oxygen; 0.015% hydrogen; 0.10% carbon and 0.30% iron;
wherein its tensile strength is not more than 540 N/mm^2,
wherein its breaking strain is at least 22%, and wherein said annealing operations are performed in a rare gas atmosphere at a temperature lying between 600° C. and 640° C. and wherein each annealing operation is equivalent to that annealing obtained by heating a Grade 2 titanium sheath prefrom within that temperature range for fifteen minutes duration, and whose preform diameter of 12.52 mm is reduced through successive lengthening steps to 3.20 mm.

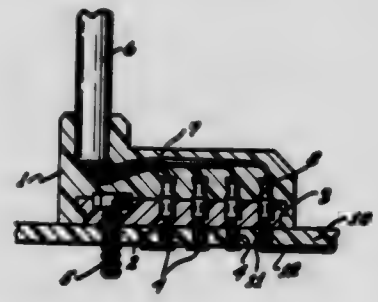
4,494,308

CONNECTING A CABLE TO A P.C. BOARD

Friedrich Schauer, Herzogenberg, Fed. Rep. of Germany, assignor to Kabelmetal Electro GmbH, Hanover, Fed. Rep. of Germany

Filed Jun. 9, 1982, Ser. No. 386,698
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1981, 3129417
Int. Cl.³ H05K *3/34*
U.S. Cl. 29—858 3 Claims

1. A method of connecting a multiconductor cable to conductors on a circuit carrier such as a printed circuit board comprising the steps of:
providing a mounting plate having a plurality of bores arranged in a pattern;
arranging solder pins in some of these bores and in a particular pattern involving a smaller number of pins than there are bores in the plate, the solder pins projecting from one side of the mounting plate;
fastening conductors of the cable to the pins on the respective other side of the plate;
molding a carrier element partially around said carrier plate thereby sealingly embedding the connection between the conductors of the cable and the soldering pins, but leaving the pins as projecting from the carrier plate exposed;



inserting the soldering pins in a pattern, of soldering sleeves in said circuit element carrier the pattern of sleeves matching the particular pattern of said pins;
soldering the pins and the sleeves to each other, thereby completing the electrical connections between the conductors of the cables, and conductors on the circuit element carrier as connected on the board or carrier to the soldering sleeves.

4,494,309

EASY ACCESS KNIFE HOLDER

Robert A. Gray, Aiken, S.C., assignor to Robert Alan Gray Ltd., Aiken, S.C.

Filed Oct. 11, 1983, Ser. No. 540,405
Int. Cl.³ B26B *29/02*
U.S. Cl. 30—151 8 Claims



1. A holder for a knife comprising a blade secured within a knife handle comprising:
a. a base, sized and shaped to confrom with the bottom of said knife, upon which said bottom of said knife rests;
b. a rear portion, sized and shaped to conform with the back of said knife, secured to said base upon which said back of said knife may rest;
c. a first side portion, sized and shaped to conform with the first side of said knife handle, said first side portion secured to said base and said rear portion;
d. a second side portion, sized and shaped to conform with the second side of said knife handle, said second side portion secured to said base and said rear portion;
e. a first flexible portion forming the first front portion of said first side portion, flexed inward toward said second side portion; and
f. a second flexible portion forming the second front portion of said second side portion, flexed inward toward said first side portion, and separated from said first flexible portion by an open area,
whereby said first flexible portion and said second flexible portion are sized and shaped to press inward and to secure said knife within said holder, said first flexible portion pressing inward onto the first front side of said first side of said knife handle and said second flexible portion pressing inward onto the second front side of said second side of said knife handle,

whereby said blade, the first front of said first side of said knife handle, and the second front of said second side of said knife handle are held within said open area by and between said first flexible portion and said second flexible portion of said holder, said blade easily accessible and utilizable for removing said knife from said holder.

4,494,310

BELT BUCKLE KNIFE

Richard L. Slaughter, Texarkana, Ark., assignor to Slaughter Knife Co., Inc., Texarkana, Tex.

Filed Sep. 13, 1982, Ser. No. 417,344
Int. Cl.[3] B26B *1/04, 11/00, 29/02*
U.S. Cl. 30—155 5 Claims



1. A belt buckle knife adapted to engage and fasten a belt, comprising:

a knife structure having a blade member comprising a blunt edge and sharp edge, and a handle member operable between a knife closed position and a knife open position in which said blade member and said handle member are locked relative to each other, and when in the closed position the sharp edge of the blade member is enclosed by the handle member and a portion of the blunt edge is exposed along its length, and

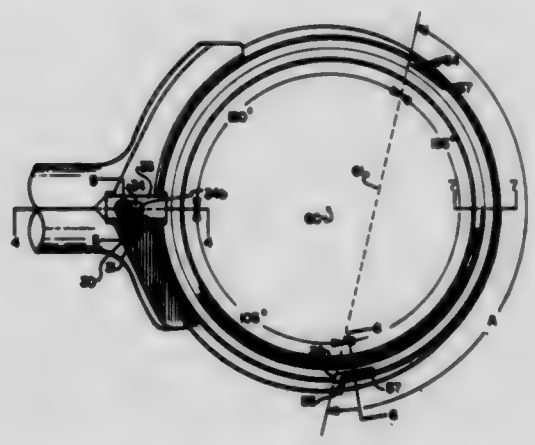
a buckle structure adapted to engage and fasten a belt, the buckle structure engaging the exposed blunt edge of the blade member to fasten the knife structure and buckle structure together.

4,494,311

MEAT TRIMMING KNIFE

Timothy J. McCullough, Box 295, Lake Rd., Vermilion, Ohio 44089

Filed Oct. 13, 1982, Ser. No. 434,128
Int. Cl.[3] B26B *7/00*
U.S. Cl. 30—276 10 Claims



1. An improved meat trimming knife including:

(a) a handpiece having a concavely shaped front end and a handle extending in a generally radial direction rearwardly from said front end;

(b) a ring-shaped blade holder adapted to be mounted on the concave front end of the handpiece;

(c) a ring-shaped cutting blade adapted to be rotatably mounted on the blade holder;

(d) a locking key slidably mounted in a complementary shaped keyway formed in the handpiece for releasably retaining the cutting blade on the blade holder;

(e) means operatively engaged with the locking key for locking said key in the blade retaining position; and

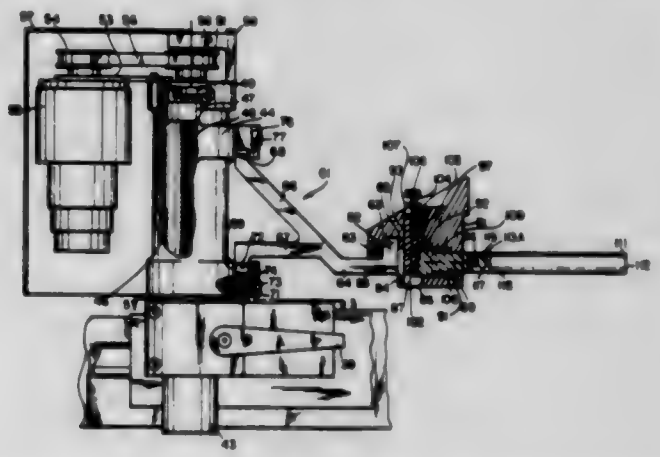
(f) tab means formed integrally on the blade holder for releasably holding the cutting blade on the blade holder, with said tab means having an arcuate length of less than 160° and being shaped a predetermined arcuate distance from the locking key.

4,494,312

PRESS BRAKE GAUGING APPARATUS

Gerald V. Roch, Indianapolis, Ind., assignor to Harco Manufacturing Co., Inc., Indianapolis, Ind.

Filed Sep. 7, 1982, Ser. No. 415,429
Int. Cl.[3] B21D *11/22*
U.S. Cl. 33—170 18 Claims



1. A workpiece locating finger assembly for gauging apparatus for presses and the like, and comprising:

a mounting bracket;

a workpiece abutment finger;

a finger mounting member having a base portion received on said bracket and having a connector portion adjacent said bracket;

said finger having a proximal portion pivotally connected to said connector portion;

adjustment means on said bracket and engaging said mounting member,

said adjustment means including a wedge in stop relationship to said base portion of said mounting member;

and resilient means received on said bracket and urging said mounting member into engagement with said adjustment means.

7. A workpiece locating gauge assembly for presses having tooling thereon, the gauge assembly comprising:

frame means mountable to a press and said frame means having elongate horizontally extending parallel guides thereon;

carriage means having bearing blocks thereon guidingly received on said guides whereby said carriage means are guided when driven horizontally toward and away from tooling on a press, each of said bearing blocks having a keyway therein extending parallel to the one of said guides on which the bearing block is guidingly received;

gauge mounting brackets having gauge bar receiving means thereon;

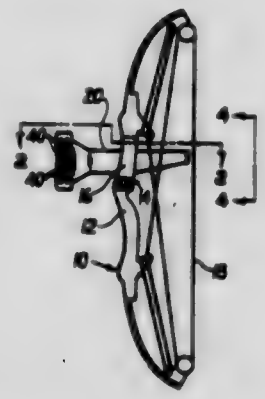
elevator means on said carriage means for raising and lowering said gauge mounting brackets and thereby raising and lowering said receiving means; and

elevator means mounting brackets keyed to said carriage bearing block keyways.

15. A gauge bar comprising:

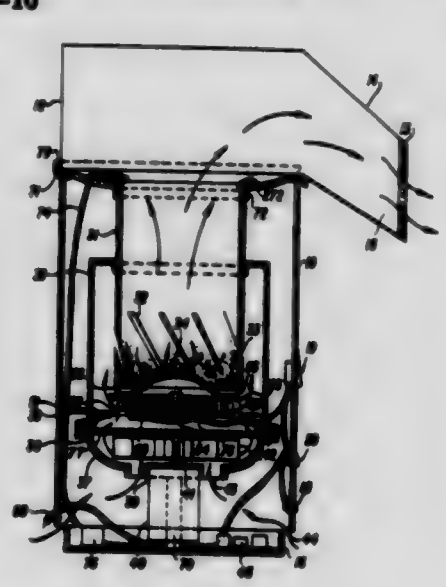
an elongated member having a cross section resembling a letter Y lying on its side, and having an upturned flange at one side, a downturned flange at the lower arm of the Y on the other side, and an upturned flange at the upper arm of the Y on the other side.

4,494,313
THREE POINT BOW SIGHT
Doyce E. Scott, 899 Walnut, Lake Orion, Mich. 48035
Filed Jan. 31, 1983, Ser. No. 462,578
Int. Cl.³ F41G 1/46, 1/10
U.S. Cl. 33—265 7 Claims



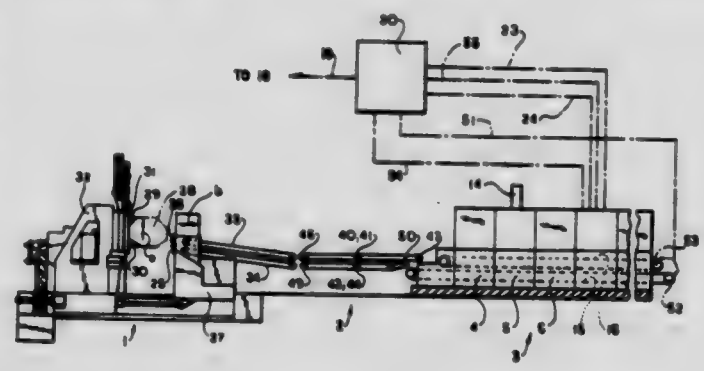
1. A three point bow sight for fixed attachment to a bow having a bow string and a hand grip portion, said bow sight comprising:
a horizontally elongated sight bracket having a front end extending forward of said bow, a rear end terminating between said bow and the bow string in its relaxed position and an intermediate portion for fixed connection to said bow;
at least one vertical slot proximate said front end;
a tab formed integral with said horizontally elongated sight bracket, said tab extending normal to said rear end of said horizontally elongated sight bracket in a lateral direction with respect to said bow;
a "V" notch disposed in the top surface of said tab having an apex coplanar with the path defined by said bow string in its extended position; and
a plurality of sight pins disposed through said at least one vertical slot, each of said plurality of sight pins being offset vertically with respect to said "V" notch to designate a predetermined shooting range, one end of said plurality of sight pins lying in said plane defined by said bow string in its extended position such that said bow string, said apex of said "V" notch and said one end of said plurality of sight pins define a plane for sighting said bow.

4,494,314
COFFEE ROASTER
Harold A. Gell, Jr., 13720 Lockdale Rd., Silver Spring, Md. 20906
Filed Nov. 28, 1983, Ser. No. 555,659
Int. Cl.³ F26B 3/08, 17/10
U.S. Cl. 34—10 45 Claims



1. A coffee roaster, comprising:
an oven chamber in the form of a vertical cylinder, closed at the bottom and opened at the top and including means for admitting forced air comprised of a plurality of openings in the lower portion of the cylindrical wall of said oven chamber, each of said openings dimensioned and positioned in said oven chamber wall so that said forced air entering therethrough flows in a circular path within said oven chamber and about the vertical axis of said oven;
blower means for generating said forced air at a flow rate which will create a fluidized bed of a charge of coffee beans in said oven chamber;
heater means for heating said forced air prior to its entering said oven chamber;
heater control means for turning said heater on at the beginning of a roasting cycle and off when the coffee bean charge has reached a desired degree of roast; and
blower control means for energizing said blower concurrently with said heater.

4,494,315
CONTINUOUS DRIER FOR PLYWOOD SHEETS
Friedrich Roos, Hausseck, and Friedrich Bahner, Rotenburg, both of Fed. Rep. of Germany, assignors to Babcock-BSH Aktiengesellschaft Vormals Büttner-Schilde-Haas AG, Krefeld, Fed. Rep. of Germany
Filed May 10, 1982, Ser. No. 376,832
Claims priority, application Fed. Rep. of Germany, May 26, 1981, 3120917
Int. Cl.³ F26B 21/10
U.S. Cl. 34—48 6 Claims



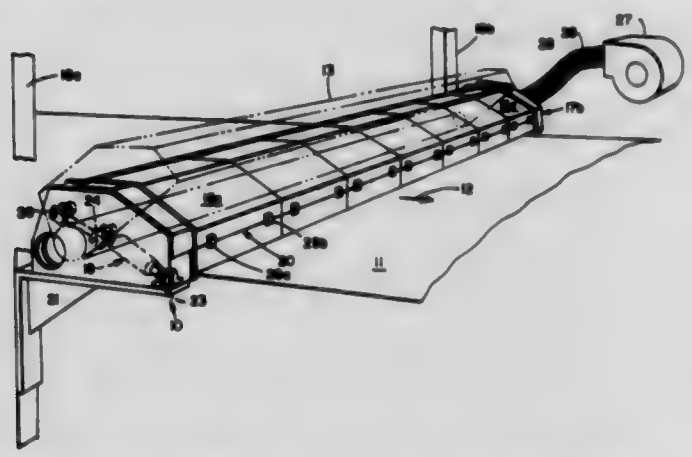
1. A continuous drier for plywood sheets adapted to be arranged in line with a cutting machine producing plywood sheets of various widths and in various successions, said drier comprising an elongated housing having an inlet end and being divided into a plurality of consecutive drying sections; conveyor means for transporting the plywood sheets from said inlet end through said consecutive sections of said elongated housing; drive means for driving said conveyor means with a variable speed; heating means, a ventilator for blowing air over said heating means and means for directing the thus produced hot air onto the plywood sheets and permitting transverse passage of the spent air over the plywood sheets in each of said sections; sensing means upstream of said inlet end of said housing for measuring the width and the spacing of said plywood sheets entering said housing; and control means in circuit with said sensing means and said drive means for regulating the speed of the conveyor means to assure a close succession of said plywood sheets on said conveyor means and for regulating the volume of the stream of hot air and/or the temperature of the latter in dependence upon the speed of said conveyor means.

4,494,316

APPARATUS FOR DRYING A MOVING WEB

Erik Stephenson; Rajeeva Sharma, both of San Jose, and Michael Richie, Santa Cruz, all of Calif., assignors to Impact Systems, Inc., San Jose, Calif.

Filed Mar. 14, 1983, Ser. No. 475,125
Int. Cl.³ F26B 23/04
U.S. Cl. 34—68 12 Claims



1. Apparatus for drying a moving web comprising:
an elongated structural member having a length at least as great as said web in a transverse cross-direction and forming the main structural support for said drying apparatus;
a plurality of dryer modules;
support means for receiving said dryer modules in a side-by-side relationship and for replaceably supporting them in positions across said web to dry said web, said support means being cantilevered from and fixed to said member;
fixed support means for rotatably supporting said structural member at both ends including means therein for rotating said dryer modules into and out of proximity to said web;
forced air cooling means said support means forming an enclosed structure that carries cooling air to said dryer modules and including a blower attached to said support means for providing said cooling air;
each of said dryer modules including a plurality of spaced, parallel, heater elements in the form of glass tubes having their integral ends pinched flat with electrical conductors extending therefrom, and including a pair of retaining clips fastened to said flat ends, said flat ends and clips providing for free flow of said cooling air to cool said glass tubes.

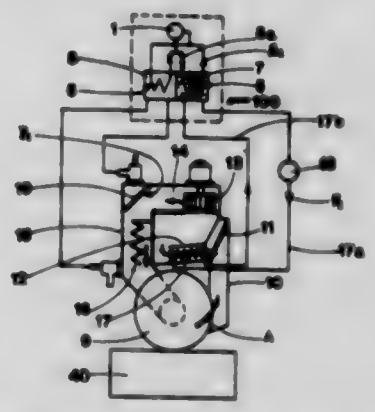
4,494,317

ACCESSORY DEVICE FOR REMOVING SOLVENT VAPOR IN MACHINES FOR DRY CLEANING GARMENTS AND THE LIKE

Gino Biagi, Calderara di Reno, and Vincenzo Fini, Sala Bolognese, both of Italy, assignors to Firbimatic S.R.L., Italy

Filed May 6, 1983, Ser. No. 492,413
Claims priority, application Italy, Jan. 24, 1983, 3314 A/83
Int. Cl.³ F26B 21/06
U.S. Cl. 34—73 2 Claims

1. Apparatus for removing solvent vapor in machines for dry cleaning garments and the like, in which said machines are provided with a closed drying circuit comprising a washing tank, a filter, and a surface condenser for the recovery of the solvent vapor, said condenser including tube means, pipe means connected to said tube means for delivering and discharging a fluid circulating therein, a fan, a heater, and a deodorizing circuit formed with two apertures by which said machine communicates with said apparatus, one of which apertures supplies air to said machine and the other of which apertures discharges a mixture of air, solvent vapor and water from said machine, said deodorizing circuit comprising said washing tank, said filter and said fan; and said apparatus comprising:
a refrigeration circuit including at least two distinct evaporators connected in parallel,
a pair of cut-off valves interlocked to the operating cycle of the dry cleaning machine and respectively connected to said evaporators,
a pair of jackets respectively enclosing said evaporators, a first of said jackets being connected to said pipe means so



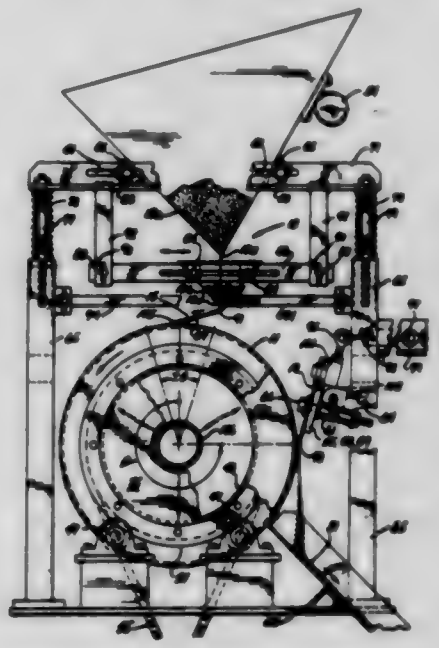
as to define a first closed circuit for supplying the tube means with said fluid and for cooling said fluid in said first jacket, the second of said jackets being connected to said apertures so as to define with said deodorizing circuit a second closed circuit and also to enable cooling of the mixture of gases passing through said deodorizing circuit and condensing of said solvent vapor in said second jacket.

4,494,318

APPARATUS AND METHOD FOR MANUFACTURING CURED RESIN-COATED PARTICLES FOR USE AS A PROPPANT

John G. Smillie, Aurora, Ill., assignor to Aurora Industries, Inc., Montgomery, Ill.

Filed May 31, 1983, Ser. No. 499,369
Int. Cl.³ D06F 58/00
U.S. Cl. 34—112 12 Claims



1. An apparatus for curing resin-coated particles comprising:
a rotating surface for receiving uncured resin-coated particles on the rotating surface,
a feed mechanism which routes controlled amounts of the uncured resin-coated particles to said rotating surface in a manner to effect a single layer distribution of the particles,
means for softening and curing the resin-coated particles to the desired extent in less than one revolution by said rotating surface,
a drive mechanism for rotating said surface about its axis at

a rotational velocity such as to cause the softening and curing resin-coated particles to adhere to said rotating surface at a point in the rotation of said surface where the force of gravity would otherwise cause the particles to separate from the rotating surface, and

means for removing the resin-coated particles adhering to said rotating surface when the resin-coated particles are properly cured.

4,494,319

DRYER FELT FABRIC AND DRYER BELT

Robert J. Rudt, East Greenbush, N.Y., assignor to Albany International Corp., Albany, N.Y.

Continuation of Ser. No. 288,973, Jul. 31, 1981, Pat. No. 4,426,795. This application Jul. 1, 1983, Ser. No. 509,930
The portion of the term of this patent subsequent to Jan. 24, 2001, has been disclaimed.
Int. Cl.³ F26B *13/08*; D03D *15/00*
U.S. Cl. 34—116 2 Claims



1. A dryer felt fabric for use in a dryer section, which comprises;

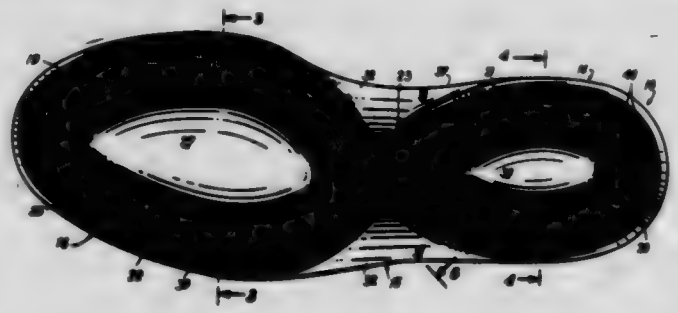
a flat woven dryer felt fabric having a substantially higher paper sheet contacting surface area per square meter at its center than along its lateral margins running in the machine direction.

4,494,320

SHOE OUTSOLE

Howard F. Davis, New York, N.Y., assignor to 8-Track Shoe Corp., White Plains, N.Y.

Filed Nov. 18, 1982, Ser. No. 442,754
Int. Cl.³ A43B *13/00, 13/04, 13/20*
U.S. Cl. 36—25 R 4 Claims



1. An outsole for incorporation in a shoe or the like to be worn on the foot of a user comprising:

a generally shoe-shaped member of rubber-like material having an upper surface and a ground contacting bottom surface the ground contacting bottom surface having first and second depressed regions therein;

said first depressed region in said bottom surface being located in the real half of said shoe outsole and being of sufficient size to substantially encompass the heel of said user's foot for cushioning same upon ground impact, said first depressed region having a tapered sidewall such that said depressed region is wider at the ground contacting surface thereof than at the top for providing support to the heel of the foot sufficient to prevent excessive downward sagging thereof into said first depressed region upon ground impact;

said second depressed region in said bottom surface being located in the front half of said shoe outsole and being of sufficient size to substantially encompass the ball of said user's foot for cushioning same upon ground impact, said second depressed region having a tapered sidewall such that said depressed region is wider at the bottom thereof than at the top for providing support to the ball of the foot sufficient to prevent excessive downward sagging thereof into said second depressed region upon ground impact;

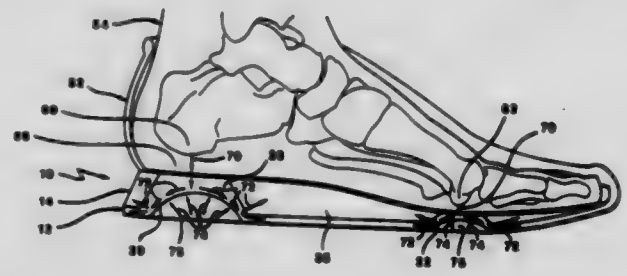
the ground contacting bottom surface surrounding said depressions and having a section extending therebetween for supporting the foot in the shank region.

4,494,321

SHOCK RESISTANT SHOE SOLE

Kevin Lawlor, 2 A Oakland St., Brighton, Mass. 02135

Filed Nov. 15, 1982, Ser. No. 441,417
Int. Cl.³ A43B *13/20, 13/12*
U.S. Cl. 36—28 12 Claims



1. A shock absorbent shoe sole comprising:

(a) an upper sole having a thickness; and

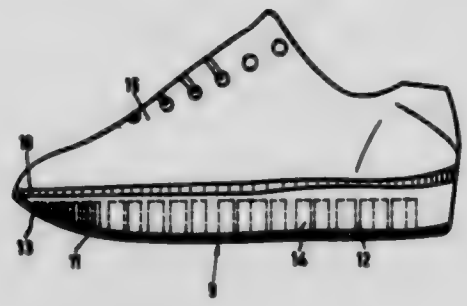
(b) a bottom sole attached to the bottom of said upper sole and including one or more inverted cups dispersed therein, each cup being located directly beneath and pointed convexly toward a natural contact of the human foot for absorbing and dispersing shock generated at said natural contact point during a foot step, each of said cups including a cup shaped cavity penetrating the thickness of the upper sole to such a degree that the upper sole plays essentially no part in absorbing shock at the natural contact point during a footstep.

4,494,322

SHOE

Josef Klagmann, Rastatt, Fed. Rep. of Germany, assignor to Golden Team Sportartikel GmbH, Weinheim, Fed. Rep. of Germany

Filed Sep. 3, 1982, Ser. No. 414,840
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1981, 3136081
Int. Cl.³ A43B *13/16, 13/20*
U.S. Cl. 36—28 14 Claims



1. Shoe, comprising a relatively thin inner sole, an outer sole and an elastic intermediate sole disposed between said inner and outer soles, defining a tip, a heel, and regions accommodating the toes, the roots of the toes and the ball of the foot including a step point, said inner sole being substantially horizontal from the tip of the shoe to a location between the step point of the region accommodating the ball of the foot and the heel of the shoe, said intermediate sole having an upwardly tapered section from the region accommodating the roots of the toes to the tip of the shoe, said intermediate sole having multiplicity of

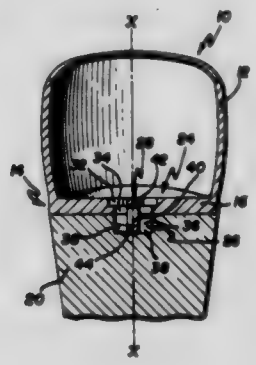
holes formed therein in the region accommodating the toes for additionally reducing the hardness of said intermediate sole in the region accommodating the toes, and said intermediate sole having other holes formed therein from the region accommodating the roots of the toes to the heel of the shoe, said other holes being less numerous and less concentrated than said first-mentioned holes in the region accommodating the toes.

4,494,323

DETACHABLE SHOE HEEL

Wendy R. Latraverse, 14B Mayberry Dr., Westboro, Mass. 01581

Filed May 3, 1982, Ser. No. 374,074
Int. Cl.³ A43B *21/36, 21/51*
U.S. Cl. 36—42 6 Claims



1. Shoe comprising:
(a) an upper portion,
(b) a sole attached to the upper portion, said sole having a heel portion which has a lower surface and an upper surface which is provided with a circular recess,
(c) a detachable heel having an upper surface for closely engaging said lower surface, said heel having a keyway which extends downwardly from the upper surface, and
(d) a retainer key mounted in the sole for rotation about a vertical axis and which is adapted to extend freely into the keyway when said upper and lower surfaces are properly engaged, said retainer key being complementary with said keyway so that rotation of the key about said vertical axis releasably locks the heel to the sole, said key having a head portion which is located in the recess so that it is below said upper surface, said head being elongated in the horizontal plane which enables the head to be grasped by the user's fingers within the recess for rotating the key about said vertical axis.

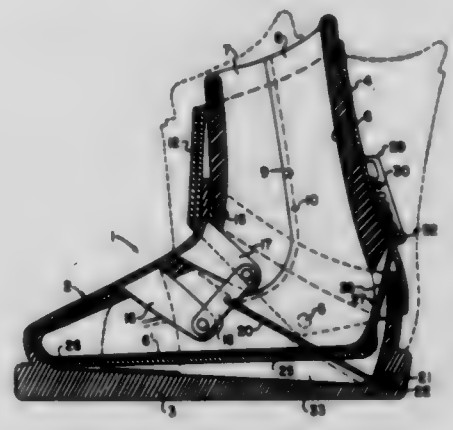
4,494,324

DYNAMIC INTERNAL FITTING SYSTEM WITH A MOVABLE FOOT BED FOR A SPORT SHOE

Richard G. Spademan, Box 6410, Incline Village, Nev. 89450

Continuation-in-part of Ser. No. 886,946, Mar. 15, 1978, Pat. No. 4,382,342. This application Jun. 20, 1979, Ser. No. 50,436
Int. Cl.³ A43B *5/04, 5/16*
U.S. Cl. 36—119 15 Claims

1. A sport shoe comprising:
means forming a movable foot bed located in the interior of said shoe for controlling foot movement in the shoe; and



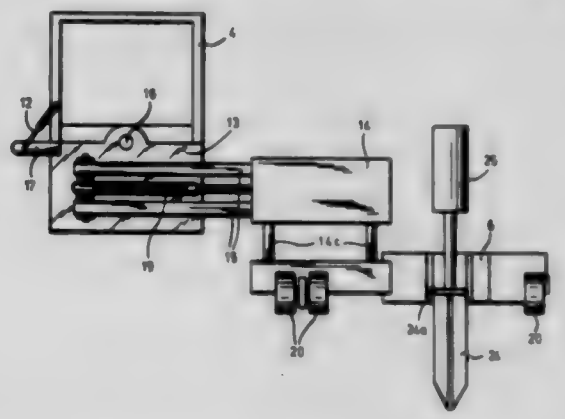
means responsive to a movement of the lower leg for moving said foot bed to tighten and loosen the fit of the shoe relative to said foot as said lower leg is moved.

4,494,325

SHRUB-LIFTING MACHINE WITH PISTON CONTROLLED ANCHOR

Pierre Berthollet, Cognin, France, assignor to Societe A.C.B., Cognin, France

Filed Oct. 7, 1983, Ser. No. 539,911
Int. Cl.³ A01G *23/06*
U.S. Cl. 37—2 R 18 Claims



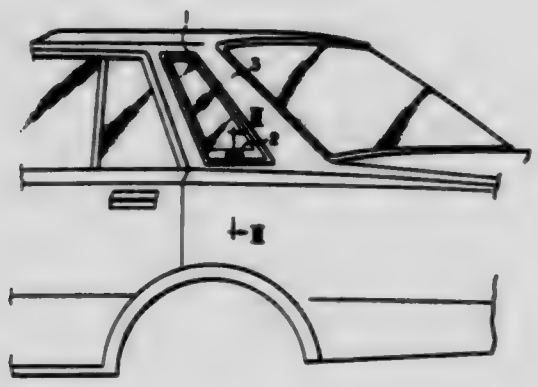
1. A machine for separating a plant with a root ball from the ground at a planting site, comprising:
a tractor having a three-point hitch;
a body mounted on said hitch and raisable and lowerable thereby;
a tool support carried by said body and having an opening adapted to receive a plant and a spade blade rotatable about said plant and adapted to penetrate the ground below said plant to cut the plant loose from the ground with a root ball;
guide means interconnecting said body and said tool support for relative longitudinal movement in a direction of displacement of said tractor to enable continued movement of said tractor in said direction upon halting of said tool support at said plant;
an anchor on said tool support engageable in the ground to halt said tool support at said plant;
a first fluid-operated cylinder connecting said body with said tool support to displace said tool support on said body opposite to said relative movement; and
a second fluid-operated cylinder connected with said anchor for driving it into and retracting it from the ground.

4,494,326

ELECTROLUMISCENT DISPLAY STRUCTURE FOR MOTOR VEHICLE WINDOW

Hiroshi Kanamori, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 28, 1982, Ser. No. 402,764
Claims priority, application Japan, Sep. 29, 1981, 56-152968
Int. Cl.³ G09F 13/00
U.S. Cl. 40—593 13 Claims



1. A marking display structure for a motor vehicle window, comprising:

a light-permeable pattern provided on the inner surface of a glass membrane for a window of the motor vehicle;

illuminating means for illuminating said pattern, said illuminating means comprising a luminescent lamp which comprises a light-permeable electrode layer, a rear electrode layer, and a luminescent layer interposed between said light-permeable electrode layer and said rear electrode, said light-permeable electrode being disposed in facing relationship with said pattern such that portions of said lamp are viewable through said pattern; and

energizing means for energizing said lamp, said energizing means comprising a DC-AC converter, such that

(a) when said lamp is not energized by said energizing means, said portions of said lamp are viewable with external illumination alone of said display structure, and

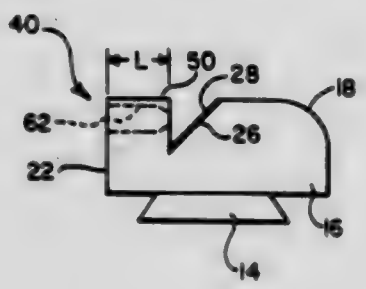
(b) when said lamp is energized by said energizing means, said pattern is illuminated by said lamp, whereby said pattern is viewable without external illumination of said display structure.

4,494,327

SIGHTING DEVICE FOR FIREARMS AND THE LIKE

W. Daniel Cullity, 209 Old County Rd., E. Sandwich, Mass. 02537

Filed Aug. 9, 1982, Ser. No. 406,206
Int. Cl.³ F41G 1/32
U.S. Cl. 42—1 S 16 Claims



1. A sighting device for use in combination with a firearm or other such equipment adapted to be sighted to a remote object, said device comprising:

A. a base member for mounting relative to the firearm or other such equipment;

B. an upstanding sight member projecting from said base member, said sight member including

i. a front end adapted to face forwardly toward the remote object when said device is mounted, and a rear end, and

ii. a surface between said front end and said rear end of said sight member that is inclined so as to face upwardly of said base member and rearwardly of said front end of said sight member, said inclined surface having a finish that is reflective of ambient light so that light from above said device is reflected by said inclined surface rearwardly toward said rear end of said sight member, and

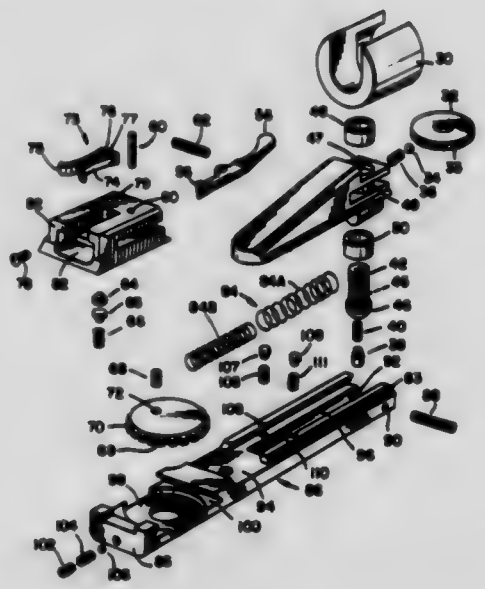
C. said rear end of said sight member defining at least one through aperture of circular cross-section defined by a first aperture defining portion located near said inclined surface and a second aperture defining portion located rearwardly of said first portion, said rear end being dimensioned such that it masks said inclined surface from view from the rear of said device except for a portion of said inclined surface that is exposed to view from the rear of said device through the aperture so that light reflected from that portion of said inclined surface passes through the aperture to the rear of said device, the first aperture defining portion having a diameter such that the reflected light passing therethrough defines a relatively sharp bead, and the second aperture defining portion having a diameter that is sufficiently larger than that of the first portion to minimize internal reflection of the light passing therethrough.

4,494,328

MOUNT FOR ATTACHING A DEVICE TO A FIREARM

Frederick G. Stevens, Bridgeport, Conn., assignor to Hydra Systems International, Inc., Bridgeport, Conn.

Filed Aug. 8, 1983, Ser. No. 520,893
Int. Cl.³ F41C 27/00
U.S. Cl. 42—1 A 7 Claims



1. A mount for attaching a device to a firearm comprising:

a longitudinal base adapted to carry the device to be mounted and having a track extending along a portion of the length thereof;

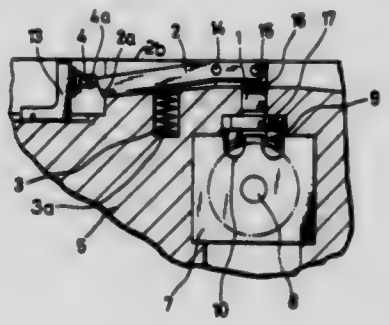
a block slidably mounted in said track;
spring means for biasing said block toward one end of said base;
first means mounted to said block for attachment to a first fixed member at one end of a firearm barrel; and
second means for attaching the other end of said base to a second fixed member at the other end of the firearm barrel;
whereby the device is mounted by attaching said first means to said first fixed member, sliding the base forward relative to said block until said second means is in a position to be attached to the second fixed member, aligning said second means with said second fixed member, and releasing said mount to cause the base to slide rearward with respect to the block in response to the biasing action of said spring means, thereby engaging said second means with said second fixed member;
said second means comprising;
a second block containing a notch adapted for mating engagement with a portion of said second fixed member, a pivoting lever arm with a tab extending into said notch to lock the second block onto said second fixed member, and;
a U-shaped spring member above said lever arm for engaging about a second fixed member.

4,494,329

ARRANGEMENT FOR DETERMINING THE PRESENCE OF A CARTRIDGE IN A CARTRIDGE CHAMBER OF A WEAPON

Lothar Post, Düsseldorf, and Bernhard Schneider, Monchen-Gladbach, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Sep. 23, 1983, Ser. No. 535,391
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1982, 3239093
Int. Cl.³ F41C *27/12*
U.S. Cl. 42—1 D 4 Claims



1. An arrangement for determining the presence or absence of a cartridge casing in a cartridge chamber of a weapon, in particular a machine cannon, comprising in combination,
a housing having a recess,
a lever pivotally mounted in said recess of said housing about an axis which is parallel to the gun barrel axis of the weapon, said lever having a first feeler arm which is adapted to extend into the cartridge chamber to thereby detect the presence of a cartridge casing in said cartridge chamber; and including a breech block operatively slidably mounted in said weapon, said breech block having a pocket, said lever having a second feeler arm, sensor switch means operatively mounted in said housing and adapted to coact with said second feeler arm, biasing means operatively mounted in said housing and biasing said second feeler arm away from said sensor switch means, whereby when a cartridge casing is seated in said cartridge chamber and the breech block is in the forwardmost operative position the edge of the bottom of the cartridge casing projects past the bottom of said pocket of said breech block thereby contacting said first feeler arm and pivotally biasing said second feeler arm against said sensor switch means against the action of said biasing means.

4,494,330

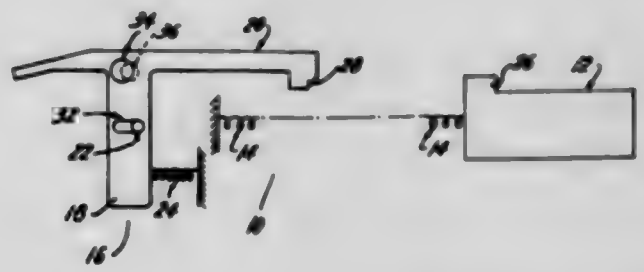
Patent Not Issued For This Number

4,494,331

FIREARM SAFETY DEVICE

William E. Vanderbeck, Ridgefield Park, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 21, 1983, Ser. No. 459,740
Int. Cl.³ F41C *11/02*
U.S. Cl. 42—70 D 1 Claim



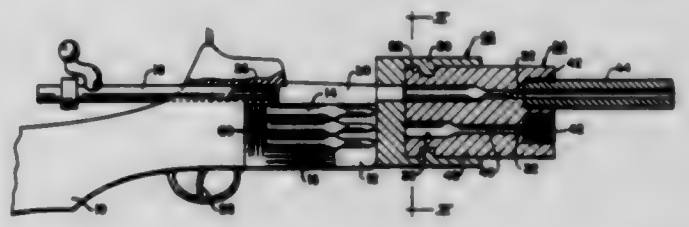
1. A firearm safety device for an automatic firearm which comprises:
(a) means for operating the firearm; a first spring mounted at one end of said means for operating the firearm for urging longitudinal movement of the operating means, said longitudinal movement initiating firing of the firearm;
(b) sear means having a base with an oblong shaped slot therein, a freely rotatable arm pivotally mounted at the base, having a pivot pin along its vertical axis perpendicular to the direction of the movement of the arm and having one end of the arm in engagement with a mating surface of the operating means;
(c) a second spring at one end of the base controlling a horizontal movement of the sear means whereby the operating means is actuated by the movement of the horizontal arm of the sear means in order to cause firing of the firearm; and
(d) a safety pin aligned to a position relative to the movement of the pivot pin in said oblong slot so that the safety may be actuated only if the weapon is properly charged, the said arm moving under a force of the said second spring when the operating means is not actuated by the arm, said horizontal arm moving in an opposite direction under a force of said first spring when the operating means is actuated by said arm of the sear means.

4,494,332

FIREARM CAPABLE OF FIRING DIFFERENT-SIZED CARTRIDGES

Michael Matievich, 380 Pennsylvania Ave., Wilmerding, Pa. 15148

Filed Mar. 31, 1983, Ser. No. 480,728
Int. Cl.³ F41C *1/00, 21/06, 21/12*
U.S. Cl. 42—77 5 Claims



1. In a firearm assembly having a cartridge receiver and means for moving cartridges sequentially from the cartridge

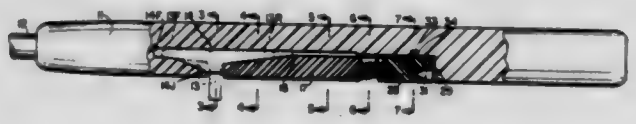
receiver into a firing chamber for sequential firing of the firearm, the combination for accommodating cartridges of different sizes comprising: a unitary firing chamber member having a plurality of parallel bores extending therethrough, each of said bores being adapted to receive a different-sized cartridge and each of said bores having means at its forward end for receiving a firearm barrel in alignment therewith, and said firing chamber member being adjustably carried on the firearm for positioning thereof with any selected one of said bores in alignment with the axis of the cartridge receiver whereby said selected one of said bores is effective as the firing chamber of the firearm.

4,494,333

FISHING ROD HANDLE WITH REEL SEAT

Hubert B. Jacobson, 1137 Pennsylvania Ave., Plymouth, Ind. 46563

Filed Jun. 16, 1983, Ser. No. 505,362
Int. Cl.[3] A01K *87/06*
U.S. Cl. 43—22 10 Claims



1. A fishing rod handle with improved reel seat and comprising:

an elongate body member having a forward end and a rear end, said body member having a generally round cross section to facilitate gripping and holding in a hand, the forward end of the body member being adapted to receive a rod thereon;

an opening in the outer surface of said body member and communicating with a first cavity in the body member,

said first cavity extending in one direction from said opening;

a closure in said opening,

said closure including a slide portion and a handle portion, the handle portion being movable out of a position substantially flush with the said outer surface and into a position transverse to the longitudinal direction of said body member, to facilitate operation of said slide portion.

4,494,334

AUXILLIARY FISHING SINKER

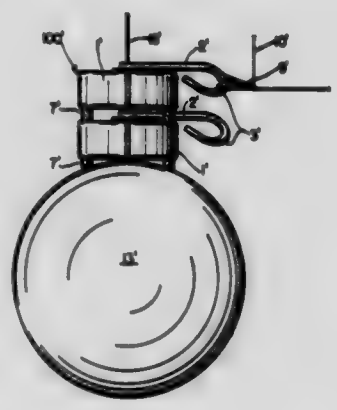
Carl W. Porter, 315 N. Virginia Ave., Falls Church, Va. 22046

Filed Sep. 30, 1982, Ser. No. 429,235
Int. Cl.[3] A01K *91/00*
U.S. Cl. 43—43.12 14 Claims

1. For use with fishing apparatus including a weighted sinker for establishing a fishing depth and a line supporting the sinker from a support, an auxiliary sinker for positioning fishing line means on the sinker line at the fishing depth, comprising:

a body having a centrally located bore, and slot means extending from a peripheral location to said bore for loosely guiding said sinker line into said bore;

a core element having means for lockingly cooperating with the wall of the bore, and including means, cooperating with said bore wall, for loosely capturing said sinker line in said core, and



means, attached to and extending away from said core element, for coupling said fishing line means with said sinker line,

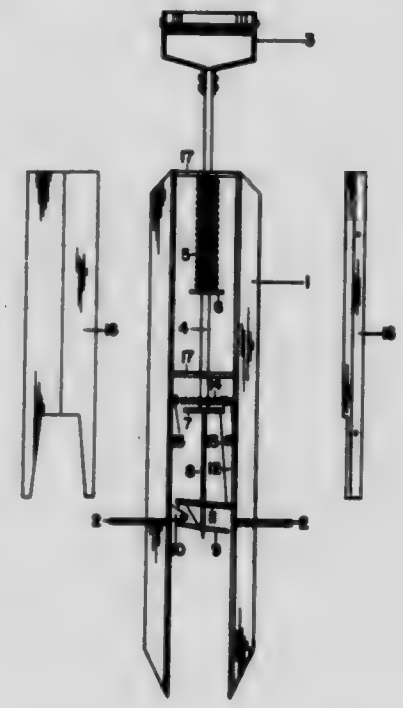
whereby upon guiding said sinker line through said slot into said bore and locking said core element in said bore, said auxiliary sinker is coupled to said sinker line and free to slide therealong to said fishing depth.

4,494,335

"AUTOMATIC SET" MOLE TRAP

Henry F. Gaines, 6430 E. Berwyn St., Indianapolis, Ind. 46203

Filed Mar. 1, 1983, Ser. No. 471,165
Int. Cl.[3] A01M *23/30*
U.S. Cl. 43—80 1 Claim



1. A mole trap for placement over a tunnel in soil, said trap comprising, a frame having two parallel side members con-

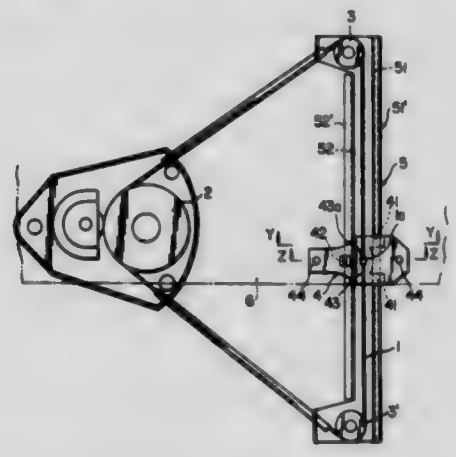
nected by spacers, said side members having sharp pointed lower ends for insertion into the soil on either side of said tunnel, each side member having a T-shaped cross section for providing lateral stability and stability against forward or backward motion, one spacer being located at and connecting the top of the side members and a second spacer connecting the side members closer to the center of the length thereof; a leveling wing attached to each side member and extending from the side thereof for inserting and locating the trap in a position in relation to the grade level of the soil; a spring powered plunger slidably mounted for vertical movement through said spacers and having an in-line plunger head attached thereto, a plurality of spaced spikes attached thereto, a plurality of spaced spikes attached to said plunger head and aligned in side-by-side relationship with the direction of the tunnel; a trigger mechanism having a pivoted trigger located at said grade level, a trigger arm, a setting spring for automatically setting the trigger mechanism by biasing the trigger arm to engage and hold the plunger head when elevated to a set position, and a connecting rod between the trigger and said trigger arm for causing the trigger arm to release the plunger head upon actuation of the trigger by a mole traveling through said tunnel; and protective shields extending between the side member for enclosing the trigger mechanism for protection to persons near the trap particularly while the trap is in the set position.

4,494,336

WIRE-TYPE DOOR WINDOW REGULATOR FOR AN AUTOMOTIVE VEHICLE

Kinichi Ishii, Yokohama, and Yoshiharu Araki, Tokyo, both of Japan, assignors to Kabushiki Kaisha Johnan Seisakusho, Japan

Filed Sep. 29, 1982, Ser. No. 427,573
Claims priority, application Japan, Jan. 19, 1982, 57-6224
Int. Cl.³ E05F *11/48*
U.S. Cl. 49—352 **6 Claims**



1. A door window regulator to which moves a window pane upwardly and downwardly relative to a door inner panel or a body panel of a vehicle, which comprises:

(a) a wire extending parallel to the direction of movement of the window pane;

(b) a wire driving mechanism to which the ends of said wire are secured and which winds and unwinds said wire according to the rotation thereof;

(c) a guide rail member, attached to the door inner panel or body panel and which extends in substantially the same direction as the motion of the window pane, having a longitudinal leg at each side thereof and the edge of one longiudinal leg being bent at a substantially right angle to form a flange and the edge of the other longitudinal leg being folded backward to form a substantially inverted U-shaped guide runner; and

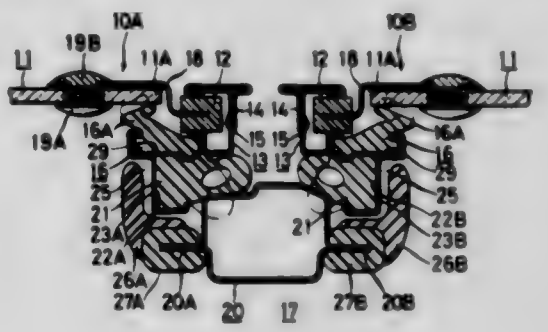
(d) a bracket for attaching the window pane to said wire having a first channel adapted for receiving said inverted U-shaped guide runner so that the window pane moves in the longitudinal direction of said guide rail member while preventing both lateral and rotational movements of the window pane, a second channel separated from said first groove for slidably engaging the flange of said guide rail member, the second channel of said bracket being formed of elements including a rigid support leg and flexible leg elastically urged in the direction of decreasing the width of the second channel, and a stop member for fixing the wire to said bracket, said bracket being attached to the window pane.

4,494,337

CONSTRUCTION OF DOOR IN MOTOR VEHICLE

Hiroyuki Watanabe, Toyota, and Mikio Ohashi, Aichi, both of Japan, assignors to Toyota Tidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 28, 1983, Ser. No. 566,425
Claims priority, application Japan, Dec. 29, 1982, 57-233599
Int. Cl.³ E05F *11/38*
U.S. Cl. 49—374 **12 Claims**



1. Construction of a door in a motor vehicle, wherein a slide piece or pieces secured to end portion of a door glass are slidably coupled into a guide groove of a guide portion of a door frame to thereby guide said door glass in the vertical direction, the outer surface of the door glass and the outer surface of the door frame are substantially flush with each other, and said construction includes a door glass weather strip for sealing between the door glass and the door frame and a door weather strip for sealing between the door and the body when the door is closed, characterized in that said door glass weather strip is provided closer to the compartment's side than said guide portion, said slide piece is secured to the forward end of a bracket projecting outwardly from an end edge of the door glass substantially in parallel to the glass surface, said guide portion is opened toward the end edge of the door glass to thereby form a guide groove for enclosing said slide piece, the outer wall surface of the guide portion is made substantially flush with the door glass, and said door weather strip is mounted at a position offset closer to a center pillar in the longitudinal direction than an end face of the door glass weather strip, which is farthest from the center pillar in the longitudinal direction and on the compartment's side in the rear of the door glass weather strip.

4,494,338

LENS-SHAPED ARTICLE OR THE LIKE AND A METHOD AND APPARATUS FOR THE MANUFACTURE OF SAME

Yoshiaki Nagaura, No. 391-2, Tonohara, Oaza, Chikushino-shi, Fukuoka-ken, Japan

Division of Ser. No. 353,251, Mar. 1, 1982,. This application Sep. 28, 1983, Ser. No. 536,514
Claims priority, application Japan, Mar. 5, 1981, 56-32848; Jun. 12, 1981, 56-91240
Int. Cl.³ B24B *13/00*
U.S. Cl. 51—33 W **2 Claims**

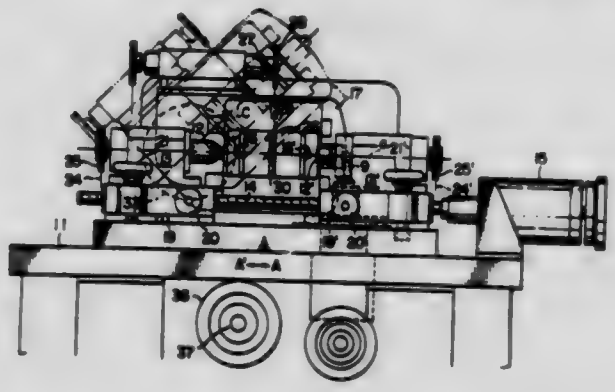
1. Apparatus for the manufacture of a lens-shaped article or the like, comprising:

a pair of facing work holders rotatable about a reference

center axis (a) and movable back and forth along the reference center axis;

a frame rotatable about a horizontal axis (b) perpendicularly intersecting the reference center axis;

a pair of tool holders, detachably holding a pair of oppositely facing machining tools and each holder rotatably



mounted on the frame on a common center of rotation (c), the center of rotation of the tool holders passing through an intersection of the reference center axis and the horizontal axis; and

tool support means connected to the pair of tool holders and to the frame for axially moving the pair of tool holders along the common center of rotation of the tool holders.

4,494,339

KNIFE SHARPENERS

Alan K. Pittaway, High Wycombe, England, assignor to Wilkinson Sword Limited, High Wycombe, England

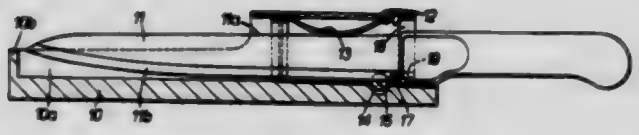
Filed Nov. 16, 1982, Ser. No. 442,204

Claims priority, application United Kingdom, Nov. 26, 1981, 8135702

Int. Cl.³ B24B *3/54*

U.S. Cl. 51—204

9 Claims



1. A knife sharpener comprising a holder for the knife when the knife is not in use, sharpening means for sharpening the cutting edge of the knife as a result of the action of positioning the knife in the holder and/or the action of withdrawing the knife from the holder, and means for selectively varying the effectiveness of the sharpening means in sharpening the cutting edge, even to the extent of rendering the sharpening means ineffective.

4,494,340

HAND-HELD DUAL KNIFE SHARPENER

Larry D. Carter, Mosinee, Wis., assignor to Oy Fiskars AB, Helsinki, Finland

Filed Dec. 29, 1982, Ser. No. 454,427

Int. Cl.³ B24B *3/54*

U.S. Cl. 51—214

4 Claims

1. A hand-held knife sharpener (10) comprising:

a gripping portion (20) and a hollow sharpener portion (22) integral with said gripping portion (20);

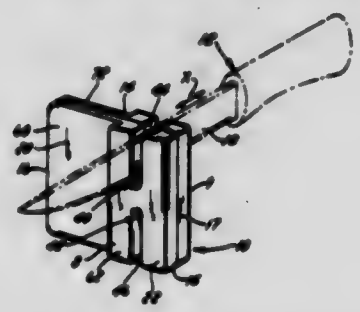
and blade sharpening means (40, 42) on said sharpener portion (22);

said blade-sharpening means (40, 42) including blade-receiving slots (44, 46) extending inwardly from opposite upper and lower edges (14, 15) of said sharpener portion (22);

said blade-sharpening means (40, 42) further including at least two pairs of elongated blade-sharpening elements (50, 52) of different abrasiveness rigidly mounted within said hollow sharpener portion (22) and the two elements (50, 52) in each pair of said elements (50, 52) intersecting one of said blade-receiving slots (44, 46);

said gripping portion (20) and said sharpener portion (22) comprising a pair of molded plastic components (56, 58), each of said components (56, 58) having an inner side and an outer side and comprising a gripping section (60), an integral sharpener section (62), flange means (68, 70) disposed along at least a portion of a peripheral edge of said sharpener section (62), slot portions (64, 65) extending inwardly from upper and lower peripheral edges (14A, 15A) of said sharpener section (62), and receiving elements (76) integrally formed on said inner side of said sharpener section (62);

said components (56, 58) further comprising means (72) for securing said components (56, 58) together in a relation-



ship wherein said inner sides of said components (56, 58) confront each other and wherein said flange means (68, 70) interengage to define a space therebetween in said hollow sharpener portion (22);

said receiving elements (76) on one component (56, 58) supporting one blade-sharpening element (50, 52) of each pair, whereby said two pairs of blade-sharpening elements (50, 52) of different abrasiveness are secured in said space between said pair of components (56, 58) when the latter are secured together,

and each pair of blade sharpening elements (50, 52) are arranged in converging and overlapping relationship relative to each other and extend into an associated blade-receiving slot (44, 46) so as to define a groove (90) which is located within a respective blade-receiving slot (44, 46).

4,494,341

DOCK SHELTER WITH IMPROVED ADJUSTABLE HEAD PAD

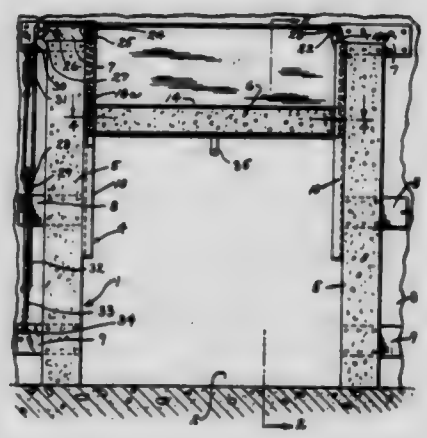
James M. Schwab, Waukesha, Wis., assignor to Kelley Company Inc., Milwaukee, Wis.

Filed Aug. 26, 1982, Ser. No. 412,018

Int. Cl.³ E04H *14/00*; E06B *1/00*

U.S. Cl. 52—173 DS

6 Claims



1. A dock shelter comprising a supporting structure attached to the dock wall, a pair of vertical side pads bordering a doorway in said dock wall, a head pad extending horizontally between the side pads, a pair of cables, one end of each cable being connected to the supporting structure and the opposite

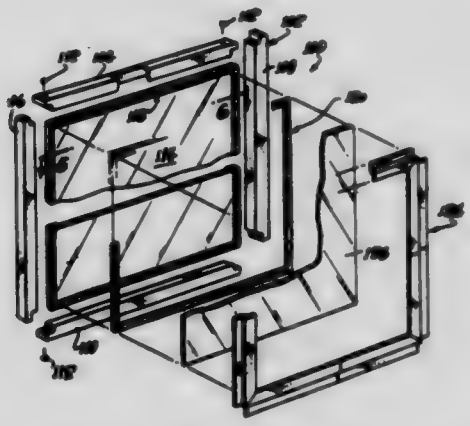
end of each cable being attached to the respective side edges of the head pad, pulley means mounted on the supporting structure for supporting said cables in movement and including a pair of pulleys mounted for rotation on a common shaft, said pulley means being disposed for free floating movement with respect to the supporting structure, guide means connected to the supporting structure for guiding the head pad in vertical movement, said guide means comprising a tubular member connected to each vertical side edge of said head pad, and a pair of guideways mounted on the supporting structure and disposed to receive the respective tubular member, said opposite end of each cable extending through the respective tubular member and being attached to the bottom end of said tubular member, and counterbalancing means connected to said pulley means for urging said pulley means downward to counterbalance the weight of the head pad.

4,494,342

INSULATED GLASS ADAPTIVE METHOD AND APPARATUS

G. Warren Decker, 131 Leawood Dr., Sparks, Nev. 89431

Filed Dec. 21, 1982, Ser. No. 451,980
Int. Cl.³ E06B *3/64, 3/28*
U.S. Cl. 52—203 5 Claims



1. The method of converting an existing single-pane glass element within a frame in a building to a multi-pane glass element within the same frame comprising: removing at least a portion of the caulking material along one side of the frame from the frame and the glass; loosening a portion of the frame about the existing pane of glass within the frame; providing spacer material about the perimeter of the existing glass within the frame; placing a new pane of glass cut to the appropriate size against the spacer material in such manner as to leave a space between the two panes of glass; and placing an adapter element inside the frame in such manner that it extends outwardly from the existing pane of glass and grips and holds the external edge of the new pane of glass.

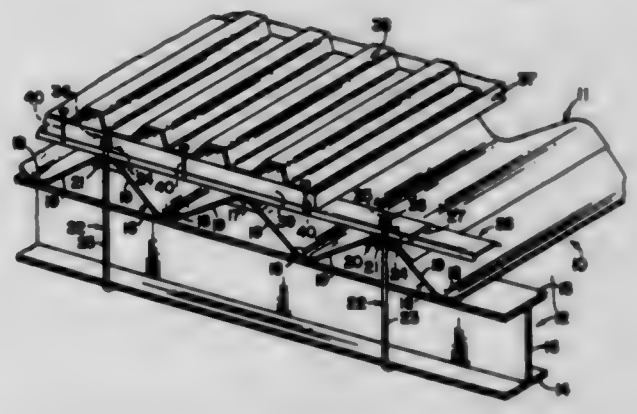
4,494,343

STRUCTURE FOR RETROFITTING CORRUGATED BUILDING EXTERIORS

James A. Berry, and Morton Sherman, both of St. Petersburg, Fla., assignors to The Celotex Corporation, Tampa, Fla.

Continuation of Ser. No. 126,517, Mar. 3, 1980, abandoned. This application Feb. 4, 1982, Ser. No. 345,899
Int. Cl.³ E04C *2/26, 2/32*
U.S. Cl. 52—309.11 9 Claims

1. A building structure comprising a corrugated-like inner sheath configurated with crests and valleys, the inner sheath being secured to its substructure by first fastening means which extends through and projects exteriorly of the inner sheath, a plurality of rigid, long, thin metal securement strips secured in a spaced arrangement to the inner sheath by attachments to the first fastening means, the metal securement strips being positioned on and lying entirely above and transverse to the crests of the sheath, a layer of insulation board positioned over the metal securement strips, an outer weather-resistant covering positioned over the layer of insulation board, and second fastening means penetrating through and securing together only



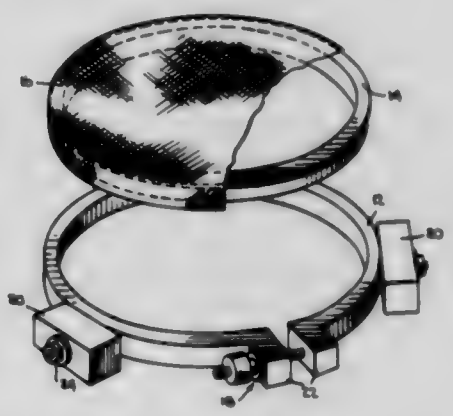
the outer weather-resistant covering, the layer of insulation board and the metal securement strips.

4,494,344

WRINKLE PREVENTION FRAME FOR LENS MANUFACTURE

Donald H. Petcen, Colonial Heights, Va., assignor to Coburn Optical Industries, Inc., Muskogee, Okla.

Filed Apr. 22, 1983, Ser. No. 487,658
Int. Cl.³ D06C *3/08*
U.S. Cl. 38—102.2 14 Claims



1. A device to prevent optical distortion in glass-plastic composite lenses during lamination thereof comprising:

an open outer ring of a flexible material equipped with adjusting means, said open outer ring having weights positioned thereon;

an inner ring held by said outer ring; and

an elastic material in stretched position covering said inner ring and maintained in stretched position by a force exerted on said outer ring by the tightening of said adjusting means.

4,494,345

BACK FLOW VALVE

Bruce M. Peterson, 313 Elizabeth St., Detroit Lakes, Minn. 56501

Filed Aug. 12, 1982, Ser. No. 407,695
Int. Cl.³ F16K *31/34*
U.S. Cl. 137—414 8 Claims

1. An inline back flow valve for a septic system or the like comprising:

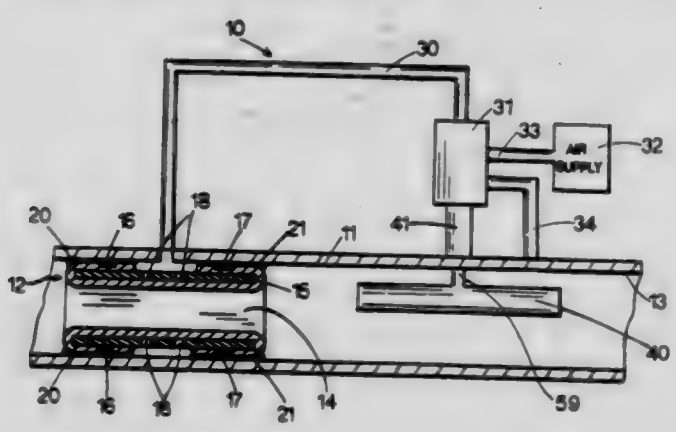
a fluid passageway for flow of fluids therethrough, said fluid passageway having an upper portion and a lower portion;

means for determining that a condition of back flow is occurring in said fluid passageway;

said means including a float located in the upper portion of said fluid passageway to permit fluid to flow beneath said float when no back flow condition exists;

said means adaptable to be connected to a source of pressurized fluid;

inflatable means mounted in said fluid passageway, said inflatable means operable for inflating to thereby seal said fluid passageway to prevent back flow of fluid through said fluid passageway when said means supplies a pressurized fluid to said inflatable means;



said inflatable means and said means for determining that a condition of back flow is occurring located in line in said fluid passageway;

a first fluid passage connected to said inflatable means to supply pressurized fluid to inflate said inflatable means; and

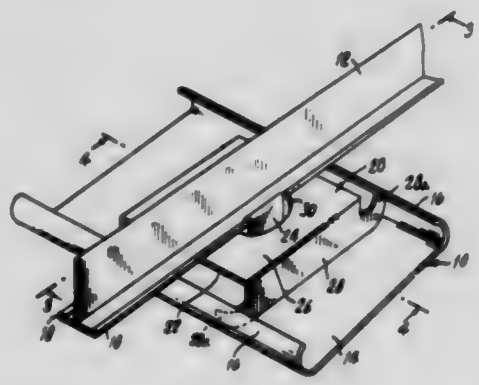
a second fluid passage connected to said inflatable means to vent pressurized fluid to deflate said inflatable means.

4,494,346

CEILING SYSTEM AND PANEL-SECURING DEVICE THEREFOR

J. Lynn Gailey, Newton Falls, Ohio, assignor to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Nov. 1, 1982, Ser. No. 438,532
Int. Cl.³ E04B 5/52
U.S. Cl. 52—489
8 Claims



1. A device for securing, to a horizontally elongated stringer, a subjacent horizontally elongated ceiling panel of upwardly opening C-shaped profile with resiliently deformable side flanges, comprising

(a) a carrier member grippable between the side flanges of the panel in a fixed angular position relative thereto; and

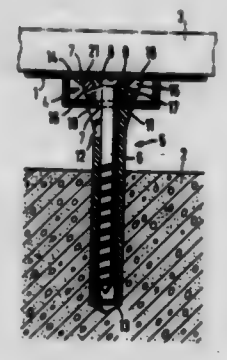
(b) a hanger member, mountable on the stringer in a fixed angular position relative thereto, for supporting the carrier member beneath the stringer for unobstructed rotation relative to the stringer about a vertical axis, such that when the carrier member is gripped by the panel and the hanger member is mounted on the stringer, the panel is suspended from the stringer and can be oriented at any desired angle relative to the stringer as viewed in plan projection.

4,494,347

METHOD AND ASSEMBLY FOR FASTENING FACADE PANELS OR FACADE SUPPORTS IN SPACED RELATION TO A SUPPORT SURFACE

Raimer Uhlig, Munich, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 426,638
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1981, 3140861
Int. Cl.³ E04B 1/38
U.S. Cl. 52—506
9 Claims



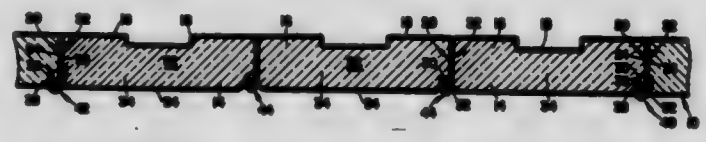
1. A method of assembling facade members in spaced relation to a structural support using a dowel which can be anchored into the structural support and a support member which can be secured in an opening in the facade member, comprising the steps of inserting the support member into the opening in the facade member, insterengaging the support member within the opening in the facade member so that the support member is secured against displacement relative to the facade member, inserting the dowel through the support member and interengaging the dowel and the support member so that the dowel is secured against displacement relative to the support member, inserting the dowel secured to the support member and the facade member into a prepared borehole in the structural support and then anchoring the dowel within the borehole in the structural support.

4,494,348

PRE-ENGINEERED MODULAR BUILDING PANEL ASSEMBLY

Rudolph F. Kastelic, 15436 Wenhaven, Chagrin Falls, Ohio 44022

Filed Dec. 15, 1981, Ser. No. 331,086
Int. Cl.³ E04C 1/10
U.S. Cl. 52—588
12 Claims



1. A panel assembly comprising:

a plurality of panel sets including a plurality of rigid panel members, each panel member having a panel wall and first and second longitudinal edge flanges configured for overlapping and mating reception to define a panel joint with one of the second and first edge flanges respectively of an adjacent second panel member, said first and second edge flanges having end portions disposed remote from said panel wall to define a panel cavity, each panel set further including a first end panel joint, a second end panel joint and at least one intermediate panel joint;

an insulating core comprising a plurality of insulating core sets with each core set including an insulating body and a moisture barrier skin received in said panel cavity and about said panel joints and being sized to span one of said panel sets, said insulating body including intermediate

longitudinal slots for receiving intermediate panel joints of said one panel set; and,

means for fastening said edge flanges and said insulating core.

4,494,349

TRUSS STRUCTURE

Arthur C. Clements, 103 M. Midtown Bldg., Munoz Rivera, Hato Rey, San Juan, P.R. 00918

Filed Jul. 28, 1982, Ser. No. 402,777

Int. Cl.³ E04C 5/06

U.S. Cl. 52—633 7 Claims



1. A truss structure comprising:

a. first and second elongated wire members each formed into a continuous generally triangular shape,

b. a first longitudinal wire member coupled to the lower apices of said first and second triangular wire members such that the apices of one triangular wire member are staggered with respect to the apices of the other triangular member and the planes of said first and second continuous triangular members form an angle with each other, and

c. second and third longitudinal wire members coupled to the upper apices of said first and second triangular wire members respectively.

4,494,350

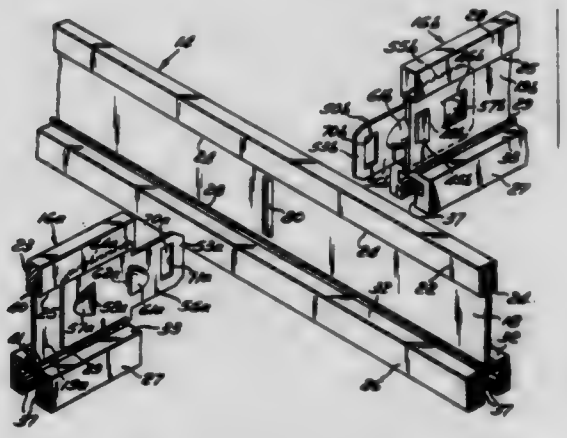
ALUMINUM SUSPENSION SYSTEM

Joseph F. Sharp, Norwalk, Calif., assignor to Ceiling Dynamics, Inc., Tucson, Ariz.

Filed Sep. 20, 1982, Ser. No. 420,354

Int. Cl.³ E04C 2/42; F16B 7/22

U.S. Cl. 52—665 9 Claims



1. A suspended ceiling grid system, comprising:

a plurality of main runners for forming plural longitudinal beams in spaced, parallel relationship, each of said main runners comprising a web, having upper and lower edges, and one or more slots therethrough;

a first and a second cross runner for forming an interconnection with a main runner, each cross runner fitting between a pair of adjacent longitudinal beams and each cross runner comprising a web, having upper and lower edges;

first means detachably mounted on said first cross runner for engaging said second cross runner;

second means detachably mounted on said second cross runner for engaging said first cross runner; and

said first and second means directly interlocking said cross runners when said first and second means are inserted into said main runner slot from opposite directions to prevent movement of said cross runners away from each other independent of said main runner web, wherein said first and second means each comprise:

a flat plate having a base portion and a tongue portion;

a first dimple formed in said base portion for detachably mounting in an aperture formed on the end of a cross runner;

a second dimple and an aperture formed on said tongue portion; and

a tab formed on the end of a cross runner, said tongue aperture receiving said tab when the tongue portions are inserted into said main runner slot from opposite directions.

4,494,351

BOOMS FOR CRANES OR THE LIKE

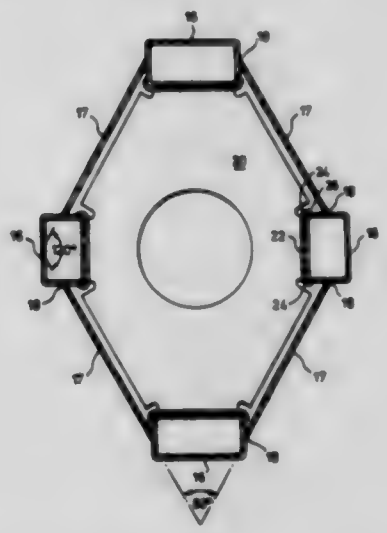
William R. Thomasson, County Durham, England, assignor to Coles Cranes Limited, Sunderland, England

Filed Aug. 18, 1982, Ser. No. 409,228

Claims priority, application United Kingdom, Aug. 18, 1981, 8125172

Int. Cl.³ E04C 3/32

U.S. Cl. 52—690 9 Claims



1. A boom for a crane comprising:

four longitudinal stiffening members spaced apart;

four substantially flat longitudinal plates, each plate being welded between adjacent stiffening members, the arrangement being so constructed as to form a boom with a substantially diamond shaped parallelogram cross-section; and

transverse plates extending transversely to and between the stiffening members and secured thereto at spaced locations along the boom, said transvers plates being spaced apart from the longitudinal plates.

4,494,352

REINFORCED STRUCTURAL MEMBER AND METHOD OF FABRICATION

John C. Lecmbuis, 10438 Lesterford Ave., Downey, Calif. 90241

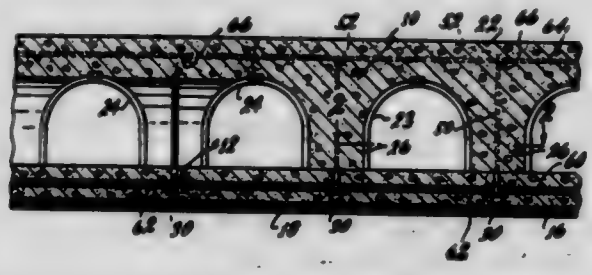
Division of Ser. No. 069,874, Aug. 27, 1979, Pat. No. 4,312,163. This application Jul. 13, 1981, Ser. No. 283,021

Int. Cl.³ E04G 21/00

U.S. Cl. 52—741 7 Claims

1. An improved method of construction of a composite truss member of a type which includes a base slab of concrete containing reinforcing means extending through the slab, the said

truss member having a web formation providing a network of spaces for allowing air circulation through the network, the truss member having an overlying layer of concrete over the web formation and having spaced columns of concrete extending through the web formation to the said base slab, the said truss member having reinforcing members embedded in the slabs including reinforcing strut members extending through the spaced columns of concrete, the improvement including the step of positioning first reinforcing strut members on a surface on centers corresponding to the centers of the spaced



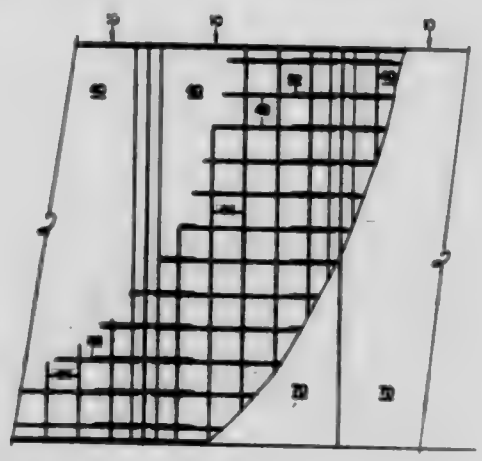
columns of concrete to be formed, forming the said reinforcing members to have top ends when positioned to be at substantially the top level of the lower slab of concrete and then pouring the concrete with the said reinforcing members in position prior to forming the said network and overlying layer of concrete and spaced columns of concrete, and securing second reinforcing strut members to predetermined ones of the first reinforcing strut members, attaching screed support means to said predetermined second reinforcing strut members, supporting screeding means from said screed support means, and screeding the surface of the lower slab of concrete.

4,494,353

METHOD OF MANUFACTURING AND BUILDING PREFORMED MODULAR BUILDING WALL SECTIONS

Alvin W. Lewis, 82 Court St., Westfield, Mass. 01085

Filed May 20, 1982, Ser. No. 380,275
Int. Cl.³ E09G *21/00*
U.S. Cl. 52—741 2 Claims



1. A method of constructing a building load-bearing wall structure disposed upon a supporting base foundation, the method comprising the steps of:

prefabricating a plurality of elongate wall modules each comprised of an open network of spaced reinforcing bars extending along X and Y axes on opposite sides of and spaced from an insulation panel, forming a skeletal network of a frame assembly consisting of:

a. seating and welding a horizontally-disposed bottom channel to a sill bolted to a base foundation,

b. seating and bolting a horizontally-disposed top plate upon a top channel,

c. seating spaced pairs of vertically-disposed U-shaped hat channels in back-to-back relationship with a stiffening connector sandwiched between and welded to the hat channels of at least some of said pairs,

disposing each wall module into a respective rectangular portion of the frame assembly defined by portions of the top and bottom channels and the respective adjacent hat channel at each side,

nesting each edge of the insulation panel of each wall module in the defined U of the respective adjacent channel, welding the hat channels and connectors to the adjacent bottom and top channels,

extending a plurality of horizontally-disposed reinforcing connecting rods through strategically-aligned openings in each arrangement of hat channels and connector and into the open network of reinforcing bars on opposite sides of the respective insulation panel of each adjacent wall module,

and pneumatically applying gunite to the spaces between the channels on opposite sides of the insulation panel to define a reinforced concrete structure.

4,494,354

DOOR FRAME CONSTRUCTION

James R. Johnston, Sterling, Ill., assignor to National Manufacturing Co., Sterling, Ill.

Filed Jan. 17, 1983, Ser. No. 458,716
Int. Cl.³ E04C *2/34*
U.S. Cl. 52—814 10 Claims



1. A door frame, comprising in combination

first and second vertical frame members each having first and second mutually parallel channels facing toward the other of said vertical frame members,

said first channel being defined by a first web portion and first and second rigid side flanges,

said second channel being defined by a second web portion, a third rigid side flange and said second rigid side flange,

said flanges each having straight mutually parallel inner and outer surfaces perpendicular to said first and second web portions,

a plurality of horizontal frame members respectively received in said first channels and disposed against said first webs and said inner surfaces of said first and second flanges,

a panel positioned against said horizontal frame members received in said second channel of said vertical frame members and disposed against said inner surface of said flange with its vertical edge portions respectively disposed in said second channels,

said second web portion and said third side flange being substantially thicker than said first web portion and said first and second side flanges.

4,494,355

CASE FEEDING APPARATUS FOR DROP PACKER

Lloyd D. Johnson, Portland, Conn., and Jack H. Lewis, Marion, N.Y., assignors to Standard-Knapp, Inc., Portland, Conn.

Filed Mar. 19, 1982, Ser. No. 359,813
Int. Cl.³ B65B *57/10*
U.S. Cl. 53—69 6 Claims

1. A case feeding apparatus for use with a drop packer which requires each case to mate with a stationary grid structure so that the articles are guided as they drop into the case, said apparatus comprising:

a lift table movable between up and down positions for raising each case into mating relationship with the fixed grid structure,

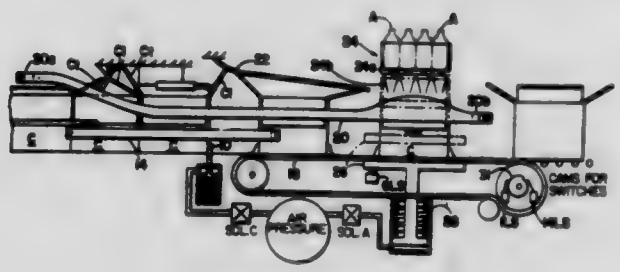
case conveyor means for moving cases onto the lift table in the down position of said table,

indexing means having a start condition and a run condition for intermittently advancing said case conveyor means from a first predetermined position to a second position spaced therefrom when said table is down,

sensing means to provide a first signal when a case moves onto said table in said table down position,

means responsive to said first signal for moving said lift table up and after a predetermined time delay moving said table down,

sensing means to provide a second signal when said table is down,



means responsive to said second signal for energizing said indexing means,

means returning said indexing means to said start condition,

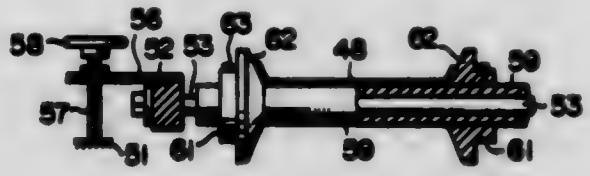
said case conveyor means including at least two laterally spaced conveyors, one of said two conveyors having trailing lugs and the other of said two conveyors having leading lugs for accurately locating the cases therebetween during intermittent case conveyor movement, and shaft means for driving said two conveyors, said shaft means including means for adjustably positioning one of said two conveyors relative to the other to accommodate cases of different longitudinal dimension.

4,494,356

PRODUCING APPARATUS FOR FISH MEAT PROCESSED FOOD

Tetsuo Takiguchi, Ube, Japan, assignor to Kabushiki Kaisha Yamagiya Tekkosho, Yamaguchi, Japan

Filed Aug. 2, 1982, Ser. No. 404,017
Claims priority, application Japan, Aug. 1, 1981, 56-120816
Int. Cl.³ A22C *7/00, 25/00*
U.S. Cl. 53—122 4 Claims



1. An apparatus for continuously producing fish meat processed food in a bundled state of a number of filament-like fish meat from paste-like fish meat, the apparatus comprising:

a solidification device for solidifying said paste-like fish meat into thin web-like fish meat, said solidification device comprising a nozzle device for stretching said paste-like fish meat into a web-like fish meat, a first endless belt device for transporting said paste-like fish meat from said nozzle device, a heating device provided on said first endless belt device to heat and solidify said paste-like fish meat, and a second endless belt device whose transporting inlet side is positioned slightly spaced from a transporting outlet side of said first endless belt device, said second endless belt cooling the solidified fish meat from said first endless belt device while transporting the solidified fish meat at the same moving speed as that of said first endless belt device;

a first cutting device positioned on the transporting outlet side of said second endless belt device to cut said solidified fish meat lengthwise to form fine filament-like fish meat;

a collection device for collecting said filament-like fish meat while transporting the same;

a bundling device for urging and bundling the collected fish meat collected by said collection device, said bundling device comprising a lower conveyor device extending in a moving direction of said collected fish meat and having a lower supporting portion for supporting a lower portion of said collected fish meat and a lower conveyor device extending above said lower conveyor device and having an upper supporting portion for pressing said collected fish meat in a direction of said lower supporting portion while successively bearing on the upper portion of said collected fish meat;

a packaging device positioned on transporting outlet sides of said upper and lower conveyors to package the peripheral surface of the bundled fish meat from said bundling device, said packaging device comprising a packaging film roll for packaging said bundled fish meat and a guide member for guiding said bundled fish meat so as to package the peripheral surface thereof while bearing the packaging film from said packaging film roll on said bundled fish meat; and

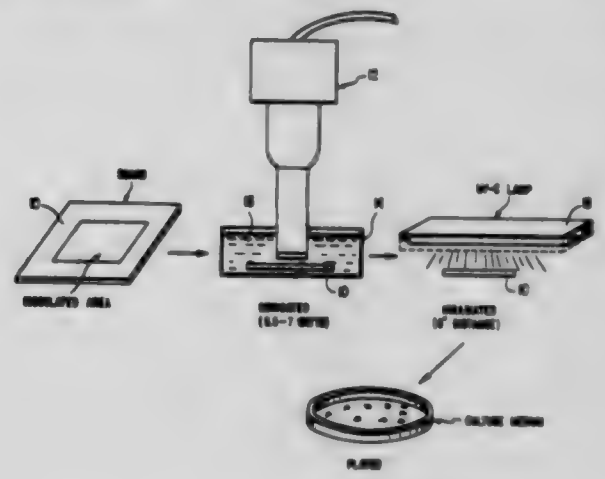
a second cutting device for cutting the packaged fish meat packaged by said packaging device into its axial required length.

4,494,357

STERILIZATION OF PACKAGING MATERIAL

Michael J. DiGeronimo, Chester, N.Y., assignor to International Paper Company, New York, N.Y.

Division of Ser. No. 336,212, Dec. 31, 1981, Pat. No. 4,424,188.
This application Aug. 25, 1983, Ser. No. 526,293
Int. Cl.³ B65B *55/00*
U.S. Cl. 53—167 16 Claims



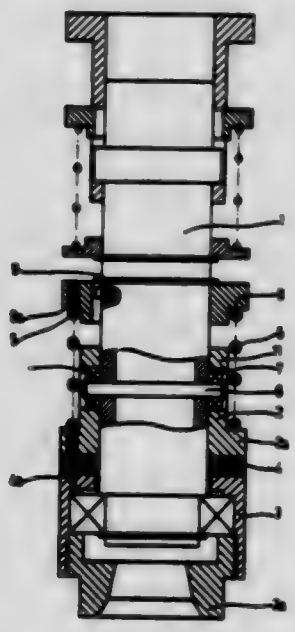
9. An apparatus for the sequential sterilization of sheet packaging material such as a paperboard laminate, the packaging material adapted to be sterilized and then formed into individual aseptic containers, the containers thence adapted to be filled with a substance, such as a potable liquid, which is to be stored in the containers in the aseptic container environment until use, the apparatus including, a vat of liquid free of chemical biocide, means for continuously moving the packaging material into and out of the vat of liquid, a sonicator in the liquid vat for imparting sonic energy to the liquid, means for maintaining at least one surface of a portion of the packaging material in contact with the liquid, whereby the at least one surface of the packaging material is exposed to sonic energy, means for drying the packaging material after it moves out of the vat, means downstream of said vat for subjecting at least the sonicated surface of the packaging material to UV radiation after the packaging material, whereby sterile packaging material useful for aseptic packaging is produced.

4,494,358

TORSIONAL TORQUE CONTROLLED FRICTION SCREWING HEAD FOR CAP INSTALLATION

Michel Zalkin, Saint-Cloud, France, assignor to Etablissements Andre Zalkin et Cie, Rueil, France

Filed Mar. 9, 1982, Ser. No. 356,563
Claims priority, application France, Mar. 25, 1981, 81 06033
Int. Cl.³ B65B 7/28; B67B 1/06
U.S. Cl. 53—331.5 6 Claims



1. A screwing head for tightening caps on containers, comprising,

a hub member which is adapted to be rotated about its axis in a forward cap-tightening direction,

a unit which has a cap gripping means on its lower end, said unit being rotatably supported on the hub member,

a lower bush member which is slidably supported on the hub member above said unit,

a friction disc which provides a friction clutch between the unit and the lower bush member,

a torsional and compression spring means which has one end connected to the lower bush member and an opposite end affixed to the hub member, said spring means being under torsion to provide forward rotational displacement of the lower bush member relative to the hub member, said spring means also being under compression to apply an axial compressive force to said frictional disc,

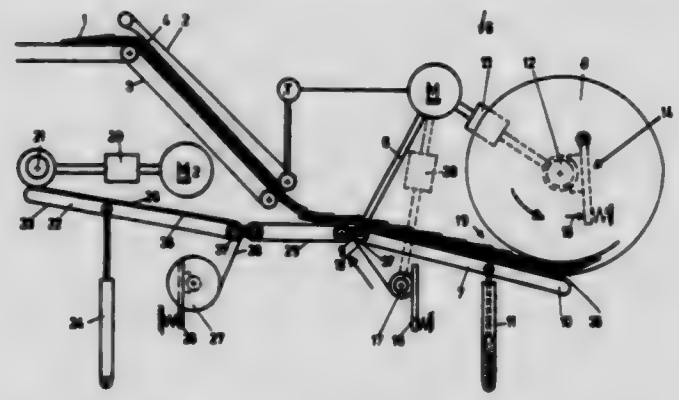
a cam mechanism operable between said lower bush member and said hub member, said cam mechanism including a cam slot in one member and a cam follower on the other member, said cam slot sloping at a given angle relative to a transverse plane of the hub member and having upper and lower slopes, said cam follower acting on both upper and lower slopes of the cam slot, said cam mechanism being operable to lock by a wedging action the lower bush member with the friction disc until the lower bush member rotates against the torsional force of the spring means in a reverse direction of rotation relative to the hub member when the cap is screwed on the container to the required torque, said cam mechanism being operable in response to said reverse direction rotation to raise the lower bush member slightly to permit slippage of said friction clutch.

4,494,359

METHOD AND APPARATUS FOR THE LONG-TERM PRESSING OF PRINTED PRODUCTS ESPECIALLY NEWSPAPERS

Werner Honegger, Tann-Rüti, Switzerland, assignor to Ferag Ag, Hinwil, Switzerland

Filed Jan. 11, 1982, Ser. No. 338,568
Claims priority, application Switzerland, Feb. 3, 1981, 692/81
Int. Cl.³ B65H 17/02
U.S. Cl. 53—430 8 Claims



1. A method for the long-term pressing of printed products, especially newspapers, each of the products having a product spine, comprising the steps of:

providing an imbricated arrangement of the products so as to define an imbricated product stream;

feeding the printed products in the imbricated product stream so as to move in a first predetermined direction with the product spine leading;

tightly winding the thus infed imbricated product stream while moving in said predetermined direction into a wound package;

unwinding the wound package and rewinding the previously wound package while moving the unwound imbricated product stream in a direction opposite to said predetermined direction so that the product spine trails;

tightly rewinding said imbricated product stream while moving in said other direction into a rewound package; and

both the initial winding of the package and the rewinding of the unwound package into a rewound package is accomplished by infeeding the product stream from below into the package being wound.

4,494,360

APPARATUS FOR BUNDLING SHEETS FOR FASCICLES

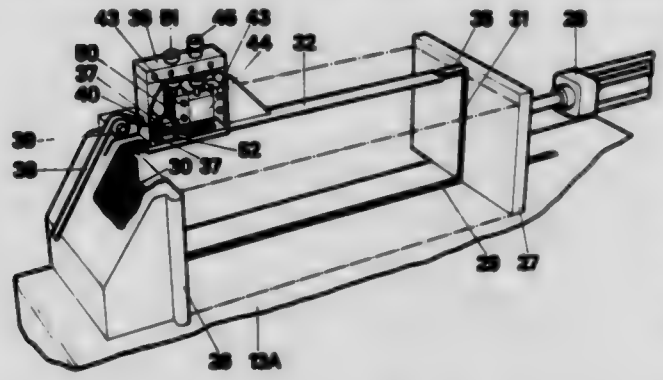
Carl G. A. Flensburg, Per Albin Hanssons väg 52 B, S-214 63 Malmö, and Rolf H. V. Isakssen, Diakongatan 59, S-216 23 Malmö, both of Sweden

PCT No. PCT/SE81/00144, § 371 Date Jan. 15, 1982, § 102(e) Date Jan. 15, 1982, PCT Pub. No. WO81/03315, PCT Pub. Date Nov. 26, 1981
PCT Filed May 13, 1981, Ser. No. 341,992
Claims priority, application Sweden, May 13, 1980, 8003573
Int. Cl.³ B65 63/02, 13/20, 13/04, 13/06
U.S. Cl. 53—528 4 Claims

1. An apparatus for bundling sheets of fascicles supplied one by one and arranged in a regular loose bundle with flat sides, said apparatus including a bundling position for building up the loose regular bundle of sheets or fascicles on a support surface, a strapping position on said support surface disposed along side said bundling position, in parallel relation therewith, and parallel to the longitudinal dimension of the bundle, means for displacing a bundle from said bundling position to said strapping position in a direction transverse to said bundling position, means for feeding a band or the like in a direction generally parallel to the longitudinal dimension of a bundle in the strapping position, means for guiding the band in a loop around a bundle in the strapping position and means for sealing a loop of

band laid around a bundle in the strapping position, wherein the improvement comprises:

said strapping position having spaced apart press plates, with one of said plates being movable toward and away from the other plate to compress a bundle located between said plates, said means for guiding the band in a loop around a bundle compressed between said press plates comprising a groove formed in each said press plate and a groove in said support surface for the bundle with said groove in said support surface extending parallel to the longitudinal



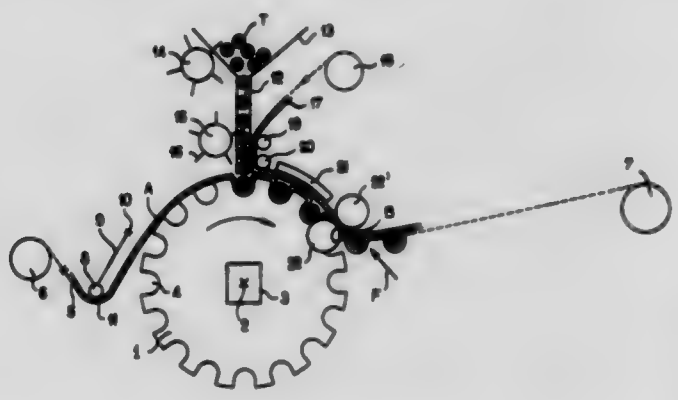
dimension of the bundle and with said groove in said support surface extending between said grooves in said press plates, said grooves in said press plates intersecting said groove and said support surface at right angles, said means for guiding the band further including a guide member located in a plane that passes through said groove in said support surface and said groovet in said press plates but being spaced from said groove in said support surface and extending parallel thereto, said guide member having one end which extends from one of said press plates.

4,494,361

PACKAGING OF DRINKING STRAWS

Jean-Claude Barathon; Fernand Moiny, both of Donzy; Christian Soyez, Cosne, and Gérard Soyez, Celle S. Loire, all of France, assignors to Soyez FR. S.A., France

Filed Aug. 4, 1981, Ser. No. 290,003
Claims priority, application France, Aug. 6, 1980, 80 17371
Int. Cl.³ B65B 47/04
U.S. Cl. 53—553 11 Claims



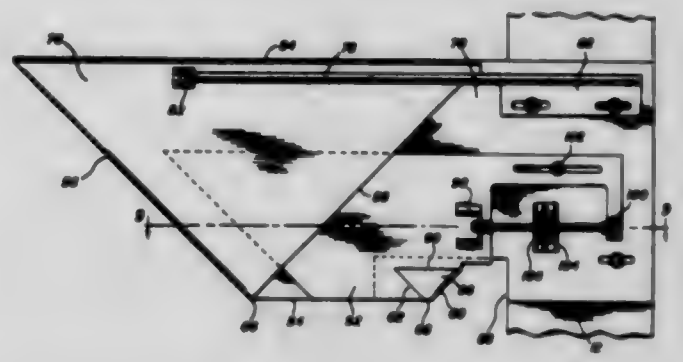
1. An apparatus for the manufacture of a sheet constituted by a first and second strip of flexible material enclosing a series of tubes therbetween, said tubes having ends and being in the form of lightweight hollow members, said apparatus comprising an endless member with a surface defining parallel recesses each capable of receiving a tube, said endless member having an axis of rotation, means for rotating the endless member continuously about said axis of rotation, means for bringing the first strip of flexible material into contact with said surface of the endless member over a sector of the path of the endless member, means for distributing the tubes including a supply conduit in which the tubes form a column of tubes, said column having a lower end which is parallel to the recesses, means for pushing said column of tubes through the conduit in the direction of said surface, and in which the supply conduit has an outlet which opens out in the immediate vicinity of the surface of the endless member at one point of said sector, so that the tube present at the outlet of the conduit and in contact with the first strip is forced into the recess of the endless member which passes below said outlet thus pushing the first strip into the recess and is immediately replaced by the next tube in the column, means for causing the second strip of flexible material to overlap the first strip downstream of said outlet in the direction of rotation of the endless member, and rotary heated wheels and a guide, said wheels permanently touch the two overlapping strips by toothed heated tracks, the rotation of the wheels being synchronized with that of the endless member so that the tubes are located between the heated teeth and the first and second strips are welded one to the other in regions which surround the ends of the tubes, the guide being located on a portion of said sector between the outlet of said supply conduit and the heated wheels and being employed to keep the two strips pressed one against the other between said outlet and said wheels.

4,494,362

PACKAGE FORMING WEB FOLDER

Keith C. Koch, Westwood, Iowa, assignor to Metromail, Inc., Mt. Pleasant, Iowa

Filed Mar. 24, 1981, Ser. No. 247,109
Int. Cl.³ B65B 9/06
U.S. Cl. 53—550 13 Claims



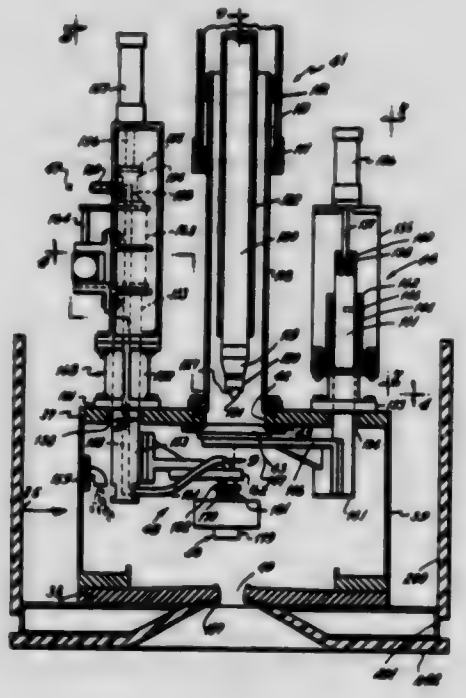
1. In combination with means for feeding an unfolded web of flexible sheet material along a predetermined direction of travel, said unfolded web having longitudinally extending intermediate and side portions, a web folding device having a supporting surface panel guiding travel of the unfolded web along said direction of travel, and guide means for directionally changing travel of the web including an intermediate segment on the panel perpendicular to said direction of travel about which the intermediate portion of the web undergoes a single 180° change in travel direction and a pair of side segments of the panel extending at angles to the direction of travel about which the side portions of the web undergo 90° changes, respectively, in travel direction, the improvement comprising a pair of planar guide members respectively connected to said side segments and extending therefrom by different distances in said direction of travel parallel to the panel, each of said guide members including a free edge about which one of the side portions of the web undergoes a second 90° change in travel direction into overlapping contact with the other of the side portions to form a flat tube.

4,494,363

METHOD AND APPARATUS FOR ASEPTICALLY FILLING CONTAINERS

Albert F. Rice, Stockton, Calif.; John C. Davis, Palentine, and Ronald J. Reiss, Hoffman Estates, both of Ill., assignors to FranRica Mfg. Inc., Stockton, Calif. and Container Technologies, Inc., Barrington, Ill.

Filed Aug. 20, 1982, Ser. No. 409,927
Int. Cl.³ B65B 7/02, 31/02, 55/04
U.S. Cl. 53—426 36 Claims



1. The method of aseptically filling a container having a fitment therein, said fitment including a rigid neck, a flange on the outer periphery of said neck, a frangible diaphragm extending across said neck to seal the interior at said container and an exposed sealing rim adapted to receive a lid in heat sealed engagement disposed outwardly of said diaphragm, said frangible diaphragm being spaced inwardly from said sealing rim, said flexible container being sterilized, said method comprising the steps of:

providing an enclosed filling chamber with an opening;

securing said bag to the outside of said filling chamber by locking said flange against the chamber so that said fitment extends into and seals said opening;

holding a lid within said filling chamber apart from said fitment;

introducing steam into said filling chamber to sterilize said chamber, the exposed portion of said fitment and said lid while maintaining the interior of said flexible container free from steam;

maintaining a fill tube completely in an asceptic housing that is sealed from said chamber;

opening said housing and introducing said fill tube trough said chamber and

puncturing said frangible diaphragm with said fill tube;

establishing a sealed relationship between said fill tube and the inside of said neck in a region spaced inwardly from said rim;

introducing product through said fill tube into said flexible container;

withdrawing said fill tube from said neck completely into said housing and sealing said housing from said chamber;

transporting a lid into position across said rim;

heat sealing said lid to said rim while within said chamber; and

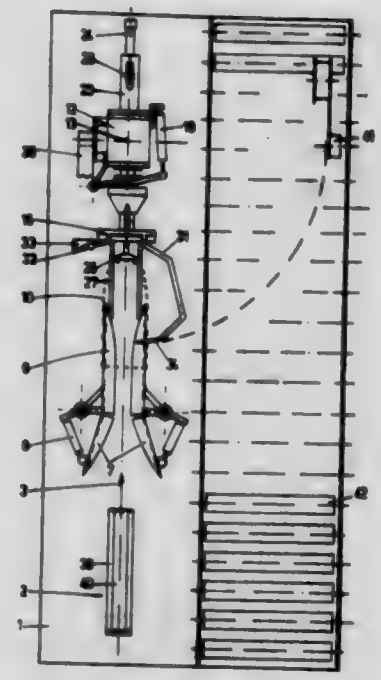
removing the neck of said container from the opening of said filling chamber.

4,494,364

APPARATUS FOR PACKING FOWLS IN PLASTIC BAGS

Pieter Meyn, P.P. Box 16, 1510 AA Oostzaan, Netherlands

Continuation of Ser. No. 256,561, Apr. 22, 1981, abandoned.
This application Nov. 10, 1983, Ser. No. 550,717
Claims priority, application Netherlands, Apr. 25, 1980, 8002379
Int. Cl.³ B65B 5/04, 7/12
U.S. Cl. 53—570 7 Claims



1. An apparatus for packing a bird in a plastic bag, a magazine holding said plastic bag, a funnel, one end of said funnel inserted into said bag previously opened by blown air, an abutment surface, plunger means pressing said bird into said bag and forcing said bird together with said bag against said abutment folding said bird's legs back against its body in said bag, means for tying said bag closed, the improvement comprising:

a support;

clamp means carried by said support for grasping and holding said bag after said bird has been pressed into said bag by said plunger means;

pincer means carried by said support for closing and holding the open end of said bag after said plunger means is removed from said bag;

means for rotating said bird and bag about the longitudinal axis of said bag along with said clamp means relative to said support and relative to said pincer means holding an end of bag for tightening and twisting said end of said bag prior to tying;

a tying station spaced from said clamp means including said means for tying and closing said twisted end of said bag about said fowl;

a slotted plate receivable over said closed end of said bag between said clamp means and said pincer means for holding back said bird as said bag is being twisted; and

said slotted plate coupled to said clamp means whereby said slotted plate and said clamp means are rotated together with the bag to reduce chaffing of said bag.

4,494,365

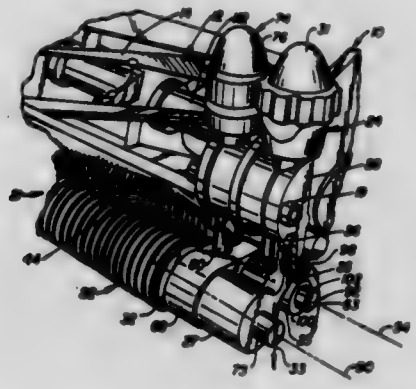
MOWER CUTTING UNIT

Lawrence L. Lloyd, 1001 Olmstead Ave., Pacific Grove, Calif. 93950

Filed Oct. 26, 1983, Ser. No. 545,971
Int. Cl.³ A01D 55/18
U.S. Cl. 56—256 23 Claims

1. A mower cutting unit of the type including a mower blade mounted for rotation to a frame and support members mounted to the frame which support the cutting unit on a mowing surface, the improvement comprising:

one said support member comprising a generally horizontal slotted expunger roller mounted to the frame for rotation about an expunger roller axis, an outer expunger roller surface and a plurality of vertically disposed annular slots located in a predetermined axial pattern along said expunger roller, said slots dividing said expunger roller surface into a plurality of expunger roller surface segments;



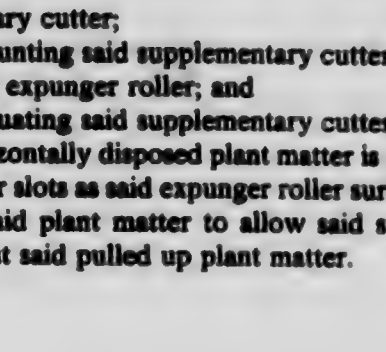
a supplementary cutter;
means for mounting said supplementary cutter adjacent and behind said expunger roller; and
means for actuating said supplementary cutter;
whereby horizontally disposed plant matter is pulled up into said circular slots as said expunger roller surface segments roll over said plant matter to allow said supplementary cutter to cut said pulled up plant matter.

4,494,366

YARN END UNTWISTING DEVICE FOR A PNEUMATIC YARN SPLICING DEVICE

Koji Deno, Shiga, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Feb. 15, 1983, Ser. No. 466,725
Claims priority, application Japan, Feb. 18, 1982, 57-21995[U]
Int. Cl.³ D01H *15/00*
U.S. Cl. 57—22 12 Claims



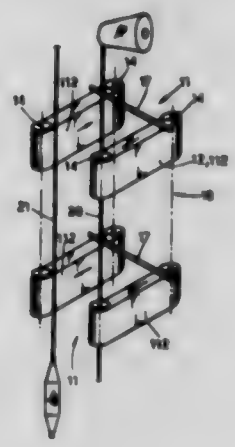
1. A yarn end untwisting device for a pneumatic yarn splicing device, comprising a splicing block having a tubular nozzle hole, a tubular untwisting pipe insertable into the tubular nozzle hole, the untwisting pipe having one or more jetting holes of a predetermined shape formed therein, and a fluid passage formed in the splicing block, the fluid passage opening into the nozzle hole for jetting a pressurized fluid into the nozzle hole, wherein the amount or direction of the pressurized fluid jetting into the nozzle hole can optionally be changed by inserting the untwisting pipe into said nozzle hole so that a selected one of said jetting holes communicates with said fluid passage.

4,494,367

SPLICER DEVICE TO DISASSEMBLE AND RECOMPOSE YARN MECHANICALLY

Roberto Bediali, Pordenone, Italy, assignor to Officine Savio S.p.A., Pordenone, Italy

Filed Nov. 4, 1982, Ser. No. 439,323
Claims priority, application Italy, Nov. 4, 1981, 83493 A/81; Sep. 30, 1982, 83456 A/82
Int. Cl.³ B65H *69/06*; D01H *15/00*
U.S. Cl. 57—22 20 Claims



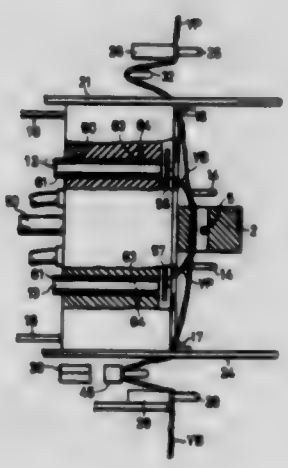
1. Splicer device through which yarns pass to mechanically disassemble and recompose yarn having tail ends comprising means to untwist-retwist the yarns to be spliced movable in opposite directions,
means for sideways displacement of at least one of two yarns to bring said yarns together after untwisting,
clamping means intermediate said untwisting-retwisting means to clamp said yarns in an untwisted condition,
securing and tearing means on each side of said untwist-retwist means to pluck and remove excessive tails of each yarn,
retwisting means intermediate said untwist-retwist means which together with said untwist-retwist means retwist the yarns, and
discharge means on each side of said untwist-retwist means to remove the excessive tails of said yarns.

4,494,368

METHOD OF PREVENTING IRREGULAR UNTWISTING OF YARN ENDS IN SPLICING SPUN YARNS

Hiroshi Mima, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Feb. 15, 1983, Ser. No. 466,726
Claims priority, application Japan, Feb. 18, 1982, 57/24955
Int. Cl.³ D01H *15/00*
U.S. Cl. 57—22 10 Claims



1. A pneumatic yarn splicing method of spun yarns including steps of pneumatically untwisting and loosening the respective free yarn ends to be spliced, overlapping the untwisted yarn

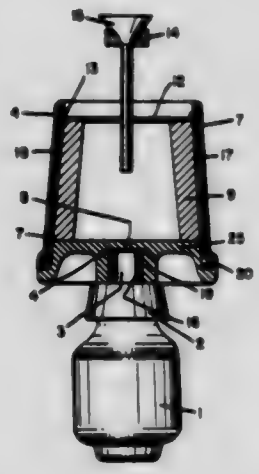
ends one over another, and applying jetted fluid flow on the overlapped yarn ends to mix and entangle fibers of the yarn ends together for splicing, characterized in that each of said untwisted spun yarn ends is cut at a predetermined position thereof prior to overlapping the yarn ends to make the respective lengths of the untwisted yarn end portions uniform.

4,494,369

SPINNING POT USED FOR TWISTING AND WINDING SYNTHETIC TEXTILE YARNS

Rajan V. Ramani, Bangalore, India, assignor to Council of Scientific and Industrial Research, New Delhi, India

Filed Sep. 29, 1982, Ser. No. 426,729
Int. Cl.³ D01H *7/80*
U.S. Cl. 57—76 8 Claims



1. A spinning pot for twisting and winding synthetic textile yarns comprising:

a barrel defining two open ends;

a removable lid located at one end of the barrel spanning the diameter of the barrel and having a locating step concentric with the barrel;

a base plate slidingly supporting the edge of the other end of the barrel and projecting into the barrel concentrically with the barrel;

locking means projecting from the base plate into a corresponding recess defined by an inner wall of the barrel during rotation of the barrel to allow the barrel to expand uniformly without lifting off from the base plate; and

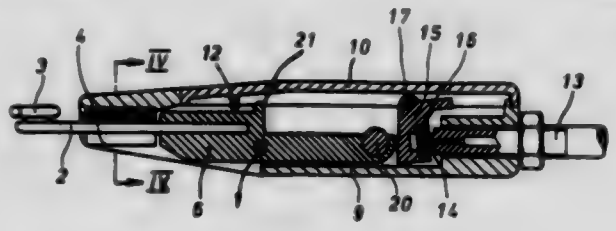
a bushing have a first member integral with the base plate and a second member fixed to a rotatable shaft of a motor, said second member engaging said first member for rotation of said barrel upon activation of said motor.

4,494,370

STOP MOTION FOR TEXTILE MACHINES

Siegfried Inger, Krefeld, Fed. Rep. of Germany, assignor to Palitex Project-Company GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Jan. 14, 1983, Ser. No. 457,884
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1982, 3201694
Int. Cl.³ D01H *13/16*
U.S. Cl. 57—81 11 Claims



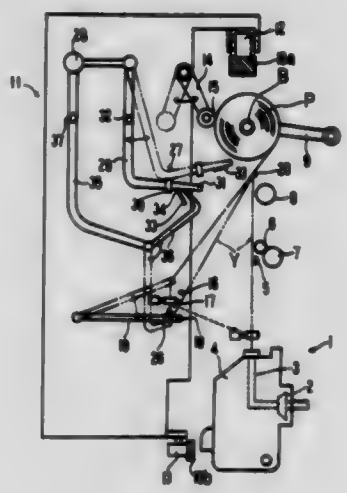
1. A stop motion mechanism for a textile machine for transmitting a signal to stop a work station in the event of thread breakage or exhaustion and comprising a thread sensor bar, a thread guide eyelet secured to one end of said thread sensor bar for receiving a running thread therethrough, means pivotally mounting said thread sensor bar for movement between a first position occupied when the thread is running normally through said thread guide eyelet and a second position occupied when the thread breaks or exhausts, means responsive to said thread sensor bar occupying said second position for transmitting the signal, and guide means positioned between said thread guide eyelet and said pivotal mounting means for said thread sensor bar for receiving said thread sensor bar when it occupies its first position and for supporting said thread sensor bar against lateral vibrational movements caused by the running thread.

4,494,371

METHOD AND APPARATUS FOR YARN PIECING IN A RINGLESS SPINNING MACHINE

Takayuki Morita, Kariya; Takahiko Tsunekawa, and Hisao Amano, both of Aichi, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Aug. 9, 1983, Ser. No. 521,601
Claims priority, application Japan, Aug. 12, 1982, 57-140161
Int. Cl.³ D01H *15/00*
U.S. Cl. 57—263 11 Claims



1. A method of piecing a broken yarn from a yarn package on a rotatably mounted bobbin into a pneumatically operated spinning unit with which the bobbin is associated in a ringless spinning machine, comprising the steps of catching the free end and unwinding a length of said broken yarn from said yarn package, rewinding part of said length on to said yarn package at substantially a single location on the surface thereof whereby a finite length of said broken yarn extending from said location can be determined, cutting said length of broken yarn to provide a cut end thereof and thereby determining said finite length to be that length of said yarn between its said cut end and said location on said yarn package, introducing said cut end of the yarn into said spinning unit while unwinding a further predetermined length of said yarn from said location on said yarn package, and again winding said yarn from said spinning unit on to said yarn package.

4,494,372

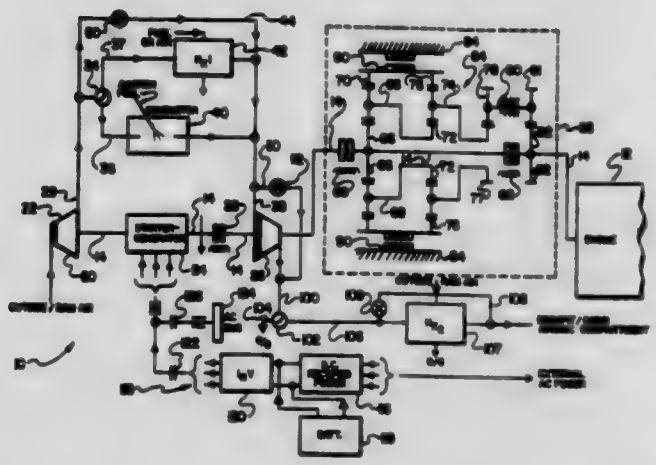
MULTI ROLE PRIMARY/AUXILIARY POWER SYSTEM WITH ENGINE START CAPABILITY FOR AIRCRAFT

Michael J. Cronin, Sherman Oaks, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed Jun. 10, 1983, Ser. No. 502,902
Int. Cl.³ F02C *7/268*, *7/32*
U.S. Cl. 60—39.07 8 Claims

1. A multi role primary/auxiliary power system for an aircraft having at least one engine, said engine having a drive shaft, said power system comprising:

a turbine coupled to said drive shaft;
a compressor coupled to said drive shaft;
a motor/generator coupled to said drive shaft, said motor/-generator mounted between said compressor and said turbine;
first passage means coupling the outlet of said compressor to said inlet of said turbine;
a combustor mounted in said first passage means;

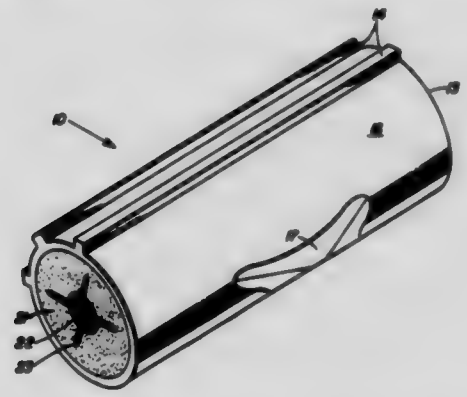


first clutch means mounted on said drive shaft adapted to disengage said motor/generator from said turbine;
a second passage means coupled to the outlet of said turbine and adapted to vent the output of said turbine overboard;
third passage means coupling said second passage means to the cabin of said aircraft; and
first valve means mounted in said second passage means adapted to close off the flow overboard in said second passage means and direct it to said third passage means.

4,494,373
FAIL SAFE ROCKET MOTOR

Ronald F. Vetter; Theodore A. Hicks, and Warren R. Compton, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 17, 1982, Ser. No. 378,580
Int. Cl.³ F02K 9/00
U.S. Cl. 60—253 4 Claims

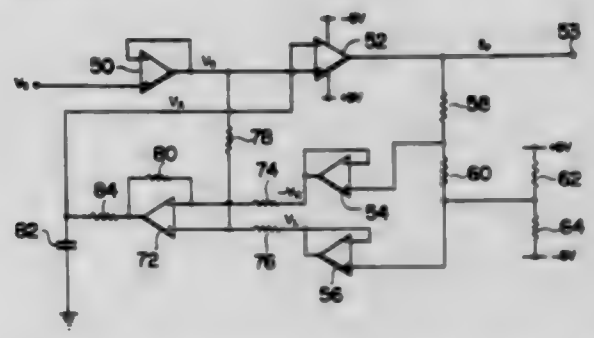


1. A rocket motor having a reduced likelihood of explosion in an external fire and comprising a cylindrical casing having a predetermined segmental portion extending axially along the casing and having a predetermined peripheral area which is disposed diametrically oppositely from said portion and is disposed centrally thereof in a direction axially along the casing; a thermally protective coating substantially covering the remainder of the periphery of the casing so that said area is thermally unprotected by the coating; a rib fixedly connected to said portion and extending therealong axially of the casing to stiffen said portion against bending in a plane passing through said portion and said area; and a propellant grain surrounded by the casing, so that when the casing is subjected to such a fire, stress is generated in the casing at said area to cause a rupture of the casing thereat.

4,494,374
AIR/FUEL RATIO MONITORING SYSTEM IN IC ENGINE USING OXYGEN SENSOR

Tsuyoshi Kitahara, Yokohama; Kohki Sone, Tokyo, and Masaaki Uchida, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Jan. 27, 1983, Ser. No. 461,475
Claims priority, application Japan, Jan. 29, 1982, 57-12642
Int. Cl.³ F01N 3/20
U.S. Cl. 60—276 5 Claims



1. In a system for monitoring an air/fuel ratio of air-fuel mixture supplied to an internal combustion engine, the system having an oxygen sensor of the concentration cell type disposed in an exhaust passage of the engine, the oxygen sensor having a laminate comprising an inner electrode layer, a microscopically porous layer of an oxygen ion conductive solid electrolyte and an outer electrode layer exposed to an exhaust gas for producing an output which varies between a high-level voltage signal when the air/fuel ratio is below stoichiometric and a low-level voltage signal when the air/fuel ratio is above stoichiometric, and judgement means for producing an air/fuel ratio signal indicative of whether the air/fuel ratio is above or below stoichiometric by comparing the output of the oxygen sensor with a reference voltage,

said judgement means comprising a modulating means for producing a modulated voltage signal by subtracting a first predetermined voltage from the output of said oxygen sensor when said air/fuel ratio signal indicates that the air/fuel ratio is below stoichiometric and by adding a second predetermined voltage to the output of said oxygen sensor when said air/fuel ratio signal indicates that the air/fuel ratio is above stoichiometric, and smoothing means for smoothing said modulated voltage signal to produce a smoothed voltage and for supplying said smoothed voltage to said judgement means as said reference voltage.

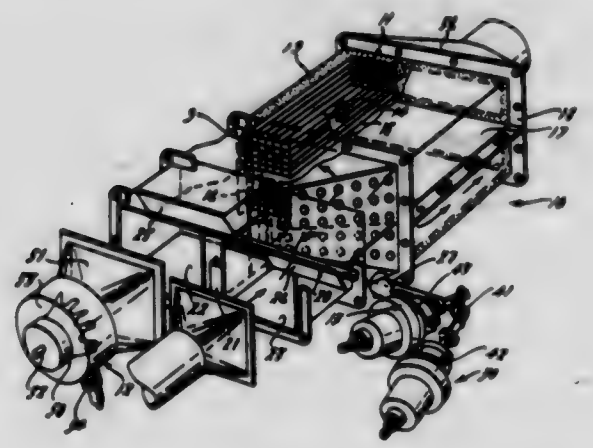
4,494,375
FILTRATION SYSTEM FOR DIESEL ENGINE EXHAUST-I

Vemulapalli D. N. Rao, Bloomfield Township, Oakland County, and Wallace R. Wade, Farmington Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 3, 1983, Ser. No. 463,688
Int. Cl.³ F01N 3/02
U.S. Cl. 60—296 12 Claims

1. A filtration system operative to remove oxidizable particulates from the exhaust gas of a diesel engine, comprising:
(a) filtration means having a filter element operative to filter out and collect a substantial portion of the entrained particulates in the exhaust gas;
(b) oxidation means for conducting a flow of gas, heated by a source of energy, through at least a portion of said filter element and effective to ignite said particulates in that portion; and
(c) flow control means having walls dividing said filter element into first and second portions, and having a flow

diverter effective to normally permit full exhaust gas flow through both of said filter portions, and simultaneously effective to selectively permit exhaust gas flow through



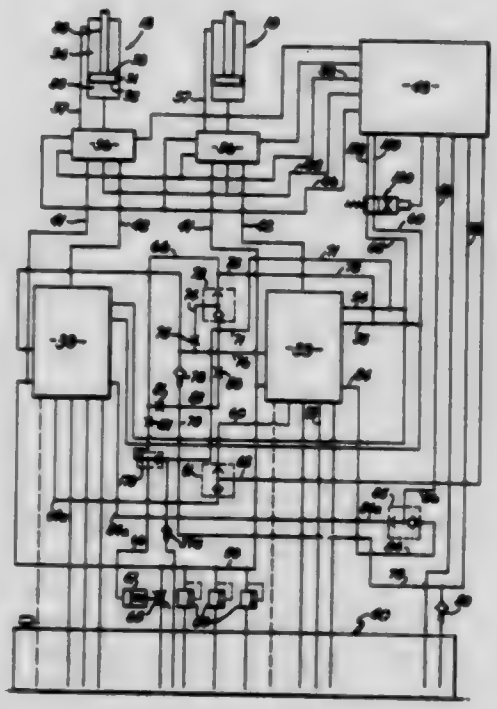
only one of said filter portions while permitting flow of heated gas of said oxidation means through the other of said filter portions.

4,494,376

FLUID ACTUATED JACK MECHANISM

Ronald E. Beaufort, Laguna Niguel, Calif., assignor to Varco International, Inc., Orange, Calif.

Filed Jul. 20, 1981, Ser. No. 284,672
Int. Cl.³ F15B 13/042, 13/06; F16H 39/46; E21B 19/08
U.S. Cl. 60—421 17 Claims



1. Jacking mechanism comprising:

two vertically extending cylinders to be received at different sides of a well pipe;

pistons reciprocable vertically within said cylinders by pressure fluid and having upwardly projecting rods;

a first gripping unit adapted to releasably engage and support a well pipe and retained against vertical movement relative to said cylinders;

a second gripping unit adapted to releasably engage and support the pipe and movable vertically relative to said first unit with said rods to jack the pipe vertically;

said pistons having downwardly facing areas exposed to said fluid which are greater than the effective upwardly facing areas thereof;

two power driven reversible variable displacement pumps operable to pump fluid with a positive displacement action in opposite directions and adjustable to vary the displacement in each of said directions;

two additional positive displacement pumps;

fluid reservoir means;

a system of conduits connected to said cylinders and said four pumps and said reservoir and including a variable restriction valve at the location of each cylinder and a reversing valve at the location of each cylinder, and including a large diameter low pressure hose connected to each cylinder and a small diameter high pressure hose connected to each cylinder; and

control means including a first control element movable in opposite directions from a central position and means operable by movement of said element in one of said directions to cause each of said variable displacement pumps to pump fluid in parallel with an associated one of said additional pumps through the associated large diameter hose to the lower portion of an associated one of said cylinders, with fluid returning from the upper end of the cylinder through the associated small diameter hose to the suction side of the variable displacement pump, and by movement of said element in the opposite direction to cause each variable displacement pump not operating in parallel with said associated additional pump to discharge fluid in a reverse direction through the associated one of said small diameter hoses to the upper end of the associated cylinder, with fluid discharging from the lower end of the cylinder through the associated larger diameter hose to said reservoir means, with the displacement of said variable displacement pump increasing progressively in accordance with the extent of movement of said first control element from said central position, and with said variable restriction valve offering restriction to the flow of fluid from the lower ends of said cylinders to said large diameter hoses, and said first control element acting to progressively open said variable restriction valves in correspondence with the extent of movement of said first control element from said central position;

said control means including a second control element operable to reverse connections to said cylinders and cause said variable displacement pumps not operating in parallel with said additional pumps, to discharge in said reverse direction to deliver fluid to the lower ends of said cylinders beneath said pistons, with fluid discharging from the upper ends of the cylinders to said reservoir means.

4,494,377

BRAKE BOOSTER OPERATED ALSO BY SOLENOID

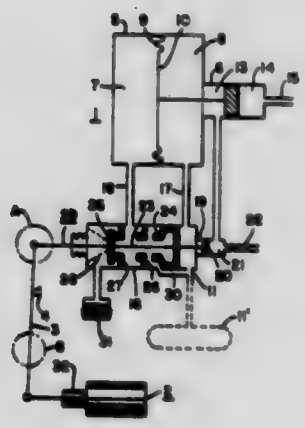
Yasuo Sato, No. 11, Kizukuri-cho, Gifu-shi, Gifu-ken, Japan

Filed Aug. 12, 1983, Ser. No. 522,708
Int. Cl.³ B60T 13/74
U.S. Cl. 60—545 8 Claims

1. A brake booster comprising:

(a) a body with a large chamber and a small chamber linked to each other,

(b) a power piston movably positioned in the large chamber so as to divide it into a control chamber and a vacuum chamber,
(c) means for providing communication between said vacuum chamber and a vacuum source,
(d) a hydraulic piston provided in said small chamber to divide it into an oil pressure control chamber and a high pressure chamber, said hydraulic piston operatively coupled to move with the power piston,
(e) means for providing communication between said high pressure chamber which communicates with a fluid operated vehicle braking mechanism,
(f) a relay valve cylinder with one end exposed to the atmosphere and the other end communicating with a source of vacuum, means to permit communication between the source of vacuum and the control chamber via a control pipe,

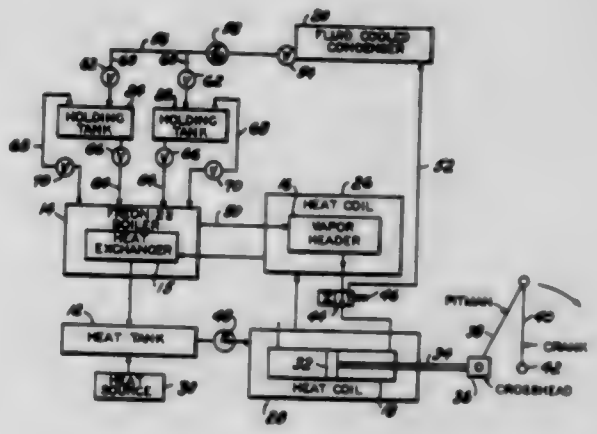


(g) atmospheric air valve means and vaccum valve means provided in the relay valve cylinder and operable in response to brake operation to change the position of the cylinder vacuum valve means to permit communication between the control pipe and the vacuum chamber, each said valve means having valve seats, said relay valve cylinder including a valve piston connected to said atmospheric air valve means and said vacuum valve means,
(h) relay valve piston means for linking the atmospheric air valve means and the vacuum valve means,
(i) a solenoid having a movable solenoid plunger; and
(j) lever means interconnecting said solenoid plunger and said relay valve piston means, said lever means pivotable about a fulcrum.

4,494,378
Patent Not Issued For This Number

4,494,379
VAPOR DRIVEN POWER SYSTEM

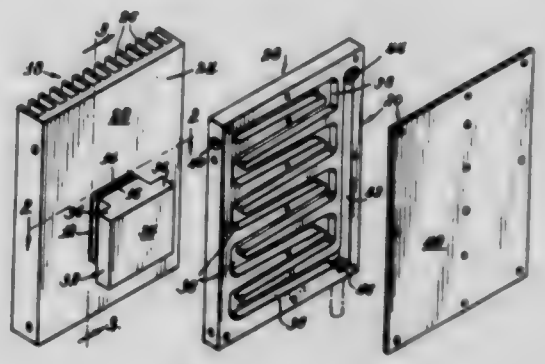
Lorrell C. McFarland, 417 E. 12, Claremore, Okla. 74017
Filed Apr. 21, 1983, Ser. No. 487,350
Int. Cl.³ F01K 25/10
U.S. Cl. 60—671 3 Claims



1. A self-contained heat energy conserving power system including a boiler containing a working medium boiling at a low temperature relative to water at atmospheric pressure, means for heating the boiler to a vapor producing temperature, a vapor driven engine connected with the boiler and a condenser interposed between the engine exhaust and boiler, the improvement comprising:
a heat exchanger within the boiler;
a first heat coil surrounding the engine and connected with the heat exchanger;
a heat tank connected between the heat exchanger and the first heat coil, said heat tank containing a fluid;
a heat source for heating said heat tank; and,
means for circulating hot fluid from said heat tank through said first heat coil and said heat exchanger.

4,494,380
THERMOELECTRIC COOLING DEVICE AND GAS ANALYZER

Ronald H. Cross, Hickory Corners, Mich., assignor to Bilan, Inc., Kalamazoo, Mich.
Filed Apr. 19, 1984, Ser. No. 602,193
Int. Cl.³ F25B 21/02
U.S. Cl. 62—3 12 Claims



1. A thermoelectric device comprising a thermoelectric element having a cold face and a hot face,

a heat-radiating device in heat-transfer with said hot face and having a flat, inner surface having a substantially greater area than the area of contact with said hot face and a thermal sink in heat-transfer contact with said cold face and comprising a flat, inner surface apposed to the flat, inner surface of said heat-radiating device and having an area substantially coextensive with the area of the flat, inner surface of the heat-radiating device; and

a conduit in heat-transfer with said thermal sink,

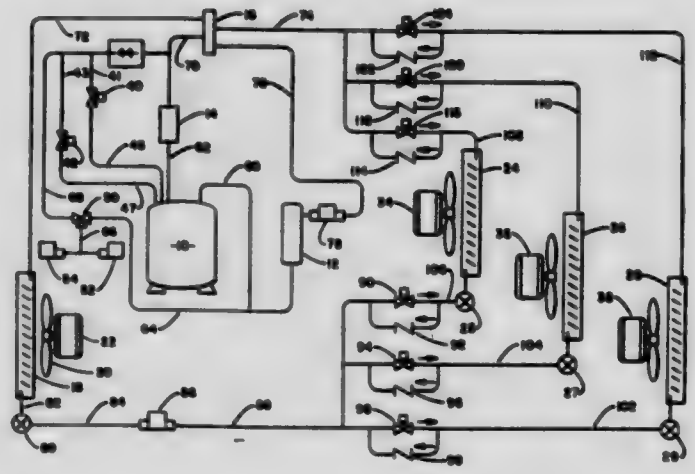
said conduit zig-zagging back and forth from an inlet adjacent the top of said thermal sink to a point adjacent the bottom thereof and thence upwardly to an outlet adjacent the top thereof.

4,494,382

METHOD AND APPARATUS FOR CONTROLLING WHEN TO INITIATE AN INCREASE IN COMPRESSOR CAPACITY

Glendon A. Raymond, Fulton, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 11, 1983, Ser. No. 540,270
Int. Cl.³ F25B *13/00*
U.S. Cl. 62—160 14 Claims



1. A control for a refrigeration circuit including an outdoor heat exchanger, at least one indoor heat exchanger and an electric motor driven variable capacity compressor means which comprises:

current sensing means for sensing the current drawn by the motor driving the compressor;

logic means connected to the current sensing means for storing the value of the current flow detected by the current sensing means as a reference value;

comparator means for comparing the value of the current flow to the compressor motor after a delay interval to the value of current flow stored in the logic means, said comparator means generating an increase signal when a selected one of said values exceeds the other of said values; and

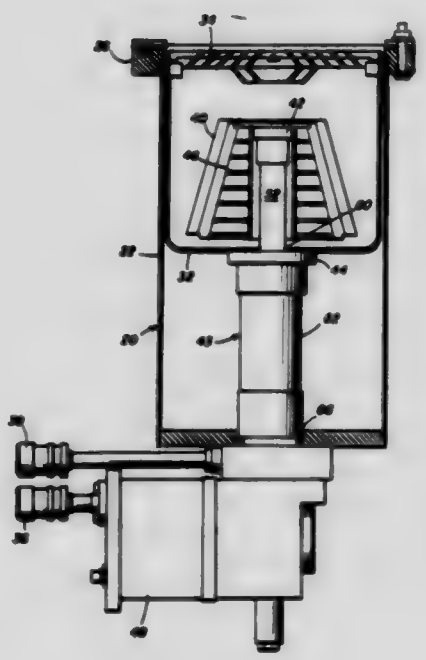
means for increasing the capacity of the compressor in response to the detection of an increase signal.

4,494,381

CRYOPUMP WITH IMPROVED ADSORPTION CAPACITY

Philip A. Lessard, Acton, Mass., assignor to Helix Technology Corporation, Waltham, Mass.

Filed May 13, 1983, Ser. No. 494,758
Int. Cl.³ B01D *8/00*
U.S. Cl. 62—55.5 11 Claims



1. A cryopump comprising:

a. a cryogenic refrigerator;

b. a condensing cryopanel mounted to a low temperature heat sink on the refrigerator; and

c. a honeycomb structure enclosed within said cryopanel, comprising an array of levels stacked along an axis, each level comprising a plurality of side-by-side chambers open radially from said axis with adsorbent material on their interiors, in thermal communication with said low temperature heat sink.

4,494,383

AIR-CONDITIONER FOR AN AUTOMOBILE

Hideaki Nagatomo; Hiroto Kawahira; Toshiro Nishizawa, and Mitsuo Yasuda, all of Shizuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1983, Ser. No. 468,992
Claims priority, application Japan, Apr. 22, 1982, 57-67857; May 12, 1982, 57-79444
Int. Cl.³ F25B *1/00*; B60H *3/04*
U.S. Cl. 62—196.2 5 Claims

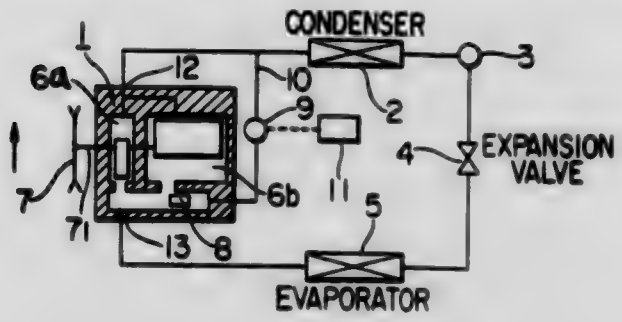
1. An air-conditioner system for dehumidifying and cooling the passenger compartment of an automobile, comprising:

a compressor means, a condenser and an evaporator connected in series in a refrigerating circuit;

said compressor means having a rotary shaft adapted to be directly connected to the engine of the automobile for being constantly driven thereby, having one large and one small displacement compressing element each having a different refrigerant compressing capacity, the compressing capacity of said small displacement compressing element being just sufficient for providing sufficient refrigerant for dehumidifying the passenger compartment, and

having refrigerant intake means for the respective large and small displacement compressing elements and a common refrigerant discharge connected to said condenser;

a refrigerant flow control valve means in said refrigerant intake means for the large displacement compressing element for controlling the amount of refrigerant sucked into said large displacement compressing element for causing the large displacement compressing element to



compress a predetermined amount of refrigerant over a period of time, the intake to said small displacement compressing element being unvalved; and

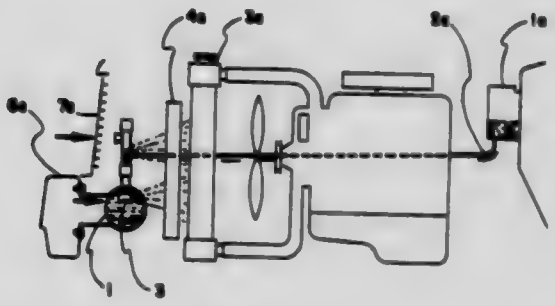
temperature setting control means connected to said refrigerant flow control valve means for controlling said refrigerant flow control valve means to provide an amount of refrigerant to said large displacement compressing element sufficient for cooling the passenger compartment to the set temperature.

4,494,384

APPARATUS FOR ENHANCING THE PERFORMANCE OF A VEHICLE AIR CONDITIONING SYSTEM

John Lott, Auburndale, Fla., assignor to Judy A. Lott, Auburndale, Fla.

Filed Nov. 21, 1983, Ser. No. 553,490
Int. Cl.[3] F25B 47/00
U.S. Cl. 62—279 1 Claim



1. An arrangement for enhancing the performance of a vehicle air conditioning unit, said air conditioning unit including a condensor and an evaporator, said evaporator having a drain connected thereto for draining condensate collected therefrom, said arrangement comprising in combination:

(a) an elongated cylinder (1) having a defined upper portion with a water condensate inlet (8) in said upper portion, said inlet (8) including a tube connected to said evaporator drain; brackets (10) connecting the cylinder (1) to the front of the vehicle at a level below the level of the evaporator drain, the elongated cylinder (1) being of a lesser length than the width of the vehicle;

(b) air inlet units (4, 4') including pipes with an inlet flared mouth disposed to receive incoming air as the vehicle moves in the forward direction, said air inlet units extending out from said cylinder upper portion; and,

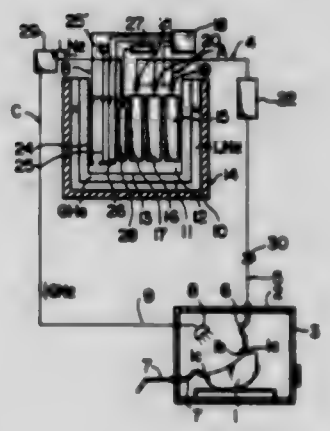
(c) spray units (3) extending out from said cylinder with spray heads facing the condenser whereby, condensate from the vehicle air conditioning unit evaporator drain enters the cylinder through said inlet (8) while outside air enters said cylinder through said inlet units so that the air forces the condensate in the cylinder out of the spray units (3) onto the air conditioning condenser so as to cool the freon therein.

4,494,385

METHOD OF PRESERVING ORGAN AND APPARATUS FOR PRESERVING THE SAME

Yasuo Kuraoka, and Nobuo Sakao, both of Sapporo, Japan, assignors to Hoxan Corporation, Sapporo, Japan

Division of Ser. No. 499,220, May 31, 1983, Pat. No. 4,462,215.
This application May 20, 1984, Ser. No. 615,212
Claims priority, application Japan, Jun. 4, 1982, 57-95896; Mar. 31, 1983, 58-56593
Int. Cl.[3] B01F 3/04
U.S. Cl. 62—306 4 Claims



1. An apparatus for preserving a frozen organ comprising:

a perfusing and thawing unit, and

a heat insulating container capable of containing said organ, said unit having a refrigerant tank containing the refrigerant such as Freon and thermally insulated,

a refrigerant temperature controlling mechanism capable of controlling the temperature of the refrigerant by a controller,

a gas supplying container supplied with the refrigerant from an organ refrigerant bomb dipped in the refrigerant for said tank,

an organ temperature controlling mechanism connected through a heat exchanger to a gas supply pipe, and

a liquid supplying mechanism for selectively flowing out the liquid to be flowed out from a first container for blood uniformly perfusing liquid such as choline, a second container for the refrigerating defect preventing agent such as dimethyle sulfoxide or glycerin, a third container for low solidifying point final perfusing liquid such as alcohol under the control of the controller to a liquid supply pipe, said organ temperature controlling mechanism being connected via a pipe (9) to a nozzle in the container (2), and said liquid supplying mechanism being connected to an artery or portal vein in the organ in the container (2) at the pipe and the vein of the organ being prolonged externally of the container via the exhaust pipe capable of being connected to the vein 1*c* of the organ.

4,494,386

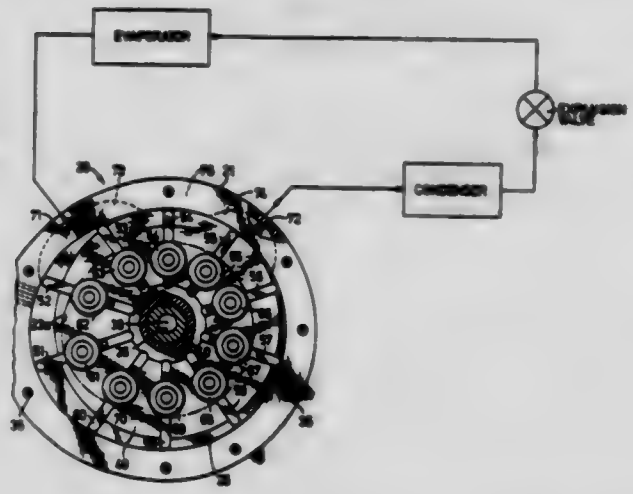
VAPOR REFRIGERATION CYCLE SYSTEM WITH CONSTRAINED ROTARY VANE COMPRESSOR AND LOW VAPOR PRESSURE REFRIGERANT

Thomas C. Edwards, Rockledge, Fla., Wayne C. Shank, Pima, Ariz., assignors to Rovac Corporation, Rockledge, Fla.

Filed Mar. 15, 1982, Ser. No. 358,056
Int. Cl.[3] F25D 9/00
U.S. Cl. 62—402 3 Claims

1. A refrigeration system including a compressor, a condenser, an expansion valve and an evaporator with controls and interconnections to provide a system operating in a vapor refrigeration cycle, said system containing a refrigerant or combination thereof selected from a group of low vapor pres-

sure refrigerants having boiling points anywhere from about 10 degrees F. to 83 degrees F., said compressor comprising an open system constrained rotary vane compressor having a



ratio Q/D of cooling capacity per unit of displacement anywhere in the range from about 8,000 to 30,000 FT-LB per HR/FT^3 per HR determined by the refrigerant or combination thereof in the system and according to

$$Q/D = Ae^{B(T+460)}$$

where (For 40 degree evaporator temperature)
$A = 2.2 \times 10^8$
e = natural logarithm base
$B = -.0189$
T = boiling point of refrigerant (degrees F.)
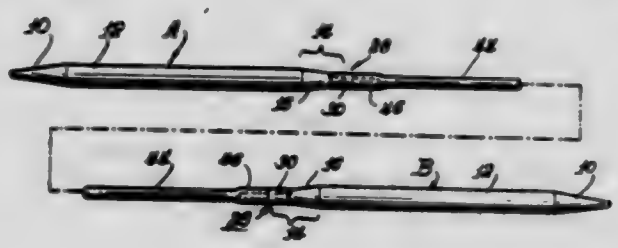
for medium capacity refrigeration, air conditioning and heat pump applications.

4,494,387

INTERCHANGEABLE KNITTING NEEDLE SYSTEM

Cornelius M. Phipps, and Cornelius M. Phipps, Jr., both of Glen Ellyn, Ill., assignors to Plastic Specialties, Inc., Glen Ellyn, Ill.

Filed Aug. 22, 1983, Ser. No. 525,221
Int. Cl.³ D04B 35/02
U.S. Cl. 66—117 6 Claims



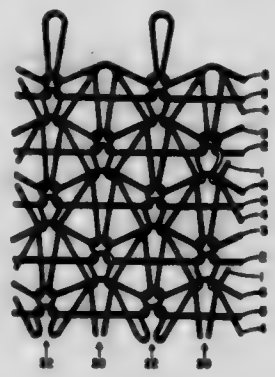
1. An interchangeable knitting needle system comprising at least one knitting needle having a tip, central shaft, and an opposite thread-engageable end including a resilient locking means capable of releasable securement with a tube adaptor, said tube adaptor having means for securing the locking means of the needle engageable end and further having at the opposite end thereof insertable tube engaging means, and at least one flexible tube.

4,494,388

KNIT CONSTRUCTION

Wing-Yan T. Lau, and Layton E. Bradberry, both of Seneca, S.C., assignors to The Kendall Company, Walpole, Mass.

Filed Sep. 22, 1982, Ser. No. 421,110
Int. Cl.³ A41B 00/00; D04B 11/00
U.S. Cl. 66—178 A 15 Claims



1. A knit construction having a repeating six-course, two wale pattern in which
said six courses include four courses comprising alternating knit and tuck stitches and two courses comprising alternaing knit and non-knit stitches,
each of said wales includes the knit stitches of two of said courses of alternating knit and tuck stitches and one of said courses of knit and non-knit stitches, the tuck stitches of the other two of said courses of knit and tuck stitches, and the non-knit stitches of the other of said courses of knit and non-knit stitches, the non-knit stitches of the other of said courses being intermediate the tuck stitches of the other two of said courses, and
said courses comprising alternating knit and non-knit stitches are of elastomeric yarn.

4,494,389

CONTINUOUS SYSTEM FOR TREATING FABRICS

Richard K. Smejda, P.O. Box 344, Riverside, Paterson, N.J. 07544

Continuation-in-part of Ser. No. 306,081, Sep. 28, 1981, abandoned. This application Jan. 5, 1984, Ser. No. 568,436
Int. Cl.³ D06B 17/04
U.S. Cl. 68—5 C 14 Claims



1. A system for treating fabric comprising:
an enclosed chamber having an entrance and an exit and a plurality of stations therebetween;
fabric supply means for feeding fabric continuously into said chamber;
applicator means positioned in the path of said fabric for applying solutions to said fabric;
take-up means at a first station within said chamber adjacent said entrance for winding said fabric into rolls;
means within said chamber for applying heat and steam to the rolls of fabric;
means for feeding successive rolls of fabric along said chamber and for holding respective rolls within selective stations for predetermined time intervals;
a second rest station for permitting further application of heat and steam to said roll;
a third rewind station including means for rewinding fabric from a first roll onto a second roll and means for subjecting said second roll to additional heat and steam capable of

maintaining a predetermined temperature to provide uniform heat and moisture throughout the roll;

a fourth station including gravity drive means for holding and moving a plurality of rolls successively toward said exit while continuing application of said heat and steam on said rolls; and

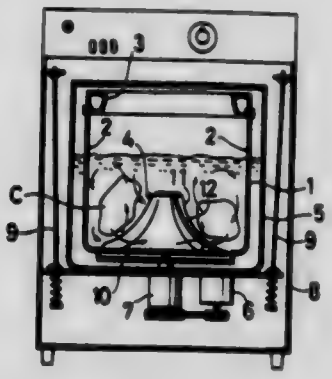
means for holding said rolls upon exiting from said chamber.

4,494,390

WASHING MACHINE

Gentaro Hayashi, Shiga; Kenji Yamamoto, Kusatsu, and Takao Kuroseko, Otsu, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Jul. 15, 1983, Ser. No. 514,241
Claims priority, application Japan, Jul. 20, 1982, 57-127170
Int. Cl.³ D06F *23/04, 17/10*
U.S. Cl. 68—23.7 10 Claims



1. A washing machine comprising a cabinet, a basket having a bottom, said basket being mounted in said cabinet, an agitator rotatably mounted on said bottom of said basket, and drive means for rotating said agitator, wherein said agitator is comprised of a substantially disk-shaped base having a predetermined outside diameter and an outer circumferential edge, a projection in the form of a substantially triangular prism having side ridges at the edges of said prism, integrally extending from a substantially central portion of said base, and three vanes integrally extending smoothly from said side ridges of said projection over said base, said projection having a height which is about ⅓ of said outside diameter and an upper end positioned below at least the level of water in said basket at the time the water is held at rest, said drive means comprising rotating means for rotating said agitator at a speed of 300 rpm or less and rotation switching control means for rotating said agitator alternately clockwise and counterclockwise.

4,494,391

AUTOMOBILE SECURITY DEVICE FOR STEERING COLUMN IGNITION LOCKS

Joseph E. Solow, Plainview, N.Y., assignor to Wolo Manufacturing Corporation, Deer Park, N.Y.

Continuation of Ser. No. 236,878, Feb. 23, 1981, abandoned.
This application Aug. 19, 1983, Ser. No. 524,850
Int. Cl.³ E05B *17/14*
U.S. Cl. 70—428 9 Claims

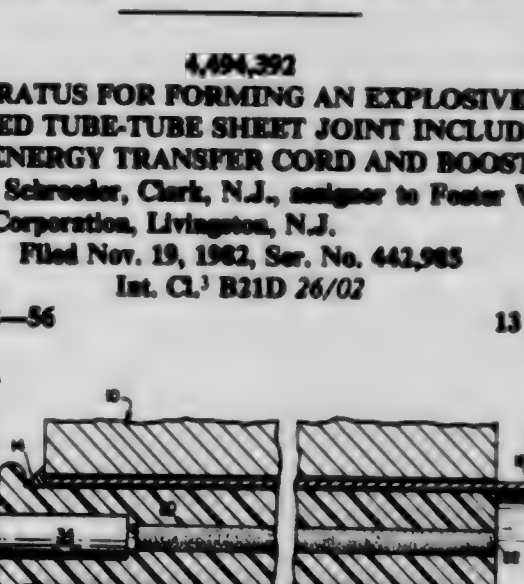
1. An automobile security device for protecting a steering column ignition lock comprising:

a cover having opposed ends, a top wall arranged at one end, a bottom wall arranged at the other end, opposed side walls, extending between said top and bottom walls, with arcuate edges adapted to wrap around a portion of the steering column, wherein said cover has a hollow interior adapted to fit over an ignition lock, wherein said bottom wall has an interior wall surface and is spaced from said arcuate edges to define a first opening for inserting a tension-bearing element into said interior to extend longitudinally along said surface, and wherein said cover has a second opening longitudinally spaced from said first opening for passing the tension-bearing element therethrough, out from said interior;

an elongate, flexible tension-bearing element attached to said one end, wherein said element has a plurality of recesses spaced along its length and has a free end adapted to be inserted into said first opening, to extend along said interior wall surface, and to extend out through said second opening;

back stop means fixed on said wall surface and arranged for selectively engaging at least one of said recesses for preventing longitudinal movement of said element; and

a cover lock mechanism comprising: (a) a lock mounted to a portion of said cover spaced from said bottom wall, (b) bolt means actuatable by said lock comprising a bolt movable toward and away from said bottom wall between an engaged position, for locking said back stop means in engagement with a recess of said element, and a disengaged position, for permitting said tension-bearing element and said back stop means to disengage, wherein in said disengaged position said tension-bearing element may be moved freely in its longitudinal direction and inserted or removed from the interior of said cover; and wherein said bolt further includes at least one projection for selectively engaging a recess of said tension-bearing element when said bolt is moved to said engaged position.

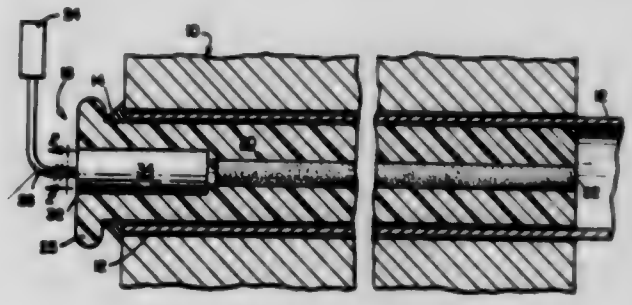


4,494,392

APPARATUS FOR FORMING AN EXPLOSIVELY EXPANDED TUBE-TUBE SHEET JOINT INCLUDING A LOW ENERGY TRANSFER CORD AND BOOSTER

Joseph W. Schroeder, Clark, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Nov. 19, 1982, Ser. No. 442,985
Int. Cl.³ B21D *26/02*
U.S. Cl. 72—56 13 Claims



1. Apparatus for expanding a tube into a bore formed in a tube sheet, comprising primary explosive means containing a relatively high number of grains of explosive per unit length and extending within said tube coextensive with that portion of the tube to be expanded; an annular force transmitting member extending between said primary explosive means and said tube for transferring to said tube the energy resulting from the

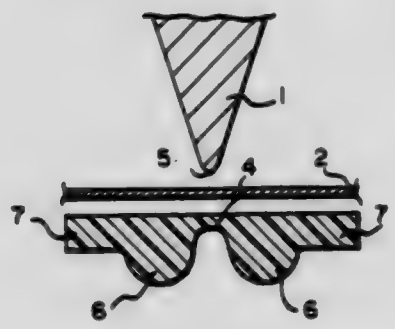
explosion of said primary explosive means; detonator means disposed externally of said tube; an energy transfer cord extending between said detonator means and said primary explosive means, said energy transfer cord including a relatively low number of grains of explosive per unit length which are insufficient to detonate said primary explosive means, and a sheath covering said latter grains of explosive, and being constructed and arranged to contain the debris and gases associated with the explosion of said latter grains of explosive; and booster means extending between said energy transfer cord and said primary explosive means, said booster means containing an explosive which is detonatable by said energy transfer cord and, upon exploding, is sufficient to detonate said primary explosive means.

4,494,393

APPARATUS AND METHOD FOR PRESS FORMING

George T. Bruce, 21 Christina Cresc., Scarborough, Ontario, Canada (M1R 4H7)

Filed Mar. 10, 1983, Ser. No. 473,955
Int. Cl.³ B21D *5/02*
U.S. Cl. 72—57 8 Claims



6. A method for press forming at least one angle in a flat metal blank comprising interposing the metal blank between a male die shaped to conform to an inside dimension of the angle and a female die of resilient elastomeric material bendable along a longitudinal line corresponding to an apex of the angle and having at least one longitudinal reinforcing rib on each of opposite longitudinal halves thereof at opposite sides of the line at a surface of said female die facing away from the metal blank; and

pressing the male die towards the female die to press the blank therebetween and thereby causing the opposite longitudinal halves of said female die to hinge, with said ribs, in opposite directions about the longitudinal line and to conform to the outside dimensions of the angle as sidewalls for the female die, the female die being deformed at the area of the longitudinal line without substantial deformation of the opposite longitudinal halves;

whereby metal of the metal blank at least partially flows around the angle in response to action between the dies.

4,494,394

STRAIGHTENING MACHINES AND METHODS

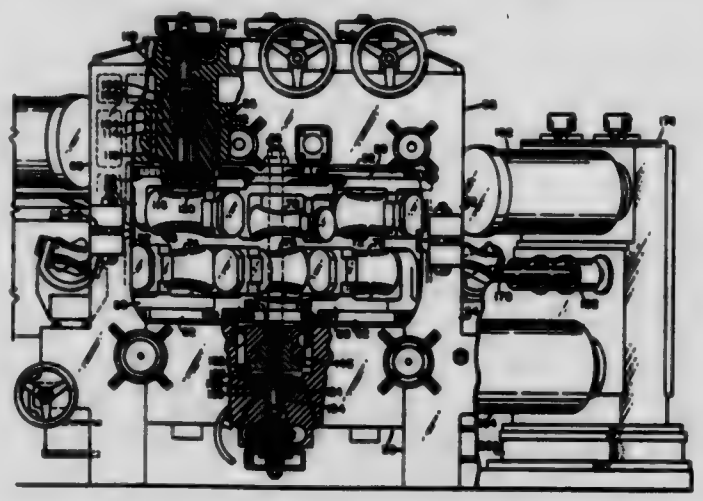
Einar W. Nilsson, 705 E. Curtin St., Bellefonte, Pa. 16823

Filed Jul. 6, 1981, Ser. No. 280,372
Int. Cl.³ B21D *3/04*
U.S. Cl. 72—98 8 Claims

1. A cross-roll straightener that advances stock in rotary motion along a curved pass line, said straightener comprising:

a central pair of rolls forming a curved pass, said rolls oppositely skewed with respect to the pass line of said cross-roll straightener, the rolls of said central pair being of generally unequal diameter and oriented to flex said stock; and

two end pairs of rolls, arranged adjacent opposite ends of said central pair, the rolls of said end pairs being oppositely skewed with respect to the pass line of said cross-roll straightener, said end pairs of rolls oriented to restrain



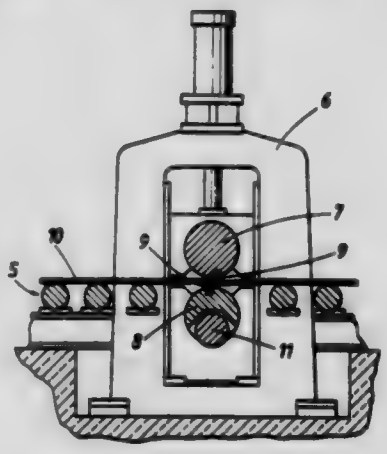
said stock and to guide said stock into wedge supportive relation with said central pair of rolls.

4,494,395

HOT-ROLLING PLANT

Franz Brettbacher, Linz, and Buchegger Rudolf, St. Florian, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Feb. 22, 1983, Ser. No. 468,084
Claims priority, application Austria, Mar. 5, 1982, 870/82
Int. Cl.³ B21B *1/00*
U.S. Cl. 72—203 3 Claims



1. In a hot-rolling plant comprising

a forward reversible coiler,

a rear reversible coiler,

reversible finish-rolling means disposed between said forward and rear reversible coilers, and

crop shears including an upper cutter cylinder and a lower cutter cylinder, which are mounted for rotation about upper and lower axes of rotation, respectively,

the improvement residing in that

said crop shears are disposed between said finish-rolling means and one of said coilers and

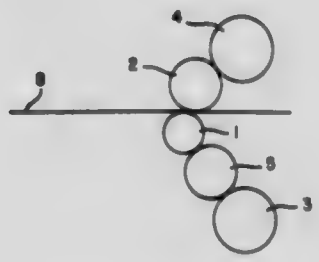
a backing roller for supporting stock to be rolled is mounted on said lower cutter cylinder for rotation about an axis which is parallel to said lower axis of rotation.

4,494,396

MULTISTAGE ROLLING MILL WITH FLATNESS CONTROL FUNCTION

Toshio Iwasami, Yokohama, and Hajime Watanabe, Yokosuka, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Japan

Filed Mar. 25, 1982, Ser. No. 361,970
Claims priority, application Japan, Apr. 2, 1981, 56-49960
Int. Cl.³ B21B 31/16, 31/32
U.S. Cl. 72—243
4 Claims



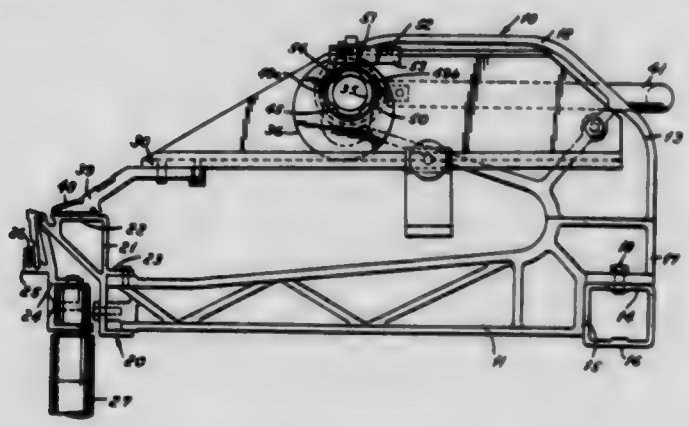
1. A multistage rolling mill with flatness control function comprising upper and lower work rolls, one of said work rolls being substantially smaller in diameter than the other work roll, upper and lower back-up rolls, said work rolls being driven, whereby rolling at different speeds is effected, said work roll of smaller diameter being offset in a rolling line with respect to axes of the upper and lower back-up rolls, an intermediate roll between said work roll of smaller diameter and the back-up roll of said work roll of small diameter, a vertical bending device provided for each of said work rolls and said intermediate roll, and a horizontal bending device for bending said work roll of smaller diameter horizontally; said other work roll and said intermediate roll being offset in the rolling line with respect to the axes of the upper and lower back-up rolls with said small diameter work roll, said intermediate roll and said back-up roll associated with said small diameter work roll all being arranged to have axes of rotation in a common plane.

4,494,397

PORTABLE SHEET BENDING BRAKE

James J. Rhoades, Garden City, Mich., assignor to Tapco Products Company, Inc., Detroit, Mich.

Continuation-in-part of Ser. No. 359,566, Mar. 18, 1982,. This application Sep. 24, 1982, Ser. No. 423,459
Int. Cl.³ B21D 5/04
U.S. Cl. 72—320
6 Claims



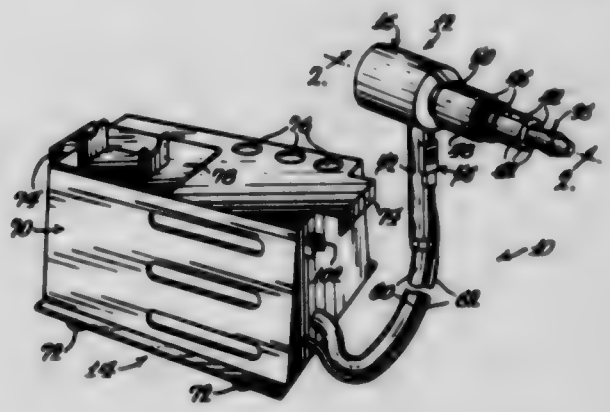
1. A sheet bending brake comprising
a plurality of generally C-shaped frame members,
each said frame member including a long arm and a short arm spaced from the long arm,
spaced rails connecting said frame members,
a first member mounted on said long arms defining a clamping surface extending longitudinally,
a second bending member,
means hinging the bending member to said first member,
a bar individual to each said frame member and having its rear end pivoted to said frame member,
a clamping member extending longitudinally of said sheet bending brake and fixed to said bars,
each said bar being generally C-shaped and including spaced upper and lower flanges and a wall connecting said flanges,
a shaft journalled in the forward ends of the short arms of the C-shaped members and extending through openings in the walls of said bars,
said shaft having longitudinally extending circumferentially spaced grooves extending throughout the effective length of said shaft,
a plurality of collars at longitudinally spaced points on said shaft having radial teeth complementary to said grooves,
a cam individual to each said collar on said shaft and individual to each said bar and positioned to cooperate with the lower flanges such that rotation of said shaft pivots said bars and, in turn, said clamping member into and out of clamping position,
each said collar and its respective cam having a plurality of circumferentially spaced axially extending teeth whereby the cams are held in circumferentially adjusted position such that the position of a cam can be adjusted circumferentially by moving the cam axially relative to the teeth on the collar to disengage the teeth, rotating the cam to the desired adjusted position and moving the cam axially to re-engage the teeth on the cam with the teeth on the collar.

4,494,398

TUBING EXPANDER APPARATUS

Edward J. Svoboda, Hinsdale, Ill., assignor to Midas International Corporation, Chicago, Ill.

Filed Feb. 14, 1983, Ser. No. 465,916
Int. Cl.³ B21D 39/08
U.S. Cl. 72—393
15 Claims



1. An apparatus for expanding tubing, comprising:
an expander unit including single-acting fluid-operated motor means, and outwardly movable, expansion jaw means operable by operation of said motor means in a first direction to effect expansion of tubing, said expander unit including biasing means for effecting movement of said motor means in a second direction opposite said first direction;
a pressurized fluid supply unit for providing a source of pressurized fluid;
conduit means joining in fluid communication said expander unit and said fluid supply unit for providing said motor means with pressurized fluid; and
electrical switch means associated with said expander unit for remotely operating said fluid supply unit;
said fluid supply unit comprising electrically powered fluid pump means adapted for continuous operation, and solenoid-operated valve means operatively connected with said electrical switch means for controlling the supply of pressurized fluid to said expander unit from said pump

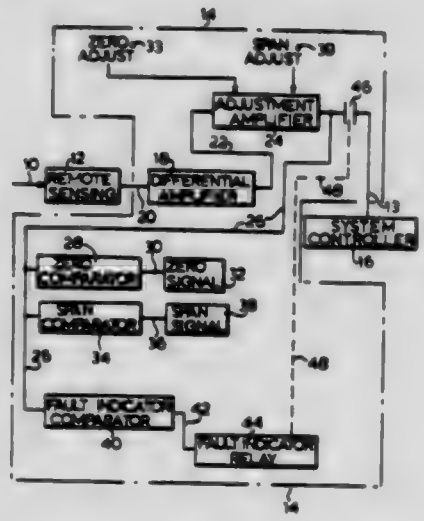
means via said conduit means, whereby actuation of said solenoid-operated valve means effects supply of pressurized fluid from said continuously operating pump means to said single-acting motor means of said expander unit for effecting tubing expansion, said biasing means effecting movement of said motor means in said second direction upon completion of tubing expansion.

4,494,399

TOXIC GAS DETECTION SYSTEM CALIBRATOR

George Youngman, Park Ridge, N.J., assignor to Becton, Dickinson & Co., Paramus, N.J.

Filed Nov. 10, 1982, Ser. No. 440,773
Int. Cl.³ G01N 27/26
U.S. Cl. 73—1 G 6 Claims



1. Calibrator apparatus for recalibrating electrochemical gas sensors, comprising

(a) a housing;

(b) a source of power;

(c) an input in said housing for connection to a gas sensor sensing head;

(d) an output in said housing for connection to a gas sensor controller;

(e) an adjustment amplifier in said housing;

(f) first flow communication means extending between said input and said adjustment amplifier;

(g) second flow communication means extending between said adjustment amplifier and said output;

(h) said source of power being connected to said first and second flow communication means;

(i) span adjustment means connected to said adjustment amplifier for adjusting the output of said adjustment amplifier;

(j) zero adjustment means connected to said adjustment amplifier for adjusting the output of said adjustment amplifier;

(k) pre-set zero comparator means connected in said second flow communication means for producing a first output signal when the adjusted output of said adjustment amplifier in response to said zero adjustment means lies within first predetermined limits and a second output signal when said adjusted output lies out of said first limits;

(l) pre-set span comparator means connected in said second flow communications means for producing a first output signal when the adjusted output of said adjustment amplifier in response to said span adjustment means lies within second predetermined limits and a second output signal when said adjusted output lies out of said second limits;

(m) first indicator means connected to said pre-set zero comparator means for producing a characteristic indication responsive to the production of a said first output signal by said zero comparator means; and

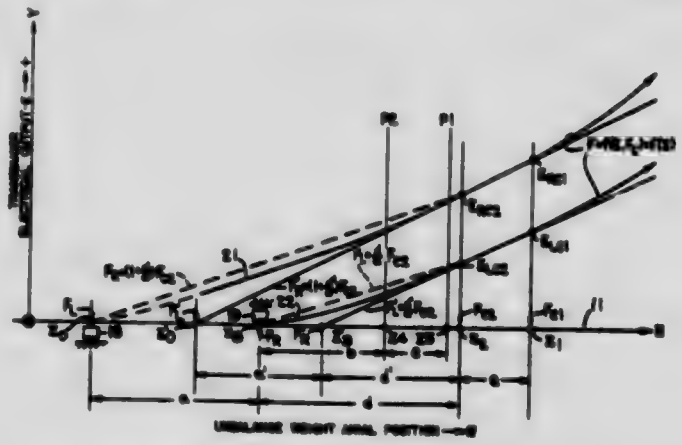
(n) second indicator means connected to said pre-set span comparator means for producing a characteristic indication responsive to the production of a said first signal by said span comparator means.

4,494,400

WHEEL BALANCER TWO PLANE CALIBRATION APPARATUS AND METHOD

Jerry M. Hill, North Little Rock, Ark., assignor to FMC Corporation, Chicago, Ill.

Filed Jul. 28, 1983, Ser. No. 518,164
Int. Cl.³ G01M 1/22
U.S. Cl. 73—1 B 15 Claims



4. A method of calibrating a dynamic balancing machine for detecting mass unbalance in objects mounted on a rotatably driven machine shaft, wherein a pair of sensors are spaced along and coupled to the shaft and provide outputs indicative of unbalance during shaft rotation, and wherein the sensor outputs are coupled to a computer which provides unbalance force magnitude and phase information, comprising the steps of

mounting a known mass at a known radius and a first known axial position on the shaft,

spinning the shaft a first time,

storing the sensor outputs,

mounting a known mass at a known radius and a second known axial position on the shaft,

spinning the shaft a second time,

computing the apparent axial separation between the sensors and the apparent axial positions of the sensors utilizing the outputs obtained from the first and second shaft spins, whereby magnitude and phase information with reduced error content may be detected relative to unbalance mass in machine shaft mounted objects at predetermined axially located planes.

4,494,401

PRESSURE SENSOR FOR THE COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE

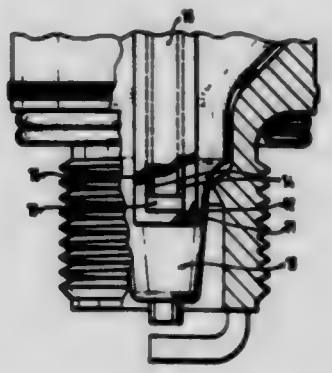
Klaus Dobler, Gerlingen; Ulrich Schoor, Stuttgart; Rudolf Heinz, Renningen; Thomas Frey, Friolzheim, and Werner Grünwald, Gerlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 11, 1983, Ser. No. 540,296
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1982, 3243743
Int. Cl.³ G01L 23/22
U.S. Cl. 73—35 14 Claims

1. Pressure sensor to determine pressures within the combustion chamber of an internal combustion engine having a plug element including a ceramic portion adapted for introduction into the combustion chamber of the internal combustion engine,

and a sensor element (13, 21) comprising a layer-like resistor made of a material which, under influence of pressure to

which the resistor is exposed, changes its resistance, supported on the plug element
wherein, in accordance with the invention,



the layer-like pressure-sensitive resistor is formed as a layer on the surface of the ceramic portion of the plug element.

4,494,402

DEVICE AND METHOD FOR PRESSURE TESTING

Patrick T. Carney, 3127 Lantern Trail, Richmond, Ind. 47374

Filed Sep. 7, 1982, Ser. No. 414,979
Int. Cl.³ G01M *3/32*
U.S. Cl. 73—40 11 Claims



1. A pressure testing device for testing the fluid tightness of an engine cooling system, the engine cooling system having a filler neck formed to provide an open mouth circumscribed by an outer seat, the filler neck further providing an inner seat, and an overflow vent between the seats, said filler neck having an interior chamber between said seats, and a pressure-type cap sealingly engageable with the outer seat of the filler neck to secure the top to the neck in spanning relation to the mouth thereof, and sealingly engageable with the inner seat of the filler neck, thereby forming outer and inner seals therewith, the cap further including a vacuum valve operative as a bypass of pressure from the interior chamber of said filler neck through said cap into the engine cooling system, comprising:
a conduit,
means for connecting the conduit to the vent of the filler neck,
a source of pressure for the conduit,
means for determining the level of pressure within the conduit.

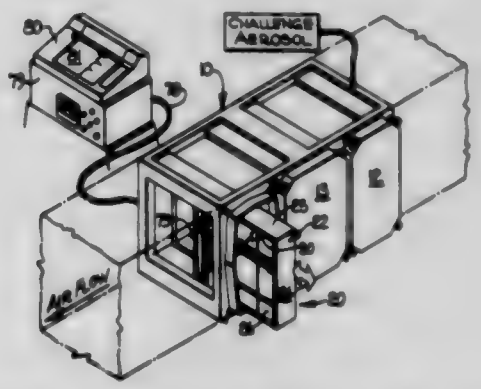
4,494,403

FILTER TESTING APPARATUS AND METHOD

Cecil W. Bowers, Chocowinity; Ivey G. Thompson, and Thomas T. Allen, both of Washington, all of N.C., assignors to Flanders Filters, Inc., Washington, N.C.

Filed Jul. 14, 1982, Ser. No. 398,405
Int. Cl.³ G01M *3/20*
U.S. Cl. 73—40.7 29 Claims

1. An apparatus adapted for detecting minute leaks of unfiltered air through an air filter, and which is characterized by the ability to scan the full area of the face of an adjacent filter and so as to permit the collection and sampling of air passing through a relatively small portion of the total area of the face of the filter at any given movement, and comprising
a generally rectangular frame which is sized to generally conform to the outline of a filter to be tested, and which defines a lateral direction extending between one pair of opposite sides, a transverse direction extending between the other pair of opposite sides, and a longitudinal direction extending through the frame and perpendicular to the lateral and transverse directions,
an air sampling probe having an air receiving open end, with the area of the open end being substantially less than the area defined within said frame,
means mounting said probe to said frame with said probe open end facing in the longitudinal direction and so as to be adapted to open toward the face of an adjacent filter,



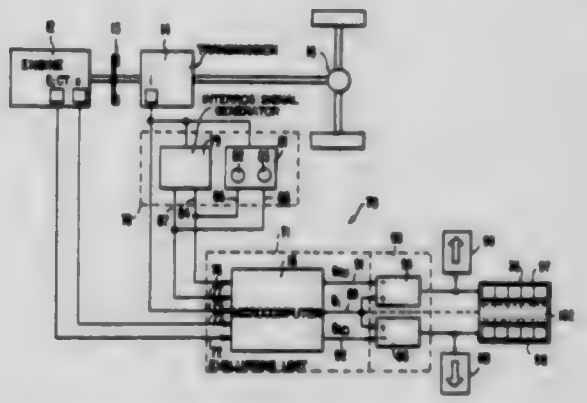
and including drive means for sequentially traversing the probe in each lateral direction across the frame, and indexing the probe in the transverse direction a distance not greater than the transverse dimension of said open end of said probe and so that the entire face of an adjacent filter may be scanned by the probe, and
means for conveying air received in the open end of said probe to a remote location for continuous analysis or the like.

4,494,404

FUEL-CONSUMPTION MONITORING SYSTEM FOR MOTOR VEHICLES WITH MANUALLY-SHIFTED TRANSMISSIONS

Paul Strifler, Dettingen, Fed. Rep. of Germany, assignor to Daimler-Benz AG, Fed. Rep. of Germany

Filed Nov. 12, 1982, Ser. No. 441,058
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1981, 3145687
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—113 14 Claims



1. A fuel consumption monitoring system for motor vehicles with manually shifted transmissions, equipped with a processing and evaluating means for generating an output signal correlated with the instantaneous fuel consumption of the vehicle, and with an indicating means for emitting an indicating signal informing the driver of the fuel utilization to be expected if another gear were selected, the processing, evaluating and indicating means generating the output signal from a processing operation involving data which are specific to the vehicle and are stored in an electronic read only memory in the evaluating means, and data characterizing the fuel consumption and the operating condition of the propulsion unit of the vehicle, the processing and evaluating means receiving interrogating

signals which indicate possible transmission ratios for a change of gear, the evaluating means comprising

means for generating a response signal as a measure of at least one of the fuel consumption reduction and the fuel consumption increase which would be obtained if, at an engine power which remains constant, the gear ratio signalled by the interrogating signal in question were to be engaged, instead of the gear ratio currently engaged, and

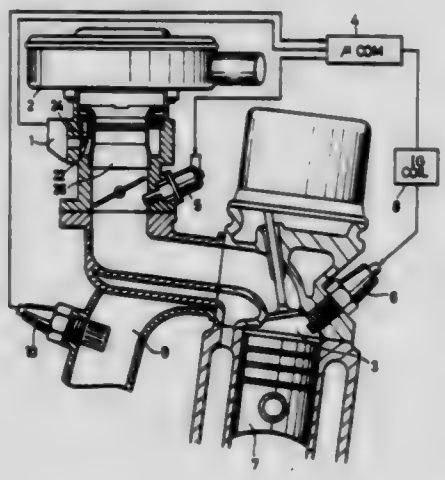
indicating means for displaying a response signal proportional to the consumption difference.

4,494,405

AIR-FLOW METER FOR INTERNAL COMBUSTION ENGINE

Minoru Ooenga, Hitachi, and Yoshishige Ohyama, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 5, 1982, Ser. No. 405,321
Claims priority, application Japan, Aug. 10, 1981, 56-124059
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—118 8 Claims



1. An air-flow meter for an internal combustion engine, the air flow meter comprising:

a main air passage means for enabling an air flow therethrough, said main air passage means including a Venturi portion means;

a bypass air passage means for bypassing said main air passage, said bypass air passage means including an inlet means and an outlet means, said inlet means opening at a position upstream of the Venturi portion, said outlet means opening at a position downstream the Venturi portion, said bypass air passage means further including at least one bent portion therein for removing dust particles in the air flowing therethrough;

at least one hot wire means disposed in the bypass passage means at a position downstream of said bent portion, said hot wire being adapted to change resistance in dependence upon an amount of air flow in said bypass passage means;

means for detecting the change of resistance of said hot wire means and for measuring the amount of air flow;

means for maintaining a surface temperature of said hot wire at 100° C. or above; and

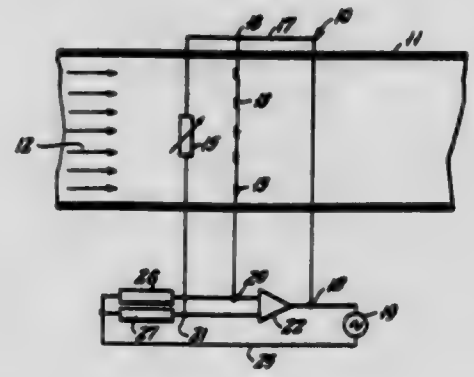
wherein said bent portion has an entrance width D, said hot wire means has a diameter d, and wherein a ratio of d/D is such that collision of dust in the air flowing through said bypass passage means against said hot wire means is substantially prevented.

4,494,406

MEANS FOR MEASURING LARGE AREA MASS FLOW

Michael Komoma, Peapack; Donald F. Wiseman, Bernardsville, both of N.J., and Andreas I. Galanis, Edgewood, Md., assignors to Eltron, Inc., Somerset, N.J.

Filed Dec. 23, 1982, Ser. No. 452,790
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—204 1 Claim



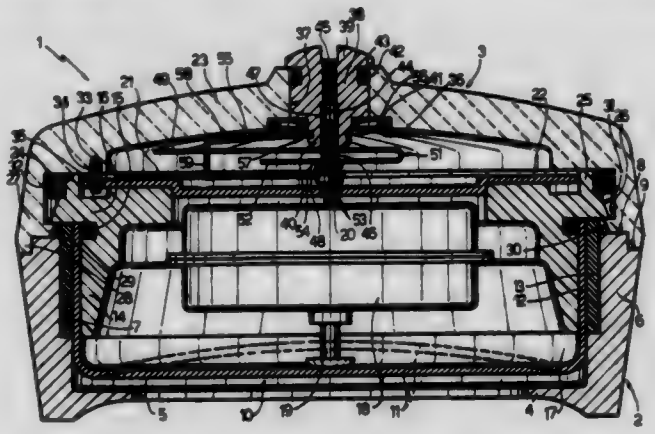
1. In an improved means for measuring fluid flow over a large cross-sectional area of a conduit including a plurality of first temperature-sensitive electrical resistors connected in series, and located within said area at various locations in a given plane perpendicular to the direction of fluid flow, said resistors being exposed to said fluid flow; a second temperature-sensitive resistor shielded from fluid flow so as to be temperature sensitive only to changes in ambient temperatures, differential amplifier means for comparing the resistive values of said first and second resistors during current flow, and producing a voltage output representing the difference in resistive values; and calibrated galvanometer means for reading said difference in resistive values in terms of fluid flow; the improvement comprising: a frame assembly corresponding in configuration to the cross-sectional area of the conduit and including a plurality of support members interconnected substantially at mutual right angles, at least some of which supports said first resistors at generally uniformly spaced intervals; said resistors being in the form of thermistor beads, said support members having leading and trailing edges, relative to the direction of fluid flow, said trailing edges having recesses therein, said thermistor beads being located within said recesses to be thereby shielded from particulate matter in fluid passing over said support member.

4,494,407

DEPTHOMETER FOR UNDERWATER DIVING

Emilio Allemano, Via Rosalino Pilo, 4, 10143 Torino, Italy

Filed May 10, 1982, Ser. No. 376,332
Claims priority, application Italy, Nov. 4, 1981, 68421 A/81
Int. Cl.³ G01F *23/14*
U.S. Cl. 73—300 8 Claims



1. A depthometer for underwater diving, comprising a cup-

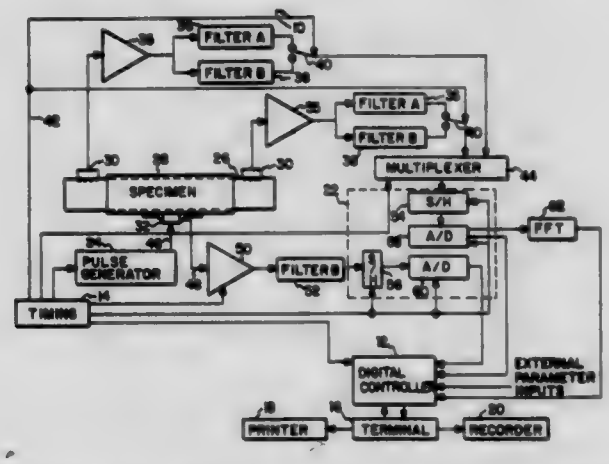
shaped casing (2); a front cover (3) snap-coupled axially to said casing (2) in a fluid-tight manner and rotatable relative thereto about its own axis; a pressure measuring device (18) arranged within said casing (2) to determine the pressure of the external environment; a dial (22) angularly rigid with said cover (3); an indicating pointer (21) operated by said pressure measuring device (18) and rotatable about said axis and along a scale of said dial (22); a maximum-indicating pointer (49) supported rotatable about said axis; a dragging member (55) disposed between said indicating pointer (21) and said maximum-indicating pointer (49); a tubular member (38) extending through said cover (3) and comprising an axial bore (44); and removable closure means (45) closing said bore (44) in a fluid-tight manner; said dragging member (55) being supported by said tubular member (38) in such a manner as to rotate idly about said axis; and adjustable friction means (54) being provided to connect said maximum-indicating pointer (49) to said tubular member (38) in a rotatable manner.

4,494,408

METHOD AND APPARATUS FOR NON-DESTRUCTIVE TESTING OF COMPOSITE MATERIALS

Thomas J. DeLacy, Los Altos, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Jul. 27, 1982, Ser. No. 402,450
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—587 22 Claims



1. A method for observing potential dimensional stability of plastic composition of thermosetting material comprising the steps of:

monitoring passive and injected acoustic signals from said composition during formation of a solid state of said composition;

generating a signature over time from said acoustic signals, said signature being uniquely characteristic of said composition; and

analyzing said signature to correlate with known residual stress relief mechanisms and resultant residual stress levels of said composition.

4,494,409

ENGINE VIBRATION SENSOR

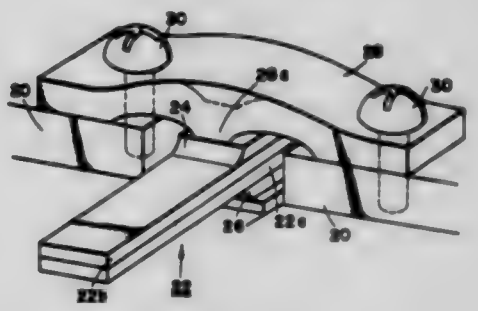
Haruyoshi Kondo; Koji Tsukada, and Masaharu Takeuchi, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed May 26, 1982, Ser. No. 382,305
Claims priority, application Japan, May 29, 1981, 56-80020; Jun. 16, 1981, 56-88334
Int. Cl.³ G01L *23/22*; G01H *1/08*
U.S. Cl. 73—651 22 Claims

1. An engine vibration sensor comprising:

a vibrator for resonating at a specific frequency of vibration of an engine to which it is attached, said vibrator being composed of a pair of piezoelectric plates attached to each other, each of said piezoelectric plates having a constant thickness and having a root and a vibrator element;

means for relatively increasing the cross-sectional area of said root to make the second moment of area of said root larger than that of said vibrator elment, said means for increasing the cross-sectional area being a pair of auxiliary supporters provided on upper and lower surfaces of said vibrator at said root thereof, for increasing the thickness of said root to make the second moment of area of said root larger than that of said vibrator element to thereby equalize the stress on said upper auxiliary support and prevent said vibrator from being damaged;



a base to be connected to an engine body; and

a clamp for retaining said root firmly between said clamp and said base, said clamp having a projection in the center portion thereof along said vibrator for retaining said root of said vibrator to thereby prevent said vibrator from being damaged to due stress concentration;

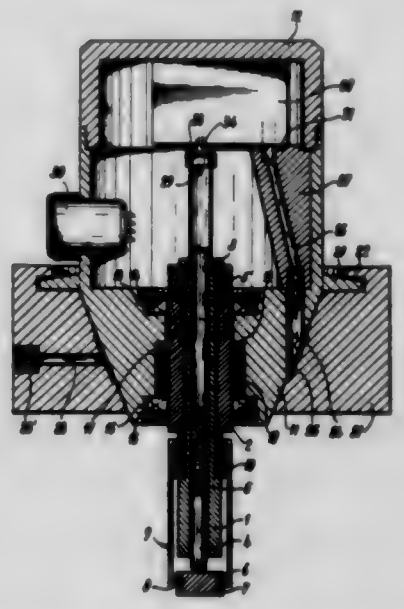
thereby preventing a change in the effective length of said vibrator element and stabilizing the characteristics of the resonant frequency of said vibrator.

4,494,410

CONVERTOR APPARATUS FOR ACCURATE AND CONSISTENT NON-DESTRUCTIVE TESTING OF OBJECTS

Gijsbertus F. J. Van Bochove, Vlaardingen, and Petrus A. A. M. Somers, Alphen A/D Rijn, both of Netherlands, assignors to Fokker B.V., Netherlands

Filed Feb. 16, 1983, Ser. No. 466,838
Claims priority, application Netherlands, Feb. 16, 1982, 8200586
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—644 15 Claims



1. A convertor for converting electrical vibrations into mechanical vibrations for non-destructive testing of objects, in particular, bonded joints between a plurality of sheets or between sheets and a honey comb structure, comprising a polycrystalline, piezo-electric member, which is provided with mutually insulated electrodes on its first and second head faces, said member being suspended and secured into a supporting element, said supporting element being provided with a resil-

ient member pressing centrally through a metal pin against the first head face of said member said supporting element being supported in a holder and mounted for movement with respect to said holder in a direction perpendicular to the object to be tested between a retracted rest position and an extended position, said holder forming a part of an arm of a positioning unit, said supporting element being supported such that the piezo-electric member extends from said holder, said supporting element being biassed in the retracted rest position, said arm being adapted to move said supporting element brought to a point that is a short distance from the object to be tested, said arm and holder being provided with drive means for moving the supporting element from the retracted rest position, in a direction toward the extended position, to a position where the piezo-electric member is pressed against the object to be tested with a predetermined force in response to a control unit.

4,494,411

PRESSURE DETECTOR COMPRISING A CYLINDRICAL CAVITY RESONATOR HAVING A FRONT SURFACE MADE AS A DIAPHRAGM

Peter Koschke, Bad Feilnbach, and Pavel Novak, Munich, both of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V., Fed. Rep. of Germany

PCT No. PCT/EP82/00183, § 371 Date Apr. 27, 1983, § 102(e) Date Apr. 27, 1983, PCT Pub. No. WO83/00925, PCT Pub. Date Mar. 17, 1983

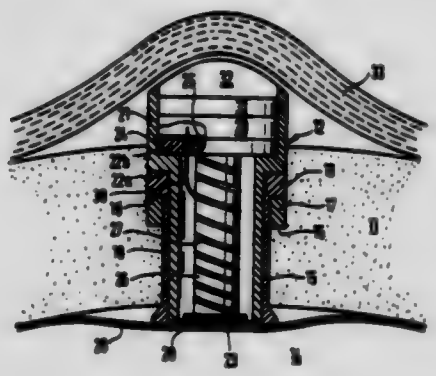
PCT Filed Aug. 27, 1982, Ser. No. 495,360

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1981, 3126093

Int. Cl.³ A61B 5/00; G01L 9/12

U.S. Cl. 73—724

12 Claims



1. A pressure detector, for measuring the intracranial pressure, including a sensor housing which comprises a cavity resonator circuit of a specific inductance and a capacity changeable in dependence on the pressure and an oscillator connected with said resonator circuit, said resonator cavity circuit comprising a cylindrical cup of electrically conductive material, an elastically yieldable, electrically conductive diaphragm that seals its front surface, and a helical inner conductor ending in a flat electrode and situated coaxially in said cup spaced from said diaphragm and secured to the bottom of said cup, wherein the cavity resonator circuit is a resonator with a helical inner conductor, said helical inner conductor being built upon a ceramic body situated coaxially in the said cup, said helical inner conductor being provided on its front face with the said flat electrode, and further characterized in that the said oscillator for the cavity resonator circuit is situated inside of the sensor housing.

4,494,412

TESTING TOOL FOR STUDS AND THE LIKE

Raymond D. Hardy, 10311 Desdemona Dr., Dallas, Tex. 75228

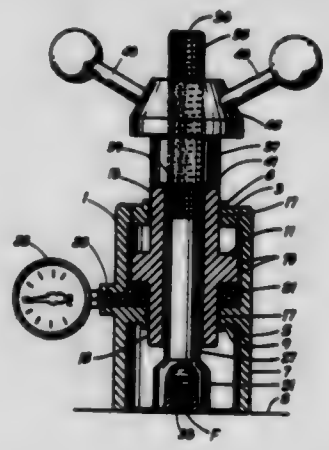
Filed May 19, 1983, Ser. No. 496,090

Int. Cl.³ G01L 1/02

U.S. Cl. 73—761

17 Claims

1. A tool for testing fasteners such as studs protruding from a plane surface comprising a cylinder having a pair of end walls each centrally apertured and an extension at one end for engagement with the fastener mounting surface, a piston slidable in the cylinder and having rod portions extending through both end walls of the cylinder, an axial aperture through the piston and piston rods, an elongated tension member extending through the aperture and axially movable therein with both its ends protruding from said piston rod portions, the portion of said tension member protruding from said piston rod in the same direction as the cylinder extension having means for gripping a fastener, a collar surrounding said tension member and adapted to abut against the end of the piston rod remote from the cylinder extension and means for forcing said collar



against the adjacent end of the adjacent piston rod, thus applying tension to said tension member and fastener and urging the piston rod and piston axially in the cylinder toward the fastener mounting surface, a hydraulic pressure gauge communicating with the cylinder between the piston and the end wall of the cylinder between the piston and the fastener mounting surface, hydraulic fluid in the same portion of the cylinder whereby tension applied to the fastener by said tension member causes movement of the piston rod and piston toward the fastener mounting surface, thereby causing pressure on the hydraulic fluid readable upon said gauge and indicative of the amount of tension applied to the stud.

4,494,413

HOMOGENEOUS SAMPLER FOR NON-HOMOGENEOUS FLOWING OF FLUID

Franciscus H. J. Bukkems, The Hague; Arnon Plaschkes; Cornelis Buurman, both of Amsterdam, and Anton M. P. Broere, The Hague, all of Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 2, 1982, Ser. No. 414,084

Claims priority, application United Kingdom, Sep. 30, 1981, 8129572

Int. Cl.³ G01N 1/20, 1/18

U.S. Cl. 73—863.43

6 Claims

1. A process for sampling a mass of non-homogeneous fluid comprising:

passing a mass of the non-homogeneous fluid through a pipeline as a fluid stream;

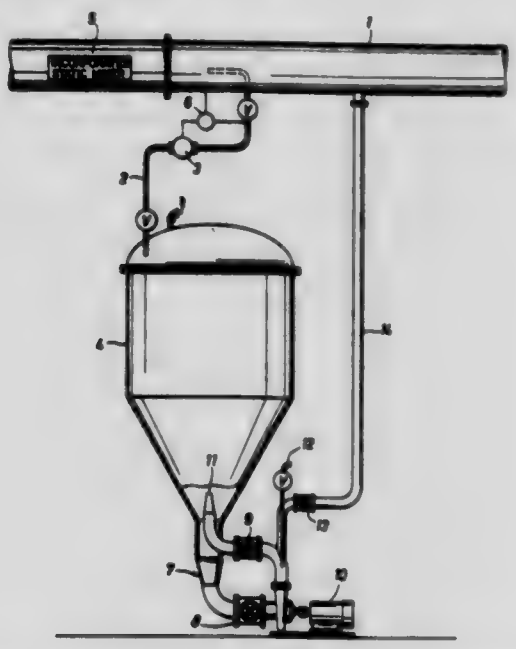
passing the fluid stream through a mixing zone in the pipeline under conditions of turbulent flow;

continuously withdrawing a part of the mixed fluid stream adjacent to the mixing zone at a velocity substantially equal to the velocity of the fluid stream in the pipeline;

introducing the withdrawn fluid stream part into a collecting vessel;

agitating the withdrawn fluid stream part collected in the collecting vessel by continuously removing fluid from the collecting vessel and jetting the removed fluid via a loop and nozzle back into the fluid in the collecting vessel at a

high velocity, the removed fluid exiting the vessel closely adjacent to the nozzle; and

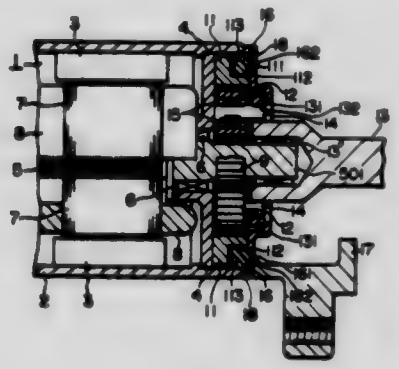


withdrawing a sample from the agitated withdrawn fluid stream part for analysis from the loop.

4,494,414
STARTER WITH A PLANETARY GEAR REDUCTION FACILITIES

Isao Hamano, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1982, Ser. No. 435,190
Claims priority, application Japan, Oct. 24, 1981, 56-160102[U]
Int. Cl.³ F02N *15/04*; F16H *57/10, 1/32*
U.S. Cl. 74—7 E 6 Claims

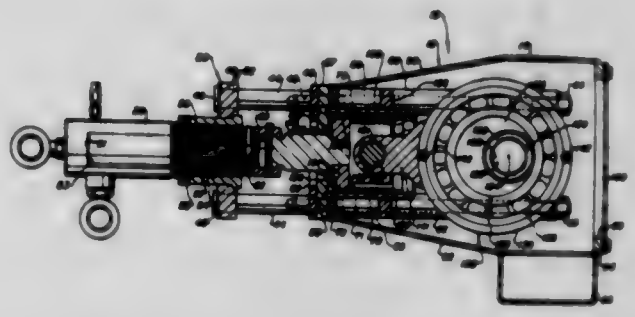


1. A starter with a planetary gear reduction facilities, comprising:
- a motor (1) having a first rotary shaft (5) and a yoke (2);
- a spur gear (9) formed on said rotary shaft;
- a cylindrical ring gear (11) rotatably mounted on an inner peripheral surface of said yoke, an inner peripheral surface of said ring gear having gear teeth thereon;
- planetary gear means (12) engaged with said ring gear teeth and said spur gear;
- an output second rotary shaft (13), said second shaft having first means (131, 132) for supporting said planetary gear means, said first rotary shaft having second means (501, 13') for rotatably supporting said second shaft;
- a first flange (16) mounted to said yoke and engaged with said second shaft to prevent axial movement thereof;
- a second flange (4) mounted adjacent one end surface of said ring gear; and
- an elastic member (18) mounted between an opposite end surface of said ring gear and an end surface (111) of said first flange, said opposite end surface of said ring gear and an end surface of said elastic member having contacting wave-like convex and concave surfaces (113a, 181).

4,494,415
LIQUID NITROGEN PUMP

Thomas L. Elliston, Fort Worth, Tex., assignor to Hydra-Rig, Incorporated, Fort Worth, Tex.

Filed Mar. 25, 1982, Ser. No. 361,601
Int. Cl.³ F16H *21/22*; F01B *1/02*; F04B *1/12*
U.S. Cl. 74—44 17 Claims



1. A power end assembly for a multi-cylinder reciprocating plunger pump comprising:
- a frame including main bearing support means comprising a plurality of spaced apart bearing support blocks and removable bearing cap members secured to each of said support blocks, respectively;
- a crankshaft assembly supported in said frame including a plurality of eccentrics, each of said eccentrics supporting a reciprocating connecting rod;
- roller bearing assemblies supported in each of said support blocks for journalling said eccentrics, respectively, directly adjacent to and on opposite sides of each of said connecting rods; and
- said crankshaft assembly is further characterized by a separable crankshaft section, and each of said eccentrics has a hub portion removably mounted on and drivenly keyed to said crankshaft section whereby said bearing assemblies can be assembled in supportive relationship to each of said eccentrics on opposite sides thereof, respectively.

4,494,416
INFINITE SPEED TRANSMISSION WITH RECIPROCATING YOKES

Lyle B. Evans, 9135 SW. Summerfield Ct., Tigard, Oreg. 97223

Filed Sep. 13, 1982, Ser. No. 416,885
Int. Cl.³ F16H *29/08, 29/20, 27/10*
U.S. Cl. 74—119 13 Claims



1. A power transmission including,
- a case,
- an input shaft journalled in said case,
- cam means driven by said shaft,
- an output shaft also journalled in said case and in alignment with said input shaft,
- reciprocating means driven by said cam means,
- an arm member shift plate, arm members swingably mounted on said shift plate and coupled to said reciprocating means whereby oscillating motion is imparted to a pair of said arms,

elongate gear plates having parallel gear racks thereon with each gear plate disposed intermediate a pair of arm members so as to be driven in a reciprocating manner by said pair of arms,

paired drive assemblies driven by each of said gear plates and each of said assemblies including a driven gear enmeshed with and driven by a gear rack on one of said gear plates, a driving gear enmeshed with an output shaft mounted gear, clutch means coupling said driven gear to said driving gear and operable to impart rotation to said driving gear of each drive assembly coincident with driven gear rotation in one direction and to overrun during opposite rotation of said driven gear whereby torque is imparted to the output shaft alternately by the driving gears of the drive assemblies, and

said shift plate adapted for positioning relative said gear plates whereby the point of contact between said arm members and their respective gear plates may be varied with respect to the axis of arm oscillation to vary the magnitude of gear plate travel and hence the speed of the output shaft.

4,494,417

FLEXIBLE ARM, PARTICULARLY A ROBOT ARM

Ove Larson, Gothenburg, and Charles Davidson, Askim, both of Sweden, assignors to Robotgruppen HB, Molndal, Sweden

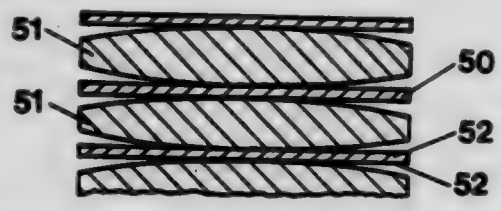
Continuation-in-part of Ser. No. 351,589, Feb. 23, 1982, Pat. No. 4,393,728, which is a continuation of Ser. No. 129,202, Mar. 11, 1980, abandoned. This application Sep. 29, 1982, Ser. No. 426,964

Claims priority, application Sweden, Mar. 16, 1979, 7902366

Int. Cl.³ B25J *1/02*; F16C *1/00*; A61F *1/06*

U.S. Cl. 74—469

6 Claims



1. A flexible arm, particularly a robot arm, for supporting and/or manipulating tools or the like comprising a plurality of elements arranged in series with adjacent elements contacting each other, at least one contact surface on each element contacting a contact surface of an adjacent element, at least one of said contact surfaces being convexly curved for rolling motion on the other contact surface of the adjacent element, the radius of curvature of said curved surface being relatively larger than half the height of the curved part of said element, the radius of curvature of the other contact surface on the adjacent element varying from a value which is relatively substantially larger compared with the contact surface of the first mentioned element to infinity, and actuating means operably connected to said elements to move them with respect to each other so that said adjacent elements have a rolling motion on said contact surfaces.

4,494,418

MULTI-DIRECTIONAL SINGLE LEVER CONTROL FOR TRANSMISSIONS

Glen R. Bellah, Bolingbrook; Richard H. Mylander, Glen Ellyn; Lloyd B. Ideiman, Evanston, and Robert R. Coons, Hinsdale, all of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed May 18, 1982, Ser. No. 379,409

Int. Cl.³ B60K *20/00, 20/10*

U.S. Cl. 74—475

9 Claims

1. A multi-directional single lever control for a transmission with at least two modes of operation, said control comprising:

a speed selector panel with a shift pattern incorporated therein;

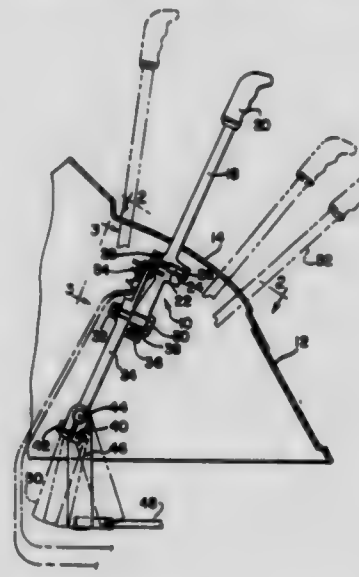
a shift lever freely moveable within and in conformance with said pattern;

said shift pattern comprising first and second sets of sequentially aligned speeds;

said sets opposing each other and respectively operating in one of said modes;

said shift lever connected with a lever mount being mechanically linked with said transmission and engaging said first set of speeds therein;

said shift lever pivotally mounted to said lever mount to provide an oscillatory motion for immediate and alternate



engaging of speeds in said opposed sets and pivoting together with said lever mount for engaging said first set of speeds;

switch means secured to said lever mount and actuated by said shift lever when said shift lever pivots about said lever mount;

said switch means attached to a valve means for controlling an input of pressurized fluid flow thereinto and actuation thereof;

said valve means hydraulically engaging either of said modes of operation in response to said pressurized fluid flow input.

4,494,419

TRANSMISSION MECHANISM IN A MANUAL TRANSMISSION

Masaki Inui, and Yasuyoshi Yasui, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

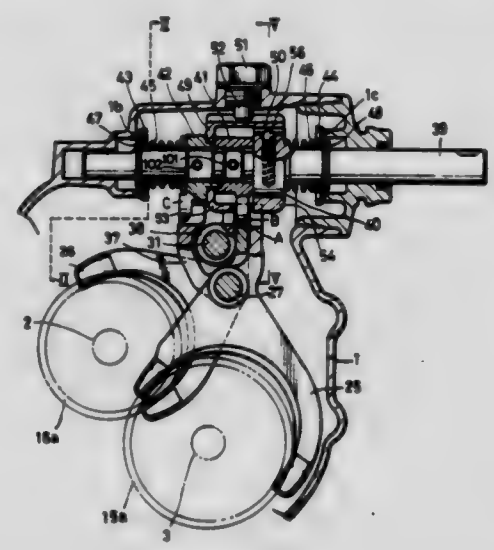
Filed Jul. 12, 1982, Ser. No. 397,442

Claims priority, application Japan, Aug. 20, 1981, 56-131946

Int. Cl.³ G05G *9/12, 5/10*

U.S. Cl. 74—477

5 Claims



1. A transmission mechanism in a manual transmission com-

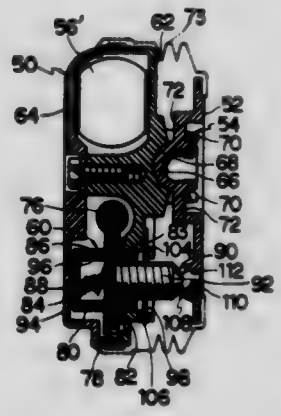
prising a fork shaft axially movably mounted on a transmission casing; a plurality of shift forks supported by and adapted to move along said fork shaft, said shift forks having first recess means at their upper portions arranged in alignment with each other and perpendicularly to said fork shaft in the neutral position of said transmission; a shift-and-select lever shaft mounted on said transmission casing and perpendicularly to said fork shaft, said lever shaft being adapted to axially move and rotate about its axis; a projection means formed with said shift-and-select lever shaft for axially moving said fork shaft and for selectively engaging one of said first recess means of said shift forks by the axial movement of said shift-and-select lever shaft; and means for moving said shift fork selectively engaged with said shift-and-select lever shaft in the axial direction of said fork shaft at the same speed of the axial movement of said fork shaft by the rotation of said lever shaft.

4,494,420

ROTARY-TO-LINEAR CONVERTER MECHANISM FOR A REMOTELY CONTROLLED REARVIEW MIRROR TILTING DEVICE OR THE LIKE

Toranosuke Sakuma, Shizuoka, Japan, assignor to Koito Seisakusho Co., Ltd., Tokyo, Japan

Filed Feb. 1, 1982, Ser. No. 344,477
Claims priority, application Japan, May 8, 1981, 56-69092; May 9, 1981, 56-69928
Int. Cl.³ G05G *11/00*; F16M *11/12*; A47G *1/24*; G02B *5/08*
U.S. Cl. 74—479 12 Claims



1. In a rearview mirror tilting device having a mirror holder (52) and a housing (50), said housing having housing open front and rear parts (62, 64), said housing being adapted and designed for accommodating motors and converter mechanisms, with a ball-and-socket joint (54) serving as the pivotal connection between the housing and the mirror holder, said ball-and-socket joint (54) including a ball (66) affixed approximately centrally on the mirror holder (52) and projecting rearward therefrom, a socket (68) to mate with the ball of said ball-and-socket joint, disposed in a corresponding position on the housing front part (62) so as to provide pivotal motion to the mirror holder (52) relative to the housing (50), in combination:

(a) first and second bidirectional motors (56, 56') within the housing (50), with output shafts, worms (76, 76') connected to said output shafts, meshing with worm wheels (78, 78'), and first and second converter mechanisms (60, 60') so arranged and disposed as to have the bidirectional rotation of the worms transformed into rectilinear reciprocation by the converter mechanisms, hollow rotor means (80) with front and rear parts, said front part being open, said hollow rotor means being formed integral with said worm wheels (78, 78'), said worm wheels being approximately midway between the opposite axial ends of said hollow rotors means (80), a wall rear part disposed at the hollow rotor means rear part perpendicular to its axis of rotation; and,

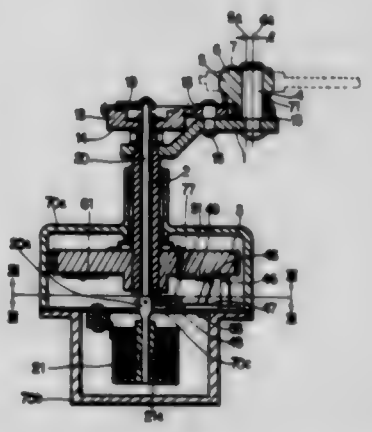
(b) a boss (88) disposed between the hollow rotor means rear part and the housing rear part (64) said boss extending between said wall rear part and said housing rear part (64) being affixed to one of said rear parts and having a pointed tip in contact with the other of said rear parts, so that the closed end of the hollow rotor means (80) make rotatable point contact and is restrained from axial displacement in the rearward direction, said wall rear part (84) serving to waterproof the tilting device and makes frictionless contact between the hollow rotor means (80) and the pointed tip of the boss (88).

4,494,421

WINDSHIELD WIPER DRIVING DEVICE

Hiroi Matsuoka, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 22, 1982, Ser. No. 360,772
Claims priority, application Japan, Mar. 31, 1981, 56-49161
Int. Cl.³ B60S *1/08*
U.S. Cl. 74—600 3 Claims



1. A windshield wiper driving device, comprising:

a crank arm connected to and rotated by a drive shaft which is rotatably driven by a motor;

a pin anchored at said crank arm;

an eccentric bush fitted on said pin and rotatable around said pin;

a stopper plate for rotation together with said eccentric bush;

a ring mounted rotatably on the outer periphery of said eccentric bush and fixed to a line rod;

stopper portions formed integrally with said ring such that a projection of said stopper plate abuts against either of said stopper portions;

an external gear fixed to a side of said eccentric bush which is opposite the side of said stopper plate;

a center gear rotatably fixed on a second pin, which is anchored at said crank arm, planetary gear meshing with said center gear and said external gear;

two stopper portions formed diametrically opposite of each other in said center gear;

a lever selectively engaging with either of said two stopper portions for stopping the rotations of said center gear; and,

drive means for driving said lever, whereby a wiping angle of a wiper blade connected to said link rod, is changed depending on whether rotations of said center gear are blocked or not blocked by said lever.

4,494,422

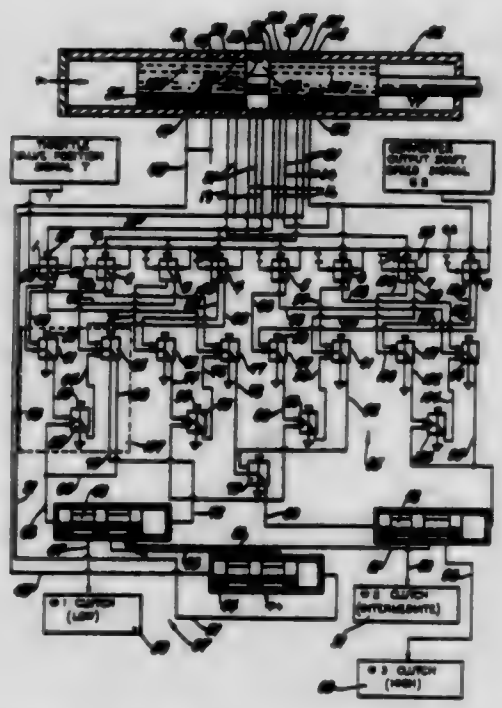
FLUIDIC TRANSMISSION CONTROLLER

Maurice F. Funke, 6891 Garland La., Columbia, Md. 21045, and Joseph W. Morris, Howard County, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C., by said Joseph W. Morris

Filed Sep. 16, 1982, Ser. No. 418,858
Int. Cl.³ B60K *41/10*, *41/22*; F15C *1/12*
U.S. Cl. 74—867 5 Claims

1. A fluidic transmission controller comprising a range selector valve (22) having a plurality of selectively energized output signal lines; a fluidic comparator module (23) that includes a plurality of similar comparators; each comparator comprising

a main supply port (54) connected to selected ones of the aforementioned signal lines, a primary collector port (56), an alternate collector port (58), one deflector beam port receiving a pressure signal T related to engine throttle position and a second deflector beam port receiving a pressure signal G2 related to transmission output speed; a fluidic logic section (25) that includes a series of similar modules (107), each logic mod-



ule comprising a plurality of beam deflection type amplifiers; selected amplifiers in the individual modules (107) having beam deflector ports receiving individual output signals generated by the comparators in the fluidic comparator module (23); and a clutch-control spool valve section (27) that includes a number of similarly constructed spool valves having control faces communicating with control signals generated by selected ones of the modules in said logic section (25).

4,494,423

AUTOMATIC TRANSMISSION CONTROL FOR AN AUTOMOTIVE VEHICLE DRIVELINE HAVING FAIL-SAFE LOGIC

James P. McCarthy, Inkster, and Richard E. Byler, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US82/01062, § 371 Date Aug. 4, 1982, § 102(e) Date Aug. 4, 1982
PCT Filed Aug. 4, 1982, Ser. No. 421,770
Int. Cl.³ B60K *41/04*
U.S. Cl. 74—869 8 Claims

1. An automatic power transmission mechanism for delivering torque from a power input member to a power output member comprising:

multiple speed ratio torque transmitting gearing establishing torque delivery paths between the input member and the output member;

multiple fluid pressure operated clutch and servo means for connecting and holding elements of said gearing;

a fluid pressure source;

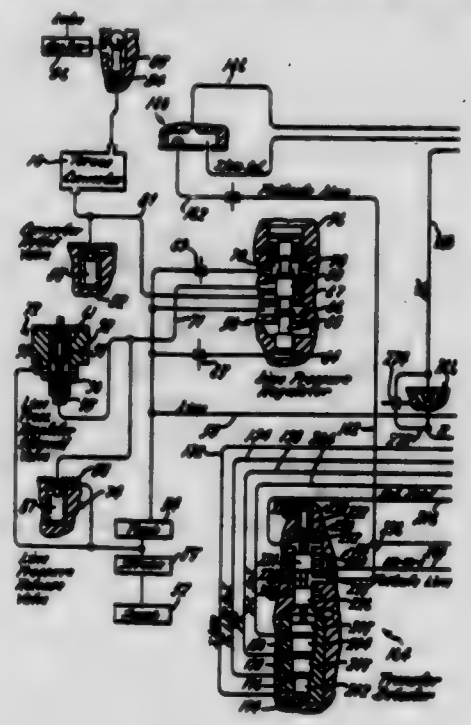
a valve for regulating the fluid pressure from said pressure source to line pressure;

a manual valve supplied with fluid from the regulating valve for communicating fluid at line pressure to a first outlet when the manual valve is disposed in a forward drive position or to a second outlet when the manual valve is disposed other than in the forward drive position;

transfer valve means normally in a first state at which communication is open between said manual valve first outlet and a feedline, movable to a second state at which communication is open between said manual valve first outlet and a fail-safe line that carries fluid to those clutch and servo means whose pressurization produces a predetermined speed ratio;

actuating means supplied with fluid from the feedline for selectively opening and closing communication between said feedline and selected clutch and servo means whereby said clutch and servo means are engaged and disengaged and the transmission ratios thereby produced;

detector valve means continuously communicating with the output of the actuating means disposed in a first state if the output of the actuating means is the output required for



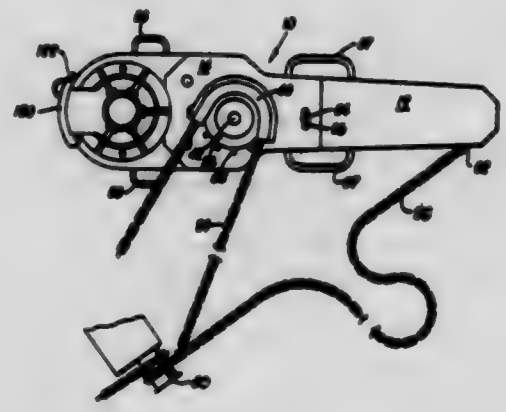
normal operation in a transmission drive ratio and disposed in a second state if the output of the actuating means is other than the output required for normal operation in a transmission drive ratio, being adapted to move the transfer valve means to its second state upon movement of the detector valve means to its second state, whereby the feedline is pressurized if the output of the actuating means corresponds to normal operation in a drive ratio and whereby the failsafe line is pressurized if the output of the actuating means is other than the output required for normal operation.

4,494,424

CHAIN-POWERED PIPE TONG DEVICE

Darrell R. Bates, P.O. Box 231, Thomas, Okla. 73669

Filed Jun. 24, 1983, Ser. No. 507,341
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.18 28 Claims



1. A chain-powered pipe tong device comprising:

an elongated main housing including a lever arm portion adjacent one end of the housing and a pipe engaging mechanism portion defining a pipe opening extending through the main housing, and defining a radial opening at

one side of the pipe engaging mechanism portion communicating with the pipe opening;

an annular gear housing rotatably mounted in the main housing and having a central opening therethrough aligned with said pipe opening in the main housing, said gear housing further defining a pipe admitting radial opening at one side thereof communicating with said gear housing central opening, and said gear housing further defining a plurality of radially inwardly opening pipe dog ports communicating with the central opening in said gear housing;

an annular main gear rotatably mounted within said gear housing and having a central opening therethrough aligned with the central opening in said gear housing, and further having a pipe admitting radial opening at one side thereof communicating with the central opening in said main gear, said main gear having gear teeth around the outer periphery thereof, and said main gear defining a plurality of circumferentially spaced cam slots;

pipe gripping dog subassemblies mounted in said gear housing and each including a cam rod, and dog means connected to said cam rod, each of said cam rods cooperating with one of said cam slots, and each of said dog means being positioned for extension through one of said pipe dog ports at a time during relative movement between the respective cam rod connected thereto and one of said cam slots;

a chain sprocket rotatably mounted on said main housing and accessible on the outer side of said main housing;

a two directional intermediate gear train positioned between, and drivingly interconnecting, said chain sprocket and said main gear for selectively driving said main gear in a clockwise or counterclockwise direction when said chain sprocket is driven in one direction;

a shifting and braking subassembly mounted in said main housing, and including means for alternately shifting said intermediate gear train from a clockwise driving status to a counterclockwise driving status, and for alternately placing said intermediate gear train in a neutral status in which rotation of said chain sprocket does not drive said main gear, said shifting and braking subassembly further including means for locking said main gear against rotation relative to said main housing; and

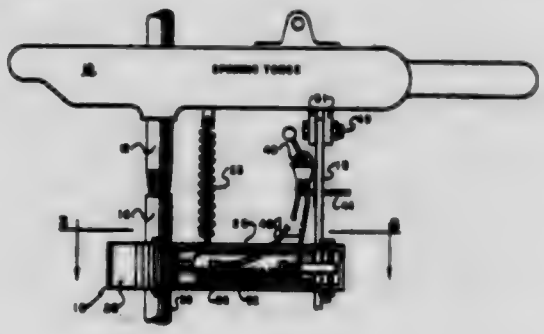
a drive chain drivingly connected to said chain sprocket.

4,494,425

BACKUP TONG

Hollis G. Skowmake, Sr., 412 Pine, Levelland, Tex. 79336

Filed Mar. 21, 1983, Ser. No. 477,436
Int. Cl.³ B25B 17/00
U.S. Cl. 81—57.34 7 Claims



1. In a tong assembly for threading and unthreading a joint of cylindrical goods into and from a string of cylindrical goods including:

a. spinning tongs for rotating the joint of cylindrical goods in threadable alignment with the string of cylindrical goods, and

b. threadable engagement of the joint and string of cylindrical goods during rotation of the joint of cylindrical goods tending to induce rotational movement of the string of cylindrical goods,

the improved backup tongs in combination with the above comprising:

c. a backup tong body connected to the spinning tongs,

d. a moveable jaw journaled to the body for movement about a cam axis,

e. a body jaw rigidly attached to the body opposite the moveable jaw,

f. a backer on the body adjacent the moveable jaw and the body jaw,

g. a cam face on the moveable jaw adapted to grip a wall of cylindrical goods aligned between the jaws,

h. the cam face being curved convex to the wall,

i. the cam axis being parallel to the wall,

j. a fixed face on the body jaw adapted to grip the wall,

k. the cam face being eccentric such that as the movable jaw is moved about the cam axis the distance between the cam face and the fixed face changes,

l. lever means connected to the body and the movable jaw for moving the movable jaw about the cam axis,

m. a bracket connected to the spinning tongs,

n. a slot in the bracket parallel to the wall of the cylindrical goods,

o. a post having an axis attached to the body with

p. the backer aligned with the post axis, and

q. the post being slidably positioned within the slot,

r. the post having a locking section and a reversing section therealong,

s. the reversing section having a circular cross-section with a diameter less than the width of the slot,

t. the locking section having a square cross-section slightly less than the width of the slot, and

u. a keeper at the end of the post larger than the width of the slot,

v. the body being oriented to the cylindrical goods such that the induced rotation of the string of cylindrical goods will move an area of the wall adjacent the moveable jaw toward the backer, and

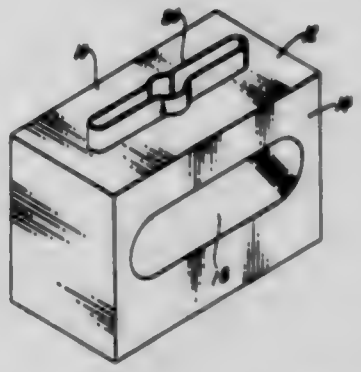
w. the faces on each jaw being toothed plates attached thereto.

4,494,426

PUNCH WITH REMOVABLE BLADE

John C. Hartzell, 19249 Allen Rd., Trenton, Mich. 48183

Filed May 20, 1983, Ser. No. 496,614
Int. Cl.³ B26F 1/14
U.S. Cl. 83—164 2 Claims



1. A punch for cutting an elongated slug from a sheet of material, comprising:

a body having a first opening, and a second opening connected to the first opening for removal of the slug;

the body having a lower seat and an upper seat disposed between said openings, the upper seat being disposed adjacent the first opening;

a hollow blade received in the body, the blade having a pair of opposed sides including a first side, and a second side shorter than the first side, the blade being mounted on the lower seat such that the upper seat supports the short side of the blade whereby the blade is disposed to define a generally continuous cutting edge about said first opening

for punching a slug in the sheet material, and the upper seat engages the slug as it passes through the blade toward the second opening; and

means in the body for locking the blade in a cutting position.

4,494,427

ROTATING SHEAR FOR HIGH-SPEED WIRE-ROLLING LINE

Gerhard Pechau; Ewald Wyzgol, and Rudi Jacob, all of Magdeburg, German Democratic Rep., assignors to Veb Schwermaschinenbau-Kombinat "Ernst Thälmann" Magdeburg, Magdeburg, German Democratic Rep.

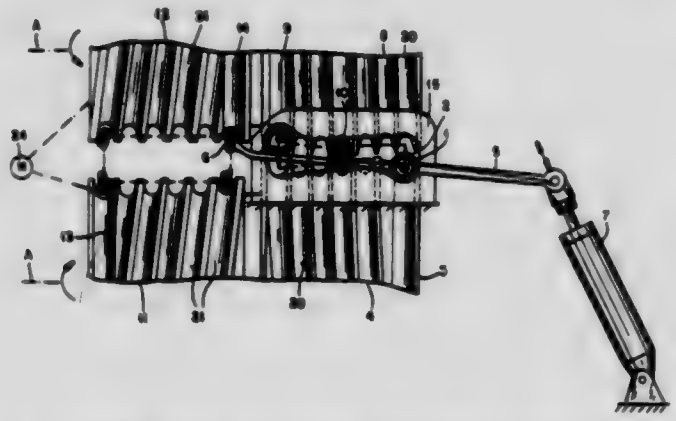
Filed Dec. 27, 1982, Ser. No. 453,120

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1981, 236519

Int. Cl.³ B23D 25/12

U.S. Cl. 83—306

10 Claims



1. A rotating shear for cutting a rapidly moving wire, the shear comprising:

a pair of cutter heads rotatable about parallel axes and having respective blades;

means for synchronously rotating the heads about the respective axes with close juxtaposition of the blades on each revolution, whereby when the wire is between the heads level with the blades it is severed thereby;

a guide tube surrounding the wire upstream of the heads and having a downstream end movable generally parallel to the axes and positioned adjacent and between the cutter heads, the wire exiting from the guide tube in a direction generally perpendicular to the plane of the head axes;

a guide head fixed to one of the cutter heads and formed with a generally helical guide groove centered on the respective axis;

an axially and radially displaceable but angularly generally nondisplaceable follower movable between a position engaged in the groove and axially entrainable thereby and a position clear thereof;

actuator means for displacing the follower between the positions;

a rigid link connected between the follower and the guide tube, whereby when the follower is in the groove the tube can be pulled axially into and out of alignment with the blades for cropping of the wire and when out of the groove the tube can be moved independently of the head, the drive means counterrotating the cutting heads, said cutting heads being formed with helical grooves of the same pitch and hand and each of a radial depth greater than the wire diameter, the guide groove being of the same pitch but opposite hand as the cutter-head grooves; and

another guide head fixed on the other cutter head and formed with a generally helical guide groove centered on the respective axis and of the same pitch and hand as the other guide groove, the two guide heads being radially spaced sufficiently that the follower can be engaged in one of the guide grooves without engaging in the other.

4,494,428

CUTTING TOOL INSERT ASSEMBLY FOR SHEARS

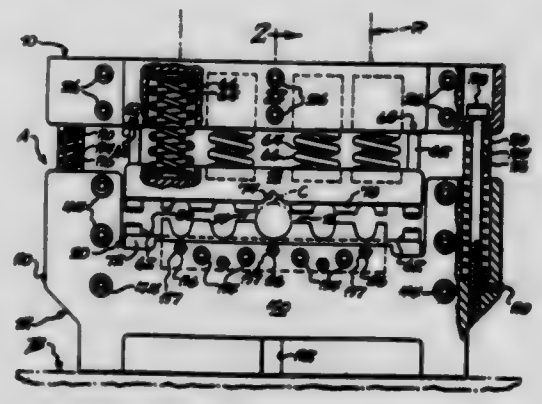
A. Paul Malof, 35 Burgundy Ter., North Amherst, N.Y. 14120

Filed Feb. 26, 1982, Ser. No. 352,641

Int. Cl.³ B26D 3/16, 7/02

U.S. Cl. 83—389

2 Claims



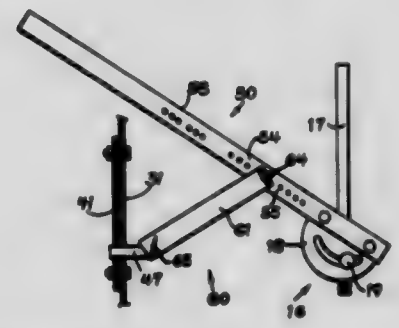
1. A removable cutting tool insert assembly for shears fed with stock, such as bar stock; said assembly including upper and lower housings; and means mounting said housings on each other for relative closing movement toward and opening movement away from each other in one direction transverse to the stock feed direction; said mounting means including resilient means normally biasing said housings into spaced apart relationship; wherein the improvement comprises: upper and lower knives on said upper and lower housings respectively, with one of said knives being offset downstream from the other of said knives in the stock feed direction and with both of said knives being elongated in another direction transverse to both said one direction and the stock feed direction; said means mounting said knives including adjustable means providing for relative movement of said knives not only toward and away from each other in the stock feed direction for adjusting the clearance between said knives, but also along each other in said other direction, for centering said knives; said upper and lower knives having lower and upper edge surfaces respectively opposing and proximately spaced from each other in said one direction, with said lower and upper edge surfaces being cut away to provide recessed cutting edge surfaces forming respectively top and bottom initial stock engaging portions opposing and remotely spaced from each other in said one direction; a hold down and a work support elongated in said other direction and having lower and upper clamping surfaces respectively; and means movably mounting said hold down and work support on said upper and lower housings respectively adjacent said upper and lower knives respectively, with said lower and upper clamping surfaces facing said bottom and top initial stock engaging portions respectively; said hold down and work support mounting means including resilient means normally biasing said hold down and work support toward said lower and upper knives respectively, one positioning means locating one of said clamping surfaces closer to the opposite one of said initial stock engaging portions than is the other of said initial stock engaging portions, but not as close to said one intial stock engaging portion as is said edge surface of said knife adjacent said one clamping surface, and another positioning means locating the other of said clamping surfaces no further from said other initial stock engaging portion than is said one initial stock engaging portion, but not as close to said other initial stock engaging portion as is said edge surface of said knife adjacent said other clamping surface; whereby upon said closing movement, said one clamping surface resiliently clamps one of the upstream and downstream stock portions against the opposite one of said knives both prior to and during shearing, in order to prevent the one stock portion from kicking, while said other clamping surface resiliently clamps the other of the upstream and downstream stock portions against the opposite other of said knives during shearing, in order to prevent the other stock portion from bending.

4,494,429

CROSSCUT SAW CARRIAGE

Warren C. Frame, Box W, Ronan, Mont. 59864

Filed Dec. 17, 1982, Ser. No. 450,654
Int. Cl.³ B27B 27/06
U.S. Cl. 83—435.1 1 Claim



1. A crosscut saw carriage for use with a crosscut saw having a saw blade mounted in a saw table, and a miter guide slidable upon the saw table;

the miter guide having a pivotable miter guide head which can be pivoted with respect to the direction of travel of the miter guide upon the saw table, comprising:

a rail mounted at the side of the saw table and parallel with the direction of travel of the miter guide;

a rolling carriage having a plurality of rollers for rolling engagement upon the rail to allow the rolling carrier to translate along said rail;

a transverse beam extending across at least a portion of the saw table; the transverse beam being adapted for rigid connection to the pivotable miter guide head adjacent one end thereof;

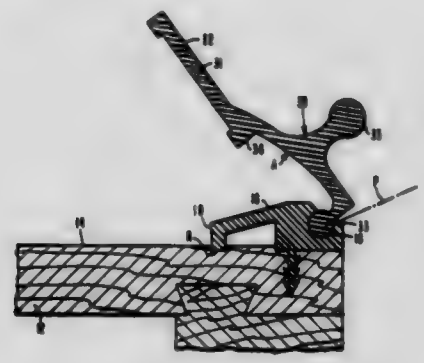
an adjustable link connected to and extending between the rolling carrier and the transverse beam; the adjustable link being connected to the transverse beam and rolling carrier by fasteners which allow the angular orientation of the adjustable link and transverse beam to be adjusted for different angular orientations with respect to the saw table.

4,494,430

PAPER GUIDE FOR PAPER CUTTER

John Bautista, Chicago Ridge, and Lawrence H. Miller, Downers Grove Township, Du Page County, both of Ill., assignors to Ideal School Supply Corporation, Oak Lawn, Ill.

Filed Mar. 14, 1983, Ser. No. 475,000
Int. Cl.³ B26D 13/4
U.S. Cl. 83—468 5 Claims



2. In a paper cutter apparatus including a cutting board having a surface to accommodate the paper stock to be cut, a graduated ruler to permit selection of the width of the cut paper stock, and a cutting mechanism, the improvement of a paper guide means associated with the ruler to provide a surface against which the paper stock is positioned prior to cutting, the improvement comprising:

a ruler affixed to said cutting board and having a cylindrically shaped groove extending at least the useful length thereof, and

a paper guide means having a paper guide arm and a cylindrical member, said cylindrical member being slidably positioned within the cylindrically shaped groove of said ruler to enable said paper guide means to horizontally traverse the cutting board surface and to vertically rotate about said cylindrical member from a position wherein said paper guide arm contacts said cutting board surface to a position removed from said surface,

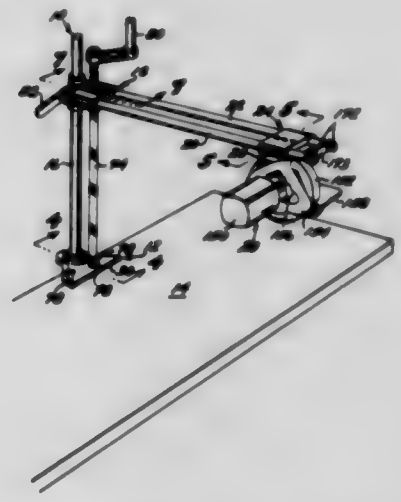
said paper guide means engaging said ruler in an interference fit when said paper guide arm contacts said cutting board surface to essentially secure said paper guide means at a fixed location on said ruler.

4,494,431

PORTABLE RADIAL ARM SAW

John O. Niswonger, 1947 Silver Spur Cir., Ojai, Calif. 93023

Filed May 7, 1982, Ser. No. 375,874
Int. Cl.³ B27B 5/00
U.S. Cl. 83—471.3 8 Claims



1. A radial arm saw comprising:

a base for attachment to a work support surface;

a vertical post attached to said base;

a rail support coupled to said post for vertical adjustable movement along said post;

horizontally extending rail means supported by said rail support and extending inwardly of said vertical post;

a carriage coupled to said rail means for horizontal movement along said rail means; and

saw support means for suspending beneath said carriage a circular saw of the type having a motor housing, a saw guard, a handle overlying said motor housing and spaced inwardly of said saw guard, and a base plate through which the blade of said circular saw extends, said saw support means being coupled to said carriage for movement of said circular saw about vertical and horizontal axes, said saw support means including a forward portion extending downwardly for attachment to forward structure of said base plate, and further including a rearward portion extending rearwardly and downwardly for overlying engagement upon that portion of said saw located between said handle and said saw guard, said rearward portion being adapted to fit in the space between said handle and said saw guard whereby said handle is accessible for use in manipulating said circular saw, said forward portion of said saw support means comprising a forward bracket adapted to extend forwardly of said motor housing and downwardly for fixed connection to said forward structure of said base plate, said rearward portion of said saw support means comprising a rearward bracket adapted to extend rearwardly of said motor housing and downwardly for fixed connection to said rearward structure of said base plate, said forward bracket being generally vertically slotted at the point of said fixed connection to accommodate saws of different heights, said forward

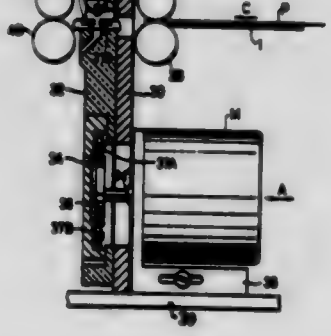
and rearward brackets being interconnected and at least one of said forward and rearward brackets being generally horizontally slotted where they are interconnected thereby to accommodate different sizes of base plates, said saw support means further including a fitting having a lower portion for engaging the underside of said rearward structure of said base plate, and an upper portion adapted to overlie said rearward structure, said upper portion having a threaded element operative to bias said upper portion away from said rearward bracket for urging said rearward bracket and said reward structure together.

4,494,432

INTERCHANGEABLE CUTTER MECHANISM

Mikio Kogane, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 17, 1983, Ser. No. 467,558
Claims priority, application Japan, Feb. 17, 1982, 57-24230
Int. Cl.³ B26D 5/16, 7/26
U.S. Cl. 83—559
3 Claims



1. A cutter mechanism comprising support means, a stationary cutting block having first cutting edges thereon detachably connected to said support means, a moveable cutting block having second cutting edge means thereon, guide means operably inter-connecting said stationary cutting block and said moveable cutting block together as a unit and for guiding said moveable cutting block relative to said stationary cutting block to bring said first and second cutting means into and out of operative engagement with each other and drive means for moving said moveable cutting block relative to said stationary cutting block, said drive means being moveably supported on said support means for movement into and out of operative engagement with said moveable cutting block for permitting separation of said stationary and moveable cutting blocks as a unit from said support means.

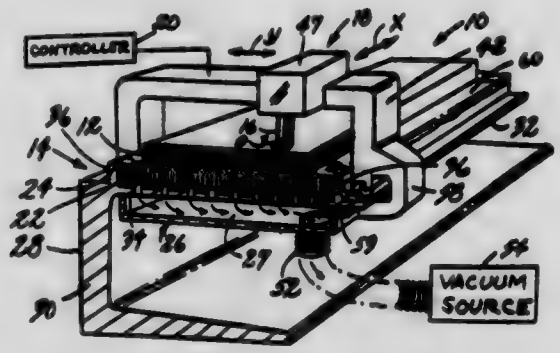
4,494,433

APPARATUS FOR WORKING ON SHEET MATERIAL AND HAVING MOVABLE VACUUM CHAMBER

Heinz J. Gerber, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed Jan. 25, 1982, Ser. No. 342,507
Int. Cl.³ B26D 5/00, 7/00, 1/00
U.S. Cl. 83—374
9 Claims

5. In an apparatus for working on sheet material and having a vacuum table assembly including a fluid permeable bottom wall and defining a fixed fluid permeable upper support surface upon which sheet material may be spread, a carriage assembly including a first carriage supported for movement longitudinally of the support surface and a second carriage supported on the first carriage for movement with the first carriage and transversely of said first carriage and said support surface, an instrument supported on the second carriage, a programmable controller, means for moving said carriage assembly in response to signals received from the programmable controller to move the instrument in working relation to sheet material spread on the support surface, and means for producing vacuum at a portion of the support surface in the working region of the instrument to hold sheet material spread over the portion of the support surface in firmly fixed engagement with the portion of the support surface, the improvement comprising said vacuum producing means including an upwardly open vacuum box disposed in generally sealing engagement with the lower surface of said bottom wall and having a transverse dimension substantially equal to the transverse dimension fo said support surface, said vacuum box cooperating with an



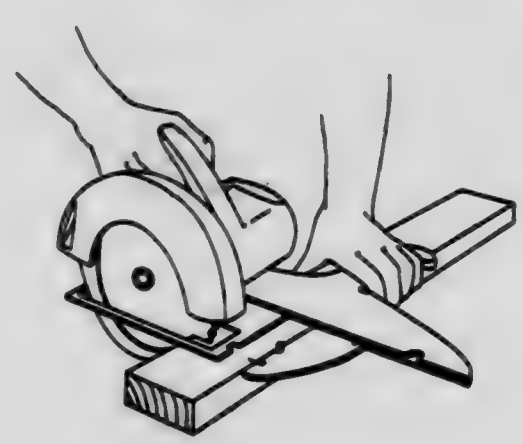
associated portion of said bottom wall to define a movable vacuum chamber generally below the transverse path of said instrument and in communicating with said fluid permeable support surface, and said apparatus including a rigid connecting member connected in fixed position to said first carriage and to said vacuum box, said connecting member connecting said vacuum box to said first carriage outboard of a longitudinally extending free edge of said table assembly to move longitudinally of said table assembly with said first carriage.

4,494,434

QUICK POSITIONING CUT-OFF GUIDE FOR HAND POWER SAWS

Robert W. Young, 2151 Plamalt Dr., Falls Church, Va. 22043

Filed Jul. 2, 1982, Ser. No. 394,504
Int. Cl.³ B27B 9/04
U.S. Cl. 83—745
12 Claims



1. A saw guide comprising:
a guide member with an elongated guide edge;
flange means upon said guide member adapted to abut the edge of a workpiece, the edge of said flange means being at right angles to said elongated guide edge;
an index member having a straight edge portion, said index member being pivotally mounted to said guide member so as to be moveable to a measurement position from a storage position, wherein said straight edge portion abuts the edge of a workpiece in the measurement position;
means for driving said index member from said storage position to said measurement position;
means for returning said index member from said measurement position to said storage position;
a measurement mark or marks on said straight edge of said index member;

said mark or marks indicating the position of the blade of the saw when the saw is guided along said elongated guide edge;

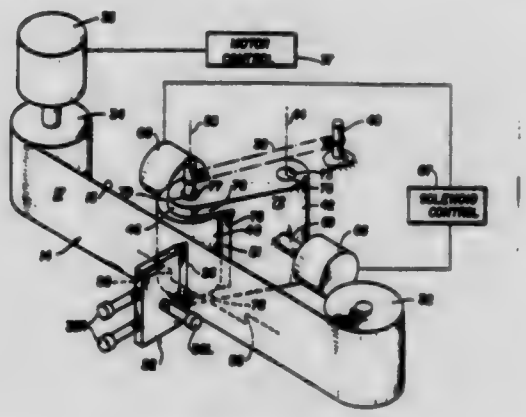
wherein said guide member is placeable upon a workpiece in such a manner that the table plate of a portable saw may bear against and be guided by said elongated guide edge, thereby facilitating cutting of the workpiece along a path parallel to said elongated guide edge.

4,494,435

CUTTING DEVICE

Ned Lindsay, P.O. Box 529, Main St., Chester, Vt. 05143

Filed Sep. 23, 1983, Ser. No. 535,297
Int. Cl.³ B26D *3/08*
U.S. Cl. 83—880 9 Claims



9. A method for cutting at least one layer of a multilayered moving composite of selected thickness comprising the steps of: fixing a cutting blade in a stationery position; movably supporting a roller in parallel spaced relationship with the fixed cutting edge; moving the roller along an arcuate path in proximate space relationship with the cutting edge; moveably supporting the composite in parallel spaced relationship between the roller and the cutting edge; engaging the composite from one side with the roller and thereby urging an opposite side of said composite into engagement with the cutting edge, for cutting the same as the roller moves in proximate spaced relation with said cutting edge; and establishing a spacing of the roller and the cutting edge, such that, at the position of proximate spaced relation, the spacing of the roller and cutting edge is less than the thickness of the composite, so that, after the cut is made, the composite remains intact.

4,494,436

APPARATUS FOR MANUFACTURING RESIN IMPREGNATED FIBER BRAIDED PRODUCTS

August H. Krucsi, Wallingford, Vt., assignor to Elfin Corporation, Wallingford, Vt.

Filed Sep. 2, 1983, Ser. No. 528,929
Int. Cl.³ D04C *3/40*
U.S. Cl. 87—23 9 Claims

1. In a braiding machine for braiding a plurality of filaments about a mandrel, said machine including:

a base,

a mandrel supported on said base for movement along its axis,

a braid wrapping carrier mounted for rotation about its axis and concentrically about the mandrel at a fixed longitudinal rotational plane position relative to the mandrel movement,

means for mounting bobbins of filaments to be braided to said carrier at spaced circumferential positions thereon for bobbin rotation about their axes,

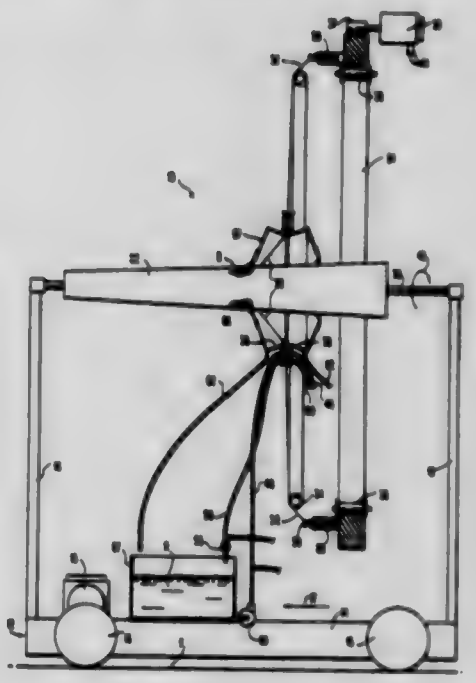
means for fixing free ends of the filaments to said mandrel at a point axially spaced from said carrier rotation plane,

means for rotating said carrier and axially shifting said mandrel to cause said filaments to wrap about said mandrel and to form a braid, the improvement comprising:

a means defining at least one annular applicator ring fixedly mounted concentrically about said mandrel axially and radially between said carrier rotation plane and the filament contact area with said mandrel and being sized and in a position such that the filaments partially wrap and wipe across a filament wrapping surface of said applicator ring,

means internally of said applicator ring and including the filament wrapping surface portion of said applicator ring for defining a closed plenum chamber,

finite pores within said filament wrapping surface of said ring,



means for supplying a coating liquid under pressure to said plenum chamber and wherein,

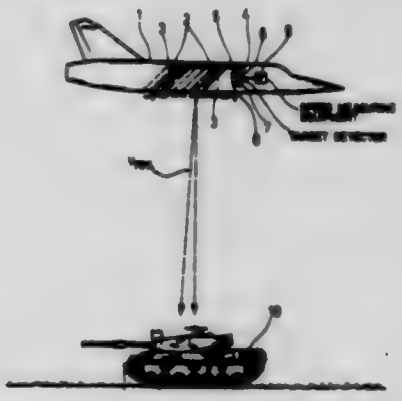
said pores are sized such that, depending on the viscosity of the coating liquid and the fluid pressure within said chamber, the coating liquid bulges out of the pore opening but is prevented from flowing therefrom until a filament passes over the pore, whereby the filament breaks the surface tension and draws in the liquid by capillary action to impregnate the filament with said coating liquid.

4,494,437

ARRANGEMENT IN LOW-FLYING WEAPONS CARRIERS FOR COMBATING GROUND TARGETS

Ignaz von Maydell, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschränkter Haftung

Filed Jan. 23, 1980, Ser. No. 116,025
Int. Cl.³ F41H *13/00*
U.S. Cl. 89—1.51 11 Claims



1. Arrangement in a low-flying weapons carrier comprising a manned or remote control aircraft for combatting ground targets, a weapon located in said weapon carrier, said weapon arranged to hold a plurality of ammunition members for attack-

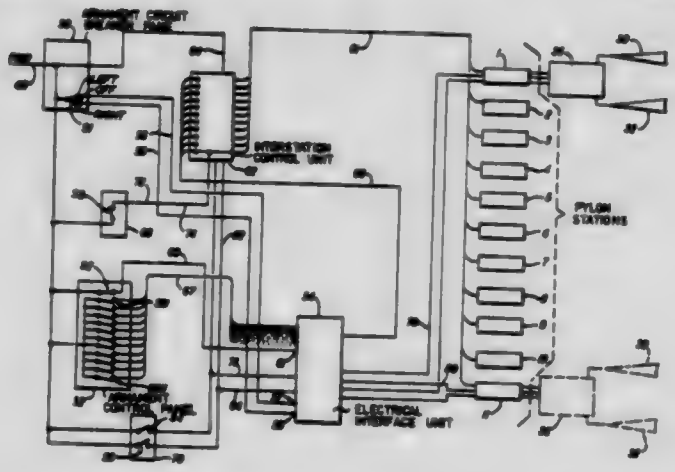
ing ground targets and said weapon having steeply downwardly directed ballistics, a release 5 in said weapon carrier for said weapon 2, a target detector 4 in said weapon carrier separate from said weapon and assigned to said release, said target detector is of relatively short reach which is directed steeply downwardly and parallel to the direction of the resulting velocity vector V_{res} of the ammunition members 3 to be discharged from said weapon.

4,494,438

AIR-TO-AIR WEAPON MODIFICATION FOR MILITARY AIRCRAFT

Gary R. Lighton, P.O. Box 81, Nedrow, N.Y. 13120, and Michael S. Lighton, 4600 Odell Pl., Jamesville, N.Y. 13078

Filed Jan. 20, 1983, Ser. No. 459,295
Int. Cl.³ F41F *3/06, 5/02*
U.S. Cl. 89—1.813 7 Claims



1. In a military aircraft having at least ony pylon permanently connected to each wing, said pylons each having a pair of spaced hooks for suspension mounting of conventional air-to-ground weapons, said aircraft further having an electrical system including a power supply, a weapons control network adapted to launch or reject said air-to-ground weapons in response to signals from said power supply, and a pair of selectively operable switches for connecting said signals to said control network to release and reject, respectively, a weapon connected to said network, the combination comprising:

(a) a mounting member having a pair of spaced lugs adapted for engagement by said spaced hooks, thereby suspending said mounting member from one of said pylons, one of said members being suspended from at least one of said pylons;

(b) a pair of missile launchers fixedly connected to inboard and outboard sides, respectively, of said mounting member, each of said launchers being adapted to carry a conventional air-to-air missile;

(c) means electrically connecting a first of said launchers to said weapons control network for selective launching or rejecting of a missile carried by said first launcher in response to a first selective closing of one of said first and second switches, respectively; and

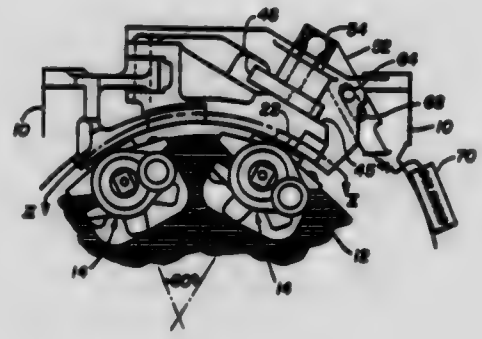
(d) relay means operable in response to said first closing of one of said first and second switches to electrically connect the second of said launchers to said weapons control system for selective launching and rejecting of a missile carried by said second launcher in response to a second selective closing of one of said first and second switches, respectively.

4,494,439

FIRING MECHANISM FOR HIGH RATE OF FIRE REVOLVING BATTERY GUN

Quentan T. Sawyer, Milton, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Apr. 25, 1983, Ser. No. 488,226
Int. Cl.³ F41D *7/04*
U.S. Cl. 89—12 7 Claims



1. A Gatling type gun comprising:

a housing;

a rotor journaled for rotation with respect to said housing;

a plurality of gun bolts disposed in an annular row on said rotor;

each gun bolt having a respective face, a firing pin, and a cocking pin fixed to said firing pin;

switchable firing pin control means mounted to said housing for sequentially engaging each of said cocking pins during rotation of said rotor of the respective gun bolts past the firing angular sector of said gun, and having

a first disposition for positively projecting the forward tip of each firing pin, whose respective cocking pin has been engaged, forward of said face of its respective gun bolt, by coupling the kinetic energy of the rotor to the firing pin over a period of time, and

a second disposition for positively precluding the forward tip of each firing pin from projecting forward of said face of its respective gun bolt; and

switching means coupled to said switchable firing pin control means for remotely switching said control means to and between said first and second dispostions.

4,494,440

ARMING SETS FOR WEAPONS SYSTEM

Richard Koine, Ratingen, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

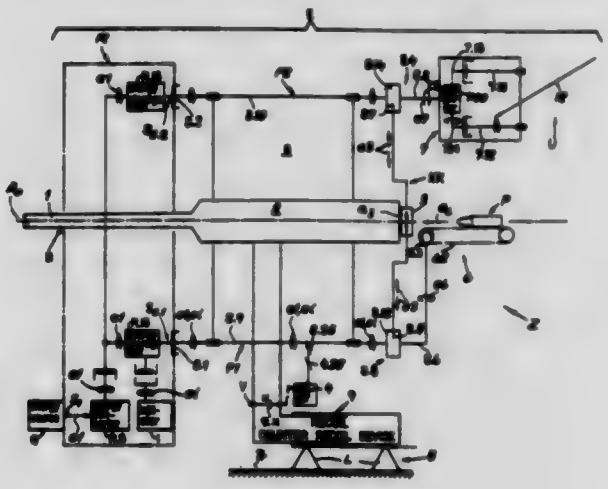
Filed Apr. 14, 1978, Ser. No. 896,462
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1977, 2716892
Int. Cl.³ F41D *10/14*
U.S. Cl. 89—33.04 21 Claims

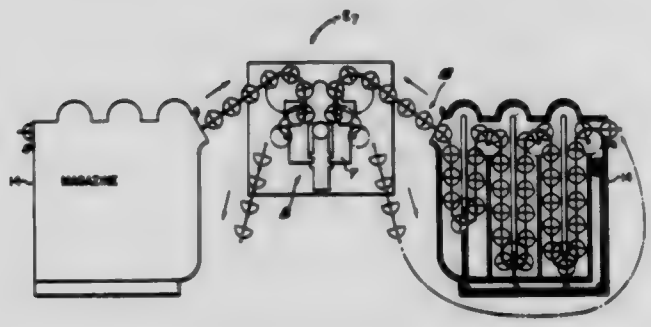
1. A weapons system comprising:

a plurality of central units each comprising a single-barrel automatic weapon, a respective munitions loader for loading individual rounds of munitions into a chamber of the respective weapon, a respective breech block closable for firing of the round in the chamber, said rounds each comprising a PRUNIT consisting of a projectile and a solid body of propellant affixed to said projectile and ignitable to propel the projectile through the barrel, and a respective arming set for at least some of said weapons, each arming set comprising means defining first and second energy-flow paths including respective shafts adapted to transmit torque from input ends to output ends of the path, at least one of the shafts being connected operatively to said breech block for shifting same between open and closed positions, at least one of the shafts of each energy-flow path being operatively connected to said loader of at least one weapon associated with the arming set, each arming set including an energy converter for transforming

energy from an energy source into a torque of at least one of the shafts thereof, the respective weapons being combined with respective arming sets and energy converters in accordance with the respective operating characteristics of the weapon in terms of the nature of the energy applied to operate same;

a recoil/counterrecoil mechanism associated with at least some of said weapons; and





a respective munitions feeder for feeding PRUNITS to each of said loaders, at least some of said munitions feeders being provided with two munitions magazines each receiving PRUNITS of different type and a selector for advancing a PRUNIT of a selected type from one of the magazines to the respective loader.

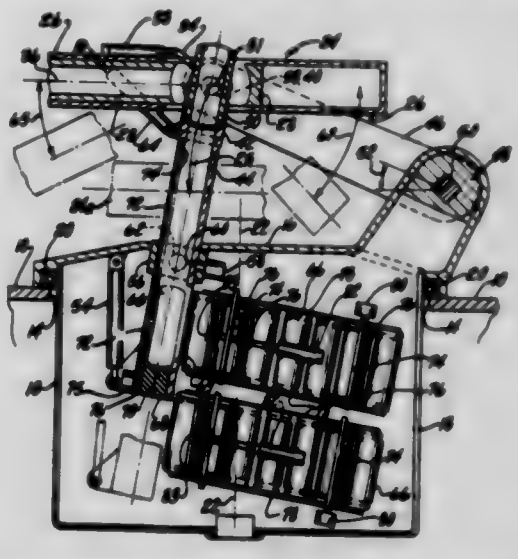
4,494,441

AMMUNITION FEED TRUNNION SUPPORT

Roland A. Magnuson, King, Wash., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 8, 1983, Ser. No. 521,470
Int. Cl.³ F41H 7/06
U.S. Cl. 89—38 7 Claims

1. In a military land vehicle comprising a hull; a turret mounted on the hull for rotational motion in the azimuth direction, said turret including a roof located approximately in the plane of the hull upper surface, a cannon located above the turret roof, and a mechanism supporting said cannon for bodily motion between a first lowered prone position adjacent said turret roof, and a second elevated prone position remote from said turret roof; said cannon comprising a receiver, a breech slidable with said receiver, and firing chamber means within said breech: the improvement wherein said support mechanism comprises a hollow elongated upright tube extending within the turret through an opening in said turret roof, a yoke affixed to the upper end of said hollow tube, trunnion means (40) between said yoke and cannon receiver enabling said cannon to swing in an elevational plane around an axis transverse to the longitudinal axis of said hollow tube, bracket means upstanding from said turret roof remote from said hollow tube, link means (46) pivotally connected to said bracket means and to said trunnion means for arcuate swinging motion in a vertical arc during motion of said cannon between its lowered position and its elevated position, said link means being oriented to absorb recoil forces during the cannon firing operation; and means within said hollow tube for conveying individual rounds of ammunition from the turret interior through said tube to said cannon firing chamber.

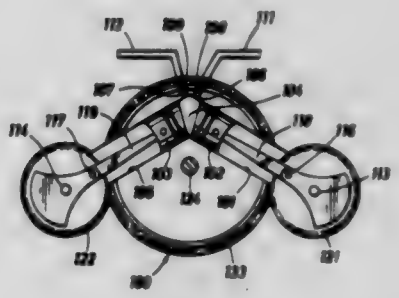


4,494,442

VALVE ACCENTUATION MECHANISM FOR OPPOSED INVERTED V ENGINE

Clark N. Fishel, 6704 Shady Cedar Cir., Austin, Tex. 78734

Continuation of Ser. No. 152,768, May 23, 1980, abandoned.
This application Mar. 30, 1982, Ser. No. 363,569
Int. Cl.³ F01B 7/04
U.S. Cl. 91—181 15 Claims



1. In a machine, such as an engine or an air compressor, the improvement comprising:

(a) a body supporting a pair of counter-opposed cylinders whose axes are oriented in an intersecting angle between 80 and 179 degrees and each pair of said cylinders having a common compression zone;

(b) means mounting a piston for reciprocation within each cylinder from its open end;

(c) rotary means connected with said pistons reciprocating in said cylinders;

(d) a flywheel journaled to said body for rotation about an axis and driven by said rotary means;

(e) a plurality of cylindrical valve chambers mounted on said body parallel to said flywheel axis of rotation;

(f) said valve chambers being connected to said compression zone of each cylinder pair by spaced apart ports, with one valve chamber being connected to intake means and the other valve chamber being connected to exhaust means;

(g) cylindrical piston valves mounted for axial movement within said valve chambers and having valve openings selectively aligned to interconnect said ports of said valve chambers with said intake and exhaust means; and

(h) said flywheel carrying cam surfaces adapted to move axially said piston valves to preset positions within said valve chamber at selected angular positions of said flywheel whereby said piston valves are moved between preset positions and control flow through said ports in said

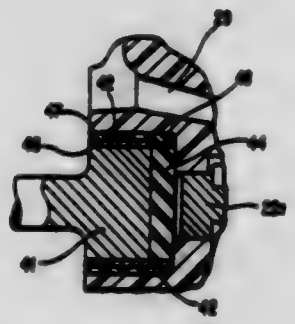
valve chambers in timed sequence to reciprocation of said pistons in said cylinders.

4,494,443

REACTION FORCE APPARATUS FOR A VACUUM BOOSTER

Kaoru Tsubouchi, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 19, 1983, Ser. No. 459,216
Claims priority, application Japan, Jan. 23, 1982, 57-007946[U]
Int. Cl.³ B60T 13/54
U.S. Cl. 91—369 A
6 Claims



1. A vacuum booster comprising:
a push rod;
a housing having a first and second compartment;
power piston means located in said housing and operated by a pressure differential between said first and second compartment and which further comprises a small diameter portion and a large diameter portion;
control valve means operatively associated with said push rod and located within said power piston means for controlling the pressure differential between said first and second compartments in response to the movement of said push rod;
output means having a first end slidably disposed within said large diameter portion of said power piston means wherein said control valve means further comprises an air-valve element one end of which is slidably disposed in said small diameter portion of said power piston means;
a resilient reaction disc located adjacent said first end of said output means and disposed within said large diameter portion of said power piston means;
a metallic sleeve contacting an outer peripheral portion of said first end of said output means and an outer peripheral portion of said reaction disc; and
a resilient member provided between a cylindrical surface portion of said large diameter portion of said power piston means and said metallic sleeve wherein said resilient member has an inner cylindrical surface in contact with an outer cylindrical surface of said metallic sleeve and said metallic sleeve has a hole formed therein for substantially interrupting a compression reaction force transmission from said reaction disk to said resilient member.

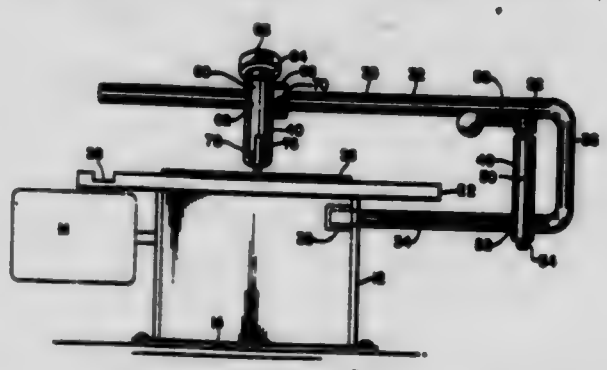
4,494,444

APPARATUS FOR CUTTING GLASS

Joseph H. Masse, 151 Coggeshall St., New Bedford, Mass. 02746

Filed Apr. 22, 1983, Ser. No. 487,612
Int. Cl.³ C03B 33/02
U.S. Cl. 83—886
11 Claims

1. An apparatus for cutting glass or other sheet material comprising a housing including a table having an upper substantially planar supporting surface for supporting and moving said sheet with respect thereto, a substantially U-shaped member having an upper arm and a lower arm, said lower arm fixedly connected to said housing for supporting said upper arm in a position overlying said table, a scoring element positioned on said upper arm for spring biased pressure contact with sheet disposed on said table, and means for temporarily forcing said upper arm upwardly with respect to said table so



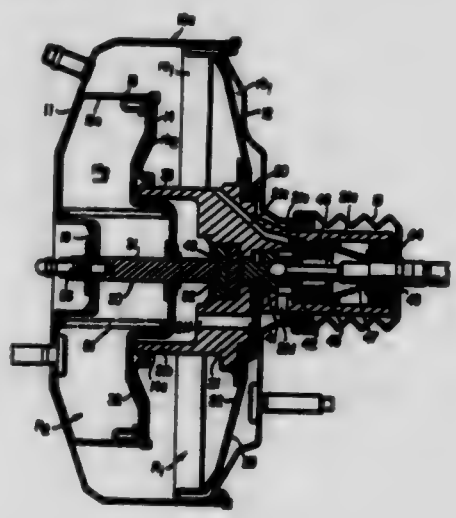
as to adjust said pressure contact between said scoring element and said sheet and for thereafter releasing said force.

4,494,445

TANDEM-TYPE BRAKE BOOSTER

Yohichi Furuta, Chiryu; Kaoru Tsubouchi, and Michiharu Nishii, both of Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 23, 1983, Ser. No. 554,679
Claims priority, application Japan, Dec. 3, 1982, 57-183948[U]
Int. Cl.³ F15B 9/10; F01B 19/00
U.S. Cl. 91—369 A
6 Claims



1. A tandem-type brake booster comprising a closed shell assembly composed of front and rear chambers defined by a partition member therein and first and second power pistons coaxially disposed in said front and rear chambers, respectively, said power pistons being operatively coupled with each other and passing through a substantially central portion of said partition member, each of said front and rear chambers including a constant-pressure chamber subjected to a vacuum and a variable-pressure chamber, respectively, and means for selectively communicating said variable pressure chamber of said rear chamber with said constant pressure chambers and atmosphere, said constant-pressure chambers in said front and rear chambers being held in communication with each other, said variable-pressure chambers in said front and rear chambers being in communication with each other, said power pistons being axially movable in unison by pressure differences between said constant-pressure chambers and said variable-pressure chambers, respectively, one of said front and rear chambers having an outside diameter smaller than that of the other chamber and that of the power piston disposed in said other chamber, and the power piston in said other chamber having an outer peripheral portion overlapping an outer peripheral portion of said one chamber when said power piston are moved forward or returned to inoperative positions thereof

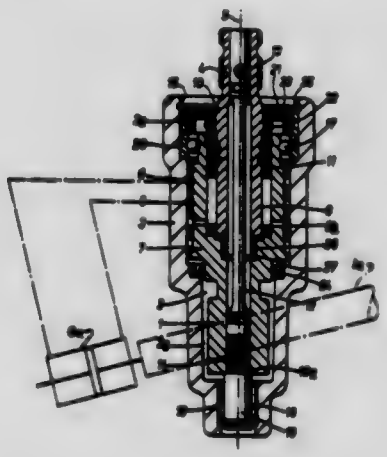
wherein said closed shell assembly further comprises a cup-shaped front shell having an open rear end and a rear shell coupled to said open rear end of said front shell, and wherein said partition member further comprises a cup-shaped reinforcement member having a diameter smaller than that of said front shell and reinforcing said front shell and a partition closing a rear opening in said reinforcement member.

4,494,446

POWER ASSISTED STEERING GEAR

Gordon E. G. Webber, and Alan G. Wilson, both of Bristol, England, assignors to Cam Gears Limited, Hertfordshire, England

Filed May 23, 1983, Ser. No. 496,942
Claims priority, application United Kingdom, Jun. 18, 1982, 8217633
Int. Cl.³ F15B *13/16*
U.S. Cl. 91—375 A 13 Claims



1. A power assisted steering gear comprising a toothed part having an axis about which it is rotatably mounted for driving an output member, a rotatably mounted input shaft coaxial with said toothed part, bearing means by which said toothed part is rotatably mounted in a housing, axially extending rod means which is coaxial with and couples together said input shaft and toothed part, valve means reacting between said toothed part and input shaft, said valve means being responsive to rotation of the input shaft for controlling flow of fluid under pressure to a servo motor associated with the output member to provide power assistance to displacement of that member, said toothed part being tubular with the rod means extending therethrough, and said rod means having an end projecting axially from the toothed part to provide a journal by which the toothed part is rotatably borne, said end projecting from the toothed part being engageable with said bearing means during location of said tooth part within the housing.

4,494,447

SELF-LATCHING ECCENTRIC CAM FOR DUAL STROKE COMPRESSOR OR PUMP

Francis J. Sisk, San Mateo, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 2, 1982, Ser. No. 438,428
Int. Cl.³ F15B *15/64*; F16H *53/04*; F04B *39/00*
U.S. Cl. 92—13.3 8 Claims

1. In a dual capacity compressor of the type having different stroke lengths through motor operation driving a crankshaft in one and an opposite direction effecting rotative repositioning of an eccentric cam on a crankshaft crankpin for a longer stroke length at one end point and a shorter stroke length at an opposite angularly displaced end point of rotation limiting means preventing rotation of said cam on said crankpin beyond said end positions, the improvement comprising:

said rotation limiting means has a circumferential extent requiring the rotation of said cam relative to said crankpin to be significantly in excess of 180° in repositioning from one end point to the other end point to obtain a centrifugal force torque component urging said cam in a rotative direction opposite the direction of rotation of said crankpin at at least one of said end points to promote maintaining the rotative repositioning of said cam on said crankpin;



said centrifugal force torque component at said end points being a function of the distance between the center of said crankpin, and a centrifugal force line which passes through the center of mass of said cam and the center of said crankshaft.

4,494,448

COMPOSITE PISTON OF POSITIVE DISPLACEMENT HYDRAULIC MACHINE AND METHOD FOR MANUFACTURING SAME

Vitaly A. Eystratov; Mikhail Y. Elkin; Viktor Y. Danilenko; Ivan M. Stepanin; Nikolai E. Tsentz; Sergei A. Rud, and Leonid M. Belferman, all of Kharkov, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky I Proektno-Konstruktorsky Institut Promyshlennykh Gidroprivodov I Girodoavtomatiki, Kharkov, U.S.S.R.

Filed Feb. 23, 1982, Ser. No. 351,346
Int. Cl.³ F16J *1/00*; B23P *15/10*
U.S. Cl. 92—172 6 Claims

1. A method of manufacturing a composite metal piston for a positive-displacement hydraulic machine consisting of the steps of fabricating blanks of a piston with a hollow skirt having a blind bore defining a cavity in said skirt and a core of lesser length than said bore disposed in the hollow skirt bore each blank made as a cylinder blank and each of a different metal, said piston and core cylinder blanks respectively having before deformation thereof by cold extrusion an outside diameter greater by a factor of $1/\epsilon$ than that of the finished piston and of the diameter of its finished core, where ϵ is the permissible degree of deformation by cold extrusion for the specific metal, the metal of said core blank having a lesser specific weight and possessing a lesser resistance to plastic deformation than the metal of said piston blank, the diameter of the axial bore being sized on a basis of a direct proportionality between the cross-sectional areas of the piston blank and the finished composite piston and the cross section and length of the core being sized on a basis of direct proportionality to the diameter and length of the axial bore and difference in metals of the piston blank and core blank and the composite piston cross-sectional areas, inserting said core cylinder blank axially into said axial bore to form a composite piston blank with the core fitting in said axial bore and having an end thereof spaced

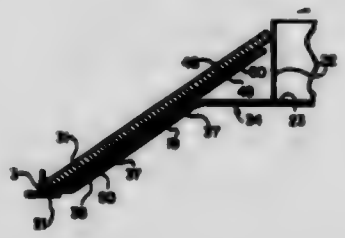
axially inwardly in said bore from an open end thereof, effecting plastic deformation of said composite piston blank radially inwardly and axially by cold extrusion in a die and while effecting said deformation of the composite piston blank while simultaneously cold flowing metal of said core axially and constricting radially inwardly the open end of said axial bore to effectively hold said core axially and radially permanently immobile in the skirt cavity of the extruded, composite piston with the core filling the entire piston skirt cavity.

4,494,449

INSULATED LAY-IN DIFFUSER

Francis J. McCabe, 239 Hastings Ct., Doylestown, Pa. 18901

Filed Mar. 22, 1982, Ser. No. 360,804
Int. Cl.³ F24F 13/00
U.S. Cl. 98—40.05 3 Claims



1. A diffuser means for interfacing a duct with an area to be serviced by the duct, the diffuser means comprising:

(a) a housing having a shaped, contoured surface and including a substantially centrally dispoeed collar for engaging portions of the duct and terminating edge portions for interfacing with the area to be serviced;

(b) insulation means positioned on the shaped surface and extending between the collar and the terminating edge portions of the housing;

(c) wherein the contoured surface is a curvilinear surface including at least one node point located intermediate the collar and the terminating edge portions of the housing;

(d) spacing plate means interposed between the shaped surface and the insulation means for spacing the insulation means from the shaped surface; and

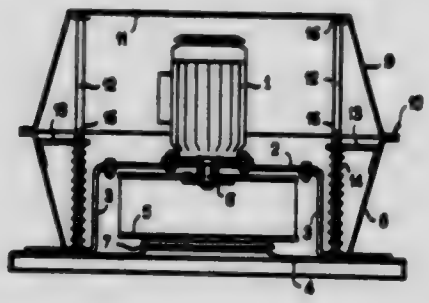
(e) the spacing plate means includes a base adapted for location over the shaped surface, and protrusions extending from the base and capable of engaging the insulation means, thereby forming an air space between the base of the spacing plate means and the insulation means.

4,494,450

PROTECTIVE COVER FOR AN EXHAUST FAN MOTOR

Pierre Avril, Champagne sur Seine, France, assignor to Jeumont-Schneider, Puteaux, France

Filed Dec. 18, 1981, Ser. No. 332,104
Claims priority, application France, Dec. 31, 1980, 80 27915
Int. Cl.³ F24F 7/02
U.S. Cl. 98—42.02 5 Claims



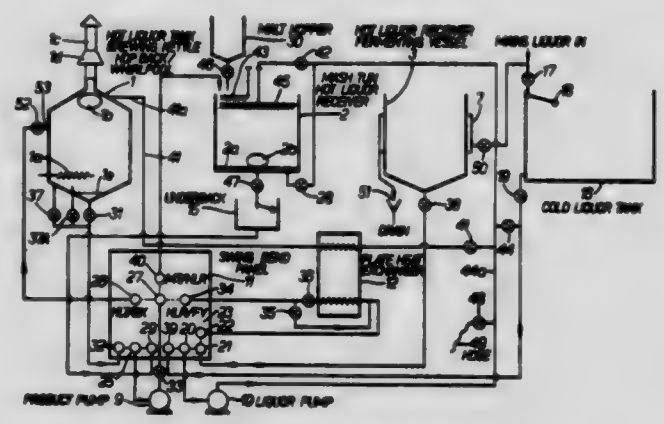
1. A motor-exhaust fan assembly having support means adapted to support the assembly at an end of an exhaust shaft and having a protective cover substantially surrounding the motor of the assembly, means urging said protective cover to move in a predetermined direction relative to said motor to expose said motor for cooling the same in the event of a severe rise in the temperature of gases exhausted from said exhaust shaft by said assembly, and restraining means for preventing said protective cover from moving in said predetermined direction until said severe rise in temperature, said restraining means comprising first means attached to said cover and movable therewith in said predetermined direction when said cover is not restrained by said restraining means and second means attached to said support means and positioned directly in the path of movement of said first means in said predetermined direction to block movement of said first means in said predetermined direction, said second means being composed of a fusible material which melts in response to said severe rise in temperature, whereupon said first means is no longer blocked and said cover is permitted to move in said predetermined direction by said urging means.

4,494,451

BREWING APPARATUS

John F. Hickey, London, England, assignor to Hickey & Company Limited, London, England

Filed Nov. 16, 1982, Ser. No. 442,154
Claims priority, application United Kingdom, Nov. 17, 1981, 8134643
Int. Cl.³ C12C 7/14
U.S. Cl. 99—276 9 Claims



1. Brewing apparatus which comprises a first vessel including heating means, a second vessel including strainer means, a third vessel, coupling pipes coupling the first, second and third vessels together, and a valve means and pump arrangement by means of which the three vessels can be coupled via the coupling pipes as necessary for fluid transfer purposes so that the first vessel can be used firstly as a hot liquor tank to produce hot liquor which is transferred to the third vessel which serves firstly as a hot liquor container, from which in use the hot liquor is transferred to the second vessel wherein it is mashed with malt to produce a wort and which serves firstly as a mash tun, from which the wort is transferred to the first vessel therein to be heated with hops whereby the first vessel serves secondly as a brewing kettle from which the resultant brew is transferred to the third vessel which serves secondly as a fermenting vessel.

4,494,452

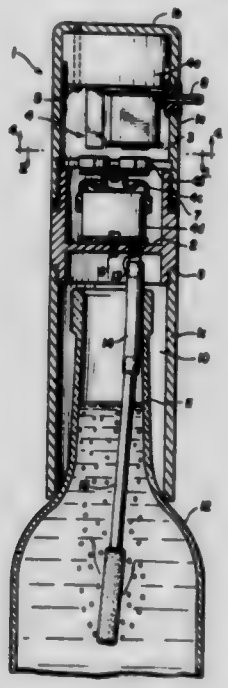
WINE AERATOR

Craig Barzso, 5508 Charlcote Rd., Bethesda, Md. 20817

Filed May 2, 1983, Ser. No. 490,507
Int. Cl.³ B01F 3/04
U.S. Cl. 99—323.1 8 Claims

1. A wine aerator for expediting the breathing time of wine just before serving compriaing, a housing, a motor driven air pump means mounted in one end of said housing, recess means provided in the opposite end of said housing for freely receiving the neck of a bottle of wine to be aerated, and a tube extending from said air pump means into the wine within the

bottle, the free end of said tube being positioned just below the wine surface, whereby air from the pump is infused into the wine, thereby causing the wine to circulate in the bottle above the bottom thereof to create an oxygen enriched froth above



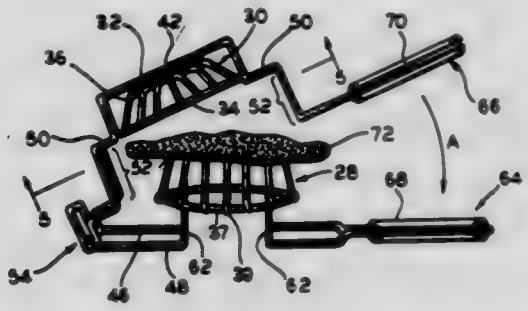
the wine surface, whereby the surface area of the wine is effectively increased without removing the wine from the bottle while simultaneously not disturbing the sediment on the bottom of the bottle during the circulation of the wine.

4,494,453

TORTILLA BASKET FRYER

Wade A. Bentson, San Francisco, Calif., assignor to Amco Corporation, Chicago, Ill.

Filed Nov. 18, 1983, Ser. No. 553,369
Int. Cl.³ A47J 37/12
U.S. Cl. 99—353 11 Claims



1. A device for deep frying tortillas, said device comprising a single nesting pair of wire frame baskets, defining a somewhat dish shaped space being between them to receive and mold the shape of a food product, a pair of elongated handles extending from one side of each one of the baskets, said handles being shaped to form a vertical stand for supporting and holding said baskets in an elevated and inverted position to facilitate a loading and unloading of said food product in said dish shaped space.

4,494,454

TACO BOARD

Conrad Sparks, 12251 Haga St., Garden Grove, Calif. 92641

Filed Mar. 16, 1982, Ser. No. 358,696
Int. Cl.³ A21B 5/02, 5/08
U.S. Cl. 99—426 3 Claims

1. A taco former, comprising:

A shaper member having two broad, opposed substantially flat surface portions connected by a flat side portion narrower than said broad, flat surface portions and disposed substantially perpendicularly to said substantially flat surface portions at edges thereof, a convex side portion opposite the narrow flat side portion, the convex side portion being convex about an axis substantially parallel to the narrow flat side and a handle member pivotally at-



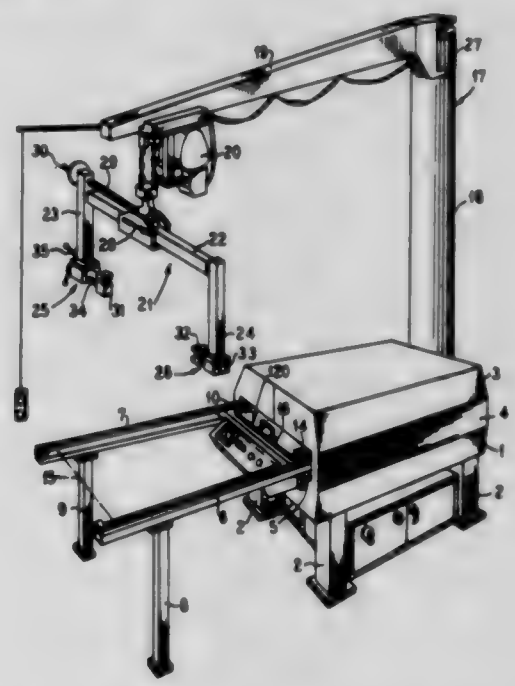
tached to said shaper member through a pivot pin disposed substantially parallel to the narrow substantially flat side portion, said shaper member having a thickness and shape such as to be suitable for forming tortillas into taco shells.

4,494,455

DEVICE FOR PREPARING DIE MEMBERS OF A PLATEN PRESS

Gregor Schoch, Crissier, Switzerland, assignor to Bobst S.A., Lausanne, Switzerland

Filed May 18, 1983, Ser. No. 495,583
Claims priority, application Switzerland, May 18, 1982, 3075/82
Int. Cl.³ B41F 1/38
U.S. Cl. 101—3 R 6 Claims



1. A device for preparing a die member of a platen press to have recesses in registry with tools of a punch member, said device having a pressing station with means for receiving a stack of members including at least one backup member, a die member and the punch member, said pressing station having means for applying pressure to the stack to at least transfer an outline of the tools of the punch member to the surface of the die member, a loading station having means for loading and unloading a member of the stack into and out of the loading station, said loading means including means for positioning

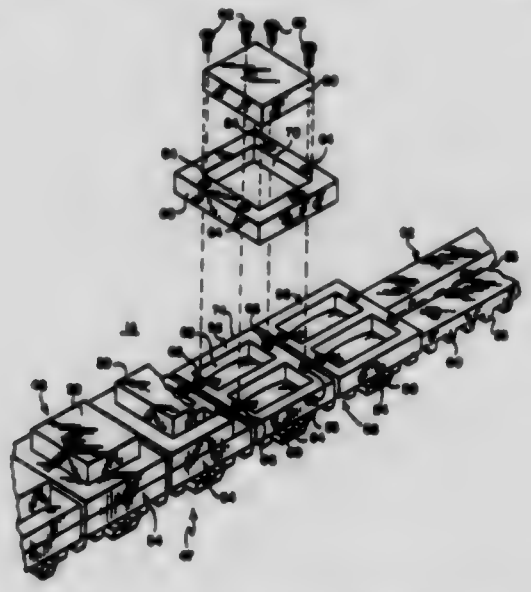
each of the members in the desired orientation; and transport means for moving the stack between the pressure station and the loading station, said transport means including a plate receiving this stack and being movable between said stations so that after loading the stack on the plate, the transport means transports the stack and plate into the pressing station wherein the means for pressing applies pressure to cause a transfer of the outline of the tools of the punch member onto a surface of the die member.

4,494,456

CONVEYOR BELT APPARATUS

Frederick C. Pink, Franklin, Mass., assignor to Component Marking Systems, Inc., Norwood, Mass.

Filed Aug. 20, 1981, Ser. No. 294,630
Int. Cl.³ B41F *17/00*
U.S. Cl. 101—35 23 Claims



1. In a conveyor system for delivering electrical or mechanical components to and from a marking device for individual marking thereof having first and second elongated closed loop endless belt elements spaced side by side in a parallel arrangement, each having a plurality of inwardly facing teeth spaced along the length thereof and being adapted to be synchronously driven in a tractor-like manner, a carrier assembly for carrying the components comprising

a short length plate member for straddling the outwardly facing surfaces of the first and second belt elements,

multiple mounting arms spaced from the inwardly facing surface of said plate member and extending substantially laterally thereto, each mounting arm having a longitudinal groove therein for receiving a tooth of either the first or second belt element, at least one tooth of each belt element being so received, means interconnecting said mounting arms and said plate member, and

at least one upper member removably mounted to said plate member and each having accommodating means for holding a component thereon, at least while the conveyor system is delivering the component.

4,494,457

APPARATUS FOR CONVERSION OF A PRINTING PRESS TO OFFSET PRINTING

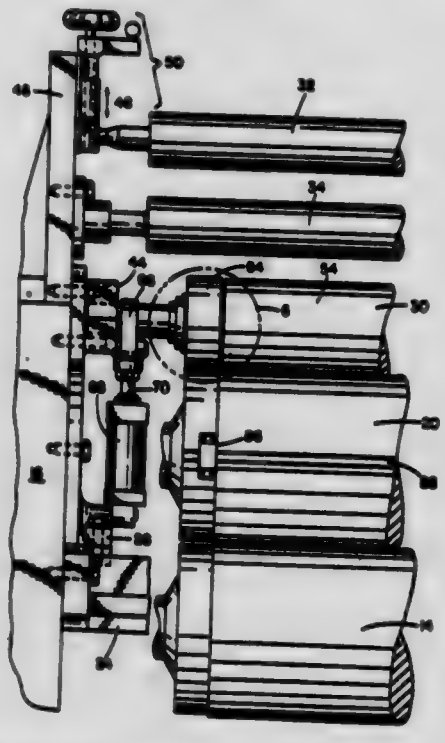
Michael A. Schwartz, Batavia, and Toshio Yamagata, Chicago, both of Ill., assignors to Press Machinery Corporation, Bensenville, Ill.

Division of Ser. No. 275,208, Jun. 19, 1981, Pat. No. 4,414,895. This application Sep. 27, 1982, Ser. No. 424,080
Int. Cl.³ B41F *13/18*
U.S. Cl. 101—217 1 Claim

1. Apparatus for the smooth operation of an offset impression cylinder and an offset blanket cylinder pair of cylinders in an offset printing printing press, in which the offset blanket cylinder has a blanket and a blanket slot, the apparatus comprising:

a bearer plate adapted to be mounted to the offset blanket cylinder in alignment with the blanket slot and bridging the blanket slot;

a cylindrical bearer having an outer diameter reduced from the outer diameter of the offset impression cylinder by an amount about twice the radial thickness of the bearer plate; and



bearing means for rotatably mounting the bearer on the offset impression cylinder in a location for cooperative contact of the bearer with the bearer plate on rotation of the offset impression cylinder and the offset blanket cylinder;

the bearer and bearer plate cooperatively contacting each other on rotation to provide smooth movement of the offset impression cylinder across the blanket slot;

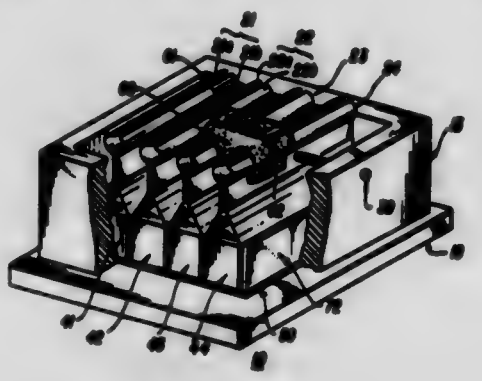
whereby print uniformity is improved.

4,494,458

TYPEHOLDING CHASE

Lewis C. Price, Jr., Yonkers, N.Y., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Jul. 27, 1983, Ser. No. 517,619
Int. Cl.³ B41B *1/18*
U.S. Cl. 101—391 14 Claims



14. A holder for type elements having opposed concave mounting surfaces, comprising:

a housing;

a plurality of type clamps contained within said housing, each of said type clamps comprising a pair of resilient support members spaced from each other and each resilient support member including an outwardly convex

mounting portion as well as an inclined planar camming surface, and a base portion;

for each pair of resilient support members, a spacer block placed between the base portions and abutting against the inclined planar surfaces; and

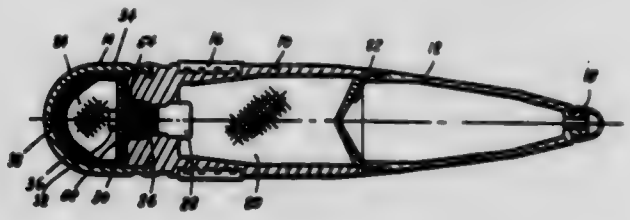
a biasing plate which presses the spacer blocks against the inclined planar surfaces so as to induce a divergent bias on said mounting portions, which engage the concave mounting surfaces of the type elements.

4,494,459

EXPLOSIVE PROJECTILE

Richard T. Ziemba, Burlington, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Sep. 5, 1980, Ser. No. 184,605
Int. Cl.³ F42C *15/26*
U.S. Cl. 102—235 8 Claims



1. A projectile adapted to receive a longitudinal acceleration of limited time duration and a rotational acceleration of limited time duration comprising:

a housing having a longitudinal axis;

a forward high explosive charge assembly disposed in a forward part of said housing;

an aft high explosive charge assembly disposed in an aft part of said housing;

a time delay fuze mechanism having a safed disposition and an armed disposition, and disposed in said housing between said forward and aft charges,

said fuze mechanism including

a substantially spherical cavity which is symmetrical about said axis,

a substantially spherical rotor disposed in said cavity and having an axis of mass symmetry and a diametral bore which is coaxial with said axis of mass symmetry and contains a detonator assembly therein serving to function both said forward and aft charge assemblies concurrently;

said aft charge assembly having a mode of operation to initially secure said fuze mechanism in its safed disposition, subsequent to set-back of said projectile to release said fuze mechanism to permit the arming thereof, and thereafter to secure said fuze mechanism in its armed disposition;

said aft charge assembly is disposed in a first fixed cavity in said housing, is disposed for fore an aft movement along said longitudinal axis, and is initially biased forwardly by biasing means into a disposition whereat it interlocks with and secures said rotor in a disposition whereat said rotor bore is not aligned with said longitudinal axis;

said aft charge assembly has a smaller volume than the volume defined by said first fixed cavity in said housing and defines a first residual cavity in said housing;

said biasing means includes a volume of liquid which is releasably contained in said first residual cavity which is initially disposed aft of said aft charge;

said aft charge assembly defines a passageway in said first cavity so constructed and arranged that upon forward longitudinal acceleration of said projectile, said aft charge and said rotor undergo relative set-back to compress said biasing means to release liquid to pass through said passageway, and as said aft charge assembly progressively sets-back it progressively decreases the volume of said first residual cavity aft of said aft charge assembly and progressively defines a second residual cavity forward of said aft charge assembly of progressively increasing volume, while said liquid passes through said passageway from said first residual cavity into said second residual cavity.

7. A projectile adapted to receive a longitudinal acceleration of limited time duration and a rotational acceleration of limited time duration comprising:

a housing having a longitudinal axis;

a forward high explosive charge assembly disposed in a forward part of said housing;

an inertial mass assembly disposed in an aft part of said housing;

a time delay fuze mechanism hving a safed disposition and an armed disposition, and disposed in said housing between said forward charge assembly and said inertial mass assembly;

said fuze mechanism including

a substantially spherical cavity which is symmetrical about said axis,

a substantially spherical rotor disposed in said cavity and having an axis of mass symmetry and a diametral bore which is coaxial with said axis of mass symmetry and contains a detonator assembly therein serving to function said forward charge assembly;

said inertial mass assembly having a mode of operation as to initially secure said fuze mechanism in its safed disposition, subsequent to set-back of said projectile to release said fuze mechanism to permit the arming thereof, and thereafter to secure said fuze mechanism in its armed disposition;

said inertial mass assembly is disposed in a first fixed cavity in said housing, is disposed for fore and aft movement along said longitudinal axis, and is initially biased forwardly by biasing means into a disposition whereat it interlocks with and secures said rotor in a disposition whereat said rotor bore is not aligned with said longitudinal axis;

said inertial mass assembly has a smaller volume than the volume defined by said first cavity in said housing and defines a first residual cavity in said housing;

said biasing means includes a volume of fluid which is releasably contained in said first residual cavity which is initially disposed aft of said inertial mass assembly;

said inertial mass assembly defines a passageway in said first cavity so constructed and arranged that upon forward longitudinal acceleration of said projectile, said inertial mass assembly and said rotor undergo relative set-back to compress said biasing means to release fluid to pass through said passageway, and as said inertial mass assembly progressively sets-back it progressively decreases the volume of said first residual cavity aft of said inertial mass assembly and proressively defines a second residual cavity forward of said inertial mass assembly of progressively increasing volume, while said fluid passes through said passageway from said first residual cavity into said second residual cavity.

4,494,460

HIGH ACCELERATION SUPPORT AND POSITIONING DEVICE

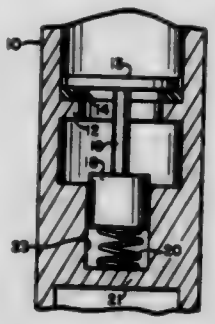
Inge Mandal, Pomona, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Jul. 6, 1982, Ser. No. 395,430
Int. Cl.³ F42B *33/00*
U.S. Cl. 102—293 8 Claims

1. A protective device for supporting fragile, movable apparatus in a projectile housing during a high acceleration launch of the projectile, comprising:

crushable support means attached to the inside of the projectile housing for supporting said fragile, movable apparatus in said projectile housing prior to and during launch, which crushable support means is crushed during launch; and

resilient positioning means mounted within each projectile housing for holding said fragile, movable apparatus in position prior to launch and for compressing during



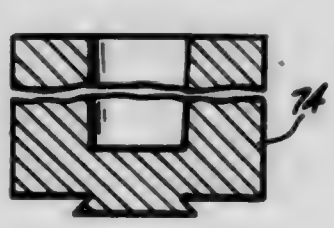
launch, said resilient positioning means returning said fragile, movable apparatus substantially to its original position free of said crushed support means after launch.

4,494,461

METHOD AND APPARATUS FOR FORMING A THIXOFORGED COPPER BASE ALLOY CARTRIDGE CASING

Michael J. Pryor, Woodbridge; Joseph Winter, New Haven, and Jonathan A. Dantzig, Hamden, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 6, 1982, Ser. No. 337,560
Int. Cl.³ F42B 9/26, 9/28
U.S. Cl. 102—464 10 Claims



1. A cartridge casing comprising:
an elongated, thin-walled member formed from an age hardenable copper base alloy;
said copper base alloy being in a condition wherein it has been forged from a semi-solid slurry and having a tensile strength of at least about 80 ksi, a yield strength of at least about 65 ksi and a structure comprising a plurality of discrete particles in a solid surrounding metal matrix;
said semi-solid slurry comprising said surrounding metal matrix in a molten condition and said discrete particles within said molten matrix.

4,494,462

THAW SHED HEATER

John J. Kane, Erie, Pa., assignor to The Pittsburgh & Conneaut Dock Company, Conneaut, Ohio

Filed Jun. 4, 1982, Ser. No. 385,028
Int. Cl.³ B61B 12/00; B61D 27/00; F24C 3/00
U.S. Cl. 104—1 R 11 Claims



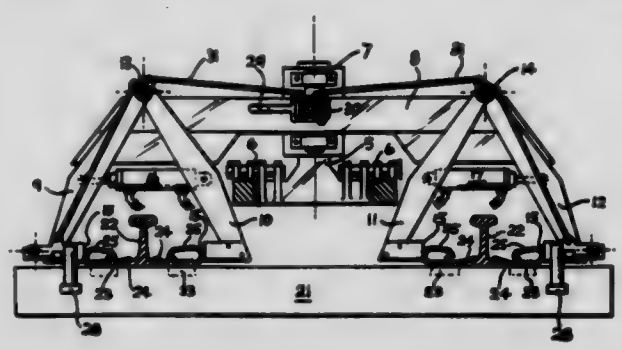
1. Railroad car heating apparatus for disposition on a railroad between rails supported thereon, comprising
(a) generally rectangularly arranged metal plates defining upstanding end and side walls of an elongated chamber adapted for reception between said rails, said metal plates including upwardly facing heat radiating cover plates extending transversely of said end and side walls, respectively, to form a roof substantially closing said chamber;
(b) means forming an elongated partition wall positioned in spaced, parallel relation to said side walls and with opposite ends spaced from said end walls to divide said chamber into coextensive, parallel, interconnected passages;
(c) a fuel-fired burner communicating with one of said passages and being operable for directing combustion gases through said chamber along recirculating flow paths through said passages.

4,494,463

RAIL FASTENER APPLICATOR

Hartley F. Young, Victoria; Wally A. Remes, and John L. Collins, both of Adelaide, all of Australia, assignors to Ralph McKay Limited, Maidstone, Australia

Filed Aug. 23, 1982, Ser. No. 410,649
Claims priority, application Australia, Sep. 1, 1981, PF0537
Int. Cl.³ E01B 29/24
U.S. Cl. 104—17 A 4 Claims



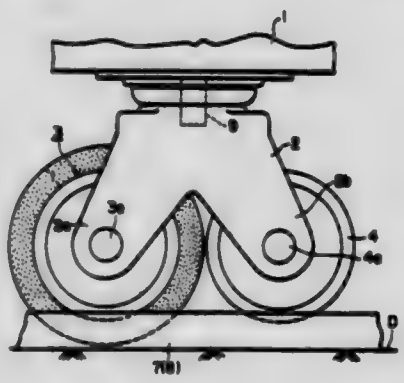
1. A rail fastener applicator for use with rail fasteners which are applied horizontally in a direction at right angles to the longitudinal dimension of the rail comprising a carrier, a frame on said carrier adapted to span two rails, a pair of pivoted arms at either end of said frame, said arms being independent from said frame and pivoted to move in a plane perpendicular to the longitudinal dimension of said rails, each arm terminating in abutment faces each of which is adapted to contact an individual rail fastener, means to move said arms in unison such that the abutment faces on each pair of arms either move toward each other to apply a pair of rail fasteners or move away from each other, and said frame being pivoted to enable rotation of said frame in a horizontal plane.

4,494,464

CASTOR WHEEL CARRIAGE

Kazuo Fujita, 2971-650, Hishino, Ozza, Seto-shi, Aichi-ken, Japan

Filed Oct. 13, 1981, Ser. No. 311,020
Int. Cl.³ B60P 17/02; B61F 3/16, 5/38; B61T 9/00
U.S. Cl. 105—170 2 Claims



1. The combination of a carriage and a castor wheel assembly wherein said castor wheel assembly is pivotally supportably mounted on said carriage, said castor wheel assembly

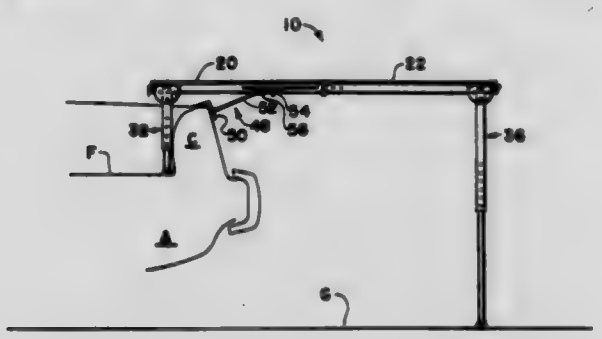
being adapted to be mounted on at least one of a floor and a pair of twin rails, said castor wheel assembly comprises a first wheel having inclined wheel portions at the edges of its periphery for engaging a pair of twin rails and a raised wheel portion defined by the periphery of the first wheel between the inclined wheel portions for engaging a floor when said wheel is dismounted from the pair of twin rails, said raised wheel portion being radially outwardly projected from said inclined wheel portions; and a second wheel having inclined wheel portions at the edges of its periphery for engaging the twin rails and said second wheel acting as a guide for said first wheel by engaging said twin rails for stabilized movement of said first wheel on said twin rails.

4,494,465

TABLE FOR USE WITH AUTOMOBILE TRUNKS AND THE LIKE

Charles M. Fick, Jr., 3832 Dance Mill Rd., Phoenix, Md. 21131

Filed Nov. 1, 1983, Ser. No. 548,146
Int. Cl.[3] A47B *37/04*
U.S. Cl. 108—44 2 Claims



1. In a folding table having a supporting system including at a first end, means for support on a motor vehicle and at a second end, a pair of legs with means for independent length-adjustment for ground support substantially at table height, and said motor vehicle being of a type having at the rear a cargo area floor and adjacent structure, the improvement comprising: means adapting said supporting system for levelling said folding table in any desired direction, including said means for support on a motor-vehicle comprising a second pair of legs with independent length-adjustment, said second pair of legs being sufficiently shorter than the first-said pair of legs for resting on a said cargo area floor and positioning said first end substantially at table height, means for bracing against said adjacent structure when the second pair of legs rests on the cargo area floor, said bracing means located for coacting with the second pair of legs for adjustably clamping said adjacent structure, the bracing means including an arm, pivot means slidably affixing a first end of the arm beneath the folding table, and an angle pivotally affixed on a second end of the arm.

4,494,466

TABLE WITH A MECHANISM FOR AUTOMATICALLY VARYING THE SIZE OF THE TABLETOP

Ervin H. Synek, 346 N. Justine Ave., Chicago, Ill. 60607, and David Volejnicek, 4735 W. Beaubien Blvd., Lisle, Ill. 60532

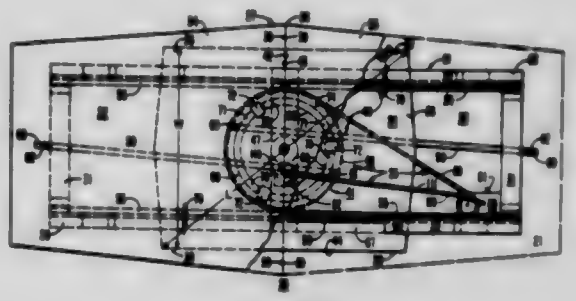
Filed Jan. 28, 1982, Ser. No. 343,547
Int. Cl.[3] A47B *1/03*
U.S. Cl. 108—85 10 Claims

1. An improved table comprising:

a pair of side leaves movable with respect to each other to abut each other for forming a tabletop of a first size;

a center leaf selectively interposable between the pair of side laves for forming therewith a tabletop of a second size; and

moving means coupled to the pair of side leaves and the center leaf for selectively moving the side leaves into abutment with each other while at the same time lowering and rotating the center leaf to remove the center leaf from in between the side leaves, and for selectively separating the side leaves while at the same time rotating and raising



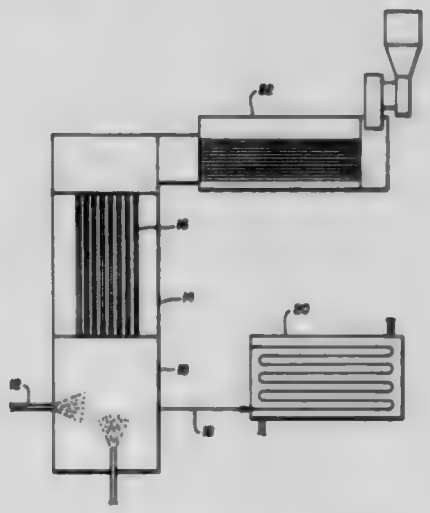
the center leaf to interpose the center leaf between the pair of side leaves.

4,494,467

APPARATUS AND TECHNIQUE FOR COMBUSTION OF METHANOL OR SIMILAR FUELS

Daniel Berman, Harav Friedman 49, Tel Aviv, Israel

Filed Apr. 19, 1982, Ser. No. 369,611
Int. Cl.[3] F23B *7/00*; C01B *2/14*
U.S. Cl. 110—234 1 Claim



1. A technique for combustion of methanol or other alcohol based fuel containing a high percentage of water, comprising the steps of:

feeding methanol or other alcohol based fuel to a first combustion chamber;

heating methanol to about 250° C. or other alcohol fuel to convert it to steam and a hydrogen fuel in said first combustion chamber;

passing the resultant hydrocarbon fuel upwardly to a second combustion chamber for combustion thereof and burning said hydrocarbon fuel in said second combustion chamber to produce heat;

supplying the steam from said first combustion chamber horizontally to utilization apparatus for heating a fluid thereby;

and

supplying combustion products from the second combustion chamber to a heat exchanger for heating of a fluid thereby.

4,494,468

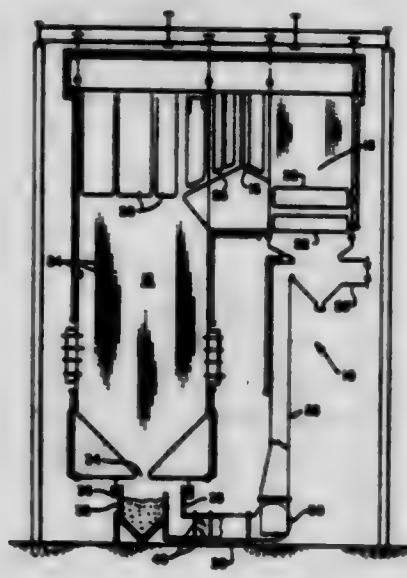
STEAM GENERATOR WITH GAS RECIRCULATION TO THE ASH HOPPER REGION OF THE FURNACE

Earl K. Rickard, East Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 23, 1983, Ser. No. 565,090
Int. Cl.[3] F23B *7/00*
U.S. Cl. 110—234 1 Claim

1. In a steam generating unit having a furance and heat exchange means for generating steam therein, an ash hopper

located beneath the furnace, said furnace having opening means connecting the ash hopper to the furnace, water-filled trough means surrounding the ash hopper, wall means extending down from the furnace into the trough means, which terminates below the water level so as to form a liquid seal for preventing hot combustion gases from escaping therefrom, duct means, said duct means having an inlet end connected to



the steam generating unit downstream of the heat exchange means, and an outlet end positioned inside the liquid seal but below the furnace opening means, a fan located in the duct means which when actuated will cause combustion gases to flow from the inlet end to the outlet end, and damper means in the duct means located downstream of the fan which can be closed to protect the fan from hot furnace combustion gases when it is not operating.

4,494,469

STEPPED GRATE FOR AN INCINERATOR PLANT

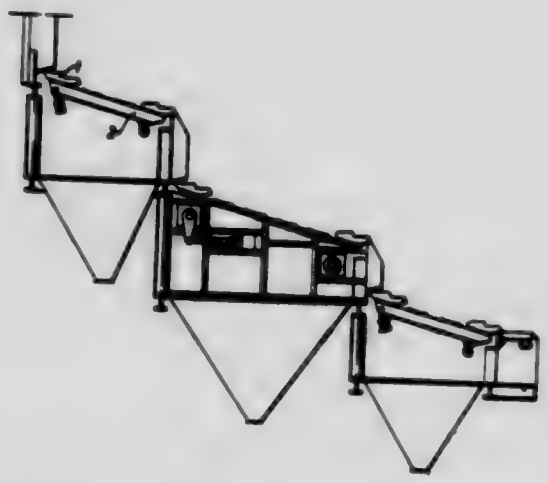
Gabriel da Silva Pinto, Glostrup, Denmark, assignor to Volund Miljoteknik A/S, Denmark

Filed May 4, 1983, Ser. No. 491,396

Claims priority, application United Kingdom, May 13, 1982, 8213940

Int. Cl.³ F23H 7/08, 7/14

U.S. Cl. 110—281 3 Claims



1. In a stepped grate for conveying garbage in a direction of travel in an incinerator plant and comprising one or more stepped grates in succession inclined forwardly in said direction of travel, each said grate comprising a plurality of grate blocks placed in a plurality of laterally adjacent stepped rows oriented in parallel with said direction of travel, said grate blocks being suppoted upon parallel placed grate beams in said direction of travel, where every other said row of grate blocks is movable reciprocally in parallel with said direction of travel whereas rows of grate blocks intermediate said every other reciprocally movable row of grate blocks are stationary, wherein the laterally adjacent grate blocks of said movable and stationary rows are placed in staggered position in said direction of travel a distance corresponding to half a grate block length and wherein alternate rows of grate blocks terminate with half grate blocks, whereby colliding contact between said laterally adjacent grate blocks is avoided during said reciprocal movement.

4,494,470

METHOD FOR IDENTIFYING SIZE AND/OR TYPE OF WORKPIECE RECEIVING MEANS AND SEWING APPARATUS FOR CARRYING OUT SAID METHOD

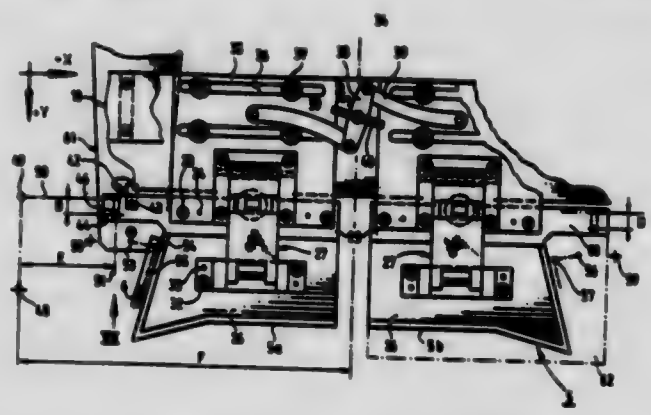
Jochen Fischer, Detmold, and Hans Scholl, Oerlinghausen-Lipperelse, both of Fed. Rep. of Germany, assignors to Kochs Adler AG, Bielefeld, Fed. Rep. of Germany

Filed Apr. 18, 1983, Ser. No. 485,591

Claims priority, application Fed. Rep. of Germany, May 3, 1982, 3216528

Int. Cl.³ D05B 21/00

U.S. Cl. 112—121.12 12 Claims



6. Apparatus for identifying the type and/or size of a workpiece receiving device which can be adjusted in size in a coordinate direction and is inserted in an automatic sewing machine before the beginning of a sewing process, comprising: two computerized servo motors for two mutually perpendicular coordinate directions to generate a programmed relative movement between a sewing head and a workpiece in a plane subtantially perpendicular to the direction in which the sewing needle moves; an interchangeable workpiece receiving device adjustable in size in one coordinate direction and assigned to the seam to be sewn; means for generating at the computer a signal identifying the particular workpiece receiving device being employed; a sensor assigned to the sewing head or lower arm; a first and second triggering means for activating the sensor and assigned to the workpiece receiving device, said sensor releasing a signal to the computer when the sensor and the first triggering means meet while the sewing head is traveling along a first coordinate direction relative to the workpiece receiving device, and when the sensor and the second triggering device meet while the sewing head is traveling along a second coordinate direction relative to the workpiece receiving device.

4,494,471

BUTTONHOLE FOOT AND SHANK ASSEMBLY

Theddeus J. Zylbert, Morris Plains, N.J., assignor to The Singer Company, Stamford, Conn.

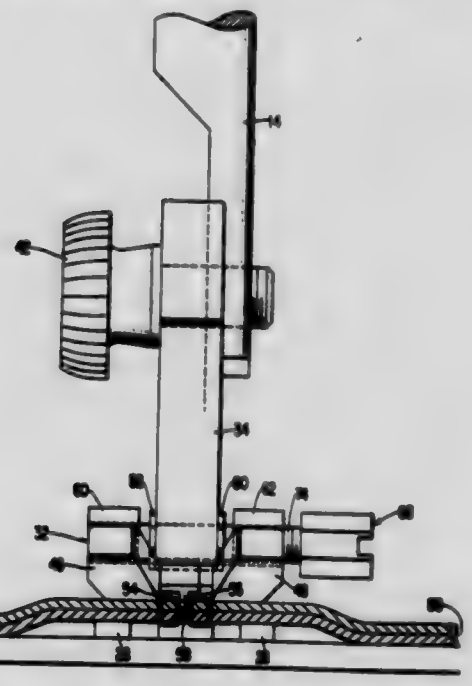
Filed Feb. 21, 1984, Ser. No. 581,832

Int. Cl.³ D05B 29/08

U.S. Cl. 112—235 6 Claims

1. In combination: a presser foot for use in the formation of buttonholes on a zig zag sewing machine, said presser foot including a sole plate with a laterally extending opening for the needle of the machine to pass through and form zig zag stitches for right and left legs of a buttonhole, the underside of the sole plate including a longitudinal groove on each side of a dividing ridge for loops of zig zag stitches in right and left buttonhole

legs, respectively, to pass through during the formation of a buttonhole; a presser bar shank securable in the machine; and means supporting the foot for pivotal movement on the presser



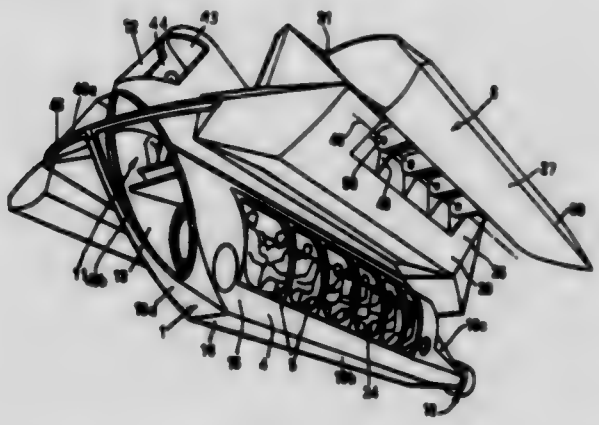
bar shank, said means including an adjustable screw with which the foot can be moved laterally relative to the shank to position the dividing ridge on the underside of the sole plate with respect to the needle.

4,494,472

FLOATING AND NONSUBMERSIBLE NAUTICAL CRAFT

Jacques Rougerie, 13 rue Chapon, 75003 Paris, France

Filed Feb. 17, 1982, Ser. No. 349,531
Claims priority, application France, Feb. 18, 1981, 81 03159
Int. Cl.³ B63B 35/72
U.S. Cl. 114—66 9 Claims



1. Floating, nonsubmersible nautical craft comprising a partially immersed hull, intended for the accommodation of passengers, closed over all, provided at the top with means of access normally in constant communication with the atmosphere, and portholes for observation of the underwater medium,

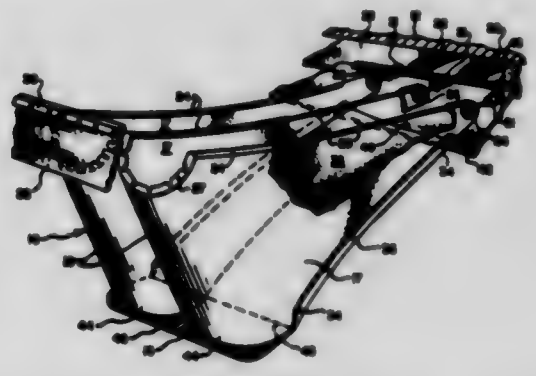
further comprising means of stabilization and buoyancy separate from the hull and means for varying the draft, means of propulsion and a pilot station, the hull and means of stabilization and buoyancy have a modular structure in transverse section, the hull being of generally tubular shape, flattened laterally, with a horizontal main axis having a succession of portholes on each of its longitudinal flanks, the means of stabilization and buoyancy having, in vertical, transverse cross section, the general form of a flat, inverted U and comprising floats movable between two extreme positions, one being low, in which floats are oriented downward, and the other high, in which floats are oriented at least substantially horizontally, characterized by the fact that the means of stabilization and buoyancy includes a chest having, in transverse cross section, the general form of a pentagon limited by an upper side, an outer longitudinal side, an inner lower side and an outer lower side, the latter two defining a lower edge situated substantially at the level of the upper longitudinal border of portholes.

4,494,473

SURFACE EFFECT SHIP STERN SEAL

Anthony Y. Simpson, Slidell, La., assignor to Textron Inc., Providence, R.I.

Filed Jul. 6, 1983, Ser. No. 511,155
Int. Cl.³ B60V 1/16
U.S. Cl. 114—67 A 16 Claims



1. A surface effect ship of the type having a main hull subtended by rigid parallel sidehulls and bow and stern seal means for transitionally maintaining an air cushion thereunder;

wherein said stern seal means comprises a plurality of air inflatable finger-like segments extending downwardly below said main hull in side-by-side relation between said sidehulls, each of said segments being formed of flexible air-impervious sheet material arranged in a trough-like configuration having vertically parallel sidewall portions and interconnecting semi-cylindrical rear wall portions

said sidewall portions having upper and lower edge portions oppositely profiled in catenary curve configurations;

tension cord means affixed to said upper edge portions of said sidewall portions and extending in catenary suspended fashion in the fore/aft directions of said main hull, said tension cord means having fore and aft ends thereof connected to said main hull; and

a water-planing front closure plate

supported by said segments to incline upwardly in the direction of the ship forward travel by affixing said lower edge portions to opposite sides of said closure plate, said closure plate having a rearmost end portion arranged to underlie said rear wall portions, and wherein the bottom edge portions of said rear wall portions are unattached to said rearmost end portion of said closure plate, thereby permitting water drainage from said finger-like segments while damping therefrom the buffeting effects of irregular water surfaces over which the ship is traveling.

4,494,474

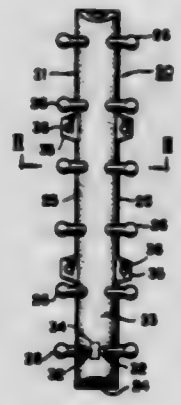
FENDER AND LIFE LADDER IN ONE

Ryosuke Saito, Kobe, Japan, assignor to Sumitomo Gomu Kogyo Kabushiki Kaisha, Kobe, Japan

Filed Oct. 27, 1982, Ser. No. 436,976
Claims priority, application Japan, Oct. 27, 1981, 56-160603
Int. Cl.³ B63B 59/02
U.S. Cl. 114—219 20 Claims

8. A fender and life ladder combination comprising: an elongate main post mountable substantially vertically on a wall surface of a quay or the like during use of the fender and life ladder combination, the main post being composed of resilient material and having a shock-receiving front wall portion, a

pair of resiliently flexible side wall portions connected to respective sides of the shock-receiving front wall portion and extending rearwardly thereof in diverging relation with respect to each other, and a rear wall portion connected to the divergent ends of the side wall portions and having a substantially flat rearmost surface for abutment against the wall surface of a quay or the like during use; and a plurality of rung members embedded in and attached to the shock-receiving front wall portion in spaced relation therealong, the rung members extending laterally of the main post and being spaced apart a distance sufficient to enable the rung members to be used as a ladder.

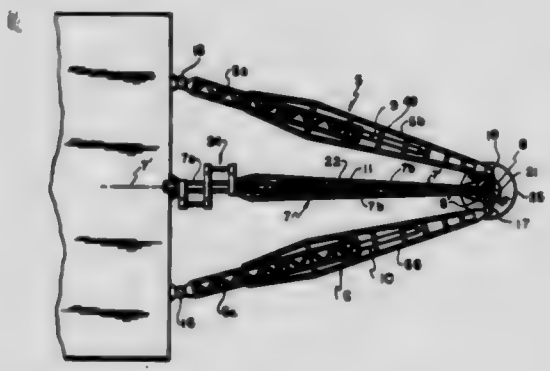


4,494,475

SYSTEM FOR MOORING A FLOATING STRUCTURE

Tor Eriksen, Buoy, Norway, assignor to Moss Rosenberg Verft A/S, Jeloy, Norway

Continuation of Ser. No. 116,846, Jan. 30, 1980, abandoned. This application Nov. 1, 1982, Ser. No. 438,031
Claims priority, application Norway, Feb. 14, 1979, 790494
Int. Cl.[3] B63B *21/00*
U.S. Cl. 114—230 18 Claims



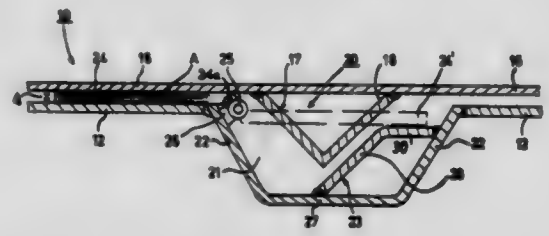
1. A single-point mooring system for a floating structure comprising, the combination of, a fixed column supported on the sea floor and projecting upwardly, mooring means rotatably mounted on said column to define a fixed mooring point above the water level, and means for attaching a floating structure to said mooring means at a predetermined distance therefrom while permitting said distance to increase or decrease; said attaching means comprising a pair of telescopic mooring arms each of which has a pair of telescoping arm members and a neutral predetermined intermediate length and a maximum extended and minimum collapsed length whereby its effective length may be increased or decreased from said neutral predetermined intermediate length without substantially impairing its structural stability, a pair of compensator means separate from and operatively associated respectively with said arm members of each of said mooring arms for urging their associated arm members to the neutral predetermined intermediate length of the mooring arms while permitting them to be extended or telescoped from said neutral predetermined intermediate length against predetermined forces, each of said compensator means comprising a hydraulic piston and cylinder assembly operatively connected between the arm members of their associated mooring arms; means for separately pivotally attaching one end of each of said arms to said mooring means whereby said arms rotate with said mooring means about a common vertical axis at said mooring point, and separate means for pivotally connecting the other end of each of said arms directly to a floating structure at predetermined distances from each other, whereby said compensator means act through said arms to urge said floating structure toward a desired neutral attitude with respect to said mooring point while permitting said floating structure to move from said desired neutral attitude towards or away from said mooring structure while returning said floating structure to said neutral attitude when the forces moving said floating structure therefrom have been discontinued; said floating structure being free to swing around said vertical axis at said fixed mooring point irrespective of whether or not it is in said neutral attitude but it is urged continuously to said neutral attitude by the action of said compensators.

4,494,476

METHOD AND APPARATUS FOR SUPPORTING LIGHTERS IN LIGHTER-TRANSPORT SHIPS

Antti I. Haanterä, Helsinki, Finland, assignor to Valmet Oy, Finland

Filed Aug. 11, 1982, Ser. No. 407,054
Claims priority, application Finland, Aug. 19, 1981, 812554
Int. Cl.[3] B63B *25/08*
U.S. Cl. 114—260 15 Claims



1. Apparatus for laterally supporting a lighter on the upper surface of a loading deck of a lighter-transport ship, the lighter having rail means provided on its bottom, comprising:

channel means situated beneath and opening onto the upper surface of said deck and adapted to receive the rail means of the lighter;

cover means operatively associated with said channel means for selectively closing said channel means, said cover means being substantially plate-shaped; and

mounting means for mounting said plate-shaped cover means proximate to said channel means for movement between a first position wherein said channel means open onto the upper surface of said deck and a second position wherein said channel means are closed,

said plate-shaped cover means having a thickness such that in said first position said plate-shaped cover means lie on the upper surface of said deck and support the bottom of said lighter so as to provide a clearance between the lighter bottom and the upper surface of said deck.

4,494,477

BOAT HULL

Leslie N. Matthews, 9 Boscombe Ave., City Beach, Western Australia, Australia

Continuation of Ser. No. 121,071, Feb. 15, 1980, Pat. No. 4,351,262. This application Jul. 21, 1982, Ser. No. 400,419
Int. Cl.[3] B63B *1/22*
U.S. Cl. 114—287 12 Claims

8. A boat hull capable of efficient operation as a mono-hull vessel and a multi-hull vessel, comprising a plurality of main hull portions laterally spaced apart, a deck extending between each adjacent pair of said main hull portions with said main hull portions extending downwardly from said deck, an intermediate hull portion movably mounted between each adjacent

pair of main hull portions extending substantially from the bow to the stern of said boat hull and below the respective deck, and means to lower and raise at least the stern section of each said intermediate hull portion relative to said respective deck so that when each said intermediate hull portion is fully lowered the boat will have the characteristics of a mono-hull vessel capable of being caused to plane on the surface of the



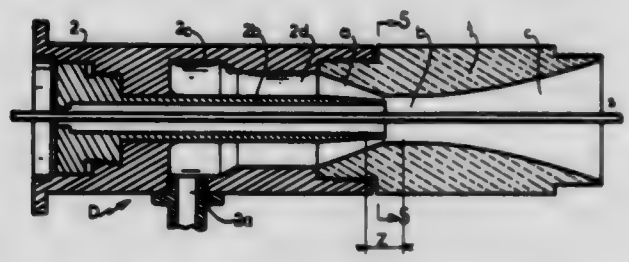
water, and when at least one of said intermediate hull portions is fully raised the vessel will have the characteristics of a multi-hull vessel capable of maintaining the vessel in a planing condition once it has reached the planing condition, said means to raise and lower each intermediate hull portion being compressible so that shock forces applied to each intermediate hull portion during movement of the boat hull over water will be at least partly absorbed by compression of said means.

4,494,478

DEVICE FOR THE INTRODUCTION AND/OR THE REMOVAL, IN AN AIRTIGHT MANNER OF SOLID BODIES ACROSS ONE APERTURE AT LEAST OF AN ENCLOSURE TREATMENT, MORE PARTICULARLY UNDER LOW PRESSURE

Gilles Lacour, Andrezieux-Bouthéon, and Serge Estevesy, St. Just-St. Rambert, both of France, assignors to Centre Stéphanois de Recherches Mécaniques Hydromecanique et Frottement, France

Filed Feb. 10, 1983, Ser. No. 465,503
Claims priority, application France, Feb. 11, 1982, 82 02717
Int. Cl.³ B05C *3/00*
U.S. Cl. 118—50 8 Claims



1. Device for the introduction and/or the withdrawal of solids through at least one orifice of an enclosed treatment area, low-pressure vat or the like whose pressure is lower than that of the immediate environment, comprising:

a Venturi tube constituting in its interior and in succession a convergence, a neck and a divergence thereby defining a convergence side and a divergence side, whereby a fluid injected through said Venturi tube produces a region of low pressure in said neck;

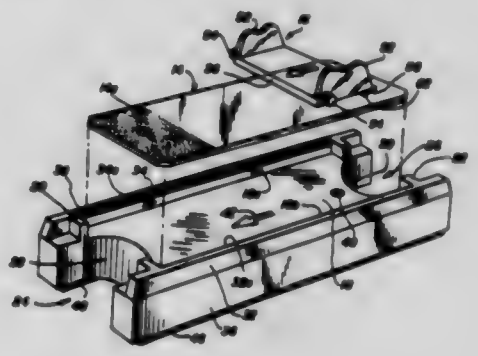
a coaxial sleeve on said convergence side into which the solid to be treated can be introduced, which sleeve is partially engaged inside said Venturi tube over a length determined in such a manner as to create a rapid change of section which defines a dynamic joint zone in combination with the pressure, flow and speed of the fluid injected toward the inside of the Venturi tube.

4,494,479

SLIDE PREPARATION APPARATUS

F. Robert Drury, Lexington, and Marshall D. Graham, Framingham, both of Mass., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Continuation-in-part of Ser. No. 434,378, Oct. 14, 1982,. This application Jan. 19, 1983, Ser. No. 459,045
Int. Cl.³ B05C *17/10, 11/04, 13/02*
U.S. Cl. 118—120 10 Claims



1. Apparatus for preparing a monolayer film of a biological fluid sample, such as blood or the like, on a slide for microscopic analysis, comprising:

A. a base having opposite extremities and a flat upper surface between said extremities for supporting a slide thereon and a pair of upstanding guide rails extending along opposite side edges of the surface, said guide rails having elongated bearing formations arranged to support a sample spreader thereon during linear movement of the spreader between said guide rails;

B. a spreader for linear movement between said extremities relative to and engaged with the slide for spreading the sample into a monolayer on the slide comprising:

i. a generally planar platform having opposing first and second ends,

ii. projection means protruding laterally from sides of said spreader for engaging said bearing formations for supporting said first platform end above said slide;

iii. a sample spreading blade member depending from the platform adjacent the second end; and

iv. means for moving said spreader linearly,

C. said spreader being constructed and arranged to be positioned for such linear movement between the guide rails along said bearing formations with said blade riding on the slide so that when a sample has been deposited on the slide resting on the said surface, said spreader is movable linearly to enable the blade member to form said monolayer during such linear movement of the spreader between said extremities without engaging said surface.

4,494,480

APPARATUS FOR SPREADING A FLUID ONTO A MOVING WEB OF MATERIAL

Jouko J. Salmela, Majamäenkatu 6, S-20900 Turku 90; Jukka Hietanen, Kalliokatu 11 B, SF-18100 Heinola 10, and Timo Syrjänen, Vuohiniementie 5 B 16, SF-18130 Heinola 13, all of Finland

Filed Jul. 7, 1983, Ser. No. 511,754
Claims priority, application Finland, Jul. 26, 1982, 822614
Int. Cl.³ B05C *5/02*
U.S. Cl. 118—411 13 Claims

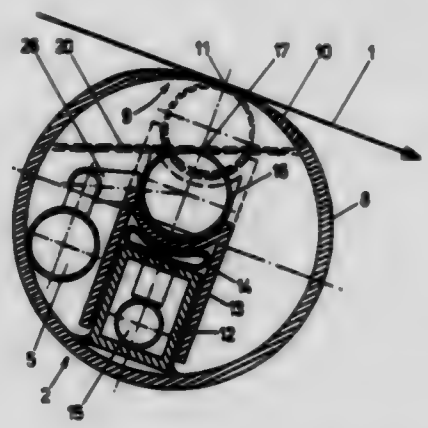
1. An apparatus for spreading a fluid onto a moving web of material, comprising:

an elongated trough extending along a longitudinal axis, having an elongated opening in a peripheral surface thereof and containing a first fluid;

a pipe, extending parallel to said longitudinal axis and having at least one aperture therein for spreading a second fluid in said pipe onto the moving web of material, said aperture being smaller than said opening, said pipe being movably

coupled to said trough for movement between a first position in which said aperture is spaced from said first fluid and a second position in which said aperture is submerged in said first fluid;

first means for conveying said first fluid into and out of said trough;



second means for feeding said second fluid into said pipe; and

means for moving said pipe between said first and second positions.

4,494,481

ANIMAL LITTER COMPOSITION

Pedro A. Rodriguez; James B. Edwards, both of Cincinnati, and Fred M. Habermehl, Hamilton, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 12, 1982, Ser. No. 441,318

Int. Cl.³ A01K 1/015

U.S. Cl. 119—1 18 Claims

1. A solid absorbent material useful as an animal litter, having adsorbed thereto from about 50 ppm to about 3000 ppm of a soluble salt of a transition metal of Group Ib or Group IIb of the periodic table of the elements.

4,494,482

ANIMAL LITTER COMPOSITION

Nancy L. Arnold, Centerville, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 441,316, Nov. 12, 1982, abandoned. This application Nov. 1, 1983, Ser. No. 546,361

Int. Cl.³ A01K 1/015

U.S. Cl. 119—1 19 Claims

1. A solid absorbent material useful as an animal litter, having adsorbed thereto from about 25 ppm to about 500 ppm of a halogenated aromatic hydrocarbon bacteriostat.

4,494,483

CONTAINER FOR THE RECEIVING AND DISPENSING OF ANIMAL REARING AND FEEDING MATERIALS, PARTICULARLY FOR WATERING YOUNG ANIMALS

Frank Haiges, Bonnegheim, Fed. Rep. of Germany, assignor to Suevia Haiges GmbH & Co., Fed. Rep. of Germany

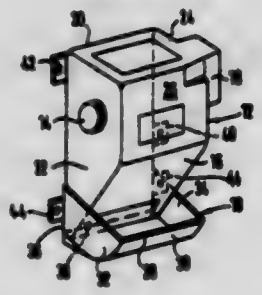
Filed Dec. 21, 1983, Ser. No. 563,699

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1982, 3246490

Int. Cl.³ A01K 7/00

U.S. Cl. 119—77 11 Claims

1. A container for receiving and dispensing animal rearing and feeding materials, particularly for the watering of young animals, comprising a watering basin, a vertical shaft which forms an effective rear wall of said basin, and a supply container for the materials, arranged above said shaft, said container being provided with an opening which can be sealed so as to be both water and air tight, and said container communicating with the basin by means of the shaft, wherein said effective rear wall of the basin provided by said shaft has at least one hole to permit liquid material to pass from the shaft into the basin, the container opening being arranged at a side wall of the supply container, said single hole being arranged off-



center in the shaft on the same side of the supply container, as said container opening and the supply container being provided with a hinge mount or pin arranged on its back side.

4,494,484

HEAT EXCHANGER FOR A PROCESS GAS

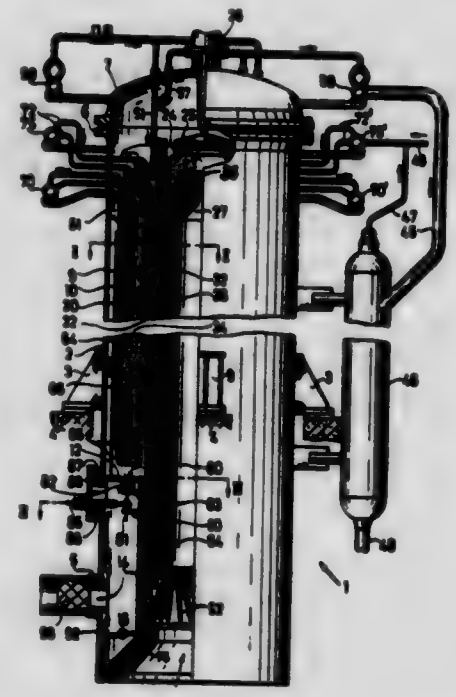
Wolfgang Rezek, Neftenbach, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Nov. 22, 1983, Ser. No. 554,563

Claims priority, application Switzerland, Nov. 24, 1982, 6846/82

Int. Cl.³ F22B 1/02

U.S. Cl. 122—34 20 Claims



1. A heat exchanger comprising

a cylindrical pressure vessel;

a duct section within said pressure vessel for conveying a hot gas therethrough;

a pair of parallel branch ducts extending from said duct section to convey parallel flows of the hot gas therethrough;

a mixing chamber communicating with said branch ducts to receive and mix parallel flows of hot gas therefrom;

an evaporator heating surface in said duct section for conveying a working medium therethrough in heat exchange relation with the hot gas in said duct section;

a second heating surface in one of said branch ducts and connected to said evaporator heating surface for conveying the working medium therethrough in heat exchange relation with the hot gas in said one branch duct;

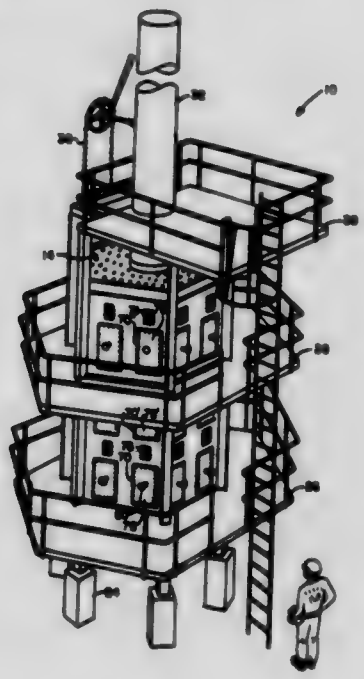
a third heating surface in the other of said branch ducts for conveying a working medium therethrough in heat exchange relation with the hot gas in said other branch duct; and

an adjustable throttle member in at least one of said branch ducts for throttling a flow of hot gas therethrough.

4,494,485
FIRED HEATER

Robert M. Kendall, Sunnyvale, and Richard J. Schreiber, Mountain View, both of Calif., assignors to Gas Research Institute, Chicago, Ill.

Filed Nov. 22, 1983, Ser. No. 554,438
Int. Cl.³ F22B *21/00*
U.S. Cl. 122—250 R 15 Claims

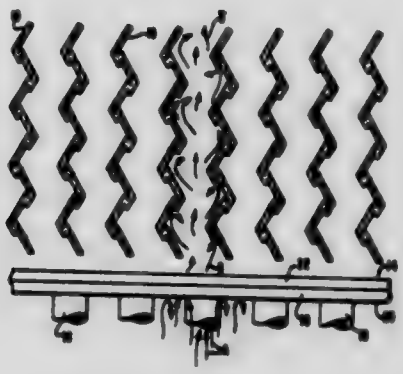


1. A fired heater comprising a vertical setting of a roof, a floor and a cylindrical sidewall which define a chamber, radiant burner means mounted in the sidewall for flamelessly combusting pre-mixed fuel and air with the burner means oriented to direct radiant heat inwardly of the chamber, at least one coil of tubes for containing fluid which is to be heated, the coils being mounted with tube runs which extend vertically within the chamber with portions of the tube forming a radiant section spaced inwardly from the burner means for absorbing radiant heat therefrom, said tube runs in the radiant section being circumferentially spaced apart to define channels for radial inward flow across the tubes of products of combustion from the burner means, and exhaust means for directing the products of combustion in an exhaust stream from the chamber.

4,494,486
SANDWICH NIPPLE PLATE FOR A STEAM GENERATOR DRYER

Oliver J. Mendler, Munhall, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 26, 1983, Ser. No. 536,506
Int. Cl.³ F16T *1/00*; F22B *37/26*
U.S. Cl. 122—491 5 Claims



1. A moisture separator comprising a plurality of chevron-shaped plates forming a sinuous flow path for moisture laden fluid flowing therebetween;

a first plate disposed generally normal to said chevron plates;

said first plate having a plurality of holes disposed therein;

tubular nipples disposed in said holes;

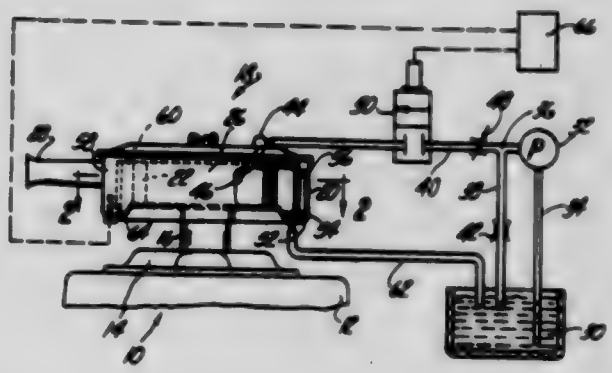
said tubular nipples having one end upset and the other end extending away from the surface of said first plate;

a second plate having apertures which register with openings in said tubular nipples, said second plate being proximate said first plate and fastened thereto in such a manner that the upset ends of said tubular nipples are clamped between said first and second plates and said tubular nipples extend toward the influent fluid flowing to said moisture separator.

4,494,487
ENGINE EFFICIENCY UNIT

John Nixon, 11795 E. Grand River, Brighton, Mich. 48116

Filed Sep. 24, 1979, Ser. No. 78,149
Int. Cl.³ F02M *25/00*
U.S. Cl. 123—1 A 10 Claims



1. For use in conjunction with an internal combustion engine having an air intake means for inducting an air flow into the engine, a fuel source and fuel mixing means for forming a combustible charge from fuel from the fuel source with the inducted air flow for the engine, a device for improving the efficiency of the engine comprising:

a source consisting of liquid petroleum distillates, said source of distillates being separate from said fuel source, said distillates having the general formula of C_nH_{2n+2}, and

means separate from said fuel mixing means for continuously feeding the petroleum distillate from said source into said inducted air flow during operation of the engine.

4,494,488
FUEL CHARGING SYSTEM FOR HIGH PERFORMANCE VEHICLES

William M. Wheatley, Columbia, S.C., assignor to Ram Automotive Company, Canton, Ohio

Filed May 23, 1984, Ser. No. 613,219
Int. Cl.³ F02B *75/12*
U.S. Cl. 123—1 A 13 Claims

1. A fuel charging system for the engine of a high performance vehicle including:

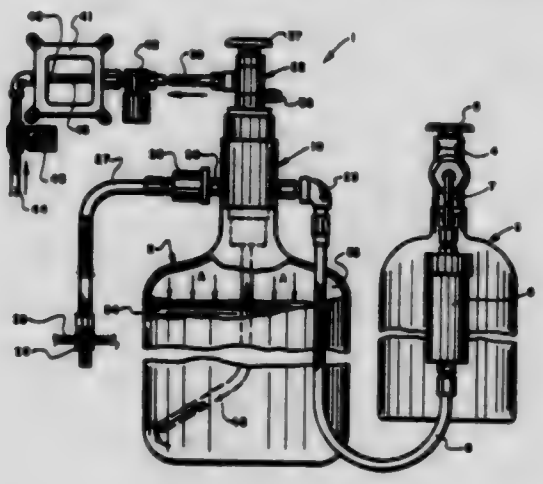
(a) a first container for holding a supply of pressurized liquid nitrous oxide;

(b) a second container for holding a supply of pressurized nitrogen gas, said nitrogen gas being under a greater pressure than the nitrous oxide;

(c) first conduit means for delivering nitrous oxide from the first container to the vehicle engine;

(d) second conduit means for delivering pressurized nitrogen gas from the second container into the first container to form a pressurized blanket of nitrogen gas against the liquid nitrous oxide for discharging the nitrous oxide from said first container and into the vehicle engine through the first conduit means; and

(e) valve means for directing the flow of pressurized nitrogen gas into the first container to form the pressurized



blanket of nitrogen gas and for permitting the flow of nitrous oxide from said container and into the first conduit means.

4,494,489

CYLINDER HEAD FOR FOUR-CYCLE INTERNAL COMBUSTION ENGINES

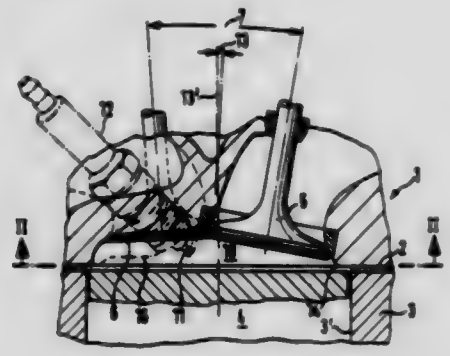
Jiri Seidl, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke A.G., Fed. Rep. of Germany

Filed Aug. 8, 1983, Ser. No. 521,371

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1982, 3229723

Int. Cl.³ F01L *1/00*

U.S. Cl. 123—41.31 15 Claims



1. A cylinder head for an externally controlled four-cycle internal combustion engine, comprising space means for combustion constructed as a substantially concave flat recess means, one inlet valve and one exhaust valve for the space means whose valve stems are arranged in generally parallel cross planes, the valve stems forming an angle of about 10° to about 20° in a projection perpendicular to the cross planes, and a spark plug whose spark gap is arranged generally in a cross plane of the inlet valve, in the inflow direction of the charge into the space means and generally in the projection of the exhaust valve stem,

projection of an angle between the inlet valve stem and a coordinated cylinder axis is larger by about 2° to about 10° than a corresponding angle of the coordinated axis with the exhaust valve stem,

a relatively high area of the recess means contains the exhaust valve and the spark gap, and

a gradually tapering area of the recess means contains the inlet valve and falls off to a separating plane between the cylinder head and cylinder.

4,494,490

CYLINDER COVER

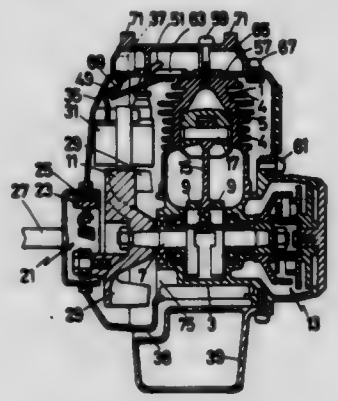
Katsumi Kiyooka, Warabi; Atsushi Harada, Kokubunji, and Kiyoshi Anbo, Hiratsuka, all of Japan, assignors to Komatsu Zenoah Co., Tokyo, Japan

Filed Mar. 28, 1983, Ser. No. 479,570

Claims priority, application Japan, Mar. 31, 1982, 57-044739[U]

Int. Cl.³ F01P *1/00*

U.S. Cl. 123—41.56 5 Claims



1. Cylinder cover apparatus for use with an air-cooled internal combustion engine having a cylinder and a fan, the cylinder cover apparatus comprising:

a fan cover mounted with the engine in spaced apart relation to the cylinder so as to define an air flow passage guiding a flow of air from the fan to cool the exterior wall of the cylinder;

said fan cover at one end thereof defining an opening leading to said cylinder exterior wall from outside the fan cover, so that an accumulation of dirt on the cylinder exterior wall can be removed by access through said opening, and

a cover member detachably secured to the engine to block said opening and thereby prevent the air flow from escaping therethrough in normal operation of the engine,

so that the cover member can be removed for access to said cylinder external wall whenever cleaning is desired wherein said cover member has an air guide section extending through said opening and engaging said air flow for guiding the air flow generated by the fan to the outer side surface of said cylinder.

4,494,491

LIQUID-COOLED INTERNAL COMBUSTION ENGINE

Toshiyuki Takeda, and Shinichi Tamba, both of Hyogo, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

PCT No. PCT/JP79/00118, § 371 Date Jan. 12, 1980, § 102(e) Date Dec. 26, 1979

Continuation of Ser. No. 186,028, Jan. 12, 1980, abandoned

PCT Filed May 10, 1979, Ser. No. 382,445

Claims priority, application Japan, May 12, 1978, 53-63677

Int. Cl.³ F02F *11/00;* F16J *15/02*

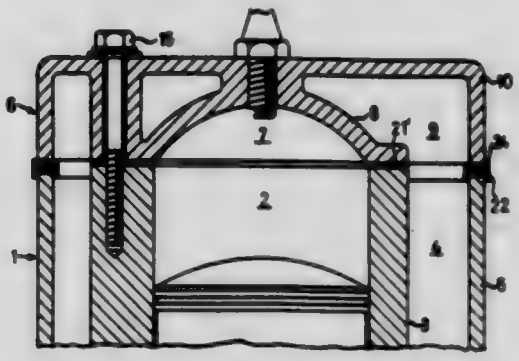
U.S. Cl. 123—41.72 2 Claims

1. Sealing system for a liquid cooled internal combustion engine, comprising

an engine section including a combustion cylinder with inner and outer shells, and a cylinder head with inner and outer shells, a combustion chamber being formed inside the inner shells of the combustion cylinder and the cylinder head, an annular cooling liquid chamber being formed between the outer shells and the inner shells of the combustion cylinder and the cylinder head, an upper end of the inner shell of the combustion cylinder having an annular recess, and an annular gap being formed between the outer shell of the combustion cylinder and the outer shell of the cylinder head when the inner shell of the cylinder head abuts against the inner shell of the combustion cylinder,

a metallic sealing member to be disposed in the annular recess of the inner shell of the combustion cylinder, said metallic sealing member being thicker than the annular recess so that the metallic sealing member directly abuts against the inner shell of the cylinder head to form a seal therewith, and

a resilient sealing member positioned between the outer shell of the combustion cylinder and the outer shell of the



cylinder head, said resilient sealing member having a U-shaped cross-section with ribs on the botton thereof extending in the opposite direction relative to the projecting direction of the U-shaped portion and being thicker than the annular gap so that when the cylinder head is firmly attached to the combustion cylinder, the metallic sealing member seals the inner shells and the resilient sealing member deforms and seals the outer shells completely.

4,494,492

LIQUID-COOLED POWER AGGREGATE OR ENGINE HAVING AN ARRANGEMENT FOR SUPPRESSING VIBRATION

Hans-Alfred Kochanowski, Ruhstorf, Fed. Rep. of Germany, assignor to Motorenfabrik Hatz GmbH & Co. KG, Ruhstorf, Fed. Rep. of Germany

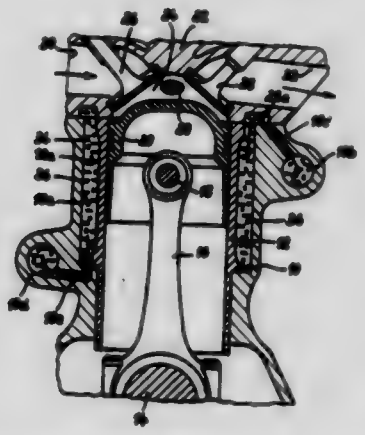
Filed Apr. 5, 1983, Ser. No. 482,361

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1983, 3304587

Int. Cl.³ F01P 3/02

U.S. Cl. 123—41.84

8 Claims



1. In a mechanism which includes: a casing having at least one internal wall which, during operation of said mechanism, is thermally stressed and subjected to vibration, and an outer wall spaced from said inner wall; and means defining a space between said inner wall and said outer wall of said casing, said space being part of a liquid cooling system of said mechanism and said liquid cooling system being adapted to cause a liquid coolant to be circulated through said space to cool said casing and said inner wall thereof; the improvement comprising easily compressible means provided in said space for suppressing, during operation of said mechanism and by virtue of its inherent compressibility, a transfer of vibrations produced during operation of said mechanism in said inner wall from said inner wall through said liquid coolant to said outer wall, said compressible means including a layer of a closed-pore, compressible foam material in said space which is supported on an internal surface of one of said inner and outer walls.

4,494,493

INTAKE SYSTEM FOR AN AUTOMOTIVE ENGINE

Kouji Morikawa, Narita Higashi, and Hitoshi Suzuki, Niiza, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

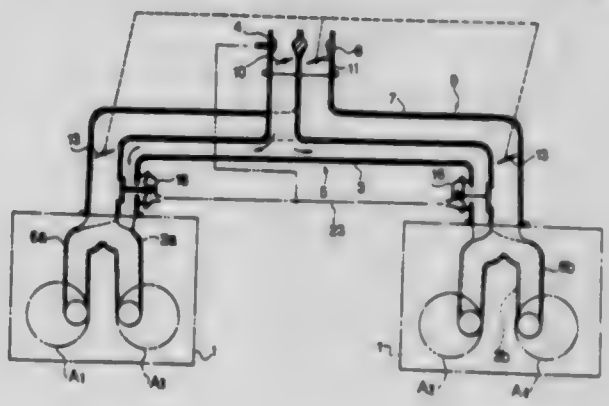
Filed May 11, 1984, Ser. No. 609,168

Claims priority, application Japan, May 12, 1983, 58-83182

Int. Cl.³ F02B 29/02, 31/00

U.S. Cl. 123—52 M

5 Claims



1. An intake system for an automotive engine having cylinders comprising:

primary intake ports communicated with said cylinders;

secondary intake ports communicated with said cylinders;

each of said primary and secondary intake ports being communicated with a corresponding cylinder at a common intake valve;

each primary intake port being disposed in a tangential direction so as to provide a swirl of inducted mixture, and sectional area of each primary intake port being reduced;

a primary intake manifold communicated with said primary intake ports;

a secondary intake manifold communicated with said secondary intake ports;

a primary carburetor having a throttle valve provided in said primary intake manifold;

a secondary carburetor having a throttle valve provided in said secondary intake manifold;

said throttle valve of the secondary carburetor being so arranged to be opened after the throttle valve of the primary carburetor has been fully opened;

a first valve provided in each branch of said secondary intake manifold for preventing a counter flow of inducted mixture;

said first valve being operatively connected to said throttle valve of the secondary carburetor so as to be opened together with the throttle valve;

a bypass provided at a position downstream of said first valve for communicating the primary intake manifold with the adjacent secondary intake manifold; and

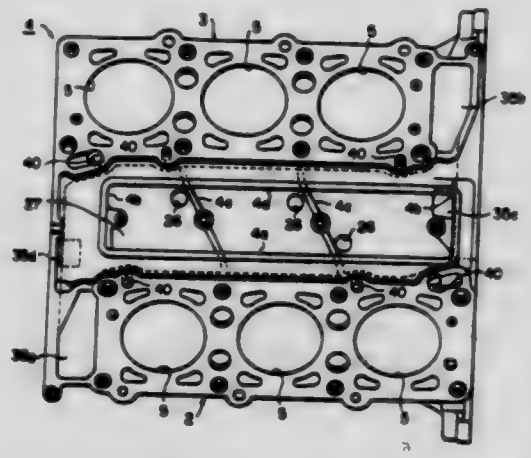
a second valve provided to close said bypass and arranged to be operated to open said bypass when load on the engine exceeds a predetermined partial load.

4,494,494

V-TYPE ENGINE

Tetsuji Yahiro, Higashihiroshima, and Haruyoshi Ishimi, Hiroshima, both of Japan, assignors to Mazda Motor Corporation, Japan

Filed Apr. 18, 1984, Ser. No. 601,728
Claims priority, application Japan, Apr. 18, 1983, 58-68789
Int. Cl.³ F02B 75/22
U.S. Cl. 123—55 VS 7 Claims



1. A V-type engine comprising a cylinder block, and first and second cylinder heads mounted on the cylinder block to form first and second cylinder banks arranged in V-shape, the front end face of the cylinder block at the first cylinder bank being substantially flush with the front end face of the same at the second cylinder bank, the rear end face of the cylinder block at the first cylinder bank being subetantially flush with the rear end face of the same at the second cylinder bank, said first and second cylinder heads being shaped to conform to the shape of the cylinder block, each cylinder bank being provided with a row of cylinders extending axially between the front and rear end faces thereof, the row of the cylinders in the first cylinder bank starting from a location spaced apart from the front end face and terminating at a location near the rear end face and the row of the cylinders in the second cylinder bank starting from a location near the front end face and terminating at a location spaced apart from the rear end face so that the row of the cylinders in the first cylinder bank is axially rearwardly displaced from that in the second cylinder bank,

characterized in that at least one oil-return passage communicating with a space defined by the corresponding cylinder head is formed in the cylinder block at, at least, one of the locations between the front end face of the cylinder block and the foremost cylinder in the first cylinder bank and between the rear end face of the cylinder block and the rearmost cylinder in the second cylinder bank.

4,494,495

VARIABLE VALVE-TIMING APPARATUS IN AN INTERNAL COMBUSTION ENGINE

Norihiko Nakamura, Mishima; Toyokazu Baika, Susono; Toshio Miki, Yao, and Minoru Kobiyashi, Chiryu, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Koyo Seiko Kabushiki Kaisha, Osaki, both of, Japan

Filed Oct. 15, 1982, Ser. No. 434,711
Claims priority, application Japan, Jan. 12, 1982, 57-002231
Int. Cl.³ F01L 1/34
U.S. Cl. 123—90.15 7 Claims

1. An apparatus for controlling relative angular relation between two interconnected bodies which are rotatable about a common first axis, the apparatus comprising:

an outer sleeve member fixedly connected to one of the bodies coaxial with said first axis;

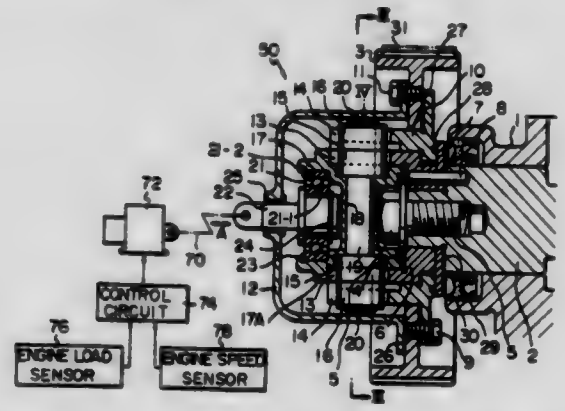
an inner sleeve member fixedly connected to the other of the bodies coaxial with said first axis, said inner sleeve member being inserted into said outer sleeve member, said outer sleeve member having a first elongated slit and said inner sleeve member having a second elongated slit overlapping the first slit in the outer sleeve member, the overlapping first and second slits being skewed with respect to each other;

abutment means disposed in each of said first and second slits, said abutment means comprising first and second rollers arranged in said first and second slits, respectively, so that each roller is in contact with the corresponding slit and means for mounting each of said first and second rollers for free and independent rotation about a second axis transverse to the first axis;

a slider on which said abutment means are fixed, said slider being movable parallel to said first axis for causing relative angular displacement between the inner and outer sleeve means due to longitudinal movement of the abutment means in said first and second slits;

means for moving the slider parallel to the first axis; and

wherein said first sleeve member has a third elongated slit



circumferentially spaced from said first slit; said second sleeve member has a fourth elongated slit circumferentially spaced from said second slit; and said abutment means includes third and fourth rollers arranged in said third and and fourth slits, respectively, so that each roller is in contact with the corresponding slit, and means for mounting each of said third and fourth rollers for free and independent rotation about at third axis transverse to the first axis and making a fixed angle with the second axis, said slits being angularly offset with respect to said abutment means such that the first and third rollers always contact the respective first and third slits on one side only of the angle between the second and third axes and the second and fourth rollers always contact the respective second and fourth slits on the other side only of the angle between the second and third axes, thereby eliminating backlash between the inner and outer sleeves.

4,494,496

VARIABLE VALVE-TIMING APPARATUS IN AN INTERNAL-COMBUSTION ENGINE

Norihiko Nakamura, Mishima, and Toyokazu Baika, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 4, 1983, Ser. No. 464,105
Claims priority, application Japan, Mar. 24, 1982, 57-45536
Int. Cl.³ F01L 1/34
U.S. Cl. 123—90.15 8 Claims

1. An apparatus for controlling the relative angular relationship between two rotating bodies interconnected with each other so as to have a common first axis of rotation, said apparatus comprising:

a first inner sleeve member which is fixedly connected to one of said bodies coaxially with said first axis;

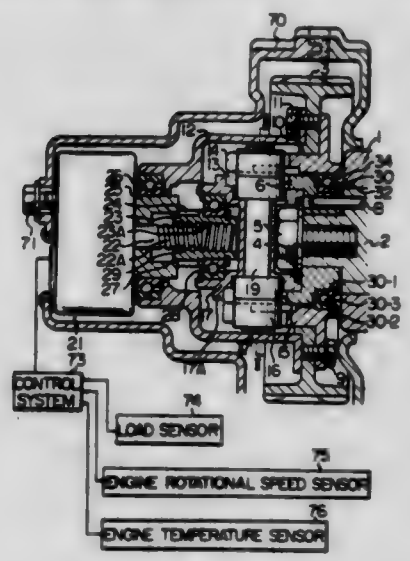
a second outer sleeve member which is fixedly connected to the other of said bodies coaxially around said first sleeve member;

means arranged between said first and second sleeve member for allowing relative rotation therebetween without much friction;

said first and second sleeve members having two circumfer-

entially spaced sets of elongated first and second slits, the first slit of each set being located in the first sleeve, the second slit of each set being located in the second sleeve adjacent to the corresponding first slit in the first sleeve, the adjacent slits being skewed with respect to each other, and at least one slit in each set being skewed with respect to the first axis;

abutment means arranged in the adjacent slits of the two sets of slits, said abutment means comprising a pin extending through said first and second slits of each set and transversely intersecting the first axis, first and second annular cylindrical rollers arranged on said pin in each of said first and second slits, respectively, each roller having an outer diameter less than the width of the corresponding slit so that each of the rollers contacts only one side of the corresponding one of the slits, and means for allowing free and independent rotation of each of the rollers about the pin;



a slider on which the abutment means are mounted, said slider being movable along and rotatable about the first axis; and

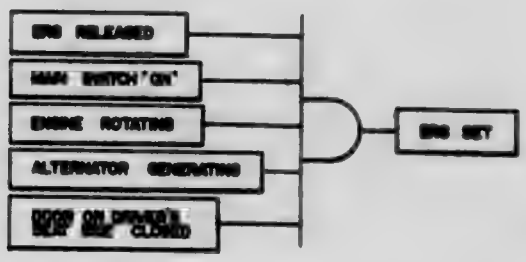
means for moving the slider along said first axis relative to said first and second sleeve members for generating a relative angular displacement between said first and second sleeve member in response to movement of the abutment means parallel to the first axis, wherein the two first slits are angularly offset with respect to the pin so that said first slits bear against the corresponding first rollers on one side of the pin, and the two second slits are angularly offset with respect to the pin so that said two second slits bear against the corresponding second rollers on a side of said pin opposite to said one side of the pin.

4,494,497

AUTOMATIC ENGINE STOP-RESTART SYSTEM

Shigekatsu Uchida; Takao Akatsuka, and Takahide Kawamura, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 14, 1982, Ser. No. 387,819
Claims priority, application Japan, Jul. 20, 1981, 56-113151
Int. Cl.³ F02D *17/00*
U.S. Cl. 123—179 B 4 Claims



1. A system for automatically stopping and restarting a motor vehicle engine having an alternator that is coupled to said engine in response to predetermined conditions comprising:

stopping means coupled to said engine for stopping said engine;

starting means coupled to said engine for restarting said engine;

engine rotational speed sensor means coupled to said engine for detecting an engine's rotational speed to generate a speed signal corresponding to said engine's rotational speed;

alternator output level sensor means coupled to said alternator for detecting an output level of said alternator to generate an alternator signal corresponding to said output level;

a first judging means coupled to said engine's rotational speed sensor means for judging as to whether said speed signal indicates said engine's rotational speed exceeding a predetermined level to produce a first signal indicative of said engine being rotating;

a second judging means coupled to said alternator output level sensor means for judging as to whether said alternator signal indicates the output level exceeding a predetermined level to produce a second signal indicative of said alternator being generating;

switching means manually operated for producing a third signal while said switching means is turning on;

a third judging means coupled to said first and second judging means and said switching means for producing an enable signal when at least said first, second and third signals are received by said third judging means;

a fourth judging means coupled to said third judging means and various sensors detecting engine operational conditions for judging as to whether a first condition for automatic engine stop is fulfilled to produce a first activating signal when fulfilled, said first condition including at least a presence of said enable signal, and said stopping means being energized by said first activating signal; and

a fifth judging means coupled to said third judging means and said various sensors for judging as to whether a second condition for automatic engine restart is fulfilled to produce a second activating signal when fulfilled, said second condition including the presence of said enable signal, and said starting means being energized by said second activating signal.

4,494,498

AIR-FUEL RATIO CONTROL SYSTEM FOR ENGINE STARTING

Tomoo Ito; Hiroshi Kamifuji, both of Katsuta; Harahiko Kobayashi, Ibaraki, and Tomiya Itakura, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Automotive Engineering Co., Ltd., Ibaraki, both of, Japan

Filed Jan. 5, 1983, Ser. No. 455,804
Claims priority, application Japan, Jan. 6, 1982, 57-168[U]
Int. Cl.³ F02N *17/00*
U.S. Cl. 123—179 G 4 Claims

1. An air-fuel ratio control system used in engine starting, comprising:

a fuel passage through which a fuel is supplied from a fuel reservoir to a space of an air-fuel mixture passage downstream from a throttle valve disposed in said air-fuel mixture passage;

fuel metering valve means including a metering valve which is disposed within said fuel passage and adapted to meter the fuel to be supplied to said space of the air-fuel mixture passage;

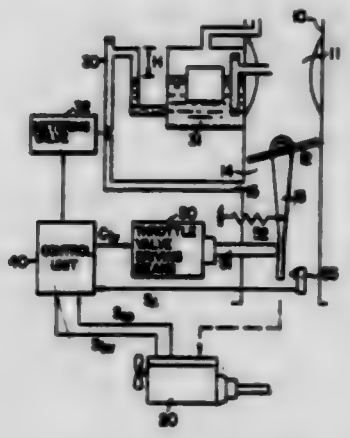
valve driving means for driving said throttle valve to vary an opening degree thereof;

temperature sensing means for sensing a temperature of an engine cooling water;

speed sensing means for sensing an engine speed; and

electronic control unit means for receiving data from said

sensing means and delivering control signals to said fuel metering valve means and said valve driving means for driving and controlling said fuel metering valve means and said valve driving means such that said throttle valve



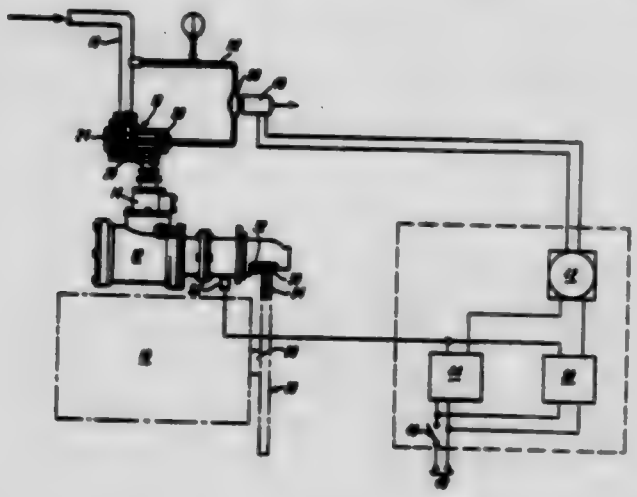
is held in a constant predetermined opening degree by means of said valve driving means during engine warm-up while the opening degree of said metering valve is varied by said control unit means in dependence upon the change in the temperature of the engine cooling water.

4,494,499

SYSTEM AND APPARATUS PROVIDING A TWO STEP STARTING CYCLE FOR DIESEL ENGINES USING A PNEUMATIC STARTER

Robert A. Stein, Dayton, Ohio, assignor to Tech Development Inc., Dayton, Ohio

Filed May 9, 1983, Ser. No. 492,940
Int. Cl.³ F02N 17/00
U.S. Cl. 123—179 F 12 Claims



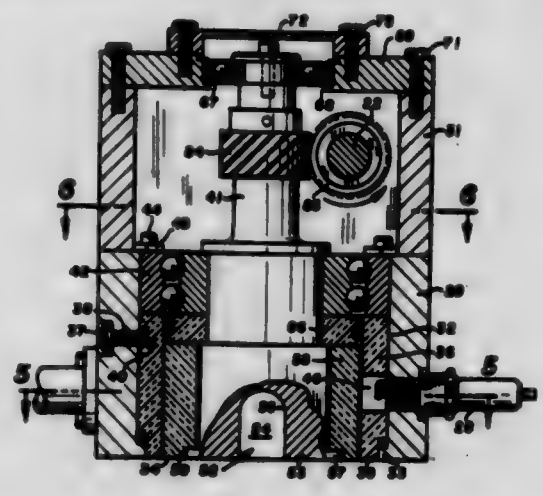
1. A system for starting a diesel engine which includes a crankshaft for drive thereof comprising means to apply power to crank the crankshaft of said engine up to a speed which is required to start the engine, means for sensing the speed of rotation of said crankshaft as it rises toward that level of speed which is required for starting said engine and transmitting signals thereof, means receiving said signals operative to responsively control the amount of power applied to drive said crankshaft to prevent the speed of its rotation from exceeding a predetermined limit which is less than that required to start said engine and means to override said control means after a predetermined degree of rotation of said crankshaft, thereby to allow its speed to rise to the level required to produce a starting of the engine.

4,494,500

ROTARY VALVE ASSEMBLY

Craig N. Hansen, Minnetonka, Minn., assignor to Hansen Engine Corporation, Minnetonka, Minn.

Filed Jun. 1, 1982, Ser. No. 383,511
Int. Cl.³ F01L 7/16
U.S. Cl. 123—190 E 29 Claims



1. An internal combustion engine comprising: a block having at least one cylindrical wall surrounding a combustion chamber, piston means located in said combustion chamber, operable to reciprocate to piston in said chamber, head means mounted on the block covering said chamber, said head means having an air and fuel intake passage and an exhaust gas passage, a rotary valve assembly operatively associated with the head means for controlling the flow of air and fuel into the chamber and the flow of exhaust gas from the chamber, said head means having a housing with a bore open to the chamber accommodating said valve assembly, said valve assembly comprising a cylindrical sleeve located in said bore, said sleeve having an inner surface, and ignition hole, and intake and exhaust ports aligned with said intake passage and exhaust gas passage, spark generating means mounted on the housing means operable to generate a spark in said hole, rotatable valving means located within said sleeve for controlling the flow of air and fuel into said chamber and the flow of exhaust gases out of the chamber, said rotatable valving means having a valving passage open to the chamber and the inner surface of the sleeve, said rotatable valving means including means having limited lateral movement to maintain a sealing relationship with said inner surface of the sleeve to close said intake and exhaust ports, said means having limited lateral movement is a body having an outer surface engageable with the inner surface of the sleeve, and said body having the valving passage, a drive shaft for rotating said body, and a universal coupling connecting the shaft with the body whereby the body rotates about an axis offset from the axis of the shaft and means operable to rotate said rotatable valving means in timed relation with the movement of the piston means whereby said engine has intake, compression, power, and exhaust strokes.

4,494,501

PISTONS WITH COMBUSTION BOWL INSERTS

Bruni Ludovico, Turin, Italy, assignor to AE PLC, Rugby, England

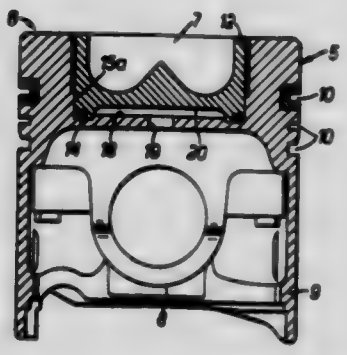
Filed Aug. 2, 1982, Ser. No. 404,416
Claims priority, application Italy, Jul. 31, 1981, 68068 A/81
Int. Cl.³ F01P 1/04
U.S. Cl. 123—193 CP 4 Claims

1. A piston for an internal combustion engine comprising:

a piston body of aluminium or aluminium alloy and having a crown end,

a generally cylindrical bore formed in the piston body and extending in an axial direction from the crown end, the generally cylindrical bore having a reduced diameter

section remote from said crown end and an increased diameter section adjacent said crown end,
a base formed in the piston body at an innermost end of said generally cylindrical bore,
an insert of a ferrous material and having a base,
a combustion bowl formed in the insert,
said insert having a generally cylindrical outer surface with a uniform diameter which forms an interference fit in the reduced diameter section of the generally cylindrical bore to connect the insert to the piston body,



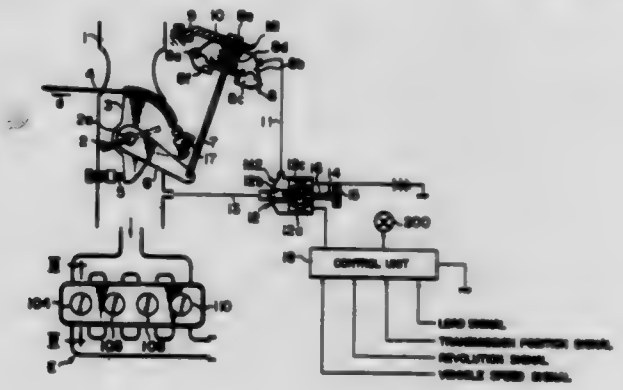
a sealing groove between said generally cylindrical outer surface of said insert and said reduced diameter section of said generally cylindrical bore,
a gap between said generally cylindrical outer surface of said insert and said increased diameter section of said generally cylindrical bore, said gap opening onto said crown end to provide a heat-insulating barrier, and
a depression formed in the base of the insert and defining, with the base of the generally cylindrical bore, an insulating air gap therebetween, whereby the transfer of heat from the combustion bowl to the piston body is reduced.

4,494,502

IDLING CONTROLLER OF VARIABLE DISPLACEMENT ENGINE

Norio Endo; Yoshiaki Danno; Tatsuro Nakagami, and Nobuaki Murakami, all of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 10, 1983, Ser. No. 456,782
Claims priority, application Japan, Jan. 27, 1982, 57-12447; Nov. 16, 1982, 57-200908; Dec. 14, 1982, 57-218907
Int. Cl.³ F02D *17/02*
U.S. Cl. 123—198 F 10 Claims



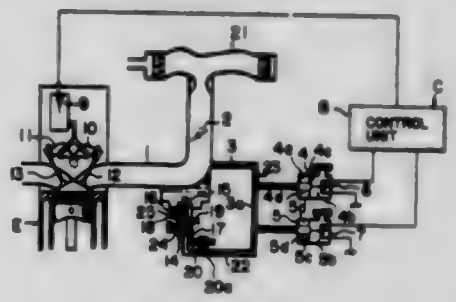
1. An idling controller for a variable displacement engine comprising:
a plurality of cylinders of a multi-cylinder engine into each of which a fuel-air mixture is supplied through a common manifold and a common air intake passage,
cylinder operation stopping means to stop the operation of part of said cylinders by cutting off the supply of the intake air to said part of cylinders,
cylinder number controlling means to control the number of operating cylinders during idlying by supplying such control signals to said cylinder operation stopping means as switching the engine operation between an all-cylinder idling mode wherein all cylinders operate and a partial-cylinder idling mode wherein said part of cylinders operate while the other(s) remain inoperative,
air flow-rate adjusting means which is provided in said common air intake passage in order to adjust the flow-rate of intake air passing through said common air intake passage, and
air flow-rate controlling means to increase or decrease the quantity of the intake air according to the number of the cylinders in operation during idling by controlling said air flow-rate adjusting means so that the quantity of the intake air passing through said common air intake passage during said partial cylinder idling mode is less than that during all-cylinder idling mode, in conformity with the action of said cylinder number controlling means.

4,494,503

VARIABLE DISPLACEMENT ENGINE

Yoshiaki Danno, and Nobuaki Murakami, both of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 10, 1983, Ser. No. 456,807
Claims priority, application Japan, Jan. 22, 1982, 57-9079
Int. Cl.³ F02D *13/06*
U.S. Cl. 123—198 F 10 Claims



1. A multicylinder variable displacement engine, comprising:
a throttle valve provided in an intake passage which supplies feed air to the combustion chamber of each cylinder of a multi-cylinder engine;
a pressure detecting means for detecting the pressure in said intake passage at a point downstream of said throttle valve;
cylinder number controlling means for controlling the number of operating cylinders by stopping the operation of part of cylinders by cutting off the supply of the feed air to said part of cylinders;
control means which, upon receiving the detection signal from said pressure detecting means, gives a signal for a full displacement mode with all cylinders in operation to said cylinder number controlling means when the detected pressure in the intake passage at said point downstream of said throttle valve is above a first preset pressure and on the other hand gives a signal for a partial displacement mode with part of cylinders in operation and the remaining cylinders out of operation to said cylinder number controlling means when the detected pressure in the intake passage at said point downstream of said throttle valve is below a second preset pressure which is lower than said first preset pressure;
control pressure feed means connected to said pressure detecting means and supplying thereto a control pressure greater than said first preset pressure preferentially to the pressure in the intake passage in order to make said control means give said signal for a full displacement mode;
control pressure switch means for detecting the temperature of the engine and turning on and off said control pressure feed means in response to detected levels of the engine temperature;
said first preset pressure being set to an almost constant

pressure generated at said point downstream of the throttle valve in the intake passage over a wide range of the rotational speed of the engine before the engine mode is changed from said partial displacement mode to said full displacement mode by means of said cylinder number controlling means in such a manner that the engine output in said partial displacement mode is substantially equal to the engine output in said full displacement mode at a same throttle valve opening, and on the other hand, said second preset pressure being set to another almost constant pressure generated at said point downstream of the throttle valve in the intake passage over a wide range of the rotational speed of the engine after said change of the engine operation mode from the partial displacement one to the full displacement one is completed; and further

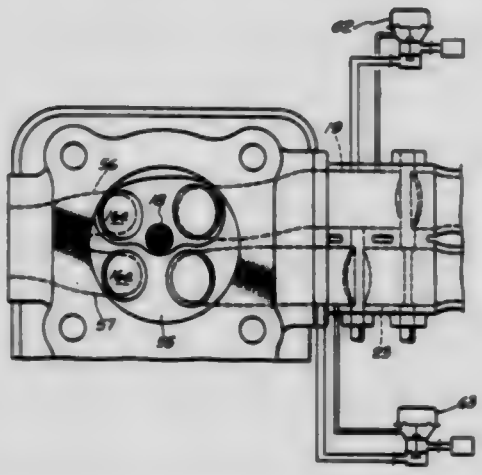
said control pressure feed means being constructed so as to supply said control pressure to said pressure detecting means when said control pressure switch means detects the temperature of the engine is lower than a predetermined value, resulting in that said control means gives said signal for a full displacement mode to said cylinder number controlling means.

4,494,504

STRATIFIED BURN INTERNAL COMBUSTION ENGINE

Shizuo Yagi; Junji Otani; Isao Fujii, and Hiroshi Kogure, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 91,874, Nov. 7, 1979, abandoned. This application Jun. 9, 1982, Ser. No. 386,611
Claims priority, application Japan, Nov. 9, 1978, 53-137274
Int. Cl.³ F02M *35/10*
U.S. Cl. 123—308 18 Claims



1. In an internal combustion piston engine, the improvement comprising, in combination: walls forming a combustion chamber having first and second intake valve ports and at least one exhaust valve port, a first intake valve for controlling flow through the first intake valve port, a second intake valve for controlling flow through the second intake valve port, an exhaust valve for controlling flow through the exhaust valve port, a spark plug communicating with said combustion chamber, means including a first intake passage for supplying a relatively rich air-fuel mixture to said first intake valve port, means including a second intake passage for supplying a relatively lean air-fuel mixture to said second intake valve port, a first throttle valve in said first intake passage, a second throttle valve in said second intake passge, a first and a second air valve that operate at a minus load of said engine and which introduce by said first air valve a relatively small amount of air into said first intake passage and by said second air valve a relatively large amount of air into said second intake passage, means for controlling operation of said first and second throttle valves so that during an intake stroke of the engine the air weight introduced into the combustion chamber through the first intake valve port is less than the air weight introduced into the combustion chamber through the second intake valve port, and so that the following relationship exists at least in the range of low loads of the engine:

$$A_{TH1}/A_{V1} < A_{TH2}/A_{V2}$$

where

A_{TH1}: effective opening area of said first throttle valve at each load.

A_{TH2}: effective opening area of said second throttle valve at each load.

A_{V1}: effective sectional area of said first intake valve port.

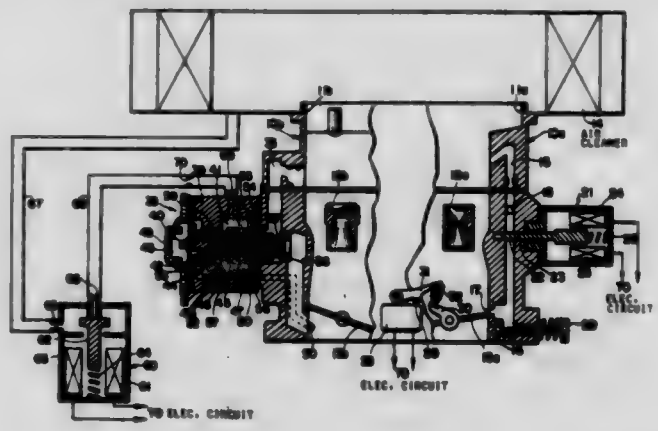
A_{V2}: effective sectional area of said second intake valve port.

4,494,505

DECELERATION CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Masaru Narumura, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 10, 1982, Ser. No. 440,534
Claims priority, application Japan, Jan. 7, 1982, 57-621
Int. Cl.³ F02M *7/12*
U.S. Cl. 123—325 7 Claims



1. A deceleration control device for an internal combustion engine having an air intake passage and a throttle valve disposed in the air intake passage, the device comprising:

(a) a first means including a first passage bypassing said throttle valve and an associated fuel supply cut-off valve for selectively admitting and interrupting a supply of fuel to the engine;

(b) a second means for conducting air to a portion of the air intake passage downstream of the throttle valve to dilute vacuum in the air intake passage downstream of the throttle valve;

(c) an air control valve for selectively opening or closing said second means and including means, responsive to the vacuum in the air intake passage downstream of the throttle valve exceeding a predetermined level, for operating the air control valve to open the second means and responsive to said vacuum in the air intake passage downstream of the throttle valve decreasing to said predetermined level to operate the air control valve to block the second bypass means; and

(d) a third means for closing said air control valve to suspend the conduction of air by said second means when the fuel supply cut-off valve recommences admitting said fuel supply after interrupting same, said third means including means for supplying air to said air control valve operating means.

4,494,506

INTAKE SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

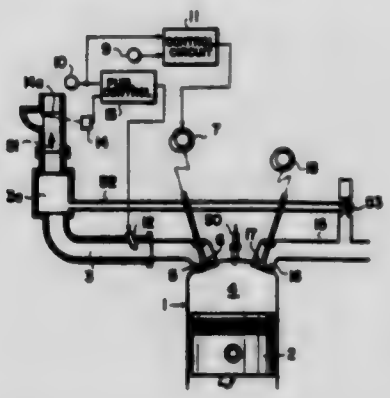
Nobuhiro Hayama; Masaaige Kinjyo; Haruo Okimoto, and Ikuo Matsuda, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Feb. 1, 1983, Ser. No. 463,044

Claims priority, application Japan, Feb. 3, 1982, 57-16556; Feb. 3, 1982, 57-16557; Feb. 3, 1982, 57-16558; Feb. 3, 1982, 57-16559; Apr. 26, 1982, 57-70027; Apr. 27, 1982, 57-70968

Int. Cl.³ F02D *13/02*

U.S. Cl. 123—348 9 Claims



1. An internal combustion engine comprising:

combustion chamber means in which intake and compression strokes are carried out, an intake system having intake passage means for providing a supply of intake gas to said combustion chamber means, charge control means for returning a controlled amount of the intake gas in the combustion chamber means to said intake passage means in the compression stroke to thereby control effective charge to the combustion chamber means, detecting means for detecting at least one factor which is related to engine speed and producing an engine speed signal, manually operated reference setting means for determining a reference speed value, and engine output restricting means for comparing the engine speed signal with said reference value and for providing a signal for restricting engine output when said engine speed signal is greater than said reference value.

4,494,507

CONTROL SYSTEM FOR A FUEL INJECTION INTERNAL COMBUSTION ENGINE INCLUDING A FUEL INJECTION RATE DETECTOR

Seishi Yasuhara, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed May 18, 1983, Ser. No. 495,662

Int. Cl.³ F02D *31/00*

U.S. Cl. 123—357 1 Claim

1. A control system for an internal combustion engine having a fuel injection nozzle, the fuel injection nozzle being connected via a fuel line to a fuel injection pump so that fuel forced out of the fuel injection pump is conducted via the fuel line to the fuel injection nozzle and is then injected into the engine via the fuel injection nozzle, the control system comprising:

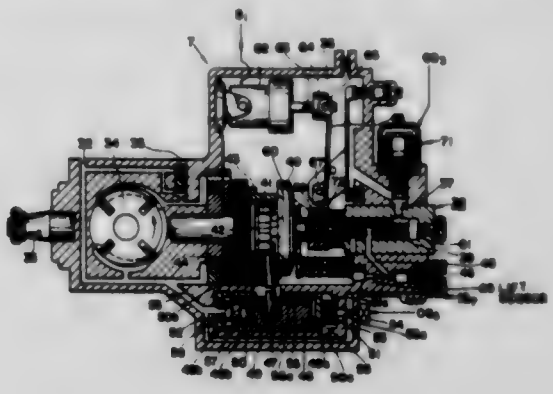
(a) a valve member movably disposed in the fuel line for allowing the fuel to pass to the fuel injection nozzle when the valve member is displaced from a closed position, whereby displacement of the valve member represents the rate of fuel injection into the engine;

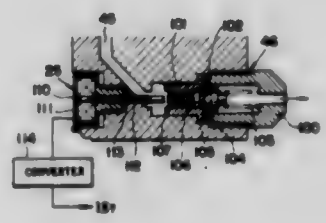
(b) means responsive to displacement of the valve member for sensing the rate of fuel injection into the engine and generating a signal indicative thereof;

(c) means for sensing an operating condition of the engine and generating a signal indicative thereof;

(d) means responsive to the engine operating condition signal for generating a signal indicative of a desired rate of fuel injection into the engine which varies as a function of the sensed engine operating condition; and

(e) means responsive to the sensed fuel injection rate signal





and the desired fuel injection rate signal for controlling the actual fuel injection rate on the basis of the difference between the sensed fuel injection rate and the desired fuel injection rate.

4,494,508

IGNITION SYSTEM

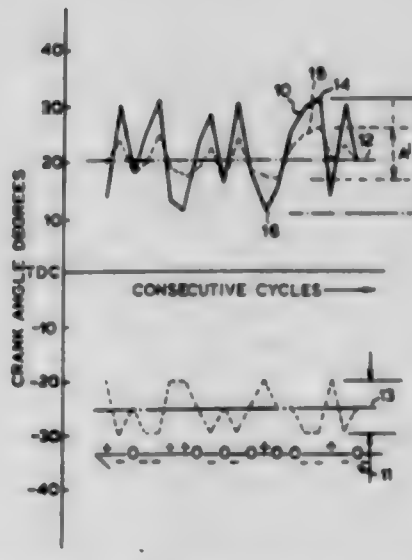
Thomas T. Ma, Chelmsford, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 14, 1983, Ser. No. 541,824

Claims priority, application United Kingdom, Dec. 22, 1982, 8236485

Int. Cl.³ F02P *5/04*

U.S. Cl. 123—406 14 Claims



1. An ignition system for an internal combustion engine including measuring means for measuring a parameter of the combustion charge in a cylinder of the engine prior to ignition in order to predict the burning characteristics of that charge so as to be able to vary the timing of the spark for igniting that charge in the same cycle in dependence upon the measured parameter in such a sense as to reduce cycle to cycle variations in the engine output torque, wherein said measuring means

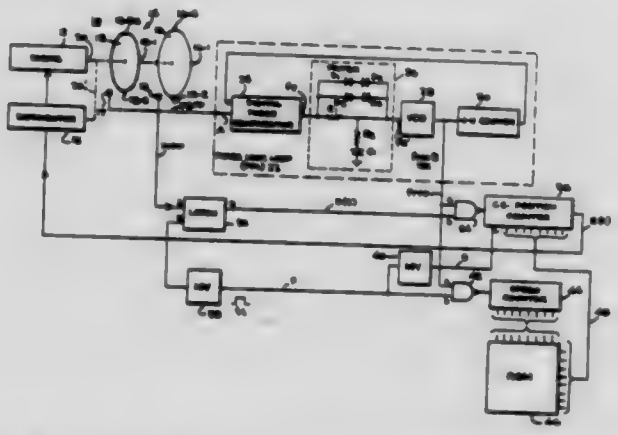
includes an anemometer within a cylinder combustion chamber of the engine to measure the charge velocity for use in perturbing the spark timing to advance or retard the timing in dependence upon the measured velocity.

4,494,509

HIGH RESOLUTION ELECTRONIC IGNITION CONTROL SYSTEM

Alexander Long, Falls Church, Va., assignor to Electromotive, Inc., Fairfax, Va.

Filed Oct. 22, 1982, Ser. No. 436,291
Int. Cl.³ F02P 5/08
U.S. Cl. 123—416 47 Claims



1. An electronic ignition system for controlling as a function of a selected engine parameter the ignition instant of an internal combustion engine having at least one cylinder and a piston disposed therein and coupled to a rotatable crankshaft of the engine to define a first reference position with respect to the crankshaft, the ignition instant occurring upon the termination of an arc of crankshaft rotation at a second variable position with respect to said first reference position, the arc of crankshaft rotation being initiated at a third reference position fixedly disposed before said first reference position considering the rotational direction of the crankshaft, said electronic ignition system comprising:

(a) means responsive to crankshaft rotation for providing a first train of signals of a first frequency, each first signal occurring in time when the crankshaft rotates past its third reference position;

(b) means responsive to crankshaft rotation for providing a second train of signals of a second frequency greater than said first frequency and proportional to the speed of angular rotation of the crankshaft, said second frequency being such that consecutive signals of said second train define a first angle of crankshaft rotation;

(c) multiplying means coupled to receive said second train of signals for providing a third train of signals of a third frequency greater than said second frequency, said third frequency being such that consecutive signals of said third train define a second angle of crankshaft rotation smaller than said first angle;

(d) means coupled to receive said first and third trains of signals and actuated upon the occurrence of each signal of said first train for integrating said third train of signals to obtain an indication of the present crankshaft position with respect to said first reference position and said third reference position with a high degree of resolution corresponding to said second, relatively small angle; and

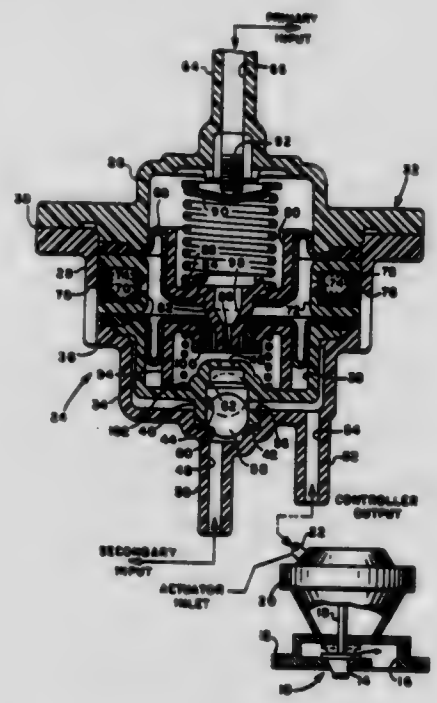
(e) means responsive to the selected parameter for setting said second variable position.

4,494,510

CONTROLLING EGR IN AN INTERNAL COMBUSTION ENGINE AND FLUID PRESSURE SIGNAL CONTROLLER THEREFOR

William W. Kelly, Battle Creek, and Cyril E. Bradshaw, Kalamazoo, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 20, 1982, Ser. No. 379,844
Int. Cl.³ F02M 25/06
U.S. Cl. 123—568 2 Claims



1. A method of operating an internal combustion engine comprising the steps of:

(a) providing a valve for controlling recirculation of exhaust gas to the engine induction passage;

(b) sensing engine induction passage vacuum and inverting and modulating said vacuum;

(c) sensing ported throttle plate suction;

(d) comparing said inverted and modulated vacuum with said throttle plate suction and switching between said modulated vacuum and said throttle suction in response to said comparison for providing the lower level control signal; and,

(e) moving said valve in response to said control signal.

4,494,511

FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Osamu Ito, Toyota; Nobuhito Hobo, Inuyama; Yoshihiko Tsuzuki, Anjo; Yutaka Suzuki, Nishio, and Takashi Hasegawa, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 244,911, Mar. 18, 1981, abandoned, which is a continuation of Ser. No. 9,360, Feb. 5, 1979, abandoned. This application Dec. 22, 1982, Ser. No. 452,337
Claims priority, application Japan, Feb. 14, 1978, 53-16130; Mar. 9, 1978, 53-27077
Int. Cl.³ F02M 39/00; F02D 1/04
U.S. Cl. 123—463 19 Claims

1. In combination with an internal combustion engine having a plurality of cylinders, a throttle valve and an output shaft rotated by the combustions of air-fuel mixture supplied to said cylinders, a fuel injection system comprising:

a source of fuel;

means for pressurizing fuel from said source to provide pressurized fuel;

an electromagnetic valve having an inlet for receiving said pressurized fuel and an outlet for supplying fuel to said engine upstream of said throttle valve at a position where substantially atmospheric pressure is always present re-

gardless of the engine intake pressure at a position downstream of said throttle valve, said fuel being supplied to said engine whenever said valve is actuated;

a pressure regulator for regulating the pressure of said pressurized fuel to the inlet of said electromagnetic valve as a function of the engine intake pressure present at a position downstream of said throttle valve, said pressure regulator comprising:

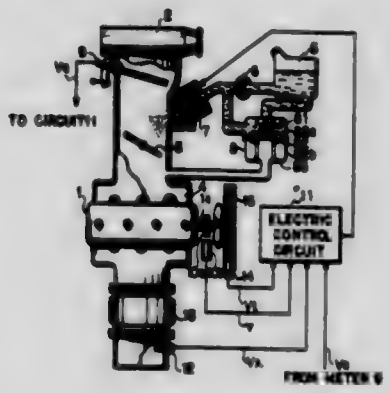
a vacuum chamber communicated with said position downstream of said throttle valve;

an atmosphere chamber communicated with the atmosphere;

a fuel chamber communicated with said pressurized fuel;

a first diaphragm separating said atmosphere chamber from said vacuum chamber;

a second diaphragm separating said atmosphere chamber from said fuel chamber, said second diaphragm being continuously linked with said first diaphragm so as to be moved therewith and having a pressure receiving area smaller than that of said first diaphragm;



a valve associated with said second diaphragm for controlling the return of pressurized fuel from said fuel chamber to said source of fuel to thereby regulate the pressure of said pressurized fuel; and

a spring disposed in said vacuum chamber for biasing said first diaphragm such that said valve moved by said first diaphragm through said second diaphragm is prevented from returning said pressurized fuel to said source of fuel; and

an electric control circuit for actuating said electromagnetic valve intermittently and synchronously with the suction strokes of said cylinders, each such actuation being for an interval of time proportional to either (a) $\sqrt{P_I}$ or (b) $\sqrt{Qa/N}$, where P_I is the engine intake pressure at a position downstream of the throttle valve, Qa is an amount of air taken into the engine and N is the rotational speed of the engine, whereby the pressurized fuel is metered by said electromagnetic valve.

4,494,512

METHOD OF CONTROLLING A FUEL SUPPLYING APPARATUS FOR INTERNAL COMBUSTION ENGINES

Noriyuki Kishi, Tokyo, and Shunpei Hasegawa, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

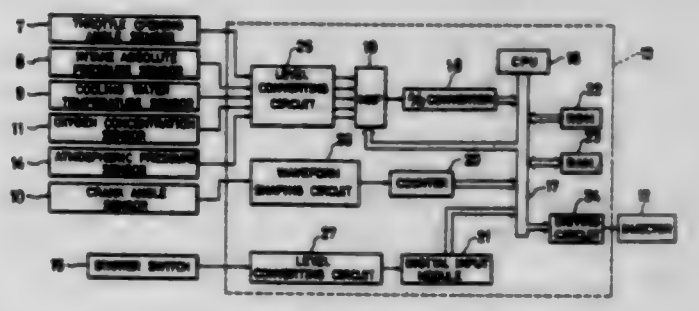
Filed Apr. 28, 1983, Ser. No. 489,676

Claims priority, application Japan, Jun. 23, 1982, 57-107972

Int. Cl.³ F02M 7/00

U.S. Cl. 123—489 4 Claims

1. In a method of supplying fuel to an internal combustion engine provided with an oxygen concentration sensor at the exhaust system thereof, said oxygen concentration sensor being adapted to produce an oxygen concentration signal representative of the oxygen concentration in the exhaust gases flowing through the exhaust system, which method cyclically performs the steps of calculating an instantaneous fundamental fuel amount value in accordance with the engine speed and load, calculating an oxygen concentration correction coefficient in accordance with said oxygen concentration signal and at least two additional correction values in accordance with at least two engine parameters other than the oxygen concentration, modifying said fundamental fuel amount value by said oxygen concentration correction coefficient and said additional correction value so as to obtain fuel amount value, and supplying fuel of an amount corresponding to said final fuel



amount value to the engine, the improvement which comprises:

a first step of discriminating that said final fuel amount value exceeds a predetermined level at a cycle; and

a second step of fixing said oxygen concentration coefficient at a predetermined value without respect to said oxygen concentration signal.

4,494,513

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES, FREE FROM EROSION OF THE PUMP HOUSING

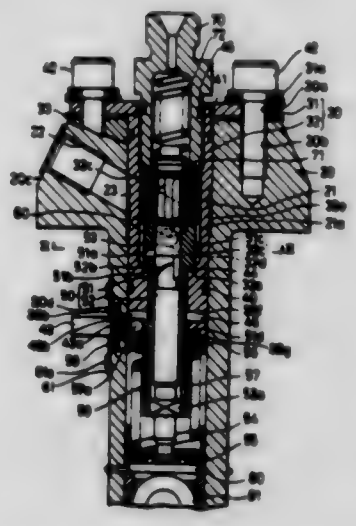
Keizi Torizuka, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Jul. 5, 1983, Ser. No. 510,875

Claims priority, application Japan, Jul. 14, 1982, 57-106640[U]

Int. Cl.³ F02M 59/44

U.S. Cl. 123—495 9 Claims



1. In a fuel injection pump having: a pump housing (20) having at least one pump accommodating space (21) formed therein; a pump element (50) mounted in said pump accommodating space (21) of said pump housing (20), said pump element (50) including a plunger barrel (51) having a peripheral wall thereof formed with a feed hole (51*a*) and an outer peripheral surface thereof formed with an annular stepped shoulder (51*b*), and a plunger (52) slidably fitted in said plunger barrel (51), said plunger barrel (51) and said plunger (52) cooperating to define a delivery chamber (53) therebetween in which said feed hole (51*a*) opens; an element holder (30) holding said pump element (50) in place within said pump accommodating space (21) of said pump housing (20), said element holder (30) including a sleeve portion (32) having a substantially hollow cylindrical configuration, said sleeve portion (32) being fitted in said pump accommodating space (21) of said pump housing (20)

and axially extending, said sleeve portion (32) having an inner peripheral surface thereof formed with an annular stepped shoulder (32*a*) fitted in said annular stepped shoulder (51*b*) of said plunger barrel (51), and a peripheral wall thereof formed with at least one fuel supply hole (32*d*), said sleeve portion (32) of said element holder (30) and said plunger barrel (51) of said pump element (50) cooperating to define an annular fuel chamber (60) therebetween, said fuel supply hole (32*d*) in said sleeve portion (32) and said feed hole (51*a*) in said plunger barrel (51) opening in said fuel chamber (60) at locations different from each other in at least one of directions axial and circumferential of said sleeve portion (32) and said plunger barrel (51); a control sleeve (57) disposed for rotation in unison with said plunger (52); a tappet (80) disposed in contact with said plunger (52); a plunger return spring (54) for biasing said tappet (80) in a direction away from said plunger (52); and a spring seat (56) on which said plunger return spring (54) seats;

the improvement wherein:

said sleeve portion (32) of said element holder (30) is formed of a material having a hardness higher than that of a material forming said pump housing (20), and has a peripheral wall thereof formed with a notched portion (32*b*) and one end surface thereof formed with a recessed portion;

said spring seat (56) has an annular shape and receives said control sleeve (57) fitted therethrough and is disposed in contact with said one end surface of said sleeve portion (32) of said element holder (30); and

a control rod (43) engages with said control sleeve (57) for causing circumferential displacement thereof and has a radially inwardly projected portion (43*a*) inserted into said notched portion (32*b*) of said sleeve portion (32) of said element holder (30) and engages with said control sleeve (57) through a ball (58) mounted on the said control sleeve (57).

4,494,514

HYDRAULIC ADJUSTING DEVICE FOR CONTROLLING THE BEGINNING OF INJECTION OF AN INJECTION PUMP

Ulrich Augustin, Kernen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

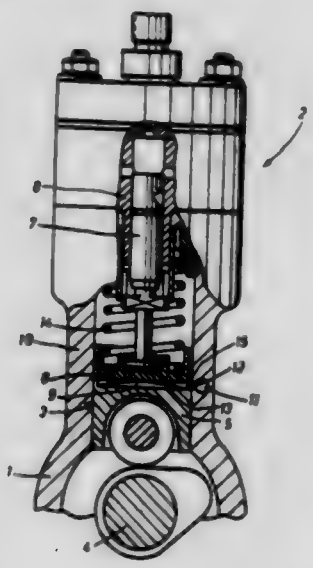
Filed Feb. 23, 1983, Ser. No. 468,999

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1982, 3206429

Int. Cl.³ F02M *59/30*

U.S. Cl. 123—504

10 Claims



1. Hydraulic adjusting device for controlling the initiation of injection by a fuel injection pump for an internal combustion engine of the type having a reciprocating pump shaft driven by a pump shaft roller tappet engaging a rotating crankshaft, or the like comprising:

a working chamber communicating with hydraulic control fluid which is pressurized in dependance on engine operating parameters, said working chamber being bounded by a tappet support for said tappet and a spring biased slidable inner piston member which is movable with the pump shaft,

and a cup washer disposed in the working chamber intermediate the tappet support and the inner piston member, said cup washer being configured to change the effective length of the pump injection stroke in dependence on the control pressure in the working chamber.

4,494,515

METHOD FOR MIXING GASEOUS FUEL WITH AIR

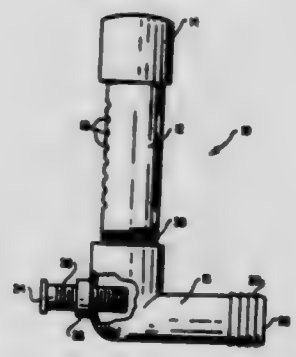
M. Wayne Brown, Orem, Utah, assignor to IPT Corporation, Provo, Utah

Division of Ser. No. 284,042, Jul. 17, 1981, Pat. No. 4,399,795. This application Jul. 20, 1983, Ser. No. 515,935

Int. Cl.³ F02B *43/00*

U.S. Cl. 123—527

6 Claims



1. A method of mixing gaseous fuel with air for subsequent combustion in an internal combustion engine, comprising the steps of:

obtaining a gaseous fuel from a fuel source at atmospheric pressure;

drawing air through an air intake system of the internal combustion engine, the air intake system having an air inlet for receiving the air and an air intake conduit for transporting the air from the air inlet to an air filter; and

introducing the gaseous fuel at atmospheric pressure into the air intake system upstream from the air filter through a fluid channel mounted in the air intake conduit so as to allow the gaseous fuel to mix with the air passing through the air intake system and air filter.

4,494,516

CARBURETOR/VAPORIZER

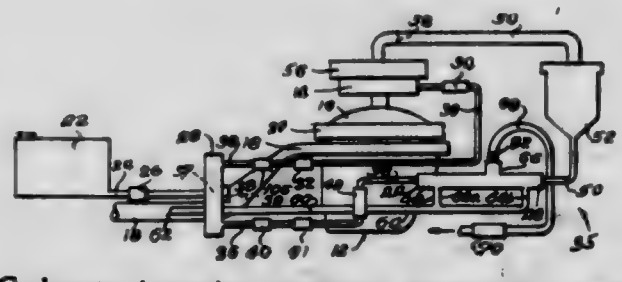
Ray M. Covey, Jr., 9700 Trinidad, El Paso, Tex. 79925

Filed Sep. 9, 1983, Ser. No. 530,759

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557

6 Claims



1. Carburetor/vaporizer apparatus adapted for retrofitting to an automobile having a petroleum fuel engine, a carburetor, a fuel tank, means for transmitting fuel from the fuel tank to the carburetor including a main fuel line, and the automobile also including an exhaust line, said apparatus comprising,

a first extension fuel line adapted to be connected with the main fuel line and leading to the carburetor,

a vapor adaptor applied to the carburetor and operative for

directing vapor passing therethrough into the air intake passage of the carburetor,

a vaporizer unit including an outer casing and a tubular vaporizer fuel line therethrough, the casing forming an exhaust gas chamber entirely surrounding the vaporizer fuel line,

a second extension fuel line adapted to be connected between the main fuel line and the vaporizer fuel line, the vaporizer fuel line being operable for conducting fuel through the vaporizer unit and confining it against escape into the exhaust gas chamber,

means for connecting the exhaust gas chamber to the exhaust line,

means operable for diverting a portion of the exhaust gases from the exhaust line to the exhaust gas chamber, the exhaust gas chamber leading to the exterior,

a vapor line connected between the vaporizer fuel line and the vapor adapter,

means responsive to temperature of the exhaust gases in the exhaust line for directing fuel from the main fuel line selectively to the first and second extension fuel lines, and

means responsive to temperature of the exhaust gases in the exhaust gas chamber for varying the rate of flow of gases through the exhaust gas chamber for correspondingly varying the temperature of the vapor in the vapor line.

4,494,517

METHOD AND APPARATUS FOR CONTROLLING AT LEAST ONE THROTTLE CROSS SECTION IN A CONTROL LINE

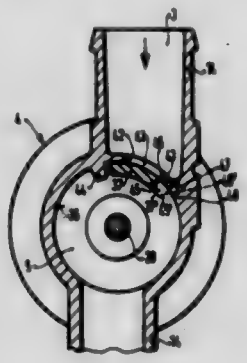
Alfred Kratt, Trossingen; Cornelius Peter, Stuttgart; Claus Ruppmann, Schwieberdingen, and Rainer Schillinger, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 22, 1983, Ser. No. 506,937

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1982, 3234468

Int. Cl.³ F02M *23/04*

U.S. Cl. 123—585 14 Claims



1. A method for controlling at least one throttle cross section in a control line carrying an operating medium for an internal combustion engine by means of an electric control motor which actuates a throttle device counter to a spring element related to said throttle device in order to control a size of a throttle cross section which controls flow of said operating medium, wherein said throttle device, is movable by a spring element into a position in which it rests on a stop and a first throttle cross section is opened when said control motor is unexcited, and upon excitation of the control motor, the throttle device is actuatable in such a manner that said first throttle cross section is closed and after an intermediate adjustment path (s_1–s_2), during which said first throttle cross section is closed, during further movement of said throttle device a second throttle cross section is opened while said first throttle cross section continues to remain closed.

3. An apparatus for controlling at least one throttle cross section in a control line carrying an operating medium for an internal combustion engine, comprising an electric control motor, a control spring, a throttle device actuatable by said electric control motor counter to said spring element in order to influence an opening size of said at least one throttle cross section, a shaft in said apparatus, a control section in the form of a circular segment rotatably supported about said shaft relative to a control opening which intersects said control line and which serves as a throttle device, said control section being rotatable by means of the spring element into a position in which it rests against a stop and opens a first throttle cross section connecting the control line upstream of the control section with the control opening when the control motor is not excited, and said control section is rotatable upon the excitation of said control motor such that within an intermediate adjustment range (s_1–s_2) said control section closes each throttle cross section and subsequently thereto opens only a second throttle cross section, said second throttle cross section being formed in the intersection of the control line and the control opening.

4,494,518

ENGINE IGNITION INTERPOLATION APPARATUS

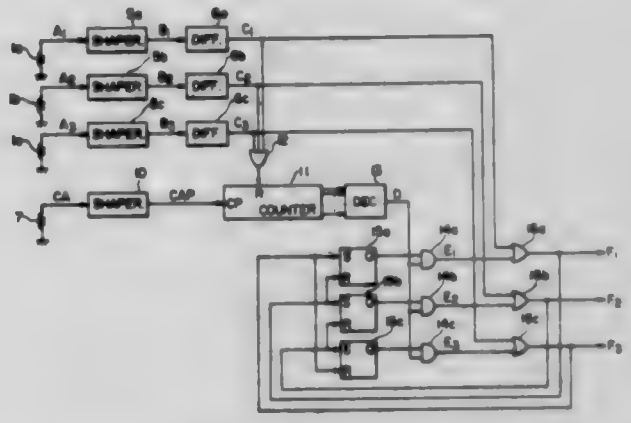
Hiroomi Katayama, Machida, and Yoshiaki Hirosawa, Shiki, both of Japan, assignors to New Nippon Electric Co., Ltd., Osaka and Honda Gikeu Kogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Oct. 12, 1982, Ser. No. 433,913

Claims priority, application Japan, Oct. 12, 1981, 56-160912

Int. Cl.³ F02P *9/00*

U.S. Cl. 123—612 12 Claims



1. An engine ignition interpolation apparatus operatively connectable to an engine having an engine crank and pistons, comprising:

reference position signal generation means for generating first through third reference position signals indicative of the position of the pistons in the engine;

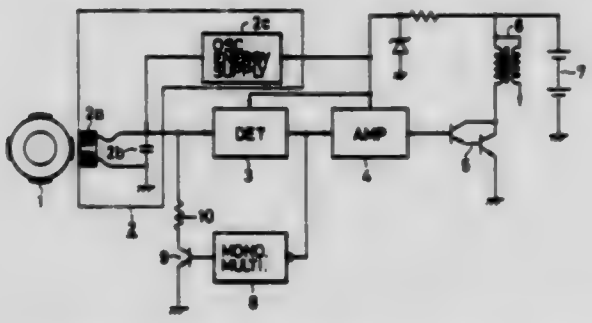
crank angle signal generation means for generating a crank angle signal indicative of the crank angle; and

signal processing means, operatively connected to said referenced position signal generation means and said crank angle signal generation means, for generating first through third primary ignition signals in dependence upon the first through third reference position signals and for generating first through third replacement ignition signals to replace the first through third primary ignition signals when one or a pair of the first through third reference position signals are absent in dependence upon the crank angle signal and the remaining first through third primary ignition signals.

4,494,519
IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Katsuyoshi Masuno, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 426,595
Claims priority, application Japan, Oct. 1, 1981, 56-146939[U]
Int. Cl.³ F02P 1/00
U.S. Cl. 123—615
1 Claim



1. A breakerless ignition system for an internal combustion engine comprising: a magnetically permeable rotor (1) driven in synchronism with an internal combustion engine, a core disposed in confronting relation to said rotor and having a coil (2*a*) wound therearound, a capacitor (2*b*) connected to said coil to form a resonant circuit therewith, a supply circuit (2*c*) for supplying said resonant circuit with oscillation energy, a threshold detector circuit (3) for detecting the condition of oscillation of said resonant circuit, an amplifier (4) for amplifying an output signal from said detector circuit, a switching element (5) driven by an output signal from said amplifier, an ignition coil (6) for generating a high voltage in response to intermittent operation of said switching element, a monostable multivibrator (8) triggered by the detector circuit output simultaneously with the deenergization of said switching element, and the series combination of a resistor (10) and transistor (9) connected between said resonant circuit and ground and responsive to an output of said multivibrator to forcibly suppress the oscillation of said resonant circuit and hold said switching element in a deenergized state for a predetermined period of time after it has been turned off to prevent false triggering of the detector circuit due to spurious signals induced in the coil by spark ignition firings.

4,494,520
SHEATHING SYSTEM FOR AUTOMOTIVE OR MARINE IGNITION WIRES

Scott L. Harwitz, Fairport, N.Y., assignor to Magnum Shielding Corp., Pittsford, N.Y.

Filed Jan. 19, 1983, Ser. No. 459,054
Int. Cl.³ F02P 15/00; H01R 4/64
U.S. Cl. 123—633
6 Claims

1. A system of organizing and grounding a set of ignition wires covered with braided metallic sheaths terminating at an electrically insulating distance from terminal end regions of said wires, which when installed on an engine are spread apart from each other to attach to spark plugs at one terminal end region and to an electrical input at another terminal end region, said system comprising:

a. an organizer strip formed of electrically conductive material;

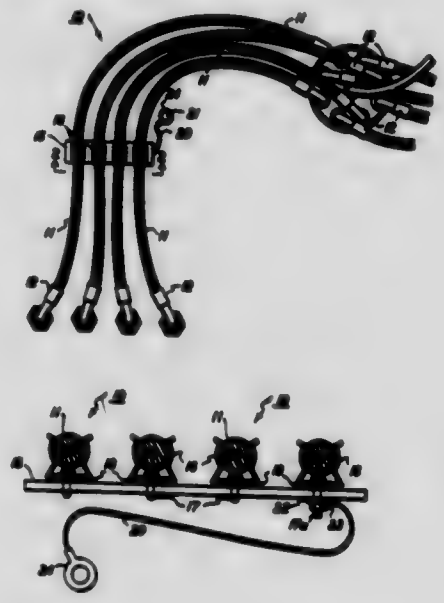
b. said organizer strip extending longitudinally far enough to span a transverse distance across a plurality of said wires;

c. means for securing said plurality of sheathed ignition wires in parallel positions on said strip so that said organizer strip forms an electrical common between said sheaths of the secured ignition wires;

d. said organizer strip being secured to mid-regions of said sheaths in a location that can vary between ends of said sheaths;

e. said organizer strip having no fixed connection other than to said sheaths so that said organizer strip is movable with said sheathed ignition wires throughout a limited range of movement;

f. a flexible ground wire having an end termination connectable to ground; and

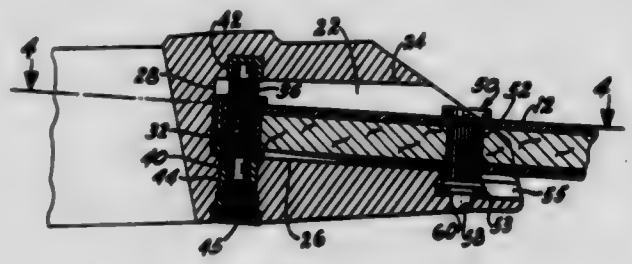


g. said flexible wire being arranged for providing an electrical path from said electrical common to ground.

4,494,521
ARCHERY BOW HAVING BOW LIMB ASSEMBLY AND ADJUSTMENT

Miguel A. Quartino, St. Louis, Mo., assignor to Hoyt/Easton Archery Co., Bridgeton, Mo.

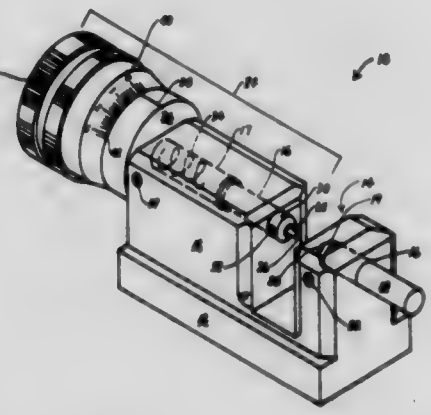
Filed Apr. 4, 1983, Ser. No. 481,929
Int. Cl.³ F41B 5/00
U.S. Cl. 124—24 R
4 Claims



1. In an adjustable limb, take-down bow, an elongated handle section having a socket extending longitudinally inward at each end thereof and having spaced front and rear walls and a bottom wall, a pair of flat bow limbs having front and rear sides and having the butt sections thereof inserted into said sockets between said front and rear walls, a short T slot in each rear socket wall extending longitudinally inward from its outer end, a member fixed in each butt section and having an enlarged head projecting from the rear side thereof slidably inserted in said T slots whereby said bow limbs are restrained from kicking forward, the spacing of said front and rear socket walls being substantially greater than the thickness of said limb butt sections and said enlarged heads being loosely received in said T slots whereby said butt sections may rock on said rear socket walls near the outer ends thereof as the inner ends of said butt sections are adjustably moved fore and aft, a screw operated limb adjustment member positioned in each of said sockets near its bottom wall for adjustably moving the inner ends of said butt sections fore or aft comprising an operating screw journalled in said front and rear socket walls and having screw threaded engagement with said adjustment member and said adjustment member having spaced front and rear walls parallel with said front and rear socket walls and spaced so as to slidably receive and retain the inner ends of said butt sec-

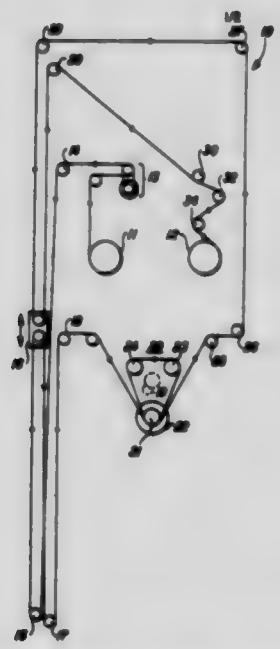
tions therebetween, and a spring pressed detent element projecting centrally from each of said heads and entered into an aperture in each of said rear socket walls.

4,494,522
SIZE DRESSER FOR GRINDING WHEELS
Dimitrije R. Vasovich, 749 E. Brokaw Rd., San Jose, Calif. 95112
Filed May 2, 1983, Ser. No. 490,342
Int. Cl.³ B24B *53/12*
U.S. Cl. 125—11 DF 19 Claims



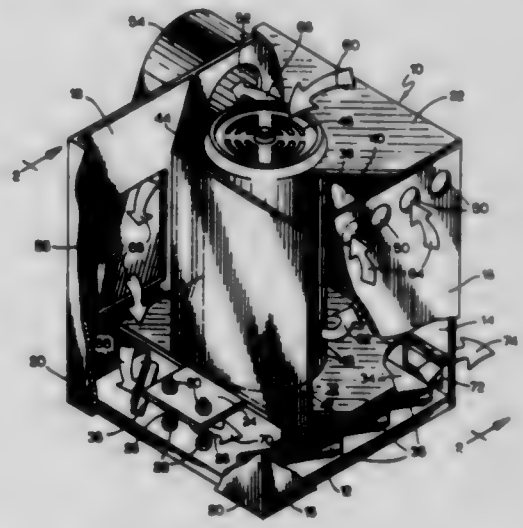
1. A size dressing apparatus for disklike elements, comprising:
a base block having a transverse gap and an axial bore formed therethrough;
means for securing a first abrasive element along the axis of said bore at a point within said gap; and
positioning means for positioning a second abrasive element smaller than said first abrasive element, along the axis of said bore at points within said gap opposing said first abrasive element.

4,494,523
WIRE SAW
Raymond C. Wells, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 5, 1983, Ser. No. 520,776
Int. Cl.³ B28D *1/08*
U.S. Cl. 125—16 R 5 Claims



1. In a wire saw apparatus having a wire supply means, a wire takeup means, a plurality of wire guides defining a continuous path between said supply means and said take-up means and defining a cutting zone, and a reversible motor driving a pulley in said continuous path, the improvement comprising:
wire storage means in said continuous path comprising carriage means having at least one pair of pulleys having separate axes, wherein said carriage means moves vertically between predetermined limits and is supported only by the wire in said wire storage means.

4,494,524
CENTRIFUGAL HEATING UNIT
Lee Wagner, Box 128, Buffalo Gap, S. Dak. 57722
Filed Jul. 19, 1982, Ser. No. 399,440
Int. Cl.³ F24C *9/00*
U.S. Cl. 126—247 29 Claims



1. A heating apparatus comprising:
a housing defining a chamber for containing a viscous liquid, the chamber being defined by a plurality of generally planar walls which meet at opposed corners spaced about a periphery of the chamber in cross-section along a first plane;
a plate unit positioned within the chamber for rotation about a central drive axis while immersed in the viscous liquid, the drive axis being perpendicular to the first plane and the plate unit comprising:
a first disk generally perpendicular to the drive axis, the first disk having its periphery in close tolerance to an intermediate portion of each of the walls and having a first passage means for permitting flow of viscous liquid through the first disk;
a second disk generally perpendicular to the drive axis, the second disk having its periphery in close tolerance to an intermediate portion of each of the walls and having second passage means for permitting flow of viscous liquid through the second disk;
means for attaching the first and second disks in an axially spaced apart, generally parallel, fixed relation with a region between the first and second disks in communication with the first and second passage means; and
motor means for rotating the plate unit about the drive axis within the chamber to cause heating of the viscous liquid.

4,494,525
STOVE WITH CATALYTIC CONVERTER
Peter S. Albertsen, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Apr. 2, 1980, Ser. No. 136,687
Int. Cl.³ F23V *15/00*; F23L *11/00*
U.S. Cl. 126—289 3 Claims

1. A stove comprising
a fire box having therein a combustion chamber,
a door on said box movable between open and closed positions relative to a first opening in said box,
means for admitting air for combustion to said chamber, including a second opening in said box adjacent the bottom thereof,
said box having therein two further openings for exhausting

combustion gases from said chamber to the exterior of said box,

a catalytic converter mounted in one of said two further openings which is located in the top of the firebox, said converter comprising a cellular structure having a plurality of closely-spaced cells or ducts extending axially therethrough and appearing in cross-section with walls of the cells or ducts arranged in intersecting rows and columns,

means for selectively closing the other of said two further openings,

said converter being positioned so that, when said other opening is closed, all said gases from said combustion chamber are caused to pass through said converter,

said door has two panes of glass secured across an opening in said door in spaced, parallel relation,

at least a portion of the peripheral edge of each of said panes is spaced from a portion of the periphery of the opening in said door, thereby to admit additional air to said chamber through said opening in the door, and

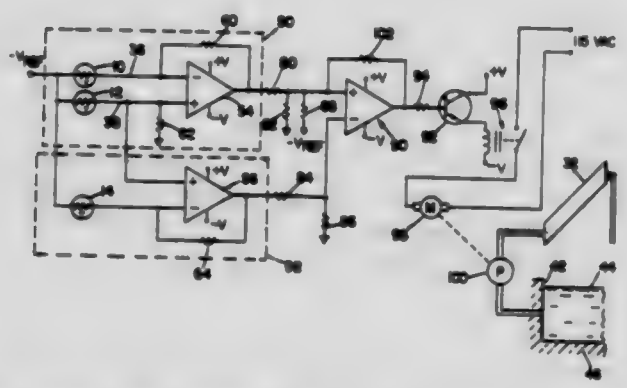
said portions of said edges of said panes are located adjacent opposite edges of the opening in said door, whereby said additional air passes through the space between said panes during passage thereof into said combustion chamber.

4,494,526

TEMPERATURE SENSING

William C. Wurst, Amherst, and Donald W. Fyfe, Hollis, both of N.H., assignors to Solar Decisions, Inc., Hollis, N.H.

Filed Feb. 28, 1983, Ser. No. 470,042
Int. Cl.³ F24J 3/02
U.S. Cl. 126—419
21 Claims



1. In a system for transferring thermal energy as between a solar energy collector and a storage area,

a first temperature sensitive transducer for sensing incident solar radiation and producing an output proportional thereto;

a second temperature transducer for sensing the ambient temperature and producing an output proportional thereto;

a third temperature sensitive transducer for sensing the temperature of energy transfer fluid in said storage area and producing an output proportional thereto;

a first comparator which includes said first and second temperature sensing transducers and is adapted to provide a first control signal representing the effective incident solar radiation;

a second comparator which includes said second and third temperature sensitive transducers and is adapted to provide a second control signal representing the effective parasitic heat loss; and

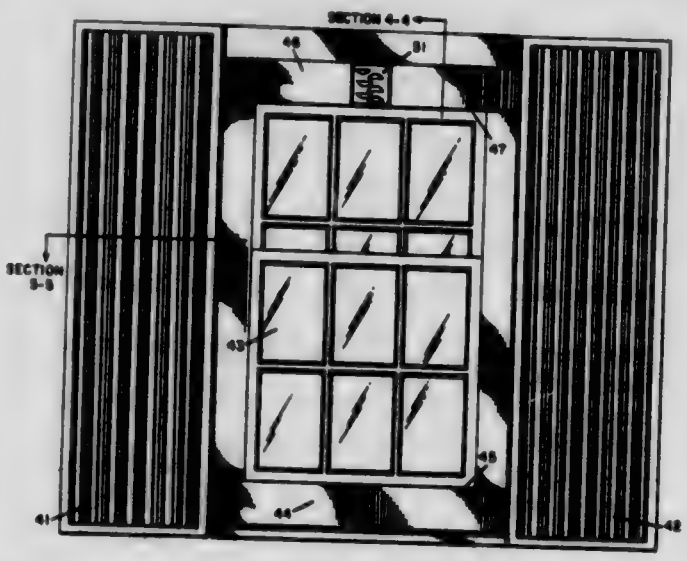
a third comparator responsive to said first and to second control signals for producing an output only when said control signals indicate net available thermal energy.

4,494,527

SOLAR HEATING

Marlene Resnick, 65 South St., Plymouth, Mass. 02360, and Roger C. Startevant, P.O. Box 972, So. Carver, Mass. 02341

Filed Dec. 13, 1982, Ser. No. 448,923
Int. Cl.³ F24J 3/02
U.S. Cl. 126—422
4 Claims



1. Solar heating apparatus for exchanging energy through double-hung window openings comprising,

means defining a solar collector chamber means for heating air therein in response to solar energy,

said solar collector chamber means having inlet means at the bottom for receiving cool air and outlet means at the top for expelling warm air,

inlet conduit means adapted to pass through an opening at the bottom of a double-hung window between the lower sash of said window and the window sill for coupling said inlet means to the inside of a building through said bottom opening and receiving cool air therethrough for warming in said solar collector chamber means,

and outlet conduit means for coupling said outlet to the inside of said building through an opening at the top in said double-hung window between the upper sash of said window and the top of the window frame for delivering warm air to said building expelled through said outlet means,

said outlet conduit means being above said inlet conduit means,

said solar collector chamber means being adapted for positioning beside said double-hung window with said outlet conduit means adapted for insertion through said top opening and said inlet conduit means adapted for insertion through said bottom opening without appreciably obstructing the view through said double-hung window except through said top and bottom openings with the unobstructed viewing area through said window being significantly greater than the area of said top and bottom openings,

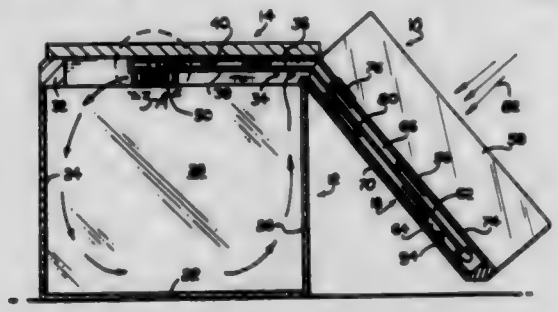
said solar collector chamber means comprising solar collecting chambers separated by the window width adjacent to each side of said window and intercoupled at the top by said outlet conduit means and at the bottom by said inlet conduit mean.

4,494,528

SOLAR HEATING SYSTEM FOR BEEHIVES AND OTHER ENCLOSURES

David J. Horton, 452 Ezie St., San Jose, Calif. 95111

Filed Jul. 5, 1983, Ser. No. 510,550
Int. Cl.[3] F24J *3/02*; A01K *47/00*
U.S. Cl. 126—429 13 Claims



1. A solar heating system for an enclosure comprising:
a fixed base assembly attached over an opening in said enclosure and provided with a first cool air duct communicating with an enclosed space within said enclosure and a first warm air duct communicating with said enclosed space, and having an inner side facing said enclosed space and an outer side facing away from said enclosed space, said base assembly having a beveled first interface edge provided with a first cool air slot communicating with said first cool air duct and a first warm air slot communicating with said first warm air duct;
a movable collector assembly provided with a second cool air duct and a second warm air duct, and a solar heated surface over which air may flow from said second cool air duct to said second warm air duct, said collector assembly having a beveled second interface edge provided with a second cool air slot communicating with said second cool air duct and a second warm air slot communicating with said second warm air duct; and
hinge means coupling said collector assembly to said fixed base assembly proximate said first beveled interface edge and said second beveled interface edge such that said collector assembly can move between a heating position where said first interface edge and said second interface edge abut in a miter such that said first cool air duct communicates with said second cool air duct through said first cool air slot and said second cool air slot and where said first warm air duct communicates with said second warm air duct through said first warm air slot and said second warm air slot, and a non-heating position where said collector assembly substantially overlies said base assembly.

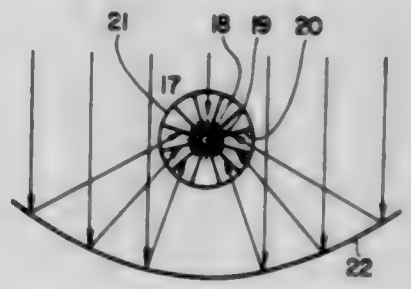
4,494,529

SOLAR TRAP

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Division of Ser. No. 095,535, Nov. 19, 1979, which is a continuation-in-part of Ser. No. 574,529, May 5, 1975, abandoned. This application Dec. 30, 1981, Ser. No. 335,905
Int. Cl.[3] F24J *3/02*
U.S. Cl. 126—439 4 Claims

1. A device for concentrating and collecting the solar energy comprising in combination:
(a) a sun light funneling and absorbing assembly including a transparent tubing; a plurality of flat dual-sided reflecting members disposed radially in a substantially axisymmetric pattern within said transparent tubing wherein the angle between two adjacent reflecting surfaces of said plurality of flat dual-sided reflecting members is greater than six degrees and less than thirty five degrees and the distance between the outer edges of two adjacent reflecting surfaces of said plurality of flat dual-sided reflecting members is greater than one and three quarters inches; a heating vessel disposed coaxially inside of said transparent tubing for carrying a heating fluid; and a plurality of heat absorbing fins affixed to and extending radially from said heating vessel a short distance in a substantially axisymmetric pattern wherein each of said plurality of heat absorbing fins is disposed intermediate an adjacent pair of said flat dual-sided reflecting members; whereby, the sunlight entering through said transparent tubing in a substantially radial direction with respect to said assembly is funneled toward said heating vessel by said plurality of flat dual-sided reflecting members and absorbed by said plurality of heat absorbing fins through the repeated irradiation process wherein the sunlight is reflected back and forth between one of said flat dual-sided reflecting members and one adjacent heat absorbing fin, and between two adjacent heat absorbing fins of said plurality of heat absorbing fins; and



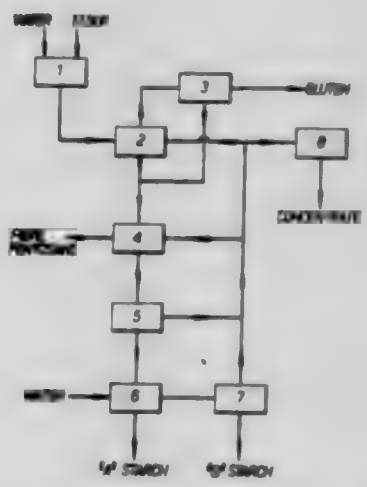
(b) one or more curved light reflecting surfaces disposed about said sunlight funneling and absorbing assembly wherein said one or more curved light reflecting surfaces reflects the sun light towards said sunlight funneling and absorbing assembly in a roughly focused manner.

4,494,530

SEPARATION OF GLUTEN AND STARCH FROM WHEAT FLOUR

Wytze Jansma; Jan Mars, both of Nijmegen; Pieter G. Stoutjesdijk, Wychen, and Herman J. Vegter, Santpoort, all of Netherlands, assignors to Latenstein Zetmeel B.V., Rotterdam, Netherlands

Filed Mar. 15, 1983, Ser. No. 475,507
Claims priority, application United Kingdom, Mar. 25, 1982, 8208768
Int. Cl.[3] C13L *1/00*
U.S. Cl. 127—69 3 Claims



1. A process for separating wheat starch and gluten, present in a pentosan-containing aqueous wheat flour slurry, which process comprises the steps of feeding said aqueous flour slurry into a first section of a hydrocyclone apparatus which delivers a starch-rich underflow fraction, and an overflow fraction containing gluten and some starch; removing agglomerated gluten from said overflow fraction by screening; centrifuging the starch-containing throughput from this screening operation and the underflow fraction from said first section of the hydrocyclone apparatus thereby to separate off a pentosan-contain-

ing water fraction as centrifuge overflow; and feeding the centrifuge underflow into a second section of the hydrocyclone apparatus in which second section starch is washed in counter-current with water and from which a concentrated washed starch fraction is delivered as underflow, whereby the separation of the pentosan-containing water fraction improves the yield of starch from the second section of the hydrocyclone apparatus.

4,494,531

EXPANDABLE BLOOD CLOT FILTER

Cesare Gianturco, Champaign, Ill., assignor to Cook, Incorporated, Bloomington, Ind.

Filed Dec. 6, 1982, Ser. No. 447,420
Int. Cl.³ A61M *29/00*; A61B *19/00*
U.S. Cl. 128—1 R
14 Claims



1. A blood clot filter for positioning within the fluid passageway of a blood vessel in a human body, comprising:

a shape memory wire, said wire contractible from a first position wherein said wire is substantially straightened to permit insertion of the filter within the lumen of an angiography catheter, to a second position wherein said wire is contracted along its length to form a curly wire mesh, the potential energy stored in said wire in its first position being sufficient to force said wire into its second position and into urging contact with the intimal wall of said blood vessel at a multiplicity of contact points, thereby aiding the anchoring of said filter at a desired body location within said blood vessel and encouraging endothelization and fibrotic encasement at said contact points, said wire having a sufficiently small diameter to prevent substantial occlusion of said blood vessel when said filter is implanted therein; and

anchoring means on said wire for anchoring said filter at a determined body location within said blood vessel, said anchoring means including a plurality of sharp projections for penetrating into said intimal wall of said blood vessel; said projections being positioned at the opposite ends of said filter, said projections at the forward end of said filter each including a barb sharpened at both ends, said barbs being adapted to pierce the intimal wall of said blood vessel and to hook in place to resist extraction.

4,494,532

TILTING HEALTH TABLE APPARATUS

Teruo Masuda, Tokyo, and Kazuyuki Yamaguchi, Sayama, both of Japan, assignors to France Bed Co., Ltd., Tokyo, Japan

Filed May 25, 1983, Ser. No. 498,142
Claims priority, application Japan, Jun. 17, 1982, 57-90511[U]; Dec. 10, 1982, 57-216367; Feb. 17, 1983, 58-21973[U]
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—71
10 Claims

1. A tilting health table apparatus comprising:

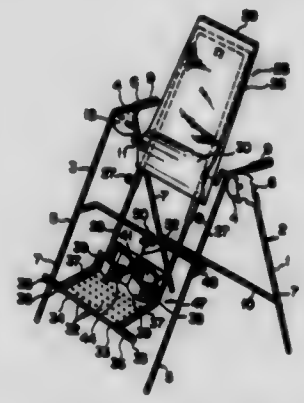
a leg assembly;

a pair of first handles fitted in a substantially horizontal manner to both sides of the upper portion of the leg assembly;

a table rotatably mounted on said leg assembly to support a user;

stopper means for keeping said table in a prescribed position to restrict its movement;

a foot board mounted on one end of said table, said foot board being provided with a foot-gripping means for securely gripping the user's legs, said foot-gripping means



including a first support board rotatably mounted on said table, a second support board fixed to said table and means for securely mounting said first support board on said second support board; and

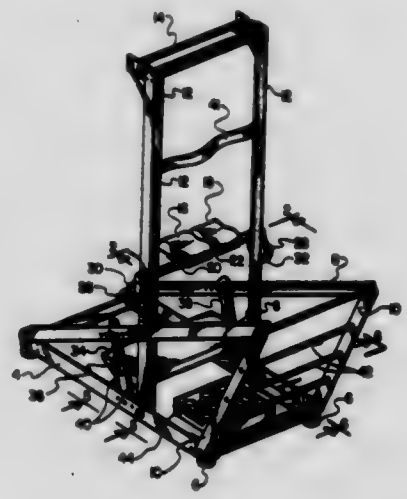
a pair of second handles projectively fitted to both sides of said foot board.

4,494,533

ASYMETRICALLY ADJUSTABLE TRACTION DEVICE

Nunzio B. Sgroi, 30830 Janlor Dr., Westlake Village, Calif. 91362, and Patrick E. Duffy, Hemet, Calif., assignors to Nunzio Sgroi, Camarillo, Calif.

Filed Apr. 6, 1982, Ser. No. 366,096
Int. Cl.³ A61H *1/02*
U.S. Cl. 128—75
9 Claims



1. A traction device of the type having an upstanding frame and a body support means carried on the frame for suspending a person from the midsection region in order to stretch the spinal column, the improvement comprising:

first and second body support members having noncircular contoured surfaces for receiving the left and right sides of a person's midsection region, respectively,

means for mounting said body support members to said frame generally adjacent each other and elevated sufficiently for a person to be suspended over said members with the left and right sides of the midsection respectively supported on the first and second members, and said means for mounting comprises first and second rotational members respectively mounting the first and second body support members, the angular orientation of the body support members being determined by the rotational position of their respective rotational members, and

means for independently adjusting the angular orientations of said first and second body support members about the same general horizontal axis, whereby the amount of

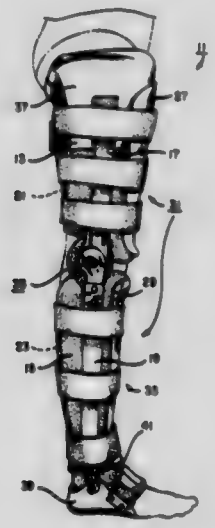
stretch imparted to the left and right sides of the body may be independently controlled.

4,494,534

UNIVERSAL LEG BRACE SYSTEM

Floyd E. Hutson, Arlington, Tex., assignor to Medical Designs, Inc., Azle, Tex.

Filed Mar. 7, 1983, Ser. No. 472,927
Int. Cl.[3] A61F *3/00*
U.S. Cl. 128—80 F 18 Claims



1. A universal leg brace system for supporting and controlling the degree of motion permitted by a wearer's knee, comprising:

a. first and second flexible sheets of cushioned material, one of which being adapted for snugly wrapping around the wearer's thigh and the other being adapted for snugly wrapping around the wearer's calf, the width of each sheet being sufficient to circumferentially envelop at least most of its associated leg member, the length of each sheet being sufficient to encompass more than half the length of its respective leg member; said flexible sheets being selectively removeable and replaceable around the wearer's leg member;

b. first and second pairs of elongate braces, each of said braces being relatively stiff so as to resist both torsion and bending loads, said first pair of elongate braces being adapted to lie on opposite sides of the wearer's thigh and the second pair of elongate braces being adapted to lie on opposite sides of the wearer's calf;

c. at least first and second pairs of rear stays adapted for being connected respectively with said first and second flexible sheets for providing posterior structural support in the longitudinal direction; said first pair of rear stays being adapted to provide posterior structural support in the longitudinal direction along the posterior of the thigh; said second pair of rear stays being adapted to provide posterior structural support in the longitudinal direction along the posterior of the calf;

d. means for connecting said first and second pairs of rear stays with said first and second flexible strips;

e. tibial plate adapted for being connected respectively with said other flexible sheet around the wearer's calf for providing anterior structural support in the longitudinal direction; said tibial plate being adapted to provide anterior structural support in the longitudinal direction along the anterior portion of the calf;

f. means for adjustably positioning and selectively attaching said first and second pairs of elongate braces to said flexible sheets and said tibial plate to the exterior sides of said other sheet after said sheet has been wrapped around the wearer's calf leg member, said braces having central ends which are near one another when respective sheets are wrapped around their respective associated leg members and the braces are attached to the respective sheets;

g. hinge means attached to respective central ends of said braces and adapted to lie on each side of the wearer's knee; said hinge means being effective for controlling the angle that is formed by the two braces on a given side of the wearer's leg; and

h. a plurality of strong straps which are selectively attached to said braces and encompass respective said braces, rear stays and plates and which are adapted to be wrapped circumferentially around the wearer's respective leg members; said straps having connection means so that they can be placed in tension around the wearer's leg and secured to said braces and hold in place said braces, rear stays and plates for providing substantial structural support without the necessity of a totally encompassing leg cast;

i. a femoral plate adapted for being connected with said one of said flexible sheets and for providing anterior structural support in the longitudinal direction along the anterior portion of the thigh of the wearer; said femoral plate being adapted to be encompassed by said straps about said thigh of a wearer; and

j. means for at least temporarily connecting said femoral plate with said one of said flexible sheets snugly wrapped around the wearer's thigh; said means for attaching said femoral plate being means for adjustably positioning and selectively attaching said femoral plate prior to being encompassed by said strong straps.

4,494,535

HIP NAIL

Armen C. Haig, 85 Pondfield Rd., Bronxville, N.Y. 10708

Filed Jun. 24, 1981, Ser. No. 277,039
Int. Cl.[3] A61F *5/04*
U.S. Cl. 128—92 BA 3 Claims

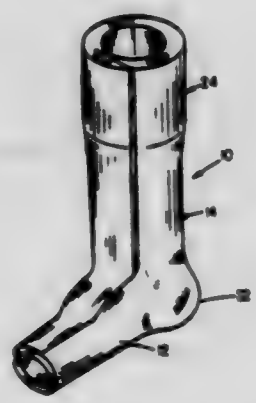


1. In a hip fixation nail for treating a fractured hip bone comprising a shank having a head portion at the distal end thereof, the head portion comprising a plurality of flanges separated by fluted areas, the entire length of the nail being cannulated by a bore; an elongated plate, attachable by means of fasteners to said bone, having bore means adjacent one end thereof for cooperatively receiving said shank; the improvement wherein a plurality of ports are located in the fluted areas in communication with the bore adjacent the distal end to allow deposition of a hardenable liquid polymeric material in the area surrounding the head portion but not at the fracture site in the hip bone to form a tighter bond between the nail and the fractured hip bone.

4,494,536
FOAM BOOT

John F. Latemser, 604 Ridgewood Ave., Omaha, Nebr. 68114

Filed Dec. 1, 1982, Ser. No. 445,908
Int. Cl.³ A61F 5/30
U.S. Cl. 128—153 2 Claims

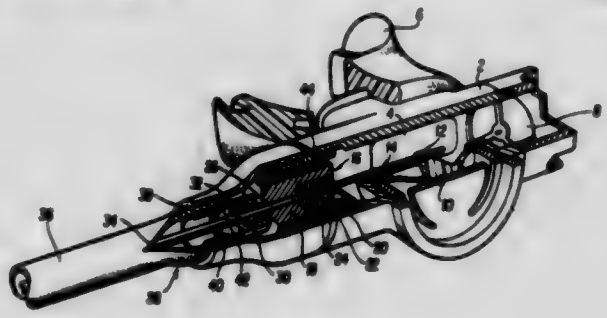


1. A foam boot for use on medical patients, comprising,
a foot embracing portion for embracing the patient's foot and including an open forward toe end,
a leg embracing portion extending upwardly from said foot embracing portion for embracing a predetermined portion of the patient's leg,
said foot and leg embracing portions being of one-piece construction,
said foot and leg embracing portions being comprised of a cushion foam material,
said foot and leg embracing portions having tapered overlapping edge portions to permit the boot to be closely and evenly positioned on the patient's foot and leg,
said foot embracing portion having inner and outer margins, said foot embracing portion having an increased thickness along the outer margin thereof,
said foot embracing portion also having a heel portion and having an increased thickness circumferentially about the heel portion thereof,
said increased thicknesses providing additional cushioning for the patient's foot and heel,
the height of said leg embracing portion being greater than needed to permit the upper end of said leg embracing portion to be cut off to the desired length,
the length of said foot embracing portion being greater than needed to permit the forward end thereof to be cut off as required.

4,494,537
BREATHING APPARATUS FOR SUPPLYING FLUID TO A USER ON DEMAND

Mark P. Gottlieb, 941-B 25th St., N.W., Washington, D.C. 20037

Filed Jun. 8, 1982, Ser. No. 386,396
Int. Cl.³ A62B 7/00; B63C 11/00
U.S. Cl. 128—204.26 8 Claims



1. A breathing apparatus for supplying fluid to a user on demand, said apparatus comprising:
a source of fluid under elevated pressure;
a casing having an outlet for said user;
fluid supply valve means connected to said source, said fluid supply valve means being positioned adjacent said source;
a first conduit providing a fluid path between said fluid supply valve means and said casing;
pilot valve means in said casing;
means supplying a fluid signal from said pilot valve means to said fluid supply valve means for opening said fluid supply valve means wherein said means for supplying a fluid signal comprises a second conduit connected between said pilot valve means and said fluid supply valve means; and
fluid pressure sensitive actuator means in said casing for actuating said pilot valve means;
wherein said fluid valve means includes means for supplying fluid under elevated pressure to said second conduit and wherein said second conduit is connected to said pilot valve means for supplying said fluid under elevated pressure to said pilot valve means and a valve element sensitive to a change of fluid pressure in said second conduit, said valve element being operative to provide a fluid flow path between said source and said first conduit.

4,494,538
MASK ASSEMBLY

William K. Ansite, Glendale, Calif., assignor to Figgie International Inc., Willoughby, Ohio

Filed Apr. 6, 1983, Ser. No. 482,622
Int. Cl.³ A62B 7/00
U.S. Cl. 128—205.25 9 Claims



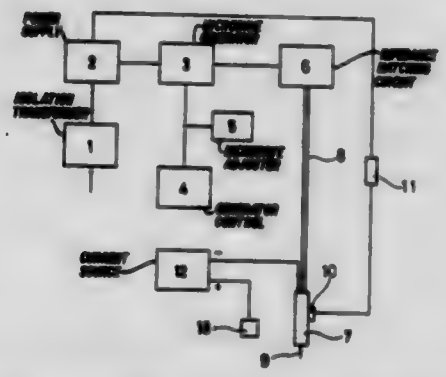
1. A oral nasal mask assembly adapted for use with a source of pressurized breathing gas and adapted to be either placed directly over a patient's face or to be connected to a gas mask previously being worn by the patient, said gas mask having an exhalation valve and a filter for filtering gases passing into the gas mask, said filter including means defining an inlet; said oral nasal mask assembly comprising:
an oral nasal mask which can be placed over the face of a patient:
a source of pressurized breathing gas;
tubing means having one end connected to said source of pressurized breathing gas, connector tube means connected to said oral nasal mask and having a first end extending into and terminating within said oral nasal mask and an opposite second end connected to the other end of said tubing means, said first end of said connector tube means adapted to be secured within the inlet of said gas mask in an airtight relationship; and
holding means capable of holding the oral nasal mask over a patient's face in the event the patient is not wearing a gas mask.

4,494,539

METHOD AND APPARATUS FOR SURGICAL OPERATION USING MICROWAVES

Toshio Zenitani, 1-23-603, Nigawa-kita 1-chome, Takarazuka-shi, Hyogo-ken, Japan (665), and Katsuyoshi Tabuse, 831-54, Otani, Wakayama-shi, Wakayama-ken, Japan (640)

Filed May 4, 1982, Ser. No. 374,884
Claims priority, application Japan, Apr. 3, 1982, 57-55583; Apr. 3, 1982, 57-55584
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—303.1 3 Claims



1. A surgical operation method utilizing microwave energy comprising the steps of:

inserting a monopolar type operating electrode into bio-tissue;

radiating microwave energy from said operating electrode into said bio-tissue for performing coagulation, hemostasis, or transection on said bio-tissue with thermal energy generated from the reaction of said microwaves on said bio-tissue; and

applying a predetermined cathodal current for a predetermined period to said operating electrode after completion of said radiation of microwave energy, thereby generating moisture by electrolysis on an interface between said operating electrode and said bio-tissue to enable said operating electrode to be dissociated from said bio-tissue.

4,494,540

UNIVERSAL MICROSLAD

Robert C. Erb, 433 Brockmont Dr., Glendale, Calif. 91202

Filed Nov. 2, 1982, Ser. No. 438,612
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—303.1 42 Claims



1. An apparatus for directionally controlling transmission of a laser beam or the like to a target area, comprising in combination,

a housing having first a chamber with an open terminus for introduction of the beam or the like for transmission therealong, and second a passageway formed by wall means in said housing intersecting the chamber, the passageway open to atmosphere and providing an unobstructed line of sight to the target area for an operator utilizing said apparatus,

lens means mounted in the chamber for focusing such beam or the like,

a specular element mounted in said housing in alignment with such chamber for directing the beam or the like transmitted through the chamber to atmosphere in the direction of the target area,

means mounted on said housing and being operatively connected to said specular element for moving the element, thereby directionally controlling such beam or the like as it is being transmitted in the direction of the target area from said specular element, said moving means being manipulatable exteriorly of said housing, and

means for universally mounting and rotating the housing to an adaptor or the like,

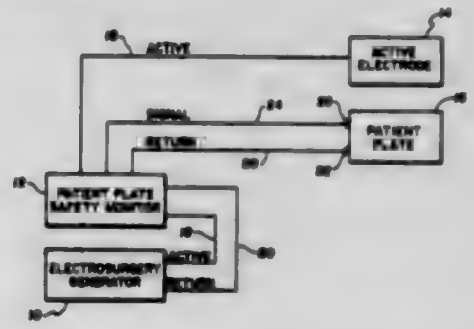
said mounting and rotating means formed in a body portion of said housing forming such passageway.

4,494,541

ELECTROSURGERY SAFETY MONITOR

G. Kent Archibald, White Bear Lake, Minn., assignor to Medical Plastics, Inc., Milford, Conn.

Division of Ser. No. 113,106, Jan. 17, 1980, Pat. No. 4,303,073.
This application Nov. 2, 1981, Ser. No. 317,555
Int. Cl.³ A61B *17/36*
U.S. Cl. 123—303.13 9 Claims



1. In an electrosurgery system having an active electrode which is selectively activated to receive current from an electrosurgery generator and apply the current to the patient and having a return electrode for connection to the body of the patient to return the current from the patient to the generator, the improvement comprising:

sensing means for sensing a parameter indicative of area of contact between the return electrode and the body of the patient;

alarm means responsive to the sensing means for providing an alarm signal if the area of contact is less than a predetermined amount; and

disable means responsive to activation of the active electrode for disabling the alarm means to prevent the alarm signal from being provided when current is supplied to the active electrode, while permitting the sensing means to continue to sense the parameter.

4,494,542

SUTURE CUTTER, EXTRACTOR AND METHOD TO CUT AND REMOVE SUTURES

Mary K. Lee, 176 Lydican Ave., Ext., Chatham, Ontario, Canada N7L 3E8

Filed Jun. 7, 1982, Ser. No. 386,004
Claims priority, application Canada, Mar. 31, 1982, 400253
Int. Cl.³ A61F *17/32*
U.S. Cl. 128—305 8 Claims

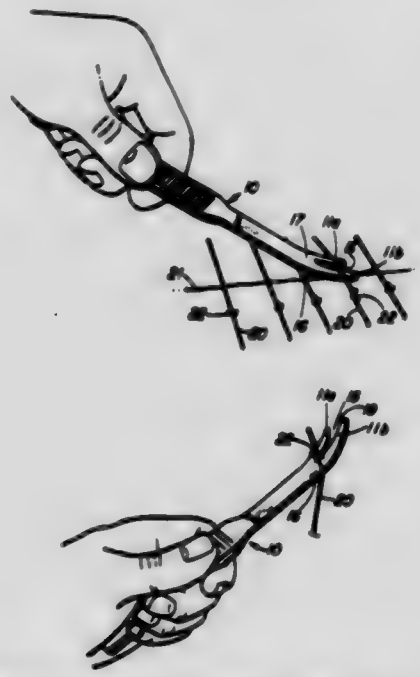
1. Apparatus for cutting and extracting a suture, comprising:

a longitudinally extending body;

a handle extending from an end of said body;

a pair of curvilinear tine means extending from the other end of said body, and curving outwardly upwardly above a plane through the handle and the longitudinal axis of said body, the tine means having blunt innermost edges and rounded free ends insertable under the suture, wherein the tine means are of unequal length, the longer tine longer of said tine means being adapted for insertion under the suture, and the tine means having rounded free ends with blunt edges to avoid injuring a patient;

a slot between the tine means open at the free ends thereof to admit and receive the suture when one of said free ends is inserted thereunder, said slot having converging edges defined by said innermost edges of said tine means and a closed end at the body to snare and retain a knot in said suture; and



a cutting edge disposed along a portion of an outermost side edge of at least one of said tine means adjacent the closed end of the slot, whereby rotation of the body about the knot in the suture engages the cutting edge with the suture for severing the suture which is then removed by lifting the knot in said suture snared and retained in the closed end of said slot.

4,494,543

INSTRUMENT FOR EXTRACTING SPLINTERS

Ernest D. Hart, 4006 E. Andrews, Fresno, Calif. 93726

Filed Mar. 5, 1982, Ser. No. 354,144

Int. Cl.[3] A61B *17/30*

U.S. Cl. 128—354

5 Claims



1. An instrument for extracting splinters and the like comprising:

A. an elongated handle having a pair of opposite ends and defining a central cavity extended longitudinally within the handle from one such end;

B. a pair of elongated arms which are mounted on the handle and disposed transversely oppositely and exteriorly thereof and are extended longitudinally thereof, the arms having respective jaws which are extended longitudinally from the handle beyond said one end and are aligned in a direction transversely thereof, one of the arms being mounted on the handle for movement of the jaw thereof from the other of the jaws and toward such other jaw for engagement therewith, and such one arm having means for resiliently urging the jaw thereof from such other jaw;

C. an elongated member having a piercing end and an opposite end, said member extending within the cavity with the piercing end disposed at such one end of the handle and said member being received in the cavity for movement longitudinally of the cavity between a retracted position in which the piercing end is longitudinally spaced from the jaws in a direction toward the end of the handle opposite such one end and an extended position in which said end is extended beyond the jaws longitudinally of the handle from the cavity and said one end;

D. retracting means for resiliently urging the elongated member longitudinally of the handle in a direction from the extended position toward the retracted position;

E. manually actuatable extending means for urging the elongated member into the extended position from the retracted position against the urging of the retracting means;

F. means for latching the elongated member to the handle to retain said member in the extended position when the elongated member is urged thereto by the extending means; and

G. manually actuatable means for unlatching the elongated member from the handle when said member is latched thereto in the extended position so that said member moves to the retracted position under the urging of the retracting means.

4,494,544

RELAY FOR A HEART DEFIBRILLATOR

Willibrordus J. S. Lambert, Eindhoven, Netherlands, assignor to Honeywell Inc., Minneapolis, Minn.

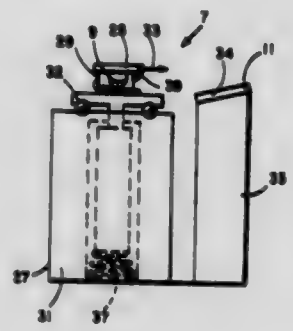
Continuation of Ser. No. 077,424, Sep. 20, 1979, abandoned. This application Oct. 15, 1980, Ser. No. 197,365

Claims priority, application Netherlands, Sep. 27, 1978, 7809766

Int. Cl.[3] H61R *1/30*

U.S. Cl. 128—419 D

5 Claims



1. A relay for a heart defibrillator comprising:

relay coil means for actuating the relay;

pivotable armature means which rotates to a first rotational position from a second rotational position when the relay coil means is energized and which further moves axially to a first axial position from a second axial position when the relay coil means is energized;

spring means for forcing the armature to the second axial position when the relay coil means is not energized;

a switching arm secured to the armature means for rotation and axial movement therewith, comprising a strip of electrically non-conductive rigid material and having a smallest dimension oriented perpendicular to the plane of rotation of the arm;

a moveable contact disposed on an end of the arm which is remote from the armature for movement therewith; and a fixed contact disposed to engage a moveable contact when the relay is energized and having a contact face which encloses an angle between 5° and 30° in the direction of rotational movement of the moveable contact;

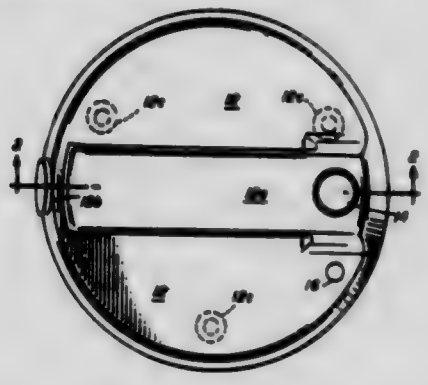
wherein the armature has sufficient axial movement between the first and second axial positions so that when the relay coil means is energized and the armature is in the first rotational position and the first axial position, the moveable contact is pressed against the fixed contact, while when energizing of the relay coil means is terminated the armature moves to the second axial position and the movable contact is clear of the fixed contact.

4,494,545

IMPLANT TELEMETRY SYSTEM

Chester D. Slocum, and John R. Batty, Jr., both of Miami, Fla., assignors to Cordis Corporation, Miami, Fla.

Division of Ser. No. 153,093, May 27, 1980, Pat. No. 4,361,153. This application Aug. 9, 1982, Ser. No. 406,367
Int. Cl.³ A61N 1/36
U.S. Cl. 128—419 P 21 Claims



1. External data telemetry apparatus for receiving data communications from a biomedical implant, comprising

a coil assembly having at least three coaxial spaced electrical coils,

transmitter means operatively interconnected with a middle one of said coils for radiating a magnetic carrier signal,

means for providing a pickup signal indicative of the difference between the voltages induced in at least one pair of other ones of said coils on opposite sides of said middle coil,

phase shift detector means operatively connected to receive said pickup signal for producing an output signal level as a function of the relative phase angle of said pickup signal,

and information signal processing means for digitally demodulating said output signal level to recover a digitally encoded data signal from said implant,

whereby digitally modulated resonance within the implant is effectively employed as a low power communications medium.

4,494,546

MATERNITY BATHING SUIT

Nancy Steiman, 950½ 16th St., Santa Monica, Calif. 90403

Filed Jun. 17, 1983, Ser. No. 505,444
Int. Cl.³ A41C 1/06, 1/08
U.S. Cl. 128—431 12 Claims



1. In a maternity garment having a front portion and a back portion each having left and right sides joined to each other at left and right side seams, the improvement comprising

first and second bands, each consisting substantially only of elastically deformable material, said first band supporting the lower abdomen of the wearer in the uterine area, and said second band supporting the small of the wearer's back, said bands being substantially rectangular and having left and right ends and upper and lower edges,

said ends of the first and second bands being connected respectively to the front and back portions of the garment and to each other at said side seams, and

the respective ends of the first and second bands being offset from each other, with the upper edge of the second band positioned higher on the body of the wearer than the upper edge of the first band.

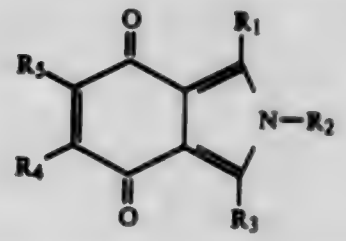
4,494,547

2H-ISOINDOLEDIONES, THEIR SYNTHESIS AND USE AS RADIOSENSITIZERS

John A. Myers, Durham, N.C., assignor to North Carolina Central University, Durham, N.C.

Filed Mar. 30, 1981, Ser. No. 248,793
Int. Cl.³ A61K 49/00; A61N 5/10
U.S. Cl. 128—659 19 Claims

12. A radiosensitizing composition for use in the radiotherapeutic treatment of cancerous tissues which comprises as an active ingredient an isoindoledione compound of the formula



wherein:

R_1 and R_3 each separately is phenyl, substituted phenyl, alkyl of 1 to 4 carbons, —CHO, —CH_2OR_6, —CO_2R_6, —COR_6, hydrogen, or together with R_2 are a divalent alkyl or alkenyl group of 3 to 5 carbons which form a cyclic ring;

R_2 is phenyl, substituted phenyl, —CH_2OR_6, —$CH_2CH_2OR_6$, alkyl of 1 to 4 carbons or with either R_1 or R_3 is a divalent alkyl or alkenyl group of 3 to 5 carbons which form a cyclic ring;

R_4 and R_5 which may be the same or different is hydrogen, alkyl of 1 to 4 carbons, —OR_6, —CO_2R_6, —COR_6, —CHO, —CH_2OR_6 or together R_4 and R_5 are a butadiene radical which form a benzene ring;

R_6 is hydrogen or alkyl of 1 to 4 carbons; together with a pharmaceutically acceptable carrier.

15. A method for the radiotherapeutic treatment of cancerous tissues in mammals which comprises:

(a) administering to said mammal, in an amount effective to enhance subsequent radiation of cancerous tissue, a radiosensitizing composition as claimed in claim 12; and

(b) subsequently exposing the cancerous tissue to radiation whereby enhanced radiation of the tissue is achieved.

4,494,548

ULTRASONIC SECTOR SCANNER

Georges Baon, Flushing, and Howard Fidel, Hartsdale, both of N.Y., assignors to Biosound, Inc., Indianapolis, Ind.

Filed Apr. 20, 1982, Ser. No. 370,014
Int. Cl.³ A61B 10/00
U.S. Cl. 128—660 6 Claims

1. A diagnostic probe comprising:

a transducer means for supplying and receiving a diagnostic energy beam,

scanning means for producing a sector scan of said transducer means, said scanning means including a cam means and an input shaft rotatable about a first fixed axis, and cam follower means in contact with said cam means and said transducer means for translating rotation of said cam means into oscillation of said transducer means about a second fixed axis,

drive means for said scanning means including a motor means and Cardon joint, and a driveshaft means connecting said motor means to said Cardon joint, said scanning means input shaft being connected to said Cardon joint and serving as the output shaft therefrom, said driveshaft

means and said input shaft being at a fixed predetermined angle at said joint,

said scanning means cam and cam follower means being adapted to compensate for variations in rotational angular velocity of said scanning means input shaft due to the said predetermined Cardon joint angle whereby a linear relationship is maintained during transducer scanning between the change in transducer means scan angle as defined by the angle formed between the scan axis during scan motion and the scan axis at a fixed reference orientation, and the change in angle of rotation of said driveshaft means relative to a fixed reference rotational position, whereby linear sector scanning is enacted, and

housing means for providing an enclosure for said transducer means, said scanning means and said drive means while allowing entry and exit of said energy beam and a connection of said diagnostic probe to associated equipment.

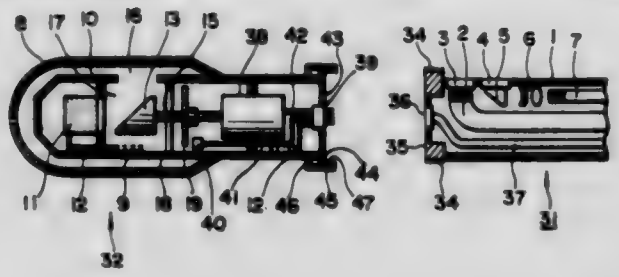


4,494,549

DEVICE FOR DIAGNOSING BODY CAVITY INTERIORS WITH SUPERSONIC WAVES

Akihiro Namba, and Mitsuga Sakai, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 13, 1982, Ser. No. 377,924
Claims priority, application Japan, May 21, 1981, 56-77221
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 2 Claims



1. A device for diagnosing the interior of a body cavity comprising:

an optical endoscope part adapted to be inserted into said body cavity;

a supersonic wave scan head assembly adapted to be inserted into said body cavity and attached distal to said optical endoscope part; and

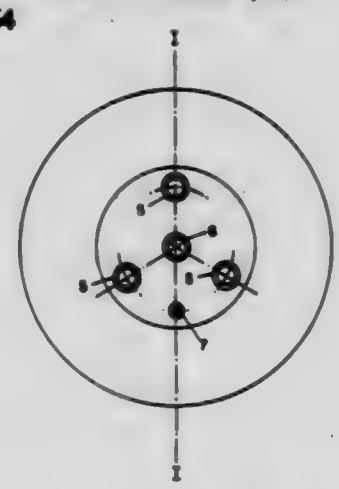
connecting means arranged on said endoscope part and on said supersonic wave scan head assembly for removably physically and operatively attaching said supersonic wave scan head assembly distal to the end of said endoscope part, a lid part having connecting means thereon adapted for connection to said optical endoscope part whereby said lid part may be removably attached to said endoscope part connecting means when said supersonic wave scan head assembly is detached therefrom, whereby said endoscope part may be used with said supersonic wave scan head assembly attached thereto for both optical observations and supersonic wave diagnosis within a body cavity and may be used within a body cavity for optical obeservations only with said supersonic wave scan head assembly detached.

4,494,550

MEASURING APPARATUS FOR THE NON-INVASIVE DETECTION OF VENOUS AND ARTERIAL BLOOD FLOW AND DRAINAGE DISORDERS

Vladimir Blazek, Butzweide 14, and Volker Wienert, Elsenborn 53, both of D-5100 Aachen, Fed. Rep. of Germany

Filed Jan. 11, 1982, Ser. No. 338,507
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1981, 3100610
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—664 6 Claims



1. A measuring apparatus for the non-invasive detection of peripheral drainage and blood flow disorders in human extremities, the emptying or filling of blood in the veins or arteries of an extremity being detectable in its timely progress, comprising:

(a) a measuring head adapted to be affixed to the skin of the extremity;

(b) a plurality of radiation sources adapted to emit radiation of the same wave length and mounted in said measuring head spaced from each other for directly contacting the skin, each of said radiation sources being adapted to direct radiation onto a respective area of the skin along a path perpendicular to the skin;

(c) means connected to said radiation sources for modulating said radiation sources;

(d) a radiation receiver mounted in said measuring head spaced from said plurality of radiation sources for directly contacting the skin and adapted for measuring the amount of radiation reflected or dispersed back by the cutaneous vascular plexus at an area of the skin different from said areas of the skin subjected to radiation from said radiation sources;

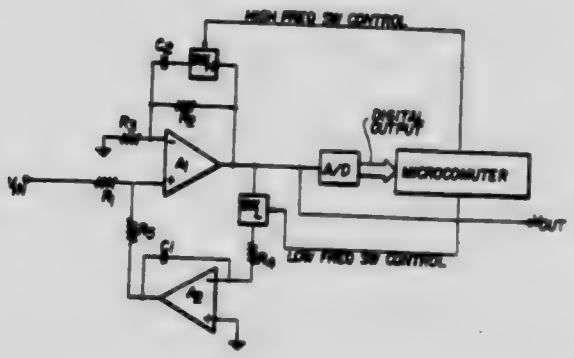
(e) a temperature sensor mounted in said measuring head for directly contacting the skin and measuring the skin temperature simultaneously with the measurement by said radiation receiver of said reflected or dispersed back radiation; and

(f) an electronic evaluation circuit connected to said radiation receiver and to said temperature sensor for selectively detecting and recording the progress of the reflected or dispersed amount of radiation and the skin temperature as functions of time, said electronic evaluation circuit including a low-pass filter with a limit frequency for suppressing interference resulting from modulation of the measured signal from said radiation receiver due to the pulse of blood in the blood vessels of the skin.

4,494,551
ALTERABLE FREQUENCY RESPONSE ELECTROCARDIOGRAPHIC AMPLIFIER

Charles A. Little, III, Palm Bay, and Raymond B. Patterson, III, Melbourne, both of Fla., assignors to Medicomp, Inc., Melbourne, Fla.

Filed Nov. 12, 1982, Ser. No. 441,175
Int. Cl.³ A61B 5/04
U.S. Cl. 128—696
7 Claims



1. In an electrocardiographic amplifier including amplifying means, detecting means for detecting low frequency noise above a predetermined magnitude, and gain adjusting means responsive to said detecting means for adjusting the low frequency portion of said amplifying means gain by a fixed magnitude to control said noise, the improvement comprising:

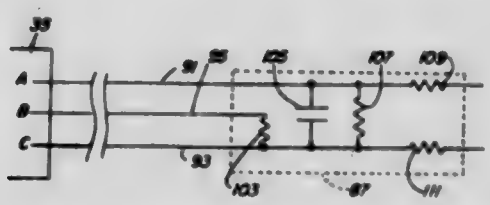
said detecting means detects a plurality of low frequency noises and provides one of a plurality of adjustment signals having a duty cycle as a function of the detected low frequency noise; and

said adjusting means adjusts said low frequency portion of said amplifying means gains to one of a plurality of magnitudes as a function of said adjustment signals, and includes an integrated means connected between the output and the input of said amplifying means in a feedback path and a switch means in series with said integrating means for enabling or disabling said feedback path in response to said adjustment signal to adjust the time constant of said grating means.

4,494,552
PHYSIOLOGICAL MONITORING ELECTRODE SYSTEM

Roger L. Heath, Prospect Heights, Ill., assignor to R2 Corporation, Skokie, Ill.

Division of Ser. No. 176,270, Aug. 8, 1980, Pat. No. 4,419,998.
This application Mar. 17, 1983, Ser. No. 476,326
Int. Cl.³ A61B 5/04
U.S. Cl. 128—696
12 Claims



1. A physiological monitoring electrode system for use with an ECG comprising:

first and second electrode elements to be attached to a patient;

first electrically conducting means connecting said first electrode element to a first input of the ECG;

second electrically conducting means connecting said second electrode to a second input of the ECG;

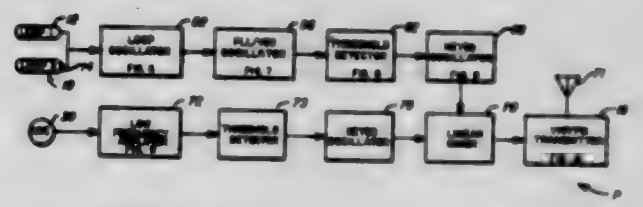
a body tissue impedance simulating circuit connected to said first and second conducting means; and

third electrically conducting means connected from said body tissue impedance simulating circuit to a third input of the ECG, said body tissue impedance circuit providing an impedance between said third conducting means and at least one of said first and second conducting means to give the appearance that the third input of the ECG is connected to a third electrode on the patient, thereby permitting said first and second electrode elements to provide input information to the ECG from the patient that normally requires the use of a minimum of three separate electrodes and the associated leads.

4,494,553
VITAL SIGNS MONITOR

Michael J. Sciarra, Southampton, and Victor L. Castaro, Farmingville, both of N.Y., assignors to F. William Carr, Houston, Tex.

Filed Apr. 1, 1981, Ser. No. 250,068
Int. Cl.³ A61B 5/08
U.S. Cl. 128—721
28 Claims



1. Apparatus for monitoring vital signs in patients, comprising:

(a) transducer means for detecting vital signs of such a patient, said transducer means comprising first and second inductive coil means wherein each coil means comprises a coil whose core area remains constant in size;

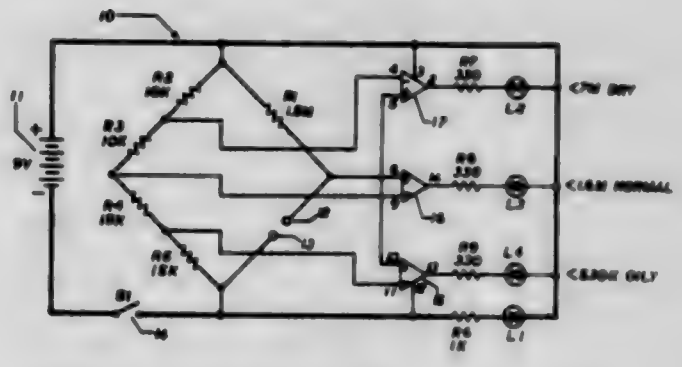
(b) means for mounting said transducer means relative to the patient's thorax whereby said first and second coil means are mounted spaced from each other so that, as the patient's thorax moves on breathing, said first and second coil means move with respect to each other to change the mutual inductance of said first and second coil means in response thereto; and

(c) transmitter means for forming a radio signal which changes according to changes in the mutual inductance of said first and second coil means due to relative movement of said first and second coil means reflecting changes in the patient's breathing.

4,494,554
SKIN TEST DEVICE USING I.C. COMPARATOR CIRCUIT

Helga M. Van Dyke, 469 Wellington Rd., Orange, Calif. 92669, and Rudolph C. DeGroot, Sr., Laguna Niguel, Calif., assignors to Helga M. Van Dyke, Orange, Calif.

Filed Sep. 25, 1981, Ser. No. 305,547
Int. Cl.³ A61B 5/05
U.S. Cl. 128—734
4 Claims



1. A portable device for testing skin or scalp resistance to determine an oily, normal and dry skin condition, comprising:

a. a battery driven bridge circuit providing preset, fixed

resistances in a first set of adjacent legs of the bridge circuit;

b. a skin surface probe-touchplate and battery drain resistance in a second set of adjacent legs of the bridge circuit opposed to the first set of legs, the probe-touchplate being adapted to test an area of skin for resistance corresponding to the skin condition;

c. a plurality of I.C. comparators connected in the bridge circuit adapted to turn on and off when comparing with a skin resistance that is equivalent to oily, normal and dry of respectively about: 15K–18K; 30K–35K; and, 42K–50K ohms corresponding to the fixed resistances in the first set of legs of the bridge circuit;

d. light indicators associated with each of the comparators for instantaneous actuation when the associated comparator changes state; and,

e. biasing resistances associated between each comparator and its associated light indicator;

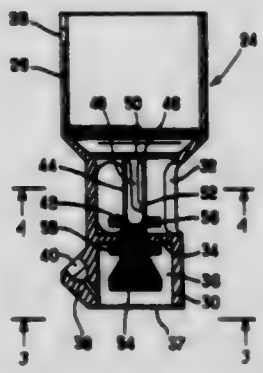
the battery voltage for driving the bridge circuit, comparators and light indicators being about 5–12 volts; whereby: i. the light indicators serially activate when the comparators change state upon equalling the resistance associated with a particular skin condition; and, ii. when a skin resistance occurs between resistances defining the particular skin condition, thereby activating two light indicators, a selection is made based primarily on which light indicator is initially actuated, and secondarily on which light indicator is subsequently actuated.

4,494,555

DISCONNECTIBLE APPARATUS COMPRISING A DOUBLE BAYONET COUPLING

André H. Abrioux, Dracy; Pierre Corcuff, Neuilly sur Marne, and Jean L. Leveque, Le Raincy, all of France, assignors to L'Oreal, Paris, France

Filed Mar. 11, 1983, Ser. No. 474,456
Claims priority, application France, Apr. 8, 1982, 82 06173
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—755 15 Claims



1. In a disconnectible apparatus comprising a double bayonet coupling between, on the one hand, a barrel supporting a rotary member, and, on the other hand, an end fitting supporting a rotor, wherein the rotor and the rotary member are intended to rotate, in use, around a common axis of rotation; the improvement wherein:

(a) the barrel and the end fitting include first bayonet coupling means connectible and disconnectible by relative rotation around said common axis of rotation,

(b) the rotary member and the rotor include second bayonet coupling means connectible and disconnectible by relative rotation around said common axis of rotation;

(c) one of said rotary member and said rotor comprising a spindle whose axis is the common axis of rotation, said spindle having at least one pin projecting substantially perpendicular to the said common axis of rotation;

(d) the other of said rotary member and said rotor comprises a sleeve coaxial with said common axis of rotation, and having a free end edge to receive said spindle; and

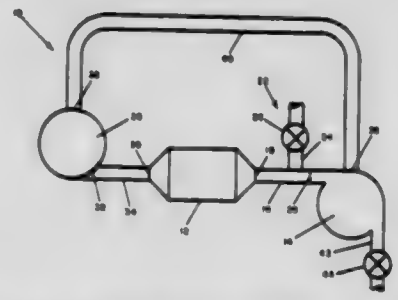
(e) said second bayonet coupling means include said spindle and said sleeve and further include a slot means comprising a first slot portion substantially parallel to said common axis of rotation and opening out at said free end edge of the sleeve, and a second slot portion joined to said first slot portion and inclined in relation to said common axis of rotation and in relation to a plane perpendicular to said common axis of rotation.

4,494,556

PNEUMATIC CONVEYING TOBACCO DRYING APPARATUS

Dan T. Wu, Jeffersontown, and Kevin R. Korte, Louisville, both of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Jan. 24, 1982, Ser. No. 391,882
Int. Cl.³ A24B *3/18*
U.S. Cl. 131—302 6 Claims



1. An apparatus for drying tobacco particles comprising:

heater means for heating tobacco drying and conveying gas passing therethrough;

a short duration tobacco-gas separator device located downstream of said heater means;

first duct means fluidly interconnecting the hot tobacco drying and conveying gas outlet of said heater means and the entrance of said separator device for establishing gas flow communication therebetween;

tobacco solids feed means located at the entrance of said separator device for introducing tobacco particles to be dried into the apparatus at the entrance of the separator device so that simultaneous drying of tobacco solids and separation of tobacco solids from said drying gas occur in said separation device;

gas moving means located upstream of the gas inlet of said heater means and in gas flow communication with the gas inlet of said heater means; and

second duct means establishing gas flow communication between the gas outlet of said separator device and the gas inlet of said gas moving means for recirculating the gas separated from said tobacco particles in said separator device back to said gas moving means.

4,494,557

METHOD OF CONDITIONING HAIR

Gerald D. Nagel, 6404 W. North Ave., Wauwatosa, Wis. 53213

Filed Sep. 20, 1982, Ser. No. 419,836
Int. Cl.³ A45D *7/00*; A61K *7/09, 7/06*
U.S. Cl. 132—7 8 Claims

I claim:

1. In a method of conditioning human hair to provide a long lasting permanent wave which includes the steps of applying a permanent wave solution to the hair to shape the hair followed by applying a neutralizer solution to the hair to neutralize the effect of the permanent wave solution and reconstitute the hair, the improvement comprising the steps of:

applying a reforming mixture to the hair after the hair has been shaped but prior to applying the neutralizer solution, said reforming mixture consisting essentially of magnesium sulfate, water and a reconstructor solution and having a magnesium sulfate to reconstructor weight ratio within the range of from about 0.7 to 1 to about 2.7 to 1 and a water to reconstructor weight ratio within the range of from about 1 to 1 to about 3.5 to 1; and

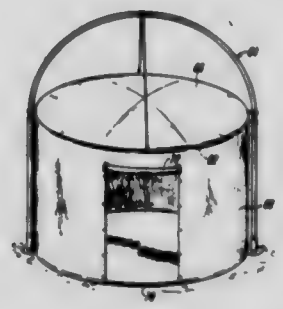
heating the hair for between about 15 to about 25 minutes after applying the reforming mixture but prior to applying the neutralizer solution.

4,494,558

ENCLOSURE AND FRAME THEREFOR

Raymond E. Fidler, Jr., P.O. Box 876, Port Aransas, Tex. 783

Filed Sep. 29, 1982, Ser. No. 427,956
Int. Cl.³ A45F *1/00*
U.S. Cl. 135—102 8 Claims



1. A multi-purpose support frame, comprising in combination an upright arch frame formed of a plurality of elongated, flexible resilient members connected together in end-to-end relationship,

said members being disposed in a common vertical plane,

a ring frame formed of a plurality of elongated flexible resilient members connected together in end-to-end relationship, and lying in a common plane,

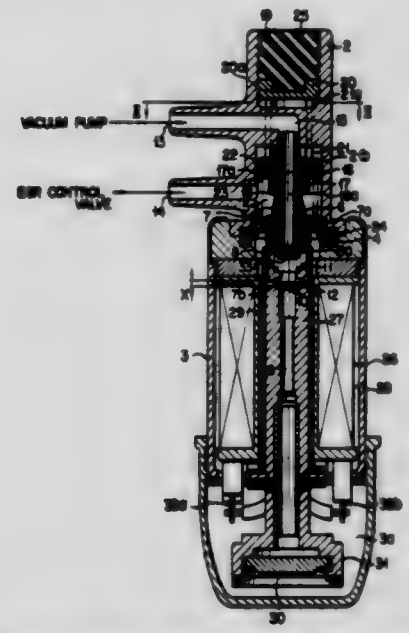
said ring frame being disposed within said arch frame, and mounted to said arch frame at opposite positions on said ring frame for slidable movement along said arch frame and for pivotal movement of said ring frame about an axis through said opposite positions providing for angular positioning of said ring frame within said arch frame, said ring frame members lying in a common plane at all angular positions of said ring frame.

4,494,559

NEGATIVE PRESSURE CONTROL APPARATUS

Setuo Kawamura, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Feb. 7, 1983, Ser. No. 464,136
Claims priority, application Japan, Feb. 10, 1982, 57-17508[U]
Int. Cl.³ G05D *16/06*
U.S. Cl. 137—116.5 6 Claims



1. A negative pressure control apparatus comprising:

a first housing defining a negative pressure chamber therein;

an inlet port which is arranged at said first housing and is adapted to be coupled to a vacuum source;

an outlet port which is arranged at said first housing, communicates with said negative pressure chamber, and supplies a controlled negative pressure;

a second housing defining an atmospheric pressure chamber kept at the atmospheric pressure therein;

a diaphragm which is interposed between said atmospheric and negative pressure chambers and is adapted to deform in accordance with a difference between the atmospheric and negative pressures in said atmospheric and negative pressure chambers;

a valve case of a magnetic material, which defines therein a communication channel for communicating said atmospheric and negative pressure chambers having a valve hole opening to said atmospheric pressure chamber and is supported by said diaphragm;

a tubular body which defines therein a negative pressure channel communicating with said inlet port, is inserted in said communication channel of said valve case, is supported to be movable along said communication channel, and has an opening open to said communication channel of said valve case;

a valve plug which is adapted to open/close said opening of said tubular body and said valve hole of said valve case;

means, urging said valve plug to said valve case and to said tubular body, for closing at least one of said opening of said tubular body and said valve hole of said valve case;

an electromagnet which is arranged inside said second housing and which attracts said valve case together with said valve plug which has closed said valve hole of said valve case so as to open said opening of said tubular body and to communicate said inlet port with said negative pressure chamber through said negative pressure and communication channel, at which time the negative pressure in said negative pressure chamber is decreased to cause said diaphragm to deform toward said negative pressure chamber causing said valve case to move so that said opening of said tubular body is closed again by said valve plug and said valve hole of said valve case is opened, thereby communicating said negative pressure chamber with said atmospheric pressure chamber through said communication channel so as to increase the negative pressure in said negative pressure chamber and to deform said diaphragm toward said atmospheric pressure chamber; and

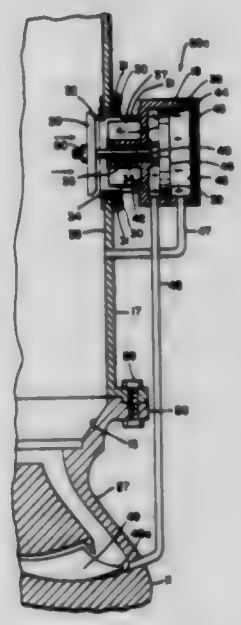
adjusting means for moving said tubular body so as to control the movement of said valve case which is caused by deformation of said diaphragm and attraction of said electromagnet.

4,494,560

SELF-PRIMING SYSTEM FOR LIQUID PUMPS

Pellegrino E. Napolitano, Middletown, N.J., assignor to Hudson Engineering Company, Bayonne, N.J.

Filed Dec. 9, 1982, Ser. No. 448,258
Int. Cl.³ F01B *25/00*
U.S. Cl. 137—117 9 Claims



1. In a self-priming pump system for a vertical pump having an inlet and an outlet, a suction chamber for the liquid to be

pumped, the suction chamber being in communication with the pump inlet, a discharge line connected to the pump outlet, a check valve positioned in the discharge line downstream of the pump outlet a distance sufficient to provide a column of priming liquid for priming the pump upon loss of suction at the pump inlet, and a priming valve having an inlet in communication with the discharge line and an outlet in communication with the suction chamber and positioned in the discharge line between the pump outlet and the check valve, the priming valve responsive to liquid flow from the pump to automatically permit flow of the priming column of liquid from the discharge line to the suction chamber under predetermined flow conditions, the improvement comprising:

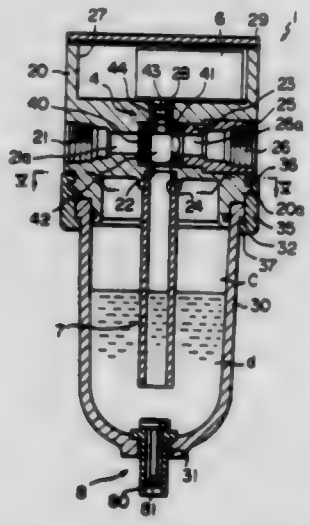
said priming valve having a valve member and a valve seat positioned adjacent an opening in said discharge line to permit flow therethrough when said valve member is spaced from said valve seat, and to prevent flow therethrough when said valve member is against said valve seat, said valve member having an area exposed to the static fluid pressure in said discharge line, a piston connected to and spaced from said valve member, a cylinder connected to said valve body outwardly of said discharge column to slidably receive said piston, said piston having a first face and a second face, a conduit extending from the discharge of said pump to said cylinder to convey pump discharge dynamic pressure to said first face of said piston, a conduit extending from said discharge line to said cylinder to convey discharge line static pressure to said second face of said piston, whereby upon normal operation of said pump the liquid static pressure acting on said valve member and the liquid dynamic pressure acting on said first face of said piston are sufficient to maintain said valve in the closed position, and upon cessation of flow through said pump when the pump discharge dynamic pressure is diminished because of loss of pump suction, the force of the liquid static pressure against said second face of said piston is greater than the force of the liquid static pressure against said valve member to cause said valve to open and thereby permit the liquid in said discharge column to flow to the pump suction chamber and prime the pump.

4,494,561

CONDENSATE DISCHARGING APPARATUS

Yoshinari Ogasawara, Aichi, Japan, assignor to CKD Corporation, Komaki, Japan

Filed Sep. 30, 1982, Ser. No. 431,078
Claims priority, application Japan, Nov. 25, 1981, 56-188943
Int. Cl.³ F16T 1/00
U.S. Cl. 137—204
6 Claims



1. A drain discharging apparatus for connection to a place in which condensate in compressed air accumulates, such as the bottom of a compressed air tank, an air conduit or the like, said apparatus comprising:

a housing having a body therein with an inlet port for connection to said place, an outlet port and a valve chest therein, and having a motor chamber in the upper part thereof;

a vessel;

a connector ring removably attaching said vessel to the lower portion of said body, said body and said vessel together defining a condensate reservoir chamber and said valve chest opening into said reservoir chamber;

a rotary valve in said valve chest and including a valve body having a valve passage therethrough for communicating said reservoir chamber only with said inlet port in one rotational position of said valve body and communicating said reservoir chamber only with said outlet port in another rotational position of said valve body and blocking communication between said ports and said reservoir chamber in all further rotational positions thereof;

an electric motor positioned in said motor chamber and connected to said valve body for continuously rotating said valve body around the axis thereof; and

a tube attached to the lower portion of said housing around said opening of said valve chest and within said reservoir chamber and extending between said valve chest and the lower portion of said reservoir chamber for conducting condensate collected in the lower portion of said reservoir chamber to said valve chest,

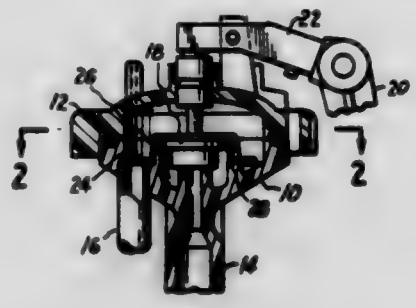
whereby said rotary valve connects said reservoir chamber with said inlet port and to said outlet port alternately while not connecting said inlet and outlet ports to each other simultaneously, and the condensate accumulated in said place is introduced into said reservoir chamber while said valve port communicates said reservoir chamber with said inlet port and is discharged from said reservoir chamber by the pressure accumulated therein only when said valve port communicates said reservoir chamber with said outlet port.

4,494,562

FLOAT VALVE SYSTEM FLOW PROPORTIONING DEVICE

James B. Stephens, La Crescenta, Calif., assignor to Coast Foundry & Manufacturing Company, Pomona, Calif.

Filed Jun. 14, 1983, Ser. No. 504,293
Int. Cl.³ F16K 47/00, 31/22
U.S. Cl. 137—436
5 Claims



1. A flow proportioning control device for a float system to supply water to a tank which is released to a toilet bowl through a discharge valve, said float valve system comprising:

a supply line;

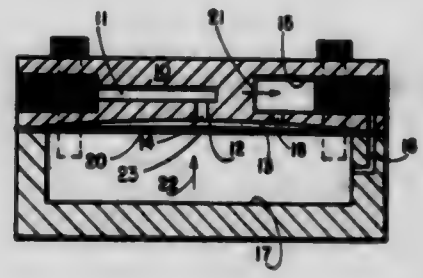
a water level responsive valve and valve seat; a valve barrier extending above and surrounding the valve seat and said water level valve; and

a tank refill line being positioned adjacent said barrier and a rigid restrictor ring interchangeably surrounding and engaging an outer surface of said barrier; said restrictor ring engaging and overlying the upper surface of the refill line; said ring being so proportioned and arranged to partially obstruct the flow from said supply line to said tank refill line thereby providing means to attain a preselected proportional flow to said tank refill line, said restrictor ring being interchangeable from one size to another size for selectively varying the proportion of water which flows to said tank refill line.

4,494,563
FLUID SAFETY VALVE

James F. N. Seiler, Jr., Frederick, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 12, 1982, Ser. No. 441,311
Int. Cl.³ F16K *31/36, 17/00*
U.S. Cl. 137—496 1 Claim



1. A safety valve for protecting apparatus from abrupt fluid pressure loss in a fluid system by damping the effects of the pressure loss comprising:

a member having a conduit chamber formed therein and a primary chamber formed therein, said conduit chamber having a shallow conically concave shape, said primary chamber being aligned with and having a configuration that essentially matches the corresponding configuration of said conduit chamber,

said member having a fluid inlet formed therein and a port also formed therein, said port being coincident with the apex of said conical conduit chamber in order to establish fluid communication between said fluid inlet and said conduit chamber,

said member also having an expansion conduit and a discharge port formed therein, said discharge port establishing fluid communication between said expansion conduit and said conduit chamber at the periphery of said conduit chamber and said expansion conduit having a substantially larger volume than said fluid inlet,

said member having a bypass conduit formed therein, said bypass conduit establishing fluid communication between said expansion conduit and primary chamber, and

a flexible membrane separating said conduit chamber from said primary chamber in order to respond to relatively higher fluid pressure in said primary chamber by closing said port at said conduit chamber apex, thereby to terminate temporarily fluid pressure loss in at least a portion of the fluid system, said flexible membrane having an aperture formed therein in alignment with said port at said conduit chamber apex to enable the fluid pressure in said primary chamber, said bypass conduit and said expansion conduit to gradually become equal with said fluid inlet fluid pressure and thus to protect the apparatus from abrupt fluid pressure loss.

4,494,564
FLAP VALVE

Stephen A. Lukacz, Nazareth, Pa., assignor to Fuller Company, Bethlehem, Pa.

Filed Mar. 11, 1983, Ser. No. 474,368
Int. Cl.³ F16K *15/03*
U.S. Cl. 137—527.6 12 Claims

1. A flap valve adapted for use in selectively closing an open ended material conduit comprising:

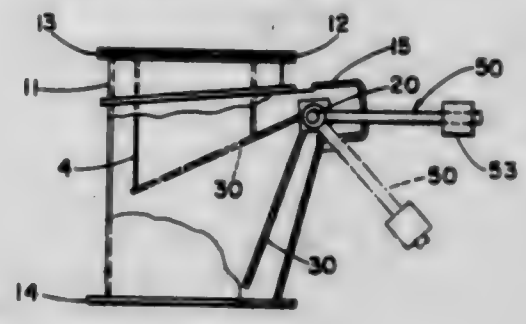
a shaft adapted to be rotatably mounted in a fixture;

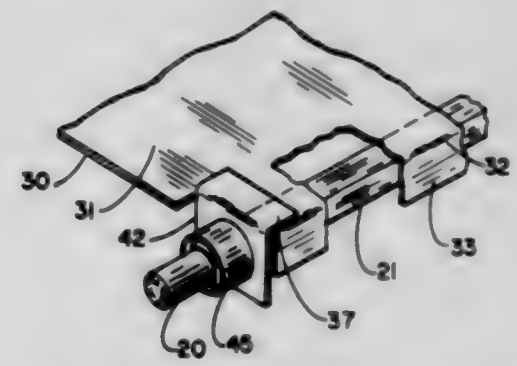
a flap having a surface adapted to selectively close a material conduit and having one end engaging said shaft;

a dog mounted on said shaft and having a leg lying atop said one end of said flap;

said dog being keyed to said shaft whereby when a force is applied to the surface of said flap which selectively closes the conduit, said force is transmitted through said dog to said shaft to tend to rotate said shaft about its own axis to open said material conduit;

said one end of said flap being bent at an angle to the surface





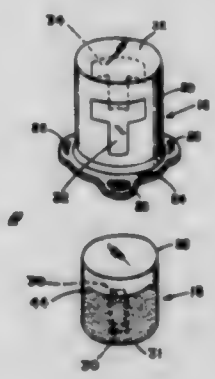
which selectively closes the conduit for preventing said flap from moving in one direction relative to said shaft; and

spacer means positioned between said dog and said fixture.

4,494,565
INDICATOR ASSEMBLY

Franklin H. Sinclair, Oradell, and Gary Glockner, Hillsdale, both of N.J., assignors to Westlock Controls Corporation, Moonachie, N.J.

Continuation-in-part of Ser. No. 367,038, Apr. 9, 1982,. This application Feb. 28, 1983, Ser. No. 470,464
Int. Cl.³ F16K *37/00*
U.S. Cl. 137—555 6 Claims



1. An indicator assembly visually indicating operational settings of a valve having a plurality of at least three flow-through ports, said valve including a rotatable operational member for selectively placing said valve in a first operational mode, a second operational mode or a third operational mode, said indicator assembly being comprised of:

an indicator member comprised of first and second surface sections, said first surface section being provided with an indicator means having a shaped configuration portions of which are selectively referenced to said first operational mode, said second operational mode and said third operational mode, said indicator member being rotatable by said operational member of said valve; and

a housing member having an elongated chamber within which said indicator member is positioned for axial rotation, said housing member including a first translucent

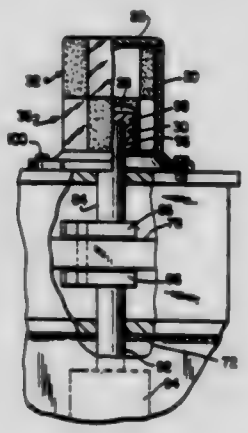
section having a shaped configuration representing graphically said plurality of at least three flow-through ports, portions of said indicator means included in said first surface section of said indicator member being selectively visible through said first translucent section when said operational member places said valve in said first operational mode, said second operational mode, or said third operational mode.

4,494,566

INDICATOR ASSEMBLY

Franklin H. Sinclair, Oradell, and Gary Glockner, Hillsdale, both of N.J., assignors to Westlock Controls Corporation, Moonachie, N.J.

Filed Apr. 9, 1982, Ser. No. 367,038
Int. Cl.³ F16K *37/00*
U.S. Cl. 137—556
16 Claims



1. An indicator assembly visual indicating operational setting of a fluid handling apparatus having a first operational position and a second operational position and provided with an operational member for placing said fluid handling apparatus in said operational positions, which comprises:

an indicator member comprised of a first and second surface sections, said first surface section being provided with a first indicator means referenced to said first operational position and said second surface section being provided with a second indicator means referenced to said second operational position, said indicator member being connected to said operational member of said fluid handling apparatus; and

a housing member including a translucent section and an indicator section mounted about said indicator member, said first surface section of said indicator member being visible through said translucent section when said operational member in said first operational position and said second surface section of said indicator member being visible through said translucent section when said operational member is in said second position, said indicator section of said housing member being provided with an indicator means to visually cooperate with one of said indicator means of said indicator member to indicate an operational position of said fluid handling apparatus.

4,494,567

APPARATUS FOR SUPPLYING A FLOW OF LIQUID TO A TURBINE

Harry D. Troyer, 351 N. 5th St., Reading, Pa. 19601

Filed Apr. 8, 1983, Ser. No. 483,147
Int. Cl.³ F03B *13/10*
U.S. Cl. 137—561 A
4 Claims

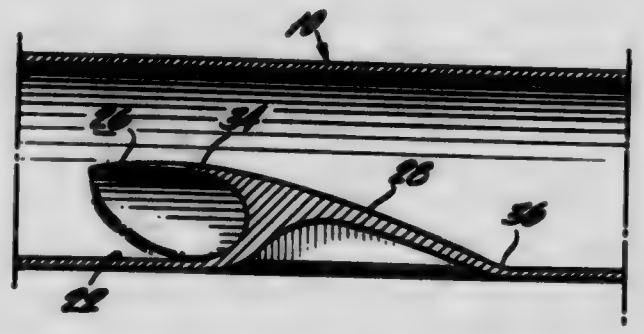
1. Apparatus for supplying a flow of liquid to a turbine from a source of liquid flowing at a variable rate, comprising:

a main conduit for receiving a variable flow of liquid from said source;

a branch conduit connected to said main conduit for supplying a flow of said liquid from said main conduit to said turbine;

said branch conduit being of smaller cross-section than said main conduit and communicating with the interior of said main conduit by way of an opening in a side wall of said main conduit; and

stationary flow-diverter means inside said main conduit extending across the bottom of said main conduit from the



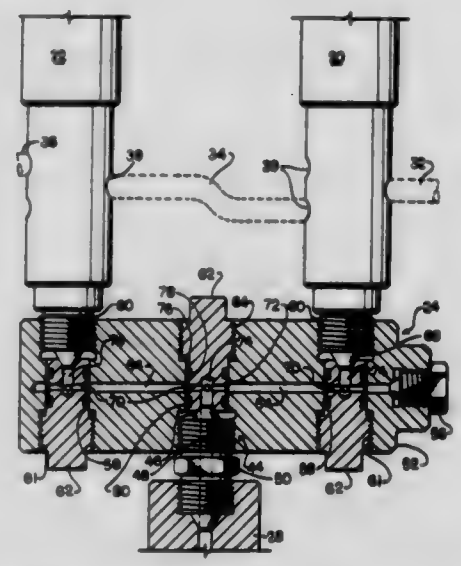
downstream side of said opening and extending short of the top of the interior of said main conduit, for diverting substantially all of said variable flow of liquid into said branch conduit by way of said side wall opening when the rate of flow of said liquid is less than a predetermined value for which the level of said liquid is at the top of said diverter, and for permitting excess of said liquid to flow over said flow-diverter means and down said main conduit when said rate of flow exceeds said predetermined value.

4,494,568

HIGH PRESSURE SENSOR BASE

Terry G. Young, Longview, Tex., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Aug. 26, 1983, Ser. No. 526,732
Int. Cl.³ F15B *13/02*; F16K *17/00, 37/00*
U.S. Cl. 137—561 A
8 Claims



1. An apparatus for receiving at least one component having an autoclave connector with an autoclave end surface and having a flow passage therein in communication with the autoclave end surface, which comprises:

a manifold having a longitudinal passage therein in communication with a fluid pressure source and having a lateral bore extending therethrough and intersecting the longitudinal passage, the lateral bore having internally threaded portions at the opposite ends thereof adjacent the outer surfaces of the manifold such that one end of the lateral bore threadably receives the autoclave connector of the component;

a cylindrical plug having an externally threaded end portion which is threadably received in the other end of the lateral bore opposite the end receiving the component, the plug

further having a reciprocal autoclave connector on the other end of the plug with a reciprocal autoclave end surface facing the autoclave end surface of the component so that upon rotation of either the plug or component establishing contact between the respective autoclave end surfaces a high pressure metal-to-metal seal is obtained, the plug including a peripheral annular groove intermediate the externally threaded portion and the autoclave end surface and a radially extending cross port communicating with the annular groove and positioned in fluid communication with the longitudinal passage of the manifold, and further including an axial bore intersecting the cross port and opening to the autoclave end surface of the plug to provide fluid communication from the fluid pressure surface, through the manifold and plug of the apparatus, to the flow passage of the component thereby providing a metal-to-metal autoclave connection which is readily obtainable at a preselected rotation orientation of the component relative to the apparatus; and

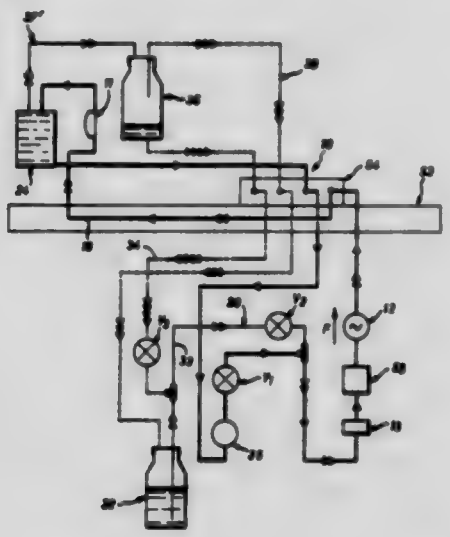
sealing means provided on the plug on opposite sides of the annular groove for sealing between the plug and the lateral bore so that pressurized fluid in the longitudinal passage of the manifold or cross port of the plug is unable to communicate with the threaded portions of the lateral bore or exteriorly of the apparatus.

4,494,569

APPARATUS FOR CIRCULATING AND REGENERATING A DEGRADABLE SOLUTION SUCH AS A SATURABLE ABSORBER FOR A LASER

Luc Tagnon, Saint-Mande, and Georges Wajs, Ivry, both of France, assignors to Essilor International Cie General d'Optique, Creteil, France

Filed Apr. 22, 1983, Ser. No. 487,873
Claims priority, application France, Apr. 22, 1982, 82 06937
Int. Cl.[3] E03B *7/07*
U.S. Cl. 137—563 14 Claims



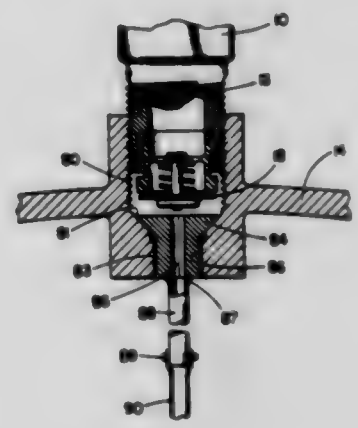
1. Apparatus for circulating and regenerating a degradable solution such as a saturable absorber for a laser, said apparatus comprising a first, circulation circuit including, in series, a cell adapted to contain the solution, a pump for pumping the solution and a second regeneration circuit carrying fresh, concentrated solution, flow control means for injecting said fresh concentrated solution into said circulation circuit, said second, regeneration circuit comprising a main tank for containing said fresh concentrated solution and an auxiliary tank defining a sump tank or collector vessel for collecting degraded solution from said circulation circuit.

4,494,570

LP GAS SAFETY VALVE

Charles H. Adkins, 251 N. Elm, Hagerstown, Ind. 47346

Filed Mar. 4, 1983, Ser. No. 472,128
Int. Cl.[3] B67B *7/24*
U.S. Cl. 137—590 20 Claims



1. A valve for a tank comprising:

a valve housing with an inlet, an outlet, a first passage extending therebetween and a closure movably mounted to open and close said passage;

an extension threadedly mounted to said outlet and extendable into said tank;

a tube attached to said extension and extending into said tank;

an insert positioned in said outlet of said housing and having a second passage extending therethrough with a valve seat provided thereon;

a rod slidably mounted to said insert and having an enlarged head sealingly seatable upon said valve seat to close said second passage; and,

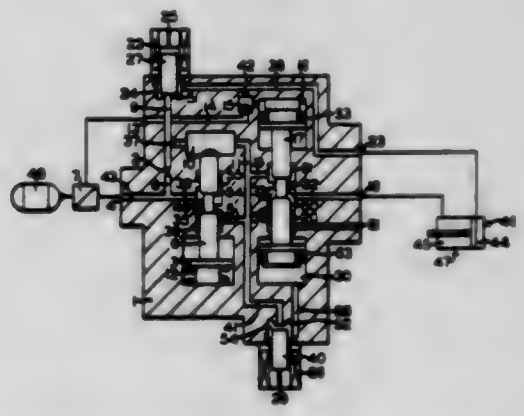
spring means operable to bias said head away from said seat in an open position to allow fluid flow from said second passage into said tube but yieldable to allow said head to move to a closed position to seat on said valve seat when said closure inlet is below a predetermined level.

4,494,571

ELECTROPNEUMATIC DOOR CONTROL VALVE

Gunter Seegers, West Bloomfield, Mich.; Günter Sebesta, Hemmingen, and Alfred Klatt, Wathlingen, both of Fed. Rep. of Germany, assignors to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Nov. 8, 1982, Ser. No. 439,701
Int. Cl.[3] F15B *13/043*
U.S. Cl. 137—596.16 8 Claims



1. An electropneumatic door control valve for controlling a flow of compressed air from a compressed air source to at least one of an opening and closing chamber of a pneumatic door drive where the door drive includes an emergency cock for tripping a pilot valve to divert the compressed air, which comprises:

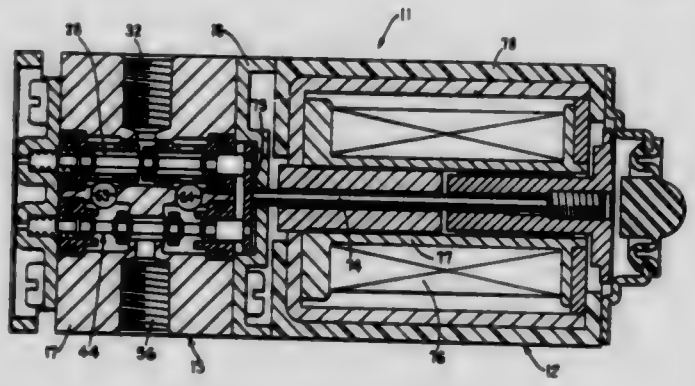
(a) a housing having a primary inlet and a first and second control outlet;
(b) first and second operating valves located within said housing, each of said operating valves having a first and a second operating position;
(c) a first through passageway formed in said housing between said primary inlet and said first control outlet and including therebetween, said first and second operating valves in respective first operating positions;
(d) a first solenoid valve means for selectively communicating the outlet of said first operating valve to said second control outlet;
(e) a second through passageway formed in said housing between said primary inlet and said second control outlet and including therebetween said first operating valve in such first operating position;
(f) a second solenoid valve means for urging said second operating valve into such first operating position;
(g) a throttled passageway communicating said primary inlet to the outlet of said first operating valve;
(h) a secondary inlet communicating with the pilot valve and being effective when the pilot valve has diverted such compressed air from said primary inlet to said secondary inlet;
(i) a first and second piston spool located in and forming a part of respective said first and second operating valves;
(j) a double check valve for allowing the higher of two pressures between said second through passageway and said secondary operating valve; and
(k) a biasing means for urging said first piston spool of said first operating valve into the second operating position.

4,494,572

FOUR-WAY POPPET VALVE ASSEMBLY

Stanley M. Loveless, Oshtemo Township, Kalamazoo County, Mich., assignor to Humphrey Products Company, Kalamazoo, Mich.

Filed Sep. 30, 1982, Ser. No. 430,077
Int. Cl.³ F15B 13/02
U.S. Cl. 137—596.17
6 Claims



1. A four-way, poppet-type valve assembly, comprising:
a valve housing including a main one-piece body portion having first and second substantially parallel and elongated openings therein;
a pair of first sleeves sealingly and stationarily disposed within the opposite axial ends of said first opening in axially opposed and spaced relationship, said first sleeves having inner axial end surfaces which are disposed in axially opposed and axially spaced relationship from one another and define a central chamber therebetween, said pair of first sleeves having coaxially aligned bores of a first substantially uniform diameter extending therethrough and defining a pair of end chambers which communicate with opposite sides of said central chamber;
the axially inner end surface of each said first sleeves defining thereon a first annular valve seat which is of a generally conical configuration and projects axially outwardly toward the valve seat formed on the other of said first sleeves, each of said valve seats having a sealing diameter which only slightly exceeds said first diameter;
first elongated valve plunger means disposed within and supported for shiftable axial movement along said first opening, said first plunger means including a central part having first elastomeric poppet means mounted thereon in encircling relationship thereto and disposed within the central chamber of said first opening, said first plunger means also having end parts which are disposed on opposite axial sides of the central part and project through the respective end chambers, and annular elastomeric sealing means creating a slidable and sealed relationship between each said end part and a respective said first sleeve for sealingly closing the outer end of the respective end chamber, said annular elastomeric sealing means defining an annular sealing area which is substantially of said first diameter and which permits relative axial sliding but sealed engagement between said first sleeve and said end part of said first plunger means;
a pair of second sleeves stationarily and sealingly seated within opposite ends of said second opening in axially opposed and spaced relationship, said second sleeves having coaxially aligned bores extending therethrough of a second diameter;
wall means stationarily positioned with respect to said body portion substantially centrally of said second opening, said second opening having a central portion which is substantially of said second diameter and extends through said wall means in coaxial alignment with the bores of said second sleeves, said wall means being disposed axially between but axially spaced from the inner axial ends of said second sleeves so as to define a pair of end chambers which are disposed on opposite sides of said wall means and are joined together by a central chamber as defined by said central portion of said second opening;
said wall means defining a pair of second annular valve seats on opposite axial sides thereof in surrounding relationship to the opposite axial ends of said central portion, each said second valve seat being of a conical configuration which projects axially outwardly toward the inner axial end of the respectively adjacent second sleeve and has a sealing diameter which only slightly exceeds said second diameter;
second elongated valve plunger means disposed within said second opening and being supported for shiftable axial movement therealong, said second valve plunger means extending axially of said second opening and having end parts which are slidably sealingly supported within said second sleeves, and annular elastomeric sealing means creating a slidable and sealed engagement between each said end part and the respective second sleeve, said sealing means including an annular slidable seal area having a diameter substantially equal to said second diameter;
said second plunger means having a central part which extends through said central chamber of said second opening and projects into the adjacent end chambers, said central part having a pair of second elastomeric poppet means mounted thereon in encircling relationship, said pair of second poppet means being axially spaced so that said wall means is disposed axially therebetween, whereby one of said second poppet means is disposed within each of said end chambers and is disposed for engagement with the respectively adjacent second valve seat;
each of said poppet means comprising an elastomeric ring member which stationarily surrounds the respective valve plunger means and has effective outer and inner diameters which respectively are greater than and less than the diameter of the respective valve seat so that the latter sealingly contacts the central annular part of the axial end face of the elastomeric ring member when the latter is sealingly engaged therewith;
said body portion having an inlet passage formed therein and communicating directly with the central chamber of said first opening for permitting pressure fluid to be supplied

thereto, and an outlet passage formed therein and communicating directly with the central chamber of said second opening for permitting said fluid to be suitably discharged;

a first load port formed in said body portion and disposed in continuous communication with one end chamber of each of said first and second openings, and a second load port formed in said body portion in continuous communication with the other end chamber of each of said first and second openings; and

operator means coupled to said first and second valve plunger means for effecting simultaneous linear shifting thereof between two end operational positions;

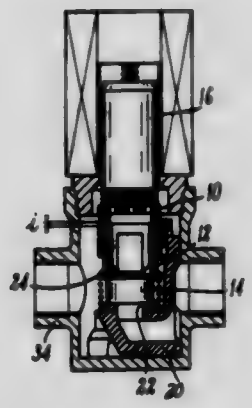
whereby the presence of pressurized fluid within the central chamber of said first opening or within any of said end chambers creates only a minimal unbalanced pressure force acting on the respective poppet means for holding it in its closed position.

4,494,573

ELECTROVALVE

Francois Berte, Le Pecq, France, assignor to Société Anonyme des Etablissements Jouvenel et Cordier, Rueil-Malmaison, France

Filed May 19, 1982, Ser. No. 379,992
Claims priority, application France, Jun. 24, 1981, 81 12373
Int. Cl.³ F16K 11/04, 31/06, 27/00
U.S. Cl. 137—625.5 5 Claims



1. An electrovalve comprising:

a core;

a single valve member;

first and second interlockable elements interlocked together, said first interlockable element being rigidly connected to said core, and said second interlockable element carrying said valve member;

two identical superimposable parts superimposed together and receiving therebetween said interlocked elements and said valve member, said two superimposed parts having therein channels, and said two superimposed parts having respective valve seats to be selectively contacted by said valve member, thereby opening or closing selected said channels; and

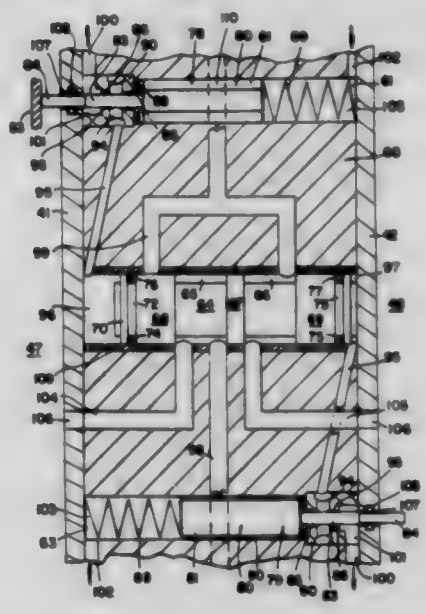
a valve body having fitted therein an assembly including said superimposed parts receiving therebetween said interlocked elements and said valve member, said valve body having therein plural ports adapted to be connected to selected said channels.

4,494,574

VALVE ARRANGEMENT FOR AN AIR-OPERATED DIAPHRAGM PUMP

Joseph C. Casilli, Waldwick; Lawrence Gibson, Dumont, and William D. Hessler, Wyckoff, all of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 23, 1983, Ser. No. 564,944
Int. Cl.³ F16K 1/00
U.S. Cl. 137—625.6 3 Claims



1. A switching valve assembly for use in a diaphragm pump including a movable wall, comprising

a casing bounding a bore and a duct that opens into said bore at a predetermined region of the latter;

an annular element stationarily mounted in said bore at said region to subdivide said bore into two compartments one of which is closer to the movable wall than the other, and including an axially extending central passage connecting said compartments and a substantially radial-passage that opens into said central passage at a zone of the latter intermediate said compartments and communicates with said duct;

means for discharging fluid from said one compartment to maintain the pressure therein substantially at a relatively low level;

means for admitting pressurized fluid into said other compartment to maintain the pressure therein at a relatively high level;

an elongated valve member received in said bore for movement axially of the latter between a first and a second end position and including a guiding portion slidingly contacting the surface circumferentially bounding said other compartment of said bore and an actuating portion axially adjoining said guiding portion and extending therefrom into and through said central passage of said annular element and beyond the same into said one compartment and into the path of movement of the movable wall at least in said first end position of said valve member, said actuating portion passing through said central passage with a larger first clearance between said other compartment and said zone, and with a smaller second clearance between said zone and said one compartment, for said second clearance to act as a throttling location;

means for biasing said valve member toward said first end position thereof for the valve member to be moved by the movable wall against the action of said biasing means toward said second end position thereof; and

an annular sealing element interposed between said annular element and said guiding portion of said valve member around said actuating portion of said valve member and operative for interrupting communication between said other compartment and said central passage in said first end position of said valve member so that the pressure in said radial passage and in said duct is relieved through said

throttling location, and for establishing such communication as said valve member is moved toward said second end position thereof with resulting flow of said pressurized fluid through said first clearance into, and pressure build-up in, said radial passage and said duct.

4,494,575

GRAVITY DUMP VALVE

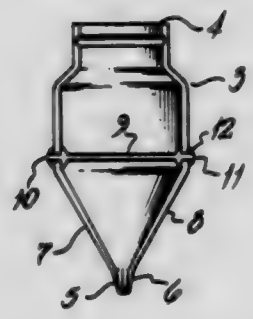
Robert S. Gladstone, Newbury, England, assignor to Coopers Filters Limited, Manchester, England

Filed Feb. 1, 1983, Ser. No. 462,975

Claims priority, application United Kingdom, Feb. 13, 1982, 8204267

Int. Cl.³ F16K *15/14*; B01D *46/48*

U.S. Cl. 137—846 2 Claims



1. A gravity dump valve for an air cleaner comprising an unreinforced, tubular elastomeric body having an inlet and and outlet spaced apart from the inlet, the outlet being in the form of a tapered body portion terminating in discharge lips which are normally closed and a rigid bracing strut extending across the inside of the valve in the tubular body at or adjacent the region where the tubular elastomeric body commences to taper towards the lips.

4,494,576

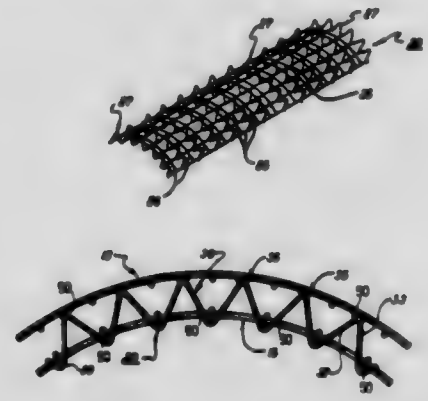
REINFORCING SYSTEM FOR CONCRETE PIPE

Robert C. Buttner, Syracuse, N.Y., assignor to Concrete Pipe & Products Corp., E. Syracuse, N.Y.

Continuation-in-part of Ser. No. 381,222, May 29, 1982, abandoned. This application Jul. 7, 1983, Ser. No. 511,485

Int. Cl.³ F16L *55/00*; B21F *27/20*

U.S. Cl. 138—175 5 Claims



1. In a concrete pipe that is subjected to high external loads at the crown and the invert which produce a compressive stress on one side of the neutral axis of the pipe and a tensile stress on the other side thereof, reinforcing apparatus for transmitting stresses from one side of the neutral axis to the other that includes

an inner cylindrical wire cage mounted inside the neutral axis of the pipe,

arcuate shaped wire mats joined to the inner cage at both the crown and invert,

each of said mats having a series of spaced apart curved wires that complement the curvature of the inner cage and which are circumferentially disposed in the pipe to place each end of the mat in a region of compressive stress thereby anchoring the ends of the curved wires in compression, and a series of spaced apart longitudinally extended wires cojoined to the curved wires,

a series of curved circumferentially disposed wire truss members woven at intervals into each mat, each truss member having a series of end to end upraised V-shaped sections connected by nodes and antinodes, each of the said antinodes being looped under a separate longitudinal mat wire and being joined to a curved wire of said cage, each node passing upwardly in a radial direction across the neutral axis of the pipe whereby stresses produced on one side of the pipe are translated to the other side of the axis along the entire length of the bridge.

4. Apparatus for reinforcing a concrete pipe that includes

a series of stiff spaced apart curved wires that complement the curvature of a pipe and which are cojoined by a series of spaced apart longitudinally disposed tie wires to from an open mesh arcuate shaped mat, and

a series of circumferentially extended wire truss members woven into the arcuate shaped mat at longitudinally spaced intervals, each truss member having a series of upraised V-shaped sections, the legs of which form included angles of about 60° at the nodes and the antinodes, each antinode being looped around a longitudinal tie wire and being cojoined to said longitudinal tie wire to form a truss bridge extending across the circumferential length of the mat.

4,494,577

WEFT INSERTING DEVICE FOR JET LOOMS

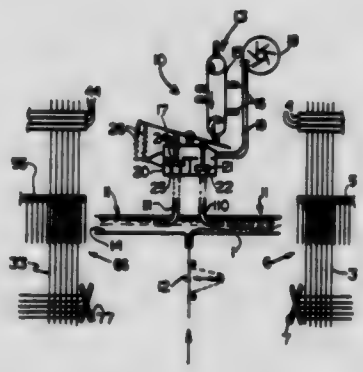
Vladimir Svat, and Ladislav Sevcik, both of Liberec, Czechoslovakia, assignors to Elitex, koncern textilniho strojirenstvi, Liberec, Czechoslovakia

Continuation-in-part of Ser. No. 275,217, Jun. 19, 1981,. This application Feb. 8, 1983, Ser. No. 464,992

Claims priority, application Czechoslovakia, Jun. 24, 1980, 4451-80

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—20 6 Claims



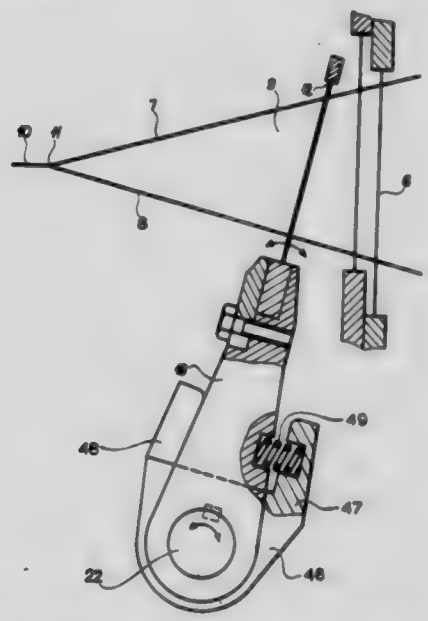
1. Apparatus for the insertion of weft yarns into two spaced sheds of a jet loom with weft change, comprising a stationary weft yarn impelling jet, said jet having two outlets cooperating with the respective sheds, two pressure air supplies for directing pressure air in the jet toward the respective outlets thereof, means for introducing weft yarns into the jet to be selectively acted upon by the respective air supplies, and means for supplying pressure air alternately to the respective air supplies according to a predetermined program, whereby to impel yarns in a selected shed of the loom.

4,494,578

WEFT BEAT-UP MECHANISM FOR LOOMS

Miloslav Cech; Adolf Slezak, both of Brno, and Vladimir Vasicek, Moravsky Krumlov, all of Czechoslovakia, assignors to Zvs Vyzkumnevyvojovy ustav, koncernova, Brno, Czechoslovakia

Filed Mar. 29, 1983, Ser. No. 479,946
Claims priority, application Czechoslovakia, Mar. 29, 1982, 2152-82
Int. Cl.³ D03D *49/68*
U.S. Cl. 139—188 A 6 Claims



4. In a weft beat-up mechanism for a loom, said mechanism including a positively driven oscillatable active member mounted on the loom, a reed mounted on the active member for beating up the weft to the front end of the fabric in the beat-up position of the active member, the improvement where the reed is mounted on a carrier, and comprising means mounting the carrier on the active member to permit swinging of the carrier to a limited extent about a pivotal axis with respect to the active member, the pivotal axis being parallel to the axis of the beaten-up weft, and yieldable means acting between the carrier and the active member for constantly urging the carrier and the reed thereon forwardly on the loom with respect to the active member, whereby to prolong the time during which the reed acts upon the inserted weft in the beat-up position of the active member, the carrier for the reed being swingably mounted on the swingable shaft which mounts the active member, said active member being provided with two arms between which the carrier is mounted, and the resilient means being mounted between one arm and the carrier, while the other arm forms a limiting stop for the swinging motion of the carrier with respect to the active member.

4,494,579

THREAD CLAMP, PARTICULARLY FOR JET LOOMS

Gilles Grandvallet, and Albert H. Deborde, both of Bourgoin Jallieu, France, assignors to Saurer Diederichs Societe Anonyme, Bourgoin Jallieu, France

Filed Nov. 8, 1983, Ser. No. 549,930
Claims priority, application France, Nov. 8, 1982, 82 1904
Int. Cl.³ D03D *47/00*
U.S. Cl. 139—429 12 Claims

1. A thread clamp for temporarily arresting a weft yarn in a jet loom, comprising:

a housing with an apertured front wall;

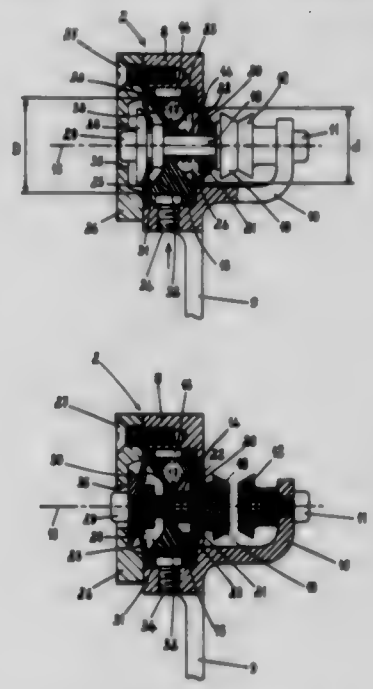
a stationary insert in said housing having a throughgoing passage substantially perpendicular to said front wall;

a deformable first membrane in said housing defining with a front surface of said insert a first chamber adjacent said front wall;

a deformable second membrane in said housing defining with a rear surface of said insert a second chamber remote from said front wall, said second membrane having a mobile portion wider than a mobile portion of said first membrane, said chambers communicating with each other through said passage;

a stem traversing said passage with clearance while being fixedly secured to both said membranes, said stem projecting beyond said front wall and terminating in a movable jaw;

a fixed jaw secured to said housing and confronting said movable jaw for contact therewith in a forward position of said stem in which said first and said second chamber respectively have a maximum and a minimum volume;



spring means coupled with said stem for biasing same toward said forward position thereof;

conduit means in said housing opening into said second chamber; and

control means for selectively connecting said conduit means to a source of high-pressure air and to the atmosphere, admission of high-pressure air to said second chamber by way of said conduit means generating a pressure differential moving said stem into a retracted position against the force of said spring means.

4,494,580

METHOD AND MACHINE FOR CUTTING ELECTRIC LEADS OF SPECIFIC LENGTH AND FOR PROCESSING AND EQUIPPING THE TWO ENDS OF THESE LEADS

Désiré Loustau, Aix-en-Provence, France, assignor to Automatismes Et Techniques Advancees, La Barque, France

Filed Sep. 22, 1982, Ser. No. 421,317
Claims priority, application France, Sep. 24, 1981, 81 18181
Int. Cl.³ B21F *27/00*
U.S. Cl. 140—1 7 Claims

1. Method for cutting off leads of discrete lengths from a wire and processing and equipping the two ends of said leads comprising:

paying out the wire in a rectilinear direction;

forming loops of specific length in the wire through the following steps;

closing onto the wire a forward clamping device of a pair of clamping devices born by a circular transfer conveyor the periphery of which is tangential to the direction of paying out of the wire;

advancing said circular transfer conveyor by a length equal to the distance between the two clamping devices of said pair at the same time as the wire is paid out;

stopping the transfer conveyor;

causing a pressor roller to drive the wire against a driving roller driven by a motor.

unwinding a length of wire corresponding to the desired

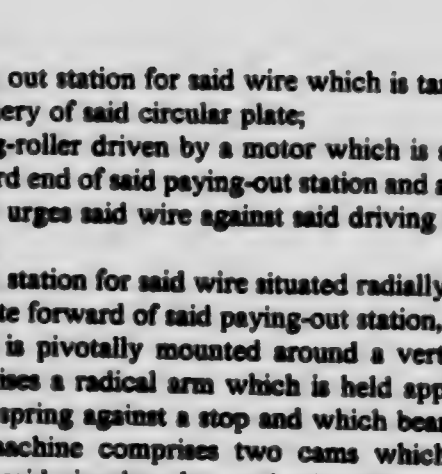
length of a loop and then closing the second clamping device of said pair on said wire;

advancing said circular conveyor and said loops held by said clamping devices to a cutting station which cuts said wire between two loops;

and pivoting by a quarter of revolution in reverse direction from one another, the two clamping devices of each pair after said cutting station in order to bring the two free ends of each wire lead to be presented transversely to the periphery of said circular conveyor and to extend beyond said periphery.

5. Machine for cutting off from a wire, leads of predetermined length and for processing and equipping automatically the two ends of said leads comprising:

a circular plate which is rotated by a motor-reduction gear unit comprising a stepping motor and which bears pairs of closet-set clamps distributed over its periphery;



a paying out station for said wire which is tangential to the periphery of said circular plate;

a driving-roller driven by a motor which is situated to the forward end of said paying-out station and a presser roller which urges said wire against said driving roller to form loops;

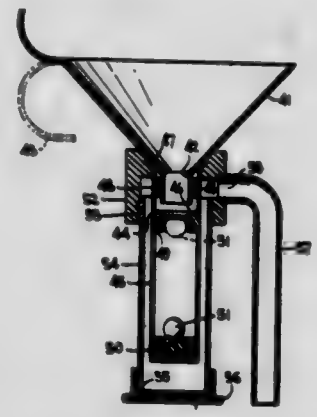
a cutting station for said wire situated radially to said circular plate forward of said paying-out station, wherein each clamp is pivotally mounted around a vertical axial and comprises a radical arm which is held applied by a torsional spring against a stop and which bears a roller and said machine comprises two cams which are situated above said circular plate and said rollers of said clamps become supported against said cams which cause said clamp to pivot in reverse direction from one another.

4,494,581

ISOLATION OF FORESTREAM AND MIDSTREAM PORTIONS OF COLLECTED URINE SAMPLES

Marvin Gordon, East Windsor, N.J., assignor to Whitman Medical Corporation, Clark, N.J.

Filed Feb. 18, 1983, Ser. No. 467,905
Int. Cl.³ B65B 3/04
U.S. Cl. 141—1 25 Claims



24. A method for collecting a midstream specimen of void urine comprising the steps of:

directing a forestream portion of a urine void into a chamber through an inlet opening;

absorbing urine received in said chamber with a material which swells significantly upon absorbing liquid;

forcefully closing said inlet opening of said chamber under the impetus of the swelling of said material; and

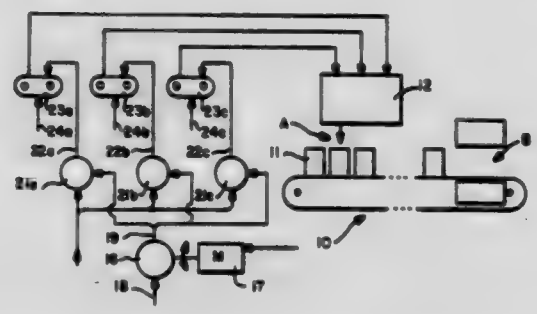
directing a subsequent portion of said urine void into a midstream specimen container after said inlet opening is closed.

4,494,582

ICE CREAM MAKING AND PACKAGING SYSTEM AND METHOD

Jerome K. Meyer, West Valley City, Utah, assignor to Safeway Stores, Incorporated, Oakland, Calif.

Filed Apr. 5, 1983, Ser. No. 482,150
Int. Cl.³ B65B 3/04
U.S. Cl. 141—9 7 Claims



5. A continuous method for the manufacture of packaged ice cream comprising the following steps:

(a) Continuously mixing air in a controlled amount with an unfrozen ice cream mix,

(b) Continuously delivering the mix to a freezing unit of the continuous type whereby it is incorporated in the mix to produce ice cream with overrun,

(c) Continually discharging equal volumes of ice cream into packaging containers,

(d) Continually conveying the containers through a weighing station,

(e) Weighing the filled containers as they are conveyed through the weighing station and deriving an underweight signal when a predetermined number comprising a group of containers is underweight and an overweight signal when such group is overweight, the durations of the

signals being in accordance with the amount of overweight or underweight of the group, and

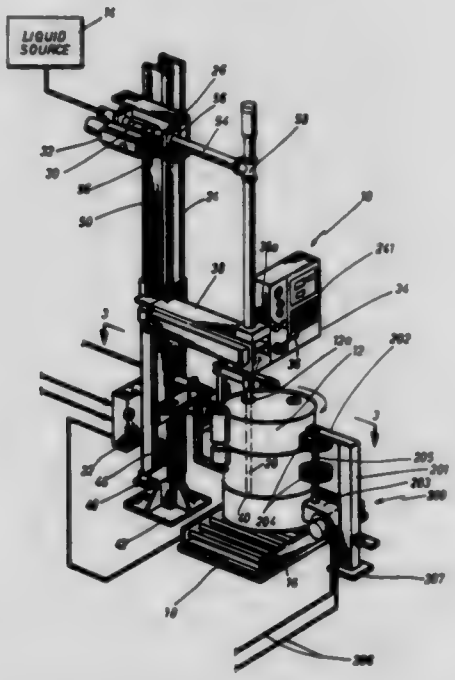
(f) Automatically adjusting the amount of air supplied to the mix responsive to the said underweight or overweight signal, the amount of air incorporated in the mix being increased responsive to overweight signals and decreased responsive to underweight signals whereby the weights of the filled containers are brought to target weight.

4,494,583

BUNG ALIGNMENT APPARATUS

Robert H. Reeves, Jr., Angleton; Don G. Chandler, Lake Jackson, and H. A. Jorgensen, Freeport, all of Tex., assignors to Velasco Scale Company, Freeport, Tex.

Filed May 16, 1983, Ser. No. 494,579
Int. Cl.[3] B65B *3/28*
U.S. Cl. 141—83 21 Claims



21. In liquid filling apparatus adapted for subsurface filling of containers, said apparatus including: a conduit for introducing liquid into a container, said conduit being movable between a raised and a lowered position; a valve to control the rate of flow of liquid through the conduit to said container; a first signal generator for generating a signal to initiate movement of the conduit from its raised position to its lowered position; a second signal generator actuable by movement of the conduit toward its lowered position, for generating a signal to actuate the valve to commence flow of liquid at a slow fill rate into said container; a delay mechanism actuable by the signal from the second signal generator to trigger a fast fill rate dispensation of liquid after a predetermined interval; a weight responsive device adapted to generate a first and a second control signal when the weight of the liquid in the container equals a first and a second cut-off weight, respectively, said first control signal being operable to initiate withdrawal of the conduit towards its raised position and to actuate the valve to return to a slow fill rate of dispensation of liquid through the conduit; a wiper device for urging liquid adhering to the outside of the conduit toward said container during withdrawal of the conduit; and a third signal generator actuable when the conduit has been raised a predetermined distance from such a container for generating a signal to stop further movement of the conduit; said second control signal, which is generated when the second cut-off weight of liquid within such a container is achieved, initiates the termination of flow of liquid from the conduit and a movement of the conduit to its raised position, the improvement which comprises:

a driven roller and two nondriven rollers, each having a vertical central axis, positioned to restrict said container's lateral motion during the rotating and filling operation, the nondriven rollers being movable between a position contiguous to the surface of the container and a retracted position permitting the container to be removed and a subsequent container to be positioned;

an infrared sensor, movable in cooperation with said nondriven rollers between (a) a functional position above the level of the top of the container and in linear alignment with the raised liquid conduit and (b) a retracted position permitting movement of the conduit;

means for retracting said nondriven rollers and said infrared sensor;

control means (a) to measure the instantaneous intensity of the infrared radiation detected by said sensor, and (b) to detect changes in such intensity taking place when the bung of the empty container passes directly beneath said sensor; and

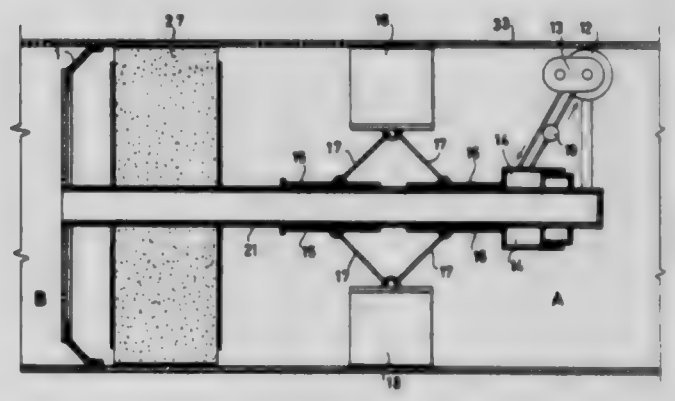
means for controlling the rotation of said container such that when said infrared sensor indicates that the bung is aligned directly beneath the conduit a signal is generated which terminates the rotational drive of the driven rollers.

4,494,584

DEVICE FOR FILLING A PIPE WITH FLUIDS, FOR EMPTYING FLUIDS FROM A PIPE AND FOR DRYING A PIPE

Antonio Rognoni, Via Faruffini, 11, Pavia, Italy

Filed Nov. 30, 1982, Ser. No. 445,741
Claims priority, application Italy, Dec. 2, 1981, 44017 A/81
Int. Cl.[3] B65B *3/04*
U.S. Cl. 141—98 8 Claims



1. A device for emptying a fluid from a pipe and for simultaneously filling the pipe with another fluid while preventing the fluids from mixing, comprising:

a support member having a head end for insertion in the pipe for emptying a fluid from the pipe;

a sealing means attached to the head end of said support member so that when the device is inserted in the pipe the sealing means presses against the inner walls of the pipe thereby preventing the fluid being emptied from the pipe from mixing with the fluid filling the pipe, and

a braking means attached to said support member for slowing the movement of the fluid filling the pipe thereby causing the pressure of the filling fluid to be greater than the pressure of the emptying fluid to produce a braking action that increases as the velocity of the filling fluid increases.

4,494,585

FUNNEL HAVING A PRIMARY VENT AND AN AUXILIARY VENT/SIPHON

Donald E. Waldecker, P.O. Box 3342, Falls Church, Va. 22046

Filed Feb. 4, 1983, Ser. No. 463,915
Int. Cl.[3] B65B *3/04*; B67C *11/00*
U.S. Cl. 141—98 15 Claims

1. A funnel comprising a hollow conical portion having a large, rimmed, mouth end and a small outlet end adapted to receive a fluent material to be dispensed, said funnel including an outlet pipe rigidly secured to the outlet end of said hollow

conical portion, said outlet pipe having a longitudinal axis which is at an angle relative to the axis of symmetry of said conical portion, said funnel including a coupling member adapted to be detachably coupled to the fill opening of a container to be filled by said funnel, said coupling member having



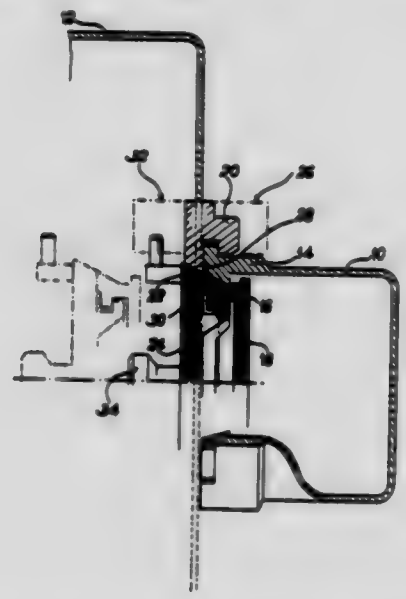
a passage therethrough receiving said outlet pipe, said funnel being rotatable relative to said coupling member about the longitudinal axis of said outlet pipe so as to permit adjustment of the filling position of said conical funnel portion relative to the container to be filled.

4,494,586

SAFETY DEVICE FOR A LOCKING AND OPENING SYSTEM

Claude Picard, Nanterre, France, assignor to La Calhene, Bezons, France

Filed Dec. 8, 1981, Ser. No. 328,537
Claims priority, application France, Dec. 16, 1980, 80 26669
Int. Cl.³ E05C 7/06
U.S. Cl. 141—384 4 Claims



1. In a locking system (26) between a first and a second enclosure, each of said enclosures comprising a flange (14, 20) defining an opening normally sealed by a door (18), said system comprising a locking ring (36) mounted on an outer periphery of the flange (26) of said first enclosure and rotatable between an inoperative position when said second enclosure is absent and a bolting position locking the second enclosure on the first enclosure, and an operating lever mounted on the flange of said first enclosure and movable between a locking position and an unlocking position of the door of said first enclosure, a safety device comprising

a first locking mechanism (80) carried by the flange (20) of said first enclosure and normally locking the locking ring in said inoperative position and in said bolting position,

a second locking mechanism (82) carried by the flange (20) of the first enclosure and normally locking the operating lever in said locking position,

first detection means (72) carried by the locking ring (36) and sensitive to the presence of the second enclosure (10) for unlocking said first locking mechanism,

second detection means (74) carried by the flange (20) of the first enclosure on the outside of said first enclosure (72) and sensitive to the presence of the locking ring in said bolting position for unlocking said second locking mechanism,

third detection means (76) carried by the flange (20) of the first enclosure (12) within said first enclosure and sensitive to the presence of the operating lever in said locking position and

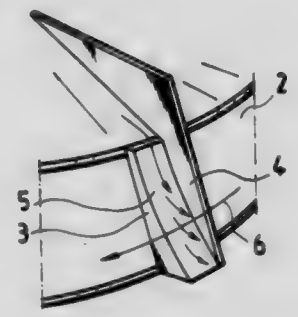
fourth detection means (78) carried by the flange (20) of the first enclosure (12) within said first enclosure and sensitive to the presence of the door of the first enclosure for unlocking said first locking mechanism.

4,494,587

WOOD CHIP SHAVER

Matti Jaakonmäki, and Pentti Raura, both of Valko, Finland, assignors to Rauma-Repola Oy Loviisan Tehtaat, Finland

Filed Jan. 10, 1983, Ser. No. 456,743
Claims priority, application Finland, Jan. 12, 1982, 820098
Int. Cl.³ B02C 18/00; B27C 1/00
U.S. Cl. 144—162 R 4 Claims



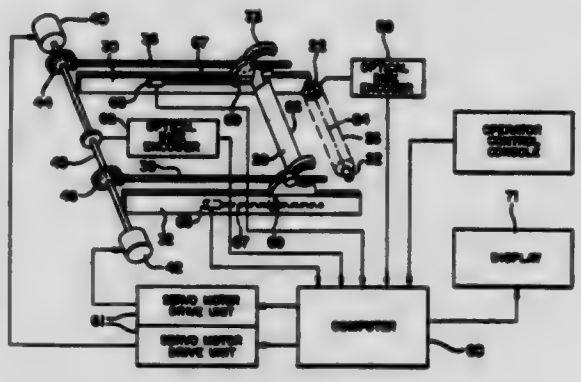
1. A wood chip shaver comprising a rotatable rotor, a plurality of circumferential cutting blades disposed on a circle around the outside of said rotor, a plurality of chip guide members each having a vane thereon carried on the circumference of said rotor, said chip guide members being disposed immediately adjacent to said blades, and shaped for guiding and urging wood chips against the blades, each chip guide member being provided in front of its respective vane with a wedge-shaped guide surface inclined toward the blades in the direction of travel of the chips, whereby the chips are guided in between said surface and the blades.

4,494,588

VENEER LATHE

Larry R. Berry, and Anton S. Richert, both of Roseburg, Oreg., assignors to Sun Studs, Inc., Roseburg, Oreg.

Filed Apr. 22, 1983, Ser. No. 487,584
Int. Cl.³ B27L 5/04
U.S. Cl. 144—209 R 4 Claims



1. A veneer lathe, comprising:

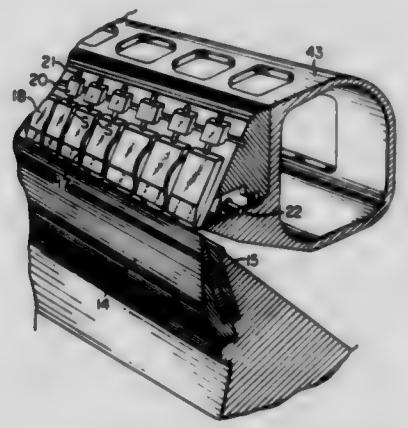
(a) spindle means, defining a spindle axis, for rotating a block about said spindle axis while veneer is cut from said block;
(b) way means, located fixedly and extending generally transversely with respect to said spindle axis, for supporting a main feed carriage;
(c) a main feed carriage movably supported on said way means for movement therealong transversely toward and away from said spindle axis;
(d) main feed carriage position sensor means for sensing the position of said main feed carriage on said way means with respect to said spindle axis;
(e) main feed carriage position indicator means remote from said main feed carriage position sensor means and responsive thereto for indicating the position of said main feed carriage;
(f) spindle rotation measuring means for determining the amount of rotation of said spindle means and providing an indication thereof at a location remote from said spindle means;
(g) motor means for moving said main feed carriage along said way means tranversely toward and away from said spindle axis; and
(h) automatic means responsive to said indications of the position of said main feed carriage and the amount of rotation of said spindle means, for controlling said motor means in response to said indication of the position of said main feed carriage to move said main feed carriage on said way means by an amount having a predetermined relationship to the amount of rotation of said spindle means.

4,494,589

VENEER LATHE

Yoshimitsu Kajikawa; Keinosuke Souma; Kohei Ogaki; Tadashi Uzuka, and Yoshihiko Minato, all of Hakodate, Japan, assignors to Uroko Seisakusho Co., Ltd., Hakodate, Japan

Filed Aug. 16, 1982, Ser. No. 408,172
Claims priority, application Japan, Aug. 17, 1981, 56-129867
Int. Cl.³ B27L *5/02*
U.S. Cl. 144—213 5 Claims



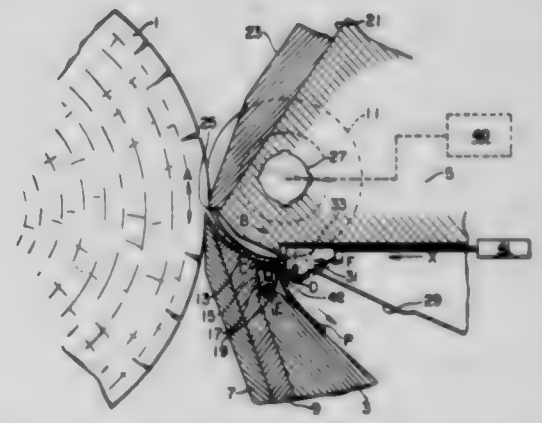
1. A motor driven veneer lathe for peeling a veneer from a log, comprising:
(a) knife means having a cutting edge for peeling said veneer from said log;
(b) a plurality of pressure bars mounted on a pressure bar frame and spaced thereon at constant intervals, wherein each of said pressure bars exerts pressure on said log through a leading edge parallel to the cutting edge of said knife means;
(c) a plurality of circular discs, each having a smooth circumference, and each interposed between two of said pressure bars, retained in position by said pressure bar frame through the medium of a drive shaft;
(d) means for moving said pressure bar frame toward the center of said log while said veneer is peeled; and
(e) means for exerting a substantially constant pressure on said log through said circular discs, wherein said exerting means is independent of said moving means.

4,494,590

VENEER LATHE

Yoshimitsu Kajikawa; Keinosuke Souma; Kohei Ogaki; Tadashi Uzuka, and Yoshihiko Minato, all of Hakodate, Japan, assignors to Uroko Seisakusho Co., Ltd., Hakodate, Japan

Filed Sep. 30, 1982, Ser. No. 430,500
Claims priority, application Japan, Oct. 27, 1981, 56-171876
Int. Cl.³ B27L *5/02*
U.S. Cl. 144—213 8 Claims



1. A veneer lathe for peeling veneer from a log, said veneer comprising:
a knife mounted on a knife frame;
a pressure bar frame;
a plurality of spaced pressure bars retained on said pressure bar frame for applying pressure to said log, the portions of said pressure bars nearest said knife being aligned substantially parallel thereto, thereby forming a gap between said knife and said pressure bars, said gap defining the thickness of said veneer;
a plurality of roller discs individually rotatably mounted in the spaces between successive ones of said pressure bars;
means for rotating said roller discs at a peripheral speed greater than the peripheral speed of said log;
a guide face mounted on said knife frame adjacent said knife and having a shape substantially corresponding to the periphery of said roller discs, thereby forming a curved path for said veneer peeled from said log;
a plurality of parallel-mounted, pressure rollers consecutively spaced along said knife frame adjacent said guide face, said pressure rollers continuing said path provided by said guide face and exerting forces on said veneer in a direction toward said roller discs; and
a plurality of parallel-mounted guide members mounted on said pressure bar frame and disposed along the path of said veneer after said pressure rollers, said guide members exerting a force on said veneer in a direction substantially perpendicular to the direction of force of said pressure rollers.

4,494,591

TILTING TABLE FOR A WOODWORKING TOOL

Harold E. Folkerth, Dayton, Ohio, assignor to Shopsmith, Inc., Dayton, Ohio

Filed Sep. 14, 1983, Ser. No. 531,978
Int. Cl.³ B25H *1/00*
U.S. Cl. 144—286 A 27 Claims

20. In a multipurpose woodworking tool of the type having a base frame, rails supported by said base frame, and a headstock slidably mounted on said rails, a tilting table comprising:
a support member vertically adjustably mounted on said rails;
a pair of trunnions attached to said support member to pivot about a common axis;
said support member including bearing surfaces adjacent to each of said trunnions;
said trunnions each including an arcuate bearing surface extending about an outboard periphery thereof, said arcu-

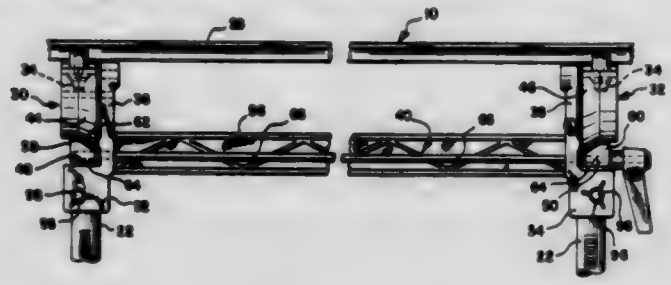
ate bearing surface being frusto-conical in shape and disposed at an angle relative to an associated one of said support member bearing surfaces;

a table top attached to and supported by said trunnions;

a rod slidably and rotatably attached to said support member;

a first wedge block fixedly attached to an end of said rod adjacent to one of said trunnions;

a second wedge block slidably and rotatably attached to said rod adjacent to the other of said trunnions;



each of said wedge blocks being positioned between and slidably engaging different ones of said bearing surfaces of said trunnions and of said support member; and

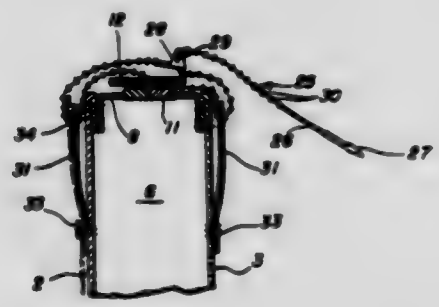
nut means threaded on an opposite end of said rod such that rotation of said nut means drawn said wedge blocks toward each other, thereby wedging each of said blocks between associated ones of said arcuate bearing surfaces of said trunnions and said support member bearing surfaces to prevent pivotal movement of said trunnions and table top.

4,494,592

MAILING BAG WITH ADDRESS MOUNTING POCKET AND TAMPER PROOF TIE SECURING MEANS ATTACHABLE TO CARD AND SLIDE ZIPPER PREVENTING SURREPTITIOUS ACCESS THEREINTO

Cletus D. Bonner, Beaver, Pa., assignor to Strayer Coin Bag Co. Inc., New Brighton, Pa.

Filed May 3, 1983, Ser. No. 476,356
Int. Cl.³ A45C *13/00*
U.S. Cl. 383—5 4 Claims



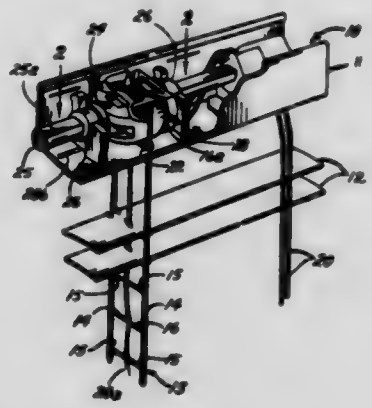
1. A bag for carrying mail or the like comprising two overlying panels of similar size and shape secured along their two peripheral sides and bottom edges to form a main pocket therebetween, said top edges being unsecured to provide a mouth, a slide fastener connected to said panels along said top edges for opening and closing said main pocket mouth, a transparent card pocket, an address card removably inserted within said pocket and being apertured at its upper end, patch means alinedly secured along their side and bottom edges to each of said panels with their upper edges being unsecured and apertured, said patch means generally underlying said card pocket and projecting thereabove and terminating below said slide fastener when in mouth closing position. Finger grip means hinged to said slide fastener and formed with an aperture in one end, and plastic tie seal means including a flexible rod tipped at one end and formed with a hollow truncated cone at its other end and having a plurality of spaced bead means therebetween, whereby when said seal means is inserted through said card, patch and finger grip apertures and said tipped end is threaded through said cone the seal means may be tightened relative to and for retaining said slide fastener in closed locked position and preventing the disengagement of said address card and whereby unauthorized entry into said bag necessitates severing said tie seal means thereby leaving overt evidence thereof.

4,494,593

VENETIAN BLIND ASSEMBLY WITH IMPROVED LADDER SUPPORTING TILT DRUMS

William V. B. Fielder, Jr., Westminster, Md., assignor to Roper Corporation, Kankakee, Ill.

Filed Apr. 1, 1983, Ser. No. 481,288
Int. Cl.³ E06B *9/322, 9/326*
U.S. Cl. 160—177 20 Claims



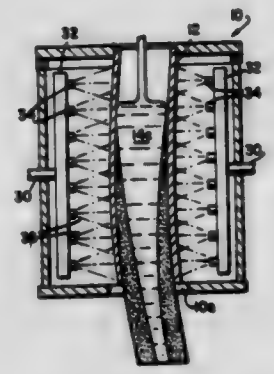
1. In a venetian blind assembly having a plurality of slats pivotably supported by flexible ladders, said ladders each having a pair of side cords with a plurality of slat supporting rungs connected between said side cords at vertically spaced junction nodes, a head rail rotatably supporting a tilt shaft, and a plurality of tilt drums mounted on said shaft for supporting said ladders, wherein the improvement comprises: said tilt drums each having a one piece body with integrally formed means cooperating with the nodes of the uppermost rung of the ladder for indexing the nodes in relatively precise predetermined positions on the tilt drum and for securing the ladder in such position during tilting drum movement.

4,494,594

SPRAY COOLING SYSTEM FOR CONTINUOUS STEEL CASTING MACHINE

Cass R. Kurzinski, Milford, Pa., assignor to AMB Technology, Inc., New York, N.Y.

Filed Sep. 8, 1981, Ser. No. 299,999
Int. Cl.³ B22D *11/124*
U.S. Cl. 164—443 16 Claims



1. A continuous casting machine for casting metals whose melting point temperature is in excess of about 2,600° F., comprising: a frame having a top and a bottom; a vertically oriented mold tube positioned in and secured to the top of said frame; and spray means including a plurality of spray nozzles spaced around said mold tube for directing sprays of water against the exterior surface of the mold tube to cool molten

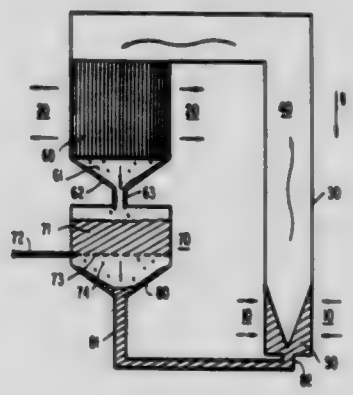
metal therein; said spray means and spray nozzles being constructed and arranged to cause said sprays of water upon exit from the spray nozzles to have a gauge pressure in the range of from about 40 pounds per square inch to about 150 pounds per square inch and to have an included spray angle of up to about 110°; and said spray nozzles being spaced up to about six inches from the mold tube and from each other a predetermined distance such that adjacent sprays of water, where they strike the mold tube, do not overlap each other more than about one inch and are not spaced from each other more than about one inch, whereby the sprays of water dissipate any barrier or layer of steam which tends to form around said mold tube and at the same time effect cooling of the molten metal in the mold tube.

4,494,595

TEMPERATURE-CONTROLLABLE HEAT VALVE

Lawrence A. Schmid, 12 Maplewood Ct., Greenbelt, Md. 20770

Filed Nov. 30, 1983, Ser. No. 556,480
Int. Cl.³ F28F *13/00*
U.S. Cl. 165—1 18 Claims



1. In the method of transferring heat by the evaporation of a working fluid in an evaporator and the condensing of the resulting vapor in a condenser to form condensate, the direction of heat flow being from the evaporator to the condenser, and the condensate being returned to the evaporator, the improvement for controlling the amount of heat flow comprising the steps of:

interrupting the return flow of condensate to produce droplets of condensate, and

controlling the temperature at the point of droplet production to control the rate of droplet production and, thus, the rate at which condensate is returned to the evaporator.

4,494,596

METHOD AND APPARATUS FOR CONDITIONING AIR TEMPERATURE AND HUMIDITY

Norman F. Bradshaw, Surrey, England, assignor to Haden Schweitzer Corporation, Madison Heights, Mich.

Division of Ser. No. 150,537, May 16, 1980, Pat. No. 4,367,787. This application Sep. 29, 1982, Ser. No. 434,077
Int. Cl.³ F24F *3/14*
U.S. Cl. 165—20 6 Claims

1. An air conditioning system comprising:

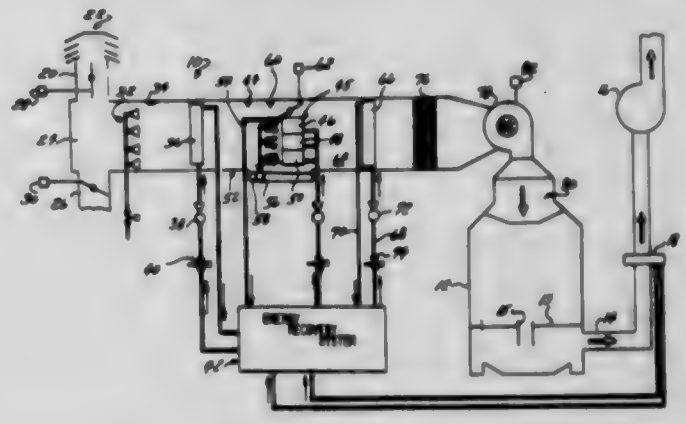
duct means having an upstream portion and a downstream portion and adapted for carrying a stream of air therethrough;

multi-section heat exchange means in said duct means mediate said upstream and downstream portions, said multi-section heat exchange means including a plurality of independently controllable sections arranged in parallel across said duct means to receive and treat respective portions of an air stream flowing in said duct means;

a plurality of banks of spray nozzles for humidifying said air stream and disposed across said duct means upstream of said multi-section heat exchange means, each said bank being operatively associated with a different section of said heat exchange means;

valve means operatively connected to said nozzles for independently controlling the operation thereof whereby humidification may occur in at least one of said banks independently of humidification in the other of said banks;

by-pass means arranged in said duct means and in parallel with said multi-section heat exchange means for controllably conveying therein a portion of said air stream around said multi-section heat exchange means whereby said



conveyed portion receives neither heat exchange treatment nor humidification; and

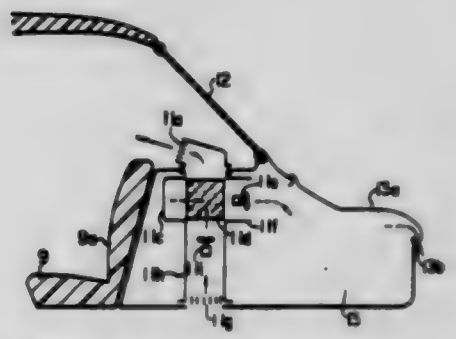
all of the portions of said air stream being remixed at said downstream portion of said duct means to provide an air stream, the qualities of which vary in degree according to the amount of treatment and humidification afforded by said apparatus and the portions of said air stream flowing through and around said heat exchange means.

4,494,597

VENTILATING DEVICE FOR AUTOMOTIVE VEHICLE

Akira Fukami; Kunio Okamoto, both of Okazaki, and Hiroki Noguchi, Oobu, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Nov. 2, 1981, Ser. No. 317,408
Claims priority, application Japan, Nov. 5, 1980, 55-154904; Mar. 10, 1981, 56-33012[U]
Int. Cl.³ F28F *27/00*
U.S. Cl. 165—41 3 Claims



1. A ventilating system for an automotive vehicle which includes a trunk compartment, separated from the vehicle compartment by rear seats and a rear board and an air conditioning device mounted in a front portion of the vehicle, said system including a ventilating device mounted in a rear portion of the vehicle below said rear board for effecting ventilation between the air in a vehicle compartment and the atmospheric air outside the vehicle,

atmospheric air passageway means for conducting atmospheric air from outside of said vehicle to said ventilation device and into the rear portion of said vehicle compartment so that such air is directed toward the front portion thereof; said atmospheric air passageway means including an outlet port located substantially at the center of the rear board as viewed in the lateral direction of the vehicle and opened toward the front portion of the vehicle;

internal air passageway means provided in a manner to cross atmospheric air passageway means for conducting air in

the rear portion of said vehicle compartment out of said vehicle compartment and into said trunk compartment and means for exhausting such air thereafter to the outside of said vehicle, said internal air passageway means including an inlet port located at both lateral end portions of the rear board; and

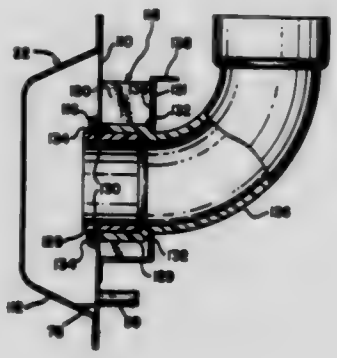
heat exchanger means mounted at the crossing portion of said atmospheric air passageway means and said internal air passageway means for causing both sensible heat and latent heat to be exchanged between the atmospheric air flowing through said atmospheric air passageway means and the air flowing through said internal air passageway means.

4,494,598

FLUE PIPE CONNECTION ASSEMBLY AND METHOD OF CONNECTION THEREOF

Robert DeHaan, Cedar Rapids, and Lee D. Gisvold, Norway, both of Iowa, assignors to Amana Refrigeration, Inc., Amana, Iowa

Filed Jan. 6, 1983, Ser. No. 456,171
Int. Cl.³ F28F 9/06
U.S. Cl. 165—47 9 Claims



1. In combination:

a recuperative heat exchanger for extracting heat from flue gases, said exchanger having a metallic exhaust manifold having a flat sheet wall with a circular aperture;

a bracket having an external connection to said flat sheet wall, said bracket defining a plate parallelly spaced from said wall of said manifold, said plate having a circular opening coaxial to said aperture, said opening being larger than said aperture;

a plastic pipe extending through said opening and into said manifold through said aperture, said pipe having an annular protrusion defining a first shoulder facing said manifold and a second shoulder facing away from said manifold;

an O-ring positioned around said pipe, said O-ring being pressed between said first shoulder and said wall of said manifold to form a substantially airtight seal therebetween; and

a bifurcated retainer removably inserted between said second shoulder and said plate, said retainer engaging said second shoulder to prevent motion of said pipe away from said manifold.

9. The method of connecting a plastic flue pipe to a flat sheet metal wall of a manifold of a recuperative heat exchanger of a residential furnace, comprising the steps of:

inserting said plastic flue pipe through a first circular aperture in a bracket plate externally connected to and parallelly speced from said wall of said manifold and through a second circular aperture in said wall, said first and second apertures being coaxial, said pipe having an annular protrusion having a circumference larger than said second aperture but smaller than said first aperture, said protrusion defining a first shoulder facing said manifold and a second shoulder facing away from said manifold;

pressing said pipe inwardly towards said manifold to compress an elastic O-ring between said first shoulder and said wall of said manifold to form an airtight seal; and

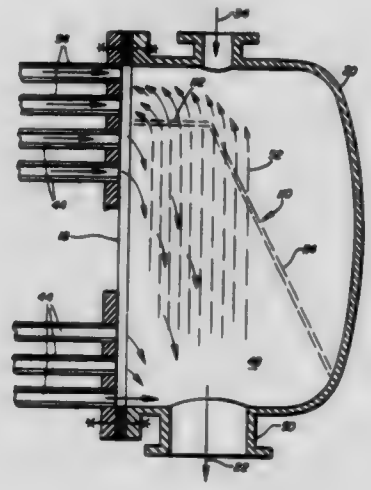
inserting a bifurcated retainer between said plate and said surface of said manifold, said retainer engaging said second shoulder to prevent movement of said pipe in a direction perpendicular away from said manifold.

4,494,599

VACUUM PRODUCING CONDENSER

Walter Kals, Hastings-on-Hudson, N.Y., assignor to Niagara Blower Company, Buffalo, N.Y.

Division of Ser. No. 491,594, May 4, 1983, which is a continuation-in-part of Ser. No. 324,785, Nov. 25, 1981, abandoned. This application May 18, 1984, Ser. No. 611,613
Int. Cl.³ F28F 9/00
U.S. Cl. 165—67 8 Claims



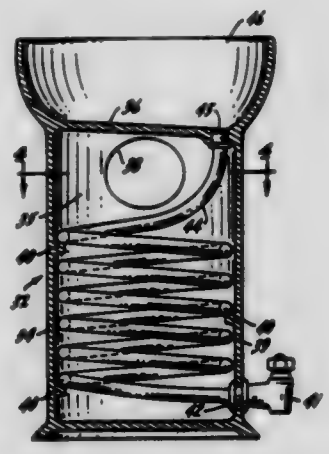
1. In a condenser for vapors containing noncondensible gases, a shell having a generally horizontal condenser chamber with condenser tubes therein, means for directing water downwardly onto the condenser tubes, a basin mounted to the bottom of said shell beneath said condenser chamber for collecting said water directed onto said condenser tubes, and support means engaging the bottom of said shell for supporting the shell, said support means being spaced outwardly from the sides of said basin to permit access to said basin sides for servicing purposes.

4,494,600

PORTABLE QUICK CHILLING AND HEATING APPLIANCE

Bruce E. DeLau, 7111 Marshall Ave., Hammond, Ind. 46323

Division of Ser. No. 241,677, Mar. 9, 1981, Pat. No. 4,407,356. This application Aug. 25, 1983, Ser. No. 526,392
Int. Cl.³ F28D 7/02
U.S. Cl. 165—132 2 Claims



1. A portable quick chilling and heating appliance for beverages and the like comprising, in combination,

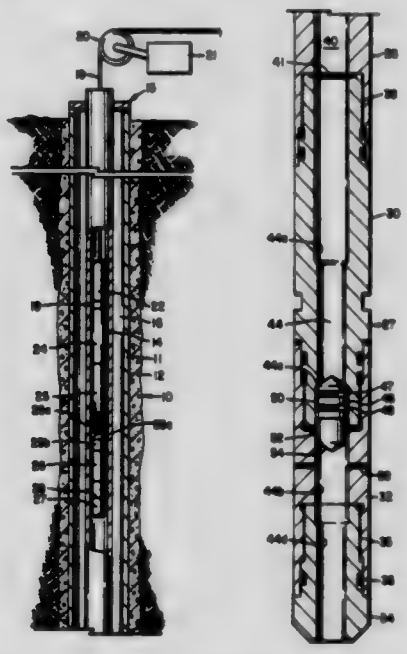
(a) a generally cylindrical container having a fluid tight lower section and a non-fluid tight upper section;
(b) a coil of metallic tubing having an upper end portion and a lower end portion, said coil being housed within the lower section of said container in spaced relation with the inner peripheral wall thereof;
(c) said upper end portion terminating in an intake;
(d) said lower end portion terminating in an outlet;
(e) a cover having a concave upper face and defining a closure for the upper section of said container;
(f) means defining a fluid reservoir in said concave upper face of said cover having an inner diameter at least as great as the inner diameter of said container and also having a lowest point;
(g) means defining a fluid-tight connection between the lowest point of said reservoir and said upper end portion of said coil;
(h) an upwardly extending wall in the upper section of said container situated above said coil; and
(i) means defining at least one aperture in said upwardly extending wall above said coil for loading ice or a heating medium into said container.

4,494,601

DOWNHOLE CHEMICAL CUTTING TOOL

Donna K. Pratt, and Jamie B. Terrell, both of Fort Worth, Tex., assignors to Gearhart Industries, Inc., Fort Worth, Tex.

Filed Sep. 14, 1981, Ser. No. 301,675
Int. Cl.[3] E21B *29/02*
U.S. Cl. 166—55 19 Claims



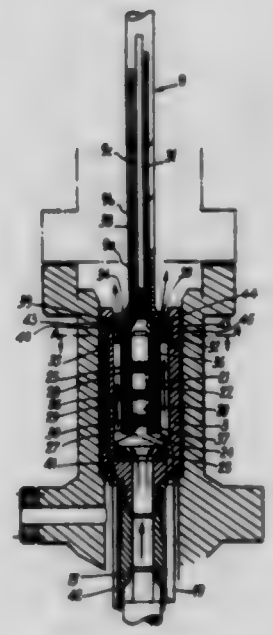
1. In a downhole chemical fluid jet cutting tool for cutting downhole tubular goods, the combination comprising:
(a) an elongated tool body adapted for insertion into a well-bore;
(b) anchoring means in said tool body, said anchoring means being actuatable between a deployed position in response to the application of fluid pressure and a retracted position in response to the release of said fluid pressure;
(c) a chemical section in said tool body having a chamber therein adapted to receive a cutting fluid;
(d) a cutting section in said tool body having a longitudinally extending bore in fluid communication with said chemical section at the rear of said cutting section and in fluid communication with the exterior of said tool body at the front of said cutting section;
(e) at least one cutting port at an intermediate location in said cutting section extending transversely from said bore to the exterior of said tool body;
(f) a piston formed of a relatively malleable material slidably disposed in said bore at a first position between said port and said chemical section; and
(g) a reduced section in said bore in front of said port dimensioned with respect to said piston to receive said piston upon the application of fluid pressure in an interference fit to hold said piston in place at a second location in front of said cutting port, the wall of said reduced bore section being formed of a hard material relative to said piston.

4,494,602

ELECTRICAL CONNECTION DEVICE FOR AN UNDERWATER WELL HEAD

André Capdebosco, Jurancon, and Jean-Claude Ferry, Haget Aubin, both of France, assignors to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Filed Jan. 10, 1983, Ser. No. 456,995
Claims priority, application France, Jan. 14, 1982, 82 00522
Int. Cl.[3] E21B *33/035*
U.S. Cl. 166—65 R 4 Claims



1. An electrical connection device for an underwater well-head including upper and lower stop-valve devices, hydraulic and production connectors, and supplying a motor driving a deep well pump suspended by tubing from the wellhead, the provision of:
a suspension connector attached to said tubing beneath the lower stop-valve device and in communication with said tubing,
said connector having a cylindrical wall with a top open end and a bottom end having a threaded connection to said tubing;
a male element coaxial with said cylindrical wall, and having a lower end seated in said bottom end of the connector and having a passageway for effluent from said tubing,
said male element being provided with axially spaced annular contacts having leads adapted to be connected to said motor;
a female element having an elongated bell shaped hollow body forming an internal chamber provided with axially spaced internal electrical contacts,
said body coaxially receiving said male element in said chamber for mutual engagement of the electrical contacts thereon,
said body having an outer diameter for a major portion of its length less than the inner diameter of the cylindrical wall of the suspension connector to provide an annular space for passage of effluent through the lower end of the male element from the tubing,
said female element having an enlarged portion sealingly engaged with internal surfaces of the top portion of the cylindrical wall of the suspension connector,
said enlarged portion having openings therein for passage therethrough of effluent,
said female element having an extension portion extending

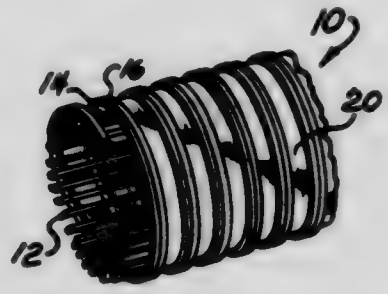
through and above the said stop-valve devices, hydraulic and production connectors associated with said wellhead, said extension portion providing a cylindrical surface against which at least one of said stop-valve devices may seal while communication is maintained with said motor, pump, and suspension connector.

4,494,603

WIRE MESH WELL SCREEN WITH WELDED WIRE SUPPORT

Julian E. Harguindey, Buenos Aires, Argentina, assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 19, 1983, Ser. No. 543,551
Int. Cl.³ E21B 43/08
U.S. Cl. 166—231 8 Claims



1. A well screen comprising a plurality of longitudinal rods, a strip of wire mesh helically wrapped on the rods at a pitch slightly greater than the width of the strip of mesh so as to define a helical gap between adjacent wraps of said strip, at least one wire helically wrapped about said rods at the same pitch as said strip of wire mesh, said at least one wire being welded to each of said rods at each of its intersections therewith, said at least one wire being positioned in said helical gap so that a first narrow width portion thereof overlies an edge portion of said strip of wire mesh while an adjacent second width portion, which includes the welded intersections with said rods, does not overlie said strip of wire mesh.

4,494,604

EXTRACTION OF ACIDIC MATERIALS FROM ORGANIC LIQUIDS AND USE THEREOF IN ENHANCED OIL RECOVERY

James E. Shaw, and Paul R. Stapp, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 28, 1983, Ser. No. 508,640
Int. Cl.³ E21B 43/22
U.S. Cl. 166—273 30 Claims

1. A method for extracting acidic materials from an organic liquid containing the same comprising:

contacting at least one organic liquid, selected from the group consisting of (1) organic liquids naturally containing said acidic materials, and (2) organic liquids which have been contacted with an oxidizing agent under conditions sufficient to produce said acidic materials, with an aqueous, polar organic solvent solution of potassium hydroxide in an amount and under conditions sufficient to produce an aqueous phase containing potassium salts of thus extracted acidic materials.

11. A method for recovering oil from a subsurface earth formation containing the same comprising;

(a) contacting at least one organic liquid, selected from group consisting of (1) organic liquids naturally containing said acidic materials, and (2) organic liquids which have been contacted with an oxidizing agent under conditions sufficient to produce said acidic materials, with an aqueous, polar organic solvent solution of potassium hydroxide in an amount and under conditions sufficient to produce an aqueous phase containing potassium salts of the thus extracted acidic materials, and

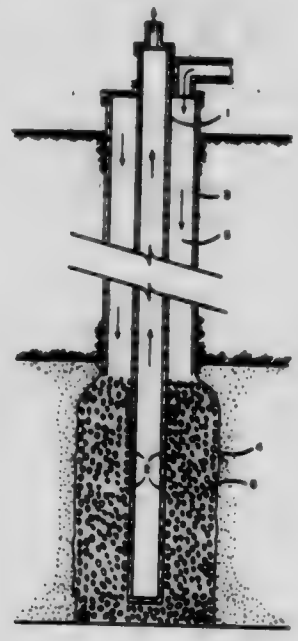
(b) contacting said subsurface earth formation with the thus extracted acidic materials or salts thereof in conjunction with an aqueous displacing medium under conditions to displace said oil.

4,494,605

SAND CONTROL EMPLOYING HALOGENATED, OIL SOLUBLE HYDROCARBONS

John F. Wiechel, Columbus, Ohio; Charles R. French, Bridgeport, and Wilbur L. Hall, Bellaire, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 11, 1981, Ser. No. 329,906
Int. Cl.³ E21B 43/02, 43/04
U.S. Cl. 166—288 18 Claims



1. A method of treating a subterranean, unconsolidated sand and petroleum containing formation penetrated by at least one well, said well being in fluid communication with the subterranean formation, for the purpose of forming a permeable barrier around the well to restrain the movement of sand particles while permitting the passage of petroleum therethrough, comprising:

(a) introducing a pre-determined quantity of granular material into the well bore adjacent the formation;

(b) introducing bituminous petroleum into the granular material;

(c) introducing an asphalt precipitating solvent consisting of a halogen substituted, oil soluble hydrocarbon having at least one halo substituent and having less than 6 carbon atoms per molecule; and

(d) introducing a heated fluid into the granular material at a temperature of at least 250° F. to solidify the precipitated asphalt.

4,494,606

PROCESS FOR IMPROVING VERTICAL CONFORMANCE IN A NEAR WELL BORE ENVIRONMENT

Robert D. Sydansk, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

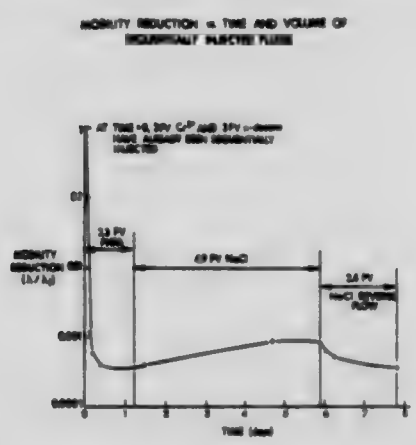
Filed May 19, 1983, Ser. No. 496,349
Int. Cl.³ E21B 33/138, 43/22
U.S. Cl. 166—295 15 Claims

1. A process for substantially plugging at least one zone of relatively high permeability in a near well bore environment of a subterranean formation penetrated by a well bore in fluid communication therewith, said formation having said at least one zone of relatively high permeability and at least one zone of relatively low permeability, the process comprising the steps of:

(a) injecting an aqueous solution containing an organic poly-

mer capable of being cross linked by a cross-linking agent into said near well bore environment via said well bore;

(b) injecting a hydrocarbon spacer between said solution containing said polymer and an aqueous solution containing said cross-linking agent into said near well bore environment via said well bore in an amount sufficient to delay mixing of said solutions containing said polymer and said cross-linking agent until said solutions are in said near well bore environment;



(c) injecting said solution containing said cross-linking agent into said near well bore environment via said well bore; and

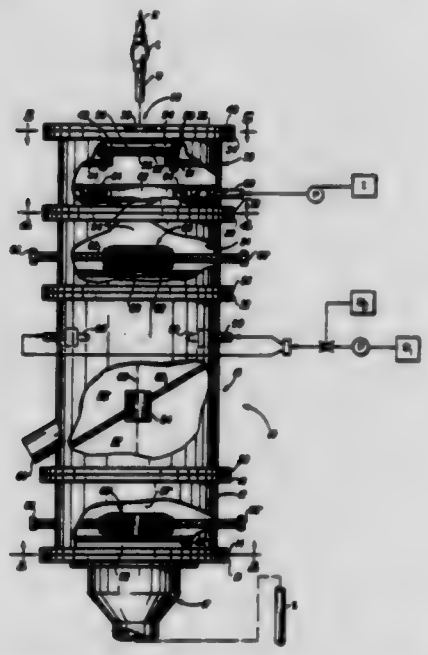
(d) reacting said polymer and said cross-linking agent upon said mixing to form a gel preferentially and predominantly within said at least one zone of relatively high permeability in said near well bore environment, which substantially plugs said at least one zone of relatively high permeability in said near well bore environment.

4,494,607

METHOD OF CLEANING AND INHIBITING SUCKER ROD CORROSION

Michael B. Ford, General Delivery, Vernal, Utah 84078, and Jim B. Griffin, 4518 Graves, Odessa, Tex. 79762

Filed May 9, 1983, Ser. No. 493,029
Int. Cl.³ E21B *19/00*
U.S. Cl. 166—311 11 Claims



5. Apparatus for cleaning and inhibiting a string of sucker rod as the string is being removed respective to a borehole, comprising; in combination:

an enclosure and a wellhead, said enclosure having an axial passageway formed therethrough through which said string can pass, means at one end of said enclosure by which the enclosure is removably attached to the wellhead;

means dividing said enclosure into a stripper chamber, a blasting chamber, a cleaning chamber, and a coating chamber; each of the recited chambers include axially aligned passageways formed therethrough which coincide with said axial passageway formed through said enclosure;

said stripper chamber includes first packer means for resiliently engaging a circumferentially extending marginal length of the string to wipe a substantial quantity of foreign material therefrom and thereby clean the outer surface thereof of unwanted material;

said blasting chamber includes means for producing a blast of abrasive material arranged circumferentially about the surface of the string and directed radially inwards towards said surface to clean said surface of unwanted material;

said cleaning chamber includes second packer means for resiliently engaging a circumferentially extending marginal length of said surface to wipe a substantial quantity of foreign material therefrom and thereby clean said surface of unwanted material;

said coating chamber includes means for applying a corrosion inhibitor agent to the cleaned surface as the string is moved along the longitudinal axis thereof and through the chamber whereby;

said string is cleaned and inhibited as the string is brought out of the borehole.

4,494,608

WELL INJECTION SYSTEM

Charles R. Williams; John H. Yonker, both of Carrollton, and Robert L. Thurman, McKinney, all of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Dec. 6, 1982, Ser. No. 447,023
Int. Cl.³ E21B *34/10*
U.S. Cl. 166—317 23 Claims

1. A valve connectable in a string of well tools, comprising:

a. a tubular body with a bore therethrough;

b. flow passage means in said body communicating said body bore with the exterior of said body; and

c. sliding sleeve valve means in said body controlling flow through said flow passage means including a downwardly biased piston valve member slidably mounted in and sealingly engaging said body above and below said flow passage means and releasably positioned in up flow passage means closed to flow position by a frangible pin through the body wall below said flow passage means and protruding into a recess in said piston valve, said piston valve having an annular differential area between the larger sealed area above said flow passage means and the smaller sealed area below said flow passage means responsive to pressure in said body bore for releasing said piston valve on application of a predetermined pressure in said body bore to slide to a down position opening said flow passage means to flow.

12. A valve connectable in a well tool string, comprising:

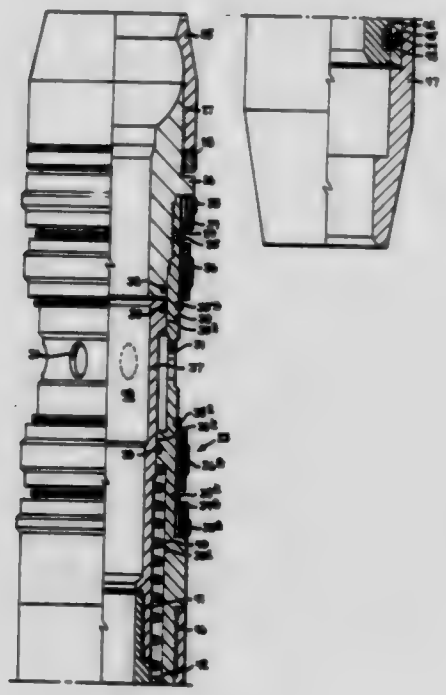
a. a tubular body with a bore therein closed at the lower end;

b. upper and lower flow passage means in said body communicating said body bore with the exterior of said body;

c. sliding valve means in said body controlling flow through said upper and lower flow passage means;

d. releasable positioning means positioning said sliding valve means up closing said upper flow passage means to flow and opening said lower flow passage means to flow; and

e. means on said sliding valve means biasing said sliding valve means downwardly toward a position opening said



upper flow passage means to flow and closing said lower flow passage means to flow.

4,494,609

TEST TREE

Kenneth L. Schwendemann, Lewisville, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 258,689, Apr. 29, 1981, abandoned. This application Dec. 11, 1981, Ser. No. 329,920

Int. Cl.³ E21B 7/12

U.S. Cl. 166—336 36 Claims

1. A subsurface test tree adapted to be suspended in a blow-out preventer stack comprising,

a tubular valve housing,

a cylinder in said housing,

a spring support in said cylinder,

a piston slidable in said cylinder,

spring means extending between said spring support and said piston and urging said piston in one direction,

a flow conduit providing a flowway extending axially through the housing and having a portion arranged radially inward from said spring means,

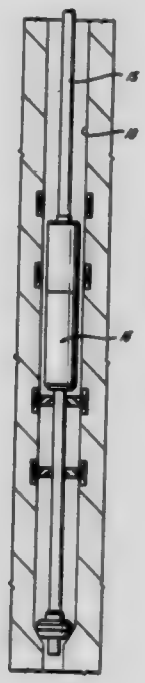
first valve means including a valve member on the spring side of said piston and positioned at least in part in the portion of the flowway surrounded by said spring means and between said spring support and piston in at least one position of the valve member,

said valve means connected to said piston and controlling flow through said flowway in response to reciprocation of said piston,

a control fluid conduit in said body extending from the side of the piston opposite said spring means,

a stinger,

means for releasably latching said stinger to said valve housing,



a control fluid conduit in said stinger communicating with the control fluid conduit in said body when said stinger is latched to said valve housing,

a tubing depends from said housing,

a hydraulically operated surface controlled subsurface safety valve in said tubing,

a hydraulic line for providing operating pressure fluid to said safety valve between said safety valve and a port in said housing, and

means in said housing establishing fluid communication between said port and said control fluid conduit.

4,494,610

METHOD FOR RELEASING STUCK DRILL PIPE

Clarence O. Walker, Richmond, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 11, 1983, Ser. No. 483,789

Int. Cl.³ E21B 31/03; C09K 7/02

U.S. Cl. 166—301 13 Claims

1. An improved method for releasing a stuck drill string in the borehole of an underground formation employing an aqueous drilling fluid, the method comprising contacting the stuck drill string with an additive composition effective in reducing the annular pressure exerted by the drilling fluid or mud cake against the stuck drill string and thereby releasing the stuck drill string, the additive composition comprising a major amount of an alcohol selected from the group consisting of methanol, ethanol, normal propanol, isopropanol and mixtures thereof.

4,494,611

APPARATUS FOR PROCESSING SOIL FOR PLANTING

Guillermo D. Alvarez, 16 Searing St., Dover, N.J. 07801

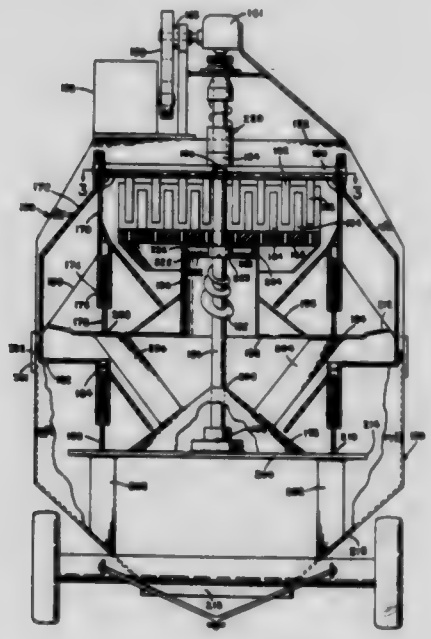
Filed Feb. 11, 1982, Ser. No. 347,873

Int. Cl.³ A01B 43/00, 35/16

U.S. Cl. 172—32 12 Claims

1. An apparatus for processing soil by mechanical means comprising:

a. a housing having a top portion with an aperture located therein, a bottom portion with an aperture located therein, for the respective gravitational ingress and egress of a quantity of soil, a plurality of planar surfaces, supported within said housing; a vertical rotatable power drive shaft centrally located in said housing with said shaft having a plurality of radially extending support arms rotatable therewith, said arms having supported thereon, a crushing means comprising a plurality of rotating discs in series rotating about said vertical power driven shaft, on said plurality of planar surfaces;



b. separating means supported by said plurality of radially extending support arms, said radially extending arms having secured thereto, downwardly extending pins; a disc plate mounted about said power driven shaft and having a plurality of openings therein for the passage therethrough of said soil and having extending upwardly therefrom a plurality of arcuate inclined pins, said upwardly extending arcuate inclined pins cooperating with said downwardly extending pins to separate the rocks and other large objects from the soil; and,

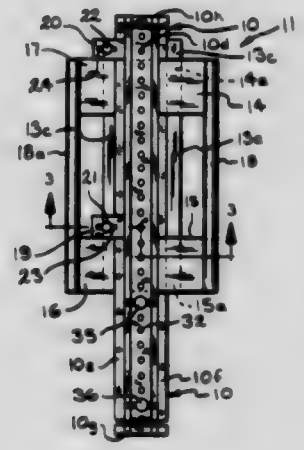
c. means for communicating said soil to said top portion aperture.

4,494,612

MANUALLY OPERABLE POST DRIVER

Harry Bell, 818 E. Shaw St., Charlotte, Mich. 48813

Filed Feb. 22, 1983, Ser. No. 468,297
Int. Cl.³ B25D *1/00*
U.S. Cl. 173—1 17 Claims



16. The method for driving a post with a U-shaped cross-section with a bottom (10*a*), two opposite legs (10*b*, 10*c*) and lateral extensions (10*e* and 10*f*) from each leg and having two opposing ends (10*g* and 10*h*) which can be blunt which comprises:

(a) mounting on a post a manually operable post driver including slide hammer means (11) manually slideable and reciprocally movable on a segment along the post between the two opposing ends (10*g* and 10*h*) of the post with retaining means (14*a*, 15*a*, 19 and 20) which removably engage the lateral extensions of the post the retaining means including at least one post engaging member on the slide hammer means slideably engaging each of the lateral extensions of the post and wherein at least one of the post engaging members is disengageable from the post extension to allow removal of the slide hammer means from the post and with hand holding members (18 and 18*a*) on the hammer means for manual operation and with a hammer head (25) on the hammer means and including anvil means (12) with securing means for removable rigid mounting of the anvil means on the post intermediate to the ends of the post adjacent to the segment of movement of the hammer means and wherein in use the hammer head of the slide hammer means impacts the anvil means to drive or to remove the post from the ground;

(b) impacting the slide hammer means on the anvil means to drive or remove the post from the ground; and

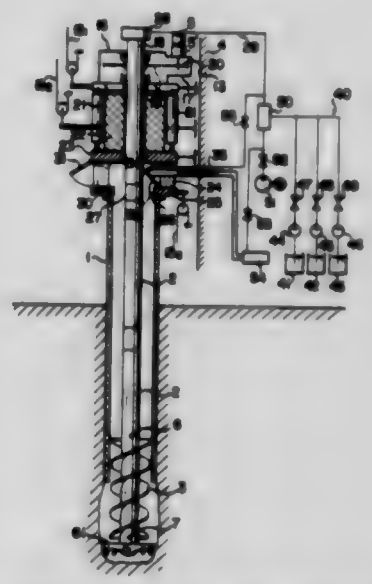
(c) disengaging the disengageable post engaging member and thus the slide hammer and the anvil means from the post.

4,494,613

METHOD AND APPARATUS FOR DRIVING HOLLOW PILES INTO THE GROUND

Hiroaki Tamaki, Hiratsuka, and Joji Nakamura, Kamakura, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Mar. 11, 1982, Ser. No. 357,270
Int. Cl.³ E02D *7/26*
U.S. Cl. 173—74 9 Claims



1. An apparatus for driving a hollow pile into the ground, comprising:

a crane vehicle having a support member pivotally mounted thereto;

a mounting member mounted for up and down movement relative to the support member, said mounting member having detachably mounted thereto a hollow pile to be driven into the ground;

a drive mechanism mounted to said crane vehicle for up and down movement relative to the support member, said drive mechanism having a hollow drive shaft and means for rotating the drive shaft;

a cylindrical member having a discharge opening mounted on said mounting member;

a cover mounted in said cylindrical member adapted for discharging earth and sand in a plug state;

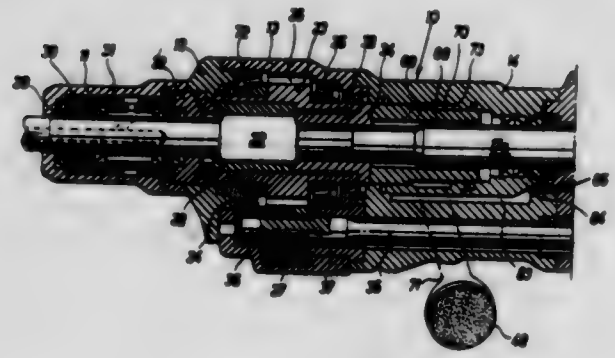
a hollow rod detachably connected to said hollow drive shaft and driven thereby;
a cutter mounted to the leading end of said hollow rod;
a short auger fixedly secured to a leading end portion of said hollow rod;
a first nozzle orifice formed in said hollow rod at a portion immediately above said short auger;
a second nozzle orifice formed in said hollow rod at a portion between said cutter and said short auger;
a source of compressed air;
a source of liquid;
means connected to said source of compressed air and liquid for mixing the compressed air with the liquid; and
first conduit means for connecting said mixing means to the inside of said hollow drive shaft.

4,494,614

HYDRAULICALLY OPERATED IMPACT DEVICE

Ake T. Ekliöf, Skärholmen, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Feb. 5, 1982, Ser. No. 346,238
Claims priority, application Sweden, Feb. 11, 1981, 8100961
Int. Cl.[3] B23B *45/16*; F01B *31/00*
U.S. Cl. 173—116 13 Claims



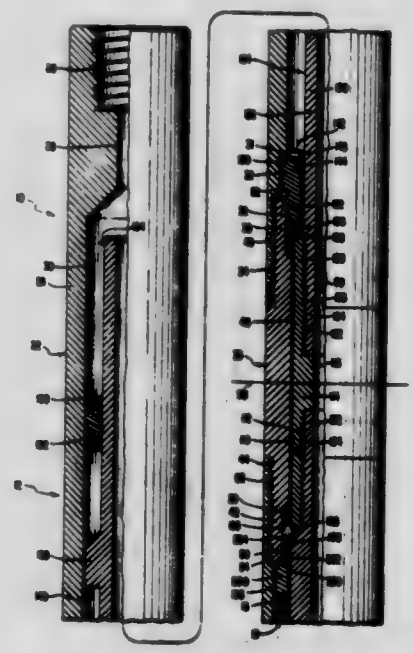
1. An hydraulically operated impact device, e.g. a rock drill, comprising:
a reciprocably driven hammer piston (17*a–c*) arranged to impact upon an anvil means of a tool member (22);
a supporting member (33,34) for axially supporting the tool member (22);
means defining a pressure chamber (70);
means for constantly connecting said pressure chamber (70) to a source of high pressure fluid;
a support piston (68) which is slidable in a cylinder means and which is subject to hydraulic pressure in said pressure chamber (70) in order to bias said supporting member (33,34) into a defined forward end position;
narrow clearances (75,76) located between relatively moving surfaces of said support piston (68) and said cylinder means in which said support piston (68) is slidable, said narrow clearances (75,76) forming narrow leak passages from said pressure chamber (70);
sealing rings (79,80) located at the outer end portions of said narrow clearances (75,76) to seal off the ends of said narrow clearances between said support piston (68) and said cylinder means;
passages (81,82) leading from portions of said narrow clearances interior of said sealing rings and communicating with said narrow clearances (75,76); and
an orifice restrictor (84) connected to said narrow clearances (75,76) via said passages (81,82), said narrow clearances (75,76) being connected in series with said passages (81,82) and said orifice restrictor (84) to a sump, said orifice restrictor (84) being connected between said narrow clearances (75,76) and said sump.

4,494,615

JARRING TOOL

Kenneth R. Jones, Corpus Christi, Tex., assignor to Mustang Tripsaver, Inc., Corpus Christi, Tex.

Filed Oct. 23, 1981, Ser. No. 314,466
Int. Cl.[3] B25D *9/00*; E21B *4/00*
U.S. Cl. 173—119 3 Claims



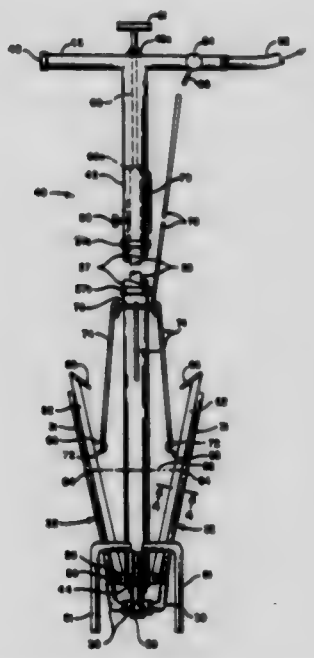
1. A jar comprising:
a barrel and a mandrel telescoped relative thereto and defining therebetween a spring chamber;
a spring in the spring chamber arranged to be stressed upon untelescoping movement between the barrel and the mandrel;
impact members carried by the barrel and mandrel for creating an impact force upon stressing of the spring and actuation of the jar;
a ball transfer mechanism operating between the barrel and mandrel for stressing the spring upon initial untelescoping movement of the barrel and mandrel and, after a predetermined untelescoping movement between the mandrel and barrel, for releasing the barrel and mandrel for free untelescoping movement to impact the members, the ball transfer mechanism including a plurality of balls and a carrier having a plurality of openings therein receiving the balls, the carrier having an end disposed in the spring chamber and abutting the spring for operatively connecting the carrier and the spring for biasing the carrier with the spring;
the spring being positioned to bias the carrier toward a location positioning the balls in latching engagement with the mandrel;
the barrel comprising a section providing a surface constraining the balls against radial movement for the duration of the preliminary untelescoping movement and then releasing the balls to enable radial movement thereof for unlatching the balls from the mandrel;
the mandrel comprising a notch having a frustoconical surface abutting the balls, a pair of bodies and a connecting section securing the mandrel bodies together and having a wear surface, the notch being provided in part by the wear surface, the mandrel connecting section being symmetrical about a plane perpendicular to a longitudinal tool axis to provide a second wear surface, the connecting section being invertible to present the second wear surface to the ball transfer mechanism.

4,494,616

APPARATUS AND METHODS FOR THE AERATION OF CESSPOOLS

George B. McKee, 472 Bay Ave., Patchogue, N.Y. 11772

Filed Jul. 18, 1983, Ser. No. 514,935
Int. Cl.³ E21B 7/18, 7/20
U.S. Cl. 175—67 7 Claims



1. A tool for implanting aeration apparatus beneath a pool for collecting waste material in a liquid carrier, comprising:

a. an extended hollow tube having an open leading edge at one end and a handle closing off the other end;

b. means extending from the side of said hollow tube adjacent said leading edge and projecting past said leading edge for communicating with the interior of said hollow tube;

c. means pivotally mounted on said tube adjacent said leading edge for supporting said aeration apparatus, said pivotally mounted means comprising a plurality of arms hinged on said hollow tube and pivoting about 180° between a retracted position folded in against said hollow tube and a position whereby said arms are projected forward of said hollow tube;

d. said aeration apparatus comprising a center tube entering said open leading edge of and extending up through said tube and aerating arms communicating with the bottom of said center tube and nestled against the outwardly facing sides of said hinged arms; and

e. means for controlling the flow of compressed air through said handle into said hollow tube, into said aeration apparatus and out said leading edge and said extending means.

7. A method for implanting an aeration device in the ground beneath a cesspool comprising the steps of:

a. mounting said device on a tool having arms in a retracted position to which said tool is engaged,

b. supplying air under pressure to said tool, said tool having means to project said compressed air forwardly;

c. lowering said tool through the bottom of said pool and into the ground surface beneath said pool, said compressed air being projected acting to agitate the material into which said tool is being lowered thereby facilitating movement of said tool;

d. upon reaching a preselected depth for said tool, raising said tool, the solid material in which said tool is buried causing said arms to spread and release said aeration device; and

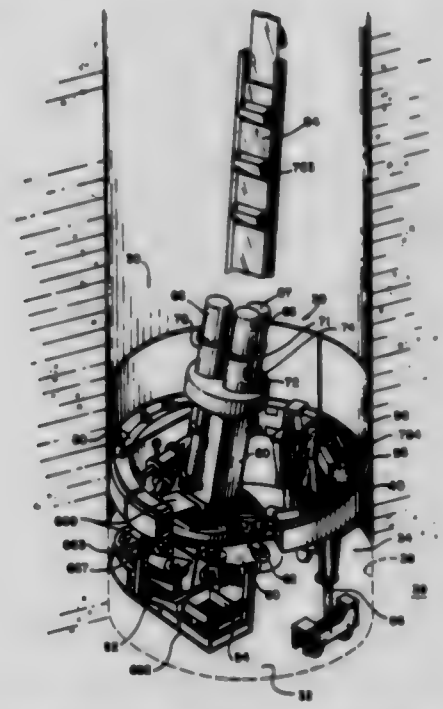
e. retracting said tool causing said arms to rotate until said arms extend down leaving said aeration device in position below said pool to deliver air under pressure to aerate said pool.

4,494,617

SHAFT BORING MACHINE

Larry L. Snyder, Golden, Colo., assignor to Harrison Western Corporation, Golden, Colo.

Filed Jan. 27, 1983, Ser. No. 461,675
Int. Cl.³ E21C 1/00; E21B 3/00
U.S. Cl. 175—86 96 Claims



1. A machine for boring a shaft in earth strata or the like, the shaft having a generally cylindrical side wall and a face at one end thereof which is cut away by the machine, and comprising:

an annular support ring means for supporting the machine on the sidewall of the shaft during a cutting stroke having an outside diameter approximately equal to the diameter of the shaft for being located in closely spaced circumjacent relationship to the side wall of the shaft;

clamping means associated with said support ring means for causing selective clamping engagement of said support ring means with the side wall of the shaft to fixedly axially hold the machine in the shaft;

a carriage means movably mounted on said support ring means in fixed axial relationship thereto for 360° circumferential movement thereabout and relative thereto;

carriage drive means operatively mounted between said rotatable carriage means and said support ring means for causing relative circumferential movement therebetween;

a rotary cutting wheel means having a central axis of rotation supported by said carriage means and adapted to be located adjacent the end face of the shaft and having a diameter substantially less than the diameter of the shaft for cutting the end face of the shaft in a continuous spiral path to elongate the shaft during each 360° revolution of said carriage means;

cutting wheel drive shaft means supported by said carriage means for rotatably driving said cutting wheel means and having a longitudinal axis of rotation;

motor drive means operatively associated with said cutting wheel drive shaft means for causing rotation of said drive shaft means and said cutting wheel means;

cutting wheel support means for holding said cutting wheel means central axis of rotation and said cutting wheel drive shaft means at a fixed acute angle of inclination relative the axis of the shaft;

axial shifting means for enabling axial movement of said cutting wheel means and said drive shaft means relative to said carriage means and said support ring means toward and away from the end face of the shaft and for forcing said cutting wheel means into cutting engagement with the end face of the shaft during a single continuous extension of said axial shifting means as said cutting wheel means is carried around said support ring means whereby

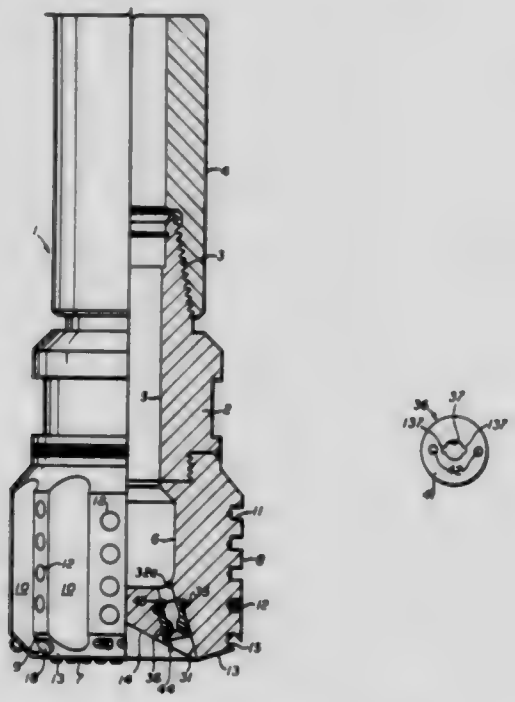
a continuous spiral cut of the end face is made during each 360° revolution of said carriage means.

4,494,618

DRILL BIT WITH SELF CLEANING NOZZLE

Robert P. Radtke, Kingwood, Tex., assignor to Strata Bit Corporation, Houston, Tex.

Filed Sep. 30, 1982, Ser. No. 430,986
Int. Cl.³ E21B *10/60*
U.S. Cl. 175—393
4 Claims



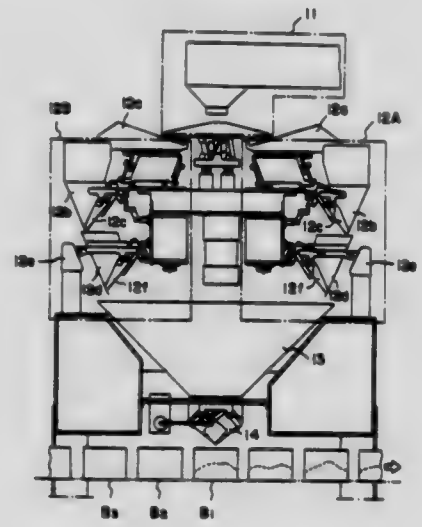
1. A drill bit with replaceable nozzles comprising:
a drill body having a hollow tubular body adapted to be connected to a drill string,
said drill body having an exterior peripheral stabilizer surface and a front end face facing forwardly in the direction of drilling,
a plurality of spaced apart diamond cutting disks supported stationarily in cutting position in said front end face,
at least one nozzle passage in said drill body comprising a duct opening from the interior of said body and a counterbore aligned therewith which opens through said front end face adjacent to said cutting elements, said passage including a shoulder,
a removable self-cleaning nozzle member of abrasive resistant hard metal of an exterior shape mounted within said counterbore and restrained by said shoulder,
means securing said nozzle member in position against said shoulder in said counterbore,
said nozzle member having a forwardly directed longitudinal passage therethrough for conducting a flow of drilling fluid,
said nozzle passage being non-circular in cross-section and sufficiently out-of-round that the portions thereof outside a maximum circular cross-section of said passage define auxiliary passages which are coextensive longitudinal with the center of said longitudinal passage to enable drilling fluid to flow around a particle of material lodged at the center of said passage, said maximum circular cross-section being smaller than the cross-section of said duct.

4,494,619

COMBINATORIAL WEIGHING APPARATUS WITH BULK AND FINE FEED

Tadaaki Matsuno, Shiga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Jun. 22, 1983, Ser. No. 506,797
Claims priority, application Japan, Jun. 23, 1982, 57-107791; Dec. 27, 1982, 57-234637
Int. Cl.³ G01G *19/22, 13/02*
U.S. Cl. 177—25
9 Claims



1. A combinatorial weighting apparatus having a plurality of weighing machines including weighing hoppers charged with batches of articles to be weighed and weight detectors for measuring the weights of the batches of articles charged into the weighing hoppers, so that a combination of batches of articles which gives a total weight value equal or closest to a target weight value can be selected and discharged, said combinatorial weighing apparatus comprising:
at least one predetermined weighing machine for discharging at least one batch of articles for a rough charging operation;
combinatorial computing means for computing a total weight of said at least one batch of articles discharged from said at least one predetermined weighing machine for the rough charging operation as a rough charging weight value and for selecting a combination of weighing machines for a corrective charging operation which gives a total weight combination equal or closest to a corrective charging weight value which is the difference between the target weight value and said rough charging weight value;
discharge control means for discharging along a first discharge path, said at least one batch of articles from said at least one predetermined weighing machine for the rough charging operation at a prescribed first timing, and for discharging along a second discharge path, said batches of articles for the corrective charging operation from said selected combination of weighing machines at a second timing; and
a chute, positioned in said first and second discharge paths, for collectively discharging the separately discharged batches of articles for the rough charging operation and for the corrective charging operation into a single location.

4,494,620

ELECTRIC BALANCE

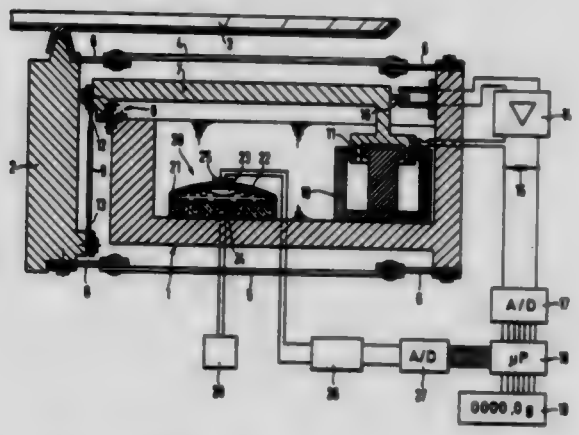
Erich Knothe, Bovenden; Franz-Josef Melcher, Hardegsen; Eberhard Stadler, Göttingen, and Rainer Exner, Wollbrandshausen, all of Fed. Rep. of Germany, assignors to Sartorius GmbH, Fed. Rep. of Germany

Filed Sep. 8, 1983, Ser. No. 530,258

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1982, 3234372

Int. Cl.³ G01G *19/22, 21/12, 21/24*

U.S. Cl. 177—25 7 Claims



1. A high resolution electronic balance comprising:
an electromagnetic balance movement;
a microprocessor for digital signal processing, receiving signals from said movement;
a signal display for signals from said microprocessor; and
an electric inclination meter built into the housing of said balance, the signals from said meter being input to said microprocessor to compensate the inclination-dependent errors of the balance movement.

4,494,621

STEERING CONTROL SYSTEM FOR CRAWLER TRACTOR TYPE VEHICLES

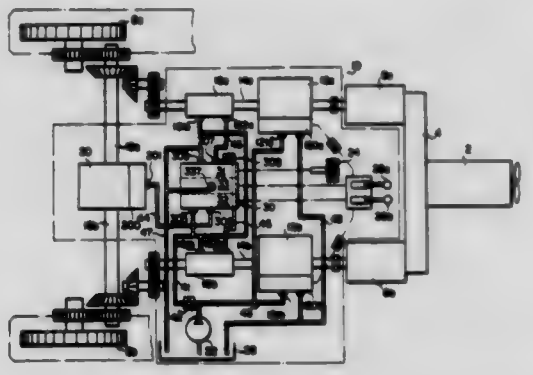
Yoshihiro Nagata, Kyoto, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Sep. 8, 1982, Ser. No. 415,841

Claims priority, application Japan, Sep. 10, 1981, 56-141657

Int. Cl.³ B60K *41/24;* B62D *11/08*

U.S. Cl. 180—6.2 6 Claims



1. A steering control system for crawler tractor type vehicles comprising an engine; a power distributor means adapted to distribute the power derived from the engine into two equal independent portions; left and right independent torque converters each of which receives one of the equally distributed portions, respectively; a power transmission mechanism with left and right power trains independent of each other, each power trains including a transmission gear means, a steering brake means and a reduction gear means and adapted to transmit the power from the left or right torque converter to left or right drive wheel, respectively; and a center clutch means adapted to directly connect or disconnect left and right power take-off transverse shafts, characterized in that said steering control system comprises an interlocking valve means located between a manually operated section and an actuating section and adapted to operatively connect the manually operated section and the actuating section, said manually operated section including a pair of left and right steering levers, linkages connected to the steering levers, respectively, a commonly used brake pedal and a linkage connected to the brake pedal, said actuating section including said left and right steering brake means and said center clutch means; and a hydraulic circuit for selectively supplying hydraulic fluid delivered by a hydraulic pump into said actuating section in response to the action of said interlocking valve means caused by the manipulation of either of said left and right steering levers and/or said brake pedal, whereby said left and right steering brake means and said center clutch means are interrelatedly operated, respectively.

4,494,622

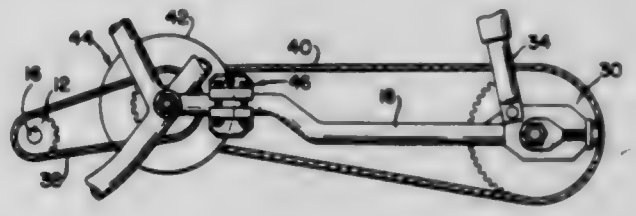
MOTORCYCLE POWER TRANSMISSION AND BRAKE ASSEMBLY

David L. Thompson, 12682 Oxford Dr., La Mirada, Calif. 90638

Continuation-in-part of Ser. No. 222,335, Jan. 5, 1981, abandoned. This application Sep. 9, 1982, Ser. No. 416,370

Int. Cl.³ B62L *1/00*

U.S. Cl. 180—227 18 Claims



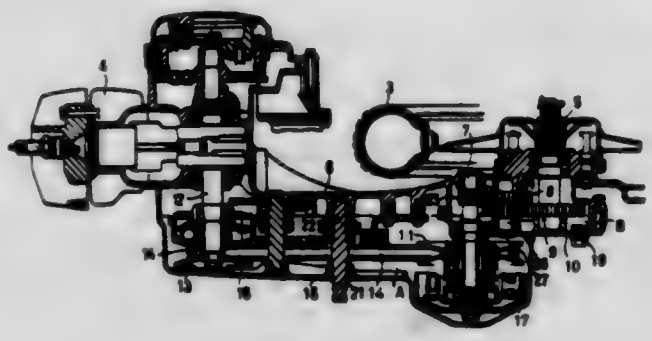
1. A power transmission and brake system for chain driven vehicles, the system comprising:
a frame;
an engine mounted to the frame;
a rotatable drive sprocket operatively connected with the engine and being rotatable thereby;
a swing arm mounted to the frame at a fixedly positioned swing arm pivot axle about which the swing arm is pivotable;
a rear wheel rotatably mounted in the swing arm at a fixedly positioned rear wheel axle, whereby the rear wheel axle is capable of at least a limited travel on an arc relative to the frame;
a rear wheel sprocket fixedly mounted to the rear wheel and rotating about the rear wheel axle;
a first endless drive chain being in permanent engagement with the rear wheel sprocket;
an idle sprocket and brake assembly mounted to the axle of the swing arm pivot, the idle sprocket and brake assembly including first idle sprocket means for engaging the first drive chain, second idle sprocket means for engaging the second drive chain, and a brake member; the first idle sprocket means, the second idle sprocket means and the brake member being fixedly connected to one another for rotation in unison about the axle of the swing arm pivot, the brake member having a frictional surface, and
brake means fixedly connected to the swing arm to move on an arc therewith, said brake means being actuable by an operator of the vehicle for engaging the frictional surface of the brake member and for transmitting a force from the brake member to the swing arm thereby braking the rear wheel of the vehicle through the idle sprocket and brake assembly and the second drive chain and resisting a tendency of the motorcycle to shift forwardly and to transfer weight to the front wheel when said motorcycle is braked, thereby improving traction of the rear wheel of the motorcycle relative to the road surface.

4,494,623

POWER TRANSMISSION CASING APPARATUS IN MOTORIZED TWO-WHEELED VEHICLE

Noboru Kerata, Kamifukuoka; Kanio Miyazaki, Oi, and Kaniyuki Yamamoto, Kodaira, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 178,942, Aug. 15, 1980, Pat. No. 4,344,500.
This application Aug. 16, 1982, Ser. No. 408,685
Claims priority, application Japan, Aug. 21, 1979, 54-105543
The portion of the term of this patent subsequent to Aug. 17, 1999, has been disclaimed.
Int. Cl.³ B62M 9/06
U.S. Cl. 180—230 2 Claims



1. A power transmission casing apparatus in a motorized two-wheeled vehicle comprising:

a case main body extending from one lateral side of an internal combustion engine to one lateral side of a rear wheel positioned rearwardly of said engine, said case main body rotatably supporting a wheel axle of said rear wheel and partially housing in a rear portion a reduction gear means which comprises the wheel axle, an input shaft, and a gear train operatively interconnecting the input shaft to the wheel axle, said casing apparatus also housing V-belt means comprising a rear pulley on the input shaft, a forward pulley on an output shaft of the engine and a V-belt operatively connecting the pulleys, each of the pulleys having a circumferential periphery;

a transmission side wall member extending to enclose said reduction gear means, said input shaft extending through said transmission side wall member; and

a V-belt cover sealingly engaging with the case main body and extending from beyond the forward-most portion of the periphery of the forward pulley to beyond the rearmost portion of the periphery of the rear pulley to enclose the V-belt means;

said gear train comprising a gear of a small diameter provided on said input shaft, a gear of a large diameter provided on said wheel axle, and two intermediate gears which are integral and coaxial one with another and are provided on an intermediate shaft;

said intermediate shaft being located at a position which faces a recess portion formed on the inner side surface of a flange of said rear pulley and a bearing portion of said intermediate shaft projecting towards said inner side surface.

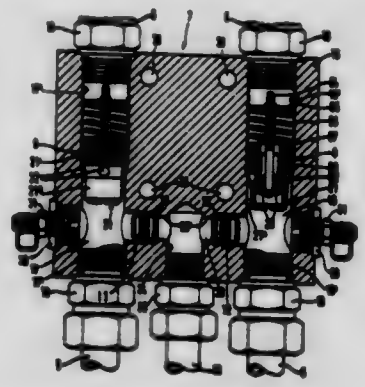
4,494,624

HYDRAULIC DRIVING SYSTEM WITH PROTECTION AGAINST OVERSPEED

Willy Scheuerle, and Georg Prechtel, both of Pfedelbach, Fed. Rep. of Germany, assignors to Willy Scheuerle Fahrzeugfabrik GmbH & Co, Pfedelbach, Fed. Rep. of Germany

Filed May 10, 1982, Ser. No. 376,836
Claims priority, application Fed. Rep. of Germany, May 19, 1981, 3119808
Int. Cl.³ B62D 11/04
U.S. Cl. 180—308 7 Claims

1. A hydraulic driving system, particularly for use in multiple-axle heavy-duty vehicles with a motor drive for each axle, comprising at least one pump, a plurality of hydraulic driving motors each having an intake port and an outlet port, parallel branch conduits for connecting the high-pressure side and the suction side of the pump in parallel to the intake and outlet ports of the motors; and an overspeed protecting device arranged in said parallel branch conduits, said overspeed protecting device comprising a housing block formed with a first throughbore connectable between the high-pressure side of the pump and the intake port of each hydraulic motor, a first



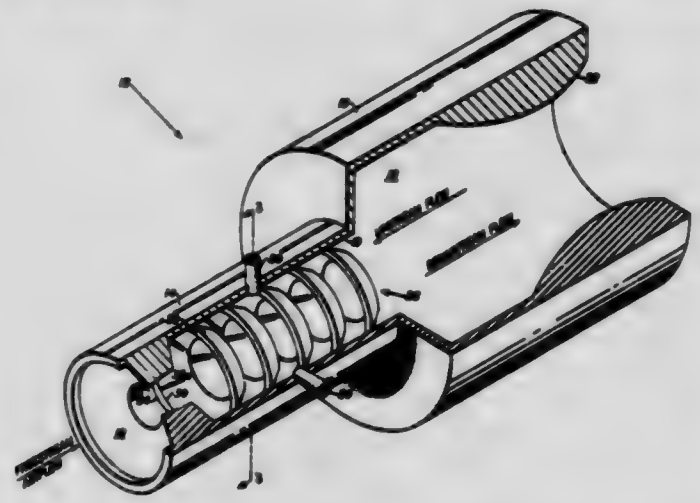
non-linear restrictor arranged in said first throughbore, a second throughbore connectable between the suction side of the pump and the outlet port of the motor, a second non-linear restrictor arranged in said second throughbore a blind bore for receiving additional pressure fluid from an auxiliary source, and a backpressure valve connecting the blind bore to the part of the first throughbore between the restrictor and the intake port of the motor.

4,494,625

AXIAL ACOUSTIC WAVE ATTENUATOR FOR RAMJETS

H. Bernard Mathes, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 29, 1983, Ser. No. 518,702
Int. Cl.³ F02K 1/44
U.S. Cl. 181—213 11 Claims



1. Attenuator apparatus installed in a ramjet engine includes a combustion section and an inlet section, the engine inlet section having an inlet nozzle and fuel injection ports and the engine combustion section having an exhaust nozzle and defining a combustion chamber, the attenuator apparatus comprising:

a plurality of spaced apart truncated hollow cone attenuators being dimensionally identical to each other and being installed in said inlet section of said engine, each of said attenuators having a base and a throat, said base defining an area larger than the area defined by said throat, said base of each of said attenuators fixedly attached to said inlet section, said throat of each of said attenuators oriented toward the combustion chamber of said engine, and at least one of said attenuators installed in said inlet section on the side of said fuel injection ports closest to said inlet

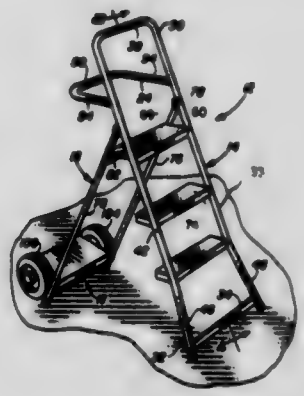
nozzle, and at least one of said attenuators installed on the side of said fuel injection ports closest to said combustion chamber of said engine, and said attenuator closest to said fuel injection ports on said inlet nozzle side of said fuel injection ports defining an aperture for each of said fuel injection ports for creating turbulence and enhancing the mixture of fuel and air adjacent the fuel injection port with which it is associated.

4,494,626

COMBINATION STEPLADDER AND HAND TRUCK APPARATUS

Dale A. Ast, Wichita, Kans., assignor to Harper, Truck, Inc., Wichita, Kans.

Filed Nov. 12, 1982, Ser. No. 440,847
Int. Cl.³ E06C 1/397; B62B 1/20
U.S. Cl. 182—20 8 Claims



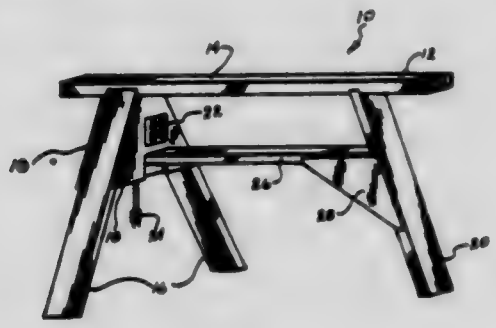
1. A combination stepladder and hand truck apparatus, comprising:
(a) a ladder support frame assembly having a support handle member and a support step assembly connected thereto;
(b) a hand truck support frame assembly having one end pivotally connected to said ladder support frame assembly and a wheel support assembly connected to another end of said hand truck support frame assembly;
(c) said ladder support frame assembly and said hand truck support frame assembly of inverted V-shaped when in the stepladder usage condition ; and
(d) a support and lock plate assembly having a support plate member pivotally mounted between said another end of said hand truck support frame assembly.

4,494,627

PORTABLE WORK STATION

Randy L. Arent, Box 75, Red Feathers Lakes, Colo. 80545

Filed May 2, 1983, Ser. No. 490,375
Int. Cl.³ F16M 11/00
U.S. Cl. 182—129 7 Claims



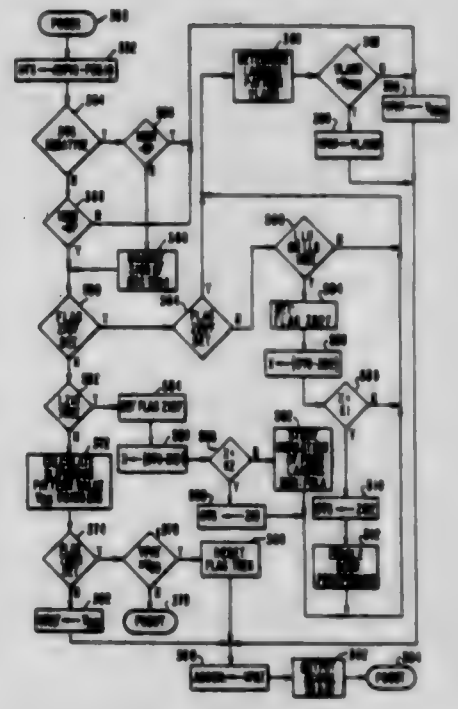
1. A portable work station comprising:
(a) an elongated member having a generally flat top working surface, said elongated member having a first end and a second end;
(b) a pair of legs each having an upper end and a lower end, the upper end of each said leg being securely attached to said elongated member near said first end, wherein each said leg depends downwardly from said elongated member;
(c) bracing means connecting said pair of legs;
(d) a single leg having an upper end and a lower end, the upper end thereof being securely attached to said elongated member near said second end, wherein said leg depends downwardly from said elongated member and is disposed directly beneath said working surface;
(e) electrical receptacle means secured to said work station beneath said working surface; and
(f) extensible leg means secured to said elongated member near its second end, wherein said extensible leg means is vertically adjustable to a length greater than the length of said single leg, wherein said extensible leg means may be extended and is adapted to support said second end of said elongated member.

4,494,628

ELEVATOR SYSTEM

Vladimir Uherek, Troy Hills Township, Morris County, and Matthew F. Kersen, Union, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 17, 1983, Ser. No. 523,993
Int. Cl.³ B66B 5/02
U.S. Cl. 187—29 R 8 Claims



1. An elevator system, comprising:
a structure having a plurality of floors and a hoistway;
an elevator car mounted for movement in said hoistway to serve the floor;
motive means for moving said elevator car to a target floor;
pulse means responsive to movement of said elevator car for providing distance pulses in response to predetermined standard increments of movement;
means responsive to said distance pulses for providing a count representative of the position of said elevator car in said hoistway;
means responsive to said car position count and to the location of the target floor for providing a distance-to-go (DTG) count representative of the distance between the elevator car and the target floor;
means defining a floor zone adjacent to each floor which has a predetermined dimension;
detector means for detecting the arrival of said elevator car at the target floor zone;
comparator means for comparing the DTG count with the predetermined dimension of the target floor zone in response to said detector means detecting the arrival of said elevator car at the target floor zone;

means responsive to said comparator means for setting the DTG count equal to the predetermined dimension of the floor zone when the DTG count and said predetermined dimension have a predetermined relationship;

and means responsive to the DTG count for providing a speed pattern signal for said motive means, at least when said elevator car is stopping at a target floor.

4,494,629

LOWERING DEVICE AND METHOD

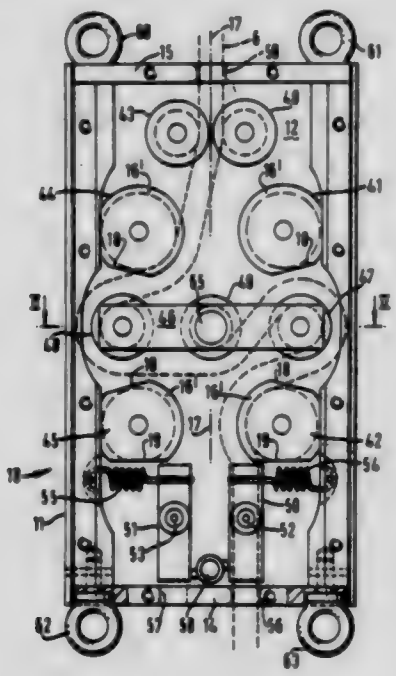
John L. Rasburn, 5 Dunstan Close, East End Rd., London N 2, England

Filed Aug. 10, 1982, Ser. No. 406,983

Claims priority, application United Kingdom, Aug. 12, 1981, 8124639

Int. Cl.³ B65H *59/14*

U.S. Cl. 188—65.5 14 Claims



1. A lowering device comprising:

a line for lowering a load,

a support structure engaged with the line in such a manner that upon lowering of the load the line runs through the support structure,

a transverse pivoted guide member positioned transversely relative to the main extended length of the line in operation, the transverse guide member having two primary guide elements mounted thereon in spaced apart relationship and the transverse guide member being pivotally mounted on the support structure at a pivot axis substantially midway between the two primary guide elements, and

manual control means coupled to the transverse guide member to effect pivotal movement thereof by an operator,

the line being threaded along a path through the support structure such that the line passes around and bears against both primary guide elements on the transverse guide member and experiences a braking effect thereby,

the route of the line through the support structure comprising a path through an opening in the support structure, a path around an arc of a first secondary guide element, a path between the first secondary guide element and a first primary guide element, a path around an arc of the first primary guide element, a path between the two primary guide elements leading back towards the said opening, a path around an arc of the second primary guide element returning to a direction away from the said opening, a path between the second primary guide element and a second secondary guide element, a path around an arc of the second secondary guide element, and a path through a further opening in the support structure, said further opening being positioned at a region of the support structure remote from the first opening with the guide member and the guide elements arranged in a region between the two openings,

the path of the line through the support structure being such that tension in the line due to a load in operation produces a turning moment on the transverse guide member which pivots the transverse guide member to bring each primary guide element towards an associated secondary guide element mounted on the support structure with the line between the associated primary and secondary guide elements to increase the braking effect on the line, the manual control means being operable to increase or decrease the braking effect by turning the transverse guide member in the same or the opposite sense to the effect of the load tension in the line.

4,494,630

FLOATING-CALIPER SPOT-TYPE DISC BRAKE

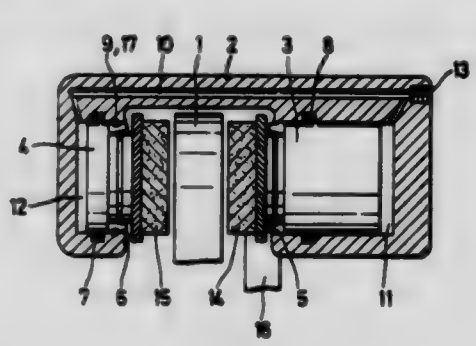
Roberto Stoka, Nauheim, and Lucas H. Haar, Niddatal, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 269,938, Jun. 3, 1981, abandoned. This application Jul. 29, 1983, Ser. No. 517,992

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1980, 3026817

Int. Cl.³ F16D *65/20*

U.S. Cl. 188—71.8 18 Claims



1. A floating-caliper spot-type disc brake comprising:

a caliper displaceable relative to a support member, said caliper embracing a brake disc having a hydraulic brake-actuating device disposed therein on one side of said disc operating directly on an adjacent one of two brake shoes each disposed on a different side of said disc, said caliper operating on the other of said two brake shoes indirectly by means of a reaction, said brake actuating device incorporating a first hydraulically movable piston and a first mechanism in contact with said caliper and said first piston for providing a predetermined brake clearance between said one of said two brake shoes and the adjacent side of said disc upon termination of a braking operation, wear of said one of said two brake shoes being compensated for by said first piston moving toward said disc; and

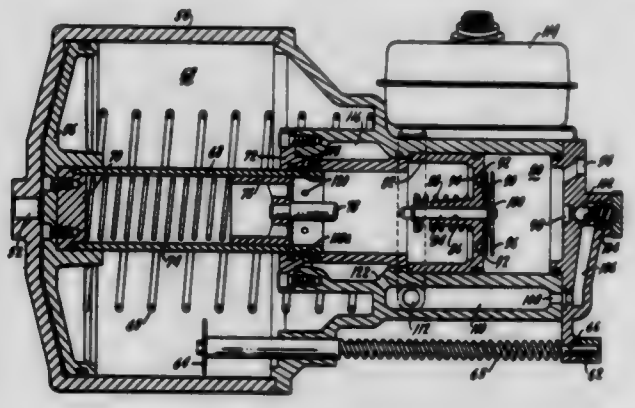
a hydraulic applying device disposed in said caliper on the other side of said disc operating on the other of said two brake shoes, said applying device being in constant communication with said brake-actuating device via a line in said caliper coupled to a common brake circuit input, said applying device having an effective hydraulic surface equal to that of said brake-actuating device, having a hydraulic movable means and having a second stop mechanism in contact with said caliper and a selected one of said hydraulically movable means and said other of said two brake shoes to limit movement of said other of said two brake shoes to provide said predetermined clearance between said other of said two brake shoes and the adjacent side of said disc upon termination of said braking operation, said applying device having a power stroke limited to said predetermined clearance and said reaction compensating for wear of said other of said two brake shoes.

4,494,631

COMBINATION AIR CYLINDER AND HYDRAULIC SLACK ADJUSTER

Henry R. Billeter, Marco Island, Fla., assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Sep. 27, 1982, Ser. No. 424,060
Int. Cl.³ B60T 11/10
U.S. Cl. 188—153 R 5 Claims



1. A combination air brake cylinder and hydraulic slack adjuster for a railroad car brake system including:

a housing, an air-operated piston in said housing, an air port in said housing in communication with said air piston, a return spring in said housing for said air piston,

a fluid outlet port in said housing, fluid piston and valve means within said housing connected to said air piston and responsive to brake application movement thereof to supply a brake shoe application fluid pressure at said outlet, said fluid piston and valve means including a first piston attached to said air piston and movable therewith, and a second piston, spaced from said first piston, and movable in response to fluid pressure forces created by movement of said first piston, a fluid reservior, check valve controlled fluid passages within a portion of said housing for connecting said reservoir with opposite sides of said second piston for adjusting slack in the brake rigging during brake application functions, said second piston having a seal portion positioned to close said check valve controlled connecting passages during brake application movement of said hydraulic slack adjuster.

4,494,632

PISTON GUIDE AND SEAL FOR DUAL-TUBE HYDROPNEUMATIC SHOCK ABSORBER

Johannes J. de Baan, and Michael Hönig, both of Ennepetal, Fed. Rep. of Germany, assignors to August Bilstein GmbH & Co. KG, Ennepetal-Altenvoerde, Fed. Rep. of Germany

Filed Mar. 22, 1983, Ser. No. 477,816
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1982, 3210518
Int. Cl.³ F16F 9/36; B60G 15/00
U.S. Cl. 188—269 11 Claims

1. A hydropneumatic shock absorber comprising:

an outer tube having upper and lower ends and centered on an upright axis;

an inner tube inside the outer tube, forming therewith an outer gas/liquid chamber, having upper and lower ends, and itself internally forming an inner chamber;

a piston rod inside the inner tube in the inner chamber and generally coaxial with the tubes;

a body of liquid filling the inner chamber and partially filling the outer chamber;

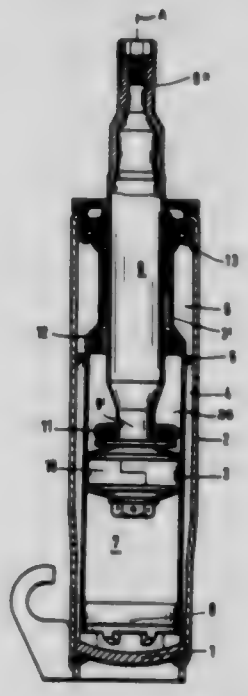
a piston carried in the inner chamber on the rod, radially outwardly engaging the inner tube, and subdividing the inner chamber into an upper and a lower compartment;

a foot valve at the lower ends between the lower compartment and outer chamber and permitting limited liquid flow therebetween;

a rigid centering washer having an outer periphery engaged against the upper end of the outer tube and an axially extending ridge engaged directly radially against the upper end of the inner tube;

a flexible annular outer lip on the washer, engaged radially against the upper end of the inner tube, and bearing flexibly thereagainst in a direction opposite the direction in which pressure in the upper compartment is effective against the outer lip, whereby the outer lip permits limited fluid flow from the upper compartment to the outer chamber but blocks opposite flow;

a flexible annular inner seal underneath the ridge on the washer and engaged radially inwardly against the piston



rod, whereby the washer and inner seal upwardly close off the inner chamber;

an outer seal on the washer engaged against the outer tube, whereby the washer and outer seal upwardly close off the outer chamber;

an element forming in the inner chamber an upwardly open pocket down into which the inner seal projects; and

structure forming a passage from the inner chamber axially past the pocket, whereby gas collecting in the inner chamber below the pocket can bleed up past the pocket and then pass by the lip into the outer chamber.

4,494,633

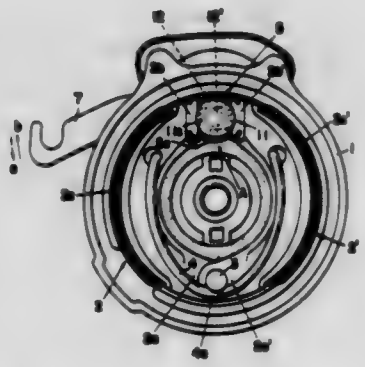
AUTOMATIC BRAKING-GAP ADJUSTER SYSTEM FOR MECHANICAL DRUM BRAKES

Isao Idesawa, Nagano, Japan, assignor to Nisshin Kogyo Kabushiki Kaisha, Japan

Filed Mar. 26, 1982, Ser. No. 362,492
Claims priority, application Japan, Mar. 31, 1981, 56-45514[U]; May 30, 1981, 56-80179[U]; Jul. 15, 1981, 56-110356; Jul. 15, 1981, 56-105291[U]; Jul. 15, 1981, 56-105293[U]; Jul. 15, 1981, 56-105294[U]; Jul. 15, 1981, 56-105295[U]; Jul. 15, 1981, 56-105296[U]; Dec. 26, 1981, 56-193583[U]
Int. Cl.³ F16D 65/56
U.S. Cl. 188—329 14 Claims

1. An automatic brake-gap adjuster system for mechanical drum brakes comprising a pair of brake shoes, each brake shoe having one end pivotally supported on a back plate and the other end adapted to move outwardly into engagement with the inner periphery of a brake drum; a cam member rotatably disposed through said back plate between said other ends of said pair of brake shoes and adapted to be rotated by a brake arm, said cam member comprising a cam portion having a pair of opposed flat sides and a tapered axial guide groove in each said side tapering from a shallower depth at the end proximate said back plate to a greater depth at the distal end thereof; cam collars slidably disposed in said guide grooves to abut onto said

other ends of said brake shoes, whereby said cam collars are rotatable with said cam member, slidable toward a cam shaft and movable in the expanding direction of said brake shoes; an actuating member threaded into said cam member to abut onto the end faces of said collars; and an adjusting member adapted to rotate said actuating member in response to the abrasion of



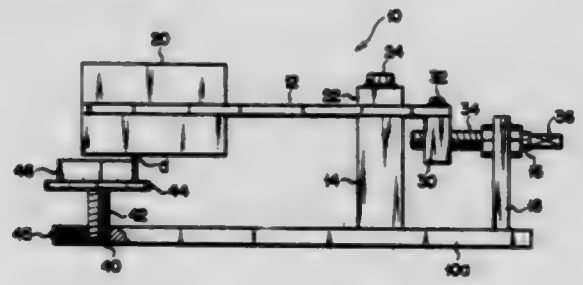
said brake shoes, thereby threadedly moving said actuating member toward said cam shaft; whereby said cam collars are slidingly moved toward said cam shaft along said tapered groove to thereby expand said brake shoes and adjust the brake-gap between the inner periphery of said brake drum and said brake shoes.

4,494,634

IMPACT DAMPER

Katuo Kato, Sagamihara, Japan, assignor to NHK Spring Co., Ltd., Yokohama, Japan

Filed Dec. 30, 1981, Ser. No. 336,021
Int. Cl.³ F16F 7/10
U.S. Cl. 188—380 8 Claims



1. An impact damper comprising:

a bed plate attached to an object of damping forming a main vibration system with a main natural frequency;

an additional weight;

additional elastic means supporting said additional weight to permit said weight to be vibrated in the same direction as the vibration of said object of damping;

said additional weight and said additional elastic means comprising an additional vibration system having a natural frequency of vibration different from that of said main vibration system;

mounting means for mounting said additional elastic means on said bed plate; and

stop means mounted on said bed plate and having one side face against which said additional weight strikes when said additional weight vibrates with an amplitude exceeding a given level,

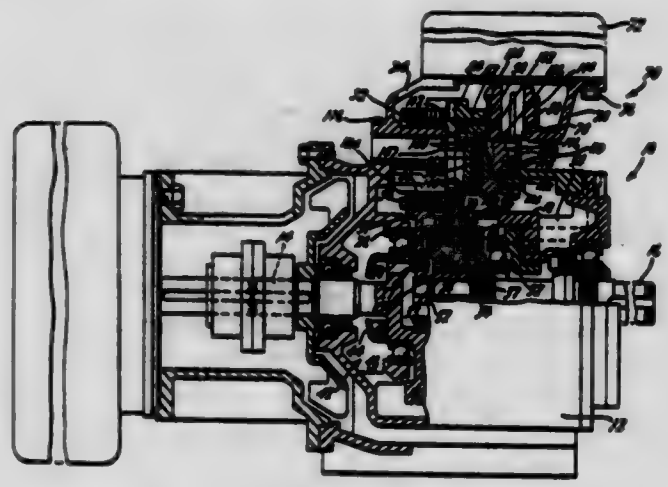
the space between said additional weight and said stop means as measured when said object of damping is not vibrating ranging from 0% to 80% of the resonance amplitude of said object of damping, and the additional natural frequency of said additional vibration system ranging from 60% to 80% of the main natural frequency of said main vibration system.

4,494,635

INCHING DRIVE FOR CLUTCH/BRAKE UNIT

Gordon M. Sommer, Boca Raton, Fla., assignor to Sommer Co., Warren, Mich.

Filed Jul. 30, 1982, Ser. No. 403,300
Int. Cl.³ B60K 41/28; F16H 57/10, 37/06
U.S. Cl. 192—12 C 8 Claims



1. An inching drive unit for a clutch/brake unit having a main housing and an input shaft and an output shaft operably associated with said main housing, said inching drive comprising:

inching motor means for driving said inching drive unit, having a drive shaft extending therefrom;

a second housing secured to said inching motor means, said drive shaft of said inching motor means extending into said second housing;

first gear means disposed at least in part within said second housing and operably associated with said inching motor drive shaft including a gear shaft and at least one pair of gears fixedly mounted one at substantially each end of said gear shaft;

second gear means operably associated with said input shaft of said clutch/brake unit; and

means for selectively engaging said first gear means with said second gear means comprising a piston disposed around and fixedly secured to said gear shaft, a chamber surrounding said gear shaft within which said piston moves, and means biasing said piston to place said first gear means out of engagement with said second gear means, wherein engagement of said first gear means with said second gear means permits said inching motor means to drive said input shaft of said clutch/brake unit.

4,494,636

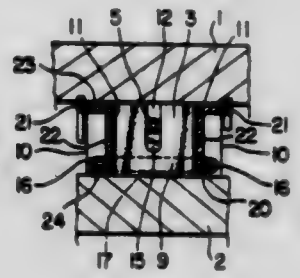
ONE-WAY CLUTCH

Shozo Wakabayashi, and Kinzo Narita, both of Osaka, Japan, assignors to Tsubakimoto-Morse Co., Ltd., Osaka, Japan

Filed Aug. 25, 1982, Ser. No. 411,394
Claims priority, application Japan, Mar. 24, 1982, 57-45555
The portion of the term of this patent subsequent to Nov. 23, 1999, has been disclaimed.
Int. Cl.³ F16D 41/07
U.S. Cl. 192—41 A 5 Claims

1. In a one-way clutch having a plurality of annular sprags inserted between an inner and an outer ring, a radially opening groove formed in each sprag between the sides thereof, a spring fitted in said groove to urge the sprag toward the engaging direction, an annular retainer comprising a wire rod bent into alternately U-shaped sections each having an axially extending part and a circumferentially extending part, the axially extending part of the retainer holding the sprag in conjunction with the spring, a pair of annular side plates disposed between said circumferentially extending parts and both sides of the sprags, the side plate having a recess in the peripheral edge thereof into which said axially extending part fits to prevent

the retainer from moving, and the sprag having an external shape for permitting rotational contact with the axially extending part of the retainer as the sprag moves into and out of



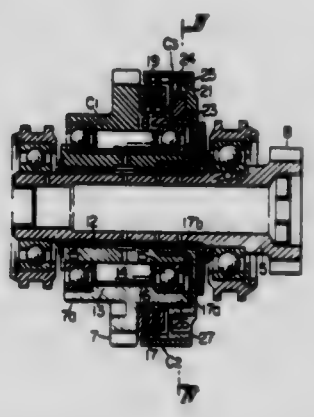
engagement with the inner and outer rings, comprising the improvement wherein the side plates have outer and inner circumferences in sliding contact respectively with the inner surface of the outer ring and the outer surface of the inner ring.

4,494,637

POWER TRANSMISSION SYSTEM FOR VEHICLES

Yusuke Gotoda, Tokyo, and Toshimitsu Yoshimura, Tsuruga-shima, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1983, Ser. No. 468,292
Claims priority, application Japan, Feb. 20, 1982, 57-26356
Int. Cl.³ F16D *41/06, 47/04*
U.S. Cl. 192—48.4 7 Claims



1. A power transmission system for vehicles, comprising a driving member connected to a crankshaft of an engine, and a driven member connected to a driving wheel, said driving and driven members being joined together via a one-way clutch, a friction clutch, and a direct-coupling clutch, which are disposed parallel to one another, said one-way clutch being so formed that it is put in a connected state when a positive load is applied thereto and in a disconnected state when a negative load is applied thereto, said friction clutch being so formed that it is slipped when it receives the rotary torque not lower than a predetermined rotary torque, said direct-coupling clutch being so formed that it is normally maintained in a connected state while being placed in a disconnected state when the speed of revolution of said engine has exceeded a predetermined level.

4,494,638

SYNCHRONIZING DEVICE, ESPECIALLY FOR THE TRANSMISSION OF A MOTOR VEHICLE

Walter Zenker, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Apr. 5, 1982, Ser. No. 365,644
Int. Cl.³ F16D *13/74, 23/02*
U.S. Cl. 192—48.91 4 Claims

1. A synchronizing device connected to a vehicle transmission lubricant circuit, said device comprising:

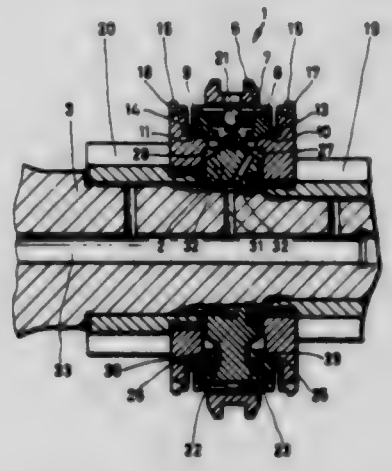
a transmission shaft;

an annular gearshift-sleeve carrier non-rotatably arranged on said transmission shaft;

a clutch ring adjacent to said gearshift-sleeve carrier and having a conical, radially outwardly directed friction surface, with an annular chamber being associated with said gearshift-sleeve carrier and said clutch ring and with the annular chamber being in constant communication with said lubricant circuit;

a gear rigidly associated with said clutch ring and rotatably mounted on said transmission shaft; and

a synchronizing ring arranged radially outwardly of and around at least a portion of said clutch ring, said synchronizing ring having a corresponding conical friction surface with which said friction surface of said clutch ring cooperates; a plurality of pocket-like recesses being arranged on at least one conical friction surface of said synchronizing ring and said clutch ring respectively, with said pocket-like recesses extending substantially radially through said friction surface as well as being open toward said conical friction surface of the opposing clutch ring and synchronizing ring respectively, as well as also being open toward said annular chamber in constant communication with said lubricant circuit for improved lubrication and cooling of the respective conical friction surfaces over which lubricant accummulation from said pocket-like recesses is distributed where said synchronizing ring and said clutch ring are brought into frictional engagement so that unavoidable wear at said conical friction surfaces can be kept small in that sufficient lubrication is brought between said conical friction surfaces.



4,494,639

ELECTRO-MAGNETIC CLUTCH CONTROL SYSTEM FOR AUTOMOBILES

Toshio Takano, Hamuramachi, and Ryuzo Sakakiyama, Tokyo, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1981, Ser. No. 265,117
Claims priority, application Japan, Jul. 31, 1980, 55-105717; Jul. 31, 1980, 55-105718; Jul. 31, 1980, 55-105720; Jul. 31, 1980, 55-105721
Int. Cl.³ B60K *41/28*
U.S. Cl. 192—0.052 2 Claims

1. A system for controlling an electro-magnetic clutch of an internal combustion engine mounted on a car, which has a drive member secured to a crankshaft of said internal combustion engine, a driven member adjacent said drive member, a magnetizing coil provided in one of said members, a transmission secured to said drive member having multi-stage change gears, comprising

a first detecting means responsive to the operation of said change gears for producing a gear-changing output signal,

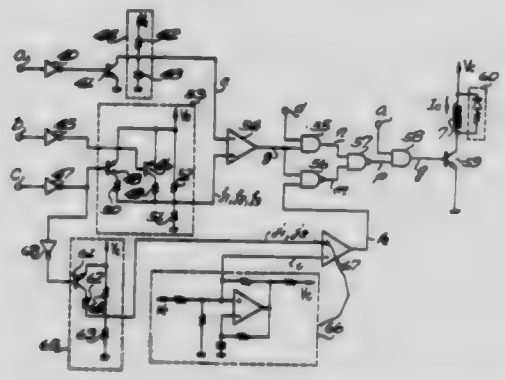
a second detecting means responsive to the acceleration of said internal combustion engine for providing output signals,

a first control circuit responsive to output signals of said first detecting means and second detecting means for producing an output signal for a period decided by the output signal of said second detecting means,

a first gate means responsive to the output signal of said first control circuit fo producing an output signal,

switch means responsive to the output signal of said first gate means to allow the current to flow to said magnetizing coil,

a second control circuit responsive to the output signal of said second detecting means for producing an output



signal for decreasing the current passing through said magnetizing coil,

second gate means responsive to said output signal of said second control circuit for controlling said first gate means, and

said second control circuit comprises a standard voltage circuit, a triangular wave generating circuit, and a comparator means for comparing outputs of said standard voltage circuit and said triangular wave generating circuit for producing a pulse train having a pulse width decided by the level of the output signal of said standard voltage circuit.

4,494,640

HYDRAULIC CONTROL DEVICE FOR AN AUTOMATIC TRANSMISSION

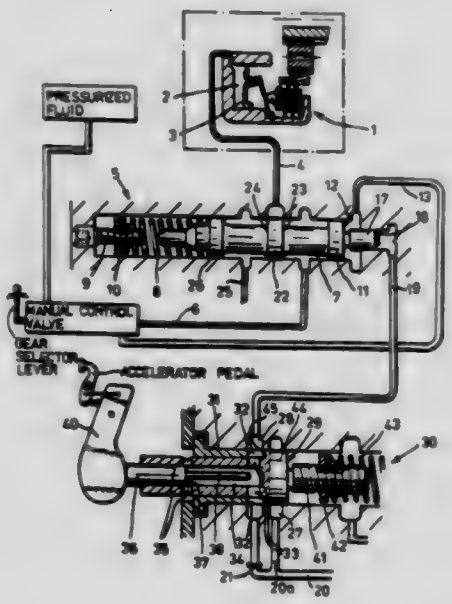
Ernst-August Honig, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jan. 13, 1983, Ser. No. 457,643

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1982, 3205198

Int. Cl.³ B60K *41/16*; F16D *21/04*

U.S. Cl. 192—0.052 **3 Claims**



1. In an automatic transmission of an automobile having a mechanical planetary gearing system with hydraulically actuatable gearshift elements for selective engagement of transmission elements; a manual control valve having positions depending upon the position of a manually actuatable selector lever, said manual control valve conveying pressurized fluid for actuation of said gearshift element when said selector lever is positioned for a forward gear, and a pressure medium line communicating between said manual control valve and said gearshift element;

a hydraulic control device comprising:

a shift valve means arranged in said pressure medium line for selectively interrupting the delivery of said pressurized fluid, said shift valve means comprising a piston, said piston controlling the delivery of said pressurized fluid to said gearshift element and being acted upon in one direction by a return spring and acted upon in an opposite direction by a pressure depending upon the position of an accelerator pedal;

a fluid line for delivering pressurized fluid to said piston, for imparting said pressure depending upon the position of an accelerator pedal, said fluid line being connected through a throttle point with a pressure line carrying an engine load-dependent pressure; and

a control valve means, arranged in said fluid line and actuatable by said accelerator pedal, for venting said fluid line when said accelerator pedal is released, and for connecting said fluid line directly with said pressure line, for bypassing said throttle point, when said accelerator pedal is actuated beyond a predefined position.

4,494,641

ELECTROMAGNETIC CLUTCH CONTROL SYSTEM FOR AUTOMOBILES

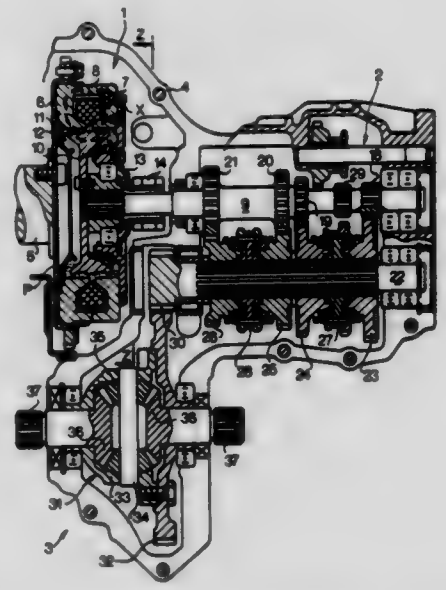
Ryuzo Sakakiyama, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1981, Ser. No. 322,816

Claims priority, application Japan, Nov. 19, 1980, 55-162831

Int. Cl.³ B60K *41/02*

U.S. Cl. 192—0.076 **7 Claims**



1. A system for controlling an electromagnetic clutch for an engine powered vehicle which has an accelerator pedal, a choke valve, an ignition device for said engine, and a circuit containing a magnetizing coil for coupling said electromagnetic clutch, comprising

an acceleration detecting circuit responsive to the depression of said accelerator pedal for producing an output signal,

a pulse generating circuit responsive to said engine ignition device for producing output pulses having a pulse separation which varies in dependency on the engine speed,

first gate means for operatively passing said pulses during occurrence of said output signal from said acceleration detecting circuit,

switch means provided in the circuit of said magnetizing coil

and responsive to the output of said gate means for sending current through said magnetizing coil depending on the output of said gate means,

means comprising a choke switch for being closed when said choke valve is closed,

a correcting circuit responsive to the output of said choke switch for producing a correcting output which is applied to said pulse generating circuit,

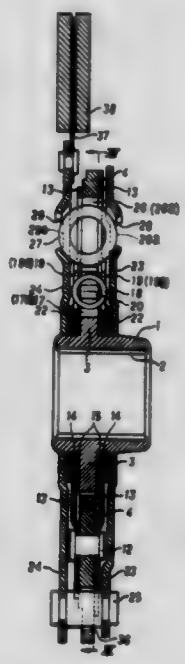
said pulse generating circuit means for reducing the pulse width of each of said output pulses in response to said correcting output.

4,494,642

CLUTCH DISC

Yasuyuki Hashimoto, Katano, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

Filed Feb. 9, 1982, Ser. No. 347,157
Claims priority, application Japan, Feb. 13, 1981, 56-20510
Int. Cl.³ F16D *3/14*
U.S. Cl. 192—106.2 4 Claims



1. A clutch disc comprising:

a splined hub;

an inner flange projecting radially from the outer periphery of said hub;

an outer flange arranged around and meshed with said inner flange but separated therefrom to provide a circumferential space therebetween;

a pair of sub-plates fitted at their inner periphery to said hub, one of said sub-plates being fixed to each side face of said outer flange to support said flange on said hub, radially inner portions of said sub-plates being pressed to frictionally engage both side faces of said inner flange;

said sub-plates and said inner flange being formed with axially registered openings therein and having a weak torsion spring arranged in said axially registered openings;

a retaining plate and a clutch plate faced to axially outside faces of said sub-plates opposite to said flange;

friction members positioned about said hub between said sub-plates and said retaining plate and clutch plate, respectively, said retaining plate and said clutch plate being connected together by pins so as to load pressure against said friction members and being supported by said hub;

said outer flange, said retaining plate and said clutch plate being formed with axially registered openings therein; and

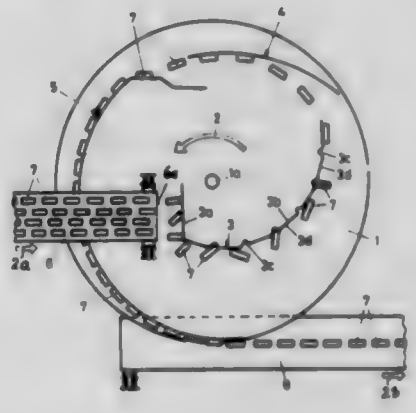
strong torsion springs arranged in said openings formed in said outer flange, retaining plate and clutch plate.

4,494,643

APPARATUS FOR ALIGNING ELONGATED ARTICLES

Max Kauchel, Gächlingen, Switzerland, assignor to SIG-Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Nov. 12, 1981, Ser. No. 320,683
Claims priority, application Switzerland, Nov. 28, 1980, 8851/80
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—392 6 Claims



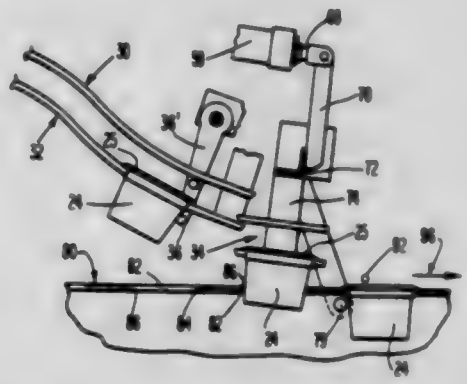
1. In an apparatus for aligning elongated articles, including a turntable having a center and a periphery, an input track leading to the turntable for conveying elongated articles thereto and having a discharge end above the turntable and a direction of conveyance; a guide rail stationarily supported above the turntable; said guide rail comprised of a plurality of consecutive sections angularly offset with respect to one another and having a generally spiral course for guiding the articles towards the periphery of said turntable and aligning the articles in a single file as the turntable rotates, an outlet track leading away from the turntable and means for pushing the articles off the turntable onto said outlet track; the improvement wherein said guide rail has a plurality of spaced, notch-like indentations connecting the consecutive sections with one another and arranged for engagement by an end portion of the articles guided along said guide rail as said turntable rotates; said notch-like indentations constituting depressions in said guide rail as viewed from said periphery.

4,494,644

CONVEYOR SYSTEM

Joseph P. Rizzo, Sr., Lester, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Jan. 3, 1983, Ser. No. 455,374
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—409 7 Claims



1. An improved conveying system for a flanged container said system comprising downwardly inclined, laterally-spaced rails for supporting the flanges of the container as the container moves by gravity toward a lower section of said laterally-spaced rails, a take-away conveyor having apertures therein and being positioned in close proximity to the lower section of

the laterally-spaced rails for permitting a leading downstream edge of a container to engage a leading edge of an aperture with flanges of said container supported by said lower section of the laterally-spaced rails and said container being in a canted orientation with a lower trailing end thereof located above said aperture; the improvement characterized in that the lower section of the spaced-apart rails is mounted for rotational movement about an axis located downstream and below said lower section and additionally comprising actuating means for rotating said movable lower section to positively direct the lower trailing end of the container into the aperture.

4,494,645

TURNING DEVICE

Heinz W. Hessling, Beckum, and Gottfried Weykam, Hesslerstrasse 14, 4700 Hamm 1, both of Fed. Rep. of Germany, assignors to Gottfried Weykam, Hamm, Fed. Rep. of Germany

Filed Jul. 19, 1982, Ser. No. 399,984

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1981, 3128917

Int. Cl.³ B65G 47/24

U.S. Cl. 198—414

12 Claims



1. A turning device for piece goods and bagged goods, comprising

a supporting element located between supplying and withdrawing transport means and turnable about an axis so as to support the goods and turn the goods;

a turnable axle for turning said supporting element, said axle having an upper portion which is hollow and provided with a plurality of openings;

means for turning said axle so as to turn said supporting element;

a transporting element vertically movable relative to said supporting element between a distal position in which said transporting element moves downwardly away of said supporting element whereby said supporting element is able to turn with goods supplied thereonto, and

a proximal position in which said transporting element moves upwardly to said supporting element and transports the goods from said supporting element, said transporting element including a plurality of moveable transporting members;

a plurality of axles which bear said transporting members, one of said axles of said transporting members extending through the respective openings of said hollow upper portion of said axle of said supporting element and bearing a respective one of said transporting members in the center of said supporting element; and

means for vertically moving said transporting element relative to said supporting element.

4,494,646

APPARATUS FOR LOOSENING AN IMBRICATED FORMATION OF PRINTED PRODUCTS OR THE LIKE

Werner Honegger, Taan-Rüti, Switzerland, assignor to Ferag Ag, Hinwil, Switzerland

Filed Oct. 19, 1982, Ser. No. 435,326

Claims priority, application Switzerland, Nov. 4, 1981, 7052/81

Int. Cl.³ B65G 47/26

U.S. Cl. 198—459

14 Claims

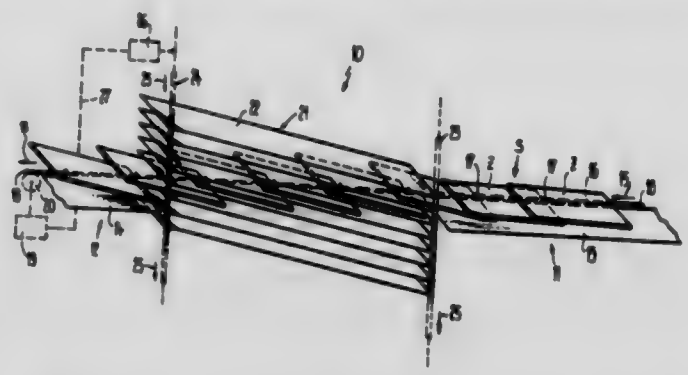
1. An apparatus for loosening an imbricated formation of products, especially printed products, transversely with respect to their surface, comprising:

a product infeed track for infeeding the imbricated formation;

a product outfeed track arranged in spaced relationship from said product infeed track;

a group of mutually spaced overlying track elements arranged between said infeed track and said outfeed track;

means for moving and guiding said group of track elements



substantially transversely with respect to said product infeed and outfeed tracks;

said overlying track elements being spaced from one another in the direction of movement of said track elements; and

conveyor means cooperating with said track elements in order to feed single products from the imbricated formation infed by means of said product infeed track to respective ones of the track elements and to displace the single products along said respective ones of said track elements to the product outfeed track.

4,494,647

CLEANING ASSEMBLY FOR A DRYER FEED CHUTE

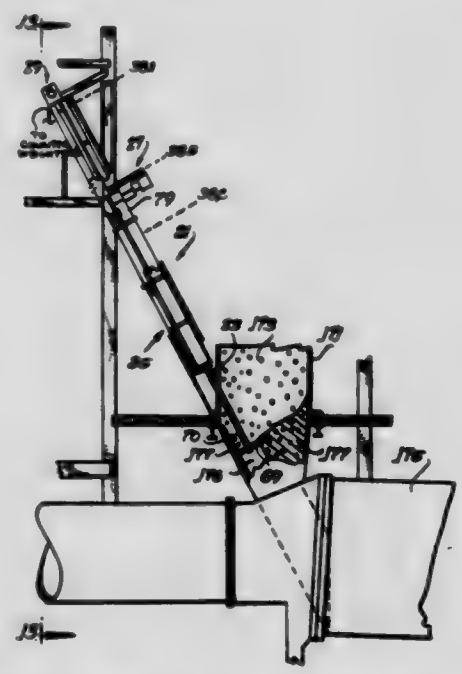
Charles E. Davis, Mulberry, Fla., assignor to CF Industries, Inc., Long Grove, Ill.

Filed Aug. 26, 1982, Ser. No. 411,611

Int. Cl.³ B65G 45/00

U.S. Cl. 198—494

6 Claims



1. A cleaning assembly, such as for a dryer feed chute, comprising: (a) a shaft member; (b) a housing, means rotatably mounting said shaft member in said housing (c) carriage means, (d) means for carrying said housing thereon; (e) drive means for rotating said shaft member relative to said housing; (f) oscillating means for moving said housing and said shaft member in a longitudinal direction, said oscillating means including cycling means for providing movement of said shaft member

from a first position to a second position and thereafter back to said first position thereby completing a cycle, and (g) dislodging means adjacent one end of said shaft means for dislodging feed material in said feed chute.

4,494,648

DEVICE FOR SUPPORTING PRESS BELTS OR ROLLER-SUPPORTED DOUBLE BELT PRESSES

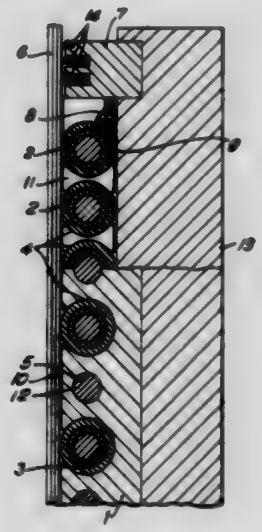
Kurt Held, Alte Strasse 1, D-7218 Trossingen 2, Fed. Rep. of Germany

Filed Aug. 18, 1982, Ser. No. 409,186

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1981, 3135031

Int. Cl.³ B30B *5/02, 5/04;* B65G *45/02*

U.S. Cl. 198—500 5 Claims



1. Device for supporting press belts on a roller-supported double belt press for effecting the application of surface pressure, comprising a roller bed having an inlet end at one end thereof and an outlet end at the opposite end thereof, a press belt arranged to pass over said roller bed in the direction from the inlet end to the outlet end, means for forming a hermetic seal between said roller bed and said press belt, said roller bed comprises a heating plate arranged in spaced relation from said press belt, a plurality of laterally spaced support bearing strips having a first direction and a second direction located on said heating plate and extending in the first direction toward said press belt and in the second direction in the direction between the inlet and outlet ends of said roller bed, said support bearing strips having spaced bearing bores therethrough transversely of the inlet end-outlet end direction of said roller bed and with spaced openings extending therethrough between adjacent said bearing bores, shafts extending across said roller bed transversely of the inlet end-outlet end direction thereof and through said bearing bores extending transversely of the second direction of said support bearing strips with said bearing bores supporting said shafts, a plurality of rollers mounted and serially arranged on each of said shafts, said rollers mounted on adjacent said shafts disposed in spaced relation and the ends of said rollers on adjacent said shafts are offset in the axial direction thereof, filling bodies located in the spaces between said rollers on laterally adjacent said shafts, at least certain of said rollers extending axially through said openings in said support bearing strips with a capillary gap formed between each said roller and the surface of said opening in said support bearing strips through which it extends, said rollers are closely spaced in said roller bed from said heating plate forming a rolling gap therebetween, the surfaces of said support bearing strips and said filling bodies located adjacent to said press belt are spaced from said press belt forming bearing interstices therebetween, and the width of said capillary gaps, rolling gaps, and bearing interstices is limited to a minimum determined by the manufacturing tolerances of the parts forming the device and said roller bed is arranged to receive a lubricant and said hermetic seal permits said lubricant to be flushed through the roller bed passing through said capillary gaps, rolling gaps, and bearing interstices.

4,494,649

ACCUMULATING CONVEYOR

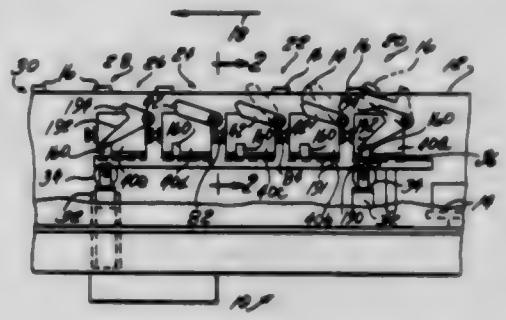
Walter Greenwood, Jr., Dearborn, Mich., assignor to Wisne Automation & Engineering Co., Novi, Mich.

Filed Jun. 3, 1982, Ser. No. 384,482

The portion of the term of this patent subsequent to Feb. 9, 1999, has been disclaimed.

Int. Cl.³ B65G *25/00*

U.S. Cl. 198—718 8 Claims



5. An apparatus for selectively activating the means for transferring an article engaging means mounted on a plurality of reciprocal modules in an accumulating conveyor between raised and lowered positions in response to the presence of articles in article support stations in which pivoting of an actuating member mounted on each module activates the transferring means within each module to raise the associated article engaging means, the apparatus comprising:

means, associated with each article support station, for sensing the presence of an article in the adjacent advanced article support station;

a member pivotally mounted on the end of each article sensing means and movable with said article sensing means between raised and lowered positions;

a stop member secured to the accumulating conveyor and adapted to engage said member when said member is in the lowered position as said modules move in one direction;

said stop member holding said member in a fixed position when said member is in the lowered position such that said member engages and causes pivotal movement of said actuating member; and

said member including means for preventing vertical movement of said member after it has engaged said stop member.

4,494,650

DISPLAY PACKAGE

John F. Cullen, Demarest, N.J., assignor to Dimensional Merchandising, Inc., West Caldwell, N.J.

Filed Aug. 18, 1983, Ser. No. 524,388

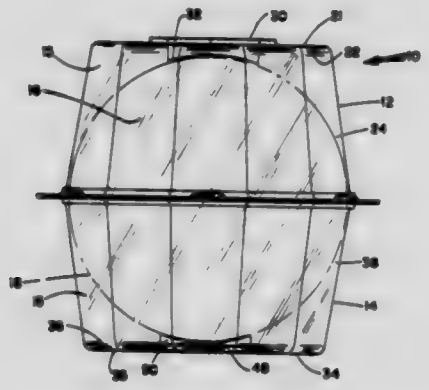
Int. Cl.³ B65D *85/00, 21/02, 6/00, 25/00*

U.S. Cl. 206—45.34 10 Claims

1. A display package, comprising:

a first bowl-shaped transparent body member; a second bowl-shaped transparent body member, each of the first and second body members having an open end and an internal cavity, said first and second body members being positioned with the respective open ends adjacent to each other to form a chamber for a ball; connecting means for connecting the first and second body members to each other to form said chamber, said first body member forming an upper portion of the package and the second body member forming a bottom portion of the package, said top portion of the package including a top supporting surface for supporting a package to be stacked thereon, the bottom portion of the package including a bottom base surface for the package; one of said top supporting surface

and bottom base surface including a male portion of a male-female member and the other of said top supporting surface and said bottom base surface including a female portion of the male-female member, whereby said packages can be stacked on each other with the bottom base surface of one package supported on the top supporting surface of a second package with said male member being inserted in said female member to prevent lateral movement between the packages.

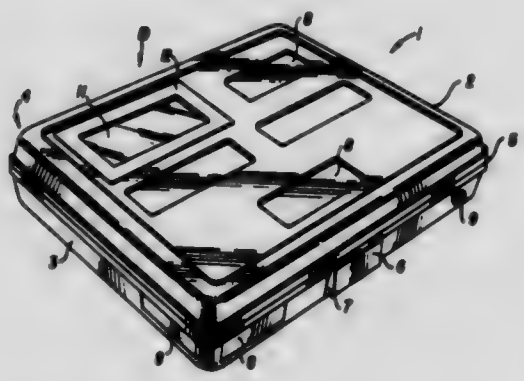


4,494,651

ELECTRICALLY CONDUCTIVE ANTI-STATIC WORK STATION

Donald A. Malcolm, Roanoke Rapids, N.C., assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Filed Apr. 19, 1983, Ser. No. 484,321
Int. Cl.³ B65D *81/02, 65/18;* H05F *3/02*
U.S. Cl. 206—328 **13 Claims**



1. A portable work station adapted to transport a device sensitive to electrical forces, said work station comprising:

a double walled electrically conductive enclosure defining an orifice and an interior, said enclosure comprising electrically conductive window means for viewing said interior through said orifice;

wherein said electrically conductive window means comprises:

window recess means completely surrounding said orifice and having at least one hole located therein; a sheet of optically transparent electrically non-conductive material located in said window recess means and completely covering said orifice, said sheet having an electrically conductive surface; and

an electrically conductive frame-like structure maintaining electrically conductive communication between said enclosure and said surface comprising:

at least one leg, said leg being inserted into said hole and

a sheet retaining indent retaining engaging said sheet to said window recess means;

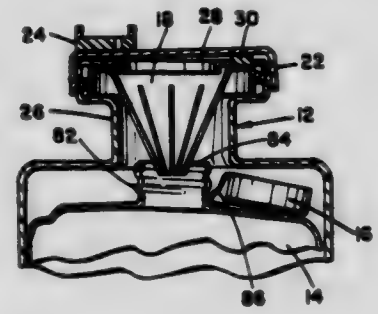
whereby the interior of said closure is shielded from external electrical forces.

4,494,652

CONTAINER FOR SHARPS

Ralph E. Nelson; Ann L. Nelson; Evelyn J. Bogner, and Paul M. Bogner, all of Newport Beach, Calif., assignors to Winfield Industries, San Diego, Calif.

Filed Jul. 1, 1983, Ser. No. 510,050
Int. Cl.³ A61M *5/32;* B02C *19/12;* B65F *7/00;* B26F *3/00*
U.S. Cl. 206—366 **35 Claims**



1. A disposal system for dangerous materials comprising in combination:

a container having a receiving opening and defining a support portion,

a thin walled closure element having a first portion supported by the support portion of the container and having a second portion extending into the container through the receiving opening, the second portion of said closure element being cut to form at least a pair of resilient inner flaps, and

a cover supported on the container for closing the receiving opening,

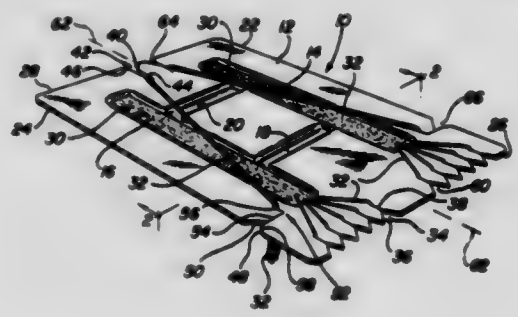
the container and the cover having detents engageable with each other to retain the cover in locked relationship on the container.

4,494,653

CONTAINER FOR SURGICAL PATTIES

Joseph J. Praderio, Quincy, Mass., assignor to Codman & Shurtleff, Randolph, Mass.

Filed Apr. 18, 1984, Ser. No. 601,455
Int. Cl.³ A61F *13/00;* B65D *1/36, 81/36, 85/62*
U.S. Cl. 206—370 **11 Claims**



1. A container for a plurality of surgical patties comprising:

a base and a peripheral edge;

a recess formed in said base, said recess adapted to receive a plurality of patties each having a locating string attached thereto;

a portion of said edge adjacent one end of said recess having a corresponding plurality of count slots therein, each slot adapted to receive the locating string of one of said plurality of patties;

another portion of said edge disposed adjacent the other end of said recess including a collection slot for receiving all of said strings;

a tie-down slot disposed on a third portion of said edge spaced transversely of said recess from said collection slot and positioned such that a locating string extending from said collection slot to said tie down slot extends across said

recess so as to permit said locating strings to act as a means for holding said plurality of patties within said recess;

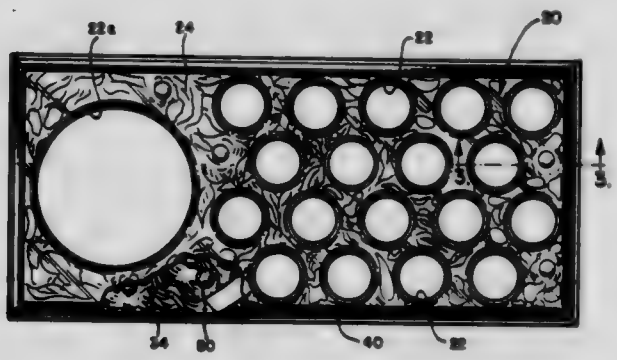
said recess adapted for receiving a wetting solution for said patties.

4,494,654

SALAD BAR INSERT

Arthur G. Gunther; Douglas H. Willsie, and Leo D. Hawkins, all of Wichita, Kans., assignors to Pizza Hut, Inc., Wichita, Kans.

Filed Nov. 3, 1982, Ser. No. 438,932
Int. Cl.³ B65D *1/34*
U.S. Cl. 206—562 9 Claims



1. In a salad bar of the type comprising a table and a plurality of salad food containers, the improvement comprising:

a salad bar insert which defines a plurality of openings and a display region situated between the openings, each of the openings sized and shaped to receive a respective one of the salad food containers, the openings distributed such that the display region is visible between the openings, the display region having an upper surface which is adapted readily to be wiped clean;

a plurality of three-dimensional salad food replicas;

means for retaining the salad food replicas in the salad bar insert beneath the upper surface of the display region such that the upper surface protects the replicas from dirt, said upper surface being transparent such that the replicas are visible from above the salad bar insert through the upper surface; and

means for retaining the insert in place on the table.

4,494,655

SORTER WITH AUTOMATIC REMOVAL MECHANISM

Tetsuo Horii, Kawasaki, and Takeshi Kohno, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 17, 1982, Ser. No. 349,688
Claims priority, application Japan, Feb. 18, 1981, 59-21684[U]
Int. Cl.³ B07C *3/06*
U.S. Cl. 209—569 1 Claim

1. A sorter for sorting documents having sorting information contained thereon comprising:

conveying means for sequentially conveying said documents along a predetermined sort path;

a stacking section including at least one row of stationary stacking bins disposed along said sort path, said row of stacking bins including plural primary stacking bins and an auxiliary stacking bin each for receiving a stack of sorted documents;

reading means disposed along said sort path upstream of said stacking section for reading said sorting information on said documents;

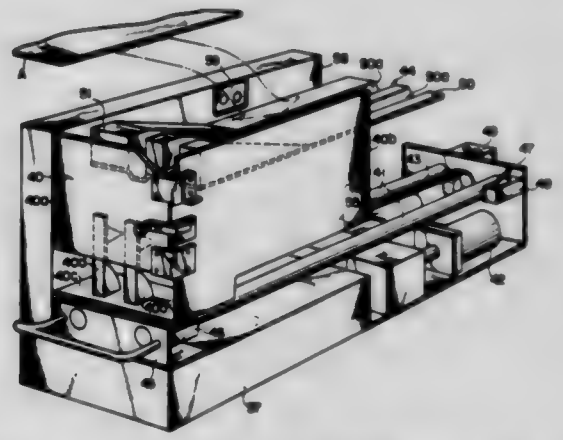
sorting means operatively connected to said reading means for assigning said documents to respective ones of said stacking bins to thereby stack and sort said documents;

a transfer section including at least one row of transfer bins, said transfer bins being movable relative to said primary and auxiliary stacking bins so as to be registrable therewith to receive said stacked and sorted documents therefrom;

plural primary removing means operatively associated with each of said primary stacking bins for transferring said sorted and stacked documents in said primary stacking bins to a predetermined first one of said transfer bins;

auxiliary removing means operatively associated with said auxiliary stacking bin for transferring said sorted and stacked documents in said auxiliary stacking bin to a predetermined second one of said transfer bins; and

control means operatively connected to each said primary removing means and said auxiliary removing means for sequentially (a) determining when a selected number of documents are stacked in each said primary stacking bin, (b) operating said primary removing means of a respective one of said primary stacking bins in response to said selected number being determined to transfer said selected



number of stacked documents therein to said predetermined first one of said transfer bins while simultaneously diverting those documents assigned to said respective one of said primary stacking bins by said sorting means to said auxiliary stacking bin, (c) determining when said selected number of stacked documents have been transferred from said respective one of said primary stacking bins to said predetermined first one of said transfer bins, (d) operating said auxiliary removing means, in response to determining the completion of said transfer of stacked documents in said respective one of said primary stacking bins to said predetermined first one of said transfer bins, to transfer the documents stacked in said auxiliary stacking bin to said predetermined second one of said transfer bins while simultaneously permitting said documents assigned to said selected one of said primary stacking bins by said sorting means to once again be stacked in said selected one of said primary stacking bins.

4,494,656

DOWN AND STUCK WARE INSPECTION METHOD AND APPARATUS

Timothy W. Shay, and Mark P. Claypool, both of Horseheads, N.Y., assignors to Powers Manufacturing, Inc., Elmira, N.Y.

Filed Apr. 1, 1983, Ser. No. 481,176
Int. Cl.³ B07C *5/00*; C03B *35/00*
U.S. Cl. 209—524 21 Claims

1. Apparatus for inspecting moving spaced objects, comprising:

radiant energy means for directing radiant energy along a path towards the objects,

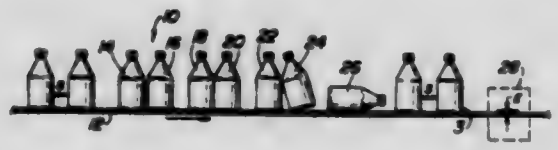
a sensor disposed with respect to the radiant energy means and the objects so as to receive radiant energy and produce an output proportional to the amount of radiant energy received, the amount of radiant energy received being dependent on the presence or absence of an object along the path of the radiant energy,

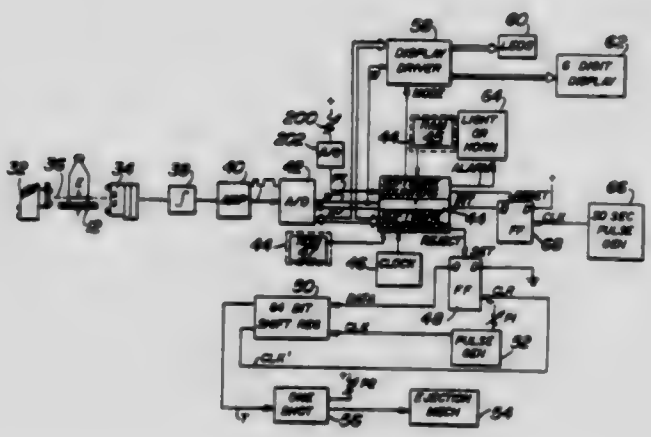
means for detecting a change in the sensor output due to the presence or absence of an object along the path of the radiant energy,

means for computing the lapse in time between successive detected changes in the sensor output,

means for periodically computing an average of said computations of said lapses in time,

means for periodically computing one or more thresholds in proportion to the average,





means for comparing a computed lapse in time with said one or more thresholds, and

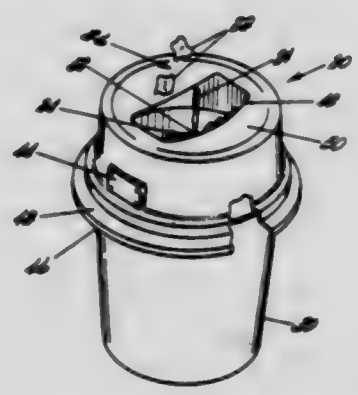
means for actuating a container ejection mechanism based on the comparison of the computed lapse in time with said one or more thresholds.

4,494,657

INTEGRAL HOUSING MEMBER FOR REMOVING MAGNETIC ARTICLES FROM A FLOW OF LOOSELY PACKED MATERIAL AND METHOD

Jerry Oldenkamp, 3202 Campanil Dr., Santa Barbara, Calif. 93109

Filed Dec. 17, 1982, Ser. No. 450,658
Int. Cl.³ B07C 5/344
U.S. Cl. 209—636 9 Claims



1. An integral housing member for removing magnetic articles from a flow of loosely packed material containing a mixture of magnetic articles and non-magnetic articles comprising

an inlet cover including means defining spaced opposed bracket receiving surfaces adapted to be positioned on the top opening of a trash receptacle, said inlet cover including means defining a hollowed-out central area which terminates in an opening at the bottom thereof having substantially the same diameter as the top opening of a said trash receptacle adapted to receive the inlet cover, said inlet cover including means defining an elongated opening located substantially parallel to and in alignment with the bottom opening;

an elongated support shaft having a central opening located at each end thereof operatively mounted in said hollowed-out central area of the inlet cover and below and substantially parallel to the axis of said elongated opening, said elongated support shaft being adapted to be rotated about its longitudinal axis;

a plurality of shaped metal plates having an aperture formed in the center thereof which is adapted to receive and have the elongated support shaft passed therethrough, said plurality of metal plates being positioned in coaxial spaced parallel relationship with each other and in coaxial alignment with and mounted relative to said elongated support shaft so as to be rotatable therewith, each of said plurality of metal plates being adapted to cooperate with one other adjacent metal plate to form a pair of magnetic retrieving plates having a space therebetween, each of said metal plates extending substantially vertically outwardly from the elongated shaft and each having angular points thereon which are adapted to engage and be rotated by the material flow being directed thereacross;

a plurality of a magnetic members coaxially aligned with and mounted on said elongated support shaft and located in the space between each pair of metal plates and in axial alignment with the elongated support shaft supporting said metal plates, said plurality of magnetic members each extending substantially vertically outwardly from said elongated support shaft with the periphery thereof spaced a predetermined distance from the periphery of said metal members, said magnetic members being formed of a magnetic material having a magnetic flux density of sufficient magnitude to magnetize each metal plate to produce a preshaped magnetic field emanating therefrom and thereacross to attract and remove magnetic articles responsive to the magnetic field from a material flow being directed across said metal plates and to hold such removed magnetic articles against said metal plates as the metal plates move relative to the material flow being directed thereacross;

a plurality of non-magnetic spacing members coaxially aligned with said elongated support shaft and positioned between each set of the plurality of shaped metal plates to form a spacing between each pair of magnetic retrieving plates;

a support means operatively coupled to the interior of the inlet cover and mounted relative to the elongated opening in the hollowed-out central area to position said elongated support shaft and said plurality of shaped metal plates, magnetic members and non-magnetic members mounted on the elongated support shaft at a preselected distance from and substantially parallel to said elongated opening and for rotatably supporting the same in a selected position relative to said elongated opening as a said material flow is being directed across said magnetic retrieving plates and to hold such removed metal articles thereagainst as the same is moved relative to the material flow being directed thereacross, said supporting means comprising a pair of brackets each having a mounting plate and a support channel, said mounting plated being adapted to be affixed to the bracket receiving portion of said inlet cover and said support channel being located in an opposed spaced relationship to said mounting plate and adapted to rotatably support said elongated support shaft, each of the support channels of the brackets including a support aperture therein;

a first and second end cap terminating in a disc-shaped plate which is of a greater external radial dimension than that of the elongated support shaft, each of said end caps being adapted to be force-fitted into the central opening at each end of the elongated support shaft, each of said end caps having a central aperture formed therein; and

a pair of shoulder-type threaded fasteners located one at

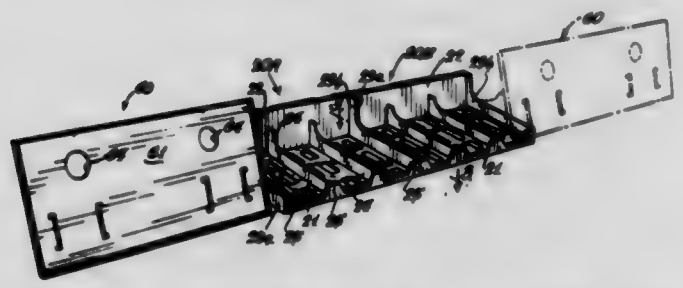
each end of the end caps and positioned to pass through the support aperture of its respective bracket and into the central aperture of its respective end cap to rotatably support the elongated support shaft on the support channel at a predetermined space from the elongated opening in the inlet cover.

4,494,658

MODULAR DISPLAY FOR CIGARETTE PACKS

Virgil S. Simon, Glenview; Marvin L. Ademan, Hoffman Estates, and John S. Skalski, Hanover Park, all of Ill., assignors to Thomas A. Schutz Co., Inc., Morton Grove, Ill.

Filed Jul. 15, 1983, Ser. No. 514,346
Int. Cl.³ A47F 7/00
U.S. Cl. 211—49 R 16 Claims



1. A modular display apparatus for merchandise which is displayed and sold in small packages, said apparatus comprising, in combination:

display tray means adapted to hold a plurality of packages of merchandise, said display tray means having a bottom wall, end walls and a rear wall;

means for fixing said tray means at a desired location in a retail shop;

an advertising sign frame adapted to receive and hold an advertising sign;

a support member for said advertising sign frame;

resiliently interengaging elements on said support member and on said advertising sign frame for detachably securing the advertising sign frame to the support member;

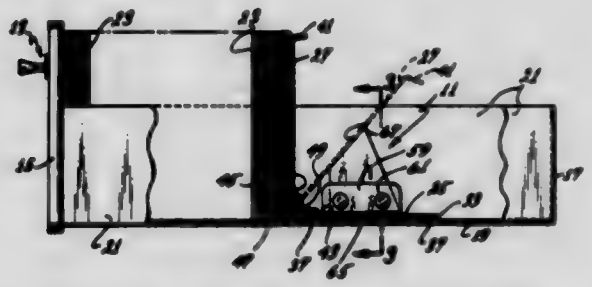
and resiliently interengaging components at an end wall of said tray means and at a side of said support member for detachably securing said support member to said tray means with the advertising sign frame immediately adjacent to said end wall of said tray means.

4,494,659

COMPRESSOR FOR MICROFICHE CARDS AND THE LIKE

Arthur T. Spees, Villa Park, Calif., assignor to Visu-Flex Company, Pico Rivera, Calif.

Filed May 3, 1983, Ser. No. 491,088
Int. Cl.³ A47F 7/00
U.S. Cl. 211—51 17 Claims



1. A compressor for cards in a drawer having a magnetic region, said compressor comprising:

a base positionable in the drawer;

a compressor member;

means for mounting the compressor member on the base for movement relative to the base between an extended position in which the compressor member can support the cards and a retracted position in which the compressor member is retracted from the cards;

resilient means for biasing the compressor member toward the extended position;

a first magnet section on said base for cooperating with the magnetic region of the drawer for magnetically retaining the compressor on the drawer with a first magnetic force; and

a second magnet section on the base for retaining the compressor member in said retracted position with a second magnetic force against the biasing force of the resilient means whereby by applying a releasing force to the compressor member, the biasing means can move the compressor member to the extended position.

4,494,660

HOLDING DEVICE FOR PENCILS AND THE LIKE

Robert S. Hansen, 2 E St., Santa Rosa, Calif. 95404

Continuation of Ser. No. 874,415, Feb. 2, 1978, Pat. No. 4,403,699. This application Sep. 13, 1983, Ser. No. 532,202
The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.
Int. Cl.³ A47F 7/00
U.S. Cl. 211—69.1 9 Claims



1. In a device for holding elongated objects: a mesh of oriented netting comprising a plurality of intersecting flexible strands joined together in predetermined positions to form a plurality of openings, said strands tending to return to their predetermined positions when moved therefrom, the mesh being arranged such that the objects can extend through at least two of the openings and deflect the strands defining said openings whereby the objects are gripped and held solely by the deflected strands as they tend to return to their predetermined positions, a generally planar rigid base, and means securing the lower portion of the mesh to the base to form a self-supporting structure in which the mesh extends upwardly from the base and stands freely in the shape in which it is arranged, said base having a lateral extent generally coextensive with the mesh and being of sufficient weight to prevent the device from falling over due to the weight of the elongated objects gripped by the strands, there being no objects within the space bounded by the mesh and the base other than the elongated objects themselves, the entire support for the objects being provided by the mesh and the base.

4,494,661

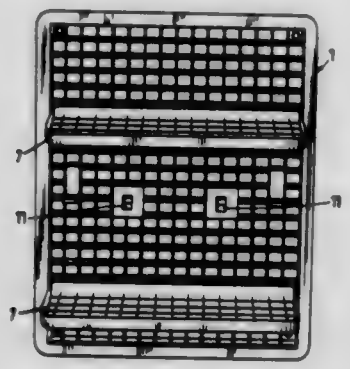
STORAGE DEVICE

Kurt Krusche, Frankfurt am Main, Fed. Rep. of Germany, assignor to Allstar Verbrauchsgüter GmbH & Co., KG, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 22, 1982, Ser. No. 351,259
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1981, 8106304[U]
Int. Cl.³ A47F 5/08
U.S. Cl. 211—87 7 Claims

1. A storage device supportable on vertical and horizontal surfaces and comprising a grid-like basic component in the form of a grating having a frame, at least one row of openings, and spacer means for spacing a rear plane of said basic component from a support surface; at least one additional component

attached to said basic component by means for releasably anchoring said basic and additional components together; said grating openings all being of substantially like depth as defined by web portions of substantially like thicknesses and extending substantially perpendicularly from said rear plane; said anchoring means comprising at least one rearwardly extending portion of said additional component, said portion being resiliently elastic and having a configuration anchorably mateable with



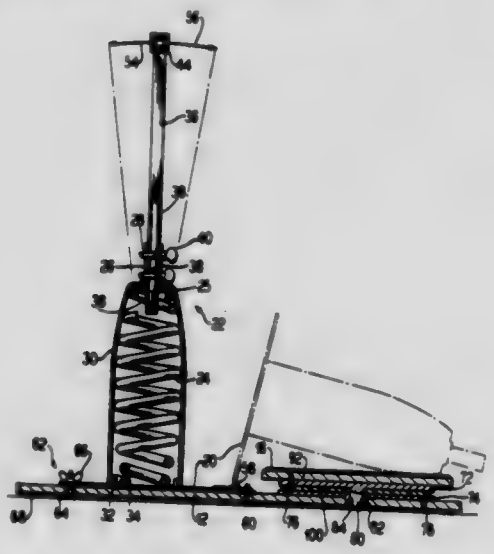
an opening of said grating, and wherein the additional component is a hook unit comprising a plate on the front of which two pairs of retaining members are provided, the retaining members forming anchoring elements for the hook unit, the retaining members being resiliently elastic plates having detent formations engageable with the rear of the grating, the plates being so dimensioned and spaced that each plate engages in a respective one of four adjacent openings of the grating.

4,494,662

MOUNTED SPRING DEVICE FOR RESISTING FLEXING

Ronald S. Clymer, 1914A W. Pratt Blvd., Chicago, Ill. 60626

Filed Mar. 4, 1983, Ser. No. 472,011
Int. Cl.[3] A63B *21/00*
U.S. Cl. 272—134 8 Claims



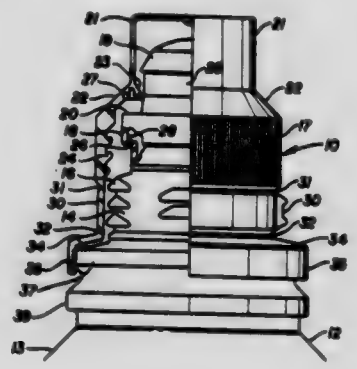
1. An exercise device comprising:
a base means adapted for attachment to a support;
first spring means including a first end connected to said base, said first spring means having a second end;
a handle connected to and extending from said second end of said first spring means;
said first spring means flexing and storing and releasing energy in response to the application by a user to and removal of force from said handle;
a support, said base means attached to said support, said support adapted to rest on a floor and comprising feet of a material to provide friction with respect to a floor, a first section mounting said base, said support including a second section which includes a portion for supporting a person when the person grasps said handle; and
second spring means connecting said portion for supporting a person to permit biasing of said portion during bidirectional pivotal movement of said portion.

4,494,663

STERILE SOLUTION CONTAINER

Francois X. Bertaud, Libertyville, and Hans J. Siedler, Gurnee, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Jan. 5, 1984, Ser. No. 568,325
Int. Cl.[3] B65D *41/32*
U.S. Cl. 215—232 20 Claims



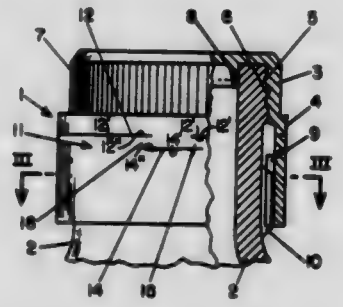
1. A tamperproof closure system for molded plastic containers having a threaded container neck including a threaded cap capable of being secured to said container neck without threadable engagement comprising:
a screw-type cap member having internal threading, a removal portion and skirt portion;
external threading complementary to said internal threading extending from said container neck;
an abutment surface presented by said container neck for sealable contact with cap skirt portion;
a breakaway portion defined by said container neck;
a contact portion defined by said cap for contact with said breakaway portion; and
captive means operatively associated with said cap and said container neck;
said cap and said container neck constructed and arranged so that when said cap skirt portion is sealed to said abutment surface, said threading is placed in a spaced apart position and when said removal portion is removed said threads will engage;
whereby when said threads are engaged, said contact portion of said cap will engage said breakaway portion of said container neck.

4,494,664

TAMPER EVIDENT CLOSURE

Piergiacomo Guala, Alessandria, Italy, assignor to Angelo Guala, S.p.A., Alessandria, Italy

Filed Feb. 28, 1983, Ser. No. 470,535
Claims priority, application Italy, Mar. 9, 1982, 20041 A/82
Int. Cl.[3] B65D *41/34*
U.S. Cl. 215—252 20 Claims



1. A tamper evident closure and container combination including a closure having an upper cap portion, a lower ring

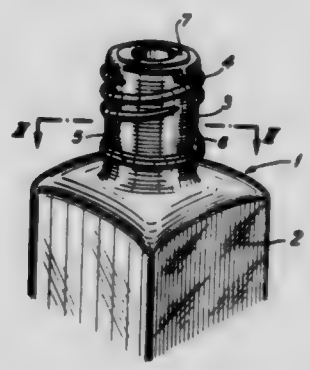
portion, and an intermediate weakened area, the weakened area being defined by nonaligned cuts separated by unsevered locations, the combination further comprising interacting means on the ring and container for blocking movement of the ring in a closure opening direction, the interacting means for blocking movement comprising inwardly projecting means on the ring and outwardly projecting means on the container, the inwardly and outwardly projecting means being axially located to be in abutting relationship when the closure is in place on the container, the cuts and unsevered locations defining cam surfaces upon separation of the cap and ring effective to cam the ring downward until the inwardly projecting means on the ring is below the outwardly projecting means on the container; whereby the ring and cap separate the weakened area to leave behind the ring and, the ring is held captive on the container at a lower location than its previous, unseparated position.

4,494,665

DEVICE FOR PREVENTING THE SELF-UNSCREWING OF A CAP FROM A CONTAINER

Myrtil B. Lehmann, Saint-Cloud, France, assignor to Chanel, Neuilly-sur-Seine, France

Filed Jan. 20, 1983, Ser. No. 459,594
Claims priority, application France, Jan. 22, 1982, 82 00973
Int. Cl.³ B65D *41/04*
U.S. Cl. 215—330 5 Claims



1. A container comprising:
a neck having therein an access opening;
first screwthread means formed on said neck and extending downwardly from the vicinity of said opening;
an annular check ring formed on said neck below said first screwthread means; and
a projection means formed integral with and extending upwardly from said annular check ring toward said first screwthread means, said projection means being so positioned that when a screw cap is fully engaged on said first screwthread means, the lower portion of said screw cap will press against said projection means and thereby secure said screw cap on said container neck.

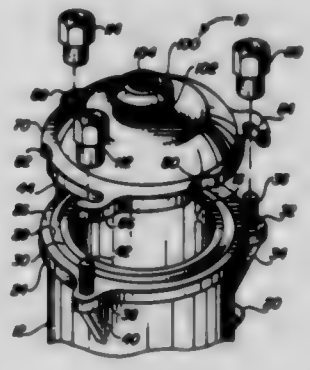
4,494,666

PRESSURE CONTAINMENT VESSEL APPARATUS FOR LEAKING GAS CYLINDER

Newell J. Cooper, 14023 N. Medinah Dr., Phoenix, Ariz. 85022, and N. Jeffrey Cooper, 4424 W. Paradise La., Phoenix, Ariz. 85023

Filed Nov. 10, 1983, Ser. No. 550,367
Int. Cl.³ B65D *45/00*
U.S. Cl. 220—3 10 Claims

1. Apparatus for containing a leaking pressurized cylinder, comprising, in combination:
cylinder means for receiving the leaking gas cylinder, including
an outwardly extending first flange,
a plurality of spaced apart ears on the first flange,
a threaded stud on each ear, and
a nut on each threaded stud; and
cap means defining a closure for the cylinder means and adapted to be secured to the first flange of the cylinder means, including
a dome,
a second flange secured to the dome and adapted to be disposed on the first flange,
a plurality of arms adapted to be disposed on and secured to the ears of the first flange by the studs and nuts, and



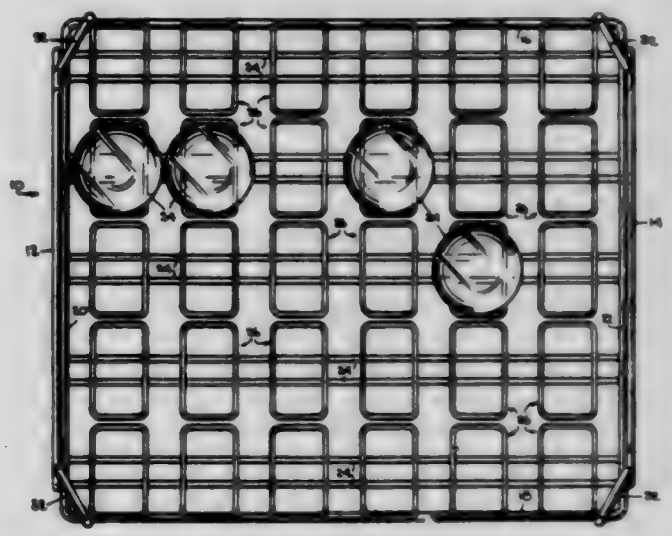
a plurality of recesses adapted to allow the cap means to clear the nuts on the studs upon the loosening of the nuts from the arms and the rotating of the cap means to align the recesses with the studs and nuts to remove the cap means from the cylinder means.

4,494,667

LENS TRAY

John M. Griffith, Richmond, Va., assignor to Coburn Optical Industries, Inc., Muskogee, Okla.

Filed Mar. 23, 1983, Ser. No. 478,174
Int. Cl.³ A45F *3/14*; B65D *21/00*
U.S. Cl. 220—19 5 Claims



1. A lens tray for holding lenses aligned horizontally in a lateral array comprising:
a rectangular frame having front, back and side portions;
parallel supporting pairs of bars spaced from each other and extending transversely between said side portions of the rectangular frame;
a plurality of lens support members supported by said pairs of bars for holding lenses thereon, said lens support members being generally of rectangular shape having a flat bottom and inclined sickle shape end portions, said portions being inclined at about 45° from the horizon for holding the edges of the outer convex surface of the lenses;
a pair of handles for carrying the tray positioned on each of said side portions of the rectangular frame forming an angle of about 99° with said frame; and
a pair of upwardly pointing tray support fingers positioned on the inside of said handles to receive and hold the rect-

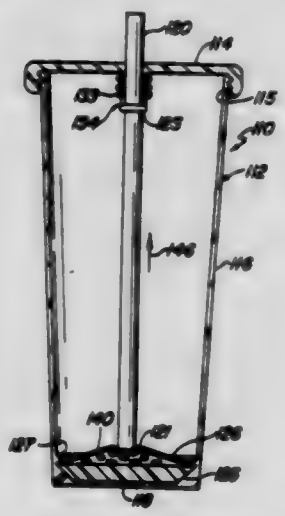
angular frame of another tray when trays are stacked upon each other.

4,494,668

STACKABLE NON-SPILLABLE DRINKING CONTAINER

Edward A. Lottick, 41 Gershom Pl., Kingston, Pa. 18704

Continuation-in-part of Ser. No. 480,565, Mar. 30, 1983, Pat. No. 4,441,640. This application Feb. 2, 1984, Ser. No. 575,201
Int. Cl.³ A47G *21/18, 19/22;* B65D *47/04*
U.S. Cl. 220—90.4 10 Claims



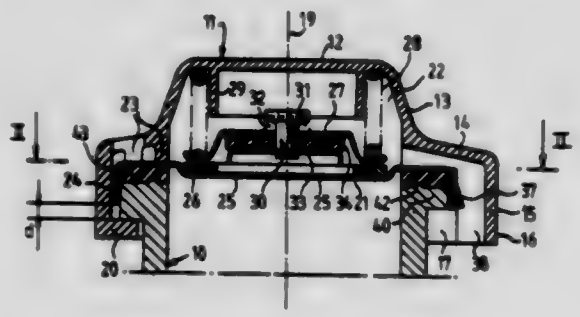
1. A non-spillable drinking container, comprising:
a container of linearly increasing cross-section provided with an open mouth at its larger end and a closed bottom at or near its smaller end;
a base plate with an expandable diaphragm mounted over substantially one surface of said base plate, said expandable diaphragm being provided with perforations therethrough which are normally closed in the unexpanded state of said expandable diaphragm and which are open when said expandable diaphragm is stretched by movement of a central portion of said diaphragm away from said one surface of said base plate;
a tube for drinking;
means for attaching said tube to said expandable diaphragm;
means for securing said base plate in juxtaposition to the bottom of said container; and
a top for said container securably mountable over said open mouth of said container, said top including means for moveably mounting said tube through said top with means for forming a seal between said moveable tube and said top.

4,494,669

STOPPER FOR A HEAT EXCHANGER CIRCUIT

Denis Villeval, Maurepas, France, assignor to Valeo, Paris, France

Filed Dec. 7, 1982, Ser. No. 447,683
Claims priority, application France, Dec. 14, 1981, 81 23316
Int. Cl.³ B65D *51/16*
U.S. Cl. 220—204 9 Claims



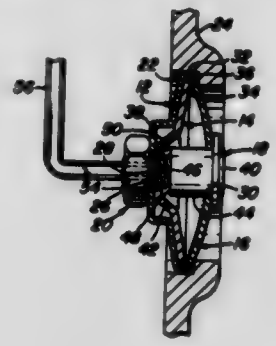
1. A stopper adapted to be fixed to the end of an inlet tube to a heat exchanger circuit for an internal combustion engine, the stopper comprising a body having a top portion, a cylindrical skirt provided with bayonet-fixing means adapted for fixing the stopper to the end of the inlet tube, a plate located within said body which is axially movable between two end positions, end stops on said stopper which define the end positions, and a set of rated overpressure and underpressure valves housed in said stopper body between the top portion and said plate, wherein said plate is in one of said end positions and is spaced apart from the end of the inlet tube when the stopper is in an intermediate position between its position for fully closing the inlet tube and its position for opening the inlet tube, thus forming a gap between the end of the inlet tube and said plate, which gap provides communication between the outside and the inside of the exchanger circuit, and wherein said plate is in the other of said end positions and is pressed in a sealed manner to the end of the inlet tube when the stopper is in the fully closed position, thus preventing communication between thef outside and inside of the exchanger circuit, other than through the overpressure or underpressure valve.

4,494,670

REMOVABLE FREEZE PLUG

Sam A. Barone, 1205 Ryson, Wheaton, Ill. 60187

Filed Aug. 26, 1983, Ser. No. 526,652
Int. Cl.³ B65D *53/04*
U.S. Cl. 220—235 3 Claims



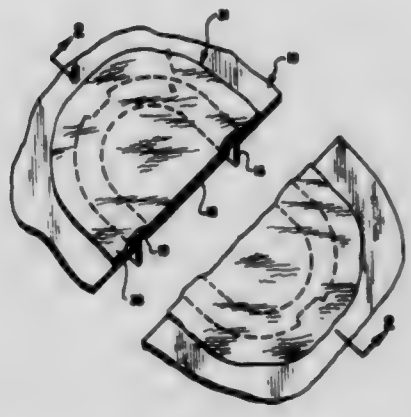
1. A core plug assembly for use in circular core holes in engine blocks, comprising in combination
a shell having an annular rim portion,
a concavo-convex expander disk having an external diameter which is slightly less than the internal diameter of said rim portion,
said disk being disposed with said shell in coaxial relationship therewith with the concave side of said expander disk facing toward said shell,
a rigid brace disk seated within said shell between said expander disk and the interior face of said shell,
said shell, said side expander disk and said brace disk having mutually aligned, centrally disposed openings therethrough,
a headed bolt extending through said openings with the head of said bold abutting the convex face of said expander disk,
a nut threadedly disposed on the shank of said bolt adjacent to the exterior face of said shell,
said bolt having a non-circular, axial blind hole in said shank at the end thereof opposite the head, said hole being sized to accept a complementary sized tool therein, and
cooperating stop means on said bolt and on said brace disk for limiting the amount of movement of said head toward said shell as said nut is tightened onto said bolt.

4,494,671

AUTOMOBILE BODY PANEL HOLE CLOSURE

Dan T. Moore, III; Michael F. Fischer, both of Cleveland Heights, and Laurie S. Herceg, Lakewood, all of Ohio, assignors to The Dan T. Moore Co., Cleveland, Ohio

Filed Jan. 12, 1984, Ser. No. 570,184
Int. Cl.³ B65D *51/18*
U.S. Cl. 220—256 12 Claims



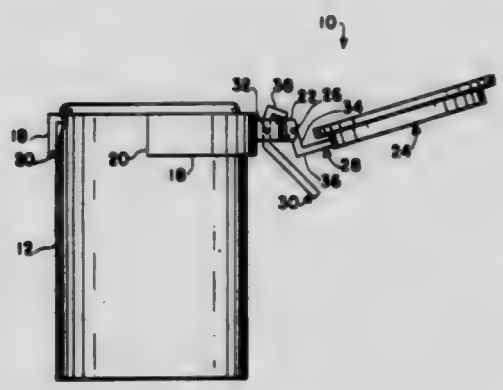
1. A closure for a hole defined by a panel, such as a body panel in an automotive vehicle, comprising:
a plate having dimensions complementary to the hole, and a top and bottom side;
a gasket having a top side and a bottom side;
the bottom side of said gasket cooperating with the top side of said plate;
means for securing said gasket to said plate;
means to secure the plate to said panel;
said gasket having dimensions somewhat larger than the hole to overlie the panel defining the hole;
the gasket having a thin, bottom side low melt compound layer of a high melt index and a thicker top side compound layer of a lower melt index, the total thickness of said gasket ranging from about 0.030 inch to about 0.065 inch; and
upon heating, said gasket causing a substantially liquidtight seal between said plate and said panel.

4,494,672

FLIP TOP CAN COVER

Robert E. Pearson, 151 Osceola Dr., New Port Richey, Fla. 33553

Filed Aug. 12, 1983, Ser. No. 522,539
Int. Cl.³ B65D *43/26*
U.S. Cl. 220—263 3 Claims



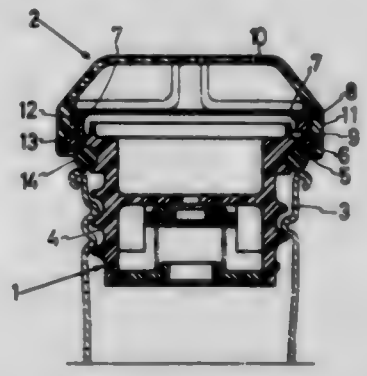
1. A closure means for a potable container of the type having a tab the removal of which produces a permanent opening in the lid of said container, comprising, in combination,
a closure member having a configuration and dimension substantially equal to the configuration and dimension of the lid of said container,
a collar member adapted to snugly and releaseably engage said container about its periphery.
an ear member fixedly secured to said collar member in radial relation to the vertical axis of symmetry of said container,
a rigid deflection plate member fixedly secured to said closure member and pivotally secured to the distal free end of said ear member,
a rigid lever member pivotally secured to said ear member radially inwardly of the distal free end of said ear member,
said lever member adapted to abuttingly engage and displace said deflection plate member and hence said closure member attendant pivoting of said lever member about its pivotal mount when said closure member is in its closed disposition.

4,494,673

SAFETY PLASTIC FILLER NECK CAP

Hideki Hiraishi, Okayama, Japan, assignor to O M Industrial Co., Ltd., Okayama, Japan

Filed Feb. 7, 1984, Ser. No. 577,668
Claims priority, application Japan, May 4, 1983, 58-78751
Int. Cl.³ B65D *41/04*
U.S. Cl. 220—288 1 Claim

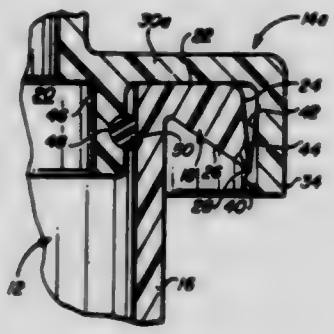


1. A safety plastic filler neck cap for vehicle comprising:
a screw body having a screw portion fitting with a screw pitch of a fuel feeder neck pipe of the vehicle comprising:
a flange disposed on the top of the screw portion;
engaging/disengaging teeth formed by extending the flange at several positions along its outer circumference;
a circular standing edge provided on the flange;
latching teeth formed at several locations along an outer circumference of the circular standing edge, which are to be latched in a reverse screwing direction; and
cuts corresponding to the latching teeth, which are formed underneath the latching teeth; and
a cap capable of engaging with and disengaging from the screw body comprising:
a rotation flange disposed on top of the cap;
a round cover edge for covering the circular standing edge as well as the engaging/disengaging teeth of the screw body;
latches provided at an upper portion of an inner surface of the round cover edge; and
an anchoring groove formed in a lower portion of the inner surface of the round cover edge;
whereby when the cap is engaged with the screw body, the latching teeth are caused to be engaged with the latches, while at the same time, the engaging/disengaging teeth fit in the anchoring groove, respectively, thereby effecting the combination of the cap and the screw body into a single unit.

4,494,674
RESEALABLE CLOSURE AND CONTAINER STRUCTURE

G. Wayne Roof, P.O. Box 1116, Coolidge, Ariz. 85228

Filed Jan. 30, 1984, Ser. No. 575,151
Int. Cl.³ B65D 41/16, 41/18
U.S. Cl. 220—306 20 Claims

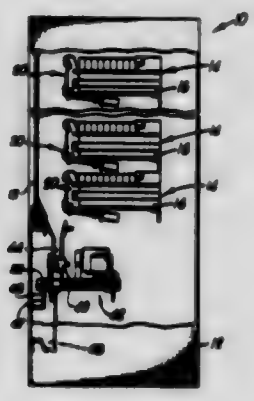


1. A container structure comprising in combination:
(a) container body means having an open top defined by an endless rim;
(b) closure lid means demountably mounted on said container body for closing the open top thereof, said closure lid having an endless depending peripheral lip which surrounds the rim of said container body; and
(c) at least a pair of latching lug means in spaced relationship on the inwardly facing surface of the peripheral lip of said closure lid for releasably engaging the rim of said container body, said pair of latching lug means each extending inwardly from the peripheral lip of said closure lid to provide a spaced relationship between the rim of said container body and the peripheral lip of said closure lid.

4,494,675
ARTICLE DISPENSING MACHINE WITH ANTI-THEFT STRUCTURE

Richard R. Stutsman, Mt. Baldy, Calif., assignor to Vertx Corporation, Salt Lake City, Utah

Filed Jun. 1, 1982, Ser. No. 384,144
Int. Cl.³ G07F 11/42
U.S. Cl. 221—13 13 Claims

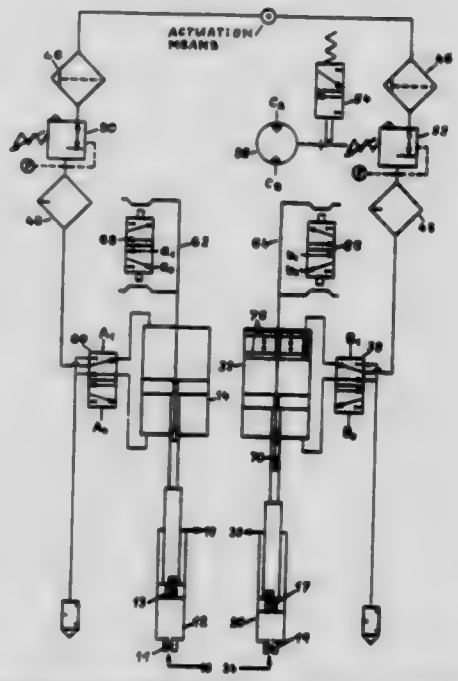


13. A dispensing machine comprising:
a box-like housing having a front panel;
a plurality of receptacles arranged within said housing, each of said receptacles adapted to contain a plurality of articles to be dispensed and having a front end facing said front panel, an open space through which said articles can fall being defined between said receptacles and said front panel;
an article means associated with each of said receptacles and disposed at said front end thereof for releasing said articles sequentially upon actuation thereof;
an elongated article receiving chamber extending horizontally behind said front panel and beneath said receptacles and positioned so that articles released from said receptacles by said releasing means fall into said chamber;
an exit tray beheath said chamber from which said articles can be removed;
an opening above said exit tray through which said articles can fall into said exit tray, said opening being offset laterally from said chamber;
conveyor means extending along the bottom of said chamber for moving said articles horizontally along said chamber toward the exit tray; and
delivery means for moving said articles from said chamber into alignment with said opening whereby said articles are caused to fall into said exit tray.

4,494,676
MULTI-COMPONENT DELIVERY APPARATUS

Manfred Berweger, 17, Hortensiadreef, B 2180 Kalmthout, Belgium

Filed Jul. 15, 1981, Ser. No. 283,560
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1980, 3029554
Int. Cl.³ B67D 5/08
U.S. Cl. 222—63 7 Claims



1. A multi-component delivery apparatus comprising:
piston pumps having preset displacement volumes,
operating means coupled to each of said pumps,
means for supplying component fluids to each of said pumps and,
means for removing measured amounts of component fluids from each of said pumps,
characterised in that the apparatus has:
means for starting the strokes of each of the connected pumps at the same moment,
means for assuring complete execution of each stroke in each pump before the beginning of any next stroke,
means for controlling the speed of the pistons in each pump so that all pumps end their respective strokes at the same moment,
means for modifying the stroke length of the pumps without causing pulsation,
means for adjusting the position of stroke reversal to a modified stroke end position;
wherein the operating means comprises piston motors being coupled to the piston pumps via their piston rods and having spacer means for adjusting the stroke length at one or at both ends of the pump cylinders characterised in that the spacer means consists of two plates which can be adjusted to any required distance from each other and which are sealed against the cylinder wall and against conduits traversing the spacer means thus creating a void

cylinder area where virtually no actuation means is absorbed at the stroke beginning;

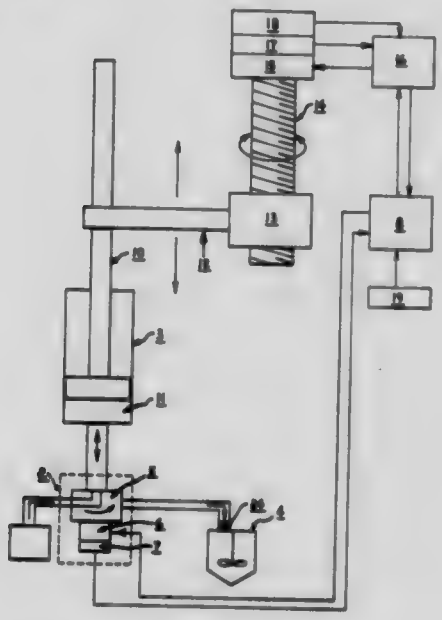
said spacer means characterised in that one of the plates is represented by a cylinder top plate and the second plate is represented by an adjustable cylinder head which is sealed against the cylinder wall and against conduits and rods traversing the spacer means and which can be set to different stroke lengths from outside the cylinder without having to dismantle the motor.

4,494,677

APPARATUS FOR DELIVERING ACCURATE VOLUME OF LIQUID

Allan F. Falcoff, Lake Orion, Mich., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 24, 1982, Ser. No. 444,085
Int. Cl.³ B67D 5/14
U.S. Cl. 222—63 6 Claims



1. An apparatus for delivering an accurate volume of fluid from a supply vessel to a mixing vessel which comprises:

a gear pump capable of pumping an accurate volume of fluid from the supply vessel into the mixing vessel;

a servo motor with a shaft coupled to the gear pump which drives the pump;

a tachometer connected to the motor for measuring motor speed;

a resolver connected to the motor shaft for measuring angular shaft rotation;

a motor controller amplifier means electrically connected to the tachometer and resolver and receives a signal from the tachometer on motor speed and a signal from the resolver on shaft rotation and thereby controls the motor and output of the gear pump;

a computer capable of storing programs electrically connected to the motor controller amplifier means;

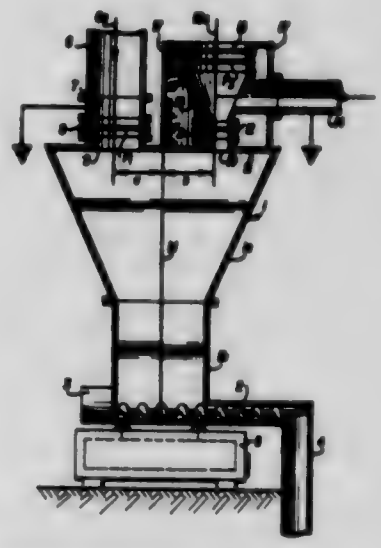
wherein the computer through the motor controller means activates the motor which drives the gear pump a predetermined number of rotations directly related to the volume of fluid to be charged into the mixing vessel and pumps the volume of fluid from the supply vessel to the mixing vessel.

4,494,678

APPARATUS FOR COMPENSATING A PRESSURIZED VESSEL ON A SCALE

Karl-Heinz Klein, Geinhausen-Hailer, Fed. Rep. of Germany, assignor to K-Tron Soder A.G., Niederlenz, Switzerland

Filed Feb. 23, 1982, Ser. No. 351,377
Claims priority, application Switzerland, Feb. 23, 1981, 1174/81
Int. Cl.³ G01G 13/00
U.S. Cl. 222—77 9 Claims



1. A weighing system comprising:

a scale;

a container for receiving material coupled to said scale such that said scale provides weight measurements of said container and any material therein;

a first inlet coupled to said container for providing material to said container and having a first cross-sectional area;

a second inlet coupled to provide pressurized gas to said container and including a first portion having a second cross-sectional area, a second portion having a third cross-sectional area, a third portion coupled to deliver a flow of gas, and means for flexibly coupling said third portion to said first and second portions, the sum of said first and second cross-sectional areas being equal to the third cross-sectional area; and

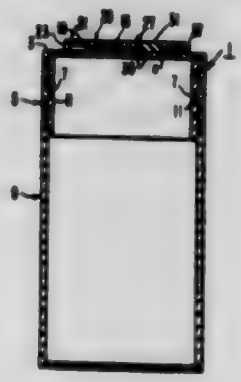
means for discharging material from said container.

4,494,679

THERMOPLASTIC CONTAINER CLOSURE FOR DISPENSING SOLIDS

Bruce T. Cleevely, Pittsburgh, Pa., assignor to The C. F. Sauer Company, Richmond, Va.

Filed Jul. 26, 1982, Ser. No. 402,159
Int. Cl.³ B65D 47/08
U.S. Cl. 222—151 3 Claims



1. A product dispensing closure for containers for finely divided solids wherein the container has a neck of circular section terminating in an annular lip, the closure comprising an integral thermoplastic molded unit having:

(a) an annular planar base having a depending skirt around

its outer periphery which fits about and is secured to the neck of the container, with the lip sealed against and providing a support for the base when the closure is in use:

(b) a substantially vertical wall extending upward from an inner periphery of the base having an elevated planar platform over the part of the area encircled by said vertical wall;

(c) a second, higher platform over the remainder of the area enclosed within said vertical wall, there being an integral straight vertical step connecting the upper and lower platforms, said step being in the location of a chord of the circle defined by the base but elevated above the base, the lower elevated platform being larger than the higher platform but both having their upper surfaces parallel with the base and with each other;

(d) a flap joined to the upper edge of said step by an integral hinge forming connection, said flap being movable between an open position where it is clear of the lower elevated position to a closed position where it makes face-to-face contact with the lower elevated platform with which it is substantially coextensive, the flap having a thickness that, when it is closed, its upper surface is a planar extension of said higher elevated platform;

(e) said lower elevated platform having at least one product discharge opening therethrough located in said platform, in an area removed from the axis about which the flap hinges, the flap having at least one projection on its undersurface positioned to enter and close said at least one opening when the flap is tightly closed;

(f) said flap and higher elevated platform transmitting downward pressure thereon through said vertical wall to the inner periphery of the base;

(g) said flap, when closed, through the higher elevated platform providing a combined load supporting area and pressure transmitting surface entirely through said vertical wall extending from the inner periphery of the base into the base and from the base into the lip of the container.

4,494,680

MANUALLY OPERATED DISPENSING PUMP

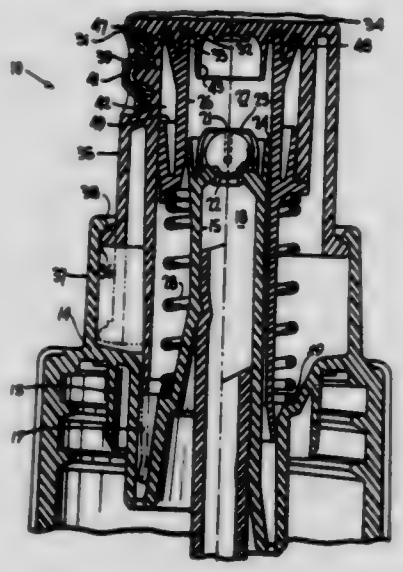
Douglas F. Corsette, 6559 Firebrand St., Los Angeles, Calif. 90045

Continuation-in-part of Ser. No. 121,223, Feb. 13, 1980, Pat. No. 4,402,432. This application Jun. 8, 1983, Ser. No. 502,274

Int. Cl.³ B05B *11/00*

U.S. Cl. 222—321

15 Claims



1. A dispensing pump comprising, a pump body adapted for fluid tight communication with the opening of a container of flowable product to be dispensed, said pump body including a stationary upstanding piston, a container vent opening, and a collar surrounding said piston, an annular plunger mounted for reciprocation on said piston to define therewith a variable volume pump chamber, said piston having a valve controlled inlet passage, a plunger head slidably disposed on said plunger for reciprocation and having means defining a variable volume accumulation chamber in open communication with said pump chamber, means resiliently urging said plunger into a fully raised position above said pump body, said head having a discharge passage adapted to be opened and closed by said plunger upon movement in response to a change in pressure within said pump chamber, retention beads on said plunger head and on said collar for limiting said plunger head in a predetermined raised position wherein said plunger closes said discharge passage in said fully raised position thereof, said retention beads extending laterally respectively toward confronting surfaces of said collar and said plunger head, one of said beads defining a first annular bearing member in sliding engagement with one of said confronting surfaces during plunger head reciprocation, said pump body further including a vertical annular wall spaced from said piston and therewith defining a vent chamber which includes said vent opening, a vent skirt extending from said plunger head and having an annular vent seal defining a second bearing member slidably guided along said wall during said plunger head reciprocation, said vent chamber being adapted to be closed by said vent seal in said fully raised position of said plunger and to be opened by said vent seal during plunger reciprocation, and said bearing members being spaced apart acting to resist any lateral or eccentric forces applied to said head during its reciprocation to thereby isolate said forces from said plunger permitting it to respond without restraint during said movement in opening and closing said discharge passage.

4,494,681

METHOD AND DISPENSER FOR DISPENSING BEER

Toshihiro Ueda, Ibaraki; Masamichi Imanishi, and Takayoshi Miyano, both of Kyoto, all of Japan, assignors to Suntory Limited, Osaka, Japan

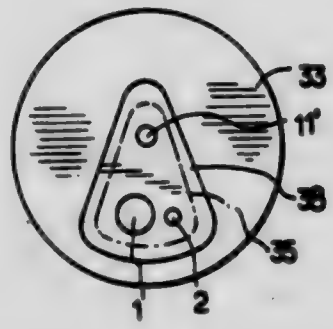
Division of Ser. No. 199,240, Oct. 21, 1980, Pat. No. 4,398,652. This application Apr. 18, 1983, Ser. No. 486,036

Claims priority, application Japan, Nov. 21, 1979, 54-151648; Feb. 22, 1980, 55-22913; May 12, 1980, 55-63173; Jul. 9, 1980, 55-94379; Jul. 14, 1980, 55-96741; Jul. 15, 1980, 55-100484; Aug. 6, 1980, 55-112100; Aug. 6, 1980, 55-112101

Int. Cl.³ B67D *3/00*

U.S. Cl. 222—485

15 Claims



1. A metal beer container having a pull-tab opening on the top end thereof, comprising: a subsidiary plate previously fixed to the inner side of said top end and which covers the under side of an opening made by the removal of said pull-tab, said subsidiary plate having a main pouring port subsidiary pouring port, and air intake port arranged thereon to face said opening made by removal of said pull-tab.

4,494,682

POURING FITMENT WITH CONTAINER AND CLOSURE THEREFOR

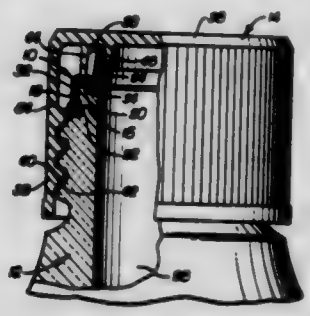
Ronald D. Beckstrom, Fullerton, and Chester C. Anderson, Santa Ana, both of Calif., assignors to Hunt-Wesson Foods, Inc., Fullerton, Calif.

Filed Jul. 7, 1982, Ser. No. 396,025

The portion of the term of this patent subsequent to Oct. 9, 2001, has been disclaimed.

Int. Cl.³ B65D *25/48*

U.S. Cl. 222—551 13 Claims



1. A pouring fitment for a container comprising:

an annular retainer portion defining an inwardly facing annular recess to receive an outwardly extending annular holding portion of a mating container;

an upwardly facing annular channel defined by said retainer portion to receive a downwardly extending support member that forms part of said closure;

a ring extending upwardly from said retainer portion;

an annular lip extending outwardly from the top of said ring and defining a pour surface; and

an annular sealing bead extending downwardly from said retainer portion to engage said holding portion of said container, whereby a downward force applied to said lip and said ring by the installation of a closure on said container urges said bead toward a liquid-tight sealing relationship with said holding portion.

4,494,683

STEAM KILN

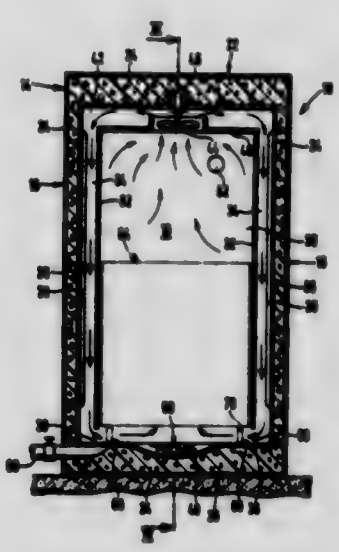
Kurt Kleber, Zum Mühlgraben 4, 6842 Bürstadt, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 426,172

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1981, 3143907

Int. Cl.³ D06C *7/02*; A41H *43/00*

U.S. Cl. 223—51 8 Claims



1. A steam kiln for setting of folds of fabrics previously provided with folds, by means of heated steam, comprising: a housing having an interior with a top wall, a bottom wall, a front wall, a back wall, and two side walls, a sealing charging door in said front wall, and heating elements in the housing interior for reheating steam brought into the kiln interior, said heating elements being disposed on said two side walls, first shielding walls disposed at a distance from the heating elements and from each of said side walls so as to form two air guiding chambers extending essentially vertically along said side walls and terminating slightly above said bottom wall; a second shielding wall disposed at a distance below said top wall, an entry aperture in said second shielding wall for the steam contained in the steam kiln and forming with said top wall a horizontal air guiding chamber communicating with said vertical air guiding chambers, a blower arranged in said horizontal air guiding chamber and having an intake connected to said entry aperture and a discharge communicating with said horizontal air guiding chamber, said bottom having a shallow, trough-like recess for the collection of steam condensate, and a steam feed system adapted to be connected to a steam source and provided in said recess and having orifices.

4,494,684

LUGGAGE BINDER FOR A BICYCLE OR LIKE VEHICLE

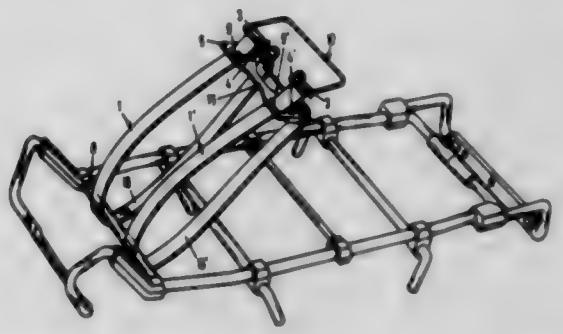
Christiaan J. H. Duyker, MA Lisse, and Albertus C. Balk, XL Aerdenhout, both of Netherlands, assignors to Bfbia Rubber B.V., Netherlands

Filed Jul. 9, 1982, Ser. No. 396,834

Claims priority, application Netherlands, Jul. 14, 1981, 8103347

Int. Cl.³ B62J *7/08*

U.S. Cl. 224—39 10 Claims



1. In a longitudinally adjustable luggage binder for a vehicle luggage carrier having at least first and second bars, comprising an elastic band, one end of which passes through a first slot in an adjusting clasp and is secured thereto by means of an enlarged portion engaging the edges of the slot, the band, after a loop has been formed about a bar of the luggage carrier, being conducted through a second slot in the adjusting clasp so that the enlarged portion is pressed and retained by the band against the adjusting clasp, the other end of the band being attached to a hook member adapted to engage a part of the luggage carrier, characterized in that:

the band after the loop has been formed, is conducted through the second slot only in the adjusting clasp, which second slot, as seen from the loop, is disposed beyond the enlarged portion, and beyond the first slot by a fixed distance, such that between the loop and the hook member the band extends through only a single slot in the adjusting clasp,

whereby the distance between said adjusting clasp and said hook member can be adjusted by merely rotating and sliding said clasp relative to said band.

4,494,685

CROSS TIE END PLATING MACHINE

Gordon E. Matlock, 544 Sappington Bridge Rd., Sullivan, Mo. 63080

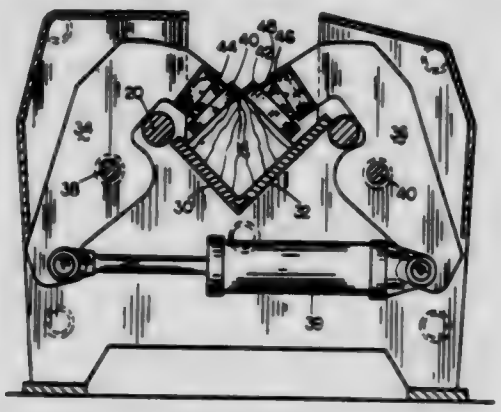
Filed Aug. 19, 1983, Ser. No. 524,582

Int. Cl.³ B25C *7/00*; B30B *7/04*

U.S. Cl. 227—41 10 Claims

1. An end plating machine for an elongated wood cross tie, comprising,

a frame means having upper and lower portions, and opposite ends,
first and second stationary platens adjacent one end of said frame means,
said first and second stationary platens being positioned adjacent and transversely to each other,
means on said frame means spaced longitudinally from said first and second stationary platens for supporting the other end of the tie,
said first and second stationary platens dwelling in planes which are approximately 45° from horizontal so as to horizontally support one end of the tie in a diagonal position with the surfaces of the tie being disposed approximately 45° from horizontal so that the tie has a pair of upper surfaces and a pair of lower surfaces,
first and second platen arms having upper and lower ends,
said first platen arm being pivotally mounted, between its upper and lower ends, to said frame means adjacent one side thereof laterally of said first stationary platen,



said second platen arm being pivotally mounted, between its upper and lower ends, to said frame means adjacent the other side thereof laterally of said second stationary platen,
first and second movable platens on the upper ends of said first and second platen arms respectively,
a power cylinder means pivotally secured to and extending between the lower ends of said first and second platen arms so that said first and second movable platens may be brought into contact with the upper surfaces of the tie and to squeeze the same to substantially close any cracks in the end of the tie,
a horizontally disposed power ram means at said one end of said frame means for forcing a nail plate into the end of the tie after the first and second movable platens have closed the cracks in the end of the tie,
and an abutment means on said frame means spaced from said one end thereof for limiting the longitudinal movement of the tie as said ram means forces the nail plate into the end of the tie.

4,494,686

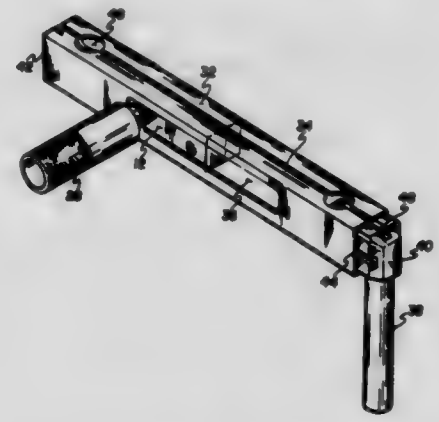
WIRE SETTING TOOL

Lee H. L'Heureux, Box 8644, c/o ARAMCO, Dhahran, Saudi Arabia

Filed May 19, 1983, Ser. No. 495,939
Int. Cl.³ B25C 7/00
U.S. Cl. 227—147 11 Claims

1. A tool for driving a wire length into a hard material which comprises in combination:

a. an elongated holder having a bore therein, said bore extending the entire length of the longest dimension of said holder and opening into at least one end of said holder, said holder having a first slot which is coextensive with the entire length of said longest dimension and which penetrates from the outside of said holder through to said bore to permit the insertion of said wire length into said bore of said holder;
b. a vise adapted to be slidably located inside said holder and having a first jaw member and a second opposing jaw member, said jaw members opening along said first slot in order to receive said inserted wire length.
c. means for operating said vise to permit said received wire length to be clamped and released; and



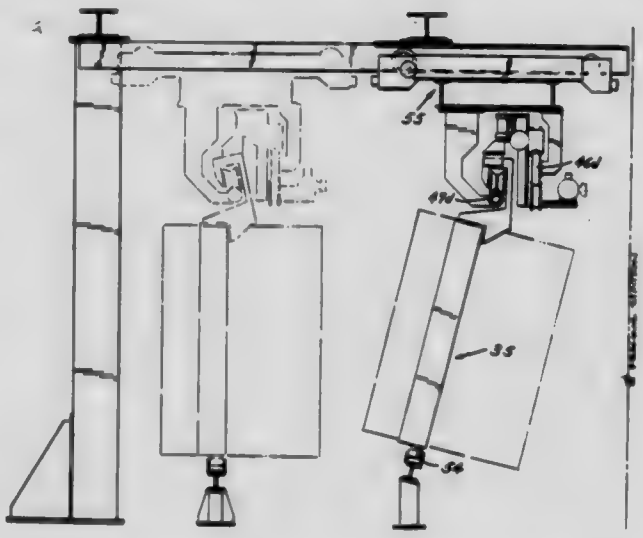
d. means for driving said vise forcefully along said bore while said received wire length is clamped by said vise thereby driving said wire length a chosen distance into said hard material after said clamped wire length and said vise are drawn back from said hard material.

4,494,687

EXPANDED CAR BODY WELDING ASSEMBLY SYSTEM

Cristiano Rossi, Birmingham, Mich., assignor to Comau S.p.A., Grugliasco, Italy

Filed Mar. 21, 1983, Ser. No. 477,125
Int. Cl.³ B23K 37/04; B23Q 7/14
U.S. Cl. 228—47 22 Claims



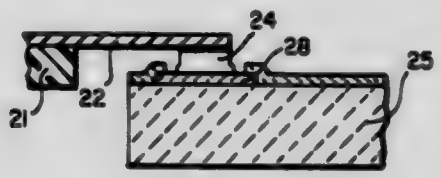
1. Car body welding assembly system including a framing station having a plurality of aligned reciprocable gates adapted respectively to orient component parts of different body styles with programmable welding means adapted to weld any of said different body components into an integrated body structure, characterized by system means for interchanging different end gates to increase the number of different body styles capable of being welding at said framing station, said system means including automatic self-propelled monotractor means for releasably engaging an end gate to move it from its aligned end position to a crane area, automatic crane means at said crane area adapted to move said end gate and monotractor means to a storage area, track means at said storage area adapted to receive and store said end gate as well as another substitute gate, automatic means for said monotractor to sequentially move said end gate into storage, release engagement, move to and engage said substitute gate, and move said substitute gate to said crane means for crane transfer to said framing line, and then move said substitute gate to said end gate position.

4,494,688

METHOD OF CONNECTING METAL LEADS WITH ELECTRODES OF SEMICONDUCTOR DEVICE AND METAL LEAD THEREFORE

Kenzo Hatada, Katano, and Isamu Kitahiro, Yawata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 11, 1982, Ser. No. 357,319
Claims priority, application Japan, Mar. 16, 1981, 56-37499
Int. Cl.[3] B23K *19/00*
U.S. Cl. 228—180 A 9 Claims



1. A method of connecting metal leads with electrodes of a semiconductor device, comprising the steps of:

forming metal bumps on a supporting member;

aligning metal leads supported on a carrier with said metal bumps and superimposing each of said metal leads on a corresponding one of said bumps;

applying pressure and heat to the surfaces of the respective leads on the opposite side from the surfaces which face said bumps so that the surfaces facing said bumps are pressed against said bumps, the pressure and heat being sufficient for bonding the leads and the bumps and insufficient to produce any substantial melting of the metal of the bumps;

separating said bumps from said support member;

aligning said metal leads with the leads of a semiconductor device so that the surface of each of said metal bumps on the side opposite the surface bonded to said metal lead faces a corresponding one of the electrodes of said semiconductor device; and

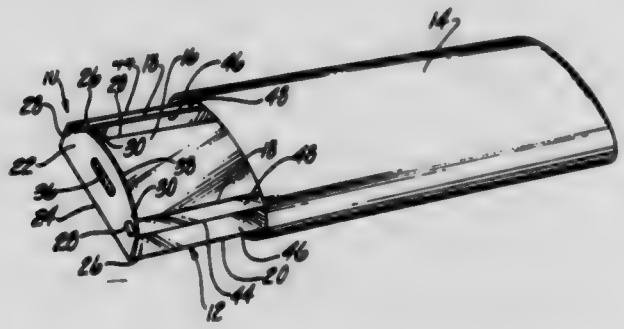
applying pressure and heat to said metal leads for pressing said metal bumps against said electrodes and bonding them thereto, the pressure and heat being insufficient to produce any substantial melting of the metal of said bumps.

4,494,689

CARRYOUT FOOD TRAY

Michael Iiltch, Bloomfield Hills, Mich., assignor to Little Caesar Enterprises, Inc., Farmington Hills, Mich.

Filed Jul. 14, 1983, Ser. No. 513,767
Int. Cl.[3] B65D *5/20*
U.S. Cl. 229—30 7 Claims



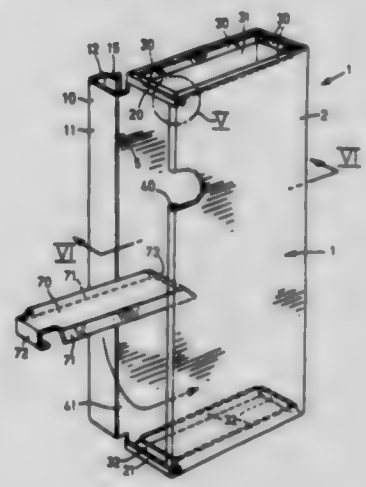
1. A carryout food tray comprising: a paperboard blank having a central panel of a rectangular shape; the blank including a pair of side panels having associated foldable scoreline connections to opposite sides of the central panel; the blank including a pair of end panels having associated foldable scoreline connections to opposite ends of the central panel; said side and end panels each having opposite ends positioned in adjacent pairs with the panel ends of each pair spaced from each other at the adjacent corner of the central panel; each side panel end including a tab; each panel end including a slot for receiving the tab on the adjacent side panel end such that the side and end panels can be folded upwardly and secured to each other at the corners of the central panel in order to prevent contact between carryout food on the tray and a bag that receives the tray and in order to also permit the food to be served on the tray after removal of the bag without the possibility of the food slipping off the tray when it is inclined; the ends of each side and end panel including edges that are inclined with respect to the associated scoreline connections thereof to the central panel; the inclination of the ends of the side and end panels being in a direction away from the adjacent panel ends such that the upwardly folded side and end panels are inclined inwardly over the central panel with the tabs and slots secured to each other; each side panel including a foldable scoreline extending parallel to the adjacent side of the central panel to define inner and outer side panel portions; the tabs being positioned on the outer portions of the side panels at the ends thereof; and the slots being inclined with respect to the scoreline connections of the end panels to the central panel to provide the outer side panel portions with a greater inward inclination than the inner side panel portions.

4,494,690

CONTAINER

Emmanuel F. Dupuis, 21 Prince Philip Dr., St. Catharines, Ontario L2N 3H9, Canada

Filed May 3, 1983, Ser. No. 491,110
Int. Cl.[3] A47G *29/12*
U.S. Cl. 232—22 13 Claims



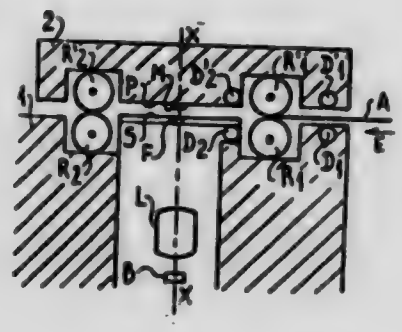
6. A container for articles, the container comprising: a main body for receiving articles; resilient clip means extending from the main body for securing the container to an edge of a door; two first openings each of which includes a respective first means associated only with the peripheries of the openings for at least hindering removal of articles from the container, the first openings being provided at opposite ends of the main body; a second opening in the main body for removal of articles therefrom; the container, in use, being adapted to be mounted by said clip means on an edge of a door having an associated doorjamb, with one first opening facing downwards, and with the first means associated with said other first opening preventing articles within the container from falling out of the container, whereby articles can be inserted into the container through said one first opening, and when the door is closed the second opening is closed to prevent removal of articles therethrough, but when the door is opened the second opening is also opened to permit removal of articles from the container through the second opening.

4,494,691

LINE-BY-LINE DOCUMENT SCANNER EQUIPPED WITH A DEVICE FOR CONTROLLING THE POSITION OF DOCUMENTS

Guy Boutrois, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 17, 1982, Ser. No. 442,507
Claims priority, application France, Nov. 17, 1981, 81 21483
Int. Cl.³ G06K 7/10
U.S. Cl. 235—470 3 Claims



1. A scanner for line-by-line scanning of a document, comprising:

a surface for transfer of the document in continuous motion, means for causing the document to slide along the surface,

n photosensors (where n is a whole number greater than 1) each having a reading field and adapted to deliver scanning signals,

a registration mark drawn on a fixed support and located within the reading field of m out of the n photosensors (where m is a whole number with $O<m<n+1$), said registration mark and said n photosensors being respectively located on the two sides of said surface,

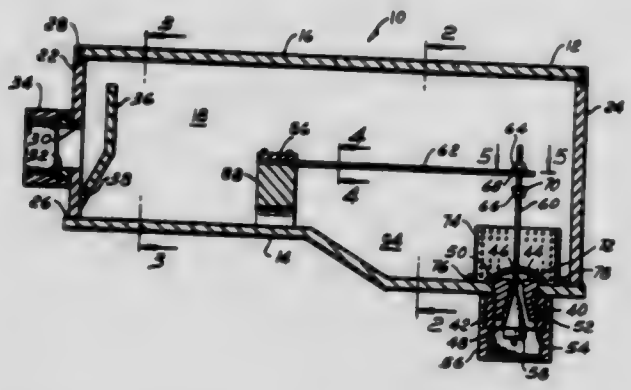
comparison circuit for detecting the passage of the document between the registration mark and the m photosensors, comprising: a memory having an input coupled for receiving the signals of the m photosensors at least at the beginning of a reading process and one output; a comparator having a first input coupled for receiving the signals of the m photosensors at least starting from an instant located between the beginning of a reading process and the beginning of transfer of the document between the registration mark and the m photosensors, a second input coupled to the output of the memory at least slarting from said instant and one output; and a counting circuit connected to the output of said comparator for counting at the time of each line scan the number of times different signals are received on the first and on the second input of said comparator.

4,494,692

STEAM TRAP

John J. Dobias, 1212 Sumach Dr., Windsor, Canada N8S 2S4

Filed Sep. 18, 1981, Ser. No. 303,396
Int. Cl.³ F16T 1/04
U.S. Cl. 236—59 6 Claims



1. A steam trap comprising a generally rectangular hollow body including two parallel spaced apart sides, two parallel spaced apart ends, a bottom having a lower portion at one end thereof forming a sump for collection of fluids in the one end of the steam trap together with one end of the hollow body and the ends of the side walls at the one end of the hollow body, and a removable cover, an opening in the other end of the hollow body through which steam and fluids enter the steam trap, an exteriorly threaded coupling member secured to the hollow body around the opening in the other end of the hollow body for connecting a steam pipe thereto, a baffel extending completely acroes the other end of the hollow body within the hollow body and extending upwardly from the bottom of the hollow body over the opening in the other end of the hollow body and including openings therethrough adjacent the bottom thereof whereby steam moisture entering into the hollow body through the opening in the other end thereof are separated at the baffel, an opening in the bottom of the hollow body within the sump adjacent the one end of the hollow body through which fluid is passed out of the steam trap, a cylindrical valve seat member including an external thread on one end thereof and an annular outwardly extending flange on the other end thereof having a conical valve seat extending axially therethrough, an internally and externally threaded cylindrical member threadedly engaged with the threaded one end of the valve seat member and clamping the periphery of the opening in the bottom of the hollow body between the flange on the valve seat member and one end of the cylindrical member to secure the valve seat member in the opening in the bottom, a conical valve complimentary to the conical valve seat and including a stem thereon extending upwardly through the valve seat into the hollow body positioned within the valve seat, a pair of spaced apart nut and washer combinations threaded onto the valve member stem, bi-metal means including a plurality of alternate layers of brass and steel members with each brass member being connected to one adjacent steel member positioned within the hollow body, a separate extra steel member positioned on the bi-metal means whereby both top and bottom of the bi-metal means is a steel member for providing initial bias for the bi-metal means, a slot in one end of the bi-metal means receiving the stem of the valve member therethrough between the nut and washer combinations thereon, the other end of the bi-metal means being arcuate and extending in a full 180° arc to provide a portion extending substantially parallel to the remainder of the bi-metal means, support structure for the bi-metal means extending completely across the hollow body at the bottom thereof and having an arcuate recess completely through the bottom thereof to permit flow of liquid along the bottom of the hollow body to the sump from the baffel and means for securing the parallel portion of the bi-metal means to the top of the support structure, a cylindrical strainer positioned over the opening through the bottom of the hollow body and extending axially along the stem of the valve member and a dish-shaped strainer concave inwardly of the hollow body positioned over the valve seat member with the stem of the valve member extending therethrough.

4,494,693

FLUID ACTUATED THERMAL COMPENSATOR WITH ADJUSTABLE STROKE CHARACTERISTICS

Wilfred H. Bechle, Long Beach, Calif., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 4, 1982, Ser. No. 404,956
Int. Cl.³ F03C 5/00; F16J 3/06; G05D 23/12
U.S. Cl. 236—100 4 Claims

1. A thermal responsive actuator comprising:

means defining a relatively fixed elongated housing member having an adjustable actuation volume at one end and a central passage extending therefrom to an opposite end;

means defining a actuation element mounted on one end of said housing means in direct communication with said actuation volume for linear movement with respect to said housing;

means defining a hollow support tube threadedly positioned onto said housing means, defining an adjustable volume trim reservoir with a volume directly related to the threaded position of said support tube on said housing means and said trim reservoir being in direct communication with the opposite end of said central passage

said actuation volume, said central passage and said trim reservoir together defining a fluid tight chamber;

a liquid phase fluid occupying said chamber wherein said fluid in said chamber changes volumetrically in response to changes in temperature;



a controllable valve means on said support tube in communication with said trim reservoir for sealing said chamber when closed or for allowing the supply of liquid to or the bleeding of liquid from said chamber when open;

means defining a liquid supply reservoir threaded onto said support tube in direct communication with said valve means and including a moveable element in communication with said liquid supply reservoir for forceably supplying liquid to or bleeding liquid from said chamber through said valve means.

4,494,694

SUPPORT SYSTEM FOR A RAILROAD TRACK

John M. Pitt, Nevada; Richard L. Handy, and Robert O. Lamb, both of Ames, all of Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Sep. 28, 1982, Ser. No. 425,181
Int. Cl.³ E01B *1/00*
U.S. Cl. 238—2 7 Claims



1. A support system for a railroad track including a pair of rails secured to a plurality of spaced-apart cross ties, comprising,

a plurality of vertically disposed piles positioned directly below said ties and rails whereby loads imposed on the cross ties will be distributed into the subgrade by said piles,

said piles being comprised of a cementitious material,

a ballast material being positioned between the cross ties and the upper ends of said piles, and

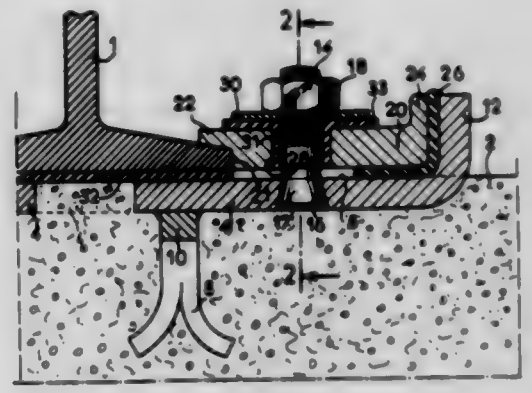
each of said piles having a cylindrical stem portion having a funnel-shaped head portion at the upper end thereof.

4,494,695

DEVICE FOR AFFIXING A RAIL TO A CONCRETE SUPPORT

Roger P. Sonneville, Annapolis, Md., assignor to Sonneville International Corporation, Washington, D.C.

Filed Sep. 16, 1981, Ser. No. 302,518
Claims priority, application France, Sep. 29, 1980, 80 20806
Int. Cl.³ E01B *9/46*
U.S. Cl. 238—265 10 Claims



1. A structure comprising in combination:

(a) a railway rail including a foot having a lateral edge;

(b) a concrete railway tie disposed under said rail and having an upper surface of a given width longitudinally of the rail and below said rail foot; and

(c) a mounting device comprising:

(1) a steel plate interposed between said rail and said tie, said plate having a substantially upright first portion in spaced relation to said lateral edge of said foot of said rail, a substantially horizontal second portion extending from said upright portion to a location beyond the edge of said foot of said rail and under said rail, said plate having a width which is at the most one half of said given width of said upper surface of said tie, said plate being embedded and anchored into the concrete of said tie in a manner resulting from the moulding of the concrete onto said plate, with said plate having an upper surface flush with said upper surface of said tie, so that both said plate and said upper surface of said tie support said rail foot, said plate having a cross section of variable dimensions with the width of said plate increasing in the direction toward said first portion;

(2) anchoring means for anchoring said plate to said tie, said anchoring means being rigid with said plate and embedded in said concrete of said tie in an intimate matter resulting from the moulding of the concrete around said anchoring means;

(3) a soft elastic pad interposed between said rail foot and said upper surface of said plate and said upper surface of said tie vertically below said rail foot for equalizing the pressure of said rail foot on the steel of said plate and the concrete of said tie;

(4) an intermediate clip for maintaining the position of said rail, said clip being interposed between said upright portion of said steel plate and said lateral edge of said rail foot, said clip being in abutting relation to said lateral edge and in overlapping relation to said foot adjacent said lateral edge and in laterally supported relation to said upright portion of said plate; and

(5) tightening means for tightening said clip to said rail and to said plate without imparting forces to said plate tending to pull said plate and said anchoring means from said concrete tie, said tightening means including a bolt rigidly fixed to said plate and extending upwardly therefrom through said clip, and a nut threaded onto said bolt above said clip, said bolt having an integral shoulder member abutting a lower surface of said plate;

the position of the application of the laterally outermost force in a downward direction from said clip to said plate being

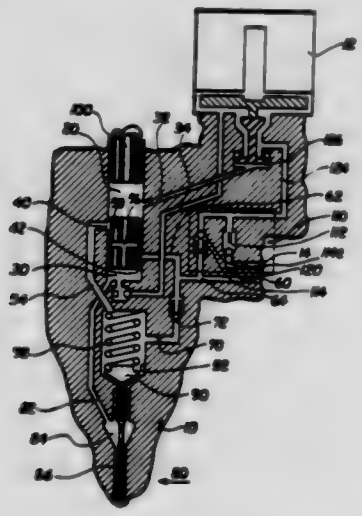
laterally outward of the position of connection between said bolt and said plate and laterally outwardly of the position of connection of said anchoring means to said plate.

4,494,696

UNIT INJECTOR

Michael J. Schneider, Huntington Woods, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jun. 24, 1983, Ser. No. 507,329
Int. Cl.³ F02M 47/02
U.S. Cl. 239—90
5 Claims



1. A unit injector of the type having a timing chamber defined between a pumping piston and a metering piston, a metering chamber defined below the metering piston, a plurality of passages including a valve passage therein for communicating fuel thereto and a drain line;

a single electrically controlled valve connected to the valve passage responsive to control signals for controlling the flow of fuel at least between a fuel supply and the timing chamber;

a nozzle situated remote from the metering chamber and passages to communicate fuel to be injected therefrom the metering chamber to the nozzle and dumping means to periodically relieve the pressure within both the timing and metering chambers, the improvement comprising self-actuating check valve means to permit fuel to flow from the supply to the valve passage and control valve in one condition and for permitting fuel within the timing chamber during a pre-injection mode of operation characterized when the pumping piston is descending, wherein fuel is being forced from the timing chamber to flow through to drain for isolating the supply from the pressure line perturbations generated by the venting of fuel from the timing chamber and to permit in another condition fuel to flow from the supply to the timing chamber.

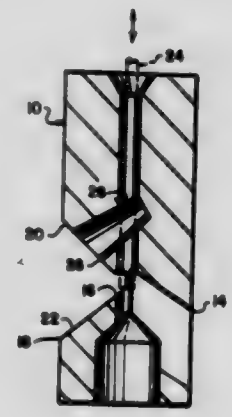
4,494,697

SPRAY CONTROL VALVE

John D. Geberth, Jr., 10 Goose Cove La., Ramsey, N.J. 07446

Filed Jan. 11, 1983, Ser. No. 457,195
Int. Cl.³ B05B 1/32
U.S. Cl. 239—124
4 Claims

1. In a spray control valve of the type used with a spray gun adapted for hydraulically atomizing and spraying liquids wherein the spray control valve functions as the spray tip, the spray control valve is mounted in a housing attached to the spray gun handle and includes a fluid bore communicating with the pressurized liquid supplied to the spray gun, a valve bore intersecting said fluid bore and substantially transverse thereto, and a spray opening substantially aligned with said fluid bore and intersected by said valve bore, the spray gun further includes a valve pin moveable in said valve bore and normally biased to obstruct said spray opening, and trigger means for moving said valve pin against said biasing action to unobstruct said spray opening and define the extent thereof, the improvement in said spray control valve comprising a relief bore formed in said spray control valve intersecting said valve bore proximate to said spray opening, said relief bore



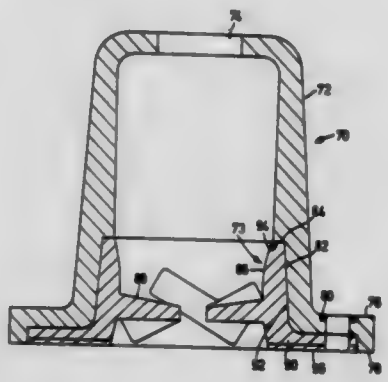
having a diameter greater than said valve bore so that a circumferential segment of said valve bore is exposed to the atmosphere to thereby relieve the pressure of any liquid material which infiltrates into said valve bore between the wall thereof and said valve pin.

4,494,698

POLYURETHANE SPRAY NOZZLE FOR ABRASIVE SLURRIES

Richard A. Brown, Hixson, and John D. Trew, Nashville, both of Tenn., assignors to Porter-Walker, Inc., Columbia and Urethane Specialties, Inc., Davidson County, both of, Tenn., a part interest

Filed Jun. 24, 1983, Ser. No. 508,072
Int. Cl.³ B05B 1/34
U.S. Cl. 239—489
16 Claims



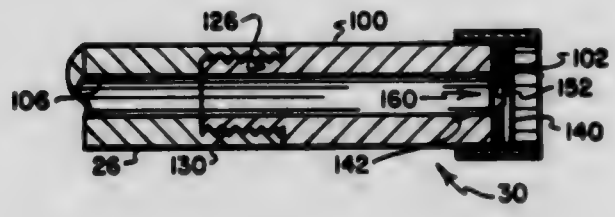
1. A polyurethane spray nozzle for high pressure abrasive aqueous slurries of limestone and the like, said nozzle comprising a hollow integral body of polyurethane, said body having a restricted inlet opening, an expanded interior hollow reservoir and a restricted outlet opening, said inlet opening being defined by a plurality of polyurethane radial vanes to impart a swirling motion to a high pressure slurry introduced from a slurry pipe source, said polyurethane being characterized by a durometer reading of about 90, a high degree of abrasion resistance and slick surface to inhibit solids build up and wear on surfaces of the nozzle contacted by said slurry and resistance to corrosion by limestone and said vanes having a flex characteristic to inhibit clogging by discrete particles of limestone or the like comprising said slurry and an outwardly extending flange having at least a laterally extending portion of the flange integrally connected to said body adjacent said inlet opening and said flange being adapted to be rigidly connected to a mating flange in said pipe line source.

4,494,699

ADJUSTABLE SPRAY NOZZLE

Robert W. Hengesbach, 7886 Mentor Rd., Mentor, Ohio 44060

Continuation-in-part of Ser. No. 313,456, Oct. 21, 1981,. This application Mar. 28, 1983, Ser. No. 479,204
Int. Cl.[3] B05B *1/26*
U.S. Cl. 239—499 3 Claims



1. An adjustable spray nozzle for providing a relatively narrow, elongate, and substantially uniform resulting spray pattern for materials issuing therefrom, with the length of the resulting spray pattern being controllable, the nozzle comprising:

(a) an elongate cylindrical tubular housing having a transversely extending end wall near one end thereof with the end wall having an exterior face and an interior face, and means defining a discharge opening therefrom formed through the end wall from the interior face thereof to the exterior face thereof, and the housing having structure which defines an elongate delivery passage for ducting material to be sprayed along a path extending longitudinally through the housing to the interior face for discharge through the discharge opening;

(b) the means defining the discharge opening including an elongate, substantially linear groove formed in the exterior face of the end wall, the groove being continuous along its length and extending from one edge of the exterior face to an opposite edge thereof and having opposed ends which open through the one and opposite edges, and a converging passage formed in the interior face of the end wall, with the groove and the converging passage intersecting and cooperating to define the discharge opening for discharging sprayed materials in a relatively narrow, elongate, but non-uniform type of discharge spray pattern which extends in planes that align with the linear groove, with the discharging materials tending to be concentrated toward opposed end regions of the discharge spray pattern, and with relatively lesser amounts of the discharging materials being present in central portions of the discharge spray pattern;

(c) band-like cylindrical spray deflector means carried by the housing for closely surrounding and closing the opposed ends of the linear groove where the opposed ends of the groove open through the one and opposite edges of the exterior face, and for extending beyond the end wall at locations near the opposed ends of the linear groove to intercept additionally end portions of the discharge spray pattern and to deflect intercepted discharging materials back into central portions of the discharge spray pattern such that a resulting spray pattern of material issuing from the nozzle is caused to be substantially uniform along its length from one end portion thereof through central portions thereof to the other end portion thereof; and,

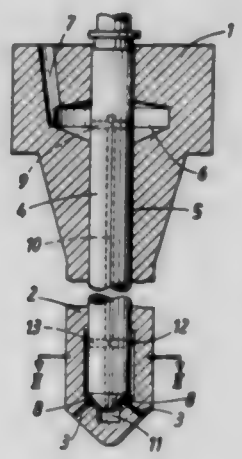
(d) connection means adjustably mounting the spray deflector means on the housing for axial movement between positions wherein the spray deflector means intercepts end portions of the discharge spray pattern to differing degrees, whereby the length of the resulting spray pattern may be controlled by controlling the extent to which the spray deflector means intercepts end portions of the discharge spray pattern.

4,494,700

FUEL INJECTION NOZZLE FOR AIR-COMPRESSING, SELF-IGNITING RECIPROCATING INTERNAL COMBUSTION ENGINES

Anton Dolenc, Vienna, Austria, assignor to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

Filed Nov. 17, 1983, Ser. No. 552,809
Claims priority, application Austria, Dec. 14, 1982, 4536/82
Int. Cl.[3] F02M *61/04*
U.S. Cl. 239—533.3 4 Claims



1. In a fuel injection nozzle for air-compressing, self-igniting, reciprocating internal combustion engines, comprising

a nozzle body comprising a hollow nozzle tip having an inside peripheral surface and valve seating means facing the interior of said nozzle tip and a plurality of nozzle orifices, which have inlet openings in said valve seating means and are open on the outside of said nozzle tip, and

a valve needle, which is axially slidably mounted in said nozzle body and nozzle tip and comprises an end portion, which faces said valve seating means and is adapted to cooperate with it so as to open and close said inlet openings,

said nozzle tip comprising guiding means formed on said inside peripheral surface and serving to axially guide said valve needle,

said valve needle being retractable from said valve seating means to an open position, in which said inside peripheral surface, said valve seating means and said end portion define a plenum chamber,

said inside peripheral surface and said valve needle defining around said valve needle between said end portion and said guiding means a clearance space, which is open at said end portion,

said nozzle body defining with said valve needle an annular chamber on the side of said guiding means that is opposite to said valve seating means,

said nozzle body being formed with a fuel inlet communicating with said annular chamber,

said needle valve being formed with an axial bore, which is open on said end portion, and with a transverse bore, which communicates with said axial bore and with said annular chamber regardless of the position of said valve needle,

the improvement residing in that

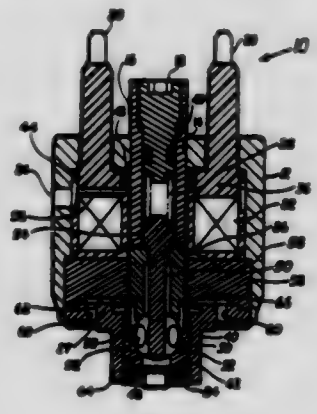
said valve seating means comprise a plurality of annular elevations, which surround respective ones of said inlet openings and have surfaces which face and conform to adjacent surface portions of said valve needle and are adapted to cooperate with said adjacent surface portions to open and close said inlet openings, and

passage means are provided, through which said clearance space communicates with said annular chamber regardless of the position of said valve needle.

4,494,701
FUEL INJECTOR

Thomas E. Hensley, Newport News, and Richard D. Weaver, Williamsburg, both of Va., assignors to Allied Corporation, Southfield, Mich.

Filed Sep. 30, 1982, Ser. No. 430,190
Int. Cl.³ B05B 01/30
U.S. Cl. 239—585
6 Claims



1. A fuel injector having a tubular housing member enclosed at one end containing a solenoid coil assembly, a tube member extending through an aperture in said enclosed end, and an adjustment means threaded in said tube member, an armature means adapted to be magnetically attracted to the tube member, valve seat means, valve member means responsive to the armature means for moving relative to the valve seat means, and means at the open end of the tubular housing member for receiving fuel into the injector for discharge between the valve member means and the valve seat means under control of the armature means, the injector characterized in that:

the valve means comprises a spherical valve member;

the armature means having a spherical bearing coupled thereto for locating and guiding in the tube member, said spherical valve member means being coupled to said armature means for movement therewith; and

the valve seat member being a tubular member having a plurality of guide means for guiding said spherical valve member to a conical valve seat at one end of the tubular member.

5. A fuel injector having a tubular housing member enclosed at one end with an aperture therein, an inlet tube extending through the aperture to a point intermediate the length of the housing member, armature means axially aligned with the inlet tube, a solenoid coil assembly, a pole piece member having an axially extending aperture and an elongated body member terminating in a valve seat, the fuel injector characterized in that:

the armature means includes an armature shaft terminating in a valve member for mating with the valve seat and an armature member extending into the pole piece member aperture for magnetically moving said armature means toward the inlet tube when the coil is energized;

a bias spring means for biasing the armature means away from the inlet tube when the coil is de-energized;

a bearing washer mounted in the body member for guiding said armature shaft during movement thereof; and

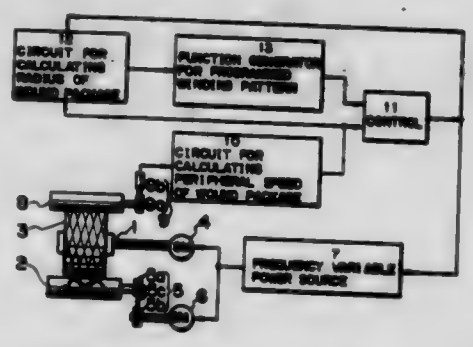
a plurality of axially-extending circumferentially spaced guides mounted in the body member concentric with the valve seat, said guides axially spaced from said bearing washer;

said bearing washer and said guides for concentrically guiding said armature shaft in response to energization of the solenoid coil to lift said valve member from said valve seat and in response to said bias spring when the solenoid coil is de-energized.

4,494,702
YARN WINDING APPARATUS

Yuzuru Miyake; Takami Sugioka; Shoichi Murakami, and Hideaki Ibuki, all of Matsuyama, Japan, assignors to Teijin Seiki Co., Ltd., Osaka, Japan

Filed Oct. 29, 1982, Ser. No. 437,523
Claims priority, application Japan, Nov. 4, 1981, 56-163756[U]
Int. Cl.³ B65H 54/02, 54/38, 59/38
U.S. Cl. 242—18 R
5 Claims



1. A rotating spindle drive type winding apparatus wherein a spindle, onto which a bobbin for winding a yarn to form a yarn package is inserted, is driven so that a predetermined winding factor is controlled in accordance with a predetermined program wherein said spindle drive type winding apparatus is provided with a control device which comprises:

(a) a peripheral speed detector for detecting the peripheral speed of said yarn package and generating a peripheral speed signal;

(b) a control, for controlling the rotational speed of said spindle, which receives a signal from a detector of the controlled winding factor and a preprogrammed winding signal, compares the winding factor signal and said preprogrammed signal and generates a control signal for controlling the rotational speed of said spindle;

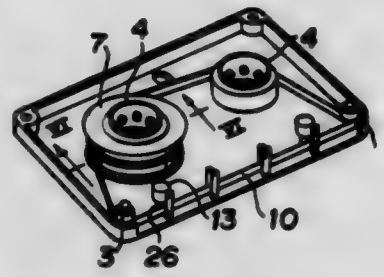
(c) a circuit which receives said peripheral speed signal and said control signal and generates a radius signal;

(d) a function generator which receives said radius signal and emits a preprogrammed winding signal to the control based on the radius signal.

4,494,703
ENDLESS TAPE CASSETTE

Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation, Tokyo, Japan

Filed Apr. 21, 1982, Ser. No. 370,645
Claims priority, application Japan, May 13, 1981, 56-72063
Int. Cl.³ G11B 23/06
U.S. Cl. 242—55.19 A
3 Claims



2. An endless tape cassette comprising a housing having upper and lower halves, a magnetic tape having a width one half of a width of a conventional magnetic tape within a tape cassette, the magnetic tape being coiled and having ends joined in the form of an endless magnetic tape, a tape reel having a height of a conventional tape reel mounted within the halves of the endless tape cassette and having disposed thereon coils of the magnetic tape, the tape reel having a hub portion and having upper and lower flanges, the lower flange having an upper surface sloping upwardly from an outer periphery of the lower flange toward the hub, and interior surface of the reel

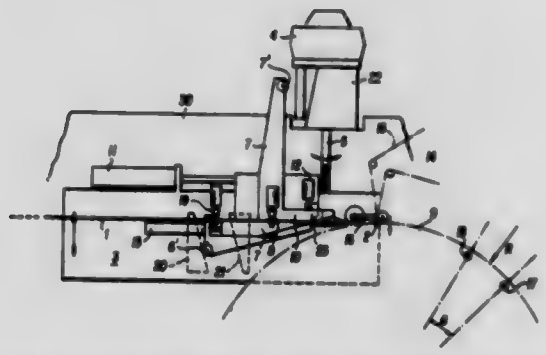
sloping outwardly from an inner periphery of the lower flange to an inner surface of the upper flange, and the upper flange having a substantially flat inner surface, tape guiding means mounted in the housing for guiding the magnetic tape in the housing and for guiding tape from an inner coil on the reel to an opening forward in the cassette housing and then redirecting the tape to the outside of the reel for winding the tape on the coils on the reel, the tape guide means including restricting means for restricting the tape for running in the lower housing half, opening means in a forward portion of the housing for receiving a capstan and pinch roller to drive the tape within the housing, the housing having drive shaft opening means adjacent the hub and the hub having a central opening for receiving a drive shaft to rotate the reel within the housing, whereby the tape is withdrawn from an innermost coil adjacent the hub of the reel and is driven through a lower half of the housing and is wound on coils on the lower portion of the reel adjacent to the lower flange, and whereby the cassette housing may be inverted for moving the tape through the cassette in reverse direction by the capstan and pinch roller, the tape being drawn from an outer coil on the reel, turning the reel and winding tape from the capstan on the reel adjacent a flat inner surface of the upper flange, which is in a lower position during inversion of the cassette.

4,494,704

PROCESS AND DEVICE FOR MANUFACTURING MOTHER CAPACITORS BY HELICAL WINDING

Claude Roy, Bagnolet, France, assignor to L.C.C.-C.I.C.E.-Compagnie Europeenne de Composants Electroniques, Bagnolet, France

Filed Jan. 12, 1983, Ser. No. 457,476
Claims priority, application France, Jan. 12, 1982, 82 00374
Int. Cl.³ B65H *19/04, 35/02;* H01G *13/00*
U.S. Cl. 242—56.1 22 Claims



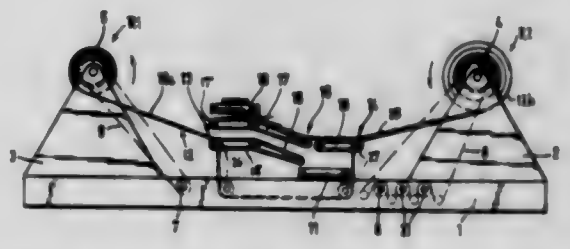
1. A process for manufacturing mother capacitors separated by an insert to form a block wherein the insert divides the block into at least two superposed mother capacitors which along with said insert have side edges completely covered with a contact metal, comprising helical winding of metalized films on a wheel as well as periodic interpositioning, after a given number of winding revolutions, of said insert having an input or leading edge and a rear edge, which process comprises an operation for making the position of an insert interpositioning device dependent on the position of the external layer of the winding, and an insert interpositioning operation comprising the steps of stopping said wheel, moving the interpositioning device from a rear, so-called rest, position to a forward position for presenting the insert by its leading edge, setting the wheel again in rotation so as to interposition said insert, moving the interpositioning device from its forward position to its rear position so as to continue winding of the films, and cutting said insert.

4,494,705

METHOD AND APPARATUS FOR TRANSPORTING AND STORING PAPER SHEETS AND THE LIKE

Heinz Linder, Zofingen, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

Filed Feb. 25, 1983, Ser. No. 469,925
Claims priority, application Switzerland, Mar. 30, 1982, 1934/82
Int. Cl.³ B65H *29/70*
U.S. Cl. 242—59 18 Claims



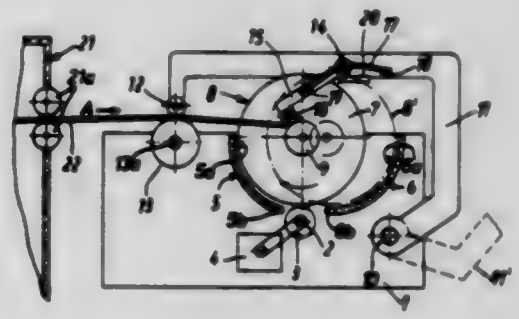
1. Apparatus for stacking and destacking sheets consisting of paper or the like, comprising sheet feeding means; sheet removing means; sheet stacking means including a hub, a flexible element having an end portion secured to said hub, means for rotating said hub in opposite directions so that the hub can collect and pay out said element, and guide means defining a first path along which a portion of said element advances in response to rotation of said hub; a reservoir; and sheet directing means including means for completing and opening a second path along which the sheets can advance from said feeding means into said reservoir, means for completing and opening a third path along which the sheets can advance from said reservoir into said first path so that said element can convolute the sheets around said hub in response to rotation of the hub in a direction to collect said element, and means for completing and opening a fourth path which connects said first path with said removing means so that the sheets which are convoluted around said hub can be advanced to said removing means in response to rotation of said hub in a direction to pay out said element, said sheet directing means defining a first junction connecting said reservoir with said second path and a second junction connecting said first path with said third path.

4,494,706

APPARATUS FOR CONVOLUTING STRIPS OF PHOTOSENSITIVE MATERIAL OR THE LIKE

Walter Becherer, Munich; Erwin Geyken, Neubiberg, and Nikolaus Jelinek, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 25, 1983, Ser. No. 498,131
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1982, 3221221
Int. Cl.³ B65H *17/20, 17/44*
U.S. Cl. 242—65 26 Claims



1. Apparatus for convoluting a strip, particularly a strip of photosensitive material, comprising:

(a) a takeup reel for the strip;

(b) means for rotating said reel so as to convolute the strip around the same, said reel being movable between a first

position of engagement with and a second position of disengagement from said rotating means; and

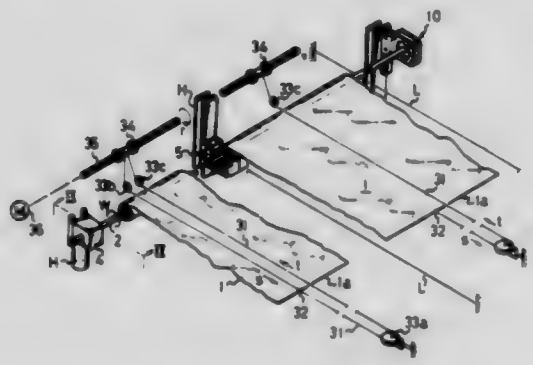
(c) means for tensioning the strip during convolution of the strip around said reel, said tensioning means being operative to maintain said reel in said first position while a tensile force in excess of a predetermined value is exerted on the strip, and said reel being arranged to move from said first position to said second position in automatic response to a reduction of the tensile force on the strip below the predetermined value.

4,494,707

APPARATUS FOR WINDING AND UNWINDING AN ELONGATED FLEXIBLE MEMBER

Kenji Nilbori, and Hisao Seda, both of Oyama, Japan, assignors to Seiwa Kagaku Kabushiki Kaisha, Japan

Filed Feb. 16, 1983, Ser. No. 466,887
Claims priority, application Japan, Feb. 22, 1982, 57-23675
Int. Cl.³ A47H *1/00*; A01G *9/14*; A63C *19/12*
U.S. Cl. 242—67.2 14 Claims



1. Apparatus for winding and unwinding an elongated flexible member of the type wherein an end of said flexible member is affixed to a winding rod and said flexible member is wound on said winding rod or unwound from said winding rod, respectively, said apparatus comprising

a winding rod mounted for selective rotation in winding and unwinding directions about a fixed axis of rotation;

an elongated flexible member having one end affixed to said winding rod;

traction means operatively connected to said flexible member for selectively pulling said flexible member at a predetermined speed in said winding and unwinding directions;

first driving means selectively rotatable in normal and reverse directions and including a torque motor for driving said winding rod; and

clutch means operatively coupling said driving means to said winding rod, said clutch means being maintained in a disengaged state during the unwinding operation of said winding rod by making the speed of rotation of said driving means in the reverse direction higher than the speed of rotation of said winding rod in the unwinding direction thereby considerably reducing tension of said flexible member during said unwinding operation.

4,494,708

PAPER TAPE REWINDING DEVICE

James A. Stubbs, 631 Colfax Ct., Goleta, Calif. 93117, and Eugene L. Gumpio, 116 Princeton Pl., Lompock, Calif. 93436

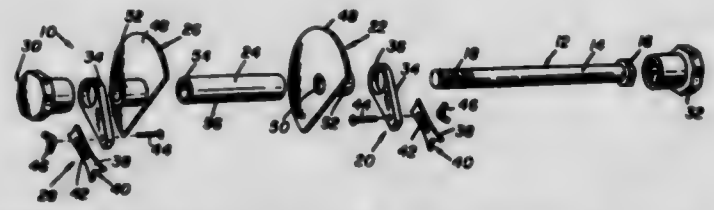
Filed Apr. 18, 1984, Ser. No. 601,783
Int. Cl.³ B65H *17/02, 23/26, 17/18*; B41J *29/00*
U.S. Cl. 242—67.3 R 6 Claims

1. For use with a machine having a tape holder for storing a roll of tape, and an automatic tape feed for pulling tape off said roll and feeding said tape such that a free end of said tape is accessible, a tape rewind device comprising:

a spool;

means for connecting said free end to said spool; and

means for mounting said spool on said machine such that said spool rests on said roll and is rotated by said roll, said mounting means including a mounting member for resting against a surface of said machine facing said roll, said mounting member being adjustable to permit an axis of



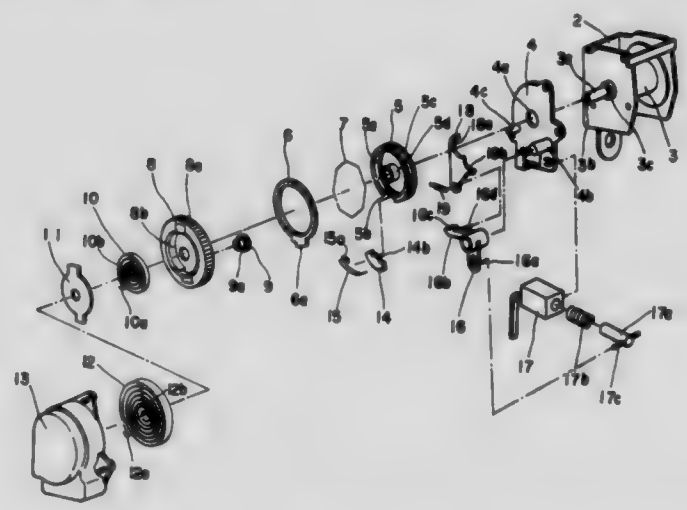
rotation of said spool to be disposed between an axis of rotation of said roll and said surface such that said spool and said mounting member are wedged between said surface and said roll.

4,494,709

SEAT BELT RETRACTOR WITH AN AUTOMATICALLY MEMORIZED TENSIONLESS POSITION

Juichiro Takada, 3-12-1, Shinmachi, Setagayaku, Tokyo, Japan

Filed Aug. 26, 1983, Ser. No. 526,901
Claims priority, application Japan, Sep. 1, 1982, 57-150792
Int. Cl.³ A62B *35/00*; B65H *75/48*
U.S. Cl. 242—107.6 1 Claim



1. A seat belt retractor with an automatically memorized tensionless position and having a frame rotatably carrying a belt reel by means of a reel shaft, a spiral winding spring connected between a cover and the reel shaft and biasing the reel in rotation in the belt-winding direction, characterized in that there is a mechanism for keeping the belt reel from rotating in the winding direction at the urging of the winding spring when the reel is at an automatically memorized rotational position, said mechanism comprising a gear wheel affixed to the reel shaft for rotation therewith and having internal teeth within a recess, a hook rotatably carried by the gear wheel adjacent the perimeter thereof and biased toward the reel shaft by a spring, a clutch ring frictionally coupled to the gear wheel by a clutch spring for rotation with the gear wheel and having an abutment, a gear carrier received by the gear wheel for rotation relative thereto about the axis of the reel shaft and having external teeth, an idler gear rotatably carried by the gear carrier and meshing with the internal gear teeth on the gear wheel and having a protrusion engageable with the hook when the idler gear is in a memorized position relative to the hook, which in turn depends upon the relative rotational positions of the gear wheel and gear carrier, the hook being engageable with an abutment on the gear carrier to stop rotation of the gear wheel, relative to the gear wheel, in the belt-winding direction upon engagement of the idler gear protrusion with the hook protrusion, a memory spring connected between the gear carrier and the reel shaft to urge the gear carrier in rotation in the belt-winding direction about the reel shaft axis, a

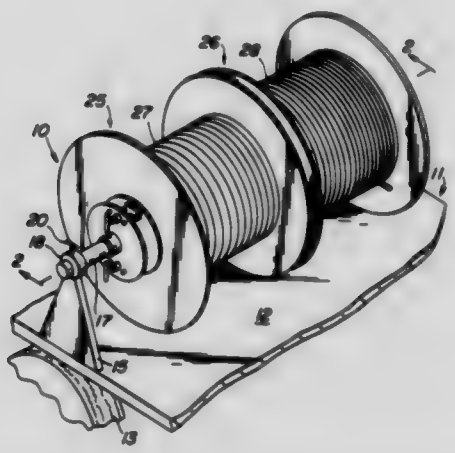
lever pivotably carried by the frame and having a toothed part engageable with the teeth on the gear carrier, actuating means for selectively urging the lever to pivot in a direction to engage the toothed part with the gear carrier teeth, and a friction plate pivotably mounted on a pin on the lever and selectively engaging the reel shaft and holding the lever toothed part out of engagement with the gear carrier teeth until a small rotation of the reel shaft in the belt-unwinding direction disengages the plate from the reel shaft.

4,494,710

REEL BRAKE APPARATUS

Michael J. Harris, P.O. Box 23127, Auston, Tex. 78735, and Kenneth N. Livingston, 10601 Sabo #182, Houston, Tex. 77089

Filed Nov. 2, 1983, Ser. No. 547,957
Int. Cl.³ B65H *59/04*
U.S. Cl. 242—156 **6 Claims**



1. A reel brake apparatus comprising an arbor, hub means on the arbor for rotatably supporting and axially locating a reel circumposed about said arbor, a friction plate circumposed about said arbor and removably engageable with one end of a reel for rotation with the reel, a fixed pressure plate circumposed about said arbor in facing spaced relation with said friction plate, a plurality of pressure pad assemblies carried by said pressure plate at angularly spaced locations thereabout, said pressure pad assemblies extending from said pressure plate toward and into frictional engagement with said friction plate, an elongate member extending generally normal to said pressure plate and adjustable longitudinally toward and away from said friction plate, a head on said elongate member facing toward said friction plate, a pad backing member between said head and friction plate, a shank on said pad backing member extending freely through said head, and spring means interposed between said head and backing member urging the latter toward said friction plate.

4,494,711

DUAL MODE CONTROL SYSTEM FOR CONTROLLING TAPE POSITION IN A REEL TO REEL TRANSPORT APPARATUS

Richard Van Pelt, Boulder, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Jan. 31, 1983, Ser. No. 462,492
Int. Cl.³ G11B *15/06, 23/12*
U.S. Cl. 242—184 **16 Claims**

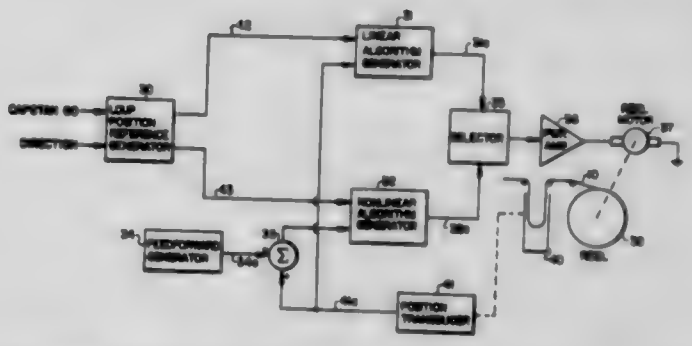
1. A system for controlling a reel motor in a reel-to-reel tape system in which tape is moved from a first reel to a second reel through at least one tape buffer, said system comprising:

a loop position reference generator that generates two loop reference signals, a first loop reference signal and a second loop reference signal, said first loop reference signal being coupled to a first of a plurality of current generators, and said second loop reference signal being coupled to a second of said plurality of current generators, said reference signals representing a desired position of said tape in said buffer;

position transducer means for measuring the position of said tape in said buffer and generating a position signal, said position signal representing the measured position of said tape in said buffer;

said plurality of current generators each producing an output control signal in response to one of said reference signals and said position signal;

selector means for selecting the output control signal from



one of said current generators in response to the measured position of said tape in said buffer relative to the desired position of said tape in said buffer, said selector means selecting the output control signal from said first current generator whenever there is a large error between the measured and desired tape position in said buffer, and selecting the output control signal from said second current generator whenever there is a small error between the measured and desired tape position; and

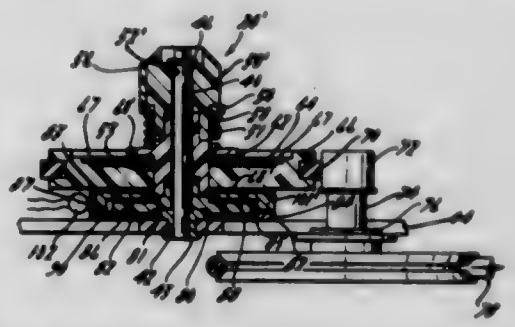
drive means for driving said reel motor in response to said selected output control signal.

4,494,712

TAPE DECK WITH NON-CONTACTING UNIDIRECTIONAL ROTATION SENSOR CONFIGURED TO PREVENT CAPSTAN TAPE WINDUP

Paul K. Godwin, Jr., Farmington, and Howard A. Kell, Jr., Farmington Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US82/01368, § 371 Date Sep. 30, 1982, § 102(e) Date Sep. 30, 1982
PCT Filed Sep. 30, 1982, Ser. No. 444,398
Int. Cl.³ G03B *1/02;* G11B *15/32, 15/43*
U.S. Cl. 242—191 **6 Claims**



1. A tape deck including:

means defining a mounting platform;

a supply reel spindle and a take-up reel spindle on said platform means positioned for accepting respective supply and take-up reels;

means connected to said platform means for driving said take-up reel spindle in a predetermined rotational direction;

multipolar magnetic field producing means mounted between said take-up reel spindle and said platform means for rotating with said take-up reel spindle only when said spindle rotates in said predetermined rotational direction;

one way clutch means between said platform means and said magnetic field producing means for allowing said field

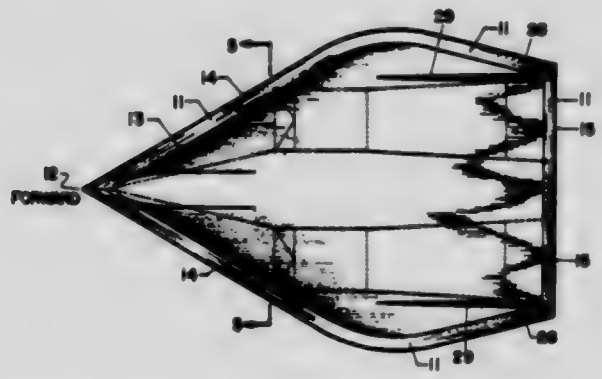
producing means to rotate only in said predetermined rotational direction and to prevent rotation of said field producing means in the opposite rotational direction; and means adjacent said magnetic field producing means for sensing the rotation thereof and providing an appropriate electrical signal output.

4,494,713

SHOCKCONE AND CHANNELED DISK-AIRFRAME

Kyunik Kim, 5026 Rhonda Ave., Santa Barbara, Calif. 93111

Filed Jun. 24, 1982, Ser. No. 391,577
Int. Cl.³ B64C *1/16, 23/04*
U.S. Cl. 244—15 6 Claims



1. A shockcone and channeled high speed flight disk-airframe

comprising an airframe having a top airfoil disk and a lower airfoil disk which are joined around the periphery thereof to form a shockcone at the forward portion of the airframe wherein the shockcone is defined by a forward nose and a wedge perimeter wherein the wedge perimeter extends rearward from the foreward nose and defines a leading edge around the foreward portion of the airframe and a trailing edge rearward of the foreward portion of the airframe, said airframe having a plurality of spaced, elongated, substantially parallel, open channels formed in the lower airfoil disk wherein the channels extend therein from the forward nose rearward of the airframe to define in the lower airfoil and between the plurality of channels at least one elongated, substantially rectangular shaped surface extending rearward from the foreward nose, said shockcone having a cross-section area rearward of the forward nose which is mushroom shaped defining a cap of a mushroom and a stem of a mushroom wherein the cap thereof is located in the top airfoil disk and defines the upper portion of the shockcone and wherein the lower stem portion thereof defines the lower part of the airframe and shockcone with the depth of the lower part of the airframe being the length of the stem of the mushroom shaped cross-section and wherein the length of the stem likewise defines both the inner sidewalls for the channels and the depth of the lower portion of the lower airfoil disk extending between the channels;

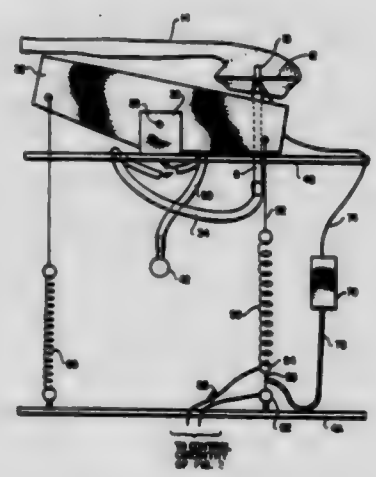
said airframe having at least one channel located on each side thereof and with the cross-sectional areas of the channels together totaling at least fifty percent of the total cross-sectional area of the airframe, each of said channels defining an inlet located in the forward portion thereof and an outlet located at the rearward portion thereof, each of said channels including means for shaping the channel such that the forward approximate one-third thereof is adapted to receive and support a variable volume power plant which produces a flattened thrust stream and such that the rearward approximate two-thirds thereof defines an outlet channel which is divergent from the portion thereof adjacent the forward one-third and becomes a divergent contoured shape downstream thereof to accommodate expansion of a high velocity thrust stream passing through the diverging contoured shaped portion of the channel to produce an aerodynamic, lift-thrust generating system for the airframe.

4,494,714

AUTOMATIC BALLOON LAUNCHING SYSTEM

Geoffrey E. Hill, 1789 Country Club Dr., Logan, Utah 84321, and Duard S. Woffinden, Logan, Utah, assignors to Geoffrey E. Hill, Logan, Utah

Filed Dec. 3, 1982, Ser. No. 446,656
Int. Cl.³ B64B *1/58*
U.S. Cl. 244—98 17 Claims



1. A system for automatically launching balloons comprising a balloon station frame,

nozzle means mounted on the frame on which the narrow end of a balloon may be mounted and through which gas may flow into the balloon,

conduit means for supplying gas to the nozzle means,

valve means responsive to first signals for controlling the flow of gas through the conduit means to prevent the flow of gas when closed and allow the flow of gas when opened,

release means responsive to second signals for separating the balloon from the nozzle means to thereby release the balloon to the atmosphere, and

control circuit means for producing the first and second signals, said control circuit means including

means for detecting a remotely generated signal and for producing a launch initiation signal in response thereto,

valve control means responsive to the launch initiation signal for applying an open signal to the valve means to cause the valve means to open and allow the flow of gas, and for applying a close signal to the valve means a period of time after application of the open signal to cause the valve means to close.

4,494,715

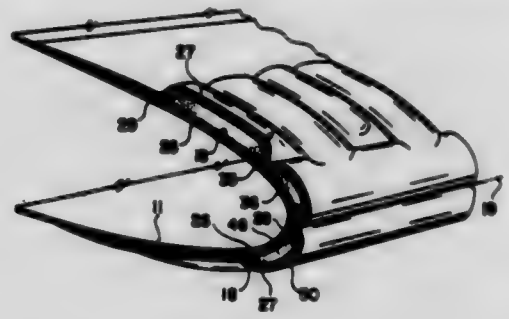
DEICER

Norbert A. Weisend, Jr., Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed May 9, 1983, Ser. No. 493,125
Int. Cl.³ B64D *15/18*
U.S. Cl. 244—134 A 8 Claims

1. A pneumatic deicer pad for a rotating helicopter blade having a leading edge, an inboard end and an outboard end; said deicer pad overlying said helicopter blade so that the center line of said pad coincides with said leading edge of said blade; said pad having an intermediate portion overlying said leading edge and also having a pair of spaced apart portions located rearward of said centerline when positioned on said blade to provide a pair of rearwardly disposed edges; said spaced apart portions defining an upper portion and a lower portion as mounted on said blade; said deicer pad having an inner ply for attachment to said blade; an outer extensible elastic ply overlying said inner ply; said plies being stitched on said intermediate portion to define at least a pair of spanwise

passageways; said plies being stitched together at said upper and lower rearwardly disposed spaced apart portions to define a plurality of adjacent chordwise extending passageways in said respective upper and lower portions that all terminate adjacent said spanwise passageways; certain ones of said chordwise passageways communicate directly with said spanwise passageways; the remaining ones of said chordwise passageways communicate around said stitching with the adjacent ends of said spanwise passageways; said certain ones of said chordwise passageways also communicate with adjacent ones



of said remaining ones of said chordwise passageways around said stitching; means for communicating said chordwise and spanwise passageways with a pressure source to elastically distend and inflate said chordwise and spanwise passageways to break up ice formations on said pad; all of said plies being covered with an air impervious layer to retain pressurized air within said deicer pad; and said stitching on said inner ply and outer extensible ply on said rearwardly disposed spaced apart portions are of a serpentine design to provide said chordwise passageways in side by side relationship.

4,494,716

WING FLAP ASSEMBLY AND AIRCRAFT PROVIDED THEREWITH

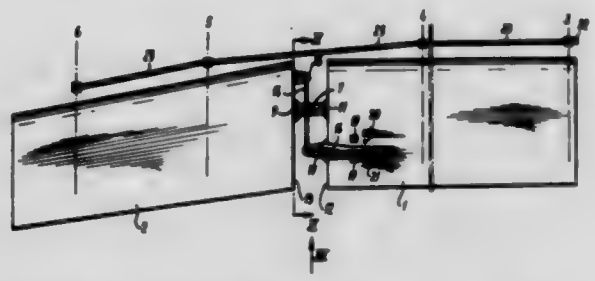
Cornelis A. Broedveld, Hoofddorp, and Frans W. de Haan, De Hoef, both of Netherlands, assignors to Fokker B.V., Schiphol, Netherlands

Filed Jan. 19, 1983, Ser. No. 459,101

Claims priority, application Netherlands, Jan. 20, 1982, 8200197

Int. Cl.³ B64C 9/00

U.S. Cl. 244—213 4 Claims



1. A wing flap assembly for an aircraft, comprising, at least two wing flaps positioned substantially in line with each other and mechanically connected to each other, each of said wing flaps having its own suspension and drive mechanism, one of said flaps being connected to a part for combined movement therewith, said part protruding between two abutments on the other flap, said abutments positioned on opposite sides of the protruding portion of said protruding part to limit the stroke of movement of said part, said one flap being pivotally connected to a lever pivotally mounted on the other flap at a distance from its pivotal connection to said one flap, said lever being integral with said protruding part which protrudes from the pivotal mounting to cooperate with said abutments.

4,494,717

VITAL TRANSMISSION CHECKING APPARATUS FOR COMMUNICATION CHANNELS

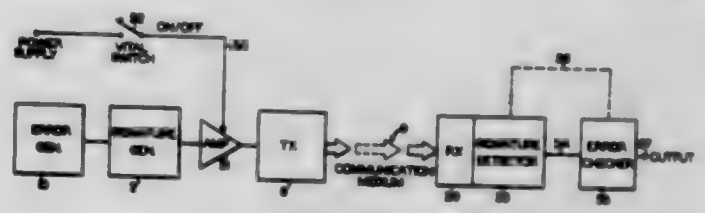
John D. Corrie, Chippenham, and Mark A. Tooley, Bristol, both of England, assignors to Westinghouse Brake & Signal Co., Ltd., Chippenham, England

Filed Sep. 30, 1981, Ser. No. 307,358

Claims priority, application United Kingdom, Oct. 7, 1980, 8032218; Mar. 21, 1981, 8108925

Int. Cl.³ B61L 21/00

U.S. Cl. 246—28 F 10 Claims



1. Vital transmission checking apparatus for a communication system, in which function information is transmitted from a first location to a second location over a selected communication channel, comprising,

(a) a first generating means at said first location operable for generating, at a predetermined repetition frequency, a preselected multi-digit signature code representing a two-state function,

(b) error generating means coupled to said first generating means and operable for periodically corrupting the generated signature code in a preselected sequential error pattern at a second repetition frequency lower than said predetermined repetition frequency,

(c) transmitter means coupled to said channel and controlled by said first generating means for continuously transmitting the signature code output with periodic corruptions to designate a first state of said function,

(d) a control switch means coupled for inhibiting the transmission of said signature codes when said function is in a second state,

(e) receiver means coupled to said channel at said second location for receiving the signature codes transmitted by said transmitter means.

(f) signature detection means coupled to said receiver means and responsive to received codes for producing a first output only when correct signature codes representing said function are received and a second output when a corrupted code is received, and

(g) error detection means coupled to said signature detection means to receive both outputs and responsive thereto for producing a function output to register said first state of said function only when said first output is present and the sequential error pattern is correct,

(1) said second state of said function being registered when the error pattern is incorrect or in the absence of any received codes.

4,494,718

NAPKIN HOLDER

Sylvia J. Clay, 956 S. 6th St., Louisville, Ky. 40203

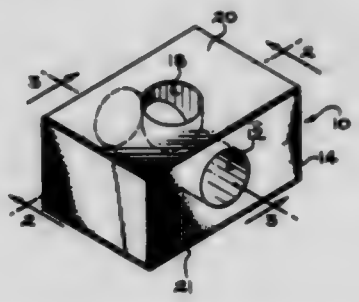
Filed Jun. 14, 1982, Ser. No. 387,862

Int. Cl.³ A45F 5/04

U.S. Cl. 248—1 12 Claims

1. In combination with a napkin, a napkin holder comprising a mass of material defining a first hollow shaft extending through and opening onto opposing, parallel, planar, vertically extending surfaces of said mass and a second hollow shaft perpendicularly intersecting said first shaft and extending vertically upward and opening onto an upper planar surface of

said mass, said napkin extending through said shafts with a portion of said napkin extending outside of each opening of



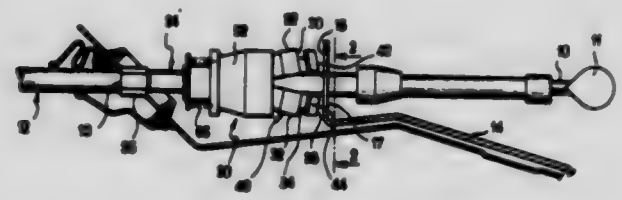
each shaft beyond the exterior surfaces of said mass to form an ornamental napkin display.

4,494,719

DEVICE FOR FIXING A FLEXIBLE CONDUIT TO A PANEL

Charles Guidicelli, Noyen, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Jan. 28, 1983, Ser. No. 461,828
Claims priority, application France, Feb. 15, 1982, 82 02421
Int. Cl.³ G12B *9/00*
U.S. Cl. 248—27.1 10 Claims



1. A device for fixing to a panel a flexible conduit in which a control cable slidably extends, including a fitting joinable to said conduit adjacent one end thereof and intended to be received in an opening formed in said panel, said fitting being provided with an abutment surface intended to bear against one face of said panel, said end of said conduit extending beyond the end of said fitting which emerges on the other face of said panel, said fitting comprising a pincer having jaws which, when tightened, are capable of engaging frictionally the outer surface of the said conduit to immobilize the latter axially relative to said fitting, and clamping means able to cause tightening of said jaws, wherein said pincer is formed in the prolongation of a cylindrical sleeve, said jaws being hingedly connected to said sleeve and forming, adjacent their free ends opposite to said sleeve, said abutment surface, said clamping means including a ring slidingly mounted on said cylindrical sleeve and having ramp means cooperating with said jaws for causing the latter to pivot towards said outer surface of said conduit and to cooperate in frictional engagement with the latter when said ring is moved axially relative to said sleeve in the corresponding direction.

4,494,720

TILT SWIVEL BASE

Jack Gregory, and Christian C. Landry, both of Acton, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 14, 1981, Ser. No. 330,716
Int. Cl.³ A47G *29/00*
U.S. Cl. 248—371 23 Claims

1. A terminal base of the type having a transverse centerline and comprising

A. a hollow box-like lower section having a front, a back and a pair of opposite sides;

B. swivel means mounted to the underside of said lower section permitting said section to swivel relative to a support surface on which they rest;

C. a hollow box-like upper section

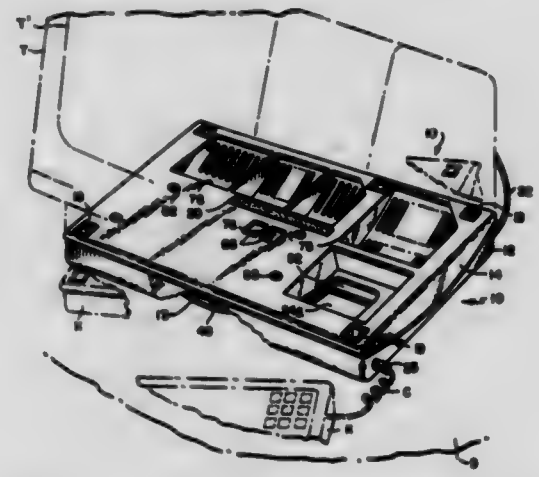
(1) having a front, a back and a pair of opposite sides;

(2) positioned on the lower section; and

(3) having terminal-supporting top surface means;

D. said upper and lower sections having opposing mating surface portion which are curved from front to back more or less about an imaginary axis which

(1) is substantially parallel to the transverse center line of said base; and



(2) lies appreciably above the confines of the base so that, when the upper section is moved on the lower section in either direction about said axis, the upper section is tilted relative to the lower section;

E. means for limiting the movement of the upper section on the lower section in said directions; and

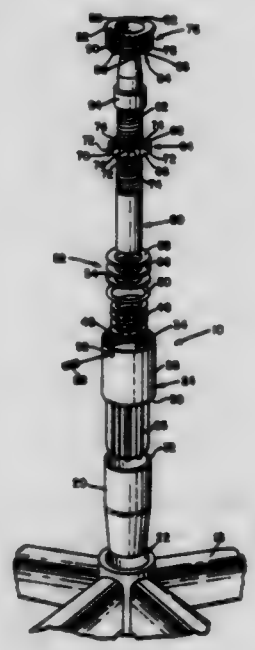
F. coacting means on said upper and lower sections defining selected positions of adjustment in the movement of the upper section relative to the lower section.

4,494,721

SEAT ADJUSTMENT MECHANISM FOR A CHAIR

Steven F. Trinkel, Rockport; Patrick E. Strange, and Mathew A. Sleats, both of Jasper, all of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed Feb. 3, 1983, Ser. No. 463,528
Int. Cl.³ F16M *11/00*
U.S. Cl. 248—406.2 19 Claims



12. An adjustable swivel chair, comprising:

a support member having a column means extending upwardly therefrom, said column means having therein a hollow portion and a downwardly facing engaging surface,

a seat having a vertically disposed spindle secured thereto, said spindle having a threaded surface thereon and being

rotatably and axially movably received in said hollow portion,

an adjusting nut threadedly engaging a portion of said spindle threaded surface that is axially below said downwardly facing engaging surface, said adjusting nut having an upper surface lockable with said downwardly facing engaging surface, and

resilient means axially between a lower surface of said adjusting nut and said column means for supporting said spindle in said column means,

said resilient means upwardly urging said adjusting nut to lockingly engage said adjusting nut upper surface with said downwardly facing engaging surface, whereby said adjusting nut is locked against rotation with said spindle, and said seat may be vertically adjusted by the rotation of said spindle relative to said locked adjusting nut,

said resilient means enabling said adjusting nut to be downwardly moved to disengage said adjusting nut upper surface from said downwardly facing engaging surface when weight is applied to said seat, whereby said adjusting nut rotates with said spindle during rotation of said weighted seat to prevent vertical adjustment thereof, and

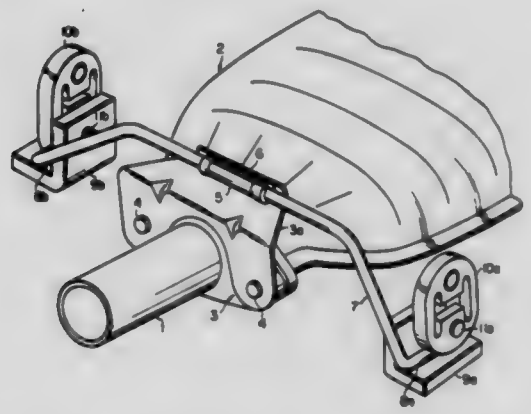
means made operative when the seat is weighted for causing said nut to tilt relative to the spindle thereby causing a degree of binding between the nut thread and spindle threads to thereby increase the frictional forces therebetween.

4,494,722

EXHAUST UNIT SUPPORT DEVICE

Shunichiro Kazai, Sagamihara, and Teruo Miyauchi, Hadano, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 26, 1982, Ser. No. 401,910
Claims priority, application Japan, Oct. 9, 1981, 56-161758
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—621 **16 Claims**



1. In an exhaust system of an internal combustion engine installed on an automotive vehicle having a body structure wherein the exhaust system includes exhaust-system component units, an exhaust unit support device for having the exhaust-system component units mounted on the vehicle body structure, comprising:

a first rigid coupling member rigidly secured to at least one of said exhaust-system component units,

a second rigid coupling member,

an elastic support member having its central portion rigidly secured to the first rigid coupling member and a portion rigidly secured to the second rigid coupling member, the first rigid coupling member rigidly and structurally intervening between the elastic support member and said one of the exhaust-system component units, and

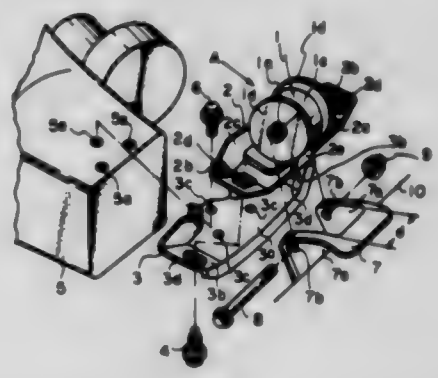
an elastic vibration-damping block having a portion connected to the second rigid coupling member by rigid fastening means and a portion connected to the vehicle body structure by rigid fastening means, wherein said second rigid coupling member has a weight predetermined to enable the second rigid coupling member to serve as a vibration-damping mass member.

4,494,723

DEVICE FOR MOUNTING AN ENGINE ON A VEHICLE BODY

Shinzo Kobuki; Haziae Kubota, and Tsuneo Miyamaru, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 28, 1982, Ser. No. 454,009
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—635 **7 Claims**



1. A device for mounting an engine on a vehicle body, comprising:

a mount insultor having a shaft fixed onto the vehicle body, a substantially cylindrical outer member, and a substantially cylindrical hollow rubber ring inserted between said shaft and said cylindrical outer member;

a dish-shaped insulator bracket fixed onto said cylindrical outer member and substantially horizontally extending in a direction which is perpendicular to a longitudinal axis of the engine body, said insulator bracket having a substantially horizontally extending bottom wall portion and inclined wall portions which are formed at opposite ends of said bottom wall portion and have a threaded hole formed thereon;

a dish-shaped engine mount bracket fixed onto the engine body and substantially horizontally extending in a direction which is perpendicular to the longitudinal axis of the engine body, said engine mount bracket having a substantially horizontally extending bottom wall portion and inclined wall portions which are formed at opposite ends of the bottom wall portion of said engine mount bracket, the bottom wall portion and the inclined wall portions of said engine mount bracket having such a shape that they are appropriately fitted onto the bottom wall portion and the inclined wall portions of said insulator bracket, respectively, when said engine mount bracket and said insulator bracket are superimposed onto each other, each of the inclined wall portions of said engine mount bracket having a slot which extends in the longitudinal direction of said engine body and is aligned with said corresponding threaded hole when said engine mount bracket and said insulator bracket are superimposed onto each other; and

bolts inserted into said corresponding slots and screwed into said corresponding threaded holes for fixing said engine mount bracket onto said insulator bracket.

4,494,724

APPARATUS FOR THE PRODUCTION OF A MONOLITHIC MANHOLE BASE

Richard U. Rex, 22586 N. Nottingham Dr., Birmingham, Mich. 48010

Filed Sep. 20, 1982, Ser. No. 422,448
Int. Cl.³ B28B *7/10*
U.S. Cl. 249—148 **6 Claims**

1. A releasable molding apparatus for manufacturing manhosidewall

a pallet removably received with the jacket which forms a horizontally disposed bottom wall,

a one piece cylindrical core that is receivable within the open top of the jacket, said core having a vertically disposed side wall that is of a smaller diameter than that of the said jacket and a horizontally disposed bottom wall whereby the core is capable of coating with the jacket and the pallet to provide a pouring cavity therebetween into which concrete is poured to a predetermined level to produce a manhole base section having a floor and a raised sidewall,

hanger means for suspending the core within the jacket that includes a first pair of spacer pins that are axially aligned along a first common diametrical line of the jacket lying between the predetermined level and the center of gravity of the base section whereby the holes created by the spacer pins in the concrete section can be used to lift the base section from the pallet, and a second set of spacer pins also passing between the jacket and the core which are axially aligned along a second common diametrical line of the jacket that lies above the said predetermined level whereby the second pair of spacer pins can be removed after the concrete base section has been cast,

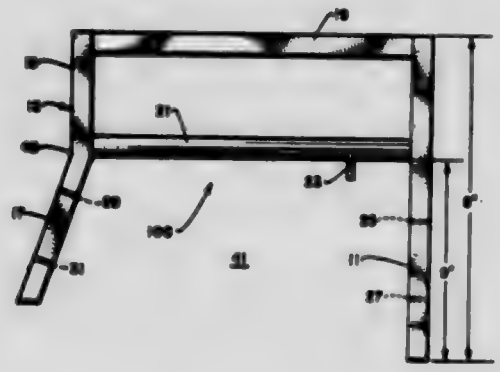
said first and second common diametrical lines being at about right angles in relation to each other to support the core in axial alignment with the vertical axis of the jacket.

4,494,725

CONCRETE FORM HOLDERS

George J. Sims, 5933 20th St., Rio Linda, Calif. 95673

Filed Jan. 31, 1983, Ser. No. 462,210
Int. Cl.³ E04G *17/02*
U.S. Cl. 249—219 R 11 Claims



1. A retainer clip used in the preparation of a form for pouring concrete and which comprises:

a pair of vertically spaced generally horizontal members, the lower of which is round in cross section, to minimize concrete pour contact secured on their ends to

each of a front and rear bar, the upper of said horizontal members being joined to one end of said front and rear bars,

the lower of said horizontal member being joined along the elevation of the front and rear bars at its termini,

at least the rear of said bars being disposed normal to said top member,

said bottom member also including at least one downwardly depending boss spaced from one of said bars along the underside of said bottom member a distance sufficient to hold a form board between the boss and said one of said bars,

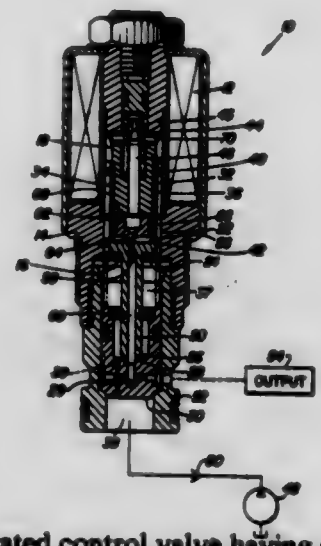
each of said front and rear bars having inwardly directed through bores along their extension below said bottom members to provide for attachment of form boards to said bars.

4,494,726

CONTROL VALVE

Viraraghavan S. Kumar, and Rohn L. Olson, both of Waterloo, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Aug. 8, 1983, Ser. No. 520,925
Int. Cl.³ F16K *31/02, 31/102*
U.S. Cl. 251—29 8 Claims



1. In a servo-operated control valve having a housing defining an inlet and an outlet, a poppet movable in the housing to control fluid communication between the inlet and the outlet, the poppet having a first passage extending therethrough and communicating with the outlet and a first valve seat surrounding an end of the first passage, the control valve also having a hollow main valve member movable in the housing and cooperating with the first valve seat to control fluid communication through the first passage, the valve member having a second passage extending therethrough, the control valve also having a hollow armature member movable in response to operation of the servo to move the valve member, and a pressure-balancing pin movably received by the armature for balancing hydraulic forces acting upon the armature and valve members, the first and second passages forming a flow path to the outlet for fluid which leaks past the pressure-balancing pin, the improvement wherein:

a check valve seat surrounds one of the second passage and is spaced apart from the first valve seat; and

a check valve member is located between the armature and the valve member and is movable in response to a pressure differential between the inlet and the outlet to a first position sealingly engaging the check valve seat to block leakage flow from the inlet to the first and second passages and to a second position spaced apart from the check valve seat to permit leakage flow from the inlet to the first and second passages.

4,494,727

ELECTRICALLY CONTROLLABLE VALVE

Rudolf Babitzka, Kirchberg; Walter Beck, Schwieberdingen, and Ernst Linder, Mühlacker, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 15, 1981, Ser. No. 311,678
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1980, 3039915
Int. Cl.³ F16K *31/02*
U.S. Cl. 251—64 9 Claims

1. Electrically controllable valve having

a housing (1);

a bore (32) formed in the housing and having a bore axis;

a movable valve element (33) slidably retained in the housing for movement in the direction along said axis;

force generating means acting on the valve element;

and comprising

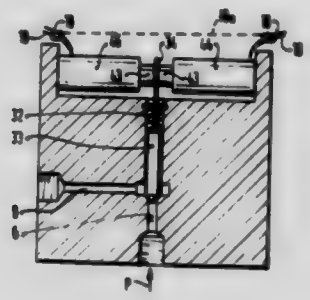
a first column or stack of first piezoelectric elements (16, 44) movable in a direction which is at least approximately

perpendicular to the axis of the bore within which the movable valve element is slidable, secured to said housing;

and a first clamping stem (43) operated by said first piezoelectric elements (16, 44);

a counter element (45) positioned at least approximately coaxially with respect to the clamping stem and forming a counter pressure or anvil for the clamping stem comprising a second column or stack of second piezoelectric elements (45);

a second clamping stem operated by said second piezoelectric elements projecting towards the first clamping stem; and



an extension element (34) secured to said movable valve element (33) extending outside of said bore and positioned for engagement between said stem and said counter element,

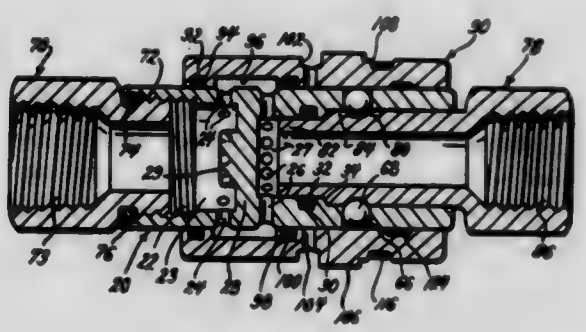
said stem being, selectively, engageable with the extension element (34) from the movable valve element to clamp the valve element in position within the bore, or permit movement of the valve element, respectively, under influence of the force generating means in accordance with the electrical condition of energization of said column or stack of piezoelectric elements.

4,494,728

BELL-MOUTH PORTS FOR PNEUMATIC COUPLINGS USING O-RINGS

Lee H. Cruse, Ozark, Mo., assignor to Foster Manufacturing Company, Springfield, Mo.

Filed Jun. 7, 1982, Ser. No. 385,579
Int. Cl.³ F16L *37/28*
U.S. Cl. 251—149.9 7 Claims



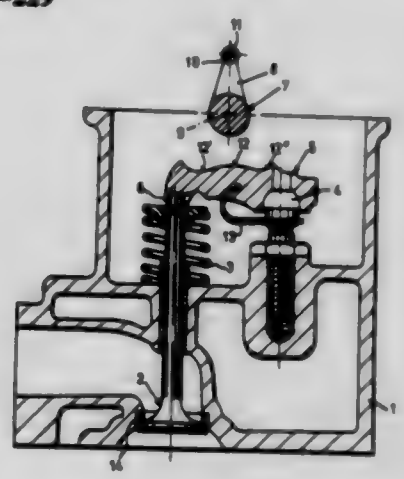
1. In a body which has a surface against which an O-ring bears during relative reciprocation of that body and of that O-ring and which has a port that opens to that surface, the improvement which comprises a bell mouth for said port, said bell mouth having a continuous and unbroken convex surface which is completely free of all straight lines and which merges smoothly and without any breaks or apexes into said surface at two points which are spaced apart along said surface in the direction of relative reciprocation of said body and of said O-ring, said bell mouth having a convex face tangential to said surface of said body at said points.

4,494,729

VALVE OPERATING MECHANISM, IN PARTICULAR FOR AN AUTOMOBILE INTERNAL COMBUSTION ENGINE

Hermann Krüger, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jan. 14, 1983, Ser. No. 458,162
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1982, 3203791
Int. Cl.³ F16K *31/44*
U.S. Cl. 251—229 12 Claims



1. A valve operating mechanism for a valve preferably in an automobile internal combustion engine, comprising:

an actuation spindle rotatable about an axis;

a component coupled to the valve, at least during valve opening, in a force-transmitting manner, said component having a bearing surface;

cam means on said actuation spindle including roller means pivotable about an axis, said roller means axis being eccentric relative to the axis of said spindle, said roller means being arranged to engage said bearing surface for opening the valve, wherein said bearing surface forms a rolling surface for said roller means, said bearing surface being shaped to effect a desired valve-open cycle over a predetermined angle of spindle rotation and wherein a connection between said roller means and the valve is present only during said valve opening cycle; and

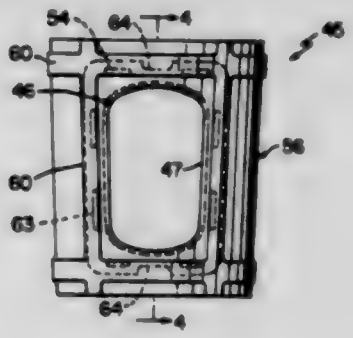
spring means for restoring the value to its closed position, whereby the roller means is mood to its valve-closed position independently of the force applied to the valve by the spring means.

4,494,730

PLUG VALVE WITH IMPROVED PLASTIC SLEEVE

John A. George, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio

Filed Nov. 1, 1982, Ser. No. 437,956
Int. Cl.³ F16K *5/02*
U.S. Cl. 251—309 10 Claims



1. In a plug valve for controlling fluid flow therethrough

said valve having, an outer housing, a flow passage extending through said housing and including an inlet and an outlet interconnected by a bore disposed therebetween, said bore having a central axis disposed substantially perpendicular to said flow passage, a plastic sleeve disposed within said housing and lining said bore, said sleeve having a pair of aligned ports therein at diametrically opposed locations, said ports being aligned with said inlet and outlet to enable fluid flow through said passage, a rotatable plug disposed within said sleeve, said plug having an opening therethrough which is adapted to be aligned in and out of registry with said inlet and outlet in accordance with rotation of said plug relative to said sleeve and housing, and means holding said sleeve against rotation relative to said housing, the improvement wherein said sleeve has substantially rigid reinforcing means embedded therein around each of said ports, said reinforcing means serving the multiple purpose of preventing cold flow of said sleeve adjoining said ports, minimizing fluid erosion of portions of said sleeve adjoining said ports, and increasing the rigidity of said sleeve around each of said ports such that with fluid flow through said valve at high velocity and with said plug rotated to a partially closed position any tendency for said plastic sleeve to be partially moved into said flow passage is substantially eliminated, each of said reinforcing means having a roughly rectangular outer peripheral outline and extending within said sleeve in all directions from around each port, said reinforcing means also having apertures therein with said apertures receiving portions of the plastic sleeve therethrough to firmly embed the reinforcing means in position in said sleeve, said housing having an inside surface and said sleeve having an outside surface, one of said surfaces having groove means therein and the other of said surfaces having projection means extending therefrom, said sleeve being adapted to be expanded and formed radially so that a portion of said projection means is disposed in said groove means, said groove means and said portion of said projection means cooperating to define said holding means and prevent rotation of said sleeve relative to said housing upon rotation of said plug, said groove means comprising a plurality of grooves and said portion of said projection means comprising a plurality of projections corresponding in number to and fitting within said plurality of grooves, said plurality of grooves extending radially in said housing from said inside surface and said projection means extending radially from the outside surface of said sleeve, said projection means comprising a pair of annular pressure rib structures in said sleeve which engage said inside surface of said housing in surrounding relation around the inner parts of said inlet and said outlet, and each of said reinforcing means comprising a reinforcement extending within said sleeve in all directions from around each port such that the reinforcement around each port substantially overlaps an associated annular pressure rib structure.

4,494,731

VALVE HAVING A MOVABLE INTERFACE ISOLATING AN ACTUATING MECHANISM

Richard W. Spils, 2225 Spenard Rd., Anchorage, Ak. 99503

Continuation-in-part of Ser. No. 165,694, Jul. 3, 1980, Pat. No. 4,363,464. This application May 13, 1982, Ser. No. 377,964

Int. Cl.³ F16K *31/50, 47/04*

U.S. Cl. 251—355 **6 Claims**

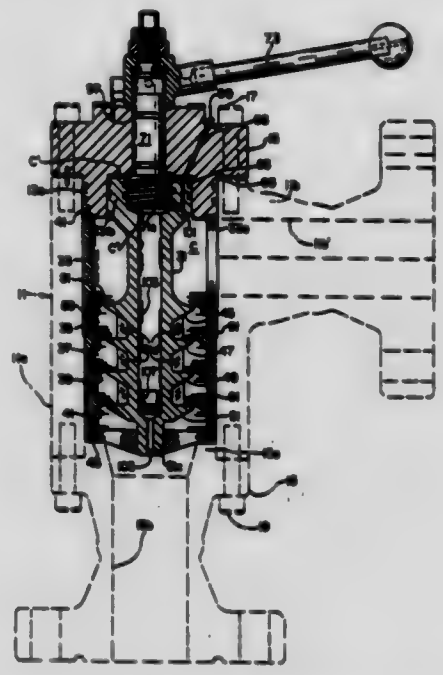
1. A valve comprising:

a valve body having a body cavity,

a valve member movable in said valve body cavity,

means providing at least one lubricant cavity associated with said valve member and changing in size upon movement of said member,

and means providing another lubricant cavity communicating with said one lubricant cavity and providing an interface between said body cavity and said other lubricant cavity movable concurrently with movement of said valve member to reduce the size of said other lubricant



cavity in proportion to the increase in size in the first mentioned lubricant cavity.

4,494,732

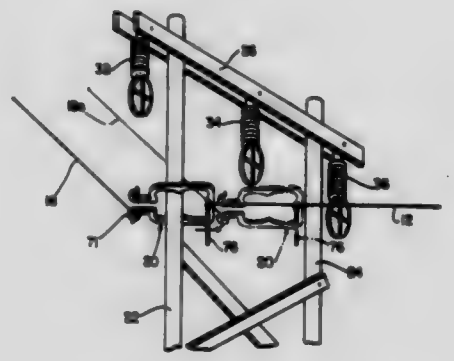
APPARATUS AND METHOD FOR STRINGING CENTER CABLES ON POWER TOWERS

Frank Waymire, Parker, Colo., assignor to Union Power Construction Company, Englewood, Colo.

Filed Nov. 5, 1982, Ser. No. 439,655

Int. Cl.³ B66D *1/36*

U.S. Cl. 254—134.3 R **9 Claims**



1. A generally U-shaped hook device for stringing cables on sequentially spaced support towers, each having corresponding first and second laterally spaced poles, the device comprising:

a bight section, arm sections and end sections;

means for connecting a tensioned sock line to the bight section;

first line securement means located in a first end section for positioning a haul line laterally outwardly of a tower as the device is pulled to horizontally straddle the first pole;

first means located along a first arm section for bearing against the first pole while the device is straddled thereacross thereby hooking the device to the pole;

second line securement means located in a second end section receiving the haul line after its release from the first end section for enabling the device to be slipped off the first pole and passed between the poles for repeated retention to a second pole of a following tower; and

second bearing means located along a second arm section for bearing against a pole of a following tower.

4,494,733

ENCLOSURE FOR ANIMALS

Jan Olsson, Prästliden 6, 511 00 Kinna, Sweden

PCT No. PCT/SE82/00201, § 371 Date Feb. 2, 1983, § 102(e) Date Feb. 2, 1983, PCT Pub. No. WO82/04378, PCT Pub. Date Dec. 23, 1982

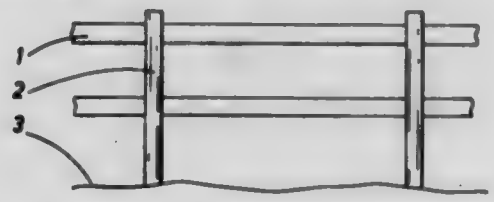
PCT Filed Jun. 9, 1982, Ser. No. 466,346

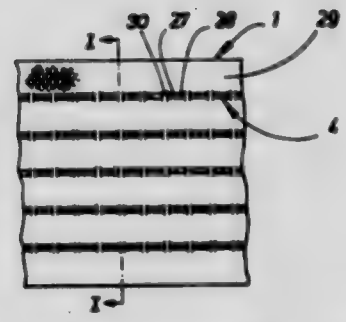
Claims priority, application Sweden, Jun. 9, 1981, 8103582

Int. Cl.[3] A01K *3/00*

U.S. Cl. 256—10

6 Claims





1. An enclosure for animals, comprising: at least one elongated tape extending between spaced apart points and having spaced longitudinally extending edges and planar sides; each tape comprising: a weave of a plurality of longitudinal and transverse, force-absorbing textile threads, and at least one electrical conductor for connection to a source of electricity and electrically insulated from the ground; each electrical conductor having at least one electrically-conductive contact wire woven into said weave and extending longitudinally of said tape, each contact wire having an uninsulated surface and also having a diameter larger than that of the longitudinal threads; whereby the outer surface of each contact wire is raised above the sides of the tape, each electrical contact wire having a core of textile material, of a certain diameter, and a metal wire wound around said core and having a diameter which is substantially less than the diameter of the core.

4,494,734

SLAG RETAINING DEVICE FOR USE DURING TAPPING OF CONVERTERS AND METHOD

Micheal D. LaBate, and Michael D. LeBate, II, both of 115 Hazen Ave., Ellwood City, Pa. 16117

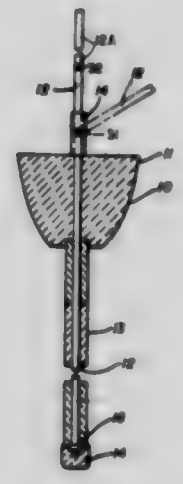
Filed Jul. 22, 1983, Ser. No. 515,998

Int. Cl.[3] C21C *5/46*

U.S. Cl. 266—45

10 Claims

9. The method of minimizing slag carry over upon draining molten metal from a furnace through a tap hole therein, said method comprising dropping a body of modified conical shape onto the surface of molten slag and metal in said furnace within a restricted area above said tap hole so as to insure that said body will be drawn into the tap hole, said body having a plurality of generally irregular faces, the intersections of which define a portion of the body having maximum cross section which is slightly larger than the maximum dimension of the cross section of the opening of said tap hole while leaving a portion of the body with a cross section less than the maximum dimension of the cross section of the tap hole, whereby the body can be lodged into the tap hole without completely blocking the tap hole opening, said body having a guide means depending from the underside of said body to engage said tap hole for guiding said body into said tap hole, said body having a density intermediate that of the molten metal and the slag, draining molten metal from the furnace through the tap hole opening, monitoring the condition of the stream emanating from said tap hole so as to obtain an indication of flaring of said



stream when said body lodges therein, and then shutting off flow through said tap hole so as to prevent carryover of slag onto the molten metal already tapped from the furnace.

4,494,735

APPARATUS FOR DEGASSING MOLTEN METAL

Robert E. Hershey, Hendersonville, N.C., assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Nov. 16, 1983, Ser. No. 552,340

Int. Cl.[3] F27B *1/16*

U.S. Cl. 266—218

14 Claims



1. An apparatus for use in the degassing of molten metal which comprises:

a chamber having an inner elongated sidewall portion, an outer elongated sidewall portion and a central axis;

metal inlet means positioned at a first height and tangentially located with respect to said chamber for tangentially introducing molten metal into said chamber such that said molten metal swirlingly flows from said molten metal inlet down through said chamber;

metal outlet means positioned at a second height below said first height for removing molten metal from said chamber; and

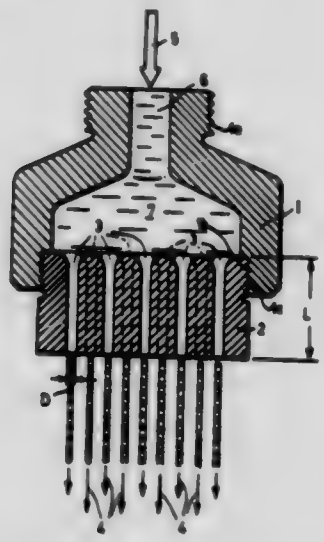
at least one fluxing gas inlet means mounted in said first inner elongated sidewall portion below said first height for introducing fluxing gas into said chamber, said at least one fluxing gas inlet means comprises a nozzle assembly sealingly mounted within an opening provided in said first inner elongated sidewall portion wherein said nozzle assembly comprises a nozzle nut, a nozzle blank received in said nozzle nut and a clamp plate, a seal having a first portion sealingly abutting said nozzle blank and a second portion sealingly abutting said clamp plate, means for holding said clamp plate in a non-rotational manner against said seal and a screw secured to said nozzle nut for biasing said clamp plate against said seal and said seal against said nozzle blank.

4,494,736

DEVICE FOR GENERATING A CONVECTIVE REACTION SYSTEM BETWEEN A REACTION AGENT AND A MOLTEN BATH

Friedrich W. Guttmann, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Division of Ser. No. 276,837, Jun. 24, 1981, abandoned, which is a continuation of Ser. No. 144,274, Apr. 28, 1980, abandoned. This application Aug. 3, 1982, Ser. No. 404,715
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1979, 2924761
Int. Cl.³ C21B 7/16
U.S. Cl. 266—265
10 Claims



4. A device for blowing a liquid reaction medium onto a molten bath to create a reaction system, comprising:

an atomization nozzle including a liquid input port; and

a front shoe connected to said nozzle and including a plurality of parallel bores in communication with said liquid input port and functioning as output ports and extending adjacent one another, each of said bores including a predetermined length and a predetermined diameter such that the ratio of the length of said bores to the diameters thereof causing said shoe to act as a guide for and causing emission of the liquid reaction medium as a corresponding plurality of parallel streams of atomized liquid.

4,494,737

LANCE FOR REPAIRING THE LINING OF STEELMAKING VESSELS

Nicholas M. Rymarchyk, Jr., Wexford, and Leo L. Meinert, Baden, both of Pa., assignors to Pullman Berry Company, Harmony, Pa.

Continuation of Ser. No. 309,644, Oct. 8, 1981, abandoned. This application Oct. 27, 1983, Ser. No. 546,631
Int. Cl.³ C21B 7/04
U.S. Cl. 266—281
25 Claims

1. In a steel-making apparatus combination comprising a vessel having an upper open mouth, an outer steel shell, an inner lining providing a hearth portion, and trunnion means on said vessel adapted to support the same for pivotal movement from a vertical operating position to a tilted discharge position, the improvement comprising,

a lining repair lance including,

a central slurry pipe,

a discharge nozzle connected to a lower end of said slurry pipe including an opening for discharging slurry material horizontally while said vessel is disposed in said vertical operating position,

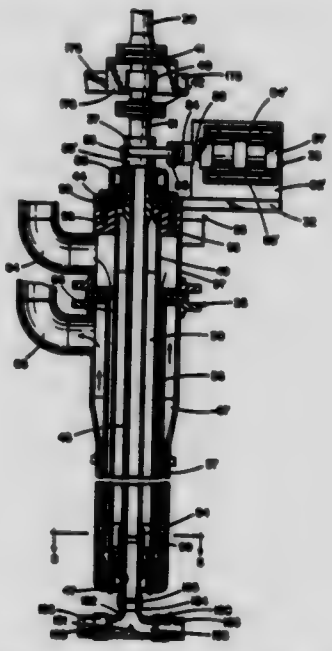
first inner, second intermediate, and third outer pipes concentric with said slurry pipe and relatively horizontally spaced to provide vertically extending inner and outer water passages,

said first inner pipe being spaced from said slurry pipe to provide an elongated swivel support chamber,

a top adapter assembly supporting said first, second and third pipes,

means supporting said slurry pipe relative to said first, second and third pipes for relative rotating movement,

conduit means connected to said slurry pipe including tubular swiveling means for directing pressurized slurry materials to said slurry pipe.



movable support means connected to said repair lance for moving the same relative to said mouth within said vessel for discharging slurry material against the inner lining of said vessel, and

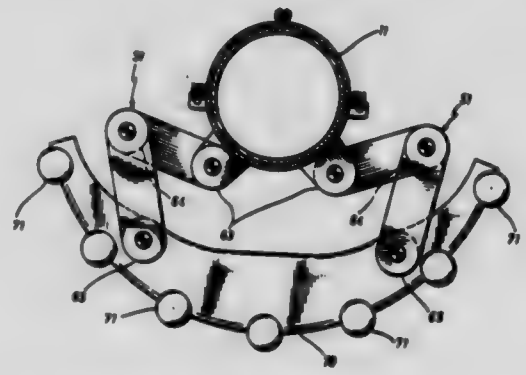
means associated with said top adapter assembly for rotating said discharge nozzle into selective areas within said vessel.

4,494,738

SHOCK-ABSORBING JOINT AND ASSEMBLY WITH ROTATING ARMS AND ELASTOMERIC SPRING ACTION

Frederick G. Britton, and Thomas A. Clark, both of Arlington, Tex., assignors to Oil States Industries, Inc., Arlington, Tex.

Filed Mar. 8, 1982, Ser. No. 356,219
Int. Cl.³ F16F 7/12
U.S. Cl. 267—140
12 Claims



1. A shock-absorbing joint comprising:

an inner pivot plate;

a pair of outer pivot plates generally parallel to and generally equidistant from the inner pivot plate on opposite sides thereof, the pair of outer pivot plates forming an unloaded angle with the inner pivot plate and being rotatable relative to the inner pivot plate by pivoting about a common pivot axis formed by the unloaded angle;

a first and second mounting base rigidly affixed to the inner pivot plate and to the pair of outer pivot plates, respec-

tively, the first and second mounting bases being rotatable relative to each other about the common pivot axis,

the first mounting base including

a pivot support shaft with the common pivot axis as its axis, the pivot support shaft being rigidly affixed to and passing through the inner pivot plate, and

an inner pair of generally symmetrical bonding surfaces, one rigidly affixed to each side of the inner pivot plate, the pivot support shaft passing through the inner pair of bonding surfaces,

the second mounting base including an outer pair of generally symmetrical bonding surfaces, one rigidly affixed to the inside face of each of the outer pivot plates, the pivot support shaft passing through the outer pair of bonding surfaces and the pair of outer pivot plates but not being attached to either; and

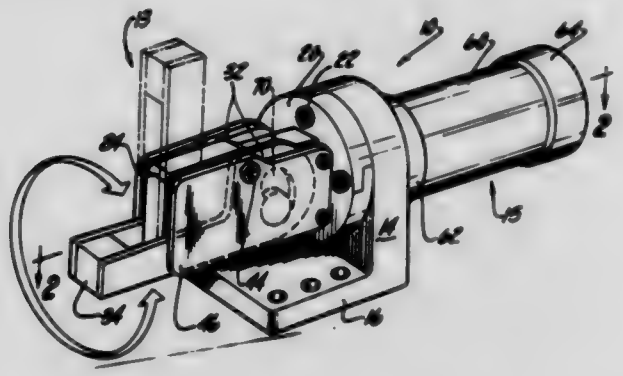
a body of elastomeric material bonded to the generally symmetrical bonding surfaces of the first and second mounting bases, so that a shock force received by either the inner pivot plate or the pair of outer pivot plates causes rotation of one relative to the other to form a loaded angle between the inner pivot plate and the pair of outer pivot plates smaller than the unloaded angle, which rotation causes the elastomeric material to be distorted by torque and to absorb rotational shear force resulting from the torque by elastomeric spring action returning the inner pivot plate and the pair of outer pivot plates to their relative position with the unloaded angle therebetween.

4,494,739

POWER OPERATED ROTATABLE CLAMPING ASSEMBLY

Al L. Valentine, Southfield, Mich., assignor to State Die & Engineering, Inc., Roseville, Mich.

Filed Mar. 4, 1983, Ser. No. 472,401
Int. Cl.³ B23Q *3/08*
U.S. Cl. 269—32 11 Claims



1. Rotatable clamping apparatus comprising:

a fluid operated motor mounted on said support and including a fluid driven, reciprocable piston;

a clamping mechanism rotatably mounted on said support and including a clamping member rotatable to any of a plurality of clamping positions upon rotation of said clamping mechanism, said clamping mechanism further including cam means for shifting said clamping member between a released position and a clamping position and an annular shoulder;

means for drivingly connected said cam means with said cylinder assembly; and

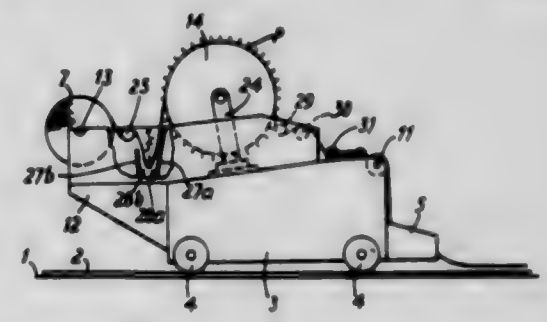
locking means for selectively locking said clamping mechanism in any of said plurality of clamping positions and including a flange engaging said shoulder and a locking member for drawing said shoulder against said support.

4,494,740

SPREADING EQUIPMENT HAVING SELVAGE ENGAGING INDEPENDENTLY ROTATED NEEDLE WHEELS

Nasu Nobuo, Fukutama, and Inada Tetsuo, Kyoto, both of Japan, assignors to Kawakami Co., Ltd., Japan

Filed Jun. 20, 1983, Ser. No. 506,100
Claims priority, application Japan, Jun. 19, 1982, 57-106052
Int. Cl.³ B65H *29/46*
U.S. Cl. 270—31 2 Claims



1. A spreading equipment having a material roller at the rear part thereof and a feed-out roller at the forward position thereof and comprising:

(a) a pair of needle wheels symmetrically placed at the middle part of said equipment and independently rotatably mounted at locations corresponding to both selvages of material cloth mounted on said material roller,

(b) V-shaped guide plates installed between said needle wheels and said material roller and having photocell detecting means mutually faced each other at the bottom of said guide plates,

(c) an unbinding roller disposed between said guide plates and said material roller in order to take out material cloth, thereby causing material cloth to hang loosely in a V-shape between said guide plates and causing the hanging length to be fixed at all times by said photocell detecting means at the bottom, and

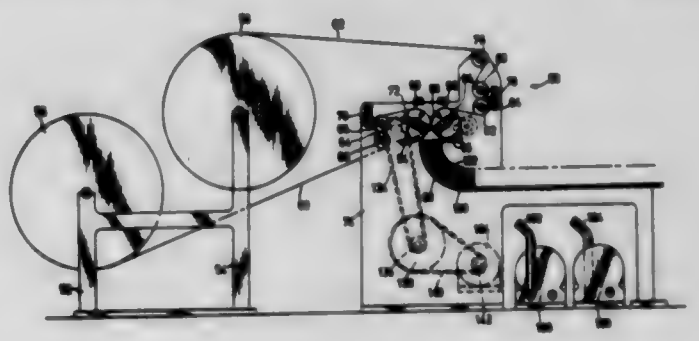
(d) means mutually operating together said unbinding roller and said photocells.

4,494,741

TISSUE CUTTING AND INTERFOLDING APPARATUS FOR Z WEBS

David L. Fischer, and William E. Waterstreet, both of Green Bay, Wis., assignors to John M. Rudolf, Green Bay, Wis.

Continuation-in-part of Ser. No. 246,053, Mar. 20, 1981, abandoned. This application Apr. 1, 1983, Ser. No. 481,118
Int. Cl.³ B41L *1/32*
U.S. Cl. 270—39 15 Claims



1. An improved machine for perforating, superimposing, and Z-folding first and second tissue webs to form an interfolded stack of separable tissues, said machine comprising:

A. first and second counterrotating perforating rolls mounted on a frame and forming a first nip;

B. perforating means associated with said perforating rolls for forming periodic longitudinally spaced transverse tear lines in the respective webs;

C. first transport means for transporting said first web into

said first nip on said first perforating roll, and for transporting said second web into said first nip on said second perforating roll, whereby to superimpose said webs at said first nip with the tear lines of said first web positioned longitudinally between the tear lines of said second web;

D. second transport means associated with said perforating rolls for alternately adhering said superimposed webs to one of said first and second perforating rolls approximately at said nip, transporting said adhered superimposed webs out of said nip by rotating said rolls, and then releasing said superimposed webs; and

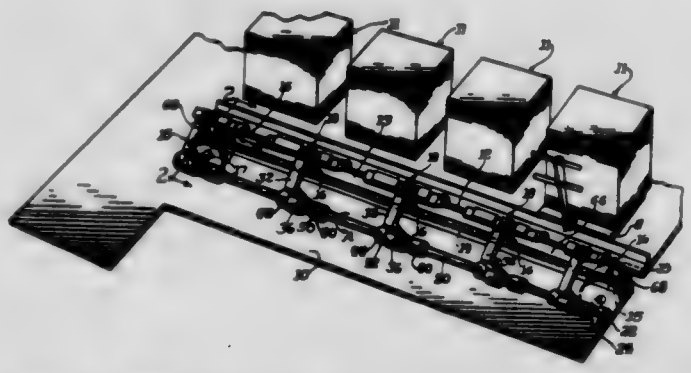
E. Z-folding means for folding said webs so each tear line of each web is tucked into a fold of the other web.

4,494,742

INSERTER WITH IMPROVED MEDIA TRANSPORT HAVING PIVOTAL SPRING BIASED SHEET HOLD-DOWNS ADJACENT TRANSPORT BELT

Kenneth L. Guenther, Park Ridge, and Edward H. Zemke, Chicago, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Sep. 7, 1982, Ser. No. 415,494
Int. Cl.³ B65H *39/02*
U.S. Cl. 270—58 19 Claims



1. In an inserting device adapted to feed individual inserts from stacks thereof to a station wherein the inserts are inserted within envelopes, an improved insert transport means compromising:

an insert track on which the inserts are deposited after being withdrawn from the insert stack;

chain drive means with lugs mounted thereon on the insert track for moving the inserts along the insert track towards the envelope inserting station;

insert hold-down members which pivot out of the way of the inserts as the inserts are withdrawn and deposited onto the insert track and which pivot to a position above and on top of the inserts to apply a compressive force to the inserts after the inserts have been withdrawn and deposited onto the insert track; and

belt means on the insert track to transport the inserts towards the insertion station and means to move the belt means towards the insertion station in cooperation with movement of the chain drive means for moving the inserts along the track, with the belt means supporting at least a portion of the insert to reduce the friction between the inserts and the insert track as the inserts are moved along the insert track towards the envelope insertion station.

4,494,743

DISPENSER PICKER APPARATUS

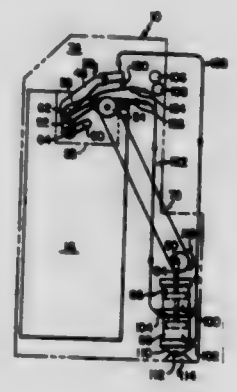
Richard T. Kushmaul, Dallas; James O. Lafevers, Irving, and James E. Webb, Richardson, all of Tex., assignors to Docutel Corporation, Irving, Tex.

Filed Aug. 31, 1981, Ser. No. 297,611
Int. Cl.³ B65H *5/10*
U.S. Cl. 271—11 16 Claims

1. In a document dispenser for positively and individually moving flexible thin-sheet documents from a stack to a distribution station, comprising in combination:

a document transport for moving documents from the stack to the distribution station, said transport including a pair of input rollers located adjacent said stack of documents,

separation means including at least one nozzle stationarily positioned at one edge of the document stack to deliver positive fluid pressure to ruffle the edge of the first document for its separation from the remaining documents in the stack,



removal means including at least one vacuum cup to apply negative fluid pressure for removing said first document from the document stack for its delivery to the pair of input rollers of said document transport; and

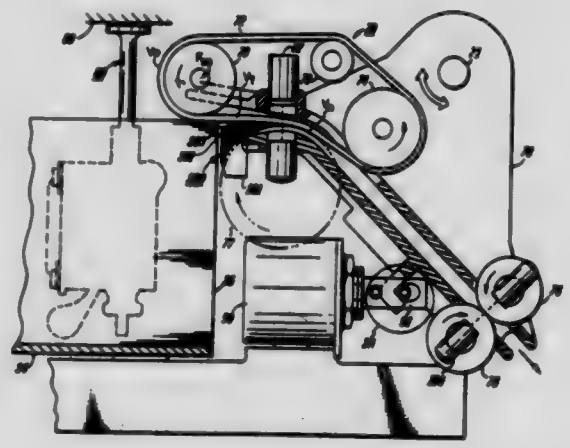
unitary reversible vacuum/pressure supply means connected to said separation means and said removal means for simultaneously applying positive fluid pressure to said nozzle and negative fluid pressure to said vacuum cup during said separation, and for simultaneously and reversibly applying positive fluid pressure to said vacuum cup and negative fluid pressure to said nozzle during positive delivery of said first document to said distribution station.

4,494,744

SHEET FEEDING AND SEPARATING APPARATUS EMPLOYING A MULTIPLE PIECE ENTRANCE GUIDE

Raymond A. Povio, Pittsford, and Robert P. Rebres, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 21, 1982, Ser. No. 421,018
Int. Cl.³ B65H *3/04*
U.S. Cl. 271—34 3 Claims



1. A sheet feeding and separating apparatus for feeding and separating sheets individually from a stack of sheets, comprising:

tray means for holding the stack of sheets, said tray means includes elevator means that lifts any sheet to be fed from said tray means to a feeding position above the confines of said tray means so that the sheets in the stack are initially unobstructed as they are fed from the stack;

endless feed belt means mounted in sheet feeding engage-

ment with the top of the stack of sheets and applying a normal force thereto;

said feed belt means being rotatably mounted between spaced supports to provide a deformable unsupported section therebetween;

a retard roll having a curvilinear portion thereof deformably engaging said feed belt means to form a nip therebetween for separating any overlapped sheets reaching the nip; and

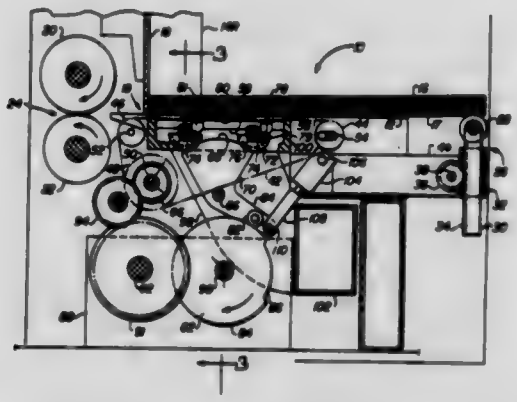
an integrally molded stationary multiple piece entrance guide positioned between said retard roll and said tray means such that said entrance guide is the first obstruction sheets being fed by said feed belt means encounter in route to the nip formed between said retard roll and said feed belt means, said entrance guide includes a high friction urethane first portion with a beveled edge that serves to shingle slugs of sheets and a polycarbonate second portion that supports said first portion, said polycarbonate second portion having an elongated third portion that is cantilevered, said elongated third portion includes an upper surface that terminates at a sharp edge and extends to a position immediately adjacent said curvilinear portion of said retard roll and works in conjunction with an upper surface of said high frictional urethane first portion to support sheets the entire distance from the stack into said curvilinear portion of said retard roll to prevent lightweight sheets from causing jams at the nip formed between said retard roll and said feed belt means.

4,494,745

FEEDING APPARATUS FOR PAPERBOARD SHEETS

William F. Ward, Sr., Hampstead, and John B. West, Glyndon, both of Md., assignors to The Ward Machinery Company, Cockeysville, Md.

Filed Dec. 16, 1981, Ser. No. 331,245
Int. Cl.³ B65H 3/12
U.S. Cl. 271—95 9 Claims



1. Feeding apparatus for feeding sheets successively in timed relation from beneath a stack of sheets comprising in combination:

(a) support means for positioning said stack such that a bottom sheet thereof is aligned with a feed nip defined by a gate means and said support means, said gate means being adapted to meter said sheets one at a time through said nip;

(b) advancing means including a plurality of rotatable endless belt means supported side by side in spaced relation across said support means;

(c) drive means for rotating said belt means unidirectionally from zero to maximum velocity when they are in contact with said bottom sheet and for decelerating said belt means to zero velocity when they are out of contact with said bottom sheet;

(d) shifting means for bringing said bottom sheet into and out of contact with said belt means in timed relation thereto such that said belt means begin rotating after they come into contact with said bottom sheet and stop rotating after they come out of contact with said sheet; and

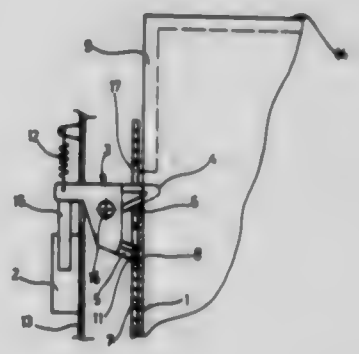
(e) suction means operably connected to said support means and adapted to apply vacuum continuously between said belt means to pull succeeding ones of said bottom sheets against said support means and said belt means.

4,494,746

COPYING MACHINE WITH A CASSETTE GUIDE

Kürt Moser, Gerlingen, Fed. Rep. of Germany, assignor to Develop Dr. Eisbein GmbH & Co., Gerlingen, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 431,238
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1982, 8223544[U]
Int. Cl.³ B65H 1/04
U.S. Cl. 271—164 14 Claims



1. An arrangement for supplying sheets of photocopying paper to a photocopying machine, comprising:

cassette means for holding a stack of sheets of photocopying paper including a first opening in a side wall at the forward end of the cassette means and a second opening in said side wall spaced from said first opening,

cassette guide means for guidably holding the cassette means in an in-use position at a photocopying machine,

and cassette position control means for assuring that the cassette means is in its proper in-use position including a pivotable control lever mounted on the photocopying machine adjacent the guide means and having first and second lever arms,

wherein the rear edge wall of the first opening being engageable against said first lever arm to pivot said control lever toward a machine operating position as said cassette means is inserted, and wherein said second opening serves to accept insertion of said second lever arm therein to permit said control lever to be pivoted toward said machine operating position when said cassette means is properly inserted.

4,494,747

PAPER CURRENCY DISPENSER FRICTION PICKER MECHANISM

Harry T. Graef, Massillon, and Kevin H. Newton, North Canton, both of Ohio, assignors to Diebold, Incorporated, Canton, Ohio

Filed Jul. 1, 1983, Ser. No. 510,410
Int. Cl.³ B65H 7/12
U.S. Cl. 271—263 21 Claims

1. Friction picker mechanism for an ATM paper note dispenser of a type in which notes at the end of a note supply stack normally pressed toward said mechanism are separated and picked one at a time from said stack by associated friction areas of a rotatable feed roller and friction separator means when said roller is driven in note feeding direction by drive means; wherein the improvement comprises:

(a) a rotatable feed roller having a smooth cylindrical surface provided with arcuate rubber friction segment means interrupting said smooth surface;

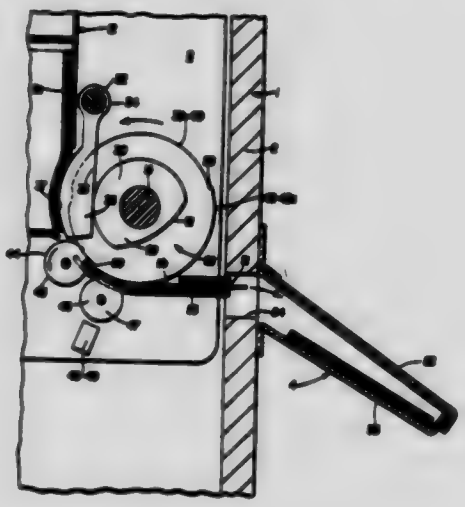
(b) rubber friction separator means directed toward and free of contact with said feed roller;

(c) doubles detector means including note thickness gauging

devices located adjacent said separator means and engaged with and actuated by notes as said notes are fed by said feed roller;

(d) reversible drive means operatively connected with said feed roller which drive means when energized normally drives said feed roller in note feeding direction with said friction segment means engaging and picking stack end notes and driving said notes one at a time successively between said feed roller and said separator means, and then past said thickness gauging devices;

(e) said friction separator means engaging the inner surfaces of and resisting movement of said notes being fed as said notes are driven between said feed roller and separator means, normally to separate doubles from the end notes being fed;



(f) said doubles detector means also including sensor means adapted to sense the detection of unseparated doubles by said note thickness gauging devices when doubles are driven past said note thickness gauging devices; and

(g) said sensor means when sensing the detection of doubles reversing said drive means to return said detected doubles back to said stack by reverse feed roller movement, whereupon normal drive means movement of the feed roller in forward note feeding direction is restored and said drive means again is reversed repeatedly until the doubles are separated from the end note being fed, by said back and forward note scrubbing of the doubles between said friction segment means and said friction separator means.

4,494,748

COLLATOR

Kiyoshi Miyashita; Museo Kasuga; Akira Shimizu, all of Hachioji; Fumitaka Oseki, Inagi; Hiroshi Tsuda, Mitaka; Katsuhiko Kimura, Hino; Nobuoto Hattori, Hachioji; Norio Amemiya, Hachioji, and Masaru Yamazaki, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

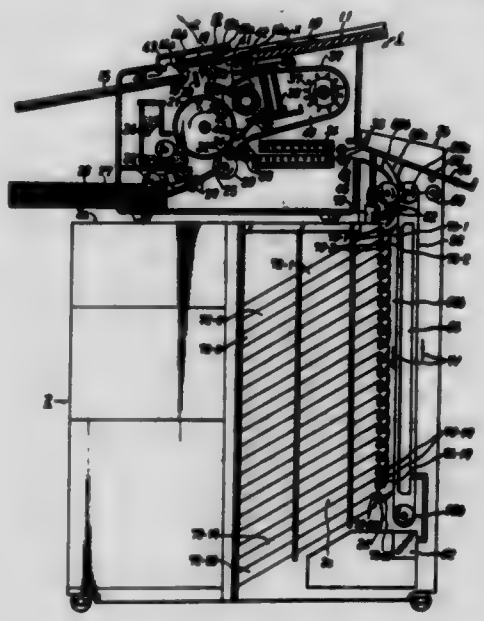
Filed Dec. 30, 1981, Ser. No. 335,651

Int. Cl.³ B65H *39/02*

U.S. Cl. 271—288

11 Claims

1. A collator for use in combination with an apparatus such as a copying machine, a printing machine, and the like, for delivering a plurality of copies successively, said collator comprising: a plurality of bins arranged in parallel with each other along a copy travelling path; means for feeding the copies along the copy travelling path; means for delivering the copies fed successively along the copy travelling path into successive bins; and means for simultaneously driving selected ones of said delivering means so as to effect copy delivery simultaneously to at least two different bin positions, whereby during a copy delivering operation for a plurality of copies of a certain



manuscript, it is possible to initiate the copy delivering operation for a plurality of copies of the next manuscript.

4,494,749

SEAL ASSEMBLIES

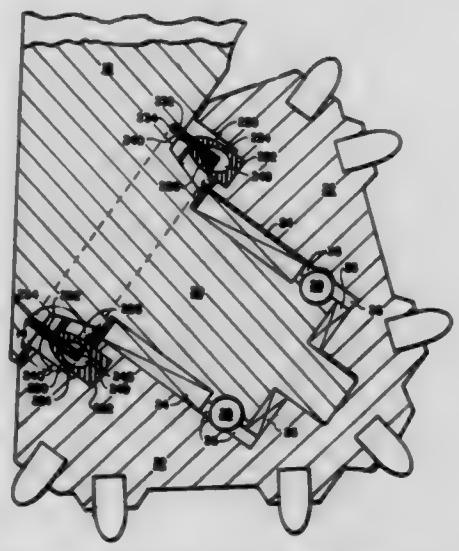
Robert F. Evans, 631 Honeywood La., La Habra, Calif. 90631

Division of Ser. No. 153,540, May 27, 1980, Pat. No. 4,294,492, which is a continuation-in-part of Ser. No. 95,532, Nov. 19, 1979, Pat. No. 4,240,674. This application Jun. 12, 1981, Ser. No. 272,884

Int. Cl.³ F16J *15/12*

U.S. Cl. 277—22

17 Claims



1. A seal assembly operatively positioned between a pair of relatively movable members comprising:

a flank member operatively connected to one of said relatively movable members, said flank member including a sealing contact surface formed thereon;

a projection operatively connected to the other of said relatively moving members, said projection including a sealing surface formed thereon in movable sealing relation with the sealing contact surface of said flank member; and

heat pipe means extending from within the interior of said projection for removing heat from said projection.

4,494,750

EXERCISER FOR RUNNERS

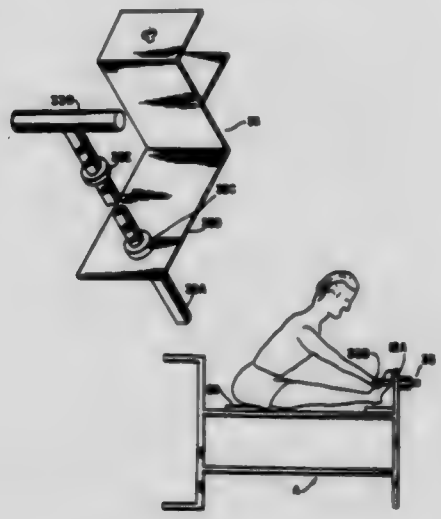
Robert S. Smith, 1263 Emory St., San Jose, Calif. 95126

Continuation-in-part of Ser. No. 327,869, Dec. 7, 1981, Pat. No. 4,456,248. This application Apr. 30, 1982, Ser. No. 373,557

Int. Cl.³ A63B *23/00*

U.S. Cl. 272—93

2 Claims



1. Structure to enable individual to stretch and pull wherein the amount of stretch may be increased in a controlled manner, said structure comprising:

a partially threaded receptacle;

a first means for threaded engagement with said threaded receptacle and for sliding into and out of said receptacle along a longitudinal axis;

a second means for rotating said first means about said longitudinal axis;

wherein said first means comprises a rod of constant cross-section along its center line, said longitudinal axis extending along the center line of said rod, a threaded portion of the external surface of said rod extending longitudinally of the rod and the remaining portion of the external surface of said rod being non-threaded and wherein said receptacle threads are adapted for engaging said threads of said first means when said first means is oriented rotatably in one position in said receptacle thereby preventing said first means from sliding into and out of said receptacle and for permitting said first means to slide through said receptacle when said first means is rotated about its longitudinal axis a selected amount.

4,494,751

EXERCISE MACHINE

Josef Schnell, Sportweg 9, Gachenbach, (Ortsteil Peutenhausen), Fed. Rep. of Germany

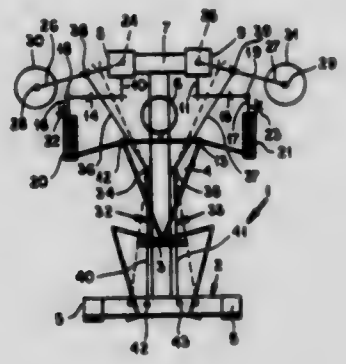
Filed Oct. 12, 1982, Ser. No. 433,678

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1981, 3140859

Int. Cl.³ A63B *21/06*

U.S. Cl. 272—117

8 Claims



1. An exercise machine comprising:

a frame;

a seat on the frame adapted to support an exercising person in a sitting position;

a pair of upright shafts journaled in the frame and extending along and rotatable about respective upright axes above the shoulders of the person on the seat;

respective horizontal front arms fixed to the shafts;

respective handles carried on the front arms and positioned for engagement with the hands and forearms of the person on the seat;

respective horizontal shafts journaled in the frame and projecting away from the person on the seat;

respective drive means including respective right-angle drives connecting the upright shafts to the respective horizontal shafts for rotation of each of the horizontal shafts synchronously with the respective upright shafts and front arms;

respective rear arms fixed on the horizontal shafts and pivotal in an upright plane, each of the rear arms being generally vertical and extending down from the respective horizontal shaft when the respective front arms are aligned and extend on the respective upright shafts away from each other; and

respective means including weights on the rear arms offset from the respective horizontal shafts for resisting rotation of the shafts in a direction corresponding to displacement of the handles away from the person on the seat with a force that increases as the handles move away from the person on the seat, whereby the chest muscles of the person on the seat can be exercised.

4,494,752

RACKET STRINGER AND TENSIONER

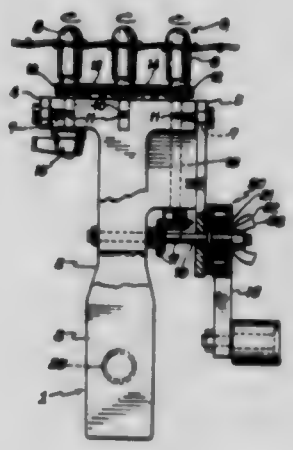
Lynn L. Ray, P.O. Box 3464, San Diego, Calif. 92103

Filed Apr. 11, 1983, Ser. No. 484,071

Int. Cl.³ A63B *51/14*

U.S. Cl. 273—73 A

11 Claims



1. A string tightener for tensioning strings across a frame which comprises:

two levers each having a roller assembly at one end thereof;

means for rockingly linking said levers together near said ends;

resilient means for biasing said two roller assemblies toward each other;

said roller assemblies and said means for rockingly linking being shaped and dimensioned to grippingly purchase a string between said two roller assemblies; and

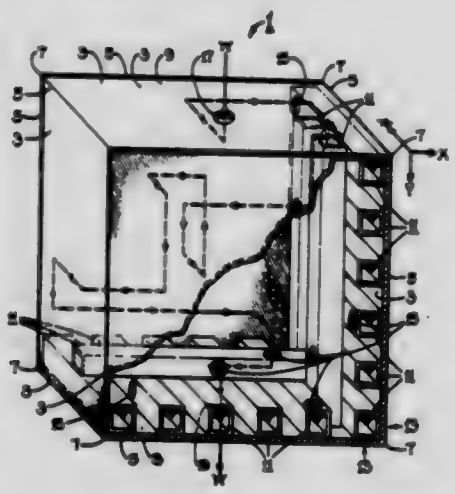
means for driving said roller assemblies in respective opposite rotational directions, comprising a drive mechanism positively coupled to one of said roller assemblies and means for reversibly linking said one roller assembly to said other roller assembly for driving said assemblies in opposite directions.

4,494,753

THREE-DIMENSIONAL TOY MAZE

George S. Wampler, 1701 S. Ditmar St., Oceanside, Calif. 92054

Filed May 24, 1983, Ser. No. 497,605
Int. Cl.³ H63F 7/04
U.S. Cl. 273—113 11 Claims



1. A hand-held toy comprising:

(a) a three-dimensional, six-sided totally enclosed diaphanous object containing a plurality of layers of hollow tubes of equal internal height and width in mutually parallel fixed arrangement;

(1) each said tube in each said layer separated from its neighbor parallel tube by another tube mutually perpendicular thereto;

(2) each said tube having at least one aperture formed in the wall thereof at random locations for passage of a sphere of fixed size therethrough into an adjacent tube to form a three-dimensional maze;

(3) an entrance aperture, formed in one side of said object and in communication with at least one said tube,

(4) an exit aperture, formed in another side of said object in communication with at least one said tube, a size at least equal to said tube apertures; and,

(b) a play ball for passage in through said entrance aperture to the maze and for travel through said maze by gravity when said toy is manipulated about its three axes to exit said maze through said exit aperture.

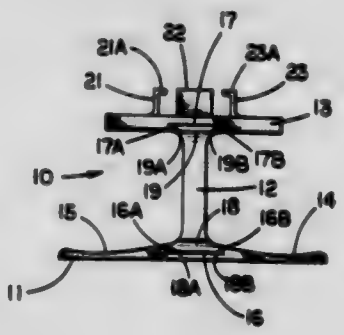
4,494,754

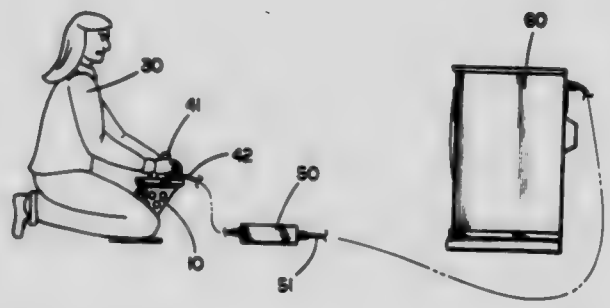
APPARATUS FOR PLAYING HOME VIDEO GAMES

John R. Wagner, Jr., 300 Ashley Dr., Rochester, N.Y. 14620

Filed Sep. 30, 1982, Ser. No. 429,604
Int. Cl.³ A63B 71/00
U.S. Cl. 273—148 B 8 Claims

1. An accessory for aiding a video game player during play of a video game, the video game player operating a video game controller which transmits signals in response to manipulations made on the video game controller by the video game player, the transmitted signals being processed by a computer processor which responsively manipulates images on a television screen, said accessory comprising: a base, said base extending horizontally, said base being positionable on a surface so as to permit a video game player to stabilize said base by placing lower body weight on said base; a riser, said riser extending upward from said base; and a mounting member attached to said riser, said mounting member being positioned over the lap of a player with lower body weight on said base, said mounting





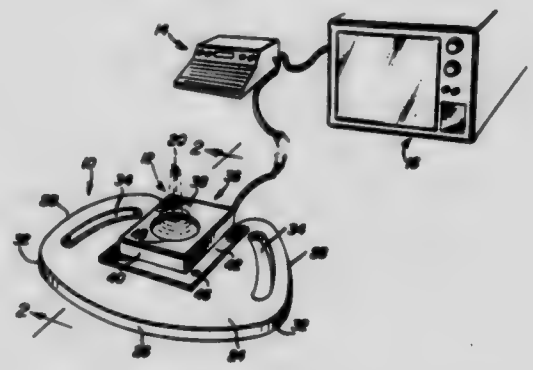
member including means for lockably receiving a video game controller in fixed position on said mounting member.

4,494,755

HOLDER FOR JOYSTICK CONTROLLER FOR VIDEO GAMES

Charles W. Caillouet, Jr., 25 Tradewinds Dr., Galveston, Tex. 77551

Filed Dec. 29, 1982, Ser. No. 454,321
Int. Cl.³ A63B 71/04
U.S. Cl. 273—148 B 18 Claims



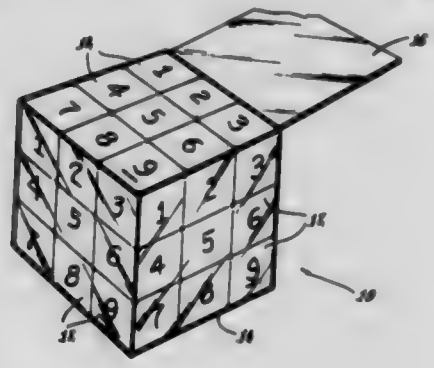
1. A holder for a hand held and manually manipulable controller having a hand held base and manually movable control stick projecting upwardly therefrom, said holder comprising an enlarged rigid panel and means retaining the controller base on the panel, means on the panel to enable it to be stabilized to stabilize the controller and enabling more effective manipulation of the control stick while minimizing hand cramps, muscle fatigue, soreness and the like, said panel including generally planar top and bottom surfaces, said means retaining the controller base on the panel being located along an edge portion of the panel.

4,494,756

CUBE PUZZLE

Gordon E. Winer, Barnard, Vt., assignor to Vermont Toy Works, Inc., Rutland, Vt.

Continuation-in-part of Ser. No. 333,712, Dec. 23, 1981, abandoned. This application Nov. 25, 1983, Ser. No. 554,999
Int. Cl.³ A63F 9/12
U.S. Cl. 273—156 18 Claims



12. A three dimensional cube puzzle comprising:

n^3 individual cube pieces each having six exposed faces, n being an integer greater than 1;

numerical indicia means on each face of each of said n^3 cube pieces, said numerical indicia means being representative of a number selected from a group of n^2 different numbers, each face of each of said cube pieces having one of said numerical indicia means thereon to define a set of six numerical indicia for each cube piece, and substantially all of said sets of six numerical indicia being different and consisting of from two to six different numbers;

support means for holding and displaying a cubic array of said n^3 cube pieces assembled to provide an n by n by n configuration, said cubic array having six exposed surfaces each of which is comprised of n^2 assembled faces of said cube pieces in an n by n configuration, said support means being adapted to maintain said n^3 assembled cube pieces in said cubic array and to permit visual inspection of each of said six exposed surfaces of said cubic array; and

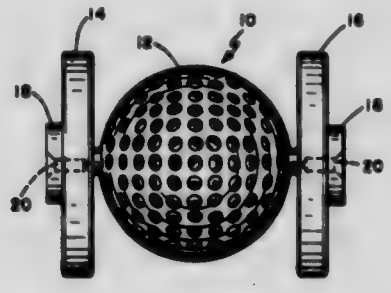
said numerical indicia means for said cube pieces being selected to provide at least 10 different cubic arrays in which, on each of said six exposed surfaces of each such cubic array, said numerical indicia means on said n^2 assembled faces of said individual cube pieces satisfy a predetermined arithmetic relationship between said numerical indicia means.

4,494,757

GOLF PUTTING DEVICE

Luther G. Simjian, Fort Lauderdale, Fla., assignor to Command Automation, Inc., Greenwich, Conn.

Filed Aug. 22, 1983, Ser. No. 525,012
Int. Cl.³ A63B 69/36
U.S. Cl. 273—183 C 1 Claim



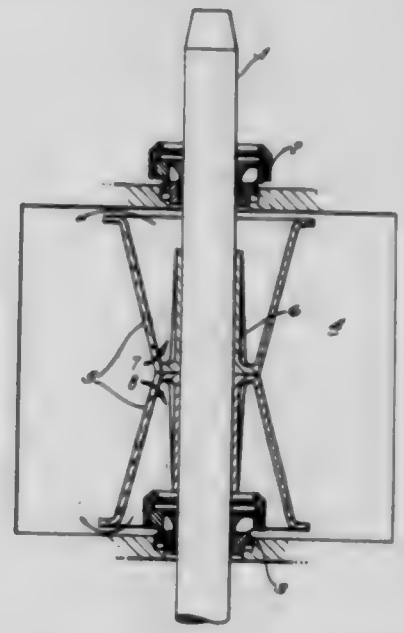
1. A golf putting aid made of plastic material including a pair of concentrically rotating wheels spaced from each other by a distance for being stroked by a putter, a sighting device resembling a golf ball concentrically mounted between said wheels, the diameter of said wheels being slightly greater than that of said ball for causing said ball to be free of rolling contact with an underlying surface upon which said wheels roll when stroked, the improvement comprising: said aid being a unitary molded plastic body, and weight means in the form of a respective disk shaped metal washer fastened concentrically upon the outer radial surface of each wheel for increasing the weight of said body to thereby cause said aid to more closely exhibit the rolling characteristic of a regular golf ball.

4,494,758

MECHANICAL SEAL LUBRICATION DEVICE

Valdemar Carlsson, Solna, and Boris Fredriksson, Huddinge, both of Sweden, assignors to ITT Industries, Inc., New York, N.Y.

Filed Mar. 22, 1984, Ser. No. 592,180
Claims priority, application Sweden, Mar. 24, 1983, 8301618
Int. Cl.³ F16J 15/42, 15/54
U.S. Cl. 277—14 V 4 Claims



1. An arrangement for lubricating a mechanical seal surrounding a rotatable shaft, comprising:

a container for holding a liquid lubricant, located adjacent the seal and receiving at least a portion of the shaft; and

means for transporting the liquid lubricant to the seal, said transporting means being located in the container, being mounted on the shaft for joint rotation therewith, and including at least one element secured to the shaft and extending substantially coaxially therewith, said element having two axially spaced end portions each having at least one opening therein, and bounding an internal passage which diverges from one of said end portions to the other of said end portions that is directed towards the seal.

4,494,759

SEAL FOR RELATIVELY ROTATABLE PARTS

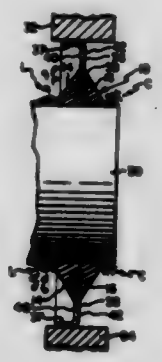
Robert A. Kieffer, 118 Meadowview La., Williamsville, N.Y. 14221

Filed Oct. 31, 1983, Ser. No. 546,915
Int. Cl.³ F16J 15/32, 15/34
U.S. Cl. 277—25 23 Claims

1. A seal for placement about a shaft and for sealing clearance between the shaft and at least two close annular surfaces each adjacent an opening through which the shaft passes, said seal comprising:

a ring-like body of stretchable material adapted to be stretched about the shaft and be thereby placed in a deformed condition and in sealing engagement therearound, said body including a central portion and at least two lip portions extending generally radially outwardly of said central portion and movable relative thereto in a hinge-like manner, each lip portion defining a radially outermost

edge and a sealing surface adjacent said edge for sealingly engaging a corresponding one of the close annular surfaces through which the shaft passes, said sealing surface being relatively short as measured from said outermost edge, said body being of such cross-sectional shape that when it is stretched from an undeformed condition to a deformed condition about the shaft, each one of said lip portions moves from a first angular position to a second



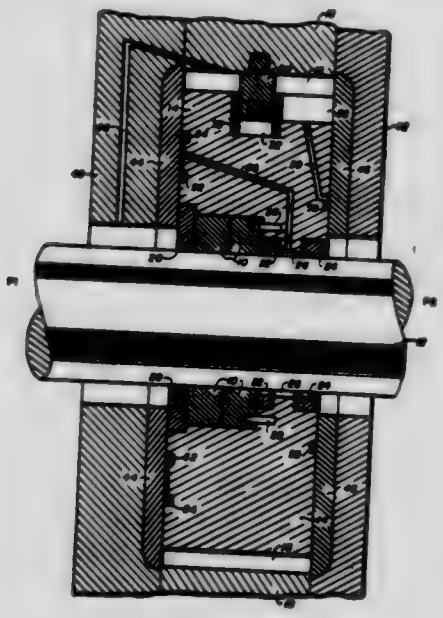
angular position relative to another one of said lip portions of said body so that when said seal is operatively placed about the shaft so that the sealing surface of each of said lip portions contacts a corresponding one of the close annular surfaces through which the shaft passes and each lip portion is thereby prevented from moving to its said second angular position, said lip portions are biased into sealing engagement with the annular surfaces.

4,494,760

PRESSURE BALANCED FLOATING SEAL

John D. Spargo, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 29, 1983, Ser. No. 518,710
Int. Cl.³ F16J *15/28, 15/40*
U.S. Cl. 277—30 9 Claims



1. A sealing device for shafts which pass through a wall, said sealing device including at least one annular housing adapted to be mounted around a shaft, said at least one annular housing including a ring-shaped chamber having disposed therein at least one layer of a sealing material adjacent said shaft, wherein the improvement comprises:

an oversized outer ring disposed radially adjacent said at least one annular housing and adapted to permit sliding of said at least one annular housing radially outwardly from said shaft;

at least one antirotation pin extending from the outer ring into said at least one annular housing and adapted to permit radial sliding of said at least one annular housing with respect to said oversized outer ring; and

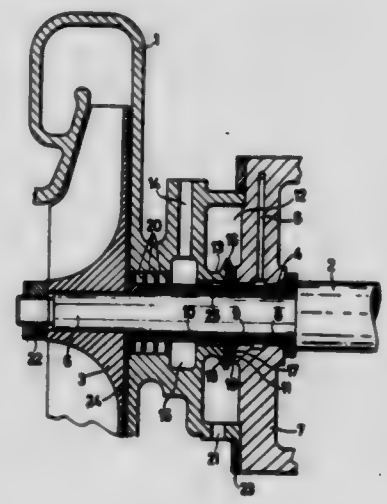
means for balancing frictional forces acting on radial surfaces of said at least one annular housing.

4,494,761

LUBRICATING OIL SEAL DEVICE FOR ROTATING SHAFT BEARINGS

Filippo Surace, and Giampaolo Garcea, both of Milan, Italy, assignors to Alfa Romeo S.p.A., Napoli, Italy

Filed Apr. 14, 1983, Ser. No. 485,042
Claims priority, application Italy, Apr. 15, 1982, 20776 A/82
Int. Cl.³ F16J *15/42*
U.S. Cl. 277—67 6 Claims



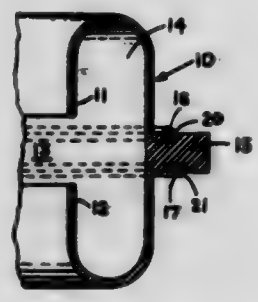
1. A lubricating oil seal device for a bearing supporting a shaft of a turbo compressor rotating in a stator, comprising a lubricating oil collecting chamber in said stator having a drain hole, an annular passage being defined by flat wall portions of said stator and extending perpendicular to said shaft and adjacent said collection chamber and said bearing to allow lubricating oil to flow from said bearing into said collection chamber, a disc member being rigid with said shaft at one end of said bearing and rotatable within said annular passage close to at least one of said flat wall portions to form an annular meatus between said one of said flat wall portions and a flat surface of said disc member opposite said bearing, and a port in said stator providing fluid communication between a radially internal annular portion of said meatus and an external environment.

4,494,762

GASKET AND GASKET MANUFACTURING METHOD

Stanley W. Geipel, Bedminster, N.J., assignor to Hickory Pond Corp., New Brunswick, N.J.

Filed Aug. 4, 1980, Ser. No. 174,808
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—206 R 3 Claims



1. A gasket comprising a metal tube having a hollow interior, said tube having on one side thereof a pair of spaced jaws to establish a gap formed in said one side thereof in order to establish fluid communication between said hollow interior and the environment outside of said tube, and a fin protruding

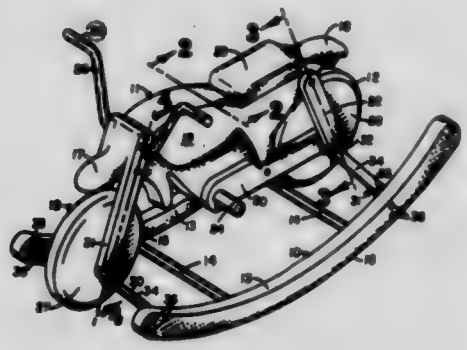
from the other side of said tube, said fin being in general alignment with said gap and having a width that is generally equal to said gap, said metal tube having an annular shape, said gap on said one tube side being oriented toward the center of said annulus, and said fin being disposed radially outward of said annular tube and forming a ring therearound, said ring further comprises at least one generally circular groove formed in the surface thereof, and a fluid seal seated in said circular groove.

4,494,763

WHEELED ROCKER TOY

Richard A. Whitehead, 127 East Hoffman, Spokane, Wash. 99207

Filed Mar. 7, 1983, Ser. No. 472,949
Int. Cl.³ A63G *15/00*
U.S. Cl. 280—1.175 1 Claim



1. A wheeled rocker toy comprising, in combination:

rocker structure providing similar opposed elongate rockers in spaced, parallel relationship, each of said rockers having similar arcuate lower surfaces to simultaneously contact a planar supporting surface;

a rigid body structure supported between and above the rockers, said body having

a seat in its upper portion to support a user

paired opposed foot rests in its lower medial portion to support the feet of a user,

handlebar structure in its upper forward portion to support the hands of a user;

forward wheel support structure depending from the forwardmost part of the body structure to rotatably support a front wheel, said wheel being configured and positioned to contact an underlying supporting surface before the rockers have reached their forwardmost rocking limit to then support the forward portion of the toy to allow its forward linear motion relative to the supporting surface; and

rearward wheel support structure depending from the rearwardmost part of the body structure to support a rearward wheel, said wheel being configured and positioned to contact an underlying supporting surface at the time the rockers have reached their rearwardmost rocking position to aid in preventing the toy from tipping rearwardly.

4,494,764

MOTORCYCLE LIFT AND METHOD

Richard W. Kelley, 667 Blaine Ave. NE., Renton, Wash. 98056

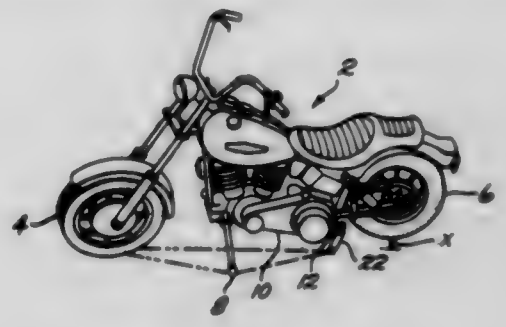
Filed Jan. 27, 1983, Ser. No. 461,622
Int. Cl.³ B62H *1/02, 1/06*
U.S. Cl. 280—293 14 Claims

1. For use with a motorcycle of the type having a front wheel, a rear wheel, a frame, and a kickstand on one side of the frame between the front and rear wheels for supporting the motorcycle in a leaning position, a lift stand comprising:

a leg including a ground-contacting foot at one of its ends; and

attaching means for attaching the leg to a rear portion of said one side of the frame rearward of the kickstand and forward of the rear wheel;

said lift stand having a support position in which the foot is in contact with the ground, the leg extends downwardly from the frame to the ground, and the motorcycle is supported on its front wheel, the kickstand, and the lift stand, with the rear wheel being elevated from the ground; and said lift stand being sufficiently close to the rear wheel and



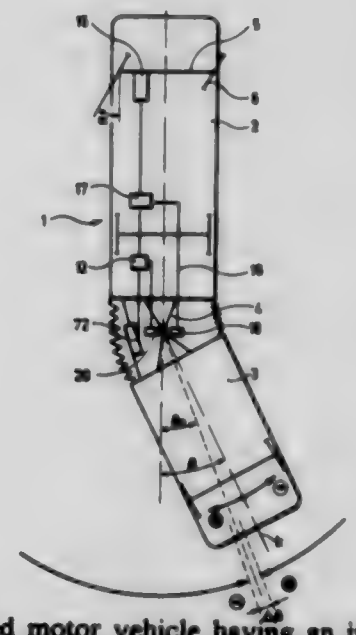
sufficiently long to cause, when the motorcycle is leaned toward said one side of the frame to move the lift stand toward its support position, the center of gravity of the motorcycle to be laterally outside and forward of the lift stand and the lift stand to contact the ground before the kickstand makes contact with the ground.

4,494,765

ANTI-JACKKNIFING DEVICE WITH FRICTION BRAKE FOR ARTICULATED MOTOR VEHICLE

István Ratzko; József Ivony; György Karászi; Jenő Mádi, and Nándor Liptai, all of Budapest, Hungary, assignors to Autóipari Kutató Intézet and IKARUS Karosszéria és Járműgyár, both of Budapest, Hungary

Filed May 13, 1982, Ser. No. 377,690
Claims priority, application Hungary, May 14, 1981, 1330
Int. Cl.³ B62D *53/06*
U.S. Cl. 280—432 5 Claims



1. In an articulated motor vehicle having an intermediate unit disposed between two vehicle units and in force coupling therewith, a force coupling bisecting the jackknifing angle and an anti-jackknifing device including a friction brake mechanism coupled to the vehicle units and producing torque around the vehicle articulation, the improvement wherein the friction brake mechanism comprises a brake rod connected to one of the vehicle units with the external surface thereof having a friction surface, a brake bracket surrounding the brake rod and carrying friction brake linings and connected to the other vehicle unit, a brake actuating element disposed in the brake bracket and applying a compressive force on the friction brake linings, wherein the mechanism comprises two brake rods articulated to one of the vehicle units symmetrically with and

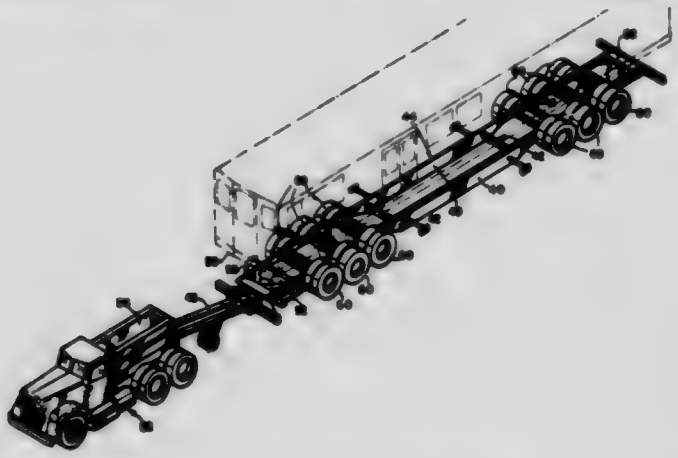
outside of the longitudinal axis of the motor vehicle, two brake brackets and multimember articulated rod systems on which the brake brackets are arranged and which are coupled to the vehicle units with the brake bracket supporting rod member moving in proportion with the jackknifing angle variation.

4,494,766

TRAILER FOR CARRYING LARGE VEHICLES

Edward L. McHugh, Langhorne; James C. McHugh, Penndel; Gerard J. McHugh, Langhorne; William Gallagher, Levittown, and David Schmidt, Langhorne, all of Pa., assignors to McHugh Brothers Crane Rentals, Inc., Penndel, Pa.

Filed Jan. 6, 1983, Ser. No. 456,272
Int. Cl.³ B62D *13/04*
U.S. Cl. 280—444 19 Claims



7. A drawbar trailer for transporting rapid transit subway cars, railcars and like vehicles having internal suspension systems, the trailer having a load support platform carried by at least one front and at least one rear axle and steerable wheel assembly, the trailer comprising:

adjustable resilient means disposed between the platform and the front and rear axles for selectively raising and lowering the front and rear of the platform and for selectively raising and lowering the sides of the platform;

hydraulically driven means for turning the wheels of at least one of the axle and wheel assemblies;

means for automatically activating and controlling the hydraulically driven turning means in response to pivotal movements of the drawbar; and,

means for holding and immobilizing the bodies of the transported vehicles with respect to the platform, preventing movement of the vehicle bodies on their internal suspension systems, whereby the load support platform may be inclined about its tilt axes to facilitate loading, carrying and unloading the transported vehicle and whereby the trailer can be maneuvered as easily as smaller trailers.

15. A drawbar trailer for transporting very long, very heavy vehicles and the like having internal suspension systems, the trailer having a load support platform carried by at least one front and rear steerable wheel assembly, the trailer comprising;

adjustable resilient means disposed between the platform and the front and rear axles for selectively raising and lowering the front and rear of the platform and for selectively raising and lowering the sides of the platform;

means for automatically turning the wheels of at least one of the front and rear axles and steerable wheel assemblies in response to pivotal movements of the drawbar;

power driven means for selectively turning the wheels independently of one another and independently of the drawbar movement; and,

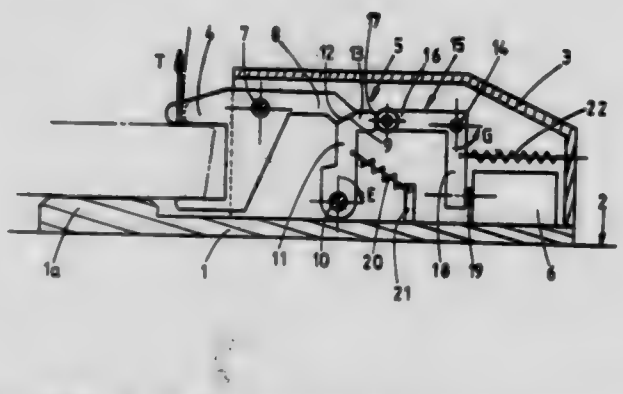
means for holding and immobilizing the bodies of the transported vehicles relative to the platform, preventing movement of the vehicle bodies on their internal suspension systems.

4,494,767

LOCKING DEVICE FOR A SKI BINDING

Christian Campillo, Garchizy, and Jean-Pierre Michaud, Clamart, both of France, assignors to Ste Look, Nievre, France

Filed May 3, 1982, Ser. No. 373,844
Claims priority, application France, May 22, 1981, 81 10210
Int. Cl.³ A63C *9/084*
U.S. Cl. 280—612 3 Claims



1. In a safety ski binding locking and release mechanism for holding a ski boot upon a ski, the improvement comprising a compound lever having a forwardly extending portion adapted to engage the sole of a ski boot and a rearwardly extending portion having a slanting surface normally extending forwardly and downwardly when said forwardly extending portion is in normal engagement with the ski boot, means pivotally mounting said compound lever on said ski about a transverse axis between said forwardly and rearwardly extending portions, a second lever pivotally mounted on said ski about a transverse axis at its lower end, and having at its upper end a forwardly and downwardly extending first surface normally engaging the slanting surface of the rearwardly extending portion of said compound lever, and a second bearing surface extending rearwardly from said first surface, a third right-angled lever pivotally mounted about a transverse axis on said ski having a normally horizontal forwardly extending arm whose end bears against the second bearing surface of said second lever, and a normally downwardly extending arm, an electromagnet having a plunger mounted on said ski with the end of its plunger contacting the lower end of said downwardly extending arm, first spring means urging the end of said downwardly extending arm to a vertical position against the end of said plunger and the end of said forwardly extending arm against the second bearing surface of said second lever, and second spring means urging said second lever in a rearward direction about its pivot, its second bearing surface against the front end of said forwardly extending arm of the third lever and its first surface against the slanting surface of said compound lever to hold the forwardly extending portion of the latter against the ski boot, whereby upon energization of said electromagnet in response to extraordinary vertical forces upon the ski boot, its plunger acts upon the downwardly extending arm of the third lever against the action of said first spring to rotate said third lever upwardly to disengage the front end of the forwardly extending arm from the second bearing surface of said second lever, whereupon said second lever pivots rearwardly under the action of said second spring and said compound lever is permitted to pivot to release the ski boot under the action of the upward forces thereon.

4,494,768

APPARATUS FOR PROGRAMMED RELEASE IN SKI BINDINGS

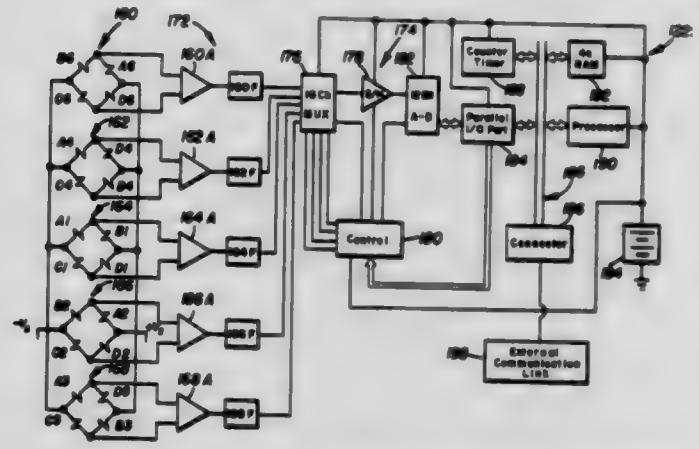
Maury L. Hull, Davis, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 162,413, Jun. 24, 1980, Pat. No. 4,371,188.
This application Feb. 1, 1983, Ser. No. 463,008
Int. Cl.³ A63C *9/08*
U.S. Cl. 280—612 1 Claim

1. In a ski binding for releasably securing a ski boot to a ski,

means for minimizing injuries in a lower extremity of a skier, said means comprising:

strain gauge means for measuring a plurality of mechanical deflections induced in said ski binding from interaction between said skier and said ski, and for developing a plurality of first electrical signals, each of said first signals being determined from a different one of said deflections; means for developing a plurality of second electrical signals determined from a relationship between said first signals, said second signals defining a measurement of forces along first selected ones of longitudinal, lateral, and vertical axes of said ski and moments about second se-



lected ones of said axes, said mechanical deflections occurring in response to said forces and said moments; computer means for computing from said second signals an actual angle of deflection as a function of a preprogrammed relationship between said second signals, said actual angle of deflection being about a location of said lower extremity of the skier and further resulting from said forces and said moments, said location being selected to prevent injury thereto; and means for comparing said actual angle of deflection with a predetermined critical angle of deflection for initiating release of said ski binding in the event said actual angle exceeds said critical angle.

4,494,769

SKI-BINDING TOE ABUTMENT MEMBER FOR A SKI BOOT HAVING A TRUNCATED SOLE

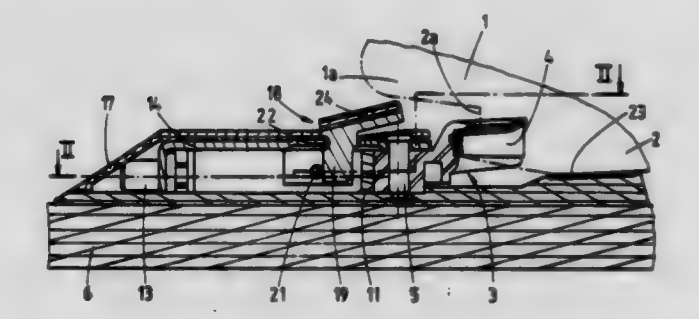
Jean J. A. Beyl; Philippe Buzon, both of Nevers; Christian Campillo, Garchizy; Jackie Cursillat, Germigny sur Loire; Daniel Le Faou, Vauzelles, and Henri Peyre, Nevers, all of France, assignors to Ste Look, Nevers, France

Filed Jun. 9, 1982, Ser. No. 386,662

Claims priority, application France, Jun. 30, 1981, 81 12819

Int. Cl.³ A63C *9/085*

U.S. Cl. 280—630 **7 Claims**



1. A ski-binding toe abutment member adapted to cooperate with a ski boot having a ski boot upper and provided with a sole having a truncated front end and a tow-cap extension in overhung relation to said truncated front end, comprising a jaw unit formed by two arms, extending about and retaining the said truncated front end of the sole, said retaining arms being rotatably mounted on at least one vertical pivot, a resilient mechanism acting upon said arms to lock the same in a boot-retaining position thereby providing an adjustable force or inherent stiffness of release, and a feeler element adapted to be in contact with the toe-cap extension of the ski boot and positioned to produce action on the resilient locking mechanism in the event of a forward fall in order to reduce the inherent stiffness of release of said mechanism said feeler element including a yoke extending transversely with respect to the ski, said feeler element being placed beneath the toe-cap extension of the ski-boot upper in close proximity to said toe-cap extension during normal skiing and being vertically displaceable in a downward direction under the thrust exerted by said toe-cap extension at the time of a forward fall the toe-cap extension of the ski-boot upper causing a downward pivotal displacement of the yoke about an axis transverse to the ski which exerts correlatively on said resilient mechanism, a thrust which tends to move said resilient mechanism away from the jaw unit to produce a reduction in said inherent stiffness of release.

4,494,770

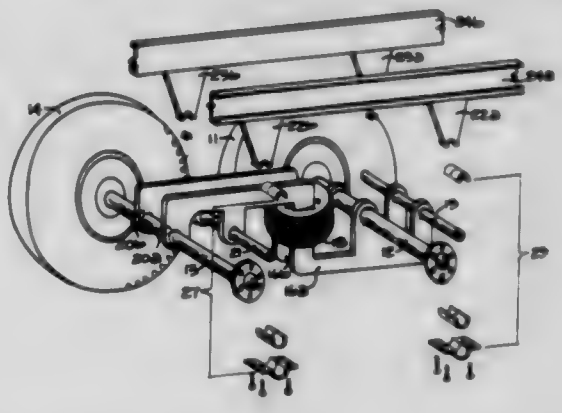
VEHICLE SUSPENSION SYSTEM

Charles W. Reynolds, 350 E. 13th St., Beaumont, Calif. 92223

Filed May 25, 1983, Ser. No. 498,105

Int. Cl.³ B60G *5/02*

U.S. Cl. 280—685 **5 Claims**



1. In combination with a vehicle body a suspension, an axle bearing a pair of wheels, an arm positioned in front of and parallel to and spaced from said axle, and rigidly secured thereto, means at each side of said arm extending vertically thereto to support said vehicle body said support means having bearing surfaces in engagement with said arm to permit axial movement with respect thereto, a rigid member secured to said arm and said axle and extending centrally beyond said axle beneath the vehicle body with means for supporting a cushioning member, and another rigid member in engagement with the opposite side of said cushioning member at one end with its other end in supporting engagement with the vehicle body, said cushioning member being positioned vertically between said rigid members.

4,494,771

SUSPENSION SYSTEM WITH U-JOINT MOUNTED LOAD CARRYING TORQUE ARM

John E. Raidel, Rte. 9, Box 400M, Springfield, Mo. 65804

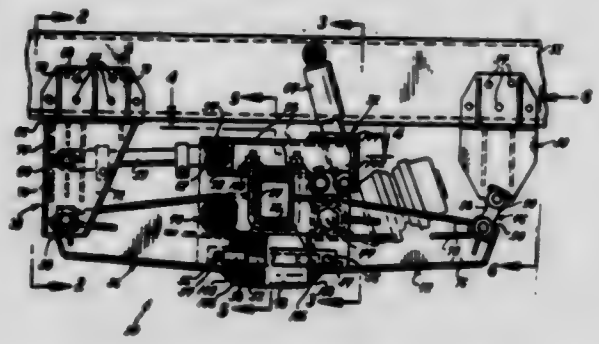
Continuation-in-part of Ser. No. 341,565, Jan. 21, 1982, Pat. No. 4,445,707, and a continuation-in-part of Ser. No. 431,755, Sep. 30, 1982, Pat. No. 4,465,298, which is a continuation-in-part of Ser. No. 341,474, Jan. 21, 1982, abandoned. This application Aug. 17, 1983, Ser. No. 523,964

Int. Cl.³ B60G *5/00*

U.S. Cl. 280—711 **11 Claims**

1. A vehicle suspension to support a chassis from at least one axle having an axle seat assembly for mounting the axle to the suspension, parallelogram means for pivotally connecting to and extending between a chassis member and the axle seat assembly to stabilize same, said parallelogram means including first and second load carrying torque arms for pivotally connecting to and extending between the axle seat assembly and a

chassis member, a U-joint associated with each torque arm to pivotally mount an end thereof, said torque arms being



mounted in opposition to each other, and a central spring means disposed between said torque arms and compressed thereby to resist axle loading.

4,494,772

ANTI-ARCH VEHICLE SUSPENSION

Paul Smith, 16700 Gledhill, Sepulveda, Calif. 91343

Filed May 12, 1983, Ser. No. 494,081

Int. Cl.³ B60G *11/46*

U.S. Cl. 280—712 **3 Claims**



1. A vehicle comprising:
a vehicle frame;
a pair of front wheels coupled to said frame;
a pair of rear wheels;
a pair of rear leaf springs;
a rear axle connected to middle portions of said leaf springs;
front and rear connectors associated with each leaf spring, each connector continually connecting a corresponding end of a leaf spring to said vehicle frame; and
a pair of air sleeves, each disposed between a leaf spring and said vehicle frame and supporting some of the frame weight on the spring, each sleeve connected to a spring location that is forward of the rear axle, said location spaced forward of the rear axle by a distance between 25% and 50% of the distance between the rear axle and the front end of the spring where it is held by the front connector.

4,494,773

TILTABLE STEERING FOR INDUSTRIAL VEHICLE OR THE LIKE

Osamu Fukui, Musashimurayama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

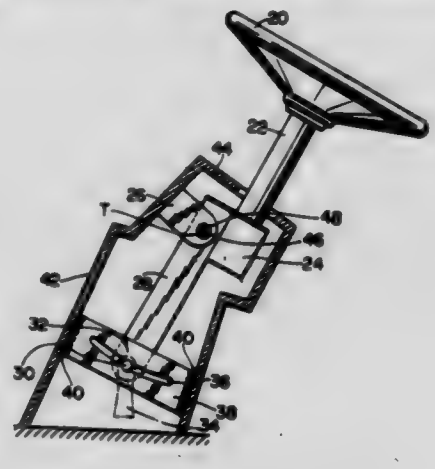
Filed Aug. 31, 1982, Ser. No. 413,530

Claims priority, application Japan, Sep. 30, 1981, 56-155978

Int. Cl.³ B62D *1/18*

U.S. Cl. 280—775 **3 Claims**

1. A tiltable steering arrangement for a vehicle having a body, comprising:
a steering wheel;
a steering column operatively connected at one end thereof with said steering wheel;
a valve housing mounted at a second end of said steering column;
a first bracket connected with said valve housing at a first end thereof;
a second bracket connected with said vehicle body, said second bracket pivotally supporting said steering wheel and steering column at a location in close proximity of said



valve housing so that the moment of force produced by said valve housing about said location is minimized;
locking means mounted at a second end of said first bracket so as to be remote from said location; and
a third bracket connected with said vehicle body, said third bracket being arranged to cooperate with said locking means in a manner to permit the second end of the said first bracket to be selectively locked thereto.

4,494,774

BELT BAND-CLAMPING ARRANGEMENT FOR SAFETY BELTS IN MOTOR VEHICLES

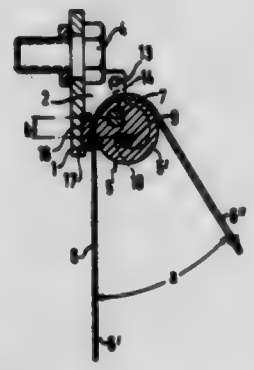
Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to REPA Feinstanzwerk GmbH, Aldorf, Fed. Rep. of Germany

Continuation of Ser. No. 550,981, Nov. 10, 1983, abandoned, which is a continuation of Ser. No. 296,166, Aug. 25, 1981, abandoned. This application May 3, 1984, Ser. No. 606,850

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1980, 3032169

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—806 **10 Claims**



1. Belt-braking system for safety belts in motor vehicles, which comprises an automatic roll-up device having a roll-up roller on which a safety belt is wound and which normally is unwound by pulling the belt against the force of a spring and which belt during abnormal operation exerts an increased torque, a belt-brake having a swivelable deflector roller member with a cambered deflector surface partly wrapped around by said belt from said automatic roll-up device, a fitting in which said deflector member is eccentrically supported to swivel about an axis with the cambered deflector surface eccentric to the axis, said deflector fitting staged behind the automatic roll-up device as a separate unit, a clamping member with a clamping surface spaced from said deflector surface to

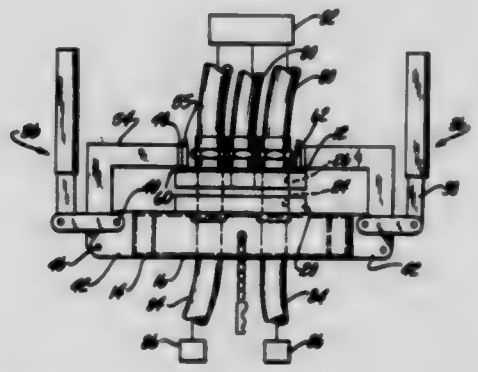
permit free movement of the belt between the deflector surface and the clamping surface, said deflector surface serving both as a clamping surface and as a deflector surface for the belt, spring means urging the deflector surface away from the clamping surface during normal operation after the belt has been put on, said increased torque during abnormal operation countering said spring means and swiveling the eccentrically supported deflector member with its deflector surface moving against the clamping surface clamping the belt therebetween.

4,494,775

FLUID COUPLING

Robert W. Nash, Birmingham; Paul R. Andre, Farmington Hills, and Dennis F. Knoblock, Utica, all of Mich., assignors to William Nash Company, Inc., Farmington Hills, Mich.

Filed Sep. 30, 1982, Ser. No. 431,832
Int. Cl.³ F16L 35/00
U.S. Cl. 285—26 4 Claims



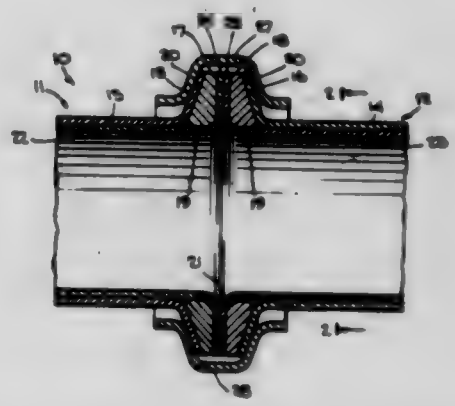
1. A plural fluid coupling comprising:
a first plate,
a plurality of fluid connectors, each fluid connector comprising a male part and a female part movable with respect to each other between a fluidly coupled position and a fluidly uncoupled position,
means for securing said male parts of said fluid connectors to said first plate,
a second plate,
means for securing said female parts of said fluid connectors to said second plate so that, with said plates positioned adjacent each other, said male and female parts of each fluid connector are aligned with each other,
means for moving said plates toward each other and said fluid connector parts from said uncoupled position to said coupled position,
wherein each male part comprises an elongated tapered conduit slidably receivable in a opening formed in said female part,
wherein said moving means comprises a pair of levers pivotally mounted to opposite sides of one of said plates and movable between a locking and a nonlocking position, said levers each having an elongated portion which abut against and along opposite sides of the other of said plates when said levers are in said locking position, said lever elongated portions being spaced apart and parallel to each other, and
wherein each lever elongated portion includes two ends which terminate adjacent opposite ends of the other of said plates when said levers are in said locking position
means at spaced intervals along each of said lever elongated portions for varying the distance between each of said lever elongated portions and said one plate when said levers are in said locked position.

4,494,776

JOINT FOR PLASTIC LINED LIGHT-WEIGHT METAL PIPING

Irving D. Press, West Orange, N.J., assignor to UMC Industries, Inc., Stamford, Conn.

Filed May 23, 1983, Ser. No. 496,883
Int. Cl.³ F16L 9/14, 23/00
U.S. Cl. 285—55 7 Claims



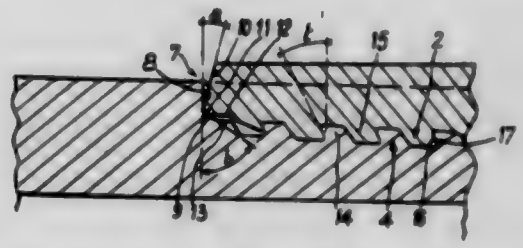
1. A lined piping assembly comprising in combination a component of light-weight metal piping having a connector portion flared radially outwardly at less than 90° to form a frusto-conical flange; a seal load ring having an inside diameter substantially matching that of said connector portion, a tapered face engaging the outer concave face of said flange, and a radial face on the side away from said tapered face; a plastic pipe lining extending out of said connector portion, through said load ring, where it is flared radially outwardly over said radial face of the ring to form a gasket portion and thereby trap said load ring; and a V-clamp for encircling said frusto-conical flange and engaging the convex side thereof behind said concave face to compress said plastic gasket portion against a mating surface of another component.

4,494,777

CLOSED ANGLE THREAD PIPE JOINT

Jean Duret, Montpellier, France, assignor to Vallourec, S.A., Paris, France

Continuation of Ser. No. 191,993, Sep. 29, 1980, , which is a continuation of Ser. No. 077,933, Sep. 24, 1979, , which is a continuation of Ser. No. 818,246, Jul. 22, 1977,. This application May 23, 1984, Ser. No. 613,751
Claims priority, application France, Jul. 23, 1976, 76 22543
Int. Cl.³ F16L 9/14
U.S. Cl. 285—55 14 Claims



1. A pipe joint comprising male and female members having coengaged conical threads, said male member having an external shoulder in abutting contact with a shoulder on the end of said female member where said threads are screwed tightly together, the bearing flanks of said threads on said male member which are opposed to said external shoulder, and the companion bearing flanks on the threads on said female member, being inclined toward said external shoulder at an acute angle with respect to the axis of said joint to provide interlocking threads, said threads being formed to have progressively diminishing heights in the vicinity of said shoulders and to vanish closely adjacent thereto, said shoulder on said female member comprising an annular internal concave sealing surface surrounded by an annular peripheral convex abutment surface,

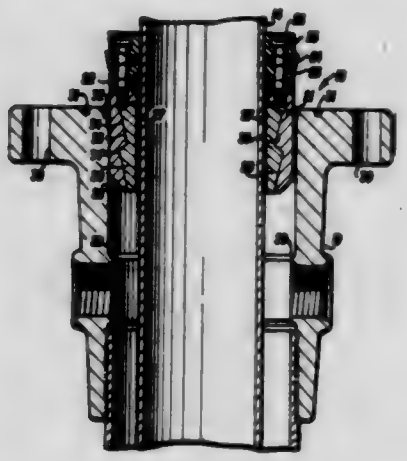
said shoulder on said male member comprising a convex internal annular sealing surface and a concave external annular abutment surface, said concave sealing surface on said female member and said convex sealing surface on said male member engaging one another when said joint is made up to provide a fluid-tightness against internal as well as external fluid pressure, said abutment surfaces and said bearing flanks of said threads providing an interlocking action of the threads and an increase of the sealing forces on said sealing surfaces of the male and female members, the bearing flanks of said threads which are closest to said abutment surfaces being at a distance from said abutment surfaces which is less than two times the pitch of said threads.

4,494,778

CASING HANGER

Clarence W. Johnson, Calgary, Canada, assignor to Bralorne Resources Limited, Alberta, Canada

Filed Mar. 22, 1982, Ser. No. 360,561
Int. Cl.³ F16L *39/00*
U.S. Cl. 285—146 10 Claims



1. A casing hanger for use in supporting production well casing within a casing head having an internal surface adjacent the upper end thereof, said casing hanger comprising slip bowl means operable to be seated on a shoulder within said casing head, slip means cooperating with said slip bowl means and having threads thereon adapted to grip said well casing, flexible seal means supported across its bottom area by said slip bowl means, cap wedge plate means, spreader means below said cap wedge plate means having an external surface for cooperating with said casing head internal surface, lower wedge plate means between said flexible seal means and said spreader means and attachment means threadedly engaging said slip bowl means and retaining said slip bowl means, said flexible seal, said lower wedge plate means, said spreader means and said cap wedge plate means, whereby the spreader means external surface contacts the internal surface of the casing head which tends to separate the cap wedge plate from the lower wedge plate to compress the flexible seal means and to create a seal between the casing and the casing head.

4,494,779

CONNECTOR FITTING FOR ELECTRICAL BOX

Steven W. Neff, Clinton, Iowa, and Richard J. Borsh, Chagrin Falls, Ohio, assignors to Thyssen-Bornemisza Inc., New York, N.Y.

Filed Jul. 14, 1982, Ser. No. 398,096
Int. Cl.³ F16L *3/02*
U.S. Cl. 285—159 2 Claims

1. A synthetic resin connector fitting for interconnecting an externally corrugated conduit with an electrical box having a wall with an aperture therethrough, said connector fitting comprising:

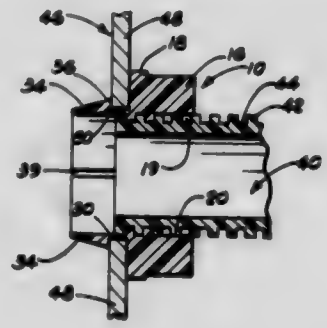
a pair of semi-cylindrical collars, each of said collars including a concave inner side having alternating grooves and ribs formed therein for the reception of a corrugated conduit, and having a concave outer side, each of said collars further including:

a semi-cylindrical body portion having a rectagular cross-sectional axial configuration; and

a peripheral, radially outwardly extending facing flange on the concave outer side of the respective collar and adjacent one end thereof;

a flexible hinge web interconnecting the semi-cylindrical collars by connection to the peripheral, radially outwardly extending facing flange on each of said collars, said hinge web facilitating the pivotation of the semi-cylindrical collars into a cylindrical collective array in which said collars abut each other along a common plane extended diametrically across the cylindrical collective array, and alternately, facilitating the pivotal opening of said collars apart from each other so that each of said semi-cylindrical body portions lies along a common plane;

a pair of spaced, box-engaging projections extending axially from each of said semi-cylindrical collars at the end thereof adjacent which the respective facing flange is located, each of said box-engaging projections having an



arcuate cross-sectional configuration conforming to a segment of a circle of substantially less than 90° of arc, and said projections each further including:

a flexible web portion connected to the semi-cylindrical body portion of the respective one of said semi-cylindrical collars; and

a wedge-shaped outer end portion connected to the web portion and defining with said web portion and with said semi-cylindrical body portion of the respective collar, an arcuate box wall-receiving recess, said recess being spaced from all of the ribs on the respective collar in an axial direction toward said wedge-shaped outer end portion, said box-engaging projections being dimensioned and positioned on their respective collars so that adjacent projections in a pair of projections in which the two projections of said pair are located on different collars are spaced from each other when said collars are pivoted into a cylindrical array with the semi-cylindrical body portions thereof in abutting contact with each other whereby the wedge-shaped outer end portions of said projections can flex freely radially inwardly without contacting and interfering with each other.

4,494,780

LIQUID PIPING SADDLE ASSEMBLY CONNECTING A BRANCH PIPE TO A MAIN PIPE

Curtis E. Burnett, Seattle, Wash., assignor to Romac Industries, Inc., Seattle, Wash.

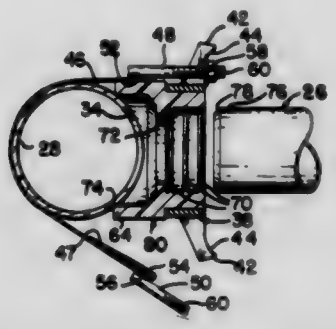
Filed Aug. 17, 1981, Ser. No. 293,664
Int. Cl.³ F16L *25/00*
U.S. Cl. 285—177 10 Claims

9. A liquid piping assembly to connect a lateral pipe to a main pipe comprising:

(a) an elastomeric gasket having in line two hollow cylinders, one larger than the other, the smaller of the said two cylinders adapted to sealably receive an end of the lateral

pipe, and the larger of said two cylinders adapted to sealably conform without modification to a large range of diameters of main pipe;

(b) a hollow metal cylindrical collar slidably received about the smaller of the said two cylinders of the gasket and



abutting the larger of the said two cylinders of the gasket at its intersection with said smaller cylinder; and

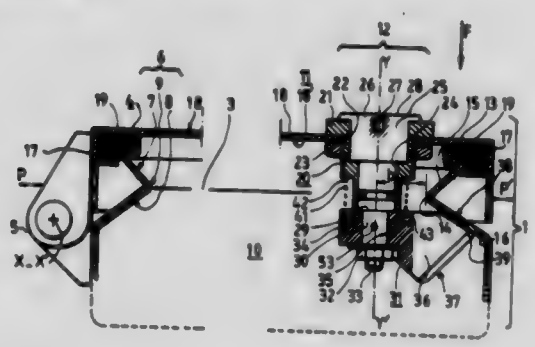
(c) an adjustable fastening means to draw the metal collar toward the main pipe, thereby compressing the elastomeric gasket against the main pipe.

4,494,781

SELF-LOCKING LOCK ASSEMBLY

Jean Lafosse, Mareil Marly, France, assignor to La Telemecanique Electrique, France

Filed Sep. 29, 1982, Ser. No. 427,025
Claims priority, application France, Oct. 6, 1981, 81 19125
Int. Cl.³ E05C 5/02; E05B 65/44
U.S. Cl. 292—60 5 Claims



1. In combination:

i- a wall having an opening delimited by a frame, said frame having outer and inner surface portions joining along a protruding rim and a door having outer and inner faces and being mounted for displacement along a predetermined path for closing the said opening through co-operation with said frame, the portion of said path which is in proximity of the opening being substantially at right angles with the plane of said opening, said door having an aperature;

ii- a hollow lock body mounted in the said aperture and an elongate operating member mounted within the said lock body for angular displacement about an axis substantially at right angles with the plane of the door, said operating member having inner and outer ends and operating means projecting from the outer face of the door at the outer end of said operating member;

iii- a bolt mounted for angular displacement about the said axis at the inner end of said operating member, said bolt having outer and inner projecting surface portions joining along a protruding rim;

iv- a torsion spring connecting the lock body to the bolt and normally biasing said bolt into a first angular position;

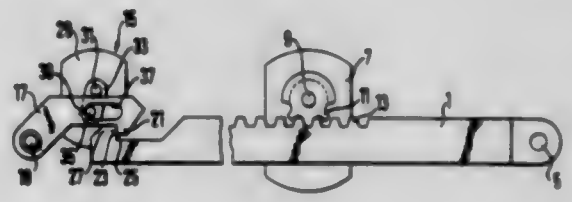
v- the innner surface portions of said frame and of said bolt being more remote from the door inner face than the outer surface portions of said frame and of said bolt respectively; the protruding rim of the frame being located nearer from the said axis than the protruding rim of the bolt when the door is displaced along the said portion of the path; the inner projecting surface portion of the bolt being shaped for cooperation with the outer surface portion and with the protruding rim of the frame which effects a camming action for angularly displacing the bolt against the action of the torsion spring until the rim of the bolt is located nearer from the axis than the rim of the frame; and the outer projecting surface portion of the bolt being shaped for locking engagement with the inner surface portion of the frame.

4,494,782

DRIVE DEVICE FOR A FASTENING MECHANISM OF A MOTOR VEHICLE DOOR LOCK OR THE LIKE

Manfred Lutz, Schweinfurt, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 24, 1983, Ser. No. 478,441
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1982, 3210924
Int. Cl.³ E05C 3/14
U.S. Cl. 292—96 14 Claims



1. Drive device for a fastening mechanism of a motor vehicle door lock or the like, comprising:

(a) a housing;

(b) an operating element guided linearly displaceably on said housing between a fastening position and an unfastening position, for said fastening mechanism of said lock,

(c) an operating drive driving said operating element in both directions of displacement,

(d) a locking lever, a pivot spindle pivotally mounting said locking lever on said housing about an axis extending transversely of the direction of displacement of said operating element, which locking lever in its locking position blocks said operating element in its fastening position and in its unlocking position releases said operating element,

(e) a rotating drive held on said housing, a drive-output shaft of which is arranged approximately parallel to said pivot spindle of said locking lever,

(f) an eccentric seated fast in rotation on said drive-output shaft of said rotating drive and pivoting said locking lever,

(g) said locking lever comprises at least one stop face on which said eccentric and/or a part firmly coupled with it rests in said locking position and in said unlocking position of said locking lever and which limit the rotating movement of said eccentric and in that said eccentric is so formed and arranged that in said locking position and/or said unlocking position of said locking lever it is situated in a beyond-dead-point-position in which forces exerted upon said locking lever in the direction towards its other position in each case press said eccentric or said part coupled with it against said stop faces of said locking lever.

4,494,783

FLUSH TYPE ROTARY DRIVE FOR LATCHES

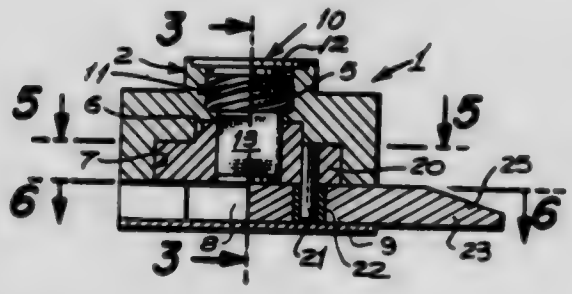
L. Richard Poe, Long Beach, Calif., assignor to Hartwell Corporation, Placentia, Calif.

Division of Ser. No. 159,594, Jun. 16, 1980, abandoned, which is a continuation of Ser. No. 20,506, Mar. 14, 1979, Pat. No. 4,265,474, which is a continuation of Ser. No. 856,504, Dec. 1, 1977, abandoned. This application Mar. 9, 1982, Ser. No. 356,379

Int. Cl.³ E05C 1/06

U.S. Cl. 292—155

7 Claims



7. A flush mounted rotary drive latch for a panel having a perforation therethrough, comprising;

a. a latch body having a bore therethrough for alignment with the perforation, the upper portion of said bore being circular with multiple screw threads formed thereon, the lower portion of said bore being enlarged to have an increased diameter;

b. a drive member including a first end, an upper portion adjacent to said first end and having multiple screw threads, and a lower portion of polygonal cross-section, said drive member being fitted into said bore in said body such that said first end may extend into the perforation and be flush with the panel, a polygonal bore along the longitudinal axis of said drive member, a polygonal plug spring-mounted within said drive member polygonal bore, said plug extending so as to be flush with the adjacent panel;

c. an annular drive disk with a polygonal bore as its center receiving said lower portion of said drive member, said drive disk being fitted about said drive member in said enlarged lower portion of said bore;

d. a latch element within said body beneath said drive disk, said latch element having a slot formed therein and being slidable in said body; and,

e. a pin-roller radially offset from said bore on said annular drive disk and slidably connecting said slot in said latch element and said drive disk.

4,494,784

DOOR-STOP FOR THE HANDICAPPED

Harvey H. Haynes, 333 Laurel Ct., Oxnard, Calif. 93030

Filed Dec. 7, 1981, Ser. No. 327,759

Int. Cl.³ E05C 17/12; E05F 5/02

U.S. Cl. 292—233

8 Claims

1. A self closing door in combination with a door stop mechanism, said door stop mechanism comprising:

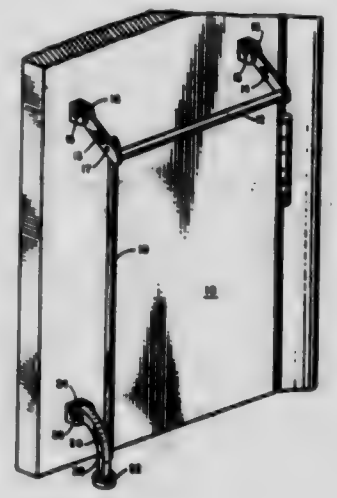
an elongate bar pivotally mounted cross-wise of said door about a pivot at a height to be easily reachable from a sitting or standing position;

door-stop means pivotally mounted adjacent the lower edge of said door constructed and arranged to hold said door in an open position;

linkage means linking said bar to said door-stop means;

said linkage means being pivoted to said bar about a pivot axis parallel to said bar pivot axis;

said linkage means being constructed and arranged so that a downward force applied to said bar moves said linkage means pivot axis from an over-centered position above said bar pivot axis to a lowered non over-centered position to simultaneously pivot said door-stop from a raised position to a down position to hold said door open and an upward force on said bar moves said linkage means pivot axis from said non over-centered position to said over-centered position above said bar pivot axis to simultaneously pivot said door-stop means from said down position to



said raised position; said over-centered position of said linkage means pivot axis locking said bar and said door-stop in a raised position to allow said door to return to a closed position;

whereby said door may be easily held open for passage and closed after passage therethrough.

4,494,785

ADJUSTABLE HANDHELD ROUND SANDWICH HOLDER

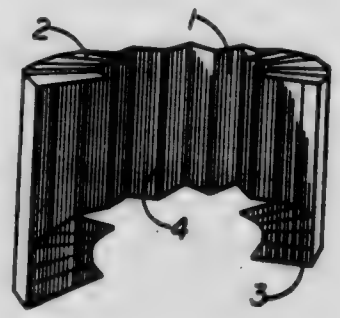
Ho K. Song, 130 Arch St., #5, Redwood City, Calif. 94062

Filed Jun. 20, 1983, Ser. No. 505,835

Int. Cl.³ A47J 47/14; B65D 5/24

U.S. Cl. 294—1 R

5 Claims



1. An adjustable hand held sandwich holder, said sandwich holder having an elongated central body, a left end portion and a right end portion, said end portions each being contoured with respect to one another, to form a open receptacle for enveloping and for receiving a circumferential portion of a sandwich placed therein;

said elongated central body comprising substantially parallel equidistant accordian fold lines transversely disposed to the longitudinal axis of said elongated central body;

said right end portion and said left end portion each comprising upper and lower appendages which extend substantially perpendicular from said elongated central body to envelope and to receive the circumferential portion of the sandwich;

said appendages each being composed of plural overlapping tab sections to form sidewalls of said open receptacle;

wherein said equidistant accordion fold lines of said elongated central body portion accommodate a systematic contraction of said right end portion and said left end portion as the sandwich is being consumed.

4,494,786

PIZZA OVEN TOOL

John R. Paulus, and Marvin C. Keck, both of Wichita, Kans., assignors to Pizza Hut, Inc., Wichita, Kans.

Filed Jul. 25, 1983, Ser. No. 516,791
Int. Cl.³ A47J 45/10, 49/00
U.S. Cl. 294—26 11 Claims



1. A pizza oven utensil for manipulating pizza pans having a base and a side wall depending upwardly from the base and defining an upper rim, comprising:

a handle constructed of a heat resistant material; a rod having a first end connected to the handle and a second end;

guiding means, defined by the second end of the rod, for pushing the pizza pans into an oven by abutting the side walls of the pizza pans and for pulling the pizza pans out of the oven in a controlled manner by engaging the rims of the pizza pan inwardly of the side walls; and

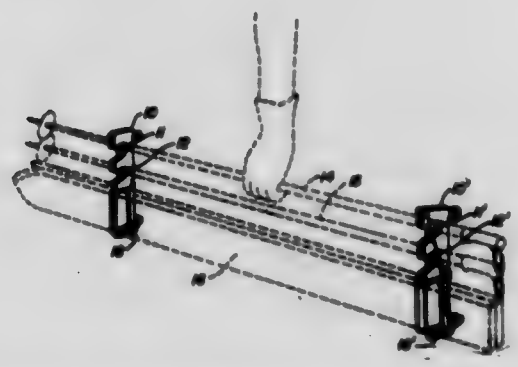
stopping means, defined by the rod, for externally positioning the second end of the rod in the oven, such that when the pizza pans are pushed a preselected distance into the oven the stopping means is effective to impede further insertion of the pizza pans in the oven.

4,494,787

FOLDABLE SKI AND POLE CARRIER

Michael D. Gainey, 2620 Del Monte La., Reno, Nev. 89511

Filed Jul. 25, 1983, Ser. No. 517,146
Int. Cl.³ B65D 71/00
U.S. Cl. 294—147 7 Claims



1. A ski and pole carrier unit adapted to be used to secure the skis and poles together, said unit comprising:

a flat rectangular block having a pair of slots projecting inwardly from the long sides of the block and slightly toward one of the short sides, the width of each slot being sufficient to accommodate a ski pole;

an L-shaped member pivotably attached to the block proximate the other of the short sides and foldable from a position flush with two sides of the block to a position extended from the block so that the base of the L-shaped member is parallel to said other short side and defines a space for receiving a pair of skis in the plane of the poles so that the skis and poles are coplanar; and

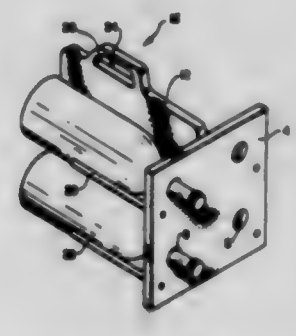
a pair of straps attached to the block, one strap adapted to secure the poles to the slots and the other strap adapted to secure the skis to the L-shaped member, whereby the skis and poles are secured in a common plane by a pair of the units to facilitate carrying of the skis and poles and attachment of the skis and poles to a ski rack without removing the carrier units, the carrier units being removed from the skis and poles during skiing and being sufficiently small when folded to fit in the skier's pocket.

4,494,788

HAND PORTABLE BOTTLE RACK

James L. Altemose, Malvern, Pa., assignor to Creative Environments, Inc., King of Prussia, Pa.

Filed Sep. 29, 1982, Ser. No. 427,842
Int. Cl.³ B65D 11/14
U.S. Cl. 294—161 10 Claims



1. A hand portable bottle rack comprising

a front panel having a plurality of spaced-apart openings for receiving the necks of bottles and for restraining movement of the bottles through the openings,

a divider panel joined to the front panel between two horizontally adjacent openings and extending rearwardly,

a pair of pegs extending rearwardly from the front panel, each positioned on a different side of said front panel below and toward the outside edge of a corresponding one of the two openings, said pegs being spaced from the divider panel a distance less than the width of the bottles to be supported, and

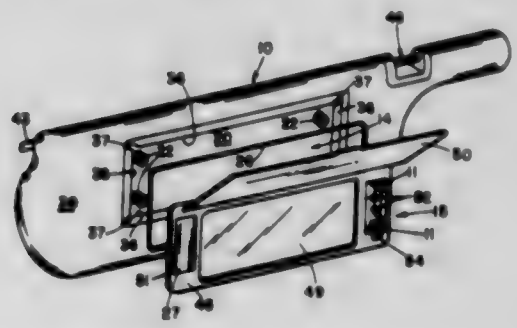
a handle connected to the top of the divider panel at a location rearwardly of the front panel so that when the handle is grasped and lifted by a person, the front panel tends to hang lower than the rest of the rack.

4,494,789

VISOR COVERING

Carl Flowerday, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed May 2, 1983, Ser. No. 490,363
Int. Cl.³ B60J 3/00
U.S. Cl. 296—97 H 20 Claims



1. A vehicle visor comprising:

a visor body having a central recess formed therein through one side of said body, said recess enclosed at an opposite side of said body and including boundary wall means extending generally orthogonal to the plane of said visor body;

upholstery material surrounding said visor body and including an edge portion extending into said recess to said enclosed side; and

a frame member having a shape conforming to said recess

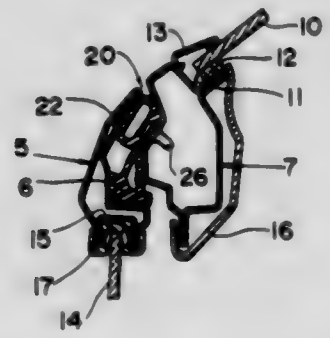
and fitted within said recess adjacent said enclosed side to compressibly hold said edge portions of said upholstery against said boundary wall means of said recess, wherein said boundary wall means includes an additional recess adjacent said enclosed side of said first named recess for receiving said frame member.

4,494,790

RAIN GUTTER ARRANGEMENT FOR AUTOMOTIVE VEHICLE

Yutaka Omura, Fujisawa, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 29, 1982, Ser. No. 373,167
Claims priority, application Japan, May 8, 1981, 56-68964
Int. Cl.³ B60J 9/00
U.S. Cl. 296—154
5 Claims



1. In a vehicle:
a roof side rail fixed to said roof panel;
a front pillar;
a door having a sash, said sash juxtaposing said front pillar and said roof side rail when the door is closed;
a first weather strip fixed to one of said roof side rail and said front pillar or said door sash; and
a second essentially hollow tube-like weather strip fixed to one of said roof side rail and said front pillar of said door sash, outboard of said first weather strip, said second weather strip having an opening formed in a first portion thereof which extends along said roof side rail for allowing rain water from said roof panel to enter into the hollow of said first portion, and a second portion which extends along said front pillar, said second portion being arranged to close the opening defined between said sash and said front pillar in a manner to prevent noise from being generated by air flowing past said front pillar, said second portion being further arranged to drain the water entering said first portion through the hollow thereof toward the bottom of the door.

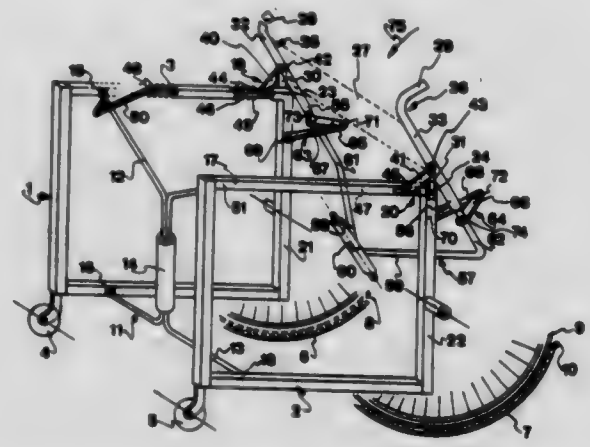
4,494,791

FOLDING WHEELCHAIR

Leo Jouk, 7, Avenue Ferrer, 93310 Le Pre Saint Gervais, France

Filed Jul. 27, 1981, Ser. No. 287,048
Claims priority, application France, Aug. 7, 1980, 80 17467; Jan. 16, 1981, 80 00709
Int. Cl.³ A47C 4/28
U.S. Cl. 297—45
16 Claims

1. In a chair including two lateral frames; a first cross-brace connecting said two frames, said first cross-brace being foldable, two staffs mounted rotatably respectively on each said frame, the improvement comprising a second cross-brace connecting said two staffs, said second cross-brace having two rigid parts swivable about a common axis; said first cross-brace being foldable into two rigid parts, each of said two rigid parts being mounted to swivel respectively on said two frames and being swivable about the same axis; second connection means between each part of the first cross-brace and each staff, both of which are rotatably connected to the same frame, said second connection means comprising, for each part and staff, a slidably mounted slide rod, the two ends of which are connected through rotation axes by a lever fixed to said staff and



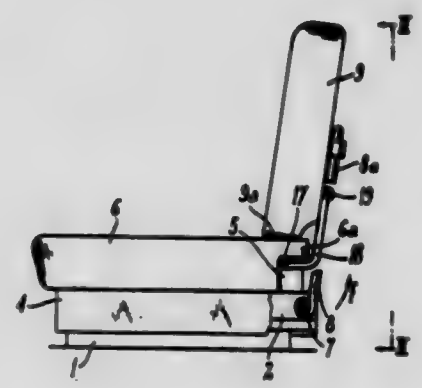
by a connecting rod mounted rotatably on said respective parts.

4,494,792

TRANSFORMABLE SEAT

Alexandre Quercy, Boulogne, France, assignor to Societe Anonyme Des Usines Chausson, Asnieres, France

Filed Jul. 27, 1981, Ser. No. 287,053
Claims priority, application France, Jul. 31, 1980, 80 16949
Int. Cl.³ A47C 13/00
U.S. Cl. 297—63
10 Claims



1. A transformable seat comprising a horizontal seat member and a seat back, wherein the seat back is connected to the support of the seat member by an articulation linkage comprising means for maintaining the lower portion of said seat back in permanent contact with the top of the rear portion of the seat member and the rear end of the latter during the pivoting movement of the seat back from an upstanding position to a position in which the top surface of the seat back is aligned with the top of the seat member, wherein rod means for maintaining the seat back comprises connecting rods fixed to the seat back, said rod means having a free end which is articulated below the seat back and below the rear portion of the seat itself in a position which is substantially in alignment with the projection of the median plane of said seat back.

4,494,793

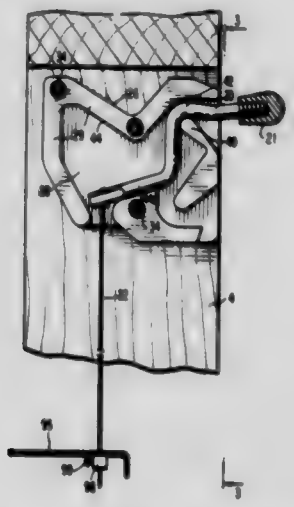
TRIGGER RELEASE MECHANISM FOR RECLINING CHAIR

Walter C. Rogers, Jr., Denton, N.C., assignor to Parma Corporation, Denton, N.C.

Filed Sep. 17, 1982, Ser. No. 419,156
Int. Cl.³ A47C 1/02
U.S. Cl. 297—85
13 Claims

1. In a reclining chair of the type including a footrest movable between retracted and extended positions, and actuating means for moving the footrest between said retracted and extended positions, the improvement comprising a trigger

projecting from one side of the chair, a connecting member connected to the trigger and extending generally vertically from the trigger to a lower level of the chair, an arm connected to the lower end portion of the connecting member and being operatively connected to said actuating means for controlling



the actuating means to move the footrest to said extended position, a case fixed to a frame portion of the chair, and means within the case mounting said trigger for pivotal movement, said case including a base having fixed thereon a fulcrum and wherein the trigger has a bite portion positioned about the fulcrum such that the trigger is movable about the fulcrum.

4,494,794

VEHICLE SEATS

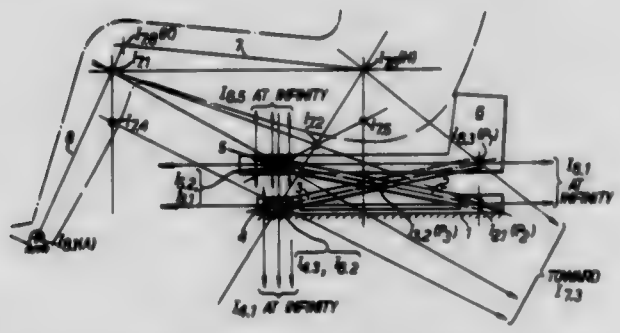
Geoffrey W. Barley, Kislingbury, England, assignor to UOP Inc., Des Plaines, Ill.

Filed May 16, 1979, Ser. No. 39,636

Claims priority, application United Kingdom, Mar. 12, 1979, 7908540

Int. Cl.³ A47C *3/00*

U.S. Cl. 297—307 **11 Claims**



1. A suspended vehicle seat for providing isolation from vertical vibrations to an occupant thereof comprising a seat part, which includes a seat rest (10) which is mounted for tilting movement and a back rest (11), a base part (1), and means connecting the seat part to the base part, said means comprising a spring suspension by which the back rest is supported on the base part and which is effective to restrict movement of the back rest to a substantially vertical direction, the suspension including a spring and a plurality of relatively movable structural elements, certain of said elements connecting to the seat rest and to the back rest for providing pivotal movement of the seat rest about at least two spaced apart horizontal transverse axes through instantaneous centres of rotation, said centres being the instantaneous centres of rotation of the thigh (7) of a seat occupant for whom the seat is designed which is positioned on the seat rest relative to any two of said structural elements of the seat which move relative to each other during upward and downward movement of the seat part relative to the base part, said pivotal movement of the seat rest causing the thigh of a seat occupant to remain in contact with the seat rest and to be movable longitudinally and pivotally in such a way that the ankle hinge axis of the seat occupant will remain stationary relative to the base part as the seat moves above and below its mid-ride position in response to vertical vibrations.

4,494,795

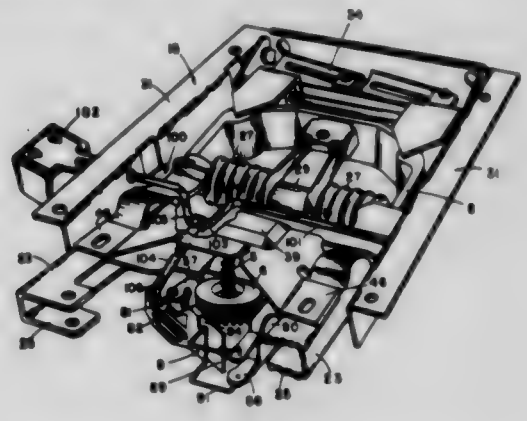
VARIABLE BACK ADJUSTER FOR CHAIRS

Charles P. Roossien, Wyoming; Brian Chambers, Byron Center, and Bruce Hiemstra, Jenison, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed May 6, 1982, Ser. No. 375,550

Int. Cl.³ A47C *1/024*

U.S. Cl. 297—355 **31 Claims**



1. In a chair having a tilting back which pivots relative to a mounting portion of said chair, the improvement of a variable back adjustment mechanism, comprising:

a first bracket to be mounted on said mounting portion;

a second bracket pivotally secured to said first bracket in overlying relationship thereto and to be operatively connected to said chair back;

a threaded spindle having one end thereof connected with one of said first and second brackets at a position on said one bracket spaced from said pivotal connection;

a gear wheel threadedly mounted on said spindle;

a gear wheel housing connected with the other of said first and second brackets spaced from said pivotal connection, and rotatably retaining said gear therein, whereby tilting said chair back pivots said two brackets and translates said spindle axially through said gear wheel, thereby rotating said gear wheel in said housing;

a pawl movably connected with said chair, and positioned to selectively engage said gear wheel to positively prevent rotation of said gear wheel with respect to said spindle;

means for shifting said pawl into and out of engagement with said gear wheel between locked and unlocked positions respectively, whereby said chair back can be locked in a plurality of different angular positions.

4,494,796

BUTTERFLY CHAIR CONSTRUCTION

Martin R. Liebhold, 12404 Rochedale La., Los Angeles, Calif. 90049

Filed Mar. 19, 1982, Ser. No. 359,812

Int. Cl.³ A47C *4/02*

U.S. Cl. 297—440 **10 Claims**

1. In a butterfly chair construction adapting the chair for rapid assembly, the combination comprising

(a) a framework that includes

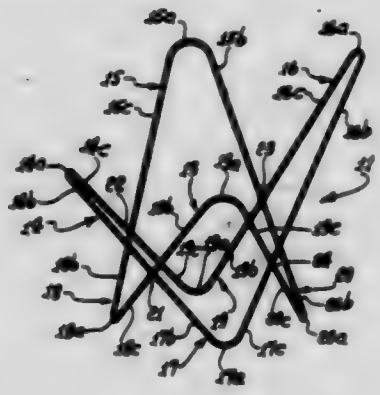
(i) four generally V-shaped upper members, each having two legs,

(ii) four generally V-shaped lower and substantially rigid members, each having two legs,

(iii) four cross pieces each having two rods defining four arms, the two rods interconnected in crossed relation, the two rods having axes which are non-intersecting,

(b) the two legs of each upper member sized to slidably

interfit, respectively, two arms of two different cross pieces, and



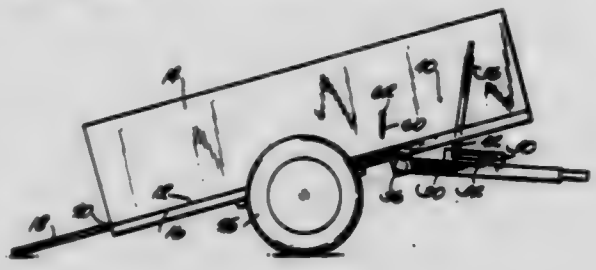
(c) the two legs of each lower member sized to slidably interfit, respectively, two arms of two different cross pieces.

4,494,797

TILT TRAILER

Victor V. Carberry, N55 W21404 Logan Dr., Menomonee Falls, Wis. 53051

Filed Aug. 10, 1983, Ser. No. 521,691
Int. Cl.[3] B60P *1/28*; B60D *1/14*
U.S. Cl. 298—5 2 Claims



1. A trailer adapted to be towed by a vehicle and adapted to support a machine, the trailer comprising:

a trailer bed adapted to support a machine, said trailer bed including a forward portion and a rearward portion,

a tailgate having an upper edge and a lower edge, said tailgate lower edge beng pivotally connected to said rearward portion of said trailer bed for swingable movement between a raised position wherein said tailgate lies in a vertical plane and a lowered position wherein said tailgate and said trailer bed are generally coplanar,

wheels supporting the trailer bed for movement along the ground, said wheels being located beneath a central portion of said trailer bed, said trailer bed being supported by said wheels for tipping movement between a first position wherein said trailer bed is generally horizontal and a machine loading position wherein said rearward portion of said trailer bed is adjacent the ground,

means for joining said trailer bed to a vehicle whereby said trailer can be towed by a vehicle, said means for joining said trailer bed to a vehicle including a draw member having opposite ends, a forward end adapted to be hitched to a vehicle and a rearward end, and means for pivotably joining said rearward end of said draw member to said trailer bed forward of said wheels such that said draw member can pivot with respect to said trailer bed about a horizontal axis substantially parallel to the axis of rotation of said wheels,

means for shifting said trailer bed from said horizontal position to said loading position, said means for shifting said trailer bed between said horizontal position and said loading position including a first lever having opposite ends, one of said ends of said first lever being pivotably connected to one of said trailer bed and said draw member for pivotal movement about a pivot axis which is fixed relative to said one of said trailer bed and said draw member, and means for slidably connecting the other of said opposite ends of said first lever to the other of said trailer bed and said draw member, said means for slideably connecting supporting said other of said opposite ends for slideably movement in the direction of the longitudinal axis of said draw member, said first lever member being pivotally moveable between a generally horizontal position wherein said trailer bed is in said horizontal position and an over-center position wherein said trailer bed is in said loading position, and a second lever pivotable about the pivot axis of said first lever and fixedly connected to said first lever for pivotal movement with said first lever and for causing pivotal movement of said first lever about said pivot axis, and a shaft connecting said first lever to said second lever, said shaft being rotatable about said pivot axis, said first lever being fixed to a first portion of said shaft to rotate therewith and said second lever being fixed to a second portion of said shaft to rotate therewith, and said means for shifting said trailer bed being positioned forwardly of said means for pivotably joining said rearward end of said draw member to said trailer bed,

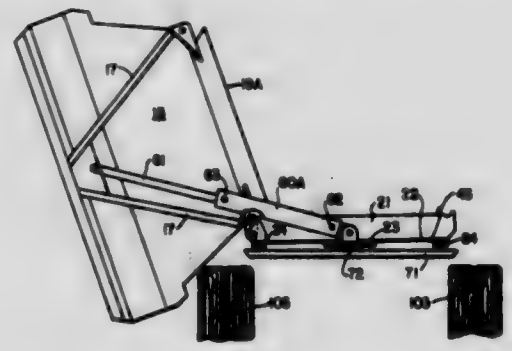
said tailgate and said trailer bed forming a generally planar inclined surface when said trailer bed is in said loading position and wherein a portion of said tailgate engages the ground and wherein said trailer bed and said tailgate form a planar inclined ramp having a slope whereby the machine can be driven onto the tailgate and trailer bed and up the inclined ramp to said forward portion of said trailer bed.

4,494,798

SIDE-DUMPING, MATERIAL-HAULING CONVEYANCE

Clarence W. Bailey, 2005 Huston St., Marysville, Calif. 95901

Continuation of Ser. No. 118,207, Feb. 4, 1980, abandoned. This application Sep. 20, 1982, Ser. No. 419,823
Int. Cl.[3] B60P *1/16*
U.S. Cl. 298—17.6 7 Claims



1. In a material-hauling conveyance having a dual side-dumping capability,

a frameless material containing bed comprising a floor portion, a pair of continuous side wall portions with no gates therein, each meeting the respective edge of said floor portion at a break line and angling away from said floor portion to form a preselected angle to the vertical, and front and rear end wall portions;

conveyance means for transporting said bed, including a truck tractor and a dolly type trailer; said truck tractor including at least a pair of wheels and a truck frame mounted to said wheels and including a rearwardly extending stinger section; said dolly type trailer including at least a pair of wheels and further comprising a trailer frame mounted to said wheels and a reach and compensator assembly including a reach extending forward from said trailer frame and including a sliding pole compensator mounted therein with a front end of said compensator pivotally mounted to said stinger section of said truck frame;

a chassis assembly comprising a front bunk assembly, means mounting said front bunk assembly in a horizontally rotatable manner on said truck frame, a bolster assembly mounted on said trailer frame, a rear bunk assembly, and means mounting said rear bunk assembly is a horizontally rotatable manner on said bolster assembly; said bed having a pair of top hats, each mounted on the bottom of one of said end wall portions thereof; and said front and rear bunk assemblies each having a bottom hat shaped to engage in mating fashion with one of said top hats to mount said bed on said chassis assembly in a suspended manner;

a pair of hinge-mounting means located on opposite sides of said bed at the ends of each of said front and rear bunk assemblies for normally retaining said bed on said chassis assembly and selectably releasable for enabling said bed to be tilted selectively to one of said sides around a rotation axis; and

hoisting means mounted to said chassis assembly and said bed at the center line of said bed for raising said bed to tilt it on a selected one of said hinge-mounting means;

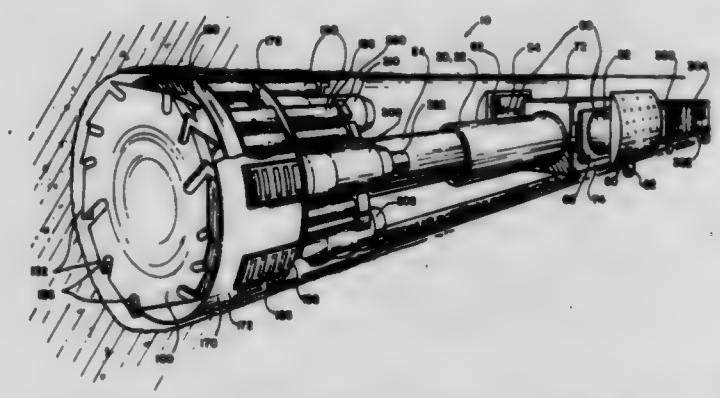
each of said hinge-mounting means being located with its rotation axis at a preselected location near an associated one of said break lines, and the width of said floor portion of said bed, the angle of said side wall portions of said bed, and the height of said rotation axis above the top of said wheels being together preselected in accordance with the overall width and depth of said bed, the anticipated center of gravity of said bed when loaded with material, and the weight of said conveyance means to enable said bed to be tilted by said hoisting means until said center of gravity passes over and beyond said rotation axis to a position such that one of said side wall portions is at an angle to the horizontal sufficient to completely dump said material from said bed without bumping into said wheels or turning over said conveyance means.

4,494,799

TUNNEL BORING MACHINE

Larry L. Sayder, Golden, Colo., assignor to Harrison Western Corporation, Lakewood, Colo.

Filed Feb. 17, 1983, Ser. No. 466,033
Int. Cl.[3] E21C *25/16*; E21D *9/08*
U.S. Cl. 299—31 39 Claims



1. A tunnel boring machine for boring a tunnel having tunnel lining structure areas in portions of the tunnel associated with unstable ground and having unlined areas in portions of the tunnel associated with stable ground, the tunnel having a central longitudinal axis, and having generally circular tunnel cross sections perpendicular to the central longitudinal axis, the tunnel cross section having a pitch axis oriented generally perpendicular to the direction of gravitational force and intersecting the central longitudinal axis and having a yaw axis intersecting the central longitudinal axis and the pitch axis and perpendicular to both, the tunnel having an end face and a peripheral sidewall with lined and unlined portions; the tunnel boring machine comprising:

rotatable cutting wheel means positioned at the front end of the machine having a central axis of rotation adapted to be selectively located at a position substantially coaxial with an associated portion of the tunnel central longitudinal axis the cutting wheel being selectively engageable with the tunnel face for cutting material away from the tunnel face to elongate the tunnel in a forward direction;

rotation means operably associated with said rotatable cutting wheel means for selectively causing rotation thereof in a cutting state of operation and for selectively stopping rotation thereof in a noncutting state of operation;

extendable and retractable central thrust rod means having a central thrust rod longitudinal axis positioned in substantially coaxial relationship with said rotatable cutting wheel means axis of rotation for transmitting forward thrust to said cutting wheel means in a central thrusting state or a shield thrusting state of operation and for transmitting prying torque to said cutting wheel means in a prying state of operation;

central body means for supporting said central thrust rod means in extendable and retractable relationship therein;

central thrust generating means operably associated with said central body means for extending and retracting said central thrust rod means from said central body means;

extendable and retractable sidewall engaging means mounted on said central body means for selectively engaging opposite portions of the tunnel peripheral sidewall for preventing relative movement of said central body means with respect to the tunnel sidewall in a central thrusting state of operation and for selectively radially shifting said body means relative the tunnel longitudinal axis for transmitting prying torque to said cutting wheel means through said central thrust rod means in a prying state of operation;

central body support means for supporting said central body on the tunnel sidewall;

annular shield means operably mounted on said central thrust rod means for shielding a portion of the machine from collapsing tunnel sidewall material;

extendable and retractable shield thrust means operably associated with said shield means for coacting with the tunnel lining structure for selectively applying forward thrust to said cutting wheel means through said central thrust rod means during a shield thrusting state of operation;

muck removal means for removing material cut by said cutting wheel means at the tunnel face to a rearward position within the tunnel; and

control means for selectively operating various machine components.

4,494,800

INTERLOCK BRAKING SYSTEM FOR MOTORCYCLES

Tsutomu Hayashi, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 12, 1982, Ser. No. 377,408
Claims priority, application Japan, May 13, 1981, 56-72071
Int. Cl.[3] B60T *8/02*
U.S. Cl. 303—6 A 7 Claims

1. An interlock braking system for motorcycles, comprising:

a brake pedal;

a single master cylinder operably connected with said brake pedal;

first and second brake means connected to said master cylinder for applying first and second braking forces to a front wheel and a rear wheel, respectively, according to braking pressures corresponding to an external force applied to said brake pedal;

a pressure circuit connecting said master cylinder with said first and second brake means;

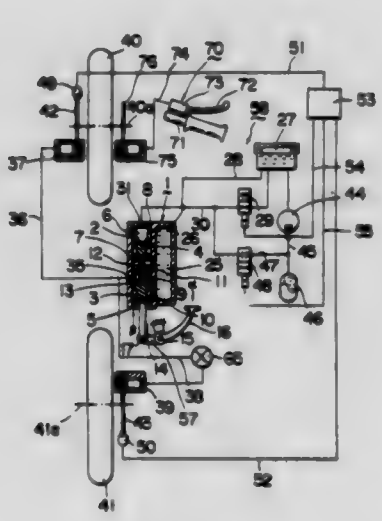
a braking force distribution mechanism for changing said first and second braking forces of said first and second brake means at a predetermined ratio set therebetween;

anti-lock means, operably connected with said first and second brake means, for changing said first and second

braking forces of said first and second brake means according to the rotational speeds of said front and rear wheels to prevent said wheels from becoming locked;

said master cylinder including a first piston member operably connected to said brake pedal, a first cylinder accommodating said first piston member therein, a second piston member operably connected to said brake pedal, a second cylinder accommodating said second piston member therein, a first oil chamber defined by said first piston member and said first cylinder for generating said braking pressures, and a second iol chamber defined by said second piston member and said second cylinder;

said anti-lock means being provided with a control mechanism for changing said braking forces according to said rotational speeds of said front and rear wheels;



said control mechanism including a first relatively low pressure source, a second relatively high pressure source, a normally open valve disposed between said first oil chamber and said first pressure source, and a normally closed valve disposed between said second oil chamber and said second pressure source;

said control mechanism closing and opening said normally open valve and said normally closed valve according to said rotational speeds of said front and rear wheels, whereby locking of said wheels is prevented; and

said braking force distribution mechanism being set at a predetermined proportion in which said first braking force applied to said front wheel is greater than said second braking force applied to said rear wheel.

4,494,801

ANTILOCK BRAKE SYSTEM WITH SEPARATE FRONT- AND REAR-WHEEL SAFETY MEANS

Taiji Okmori, Kawagoe; Makoto Sato, Kamifukuoka, and Yoshikazu Tsuchiya, Fujimi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1982, Ser. No. 425,954

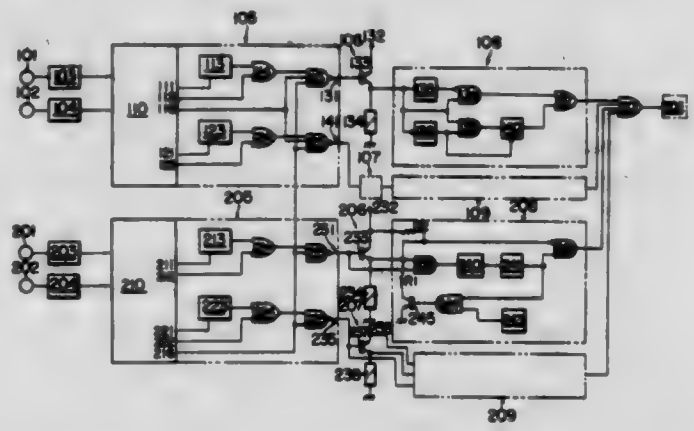
Claims priority, application Japan, Mar. 8, 1982, 57-36113; Mar. 8, 1982, 57-36114

Int. Cl.³ B60T *8/04*

U.S. Cl. 303—92 **3 Claims**

1. An antilock brake system with separate front- and rear-wheel safety means, comprising:

a brake force applying system for applying a brake force to front and rear wheels; front-wheel antilock control means for suppressing the brake force applied to said front wheel when the brake force to said front wheel is excessively strong; rear-wheel antilock control means for suppressing the brake force applied to said rear wheel when the brake force to said rear wheel is excessively strong; front-wheel safety means for detecting a malfunction, when said front-wheel antilock control means is malfunctioning in its brake force suppressing state, to instantly block the supply of power to said front-wheel antilock control means; and rear-wheel safety means for suppressing the brake force to said rear wheel each time the brake force to said rear wheel is excessively strong, when said rear-wheel antilock



control means has a malfunction and has lost its brake force suppressing function.

4,494,802

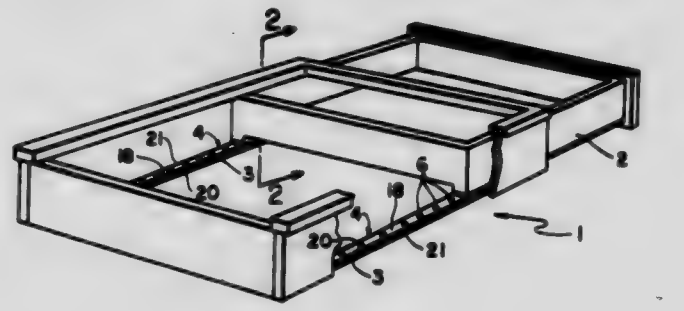
SLIDE ARRANGEMENT

Richard L. Henson, 1200 N. Everette, Glendale, Calif. 91207

Filed Apr. 25, 1983, Ser. No. 488,031

Int. Cl.³ F16C *29/04*

U.S. Cl. 308—3.8 **22 Claims**



1. A slide arrangement that rests upon a support for a drawer or the like comprising:

an elongated bearing member having a pair of opposed surfaces, the bearing member formed of sheet material having a coefficient of friction of less than 0.25 being fixedly mounted by the first of the opposed surfaces to the support for the drawer;

first walls forming a plurality of ball receiving sockets in general alignment along the length of and accessible through the second of the opposed surfaces; and

balls engaged within the ball receiving sockets, the balls disposed to support the bottom longitudinal edge of the drawer a preselected distance from the bearing member.

4,494,803

PULL-OUT GUIDE ASSEMBLY FOR DRAWERS

Erich Röck, and Josef Brunner, both of Höchst, Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Jun. 28, 1983, Ser. No. 509,230

Claims priority, application Austria, Jul. 7, 1982, 2627/82

Int. Cl.³ F16C *29/04*

U.S. Cl. 308—3.8 **2 Claims**

1. A pull-out guide assembly for use on each of opposite sides of a drawer or the like in an article of furniture of the type wherein the drawer or the like is slidably insertable into and removable from a furniture body, said assembly comprising:

a pull-out rail to be fastened at a side of the drawer;

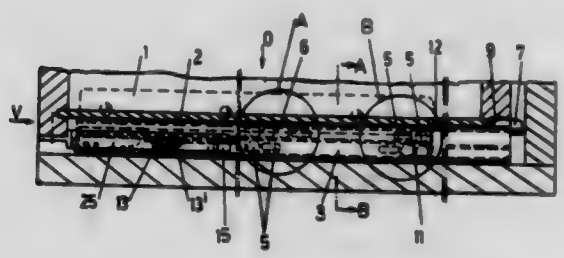
a supporting rail to be fastened at a side of the body;

an intermediate carriage arranged between said rails and supporting load-transmitting disk or cylindrical shaped rollers;

said rails having respective running flanges having ends with inclined portions for drawing the drawer into the body;

said pull-out rail having a portion of rectangular cross-section receiving said carriage, said portion of rectangular cross-section being defined by two horizontal flanges and two vertical flanges, approximately half of said portion of rectangular cross-section being open at a side thereof directed toward a side wall of the body;

said supporting rail having a portion with a Z-shaped profile extending into said pull-out rail and into said carriage, said portion having said Z-shaped profile including a horizontal flange defining said running flange of said supporting rail and inner and outer vertical flanges extending from respective opposite ends of said horizontal flange thereof;



said rollers including first rollers having vertical axes of rotation and arranged above said horizontal flange of said supporting rail and running between said outer vertical flange of said supporting rail and a first said vertical flange of said pull-out rail;

said rollers further including second rollers having vertical axes of rotation and arranged below said horizontal flange of said supporting rail and running between said inner vertical flange of said supporting rail and a second said vertical flange of said pull-out rail; and

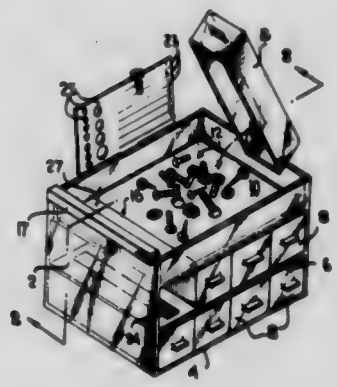
said carriage having a groove with a vertical depth for receiving said outer vertical flange of said supporting rail.

4,494,804

STORAGE CABINET WITH PARTS SORTER

Lonnie O'Keeffe, P.O. Box 26194, El Paso, Tex. 79926

Filed Oct. 27, 1981, Ser. No. 315,412
Int. Cl.[3] B65D *91/00;* B65B *67/02*
U.S. Cl. 312—211 8 Claims



1. Apparatus for facilitating inspection of a plurality of objects, and the subsequent placement of objects in a drawer consisting of:

a tray having a peripheral upstanding rim and a bottom for receiving said plurality of objects,

said bottom having a hole therein,

means for supporting a drawer beneath said hole, and

cover means for covering said hole,

said cover means being removable so that said hole may be uncovered,

said cover means having an edge with a straight portion, whereby said cover means may act as a scraper for pushing said objects through said hole,

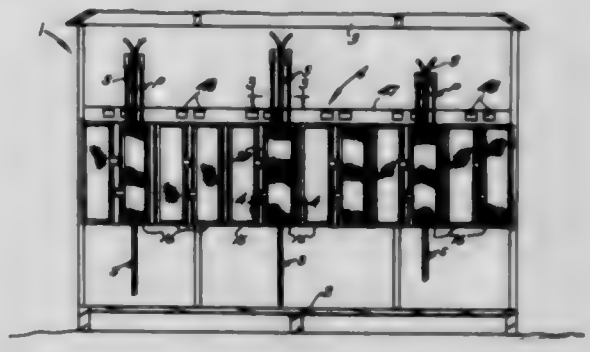
whereby said objects may be placed in said drawer by allowing them to fall through said hole.

4,494,805

EQUIPMENT LOCKER

Philip J. Washburn, Roseburg, Oreg., assignor to Glen E. Beymer, Creswell, Oreg.

Filed Nov. 29, 1982, Ser. No. 445,357
Int. Cl.[3] A47B *81/00*
U.S. Cl. 312—215 4 Claims



1. A locker for the orderly storage of ski equipment, said locker comprising,

upper and lower members each having a horizontally extending open ended recess therein,

side walls and a back wall extending intermediate said members,

a door normally closing the open end of each recess and confining the stored articles therein to an upright position, said door additionally closing a storage area defined by said members and said side and back walls,

a door jamb of tubular construction,

a door locking mechanism within said door jamb, said locking mechanism including a solenoid having an armature, a door latch actuated by said armature, an electrical circuit serving said solenoid, a self-interrupting switch in said circuit causing the solenoid to be energized in an intermittent manner to impart impact loads to the latch to assure latch movement in the presence of loads on the door latch, a door actuated switch in said circuit and actuated to a closed position upon closing of the door, and

a computer and a computer actuated switch closed by the computer at the expiration of a timed interval of locker use to close said electrical circuit and energize said solenoid and said self-interrupting switch.

4,494,806

SPRING LOADED DRAWER ASSEMBLY WITH MECHANICAL DAMPING

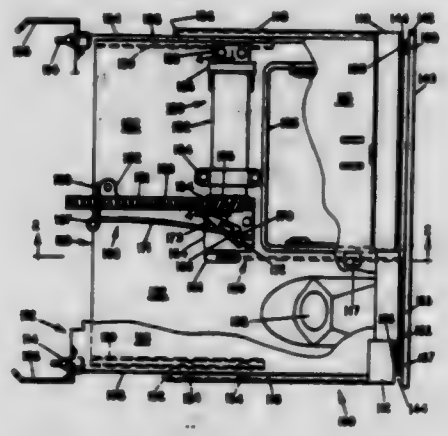
V. Harold Williams, Rockford, and David L. Tomsu, Grand Rapids, both of Mich., assignors to Leslie Metal Arts Company, Grand Rapids, Mich.

Filed May 13, 1983, Ser. No. 494,414
Int. Cl.[3] A47B *21/04*
U.S. Cl. 312—333 16 Claims

1. In a drawer assembly comprising a stationary retainer frame, a drawer, means for slidably mounting the drawer to the retainer frame so as to allow the drawer to move between a closed, retracted position and an open, extended position, means for releasably maintaining the drawer in the closed position, and mechanical force means mounted to the frame for exerting mechanical forces on the drawer relative to the frame so as to extend the drawer from the closed position, the improvement which comprises:

damping means mounted to the frame, coupled to the mechanical force means, and comprising a hollow fluid-filled chamber bounded by surfaces with a high viscosity fluid in the chamber, wherein shear stress forces are exerted by

the fluid on at least one surface of the chamber for opposing the exerted mechanical forces and damping the magnitude of the velocity at which the drawer is extended from the retainer frame.

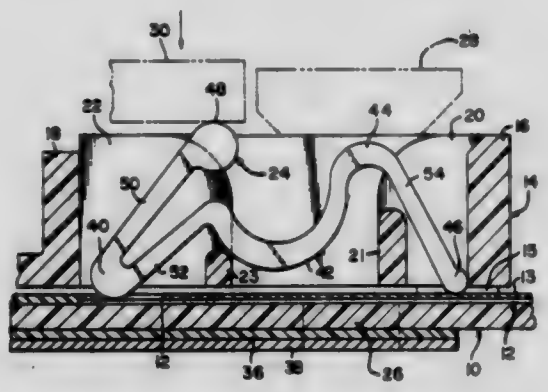


4,494,807

LOW PROFILE CHIP CARRIER CONTACT

Nicola Cosmo, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 27, 1982, Ser. No. 453,328
Int. Cl.³ H01R 9/09
U.S. Cl. 339—17 CF 19 Claims



1. A device for connecting a leadless integrated circuit chip carrier or package to a circuit board, comprising:

a circuit board having electrical conductors contained thereon;

chip carrier housing means disposed on said circuit board for receivably receiving a leadless integrated circuit chip carrier, said carrier housing means having on each side thereof a plurality of slots for receivably receiving contact means;

contact means disposed in said slots for providing electrical communication between a leadless integrated circuit chip carrier and said electrical conductors contained on said circuit board, said contacts having a first portion resembling an S which has been placed on its side having a second portion resembling a superimposed beam portion on one of the outermost curves, said beam portion having a contact area at each of its ends, with said beam ends being in engagement with opposed, inwardly facing, substantially planar surfaces of said circuit chip carrier and said circuit board, thereby providing electrical communication between a leadless integrated circuit chip carrier and said electrical conductors contained on said circuit board;

first bracket means disposed on said carrier housing means for retaining said contact means in said carrier means;

a leadless integrated circuit chip carrier disposed on said carrier housing means; and

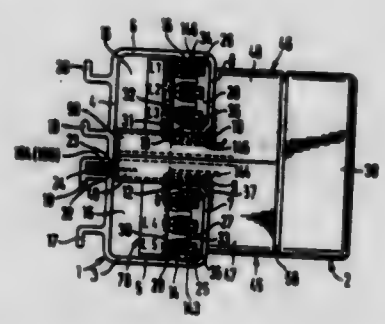
second bracket means disposed on the top of said leadless integrated circuit chip carrier for maintaining said leadless integrated circuit chip carrier in electrical communication with said contact means.

4,494,808

ELECTRICAL COLLECTOR RAIL WITH CONNECTABLE ADAPTER

Harald Widell, Kalendervägen 25; Jan Widell, Augustivägen 11, and Nils-Ake Bergman, Junivägen 24, all of S-352 47 Växjö, Sweden

Filed Dec. 10, 1982, Ser. No. 448,803
Claims priority, application Sweden, Dec. 17, 1981, 8107582; Fed. Rep. of Germany, Mar. 29, 1982, 8208908[U]
Int. Cl.³ H01R 9/00
U.S. Cl. 339—21 R 13 Claims



1. An electrical collector rail with a connectable adapter comprising

a rail which is substantially C-shaped in cross-section and has a rear wall, two side walls and a front wall wherein an opening is located;

a number of conductors situated, at least partially, behind said front wall;

an adapter having an insertion part for insertion into said opening;

a contact beam attached to said adapter adjacent said insertion part;

plugs mounted on said contact beam; and

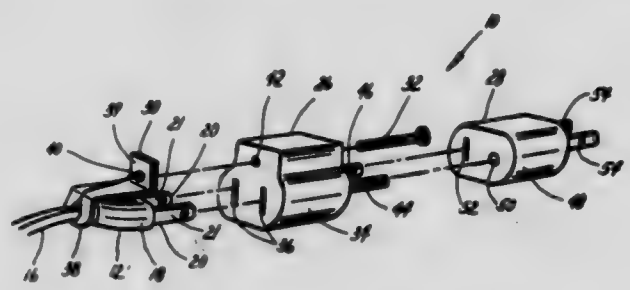
screw means extending through said adapter, accessible at a side of the adapter remote from the rail and operable to pivot said contact beam within said rail and move said beam forward until said plugs contact said conductors and backwards until said plugs are out of contact with said conductors.

4,494,809

SECURITY ATTACHMENT FOR ELECTRICAL PLUG

Leonard Soloman, 156 Shoreview Dr., Chelsea, Mich. 48118

Filed Feb. 15, 1983, Ser. No. 466,406
Int. Cl.³ H01R 13/621
U.S. Cl. 339—75 P 18 Claims



1. As an authorized use permitter and unauthorized use preventer for connection between an electrical receptacle having plural terminals of a given construction and pattern and an electrical plug having plural terminals of a construction and pattern which allow the plug and receptacle to be plugged together to establish electric circuit continuity between the terminals of the plug and those of the receptacle, a security attachment comprising first and second adapters, each adapter

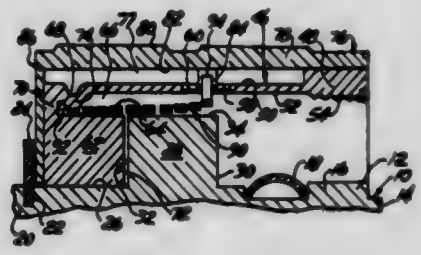
comprising its own non-conducting body and a pair of electrical conductors therein terminating at respective ends thereof in respective first and second sets of terminals, said first set of terminals of said first adapter comprising plural terminals constructed and arranged to allow the plug and said first adapter to be plugged together to establish electric circuit continuity between the terminals of the plug and said conductors of said first adapter, said first set of terminals of said second adapter comprising plural terminals constructed and arranged to allow the receptacle and said second adapter to be plugged together to establish electric circuit continuity between the terminals of the receptacle and said conductors of said second adapter, said two adapters having their second sets of terminals constructed and arranged for mutual engagement to establish electric circuit continuity between their respective electrical conductors so that electric circuit continuity will thereby be established between the terminals of the plug and those of the receptacle via said two adapters when the latter are associated with their second sets of terminals in mutual engagement and with their first sets of terminals respectively plugged together with the plug and the receptacle respectively, said second set of terminals of said first adapter being constructed and arranged to preclude the possibility of establishing electric circuit continuity with the terminals of the receptacle if an attempt is made to plug together said second set of terminals of said first adapter and those of the receptacle, and means providing for connection of said first adapter with the plug to prevent the two from becoming unplugged after they have been plugged together.

4,494,810

ANTI-DECOUPLING DEVICE FOR AN ELECTRICAL CONNECTOR

Alan L. Schildkraut, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed May 11, 1983, Ser. No. 493,487
Int. Cl.³ H01R *13/623*
U.S. Cl. 339—89 M 9 Claims



1. An anti-decoupling mechanism for a separable electrical connector assembly, the electrical connector assembly comprising a pair of generally cylindrical connector members adapted for mating engagement along their primary axis and a coupling nut rotatably mounted to one of said connector members for coupling the connector members together, said one connector member including an annular flange and said coupling nut comprising a generally cylindrical coupling sleeve adapted to connect to the other connector member upon coupling rotation of the coupling nut in one direction and a radial flange having a forwardly facing end wall abutting the annular flange for rotation thereabout, said coupling rotation of the coupling nut drawing the flanges tightly against one another, the anti-decoupling mechanism restraining said coupling nut against unwanted uncoupling rotation in the other direction and characterized by:

coil means connected to the coupling nut for coiling about said coupling nut and said one connector member as a result of the coupling nut rotating from a first position to a second position, said coil means being uncoiled relative to said one connector member when in the first position whereby the coupling nut is not restrained from rotating relative to either of the connector members and tightly coiled relative to said coupling nut and said one connector member when in the second position whereby friction forces developed between the tightly coiled relation and the tightly abutted flanges restrain the coupling nut from rotating relative to the other connector member; and

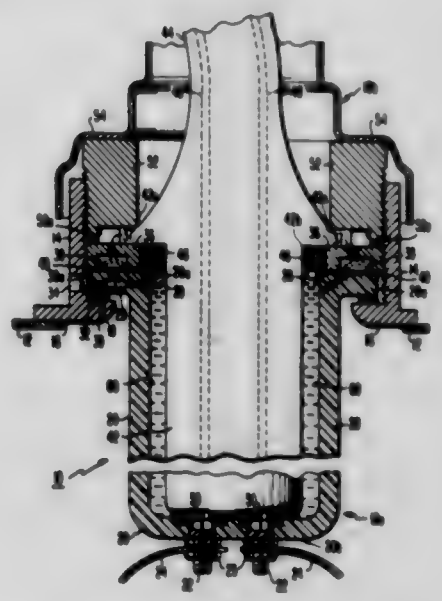
means for driving the coupling nut in either of said directions.

4,494,811

HIGH VOLTAGE CONNECTOR ASSEMBLY WITH INTERNAL OIL EXPANSION CHAMBER

Anthony Palermo, Jr., South Euclid, Ohio, assignor to Picker Corporation, Highland Heights, Ohio

Continuation of Ser. No. 215,003, Dec. 10, 1980, abandoned.
This application Sep. 30, 1982, Ser. No. 431,702
Int. Cl.³ H01R *13/52*
U.S. Cl. 339—94 R 5 Claims



1. A high voltage connector assembly comprising a female connector and a male connector, said female connector comprising:

a generally cylindrical support member having an inwardly extending lip;

a generally cylindrical container closed at one end and having an outwardly extending flange at the opposite end, at least one part of said container being located within said support member, at least part of said lip and flange being coextensive;

an annulus positioned in said member for urging said flange and lip toward one another, said annulus having a hollowed out annular cavity on one planar surface thereof, said one planar surface and cavity being covered by an elastomeric material, said elastomeric material being held in place between said planar surface and said flange;

said male connector comprising:

a generally cylindrical member of diameter smaller than and adopted for insertion in said female generally cylindrical container such that there is a gap between said male and female cylindrical members which extends to said elastomeric material, means to engage said support member for creating a liquid-tight seal between said male and female connectors; and

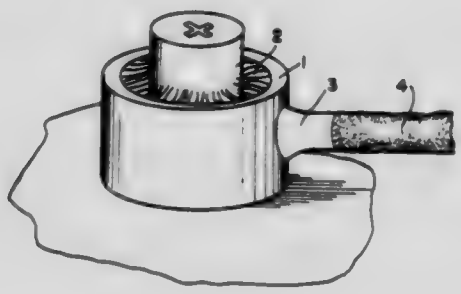
a liquid dielectric in said gap which when expanded depresses said elastomeric material into said cavity.

4,494,812

WIRE BRUSH BATTERY CONNECTOR

John D. Bolton, 5 Shiloh Cir., Irvine, Calif. 92714

Filed Mar. 14, 1983, Ser. No. 444,425
Int. Cl.[3] H01R 4/26, 11/28
U.S. Cl. 339—95 B 3 Claims



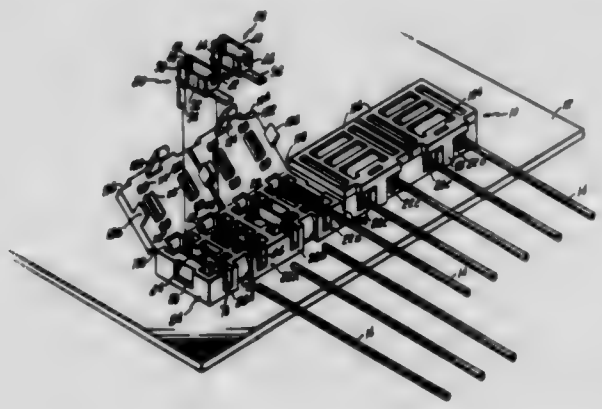
1. An apparatus for connecting a wire to a power source or load post comprising a wire electrically connected to a metal ring, with a plurality of metal wires projecting from the internal surface of said ring.

4,494,813

ELECTRIC CONNECTOR ASSEMBLY

Eugene E. Daley, Jr., and Thomas R. O'Grady, both of Fort Wayne, Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 17, 1983, Ser. No. 476,170
Int. Cl.[3] H01R 13/38
U.S. Cl. 339—99 R 4 Claims



1. An electric connector assembly for connecting two insulated wires to be conductors on a printed circuit board which comprises:

a conductive sheet metal contact member for each wire comprising a flat base portion, a wire terminating portion, and a terminal lug portion extending perpendicularly from said base portion on one side thereof for insertion into a printed circuit board; said wire terminating portion including a pair of contact plates supported on the other side of said base portion in spaced opposed relation; each contact plate having a wire-receiving slot opening into an edge thereof facing away from said base portion and aligned with the slot of the other contact plate whereby upon movement of an insulated wire laterally of its axis into said aligned slots, the edges of said slots pierce the insulation of the wire to establish electrical contact with the wire;

an open top hollow housing block of resilient insulation material comprising a flat base, front and rear walls, first and second side wall, and divider wall means extending between said front and rear walls to define two longitudinally extending parallel chambers each receiving a respective contact member with its contact plates facing said front and real walls respectively; said base having bores therein through which said terminal lug portions extend beyond the bottom surface of said base; said front and rear walls each having a pair of notches opening into an edge thereof facing away from said base in alignment with the respective slots of said contact plates for receiving the wires to be connected; said divider wall means including a longitudinally extending rail supported at its ends in spaced relation to said base by a pair of abutment walls formed integrally on said base at opposite sides of an opening through said base; a flexible arm integral at one end with said rail and having a free end laterally deflectable and projecting through said opening below the bottom surface of said base; said arm having a locking extension projecting laterally outwardly and adapted for insertion through a hole in a printed circuit board and into retaining engagement with the underside of the printed circuit board when said base is brought into contacting relation with the printed circuit board;

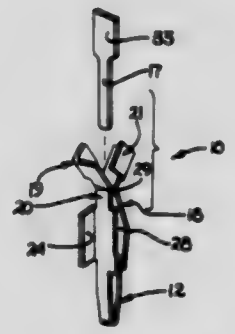
and a cover hinge on said rear wall to fold over and extend across said base in its closed position; said cover having integral pusher members for forcing wires into said slots of the contact plates when said cover is moved to its closed position; said cover and said front wall being complementarily formed with means for latching said cover in its closed position.

4,494,814

HEAT DISSIPATING LEAD CONNECTOR FOR SEMICONDUCTOR PACKAGES

Terrell A. Oyama, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Aug. 16, 1982, Ser. No. 408,147
Int. Cl.[3] H01R 13/05
U.S. Cl. 339—112 R 9 Claims



1. A heat dissipating connector for coupling a semiconductor package lead to a printed circuit board or the like, comprising:

a conductive strip of metal having a substantially U-shaped bend transverse to the longitudinal axis of said strip thereby forming a centrally disposed bore for receiving and retaining said lead, and having a pair of oppositely facing fingers providing an inward spring force for compressing said lead between said fingers, and for retaining said connector in a receiving hole, each finger of said pair of opposite facing fingers having a free end, each free end being bent outwardly such that said free ends diverge; and

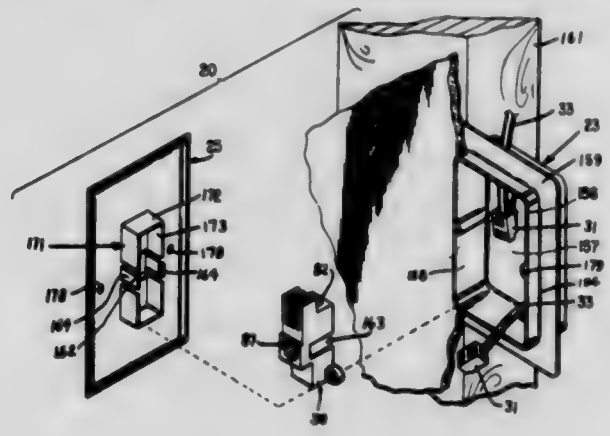
an integral fin extending outwardly from said conductive strip along the central portion of the longitudinal edge of at least one of said fingers,

whereby heat generated by an integrated circuit within a semiconductor package transferred to said lead is dissipated by said connector thru said fin.

4,494,815
SELF-ALIGNING COVER FOR MODULAR TRICOUPLER

Melvin W. Brzostek, Bel Air; Edwin C. Hardesty, Perry Hall, and Erle M. Hutchins, Bel Air, all of Md., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Nov. 19, 1982, Ser. No. 442,930
Int. Cl.[3] H01R *13/60*
U.S. Cl. 339—123 12 Claims



1. A device for modular wiring systems, said device comprising:

a tricoupler which includes:

a housing which is made of a dielectric material, said housing including first, second and third modular plug-receiving cavities and a groove in each of two opposite sides thereof; and

a wire-like contact element which is made of a relatively resilient metallic material and which is mounted in said housing, said wire-like contact element including one end portion which extends into said second cavity, another end portion which extends into said third cavity, and a loop which extends from the vicinity of said third cavity, through said first cavity toward said second cavity, and which is controlled to deflect sufficiently without permanent deformation to develop suitable contact pressure when engaged by a terminal of a modular plug that is inserted into said first cavity; and

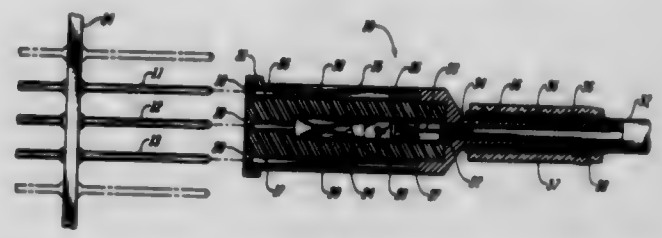
a cover which includes means for securing said tricoupler thereto, an opening which is aligned with said third cavity when said tricoupler is secured to said cover, and a pair of latching tabs depending therefrom with each said tab adapted to be received in one of said grooves of said housing, said cover also including alignment means for causing said opening to be aligned with said third cavity as said tricoupler is being secured to said cover, said alignment means including a perimetral fence which depends from said cover and which includes two end portions and two side portions with each side portion including two segments spaced from each other with one of said latching tabs disposed therebetween.

4,494,816
COAXIAL CABLE CONNECTOR

Peter J. Tamburro, Hanover Township, Morris County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 27, 1983, Ser. No. 517,635
Int. Cl.[3] H01R *17/18*
U.S. Cl. 339—177 R 7 Claims

1. A coaxial cable connector comprising an insulative plug having a first electrical terminal pin receiving aperture at one end opening on an inner cavity in said plug an opening on the other end, and a second electrical terminal pin receiving aperture at said one end opening on a slot formed in a surface of said plug, an electrical contact fitted in said cavity, said contact presenting electrical terminal pin contacting means at one end facing said first aperture and electrical conductor contacting means at the other end facing said other end of said plug, and a conductive housing fitted about said plug, said housing being formed to present an electrical contact surface extending into

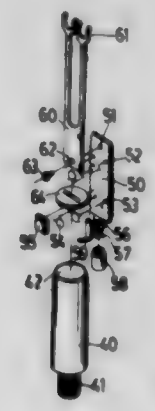


said slot, said housing terminating in a hollow stem dimensioned within to receive the inner insulation of a coaxial cable and without to receive about it the shielding of a coaxial cable.

4,494,817
FEEDER CONNECTOR ASSEMBLY FOR COAXIAL CABLE

Chi-Hao Huang, No. 4, Kuo Sheng Li, Chang Hua, Taiwan (500)

Continuation-in-part of Ser. No. 357,797, Mar. 12, 1982,. This application Aug. 12, 1983, Ser. No. 522,578
Int. Cl.[3] H01R *17/18*
U.S. Cl. 339—177 R 2 Claims



1. A feeder connector comprising:

a base plate;

a hollow safety sleeve having a threaded portion integrally formed on one end thereof, said plate being positioned within said safety sleeve;

a plug piece fitted on the other end of said safety sleeve;

a twin lead feeder passing through said plug piece such that a portion thereof is positioned within said safety sleeve, the portion of said twin lead feeder within said safety sleeve being fixed to said base plate;

clip means fixed to said base plate, said clip means including wedge clip guide pieces;

a body means, said wedge clip guide pieces engaging said body means; and

a hook shaped leaf spring means fixed to said base plate, said leaf spring means being pressed against the inside wall of said safety sleeve

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4,494,818
MOUNTING MEMBER FOR ELECTRICAL CONTACTS

Carl C. Petersen, Binghamton; Stephen A. McKeown, Unadilla, and Richard W. Normann, Otego, all of N.Y., assignors to Allied Corporation, Southfield, Mich.

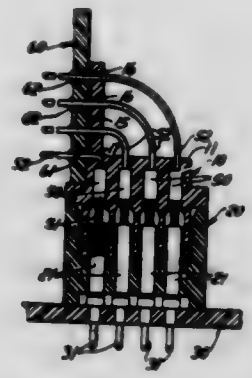
Filed Sep. 6, 1983, Ser. No. 529,419
Int. Cl.[3] H01R *9/09*
U.S. Cl. 339—192 R 6 Claims

1. A mounting member for electrical contacts each having a forward mating portion and a rearwardly extending bendable conductor, said mounting member comprised of a plastic one piece molded unitary member characterized by:

a base having a forward end, a rear end and a plurality of passages extending between said forward end and said rear end, each of said passages adapted to receive a respective contact with the bendable conductor of each contact extending from the rear end of said base;

a planar portion extending parallel to the rear end of said base, said planar portion including a plurality of apertures each adapted to receive the rearwardly extending conductor of a respective contact; and

a hinge portion integrally connected to said base and said planar portion, said hinge portion dimensioned to allow said planar portion to be moved from its position parallel to the rear end of said base to a position perpendicular to



the rear end of said base whereby, when said contacts are mounted in the passages in said base with their respective conductors extending through the apertures in the planar portion of said mounting member and said planar portion is moved 90 degrees, the conductor of each contact is deformed by such motion of the planar portion from a substantially straight shape into one in which it is bent 90 degrees.

4,494,819

TELESCOPE OBJECTIVE SYSTEM FOR THE INFRARED RANGE

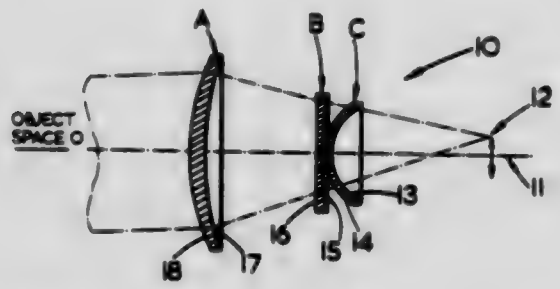
Michael O. Lidwell, Glasgow, Scotland, assignor to Barr & Stroud Limited, Glasgow, Scotland

Continuation of Ser. No. 234,439, Feb. 13, 1981, abandoned. This application Dec. 29, 1983, Ser. No. 566,699

Claims priority, application United Kingdom, Mar. 5, 1980, 8007406

Int. Cl.³ G02B *13/14*

U.S. Cl. 350—1.4 3 Claims



1. A telescope objective system formed by a primary lens having a single lens element aligned on a common optical axis with a secondary lens having two lens elements forming a doublet, the shape and power distribution of the lens elements being such as to compensate for monochromatic aberration of the system, each lens element being made of a material which has a useful spectral bandpass in the infrared wavelength region and the lens elements of the secondary lens having refractive surfaces intercepting said optical axis which are substantially spherical, the system having a planar image surface, a positively-powered primary lens and a negatively-powered secondary lens whereby to provide an effective focal length greater than the axial distance between the image surface and the distal refractive surface, said distal refractive surface being formed by said primary lens element which is made of germanium, at least one of the two lens elements of the secondary lens being made of a chalcogenide glass such that the system is achromatic in the infrared wavelength region, wherein both lens elements of the secondary lens are made of chalcogenide glass having a refractive index of about 2.4916 and a dispersion coefficient of 0.00660, the radius of curvature of the respective refractive surfaces and the separations between successive refractive surfaces as listed from said distal refractive surface, in normalised units, being as follows:

ITEM		Radius	Separation
	Primary Lens		
	1st Refractive Surface	0.5926	—
	2nd Refractive Surface	0.7692	.0427
	Secondary Lens		
1st lens	1st Refractive Surface	−3.2968	0.3948
element	2nd Refractive Surface	0.3825	.0160
2nd lens	1st Refractive Surface	0.6204	.0267
element	2nd Refractive Surface	−1.5895	.0267

positive radius of curvature indicating a centre of curvature lying on the image plane side of the refractive surface and vice versa.

4,494,820

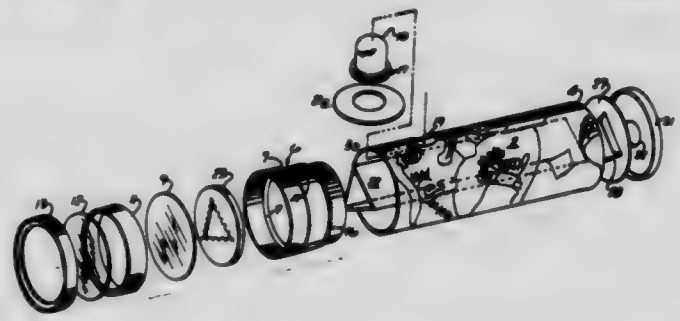
KALEIDOSCOPE ASSEMBLY

Ronald R. Klawitter, Hermann, Mo., assignor to Handi-Pac, Inc., Hermann, Mo.

Filed Jan. 28, 1983, Ser. No. 462,058

Int. Cl.³ G02B *23/00*

U.S. Cl. 350—4.1 7 Claims



1. A kaleidoscope comprising a hand supportable and operable housing having a first end and a second end; a sleeve rotatably disposed within said housing adjacent said first end, with the axis of rotation longitudinally extending toward said second end, said sleeve defining a transparent object enclosure therewithin; a plurality of pattern producing objects within said enclosure; an end wall having a view opening, said end wall being disposed adjacent said second end of said housing; reflecting means disposed within said housing to extend between said view opening and said transparent object enclosure to define a varying composite image at said view opening when said sleeve and said transparent enclosure therein are rotated; support means within said housing to support said reflecting means; and rotatable manual actuating means projecting through said housing intermediate said first and second ends in spaced relation from said ends with its axis of rotation extending normally to the axis of rotation of said sleeve and geared to said sleeve to rotate said sleeve and said transparent object enclosure therewithin to produce said varying composite image at said viewing end by tumbling said pattern producing objects within said enclosure.

4,494,821

LASER PRINTING SYSTEM WITH DEVELOPABLE HELICOID REFLECTOR

John R. Lewis, Stow; Andrew McCurdy, Danvers, and Arthur D. Gaudet, Waltham, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

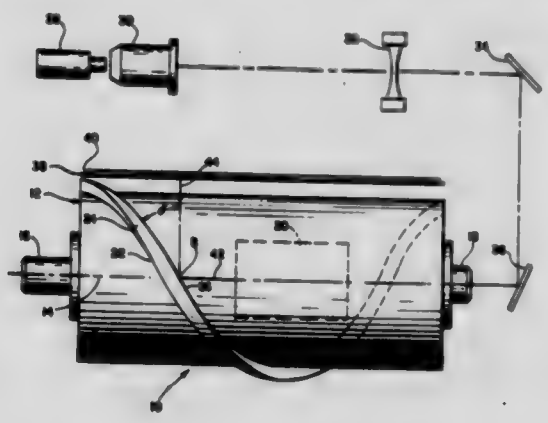
Filed Mar. 7, 1983, Ser. No. 472,733

Int. Cl.³ G02B *27/17*

U.S. Cl. 350—6.5 16 Claims

1. Line scanning apparatus for use with a source of radiation that can be beamed thereat, to scan the beamed radiation across a radiation sensitive medium in a plurality of successive line scans, said apparatus comprising:

a specularly reflective developable helicoid disposed for rotation about the longitudinal center axis thereof to receive an incident beam of radiation from the source in a direction generally parallel to said longitudinal center axis and reflect the incident beam of radiation in a direction outward of said longitudinal center axis toward the radiation sensitive medium wherein one rotation of said helicoid operates to displace the reflected beam of radiation in one direction parallel to said longitudinal center axis; and



means for optically controlling said reflected radiation from said helicoid so as to limit the divergence of the reflected radiation in directions generally perpendicular to the longitudinal center axis of said helicoid.

4,494,822

OVERHEAD ELECTRIC AND OPTICAL TRANSMISSION SYSTEMS

Peter Harvey, London, England, assignor to BICC Public Limited Company, London, England

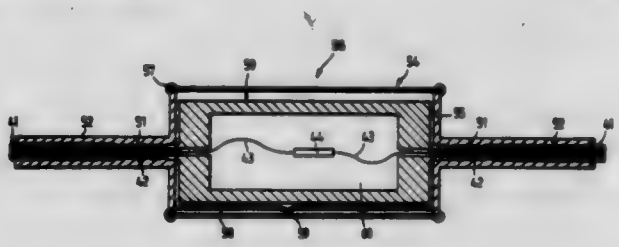
Filed Jun. 18, 1982, Ser. No. 389,682

Claims priority, application United Kingdom, Jun. 18, 1981, 8118737

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.21

43 Claims



16. In an overhead electric transmission system of the kind in which at least one overhead electric conductor comprises a substantially circumferentially rigid central core having an elongate compartment within and extending throughout the length of the core, at least one optical fibre loosely housed in the elongate compartment and, surrounding the central core, at least one layer of helically wound bare elongate elements of metal or metal alloy, a joint between two overhead electric conductors, or between an overhead electric conductor and a cable extending to a spaced location, wherein the joint between the optical fibres of the overhead electric conductors, or of the overhead electric conductor and the cable, is enclosed within a substantially fluid-tight elongate housing of metal or metal alloy having protruding from each or one of its ends a sleeve of metal or metal alloy of high electrical conductivity through which at least a part of one of the overhead electric conductors, or of the overhead electric conductor, extends and which is compression jointed to said overhead electric conductor to provide a mechanical and electrical connection between the metal housing and said overhead electric conductor.

4,494,823

OPTICAL CONNECTOR SYSTEM

Kenichi Yoshida; Kimiro Ono, and Tomio Iwamoto, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

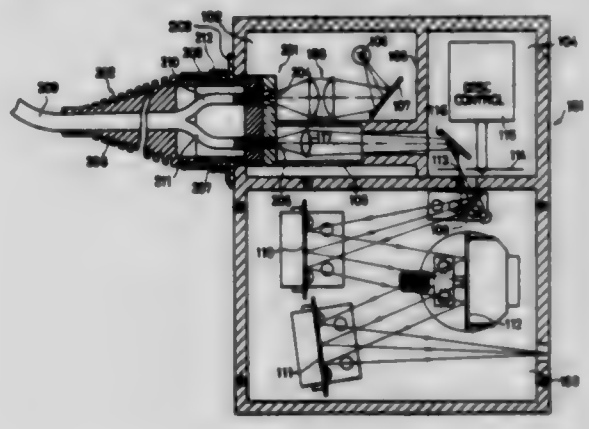
Filed Dec. 6, 1982, Ser. No. 447,362

Claims priority, application Japan, Dec. 9, 1981, 56-182156[U]; Mar. 8, 1982, 57-37017; Sep. 17, 1982, 57-140979[U]

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.22

13 Claims



9. An optical connector comprising: a pair of housings; one of the housings containing a plurality of light-receiving and light-transmitting elements in a fixed condition, the other housing containing a plurality of optical fiber bundles in a fixed condition, said optical fiber bundles in said other housing being provided to face the light-receiving and light-transmitting elements in said one housing, wherein at least one pair of optical fiber bundles can be connected to said light-receiving and light-transmitting elements simultaneously when said housings are in an opposed relationship; wherein one of the fiber bundles comprises a light-transmitting bundle and another of said fiber bundles comprises a light-receiving bundle; and wherein one of said housings comprises a female member, and the other housing a male member, means to lock the members together, said female member having a light-transmitting window and a light-receiving window, said light-transmitting and light-receiving windows configured so that, when the male member comes into engagement, the light-transmitting window faces the end surface of the light-transmitting fiber bundle, and the light-receiving window faces the end surface of the light-receiving fiber bundle.

4,494,824

LIQUID CRYSTAL DISPLAY WITH SMALL IMPEDANCE ORIENTING FILM

Takeshi Nakamura, Yamatokoriyama; Seiji Okamoto, Osaka, and Kazuyoshi Hirayama, Kashihara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

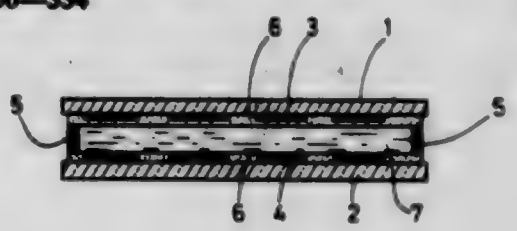
Filed Dec. 17, 1982, Ser. No. 450,775

Claims priority, application Japan, Dec. 18, 1981, 56-189671[U]

Int. Cl.³ G02F 1/133; C09K 3/34

U.S. Cl. 350—334

6 Claims



1. A liquid crystal display device comprising a pair of opposed substrates, a transparent electrode provided on at least

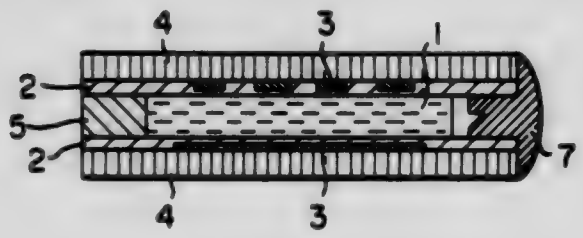
one of the substrates, a liquid crystal composition sandwiched between the substrates, an orienting film of an organic high copolymer resin formed at least over the surface of the electrode which is on the substrate and is to be in contact with the liquid crystal composition, and conductive particles mixed within the orienting film to reduce the resistance of the orienting film.

4,494,825

FILL PORT SEAL WITH FIRST AND SECOND PHOTOSENSITIZERS

Ken Sasaki; Shigeru Matsuyama; Masaharu Koyama, all of Mobara, and Kazuyoshi Ichihara, Chiba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 3, 1982, Ser. No. 354,183
Claims priority, application Japan, Mar. 4, 1981, 56-29864
Int. Cl.³ G02F *1/133;* C08F *8/00*
U.S. Cl. 350—343 10 Claims



1. A liquid crystal display device comprising a pair of substrates which are placed in parallel and at least one of which is transparent, the peripheries of said substrates being sealed by a sealant to form an inner cavity with a fill port, said inner cavity being filled with a liquid crystal composition, the inner surfaces of said substrates facing each other having electrodes and orientation controlling films thereon, and said fill port being sealed by using a photo-setting resin composition comprising an acrylic or methacrylic type resin as a major resin component and two or more photosensitizers different in quality, wherein the photosensitizers different in quality are comprised of at least one first photosensitizer which can reduce the curing time of the resin composition greatly and at least one second photosensitizer which can reduce the curing time of the resin composition not so greatly as the first photosensitizer, and wherein the at least one first photosensitizer is selected from the group consisting of β-naphthalene sulfochloride, 1-butylnaphthalene-sulfonic acid-2-chloride, 1,4-dibutylnaphthalene sulfonic acid-2-chloride, p,p-ditolyl disulfide, β,β-dinaphthalene disulfide, decyl chloride, benzoin methyl ether, benzoin ethyl ether, benzoin isopropyl ether, benzoin n-butyl ether, benzoin sec-butyl ether, benzoin isobutyl ether, di-tert-butyl peroxide, 2-methylanthraquinone, 1,5-dinitroanthraquinone, and anthraquinone, and the at least one second photosensitizer is selected from the group consisting of benzene-sulfochloride, diphenyl disulfide, tetramethylthiuram disulfide, bis(2-benzthiazyl) disulfide, dibenzyl ketone, Michler's ketone, phenyl acetone, benzophenone, 4-methoxy benzophenone, acetophenone, acetylacetone, benzoin phenyl acetate, benzoin tert-butyl ether, furoin, furoin methyl ether and tert-butyl perbenzoate.

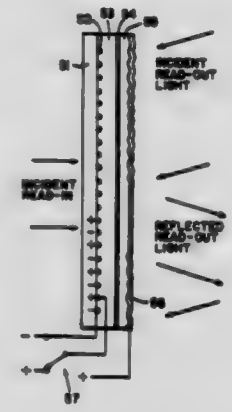
4,494,826

SURFACE DEFORMATION IMAGE DEVICE

James L. Smith, 426 High School Dr., Grand Prairie, Tex. 75050

Filed Dec. 31, 1979, Ser. No. 108,933
Int. Cl.³ G02F *1/29*
U.S. Cl. 350—360 4 Claims

1. A surface deformation image device comprising a plurality of laminated layers; a first layer being a transparent supporting substrate; a second layer being a grille structure layer; a third layer being photoconducting layer in electrical contact with said grille structure layer; a fourth layer being an elastomer layer; a thin metal film coating layer on said elastomer layer; terminals being connected to said thin metal film layer and said grille structure layer such that electrical potential can be applied across said layers, excepting said first layer, causing selective declination of the elastomer layer and therefore the metal film coating, said elastomer layer relaxing in corresponding areas of said photoconductive layer which are struck by



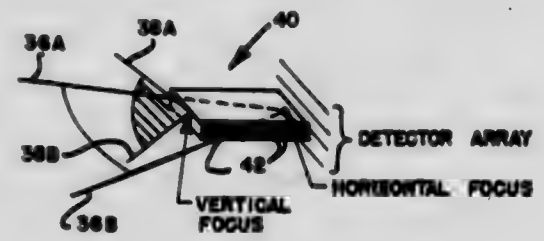
electromagnetic energy; an electrical switch; and said grille structure being made up of a plurality of lines connected to said electrical switch such that alternate lines are connected to given voltage polarity and the lines remaining may be switched to either similar or opposite voltage.

4,494,827

IMAGING APPARATUS FOR TRANSVERSE ELECTRODE ELECTRO-OPTIC TUNABLE FILTER

Richard L. Abrams, Pacific Palisades; David M. Henderson, Playa Del Rey, both of Calif.; Douglas A. Pinnow, Cheshire, Conn., and Ronald R. Stephens, West Lake Village, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 20, 1982, Ser. No. 435,522
Int. Cl.³ G02F *1/03*
U.S. Cl. 350—385 5 Claims



1. An apparatus for imaging, comprising:

a. an anamorphic optical system means for transmitting and focusing a beam of polarized light carrying an image; and

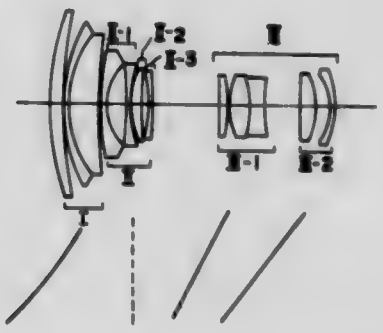
b. a large aperture electro-optic tunable filter assembly having an entrance surface and an exit surface in optical alignment with said anamorphic optical system means, wherein said filter assembly includes at least one transverse field electro-optic tunable filter having electrodes, with said filter comprising a platelet of electro-optic material of a known index of refraction, and with said platelet being clad between its surface and said electrodes with a material having a lower index of refraction than said platelet material and wherein said anamorphic optical system focuses in a first direction an image onto said entrance surface and focuses in a second direction orthogonal to the first direction an image onto said exit surface.

4,494,828

ZOOM LENS SYSTEM OF RELATIVELY HIGH ZOOM RATIO RANGING TO WIDE ANGLE PHOTOGRAPHY

Hisayuki Masumoto, Sakai, and Shuji Ogino, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 8, 1982, Ser. No. 366,673
Claims priority, application Japan, Apr. 9, 1981, 56-53948; Apr. 10, 1981, 56-54672; Jan. 26, 1982, 57-11090
Int. Cl.³ G02B 7/04
U.S. Cl. 350—427 27 Claims



1. A zoom lens system of a relatively high zoom ratio ranging to wideangle photography in which the shortest focal length is less than the length of the diagonal line of the effective image plane, comprising from the object to the image side:

a first lens group of a positive refractive power;

a second lens group of a negative refractive power consisting of a first negative subunit, including at least two separate negative lenses, a second positive subunit located on the image side of the first negative subunit with an unchangeable air space and a third negative subunit located on the image side of the second positive subunit with an unchangeable air space; and

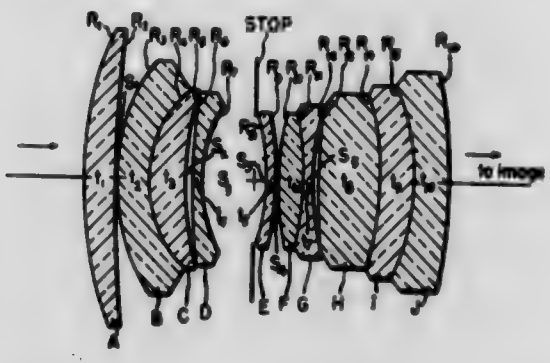
a third lens group of a positive refractive power, wherein at least an air space between the first and second lens groups and an air space between the second and third lens groups are changeable upon zooming.

4,494,829

CURVED FIELD PHOTOGRAPHIC OBJECTIVE

George H. Aklin, deceased, late of Fairport, NY, and Marie M. Aklin, Voluntary Administrator, 2 Woodside Rd., Fairport, N.Y. 14450

Filed Sep. 20, 1982, Ser. No. 420,581
Int. Cl.³ G02B 9/62
U.S. Cl. 350—464 2 Claims



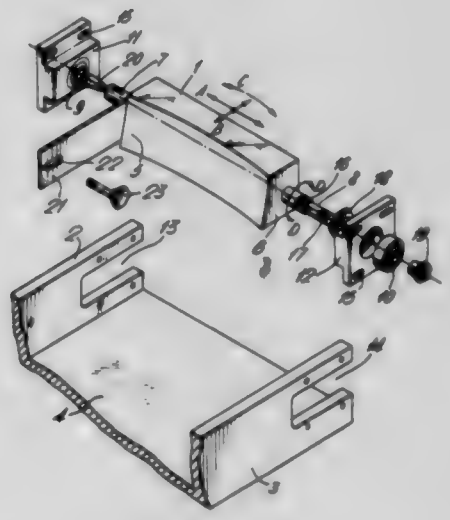
1. In a six-component, ten-element photographic objective, a first lens section forward of the aperture stop comprising a singlet, a doublet and a singlet in order from the long conjugate, and a second lens section rearward of the aperture stop said rearward section consisting, in order from the stop, of a negative singlet concave to the stop, a doublet in the form of a meniscus with its outer surfaces convex to the stop and comprising a biconvex element and a biconcave element with the cemented surface concave to the stop, and a biconvex triplet comprising a biconvex element and two menisci, said biconvex element having a higher index of refraction than said menisci, the cemented surfaces within said biconvex triplet being concave to the stop.

4,494,830

MOUNTING ASSEMBLY FOR OPTICAL ELEMENTS

Richard W. Grainge, and Dennis Slow, both of Hatfield, England, assignors to British Aerospace Public Limited Company, London, England

Filed Aug. 6, 1982, Ser. No. 405,905
Claims priority, application United Kingdom, Aug. 13, 1981, 8124726
Int. Cl.³ G02B 7/00
U.S. Cl. 350—486 6 Claims



1. A mounting assembly including an optical element having an optically effective region and spaced end regions disposed laterally of said optically effective region, a carrier member having two spaced web regions between which the optical element lies and which carry first displacement means comprising twin location members, each slidably associated with one of said spaced web regions and cooperating with one end of said spaced end regions of the optical element for displacing said spaced end regions in the same sense as said spaced web regions to effect bodily fore-and-aft adjustment, second displacement means for displacing the optical element away from one of said spaced web regions toward the other of said spaced web region to effect bodily lateral adjustment, and tilting means comprising arm means for tilting the optical element with respect to said spaced web regions to effect angular adjustment in elevation, said twin location members of said first displacement means being capable of sliding differentially with respect to said spaced web regions to effect angular adjustment of the optical element in azimuth.

4,494,831

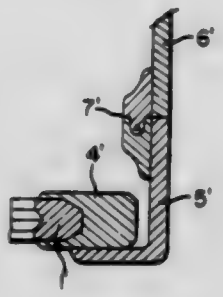
SPECTACLE FRAME

Kenichi Yaguchi, Chiba; Masaru Ichikawa, and Takuji Kinoshita, both of Yokohama, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 9, 1981, Ser. No. 319,619
Claims priority, application Japan, Nov. 22, 1980, 55-164919
Int. Cl.³ G02C 5/00
U.S. Cl. 351—41 3 Claims

1. A spectacle frame of titanium or titanium alloy having at at least one location a brazed portion of titanium or titanium alloy joined with titanium or titanium alloy, or of titanium or

titanium alloy joined with another metal, characterized in that silver-zinc alloy consisting essentially of 70–95% by weight of



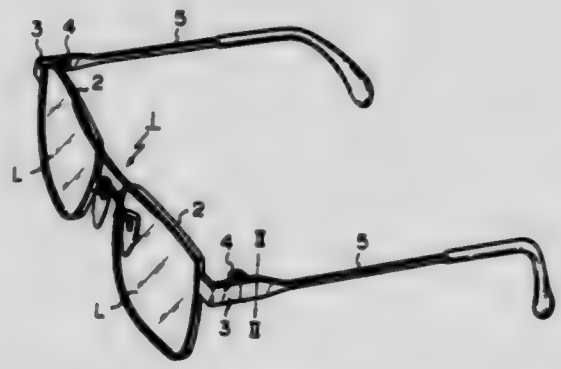
silver and 5–30% by weight of zinc is used as a brazing filler metal material of the brazed portion.

4,494,832

EYEGLASS-FRAME

Masayuki Takamura, and Kazuo Kurahashi, both of Shizuoka, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Apr. 13, 1982, Ser. No. 368,038
Claims priority, application Japan, Apr. 15, 1981, 56-54141[U]
Int. Cl.³ G02C 5/18, 5/02
U.S. Cl. 351—41 13 Claims



1. An eyeglass frame comprising

a pair of bows having a core-to-covering structure which includes a core exhibiting super elasticity at room temperatures and a covering clad to said core, said core being made of a material chosen from a group consisting of copper-tin-zinc alloys, copper-aluminum-zinc alloys and copper-aluminum-nickel alloys, and said covering being made of a material chosen from a group consisting of nickel and nickel base alloys.

4,494,833

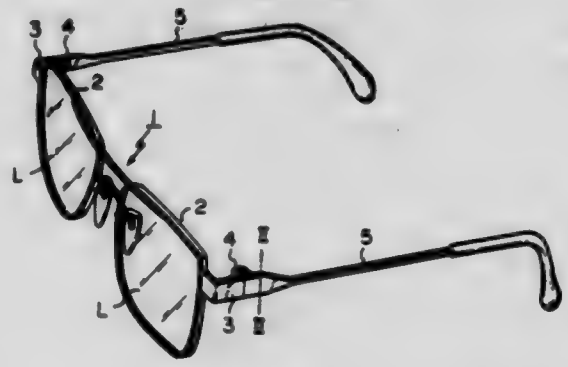
EYEGLASS-FRAME

Masayuki Takamura, and Kazuo Kurahashi, both of Shizuoka, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Apr. 13, 1982, Ser. No. 368,039
Claims priority, application Japan, Apr. 15, 1981, 56-054142[U]
Int. Cl.³ G02C 5/18, 5/02
U.S. Cl. 351—41 11 Claims

1. An eyeglass-frame comprising

a pair of bows having a core-to-covering structure which includes a core exhibiting super elasticity at room temperatures and a covering clad to said core, said core being made of a material chosen from a group consisting of copper-tin-zinc alloys, copper-aluminum-zinc alloys and copper-aluminum nickel alloys, and said covering being



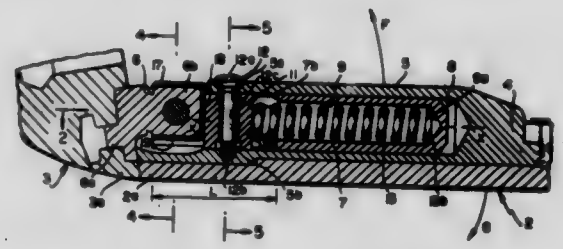
made of a material chosen from a group consisting of silver, silver base alloys, gold and gold base alloys.

4,494,834

HINGE FOR THE PIVOTING OF AN ELASTICALLY DIVERTIBLE TEMPLE PIECE TO AN EYEGLASS FRAME

Vittorio Tabacchi, Padua, Italy, assignor to Safilo, S.p.A., Padua, Italy

Filed May 17, 1982, Ser. No. 378,856
Int. Cl.³ G02C 5/16, 5/22
U.S. Cl. 351—153 8 Claims



1. A hinge for pivoting an eyeglass temple piece divertible between a closed position against an eyeglass frame and beyond a normal open position in relation thereto, which comprises a slide, a seat provided in an end section of the temple piece, the slide being slideably mounted in the seat and having an end protruding therefrom, the slide having a hole with a bottom wall therein, the hole extending coaxially into the slide over a predetermined depth from the protruding end thereof, a slot, the slot extending longitudinally in the slide over a predetermined length from the protruding end thereof, a block, the block being mounted transversely at the mouth of the seat and extending through the slot and constituting a guide for the slide, a spring, the spring being mounted in the hole and engaging respectively the block and bottom wall of the hole, and means for hingedly connecting the protruding end of the slide to the front piece of the eyeglass frame.

4,494,835

POLYCONDUCTOR DEVICE FOR LASER BEAM DETECTION AND PROTECTION

Michael Hamid, Winnipeg, Canada, and Anastasios Lionis, Vlissingen, Netherlands, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 30, 1982, Ser. No. 403,596
Int. Cl.³ G02C 1/00; G01J 1/42
U.S. Cl. 351—158 6 Claims

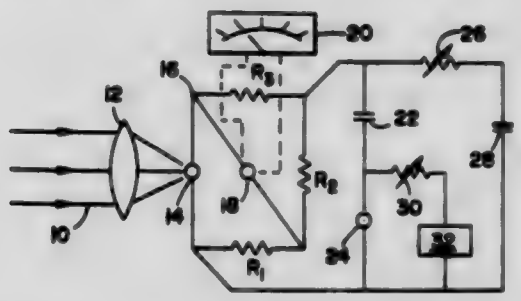
1. An apparatus for detecting and protecting against high intensity laser radiation comprising:

(a) a lens to focus said laser radiation at a predetermined spot;

(b) at least one radiation sensing polyconducting film positioned approximate said predetermined spot, said film

having points for electrical connection such that a film bias voltage may be applied across said film and such that said film may be operably connected in an electrical network;

(c) a Wheatstone bridge circuit comprising a portion of said network in which said polyconducting film constitutes



one arm of said bridge circuit to a predetermined voltage level;

(d) means for electrically compensating voltage variations in said bridge network induced by ambient temperature fluctuations; and

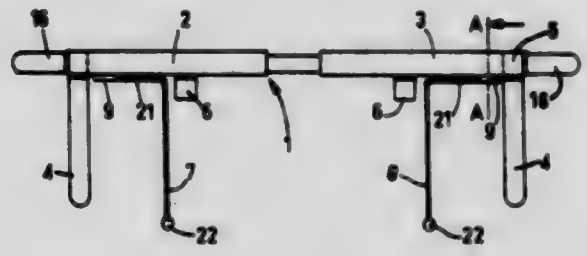
(e) means for reading voltage variations in said bridge network from said predetermined voltage level.

4,494,836

DEVICE FOR DETERMINING AND MEASURING MONOCULAR PUPILLARY DEVIATIONS IN A PATIENT'S EYES

Jean Cogez, Paris, France, assignor to Essilor International, Creteil, France

Filed Apr. 13, 1982, Ser. No. 368,014
Claims priority, application France, Apr. 29, 1981, 81 08 558
Int. Cl.³ A61B *3/10*
U.S. Cl. 351—204 **6 Claims**



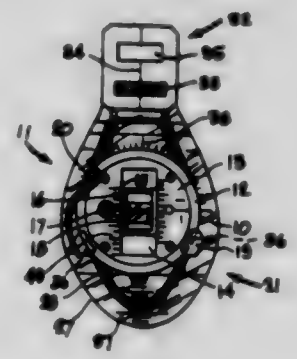
1. A device to determine and/or measure the monocular pupillary deviations in a patient's eyes, comprising a cross-bar, carrying two adjustable reticles, to determine and/or measure the distance between the pupil of each eye, the said cross-bar being formed of two casings which can move telescopically in relation to each other, and each of which contains a runner capable of moving inside it under the control of an outside regulating knob, said runner being connected to a removable reticle-holder rod, each such telescopic casing futher comprising a downward-pointing arm, adapted to be held against the corresponding inside or outside surface of one of the arms of a spectacle frame worn by a patient by at least one spring exerting force on each casing, the said device being characterized by the fact that each casing comprises an internal extension which enables the two casings to fit telescopically inside each other, said internal extension including a supporting surface for one end of a compression spring, positioned in such a way that the force of the spring causes the casings to move away from each other, and presses the downward arms against the inside surface of the spectacle arms.

4,494,837

PUPIL LOCATION GAUGE

Paul F. Bommarito, 10684 Martinwood Way, Cupertino, Calif. 95014

Continuation-in-part of Ser. No. 179,807, Aug. 20, 1980, Pat. No. 4,381,143, which is a continuation-in-part of Ser. No. 6,340, Jan. 25, 1979, abandoned. This application Apr. 25, 1983, Ser. No. 488,085
Int. Cl.³ A61B *3/10, 3/04*
U.S. Cl. 351—204 **11 Claims**



1. A pupil location gauge for use in an ophthalmic test lens holder comprising,

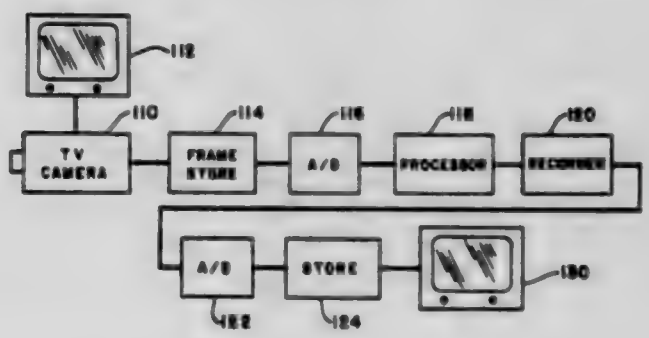
a disc mountable in a test lens holder having a graduated scale and an insert containing a vision interference index member, said index member comprising a material which decreases visual light transmission, having a center line intersecting the visual axis, and mechanical means associated with said disc for moving said insert to change the position of said index member in relation to the graduated scale on said disc.

4,494,838

RETINAL INFORMATION MAPPING SYSTEM

Donald L. Wallquist, and Gilbert G. Kuperman, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 14, 1982, Ser. No. 398,132
Int. Cl.³ A61B *3/14*
U.S. Cl. 351—206 **4 Claims**



1. A method of determining the effects on vision of various conditions by processing an image frame having a given number of pixels horizontally and vertically which comprises the steps of:

digitizing the value of each pixel;

the array of the digitized frame being processed so that a non-linear smoothing of the intensity values is carried out on the basis of physiological data regarding the distribution of rods across the retina and perceptual data regarding differential visual acuity as a function of retinal field angle, the relative visual acuity curve being implemented by performing an adaptive convolution on the digital scene, by

determining for each point in the array the radial distance R to the array center (which corresponds to the fovea);

supplying a visual acuity factor as a parameter, useful values

of the visual acuity factor being in the range of zero up to 0.500, increasing values producing output images which are less clear, and at a value of 1.0 the output image being completely blurred;

assigning to each pixel of the image a neighborhood having a radius r, the neighborhood comprising all pixels which are both within the radius r and within the image boundary, the radius r being a function of said visual acuity factor and of the distance R of the pixel from the center of the image, so that the effects of the distribution of rods in the retina provides the weighting for allocating signal processing bandwidth differentially across the scene in accordance with human physiological data;

for each pixel, summing the digital values of all pixels within its neighborhood, counting the number of pixels in the neighborhood, dividing the resulting sum by the resulting count to form an average value, and assigning that average value as a new digital value for the pixel;

forming a new image frame with said new digital values for all of the pixels, providing an output array composed of the new filtered values; and

supplying the output array to display means for viewing, with intensity proportionate to digital value.

4,494,839

AUTOMATIC FOCUSING DEVICE FOR SLIDE PROJECTORS

Dietrich Brueckner, Wetzlar-Neuborn, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

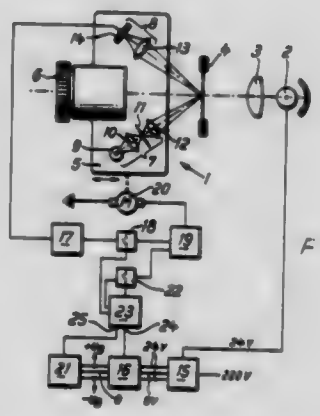
Filed Feb. 24, 1983, Ser. No. 469,312

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1982, 3207152

Int. Cl.³ G03B *3/10*

U.S. Cl. 353—101

5 Claims



1. An automatic focusing device for a slide projector, comprising:

control unit means for producing a cancellation signal;

means for producing an error voltage signal determinative of deviation of a slide from a position of sharpest focus;

manual control means for producing a manual control signal;

means, responsive to said manual control signal, for generating a manual focus signal from said manual control signal;

a positioning motor;

means, responsive to said error voltage signal or to said manual control signal, for driving said positioning motor;

primary switch means, electrically interposed between said error voltage signal producing means and said driving means, and switchable between a first state in which said error voltage signal producing means is connected to said driving means, and a second state, in which said error voltage signal producing means is not electrically connected to said driving means;

secondary switch means, electrically interposed between said manual focus signal generating means and said driving means, and switchable between a first state in which said manual focus signal generating means is not electrically connected to said driving means, and a second state in which said manual focus signal generating means is not electrically connected to said driving means; and

switching amplifier means, responsive to said manual control signal and said cancellation signal, and connected to said primary switch means and said secondary switch means, for switching each of said primary and secondary switch means into the respective second state of each in response to the presence of said manual control signal, and for switching each of said primary and secondary switch means into their respective first states in response to the presence of said cancellation signal.

4,494,840

DUAL LENS IMAGE ROTATION SYSTEM

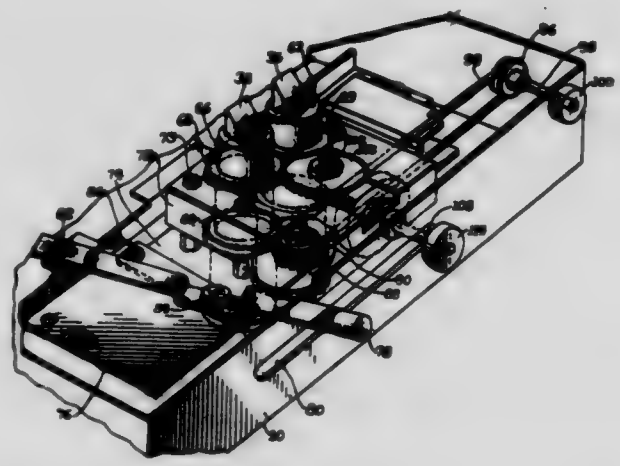
John S. Toeppen, Hartford, Wis., assignor to Bell & Howell Company, Chicago, Ill.

Filed Sep. 6, 1983, Ser. No. 529,787

Int. Cl.³ G03B *21/22*

U.S. Cl. 353—101

8 Claims



1. Apparatus for rotating a projected image in an image light path comprising:

two projection lenses mounted adjacent each other in separately adjustable threaded receiving means for individually focusing the lenses by rotating the receiving means,

a focusing gear which engages individually the adjustable threaded receiving means,

means to rotate the focusing gear,

an image rotation prism disposed above each of the projection lenses,

selector means to position either lens and its prism in the image light path,

the selector means also positioning either threaded receiving means in engagement with the focusing gear,

a prism gear surrounding each prism, a drive gear simultaneously engaging both of the prism gears, and means to rotate the drive gear to rotate the prisms in unison an identical amount to cause the amount of rotation of the projected image to be the same regardless of which projection lens is disposed in the image light path.

4,494,841

ACOUSTIC TRANSDUCERS FOR ACOUSTIC POSITION SENSING APPARATUS

Michael A. Marcus, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 12, 1983, Ser. No. 531,375

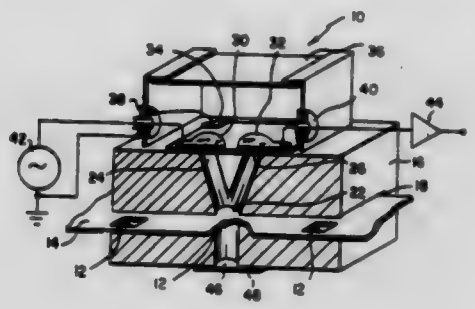
Int. Cl.³ G03B *7/24, 17/00;* H04R *17/00*

U.S. Cl. 354—21

30 Claims

1. Acoustic position sensing apparatus of the type for sensing the position of an object with respect to a sensing port in an acoustic resonator; the apparatus including acoustic transducer means for generating an acoustic signal of a predetermined frequency in the resonator and for sensing the acoustic signal in the resonator, the sensed signal having a component representing the position of the object with respect to the sensing port;

characterized by said acoustic transducer means comprising a sheet of poled piezoelectric material having electrodes on



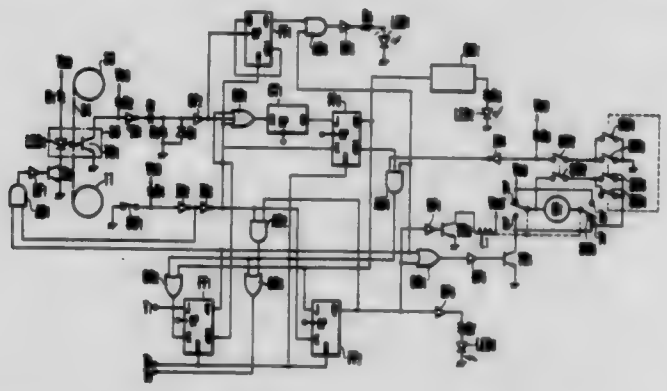
opposite sides thereof, said sheet being fixed over a transducer port in said acoustic resonator.

4,494,842

AUTOMATIC REWINDING DEVICE FOR FILM IN CAMERA

Hiroyuki Kimura; Mutsunobu Yazaki, both of Kanagawa; Hideo Taka, and Makoto Masunaga, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1982, Ser. No. 441,066
Claims priority, application Japan, Nov. 13, 1981, 56-182036; Nov. 13, 1981, 56-182037; Nov. 13, 1981, 56-182038
Int. Cl.[3] G03B *1/18*
U.S. Cl. 354—173.11 9 Claims



1. An automatic rewinding device for film in a camera comprising:

(a) transporting means for moving film in response to the driving force of an electric motor;

(b) timer means having a released state and a reset state for producing a first signal a predetermined time after having been released from the reset state;

(c) changeover means for receiving said first signal to change over a film winding operation of said transporting means to a film rewinding operation;

(d) detecting means for detecting film movement during film winding by said transporting means and for producing a second signal for resetting said timer means in response to movement of the film;

(e) reset means for producing a third signal for resetting said timer means when one cycle of film winding operation for one frame is completed; and

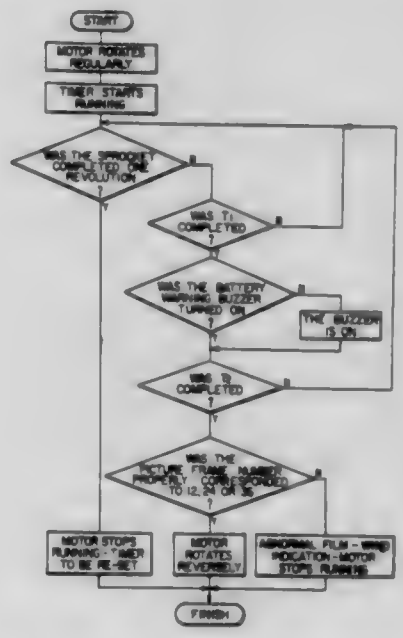
(f) latch means for latching the first signal of said timer means, said latch means producing a fourth signal for actuating said timer means to be reset as the first signal is latched.

4,494,843

AUTOMATIC FILM REWIND METHOD FOR CAMERA

Takashi Kobayashi, Tsuru; Takeshi Inagaki, Hachioji; Hiroshi Takahashi, Hachioji, and Takayuki Ohira, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Oct. 15, 1982, Ser. No. 434,627
Claims priority, application Japan, Oct. 19, 1981, 56-167437
Int. Cl.[3] G03B *1/60, 17/36*
U.S. Cl. 354—214 8 Claims



1. A method for automatically rewinding the film in a camera having a battery-powered automatic film rewinder, the method comprising the steps of:

(a) detecting a phenomenon in which a frame of film is not being advanced normally;

(b) determining whether the film is not advancing normally because of battery deterioration;

(c) determining whether the frame number of the film being advanced corresponds to a specific frame number of the film; and

(d) rewinding the film only if the film is not advancing normally and the frame number of the film being advanced corresponds to a predetermined number.

4,494,844

LIGHT SHADING DEVICE FOR A CAMERA

Masahisa Fujino; Akio Sunouchi, both of Tokyo; Ryuji Suzuki, and Tatsuo Konno, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 8, 1982, Ser. No. 386,234
Claims priority, application Japan, Jun. 18, 1981, 56-90385
Int. Cl.[3] G03B *9/28, 19/12*
U.S. Cl. 354—241 5 Claims

1. A light shading device for a camera having a focal plane shutter comprising:

a rear wall forming a part of the camera body for defining an exposure window;

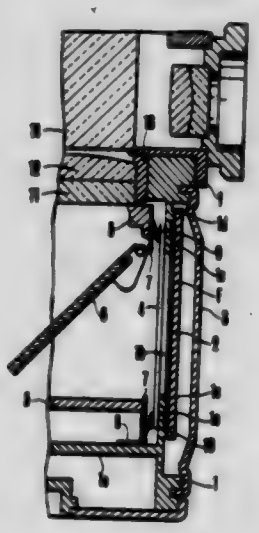
a shutter curtain arranged to run in a shutter curtain running path extending in front of said exposure window so as to open and close said exposure window;

a plurality of supports fixed in the camera body arranged to face said shutter curtain running path, each of said supports defining a planar surface extending generally in parallel relationship to the plane of said shutter curtain and a protuberant part defined with a stepped configuration extending outwardly from said planar surface toward said shutter curtain; and

a light shading curtain consisting of a relatively soft resilient material, said light shading curtain including a base part which is rigidly affixed on said planar surface and a pro-

jecting part extending from said base part with its end in abutting contact with said shutter curtain;

said projecting part having a generally planar surface in abutting contact with said protuberant part to be resiliently deflected in order to urge said end thereof into contact with said shutter curtain said protuberant part being defined by a pair of nonparallel generally planar



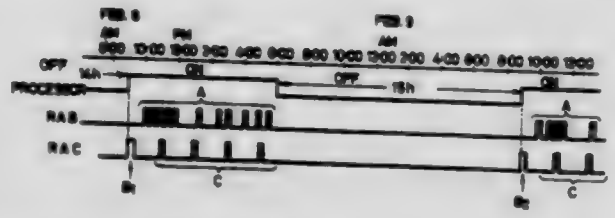
surfaces both of which extend transversely to said abutting surface of said projecting part, said base part being located on said planar surface relative to said protuberant part so that the cooperation between said protuberant part and said projecting part operates to effect a particular spacing between said base part and said abutting contact thereby to effect a desired resilient pressure with which said end of said projecting part abuts said shutter curtain.

4,494,845

SYSTEM FOR CONTROLLING THE ACTIVITY OF DEVELOPING SOLUTIONS AND APPARATUS FOR PROCESSING PHOTOSENSITIVE MATERIALS

Haruo Aoki, Kanagawa, and Masahiro Terahata, Tokyo, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 2, 1983, Ser. No. 500,596
Claims priority, application Japan, Jun. 2, 1982, 57-94271; Jun. 2, 1982, 57-94272
Int. Cl.³ G03D 3/06; G06F 15/46
U.S. Cl. 354—297
6 Claims



1. A method for controlling the activity of developing solution, comprising the steps of:

electronically storing data collected through the use of control strips, said control strips providing reference data on first and second testing scales, said testing scales being correlative to different photographic sensitivities;

electronically comparing the most recently collected first testing scale data with first testing scale data stored previously to correct the developing solution condition for which said testing scale is correlative;

electronically revising said second testing scale data to comport with the correction to the developing solution brought about by the previous step; and

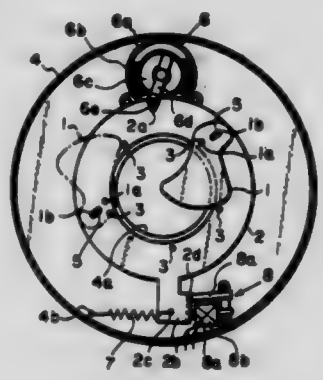
electronically comparing the most recently collected and revised second testing scale data with second testing scale data stored previously to correct the developing solution condition for which said second testing scale is correlative.

4,494,846

ELECTROMAGNETIC SHUTTER

Tomio Kurosu, Iwatsuki, and Yukio Yoshikawa, Tokyo, both of Japan, assignors to Copal Company Limited, Tokyo, Japan

Filed Oct. 25, 1982, Ser. No. 436,567
Claims priority, application Japan, Oct. 27, 1981, 56-159799; Oct. 27, 1981, 56-159800
Int. Cl.³ G03B 7/08, 7/26, 9/08
U.S. Cl. 354—400
12 Claims



1. Electromagnetic shutter for a camera having an exposure control circuit comprising:

shutter blades for opening and closing the aperture of said shutter;

a shutter control circuit having a photoelectric element for measuring the scene brightness as to generate a proper exposure signal for closing said shutter blades for the proper exposure after the same have been opened;

holding means for releasably holding said shutter blades in the closed positions;

said holding means comprising composite magnetic means consisting of a permanent magnet for holding said shutter blades in closed positions to close said aperture and an electrical coil wound about said permanent magnet for cancelling the magnetic force of said permanent magnet upon energization thereof, thereby permitting said shutter blades, which are held in their closed positions by said permanent magnet, to be released when said coil is energized for a short time period;

spring means for opening said shutter blades when the holding of said shutter blades in the closed positions by said holding means is released; and

electromagnetic driving means actuated by said proper exposure signal of said shutter control circuit for driving said shutter blades from the open positions to the closed positions against the action of said spring means so as to permit said shutter blades to be held in the closed positions by said holding means.

4,494,847

DISTANCE MEASURING SYSTEM

Masanori Yamada, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 11, 1982, Ser. No. 407,280
Claims priority, application Japan, Aug. 18, 1981, 56-129171; Jan. 14, 1982, 57-4310
Int. Cl.³ G03B 7/08, 15/03, 17/40; G01C 3/00
U.S. Cl. 354—403
9 Claims

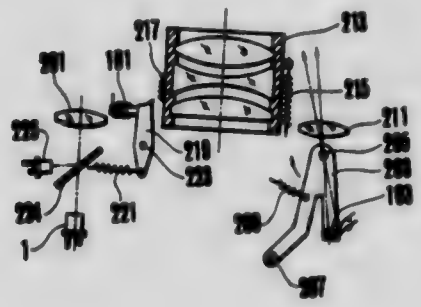
1. A distance measuring system comprising:

(a) light emitting means for emitting light to illuminate an object;

(b) light measuring means for measuring light reflected from the object;

(c) means for broadening a distance measuring zone when

the brightness on the object is lower from a distance measuring zone when the brightness is high; and



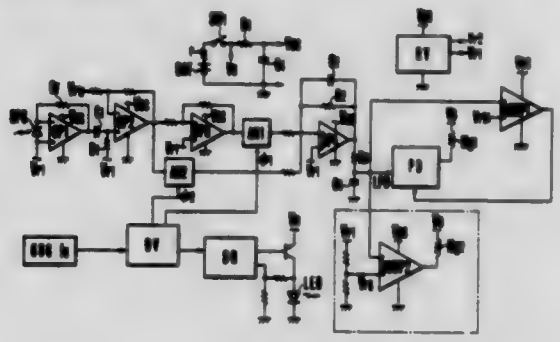
(d) electrical output means for producing the output signal of said light measuring means in the form of a signal representing a distance to the object.

4,494,848

DISTANCE MEASURING DEVICE

Masahiko Ogawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1982, Ser. No. 408,603
Int. Cl.[3] G03B *7/08*; G01C *3/00*
U.S. Cl. 354—403 18 Claims



1. A distance measuring device to project a distance measuring signal onto an object and receive a signal reflected therefrom thereby measuring a distance to said object, comprising:
(A) signal receiving means for receiving said distance measuring signal reflected from the object;
(B) distance indicating means for indicating a distance to the object depending on an output of the signal receiving means;
(C) detection means for detecting when the signal receiving means is placed in a saturated state by external noise elements received together with the distance measuring signal, said detection means being arranged for regulating the operation of the distance indicating means when the saturated state is detected.

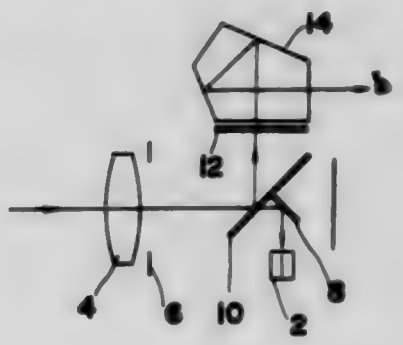
4,494,849

FOCUS DETECTING DEVICE FOR A CAMERA

Yasuhiro Nambe, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 8, 1983, Ser. No. 472,883
Claims priority, application Japan, Mar. 9, 1982, 57-37832; Dec. 27, 1982, 57-230012
Int. Cl.[3] G03B *3/00*
U.S. Cl. 354—406 31 Claims

1. A focus device for detecting a focusing condition of an objective lens by receiving the light passed through the objective lens, comprising:
means for receiving the light rays passed through said objective lens to produce electrical signals, said light receiving means including a first photoelectric device which contains a plurality of photoelectric elements in contact with an optical axis of said objective lens in such a manner that said photoelectric elements are arranged in parallel with said optical axis for receiving the light rays passed through a first portion of said objective lens, and a second photoelectric device which contains a plurality of photoelectric elements in contact with the optical axis in such a manner that said photoelectric elements are arranged in



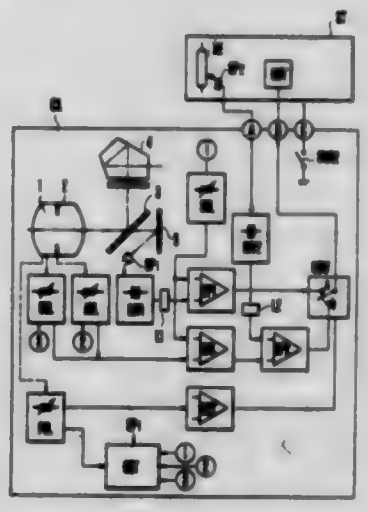
parallel with said optical axis for receiving the light rays passed through a second portion of said objective lens with respect to a predetermined focal plane in accordance with said electrical signals from said light receiving means.

4,494,850

FLASH PHOTOGRAPHING SYSTEM

Makoto Katsuma; Masaharu Kawamura, and Masanori Yamada, all of Kanagawa, Japan, assignors to Canon Kabushiki, Kaisha, Tokyo, Japan

Filed Jun. 16, 1983, Ser. No. 505,082
Claims priority, application Japan, Jun. 21, 1982, 57-107250; Jun. 22, 1982, 57-107482
Int. Cl.[3] G03B *15/05*
U.S. Cl. 354—416 32 Claims



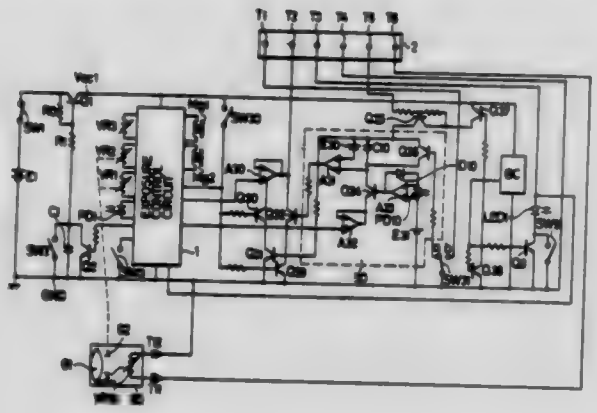
32. A flash device comprising:
(a) flash means; and
(b) a control circuit having a distance light adjusting mode and a second light adjusting mode in which the control circuit adjusts the quantity of light on the basis of a reflected light coming from an object to be photographed as a result of a flash by said flash means, said control circuit being arranged to perform flash exposure control by shifting said distance light adjusting mode to said second light adjusting mode when an accessory that varies the quantity of a transmission light passing through the photo-taking lens of a camera is mounted on the photo-taking lens.

4,494,851

DISPLAY UNIT FOR FLASHLIGHT PHOTOGRAPHY

Osamu Maida; Hiroshi Hasegawa; Nobuyoshi Hagyuda, all of Tokyo, and Yoshikazu Iida, Chigasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 25, 1982, Ser. No. 436,430
Claims priority, application Japan, Oct. 31, 1981, 56/174925; Oct. 31, 1981, 56/174926
Int. Cl.³ G03B 1/00
U.S. Cl. 354—421 20 Claims



1. In a flashlight emission apparatus having means for lighting a flash tube to illuminate an object to be taken and means for controlling the quantity of emitted light from said flash tube, said apparatus being cooperative with a camera having means for generating preset information of ASA speed value of a film and aperture value of the taking lens prior to taking, the improvement provided with a device for making a display of the limit of object distance for providing an optimum exposure to said film by the emitted light controlled by said control means, the device comprising:

(a) means for receiving said preset information from said camera to provide first data corresponding to the received information;

(b) means for providing second data substantially identical with said first data;

(c) means for providing third data indicative of the limit of the quantity of emitted light controllable by said control means;

(d) selection means for selecting one data from the first data and second data;

(e) means for forming an output corresponding to said limit of object distance from said selected one and third data; and

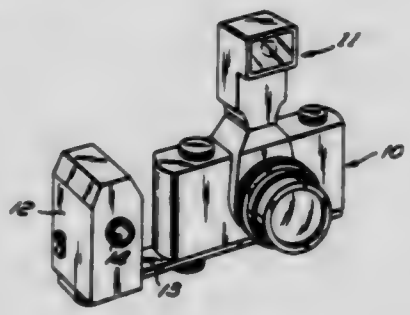
(f) means for effecting a visual display of said limit of object distance in response to the output of said output forming means.

4,494,852

PHOTOFLASH DETECTOR

Roland Smith, Jr., P.O. Box 6789, Hollywood, Fla. 33021

Filed May 25, 1983, Ser. No. 497,880
Int. Cl.³ G03B 17/18, 17/56
U.S. Cl. 354—467 5 Claims



1. A photoflash detector for use with a camera having a photoflash unit for producing a flash of light when the camera shutter opens, said detector comprising:

a light-activated SCR electrically disconnected from said photoflash unit and operatively arranged to be activated in response to a flash of light from the photoflash unit;

a signalling device which produces an audible signal;

circuit means operatively coupling said light-activated SCR to said signalling device to operate the latter in response to the activation of said SCR;

a battery operatively connected to power said light-activated SCR, said signalling device and said circuit means;

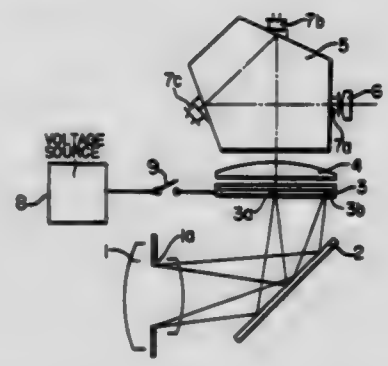
and a housing containing said battery, light-activated SCR, signalling device and circuit means to provide a self-contained unit.

4,494,853

PHOTOMETRIC METHOD FOR CAMERAS

Koji Watanabe, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 23, 1981, Ser. No. 286,194
Claims priority, application Japan, Aug. 2, 1980, 55-106600
Int. Cl.³ G03B 7/08, 13/24
U.S. Cl. 354—478 4 Claims



1. The method of varying photometric sensitivity distribution in a camera having an automatic exposure control of the through-the-lens photometric type in which the amount of exposure is determined by a photoreceptor, which includes the steps of passing the light from the picture area to the photoreceptor and to a view finder through a focusing screen comprising an electro-optical element, and varying the photometric sensitivity distribution by controlling the voltage applied to said electro-optical element, whereby an operator is able to confirm the focusing situation and photometry range through said view finder.

4,494,854

ENERGY SAVING CAMERA

Shigeru Yamaga, Tokyo, and Masamichi Furukawa, Hamamatsu, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 282,073, Jul. 10, 1981, abandoned. This application Aug. 24, 1983, Ser. No. 525,805
Claims priority, application Japan, Jul. 11, 1980, 55-94838; Oct. 13, 1980, 55-145557[U]
Int. Cl.³ G03B 7/26, 17/02; H01M 10/44; H01L 31/04
U.S. Cl. 354—484 15 Claims

1. A power supply circuit of a camera having a camera body provided with a battery chamber for supplying an electric power to a control circuit of said camera for carrying out at least a part of the photographic operation, comprising:

a solar battery;

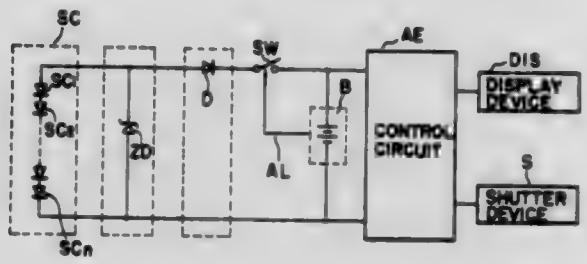
a second battery removably provided in said chamber to be electrically connectable to said control circuit, said second battery being a selected one of either a primary battery or a second battery;

means for indicating said second battery to be a secondary battery when said second battery is a secondary battery;

connection means for electrically connecting said solar battery and second battery in parallel;

switch means provided in said connection means for connecting said solar battery to or disconnecting said solar battery from said second battery through said connection means; and

detecting means for detecting whether said battery is a primary battery or a secondary battery based on said means for indicating when said battery is removably pro-



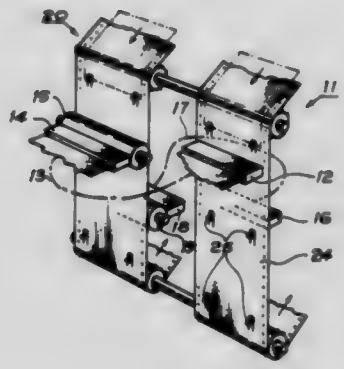
vided in said battery chamber in position, said detecting means causing said switch means to connect said solar battery to said second battery through said connection means only when said second battery is detected to be a secondary battery due to presence of said means for indicating, said detecting means causing said switch means to maintain said solar battery disconnected from said second battery when said second battery is detected to be a primary battery due to the presence of said means for indicating.

4,494,855

SYNCHRONOUS COPYING AND COLLATING SYSTEM

Richard H. Colwill, 1007 Hellam St., Monterey, Calif. 93940

Filed Mar. 7, 1984, Ser. No. 587,110
Int. Cl.[3] G03B *27/00*
U.S. Cl. 355—1 15 Claims



1. A synchronous copying and collating system comprising:

a. an original document feed path and a copy paper feed path arranged side by side;

b. said original and copy feed paths each having reprographic portions extending vertically downward;

c. endless drive belts with drive perforations arranged to move along said reprographic portions of each of said feed paths;

d. pinwheel drive means for moving said endless belts simultaneously at the same speed for moving original paper and copy paper in a substantially continuous succession through each of said paths;

e. said endless drive belts having alignment pegs arranged to locate original and copy paper at predetermined regular intervals on said endless drive belts;

f. at least one fiber optic lens array arranged adjacent said original path for reading information moving down said original path;

g. reprographic means for copying information onto said copy paper moving down said copy path;

h. fiber optic means for transferring information read from said original path to said reprographic means; and

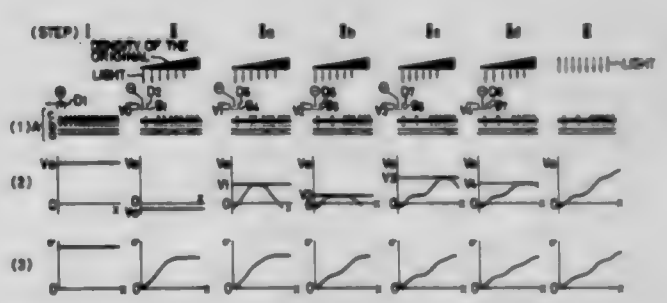
i. a recirculation path for recirculating original documents through said original path.

4,494,856

ELECTROPHOTOGRAPHIC METHOD AND APPARATUS FOR PROVIDING ACCURATE HALF-TONE IMAGES

Takao Aoki, Abiko; Takahiro Inoue; Masahiro Goto, both of Yokohama, and Kenji Takeda, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 20, 1982, Ser. No. 410,061
Int. Cl.[3] G03G *15/22*
U.S. Cl. 355—3 R 14 Claims



1. A process for forming an electrostatic latent image on a photosensitive medium having an electroconductive layer, a photoconductive layer and an insulating surface layer, the process comprising the steps of:

(a) uniformly charging the insulating surface layer of said photosensitive medium with a selected polarity;

(b) subjecting said photosensitive medium to corona discharge having a component of opposite polarity to that of the uniform charge of step (a) while exposing said photosensitive medium to a light image;

(c) increasing the surface potential on said photosensitive medium at the half-tone area of the light image by applying a light image exposure onto said photosensitive medium;

(d) subjecting said photosensitive medium to corona discharge having the component of opposite polarity to that of the uniform charge of step (a) under the effect of light image exposure thereby discharging a portion of the surface potential of the half-tone area previously increased at step (c) so as to decrease the surface potential on said photosensitive medium previously obtained at step (c); and

(e) exposing said photosensitive medium to uniform light.

7. Apparatus for forming electrostatic latent images on a photosensitive medium, said apparatus comprising:

(a) an endless moving photosensitive medium having an electroconductive layer, a photoconductive layer and an insulating surface layer;

(b) optical means for guiding a light image to said photosensitive medium;

(c) means for applying a first charge for uniformly charging the insulating surface layer of said photosensitive medium with a selected polarity;

(d) corona charging means for applying a second charge to said photosensitive medium using corona having the component of opposite polarity to that of the uniform charge with simultaneous image-wise exposure;

(e) corona charging means for applying corona having the component of opposite polarity to that of the uniform charge under the effect of light image exposure to decrease the surface potential on the photosensitive medium as compared to such potential effected by said means for applying said second charge;

(f) guiding means provided between the corona charging means for applying said second and third charge for guid-

ing the light image to the downstream side of said charging means for applying said second charge; and

(g) illumination means for uniformly exposing said photosensitive medium to light.

4,494,857

IMAGING METHOD USING A CHARGED INSULATING LAYER

Tsuyoshi Ueno; Shinichi Hashimoto, both of Fujisawa; Kouzou Matsuyama, Yokohama, and Nobutaka Wakao, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

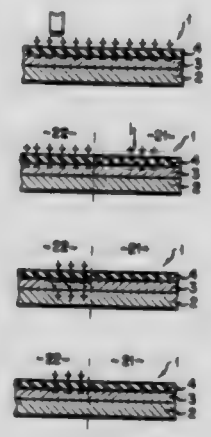
Continuation of Ser. No. 252,194, Apr. 8, 1981, abandoned. This application Apr. 13, 1983, Ser. No. 484,485

Claims priority, application Japan, Apr. 11, 1980, 55-47781

Int. Cl.³ G03G *15/052*

U.S. Cl. 355—3 CH

7 Claims



1. An electrophotographic imaging method for reproducing an image comprising the steps of:

providing a photosensitive drum having a conductive base, a photosensitive layer over said base and an electrically insulating layer over said photosensitive layer;

charging, via a contact-type charger, positive charges on said insulating layer thereby bringing negative charges from said conductive base into said photosensitive layer to exist latently therein;

imaging exposing said photosensitive drum with an image to be reproduced having light and dark regions, the light regions causing some of the positive charges on said insulating layer to be discharged and the dark regions not substantially affecting charges on the insulating layer;

discharging, by applying via a contact-type charger an A.C. voltage to said photosensitive and insulating layers, the A.C. voltage substantially removing from said insulating layer any remaining charges in said light regions while not removing all of the charges in said dark regions thereby rendering said light regions substantially charge-free with said dark regions having charges remaining thereon, latent negative charges in said photosensitive layer corresponding in number to the positive charges reduced by said discharging step being drawn into said conductive base by positive charges generated therein, those negative charges corresponding in number to the number of positive charges on said insulating layer existing latently in said photosensitive layer at said dark regions, the photosensitive and insulating layers being substantially charge free at said light regions, thereby forming a latent image having a contrast corresponding to the image to be reproduced.

4,494,858

GEOMETRIC DESIGN REPRODUCING APPARATUS

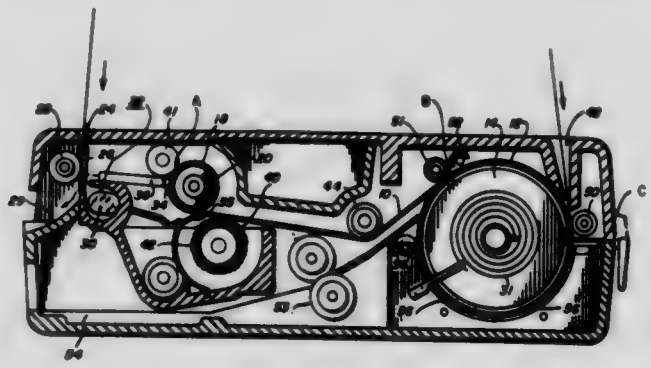
Charles A. Gege, Webster; Timothy T. Blair, Shortsville, and Thomas W. Morgan, Macedon, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 28, 1983, Ser. No. 489,615

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 TR

12 Claims



1. Electrostatographic reproducing apparatus comprising a movable imaging surface, means to transport said imaging surface along a path past a series of operational processing stations including at least an image forming station and a developed toner image and copy substrate contact station, said apparatus also including a copy substrate entrance to the apparatus, a copy substrate path to guide said copy substrate from said entrance to said copy substrate contact station, means to transport said copy substrate along said copy substrate path, the distance along the imaging surface path from said image forming station where the lead edge of an image is formed on the imaging surface to the initial line of contact of the imaging surface with the copy substrate being equal to the distance along said copy substrate path from the copy sheet entrance to the initial line of contact of the lead edge of the copy substrate with the lead edge of the image on the imagining surface, and means at the beginning of each image cycle to simultaneously actuate said movable imaging surface and said copy substrate transport whereby the lead edge of the formed image on the imaging surface and the lead edge of the copy substrate simultaneously arrive at the initial line of contact.

4,494,859

MODULAR READER/PRINTER DEVELOPER APPARATUS

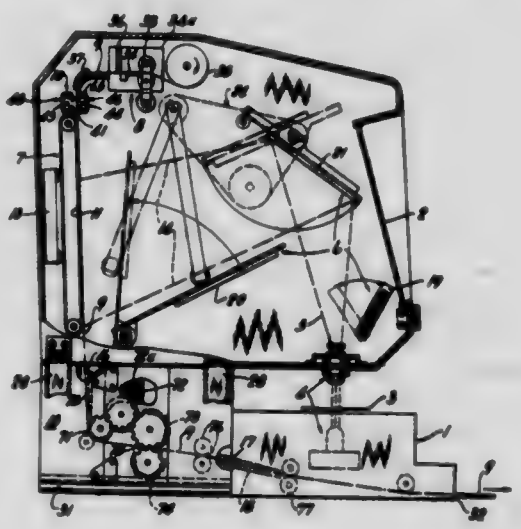
Ronald J. Frias, Milwaukee; David Jagielski, Kewaskum, and Nicholas R. Schetter, Rubicon, all of Wis., assignors to Micron Corporation, Iron Ridge, Wis.

Filed Apr. 6, 1983, Ser. No. 482,524

Int. Cl.³ G03G *15/00, 15/26*

U.S. Cl. 355—5

23 Claims



1. A reader/printer apparatus comprising an optical image

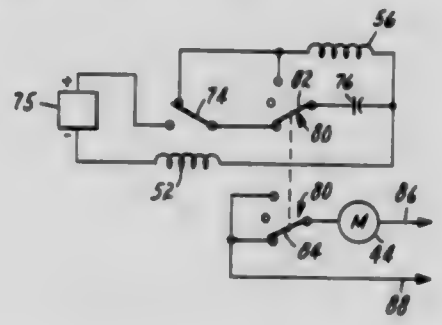
transmitting means, a display means, a photoconductive copy exposure means having a conveyor means, means for selectively coupling said transmitting means to said display means and said exposure means, a supporting main frame for said transmitting means in fixed position relative to said display means and said exposure means and having a hard copy paper outlet, a releasable charger support means located to the infeed side of said exposure means adapted to releasably support an elongated corona charging means having a charging passageway in alignment with said exposure conveyor means, and a developing chamber located to the discharge side of said exposure conveyor means and having an opening for receiving a self-contained developer module, a plurality of said developer modules each having a frame substantially corresponding to said chamber and each being adapted to reliably be mounted within said chamber and each having a paper inlet and a paper discharge aligned with the exposure conveyor means and with said hard copy paper outlet.

4,494,860

CONTROL CIRCUITRY FOR A CONTINUOUS COPY MACHINE

Robert F. Nepper, and Alan J. Solyntjes, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 29, 1983, Ser. No. 518,644
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—13 **3 Claims**



1. An electrically operated copy machine having a transferring mechanism driven by a drive motor for providing synchronous movement in the copy machine of copy paper and original sheets of varying lengths where the copy paper is provided by a continuous web of copy paper from a copy paper supply roll and apparatus and circuitry responsive to the presence and absence of the original for cutting sheets from the copy paper which correspond to the length of the original including:

first and second copy paper feed rollers included in the transferring mechanism, said first feed roller positioned between the copy paper supply roll and said second feed roller;

first and second solenoids, each having a winding;

a capacitor having one side connected to one end of each of said windings;

a D.C. power supply having one side connected to the other end of said second solenoid winding;

a cutter positioned in the path of travel of the copy paper between said first and second feed rollers and operatively connected to said first solenoid;

first switch means positioned along the path of travel for an original sheet presenting a first position and a second position in response to the absence and presence, respectively, of an original sheet presented to the copy machine at said first switch means, said first switch means operatively connected to said other end of said first solenoid winding, the other side of said capacitor and the other side of said D.C. power supply forming a first circuit loop including said first solenoid winding and said capacitor when said switch means is presenting said first position and forming a second circuit loop including said D.C. power supply, said capacitor and said second solenoid winding when said switch means is presenting said second position, said second circuit loop when formed causing said capacitor to be charged and causing said second solenoid winding to be energized while said capacitor is being charged and said first circuit loop when formed subsequent to the formation of said second circuit loop causing said first solenoid winding to be energized by the discharge of said capacitor;

a clutch adapted for control by said second solenoid and operatively engaged between the drive motor and said first feed roller for providing sufficient rotation of said first feed roller to move the copy paper from said cutter to said second feed roller following energization of said second solenoid; and

manually operated second switch means including a first pole presenting a first, a second and a third position and a second pole presenting a first, a second and a third position, said first pole being operatively connected between said first switch means and said other side of said capacitor and to said other side of said first solenoid winding forming a connection between said other side of said capacitor and said first switch means to enable said first switch means to form said first or second circuit loops when said second switch means is presenting said first position, disconnecting said other side of said capacitor and said first switch means to disable said first switch means from forming said first and second circuit loops when said second switch means is presenting said second position and forming a third circuit loop including said first solenoid winding and said capacitor when said second switch means is presenting said third position, said third circuit loop when formed subsequent to the formation of said second circuit loop causing said first solenoid winding to be energized by the discharge of said capacitor, said second pole of said second switch means being adapted to operatively connect said drive motor to a power supply when presenting said first and third positions and disconnecting said drive motor from said power supply when presenting said second position.

4,494,861

COPYING APPARATUS

Tetsuji Tachika, Tokyo; Hisashi Sakamaki, Yokohama, and Hiroyuki Hattori, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 797,846, May 17, 1977, Pat. No. 4,275,958.
This application Dec. 10, 1980, Ser. No. 215,023
Claims priority, application Japan, May 21, 1976, 51-58705
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **6 Claims**

1. A copying system having a copying apparatus comprising:

means for setting numeric data for a copying operation;

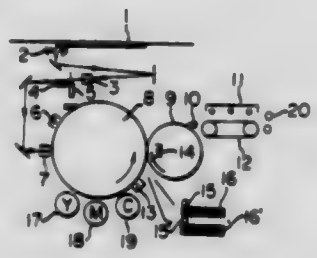
storage means for storing first and second numeric data for a plurality of copying operations, wherein each copying operation comprises the formation of a plurality of complete copies set by said setting means;

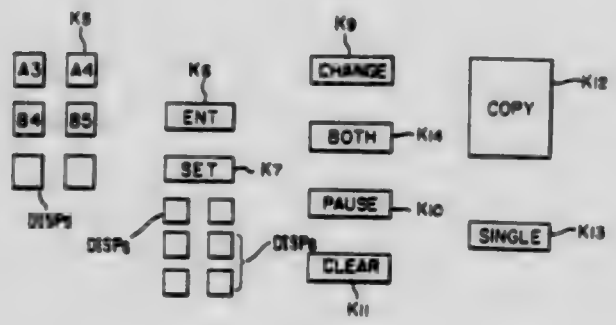
first manual switch means for enabling second numeric data to be set in said storage means by said setting means without affecting the numeric data already stored in said storage means;

second manual switch means for causing the second numeric data to be read out from said storage means after completion of the copying operation according to the first numeric data stored in said storage means; and

control means for causing said copying apparatus to carry out the first copying operation to obtain a first plurality of copies in accordance with the first numeric data and the second copying operation to obtain a second plurality of copies in accordance with the second numeric data read out from said storage means by operation of said second

manual switch means, wherein during the time that the copying operation according to the first numeric data is





being carried out, the second numeric data is retained in said storage means.

4,494,862

COMPUTERIZED INFORMATION PROCESSING SYSTEM EQUIPPED WITH COPYING APPARATUS

Atsuyuki Tanaka, Shinshiro, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 28, 1981, Ser. No. 306,408

Claims priority, application Japan, Sep. 30, 1980, 55-136935; Jul. 31, 1981, 56-121528

Int. Cl.³ G03G *15/04*

U.S. Cl. 355—14 C **10 Claims**

1. A computerized information processing system including a copying apparatus and a computer means provided with a memory means for storing image signals, said copying apparatus being capable of composing an image, on a recording paper, of an original sheet placed on said copying apparatus, including also an image based on the image signals from said computer and at least comprising:

a photoreceptor drum;

a charging means for electrically charging a surface of said photoreceptor drum;

a scanning and projecting means for scanning the original sheet and projecting an optical image of the original sheet onto the surface of said photoreceptor drum;

a transport means for transporting a recording paper;

a transfer means for transferring to the recording paper, an image formed on said photoreceptor drum;

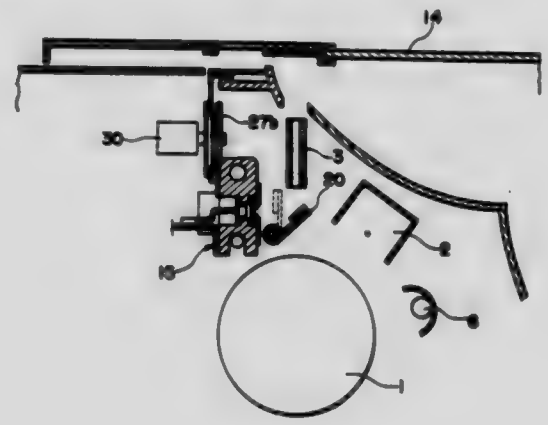
an image forming means for forming a visible image on the recording paper in response to the image signals supplied from said computer;

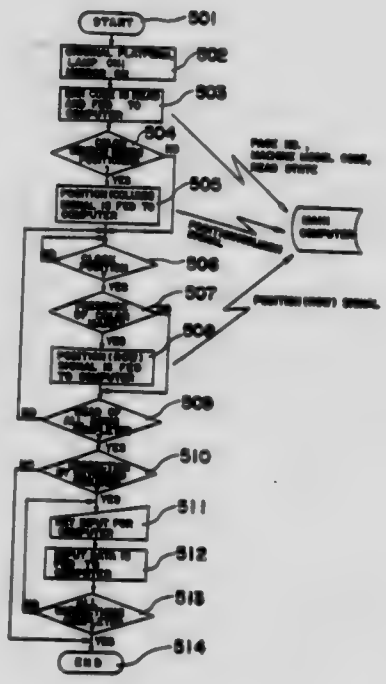
a mark read means for reading optical marks provided on the original sheet and converting the optical marks into electrical signals;

a signal output means for supplying to said computer, the electrical signals as instruction signals thereto;

said computer means being for at least supplying the image signals to said image forming means of said copying apparatus and executing, in response to the instruction signals supplied from said copying apparatus, a predetermined processing of the image signals stored in said memory means; and

said copying apparatus being operatively associated with said computer means in such a manner that, when said copying apparatus forms a composite image on the recording paper by composing a scanned and projected image of the original sheet provided with the optical marks corresponding to predetermined processing instructions to said computer and an image based on a primary image signal supplied from said computer, it thereafter reads, by the use of a read means of said copying apparatus, optical marks on the recording paper having





the composite image formed thereon and then, supplies the instruction signals to said computer means, said computer means producing a secondary set of image signals after executing, in response to the instruction signals, the predetermined processing of the primary image signals and making an output of the secondary image signals at the time of a subsequent copying operation.

4,494,863

CLEANING APPARATUS FOR A CHARGE RETENTIVE SURFACE

John R. Laing, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 25, 1983, Ser. No. 517,151

Int. Cl.³ G03G *21/00*

U.S. Cl. 355—15 **31 Claims**

1. Printing apparatus including:

a charge-retentive surface;

latent image forming means;

means for forming a toner image;

development means;

transfer means;

means for removing residual toner and debris from said charge-retentive surface;

said image forming, development, transfer and toner removing means being positioned adjacent said charge-retentive

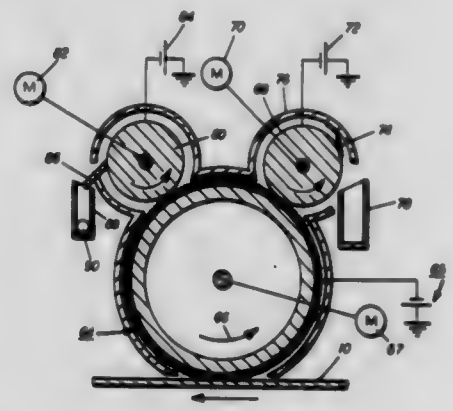
surface so that sections of said charge-retentive surface can be moved therepast in that order;

said residual toner and debris removing means comprising:

a brush supported for rotation and contact with said surface for removing residual toner and debris therefrom;

a first detoning member supported for contact with said brush;

a second detoning member supported for contact with said brush; and



means for electrically biasing said brush and said first and second detoning members to thereby establish an electrostatic field between said brush and each of said detoning members; said electrical biasing means being such as to cause one of said detoning members to attract toner from said brush and the other of said detoning members to attract debris therefrom.

4,494,864

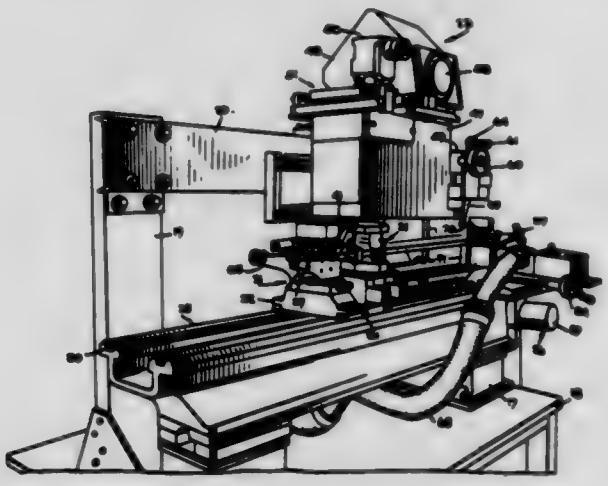
APPARATUS FOR STEREOSCOPIC PHOTOGRAPHY

Edgar C. Smith, Long Island City, and James B. Campbell, New York, both of N.Y., assignors to The Three Dimensional Photography Corp., Yonkers, N.Y.

Division of Ser. No. 864,748, Dec. 27, 1977,. This application Aug. 13, 1979, Ser. No. 65,959

Int. Cl.[3] G03B *27/32, 35/14, 27/62, 27/64*

U.S. Cl. 355—22 25 Claims



1. An apparatus for the processing of a plurality of film image frames comprising

stable means for supporting a carriage assembly means, the carriage assembly means being movable on the stable means and supporting the film image frames,

optical means on the stable means for optical viewing at least two image frames and determining a base distance between the image frames and means for causing a mark to be placed on each of the plurality of frames as the carriage assembly means is moved in accordance with the base distance.

4,494,865

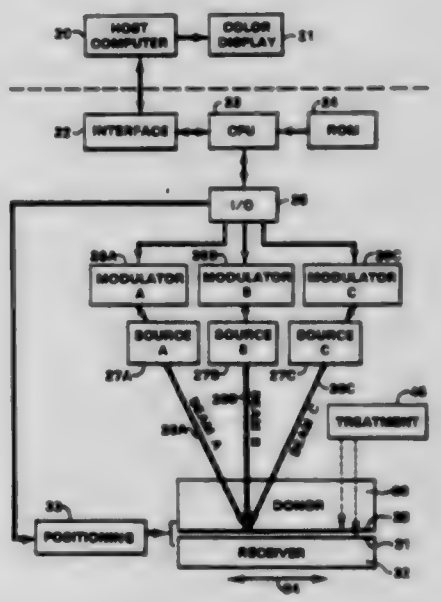
PROVIDING PATTERNS

Paul G. Andrus, Powell; B. Thomas Smith, Upper Arlington, and Thomas M. Dolash, Worthington, all of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed Dec. 13, 1982, Ser. No. 449,365

Int. Cl.[3] G03B *27/32, 27/52*

U.S. Cl. 355—32 38 Claims



1. Apparatus for providing patterns of materials, comprising

a support member having a plurality of groups of surface areas, with each surface area in a given group facing generally in a predetermined direction that is different from the direction faced by the surface areas in any other group,

the surface areas in each group having an energy-modifiable material adjacent thereto,

means for directing energy onto the material adjacent to the surface areas in each group in such manner as to substantially modify some of the material without substantially modifying the material adjacent to the surface areas of the other groups, and

means for positioning a receiver member with a surface thereof adjacent to the groups of surface areas, so as to transfer a substantial proportion either of the modified materials or of the remaining unmodified materials to the receiver surface to form the desired patterns thereon.

4,494,866

APPARATUS FOR SCANNING AN ORIGINAL FOR COPIERS HAVING A VARIABLE REDUCING/ENLARGEMENT RATIO

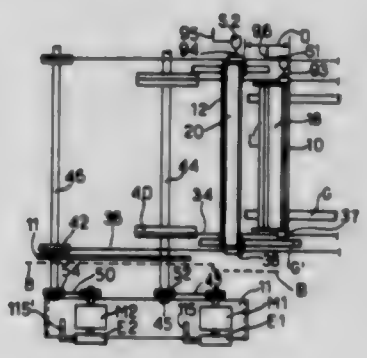
Luciano Rattia, Ivrea, and Amerigo Vigliermo, Baio Dora, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Dec. 13, 1982, Ser. No. 449,388

Claims priority, application Italy, Dec. 21, 1981, 68650 A/81

Int. Cl.[3] G03B *27/34, 27/40, 27/70*

U.S. Cl. 355—57 6 Claims



2. Apparatus for scanning a fixed original to be copied on a

copying machine with different reduction/enlargement ratios comprising

first and second mirror carriages independently movable in the same direction parallel to said original to direct the scanned original image toward a rotatable image receptor,

a first motor connected to said first carriage to move it at a preset speed according to a selected reduction/enlargement ratio,

a control circuit responsive to said selected ratio to activate said first motor at said preset speed,

a second motor connected to said second carriage and activated by said control circuit to move said second carriage simultaneously with said first carriage at a second speed in predetermined ratio to said preset speed,

said control circuit comprising a frequency generator controlled by a control unit to generate reference frequencies selectively variable according to said selected reduction-/enlargement ratio,

a first driving circuit to drive said first motor at said preset speed depending on said reference frequencies,

a second driving circuit independent of said first one to drive said second motor at said second speed, and

a frequency divider connected between said generator and said second driving circuit to divide by two each of said selected frequencies thereby to control said driving circuit so that said second motor is rotated at half speed with respect to said first motor,

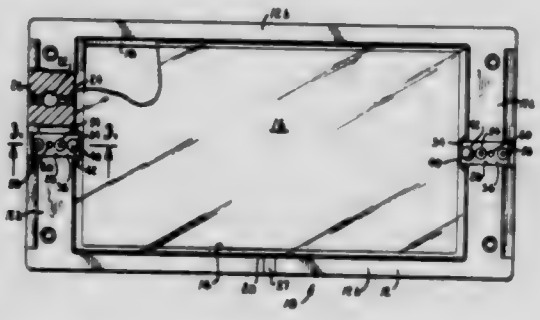
whereby said second carriage travels at said second speed simultaneously with said first carriage to scan said original irrespective of the variations of said preset speed.

4,494,867

PIN MOUNTING PLATE FOR VACUUM FILM HOLDERS

Joseph H. Wally, Jr., Shawnee Mission, Kans., assignor to Opti-Copy, Inc., Lenexa, Kans.

Filed Jul. 18, 1983, Ser. No. 514,634
Int. Cl.[3] G03B *27/60*
U.S. Cl. 355—73
19 Claims



1. An arrangement for mounting a registration pin at a preselected location on a vacuum film holder having a frame presenting an opening and a recessed shelf around the opening, a transparent panel seating on the shelf to cover the opening, and a vacuum channel extending around the panel for applying vacuum to the film to hold same flatly against the panel, said arrangement comprising:

means providing a recess in the frame adjacent the vacuum channel;

a notch in the panel at a location aligned with said recess and adjacent the vacuum channel on the opposite side of the channel from the recess;

a plate having a size to fit partially in said recess and partially in said notch to bridge the vacuum channel;

means for mounting the registration pin on said plate to project from one side thereof;

an aperture in the frame at a location within said recess;

a locator pin for insertion in said aperture; and

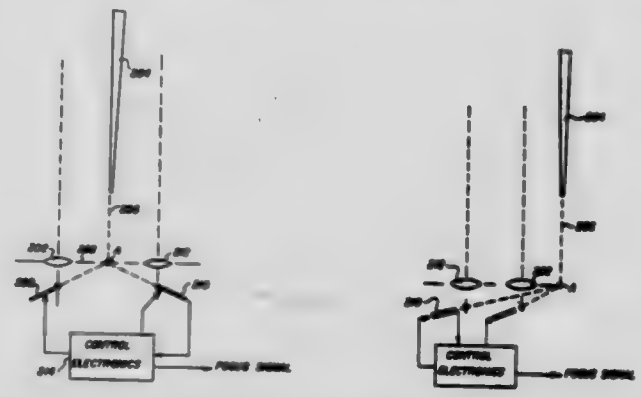
means for mounting said locator pin on said plate to project from the side thereof opposite said one side at a location to position said registration pin at said preselected location when said plate is inserted in said recess and notch with said locator pin received in said aperture.

4,494,868

RANGEFINDER DEVICE WITH FOCUSED ELONGATED LIGHT SOURCE

David N. Lambeth, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 18, 1982, Ser. No. 409,260
Int. Cl.[3] G01C *3/10*; G03B *7/08*
U.S. Cl. 356—1
14 Claims



1. A rangefinder device, comprising:

(a) means for illuminating a spot on an object in a scene, including:

(1) an elongated light source having a longitudinal axis, and

(2) a first lens positioned with respect to the elongated light source such that the longitudinal axis of the light source intersects the principle plane of the first lens for projecting a real image of said light source, said real image defining an elongated beam region extending generally parallel to and displaced from the optical axis of the lens whereby an object located in said beam region will be illuminated with a spot of light having an in-focus component; and

(b) means for viewing the scene to determine the distance to the object by detecting the apparent location of the in-focus component of the illuminated spot in the scene, including:

(1) a linear image sensor having a longitudinal axis, and

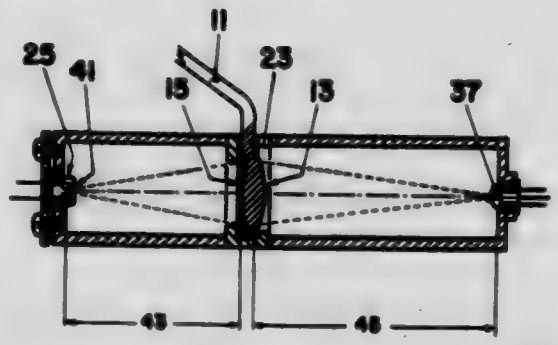
(2) a second lens positioned with respect to the linear image sensor such that the longitudinal axis of the linear image sensor intersects the principle plane of the second lens for forming an image of said elongated beam region on said linear image sensor.

4,494,869

APPARATUS AND METHOD FOR PHOTOMETRIC MEASUREMENT OF OIL PRESENT ON HUMAN SKIN

Hans D. Neumann, 1011 Parma Way, Los Altos, Calif. 94022

Filed Jun. 22, 1982, Ser. No. 391,078
Int. Cl.[3] G01N *1/10, 33/26*
U.S. Cl. 356—36
5 Claims



4. Apparatus for sampling the oiliness of the skin, comprising

a sampling pellet having optically smooth opposing surfaces, one of said surfaces being brought into contact with the skin to transfer oil from the skin to that surface and at least one of said surfaces being a curved surface.

4,494,870

ARRANGEMENT FOR SETTING OUT POINTS AND STRAIGHT LINES

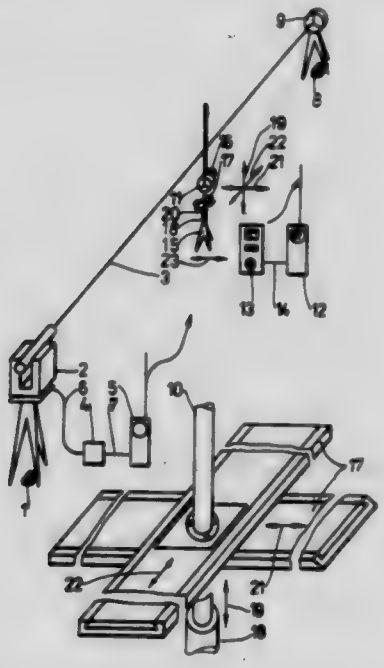
Peter Heutschel; Wolfgang Meyl, and Egon Seipelt, all of Dresden, German Democratic Rep., assignors to Jenoptik Jena G.m.b.H., Jena, German Democratic Rep.

Filed May 14, 1981, Ser. No. 263,785

Claims priority, application German Democratic Rep., Jun. 30, 1980, 222231

Int. Cl.[3] G01B *11/26;* G01C *3/08, 15/02*

U.S. Cl. 356—152 3 Claims



1. An arrangement for setting out terrain points and straight lines comprising

a tacheometer for emitting a measuring beam and detecting the same,

said tacheometer being stationed at a first end point of a straight line,

a first reflector for marking a second end point of said straight line,

a second reflector for setting out a terrain point on said straight line,

said first reflector being for reflecting said measuring beam to said tacheometer, said tacheometer being for detecting the intensity of the reflected measuring beam and for measuring the distance between said first end point and said second reflector,

means for converting said intensity and said distance measured into measuring signals and for transmitting said measuring signals,

said means for converting and transmitting being connected to said tacheometer,

an interrupter attached to said second reflector for interrupting said measuring beam and, hence, reducing said intensity,

a tripod vertically adjustable,

a cross-slide for horizontal displacements,

said cross-slide being attached to the upper portion of said tripod,

said interrupter and said second reflector being seated on said cross-slide,

said tripod and said cross-slide being for displacing said interrupter and said second reflector at right angles and in parallel to said measuring beam,

a measuring signal detector being stationed at the terrain point to be set out and being for detecting said measuring signals transmitted from said means for converting and transmitting,

an indicating means being connected to said signal detector, for indicating said measuring signals and variations of said measuring signals at displacements of said interrupter and said second reflector.

4,494,871

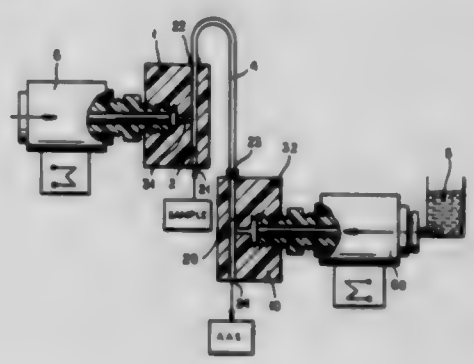
DEVICE FOR PULSE DOSAGE OF LIQUID MICROSAMPLES INTO THE FLAME OF ATOM ABSORPTION SPECTROPHOTOMETER

Lyubomir P. Futekov; Georgi L. Bekyarov, and Rina G. Parichkova, all of Plovdiv, Bulgaria, assignors to Nauchno-Proizvodstveno Predpriyatie "Balkan", Plovdiv, Bulgaria

Filed Nov. 18, 1981, Ser. No. 322,544

Int. Cl.[3] G01N *21/72*

U.S. Cl. 356—315 4 Claims



1. In an atomic absorption spectrophotometer provided with a flame liquid sample atomizer, and a source of a liquid sample to be analysed, the improvement which comprises:

a three-way distributor having a throughgoing passage interconnecting a pair of ports, and a further passage opening into said throughgoing passage between said pair of ports;

means connecting one of the ports of said pair to said source;

means for connecting the other port of said pair to said atomizer;

an electromagnetic valve connected to said further passage for admitting air through said further passage to said throughgoing passage, the means connecting said other port to said atomizer including a second three-way distributor having a throughgoing passage communicating between said other port and said atomizer and a further passage opening into said throughgoing passage, communicating with a supply vessel for a solvent and provided with a second electromagnetic valve for closing the further passage, said second distributor being located at a level below the first distributor.

4,494,872

MULTIPLE ENTRANCE APERTURE DISPERSIVE OPTICAL SPECTROMETER

Kenneth W. Busch, Waco, Tex., assignor to Baylor University, Waco, Tex.

Continuation-in-part of Ser. No. 195,210, Oct. 17, 1980, Pat. No. 4,375,919, which is a continuation of Ser. No. 33,235, Apr. 25, 1979, abandoned. This application Mar. 24, 1982, Ser. No. 361,264

Int. Cl.[3] G01J *3/20*

U.S. Cl. 356—328 35 Claims

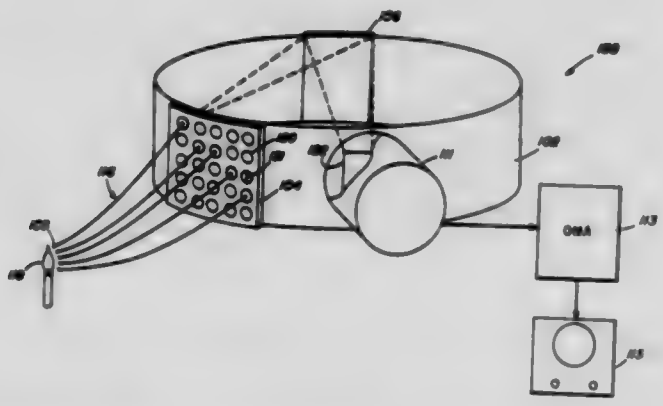
1. An optical fiber polychromator comprising:

an optical arrangement including entrance means for admitting light radiation into an entrance focal plane, display means located at a predetermined exit focal plane, and spectrum means for separating said radiation into spectral components determined by the position at which said radiation is admitted into said entrance plane and for focusing said spectral components on said display means;

a plurality of optical fibers, each of said optical fibers having

one end positioned near a light source and the other end positioned adjacent to said entrance focal plane for guiding radiation to said entrance plane; and

means included in said entrance means for retaining the end of each of said optical fibers nearest said entrance plane in any one of a plurality of locations in a predetermined array, each of said locations in said array being defined by



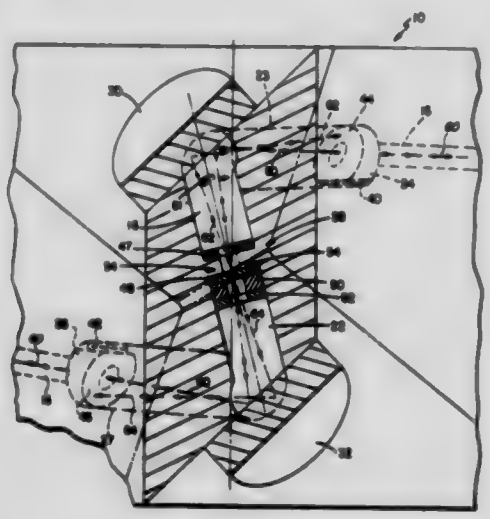
column and row coordinates in a fixed rectilinear matrix located in said entrance focal plane, said column and row coordinates being separated by predetdetermined distances and said optical fibers being retained at locations of said array so that no two of said fibers are aligned within the same row, whereby radiation admitted by said fibers is displayed at said exit plane in parallel non-overlapping spectral bands.

4,494,873

ELECTROMAGNETIC WAVE REFLECTIONS ABSORBER

Michael Perlmutter, Sherborn, and Lawrence L. Clampitt, Wayland, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Feb. 17, 1981, Ser. No. 235,320
Int. Cl.[3] G01C *19/64*
U.S. Cl. 356—350 9 Claims



1. In combination:

means for producing a plurality of counter-traveling electromagnetic waves within a closed path with a gain medium;

means for producing a direction-dependent phase shift to said waves resulting in a frequency splitting between said counter-traveling waves; and

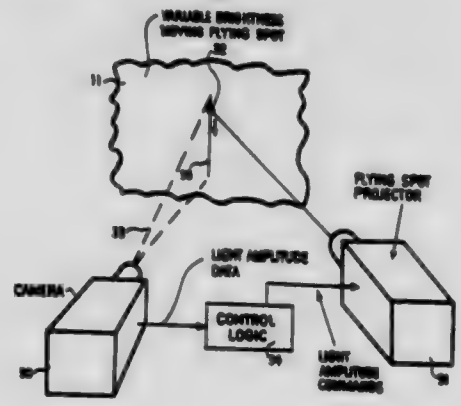
means for absorbing electromagnetic waves reflected from said direction-dependent frequency splitting means, said absorbing means comprising a conical shield with a light wave absorptive coating deposited on said shield.

4,494,874

DETECTION OF THREE-DIMENSIONAL INFORMATION USING A PROJECTED POINT OR LINE OF LIGHT

Paul DiMatteo, Huntington, and Joseph Ross, Fort Salonga, both of N.Y., assignors to Robotic Vision Systems, Inc., Hauppauge, N.Y.

Filed Jul. 7, 1981, Ser. No. 281,068
Int. Cl.[3] G01B *11/24*
U.S. Cl. 356—376 6 Claims



1. A method of detecting three-dimensional information, comprising the steps of: projecting a variable-intensity flying spot of light onto an object to be scanned; effecting a first scan by causing relative movement between object and light spot; receiving light-intensity signals in a single reflected light ray from the object point-by-scanned-point and modifying the intensity of the light spot in accordance with each received signal; effecting a second scan by causing relative movement between object and light spot; and reducing the light-spot intensity during the second scan at such points of the object where the signal was strong during the first scan, and increasing the light-spot intensity during the second scan at such points where the signal was weak during the first scan, said steps of effecting a first scan and a second scan comprising measurements of a multiplicity of points independent of light intensity at the object, so that accuracy of said measurements is not influenced by the light intensity at the object, the light-spot intensity during said second scan being dependent on said light-intensity signals of said first scan for preventing inaccuracy due to measurement delay and lag in modifying by a distance equal to scan velocity multiplied by measurement delay time.

4,494,875

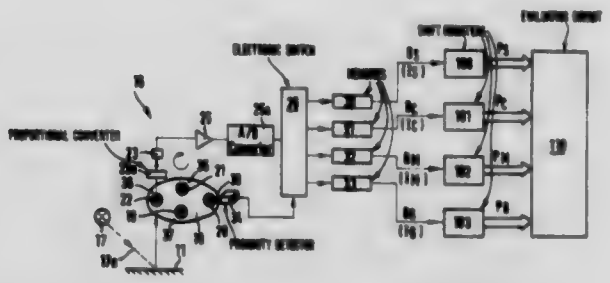
METHOD AND APPARATUS FOR MONITORING AND EVALUATING THE QUALITY OF COLOR REPRODUCTION IN MULTI-COLOR PRINTING

Peter Schramm, Kahl, and Walter Feulner, Puchheim, both of Fed. Rep. of Germany, assignors to Grapho Metronic Mess- und Regeltechnik GmbH & Co. KG, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 278,560, Jun. 29, 1981, abandoned. This application Dec. 9, 1981, Ser. No. 328,864
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1980, 3024773
Int. Cl.[3] G01J *3/50*
U.S. Cl. 356—402 20 Claims

10. Apparatus for automatically examining a color control strip which is imprinted on a sheet-like carrier in a multi-color printing machine and contains a series of neighboring patches in a plurality of different colors, comprising means for sensing color-dependent properties of successive patches of the strip and for generating a plurality of signals during scanning of each patch; means for effecting a relative movement between the strip and said sensing means; a plurality of memories, one for each of said different colors and each arranged to store a predetermined number of signals transmitted by said sensing means and pertaining to the respective color as well as to

eradicate the oldest stored signal on reception of a fresh signal so that, once the memories receive predetermined numbers of



signals, the number of stored signals in each of said memories remains unchanged; and means for automatically evaluating said predetermined numbers of stored signals.

4,494,876

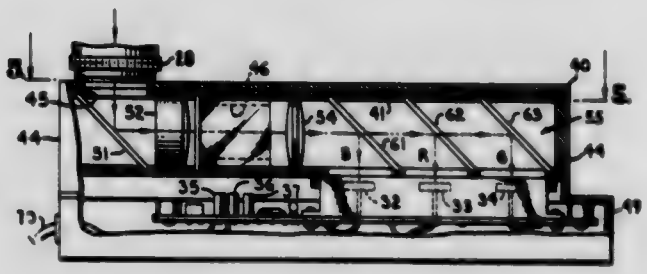
INTEGRATOR FOR ANALYZING THE SPECTRAL CONTENT OF PRINTING ILLUMINATION

Henri Van Wandelen, Overland Park, Kans., assignor to Bremson Data Systems, Inc., Lenexa, Kans.

Filed Feb. 17, 1982, Ser. No. 349,460

Int. Cl.³ G01J *3/50*

U.S. Cl. 356—404 **24 Claims**



3. An integrator for analyzing the spectral content of printing illumination, which comprises:

(a) a first color separation filter for diverting a first color from an optical path of the printing illumination;

(b) a second color separation filter receiving said printing illumination from said first color separation filter and diverting a second color from said optical path;

(c) a first phototransducer receiving said first color and providing a signal representative of the intensity thereof;

(d) a second phototransducer receiving said second color and providing a signal representative of the intensity thereof;

(d) a third phototransducer receiving a third color passing through said second color separation filter and providing a signal representative of the intensity thereof;

(f) a density classifier; and

(g) a specular filter angularly disposed in the optical path of said printing illumination and diverting a portion thereof to said density classifier.

4,494,877

FUNNEL MEMBER FOR SINGLE-SCREW EXTRUDER

Hartmut Upmeier, and Thilo Schreiber, both of Lengerich, Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Jul. 22, 1983, Ser. No. 516,375

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1982, 3227443

Int. Cl.³ B28C *7/04*; B29F *3/02*

U.S. Cl. 366—76 **7 Claims**

1. A single-screw extruder comprising:

a housing;

a sleeve defined by said housing;

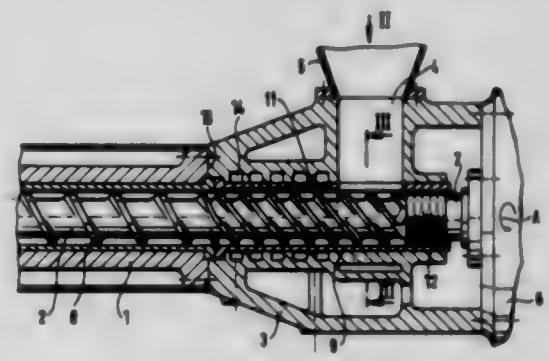
a feed screw mounted within said sleeve;

an eccentric filling aperture defined by the housing being positioned tangentially to said feed screw;

a plurality of grooves defined by said housing being in communication with said sleeve and extending parallel to the longitudinal axis of said sleeve, said plurality of grooves decreasing in depth along the longitudinal axis of the sleeve;

a first zone of said sleeve positioned adjacent to said eccentric filling aperture wherein said plurality of grooves are spaced about the circumference of said sleeve; and

a second zone of said sleeve including said eccentric filling aperture wherein some of said plurality of grooves are spaced about a portion of the circumference of said sleeve, said portion of the circumference of the sleeve extending from one edge of the eccentric filling aperture to a point radially opposite to the one edge of the eccentric filling aperture.



4,494,878

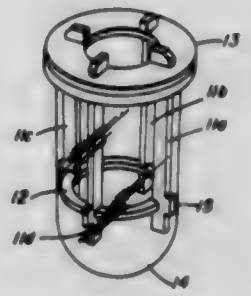
FASTENER-FREE BAFFLE ASSEMBLY SYSTEM

Charles E. Rainey, Jr., North Richland Hills, Tex., assignor to Graham Magnetics Incorporated, North Richland Hills, Tex.

Filed Jul. 14, 1983, Ser. No. 513,770

Int. Cl.³ B01F *7/00*; B01J *14/00*

U.S. Cl. 366—341 **11 Claims**



1. A removable, fastener-free, baffle assembly for use with agitated vessels, said baffle assembly comprising:

(a) an upper support member adapted to rest upon the upper surface of the mouth of said vessel,

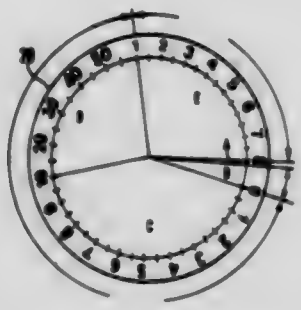
(b) a plurality of baffle members forming a fastener-free interlock with said upper support member, and depending therefrom

(c) a lower stabilizing ring forming a fastener-free interlock with said baffle members at a point along the lower half of said members and along the interior sides of said members.

4,494,879
OPERATING ARRANGEMENT FOR AN ELECTRO-MECHANICAL CHRONOMETER

Alfred Meixner, Nuremberg, Fed. Rep. of Germany, assignor to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Jan. 20, 1984, Ser. No. 572,360
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1983, 3337574
Int. Cl.³ G04B *19/00*; G04F *8/00*
U.S. Cl. 368—76
9 Claims

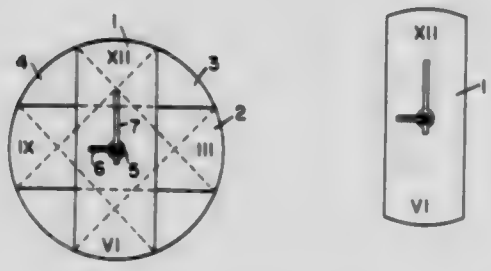


1. In an operating arrangement for a chronometer including an analog display with at least one indicator element, such as for a microchronometer or a microswitch, wherein the indicator element is driven at a rotational speed which is dependent upon the display position; the improvement comprising an electro-mechanical transducer forming a driving element; and switch means controlled in dependence upon the display position operative in one of at least two different pulse frequencies, wherein said switch means actuates said transducer in dependence upon the position of the analog display.

4,494,880
FOLDABLE CLOCK DIAL

Wen-Kuang Su, 11th Fl. No. 56 Nan-King E. Rd. Sec. 4, Taipei, Taiwan

Filed Mar. 14, 1984, Ser. No. 590,022
Int. Cl.³ G04B *19/06*
U.S. Cl. 368—232
6 Claims



1. A foldable clock dial comprising a plurality of plates adapted to be coaxially mounted on the axle sleeve of a clock movement in such a manner that the plates can be rotated about the axle sleeve into a first position to form a complete dial having a predetermined shape, and into a second position in which the plates are folded up to form a small, compact package.

4,494,881
INTRA-OPTICAL LIGHT BEAM SIGHTING SYSTEM FOR AN INFRARED THERMOMETER

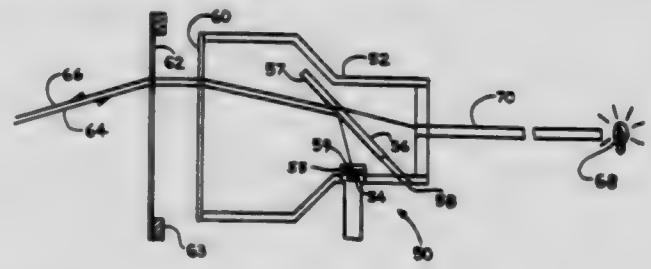
Charles E. Everest, 11662 Pinclan Way, Santa Ana, Calif. 92705

Filed Mar. 10, 1982, Ser. No. 356,869
Int. Cl.³ G01J *5/08*
U.S. Cl. 374—124
5 Claims

1. In an infrared thermometer of the transportable type, housing an infrared detector for generating a signal representative of the infrared energy transmitted to the thermometer from an object of which the temperature is to be measured and having a display for indicating the measured temperature; the improvement comprising:

a source of visible light contained within said thermometer,

an optical lens apparatus having equal effective spaced aperture means in said thermometer for directing said infrared energy onto said infrared detector and for transmitting said visible light out of said thermometer,



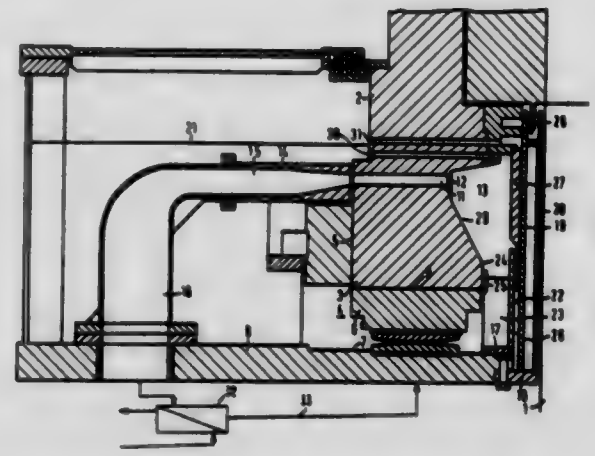
the beam of infrared energy and visible light being congruent between said thermometer and said object whereby a visible intersection of the infrared field of view of the thermometer with said object is provided, and

means separating said light source from said detector preventing said visible light from being incident on said infrared detector.

4,494,882
SELF-PUMPING THRUST BEARING FOR ELECTRIC MACHINES

Hans-Jurgen Pollok, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 429,865
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1981, 3141061
Int. Cl.³ F16C *17/06, 17/00, 33/10*
U.S. Cl. 384—307
3 Claims



1. A self-pumping thrust bearing for electric machines having a vertical shaft comprising a rotating thrust ring, a thrust ring cup in which the thrust ring is disposed, an oil space between the thrust ring and the vertical shaft disposed above a bearing gap, a first set of approximately radially-extending bores in the rotating thrust ring in communication with the oil space, a ring canal arranged in a stationary part adjacent to the thrust ring into which the first set of radial bores open, the first set of radial bores being operative upon rotation of the thrust ring to suck oil from the oil space and feed it to the ring canal from which the oil is fed to at least one cooler and then returned to the thrust bearing cup, the thrust bearing cup including at least one stationary cylinder wall which is adjacent to the vertical shaft, a rotating cylinder wall disposed adjacent the stationary cylinder wall on the side thereof facing the oil space, the rotating cylinder wall beginning at the thrust ring and extending to the oil space, the oil space being enlarged by a recess extending at least to the first set of radial bores on the inside of the thrust ring, the first set of radial bores opening

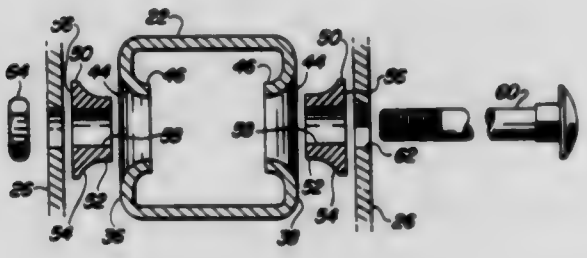
into the oil space adjacent the top of the recess, and a second set of approximately radially-extending bores provided in the thrust ring above the first set of radial bores, the second set of radial bores being in communication with the thrust bearing cup opening into the oil space in or above the recess enlarging the oil space and below a top end of the rotating cylinder wall for removing foamed oil and air from the oil space.

4,494,883

BEARING SURFACE FOR THINWALLED TUBE

David C. Winter, Des Moines, Iowa, assignor to Deere & Company, Moline, Ill.

Continuation of Ser. No. 278,524, Jun. 29, 1981, abandoned.
This application Jul. 29, 1983, Ser. No. 518,316
Int. Cl.[3] F16C *35/02, 33/08*
U.S. Cl. 384—439 11 Claims



1. In a hollow elongated tubular link for an agricultural implement, the link adapted for sandwiching between a pair of plates and including parallel opposed sidewalls each having a thickness substantially less than the distance between the sidewalls and transverse walls connecting the sidewalls, pivot bearing structure comprising: a pair of circular axially aligned seats formed integrally with and recessed inwardly from the opposed sidewalls, each seat having a radius substantial compared to the dimension of the sidewall perpendicular to the axis of the link, a pair of individual one-piece bushings pressed into and non-rotatably supported in the respective seats, said bushings having axially aligned bores, wherein each bushing includes an axially outermost end flush with or slightly recessed with respect to the corresponding sidewall, a flared rim portion adjacent the outermost end, an inner cylindrical portion having a diameter less than the rim portion, and an axially inwardmost end located inwardly of the sidewall, wherein each corresponding seat includes a rounded portion extending inwardly from the sidewall for receiving the flared portion closely adjacent the transverse connecting walls and an inner portion extending axially inwardly from the sidewall for receiving the cylindrical portion, said rounded portion cooperating with the flared portion to secure the latter against rocking and axial motion with respect to the sidewalls so that said inwardmost ends are axially spaced a fixed distance apart, and pivot pin means mounted for rotation with respect to the bushings extending through the bores and connected to the plates for maintaining the plates parallel and closely adjacent the link sidewalls while permitting the link to pivot with respect to the plates.

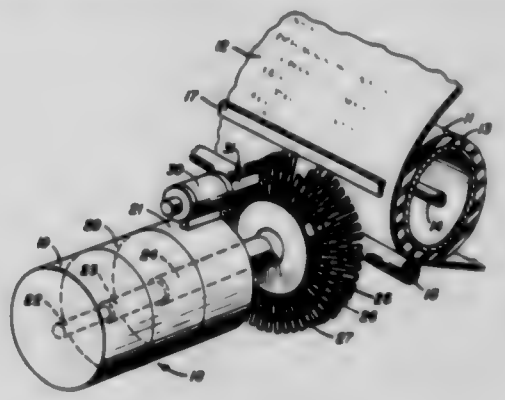
4,494,884

SPOKED MULTIPLE-WHEEL PRINTER

Herman H. Lowell, P.O. Box 3128, Silver Spring, Md. 20901

Filed Nov. 4, 1982, Ser. No. 439,274
Int. Cl.[3] B41J *1/30*
U.S. Cl. 400—144.2 19 Claims

1. In a high speed line printer having a platen, a print element assembly, and hammer means for moving a selected print element of the print element assembly toward the platen, the improvement comprising; said print element assembly consisting of a plurality of individual print wheels axially fixed with regard to said platen, each wheel having a plurality of radial character carrying spokes, said wheels being axially spaced from each other, separate electric motors for each print wheel adapted to rotate its respective wheel so that a selected spoke is in alignment with the hammer means for actuation thereby, at least one radial gap between a pair of spokes in each print wheel, said gaps of all but the wheel closest to said hammer means having at least a width of one spoke and adapted to allow entry therethrough of either the hammer means or a spoke from a successive spaced print wheel, the wheel closest to said hammer means having a gap width sufficient to allow



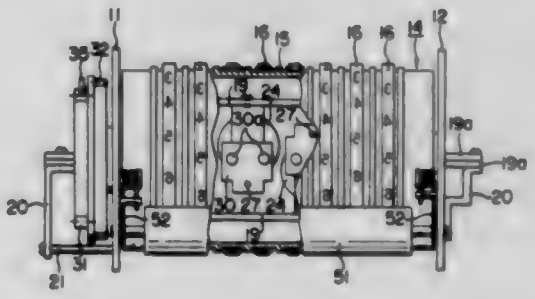
passage therethrough of said hammer means, character selection means for selectively actuating one or more of the motors for rotating its associated print wheel to align a selected spoke on one wheel with the hammer means and gaps on the remaining wheel or wheels with the hammer means, and means for actuating the hammer means to drive the selected spoke to impact the character thereon against the platen to effect printing.

4,494,885

COMPACT PRINTER

Satoshi Watanabe; Toru Wakasawa; Hirofumi Hirano, and Hiroshi Nishizawa, all of Chichibu, Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Canon Denshi Kabushiki Kaisha, Chichibu, both of, Japan

Continuation of Ser. No. 155,157, May 30, 1980, abandoned.
This application Aug. 11, 1982, Ser. No. 407,296
Claims priority, application Japan, Jun. 4, 1979, 54-69664; Jun. 4, 1979, 54-69665; Jun. 4, 1979, 54-69666; Jun. 5, 1979, 54-70411; Jun. 29, 1979, 54-82373; Aug. 10, 1979, 54-102625
Int. Cl.[3] B41J *9/12, 1/18, 1/20*
U.S. Cl. 400—145.2 12 Claims



1. A compact printer comprising a typefont wheel provided with printing types and an ink roller for applying printing ink to said printing types, said typefont wheel including a support, a plurality of typefont belts mounted on said support to define plural columns of printing types, each belt being made of an elastic member and having integrally formed on one side thereof a plurality of said printing types and on the other side thereof a plurality of positioning projections, each printing type being associated with a separate positioning projection and the printing types on adjacent typefont belts being arranged in a staggered fashion, said support having a plurality of apertures, wherein adjacent positioning projections on each typefont belt are spaced apart by a distance slightly less than the distance between corresponding apertures on said support, said projections being positioned within the apertures to mount

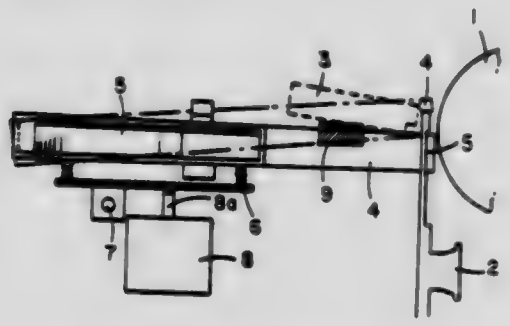
each of said typefont belts on said support under tension over substantially the entire belt, and impact means disposed within said support and including at least one hammer dimensioned to impact types on a plurality of adjacent typefont belts from inside said support by striking the associated projections, wherein the staggered arrangement of types on adjacent typefont belts is such that at any time said hammer can only strike one projection of one of the adjacent typefont belts to transmit an impact force to the associated printing type thereby ensuring rapid and exact printing, and return of the one typefont belt to its original position without affecting the printing types of adjacent typefont belts.

4,494,886

PRINTING DEVICE

Hiroatsu Kondo, Zushi; Toshiaki Ozawa, Chiba, and Yasuaki Yamada, Matsudo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 242,348, Mar. 10, 1981, abandoned. This application Jan. 28, 1983, Ser. No. 462,006
Claims priority, application Japan, Mar. 17, 1980, 55-33590
Int. Cl.[3] B41J *35/28*
U.S. Cl. 400—208 4 Claims



1. A printing device comprising:
a cassette for housing an ink ribbon and having a first area for indicating a first information concerning said ink ribbon and having a second area for indicating a second information concerning the ink ribbon;
means for shifting said cassette between a first position and a second position; and
detecting means fixedly positioned and selectively facing either one of said first and second areas in said first and second positions and capable of detecting changes in kinds of the first and second information to be detected, said detecting means detecting only the first information when the cassette is shifted to said first position, and only the second information when the cassette is shifted to said second position.

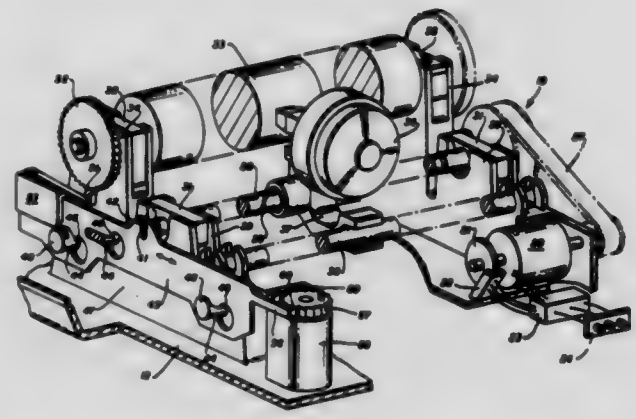
4,494,887

HIGH SPEED PRINTER ASSEMBLY

Karl T. Wincent, Tiverton, R.I., assignor to Litton Systems, Inc., Fall River, Mass.

Filed Jan. 10, 1984, Ser. No. 569,578
Int. Cl.[3] B41J *19/80, 33/18*
U.S. Cl. 400—568 12 Claims

1. A high speed printer including a movable print head used for printing lines of information on a record carrier, said high speed printer comprising:
a molded base having a plurality of plastic towers integrally molded thereon,
a cylindrical platen mounted on two of said plastic towers for supporting said record carrier,
a platen drive gear mounted on one end of said platen,
a drive shaft having a helical groove along the length thereof and an eccentric drive pin at one end,
a pair of plastic towers supporting said drive shaft,
a movable carriage supporting said print head and having means for following said helical groove,
a slide bar mounted for reciprocating motion and having a drive slot for receiving said eccentric drive pin,
platen drive means on said slide bar for selective engagement with said platen drive gear, and



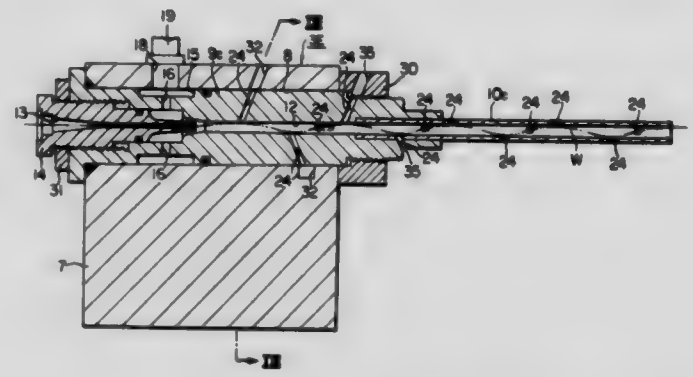
a single motor for driving said drive shaft, whereby said helical groove drives said print head across said platen and said eccentric drive pin reciprocates said slide bar to rotate said platen through said platen drive means.

4,494,888

WEFT INSERTING METHOD AND APPARATUS FOR AN AIR JET LOOM

Hiroshi Honda, and Mitsuru Hasegawa, both of Kariya, Japan, assignors to Seisakusho Kabushiki Kaisha Toyoda Jidoshokki, Kariya, Japan

Filed Jul. 22, 1982, Ser. No. 400,663
Claims priority, application Japan, Jul. 27, 1981, 56-117287; Aug. 6, 1981, 56-117028[U]; Aug. 6, 1981, 56-117029[U]
Int. Cl.[3] D03D *47/30*
U.S. Cl. 139—435 15 Claims



1. A method for inserting a weft into the warp shed of an air jet loom by compressed air discharged from a weft passage of an ejection nozzle, characterized in that the weft is inserted into said weft passage centrally thereof and passes through said weft passage while deviating from the axis of said weft passage at least along a portion thereof.

4,494,889

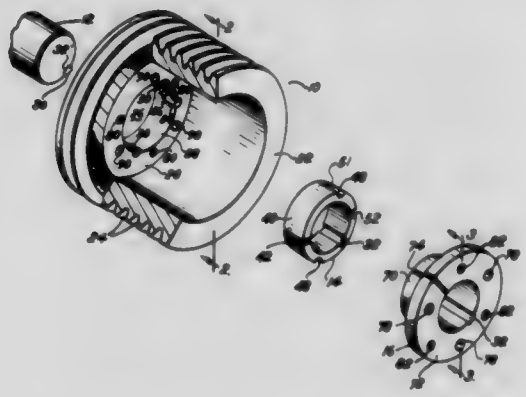
SHAFT BUSHING AND HUB ASSEMBLY

Dennis R. Thompson, Weaverville, N.C., assignor to Reliance Electric Company, Greenville, S.C.

Filed Jul. 14, 1983, Ser. No. 513,623
Int. Cl.[3] F16D *1/00*
U.S. Cl. 403—4 17 Claims

1. A bushing and hub assembly for mounting a machine element on a shaft, comprising a hub having an axial bore with side walls tapered from one end of the hub bore to the other end, a first bushing having a frustoconically shaped body for seating in the bore of said hub, means defining spaced holes at the interface of said bushing and hub with screw threads in the portion of the holes in said hub, screws for threaded engagement with the screw threads in the hub hole portion and in

abutting relationship with the inner end of the bushing hole portion, a second bushing interchangeable with said first bushing having a frustoconically shaped body for seating in the bore of said hub and having a radially extending annular flange on the larger end of the body and being adapted to extend radially along one end of said hub, a plurality of threaded holes in the end of said hub adjacent said flange extending in axial



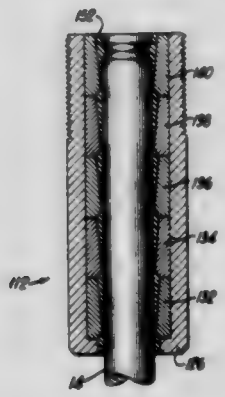
parallel relationship with the bore and being spaced radially outwardly from said bore, a plurality of plain holes extending through said flange for alignment with said threaded holes in the end of said hub, and screws for extending through the holes in said flange and into the holes in the end of said hub, said bushing bodies having the same taper as the taper of the side walls of said hub and having a radial and axially disposed slit extending the length of the respective bushings.

4,494,890

MULTI-WEDGE CONNECTOR

George E. Lusk, Woodstock, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.

Division of Ser. No. 576,731, May 12, 1975,. This application Dec. 2, 1980, Ser. No. 212,237
Int. Cl.[3] B25G *3/34;* F16B *11/00*
U.S. Cl. 403—267 17 Claims



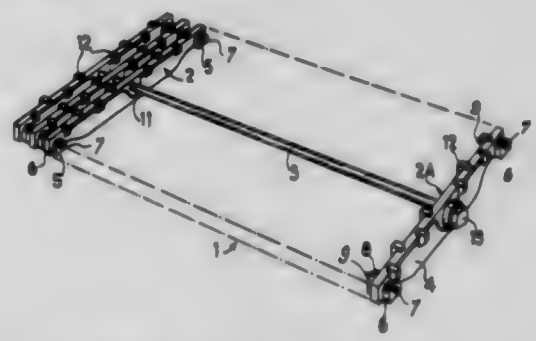
1. A sucker rod string comprising
a plurality of resin bonded, glass reinforced sucker rods,
means for serially interconnecting said plurality of sucker rods, said interconnecting means comprising
elongated means having a predetermined, elongated, interior profile configuration defined by an interior surface adapted to be positioned about an elongated end portion of said rod in a spaced apart relationship for transmitting a tensile force to said rod, said interior profile configuration defining a cross sectional area that is nonuniform along the longitudinal axis of said elongated means,
means adapted to be disposed between said interior surface and said rod for filling substantially all of the spaces or voids between said interior surface and said rod to thereby affix said end fitting to said rod, and
means adapted to coat said interior surface for avoiding the development of a bond between said interior surface and said filling means.

4,494,891

GRATING FOR A HIGHWAY CONSTRUCTION IN PARTICULAR FOR A SEWER OPENING

Jean-Claude Hauer, Saulxures lès Nancy, and Jacques Oger, Pont-a-Mousson, both of France, assignors to Pont-A-Mousson S.A., France

Filed May 14, 1982, Ser. No. 378,304
Claims priority, application France, Jun. 5, 1981, 81 11188
Int. Cl.[3] E03F *5/06*
U.S. Cl. 404—4 7 Claims



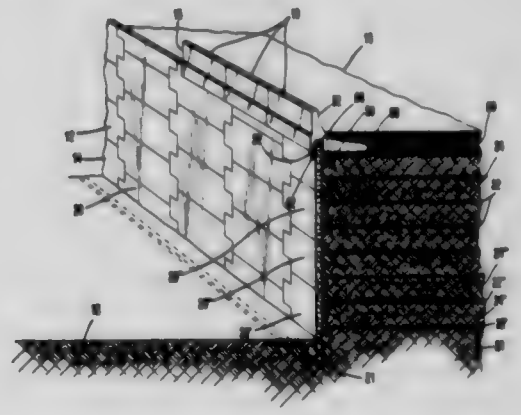
1. A grating for highway construction, in particular for a sewer opening, of the type comprising a series of transversal elements (2) connected by at least one longitudinal clamping crosspiece (3), said grating comprising only a single central crosspiece (3), the transversal elements (2) having reciprocal abutting surface means, in the form of surfaces (5) capable of sliding vertically relative to each other, for eliminating rocking of the grating when it is supported on a frame and subjected to rolling loads, and wherein each transversal element (2) comprises means (7, 9) for limiting, but still permitting, the relative sliding of said abutting surfaces (5).

4,494,892

TRAFFIC BARRIER, BARRIER ELEMENT AND METHOD OF CONSTRUCTION

Longine J. Wojciechowski, Potomac, Md., assignor to Henri Vidal, France

Filed Dec. 29, 1982, Ser. No. 454,412
Int. Cl.[3] E01F *15/00*
U.S. Cl. 404—6 14 Claims



9. A traffic barrier element, comprising: a block of precast concrete having a side with a profile for redirecting an incident vehicle away from the side, a bottom surface with a longitudinally extending channel proportioned to receive a wall edge, the channel defined by a depth which exceeds its width, the channel providing an internal face for supporting the barrier element and defining an inner lip and an outer lip on opposite sides of the channel with the inner and outer lips being adapted to straddle the wall edge and being operable to resist overturning of the barrier element due to a camming effect between the outer lip and the wall upon any impact which rotates the block, and anchoring means being partially imbedded within the

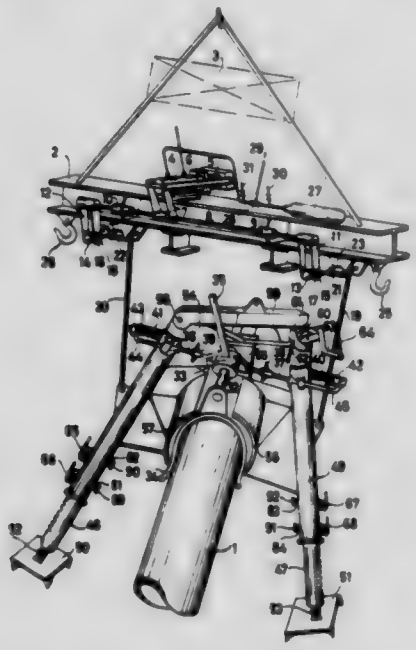
block and partially projecting from the inner lip, whereby the block can be supported by the channel and can be connected to a counterweight by the anchoring means.

4,494,893

ADJUSTABLE APPARATUS FOR SUPPORTING AN UNDERWATER PIPE LAID AT GREAT DEPTH OVER A DEPRESSION IN THE SEA BED

Enrico Migliavacca, S. Giuliano Milanese, Italy, assignor to Snam S.p.A., Milan, Italy

Filed Mar. 15, 1983, Ser. No. 475,399
Claims priority, application Italy, Mar. 19, 1982, 20263 A/82
Int. Cl.[3] F16L *1/04, 3/00*
U.S. Cl. 405—172 5 Claims



1. An adjustable apparatus for supporting an underwater pipe suspended over a depression in a sea bed of great or medium depth, having an upper floating structure which enables the apparatus to be introduced into the sea bed and mounted over the pipe to be supported, and a lower structure which includes a pair of telescopic legs able to rest on the sea bed, and a pair of half saddles for supporting the pipe,

said upper structure, having a main beam and a buoyancy tank fixed thereto, wherein said main beam is provided with a device for releasing the cables connected to said beam in order to support the lower structure during the introduction of the apparatus into the sea and the mounting of the apparatus over the pipe, and a pair of hooks for recovering said lower structure,

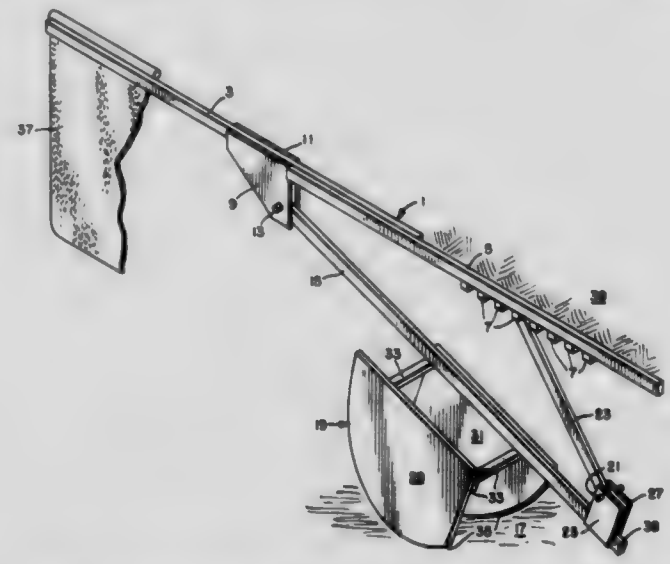
said lower structure having a pair of fixed legs, a pair of half saddles for supporting the pipe, each rigidly mounted at a defined distance from said fixed legs, a pair of mobile legs each provided with a base plate and housed inside the fixed legs such that once the half saddles are resting on the pipe said mobile legs can slide downward until they lie on the sea bed where they are then locked to said fixed legs, a pair of plates rigidly connected on one end to the upper ends of the fixed legs and connected together at the opposite end in such a manner as to enable said plates to rotate relative to each other in the same plane, a pin positioned perpendicular to said plates having a length which extends beyond said plates, wherein said pin has a guide saddle at one end thereof, the purpose of which facilitates the coupling of the half saddles for supporting the pipe while being placed underwater, and a strut hinged to one of said plates which locks the rotary movement of the leg connected to the other plate.

4,494,894

EXTENSIBLE BRATTICE SUPPORT SYSTEM FOR MINE FACE VENTILATION

Edward F. Divers; John C. Lascola, and Robert G. Behers, all of Pittsburgh, Pa., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Mar. 8, 1983, Ser. No. 473,294
Int. Cl.[3] E21F *1/14*
U.S. Cl. 405—290 9 Claims



1. A mobile extensible brattice support system for use with an underground mine ventilation system comprising:

an upper elongated support assembly having a cantilevered inby end and an outby end extending in the same general direction as the directed flow of air, said assembly having height adjustment indexing members on its lower side nearer the outby end thereof;

an air impervious depending curtain extending along the longitudinal extent of said assembly in the direction of directed air flow;

a first rigid inclined support member pivotally joined to said first member at one end, said first member having a lower foot engaging section near its other end;

a second rigid inclined support member pivotally joined to said first member at one end and having a free end on its other end engageable with said assembly's indexing members; and

a movable mine floor engaging fulcrum to support said first rigid member whereby upon the application of a downward foot pressure on the first member's foot engaging section the free end of the second member may be inserted into the assembly's indexing member to raise and fix the assembly and its depending curtain into engagement with the mine's roof.

4,494,895

PORTABLE DRILL PRESS MECHANISM

Arthur L. Leaf, 1009 Villa Ave., San Jose, Calif. 95126

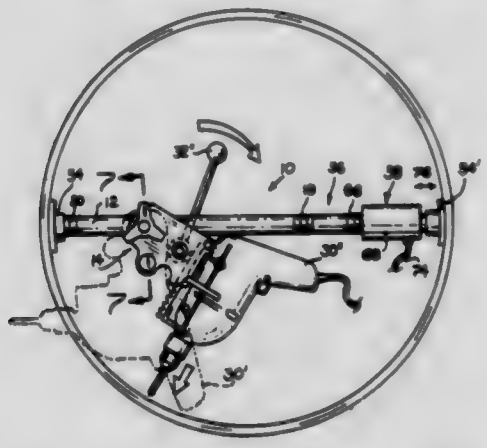
Filed Feb. 7, 1983, Ser. No. 464,200
Int. Cl.[3] B23B *45/14*
U.S. Cl. 408—236 13 Claims

1. A portable drill press mechanism for an electric hand drill comprising:

an elongated support post having a longitudinal axis;

a drill support assembly including a body portion, a swivel member provided with a transverse bore through which said post may extend, first pivot means for pivotally attaching a first end of said swivel member to said body portion, set screw means including a threaded stud having a first end engaged with a threaded bore provided in a second end of said swivel member where said stud may cooperate with said pivot means to allow rotation of said swivel member, said set screw means further including handle means attached to a second end of said stud such

that rotation of said handle may cause said first end of said stud to engage a portion of said post disposed within said bore, carriage means attached to said body portion, a carriage actuating mechanism for moving said carriage



means relative said body portion, and clamping means attached to said carriage means for clamping said electric hand drill to said carriage means; and

means attached to a first end of said post to engage a surface of a work piece.

4,494,896

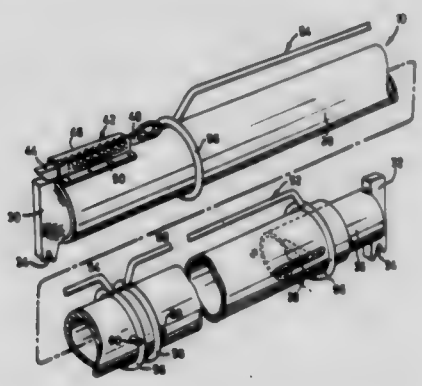
SUPPORT BAR

Dioniso DiFranco, Oakville, Canada, assignor to Peel Truck & Trailer Repair Ltd., Mississauga, Canada

Filed Jan. 24, 1983, Ser. No. 460,278

Int. Cl.[3] B61D *45/00*

U.S. Cl. 410—148 12 Claims



1. A load support system, comprising:

first and second support elements horizontally spaced apart one from another, each said support element having a vertically-elongated opening therein, each said opening having substantially the same dimension and having a lower and an upper edge which are in substantially horizontal alignment,

elongate load support bar means having axially relatively-movable members and vertically-elongate one-piece mounting elements fixedly mounted at opposite ends of said load support bar means,

each said mounting element having a transversely-extending notch formed in the lower end thereof to enable the mounting element to hook over said lower edge of the elongate opening, said notches being located relative to said support bar means such that a straight line drawn between the notches extends parallel to the axis of the support bar means, each said mounting element having a transverse dimension which is the same as that of the elongate opening, so that the side edges of the opening engage the side faces of the mounting element when located therein;

one of said mounting elements having a vertical height from the upper extremity of the notch therein to the upper extremity of the mounting element which is substantially equal to the length of the elongate opening, so that the top edge of the opening engages the upper face of said one mounting element when located thereon, and the other of said mounting elements having a vertical height from the upper extremity of the notch therein to the upper extremity of the mounting element which is less than the length of the elongate opening, and

latch means mounted to said support bar means adjacent said other one of the mounting elements, said latch means having a spring biased bolt element extending therefrom into the opening between the upper extremity of the other mounting element and the upper edge of the opening to engage the side edges and upper edge of the opening and lock said support bar means to said support elements in a horizontal position,

said spring biased bolt being retractable from the opening against the spring bias to enable said other mounting element to be unhooked from the opening and thereby the support bar means to be released from the support elements.

4,494,897

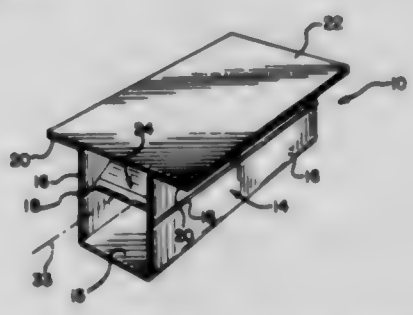
DAMAGE PREVENTION VOID FILLER FOR SEPARATING LOADS DURING TRANSIT

Eugene A. Rogers, Arlington Heights, Ill. 60004

Filed Feb. 10, 1983, Ser. No. 465,522

Int. Cl.[3] B61D *45/00*; B63B *25/24*; B65D *81/04*

U.S. Cl. 410—154 7 Claims



1. A collapsible void filler damage prevention device adapted to fold into a flat configuration and be unfolded into an expanded configuration for protecting cargo during transit, the improvement comprising:

an outer housing providing a four sided, tubular member having a bottom, top and two sides and a longitudinal axis extending the length thereof;

said sides adapted to extend upwardly from the bottom to said top when the damage prevention device is in said expanded configuration, and, said sides having means for bowing the sides outwardly to thereby allow the void filler to collapse easily and provide an outwardly directed spring force on adjacent objects to hold the void filler in place when the sides are in said expanded configuration;

core means with means attached within said tubular member to hold the core means in position and having leg means extending to connect the bottom and top of the outer tubular member, said core means having a width to thereby contact and space apart the sides to prevent their inward movement and rigidify the outer tubular member when the void filler is in the expanded configuration;

said core means having means to allow it to be folded and collapsed when the outer housing is collapsed.

4,494,898

MOUNTING PLASTICS MEMBERS IN OPENINGS IN SHEET METAL MEMBERS

Thomas D. Brownbill, Sidmouth, England, assignor to Metal Box p.l.c., Reading, England

Filed Apr. 23, 1982, Ser. No. 371,138

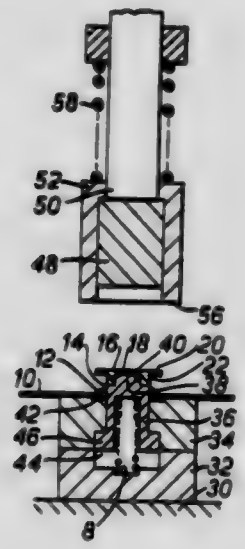
Claims priority, application United Kingdom, Apr. 23, 1981, 8112540

Int. Cl.[3] B21D *51/00*

U.S. Cl. 413—14 14 Claims

1. A method of mounting a plastics member in an opening which is defined in a sheet metal member by a free edge of the

sheet metal, comprising forming up a marginal region of the sheet metal member around the location of the opening, receiving the plastics member in the opening, reforming the marginal region and thereby closing the opening onto the plastics member and causing the free edge to bite into and seal around the



plastics member, and proving corrugations in the marginal region of the sheet metal member comprising undulations in the sheet metal having alternate peaks and troughs, each commencing at a location spaced from the free edge and extending radially inwardly towards the free edge.

4,494,899

PIPE TROUGH FOR TRANSPORTING PIPE BETWEEN UPPER AND LOWER POSITIONS

Tan Hoang, Oklahoma City, and James B. Smiley, Norman, both of Okla., assignors to Tri-Star Enterprises, Inc., Norman, Okla.

Filed Apr. 28, 1982, Ser. No. 372,542
Int. Cl.³ E21B *19/14*
U.S. Cl. 414—22 **19 Claims**



1. In a trough for use in transporting pipe between upper and lower positions of the type having means for unloading pipe at a lower position, apparatus for positioning the pipe along the trough, said apparatus comprising:

an upper and lower channels mounted lengthwise along each side of the trough;

sprocket means rotatably mounted at each end of the channels;

power means operatively connected to said sprocket means for selectively rotating the same;

chain means having an upper run contained in said upper channel and a lower run contained within said lower channel, said chain means being operatively engaged with said sprocket means;

a pipe carrier for receiving one end of a pipe, said carrier being received in the trough;

carrier support means extending downwardly from said pipe carrier;

roller means rotatably mounted on said carrier support means, said roller means being received within said upper channel and further being in rolling engagement with said channel; and

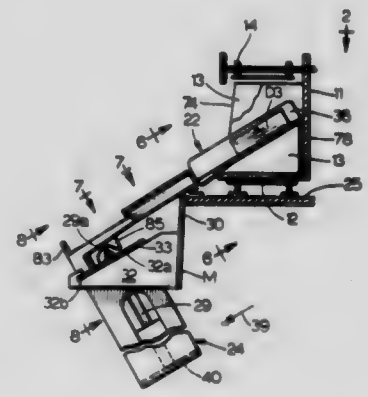
means for connecting said chain means to said carrier support means.

4,494,900

FLEXIBLE DISK SORTER SLIDE APPARATUS

Ronald R. Johnson, Shorewood; James A. Melville, St. Louis Park, and Richard D. Schuelke, Eden Prairie, all of Minn., assignors to IXI Laboratories, Inc., Shorewood, Minn.

Filed Apr. 20, 1983, Ser. No. 486,707
Int. Cl.³ B65G *57/16*
U.S. Cl. 414—27 **20 Claims**



1. Apparatus for conveying a generally flat disk jacket combination that includes a generally rectangular jacket having opposite first and second edges and opposite third and fourth edges that extend at right angles to the first and second edges to fall into a box, comprising first means for moving the disk jacket combination in a longitudinal forward direction with the first edge in advance of the second edge and discharge the combination, second means for receiving the discharged combination from the first means and supportingly conveying the combination under gravity transversely downwardly more remote from the first means with the third edge transversely in advance of the fourth edge and the first edge forwardly of the second edge during the initial transverse downward movement, and third means for receiving the combination from the second means and supportingly conveying the combination under gravity transversely downwardly more remote from the first means to discharge the combination into the box and initially impeding the transverse movement of the jacket first and third edge corner portion to impart a turning movement to the combination so that the combination rotates through an angle of about 90° as the combination moves under gravity toward the box whereby the third edge is forwardly of the fourth edge and the second edge is transversely in advance of the first edge.

4,494,901

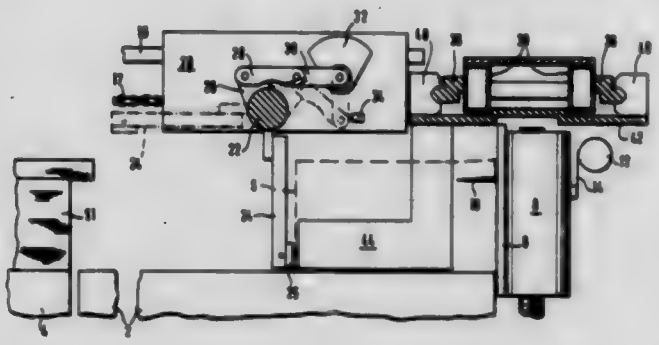
ALIGNING STACKS OF SHEETS

David Wood, Bristol, England, assignor to Jagenberg AG, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 30, 1982, Ser. No. 404,198
Claims priority, application United Kingdom, Aug. 4, 1981, 8123832
Int. Cl.³ B65H *31/34*
U.S. Cl. 414—28 **2 Claims**

2. An apparatus for aligning successive stacks of sheets comprising a horizontal air table, means for feeding successive stacks onto one end of the table, a vertical backboard at the other end of the table, a horizontally disposed sheet-separating blade projecting from the backboard and movable vertically, a first pusher movable along the air table between said feeding means and said backboard in a direction perpendicular to said backboard, and a second pusher movable across the air table parallel to said backboard to push the aligned stack transversely away from the table and blade, whereby horizontally

offset upper and lower portions of said stacks are vertically aligned by said first pusher pushing said stack portions against



said backboard, said horizontally extending blade serving to penetrate between said upper and lower stack portions to facilitate their vertical alignment with each other.

4,494,902

METHOD OF AND DEVICE FOR FEEDING ELECTRIC AND/OR ELECTRONIC ELEMENTS TO GIVEN POSITIONS

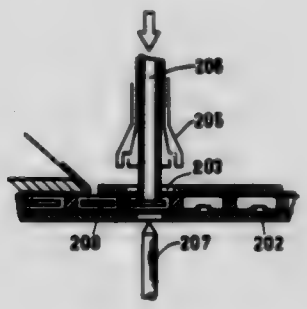
Bernardus J. Kuppens, and Hendrik C. Wardenaar, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 16, 1982, Ser. No. 399,042

Claims priority, application Netherlands, Jul. 29, 1981, 8103573

Int. Cl.³ B65B *69/00*

U.S. Cl. 414—223 26 Claims



1. A method of feeding and transferring elements, comprising feeding a series of elements along a feed path in a feed direction, so as to move the elements one at a time to a transfer position; and transferring an element from said transfer position in a transfer direction by a transfer member,

characterized by the additional steps of

defining said feed path by a feed channel enclosing said series of elements on all sides except in the transfer direction, said feed channel having a removal opening at the transfer position to permit movement of an element in the transfer direction,

moving an end of an elongated part of a transfer member through said removal opening into contact with one side of an element at the transfer position,

moving an ejection pin into contact with the other side of the element,

pressing the element out of the respective transfer position by further movement of the ejection pin, while holding the element between the ejection pin and the elongated part, and

then holding the element by the transfer member and transferring the element to another, selected position.

9. A device for heating and transferring a plurality of series of elements, comprising

a plurality of feed channels arranged substantially parallel with each other, each channel defining a feed path and enclosing said path on all sides, and having a removal opening at an end of the channel, said removal openings being arranged in a straight line,

a corresponding plurality of transfer members disposed opposite each respective removal opening,

means for moving the transfer members in a transfer direction transverse to said feed direction,

characterized in that each of said transfer members comprises an elongated part having an end disposed toward the feed channel,

said means for moving the transfer member includes means for moving said elongated part through said removal opening into contact with one side of an element located at the transfer position aligned with said opening, and

the device further comprises a corresponding plurality of ejection pins disposed to the other side of the feed channel opposite respective elongated parts, and

means for first moving each respective elongated part until it contacts a respective element at the transfer position, subsequently displacing the respective ejection pin together with the element and the elongated part, and then holding the element by the transfer member and returning the ejection pin to its initial position.

4,494,903

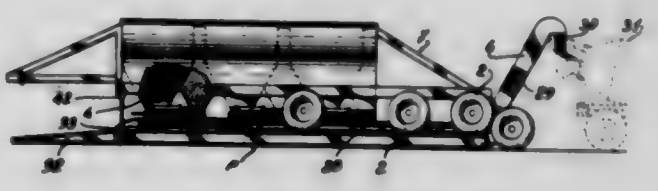
METHOD OF SUPPLYING CONCRETE

Evelyn Badicel, 1160 St. Mathieu St., Apt. 1110, Montreal, Canada H3H 2P4, and Gunnar O. Porko, 420 Lazard St., Mount Royal, Canada (H3R 1P5)

Filed Jun. 7, 1982, Ser. No. 385,447

Int. Cl.³ B65G *65/42*

U.S. Cl. 414—376 3 Claims

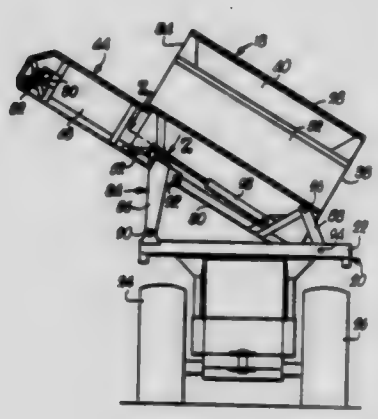


1. A mobile platform for positioning at a destination site a truck trailer carrying at least one compartmented container defining two bottom-discharging compartments adapted to carry aggregate in one compartment and cement in the other compartment, with both compartments having discharge apertures located along a line parallel to the centerline of the truck trailer, said platform including an elongated frame adapted to rest on the ground, defining a pair of lateral transversely-spaced longitudinally-extending tracks for receiving the wheels of the truck trailer and having a front and a rear end, a longitudinally-extending concrete ingredients conveying means disposed longitudinally of said platform between said tracks, said conveying means including a conveyor enclosed in a casing, said casing haing spaced load-receiving apertures adapted to register with the discharge openings of said container compartments when said truck trailer is positioned on said platform, ramp means pivoted to the front end of said platform to permit said truck trailer to embark onto said platform, said ramp means movable between a ground-engaging position extending forwardly of said platform and a stored position folded backwardly over said platform, a towing arm secured to and extending forwardly from the front end of said platform for hitching the platform to a towing truck, ground-engaging wheels carried by the rear end of said platform and respectively aligned with said tracks, and power means to raise and lower the platform with respect to said wheels, whereby said platform, when raised, can be towed by a truck on a road, said ground-engaging wheels protruding upwardly from said tracks when said platform rests on the ground to act as positioning bumpers for the rear wheels of said truck trailer, thereby compelling the positioning of the container discharge openings immediately over the conveyor load-receiving apertures.

4,494,904
SELF-UNLOADING ON-THE-GO FORAGE HOPPER

Amos G. Hill, Hesston, and Harold K. Garrison, Newton, both of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Mar. 4, 1982, Ser. No. 354,906
Int. Cl.³ B60P *1/04*; A01D *90/00*
U.S. Cl. 414—491 9 Claims



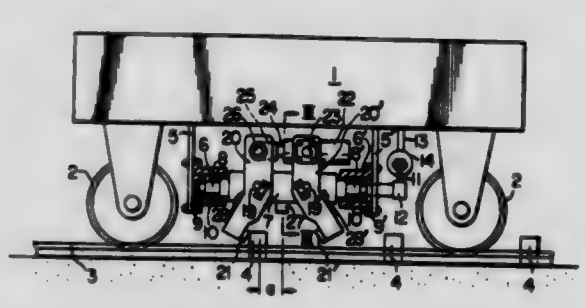
1. A harvester comprising: mobile frame means;
apparatus mounted on said frame means and operable to gather crop materials from a field being traversed by the harvester and to reduce the materials into small segments,
said apparatus including a delivery spout through which a stream of the segments is discharged rearwardly from the apparatus;
an enclosed box having a top, a bottom, and four sides extending between said top and bottom,
a front side of the box having a crop entry opening therein adjacent said top for receiving the stream of crop segments from the delivery spout;
means mounting said box on said frame means for movement between an upright position in which said sides are generally upright and said bottom is generally horizontal and a laterally tilted position in which said sides are inclined and said bottom is sloped generally upwardly and outwardly;
power means connected for causing said movement of the box between said positions,
a lateral side of the box having structure shiftable from a normal raised position in which it serves as a crop confining and containing portion of the box to a lowered position generally aligned with and as an extension of said bottom in which it serves as an outwardly projecting unloading spout for the box; and
an unloading conveyor associated with said bottom and said structure and selectively operable to convey crop materials up the inclined bottom and the structure when the box is in its tilted position and said structure is in its lowered position,
said delivery spout being positioned forwardly of the box and separate therefrom and within the height dimensions of the latter when the box is in both said positions,
said entry opening being so disposed relative to said delivery spout as to permit the continuous, uninterrupted admittance of crop materials into the box during unloading thereof when the box is in its tilted position whereby harvesting, loading, collecting and unloading of crop materials can be carried out on-the-go.

6. A harvester as claimed in claim 1, wherein said entry opening and the delivery spout are so disposed relative to one another as to permit loading of the box from the delivery spout when the box is in its upright position and during movement thereof between said upright and tilted positions.

4,494,905
APPARATUS FOR STOPPING TRUCK AT PRESELECTED POSITION

Hiromasa Yamaji, and Yuji Kobayashi, both of Yokosuka, Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Jun. 8, 1982, Ser. No. 386,318
Claims priority, application Japan, Jun. 10, 1981, 56-89078
Int. Cl.³ B65G *69/00*
U.S. Cl. 414—584 4 Claims



1. An apparatus for stopping a truck for use in coke oven operations at a preselected position comprising a clamping mechanism supported by said truck and at least one stopping member stationarily disposed along the path of movement of said truck and adapted to be clamped by said clamping mechanism, wherein said clamping mechanism comprises:
a frame rotatable about an axis extending in the direction of running of said truck;
driving means for rotating said frame within a predetermined angular range;
a pair of levers pivotally secured at their central portions to said frame so as to be swingable about two respective axes which are perpendicular to the axis of rotation of said frame and spaced from each other in the direction of the axis of rotation of said frame;
a fluid-operated cylinder having a piston rod and a cylinder body each being connected to a respective end of one of said levers, said fluid-operated cylinder being operative to swing said levers in such a manner that the other ends of said levers move towards each other to engage said stopping member whereby said truck is moved forward or backward to said preselected position; and
a stopper fixed to the frame between said levers and adapted to limit the closing positions of said levers.

4,494,906
EARTHMOVING MACHINE

Norman Brocklebank, Beverley, and Kenneth A. Deighton, Cottingham, both of England, assignors to Priestman Brothers Limited, Hull, England

Filed Oct. 20, 1982, Ser. No. 435,466
Claims priority, application United Kingdom, Oct. 21, 1981, 8131708
Int. Cl.³ B66C *23/72*
U.S. Cl. 414—719 10 Claims



1. An earth moving machine comprising a base; a generally horizontal axis defined on said base; a boom having a first end and a second end, said boom being pivotally mounted intermediate its ends about said generally horizontal axis; pivot means at said first end of said boom; an arm mounted on said pivot means at said first end of said boom; a movable counterweight

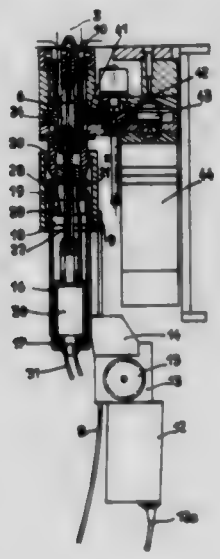
at said second end of said boom; means for slidably moving said counterweight along said boom; means operatively connecting said counterweight to said arm and adapted to cause said arm to pivot outwardly away from the axis as the counterweight is moved outwardly along the boom in the opposite direction and to cause the counterweight to move inwardly along the boom as the arm pivots toward the axis; a winch, said winch being mounted on said machine remote from said pivot means; and a cable extending from said winch to the end of said arm remote from said boom, whereby operation of said winch to wind in said cable draws said arm inwards towards said axis.

4,494,907

POSITIONING AND REMOVAL DEVICE FOR A CHECKING MEANS OR A TOOL IN A RECEIVER INSTALLATION

Jean Coussau, Paris, and Georges Clar, Lyons, both of France, assignors to Framatome, Courbevoie, France

Filed Mar. 29, 1982, Ser. No. 362,824
Claims priority, application France, Apr. 17, 1981, 81 07835
Int. Cl.[3] B65G *47/00*
U.S. Cl. 414—749 2 Claims



1. Positioning and removal device for checking means or a tool in a receiver installation, in operating position in a medium inaccessible to an operator, said device comprising:

(a) a guidance and displacement track constituted by a rack of flexible material which can follow a non-rectilinear path, fixed at an anchoring point to the receiver installation at one of its ends and of sufficient length for its other end to terminate outside of said inaccessible medium;

(b) a carriage movable on said guidance track including a motor and a gear wheel rotated by said motor and engaging with said rack;

(c) a loading sleeve fastened to said carriage, of tubular shape, constituting at its forward end, in the direction of movement of said carriage towards said receiver installation, an actuating cam on its outer surface, including on its inner surface a hooking groove and bearing a removable closure part obturating at least partly the inner bore of said sleeve at its rear end;

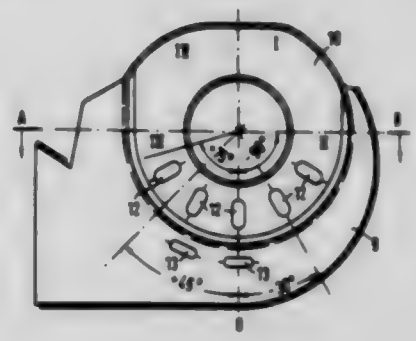
(d) a support unit for said checking means provided with catches for hooking said support unit to said sleeve at the level of said groove, the rear portion of which is engageable in said sleeve to become supported on said closure part, and the forward portion of which includes hooking means complementary to the hooking means borne by said receiver installation, said cam formed on said sleeve being a cam for actuating the hooking means of said support unit on said receiver installation, this actuation in the direction of opening and hooking of the catches of said support unit on said sleeve being caused by a forward movement of said carriage when the closure part of said sleeve is in an out-of-service position, while the transport and hooking of the support unit on said receiver installation are produced also by forward movement of said carriage when said closure part is in service position in said sleeve.

4,494,908

TANGENTIAL BLOWER

Reinhold Hopfensperger, Dietelskirchen, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 257,819, Apr. 27, 1981, abandoned.
This application Feb. 22, 1983, Ser. No. 468,244
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1980, 3016438
Int. Cl.[3] F04D *17/04*
U.S. Cl. 415—206 8 Claims



1. In a tangential blower having a conducting element mounted to the side members of the housing and enclosing the pressure space of the blower, a partition wall between the suction and the pressure spaces of the blower, and an impeller rotatably supported in bearings provided for in the side members of the housing, having blade edges extending almost in parallel with the axis of rotation, said conducting element—starting from a line of greatest approximation to the circumference of the impeller—extending at first at a preferably continuously increasing distance away from the circumference of the impeller and, after ninety or more angular degrees, continues to extend substantially as a straight line, the end of the partition wall facing the impeller having a rounding, the improvement comprising:

(a) said partition wall (3), starting out from said rounding (4), has a first section expanded in a diffuser-like manner, a second section constricted in a confuser-like manner and, finally, a third section expanded in a diffuser-like manner until reaching the outlet cross section, said third section of said partition wall (3) together with the straight portion of said conducting element including an angle (α) between 20 and 40 degrees, and having such a position that the pressure-side outlet cross section will amount to approximately 55 to 65% of the intake cross section on the suction side;

(b) the pressure-sided outer edge of the conducting element (2) is provided with a stepping (8) extending over almost the entire length of the blower;

(c) the distance C (FIG. 1) between the impeller circumference and the conducting element (2) amounts to approximately 0.2 to $0.4 \times D_L$ (impeller diameter);

(d) the side members (9) of the housing are provided with pockets (10) having openings (12), and the side members (9) of the housing are also provided with openings (13) outside the pocket range, said openings (12) within the pocket range being arranged within an angular section of approximately 165 degrees in quadrant II and in quadrant III of the side members (9) of the housing, and altogether having an opening cross section amounting approximately to 4–5% of the impeller face side;

(e) the impeller face sides are provided with openings (17); and

(f) the spacing (23) between the impeller circumference and the conducting element (2) at the point (A) of its greatest

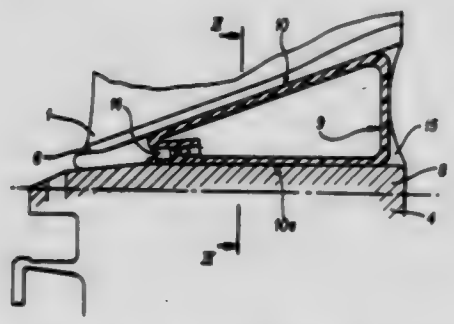
approximation to the impeller, amounts approximately from 0.08 to $0.12 \times D_L$.

4,494,909

DAMPING DEVICE FOR TURBOJET ENGINE FAN BLADES

Alexandre Forestier, Vaux le Penil, France, assignor to S.N.E.C.M.A., Paris, France

Filed Dec. 3, 1982, Ser. No. 446,625
Claims priority, application France, Dec. 3, 1981, 81 22622
Int. Cl.[3] F01D *5/10*
U.S. Cl. 416—190 4 Claims



1. A damping device for turbojet engine fan blades, each of said blades having a blade root portion, a half-platform and a shank interconnecting said root portion and said half-platform, comprising:

a disc having a rim portion formed of a plurality of teeth delimiting axial grooves which receive said root portion of each of said blades, each of said blade root portions being extended radially by said shank connected to said half-platform and wherein each half-platform extends circumferentially on either side of said shank and wherein the half-platforms and the shank of two adjacent blades and each tooth of the disc form a space between said two adjacent blades; and

a wedge member mounted in said space and which further comprises a hollow, bellows-shaped body and means operatively associated with said wedge member for limiting axial movement of said wedge member, said body being inflated after mounting such that said body entirely occupies said space wherein said wedge member further comprises a first and second side which are interconnected on an upstream side of said blades wherein said first side is supported on end portions of the disc teeth and said second side is supported on said half-platforms of said adjacent blades and a folding wall interconnecting said first and second sides.

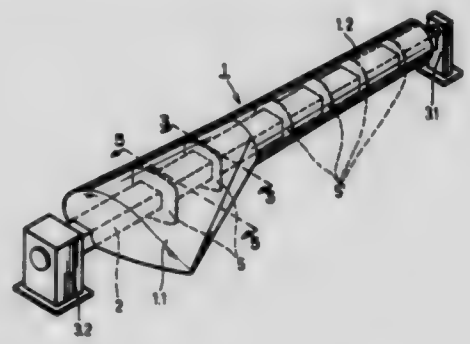
4,494,910

LARGE SURFACE STRUCTURAL COMPONENT, ESPECIALLY ROTOR BLADE

Michael Hahn, Ottobrunn, and Franz Sperber, Kolbermoor, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,214
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1981, 3114567
Int. Cl.[3] F03D *1/06*; B65H *81/00*
U.S. Cl. 416—226 10 Claims

1. A large surface structural component, such as a rotor blade, having a given cross-sectional finished contour, comprising a plurality of support core sections of foam material forming a support core, said support core sections initially having an excess dimension, a plurality of disk type positive templates inserted in said support core so that each disk type positive template is rigidly connected to two adjacent core sections for interconnecting the core sections in a force transmitting manner, said disk type positive templates having a circumferential contour corresponding at least partially or substantially to said given cross-sectional finished contour of the structural component for defining a guide limit for a subsequent machining operation on said core sections for removing



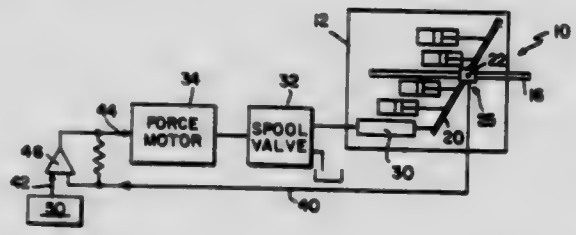
said excess dimension of said core sections, and a shell of fiber reinforced material for enveloping said support core.

4,494,911

PISTON PUMP SERVO CONTROL

Duane J. Davis, Galesburg, Mich., assignor to General Signal Corporation, Stamford, Conn.

Filed Apr. 29, 1983, Ser. No. 489,772
Int. Cl.[3] F04B *1/26*
U.S. Cl. 417—222 9 Claims



1. A pump control system for controlling the pump output flow at a given pump speed comprising:

a variable displacement pump having a housing and a rotatably positionable swash plate therein for controlling the output of said variable displacement pump;

means for altering the position of said swash plate so as to change said pump output flow in response to control signals;

means for producing an electric signal representative of the desired swash plate position;

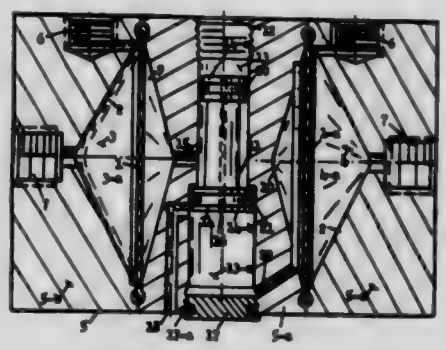
an electric feedback signal producing means mounted within said pump housing and directly connected to said swash plate for indicating the actual position of said swash plate; and

means for comparing said electric signals representing the desired and actual swash plate positions and producing an error signal representative of the difference between these two positions, and means for providing control signals to said means for altering the position of said swash plate as a function of said difference so as to cause said error signal to be decreased by altering swash plate position, and said means for providing control signals also includes a failsafe means generating a reference signal, comparing said feedback signal to said reference signal, and preventing said means for providing control signals from altering the position of said swash plate when the magnitude of said reference signal is greater than said feedback signal.

4,494,912
ENERGY CONSERVING AIR PUMP

Richard S. Pauliukonis, 6660 Greenbriar Dr., Cleveland, Ohio 44130

Filed Sep. 16, 1982, Ser. No. 419,011
Int. Cl.³ F04B 45/04
U.S. Cl. 417—347
7 Claims



1. An energy conserving air pump comprising:
a pump operating and a pumping sections in a pump housing provided with a first air actuated pump operating section located substantially central thereto including a valve chamber with a shuttle valve means incorporated therein and consisting of a differential diameter piston slidably movable inside a differential diameter bore thereof provided with air porting means including a supply and exhaust port means for compressed air flow therethrough and into adjacent second pumping section provided with a chamber separated by a reciprocating pumping means including movable members thereof a first side of which defining a gas space therein when pressurized by said air delivered thereto from said first pump operating section via ports incorporated therein until said air is discharged therefrom via said exhaust port means constituting a full reciprocating cycle pumping requires while a second side of which defining a liquid space thereof is adaptable of fluid pumping from a first fluid supply to a second fluid discharge port means when said pumping members become reciprocatingly shifted therein by said air,

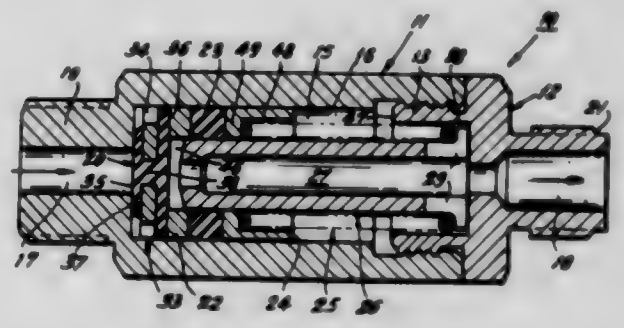
said pump operating section and said pumping section in combination operating in an inter-related function so that when said first pump operating section becomes energized by said pressurized air entering said supply port means via a first pump operating port in communication with said valve chamber, said differential diameter piston shuttles therein from a first pump atmospheric position to a second pump energized position and back thereby allowing a simultaneous fluid pumping by the air action over said pumping members until said pressurized air completes the cycle therein and becomes exhausted therefrom, rendering said pump operating section atmospheric, and vice-versa,

said differential diameter piston includes a first smaller diameter piston end which when pressurized by said air entering said supply port means exerts a first pressure-end-force to said differential diameter piston urging said piston position change until said pressurized air passes an air pilot port incorporated centrally thereto to exit a second larger diameter piston end for exerting a second larger pressure-end-force than said first end force to urge an automatic piston return to said first pump atmospheric position as a result of a force differential over said differential diameter piston for piston unloading at the end of the cycle via said exhaust port means provided therein to permit cycle repetition with operation of said pumping section when said shuttle valve means becomes energized, and vice-versa, said pressurized air performing dual function over said differential diameter piston automatically by first shifting said piston from said first to said second positions with a single slug of air which also shifts said pumping members before exhausting into the atmosphere during each operating cycle of the pump.

4,494,913
POSITIVE DISPLACEMENT INJECTOR

Philip J. Keller, Pompton Plains, N.J., assignor to Bijur Lubricating Corp., Bennington, Vt.

Filed Jul. 8, 1982, Ser. No. 396,408
Int. Cl.³ F04B 35/00
U.S. Cl. 417—349
5 Claims



1. A positive displacement injector for controlling the application of fluids, said injector including:
housing means defining a main chamber communicating with an inlet port and an outlet port downstream of said inlet port;
piston means disposed within said main chamber;
valve means movable mounted within said main chamber upstream of said piston means;
hollow guide means within said main chamber defining a fluid passage having its downstream end in communication with said outlet port, and supporting said piston means for movement toward and away from said valve means;
biasing means urging said piston means toward said valve means to operate the latter to an upstream sealing position blocking said inlet port to prevent backflow therethrough;
said valve means being movable downstream by fluid injecting pressure applied at said inlet port, to a downstream sealing position engaging said guide means and blocking flow of fluid into said passage through its upstream end;
aperture means extending from said passage outboard of said guide means at a point downstream of said piston means;
said valve means including a seal in the form of a flexible disk having a peripheral edge portion biased toward a normal undeflected position to block upstream fluid flow past said valve means, said edge portion being deflectable downstream when subjected to fluid injecting pressure;
said valve means also including a relatively stiff disk adjacent the upstream face of said flexible disk and having a periphery with aperture means thereat, said seal when in its normal undeflected position blocking upstream fluid flow through said aperture means of said relatively stiff disk at the said periphery thereof, said edge portion of said flexible disk being deflected downstream by fluid flowing downstream through said aperture means of said relatively stiff disk;
the valve means also including a valve section in front of said relatively stiff disk for blocking said inlet port, and a narrow connecting section positioned at the center of said flexible disk and extending through a central aperture in said relatively stiff disk;
upon application of fluid injecting pressure at said inlet port, fluid forces move said valve means downstream and acting through said valve means force said piston means downstream until movement of said valve means is stopped by engagement with said guide means, after which said peripheral edge portion of said seal deflects downstream permitting direct application of fluid under injecting pressure to said piston means to continue moving the latter downstream until movement thereof is arrested

by stop means, with upstream movement of said valve means being effective to force fluid into said passage through its upstream end, and downstream movement of said piston means being effective to force fluid into said passage though said aperture means;

when downstream movement of piston means stops, fluid pressures on opposite sides of said seal equalizes, thereby permitting the edge portion of said seal to assume its said normal undeflected position;

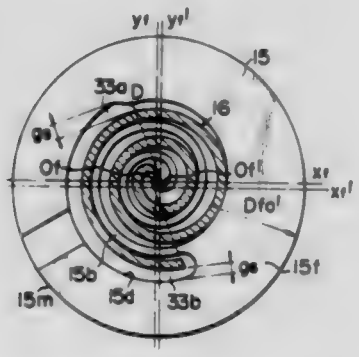
upon subsequent releaxation of fluid injecting pressure at said inlet port, fluid being forced upstream by said piston means as it moves upstream under the influence of said biasing means, and this fluid that is forced upstream by said piston means moving said valve means to said upstream sealing position with some of this fluid entering said passage through its said downstream end, flowing through said aperture means and outboard of said passage to the downstream side of said piston means.

4,494,914

SCROLL FLUID APPARATUS WITH DISPLACED CENTERS FOR THE SCROLL MEMBER END PLATES

Masao Shibayashi, Shimizu, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 1, 1983, Ser. No. 481,151
Int. Cl.[3] F01C *1/02*
U.S. Cl. 418—55 10 Claims



1. A scroll fluid apparatus comprising:

a stationary scroll member including a disc-shaped end plate and a wrap of a spiral form disposed in upright position on the end plate and having a suction chamber formed by an arcuate wall at an outer peripheral portion of the wrap; and

an orbiting scroll member including a disc-shaped end plate and a wrap of a spiral form disposed in upright position on the end plate;

the stationary scroll member and the orbiting scroll member being assembled with the wraps facing inwardly and meshing with each other so as to allow the orbiting scroll member to move in orbiting movement with respect to the stationary scroll member without rotating on its own axis, the stationary scroll member being formed with an exhaust port opening in a central portion of the end plate and a suction port opening at its outer peripheral portion so that gas is drawn by suction through the suction port and compressed in compression spaces defined by the two scroll members and shifting the position toward the centers of the end plates to have the volume reduced to thereby discharge compressed gas through the exhaust port;

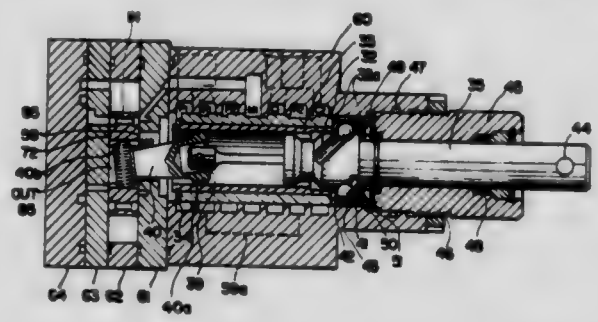
the orbiting scroll member and the stationary scroll member have the centers of their disc-shaped end plates displaced from the centers of base circles of the respective spiral wraps toward outer end edge portions of the wraps by $\pi a/2$, where π is the ratio of the circumference of a circle to its diameter and a is the radius of the base circles of the spiral wraps.

4,494,915

HYDROSTATIC STEERING UNIT WITH CYLINDRICAL SLIDE MEMBER WITHIN CLINDRICAL VALVE SLEEVE

Hollis N. White, Jr., 243 Pyle La., Hopkinsville, Ky. 42240

Continuation-in-part of Ser. No. 51,508, Jun. 25, 1979, abandoned. This application Nov. 2, 1981, Ser. No. 317,501
Int. Cl.[3] F04C *2/10*; F15B *9/08*
U.S. Cl. 418—61 B 18 Claims



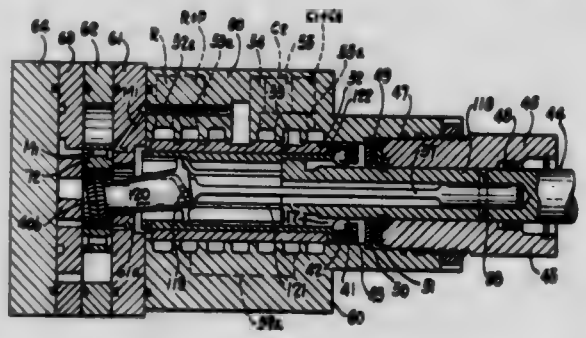
1. In a hydrostatic steering device having a rotatable drive shaft and an axially operated spool valve, an improved actuation means, said actuation means comprising a slide member, means to directly connect said slide member to the drive shaft for transforming the rotational motion of the drive shaft into axial movement of said slide member, and means to connect the spool valve to said slide member for transmitting axial motion of said slide member into axial motion of the spool valve, there being a clearance between the spool valve and said slide member allowing relative non-axial movement therebetween, with the result that rotational motion of the drive shaft is directly transformed into axial motion of the spool valve through said slide member.

4,494,916

HYDROSTATIC STEERING UNIT WITH CYLINDRICAL SLIDE MEMBER WITHIN CYLINDRICAL VALVE SLEEVE

Hollis N. White, Jr., 243 Pyle La., Hopkinsville, Ky. 42240

Continuation-in-part of Ser. No. 381,946, May 26, 1982, , which is a continuation-in-part of Ser. No. 317,501, Nov. 2, 1981, , which is a continuation-in-part of Ser. No. 51,508, Jun. 25, 1979, abandoned. This application Nov. 4, 1982, Ser. No. 439,058
Int. Cl.[3] F04C *2/10*; F15B *9/08*
U.S. Cl. 418—61 B 10 Claims



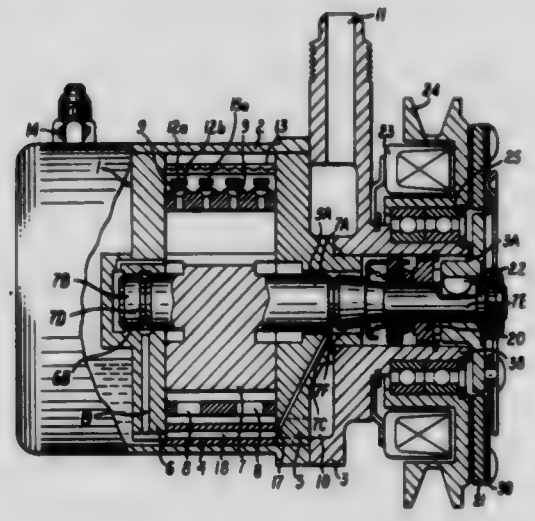
1. In a hydrostatic steering device having a rotatable drive shaft and axially operated spool valve, an improved actuation means, said actuation means comprising a slide member, means for transforming the rotational motion of the drive shaft into axial movement of said slide member, and means to connect the spool valve to said slide member for transmitting axial motion of said slide member into axial motion of the spool valve, there being a clearance between the spool valve and said slide member allowing relative non-axial movement therebetween with the result that rotational motion of the drive shaft is directly transformed into axial motion of the spool valve through said slide member.

4,494,917

BEARING STRUCTURE FOR AN AIR COMPRESSOR

Haruyuki Komori, Narashino, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Chiba, Japan

Continuation-in-part of Ser. No. 294,995, Aug. 21, 1981, abandoned. This application Aug. 5, 1983, Ser. No. 520,857
Claims priority, application Japan, Sep. 12, 1980, 55-126981
Int. Cl.³ F01C *21/02*
U.S. Cl. 418—69 7 Claims



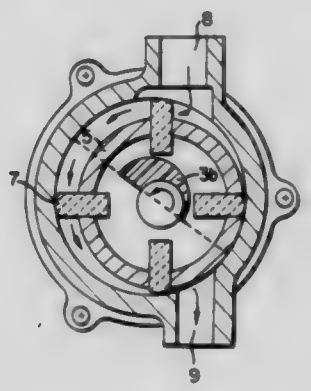
1. In a gas compresor, the combination comprising:
a cylinder having an end block;
a compressor rotor within said cylinder and having an axial mounting shaft extending therefrom toward said end block;
a bearing surface defining a substantially constant diameter opening through said end block aligned with said mounting shaft and dimensioned to receive therein said mounting shaft for rotatably supporting said mounting shaft to mount said rotor for rotation within said cylinder; and
said mounting shaft having a circumferential surface oil groove positioned within the opening through said end block and opposite said bearing surface, a substantially constant diameter portion extending the length of said bearing surface up to said oil groove and on the side of said oil groove as said rotor and a tapered portion starting adjacent said oil groove and converging in a direction away from said oil groove and away from said rotor and extending for substantially the length of said bearing surface beyond said oil groove.

4,494,918

AUXILIARY RADIALLY SHIFTING MECHANISM FOR VANES IN A PUMP OF THE VANE TYPE

Tadashi Nozaki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1982, Ser. No. 400,716
Int. Cl.³ F04C *2/00*
U.S. Cl. 418—260 3 Claims



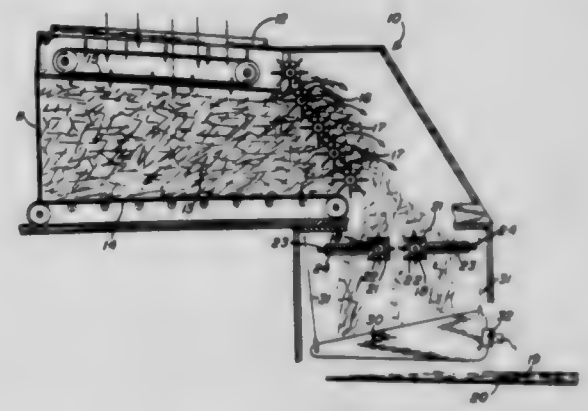
1. In a pump of the vane type having
a cup-shaped cylinder with a suction port and a discharge port, each port having a mouth with upstream and downstream sides,
A rotor eccentrically and rotatably received within said cylinder,
a number of vanes radially shiftably disposed within said rotor and adapted to be rotated relative to said cylinder as said rotor rotates so as to have their radially outward ends abut against the inner periphery of said cylinder in order to form fluid delivery chambers,
whereby fluid is sucked through said suction port and discharged through said discharge port under pressure, and
a bracket to close said cylinder at its open end,
wherein the improvement comprises:
an auxiliary radially shifting means for eliminating a hunting phenomenon of said vanes, said means being disposed on said bracket in a vicinity extending in the direction of rotation only from a point near the downstream side of the mouth of said discharge port to a point just beyond the downstream side of the mouth of said suction port of said cylinder, so that abnormal wear of the vanes is prevented in a vicinity extending in a direction of rotation from a point just beyond the downstream side of the mouth of the suction port of said cylinder to a point near the downstream side of the mouth of the discharge port of said cylinder.

4,494,919

APPARATUS FOR LAYING A MAT OF WOOD STRANDS

Robert M. Knudson, and Hubert Ehrenfellner, both of British Columbia, Canada, assignors to MacMillan Bloedel Limited, Vancouver, Canada

Filed Sep. 20, 1982, Ser. No. 420,084
Int. Cl.³ B29J *5/00*; B29C *23/00*
U.S. Cl. 425—83.1 11 Claims



1. Apparatus for continuously laying wood strands in a mat of substantially even thickness, the mat advancing at a substantially constant speed comprising:
means for forming a pile of wood strands of substantially uniform depth,
a plurality of spike rolls rotating about substantially horizontal parallel axes spaced vertically apart and located at one side of the pile of wood strands, the spike rolls adapted to pull wood strands out of the pile, and form a uniform curtain of falling strands,
advancing means for the pile of wood strands to force the pile against the spike rolls,
a pair of counter-rotating spreader rolls side by side in the same horizontall plane, the spreader rolls having axes substantially parallel to the spike roll axes and located beneath the spike rolls to receive the curtain of fallen strands,
each of the spreader rolls having a plurality of radial extending spikes to distribute the strands evenly in a mat beneath,
means for rotating the spreader rolls in counter-rotating directions such that strands distributed by the spikes are directed outside the spreader rolls and not in between, and
horizontal adjustment means for the spreader rolls to adjust

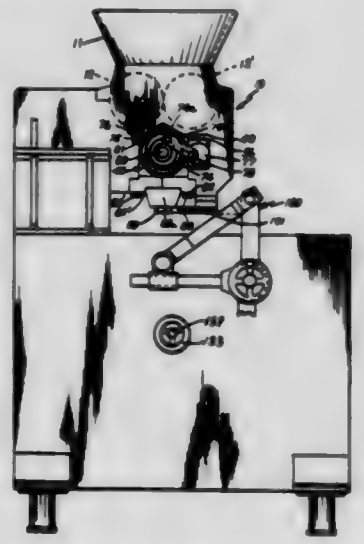
the location of the spreader rolls beneath the curtain of fallen strands, provide a predetermined distance between tips of the spikes on one spreader roll and tips of the spikes of the other spreader roll and insure that the tips of the spikes on one spreader roll do not overlap with the tips of the spikes on the other spreader roll.

4,494,920

POSITIVE-DISPLACEMENT VOLUMETRIC DEPOSITOR APPARATUS FOR BAKING DOUGH AND THE LIKE

Joseph R. Anderson, Ada, Mich., assignor to Werner Lehara, Inc., Grand Rapids, Mich.

Filed Nov. 7, 1983, Ser. No. 549,071
Int. Cl.[3] A21C *3/10, 5/00*
U.S. Cl. 425—190 38 Claims



1. A volumetric metering apparatus for providing a continuous succession of accurately metered deposits of media, comprising:

(a) a supply means for providing media;

(b) a support having a cavity therein, said cavity being in fluid communication with said supply means and being in fluid communication with a discharge orifice defined by said support;

(c) valve means disposed in said cavity and defining first and second chambers therein;

(d) means for moving at least portions of said valve means between a first position wherein said first chamber is in fluid communication with said supply means whereupon said first chamber is charged with media and wherein said second chamber is in fluid communication with said discharge orifice, and a second position wherein said second chamber is in fluid communication with said supply means whereupon said second chamber is charged with media and wherein said first chamber is in fluid communication with said discharge orifice; and

(e) positive-displacement metering plunger means disposed in said chambers and operatively associated with said valve means, for alternatingly discharging volumetric quantities of said media from said chambers when each of said chambers is in fluid communication with said discharge orifice.

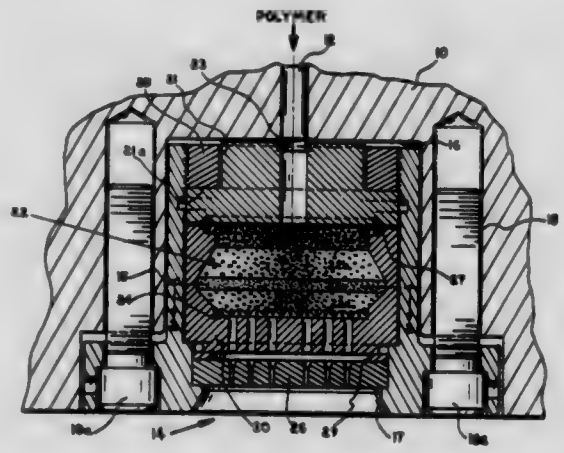
4,494,921

FILTER ELEMENT

Lyles H. Sowell, Old Hickory, Tenn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 8, 1983, Ser. No. 521,422
Int. Cl.[3] B29F *3/04*
U.S. Cl. 425—198 6 Claims

1. A layered filter bed element for removing contaminants from a molten fluid polymer stream flowing through the layer in a direction substantially normal to the layers, said filter bed element comprising: a compressed layer of formable powdered



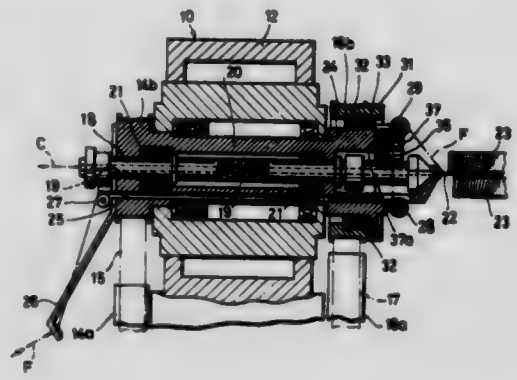
metal defined by a peripheral edge, said layer having a porosity that increases from its center toward its periphery.

4,494,922

APPARATUS FOR STAMPING FILAMENTARY MATERIAL FOR HELICALLY COILED SLIDE-FASTENER COUPLING ELEMENTS

Takeo Fukuroi; Shigenori Omori, both of Uozu, and Akira Tanaka, Kurobe, all of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jul. 7, 1983, Ser. No. 511,650
Claims priority, application Japan, Jul. 12, 1982, 57-120827
Int. Cl.[3] A01J *21/00, 25/12*
U.S. Cl. 425—324.1 6 Claims



1. An apparatus for stamping a filamentary material for the production of a row of continuous coil coupling elements on a mandrel to be attached on slide fastener stringer tapes, said apparatus comprising:

(a) a frame;

(b) a stationary shaft mounted on said frame and having a mandrel extending from one end of said stationary shaft;

(c) a driven rotor rotatably mounted on said stationary shaft;

(d) a rotative ring member mounted at one end of said rotor and rotatable by a drive power derived from the same source of power as that for said rotor; and

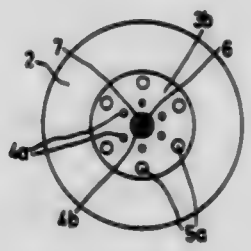
(e) a pair of mating stamping rolls rotatably mounted on one and the same end of said rotor and having rotational axes parallel to each other and to the axis of said rotor, one of said stamping rolls being in driven engagement with said ring member, said rotor rotating at a different angular speed from that at which said ring member rotates, with the resulting speed differential being utilized to make said stamping rolls rotate on their own axes as they orbit about the axis of said rotor.

4,494,923

OXY-FUEL BURNERS

Paul Guillaume, Ivry-sur-Seine; Luc Vezin, Domont, and Bernard Dubi, Velizy Villacoublay, all of France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed Aug. 15, 1983, Ser. No. 523,621
Claims priority, application France, Aug. 25, 1982, 82 14566
Int. Cl.³ F23Q 3/00
U.S. Cl. 431—9 6 Claims



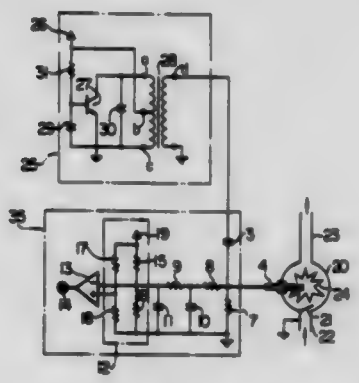
1. In a method for igniting an oxy-fuel burner comprising injecting oxidizing gas and fuel jets from the burner, the jets being arranged to engender recirculation flows during mixing of said oxidizing gas and fuel jets with each other, and inducing an electric ignition spark within a volume of said recirculation flows; the improvement wherein said jets are arranged with an inner ring of fuel jets around said electric ignition spark and an outer ring of oxidizing gas jets around said ring of fuel jets, the flow rates of said jets and the arrangement of said jets relative to said electric ignition spark are such that within said recirculation flow volume the relative proportions of oxidizing gas and fuel lie between the oxidizing-gas-rich and fuel-rich inflammability limits thereof, but closer to the fuel-rich limit.

4,494,924

FLAME DETECTOR FOR PULSE COMBUSTION APPARATUS

Toshio Tanaka, Toride; Motoshi Miyanaka, and Shigekichi Kochiyama, both of Yanai, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 305,725, Sep. 25, 1981, abandoned. This application Sep. 21, 1983, Ser. No. 534,285
Claims priority, application Japan, Aug. 24, 1981, 56-131517
Int. Cl.³ F23N 5/12
U.S. Cl. 431—78 9 Claims



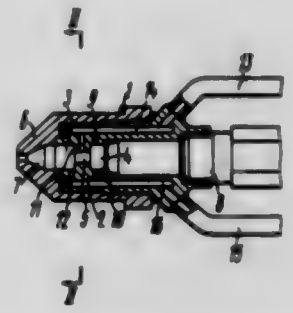
1. A flame detecting circuit for detecting flames produced intermittently in a pulse combustion apparatus, comprising a pair of terminals capable of being disposed to be in contact with flames produced intermittently as the result of pulse-like combustion in said combustion apparatus, a single A.C. voltage generating circuit for producing an A.C. voltage of a predetermined high frequency and of predetermined amplitude to be applied across said pair of terminals, and a flame detecting circuit of a rectifying system for producing a signal representative of presence or absence of said flame on the basis of an input signal which is produced across said pair of terminals through rectifying action of said flame when a period of occurrence of said flame is superposed on a period of a flame detecting voltage portion of said A.C. voltage, wherein said predetermined frequency is so selected that it is higher than that of a commercial A.C. power supply line and higher than a maximum value of frequencies of which said flames are produced in said pulse-like combustion, and that the period of at least one flame detecting voltage portion of said A.C. voltage is superposed onto the period of each of completely all the flames, and that in the case where a part of the flame detecting voltage portion of one cycle of said A.C. voltage and a part of the flame detecting voltage portion of succeeding one cycle of said A.C. voltage are superposed onto the period of one flame, the sum of periods of both the superpositions of said one and said succeeding one cycles of said A.C. voltage is not shorter than the entire period of the flame detecting voltage portion of one cycle of said A.C. voltage.

4,494,925

DEVICE FOR GAS JET CUTTING OF MATERIALS

Viktor G. Zabotin, Ulitsa XXII slezda 179, kv. 27; Alexandr I. Kosenko, Ulitsa Novo-Sadovaya 42, kv. 32; Sergei P. Koziov, Ulitsa Zaporozhskaya 45, kv. 7; Alexandr N. Pervyshin, kvartal 15, 6, kv. 82; Viktor P. Lukachev, Volzhsky prospekt, 37, kv. 10, all of Kuibyshev; Vladimir A. Mikhailov, Ulitsa Mira 92, korpus 1, kv. 79, Moscow; Valery M. Buryakov, Ulitsa Onezhskaya 15b, kv. 27, Moscow; Roman D. Tokhunts, Izmailovsky bulvar, 67, korpus 1, kv. 5, Moscow; Vladimir S. Yakovlev, Ulitsa Marshala Novikova 6, korpus 2, kv. 56, Moscow, all of U.S.S.R.; Viktor Y. Levin, deceased, late of Kuibyshev, U.S.S.R., and by Sofia N. Levin, administratrix, Volzhsky prospekt, 37, kv. 58, Kuibyshev, U.S.S.R.

PCT No. PCT/SU80/00221, § 371 Date Aug. 16, 1982, § 102(e) Date Aug. 16, 1982, PCT Pub. No. WO82/02424, PCT Pub. Date Jul. 22, 1982
PCT Filed Dec. 30, 1980, Ser. No. 408,224
Int. Cl.³ F23Q 3/0
U.S. Cl. 431—158 8 Claims



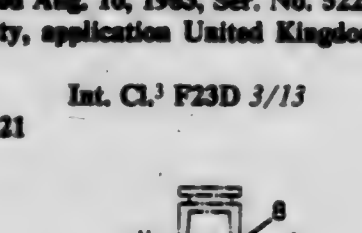
1. A device for gas jet cutting, comprising:
a head;
a gas producer in said head;
said gas producer including primary and secondary combustion chambers axially aligned and interconnected by an axial passage;
a nozzle discharge passage in one end of said head and communicating with said primary combustion chamber;
an electric spark igniter axially aligned with said gas producer and communicating with said secondary combustion chamber;
first and second injectors in said gas producer communicating with said secondary combustion chamber for feeding fuel and oxidizer therein;
a third tangential jet injector in said gas producer connected to said axial passage to supply oxidizer to said primary combustion chamber; and
a fourth tangential jet injector in said gas producer communicating with said primary combustion chamber for supplying fuel therein.

4,494,926

WICK HOLDER FOR A LIQUID-FUEL LAMP

Hans J. Rika, Biscayne, Port Marnock, Dublin, Eire., Ireland

Filed Aug. 10, 1983, Ser. No. 522,052
Claims priority, application United Kingdom, May 5, 1983, 8312334
Int. Cl.³ F23D 3/13
U.S. Cl. 431—321 6 Claims



1. A wick holder for a liquid-fuel burning lamp comprises a wick support in the form of a button-like metal pressing formed to be a press-fit in the neck of a liquid-fuel containing lamp, the centre of the pressing being formed with an aperture presenting radially inwardly projecting fingers, and a wick tube of heat resisting material forced partly through the aperture so that the fingers flex as the tube is pushed through and by their own elasticity grip the tube frictionally and hold it in a desired axial position in the wick support, the fingers being spaced apart around the aperture to permit air flow therethrough when the tube is gripped by the fingers.

4,494,927

CENTRALIZED LADLE HEATING AND DRYING SYSTEM

Grigory M. Gitman, Duluth, Ga., assignor to The Cadre Corporation, Atlanta, Ga.

Continuation-in-part of Ser. No. 418,798, Sep. 16, 1982, Pat. No. 4,432,726. This application May 10, 1983, Ser. No. 493,248
Int. Cl.³ F27D 3/00; F24J 3/00; C21B 9/00
U.S. Cl. 432—9 32 Claims

11. A method of simultaneously heating a plurality of ladles or the like comprising the steps of

arranging the ladles with their openings accessible for engagement by a lid,

engaging the rim of each ladle with a lid that substantially closes the opening of each ladle,

moving combustion air and fuel through the lid of at least one ladle into the ladle and burning the combustion air and fuel in the one ladle,

moving the exhaust gases from the at least one ladle through its lid and through the lid of and into a second ladle, and

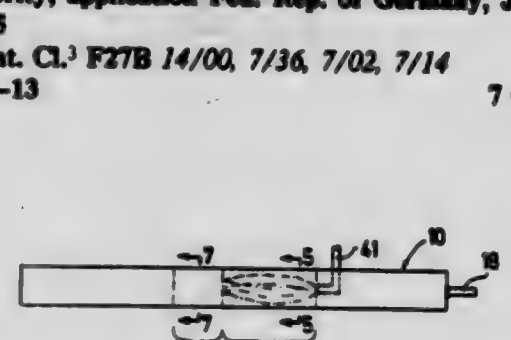
exhausting the gases from the second ladle.

4,494,928

METHOD AND APPARATUS FOR PRODUCING EXPANDED CLAY AND EXPANDED SHALE

Hans-Joerg Rohrbach, Balingen, Fed. Rep. of Germany, assignor to Rohrbach Technologie KG and Baustofftechnik GmbH & Co., both of Balingen, Fed. Rep. of Germany

Filed Jul. 19, 1983, Ser. No. 515,167
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1982, 3228745
Int. Cl.³ F27B 14/00, 7/36, 7/02, 7/14
U.S. Cl. 432—13 7 Claims



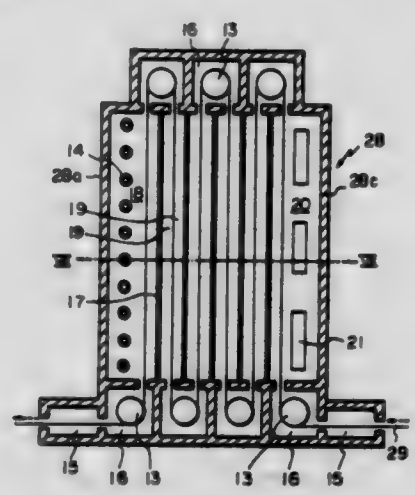
2. In a rotary tubular kiln for producing expanded clay or expanded shale, which kiln includes a means defining a continuous, essentially linear product conveying and treating region which includes a preheating zone enclosed by a cylindrical jacket, the kiln having charging and discharge ends at respectively opposite ends of said product conveying and treating region, a stationary burner disposed in the vicinity of the discharging end for heating said conveying and treating region, and a mantle burner fixed to said jacket to rotate therewith and located for heating the preheating zone, the improvement comprising means mounted in said kiln for mixing raw material introduced in the kiln via the charging end, said mixing means being located in the preheating zone immediately preceding said mantle burner.

4,494,929

CONTINUOUS HEAT TREATMENT FURNACE

Masato Fujioka; Katsuyoshi Kobayashi; Koichi Yuta, and Nobuyoshi Nishihara, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 15, 1983, Ser. No. 475,489
Claims priority, application Japan, Mar. 19, 1982, 57-42885; Mar. 19, 1982, 57-42886; Mar. 26, 1982, 57-47284
Int. Cl.³ F27B 9/28; C21D 9/52, 9/54
U.S. Cl. 432—59 11 Claims



1. A continuous heat treatment furnace for heat-treating a metal strip comprising outer furnace walls defining said furnace, roller means disposed within the interior of said furnace providing a plurality of adjacent paths within said furnace interior for passing said metal strip through said furnace, a separation wall of an air-permeable solid having a three-dimen-

sional skeleton structure or net-like laminate structure disposed within the interior of said furnace, and satisfying the following requirement:

$$\frac{10}{a_p} < \delta < 300000 \frac{\epsilon^3}{a_p^2}$$

wherein δ stands for the thickness (m) of the air-permeable solid wall, a_p stands for the specific surface area (m^2/m^3) of the air-permeable solid wall, and ϵ stands for a porosity of the air-permeable solid wall, and

wherein said separation wall is arranged between the confronting surfaces of the strip passing in two adjacent paths.

4,494,930

SHAFT FURNACE FOR HEAT TREATMENT OF FINELY DISPERSED MATERIALS

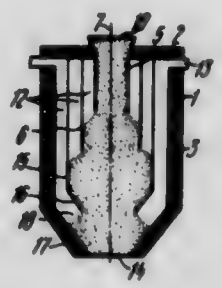
Ivan K. Bauer; Vitaly P. Malyshev; Dzhantore N. Abishev; Sergei V. Belyaev; Anatoly I. Shirokov; Nazymkul Baltynova; Elena S. Alipchenko, all of Karaganda; Djusenkhan D. Ekeibaev, and Vakhit T. Abdulkhairov, both of Dzhezkarganskaya, all of U.S.S.R., assignors to Khimiko-Metallurgicheskiy Institut, Karaganda, U.S.S.R.

PCT No. PCT/SU80/00185, § 371 Date Jul. 16, 1982, § 102(e) Date Jul. 16, 1982, PCT Pub. No. WO82/01936, PCT Pub. Date Jun. 10, 1982

PCT Filed Nov. 28, 1980, Ser. No. 403,647

Int. Cl.³ F27B *15/10*; F27D *1/08*

U.S. Cl. 432—95 3 Claims



1. A shaft furnace for heat treatment of finely dispersed materials, comprising a heated casing of rectangular cross section; a cover detachably connected to said casing; a hopper communicating with said cover for charging a material in to said casing; exhaust pipes situated in a top part of the casing and through which resulting gases are drawn off; and two groups of plates located in said casing equidistant from a vertical axis of said casing, wherein the plates being arranged parallel to the vertical axis of the casing being of different lengths which increase in the direction from the vertical axis toward a narrow wall of said casing, and form passages therebetween and the narrow wall for the flow of gases toward said exhaust pipes; and, wherein the widths of the narrow walls is smaller than the widths of the wide walls of the casing by a factor of 8 to 10.

4,494,931

METHOD AND PAD WITH INDEX TABS FOR APPLYING ORTHODONTIC BRACKETS

Alexander J. Wildman, 2440 Willamette St., Eugene, Oreg. 97405

Continuation-in-part of Ser. No. 434,494, Oct. 15, 1982, Pat. No. 4,443,189. This application Apr. 29, 1983, Ser. No. 489,831

Int. Cl.³ A61C *7/00*

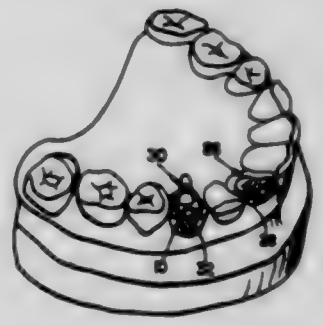
U.S. Cl. 433—8 7 Claims

1. An orthodontic bracket mounting pad comprising:

a generally planar pad portion having a perimeter contoured to conform generally to the shape of one of a lingual and labial surface of a selected tooth, the pad portion having a gingival end and an occlusal end, and

indexing means integrally connected to the occlusal end of the pad portion and extending outwardly therefrom for a sufficient length to be bent over the occlusal surface of the tooth to the opposite side of the tooth from said one surface;

the pad portion and indexing means being formed of a bur-



nishable material so that the pad can be burnished to substantially conform to the underlying contours of the selected tooth in a plaster model and thereby memorize such shape so that the pad can be transferred to substantially identically the same position on the corresponding tooth of the patient from whom the model was made.

4,494,932

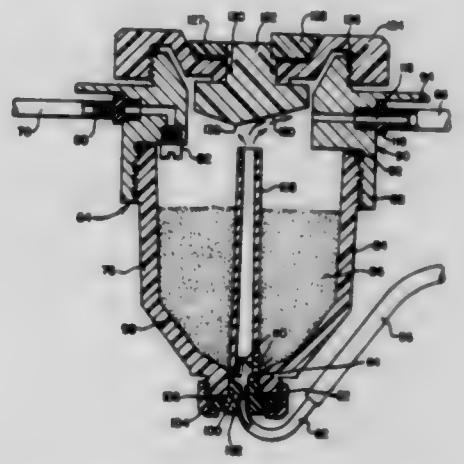
DENTAL CLEANING APPARATUS AND METHOD

Leonard Razwinski, New Hyde Park, N.Y., assignor to Cooper LaserSonics, Inc., Santa Clara, Calif.

Filed Feb. 18, 1983, Ser. No. 467,916

Int. Cl.³ A61C *3/02*

U.S. Cl. 433—88 25 Claims



1. In a system for cleaning teeth in which a stream of air having cleaning powder particles entrained therein and a separate stream of water are directed against the tooth surface to be cleaned, an improved cleaning powder dispensing apparatus for providing a controlled flow of cleaning powder particles comprising,

a powder chamber for containing a supply of cleaning powder to be dispensed, the powder chamber having sidewalls, a bottom wall and top closure means and having a maximum powder supply level spaced below said top closure means,

an elongated tube mounted in said chamber and having a bottom end adjacent said bottom wall and an open top end spaced above said maximum powder supply level,

powder dispensing opening means providing a gravity flow path for powder from the bottom portion of said chamber into the bottom end portion of said elongated tube,

first air inlet means for directing a flow of air under pressure upwardly through said elongated tube from a point below said powder dispensing opening means for conveying powder from the bottom portion of said elongated tube and discharging the powder from the open top end of the tube,

an outlet opening in the sidewall of the chamber at a point above said maximum powder supply level,

deflection means positioned to engage and deflect at least a portion of the air and powder particles discharged from said open top of said elongated tube in a direction toward the sidewall of the chamber whereby air admitted into the bottom of said elongated tube and powder particles conveyed through the tube escape through said outlet opening,

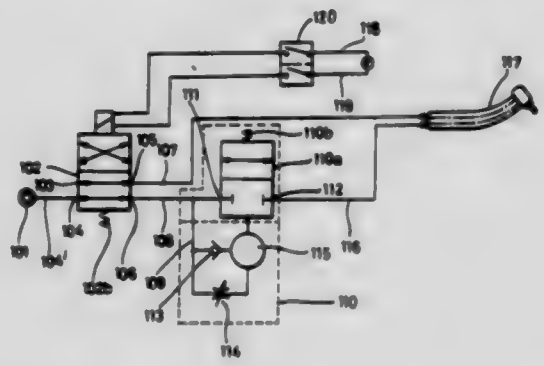
conduit means for conveying the escaping air and powder particles from said outlet opening in a stream for direction onto the tooth surface to be cleaned.

4,494,933

ROTATION CONTROL DEVICE FOR DENTAL HANDPIECE

Takahiro Matsui, Uji, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Continuation of Ser. No. 235,648, Feb. 18, 1981, abandoned. This application Mar. 8, 1983, Ser. No. 473,241
Claims priority, application Japan, Feb. 19, 1980, 55-21015
Int. Cl.³ A61C *1/02*
U.S. Cl. 433—98 1 Claim



1. A dental turbine rotation control device for a dental air bearing turbine in a static type dental air turbine comprising an air bearing journalling a rotating shaft supporting a dental cutting tool, a turbine provided integral with said shaft, an air passage for supplying said air bearing and turbine with compressed air and an exhaust passage for exhausting air used in said turbine and a compressed air source, said rotation control device being characterized in that it comprises a four-way magnetic valve for connecting said air passage to said compressed air source, a closing valve for opening and closing said exhaust passage, and an air timer for controlling said closing valve, said air timer comprising:

an air tank coupled to said closing valve;

a throttle valve coupling said air tank to said magnetic valve; and

a return valve in parallel with said throttle valve.

4,494,934

DENTAL MODEL BASE

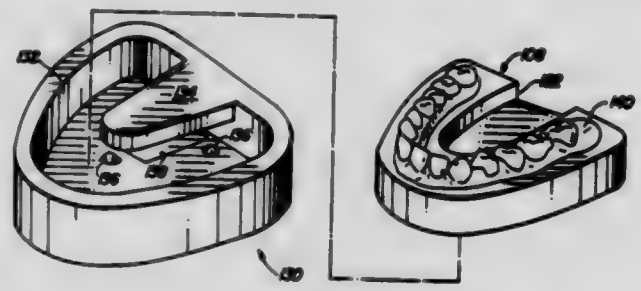
Ronald E. Huffman, Tucson, Ariz., assignor to KV33 Corporation, Tucson, Ariz.

Division of Ser. No. 230,330, Feb. 2, 1981, Pat. No. 4,378,979. This application Nov. 23, 1981, Ser. No. 323,735
Int. Cl.³ A61C *11/00*; B29C *1/16*
U.S. Cl. 433—213 5 Claims

1. A base for use in a dental model to support a tooth die, said base comprising in combination:

(a) a body, said body including a planar top surface, a planar bottom surface essentially parallel with said top surface and a perimeter surface interconnecting said top and bottom surfaces, said perimeter surface being defined by a rear portion, extending between two rear corners and two converging symmetric convex sides extending from said corners and joining each other at a centrally located point at the front of said body; and

(b) a platform formed upon and extending upwardly from said top surface of said body a distance less than the height of said body for supporting the bottom surface of the tooth die, said platform including an outer marginal edge defined by an upward extension of said perimeter surface attendant a part of said rear portion, said two rear corners and said convex sides and an inner marginal edge defining



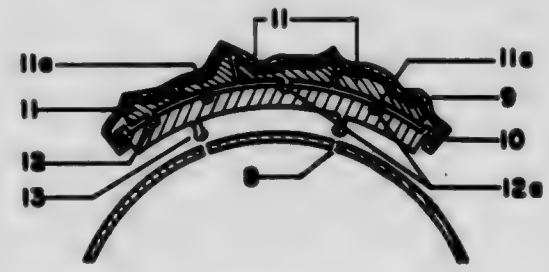
an inner recessed portion, said outer and inner marginal edges defining an approximately uniform width therebetween, said inner recessed portion being coincident with a part of said top surface of said body and including concave sides converging from said rear portion toward but short of the front point of said body and depending from said inner marginal edge.

4,494,935

MULTIPURPOSE GLOBE

Anna L. Miller, 112 Whispering Pines Dr., Waveland, Miss. 39576

Filed Dec. 29, 1983, Ser. No. 566,715
Int. Cl.³ G09B *27/08*
U.S. Cl. 434—132 7 Claims



1. A globe apparatus comprising:

a sphere having major land masses and oceans depicted on the outer surface thereof;

a first set of detachable elements representing geopolitical entities detachably mounted on said outer surface of said sphere on portions thereof representing land masses, the outer edges of elements being in the shape of the geopolitical entity represented thereby; and

a second set of detachable elements detachably mounted on the outer surface of said sphere on portions thereof representing land masses, the elements of said second set representing further divisions of the land masses, the upper surfaces of one of said sets of elements being in relief to represent topological features of the portion of the land mass represented thereby, and said one set of detachable elements being mounted on said sphere on top of the other set so as to cover the other set, whereby removal of the one set reveals the other set;

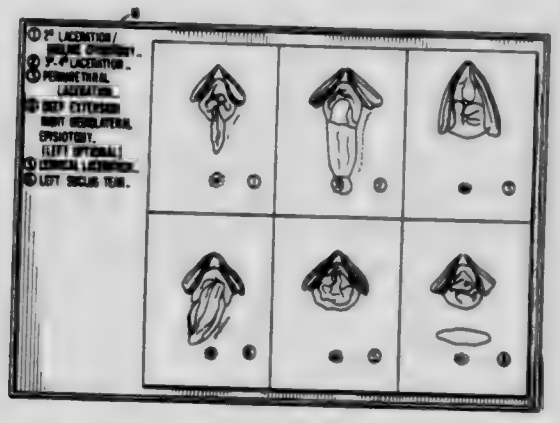
said sphere comprising four separate quadrants including connecting means for enabling the quadrants to be detachably connected together in different combinations so as to permit division of the globe into the Northern and Southern hemispheres of the Earth, and, alternately, into the Eastern and Western hemispheres of the Earth.

4,494,936

EPISIOTOMY TRAUMA REPAIR TEACHING AID

Bonnie J. Stickles, 2109 Sargent Ave., St. Paul, Minn. 55105

Continuation of Ser. No. 421,367, Sep. 22, 1982, abandoned. This application Apr. 17, 1984, Ser. No. 600,225
Int. Cl.[3] G09B *23/30*
U.S. Cl. 434—273
2 Claims



1. An episiotomy trauma repair teaching aid having a plurality of three-dimensional, simulated perinea modules into which various types of surgical incisions used in obstetrics for delivery of babies have been formed, each of said modules comprising:

a firm PCB base;

firm PCB sides connected to said base which, with said base, provide rigidity to said module;

a foam rubber interior portion having an inner surface and an outer surface, said inner surface affixed to said base, and which simulates the response of flesh to suturing;

a plurality of thin layers of elastic polymeric material connected to said outer surface of said interior layer;

a plurality of relatively soft colored layers of PCB covering said thin layers of elastic polymeric material, wherein the combination of said layers of elastic polymeric material, said layers of PCB simulates the response of subcutaneous tissue to suturing; and

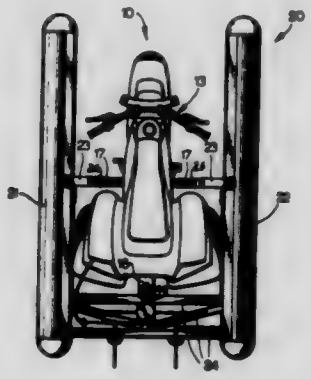
a plurality of resilient and pre-tensioned cords embedded in said interior portion to simulate pelvic musclature, wherein said PCB base, said PCB sides, said foam rubber interior portion, said elastic polymeric material, said relatively soft layers of PCB and said plurality of pre-tensioned cords combine to form a durable, flexible, sewable and realistic module in said episiotomy trauma repair teaching aid.

4,494,937

PONTOON ATTACHMENT FOR ALL TERRAIN VEHICLE

Fred H. Riermann, 20211 Maxwill, Scandia, Minn. 55073

Filed Feb. 10, 1983, Ser. No. 465,700
Int. Cl.[3] B63H *1/100*
U.S. Cl. 440—11
9 Claims



7. A paddle wheel for attachment to an all terrain vehicle to provide for water propulsion comprising a first member having a plurality of water engaging vanes;

a second member having a plurality of water engaging vanes connected to said first member, said first member pivotally connected to said second member; and

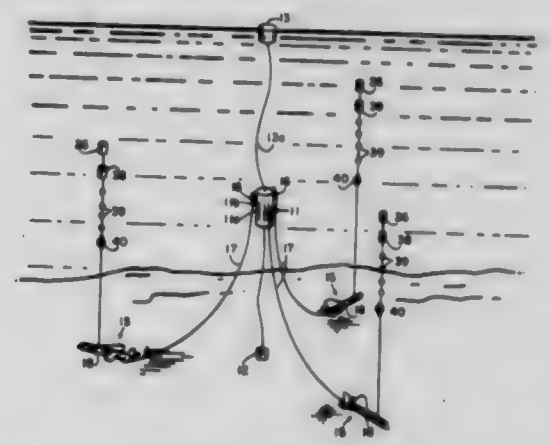
means for producing a force to pivot said first member and said second member outward to hold said first member and said second member so that when said paddle wheel is mounted to the all terrain vehicle the frictional forces hold said paddle wheel to the drive mechanism of the all terrain vehicle.

4,494,938

MASTER BUOY SYSTEM FOR ACOUSTIC ARRAY DEPLOYMENT, USING UNDERWATER GLIDE BODIES REMOTELY LAUNCHED FROM A SUBMERGED POD

Robert A. Flood, San Diego; Howard R. Talkington, La Jolla; Richard A. Wheelock, and Robert L. Watts, both of San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 800,584, May 23, 1977, Pat. No. 4,272,835. This application Sep. 24, 1980, Ser. No. 190,111
Int. Cl.[3] B63B *21/52*
U.S. Cl. 441—33
6 Claims



1. An apparatus for hydrodynamically deploying by gravity at least one hydrophone means comprising:

means for defining an elongate body member having a cavity to contain the hydrophone means therein;

a horizontal stabilizer mounted on the aft end of the defining means for creating a hydrodynamic positive pitching moment to increase pitching stability;

a delta-shaped wing mounted on top of the defining means for providing hydrodynamic lift, the center of lift of which is aft of the center of gravity of the apparatus and the elongate body member defining means with the hydrophone means, the horizontal stabilizer, and the delta-shaped wing have sufficient mass to assure that gravity effects the hydrodynamic deployment thereof;

means interposed between the defining means and the delta-shaped wing for raising the delta-shaped wing above the defining means to increase roll stability, the raising means is configured to orient the delta-shaped wing in an inclined positive angle with respect to the longitudinal axis of the defining means;

a vertical stabilizer mounted on the top of the aft end of the defining means for ensuring yaw stability and the delta-shaped wing is shaped with a positive dihedral angle to further increase roll stability; and

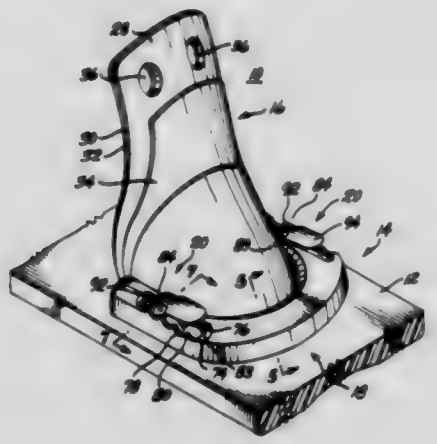
means mounted on the elongate body member for closing the cavity.

4,494,939

WATER SKI BINDING

David E. Calapp, Bellevue; Gail M. Ackert, Bothell, both of Wash., and Roger J. Brown, Aspen, Colo., assignors to Connelly Skis, Inc., Lynnwood, Wash.

Filed Feb. 4, 1983, Ser. No. 464,020
Int. Cl.³ A63C 15/06
U.S. Cl. 441—70 35 Claims



1. In a heelpiece for a water ski binding adapted to be mounted on the top surface of a water ski and including a heel-gripping member, a heel base interconnected therewith and means for adjustably mounting the base on the top surface of the water ski, the improvement comprising:

a. post means extending upwardly from the top surface of the ski;

b. elongate slot means in said heel base for receiving said post means;

c. a plurality of detents disposed along said slot means; and,

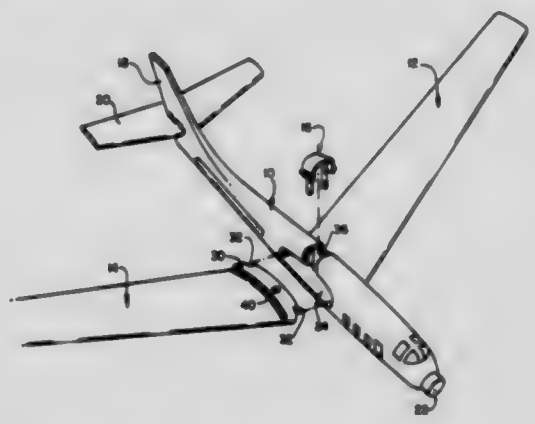
d. cam means cooperating with and rotatable relative to said post means about an axis nonparallel to the axis of said post means to press said heel base against the water ski top surface to hold the heelpiece against movement at selected locations along the ski surface.

4,494,940

MODEL AIRCRAFT

Charles Gretz, Suisun, Calif., assignor to Life-Like Products, Inc., Baltimore, Md.

Filed Apr. 19, 1982, Ser. No. 369,567
Int. Cl.³ A63H 27/00
U.S. Cl. 446—61 10 Claims



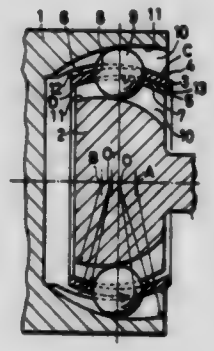
1. Model aircraft apparatus comprising an aircraft fuselage, wings, and a generally U-shaped clip for attaching the wings to the fuselage in a flying position, the wings having openings disposed on opposite sides of the fuselage, respectively, when the wings are in said position, and the clip including a bridge portion and opposed depending limbs, the bridge portion being adapted to fit over the fuselage with the limbs on opposite sides of the fuselage, and with the limbs fitting in said openings in the wings, thereby securing the wings to the fuselage, the fuselage including a recessed arch section in which the bridge portion of the clip is adapted to fit with the outer surface of the clip substantially flush with adjacent surfaces of the fuselage, the arch section including grooves for receiving the respective limbs of the clip, and the limbs of the clip being offset from the transverse center line of the bridge portion and the grooves being offset from the transverse center line of the arch section, so that the clip can only be received in the arch section in one direction.

4,494,941

CONSTANT VELOCITY UNIVERSAL JOINT

Seiichi Hirai, Hidaka, and Nobuyuki Otsuka, Kawagoe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1982, Ser. No. 370,076
Claims priority, application Japan, Apr. 24, 1981, 56-61488
Int. Cl.³ F16D 3/24
U.S. Cl. 464—145 18 Claims



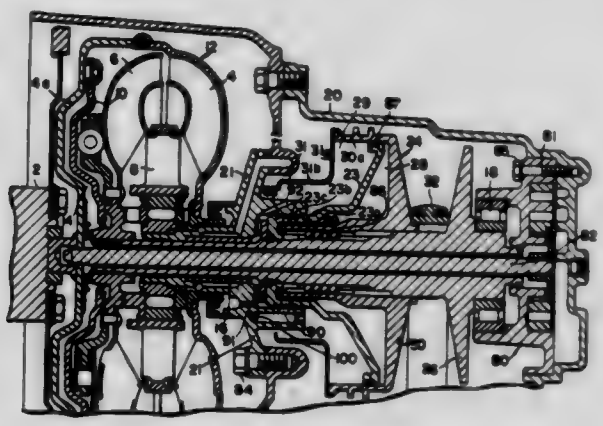
1. A constant velocity universal joint comprising an outer member having an inner spherical surface with a constant radius of curvature, an inner member fitted in said outer member and having an outer spherical surface facing said inner spherical surface of the outer member, said outer spherical surface of said inner member having a constant radius of curvature, said inner and outer members being adapted for relative angular travel about a center of the joint, a cage member interposed between said inner and outer members, said cage member having an outer spherical surface facing the inner spherical surface of the outer member for operative contact engagement therewith and an inner spherical surface facing the outer spherical surface of the inner member for operative contact engagement therewith, said cage member having windows therein, and balls disposed in said windows and projecting outwardly therefrom, said inner and outer members being provided with respective opposed ball grooves in which said balls are engaged, said mutually facing spherical surfaces of the outer member and the cage member being slightly eccentric with respect to one another so that a gap formed between the two spherical surfaces gradually decreases continuously from one end towards the other end of the joint and said surfaces come into pressure contact in a first contact zone proximate said other end, while said mutually facing spherical surfaces of the inner member and the cage member are slightly eccentric with respect to one another so that a second gap formed between these two spherical surfaces gradually decreases continuously from said other end to said one end of the joint and said surfaces come into pressure contact at a second contact zone proximate said one end, said first and second pressure contact zones of said cage respectively with said outer and inner members proximate said ends of the joint maintaining said cage in axial position in said joint while permitting universal movement of said inner and outer members about the joint center with operating engagement of said confronting spherical surfaces of said cage member and said inner and outer members.

4,494,942

CONTINUOUSLY VARIABLE V-BELT TRANSMISSION

Hiroyuki Hirano, Yokosuka; Sigeaki Yamamuro, Zushi; Yoshiro Morimoto, Yokosuka, and Yoshikazu Tanaka, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 9, 1982, Ser. No. 367,090
Claims priority, application Japan, Apr. 11, 1981, 56-53793
Int. Cl.³ F16H *11/04*
U.S. Cl. 474—28 4 Claims



1. A continuously variable V-belt transmission comprising;
a drive pulley;
a driven pulley;
a V-belt running over said drive pulley, each of said pulleys having an axially fixed conical disc, an axially movable conical disc provided with
a cylinder wall, an axially fixed partition wall sealably fitted within said cylinder wall to define within said cylinder wall a cylinder chamber between said axially fixed partition wall and said axially movable conical disc, and a trough including an annular disc like portion extending inwardly from said cylinder wall to define within said cylinder wall a compensation chamber between said disc like portion of said trough and said axially fixed partition wall;
said trough including a tubular portion extending axially from said disc like portion in a direction remote from said axially fixed partition wall;
said axially fixed partition wall carrying means sealably separating said compensation chamber from said cylinder chamber so as to prevent communication therebetween;
a shift control valve;
means establishing communication between said cylinder chamber and said shift control valve;
a source of lubricating fluid; and
means defining at least one passage establishing communication between said source of lubricating fluid and said compensation chamber, said at least one passage being so oriented as to direct a flow of fluid thrown radially outwardly toward said tubular portion of said trough toward said compensation chamber.

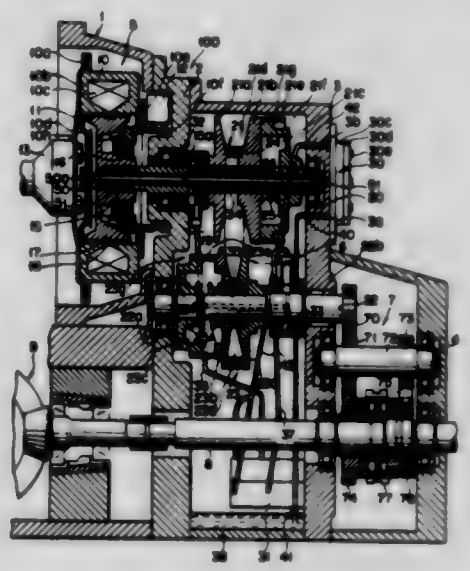
4,494,943

POWER TRANSMISSION DEVICE FOR VEHICLES

Toshihiro Takei; Takahiro Goshima, both of Kariya; Yoshiyuki Hattori, Toyoake, and Kazuma Matsui, Toyohashi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 3, 1982, Ser. No. 414,579
Claims priority, application Japan, Sep. 8, 1981, 56-141269; Sep. 8, 1981, 56-141270
Int. Cl.³ F16H *55/52*
U.S. Cl. 474—28 17 Claims

1. A power transmission device for vehicles, comprising:
a housing rotatably supporting a crank shaft of an engine of the vehicle;
a first shaft rotatably supported inside said housing to be coaxial with said crank shaft;
a clutch unit having a drive member arranged inside said housing and coupled to said crank shaft, and a driven member fixed to said first shaft;
a second shaft rotatably supported inside said housing to be parallel to said first shaft;
infinite variable transmission including a drive pulley having a fixed sheave secured to said first shaft and a movable sheave axially movable mounted on said first shaft, a driven pulley having a fixed sheave secured to said second shaft and a movable sheave axially movably mounted on said second shaft, and a V belt which is placed on said drive and driven pulleys through V grooves defined by said fixed and axially movable sheaves of said drive and driven pulleys;



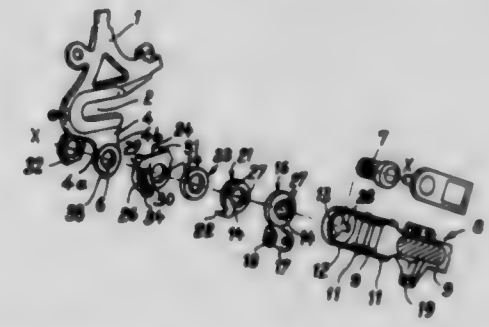
hydraulic piston-cylinder assemblies which are fixed to said movable sheaves and to said first and second shafts associated therewith and which move said movable sheaves towards and away from said fixed sheaves associated therewith;
a rotary hydraulic pump which is disposed at said housing, which has a rotary element to generate a hydraulic pressure upon rotation, and which supplies the hydraulic pressure to said hydraulic piston-cylinder assemlbies; and
a third shaft passing through said first shaft and having one end connected to said crank shaft and the other end connected to said rotary element of said rotary hydraulic pump.

4,494,944

DEVICE FOR MOUNTING A DERAILLEUR ON THE FRAME LUG OF A CYCLE

Maurice E. L. Coué , Feucherolles, France, assignor to Huret et ses Fils, Nanterre, France

Filed Jun. 28, 1982, Ser. No. 393,070
Claims priority, application France, Jul. 3, 1981, 81 13117
Int. Cl.³ F16H *11/08*
U.S. Cl. 474—82 7 Claims



1. A device for mounting a chain derailleur on a frame lug having a notch of a cycle having a wheel and a wheel spindle engaged in the notch of the lug, said device comprising a base member of the derailleur, a pivot carried by the lug in a position parallel to the spindle for pivotally mounting the base

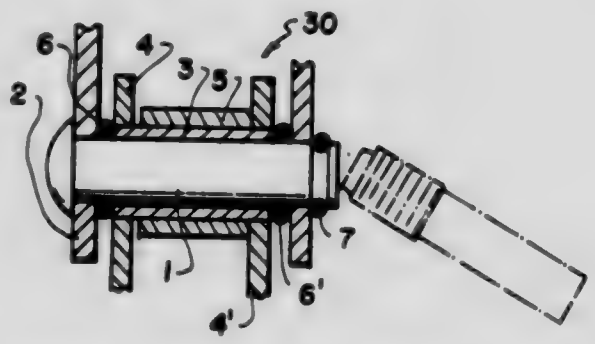
member of the derailleur on the lug, means for pivotally biasing the base member of the derailleur about said pivot toward an operative position of the derailleur, means defining an abutment rigid with the base member of the derailleur, means defining a support surface which is rigidly fixed relative to the frame lug, said operative position being determined by abutment of the abutment against the support surface upon a pivoting of the base member about said pivot in a first direction, a resiliently yieldable retaining means which is fixed in position relative to the frame lug, is in angularly spaced relation to said support surface relative to said pivot and has a retaining position in which retaining position the retaining means is encountered by the abutment in the course of an angular displacement of the base member of the derailleur in a second direction opposed to said first direction about said pivot, said retaining means being resiliently yieldable upon exertion of sufficient torque on said base member in said second direction about said pivot so as to allow said abutment to assume a position on an opposite side of said retaining means relative to said support surface and being capable of resuming said retaining position when said abutment is on said opposite side for resiliently retaining the abutment in a position in which the derailleur is spaced away from said operative position and immobilized so as to give access to the wheel spindle, said retaining means being in substantially close proximity to the abutment when the abutment is an abutting relation to the support surface.

4,494,945

ROLLER CHAIN LINK CONSTRUCTION AND METHOD OF MANUFACTURE

Teiji Ogino, Ishikawa, Japan, assignor to Enuma Chain Manufacturing Co., Ltd., Japan

Filed Jan. 29, 1982, Ser. No. 344,043
Int. Cl.³ F16G *1/22, 5/10, 13/02*
U.S. Cl. 474—231 **7 Claims**



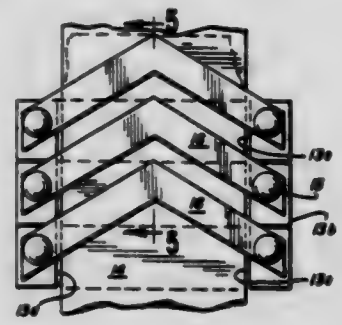
5. A method of assembling a power transmission roller chain link which includes a first pin link plate, first and second spaced-apart substantially parallel pins having first ends connected to the first pin link plate and opposite second ends with an extension having a threaded area with a heat-treated brittle groove area of diameter less than that of the threaded area and the groove area disposed between the thread area and the second end, comprising: applying a bushing over each of said first and second pins; applying a roller over said bushing together with a roller link plate adjacent each end of said roller and press-fitting roller link plates to respective ends of said bushing; thereafter passing the extension of the link pins through openings in a second link plate so as to position the threaded area of the link pin extension exteriorily of the second pin link plate, threadably engaging a nut on the threaded area of said extension to bear over said groove area and against said second link plate and to force said second link plate along the associated link pins to position it adjacent said bushing; threadably disengaging said nut from over said groove area; and thereafter breaking off the extension from the assembly at said groove area.

4,494,946

FLEXIBLE CONTINUOUS TORQUE TRANSMITTING DEVICE

John P. Wilcox, Columbus, Ohio, assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Aug. 26, 1981, Ser. No. 296,432
Int. Cl.³ F16G *5/26*
U.S. Cl. 474—242 **5 Claims**



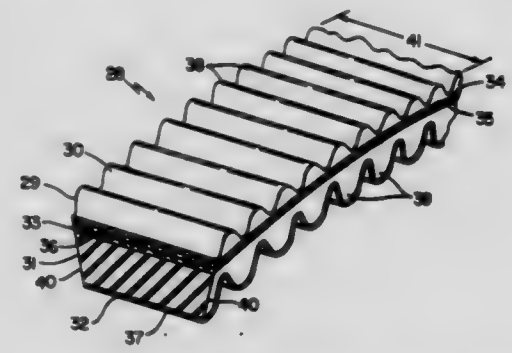
1. A flexible, continuous device for transmitting torque between a driving V pulley and a driven V pulley, comprising a plurality of strut means arranged in aligned side-by-side relation, each strut means at a given ratio of the driving and driven pulleys having a predetermined pitch radius relative to the pulley axes; a continuous flexible band means engaging corresponding surfaces of said strut means; and a member mounted on each strut means and coacting therewith to retain said strut means and said band means in assembled relation, each member having a portion thereof protruding longitudinally in the direction of travel of said band means to at least a second strut means beyond the strut means on which it is mounted whereby when the strut means on which the member is mounted begins exiting a pulley in a non-tangential direction, the protruding portion thereof engages a previously exited strut means and the latter exerts an outward force on said forwardly protruding portion causing a pivoting moment on said strut means to which said member is mounted, whereby the latter strut means exits the periphery of the pulley in a generally tangential direction.

4,494,947

ENDLESS POWER TRANSMISSION V-BELT CONSTRUCTION AND METHOD OF MAKING THE SAME

Joseph P. Miranti, Jr., Porter Township, Christian County; Mark P. Foley, Springfield; Gerald C. Hollaway, Springfield; Larry R. Oliver, Springfield; Paul M. Standley, Springfield, and James A. Lewis, Springfield, all of Mo., assignors to Dayco Corporation, Dayton, Ohio

Continuation of Ser. No. 348,106, Feb. 11, 1982, Pat. No. 4,410,314. This application Aug. 11, 1983, Ser. No. 522,422
The portion of the term of this patent subsequent to Oct. 18, 2000, has been disclaimed
Int. Cl.³ F16G *1/10, 1/28*
U.S. Cl. 474—251 **18 Claims**



1. In an endless power transmission V-belt construction formed mainly of polymeric material and having rounded top and bottom teeth respectively extending along the length of the top and bottom surfaces of said belt construction, said belt construction comprising a tension section having said top

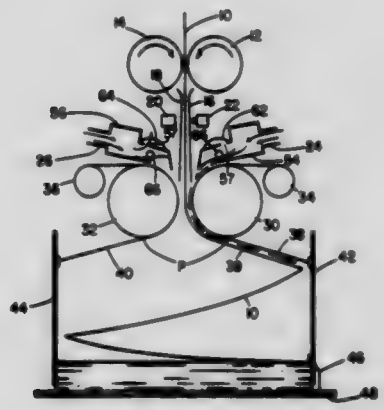
surface, a compression section having said bottom surface, and a load-carrying section disposed intermediate said tension section and said compression section, the improvement wherein the quotient of the top width to belt thickness of said belt construction is approximately 2.0, the quotient of the bottom to top tooth pitch is approximately 1.40, the quotient of the bottom to top tooth depth is approximately 1.77 and the quotient of the belt thickness to flex thickness is approximately 3.98 whereby said belt construction is adapted to be utilized in a continuously variable transmission unit.

4,494,948

AIR CONTROLLED PAPER STACKER

Emil G. Teyssier, Jr., Lansdale, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Jul. 6, 1982, Ser. No. 395,209
Int. Cl.³ B31F *7/00*
U.S. Cl. 493—11 **5 Claims**



1. A paper stacker for the refolding of a continuous unfolded paper form comprising:

a first and a second forced air supply;

a first and a second curved surface closely positioned one to another in a facing relationship;

paper form receiving means positioned to receive and stack the continuous paper form in an original configuration; said receiving means having first and second adjustable side means for accommodating various size refolded forms;

first and second extendable supply means for supplying sheets having an adjustable length, said sheets covering said first and second curved surfaces, respectively, and attached to said first and second side means, respectively, said sheets having lengths adjustable in response to adjustment of said side means; and

means for controlling forced air, said means having an input and output, said input of said forced air control means coupled to movement of said paper form to receive location and speed information therefrom, said output of said forced air control means coupled to said first and second forced air supply, such that the location and speed information received by said forced air control means causes said forced air supply to alternately operate to attach to said curved surfaces and said sheets for urging said continuous form over said first and second curved surfaces and along said sheets toward said side means in an alternating manner whereby said unfolded form is forced to refold in the original configuration.

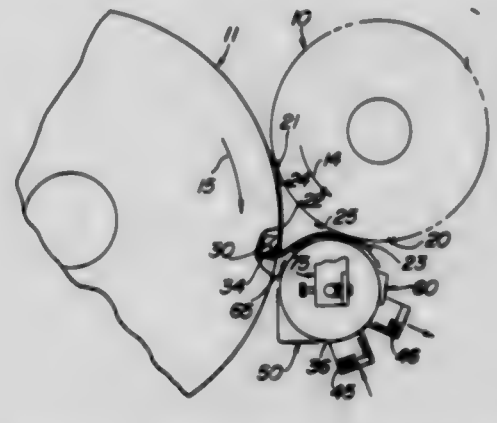
4,494,949

SHEET FOLDING APPARATUS AND METHOD

William D. Baley, Dallas, Tex., assignor to The Lehigh Press, Inc., Pennsauken, N.J.

Filed Jan. 10, 1983, Ser. No. 456,751
Int. Cl.³ B65H *45/16*
U.S. Cl. 493—432 **17 Claims**

1. In a sheet folding machine including rotary tangential tucker and jaw rolls for respective edgewise feeding of a sheet to the nip of said rolls and there gripping a bent portion of said sheet intermediate its leading and trailing edges, the improvement comprising a working surface on the downstream side of and facing toward said nip, and air stream producing means associated with said working surface for passing an air stream along said working surface in the direction away from said jaw roll, to maintain the leading sheet edge portion smoothly extended during folding back on the trailing edge sheet portion.



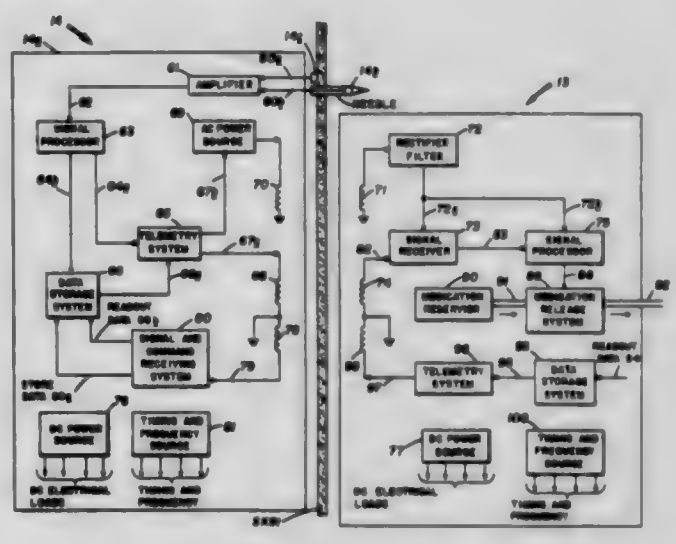
10. A method of folding a sheet comprising: feeding a sheet edgewise along a first path, gripping an intermediate portion of the sheet, moving the sheet by the gripped portion along a second path away from said first path with the leading and trailing edges of the sheet free, and directing a fluid stream counter to and away from said second path to extend and guide the leading edge portion of the sheet back against the trailing edge sheet portion.

4,494,950

PLURAL MODULE MEDICATION DELIVERY SYSTEM

Robert E. Fischell, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed Jan. 19, 1982, Ser. No. 340,817
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—66 **6 Claims**



1. A medication delivery system for delivering medication into a patient, said medication delivery system comprising:

a sensor module including,

a sensor module housing adapted to be externally mounted on a patient's skin,

a needle adapted to be buried just beneath said patient's skin;

a glucose sensor physically connected to the tip of said needle,

a telemetry means mounted in said sensor module housing and electrically connected to said glucose sensor, for transmitting a signal carrying sensed glucose level information; and

a medication release module adapted to be implanted in said

patient for dispensing medication into said patient, including,

a medication release module housing adapted to be implanted in said patient,

a receiver means mounted in said medication release module housing for receiving signals transmitted by said telemetry means and for decoding sensed glucose level information,

a delivery means mounted in said housing and connected to said receiver means for causing medication to be delivered into said patient in accordance with said sensed glucose level information.

4,494,951
FLAMEPROOFING TEXTILES

Robert Cole, Dudley, and James E. Stephenson, Birmingham, both of England, assignors to Albright & Wilson Limited, Warley, England

Filed Sep. 24, 1982, Ser. No. 423,052
Claims priority, application United Kingdom, Sep. 28, 1981, 8129272
Int. Cl.³ D06M *13/26*; C09K *3/28*; B05D *3/04*
U.S. Cl. 8—195 16 Claims

1. A process for flameproofing a cellulosic textile fabric, which comprises impregnating said fabric with an aqueous solution of pH 4–8 comprising a tetrakis(hydroxymethyl phosphonium) compound or a precondensate thereof with a nitrogen containing compound in a molar ratio of nitrogen containing compound to tetrakis(hydroxymethyl)phosphonium group of 0.05–0.5:1, drying the impregnated fabric, treating the fabric by passing it in contact with at least one duct having at least one orifice, through which gaseous ammonia is caused to issue and pass through the fabric, then wetting the treated fabric to give it a moisture content of 10–60%, and then passing said wetted fabric in contact with at least one duct having at least one orifice through which gaseous ammonia is caused to issue and pass through the fabric to give a cured fabric.

4,494,952
WETTING AGENTS AND THEIR USE AS MERCERIZING ASSISTANTS

Heinz Abel, Reinach, and Christian Guth, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 29, 1983, Ser. No. 527,600
Claims priority, application Switzerland, Sep. 8, 1982, 5336/82
Int. Cl.³ D06M *1/02*; B01F *17/02, 17/12*
U.S. Cl. 8—125 30 Claims

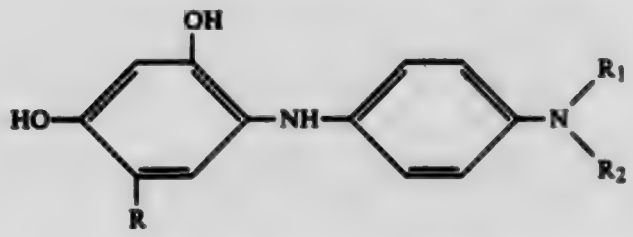
1. A wetting agent which comprises
(a) a sulfate of a fatty alcohol having 6 to 18 carbon atoms,
(b) a phosphate of a monoalcohol having 4 to 12 carbon atoms,
(c) an alcohol having 6 to 18 carbon atoms or a condensation product thereof with paraformaldehyde and
(d) a hydrotrope.

4,494,953
2,4-DIHYDROXYDIPHENYLAMINES AND HAIR DYEING COMPOSITIONS AND METHOD

Andreé Bagant, Boulogne, and Francoise Estradier, Paris, both of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 27,064, Apr. 4, 1979, Pat. No. 4,263,213.
This application Jan. 15, 1981, Ser. No. 225,355
Claims priority, application France, Apr. 6, 1978, 78 10209
Int. Cl.³ A61K *7/13*; C09B *57/00*
U.S. Cl. 8—406 40 Claims

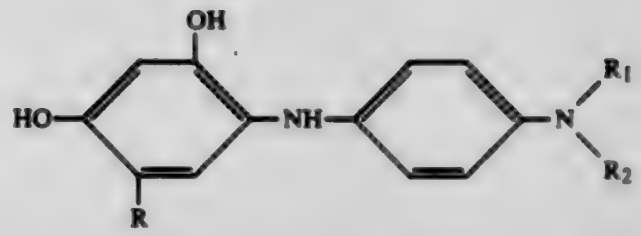
1. A 2,4-dihydroxydiphenylamine of the formula:



(I)

or an acid addition salt thereof, in which formula R_1 and R_2 form, together with the nitrogen atom to which they are bonded, a morpholino or piperidino ring and R represents a hydrogen atom.

4. A composition suitable for dyeing keratin fibers which comprises at least one 2,4-dihydroxydiphenylamine of the formula:



(I)

or an acid addition salt thereof, in which formula either R_1 and R_2 form, together with the nitrogen atom to which they are bonded, a morpholino or piperidino ring and R represents a hydrogen atom, or R_1 represents a hydrogen atom, R_2 represents a tetrahydrofurfuryl or methoxyethyl radical and R represents a hydrogen atom or a methyl radical, together with an aqueous carrier or diluent.

4,494,954
PROCESS FOR PRODUCING COLORED CONTACT LENS

Taro Suminoe, Tokyo; Tetsuo Ito, Machida; Yasuhiro Kiyomatsu, Yokohama, and Takao Shimizu, Toda, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd. and Ricky Contact Lens Research Institute Inc., both of Tokyo, Japan

Filed Dec. 15, 1982, Ser. No. 450,040
Claims priority, application Japan, Dec. 16, 1981, 56-201450
Int. Cl.³ B29D *11/00*; D06P *1/90, 3/00*
U.S. Cl. 8—507 24 Claims

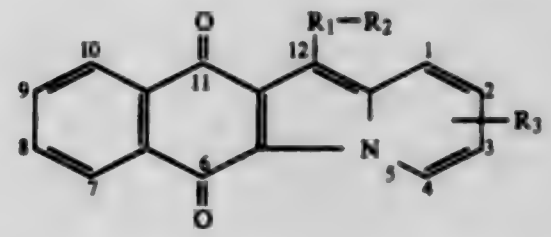
1. A process for producing a color shaped article, comprising:
(a) immersing a shaped article consisting of a substantially non-hydrous polymer of at least one monomer selected from the group consisting of acrylates and methacrylates in a dyeing solution prepared by dissolving a water-soluble dye in a solvent capable or swelling said polymer; said solvent being used alone or in combination with up to 20 parts by weight of water or up to 10 parts by weight of an aqueous alkaline reducing solution per 100 parts by weight of the solvent,
(b) swelling and coloring the shaped article, and then
(c) drying the swollen shaped article.

4,494,955
MASS DYEING OF POLYESTER WITH PYRROCOLINE DYE OF HIS THERMAL STABILITY

Peter Bitterli, Reinach, and Bansi L. Kaul, Biel-Benken, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Nov. 7, 1983, Ser. No. 549,076
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1982, 3241494
Int. Cl.³ C08J *3/20*; C08K *5/34*; C08L *67/02*; C09B *57/00*
U.S. Cl. 8—512 20 Claims

1. Mass-dyed polyester having dissolved therein, as dyestuff, a compound or a mixture of compounds of formula I



I

wherein
R_1 is a direct bond, —CONH— or —NHCO—,
R_2 is C_{1-4}alkyl; C_{1-4}alkyl mono-substituted by chlorine, bromine or C_{1-3}alkoxy; phenyl or naphthyl; phenyl or naphthyl substituted by up to two substituents selected from chlorine, bromine, methyl, methoxy, nitro, cyano, carboxy and alkoxy-C_{1-3}-carbonyl; or cyano
provided that R_1 is a direct bond when R_2 is cyano

and

R_3 is hydrogen; methyl; ethyl; alkoxy-C_{1-3}-carbonyl; or —CH=CH—CH=CH— bound in the 1,2-position.

4,494,956

PROCESS FOR PAD DYEING CELLULOSIC TEXTILE MATERIALS

Paul Schäfer, Riehen, and Hans-Ulrich Berendt, Allschwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 7, 1983, Ser. No. 559,121

Claims priority, application Switzerland, Dec. 14, 1982, 7268/82; Oct. 6, 1983, 5431/83

Int. Cl.³ D06P *1/38, 1/52, 1/607*

U.S. Cl. 8—543 16 Claims

1. A process for dyeing textile materials which consist wholly or partly of cellulose fibres with substantive dyes or reactive dyes, which process comprises padding the cellulosic materials with an aqueous dye liquor which contains, in the addition to the dye, a graft polymer obtained from an adduct of an alkylene oxide with an at least trihydric aliphatic alcohol of 3 to 10 carbon atoms and acrylamide or methacrylamide, and subsequently fixing the dye by a heat treatment or by the cold pad-batch method.

4,494,957

DYE COMPOSITIONS FOR POLYESTER FIBERS

Toshio Niwa; Kiyoshi Himeno, both of Kanagawa, and Shuichi Maeda, Saitama, all of Japan, assignors to Research Association of Synethtic Dyestuffs, Tokyo, Japan

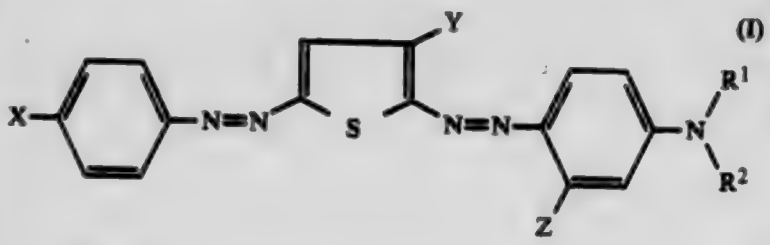
Filed May 10, 1983, Ser. No. 493,314

Claims priority, application Japan, May 17, 1982, 57-82788; Feb. 4, 1983, 58-17208

Int. Cl.³ C09B *29/08;* D06P *1/04, 3/54*

U.S. Cl. 8—639 5 Claims

1. A dye composition for dyeing polyester fibers comprising at least one disazo dye represented by the formula (I):



(I)

wherein

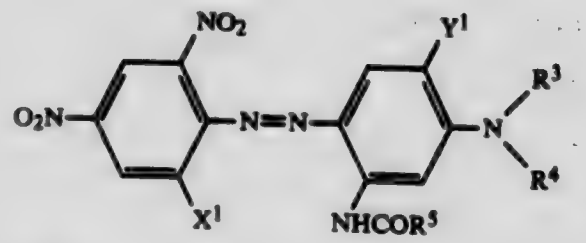
X represents a hydrogen atom, a chlorine atom, a nitro group or a trifluoromethyl group;

Y represents a cyano group, an alkoxycarbonyl group or a carbamoyl group;

Z represents a hydrogen atom, a chlorine atom, methyl group, a hydroxyl group, or an alkyl group substituted with a formylamino group or an acylamino group;

R^1 and R^2 each represents a hydrogen atom; a cyclohexyl group; an aryl group; an alkenyl group; an aralkyl group; an alky group; or an alkyl group substituted with a hydroxyl group, a lower alkoxy group, a lower alkoxyalkoxy group, a lower alkanoyloxy group, a formyloxy group, a chloro-lower alkanoyloxy group, an aryloxyloxy group, an aryloxy group, a lower alkoxycarbonyl group, a lower alkoxyalkoxycarbonyl group, an aralkyloxycarbonyl group, a lower alkoxycarbonyloxy group, a halogen atom, a cyano group, an alkenyloxy group or a tetrahydrofuryl group; and

at least one monoazo dye represented by the formula (II):



(II)

wherein

X^1 represents a halogen atom;

Y^1 represents a hydrogen atom, an alkoxy group or an alkoxyalkoxy group;

R^5 represents a lower alkyl group;

R^3 and R^4 each represents a hydrogen atom, an aryl group, an alkenyl group, a cyclohexyl group, an aralkyl group, an alkyl group, or an alkyl group substituted with a hydroxyl group, a lower alkoxy group, a lower alkoxyalkoxy group, a lower alkanoyloxy group, a chloro-lower alkanoyloxy group, an aryloyloxy group, an aryloxy group, a lower alkoxycarbonyl group, a lower alkoxyalkoxycarbonyl group, an aralkyloxycarbonyl group, a lower alkoxycarbonyloxy group, a halogen atom, a cyano group, an alkenyloxy group or a tetrahydrofuryl group; the proportion of said monoazo dye and said disazo dye in said composition being about 25:75 to 75:25.

4,494,958

BLENDING ASPHALTITE WITH LIGNITE OR BITUMINOUS COAL

Thomas J. Doolin, 321 W. Sanner St., Somerset, Pa. 15501

Filed Aug. 2, 1983, Ser. No. 519,703

Int. Cl.³ C10L *9/10*

U.S. Cl. 44—1 G 4 Claims

1. A composition comprising a blend mixture of particles of asphaltite and lignite or bituminous coal in which the asphaltite is at least 50% by weight of the mixture.

4,494,959

COAL-WATER SLURRY AND METHOD FOR ITS PREPARATION

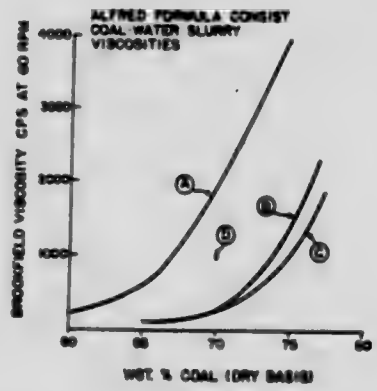
James E. Funk, Alfred Station, N.Y., assignor to Alfred University Research Foundation, Inc., Alfred, N.Y.

Continuation of Ser. No. 288,737, Jul. 31, 1981, Pat. No. 4,416,666, which is a continuation-in-part of Ser. No. 088,815, Oct. 26, 1979, Pat. No. 4,282,006, which is a continuation-in-part of Ser. No. 975,166, Nov. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 790,337, Apr. 25, 1977, abandoned. This application Jun. 30, 1983, Ser. No. 509,713

The portion of the term of this patent subsequent to Nov. 22, 2000, has been disclaimed.

Int. Cl.³ C10L *1/32*

U.S. Cl. 44—51 15 Claims



1. A coal-water slurry comprised of from about 65 to about 85 weight percent of solids by weight of slurry, from about 15 to about 35 weight percent of carrier water by weight of

slurry, and from about 0.01 to about 4.0 weight percent of polyelectrolyte dispersing agent by weight of dry coal in said slurry, wherein:

(a) said coal-water slurry has a Brookfield viscosity of less than 4,000 centipoise when tested at a solids content of 75 weight percent, ambient temperature, and 60 revolutions per minute;

(b) said coal-water slurry has a yield stress of from about 0.1 to about 10 Pascals;

(c) from about 5 to about 36 weight percent of the particles of coal in said slurry are of colloidal size, and being smaller than about 3 microns, and said colloidal sized particles of coal have a net zeta potential in said coal-water slurry of from about 15 to about 85 millivolts;

(d) at least about 85 weight percent of the particles of coal in said coal-water slurry have a particle size less than 300 microns; and

(e) said coal-water slurry comprises a compact of finely-divided particles of coal dispersed in said carrier water; and (f) said compact of finely divided particles of coal has a particle size distribution substantially in accordance with the following formula:

$$CPFT = \frac{D^n - D_S^n}{D_L^n - D_S^n} \cdot 100,$$

CPFT is the cumulative weight percent, dry basis, of particles finer than a particle of stated size, D,

D is the diameter of any particle in the compact,

D_L is the diameter of the largest particle in the compact, sieve size or its equivalent, being from about 38 to about 400 microns,

D_S is the diameter of the smallest particle in the compact, being from about 0.01 to about 0.4 microns, and

n is numerical exponent, with n being from about 0.2 to about 0.5 and with all diameters sized in microns.

4,494,960

PROCESS FOR THE PRODUCTION OF PUMPABLE COAL SLURRIES

Wilfried Dolkemeyer, Bornheim-Udorf; Karl-Heinz Keim, and Ewald Meisenburg, both of Heimerzheim, all of Fed. Rep. of Germany, assignors to Rheinische Braunkohlenwerke AG, Stuttgenweg, Fed. Rep. of Germany

PCT No. PCT/DE81/00211, § 371 Date Aug. 4, 1982, § 102(e) Date Aug. 4, 1982, PCT Pub. No. WO82/02056, PCT Pub. Date Jun. 24, 1982

Continuation of Ser. No. 406,247, Aug. 4, 1982, abandoned PCT Filed Dec. 3, 1981, Ser. No. 626,597

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1980, 3046248

Int. Cl.³ C10L *1/18*

U.S. Cl. 44—51 **9 Claims**

1. A process for the production of pumpable coal slurries in oils which boil at a temperature of higher than about 200° C., characterized in that a first amount of finely divided coal is mixed into an oil which boils at a temperature of higher than about 200° C. to produce a slurry, the proportion of coal in said slurry being such as not to exceed the limit of pumpability, the slurry is treated for a period of from about 0.5 to 15 minutes at a temperature of from 280° to 450° C., and such a further amount of finely divided coal is mixed into the slurry after the above-indicated treatment as to increase the proportion of coal in the slurry without exceeding the limit of pumpability.

4,494,961

INCREASING THE CETANE NUMBER OF DIESEL FUEL BY PARTIAL OXIDATION

Chaya Venkat, Bellemead, N.J., and Dennis E. Walsh, Richboro, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 14, 1983, Ser. No. 504,115

Int. Cl.³ C10L *1/30*

U.S. Cl. 44—57 **12 Claims**

1. A method for improving the cetane number of a low hydrogen content, highly aromatic diesel boiling range fuel by heating same under mild oxidation conditions in the presence of a catalyst system comprising (1) an alkaline earth metal permanganate, (2) an oxide of a metal group Groups IB, IIB, IIIB, IVB, VB, VIB, VIIB or VIII of the Periodic Table, or (3) a mixture of (2) and an alkali metal or alkaline earth metal oxide or salt.

4,494,962

FUEL PRODUCT

George M. Christie, 33 Claude, Beaconsfield, Quebec, Canada (H9W 4E9), and James M. Holmes, 60 Grove Ave., Ottawa, Ontario, Canada (K1S 3A8)

Filed Nov. 24, 1982, Ser. No. 444,356

Int. Cl.³ C10L *5/14, 5/36*

U.S. Cl. 44—15 D **2 Claims**

1. A method of producing a composite fuel log comprising the steps of preparing a slurry of water and used newsprint paper fibers; grinding coal to a mesh size of between 10 microns and 3 mm; adding the coal particles to the slurry to a proportion of between 1% and 10% paper fibers and 90% to 98% coal particles; mixing the coal slurry; adding powdered limestone to the slurry in an amount of 1% to 10% by weight; pouring the slurry into an open ended mould; applying negative pressure at least to the open end of the mould to reduce the water content to at least 50% humidity; removing the so-formed log from the mould; and drying the log to reduce the moisture content below 30% humidity and placing the log in a hermetically sealed envelope.

4,494,963

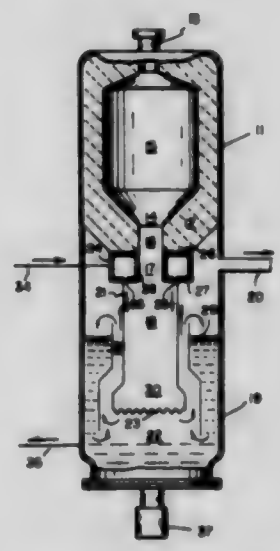
SYNTHESIS GAS GENERATION APPARATUS

Erwin A. Reich, Stamford, Conn., assignor to Texaco Development Corporation, White Plains, N.Y.

Filed Jun. 23, 1983, Ser. No. 507,266

Int. Cl.³ C10J *3/48, 3/52, 3/84*

U.S. Cl. 48—69 **2 Claims**



1. A synthesis gas generation apparatus including

means defining a vertically extending synthesis gas generation zone having a lower outlet through which hot synthesis gas is withdrawn;

means defining a vertically extending quench chamber below said vertically extending synthesis gas generation zone and having a hot synthesis gas inlet therein joining said lower outlet of said gas generation zone whereby hot

synthesis gas is admitted to said quench chamber, said quench chamber further including a body of cooling liquid therein;

an attenuated vertically extending dip tube in said quench chamber having inner and outer perimetric surfaces, and an upper inlet end through which hot synthesis gas entering said quench chamber is admitted to said dip tube through which said gas moves toward an oulet end of said dip tube located within said body of liquid;

a quench ring adjacent to the inner perimetric surface at the inlet end of said dip tube for directing a curtain of liquid along the inner perimetric surface of said dip tube and toward the outlet end of said dip tube;

means defining an expanded outlet portion of said dip tube including the outlet end thereof, said expanded portion having an area between about 140 to 400% of the area of the non-expanded portion of the dip tube; and

serrations on the outlet end of said expanded outlet portion of said dip tube;

whereby charge gas admitted to the inlet end of said dip tube may be passed downwardly through (i) a first contacting zone in said dip tube wherein it is contacted with a film of cooling liquid passing downwardly therethrough, (ii) a second contracting zone in said expanded portion of said dip tube wherein the velocity of said downwardly descending charge gas is decreased, and then through (iii) a third contacting zone adjacent to the lower outlet end of said dip tube wherein gas is contacted with a body of cooling liquid, and thence to the quench gas outlet of said quench chamber.

4,494,964

POROUS CERAMIC ABRASIVE WHEEL OR CERAMIC FILTER

Stig L. Ohlsson, Ljungbyhed, and Jan-Olov K. Berthou, Hässleholm, both of Sweden, assignors to Perstorp AB, Perstorp, Sweden

Filed Apr. 5, 1984, Ser. No. 597,023
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—296 1 Claim

1. A porous ceramic abrasive wheel or ceramic filter comprising pores formed therein from fine-grained pentaerythritol, dipentaerythritol, or a mixture thereof, as a pore forming additive.

4,494,965

DEVICE UTILIZED FOR SEPARATION OF HYDROGEN ISOTOPES FROM A GAS MIXTURE FOR SEPARATION OF ISOTOPES CONTAINED IN A HYDROGEN ISOTOPE MIXTURE

Imran Ali-Khan, Jülich, Fed. Rep. of Germany; Karl-Jürgen Dietz, East headred, England; Francois Waelbroeck, and Peter Wienhold, both of Jülich, Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 310,076, Oct. 9, 1981, abandoned, which is a continuation-in-part of Ser. No. 104,863, Dec. 18, 1979, abandoned. This application Sep. 30, 1982, Ser. No. 430,042
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1979, 2854682
Int. Cl.³ B01D *53/22*
U.S. Cl. 55—16 13 Claims

1. A method for separating hydrogen isotopes from a gas mixture containing a hydrogen isotope mixture, which comprises the steps of:

supplying said gas mixture into a first chamber;

dissociating molecular bound hydrogen contained in said gas mixture in the gaseous space;

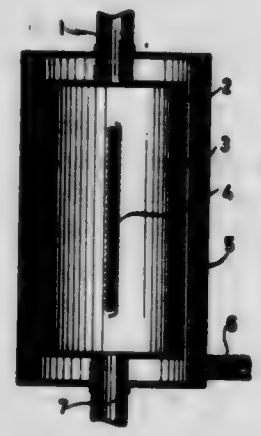
allowing said dissociated hydrogen to penetrate a permeable wall arranged between said first chamber and a second chamber said wall being permeable for atomic hydrogen and less permeable for molecular hydrogen, and allowing the dissociated hydrogen to recombine to form hydrogen molecules;

accumulating said hydrogen molecules in said second chamber until a predetermined pressure has been reached, and

withdrawing said hydrogen molecules from said second chamber.

11. An apparatus for separating hydrogen isotopes from a gas mixture to separate isotopes contained in a hydrogen isotope mixture, which apparatus comprises in combination:

a first chamber and second chamber respectively closable by valves and surrounded on all sides by walls, said first chamber being connected with a gas supply line and a gas discharge line;



a partition separating said chambers and consisting of material differing from palladium, at least a portion of said partition being permeable for atomic hydrogen and less permeable for molecular hydrogen, said second chamber being adapted to collect isotope mixture passing through said permeable portion of said partition, and being adapted to be evacuated, the remaining walls of said chambers comprising material which is at most only poorly permeable for hydrogen isotopes; and

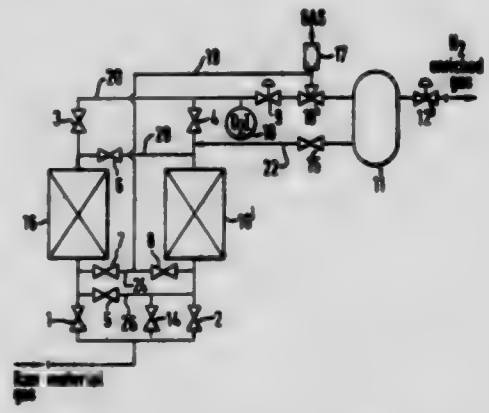
a device independent of the partition arranged in said first chamber, utilizable for a dissociation of molecular hydrogen in the gaseous space of said chamber.

4,494,966

PROCESS FOR NITROGEN ENRICHMENT

Masakazu Umeki, Yawata, Japan, assignor to The BOC Group plc, London, England

Filed Jul. 1, 1983, Ser. No. 510,464
Claims priority, application Japan, Jul. 7, 1982, 57-118064
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—26 6 Claims



1. A process for the separation of a gas mixture comprising the steps of:

(a) repeatedly performing a cycle of operations in employing a first vessel containing adsorbent which adsorbs one component of a gas mixture more readily than another or the other component of the gas mixture, the cycle of operations comprising:

(i) passing the gaseous mixture under pressure through the vessel whereby said one component is adsorbed and a gas stream relatively lean in the adsorbed component flows out of the bed as a product gas;

(ii) regenerating the adsorbent by desorbing gas therefrom and causing a gas stream relatively rich in the desorbed gas to flow out of the vessel;

(b) repeatedly performing such a cycle of operations employing a second vessel containing said adsorbent, the cycles being phase relative to one another such that at no time is step (i) or step (ii) in one cycle performed simultaneously with the corresponding step in the other cycle;

(c) passing the product gas stream into a reservoir;

(d) placing the two beds in flow communication with each other at intervals between successive adsorption steps;

(e) halting the process during an interval between successive adsorption steps when the two beds are placed in flow communication, exhausting gas remaining in the vessels from the said vessels countercurrently to the flow of the gas mixture to thereby depressurize the vessels; and

(f) purging the depressurized vessels by passing product gas from said reservoir to said vessels.

4,494,967

PROCESS FOR THE REMOVAL OF IMPURITIES FROM A GAS STREAM CONTAINING SOLVENT VAPORS

Peter Barth, Neuwied, Fed. Rep. of Germany, assignor to Lohmann GmbH & Co. KG, Neuwied, Fed. Rep. of Germany

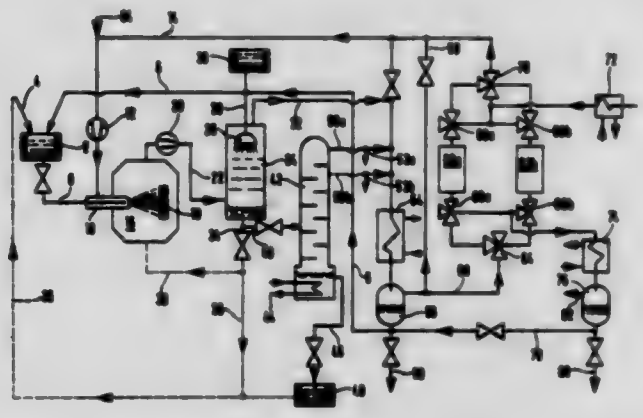
PCT No. PCT/EP82/00171, § 371 Date Apr. 14, 1983, § 102(e) Date Apr. 14, 1983, PCT Pub. No. WO83/00641, PCT Pub. Date Mar. 3, 1983

PCT Filed Aug. 13, 1982, Ser. No. 502,018

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1981, 3132292

Int. Cl.³ B01D 53/04, 47/05

U.S. Cl. 55—74 4 Claims



1. A process for removing impurities from a gas stream containing one or more solvent vapors, said impurities being suspended in a gas stream as liquid or solid particles, comprising the steps of washing the gas stream with a condensate of one or more solvent vapors contained in the gas stream, said condensate being substantially free of impurities and including one or more auxiliary agents which bind the impurities to be removed from the gas stream, feeding the solvent concentrate to the gas stream after separation of the impurities and removing said concentrate from the gas stream through condensation and adsorption together with the originally contained solvent vapors and the parts which vaporize during the washing step and returning the solvent concentrate to a mixing vessel either together with the removed impurities or after separation of the impurities.

4,494,968

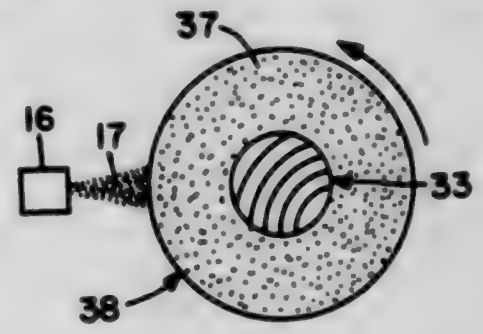
METHOD OF FORMING LAMINATED SINGLE POLARIZATION FIBER

Venkata A. Bhagavatula, Corning, and Donald B. Keck, Big Flats, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Oct. 3, 1983, Ser. No. 538,325

Int. Cl.³ C03B 37/075; G02B 5/172

U.S. Cl. 65—3.12 22 Claims



1. In a method of forming an optical fiber comprising the steps of

providing an elongated core structure,

applying a layer of cladding glass to said core structure, and

forming an optical fiber from the resultant preform,

the step of providing a core structure being such that it comprises

(a) providing a substrate,

(b) forming on said substrate a laminated glass structure, adjacent glass lamina of the laminated glass structure having different refractive indices, and

(c) removing one or more azimuthally asymmetric laminated core structures from the laminated glass structure.

4,494,969

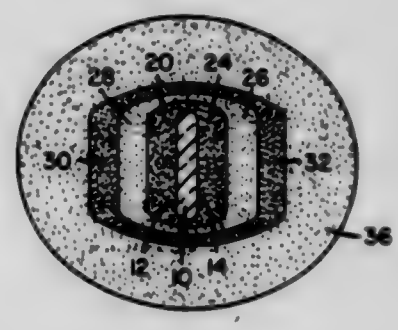
METHOD OF FORMING LAMINATED SINGLE POLARIZATION FIBER

Venkata A. Bhagavatula, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 3, 1983, Ser. No. 538,326

Int. Cl.³ C03B 37/075; G02B 5/172

U.S. Cl. 65—3.12 6 Claims



1. In a method of forming an optical fiber comprising the steps of

providing an elongated core structure,

applying a layer of cladding glass to said core structure, and

forming an optical fiber from the resultant preform,

the step of providing the core structure being such that it comprises

providing an elongated mandrel having first and second parallel longitudinally extending planar sidewalls,

depositing on said first and second sidewalls a plurality of planar layers of glass particles, adjacent ones of which layers have different refractive indices, and

consolidating said glass particles to form a core structure having a plurality of parallel dense glass laminae.

4,494,970

APPARATUS FOR PRODUCTION OF FIBER MATS

Edgar Muschelknautz, Leverkusen, and Norbert Rink, Dormagen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

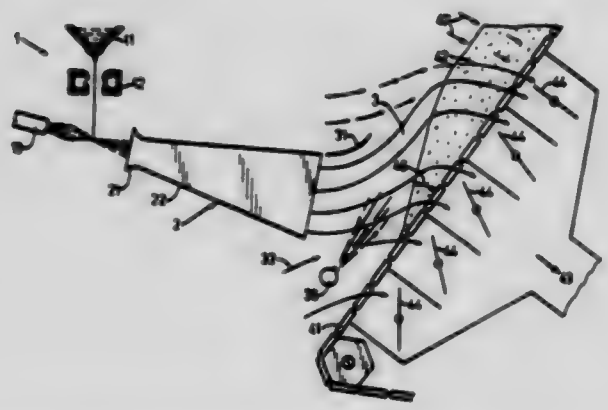
Division of Ser. No. 251,907, Apr. 7, 1981, Pat. No. 4,343,639. This application Feb. 8, 1982, Ser. No. 346,786

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1980, 3016114; Jun. 20, 1980, 3023016

Int. Cl.³ C03B 37/06

U.S. Cl. 65—9

5 Claims



1. An apparatus for the production of mats made of organic or inorganic fibers, consisting essentially of a member forming a channel, means for providing and introducing a flowing dispersion of fibers and gas into said channel, a perforated conveyor belt at an angle of about 90° to 150° relative to the channel, said conveyor belt being spaced from the outlet of the channel so as to allow surrounding air to enter into the open space between channel and conveyor belt, a curved deflection and guiding member positioned on one side of the channel outlet traversely to the conveyor belt, and means for removing the gas by suction below the conveyor belt, channel, deflection member and suction means being in positions relative to each other that gas flows from the channel outlet to the conveyor belt in an S-shaped path.

4,494,971

PROCESS AND APPARATUS FOR GRANULATION OF SLAG

Guido Monteyne, Lembeke, Belgium; Marc Calmes, Luxembourg, and Robert Schmeler, Dalheim, both of Luxembourg, assignors to Paul Wurth S.A., Luxembourg, Luxembourg

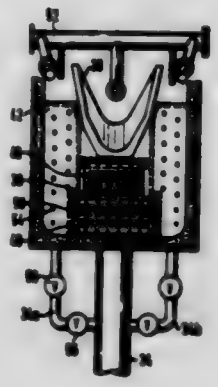
Filed Nov. 17, 1982, Ser. No. 442,456

Claims priority, application Luxembourg, Nov. 18, 1981, 83768

Int. Cl.³ C03B 19/08

U.S. Cl. 65—19

25 Claims



1. In a process for the liquid granulation of slag wherein molten slag from a vessel is caused to drop into a granulation enclosure into which at least two currents of water are injected and from which a slurry of granulated slag and water is evacuated, the steps of:

determining the output of molten slag;

keeping the flow rate of a first of said currents constant at a rate commesurate with requirements for granulation of a first amount of molten slag; and

varying the flow rate of a second current of water automatically between zero or a predetermined minimum and a higher level in accordance with changes in the output of molten slag to maintain a volume of water flow sufficient for granulation of the slag.

4,494,972

THERMALLY TOUGHENING GLASS

Brian Marsh, Lancashire; Malcolm J. Rigby, Merseyside, and Peter Ward, Lancashire, all of England, assignors to Pilkington Brothers P.L.C., St. Helens, England

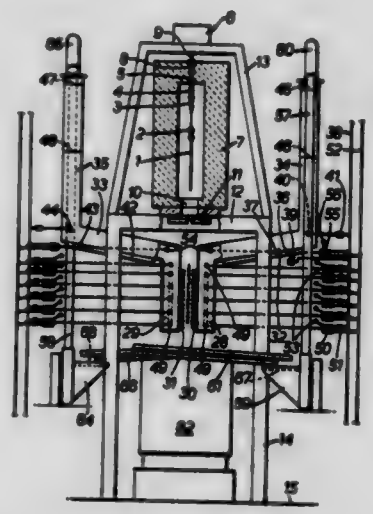
Filed Jan. 26, 1983, Ser. No. 461,371

Claims priority, application United Kingdom, Feb. 1, 1982, 8202768; Oct. 11, 1982, 8229004

Int. Cl.³ C03B 27/02, 27/04

U.S. Cl. 65—114

17 Claims



1. Apparatus for thermally toughening glass comprising:

means for containing a supply body of particulate material;

means for generating a flow of mobile aerated particulate material from that supply body;

nozzle means for projecting particulate material of said flow towards the glass to be toughened;

gas permeable means located within said generating means in the flow from the supply body to the nozzle means; and

switchable gas extraction means connected to said gas permeable means for selectively regulating the mobility of the particulate material so as to initiate the flow from the supply body to the nozzle means.

8. A method of thermally toughening glass in which a hot glass article is quenched with a particulate material, comprising:

aerating a supply body of particulate material while extracting gas from an outlet region of that body to compact the material in that region and impede flow from that supply body;

switching from said gas extraction to gas supply to that outlet region to initiate a flow of aerated particulate material from that supply body; and

directing that flow towards the hot glass article and sustaining that flow for a time sufficient to induce toughening stresses in the glass.

4,494,973

TAKE-OUT ARM FOR BOTTLE FORMING MACHINE

Jack I. Perry, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 6, 1983, Ser. No. 501,689

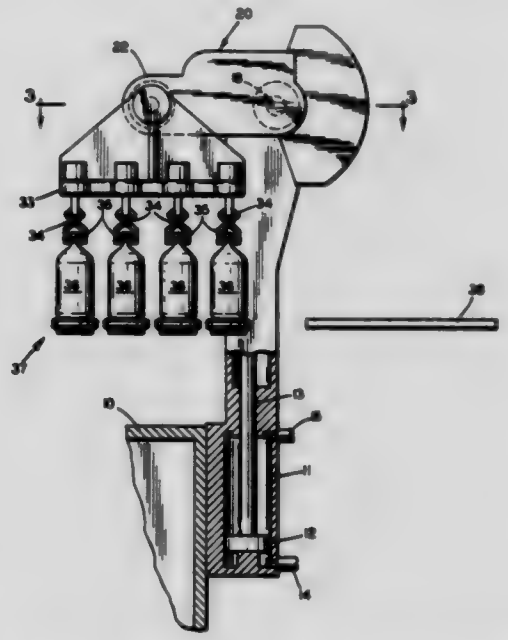
Int. Cl.³ C03B 9/44

U.S. Cl. 65—260

15 Claims

1. A take-out apparatus for moving a plurality of newly formed glass articles from the blow mold to a cooling dead

plate, comprising a support positioned intermediate the mold and dead plate, a fixed, horizontal shaft extending from said support, a take-out arm pivotally connected to said shaft, said arm comprising a horizontally extending casting, means pivotally supporting one end of said arm on said shaft, a first vertical member fixed to the axis of said shaft, a second vertical mem-



ber pivotally mounted intermediate its length in the other end of said arm, parallel linkage means extending between said members for maintaining said members parallel, plural take-out tongs mounted to said second member and counterweight means connected to said arm and extending out beyond the axis of said shaft on the side opposite said take-out tongs.

4,494,974

FOREHEARTH FOR CONDITIONING GLASS

Peter Vilk, London, and Alan Stephens, Greenford, both of England, assignors to B.H.F. (Engineering) Ltd., Middlesex, England

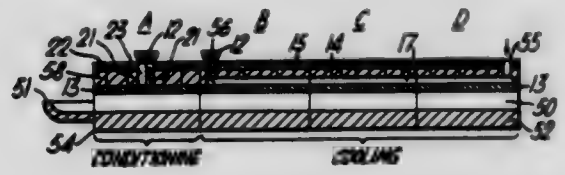
PCT No. PCT/GB82/00295, § 371 Date Jun. 16, 1983, § 102(e) Date Jun. 16, 1983, PCT Pub. No. WO83/01440, PCT Pub. Date Apr. 28, 1983

PCT Filed Oct. 19, 1982, Ser. No. 510,449

Claims priority, application United Kingdom, Oct. 19, 1981, 8131468

Int. Cl.³ C03B 5/23

U.S. Cl. 65—337 **6 Claims**



1. A forehearth for use in glass production, which forehearth comprises:

a refractory trough for molten glass comprising longitudinally disposed along it a cooling section and a conditioning section and having an insulating roof thereover;

means for heating glass in the trough; and

means in said cooling section for blowing cooling air longitudinally with respect to the direction of glass flow within the forehearth across the inside forehearth roof surface to cool the glass surface by heat exchange radiation; the cooling section comprising at least two longitudinally disposed zones which have different degrees of insulation from each other.

4,494,975

COMPOSING COMPOSITIONS

Marcel F. L. P. De Boodt, Gent, and Omer F. Verdonck, Oostakker both of Belgium, assignors to Labofina, S.A., Brussels, Belgium

Filed Dec. 2, 1982, Ser. No. 446,291

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1981, 3139756

Int. Cl.³ C05F 9/04

U.S. Cl. 71—25 **20 Claims**

1. A composting composition comprising a mixture of biomass and a petroleum sludge.

4,494,976

FERTILIZERS CONTAINING NITROGEN AND MICRONUTRIENTS

Peter S. Backlund, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 259,067, Apr. 30, 1981, abandoned. This application Mar. 7, 1983, Ser. No. 471,452

Int. Cl.³ C05C 9/00

U.S. Cl. 71—28 **7 Claims**

1. A method for producing free-flowing nitrogenous chemical fertilizer particles, containing micronutrients, comprising the steps of:

(a) coating urea particles with a metal-containing component consisting essentially of powdered oxides of one or more metals selected from the group consisting of iron, zinc, manganese, molybdenum, copper, boron, and cobalt;

(b) heating the coated particles for a time and at a temperature below the melting point of urea so as to effect a condensation reaction between the metal-containing component of the coating and the urea in the coated particle; and

(c) recovering a particulate product without drying, the particles being resistant to caking and crushing, and having urea nitrogen and micronutrient which are readily plant available.

4,494,977

QUATERNARY AMMONIUM SALTS OF α-1,4-THIAZINE ALKANEPHOSPHONIC ACIDS

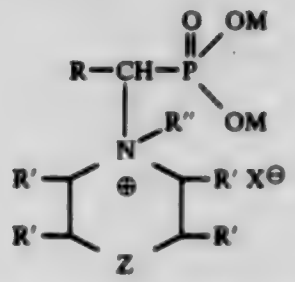
Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 932,258, Aug. 9, 1978, Pat. No. 4,259,483. This application Sep. 15, 1980, Ser. No. 187,390

Int. Cl.³ A01N 43/84

U.S. Cl. 71—67 **8 Claims**

1. A microbiocidal process which comprises treating a water or hydrocarbon system with a microbiocidally effective amount of a compound of the formula



where R and R″ are members selected from the group consisting of alkyl, alkenyl, cycloalkyl, aryl, alkaryl, aralkyl, and hydroxyphenyl and from the group consisting of alkyl, aralkyl, cycloalkyl, alkenyl and alkynyl, respectively, R′ is hydrogen or alkyl, Z is S, SO or SO_2, M is hydrogen or a salt moiety and X is a halide, acetate, sulfonate or arylsulfonate.

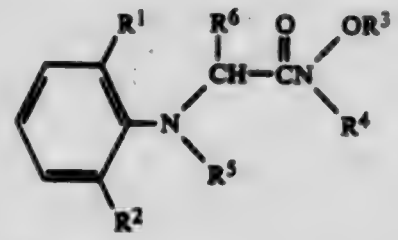
4,494,978

HERBICIDAL N-(N'-HYDROCARBYLOXYCARBAMYLALKYL)-2,6-DIALKYL-ALPHA-HALOACETANILIDES

David C. K. Chan, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 30, 1976, Ser. No. 755,883
The portion of the term of this patent subsequent to Mar. 16, 1993, has been disclaimed.
Int. Cl.³ A01N 37/22
U.S. Cl. 71—117 7 Claims

1. A method for the control of undesirable vegetation which comprises applying to said vegetation or its habitat a phytotoxic effective amount of a compound having the formula:



wherein R^1 is alkyl of 1 to 6 carbon atoms; R^2 is alkyl of 1 to 6 carbon atoms; R^3 is alkyl of 1 to 6 carbon atoms, haloalkyl of 1 to 2 carbon atoms and 1 to 4 chlorine or bromine, alkenyl of 3 to 6 carbon atoms, alkynyl of 3 to 6 carbon atoms, phenyl, substituted phenyl having 1 or 2 substituents selected from the group of fluoro, chloro, bromo or alkyl of 1 to 3 carbon atoms, benzyl, or substituted benzyl having 1 or 2 ring substituents selected from the group of fluoro, chloro, bromo or alkyl of 1 to 3 carbon atoms; R^4 is hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl of 3 to 6 carbon atoms, alkynyl of 3 to 6 carbon atoms, phenyl, substituted phenyl having 1 or 2 substituents selected from the group of fluoro, chloro, bromo or alkyl of 1 to 3 carbon atoms, benzyl, substituted benzyl having 1 or 2 ring substituents selected from fluoro, chloro, bromo or alkyl of 1 to 3 carbon atoms; and R^5 is haloacetyl of 1 to 3 halo groups selected from fluoro, chloro or bromo; R^6 is hydrogen or alkyl of 1 to 6 carbon atoms.

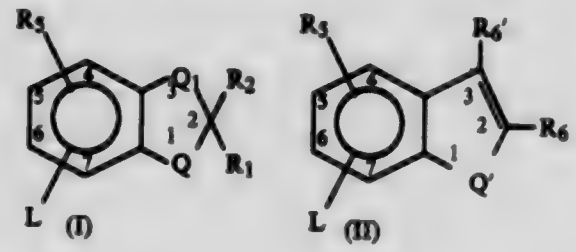
4,494,979

BENZOFURAN SULFAMATES

Morris P. Rorer, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

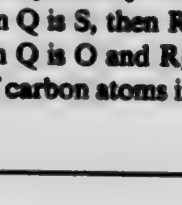
Continuation-in-part of Ser. No. 286,602, Jul. 24, 1981, abandoned. This application Jun. 15, 1982, Ser. No. 387,951
Int. Cl.³ C07D 405/12, 409/12; A01N 43/54, 43/66
U.S. Cl. 71—92 13 Claims

1. A compound of the formula:

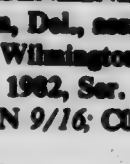


(I) (II)

wherein
Q is O, S or SO_2;
Q_1 is CR_3R_4 or O;
L is $OSO_2NHCONHA$;
R_1 is H or C_1–C_3 alkyl;
R_2 is H or CH_3;
R_3 is H or CH_3;
R_4 is H or CH_3;
R_5 is H, CH_3, OCH_3, Cl, Br, NO_2, CO_2R_7, SO_2R_8, OSO_2R_9 or $SO_2NR_{10}R_{11}$;
R_6 is H or C_1–C_3 alkyl;
R_6' is H or CH_3;
R_7 is C_1–C_3 alkyl, $CH_2CH{=}CH_2$, $CH_2CH_2OCH_3$ or CH_2CH_2Cl;
R_8 is C_1–C_3 alkyl;
R_9 is C_1–C_3 alkyl or CF_3;
R_{10} and R_{11} are independently C_1–C_2 alkyl;
A is



X is CH_3 or OCH_3;
Y is Cl, CH_3, OCH_3, OC_2H_5, CH_2OCH_3, NH_2, $NHCH_3$, $N(CH_3)_2$, $CH(OCH_3)_2$ or



and
Z is CH;
provided that
(1) L is fixed at the 4- or 7-position; and when L is at the 4-position, then R_5 is at the 5-position, and when L is at the 7-position, then R_5 is at the 6-position;
(2) in Formulae I and II, when Q is O and L is in the 4-position, and R_5 is other than H, then R_1 and R_6 are other than H;
(3) in Formula II, when Q is O and L is in the 7-position, and R_5 is other than H, then R_6 and R_6' are other than H;
(4) in Formula II, when Q is S or SO_2 and R_5 is other than H, Br or NO_2, then R_6 and R_6' are other than H;
(5) in Formula I, when Q is S, then R_5 is other than SO_2R_8;
(6) when Q_1 is O, then Q is O and R_5 is H; and
(7) the total number of carbon atoms in R_1 to R_4 are less than or equal to 4.

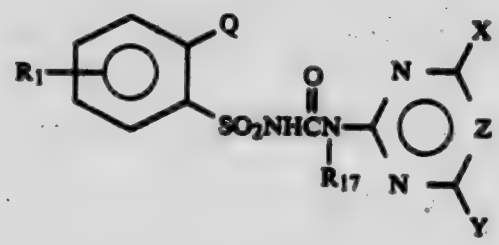
4,494,980

HERBICIDAL ORTHO-(AZINYL)-BENZENESULFONAMIDES

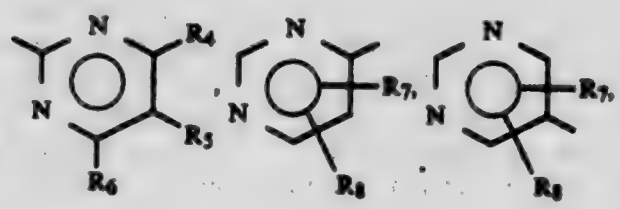
Rafael Shapiro, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 28, 1982, Ser. No. 437,325
Int. Cl.³ A01N 9/16; C07D 403/12
U.S. Cl. 71—92 10 Claims

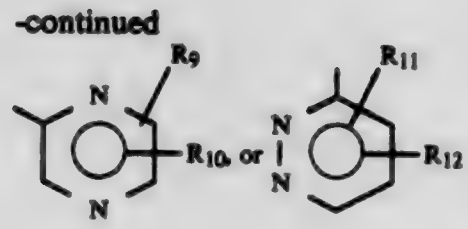
1. A compound of the formula:



wherein Q is



-continued



R_1 is H, F, Cl, CH_3 or OCH_3;
R_5, R_9, R_{10}, R_{11}, R_{12} and R_{17} are independently H or CH_3;
R_7, R_8, R_4 and R_6 are independently H, CH_3 or OCH_3;
X is CH_3, OCH_3 or Cl;
Y is CH_3, C_2H_5, CH_2OCH_3, OCH_3, OC_2H_5, $CH(OCH_3)_2$ NH_2, $NHCH_3$ or $N(CH_3)_2$;
Z is CH
provided that when X is Cl, then Y is OCH_3, OC_2H_5, NH_2, $NHCH_3$ or $N(CH_3)_2$ and when R_1 is CH_3, it is in the 3-, 4- or 5-position of the benzene ring;
and their agriculturally suitable salts.

9. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

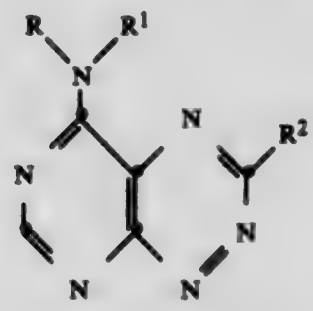
4,494,981

USE OF CERTAIN PYRIMIDO[5,4-e]-1,2,4-TRIANZINES FOR CONTROLLING THE GROWTH OF UNWANTED PLANTS

Tariq A. Andrea, Escalon; William W. John, and James J. Steffens, both of Modesto, all of Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 22, 1983, Ser. No. 525,061
Int. Cl.³ A01N *43/64, 43/10*
U.S. Cl. 71—93 1 Claim

1. A method for controlling the growth of unwanted plants at a locus, which method comprises applying to the locus an effective amount of a compound of the formula



(I)

wherein R is hydrogen or alkyl of from one to four carbon atoms, R^1 is hydrogen or optionally substituted alkyl of from one to ten carbon atoms, either straight-chain or branched-chain in configuration, any substituent thereon being selected from: (a) halogen and hydroxy, bonded to a carbon atom other than the carbon atom of the alkyl moiety that is bonded to the indicated nitrogen atom; (b) alkoxy, alkylthio, alkenyl, alkynyl, cycloalkyl of from three to six carbon atoms; (c) optionally substituted phenyl, any substituent thereon being selected from halogen, mono- and polyhaloalkyl, cyano, nitro, amino, mono- and dialkylamino, alkyl, alkoxy and alkylthio wherein each alkyl moiety contains from one to four carbon atoms; and (c) aromatic heterocyclyl selected from furanyl and pyridyl, and R^2 is hydrogen or is alkyl, or mono- or polyhaloalkyl of from one to six carbon atoms.

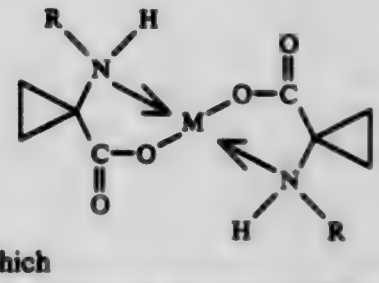
4,494,982

PLANT GROWTH-REGULATING 1-AMINO-CYCLOPROPANECARBOXYLIC ACID METAL COMPLEXES

Rolf Schröder, Wuppertal-Elberfeld, and Klaus Lürssen, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 406,680, Aug. 9, 1982, Pat. No. 4,457,870.
This application Nov. 2, 1983, Ser. No. 548,178
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1981, 3133917
Int. Cl.³ E05B *65/08*
U.S. Cl. 71—97 11 Claims

11. A method of regulating the growth of plants comprising applying to the plants, or to a habitat thereof, a plant-growth regulating effective amount of a 1-amino-cyclopropanecarboxylic acid metal complex of the formula



in which
R is a hydrogen atom or a radical of the formula —CO—R^1,
R^1 is a hydrogen atom or an alkyl radical having 1 to 4 carbon atoms or a phenyl radical, and
M is a transition metal atom which can assume the coordination number 4.

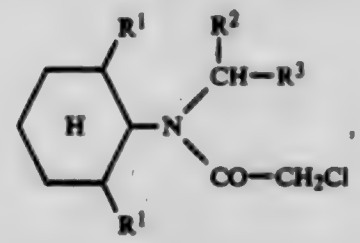
4,494,983

CHLOROACETIC ACID CYCLOHEXYLAMIDES, THEIR PREPARATION, THEIR USE FOR CONTROLLING WEEDS AND AGENTS FOR THIS USE

Karl Eicken, Wachenheim; Norbert Goetz, Worms, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 1, 1982, Ser. No. 383,977
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1981, 3123731
Int. Cl.³ A01N *37/26, 43/64*; C07C *103/38*; C07D *249/08*
U.S. Cl. 71—118 8 Claims

1. A chloroacetic acid cyclohexylamide of the formula



I

where R^1 is methyl, R^2 is hydrogen and R^3 is C_1–C_8-alkoxy, C_3–C_6-alkenyloxy, C_3–C_6-cycloalkylmethoxy, or C_1–C_6-alkoxyethoxy.

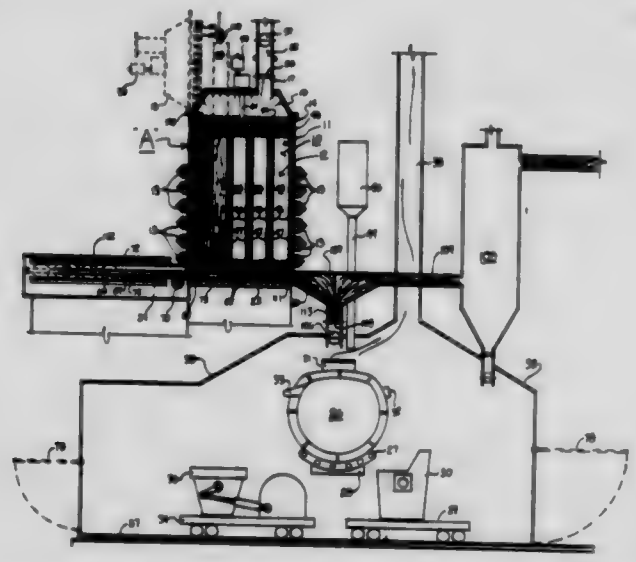
6. A herbicidal agent which comprises: a solid or liquid carrier and an effective amount of at least one compound of the formula I as set forth in claim 1.

4,494,934

METHOD FOR DIRECT REDUCTION OF IRON OXIDE UTILIZING INDUCTION HEATING

Albert Calderon, 1065 Melrose St., Bowling Green, Ohio 43402

Continuation-in-part of Ser. No. 131,137, Mar. 17, 1980,. This application Jul. 7, 1980, Ser. No. 166,172
Int. Cl.[3] C21B *13/12*
U.S. Cl. 75—11 15 Claims



1. A method of reducing iron oxide comprising the steps of:
(a) charging iron oxide and a solid carbonaceous material into the inlet end of a plurality of compartments whose walls comprise a material which is adaptable to being heated by induction and wherein said plurality of compartments commonly shares an induction coil means which surrounds said plurality of compartments and said induction coil means does not individually surround any of said compartments;
(b) heating said walls of said compartments by said induction coil means and transferring heat from said walls to the material contained therein by conduction to cause the metallization of the iron oxide by the reducing agents contained in the solid carbonaceous material;
(c) discharging metallized iron from an outlet end of said plurality of compartments;
(d) forcing the gaseous products generated by the reaction of the iron oxide and the reducing agents of the carbonaceous material, to flow toward the outlet end of said compartments to increase the efficiency of metallization; and
(e) collecting said gaseous products resulting from said metallization.

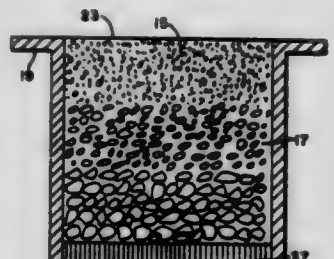
4,494,985

FILTRATION OF INCLUSIONS FROM MOLTEN METAL ALLOY

Russell H. Butler, Rockaway; Edward V. Limoncelli, Morristown; Michael J. Litwinowich, Boonton, and Michael L. Briggs, Budd Lake, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jan. 7, 1983, Ser. No. 456,223
Int. Cl.[3] C22B *21/06*
U.S. Cl. 75—93 R 13 Claims

1. A filter apparatus for removing inclusions from a molten metal alloy, comprising:
(a) a nozzle body composed of a refractory material, and having an inlet portion and a slot outlet orifice portion for extruding a planar, sheet-like stream of molten metal;
(b) a filter bed located in said nozzle body, interposed between said inlet portion and said outlet portion and comprised of at least two filter zones arranged in layers;
(c) each of said filter zones containing filter particles which are composed of said refractory material and have a preselected size range;
(d) said filter zones being successively and progressively arranged to selectively locate the zone having the largest filter particles proximate to said nozzle body outlet orifice portion and locate the zone having the smallest filter particles relatively more proximate to said nozzle body inlet portion; and



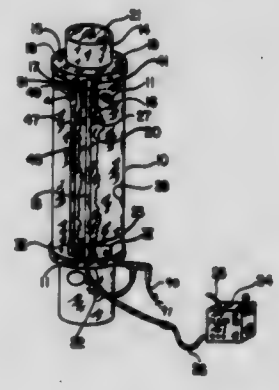
(e) stabilizer means located successive to said filter bed, within said nozzle body and in proximity to said outlet slot orifice for providing a stable, substantially uniform flow from said filter bed to said outlet orifice and for providing a substantially planar flow through said slot.

4,494,986

GOLD EXTRACTING PROCESS AND APPARATUS

Donald Forman, 467 Emerson Ave., Yuba City, Calif. 95991

Filed Aug. 14, 1981, Ser. No. 292,953
Int. Cl.[3] C22B *11/10*
U.S. Cl. 75—109 4 Claims



1. A process for recovering gold and other precious metals from water comprising the steps of:
flowing water downwardly within an enclosed chamber and out the top thereof;
simultaneously injecting air up said chamber and circulating the same back into said chamber; and
flowing mercury up within said chamber in non-contiguous relation to said water being flowed upwardly and using a portion of said injected air to lift said mercury and cause said mercury to exit at a point above said water and into impingement with a portion of said chamber above said water thereby forming electrostatically charged particles of mercury which move downwardly in said chamber into contact with the upwardly flowing water thereby forming amalgams of mercury and gold or other precious metals which can later be separated.

4,494,987

PRECIPITATION HARDENING AUSTENITIC SUPERALLOYS

Michael K. Korenko, Wexford, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 21, 1982, Ser. No. 370,438
Int. Cl.³ G21C *1/00, 3/58;* C22C *30/00*
U.S. Cl. 75—124 22 Claims

1. An iron base, gamma prime precipitation hardening austenitic superalloy having improved ductility characteristics after neutron irradiation in a fast breeder nuclear reactor, comprising an iron-nickel-chromium alloy including about 0.05–0.5 weight percent of a ductility enhancing agent selected from the group consisting of yttrium, hafnium and scandium, alone or in combination with each other, titanium and aluminum in amounts effective to produce gamma prime hardening during thermal aging outside of said fast breeder nuclear reactor and silicon in an amount effective through interaction with said ductility enhancing agent to enhance the post neutron irradiation ductility of said alloy.

4,494,988

GALLING AND WEAR RESISTANT STEEL ALLOY

William J. Schumacher, Monroe, Ohio, and Harry Tanczyn, Baltimore, Md., assignors to Armco Inc., Middletown, Ohio

Filed Dec. 19, 1983, Ser. No. 562,984
Int. Cl.³ C22C *39/26*
U.S. Cl. 75—128 A 13 Claims

1. A steel alloy having high tensile strength, metal-to-metal wear resistance, and oxidation resistance, said alloy consisting essentially of, in weight percent, about 1.0% maximum carbon, from 10% to about 16% manganese, about 0.07% maximum phosphorus, about 0.1% maximum sulfur, 4% to about 6% silicon, 4% to about 6% chromium, 4% to about 6% nickel, about 0.05% maximum nitrogen, and balance essentially iron.

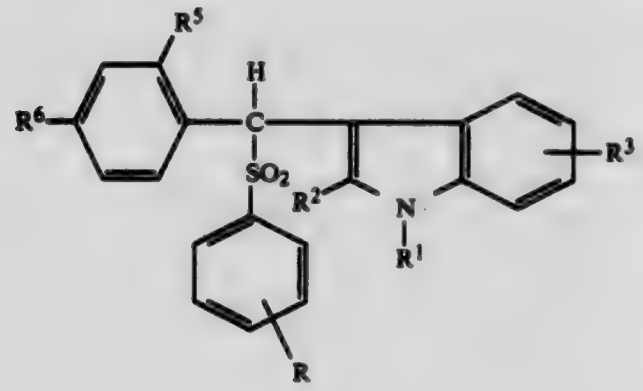
4,494,989

COMPOUNDS, PROCESSES AND MARKING SYSTEMS

Paul J. Schmidt, Sharonville, and William M. Hung, Cincinnati, both of Ohio, assignors to The Hilton-Davis Chemical Co., Cincinnati, Ohio

Division of Ser. No. 164,892, Jun. 30, 1980, , which is a continuation-in-part of Ser. No. 48,599, Jun. 14, 1979, Pat. No. 4,257,954, which is a continuation-in-part of Ser. No. 931,654, Aug. 8, 1978, Pat. No. 4,253,788. This application Jul. 19, 1982, Ser. No. 399,916
Int. Cl.³ C09D *11/00*
U.S. Cl. 106—21 2 Claims

1. A pressure-sensitive carbonless duplicating system or thermal marking system containing as the color-forming substance a [(2-R^5-4-R^6-phenyl) (1-R^1-2-R^2-5/6-R^3-3-indolyl) (R-phenylsulfonyl)]methane of the formula



wherein:

R represents one or two of hydrogen, C_1 to C_3 alkyl, C_1 to C_3 alkoxy, halo, nitro or acetamido;

R^1 represents hydrogen, C_1 to C_{18} alkyl, C_2 to C_4 alkenyl, benzyl or benzyl substituted in the benzene ring by one or two of halo or C_1 to C_3 alkyl;

R^2 represents hydrogen, C_1 to C_3 alkyl or phenyl;

R^3 represents one or two of hydrogen, C_1 to C_3 alkyl, C_1 to C_3 alkoxy, halo or nitro;

R^5 represents hydrogen, dialkylamino in which alkyl is non-tertiary C_1 to C_4 alkyl, C_1 to C_3 alkyl, C_1 to C_4 alkoxy or halo; and

R^6 represents hydrogen, C_1 to C_3 alkyl, C_1 to C_3 alkoxy, halo, dialkylamino in which alkyl is non-tertiary C_1 to C_4 or N-alkylbenzylamino in which alkyl is non-tertiary C_1 to C_4 and benzyl may be substituted in the benzene ring by one or two or halo or C_1 to C_3 alkyl.

4,494,990

CEMENTITIOUS COMPOSITION

Harry A. Harris, Leawood, Kans., assignor to Ash Grove Cement Company, Overland Park, Kans.

Filed Jul. 5, 1983, Ser. No. 510,636
Int. Cl.³ C04B *7/35*
U.S. Cl. 106—90 9 Claims

1. A cementitious composition comprising:

about 25–60 weight percent of a cement component selected from the group comprising Type I and Type II portland cement, said cement component comprising about 3–50 weight percent pozzolan having a sulfur reactivity factor of 12 or less;

about 40 to 75 weight percent calcium sulfate hemihydrate; and

about 1 to 20% by weight of a compatible polymer modifier, based on the weight of said cement component.

4,494,991

Patent Not Issued For This Number

4,494,992

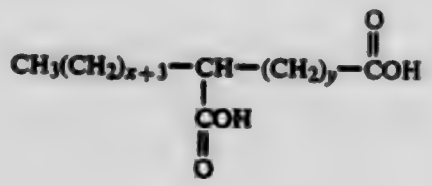
AMPHOTERICS AS EMULSIFIERS FOR BITUMINOUS EMULSIONS

Peter Schilling, and Hans G. Schroeders, both of Charleston, S.C., assignors to Westvaco Corporation, New York, N.Y.

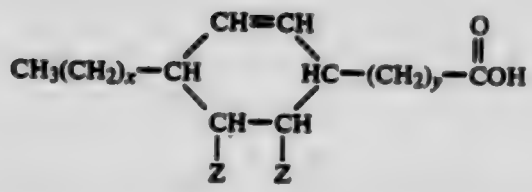
Division of Ser. No. 505,714, Jun. 20, 1983, Pat. No. 4,478,642. This application Jan. 18, 1984, Ser. No. 571,781
Int. Cl.³ C08L *95/00*
U.S. Cl. 106—277 3 Claims

1. Amphoteric emulsifiers for anionic and cationic bitumi-

nous emulsions consisting of reaction products of nitrogen-containing intermediates with compounds selected from the group consisting of formaldehyde and sodium sulfite or bisulfite, chloroalkane sulfonic acid salts, γ-propane sultone, chloromethane phosphonic acid, acrylic acid, fumaric acid, maleic acid and chloroalkanoic acids, wherein the nitrogen-containing intermediates are selected from the group of reaction products of polyamines reacted with sulfonated carboxylic acids and polyamines reacted with polycarboxylic acids corresponding to the formulae



and



wherein x and y are integers from 3 to 9, x and y together equal 12, at least one Z is a carboxylic acid group and any remaining Z is hydrogen.

4,494,993

NACREOUS PIGMENTS, THEIR PREPARATION AND USE

Horst Bernhard, Schwarzenberg, Austria, and Reiner Esselborn, Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Dec. 27, 1982, Ser. No. 453,045
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151354
Int. Cl.³ C09C *3/00*
U.S. Cl. 106—291 15 Claims

1. Nacreous pigments having improved transparency and tinctorial strength, comprising mica flakes whose surfaces are coated with a metal oxide layer wherein said metal oxide layer consists essentially of a homogeneous mixture of titanium dioxide, silicon dioxide and aluminum oxide.

9. A process for preparing nacreous pigments having improved transparency and tinctorial strength and comprising mica flakes whose surfaces are coated with a metal oxide layer wherein the metal oxide layer comprises a homogeneous mixture of titanium dioxide, silicon dioxide and aluminum oxide;

comprising coating mica flakes in an aqueous suspension of a pH of about 0.5–5 and a temperature of about 50°–100° C. by including in the suspension an amount of aluminum ions corresponding to the amount to be incorporated into the metal oxide layer and adding to the suspension two solutions at the same time, one a solution of a titanium salt providing an amount of titanium ions corresponding to the amount to be incorporated into the metal oxide layer and the other a basic solution effective to maintain said pH at an essentially constant value and containing an amount of solubilized SiO_2 corresponding to the amount to be incorporated into the metal oxide layer, uniformly co-precipitating onto the mica flakes titanium dioxide hydrate, silicon dioxide and aluminum hydroxide to form a uniform layer homogeneously containing said precipitated components,

and then washing, drying and calcining the coated mica flakes.

14. In a composition comprising a base ingredient and a pearlescent pigment based on TiO_2 coated mica flakes, the improvement wherein the mica flakes are nacreous pigments having improved transparency and tinctorial strength, comprising mica flakes whose surfaces are coated with a metal oxide layer wherein said metal oxide layer consists essentially of a homogeneous mixture of titanium dioxide, silicon dioxide and aluminum oxide.

4,494,994

SURFACE ACTIVE AGENT COMPOSITIONS CONTAINING POLYPEPTIDES AND LIGNIN SULFONIC ACID

Gheorghe Cioca, Coatesville, Pa.; Marcel Siegler, North Bergen, N.J., and Apostol Spiliadis, Fraser, Pa., assignors to Seton Company, Newark, N.J.

Filed Mar. 28, 1983, Ser. No. 479,715
Int. Cl.³ C08H *1/00, 1/06, 5/02, 5/04*
U.S. Cl. 106—308 P 14 Claims

1. In a composition including solid particles having a particle size of about 2 microns or less and a surface active agent, the improvement comprising said surface active agent being comprised of:

(a) lignin sulfonic acids; and

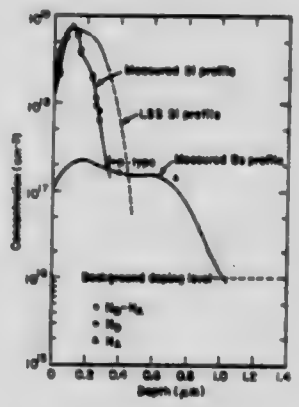
(b) a polypeptide having a molecular weight of about 2,500 to about 15,000.

4,494,995

DUAL SPECIES ION IMPLANTATION OF TERNARY COMPOUNDS BASED ON IN-GA-AS

Kamal Tabatabaie-Alavi, Cambridge; Abu N. M. M. Choudhury, Belmont; Nancy J. Slater Gabriel, Cambridge, and Clifton G. Fonstad, Arlington, all of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 1, 1983, Ser. No. 471,083
Int. Cl.³ H01L *21/265, 29/48, 29/56*
U.S. Cl. 148—1.5 5 Claims



1. A method for ion implanting using multiple energy Be^+ to produce p-type regions in an n-$In_{0.53}Ga_{0.47}As$ substrate and thereafter implanting Si in Be-implanted InGaAs epilayers to produce n^+-p-n structure which includes the steps of:

implanting Be^+ in said n-InGaAs substrate;

annealing Be^+ implanted n-InGaAs substrate; and

implanting Si in Be^+ implanted n-InGaAs substrate.

4,494,996

IMPLANTING YTTRIUM AND OXYGEN IONS AT SEMICONDUCTOR/INSULATOR INTERFACE

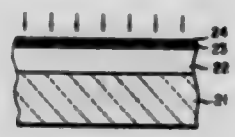
Junichi Ohno, Yokohama, and Takao Ohta, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

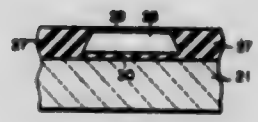
Filed Apr. 11, 1983, Ser. No. 483,706
Claims priority, application Japan, Apr. 12, 1982, 57-60536
Int. Cl.³ H01L *21/265, 7/00*
U.S. Cl. 148—1.5 4 Claims

1. A method of manufacturing a semiconductor device with a semiconductor element formed in an insulating substrate comprising:

a step of forming a semiconductor film on an insulating substrate;

a step of ion implanting yttrium and oxygen or a lanthanide metal and oxygen in the neighborhood of said substrate and semiconductor film; and





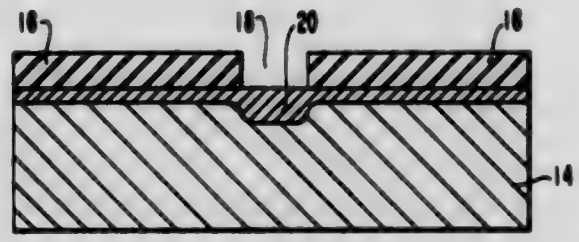
thermally treating the resultant system, thereby forming an insulating layer containing yttrium or a lanthanide metal as said insulating layer in the neighborhood of said interface.

4,494,997

ION IMPLANT MASK AND CAP FOR GALLIUM ARSENIDE STRUCTURES

Zachary J. Lemnios, Bowie, and He B. Kim, Pasadena, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 15, 1983, Ser. No. 504,568
Int. Cl.³ H01L *21/265*
U.S. Cl. 148—1.5 5 Claims



1. A method for fabricating doped regions in a gallium arsenide substrate comprising the steps of depositing a layer of germanium selenide over a substrate of gallium arsenide, exposing the layer of germanium selenide to a predetermined pattern, developing the exposed layer of germanium selenide to provide openings in the layer of germanium selenide, ion implanting impurities through said openings to form first ion implanted regions, ion implanting impurities of a second concentration through the layer of germanium selenide to form second ion implanted regions, annealing first and second ion implanted regions, converting the layer of germanium selenide to a layer of germanium, and removing the layer of germanium.

4,494,998

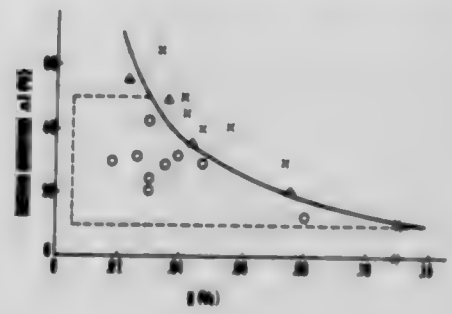
PROCESS FOR PRODUCING AUSTENITIC STAINLESS STEELS LESS SUSCEPTIBLE TO ROLLING DEFECTS

Masanori Ueda; Ryosuke Takahashi, both of Fukuoka, and Hidemaro Takeuchi, Yamaguchi, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 341,629, Jan. 22, 1982, abandoned. This application Aug. 26, 1982, Ser. No. 411,953
Claims priority, application Japan, Jan. 31, 1981, 56-13696; Jan. 31, 1981, 56-13697
Int. Cl.³ C22C *38/12*
U.S. Cl. 148—2 6 Claims

1. A process for producing austenitic stainless steels less susceptible to rolling defects, comprising:

continuously casting an austenitic stainless steel containing not less than 0.005% nitrogen under the condition of $N \times \Delta T \leq 1.5$, in which N represents the nitrogen content percentage, and ΔT represents the difference between a



tundish temperature of the steel and the melting point of the steel and ranges from 10° C. to 50° C., and hot rolling the steel slab thus obtained.

4,494,999

PROCESS FOR MAKING FINE-GRAIN WELDABLE STEEL SHEET FOR LARGE-DIAMETER PIPES

Michael Gräf, Ratingen, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 11, 1983, Ser. No. 512,480
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1982, 3226160
Int. Cl.³ C21D *7/14*
U.S. Cl. 148—2 19 Claims

1. A process for producing fine-grain microalloyed steel sheets suitable for welding into large-diameter pipes, comprising the steps of:

(a) providing a composition consisting essentially, by weight, of 0.05 to 0.07% carbon, 1.5 to 2.0% manganese, 0.001 to 0.003% sulfur, 0.005 to 0.008% nitrogen, titanium in a proportion of substantially 3.5 to 4 times that of nitrogen, 0.25 to 0.40% silicon, 0.03 to 0.05% aluminum, 0.02 to 0.08% niobium, remainder iron and usual impurities;

(b) continuously casting said composition into slabs;

(c) heating said slabs to an elevated temperature between substantially 1120° and 1160° C., with resulting formation of TiN precipitates having particle sizes between about 0.06 and 0.2 microns; and

(d) subjecting the slabs to a succession of hot-rolling stages with intervening cooling, including an initial deformation to a degree of at least 55% beginning at said elevated temperature.

4,496,000

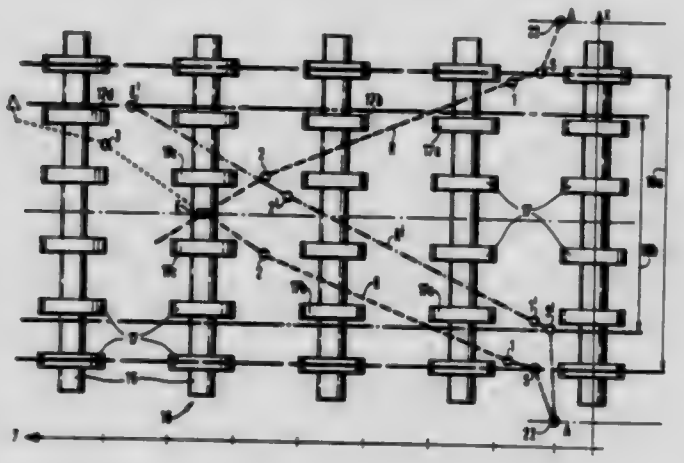
DEVICE FOR CUTTING A STRIP CAST IN A CONTINUOUS CASTING MACHINE

Karl-Heinz Möller, Oberursel, Fed. Rep. of Germany, assignor to Messer Griesheim GmbH, Frankfurt, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,048
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1979, 2935029
Int. Cl.³ B23K *7/02, 7/10*
U.S. Cl. 148—9 R 9 Claims

1. In a device for cutting through a continuously cast strip produced in a continuous casting installation, consisting of a flame cutting machine with at least one flame cutting unit, a roller bed for transportation of the strip which moves at a constant speed, whereby the flame cutting machine can be coupled to the strip during the flame cutting action, and with a control unit for controlling the lateral movement of each flame cutting unit in a path of travel which is always between the individual rollers of the roller bed during the cutting operation, the improvement being that the speed of the cutting path is within a range which includes the optimum speed, and said

control unit comprising impulse senders connected with a control computer and installed at said flame cutting machine to



monitor the longitudinal motion of said machine and the transverse motion of said flame cutting unit.

4,495,001

PRODUCTION OF AGE HARDENABLE ALUMINUM EXTRUDED SECTIONS

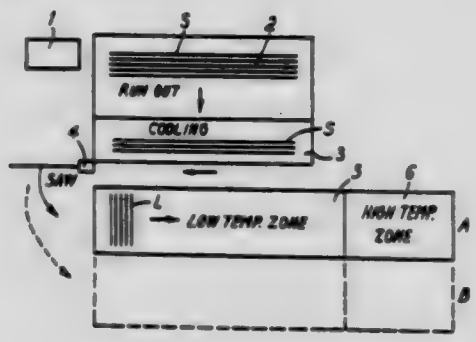
Walter Bennett; John H. Ablewhite, and Anthony J. Bryant, all of Banbury, England, assignors to Alcan International Limited, Montreal, Canada

Filed Dec. 3, 1982, Ser. No. 446,697

Claims priority, application United Kingdom, Dec. 11, 1981, 8137503

Int. Cl.³ C22F *1/04*

U.S. Cl. 148—11.5 A 6 Claims



1. In a method of producing extruded sections of an age hardenable alloy, in which extruded sections are extruded onto a run out table and laterally moved therefrom to a cooling and stretching station

the improvement which comprises progressing the cooled and stretched sections into, through and out of a relatively low temperature first thermal ageing zone while travelling in a direction transverse to their length and into, through and out of a second, higher ageing temperature zone also while travelling in a direction transverse to their length.

4,495,002

THREE-STEP TREATMENT OF STAINLESS STEELS HAVING METASTABLE AUSTENITIC AND MARTENSITIC PHASES TO INCREASE RESISTANCE TO CHLORIDE CORROSION

Joseph G. Anello, Ridley Park, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 267,826, May 27, 1981, abandoned. This application Apr. 22, 1983, Ser. No. 487,485

Int. Cl.³ C21D *7/06*

U.S. Cl. 148—12 E 12 Claims

1. A process for producing improved chloride corrosion resistance in turbine components fabricated from stainless steel which contains both aged martensitic and metastable austenitic phases, said process comprising:

(a) initial shot peening said fabricated component at an intensity of 0.010–0.015 A with 190–270 size shot;

(b) heating said component to about 980°–1020° F. for ¼–4 hours; and



(c) final shot peening said component at an intensity of 0.004–0.006 A with 70–150 size shot.

4,495,003

MANUFACTURING A STEEL TUBE INCLUDING TUFFTRIDING

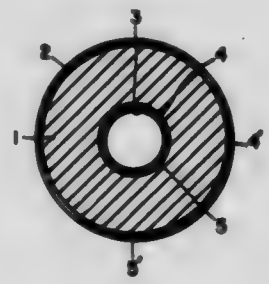
Naomi Kubo, Nagoya, Japan, assignor to Usui Kokusai Sangyo Kabushiki Kaisha, Sunto, Japan

Division of Ser. No. 383,788, Jun. 1, 1982, Pat. No. 4,458,724. This application Jan. 10, 1983, Ser. No. 456,982

Claims priority, application Japan, Jun. 8, 1981, 56-87868

Int. Cl.³ B32B *15/00*

U.S. Cl. 148—15.5 4 Claims



1. A method of manufacturing a steel tube having a small outside diameter and a large wall thickness, and a hardened layer on at least one surface, comprising the steps of Tufftriding a steel tube in a molten bath of sodium cyanide while the tube is being axially vibrated, whereby a diffusion layer comprising a solid solution of nitrogen is formed on at least one surface of the tube; and heat treating the tube in a gaseous atmosphere to decompose any intermetallic compound formed on the diffusion layer by the Tufftriding, whereby a hardened layer is formed on the said surface.

4,495,004

PROCESS FOR HIGH-TEMPERATURE CARBURIZING TREATMENT OF TRACK BUSHES FOR TRACTORS OR TRACKED VEHICLES

Walter Grilli; Franco De Meo, and Ivan Franchini, all of Modena, Italy, assignors to Italtractor ITM SpA, Castelvetro, Italy

Filed Oct. 20, 1983, Ser. No. 543,727

Int. Cl.³ C23C *11/10*

U.S. Cl. 148—16.5 8 Claims

1. Process for the production of track bushes for tracked vehicles, from low-carbon boron steel, having a martensitic structure in the center and on the surface, with 5–8 ASTM austenitic grain, center hardness between 32 and 44 HRC,

surface hardness over 55 HRC and hardness of ends between 35 and 46 HRC, comprising forming a charge comprised by a plurality of bushes in a basket, and subjecting the charge to the following sequential operations:

preheating the charge in a pretreatment chamber of a furnace having a carburizing chamber, with combustion gases from said carburizing chamber;

transferring the charge to said carburizing chamber, where the carburizing atmosphere is produced in situ, and there carburizing the charge at a temperature in excess of 900° C.;

cooling the charge in a third chamber of said furnace, to a temperature of 820°–850° C., maintained by means of combustion gas leaving said carburizing chamber;

extracting bushes from the charge one at a time by a robot and directly individually quenching the extracted bushes;

tempering the ends of the bushes and emulsion cooling the bushes; and

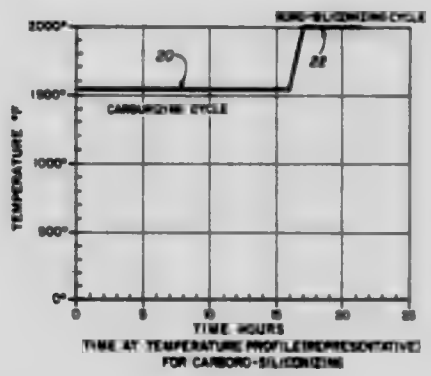
total stress relieving the bushes for 1–2 hours at 180°–200° C. in a continuous furnace fed by hot waste gases from the first-mentioned furnace.

4,495,005

CARBOSILICONIZING FERROUS SUBSTRATES

William L. Aves, Jr., Arlington, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 31, 1983, Ser. No. 547,184
Int. Cl.³ C21D *9/22*
U.S. Cl. 148—16.5 **16 Claims**



TIME AT TEMPERATURE PROFILE (REPRESENTATIVE) FOR CARBORO-SILICONIZING

1. A process for treating ferrous metals comprising the steps of:

exposing the ferrous metal to diffusible carbon, boron and silicon during a single thermal cycle; and

controlling the conditions at the ferrous metal surface to initially carburize the ferrous metal surface and subsequently boronize and siliconize the ferrous metal surface, forming a gradual transition between the carburized layer and the boronized and siliconized layer.

4,495,006

BOROCARBURIZING FERROUS SUBSTRATES

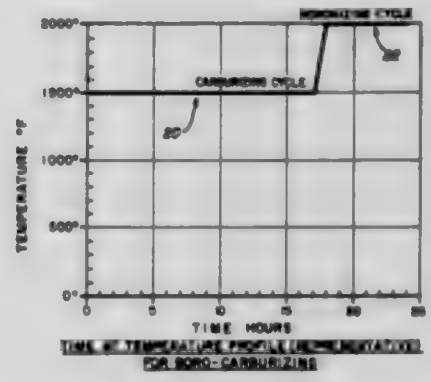
William L. Aves, Jr., and Gary A. Aves, both of Arlington, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 31, 1983, Ser. No. 547,302
Int. Cl.³ C21D *9/22*; C23C *9/00*
U.S. Cl. 148—16.5 **19 Claims**

1. A process for treating ferrous metals comprising the steps of:

exposing the ferrous metal to diffusible carbon and boron during a single thermal cycle; and

controlling the conditions at the ferrous metal surface to initially carburize the ferrous metal surface and subsequently boronize the ferrous metal surface, forming a gradual transition between the carburized and boronized layers.



TIME AT TEMPERATURE PROFILE (REPRESENTATIVE) FOR BORO-CARBURIZING

4,495,007

SOLDERING FLUX

Frank M. Zado, Lawrence Township, Mercer County, N.J., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Mar. 12, 1984, Ser. No. 588,634
Int. Cl.³ B23K *35/36, 35/34*
U.S. Cl. 148—23 **25 Claims**

1. A solder flux which comprises:

(a) rosin;

(b) an activator having at least one halogen atom and at least one destabilizing substituent;

(c) a surfactant selected from the group consisting of (a') a polycarboxylic acid, (b') a hydroxyl substituent of (a'), (c') a keto acid and (d') a mixture of any of the foregoing surfactants; and

(d) the dimer of linoleic acid, wherein said activator is present in an amount of from 1 to 15 weight percent and said surfactant is present in an amount of from 0 to 25 weight percent.

4,495,008

PROCESS OF MAKING LONG-LIFE THIN METAL PLATE FOR AUTOMOBILE BODIES, AND THIN PLATE MADE THEREBY

Roberto Bruno, and Massimo Memmi, both of Rome, Italy, assignors to Zincroksid S.p.A., Turin, Italy

Division of Ser. No. 219,112, Dec. 22, 1980, Pat. No. 4,437,944, which is a continuation-in-part of Ser. No. 173,234, Jul. 28, 1980, abandoned. This application Mar. 1, 1982, Ser. No. 353,444
Int. Cl.³ C23F *7/26*
U.S. Cl. 148—31.5 **5 Claims**

1. A long-life sheet metal plate for automobile bodies, the sheet metal plate being coated on only one of its faces with a layer of zinc, and a chrome-chromic oxide coating covering both the zinc-coated face and the other face of the metal plate.

4,495,009

METHOD OF COOLING COLD STEEL STRIP WITH COOLING ROLLS

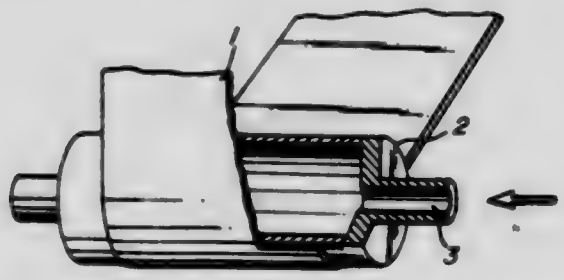
Shinjiro Murakami; Osamu Hashimoto, both of Kurashiki; Kazuo Morimoto, and Kaneaki Hyodo, both of Hiroshima, all of Japan, assignors to Kawasaki Steel Corporation, Kobe and Mitsubishi Heavy Industries, Ltd., Tokyo, both of, Japan

Filed Jul. 6, 1983, Ser. No. 511,561
Claims priority, application Japan, Jul. 8, 1982, 57-117758
Int. Cl.³ C21D *1/18*
U.S. Cl. 148—128 **1 Claim**

1. A method of cooling a steel strip with a hollow cooling roll by means of thermal transmission through the roll between a cooling medium flowing through an internal cavity of said cooling roll and said steel strip being in contact with and running about said cooling roll, wherein said method com-

prises the steps of obtaining uniform contact between the strip and cooling rolls, controlling the temperature fall of the strip per each cooling roll, and controlling tensile forces on the strip, said method being carried out so as to fulfil the following equation (1) with said cooling roll having a diameter $D>600$ mm when a thickness h of said steel strip is within $0.2 \leqq h < 0.6$ mm,

$$\Delta T_S < 0.65 \cdot \sigma_T^{1.5} \cdot \theta \cdot h^{-0.75} \quad (2)$$



and so as to fulfil the following equation (2) with said cooling roll having a diameter $D>1{,}000$ mm when a thickness h of said steel strip is within 0.6 mm $\leqq h$,

$$\Delta T_S < 1.05 \cdot \sigma_T^{1.5} \cdot \theta \cdot h^{-0.83} \quad (2)$$

where ΔT_S is temperature fall °C. per one cooling roll, σ_T is tensile stress in a lengthwise direction of said steel strip and θ is winding angle about said cooling roll.

4,495,010

METHOD FOR MANUFACTURING FAST BIPOLAR TRANSISTORS

Ditmar Kranzer, Putzbrunn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 208,493, Nov. 19, 1980, abandoned.
This application Jan. 24, 1983, Ser. No. 460,504
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1979, 2946963

Int. Cl.³ H01L *21/20, 21/265*
U.S. Cl. 148—175
5 Claims

1. Method for the manufacture of fast bipolar transistors, which comprises

applying an n-doped buried-layer diffusion layer over a p-doped silicon semiconductor substrate;

subsequently applying an n-doped epitaxially deposited silicon layer over the semiconductor body;

forming walls extending through the epitaxial layer into one of the buried-layer diffusion layer and the semiconductor substrate for insulating adjacent components;

creating a collector zone by placing n-doped collector diffusions into the epitaxially applied n-doped silicon layer which extend through the epitaxially applied layer into the buried-layer diffusion layer;

depositing, in sequence, an undoped polycrystalline layer, a silicon oxide layer and a silicon nitride layer on the surface of the semiconductor body at given locations where a transistor is to be produced;

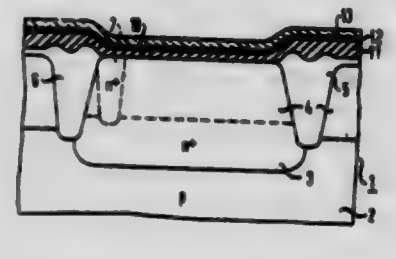
selecting base contact locations of a given size; collector contact locations and emitter contact locations;

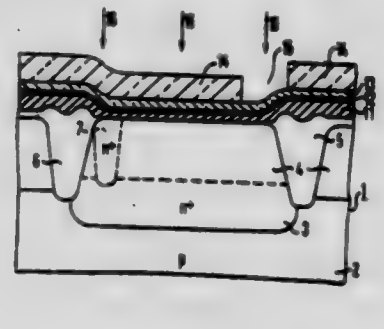
depositing a photo varnish or photoresist layer on the silicon nitride layer; etching windows which are larger than the given size into the photo-layer at the base contact locations by photolithography;

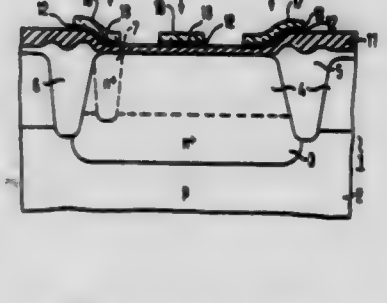
implanting boron with a particle energy which penetrates the silicon nitride and SiO_2 layers down into the polycrystalline layer but does not penetrate the resist mask;

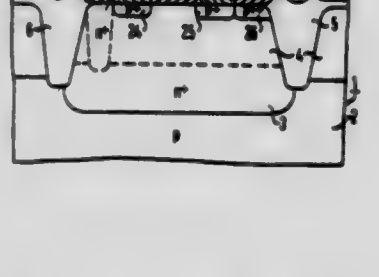
implanting boron again after removing the photo resist mask with a particle energy which implants the exposed parts of the polycrystalline layer with boron but does not implant the silicon body and the parts of the polycrystalline layer under the silicon nitride layer;

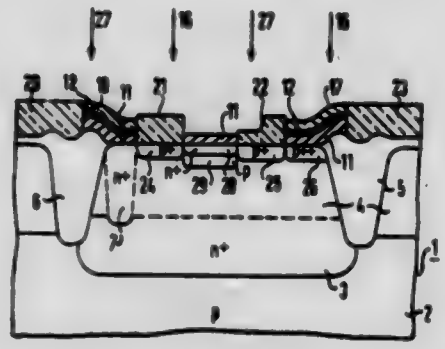
simultaneously with oxidizing the exposed parts except the base contact locations of the polycrystalline layer for structuring, diffusing boron from the polycrystalline layer into the layers therebelow by the heat caused by the oxidation; subsequently etching away the silicon nitride and silicon oxide layers at the emitter contact locations by another photo technique while preserving the nitride and oxide layers of the base and collector contact locations;











implanting boron and arsenic into the polycrystalline layers at the emitter contact locations with a substantially higher concentration of arsenic than boron, leaving a nitride mask in the base contact locations which is thick enough to keep arsenic ions away from the polycrystalline layer therebelow;

producing an inner base region and an emitter zone by bringing arsenic ions and boron ions from the polycrystalline layer into the silicon body by thermal diffusion; and

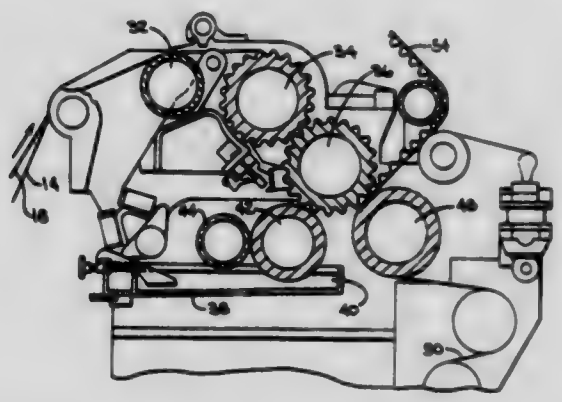
opening contact points on the doped polycrystalline layers, and subsequently applying emitter, base and collector contacts.

4,495,011

METHOD OF MANUFACTURING DUAL ARCH CORRUGATED PAPERBOARD PRODUCT

Paul M. Scharfenberg, Hurst, and Kenneth N. Findley, Jr., Arlington, both of Tex., assignors to Findley Adhesives, Inc., Brookfield, Wis.

Filed Apr. 5, 1982, Ser. No. 365,795
Int. Cl.³ B32B 31/26, 3/28
U.S. Cl. 156—78 13 Claims



1. A process for forming a corrugated paperboard product having a dual arch corrugated medium fastened to at least one liner, comprising the steps of:

providing first and second webs of medium material;

applying a dryable water-based emulsion adhesive bonding agent in a foamed state over substantially the entire surface of at least one of said webs;

drying the bonding agent instantaneously after its application on said one web by evaporating the water from said bonding agent so that the bonding agent assumes a dry condition;

bringing the webs together after the bonding agent is dry to form a dual arch medium;

corrugating the medium so formed while simultaneously applying heat to said medium to activate the dried bonding agent to seal the webs together;

applying adhesive to the flutes of the corrugated medium; and

adhering the liner to the medium.

4,495,012

METHOD OF AND APPARATUS FOR PRODUCING DECORATIVE FLOOR AND WALL COVERINGS

Daniel Bérenger, Saint Paul Trois Chateaux, France, assignor to Geriand S.A., Villeurbanne, France

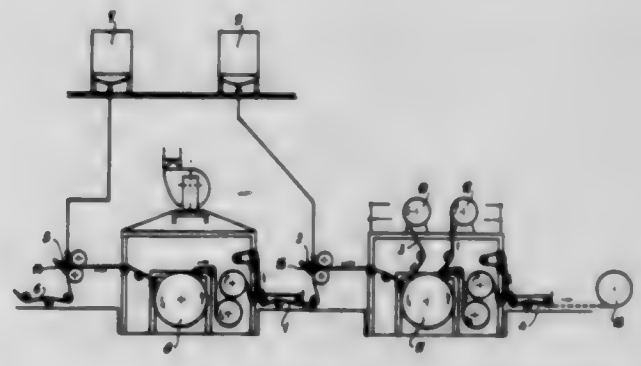
Filed Jun. 17, 1983, Ser. No. 505,310
Claims priority, application France, Jun. 18, 1982, 82 11122
Int. Cl.³ B32B 37/02; B44C 1/16; C09J 5/02; B44C 3/00
U.S. Cl. 156—78 8 Claims

1. A process for continuously producing a floor or wall covering which comprises the steps of:

continuously applying a thermally activatable plastisole to a sheet support to form a plastisole-coated sheet;

continuously compacting the plastisol coated sheet with a transferrable pattern on a transfer paper continuously; and

continuously and progressively thermally activating said plastisol to gelify the same while said pattern of said paper is in contact therewith, thereby transferring said pattern from said paper to the plastisol as it is gelified and forming



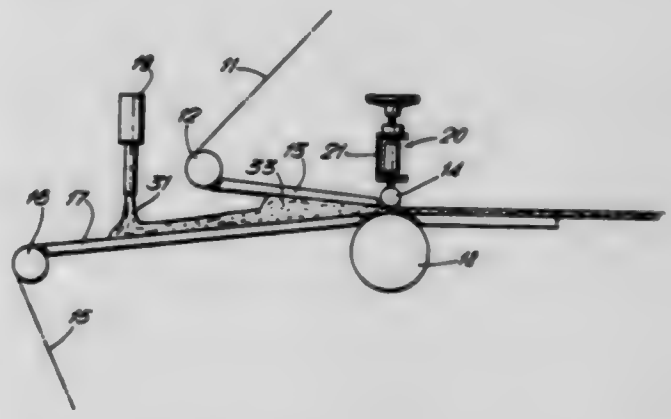
a patterned gelified synthetic resin surface of a wall covering formed from said sheet.

4,495,013

APPARATUS AND METHOD FOR THE CONTINUOUS MANUFACTURE OF FOAM BOARD

Brian J. Walker, Cheshire, and Victor F. Hodgson, Manchester, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Apr. 21, 1980, Ser. No. 141,929
Claims priority, application United Kingdom, May 31, 1979, 7918923
Int. Cl.³ B32B 31/20
U.S. Cl. 156—79 7 Claims



1. Apparatus for the continuous manufacture of foam board having a plastics foam core sandwiched between flexible facing sheets which comprises a conveyor assembly for continuously advancing upper and lower facing sheets in spaced opposed transversely-parallel disposition; a foam dispenser for depositing a liquid mixture of plastics foam-forming ingredients onto at least one of the facing sheets; a metering device for causing the facing sheets to converge into proximate relationship; and zones for the expansion and curing of the foam laminate; the metering device comprising two spaced opposed foam-constricting members forming therebetween a metering gap, at least one of the members being deformable in a controlled manner such that the profile of the metering gap can be variously defined.

4,495,014

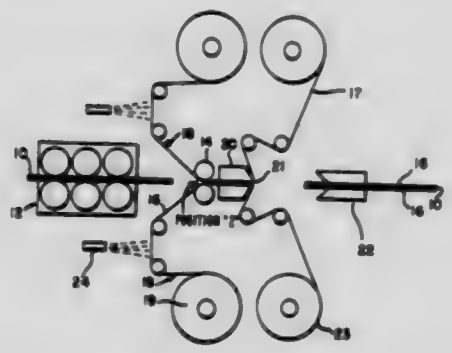
LAMINATING AND TRIMMING PROCESS

Peter L. Gebrian, and Charles B. Jones, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 18, 1983, Ser. No. 467,649
Int. Cl.³ B32B 31/20, 31/12; B29C 27/00
U.S. Cl. 156—80 32 Claims

1. A process for laminating discrete sections of a supported photosensitive layer to at least one sheet substrate comprising

(a) laminating under pressure a section of the supported photosensitive layer to a moving sheet substrate,
(b) releasing the laminating pressure from the photosensitive layer and the sheet substrate,
(c) removing the support from the laminated layer and trimming the photosensitive layer substantially at a line dividing where laminating pressure and no laminating pressure



has been applied to said photosensitive layer, wherein a time interval of not less than 0.5 seconds is present between the release of pressure in step (b) and the support removal of step (c),
(d) reversing the direction of travel of the photosensitive layer which is not laminated to the sheet substrate,
(e) repeating steps (a), (b), and (c) to laminate another section of photosensitive layer.

4,495,015

CONTROLLED WAFER RELAXING IN MAKING COMPOSITE LENSES

Donald H. Petcen, Colonial Heights, Va., assignor to Coburn Optical Industries, Inc., Muskogee, Okla.

Filed Sep. 1, 1983, Ser. No. 528,675
Int. Cl.³ B32B *17/10*
U.S. Cl. 156—80 8 Claims

1. In a method of laminating a preformed thermoplastic/-thermoset wafer to a pre-finished ophthalmic glass lens of the type, wherein after manufacturing, the preformed thermoplastic/thermoset wafer is positioned against the surface of the pre-finished ophthalmic glass lens so that the thermoplastic side thereof is in contact with said glass surface, said wafer and glass are pressed to form a laminate and subjected to elevated temperatures and high pressures to strengthen bonding therebetween, wherein the improvement comprises:

storing said preformed thermoplastic/thermoset wafer immediately after manufacture thereof at a temperature of about 40° to 50° F. at less thant 50% relative humidity; and subjecting said stored wafer to a temperature of about 90° to 120° F. and a relative humidity of about 50% to 70% for 15 to 48 hours just prior to said lamination.

4,495,016

METHOD OF MAKING A PACKING LAMINATE WEB

Rolf Viberg, Bjärred; Göran Harrysson, Lund, and Tom Kjelgaard, Löddeköpinge, all of Sweden, assignors to Tetra Pak International AB, Lund, Sweden

Filed Dec. 23, 1982, Ser. No. 452,831
Claims priority, application Sweden, Dec. 29, 1981, 8107824
Int. Cl.³ B32B *31/04, 31/20, 31/30*
U.S. Cl. 156—152 7 Claims

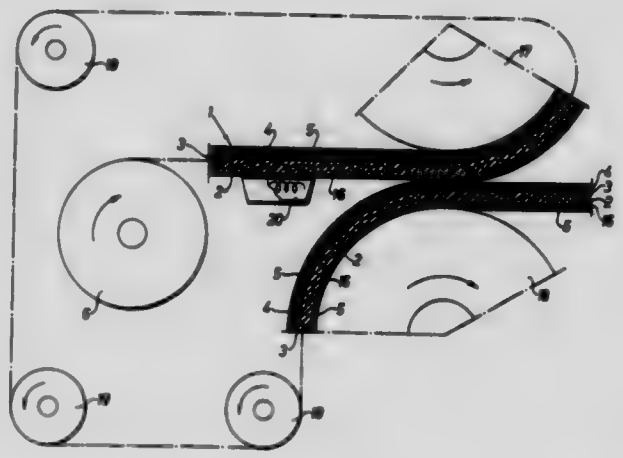
1. A method for converting a packing laminate web to a secondary web with a sterile surface, comprising the steps of:

extruding a detachable protective layer on to a first side of said packing laminate web to form the primary web, said protective layer maintaining said first side in a sterile condition;

delaminating said protective layer from said first side while maintaining said first side in the sterile condition; and

transferring said protective layer to a second side of said packing laminate, said protective layer being secured to said second side to form said secondary web;

wherein, before the protective layer is delaminated, the laminate web is guided around a first of a pair of cooperating pressure rollers and then into a nip between said pressure rollers, where a transfer of the protective layer takes place, so that a laminate web in a secondary form is obtained after the web has passed between the pressure rollers for a second time.

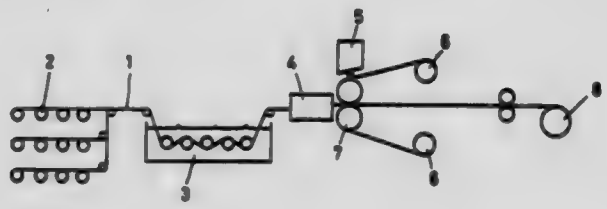


4,495,017

PROCESS FOR CONTINUOUS PRODUCTION OF PREPREG SHEETS

Yasuaki Abe, Takarazuka; Mikio Hayashi, Kawanishi; Kousaku Asagi, Ibaraki; Akira Morii, Takatsuki, and Kazutoshi Fujimura, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Continuation of Ser. No. 302,356, Sep. 15, 1981, abandoned. This application Mar. 25, 1983, Ser. No. 478,880
Claims priority, application Japan, Sep. 18, 1980, 55-130191; Jun. 26, 1981, 56-100344
Int. Cl.³ B32B *5/02;* D04H *3/08*
U.S. Cl. 156—181 10 Claims



1. A process for the continuous production of prepreg sheets unidirectionally arranged in parallel which consists essentially of contacting a plurality of fiber bundles arranged unidirectionally in parallel with each other with a solvent which may contain up to 5% by weight of a sizing agent and continuously taking up said fiber bundles under tension of 33.33–250 g/1000 filaments over curved surfaces of spreader bodies, while in a wet state with said solvent to spread out said fiber bundles, drying the thus-spread out fibers by contacting them over heated drum drier bodies heated sufficiently to substantially remove all the solvent therefrom, and then impregnating the dried fiber bundles with a predetermined quantity of a molten resin.

4,495,018

PROCESS FOR PRODUCING A REINFORCED TUBE

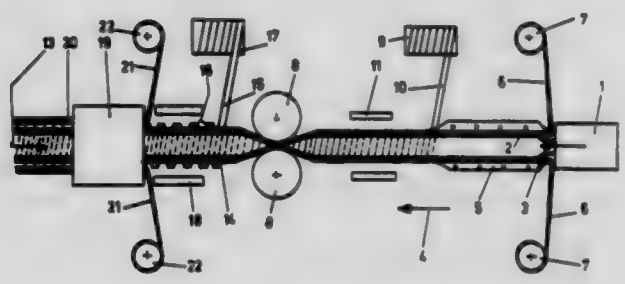
Christoph Vohrer, Hattsteiner Str. 22, D, 6420 Konigstein 2, Fed. Rep. of Germany

Filed Jul. 14, 1983, Ser. No. 514,154

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1982, 3227166

Int. Cl.³ B31C *3/00*

U.S. Cl. 156—187 12 Claims



1. A process for producing a reinforced tube which has a thin-walled inner tube and an outer sheath made of thermoplastic or elastomeric material as well as thin strips which extend in an axial direction on the outside of the inner tube and are reinforced with textile threads and which consist of plastic connectable to the material of the inner tube, the strips appearing as a closed layer, including the steps of:

a. extruding the thermoplastic or elastomeric material from an annular nozzle to form the inner tube 2,

b. encircling the extruded inner tube with a closed layer of the strips (6), which are at least coated with heat-activatable adhesive material and which extend in the axial direction of the inner tube,

c. subjecting the inner tube (2) to a relatively low internal pressure (3) while passing the inner tube and the closed layer of thin strips through a sizing guide 5, while supplying heat at the entrance of the guide, thereby expanding the tube against the strips and the strips against the guide, the heat at the guide entrance being effective to activate the adhesive and bond the tube to the layer of strips, the guide being long enough to cool the tube and strips sufficiently so that they set as an integral structure,

d. winding a second layer of strips (10) of heat activatable adhesive material spirally over the first layer bonded to the inner tube and bonding the second layer to the first layer by heating,

e. passing the tube with the connected layers of strips through pinching rolls to close the tube and thereby maintain the tube upstream from the rolls at said relatively low internal pressure, said rolls being also effective to drive the tube and the layers of strips bonded thereto, and

f. finally subjecting the reinforced inner tube (14) to a relatively high internal pressure (13) and applying to it the outer sheath (20).

4,495,019

PLYWOOD BENDING

Richard Ogg, R.R. 3, Box 38, Littlestown, Pa. 17340

Filed May 21, 1982, Ser. No. 380,756

Int. Cl.³ B29C *19/02*

U.S. Cl. 156—222 16 Claims

8. Apparatus for making a strip of laminated material comprising:

a first roller rotatable about a first axis;

a second roller rotatable about a second axis, said second axis being distinctly non-parallel with said first axis;

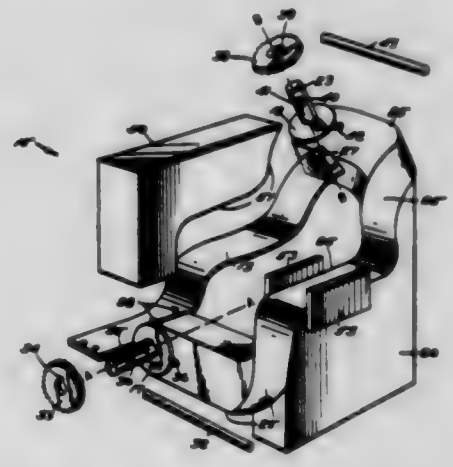
a female die surface extending continuously from said first roller to said second roller;

a male die surface conforming to a central area of said female die surface between said first and second rollers, and having a length substantially less than the length of said female die surface;

a flexible band of substantially non-deformable material, said band having a length greater than the length of said female die surface extending between said rollers;

means for attaching the ends of said flexible band to said rollers;

means for applying a force to said male die surface moving it toward said female die surface; and



means for rotating said rollers about their axes of rotation with the band held thereby to tension said band and cause said band to closely conform to the shape of said female die surface.

9. Apparatus as recited in claim 8 wherein said first and second axes are stationary with respect to each other.

4,495,020

PRIMER FOR BONDING POLYESTER PLASTICS

Masamitsu Nakabayashi, Seanan; Masuo Miyaji, Izumi, and Yoshio Kamatani, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Feb. 15, 1983, Ser. No. 466,555

Claims priority, application Japan, Feb. 18, 1982, 57-25482

Int. Cl.³ C09J *5/04*

U.S. Cl. 156—314 8 Claims

1. A method for bonding polyester plastics to the same or different substrates which comprises undercoating the surface of the polyester plastics with a primer composition which contains an isocyanate compound having one or more 1,3,5-oxadiazine-2,4,6 -trione rings and, then, bonding the polyester plastics to the same or different substrates with use of an adhesive.

4,495,021

APPARATUS FOR PRODUCING FIBER REINFORCED PLASTIC SHEET STRUCTURES

William B. Goldsworthy, Ranchos Palos Verdes, Calif., assignor to Goldsworthy Engineering, Inc., Torrance, Calif.

Division of Ser. No. 290,358, Dec. 11, 1981, Pat. No. 4,420,359. This application Sep. 26, 1983, Ser. No. 535,909

Int. Cl.³ B65H *81/00*

U.S. Cl. 156—425 13 Claims

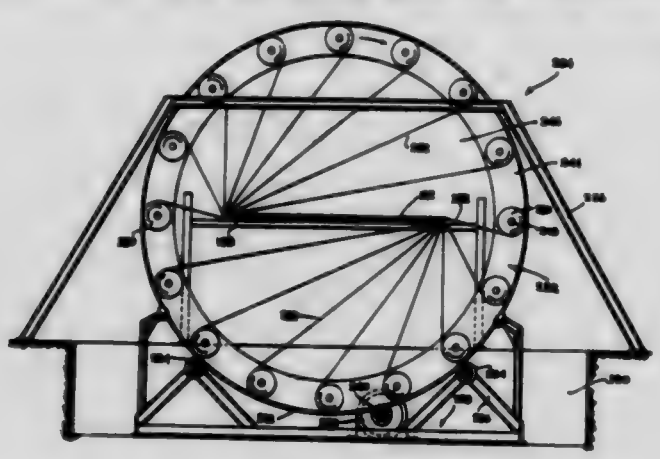
1. An apparatus for producing a reinforced plastic composite article on a continuous basis, comprising:

(a) means for continuously feeding through said apparatus a plurality of endwise abutted panels with each having a pair of spaced apart first edges and a pair of spaced apart second edges and relatively flat opposite surfaces;

(b) winding means for winding a plurality of first strands of fiber reinforcing material about said panels in a direction which is at an angle to the direction of movement of said panels and which strands are in closely spaced relationship to one another about and around said pair of spaced apart first edges and across said relatively flat opposite surfaces, and where portions of said first strands extend across and between flat surfaces of two endwise abutted panels; and

(c) means for applying a plurality of second strands of fiber reinforcing material to the first strands on said relatively

flat opposite surfaces of said panels and extending between the spaced apart second edges with a predetermined amount of tension on said strands and while said panels are continuously feeding through said apparatus, and where portions of said second strands extend across flat surfaces



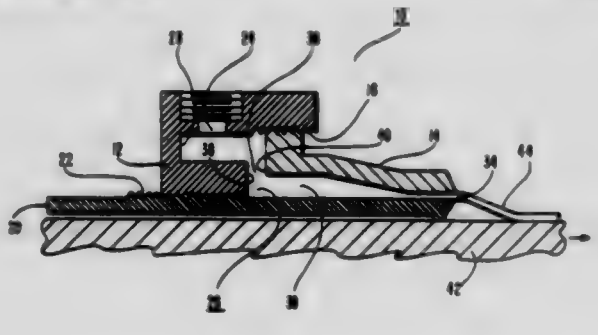
of two or more endwise abutted panels, said plurality of first strands and plurality of second strands having been impregnated with a curable binder which was cured and bonded to first and second strands and thereby bonding said first and second strands to one another to effect a woven strand sheet and to bond same to said panels.

4,495,022

EXTRUSION METHOD AND APPARATUS

Moutri Viriyayuthakorn, Hamilton Township, Mercer County, N.J., and Robert V. DeBoo, Atlanta, Ga., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Aug. 31, 1982, Ser. No. 413,301
Int. Cl.³ B29C *19/00*; H01B *7/02*; A21C *3/00*; A01J *21/00*
U.S. Cl. 156—500
24 Claims



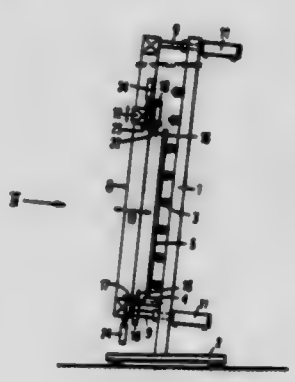
1. A diverter for uniformly distributing extrudate from an extruder so as to coat with extrudate an elongated member passing axially through the center of the diverter comprises a housing having a first cylindrical member with an extrudate entry port therein, a second cylindrical member coupled to the first member and an axial core member adjustably positioned within the first member and extending centrally through the first and second members, the members situated so as to form a circumferentially and axially extending cavity within the housing, said cavity having three communicating sections, a ring section which communicates with the extrudate entry port, a die section extending circumferentially and axially along the outer surface of the axial core member and terminating in an annular extrudate outlet orifice, and a contraction section intermediate and communicating with said ring and die sections, said contraction section being formed by a gap between essentially flat opposing internal faces of the first and second members said gap varying in size between the vicinity of the entry port and 180° therefrom by means of a bevel on at least one of said opposing faces, said bevel forming an angle of from ½° to 5° with respect to the opposing face.

4,495,023

APPARATUS FOR FITTING SPACER FRAMES

Peter Lisec, Bahnhofstrasse 34, Amstetten-Haunmening, Austria

Filed Nov. 30, 1982, Ser. No. 445,831
Claims priority, application Austria, Dec. 3, 1981, 5194/81; Apr. 5, 1982, 1355/82
Int. Cl.³ B32B *31/00*; B23P *19/00*
U.S. Cl. 156—562
14 Claims



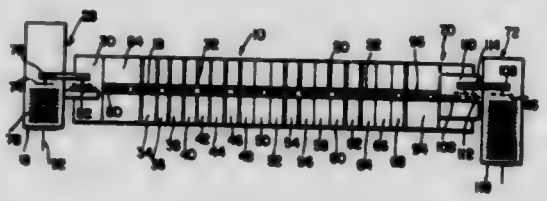
1. Apparatus for fitting spacer frames onto panes of glass with adhesive or sealant therebetween, in the course of manufacture of insulting glass panes, comprising a substantially upright support wall, conveyor means for conveying panes of glass into the apparatus, a frame-like mounting support disposed in front of the support-wall, means for moving the mounting support toward and away from the support wall, the mounting support having an upper horizontal limb which is displaceable upwardly and downwardly, a lower horizontal limb and a vertical limb disposed at an exit end of the apparatus, the frame-like mounting support having clamp means thereon, retractable pins (16) for contacting the spacer frames (19), said pins being disposed on said vertical limb (14, 14″) and on said horizontal limbs (12, 15) of the frame-like support (8) in the area between the support wall (1) and clamp means (17, 17′) also on said vertical and horizontal limbs, said clamp means (17, 17′) comprising clamp abutments (22,32) fixedly mounted on the limbs (12, 14, 14″, 15) of the frame-like mounting support (8) and clamp members (23,33) which are pivotable to a position over the clamp abutments (22, 32) and movable toward the latter into a position to hold a spacer frame (19) against said abutments.

4,495,024

METHOD FOR DEPOSITION OF FLUID AND GASEOUS MEDIA ON SUBSTRATES FOR THEIR TRANSPORT

Edward Bok, Burg. Amersfoordtlaan 82, 1171 DR Badhoevedorp, Netherlands

PCT No. PCT/NL82/00027, § 371 Date Apr. 25, 1983, § 102(e) Date Apr. 25, 1983, PCT Pub. No. WO83/00774, PCT Pub. Date Mar. 3, 1983
PCT Filed Aug. 25, 1982, Ser. No. 491,318
Int. Cl.³ B44C *1/22*; B08B *5/04*; C23C *13/08*; B05D *5/12*
U.S. Cl. 156—646
23 Claims



1. Method of transporting and processing substrates within a confined passageway comprising:

a. supplying a fluid medium through a supply channel intersecting the passageway, and

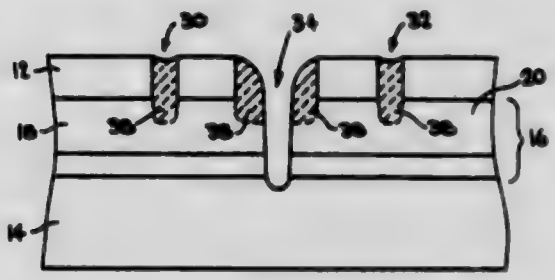
b. discharging said fluid medium through a discharge channel intersecting said passageway adjacent said supply channel, such that the moving fluid medium cushions, while transporting the substrate in said passageway.

4,495,025

PROCESS FOR FORMING GROOVES HAVING DIFFERENT DEPTHS USING A SINGLE MASKING STEP

Jacob D. Haskell, Palo Alto, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 6, 1984, Ser. No. 597,617
Int. Cl.³ H01L 21/306; B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—648 19 Claims



1. A process for forming grooves of different depths in a wafer of semiconductor material utilizing a single masking step, said process comprising the steps of:

depositing a first protective layer over the surface of a substrate of said semiconductor material;

depositing a masking layer of photoresist material over the surface of said first protective layer;

optically exposing said masking layer of photoresist material to define within said masking layer of photoresist material images for a first type groove and a second type groove, where said first type groove image is narrower in width than said second type groove image;

developing said masking layer of photoresist material to expose regions of said first protective layer where grooves of said first type and said second type are to be formed;

etching said exposed regions of said first protective layer to expose regions of said substrate where grooves of said first type and said second type are to be formed;

etching said exposed regions of said substrate to form grooves of said first type and said second type, such that said first type groove is narrower in width than said second type groove;

stripping said masking layer of photoresist material from said first protective layer;

depositing a second protective layer of a predetermined thickness over said first protective layer and over said first type groove and said second type groove such that said first type groove is substantially filled in and said second type groove is partially filled in;

anisotropically etching the second protective layer so as to remove said second protective layer from the bottom of said second type groove exposing a region of said substrate thereunder; and

etching said second type groove so as to penetrate to a desired depth the exposed region of said substrate thereunder.

4,495,026

METHOD FOR MANUFACTURING METALLIZED SEMICONDUCTOR COMPONENTS

Helmut Herberg, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 16, 1983, Ser. No. 523,574
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1982, 3232837
Int. Cl.³ C23F 1/02; B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—652 6 Claims

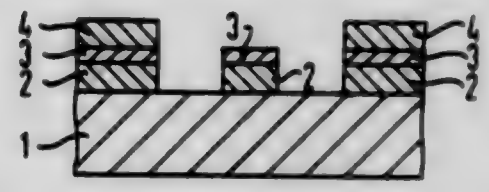
1. A method for the manufacture of a pressure-contacted thyristor wherein the emitter metal layer is thicker than the base metal layer, comprising the following steps in sequence:

(a) successively applying layers of aluminum, silver and aluminum on the thyristor substrate,

(b) applying a negative acting photoresist in selected areas of the emitter region to thereby form a predetermined conductivity pattern in said emitter region,

(c) applying a positive acting photoresist in selected areas of the base region to thereby form a predetermined conductivity pattern in said base region,

(d) etching away areas of the uppermost aluminum layer at locations of the substrate which are not covered by either type of photoresist utilizing a solvent which does not significantly attack said silver layer,



(e) etching away the intermediate silver layer which is not covered by either type of photoresist, utilizing a solvent which does not significantly attack said aluminum layers,

(f) removing the positive acting photoresist,

(g) etching away the lowermost aluminum layer at locations on said substrate which are not covered by negative photoresist deposits with a solvent which does not significantly attack silver or said substrate, and

(h) removing the remaining negative photoresist deposits.

4,495,027

METHOD OF MAKING AN ORIENTED MULTILAYER HEAT SEALABLE PACKAGING FILM

John R. Wagner, Jr., Rochester, and Carl C. Hein, Pittsford, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 355,427, Mar. 8, 1982, Pat. No. 4,447,494. This application Feb. 3, 1984, Ser. No. 576,972
Int. Cl.³ B29D 3/00
U.S. Cl. 156—244.11 4 Claims

1. The method for producing a heat sealable multiply film structure comprising:

coextruding a substrate layer comprising homopolymer polypropylene with a layer consisting essentially of a random copolymer of ethylene and propylene on at least one side of said polypropylene layer, said copolymer containing from about 0.5 to about 6% by weight of ethylene and about 94 to about 99.5% by weight of propylene;

biaxially orienting the coextrudate;

applying a primer coating to the surface of at least one random copolymer layer;

applying a heat sealable layer on said primer coating, said heat sealable layer comprising a vinylidene chloride copolymer containing at least 50% by weight of vinylidene chloride; and

aging the structure for a time and at a temperature sufficient to yield a heat seal strength between facing heat sealed layers greater than that obtained in the absence of said aging.

4,495,028

PROCESS CONTROL FOR FLASH CONCENTRATING SOLUTIONS CONTAINING POLYOLEFINS

Fred Rowe, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 278,129, Jun. 26, 1981, Pat. No. 4,375,524. This application Sep. 29, 1982, Ser. No. 427,247
Int. Cl.³ B01D 3/42; F17D 3/01
U.S. Cl. 159—47.1 5 Claims

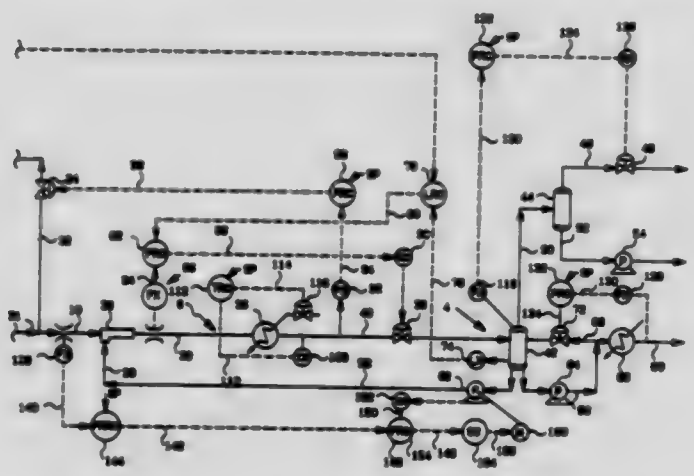
1. A method comprising:

(a) removing liquid from a first zone;

pumping a first portion of the liquid to a second zone;

(c) recycling a second portion of the liquid to the first zone;

(d) sensing a first liquid level in the first zone and establishing a first signal representative of said first liquid level;
(e) sensing a second liquid level in the second zone and establishing a second signal representative of said second liquid level;
(f) comparing the first signal to the second signal and establishing a third signal representative of a predetermined relation ship between the first signal and the second signal;



(g) manipulating, in response to the third signal, the rate at which the first portion of liquid is pumped to the second zone;
(h) sensing the pressure of the first portion of the liquid and establishing a fourth signal representative of the pressure; and
(i) manipulating, in response to the fourth signal, the rate at which liquid is recycled to the first zone.

4,495,029

PROCESS FOR THE PREPARATION OF COATED PAPER AND CARDBOARD AND COATING MATERIALS FOR THE PERFORMANCE OF THE PROCESS

Kurt W. Bergmann, Brüggen, and Popko J. Westerhuis, Hückelhoven-Baal, both of Fed. Rep. of Germany, assignors to Feldmühle Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 131,860, Mar. 19, 1980, abandoned.
This application Aug. 19, 1982, Ser. No. 409,361
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1979, 2911679
Int. Cl.[3] D21F *11/00*
U.S. Cl. 162—135 15 Claims

1. A process for preparing a coating paper substrate consisting essentially of preparing a raw paper substrate having a pH of less than about 6.5, applying a coating thereto composed of an aqueous dispersion of a plastic and inorganic pigments, the coating having a pH of more than about 6.5 wherein the particles of the plastic in the dispersion have a non-cation-active charge and wherein the coating also contains a material which does not affect the preparation or storage stability of the coating, but which in the pH-range below about 6.5 becomes highly cation-active resulting in solidification of the coating at the time of contact of the coating with the paper surface to minimize penetration of the coating into the paper, and then drying the thus applied coating.

4,495,030

FILTER PAPER

Robert D. Giglia, Rye, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 15, 1983, Ser. No. 561,752
Int. Cl.[3] A62B *23/00, 23/04;* B01D *39/14, 39/16, 39/20*
U.S. Cl. 162—145 8 Claims

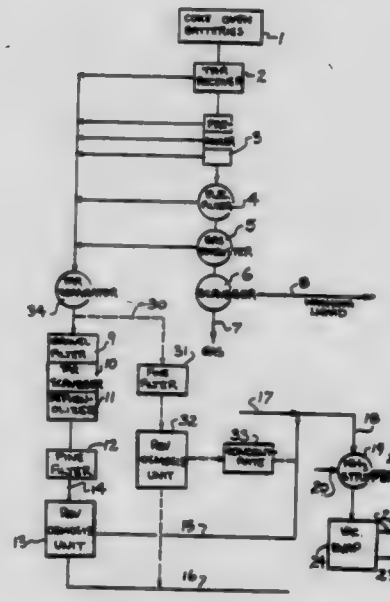
1. A high efficiency, toxic vapor absorptive, non-woven filter material comprising a wet-laid sheet containing fibrillated binder fiber, active carbon and submicron size glass fiber.

4,495,031

TREATMENT OF GAS CONDENSATES

Dieter Breidenbach, Waltrop; Wilhelm Mosebach, Kamen-Methler, and Winfried Dellmann, Kamen, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Filed May 13, 1983, Ser. No. 494,348
Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219701
Int. Cl.[3] C10B *57/00;* C02F *1/44*
U.S. Cl. 201—28 15 Claims



1. Method of treating a gas condensate recovered as waste water from the carbonization process or other themal process of upgrading coal for removing substantially the ammonium salt content therefrom prior to recycling the water to such process substantially to provide such process as a waste water-free process, which comprises
subjecting the gas condensate to reverse osmosis treatment to convert the gas condensate to a permeate of correspondingly reduced salt content and constituting a reusable source of water for such process, and a concentrate of correspondingly increased salt content,
recovering and recycling the permeate as a reusable source of water to such process, and
subjecting the concentrate to lye treatment and to ammonia stripping treatment to form a lye treated salt containing stripped concentrate.

4,495,032

SPLIT HUB WHEEL APPARATUS

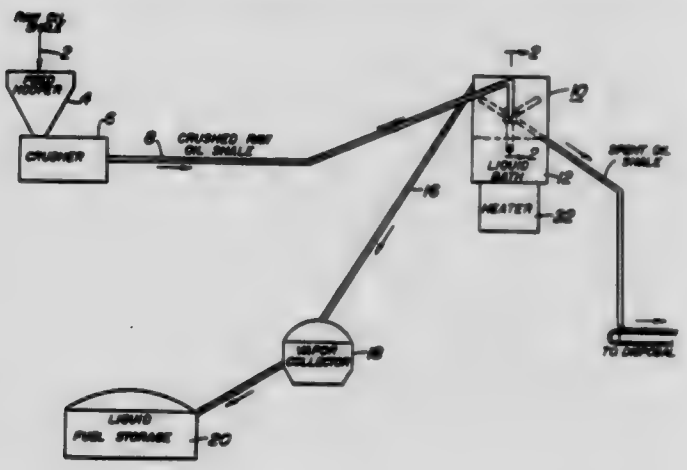
Carl G. Everman, P.O. Box 204, Grayson, Ky. 41143

Division of Ser. No. 255,126, Apr. 17, 1981, Pat. No. 4,410,416.
This application Oct. 17, 1983, Ser. No. 542,834
Int. Cl.[3] C10B *1/00, 47/00*
U.S. Cl. 202—105 5 Claims

1. An apparatus for the sequential loading and unloading of material in an air tight environment which comprises:
(a) a housing;
(b) a stationary hollow cylindrical axle having a top and bottom opening, said axle positioned within said housing;
(c) an inlet conduit disposed at an acute angle with respect to that portion of a vertical plane passing through said housing and above said axle, and said conduit having its outer open end communicating with the environment external to said housing and its inner open end communicating with said bottom opening in said axle;
(d) an outlet conduit disposed at an obtuse angle with respect to that portion of said vertical plane passing through said housing and above said axle, and said conduit having its outer open end communicating with the environment external to said housing and its inner open end communicating with said top opening in said axle;

(e) a rotatable cylindrical hollow shaft snugly fit around said axle, said shaft comprising three hollow, perforated spokes set approximately equidistant apart from each other and extending radially outward from said shaft, said spokes being closed at their outer ends and open at their inner ends contacting said shaft;

(f) a liquid bath maintained within said housing such that all three of said spokes are capable of contacting said liquid bath during one complete rotation of said shaft; and



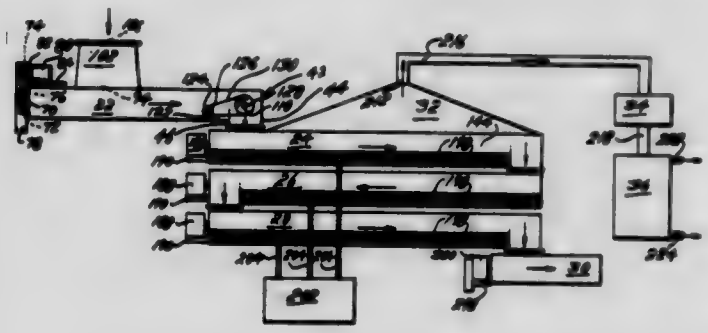
(g) a means to rotate said shaft around said axle to allow for the successive alignment of said open ends of said spokes and said openings in said axle such that said material is sequentially loaded into one of said spokes at a time, dipped into said liquid bath while contained in said spoke and unloaded from said spoke while said housing is maintained at air tight conditions.

4,495,033

CONTINUOUS STILL

Robert G. Rathbun, 401 E. Toppenish Ave., and Albert J. Thalheimer, Rte. 3 Box 3718, both of Toppenish, Wash. 98948

Filed Jul. 20, 1981, Ser. No. 285,354
Int. Cl.³ B01D *3/04*
U.S. Cl. 202—118 9 Claims



5. A continuous still for processing a plant comprising fiber and organic material to separate said organic material, said continuous still comprising:

a. a feed unit having a first inlet opening and a first outlet opening;

b. said feed unit comprising first screw and a second screw;

c. said first screw and said second screw overlap;

d. said feed unit being enclosed between said first inlet opening and said first outlet opening;

e. said plant being introduced into said feed unit through said first inlet opening;

f. said first screw and said second screw each having at least a large first pitch and a small second pitch for said pitch to contact said first pitch and then said second pitch to form a plug in said feed unit to prevent vapors of said organic material escaping through said first inlet opening;

g. a cooking unit having a second inlet opening and a second outlet opening;

h. said first outlet opening, operatively, connecting with said second inlet opening;

i. a collector means operatively connecting with said cooking unit to collect vapors of said organic material;

j. said cooking unit comprising a third screw to agitate said plant to assist in separating said vapors of organic material from said fiber;

k. a discharge unit having a third inlet opening and a third outlet opening;

l. said second outlet opening operatively connecting with said third inlet opening;

m. said discharge unit being enclosed between said third inlet opening and said third outlet opening;

n. said discharge unit comprising a fourth screw and a fifth screw;

o. said fiber being introduced from said cooking unit into said discharge unit through said third inlet opening;

p. said fourth screw and said fifth screw overlap and each having a large first pitch and a large second pitch for said fiber to contact said first pitch and then said second pitch to form a plug in said discharge unit to prevent said vapors of organic material escaping through said third outlet opening;

q. said fiber leaving said discharge unit through said third outlet opening; and,

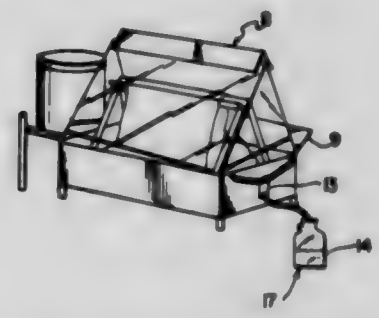
r. a means to introduce steam into said cooking unit to form said vapors of organic material from said organic material.

4,495,034

WASTE EFFLUENT TREATMENT AND SOLVENT RECOVERY SYSTEM

Frank Lucas, Rte. 2, Box 297, Centreville, Md. 21617

Continuation of Ser. No. 156,582, Jun. 5, 1980, abandoned, which is a continuation-in-part of Ser. No. 951,877, Oct. 16, 1978, abandoned. This application Apr. 29, 1982, Ser. No. 373,154
Int. Cl.³ C02F *1/14*; B01D *3/02*
U.S. Cl. 202—181 2 Claims



1. A chemical waste effluent treatment and solvent and solids recovery system for inorganic and organic solutions comprising:

a support;

a primary reservoir on said support receiving solution to be treated;

a solar distilling unit adjacent said support including:

a secondary reservoir;

a frame extending above said secondary reservoir and being adjustable in height,

a trough on an uppermost portion of said adjustable frame,

absorbent means draped over said trough and both sides of said frame and extending downwardly into said reservoir, said absorbent means being aligned parallel to the rays of sun,

means connecting said primary reservoir to said trough for gravity fluid flow from said primary reservoir to said trough,

automatic leveling means attached to said frame and operatively associated with said connecting means for maintaining a desired level of solution in said secondary reservoir by continuously regulating flow through said connecting

means from said primary reservoir to said trough whereby overflow from said trough flows down said absorbent means to said secondary reservoir,

a dome comprising glass panel covering and enclosing on both opposite sides of said secondary reservoir, said frame, said trough, and said absorbent means, said panels being aligned with said frame and serving as a condensing surface for solvent evaporated from said absorbent means, said dome having a peak,

collecting troughs at a lowermost portion of said panels for receiving and collecting condensed solvent,

at least one auxilliary mirror located adjacent outside said dome reflecting additional sunlight thereinto, and

a bonnet shading said peak of said dome and the uppermost portions on both sides thereof, the ratio of height of the frame carrying the absorbent means to the height of the interior of said dome being adjustable to enable selective collection of more volatile solvents;

chemical trap means for additional treatment of said distilled water;

transfer means for transferring said distilled solvent from said collecting troughs to said chemical trap means; and

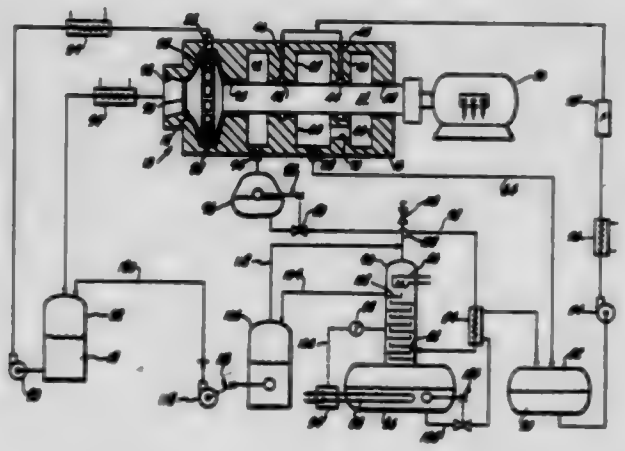
product collection means connected to said chemical trap means for collecting the additionally treated distilled solvent.

4,495,035

FLUID HANDLING METHOD WITH IMPROVED PURIFICATION

Judson S. Swearingen, 24703 Pacific Coast Hwy., Malibu, Calif. 90265

Filed Mar. 6, 1981, Ser. No. 241,120
Int. Cl.³ B01D *3/34*; C10M *11/00*; F01M *11/03*
U.S. Cl. 203—23 15 Claims



1. In a process for effecting a pressure change in a working fluid by passing the working fluid through a rotor and wherein a shaft extends longitudinally from and rotates with said rotor within a surrounding housing means which defines a contact zone between the rotor and a first seal means generally surrounding the shaft in axially spaced relation to the rotor to receive a lubricant fluid and a contact fluid, said lubricant fluid having a minimum boiling point and an additive fluid mixed therewith is injected into the first seal means adjacent the shaft at a pressure sufficient to cause the lubricant fluid to flow axially toward the rotor, the steps comprising:

collecting from said contact zone a composite liquid comprising said contact fluid, said additive fluid and said lubricant fluid; and

separating said contact fluid from said composite liquid in the presence of said additive fluid having a boiling point greater than the maximum boiling point of said contact fluid, but less than the minimum boiling point of said lubricant fluid.

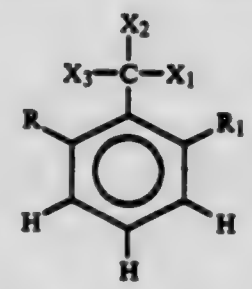
4,495,036

ELECTROCHEMICAL CHLORINATION PROCESS

Ying-Hung So, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

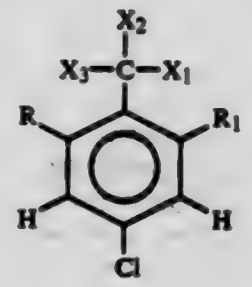
Filed Jul. 11, 1983, Ser. No. 512,263
Int. Cl.³ C25C *1/00*
U.S. Cl. 204—59 R 20 Claims

1. A process comprising electrolytically chlorinating an alkyl aromatic compound of Formula I:



I

wherein R is H or alkyl; R_1 is H, a weak electron-donating moiety or an electron-withdrawing moiety; and X_1, X_2 and X_3 are independently H, halo, alkyl, or haloalkyl; in an electrolytic solution comprising a primary cyano alkane solvent and dry HCl or an electrolytic salt, which is a chloride salt of an alkali metal or an alkaline earth metal, by passing from an anode, which has a surface which is substantially free of cyclodextrin or derivatives thereof, to a cathode an electric current under reaction conditions such that there is formed a compound of formula II:



II

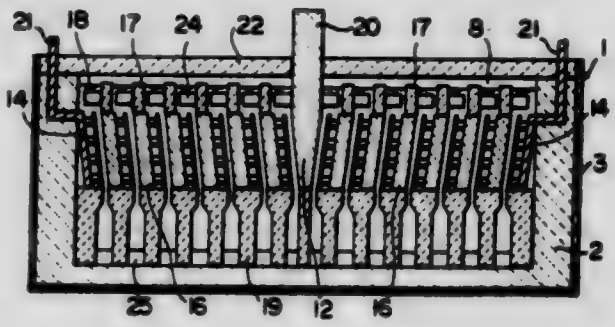
wherein R, R_1, X_1, X_2 and X_3 are as defined for formula I, with the proviso that the ratio of compound II formed to the corresponding ortho-chloro isomer formed is at least about 1.7.

4,495,037

METHOD FOR ELECTROLYTICALLY OBTAINING MAGNESIUM METAL

Hiroshi Ishizuka, 19-2, Ebara 6-chome, Shinagawa-ku, Tokyo, Japan

Filed Oct. 25, 1983, Ser. No. 545,255
Claims priority, application Japan, Nov. 19, 1982, 57-204229
Int. Cl.³ C25C *3/04*
U.S. Cl. 204—70 1 Claim



1. In a method of electrolytically obtaining magnesium metal from an electrolytic bath which comprises $MgCl_2$, comprising: preparing and holding a fused bath in an arrangement which comprises two separate spaces, depositing magnesium metal cathodically and chlorine gas anodically in the first space,

transferring magnesium metal carried by the bath to the second space through a channel means arranged between the spaces, and allowing magnesium metal, for recovery, to collect to a major part at the surface of bath in the second space, the improvement in which said electrolytic bath consists of $MgCl_2$ and NaCl, as well as at least one compound selected from KCl and LiCl but without $CaCl_2$, so composed as to exhibit an electrical conductivity of $2.4\Omega^{-1}cm^{-1}$ and a density greater by 0.02 to 0.10 g/cm^3 than magnesium at circumstantial temperatures employed, so the magnesium metal in transfer may be held for the substantial part under the surface until the metal enters the second space and ascend to the surface in time in said space.

4,495,038

METHOD OF AND APPARATUS FOR ELECTROEROSIVELY WIRE-CUTTING A CONDUCTIVE WORKPIECE

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Aug. 10, 1982, Ser. No. 406,891
Claims priority, application Japan, Aug. 12, 1981, 56-127087
Int. Cl.³ C25F *3/14*; B23K *9/16*
U.S. Cl. 204—129.2 18 Claims



1. A method of electroerosively wire-cutting a conductive workpiece, compriaing the steps of:

(a) axially advancing a continuous electrode wire stretched under tension across wire-supply and wire-takeup sides to cause it to continuously travel through the workpiece between a pair of wire-guide members at a predetermined rate of travel;

(b) passing an electroerosion machiming current between the traveling electrode wire and the workpiece across a machining gap flushed with a machining fluid;

(c) advancing the traveling axis of said electrode wire relative to said workpiece along a prescribed cutting path having at least one corner to advance electroerosion machining of said workpiece along said cutting path; and

(d) temporarily increasing the rate of axial advance of said electrode wire immediately upon its change of course at said corner along said path.

4,495,039

METHOD FOR ACTIVATING A PYROCARBON ELECTRODE TIP

Osvaldo Cerise, Doneo; Pietro Arra, and Franco Vallana, both of Turin, all of Italy, assignors to Soria Biomedica S.p.A., Saluggia, Italy

Filed Aug. 6, 1982, Ser. No. 405,784
Claims priority, application Italy, Aug. 7, 1981, 68103 A/81
Int. Cl.³ C25B *11/12*
U.S. Cl. 204—130 4 Claims

1. Method for activating a pyrocarbon tip for an electrode for a cardiac stimulator, consisting of subjecting the tip to an anodic electrolytic treatment in an electrolyte composed of a mixture of 50 parts by weight of concentrated sulphuric acid (98% by weight) and 50 parts by weight of concentrated nitric acid (65% by weight), said electrolytic treatment being carried



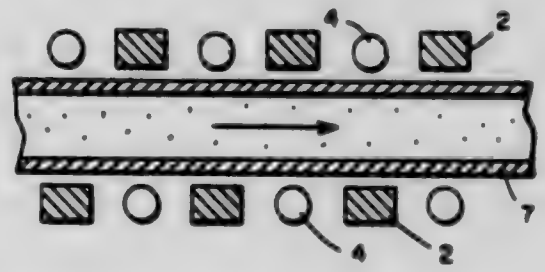
out with a voltage greater than 1 V and a current density greater than 3 mA/mm^2.

4,495,040

PHOTOMAGNETIC CATALYSIS PROCESS

C. Richard Panico, Medford, Mass., assignor to Xenon Corporation, Wilmington, Mass.

Continuation-in-part of Ser. No. 491,016, May 3, 1983, and a continuation-in-part of Ser. No. 401,318, Jul. 23, 1982, Pat. No. 4,443,533. This application May 12, 1983, Ser. No. 493,779
Int. Cl.³ B01J *19/12, 19/24*
U.S. Cl. 204—155 30 Claims



1. The method of catalyzing a chemical reaction in a substance of a type in which a chemical reaction can be catalyzed by the combined effects of a magnetic field and electromagnetic radiation, said method comprising the step of applying to said substance electromagnetic radiation and a pulsed magnetic field of sufficient (and greater than ambient) strength to catalyze said chemical reaction, said magnetic field being generated by means other than a discharge through a straight or flat serpentine flash lamp, and said magnetic field being other than that of said electromagnetic radiation.

4,495,041

PHOTOCHEMICAL PROCESS USING SHAPE-SELECTIVE PHOTOASSISTED HETEROGENOUS CATALYST COMPOSITIONS

Theodore P. Goldstein, Yardley, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 15, 1982, Ser. No. 368,550
Int. Cl.³ B01J *19/12*
U.S. Cl. 204—158 R 22 Claims

1. A method of catalyzing highly specific photochemical reactions in a reaction system by incorporating a photoassisting species within a zeolite catalyst to form a catalyst composition, which method comprises:

exposing the catalyst composition to radiant energy selected from the group consisting of ultraviolet radiation and visible light while simultaneously contacting the catalyst

composition with one or more reactants, and removing the resulting products from the reaction system.

4,495,042

PHOTO-CURABLE EPOXY RESIN COMPOSITION

Shuzi Hayase, Kawasaki; Yasunobu Onishi, and Shuichi Suzuki, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 5, 1983, Ser. No. 482,305
Claims priority, application Japan, Apr. 7, 1982, 57-56644
Int. Cl.³ C08J *3/28*; C08L *63/00*
U.S. Cl. 204—159.14 7 Claims

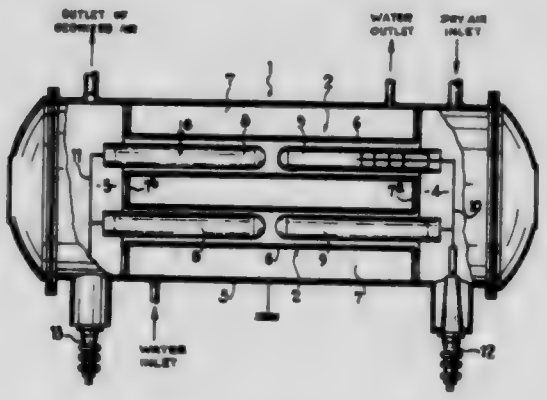
1. A photo-curable epoxy resin composition, comprising:
an epoxy resin;
a combination of an organic aluminum compound selected from the group consisting of an alkoxy aluminum compound, an aryloxy aluminum compound, an acyloxy aluminum compound, and an aluminum chelate compound, wherein said organic aluminum compound is present in an amount of from about 0.001 to 10% by weight based on the epoxy resin; and
a silicon compound comprising an o-nitrobenzyloxy group as a catalyst, wherein said silicon compound is present in an amount of from about 0.1 to 20% by weight based upon the epoxy resin.

4,495,043

PROCESS FOR SUPPLYING ELECTRIC POWER TO AN OZONIZER

Maurice Marets, Sevran, France, assignor to Trailigaz, Compagnie Generale de L'Ozone, Garges les Gonesse, France

Filed Mar. 4, 1981, Ser. No. 240,351
Claims priority, application France, Mar. 6, 1980, 80 05012; Jan. 7, 1981, 81 00130
Int. Cl.³ C01B *13/10*
U.S. Cl. 204—176 12 Claims



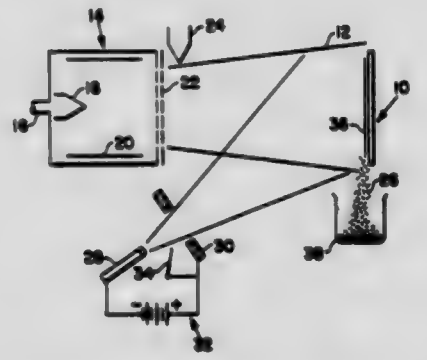
1. In a method for supplying electric power to an ozone producing element comprising at least two conductive electrodes disposed in facing relation to each other and between which electrodes a gas to be ozonized flows, comprising the step of applying to said electrodes sequential bursts of electrical energy with a voltage whose amplitude value is capable of producing electronic discharges between electrodes with each burst comprising a wave train of alternating voltage, the bursts being separated from each other in time by time periods during which the volume of gas treated by a first burst will be at least partly evacuated from the space between the electrodes prior to the application of the second burst, and the step of providing to said electrodes an electrical condition during said time periods between bursts to cause gas ions resulting from the said first burst to remain between said electrodes.

4,495,044

DIAMONDLIKE FLAKES

Bruce A. Banks, Olmsted Township, Cuyahoga County, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 495,381, May 17, 1983, Pat. No. 4,437,962. This application Mar. 19, 1984, Ser. No. 591,089
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 C 19 Claims



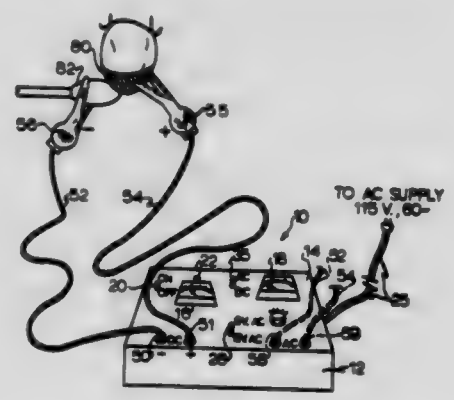
1. A method of making diamondlike carbon flakes comprising the steps of
depositing carbon on a surface
creating diamond bonds in said carbon by subjecting said carbon on said surface to a beam of ions, and
removing diamondlike carbon flakes from said surfaces.

4,495,045

ELECTROLYTIC DENTAL ETCHING APPARATUS

Thomas R. Jackson, 146 Renfro St., Mt. Airy, N.C. 27030

Filed Mar. 13, 1984, Ser. No. 589,155
Int. Cl.³ C25D *17/12*
U.S. Cl. 204—224 R 1 Claim



1. A chairside apparatus for etching and thereafter removing any oxide coating from an electrically conductive surface of an installed dental device in a patient preparatory to bonding a covering material to the surface so etched, comprising:
(a) AC-energized power supply means providing:
(i) a source of DC voltage within the range of 6–12 volts;
(ii) a source of AC voltage within the range of 6–12 volts;
(b) a pair of leads;
(c) means enabling one end of said pair of leads to be selectively connected to either said DC or AC source to provide the corresponding selected said voltage at the opposite terminal ends thereof;
(d) a disposable fibrous swab mouunted on the terminal end of the first of said leads and being sufficiently small in size to enable the said etching and oxide coating removal to be accomplished chairside with said device installed;
(e) a dilute acid stored in said swab; and
(f) means for detachably connecting the terminal end of the second of said leads to a selected location on said electrically-conductive surface such that said etching may be

accomplished by intermittently touching said swab to said surface when said leads are connected to said DC source and removal of said coating can be accomplished by intermittently touching said swab to said surface when said leads are connected to said AC source.

4,495,046

ELECTRODE CONTAINING THALLIUM (III) OXIDE

Jay A. Switzer, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 496,284, May 19, 1983,. This application Aug. 18, 1983, Ser. No. 524,394

Int. Cl.[3] C25F *1/00*; C25B *11/00*

U.S. Cl. 204—242 67 Claims

1. An electrode useful in an electrolytic cell comprising the compound thallium (III) oxide, said electrode capable of generating a current of at least 10 milliamperes when immersed in a 4.0 molar aqueous solution of sodium chloride and electrically connected to a platinum counter electrode.

4,495,047

ELECTROLYTIC REDUCTION CELLS

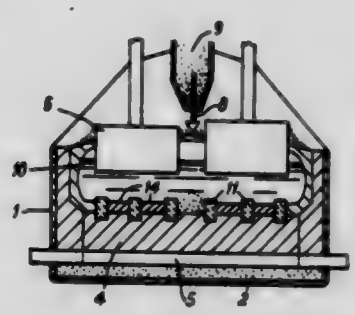
Adam J. Gesing, and Ernest W. Dewing, both of Kingston, Canada, assignors to Alcan International Limited, Montreal, Canada

Filed Jun. 23, 1982, Ser. No. 391,405

Claims priority, application United Kingdom, Jun. 25, 1981, 8119588

Int. Cl.[3] C25C *3/08, 7/02*; C25B *11/12*

U.S. Cl. 204—245 8 Claims



1. An electrolytic cell for the production of metals by electrolysis of a molten electrolyte which is less dense than the product metal, said cell including a cathodic carbon floor having steel collector bars embedded therein, and barrier members arranged to extend upwardly from the cell floor to a height approximating to the normal maximum operating level of product metal in the cell, said barrier members being electrically nonconductive at least in a direction perpendicular to their length and having at least a surface layer of material resistant to product metal, said barrier members being arranged transversely to the flow of horizontal currents in the product metal on the cathodic cell floor,

wherein a plurality of said barrier members, spaced apart, are arranged substantially parallel with the longitudinal axis of the cell.

4,495,048

APPARATUS FOR ELECTROLYSIS OF SALINE WATER

Katsuyuki Murakami, Maebashi; Kaoru Hirakata, Yoshiokamura; Shinichi Shimoda, Fujimimura, and Reiichi Itai, Maebashi, all of Japan, assignors to The Japan Carlit Co., Ltd., Tokyo, Japan

Filed May 18, 1982, Ser. No. 379,472

Claims priority, application Japan, May 22, 1981, 56-77470

Int. Cl.[3] C25B *1/14, 1/26*

U.S. Cl. 204—267 6 Claims

1. A filter-press type electrolytic cell, wherein sodium hypochlorite is produced by diaphragmless electrolysis of saline water, comprising:

first and second end plates vertically disposed in spaced parallel relationship;

a plurality of planar electrodes successively separated from each other and from the end plates;

planar insulating members vertically disposed in parallel relationship to each other and interposed between said planar electrodes and between said planar electrodes and said end plates to successively separate said planar electrodes from each other and to separate said planar electrodes from said end plates, thereby forming a plurality of electrolytic copartments between successive electrodes;

said first end plate having a hole in the lower part thereof on a side for receiving an electrolyte inlet pipe, and plurality of holes located peripherally along the marginal edges for receiving bolts therethrough;

one of said insulating members being adjacent said first end plate, said one of said insulating members being a first insulating pipe plate having a hole in the lower part on one side thereof for receiving said electrolyte inlet pipe, said electrolyte inlet pipe passing through said first end plate and disposed substantially perpendicularly to said first insulating pipe plate;

one of said planar electrodes being adjacent said first insulating pipe plate, said one of said planar electrodes being a terminal anode having a hole in a lower part on a side for receiving electrolyte from the electrolyte inlet pipe, said terminal anode having a protruding upper edge serving as



an electrical connection terminal, said terminal anode consisting essentially of a substrate of titanium or an alloy thereof and a coating applied on the surface of the terminal anode coming in contact with the electrolyte, said coating comprising a ternary mixture of platinum-palladium oxide-ruthenium dioxide having a composition ranging from 3 to 42% by weight of platinum, from 3 to 4% by weight of palladium oxide and from 42 to 94% by weight of ruthenium dioxide, and titanium dioxide in a ratio ranging from 20 to 40% by weight based on the weight of said ternary mixture;

the second end plate having a pair of holes, one of said holes being in an upper part of one side of said second end plate and the other of said holes being in a lower part of the same side of said second end plate, each of said pair of holes receiving an electrolyte outlet pipe, said second end plate also having a plurality of holes peripherally along the marginal edges for receiving bolts therethrough;

another of said insulating members being adjacent said second end plate, said another of said insulating members being a second insulating pipe plate having a pair of holes for receiving said electrolyte outlet pipes, one of said pair of holes being in an upper part of one side of said another of said insulating members and the other of said pair of holes being in a lower part on the same side of said another insulating member, said electrolyte outlet pipes passing through said pair of holes in said second end plate and

being disposed substantially perpendicularly to said second insulating pipe plate;

another of said planar electrodes being adjacent said second insulating pipe plate, said another of said planar electrodes being a terminal cathode having a pair of holes for passing electrolyte to the electrolyte outlet pipes, one of said pair of holes being in an upper part of one side of said terminal cathode and another of said pair of holes being in a lower part on the same side of said terminal cathode, said terminal cathode having a protruding upper edge serving as an electrical connection terminal, said terminal cathode consisting essentially of titanium or an alloy of titanium;

said planar insulating members including at least one intermediate insulating member comprising an insulating frame gasket cut out at a central portion to form at least one hollow electrolytic compartment between successive electrodes;

said plurality of planar electrodes including at least one intermediate electrode comprising a bipolar electrode having a pair of holes for passing electrolyte therethrough, one of said pair of holes being in an upper part of one side of said intermediate electrode and the other of said pair of holes being in a lower part on the same side of said intermediate electrode; said intermediate electrode having the same coating on its anode surface as that of the terminal anode;

the holes for passing electrolyte in said planar electrodes being disposed on opposite sides of successive electrodes to provide a sinuous flow path for the electrolyte through said at least one electrolytic compartment;

the ratio of the length to the width of the outer dimension of said planar electrodes and said planar insulating members being within the range of from 1:1.1 to 1:10;

said insulating members and electrodes defining at least three hollow electrolytic compartments;

a planar degassing block inserted after every group of 3 to 7 of said electrolytic compartments, said degassing block comprising a pair of holes, one of said pair of holes being in an upper part of a side of said planar degassing block for passing gas and another of said pair of holes being in a lower part of the same side of said degassing block for passing electrolyte;

a degassing pipe communicating with said gas passing hole for passing gas; and

an intermediate terminal anode and an intermediate terminal cathode being on opposed faces of said planar degassing block, each of said intermediate terminal anode and said terminal cathode having a pair of holes for passing electrolyte, one of said pair of holes being in an upper part of said intermediate terminal anode and said intermediate terminal cathode on the same side and another of said holes being in the lower part on the same side thereof; and a protruding upper edge serving as an electrical connection terminal on the other side of said intermediate terminal anode and said intermediate terminal cathode;

and wherein the ratio of the length to the width of the outer dimension of said planar degassing block, said intermediate terminal anode and said intermediate terminal cathode is within the range of from 1:1.1 to 1:10.

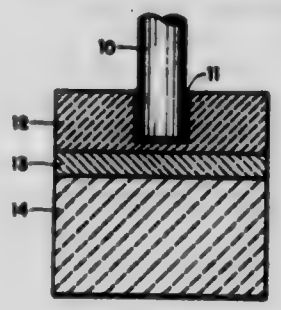
4,495,049

ANODE FOR MOLTEN SALT ELECTROLYSIS

Dunne R. Secrist, Elizabethton, and James M. Clark, Johnson City, both of Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 491,089, May 3, 1983,. This application Nov. 21, 1983, Ser. No. 554,068
Int. Cl.³ C25B *11/04*
U.S. Cl. 204—292 7 Claims

1. A permanent cermet anode for electrowinning of aluminum and other metals by molten salt electrolysis having one end attached to a current source and the other end in contact with the molten electrolyte, said ends having different compositions, the end attached to the current source having from 30% to 80% by volume of a metal selected from the group consisting of Cu, Ni, Fe, Cr and alloys thereof and from 20% to 70% by volume of a ceramic component, the end in contact with the electrolyte having from 75% to 90% by volume of a ceramic component and from 10% to 25% by volume metal selected from said group of metals, wherein the anode is formed by sintering a mixture of metal and ceramic powders to form a hard dense body substantially resistant to attack by the



molten salt environment, wherein the metal content of said anode increases progressively from one end of the anode to the other, the end attached to the current source containing sufficient metal to render the cermet brazable to a lead-in current conductor and having a resistivity less than 1×10^{-3} ohm-cm at 950° C., the end in contact with the electrolyte having a resistivity less than 1×10^{-1} ohm-cm at 950° C. with a negative temperature coefficient of resistivity.

4,495,050

TEMPERATURE INSENSITIVE POTENTIOMETRIC ELECTRODE SYSTEM

James W. Ross, Jr., 39 Hurlburt St., Cambridge, Mass. 02138

Continuation-in-part of Ser. No. 211,351, Nov. 28, 1980, abandoned. This application Feb. 16, 1983, Ser. No. 466,856
Int. Cl.³ G01N *27/30*
U.S. Cl. 204—408 7 Claims

1. A potentiometric electrode measuring system characterized by rapid response and relative insensitivity to temperature changes and having measuring and reference electrodes, each having: an inert electrode lead, and a filling solution including at least a redox couple having

(i) an exchange current of the order of 10^{-6} amperes/cm^2 or greater, and

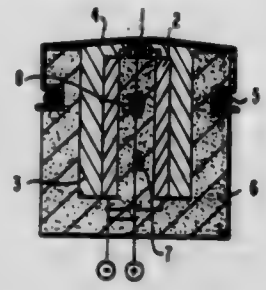
(ii) a ratio of reduced to oxidized forms of such magnitude as to provide an electrode potential that is invariant with temperature.

4,495,051

GALVANIC CELL TYPE OXYGEN SENSOR

Yuko Fujita; Hiroshi Kudo, and Ikuo Tanigawa, all of Kyoto, Japan, assignors to Japan Storage Battery Company Limited, Kyoto, Japan

Filed Sep. 30, 1983, Ser. No. 538,013
Int. Cl.³ G01N *27/30, 27/54*
U.S. Cl. 204—408 4 Claims



1. A galvanic cell type oxygen sensor comprising

(A) a galvanic cell comprising (i) a cathode made up of metal effective for the electrolytic reduction of oxygen, (ii) an

anode made up of lead and (iii) an electrolyte comprising an aqueous mixed solution of an organic acid salt and a lead compound, wherein the pH value of said electrolyte is from 4 to 7, and wherein said galvanic cell is so constructed that oxygen diffusion to said cathode is controlled by a polymer film; pg,23

(B) a resistor; and

(C) a thermistor

wherein said resistor (B) and thermistor (C) are connected between said cathode and anode.

4,495,052

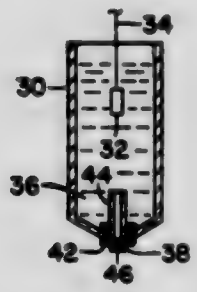
REPLACEABLE JUNCTIONS FOR REFERENCE ELECTRODES

Donald P. Breziński, Millis, Mass., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 419,001, Sep. 9, 1982, abandoned, which is a continuation-in-part of Ser. No. 218,788, Dec. 22, 1980, abandoned. This application May 14, 1984, Ser. No. 609,597

Int. Cl.³ G01N *27/30*

U.S. Cl. 204—435 18 Claims



1. In a reference electrode comprising an enclosure containing a half-cell electrode, a half-cell electrolyte, and a reference junction positioned in an outlet for the electrolyte, the half-cell electrode bing connectable to an external measuring means, the improvement which comprises a removable and replaceable reference junction comprising a removable glass encasing body encasing a porous member which is a porous ceramic, said porous member being in length only up to about one half the length of the glass encasing body, fixedly inserted through said outlet which comprises a compressible grommet, in which said glass encasing body is glass capillary tubing bonded to said porous member, said reference junction being removable and replaceable by the laboratory practitioner with simple laboratory tools.

11. A reference junction for a reference electrode, said reference junction comprising a glass encasing body encasing a porous member which is a porous ceramic having a length up to one half the length of the glass encasing body, in which said glass encasing body is glass capillary tubing which is bonded to said porous member.

4,495,053

REPLACEABLE JUNCTIONS FOR REFERENCE ELECTRODES

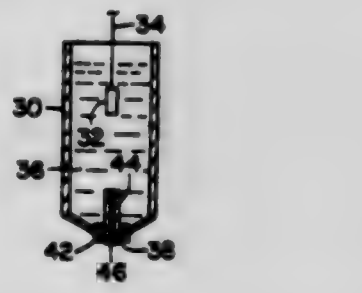
Raymond L. Souza, Woburn, Mass., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 424,847, Sep. 17, 1984, abandoned, which is a continuation-in-part of Ser. No. 218,789, Dec. 22, 1980, abandoned. This application May 14, 1984, Ser. No. 609,972

Int. Cl.³ G01N *27/30*

U.S. Cl. 204—435 10 Claims

1. A reference electrode comprising an enclosure containing a half-cell electrode, a half-cell electrolyte, and a reference junction positioned in an outlet for the electrolyte, the half-cell electrode being connectable to an external measuring means, in which said reference junction comprises a removable and replaceable reference junction fixedly inserted through said outlet, wherein said reference junction comprises a removable glass encasing body encasing a porous member which is a porous ceramic and said outlet comprises a compressible grommet, in which said glass encasing body is glass capillary tubing bonded to said porous member, said reference junction being removable and replaceable by the laboratory practitioner with simple laboratory tools.



7. A reference junction for a reference electrode, said reference junction comprising a glass encasing body encasing a porous member which is a porous ceramic, in which said glass encasing body is glass capillary tubing which is bonded to said porous member.

4,495,054

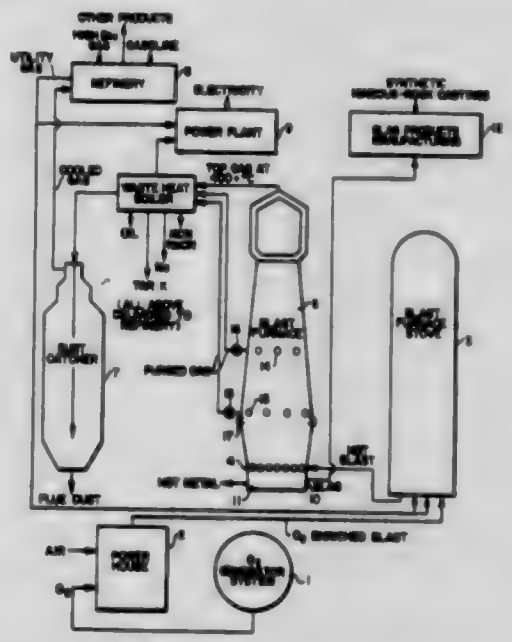
METHOD OF OPERATING A BLAST FURNACE TO EXTRACT CARBONACEOUS OIL AND GAS FROM BITUMINOUS MATERIALS

H. Bruce Claflin, 2436 Park Blvd., Upland, Calif. 91786

Filed Aug. 11, 1980, Ser. No. 176,910

Int. Cl.³ C10G *1/02;* C10B *53/06, 47/04*

U.S. Cl. 208—8 R 21 Claims



1. A method of operating a blast furnace to process a natural material selected from the group consisting of oil shale, oil sandstone, asphalt rock or mixtures thereof comprising:

charging a first carbonaceous material selected from the group consisting of oil shale, oil sandstone, asphalt rock or mixtures thereof and a second carbonaceous material to the top of a blast furnace;

burning the carbonaceous char material remaining when the burden reaches the lower portion of the blast furnace in front of the primary tuyeres to provide a hot, upwardly-moving gas stream containing CO and H_2 to vaporize recoverable hydrocarbons contained in the carbonaceous material as the carbonaceous material moves downwardly through the blast furnace;

withdrawing a gas containing hydrocarbons, CO, H_2 and vaporized carbonaceous oil and tar from near the top of the blast furnace; and

withdrawing molten slag from near the bottom of the blast furnace.

4,495,055

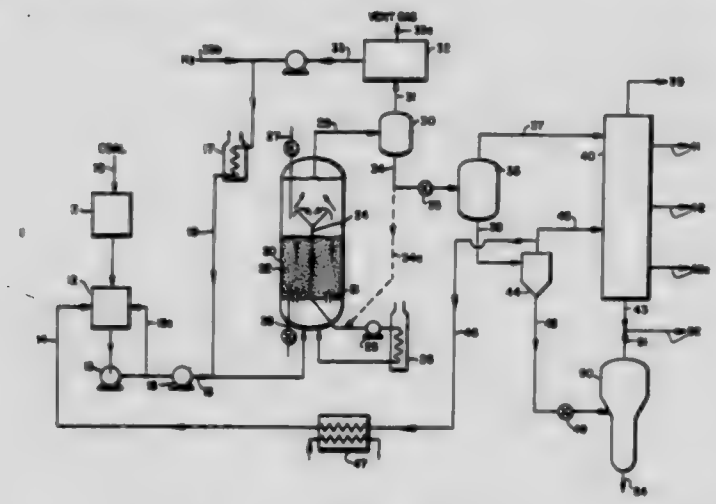
COAL CATALYTIC HYDROGENATION PROCESS USING DIRECT COAL SLURRY FEED TO REACTOR WITH CONTROLLED MIXING CONDITIONS

Alfred G. Comolli, Yardley, and Edwin J. Hippo, Morrisville, both of Pa., assignors to HRI, Inc., Gibbsboro, N.J.

Continuation-in-part of Ser. No. 365,767, Apr. 5, 1982,. This application Jan. 25, 1984, Ser. No. 574,223

Int. Cl.[3] C10G *1/08*

U.S. Cl. 208—10 20 Claims



1. A process for catalytic hydrogenation of coal to produce increased yields of low boiling hydrocarbon liquid products and gas, the process comprising:

(a) mixing particulate coal with a hydrogenated coal-derived hydrocarbon liquid to provide a flowable coal-oil slurry material having a standard temperature-time units (STTU) severity index exposure less than about 0.1 wherein said STTU index is defined by the following relation:

$$STTU = Ate^{-B/T}$$

where

A = about 1.12×10^{15}

t = the coal residence time in minutes

B = about 45045

T = the temperature in °R;

(b) feeding said coal-oil slurry directly into a catalytic reaction zone, along with a heated coal-derived recycle liquid and recycle hydrogen, so as to avoid formation of thermal retrograded material during any heating of the coal occurring before said reaction zone;

(c) passing said coal-oil slurry and said hydrogen upwardly through said reaction zone containing coal-derived liquid and hydrogen and an ebullated bed of particulate catalyst maintained at 650°–900° F. temperature and 1000–5000 psi hydrogen partial pressure and 7.5–90 lb/hr ft^3 space velocity for rapidly heating and reacting the coal therein and providing catalytic hydrogenation reactions to produce coal-derived hydrogenated material therein;

(d) withdrawing a portion of said coal-derived liquid from said reaction zone at a level above said ebullated bed of particulate catalyst adjusting the withdrawn liquid temperature as required to control said reaction zone temperature, and recycling the coal-derived liquid to the lower portion of the reaction zone;

(e) withdrawing from the upper part of said reaction zone a coal-derived hydrogenated material containing gas and liquid fraction, and phase separating said material into gaseous and liquid fractions;

(f) passing said liquid fraction to a liquid-solids separation step, from which an overhead liquid stream containing a reduced solids concentration is recycled to provide said hydrogenated coal-derived liquid for providing said coal-oil slurry; and

(g) recovering hydrocarbon gas and increased yields of low boiling hydrocarbon liquid products from the process.

4,495,056

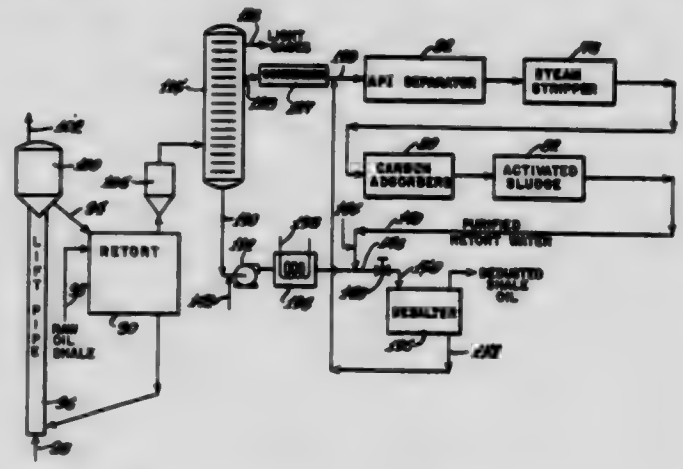
OIL SHALE RETORTING AND RETORT WATER PURIFICATION PROCESS

Dean G. Venardos, Naperville, and Colin G. Grieves, Oswego, both of Ill., assignors to Standard Oil Company (Indiana) and Gulf Oil Corporation, both of Chicago, Ill.

Filed Apr. 16, 1982, Ser. No. 368,976

Int. Cl.[3] C10G *1/02;* C10B *53/06;* C02F *3/12*

U.S. Cl. 208—11 R 7 Claims



1. An oil shale process, comprising the steps of:

retorting raw oil shale in a surface retort to liberate an effluent product stream of hydrocarbons and oil shale retort water vapors containing oil shale particulates ranging in size from less than one micron to 1000 microns, organic carbon, ammonia, and chemical oxygen demand;

partially dedusting said effluent product stream to separate and remove some of said oil shale particulates from said effluent product stream;

separating said partially dedusted, effluent product stream into at least one fraction of shale oil, a fraction of hydrocarbon gases and a fraction of oil shale retort water vapors containing shale oil, oil shale particulates ranging in size from less than one micron to 1000 microns, organic carbon, ammonia and chemical oxygen demand in at least one quench tower;

condensing said fraction of oil shale retort water vapor into a fraction of oil shale retort water;

separating and removing a substantial portion of said shale oil from said fraction of oil shale retort water by gravity separation and sedimentation;

separating and removing a substantial portion of said oil shale particulates from said fraction of oil shale retort water in at least one oil shale separator selected from the group consisting of an air flotation unit, a clarifier, and a granular filter;

steam stripping and removing a substantial portion of said ammonia from said fraction of oil shale retort water in a stream stripper;

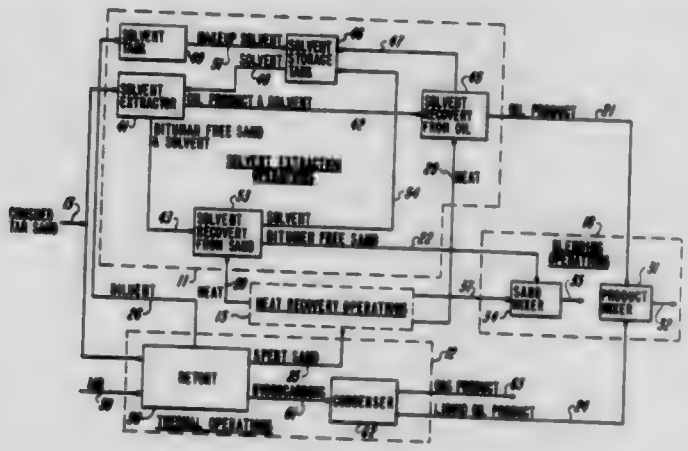
passing said steam stripped, oil shale retort water through a tank containing powdered activated carbon and activated sludge to substantially purify said oil shale retort water;

recycling and spraying some of said purified water from said tank containing powdered activated carbon and sludge in said quench tower to obtain heavy shale oil, said sprayed water becoming contaminated in said quench tower with said shale oil and said oil shale particulates; and treating said contaminated water in said oil shale separator, steam stipper and tank along with said fraction of oil shale retort water.

4,495,057
COMBINATION THERMAL AND SOLVENT EXTRACTION OIL RECOVERY PROCESS AND APPARATUS

Bahram Amirijafari, 2051 Crestvue Cir., Golden, Colo. 80401, and Herbert E. Nuttall, Jr., 1445 Honeysuckle Dr., NE., Albuquerque, N. Mex. 87127

Filed May 7, 1982, Ser. No. 376,251
Int. Cl.³ C10G *1/02, 1/04, 1/00;* C10B *53/06*
U.S. Cl. 208—11 R 14 Claims



1. A process for the production of upgraded oil and sand products during the separation of bitumen from tar sands and the like comprising the steps of:

subjecting a quantity of tar sand to a solvent extraction operation to yield a high viscosity oil product and a substantially bitumen-free sand product;

simultaneously subjecting an additional quantity of tar sand that has not been subjected to said solvent extraction operation to heat in a thermal operation that is operating in parallel with said solvent extraction operation in relation to incoming tar sand to said operations to yield a hot, low viscosity oil product and a hot and dry spent sand product;

recovering heat from said hot and dry spent sand and transferring the recovered heat to the solvent extraction operation to provide a substantial part of the heat requirement for the solvent extraction operation;

combining the low viscosity oil product with the high viscosity oil product to provide an upgraded synthetic crude product and combining the cooled spent sand with said substantially bitumen free sand to provide an environmentally suitable waste sand product; and

removing solvent fractions from the high viscosity oil product and from the sand products of said solvent extraction operation and recycling said removed solvent fractions to said solvent extraction operation.

4,495,058
PROCESS FOR GENERATING SUPERHEATED STEAM USING RETORTED SOLIDS

Robert A. Farnham, San Rafael; Lawrence P. Zestar, Richmond, and Corey A. Bertelsen, Oakland, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 6, 1983, Ser. No. 501,592
Int. Cl.³ C10G *1/02*
U.S. Cl. 208—11 R 12 Claims

1. A process for retorting particulate oil shale, which comprises:

(a) passing superheated steam through a bed comprising a mixture of the oil shale and hot combusted shale in a retort at a pyrolyzing temperature to recover a gaseous mixture of product vapors and steam and to separately recover a solid mixture of pyrolyzed shale and the combusted shale;

(b) condensing the steam in the gaseous mixture to recover water separately from the product vapors;

(c) heating the water in a steam generator to produce steam;

(d) passing the steam through a steam separator to separate the steam into wet steam and saturated steam;

(e) burning the solid mixture in a combustor to recover hot combusted shale;

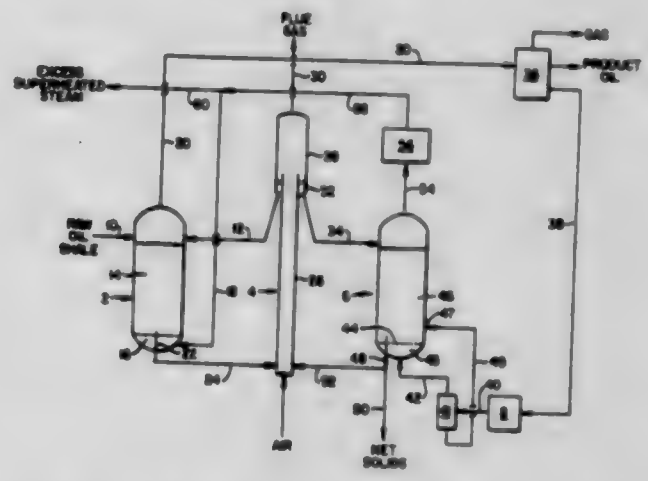
(f) recirculating a first portion of the hot combusted shale to the retort;

(g) introducing a second portion of the hot combusted shale to a steam superheater to form a bed of solids therein;

(h) introducing the saturated steam into the bed of hot combusted shale solids in the superheater through the bottom of the bed at a rate sufficient to at least partially fluidize the solids in the bed and introducing the wet steam into the bed at a point above the bottom of the bed and further providing sufficient residence time for the steam in the bed to superheat the steam;

(i) recirculating at least a portion of the superheated steam to the retort; and

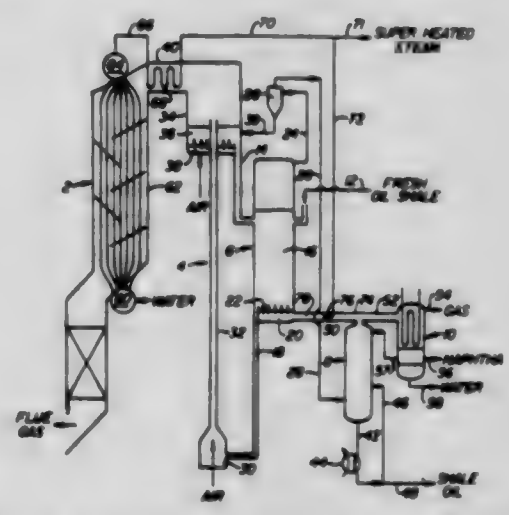
(j) recirculating the shale solids from the superheater to the combustor.



4,495,059
STEAM RECYCLE USED AS STRIPPING GAS IN OIL SHALE RETORTING

P. Henrik Wallman, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 12, 1983, Ser. No. 522,917
Int. Cl.³ C10G *1/00;* C10B *53/06*
U.S. Cl. 208—11 R 8 Claims



1. A process for retorting oil shale which comprises:

(a) mixing in a retorting zone a particulate oil shale with a hot particulate heat-transfer solid in a ratio sufficient to raise the temperature of the oil shale to a retorting temperature;

(b) passing a non-oxidizing stripping gas containing noncondensable hydrocarbons and at least 50 percent by weight of steam through the mixture of oil shale and heat-transfer solid, whereby a mixture of stripping gas and evolved shale oil vapors is produced;

(c) separating a recycle gas from the mixture of shale oil vapor and stripping gas, said recycle gas comprising steam and non-condensable hydrocarbons;

(d) adding sufficient high quality, high pressure steam to the recycle gas using a steam injecting means to increase (i) the pressure of the resulting mixture of gases above that of the recycle gas to enable the use of the mixture as the stripping gas of step (b), and (ii) the weight percent of steam in the mixture to at least 50 percent; and

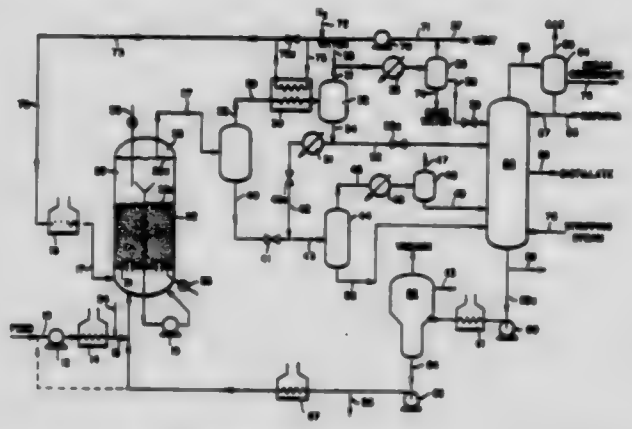
(e) using the mixture of recycle gas and steam of step (d) as the stripping gas of step (b).

4,495,060

QUENCHING HYDROCARBON EFFLUENT FROM CATALYTIC REACTOR TO AVOID PRECIPITATION OF ASPHALTENE COMPOUNDS

Lawrence M. Abrams, Miami, Fla., assignor to HRI, Inc., Gibbsboro, N.J.

Filed Dec. 27, 1982, Ser. No. 453,259
Int. Cl.³ C10G 9/16, 65/10
U.S. Cl. 208—48 Q 12 Claims



1. A process for high conversion of petroleum residua containing at least about 25 V % material boiling above about 1000° F. to produce lower boiling hydrocarbon liquid products, comprising:

(a) feeding a petroleum residua feedstock together with hydrogen into a reaction zone containing an ebullated catalyst bed, maintaining said reaction zone at 750°-900° F. temperature, 1000-5000 psig hydrogen partial pressure for liquid phase reaction to produce a hydroconverted material containing a mixture of gas and liquid fractions, including C_5^+ portions;

(b) separating said gas fraction from said liquid fractions in a first separation zone to provide a first gas fraction and a first liquid fraction, and cooling said first gas fraction to below about 650° F. to condense the gas and form a gas-liquid mixture;

(c) further separating said cooled gas fraction from said mixture in a second phase separation zone to provide a second gas fraction and a second liquid fraction and cooling said second liquid fraction to below about 650° F.;

(d) pressure-reducing said first liquid fraction to a pressure below about 1000 psig and flashing vapor from the liquid fraction while mixing the resulting liquid with at least a portion of said cooled second liquid fraction to quench the liquid to a temperature below about 775° F., said cooled second liquid fraction having an API gravity not more than about 22° API higher than the API gravity of said first liquid fraction; and

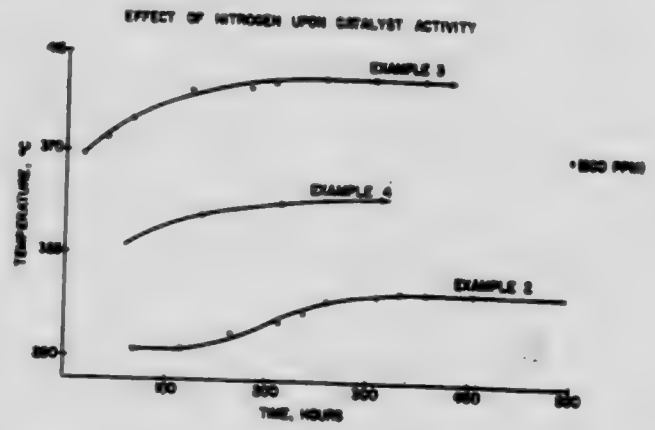
(e) distilling said mixed liquid fractions to produce hydrocarbon distillate liquid products having normal boiling temperature below about 875° F. and a residual bottoms material.

4,495,061

HYDROCARBON CONVERSION CATALYST AND PROCESS USING SAID CATALYST

Jerome F. Mayer, San Anselmo, and Stephen J. Miller, San Francisco, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 160,033, Jun. 16, 1980, Pat. No. 4,313,817, which is a continuation-in-part of Ser. No. 21,751, Mar. 19, 1979, abandoned. This application Sep. 15, 1981, Ser. No. 302,014
The portion of the term of this patent subsequent to Feb. 2, 1999, has been disclaimed.
Int. Cl.³ C10G 65/12, 47/12
U.S. Cl. 208—89 31 Claims



1. A hydrocracking process comprising contacting a hydrocarbon feed containing substantial amounts of materials boiling above 95° C. in a reaction zone with hydrogen and a catalyst under hydrocracking conditions, wherein said catalyst comprises a composite containing:

(A) a porous amorphous matrix selected from the group consisting of alumina-silica, alumina-silica-titania and alumina-silica-zirconia polygels, said polygel having an alumina-to-silica weight ratio in the range of from about 0.2-20 to 1, respectively;

(B) a hydrogenation component of (1) nickel or cobalt or any combination thereof in an amount, calculated as metal, in the range of from about 1 to 10 weight percent of said matrix, and (2) molybdenum or tungsten, or any combination thereof, in an amount, calculated as metal in the range of from about 5 to 25 weight percent of said matrix, said hydrogenation component being (1) in the form of metal or oxide or sulfide or any combination thereof and (2) dispersed through said matrix; and

(C) a finely divided intermediate pore size silicaceous crystalline molecular sieve component substantially in the ammonium or hydrogen form, said molecular sieve being (1) substantially free of such hydrogenation component, (2) dispersed through said matrix and (3) selected from the group consisting of (i) crystalline aluminosilicates of the ZSM series including crystalline admixtures of members of the ZSM series and (ii) essentially alumina-free silicates of the crystalline silica polymorph or chromia silicate or ferrosilicate families.

4,495,062

CATALYST AND SUPPORT, THEIR METHODS OF PREPARATION, AND PROCESSES EMPLOYING SAME

Albert L. Hensley, Jr., Munster, Ind., and Leonard M. Quick, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 274,499, Jun. 17, 1981, Pat. No. 4,399,057. This application Apr. 15, 1983, Ser. No. 485,185
Int. Cl.³ C10G 47/12, 45/04, 45/08
U.S. Cl. 208—111 30 Claims

1. A process for the conversion of a hydrocarbon stream containing asphaltenes and a substantial amount of metals, which process comprises contacting said stream under suitable

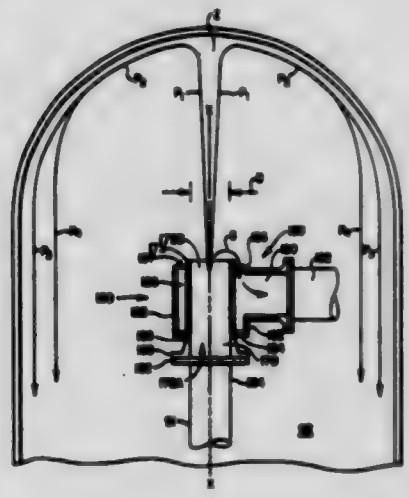
conditions with a catalyst comprising a hydrogenating component comprising at least one hydrogenating metal and a large-pore, high-surface area support comprising two or more inorganic oxides, said at least one hydrogenating metal being present in the elemental form, as the oxide, as the sulfide, or mixtures thereof, said catalyst having been prepared by forming a composite comprising said two or more inorganic oxides into a shaped catalyst support material having a selected shape and at least 0.8 cc/gm of its pore volume in pores having diameters of 0 nm (0 Å) to 120 nm (1,200 Å) and at least 0.1 cc/gm of its pore volume in pores having diameters of 120 nm (1,200 Å) to 5,000 nm (50,000 Å), heating said shaped catalyst support material in the presence of steam at sufficient elevated temperature, steam pressure, and time period to increase the average pore diameter of said shaped catalyst support material in the absence of any appreciable reduction in pore volume so as to provide a steam-treated support material, and subsequently impregnating said steam-treated support material with said at least one hydrogenating metal.

4,495,063

CARBOMETALLIC OIL CONVERSION WITH BALLISTIC SEPARATION

Paul W. Walters, Ashland; Roger M. Benslay, Catlettsburg, and Dwight F. Berger, Russell, all of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 263,394, May 13, 1981, Pat. No. 4,390,503. This application Nov. 1, 1982, Ser. No. 438,074
Int. Cl.³ C10G *11/18*
U.S. Cl. 208—113 5 Claims



1. A process for converting vaporized carbo-metallic oil to lighter product vapors comprising the steps of:

(A) contacting said oil with fluidized particulate solids in a vertical tubular riser cracking zone at cracking conditions to produce a suspension of said lighter products in said particulate solids,

(B) providing an annular shroud about the discharge end of the cracking zone, said shroud being open in the end adjacent to the discharge end of said cracking zone, but closed in the end opposite thereto, together with open end conduit means penetrating the outer wall of said shroud and extending radially therefrom,

(C) passing said suspension from said cracking zone into an enlarged disengagement zone under conditions providing substantially greater momentum to said solids than said product vapors and providing a pressure differential in the direction of flow of said vapors whereby rapid separation between solids and vapor is achieved,

(D) recovering product vapors thus separated from solids in said annular zone for recovery via said open end conduit means,

(E) and recovering said solid particulate material from said disengagement zone for regeneration and recycle to said riser cracking zone.

4,495,064

METAL PASSIVATION ADDITIVE EMPLOYED IN A CRACKING PROCESS

Ernest B. Boston, Phillips, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 13, 1984, Ser. No. 599,848
Int. Cl.³ C10G *11/05*
U.S. Cl. 208—120 16 Claims

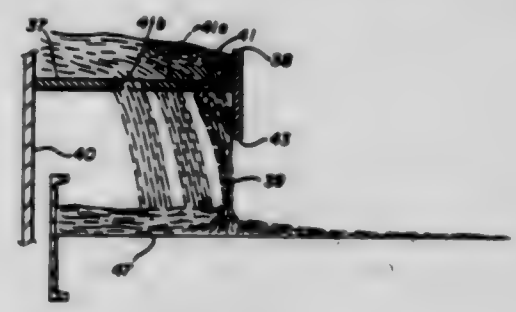
1. A process for cracking hydrocarbon feedstock which comprises contacting said hydrocarbon feedstock with an active hydrocarbon cracking catalyst under cracking conditions wherein said cracking catalyst has been modified with an amount of antimony hydroxyhydrocarbylthiolate sufficient to passivate contaminating metals.

4,495,065

VIBRATORY SCREENING APPARATUS AND METHOD

Sharon M. B. DeReamer, Spring, and Dennis R. Elfling, Katy, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 7, 1983, Ser. No. 472,820
Int. Cl.³ B01D *33/38*; B07B *1/00*
U.S. Cl. 209—243 9 Claims



1. A vibrating screen machine for separating particles from fluid in which a fine mesh screen is located within a vibratory basket, and means is provided for vibrating the basket, said machine further including:

supply means for delivering fluid having the entrained particles from a source thereof towards said screen;

weir means disposed substantially adjacent the supply means and overlying an upstream portion of said screen for directing the flow of fluid onto said screen, said weir means including an upstream end positioned directly adjacent said supply means and a downstream end positioned away therefrom;

dam means attached to the downstream end of said weir means for forming a pool of said fluid on said weir means, said weir means including at least one fluid flow opening positioned substantially adjacent said dam means; and

flow directing means connected to said weir means for directing the fluid flowing through said fluid flow opening towards the upsteam portion of said screen underlying said weir means.

4,495,066

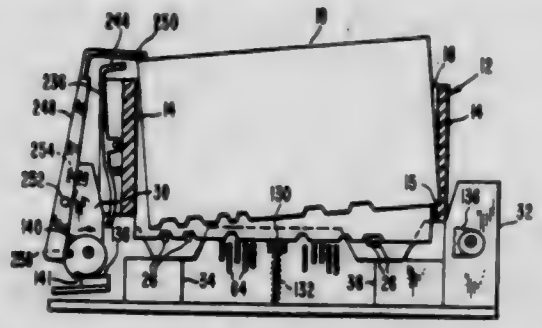
CARD RETAINER AND CONTROL MEANS FOR INFORMATION RETRIEVAL DEVICES

Laurence A. Cross, Jr., Groveville, N.J., assignor to Microsins, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 291,593, Aug. 10, 1981, Pat. No. 4,421,237. This application May 28, 1982, Ser. No. 382,862
Int. Cl.³ B07C *5/36*
U.S. Cl. 209—608 5 Claims

1. In a device for retrieving randomly filed cards, microfiche, microfiche jackets or the like, and including a support structure, a capsule removably insertable therein and holding a quantity of randomly filed cards, means for displacing wanted cards relative to unwanted ones preliminary to ejection of the wanted cards, and means for ejecting the wanted cards, the improvement comprising fulcrum means movable between a

retracted position, and an advanced position providing in said fulcrum means an element about which a wanted card must pivot when ejected, the capsule having means for engaging the pivoted card against return from its ejected position, the fulcrum means comprising an arm mounted on the support structrue for movement between the retracted and advanced positions thereof, said arm being pivotally mounted on the support structure, the arm being spring-biased to its retracted position,



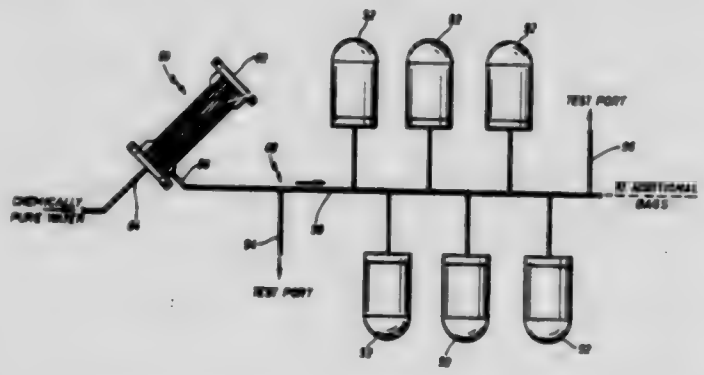
the ejection means including cam means for biasing the arm to its advanced position against the restraint of said spring, the ejection means further including a spring-loaded ejector plate for snapping the wanted cards into engagement with said element of the fulcrum means, said cam means being adapted to first retract the ejection plate against the spring-loading thereof and thereafter release the same to exert its snap-action against the wanted cards.

4,495,067

APPARATUS FOR PREPARATION OF INFUSION GRADE WATER

Elias Klein, New Orleans, La., and Douglas J. Beach, Burlington, N.C., assignors to Tracor, Inc., Austin, Tex.

Continuation of Ser. No. 212,142, Dec. 2, 1980, abandoned. This application Sep. 29, 1982, Ser. No. 428,436
Int. Cl.[3] B01D *31/00*
U.S. Cl. 210;87
2 Claims



2. A portable device for preparation of infusion grade water comprising:

a chemical purification assembly including:

an inlet port for receiving feed water,

a first filter for filtration of gross particles and organic impurities, said filter having an input port connected to said inlet port, and an output port for discharging filtered water,

means for reverse osmosis purification of said filtered water, said means having a retentate port for delivery of rejected water, said means generating permeate water, and wherein said means for reverse osmosis purification comprises membrane cartridges plumbed in parallel, connected to said first filter, each of said cartridges having a permeate port and a retentate port for delivering said water,

means for deionization of said permeate water connected to said means for reverse osmosis purification, and,

a second filter connected to said means for deionization, for fine particle filtration resulting in chemically pure water;

an endotoxin filter receiving assembly including;

an endotoxin filter having a means for receiving said chemically pure water, said endotoxin filter removing lipopolysaccharides of gram-negative bacteria from said chemically pure water and having a means for delivery of nonpyrogenic infusion grade water, and

collection means integrally sealed with said endotoxin filter for receiving and storing free of contamination said infusion grade water, said collection means constructed and arranged for preparation of solutions for direct patient infusion; and,

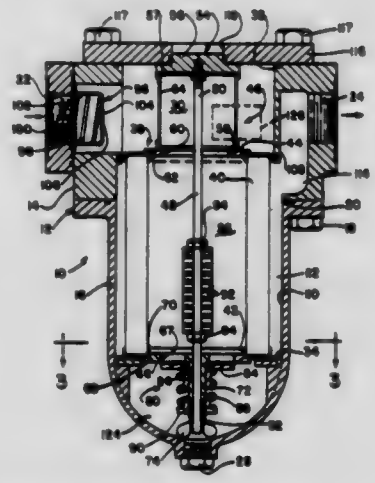
further including a recirculation system including a valve and conduit for delivering the retentate back to the means for reverse osmosis purification, said recirculation means including a needle valve in a rotameter for adjustment of the flow rate through each of the membrane cartridges.

4,495,068

FLUID FILTERING DEVICE

Nils O. Rosaen, 5490 Waldon, Clarkston, Mich. 48016

Filed Oct. 29, 1979, Ser. No. 89,143
Int. Cl.[3] B01D *27/10*
U.S. Cl. 210—91
10 Claims



1. A fluid filtering device comprising:

a housing having a filter chamber, said housing having a first fluid port open to a first end of the filter chamber and a second fluid port open to said filter chamber, said housing having an opening which is open to said first end of the filter chamber;

a filter assembly comprising a tubular filter element open at each end and a holder assembly for the filter element, said holder assembly comprising a closure member for engaging and closing one end of the filter element, an annular member for engaging the other end of the filter element and means for detachably connecting said closure member to said annular member so that the filter element is entrapped therebetween, a part of said detachable connection means forming a hand gripping portion for manipulating the filter assembly;

said filter assembly being insertable through the housing opening by said hand gripping portion so that said filter element is positioned within said filter chamber and so that the other end of the filter element is open to said first port, said filter element being spaced radially inwardly from said housing thus forming an annular chamber, said annular chamber being open to said second port;

means for sealing said other end of said filter element to said housing; and

means for closing the open end of said housing.

4,495,069

DRAIN SYSTEM FOR FUEL PROCESSOR APPARATUS

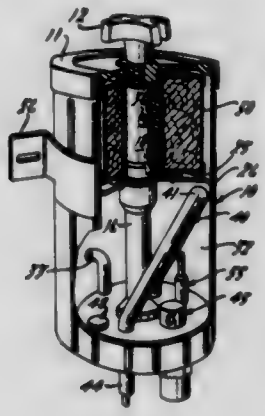
Leland L. Davis, Saline, Mich., assignor to Davco, Inc., Ann Arbor, Mich.

Continuation-in-part of Ser. No. 287,149, Jul. 27, 1981, which is a continuation-in-part of Ser. No. 188,875, Sep. 19, 1980, Pat. No. 4,368,716, and a continuation-in-part of Ser. No. 435,681, Oct. 21, 1982, Pat. No. 4,421,090, which is a continuation of Ser. No. 188,875, Sep. 19, 1980, Pat. No. 4,368,716. This application Feb. 1, 1983, Ser. No. 463,041

The portion of the term of this patent subsequent to Jan. 18, 2000, has been disclaimed.

Int. Cl.³ F02M *31/00*; B01D *23/00*

U.S. Cl. 210—114 37 Claims



1. In a fuel processor means operative to separate out water or other impurities from the fuel, said fuel processor means including a chamber adapted to receive said fuel flowing therethrough, said fuel and said water or other impurities being separated in a lower portion of said chamber, the improvement comprising:

quantity sensing means located in said lower portion of said chamber for detecting the presence of at least one predetermined quantity of said water or other impurities therein;

drain means actuable to discharge a substantial portion of said water or other impurities from said chamber in response to the detection of said predetermined quantity of said water or other impurities by said quantity sensing means, whereby the quantity of said water or other impurities in said chamber is maintained at or below said predetermined quantity; and

temperature sensing means located in said lower portion of said chamber for sensing the temperature of said water or other impurities in said lower portion of said chamber and for disabling said drain means in response to detection of a water temperature below a predetermined temperature level.

4,495,070

HORIZONTAL VACUUM BELT FILTER

Henri G. W. Pierson, Greenwood, Bozeat, Northamptonshire, England

Continuation-in-part of Ser. No. 317,298, Nov. 2, 1981, abandoned. This application Nov. 18, 1982, Ser. No. 442,586

Claims priority, application United Kingdom, Jan. 10, 1981, 8100710

Int. Cl.³ B01D *33/32*

U.S. Cl. 210—139 1 Claim

1. A filter belt assembly comprising in combination:

a filter belt disposed in an endless configuration defining a substantially horizontal upper run and a return lower run strategically entrained over a system of frame-mounted rollers, a slurry supply means for charging a slurry onto the top side of the upper run,

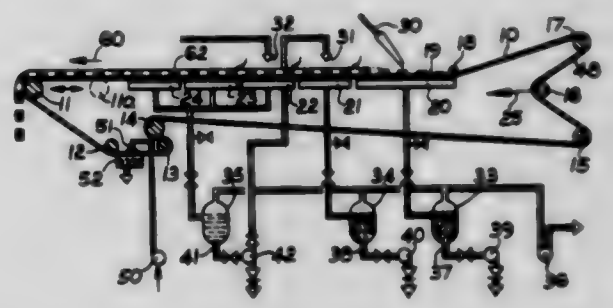
a wash liquor supply means for feeding a wash liquor onto the top side of the upper run,

a recirculated wash liquor supply means for feeding a recirculated wash liquor onto the top side of the upper run,

a vacuum means disposed beneath the upper run for drawing the liquid content from the slurry and wash liquors through the belt with the remaining solid content of the slurry being deposited in cake form upon the top side of the upper run,

a drive means for effecting incremental forward movement of the upper run relative to the vacuum means,

a variable valved control means operative upon commencement of each increment of forward movement of the upper run for allowing slurry charging during a first pre-set time period of the forward movement and for preventing slurry charging at all other times and also for allowing wash liquor charging during a second pre-set time period of the forward movement and for preventing wash liquor charging at all other times in the obtainment of a thin and even spread of the slurry on the upper run



and an adequate washing thereof, the control means including a first pipeline loop and a first pump operative for causing slurry to flow therearound continuously,

a first branch leading from the loop to the slurry supply means,

a first valve means disposed in the first branch,

a first timer for causing the valve to be opened only for the first pre-set time period,

a second pipeline loop and a second pump operative for causing wash liquor to flow therearound continuously,

a second branch leading from the loop to the wash liquor supply means, and

a second valve means disposed in the second branch, and

a second timer for causing the second valve to be opened only for the second pre-set time period.

4,495,071

HORIZONTAL PLATE FILTER WITH SELF-ALIGNING PLATES

John R. Schneider, 26 Cove Rd., Belvedere, Calif. 94920, and Joseph F. Mangione, San Rafael, Calif., assignors to John R. Schneider, Belvedere, Calif.

Filed Mar. 24, 1983, Ser. No. 478,313

Int. Cl.³ B01D *25/04*

U.S. Cl. 210—230 11 Claims

1. In a liquid filtering device a filtering section comprising:

a lower platen;

an upper platen;

a plurality of intermediate filter plates located between said platens;

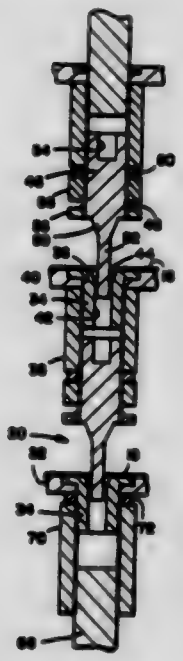
means connecting said plates to each other with one of said plates being connected to said upper platen;

sealing means between adjacent plates;

means for moving said upper platen upwardly relative to said lower platen to separate said plates in oen operating mode to facilitate replacement of filter media between plates and for moving said upper platen downwardly in another operating mode to press said plates and said platens together and thereby seal chambers formed between adjacent plates for incoming liquid being filtered; and

alignment means on each of said plates cooperating with similar alignment means on each adjacent plate for maintaining the precise positioning of said plates relative to each other as the plates are brought together, each said

alignment means comprising a plurality of alignment pins for each said filter plate; means on each said filter plate for retaining said alignment pins;



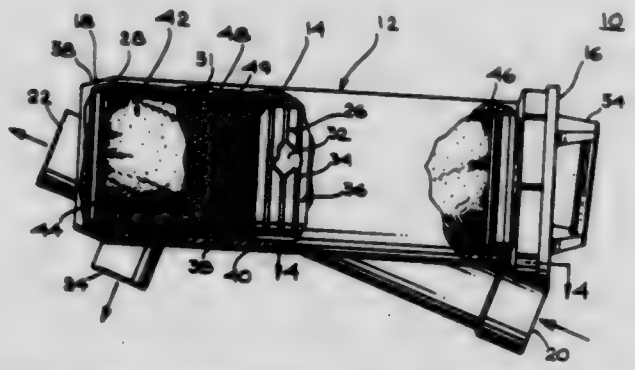
centering means on each alignment pin; and a receptacle means on each said filter plate for receiving said centering means of an alignment pin for an adjacent filter plate when the plates are moved together.

4,495,072

FILTER SCREEN DEVICE

Larry D. Fields, Mira Loma, Calif., assignor to Yardney Corporation, Pawcatuck, Conn.

Filed Feb. 25, 1983, Ser. No. 469,546
Int. Cl.³ B01D 27/12, 29/14, 29/38
U.S. Cl. 210—238
2 Claims



1. An improved filter screen device, said device comprising, in combination:

a. an elongated tubular housing having a hollow central interior, an open upstream end communicating with said interior and an enclosed end wall at the opposite downstream end, an inlet disposed at an acute angle to the main axis of said housing, intersecting said interior between said upstream and downstream ends, converging with the tubular housing in the direction of the downstream end and configured to cause liquid passing therethrough into said housing to spiral over the outer face of said screen, a first outlet extending through said end wall at said downstream end about perpendicular to said first outlet;

b. a hollow elongated perforated tubular member releasably secured in said housing interior and having an open downstream end and a closed upstream end, the latter sealing said upstream end of said housing, said first outlet being in communication with the interior of said tubular member at the downstream end thereof, said tubular member having annular slots spaced longitudinally on the exterior thereof about perpendicular to the longitudinal axis thereof, and having a handle connected to the closed upstream end thereof and tabs which fit into slots in said upstream end of said housing, said tubular member being insertable into said housing and rotatable therein to lock to said housing by said tabs;

c. a flexible sock type filter screen releasably disposed over the outer surface of said tubular member and spaced inwardly of said housing to define therewith an annular space with which said second outlet is in communication;

d. an intermediate grid disposed between said screen and said tubular member to hold said screen away from said tubular member for improved filtration; and,

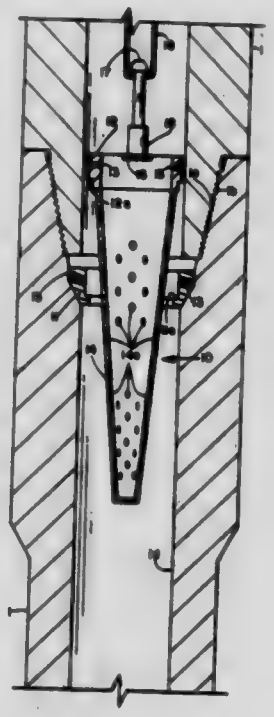
e. O-rings clamping said screen to said grid, said downstream end of said housing having converging walls against which one of said O-rings resiliently abuts when said tubular member locks in said housing.

4,495,073

RETRIEVABLE SCREEN DEVICE FOR DRILL PIPE AND THE LIKE

Herbert W. Beimgraben, Houston, Tex., assignor to Baker Oil Tools, Inc., Orange, Calif.

Filed Oct. 21, 1983, Ser. No. 544,209
Int. Cl.³ B01D 35/02
U.S. Cl. 210—448
7 Claims



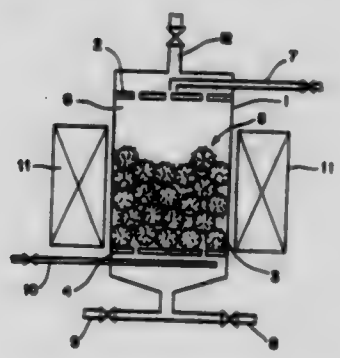
1. A retrievable screen for a well conduit defined by selectively connectable lengths of tubular members, comprising: a collar element constructed and arranged for mounting between any two of the selectively connectable ends of the tubular members; a screen element inserted in said collar and supported thereby in transverse relationship to the well conduit bore, said screen element having restricted apertures therethrough permitting flow of fluids but trapping all particles sized greater than said apertures; releasing means connecting said screen element to said collar, whereby the application of an applied axial force to said screen element effects the activation of said releasing means and the removal of said filter element; handle means rigidly secured to said screen element, said handle means terminating in a fishing neck, thereby permitting manual insertion of said screen element in the well conduit and downhole retrieval of said screen element by an overshot fishing tool.

4,495,074

METHOD AND APPARATUS FOR FILTRATION USING FERROMAGNETIC METAL FIBERS

Michiaki Hagiwara, Kyoto, and Yoshitaka Tomohiro, Uji, both of Japan, assignors to Unitika, Ltd., Hyogo, Japan

Filed Aug. 12, 1982, Ser. No. 407,317
Claims priority, application Japan, Aug. 20, 1981, 56-131046
Int. Cl.³ B01D 35/06
U.S. Cl. 210—695 12 Claims



1. A filtration method characterized in that a prefilt containing suspended solids is passed through a layer of filter medium in a magnetic field to remove the suspended solids from the prefilt, the filter medium layer comprising a collection of globular or ellipsoidal fiber lumps each formed by interlocking short organic fibers and having short corrosion-resistant amorphous ferromagnetic metal fibers adhered to the surface of the lump.

2. A filtration method characterized in that a prefilt containing suspended solids is passed through a layer of filter medium in a magnetic field to remove the suspended solids from the prefilt, the filter medium layer comprising a collection of globular or ellipsoidal fiber lumps each formed by interlocking short organic fibers and having short corrosion-resistant amorphous ferromagnetic metal fibers partially inserted into the lump so that the metal fibers project from the surface of the lump.

4,495,075

METHODS AND COMPOSITIONS FOR PREVENTING THE PRECIPITATION OF ZINC DIALKYLDITHIOPHOSPHATES WHICH CONTAIN HIGH PERCENTAGES OF A LOWER ALKYL GROUP

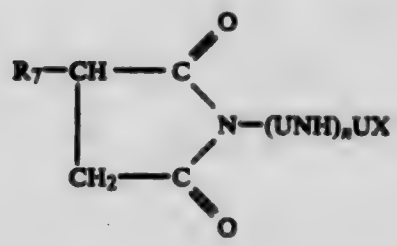
Thomas F. Buckley, Hercules, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 15, 1984, Ser. No. 610,372
Int. Cl.³ C10M 1/48
U.S. Cl. 252—32.7 E 14 Claims

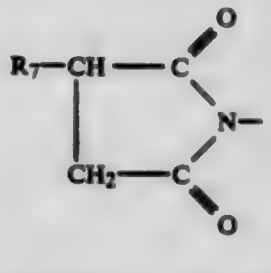
1. An anti-oxidant anti-corrosion zinc dialkyldithiophosphate composition which is stable to precipitation which comprises:

(a) a zinc dialkyldithiophosphate prepared from the reaction of phosphorus pentasulfide with a mixture of about 50 to 90 percent of a lower alcohol plus about 50 to 10 percent of a higher alcohol followed by neutralization of the resulting dialkyldithiophosphoric acid with a basically reacting zinc compound; and

(b) about 0.1 to 10.0 percent by weight to the zinc dialkyldithiophosphate of an oil-soluble alkenyl or alkyl mono- or bis-succinimide of the formula:

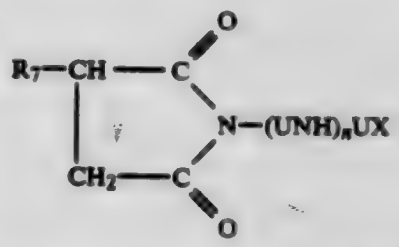


wherein X is amino or a group of the formula:



R_7 is an alkenyl or alkyl group containing from about 20 to 60 carbon atoms; U is alkylene containing 2 to 6 carbon atoms; and n is an integer of from 0 to 6.

7. A method of preventing precipitation in a zinc dialkyldithiophosphate composition prepared from reacting phosphorus pentasulfide with a mixture of about 50 to 90 mole percent of a lower alcohol and 50 to 10 mole percent of a higher alcohol followed by neutralization of the resulting dialkyldithiophosphoric acid with a basically reacting zinc compound which comprises the addition of about 0.5 percent to about 10.0 percent by weight to the zinc dialkyldithiophosphate of an alkyl or alkenyl mono- or bis-succinimide of the formula:



wherein X is amino or a group of the formula:

R_7 is an alkenyl or alkyl group containing from about 20 to 60 carbon atoms; U is alkylene containing 2 to 6 carbon atoms; and n is an integer of from 0 to 6.

4,495,076

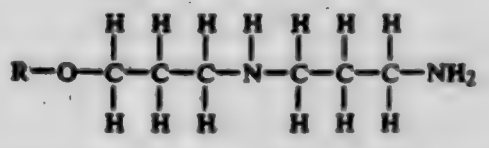
LUBRICATING OIL COMPOSITION CONTAINING REACTION PRODUCT OF TETRAHYDROPYRIMIDINES

Sheldon Chibnik, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 3, 1984, Ser. No. 606,563
Int. Cl.³ C01M 1/54
U.S. Cl. 252—38 11 Claims

1. A composition containing a major portion of a lubricating oil or grease and between about 0.5 and about 15% by weight of an additive prepared by:

(a) reacting a diamine or mixture of diamines generally having the structural formula



wherein R is 1 to 70 carbon atoms in length, with a long chain monocarboxylic or dicarboxylic acid, in a mole ratio of diamine to acid between about 1:1 and about 1:2 at a

temperature of about 100° to about 300° C. thereby obtaining a tetrahydropyrimidine reaction product; and

(b) reacting the tetrahydropyrimidine reaction product of (a) with an inorganic base in a mole ratio of base to carboxylic acid of (a) of between about 1:1 and about 5:1, at a temperature of about 175° to about 350° C., thereby obtaining a second reaction mixture containing said additive composition.

4,495,077

PROCESS FOR PREPARATION OF AMIDES OF UNSATURATED CYCLIC KETO ACIDS

Justin C. Powell, Fairfax, Va., and Stephen A. Levine, Fishkill, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 28, 1983, Ser. No. 461,730

Int. Cl.³ C10M *1/28, 1/36*

U.S. Cl. 252—51.5 A 18 Claims

1. An amide of a cyclized keto acid prepared by the reaction of (i) an amine containing a first amino group and at least one other group which is an amino group or a hydroxyl group and (ii) a cyclized unsaturated keto acid prepared by the cyclizing of an alken-2-yl dicarboxlic acid anhydride with Lewis acid catalyst in anhydrous Friedel-Craft solvent, wherein said alkenyl group contains at least four carbon atoms thereby forming an amide reaction product; and

recovering said amide reaction product.

4,495,078

SOLID PROTON CONDUCTORS AND THEIR USE

Michael Bell, Kingston, Canada; Klaus-Dieter Kreuer, Böblingen; Albrecht Rabenau, and Werner Weppner, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V., Gottingen, Fed. Rep. of Germany

Filed Jul. 9, 1982, Ser. No. 396,953

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1981, 3127821

Int. Cl.³ H01G *9/00;* H01B *1/06*

U.S. Cl. 252—62.2 12 Claims

1. A solid proton conductor comprising zeolites having proton-containing cations and having six-membered rings and/or larger rings as secondary structural groups of the zeolithic structure, and having in the crystal lattice passages of said zeolites, a phase which promotes proton transport and wherein the zeolite is a zeolite of the analcime group, the chabazite group, the phillipsite group and/or the faujasite group.

4,495,079

FACIAL SKIN CLEANSER CAPABLE OF SOFTENING AND REMOVING SEBUM PLAQUE

Allen H. Good, 149 Kent Place Blvd., Summit, N.J. 07901

Filed Apr. 21, 1983, Ser. No. 487,306

Int. Cl.³ C11D *3/48, 3/46*

U.S. Cl. 252—106 10 Claims

1. A facial skin cleanser capable of softening and removing sebum plaque which comprises a thickened mixture of from 6 to 20 parts mineral oil, 4 to 19 parts of a mixed ester of a C_{12}-C_{18} fatty alcohol with caprylic acid and capric acid, 0.02 to 3 parts of a mixture of cetyl alcohol and stearyl alcohol, 0.2 to 3 parts of a mixture of cetyl alcohol and stearyl alcohol ethoxylated with from 10 to 30 moles of ethylene oxide, 0.02 to 1 part of sodium lauryl sulfate, per 100 parts by weight of the composition, and sufficient alkali to raise the pH of the composition to from 5.5 to 7.5, the balance comprising an aqueous solvent system.

4,495,080

METHOD FOR PREPARING A CATION EXCHANGER

Léon Petit, Wavre, and Serge R. De La Roche, Alsemberg, both of Belgium, assignors to Société Internationale de Publicité et d'Agences commerciales, enabrégé: "Sipec", Belgium

Continuation of Ser. No. 223,901, Jan. 9, 1981, abandoned. This application Aug. 8, 1983, Ser. No. 521,014

Claims priority, application Luxembourg, Jan. 16, 1980, 82089

Int. Cl.³ C02F *5/02;* C02B *1/44*

U.S. Cl. 252—179 26 Claims

1. A method of preparing a cation exchanger for removing metals from metal-containing liquids, which comprises:

(a) preparing a silicic acid solution having a molecular weight lower than 50,000 at a pH valve between 1 and 3;

(b) adding to said silicic acid solution an amount of cement to form a micro-spongy precipitate having a CaO/SiO_2 ratio between 1 and 3.5; and

(c) drying and grinding said precipitate to form particles with a mean diameter of from 100 to about 600 microns.

4,495,081

COMPOSITIONS CONTAINING POLYETHER POLYOLS AND ALIPHATIC PRIMARY AMINES

James A. Vanderhider, Lake Jackson, and Gerald M. Lancaster, Surfside, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 397,714, Jul. 13, 1982, abandoned, which is a continuation-in-part of Ser. No. 321,348, Nov. 16, 1981, abandoned, which is a continuation-in-part of Ser. No. 231,066, Feb. 3, 1981, abandoned. This application Nov. 7, 1983, Ser. No. 549,697

Int. Cl.³ C08G *18/06, 18/14;* C09K *3/00*

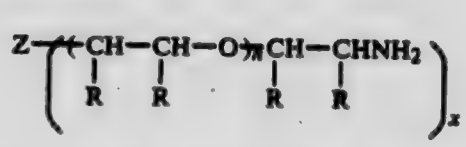
U.S. Cl. 252—182 11 Claims

1. A composition consisting essentially of a mixture of

(I) a polyol or a polyol mixture which polyol(s) is(are) free of active amine hydrogen atoms and which polyol or polyol mixture has an average hydroxyl functionality of at least 2 and an average hydroxyl equivalent weight of from about 500 to about 5000 and

(II) as a chain extender composition a mixture comprising

(A) at least one aliphatic amine-containing material having at least one primary amine group or a mixture of such materials, which material or mixture of materials has an average aliphatic amine hydrogen functionality of from about 2 to about 16 and an average aliphatic amine hydrogen equivalent weight of from about 15 to about 500 selected from the group consisting of alkylenediamines, polyalkylenepolyamines, cycloaliphatic amines, heterocyclic aliphatic amines and aminated polyoxyalkylene compounds which are represented by the general formula



wherein Z is the residue resulting from the removal of two or more hydrogen atoms from an initiator compound having a plurality of OH, NH or NH_2 groups or a combination of such groups; x has a value of from 2 to about 16; n has a value sufficient to provide the compound with the desired equivalent weight; and each R is independently hydrogen or a hydrocarbyl group having from 1 to about 4 carbon atoms with the proviso that when one of the R groups is other than hydrogen or a methyl group, the other R group is hydrogen; and

(B) one or more of the members selected from the group consisting of

(1) at least one hydrogen-containing material free of aliphatic amine hydrogen atoms or mixture of such materials, which material or material mixture has an

average OH functionality of from about 2 to about 4; and an average OH equivalent weight of from about 30 to about 120; and

(2) at least one aromatic amine-containing compound which is essentially free of aliphatic amine hydrogens and which contains at least 2 aromatic amine hydrogen atoms or mixture of such materials; and

wherein

(a) components (I) and (II-A) are present in quantities such that component (I) provides from about 60 to about 98 percent by weight of the composition based upon the combined weight of components (I) and (II-A) and

(b) component (II-B) is present in a quantity of from about 5 to about 60 percent by weight of the combined quantities of (I), (II-A) and (II-B).

4,495,082

WATER-ABSORBENT

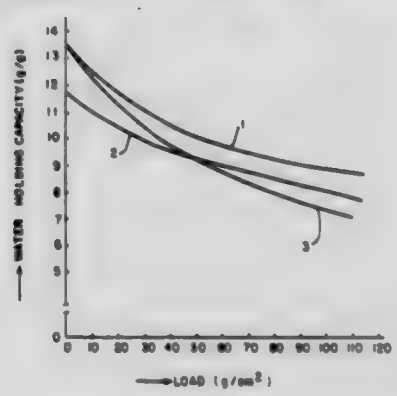
Akio Mita, Tokyo, and Susumu Kashiwabara, Hino, both of Japan, assignors to Director-General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Mar. 14, 1980, Ser. No. 130,348

Claims priority, application Japan, Apr. 4, 1979, 54-40169

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—194 7 Claims



1. A water-absorbent which comprises a mixture of a pulp A manufactured by a pulping treatment of bagasse containing at least 5% by weight of pith and having a lignin content of 5-25% by weight and a pulp B having a lignin content of not greater than 5% by weight, wherein the ratio by weight of pulp A to pulp B (A/B) is within the range of from 95/5 to 20/80.

4,495,083

GUEST-HOST TYPE LIQUID CRYSTAL COMPOSITION AND LIQUID CRYSTAL DISPLAY DEVICE USING THE SAME

Shuji Imazeki; Akio Mukoh; Hiroenda Morishita, all of Hitachi; Seiichi Imabori, Kawasaki; Masaharu Kaneko, Yamato, and Hitoshi Ono, Yokohama, all of Japan, assignors to Hitachi, Ltd. and Mitsubishi Chemical Industries, Limited, both of Tokyo, Japan

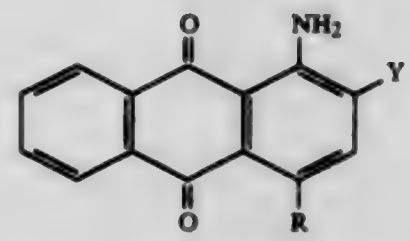
Filed Oct. 10, 1980, Ser. No. 195,860

Claims priority, application Japan, Oct. 12, 1979, 54-130785; Jan. 8, 1980, 55-712; May 28, 1980, 55-70152; Aug. 21, 1980, 55-114937; Sep. 8, 1980, 55-123571

Int. Cl.³ C09K *3/34*; C02F *1/13*

U.S. Cl. 252—299.1 17 Claims

1. In a liquid crystal composition comprising at least one host liquid crystal and at least one pleochroic dye dissolved as a guest in said at least one host liquid crystal, said host liquid crystal being a nematic liquid crystal, wherein said at least one pleochroic dye includes at least one anthraquinone dye represented by the formula:



(I)

wherein R is OH or NH_2, provided that (a) when R is OH, Y is selected from the group consisting of COXR′ in which X is an oxygen atom, and R′ is a cycloalkyl group or an aryl group each having one or more substituents, and (b) when R is NH_2, Y is COXR′ in which X and R′ are as defined above, and wherein said substituents have 1 to 18 carbon atoms when R is OH, and 1 to 24 carbon atoms when R is NH_2.

4,495,084

PLASTIC SCINTILLATOR

Tohru Shimizu, Noda, and Junji Nakagawa, Ichikawa, both of Japan, assignors to Kyowa Gas Chemical Industry Co., Ltd., Tokyo, Japan

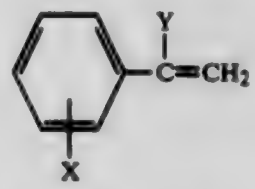
Filed Aug. 16, 1982, Ser. No. 408,452

Claims priority, application Japan, Aug. 17, 1981, 56-127750

Int. Cl.³ G01T *1/20*

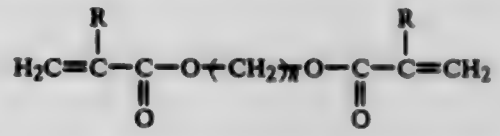
U.S. Cl. 252—301.17 19 Claims

1. A plastic scintillator in which a scintillating substance is incorporated in a matrix resin comprising a copolymer obtained by polymerizing a polymerizable mixture comprising at least 40 percent by weight of (a) at least one compound represented by the general formula I:



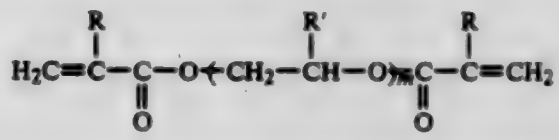
(I)

wherein, X and Y independently denote hydrogen atom or methyl group providing they do not exclusively denote methyl group, and a crosslinking amount of (b) at least one copolymerizable monomer possessed of two carbon-carbon double bonds capable of radical polymerization in the molecular unit thereof selected from the group consisting of compounds represented by the general formula II:



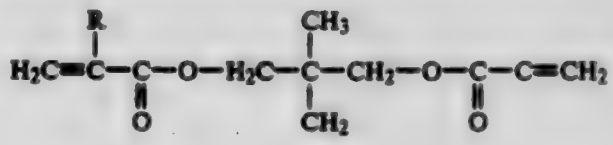
(II)

wherein, R denotes hydrogen atom or methyl group and n an integer of the value of 3 to 8; compounds represented by the general formula III:



(III)

wherein, R and R′ independently denote hydrogen atom or methyl group and m an intrger of the value of 1 to 23; and compounds represented by the general formula IV:



(IV)

wherein, R denotes hydrogen atom or methyl group.

4,495,085

PHOSPHOR

Shunichi Hashimoto, Yokohama, and Katsutoshi Ohno, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 23, 1984, Ser. No. 582,782
Claims priority, application Japan, Feb. 28, 1983, 58-31963
Int. Cl.³ C09K *11/46*
U.S. Cl. 252—301.4 F 9 Claims

1. A phosphor comprising:
a host material of calcium silicate having the formula:

$$CaO.xSiO_2$$

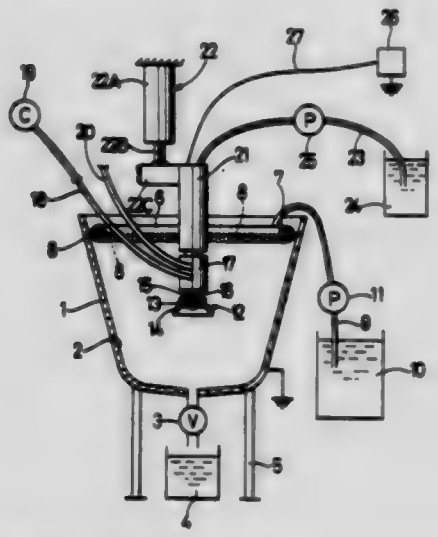
where x is in the range of 0.5 to 1, and
an activator of dysprosium in an amount of 0.05 to 10 mol % relative to one mol of said host material, said phosphor emitting essentially white light under excitation by an electron beam source and having a long decay time during which it emits essentially white light after the excitation source is removed.

4,495,086

METHOD AND APPARATUS FOR PREPARING EMULSIONS

Koichi Hiroshima, Kawasaki, and Yoshinori Tada, Chigasaki, both of Japan, assignors to Ransburg Japan, Limited, Tokyo, Japan

Filed Jul. 14, 1982, Ser. No. 398,441
Claims priority, application Japan, Aug. 19, 1981, 56-129606; Jan. 13, 1982, 57-3894
Int. Cl.³ B01F *13/08*; B01J *13/00*; B05B *5/04*
U.S. Cl. 252—314 20 Claims



1. An apparatus for producing emulsions by spraying particles of a disperse phase liquid into a continuous phase liquid, said apparatus comprising in combination:
(a) an emulsifying vessel interiorly providing a gravitiative flow surface for forming thereon a stream of said continuous phase liquid;
(b) a continuous phase liquid feeder for directing said continuous phase liquid to said gravitative flow surface of said emulsifying vessel;
(c) a rotary atomizing head disposed in said emulsifying vessel in communication with a disperse phase liquid supply;
(d) a rotational drive means for rotatably driving said rotary atomizing head within said emulsifying vessel;
(e) a high voltage power supply connected to said rotary atomizing head to apply thereto a high voltage to atomize said disperse phase liquid in cooperation with said rotational drive means and to direct electrostatically charged particles of said disperse phase liquid toward said gravitative flow surface of said emulsifying vessel along lines of electric force formed between said rotary atomizing head and said emulsifying vessel, thereby continuously dispersing the atomized particles of said disperse phase liquid in said stream of said continuous phase liquid; and
(f) a receptacle located beneath said gravitative flow surface of said emulsifying vessel for collecting the resulting dispersion.

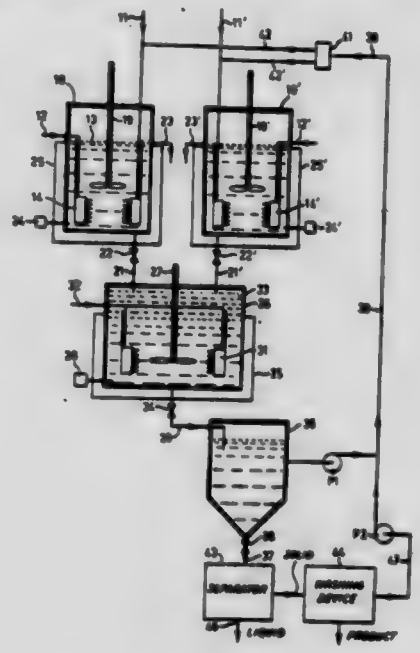
19. A method for producing an emulsion by spraying particles of a disperse phase liquid into a continuous phase liquid, said method comprising the steps of:
(a) feeding said continuous phase liquid to a gravitative flow surface on the inner periphery of an emulsifying vessel and allowing said continuous phase liquid to flow therealong due to the force of gravity in the form of a thin filmy stream;
(b) feeding said disperse phase liquid to a rotary atomizing head;
(c) rotating said rotary atomizing head in said emulsifying vessel while applying a predetermined high voltage to said rotary atomizing head to thereby atomize said disperse phase liquid to form a spray of disperse phase particles of a desired size; and
(d) directing said spray of disperse phase particles to impact on said filmy stream of said continuous phase liquid on the gravitative flow surface on the inner periphery of said emulsifying vessel to thereby disperse said disperse phase particles in said continuous phase liquid.

4,495,087

PREPARATION OF ALUMINUM HYDROXYCARBONATE GELS BY A CONTINUOUS PROCESS

Tai-Wing Ng, Downsview; Arthur P. G. Wright, Toronto; Eric Blaser, Toronto, and Suhas Ambike, West Hill, all of Canada

Filed Dec. 27, 1982, Ser. No. 452,997
Int. Cl.³ B01J *13/00*; C01F *7/02*; A61K *33/08*
U.S. Cl. 252—315.7 27 Claims



1. Process for the production of aluminum hydroxycarbonate gel comprising reacting an aqueous solution of an aluminum salt with an aqueous alkaline solution containing carbonate and bicarbonate anion and that undergoes reaction with the aluminum salt to precipitate therefrom an aluminum hydroxycarbonate gel, said process comprising continuously introducing the reactant solutions into an initial reactor vessel wherein the gel-forming reaction takes place, the reaction mixture being vigorously agitated so as to maintain the reactants and the gel precipitate formed therefrom substantially homogeneously distributed through the vessel and wherein the reaction mixture in the initial reactor vessel is maintained at a pH from about 6.5 to about 7.0, by controlled addition of an aqueous solution of an aluminum salt, continuously withdrawing

from the initial reactor vessel an output stream of the reaction mixture containing aluminum hydroxycarbonate gel, passing the reaction mixture to a subsequent reaction vessel wherein the reaction mixture is maintained at a lower pH of about 6.4 to about 6.8, and permitting the gel-forming reaction to proceed in the said subsequent vessel.

4,495,088

METHOD FOR IMPROVING FUEL ECONOMY OF INTERNAL COMBUSTION ENGINES

Thomas V. Liston, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 279,499, Jul. 1, 1981, abandoned. This application Feb. 24, 1983, Ser. No. 469,499
The portion of the term of this patent subsequent to Jun. 19, 2001, has been disclaimed.
Int. Cl.³ C10M *1/48, 1/54*
U.S. Cl. 252—32.7 E 12 Claims

1. A lubricating oil composition comprising a major amount of an oil of lubricating viscosity and an effective amount to reduce friction of a borated fatty acid ester of glycerol or mixtures thereof and an effective amount of an alkenyl succinimide to stabilize the borated fatty acid ester of glycerol against hydrolysis.

4,495,089

CONTINUOUS PROCESS FOR THE PRODUCTION OF SOLVENTS FOR COAL LIQUEFACTION

Hiroyuki Ihara; Kazuo Takahashi; Michiro Matsubara; Fumio Kumata, and Yoshitomo Sanami, all of Kanagawa, Japan, assignors to Mitsubishi Oil Company, Limited, Tokyo, Japan

Filed Sep. 10, 1982, Ser. No. 416,763
Claims priority, application Japan, Sep. 12, 1981, 56-143183
Int. Cl.³ B01F *1/00;* C10G *1/08*
U.S. Cl. 252—364 10 Claims

1. A continuous process for the production of a solvent used in liquefaction of coal, comprising the steps of:

hydrogenating a mixture comprised of 100 parts by weight of a hydrocarbon mixture and from 0.2 to 10 parts by weight of phenol and/or alkylphenol in which the alkyl group contains from 1 to 3 carbon atoms, the alkylphenol being at least one member selected from the group consisting of cresols, xylenols, methylethylphenols, and propylphenols which have a boiling point of from 180° to 250° C., the hydrocarbon mixture containing at least 50% by weight of a polycyclic aromatic hydrocarbon and its alkyl derivative, the polycyclic aromatic hydrocarbon and its alkyl derivative being tricyclic to pentacyclic aromatic hydrocarbons and their alkyl derivatives and being at least one member selected from the group consisting of phenanthrene, anthracene, fluoranthene, pyrene, chrysene, cholanthrene, benzo (a) phrene, and their alkyl derivatives, wherein at least 80% by weight of the hydrocarbon mixture has a boiling point in a range of from 320° to 550° C., the hydrogenation being carried out in a high temperature and pressure atmosphere in the presence of a catalyst containing a sulfide selected from the group VIII metal sulfides and group IV metal sulfides of the Periodic Table to obtain a partially hydrogenated product having a partial hydrogenation rate of less than 50% from partial hydrogenation of an aromatic ring of the polycyclic aromatic hydrocarbon or its alkyl derivative.

10. A continuous process for the production of a solvent used in liquefaction of coal, comprising the steps of:

hydrogenating a mixture comprised of 100 parts by weight of a hydrocarbon mixture and from 0.2 to 10 parts by weight of phenol and/or alkylphenol in which the alkyl group contains from 1 to 3 carbon atoms, the alkylphenol being at least one member selected from the group consisting of cresols, xylenols, methylethylphenols, and propylphenols which have a boiling point of from 180° to 250° C., the hydrocarbon mixture containing at least 50% by weight of a polycyclic aromatic hydrocarbon and its alkyl derivative, the polycyclic aromatic hydrocarbon and its alkyl derivative being tricyclic to pentacyclic aromatic hydrocarbons and their alkyl derivatives and being at least one member selected from the group consisting of phenanthrene, anthracene, fluoranthene, pyrene, chrysene, cholanthrene, benzo (a) phrene, and their alkyl derivatives, wherein at least 80% by weight of the hydrocarbon mixture has a boiling point in a range of from 320° to 550° C., the hydrogenation being carried out in a high temperature and pressure atmosphere in the presence of a catalyst containing a sulfide selected from the group VII metal sulfides and group IV metal sulfides of the Periodic Table to obtain a partially hydrogenated product having a partial hydrogenation of an aromatic ring of the polycyclic aromatic hydrocarbon or its alkyl derivative,

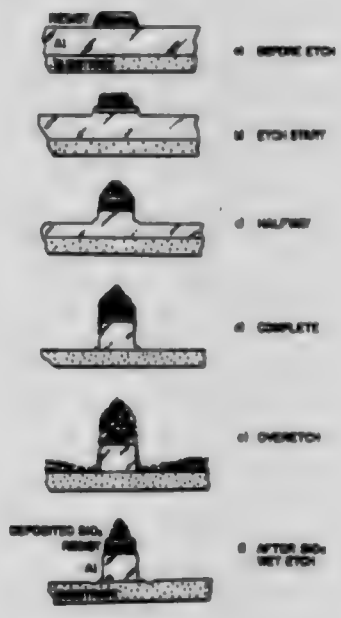
the catalyst containing the sulfide is selected from the group consisting of nickel-molybdenum sulfide catalyst and cobalt-molybdenum sulfide catalyst and wherein the hydrogenation in a high temperature and pressure hydrogen atmosphere is performed at a temperature of from 280° to 360° C., a pressure of from 50 to 200 kg/cm^2 (gauge pressure), a hydrogen/feed ratio of from 300 to 3,000 vol/vol, and a liquid space velocity per hour of volume of feed oil passing per volume of the catalyst of from 0.5 to 2.0 vol/-vol.

4,495,090

GAS MIXTURES FOR ALUMINUM ETCHING

Christopher M. Horwitz, Summer Hill, Australia, assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 454,946, Jan. 3, 1983, Pat. No. 4,462,882. This application Sep. 12, 1983, Ser. No. 531,515
Int. Cl.³ C23K *15/00*
U.S. Cl. 252—372 6 Claims



1. An etch gas mixture for selectively etching aluminum in preference to a masking material on said aluminum, the mixture comprising an etch gas, a source of gaseous silicon, a source of gaseous hydrogen and a source of gaseous oxygen, which when introduced into a plasma etching chamber serves to deposit silicon dioxide selectively on the masking material while the unmasked aluminum is etched.

4,495,091

PROCESSES FOR PREPARING METHYL SUBSTITUTED-2-OXOHEXANE MIXTURES

Richard M. Boden, Monmouth Beach; Lambert Dekker, Wyckoff; Frederick L. Schmitt, Holmdel, all of N.J., and Augustinus G. van Loveren, Rye, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

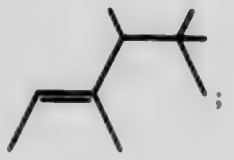
Division of Ser. No. 345,666, Feb. 8, 1982, Pat. No. 4,420,423, which is a continuation-in-part of Ser. No. 195,630, Oct. 9, 1980, Pat. No. 4,335,009, which is a continuation-in-part of Ser. No. 160,788, Jun. 19, 1980, Pat. No. 4,287,084. This application May 24, 1983, Ser. No. 497,598

Int. Cl.³ A61K 7/46

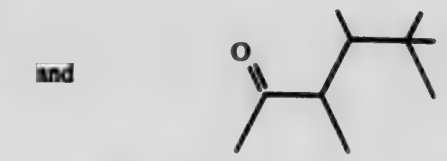
U.S. Cl. 252—522 R 4 Claims

1. A process comprising the steps of:

(i) dimerizing two moles of isoamylene in the presence of an acidic atalyst to form diisoamylene which is a mixture of molecules having the structures:

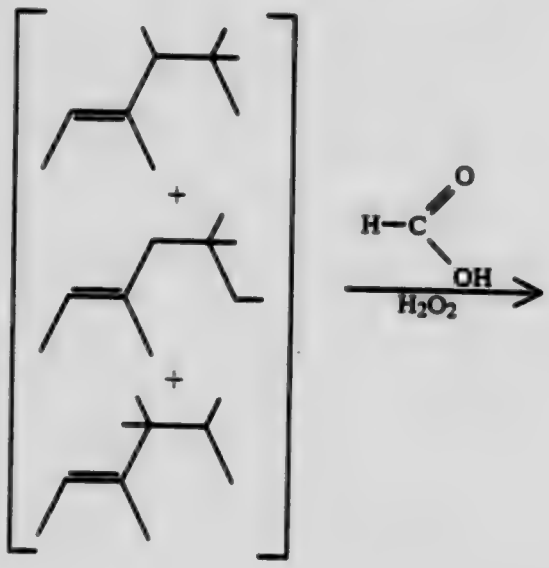


and

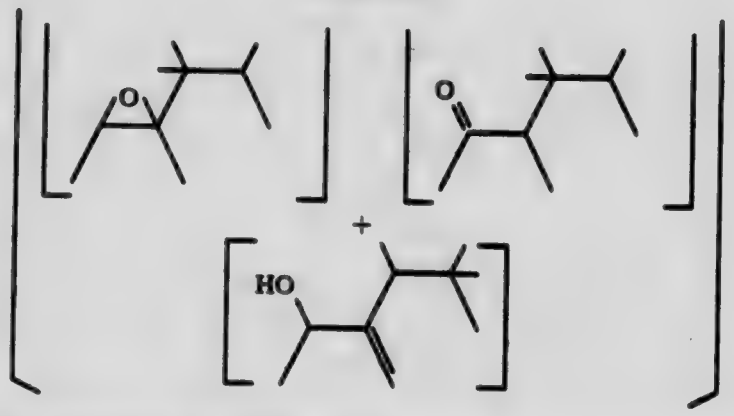


having a distillation range of 36°–40° C., vapor teperature; 74°–94° C. liquid temperature and 4–5 mm/Hg pressure;

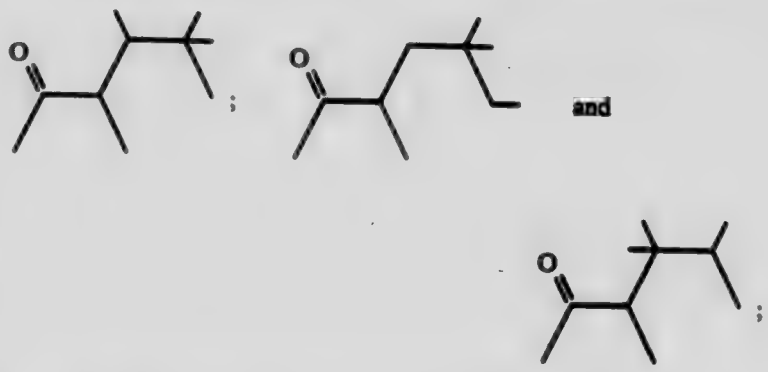
(ii) intimately admixing the resulting diisoamylene mixture with concentrated hydrogen peroxide and formic acid whereby a mixture of alcohols, epoxides and ketones is formed according to the reaction:



-continued

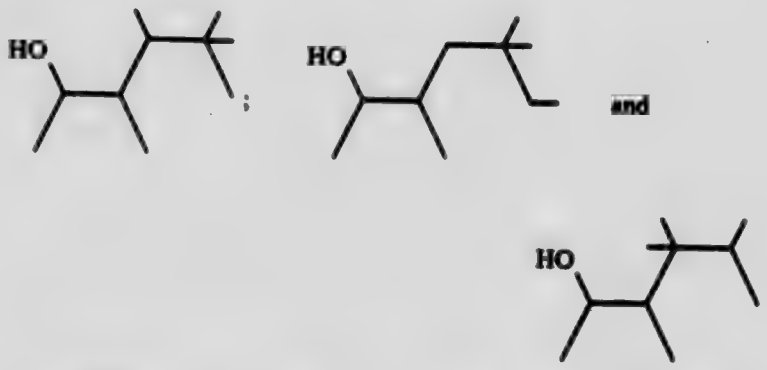


(iii) distilling the resulting reaction product at a temperature in the range of 93°–100° C. vapor temperature; 109°–120° C. liquid temperature at 50 mm/Hg pressure in order to isolate a mixture of compounds having the structure:



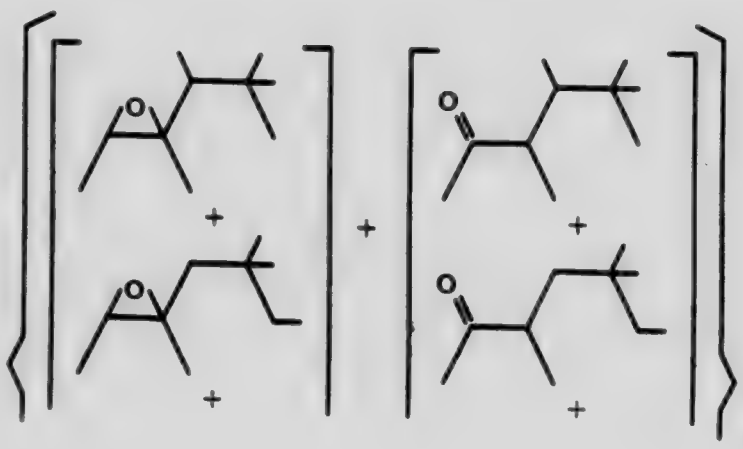
and

(iv) intimately admixing the resulting mixture with an alkali metal borohydride whereby a mixture of compounds is formed having the structures:

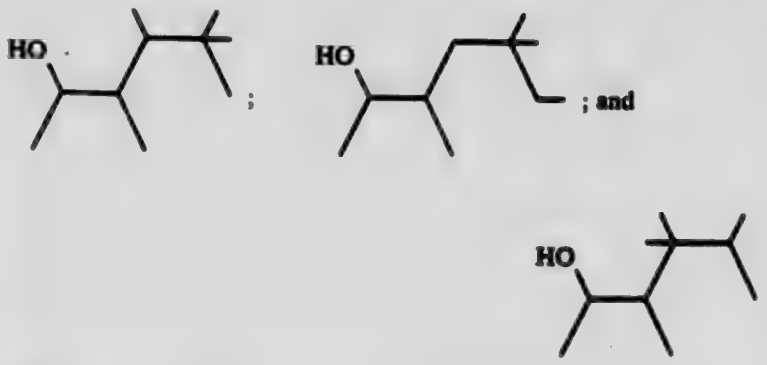


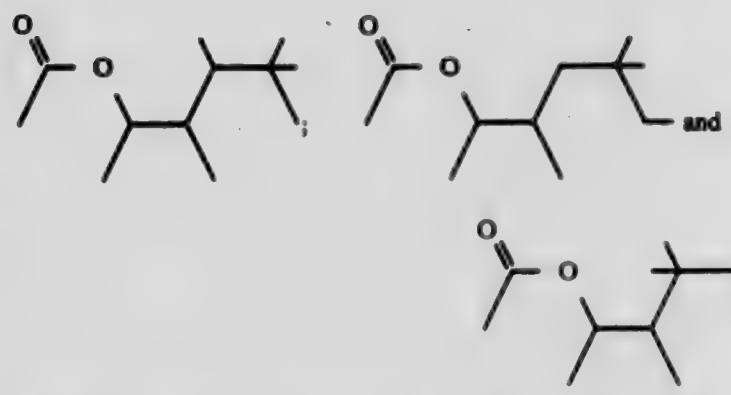
distilling at a vapor temperature in the range of 90°–93° C.; a liquid temperature in the range of 97°–108° C. and a pressure of 14 mm/Hg.

2. The process of claim 1 comprising the additional step of intimately admixing the mixture of compounds having the structures:



with acetic anhydride whereby a mixture of compounds is formed having the structures:





distilling at a vapor temperature in the range of 88°–90° C.; a liquid temperature in the range of 97°–109° C. and a pressure of 8.5 mm/Hg.

3. The product produced by the process of claim 1.

4. The product prepared according to the process of claim 2.

4,495,092

VISCOSITY REGULATORS FOR HIGH-VISCOSITY SURFACTANT CONCENTRATES

Karl H. Schmid, Mettmann; Hans J. Rommerskirchen, Duesseldorf-Eller; Herbert Reuter, Hilden; Wolfgang Seiter, Neuss, and Robert Piorr, Ratingen-Hoesel, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Feb. 6, 1984, Ser. No. 577,433

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1983, 3305430

Int. Cl.³ C11D *1/825*

U.S. Cl. 252—559 21 Claims

1. A process for the preparation of an aqueous concentrate of an α-sulfofatty acid ester comprising the steps of:

(a) Sulfonating a fatty acid ester in the α-position with an excess of gaseous SO_3 to produce an α-sulfofatty acid ester;

(b) removing most or all of the excess SO_3 from the α-sulfofatty acid ester;

(c) adding to the α-sulfofatty acid ester (i) a monohydric or polyhydric alcohol containing from 8 to 40 carbon atoms or (ii) a reaction product a monohydric or polyhydric alcohol containing from 8 to 40 carbon atoms of with from 1 to 20 moles of ethylene oxide, propylene oxide, or a mixture of ethylene oxide and propylene oxide, per mole of alcohol;

(d) neutralizing the α-sulfofatty acid ester with concentrated aqueous alkali metal hydroxide solution wherein said solution is at a concentration sufficient to produce an α-sulfofatty acid ester concentration of at least 50% by weight;

and wherein the alcohol in step (c) is added in quantity sufficient to produce a viscosity of the aqueous concentrate of less than 10,000 mPas at 70° C.

4,495,093

PROCESS FOR MAKING THIOBISCARBAMATES

Wallace Y. Fu, Chapel Hill, N.C., assignor to Union Carbide Corporation, Danbury, Conn.

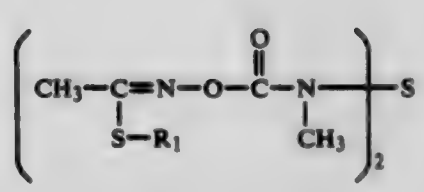
Filed Apr. 15, 1982, Ser. No. 368,639

Int. Cl.³ C07C *103/12*

U.S. Cl. 260—453.3 19 Claims

1. An improved method for the preparation of a stable thiobiscarbamate compound of the formula:

Formula I



wherein R_1 is alkyl of from 1 to 4 carbon atoms, which method comprises the steps of:

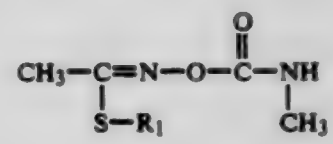
(1) contacting at a temperature of from about 0° C. to about 35° C.

(a) a mixture of:

(i) a nitrogen-containing heterocyclic base, and

(ii) a carbamate of the formula:

Formula II



wherein R_1 is as previously defined, with

(b) a sulfur chloride of the group of SCl_2 and S_2Cl_2, to form a reaction slurry.

(2) cooling said slurry to a temperature of no greater than about 20° C.,

(3) quenching said slurry by the addition thereto of a C_1–C_3 alcohol at a temperature of no greater than 35° C.,

(4) separating said thiobiscarbamate from said slurry and purifying by one or more washings with methanol, and

(5) thereafter, recovering said thiobiscarbamate in high yield, and having a good thermal stability.

4,495,094

PROCESS FOR SEPARATING FATTY AND ROSIN ACIDS FROM UNSAPONIFIABLES

Michael T. Cleary, Elmhurst, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Apr. 9, 1984, Ser. No. 598,121

Int. Cl.³ C09F *1/00, 5/10*

U.S. Cl. 260—97.6 7 Claims

1. A process for separating fatty and rosin acids from a feed mixture comprising said fatty and rosin acids and an unsaponifiable compound, said process comprising:

(a) introducing said feed mixture into an extraction zone, and therein contacting said mixture with a solvent comprising an alcohol and water solution which is selective for adsorbing said fatty and rosin acids;

(b) removing a raffinate stream from said extraction zone which contains a higher concentration of unsaponifiable compound than said feed mixture; and

(c) removing a solvent-rich extract stream from said extraction zone containing a higher concentration of said fatty and rosin acids, on a solvent free basis, than said feed mixture.

4,495,095

ACIDULATION AND RECOVERY OF CRUDE TALL OIL FROM TALL OIL SOAPS

Nelson E. Lawson, Trenton, and Gamal I. Amer, Lawrenceville, both of N.J., assignors to Union Camp Corporation, Wayne, N.J.

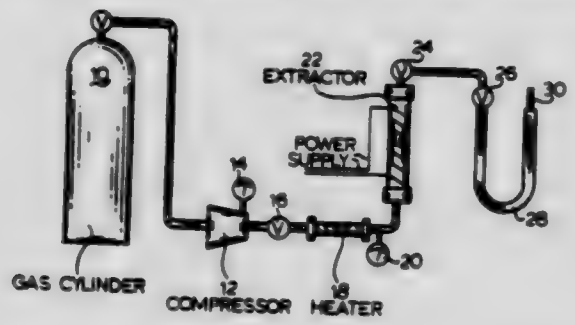
Filed Apr. 4, 1983, Ser. No. 481,811

Int. Cl.³ C09F *93/00;* C11D *15/00*

U.S. Cl. 260—97.7 4 Claims

1. A method for the preparation of crude tall oil which

comprises acidulating tall oil soaps with supercritical carbon dioxide and thereafter recovering the resulting acidulated



material from the fluid phase of the supercritical carbon dioxide.

4,495,096

PROCESS FOR PRODUCING AND OBTAINING ANAPHYLATOXIN-AND COCYTOTAXIN-CONTAINING LEUCOTAXINE PREPARATIONS AND OF ANAPHYLATOXIN AND COCYTOTAXIN PROTEINS IN MOLECULARLY HOMOGENEOUS, BIOLOGICALLY ACTIVE FORM

Josef H. Wissler, Bad Nauheim, Fed. Rep. of Germany, assignor to Max-Planck Gesellschaft Zur Forderung der Wissenchaften, Gottingen, Fed. Rep. of Germany

Filed Jun. 18, 1981, Ser. No. 275,014

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1980, 3022914

Int. Cl.³ C07G *7/00*

U.S. Cl. 260—112 B

32 Claims

1. In a process for producing and obtaining an anaphylatoxin- and cocytotaxin-containing leucotaxine preparation in biologically active form from contact-activated mammalian serum, the process including separating proteins from other serum constituents to obtain a serum protein concentrate fraction, separating a part of accompanying foreign blood proteins from anaphylatoxin and cocytotaxin present in said protein concentrate fraction, and isolating the leucotaxine preparation by chromatography on hydroxyapatite, wherein the improvement comprises separating prior to chromatography on hydroxyapatite, a major fraction of accompanying foreign blood constituents from said serum protein concentrate fraction by fractional elution and then filtering the residual protein precipitate containing anaphylatoxin and cocytotaxin by molecular sieve filtration.

4,495,097

DES-SERINE²-GLYCINE⁸ CALCITONIN

Ronald C. Orlowski, Frankfort, and Jay K. Seyler, Bourbonnais, both of Ill., assignors to Armour Pharmaceutical Company, Tarrytown, N.Y.

Filed Apr. 4, 1983, Ser. No. 481,979

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 T

4 Claims

1. A peptide having the structure:

H—CYS—ASN—LEU—SER—THR—CYS—GLY—LEU—
—GLY—LYS—LEU—SER—GLN—GLU—LEU—HIS—
—LYS—LEU—GLN—THR—TYR—PRO—ARG—THR—
—ASN—THR—GLY—SER—GLY—
THR—PRO—NH_2(Salmon)

or

-continued

H—CYS—ASN—LEU—SER—THR—CYS—GLY—LEU—
—GLY—LYS—LEU—SER—GLN—GLU—LEU—HIS—
—LYS—LEU—GLN—THR—TYR—PRO—ARG—THR—
—ASP—VAL—GLY—ALA—GLY—THR—PRO—NH_2(Eel).

4,495,098

COORDINATION COMPLEXES OF POLYVALENT METAL IONS AND CYAN DYE-RELEASING COMPOUNDS COMPRISING A 6-HETEROCYCLAZO-3-PYRIDINOL

James A. Roczak, Rochester, and James K. Elwood, Victor, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

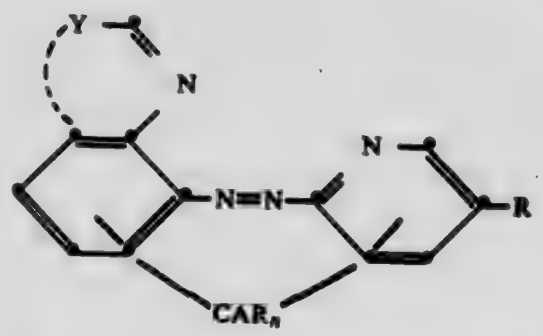
Division of Ser. No. 458,501, Jan. 17, 1983, Pat. No. 4,419,435, which is a continuation-in-part of Ser. No. 380,844, May 21, 1982, abandoned. This application Jun. 15, 1983, Ser. No. 504,694

Int. Cl.³ C09B *45/14, 45/18, 45/20, 45/22*

U.S. Cl. 534—651

9 Claims

1. A coordination complex of a polyvalent metal ion and a nondiffusible compound capable of releasing at least one diffusible cyan dye moiety comprising a 6-heterocyclylazo-3-pyridinol, said compound having the formula:



wherein:

(a) Y represents the atoms necessary to complete a 5- or 6-membered aromatic heterocyclic fused ring;

(b) CAR represents a ballasted carrier moiety capable of releasing said diffusible cyan dye moiety as a function of development of a silver halide emulsion layer under alkaline conditions;

(c) R represents a hydroxy group, a salt thereof, or a hydrolyzable precursor thereof, or CAR which is linked to said dye moiety through an oxygen atom thereon; and

(d) n is 0, 1 or 2, with the proviso that when n is 0, the R is CAR which is linked to said dye moiety through an oxygen atom thereon.

4,495,099

NON-DIFFUSIBLE MAGENTA COMPOUND CAPABLE OF RELEASING A 4-(2-HETEROCYCLAZO)PHENOL HAVING A HETEROCYCLIC RING FUSED THERETO

Steven Evans, Rochester, and James K. Elwood, Victor, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

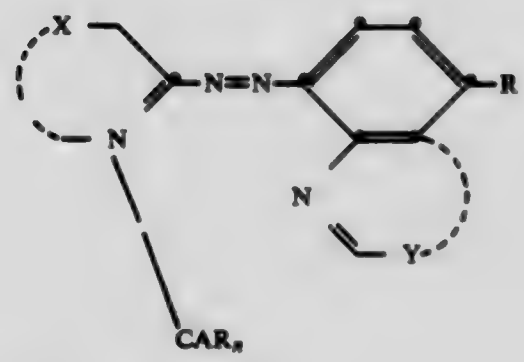
Division of Ser. No. 458,499, Jan. 17, 1983, Pat. No. 4,420,550, which is a continuation-in-part of Ser. No. 380,843, May 21, 1982, abandoned. This application Jun. 15, 1983, Ser. No. 504,692

Int. Cl.³ C09B *45/02, 45/12, 45/22, 45/32*

U.S. Cl. 534—651

15 Claims

1. A nondiffusible compound capable of releasing at least one diffusible magenta dye moiety, said compound having the formula:



wherein:

(a) X represents the atoms necessary to complete a 5- or 6-membered heterocyclic ring;

(b) Y represents the atoms necessary to complete a 5- or 6-membered heterocyclic fused ring;

(c) CAR represents a ballasted carrier moiety which will release said diffusible magenta dye moiety as a function of development of a silver halide emulsion layer under alkaline conditions;

(d) R represents hydroxy, a salt thereof, or a hydrolyzable precursor thereof, or CAR which is linked to said dye moiety through an oxygen atom thereon; and

(e) n is 0, 1 or 2, with the proviso that when n is 0, then R is CAR which is linked to said dye moiety through an oxygen atom thereon.

4,495,100

NON-DIFFUSIBLE CYAN COMPOUND CAPABLE OF RELEASING A 6-HETEROCYCLYLAZO-3-PYRIDINOL

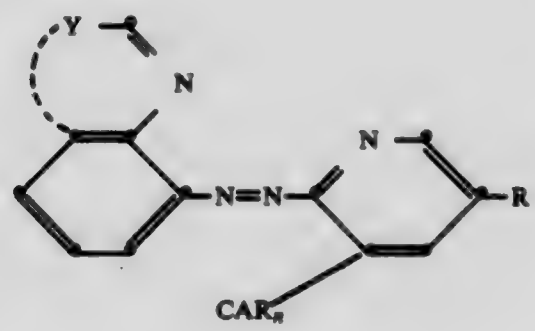
James A. Reczek, Rochester, and James K. Elwood, Victor, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 458,501, Jan. 17, 1983, Pat. No. 4,419,435, which is a continuation-in-part of Ser. No. 380,844, May 21, 1982, abandoned. This application Jun. 15, 1983, Ser. No. 504,693

Int. Cl.³ C09B *29/22, 29/36, 45/00, 31/14*

U.S. Cl. 534—651 15 Claims

1. A nondiffusible compound capable of releasing at least one diffusible cyan dye moiety, said compound having the formula:



wherein:

(a) Y represents the atoms necessary to complete a 5- or 6-membered aromatic heterocyclic fused ring;

(b) CAR represents a ballasted carrier moeity which will release said diffusible cyan dye moiety as a function of development of a silver halide emulsion layer under alkaline conditions;

(c) R represents hydroxy, a salt thereof, or a hydrolyzable precursor thereof, or CAR which is linked to said dye moiety through an oxygen atom thereon; and

(d) n is 0, 1, or 2, with the proviso that when n is 0, then R is CAR which is linked to said dye moiety through an oxygen atom thereon.

4,495,101

ANTIINFLAMMATORY 5H-TETRAZOLO (5,1-C)(1,4)BENZODIAZEPINE DERIVATIVES

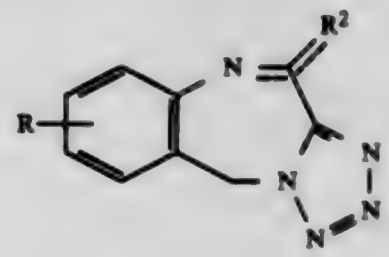
Dieter H. Klaubert, Flemington, N.J.; Stanley C. Bell, Narberth, Pa.; Thomas W. Pattison, King of Prussia, Pa., and Richard W. Rees, Bryn Mawr, Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Apr. 28, 1983, Ser. No. 489,685

Int. Cl.³ C07D *210/00, 403/00*

U.S. Cl. 260—239.3 T 20 Claims

1. A compound of the formula:

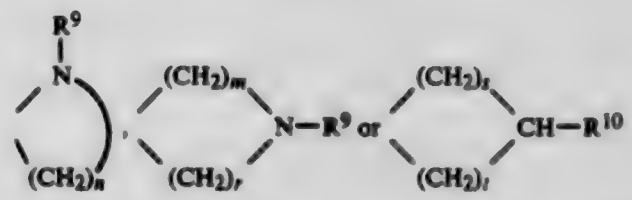


in which

R is hydrogen, halogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, hydroxyl nitro or cyano; and

R^2 is =O, =S, H_2, $-SCH_3$, or $-NR^4R^5$

where R^4 and R^5 are, independently, hydrogen, alkyl of 1 to 6 carbon atoms or dialkylaminoalkyl where each alkyl moiety has 1 to 6 carbon atoms, or R^4 and R^5 together form an alkylidene group of 4 to 6 carbon atoms, or, together with the nitrogen atom to which they are attached, they form the 4-morpholinyl moiety or a group of the formula:



wherein R^9 is alkyl of 1 to 6 carbon atoms, aryl of 6 to 10 carbon atoms, hydroxyalkyl of 1 to 6 carbon atoms; aralkyl of 7 to 16 carbon atoms or alkoxyalkyl of 2 to 12 carbon atoms; R^{10} is alkylamino of 1 to 6 carbon atoms or piperidino; n is one of the integers 3, 4 or 5; m is one of the integers 1 or 2; r is one of the integers 2 or 3; s is an integer from 0 to 6; t is an integer from 0 to 6; with the proviso that the sum of s and t is 3 to 6; and with the proviso that when R is chloro in 8-position, R^2 must be other than oxygen or sulfur; or a pharmaceutically acceptable salt thereof.

4,495,102

AMINOALKYL STEROIDS

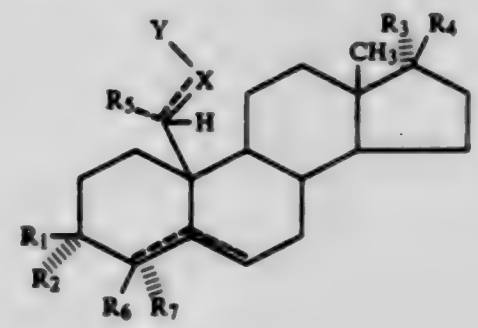
Leonard N. Nysted, Highland Park, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Filed Sep. 3, 1982, Ser. No. 414,717

Int. Cl.³ C07J *43/00*

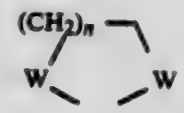
U.S. Cl. 260—239.5 49 Claims

1. A compound of the formula:



I

wherein R_1 and R_2, each being the same or different, are:
(a) hydrogen;
(b) benzyloxy;
(c) hydroxyl;
(d) alkanoyloxy as from one to six carbon atoms, inclusive;
(e) wherein R_1 and R_2 are taken together to form a keto group; or
(f) wherein R_1 and R_2 are taken together to form a heterocyclic ring of the formula:

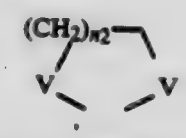


wherein W is oxygen or sulfur; wherein n_1 is 1 or 2.
wherein R_3 and R_4, each being the same or different are:
(a) hydrogen;
(b) alkyl from 1 to 10 carbon atoms, inclusive;
(c) alkanoyloxy of from 1 to 6 carbon atoms, inclusive;
(d) aralkoxy;
(e) hydroxy;
(f) wherein R_3 and R_4 are taken together to form:
(1) a keto group;

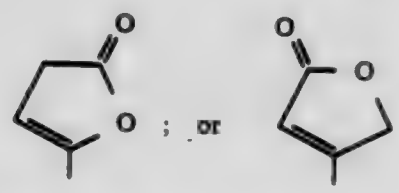
(2)



(g) wherein R_3 and R_4 are taken together to form a heterocyclic ring of the formula:



wherein V is oxygen or sulfur; wherein n_2 is 1 or 2;
(h) wherin one of R_3 or R_4 is of the formula:



with the proviso that the remaining R_3 or R_4 is hydrogen;
(i) $-COOR_8$; or
(J) carboxyalkyl, of from 2 to 5 carbon atoms, inclusive;
wherein R_8 is:
(a) hydrogen; or
(b) alkyl of from 1 to 6 carbon atoms, inclusive;
wherein R_5 is:
(a) hydrogen;
(b) hydroxyl; or
(c) trialkylsilyloxy; with the proviso that R_5 is present only when the carbon to which it is attached is saturated;
wherein R_6 and R_7, each being the same or different, are:
(a) hydrogen; or
(b) alkyl of from 1 to 6 carbon atoms, inclusive, with the proviso that only one of R_6 or R_7 may be present when a 4,5 ring double bond exists;
wherein X is:
(a) alkyl of from 1 to 6 carbon atoms, inclusive;
(b) alkylidene of from 1 to 6 carbon atoms, inclusive, with the proviso that when X is alkylidene, R_5 is not present;
wherein Y is:
(a) $-NR_9R_{10}$; or
(b) $-N^{(+)}R_{11}R_{12}R_{13}\ Z^{(-)}$;

wherein R_9 and R_{10}, each being the same or different, are:
(a) hydrogen;
(b) alkyl of from 1 to 6 carbon atoms, inclusive;
(c) alkanoyl of from 1 to 6 carbon atoms, inclusive;
(d) aryl; or
(e) aralkyl;
wherein R_{11}, R_{12} and R_{13}, each being the same or different are:
(a) alkyl of from 1 to 6 carbon atoms, inclusive;
(b) aryl; or
(c) aralkyl;
wherein Z is a pharmacologically acceptable negative ion; or the pharmacologically acceptable salts; the compounds of the invention being either hydrated or unhydrated.

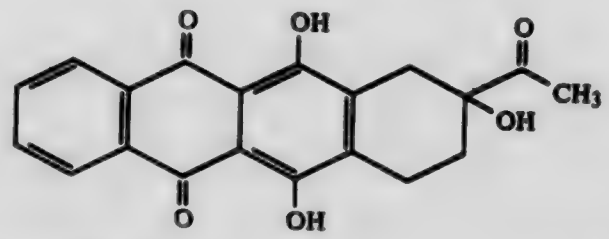
4,495,103

PREPARATION OF OPTICALLY ACTIVE 4-DEMETHOXYDAUNOMYCINONE

Shiro Terashima, Tokyo; Katsumi Tamoto, Funabashi, and Masamichi Suginori, Tokyo, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

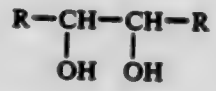
Filed Mar. 2, 1983, Ser. No. 471,338
Claims priority, application Japan, Jul. 30, 1982, 57-134106; Jul. 30, 1982, 57-134109
Int. Cl.³ C07C 50/36, 167/02
U.S. Cl. 260—351.1 11 Claims

1. A process for preparing optically active 4-demethoxy-7-deoxydaunomycinone which comprises reacting a racemate of the α-hydroxyketone of the formula:



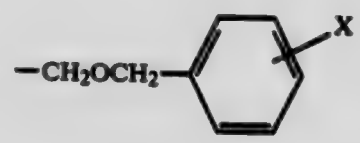
(I)

with an optical isomer of the α-glycol of the formula:

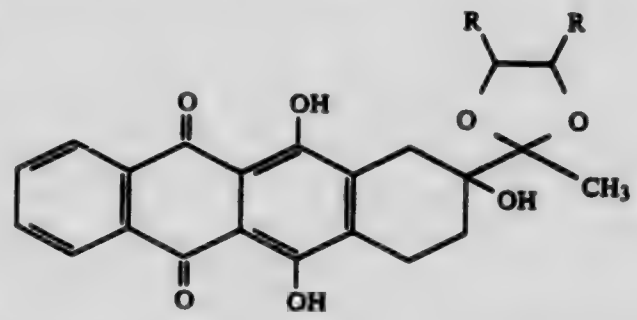


(II)

wherein R is a group of the formula:

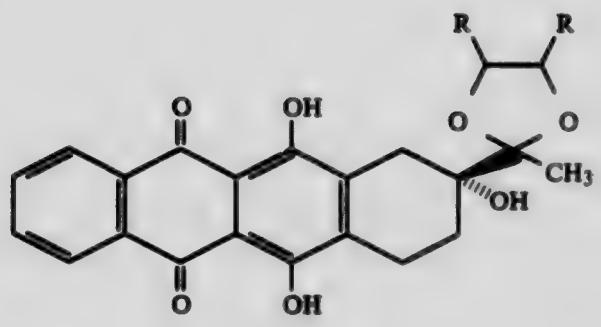


and X is a halogen atom of a layer alkyl group in the presence of a catalytic amount of an acid to give a diastereomeric mixture of the acetal of the formula:

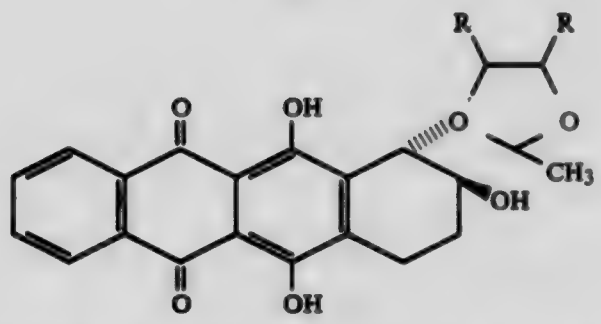


(III)

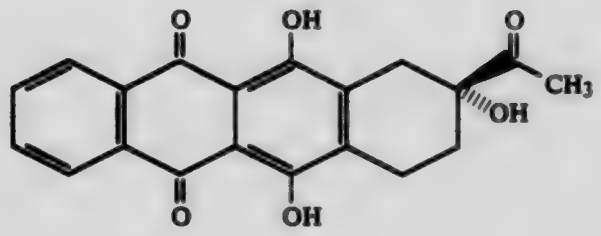
wherein two R groups take a trans configuration, separating the diastereomeric mixture into each of the diastereomers of the formulas:



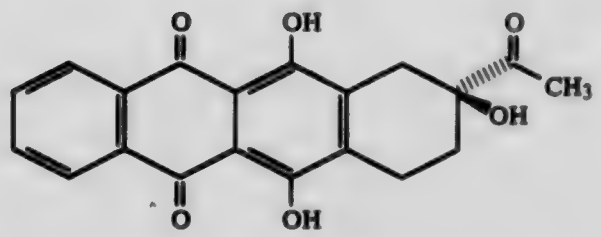
and



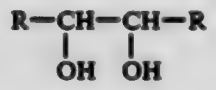
wherein R is as defined above and two R groups take a trans configuration by precipitation from a solvent to which said diastereomers show different solubilities and subjecting either one of the resultant diastereomer to deacetalization by treatment with an acid to give the corresponding optically active 4-demethoxy-7-deoxydaunomycinone of either one of the formulas:



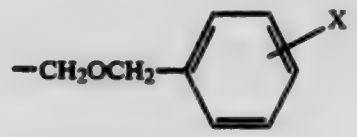
and



4. An optically active α-glycol of the formula:



wherein R is a group of the formula:



and X is a halogen atom or a lower alkyl group.

4,495,104

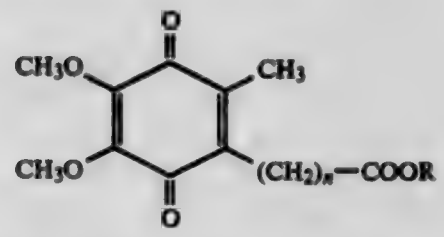
QUINONE CARBOXYLIC ACIDS AND ESTER DERIVATIVES

(III-A) Isuke Imada, Izumi; Tetsuya Okutani, Takatsuki, and Masazumi Watanabe, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jul. 11, 1980, Ser. No. 167,522
Claims priority, application Japan, Apr. 15, 1980, 55-49956
Int. Cl.³ C07C 66/00, 69/95
U.S. Cl. 260—396 R 9 Claims

1. A compound of the formula

(III-B)



wherein n is an integer of 10 to 21, inclusive, and R is hydrogen or alkyl having 1 to 4 carbon atoms.

4,495,105

PREPARATION OF HIGHER TIN CARBOXYLATES IN IMPROVED YIELDS USING AN INERT GAS

Richard F. Miller, Humble, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 9, 1983, Ser. No. 473,836
Int. Cl.³ C07F 7/22
U.S. Cl. 260—414 13 Claims

1. In a method of producing higher carboxylates of tin comprising the steps of:

(a) reacting stannous oxide, stannic oxide or mixtures of these with an anhydride of a lower organic acid,

(b) reacting the product from (a) with at least one higher carboxylic acid to produce a tin carboxylate of said higher carboxylic acid, and

(c) recovering the tin carboxylate of said higher carboxylic acid,

the improvement comprising passing an inert gas through the reaction mixture during step (b).

4,495,106

ADSORBENT AND PROCESS FOR SEPARATING FATTY ACIDS FROM ROSIN ACIDS

Michael T. Cleary, Elmhurst, Ill., and William C. Laughlin, Edmond, Okla., assignors to UOP Inc., Des Plaines, Ill.

Filed Aug. 13, 1982, Ser. No. 408,100
Int. Cl.³ C11C 1/08
U.S. Cl. 260—419 21 Claims

1. A process for separating a fatty acid from a mixture comprising a fatty acid and a rosin acid, said process comprising contacting said mixture at separation conditions with a molecular sieve comprising silicalite in a silica matrix the precursor of said molecular sieve comprising silicalite powder dispersed in colloidal amorphous silica, said precursor having been gelled and then treated in a manner effecting substantially complete elimination of hydroxyl groups on said molecular sieve, to provide that said molecular sieve selectively retains said fatty acid thereon to the exclusion of said rosin acid which is removed from the fatty acid containing molecular sieve.

4,495,107

PROCESS FOR PRODUCING ALKALI METAL CYANATES

William B. Dodge, Princeton, and Marc Halfon, Cranbury, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Mar. 10, 1983, Ser. No. 474,216
Int. Cl.³ C01C 3/00
U.S. Cl. 260—453 P 3 Claims

1. A process for making an alkyl isocyanate which comprises (1) first heating urea with a stoichiometric excess of alkali metal carbonate in the temperature range 130°-180° C. in a solvent which selectively dissolves the urea but not the alkali metal carbonate and is selected from the group consisting of 1,2-dichlorobenzene, benzonitrile, 2-phenylbutane and mesitylene and then (2) reacting the alkali metal cyanate produced thereby, without recovery or purification, in situ with a dialkylsulfate, thereby yielding the desired alkyl isocyanate.

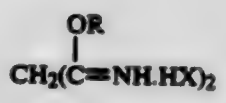
4,495,108

PROCESS FOR PREPARING DIALKYL PROPANEDIIMIDATE DIHYDROHALIDES

Jeffrey S. Gramm, Wilmington; Edwin L. Morgan, Jr., Newark, both of Del., and Patrick J. Sheeran, Landenberg, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 11, 1983, Ser. No. 474,470
Int. Cl.³ C07C 41/01
U.S. Cl. 260—453.7 15 Claims

1. An improved process for preparing a dialkyl propanediimidate dihydrohalide of the formula:



where

R is alkyl of 1 to 3 carbon atoms, and

X is chlorine or bromine,

by reacting malononitrile, an alcohol ROH and anhydrous hydrogen halide HX, wherein the improvement comprises conducting the reaction under a pressure of about 2 to 150 psig in a halobenzene, haloalkylbenzene or alkylbenzene solvent having a boiling point in the range of about 100° to 200° C. at atmospheric pressure.

4,495,109

PRODUCTION OF UNSATURATED NITRILES USING CATALYSTS PROMOTED WITH VARIOUS METALS

Robert K. Grasselli, Chagrin Falls; Dev D. Suresh, Warrensville Heights, and Arthur F. Miller, Cleveland, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 371,324, Apr. 23, 1982, abandoned, which is a continuation of Ser. No. 940,533, Sep. 8, 1978, abandoned, which is a continuation of Ser. No. 380,527, Jul. 19, 1973, abandoned. This application Aug. 5, 1983, Ser. No. 520,870
Int. Cl.³ C07C 120/14
U.S. Cl. 260—465.3 3 Claims

1. In a process for preparing acrylonitrile by contacting a mixture of propylene, molecular oxygen and ammonia at a temperature of about 300° C. to about 500° C. with a catalyst, the improvement comprising (1) contacting said mixture with said catalyst at a rate such that the WWH is 0.05 to 0.25 and (2) using as said catalyst an oxide complex of the formula:

$$Cr_aK_bNi_gCo_hFe_dBi_eP_iMo_{12}O_x$$

wherein

a is about 0.5,

b is about 0.1,

g is about 2.5,

h is about 4.5,

d is about 2 to about 3,

e is about 1,

i is 0 to about 0.5, and

x is a number sufficient to satisfy the valence requirements of the other elements present,

said catalyst being free of antimony and tungsten.

4,495,110

METHOD OF CONTINUOUSLY FORMING AN ACID FLUORIDE FROM CARBON MONOXIDE, ANHYDROUS HYDROGEN FLUORIDE AND AN OLEFIN

John E. Corn, Westerville, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Jan. 26, 1981, Ser. No. 228,305
Int. Cl.³ C07C 51/58
U.S. Cl. 260—544 A 4 Claims

1. A method of continuously forming an acid fluoride from anhydrous hydrogen fluoride, carbon monoxide, and an olefin comprising

(a) continuously injecting the anhydrous hydrogen fluoride, carbon monoxide, and olefin into an area of high turbulence to form a reactant mixture;

(b) continuously transferring the reactant mixture from the area of high turbulence to a continuous reactor

wherein the temperature of the reactant mixture within said area of high turbulence is maintained at about 90° C. or less.

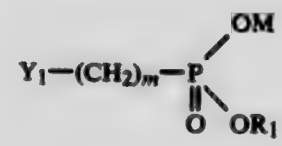
4,495,111

HEMIESTERS OF PHOSPHONIC ACIDS

Bernard Guerin, Bures/Yvette; Pierre Poisson, Bernay, and Georges Startz, Brest, all of France, assignors to Ato Chimie, France

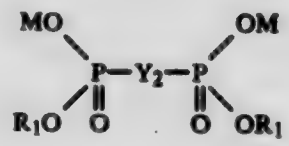
Division of Ser. No. 411,046, Aug. 24, 1982, Pat. No. 4,444,930. This application Sep. 26, 1983, Ser. No. 535,927
Claims priority, application France, Aug. 26, 1981, 81 16332
Int. Cl.³ C07F 9/40
U.S. Cl. 260—932 7 Claims

1. A hemiester with the formula



where Y_1 is a monovalent radical derived, by the loss of a nuclear hydrogen atom, from a compound selected from the group consisting of benzene, toluene, ethylbenzene, bromobenzene and cyclohexane, R_1 is a methyl or ethyl radical, m is 0 or 1 and M is potassium.

2. A hemiester with the formula



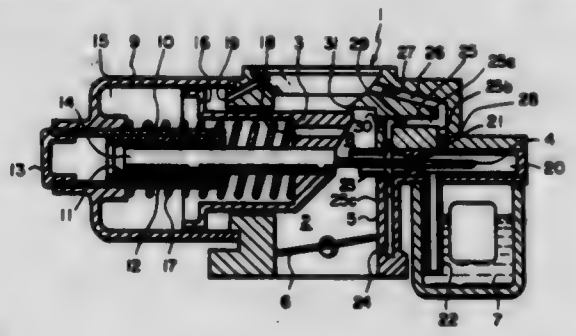
where Y_2 is a divalent radical derived, by the loss of two hydrogen atoms, each located on a different nucleus, from a compound selected from the group consisting of diphenyl, diphenyloxide, diphenylsulphone and diphenyl-2,2-propane, R_1 is a methyl or ethyl radical and M is potassium.

4,495,112

VARIABLE VENTURI-TYPE CARBURETOR

Takaaki Itou; Takashi Katou, both of Mishima, and Toshiharu Morino, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Aisan Industry Co., Ltd., Obu, both of, Japan

Filed Oct. 27, 1982, Ser. No. 437,142
Claims priority, application Japan, Jun. 22, 1982, 57-106134
Int. Cl.³ F02M 9/06
U.S. Cl. 261—41 D 10 Claims



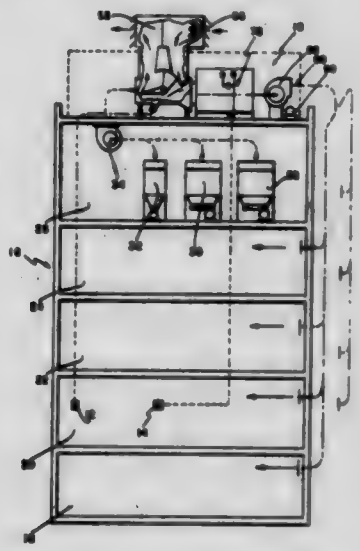
1. A variable venturi-type carburetor comprising:
an intake passage formed in the carburetor and having an inner wall;
a suction piston transversely movable in said intake passage in response to a change in the amount of air flowing within said intake passage, said suction piston having a tip face which defines a venturi portion in said intake passage;
a throttle valve arranged in said intake passage at a position downstream of said suction piston;
a main fuel passage transversely extending to and opening into said intake passage;
a metering jet arranged in said main fuel passage;
a needle fixed onto the tip face of said suction piston and extending through said main fuel passage and said metering jet;
a slow fuel port formed on the inner wall of said intake passage and opening into said intake passage downstream of said throttle valve;
a slow fuel passage interconnecting said slow fuel port with said main fuel passage upstream of said metering jet;
a first fuel metering jet aranged in said slow fuel passage; and
a vacuum control jet connecting said venturi portion to said slow fuel passage between said slow fuel port and said first fuel metering jet.

4,495,113

ROTARY MIXING DAMPER METHOD AND MEANS

John E. Kice, Wichita, Kans., assignor to Kice Metal Products Co., Inc., Wichita, Kans.

Filed May 24, 1982, Ser. No. 381,557
Int. Cl.³ F24F 6/12
U.S. Cl. 261—64 R 2 Claims



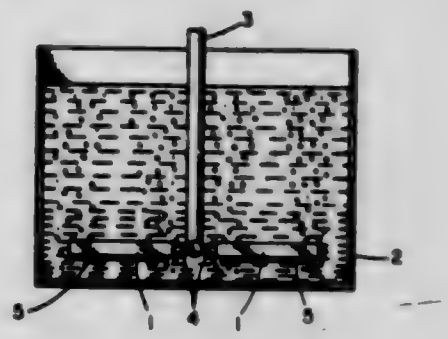
1. In an improved air stabilization system used in a building ventilation system which has an air propulsion means for delivering and/or intaking air through a plurality of openings in a housing having a damper assembly, wherein the improvement comprises a single mixing damper blade means rotatably positioned within the housing such as to regulate the air flow through the openings of the housing to allow either intake of ambient air to exhaust air from the building or to blend air from the building with outside air or to circulate only building air by completely closing off any intake of ambient air and exhaust of building air; said housing additionally includes at least one protrusion member secured to the inside thereof in order to define the limits of rotation of the single damper blade means within the housing; the openings of said housing comprises an ambient air intake opening, an ambient exhaust opening, a building air inlet opening, and an outlet opening; said housing comprises an outlet protrusion member attached to the top of said outlet opening and an inlet protrusion member secured in proximity to the bottom of said building air inlet opening; a spray chamber means in communication with said outlet opening of said housing, said spray chamber means comprises a sump means positioned within the bottom thereof, a spray bank means, and an eliminator means having a cross section defining a chevron; a fan means in communication with the spray chamber means for circulating air from the chamber means into the building; said damper blade means comprises a modified wedge having one end with a first axis of arcuate shape and another opposed end with a second axis and tapering to an edge, said first axis and said second axis having an angle with respect to each other of greater than about 90° but less than about 180°.

4,495,114

LEAF SPRING DIFFUSER WITH AMPLITUDE LIMIT

Walter C. Strauss, 718 E. Freistadt, Thiensville, Wis. 53092

Filed Jan. 17, 1984, Ser. No. 571,431
Int. Cl.³ B01F 3/04
U.S. Cl. 261—81 3 Claims



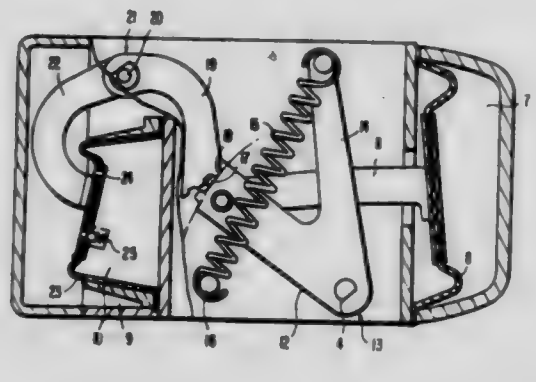
1. In an air diffuser for the treatment of sewage having a diffuser body defining an internal air chamber which is supplied by air through an air inlet and which delivers the air to a sewage tank through an air outlet port formed in the body, and from which port air flow is periodically modulated by a resilient vibrating leaf spring affixed to the exterior of the body, the improvement for limiting the amplitude of the outward deflection of the leaf spring into the sewage tank comprising a leaf-spring amplitude-limiting stop fixedly mounted on an extremity of the leaf spring subject to maximum deflection to move therewith with the stop being directed inwardly to pass through the port and into the internal air chamber, the stop having a cross-sectional area in a plane generally normal to its direction of motion substantially less than the area of the port opening so that the stop does not obstruct the flow of air out the port, and with the stop being formed with a portion located within the internal air chamber and engaging the diffuser body when the extremity of the leaf spring is deflected outwardly and away from the diffuser body to limit thereby the amplitude of leaf spring deflection.

4,495,115

DOWNDRAFT CARBURETOR FOR INTERNAL COMBUSTION ENGINES

Roland Adam, Stuttgart; Dieter Krauth, Waiblingen-Hohenacker, and Hans-Otto Derndinger, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Dec. 7, 1982, Ser. No. 447,664
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1981, 3149277
Int. Cl.³ F02M 9/08
U.S. Cl. 261—44 F 4 Claims



1. A downdraft carburetor for internal combustiion engines, having

a choke tube,

a choke tube valve means, swivellable with a shaft and forming part of the choke tube wall, for controlling the magnitude of the cross-section of the choke tube,

a spring-loaded diaphragm means,

lever means for actuating the choke tube valve means in response to the spring loaded diaphragm means as a function of the control pressure in the choke tube

a jet needle means attached to the diaphragm means for engaging a jet carrier opposite the choke tube valve, and comprising

a first angular lever means rigidly connected to the shaft,

rod means attached to the diaphragm means, the free end of the rod means being attached to the free end of one leg of said first angular lever means for moving the choke tube valve means, and

a tension spring means for acting on another leg means of the first angular lever means for increasing the resulting closing moment due to the spring force and the effective lever arm on the closing of the choke tube valve.

4,495,116

POLYCRYSTALLINE TRANSLUCENT ALUMINA SINTERED BODY, A METHOD FOR PRODUCING THE SAME AND A HIGH PRESSURE VAPOR DISCHARGE LAMP OBTAINED BY USING SAID SINTERED BODY

Masayuki Kaneno, Tokoname, and Takehiro Kajihara, Komaki, both of Japan, assignors to NGK Insulators, Ltd., Japan

Division of Ser. No. 260,758, May 5, 1981, Pat. No. 4,373,030.
This application Oct. 19, 1982, Ser. No. 435,226
Claims priority, application Japan, May 15, 1980, 55-63312
Int. Cl.³ C04B 35/10
U.S. Cl. 264—1.2 4 Claims

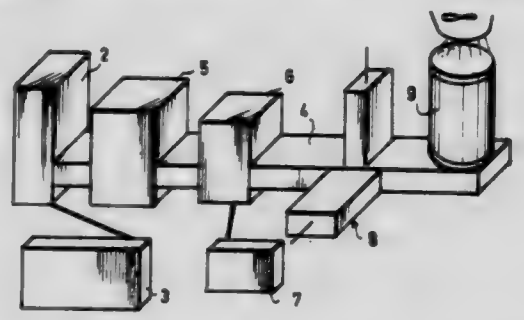
1. A method for producing a polycrystalline translucent alumina sintered body in which the content of MgO is 0.001–0.04% by weight, the content of each La_2O_3 and Y_2O_3 is 0.001–0.01% by weight, a weight ratio of $MgO/(La_2O_3 + Y_2O_3)$ is 0.5 to 2.0, and the translucent alumina sintered body has an in-line transmission of more than 40% at a wavelength of 0.6 μm, which comprises adding to alumina powder having a purity of more than 99.8%; MgO or a compound forming MgO, wherein a weight percent of MgO is within the range of 0.01–0.1%; La_2O_3 or a compound forming La_2O_3, wherein a weight percent of La_2O_3 is within the range 0.001–0.01%; and Y_2O_3 or a compound forming Y_2O_3, wherein a weight percent of Y_2O_3 is within the range 0.001–0.01%; thoroughly mixing the resulting mixture, shaping the mixture into a desired form and firing the shaped article under a vacuum or in either an atmosphere of hydrogen gas or dissociated ammonia gas, wherein an oxygen concentration is within a range of 10^{-15}–10^{-25} atm.

4,495,117

METHOD FOR THE MANUFACTURE OF CONTACT LENSES USING MICROWAVE ENERGY

Bernard Feurer, Montgiscard, and Gilles Pigot, Toulouse, both of France, assignors to Alcon Pharmaceuticals, Limited, Cham, Switzerland

Filed Mar. 17, 1983, Ser. No. 476,385
Claims priority, application France, Mar. 17, 1982, 82 04663
Int. Cl.³ B29D 11/00
U.S. Cl. 264—1.4 12 Claims



1. A method of manufacturing a contact lens of appropriate optical quality consisting of: constructing water-tight molds, reproducing, in the mold cavity, the shape of the lens desired and wherein said water-tight molds are composed of a substantially transparent material with respect to ultra high frequency electromagnetic waves, and said water-tight molds being constructed so as to possess a thermic inertia much higher than the portion of basic composition needed to make a lens;

preparing a basic composition starting with one or several monomers having double polymerizable bonds, and having an absorbent quality with respect to ultra high frequency waves;

insuring polymerization of the composition within the sealed molds, through irradiation by means of ultra high frequency waves;

said method being characterized in that the polymerization operation is realized by arranging several molds (1), each containing an amount of basic composition, within at least one sealed metallic chamber (9) constituting a resonant cavity of a unique mode for the frequency of the ultra high frequency waves used, said molds being positioned in an area of the cavity where the electromagnetic field is approximately homogeneous and being distributed so that the amounts of basic composition contained in said molds act as a load fitted to the inside of said resonant cavity.

4,495,118

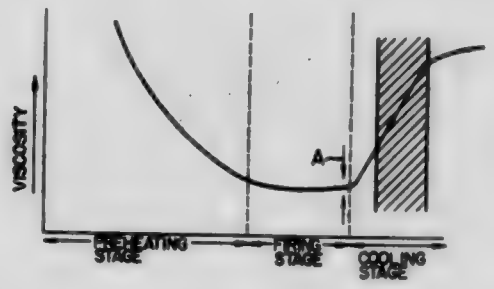
CERAMIC PLATES AND METHOD FOR THE PRODUCTION THEREOF

Hideo Ikami, Tochigi, Japan, assignor to Nippon Chemiphar Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1983, Ser. No. 484,724
Int. Cl.³ C04B 33/24
U.S. Cl. 264—25 12 Claims

1. A method for producing ceramic plates which comprises drawing a green body from an extruder in a curved shape, cutting and spreading said green body in a plate form, rolling the resulting green plates in the same direction as that of drawing, subjecting the rolled plates to heat treatment with far infrared rays or high-frequency heating before the plates contain a moisture content reduced to less than 15% while the

plates are transferred in the same direction as that of drawing, drying the plates thus treated while the plates are further



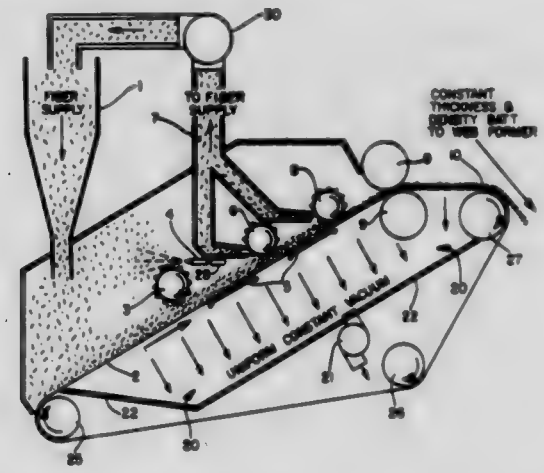
transferred in the same direction, and then firing the plates in a kiln.

4,495,119

METHOD FOR PRODUCING HOMOGENEOUS BATTS OF AIR-LAID FIBERS

Raymond Chung, 208 Alcott Dr., Neenah, Wis. 54956

Filed Jul. 12, 1982, Ser. No. 397,376
Int. Cl.[3] B29N *19/00*
U.S. Cl. 264—37 13 Claims



1. A method of producing a batt of air-laid fibers comprising:
(a) depositing an excess of feed fibers on a moving foraminous fabric to form a batt having a machine direction and a cross-machine direction;
(b) compacting the batt against the fabric by maintaining an air pressure differential through the batt and the fabric which is constant with time and uniform in the cross-machine direction;
(c) skimming an upper layer of fibers from the batt with a first scarfing roll, wherein the skimmed fibers are deposited on the moving fabric upstream of said first scarfing roll;
(d) reforming the batt by rearranging the fibers within the batt; and
(e) skimming an upper layer of the fibers from the reformed batt with a second scarfing roll wherein the skimmed fibers are recycled and deposited upstream of the first scarfing roll and wherein a batt of relatively uniform basis weight is produced.

4,495,120

METHOD FOR MANUFACTURE OF SHAPED ARTICLE OF POLYURETHANE FOAM

Kenji Shimomura, Yokohama, Japan, assignor to Ikeda Bussan Co., Ltd., Japan

Filed Nov. 9, 1981, Ser. No. 319,363
Claims priority, application Japan, Nov. 11, 1980, 55-157669
Int. Cl.[3] B29D *27/04*
U.S. Cl. 264—51 11 Claims

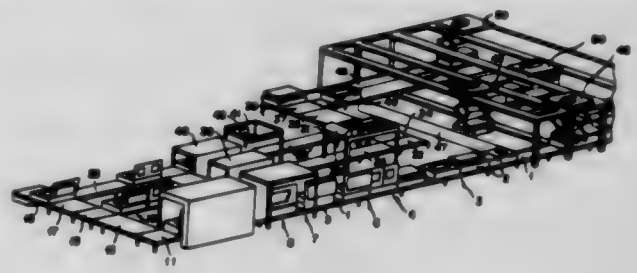
1. A method for the substantially concurrent manufacture of at least a first and a second type of shaped article of polyurethane foam in molds of a first and a second group, said first group of molds being adapted to the formation of said first type of shaped article and second type of molds being adapted to the formation of said second type of shaped article, said first type of foamed shaped article having predetermined physical properties different from the said second type of foamed shaped article, comprising the sequential steps of

providing a plurality of molds of said first and said second groups,

providing a primary temperature adjustment to all of said molds,

selecting and then separating molds of said first group from molds of said second group and causing the molds of said first group to be conveyed along at least one predetermined path and the molds of the second group to be conveyed along at least one other predetermined path,

providing an appropriate secondary temperature adjustment



to the molds of said first group and to molds of said second group on their appropriate paths

injecting the appropriate foamable urethane resin reaction mixture to the molds of said first group and the molds of second group

providing a first series of heater units, each comprising a water containing bath and heating means therefor to maintain said bath at a first predetermined temperature

conveying molds of said first group to said first heater units and immersing said molds in heated water baths thereof

providing a second series of heater units each comprising a water containing bath and a heating means therefor to maintain said bath at a second predetermined temperature

conveying molds of said second group to said second heater units and immersing said molds in the heater water baths thereof

whereby the urethane resin mixtures in said molds is permitted to foam and set within said molds.

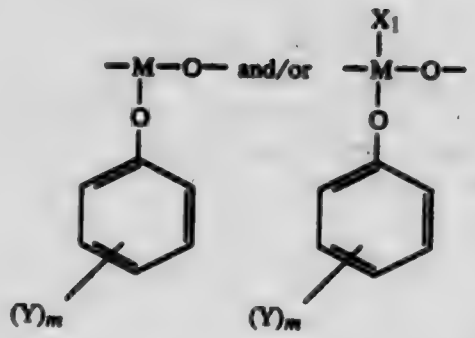
4,495,121

PROCESS FOR PRODUCING INORGANIC FIBER

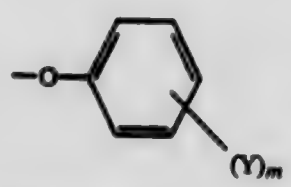
Shozo Horikiri, Amagasaki; Hidekimi Kadokura, Nihama; Masaji Harakawa, Nihama; Kunio Saegusa, Nihama, and Masao Yamagiwa, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Nov. 23, 1982, Ser. No. 444,044
Claims priority, application Japan, Nov. 30, 1981, 56-193315; Sep. 27, 1982, 57-169324
Int. Cl.[3] C01F *7/02*
U.S. Cl. 264—56 3 Claims

1. A process for producing inorganic fiber which comprises spinning a spinning solution in organic solvent of polymetaloxane to form a precursor fiber, followed by calcination thereof, wherein said solution contains polymetaloxane comprising 0.1–95 mole % of a structural unit represented by the following general formula and 99.9–5 mole % of the following formula:

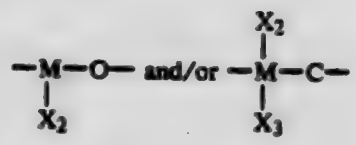


(wherein M represents a trivalent or tetravalent metal atom, Y represents an organic group, nitro or halogen, m represents an integer from 1 to 3, X_1 represents an organic group which is the same as or different from

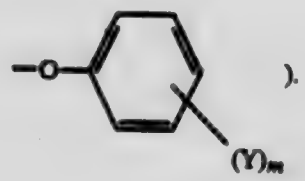


hydrogen, nitro or halogen.

[B]



(wherein, M is the same as shown hereinabove, X_2 and X_3 represent organic group other than



).

4,495,122

METHOD FOR THE PRODUCTION OF A POLYCRYSTALLINE SHAPED BODY OF SILICON CARBIDE

Gerhard Leimer, and Ernst Gugel, both of Bavarian, Fed. Rep. of Germany, assignors to Feldmühle Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Nov. 23, 1981, Ser. No. 324,324

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1980, 3044161

Int. Cl.³ C04B *35/56*

U.S. Cl. 264—65 4 Claims

1. In a method for the production of a polycrystalline shaped body of silicon carbide of a density of at least 98% of the theoretical density of silicon carbide, prepared through pressureless sintering at temperatures from 1,900° to 2,200° C. from at least 97 weight % of α-silicon carbide or β-silicon carbide under addition of up to 3 weight % of boron, the improvement which comprises said shaped body being prepared without any carbon additions to the batch and being pressureless sintered in a carbon containing protective gas atmosphere.

[A]

4,495,123

DENSE SHAPED ARTICLES CONSISTING OF POLYCRYSTALLINE HEXAGONAL BORON NITRIDE AND PROCESS FOR THEIR MANUFACTURE BY ISOSTATIC HOT PRESSING

Klaus Hunold, Kempten; Alfred Lipp, Bad Worishofen, and Klaus Reinmuth, Durach, all of Fed. Rep. of Germany, assignors to Elektroschmelzwerk Kempten GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 29, 1982, Ser. No. 454,164

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1982, 3201563

Int. Cl.³ C01B *21/06*

U.S. Cl. 264—69 5 Claims

1. A process for the manufacture of a shaped, isotropic article of boron nitride article by isostatic hot-pressing using an inert gas as a pressure-transfer medium, which comprises: introducing boron nitride powder having a boric oxide content of not more than 1% into a prefabricated casing, compacting the boron nitride by vibrating the casing; sealing the casing containing the compacted boron nitride vacuum tight under a vacuum; heating the encased compacted boron nitride in a high-pressure zone to from about 1200° to 1500° C. while gradually increasing the gas pressure to about 50 to 300 MPa until dense shaped articles are formed; and cooling and recovering the shaped articles wherein the boron nitride powder employed is devoid of sintering aids.

4,495,124

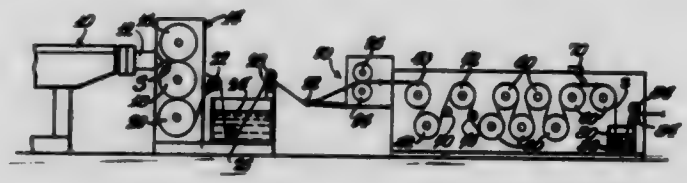
METHOD FOR PRODUCING POLYPROPYLENE SHEET

Donald L. Van Erden, Wildwood; Russell J. Gould, Mount Prospect, and Yukio A. Matsumaga, Chicago, all of Ill., assignors to Signode Corporation, Glenview, Ill.

Division of Ser. No. 343,501, Jan. 28, 1982, Pat. No. 4,428,720, which is a division of Ser. No. 138,491, Apr. 22, 1980, abandoned. This application Oct. 24, 1983, Ser. No. 544,480

Int. Cl.³ B29D *7/02*

U.S. Cl. 264—130 15 Claims



1. The method for producing an abrasion resistant sheet from linearly crystallizable polypropylene material, said method comprising the steps of:

(a) extruding said material in a sheet at a first temperature at which said material is rendered flowable;

(b) casting said sheet on plural driven, heat transfer casting rolls and feeding said sheet in a forward direction to form said sheet while maintaining said casting rolls at a temperature below said first temperature and cooling said sheet to a second temperature below said first temperature;

(c) feeding said sheet through a cooling bath to cool said sheet to a third temperature below said second temperature;

(d) feeding said sheet through heated and driven compression rolls to maintain said sheet at a fourth temperature, to compress said sheet, and to cause flow of said material in said sheet in the forward direction so as to reduce the cross-sectional thickness of said sheet;

(e) placing said sheet under tension with a tensioning means in the forward direction in conjunction with said compression rolls so as to cause orientation of the macromolecular chains in said material of said sheet as said sheet exits said compression rolls, said step of placing said sheet under tension including the steps of

(1) providing as part of said tensioning means one or more chill rolls and cooling said chill rolls so as to cool said

sheet to a fifth temperature below said fourth temperature;

(2) providing as part of said tensioning means one or more surface treatment rolls and heating said surface treatment rolls for reheating a surface of said sheet to a sixth temperature above said fifth temperature and between about 350 degrees F. and about 525 degrees F. for a time period sufficient to cause surface fusion to a depth between about 0.1 mil and about 3 mils but for a time period insufficient to cause fusion in the entire thickness of said sheet; and

(3) providing as part of said tensioning means one or more stress relieving rolls and heating said stress relieving rolls to a seventh temperature below said sixth temperature so as to cause said sheet to reach a uniform temperature throughout its cross section for effecting stabilization of said sheet;

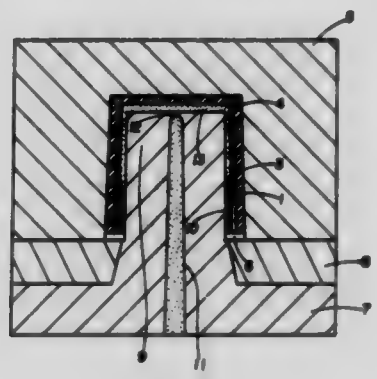
whereby the rolls of said tensioning means not only place said sheet under tension in conjunction with said compression rolls for effecting said orientation of the macromolecular chains, but also simultaneously effect said cooling of said sheet, said surface fusion of said sheet, and said stabilization of said sheet.

4,495,125

METHOD FOR FORMING A SYNTHETIC-RESIN-MADE CONTAINER

Yoshiharu Hatakeyama, Tokyo, and Kenzo Teshima, Chiba, both of Japan, assignors to Yoshida Industry Co., Ltd., Tokyo, Japan

Filed Aug. 30, 1982, Ser. No. 413,067
Claims priority, application Japan, May 13, 1982, 57-79243
Int. Cl.³ B29D *3/00, 9/00*
U.S. Cl. 264—132 4 Claims



1. A method for forming a synthetic-resin-made container, said method comprising:

forming a relatively thin tubular member of soft material and having open opposite first and second ends, and imparting an ornamentation or decoration at least to an outer surface of said tubular member;

forming an outer sleeve of transparent or semitransparent synthetic resin material and having opposite first and second ends, with at least said first end of said outer sleeve being open;

loosely inserting said tubular member into said outer sleeve until said first end of said tubular member comes into contact with said second end of said outer sleeve;

disposing said outer sleeve and said tubular member in an injection molding die, with said second end of said outer sleeve being positioned inwardly of said die, and defining in cooperation with a core of said die a cylindrical space within said tubular member and said outer sleeve, said core having at an inner end thereof adjacent said second end of said outer sleeve an injection port;

injecting through said injection port molten resin which is fusible with said material of said outer sleeve into said cylindrical space, and causing said molten resin to flow from an inner end to an outer end of said cylindrical space, while pressing said tubular member into close contact with an inner surface of said outer sleeve; and

solidifying said molten resin to form therefrom an inner sleeve, while fusing together said outer and inner sleeves at respective opposite ends thereof, thereby hermetically sealing said tubular member between said outer and inner sleeves.

4,495,126

ADHESIVE ACTIVATED EMULSION TO A POLYESTER YARN

William O. Deeken, Stow, and Charles L. Davis, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 2, 1982, Ser. No. 446,106
Int. Cl.³ B29G *5/00;* B29C *25/00;* D01D *5/12;* D01F *11/00*
U.S. Cl. 264—137 11 Claims



1. A process for the application of an adhesive activated emulsion to polyester yarn comprising;

a. passing undrawn polyester yarn around a heated feed roll rotating with a surface speed in the range of 54 to 274 meters per minute, wherein said feed roll is at a temperature of from 80° C. to 125° C.;

b. passing said yarn to and around a snub pin, thereafter;

c. passing said yarn past a heated draw platen wherein said platen is at a temperature of from 150° C. to 235° C., thereafter;

d. contacting said yarn with a means of applying an adhesive activated emulsion, thereafter;

e. passing said yarn to a heated draw roll rotating with a surface speed in the range of 150 to 550 meters per minute, wherein said draw roll is at a temperature of from 125° C. to 200° C., thereafter;

f. passing said yarn to a windup roll operating at a surface speed in the range of 150 to 550 meters per minute.

4,495,127

METHOD OF MANUFACTURING CONCRETE SLEEPER BLOCKS

Stig Thim, Växjö , Sweden, assignor to A-Betong AB and Sabema Material AB, both of Växjö, Sweden

Filed Mar. 15, 1983, Ser. No. 475,661
Claims priority, application Italy, Jul. 9, 1982, 22322 A/82
Int. Cl.³ B28B *23/06*
U.S. Cl. 264—157 3 Claims

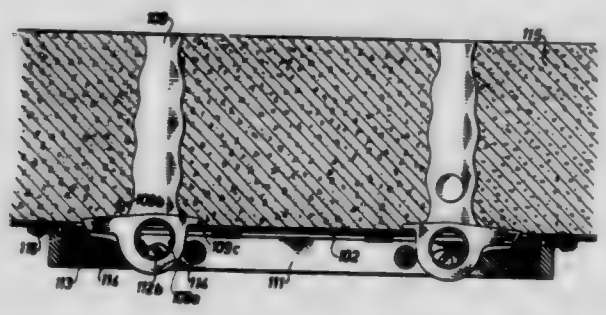
1. In a method of manufacturing concrete sleeper blocks (115) of varying length and having a mutually different number of attachment means (109) for mounting rails thereto, said attachment means being in mutually different positions on said blocks and said blocks being intended for the manufacture of a railway switching-point, including the steps of placing a plurality of thin matrix plates (102) having lengths corresponding to the desired lengths of the different sleeper blocks end to end in an elongate mould bed (101A), said matrix plates being provided with detachably mounted attachment means (109) ex-

tending upwardly therefrom; tensioning reinforcing rods in said mould bed; pouring concrete into the mould bed and leaving the concrete to cure; removing the hardened coherent concrete body from the mould; removing the matrix plates from said concrete body and from the attachment means cast therein; and cutting the concrete body into finished sleeper blocks, the improvements characterized by:

(a) disposing a rigid, structurally supporting frame memeber (111) below a pair of adjacent matrix plate apertures (102*a*),

(b) loosely attaching the frame member to the matrix plate,

(c) individually inserting a pair of attachment means through the apertures and into the frame member,



(d) passing an offset arm of a crank lever (112) through aligned holes (109*a*, 111*a*) in the frame member and one of the attachment means,

(e) rotating the crank lever to urge said one attachment means into direct contact with position location members (114) mounted to and extending transversely across the frame member,

(f) repeating steps (d) and (e) for another one of the attachment means, and

(g) upon casting and hardening of the sleeper blocks, disengaging said frame member from the matrix plate and the in-cast attachment means for renewed use in a subsequent casting operation.

4,495,128

METHOD FOR COLORING POLYVINYLCHLORIDE

Jan U. Stoffelsma, Hardenberg, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Filed Jun. 16, 1980, Ser. No. 159,749

Claims priority, application Netherlands, Jun. 14, 1979, 7904675

Int. Cl.³ D01F *1/02*

U.S. Cl. 264—211 1 Claim

1. A method of manufacturing colored injection molded or extruded poly(vinyl chloride) articles which comprises adding to the mold or extruder along with the poly(vinyl chloride) a coloring composition containing at least 40% by weight of coloring pigments and at most 60% by weight of glycerol monostearate, said coloring composition being obtained by mixing pigment particles with a molten mass of glycerol monostearate and solidifying the molten mass, said coloring composition being added in such an amount that the molded article contains a maximum of 5% by weight glycerol monostearate.

4,495,129

PROCESS FOR PRODUCING HIGH PRECISION APERTURES IN PLASTIC COMPONENTS

Alfred L. Newberry, Moore, and Francis A. Lassak, Oklahoma City, both of Okla., assignors to Magnetic Peripherals Incorporated, Minneapolis, Minn.

Filed Sep. 6, 1983, Ser. No. 529,300

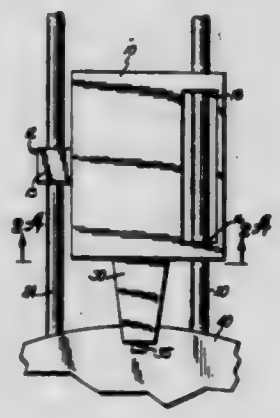
Int. Cl.³ B29C *25/00*

U.S. Cl. 264—235 4 Claims

1. A process for forming and aligning a pair of precisely dimensioned apertures in a plastic component consisting of a carriage for supporting a magnetic transducer for reading and/or writing on a magnetic disk having a pair of apertures in alignment which are bore holes to be used for sliding on a guide rod in an operative structure, comprising the steps of:

(a) injection molding the carriage from a composition which includes a crystalline or semicrystalline material during a molding step, said carriage having said apertures partially formed therein during said molding step;

(b) inserting an oversized annealing rod into said apertures during an inserting step; wherein said annealing rod is oversized with respect to both of said apertures, and said rod is inserted into and extends through both of said apertures prior to said annealing step, thereby causing said annealing rod to finally align and form said apertures with respect to each other;



(c) placing said carriage, with said annealing rod installed in said apertures, in an oven at an elevated temperature for a period of time during an annealing step; and

(c-1) Cooling said carriage with said annealing rod in said apertures;

(d) removing said annealing rod from said apertures during a removal step.

4,495,130

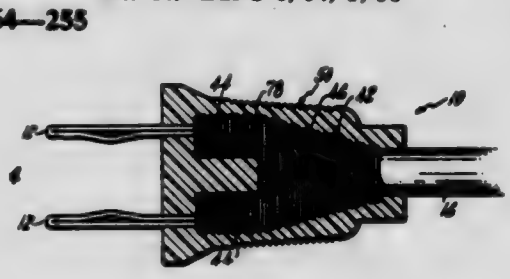
METHOD OF MOLDING AN ELECTRICAL CONNECTOR

Paul A. Hedrick, Georgetown, Ky., assignor to Essex Group, Inc., Fort Wayne, Ind.

Division of Ser. No. 306,113, Sep. 28, 1981, Pat. No. 4,398,785. This application Apr. 4, 1983, Ser. No. 481,976

Int. Cl.³ B29C *6/04, 1/00*

U.S. Cl. 264—255 4 Claims



1. The method of making an electrical connector consisting essentially of the steps of: electrically and mechanically attaching two contacts to corresponding bared ends of two insulated stranded conductors of an electrical cord to form a pair of connections; inserting said connections and portions of said contacts and said conductors contiguous to said connections in the cavity of a mold having two spaced arm cavity regions joined to a base cavity region with said two connections disposed in respective arm cavity regions and said conductors extending into said base cavity region; at least said two arm cavity regions of said mold cavity having irregularly shaped inner surfaces with raised and depressed portions; injecting electrical insulating material in fluid condition into said cavity and continuing the injection until the unoccupied space of said cavity is filled; said injection being at a flow rate providing a turbulent flow over said irregularly shaped surfaces which tends to force any loose strand at the bared ends of said conductors away from said irregularly shaped surfaces; permitting

the insulating material within said cavity to solidify thus forming a first molded body having spaced arms surrounding said connections and joined to a base with any loose strand at the bared ends of said conductors being effectively captured in said first body; and subsequently injection molding a second insulating body substantially surrounding said first body and extending between said arms to further insulate said connections.

4,495,131

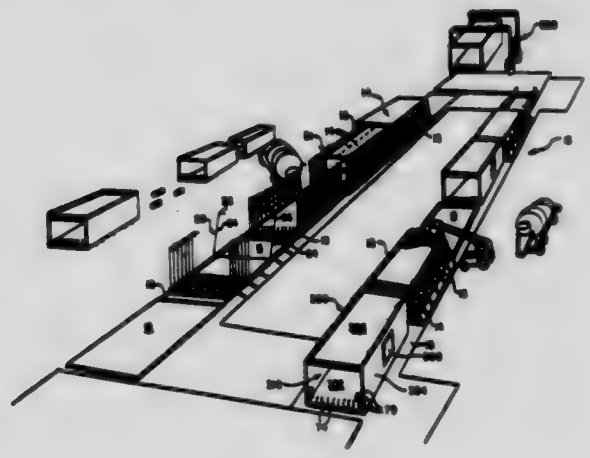
METHOD FOR PRE-CASTING STEEL REINFORCED CONCRETE BOX-LIKE MODULES

Jamie L. Del Valle, Rio Piedras, P.R., assignor to Master Modular Homes, Inc., Toa Baja, P.R.

Division of Ser. No. 223,434, Jan. 8, 1981, Pat. No. 4,372,906, which is a division of Ser. No. 942,377, Sep. 14, 1978, Pat. No. 4,272,050. This application Sep. 30, 1982, Ser. No. 430,994

Int. Cl.³ B28B *1/16*

U.S. Cl. 264—256 **2 Claims**



1. A method of forming pre-cast modules from a concrete formulation, said modules each having a floor, a pair of spaced apart side walls extending up from said floor, and a roof extending between the upper ends of said side walls, said method being performed on a plurality of spaced apart planar casting beds of 4 in number, said casting beds being arranged serially in a continuous row, said method being further performed with a pair of movable interior wall and ceiling forms and a pair of exterior movable wall forms, the thickness of the floor, walls and roof of said modules and the concrete formulation being such that concrete formed therefrom will cure sufficiently in one day so that said floor can substantially support the weight of said interior forms and said roof can self support at least half of its span and said concrete will cure sufficiently in three days to render a complete module self supporting, said serially arranged continuous row of casting beds being designated one, two, three, and four; said method comprising substantially the following sequence of steps:

on an initial day disposing on a previously cast floor on casting bed one, one of said interior and exterior forms, and casting a floor on casting bed two while permitting at casting beds three and four previously cast modules including walls and roofs to fully cure;

on the immediately following said initial day (the second day), pouring walls and a roof with the forms to complete the pouring of a module on casting bed one, while permitting the floor on casting bed two to cure and removing the now fully cured module on casting bed three while permitting the module as casting bed four to continue curing;

on the day immediately following the second day (the third day), removing the exterior forms from casting bed one and removing one of said interior forms from casting bed one and then shoring the roof of the module at casting bed one along a median strip and then removing the other of said interior forms from casting bed one, and assembling said interior and exterior forms removed from casting bed one on casting bed two, and pouring a floor slab on casting bed three, and permitting the module on casting bed four to continue curing;

on the day immediately following the third day (the fourth day), permitting the module cast on casting bed one to continue curing, pouring the concrete walls and roof to complete the pouring of a module on casting bed two, while permitting the floor slab on casting bed three to cure, and removing the fully cured module from casting bed four;

on the day immediately following the fourth day (the fifth day), permitting the module on casting bed one to continue curing, and removing from the module cast on casting bed two on the fourth day the exterior forms and one interior form and then shoring said module along a median strip and the removing the other of said interior form from said module, and assembling said interior and exterior forms removed from casting bed two on casting bed three, and casting a floor slab on casting bed four;

on the day immediately following the fifth day (the sixth day), removing the fully cured module from casting bed one, and permitting the concrete in the module on casting bed two to cure, and pouring the walls and roof into the forms on casting bed three to complete the pouring of a module on casting bed three, and permitting the floor slab on casting bed four to cure;

on the day immediately following the sixth day (the seventh day), casting a floor slab on casting bed one, while permitting the module on casting bed two to continue curing, and removing the exterior forms and one of the interior forms from the module cast on the sixth day on casting bed three and then shoring the roof of said module along a median strip and then removing the other interior form from said module on said casting bed three and assembling said interior and exterior forms removed from casting bed three on the floor slab on said casting bed four; and

on the day immediately following the seventh day (the eighth day), permitting the floor slab poured on said casting bed one on said seventh day to cure, while removing the now fully cured module cast on the fourth day on casting bed two from casting bed two, and permitting the concrete forming the walls and roof of the module poured on casting bed three on the sixth day to continue curing, and pouring the walls and ceiling into the forms assembled on casting bed four to complete the pouring of a module on casting bed four.

4,495,132

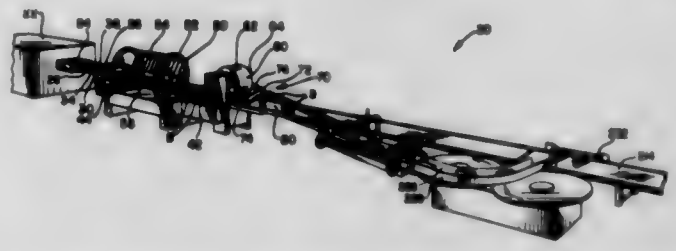
METHOD AND APPARATUS FOR MAKING ANTIQUE BRICK

Joseph A. Johnson, Malakoff, Tex., assignor to Texas Industries, Inc., Dallas, Tex.

Filed Sep. 23, 1982, Ser. No. 422,136

Int. Cl.³ B28B *11/08*

U.S. Cl. 264—293 **20 Claims**



1. An apparatus for treating elongated products having longitudinal edges thereon comprising:

first transport means for transporting said products such that the longitudinal edges are substantially perpendicular to the direction of travel,

first turning means for turning said products such that the longitudinal edges are substantially parallel to the direction of travel of the products and such that the products

are moved in single file, said turning means including a first conveyor for receiving said product thereon,

a second conveyor for receiving products thereon from said first conveyor and having an axis of movement divergent from that of said first conveyor,

means for treating selected longitudinal edges of the products as the products are moved on said second conveyor, and

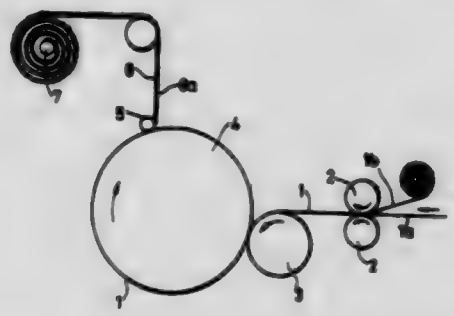
second turning means for receiving said products from said second conveyor and for turning the products such that the longitudinal edges are substantially in the same orientation as said products on said first transport means and for depositing the products onto a third moving conveyor, said third conveyor moving slower than said first conveyor and in line with said first conveyor.

4,495,133

PROCESS FOR THE PRODUCTION OF PILE-SURFACED TEXTILE STRUCTURES

Taino Sugihara, and Tsuyoshi Aoki, both of Moriyama, Japan, assignors to Chiso Corporation, Osaka, Japan

Filed Aug. 16, 1983, Ser. No. 523,671
Claims priority, application Japan, Aug. 17, 1982, 57/141731
Int. Cl.³ B32B *33/00*
U.S. Cl. 264—504 6 Claims



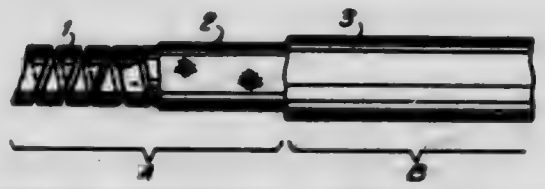
1. A process for the production of a pile-surfaced textile structure which compriaes the steps of: forming a composite by adhering a low-melting point thermoplastic resin material to one side of a substantially flat sheet of backing material by melting said resin material, said resin material becoming molten when heated at a given temperature and said backing material being an air-permeable textile structure which remains substantially intact and is not softened upon being heated at a given temperature; heating said composite at said given temperature to melt said resin material; and injecting an air-jet through said heated composite form the side of said backing material which is opposite said resin material so that said resin is projected into fibrous forms which form a pile surface on said composite.

4,495,134

METHOD FOR MANUFACTURING A FLEXIBLE TUBE FOR AN ENDOSCOPE

Teruo Ouchi, Kawagoe, and Hiromichi Shibuya, Tokyo, both of Japan, assignors to Kabushiki Kaisha Medos Kenkyusho, Japan

Filed Nov. 16, 1982, Ser. No. 441,998
Claims priority, application Japan, Nov. 17, 1981, 56-184060
Int. Cl.³ B29C *17/07, 19/00, 23/00;* B29D *9/04*
U.S. Cl. 264—516 8 Claims



1. In a method for manufacturing a flexible tube for use in an endoscope, the flexible tube comprising a basic tubular core structure including at least an inner metallic tubular spiral having an outer side and an outer meshwork tube covering the outer side of the metallic tubular spiral, the improvement comprising the steps of:

(a) locating a preformed homogeneous thermoplastic synthetic resin tube over the outer surface of the meshwork tube with a contact pressure therebetween to form an intermediate product by the steps of

temporarily closing the hollow interior of the basic tubular core structure;

positioning a forcibly enlarged open end of the homogeneous thermoplastic synthetic resin tube over one end of the basic tubular core structure;

inflating the thermoplastic synthetic resin tube by supplying compressed gas into the interior thereof until the inner diameter of the inflated termoplastic synthetic resin tube corresponds to the outer diameter of the basic tubular core structure;

feeding the thermoplastic synthetic resin tube axially over the basic tubular core structure;

reducing the internal overpressure in the interior of the thermoplastic synthetic resin tube after a desired length of said thermoplastic synthetic resin tube has been fed over the basic tubular core structure

whereupon a contact pressure exists between the thermoplastic synthetic resin tube and the tubular core structure resulting from the inherent contractive forces tending to restore the synthetic resin tube to its unstressed condition; and

(b) treating the intermediate product so that the thermoplastic synthetic resin of the thermoplastic synthetic resin tube partially flows into the mesh of the meshwork tube by the step of

heating the thermoplastic synthetic resin tube to a temperature higher than a softening point of the thermoplastic synthetic resin forming the same,

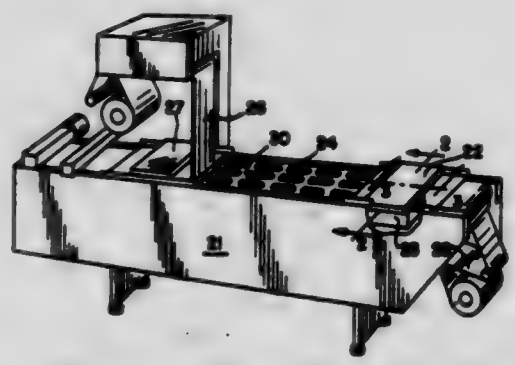
whereupon the thermoplastic synthetic resin protrudes into the mesh of the meshwork tube and so that upon plasticizing the resin tube forms a coating layer bonded integrally to the basic tubular core structure.

4,495,135

METHOD FOR FORMING CONTAINER HAVING RE-ENTRANT FLANGE

Leonard A. White, Gurnee, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 9, 1982, Ser. No. 406,374
Int. Cl.³ B29C *17/04*
U.S. Cl. 264—553 5 Claims



1. A short-stroke method for forming thermoformed unitary container members having an undercut flange, comprising the steps of:

longitudinally moving a web of thermoformable material over an undercut flange-forming member along the periphery of a thermoforming molding cavity, the undercut flange-forming member having a movable leading end that is at the upstream end of the molding cavity, the upstream end being defined by the direction of said longitudinal movement of the web, the undercut flange-form-

ing member having a stationary trailing end that is downstream of the leading end of the flange-forming member;

thermoforming a unitary container member within the molding cavity by thermoforming a portion of the web over the flange-forming member and into a body-forming member of the molding cavity, said unitary container member having a body, said container member body having a flange along the periphery of the walls of the container member body;

said thermoforming step including imparting a re-entrant condition to the flange so as to form an undercut portion while thermoforming said body and said flange from the web of thermoformable material, said step of imparting a re-entrant condition including drawing the thermoformable material over the undercut flange-forming member;

opening the leading end of the molding cavity flange-forming member by moving same through a short-stroke in said upstream direction away from the molding cavity and by moving same away from the trailing portion of the flange-forming member;

separating the body-forming member and the leading end of the flange-forming member from the rest of the molding cavity until the body-forming member of the molding cavity and the leading end of the flange-forming member clear the container member body;

slidingly moving the web and the container member formed therein in the upstream direction and away from the molding cavity until the container member is completely removed from the molding cavity; and

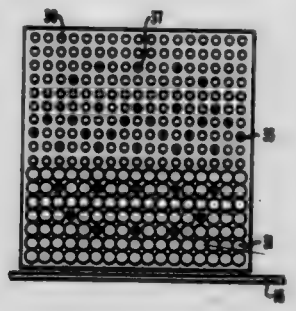
closing the leading end of the molding cavity flange-forming member through a short-stroke in a downstream direction until the leading end operatively engages the trailing portion of the flange-forming member.

4,495,136

MAXIMUM POWER CAPABILITY BLANKET FOR NUCLEAR REACTORS

Thomas M. Camden, Jr., Apollo, and William L. Orr, Ligonier, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 11, 1982, Ser. No. 377,227
Int. Cl.[3] G21C *3/32*
U.S. Cl. 376—172 10 Claims



1. In combination with the core for a nuclear pressurized water reactor having a core barrel which encloses a plurality of vertically oriented and closely spaced elongated fuel assemblies, each of said fuel assemblies having a generally square cross-sectional configuration with four axial exterior faces, the combined array of said fuel assemblies having the general configuration of a right circular cylinder to the extent permitted by the square configuration of those fuel assemblies which are positioned at the periphery of said combined fuel assembly array, a portion of said peripherally positioned fuel assemblies of said array having one axial peripheral face which forms a portion of the periphery of said combined fuel assembly array, the remainder of said peripherally positioned fuel assemblies of said array having two axial peripheral faces which form a portion of the periphery of said combined fuel assembly array, a flow baffle closely surrounding said axial peripheral faces of said fuel assemblies which form the outer periphery for said combined fuel assembly array to direct the flow of coolant fluid upwardly through said fuel assembly array during operation of said reactor, those of said fuel assemblies which are positioned interiorly within said array each comprising a plurality of regularly spaced parallel and coextensive relatively small diameter fuel rods each of which comprises fissile pellets stacked within a sealed metallic cladding, said small diameter fuel rods being primarily supported by upper and lower nozzles and by grid structures spaced along the length of said rods, each of said fuel assemblies which are interiorly positioned within said combined array having a high H/U ratio, and a relatively small proportion of control rod thimbles spaced among said small diameter fuel rods; the improved constructions for said fuel assemblies which are peripherally positioned in said combined array;

said improved peripherally positioned fuel assemblies each incorporating two different fuel rod designs, the first of said fuel rod designs being the same as the fuel rod designs used in said fuel assemblies which are interiorly positioned within said combined array, and the second of said fuel rod designs differing from said first fuel rod designs in that the diameter of said second fuel rod designs is larger than that of said first fuel rods and the pellets of said second fuel rods comprise fertile material with those portions of said peripherally positioned assemblies which incorporate said second fuel rods having a low H/U ratio, and a relatively small proportion of control rod thimbles spaced among said fuel rods of said peripherally positioned arrays;

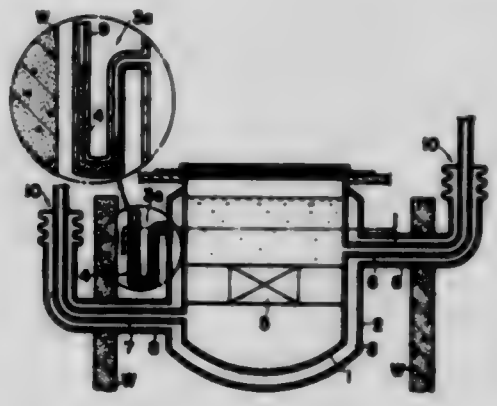
said first fuel rod designs and said second fuel rod designs positioned in separate discrete locations within each of said peripherally positioned fuel assemblies, said second fuel rods positioned nearest the peripherally positioned axial faces of said fuel assemblies which form the periphery of said combined array, and said first design fuel rods positioned furthest away from the peripherally positioned axial faces of said fuel assemblies which form the periphery of said combined array.

4,495,137

NUCLEAR REACTOR

Akira Otsubo, Kashiwa, Japan, assignor to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Dec. 21, 1981, Ser. No. 333,185
Claims priority, application Japan, Jan. 21, 1981, 56-7336; Mar. 16, 1981, 56-37627
Int. Cl.[3] G21C *13/00, 17/00*
U.S. Cl. 376—171 15 Claims



1. A fast breeder reactor comprising:

a reactor vessel;

a guard vessel enclosing said reactor vessel, spaced a predetermined distance from said reactor vessel; and

a liquid manometer structure, the space defined between said reactor vessel and said guard vessel communicating with the exterior of said guard vessel only through said liquid manometer structure, said manometer structure being filled with a liquid so as to liquid-seal said space between said reactor vessel and said guard vessel with respect to the exterior of said guard vessel said space between said

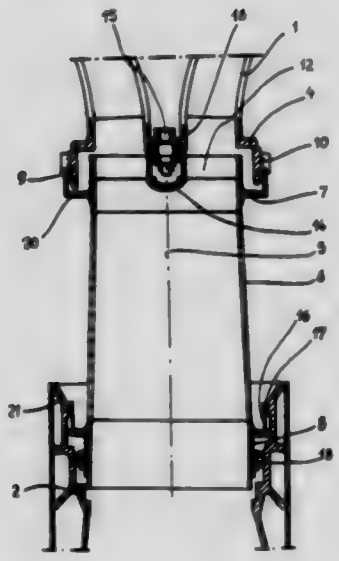
reaction vessel and said guard vessel being charged with an inert gas so as to maintain said space at a pressure substantially greater than atmospheric pressure.

4,495,138

JUNCTION DEVICE BETWEEN THE DELIVERY DUCT OF A PRIMARY PUMP AND A DUCT JOINED TO THE CORE SUPPORT OF A FAST NEUTRON NUCLEAR REACTOR

Michel Thévenin, Fresnes, and Georges Jullien, St Michel sur Orge, both of France, assignors to Novatome, Le Plessis Robinson, France

Filed May 12, 1982, Ser. No. 377,483
Claims priority, application France, Jun. 19, 1981, 81 12084
Int. Cl.³ G21D *1/04*
U.S. Cl. 376—203 3 Claims



1. A junction device between the delivery duct of a primary pump and a duct joined to the core support of a liquid metal cooled fast neutron nuclear reactor, in which the liquid metal constituting the primary fluid of said reactor is pumped to the base of the core of said reactor by primary pumps which inject the liquid metal into ducts joined to said core support for the purpose of cooling said core, comprising

(a) a frusto-conical sleeve (6) disposed as an extension of said pump delivery duct and having its smaller base situated near the outlet of said delivery duct and its larger base near the inlet of said duct (2) joined to said core support;

(b) a connecting member (7) joined to said sleeve (6) to its smaller base and symmetrical in revolution around the axis of said sleeve (6), said connecting member carrying in its central portion, near the axis of symmetry (5), a movable portion (14) of an articulated connection means the fixed portion (16) of which is fixed on said pump duct, thus permitting simultaneously lateral displacements and the retention of said sleeve (6) on said pump duct against axial forces, while the peripheral portion of said connecting member (7), which has a diameter larger than the diameter of said smaller base of said sleeve (6), has a spherical surface (9), symmetrical around the axis (5) of said sleeve (6), which is complementary to a corresponding surface machined on a piece (4) rigidly fixed on the end of said pump delivery duct, fluid-tightness between these two surfaces disposed against one another being achieved with the aid of a labyrinth seal (10), while the pressure of the liquid metal delivered by said pump, applied to the portion of said connecting member (7) which is located between its peripheral portion and its portion fixed to said sleeve (6), enables exertion of an axially directed force on sleeve (6);

(c) a sealing device (18) inserted between the outlet end of said sleeve (6) and said duct (2) joined to said core support, the end of said sealing device on which the outlet end of said sleeve (6) is engaged having a diameter different from that of the end of said sleeve; and

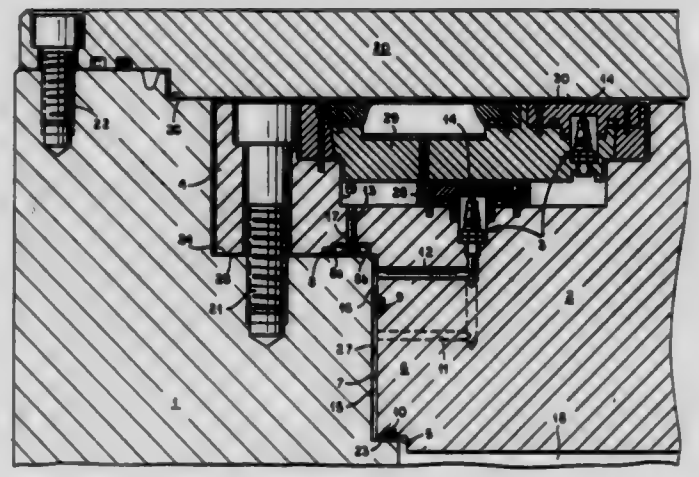
(d) an elastic means (16) inserted between the end of said sleeve (6) and a support member fastened to said core support, said elastic means extending over the entire periphery of said sleeve (6) for the lateral support thereof, the outlet end of said sleeve being freely movable in the axial direction relative to said duct (2) joined to said core support.

4,495,139

RADIOACTIVE-WASTE CONTAINER WITH LEAK MONITOR

Klaus G. Janberg, Ratingen-Lintorf, and Dieter Methling, Hattingen, both of Fed. Rep. of Germany, assignors to GNS Gesellschaft fur Nuklear-Service mbH, Essen, Fed. Rep. of Germany

Filed Jul. 9, 1982, Ser. No. 396,769
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1981, 3127219
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—203 10 Claims



1. A container for radioactive waste, said container comprising:

a massive metallic vessel having an interior adapted to receive radioactive waste and having a mouth formed with inner and outer spaced generally planar and annular vessel shoulders and formed therebetween with a nonplanar intermediate annular vessel surface;

a massive metallic cover formed with a plug fitted in said mouth and having respective inner and outer plug shoulders closely juxtaposed with said vessel shoulders and a nonplanar intermediate annular plug surface complementary to said intermediate vessel surface;

an inner ring seal engaged snugly between said inner shoulders;

a pair of generally concentric and spaced outer ring seals engaged snugly between said outer shoulders and forming an annular outer chamber therebetween;

an intermediate ring seal engaged snugly between said intermediate surfaces and forming therebetween and with said inner ring seal an annular inner chamber and therebetween and with said outer ring seals an intermediate chamber, said cover being formed with respective inner, intermediate, and outer passages each having one end opening into the repective chamber and another end; and

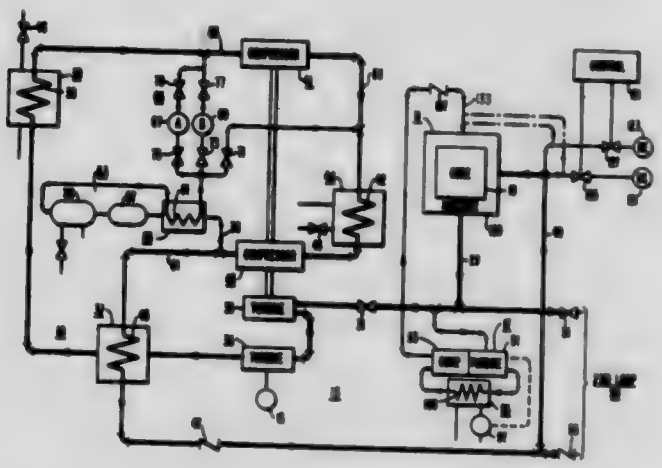
means on said cover at the other ends of said passages for sampling gases therein and in the respective chambers.

4,495,140

PERMANENT DEACTIVATION OF NUCLEAR REACTOR

Edgar L. Kochka, Pittsburgh, Pa.; Joseph M. Tobin, deceased, late of McMurray, Pa., and Arlene F. Neve, administratrix, Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 24, 1981, Ser. No. 324,365
Int. Cl.³ G21C 7/06
U.S. Cl. 376—207 16 Claims



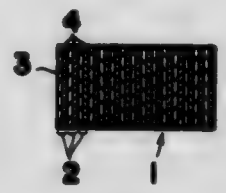
1. The method of permanently deactivating, in the event of an emergency, a nuclear reactor whose working fluid is a gas and whose fuel is contained in a body having channels for conducting the working fluid, the said method comprising deriving borane from boron trifluoride etherate in which the boron is substantially enriched in B_{10}, reacting said borane with one or more of the class consisting of unsaturated hydrocarbons and ammonia to produce respectively one or more of the class consisting of carboranes, alkyl boranes, and alkyl diboranes or boron nitrogen products, (the carboranes, boranes, diboranes, and carbon nitrogen products being all herein referred to as last-named compounds), injecting one or more of said last-named compounds into said working fluid so that said compounds are circulated with said working fluid through said channels of said body, while said compounds are in said body converting said compounds into one or more of the class of materials consisting of boron and the highly-refractory compounds of boron and carbon and/or boron and nitrogen, and adhering said material to the walls of said channels, sufficient compounds being converted to provide sufficient converted material to deactivate said nuclear reactor permanently.

4,495,141

TAGGING GAS RELEASING ELEMENT

Satoru Ozaki, Ichigawa, Japan, assignor to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Jun. 12, 1979, Ser. No. 47,774
Claims priority, application Japan, Jun. 26, 1978, 53-77240
Int. Cl.³ G21C 17/00, 3/10
U.S. Cl. 376—251 28 Claims



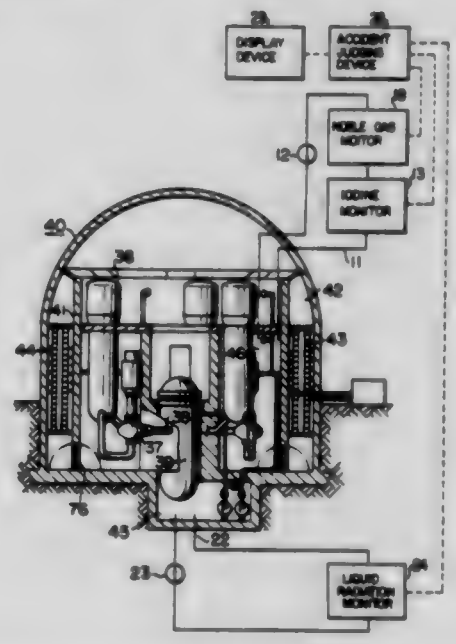
1. A tagging gas releasing element for insertion within a nuclear fuel rod, said tagging gas releasing element consisting essentially of an inorganic solid material having a tagging gas composed of at least one rare gas selected from the group consisting of helium, xenon, neon and krypton adsorbed on the surface region thereof so as to detect failure in a nuclear fuel rod, said tagging gas being released from said element and into the interior of said fuel rod by means of desorption under the high temperature operation conditions of a nuclear reactor so as to tag each fuel rod and detect failure of the fuel rod when the tagging gas leaks therefrom, said inorganic solid material containing the tagging gas being the sole source of the tagging gas.

4,495,142

MONITORING SYSTEM FOR MONITORING STATE OF NUCLEAR REACTOR CORE

Tadakazu Nakayama; Ryozo Tsuruoka, and Masaki Matsumoto, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1981, Ser. No. 245,515
Claims priority, application Japan, Mar. 19, 1980, 55-35345
Int. Cl.³ G21C 17/00
U.S. Cl. 376—251 13 Claims



1. A monitoring system for monitoring the state of the core of a nuclear reactor, comprising: a first pipe communicated at its both ends with the gas layer in a nuclear reactor container housing a nuclear reactor vessel; gas transferring means provided in said first pipe; first means provided in said first pipe for measuring a level of the radioactivity of iodine; second means provided in said first pipe at the downstream side of said first means for measuring a level of the radioactivity of noble gas; a second pipe communicated at its both ends with a space which is to be filled with the coolant in the liquid state discharged out of said nuclear reactor vessel; means disposed in said second pipe for transferring said coolant in the liquid state; third means disposed in said second pipe for measuring a level of the radioactivity of iodine in the coolant in the liquid state; judging means for determining, upon receipt of the outputs from said first means, second means and third means, a condition of fuel rods in said nuclear reactor vessel; and means for displaying the condition of the fuel rods as determined by said judging means.

4,495,143

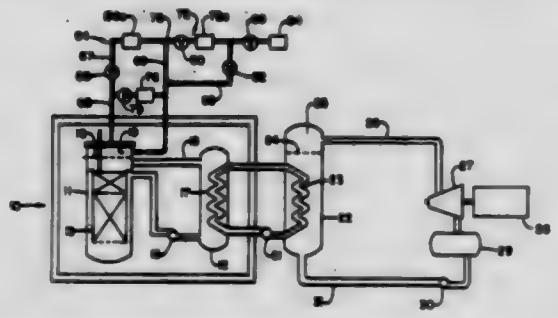
GAS TAGGING AND COVER GAS COMBINATION FOR NUCLEAR REACTOR

Kenny C. Gross, Lemont, Ill., and Matthew T. Lang, Idaho Falls, Id., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 26, 1983, Ser. No. 535,462
Int. Cl.³ G21C 17/04
U.S. Cl. 376—251 8 Claims

1. In a nuclear reactor having a sealed vessel and a core therein holding fuel elements, a liquid metal coolant circulating through the core and over the fuel elements, and a cover gas confined in the vessel over the coolant, the combination of a cover gas cleanup system operable to purge the cover gas of

any fission gases such as xenon and krypton that may escape from the fuel element upon a leak developing in the fuel element cladding, fuel element identification means including the encasement in the different fuel elements of selected tag isotopes blended in unique combinations relative to one another and the cataloging of the uniquely tagged fuel elements according to their locations in the core, means including a tag gas recovery and analysis system connected downstream of and in series with the gas cover cleanup system operable to receive the purged cover gas discharged therefrom, the cover gas



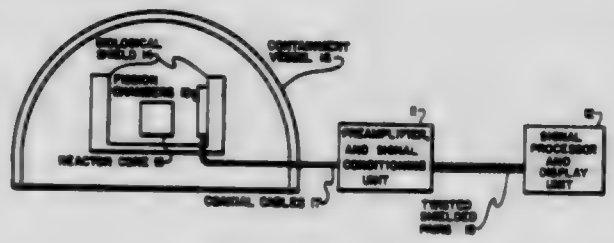
cleanup system and the tag recovery system each having a cryogenic charcoal bed, whereby the cover gas cleanup system bed operates at a first temperature to isolate out the fission gases and the tag gas recovery system bed operates at a second temperature colder than the first temperature to recover the tag gases from the cover gas, the tag analysis system including the use of mass spectrometry for identifying the unique combinations of these isotopes and for thus locating the leaking fuel element according to the core catalog, and the cover gas being of helium and the tag isotopes being of neon and argon.

4,495,144

FISSION CHAMBER DETECTOR SYSTEM FOR MONITORING NEUTRON FLUX IN A NUCLEAR REACTOR OVER AN EXTRA WIDE RANGE, WITH HIGH SENSITIVITY IN A HOSTILE ENVIRONMENT

Clinton L. Lingren, San Diego, and James F. Miller, Encinitas, both of Calif., assignors to Gamma-Metrics, San Diego, Calif.

Filed Jul. 6, 1981, Ser. No. 280,335
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—255 21 Claims



1. A system for monitoring neutron flux in a nuclear reactor having a core located within a biological shield within a containment vessel, comprising

a plurality of fission chamber detectors located adjacent the reactor core inside the biological shield for providing neutron signal pulses in response to the detection of neutrons;

a preamplifier and signal conditioning unit located outside the containment vessel for amplifying and conditioning said neutron signal pulses; and

coaxial cables for conducting said neutron signal pulses from the fission chamber detectors to the preamplifier and signal conditioning unit, wherein each coaxial cable comprises

a center conductor;

a coaxial high temperature insulating layer closely covering the center conductor;

a coaxial dielectric layer closely covering the insulating layer, said dielectric layer being resistant to nuclear radiation damage; and

a coaxial conductive solid sheath layer closely covering the dielectric layer; and

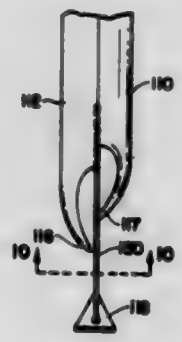
a coaxial outer insulating layer closely covering the solid sheath layer, said outer layer being resistant to nuclear radiation damage.

4,495,145

SPHERICAL NUCLEAR FUEL LOADING PROBE

Aime A. Gehri, Richland, Wash., assignor to Exxon Nuclear Company, Inc., Bellevue, Wash.

Filed Dec. 7, 1981, Ser. No. 327,816
Int. Cl.³ G21C *5/36*; B67D *5/08*; G21G *13/00*; G01G *17/04*
U.S. Cl. 376—261 6 Claims



1. A loading probe for loading spherical nuclear fuel of three different diameters into a fuel rod comprising:

(a) funnel means for receiving said spherical nuclear fuel, said funnel means maintaining a separation of said spherical fuel of different diameters;

(b) tubing means corresponding to each of said spherical nuclear fuel diameters, said tubing means of sufficient length so that said tubing means extends about the length of said fuel rod in the load portion;

(c) valve means for releasably containing said fuel spheres within said funnel means, said valve means able to release said fuel spheres to said tubing means;

(d) gate means between said valve means and said tubing means for regulating the rate of flow of each said spherical fuel as it passes from said funnel means through said valve means into the end of said tubing means away from said fuel rod; and

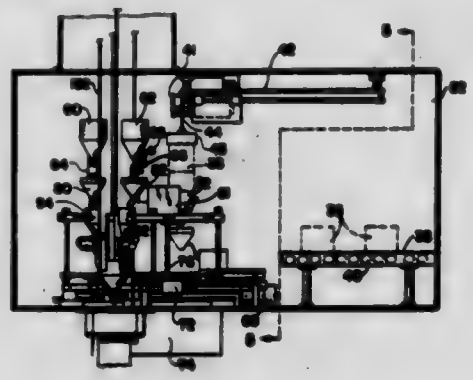
(e) deflector means attached to said end of said tubing means within said fuel rod for mixing said fuel as it emerges from said tubing means;

4,495,146

SPHERICAL NUCLEAR FUEL LOADING SYSTEM

Aime A. Gheri, Richland, Wash., assignor to Exxon Nuclear Company, Inc., Bellevue, Wash.

Filed Dec. 7, 1981, Ser. No. 327,817
Int. Cl.³ G21C *5/36*; B67D *5/08*; G21G *17/04*, *13/00*
U.S. Cl. 376—261 9 Claims



1. A system for the loading of subetantially spherical nuclear fuel into a vertically maintained fuel rod comprising:

(a) a main house having an inert atmosphere and having a sealable opening to receive three quantities of fuel spheres, each quantity having a different diameter for loading into

fuel rods, said fuel rods having one open end within said housing;

(b) a weighing station system for receiving said spheres and separating each of said three quantities of spheres into predetermined quantities, said weighing station including a balance means for weighing said nuclear fuel spheres;

(c) a means for transferring said fuel spheres after entering said main housing to said weighing station within said main housing;

(d) a fuel rod support system for supporting said fuel rod in an upright position;

(e) a means for feeding said predetermined quantities of said fuel spheres in a controlled manner into said fuel rod so as to randomly mix said fuel spheres;

(f) a means for raising and lowering said feeding means,

(g) a means for transferring each of said predetermined quantities of said fuel spheres to a corresponding hopper of said feeding means for subsequent loading into said fuel rod;

(h) a means for maintaining said fuel rod in sealing engagement with said main housing in order to preserve said inert atmosphere.

4,495,147

HEAT-RETARDING CLOSURE SYSTEM FOR PRESSURE RELIEF OPENINGS OF PARTITIONS, IN NUCLEAR REACTOR BUILDINGS

Wolfgang-Peter Fricker, Freinsheim; Manfred Scholz; Heinrich Bansche, both of Erlangen, and Bernd Gollasch, Nürnberg, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim an der Ruhr and Grünzweig & Hartmann Montage GmbH, Ludwigshafen, both of, Fed. Rep. of Germany

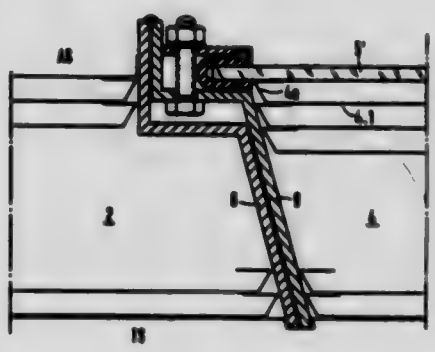
Filed Jan. 22, 1981, Ser. No. 227,807

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1980, 3002335

Int. Cl.³ G21C *11/08*

U.S. Cl. 376—283

9 Claims



1. Heat retarding closure system, for partitions having pressure relief openings formed therein, in nuclear reactor buildings where main coolant nozzles of a reactor pressure vessel penetrate a biological shield, comprising blowout inserts in the form of closure elements having a side facing the reactor, a side facing away from the reactor and anchors for holding said closure elements, said blowout inserts being pushable out of said anchors by an overpressure in a given pressure difference direction on said side facing the reactor, and an outer sealing blowout skin, said blowout inserts being in the form of heat-retarding cassette inserts having a front surface at said side facing away from the reactor with a peripheral shearing edge formed thereon resting against said blowout skin, said blowout skin having a given thickness in said given pressure difference direction, said blowout skin being sheared off by said shearing edge of said cassette insert and said cassette insert being pushed out of said anchors when a given pressure difference is reached, said anchors being in the form of a partition seat having an outside and an inside and said partition seat and blowout insert being widened from the inside to the outside.

4,495,148

PROCESS AND APPARATUS FOR REMOVING COMBUSTIBLE LUBRICANTS FROM SINTERABLE WORKPIECES

Reiner Sarnes, Gerhart Hauptmannstr. 16, D-7302 Ostfildern 2, and Emil Heiarich, Bruckner Str. 1, D-7054 Korb, both of Fed. Rep. of Germany

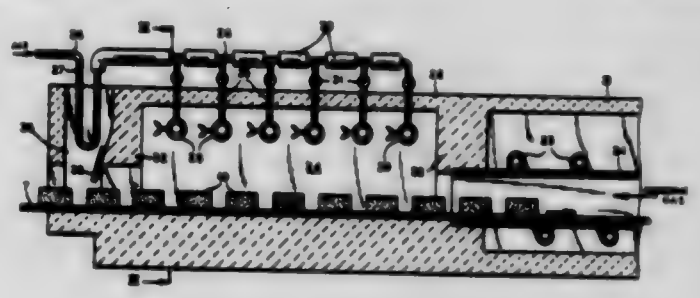
Filed Jan. 11, 1983, Ser. No. 457,145

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1982, 3200582

Int. Cl.³ B22F *3/00*

U.S. Cl. 419—57

14 Claims



1. A process for removing a combustible lubricant from workpieces of pressed metallic particles advancing through a preheating chamber into a muffle furnace for sintering, comprising the steps of:

(a) blowing an at least partly combustible protective gas of low oxygen content through said preheating chamber in counterflow to the advancing workpieces, said protective gas also traversing said muffle furnace to envelop the workpieces being sintered;

(b) heating an oxygen-rich gas to an elevated temperature sufficient to volatilize the lubricant permeating the workpieces which enter the preheating chamber at a substantially lower temperature; and

(c) admitting the hot oxygen-rich gas to said preheating chamber at locations spaced along the path of the workpieces for admixture with said protective gas and resulting ignition of combustible constituents of the latter and of the evaporating lubricant whereby the oxygen content of the mixture is progressively depleted on the way from the entrance end to the exit end of the preheating chamber to an extent preventing oxidation of the workpieces heated up along said path.

4,495,149

OPTICAL-TYPE AUTOMATIC ANALYZING AND MEASURING APPARATUS

Toyotaro Iwata; Kunio Nakajima, and Hiroyuki Otsuki, all of Hyogo, Japan, assignors to Toa Medical Electronic Co., Ltd., Hyogo, Japan

Filed Sep. 16, 1982, Ser. No. 419,038

Claims priority, application Japan, Sep. 18, 1981, 56-147165

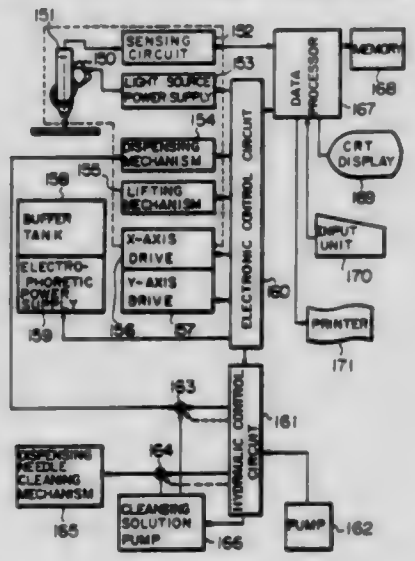
Int. Cl.³ G01N *35/06*

U.S. Cl. 422—65

15 Claims

1. An optical-type automatic analyzing and measuring apparatus which comprises an X-Y drive mechanism, and optics/-dispensing mechanism having an optical system and dispensing means including a dispensing needle, a dispensing needle cleaning mechanism, a lifting mechanism having a lifter adapted to lift and lower an object remote of said dispensing needle, and a reagent/sample holder accommodating reagents and samples, wherein said optics/dispensing mechanism and said lifting mechanism are mounted on the same movable structure and transported together in two dimensions by said X-Y drive mechanism, the optical system of said optics/dispensing mechanism, the dispensing needle of said dispensing means and the lifter of said lifting mechanism are located spaced apart from one another by predetermined distances so as not to impede the operation of one another, said dispensing means is adapted to take up a predetermined quantity of a reagent or sample from said reagent/sample holder and dispense the same in pre-

scribed quantities at each of a number of predetermined positions to allow reagents and samples to react, said optical system determines the positions of said mechanisms and said holder in a two-dimensional plane by confirming the operating position of said needle or lifting mechanism spaced apart from each other by a predetermined distance, said optical system being adapted to read the optical characteristics of a sample following a reaction with a reagent and to generate a detection signal for providing the measured results, said optical system includes



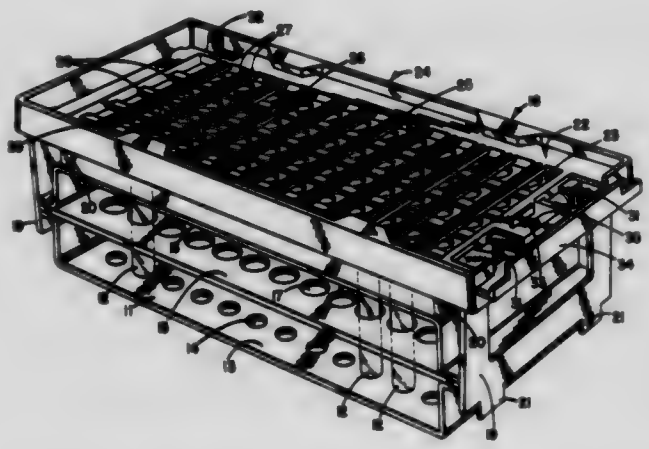
a lamp housing, a light condenser, light guiding optical fibers, an irradiation lens housing, an irradiation lens, an objective lens and a light receiving element, and said rinsing needle cleaning mechanism passes a rinsing liquid and air through the interior of the dispensing needle before said needle takes up a reagent or sample, and ejects a rinsing liquid and air toward the outer surface of the dispensing needle after said needle takes up a reagent or sample, whereby the dispensing needle is rinsed and blown dry.

4,495,150

MULTIPLE OBJECT CAPTURING AND PROCESSING DEVICE

William E. Cook, Vista; Morton A. Vodian, Escondido, and Otto Haunold, Carlsbad, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 25, 1983, Ser. No. 516,486
Int. Cl.³ B01L *9/00;* B01D *35/02;* B06B *3/00*
U.S. Cl. 422—99 9 Claims



1. In a testing apparatus employing a plurality of test tubes with at least one solid object insertable into each test tube, said apparatus including a rack for maintaining said test tubes in vertical alignment and a means for retaining said test tubes in said rack when said rack is inverted, the improvement comprising:

said retaining means including means defining a first plurality of holes in alignment with said test tubes, said first holes sized to allow said objects to pass through said retaining means;

a capture slide movably mounted adjacent said retaining means, said capture slide including means defining a second plurality of holes to allow said object to pass therethrough, said capture slide movable to a first position in which said second holes in said capture slide are not in alignment with said first holes in said retaining means and a second position in which said second holes in said capture slide are in alignment with said first holes in said retaining means;

a containing slide, movably mounted adjacent said capture slide, said containing slide including means defining a first plurality of spaces to allow said object to pass therethrough, said containing slide movable to a first position in which said first spaces in said containing slide are not in alignment with said first holes in said retaining means and a second position in which said first spaces in said containing slide are in alignment with said first holes in said retaining means; and

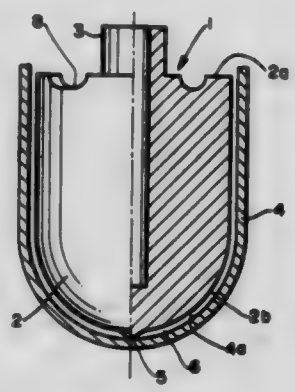
whereby, when said capture slide is in said first position and said containing slide is in said second position, then said object is contained in said retaining means by the cooperation of said containing slide and said retaining means.

4,495,151

ELEMENT FOR IMMUNOASSAY

Kunio Ohyama; Nobuaki Nakagawa, and Susumu Watanabe, all of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Jul. 1, 1982, Ser. No. 394,473
Claims priority, application Japan, Jul. 1, 1981, 56-101365
Int. Cl.³ G01N *33/54*
U.S. Cl. 422—102 8 Claims



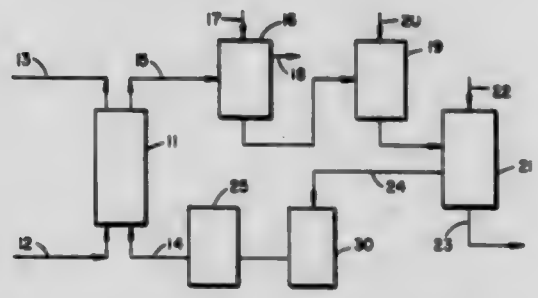
1. In apparatus for performing an immunoassay, comprising in combination a reaction tube closed at its bottom, and in the reaction tube a molded element having on its surface material having specific binding ability for a component in a liquid specimen to be assayed; the improvement in which the shape of the surface of the element adjacent the interior surface of the tube is the complement of the shape of the interior surface of the tube, and spacer means on the element in contact with the interior surface of the tube, said spacer means holding the element in such position in the tube that said surfaces of complementary shape are spaced from each other a small but constant distance thereby to receive between said surfaces of complementary shape a thin layer of constant thickness of a liquid specimen for immunoassay.

4,495,152

LEACH APPARATUS INCLUDING MEANS TO PROTECT ION EXCHANGE RESIN

Tsoung-yuan Yan, Philadelphia, Pa., and Raymond L. Lozano, Thoreau, N. Mex., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 963,662, Nov. 24, 1978, Pat. No. 4,298,578. This application Aug. 28, 1981, Ser. No. 297,303
Int. Cl.³ F04C 29/00
U.S. Cl. 422—159 5 Claims



1. In an apparatus for recovering values including means supplying a leach solution containing said values to at least one column filled with ionexchange resin, means for supplying eluant through said column to desorb said values from said resins, means for precipitating said values from said eluate upon addition of hydrogen peroxide, and means for making up fresh eluant from the decant solution which exists after said precipitation of said values, the improvement comprising:

a chamber positioned between said means for precipitating said values and said means for making up fresh eluant through which said decant solution flows; and

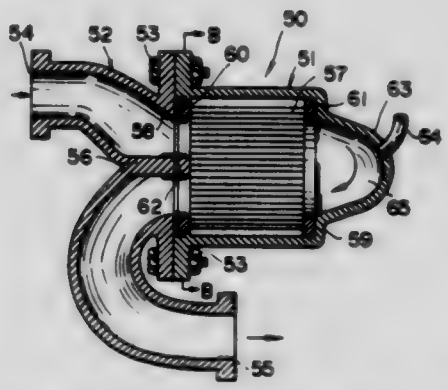
catalytic material in said chamber decomposing substantially all of any hydrogen peroxide that may be present in said decant solution into water and oxygen.

4,495,153

CATALYTIC CONVERTER FOR TREATING ENGINE EXHAUST GASES

Minoru Midorikawa, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed May 3, 1982, Ser. No. 374,413
Claims priority, application Japan, Jun. 12, 1981, 56-85491
Int. Cl.³ F01N 3/10
U.S. Cl. 422—171 5 Claims



1. A catalytic converter for treating engine exhaust gas, comprising:

(a) a carrier having opposite first and second ends and being formed with a plurality of passageways extending from the first to the second end of the carrier, the passageways having opposite first and second ends respectively, the first ends of the passageways being at the first end of the carrier, the second ends of the passageways being at the second end of the carrier;

(b) a casing housing the carrier in such a manner that the casing and the second end of the carrier define a space, inside the casing, through which the second ends of the passageways communicate in common;

(c) an inlet tube connected to the casing in such a manner as to directly communicate with a part of the first ends of the passageways for supplying the engine exhaust gas thereto;

(d) an outlet tube connected to the casing in such a manner as to directly communicate with another part of the first ends of the passageways;

(e) first catalyst carried on a part of the carrier including the passageways which directly communicate with the inlet tube; and

(f) second catalyst carried on another part of the carrier including the passageways which directly communicate with the outlet tube;

(g) a partition wall separating the inlet tube from the output tube;

(h) a first inward step provided on the casing;

(i) a second inward step provided on the inlet and outlet tubes, the second inward step being operative to hold the carrier in cooperation with the first inward step;

(j) an annular bumper member positioned between the carrier and the second inward step;

(k) a diametrical bumper member contacting the carrier and extending diametrically with respect to the annular bumper member; and

(l) a retainer holding the diametrical bumper member and the partition wall and thereby securing the diametrical bumper member to the partition wall, the retainer and the diametrical bumper member cooperating to prevent direct communication between the parts of the first ends of the passageways, the retainer having an annular portion and a diametrical portion extending diametrically with respect to the annular portion, the annular portion being positioned between the carrier and the second inward step and having a groove receiving the annular bumper member, the diametrical portion having oppositely directed grooves receiving the diametrical bumper member and the partition wall respectively;

whereby the engine exhaust gas flows past the inlet tube, a part of the passageways relating to the first catalyst, the space inside the casing, another part of the passageways relating to the second catalyst, and the outlet tube, in that order.

4,495,154

FUEL REFORMER

Larry G. Christner, Sandy Hook, and Jen-Jung Fan, Danbury, both of Conn., assignors to Energy Research Corporation, Danbury, Conn.

Filed May 28, 1982, Ser. No. 382,915
Int. Cl.³ B01J 8/02; F28D 21/00
U.S. Cl. 422—203 6 Claims

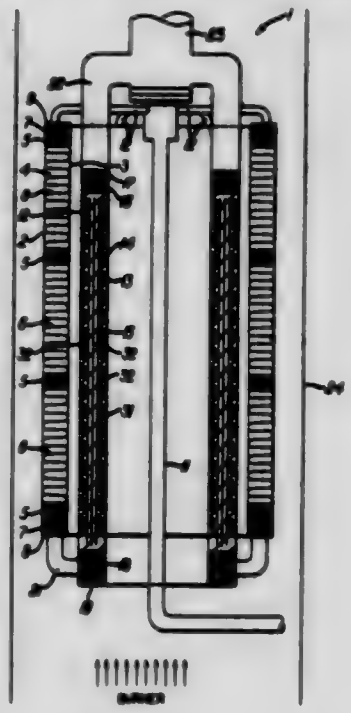
1. A reformer for reforming a fuel comprising:

a member having an elongated chamber;

a catalyst disposed within said chamber along the length of said chamber;

a heat conductive means disposed within said chamber along the length of said chamber, said heat conductive means comprising one or more elongated, thin, continuous pieces of metallic wire, each piece of metallic wire being in said catalyst and extending continuously over the length of said chamber over which said catalyst extends, whereby

heat transferred to said catalyst in a direction transverse to the length of said chamber is transferred by said metallic



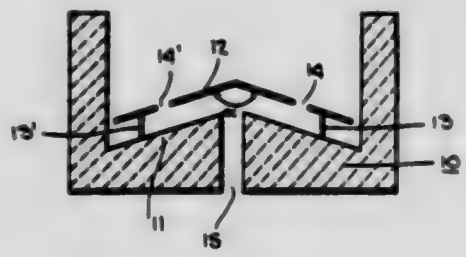
wire through said catalyst along the length of said chamber.

4,495,155

MODIFIED CRUCIBLE FOR THE PENDANT DROP METHOD OF CRYSTALLIZATION

Jean Ricard, Grenoble, and Charles Excoffon, Les Peillets, both of France, assignors to Circeram, Paris, France

Filed May 23, 1983, Ser. No. 496,893
Claims priority, application France, Jun. 11, 1982, 82 10174
Int. Cl.³ C30B *15/08, 15/10*
U.S. Cl. 422—248 4 Claims



1. A crucible for use in the continuous preparation of single crystals having a desired crystal orientation or for depositing crystalline material in a thin film on a substrate by the pendant drop growth method and comprising in its lower region one or more capillary bores having a height equal to or greater than the retention height in the capillary of the molten material used to produce the single crystals or thin film at a temperature and pressure desired, characterized in that the bottom of the crucible is capped by a baffle plate supported on feet resting on the bottom of the crucible, the baffle plate not extending to the inside edges of the crucible.

4,495,156

PRIMARY SYSTEM

Stanley E. Rokowetz, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Jan. 5, 1983, Ser. No. 455,649
Int. Cl.³ B05D *1/36, 7/00, 3/02*
U.S. Cl. 427—384 12 Claims

1. A method for priming metal substrates including the steps of:

(a) coating the surface of the metal substrate with an aqueous primer system comprising an organic titanium chelate dissolved in or admixed with water or a water-solvent mixture.

(b) drying the coating to produce a titanate film on the metal surface; and

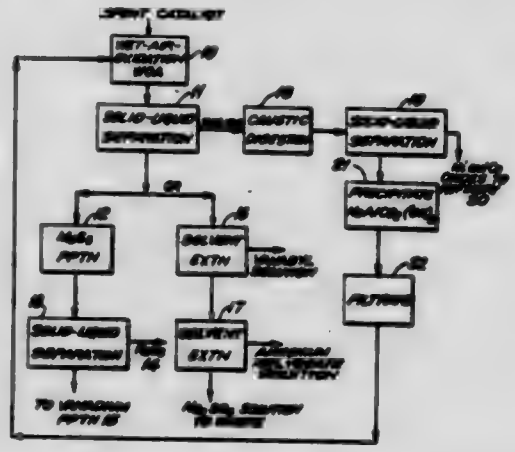
(c) applying a lubricant over said titanate coated surface.

4,495,157

RECOVERY OF METAL VALUES FROM SPENT HYDRODESULFURIZATION CATALYSTS

Roger F. Sebenik; Pablo P. LaValle, both of Ann Arbor, Mich.; John M. Laferty, Wheat Ridge, Colo., and William A. May, Ann Arbor, Mich., assignors to Amax Inc., Greenwich, Conn.

Filed Sep. 2, 1983, Ser. No. 528,884
Int. Cl.³ C01G *31/00, 39/00*
U.S. Cl. 423—54 10 Claims



1. A process of recovering metal values from spent hydrodesulfurization catalyst which comprises:

forming in a pressure vessel an aqueous slurry of finely divided spent catalyst and sodium carbonate;

the spent catalyst containing by weight about 2 to 10% Mo, up to about 12% V, about 0.5 to 4% Co, up to about 10% Ni, occluded oil, coke, sulfide sulfur and the balance essentially alumina;

the amount of sodium carbonate being at least sufficient to convert Mo and any V present to soluble Na_2MoO_4 and $NaVO_3$ and to neutralize SO_3 produced during oxidation, the amount of sodium carbonate being at least that required stoichiometrically;

heating said slurry in the presence of an oxygen-containing gas to a temperature of about 200° C. to 350° C. and a pressure of about 800 psig to 2500 psig for a time at least sufficient to solubilize said Mo and any V present;

the amount of oxygen being over about 1.1 times the stoichiometric amount sufficient to oxidize the metal values and sulfur to the maximum oxidized state and oxidize the oil and free carbon to CO_2 and H_2O;

the lower range of pressure being employed where oxygen is used and the high pressure range being used when air is used as the oxidation agent;

removing the reacted slurry from the pressure vessel and separating the solids therefrom to provide a filtrate containing $NaVO_3$ and Na_2MoO_4 and solids containing alumina, NiO and CoO;

recovering each of the metal values Mo and V from the filtrate solution by selectively extracting said vanadium using an organic solvent containing a quaternary amine at a pH of about 8.5 to 9.5 and provide an aqueous raffinate containing said molybdenum which is extracted therefrom using an organic solvent containing a secondary or tertiary amine at a pH of about 2 to 4;

or, in the alternative, selectively precipitating said Mo value from the filtrate solution as MoS_3 by adjusting the pH to less than about 1 by the addition of H_2S to provide a filtrate containing V which is recovered as a hydrated oxide by neutralizing the solution with a neutralizing agent selected from the group consisting of NaOH and Na_2CO_3 or precipi-

tated as a red cake by first oxidizing the vanadium to its higher valance and then adjusting the pH thereof with said neutralizing agent.

4,495,158

PROCESS FOR THE RECOVERY OF TANTALUM VALUES

Joseph E. Ritsko, and Howard L. Acla, both of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Feb. 29, 1984, Ser. No. 584,846
Int. Cl.[3] C01G *35/00*
U.S. Cl. 423—65 13 Claims

1. A process for recovery of tantalum from an impure source containing tungsten, titanium, iron, and other impurities, said process comprising:

(a) mixing said impure source with an alkali metal carbonate to form a mixture;

(b) drying said mixture,

(c) heating the dried mixture at a sufficient temperature and for a sufficient time to convert said tungsten impurities to a water soluble form and form a resulting mixture,

(d) leaching the resulting mixture with water to form a two phase system in which the liquid phase contains tungsten values and the solid phase contains the tantalum values and other impurities,

(e) separating said liquid phase containing the tungsten values from said solid phase containing the tantalum values and other impurities,

(f) digesting said solid phase containing the tantalum values and other impurities in a hydrochloric acid solution of sufficient strength, at a sufficient temperature and for a sufficient time to solubilize iron and a portion of the titanium impurities and form a liquid phase comprising iron and titanium,

(g) separating the liquid phase comprising iron and titanium from the resulting solid phase containing the tantalum values and depleted titanium values,

(h) contacting said resulting solid phase with an aqueous solution of hydrofluoric acid of sufficient strength to solubilize said tantalum values and titanium values,

(i) separating the resulting hydrofluoric acid solution containing said tantalum values and titanium values from any insolubles,

(j) adjusting the pH of said hydrofluoric acid solution containing said tantalum values and said titanium values from about 6.0 to about 8.0 with a base to form a first tantalum precipitate whereby a major portion of said titanium values remain in the resulting solution,

(k) separating the first tantalum precipitate from said resulting first solution,

(l) dissolving said first tantalum precipitate in an aqueous solution of oxalic acid of sufficient strength to solubilize the tantalum values,

(m) separating the resulting oxalic acid solution containing the tantalum values and said minor portion of titanium from the resulting insolubles,

(n) adjusting the pH of said oxalic acid solution to from about 6.5 to about 7.0 with a base to form a second tantalum precipitate and a second solution,

(o) separating said second tantalum precipitate from the second solution,

(p) dissolving said second tantalum precipitate in hydrochloric acid, and

(q) digesting the resulting hydrochloric acid solution containing tantalum values at a sufficient temperature and for a sufficient time to form a two phase system including a solid phase consisting of a third tantalum precipitate of high purity.

4,495,159

EXTRACTION OF ARSENIC IN SOLUTION IN LIQUORS CONTAINING ALKALI METAL CARBONATE, SULPHATE AND POSSIBLY HYDROXIDE, AND AT LEAST ONE OF THE METALS VANADIUM, URANIUM AND MOLYBDENUM

Pierre Maurel, Aix-en-Provence, France, assignor to Uranium Pechiney Ugine Kuhlmann, Paris, France

Filed Jul. 16, 1982, Ser. No. 398,832
Claims priority, application France, Jul. 29, 1981, 81 15064
Int. Cl.[3] C01B *27/00, 29/00*
U.S. Cl. 423—87 13 Claims

1. A process for extracting arsenic by means of a magnesium compound from aqueous solution to be purified, resulting from the alkaline attack on an ore, and extraction of the useful elements which are solubilized in the attack operation, which aqueous solution contains alkali metal carbonate, sulphate, hydroxide or hydrogen carbonate and may also contain at least one of the metals vanadium, uranium and molybdenum, said process comprising treating the solution with a magnesium compound at a temperature below the boiling point temperature for the solution to precipitate magnesium arsenate, removing the precipitated magnesium arsenate from the remaining liquor, adding lime to the liquor to convert carbonates into alkali metakl hydroxides to produce a first alkali metal hydroxide-enriched liquor and a first precipitate containing calcium carbonate, separating the first precipitate containing calcium carbonate, from the first alkali metal hydroxide-enriched liquor, and concentrating the combined liquor to produce a second precipitate containing alkali metal sulphate and a second alkali metal hydroxide-enriched liquor.

4,495,160

REMOVAL AND RECOVERY OF MAGNESIUM, STRONTIUM AND BARIUM FROM BRINES

Truman P. Moore, and Robert L. Reed, both of Tulsa, Okla., assignors to The Standard Oil Company, Chicago, Ill.

Filed Mar. 28, 1983, Ser. No. 479,409
Int. Cl.[3] C01F *1/00, 5/00, 11/00*
U.S. Cl. 423—158 33 Claims

1. A process for sequentially removing magnesium and strontium from brines, said process comprising:

(a) precipitating magnesium hydroxide from a brine at temperatures in the range from above 80° C. to about the boiling point of said brine to produce a mother liquor and magnesium hydroxide precipitate;

(b) separating said mother liquor from said magnesium hydroxide precipitate; then

(c) cooling said mother liquor to effect precipitation of strontium hydroxide; and

(d) separating strontium hydroxide precipitate from the mother liquor.

4,495,161

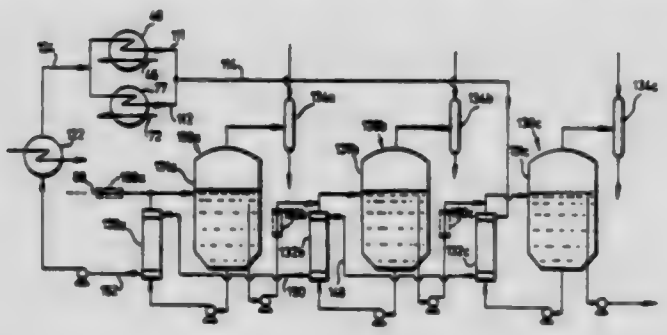
ENERGY RECOVERY METHOD AND SYSTEM FOR COMBINED SULPHURIC ACID AND PHOSPHORIC ACID MANUFACTURING PLANT

Gordon M. Cameron, Willowdale, and John V. Orlando, Scarborough, both of Canada, assignors to C-I-L Inc., North York, Canada

Continuation of Ser. No. 473,188, Feb. 22, 1983, abandoned, which is a continuation of Ser. No. 307,088, Sep. 30, 1981, abandoned. This application Apr. 16, 1984, Ser. No. 599,606
Claims priority, application Canada, Apr. 10, 1981, 375178
Int. Cl.[3] C01B *25/16, 17/92, 17/48*
U.S. Cl. 423—167 11 Claims

1. In a process for the manufacture of concentrated phosphoric acid in which sulphuric acid and phosphate rock are reacted to produce a slurry of calcium sulphate in dilute phosphoric acid, the slurry being filtered to produce a dilute stream of phosphoric acid and the phosphoric acid then being concentrated by evaporation of excess water in at least first and sec-

ond evaporator stages, and in which said sulphuric acid is produced in a sulphuric acid plant physically adjacent the phosphoric acid plant, said sulphuric acid plant having means for producing a stream of gas containing oxygen, means for reacting said stream of gas to produce sulphur dioxide therein, a converter to convert said sulphur dioxide to sulphur trioxide, drying means for absorbing, in a first portion of sulphuric acid, moisture from said gas stream upstream of said converter, absorbing means for absorbing in a second portion of sulphuric acid, sulphur trioxide from said converter, said first and second portions of sulphuric acid having temperatures in the range from approximately 180° F. to 230° F. before cooling, cooling means for cooling at least said second sulphuric acid portion, and means for producing high quality steam, the improvement comprising the steps of recovering in a heat recovery fluid heat from said cooling means, and using said heat as essentially the sole source of heat to evaporate water from the phosphoric acid in at least said first and second evaporator stages by flowing said heat recovery fluid first to said second evaporator



stage and passing it in countercurrent flow with said phosphoric acid in a heat exchanger of said second evaporator stage to operate said second evaporator stage at a selected temperature, and then flowing said heat recovery fluid from said second evaporator stage to said first evaporator stage and passing it in countercurrent flow with said phosphoric acid in a heat exchanger of said first evaporator stage to operate said first evaporation stage at a temperature substantially lower than said selected temperature, maintaining the phosphoric acid in said first evaporator stage at a concentration which does not exceed approximately 40% P_2O_5, flowing phosphoric acid from said first evaporator stage to said second evaporator stage and maintaining the phosphoric acid in said second evaporator stage at a concentration which substantially exceeds that in said first evaporator stage operating said first evaporator stage at a very low pressure by a barometric condenser and operating said second evaporator stage at essentially the same very low pressure as said first evaporator stage to enable said evaporation, thereby allowing said steam to be used for other purposes.

4,495,162

PREPARATION OF A CALCIUM SULFATE ANHYDRITE MATERIAL OF LOW CHLORIDE CONTENT

Ebbe S. Jons, Vaerloese, and Klaus E. Gude, Vedbaek, both of Denmark, assignors to A/S Niro Atomizer, Soborg, Denmark

Filed Aug. 31, 1982, Ser. No. 413,417

Claims priority, application Denmark, Sep. 4, 1981, 3912/81; Sep. 8, 1981, 3978/81; Nov. 11, 1981, 4992/81; Mar. 16, 1982, 1165/82; May 28, 1982, 2430/82

Int. Cl.³ C04B *11/02, 11/00;* C01F *11/46*

U.S. Cl. 423—171 17 Claims

1. A process for preparing a calcium sulfate anhydrite material of low chloride content from a chloride containing spent absorbent resulting from flue gas desulfurization by means of a basic calcium compound containing absorbent, said spent absorbent containing an amount of chloride equivalent to at least about 0.5 weight percent calcium chloride comprising the steps of

(a) oxidizing calcium sulfite in said spent absorbent into calcium sulfate,

(b) ensuring the presence of sufficient fly ash in intimate admixture with the spent absorbent for substantially reducing the chloride content of the spent absorbent, said fly ash resulting from the combustion of solid fuel,

(c) heating the fly ash containing oxidized spent absorbent at a temperature of 600°–950° C.,

(d) contacting the fly ash containing oxidized spent absorbent with water vapor during said heating, and

(e) removing HCl-gas driven off by said heating.

4,495,163

FLUIDIZED BED SULFUR DIOXIDE REMOVAL

Xuan T. Nguyen, Montreal, Canada, assignor to Domtar Inc., Montreal, Canada

Continuation-in-part of Ser. No. 352,176, Feb. 25, 1982, abandoned. This application Jan. 11, 1983, Ser. No. 457,180

Int. Cl.³ B01J *8/00;* C01B *17/00*

U.S. Cl. 423—244 8 Claims

1. In a method of using fluidized bed for stripping SO_2 from gases by providing a bed of pellets, passing SO_2 containing gases through said bed to fluidize said pellets and to form a fluidized bed of said pellets, injecting into said bed at least one aqueous chemical selected from the class consisting of alkali and alkaline earth material reactive with sulfur dioxide to form a non-volatile compound, reacting at least a portion of said SO_2 with said chemical in said fluidized bed to form a combined product, combining said combined product with previously formed product and to discard a portion of the improvement comprising adjusting the concentration and feed rate of said reaction chemical as to exhaust gases from said bed at a temperature as low as possible below 115° C. but high enough and above 40° C. to prevent the condensation of the moisture present in the gas stream, thereby the water of the aqueous reaction chemical being not spray-dired by said SO_2 containing gases but allowing prolongation of the scrubbing time between said reaction chemical and said SO_2 containing gases, to exhaust gages from said bed substantially free of SO_2 and thus eliminating the need of auxiliary scrubbing elements that are typically used in association wiht fluidized bed SO_2 removal.

4,495,164

PROCESS FOR PRODUCING ACICULAR MAGNETITE OR ACICULAR MAGHEMITE

Yoshiro Okuda, and Toshiharu Harada, both of Hiroshima, Japan, assignors to Toda Kogyo Corp., Hiroshima, Japan

Continuation-in-part of Ser. No. 265,015, May 19, 1981, abandoned. This application Jul. 11, 1983, Ser. No. 512,661

Claims priority, application Japan, May 30, 1980, 55-73512; May 31, 1980, 55-73511

Int. Cl.³ C01G *49/06, 49/08*

U.S. Cl. 423—266 3 Claims

1. A process for preparing acicular magnetite of high axial ratio, which comprises

(a) providing a suspension of iron (II) hydroxide in aqueous sodium hydroxide at a pH of at least 11 and containing 0.5 to 7.0 atom % magnesium based on the amount of the iron (II) hydroxide in the suspension and calculated as the ratio of Mg to Fe(II), said magnesium being provided as its sulfate or chloride;

(b) oxidizing said suspension with an oxygen-containing gas to form acicular iron (III) oxide hydroxide in the form of particles having a long axis length of 0.3 to 2.0 μm and an axial ratio of more than 20:1, said acicular iron (III) oxide hydroxide exhibiting a higher axial ratio than acicular iron (III) oxide hydroxide prepared as above absent said magnesium sulfate or magnesium chloride; and

(c) reducing said acicular iron (III) oxide hydroxide to acicular magnetite having the same particle shape.

4,495,165

METHOD OF PURIFICATION OF PHOSPHORIC ACID

Guillermo R. Garza, Rio Balsa No. 62, Colonia Cuauhtemoc, Mexico

Filed Oct. 3, 1983, Ser. No. 538,138
Int. Cl.³ C01B 25/16
U.S. Cl. 423—321 R 24 Claims

1. A method for purifying phosphoric acid comprising the steps of:

mixing a porous carbonaceous material with phosphoric acid having impurities therewith;

heating and agitating the mixture of carbonaceous material and phosphoric acid at a temperature between about 100° C. and about 300° C. so as to affect dehydration of the mixture; and then thereafter heating said mixture of carbonaceous material and phosphoric acid at a temperature between about 200° C. and about 1000° C., and

after said heating and agitating, then washing said mixture with a solvent to dissolve the phosphoric acid which has thus been purified.

4,495,166

SYNTHESIS OF ZSM-5 UTILIZING A MIXTURE OF QUATERNARY AMMONIUM IONS AND AMINES

Robert B. Calvert, Plainsboro, and Louis D. Rollmann, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 19, 1982, Ser. No. 399,575
Int. Cl.³ C01B 33/28
U.S. Cl. 423—329 5 Claims

1. In a process of manufacturing zeolite ZSM-5 which process comprises crystallizing an aqueous forming solution comprising a source of silica and a nitrogenous template and recovering said zeolite ZSM-5, the improvement which comprises utilizing as said nitrogenous template both a tetrapropylammonium salt and an amine having the formula $R_1R_2R_3N$ wherein R_1 and R_2 are selected from the group consisting of hydrogen and lower alkyl of from 2–8 carbon atoms and R_3 is a lower alkyl of from 2–8 carbon atoms wherein the molar ratio of tetrapropylammonium salt to silica ranges from about 0.001 to 0.04, wherein the molar ratio of said amine to silica ranges from about 0.02 to about 0.18 and wherein the molar ratio of both the tetrapropylammonium salt and the amine to silica ranges from about 0.02 to about 0.22.

4,495,167

PRECIPITATED SILICAS HAVING HIGH STRUCTURE AND PROCESS FOR THEIR PREPARATION

Peter Nauroth, Wesseling; Heinz Esch, Wesseling-Urfeld, and Günter Turk, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Nov. 2, 1982, Ser. No. 438,633
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1981, 3144299
Int. Cl.³ C01B 33/18
U.S. Cl. 423—339 10 Claims

1. A precipitated silica which is one having the following physical-chemical characteristics:

(1)	BET-surface area	m^2/g	400–600
	DBP-number	%	340–380
	Bulk density	g/l	180–220
	Sieve residue >63 mμ	Wt. %	25–60, or
(2)	BET-surface area	m^2/g	400–600
	DBP-number	%	320–360
	Bulk density	g/l	75–120
	Sieve residue >63 mμ	Wt. %	<0.1, or
(3)	BET-surface area	m^2/g	400–600
	DBP-number	%	310–360
	Bulk density	g/l	35–70
	Sieve residue >63 mμ	Wt. %	<0.01.

4,495,168

AEROSOL GEL

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Aug. 22, 1983, Ser. No. 525,148
Int. Cl.³ A61K 7/00, 7/15; A61L 9/04
U.S. Cl. 424—45 15 Claims

1. A pressurized composition in an aerosol container and adapted to form a spray upon release of pressure therefrom which composition is a liquid inside the container and forms a gel on contact with living tissue comprising by weight about 35 to 80 percent water, 10 to 25 percent polyoxyethylene-polyoxybutylene copolymer of the formula:

$$Y[(C_4H_8O)_n(C_2H_4O)_mH]_x$$

wherein Y is the residue of a water-soluble organic compound containing therein x active hydrogen atoms; n is an integer; x is an integer greater than 1; the value of n and x are such that the molecular weight of the oxybutylene groups is from about 1000 to 20,000; and the value of m is such that the oxyethylene groups constitute about 60 to 90 percent of the total weight of the compound, and about 3 to 50 percent propellant which is a solvent for the composition in said container or propellant which is not a solvent for said composition plus about 1 to 10 percent of a non-propellant volatile solvent.

15. An apparatus for treating skin comprising an aerosol container adapted to hold a material under pressure, a gel composition provided inside said container which is liquid when under the pressure normally found inside an aerosol container and which gels on contact with living skin at atmospheric pressure, a valve adapted to close off or release the liquid under pressure in the form of a spray, said gel composition comprising by weight abut 35 to 80 percent water, and 10 to 25 percent polyoxethylene-polyoxybutylene copolymer of the formula:

$$Y[(C_4H_8O)_n(C_2H_4O)_mH]_x$$

wherein Y is the residue of a water-soluble organic compound containing therein x active hydrogen atoms; n is an integer; x is an integer greater than 1; the value of n and x are such that the molecular weight of the oxybutylene groups is from about 1000 to 20,000; and the value of m is such that the oxyethylene groups constitute about 60 to 90 percent of the total weight of the compound, and about 3 to 50 percent propellant which is a solvent for the composition in said container or propellant which is not a solvent for said composition plus about 1 to 10 percent of a non-propellant volatile solvent.

4,495,169

AEROSOL GEL SHAVING CREAM

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Aug. 22, 1983, Ser. No. 525,147
Int. Cl.³ A61K 7/00, 7/15; A61L 9/04
U.S. Cl. 424—47 19 Claims

1. An aerosol shave cream composition comprising by weight about 35 to 85 percent water, about 1 to 10 percent volatile solvent, about 3 to 50 percent propellant and about 10 to 25 percent of a polyoxyethylene-polyoxypropylene copolymer of the formula:

$$Y[(C_3H_6O)_n(C_2H_4O)_mH]_x$$

wherein Y is the residue of a water-soluble organic compound containing therein x active hydrogen atoms; n is an integer; x is an integer greater than 1; the value of n and x are such that the molecular weight of the oxypropylene groups is from about 2250 to 7500; and the value of m is such that the oxyethylene

groups constitute about 45 to 90 percent by weight of the compound and wherein the water/copolymer weight ratio is less than about 4.5:1.

16. An apparatus for applying shaving cream to the skin comprising an aerosol container adapted to hold a material under pressure, a gel composition provided inside said container which is liquid when under the pressure normally found inside an aerosol container and which gels on contact with living skin, a valve adapted to close off or release the liquid under pressure in the form of a spray, said gel composition comprising by weight about 35 to 85 percent water, about 1 to 10 percent volatile solvent, about 3 to 50 percent of a propellant and about 10 to 25 percent polyoxyethylene-polyoxypropylene copolymer of the formula:

$$Y[(C_3H_6O)_n(C_2H_4O)_mH]_x$$

wherein Y is the residue of a water-soluble organic compound containing therein x active hydrogen atoms; n is an integer; x is an integer greater than 1; the value of n and x are such that the molecular weight of the oxypropylene groups is from about 2250 to 7500; and the value of m is such that the oxyethylene groups constitute about 45 to 90 percent by weight of the compound and wherein the water/copolymer ratio is less than about 4.5:1.

4,495,170

SWEETENING AGENTS CONTAINING CHLORODEOXYSUGAR

Pamela K. Beyts, and Zdenek Latymer, both of Reading, England, assignors to Tate & Lyle Public Limited Company, England

Filed Apr. 22, 1982, Ser. No. 370,967
Claims priority, application United Kingdom, Apr. 29, 1981, 8113153
Int. Cl.³ A61K 31/70; C07H 15/24
U.S. Cl. 424—48 14 Claims

1. A sweet composition comprising a synergistic mixture of, at least one sweetening agent with an associated bitter taste selected from the group consisting of saccharin, stevioside and acesulpham K, and at least one sweet chlorodeoxysugar sweetener selected from the group consisting of chlorodeoxysucrose and chlorodeoxygalactosucrose.

4,495,171

PREPARATION FOR TREATING GUM DISEASE

Snejana G. Paritsheva, 15 Vicora Linkway, Don Mills, Ontario, Canada

Continuation-in-part of Ser. No. 438,208, Nov. 1, 1982, abandoned. This application Mar. 22, 1984, Ser. No. 591,905
Int. Cl.³ A61K 7/26, 35/78
U.S. Cl. 424—58 7 Claims

1. A preparation for treating pyorrhea and other gum diseases which result in symptoms of swollen, bleeding, sensitive, shrunken or receding gums, comprising a mixture of from 10 to 90 percent by volume dry powdered alum and from 90 to 10 percent by volume dry powdered cloves.

4,495,172

NAIL COATING

Jan A. Oriowski, Altadena; David V. Butler, West Covina, and Patrick D. Kidd, Sierra Madre, all of Calif., assignors to Scientific Pharmaceuticals, Inc., Duarte, Calif.

Filed Feb. 4, 1980, Ser. No. 118,303
Int. Cl.³ A61K 7/043
U.S. Cl. 424—61 17 Claims

1. A human nail coating composition comprising the following components:

(i) from about 21% to about 53% by weight of ethoxyethylmethacrylate;

(ii) from about 0.2% to about 11% by weight of a cross-linking agent having at least two methacrylate groups per molecule; and

(iii) from about 45% to about 71% by weight of a polymeric filler having at least 70% of ethylmethacrylate groups in a homopolymer or a copolymer with methyl methacrylate, whereby said components, when mixed, have a consistency sufficient to permit application to human nails, and whereby said composition is capable of curing within about 60 seconds to about 360 seconds upon application to human nails.

4,495,173

PRE-SHAMPOO TYPE HAIR TREATMENT COMPOSITION

Kinjiro Matsunaga, Miyashiro; Takeo Okumura, Sakura, and Rikio Tsushima, Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Nov. 6, 1981, Ser. No. 318,878
Claims priority, application Japan, Nov. 28, 1980, 55-167863
Int. Cl.³ A61K 7/06, 47/00
U.S. Cl. 424—70 5 Claims

1. A pre-shampoo hair treatment composition which comprises

(A) 0.5–5% by weight of at least one decomposition derivative of keratin material selected from the group consisting of

(1) alkali salts of decomposition products obtained by oxidation of keratin material, and

(2) alkali salts of derivatives at the thiol group of decomposition products obtained by reduction of keratin material, alone or in combination with a keratin product having only been subjected to hydrolysis, and

(B) 0.1 to 5 wt% of at least one cationic polymer selected from the group consisting of diallyl quaternary ammonium salts, cationic celluloses, cationic starches and cationic vinyl polymers; in a polar solvent.

4,495,174

ANESTHETIC POLYORGANOPHOSPHAZENES

Harry R. Allcock; Paul E. Austin, and Thomas X. Neenan, all of State College, Pa., assignors to Research Corporation, New York, N.Y.

Filed Jun. 21, 1982, Ser. No. 390,345
Int. Cl.³ A61K 9/58; C08G 79/02, 79/04
U.S. Cl. 424—78 20 Claims

1. A long-acting, local anesthetic, comprising:

a polymeric phosphazene backbone, and

an organic radical having local anesthetic activity and an amino functional group on a phenyl ring through which said radical is covalently attached to said phosphazene backbone by a phosphorous-nitrogen single bond, and said organic radical being selected from the group consisting of radicals of benzocaine, butethamine, butyl ester of p-aminobenzoic acid, m-butethamine, procaine, chloroprocaine proparacaine, propoxycaine and tetracaine.

20. A long-acting local anesthetic medicament, comprising a compound of claim 1 in admixture with a pharmaceutically acceptable carrier.

4,495,175

PREPARATION OF HIGHLY PURIFIED HUMAN ANTIHEMOPHILIC FACTOR

Stephen I. Chavin, and Philip J. Fay, both of Rochester, N.Y., assignors to University of Rochester, Rochester, N.Y.

Filed Aug. 5, 1982, Ser. No. 405,456
Int. Cl.³ A61K 35/16; C07G 7/00
U.S. Cl. 424—101 10 Claims

1. A method for preparing a highly purified, essentially homogeneous Antihemophilic Factor concentrate, comprising the steps of:

(a) obtaining an Antihemophilic Factor concentrate which is totally or partially free from prothrombin complex proteins, fibrinogen, and albumin,

(b) subjecting the Antihemophilic Factor concentrate to a separation on the basis of Stokes radius to separate Antihemophilic Factor of an apparently high Stokes radius value from other proteins,

(c) treating the Antihemophilic Factor concentrate to change the effective Stokes radius of the Antihemophilic Factor molecule to an apparently low value,

(d) subjecting the Antihemophilic Factor concentrate to a separation on the basis of Stokes radius to separate Antihemophilic Factor of apparently low Stokes radius value from other proteins,

(e) subjecting the Antihemophilic Factor concentrate to chromatography on an anion exchange medium to yield a highly purified, essentially homogeneous Factor VIII C characterized by a specific activity of at least 4000, being essentially free of fibrinogen and von Willebrand's protein, and single band electrophoretic mobility on SDS/PAGE at an apparent molecular weight around 100,000 daltons.

7. An essentially homogeneous, biologically active protein material characterized as follows:

(a) procoagulant activity of at least about 4,000 AHF units per mg of protein;

(b) essentially free of fibrinogen, fibronectin, von Willebrand's protein, and vitamin K-dependent coagulation factors; and

(c) single-band electrophoretic mobility wherein essentially all AHF activity is found in said single band indicative of a single protein having an apparent molecular weight on SDS PAGE of about 100,000.

4,495,176

PHOSPHOPEPTIDES FROM CASEIN-BASED MATERIAL

Gérard Brulé; Leïc Roger, both of Rennes; Jacques Fauquant, Monfort, and Michel Piot, Rennes, all of France, assignors to Institut National de la Recherche Agronomique, Paris, France

Division of Ser. No. 229,062, Jan. 28, 1981, Pat. No. 4,358,465.
This application Jun. 16, 1982, Ser. No. 388,931
Claims priority, application France, Feb. 1, 1980, 80 02281
The portion of the term of this patent subsequent to Nov. 9, 1999, has been disclaimed.
Int. Cl.³ A61K *33/42, 33/24;* C07G *7/00;* C12P *21/06*
U.S. Cl. 424—128 16 Claims

1. Products consisting of organophosphorated salts formed by phosphopeptides and linked bivalent cations produced by the process comprising subjecting a casein-based material containing phosphocaseinates of monovalent cations or paracasein derived therefrom to an enzymatic hydrolysis at a pH in the range of 7 to 9 and a temperature in the range of 37° to 45° C. by means of at least one proteolytic enzyme capable of substantially reproducing the proteic digestion which occurs in vivo in the human body, subjecting the resultant hydrolyzate to at least one ultrafiltration step on membranes which retain the enzyme but allow all the peptides of the hydrolyzate to pass in the permeate to obtain a permeate containing phosphopeptides and non-phosphorylated peptides, adding to the permeate at least one bivalent cation salt to form aggregates of the phosphopeptides to produce a solution containing essentially the aggregates of phosphopeptides and the non-phosphorylated peptides, subjecting the solution to at least one ultrafiltration step with membranes that retain the aggregates of phosphopeptides and allow the non-phosphorylated peptides to pass through, and recovering the retained aggregates of phosphopeptides.

4,495,177

GEL TABLETING AGENT

Corazon A. Taracatac, Hayward; Luis Flores, Castro Valley, and Virea Chaudhry, Fremont, all of Calif., assignors to Shaklee Corporation, San Francisco, Calif.

Filed Jan. 17, 1983, Ser. No. 458,627
Int. Cl.³ A61K *9/26, 33/26, 31/375*
U.S. Cl. 424—147 8 Claims

1. A composition for a direct compression tableting agent comprising:

a pharmacologically active mineral selected from the group consisting of iron, copper, aluminum, stannous, zinc and manganese;

a binder solution comprising at least one gum product selected from the group consisting of Agar-Agar, Locust Bean, Tagacanth, gelatin and gum ghatti; and

a substantially water insoluble compressible carrier comprising a mixture of about: 34% to 75% dicalcium phosphate anhydrous, 11% to 23% tricalcium phosphate, and 11% to 28% maltodextrin, said mineral and carrier being granulated together with said binder solution to form a mineral matrix granulation; and

ascorbic acid blended with said mineral matrix granulation provided in a pharmacologically beneficial amount;

whereby said mineral matrix granulation prevents substantial physical interaction between said mineral and said ascorbic acid such that reaction therebetween is minimized.

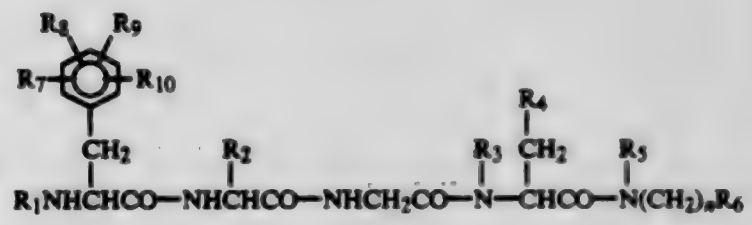
4,495,178

ENKEPHALIN ANALOGS

Donald W. Hansen, Jr., Chicago; David A. Jones, Jr., Evanston; Robert H. Mazur, Chicago, and James M. Schlatter, Glenview, all of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Oct. 6, 1983, Ser. No. 539,458
Int. Cl.³ A61K *37/00;* C07C *103/52*
U.S. Cl. 514—17 50 Claims

1. A Compound of the formula:



wherein R_1 is:

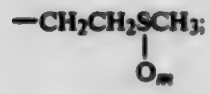
(a) hydrogen; or

(b) alkyl of 1 to 6 carbon atoms, inclusive;

wherein R_2 is:

(a) alkyl of 1 to 6 carbon atoms, inclusive; or

(b)



m being either zero, 1 or 2;

wherein R_3 is:

(a) hydrogen; or

(b) alkyl of 1 or 2 carbon atoms; inclusive;

wherein R_4 is:

(a) cyclohexyl, optionally substituted by alkyl of from 1 to 6 carbon atoms, inclusive;

wherein R_5 is:

(a) hydrogen; or

(b) alkyl of 1 to 6 carbon atoms, inclusive;

wherein R_6 is:

(a) carboxy;

(b) alkoxycarbonyl of 2 to 7 carbons atoms, inclusive;

(c) $CONH_2$;

(d) N,N-dialkylcarbamoyl of 3 to 7 carbon atoms, inclusive;
(e) hydroxy; or
(f) alkanoyloxy of 2 to 7 carbon atoms, inclusive; wherein R_7, R_8, and R_9 are H or alkyl or 1 to 6 carbon atoms, and may be the same or different;
wherein R_{10} is:
(a) hydrogen;
(b) hydroxy; or
(c) alkoxycarbonyloxy wherein the alkoxy portion is from 1 to 6 carbon atoms, inclusive;
wherein n is an integer of from 3 to 10 inclusive and the pharmacologically acceptable acid addition salts and suitable hydrated forms thereof.

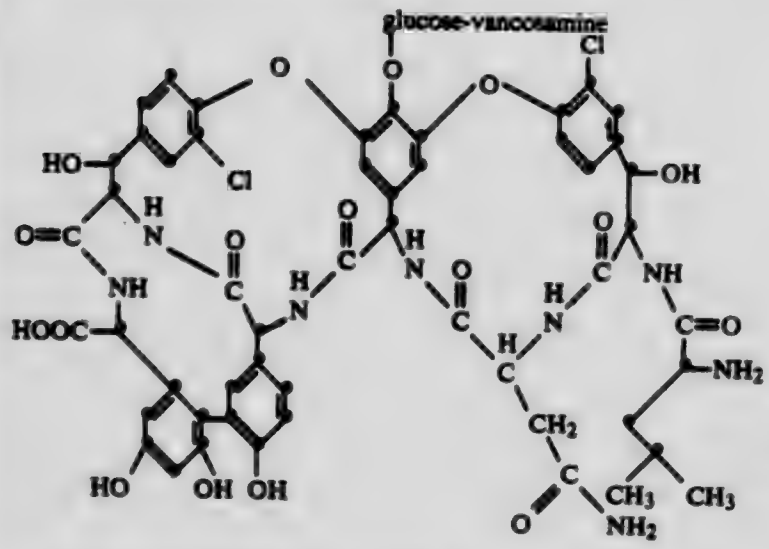
4,495,179

A51568 ANTIBIOTIC AND PROCESS FOR PRODUCING THEREOF

Marvin M. Hoehn, and Gary G. Marconi, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 450,880, Dec. 20, 1982, abandoned. This application Dec. 16, 1983, Ser. No. 562,255
Int. Cl.³ A61K *37/00*, *35/00*; C07C *103/52*
U.S. Cl. 514—9 3 Claims

1. Antibiotic A51568, which has the structure



and its pharmaceutically-acceptable, non-toxic salts.

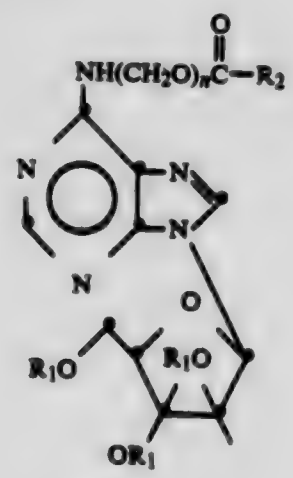
4,495,180

PRODRUGS OF ARA-A AN ANTIVIRAL AGENT

Jose Alexander, Lawrence, Kans., assignor to Merck & Co., Inc., Rahway, N.J.

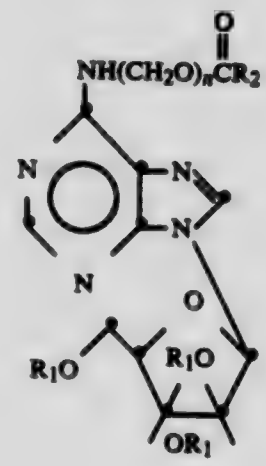
Filed Jun. 21, 1982, Ser. No. 390,444
Int. Cl.³ A61K *31/70*; C07H *19/06*
U.S. Cl. 514—46 9 Claims

1. A compound of the formula:



wherein
n is 1 or 2;
R_1 is independently H or lower alkanoyl having from 1 to 4 carbon atoms;
R_2 is selected from the group consisting of:
(a) straight or branched chain alkyl having from 1–20 carbon atoms;
(b) aryl having from 6–10 carbon atoms;
(c) cycloalkyl having from 3–8 carbon atoms;
(d) alkenyl having from 2–20 carbon atoms;
(e) cycloalkenyl having from 4–8 carbon atoms;
(f) alkynyl having from 2 to 20 carbon atoms;
(g) aralkyl having from 7–26 carbon atoms;
(h) aralkenyl having from 7–26 carbon atoms;
(i) lower acyloxy alkyl having from 2–20 carbon atoms;
(j) carboxyalkyl having from 2–20 carbon atoms.
4. 2',3',5'-triacetyl 6-(hydroxymethoxy)methylamino-purine-9-β-D arabinofuranoside.
8. An antimetabolite against herpes virus pharmaceutical composition for topical application comprising an anti-herpes virus effective amount of an active drug of the formula:

Formula I



wherein
n is 1 or 2;
R_1 is independently H or lower alkanoyl having from 1 to 4 carbon atoms;
R_2 is selected from the group consisting of:
(a) straight or branched chain alkyl having from 1–20 carbon atoms;
(b) aryl having from 6–10 carbon atoms;
(c) cycloalkyl having from 3–8 carbon atoms;
(d) alkenyl having from 2–20 carbon atoms;
(e) cycloalkenyl having from 4–8 carbon atoms;
(f) alkynyl having from 2 to 20 carbon atoms;
(g) aralkyl having from 7–26 carbon atoms;
(h) aralkenyl having from 7–26 carbon atoms;
(i) lower acyloxy alkyl having from 2–20 carbon atoms;
(j) carboxyalkyl having from 2–20 carbon atoms.

4,495,181

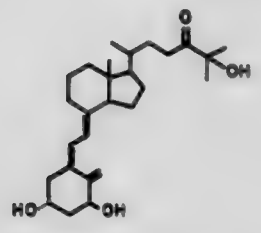
1,25-DIHYDROXY-24-OXO-VITAMIN D_3 AND 1,23,25-TRIHYDROXY-24-OXO-VITAMIN D_3

Anthony W. Norman, Riverside, Calif., and Eberhard Mayer, Ellwangen, Fed. Rep. of Germany, assignors to The Regents of the University of California, Berkeley, Calif.

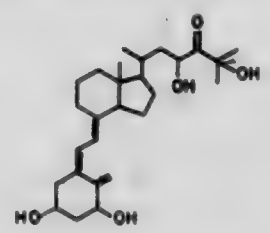
Filed Oct. 3, 1983, Ser. No. 538,225
Int. Cl.³ A61K *31/59*
U.S. Cl. 514—167 5 Claims

4. The novel biologically active metabolite of vitamin D_3, 1,23,25-trihydroxy-24-oxo-vitamin D_3.

5. The method comprising the administration of an effective amount of 1,23,25-trihydroxy-24-oxo-vitamin D_3 to humans for



1,25(OH)$_2$-24-oxo-D$_3$



1,23,25(OH)$_3$-24-oxo-D$_3$

the treatment of disease states involving calcium homeostatis disorders.

4,495,182

CEPHEM COMPOUNDS

Tsutomu Teraji, Osaka; Kazuo Sakane, Amagasaki, and Jiro Goto, Suita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

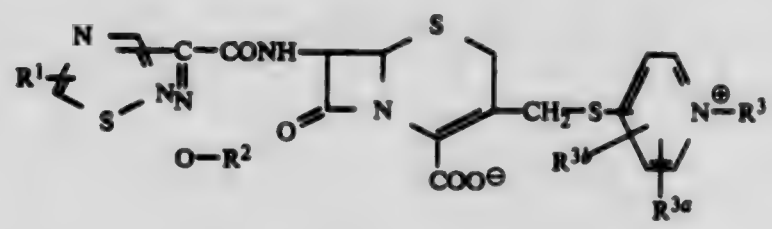
Filed May 27, 1982, Ser. No. 382,763

Claims priority, application United Kingdom, Jan. 22, 1981, 8119173; Sep. 29, 1981, 8129325; Apr. 26, 1982, 8212051

Int. Cl.^{3} C07D *501/36*; A61K *31/545*

U.S. Cl. 514—226 31 Claims

1. New cephem compounds of the formula:



wherein

R^1 is amino or a protected amino group;

R_2 is hydrogen, lower aliphatic hydrocarbon group selected from lower alkyl, alkenyl and alkynyl which may be substituted with carboxy, protected carboxy, lower alkylthio or phenyl, cyclo(lower)alkyl, or cyclo(lower)alkenyl;

R^3 is lower alkyl which may be subetituted with carboxy, carbamoyl, hydroxy, amino or protected amino;

R^{3a} is hydrogen, lower alkyl or amino; and

R^{3b} is hydrogen or lower alkyl; and

pharmaceutically acceptable salts thereof.

4,495,183

ARYL SUBSTITUTED PYRIDO[1,4]BENZODIAZEPINES FOR TREATMENT OF DEPRESSION

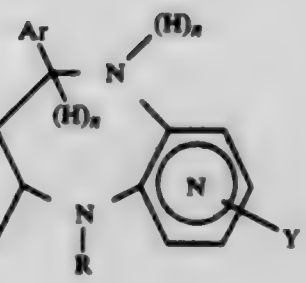
Chandler R. Taylor, Jr., Mechanicsville, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Division of Ser. No. 395,218, Jul. 6, 1982, Pat. No. 4,447,361, and a continuation-in-part of Ser. No. 305,080, Sep. 24, 1981, abandoned. This application Jan. 13, 1984, Ser. No. 570,638

Int. Cl.^{3} A61K *31/55*

U.S. Cl. 514—220 60 Claims

1. A method of treating depression which comprises administering an effective amount of a compound having the formula



wherein;

R is selected from the group consisting of hydrogen, loweralkyl or —alk^1—NR^{1}R^2,

R^1 and R^2 are selected from the group consisting of hydrogen, loweralkyl or R^1 and R^2 taken together with the adjacent nitrogen atom may form a heterocyclic residue selected from the group consisting of 1-pyrrolidinyl, 1-piperidinyl, 4-morpholinyl, 1-piperazinyl or 4-loweralkyl-1-piperazinyl,

Ar is selected from the group consisting of 2, 3 or 4-pyridinyl, 2 or 3-thienyl, phenyl or phenyl substituted by 1 to 3 radicals selected from halo, loweralkyl, loweralkoxy, trifluoromethyl or nitro and may be the same or different,

—alk^1 is a straight or branched hydrocarbon chain containing 1–8 carbon atoms,

Z is selected from the group consisting of hydrogen, halogen, loweralkyl, loweralkoxy, hydroxy or nitro,

Y is selected from the group consisting of hydrogen or 1–2 radicals selected from loweralkyl, loweralkoxy or hydroxy, and may be the same or different,

n is 0 or 1 and when n is zero the dotted line is a double bond, and the pharmaceutically acceptable acid addition salts thereof.

4,495,184

MORPHOLINO PROPANOL DERIVATIVES, FUNGICIDAL COMPOSITIONS AND USE

Hans-Joachim Knops; Wolfgang Krämer, both of Wuppertal, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

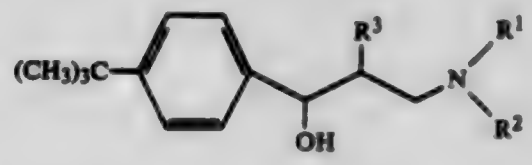
Filed May 23, 1983, Ser. No. 496,673

Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019496

Int. Cl.^{3} A01N *43/84*; C07D *295/08*

U.S. Cl. 514—238 6 Claims

1. A 1-phenyl-3-amino-propane derivative of the formula



in which

R^1 R^2 together with the nitrogen atom to which they are bonded form a morpholino ring, optionally substituted by one or more methyl groups, and

R^3 is selected from the group consisting of a hydrogen atom and an alkyl radical,

or a physiologically acceptable acid addition salt thereof.

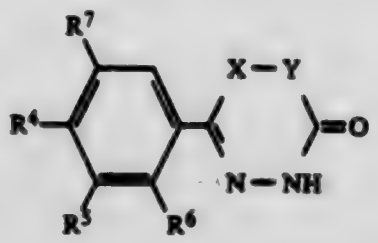
4. A fungicidal composition comprising a fungicidally effective amount of a compound or salt according to claim 1 in admixture with a diluent.

4,495,185
1,2,4-TRIAZIN-3(2H) ONES

David Brown, Macclesfield; Rodney B. Hargreaves, Poynton; Bernard J. McLoughlin, and Stuart D. Mills, both of Macclesfield, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Oct. 26, 1982, Ser. No. 436,801
Claims priority, application United Kingdom, Nov. 12, 1981, 8134175
Int. Cl.³ C07D 253/06; A61K 31/53
U.S. Cl. 514—242 7 Claims

1. A heterocyclic compound of the formula



wherein

X is $—CR^1R^2$ and Y is $—NR^3—$, wherein R^1, R^2 and R^3, which may be the same or different, each is hydrogen or alkyl or up to 4 carbon atoms;

wherein either R^4 is hydrogen, fluoro or chloro, or alkyl, alkenyl, halogenoalkyl, aminoalkyl, hydroxyalkyl, alkoxyalkyl or alkoxy each of up to 6 carbon atom, and R^5, R^6 and R^7, which may be the same or different, each is hydrogen, fluoro, chloro, bromo or iodo, or alkyl, alkenyl, halogenoalkyl, aminoalkyl, hydroxyalkyl, alkoxyalkyl or alkoxy each of up to 6 carbon atoms, provided that R^4, R^5, R^6 and R^7 are not all hydrogen;

or R^4 is bromo and R^5, R^6 and R^7 have the meanings stated above, provided that R^5, R^6 and R^7 are not all hydrogen;

or R^4 and R^5 together, or R^5 and R^6 together, or R^4 and R^7 together, form the $—CH=CH—CH=CH—$ group and the other two of R^4, R^5, R^6 and R^7 have the meanings stated above.

7. A method for the treatment of acute or chronic heart failure in a warm-blooded animal in need of such treatment, which comprises administering to said animal an effective amount of a heterocyclic compound claimed in claim 1.

4,495,186
ORGANOMETAL COMPLEXES OF N-CYCLOHEXYL-PIPERAZINO ACETAMIDES OR PROPIONAMIDES, PREPARATION AND USE THEREOF AS ANTIULCER-ANTISECRETIVE-BUFFERING DRUGS

Camillo C. Mora, Piacenza, Italy, assignor to Camillo Corvi S.p.A., Italy

Filed Jan. 31, 1983, Ser. No. 462,138
Claims priority, application Italy, Apr. 5, 1982, 20583 A/82
Int. Cl.³ A61K 31/495; C07D 295/02
U.S. Cl. 514—255 7 Claims

1. Salt of N-cyclohexyl-piperazino-acetamide or propionamide with dihydroxy aluminum-α-hydroxy-carboxylate.

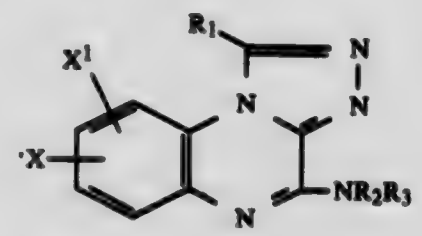
5. A pharmaceutical preparation with antiulcer, antisecretive and buffering action, which contains a salt according to claim 1, together with one or more vehicles and/or pharmacologically inert and non-toxic excipients

4,495,187
METHOD OF USING [1,2,4]TRIAZOLO[4,3-a]QUINOXALINE-4-AMINE DERIVATIVES AS ANTIDEPRESSANT AND ANTIFATIGUE AGENTS

Reinhard Sarges, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 434,789, Oct. 18, 1982, abandoned. This application Sep. 2, 1983, Ser. No. 528,361
Int. Cl.³ A61K 31/495
U.S. Cl. 514—250 19 Claims

1. A method for treating depression and fatigue in a mammal in need of such treatment, which comprises administering to said mammal an antidepressant/anti-fatigue effective amount of a compound selected from the group consisting of [1,2,4]triazolo[4,3-a]quinoxaline-4-amine bases of the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein

X and X^1 are each selected from the group consisting of hydrogen, fluorine, chlorine, bromine and methoxy;

R_1 is selected from the group consisting of hydrogen, lower alkyl, lower perfluoroalkyl and phenyl; and

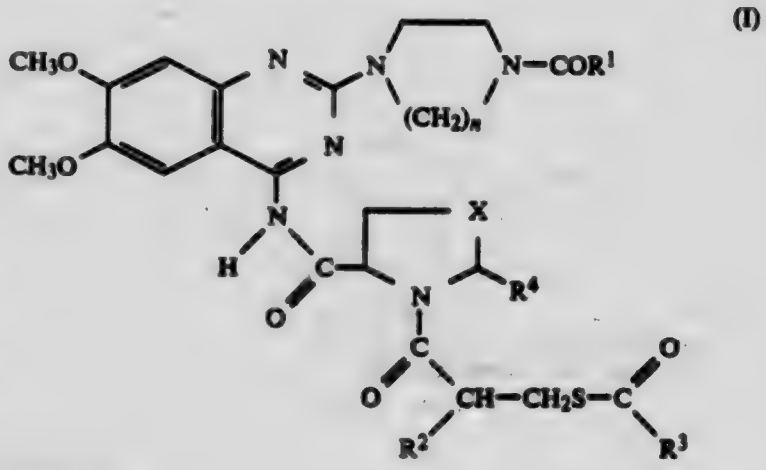
R_2 and R_3 are each selected from the group consisting of hydrogen, lower alkyl, phenylalkyl having up to three carbon atoms in the alkyl moiety and alkanoyl having from two to five carbon atoms, provided that at least one of R_2 and R_3 is always other than hydrogen or methyl; or R_2 and R_3, when taken together, complete a piperazino ring.

4,495,188
ACYLAMINOQUINAZOLINE DERIVATIVES AND A PHARMACEUTICAL COMPOSITION CONTAINING THEM

Yasunobu Sato; Hiroshi Fukami; Hiroyuki Koike, and Nobuaki Kitahara, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Nov. 24, 1981, Ser. No. 324,425
Claims priority, application Japan, Nov. 26, 1980, 55-166327
Int. Cl.³ A61K 31/505; C07D 403/14, 417/14
U.S. Cl. 514—260 20 Claims

12. A pharmaceutical composition for the treatment of hypertension, comprising an effective amount of an antihypertensive agent in admixture with a pharmaceutically acceptable carrier or diluent, wherein said antihypertensive agent is selected from compounds of formula (I):



(I)

in which:

R^1 represents lower alkoxy, lower alkyl, C_3–C_7 cycloalkyl,

lower alkenyl, vinyl having a phenyl or furyl substituent, said phenyl substituent being unsubstituted or having one substituent selected from lower alkoxy and methylenedioxy, lower alkyl having one substituent selected from phenyl, phenoxy and cycloalkylidene having 3 to 7 carbon atoms, phenyl which is unsubstituted or has 1–3 substituents selected from lower alkoxy and phenyl-substituted lower alkoxy, furyl, oxazolyl, methylthiooxadiazolyl or tetrahydrofuryl;

R^2 represents a hydrogen atom or lower alkyl;

R^3 represents lower alkyl or phenyl which is unsubstituted or has one substituent selected from lower alkyl, lower alkoxy and halogen atoms;

R^4 represents a hydrogen atom or C_2–C_4 alkylcarbonyloxy-substituted phenyl;

X represents methylene or sulphur; and

n is 2 or 3, and pharmaceutically acceptable acid addition salts thereof.

4,495,189

CONDENSED PYRIMIDINES

Zoltán Mészáros; József Knoll; Peter Szentmiklosi; Istvan Hermecz; Ágnes Horváth; Sándor Virág; Lelle Vasvári, and Ágoston Dávid, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

Continuation-in-part of Ser. No. 14,689, Feb. 23, 1979, Pat. No. 4,472,398, which is a continuation-in-part of Ser. No. 742,464, Nov. 17, 1976, Pat. No. 4,460,771. This application Apr. 2, 1982, Ser. No. 364,753

Claims priority, application Hungary, Nov. 27, 1975, CI-1623

The portion of the term of this patent subsequent to Jul. 17, 2001, has been disclaimed.

Int. Cl.³ A61K *31/505*; C07D *471/04*

U.S. Cl. 514—258 2 Claims

2. A method of inhibiting thrombocyte aggregation which comprises the step of administering to a mammal susceptible to thrombocyte aggregation a pharmaceutically effective amount of the compound selected from the group consisting of:

1,6-dimethyl-3-carbamoyl-4-oxo-1,6,7,8-tetrahydro-4H-pyrido(1,2a)-pyrimidine;

1,6-dimethyl-3-(N-tertiary-butyl-carbamoyl)-4-oxo-1,6,7,8-tetrahydro-4H-pyrido(1,2-a)pyrimidine;

1,6-dimethyl-3-(N-2-phenethyl-carbamoyl)-4-oxo-1,6,7,8-tetrahydro-4H-pyrido(1,2-a)pyrimidine;

1,6-dimethyl-3-[N-(3,3-diphenyl-propyl)-carbamoyl]-4-oxo-1,6,7,8-tetrahydro-4H-pyrido(1,2-a)pyrimidine;

1,6-dimethyl-3-(N-phenyl-carbamoyl)-4-oxo-1,6,7,8-tetrahydro-4H-pyrido(1,2-a)pyrimidine; and

1,6-dimethyl-3-(N-methyl-carbamoyl)-4-oxo-1,6,7,8-tetrahydro-4H-pyrido(1,2-a)pyrimidine.

4,495,190

DERIVATIVES OF GUANINE FOR COMBATING HERPES VIRUS INFECTIONS

Curt-Erik Hagberg, Upplands Väsby; Karl N. Johansson, Enköping; Zsuzsanna M. I. Kovacs, Järna, and Göran B. Stening, Södertälje, all of Sweden, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

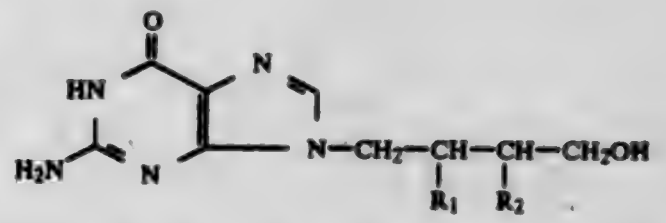
Continuation-in-part of Ser. No. 331,648, Dec. 17, 1981, abandoned. This application Oct. 25, 1982, Ser. No. 436,522

Claims priority, application Sweden, Dec. 22, 1980, 8009040

Int. Cl.³ A61K *31/52*; C07D *473/18*

U.S. Cl. 514—262 32 Claims

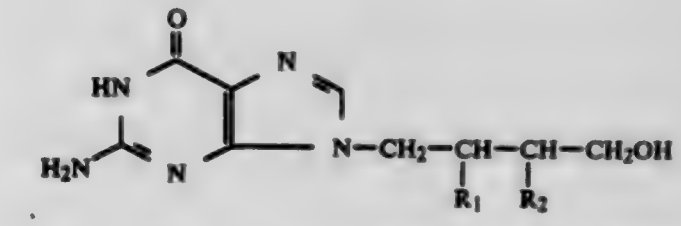
1. A compound of the formula



I

wherein each of R_1 and R_2, which are the same or different is hydrogen, hydroxy or fluoro; provided that R_1 or R_2 is hydrogen when R_1 and R_2 are different, and provided that R_1 and R_2 are hydroxy or fluoro when R_1 and R_2 are the same; or a physiologically acceptable salt or an optical isomer thereof.

13. A method for the treatment of herpes virus infections in an animal or human host in need of treatment, comprising administering a therapeutically effective amount of a compound of the formula



wherein each of R_1 and R_2, which are the same or different is hydrogen, hydroxy or fluoro; provided that R_1 or R_2 is hydrogen when R_1 and R_2 are different, and provided that R_1 and R_2 are hydroxy or fluoro when R_1 and R_2 are the same; or a physiologically acceptable salt or an optical isomer thereof.

4,495,191

FUNGICIDAL 3-1,2,4-TRIAZOL-1-YL-1,2-DIARYL-1-HALOGENO-PROP-1-ENE DERIVATIVES, COMPOSITIONS, AND METHOD OF USE

Heinz Ehrhardt, Rehling; Hilmar Mildenberger, Kelkheim; Burkhard Sachse, Kelkheim, and Peter Hartz, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

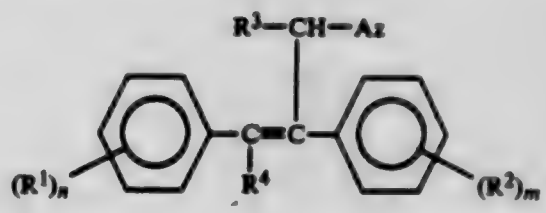
Filed Mar. 21, 1983, Ser. No. 477,080

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1982, 3210570

Int. Cl.³ C07D *249/08*; A01N *9/22*

U.S. Cl. 514—383 6 Claims

1. A 3-azolyl-1,2-diaryl-1-halogenoprop-1-ene compound of the formula



or a salt, complex salt, or quaternization product thereof, wherein n and m are 1, 2, or 3,

all R^1 and R^2 are independently hydrogen, halogen, $-CF_3$, $-OCF_2CF_2H$, C_1–C_8-alkyl, C_5- or C_6-cycloalkyl, C_1–C_6-alkoxy, C_2–C_6-alkenoxy, phenoxy, phenyl or phenoxy or phenyl substituted by halogen.

R^3 is hydrogen or C_1–C_5-alkyl,

R^4 is chlorine or bromine, and

Az is 1,2,4-triazol-1-yl.

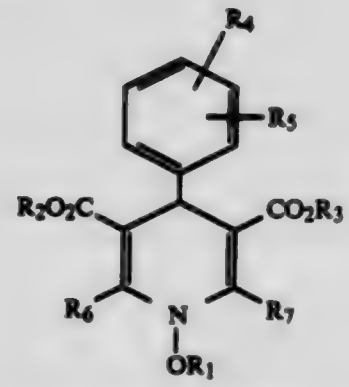
4,495,192

1-SUBSTITUTED 1,4-DIHYDROPYRIDINES

Kenji Muto; Yoshinori Takamoto, both of Shizuoka; Takao Hatta, Sagamihara; Tomotsu Hashimoto, Numazu; Koji Yamada, Susono, and Minoru Watanabe, Tokyo, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Apr. 29, 1983, Ser. No. 490,167
Claims priority, application Japan, Apr. 30, 1982, 57-71425
Int. Cl.³ A61K *31/455*; C07D *211/94, 401/12, 405/12*
U.S. Cl. 514—318 27 Claims

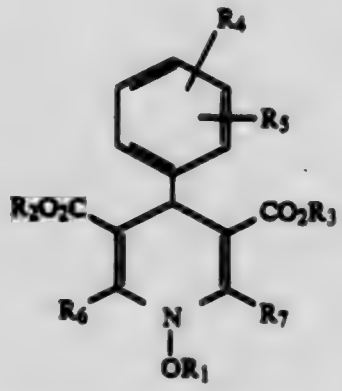
1. A 1,4-dihydropyridine compound having the general formula:



(I)

wherein R_1 represents a hydrogen atom, an alkyl group having 1–5 carbon atoms, an alkenyl group having 2–5 carbon atoms, a benzyl group, a phenethyl group, a diphenylmethyl group, a formyl group, an acetyl group, a pivaloyl group or a benzoyl group, R_2 and R_3 are the same or different groups and each represents a substituted or unsubstituted alkyl group having 1–5 carbon atoms wherein the substituents include a halogen atom and an alkoxy group having 1–5 carbon atoms, an alkenyl group having 2–5 carbon atoms, a disubstituted aminoalkyl group having 1–5 carbon atoms wherein substituents are the same or different groups and include alkyl groups having 1–5 carbon atoms, and a benzyl group or a substituted or unsubstituted heterocyclic group wherein the heterocyclic group includes a thienyl group, a furyl group, a piperidyl group, a pyranyl group, and a pyrrolidinyl group; and the substituent includes a hydrogen atom, an alkyl group having 1–5 carbon atoms, a benzyl group, a phenethyl group, a formyl group, an acetyl group and benzoyl group, R_4 and R_5 are the same or different groups and each represents a hydrogen atom, a halogen atom or a nitro group, and R_6 and R_7 are the same or different groups and each represents an alkyl group having 1–5 carbon atoms; or a pharmaceutically acceptable acid addition salt thereof.

27. An anti-hypertensive or vasodilating composition comprising a pharmaceutical carrier and as active ingredient, an effective amount of a 1,4-dihydropyridine compound of the general formula:



(I)

wherein R_1 represents a hydrogen atom, an alkyl group having 1–5 carbon atoms, an alkenyl group having 2–5 carbon atoms, a benzyl group, a phenethyl group, a diphenylmethyl group, a formyl group, an acetyl group, a pivaloyl group or a benzoyl group, R_2 and R_3 are the same or different groups and each represents a substituted or unsubstituted alkyl group having 1–5 carbon atoms wherein the substituents include a halogen atom and an alkoxy group having 1–5 carbon atoms, an alkenyl group having 2–5 carbon atoms, a disubstituted aminoalkyl group having 1–5 carbon atoms wherein substituents are the same or different groups and include alkyl groups having 1–5 carbon atoms, and a benzyl group or a substituted or unsubstituted heterocyclic group wherein the heterocyclic group includes a thienyl group, a furyl group, a piperidyl group, a pyranyl group, and a pyrrolidinyl group; and the substituent includes a hydrogen atom, an alkyl group having 1–5 carbon atoms, a benzyl group, a phenethyl group, a formyl group, an acetyl group and benzoyl group, R_4 and R_5 are the same or different groups and each represents a hydrogen atom, a halogen atom or a nitro group, and R_6 and R_7 are the same or different groups and each represents an alkyl group having 1–5 carbon atoms; or a pharmaceutically acceptable acid addition salt thereof.

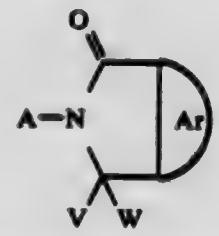
4,495,193

IMIDAZOLE COMPOUNDS WHICH REDUCE GASTRIC ACID SECRETION

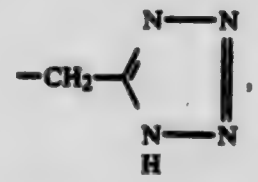
Sun H. Kim, Chestnut Hill, and Jacques-Pierre Moreau, Upton, both of Mass., assignors to Biomeasure, Inc., Hopkinton, Mass.

Filed Dec. 30, 1982, Ser. No. 454,733
Int. Cl.³ A61K *31/415*; C07D *403/12*
U.S. Cl. 514—385 7 Claims

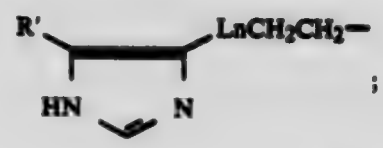
1. A compound having gastric acid secretion reducing activity and having the formula



wherein each V and W, independently, is H, $—CH_2CN$,



or $—CH_2COOR^4$ where R^4 is H or a lower alkyl; or V and W together represent $=CHCOOR^4$ or $=CHCN$; A is



;

and Ar is benzene; or the pharmaceutically acceptable salt thereof.

7. A method of treating a mammal suffering from gastric hypersecretion comprising administering to said mammal a gastric secretion reducing amount of the compound of claim 1, 2, 3, or 4.

4,495,194

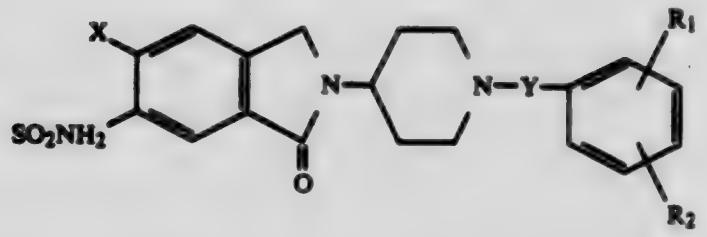
ANTIHYPERTENSIVE ISOINDOLE DERIVATIVES

Terence M. Dolak, and Tellis A. Martin, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Nov. 12, 1982, Ser. No. 441,204
Int. Cl.³ A61K *31/445*; C07D *401/04*
U.S. Cl. 514—323 23 Claims

1. A compound of Formula I

Formula I



wherein

X is halogen or trifluoromethyl;

R_1 and R_2 are independently hydrogen, lower alkyl, lower alkoxy, lower alkenyloxy, lower alkylthio, trifluoromethyl, cyano, nitro;

Y represents a single bond or a divalent alkylene radical of 1 to 4 carbon atoms;

or a pharmaceutically acceptable acid addition salt thereof.

18. The process for treating hypertension comprising systemically administering to a mammal in need of such treatment an antihypertensive effective amount of a compound of claim 1 or a pharmaceutically acceptable salt thereof.

4,495,195

XANTHINE OXIDASE INHIBITING 3(5)-PHENYL-SUBSTITUTED-5(3)-PYRAZOLE-CARBOXYLIC ACID DERIVATIVES, COMPOSITIONS, AND METHODS OF USE

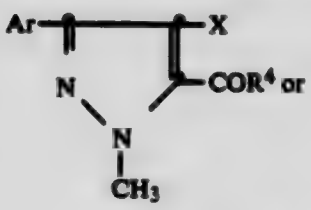
James R. Beck; Robert P. Gajewski, both of Indianapolis, and Ronald E. Hackler, Greenfield, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

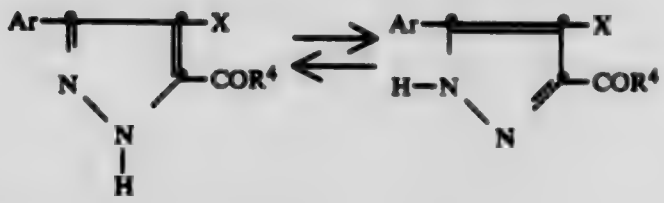
Filed Nov. 1, 1982, Ser. No. 437,994

Int. Cl.³ A61J 31/415; C07D 231/20, 49/18

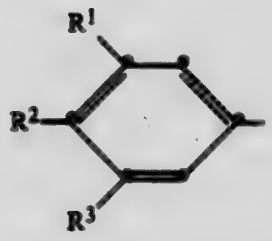
U.S. Cl. 514—406 45 Claims

1. A method for lowering the blood urate (uric acid) level in mammals which comprises the parenteral administration to a mammal having an elevated blood urate level and in need of treatment a drug of the formula





wherein Ar is



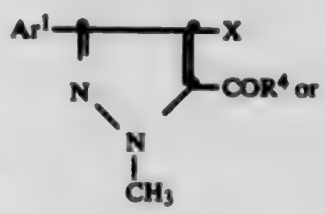
wherein

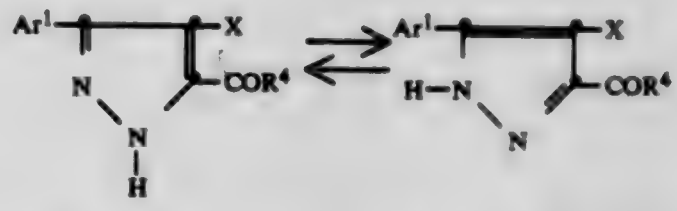
R^1, R^2 and R^3 are individually H, Cl, Br, F, I, C_{1-3} alkyloxy or C_{1-3} haloalkyl; provided that at least one of R^1, R^2 and R^3 is H and one is other than H, and only one is I;

X is NH_2, OH, H, F, Cl, Br, I or C_{1-3} alkyl;

R^4 is OH or OM; wherein M is a non-toxic cation; in a quantity sufficient to lower said elevated blood urate level.

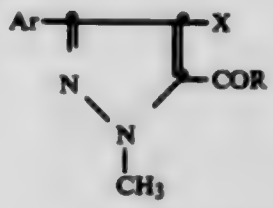
5. A compound of the formulas

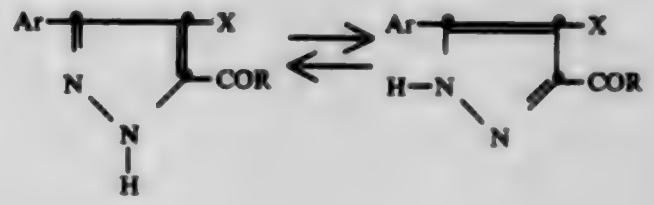




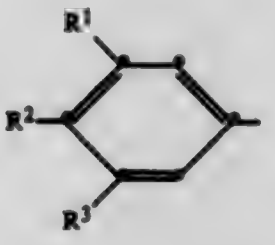
wherein Ar^1 is 3-trifluoromethylphenyl, X is OH, NH_2, H, Br, Cl, F or I and R^4 is OH or OM wherein M is a non-toxic cation.

42. A method of inhibiting the enzyme xanthine oxidase in a mammal which comprises administering to said mammal by the oral route a xanthine oxidase inhibiting dose of a drug of the formula





wherein Ar is



wherein

R^1, R^2 and R^3 are individually H, Cl, Br, F, I, C_{1-3} haloalkyl or C_{1-3} alkyloxy provided that one of R^1, R^2 and R^3 is H, one is other than H and not more than one is I;

X is NH_2, H, Cl, Br, F, I, OH or C_{1-3} alkyl;

R is OH, OM, O-alk, NH_2, NH-alk or N(alk)$_2$; wherein alk is C_{1-5} alkyl; and M is a non-toxic cation.

4,495,196

ANTIINFLAMMATORY 4,5-DIARYL-α-POLYFLUOROALKYL-1H-PYRROLE-2-METHANOLS AND METHOD FOR USE THEREOF

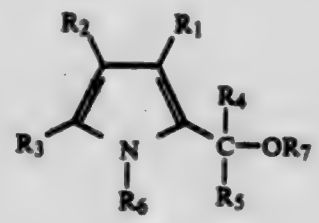
George A. Boswell, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 166,807, Jul. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 159,238, Jun. 20, 1980, abandoned, which is a continuation-in-part of Ser. No. 070,326, Aug. 27, 1979, abandoned. This application Aug. 19, 1981, Ser. No. 294,327

Int. Cl.³ A61K 31/40, 31/45; C07D 207/323, 213/04

U.S. Cl. 514—427 33 Claims

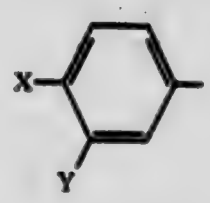
1. A compound of the formula



wherein

R_1=H or C_1–C_2 alkyl;

R_2 and R_3 independently=3-pyridyl or



where

X=H, F, Cl, Br, C_1–C_2 alkyl, C_1–C_2 alkoxy, di(C_1–C_2 alkyl)amino or $CH_3S(O)_n$ where

n=0, 1 or 2; and

Y=H, F or Cl;

with the proviso that when Y is F or Cl, then X is F or Cl;

R_4 and R_5 independently=H, CF_3, CF_2H, $CFCl_2$, CF_2Cl, CF_2CF_3, C_1–C_3 alkyl or $CF_2CF_2CF_3$;

with the provisos (1) that no more than one of R_4 or R_5 can be selected from the group consisting of H and C_1–C_3 alkyl, (2) that no more than one of R_4 or R_5 can be CF_2CF_3 and (3) that when one of R_4 or R_5 is $CF_2CF_2CF_3$, then the other R_4 or R_5 must be H; or

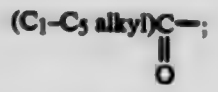
R_4 and R_5 taken together=CF_2CF_2CFZ—,

where

Z=F, Cl or Br;

R_6=H; C_1–C_6 alkyl;

R_7=H, C_1–C_6 alkyl; benzyl; benzyl substituted by up to three substituents, where said substituents are independently selected from F, Cl, Br, NO_2, CF_3 C_1–C_2 alkyl, or C_1–C_2 alkoxy;



benzoyl; or benzoyl substituted by up to three substituents, where said substituents are independently selected from F, Cl, Br, NO_2, CF_3, C_1–C_2 alkyl, or C_1–C_2 alkoxy; or —$COOR_8$;

R_8=C_1–C_4 alkyl; phenyl; phenyl substituted by up to three substituents, where said substituents are independently selected from F, Cl, Br, NO_2, CF_3, C_1–C_2 alkyl, or C_1–C_2 alkoxy; benzyl or benzyl substituted by up to three substituents, where said substituents are independently selected from F, Cl, Br, NO_2, CF_3, C_1–C_2 alkyl, or C_1–C_2 alkoxy;

with the proviso that R_6 cannot be H when R_7 is alkanoyl, benzoyl or substituted benzoyl, or $COOR_8$; or a pharmaceutically suitable acid addition salt where R_2 or R_3 is 3-pyridyl or X is dialkylamino; or a pharmaceutically suitable metal salt when R_7 is H.

23. A method of treating inflammation in a mammal which comprises administering to the mammal an antiinflammatory amount of a compound of claim 1.

4,495,197

N-CARBOXYL-THIENAMYCIN ESTERS AND ANALOGS THEREOF AS ANTI-INFLAMMATORY AGENTS

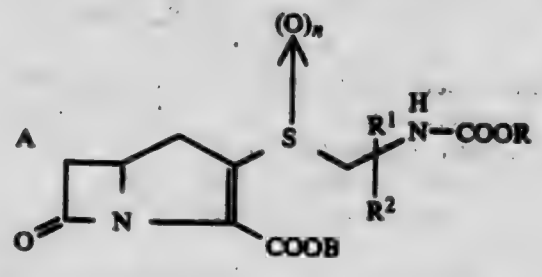
James B. Doherty, New Milford; Morris Zimmerman, Watchung, and Bonnie M. Ashe, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 24, 1982, Ser. No. 380,984

Int. Cl.³ C07D 487/04; A61K 31/40

U.S. Cl. 514—210 7 Claims

1. A method of treating anti-inflammatory conditions comprising the administration to mammalian species in need of such treatment a therapeutically effective amount of the composition containing a compound of formula:



(I)

or a pharmaceutically acceptable salt thereof wherein:

R^1 *and* R^2 independently are

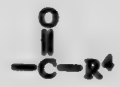
(1) hydrogen; or

(2) C_{1-6}alkyl;

(1) hydrogen;

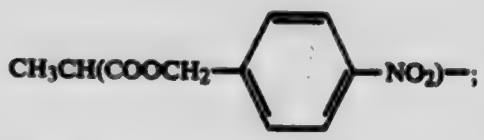
(2)

where R^3 represents hydrogen, C_{1-6}alkyl,  or



where R^4 represents benzyl or benzyl substituted with a functional group selected from a group consisting of nitro, CH_3SO_2, aminosulfonyl, fluoro, chloro, methyl, methoxy, and methylthio or methyl; or

(3)



R and B independently are

(1) C_{1-6}alkyl;

(2) phenyl;

(3) benzyl or benzyl substituted with a functional group as previously defined;

(4) benzhydryl;

(5) triphenylmethyl;

n is 0, 1 or 2.

4,495,198

ANTIHYPERTENSIVE CHROMONOXYPROPANOLAMINES

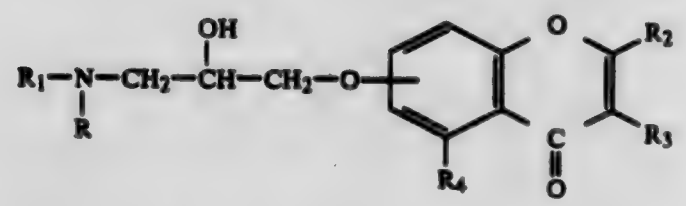
Edwin S. Wu, Rochester, N.Y., assignor to Penwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 259,403, May 1, 1981, abandoned, and a continuation-in-part of Ser. No. 422,929, Sep. 24, 1982, abandoned. This application Nov. 15, 1982, Ser. No. 441,890

Int. Cl.³ A61K *31/35*

U.S. Cl. 514—456 10 Claims

1. A method of reducing hypertension in an animal which comprises administering to the animal an amount effective to reduce hypertension of a chromone having the formula:



or a pharmaceutically acceptable or quaternary ammonium salt thereof wherein the side chain is in the 6 or 7 position of the chromone nucleus; R is H or methyl, R_1 is H, primary or secondary alkyl of 1 to 4 carbons; lower alkenyl or cycloalkyl of 3 to 6 carbons; R_2 is hydrogen, lower alkyl, CF_3, phenyl, o-halophenyl or p-halophenyl, R_3 is hydrogen or phenyl or benzyl and R_4 is hydrogen or hydroxyl; provided, however, that at least one of R_2 or R_3 is phenyl or substituted phenyl.

4,495,199

DIOXOLANIC AMINE WITH PHARMACOLOGICAL ACTIVITY, ITS METHOD OF PREPARATION, THE PHARMACEUTICAL COMPOSITIONS CONTAINING SAME AND THEIR USE IN HUMAN MEDICINE

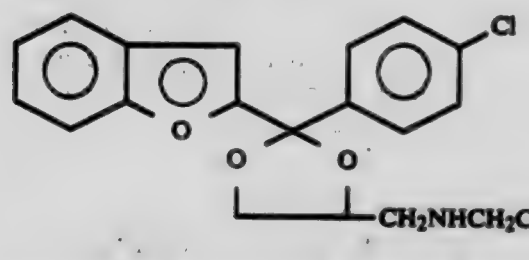
José Miguel B. Ribalta, 125 bis, calle Mayor de Sarriá; Leonida Bruseghini, 5, calle Caponata, both of Barcelona, Spain; Silvano Casadio, 11, via Tantardini, Milan, Italy, and Jorge P. Iniesta, 39, calle Leyva, Barcelona, Spain

Filed Sep. 30, 1982, Ser. No. 432,397

Int. Cl.³ A61K *31/34*; C07D *317/00*

U.S. Cl. 514—467 5 Claims

1. Dioxolanic amine of the formula I



corresponding to the 2-(2'-benzofuranil)-4-n-butylaminomethyl-2-p-chlorophenyl-1,3-dioxolane, as well as its pharmaceutically acceptable salts such as maleate, citrate, orotate, oxolate, malonate, p-toluensulphate and the like.

2. A pharmaceutical composition useful in effecting intense vasodilatory, anti-angina and anti-arrhythmic activity, containing as active ingredient a vasodilating, anti-angina and anti-arrhythmic effective amount of the dioxolanic amine of its salt according to claim 1, in an acceptable pharmaceutical carrier.

5. A pharmaceutical composition useful for alleviation of symptoms associated with fibrillation and vasopression, containing as active ingredient a therapeutic effective amount of the dioxolanic amine or its salt according to claim 1, in an acceptable pharmaceutical carrier.

4,495,200

PROCESS FOR THE CONTROL OF SULFATE-REDUCING BACTERIA

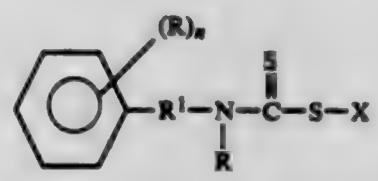
Merlin R. Lindstrom, Bartlesville; Leslie J. Henshaw, Stillwater; Harold W. Mark, and James B. Clark, both of Bartlesville, all of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 6, 1983, Ser. No. 539,441

Int. Cl.³ A01N *47/10*

U.S. Cl. 424—286 4 Claims

1. A process for the control of planktonic sulfate-reducing bacteria in industrial process water systems which comprises the step of treating said systems with a dithiocarbamate of the formula:



wherein R is a C_1 to C_4 alkyl radical, R^1 is either a methylene or ethylene radical, n is 0, 1, 2, or 3 and X is a Group IA alkali metal and wherein said dithiocarbamate is incorporated into the said water systems in a concentration between about 1 ppm and 10,000 ppm.

4,495,201

PHARMACEUTICAL COMPOSITION AND METHOD FOR TREATING HEART DISEASES THEREWITH

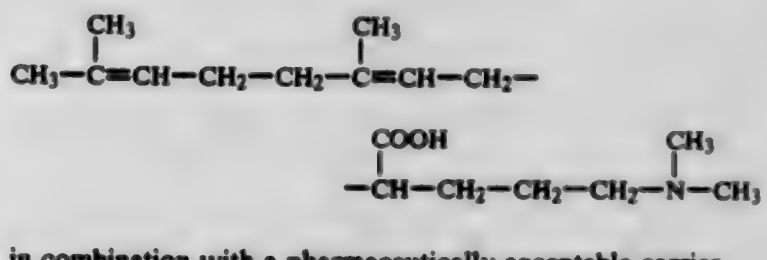
Ljudmila S. Bondar; Rostan A. Oksnev; Lev V. Polezhaev; Sergei P. Kolchin; Ljudmila V. Cherkasova, and Lilia F. Nikolaeva, all of Moscow, U.S.S.R., assignors to Institut Organicheskoi Khimii Imeni N.D. Zelinskogo; Vsesojuzny Kardiologicheshy Nauchny Tsentr and Institut Fiologii Razvitia Imeni N.K. Koltsova Akademii Nauk SSSR, all of Moscow, U.S.S.R.

Filed May 26, 1982, Ser. No. 382,194

Int. Cl.³ A61K *31/195*

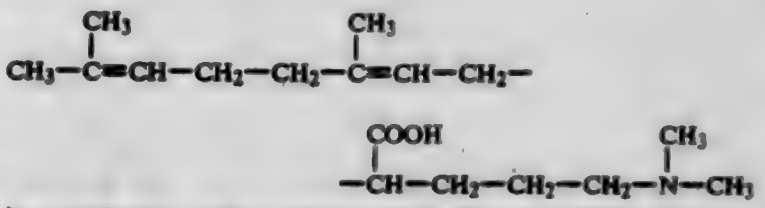
U.S. Cl. 514—560 6 Claims

1. A pharmaceutical composition for treating heart diseases selected from the group consisting of myocardial infarction, myocarditis, myocardiopathy, and myocardial dystrophy comprising an injectable solution containing from 1.5 to 5% by weight of the compound 4',5,9-trimethyl-2-(4'-azapentyl)-decadi-4,8-ene acid of the following formula:



in combination with a pharmaceutically acceptable carrier.

4. A method of treating heart diseases selected from the group consisting of myocardial infarction, myocarditis, myocardiopathy, and myocardial dystrophy in a warm-blooded animal comprising administering to said warm-blooded animal an injectable solution containing from 1.5 to 5% by weight of the compound 4',5,9-trimethyl-2-(4'-azapentyl)-decadi-4,8-ene acid of the following formula:



in combination with a pharmaceutically acceptable carrier.

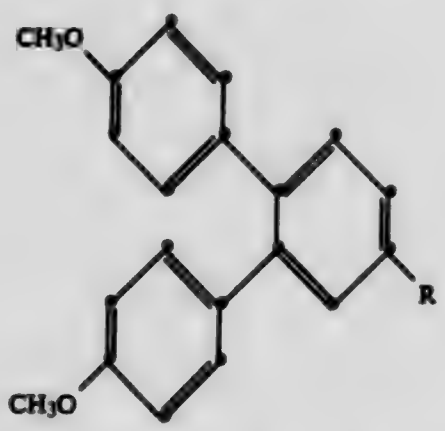
4,495,202

TERPHENYL DERIVATIVES AND PHARMACEUTICAL USES THEREOF

Ken Matsumoto, and John S. Ward, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 22, 1983, Ser. No. 506,931
Int. Cl.³ A61K *31/09*; C07C *43/205, 43/225*
U.S. Cl. 514—721 20 Claims

1. A compound of the formula I



I

wherein R is trifluoromethyl, phenyl, or phenyl substituted with iodo, bromo, chloro, fluoro, or trifluoromethyl.

8. A method of treating pain, fever, thrombosis, inflammation, or arthritis which comprises administering to a mammal in need of such treatment an effective amount of a compound of claim 1.

12. A pharmaceutical formulation useful in the treatment of pain, fever, thrombosis, inflammation, or arthritis comprising an effective amount of a compound of claim 1 in association with a pharmaceutically acceptable carrier.

4,495,203

ANHYDROUS COMPOSITION, STABLE TO OXIDATION, BASED ON ANTHRALIN OR ONE OF ITS DERIVATIVES, IN A CARRIER CONSISTING OF A FATTY ACID ALKYL ESTER AND A THICKENER, AND ITS USE IN THE TREATMENT OF SKIN DISEASES

Jean-Francois Grollier, Paris; Georges Rosenbaum, Asnieres; Josiane Allec, Pierrefitte, and Braham Shroot, Antibes, all of France, assignors to Societe Anonyme dite: L'OREAL, Paris, France

Filed Oct. 22, 1982, Ser. No. 435,983
Claims priority, application France, Oct. 23, 1981, 81 19952; Apr. 5, 1982, 82 05864
Int. Cl.³ A61K *31/05*
U.S. Cl. 514—732 6 Claims

1. A stable to oxidation, anhydrous composition for treatment of diseases of the skin and particularly for psoriasis, containing 0.01 to 5% by weight of anthralin in a carrier comprising 60 to 99% by weight of a fatty acid alkyl ester, the fatty acid having from 12 to 18 carbon atoms and the alkyl radical having 2 to 3 carbon atoms, and 0.1 to 20% by weight of a thickener selected from the group consisting of silica having an average particle diameter of less than 30 mμ and ethylene polymer powder having a density of 0.9 to 0.96 (g/cm^3).

4,495,204

NEUTRAL TASTING ALCOHOLIC BEVERAGE

Robert L. Weaver, Montreal West; Joris E. A. Van Gheluwe, Longueuil, and John A. McKee, Greenfield Park, all of Canada, assignors to The Molson Companies Limited, Ontarion, Canada

Filed Jul. 27, 1983, Ser. No. 517,900
Claims priority, application Canada, Aug. 9, 1982, 409030
Int. Cl.³ C12C *11/04*; C12G *3/00*
U.S. Cl. 426—16 16 Claims

1. A method of producing a neutral tasting alcoholic beverage comprising the steps of:

(i) mashing a well modified standard brewers malt, with hops and water at a temperature of 40° C. to 45° C. for a period of time of between 10 to 30 minutes, and thereafter raising the temperature to from 60° C. to 62° C. to obtain a wort;

(ii) mixing the thereby obtained wort in an amount of from 2% to 20% with a fermentable carbohydrate and water at a temperature of between 80° C. and 90° C. in an amount of from 80% to 98%, to obtain a fermentable solution;

(iii) cooling the thereby obtained solution to between 14° C. to 20° C., pitching the cooled solution with brewers yeast and fermenting the solution for from 4 to 8 days at from 14° C. to 20° C., and

(iv) thereafter cooling the fermented solution to 0° C. for from 4 to 7 days, and filtering the solution to obtain a neutral tasting alcoholic beverage.

4,495,205

MEAT ANALOG PRODUCT

Rita W. Brander, New Rochelle, N.Y., and Teresa A. Raap, Ridgefield, Conn., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 3, 1983, Ser. No. 538,591
Int. Cl.³ A23J *3/00*
U.S. Cl. 426—104 27 Claims

1. A process for preparing a meat analog product from texturized vegetable protein (TVP), comprising;

(a) heating a TVP containing entrapped volatiles in an aqueous medium to remove said volatiles therefrom;

(b) freezing the heated TVP with removed volatiles for a time and at a temperature effective to disrupt the fiber structure of the TVP and decrease its water binding capacity;

(c) thawing and combining the thawed TVP with a binder composition;

(d) forming a mass wherein the combined TVP and binder composition are in intimate admixture;

(e) freezing the formed mass for a time and at a temperature effective to further disrupt the structure of the TVP and decrease its water binding capacity wherein the water released combines with the binder composition; and

(f) thawing and cooking the mass.

4,495,206

HIGH PROTEIN, SOLID DIETARY FOOD PRODUCT

Edward Wein, Willowdale, Canada, assignor to Canada Packers, Inc., Canada

Continuation-in-part of Ser. No. 898,994, Apr. 21, 1978, abandoned. This application Apr. 1, 1980, Ser. No. 136,408
Int. Cl.³ A23L *1/04*; A23J *3/00*
U.S. Cl. 426—250 6 Claims

1. A solid, high protein dietary food product consisting essentially of a gelatin hydrolysate, and one or more members selected from the group consisting of essential amino acids, preservatives, flavoring agents, coloring agents, texturizers and sweetners, wherein said gelatin hydrolysate is composed prodominantly of high molecular weight polypeptides such that it is solid at room temperature over the range of concentrations of protein solids in aqueous solution from 50 to 100%, by weight, and such that the viscosity of a 10% solids (w/w)

aqueous solution at 140° F. is between about 13–25 millipoises and wherein said gelatin hydrolysate is present in quantities equal to or greater than 50% by weight of the product.

4,495,207

PRODUCTION OF FOOD-GRADE CORN GERM PRODUCT BY SUPERCRITICAL FLUID EXTRACTION

Donald D. Christianson, Peoria, and John P. Friedrich, Green Valley, both of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 25, 1982, Ser. No. 436,541
Int. Cl.³ A23L *1/172*
U.S. Cl. 426—312 16 Claims

1. A method for preparing a high-protein, food-grade product from a dry-milled corn germ fraction comprising the steps of:

a. contacting said dry-milled corn germ fraction with carbon dioxide, under supercritical conditions, as a solvent and thereby extracting the lipids from said germ fraction;
b. separating the lipid-containing carbon dioxide solvent from the substantially lipid-free germ fraction residue; and
c. recovering said residue as a high-protein, food-grade product.

4,495,208

SHELF-STABLE HIGH MOISTURE PET FOOD

Herman H. Friedman, Forest Hills, and Walter R. Popp, Valley Cottage, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 353,291, Mar. 1, 1982, abandoned, which is a continuation of Ser. No. 158,014, Jun. 7, 1980, abandoned. This application Oct. 11, 1983, Ser. No. 540,901
Int. Cl.³ A23K *1/00*
U.S. Cl. 426—335 8 Claims

1. A moist, microbiologically-stable, nutritionally-balanced pet food comprising water, protein, fat, carbohydrates, vitamins and minerals and a bactericidal preservation system wherein the pet food has a moisture content of from 50% to 80% by weight and a water activity of from 0.92 to 0.98 and reamins stable, without pasteurization, against the growth of bacteria and mold, and further comprising a preservation system consisiting of, on a total weight basis, from 4 to 15% sugars selected from the group consisting of fructose and high fructose corn syrup solids, from 0.3 to 3% of an edible organic acid selected from the group consisting of heptanoic, octanoic and nonanoic acid and combinations thereof, sufficient inorganic acid to maintain the pH of the pet food within the range of from 3.5 to 5.8, from 1.5 to 3% of a high molecular weight ionic polysaccharide selected from the group consisting of carageenans, pectins and alginates and from 0.1 to 0.5% of an antimycotic seleted from the group consisting of sorbic acid and the edible salts thereof.

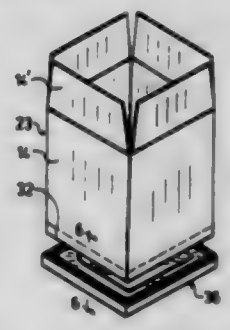
4,495,209

METHOD OF FORMING, FILLING AND HERMETICALLY SEALING CONTAINERS

Michael G. Whiteside, 10 Reimar Rd., Apt. 1, Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 385,430, Jun. 7, 1982, abandoned. This application Dec. 19, 1983, Ser. No. 562,542
Int. Cl.³ B65B *7/20, 7/28*
U.S. Cl. 426—392 2 Claims

1. A method of forming, filling and hermetically sealing a container, comprising providing a container body of paperboard material with opposed ends, said container body being of rectangular section with a front panel, a rear panel and two side panels, said panels having level edges at one end with a strip of thermoplastic material extending around surfaces of the panels adjacent the edges, each panel having a closure flap at its opposite end, a dab of thermoplastic material being provided at said opposite end of the junction of each pair of adjacent panels, providing a rectangular closure member of thermoplastic material with a reversely bent peripheral wall providing a groove, said closure member also having an opening and removable closing means closing said opening, the method further comprising supplying the container body in a flattened form to a forming station with said opposite end uppermost and said one end lowermost, opening the flattened container body to a box form, heat softening the thermoplastic strip adjacent the edges of the panels at said one end, moving the container body with said one end lowermost to a closure-receiving station, fitting the closure member onto the container body by inverting the closure member and causing portions of the panels at said one lowermost, end to enter into the peripheral groove of the inverted closure member with the softened thermoplastic strip engaging the peripheral wall of the closure member, thus enchancing the hermetic seal between the closure member and the container body since the heat softened thermoplastic strip tends to flow downwardly into the closure member allowing the thermoplastic strip to cool and perma-



nently secure the closure member to the container body, thereby forming a container, moving the container to a filling station, filling the container with product while the container is still in the orientation with said opposite end uppermost, moving the filled container to a closing station, closing the container while in said orientation by folding two opposed panels downwardly to a closed position, providing heat softened thermoplastic on the uppermost faces of the closed flaps, folding the other two opposed flaps downwardly to a closed position in engagement with the thermoplastic material on the flaps and allowing the thermoplastic material to cool and thereby seal said opposite end of the container, and then heat softening the dabs of thermoplastic material at said junctions of the panels and inverting the container to position said opposite end lowermost to cause said dabs to flow into and seal the corners of the container at said opposite end to more thoroughly seal the container and prevent possible leakage of the product from the corners of the corner.

4,495,210

CAFFEINE ADSORPTION

David Green, Chavornay, and Maurice Blanc, Morges, both of Switzerland, assignors to Societe D'Assistance Technique Pour Produits Nestle S.A., Lausanne, Switzerland

Filed May 28, 1980, Ser. No. 153,904
Int. Cl.³ A23F *5/22*
U.S. Cl. 426—422 5 Claims

1. A process for the recovery of caffeine from an aqueous solution containing caffeine extracted from green coffee beans and non-caffeine green coffee solids which comprises contacting the solution with substantially neutral activated carbon and separating the activated carbon, with caffeine adsorbed thereon, from aqueous solution of reduced caffeine content.

4,495,211

PROCESS FOR THE DECAFFEINATION OF GREEN COFFEE BEANS

Gerben D. Mooiweer, Nieuwegein, Netherlands, assignor to Douwe Egberts Koninklijke Tabakfabriek Koffiebranderijen Theehandel N.V., Utrecht-th, Netherlands

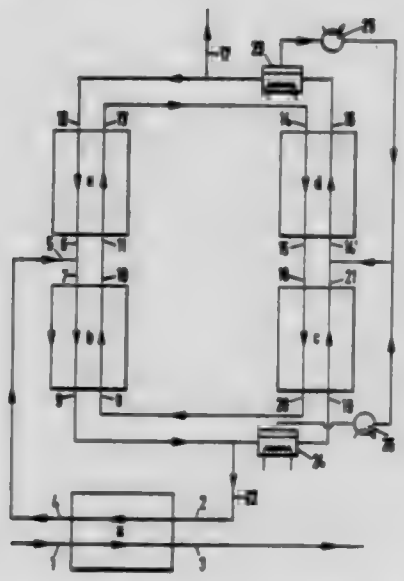
Filed Oct. 14, 1982, Ser. No. 434,185

Claims priority, application Netherlands, Oct. 27, 1981, 8104854

Int. Cl.³ A23F *5/20*

U.S. Cl. 426—422

5 Claims



1. A continuous process for the decaffeination of green coffee beans, comprising the following integrated process stages;

(a) contacting the green coffee beans after soaking in water with a caffeine-deficient aqueous solution from stage (b), being an equilibrium extract of these beans from which caffeine has been withdrawn, resulting in caffeine-deficient beans on the one hand and an equilibrium extract of the beans on the other;

(b) contacting the equilibrium extract of the green coffee beans, produced in stage (a) together with the solution of coffee bean components, produced in stage (e), with a caffeine-deficient adsorbent loaded with non-caffeine coffee bean components, and loaded adsorbent being produced in stage (c) and having a preferential adsorption capacity for caffeine, resulting, on the one hand, in a caffeine-deficient solution of coffee bean components, which solution is concentrated by evaporation, the distillate being condensed and returned to stage (d) while the concentrate is partially passed to stage (c) and partially recycled to stage (a), and, on the other hand, an adsorbent loaded with coffee bean components, which loaded adsorbent is supplied to stage (e);

(c) contacting the caffeine-deficient solution of coffee bean components, produced in stage (b), with clean adsorbent, resulting, on the one hand, in a clean aqueous solution and, on the other, in an adsorbent loaded with soluble coffee bean components, but deficient in caffeine, which loaded adsorbent is supplied to stage (b);

(d) contacting the clean aqueous solution produced in stage (c) with the adsorbent loaded with coffee bean components rich in caffeine, which solution is concentrated by evaporation, the distillate being condensed and returned to stage (d) while the concentrate is partially discharged and partially supplied to stage (e);

(e) contacting the caffeine-rich solution of coffee bean components from stage (d) with the adsorbent loaded with soluble coffee bean components from stage (b), resulting, on the one hand, in a solution of coffee bean components, which is supplied to stage (b), and on the other hand, in an adsorbent loaded with soluble coffee bean components rich in caffeine, which is supplied to stage (d).

4,495,212

PROCESS FOR CONCENTRATING A COLD PRODUCT AND FOR PREHEATING A CIRCULATING FLUID

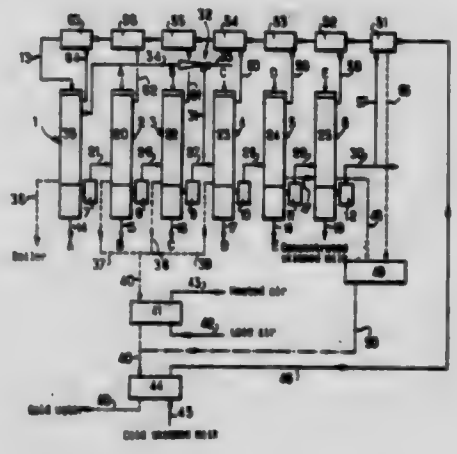
Jacques J. Ciboit, Paris, France, assignor to Legallharre S.A., Rueil Malmaison, France

Filed May 28, 1981, Ser. No. 267,893

Int. Cl.³ A23C *1/00*; B01D *1/18*

U.S. Cl. 426—492

4 Claims



1. A process for concentrating a cold liquid dairy product and for preheating a circulating fluid, which comprises the steps of:

(a) submitting said liquid dairy product to a multi-stage evaporation by supplying a first evaporation stage with heating vapor as a source of heat for evaporation of the liquid dairy product in said first evaporation stage to convert said heating vapor to condensate and produce evaporation vapor from the liquid dairy product, supplying the second evaporation stage with evaporation vapor produced in the first evaporation stage, so that the first evaporation stage supplies a source of heat for evaporation of the liquid dairy product in said second evaporation stage to convert the evaporation vapor supply in said second evaporation stage to condensate and produce evaporation vapor from the liquid dairy product, and repeating the above steps of submitting and supplying up to and including the last evaporation stage,

(b) withdrawing evaporation vapor, condensates or a mixture thereof, from at least one evaporation stage,

(c) preheating said circulating fluid by a one-step heat exchange with the evaporation vapor, the condensates or the mixture thereof, withdrawn from said at least one evaporation stage, and,

(d) preheating the cold liquid dairy product to be concentrated, by heat exchange with at least a portion of the condensates resulting from the vapor, the condensates or the mixture thereof after their heat exchange with the circulating fluid.

4,495,213

WATER-SOLUBLE SWEETENING TABLET

Erich Wolf, Overath, and Rolf Deininger, Cologne, both of Fed. Rep. of Germany, assignors to Chimicasa GmbH, Wiesentalstr., Switzerland

Filed Sep. 30, 1982, Ser. No. 431,072

Claims priority, application European Pat. Off., Aug. 31, 1982, 82109002.5

Int. Cl.³ A23L *1/236*

U.S. Cl. 426—548

5 Claims

1. A compressed water-soluble sweetening tablet containing, on a dry weight basis:

70 to 95% of L-aspartyl-L-phenylalanine methylester as a sweetening agent, having a granular size of 0.01 to 0.4 mm,

0 to 1% of an auxiliary tabletting agent, and

the rest comprising a water-swellable jellifier as a solubility accelerator, selected from the group consisting of cross-

linked sodium carboxymethylcellulose and cross-linked polyvinyl pyrrolidone,

wherein the granules of said sweetening agent are coated with a dried layer of said solubility accelerator.

4,495,214

PROCESS FOR PRODUCING QUICK-COOKING PRODUCTS

Edward Seltzer, Teaneck, N.J., and William A. Hamilton, San Jose, Costa Rica, assignors to Rutgers Research & Educational Foundation, New Brunswick, N.J.

Continuation-in-part of Ser. No. 307,614, Oct. 1, 1981,. This application Dec. 28, 1983, Ser. No. 566,181

Int. Cl.[3] A23L *1/16*

U.S. Cl. 426—557 23 Claims



1. A process for making quick-cooking pasta comprising the steps of:

(a) combining flour, water, a carbonate selected from the group consisting of edible ammonium carbonate and edible encapsulated alkali metals, an acidic leavening salt, and an interrupter to form a dough, said interrupter being present in an amount sufficient to improve the consistency of the final product,

(b) extruding the dough through an extrusion cooker under conditions of pressure and temperature sufficient to permit the carbonate to react with the acidic leavening salt and to at least partially gelatinize the starch in the flour while forming the dough, and

(c) drying the extruded formed pasta.

4,495,215

FLUIDIZED BED FURNACE AND METHOD OF EMPTYING THE SAME

Elke Barnert, Jülich, and Heinz Schmitz, Aachen, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschrankter Haftung, Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 269,651, Jun. 2, 1981, abandoned. This application Jan. 10, 1983, Ser. No. 457,054

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1980, 3021037

Int. Cl.[3] B05B *1/34*; C23C *11/00*

U.S. Cl. 427—6 10 Claims

1. Fluidized bed furnace for the coating of nuclear reactor fuel particles comprising

a reaction tube for containing said particles in a fluidized bed therein, having at least one orifice at its bottom end;

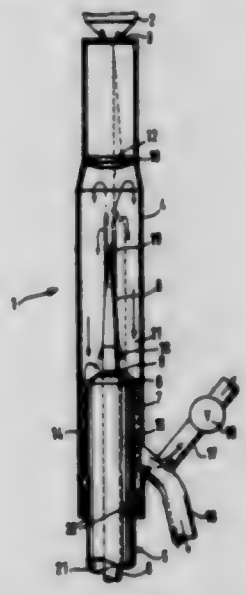
duct means below said bottom end of said reaction tube including an outer tube for supply of a carrier gas to said reaction tube, having an inlet and being connected for outlet purposes to said reaction tube, and at least one inner tube for supply of a coating gas disposed inside said outer tube below said at least one orifice;

a porous plate (10) extending across the interspace between outer and inner tubes, said inlet of said outer tube being located below said porous plate and connecting with said interspace, and

overflow duct means (17, 18) for venting said outer tube,

said at least one inner tube being axially movable to an extent sufficient to lower it, from its normal position during operation of the furnace, to a position to which a passage for downwardly falling fuel particles is produced,

a collecting device being located in said interspace below said outer tube inlet for catching particles that have fallen through said passage, and



a coating gas supply, an inert gas supply, and means for replacing the coating gas in said at least one inner tube with the inert gas and vice versa.

4,495,216

POWDER FOR USE IN DRY SENSITIZATION FOR ELECTROLESS PLATING

Gunnar Soerensen, Risskov, and Leo G. Svendsen, Åarhus C, both of Denmark, assignors to A/S Neselco, Copenhagen, Denmark

Filed Jul. 22, 1982, Ser. No. 400,884

Claims priority, application Denmark, Jul. 24, 1981, 3300/81

Int. Cl.[3] B05D *3/00*; C08K *3/10*; C23C *3/02*

U.S. Cl. 427—25 10 Claims

1. A finely powdered, hydrophobic, thermoplastic material which is useful in the sensitizing of the surface of a substrate on which metal is to be electrolesly deposited, prepared by depositing from 0.1 to 10% by weight of a surfactant and from 0.1 to 10% by weight of a sensitizing tin compound on a thermoplastic powder, said percentages being based the weight of said thermoplastic powder, the powdered material obtained by said process upon melting down on a substrate resulting in a well defined metallization edge subsequent to electroless metallization.

4,495,217

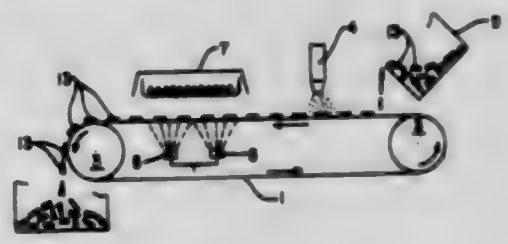
METHOD FOR APPLYING POWDERED COATINGS

Timothy J. Schrum, 125 N. Church St., Mohnton, Pa. 19540

Filed Apr. 19, 1982, Ser. No. 369,594

Int. Cl.[3] B05D *1/04*, *3/02*

U.S. Cl. 427—27 9 Claims



1. A method for applying powdered coatings to relatively small parts without fixturing, comprising the steps of:

placing the parts on a heat conductive surface;

distributing the fusible coating powders over the exposed surfaces of the part;

heating the powders distributed on the parts to above their melting point while maintaining te heat conductive surface at a temperature below which any overspray coating powders on the conductive surface become tacky.

discontinuing the heating; cooling the powders below their melting point; and

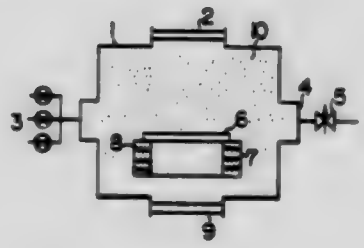
removing the parts from the heat conductive surface after the coatings have solidified.

4,495,218

PROCESS FOR FORMING THIN FILM

Kazufumi Azuma, Hiratsuka; Mitsuo Nakatani, Yokohama; Kazuo Nate, Machida; Masaaki Okunaka, and Hitoshi Yokono, both of Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 22, 1983, Ser. No. 534,686
Claims priority, application Japan, Sep. 29, 1982, 57-168463
Int. Cl.³ C23C *17/00*
U.S. Cl. 427—53.1 8 Claims



1. A process for forming a thin film by a chemical vapor deposition method, which comprises:

supplying a starting material gas containing at least one polysilane of the formula:

$$Si_nH_{2n+2}$$

wherein n is an integer of 2, 3 or 4, into a reaction vessel of a chemical vapor deposition apparatus containing a substrate heated to a temperature of from 20° C. to 300° C.; the pressure in said reaction vessel being from 0.1 to 100 torr,

irradiating the starting material gas with ultraviolet light, and

forming a thin film of silicon on the substrate.

4,495,219

PROCESS FOR PRODUCING DIELECTRIC LAYERS FOR SEMICONDUCTOR DEVICES

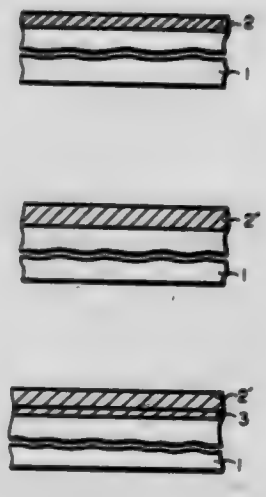
Takashi Kato, and Nobuo Toyokura, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 8, 1982, Ser. No. 433,520
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—82 11 Claims

1. A process for producing a dielectric layer on a semiconductor layer, comprising the steps of:

forming a layer of oxide of an element selected from the group consisting of tantalum, titanium, niobium, hafnium, yttrium, zirconium, and vanadium on the surface of the semiconductor layer; and

heating the semiconductor layer, having the oxide layer thereon, in a wet oxidizing atmosphere at a temperature in the range of 700° C. to 1200° C., to thermally oxidize the semiconductor layer so as to form an insulating layer, which comprises the oxide of the semiconductor layer, at



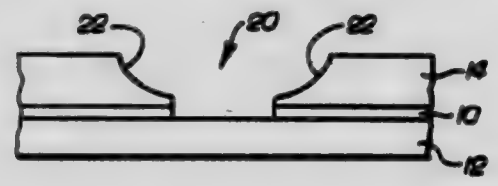
the interface between the semiconductor layer and the oxide layer.

4,495,220

POLYIMIDE INTER-METAL DIELECTRIC PROCESS

Stanley Wolf, Sunset Beach, and Warren C. Atwood, Los Angeles, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 7, 1983, Ser. No. 540,064
Int. Cl.³ H01L *21/312*
U.S. Cl. 427—82 11 Claims



1. A method for forming via holes in a polyimide dielectric film, said method compriaing the steps of:

forming a polyimide layer over a lower metal layer in a semiconductor circuit;

forming an upper layer of silicon dioxide highly doped with phosphorous, over the polyimide layer;

etching a via hole pattern in the silicon dioxide layer;

dry-etching a sloped-walled via hole in the polyimide;

dry-etching the hole all the way through to the metal layer, but without significantly enlarging the hole further in width; and

etching the hole to remove any residue of polyimide material, and to remove the upper layer of silicon dioxide.

4,495,221

VARIABLE RATE SEMICONDUCTOR DEPOSITION PROCESS

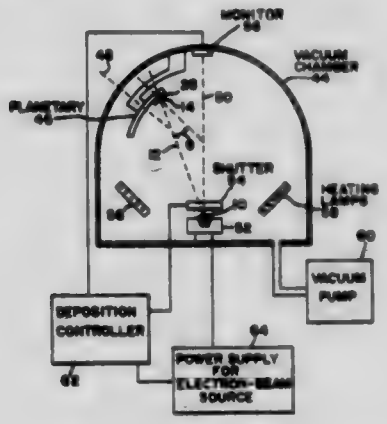
Eliot K. Broadbent, San Jose, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Oct. 26, 1982, Ser. No. 436,863
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—88 10 Claims

1. A method of forming a layer of an electically conductive material on a surface of a semiconductor body wherein the material subetantially consists of aluminum with no more than 4% by weight of copper and no more than 4% by weight of silicon, characterized by the steps of:

initially directing atoms of the material toward the surface to accumulate there at a potentially variable first deposition rate whose average value R_{1AVG} is not greater than 10 angstroms/second on substantially non-inclined portions of the surface and is sufficiently less than the average value R_{2AVG} of a potentially variable second deposition

rate that I_{1AVG}/R_{1AVG} is not greater than one half I_{2AVG}/R_{2AVG} where I_{AVG} and I_{2AVG} are the average nucleation rates of atoms of the material on the non-inclined portions at the first and second deposition rates, respectively; and



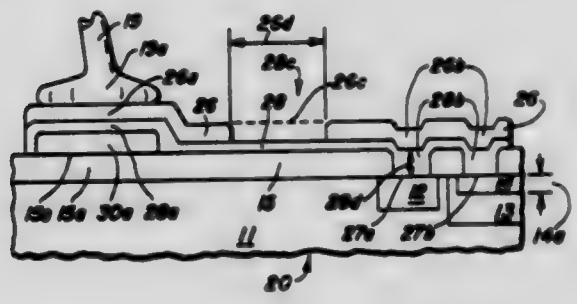
subsequently directing atoms of the material toward the surface at the second deposition rate to increase the average thickness of the layer to a selected thickness, the temperature of the body being largely the same during both steps of directing.

4,495,222

METALLIZATION MEANS AND METHOD FOR HIGH TEMPERATURE APPLICATIONS

George F. Anderson, Tempe, and Dan L. Burt, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 7, 1983, Ser. No. 549,354
Int. Cl.[3] H01L *21/28*
U.S. Cl. 427—89 5 Claims



1. In a process for forming bonding pads suitable for attachment of external bonding means, on an electrical device having a resistive barrier layer beneath said pads and on a substrate, the improvement comprising inserting between said substrate and said resistive barrier layer an adhesion layer comprising a material which forms intermetallic compounds with said resistive barrier layer and comprises an element in common with said substrate.

4,495,223

PROCESS FOR PHOSPHATING ASBESTOS FIBERS

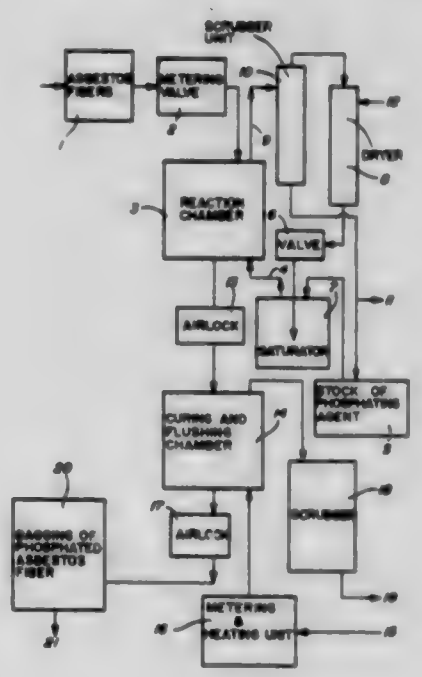
Jean-Marc Lalancette; Marcel Cossette, and Pierre Delvaux, all of Sherbrooke, Canada, assignors to Societe Nationale de L'Amiante, Quebec, Canada

Filed Feb. 22, 1984, Ser. No. 582,474
Int. Cl.[3] B05D *7/00*; C03B *37/00*; C23C *11/00, 13/00*
U.S. Cl. 427—215 6 Claims

1. In a process for phosphating asbestos fibers by contacting asbestos fibers with a gaseous phosphorus chloride, the improvement which comprises,

(a) countercurrently circulating in a closed system a gaseous phosphorus chloride in a first reaction chamber at near atmospheric pressure through a mass of substantially water-free asbestos fibers having a loose density between 15 and 325 kg/m^3,

(b) adsorbing the gaseous phosphorus chloride on said asbestos fibers at a temperature in a range between the boiling temperature of the phosphorus chloride at atmospheric pressure and 200° C. above the boiling temperature of the phosphorus chloride for a period of time varying between 0.2 and 4 hours, whereby phosphated asbestos fibers are obtained,



(c) curing while displacing said phosphated asbestos fibers in a second chamber for a period of from 0.1 to 6 hours at a temperature ranging from the boiling point of the phosphorus chloride and 240° C. above the boiling point of the phosphorus chloride, and

(d) flushing the cured phosphated asbestos fibers to remove therefrom any unreacted phosphorus chloride, volatile and toxic by-products produced during the reaction of said asbestos fibers with the phosphorus chloride and recovering said cured phosphated fibers.

4,495,224

METHOD FOR PREPARING IMPROVED MOLDING MATERIALS FROM COATED FINE PARTICULATE EXPANDABLE STYRENE POLYMERS AND APPLICATION OF THE COATED PRODUCTS

Josef-Karl Rigler, Recklinghausen; Horst Leithäuser, and Heinz Osterhoff, both of Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Hüls A.G., Marl, Fed. Rep. of Germany

Filed Oct. 4, 1983, Ser. No. 538,906
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1982, 3239563; May 11, 1983, 3317169
Int. Cl.[3] B05D *7/00*; C08J *9/22*
U.S. Cl. 427—222 12 Claims

1. In a method for coating fine particulate expandable styrene polymers with glycerin esters of long chain fatty acids, the improvement comprising:

(a) introducing said fine particulate expandable styrene polymers into a closed mixing vessel;

(b) preparing organosols of said glycerin esters having 14 to 24 carbon atoms in non-solvent aliphatic hydrocarbons having 3 to 8 carbon atoms, said glycerin esters being in pulverulent form and having a glycerin monoester proportion of about 10 to 40% by weight and a particle size less than 100 microns;

(c) adding said organosols to said fine particulate expandable styrene polymers with mixing;

(d) removing said non-solvent aliphatic hydrocarbons by reducing the pressure in said mixing vessel; and

(e) separating said fine particulate expandable styrene polymers coated with said glycerin esters.

4,495,225

METHOD AND COMPOSITION FOR THE PREVENTION OR INHIBITION OF CORROSION

Stanley J. Clubs, Burnsville, and Michael J. Barteime, III, Richfield, both of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Filed Mar. 21, 1984, Ser. No. 591,676
Int. Cl.[3] B05D *3/02*; C09K *3/00*; C04B *9/02*
U.S. Cl. 427—236 30 Claims

1. An improved method of preventing corrosion on a surface, which comprises:

(a) forming a coating of from about 2 to 15 mils thick on the surface, with a composition comprising:

(i) about 10 to 80% by weight of a rust-inhibitive, grease-like concentrate comprising a thixotropic inorganic/organic complex stably dispersed in an essentially inert liquid oily phase in an amount not to exceed 4 parts, per part of said complex, of said essentially inert liquid oily phase, said inorganic/organic complex comprising an over-based alkaline earth organic sulfonate salt, whereby the crystalline structure of the inorganic portion of said complex is platelet and film-forming in character;

(ii) about 5 to 25% by weight of at least one drying oil, said drying oil being miscible in a diluent oil selected from the group consisting of aliphatic hydrocarbon diluents, cycloaliphatic hydrocarbon diluents, aromatic hydrocarbon diluents, and mixtures thereof, boiling at temperatures above 150° C.;

(iii) about 0.03–0.6% by weight metal, provided by a first metal drier selected from the group consisting of copper carboxylate compounds, rare earth carboxylate compounds and mixtures thereof;

(iv) about 0.1 to 2.2% by weight metal, provided by a second metal drier consisting of zinc carboxylate compounds;

(v) about 20 to 60% by weight naphthenic or straight chain paraffinic oils or mixtures thereof;

(vi) about 2 to 15% by weight petrolatum; and

(b) curing the coating.

21. A corrosion-inhibiting composition which comprises:

(a) about 10 to 80% by weight of a rust-inhibitive, grease-like concentrate comprising a thixotropic inorganic/organic complex stably dispersed in an essentially inert liquid oily phase in an amount not to exceed 4 parts, per part of said complex, of said essentially inert liquid oily phase, said inorganic/organic complex comprising an over-based alkaline earth organic sulfonate salt, whereby the crystalline structure of the inorganic portion of said complex is platelet and filmforming in character;

(b) about 5 to 25% by weight of at least one drying oil, said drying oil being miscible in a diluent oil selected from the group consisting of aliphatic hydrocarbon diluents, cycloaliphatic hydrocarbon diluents, aromatic hydrocarbon diluents, and mixtures thereof, boiling at temperatures above 150° C.;

(c) about 0.03 to 0.6% by weight metal provided by a first metal drier selected from the group consisting of copper carboxylate compounds, rare earth carboxylate compounds, and mixtures thereof;

(d) about 0.1 to 2.2% by weight metal provided by a second metal drier selected from the group consisting of zinc carboxylate compounds;

(e) about 20 to 60% naphthenic or straight chain paraffinic oils; and

(f) about 2 to 15% petrolatum.

4,495,226

METHOD FOR PREPARING SILICONE-TREATED STARCH

Jari K. Smith, Sanford, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 395,555, Jul. 6, 1982, abandoned. This application Dec. 5, 1983, Ser. No. 558,212
Int. Cl.[3] A21D *4/00*; B65B *55/00*; C08L *3/00*; B32B *9/04*
U.S. Cl. 427—326 22 Claims

1. A method for treating starch, said method comprising contacting said starch with from about 0.1% to about 15% by weight, based on the weight of the starch, of an organosiloxane polymer, said organosiloxane polymer consisting essentially of three or more siloxane units having the formula $R_aSiO_{(4-a)/2}$, said siloxane units being joined to one another by siloxane bonds, wherein a has a value of 0, 1, 2 or 3 and R is a silicon-bonded radical selected from the group consisting of hydrocarbon radicals, hydrocarbonoxy radicals, substituted hydrocarbon radicals, substituted hydrocarbonoxy radicals, and the hydroxyl radical, with the proviso that any hydroxyl radicals are present only on terminal $R_aSiO_{(4-a)/2}$ units, said contacting being done in water, at a temperature of from about 60° C. to about 98° C. for a period of time at least 60 seconds in duration.

4,495,227

FOAMABLE SILICONE-CONTAINING COMPOSITION FOR TREATMENT OF FABRIC MATERIALS

Masaki Tanaka, Gunma, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1983, Ser. No. 487,202
Claims priority, application Japan, Apr. 26, 1982, 57-69837
Int. Cl.[3] B05D *3/02*; C08J *9/00, 9/32*; C08G *77/00*
U.S. Cl. 427—373 6 Claims

5. A method for the water-proofing treatment of a fabric material which comprises coating the fabric material with a foamable silicone-containing composition comprising a curable silicone composition mainly composed of a liquid diorganopolysiloxane with a substantially linear molecular structure having at least two functional groups bonded to the silicon atoms in a molecule as the base polysiloxane, said functional groups being selected from the group consisting of silanolic hydroxy groups, and two alkenyl groups; a liquid organosilicon compound having at least three functional groups bonded to the silicon atoms, said functional groups being selected from the group consisting of hydrogen and hydrolyzable groups; and a condensation catalyst and a blowing agent which is a low-boiling organic liquid encapsulated in a polyvinylidene chloride film in the form of microcapsules, in an amount from 1 to 200 parts by weight per 100 parts by weight of the said curable silicone composition and heating the thus coated fabric material to effect curing of the curable silicone composition and simultaneous foaming of the composition.

4,495,228

HYDRAULIC CEMENT COMPOSITION AND METHOD FOR USE AS PROTECTIVE COATING FOR SUBSTRATES

Charles E. Cornwell, 7104 Marian Dr., Alexandria, Va. 22307

Continuation-in-part of Ser. No. 294,206, Aug. 19, 1981, abandoned. This application Nov. 16, 1982, Ser. No. 442,120
Int. Cl.[3] B05D *3/02*; C04B *7/02*
U.S. Cl. 427—385.5 4 Claims

1. A corrosion resistant and fireproof coating composition consisting essentially of a hydraulic cement, water reducer, thixotropic agent, finely divided minerals, color pigments and combined with water to make a coating suitable for application on various substrates.

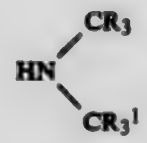
4,495,229

ONE-COMPONENT, HEAT-CURING POLYURETHANE-COATINGS, STABLE IN STORAGE

Elmar Wolf, Recklinghausen, and Felix Schmitt, Herten, both of Fed. Rep. of Germany, assignors to Chemische Werke Huls A.G., Marl, Fed. Rep. of Germany

Filed May 31, 1983, Ser. No. 499,786
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1982, 3231558
Int. Cl.³ B05D 3/02; C08G 18/81, 18/10, 18/32
U.S. Cl. 427—388.2 12 Claims

1. A polyurethane one-component heat-curing coating which is stable in storage and is hardened above a temperature of about 120° C., comprising a polyol compound having a low glass transition temperature, and a blocked polyisocyanate compound, wherein said blocked polyisocyanate compound is the reaction product of a polyisocyanate compound and a sterically hindered secondary amine compound having the formula:



wherein R is selected from the group consisting of a hydrogen atom, C_3–C_9 alkyl radical, unsubstituted cycloalkyl radical, cycloalkyl radical substituted by C_1–C_4 alkyl radicals, or heteroatom-containing cycloalkyl radical, wherein each R is identical to or different from each other; R^1 is selected from the group consisting of alkyl radical or cycloalkyl radical, wherein each R^1 is identical to or different from each other; or R and R^1 are chemically bonded therebetween, thereby forming a ring structure.

12. A method of producing a high quality object made of metal, glass or plastic which comprises applying the polyurethane one-component heat-curing coating of claim 1 to a surface of said object, and heating said object coated with said coating above a temperature of about 120° C. for a period of about 30 minutes to 30 seconds, thereby hardening said coating on the surface of said object.

4,495,230

NEEDLEWORK ART FORM

Rebecca A. Ellwein, 2213 Windy Pines Bend, Virginia Beach, Va. 23456

Filed Jun. 30, 1983, Ser. No. 509,303
Int. Cl.³ B44F 3/00; G09B 19/20
U.S. Cl. 428—13 12 Claims



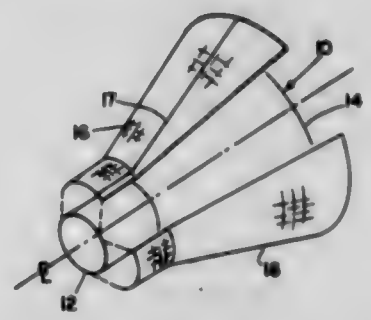
1. A needlepoint art form which can be provided both in kit form as well as a finished product, comprising in combination:
a needlepoint base in the form of an apertured flexible substrate to which colored needlepoint yarns are applied by needlepoint operations;
a design imprinted on said base within a marginal outline, said design further including color coded areas serving as guides for correspondingly colored yarns;
said design further including a predetermined single relatively small but nevertheless visually dominant feature area defining an applique outline which is less than the overall size of said design and which is also to be filled with yarn; and
a single decorated three dimensional solid applique comprising but a part of said design, formed by molding, sculpturing and the like, and having a perimeter corresponding to the outline of said dominant feature area affixed thereto over said yarn following needlepoint application.

4,495,231

FIBER COMPOSITE

A. Theodore Laskaris, Danvers, and Paul J. Roy, Lowell, both of Mass., assignors to Avco Corporation, Wilmington, Mass.

Filed Sep. 29, 1982, Ser. No. 427,085
Int. Cl.³ B32B 3/10, 5/12, 9/00
U.S. Cl. 428—36 7 Claims



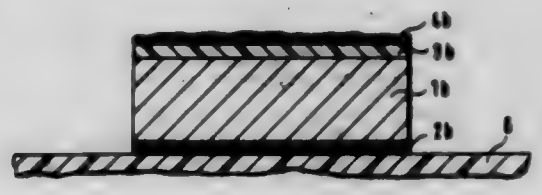
1. An improved fiber reinforced composite, said fiber reinforcement comprising:
a first layer comprising a plurality of elongate flexible fabric segments arranged together in an abutting side-by-side relationship defining an elongate irregularly shaped body shell form and having a plurality of continuous longitudinal yarns extending axially the length of each fabric segment, and
a second layer comprising a continuous yarn wound peripherally upon said first layer and oriented substantially orthogonally with said longitudinal yarns of said first layer.

4,495,232

STAMPING FOILS AND METHODS

Herbert Bauser, Stuttgart; Edmund Kurz, Magstadt; Bernd Schindler, Stuttgart; Klaus Zerweck, Leonberg; Thomas Boich, Heilbronn; Andreas Haller, Villingen-Schwenningen, and Theo Mager, Bad Dürrheim, all of Fed. Rep. of Germany, assignors to Irion & Vosseler GmbH & Co. & Zahlerfabrik, Schwenningen, Fed. Rep. of Germany

Filed Mar. 29, 1982, Ser. No. 363,068
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1981, 3116078
Int. Cl.³ B32B 7/10; C09J 7/02
U.S. Cl. 428—41 23 Claims



1. A stamping foil for producing electrically conductive circuits on an electrically insulating or poorly conductive substrate;
said foil being bondable to said substrate in areas activated

by compression with a stamping die or stereotype and comprising an electrically conductive layer having a generally decorative or graphic function and having a thickness of between 10 to 35 microns to achieve the required electrical function(s);

said foil being endowed with sufficiently low shear strength to permit sharp separation of said activated areas from unactivated areas of the foil following a stamping operation;

said structure of said conductive layer consisting essentially of fibrous, fibrous-granular or fibrils whose axes are oriented at approximately right angles to the surfaces of said foil and having a diameter between 0.5 and 2 microns; and

a bonding layer adjacent to said conductive layer;

said bonding layer being activatable by compression or heating with said stamping die or stereotype;

whereby said bonding layer effects adhesion of said conductive layer to said subetrate in the activated areas.

7. The foil of claim 1, wherein said bonding layer comprises a melting glue which rapidly solidifies and bonds said conductive layer to said substrate in the activated areas immediately following a hot-stamping operation.

8. The foil of claim 1 or 7, wherein the side of said conductive layer which is not in contact with said bonding layer is attached to a carrier tape by means of a separating layer which has sufficient adhesiveness to bond said tape to said conductive layer prior to stamping and which loses its adhesiveness in areas activated by a stamping operation.

4,495,233

REMOVABLE COVER ADAPTED TO COVER THREE-DIMENSIONAL ARTICLES

Piero Bassetti, Milan, Italy, assignor to Bassetti, S.p.A., Milan, Italy

Filed Feb. 2, 1984, Ser. No. 576,319
Claims priority, application Italy, Feb. 14, 1983, 20000/83 [U]
Int. Cl.³ B32B *3/06*
U.S. Cl. 428—81 5 Claims



1. A cover made of a piece of fabric or non-woven fabric essentially polygonal in shape, adapted to enwrap 3-D articles, characterized by the fact that it features on two end flaps of two opposed sides a hemming of said flaps which forms a slide-seating within which corrugating elements are placed, each of the two free flaps of said cover also featuring two eyelets adapted to receive said corrugating elements.

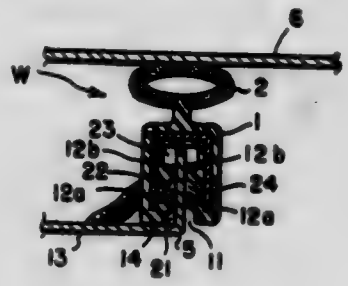
4,495,234

WEATHER STRIP FOR AUTOMOBILES

Masahiro Tominaga, Aichi-ken; Kenichi Nakamura, Ichinomiya-shi, Aichi-ken, and Kunio Mishima, Inazawa-shi, Aichi-ken, all of Japan, assignors to Toyoda Gosei Co., Ltd., Aichi-ken, Japan

Filed Sep. 30, 1982, Ser. No. 428,612
Claims priority, application Japan, Oct. 27, 1981, 56-159762[U]
Int. Cl.³ E06B *7/16*
U.S. Cl. 428—122 2 Claims

1. A weather strip for a vehicle having a body flange to be sealed, comprising a strip body shaped in the form of a channel having an opening extending in the longitudinal direction thereof, the opening receiving said body flange therein, and at least one sealing lip formed on an inner surface of said strip body, said sealing lip extending in the longitudinal direction of and projecting inwardly of said strip body, said weather strip including at least one communicating portion, said communicating portion including means defining at least one interior



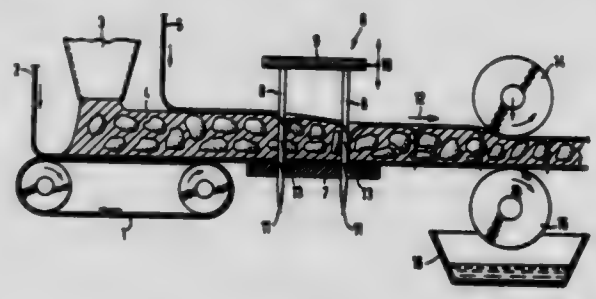
area from which a portion of said sealing lip has been cut away to thereby define an opening in said at least one sealing lip and means below said opening in said sealing lip for providing communication between said opening in said sealing lip and the outside of said strip body to allow water which may have accumulated within said strip body to drain outside of the vehicle.

4,495,235

PROCESS FOR THE PREPARATION OF FIBER-REINFORCED FLAT BODIES CONTAINING A HARDENABLE BINDER

Guenter H. Tesch, 22, Rte. de la Heitera, Fribourg, Switzerland (CH 1700)

Filed Jul. 26, 1982, Ser. No. 402,086
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1981, 3129509; Switzerland, Jan. 29, 1982, 550/82
Int. Cl.³ B32B *3/10*
U.S. Cl. 428—137 33 Claims



1. A process for the preparation of fiber-reinforced composite flat bodies containing three layers wherein a core layer containing a hardenable binder which is not hard is introduced between outer layers comprising a backing layer and a cover layer and wherein at least one outer layer is a fiber layer comprising fibers which are capable of active needle bonding, needle bonding at least said outer layer prior to the hardening of the binder so that (at least two) all three layers are held together by the fibers in the deformable state and when the binder is hardened providing the body with additional elasticity other than the elasticity of the hardened core layer.

4,495,236

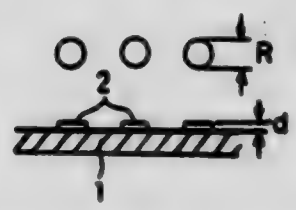
PRESSURE-SENSITIVE ELECTRICALLY CONDUCTIVE COMPOSITE SHEET

Masaaki Obara, Atsugi; Yoshio Tajima, Ito, and Yukiji Suzuki, Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co. Ltd., Tokyo, Japan

Filed Nov. 29, 1983, Ser. No. 555,972
Claims priority, application Japan, Nov. 29, 1982, 57-207649
Int. Cl.³ B32B *3/10*; H01B *1/00*
U.S. Cl. 428—172 1 Claim

1. A pressure-sensitive, electrically conductive composite

sheet which comprises an electrically conductive elastomer sheet obtained by dispersing electrically conductive particles in an elastomer high-molecular weight material; a dot pattern



disposed over at least one surface of said electrically conductive elastomer sheet, said dot pattern being composed of an electrically insulating material and having the following requirements:

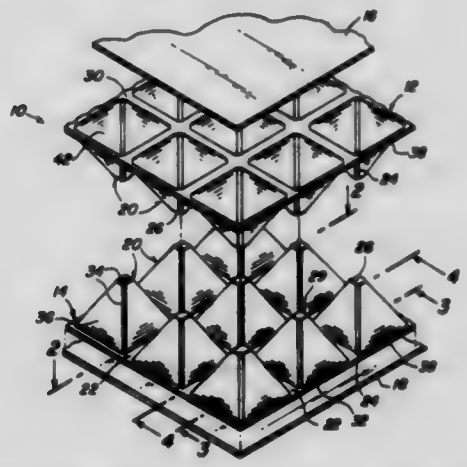
Diameter of dots	R = 0.3 to 1.5 mm
Thickness of dots	d = 0.01 to 0.10 mm
Distance between centers of neighboring dots	l = (0.1 to 3.0) + R

4,495,237

PYRAMIDAL CORE STRUCTURE

Fred R. Patterson, 303 Huntingdon Rd., Union, N.J. 07083

Filed Jun. 10, 1983, Ser. No. 503,238
Int. Cl.³ B32B *3/30*
U.S. Cl. 428—178 9 Claims



1. A pyramidal core structure which comprises:

(a) two substantially identical panels, each said panel having continuous hollow pyramid shapes embossed in both longitudinal and latitudinal directions to define four-sided embossments projecting from the panels with orthogonal narrow channels between them crossing at intersections, each of the pyramid shapes having slightly beveled edges at all four corners and a slightly truncated top so that one of said panels can be inverted and mated in either of two orthogonal directions with the other of said panels in an appropriate manner to form a core structure; and,

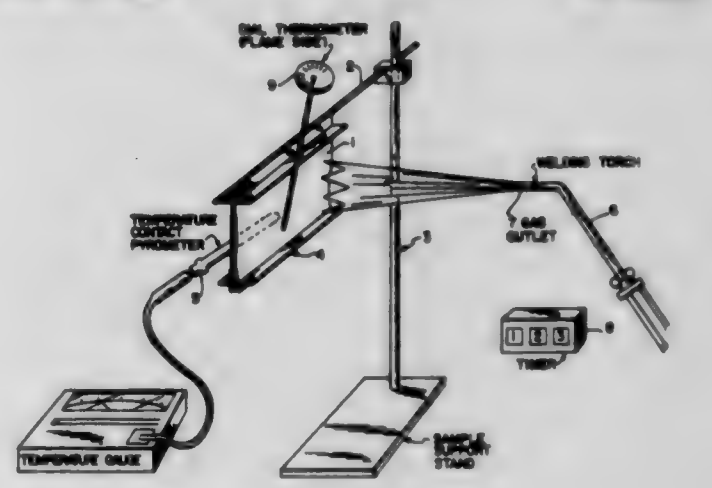
(b) means for integrally bonding said two panels together along mating beveled edges and where a truncated top sits into an intersection of crossing channels, so as to form the core structure into a composite integral structure.

4,495,238

FIRE RESISTANT THERMAL INSULATING STRUCTURE AND GARMENTS PRODUCED THEREFROM

Joseph G. Adiletta, Thompson, Conn., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Oct. 14, 1983, Ser. No. 542,025
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—215 20 Claims



1. A porous, flexible and pliant fire and heat resistant composite structure comprising:

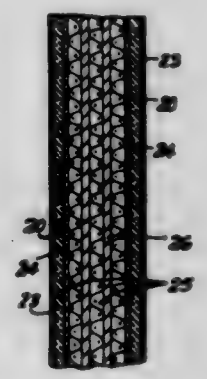
at least one outer layer of a fire resistant fabric and one or more layers of a heat resistant material comprised of a mixture of from 50 to about 94 percent by weight of inorganic microfibers and from about 50 to about 6 percent by weight of a heat resistant binding agent, said composite structure having a Thermal Resistance of at least about 25 seconds.

4,495,239

CAMOUFLAGE MATERIALS HAVING A WIDE-BAND EFFECT AND SYSTEM INCORPORATING SAME

Gunter Pusch, Bannholzweg 12, 6903 Neckargemund 2; Alexander Hoffmann, Heidelberger Str. 24, 6901 Mauer, and Dieter E. Alaslinger, Heidestr. 54, 6222 Geisenheim, all of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 226,787, Jan. 21, 1981, , which is a continuation of Ser. No. 942,703, Aug. 23, 1978, abandoned.
This application Dec. 16, 1982, Ser. No. 459,354
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1977, 2750919
Int. Cl.³ B32B *23/02*
U.S. Cl. 428—192 17 Claims



1. A camouflage material having a wide-band effect ranging from the visual portion of the spectrum up through the radar region of the spectrum, said material comprising at least a base layer, a homogenous metal layer on said base layer reflective in the range of terrestrial thermal radiation as well as in the radar region of the spectrum and having a specific surface resistivity of not more than 0.5 to 10 ohms per square and a camouflage paint applied on said reflective metal layer, said paint contain-

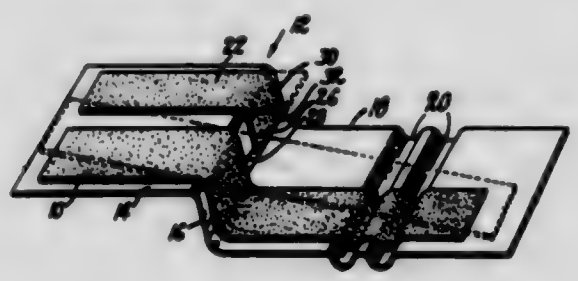
ing pigments having reflective properties in the visible and near IR spectral regions that are similar to the natural background and containing a binder having high transparency characteristics in the spectral regions of the atmospheric windows II (3–5 μm) and III (8–14 μm) and wherein the emissivity of the camouflage paint in windows II and III varies over the surface of the material and varies between 50 and 90% in window II and between 60 and 95% in window III and wherein the metal is selected from the group consisting of aluminum, copper, zinc and its alloys.

4,495,240

HEAT-FUSIBLE-EXPANDABLE MASTIC FOR AUTOMOBILE FLOOR PANS

Bruce C. McCarthy, Newburyport, Mass., assignor to USM Corporation, Farmington, Conn.

Division of Ser. No. 336,091, Dec. 31, 1981, Pat. No. 4,456,705. This application Apr. 16, 1984, Ser. No. 600,781
The portion of the term of this patent subsequent to Jun. 26, 2001, has been disclaimed.
Int. Cl.³ B32B 3/26
U.S. Cl. 428—319.1 13 Claims



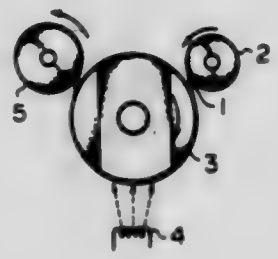
1. A laminate comprising a mastic sheet material softenable into conformnity with a contoured metal surface but resistant to flow and comprising from about 25 to about 65 percent by weight of the mastic material of mineral filler, from about 2 to about 15 percent by weight of an elastomer, from about 2 to about 20 percent by weight of asphalt from about 20 to about 60 percent by weight of a polymeric modifier and an effective amount of a heat activatable foaming agent and a substrate bonded to at least on surface of the mastic sheet material.

4,495,241

MAGNETIC TAPE

Kenzaburo Iijima, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Jan. 4, 1983, Ser. No. 455,525
Claims priority, application Japan, Jan. 6, 1982, 57-1256
Int. Cl.³ H01F 10/02
U.S. Cl. 428—328 14 Claims



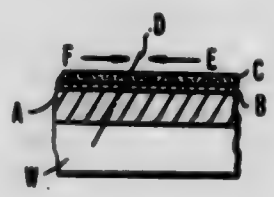
1. Magnetic tape comprising
a base layer formed by solution treatment of an age-hardening type magnet alloy material and
a ferromagnetic surface layer which is formed on one surface side of said base layer by age-hardening of said magnet alloy material and has a thickness in a range from 0.1 to 2 micronmeters.

4,495,242

MAGNETIC RECORDING MEDIUM

Yoshihiro Arai, and Akira Nahara, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 1, 1982, Ser. No. 364,271
Claims priority, application Japan, Apr. 2, 1981, 56-49883; Apr. 2, 1981, 56-49885; Apr. 2, 1981, 56-49886
Int. Cl.³ B05D 5/12
U.S. Cl. 428—336 4 Claims



1. A magnetic recording medium, comprising:
a non-magnetic support;
a thin film of a magnetic metal evaporated on the non-magnetic support, wherein the surface part of the film is converted to the metal oxide layer, wherein the total thickness of the thin film of magnetic metal ranges from about 200 Å to 20,000 Å, and the thickness of the metal oxide layer is less than 300 Å; and
a protecting film composed of a high molecular weight compound, a higher fatty acid, a fatty acid ester or a combination thereof, laminated on said metal oxide layer, wherein the thickness of the protecting film is less than 500 Å.

4,495,243

RELEASE AGENT AND PRODUCT

Takaji Kishi, Itami, Japan, assignor to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 21, 1980, Ser. No. 180,010
Claims priority, application Japan, Aug. 24, 1979, 54-108483
Int. Cl.³ C09J 7/02
U.S. Cl. 428—352 8 Claims

1. A release agent comprising:
(A) a polymer of at least one vinyl monomer of the formula

$$CH_2=CR_1COO(CH_2CHR_2O)_nCONHR \quad (I)$$

wherein R_1 and R_2, independently from each other, represent hydrogen or a methyl group, R represents an alkyl group having at least 12 carbon atoms or a fluoroalkyl group having at least 6 carbon atoms, and n is an integer of from 1 to 6, said vinyl monomer of formula (I) being an adduct of a compound of the following formula

$$CH_2=CR_1COO(CH_2CHR_2O)_nH \quad (II)$$

wherein R_1, R_2 and n are as defined above, with a compound of the following formula

$$RNCO \quad (III)$$

wherein R is as defined above,
(B) a copolymer of at least one vinyl monomer of general formula (I) above and at least one other monomer selected from the group consisting of stearyl acrylate, stearyl methacrylate, stearyl acrylamide, stearyl methacrylamide, vinyl stearate, stearyl vinyl ether, methyl acrylate, methyl methacrylate, ethyl acrylate, ethyl methacrylate, vinyl acetate, styrene, 2-hydroxyethyl methacrylate, 2-hydroxyethyl acrylate, 2-hydroxypropyl acrylate, diethylene glycol monomethacrylate, tetraethylene glycol monomethacrylate, polypropylene glycol monomethacrylate, acrylic acid, methacrylic acid, monoesters of maleic acid, monoesters of itaconic acid, crotonic acid, maleic anhydride, glycidyl methacrylate acrylonitrile, methyl vinyl ketone, and N-vinyl pyrrolidone, or
(C) a mixture of said polymer (A) and said copolymer (B).

2. A product prepared by coating the release agent of claim 1 on the surface of a release paper.

4,495,244

CONTINUOUS FILAMENT SLUB YARN

Bobby M. Phillips, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 21, 1983, Ser. No. 553,932
Int. Cl.³ D02G *3/00, 3/02, 3/36*
U.S. Cl. 428—399 3 Claims

1. Continuous filament yarn of textile utility wherein said yarn has slubs formed at randomly spaced intervals along the length of the yarn, and wherein each filament has a main body section extending along the length of the filament and at least one wing member extending from said main body section along the length of the filament, said wing member rising and falling in wave-like manner along said main body section only within the area of said randomly spaced intervals.

4,495,245

INORGANIC FILLERS MODIFIED WITH VINYL ALCOHOL POLYMER AND CATIONIC MELAMINE-FORMALDEHYDE RESIN

David W. Zanker, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 14, 1983, Ser. No. 513,879
Int. Cl.³ B32B *27/20, 5/16*; C08K *9/00, 9/04*
U.S. Cl. 428—403 10 Claims

1. A modified filler prepared by contacting inert, particulate, mineral filler with aqueous solution of vinyl alcohol polymer and aqueous colloidal dispersion of cationic melamine-formaldehyde resin sequentially, in either order, or concurrently in one step by use of preformed aqueous vinyl alcohol polymer/cationic melamine-formaldehyde interaction product, the weight ratio of vinyl alcohol polymer to cationic melamine-formaldehyde resin being from about 0.3:1 to about 8:1, at a temperature of up to about 100° C. for a period of from about 1 minute to about 1 hour, to obtain a filler having adsorbed thereon from about 0.01 to about 3%, based on dry filler weight, of each of vinyl alcohol polymer and cationic melamine-formaldehyde resin.

4,495,246

ACICULAR FERROMAGNETIC CHROMIUM DIOXIDE PARTICLES

Werner Steck, Ludwigshafen; Jenoe Kovacs, Hemsheim; Norbert Mueller, Friedelsheim, and Helmut Jakusch, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 27, 1983, Ser. No. 545,938
Int. Cl.³ H01F *10/02*
U.S. Cl. 428—403 4 Claims

1. Acicular ferromagnetic chromium dioxide particles having a pH greater than 4, said particles having been prepared by suspending acicular ferromagnetic chromium dioxide particles in water, adding an aqueous solution of an alkali metal sulfite or bisulfite and an aqueous solution of an iron (II) salt to the particle suspension, at a temperature of from 10° to 70° C., maintaining the pH of the suspension at from 4 to 11 by adding additional base to the suspension and thereafter separating the solid particles from the suspension, washing the particles with water and drying the particles at a temperature below 130° C.

4,495,247

PRIMER COATING COMPOSITION OF A FLUOROCARBON POLYMER AND AN AMINO ALKYL ALKOXY SILANE

Joseph A. Vasta, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 30, 1983, Ser. No. 509,704
Int. Cl.³ B32B *27/00, 9/00*; C08L *27/12*; C08K *3/10*
U.S. Cl. 428—422 14 Claims

1. A composition consisting essentially of about 10–50% by weight binder and 50–90% by weight organic solvent, wherein the binder consists essentially of

a fluorocarbon polymer comprising vinylidene fluoride and hexafluorpropylene having a weight average molecular weight of about 50,000–300,000;

a metallic oxide which is an acid acceptor and

an amino alkyl alkoxy silane selected from the group consisting of gamma amino propyl trimethoxy silane and gamma amino propyl triethoxy silane.

4,495,248

COATING COMPOSITION OF A FLUOROCARBON POLYMER AND A POLYAMINE CURING AGENT

Joseph A. Vasta, Wilmington, Del., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

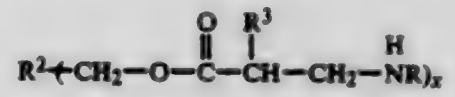
Continuation-in-part of Ser. No. 509,703, Jun. 30, 1983, abandoned. This application Feb. 27, 1984, Ser. No. 583,977
Int. Cl.³ C08K *3/10*; C08F *8/32, 8/42*; B32B *27/00*
U.S. Cl. 428—422 24 Claims

1. A coating composition comprising about 10–70% by weight binder and 30–90% by weight of an organic solvent; wherein the binder comprises:

a fluorocarbon polymer comprising vinylidene fluoride and hexafluoropropylene having a weight average molecular weight of about 50,000–600,000,

a metallic oxide which is an acid acceptor; and

a curing agent of the formula



where R is R^1NH_2 and R^1 is aliphatic or cycloaliphatic hydrocarbon radical, R^2 is C or a hydrocarbon group, R^3 is H or CH_3, X is 3 when R^2 is a hydrocarbon group and X is 4 when R^2 is C.

4,495,249

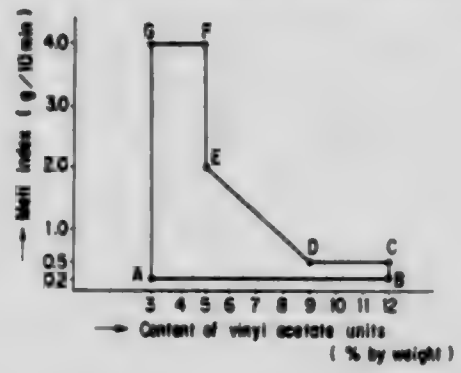
HEAT SHRINKABLE MULTI-LAYERED LAMINATE FILM

Masaki Ohya; Yoshiharu Nishimoto, and Kengo Yamazaki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi, Japan

Filed Feb. 4, 1983, Ser. No. 464,018
Claims priority, application Japan, Feb. 19, 1982, 57-25691
Int. Cl.³ B32B *27/30, 27/32*
U.S. Cl. 428—516 6 Claims

1. A heat-shrinkable laminate film excellent in gas-barrier property, oil-resistance and peel-resistance, comprising a core layer made of a saponified copolymer of ethylene and vinyl acetate, two outer layers made of a resin selected from mixtures of 80 to 30% by weight of a copolymer of ethylene and vinyl acetate having a crystal melting point in a range of 85° to 103° C. and 20 to 70% by weight of a linear low-density polyethylene having a crystal melting point in a range of 110° to 125° C. or a copolymer of propylene and ethylene having a crystal melting point of 126° to 155° C., and two adhesive

layers disposed between the core layer and the outer layers, the ratio of the weight of the copolymer of ethylene and vinyl



acetate to the total weight of the polymers of the two outer layers being larger than 0.4.

4,495,250

ANION EXCHANGE RESIN OF SURFACE FUNCTIONAL TYPE AND THE PROCESS FOR PRODUCING THE SAME

Takaharu Itagaki, Yokohama; Hidenaga Ouchi, Konae, and Akihiro Shimura, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

Filed Aug. 16, 1983, Ser. No. 523,593
Claims priority, application Japan, Aug. 27, 1982, 57-148697
Int. Cl.³ B32B *27/08, 5/16*
U.S. Cl. 428—520 22 Claims

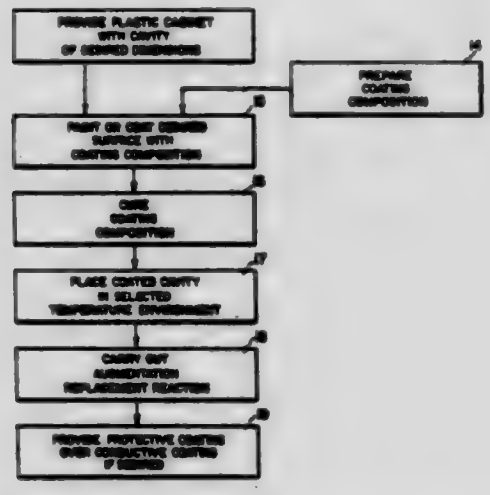
1. An anion exchange resin of the surface functional type having a structure in which the surface of a lipophilic cross-linked polymer matrix is coated with a water insoluble hydrophilic polymer layer having amino groups or quaternary ammonium groups, said hydrophilic polymer layer not being chemically bonded to said lipophilic cross-linked polymer matrix and being insoluble in water by virtue of the cross-linking within itself which occurs when said amino and quaternary ammonium groups are introduced into the hydrophilic polymer.

4,495,251

SHIELDED PLASTIC MICROWAVE OVEN CAVITY

Charles W. Eichelberger, Schenectady; Robert J. Wojnarowski, Clifton Park, both of N.Y., and Peter I. Cohen, Louisville, Ky., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 220,332, Mar. 11, 1981, Pat. No. 4,385,082.
This application Feb. 14, 1983, Ser. No. 466,175
Int. Cl.³ B22F *7/04;* B05D *5/12*
U.S. Cl. 428—548 10 Claims



1. A plastic microwave oven cabinet having a low resistivity coating on at least a portion of at least one of the inside and outside surfaces thereof, said coating comprising a cured polymer containing therein a first finely divided metallic composition with particles of size greater than about 3 microns and less than about 50 microns and a second metal; the contents of the metal of said first metallic composition and second metal in said cured polymer being about 60–80%, by volume; and a contiguous layer of said second metal on said cured polymer, wherein said second metal is below the metal of said first metallic composition in the activity series.

4,495,252

WEAR-RESISTANT METALLIC ARTICLE

James W. O'Brien, Cleveland Heights, and Frank Spevak, Maple Heights, both of Ohio, assignors to Imperial Clevite Inc., Glenview, Ill.

Filed Jan. 16, 1980, Ser. No. 112,525
Int. Cl.³ B22F *7/08, 7/04;* F16C *33/00*
U.S. Cl. 428—555 10 Claims

1. A method of producing a metallic substrate having bonded thereto a wear-resistant surface containing nickel aluminide in a copper base matrix with lead which process comprises the steps of:

(a) providing a metallic substrate;

(b) affixing a barrier layer of a metal selected from the group consisting of nickel, alloys of nickel, copper and alloys of copper to a surface of the metallic substrate;

(c) applying a layer of wear-resistant material over the surface of said barrier layer, with said wear-resistant material including a mixture of nickel aluminide and a copper base alloy;

(d) sintering said so-applied wear-resistant material at a temperature sufficient to cause it to become bonded to said substrate;

(e) compacting the sintered layer an amount sufficient to cause it to have a density near theoretical; and

(f) re-sintering said article at a temperature sufficient to cause the wear-resistant material to become bonded together and to the substrate.

6. A wear-resistant metallic article which comprises:

(a) a metallic substrate;

(b) a barrier layer of a metal selected from the group consisting of nickel, alloys of nickel, copper and alloys of copper bonded to a surface of the metallic substrate; and

(c) a layer of wear-resistant material bonded to the surface of said barrier layer, with said wear-resistant material including a mixture of nickel aluminide and copper base alloy with lead.

4,495,253

SOLDERABLE PLATED PLASTIC COMPONENTS AND PROCESS FOR PLATING

Hal P. Abel, Whittier, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed May 31, 1983, Ser. No. 499,748
Int. Cl.³ B29D *3/02;* B32B *15/08*
U.S. Cl. 428—624 16 Claims

1. A metal plated plastic article formed by a process comprising the steps of:

a. selecting a plastic having a deflection temperature and a melting temperature of at least 204° C. and having a predetermined amount of glass fill;

b. forming the plastic into the article shape;

c. roughening the surface of the article by means of physical abrasion;

d. exposing the roughened surface of the formed article to a chemical etch solution comprising ammonium bifluoride, nitric acid, and sulfuric acid;

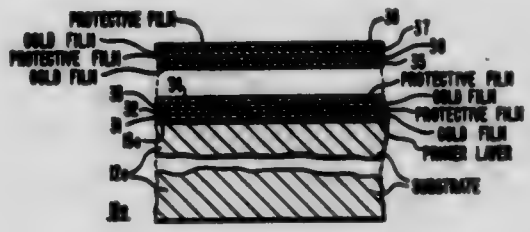
e. chemically depositing a first layer of conductive metal on the chemically etched surface of the artcle; and

f. electrolytically depositing a second layer of metal on the first layer of conductive metal.

4,495,254
PROTECTIVELY-COATED GOLD-PLATED ARTICLE OF JEWELRY OR WRISTWATCH COMPONENT

Richard A. Hoffman, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 264,322, May 18, 1981, , which is a continuation-in-part of Ser. No. 185,655, Sep. 9, 1980, abandoned. This application May 21, 1984, Ser. No. 612,494
Int. Cl.³ C23C *15/00*
U.S. Cl. 428—632 11 Claims



1. As a new article of manufacture, a piece of jewelry or a wristwatch component that is composed of a base metal and is coated with a layer of gold or a gold alloy that has a thickness substantially less than 100,000 Angstroms and is protected from scratches and abrasion damage, when the jewelry piece or wristwatch component is in use, by a thin adherent substantially transparent film consisting essentially of an inert nonmetallic material that has;

a Knoop hardness in the range of from about 400 to about 2500 and is thus of sufficient hardness to be resistant to both scratches and abrasion,

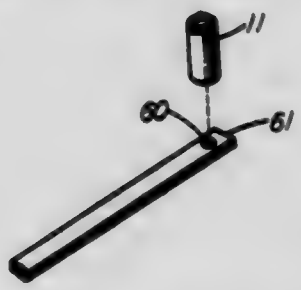
a refractive index in the range of from about 1.4 to about 2.8,

said protective film having a thickness that is in the range of from about 14,000 to about 40,000 Angstroms and is also so correlated relative to the refractive index of the nonmetallic inert material comprising said film that the film, in addition to being substantially transparent, is (a) substantially devoid of discoloration due to optical interference effects that otherwise would be produced by incident light rays and thus alter the natural pleasing appearance of the underlying gold coated surface of the jewelry piece or wristwatch component and (b) is of sufficient thickness to protect the gold-coated surface of the jewelry piece or wristwatch component from abrasion damage and scratches when said jewelry piece or wristwatch component is in use and subjected to frequent human contact.

4,495,255
LASER SURFACE ALLOYING

Clifton W. Draper, Hopewell, and John M. Poate, Summit, both of N.J., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Oct. 30, 1980, Ser. No. 202,290
Int. Cl.³ C23C *5/00*; B05D *3/06*; B23K *9/00*; B32B *15/00*
U.S. Cl. 428—669 2 Claims



1. A method of surface alloying, comprising the steps of:

depositing a 270 A. to 3500 A. thick coating of gold on a nickel substrate;

depositing a very thin layer of palladium having a thickness of about 300 A. on the gold coated subetrate; and

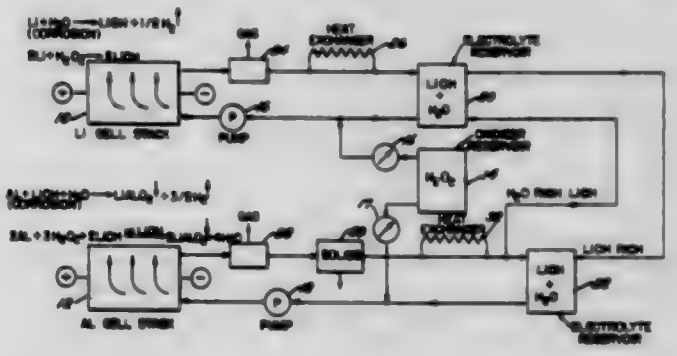
raster scanning a plurality of laser pulses of such a length and power density at the coated subetrate so as to melt portions of the gold, palladium and the nickel to form an alloy on the surface thereof to a depth of approximately 5,000 A., the alloy having a higher concentration of the gold coating material than the nickel material at the surface of the alloy.

2. An electrical connector having an electrical contact area which is a surface alloy formed by the method of claim 1.

4,495,256
DUAL ELECTROCHEMICAL SYSTEM

James R. Moden, Bristol, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 26, 1984, Ser. No. 573,904
Int. Cl.³ H01M *8/04*
U.S. Cl. 429—17 4 Claims



1. A method of increasing the energy density of two electrochemical systems by using the by-product of each system as one of the necessary ingredients of the reactants of the other system comprising the steps of:

providing a first reservoir having hydrogen peroxide therein;

providing at least one other reservoir having a lithium hydroxide electrolyte therein;

controllably adding hydrogen peroxide from said first reservoir and lithium hydroxide electrolyte from said other reservoir to a lithium cell stack for providing a electrochemical reactor that includes the formation of lithium hydroxide;

returning said formed lithium hydroxide to said other reservoir;

controllably adding hydrogen peroxide from said first reservoir and lithium electrolyte from said other reservoir to an aluminum cell stack for providing a electrochemical reaction that includes the formation of lithium aluminate and water; and

returning said formed water to said other reservoir.

4,495,257
HORIZONTAL BATTERY HOLDER FOR CYLINDER CELLS

Charles Engelstein, South Orange, N.J.; David L. Kassel, New York, and Harry Goodman, Rockville Centre, both of N.Y., assignors to Memory Protection Devices, Inc., Farmingdale, N.Y.

Filed Aug. 29, 1983, Ser. No. 527,220
Int. Cl.³ H01M *2/100*
U.S. Cl. 429—100 5 Claims

1. A battery holder comprising:

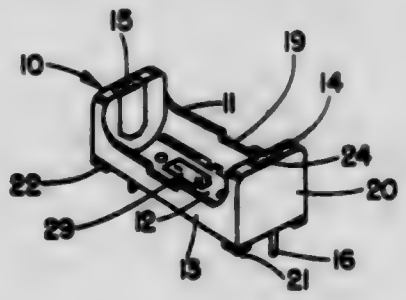
(a) a casing having a bottom end and a peripheral barrier means, the casing being disposed to receive a battery cell abutting the bottom and the peripheral barrier means, the casing being shaped such that its inner surface matches the contour of said cell;

(b) an electrically conductive terminal having one leg located in a recess in said peripheral barrier and another leg being resilient and contacting one pole of said battery when said battery is in place within said holder;

(c) another electrically conductive terminal with one leg located in another recess in said peripheral barrier and

another leg being resilient and contacting the other pole of said battery when said battery is in place within said holder;

(d) said electrically conductive terminals each having a



portion projecting from the top of said recess in said peripheral barrier and having one or more apertures to facilitate hard wire soldering, and

(e) a plurality of raised mounting tabs projecting from the bottom of said casing.

4,495,258

ELECTRODE OF ALKALI METAL COMPOUND FOR A SECONDARY ELECTROCHEMICAL CELL, AND A CELL INCLUDING SUCH AN ELECTRODE

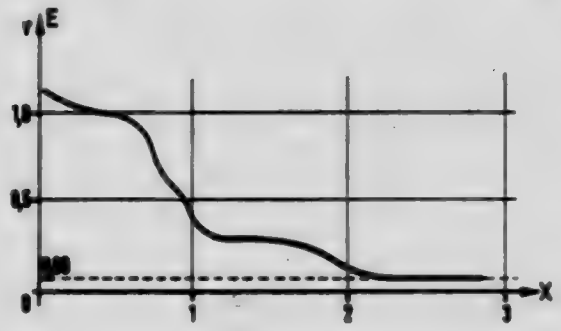
Alain Le Méhauté , Gif-sur-Yvette, and Claude Belin, Montpellier, both of France, assignors to Societe Anonyme dite: Compagnie Generale d'Electricite, Paris, France

Filed Feb. 24, 1984, Ser. No. 583,186

Claims priority, application France, Feb. 28, 1983, 83 03245

Int. Cl.[3] H01M *4/36*

U.S. Cl. 429—103 14 Claims



1. An electrode for a secondary electrochemical cell operating in a non-aqueous medium, wherein the active material is constituted by an alkali metal in the zero valent state which alkali metal is inserted into an insertion compound, the improvement wherein said insertion compound receiving said alkali metal has an ordered three-dimensional lattice structure and is constituted by at least one intermetallic compound having polyatomic anionic clusters with atoms chosen from the group constituted by gallium, boron and aluminum, and with structuring counter ions chosen from the group constituted by alkaline earth and alkali ions.

9. A secondary electrochemical cell operating in a non-aqueous medium and including a positive electrode, an electrolyte, and a negative electrode as defined in claim 1.

4,495,259

VIBRATION RESISTANT BATTERY

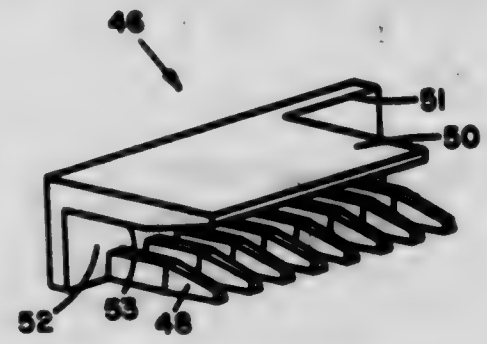
Toshio Uba, Denver, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Feb. 11, 1983, Ser. No. 465,735

Int. Cl.[3] H01M *2/26, 2/14*

U.S. Cl. 429—161 16 Claims

1. In a battery composed of at least one electrochemical cell comprising a cell housing in which is disposed at least one positive electrode plate, at least one negative electrode plate, a plurality of projecting positive plate tabs and a connecting strap uniting the same, a plurality of projecting negative plate tabs and a connecting strap uniting the same, separator interposed between the positive and negative plates, and an electrolyte, the improvement comprising an electrode plate group vibration support means at least partially enveloping a connector strap and comprising a comb-like portion underlying the



strap in close proximity thereto and having teeth interposed between the projecting tabs associated with such strap, and a hood portion overlying the strap in close proximity thereto, and said cell being provided with means for limiting relative movement between the vibration support means and the cell housing.

4,495,260

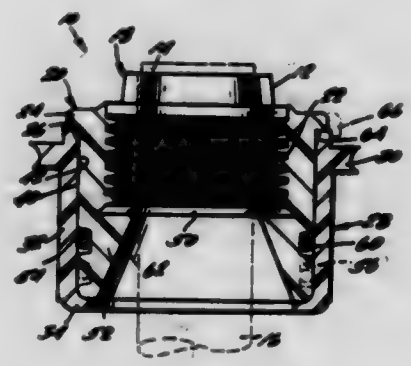
SLIDING SEAL LEAD BUSHING

James S. Hardigg, Conway, and E. Wayne Turner, Deerfield, both of Mass., assignors to Hardigg Industries, Inc., South Deerfield, Mass.

Filed Apr. 7, 1983, Ser. No. 482,881

Int. Cl.[3] H01M *2/22, 2/30*

U.S. Cl. 429—180 13 Claims



1. A molded integral bushing for use in sealing a battery terminal post to the cover of a battery comprising an annular member comprised of lead having a hollow interior shaped in a complementary manner to the exterior of said terminal post so that it can fit thereover and be melted thereto, said annular member having means defining at least one annular groove about the exterior thereof, a mantle formed of a synthetic material molded about the exterior of said annular member and extending a predetermined distance therebelow with that portion of the mantle positioned directly adjacent said annular member having a smooth exterior wall and sealing means positioned on the exterior of said mantle in the portion extending below said annular member for sealing the mantle to the battery cover.

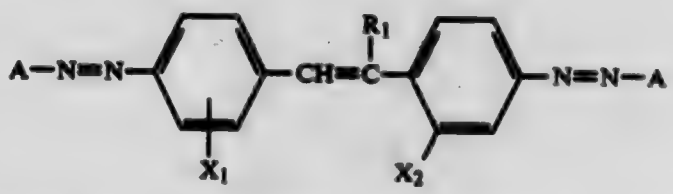
4,495,261

ELECTROPHOTOGRAPHIC SUBSTITUTED P,P'-BISAZO DIPHENYL ACRYLONITRILE COMPOUNDS FOR PHOTORECEPTORS

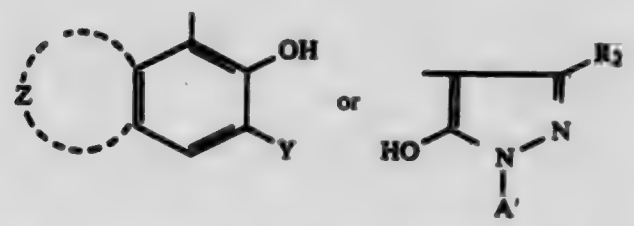
Jiro Takahashi; Tawara Komamura; Kiyoshi Sawada, all of Hachioji; Seamu Saeki, Hino; Satoshi Goto, Hachioji, and Akira Kinoshita, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1982, Ser. No. 453,281
Claims priority, application Japan, Dec. 28, 1981, 56-213834
Int. Cl.³ G03G 5/06
U.S. Cl. 430—58 11 Claims

1. An electrophotographic photoreceptor comprising an electrically conductive support having formed thereon a light-sensitive layer containing a bisazo compound of formula (I):



(wherein R_1 is a cyano group, a chlorine atom or a bromine atom; X_1 is a halogen atom, an alkyl group, an alkoxy group or a cyano group; X_2 is a hydrogen atom, a halogen atom, an alkyl atom or an alkoxy group; A is



wherein Y is a carbamoyl group or a sulfamoyl group; Z is an atomic group necessary for forming an aromatic hydrocarbon ring or a heteroaromatic ring; R_2 is a hydrogen atom, an amino group, a carbamoyl group, a carboxy group or an ester group thereof; and A' is an aryl group).

4,495,262

PHOTOSENSITIVE MEMBER FOR ELECTROPHOTOGRAPHY COMPRISES INORGANIC LAYERS

Masatoshi Matsuzaki, Hino; Toshinori Yamazaki, Hachioji; Isao Myokan, Hachioji; Tetsuo Shima, Hachioji, and Hiroyuki Nomori, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

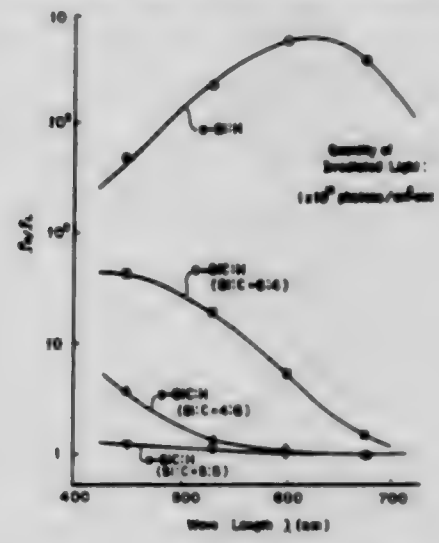
Filed Apr. 28, 1983, Ser. No. 489,317
Claims priority, application Japan, May 6, 1982, 57-75655
Int. Cl.³ G03G 5/082; B32B 7/12
U.S. Cl. 430—58 29 Claims

1. A photosensitive member which comprises a substrate, a second silicon carbide layer on said substrate, a silicon germanium photoconductive layer on said second silicon carbide layer, and a first silicon carbide layer on said silicon germanium layer;

said first silicon carbide layer comprising amorphous hydrogenated silicon carbide or amorphous fluorinated silicon carbide or amorphous hydrogenated and fluorinated silicon carbide;

said second silicon carbide layer comprising amorphous hydrogenated silicon carbide or amorphous fluorinated silicon carbide or amorphous hydrogenated and fluorinated silicon carbide; and

said silicon germanium photoconductive layer comprising at least one silicon germanium selected from the group consisting of amorphous hydrogenated silicon germanium, amorphous fluorinated silicon germanium, amorphous hydrogenated and fluorinated silicon germanium, amorphous hydrogenated silicon germanium carbide, amorphous fluorinated silicon germanium carbide and amorphous hydrogenated and fluorinated silicon germanium carbide.



4,495,263

ELECTROPHOTOGRAPHIC ELEMENTS CONTAINING POLYAMIDE INTERLAYERS

Paul D. VanderValk, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 30, 1983, Ser. No. 509,535
Int. Cl.³ G03G 5/14
U.S. Cl. 430—60 13 Claims

1. An electrophotographic element comprising a photoconductor layer overlying, in sequence, an electrically conducting layer, an interlayer comprising a polyamide having repeating units derived from caprolactam, and a support.

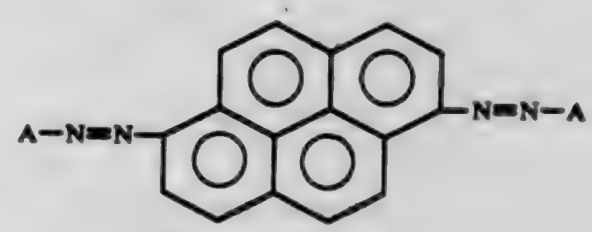
4,495,264

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER COMPRISING DISAZO COMPOUND

Hideyuki Takahashi, and Shozo Ishikawa, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

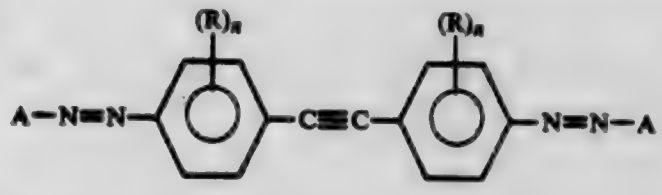
Filed Mar. 14, 1984, Ser. No. 589,343
Claims priority, application Japan, Mar. 15, 1983, 58-41475; Mar. 15, 1983, 58-41476; Mar. 15, 1983, 58-41477
Int. Cl.³ G03G 5/06, 5/14
U.S. Cl. 430—58 41 Claims

1. An electrophotographic photosensitive member having a photosensitive layer on or over an electrically conductive substrate, the photosensitive layer comprising an organic photoconductive material selected from the group consisting of the following general formulas (1), (2) and (3):



(1)

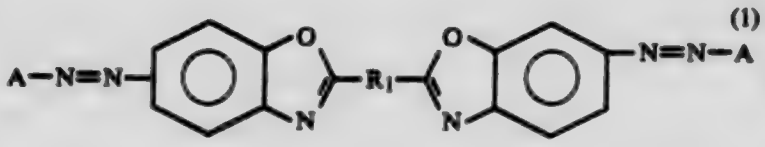
wherein A is a coupler component having aromaticity,



(2)

wherein A is a coupler component having aromaticity, R is

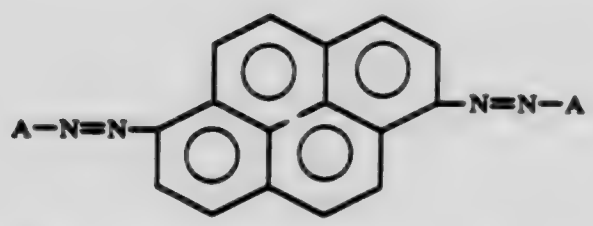
hydrogen, halogen, alkyl, or alkoxy, and n is an integer of 1 to 4,



(1)

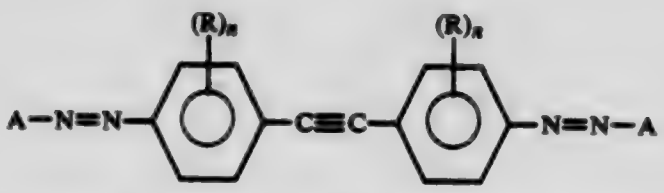
wherein A is a coupler component having aromaticity and R_1 is a single bond or a substituted or unsubstituted divalent hydrocarbon or heterocyclic residue.

17. An organic photoconductive material selected from the group consisting of the following general formulas (1), (2) and (3):



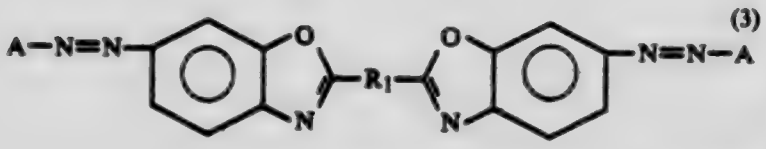
(1)

wherein A is a coupler having aromaticity,



(2)

wherein A is a coupler having aromaticity, R is hydrozen, halogen, alkyl, or alkoxy, and n is an integer of 1 to 4,



(3)

wherein A is a coupler having aromaticity and R_1 is a single bond or a substituted or unsubstituted divalent hydrocarbon or heterocyclic residue.

4,495,265

ELECTROPHOTOGRAPHIC COPPER DOPED CADMIUM SULFIDE MATERIAL AND METHOD OF MAKING

Sixdeniel Faria, Towanda, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 128,330, Mar. 7, 1980, abandoned, and Ser. No. 147,902, May 8, 1980, abandoned. This application Feb. 12, 1981, Ser. No. 233,806
The portion of the term of this patent subsequent to Dec. 22, 2000, has been disclaimed.
Int. Cl.³ G03G 5/08, 5/087
U.S. Cl. 430—95 9 Claims

1. A method for producing an electrophotographic copper-activated cadmium sulfide material, the method comprising:
(a) mixing copper-containing and cadmium chloride starting materials with cadmium sulfide in amounts corresponding to 200 to 300 parts per million of copper and 0.02 to 0.06 weight percent of a halide of a cation selected from the group consisting of cadmium and the alkali metals, and
(b) heating the mixture at a temperature within the range of about 375° C. to 500° C. for from about 1 to 5 hours.

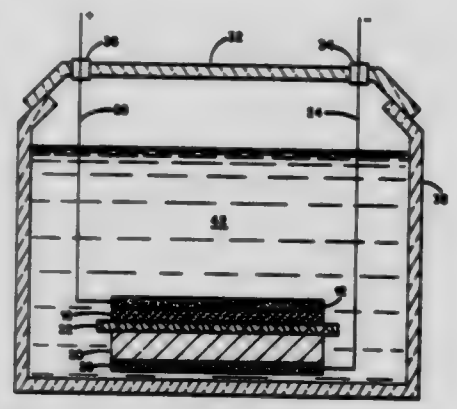
4. Electrophotographic copper-activated cadmium sulfide material containing copper within the range of about 200 to 300 parts per million, halide in the range of about 0.02 to 0.06 weight percent, and having very good contrast voltage prepared by the method of claim 1.

4,495,266

HIGH RATE ELECTROCHEMICAL CELL

Keith A. Klinedinst, Marlborough, and Carl R. Schlaikjer, Winchester, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 7, 1982, Ser. No. 376,057
Int. Cl.³ H01M 6/14
U.S. Cl. 429—105 12 Claims



1. An eletrochemical cell comprising
an oxidizable active anode material;
a cathode current collector as originally fabricated comprising a mixture consisting essentially of carbon, copper sulfide, and a binder adherent to an inert electrically-conductive substrate; and
an electrolytic solution, in contact with the anode material and cathode current collector, comprising a reducible liquid cathode material and an electrolyte solute dissolved therein.

4,495,267

MAGNETIC TONER HAVING IMPROVED HUMIDITY DEPENDENCY

Nobuyasu Honda, Tenri; Toshiro Yamakawa, Osaka, and Toshimitsu Ikeda, Himeji, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Mar. 22, 1983, Ser. No. 477,660
Claims priority, application Japan, Mar. 26, 1982, 57-47462
Int. Cl.³ G03G 9/08, 9/14
U.S. Cl. 430—106.6 7 Claims

1. A magnetic toner having an improved humidity dependency, which comprises as main ingredients a magnetic material composed of magnetite and a binder medium, wherein the water-soluble component content in the magnetite is lower than 0.1% by weight and the water content of the magnetite at a temperature of 20° C. and a relative humidity of 60% is lower than 0.3% by weight.

4,495,268

ELECTROPHOTOGRAPHIC PROCESS USING TRANSFER-TYPE ONE-COMPONENT MAGNETIC DEVELOPER

Nobuhiro Miyakawa, Saita, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 217,579, Dec. 18, 1980,. This application Jun. 30, 1982, Ser. No. 393,802
Claims priority, application Japan, Dec. 25, 1979, 54-167594
Int. Cl.³ G03G 9/14
U.S. Cl. 430—122 7 Claims

1. In an electrostatic photographic copying process comprising causing a p-type photosensitive plate carrying a positively charged latent image thereon to come in contact with a magnetic brush of a one-component dry magnetic developer to effect development of the electrostatic latent image and elec-

trostatically transferring the formed image of the developer onto a transfer sheet, the improvement wherein the magnetic developer consists essentially of particles having a particle size of from 5 to 35 microns and being obtained by kneading triiron tetroxide homogeneously and intimately with a binder medium, cooling the kneaded composition, pulverizing the cooled composition and classifying the pulverized composition, said binder medium comprising a polymer comprising at least one of vinyl aromatic monomer or acrylic monomer units and having a volume resistivity higher than 1×10^{15} ohm-cm and



particles of triiron tetroxide dispersed in the binder medium, said triiron tetroxide being one of an isometric system having a particle size of 0.25 to 1 micron and a coercive force of 30 to 80 Oe, said binder medium being present in an amount of 60 to 125 percent by weight based on the triiron tetroxide, said developer having a volume resistivity of at least 1.5×10^{14} ohm-cm, a dielectric constant of from 3.5 to 4.9 as measured under conditions of an electrode spacing of 0.65 mm, an electrode sectional area of 1.43 cm^2 and an inter-electrode load of 105 g/cm^2 and an electrostatic capacitance of from 7 to 9.5 pF as measured under said conditions.

4,495,269

WATERBORNE TWO COMPONENT DIAZO TYPE COATING COMPOSITION WITH HYDROLYZED POLYVINYL ACETATE AND HEXAMETHOXY METHYLMELAMINE RESIN

Edward C. Bialczak, Guilford, and John J. Chernovitz, East Haven, both of Conn., assignors to AM International, Inc., Chicago, Ill.

Continuation of Ser. No. 421,514, Sep. 22, 1982, abandoned. This application Aug. 20, 1984, Ser. No. 642,706

Int. Cl.³ G03C *1/60, 5/34*

U.S. Cl. 430—150 7 Claims

1. An aqueous diazo light-sensitive composition which comprises water, a 30 to 50% hydrolyzed polyvinyl acetate resin, hexamethoxy methylmelamine resin, a diazo light-sensitive compound and at least one coupling agent for said diazo compound together with at least one acid stabilizer to enhance the shelf life of said composition said composition substantially excluding the presence of organic solvents.

3. A method of forming a diazo image which comprises applying an aqueous diazo light-sensitive film coating to the surface of a support substrate which substantially excludes the presence of organic solvents, said coating comprising a diazo light-sensitive compound, a 30 to 50% hydrolyzed polyvinyl acetate resin, hexamethoxy methylmelamine resin, a coupling agent and stabilizer for said diazo composition, drying said film, exposing said diazo composition selectively to ultraviolet radiation and developing said exposed diazo film to an alkaline vapor to produce a diazo image.

4,495,270

COLOR DIFFUSION TRANSFER PHOTOGRAPHIC ELEMENT

Motohiko Tsubota, and Masakazu Moriguchi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 247,456, Mar. 25, 1981, abandoned. This application Nov. 29, 1982, Ser. No. 444,912

Claims priority, application Japan, Mar. 25, 1980, 55-37846

Int. Cl.³ G03C *7/00*

U.S. Cl. 430—218 5 Claims

1. A color diffusion transfer photographic element comprising

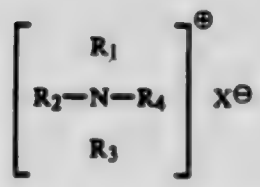
(a) a photosensitive element containing at least one photosensitive silver halide emulsion layer combined with a dye releasing redox compound,

(b) a dye image receiving element, and

(c) an alkaline processing composition element where the alkaline processing composition element contains

(1) a developing agent having a one-electron oxidation-reduction potential of −80 mV to −200 mV with respect to a saturated calomel electrode at a pH of 11.0, wherein said developing agent (1) is a 1-phenyl-3-pyrazolidone or an aminophenol, and

(2) at least one of the compounds represented by the following general formula (I) in an amount of about 10^{-6} to 1.0 g per kg of the alkaline processing composition:



(I)

where R_1, R_2, R_3 and R_4, which may be the same or different, each represents an alkyl group, a substituted alkyl group, an alkenyl group, an aryl group or a substituted aryl group, and $X^{\ominus}$ represents an anion, wherein said element is substantially free of dye salt formation between compounds of general formula (I) and the dye releasing redox compound.

4,495,271

RADIATION POLYMERIZABLE MIXTURE AND COPYING MATERIAL PRODUCED THEREFROM

Ulrich Geissler, Frankfurt am Main; Walter Herwig, Bad Soden, and Elisabeth Fetsch, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 19, 1982, Ser. No. 379,865

Claims priority, application Fed. Rep. of Germany, May 20, 1981, 3120052

Int. Cl.³ G03C *1/94, 1/70*

U.S. Cl. 430—277 20 Claims

1. A radiation-polymerizable mixture consisting essentially of

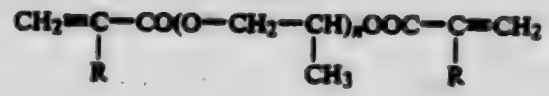
(a) from about 20 to about 80 weight percent of a binder which is insoluble in water, but soluble or at least swellable in aqueous alkaline solutions, and which consists essentially of a terpolymer consisting essentially of monomers selected from the group consisting of

(i) methacrylic acid,(ii) alkyl methacrylates having 4 to 15 carbons in the alkyl group or methyl methacrylate, and (iii) styrene or acrylonitrile;

(b) from about 0.1 to about 20 weight percent of a radiation-activatable polymerization initiator; and

(c) from about 20 to about 80 weight percent of a polymerizable acrylate or methacrylate of a dihydric to tetrahydric alcohol, said polymerizable acrylate or methacrylate comprising from 10 to about 100 weight percent, relative to the total amount of polymerizable compound, of a poly-

propylene glycol diacrylate or dimethacrylate corresponding to the formula



wherein

R represents a hydrogen atom or a methyl group and

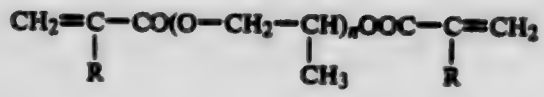
n represents a number from 2 to 13.

12. A copying material comprising a support and a radiation-polymerizable layer consisting essentially of:

(a) from about 20 to about 80 weight percent of a binder which is insoluble in water, but soluble or at least swellable in aqueous alkaline solutions, and which consists essentially of a terpolymer consisting essentially of monomers selected from the group consisting of (i) methacrylic acid, (ii) alkyl methacrylates having 4 to 15 carbons in the alkyl group or methyl methacrylate, and (iii) styrene or acrylonitrile;

(b) from about 0.1 to about 20 weight percent of a radiation-activatable polymerization initiator; and

(c) from about 20 to about 80 weight percent of a polymerizable acrylate or methacrylate of a dihydric to tetrahydric alcohol, said polymerizable acrylate or methacrylate comprising from 10 to 100 weight percent, relative to the total amount of polymerizable compound, of a polypropylene glycol diacrylate or dimethacrylate corresponding to the formula



wherein

R represents a hydrogen atom or methyl group and

n represents a number from 2 to 13.

14. A copying material according to claim 12 wherein said support is selected from the group consisting of copper, steel, chromium-plated copper, chromium-plated steel, zinc, nickel, aluminum, aluminum alloys, silicon dioxide, doped oxide layers, polyethylene terephthalate films, cellulose acetate films, nylon gauze and nickel screens.

4,495,272

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Morio Yagihara; Tsumoru Hirano; Mitsunori Hirano, and Makoto Umemoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa,

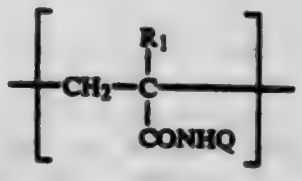
Filed Jul. 12, 1983, Ser. No. 513,181

Claims priority, application Japan, Jul. 12, 1982, 57-120857

Int. Cl.³ G03C *7/16*

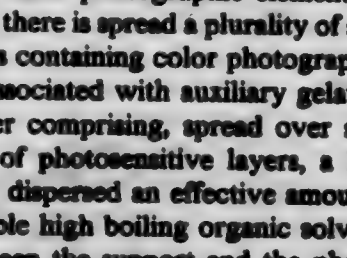
U.S. Cl. 430—381 23 Claims

1. A silver halide color photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer containing a cyan color image forming polymer coupler latex capable of forming a dye upon coupling with an oxidation product of an aromatic primary amine developing agent wherein the cyan color image forming polymer coupler latex contains at least one repeating unit represented by the general formula (I) described below and at least one repeating unit represented by the general formula (II) described below:



(I)

wherein R_1 represents a hydrogen atom, a lower alkyl group containing from 1 to 4 carbon atoms or a chlorine atom; and Q represents a cyan coupler residue capable of forming a dye upon coupling with an oxidized aromatic primary amine developing agent,



(II)

wherein R_2 represents a hydrogen atom, a lower alkyl group containing from 1 to 4 carbon atoms or a chlorine atom; and R_3 and R_4, which may be the same or different, each represents a hydrogen atom, an unsubstituted or substituted alkyl group which may be a straight chain, a branched chain or a cyclic, or an unsubstituted or substituted phenyl group, wherein the repeating unit represented by the general formula (II) is derived from an ethylenically unsaturated monomer which does not have an ability of oxidative coupling with an aromatic primary amine developing agent; and

wherein the polymer further contains a repeating unit derived from a non-color forming monomer which does not couple with the oxidation product of an aromatic primary amine developing agent other than the repeating unit represented by the general formula (II).

4,495,273

COLOR PHOTOGRAPHIC ELEMENTS WITH IMPROVED MECHANICAL PROPERTIES

Mario Pasnocchia, Ferrania, Italy, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 3, 1981, Ser. No. 298,942

Claims priority, application Italy, Sep. 17, 1980, 49692 A/80

Int. Cl.³ G03C *1/84*

U.S. Cl. 430—510 14 Claims

1. A silver halide photographic element comprising a support on which there is spread a plurality of silver halide photosensitive layers containing color photographic couplers, these layers being associated with auxiliary gelatin layers, and said element further comprising, spread over said support under said plurality of photosensitive layers, a layer of gelatin in which there is dispersed an effective amount of droplets of a water-immiscible high boiling organic solvent which reduces adhesion between the support and the photosensitive layers, and an effective amount of a vinyl addition polymer latex.

4,495,274

DIRECT-POSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Kazuhiro Yoshida, Hino, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1983, Ser. No. 487,216

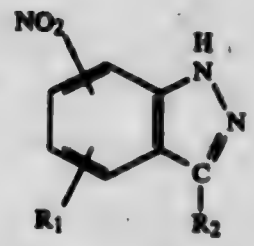
Claims priority, application Japan, Apr. 26, 1982, 57-68785

Int. Cl.³ G03C *1/36*

U.S. Cl. 430—523 20 Claims

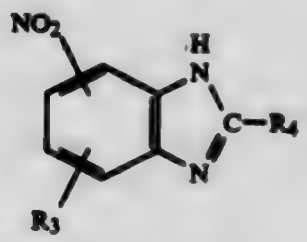
1. A direct-positive silver halide photographic material, whose speed is stable and whose minimum density is small under a high temperature and a high humidity, said material comprising a support, a silver halide emulsion layer comprising fogged silver halide particles prepared in the presence of a water soluble iridium salt or a water soluble rhodium salt, and a hydrophilic colloidal layer comprising a compound selected from the group consisting of compounds having the following Formula I and II and at least one compound selected from the group consisting of a compound having the following Formula III and a gold compound,

Formula I



wherein R_1 is hydrogen, an alkyl, —SO_3M or —COOM radical wherein M is hydrogen, an alkaline metal or ammonium ion, and R_2 is hydrogen or a lower alkyl radical,

Formula II



wherein R_3 is hydrogen, an alkyl, —SO_3M or —COOM radical wherein M is hydrogen, an alkaline metal or ammonium ion, and R_4 is hydrogen, an alkyl or —CH_2—S—$(CH_2)_n$—Y' radical wherein n is an integer of from 1 to 3, and Y' is hydrogen or —SO_3M radical,

Formula III

$$H_2N—Y—NH—Y_mNH_2$$

is an integer of from 1 to 5, and Y is an alkylene radical having from 2 to 4 carbon atoms, provided not less than 2 Ys present inside the same molecule are allowed to be different alkylene radicals, wherein the adding quantity of the compound having Formula III is from 1.0×10^{-7} to 1.0×10^{-2} mole per mole of silver halide and the adding quantity of the gold compound in from 1.0×10^{-7} to 1.0×10^{-4} mole per mole of silver halide.

4,495,275

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Shigeki Yokoyama, and Kunihiko Ohga, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 25, 1981, Ser. No. 277,370

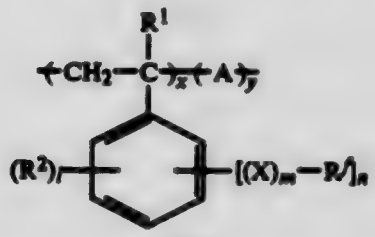
Claims priority, application Japan, Jun. 25, 1980, 55-86201; Apr. 28, 1981, 56-64702

The portion of the term of this patent subsequent to Dec. 28, 1999, has been disclaimed.

Int. Cl.³ G03C 1/78

U.S. Cl. 430—527 5 Claims

1. A silver halide photographic element, comprising: a support; a plurality of photographic layers on the support including at least one silver halide emulsion layer, wherein one of said layers comprises a water-soluble polymer having a recurring unit represented by following general formula (I)



(I)

wherein A represents a monomer unit formed by copolymerizing a copolymerizable monomer having at least one ethylenically unsaturated group; R^1 represents hydrogen, a halogen atom, or an alkyl group having 1 to 3 carbon atoms; R^2 can represent a monovalent substituent, and when l is more than one, two R^2 groups together can represent an atomic group forming a ring; R/ represents an alkyl group having 1 to 30 carbon atoms, an aralkyl group, an aryl group, or an alkylaryl group, wherein at least four hydrogens have been substituted for by fluorine atoms; X represents a divalent coupling group shown by —$(R)_p$—L— (wherein R represents an alkylene group, an arylene group, or an aralkylene group; L represents an oxy group, a thioxy group, an imino group, a carbonyl group, a carboxy group, a carbothioxy group, a carboxyamido group, an oxycarbonyl group, a carbamoyl group, a sulfone group, a sulfonamido group, an N-alkylsulfonamido group, a sulfamoyl group, a sulfoxy group, or a phosphate group; and p is 0 or 1); l is an integer of 0 to 4; m is an integer of 0 to 3; n is an integer of 1 to 5; x is 0.1 to 50 mol%; and y is 50 to to 99.9 mol%, said water-soluble polymer being present in an amount sufficient to increase antistatic properties and provide good adhesion resistance.

4,495,276

PHOTOSENSITIVE MATERIALS HAVING IMPROVED ANTISTATIC PROPERTY

Masaaki Takimoto; Takashi Saida, and Masataka Murata, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 13, 1981, Ser. No. 253,499

Claims priority, application Japan, Apr. 11, 1980, 55-47663

Int. Cl.³ G03C 1/78

U.S. Cl. 430—527 14 Claims

1. A silver halide photosensitive element having an improved antistatic property comprising a silver halide layer, a base support and

an electrically conductive layer on said base support, said electrically conductive layer comprising fine particles of a crystalline metal oxide selected from the group consisting of ZnO, TiO_2, SnO_2, Al_2O_3, ZrO_3, In_2O_3, SiO_2, MgO, BaO and MoO_3 or a composite oxide thereof dispersed in an organic film-forming binder, said electrically conductive layer being formed by dispersing said fine particles of a crystalline metal oxide in said binder and coating the same, the light-scattering efficiency of said photosensitive material being 50% or less, wherein said electrically conductive layer has a surface resistivity of $10^{11}\Omega$ or less at 25° C. under 25% relative humidity.

4,495,277

PHOTOGRAPHIC SILVER HALIDE EMULSION

Manfred Becker, Leverkusen; Siegbert Klötzer, and Erik Moisar, both of Cologne, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 1, 1983, Ser. No. 519,150

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1982, 3229999

Int. Cl.³ G03C 1/02

U.S. Cl. 430—567 10 Claims

1. A photographic silver halide emulsion containing silver halide grains which have a core/shell structure and which are chemically sensitised at the surface thereof to provide density and speed, wherein, in the silver halide grains, at least one layer contains at least 25 mole percent of silver chloride and wherein the total content of silver chloride amounts to less than 30 mole percent and wherein the emulsion is chemically ripened at its surface to such an extent that the ratio R of the density D_r obtainable after surface ripening to the density D_u obtainable with the as yet non-surface-ripened, but otherwise identical, emulsion amounts to at least 3, the ratio R being determined by applying the ripened emulsion and the unripened emulsion to a layer support in exactly the same way, exposing them and then developing them for 17 minutes at 20° C. in a developer of the following composition:

ascorbic acid	10 g
p-methylaminophenol	2.4 g
Na_2CO_3 (sicc.)	10 g
KBr	2.0 g
water to 1000 ml	

and D_r being the value of 90% of the maximum density and D_u being obtained by exposure of the as yet unripened emulsion to the extent which leads to the density D_r in the case of ripened emulsion.

4,495,278

PROCESS FOR MAKING NOVEL BLOOD CLOTTING ENZYME COMPOSITIONS

William R. Thomas, Laguna Niguel, Calif., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Apr. 27, 1981, Ser. No. 258,072
Int. Cl.³ C12Q 1/70, 1/56; C12N 7/04, 7/06, 9/48, 9/68, 9/74
U.S. Cl. 435—5 87 Claims

1. A method for inactivating virus in a blood clotting enzyme composition suspected to contain such virus, which method for inactivating consists essentially of heating the composition in the dry state until the composition is substantially free of said virus in the infectious form and said blood clotting enzyme in the denatured form.

4,495,279

ISOELECTRIC FOCUSSING-POLYNUCLEOTIDE/POLYACRYLAMIDE GEL ELECTROPHORESIS

Timothy P. Karpetsky, Riderwood, and Glenn E. Brown, Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Jul. 27, 1982, Ser. No. 402,352
Int. Cl.³ C12Q 1/68, 1/00, 1/34; C12N 9/14, 9/22; G01N 33/50, 27/26
U.S. Cl. 435—6 12 Claims

1. A method for resolving multiple native nuclease activities in a protein sample by two-dimensional gel electrophoresis comprising:

(a) separating the proteins by gel electrophoresis in the first dimension under non-denaturing conditions according to isoelectric point;

(b) separating the proteins from step (a) by gel electrophoresis in the second dimension under non-denaturing conditions according to size and mass-to-charge ratio under conditions which inhibit nuclease activity, and wherein a polynucleotide nuclease substrate is incorporated into the second-dimension gel;

(c) incubating the second-dimension gel under nuclease-activating conditions; and

(d) visualizing nuclease activities in the gel.

4,495,280

CLONED HIGH SIGNAL STRENGTH PROMOTERS

Hermann G. Bujard, Heidelberg, Fed. Rep. of Germany; Annie C. Y. Chang, Palo Alto, and Stanley N. Cohen, Portola Valley, both of Calif., assignors to The Board of Trustees of the Leland Stanford Jr. University, Stanford, Calif.

Filed May 20, 1981, Ser. No. 265,276
Int. Cl.³ C12Q 1/68, 1/02; C12P 21/00, 19/34; C12N 15/00
U.S. Cl. 435—6 15 Claims

1. A linear DNA sequence having proximal to one end a strong T5 phage promoter, proximal to the other end a strong transcriptional terminator balanced with said strong T5 promoter, and having intermediate said promoter and terminator at least one of (1) a marker for selection adjacent to said terminator or (2) a replication system foreign to T5, wherein the direction of said promoter is away from said terminator and said marker is expressed at a frequency of less than about one-fourth the frequency of a structural gene, when said structural gene is inserted between said promoter and terminator, so as to be under the transcriptional control of said promoter and to bridge said linear DNA sequence to provide a circular DNA sequence.

11. A method for determining the strength of a promoter which comprises:

inserting said promoter into a linear DNA sequence having in the downstream direction for expression proximal to one end; a gene allowing for detection of expression; a transcriptional terminator of known strength; a marker allowing for determination of expression; and a replication system recognized by a predetermined host; whereby a circular DNA sequence is obtained;

transforming said host with said circular DNA sequence;

growing said host in nutrient medium under conditions allowing for determination of the extent of expression of said gene and said marker; and

determining the strength of said promoter is determined by the relative degree of transcription of said gene and said marker.

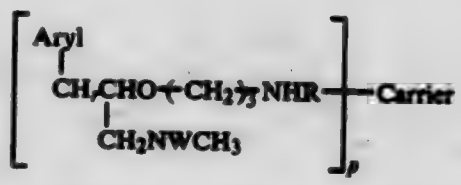
4,495,281

TRICYCLIC ANTIDEPRESSANT DRUG IMMUNOGENS, ANTIBODIES, LABELED CONJUGATES, AND RELATED DERIVATIVES

Robert T. Buckler, Edwardsburg, Mich., and Frederick E. Ward, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

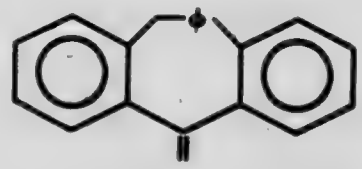
Filed Oct. 21, 1982, Ser. No. 435,633
Int. Cl.³ A61K 39/385; C07G 7/00; C12N 9/96; G01N 33/54
U.S. Cl. 435—7 21 Claims

1. A tricyclic antidepressant drug immunogen of the formula:



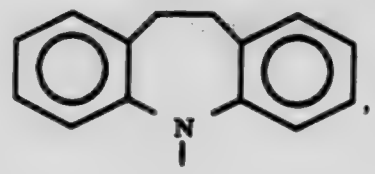
wherein Aryl represents a tricyclic antidepressant drug nucleus selected from the group consisting of

A.



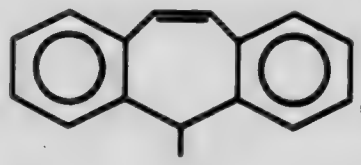
, r being 1, and ϕ being —CH_2— or —O—;

B.



, r being 2; and

C.



, r being 2;

wherein W is hydrogen or methyl; R is a bond or a linking group; Carrier is an immunogenic carrier material; and p is on the average from 1 to about 50.

4,495,282

PROCESS FOR PRODUCING TARGET CELL LYSIS FACTOR AND USES THEREWITH

Haruo Otsuishi, Chiba, and Masakazu Mitsuhashi, Okayama, both of Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama and Meshida Seiyaku Kabushiki Kaisha, Tokyo, both of, Japan

Filed Jul. 21, 1982, Ser. No. 400,487

Claims priority, application Japan, Jul. 21, 1981, 56-112913; Jul. 21, 1981, 56-112914; Jul. 31, 1981, 56-120459; Nov. 21, 1981, 56-187626; Nov. 21, 1981, 56-187627; Dec. 21, 1981, 56-205115

Int. Cl.³ C12P *21/00*; A61K *39/100*

U.S. Cl. 435—68 23 Claims

1. A process for producing human Target Cell Lysis Factor (TCLF), comprising:

implanting a human cell line selected from the group of cell lines consisting of BALL-1, TALL-1, NALL-1, Namalwa, MOLT-3, Mono-1, B-7101, JBL, EBV-Sa, EBV-Wa, EBV-HO, BALM 2, CCRF-CEM, DND-41, and CCFR-SB in a non-human warm-blooded animal;

feeding the animal to allow said human cell line to utilize the nutrient body fluid of the animal for its multiplication;

exposing the multiplied human cells to a TCLF inducer under conditions appropriate to induce the accumulation of a substantial amount of TCLF by said cells; and

recovering the accumulated TCLF.

4,495,283

PROCESS FOR PRODUCING L-HISTIDINE BY FERMENTATION

Kazumi Araki, Machida, and Tetsuro Kuga, Komae, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Apr. 7, 1983, Ser. No. 482,892

Claims priority, application Japan, Apr. 10, 1982, 57-59869

Int. Cl.³ C12P *13/24*; C12N *15/00, 1/20*; C12R *1/13, 1/15*

U.S. Cl. 435—107 9 Claims

1. A process for producing L-histidine by fermentation which comprises culturing an L-histidine producing mutant microorganism belonging to the genus Corynebacterium or Brevibacterium in a nutrient medium until L-histidine is accumulated in the culture liquor and thereafter recovering said L-histidine therefrom; said mutant being characterized by at least a resistance to growth inhibition by an RNA polymerase inhibitor or a requirement for adenine.

4,495,284

MICROBIOLOGICAL PROCESS FOR THE PREPARATION OF 1-CARVONE

Peter M. Rhodes, Margate, and Norman Winskill, Ramsgate, both of England, assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 418,893, Sep. 16, 1982, abandoned. This application Nov. 22, 1982, Ser. No. 443,805

Claims priority, application United Kingdom, Oct. 21, 1981, 8131667

Int. Cl.³ C12P *7/26*; C12N *1/20*; C12R *1/38*

U.S. Cl. 435—148 5 Claims

1. A process for the preparation of 1-carvone which comprises cultivating the carvone producing microoorganism Pseudomonas strain NCIB no. 11671 in an aqueous nutrient medium in the presence of 1-α-pinene or 1-β-pinene and recovering 1-carvone from the fermentation medium.

4,495,285

PLASMINOGEN ACTIVATOR DERIVATIVES

Kinhiro Shimizu, Yoshikawa-danchi 4-16-102, Yoshikawa-machi, Kitakatsushika-gun, Saitama-ken; Tsuguji Nakahara, 6-21-6, Meguroheanmachi, Meguro-ku, Tokyo, and Takatoshi Kinoshita, Satsuki-so, Noborito 15-30, Koshigaya-shi, Saitama-ken, all of Japan

Filed Oct. 27, 1982, Ser. No. 437,009

Claims priority, application Japan, Oct. 30, 1981, 56-172908

Int. Cl.³ C12N *9/72, 9/48, 11/06*

U.S. Cl. 435—215 17 Claims

1. A derivative of a human-originated non-immunogenic plasminogen activator, comprising at least one polyalkylene glycol chemically bonded with at least one coupling agent to amino acid side chains of said plasminogen activator, wherein said polyalkylene glycol has a molecular weight in the range of 200–20,000 and is unsubstituted or is substituted with one or more alkyl or one or more alkanoyl groups.

4,495,286

ANTIBIOTIC COMPLEX PRODUCING BACTERIAL CULTURE

Josefino B. Tunac, Troy, Mich.; William E. Dobson, Windsor, Canada, and Blanche D. Graham, Redford Township, Wayne County, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 25, 1983, Ser. No. 497,875

Int. Cl.³ C12N *1/20*; C12R *1/465*

U.S. Cl. 435—253 1 Claim

1. A biologically pure culture of the microorganism *Streptomyces pulveraceus* subspecies *fostreus* ATCC 31906, said culture being capable of producing the CL 1565 antibiotic complex in a recoverable quantity upon cultivation in an aqueous nutrient medium containing assimilable sources of nitrogen and carbon.

4,495,287

PROCESS FOR PRODUCING GENE PRODUCTS OF PLASMID HAVING TEMPERATURE DEPENDENT PLASMID COPY NUMBER

Bernt E. Uhlin; Kurt Nordström, and Soeren Molin, all of Odense, Denmark, assignors to A/S Alfred Benzon, Copenhagen, Denmark

Filed May 22, 1978, Ser. No. 908,108

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2759053

Int. Cl.³ C12N *9/86, 15/00, 1/00*; C12P *21/00*

U.S. Cl. 435—231 10 Claims

1. A method for producing a gene product of DNA, comprising cultivating bacteria carrying a recombinant DNA plasmid showing a controlled constant plasmid copy number when the host bacteria are cultivated at one temperature, and showing, when the host bacteria carrying the plasmid are grown at a different temperature, an altered plasmid copy number control allowing an at least 20 times higher copy number, or a totally uncontrolled copy number under conditions including at least a period of cultivation at or approaching a temperature at which the plasmid shows an altered copy number control allowing an at least 20 times higher or totally uncontrolled copy number; said approaching temperature being a temperature at which the host bacteria survive and are still capable of propagation; and harvesting, from the bacterial culture, a gene product of the plasmid.

4,495,288

METHOD OF CULTURING ANCHORAGE DEPENDENT CELLS

Allen P. Jarvis, Jr., Newburyport, Mass., and Franklin Lim, Richmond, Va., assignors to Damon Biotech, Inc., Needham Heights, Mass.

Continuation of Ser. No. 243,586, Mar. 13, 1981, abandoned, which is a continuation-in-part of Ser. No. 24,680, Mar. 28, 1979, Pat. No. 4,352,883, which is a continuation-in-part of Ser. No. 935,413, Oct. 28, 1978, abandoned. This application Apr. 13, 1983, Ser. No. 484,627

The portion of the term of this patent subsequent to Oct. 5, 1999, has been disclaimed.

Int. Cl.³ C12N 5/00, 5/02, 11/00, 11/04

U.S. Cl. 435—241 10 Claims

1. A process for culturing anchorage dependent cells, said process comprising the steps of:

A. suspending a cell in a medium containing an anchorage substrate material and high molecular weight components needed to maintain viability and to support mitosis of said cell;

B. encapsulating said cell together with said medium and anchorage substrate material within a semipermeable membrane comprising a polysaccharide having plural anionic groups cross-linked with a polymer having plural cationic groups and a molecular weight greater than 3,000, said semipermeable membrane having an upper limit of permeability sufficient to preclude traverse of said anchorage substrate material and sufficient to allow low molecular weight molecules to traverse said membrane;

C. suspending the product of step B in a culture medium sufficient to maintain viability and to support mitosis of said encapsulated cell; and

D. allowing said cell to undergo mitosis within said membrane.

4,495,289

TISSUE CULTURE CLUSTER DISH

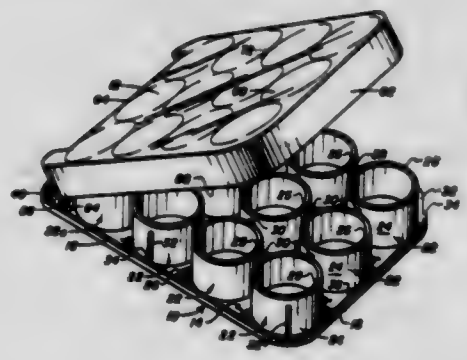
George F. Lyman, Rocky Point, Me., and Alan Lowry, Canton, Mass., assignors to Data Packaging Corporation, Cambridge, Mass.

Continuation of Ser. No. 244,731, Mar. 17, 1981, Pat. No. 4,349,632. This application Jun. 28, 1982, Ser. No. 393,174

The portion of the term of this patent subsequent to Sep. 14, 1999, has been disclaimed.

Int. Cl.³ C12M 3/00, 1/22, 1/18; B01L 3/00

U.S. Cl. 435—284 7 Claims



1. A laboratory cluster dish comprising:

a base having a plurality of wells joined in a unitary structure for receiving materials,

a cover having a top closure wall, said cover being adapted to be supported in a first closed position with the closure wall adjacent the top edges of the wells,

and support means formed as part of the base for engaging the cover for supporting the cover on the base in a second position wherein the cover is lifted at an angle with respect to the base to permit access to the wells by a pipette or other instrument while preventing contamination of the wells by airborne substances.

5. A laboratory cluster dish comprising:

a base having a plurality of wells joined in a unitary structure for receiving materials, said base having a solid and continuous bottom wall which defines the bottoms of all the wells, said wells having side walls that extend upwardly from said bottom wall,

a rim formed on the periphery of the base and extending upwardly above the upper surface of the bottom wall to retain any fluid on the base which may spill from the wells, said rim being substantially shorter than the side walls of the wells so as to permit direct viewing of the side walls of the wells without looking through the rim,

a cover having a top closure wall adapted to be supported on the base to cover the wells,

and a bead formed on the bottom wall of the base and extending downwardly from the lower surface of the base to support the base on a surface with the bottoms of the wells off said surface.

4,495,290

APPARATUS FOR COMPOSTING

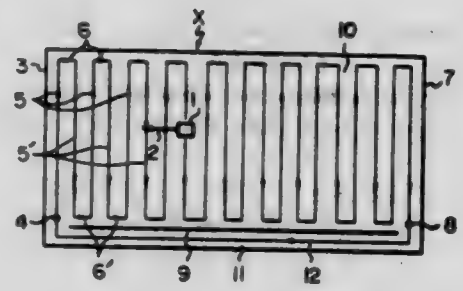
Kaoichi Ito; Yoshio Hirayama; Ryoichi Takeuchi, all of Kanagawa; Masanori Kodaira, Tokyo, and Goro Iizuka, Kanagawa, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Continuation of Ser. No. 254,278, Apr. 15, 1981, abandoned, which is a division of Ser. No. 150,652, May 16, 1980, abandoned. This application Sep. 24, 1982, Ser. No. 423,216

Claims priority, application Japan, May 26, 1979, 54-65249; Jul. 11, 1979, 54-87576

Int. Cl.³ C12M 1/06

U.S. Cl. 435—315 8 Claims



1. An apparatus for use in achieving composting of organic materials, said apparatus comprising:

means defining a generally rectangular zone including first and second spaced parallel side edges, first and second spaced parallel end edges and a floor extending between said edges for being covered by and supporting a layer of organic materials provided with proper temperature, moisture and microorganism content to enable composting thereof, said floor having therein plural perforations;

means for injecting air through said perforations upwardly into the layer;

agitator means for agitating said organic materials being composted, said agitator means including a rotatable horizontal shaft which is mounted to extend transverse only to said side edges and a plurality of scraper blades which are fixed to said shaft and which extend generally radially from said shaft, said scraper blades being located such that they will scrape a predetermined width of organic materials from a layer of said materials covering said floor at said zone, such scraping being in a first direction parallel to said side edges, and such scraper blades being structured such that they will throw the thus scraped materials upwardly above said layer in a second direction opposite to said first direction, such that the thus thrown materials fall back down to reform the layer in a loose and non-packed manner, thereby aerating said materials to facilitate said composting thereof;

means defining a path outside of said zone and extending parallel to said side edges for allowing the passage of said

agitator means outwardly of said zone in a direction parallel to said side edges;

a longitudinal carriage extending transversely to said side edges and above said layer, said carriage extending from one said side edge to a position beyond the other said side edge and said path;

a carrier mounted on said carriage and supporting said agitator means;

means for traversing said agitator means back and forth between said first and second side edges in directions transverse to said first and second directions, said traversing means comprising means for moving said carrier and said agitator means longitudinally of said carriage and for moving said carrier and said agitator means between said zone and said path when said carriage is located at either of said end edges; and

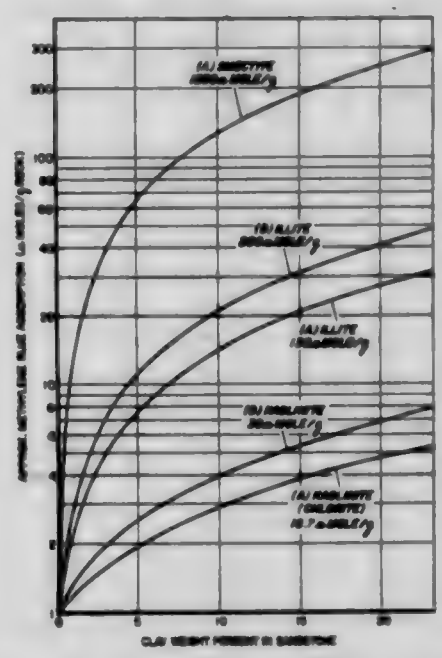
means for periodically shifting said agitator means in said first direction by incremental distances, equal to said predetermined width, from said first end edge to said second end edge, said shifting being between traversing movements of said agitator means, so that the entire said layer is scraped and thrown in incremental bands of said predetermined width, said shifting means comprising means for moving said carriage, said carrier and said agitator means parallel to said side edges and transverse to the longitudinal direction of said carriage.

4,495,292

DETERMINATION OF EXPANDABLE CLAY MINERALS AT WELL SITES

Robert M. Siebert, and Richard W. Lahaza, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Sep. 16, 1982, Ser. No. 418,852
Int. Cl.³ G01N *31/06, 33/24*
U.S. Cl. 436—25 5 Claims



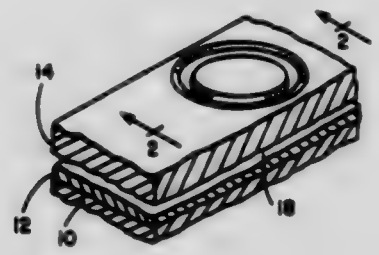
1. A method for determining the expandable clay content of subterranean formations comprising (1) sampling said formations, (2) adding a portion of said sample to a solution of organic dye in a non-polar or low polarity solvent, (3) adding a second portion of said sample to a solvent of organic dye in water or a polar solvent, and determining the expandable clay content as the difference between non-polar solvent adsorption and water or polar solvent adsorption.

4,495,291

INDICATORS FOR ETHYLENE OXIDE

William R. Lawton, Deerfield Beach, Fla., assignor to Graphic Controls Corporation, Buffalo, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,226
Int. Cl.³ G01N *21/78*
U.S. Cl. 436—1 9 Claims



9. The method for indicating the amount of residual alkylene oxide present in an alkylene oxide treated article by using a gas indicating device having a gas-sensitive cholesteric liquid crystal composition applied as a coating on a supporting substrate,

a mechanically isolated zone of said coating being sealed from direct exposure to an ambient system, and a transparent, gas-permeable cover sheet covering said isolated zone of said coating, and said zone being viewable through said cover sheet,

said method comprising the steps of exposing said indicating device to an alkylene oxide biocidal gas, diffusing a biocidal gas through said cover sheet to contact said zone of said coating, visually noting any color change occurring in said zone, aerating said indicating device, and again visually noting any color change in said zone of said coating and comparing the color of said zone with that of an area exposed directly to the ambient system, the steps of said method being carried out in the presence of an article whereby the gas indicating device and the article are simultaneously exposed to said steps.

4,495,293

FLUOROMETRIC ASSAY

Mark R. Shaffar, Vernon Hills, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 24, 1983, Ser. No. 469,323
Int. Cl.³ G01N *21/17, 21/25*
U.S. Cl. 436—172 12 Claims

7. An improved fluorimetric assay method for determining a ligand in an assay solution containing a sample suspected of containing the ligand, and an effective amount of a reagent system which in the presence of the ligand is capable of providing a change in the transmittive properties of the assay solution within a wavelength band, said improvement comprising adding to the assay solution an effective amount of a fluorescer wherein the fluorescer does not react either chemically or immunologically with the ligand or the reagent system, and wherein the excitation and/or emission wavelength band of the fluorescer overlaps the wavelength band associated with the change in the transmittive properties of the assay solution; irradiating the assay solution with light having a wavelength within the excitation wavelength band of the fluorescer; and then measuring the intensity of the fluorescer emitted by the assay solution as a measure of the concentration of the ligand in the sample.

4,495,294

METHOD FOR DETERMINING BACTERIAL ENDOTOXIN AND KIT THEREFOR

Chizuko Nakahara, Hino; Shigeneri Tanaka, Tokyo; Hiroshi Tamura, Higashiyamato, and Akiyoshi Matsumoto, Hino, all of Japan, assignors to Seikagaku Kogyo Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1982, Ser. No. 441,810
Claims priority, application Japan, Nov. 16, 1981, 56-182190
Int. Cl.³ G01N 33/16; C12Q 1/00, 1/38, 1/36
U.S. Cl. 436—502 15 Claims

1. In a method for qualitatively, semi-quantitatively or quantitatively determining a bacterial endotoxin in an assay sample by a gellation method or synthetic subetrate method using an amoebocyte lysate component of horseshoe crab in the presence or absence of a substrate for endotoxin determination, the improvement wherein the determination by the gellation method or synthetic subetrate method is effected by using an assay sample in the liquid state obtained by treating said assay sample with an endotoxin-free acid having a $pKa^{25°\,C.}$ value of not more than 3 at a pH of not more than 3, whereby the assay sample is freed from the hydrolytic activity of an endotoxin-independent enzyme, which is an inhibiting factor in measuring the true amount of the bacterial endotoxin in the assay sample.

4,495,295

IMMUNOASSAYS USING SUPPORT-CONTAINING SEPARATE ANTIGENS AND ANTIBODIES DERIVED FROM AN IMMUNE COMPLEX

A. Robert Neurath, New York, N.Y., assignor to New York Blood Center, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 41,127, May 21, 1979, and a continuation-in-part of Ser. No. 323,003, Nov. 19, 1981. This application Mar. 29, 1982, Ser. No. 362,718
Int. Cl.³ G01N 33/54, 33/60
U.S. Cl. 436—518 26 Claims

13. A process for detecting the presence of an antigen in a specimen which comprises:

(a) contacting the specimen suspected of containing an antigen with a substrate having bound thereon a mixture of antigens and antibodies to said antigen in said specimen, said antibodies and said antigen being bound to said substrate separately not being in the form of an immune complex, in the presence of a radioactive material labeled or enzyme labeled antigen, incubating the so-contacted substrate and washing the substrate;

(b) effecting radioimmunoassay if said antigen is radioactive or enzyme labeled immunoassay if said antigen is enzyme labeled; and

(c) comparing the counts if radioimmunoassay is effected or enzymatic activity if enzyme immunoassay is effected with the counts or enzymatic activity of a control carried out without the presence of said specimen.

4,495,296

LABELED ANTI-HAPTEN ANTIBODIES AND THEIR USE AS A UNIVERSAL REAGENT FOR SOLID PHASE RADIO- AND/OR ENZYME-IMMUNOASSAYS

A. Robert Neurath, New York, and Nathan Strick, Far Rockaway, both of N.Y., assignors to New York Blood Center, Inc., New York, N.Y.

Filed May 21, 1979, Ser. No. 41,127
Int. Cl.³ G01N 33/52, 33/54, 33/56
U.S. Cl. 436—530 3 Claims

1. A process for detecting the presence of an antigen in a specimen which comprises:

(A) contacting said specimen with a substrate coated with antibodies of said antigen, incubating the so-contacted substrate and washing the substrate;

(B) contacting the washed material of step (A) with a hapten conjugated antibody against said antigen, incubating the so-contacted material and washing the so-incubated material;

(C) contacting the washed material of step (B) with a radioactive material labeled or enzyme containing anti-hapten antibody prepared by contacting an anti-hapten antiserum with a haptenated antigen and recovering anti-hapten antibody from haptenated antigen and any other serum proteins, incubating the so-contacted material and washing the same; and

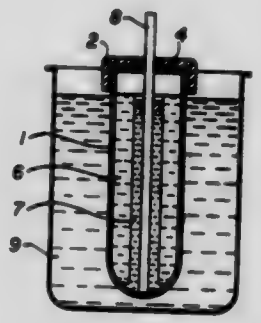
(D) effecting radioimmunoassay if said anti-hapten antibody is radioactive or enzyme labeled immunoassay if said antihapten antibody is enzyme labeled, wherein said anti-hapten antibody is one prepared by contacting an anti-hapten anti-serum with a hapten containing protein, dissolving the resultant complex in a buffer which dissociates an antigen-antibody complex and separating said anti-hapten antibody from haptenated antigen.

4,495,297

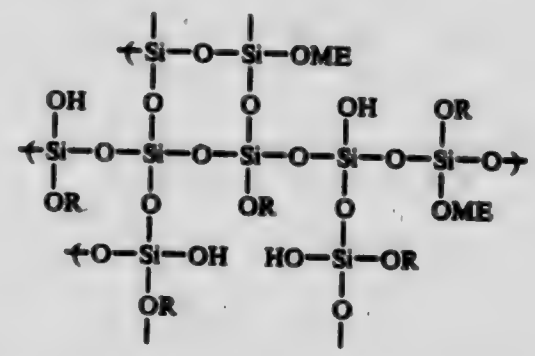
METHOD FOR MAKING A GRADIENT DOPED POLYSILOXANE GEL

Ramón Puyané, Petit-Lancy; Carlos J. R. Gonzalez-Oliver, Geneva, and Alan L. Harmer, Plan les Ouates, all of Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

Filed Jun. 24, 1983, Ser. No. 507,829
Claims priority, application European Pat. Off., Jul. 26, 1982, 82810317.6
Int. Cl.³ C03C 3/04
U.S. Cl. 501—12 7 Claims



1. A method for the preparation of a polysiloxane doped gel of following structure



in which ME is at least one dopant (metals) metal and R is alkyl, consisting essentially of the following steps:

(1) making an organic solution of silicon alkoxide and adding water for progressively hydrolyzing part of said alkoxide into the corresponding hydroxy functions with consecutive polycondensation by dehydration of said hydroxy functions to a cross-linked polysiloxane backboned wet gel body, and

(2) thereafter placing said wet gel body as a first phase into surface contact with a body of a waterless nongelling organic solution of silicon alkoxide as a second phase, one of said phases containing at least one dopant metal alkoxide and letting the metals including silicon in still free

unpolymerized form migrate by diffusion from one phase to the other, the direction of migration being from the phase richer in each metal to the phase leaner in the metal of the two phases to produce a smooth gradient profile across the doped gel of said dopant metal and (3) thereafter removing the doped gel body from the solution.

4,495,298

THALLIUM-CONTAINING OPTICAL GLASS

Takasi Yamagishi, Itami, and Yukio Noguchi, Toyonaka, both of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed May 11, 1982, Ser. No. 377,246
Claims priority, application Japan, May 12, 1981, 56/71122
Int. Cl.³ C03C *3/04, 3/08, 3/10, 3/30*
U.S. Cl. 501—55 10 Claims

1. A lens having a refractive index gradient, made of a thallium-containing optical glass composition which consists essentially of the following oxides in the indicated proportions in mole %

SiO_2	35–80
Tl_2O	1–30
$Tl_2O + R_2O$ (R being an alkali metal)	1–35
ZnO	0–35
GeO_2	0–30
BaO	0–25
TiO_2	0–20
MgO	0–20
B_2O_3	0–8
ZrO_2	0–2
Al_2O_3	0–8
SnO	0–5
CaO	0–10
SrO	0–10
PbO	0–10
La_2O_3	0–5
Bi_2O_3	0–8
Ta_2O_5	0–2

and satisfies the following relations

$$5 \leqq ZnO + GeO_2 + BaO + TiO_2 + MgO + B_2O_3 \leqq 40,$$

$$0.1 \leqq ZrO_2 + Al_2O_3 + SnO \leqq 8,$$

$$0 \leqq CaO + SrO + PbO + La_2O_3 + Bi_2O_3 + Ta_2O_5 \leqq 10,$$

and

$$0 \leqq Li_2O \leqq 7,$$

said lens having an aperture angle (θc) on its optical axis of not less than 19 degrees.

4,495,299

THALLIUM-CONTAINING OPTICAL GLASS COMPOSITION

Yukio Noguchi, Toyonaka, and Takashi Yamagishi, Itami, both of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Sep. 6, 1983, Ser. No. 529,874
Claims priority, application Japan, Sep. 14, 1982, 57-160212
Int. Cl.³ C03C *3/04, 3/08, 3/10, 3/30*
U.S. Cl. 501—72 12 Claims

1. A thallium-containing optical glass composition which consists essentially of the following oxides in the indicated proportions in mole %:

SiO_2	35–80
Tl_2O	4–26
$Tl_2O + R_2O$	8–42
(in which R is an alkali metal)	
ZnO	6–26
ZrO_2	0–2
Al_2O_3	0–8
SnO and/or SnO_2	0–5
B_2O_3	0–8

and satisfies the following relations:

$$0 \leqq K_2O \leqq 10$$

$$4 \leqq Na_2O + Li_2O \leqq 26$$

$$0.1 \leqq ZrO_2 + Al_2O_3 + SnO \text{ and/or } SnO_2 \leqq 8$$

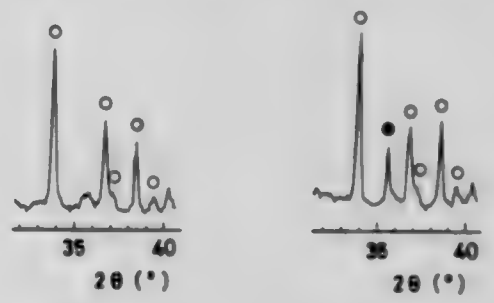
$$0.18 \leqq \frac{Na_2O + Li_2O}{Tl_2O} \leqq 5.50.$$

4,495,300

METHOD FOR MANUFACTURE OF LOW THERMAL EXPANSION CORDIERITE CERAMICS

Shiro Sano, Nagoya, Japan, assignor to Agency of Industrial Science and Technology, Ministry of International Trade and Industry, Tokyo, Japan

Continuation of Ser. No. 431,560, Sep. 30, 1982, abandoned. This application May 14, 1984, Ser. No. 609,526
Claims priority, application Japan, Jan. 14, 1982, 57-4155
Int. Cl.³ C04B *35/18, 35/20, 35/48*
U.S. Cl. 501—102 3 Claims



1. A method for the manufacture of a low thermal expansion cordierite ceramic having an excellent dielectric property, which consists of preparing at least one zirconium compound selected from the group consisting of zirconium chloride, zirconium oxychloride, zirconium oxide, zirconium bromide, zirconium hydroxide and zirconium fluoride; and at least one phosphorus compound selected from the group consisting of phosphorus oxide, phosphorus bromide, phosphorus fluoride and phosphoric acid; in relative amounts representing a weight ratio of 1:1 to 5:1 as zirconia to phosphorus pentoxide; adding said zirconium compound and said phosphorus compound in said weight ratio to cordierite, which consists of 5 to 17% by weight of MgO, 30 to 45% by weight of Al_2O_3 and 43 to 60% by weight of SiO_2, in a combined amount of 2 to 25% by weight as the respective oxides, based on the amount of cordierite; and firing the resultant mixture at a temperature of 1200° C. to 1450° C., thereby giving rise to zircon in the sintered product.

4,495,301

INSULATING REFRACTORIES

Peter T. Sutor, Pittsburgh, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 6, 1983, Ser. No. 482,648
Int. Cl.³ C04B *35/02*
U.S. Cl. 501—124 3 Claims

1. A lightweight refractory monolith forming high alumina

sized graded batch comprising about 15 to 40%, by weight, of at least one material selected from the group consisting of hydrated alumina and activated alumina, the remainder being high alumina refractory material having an alumina content of at least about 50% and calcium aluminate cement, said high alumina refractory material including at least 25%, by weight of the batch, of hollow spherical particles of alumina, the cement constituting at least about 15%, by weight of the batch.

4,495,302

CERAMICS COMPACT

Derek Taylor, Congleton; Stephen P. Howlett, Macclesfield; Howard J. Farr, Gnosall, and Barbara L. Tickle, Stone, all of England, assignors to Doulton Industrial Products Limited, Staffordshire, England

Filed Jul. 26, 1983, Ser. No. 517,400

Claims priority, application United Kingdom, Jul. 28, 1982, 8221855

Int. Cl.³ C04B 35/44

U.S. Cl. 501—125 13 Claims

1. A fired ceramics compact suitable for use in casting of a superalloy material wherein the ceramics compact consists essentially of a ceramics material consisting of a solid solution of BaO and Al_2O_3 wherein the composition of the solid solution lies on or between a first and a second eutectic composition, the first and the second eutectic compositions being adjacent and occurring to either respective side of stoichometric $BaO.Al_2O_3$ in a phase diagram of the solid solution.

4,495,303

PROCESS FOR MAKING ZEOLITE ZSM-45 WITH A DIMETHYLDIETHYLAMMONIUM DIRECTING AGENT

Gustav H. Kuehl, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 29, 1983, Ser. No. 555,911

Int. Cl.³ C01B 33/28

U.S. Cl. 502—62 6 Claims

1. A method for preparing a synthetic porous crystalline aluminosilicate zeolite, said aluminosilicate zeolite having a silica to alumina ratio of at least 8, said aluminosilicate zeolite as calcined further being characterized by an X-ray diffraction pattern exhibiting values substantially as set forth in Table 1 of the specification, said method comprising preparing a mixture capable of forming said aluminosilicate zeolite, said mixture containing sources of alkali metal ions, an oxide of aluminum, an oxide of silicon, a dimethyldiethylammonium ion and water and having a composition in terms of moles of oxides, falling within the following ranges:

SiO_2/Al_2O_3	10–80
H_2O/OH^-	15–100
OH^-/SiO_2	0.40–0.80
DMDEA/(DMDEA + Z)	0.75–1.0

wherein DMDEA represents said dimethyldiethylammonium ion and Z represents said alkali metal ion, and maintaining said mixture under sufficient conditions until said crystalline aluminosilicate zeolite is formed.

5. A synthetic porous crystalline aluminosilicate zeolite having a composition, on an anhydrous basis and in terms of moles of oxides per mole of alumina, expressed by the formula:

$$(0.8-1.8)R_2O:(0.0-0.3)Na_2O:(0.0-0.5)K_2O:Al_2O_3:xSiO_2$$

wherein R_2O is the oxide of dimethyldiethylammonium ions and x is at least 8, said aluminosilicate zeolite as calcined being characterized by an X-ray diffraction pattern exhibiting values substantially as set forth in Table 1 of the specification.

4,495,304

CATALYST FOR CONVERSION OF HYDROCARBONS

Jin S. Yoo, Flossmoor, and John A. Jaecker, Homewood, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 301,678, Sep. 14, 1981, abandoned, which is a continuation-in-part of Ser. No. 173,315, Jul. 29, 1980, abandoned. This application May 16, 1983, Ser. No. 494,604

Int. Cl.³ B01J 29/06, 21/00

U.S. Cl. 502—66 48 Claims

1. A composition of matter comprising, in intimate admixture, a major amount of solid particles capable of promoting hydrocarbon conversion at hydrocarbon conversion conditions, said solid particles including at least one crystalline aluminosilicate capable of promoting said hydrocarbon conversion, and a minor amount of discrete entities having a composition different from said solid particles and comprising at least one metal-containing spinel which includes a first metal and a second metal having a valence higher than the valence of said first metal, the atomic ratio of said first metal to said second metal in said spinel being at least about 0.2 and said spinel having a surface area in the range of about 25 $m^2/gm.$ to about 600 $m^2/gm.$

2. The composition of claim 1 wherein said hydrocarbon conversion comprises hydrocarbon cracking in the substantial absence of added molecular hydrogen and a major amount, by weight of said solid particles have diameters in the range of about 10 microns to about 250 microns.

4. The composition of claim 2 wherein at least one of said solid particles and discrete entities further comprise a minor, catalytically effective amount of at least one additional metal component capable of promoting the conversion of sulfur dioxide to sulfur trioxide.

6. The composition of claim 1 wherein said spinel comprises alkaline earth metal-containing spinel and the atomic ratio of said first metal to second metal is at least about 0.25.

9. The composition of claim 6 wherein said spinel includes magnesium and aluminum, and the atomic ratio of magnesium to aluminum in said spinel is in the range of about 0.25 to about 0.75.

4,495,305

CATALYST FOR CONVERSION OF HYDROCARBONS

Jin S. Yoo, Flossmoor, and John A. Jaecker, Homewood, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 301,676, Sep. 14, 1981, abandoned, which is a continuation-in-part of Ser. No. 173,320, Jul. 29, 1980, abandoned. This application May 16, 1983, Ser. No. 494,603

Int. Cl.³ B01J 29/06, 21/00

U.S. Cl. 502—65 62 Claims

1. A composition of matter comprising, in intimate admixture, a major amount of solid particles capable of promoting hydrocarbon conversion at hydrocarbon conversion conditions, said solid particles including at least one crystalline aluminosilicate capable of promoting said hydrocarbon conversion, and a minor amount of discrete entities having a composition different from said solid particles and comprising at least one metal-containing spinel including alkaline earth metal and a second metal having a valence higher than the valence of said alkaline earth metal, the aromatic ratio of said alkaline earth metal to said second metal in said spinel being at least about 0.25 and said spinel having a surface area in the range of about 25 $m^2/gm.$ to about 600 $m^2/gm.$, and at least one rare earth metal component associated with said spinel.

46. A composition of matter comprising a major amount of at least one alkaline-earth metal-containing spinel including an alkaline earth metal and a second metal having a valence higher than the valence of said alkaline earth metal, the atomic ratio of said alkaline earth metal to said second metal in said spinel being at least about 0.17, said spinel having a surface area in the range of about 25 $m.^2/gm.$ to about 600 $m.^2/gm.$, and a minor amount of at least one rare earth metal component associated with said spinel.

50. The composition of claim 46 wherein said alkaline earth metal is magnesium and said second metal is aluminum and the atomic ratio of said magnesium to said aluminum in said spinel is at least about 0.25.

4,495,306

PREPARATION OF CATALYSTS BY THE PRECIPITATION OF A HYDROXIDE OR SULFIDE FROM AN EMULSION IN THE PRESENCE OF CARBONACEOUS SOLID

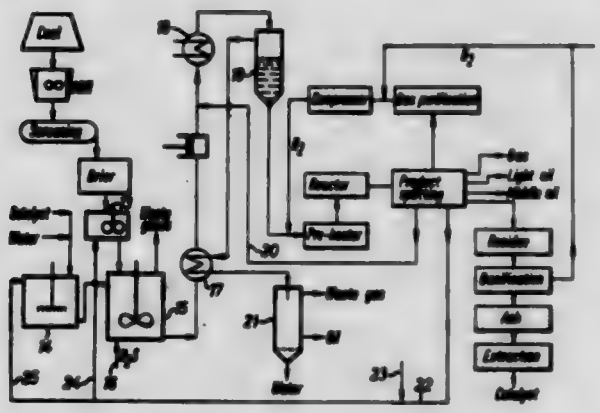
Peter Budahn, Ellerbeop, and Jörn Ehlers, Uetersen, both of Fed. Rep. of Germany, assignors to The British Petroleum Company Limited, London, England

Continuation of Ser. No. 364,177, Apr. 1, 1982, abandoned. This application Feb. 23, 1984, Ser. No. 582,894

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1981, 3114168

Int. Cl.³ B01J *23/82, 23/74;* C10G *1/06, 47/12*

U.S. Cl. 502—185 10 Claims



1. A process for the preparation of a catalyst suitable for hydrogenation of coal and/or heavy oil fractions by bringing a water-in-oil emulsion containing a salt of hydrogenating metal into contact with a carbonaceous solid followed by removal of water characterized in that the salt is converted into a hydroxide or sulphide while the water-in-oil emulsion is in contact with the carbonaceous material.

5. A process according to claim 1 wherein the carbonaceous material is suspended in oil, the emulsion is mixed with the suspension, and the salt is then converted to the hydroxide or sulphide.

9. A process according to claim 1 wherein a compound of calcium is added before, during or after the impregnation of the carbonaceous material to give a calcium concentration of 0.1 to 0.5% by weight, based on the carbonaceous material.

4,495,307

SHAPED CATALYST PARTICLE FOR USE IN HYDROPROCESSING OF PETROLEUM OILS

Porter Clements, Whiting, Ind., assignor to Kstalco Corporation, Oak Brook, Ill.

Filed Nov. 14, 1983, Ser. No. 551,063

Int. Cl.³ B01J *23/24, 23/74, 35/02*

U.S. Cl. 502—305 5 Claims

1. A catalyst particle comprising one or more hydrogenation metals selected from Group VIB and Group VIII of the Periodic Table of Elements and a porous, inorganic oxide substrate supporting said metal or metals, said particle having a generally cylindric configuration with a cross-section of trilobular shape having concave interlobular interstices bluntly rounded with greater curvature than the curvature of the lobes, wherein the trilobular shape is defined by an equilateral triangle, the midpoints of adjacent sides of the triangle serving as the centers for two lobe-defining radii of curvature (r_2), the vertices of the triangle defining the centers for the interstitial radii of curvature (r_1), and the common intersection of the bisectors of the included angles of the triangle serving as the center for the remaining lobe-defining radius of curvature (r_3).

4,495,308

TWO-REGION SPHERICAL CATALYSTS

Kirk R. Gibson, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 471,985, Mar. 4, 1983, abandoned. This application Feb. 14, 1984, Ser. No. 579,847

Int. Cl.³ B01J *21/04*

U.S. Cl. 502—355 12 Claims

1. A catalyst for hydroprocessing hydrocarbonaceous feedstocks comprising:

an inner region of catalyst characterized by having less than 5% of the pore volume contributed by macropores and comprising between 5 and 30 weight percent total catalytic metals supported on a refractory inorganic oxide; and

an outer region of catalyst characterized by having more than 10% of the pore volume contributed by macropores and comprising between 1 and 15 weight percent total catalytic metals supported on a refractory inorganic oxide.

4,495,309

REACTION INJECTION MOLDED POLYURETHANES, POLYUREAS AND POLYUREA-URETHANES EMPLOYING THIAPOLYCYCLIC POLYISOCYANATES

Tonja R. Sutton, and David W. Hughes, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 15, 1984, Ser. No. 610,453

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—51 14 Claims

1. A reaction injection molding composition comprising a polyahl, a normally liquid thiapolycyclic polyisocyanate and a urethane catalyst, a urea catalyst or a mixture of a urethane catalyst and a urea catalyst in proportions such that, upon subjecting the composition to conditions of a reaction injection molding process, a useful article is formed.

4,495,310

METHOD OF FORMING A URETHANE PREPOLYMER AND ITS USE IN CONSOLIDATING AGGREGATE MATERIAL

Richard R. Dedolph, Naperville, Ill., assignor to Gravi-Mechanics Co., Chicago, Ill.

Continuation-in-part of Ser. No. 350,946, Feb. 22, 1982, Pat. No. 4,439,552, which is a continuation of Ser. No. 262,204, May 8, 1981, Pat. No. 4,329,436. This application May 10, 1983, Ser. No. 493,378

The portion of the term of this patent subsequent to May 11, 1999, has been disclaimed.

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—99 9 Claims

1. A method of forming a urethane prepolymer, said method comprising the steps of:

(a) adding to a polyether or polyester compound under substantially anhydrous conditions a stoichiometric excess of a compound containing at least two active isocyanate groups per molecule to initiate an exothermic condensa-

tion reaction between said polyether or polyester compound and said isocyanate compound, the temperature of said reactants being such that the temperature of the reactants after addition of isocyanate is less than or equal to about 120° C., the density of said isocyanate compound being greater than the density of said polyether or polyester compound and said isocyanate compound being added gradually to said polyether or polyester without substantial added mixing whereby a relatively dense isocyanate layer and a polyether or polyester layer overlying said isocyanate layer are formed; and,

(b) allowing said reaction to proceed in order to form said urethane prepolymer.

4,495,311

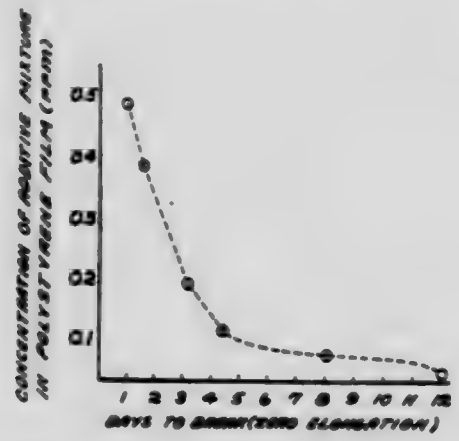
DEGRADABLE HYDROCARBON POLYMERS

Donald E. Hudgin, Princeton Junction, and Thomas Zawadzki, Princeton, both of N.J., assignors to Princeton Polymer Laboratories, Inc., Princeton, N.J.

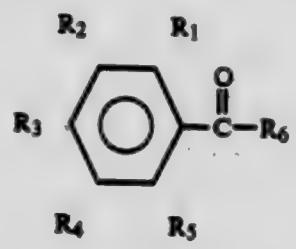
Division of Ser. No. 269,291, Jul. 6, 1972, Pat. No. 3,830,764. This application Mar. 27, 1974, Ser. No. 455,334

Int. Cl.³ C08F *8/06*

U.S. Cl. 523—126 43 Claims



1. A composition comprising a first component selected from the group consisting of chelates of a metal which is titanium or zirconium with a beta diketone, and a second component selected from the group consisting of (a) a benzoyl compound of the formula:



and (b) acetonaphthone where R_1, R_2, R_3, R_4 and R_5 are selected from the group consisting of hydrogen, halogen, alkyl, alkoxy, aryl, and aryloxy and R_6 is selected from the group consisting of alkyl, aralkyl, aryl, aroyl benzoylphenyl, and pyridyl groups and such groups substituted with a member of the group consisting of halogen, alkyl, aryl, alkoxy, and aryloxy, each of said components being present in an amount sufficient that the mixture thereof is more effective to decrease the time of degradation of a polymer of an olefin having having 2 to 3 carbon atoms than a corresponding amount of either member of the two component additive system by itself.

4,495,312

RESIN COMPOSITION SUITABLE FOR USE IN MEDICAL DEVICES

Hiroyoshi Hata, Shiga; Seiichiro Honda, Takarazuka; Seiya Hosokawa, Ibaraki; Kazuhiko Kuki, Uji; Toshiharu Matsumiya, and Kazuo Sakamoto, both of Shizuoka, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 11, 1983, Ser. No. 474,349

Claims priority, application Japan, Mar. 16, 1982, 57-41889; Jun. 1, 1982, 57-94582; Oct. 18, 1982, 57-183501

Int. Cl.³ C08K *5/15*

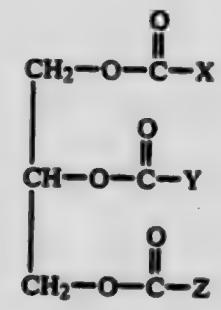
U.S. Cl. 523—105 14 Claims

1. A resin composition comprising the following blend:

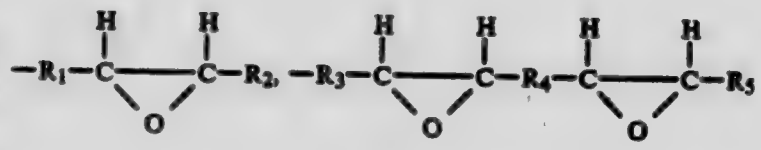
(a) a vinyl chloride/ethylene copolymer having an ethylene content in the range of 3 to 12% by weight, an average degree of polymerization in the range of 700 to 2900 and a ratio of weight average molecular weight to number average molecular weight in the range of from 2.5:1 to 5.5:1,

(b) an ethylene/carbon monoxide/vinyl acetate copolymer, and

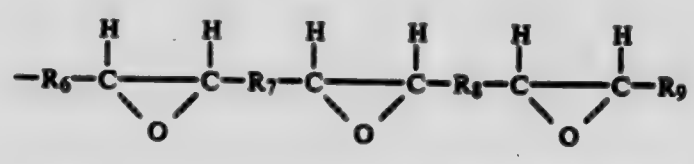
(c) a glycerin ester of the following formula



wherein X, Y and Z are identical or different and each represents a hydrogen atom or a residue of an epoxidized aliphatic carboxylic acid selected from the class consisting of



and



in which R_1, R_3, R_4, R_6, R_7 and R_8, independently from each other, represent a saturated or unsaturated, linear or branched divalent hydrocarbon group having 1 to 25 carbon atoms, and R_2, R_5 and R_9, independently from each other, represent a saturated or unsaturated, linear or branched monovalent hydrocarbon group having 1 to 25 carbon atoms,

provided that X, Y and Z are not hydrogen atoms at the same time;

said composition being such that before blending the ingredients of the resin composition, the ethylene/carbon monoxide/vinyl acetate copolymer is treated with a liquid which substantially dissolves acetic acid and in which the copolymer is substantially insoluble and the thus-treated copolymer is dried.

4,495,313

PREPARATION OF HYDROGEL FOR SOFT CONTACT LENS WITH WATER DISPLACEABLE BORIC ACID ESTER

Hans-Ole Larsen, Farum, Denmark, assignor to Mia Lens Production A/S, Copehagen, Denmark

Continuation-in-part of Ser. No. 259,115, Apr. 30, 1981, abandoned. This application Mar. 19, 1982, Ser. No. 360,107
Int. Cl.³ C08K 5/05; C08F 2/16; C08L 33/08
U.S. Cl. 523—106 13 Claims

1. A method of forming a hydrogel of improved mechanical and optical properties appropriate for use in a soft contact lens which comprises providing a substantially anhydrous polymerizable mixture of a polymerizable, hydrophilic hydroxy ester of acrylic or methacrylic acid and a polyhydric alcohol, and a water displaceable ester of boric acid and a polyhydroxyl compound having at least 3 hydroxyl groups or mixtures thereof, causing said mixtures to polymerize so as to form a hydrophilic polymer containing at least 30% by volume of said boric acid ester, and displacing said boric acid ester with water.

4,495,314

DENTURE ADHESIVE CREAMS WITH IMPROVED EXTRUDABILITY

James J. Keegan, Bloomfield, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 23, 1981, Ser. No. 323,508
Int. Cl.³ A61K 6/00
U.S. Cl. 523—120 35 Claims

1. In an improved denture adhesive composition comprising an adhesive component and a vehicle, wherein said vehicle comprises a gel consisting essentially of:

A. a mineral oil component;

B. a polyolefin wax component; the improvement wherein said vehicle comprises

sorbitan monostearate, in an amount of from about 0.25% to about 2.25% by weight of said gel wherein said denture adhesive exhibits improved extrudability.

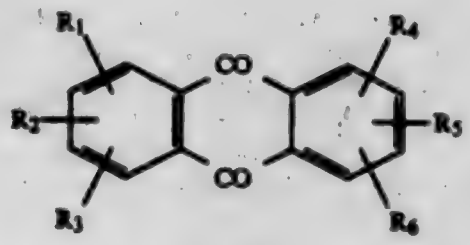
4,495,315

PHOTO-DEGRADABLE STYRENE RESIN COMPOSITIONS

Hiroshi Miyoshi, Takatsuki; Hirokumi Mori, and Yoriko Tanoue, both of Suita, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 153,013, Jun. 14, 1971, abandoned. This application Sep. 9, 1974, Ser. No. 504,159
Claims priority, application Japan, Sep. 18, 1970, 45-82135; Sep. 19, 1970, 45-82381; Dec. 4, 1970, 45-107896; Dec. 28, 1970, 45-126948
Int. Cl.³ C08F 8/50
U.S. Cl. 523—125 18 Claims

1. A photo-degradable styrene resin composition which consists essentially of a polystyrene resin selected from one of the group consisting of a homopolymer of styrene and a copolymer of styrene with at most 50 mole percent of another comonomer copolymerizable therewith selected from the group consisting of methyl acrylate, ethyl acrylate, butyl acrylate, acrylic acid, methacrylic acid, methyl methacrylate, acrylonitrile, butadiene, isoprene, maleic acid, maleic anhydride, maleic acid esters, itaconic acid and itaconic acid esters, and, incorporated therein, at least one photo-degradable agent selected from compounds of the following formula



wherein R_1, R_2, R_3, R_4, R_5, and R_6, which may be the same or different, represent a member selected from the group consisting of hydrogen, chlorine, bromine, hydroxyl, methyl, ethyl, methoxy, ethoxy and nitro; with the proviso that when at least one of R_1, R_2, R_3, R_4, R_5, or R_6 is a hydroxyl group, said hydroxyl group is not present in an ortho-position to a —CO— group;

said photo-degradable agent being present in an amount sufficient to exhibit a photo-degradable effect.

4,495,316

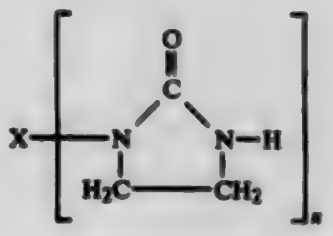
ACID-CURABLE FLUORIDE-CONTAINING NO-BAKE FOUNDRY RESINS

David R. Armbruster, Forest Park, Ill., assignor to Acme Resin Corporation, Forest Park, Ill.

Filed Sep. 23, 1976, Ser. No. 726,032
Int. Cl.³ C08L 61/10; C08K 3/16
U.S. Cl. 523—139 25 Claims

1. An acid-curable resin binder solution consisting essentially of:

(a) a resinous material selected from the group consisting of phenolic resole resins, furan resins, resorcinol resins, phenolic resorcinol resins, ethylene urea-terminated resins characterized by the formula:



wherein X is an organic structure having a molecular weight of from about 100 to about 5000 and n is greater than one and mixtures thereof;

(b) a compound that generates fluoride during acid-curing of the prepolymer; and

(c) a hydrophilic solvent for said resinous material, said solvent being present in an amount sufficient to provide a viscosity in the range of from about 10 to about 1000 cps at 25° C.

4,495,317

WARER REDUCIBLE EPOXY COATING COMPOSITION

Richard A. Albers, Irvine, Calif., assignor to Deft Chemical Coatings, Inc., Irvine, Calif.

Continuation of Ser. No. 143,916, Apr. 25, 1980, Pat. No. 4,352,898. This application May 7, 1982, Ser. No. 375,996
The portion of the term of this patent subsequent to Oct. 5, 1999, has been disclaimed.
Int. Cl.³ C08J 3/08; C08L 63/00; C07D 3/58
U.S. Cl. 523—414 31 Claims

1. A homogeneous water-reducible coating composition comprising epoxy resin and sufficient modified polyamine resin to cure the epoxy resin, the modified polyamine resin being a polyamide-epoxy adduct formed by reacting a poly-aminoimidazoline and diglycidyl ether of bisphenol A, the modified polyamine resin being homogeneously reduced in an aqueous system comprising nitroparaffin in an amount of at least 2% by weight of the modified polyamine resin and water in an amount

of at least 50% by weight of the modified polyamine resin, the composition containing substantially no emulsifier, the nitroparaffin having the formula C_nX_{2n+2} where n is an integer from 1 to 4 and each X is independently selected from the group consisting of chlorine, hydrogen, and NO_2, where at least one but no more than two X's are NO_2, the modified polyamine resin being inherently insoluble and non-dispersible in water.

4,495,318

LOW TACK MICROSPHERE GLUE

Philip H. Howard, Jamesville, N.Y., assignor to International Cube Corporation, Syracuse, N.Y.

Filed Mar. 21, 1984, Ser. No. 591,948
Int. Cl.³ C08F 2/30, 265/02; C08L 51/00
U.S. Cl. 524—375 1 Claim

1. A low tack microsphere glue for application to a substrate to provide a reusable adhesive surface having microspheres surrounded by hydrated layers of surfactant which act as a steric barrier to particle coalescence prepared according to the process comprising the steps of:

admixing, in approximate parts by weight, 2820 parts water; 54 parts of a 15% aqueous solution of polyacrylic acid having a molecular weight of 300,000 to 500,000 until said acid is dissolved;

raising the pH of the solution to 7.0 by adding concentrated ammonium hydroxide thereto;

adding 3.7 parts of a 70% active benzoyl peroxide catalyst and 1000 parts 2-ethylhexyl acrylate to the solution;

holding said mixture under a vacuum of about 25 inches of mercury with stirring for about 5 minutes;

adding, under a nitrogen purge, about 21.5 parts of a non-ionic surfactant selected from the group consisting of octylphenol ethoxylate or polyoxyethylene oleyl ether with agitation;

heating the mixture to about 60° C. for about 16 hours to form an aqueous compression; and

passing the suspension through a 250 micron screen to remove the small amount of unsuitable larger particle agglomerates.

4,495,319

WATER BASED CONCRETE CURE

John J. Sackis, Bartlett, and Paul H. Anderson, Elgin, both of Ill., assignors to W. R. Meadows, Inc., Chicago, Ill.

Division of Ser. No. 421,851, Sep. 23, 1982, Pat. No. 4,439,563. This application Dec. 29, 1983, Ser. No. 566,798
Int. Cl.³ C08K 5/35
U.S. Cl. 524—96 3 Claims

1. A method for making a white pigmented water based concrete cure by predispersing a white pigment and mixing the pigment dispersion with a clear resin/wax emulsion concentrate and let down water comprising the steps of:

adding dispersing water to a disperser vessel means;

adding a volatile base to the disperser vessel means;

activating disperser means of the disperser vessel means;

adding a fatty acid to the disperser vessel means whereby the fatty acid combines with the volatile base thereby forming an anionic emulsifier;

adding a white pigment to the disperser vessel means;

dispersing the white pigment;

mixing the pigment dispersion with a clear resin/wax emulsion concentrate and let down water; and thereby, forming a white pigmented concrete cure having a reflectancy value of at least 60 and having water present in the range of from about 60% to about 85% by weight and resin/wax solids present in the range of from about 13% to about 30% by weight.

4,495,320

3,6-DI-T-BUTYL-2-NAPHTHYL CATECHOL PHOSPHITE AND COMPOSITIONS THEREOF

Dwight W. Chasar, Northfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed May 27, 1983, Ser. No. 498,622
Int. Cl.³ C08K 5/34, 5/52
U.S. Cl. 524—101 10 Claims

1. A composition comprising materials subject to degradation and a stabilizing amount of 3,6-di-t-butyl-2-naphthyl catechol phosphite.

4,495,321

POLYIMIDE AND/OR POLYAMIDE-IMIDE COMPOSITIONS IN MIXED SOLVENTS

Mary T. Arnold, Upland, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 19, 1983, Ser. No. 562,680
Int. Cl.³ C08L 79/08
U.S. Cl. 524—104 5 Claims

1. A coating composition comprising a polymer selected from polyamide-imides and polyimides dissolved in a mixture of solvents which consist essentially of

(a) from about 10 percent to about 90 percent by weight N-methyl pyrrolidone and

(b) correspondingly from about 90 percent to about 10 percent by weight acetophenone wherein the solids content of the polymer solvent solution is between about 5 percent and 40 percent by weight based on the total weight of solution, said acetophenone having a purity of at least 98.5 percent.

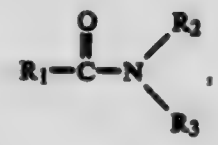
4,495,322

SILICONE RESIN COATING AGENT

Ralf Liebler, Darmstadt, Fed. Rep. of Germany, assignor to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

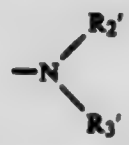
Continuation of Ser. No. 411,641, Aug. 26, 1982, abandoned. This application Mar. 5, 1984, Ser. No. 586,632
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135241
Int. Cl.³ C08K 5/16
U.S. Cl. 524—198 9 Claims

1. An aqueous coating formulation having improved storage stability, said formulation having a pH between 3 and 6 comprising (A) a silicone resin condensation product prepared by condensing a partially hydrolyzed organosilicon compound in the presence of a catalytic amount of an acid and (B) from 0.01 to 1 mole, per mole of organosilicon compounds present in said coating formulation, of an amide of the formula



wherein

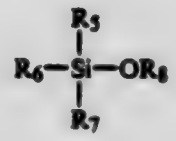
R_1 is hydrogen, linear or branched alkyl having 1 to 22 carbon atoms, phenyl, substituted phenyl, or —OR_4 where R_4 is alkyl having 1 to 18 carbon atoms, phenyl, naphthyl, or substituted phenyl or naphthyl, or R_1 is



where R_2' and R_3' are the same or different and have the same meanings as R_2 and R_3, defined below, and

R_2 and R_3, which are the same or different, taken alone are hydrogen, alkyl having from 1 to 4 carbon atoms, phenyl, or substituted phenyl, or wherein R_2 and R_3, taken to-

gether with the nitrogen atom, or R_1 and R_3, taken together with the bridging nitrogen and carbonyl carbon atoms, form a heterocycle having 5 to 7 members or such a heterocycle containing further nitrogen or oxygen atoms, and wherein said organosilicon compound which is condensed is a partial hydrolysis product of a compound of the formula

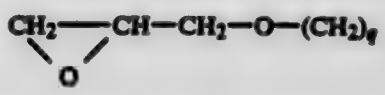


wherein

R_5, R_6 and R_7 independently of one another are $-(O)_nR_9$ where R_8 and R_9 are alkyl having from 1 to 5 carbon atoms, or vinyl, allyl, or phenyl and n is zero or one, or

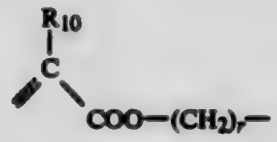
R_8 and/or R_9 are $H[NH-(CH_2)_{m'}]_p-NH(CH_2)_m-$, m and m' are each an integer from 1 to 6, and p is zero or one, or

R_8 and/or R_9 are



where q is an integer from 1 to 6, or

R_8 and/or R_9 are



where R_{10} is hydrogen or methyl and r is an integer from 1 to 6,

with the proviso that when R_8 or R_9 are not alike one of them is alkyl having from 1 to 5 carbon atoms or is vinyl, allyl, or phenyl.

4,495,323

SOLVENT RESISTANT POLYMERIC COMPOSITION

James H. Collins, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 542,866, Oct. 17, 1983, abandoned. This application Feb. 6, 1984, Ser. No. 577,452

Int. Cl.³ C08L 23/08, 53/02; C08K 3/26, 5/01

U.S. Cl. 524—426 7 Claims

1. A polymeric composition comprising:

(a) about 5 to about 90 parts by weight of a radial $(AB)_xBA$ block copolymer where x is greater than 1, each block A being a monoalkenyl arene polymer block having an average molecular weight between about 5,000 and about 30,000, each block B being an elastomeric conjugated diene polymer block having an average molecular weight between about 15,000 and about 300,000, the blocks A comprising between about 20 and about 40 percent by weight of said block copolymer having a melt index between about 0.1 and about 30.0;

(b) 0–100 parts of a radial $(C\,D)_xDC$ block copolymer where x is greater than 1, each block C being a monoalkenyl arene polymer block having an average molecular weight between about 20,000 and about 40,000, each block D being an elastomeric conjugated diene polymer block having an average molecular weight between about 15,000 and about 300,000, the blocks C comprising about 40 to about 55 percent by weight of said block copolymer;

(c) about 10 to about 95 parts by weight of a linear low density polyethylene having a melt index between about 0.1 and 30, and a density greater than about 0.90 grams per cubic centimeter;

(d) about 0 to about 200 parts by weight of a hydrocarbon rubber extending oil;

(e) about 0 to about 150 parts by weight of a polystyrene resin; and

(f) about 0 to about 200 parts by weight of a finely divided filler.

7. A shoe sole having the composition of claim 1.

4,495,324

GLASS REINFORCED POLYAMIDE COMPOSITION CONTAINING ACRYLIC CORE/SHELL POLYMER

Varkki P. Chacko, Summit, and Timothy J. Kraft, Pompton Plains, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 544,678, Oct. 24, 1983, abandoned. This application Nov. 10, 1983, Ser. No. 550,691

Int. Cl.³ C08K 3/40

U.S. Cl. 524—504 13 Claims

1. A composition comprising:

a polyamide;

a reinforcing amount of glass fiber; and

from 1 to 25 percent by weight based on the weight of the polyamide of a core/shell polymer wherein the core/shell polymer comprises 40 to 90 parts by weight of an elastomeric core comprising an acrylic elastomer and 10 to 60 parts by weight of a rigid shell, the shell consisting essentially of from 20 to 100 parts by weight of a methacrylic ester, 0 to 80 parts by weight of styrene, and 0 to 50 parts of weight of acrylonitrile.

4,495,325

POLYMER-BOUND ULTRAVIOLET STABILIZER COATING COMPOSITIONS CONTAINING CROSS LINKERS

Michael DeBergalis, and Robert P. O'Fee, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 25, 1983, Ser. No. 469,688

Int. Cl.³ C08L 61/28, 37/00

U.S. Cl. 524—507 34 Claims

1. A coating composition containing an ultraviolet stabilizer polymer which absorbs ultraviolet radiation and effectively dissipates the resulting energy as heat, but which does not contain effective amounts of ultraviolet sensitizer, said polymer of said coating composition comprising, by weight, 12.5–50% of a first moiety which absorbs ultraviolet energy said first moiety being bound to a polymeric second moiety to produce said ultraviolet stabilizer polymer containing, by weight, 12.5–80% of said first moiety,

said coating composition also containing a cross-linking species which aids in cure of coatings by cross linking with said stabilizer polymer.

4,495,326

RUBBER COMPOUNDS CONTAINING ZINC DIMETHACRYLATE

Thomas F. Donatelli, and Philip F. Murray, both of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jan. 9, 1984, Ser. No. 569,418

Int. Cl.³ C08K 3/04; C08L 51/00, 31/00

U.S. Cl. 524—533 5 Claims

1. A sulfur-curable natural rubber compound comprising:

(a) 100 parts by weight of natural rubber;

(b) from about 20 to 120 parts by weight of carbon black;

(c) from about 1 to about 15 parts by weight of sulfur; and

(d) from about 0.2 to about 15 parts by weight of a zinc dimethacrylate powder having a surface area of from about 3.7 to about 5.4 m^2/g or more.

4,495,327

AQUEOUS CATIONIC SURFACE-COATING SYSTEM AND ITS USE

Hans-Uwe Schenck, Wachenheim; Rainer Blum, Ludwigshafen; Erich Gulbins, Heidelberg; Fritz-Erdmann Kempter, Feldafing, and Eberhard Schupp, Schwetzingen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 371,012, Apr. 22, 1982, abandoned. This application Jul. 18, 1983, Ser. No. 515,026
Claims priority, application Fed. Rep. of Germany, May 9, 1981, 3118418
Int. Cl.³ C09D *3/80, 5/40*
U.S. Cl. 524—556 4 Claims

1. An aqueous cationic surface-coating system containing an olefinically unsaturated surface-coating binder having basic nitrogen groups, which binder contains α,β-olefinically unsaturated amidomethyl groups or α,β-olefinically unsaturated carboxylic acid ester groups or products derived from a diene polymer or a mixture of these products wherein some or all of the basic nitrogen groups are converted into salts with acid, which surface-coating system contains from 1 ppm to 1% by weight (metal content, based on the binder) of a Co, Mn, Pb, Ce, Zr, Ca, Zn, Fe, Al, Cu, Ni or Cd complex, if appropriate in combination with an inhibitor or an initiator which supplies free radicals or with a mixture of an inhibitor and an initiator which supplies free radicals.

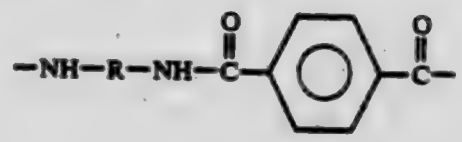
4,495,328

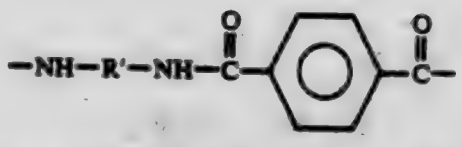
CRYSTALLINE COPOLYAMIDES FROM TEREPHTHALIC ACID AND HEXAMETHYLENEDIAMINE AND TRIMETHYLHEXAMETHYLENEDIAMINE

Wassily Poppe, Lombard; Yu-Tsai Chen, Glen Ellyn, and Larry W. Autry, Lisle, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 466,903, Feb. 16, 1983, abandoned. This application Apr. 19, 1984, Ser. No. 601,909
Int. Cl.³ C08G *69/26*
U.S. Cl. 524—606 21 Claims

1. A crystalline injection moldable polyamide copolymer of terephthalic acid and hexamethylenediamine and trimethylhexamethylenediamine which copolymer has a heat deflection temperature of at least about 240° C. when molded and filled with glass fibers, glass beads or graphite fibers, comprising the following recurring structural units:

(A) 

(B) 

wherein R is a straight chain aliphatic hydrocarbon radical containing 6 carbon atoms and R′ is a tri-methyl substituted saturated hydrocarbon radical 6 carbon atoms in length with two of three methyl groups on the same carbon atom wherein the ratio of A units to B units is about 55:45 to about 95:5.

4,495,329

PHENOLIC RESIN COMPOUNDS

Robert E. Blair, Columbus, and Michael R. Peeda, Ahoskie, both of Ohio, assignors to Georgia-Pacific Resins, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 479,125, Mar. 28, 1983, abandoned, which is a continuation of Ser. No. 385,124, Jun. 4, 1982, abandoned, which is a continuation of Ser. No. 224,103, Jan. 5, 1981, abandoned. This application Feb. 16, 1984, Ser. No. 580,701
Int. Cl.³ C08K *5/10*
U.S. Cl. 524—774 15 Claims

1. A thermosetting phenolic resin compositions comprising a phenol-aldehyde resole resin produced in the presence of a plasticizing amount of a phenolic ester reaction product, said product being made by the reaction of an unsaturated fatty acid containing from 8 to 22 carbon atoms and a phenol in the presence of a mineral acid.

4,495,330

CROSSLINKERS FOR RTV COMPOSITIONS

Rack H. Chung, deceased, late of Saratoga County, N.Y., and by Betsy A. Chung, executrix, 12 Appletree Ct., Clifton Park, N.Y. 12065, assignors to General Electric Company, Waterford, N.Y.

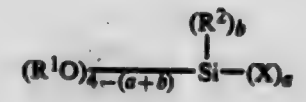
Filed May 25, 1983, Ser. No. 497,777
Int. Cl.³ C08K *3/10*
U.S. Cl. 524—783 29 Claims

1. A stable, one package, substantially anhydrous and substantially acid-free, room temperature vulcanizable organopolysiloxane composition stable under ambient conditions in the substantial absence of moisture over an extended period of time and convertible to a translucent and colorless tack-free elastomer comprising:

(A) a polydiorganosiloxane base polymer wherein the silicon atom at each chain end is terminated with at least two alkoxy radicals;

(B) an effective amount of condensation catalyst;

(C) a stabilizing amount of silane scavenger for hydroxy functional groups having the formula:



where R^1 is a $C_{(1-8)}$ aliphatic organic radical selected from alkyl, alkylether, alkylester, alkylketone and alkylcyano or a $C_{(7-13)}$ aralkyl radical, R^2 is a $C_{(1-13)}$ monovalent substituted or unsubstituted hydrocarbon radical, X is a cycloaliphatic enoxy radical, a is a whole number equal to 1 to 4, b is a whole number equal to 0 to 3, and the sum of a+b equals 1 to 4; and

(D) an effective amount of curing accelerator selected from the group consisting of substituted guanidines, amines and mixtures thereof.

10. The composition of claim 1 further comprising an effective amount of adhesion promoter.

11. The composition of claim 1 further comprising an effective amount of sag control agent.

4,495,331

SCAVENGERS FOR RTV SILICONE RUBBER COMPOSITIONS

Rack H. Chung, deceased, late of Saratoga County, N.Y. (by Betsy A. Chung, executor), assignor to General Electric Company, Waterford, N.Y.

Filed May 25, 1983, Ser. No. 497,780
Int. Cl.³ C08K *3/10*
U.S. Cl. 524—783 44 Claims

1. A stable, one package, substantially anhydrous and substantially acid-free, room temperature vulcanizable organopolysiloxane composition stable under ambient conditions in

the substantial absence of moisture over an extended period of time and convertible to a tack-free elastomer, comprising:

(A) a polydiorganosiloxane base polymer wherein the silicon atom at each chain end is terminated with at least two alkoxy radicals;

(B) an effective amount of condensation catalyst; and

(C) a stabilizing amount of organic scavenger for hydroxy groups which has the formula:

$$R\text{-}(N{=}C{=}O)_x$$

where R is a linear or cyclic aliphatic group or an aromatic group, and x equals at least 1.

19. The composition of claim 1 further comprising up to about 700 parts by weight filler.

20. The composition of claim 19 wherein the filler is selected from the group consisting of titanium dioxide, zirconium silicate, silica aerogel, iron oxide, diatomaceous earth, fumed silica, carbon black, precipitated silica, glass fibers, polyvinylchloride, ground quartz and calcium carbonate.

4,495,332

PROCESS FOR PRODUCING AROMATIC SULFIDE POLYMERS

Zenya Shiiki; Yo Iizuka, and Yukichika Kawakami, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 1983, Ser. No. 517,837

Claims priority, application Japan, Jul. 29, 1982, 57-131166; Apr. 11, 1983, 58-63256

Int. Cl.³ C08F *2/16*

U.S. Cl. 524—800 11 Claims

1. A process for producing an aromatic sulfide polymer which comprises heating, to a temperature of 100° to 250° C. in an aprotic solvent, a mixture consisting essentially of:

(A) a dihaloaromatic compound;

(B) a substantially anhydrous fine powder of a sulfide of a metal selected from the group consisting of an alkali metal and an alkaline earth metal;

(C) a substantially anhydrous fine powder of a carbonate of a metal selected from the group consisting of an alkali metal and an alkaline earth metal, or a mixture of the metal carbonate and a hygroscopic inorganic salt; and

(D) water dissolved in the aprotic solvent in a quantity of 0.01 to 2 mols per gram equivalent of the metal sulfide.

4,495,333

POLYPHENYLENE OXIDE/POLYSTYRENE BLOCK COPOLYMERS

Dwain M. White, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 390,094, Jun. 21, 1982, abandoned. This application Nov. 28, 1983, Ser. No. 555,795

Int. Cl.³ C08L *81/02, 85/02*

U.S. Cl. 525—150 15 Claims

1. A block copolymer comprising a phosphoryl-coupled polyphenylene oxide radical and polyfunctional polystyrene radical.

4,495,334

ETHYLENE POLYMER BLEND COMPOSITIONS

Kazuo Matsuura, Tokyo; Noboru Yamaoka; Shinichi Yasuhashi, both of Yokohama; Katumi Usui, Yokosuka, and Mituji Miyoshi, Kanagawa, all of Japan, assignors to Nippon Oil Company Ltd., Tokyo, Japan

Continuation of Ser. No. 257,647, Apr. 27, 1981, abandoned. This application Jan. 4, 1983, Ser. No. 455,472

Claims priority, application Japan, Apr. 3, 1980, 55-56363

Int. Cl.³ C08L *23/20, 23/04*

U.S. Cl. 525—240 4 Claims

1. A polymer composition having a melt index of 0.01 to 5.0 and a density of 0.880 to 0.935, said polymer composition comprising a blend of:

(1) 40 to 70 parts by weight of an ethylene/α-olefin copolymer having an intrinsic viscosity determined in decalin at 135° C. in the range of from 3.5 to 8.0 dl/g and a density in the range of from 0.850 to 0.903 which copolymer is obtained by copolymerizing ethylene with an α-olefin having 4 to 12 carbon atoms in a substantially liquid solvent-free vapor phase condition and in the presence of a catalyst comprising a solid ganoaluminum compound, said solid substance containing magnesium and titanium and-/or vanadium, and

(2) 60 to 30 parts by weight of a high-pressure process polyethylene having an intrinsic viscosity determined in decalin at 135° C. of not higher than 1.3 dl/g and a density of 0.915 to 0.935.

4,495,335

SELF-CROSSLINKING HEAT-CURABLE BINDER

Michael Geist, Münster, and Horst Diefenbach, Nottuln, both of Fed. Rep. of Germany, assignors to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

Filed Mar. 7, 1983, Ser. No. 472,639

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1982, 3215891

Int. Cl.³ C08L *67/04*

U.S. Cl. 525—438 9 Claims

1. A self-cross-linking heat-curable binder based on an organic synthetic resin which contains amino groups and esterified carboxyl groups and is water-dilutable due to neutralization with acids, in which the esterified carboxyl groups are activated in the alcohol component and are β-hydroxylalkyl ester groups or carbalkoxymethyl ester groups and said organic synthetic resin is an epoxy resin which has been prepared by reacting a polyglycidyl ester or ether with a compound which carries two groups which are reactive toward epoxy groups and at least one of said esterified carboxyl groups to give an intermediate produce having terminal epoxy groups, and reacting said terminal epoxy groups having open rings with a compound selected from the group consisting of primary amines, secondary amines, ketimines having a hydrogen atom on the nitrogen atom, and aminoalcohols blocked at the nitrogen atom or a polyurethane resin which has been prepared by reacting a diisocyanate with a compound which carries two groups which are reactive toward isocyanate groups and at least one of said esterified carboxyl groups to give an intermediate product having terminal isocyanate groups, and reacting said terminal isocyanate groups with a compound selected from the group consisting of primary amines, secondary amines, ketimines having a hydrogen atom on the nitrogen atom, aldimines having a hydrogen atom on the nitrogen atom, and aminoalcohols blocked at the nitrogen atom.

4,495,336

MERCAPTO-POLYCARBOXYLIC ACIDS

Rudolf H. Hausler, and Neil E. S. Thompson, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Jun. 7, 1982, Ser. No. 385,351

Int. Cl.³ C23F *11/04*; E21B *43/22*

U.S. Cl. 252—8.55 E 20 Claims

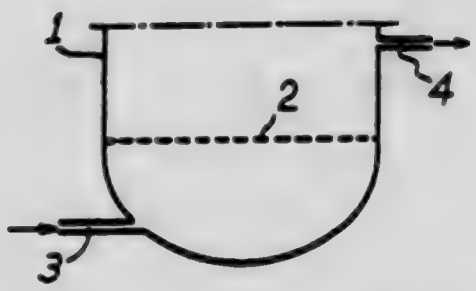
1. A process of inhibiting corrosion which comprises treating a system with a sulfidic sulfur-containing polycarboxylic acid having carboxylic groups attached to adjacent carbons, or a derivative thereof selected from the group consisting of anhydrides, salts, esters, amides, aminoamides, ester amides, polyamides, polyester amides, and cyclic amidines of said carboxylic acid.

4,495,337

PROCESS FOR THE BOTTOM DRAINAGE OF A FLUID-BED POLYMERIZATION REACTOR

Charles Raufast, Saint Julien Les Martigues, France, assignor to BP Chimie Societe Anonyme, Paris, France

Filed Feb. 24, 1983, Ser. No. 469,528
Claims priority, application France, Feb. 26, 1982, 82 03204
Int. Cl.³ C08F 2/00
U.S. Cl. 526—88 2 Claims



1. Process permitting the partial or total evacuation of a fluidised bed in which a polymerisation or a copolymerisation of gaseous alpha-olefin is being carried out on a solid fluidised catalyst, the said polymerisation or copolymerisation being effected in a reactor comprising in its bottom part a plate, a gas inlet situated between the said plate and the bottom of the reactor, a lateral pipe located above the said plate for the discharge of fluidised particles, a vertical evacuation piping having an opening at the level of the plate and leading into a funnel, the said vertical piping being occluded by a cock with high-speed opening, and a gas inlet tube leading into the said vertical piping between the plate and said cock, the process being characterised by the fact that:

the ratio of pressure existing in the reactor to that existing in said funnel when said cock with high-speed opening is closed, is greater than 5, the difference between these two pressures being greater than 0.4 MPa.

a quantity of gas is admitted via the gas inlet tube such that when said cock is closed, the gaseous stream in the vertical piping has a speed between approximatively 5 and 50 times the minimum speed of the gases which would cause fluidisation of the polymer particles in the said piping,

said partial evacuation is carried out by periodically opening and closing the said cock with high-speed opening.

4,495,338

COMPONENTS OF CATALYSTS FOR THE POLYMERIZATION OF OLEFINS

Adolfo Mayr, Ferrara, Italy; Ernanno Susa, Brussels, Belgium, and Ettore Giachetti, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Continuation of Ser. No. 267,624, Jun. 29, 1972, abandoned, which is a continuation of Ser. No. 878,535, Nov. 20, 1969, abandoned. This application Sep. 24, 1980, Ser. No. 190,375
Claims priority, application Italy, Nov. 21, 1968, 24008 A/68
The portion of the term of this patent subsequent to Nov. 3, 1998, has been disclaimed.
Int. Cl.³ C08F 4/02, 10/00
U.S. Cl. 526—125 57 Claims

1. Components of catalysts for the polymerization of olefins comprising the product obtained by contacting a transition metal halide selected from titanium and vanadium halides in which the metal has a valence lower than 4, with an active form of an anhydrous magnesium dihalide, the titanium or vanadium halide being used in an amount less than 50% by weight with respect to the magnesium dihalide, and the active magnesium dihalide being characterized in that, in its X-rays powder spectrum, the most intense diffraction line present in the spectrum of the normal, non-active magnesium dihalide is less intense and, in its place, a broadened halo appears.

4,495,339

CHEMICAL APPROACH FOR CONTROLLING NADIMIDE CURE TEMPERATURE AND RATE

Richard W. Leaver, Rocky River, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 516,217, Jul. 22, 1983, abandoned. This application Dec. 14, 1983, Ser. No. 561,434
Int. Cl.³ C08F 20/52
U.S. Cl. 526—262 1 Claim

1. A method of retarding the rate of polymerization in a maleimide prepolymer comprising the step of adding an effective amount of norbornenyl end-capped reactant, said effective amount being substantially less than 1.0 mole fraction relative to the maleimide.

4,495,340

CURABLE MASSES PRODUCING CARBOXYFUNCTIONAL SILICONE COATINGS

John D. Blizzard, Bay City, and Terence J. Swihart, Essexville, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 23, 1983, Ser. No. 565,074
Int. Cl.³ C08G 77/06
U.S. Cl. 528—15 34 Claims

1. A curable mass comprising the combination of:

(A) the reaction product of

(i) an organosilicon resin consisting essentially of $R_3SiO_{\frac{1}{2}}$ units and $SiO_{4/2}$ units wherein R represents a monovalent hydrocarbon radical, the ratio of $R_3SiO_{\frac{1}{2}}$ units to $SiO_{4/2}$ units is from 0.6/1 to 0.9/1 said resin containing from 0.1% to 5% by weight, based on the total weight of reactant (i), of hydroxyl radicals bonded to silicon atoms, and

(ii) a polyorganohydrogensiloxane;

(B) a carboxyfunctional silicone having the general unit formula $Q_aR'_bSiO_{(4-a-b)/2}$ wherein

Q is a carboxyfunctional radical,

R' is selected from the group consisting of monovalent hydrocarbon radicals, hydride radicals, and hydroxy radicals,

a has a value of 0 to 3,

b has a value of 0 to 3,

the sum of the values of a plus b is from 1 to 3, there being at least one Q radical and at least of R' radical selected from the group consisting of hydride radicals, vinyl radicals, and hydroxy radicals; and

(C) a catalytically effectiv amount of a catalyst.

4,495,341

EPOXY-MODIFIED POLYOLS AND POLYMER-POLYOLS USEFUL IN THE PREPARATION OF IMPROVED PLASTICS, INCLUDING POLYURETHANE FOAMS, ELASTOMERS AND THE LIKE

Paul Stamberger, Baltimore, Md., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 279,318, Jul. 1, 1981, abandoned. This application Jun. 6, 1983, Ser. No. 501,608
Int. Cl.³ C08G 65/28
U.S. Cl. 528—110 4 Claims

1. The adduct formed by reaction of a polyol, having an average molecular weight of at least about 500 and a hydroxyl number in the range of about 20 to about 400 with an epoxy co-reactant in which the polyol, the epoxy co-reactant and the adduct are essentially free of ethylenic unsaturation.

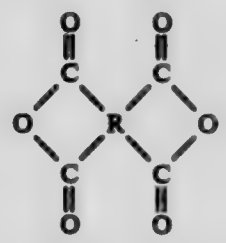
4,495,342
ISOIMIDE CONTAINING OLIGOMERS

Abraham L. Landis, Northridge, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Continuation-in-part of Ser. No. 206,317, Jul. 24, 1981, Pat. No. 4,438,273. This application Sep. 26, 1983, Ser. No. 535,460
Int. Cl.³ C08G 73/06, 73/10, 73/12
U.S. Cl. 528—125 18 Claims

1. A polymerizable isoimide-containing oligomer prepared by

(a) reacting in a chosen organic solvent a dianhydride having the formula:

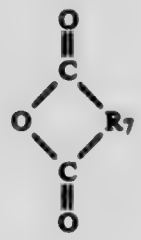


where R is a tetravalent organic group containing 2 to 27 carbon atoms, with a diamine having the formula:

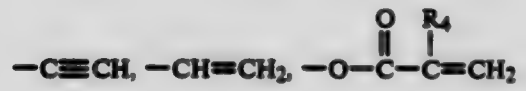
$$H_2N—R_5—NH_2$$

wherein R_5 is a divalent organic group containing 2 to 30 carbon atoms;

(b) reacting the product of (a) with a monoanhydride having the formula:



where R_7 is a radical containing an alkenylene group, a heterocyclic group, or a trivalent aryl group having an x radical substituted thereon wherein x is selected from the group consisting of



wherein R_4 is H or $—CH_3$, and CN

(c) cooling the reaction mixture produced in (b) to a selected temperature about at least as low as ambient temperature, and

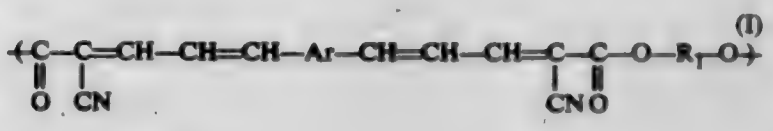
(d) adding to said reaction mixture at said selected temperature a chosen dehydrating agent to dehydrate and cyclize the product of (b) to thereby form said isoimide-containing oligomer.

4,495,343
VISIBLE LIGHT-SENSITIVE POLYESTER POLYMER AND VISIBLE LIGHT-SENSITIVE RESIN COMPOSITION CONTAINING SAID POLYMER

Kaoru Iwata, Hachioji; Tsuneo Hagiwara, and Hiroshi Matsunawa, both of Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

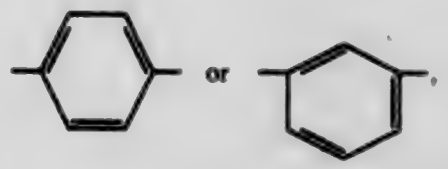
Filed Jun. 6, 1983, Ser. No. 501,395
Claims priority, application Japan, Feb. 23, 1983, 58-27716
Int. Cl.³ C08G 69/08, 69/44
U.S. Cl. 528—292 13 Claims

1. A substantially linear polyester polymer having sensitivity to visible light, said polymer containing at least 10 mole%, based on the entire polymer, of recurring units of the following formula



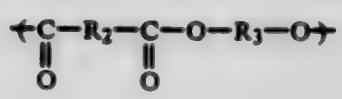
(I)

wherein Ar represents



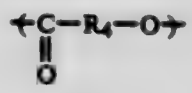
and R_1 represents a divalent aliphatic hydrocarbon group having not more than 20 carbon atoms, the chain of which may be interrupted by one or more oxygen atoms, and having a reduced viscosity of at least 0.2 dl/g.

7. The polymer of claim 1 which further contains 0 to 90 mole%, based on the entire polymer, of recurring units of the following formula



(II)

and/or



(III)

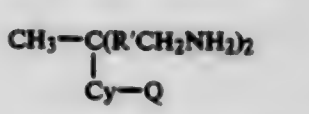
wherein R_2 represents a divalent hydrocarbon group having not more than 15 carbon atoms, R_3 represents a divalent aliphatic hydrocarbon group having not more than 20 carbon atoms, the chain of which may be interrupted by one or more oxygen atoms, and R_4 represents a divalent hydrocarbon group having 4 to 9 carbon atoms.

4,495,344
COPOLYAMIDE FROM CYCLOALIPHATIC SUBSTITUTED NONANE DIAMINE

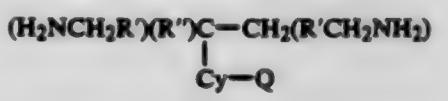
Charles A. Drake, and Stanley D. Turk, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 326,107, Nov. 30, 1981, Pat. No. 4,408,037, which is a division of Ser. No. 138,942, Apr. 9, 1980, Pat. No. 4,324,738, which is a division of Ser. No. 716,406, Aug. 23, 1976, Pat. No. 4,288,625, which is a continuation of Ser. No. 499,660, Aug. 22, 1974, abandoned. This application Jun. 3, 1983, Ser. No. 500,745
Int. Cl.³ C08G 69/26
U.S. Cl. 528—340 21 Claims

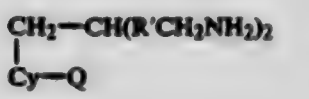
1. As a composition of matter, copolyamides prepared by reacting at least one cycloalkylalkylenediamine from the group consisting of:



(XI)

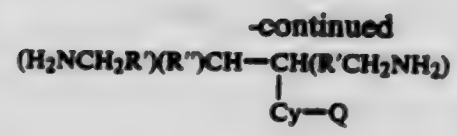


(XII)



(XIII) and

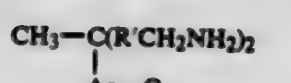
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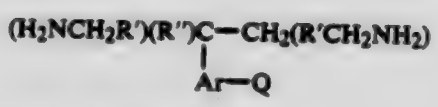
(XIV)

wherein

Cy represents the cyclohexylene or perhydronaphthylene radical, and at least one aralkylenediamine selected from the group consisting of:



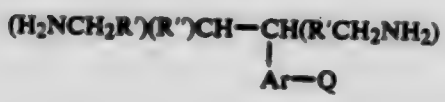
(VII)



(VIII)



and (IX)



(X)

wherein

Ar is a divalent phenylene or naphthylene radical, wherein

R′ is an alkylene or alkylidene radical of at least one carbon atom; R″ is an alkyl radical of at least one carbon atom; Q is selected from the group consisting of —H, —X, —R‴, —N(R‴)$_2$, —NH$_2$′HX, —OR‴, —SH, —OH, and —SR‴; X is halogen and is fluorine, chlorine, bromine, or iodine; and R‴ is an alkyl radical of 1 to 6 carbon atoms; and each said —Ar—Q and Cy—Q contains 6 to 22 carbon atoms;

with at least one alpha, omega-hydrocarbon dicarboxylic acid of C_6 to C_{16} carbon atoms per molecule,

under reaction conditions suitable for forming said copolyamides resin.

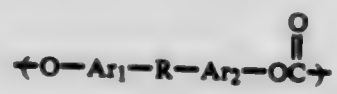
4,495,345

OPTICAL ELEMENT AND OPTICAL POLYCARBONATE RESIN COMPOSITION FOR THE PREPARATION THEREOF

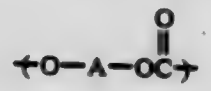
Sota Kawakami, Hachioji; Hideki Murata, Akishima; Satoshi Matsunaga, Hino, and Toshihiko Kiriki, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1983, Ser. No. 474,464
Claims priority, application Japan, Mar. 18, 1982, 57-43841
Int. Cl.^{3} C08G *63/62*
U.S. Cl. 528—372 6 Claims

1. An optical element including an optical resin composition consisting essentially of a polycarbonate, said optical resin composition having a melt flow rate of at least 5.0 grams/10 minutes as measured based on International Standards Organization Reference 1133 Standard at 230° C. and 5 kg, said optical resin composition having a glass transition point of at least 100° C., said polycarbonate having a major repeating unit represented by Formula I or II,



I



II

wherein Ar_1 and Ar_2 are each a cycloalkylene, R is selected from alkylene, cycloalkylene, —O—, —O—Ar_3—O—, —S—, —SO—, —SO$_2$—, —SO$_2$—Ar_3—SO$_2$—, —R_1—Ar_4—R_1—, —O—R_1—O—,

—CONH—R_1—NHCO—, or —Ar_5—R_1—; Ar_3 and Ar_4 are individually phenylene or bisphenylene; R_1 is an alkylene; R_2 is an alkyl, Ar_5 is a cycloalkylene; and A is selected from an alkylene, a cycloalkylene, —R_1—Ar_4—R_1—, —R_1—Ar_5—R_1—, —R_1—O—Ar_4—O—R_1—, or —R_1—O—Ar_4—X—Ar_4—O—R_1—; and X represents —SO$_2$—, —CO—, an alkylene group, or —R_1—Ar_4—R_1—.

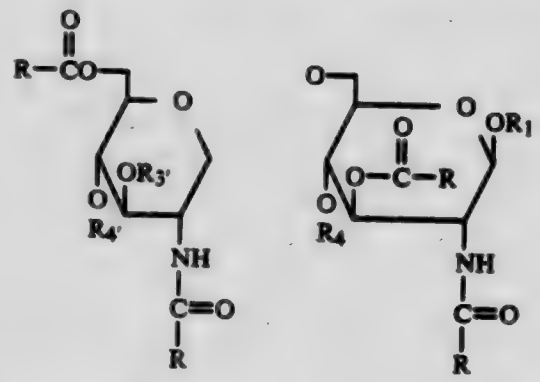
4,495,346

METHOD OF PREPARING A DISACCHARIDE

Laurens Anderson, Madison, Wis., and Mina A. Nashed, Alexandria, Egypt, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 248,692, Mar. 30, 1981, abandoned. This application Oct. 6, 1982, Ser. No. 433,055
Int. Cl.^{3} C07H *1/00*
U.S. Cl. 536—18.5 4 Claims

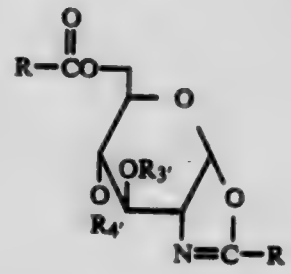
1. A method of preparing a disaccharide of the formula:



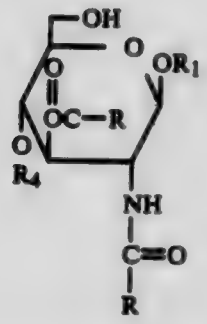
in which R is an alkyl, hydroxyalkyl or protected hydroxyalkyl group of 7 to 19 carbon atoms; R_1 is selected from allyl, benzyl, 1-propenyl, or trichloroethyl; R_3′ is selected from allyl, crotyl, 2-methoxyethoxymethyl, methylthiomethyl, or benzyl; R_4′ is hydrogen, chloroacetyl, or β-benzoylpropionyl; and R_4 is hydrogen or



said method comprising reacting a compound of the formula:



with a compound of the formula:



in which all symbols are as previously defined, in the presence of a coupling catalyst selected from p-toluenesulfonic acid and 2,6-dimethylpyridinium p-toluenesulfonate.

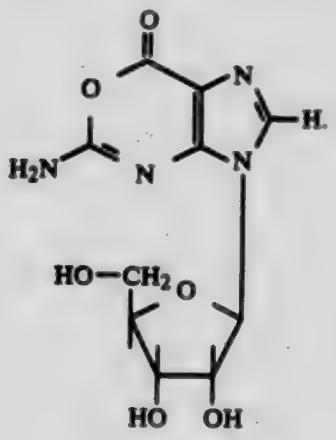
4,495,347

ANTIBIOTIC OXANOSINE AND PROCESS FOR THE PREPARATION THEREOF

Hamao Umezawa; Nobuyoshi Shimada, both of Tokyo; Hiroshi Naganawa, Honmachi; Tomohisa Takita, Asaka; Maas Hamada, Naito, and Tomio Takeuchi, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Division of Ser. No. 323,650, Nov. 20, 1981, Pat. No. 4,394,445.
This application Nov. 5, 1982, Ser. No. 439,446
Claims priority, application Japan, Nov. 22, 1980, 55-165159
Int. Cl.³ C07H *17/00*
U.S. Cl. 536—24 1 Claim

1. The antibiotic oxanosine having the formula



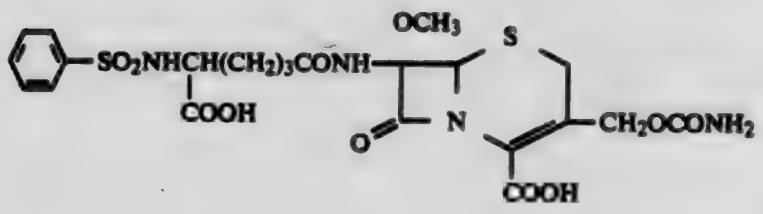
4,495,348

DERIVATIVE OF CEPHAMYCIN C

Mamoru Kunishima, Saitama; Masahiko Yabuuchi, Yono; Minoru Masuda; Kikuo Imazumi, both of Ageo, and Hiroaki Hamano, Higashimurayama, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 24, 1981, Ser. No. 324,475
Claims priority, application Japan, Dec. 4, 1980, 55-170274
Int. Cl.³ C07D *501/57;* A61K *31/545*
U.S. Cl. 544—021 1 Claim

1. An N-benzenesulfonyl derivative of cephamycin C represented by the following formula:



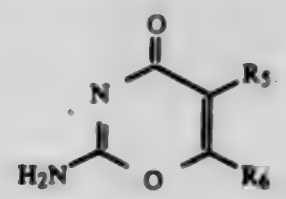
4,495,349

6-ARYLURACILS

Harvey I. Skulnick; Herman W. Smith; Robert J. Smith, and Wendell Wierenga, all of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

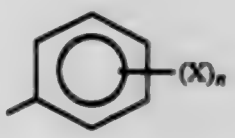
Filed Jul. 11, 1983, Ser. No. 512,497
Int. Cl.³ C07D *265/10;* A61K *31/535*
U.S. Cl. 544—97 6 Claims

1. A compound having the formula



III

wherein R_5 is hydrogen or bromine; and R_6 is a member selected from the group consisting of



III_6

wherein n is a number of from 0 to 3, inclusive; and

X is hydroxy, alkyl of from 1 to 8 carbon atoms, inclusive; alkoxy of from 1 to 5 carbon atoms, inclusive; alkylthio of from 1 to 5 carbon atoms, inclusive; nitro; $—NX_1X_2$; aminoalkyl of from 1 to 3 carbon atoms, inclusive; halogen; benzyl; aryl; furyl; pyridyl; or thiophene, and wherein X_1 and X_2 are the same or different and are alkyl of from 1 to 8 carbon atoms, inclusive; or taken together with —N are a saturated cycloalkylamino group —N Cn'; wherein n' is 3, 4, 5 or 6 or dialkyl substituted cycloalkylamino, wherein each alkyl is from 1 to 3 carbon atoms, inclusive and pharmaceutically acceptable salts thereof.

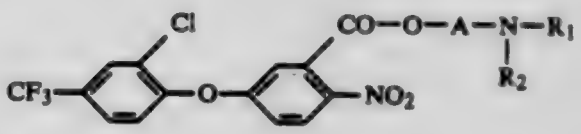
4,495,350

HETEROCYCLIC ESTERS OF 2-NITRO-5-(O-CHLORO-P-TRIFLUOROMETHYL-PHENOXY)-BENZOIC ACID

Dieter Dürr, Bottmingen; Otto Rohr, Therwil, and Beat Böhner, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 107,983, Dec. 28, 1979, Pat. No. 4,455,437.
This application Sep. 13, 1982, Ser. No. 417,744
Claims priority, application Switzerland, Jan. 9, 1979, 168/79
Int. Cl.³ C07D *295/14, 213/55*
U.S. Cl. 544—167 9 Claims

1. A heterocyclic ester of 2-nitro-5-(o-chloro-p-trifluoromethylphenoxy)-benzoic acid of the formula



wherein

A is a branched-chain or straight-chain C_2–C_4alkylene group,

R_1 and R_2 taken together with the nitrogen atom to which they are attached or R_1 and a carbon atom of A taken together with the nitrogen atom to which R_1 is attached form a 3- to 7-membered heterocycle which optionally includes in its ring an oxygen atom, a sulfur atom or the group $—NR_3—$ in which R_3 is hydrogen, C_1–C_4alkyl, phenyl or benzyl, and

R_2 when not forming part of the heterocyclic ring is a bond, hydrogen or C_1–C_4alkyl, and acid addition or quaternary ammonium salts thereof.

4,495,351

METHOD FOR THE PRODUCTION OF 1-ALKYL-6,7-METHYLENE-DIOXY-4(1H)-OXO-CINNOLIN-3-CARBOXYLIC ACIDS

Hans-Jörg Schmidt; Joachim Franke; Reingard Scheffler, all of Dresden; Heinz Töajes; Günter Kammann, both of Radebeul, and Günther Dietz, Dresden, all of German Democratic Rep., assignors to Veb Arzneimittelwerk Dresden, Radebeul, German Democratic Rep.

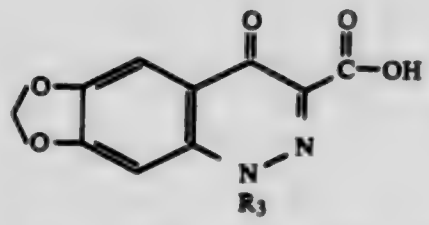
Filed Dec. 21, 1982, Ser. No. 451,539

Claims priority, application German Democratic Rep., Dec. 22, 1981, 2360676

Int. Cl.³ C07D *491/056, 317/66*

U.S. Cl. 544—234 15 Claims

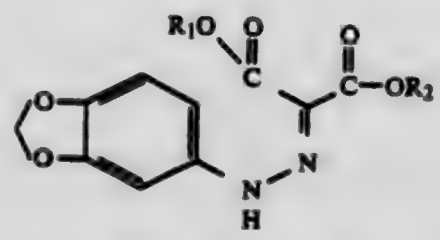
1. Method for the production of 1-alkyl-6,7-methylenedioxy-4(1H)-oxo-cinnolin-3-carboxylic acids of the formula V



V

$R_3 = -CH_3; -C_2H_5; -C_3H_7; -C_4H_9$

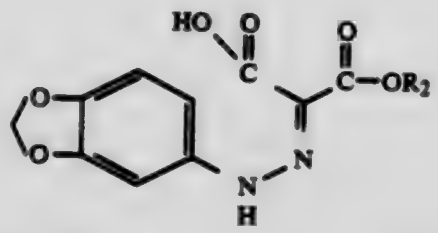
comprising diazotization of 3,4-methylenedioxyaniline by means of sodium nitrite and mineral acid to form 3,4-methylenedioxyphenyldiazonium salt and coupling this with malonic acid dialkylester, thereby producing mesoxalic acid dialkylester-3,4-methylenedioxyphenylhydrazone of the formula I



I

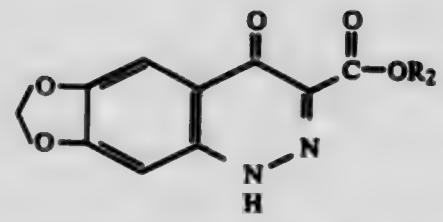
$R_1 = -CH_3; -C_2H_5; -C_3H_7; -C_4H_9$
$R_2 = -CH_3; -C_2H_5; -C_3H_7; -C_4H_9$ and

isolating said compound of formula I, saponifying of one ester group of said compound of Formula I with 1 to 1.5 mol alkali, thereby producing monoalkylester of the Formula II



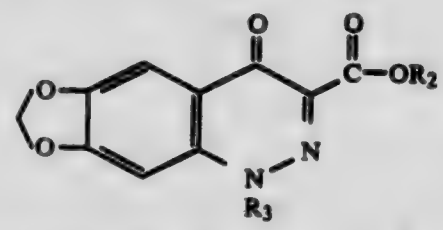
II

R_2 having the above-given meaning, isolating said compound of Formula II, reacting said compound of Formula II with a Friedel-Crafts catalyst selected from the group consisting of $POCl_3$, PCl_5 at 1–1.5 mol, excess of polyphosphoric acid and excess of polyphosphoric ester in the presence of a carboxylic acid anhydride into the 6,7-methylenedioxy-4(1H)-oxo-cinnolin-3-carboxylic acid alkylester of the Formula III



III

R_2 having the above-given meaning, separating the solid product and reacting said compound of Formula III with a C_1–C_4-alkyl halogenide in the presence of alkali in a solvent, to produce a compound of the formula IV



IV

R_2 and R_3 having the above-given meaning, isolating said compound of Formula IV and saponifying of one ester group of said compound of Formula IV.

4,495,352

HETEROCYCLIC SUBSTITUTED ARYLOXY 3-INDOLYL-TERTIARY BUTYLAMINOPROPANOLS

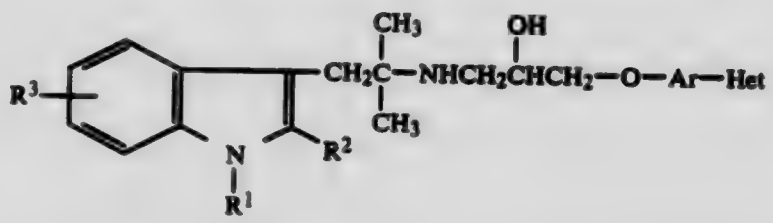
William E. Kreighbaum, and William T. Comer, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Division of Ser. No. 011,819, Feb. 13, 1979, Pat. No. 4,314,943, which is a continuation-in-part of Ser. No. 815,138, Jul. 13, 1977, abandoned. This application Dec. 3, 1981, Ser. No. 327,293

Int. Cl.³ C07D *403/12;* A61K *31/505*

U.S. Cl. 544—284 3 Claims

1. A compound selected from the group consisting of



and the pharmaceutically acceptable acid addition salts thereof wherein

R^1 or R^2 is hydrogen and the other is hydrogen or alkyl having 1 to 4 carbon atoms,

R^3 is H, halogen, alkyl having 1 to 4 carbon atoms, or alkoxy having 1 to 4 carbon atoms and is located in the 4-, 5-, 6-, or 7-positions of the indole ring,

Ar—Het as a unit is selected from the group consisting of 4-alkyl-7-alkoxyquinazolin-6-yl, and 4-alkyl-6-alkoxyquinazolin-7-yl wherein said alkyl and alkoxy groups have 1 to 4 carbon atoms.

4,495,353

PROCESS FOR SUBSTITUTION OF AROMATIC ORGANIC COMPOUNDS

Robert J. Bryant, Stanley, England, assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 327,714, Dec. 4, 1981, Pat. No. 4,422,955. This application Jun. 13, 1983, Ser. No. 504,095

Claims priority, application United Kingdom, Dec. 17, 1980, 8040383

Int. Cl.³ C07D *215/16;* C07C *41/16*

U.S. Cl. 546—178 32 Claims

1. A process for substituting for a halogen atom attached to

the nuclear carbon atom of an aromatic ring, wherein the halogen-substituted aromatic ring comprises the whole or part of a partially or wholly aromatic substrate selected from the group consisting of a monocyclic carbocyclic compound, a polycyclic carbocyclic compound, a monocyclic heterocyclic compound and a polycyclic heterocyclic compound; a substituent of the formula O—R, wherein R represents a substituent selected from the group consisting of alkyl having from 1 to 6 carbon atoms; which process comprises reacting said substrate with an alcoholate of the formula:

$$M^{n+}[O—R]_n^{\ominus}$$

wherein M represents an alkali metal atom; n is the valency of M, and R is as defined above, in the presence of a catalytically-effective amount of an active catalyst mixture comprising:

(i) a formic acid ester of an organic alcohol having the formula:

$$R^2—O—CO—H$$

wherein R^2 represents alkyl having from 1 to 4 carbon atoms, and

(ii) a cuprous salt:

in a liquid medium which is a solvent for the catalyst mixture and in which the substrate is at least partially soluble, under substantially anhydrous conditions and a non-oxidizing atmosphere for a time and at a temperature which will achieve substitution of the O—R substituent for the halogen substituent, wherein the temperature does not exceed 120° C. and based on one mole of the substrate, the cuprous salt and formic acid ester each is employed in an amount of about 0.01 to 3 moles and the alcoholate is employed in an amount of from about 0.9 to 10 moles.

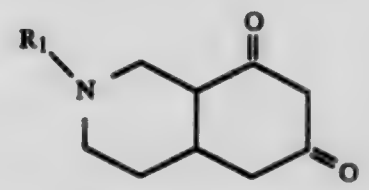
4,495,354

PROCESS FOR BICYCLIC DIKETONES

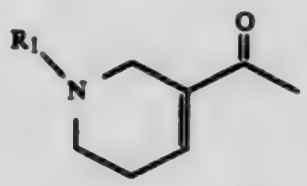
David L. Coffen, Glen Ridge, N.J., and Urs O. Hengartner, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 29, 1982, Ser. No. 363,332
Int. Cl.³ C07D *217/04*
U.S. Cl. 546—146 3 Claims

1. A process for the preparation of bicyclic diketones of the formula



wherein R_1 is lower alkyl of 1 to 7 carbon atoms or phenyl-lower alkyl of 1 to 7 carbon atoms wherein phenyl can be unsubstituted or substituted by one or more groups selected from the group consisting of lower alkyl of 1 to 7 carbon atoms and halogen which comprises the steps of (a) reacting a compound of the formula



wherein R_1 is as previously described, or a salt thereof with a di-lower alkyl malonate, wherein lower alkyl is of 1 to 7 carbon atoms, in the presence of a lower alkanol and an alkali metal alkoxide; and (b) treating the resulting reaction mixture sequentially with a base and then with an acid.

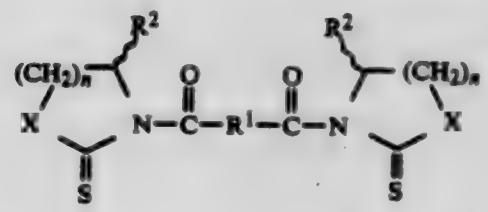
4,495,355

OPTICALLY-ACTIVE DIAMIDE DERIVATIVES

Eiichi Fujita, Kyoto; Yoshimitsu Nagao, Uji; Takao Ikeda, and Takehisa Inoue, both of Kyoto, all of Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Chiba, Japan

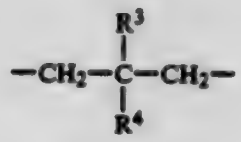
Filed Dec. 9, 1982, Ser. No. 448,505
Claims priority, application Japan, Dec. 11, 1981, 56-200625
Int. Cl.³ C07D *41/06*
U.S. Cl. 546—209 6 Claims

1. An optically active diamide of the formula

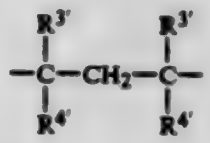


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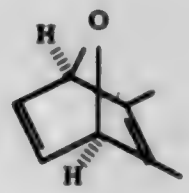
wherein R^1 is a divalent group which will, upon substitution of one of the heterocyclic groups in formula I with a nucleophilic reagent, stand as an asymmetric center in the substitution product, said R^1 being selected from the group consisting of (1) a group of the formula



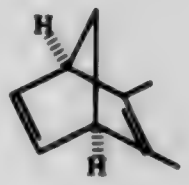
wherein R^3 and R^4 are different from each other and are selected from the group consisting of hydrogen; alkyl of 1–4 carbon atoms which may be subetitued by halogen, alkoxyl or aryl; amino which may be protected by acetyl, propionyl, butyryl, benzoyl, benzyloxycarbonyl, tert-butyloxycarbonyl, p-methoxybenzyloxycarbonyl, methoxymethyl, methoxyethoxymethyl, tetrahydrofuryl or tetrahydropyranyl; and hydroxyl which may be protected by one of said amino-protecting groups, (2) a group of the formula



wherein $R^{3'}$ and $R^{4'}$ are different from each other and have the same meanings as R^3 and R^4 defined above, or $R^{3'}$ and $R^{4'}$ may together form an ethylene, propylene or butylene group, (3) a group of the formula



and (4) a group of the formula



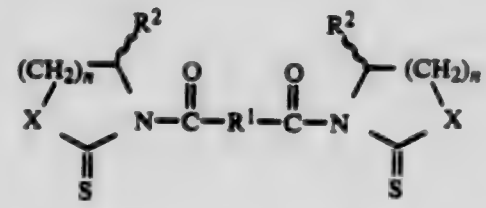
R^2 is a substituent which has such a configuration and a molecular size that the regioselectivity in the substitution reaction of the heterocyclic residue in the formula I with a nucleophilic reagent can be determined by a stereochemical interaction with the substituent R^1, said R^2 being

selected from the group consisting of hydroxyalkyl of 1–4 carbon atoms, alkoxyalkyl of 2–4 carbon atoms, carboxyl, alkoxycarbonyl of 2–9 carbon atoms, a mono- or di-alkyl substituted amidecarbonyl group, and alkyl of up to 4 carbon atoms the steric configuration of the two asymmetric carbon atoms to which the R^2 substituents are attached being identical,

X is sulfur or oxygen, and

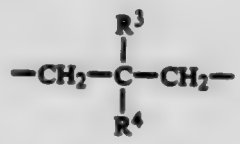
n is an integer which is 1 or 2.

2. A process for producing an optically active diamide of the formula

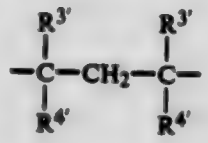


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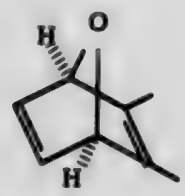
wherein R^1 is a divalent group which will, upon substitution of one of the heterocyclic groups in formula I with a nucleophilic reagent, stand as an asymmetric center in the substitution product, said R^1 being selected from the group consisting of (1) a group of the formula



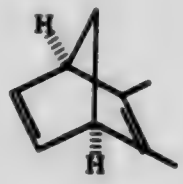
wherein R^3 and R^4 are different from each other and are selected from the group consisting of hydrogen; alkyl of 1–4 carbon atoms which may be substituted by halogen, alkoxyl or aryl; amino which may be protected by acetyl, propionyl, butyryl, benzoyl, benzyloxycarbonyl, tert-butyloxycarbonyl, p-methoxybenzyloxycarbonyl, methoxymethyl, methoxyethoxymethyl, tetrahydrofuryl or tetrahydropyranyl; and hydroxyl which may be protected by one of said amino-protecting groups, (2) a group of the formula



wherein $R^{3'}$ and $R^{4'}$ are different from each other and have the same meanings as R^3 and R^4 defined above, or $R^{4'}$ and $R^{4'}$ may together form an ethylene, propylene or butylene group, (3) a group of the formula



and (4) a group of the formula



R^2 is a substituent which has such a configuration and a molecular size that the regioselectivity in the substitution reaction of the heterocyclic residue in formula I with a nucleophilic reagent can be determined by a stereochemical interaction with the substituent R^1, said R^2 being selected from the group consisting of hydroxyalkyl of 1–4 carbon atoms, alkoxyalkyl of 2–4 carbon atoms, carboxyl, alkoxycarbonyl of 2–9 carbon atoms, a mono- or di-alkyl substituted amidecarbonyl group, and alkyl of up to 4 carbon atoms, the steric configuration of the two asymmetric carbon atoms to which the R^2 substituents are attached being identical,

X is sulfur or oxygen, and

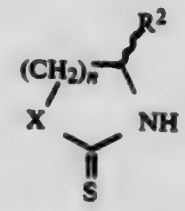
n is an integer which is 1 or 2,

which process comprises subjecting a dicarboxylic acid of the formula



[II]

wherein R^1 is as defined above, or an anhydride thereof, and a heterocyclic compound of the formula



[III]

wherein R^2, X and n are as defined above, to a condensation reaction in the presence of a condensation agent.

4,495,356

1,4-DIHYDROPYRIDINE COMPOUND

Yoichi Inoue, Omiya; Toshio Matsumoto, Ageo; Hirosuke Niwa, Kawaguchi; Kenichi Suzuki, Saitama, and Yasuo Hoshide, Tokyo, all of Japan, assignors to Nikken Chemicals Co., Ltd. and Institute of Organic Synthesis Academy of Sciences Latvian SSR., both of Tokyo, Japan

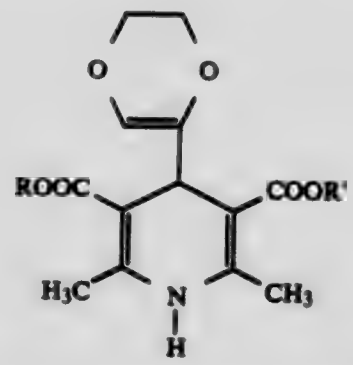
Filed Feb. 22, 1983, Ser. No. 468,663

Claims priority, application Japan, Feb. 23, 1982, 57-026790

Int. Cl.³ C07D *405/04*

U.S. Cl. 546—268 4 Claims

1. 1,4-Dihydropyridine compound having the general formula:



[I]

wherein R and R' are independently a methyl, ethyl, or n-propyl group.

4,495,357

PYRIDYL-SUBSTITUTED-BENZOFURANS

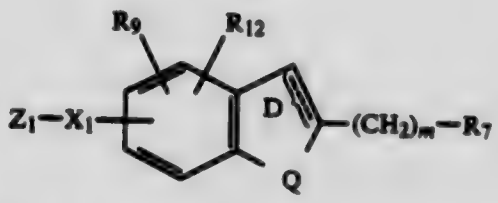
Roy A. Johnson, Norfolk County, Mass., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 385,622, Jun. 8, 1982, abandoned, which is a continuation-in-part of Ser. No. 279,374, Jul. 1, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 430,306

Int. Cl.³ C07D *405/06*

U.S. Cl. 546—269 33 Claims

1. A compound of the formula I



I

wherein Z_1 is
(a) 4-pyridinyl,
(b) 3-pyridinyl, or
(c) 3-pyridinyl substituted at the 4 position by
(1) —OCH_3,
(2) —$N(CH_3)_2$, or
(3) NH_2, or
(d) 3-pyridinyl substituted at the 2, 4, 5, or 6 position by chlorine;
wherein X_1 is
(a) —$(CH_2)_n$—,
(b) —CH(OH)— or
(c) —C(O)—;
wherein R_1 is hydrogen, a pharmacologically acceptable cation, (C_1-C_{12}) alkyl, (C_3-C_{10}) cycloalkyl, (C_7-C_{12}) aralkyl, phenyl, phenyl mono-, di-, or trisubstituted by chloro, (C_1-C_3) alkyl, or phenyl para-substituted by
(a) —NHCO—R_{25},
(b) —O—CO—R_{26},
(c) —CO—R_{24},
(d) —O—CO—(p-Ph)—R_{27}, or
(e) —CH=N—NH—CO—NH_2,
wherein R_{24} is phenyl or acetamidophenyl, R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or amino, R_{26} is methyl, phenyl, amino or methoxy; and R_{27} is hydrogen or acetamido, and wherein —(p-Ph) is 1,4-phenylene;
wherein R_7 is
(a) hydrogen,
(b) —CH_2OH,
(c) —$COOR_1$,
(d) —$CH_2N(R_4)_2$,
(e) —CN or
(f) —C(O)—R_4;
wherein R_4 is
(a) hydrogen,
(b) (C_1-C_4)alkyl, or
(c) phenyl;
wherein R_9 is attached at the 7-position and is
(a) hydrogen,
(b) (C_1-C_4)alkyl
(c) fluoro,
(d) chloro,
(e) bromo, or
(f) —OCH_3;
wherein R_{12} is hydrogen, or, R_9 and R_{12} when taken together and attached to contiguous carbon atoms form —O—CH_2—O—;
wherein D represents a single or a double bond;
wherein m is an integer from 0 to 4, inclusive; and
wherein n is an integer from 0 to 1, inclusive; including, pharmacologically acceptable acid addition salts thereof with the proviso that when Z_1 is 4-pyridinyl or 3-pyridinyl and n is zero R_7 is other than hydrogen and with the further proviso that when X_1 is —(CH_2)— and m is zero, R_7 is other than H.

4,495,358

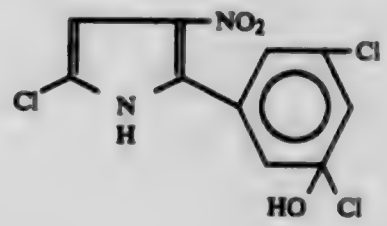
ANTIBIOTIC PYRROLOMYCIN E

Masao Koyama, Yokohama; Takashi Tsuruoka, Kawasaki; Norio Ezaki, Yokohama; Keisosuke Miyauchi, Yokohama, and Shigeharu Inouye, Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Nov. 2, 1982, Ser. No. 438,658
Claims priority, application Japan, Dec. 23, 1981, 56-206967
Int. Cl.³ C07D *205/10*; A61K *31/40*
U.S. Cl. 548—550 2 Claims

1. An antibiotic, pyrrolomycin E having the following properties:
Elementary Analysis (by weight): C, 39.10%, H, 1.61%; N, 8.94%; Cl, 34.88%;
Molecular Weight: 306;
Molecular Formula: $C_{10}H_5N_2O_3Cl_3$;
Melting Point: above 250° C. (decomposition);
Optical Rotation: $[\alpha]_D^{25}=0$ (C=0.5, methanol);
Ultraviolet Absorption Spectrum: as shown in FIG. 1;
Infrared Absorption Spectrum: as shown in FIG. 2;
The characteristic absorption bands, as determined using the potassium bromide tablet method, are 3320, 1560, 1475, 1380, 1290, 1045 cm^{-1};
Color Reaction: Positive for the iodine reaction and Lemieux reaction, and negative for the ninhydrin reaction;
Appearance and Color: Yellow needle-shaped crystals (weak acidic substance);
Rf Value on Thin Layer Chromatography (silicagel, 60F254, E. Merck): 0.6 (benzene-ethyl acetate-acetic acid (100:20:1));
Solubility: Soluble in methanol, acetone, ethyl acetate, sparingly soluble in water, n-hexane.

2. An antibiotic pyrrolomycin E with a structural formula:



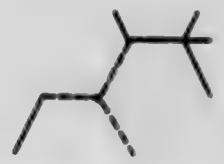
4,495,359

PRINS REACTION PRODUCTS OF DIISOAMYLENE, DERIVATIVES THEREOF, ORGANOLEPTIC USES THEREOF AND PROCESSES FOR PREPARING SAME

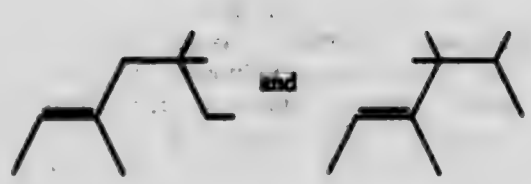
Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 391,583, Jun. 24, 1982, Pat. No. 4,429,151, which is a division of Ser. No. 267,850, May 28, 1981, Pat. No. 4,359,412. This application May 5, 1983, Ser. No. 492,011
The portion of the term of this patent subsequent to Jan. 31, 2000, has been disclaimed.
Int. Cl.³ C07D *309/18*; C07C *29/03*, *67/313*
U.S. Cl. 549—356 2 Claims

1. A product produced according to the process comprising the step of intimately admixing a mixture of diisoamylene derivatives defined according to the genus:

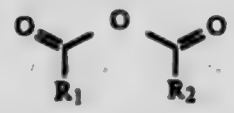


wherein one of the dashed lines represents a carbon-carbon double bond and each of the other of the dashed lines represents a carbon-carbon single bond and a compound having a structure selected from the group consisting of:



and

with an acyl anhydride having the structure:



wherein R_1 and R_2 are the same or different and each represents C_1-C_3 alkyl; in the presence of an acid catalyst and with formaldehyde or a formaldehyde precursor selected from the group consisting of trioxane, paraformaldehyde and formalin.

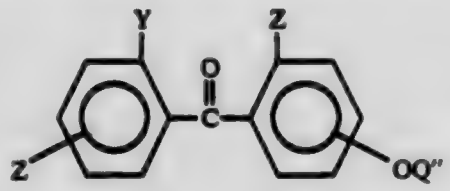
4,495,360

ULTRAVIOLET LIGHT ABSORBING AGENTS, METHOD FOR MAKING, COMPOSITIONS AND ARTICLES CONTAINING SAME

Blair T. Anthony, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 30, 1982, Ser. No. 373,361
Int. Cl.³ C07F 7/08, 7/18
U.S. Cl. 556—436 6 Claims

1. An ultraviolet light absorbing agent having the formula,



where Q″ is

$$-CH_2(CH_2)_nSi(OCH_3)_{3-a}(OR)_a$$

R is alkyl or alkanoyl having 2 to 6 carbon atoms, Y is H or OH, Z is H, OH, OQ″ or OW, where at least one Z is OH in the ortho position to the carbonyl if Y is H, W is C_mH_{2m+1}, m is 1 to 18, n=0, 1 or 2, and "a" has a value of from about 0.5 to about 2.5 inclusive.

4,495,361

POLYSILOXANE COMPOSITION WITH IMPROVED SURFACE WETTING CHARACTERISTICS AND BIOMEDICAL DEVICES MADE THEREOF

Gary D. Friends, Ontario; John B. Meipolder, Hilton; Jay F. Kunzler, Canandaigua, and Joon S. Park, Pittsford, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Apr. 29, 1983, Ser. No. 489,921
Int. Cl.³ C07F 7/10
U.S. Cl. 556—419 10 Claims

1. N-Alkenoyl trialkylsilyl aminates of the formula

$$CH_2{=}C(E)C(O)N(H)CH(G)(CH_2)_mC(O)OSi(R)_3$$

wherein
E is H or CH_3,
G is $(CH_2)_xC(O)OSi(R)_3$ or H,
R is CH_3, C_2H_5 or C_3H_7,
m is an integer from 0 to 15, and
x is an integer from 0 to 10, and
m+x is an integer from 1 to 15.

4,495,362

PROCESS FOR PREPARING ALKYL NITROACETATES

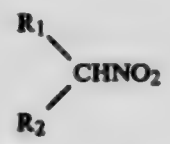
Tadatoshi Honda, Fujisawa, and Yoichi Hosono, Yokohama, both of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Nov. 4, 1982, Ser. No. 439,188
Int. Cl.³ C07C 79/41, 79/42, 79/46
U.S. Cl. 560—20 12 Claims

1. A process for preparing an alkyl nitroacetate represented by the formula:



wherein R_1 and R_2 are a hydrogen atom, a linear or branched alkyl group having 1 to 7 carbon atoms, a benzyl group, a chlorophenyl group, a nitrophenyl group or phenyl group, and R_3 is a linear or branched alkyl group having 1 to 4 carbon atoms, comprising reacting a nitroparaffin represented by the formula:



wherein R_1 and R_2 are the same as described above, with alkyl phenyl carbonate represented by the formula:

$$ArOCOOR_3$$

wherein Ar is a chlorophenyl group or a phenyl group and R_3 is the same as described above, in a polar aprotic solvent in the presence of cyanide ion.

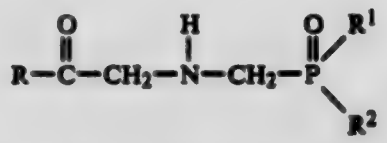
4,495,363

ESTERS OF N-PHOSPHONOMETHYLGLYCINE

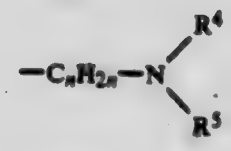
John E. Franz, Crestwood, Mo., assignor to Monsanto Co., St. Louis, Mo.

Division of Ser. No. 630,392, Nov. 10, 1975, abandoned, which is a continuation of Ser. No. 362,712, May 22, 1973, abandoned, which is a division of Ser. No. 170,385, Aug. 9, 1971, Pat. No. 3,799,758, which is a continuation-in-part of Ser. No. 123,057, Mar. 10, 1971, abandoned. This application Mar. 24, 1982, Ser. No. 361,219
Int. Cl.³ C07C 101/04; C07F 9/02
U.S. Cl. 560—155 22 Claims

1. A herbicidally active ester of N-phosphonomethylglycine represented by the formula:



wherein R, R^1, and R^2 are independently selected from the group consisting of —OH, —OR^3, and —OR^6 wherein R^3 is selected from the group consisting of monovalent hydrocarbon groups, monovalent hydrocarbonoxyhydrocarbon groups, each group containing from 1 to 18 carbon atoms, halogenated monovalent hydrocarbon groups, halogenated monovalent hydrocarbonoxyhydrocarbon groups, each group containing from 1 to 18 carbon atoms and from 1 to 3 halogens,



groups wherein n is an integer from 1 to 4 and R^4 and R^5 are independently selected from the group consisting of hydrogen, alkyl, and hydroxyalkyl, each having 1 through 4 carbon atoms, alkenyl having 2 through 4 carbon atoms, and R^4 and R^5 as defined above, together with the nitrogen atom can form a heterocyclic ring; and R^6 is a salt-forming cation selected from the group consisting of cations of alkali metals, alkaline earth metals, copper, zinc, manganese, nickel, ammonium, organic ammonium, provided that when the organic group is aryl the ammonium salt is a primary amine salt, and mixtures of such salts, provided that at least one of R, R^1, and R^2 is $—OR^3$, and further provided that no more than two of R, R^1, or R^2 are —OH, $—OR^3$, or $—OR^6$.

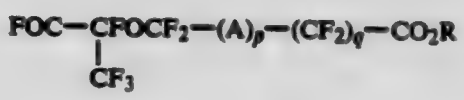
4,495,364

PROCESS FOR PRODUCING FLUORINATED ACID FLUORIDE HAVING ESTER GROUP

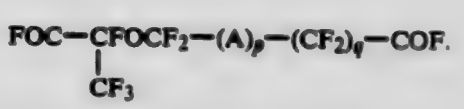
Masaaki Yamabe, Machida, and Seiji Munekata, Tokyo, both of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 847,908, Nov. 2, 1977, abandoned. This application Feb. 14, 1980, Ser. No. 121,479
Claims priority, application Japan, Jul. 28, 1977, 52-89769
Int. Cl.³ C07C *67/14*
U.S. Cl. 560—180 10 Claims

1. A process for producing a fluorinated acid fluoride having an ester group which has the formula



wherein A represents a C_1–C_{10} bifunctional perfluoro group; p represents 0 or 1 ; q represents an integer of 1 to 8; and R represents an organic group
which comprises reacting a diacid fluoride having the formula



with an alcohol having the formula ROH.

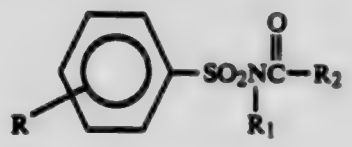
4,495,365

N-ACYLSULFONAMIDE HERBICIDAL ANTIDOTES

Ferenc M. Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Co., Westport, Conn.

Division of Ser. No. 208,912, Nov. 21, 1980, Pat. No. 4,347,380, which is a division of Ser. No. 31,906, Apr. 20, 1979, Pat. No. 4,266,078. This application Apr. 29, 1982, Ser. No. 372,881
Int. Cl.³ C07C *143/78*
U.S. Cl. 564—91 6 Claims

1. A compound of the formula



in which
R is selected from the group consisting of hydrogen, methyl, chloro, acetamido;
R_1 is selected from the group consisting of hydrogen, allyl and metal ion;
R_2 is selected from the group consisting of acetonyl, halophenyl, halophenylthioalkyl, and cyclohexanedione.

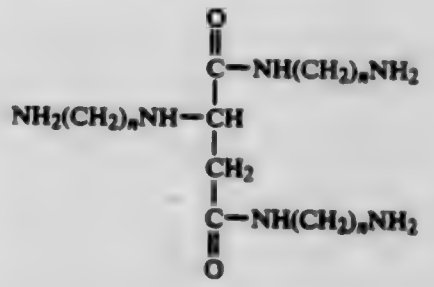
4,495,366

PROCESS FOR MAKING TRIFUNCTIONAL PRIMARY AMINE CROSSLINKER

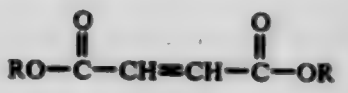
David A. Ley, Stamford, Conn., and Herbert Burkhard, Eastchester, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sep. 6, 1983, Ser. No. 529,233
Int. Cl.³ C07C *102/06*
U.S. Cl. 564—160 9 Claims

1. An improved process of making a trifunctional primary amine compound of the formula



wherein n=4-8; said process comprising (a) slowly adding an unsaturated diester of the formula



wherein R is an alkyl of 1–4 carbon atoms, to a solution of a diamine in an aromatic organic solvent, the solution being under reflux conditions and the diamine/diester molar ratio being at least about 3:1; wherein the diamine is of the formula

$NH_2(CH_2)_nNH_2$

wherein n is the same as above; and (b) recovering said trifunctional primary amine compound.

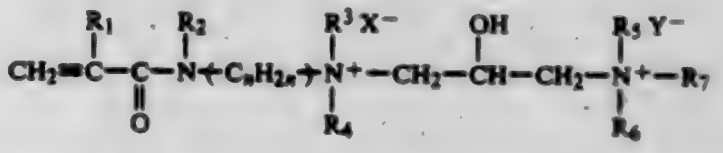
4,495,367

HIGH CHARGE DENSITY, CATIONIC METHACRYLAMIDE BASED MONOMERS AND THEIR POLYMERS

Laurence G. Dammann, Crestwood, Ky., assignor to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 395,420, Jul. 6, 1982, abandoned. This application Dec. 19, 1983, Ser. No. 563,012
Int. Cl.³ C07C *103/70*
U.S. Cl. 564—208 2 Claims

1. A compound of the formula:



wherein:
R_1 and R_2 are hydrogen or methyl,
R_3, R_4, R_5, R_6 and R_7 are the same or different lower alkyls,
n is an integer ranging from 1 to 6, and
X and Y are the same or different anion.

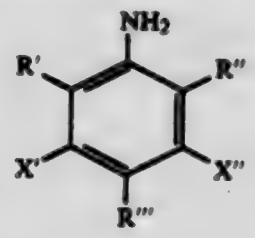
4,495,368

PROCESS FOR THE PREPARATION OF META-HALOGENOANILINES

Georges Cordier, Francheville, France, assignor to Rhone-Poulenc Agrochimie, Lyons, France

Filed Jan. 31, 1983, Ser. No. 462,327
Claims priority, application France, Feb. 5, 1982, 82 02021
Int. Cl.³ C07C *85/00, 85/24*
U.S. Cl. 564—412 26 Claims

1. A process for the preparation of anilines substituted in the meta-position by a halogen atom, by the catalytic hydrogenation, in an anhydrous organic liquid phase, under the action of heat and under pressure, in the presence of noble metals from group VIII of the periodic classification, of amine-substituted and halogen-substituted benzene derivatives of the formula:



(I)

in which:

X′ and X″, which are identical to or different from one another, each represent a halogen atom, an alkyl radical having 1 to 4 carbon atoms or an alkoxy radical having 1 to 4 carbon atoms, at least one of X′ and X″ necessarily being a halogen atom, and one of X′ and X″ may represent hydrogen, and

R′, R″ and R‴, which are identical to or different from one another, each represent a halogen atom, an alkyl radical having 1 to 4 carbon atoms, alkoxy radical having 1 to 4 carbon atoms, an optionally substituted phenyl, benzyl or phenoxy radical, at least one of these three symbols representing the halogen atom, and at most two of R′, R″ and R‴may represent hydrogen,

wherein the hydrogenation reaction is carried out in the presence of a halogen-containing hydracid, or of a generator of this acid, in a chlorobenzene solvent.

4,495,369

PROCESS FOR THE PREPARATION OF NEOPENTYLAMINE

Friedrich Werner, Cologne; Heinz U. Blank, Odenthal; Günther Gramm, Cologne; Rudolf Braden, Odenthal, and Heinz Ziemann, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 166,269, Jul. 2, 1980, abandoned. This application Sep. 22, 1981, Ser. No. 304,532
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1979, 2928742
Int. Cl.³ C07C *85/06*
U.S. Cl. 564—480 11 Claims

1. A process for the preparation of neopentylamino which is virtually free from amines with a higher degree of alkylation which comprises contacting neopentanol with ammonia at a temperature of 200° to 300° C. in the presence of a hydrogenation catalyst.

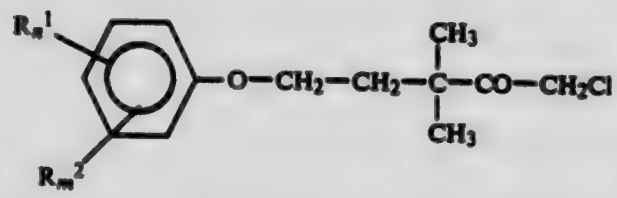
4,495,370

PREPARATION OF 5-ARYLOXY-1-CHLORO-3,3-DIMETHYL-2-PENTANONES

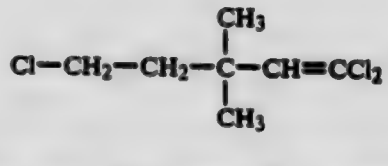
Manfred Jautelat, Burscheid; Dieter Arlt, Cologne, and Gerhard Jäger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 27, 1983, Ser. No. 498,611
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1982, 3222221
Int. Cl.³ C07C *45/42*
U.S. Cl. 568—322 6 Claims

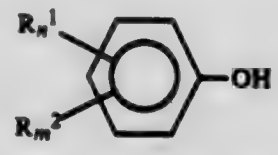
1. A process for the preparation of a 5-aryloxy-1-chloro-3,3-dimethyl-2-pentanone of the formula



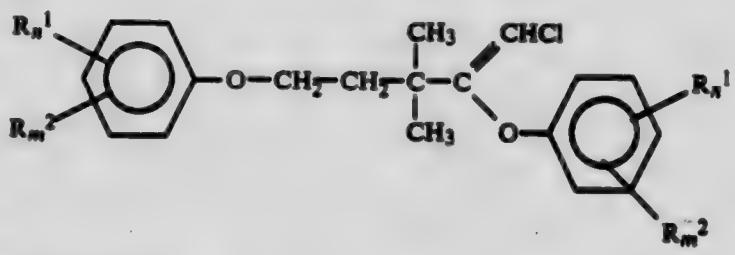
in which R^1 and R^2 each independently is halogen, alkyl having 1 to 4 carbon atoms, alkoxy or alkylthio each having 1 to 2 carbon atoms, halogenoalkyl, halogenoalkoxy or halogenoalkylthio each having 1 to 2 carbon atoms and 1 to 5 halogen atoms cyclohexyl, dialkylamino having 1 to 4 carbon atoms in each alkyl moiety, nitro, cyano, alkoxy-carbonyl having 1 to 4 carbon atoms in the alkyl moiety, phenyl or halophenyl, m and n each independently is an integer from 0 to 5, and $m+n \leq 5$, comprising reacting one equivalent of 1,1,5-trichloro-3,3-dimethyl-1-pentene of the formula



with 2 to 4 equivalents of a phenol of the formula



at a temperature between about 100° and 250° C. in the presence of 2 to 4 equivalents of a base in a diluent, to produce a compound of the formula



and subjecting such reaction product to acid hydrolysis with the aid of a mineral acid at a temperature between about 20° and 150° C.

4,495,371

PROCESS FOR ISOMERIZING STYRENE OXIDE OR HOMOLOGUES TO β-PHENYLALDEHYDES

Carlo Neri, and Franco Buonomo, both of S. Donato Milanese, Italy, assignors to ANIC S.p.A., Palermo, Italy

Filed Jul. 14, 1983, Ser. No. 513,800
Claims priority, application Italy, Jul. 28, 1982, 22606 A/82
Int. Cl.³ C07C 45/58
U.S. Cl. 568—427 7 Claims

1. A process for the isomerisation of styrene oxide or homologs thereof to the corresponding β-phenylaldehydes comprising conducting the isomerisation reaction in the presence of a catalyst composed of synthetic zeolites containing titanium, said zeolites being of the general formula:

$$xTiO_2.(1-x)SiO_2$$

where x is between 0.0001 and 0.04, and optionally in the presence of one or more solvents.

4,495,372

PREPARATION OF MONO-NITRO AROMATIC COMPOUNDS

Joseph A. Feiccabrino, Naugatuck, Conn., assignor to Uniroyal, Inc., Middlebury, Conn.

Filed Nov. 5, 1982, Ser. No. 403,450
Int. Cl.³ C07C 79/10
U.S. Cl. 568—929 5 Claims

1. A process for the preparation of mono-nitro polynuclear aromatic compounds comprising reacting a polynuclear aromatic compound with nitric acid in the absence of sulphur acid and in the absence of a solvent wherein the molar ratio of nitric acid to said aromatic compound is from 0.75/1 to 2/1.

4,495,373

METHOD FOR PARTIAL NUCLEAR HYDROGENATION OF AROMATIC HYDROCARBON COMPOUNDS AND A HYDROGENATION CATALYST THEREFOR

Shuichi Niwa, Ibaraki; Juichi Imamura, Chofu; Fujio Mizukami, Ibaraki; Kazuo Shimizu, Ibaraki, and Yoshio Orito, Ibaraki, all of Japan, assignors to Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed Feb. 22, 1984, Ser. No. 582,565
Int. Cl.³ C07C 5/02, 5/11
U.S. Cl. 585—269 17 Claims

1. A method for the preparation of a partially nuclear-hydrogenated product of an aromatic hydrocarbon compound which comprises reacting the aromatic hydrocarbon compound in the liquid phase admixed with water with hydrogen in the presence of a ruthenium-containing solid catalyst with silica, alumina or silica-alumina gel as the carrier, said ruthenium-containing solid catalyst being produced by subjecting a silicon alkoxide, aluminum alkoxide or a mixture thereof to hydrolysis and gelation in the presence of a ruthenium compound to form a gel of silica, alumina or silica-alumina as the carrier uniformly impregnated with ruthenium followed by drying.

4,495,374

METHANE CONVERSION

C. A. Jones, Newtown Square, and John A. Sofranko, West Chester, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 12, 1983, Ser. No. 522,936
Int. Cl.³ C07C 2/00
U.S. Cl. 585—500 26 Claims

1. In an improved method for converting methane to higher hydrocarbon products which comprises contacting a gas comprising methane at synthesizing conditions with at least one reducible oxide of at least one metal which oxides when contacted with methane at synthesizing conditions are reduced and produce higher hydrocarbon products and water, said contacting being carried out in the substantial absence of catalytically effective Ni, Rh, Pd, Ag, Os, Ir, Pt, Au and mixtures thereof, the improvement which comprises conducting the contacting in the presence of a promoting amount of at least one promoter selected from the group consisting of alkaline earth metals and compounds thereof.

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ELECTRICAL

4,495,375

MIS OR SIS SOLAR CELLS

Edmund Rickus, Oestrich-Winkel, and Karlheinz Jäger, Kronberg, both of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt, Fed. Rep. of Germany

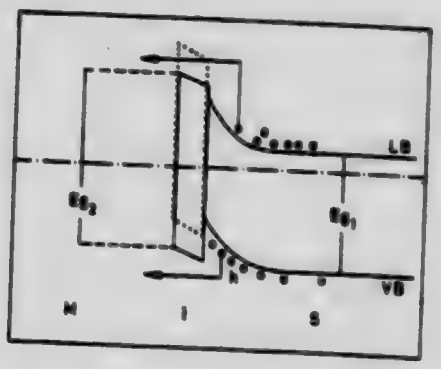
Filed Sep. 13, 1983, Ser. No. 531,718

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1982, 3234678

Int. Cl.³ H01L *31/06*

U.S. Cl. 136—258

14 Claims



1. A solar cell with metal layer-quasi insulator-semiconductor (MIS) or semiconductor-quasi insulator-semiconductor (SIS) layer arrangement where the quasi insulating layer consists of a high-resistance semiconductor material, characterized in that the quasi insulating layer is doped with a material which makes it easier for the appropriate minority carrier to overcome the additional potential barrier caused by the quasi insulating layer.

4,495,376

CARRIER FOR INTEGRATED CIRCUIT

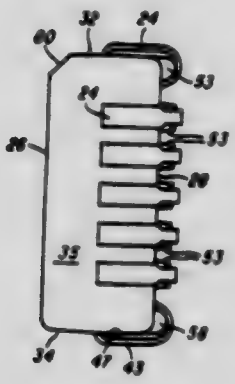
Angus W. Hightower, Richardson; Reginald W. Smith, Arlington, and John W. Orcutt, Garland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 286,833, Jul. 27, 1981,. This application Sep. 15, 1983, Ser. No. 532,814

Int. Cl.³ H05K *5/00*

U.S. Cl. 174—52 FP

3 Claims



1. A carrier for an integrated circuit comprising:

(a) an enclosure having a top and a bottom parallel to said top, and two pairs of opposite parallel lateral sides connected together and extending from said top to said bottom, at least one lateral side having a plurality of protuberances extending beyond said bottom, said bottom having depressions therein, each depression located adjacent one of said protuberances; each protuberance having a rounded end extending away from said one lateral side toward said bottom and a slope extending from said rounded end into its adjacent depression, and

(b) a plurality of leads, each lead having one end disposed in said enclosure and extending through said one end lateral side over and substantially abutting said rounded end into said adjacent depression along and substantially abutting said slope for support to another end opposite to said one end of said lead.

4,495,377

SUBSTRATE WIRING PATTERNS FOR CONNECTING TO INTEGRATED-CIRCUIT CHIPS

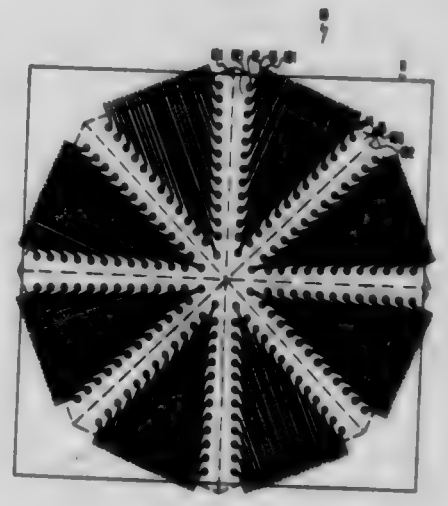
Charles L. Johnson, Stewartville, and John M. Ryba, Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,522

Int. Cl.³ H05K *1/02*

U.S. Cl. 174—68.5

16 Claims



1. A substrate for mounting an integrated-circuit chip by means of linear signal conductors connecting to a plurality of input-output pads on said substrate, characterized in that

said pads are disposed in single lines substantially following the radial edges of a plurality of wedge-shaped segments, said linear conductors crossing the outer edges of said segment, said segments together forming a polygonal area under said chip.

4,495,378

HEAT-REMOVING CIRCUIT BOARDS

Richard Dötzer, Nuremberg, and Ernst-Friedrich Lechner, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

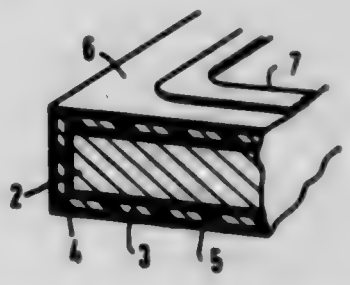
Continuation of Ser. No. 303,102, Sep. 17, 1981, abandoned. This application Aug. 22, 1983, Ser. No. 525,378

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1980, 3035749

Int. Cl.³ H05K *1/05*

U.S. Cl. 174—68.5

6 Claims



1. A heat removing circuit board comprising:

a flat core plate of a material selected from iron, titanium, conductive carbon and graphite;

on said core plate a thin first intermediate layer of a material selected from copper and silver;

a second intermediate layer on and in direct contact with said first intermediate layer, said second intermediate layer being of extremely pure aluminium;

an outer aluminum eloxal layer on and in direct contact with said second intermediate layer; and

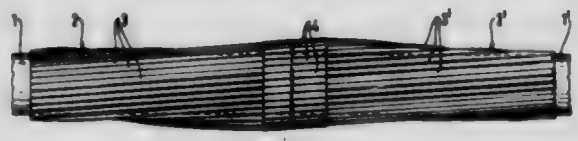
conductor runs on said outer aluminum eloxal layer, said conductor runs being of a material selected from copper and nickel.

4,495,379

SPLICE FOR ELECTRIC CABLE ARMOR

Henri Thevenon, Lyons, France, assignor to Les Cables de Lyon, Clichy, France

Filed Dec. 5, 1983, Ser. No. 558,250
Claims priority, application France, Dec. 3, 1982, 82 20254
Int. Cl.³ H02G *15/08*; F16G *11/12*
U.S. Cl. 174—88 R 4 Claims





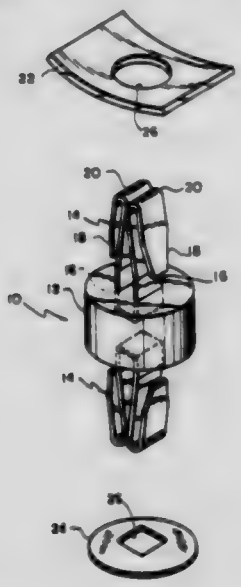
1. A cable splice splicing together the ends of two underwater cables, said cables having a plurality of armor wires wrapped helically thereabout at equal pitch, corresponding armor wires of respective cable ends having wire ends in axial alignment, the improvement wherein the ends of respective axially aligned armor wires having respectively right hand and left hand threads, and a plurality of sleeves, each sleeve having one end portion tapped with a left hand thread and an opposite end portion tapped with a right hand thread, and being threaded to the threaded ends of given axially aligned armor wires, whereby said sleeves enable the lay of the helically wrapped armor wires to be undisturbed by the splice effected thereby.

4,495,380

COMBINED METAL AND PLASTIC STANDOFF

William P. Ryan, Bethany; Richard A. Mason, Orange; Vincent A. Maida, Cheshire, and Timothy F. Donovan, Huntington, all of Conn., assignors to Mite Corporation, New Haven, Conn.

Filed Oct. 8, 1982, Ser. No. 433,426
Int. Cl.³ F16B *19/00*; H05K *7/12, 7/14*
U.S. Cl. 174—138 D 12 Claims



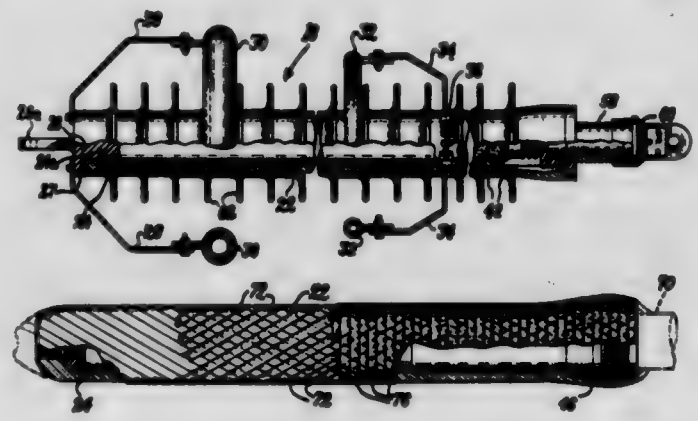
1. A combined metal and plastic standoff for supporting a circuit board in fixed spatial relationship with another element, comprising a rigid plastic body of appreciable length to produce the standoff effect, and a metal retaining member integrally mounted on said plastic body at an operative end thereof and having main, reverse bend and retaining portions, said main portion being in part fixedly disposed within said plastic body, said reverse bend portion being resilient and connecting said main and retaining portions, and said retaining portion being disposed outwardly of and longitudinally beyond said plastic body and comprising means for engagement with the circuit board or other element by an essentially longitudinal motion of the standoff along the axis of said body length to physically lock the circuit board or other element to said plastic body adjacent said operative end.

4,495,381

DYNAMIC LOAD BEARING TRANSMISSION LINE SUPPORT MEMBER

John A. Timoshenko, Pittsfield, and Daniel D. Bergh, Lenox, both of Mass., assignors to General Electric Company, Pittsfield, Mass.

Filed Sep. 30, 1982, Ser. No. 429,712
Int. Cl.³ H01B *17/02, 17/46*
U.S. Cl. 174—178 7 Claims



1. A load bearing member having application in an aerial transmission line supporting insulator comprising:

A. an elongated tube formed of multiple convolutions of a continuous band of plural glass fiber strands and a resin bonding agent, said fiber band being wound in alternating oppositely directed helical winding patterns and an essentially circumferential winding pattern;

B. a metallic insert disposed within each open end of said tube, said inserts having uneven exterior surfaces over which said glass fiber convolutions extend to captivate said inserts within the tube ends in interference fit fashion, each of said inserts having a tapped central bore, and

C. a metal end fitting in each of said inserts, each end fitting comprising a central portion with external threads thereon and a shoulder extending radially outward from said central portion, said central portion being threaded into the tapped central bore of its associated insert and having its shoulder abutting against an end wall of said tube to enable compressive forces on said load bearing member to be effectively transmitted through said shoulders to said tube,

D. said central bore of one of said inserts having a diameter at least as great as the maximum inside diameter of said tube so that the mandrel on which said tube is wound can be readily removed from said tube through said bore after winding, thus leaving a space within the tube for the subsequent introduction of elements to be housed within said space.

4,495,382

TELEPHONE REGULATOR CIRCUITRY

Donald L. Smith, and David B. Jones, both of San Jose, Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

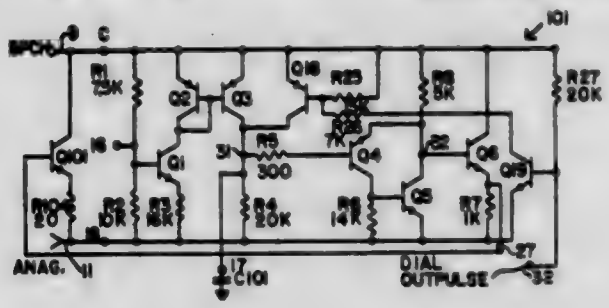
Filed Apr. 23, 1982, Ser. No. 371,328
Int. Cl.³ H04M *1/76*
U.S. Cl. 179—81 R 9 Claims

1. A regulator circuit for use in a telephone set having a speech lead and a ground lead which together form a telephone line to generate, in response to the telephone DC line

current, a DC voltage sufficient to operate said telephone set, said regulator circuit comprising:

a voltage divider means connected across said speech lead and said ground lead, said voltage divider means having an output node which provides an output voltage proportional to the voltage across said telephone line;

a first amplifying means having an input node coupled to said output node of said voltage divider means for providing a first output signal when said voltage across said telephone line exceeds a first predetermined voltage, said first amplifying means shunting current between said speech lead and said ground lead when said voltage across said telephone line exceeds a first predetermined voltage;



a second amplifying means responsive to said first output signal for providing a second output signal when said voltage across said telephone line exceeds a second predetermined voltage greater than said first predetermined voltage; and

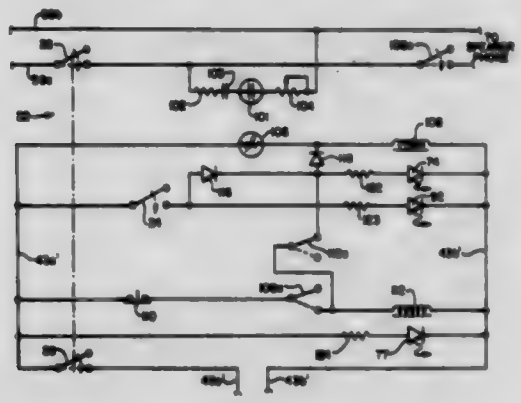
a current shunting means coupled across said telephone line which is responsive to said second output signal for maintaining the ratio of said telephone line voltage and said telephone DC line current within a predetermined range of magnitudes over a predetermined range of said telephone line voltage.

4,495,383

HANDS-FREE TELEPHONE-SPEAKER INTERFACER

David Lubin, Bradenton, Fla.; Larry W. Connor, and Samuel W. Glass, both of Greensboro, N.C., assignors to Air Conditioning Corporation, Greensboro, N.C.

Filed Jun. 14, 1982, Ser. No. 388,132
Int. Cl.³ H04M *1/60*
U.S. Cl. 179—100 L 5 Claims



1. An interfacing apparatus for electronically interfacing a two-way speaker device with a telephone network having telephone lines, including a source of power for said interfacing apparatus and mode selective switch means for selectively connecting, when actuated, said interfacing apparatus with said telephone network to permit either conventional telephone answering or hands-free automatic answering by the user, said electronic interfacing apparatus comprising:

an answering switch in circuit with said telephone lines which, when actuated by said interfacing apparatus, connects said telephone lines to said two-way speaker device to receive said incoming call;

coupling means for automatically coupling said telephone network to said speaker device in response to ringing signals on said telephone lines to receive incoming telephone calls on said speaker device, when said mode selective switch means is actuated, said coupling means including an electronic optocoupler having its input connected to a telephone line for receiving a signal indicative of an incoming call, and providing an output signal indicative of said incoming call, said output signal causing said telephone line to be connected to said speaker device by actuating said answering switch to permit hands-free two-way communication by a user with a caller;

timing means for limiting the duration of the coupling of said telephone network to said speaker device to a predetermined time, said timing means including an integrated electrical timing circuit having its input in circuit with a charging capacitor and the output of said coupling means, said timing circuit being responsive to a predetermined voltage level on said charging capacitor to connect said telephone line to said speaker device, wherein said charging capacitor is in circuit with said source of power and is charged thereby, said coupling means cyclically causing the discharge of said charging capacitor, in response to a ringing signal indicative of the presence of an incoming call, to a sufficiently low level of charge on said capacitor causing said timing circuit to be actuated to connect said incoming call to said speaker device;

resetting means including hang-up switch means for shortening the duration of the coupling of said telephone network to said speaker device by said actuation of said hang-up switch means; and

extending means for bypassing said timing means to extend the duration of coupling when said extending means is actuated while said mode selective switch means is actuated.

4. An electronic apparatus for interfacing a telephone network having at least a pair of telephone lines with a two-way speakerphone comprising:

switching means for optically coupling said speakerphone through an automatic answering device, said answering device comprising:

blocking means for blocking DC components of a predetermined polarity of signals on said telephone lines;

an electronic optocoupler for coupling said telephone ringing signals to ground for discharging a charging capacitor at a predetermined signal level, said optocoupler having its input connected to a telephone line for receiving a signal indicative of an incoming call and providing an output signal indicative thereof, said optocoupler cyclically discharging said charging capacitor in response to said output signal of said optocoupler; and

means responsive to the predetermined signal level in said charging capacitor for connecting said speakerphone to said telephone lines automatically in a hands-free manner in response to said ringing signal.

4,495,384

REAL TIME COCHLEAR IMPLANT PROCESSOR

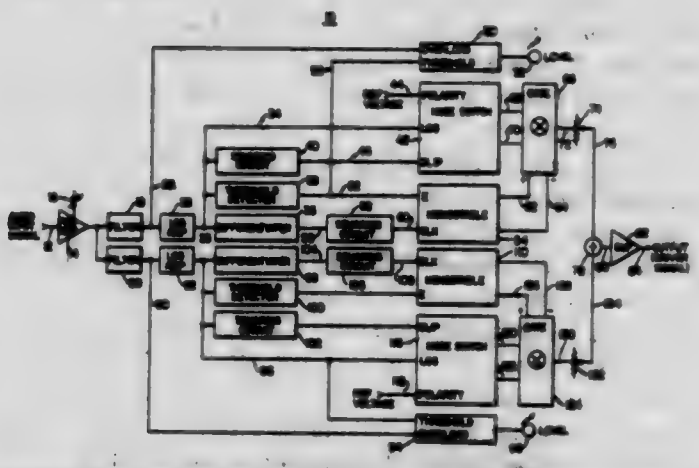
Brian L. Scott, Denton, and Wayne E. Kirkwood, Dallas, both of Tex., assignors to Scott Instruments Corporation, Denton, Tex.

Filed Aug. 23, 1982, Ser. No. 410,628
Int. Cl.³ H04R *25/00*
U.S. Cl. 179—107 FD 34 Claims

1. Apparatus for generating a driver signal for an auditory implant electrode, comprising,

means for receiving an audio input signal,

means for detecting zero slope points of said audio input signal, and



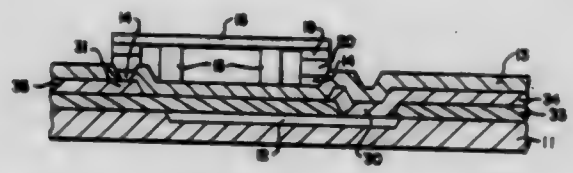
means for generating said driver signal having a pulse following the detection of each of said zero slope points of said audio input signal.

4,495,385

ACOUSTIC MICROPHONE

Jon A. Roberts, Minnetonka, and Thomas E. Hendrickson, Wayzata, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 2, 1982, Ser. No. 446,290
Int. Cl.³ H04R 23/02
U.S. Cl. 179—111 R 13 Claims



1. A capacitive acoustic transducer comprising:
a first field plate mounted to a semiconductor substrate structure;
a second field plate made of metal, having first and second oppositely and substantially exposed surfaces; and,
mounting means for mounting said second field plate to said semiconductor substrate structure so that said first and second field plates form an acoustically responsive capacitor, said first exposed surface of said second field plate substantially facing said first field plate, said mounting means allowing said second field plate to respond to acoustic energy for altering the capacitance between said first and second field plates, said mounting means including first and second contact means for respective connection to said first and second field plates.

4,495,386

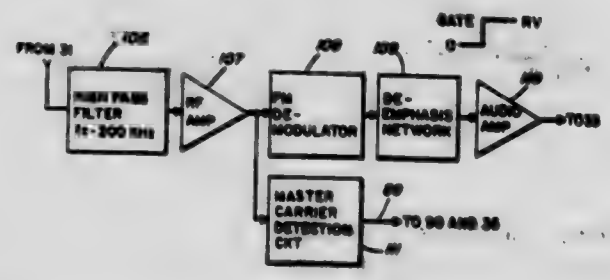
TELEPHONE EXTENSION SYSTEM UTILIZING POWER LINE CARRIER SIGNALS

William M. Brown, Acton, and Robert T. Dunn, Bedford, both of Mass., assignors to Astech, Inc., Bedford, Mass.

Continuation of Ser. No. 363,063, Mar. 29, 1982, Pat. No. 4,479,033. This application Nov. 7, 1983, Ser. No. 549,598
Int. Cl.³ H04M 11/00
U.S. Cl. 179—2.51 4 Claims

1. A method of electrically coupling telephone signals on a telephone line to a conventional extension telephone having four or less wires, three of which are the tip, ring, or ground wires utilizing available electrical power lines having power outlets along the power lines comprising the steps of:
(a) coupling the tip and ring wires from the telephone line to a master linking circuit;
(b) coupling the master linking circuit to a first power line outlet;
(c) coupling an extension linking circuit to a second power line outlet;
(d) coupling a conventional extension telephone having tip and ring lines to the extension linking circuit;
(e) said master linking circuits performing the following steps:
(i) coupling telephone signals on the tip line to a transmitter for transmission in a first direction over said power line to said extension linking circuits;





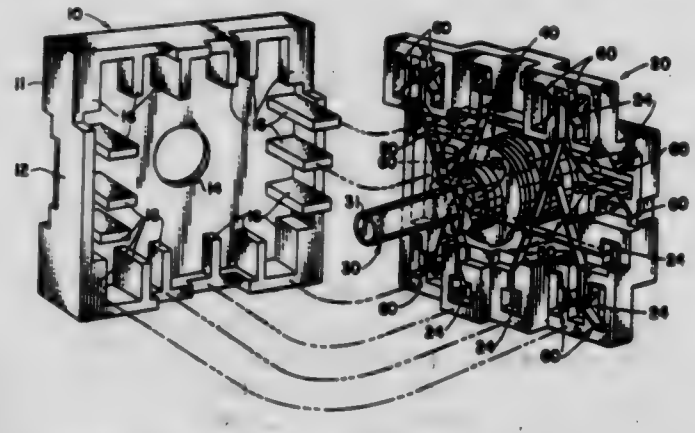
(ii) receiving signals in a receiver from the extension linking circuits for transmission in a second direction to the telephone line;
(f) said extension linking circuits performing the following steps:
(i) coupling telephone signals on the tip line of the extension telephone to a transmitter for transmission in said second direction over said power line to said receiver in said master linking circuits;
(ii) receiving signals in a receiver from the transmitter in the master linking circuits for transmission in said first direction to the extension telephone over the tip and ring lines.

4,495,387

ROTARY SELECTOR SWITCH

Roger L. Thrush, Mansfield, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Sep. 30, 1982, Ser. No. 430,806
Int. Cl.³ H01H 19/00
U.S. Cl. 200—6 B 14 Claims



1. A rotary selector switch comprising:
a rotatable shaft;
at least one cam member fixed to and carried on the shaft;
a switching means actuated by the cam member upon rotation of the shaft, the switching means including a plurality

of fixed elements each having a terminal portion and an adjacent contact portion, and a plurality of elongated movable elements each having a terminal end portion and a contact end portion, the said end portion being located on opposite sides of said shaft and being interconnected by an intermediate cam follower portion engageable with and driven by the cam member, rotation of the cam member causing said contact portions of the fixed elements and said contact end portions of the movable elements to engage and disengage from each other at one or more predetermined rotational positions of the shaft, said terminal portions and said terminal end portions being circumferentially distributed about the axis of rotation of the shaft; and

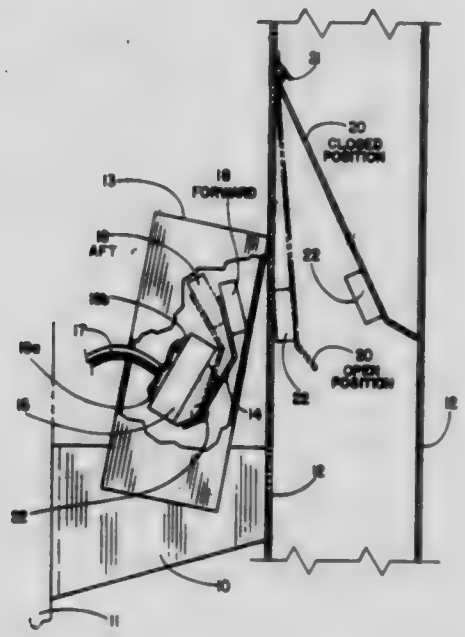
a casing rotationally supporting the shaft, the casing supporting said terminal portions of the fixed elements and said terminal end portions of the movable elements, said casing including at least two separate members between which are sandwiched portions of the switching means to retain the switching means in proper position relative to the cam member.

4,495,388

BIN LEVEL DETECTOR AND FILLING SWITCH

David A. Yoder, 30 Cedar Park Blvd., SW., Pataskala, Ohio 43062

Continuation of Ser. No. 503,587, Jun. 13, 1983, abandoned. This application Jun. 25, 1984, Ser. No. 624,272
Int. Cl.³ H01H 35/00
U.S. Cl. 200—61.21 6 Claims



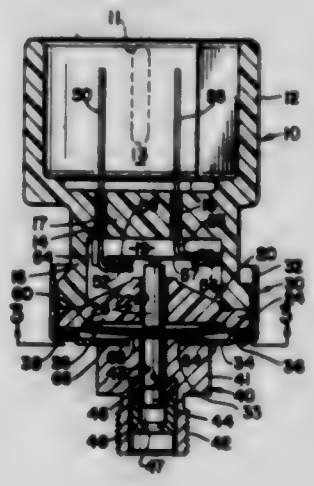
1. A bin level detector and control device comprising:
(a) a vertical tube mounted within a bin;
(b) a movable plate with an upper end and a lower end, said upper end mounted with a hinge inside the vertical tube within said bin, said plate having an open position and a closed position extending into said tube into close proximity to all the surrounding interior tube walls and holding an attached first magnet at said lower end of said plate;
(c) a second magnet with its like pole opposite to and biased with said first magnet and mounted to a movable support means for moving said second magnet towards said first magnet to urge said plate into said closed position, said first magnet and said second magnet being separated by a solid sheet material; and
(d) a control means linked to said second magnet for actuation by the increased force applied to said second magnet by movement of said plate to said open position by a material flowing into said tube.

4,495,389

PRESSURE SWITCH

Donald E. Place, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Jun. 11, 1982, Ser. No. 387,287
Int. Cl.³ H01H 35/34
U.S. Cl. 200—83 P 7 Claims



1. A fluid pressure monitoring snap disc switch comprising:
a casing;
a switch means mounted on the casing and including a fixed contact and a movable contact engageable with the fixed contact;
a snap disc supported at its periphery by the casing;
a movable motion transfer element, slidably supported by the casing for reciprocating movement, and extending between the central portion of one side of the disc and the movable contact, snap movements of the central portion of the disc causing concurrent movements of the movable contact via the motion transfer element, the disc being calibrated to snap from a stable state upon application of a relatively low force;
a pistonlike plunger slidably supported by the casing for linear reciprocating movement on its longitudinal axis, one end of the plunger engaging the central portion of the other side of the disc, the other end of the plunger being exposable to a highly pressurized fluid, the effective cross-sectional area of the exposed end of the plunger being minimized to provide, in response to relatively high fluid pressure, the required low operating force directly to the snap disc via the plunger; and
seal means mounted on the casing and slidably engaging the plunger to preclude the application of fluid-pressure-generated forces to the disc by means other than the plunger, the disc being a non-bistable snap disc having a stable state and a non-stable state, movement of the plunger toward the disc applying a force to the disc to snap it from its stable state to its non-stable state, a predetermined decrease in the applied force allowing the disc to automatically reset from its non-stable state to its stable state, said resetting disc being the sole means for moving the piston against the high fluid pressure-generated force acting on the exposed end of the piston.

4,495,390

DISCONNECT SWITCH

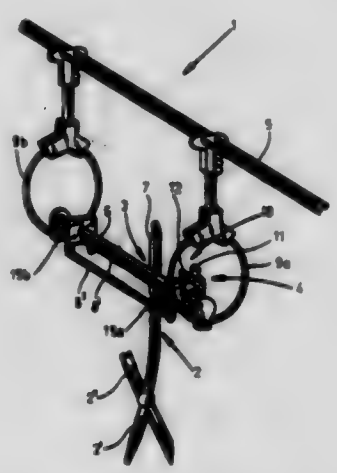
P. H. Leppers, Maastricht, Netherlands, and Walter Schnoor, Essen, Fed. Rep. of Germany, assignors to Ruhrtal Elektrizitätsgesellschaft Hartig GmbH & Co., Essen, Fed. Rep. of Germany

Filed Sep. 22, 1983, Ser. No. 534,583
Int. Cl.³ H01H 9/40
U.S. Cl. 200—145 17 Claims

1. In an electrical switch comprising relatively displaceable first and second metallic terminal members engaging each

other in a closure position for connecting a power line to a load circuit,

the combination therewith of a metallic guard element yieldably interposed between said first and second terminal members for conductive engagement, prior to engagement of said first terminal member, by said second terminal member upon relative motion of said terminal members from a disconnect position into said closure position, and circuit-breaker means inserted between said guard



element and said first terminal member for establishing conductive contact therebetween in response to an initial displacement of said guard element by said second terminal member prior to engageent of the latter with said first terminal member, said circuit-breaker means comprising two coacting conductors separating upon reverse motion of said terminal members into said disconnect position after disengagement of said terminal members from each other but before loss of contact between said guard element and said second terminal member.

4,495,391

ALTERNATE ON-OFF SWITCH MECHANISM

Zenichi Kitao, Nagaokakyo, and Haruyuki Koizumi, Kyoto, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

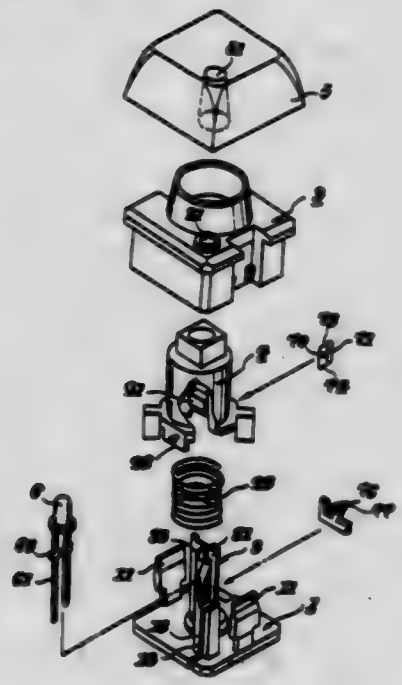
Filed Dec. 29, 1982, Ser. No. 454,270

Claims priority, application Japan, Dec. 29, 1981, 56/196815[U]; Jan. 13, 1982, 57/4382

Int. Cl.³ H01H *3/12, 13/56*

U.S. Cl. 200—153 J

1 Claim



1. An alternate on-off switch mechanism comprising a plunger member supported for linear movement,

a rotary cam rotatably supported by the plunger member,

a spring member for biasing said plunger member toward an original position of the plunger member,

a first stationary cam which is adapted to be engaged with said rotary cam so as to rotate said rotary cam by a predetermined angle, as said plunger member is pushed to a first position against the spring member,

a second stationary cam which is engaged with said rotary cam so as to lock the plunger member in a second position as the plunger member supporting said rotary cam at said predetermined angle returns from said first position

wherein said plunger member when locked in the second position is pushed again, said rotary cam is further rotated by said first stationary cam so as to be disengaged from said second stationary cam when said plunger member returns to said second position,

a base member and a cover mounted on the base member so as to enclose said plunger member, said rotary cam, said first and second stationary cams, and said spring member, so that said switch mechanism is protected against entry of foreign matter,

and

wherein said first stationary member is mounted on said base member and said second stationary cam is formed on an inner wall surface of said cover.

4,495,392

MICROWAVE SIMMER POT

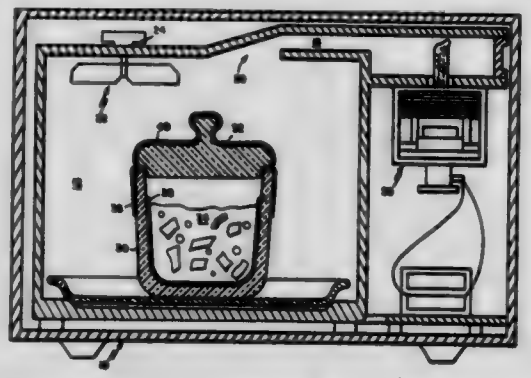
Palmer P. Derby, Weston, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 138,070, Apr. 7, 1980, abandoned, which is a continuation of Ser. No. 937,671, Aug. 18, 1978, abandoned. This application Jan. 7, 1982, Ser. No. 337,785

Int. Cl.³ H05B *6/80*

U.S. Cl. 219—10.55 E

1 Claim



1. A cooking utensil for heating food with microwave energy, comprising:

a microwave transparent container for holding food, said container having thick, low thermal conductivity walls;

a first microwave and thermal radiation reflective layer covering a portion of the outer surface of said container;

a second microwave and thermal radiation reflective layer covering a portion of the inner surface of said container, said first and second layers partially overlapping;

a lid removably positioned over said container, said lid having low thermal conductivity; and

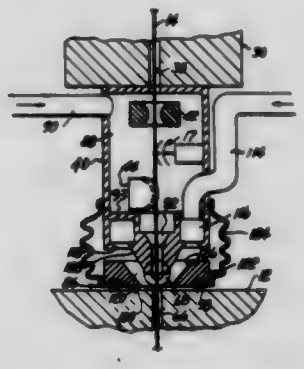
said first and second layers being spaced by the thickness of said walls of said container to provide a path through said microwave transparent walls in the region of said overlap for microwave energy to enter the interior of said container to heat said food.

4,495,393

FLUID JETSTREAM THREADING MECHANISM AND METHOD FOR TRAVELLING WIRE EDM APPARATUS

Johan Janicke, La Roche-sur-Foron, France, assignor to Ateliers des Charmilles S.A., Geneva, Switzerland

Filed Dec. 21, 1981, Ser. No. 332,978
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 M 8 Claims



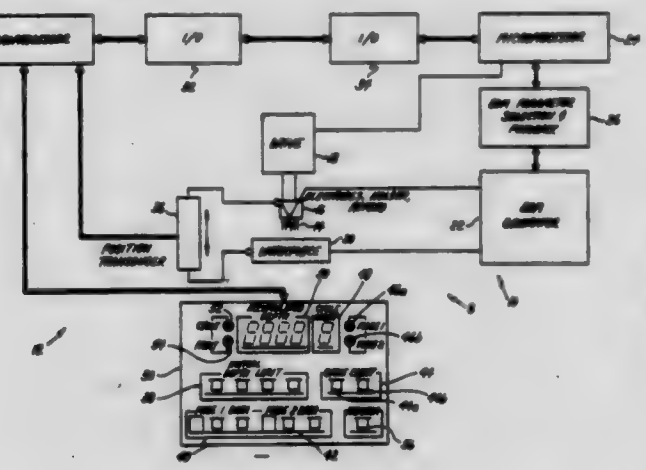
1. A method for threading the end of the electrode wire of a travelling wire EDM apparatus through an aperture in a workpiece, said method comprising placing an enclosure surrounding said end of said wire with an open end of said enclosure surrounding said aperture and in engagement with a surface of said workpiece such as to form a substantially leakproof junction between the open end of said enclosure and said workpiece surface, introducing said end of said wire in said enclosure such that said end of said wire is disposed proximate the inlet of said aperture, introducing a pressurized fluid in said enclosure for causing a high velocity stream of said fluid radially converging towards the inlet of said aperture, feeding the end of said wire towards the inlet of said aperture in said radially converting fluid flow, and pushing said end of said wire through said aperture.

4,495,394

ELECTRONIC DEPTH CONTROLLER FOR EDM APPARATUS

John R. McGregor; Gary F. Rupert, both of Ann Arbor, and Thomas M. Kennedy, Chelsea, all of Mich., assignors to Raycon Corporation, Ann Arbor, Mich.

Continuation of Ser. No. 346,689, Feb. 8, 1982, abandoned. This application Jun. 5, 1984, Ser. No. 617,149
Int. Cl.³ B23P *1/02*
U.S. Cl. 219—69 C 18 Claims



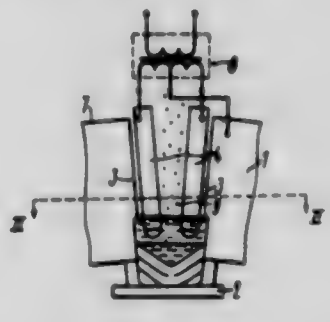
1. In EDM apparatus for machining at least one hole in a workpiece via at least one electrode mounted on a holder, said EDM apparatus comprising means for advancing and retracting said holder and at least one electrode in unison toward and away from the workpiece, means for refeeding the at least one electrode on the holder, a main control system for controlling the advance and retraction of said holder and at least one electrode relative to the workpiece and for controlling machining operations, and a depth control system operatively associated with said main control system, said depth control system comprising sensor means providing a signal referenced to a reference datum and indicative of relative position of the holder to the workpiece in the direction of advancement and retraction, the improvement in said depth control system which comprises input means for presetting an initial amount of travel for said holder in the direction of advancement at the beginning of a machining operation, said input means including means for presetting an increment of travel for said holder in the direction of advancement subsequent to the initial amount of travel in the direction of advancement, a data register for depth limit data, means for comparing the data contents of said data register with said sensor means signal, and operating means comprising means for loading said data register with the initial amount of travel preset by said input means and for causing the holder to advance said initial amount of travel at the beginning of a machining operation, means operable upon completion of said initial amount of advance to execute a sub-cycle, said last-named means comprising means for causing a refeeding of the at least one electrode, means for updating the data contents of said data register by the increment of travel set by said input means and for thereafter causing the holder and the refed at least one electrode to advance to the updated depth limit, and means for causing said sub-cycle to be repeatedly executed a given number of times.

4,495,395

METHOD FOR ELECTROSLAG WELDING WITH CONSUMABLE PLATE ELECTRODES

Boris I. Medovar; Vladimir P. Andreev; Vladimir V. Kozik; Nikolai T. Shevchenko, all of Kiev; Dmitry U. Spisarenko, Kievskaya; Vladimir P. Malevanny, Kiev; Vladimir F. Karpov, Zhdanov Donetskoi; Viktor V. Chernykh, Moscow; Anatoly D. Chepurnoi, Zhdanov Donetskoi; Evgeny A. Matsegora, Kramatorsk Donetskoi, and Lev A. Shurupov, Kiev, all of U.S.S.R., assignors to Institut Elektrosvarki Imeni E.O. Patona, Kiev, U.S.S.R.

Filed Sep. 20, 1982, Ser. No. 419,918
Int. Cl.³ B23K *25/00*
U.S. Cl. 219—73.1 3 Claims



1. A method for electroslag welding of workpieces in a welding gap, said workpieces having end faces and side surfaces, and said workpieces being welded with adding material and consumable plate electrodes, said electrodes having first faces and second faces, said method comprising:

arranging the end faces of the workpieces that are to be welded together at a predetermined angle of divergence to form the welding gap;

introducing the adding material and the electrodes into the welding gap;

positioning the electrodes in the welding gap in pairs, one electrode of a pair opposite the other, at a divergent angle equal to the angle of divergence of the end faces to be welded together; and

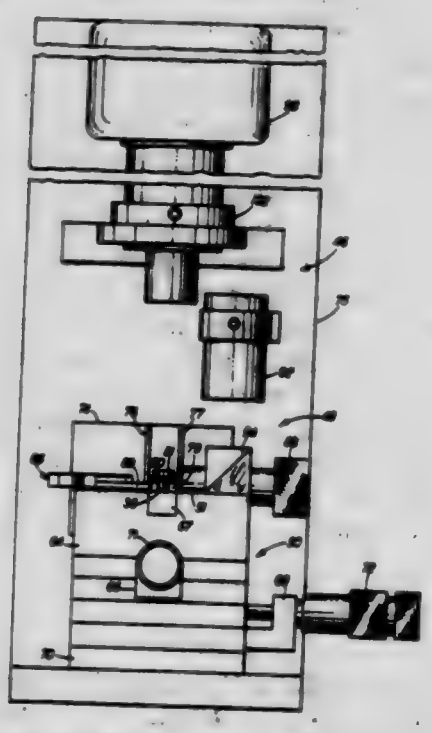
positioning the first faces of the electrodes parallel to the end faces of the electrodes to be welded together and the second faces of the electrodes extending beyond the side surfaces of the workpieces.

4,495,396

ALIGNING A WORKPIECE TO A BODY

Charles R. Fegley, Laureldale, and Lereus Regneth, Wyomissing, both of Pa., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Nov. 1, 1982, Ser. No. 438,230
Int. Cl.³ B23K 1/12
U.S. Cl. 219—85 G 8 Claims



1. Apparatus for aligning a workpiece to a bore in a body, comprising:

means for providing radiation directed to a first end of the bore such that at least some portion of such radiation is redirected sufficiently to pass longitudinally along the surfaces of the bore thereby projecting an image of said bore from a second end thereof;

means for sensing said projected image of said bore;

means for manipulating the workpiece about the first end of the bore such that at least a target portion of said workpiece reflects the radiation sufficiently to cast an image of the target through the bore and through the image of the bore onto the sensing means, such manipulation continuing until a desired alignment of the workpiece with respect to the bore is achieved.

4. Apparatus as in claim 1 wherein the manipulating means further comprises:

heating means for supporting the workpiece during said manipulating such that said workpiece is aligned for a time sufficient for heating and bonding the workpiece to the body.

4,495,397

PROJECTION FOR RESISTANCE WELDING OF SOFT METALS

Paul Opprecht, Herrenbergstr. 10, 8962 Bergdietikon, and Jürg Opprecht, Widen, both of Switzerland, assignors to Paul Opprecht, Bergdietikon, Switzerland

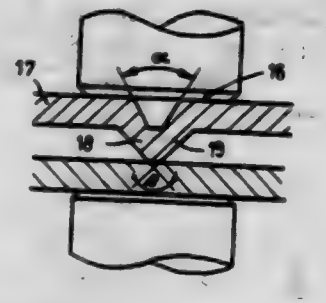
Continuation-in-part of Ser. No. 227,711, Jan. 23, 1981, abandoned. This application Oct. 13, 1981, Ser. No. 310,511
Claims priority, application Switzerland, Feb. 11, 1980, 1121/80; Nov. 26, 1980, 8739/80; Sep. 15, 1981, 5948/81
Int. Cl.³ B23K 11/14
U.S. Cl. 219—93 14 Claims

1. An electrical resistance welding projection at workpieces, such as sheets and thin-wall parts essentially consisting of a soft metal such as aluminum or aluminum alloy, wherein:

said projection has flanks;

said flanks of said projections internally enclosing an angle in the range of about 40° to 75° and externally an angle in the range of about 40° to 100°; and

the strength of the material of the projection at the region of the projection flanks being greater by about 50% than the



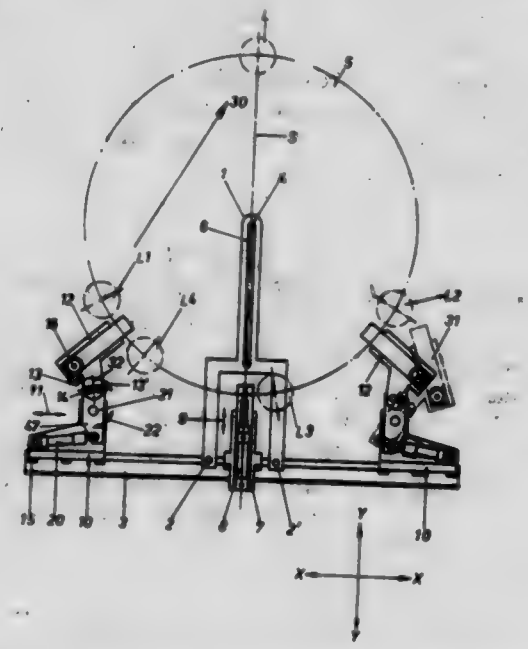
strength of neighboring base material of the workpiece at which there is present the projection.

4,495,398

MACHINE FOR WORKING FLAT WORKPIECES BY CUTTING

Walter Bredow, and Gerhard Otto, both of Alfeld, Fed. Rep. of Germany, assignors to C. Behrens AG, Alfeld, Fed. Rep. of Germany

Filed Mar. 10, 1983, Ser. No. 474,316
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1982, 3211224
Int. Cl.³ B23K 27/00
U.S. Cl. 219—121 LG 12 Claims



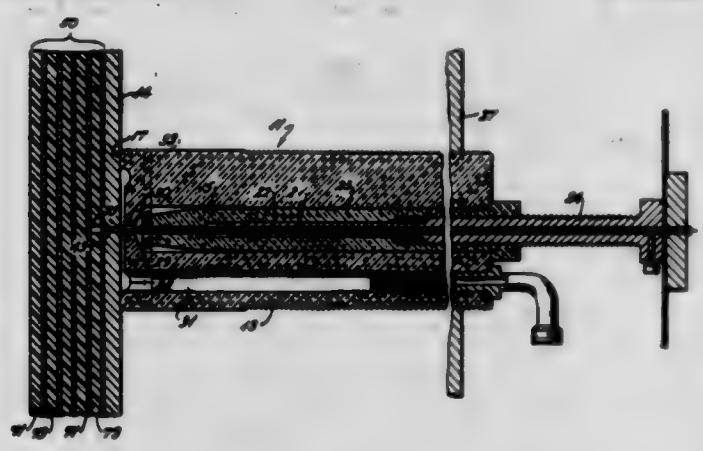
1. A machine for working workpieces with a round outer contour by cutting, comprising a coordinate table arranged to displace a workpiece in x-direction and y-direction and having a clamping guide extending in x-direction; cutting means acting substantially in z-directions and moving in a predetermined movement region; and clamping means arranged to releasably hold the workpiece on said coordinate table, said clamping means including a central clamping device arranged on said clamping guide, aligned with the axis of symmetry extending through the center axis of the workpiece, and having clamping elements mounted displaceable in the direction of the axis of symmetry, said clamping means also including two lateral clamping devices displaceably arranged on said clamping guide, located at opposite sides of said central clamping device and each having clamping elements which are mounted pivotally about at least one pivot axis extending substantially normal to the workpiece plane and parallel to the z-axis so that said clamping elements can move from a releasing position in which the workpiece and the movement region of said cutting means are released to a clamping position in which they engage the workpiece and vice versa.

4,495,399

MICRO-ARC MILLING OF METALLIC AND NON-METALLIC SUBSTRATES

Gordon L. Cann, 17751-F Skypark East, Irvine, Calif. 92714

Continuation-in-part of Ser. No. 247,770, Mar. 26, 1981, Pat. No. 4,404,456. This application Mar. 4, 1982, Ser. No. 354,546
Int. Cl.³ B23K 9/00
U.S. Cl. 219—121 PY 29 Claims



1. A method for milling materials from a work article in which the materials are removed by a micro-arc-heated gas plasma comprising:

(a) placing a cathode having a longitudinal axis in the proximity of the material to be milled;

(b) establishing an anode adjacent the cathode;

(c) providing an electric potential across the anode and cathode, said potential being sufficient to maintain an arc at less than 10 amperes;

(d) directing a gaseous fluid within a substantially confined chamber in a controlled flow pattern substantially radially toward the material to be removed while maintaining said potential between the cathode and anode for a predetermined time period; and

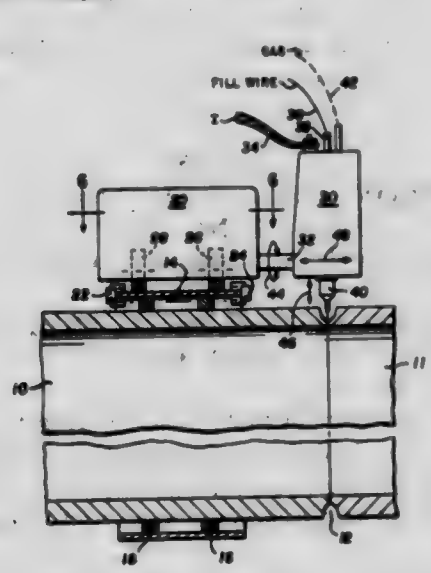
(e) passing the gaseous fluid from said work article toward the cathode through a vortex flow to remove material from said proximity.

4,495,400

METHOD AND APPARATUS FOR POSITIONING A WELDING TORCH IN AUTOMATIC ELECTRIC WELDING

Floyd M. Thompson, Houston, Tex., assignor to Crutcher Resources Corporation, Houston, Tex.

Filed Apr. 26, 1982, Ser. No. 371,737
Int. Cl.³ B23K 9/12
U.S. Cl. 219—125.12 10 Claims



1. In automatic arc welding where a weld torch follows lateral traverses across a groove during travel along the length of said groove and the weld torch provides an arc current, the combination comprising:

(a) means to produce a control signal representative of the difference between the arc current near the end of each of said traverses and the base arc current at the center of said traverse;

(b) means to produce the integral of said control signal; and

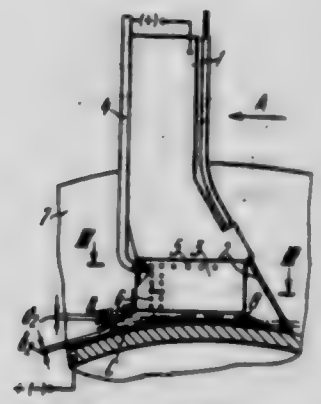
(c) means to arrest travel of said torch on each said traverse each time the integral of control signal reaches a reference value.

4,495,401

TORCH FOR GAS-SHIELD ARC WELDING IN DEEP NARROW GROOVE

Viktor V. Sidorov; Efim Y. Tseliker; Evgeny P. Sidorov; Leonid V. Sukhov; Vyacheslav F. Gorb, all of Moscow, and Gennady M. Beirakovsky, Kolpino Leningradskoi, all of U.S.S.R., assignors to Nauchno-Proizvodstvennoe Obiedinenie Po Tekhnologii Mashinostroenia (NPO Tsniitmash), Moscow, U.S.S.R.

PCT No. PCT/SU80/00195, § 371 Date Jul. 12, 1982, § 102(e) Date Jul. 12, 1982, PCT Pub. No. WO82/01840, PCT Pub. Date Jun. 10, 1982
PCT Filed Nov. 28, 1980, Ser. No. 403,506
Int. Cl.³ B23K 9/16
U.S. Cl. 219—136 2 Claims



1. A torch for gas-shielded arc welding in a narrow deep groove, comprising a current contact torch bit; with an electrode and a nozzle for feeding the shielding gas to the welding zone, which communicates with a gas-feeding tube and is fitted with at least one row of horizontally arranged holes, characterized in that the nozzle is made as a closed chamber (3) which is wedge-shaped and whose sharp edge facing the electrode (2) is in one plane with the axis of the electrode (2), the side walls and bottom of the chamber (3) being provided with at least one additional row of holes (6) whose axes lie in one plane approximately perpendicular to the walls (7) of the groove; and a ledge (8) secured externally on a wall of the chamber (3) opposite the sharp edge thereof, the inclination angle of said ledge (8) being variable with respect to the bottom (9) of the chamber (3).

4,495,402

WARMER FOR TEMPERATURE CONDITIONING WET DRESSINGS AND OTHER ARTICLES

Thomas H. Burdick, Deerfield; Alfred Vasconcellos, Crystal Lake, and William G. Whitney, Evanston, all of Ill., assignors to W. G. Whitney Corporation, Glenview, Ill.

Filed Oct. 2, 1981, Ser. No. 307,954
Int. Cl.³ B65D 83/08; H05B 3/20
U.S. Cl. 219—214 14 Claims

1. A warmer for articles disposed in stacked relation comprising,

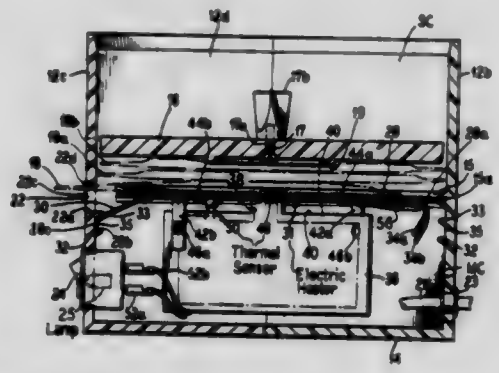
a container made of thermal and electrical insulating material and forming an inner compartment,

a thin aluminum plate in the range of from about 0.013 to 0.016 inches in thickness disposed horizontally in said inner compartment to partition the compartment into an upper combined storage and heating compartment for

receiving said articles in stacked relation to be warmed, and a lower mechanism compartment,

electrical heating means on the lower side of said thin aluminum plate to deliver thermal energy thereto,

said thin aluminum plate having a center aperture forming a thermal island in which is disposed in thermal isolation a first sensing means projecting into said combined heating and storage compartment for engaging a bottommost one of said articles in stacked relation in said combined heating and storage compartment for sensing the temperature of said bottommost article,



and circuit control means connected to said heating means including said first sensing means and further including a second sensing means directly responsive to the temperature of such said heating means, and including means for selectively limiting the thermal input delivered to the storage compartment as a function of the sensed temperature of said first and second sensing means for bringing the temperature of said bottommost article to a selected level and maintaining said temperature of said bottommost article at said selected level.

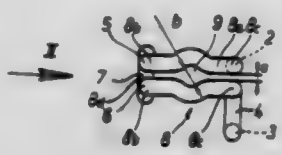
4,495,403

DIRECTLY-HEATED ELECTRICAL RESISTANCE UNSOLDERING TIP FOR SIMULTANEOUS LIQUEFYING AND REMOVING SOLDER FROM A JOINT

Toth Attila, Zechmeisterstrasse 15, A-4020 Linz, Austria

Filed Sep. 12, 1983, Ser. No. 531,426
Claims priority, application Austria, Sep. 13, 1982, 3425/82
Int. Cl.[3] B23K *3/02*; H05B *3/02*
U.S. Cl. 219—233
10 Claims





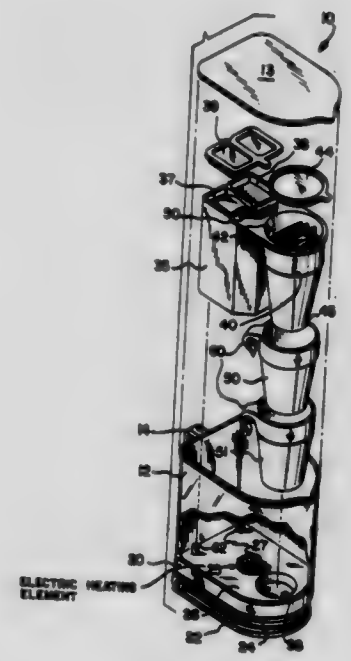
1. An unsoldering tip for an electrical apparatus for unsoldering of soldering joints and for removing solder, comprising an electrical conductor having ends designed to be connected to an electric voltage source and having such an electrical resistance that it becomes heated on current flow therethrough, said electrical conductor comprising two legs partially extending in parallel relation and being connected one with the other at one end and being adapted for being connected at their other ends to respective terminals of the electrical voltage source and said legs having at their parallelly extending area a small distance of between approximately 0.1 and 0.3 mm. therebetween and said legs comprising a bend where an enlarged open area is provided between said legs for receiving the soldering joint, the maximum spacing between said legs in said enlarged area being between approximately 0.8 and 1.2 mm.

4,495,404

SELF-CONTAINED COMPACT ELECTRIC BEVERAGE BREWING TRAVEL KIT

Wayne E. Carmichael, 7207 Robert Ulrich Ave., Dayton, Ohio 45415

Filed Sep. 27, 1982, Ser. No. 423,975
Int. Cl.[3] A47J *31/00*; A45C *11/20*; H05B *3/00*
U.S. Cl. 219—281
6 Claims



3. A compact travel kit for making a beverage such as tea or coffee, and for containing cups and ingredients, comprising:

a container adapted to receive a quantity of water to be heated, said container being open at the top and having side walls, a bottom, a front wall having means thereon defining a pouring spout, and a back wall having means thereon defining a lifting handle,

heater means in said bottom for heating water in said container,

an insert removably receivable within said container through said open top,

means in said insert defining a plurality of upwardly opening storage compartments,

means on said insert defining a downwardly depending member adapted to be received in the uppermost one of a plurality of nested cups for retaining and locating the cups within said container.

4,495,405

AUTOMATIC CONTROL SYSTEM INCLUDING ERROR PROCESSING LOOP

John E. Foster, Miami, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Sep. 23, 1982, Ser. No. 421,812
Int. Cl.[3] H05B *1/02*
U.S. Cl. 219—510
19 Claims

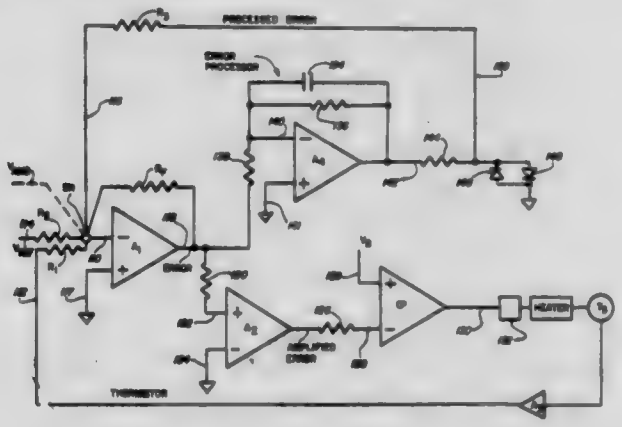
1. An automatic control system for varying the switching point of a device relative to a variable output signal, which device operates in at least two modes of operation respectively on opposite sides of said switching point, said system comprising:

A. means for generating said variable output signal in response to the operation of said device;

B. combination means for producing an error signal comprising the combination of a constant reference signal, a processed error signal that varies, and said variable output signal, said error signal varying in response to both said

processed error signal and said variable output signal relative to said constant reference signal;

C. control means for switching the mode of operation of said device in response to said error signal; and



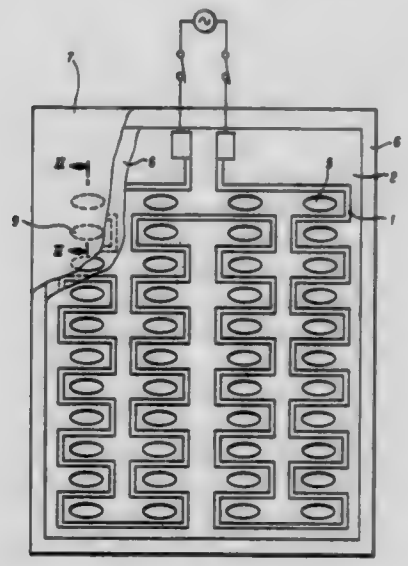
D. error processing means for generating said processed error signal as a time-averaged function of said error signal.

4,495,406

HEATING SHEET

Yoshio Sakai, Ueda, and Takeshi Yamada, Saku, both of Japan, assignors to Totoku Electric Co., Ltd., Tokyo, Japan

Filed Mar. 24, 1983, Ser. No. 478,492
Claims priority, application Japan, Apr. 6, 1982, 57-49566[U]
Int. Cl.[3] H05B *3/36*
U.S. Cl. 219—528 2 Claims



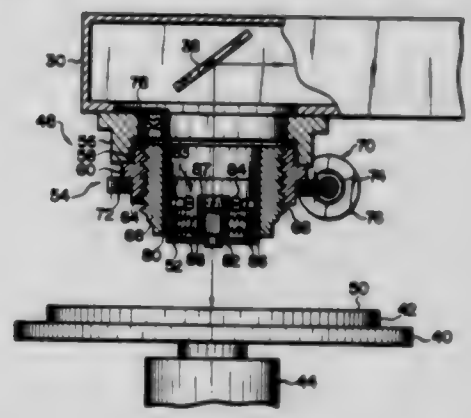
1. A heating sheet comprising a heater element which is obtained by forming a metal foil heating circuit on one surface of a first plastic sheet and superposing a second plastic sheet of the same shape as said first plastic sheet thereover, and adhering said first and second plastic sheets together; through holes formed in a regular pattern in portions of said heater element other than portions having said metal foil heating circuit formed therein; and a pair of protective thermoplastic covers which clamp said heater element therebetween and which are bonded together at a periphery of said heating sheet and through said through holes; wherein those portions of said protective covers which correspond to said through holes are recessed and indented due to said through holes in said heater element, thereby distinguishing the locations of said through holes.

4,495,407

SYSTEM FOR FOCUSING AN OPTICAL HEAD ONTO A FLAT SURFACE

Hiroshi Kodama; Masaharu Sakamoto; Ken Ohshima; Shoji Yoshikawa; Kunio Yamamiya, and Kiichi Kato, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1982, Ser. No. 362,613
Claims priority, application Japan, Mar. 31, 1981, 56-48005
Int. Cl.[3] G01J *1/20*
U.S. Cl. 250—201 9 Claims



1. A system for focusing an optical head onto a substantially flat surface of an object, comprising:

a unit for generating a laser beam;

an optical head for receiving the laser beam and for projecting said laser beam onto the surface of the object, said optical head including an objective lens having an optical axis and a focal point for converging the laser beam toward the focal point; and means for directing the laser beam reflected from the surface of the object in a predetermined direction;

first moving means coupled to the optical head for moving said optical head along the optical axis of the objective lens of said optical head;

second moving means coupled to the objective lens for moving the objective lens along the optical axis of the objective lens of said optical head;

means for detecting the reflected laser beam directed by said directing means and for generating a focusing signal having a level corresponding to the distance between the objective lens and the surface of the object;

first energizing means for selectively energizing said first moving means for moving said optical head in response to the level of the focusing signal; and

second energizing means for selectively energizing said second moving means for moving said objective lens in response to the level of the focusing signal;

only one of said first and second energizing means energizing its respective first and second moving means at any one time.

4,495,408

SUNLIGHT DIRECTION SENSOR

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

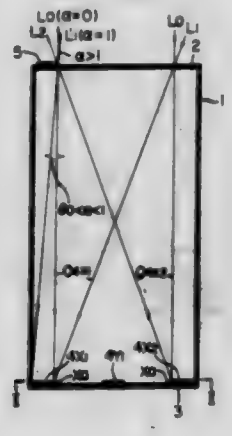
Filed May 7, 1982, Ser. No. 376,235
Claims priority, application Japan, May 9, 1981, 56-69781; Jun. 26, 1981, 56-99993; Feb. 5, 1982, 57-17237
Int. Cl.[3] G01J *1/20*; F24J *3/02*
U.S. Cl. 250—203 R 8 Claims

1. A sunlight direction sensor comprising a cylindrical body, a nontransparent flange disposed at an upper end of said cylindrical body and having an inner diameter smaller than an inner diameter of said cylindrical body, a first photosensor which is arranged on said nontransparent flange, and at least one pair of second and third photosensors which are symmetrically arranged at a lower end of said cylindrical body so that inner edges of said second and third photosensors correspond to an inner periphery of said flange, wherein a ratio α of a width of a luminous flux falling incident on said second or third photo-

sensor to an overall width thereof is given as follows, said width being measured from the inner edge of the corresponding sensor:

$$\alpha=(L_1-L_2)/(\lambda L_0-2L_2)$$

where L_0 (mV) is an output signal generated in response to a total amount of luminous flux incident on said first sensor, L_1



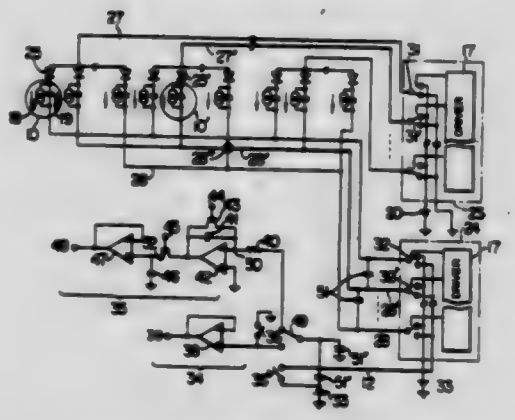
(mV) is an output signal generated in response to an amount of direct and indirect luminous flux incident on said second photosensor, L_2 (mV) is an output signal generated in response to an amount of indirect luminous flux incident on said third photosensor, and λ is the ratio of the output signal from said first photosensor to the output signal from said second photosensor when luminous flux is incident on the entire surfaces of said first photosensor and said second photosensor.

4,495,409

PHOTOSENSOR WITH DIODE ARRAY

Toru Baji, Kokubunji; Naohiko Koizumi, Mobara; Toshihisa Tsukada, Tokyo; Hideaki Yamamoto, Tokorozawa; Yasuharu Shimomoto, Tokyo, and Yasuo Tanaka, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 16, 1982, Ser. No. 348,669
Int. Cl.³ H01J 40/14
U.S. Cl. 250—211 J 8 Claims



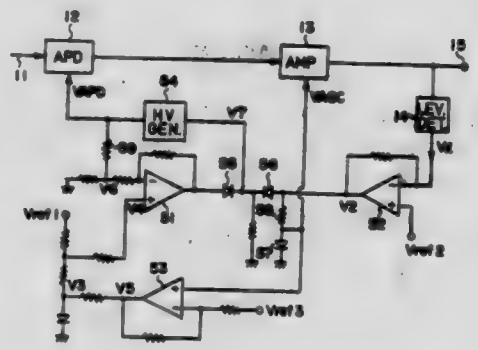
1. A photosensor comprising an array of a plurality of unit picture elements each of which is constituted by a serial connection of a photoconductor film and a diode, wherein said plurality of unit picture elements are grouped into at least two groups, the unit picture elements belonging to the respective groups being connected to a corresponding first group of wiring conductors provided in association with said groups, respectively, while the unit picture elements belonging to the different groups and located at the same positions in the different groups relative to one another are connected together to a respective second group of wiring conductors, including first means for applying a voltage to a selected wiring conductor of the first group of wiring conductors which selected wiring conductor is connected to a selected one of said at least two groups of picture elements which includes picture elements from which a signal is to be read out, said voltage serving for biasing forward the diodes of said picture elements to be read out, while no forward bias voltage is applied to other wiring conductors of the first group of wiring conductors connected to other groups of the unit picture elements which do not include the picture elements from which signals are to be read out; and second means provided for wiring conductors of the second group of wiring conductors connected to the unit picture elements to be read out for sequentially biasing forward the diodes of said picture elements to be read out, so that electric charges stored at nodes located between said photoconductor films and said diodes, respectively, are sequentially read out as signals by the operation of said first and second means.

4,495,410

LIGHT RECEIVING AUTOMATIC GAIN CONTROL CIRCUIT

Takatoshi Minami, Kawasaki, and Hiroshi Nishimoto, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP81/00138, § 371 Date Feb. 5, 1982, § 102(e) Date Feb. 5, 1982, PCT Pub. No. WO82/00073, PCT Pub. Date Jan. 7, 1982
PCT Filed Jun. 15, 1981, Ser. No. 349,090
Claims priority, application Japan, May 25, 1980, 55-85246
Int. Cl.³ H01J 40/14
U.S. Cl. 250—214 AG 12 Claims



1. A light receiving circuit having an output that is kept at a constant level by automatic gain control of the multiplication factor of an avalanche photodiode which converts a light signal into an electric signal and automatic gain control of an amplifier which amplifies an output of said avalanche photodiode, comprising:

means for applying a first control voltage to said avalanche photodiode for controlling said avalanche photodiode to have a multiplication factor which approximates with straight-line segments the optimum signal-to-noise ratio, and for applying a second control voltage to said amplifier for controlling its gain to provide said output with said constant level, said means including

first comparing means for comparing a voltage proportional to said first control voltage and a signal corresponding to a first reference voltage,

second comparing means for comparing the output of said amplifier and a second reference voltage, the output of the second comparing means corresponding to said second control voltage provided to said amplifier

third comparing means for comparing a third reference voltage and said second control signal, the output of said third comparing means being coupled to said first reference voltage;

a high voltage generator circuit having an output connected to supply said first control signal to said avalanche photodiode, and

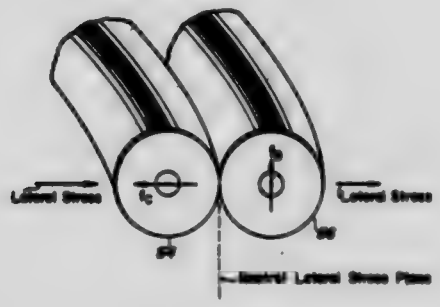
a switch device having as inputs the outputs of said first and second comparing means and providing an output as an input of said high voltage generator circuit.

4,495,411

FIBER OPTIC SENSORS OPERATING AT DC

Scott C. Rashleigh, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 27, 1982, Ser. No. 437,098
Int. Cl.³ G01D 5/34
U.S. Cl. 250—227 25 Claims



1. A physical sensor for detecting a physical quantity varying at any rate below a maximum rate with minimal disturbance from environmentally induced perturbations, comprising:

a first highly birefringent optical fiber having orthogonal fast and slow axes, a first coherent light signal passing through said first fiber;

a second highly birefringent optical fiber having orthogonal fast and slow axes, a second coherent light signal passing through said second fiber, said first and second fibers being equally birefringent, said second fiber being positioned longitudinally adjacent to said first fiber, said fast axis of said first fiber being orthogonal to said fast axis of said second fiber;

coupling means mechanically coupled to said first and second fibers for asymmetrically altering the birefringence of said first and second fibers in response to said physical quantity and for rotating the states of polarization of said first and second light signals in the same direction in response to said physical quantity, said birefringence of said first and second fibers being symmetrically altered in response to environmental perturbations such that the states of polarization of said first and second light signals are rotated in opposite directions in response to said environmental perturbations; and

detection means for detecting the states of polarization of said first and second light signals, for combining said detected states of polarization altered due to said physical quantity, for cancelling said detected states of polarization altered due to said environmental perturbations, and for producing an output signal representative of said physical quantity.

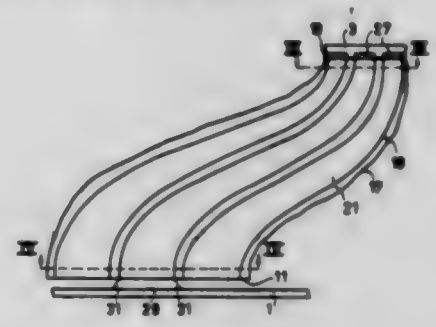
4,495,412

DEVICE FOR THE OPTICAL SCANNING OF A DOCUMENT

Martinus L. G. Thoone; Giok D. Khoe, both of Eindhoven, Netherlands; Dieter Küppers, Aachen, Fed. Rep. of Germany, and Pol A. G. J. Gastin, Brussels, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,509
Claims priority, application Netherlands, Jul. 30, 1981, 8103599
Int. Cl.³ G02B 5/14; G06K 7/10
U.S. Cl. 250—227 4 Claims

1. A device for the optical scanning of a document (1), comprising a transducer (3) which comprises a row of photoelectric elements, (27) and a coupling member (7) with an entrance (11) which is to be directed towards the document and an exit (13) which is optically connected to the transducer, said coupling member (7) being constructed as an integrated optical waveguide circuit comprising a glass substrate (17) in which there are formed optical conductors (21) which extend from the entrance to the exit and the ends of which are situated on a first line at the entrance and on a second line at the exit, said first line being substantially longer than the second line, the width of each optical conductor gradually decreasing from the entrance (11) of the coupling member towards the exit (13), characterized in that in the glass substrate (17) of the coupling



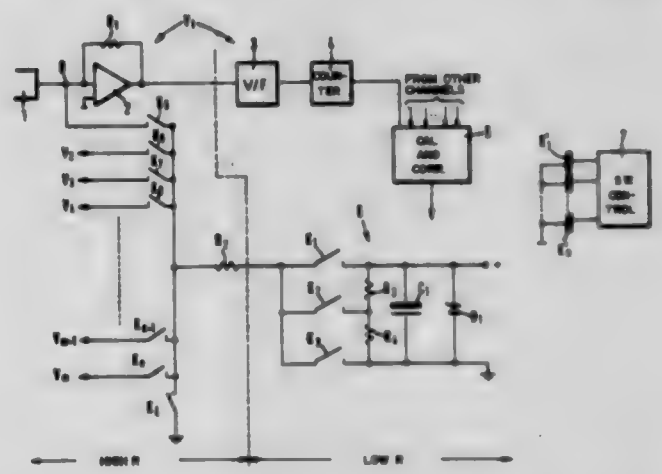
member (7) there are formed grooves (19) which are filled with a glass having a refractive index higher than that of the glass of the substrate, in order to form the light conductors (21) over the entire length of the grooves (19), the distance between every two adjacent grooves being substantially constant and substantially smaller than the width of the grooves.

4,495,413

PROCESS FOR CALIBRATING ION-CURRENT AMPLIFIERS IN MASS SPECTROMETERS AND MASS SPECTROMETER FOR CARRYING OUT THE PROCESS

Heinz Lerche, Bremen; Horst Rache, Delmenhorst, and Reiner Wedde, Seeberger, all of Fed. Rep. of Germany, assignors to Finnigan Mat GmbH, Fed. Rep. of Germany

Filed Sep. 25, 1982, Ser. No. 425,314
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1981, 3139975
Int. Cl.³ G01D 18/00; G12B 13/00; B01D 59/44
U.S. Cl. 250—252.1 11 Claims



1. A process for calibrating ion-current amplifiers in mass spectrometers possessing a plurality of ion-targets, especially Faraday targets, the individual measuring channels being calibrated by means of known reference-values, the measurement-values, obtained in this process, being stored, and the stored measurement-values being inter-correlated in order to form correction-factors for the individual measuring channels, characterized by the following steps: supplying an electric current having a high degree of constancy, as a reference-value, to the individual measuring channels in chronological succession; designating one of said channels as a reference channel; obtaining measurement-values, as a result of said electrical current, from each channel; and inter-correlating said measurement-values by division of all measurement-values by the measurement-value of said reference channel, the quotient of said division being said correction-factors whereby amplifier gain error in each of said channels is corrected.

4,495,414

AUTOMATIC MASS SPECTROMETER INLET SYSTEM

Andrew Barrie, Knutsford, and Phillip A. Freedman, Northwich, both of England, assignors to V.G. Isogas Limited, England

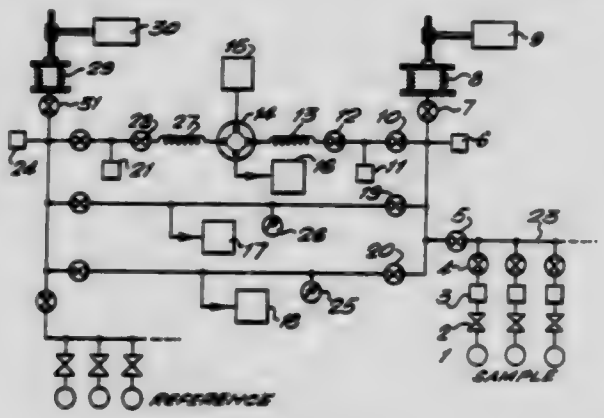
Filed Nov. 30, 1982, Ser. No. 445,550

Claims priority, application United Kingdom, Nov. 30, 1981, 8136038

Int. Cl.³ H01J 49/04

U.S. Cl. 250—288

10 Claims



1. A mass spectrometer adapted for the accurate determination of the isotopic composition of an at least partially condensable gaseous sample, said mass spectrometer having an ion source and an inlet system comprising:

(a) means for allowing said sample to expand from a reservoir into said inlet system;

(b) means for determining the pressure of said sample in said inlet system;

(c) means for allowing said sample to expand further into said ion source when said pressure of said sample is greater than a predetermined pressure;

(d) a coolable vessel provided with cooling means for condensing substantially all of the condensable portion of said sample into said coolable vessel when said pressure of said sample is less than said predetermined pressure, said cooling means comprising a coolant passage disposed around said coolable vessel, pumping means for drawing a coolant through said passage, means for vapourising said coolant before it reaches said pumping means, and means for stopping the flow of coolant through said passage;

(e) means for isolating said coolable vessel from said reservoir after said condensable portion of said sample has been condensed in said coolable vessel;

(f) means for vapourising in said inlet system after said reservoir has been isolated from said coolable vessel the portion of said sample condensed in said coolable vessel; and

(g) means for allowing said vapourised sample portion to expand further into said ion source.

4,495,415

RADIATION SENSING SYSTEM

Takashi Kawabata, Kamakura, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1982, Ser. No. 442,783

Claims priority, application Japan, Nov. 24, 1981, 56-188189

Int. Cl.³ G01J 5/00

U.S. Cl. 250—336.1

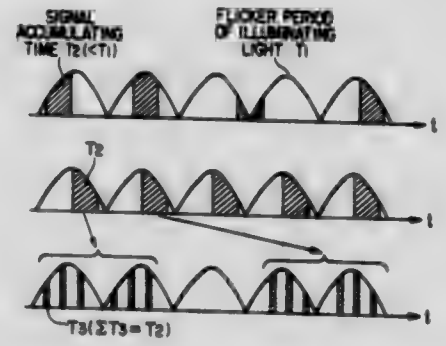
34 Claims

1. A radiation sensing system including:

(A) signal accumulating type radiation sensor means having at least one radiation sensing element responsive to a radiation to produce an electrical signal;

(B) presetting means for presetting the signal accumulating time of said sensor means;

(C) first control means for dividing the signal accumulating time preset by said presetting means into a plurality of discontinuous time sections and causing said sensor means to accumulate the produced signal of said sensing element only during each of said time sections; and



(D) second control means for reading out the accumulated signal from said sensor means after termination of the signal accumulation by said plurality of time sections.

4,495,416

REMOTE SENSING INSTRUMENT

Ross S. Mason, Upper Hutt, and Peter J. Ellis, Wainuiomata, both of New Zealand, assignors to New Zealand Government Property Corporation, New Zealand

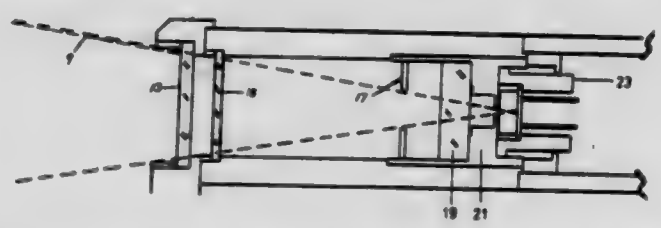
Filed Sep. 2, 1982, Ser. No. 414,435

Claims priority, application New Zealand, Sep. 3, 1981, 198264

Int. Cl.³ G01J 1/00

U.S. Cl. 250—338

8 Claims



1. An instrument for the determination and recording of the intensity of radiation emitted or reflected by a target in one or more spectral bands within the visible and infra-red spectrum, including at least one measuring system wherein the instrument has a field of view collimated by an object aperture and a detector aperture, within the range 10 degrees to 30 degrees, with a penumbra lying between 0.2 degrees and 1 degree, surrounding the said field of view.

4,495,417

DEVICE FOR THE DETERMINATION OF THE SOOT CONTENT OF AN OIL SAMPLE

Lutz Hohensang, Hamburg, Fed. Rep. of Germany, assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 21, 1982, Ser. No. 435,787

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1981, 8132595[U]

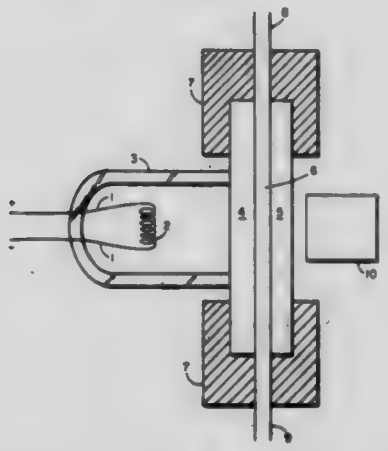
Int. Cl.³ G01J 1/00

U.S. Cl. 250—343

7 Claims

1. An apparatus for determining the soot content of an oil sample comprising a source of infrared radiation, an oil-sample receptacle of infrared permeable material and an infrared detector and a power source, said apparatus having one side or an

aperture in said side of the oil-sample receptacle form a part of the bulb of a small incandescent lamp containing said source of



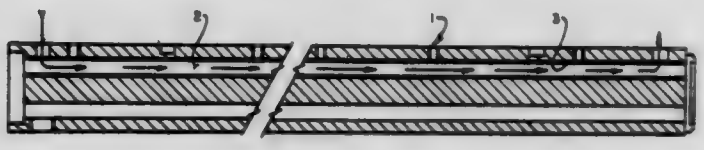
infrared radiation and having the infrared detector placed on the side opposite the oil-sample receptacle.

4,495,418

METHOD OF STANDARDIZING IR BREATH ALCOHOL DEVICE

Donald G. Hutson, El Cerrito, Calif., assignor to Cal Detect, Inc., Richmond, Calif.

Filed Feb. 15, 1983, Ser. No. 466,434
Int. Cl.[3] G01F *15/14;* G01J *5/02*
U.S. Cl. 250—343 4 Claims



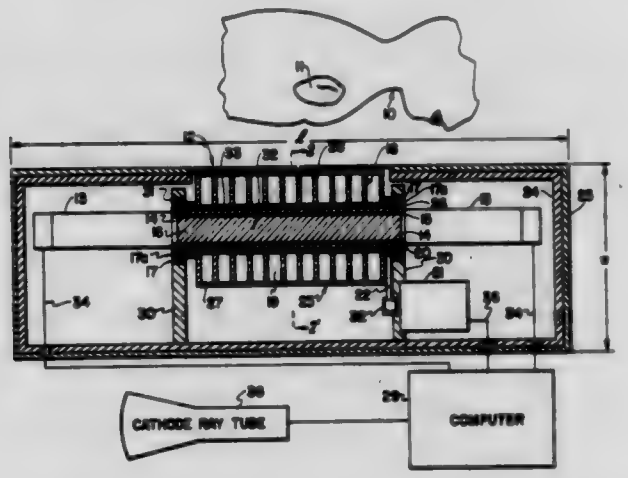
1. The method of standardizing, calibrating or testing apparatus utilizing an IR cell for determining quantitatively the content of alcohol in breath comprising passing a dry gas sample carrier containing a known amount of ethyl alcohol through an IR cell the walls exposed to said sample of which are, as to said alcohol, non-adsorbant.

4,495,419

RADIATION DETECTION DEVICE

Stewart J. Schmehl, 241 Midland Ave., Montclair, N.J. 07042

Filed Jun. 11, 1982, Ser. No. 387,422
Int. Cl.[3] G01T *1/202, 7/00*
U.S. Cl. 250—363 S 6 Claims



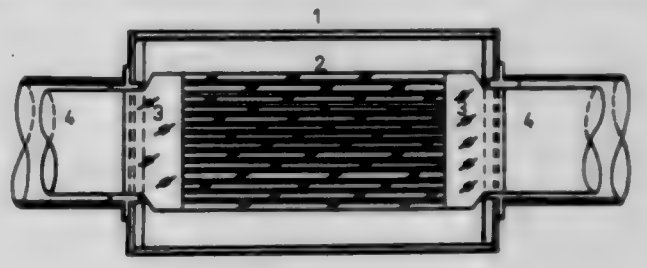
1. A hand-held detection device comprising a housing having a radiation permeable window located therein and a rotating cylindrical collimator mounted in said housing, said collimator comprising a tubular member comprised of a radiation permeable material and a plurality of equally spaced radial rows of channels formed by channel forming members mounted on said tubular member, said collimator surrounding a tubular scintillator.

4,495,420

MULTILAYER SCINTILLATION CHAMBER FOR THE SIMULTANEOUS MEASUREMENT OF RADIOACTIVE SAMPLES

Martin Chudy; Rudolf Janik, and Pavol Povinec, all of Bratislava, Czechoslovakia, assignors to Univerzita Komenskeho, Bratislava, Czechoslovakia

Filed Apr. 28, 1982, Ser. No. 372,526
Int. Cl.[3] G01T *1/20*
U.S. Cl. 250—367 2 Claims



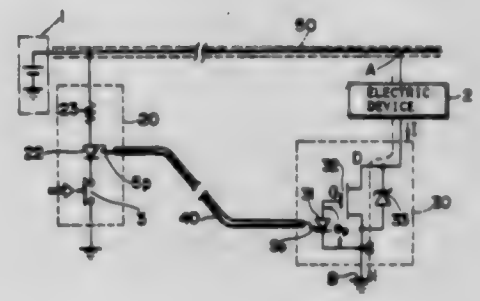
1. A multilayer scintillation chamber adapted for the simultaneous measurement of radionuclides emitting beta-radiation, comprising a light-tight casing, a plurality of layers of plastic scintillation plates disposed in spaced parallel relationship in said light-tight casing, and two photomultipliers, the ends of said plates being optically coupled through light guides to said photomultipliers, said chamber further comprising electronic circuits for selecting only those events in which output pulses from the two photomultipliers are in coincidence, and in which the amplitudes of said pulses correspond to the maximum energies of registered beta-particles of measured beta-radionuclides in said plastic scintillation plates.

4,495,421

OPTICAL POWER SUPPLY SWITCHING APPARATUS

Hiroshi Endo; Masazumi Sone; Iwao Imai, and Hideo Kasuya, all of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 29, 1982, Ser. No. 363,149
Claims priority, application Japan, Apr. 7, 1981, 56-51259
Int. Cl.[3] G02B *27/00;* H01J *40/14*
U.S. Cl. 250—551 9 Claims



1. An optical power supply switching apparatus for connecting or disconnecting a power supply to or from at least one electric appliance, which comprises:

(a) a power supply line for connecting the power supply to the at least one electrical appliance, said power supply line comprising a low impedance coaxial cable;

(b) at least one manual switch;

(c) at least one light-emitting element connected in series with the power supply and said manual switch for emitting therefrom at least one optical signal S_p having a specific wavelength when said manual switch is closed;

(d) one optical fiber, one end of which is disposed near said light-emitting element in such a way that the optical signal

S_p emitted from said light-emitting element can be introduced thereinto;

(e) at least one photoelectric transducer disposed near the other end of said optical fiber in such a way that said transducer can generate a voltage signal e_p when the optical signal S_p is applied thereto through said optical fiber; and

(f) at least one non-electromechanical switching element responsive to the signal e_p from said photoelectric transducer for connecting the power supply to the electric appliance via said power supply line when said photoelectric transducer generates the voltage signal e_p and for disconnecting the power supply from the electric appliance when said photoelectric transducer does not generate the voltage signal e_p;

whereby the electric appliance is switched on or off through the medium of an optical signal when said manual switch is turned on or off.

4,495,422

ILLUMINATION CONTROL FOR RASTER INPUT SCANNERS

Douglas G. Wiggins, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 27, 1981, Ser. No. 325,158
Int. Cl.³ H04N 1/10
U.S. Cl. 250—578 3 Claims



2. In combination:

a linear array for viewing images line by line, said array having a plurality of photosites which view successive portions of each image line along a scan axis, relative movement between said images and said array along a cross scan axis substantially perpendicular to said scan axis permitting said array photosites to view said image lines in succession; the dimension of the individual photosites that comprise said array along said cross scan axis being greater than the dimension of said photosites along said scan axis whereby resolution along the scan axis is ordinarily greater than resolution along the cross scan axis; and

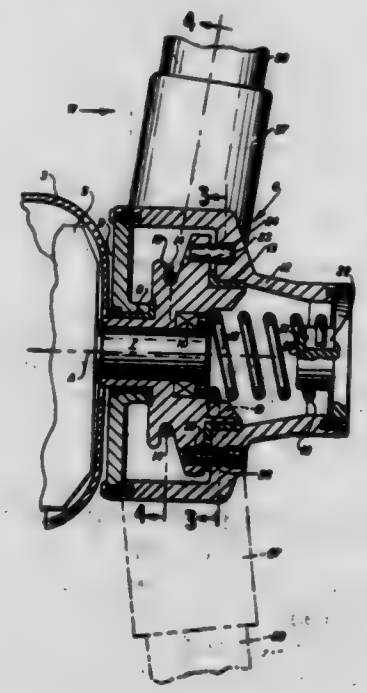
means for reducing the effective size of said photosites to enhance resolution of said array along said cross scan axis comprising a mask integral with said array and overlaying said array photosites, said mask having an elongated continuous aperture therethrough paralleling the scan axis and forming a viewing window through which said array photosites view said image lines, the dimension of said aperture along said cross scan axis uniformly increasing from a minimum at substantially said array center to a maximum at said array ends, said aperture maximum dimension being less than the dimension of said array photosites along said scan axis whereby to convert the effective size of said photosites from oversquare to undersquare.

4,495,423

WIND ENERGY CONVERSION SYSTEM

Ernest E. Rogers, Lake Geneva, Wis., assignor to Felt Products Mfg. Co., Skokie, Ill.

Filed Sep. 10, 1981, Ser. No. 300,731
Int. Cl.³ F03D 7/02
U.S. Cl. 290—44 45 Claims



1. A wind powered device comprising:

a support structure

a drive shaft mounted for rotation about its axis with respect to the support structure,

speed regulating means operatively connected to said drive shaft to regulate the speed at which said drive shaft may rotate,

a rotor assembly mounted on said drive shaft for rotational movement with respect to said drive shaft about the axis of said drive shaft and for rotation with respect to said support structure, said rotor assembly comprising at least one rotor blade, and

torque control means carried by said rotor assembly coupling said drive shaft and said rotor assembly for driving said drive shaft in response to rotation of said rotor assembly and for automatically changing the pitch of the blade as said rotor assembly rotates relative to said drive shaft about the axis of said drive shaft.

4,495,424

PLANT FOR UTILIZATION OF WIND AND WAVES

Bernhard Jöst, Tramінerweg 4, D-8600 Mannheim 31, Fed. Rep. of Germany

PCT No. PCT/DE82/00086, § 371 Date Jan. 7, 1983, § 102(e) Date Jan. 7, 1983, PCT Pub. No. WO82/03662, PCT Pub. Date Oct. 28, 1982
PCT Filed Apr. 15, 1982, Ser. No. 456,005
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1981, 3145419
Int. Cl.³ F03B 13/12; F04B 17/02
U.S. Cl. 290—53 9 Claims

1. A plant for the combined utilization of wind and wave energy in an ocean region, comprising:

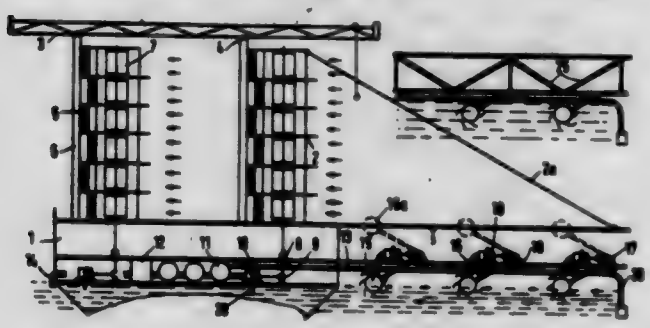
(a) a floating carrier for said plant;

(b) a plurality of rotatable wind wheels driving respective axles;

(c) a plurality of pendulum rods connected to floats disposed on the surface of the sea for movement up and down with the waves thereof, said up and down movement being with respect to said carrier;

(d) a first plurality of pumps driven by the axles of said rotatable wind wheels through crank rods and crank shafts connected therebetween;

(e) a second plurality of pumps driven by the up and down movement of said floats through toothed segments connected to said pendulum rods for rotational movement about a shaft mounted to said carrier and operatively connected to said pumps through gears and crank pins;



said pumps, when driven by said wind wheels and said floats, being adapted to suction in water through suction conduits;

(f) at least one pressure vessel for receiving said water from said pumps; and

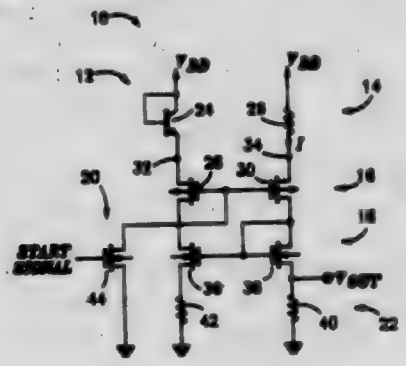
(g) a turbo generator driven by the water discharged by said at least one pressure vessel.

4,495,425

V_{BE} VOLTAGE REFERENCE CIRCUIT

James A. McKenzie, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 24, 1982, Ser. No. 391,780
Int. Cl.³ G05F 3/16; H03L 1/00
U.S. Cl. 307—297 14 Claims



1. A voltage reference circuit comprising:

reference voltage means, for providing an output reference voltage;

reference current means, for providing a reference current proportional to the output reference voltage;

a differential stage having first and second inputs coupled to said reference voltage means and reference current means, respectively, and first and second current outputs;

first and second impedances, each having a first terminal coupled to a voltage node and a second terminal coupled to said first and second current outputs, respectively, for developing an output voltage proportional to said reference voltage; and

current mirror means coupled between said differential stage and said first and second impedances, for providing a mirror current to said first and second impedances.

4,495,426

LOW POWER INVERTER CIRCUIT

Jerald G. Leach, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 24, 1981, Ser. No. 335,028
Int. Cl.³ H03K 19/096, 19/20, 17/693
U.S. Cl. 307—453 5 Claims

1. A low power logic circuit comprising:

a node;

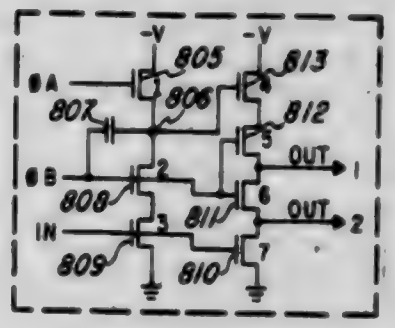
a voltage supply for supplying voltage to the low power logic circuit;

an input line means for receiving an input signal with a first and second logic level;

an output line;

a first and second clock means for providing a first and second clock signal, the first clock signal having an anti-phase relationship with the second clock signal;

first circuit means, connected to said first and second clock means and said voltage supply for precharging the node with the supply voltage in response to the first clock signal, and conditionally discharging the node in response to the second clock signal;



a second circuit means connected to said input line means for discharging said node upon an occurrence of the first logic level and the first circuit means conditioned to discharge said node; and

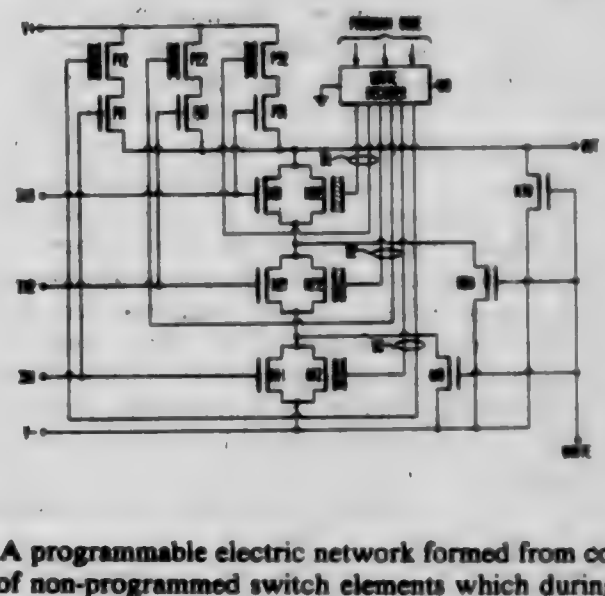
third circuit means connected to said second circuit means, said node, said input line means, said second clock means, said power supply and said output line, for isolating said output line from the node, in response to the second clock signal by disabling the third circuit means when the first clock signal enables the first circuit means, the third circuit means includes: switching means, connected to said power supply and said node for providing an output signal to said output line upon an occurrence of a preselected change of level of said node with an occurrence of a preselected clock level of said second clock signal.

4,495,427

PROGRAMMABLE LOGIC GATES AND NETWORKS

James M. Cartwright, Jr., Cambria Heights, N.Y., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 213,361, Dec. 5, 1980, abandoned. This application Mar. 30, 1983, Ser. No. 480,596
Int. Cl.³ H03K 19/094, 19/177
U.S. Cl. 307—469 65 Claims



52. A programmable electric network formed from connections of non-programmed switch elements which during normal operation of the network at times programming is not being done respond to signals in a normal range and at least one programmed-conduction switch element selectively connect-

ing a respective pair of nodes each which programmed-conduction switch element is programmable to be either non-conductive or fully conductive responsive to a plurality of programming voltages supplied as bits of a programming instruction, said programmed-switch element being one the conduction of which is not appreciably altered responsive to said signals in a normal range and essentially consists of:

a plurality of programmable-threshold-voltage transistors, each being of a type with its threshold voltage electrically alterable by application of a programming voltage to its gate, said programmable-threshold-voltage transistors being connected as a logic gate for programming instructions, with respective gate electrodes connected for receiving respective ones of the programming voltages that are bits of said programming instruction and with respective channels through selected ones of which said pair of nodes may be selectively connected.

4,495,428

CIRCUIT ARRANGEMENT FOR DERIVING A LEVEL CONTROL SIGNAL USING SILICON DIODES

Yukinobu Ishigaki, Machida, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

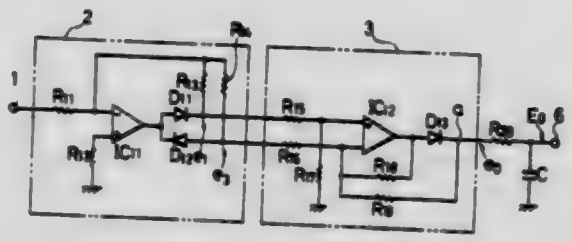
Filed Jun. 7, 1982, Ser. No. 386,157

Claims priority, application Japan, Jun. 9, 1981, 56-88460; Jun. 9, 1981, 56-88461; Jun. 9, 1981, 56-88459; Jun. 15, 1981, 56-92027; Jul. 13, 1981, 56-109128

Int. Cl.³ G06G *7/12*; H03K *5/00*

U.S. Cl. 307—490

12 Claims



1. A circuit arrangement for deriving a level control signal from an input signal, comprising:

a circuit arrangement input terminal to which said input signal is applied and a circuit arrangement output terminal from which said level control signal is derived;

a linear detector comprising a linear-detector input terminal and a linear-detector output terminal, first amplifier means coupled to said linear-detector input terminal, a first silicon diode coupled to the output of the first amplifier means for passing an output signal therefrom to said linear-detector output terminal, and feedback circuit means for coupling a voltage at said linear-detector output terminal to the input of said first amplifier means;

a transfer circuit having a transfer function describing the relationship between the input-to-output characteristic of a circuit formed by germanium diodes and the input-to-output characteristic of a circuit formed by silicon diodes, the tranfer circuit comprising a transfer-circuit input terminal and a transfer-circuit output terminal, second amplifier means coupled to said transfer-circuit input terminal, a second silicon diode for coupling a voltage at the output of the second amplifier means to said transfer-circuit output terminal, a first feedback resistor for coupling a voltage at said transfer-circuit output terminal to the input of said second amplifier means, and a second feedback resistor for coupling a voltage at the output of said second amplifier means to the input thereof; and

a time constant circuit connected to said circuit arrangement output terminal;

said linear-detector input and output terminals and said transfer-circuit input and output terminals being connected in circuit between said circuit arrangement input terminal and said circuit arrangement output terminal.

4,495,429

LIMITER AMPLIFIER

Takashi Oda, and Koichi Nagata, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

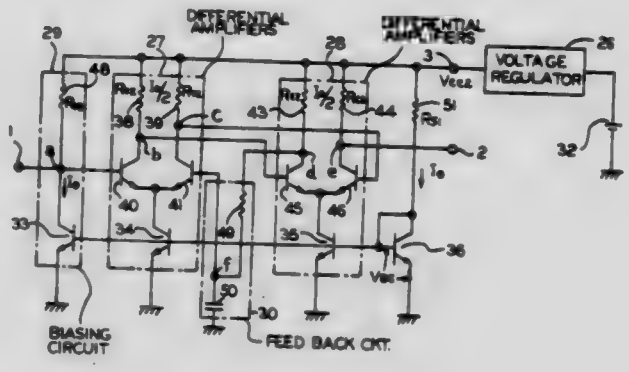
Filed Jun. 9, 1982, Ser. No. 386,513

Claims priority, application Japan, Jun. 12, 1981, 56-90516

Int. Cl.³ G06G *7/12*; H03K *5/153*; H03F *3/45*

U.S. Cl. 307—491

8 Claims



1. A limiter amplifier comprising:

power supply means;

a plurality of differential amplifier means connected in cascade between an input terminal and an output terminal for amplitude-limiting an input signal applied to said input terminal to provide an amplitude-limited output signal at said output terminal, each of said amplifier means having first transistor means;

biasing circuit means connected to supply a bias voltage to the input terminal of said differential amplifier means, said biasing circuit means having second transistor means;

constant voltage means for supplying a constant bias voltage to said first and second transistor means to enable them to supply constant currents to said amplifier means and said biasing means, respectively;

voltage regulator means connected to said power supply means for supplying a constant voltage to said amplifier means, biasing circuit means and constant voltage means; and

said voltage regulator means, said first and second transistor means and said constant voltage means having substantially the same temperature characteristics.

4,495,430

BALANCED ARMATURE WINDING FOR MOTORS

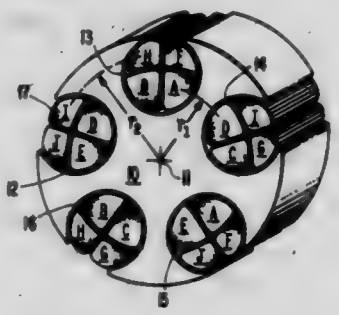
John A. Herr, Garwood, and Wolfgang Jaffe, Roselle Park, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Jun. 22, 1979, Ser. No. 51,333

Int. Cl.³ H02K *3/00*

U.S. Cl. 310—196

5 Claims



1. An armature for an electromechanical device comprising;

a substantially cylindrical member having an axis of rotation along the length thereof,

said cylindrical member including a plurality of exterior lengthwise slots,

electrically conductive wire wound in said slots to form a plurality of serially connected coils,

said coils located closer to the axis of rotation of said cylindrical member having a greater number of turns of said

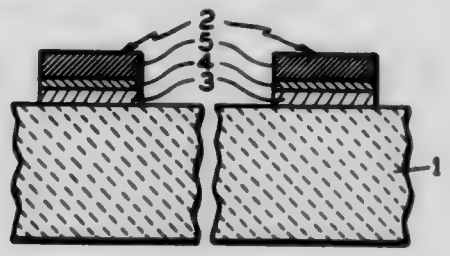
conductive wire than coils located a greater distance away from said axis of rotation.

4,495,431

LOW REFLECTIVITY SURFACE-MOUNTED ELECTRODES ON SEMICONDUCTIVE SAW DEVICES

Thomas W. Grudkowski, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 22, 1983, Ser. No. 525,185
Int. Cl.³ H03H 9/25
U.S. Cl. 310—313 B 6 Claims



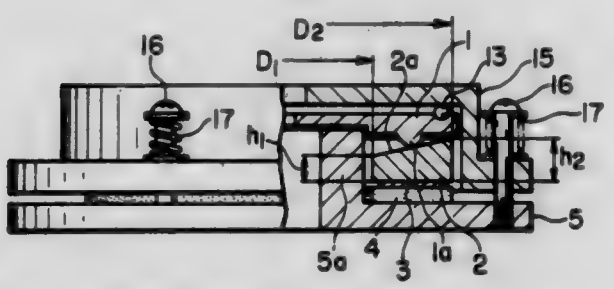
1. A surface acoustic wave device comprising:
a substrate of semiconducting and piezoelectric material; and
metallic electrodes formed on the surface of said substrate, characterized by:
said electrodes comprising gold and germanium with germanium consisting of about 2%–3% of the total gold and germanium, said electrodes having thickness which is a small fraction of the design acoustic wavelength of the device.

4,495,432

PIEZOELECTRIC VIBRATION WAVE MOTOR WITH SLOPED DRIVE SURFACE

Makoto Katsuma, Kawasaki; Hiroyasu Murakami, Tokyo, and Akira Hiramatsu, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 5, 1983, Ser. No. 558,004
Claims priority, application Japan, Dec. 15, 1982, 57-219532; Dec. 27, 1982, 57-234720; Jan. 31, 1983, 58-14246
Int. Cl.³ H01L 41/08
U.S. Cl. 310—328 5 Claims



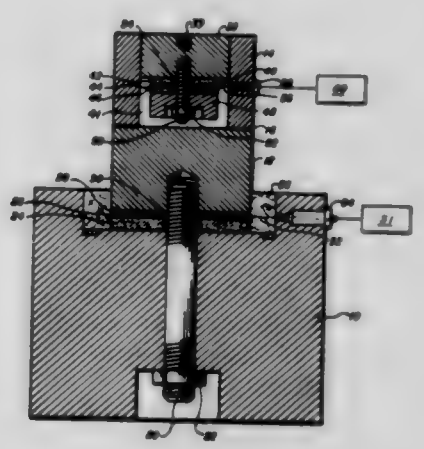
1. A vibration wave motor comprising:
a plurality of electrostrictive element groups arranged or polarized phase-differentially, said electrostrictive element groups each including at least one electrostrictive element;
a ring-shaped vibration member for generating a travelling vibration wave when voltages having phase differences therebetween are applied to said electrostrictive element groups, said vibration member having a sloped area, a thickness of said sloped area increasing as it radially goes from a center to an outer circumference; and
a movable member press-contacted to said vibration member such that said movable member is friction-driven by said vibration member.

4,495,433

DUAL CAPABILITY PIEZOELECTRIC SHAKER

Anthony A. Sheridan, Glen Burnie, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 22, 1983, Ser. No. 554,419
Int. Cl.³ H01L 41/08
U.S. Cl. 310—329 5 Claims



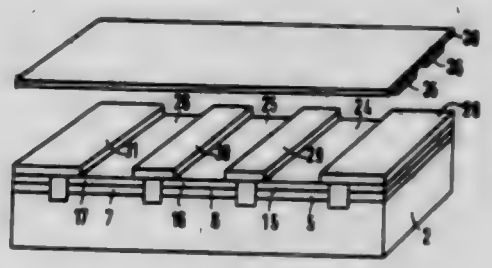
1. A shaker device for performing absolute and comparison calibration of accelerometers, comprising:
a massive shaker base;
a shaker head having a cylindrical axial cavity in a lower portion thereof;
at least one expander piezoelectric disc disposed between the shaker base and shaker head;
means for providing an input driving voltage over a predetermined continuous frequency range to the at least one expander piezoelectric disc such that comparison calibration can be accomplished at points over said predetermined continuous frequency range;
a reference accelerometer mounted axially within the cylindrical axial cavity of said shaker head;
means electrically coupled to said reference accelerometer for detecting and recording an output signal; and
means for mounting accelerometers to be calibrated on said shaker head.

4,495,434

PRESSURE-SENSITIVE TRANSDUCER USING PIEZO CERAMIC MATERIAL

Heinrich Diepers, Hoechstadt, and Herbert Schewe, Herzogenaurach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 27, 1983, Ser. No. 536,408
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1982, 3236098
Int. Cl.³ H01L 41/08
U.S. Cl. 310—338 5 Claims



1. A pressure-sensitive transducer arrangement comprising, in combination:
(a) a substrate having a substrate surface;
(b) a plurality of strip-shaped column conductors disposed on said substrate surface and electrically insulated from

each other (;), succesive ones of said column conductors being spaced apart a maximum distance of a few hundred micrometers,

(c) a plurality strip-shaped dielectric elements formed of a piezoceramic material, each dielectric element being disposed over a corresponding one of said column conductors; and

(d) a plurality of strip-shaped row conductors disposed above said dielectric elements and separated therefrom at each crosspoint by an empty space, succesive ones of said row conductors being spaced apart a maximum distance of a few hundred micrometers;

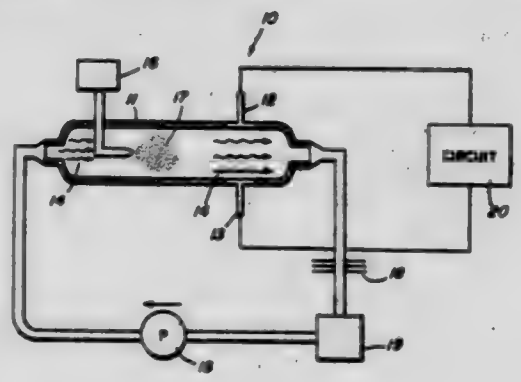
whereby a matrix of transducer elements are formed at the crosspoints of said column and row conductors with a maximum grid size of a few hundred micrometers.

4,495,435

PLASMA SWITCH

Joseph M. Proud, Wellesley Hills, and Walter P. Lapatovich, Watertown, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jul. 26, 1982, Ser. No. 402,174
Int. Cl.³ H01J *17/26*
U.S. Cl. 313—231.31 6 Claims



1. A plasma switch for switching an electrical circuit having a voltage potential, comprised of:

a discharge tube;

at least two electrodes arranged in said tube and adapted to be coupled to said voltage potential;

means for moving a gas stream of noble gas through said tube, said noble gas supporting a plasma discharge between said electrodes, whereupon said switch is in an on-state; and

means for ejecting a mixture of MX_3 and SiO_2 particles into said gas stream upstream from said electrodes, wherein M is a metal selected from Group IIIA of the periodic table and X is a halogen, said mixture reacting in said plasma discharge increasing the vapor pressure of the MX_3 and generating SiX_4 thereby quenching electrons and extinguishing said plasma discharge whereupon said switch is in an off-state.

4,495,436

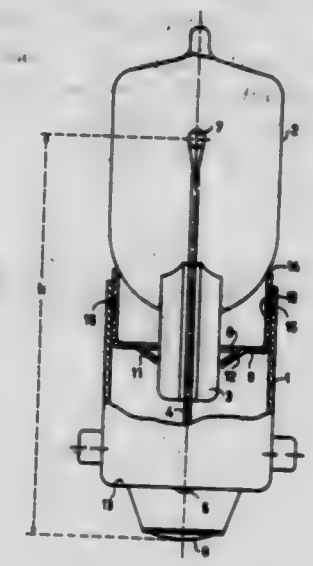
ELECTRIC LAMP HAVING A LAMP CAP WHICH IS CONNECTED WITHOUT CEMENT

Victor R. Noteltairs, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 2, 1982, Ser. No. 394,737
Claims priority, application Netherlands, Jul. 21, 1981, 8103436
Int. Cl.³ H01J *5/48*
U.S. Cl. 313—318 5 Claims

1. An electric lamp which comprises:

a substantially metal cup, a substantially metal lamp cap and a glass envelope, said lamp cap having a base, said envelope being secured in said lamp cap without cement, said lamp envelope being sealed at one end by means of a pinch through which current supply conductors extend from contacts on said lamp cap to an electric element disposed inside said lamp envelope, said cup having an open end and a base, said open end being opposite said base, said base having an aperture therein, said pinch of said lamp envelope extending through said aperture in said base of said metal cup, said cup being secured in said lamp cap and having along the edge of said aperture oppositely-located



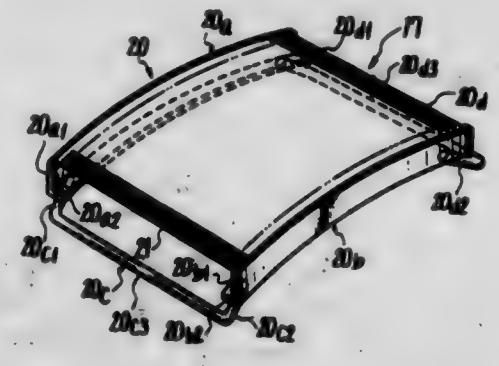
lugs which face said base of said lamp cap and bear against said pinch of said lamp envelope, said open end of said metal cup being in line contact with said lamp envelope, said metal cup being secured in said lamp cap with said base thereof facing said base of said lamp cap and engaging said lamp envelope with said open end thereof.

4,495,437

GRID APPARATUS FOR USE WITH A COLOR CATHODE RAY TUBE

Hisao Kume, Aichi, and Takahide Sanma, Ohgaki, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 24, 1982, Ser. No. 411,018
Claims priority, application Japan, Aug. 26, 1981, 56-133791
Int. Cl.³ H01J *29/07, 19/48*
U.S. Cl. 313—403 2 Claims



1. A grid apparatus for use with a color cathode ray tube comprising a pair of opposing frame members, a grid element stretched between said pair of opposing frame members, and a pair of arm portions respectively fixed at free ends thereof to said pair of opposing frame members for mechanically connecting said pair of opposing frame members, and for stretching said grid element with a predetermined tension in cooperation with said pair of opposing frame members, in which each of said pair of arm portions is curved as a U-shape in a substantially single plane, both ends thereof are connected to said pair of opposing frame members at positions outside from their Bessel points, the plane in which each of said pair of arm portions is arranged is respectively widened rearward with an angle from 45° to 65° with respect to a surface perpendicular to the axis of said cathode ray tube, and a ratio $I_1 l/hd$ 2 is selected to be a value ranging from 1.5 to 2.0 where I_1 is the moment of

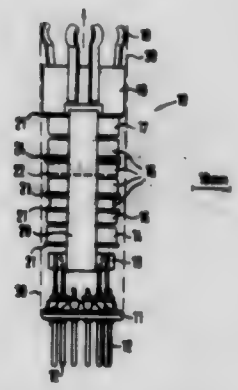
inertia of the area of said frame members and I_2 is the moment of inertia of the area of said arm portions.

4,495,438

DEVICE FOR ADJUSTING ELECTRON BEAMS IN A CATHODE-RAY TUBE

Walter Kornaker, Berkheim, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed May 21, 1982, Ser. No. 380,793
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1981, 3123301
Int. Cl.³ H01J 29/51
U.S. Cl. 313—412
36 Claims



1. Apparatus for generating and adjusting electron beams in a cathode-ray tube comprising:

an electron gun for producing a central and two outer electron beams each along a respective central axis extending in a z direction and lying in an x-z plane, said gun having electrodes and adapted to be housed in the neck of said cathode ray tube, said gun extending in a z-direction;

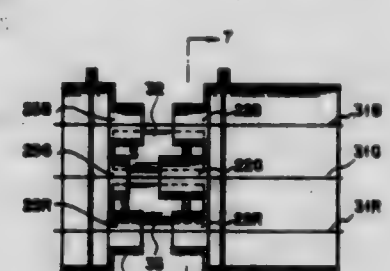
a magnetic ring attached to said gun, said ring being magnetizable from outside said neck, said ring having two long sides and two short sides defining an oblong area, said oblong area being normal to said x-z plane, said oblong area having its longer axis lying in said x-z plane and having its shorter axis perpendicular to said x-z plane, said ring being formed such that the distance in a y direction of said ring from the respective said central axis of each of said two outer electron beams is shorter than the distance in the y direction of said ring from said central axis of said central electron beams.

4,495,439

MAGNETIC FOCUSING TYPE CATHODE RAY TUBE

Taketoshi Shimoma, Isezaki; Kunio Fukuda, and Toshio Shimaoogi, both of Fukaya, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 25, 1982, Ser. No. 411,364
Claims priority, application Japan, Sep. 2, 1981, 56-137004; Sep. 2, 1981, 56-137005; Sep. 2, 1981, 56-137006; Sep. 2, 1981, 56-137007; Sep. 2, 1981, 56-137008
Int. Cl.³ H01J 29/64, 29/51
U.S. Cl. 313—412
9 Claims



1. A cathode ray tube, comprising:

a cathode ray tube envelope having a face plate formed with a screen, a funnel portion integrally provided on said face plate, and a neck portion integrally provided on said funnel portion;

means for generating magnetic fields within an electron gun device; and

said electron gun device, disposed within said neck portion, comprising a cathode and a magnetic yoke, adjacent to said cathode with a magnetic gap therebetween, said device generating electron beams in in-line form, and said magnetic yoke including:

a first yoke, disposed on the cathode side of said magnetic gap and having a passage therein permitting the passage of the electron beams therethrough,

a second yoke, disposed on the screen side of said magnetic gap, and having a passage therein permitting the passage of said electron beams therethrough and magnetically asymmetrical with said first yoke;

a third yoke disposed adjacently between said first yoke and said cathode, providing a strong magnetic shield effect against any magnetic fields generated by said means for generating magnetic fields;

a fourth yoke, disposed adjacent to said second yoke providing a weak magnetic shield effect against any magnetic fields generated by said means for generating magnetic fields; and

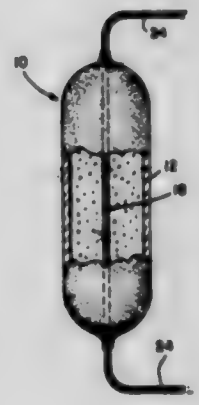
said magnetic yoke constituting means for causing one of the radial components of the magnetic field in said magnetic gap to have an opposite polarity to that of other magnetic fields present, the radial component of a magnetic field in said magnetic gap defining a prescribed angle with respect to a beam traveling direction.

4,495,440

ARC-EXTINGUISHING AMPUL AND FLUORESCENT LAMP HAVING SUCH AMPUL MOUNTED ON EACH ELECTRODE STRUCTURE

Steven C. Schlitt, Merrimac; Thomas S. Yong, Danvers; William J. Roche, Merrimac, and John W. Anderson, Jr., Ipswich, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Aug. 23, 1982, Ser. No. 410,274
Int. Cl.³ H01J 61/10, 61/42, 61/28
U.S. Cl. 313—492
6 Claims





1. A low-pressure arc discharge lamp comprising:

(a) a hermetically sealed tubular glass envelope having a

luminescent material coated on the interior surface thereof and two opposed ends;

(b) a glass stem at each of said ends, said stem comprising a flare sealed to said envelope and an inwardly projecting body terminating in a press;

(c) an electrode structure mounted on each stem, said electrode structure comprising two lead-in wires sealed in said press and a filament mounted on said lead-in wires, said filament having a coating of electron-emissive material thereon;

(d) two heat shields, one of said heat shields being mounted on each electrode structure between said filament and said glass stem;

(e) a fill within said envelope, said fill being an arc discharge generating and sustaining medium;

(f) two arc-extinguishing ampuls, one of said ampuls being mounted on each heat shield on the side facing said filament, each ampul having a thin glass wall enclosing a hermetically sealed cavity and being such that said body or a portion thereof will rupture when raised to the melting point of the glass;

(g) an arc-extinguishing fluid within said cavity;

(h) at least one electrically conductive support wire mounted to said ampul, said support wire being means for mounting said ampul on said heat shield; and

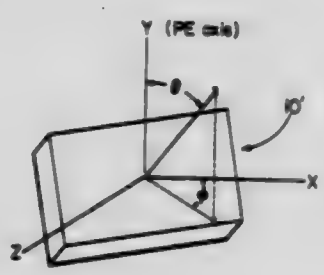
(i) a heat-conductive coating covering the outer surface of said ampul and a portion of said support wire.

4,495,441

PYROELECTRIC TARGETS AND METHOD OF MANUFACTURE

N. Vasanth Rao, Foster, R.I., and Avner Shaulov, Monsey, N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Dec. 5, 1980, Ser. No. 213,432
Int. Cl.³ H01J 9/20, 29/10
U.S. Cl. 313—388 14 Claims



1. A pyroelectric target comprising a pyroelectric material having a pyroelectric axis, said material being anisotropic dielectrically and having two faces which are substantially planar and which are substantially parallel to each other, said faces being provided with electrodes, characterized in that the angle between the pyroelectric axis and a normal to the planar faces is greater than substantially 0° but less than 90°.

4,495,442

COLD-CATHODE MAGNETRON INJECTION GUN

Kazuo Minami, Kawasaki, Japan, assignor to Tokyo Institute of Technology, Tokyo, Japan

Filed Sep. 7, 1982, Ser. No. 415,465
Claims priority, application Japan, Sep. 17, 1981, 56-145478
Int. Cl.³ H01J 23/16, 29/96
U.S. Cl. 315—3 3 Claims

1. A cold-cathode magnetron injection gun, comprising

a vacuum container;

an insulating holder, said insulating holder extending from a sidewall of said vacuum container toward the inside thereof;

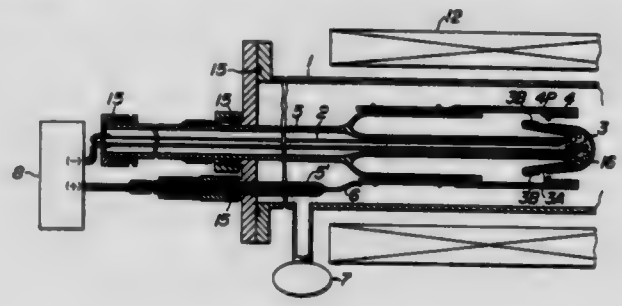
a conductor airtightly secured to said insulating holder, said conductor extending from a voltage source outside said vacuum container to the inner end of said insulating holder;

a conical cold-cathode having a longitudinal axis secured to the inner end of said insulating holder and connected to the inner end of said conductor, the apex of said conical cathode extending away from said conductor;

a cylindrical anode secured to said insulating holder, said cylindrical anode coaxially surrounding said conical cathode;

a lead wire connecting said cylindrical anode to said voltage source;

an annular projection extending from the inner surface of said cylindrical anode toward said conical cathode, an end of said annular projection being spaced from said conical cathode;



an insulating film coated on a portion of the outer surface of said conical cathode, the portion of the outer surface of said conical cathode not coated by said insulating film forming a conductive emission ring surface facing the end of said annular projection; and

a solenoid coil surrounding said vacuum container, said solenoid coil generating a uniform magnetic field within said vacuum container extending parallel to the axis of said conical cathode, said conical cathode having an inclined surface defining a magnetron injection gun adapted to operate under conditions of $\alpha_0 \leqq 0.1$, where $\alpha_0 = E_0/(cB)$, E_0 is the electric field intensity at said emission ring surface, c the velocity of light in vacuum, and B the magnetic flux density of said magnetic field.

4,495,443

COMPACT FLUORESCENT LAMP COMBINATION, AND METHOD OF MAKING IT

John H. Cummings, 11691 SE. Wilding Rd., Santa Ana, Calif. 92705

Filed Jan. 27, 1984, Ser. No. 574,479
Int. Cl.³ H01J 7/44, 17/34, 19/78, 23/16
U.S. Cl. 315—58 12 Claims

1. A method of manufacturing a combination fluorescent lamp and screw plug, said method comprising:

(a) selecting a compact fluorescent lamp having relatively small fluorescent tube means and a base, and also having two contact pins on said base, and also having a starter housing projecting from said base on the side thereof remote from said tube means,

(b) selecting a screw plug having a metal screw portion adapted to screw into a socket for an incandescent lamp bulb, and also having a contact button coaxial to said screw portion and near one end thereof, and also having a hollow insulating cylindrical body on which said screw portion and contact button are mounted, and also having a flange portion at the end of said body remote from said button, said flange portion being recessed on the side thereof remote from said button, said flange portion having inwardly-extending apertured boss portions that define, together with wall portions of said flange portion, recess regions on opposite sides of each boss portion, said boss portions being along a line diametral to said body and being on opposite sides of said body,

(c) mounting, on said flange portion, thin and insulating socket means having pin-socket means therein adapted to

receive said contact pins, and having opening means adapted to receive said starter housing, said socket means being sufficiently thin that said starter housing projects downwardly into said hollow cylindrical body,

said mounting step being so effected that said pin-socket means are registered with said recess regions whereby said pins will be registered with said recess regions when said lamp is assembled with said screw plug and said insulating socket,

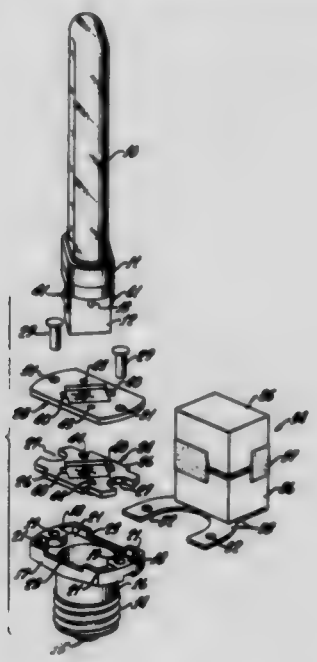
(d) mounting "ballast" coil means on said screw plug, and

(e) electrically connecting said screw portion, contact button, pin sockets, and ballast coil means in circuit with each other.

4. A screw-plug base adapted to be combined with a compact fluorescent lamp, said compact fluorescent lamp having relatively small fluorescent tube means and also having a base, and further having two contact pins on said base, and further having a starter housing projecting from said base on the side thereof remote from said tube means, said screw-plug base comprising:

(a) a screw plug having a metal screw portion adapted to screw into a socket for an incandescent light bulb,

said screw plug also having a contact button coaxial to said screw portion and near one end thereof, said screw plug also having a hollow insulating cylindrical body on



which said screw portion and contact button are mounted, said screw plug also having a flange portion at the end of said body remote from said button,

said flange portion being recessed on the side thereof remote from said button,

said flange portion having inwardly-extending apertured boss portions that define, together with wall portions of said flange portion, recess regions on opposite sides of each boss portion,

said boss portions being along a line diametral to said body and being on opposite sides of said body,

(b) thin and insulating socket means mounted on said flange portion,

said insulating socket means having pin-socket means therein adapted to receive said contact pins,

said socket means further having opening means therein adapted to receive said starter housing,

said socket means being sufficiently thin that said starter housing projects downwardly into said hollow cylindrical body when said fluorescent tube is assembled with said screw plug,

said pin-socket means being registered with said recess regions whereby said pins will be registered with said recess regions when said fluorescent lamp is assembled with said screw plug, and

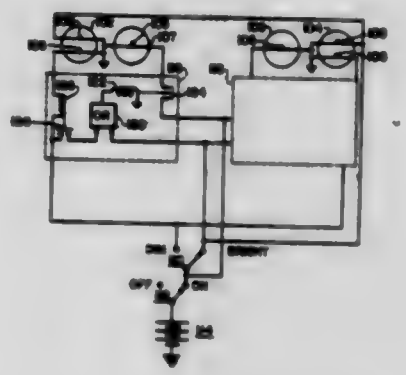
(c) "ballast" coil means mounted on said screw plug.

4,495,444

VEHICLE LIGHTING SYSTEM

Francis J. Thomas, Box 45, Candlewood Isle, New Fairfield, Conn. 06810

Filed Mar. 7, 1983, Ser. No. 472,577
Int. Cl.³ H05B 39/10
U.S. Cl. 315—82
11 Claims



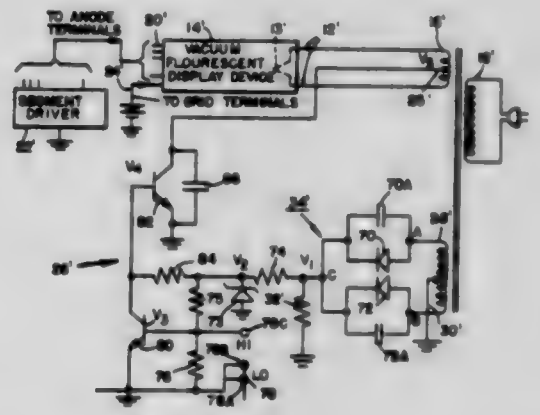
1. A lighting system for a surface-movable vehicle of the type employing a first light-producing operator-selectable means to provide bright illumination and a second light-producing, operator-selectable means to provide dim illumination, where said bright illumination produces lighting of the surface further from the vehicle that said dim illumination, characterized by means responsive to the flow of electric current through said first light-producing means for sensing the operability of said first light-producing means to provide an indication of inoperability, and means comprising an OR circuit responsive to said indication of inoperability and to an indication that said second light-producing means has been operator-selected to cause said second light-producing means to operate in either case.

4,495,445

BRIGHTNESS CONTROL FOR A VACUUM FLUORESCENT DISPLAY

Stephen D. Turney, New Hartford, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Jun. 6, 1983, Ser. No. 501,385
Int. Cl.³ H05B 37/00
U.S. Cl. 315—169.1
22 Claims



1. A brightness control for a vacuum fluorescent display comprising:

a vacuum fluorescent display having anode, grid and cathode terminals, said anode and grid terminals adapted for coupling to means for supplying selected voltages thereto,

means coupled to said cathode terminals for supplying substantially continuous AC potential thereto, and

control means having first and second operative states coupled to said means for supplying AC potential to said cathode terminals,

said control means being responsive to said means for supplying AC potential such that said control means assumes

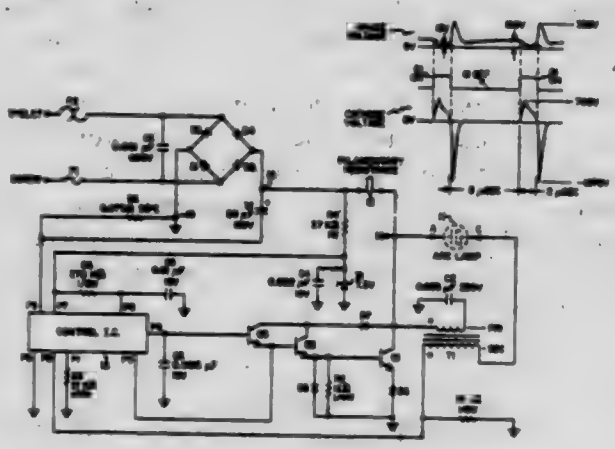
said second operative state only during time periods symmetrical about the zero crossings of the AC potential,
said means for supplying AC potential being responsive to the first operative state of said control means to supply said AC potential at a first level and being responsive to the second operative state of said control means to supply said AC potential at a second level,
and said vacuum fluorescent display producing light output only in response to the delivery thereto simultaneously of the selected voltages to said anode and grid terminals and AC potential at said second level to said cathode terminals, whereby light output is produced only during time periods symmetrical about the zero crossings of the AC potential supplied to the cathode terminals.

4,495,446

LIGHTING UNIT WITH IMPROVED CONTROL SEQUENCE

Thomas A. Brown, Fulton; Marc A. Dinsoway, Liverpool; William Peil, North Syracuse, all of N.Y., and Spiro Vasuvakas, Sagamore Hills, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 27, 1982, Ser. No. 452,910
Int. Cl.³ H05B 37/00
U.S. Cl. 315—206 20 Claims



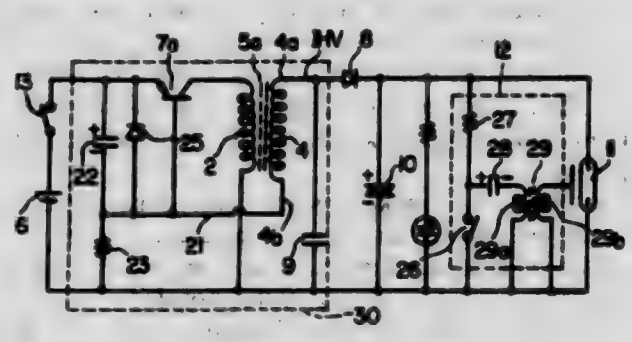
1. A lighting unit comprising:
A. a dc power source having two output terminals, the second, a reference terminal;
B. an arc lamp; and
C. an operating network comprising:
(1) an incandescible filamentary resistance serially connected with said arc lamp to provide standby light for said arc lamp.
(2) alternating electrical energy transforming means having a primary and a secondary winding for deriving a stepped-up output voltage,
(3) semiconductor switching means responsive to first and second input signals generated by control means which has a multistate arc lamp starting sequence, said semiconductor switching means being rendered conductive; (1) at a low, not excluding zero, switching rate in response to the presence of the first input signal, and (2) at a high switching rate in response to the presence of the second input signal, said semiconductor switching means being in a nonconductive condition in the absence of said first and second input signals;
(4) means for interconnecting said switching means, said control means and said dc power source, said interconnecting means providing four paths, a first path between said dc power source and said filamentary incandescent filament, a second path between said switching means and the node formed by said connection of said incandescible filament and one side of said arc lamp and also providing connection between said switching means and one side of said primary winding, a third path between the other side of said arc lamp and one side of said secondary winding and a fourth path between said control means and the other side of said secondary winding, said interconnecting means coupling electrical energy from said d.c. source to, (1) said incandescible filament resistance, (2) said arc lamp, and (3) said transforming means, said electrical energy being coupled in a form determined by the conductive and nonconductive conditions of said switching means, said coupled forms including:
(a) a low, not excluding zero, frequency periodic form to said resistive filament via said second path for standby illumination when said switching means is operated at said low, not excluding zero, switching rate,
(b) a higher frequency (relative to said low frequency) periodic form to said resistive filament for standby illumination and to the primary winding of said transforming means via said second path (ii) for starting and transitioning said arc lamp when said switching means is operated at said high switching rate, and,
(c) a dc form to said serially connected filament and arc lamp via said first path for energizing and ballasting said arc lamp during said nonconductive condition of said switching means,
(5) said control means having means responsive to timing information and having means for sensing the arc current conditions of said arc lamp via said fourth path both for operating said switching means, said multistate arc lamp starting sequence having states including:
(a) a preignition state generating said first input signal to operate said switching means at said low, not excluding zero, switching means for standby illumination,
(b) an ignition state generating said second input signal to operate said switching means at said high switching rate, appropriately high for energizing both said filamentary resistance to produce its incandescence and further igniting and transitioning said arc lamp,
(c) an ignited state in which said switching means remains nonconductive so long as arc current of said arc lamp is sensed by said arc sensing means, and
(d) an end of life state in which said switching means remains nonconductive if the arc current of said arc lamp sensed by said arc sensing means has not transitioned after passage of sufficient time which arc current condition is indicative of a probable failure of said lighting unit.

4,495,447

DC-DC CONVERTER CIRCUIT

Igarashi Shigemi, Tokyo, Japan, assignor to Sato Koki Company Ltd., Tokyo, Japan

Filed May 26, 1981, Ser. No. 266,645
Claims priority, application Japan, Jun. 8, 1980, 55-111405[U]; Jun. 8, 1980, 55-111406[U]; Jun. 8, 1980, 55-111407[U]; Dec. 6, 1980, 55-82481[U]
Int. Cl.³ H05B 37/00
U.S. Cl. 315—241 P 3 Claims



1. A DC-DC converter photographic flash lamp circuit device comprising:
a transformer having a primary coil and a high voltage secondary coil;
a high current gain transistor connected between a DC voltage source and said primary coil;

said high current gain transistor having its base connected to the earth - ground side of said secondary coil;

a diode connected to the base of said high current gain transistor and between said DC voltge source for protecting said high voltage gain transistor from reverse voltages produced by said primary coil;

a feedback capacitor connected across said high voltage secondary coil;

a charging circuit comprised of a rectifier and a large capacity condenser connected to the other side of said secondary transformer;

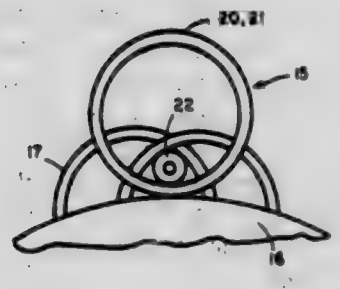
trigger circuit means comprised of a trigger transformer, trigger condenser and triggering contact switch connected to trigger a flash lamp and discharge said large capacity condenser through said flash lamp thereby emitting light.

4,495,448

MEANS AND METHOD OF SENSING MOTOR ROTATION SPEED FROM STRAY ESCAPING FLUX

Robert F. Dumbeck, FM 3000 Box 548, Elgin, Tex. 78621

Filed Nov. 6, 1981, Ser. No. 318,699
Int. Cl.³ H02P 5/16
U.S. Cl. 318—54 17 Claims



5. The method of deriving an electrical signal varying in characteristic as a function of the operational characteristics of a motor with electromagnetic stator and rotor windings comprising the steps of, operating the motor under rated conditions from a specified line power source, picking up signals from the stray magnetic flux excaping from the motor without requiring motor modifications for the purpose of providing a signal by placing an electromagnetic sensor responsive to the escaping magnetic flux within said field to sense the flux without any conductive or mechanical connections to the motor, processing and signals derived from the escaping magnetic flux by said sensor to produce information representative of the rotational speed of the motor, fortifying the electromagnetic signals sensed by the sensor by amplifying the signals and providing positive feedback of the amplified signals into the sensor, relatively positioning a plurality of windings in the sensor, providing one of the windings of a smaller diameter compared with larger diameters of the other windings, coaxially positioning the windings of larger diameter, offsetting the smaller diameter winding to a position adjacent a circumferential portion of the larger windings, and providing said positive feedback into the offset winding.

4,495,449

ELECTRIC PROPULSION SYSTEM FOR TRACTION VEHICLES WITH AUTOMATIC RETARD SPEED REGULATION

Kenneth G. Black, and Stuart W. McElhenny, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.

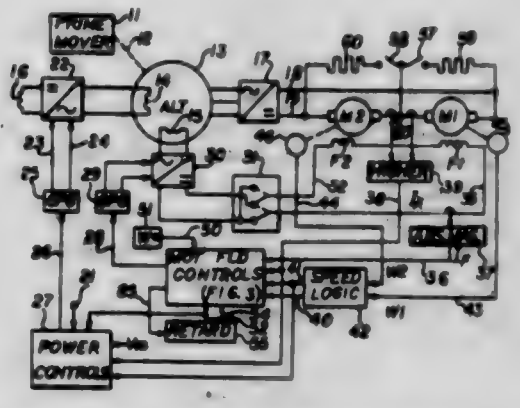
Filed Dec. 2, 1983, Ser. No. 557,553
Int. Cl.³ H02P 7/685
U.S. Cl. 318—60 12 Claims

1. In a traction vehicle propulsion system comprising a pair of adjustable speed d-c electric motors which can either propel or dynamically retard the vehicle, each of said motors having armature windings adapted to be connected to a source of d-c voltage of variable average magnitude and having field windings adapted to be connect to a separately controllable source of excitation current the average magnitude of which is variable and depends on the value of a control signal that is supplied to said controllable source, said propulsion system including command means for producing a predetermined command signal when dynamic retarding of the vehicle is desired, the improvement comprising:

a. first means coupled to both of said motors for providing a feedback signal representative of the actual rotational speed of the slower motor;

b. second means for providing a speed reference signal of preselectable value; and

c. control means connected to said first and second means and to said command means and responsive to the excitation current in said field windings for producing said control signal, said control means including



(i) third means effective in the absence of said command signal for making the value of said control signal representative of any deviation of the absolute magnitude of said excitation current from a first reference magnitude which varies as a predetermined function of the magnitude of current in the amature windings of said motors, and

(ii) fourth means effective when said command signal is produced and responsive to the rotational speed of the slower motor exceeding a first predetermined desired speed for making said control signal value representative of any deviation of the absolute magnitude of said excitation current from a second reference magnitude which is normally determined by the error between said slower motor speed and said first predetermined desired speed, whereby said excitation current magnitude is varied as necessary to minimize said error.

4,495,450

CONTROL DEVICE FOR BRUSHLESS MOTOR

Hisashi Tokizaki, and Hironobu Sato, both of Gunma, Japan, assignors to Sanyo Electric Co., Ltd. and Tokyo Sanyo Electric Co., Ltd., both of, Japan

Filed Dec. 16, 1983, Ser. No. 562,434
Claims priority, application Japan, Dec. 29, 1982, 57-232761; Jan. 26, 1983, 58-11733; Mar. 23, 1983, 58-42565[U]; Apr. 13, 1983, 58-66091; Aug. 2, 1983, 58-142195
Int. Cl.³ H02K 29/02
U.S. Cl. 318—138 8 Claims

1. A control device for controlling conduction to stator coils in a brushless motor having stator coils of a plurality of phases and a rotor having a permanent magnet of a plurality of poles, said control device comprising:

power source means for supplying direct current power,

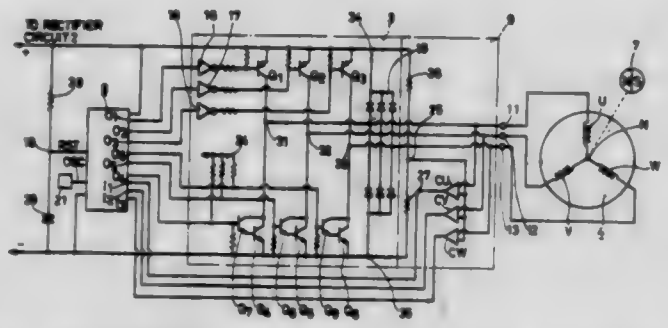
inverter means responsive to a control signal applied thereto for supplying said direct current power to said stator coils in a plurality of predetermined modes to be changed over so as to generate a rotational magnetic field in said stator coils,

reference voltage providing means for providing reference

voltage having a predetermined relation with voltage of said power source means,

comparing means for comparing voltage induced in said stator coils due to rotation of said rotor with said reference voltage so as to provide a comparison signal, and

mode controlling means for supplying said control signal corresponding to said predetermined modes for said inverter means, said mode controlling means including:



first timer means responsive to changeover of said modes to be enabled and responsive to change in said comparison signal to be disabled for determining a first period of time, and

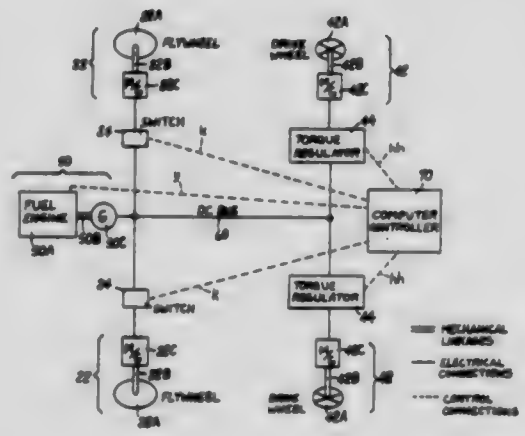
second timer means responsive to disablement of said first timer means to be enabled for changing over said modes at the end of a second period of time having a predetermined relation with said first period of time.

4,495,451

INERTIAL ENERGY INTERCHANGE SYSTEM WITH ENERGY MAKEUP BY COMBUSTION ENGINE ON DEMAND

Maxwell K. Barnard, 4700 Seventh Ave. NE., Seattle, Wash. 98105

Continuation-in-part of Ser. No. 222,899, Jan. 6, 1981, abandoned. This application Jun. 7, 1982, Ser. No. 385,301
Int. Cl.³ H02K *7/02*
U.S. Cl. 318—150 17 Claims



2. An electrical energy interchange system for wheeled vehicle propulsion, comprising induction motor/generator driven/driving drive wheels, induction motor/generator driven/driving flywheel means, and fuel engine driven DC generator means, and system including:

(a) a plurality of flywheels each drives by a separate induction motor/generator;

(b) a plurality of drive wheels each directly and separately driven by a separate induction motor/generator;

(c) an electrical bus maintained at a DC voltage which is responsive to the operational conditions and the operational needs of the vehicle;

(d) bidirectional, variable frequency switching means between each of the induction motor/generators and the bus; and

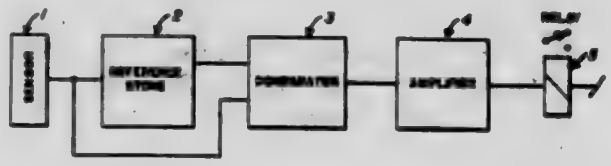
(e) digital computer type controller means monitoring the DC voltage on the electrical bus and, responsive thereto, controlling the frequency and duty cycle of each of said switching means, and controlling the operation of said fuel engine driven DC generator means to deliver electrical energy to said DC bus as needed.

4,495,452

WINDSHIELD WIPER CONTROL HAVING A SENSOR AND A REPEATEDLY RENEWED OFFSET SIGNAL

Allan Boegh-Peterson, Flongvaenget 14, DK-2640 Hedehusene, Denmark

PCT No. PCT/DK82/00168, § 371 Date Aug. 8, 1983, § 102(e) Date Aug. 8, 1983, PCT Pub. No. WO83/02093, PCT Pub. Date Jun. 23, 1983
PCT Filed Dec. 7, 1982, Ser. No. 525,035
Claims priority, application Denmark, Dec. 8, 1981, 5415/81
Int. Cl.³ H02P *1/04*
U.S. Cl. 318—444 1 Claim



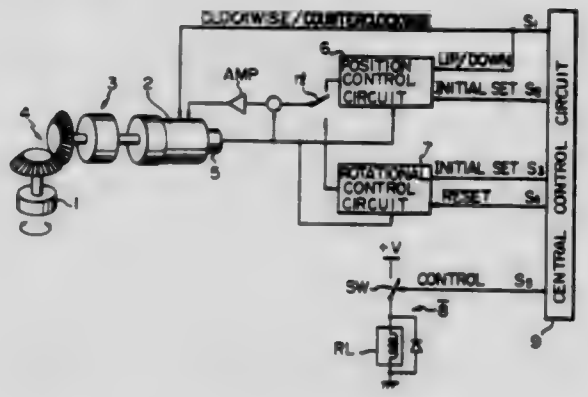
1. A windshield wiper control systems for automatic operation based upon the presence on a windshield of a predetermined amount of moisture, including a wiper, a motor for driving the wiper, a moisture sensor arranged within the area swept by the wiper, a reference store connected to the output of the sensor, a reference signal stored in said store, and means to compare the sensor output signal to said reference signal so that the motor is activated when the moisture amount exceeds the amount of the reference signal, so that each time the wiper has just passed the sensor, the sensor output signal is written to the store and is retained as a reference at the next comparison, and circuit means allowing said reference signal to continuously follow slow changes of the signal from the sensor.

4,495,453

SYSTEM FOR CONTROLLING AN INDUSTRIAL ROBOT

Hajimu Inaba, Hino; Shinsuke Sakakibara, Komae; Shigemi Inagaki, Musashino, and Nobutoshi Torii, Hachioji, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Jun. 23, 1982, Ser. No. 391,396
Claims priority, application Japan, Jun. 26, 1981, 56-98388
Int. Cl.³ G05B *19/42*
U.S. Cl. 318—568 3 Claims



1. A system for controlling an industrial robot having a wrist rotated by a direct-current motor which is controlled by feeding back the output pulses of a pulse coder (5) provided on the output shaft of said direct-current motor, comprising:

a stroke-limit position control means connected to said pulse coder, for controlling the position of said wrist between the minimum stroke and the maximum stroke;

a rotational control means connected to said pulse coder, for controlling the rotations of said wrist; and

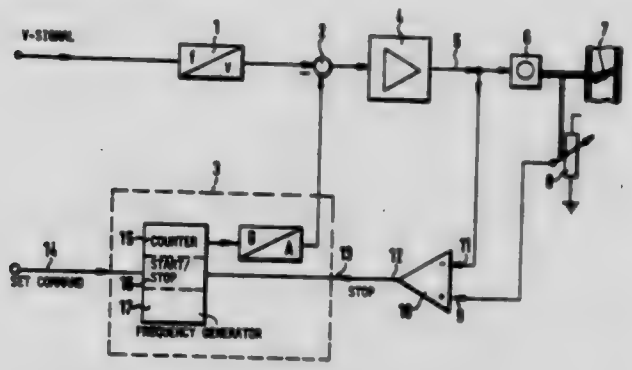
a selecting means connected between said direct-current motor and the outputs of said stroke-limit position control means and said rotation control means, for selecting either stroke-limit position control or rotational control.

4,495,454

DEVICE FOR ELECTRIC CONTROL OF THE SPEED OF AN AUTOMOTIVE VEHICLE

Harald Collosia, Glashütten, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 12, 1982, Ser. No. 397,251
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1981, 3130099
Int. Cl.³ G05B *1/06*
U.S. Cl. 318—663
3 Claims



1. In a device for the electric control of the speed of an automotive vehicle driven by an internal combustion engine, the vehicle having a guide signal transmitter, a comparison element fed with a guide signal of the transmitter and a vehicle-speed signal, and a control amplifier which is arranged behind the comparison element and gives off a set signal to a setting drive for the displacement of a throttle valve which controls the air-fuel mixture of the internal combustion engine, the improvement comprising:

a position indicator coupled with the throttle valve for generating a feedback signal representing a position of the throttle valve, wherein the guide signal transmitter incorporates an integrator and a memory, and

means for comparing the set signal with the feedback signal, an output signal of the comparing means being coupled to the guide signal transmitter to provide for integration of the set signal by the integrator, the integration beginning upon application of a set command signal to the integrator and upon a setting of the throttle valve in a desired position by a driver of the vehicle, the integration terminating when the comparing means signals equality between the magnitudes of the set signal and the feedback signal, thereby to maintain a vehicle speed in accordance with the present position of the throttle valve.

4,495,455

MULTI-PHASE STEPPING MOTOR CONTROLLER

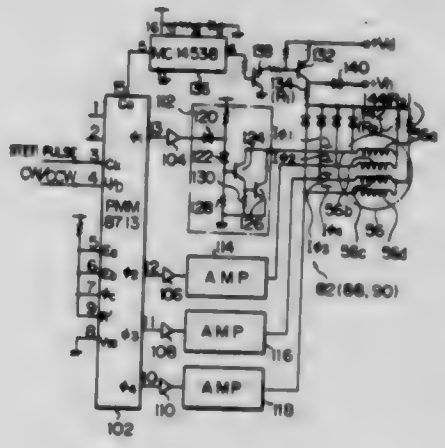
Shigeyuki Araki, Komae, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 18, 1983, Ser. No. 467,981
Claims priority, application Japan, Feb. 22, 1982, 57-27240
Int. Cl.³ H02K *29/04*
U.S. Cl. 318—696
11 Claims

1. A stepping motor controller for controlling a stepping motor having multiple phases and excitation coils therefor in which m and n motor phases are alternately excited to drive the motor, comprising:

excitation means for energizing m excitation coils at a first predetermined timing to excite the m motor phases and sequentially energizing n excitation coils at a second predetermined timing to excite the n motor phases; and

control means for controlling the excitation means to energize the m and n excitation coils such that the magnitude of energization for the m excitation coils is equal to that of



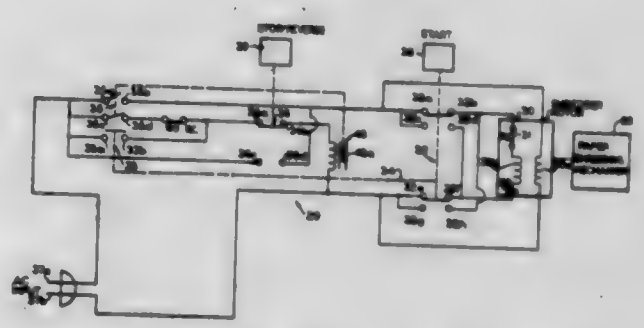
energization for the n excitation coils which is multiplied by a coefficient k which is greater than 1.

4,495,456

AUTOMATIC REVERSING SYSTEM FOR SHREDDER

Alfredo J. Vercillo, Harwood Heights, and Arthur Kusha, Glenview, both of Ill., assignors to General Binding Corporation, Northbrook, Ill.

Filed Sep. 23, 1982, Ser. No. 422,282
Int. Cl.³ H02P *3/20*
U.S. Cl. 318—755
10 Claims



1. An automatic reverse shredder system, comprising:

a shredder having an AC drive motor with a run winding, a starter winding assembly, and centrifugal switch means for disconnecting power feed to the starter winding assembly when the motor is rotating above a predetermined speed;

an AC power source;

manually actuatable switch circuit means connected between said AC power source and motor windings, said switch circuit means together with said centrifugal switch means turning on the shredder motor for normal forward operation when manually actuated, and automatically reversing the motor when jamming of the shredder occurs and the motor falls below a predetermined speed; and

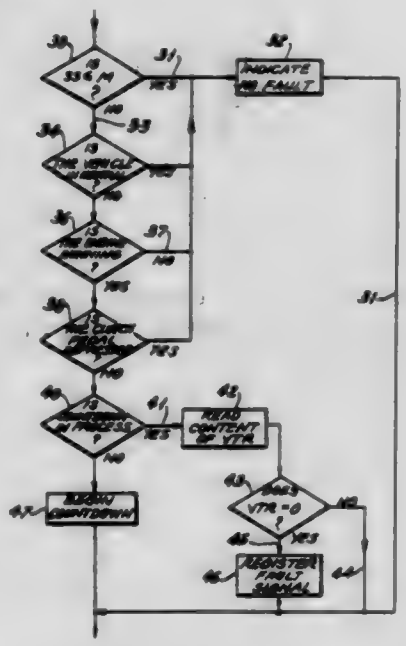
said manually actuatable switch circuit means including a momentary contact start switch, a momentary contact stop switch, reverse switch means for stopping reverse rotation of the motor after a predetermined reverse operation of the shredder, and a latch means, said latch means being directly latched when the start switch is actuated and being unlatched when either the stop switch or the reverse switch means is actuated.

4,495,457

METHOD OF PREVENTING ERRONEOUS GEAR SELECTION IN A VEHICLE TRANSMISSION

Hans V. Stahl, Södertälje, Sweden, assignor to Saab-Scania Aktiebolag, Sweden

Filed Nov. 19, 1981, Ser. No. 322,851
Claims priority, application Sweden, Nov. 28, 1980, 8008402-3
Int. Cl.³ B60K 41/04
U.S. Cl. 364—424.1 3 Claims



1. A method for preventing an automatic selection of an erroneous gear in a gearbox which is provided with a gear selection system which is operable in both a manual and an automatic selection mode and which may switch from the manual to the automatic mode when the system is operating in the manual mode and the gearbox is in a gear which is higher than the first gear, said method comprising the steps of:

generating, from the time that the engine is first started, output signals indicative of whether the engine is running, whether a forward gear is engaged, whether a manually operable clutch interfacing the gearbox and the engine is in a torque-transmitting position, and whether the vehicle speed is lower than a predetermined value;

generating a fault signal if, during a predetermined time interval, said output signals continually indicate that said vehicle speed is lower than said predetermined value, that said engine is running, that a forward gear is engaged and that said clutch is in said torque-transmitting position; said predetermined time interval starting from the time that said output signals simultaneously indicate that said engine is running, that a forward gear is engaged and that said clutch is in said torque-transmitting position; and

inhibiting the automatic selection by said gear selection system of a gear other than neutral in said gearbox due to the generation of said fault signal.

4,495,458

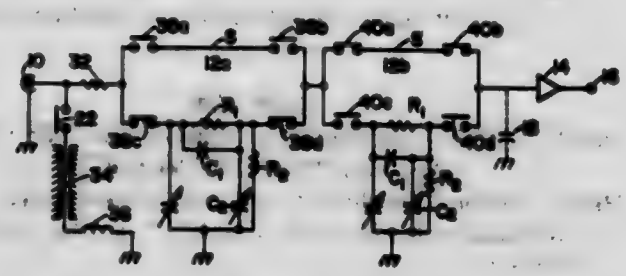
TERMINATION FOR HIGH IMPEDANCE ATTENUATOR

Desmond L. Murphy, Portland, Oreg., assignor to Tektronix, Beaverton, Oreg.

Filed Sep. 30, 1982, Ser. No. 431,852
Int. Cl.³ G01R 27/00
U.S. Cl. 324—57 R 10 Claims

9. A termination circuit for a transmission line connected to a capacitive load, comprising:

a damping resistor connected in series with the input of said transmission line; and



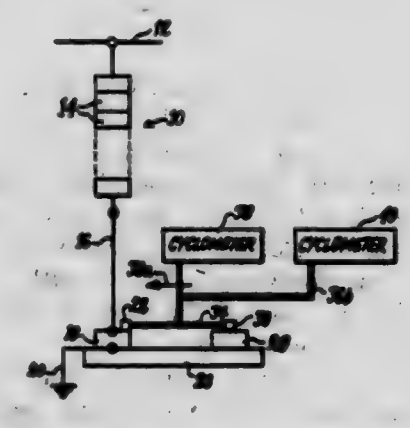
a series combination of a termination resistor, a delay line and an inductor connected between the input end of said damping resistor and ground.

4,495,459

SURGE ARRESTER DISCHARGE COUNTING APPARATUS

James S. Kresge, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Sep. 20, 1982, Ser. No. 420,195
Int. Cl.³ G01R 31/02
U.S. Cl. 324—72 7 Claims



1. Apparatus for counting discharges exceeding a predetermined minimum energy content of a surge arrester having a series stack of varistor elements, said apparatus including, in combination:

A. a separate varistor element characteristic of the arrester varistor elements and serially connected in the arrester discharge path;

B. a counter; and

C. a varistor temperature sensing device thermally coupled with said separate varistor element and operatively coupled with said counter to initiate the registration of a count therein each time an arrester discharge produces a temperature rise in said separate varistor element in excess of a predetermined amount.

4,495,460

RESETTABLE FEEDBACK SENSOR

David J. Bernays, Jr., San Jose, Calif., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Jun. 10, 1982, Ser. No. 387,161
Int. Cl.³ G01R 23/16
U.S. Cl. 324—77 A 2 Claims

1. A digital feedback control system comprising:

a difference network including means for generating an error signal representative of the difference between an input signal and a sensor signal,

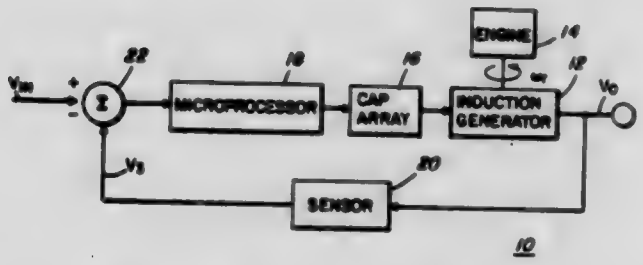
a controlled system responsive to said error signal and including means for generating an output signal representative of the operation of said controlled system, wherein said output signal is a relatively high frequency carrier signal having a relatively slowly varying envelope,

a feedback network responsive to said output signal and including sensor means for generating said sensor signal, said sensor means including:

A. selectively operative integrator means for generating an integrated signal representative of the integral of said carrier signal,

B. selectively operative reset means for resetting said integrator,

C. selectively operative analog-to-digital (A/D) means for generating a digital signal representative of said integrated signal, and



10

D. a controller switch operative during each cycle of said carrier signal including control means for sequentially:

i. enabling said integrator means during a predetermined portion of each cycle,

ii. enabling said A/D means,

iii. enabling said reset means,

and said digital signal corresponds to said sensor signal, wherein said controlled system is controlled on a cycle-to-cycle basis.

4,495,461

WAVEFORM CROSSING DETECTOR

John E. Gilliam, Carshalton, England, assignor to U.S. Philips Corporation, New York, N.Y.

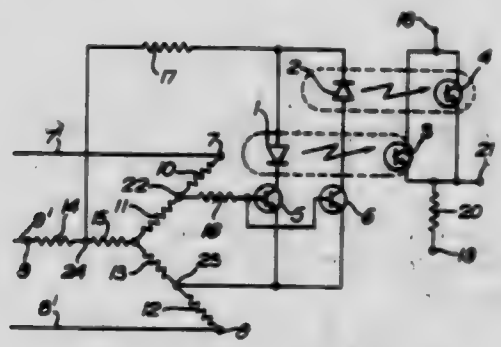
Filed Jun. 8, 1982, Ser. No. 386,364

Claims priority, application United Kingdom, Jun. 8, 1981, 8117495

Int. Cl.³ G01R *25/00*

U.S. Cl. 324—86

16 Claims



1. A circuit arrangement for detecting the instants at which the difference between voltages on first and second conductors of an alternating current supply pass through substantially zero in a given sense comprising: a photo-emissive semiconductor junction, a photo-sensitive element situated in a radiation path of said photo-emissive semiconductor junction, and a forward-current supply circuit for said photo-emissive semiconductor junction, said forward-current supply circuit having a control input connected between said first and second conductors and being arranged to supply said photo-emissive semiconductor junction with forward current in response to each passage of said difference through substantially zero in said given sense, said first and second conductors being first and second phase conductors respectively of a three-phase alternating current supply, circuit means providing an output current path of said supply circuit between a third phase conductor of said three-phase alternating current supply and one of said first and second phase conductors, said photo-emissive semiconductor junction being connected in said output current path between said forward-current supply circuit and said third phase conductor.

4,495,462

CURRENT SOURCE TEST CIRCUITRY

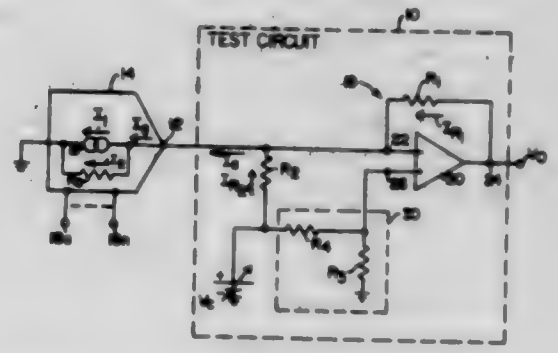
Thomas G. Weldon, Milpitas, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Mar. 3, 1983, Ser. No. 471,945

Int. Cl.³ G01R *19/18*

U.S. Cl. 324—120

11 Claims



tric energy to be monitored and a voltage transformer for deriving an input signal representative of the voltage supplied from the source, electronic multiplier circuit means for multiplying together the signal representative of the current and the signal representative of the voltage, said electric multiplier circuit means comprising CMOS type electronic switches having first and second inputs and an output, comparator circuit means supplied with an input reference signal and with either of the signals representative of the current or voltage as a second input and for deriving at the output thereof a pulse width modulated signal representative of either the current or voltage that is supplied to the first input to said multiplier circuit means, the other of said current or voltage signals being supplied to the second input terminal of the multiplier circuit means, and means for deriving at the output from said multiplier circuit means an output amplitude modulated and pulse width modulated product signal that is representative of the product of the current and voltage supplied from the source of electric energy with any DC offset error caused by the active load terminated input current transformer being automatically zeroed out.

4,495,464

NON-CONTACTING, SPEED-DETECTING DEVICE OF A DIRECT-CURRENT GENERATOR TYPE

Yoshinori Kouzi, Hino; Yoichi Amemiya, Hachioji, and Noboru Iwamatsu, Hino, all of Japan, assignors to Fujitsu Fanuc Limited, Hino, Japan

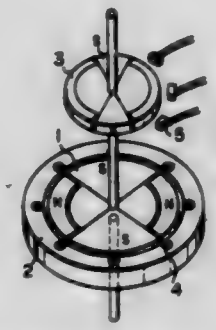
PCT No. PCT/JP81/00234, § 371 Date May 13, 1982, § 102(e) Date May 13, 1982, PCT Pub. No. WO82/01074, PCT Pub. Date Apr. 1, 1982

PCT Filed Sep. 17, 1981, Ser. No. 380,747

Claims priority, application Japan, Sep. 22, 1980, 55-130585

Int. Cl.³ G01P *3/48, 3/54*

U.S. Cl. 324—174 5 Claims



1. A non-contacting speed-detecting device of the direct-current generator type comprising a cylindrical permanent magnet rotor positioned for rotation within a stator, a plurality of stator winding wound on said stator, a permanent magnet for location positioned to rotate coaxially with said permanent magnet rotor and having a plurality of N pole regions and S pole regions, a plurality of magnetic induction switches positioned close to the circumference of said permanent magnet for location to be actuated thereby, said magnetic induction switches being connected respectively to said stator windings to sequentially connect said windings to an output when actuated in response to rotation of said permanent magnetic for rotation so that a stabilized D.C. voltage output proportional to the rotating speed is obtained, wherein the improvement comprises:

said permanent magnet for location being formed so that said N pole regions and said S pole regions alternate continuously around its circumference and have different circumferential widths, and the magnetic field applied to said magnetic induction switches is inverted steeply from one polarity to the other polarity as said magnetic rotates.

4,495,465

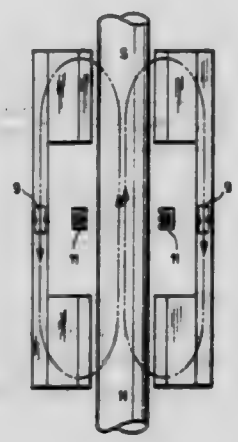
METHOD AND APPARATUS FOR NON-DESTRUCTIVE TESTING OF MAGNETICALLY PERMEABLE BODIES USING A FIRST FLUX TO SATURATE THE BODY AND A SECOND FLUX OPPOSING THE FIRST FLUX TO PRODUCE A MEASURABLE FLUX

Frank G. Tomaiuolo, Unionville, and John G. Lang, Scarborough, both of Canada, assignors to Rotesco Inc., Scarborough, Canada

Filed May 3, 1982, Ser. No. 373,851

Int. Cl.³ G01N *27/72;* G01R *33/12*

U.S. Cl. 324—232 42 Claims



1. Apparatus for determining cross sectional area changes of a body part having magnetic permeability, said apparatus comprising a first magnetomotive force means for inducing a first magnetic flux to at least substantially saturate the body part giving rise to a flux distribution pattern determined by cross sectional area characteristics of the body part, a second magnetomotive force means for incuding a second magnetic flux generally opposing the first magnetic flux in a selected region of said flux distribution pattern outside of the body part such that any resultant magnetic flux in the selected region is at a readily measurable flux level while the body itself is maintained substantially saturated with the first flux and detecting means to monitor the flux in the selected region for detecting flux level variances indicative of such cross sectional area changes by comparative investigation along the body part.

4,495,466

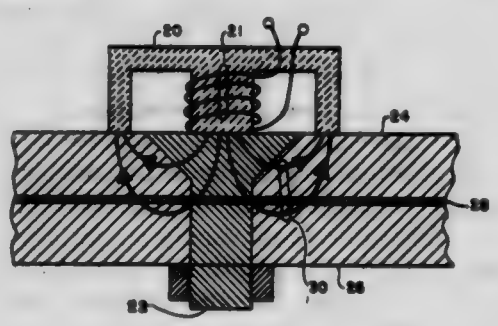
EDDY CURRENT TEST PROBE WITH CIRCUMFERENTIAL SEGMENTS AND METHOD OF TESTING MATERIAL SURROUNDING FASTENER HOLES

Kenneth M. Lakin, Ames, Iowa, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 8, 1982, Ser. No. 366,732

Int. Cl.³ G01N *27/90;* G01R *33/12*

U.S. Cl. 324—242 4 Claims



1. A method of testing specimens with fastener holes in multi-layer material which may have sealant material between layers using an instrument comprising a cup core formed of high permeability material having an outer cylindrical wall and an inner center post with the outer wall being joined to the

center post at one end and the other end terminating with a rim so as to form an open end of a cup, the outer wall containing a plurality of equidistant openings extending completely through the outer wall, and along the cylindrical length from the rim to a plane perpendicular to the cylindrical axis through the outer wall, to thereby provide a plurality of segments in the form of peripheral posts around the outer wall, with a plurality of segments in each quadrant, with the segments having planes of symmetry through the cylindrical axis which have equal angles between them completely around the cylinder, there being a search coil wound around said center post, and a pick-up coil wound around each segment, the piek-up coils being substantially the same size and shape, at substantially the same location on the respective segments;

said method comprising the steps of:

exciting the center post winding with alternating current of a selected operating frequency;

scanning the pick-up coils and measuring the voltage of each individual pick-up coil with the instrument centered on a fastener of a flawless reference specimen;

scanning the pick-up coils and measuring the voltage of each individual pick-up coil with the instrument centered on a fastener of a specimen to be tested with the same excitation voltage; and

comparing the voltage of each individual pick-up coil with the corresponding voltage from the reference specimen whereby flaws in the specimen being tested are indicated by discrepencies between the two voltage readings and flaw orientation is determined by identification of the segment coil;

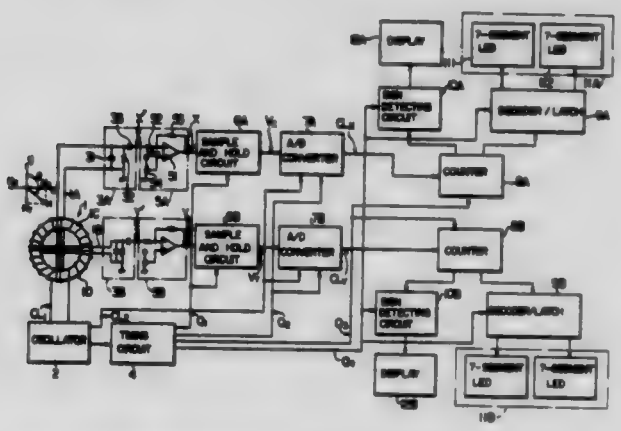
said frequency being lowered for testing deeper layers of material.

4,495,467

APPARATUS FOR SIMULTANEOUS MEASUREMENT OF MAGNETIC FIELD COMPONENTS IN MUTUALLY PERPENDICULAR DIRECTIONS

Akira Kuso, Oobu; Muneaki Matsumoto, Okazaki, and Koji Numata, Toyokawa, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 23, 1981, Ser. No. 286,198
Claims priority, application Japan, Jul. 30, 1980, 55-104800
Int. Cl.³ G01R *33/02*
U.S. Cl. 324—244 5 Claims



1. A magnetic field measuring apparatus comprising:

a magnetic sensor for simultaneously generating a first and a second output signal respectively corresponding to components of a magnetic field in mutually perpendicular directions;

an oscillator circuit for generating excitation pulses for exciting said magnetic sensor and analog-to-digital conversion control pulses;

a timing circuit responsive to said oscillator circuit to generate first, second, third and fourth timing control signals;

a first and a second signal processing channel each including a resonant circuit resonant with one of said sensor output signals to generate a resonance output, an adjusting circuit for amplifying said resonance output to generate an adjusted output, a sample and hold circuit responsive to said first timing control signal to sample and hold said adjusted output and generate a holding signal, an A/D converter circuit responsive to said holding signal, said analog-to-digital conversion control pulses and said second timing control signal to generate a number of clock pulses proportional to said holding signal, a counter responsive to said third timing control signal to count said clock pulses to generate a count value, and a decoder/latch circuit responsive to said fourth timing control signal to latch said count value, and

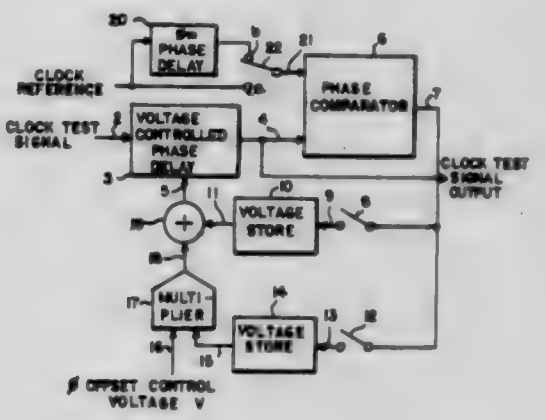
a first and a second display respectively responsive to said decoder circuit to display digital outputs respectively corresponding to said mutually perpendicular field components.

4,495,468

CONTROLLED PHASE OFF-SET DIGITAL TEST SYSTEM

Edward W. Richards, Fitchburg, and Paul T. Chang, Chelmsford, both of Mass., assignors to Tau-Tron, Inc., Chelmsford, Mass.

Filed Jan. 2, 1981, Ser. No. 221,968
Int. Cl.³ H03L *7/00*; H03K *5/26*
U.S. Cl. 328—155 13 Claims



1. A system for producing a clock output signal that is offset in phase with respect to a reference signal according to a clock phase offset control signal comprising;

(a) sources of clock and reference signals and clock offset control signal,

(b) a controlled variable phase shifter for shifting phase of the clock signal, producing a clock output signal,

(c) a phase comparator for comparing the phase shifted clock output signal with the reference signal producing a comparator output signal representative of the phase difference,

(d) a negative feedback circuit between the comparator output and the variable phase shift control and

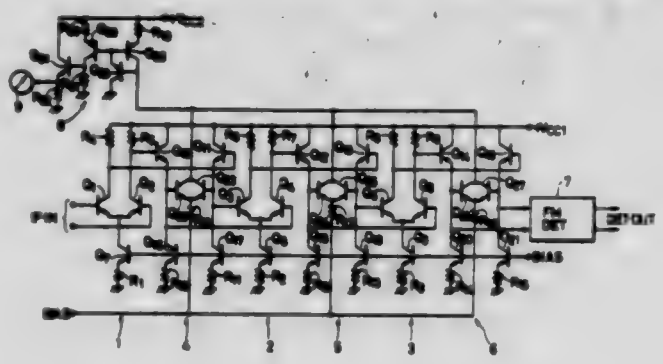
(e) means in said feedback circuit for multiplying feedback to the phase shifter by the off-set control signal,

(f) whereby the clock output phase offset is proportional to the offset control signal when the system is in equilibrium.

4,495,469
DIFFERENTIAL AMPLIFIER OUTPUT LEADING CIRCUIT, AND INTERMEDIATE FREQUENCY AMPLIFIER USING SAME

Tetsuo Numata, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 17, 1982, Ser. No. 442,328
Claims priority, application Japan, Nov. 17, 1981, 56-184053
Int. Cl.³ H03F 3/45
U.S. Cl. 330—2 8 Claims

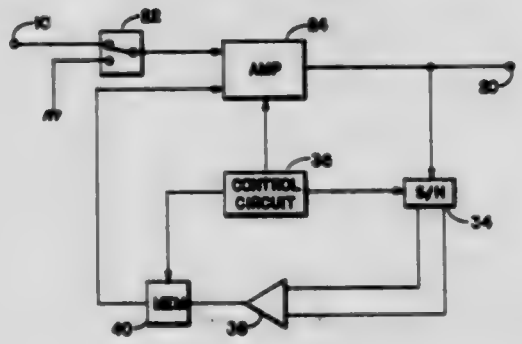


1. A differential amplifier output leading circuit, comprising: plural active elements, controlled electrodes of which are commonly connected; means for applying a pair of differential outputs of a differential amplifier respectively to control electrodes of said active elements, an output being led out of said commonly connected electrodes of said active elements; said applying means comprising a pair of emitter follower circuits receiving said pair of differential outputs as inputs thereof; and a pair of constant current sources constituting loads of said pair of emitter follower circuits, the emitter follower outputs of said pair of emitter follower circuit being applied to said control electrodes, respectively.

4,495,470
OFFSET BALANCING METHOD AND APPARATUS FOR A DC AMPLIFIER

Lloyd R. Bristol, Tigard, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Feb. 7, 1983, Ser. No. 464,284
Int. Cl.³ H03F 1/26
U.S. Cl. 330—9 9 Claims

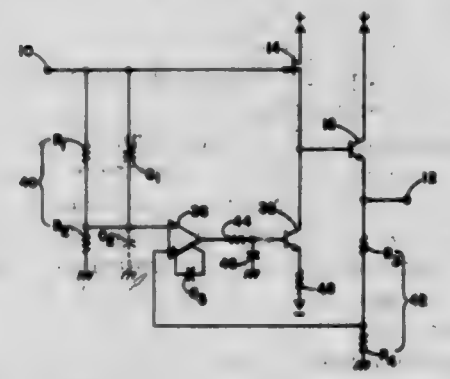


1. An offset balancing circuit for a differential DC amplifier, comprising:
- input switching means for selectively applying an input signal and ground potential to one input of said DC amplifier;
- polarity switching means for alternately switching the polarity of said DC amplifier between the normal and inverted states;
- detection means for detecting the output DC voltages from said DC amplifier in the normal and inverted states while applying the ground potential to one input of said DC amplifier; and
- control means for providing DC offset compensation voltage relating to the voltage difference between the output DC voltages from said detection means to the other input of said DC amplifier.

4,495,471
BUFFER AMPLIFIER

Ronald A. Barrett, Tigard, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Sep. 19, 1983, Ser. No. 533,683
Claims priority, application Japan, Oct. 12, 1982, 57-177692
Int. Cl.³ H03F 3/16
U.S. Cl. 330—151 1 Claim

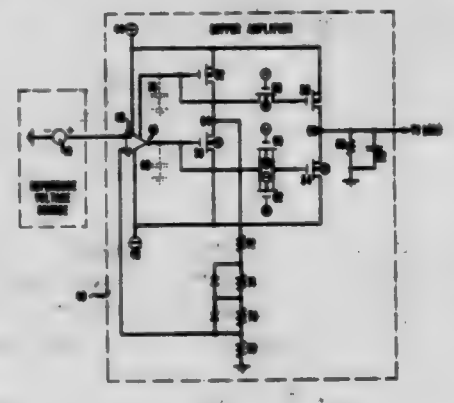


1. A buffer amplifier, comprising:
- a field effect transistor having a gate DC coupled to an input terminal;
- a bipolar transistor the principal current path of which is coupled in series with the source of said field effect transistor;
- an emitter follower transistor connected to the source side of said field effect transistor;
- an input divider connected to the input terminal;
- an output divider connected to the output end of said emitter follower transistor; and
- an operational amplifier for amplifying the voltage difference from said input and output dividers and providing the output thereof to the control electrode of said bipolar transistor.

4,495,472
STABLE FAST-SETTLING VOLTAGE REFERENCE BUFFER AMPLIFIER

Mrinira R. Dwarakanath, Berkeley Heights, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 22, 1982, Ser. No. 443,194
Int. Cl.³ H03F 3/16
U.S. Cl. 330—277 5 Claims



5. A stable fast-settling buffer configuration comprising
- an amplifier having input and output terminals,
- first and second stages decoupled from each other and responsive to a voltage appearing at said output terminal for providing identical output voltages at first and second node points, respectively, said second node point being adapted to be connected to a load,

and a feedback path connected between said first node point and the input terminal of said amplifier,

wherein said amplifier includes an additional input terminal to which a reference voltage source is adapted to be connected,

wherein said first and second stages comprise first and second source follower circuits, respectively,

wherein each of said first and second source follower circuits comprises a current source in series with the source-to-drain path of an MOS transistor,

wherein the output terminal of said amplifier is directly connected to the gate of the transistor in said first source follower circuit and is connected to the gate of the transistor in said second source follower circuit via a decoupling element,

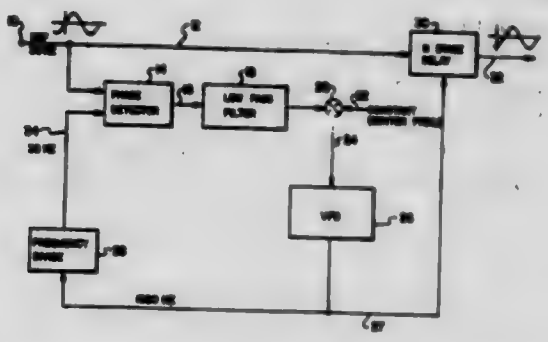
and wherein the current source in said second source follower circuit supplies a current that is N times that supplied by the current source in said first source follower circuit, where N is a positive number, and wherein the β of the transistor in said second source follower circuit is N times that of the transisitor in said first source follower circuit.

4,495,473

DIGITAL PHASE SHIFTING APPARATUS WHICH COMPENSATES FOR CHANGE OF FREQUENCY OF AN INPUT SIGNAL TO BE PHASE SHIFTED

Jan E. Treise, W. Melbourne, Fla., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 19, 1982, Ser. No. 399,678
Int. Cl.³ H03H *11/20*; H03L *7/06*
U.S. Cl. 331—10 3 Claims



1. Digital phase shifting means comprising, in combination:

first means for supplying a signal to be phase shifted;

time variable signal sampling means having signal and control input means and phase shifted output signal means and including sampled data serial delay storage means, the time between samples being a direct function of the frequency of the signal to be phase shifted and the total delay between input and output being inversely proportional to the frequency of the signal being phase shifted;

phase detecting means including first and second input means and output means;

means directly connecting said first means to said signal input means of said sampling means and to said first input means of said phase detecting means;

variable frequency oscillator means including control input means and variable frequency output means;

second means connecting said output means of said phase detecting means to said control input means of said oscillator means for varying the output frequency thereof from a quiescent center frequency; and

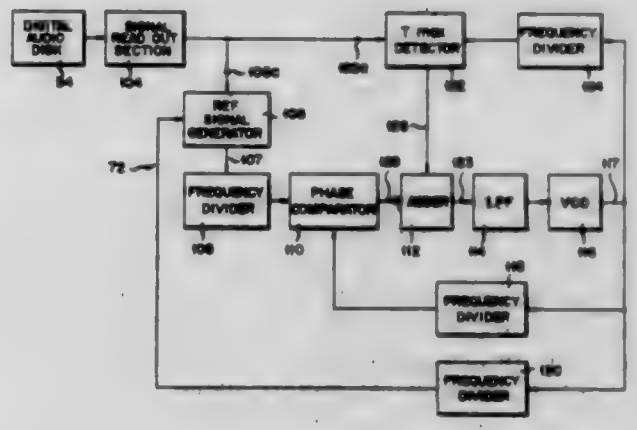
means for connecting said output means of said oscillator means to said control input means of said sampling means and to said second input means of said phase detecting means.

4,495,474

PLL CONTROL CIRCUIT FOR RECOVERY OF DATA FROM AUDIO DISK

Meisei Nishikawa, Yukio Nakamura, both of Yokohama, and Tadashi Kojima, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 29, 1982, Ser. No. 426,758
Claims priority, application Japan, Jun. 15, 1982, 57-102818
Int. Cl.³ H03L *7/10*
U.S. Cl. 331—11 8 Claims



1. A phase locked loop control circuit for a reproduction system which reproduces an information signal digitally prestored in a recording medium such as an optical disk, said circuit comprising:

(a) oscillator means for oscillating at a given frequency to produce an oscillation signal from an output terminal thereof and for varying said oscillating frequency of the oscillation signal;

(b) signal generating means for generating a first electrical signal corresponding to a phase state of the readout digital information signal stored in said recording medium so as to hold its period values included in a range determined by minimum and maximum period values defined in accordance with a chosen modulation system;

(c) comparator means connected to said signal generating means and to the output terminal of said oscillator means, for receiving the first electrical signal and the oscillation signal respectively at first and second input terminals thereof to compare the first electrical signal with the oscillation signal, and for producing a second electrical signal from an output terminal thereof which corresponds to a phase difference between the first electrical signal and the oscillation signal;

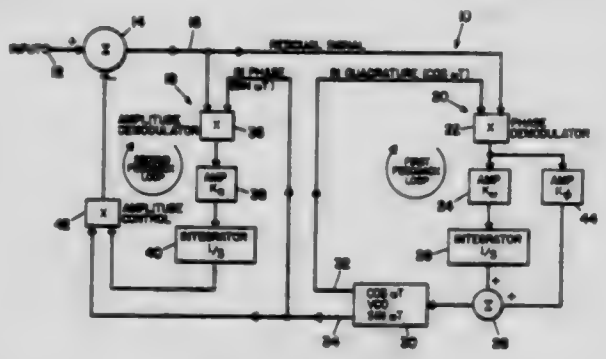
(d) detector means for extracting a specific period value from a readout information signal to detect the deviation between said specific period value and a period value obtained on the basis of the oscillation signal from said oscillation means and for generating a third electrical signal corresponding to the deviation at an output terminal thereof; and

(e) adder means connected to output terminals of said comparator means and said detector means, for receiving and adding the second and third electrical signals and for supplying sum data as an oscillation control signal to said oscillator means, whereby said oscillator means varies the oscillating frequency of the oscillation signal therefrom in response to the oscillation control signal to initiate an updated oscillation locking state.

4,495,475
RESIDUAL MODE PHASE LOCKED LOOP

John G. Mark, Pasadena; James R. Steele, Northridge, and Craig C. Hansen, East Palo Alto, all of Calif., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Filed Jan. 8, 1982, Ser. No. 337,920
Int. Cl.³ H03L 7/08; H03B 1/12; H04B 15/00; H03D 3/24
U.S. Cl. 331—12 11 Claims

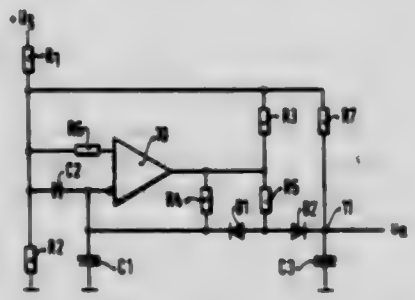


1. A phase locked loop, comprising;
an input terminal for receiving an input signal;
estimating means for producing an estimated input signal and means for subtracting said estimated input signal from said input signal to produce a residual signal;
first means for demodulating said residual signal for producing a first demodulated residual signal;
controlled oscillator means for receiving said first demodulated residual signal for producing first and second controlled oscillator signals in response to said first demodulated residual signal;
first feedback means for applying said first oscillator signal to said first means for demodulating;
second means for demodulating said residual signal for producing a second demodulated residual signal;
second feedback means for applying said secod oscillator signal to said second means for demodulating;
wherein said second oscillator signal and said second demodulated residual signal are applied to said estimating means for producing said estimated input signal; said residual signal being reduced to near zero.

4,495,476
SAWTOOTH VOLTAGE GENERATOR

Helmut Steinmann, Baden-Baden, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE81/00193, § 371 Date Aug. 26, 1982, § 102(e) Date Aug. 26, 1982, PCT Pub. No. WO82/02807, PCT Pub. Date Aug. 19, 1982
PCT Filed Nov. 6, 1981, Ser. No. 414,365
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1981, 3105253
Int. Cl.³ H03K 3/023, 4/08
U.S. Cl. 331—111 9 Claims

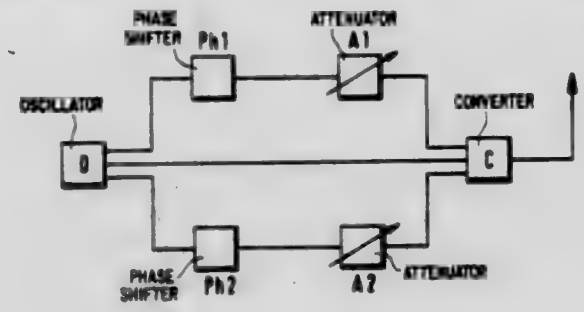


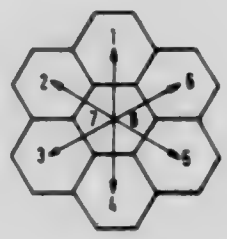
1. A sawtooth voltage generator, particularly for use as a clock and a reference voltage generator for an electronic regulating apparatus for a motor vehicle, having
a source of voltage (U_S);
means (10) coupled to the voltage source and providing a charging voltage;
and comprising
a first capacitor (C1);
a second capacitor (C3);
a common low-resistance charging resistor (R5) connecting the charging voltage providing means (10) to said first and second capacitors (C1, C3) to charge said capacitors to substantially the same charge voltage;
a first discharge circuit (R4) coupled to the first capacitor (C1) and to a reference voltage, and defining, with said first capacitor, a first discharge time constant;
a second discharging circuit (R7) coupled to the second capacitor and to a voltage which differs from said reference voltage level, and defining, with said second capacitor, a second discharge time constant;
means (D1, D2) effectively decoupling said first and second discharge circuits from each other and from said common charging resistor (R5);
and means deriving a sawtooth output voltage wave (Ua) having a wave form representative of the discharge wave form (U_{C3}) of said second capacitor (C3) and a time constant depending on the longest one of the discharge time constants,
to permit freely selecting the time constant of the sawtooth output voltage wave (U_A) and freely selecting the wave form of the sawtooth output voltage wave based on a discharge time constant of the second discharge circuit (R7) for the second capacitor, while permitting maintaining the cycling time constant or frequency of operation of the sawtooth output voltage wave (Ua) of the first discharge circuit (R4) of the first capacitor (C1).

4,495,477
MULTIPLE AMPLITUDE AND PHASE SHIFT KEYED SIGNAL MODULATION METHOD

Herbert Weber, Backnang, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 27, 1982, Ser. No. 372,386
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1981, 3117134
Int. Cl.³ H03C 5/00; H04L 27/20
U.S. Cl. 332—10 4 Claims





OS	MS
1 0 0	1
1 1 0	2
0 1 0	3
0 1 1	4
0 0 1	5
1 0 1	6
0 0 0	7
1 1 1	0

1. In a multi-phase modulation method in which digital

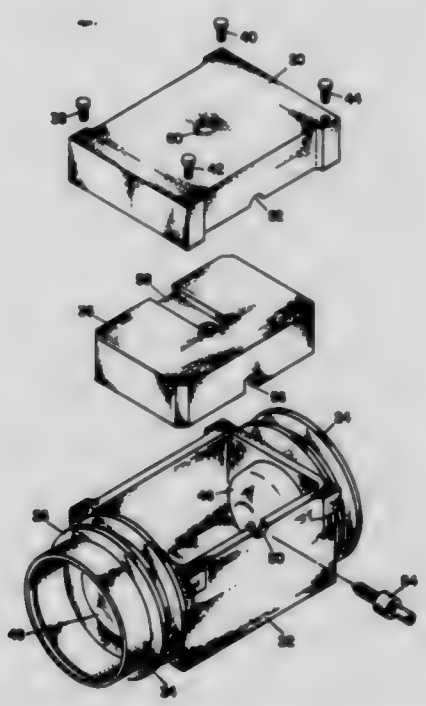
words each having a word length of k data bits control the generation of a modulated carrier in a manner such that each digital word value is associated with a particular amplitude and phase of the modulated carrier, and in which the modulated carrier is formed of a combination of three oscillating signals having identical frequencies, shifted in phase by 120° relative to one another, and each having a selected amplitude, the digital words being associated with the oscillating signals in such a manner that a first group of digital words is represented only by modulated carrier phases which possess equal angular spacings in the 360° phase plane and at least one further digital word is represented by a zero amplitude carrier formed by combining the three oscillating signals each having the identical selected amplitude or by suppressing all three oscillating signals, the improvement wherein: each digital word has a length of at least 3 bits; there is a plurality of further digital words each represented by a zero amplitude carrier, at least three bits of each further digital word differing from the corresponding at least three bits of each other further digital word; and said method comprises modulating the carrier in response to successive bits of each digital word for producing, during the period of each digital word, a first modulated carrier segment representing the digital word and two further modulated carrier segments representing redundant digital words derived from the digital word represented by the first modulated carrier segment and having values which permit error-free determination, during subsequent demodulation, of the digital word represented by the first modulated carrier segment.

4,495,478

CAVITY RESONATOR FOR ATOMIC FREQUENCY STANDARD

Tae M. Kwon, Thousand Oaks, and Howard E. Williams, Northridge, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Feb. 16, 1983, Ser. No. 467,061
Int. Cl.³ H01P *7/06;* H01S *1/06;* H03L *7/26*
U.S. Cl. 333—230 11 Claims



1. A cavity resonator for a vapor cell atomic frequency standard comprising, in combination:

(a) a substantially rectangular body having an internal cavity for supporting TE_{101} mode electromagnetic energy; and

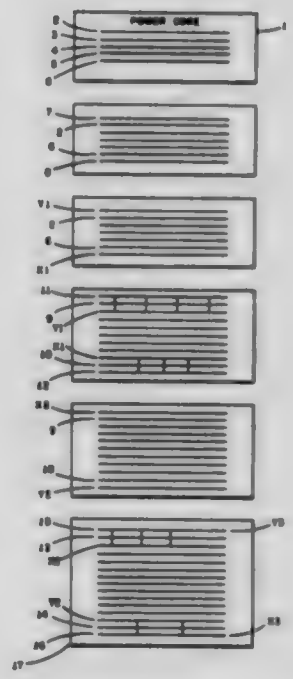
(b) means for preferentially orienting said TE_{101} mode electromagnetic energy.

4,495,479

SELECTIVE WIRING FOR MULTILAYER PRINTED CIRCUIT BOARD

Karl Hermann, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 22, 1982, Ser. No. 436,152
Int. Cl.³ H01P *3/18*
U.S. Cl. 333—238 7 Claims



1. A multilayer printed circuit board optimized for fabrication including:

at least one signal layer exclusively of short lines having a wide tolerance range for line dimensions and line-to-line spacings;

at least one signal layer exclusively of long lines, each long line being longer than each short line, having a tolerance range in line dimensions and line-to-line spacings narrower than said wide tolerance range;

at least one dielectric layer located between a signal layer of short lines and a signal layer of long lines;

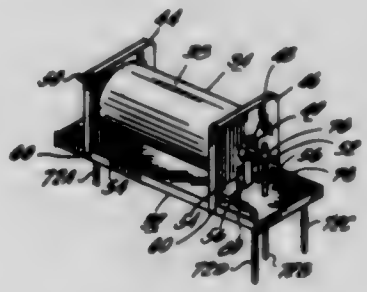
wherein the characteristic impedance and noise coupling coefficients of the short lines vary over a large range and the characteristic impedance and noise coupling coefficients of the long lines vary over a range smaller than said large range.

4,495,480

MULTIPATTERN ELECTRIC COMPONENT CONNECTING PIN BASE PLATE MOUNTING ASSEMBLY

George L. Martin, Bricktown, and Howard G. Melick, Toms River, both of N.J., assignors to Inreseo, Inc., Brick, N.J.

Filed Dec. 17, 1981, Ser. No. 331,595
Int. Cl.³ H01H *1/06*
U.S. Cl. 335—199 6 Claims



1. An electronic component mounting assembly mounting an electronic component on a printed circuit board in operative connection with the circuit printed thereon, wherein said

printed circuit board has a first plurality of openings in a predetermined pattern, comprising:

a base plate having a plurality of holes therethrough formed in a pattern corresponding to said predetermined pattern of openings on said printed circuit board

an electronic component comprising a reed switch relay assembly mounted on said base plate, said reed switch relay assembly comprising

a hollow bobbin member,

a reed switch relay operatively contained within said hollow bobbin member and having switch contact end terminals extending outward from the ends of said bobbin,

a coil operatively surrounding said bobbin and having two terminal ends extending therefrom, and

end plates attached to each end of said bobbin member, said end plates having openings through which extend said switch contact end terminals, and means for positioning said switch and coil substantially parallel on and above said base plate; and

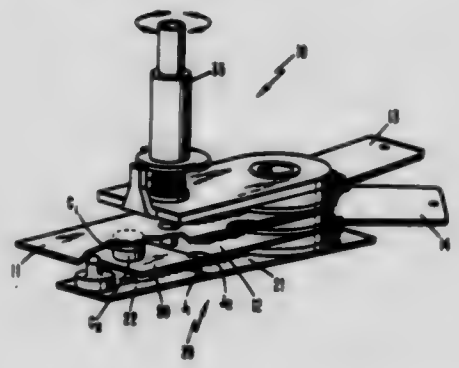
contact pins inserted through said respective base plate holes and having upper ends operatively connected to said switch contact end terminals and said terminal ends of said coil.

4,495,481

THERMOSTAT WITH BIMETAL COMPENSATING ELEMENT

Colin D. Hickling, Frankfort, and Marvin Barnes, Stamping Ground, both of Ky., assignors to Trigometer, Inc., Frankfort, Ky.

Filed Jun. 30, 1982, Ser. No. 393,810
Int. Cl.³ H01H 37/12, 37/52
U.S. Cl. 337—349 12 Claims



1. A temperature responsive switch for consistent operation of a heating element or the like in a temperature range substantially above normal ambient temperature during all operating cycles comprising

a first contact mounted on a first spring member;

a second contact mounted on a second spring member for cooperation with said first contact and including a bimetal compensating portion positioned for heat transfer by convection from the heating element; and

means for engaging one of said spring elements to break said contacts;

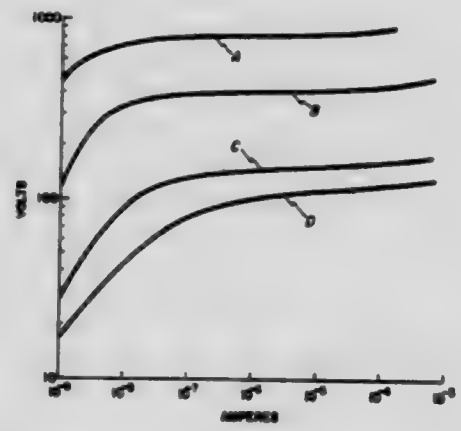
said bimetal compensating portion adapted to move said second contact toward engagement with said first contact in response to increasing temperature so as to compensate for any increase in temperature in said engaging means during cycling, whereby initial overshoot and variable contact weld size between the contacts is compensated and the desired temperature setting is maintained in a narrow range.

4,495,482

METAL OXIDE VARISTOR WITH CONTROLLABLE BREAKDOWN VOLTAGE AND CAPACITANCE AND METHOD OF MAKING

Herbert R. Philipp, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 295,901, Aug. 24, 1981, abandoned.
This application Jun. 16, 1983, Ser. No. 504,770
Int. Cl.³ H01C 7/12
U.S. Cl. 338—21 19 Claims



1. A method for controlling the intrinsic capacitance and breakdown voltage of a body of sintered zinc oxide based varistor material, said body possessing at least two substantially planar, parallel surfaces for electrode attachment, said body nonetheless retaining the nonohmic voltage-current properties of said varistor material, said method comprising:

diffusing lithium into the bulk of said varistor material by applying, to at least one of said parallel planar surfaces of said varistor body, a composition containing lithium such that the lithium concentration thereon is less than 2 mg/cm^2, and then heating said varistor material at elevated temperatures for a time sufficient to cause diffusion of at least a portion of said lithium into said varistor body, whereby the intrinsic capacitance of said varistor material decreases and the breakdown voltage of said varistor body increases as the concentration of diffused lithium therein increases; and

attaching at least one electrode to said planar surface having said lithium composition applied thereto.

7. The varistor produced in accordance with the method of claim 1.

4,495,483

GROUND PROXIMITY WARNING SYSTEM WITH TIME BASED MODE SWITCHING

Charles D. Bateman, Bellevue, Wash., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Apr. 30, 1981, Ser. No. 259,131
Int. Cl.³ G01C 5/00; G01S 9/04
U.S. Cl. 340—970 23 Claims

1. A ground proximity warning system for aircraft comprising:

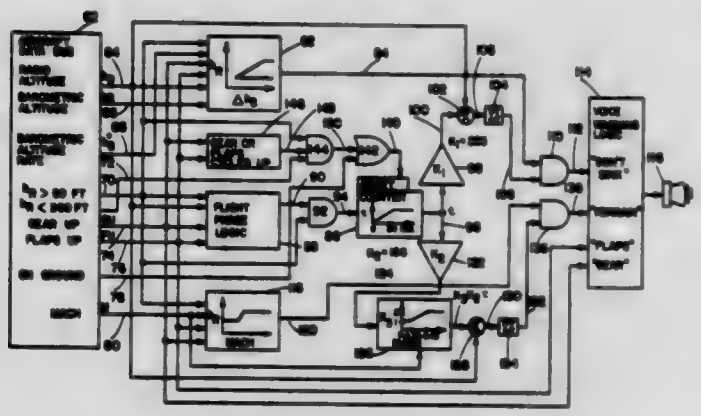
a source of signals representing aircraft flight parameters;

a source of a signal representing time;

a first warning mode means responsive to said flight parameter signals for generating a first warning signal in accordance with a first predetermined relationship between flight parameters;

a second warning mode means responsive to said flight parameter signals for generating a second warning signal

in accordance with a second predetermined relationship between flight parameters; and



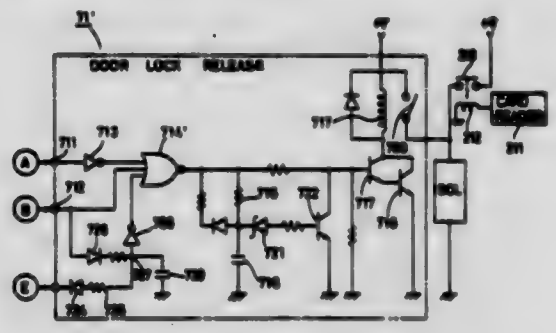
means responsive to said time signal for switching from said first warning mode means to said second warning mode means as a function of time.

4,495,484

ALARMING APPARATUS OF VEHICLE

Shiro Kawakatsu, and Toshikazu Kawasaki, both of Suita, Japan, assignors to Daihatsu Motor Co., Ltd., Ikeda, Japan

Continuation of Ser. No. 149,717, May 14, 1980, Pat. No. 4,353,055. This application Jan. 7, 1982, Ser. No. 337,833
Int. Cl.³ B60Q 1/00
U.S. Cl. 340—52 D 6 Claims



1. A door lock releasing apparatus in a vehicle which vehicle includes a door and an auxiliary device for implementing an auxiliary function of said vehicle, comprising:

using state selecting means for selecting a using state or a non-using state of said vehicle,

state detecting means for detecting a predetermined undesired state of said auxiliary device, said predetermined undesired state being undesired in said non-using state of said vehicle,

door lock means having a door locked state operatively coupled to said door, and

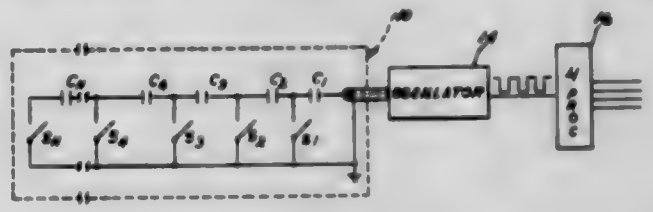
door lock releasing means responsive to said state detecting means for said auxiliary device and said using state selecting means of said vehicle for automatically releasing said door locked state of said door lock means when said predetermined undesired state of said auxiliary device is not detected by said state detecting means and said non-using state is selected by said using state selecting means and for not automatically releasing said door locked state of said door lock means when said predetermined undesired state of said auxiliary device is detected by said state detecting means irrespective of whether said non-using state is selected by said using state selecting means.

4,495,485

TOUCH CONTROL ARRANGEMENT FOR DATA ENTRY

Peter H. Smith, Anchorage, Ky., assignor to General Electric Company, Louisville, Ky.

Continuation of Ser. No. 215,998, Dec. 12, 1980, abandoned. This application Aug. 31, 1983, Ser. No. 528,075
Int. Cl.³ G08C 9/00
U.S. Cl. 340—365 C 7 Claims



1. A touch control arrangement for an appliance of the type incorporating a plurality of appliance operating components arranged for selective actuation in accordance with use generated input data, said touch control arrangement comprising:

touch responsive data entry means arranged for user actuation comprising a plurality of touch keys and a capacitive network including a plurality of capacitive elements operatively coupled to said touch keys;

oscillating means for generating a control signal at a plurality of discrete predetermined frequencies; each of said touch keys being uniquely associated with a different one of said plurality of predetermined frequencies, said capacitive network being coupled in tuning relationship with said oscillating means such that the frequency of said control signal is determined by the selective touching of said touch keys by the user; and

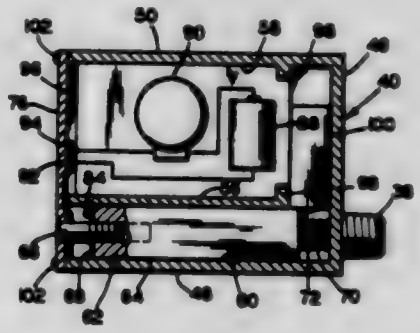
a microprocessor responsive to said control signal operative to control appliance operation in a manner determined by the frequency of said control signal.

4,495,486

SIMPLIFIED ALARM FOR A SLIDING DOOR OR THE LIKE

John D. White, 3705 Brunswick Dr., Toledo, Ohio 43606

Continuation-in-part of Ser. No. 525,952, Aug. 24, 1983, Pat. No. 4,472,709. This application Jun. 29, 1984, Ser. No. 626,231
Int. Cl.³ G08B 13/08
U.S. Cl. 340—546 20 Claims



1. A burglar alarm for a sliding door or the like comprising a rod member having one end adapted to engage one of a movable frame of the door and a stationary frame, a case located at the other end of said rod member, a plunger extending outwardly from said case and adapted to engage the other of said door frame and said stationary frame, resilient means urging said plunger outwardly toward the associated frame, an alarm system in said case comprising a source of power, signal means connected with said source of power, a pair of electrical contacts connected with said source and said signal means, said plunger having conductive means engageable with said contacts when said plunger moves further outwardly of said case under the force of said resilient means when the plunger is moved away from the associated frame to cause said power source to activate said signal means, and gravity-operated

means for preventing said plunger from being pushed inwardly into the case when said conductive means engages said electrical contacts.

4,495,487

AMORPHOUS ANTIPILFERAGE MARKER

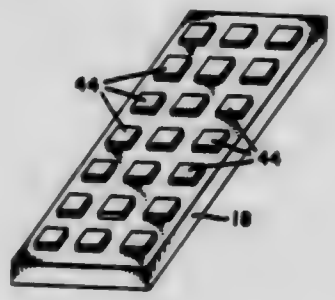
Sheldon Kavesh, Whippany; Gregory J. Sellers, Convent Station, and Wayne H. Witte, Stanhope, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 317,625, Nov. 2, 1981, abandoned. This application Oct. 27, 1982, Ser. No. 437,073

Int. Cl.³ G08B *13/26*

U.S. Cl. 340—572

7 Claims



1. For use in a magnetic theft detection system, a marker adapted to generate magnetic fields at frequencies that are harmonically related to an incident magnetic field applied within an interrogation zone and have selected tones that provide said marker with signal identity, said marker comprising an elongated, ductile strip of amorphous ferromagnetic material having a composition consisting essentially of the formula $Fe_aCr_bC_cP_dMo_eCu_fB_gSi_h$ where "a" ranges from about 71–79 atom %, "b" ranges from about 0–10 atom %, "c" ranges from about 13–15 atom %, "d" ranges from about 4–7 atom %, "e" ranges from about 0–2 atom %, "f" ranges from about 0–0.1 atom %, "g" ranges from about 0.5–2 atom % and "h" ranges from about 0–2 atom %, with the proviso that the sum (c+d+g+h) ranges from 19–24 atom % and the fraction c/(c+d+g+h) is less than about 0.84.

4,495,488

ULTRASENSITIVE APPARATUS AND POSITIONING METHOD FOR DETECTING CHANGE IN FLUID FLOW CONDITIONS IN RELIEF FLOWLINES ASSOCIATED WITH A CHEMICAL OR REFINERY COMPLEX

Stephen F. Streib, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 184,560, Sep. 5, 1980, Pat. No. 4,434,418. This application Aug. 18, 1982, Ser. No. 409,379

The portion of the term of this patent subsequent to Feb. 28, 2001, has been disclaimed.

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—606

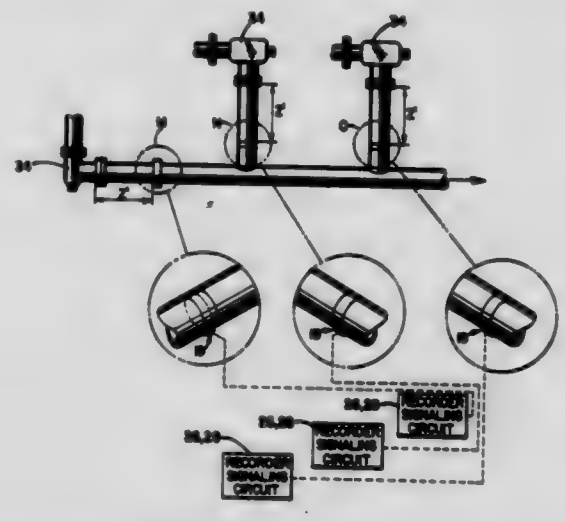
7 Claims

1. Method of providing detection of fluid flow in a series of relief flowlines of a relief-flare system through activation of associated relief valves controlling discharge from process units of a chemical or refinery complex whereby sources of relief discharge therein can be pinpointed, comprising:

(a) positioning at least one of a series of transducer-meters for sensing heat flux in a selected location that is (i) radially disposed exterior to at least one of said flowlines in heat conducting contact therewith while maintaining integrity of said at least one flowline radially intact and (ii) linearly disposed along said one flowline closely adjacent to an associated relief valve so that fluid discharge through said relief valve can be accurately detected by said transducer-meter;

(b) for said one of said series of meters, continuously recording a base line signal constant with time but above a predetermined threshold level, said base line signal being indicative of a no-flow, steady state temperature condition within said at least one flowline at said selected location; and

(c) monitoring change in fluid flow interior of said one flowline at said selected location by generating and recording a transient cascaded output signal proportional to transient heat flux detected exterior of said one flowline,



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said recorded transient signal deviating in amplitude from said prior recorded base line signal whereby said change in fluid flow can be accurately indicated thereby indicating the occurrence of said transient cascaded signal output so as to pinpoint location of relief discharge from one or more associated process units of said chemical or refinery complex.

4,495,489

FAULT INDICATOR WITH IMPROVED FLAG INDICATOR ASSEMBLY

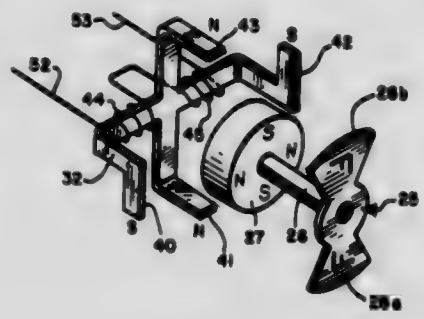
Edmund O. Schweitzer, Jr., 1002 Dundee Rd., Northbrook, Ill. 60118

Filed Jul. 20, 1982, Ser. No. 399,996

Int. Cl.³ G01R *19/16*; G08B *21/00*

U.S. Cl. 340—664

17 Claims



1. A fault indicator for indicating the occurrence of a fault current in an electrical conductor, comprising, in combination:

a housing;

status indicating means comprising an indicator flag rotatably mounted within said housing, said indicator flag having first and third positions corresponding to a reset state, and second and fourth positions corresponding to a fault-indicating state, said positions being consecutively spaced 90° about the axis of rotation of the indicator flag;

a flag actuator magnet rotatably coupled to said indicator flag, said actuator magnet having first, second, third and fourth magnetic poles of alternating magnetic polarity spaced 90° around said axis of rotation;

means comprising a magnetic pole piece having first, second, third and fourth magnetic pole segments extending from a common location to predetermined locations in magnetic communication with respective ones of said first, second, third and fourth poles of said flag actuator magnet; and

circuit means including a first magnetic winding on said first

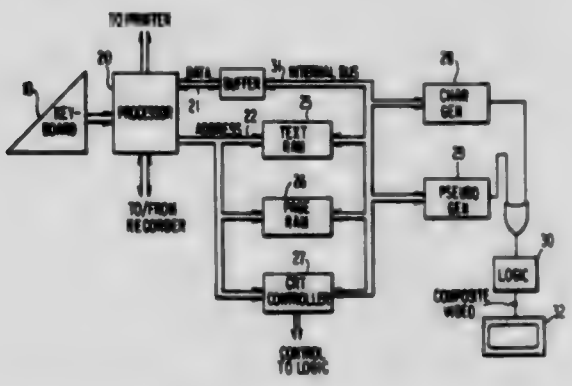
pole segment and a second magnetic winding on said second pole segment, for conditioning said first and third magnetic pole segments to a first magnetic polarity, and said second and fourth magnetic pole segments to an opposite magnetic polarity during normal current flow in the conductor, and for reversing the polarities of said pole segments upon occurrence of a fault current in the conductor whereby said indicator flag is caused to rotate from one of said first and third positions to one of said second and fourth positions upon occurrence of a fault current.

4,495,490

WORD PROCESSOR AND DISPLAY

Beth R. Hopper; Dan M. Howell, and Robert A. Kolpek, all of Lexington, Ky., assignors to IBM Corporation, Armonk, N.Y.

Filed May 29, 1981, Ser. No. 268,609
Int. Cl.[3] G09G *1/16*
U.S. Cl. 340—709 11 Claims



1. A word processor comprising:

input means including a keyboard with a plurality of keys associated with different graphic or function including at least two cursor control keys, said input means producing a unique key code for each key or group of keys,

display means including a cathode ray tube for producing a visible image in response to a periodically repeating video signal and associated horizontal and vertical sync signals, said visible image including a cursor positioned in response to actuation of said cursor control keys,

control means responsive to said input means for manipulating and storing said unique key codes and for controlling said display means,

wherein the improvement comprises:

word underscore means in said control means responsive to one of said unique key codes for storing an underscore representation associated with each character of a word identified by the position of said cursor when said unique keycode is sensed.

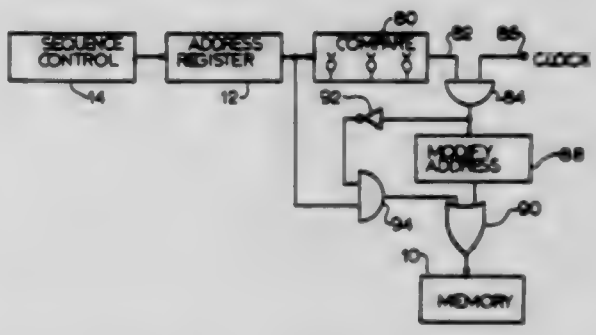
4,495,491

METHOD FOR HIGHLIGHTING OF A REGION ON A DISPLAY SCREEN

Wolfgang Postl, Berg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 191,680, Sep. 29, 1980, abandoned. This application Dec. 13, 1983, Ser. No. 561,125
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939457
Int. Cl.[3] G09G *1/16*
U.S. Cl. 340—709 10 Claims

1. A method of highlighting an image region within an image composed of image elements displayed on a display screen which can display said image elements in at least two levels of brightness, each said image element being individually targetable in positional relation to said image region comprising the steps of changing-over between a first mode of high-lighting and a second mode of highlighting, wherein said first mode comprises alternately displaying the image elements of the region to be emphasized in changed and unchanged condition, modifying the image content within the region to be highlighted during said changed condition, and wherein said second mode comprises alternately displaying the image elements of the region to be emphasized in changed and a different



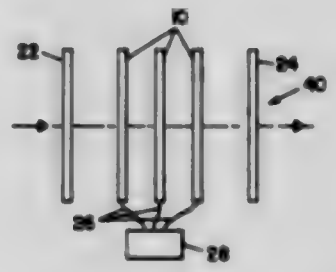
unchanged condition, and modifying the image content within the region to be highlighted during said changed condition of said second mode differently from that in said first mode, and effecting said changing-over automatically in response to a predetermined condition of said image content.

4,495,492

MAGNETO-OPTIC CHIP WITH GRAY-SCALE CAPABILITY

Robert H. Anderson, Long Beach; William E. Ross, Woodland Hills, and Theodore R. Maki, Northridge, all of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 5, 1982, Ser. No. 375,321
Int. Cl.[3] G09G *3/34*
U.S. Cl. 340—783 3 Claims



1. A magneto-optic display system to achieve gray-scale comprising:

(a) first and second generally planar magneto-optic chips; each of said magneto-optic chips includes:

(1) a registration surface normal to the direction of light passage through said chip,

(2) a plurality of pixel areas in which individual ones of said pixel areas can exhibit one state of at least three magnetic states: a first state magnetized totally in one direction where said one direction is normal to said registration surface and parallel with said direction of light passage, a second state magnetized totally in an opposite direction to said one direction, and a third state magnetized both in said one direction and in said opposite direction so that said third state is demagnetized or stripped out, and

(3) means to electrically address individual ones of said pixel areas and place a selected pixel area in a respective one of said three magnetic states;

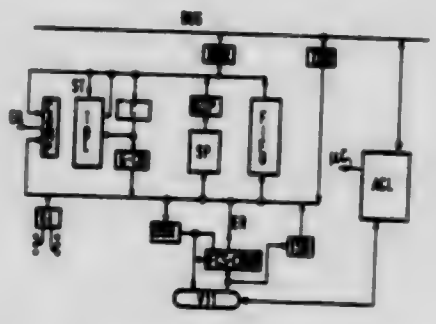
(b) said first and second magneto-optic chips positioned adjacent to each other in a tandem relationship with respective ones of said first chip pixel areas in alignment with associated ones of said second chip pixel areas so that the associated amount of light passage through said selected pixel area as determined by its magnetic state has one of three corresponding levels of light passage thereby developing a desired degree of gray scale.

4,495,493

METHOD OF CONTROLLING THE TRANSMISSION/RECEPTION OF DATA IN A LOCAL COMMUNICATION NETWORK, AND DATA TRANSMISSION SYSTEM FOR PERFORMING THE METHOD

Gerard Segarra, Jouigny, and Jean L. Allain, Saclay, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 12, 1982, Ser. No. 367,696
Claims priority, application France, Apr. 15, 1981, 81 07558
Int. Cl.³ H04Q 9/00
U.S. Cl. 340—825.5
10 Claims



7. A local data communication network, comprising a plurality of transmitter/receiver stations, each of which is connected to a transmission medium for the transport of data, said stations forming a logic communication loop, each station having its own address and comprising an address indicator, each station further comprising:

allocation means for allocating the right to transmit to that station when its own address corresponds to the address indicated by its address indicator;

transmission means for transmitting a single message, said transmission means having a control output connected to said allocation means and being activated under control of said allocation means, said transmission means being provided for transmitting a presence message if no information has to be transmitted by that station when it is allocated the right to transmit;

each of said address indicators being provided with incrementing means for incrementing them by one position by an end-of-message indication of the message transmitted by the station having the right to transmit; each of said address indicators being further provided with resetting means for resetting them when each of said stations has had the right to transmit; said data communication network comprising a pilot station, said pilot station comprising an inactive-time counter for measuring the duration of the inactivity of a station having the right to transmit and for generating a substitution message when the inactive-time counter exceeds a predetermined value.

4,495,494

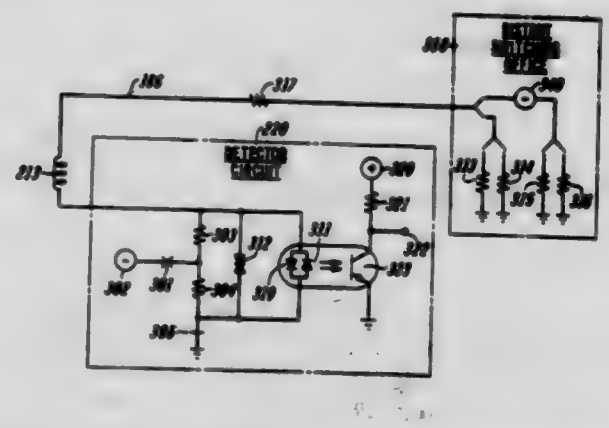
DETECTOR CIRCUIT FOR COMMUNICATION LINES

Robert F. McCune, Sandwich, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 5, 1981, Ser. No. 308,911
Int. Cl.³ H04M 3/22
U.S. Cl. 340—825.06
10 Claims

7. A detector circuit for use in a communication line having a plurality of operative modes and having first and second resistances for each of said modes; said circuit comprising:

a network connected only serially to said line and having a first branch having a pair of serially connected resistors and a second branch parallel to said first branch and having a pair of oppositely poled light-emitting devices; and



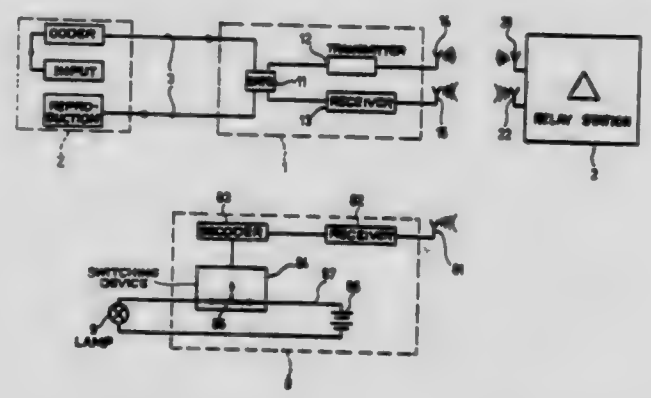
switch means for selectively controlling current applied to said network for particular ones of said plurality of operative modes.

4,495,495

STAFF-LOCATION AND SIGNALLING SYSTEM FOR USE IN MINES

Siegfried Ormanns, Gelsenkirchen, and Helmut Neumann, Dortmund, both of Fed. Rep. of Germany, assignors to Ruhrkohle Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Jan. 18, 1982, Ser. No. 340,017
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1981, 3101542
Int. Cl.³ G08B 5/22
U.S. Cl. 340—825.45
19 Claims



1. A staff-location and signalling system for operation in a mine, comprising:

at least one base station adapted to be located in the mine area and comprising a transmitter for transmitting radio signals;

at least one first signal receiver;

at least one secondary wave-guide adapted to extend through at least part of the mine area for transmitting radio signals between said at least one base station and said first signal receiver at a distance therefrom;

a miner's lamp adapted to be carried by a person in the mine area;

the first signal received being associated with said lamp and adapted to respond to coded radio signals transmitted by said at least one base station; and

a normally-closed working-current circuit connecting said associated miner's lamp to a source of working current;

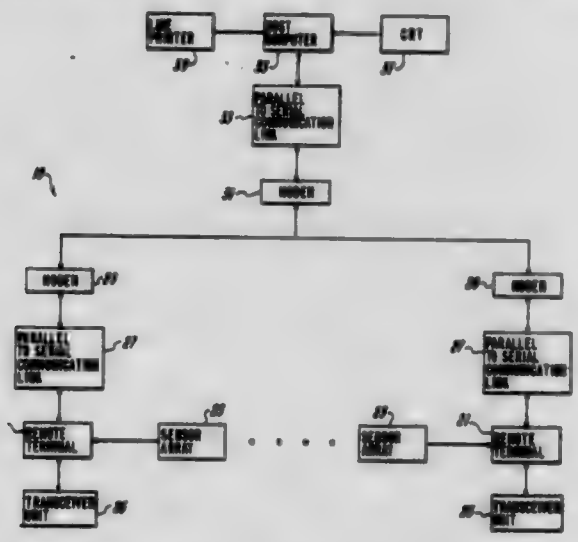
said at least one first signal receiver being adapted to open and close said circuit so that the miner's lamp can be switched off and on in accordance with said coded radio signals.

4,495,496

PERSONNEL MONITORING AND LOCATING SYSTEM

Scott A. Miller, III, Boulder, Colo., assignor to Johnson Engineering Corp., Boulder, Colo.

Filed Dec. 15, 1981, Ser. No. 330,976
Int. Cl.[3] H04Q 9/00; G08G 1/01
U.S. Cl. 340—825.54 25 Claims



1. A system for monitoring a plurality of movable objects within a preselected area, said system comprising:

a plurality of transmitting means at said preselected area;

control means connected with said plurality of transmitting means to cause each of said plurality of transmitting means to provide an interrogation pulse output at predetermined times;

a plurality of transponder means each of which is associated with and constrained to movement with a different one of said movable objects, with said plurality of transponder means being capable of simultaneously receiving said interrogation pulse output from said plurality of transmitting means, and with each of said transponder means, responsive to receipt of said interrogation pulse output from said transmitting means, providing a reply output with said reply output from each of said transponder means being delayed by different predetermined time intervals so that all reply outputs from said transponder means occur at different time intervals with respect to one another; and

signal processing means for providing an output indicative of the particular transponder means from which a reply output was received to thereby enable monitoring of the objects associated with said transponder means.

4,495,497

CIRCUIT ARRANGEMENT FOR CONTROLLED INTERCONNECTION OF SIGNAL SOURCES AND SIGNAL DESTINATIONS

Kálmán Molnár, Munich, Fed. Rep. of Germany, assignor to National Semiconductor Corporation, Santa Clara, Calif.

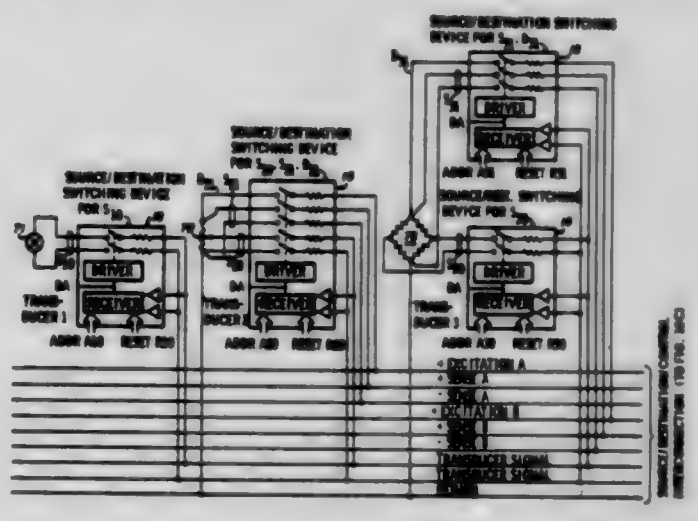
Filed Jan. 7, 1982, Ser. No. 337,895
Int. Cl.[3] H04Q 9/00; G08C 15/06
U.S. Cl. 340—825.63 7 Claims

1. A remote data system for selectively connecting signal source to destination devices including:

a transmission line;

a source/destination switching device coupled to each of said signal source and destination devices and including transmission line connection means, switch means coupled to said transmission line connection means, pulse responsive receiver means coupled to said transmission line connection means, driver means coupled between said receiver means and said switch means, detect and decode means connected to said receiver, register means responsive to said detect and decode means, comparator means responsive to said register means and including an address comparator a general enable decoder and a reset decoder, first gate means responsive to said address comparator said general enable decoder said reset decoder and said transmission detect and decode means, first and second flip flop means adapted to be activated by said first gate means, and second gate means responsive to said first and second flip flop means coupled to activate said driver means;

a control signal generator adapted to transmit control pulses; and



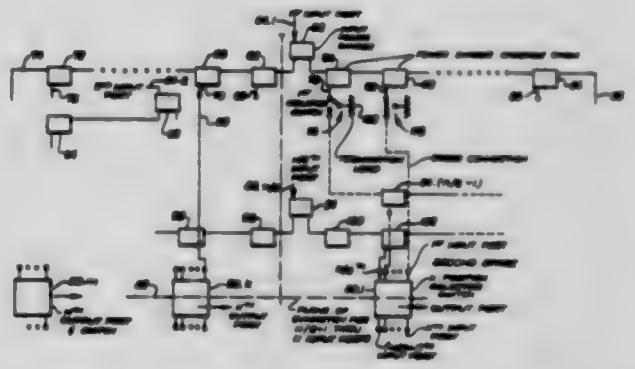
a control signal switching device adapted to be actuated by said control signal generator and coupling said control signal generator to said transmission line to transmit a control signal; thereby providing control means responsive to pulses from said control signal generator for enabling said source/destination switching devices to connect selected signal source and destination devices to said transmission line.

4,495,498

N BY M PLANAR CONFIGURATION SWITCH FOR RADIO FREQUENCY APPLICATIONS

Peter G. Petrelis, Huntington Beach, and John A. Alexander, Rancho Palos Verdes, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 2, 1981, Ser. No. 317,046
Int. Cl.[3] H04Q 1/00
U.S. Cl. 340—825.79 22 Claims



1. A radio-frequency switch of planar construction for connecting N input signals selectively to M output circuits, where N and M are integers, said switch comprising:

a substrate having first and second faces;

an output stage having M output switches arrayed in a row on said first face of said substrate, each of said output switches having N input ports and one output port;

an input stage having N input ports connected respectively to N power distribution means, each of said power distribution means having elements distributed on said first face of said substrate, along one of N rows practically parallel with said row of output switches, and each of said power distribution means having M output ports; and

electrical conductor means connecting said output ports of

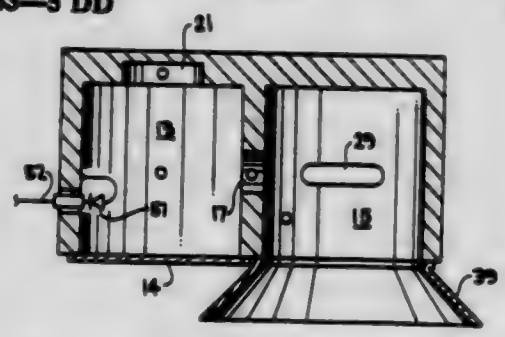
said power distribution means with said input ports of said output switches, said conductor means being disposed on said second face of said substrate wherever necessary to avoid intersection with said power distribution means.

4,495,499

INTEGRATED OSCILLATOR-DUPLEXER-MIXER

David Richardson, 2588 Knightsbridge La., Santa Clara, Calif. 95050

Filed Sep. 8, 1981, Ser. No. 299,656
Int. Cl.³ G01S 9/00
U.S. Cl. 343—5 DD 30 Claims



16. Integrated oscillator-duplexer-mixer apparatus for sensing the distance of an object or for frequency or phase modulated two-way communication, the apparatus comprising:

a grounded, metal body having a front face and a first cylindrical cavity closed at the cavity front and rear ends, with cylinder axis substantially perpendicular to the front face of the body, with the front end of the cavity terminating on or adjacent to the front face of the body and the rear end of the cavity terminating within the body;

the body having a second cylindrical cavity at the side of and adjacent to, and having a cylinder axis substantially parallel to the axis of, the first cylindrical cavity, with the front end of the second cavity being open and terminating on the front face of the body and the rear end of the second cavity terminating within the body;

the body having a third substantially cylindrical cavity, communicating with the first and second cylindrical cavities in the interior of the body, having a cylinder axis that is substantially parallel to the front face of body, and having a cylinder diameter that is no more than 25% of the first cylindrical cavity, with the third cavity cylinder axis being positioned substantially equidistant from the rear end and the front end of the first cylindrical cavity;

microwave generating means, positioned adjacent to the rear end of and in electromagnetic communication with, the first cylindrical cavity, for generating electromagnetic vibrations of predetermined frequency ω_O within the first cylindrical cavity;

the body having a cylindrical mixer slot cavity, positioned adjacent to and in communication with the second cylindrical cavity, with a cylinder axis that is substantially perpendicular to the cylinder axes of the second and third cylindrical cavities;

a mixer diode, positioned in the mixer slot cavity, and oriented to sense electromagnetic vibration signals propagating within the slot cavity, for sensing the presence of two or more distinct electromagnetic vibration signals and for forming the product signal of such distinct signals;

low pass filter means, electrically connected to the mixer diode, for receiving the mixer diode product signal and allowing the passage only of product signals with resulting frequencies less than some predetermined threshold frequencies, $\omega_T \leq 2\pi \times 10^8$ rd/sec, in response to receipt of n electromagnetic vibration signal of arbitrary frequency components from the mixer diode;

horn means, mechanically attached to the body and communicating with the second cylindrical cavity at the front end of the cavity, for limiting the direction of radiation emitted from or received by the cavity; and

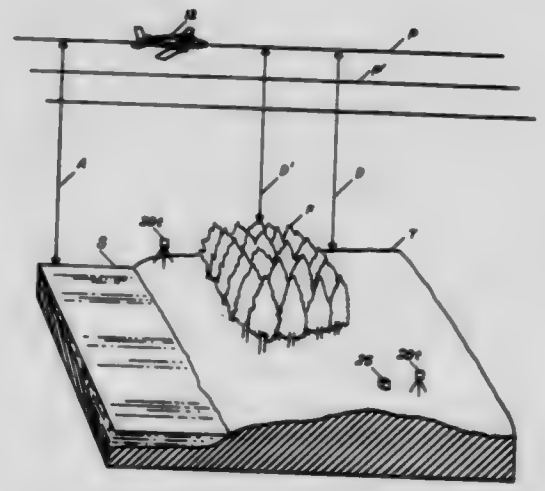
resonant cavity frequency dynamic variation means, electromagnetically communicating with the first cylindrical cavity, for varying the predetermined frequency ω_O associated with the cavity in a controlled, time-varying manner.

4,495,500

TOPOGRAPHIC DATA GATHERING METHOD

Roger S. Vickers, Los Altos, Calif., assignor to SRI International, Menlo Park, Calif.

Filed Jan. 26, 1982, Ser. No. 342,819
Int. Cl.³ G01S 9/02
U.S. Cl. 343—5 CM 3 Claims



3. A method for acquiring data for use in producing a computer generated topographic map of foliage covered terrain comprising the steps of overflying the terrain along a flight path, directing at the terrain while traversing the flight path a first radar pulse at a first frequency and a second radar pulse at a second frequency that is greater than the first frequency so as to produce a plurality of first signals representative of the distance from points along the flight path to the terrain surface and a plurality of second signals representative of the distance from points along the flight path to the foliage surface, measuring the distance of the points along the flight path above a preselected reference plane to derive plural altitude signals, generating location coordinate signals representative of the location of the points along the flight path relative to the terrain, producing a continuous series of timing pulses recurring at preselected time intervals for affording correlation with the points along the path, simultaneously recording the first, second, altitude and coordinate signals and timing pulses on a recording medium measuring temperature and pressure on the terrain surface to produce a ground temperature signal and a ground pressure signal, and recording the ground temperature signal and the ground pressure signal with a standard time signal to afford subsequent input of the data on the recording medium and the ground temperature and pressure signals to a computer in time correlation for generation of a topographic map of the terrain.

4,495,501

METHOD AND MEANS FOR PROVIDING FREQUENCY AGILE OPERATION OF MTI RADAR

Durwood L. Creed, Rome, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 28, 1982, Ser. No. 373,084
Int. Cl.³ G01S 13/52, 13/24
U.S. Cl. 343—7.7 6 Claims

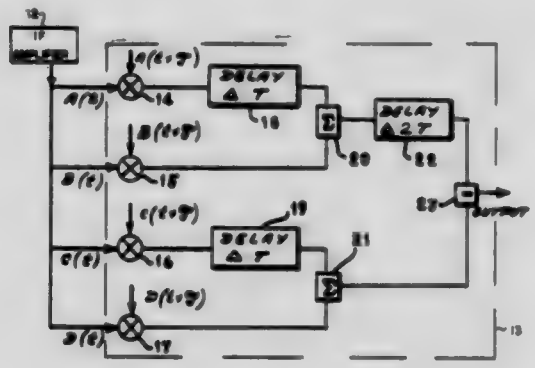
3. A frequency agile MTI radar comprising r.f. pulse generating means for generating an r.f. pulse train,

modulating means modulating the pulses of said r.f. pulse train to the effect that successive groups of four pulses taken as sets of pairs of pulses are frequency modulated such that the frequency of one of the pulses of the two

pairs of pulses is constrained to make the pulse pairs have equal difference frequencies,

transmitting means for transmitting said r.f. pulse train,

receiving means for receiving a return r.f. pulse train echo, and



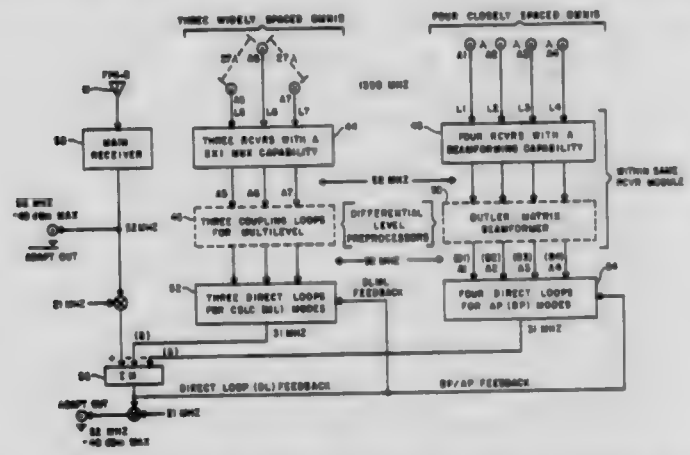
processing means for processing the received r.f. pulse train echo to develop first and second difference frequency signal responsive to the frequency difference between the pulses of received pulse train echo pulse pairs, said processing means subsequently differencing said first and second difference frequency signals to provide an MTI output.

4,495,502

MULTIPLE LOOP SIDELOBE CANCELLER

Raymond J. Masak, East Northport, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 27, 1982, Ser. No. 343,042
Int. Cl.³ G01S *3/16, 3/28*
U.S. Cl. 343—380 **10 Claims**



1. A space tapered multiple jammer sidelobe canceller comprising first and second subsystems for use in a system having a main system for receiving desired and interfering electromagnetic wave energy from a given angular region of space, and main system having a main beam forming antenna and a main receiving means coupled to the main antenna;

said first subsystem comprising a first array of antenna elements, widely spaced several wavelengths between any two elements, and a first unit comprising a plurality of adaptive loops coupled to said antenna elements of the first array;

said second subsystem comprising a second array of antenna elements, closely spaced on the order of one wavelength or less between adjacent elements, and a second unit comprising a plurality of adaptive loops coupled to said antenna elements of the second array; and

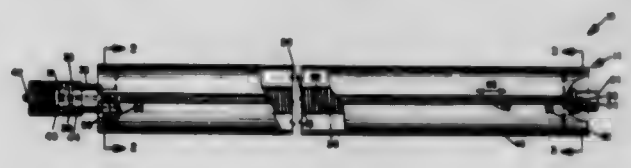
combining means having inputs from said main receiving means, from said first unit and from said second unit, for summing the signals for generating a system output and adaptive control loop feedback signals supplied on leads to the first and second units, said adaptive control loop feedback signals being used to form in said adaptive loops the generation of cancellation signals in response to correlation between interfering signals appearing in the subsystems and the same interfering signals appearing in said main system.

4,495,503

SLOW WAVE ANTENNA

William H. Morman, 2311 Telemark, NW., Rochester, Minn. 55901

Filed Feb. 19, 1982, Ser. No. 350,481
Int. Cl.³ H01Q *1/36, 13/18*
U.S. Cl. 343—746 **8 Claims**



1. Antenna for an RF communications device comprising:

a. means providing a slow wave structure for radio frequency energy and connected to said communications device, said slow wave structure being symmetrical about an axis and including means of a distributed capacitance and distributed inductance; and,

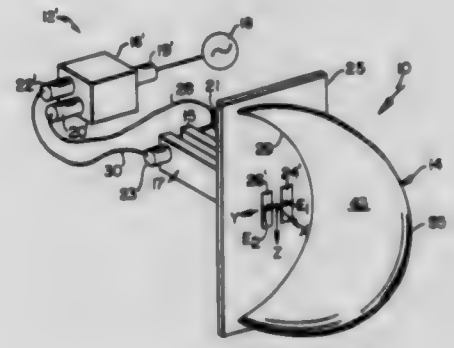
b. continuously slotted cylindrical means for varying the driving point impedance of said slow wave structure by varying the ratio of said distributed capacitance to said distributed inductance and adjustably slidable and positioned about said axis of said slow wave structure means by a dielectric washer at each end thereof whereby said slotted cylindrical varying means changes said distributed capacitance thereby providing an antenna having a length less than an equivalent free space length.

4,495,504

RADIO FREQUENCY ANTENNA HAVING A REFLECTOR WITH AN EDGE IN A PATTERN NULL REGION TO REDUCE EDGE SCATTERING

Donald H. Archer; Michael A. Gilbert; Robert H. Loomis, and Michael J. Maybell, all of Santa Barbara, Calif., assignors to Raytheon Company, Lexington, Mass.

Filed Mar. 2, 1983, Ser. No. 471,552
Int. Cl.³ H01Q *19/17*
U.S. Cl. 343—779 **4 Claims**



1. A radio frequency antenna, comprising:

(a) a feed for producing an antenna pattern having a pair of radiating lobes with a null region between such radiating lobes; and

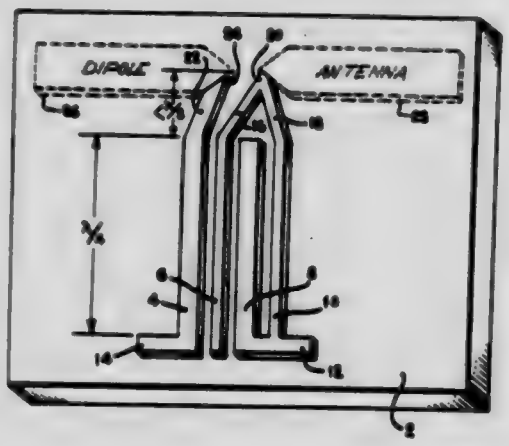
(b) a reflector having a surface disposed to intercept a portion of the antenna pattern and an edge disposed in the null region.

4,495,505

PRINTED CIRCUIT BALUN WITH A DIPOLE ANTENNA

Michael W. Shields, Boulder, Colo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 10, 1983, Ser. No. 493,387
Int. Cl.³ H01Q *9/16*; H01P *5/10*
U.S. Cl. 343—821 6 Claims



1. An improved printed circuit balun comprising:
a dielectric substrate,
first, second, third and fourth spaced conductive strips each having a first and second end and disposed in parallel in an uninterrupted numerical order upon a surface of said substrate,
a first conductive member connected to the first end of said first conductive strip,
a second conductive member connected to the first end of said third and fourth conductive strips,
said first end of said second conductive strip and said first and second conductive members providing a means for connecting an unbalanced transmission line to said balun,
a pair of balanced output lines,
a third conductive member connected between the second end of said first conductive strip and one of said pair of balanced output lines,
a fourth conductive member connected between the second end of second conductive strip and the other one of said pair of balanced output lines, and
a fifth conductive member connected between the second end of said fourth conductive strip and the other of said pair of balanced output lines.

2. Apparatus as defined in claim 1 wherein the lengths of said conductive strips are one quarter wavelength of the center frequency applied to said balun.

3. Apparatus as defined in claim 2 wherein the length of said third, fourth and fifth conductive members do not extend more than one eighth wavelength of the center frequency of said balun beyond the end of said conductive strips.

4. Apparatus as defined in claim 3 wherein the width of said second conductive strip differs from that of said first and third conductive strips.

5. Apparatus as defined in claim 4 and further including a printed circuit dipole antenna connected to said pair of output lines.

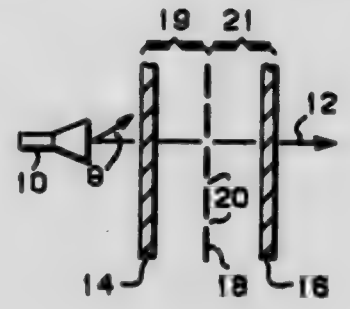
4,495,506

IMAGE SPATIAL FILTER

Bill H. Sasser, Tempe; Scott H. Walker, Scottsdale, and Raymond G. Immell, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 5, 1982, Ser. No. 365,842
Int. Cl.³ H01Q *15/02*
U.S. Cl. 343—909 6 Claims

1. An image spatial filter comprising:
a first dielectric sheet;
a second dielectric sheet substantially parallel to and spaced from said first dielectric sheet;
a ground plane between, substantially parallel to and separated from said first and second dielectric sheets;
coupling means defined by said ground plane for coupling energy from one side of said ground plane to another side thereof; and



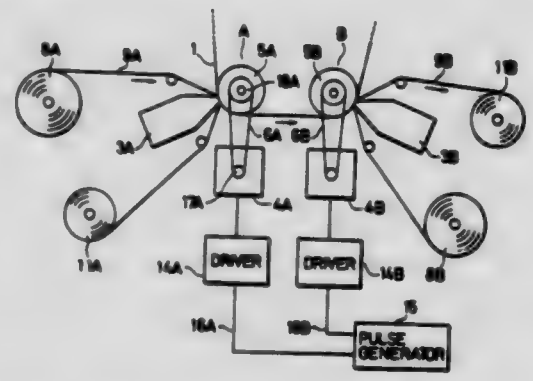
spacing means for maintaining said spaced apart and substantially parallel relationship between said first and second dielectric sheets and said ground plane.

4,495,507

MULTICOLOR TRANSFER HEAT-SENSITIVE RECORDING APPARATUS

Fujio Moriguchi, and Masami Kurata, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 19, 1983, Ser. No. 459,076
Claims priority, application Japan, Jan. 20, 1982, 57-6133
Int. Cl.³ G01D *15/10, 15/24*; B41J *31/02, 17/08*
U.S. Cl. 346—76 PH 2 Claims



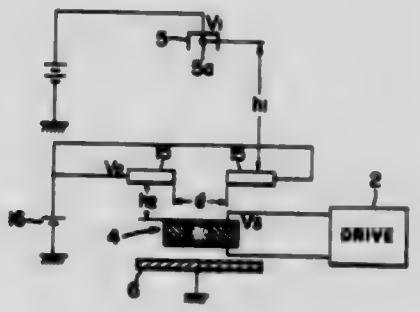
1. A multicolor transfer heat-sensitive recording apparatus comprising at least two recording stations where images are recorded in different colors, respectively, each recording station including a thermal recording medium for thermal transfer recording, conveying drive means for auxiliary scanning at the associated recording station, a recording sheet which is conveyed through said recording stations in a predetermined order, and a thermal head for selectively heating said thermal recording medium according to a video signal, to transfer an ink image onto said recording sheet, said conveying drive means in one of said recording stations being a stepping motor which carries out an ordinary stepping operation, and said conveying drive means in the other recording stations being a mini-angle stepping motor which conducts a mini-angle stepping operation and which can adjust rotational periods thereof.

4,495,508

ELECTROSTATIC REPRODUCING APPARATUS

Noriyoshi Tarumi, Hachioji; Haruo Iwahashi, Fussa; Masahiko Matsunawa, and Hiroshi Tokunaga, both of Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1981, Ser. No. 314,209
Claims priority, application Japan, Nov. 5, 1980, 55-154632; Dec. 1, 1980, 55-168068
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—159 3 Claims



1. In an electrostatic reproducing apparatus of the type comprising an ion modulating electrode having a control electrode and a common electrode formed as a unit with said control electrode through an insulating layer, and having at least one aperture therethrough, a charge retaining drum positioned at one side of said ion modulating electrode, an ion generator arranged at the other side thereof, and a source of voltage applied to said ion generator, wherein the passing of ions through said aperture is controlled according to an electric control signal applied to said control electrode, the improvement comprising another electrode having a through-hole larger than said aperture, spaced from and coaxial with said ion modulating electrode, and a voltage source lower in absolute value than the voltage applied to said ion generator applied to said other electrode, whereby ions passing through said ion modulating electrode are condensed.

4,495,509

MICROENCAPSULATION BY INTERCHANGE OF MULTIPLE EMULSIONS

Hung-Ya Chao, Williamsville, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jun. 9, 1983, Ser. No. 502,477
Int. Cl.³ B01J *13/02*; B32B *27/42*
U.S. Cl. 346—215 25 Claims

1. A method of making microcapsules having generally continuous polymeric walls comprising the following steps:
(a) preparing a first organic-in-aqueous emulsion comprising a first organic solution having a first oil soluble reactive material dissolved therein and a first aqueous emulsification solution;
(b) preparing a second organic-in-aqueous emulsion comprising a second organic solution having a second oil soluble reactive material dissolved therein and a second aqueous emulsification solution; and
(d) mixing said organic-in-aqueous emulsions such that said oil soluble reactive materials react to form said microcapsules.

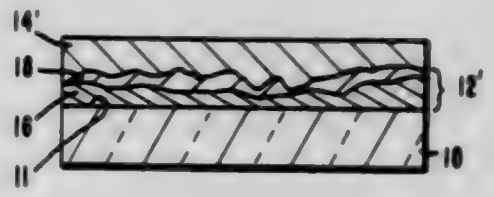
13. Microcapsules having generally continuous polymeric walls prepared by a method comprising the following steps:
(a) preparing a first organic-in-aqueous emulsion comprising a first organic solution having a first oil soluble reactive material dissolved therein and a first aqueous emulsification solution;
(b) preparing a second organic-in-aqueous emulsion comprising a second organic solution having a second oil soluble reactive material dissolved therein and a second aqueous emulsification solution; and
(d) mixing said organic-in-aqueous emulsions such that said oil soluble reactive materials react to form said microcapsules.

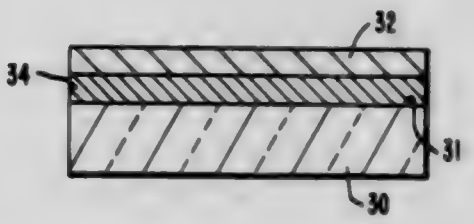
4,495,510

IMPROVED SUPERCONDUCTOR/SEMICONDUCTOR JUNCTION STRUCTURES

John A. Roth, and Lynette B. Roth, both of Oxnard, Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Division of Ser. No. 199,163, Oct. 22, 1980, Pat. No. 4,395,813.
This application Nov. 29, 1982, Ser. No. 444,939
Int. Cl.³ H01L *27/12*
U.S. Cl. 357—5 10 Claims





1. A superconductor/semiconductor junction device having optimized low-temperature current transport properties formed by the process comprising the steps of:
(a) providing a substrate of a chosen semiconductor material having an atomically clean surface;
(c) depositing on said clean surface of said substrate to a first predetermined thickness a layer of a chosen reactive material which is capable of undergoing an interfacial reaction with a first selected superconducting material to form a second selected superconducting material;
(c) depositing on said layer of said chosen reactive material a layer of said first selected superconducting material to a second predetermined thickness whereby said second superconducting material is formed by the reaction of said chosen reactive material with said first selected superconducting material and serves as an interfacial reaction barrier to prevent reaction between said surface of said substrate and said first selected superconducting material to form an undesired non-superconducting material that would degrade said current transport properties of said structure; and
(d) providing contact means connected to said layer of said first selected superconducting material for deriving an electrical output from said device.

3. A superconductor/semiconductor junction device having optimized low-temperature current transport properties formed by the process comprising the steps of:
(a) providing a substrate of a chosen semiconductor material having an atomically clean surface;
(b) depositing on said clean surface of said substrate a layer of a first selected superconducting material to a first predetermined thickness;
(c) depositing on said layer of said first selected superconducting material to a second predetermined thickness a layer of a second selected superconducting material which is capable of reaction with said semiconductor material of said substrate to form an undesirable non-superconducting material, whereby said layer of said first selected superconducting material serves as an interfacial reaction barrier to prevent said reaction between said surface of said substrate and said second selected superconducting mate-

rial which would produce said undesirable non-superconducting material which would degrade said current transport properties of said structure; and

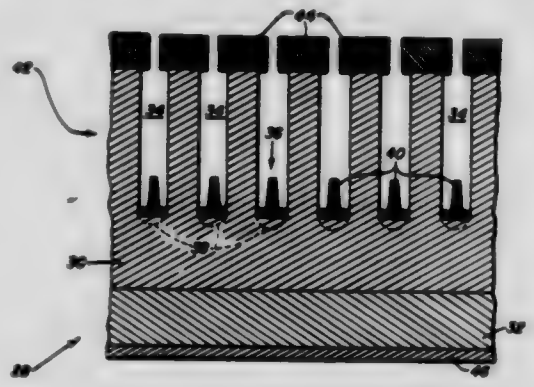
(d) providing contact means connected to said layer of said second selected superconducting material for deriving an electrical output from said device.

4,495,511

PERMEABLE BASE TRANSISTOR STRUCTURE

Max N. Yoder, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 23, 1982, Ser. No. 410,229
Int. Cl.³ H01L *29/80*
U.S. Cl. 357—22
10 Claims



1. An improved permeable base transistor (PBT) structure comprising:

an n^+-type semiconductor material substrate;

a metal ohmic emitter/cathode/source contact fashioned to the bottom of said n^+-type semiconductor material substrate;

an n-type semiconductor material epitaxially grown on the top of said n^+-type semiconductor material substrate so as to configure a plurality of trenches in said n-type semiconductor material, said n-type semiconductor material including a plurality of implantation regions fashioned therein at the bottom of corresponding ones of said plurality of trenches, said implantation regions being formed after bombardment of said n-type semiconductor material with ions selected to render said implantation regions semi-insulating;

a control grid structure including a plurality of Schottky metal control grid elements operatively emplaced contiguously to corresponding ones of said plurality of implantation regions; and

a collector/anode/drain structure including a plurality of Schottky metal collector/anode/drain contacts deposited on the top surface of said n-type semiconductor material, said collector/anode/drain contacts being deposited during the fabrication of said control grid structure.

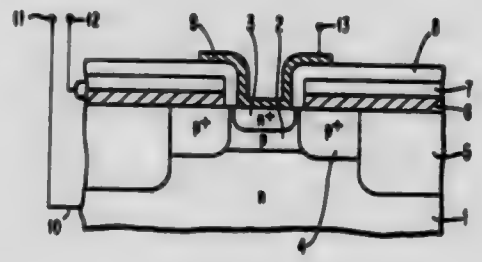
4,495,512

SELF-ALIGNED BIPOLAR TRANSISTOR WITH INVERTED POLYCIDE BASE CONTACT

Randall D. Isaac, and Tak H. Ning, both of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1982, Ser. No. 385,740
Int. Cl.³ H01L *23/48, 29/46, 29/72*
U.S. Cl. 357—34
3 Claims

1. A self-aligned bipolar transistor structure having a metal silicide layer covering the extrinsic base region about an aperture defining the emitter and intrinsic base region characterized by:



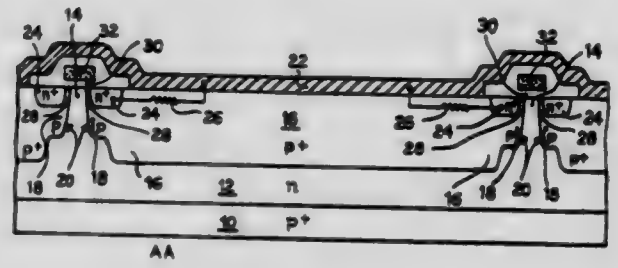
a doped polysilicon layer covering said metal silicide layer and having the same aperture.

4,495,513

BIPOLAR TRANSISTOR CONTROLLED BY FIELD EFFECT BY MEANS OF AN ISOLATED GATE

Bernard Descamps, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 14, 1982, Ser. No. 388,500
Claims priority, application France, Jun. 16, 1981, 81 11835
Int. Cl.³ H01L *27/02*
U.S. Cl. 357—43
6 Claims



1. A semiconductor structure of the bipolar conduction type controlled by an isolated gate which is adapted to render said structure selectively conductive or to block the same, comprising :

a semiconductor substrate doped with an impurity having a conductivity of a first type, said substrate constituting an emitter area of a vertical bipolar transistor formed in said structure,

an emitter contact electrically connected to said substrate,

an epitaxial layer slightly doped with an impurity having a conductivity of a second type opposite to the conductivity of said first type, which epitaxial layer covers said substrate and constitutes a base area of said bipolar transistor,

a collector area having a conductivity of said first type and strongly doped from the surface of said epitaxial layer in its major portion, said collector area being surrounded by an area wherein said epitaxial layer of second type conductivity is exposed and said collector area being covered on the major portion of its surface with a collector contact;

a source area constituted by a zone doped from the surface of said epitaxial layer with an impurity having a conduction of said second type, said doped zone being included within said collector area and extending along a border thereof while exposing an interval between said area and said zone, a thin isolating layer covering said interval, and a conductive layer covering said thin isolating layer, so as to constitute the control gate of said structure, and

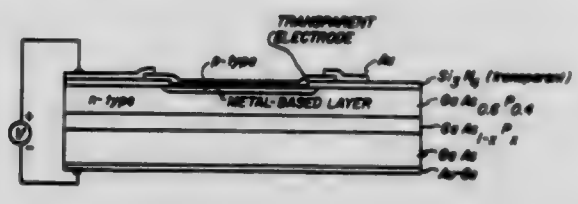
a resistive source access zone connected, on the one hand, to said source area and, on the other hand, to said collector contact, the resistance of said zone being sufficiently high to prevent the junction constituted between the source area and the collector area from being rendered conductive when a current passes through the collector.

4,495,514

TRANSPARENT ELECTRODE LIGHT EMITTING DIODE AND METHOD OF MANUFACTURE

David J. Lawrence, Rochester; Daniel C. Abbas, Webster; Daniel J. Phelps, Rochester, and Frank T. J. Smith, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 239,798, Mar. 2, 1981,. This application Jul. 28, 1983, Ser. No. 517,568
Int. Cl.³ H01L *27/12, 33/00, 23/48, 29/40*
U.S. Cl. 357—67 2 Claims



1. In a light emitting diode structure having a semiconductor light emitting surface, the improvement comprising

a continuous transparent metal-based layer formed on said surface and having a thickness of between about 15 and 100 angstroms; and

a transparent electrode formed on said metal-based layer and wherein such light emitting diode structure was annealed after formation of said transparent metal-based layer and said transparent electrode to reduce the resistance between said surface and such transparent electrode.

4,495,515

ELECTRICALLY ISOLATING TWO PIECE MOUNTING WASHER ARRANGEMENT

Gani Pamiello, Little Falls, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 26, 1982, Ser. No. 401,943
Int. Cl.³ H01L *23/02, 23/12*
U.S. Cl. 357—81 12 Claims



1. A mounting arrangement for mounting a power transistor package on a circuit chassis comprising;

a first mounting washer constructed of a material having high relative permittivity electrical insulating properties and low thermal resistance heat conduction properties and futher having a perimeter outline shape conforming to a perimeter outline of a body of the power transistor package to be mounted on top of the first mounting washer and further including an anchoring hole in register with a first anchor hole of the transistor package,

a second mounting washer constructed of a material having high relative permittivity, electrical insulating properties and having an anchoring hole in register with an anchoring hole in an electrode of the transistor package and further including means for positively engaging the first mounting washer, said means for engaging operative to prevent relative twisting of the first and second mounting washers and further operative to maintain the anchoring holes a fixed distance apart,

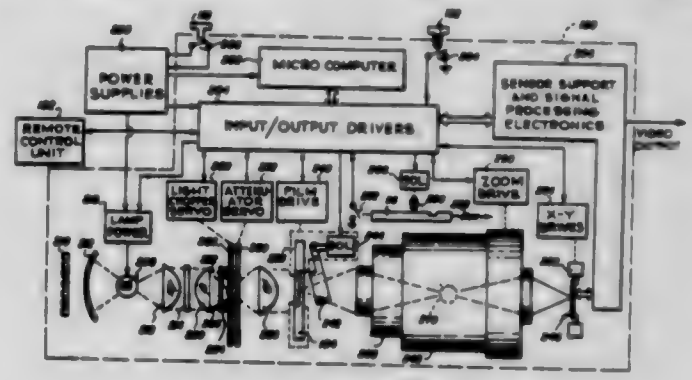
the first and second mounting washers being mounted coplanar with each other and positioned between the power transistor and the circuit chassis with the first mounting washer located exclusively under the body of the power transistor package and the second mounting washer under the electrode of the power transistor.

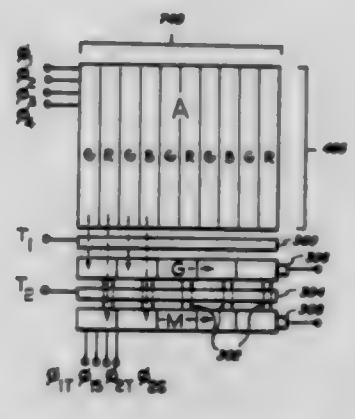
4,495,516

FILM VIDEO PLAYER HAVING FLASH ILLUMINATED AREA IMAGE SENSOR AND SINGLE FRAME CCD IMAGE SENSOR FOR USE THEREWITH

Leslie G. Moore, and Te-Hsung Lee, both of Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 29, 1982, Ser. No. 426,426
Int. Cl.³ H04N *9/11*
U.S. Cl. 358—54 7 Claims





1. A film video player for scanning color negative film to produce a color video signal, comprising:

(a) film gate means for holding the color negative film;

(b) a solid state area image sensor responsive to control signals for producing color video signals, comprising:

(1) a charge coupled device area array having rows and columns of image sensing elements, responsive to scene light for producing photosignals, and

(2) an array of color filters disposed over said image sensing array,

(c) means for flash illuminating the film in said film gate during the vertical retrace intervals of said video signals;

(d) means for projecting an image of said film in said film gate onto said image sensor;

(e) control signal generating means for supplying said image sensor with control signals to produce said color video signals at a standard video field rate; and

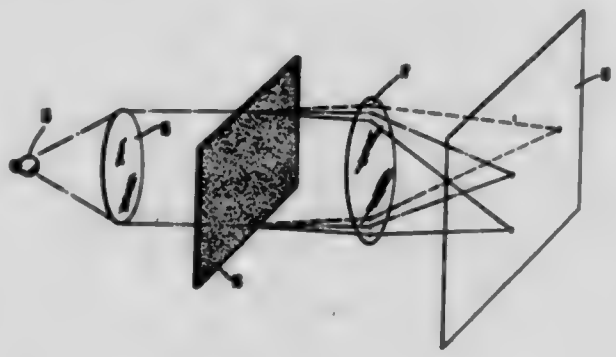
(f) signal processing means responsive to the color video signals produced by said image sensor for inverting said color video signals to produce positive color video signals.

4,495,517

PRINTING SCREEN AND METHOD OF MAKING SAME

Frank A. Sportelli, 7 Redwood Court, Glen Cove, N.Y. 11542

Division of Ser. No. 090,763, Nov. 2, 1979, Pat. No. 4,283,471.
This application Aug. 3, 1981, Ser. No. 289,602
Int. Cl.³ H04N 1/46
U.S. Cl. 358—75 3 Claims



1. In a television transmission process, the method comprising:

(a) providing a light transmitting element made in accordance with the process of (i) providing a negative screen having an overall pattern defined by rows of closely spaced substantially square-shaped areas, (ii) providing an image carrier effective to receive three separate exposures of said overall pattern at the same location on the negative screen, and (iii) developing an image screen pattern on said image carrier wherein each of said plurality of exposoures of said overall pattern is effected at a different angle with respect to each other, and then

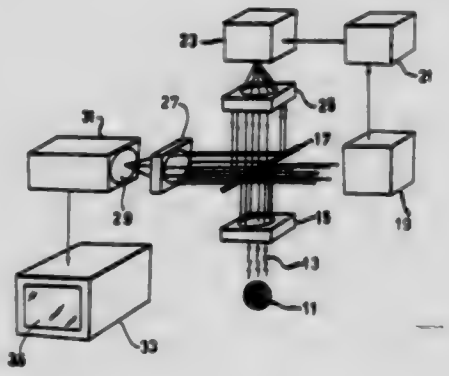
(b) using said light transmitting element for transmitting a reproduced image.

4,495,518

INFRARED TEST FOR WOODEN UTILITY POLES FOR STRUCTURAL SOUNDNESS

Corigan Sanolan, 682 Orchard Pkwy., Niagara Falls, N.Y. 14301

Filed Oct. 6, 1982, Ser. No. 433,002
Int. Cl.³ H04N 5/23
U.S. Cl. 358—113 10 Claims



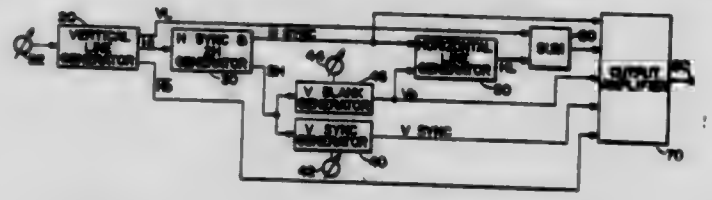
1. A method for testing a wooden utility pole for structural soundness which comprises receiving infrared radiation from a wooden utility pole being tested, converting the infrared radiation received to visually observable form, comparing by means of such visually observable form radiation received from different locations along the length of the utility pole, and noting disparities therein, which are indicative of portions of the pole which may be structurally unsound.

4,495,519

TEST PATTERN GENERATORS

Clayton C. Wahlquist, West Valley City, Utah, assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 30, 1982, Ser. No. 393,569
Int. Cl.³ H04N 7/02
U.S. Cl. 358—139 30 Claims



1. A test pattern generator for generating a test pattern signal which can be applied to a raster scan display apparatus having first and second mutually orthogonal scanning directions to cause the apparatus to display a test pattern consisting of a first set of spaced lines oriented in said first direction and a second set of spaced lines oriented in said second direction, said test pattern generator comprising:

a first pulse generating circuit for generating at least a first pulse train and a second pulse train, said first pulse train including, between successive pulses of said second pulse train, a number of pulses equal to the number of lines in said first set;

a second pulse generating circuit for receiving said second pulse train and generating at least a first sync pulse train;

a third pulse generating circuit connected to the second pulse generating circuit for generating a second sync pulse train and a fifth pulse train; and

a fourth pulse generating circuit connected to the second and third pulse generating circuits for generating a sixth pulse train in response to the first sync pulse train and the fifth pulse train, the sixth pulse train including, between successive pulses of the fifth pulse train, a number of pulses equal to the number of lines in said second set, and each pulse of the sixth pulse train being in a predetermined timed relation to a pulse of the first sync pulse train,

whereby pulse trains from said pulse generating circuits may be combined to form a test pattern signal.

4,495,520

TELEVISION CAMERA VIDEO LEVEL CONTROL SYSTEM

Marvin Kravitz, Princeton Junction; Larry A. Freedman, East Brunswick; Elmer H. Fredd, Yardville, and Dan E. Deuef, Freehold, all of N.J., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 9, 1982, Ser. No. 367,132
Int. Cl.³ H04N 5/14
U.S. Cl. 358—219 2 Claims

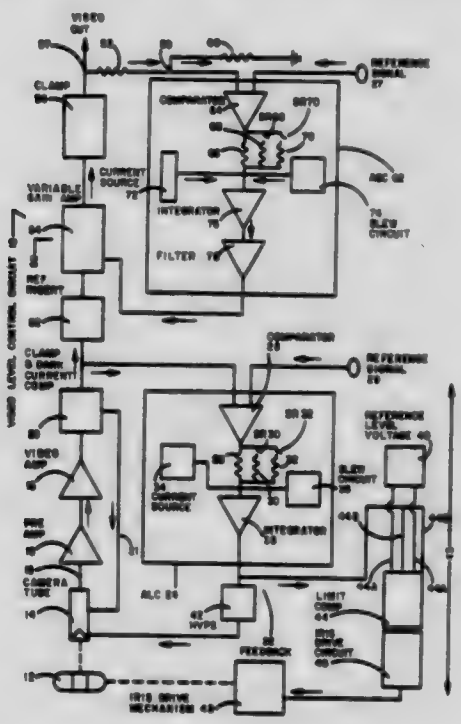
1. A video level control system for providing a normalized video signal representing a scene including:

first means for providing light images of a scene and controlling the intensity of admitted light from the scene;

second means including a camera tube responsive to the light images provided by the first means for converting the light images of a scene into electrical signals, and for conditioning the electrical signals;

third means responsive to the electrical signals provided by the second means for providing a normalized video signal by altering the electrical signals of the second means through automatic gain control as a function of the signal remaining after clipping a pre-selected area percentage of

the scene that exceeds a pre-set reference when scene luminance is in a first illumination range; and



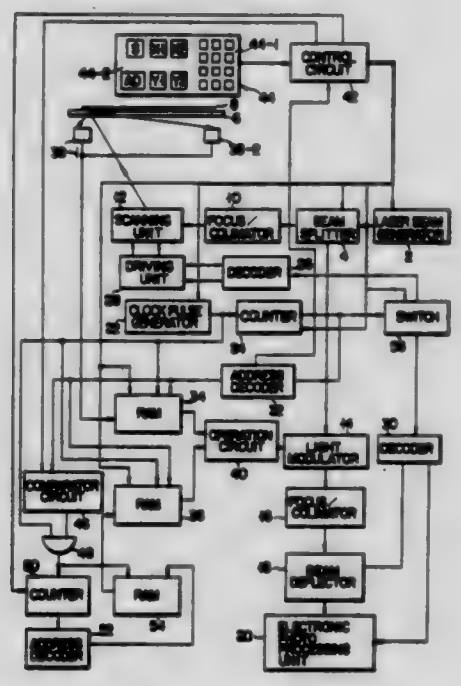
fourth means for controlling the first and second means so that a normalized video signal is provided when scene luminance is above the first illumination range.

4,495,521

ELECTRONIC COPYING APPARATUS

Chiaki Nagoh, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 195,425, filed as PCT JP/00171, Jun. 30, 1979, § 102(e) date Mar. 13, 1980, abandoned.
This application Sep. 22, 1982, Ser. No. 421,280
Claims priority, application Japan, Jul. 13, 1978, 53-85627
Int. Cl.³ H04N *1/38, 1/40*
U.S. Cl. 358—256 3 Claims



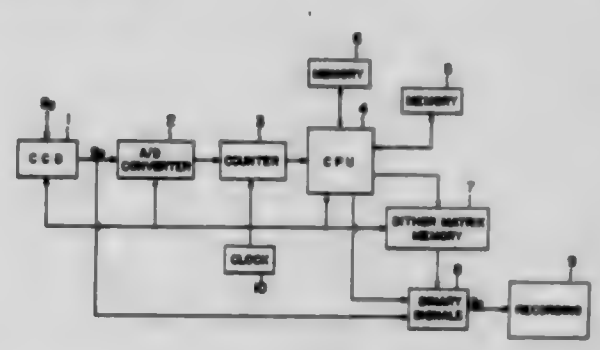
1. An electronic copying apparatus comprising:
optical scanning means for scanning an original;
photo-electric converting means for converting light reflected from the original into an electric signal;
data generating means including random access memory means for storing data for insertion or deletion on a copy;
first memory means for storing electric signals from said photo-electric converting means;
second memory means for storing data signals from said data generating means random access memory, said second memory means having substantially the same memory capacity as said first memory means;
a single address designating circuit producing an address signal which is supplied to said first and second memory means to commonly designate addresses for said first and second memory means;
means for processing data read out from said first and second memory means;
keyboard means for generating indications of address locations on said copy at which data stored in said random access memory means is to be inserted or deleted;
data transfer control means including means for comparing said address signal from said single address designating circuit and said indications from said keyboard means and generating a comparison signal when detecting that an address corresponding to said address signal resides in a range defined by said indications of address locations, and means for sequentially addressing locations in said random access memory means in synchronism with changes in the output of said single address designating circuit in response to said comparison signal thereby permitting data to be sequentially transferred from said data generating means random access memory means to said second memory means;
light modulating means for modulating incident light in accordance with an output signal of said processing means; and
electronic photographic processing means for disposing an image in accordance with said modulated incident light on said copy.

4,495,522

RECORDING APPARATUS AND METHOD OF PICTURE IMAGE

Masahiko Matsunawa, and Yoshinori Abe, both of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 6, 1982, Ser. No. 395,638
Claims priority, application Japan, Jul. 7, 1981, 56-105030; Sep. 3, 1981, 56-137722
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—280 4 Claims

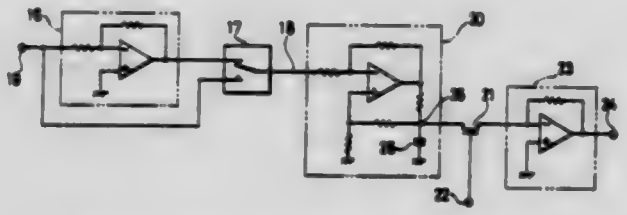


1. In a method of recording a picture image by converting picture signals into binary signals using a matrix which has a plurality of threshold values with a predetermined frequency distribution arrayed according to a predetermined order and recording the picture according to the binary picture signals, the improvement wherein a plurality of matrix groups with different frequency distributions of threshold values are prepared, the picture to be recorded is divided into a plurality of picture regions to obtain picture density data for each of the regions, matrices corresponding to the picture density data detected for each of the regions are selected among said plurality of matrix groups, and the picture signals are converted into binary signals using said selected matrices.

4,495,523
SIGNAL PROCESSING UNIT FOR ORIGINAL READING DEVICE

Takashi Ozawa, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 20, 1983, Ser. No. 459,556
Claims priority, application Japan, Jan. 22, 1982, 57-7456
Int. Cl.³ H04N 1/10, 3/14, 5/21
U.S. Cl. 358—293
5 Claims



2. An original reading device of the type having light sensing elements connected to a signal line through MOS transistors, whereby a light sensing element is charged when an MOS to which it is connected is turned on, the charging representing light intensity on said light sensing element and being detected on a signal line, said original reading device comprising:

first and second signal lines for connection to said elements via a corresponding number of said MOS transistors to which said elements are respectively connected;

said number of MOS transistors being arranged in alternating groups of at least two MOS transistors per group, said groups being alternately connected to said first and second signal lines such that all MOS transistors in any group are connected to the same signal line and all MOS transistors in the next succeeding group are connected to the other signal line; and

a differential amplifier means, having its inputs fed with the signals on said first and second signal lines, for providing an output signal;

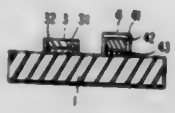
means for integrating said output signal of said differential amplifier to remove noise in said output signal.

4,495,524
PART FOR A SLIDE VARIABLE RESISTOR

Takeshi Kakuhashi, and Hiroshi Tahara, both of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 21, 1983, Ser. No. 506,267
Int. Cl.³ H01C 1/012
U.S. Cl. 338—314
4 Claims



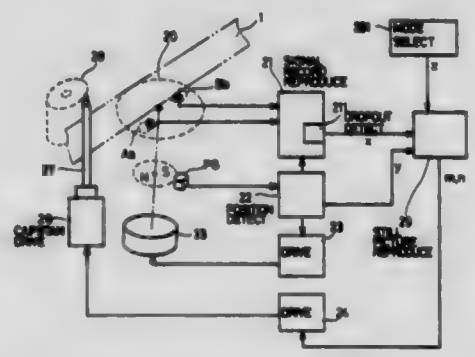


1. A part for a slide variable resistor, adapted for a slide terminal to be slid along the surface thereof, having a film resistive layer comprising a main resistive layer pattern formed by electroplating a thin metal resistor on an insulated support and a protective resistive layer pattern coated on said main resistive layer, wherein said protective resistive layer pattern has a larger sheet resistivity than said main resistive layer pattern, and wherein said protective resistive layer pattern is formed of an abrasion-resistant material selected from the group consisting of (1) a paste comprising (a) an electrically conductive powder selected from the group consisting of a carbon powder, silver powder, and nickel powder; and (b) a thermosetting resin, and (2) a paste comprising (a) a noble metal selected from the group consisting of gold, palladium, and silver, (b) a base metal selected from the group consisting of copper and nickel, and (c) glass frit.

4,495,525
MAGNETIC VIDEO REPRODUCING APPARATUS HAVING STILL PICTURE REPRODUCING FUNCTION

Ryohei Uchida, Kobe, and Toshifumi Fujii, Nagaokakyo, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1982, Ser. No. 384,670
Int. Cl.³ H04N 5/782
U.S. Cl. 360—10.3
8 Claims



1. A magnetic video reproducing apparatus employing a rotational plural-head system including at least two video heads, a helical scan system and an azimuth system, comprising:

capstan driving means,

position detecting means for detecting and producing an output indicative of the positions of said at least two magnetic heads,

dropout detecting means for detecting and producing an output indicative of a decrease in signal level of a reproduced signal output from said at least two magnetic heads, and

control means responsive to said position detecting means and said dropout detecting means for driving said capstan driving means for causing said decrease of the level of said reproduced signal output to be close to a change over between said at least two magnetic heads,

said control means comprising:

time difference detecting means responsive to said position detecting means and to said dropout detecting means for detecting and producing an output indicative of a time difference between the outputs from said position detecting means and from said dropout detecting means,

time period converting means responsive to said time difference detecting means for converting the output therefrom to an output signal of a time period associated with said output from said time difference detecting means, and

driving means responsive to the output signal from said time period converting means for driving said capstan driving means,

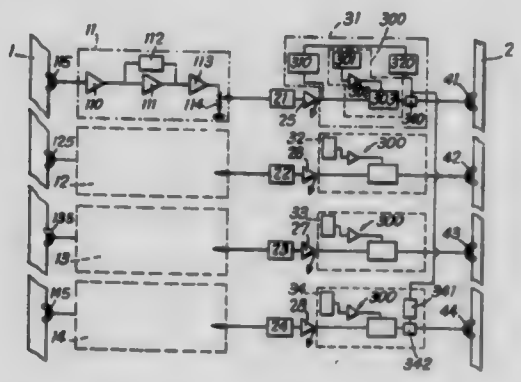
said driving means adapted for determining the driving amount of said capstan driving means responsive to the time period of the output signal from said time period converting means,

said time period converting means producing a period for its output signal adapted to cause the decrease of the signal level of said reproduced signal output to be close to said change over between said at least two magnetic heads.

4,495,526
METHOD AND APPARATUS FOR IDENTIFYING SOUND RECORDINGS

Dimitri Baranoff-Rossine, Paris, France, assignor to Societe Scome-France, La Roche Guyon, France

Filed Oct. 25, 1982, Ser. No. 436,348
Claims priority, application France, Oct. 28, 1981, 81 20250
Int. Cl.³ G11B 5/86, 15/04
U.S. Cl. 360—15 18 Claims



1. Method for identifying a sound recording, recorded on at least one track of a recording medium such as a magnetic tape and consisting in associating a coded auxiliary signal with the sound information signal, wherein the auxiliary signal is introduced during an individual recording operation of the sound information signal on the final recording medium, from the readout of a master tape on which, both the sound information signal and an end-of-sequence signal inserted between two sequences of program of the sound information signal have been recorded beforehand, the auxiliary signal being constituted by a coded digital signal derived from a pilot frequency and incremented at each detection of an end-of-sequence signal when the master tape is read out, and in mixing the auxiliary signal with the sound information signal while recording the sound information signal on the final recording medium in such a way as to inscribe the auxiliary signal repeatedly throughout the whole recording, the coded digital auxiliary signal being derived from a pilot frequency F which corresponds to a basic frequency f situated in a range outside the spectrum of audible frequencies towards the ultrasounds multiplied by a factor equal to the ratio of the advancing speed of the individual medium of final recording during the individual recording operation, to the advance speed of the individual medium of final recording during normal readout thereof.

4,495,527
VIDEO RECORDING SYSTEM WITH FOCUSING DEVICE

Susumu Kozuki; Masaya Maeda, and Hiroyuki Takimoto, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1982, Ser. No. 351,897
Claims priority, application Japan, Mar. 5, 1981, 56-31888
Int. Cl.³ H04N 5/782
U.S. Cl. 360—33.1 9 Claims

1. A video system comprising:

(A) a video camera including:

image pickup means for transducing a photo-image to an electrical signal;

a lens system for projecting an image of an object to be photographed onto an image receiving surface of said image pickup means; and

a lens moving mechanism for moving said lens system;

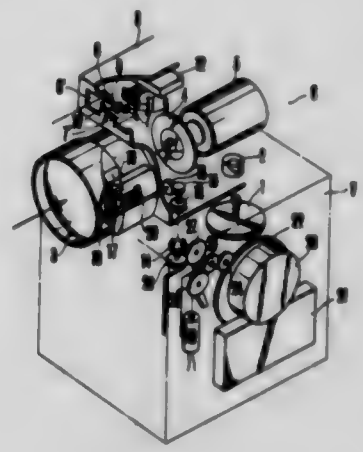
(B) a video signal recording apparatus including:

recording means for recording video signals corresponding to the electrical signal on a recording medium;

a medium moving mechanism for moving said recording medium; and

an electric motor for generating driving torque to move said moving mechanism;

(C) connecting means for mechanically connecting said video camera and said recording apparatus directly with each other; and

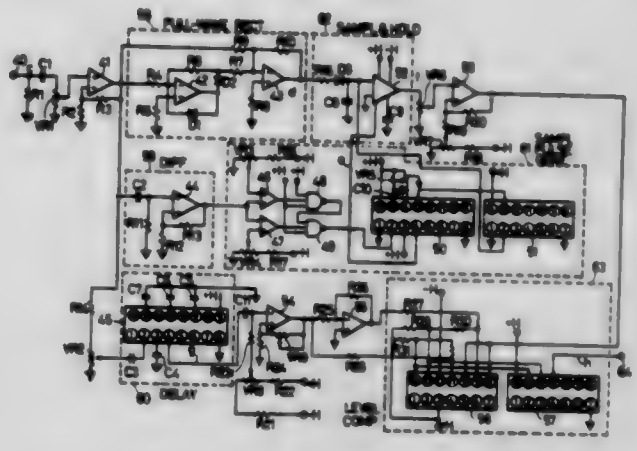


(D) transmission mechanism forming means for mechanically transmitting the driving torque to said lens moving means when said connecting means connects said video camera to said recording apparatus.

4,495,528
MAGNETIC REPRODUCING SYSTEM FOR A DIGITAL SIGNAL

Kohhei Sasamura, Sagamihara, and Masaru Moriyama, Yamato, both of Japan, assignors to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed Jul. 2, 1982, Ser. No. 394,942
Claims priority, application Japan, Jul. 10, 1981, 56-107938; Oct. 13, 1981, 56-163123
Int. Cl.³ G11B 5/09
U.S. Cl. 360—40 6 Claims



1. A magnetic reproducing system for a digital signal, for reproducing a recording two-valued code signal from a magnetic recording medium, and detecting the signal level of the reproduced signal to reproduce a digital signal of a desired two-valued code, said recording two-valued code signal being obtained by passing said digital signal of said desired two-valued code through a converter and delay means and then feeding back this digital signal to said converter to carry out a modulo-2 addition, said magnetic recording medium being recorded with said recording two-valued code signal, said magnetic reproducing system comprising:

a magnetic head for reproducing said two-valued code recorded on said magnetic recording medium;

an equalizer for performing wave-equalization of the signal reproduced by said magnetic head; and

a signal detection circuit for detecting the signal level of a three-valued code signal obtained from said equalizer, to produce a two-valued detection signal in which signal levels corresponding to "+1" and "−1" of said three-valued code signal is set to a signal level "+1" and a signal level corresponding to "0" of said three-valued code

signal is set to a signal level "0", as a reproduced output signal of said digital signal,

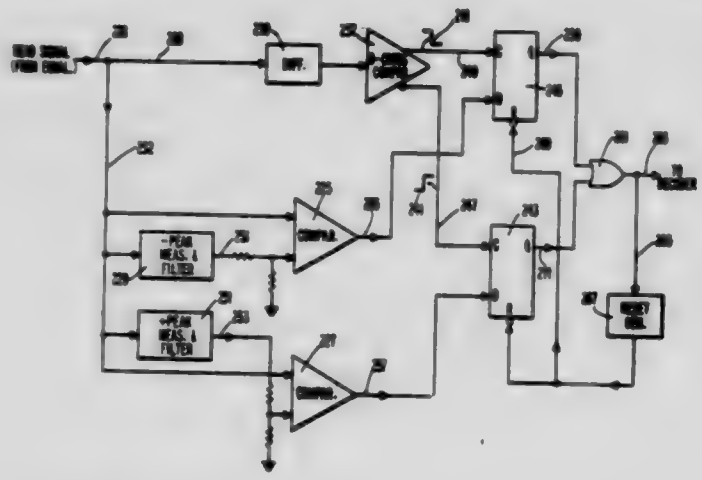
said signal detection circuit comprising a full-wave rectifier for producing a full-wave rectified signal from the three-valued code signal obtained from said equalizer, sampling pulse generation means supplied with said three-valued code signal for generating a sampling pulse with a phase substantially corresponding to peak value positions of the signal levels corresponding to "+1" and "−1" of said three-valued code signal, a sample and hold circuit for sampling an output signal of said full-wave rectifier with an output sampling pulse of said sampling pulse generation means and holding the sampled value, a delay circuit for delaying said three-valued code signal so as to match the timing with an output reference signal of said sample and hold circuit, and level comparing circuit means for comparing the levels of the output reference signal of said sample and hold circuit and a delayed three-valued code signal obtained from said delay circuit, to obtain a two-valued code signal having a waveform substantially identical to the digital signal of said desired two-valued code.

4,495,529

QUALIFIER CIRCUIT

Roy W. Gustafson, Boxborough, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed May 7, 1982, Ser. No. 375,933
Int. Cl.[3] G11B 5/09, 5/02
U.S. Cl. 360—46 1 Claim



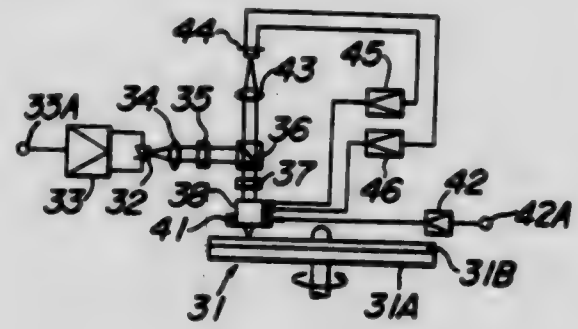
1. Qualifier circuitry means for determining whether or not a signal generated by a read head associated with a magnetic recording medium is a qualified signal as compared with noise and the like comprising in combination: input circuitry means formed to receive non-differentiated pulse signals from said read head; first and second peak measuring circuitry connected to said input circuitry means and each formed to detect and average peak values of said non-differentiated signals received by said input circuitry means and each further formed to generate a different peak reference signal; first and second signal comparison means connected to said input circuitry means to receive said non-differentiated pulse signals and further respectively connected to said first and second peaks measuring circuitry to receive respectively therefrom said peak reference signals and each of said signal comparison means formed to generate a valid signal when the amplitude peak of a non differentiated signal exceeds the amplitude of a said reference signal with which it is compared; signal differentiation circuitry connected to said input circuitry means to differentiate said non-differentiated pulse signals and provide differentiated signals therefrom; zero crossover circuitry coupled to said differentiation circuitry to receive said differentiated signals and formed to generate a leading edge signal virtually coincident with associated zero crossover of said differentiated signals; first logic circuit means having at least first and second input signal means and an output signal means and connected to said zero crossover circuitry and some first signal comparison means and formed to provide a first qualified signal in response to the simultaneous presence of a leading edge signal and a valid signal respectively at said last mentioned first and second input signal means; and second logic circuit means having at least first and second input signal means and an output signal means and formed to provide a second qualified signal in response to the simultaneous presence of a leading edge signal and a valid signal respectively at said last mentioned first and second input signal means.

4,495,530

METHOD OF PROCESSING INFORMATION SIGNAL WITH RESPECT TO OPTO-MAGNETIC RECORD MEDIUM

Tuneo Yanagida, Hino, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Nov. 25, 1981, Ser. No. 324,764
Claims priority, application Japan, Nov. 26, 1980, 55-165322
Int. Cl.[3] G11B 5/02
U.S. Cl. 360—59 16 Claims



1. In a method of processing an information signal with respect to an opto-magnetic record medium which has an easily magnetizable axis perpendicular to its surface and has been uniformly magnetized in one direction, in order to erase an information signal which has been recorded in the record medium along one or more tracks by inverting the direction of magnetization in accordance with the information signal, the improvement in said method comprising:

heating at least a part of the track containing the information signal to be erased by uniformly irradiating said part with an unmodulated light beam to a temperature at which said part substantially attains a paramagnetic condition; and

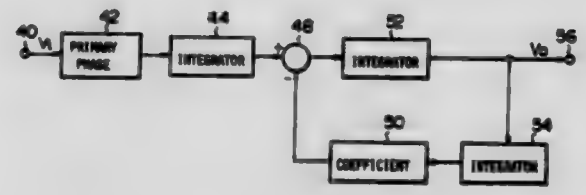
applying to said part an erasing magnetic field having a direction such that said part is uniformly magnetized in a direction opposite to said one direction so as to erase the information signal in said part of the track.

4,495,531

EQUALIZER CIRCUIT FOR SIGNAL WAVEFORM REPRODUCED BY APPARATUS FOR MAGNETIC DIGITAL DATA RECORDING AND PLAYBACK

Kouhei Sasamura, Sagamihara, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 8, 1983, Ser. No. 473,375
Int. Cl.[3] G11B 5/45, 5/02
U.S. Cl. 360—65 8 Claims



1. An apparatus for equalizing the waveform of a signal reproduced from a magnetic recording medium, comprising:

a phase circuit for varying a phase of a signal passing therethrough;

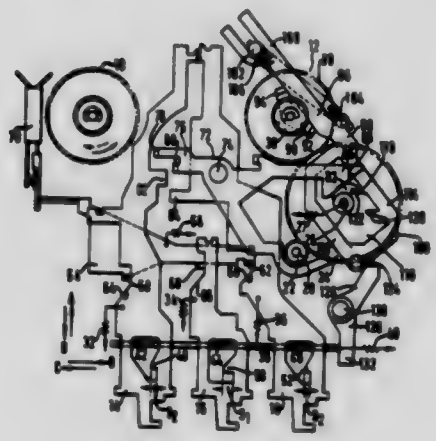
an adder circuit for processing the reproduced signal whose waveform is to be equalized;
a first integrator circuit for integrating an output signal of said adder circuit and varying an integration time constant thereof;
a second integrator circuit for integrating an output signal of said first integration circuit; and
a coefficient circuit for adjusting the level of an output signal of said second integrator circuit and supplying an output signal thereof to the adder circuit, the adder circuit processing the reproduced signal and the output signal of said coefficient circuit.

4,495,532

TAPE PLAYER

Takamasa Kurafuzi, and Kimihide Tokura, both of Kouhoku, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 9, 1983, Ser. No. 465,097
Claims priority, application Japan, Feb. 9, 1982, 57-19270
Int. Cl.³ G11B *15/02, 15/18*
U.S. Cl. 360—71 20 Claims



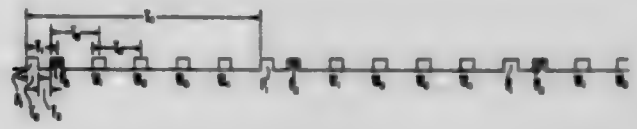
1. A tape player with operating mode changing mechanism, comprising:
a chassis;
means for running a tape, said tape running means being supported on said chassis;
a first rotary member adapted to rotate while the tape runs;
thrusting means driven by rotation of said first rotary member;
holding means formed on said chassis;
a rocking member held by said holding means and provided with first and second engagement portions, said first engagement portion being engagable with said thrusting means,
said rocking member making a first movement relative said holding means in response to said thrusting means thrusting said first engagement portion during running of the tape; and
a second rotary member adapted to rotate regardless of running of the tape and movable between first and second positions to move said rocking member into different positions, said second rotary member being provided with an engagement section for engaging with said second engagement portion of said rocking member,
said second engagement portion of said rocking member being prevented from engaging with said second engagement section of said second rotary member during said first movement of said rocking member, but engaging with said second engagement section of said second rotary member when running of the tape has stopped with said rocking member making a second movement relative said holding means in response to rotation of said second rotary member for changing the operating mode of the tape player.

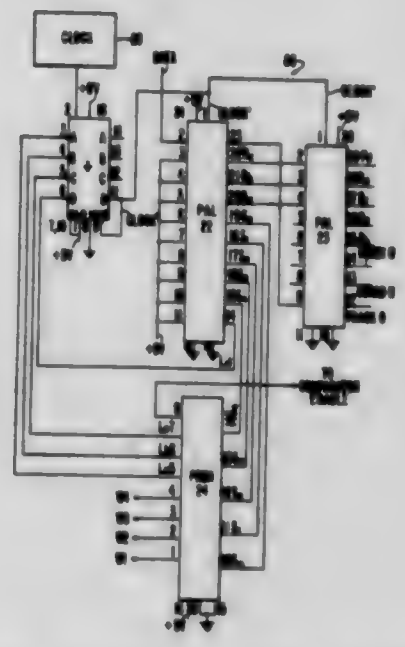
4,495,533

DISK MEMORY INDEXING SYSTEM

Aaron L. Chambers, Woodside, Calif., assignor to Atasi Corporation, San Jose, Calif.

Filed Jun. 28, 1982, Ser. No. 392,504
Int. Cl.³ G11B *27/32, 27/36, 31/00*
U.S. Cl. 360—72.2 9 Claims





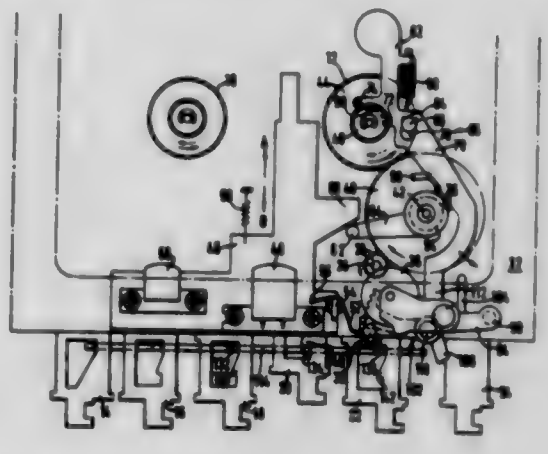
1. A servo disk comprising a plurality of tracks each said track storing data relating to the status of said track, said data comprising a plurality of pulse pairs which are read as said servo disk rotates, each said pulse pair including a first pulse and optionally including a second pulse, wherein as said servo disk rotates said first pulse of each said pulse pair is read before said second pulse is read, and wherein the presence or absence of said second pulse is used to store a binary digit.

4,495,534

TAPE PLAYER

Takamasa Kurafuji, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 9, 1983, Ser. No. 465,098
Claims priority, application Japan, Feb. 9, 1982, 57-19271
Int. Cl.³ G11B *15/22*
U.S. Cl. 360—74.1 24 Claims



1. A tape player comprising:
a chassis;
means for running a tape, said tape running means being supported on said chassis;

a first rotary member adapted to rotate while the tape runs;
thrusting means driven by rotation of said first rotary member;
a second rotary member adapted to rotate regardless of running of the tape, said second rotary member including an engagement section rotatable therewith;
holding means formed on said chassis; and
a rocking member releasably held by said holding means and provided with first and second engagement portions corresponding, respectively, to said thrusting means and to said engagement section of said second rotary member,
said rocking member making a first rocking movement about said holding means in response to said thrusting means contacting said first engagement portion during running of the tape for preventing contact between said second engagement portion and said engagement section of said second rotary member, and
said rocking member making a second rocking movement about said holding means in response to said second engagement portion contacting said engagement section of said second rotary member and rotation of said second rotary member for detecting stoppage of the running of the tape.

4,495,535

WHEEL-DRIVEN MODE SWITCHING MECHANISM FOR CASSETTE TAPE RECORDERS

Naomichi Kohri, Maebashi; Yutaka Fukuda, and Hiroshi Muramatsu, both of Gunma, all of Japan, assignors to Victor Company of Japan, Ltd., Japan

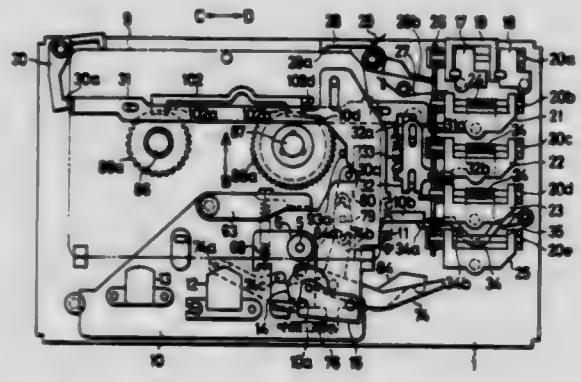
Filed Dec. 23, 1981, Ser. No. 333,981

Claims priority, application Japan, Dec. 24, 1980, 55-186227[U]; Dec. 24, 1980, 55-186228[U]; Jan. 6, 1981, 56-622; Jan. 21, 1981, 56-7337; Jan. 23, 1981, 56-8644

Int. Cl.³ G11B *15/00, 17/00, 15/12*

U.S. Cl. 360—96.3

12 Claims



1. A mode switching mechanism of a cassette tape recording and reproducing apparatus having a plurality of manually operated function keys for operating the apparatus in one of recording, playback, rewind and fast-forward modes, and a motor energized in response to operation of one of said function keys, comprising:
a toothed driving wheel driven by said motor;
a driven wheel including first and second coaxially mounted cams rotatable therewith, the driven wheel having a toothed circumferential portion for engaging with the driving wheel and a toothless circumferential portion for disengaging from said driving wheel;
a spring-biased arm for pressing said first cam to urge said driven wheel into engagement with said driving wheel;
means for locking said driven wheel against said spring-biased arm when the driven wheel is disengaged from said driving wheel and unlocking said driven wheel in response to operation of a function key to allow said spring-biased arm to urge said driven wheel into engagement with said driving wheel;
a first cam follower engageable with said second cam in response to the operation of one of said recording and playback function keys;
a second cam follower engageable with said second cam in response to the operation of one of said rewind and fast-forward function keys; and
a base carrying a transducer head, said base being movable upon engagement with said first and second cam followers into first and second operating positions, respectively.

4,495,536

VOLTAGE TRANSIENT PROTECTION CIRCUIT

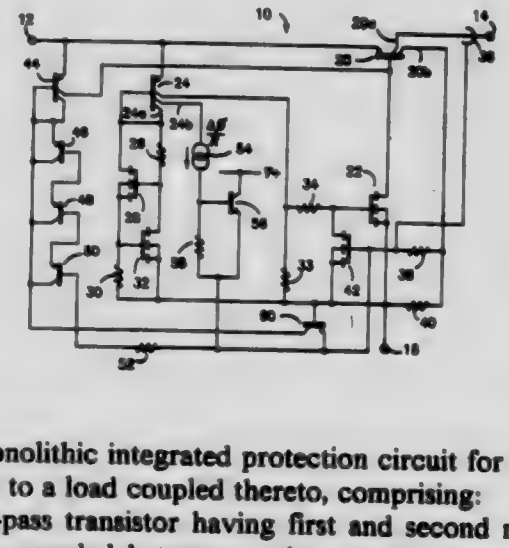
Byron G. Bynum, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 27, 1982, Ser. No. 453,402

Int. Cl.³ H02H *3/20*

U.S. Cl. 361—91

21 Claims



1. A monolithic integrated protection circuit for providing protection to a load coupled thereto, comprising:
a series-pass transistor having first and second main electrodes coupled between an input and an output of the protection circuit and a control electrode;
control circuit means coupled to said control electrode of said series-pass transistor which is responsive to an external signal applied to an input thereof exceeding a threshold value for rendering said series-pass transistor conductive; and
feedback circuit means responsive to said series-pass transistor being driven into saturation for providing a feedback control signal to said control circuit means to cause said series-pass transistor to supply the required load current to said output of the protection circuit while minimizing current drive to said control electrode.

4,495,537

CONTROLLED CURRENT LIMITER

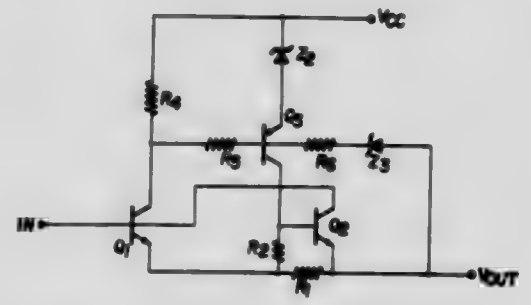
David P. Laude, Indialantic, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed May 10, 1983, Ser. No. 493,234

Int. Cl.³ H02H *3/08*

U.S. Cl. 361—98

5 Claims



1. A controlled current limiter comprising:
an input, first and second terminals;
a first transistor having a base connected to said input terminal, a collector connected to said second terminal and an emitter;
a second transistor having a collector connected to said base

of said first transistor, an emitter connected to said first terminal and a base;

a voltage divider having a first end point connected to said base of said second transistor, a second end point connected to said first terminal and an intermediate point connected to said emitter of said first transistor;

a diode connected between said second terminal and said first end point of said voltage divider for preventing current flow through said voltage divider until the voltage difference between said first and second terminals exceed the breakdown voltage of said diode; and

a switch means in series with said diode and having a control electrode connected to the collector-emitter path of said first transistor for connecting said diode in series between said second terminal and said first end of said voltage divider at a preselected current in said first transistor's collector-emitter path.

4,495,538

CONTACTOR APPARATUS COMPRISING MEANS FOR AUTOMATICALLY OPENING POWER CIRCUITS AND A LOCAL CONTROL DEVICE

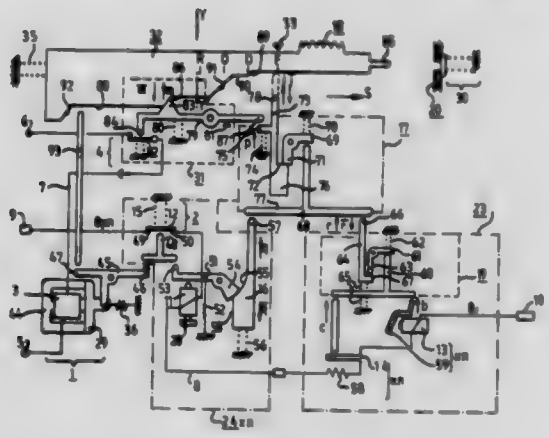
Christian Thomas, Montesson, France, assignor to La Telemecanique Electrique, France

Filed Nov. 9, 1982, Ser. No. 440,382

Claims priority, application France, Nov. 9, 1981, 8120919

Int. Cl.³ H02H *1/00*; H01H *71/10*

U.S. Cl. 361—115 **10 Claims**



1. A contactor apparatus comprising:

i power circuit means for supplying current to a load including a plurality of power switch means in said circuit and, for each of said switch means, a first protection means actuated by the occurrence of a short circuit current through the power circuit means, second and third protection means respectively actuated by the occurrence of second and third types of overload current having an intensity substantially lower than that of a short circuit current, with the third type of overload current having a substantially longer duration than that of the second type, the first protection means, when actuated, triggering said power switch means into an open position to disconnect the circuit from the load;

ii control circuit means including a control switch serially connected with electromagnet means, said electromagnet means, when energized through said control circuit means, controlling the opening of one of said power switch means; and a spring means normally resetting the control switch into a closed position after opening of the one switch means;

iii local control means for controlling one of said switches comprising a mechanical control member having camming surface portions and mounted for displacement along a predetermined path successively from first to second and third positions against the action of an external force such as spring means for resetting the said mechanical member into its first position;

iv a transmission member operated by said local control means having a locking surface portion which contacts a first one of said camming surface portions of the mechanical control member for retaining it in its third position when the said mechanical control member has been set into the said third position under the action of the external force, the said transmission member further having a control surface portion which acts upon the control switch to open the same when the mechanical control member is not in its third position;

v first, second and third snap acting tripping mechanisms each having a cocked and a released position, with spring means normally pushing the said second and third mechanisms into their cocked position, each of said second and third mechanisms automatically passing from the cocked to the released position under the action of a releasing force and from the released to the cocked position under the action of cocking force, the releasing and cocking forces having opposite directions, the first tripping mechanism being positioned by a second one of said camming surface portions when the mechanical control member is in its first position to receive the cocking force therefrom and having a control surface portion which, in the released position of the first tripping mechanism, cooperates with the transmission member to unlock the said locking surface portion from the said first camming surface portion; the second and third tripping mechanism also receiving their cocking force when the mechanical control member is in its first position, the second tripping mechanism being set into its released position by the first protection means when the first protection means is actuated and then applying a releasing force to the first tripping mechanism from its cocked position;

vi release means for the third tripping mechanism, said release means having an actuated position in which they are set by any one of the second and third protection means when any one of the second and third protection means is actuated and then applying a releasing force to the third tripping mechanism, the third tripping mechanism, when in its released position, applying a releasing force to the first tripping mechanism from its cocked position, the camming surface portions of the mechanical control member including a third camming surface portion which stops the displacement of the mechanical control member from its third position to its second position through abutment of the third camming surface portion with the first tripping mechanism.

4,495,539

EXCESS VOLTAGE ARRESTERS

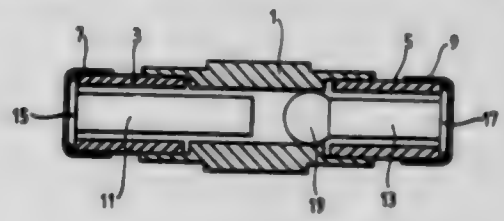
Kenneth G. Cook, Northwood, England, assignor to The M-O Valve Company Limited, England

Continuation of Ser. No. 285,061, Jul. 20, 1981, abandoned. This application Jun. 13, 1983, Ser. No. 490,236

Claims priority, application United Kingdom, Sep. 19, 1981, 8030419

Int. Cl.³ H02H *9/06*

U.S. Cl. 361—124 **2 Claims**



1. An excess voltage arrester comprising a gas filled enclosure and an electrode structure housed within the enclosure which structure defines at least one discharge gap, said structure including

(A) a first electrode, having an end portion in the form of a metal rod; and

(B) a second electrode having a portion in the form of a tube, said portion of said second electrode coaxially surrounding said end portion of said first electrode, the arrester being constructed so that $\pi r_1^2(x+r_2)>4/3\pi r_2^3$, where r_1 is the radius of said end portion of said first electrode, r_2 is the internal radius of said portion of said second electrode and x is tha axial overlap of the two portions;

(C) and the material of which said end portion of the first electrode consists being such that

(i) on overheating of the arrester due to the occurrence of a discharge in the arrester over a prolonged period,

(ii) an end part of said end portion of the first electrode melts,

(iii) the remainder of said first electrode remaining unmelted,

(iv) said end part taking up under the action of surface tension a generally spherical form supported on said remainder,

(v) the radius of said end part when molten being such that said end part will contact said portion of the second electrode regardless of the orientation of the arrester.

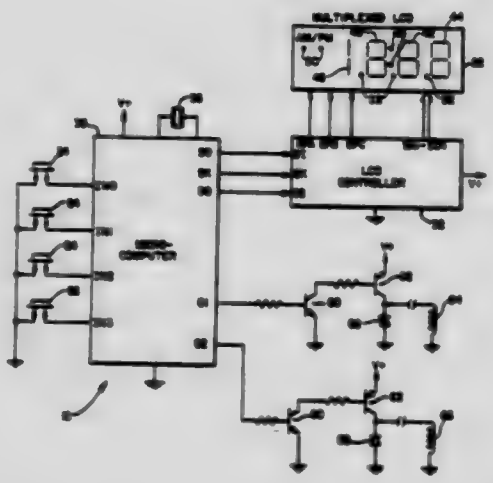
4,495,540

ELECTRONIC LOCK

Richard C. Remington, Pompton Plains, and Lonnie C. Bott, Wayne, both of N.J., assignors to Presto Lock, Inc., Garfield, N.J.

Filed Dec. 27, 1982, Ser. No. 453,131
Int. Cl.³ H01H *47/32*
U.S. Cl. 361—172 11 Claims





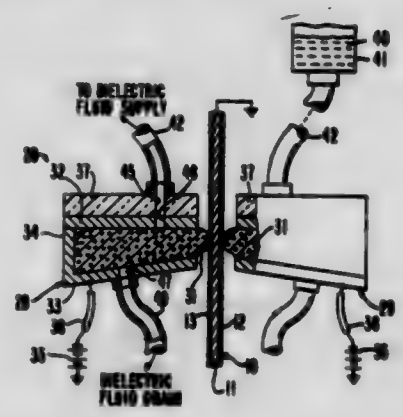
1. An electronic lock comprising display means having a plurality of display locations, a plurality of push buttons, each push button being associated with a different display location, means responsive to the actuation of each push button for displaying at the associated display location a sequence of indicia and for selecting from the sequence, under the control of the push button, a selected indicium for display at the associated display location, thereby enabling a selected set of indicia to be displayed by the display means, means for storing a predetermined set of indicia corresponding to the on-combination condition of the lock, means for comparing the displayed set of indicia with the stored predetermined set of indicia, and means responsive to the comparison for operating associated latch means to open the lock when the sets of indicia match.

4,495,541

APPARATUS FOR AND METHOD OF MAKING AN ELECTRET TAPE

Mark R. Magee, Saratoga, and Richard D. James, Los Altos Hills, both of Calif., assignors to GTE Communication Products Corporation, Stamford, Conn.

Filed Sep. 2, 1983, Ser. No. 529,060
Int. Cl.³ B05C *1/04*
U.S. Cl. 361—225 7 Claims



1. Apparatus for making a composite electret tape having an elongated electrically conductive strip and a dielectric layer on one side of said strip, comprising:

a supply reel for winding thereon said tape with an uncharged dielectric layer;

a take-up reel for winding thereon said tape with charged dielectric layers;

means for moving said tape from the supply reel to the take-up reel such that part of said tape moving between the reels is disposed in a plane at an angle of $90°\pm10°$ with horizontal; and

an electrostatic charging assembly for charging the dielectric layers disposed adjacent to said part of the tape comprising:

a pair of sponge electrodes disposed on opposite sides of said plane and positioned to receive the dielectric layers, respectively, across the full widths thereof;

a supply of dielectric fluid connected to the top of each of said electrodes for wetting same;

a drain for excess dielectric fluid connected to the bottom of each of said electrodes;

means for grounding said strip; and

a source of high dc voltage connected to said electrodes whereby said dielectric layers are simultaneously electrostatically charged.

4,495,542

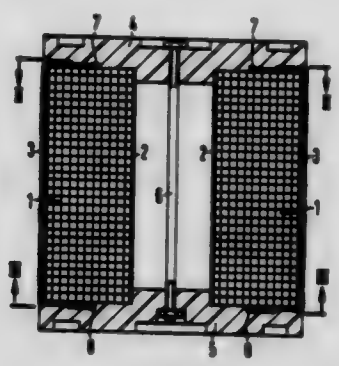
ELECTRIC ROLLER-TYPE CAPACITOR AND METHOD AND DEVICE FOR PRODUCING THE CAPACITOR

Rudolf Krös, Heidenheim, and Harald Vetter, Regensburg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 25, 1983, Ser. No. 545,063
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1982, 3239865
Int. Cl.³ H01G *4/00*; H01H *85/30*
U.S. Cl. 361—301 3 Claims

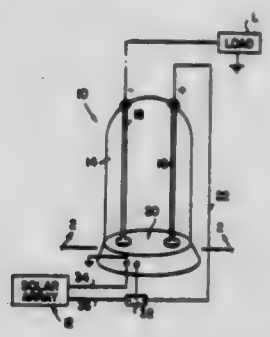
1. In an electric roller-type capacitor formed with a capacitor winding built into a housing and having end-face contact layers, the improvement therein which comprises a wrapping

consolidating the capacitor winding and formed of a fiberglass-reinforced synthetic resin composite, said wrapping covering



the circumference of the winding as well as parts of the end-face contact layers.

4,495,543
ACCUMULATOR
David T. Langley, Jr., 226 S. Main St., Los Angeles, Calif. 90012
Filed Nov. 15, 1983, Ser. No. 551,837
Int. Cl.[3] H01G *4/00*; H02J *3/32*
U.S. Cl. 361—301 8 Claims



1. Apparatus for smoothing energy received from an intermittent source, such as a solar energy collector, comprising, in combination:

(a) enclosure means for retaining energy in the form of electrical charges;

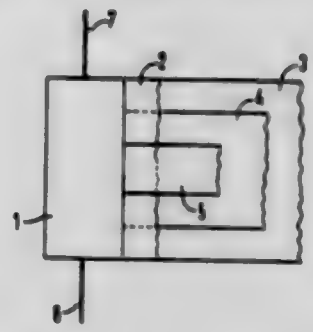
(b) first electrode means arranged extending into the enclosure means and connected to a source of intermittent energy for creating a first plate of a capacitor;

(c) second electrode means associated with the enclosure means and connectible to a load for creating a second plate of a capacitor, the enclosure means containing an inert gas selected to function as a dielectric up to a breakdown voltage of the gas; and

(d) an energy cell means associated with the enclosure means and connected to the first electrode means for selectively supplying electrical energy to the enclosure means.

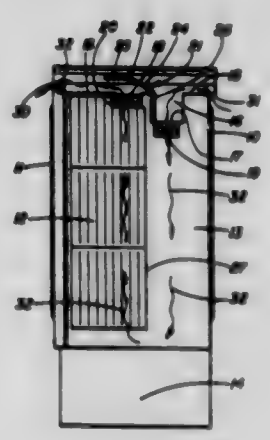
4,495,544
ELECTRIC ROLL-TYPE CAPACITOR
Walter Brüstle, Gerstetten, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Jun. 28, 1983, Ser. No. 508,586
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1982, 3224413
Int. Cl.[3] H01G *4/08*, *1/015*
U.S. Cl. 361—323 9 Claims

1. Electric roll-type capacitor with a high capacity stability and a constant temperature coefficient, comprising a dielectric formed of at least two wound shrunken plastic foils, electrodes in the form of a metal value foil and a metal cover foil each being wound between two respective plastic foils, and connection elements electrically conductively connected to said metal foils, one of said metal foils being formed of aluminum and the



other of said metal foils being formed of a metal selected from the group consisting of tin and a tin-lead alloy.

4,495,545
ENCLOSURE FOR ELECTRICAL AND ELECTRONIC EQUIPMENT WITH TEMPERATURE EQUALIZATION AND CONTROL
Gilles L. Dufresne, Aylmer; George V. Devlin, Nepean; Alexander F. Campbell, Woodlawn, and David Campbell, Nepean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Mar. 21, 1983, Ser. No. 476,940
Int. Cl.[3] H05K *7/20*
U.S. Cl. 361—384 10 Claims



1. An enclosure for electrical equipment, said enclosure including two sections side by side and interconnected at each end;

an air inlet connected to one section at one end;

an air outlet connected to the other section at said one end;

a pivotally mounted baffle at said one end, moveable alternately to one of a first position and a second position; the baffle isolating said sections from said inlet and outlet and permitting connection between sections at said one end in said first position for continuous circulation through both sections, the baffle preventing connection between sections at said one end opening said sections to said inlet and outlet in said second position for circulation from said inlet through said sections to said outlet;

a first fan operable to continuously circulate air through said sections when said baffle is in said first position;

a second fan operable when said baffle is in said second position, to assist in circulating air from said inlet to said outlet through said sections;

heat responsive means to move said baffle from said first position to said second position when the temperature in said enclosure exceeds a predetermined value.

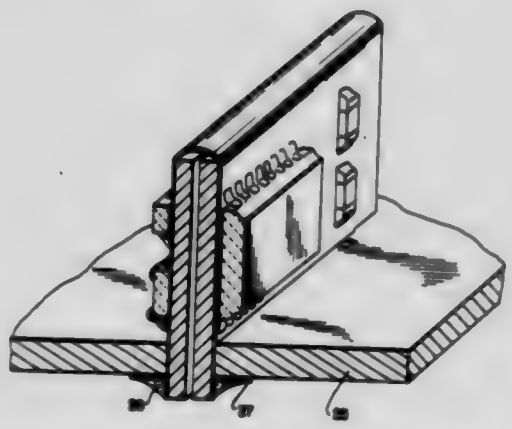
JANUARY 22, 1985 ELECTRICAL

4,495,546

HYBRID INTEGRATED CIRCUIT COMPONENT AND PRINTED CIRCUIT BOARD MOUNTING SAID COMPONENT

Tsuneshi Nakamura, Hirakata, and Tatsuro Kikuchi, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 13, 1982, Ser. No. 377,997
Claims priority, application Japan, May 18, 1981, 56-74689
Int. Cl.³ H05K *1/14, 3/40*
U.S. Cl. 361—398
24 Claims



1. A hybrid integrated circuit component for insertion in a slit of a mother printed circuit board, comprising: a flexible circuit board composed of a flexible insulated substrate, a circuit conductor formed on one surface of said flexible insulated substrate, and a pair of conductor layers formed along two opposite sides of said flexible insulated substrate to serve as a pair of external connection terminals; circuit elements mounted on said flexible insulated substrate and electrically connected to said circuit conductor; and a pair of hard supporting plates cemented on the other surface and at said two opposite sides of said flexible insulated substrate so that said flexible circuit board can be folded at a center bending portion of said flexible insulated substrate so that said pair of hard supporting plates face to each other and so that said pair of external connection terminals are arranged close to each other when said flexible insulated substrate is folded and so that said flexible insulated substrate at said center bending portion, when folded, has a spring characteristic sufficient to spring said substrate outward toward a flat condition with a sufficient force to ensure contact between said slit of said mother printed circuit board and each of said pair of external connection terminals of said flexible circuit board when said pair of external connection terminals of the folded flexible insulated circuit board are inserted into said slit of said mother printed circuit board.

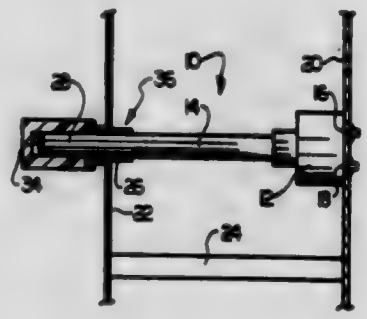
4,495,547

BUSHING FOR USE BETWEEN A CONTROL KNOB AND A HOUSING

Paul H. Stoverock, Hannibal, Mo., assignor to Harris Corporation, Melbourne, Fla.

Filed Apr. 6, 1982, Ser. No. 365,917
Int. Cl.³ H01F *15/02*
U.S. Cl. 361—400
8 Claims

1. In a system including a device having a movable control arm, a printed circuit board, and a panel disposed adjacent said board, said device being mounted on said printed circuit board so that the control arm extends through an opening in said panel, and wherein a knob is mounted on the distal portion of said arm, the improvement comprising a bushing having a barrel portion and a flange portion through both of which extends a passage for closely receiving said control arm, where said barrel portion is dimensioned to fit in said panel opening and to be closely received thereby and where said flange portion is attached to one end of said barrel portion and has a transverse dimension larger than said opening, said bushing being mounted on said control arm between said panel and said knob, and where said knob is axially slideable toward said printed circuit board along said arm whereby, when an axial force is applied to said knob, said knob slides to a position wherein one axial face of said flange portion abuts said panel



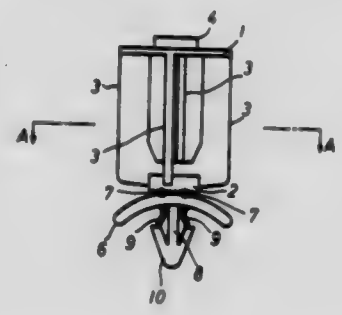
and the other axial face of said flange portion abuts said knob so that both axial and transverse loading applied to said knob are absorbed by said bushing and said panel rather than being transmitted to said printed circuit board via said control arm.

4,495,548

SPACER FOR WIRING BOARDS AND ASSEMBLED STRUCTURE THEREOF

Kazuhiro Matsui, Toyoake, Japan, assignor to Kitagawa Industries Co., Ltd., Nagoya, Japan

Filed Nov. 12, 1982, Ser. No. 441,000
Int. Cl.³ H05K *7/12*
U.S. Cl. 361—413
11 Claims



1. A spacer for wiring board which comprises construction elements as follows:

an upper substrate having a flange portion at the center of which a coupling hole is formed which penetrates through said upper substrate;

a lower substrate opposite to said upper substrate;

a plurality of support members bridging said upper and lower substrates so as to maintain a space therebetween;

a resilient coupling member having a plurality of link pieces and a link plate; and

a resilient plate push piece formed between one side of said lower substrate and end portions of said link pieces and said link plate,

all of said construction elements, including said upper substrate, said lower substrate, the plurality of said support members, and said resilient plate push piece being integrally formed in one piece.

4,495,549

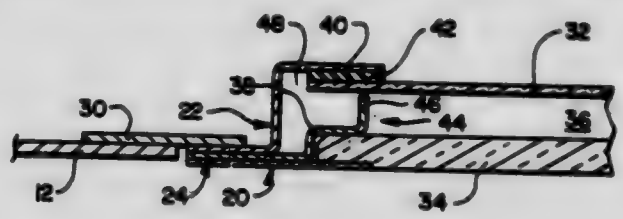
INFRARED RADIATION FILTER LENS FOR AIRCRAFT LIGHTS

Albert A. Carlson; Darrel M. Owen, both of Seattle, and George W. Van Winkle, Bellevue, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 28, 1982, Ser. No. 425,428
Int. Cl.³ B64F *1/20*
U.S. Cl. 362—62
2 Claims

1. An infrared radiation filter lens for aircraft lights, comprising heat-conductive filter frame means configured for

disposition in heat-exchange relationship with the structure of the aircraft proximate the location of said lights; first and second window panels secured peripherally by said filter frame means in laterally spaced, generally conforming relationship defining a fluid cell therebetween for interposition outwardly proximate said aircraft lights in the light path thereof; a fluid, infrared radiation filtration medium disposed for convective circulation within said cell; and baffle means inwardly proximate transverse side edges of said cell intermediate longitudi-



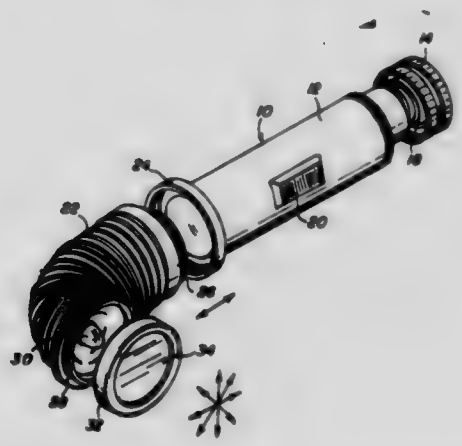
nal top and bottom edges thereof for deflecting convective circulation of said fluid along and in contact with said side edges through flow channels having inlet and outlet ports defined by said baffle means; wherein said filter frame means includes a generally "U"-shaped clip element having inner and outer legs receiving one of said window panels therebetween, said inner leg being displaced laterally inwardly within said fluid cell along said transverse side edges intermediate said longitudinal edges to comprise said baffle means.

4,495,550

FLEXIBLE FLASHLIGHT

Joseph Visciano, 564 Holt St., West Hempstead, N.Y. 11552

Filed Apr. 24, 1984, Ser. No. 603,364
Int. Cl.³ F21L 7/00
U.S. Cl. 362—189 8 Claims



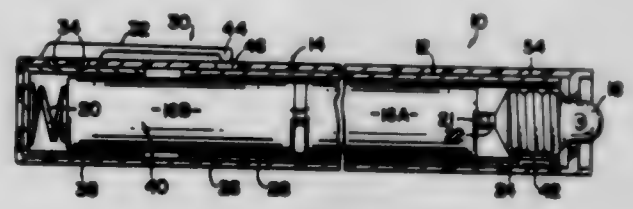
1. A flexible flashlight, comprising in combination:
(a) a body tube which contains at least one battery cell;
(b) a threaded end cap which threads on to a mating threaded body tube to end cap section; wherein when said battery cell is installed into the invention said threaded end cap is installed thereby fixing said battery in place;
(c) a switch, whereby said flexible flashlight is turned on and off;
(d) a threaded body tube socket located at the opposite end of said body tube from said end cap; whereby a bellows type extension may be installed;
(e) a bellows which is attached to said threaded body tube socket by a mating threaded bellows to body tube socket;
(f) a threaded bellows to bezel adapter located at the end of said bellows furthest from said threaded bellows to body tube socket; wherein said threaded bellows to bezel adapter contains a bulb mounted coaxially at the center of saidthreaded bellows to bezel adapter whereby when said bellows in flexed said bulb radiates light in the direction extending away from the open end of said threaded bellows to bezel adapter;
(g) a bezel ring with an inside thread which mates with the outside thread on said threaded bellows to bezel adapter whereby said bezel ring has an aperture into which is fitted an optically transmitting lens;
(h) means for fixing the position of said bellows in a rigid position once it has been flexed;
(i) means for preventing said body tube from rolling off a surface once said body tube has been placed in position; and,
(j) means for attaching said body tube to any surface which contains ferro-magnetic material;
(k) means for connecting said battery to said bulb in such manner as to prevent said connecting means from breaking under frequency flexion.

4,495,551

CONDUCTOR TUBE FOR FLASHLIGHTS

Carl L. Foltz, Largo, Fla., assignor to Halkey-Roberts Corporation, St. Petersburg, Fla.

Filed Aug. 17, 1983, Ser. No. 524,097
Int. Cl.³ F21L 7/00
U.S. Cl. 362—205 17 Claims



1. A battery operated flashlight, comprising in combination:
a casing;
a two-pole switch means having a first pole connected in electrical contact with one terminal of the battery and a second pole;
a light bulb having a base terminal and a center terminal;
means for connecting another terminal of the battery to the center terminal of said light bulb;
a substantially cylindrical conductor tube having a bulb-receiving end for receiving said base terminal of said light bulb and for providing electrical contact between the base terminal of said light bulb and the second pole of said switch means when said switch means is actuated to an "on" position;
said conductor tube comprising an inner non-conductive sleeve and an outer conductive sleeve;
said base terminal of said light bulb being positioned within said bulb-receiving end of said conductor tube; and
said conductor tube further comprising at least one lance extending from said outer conductive sleeve in electrical contact with said base terminal of said light bulb fitted into said bulb-receiving end of said conductor tube.

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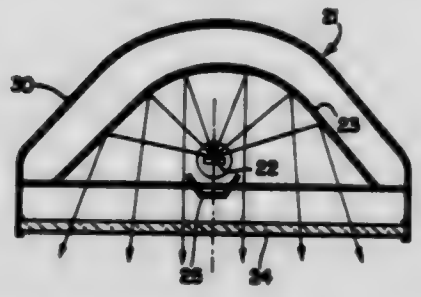
FORWARD SHINING VEHICLE LAMP

Henry W. Graff, Elgin, Ill., assignor to Cal Custom Accessories, Inc., Carson, Calif.

Filed Dec. 13, 1982, Ser. No. 448,935
Int. Cl.³ F21M 3/08
U.S. Cl. 362—297 10 Claims

1. A forward shining vehicle lamp comprising:
a protective housing having an open mouth;
a reflective member mounted to the protective housing, said reflector member having an axis and a generally concave reflective surface that is oriented generally toward the open mouth of the protective housing;
a light source secured to the lamp in predetermined relationship between the reflector member and the open mouth of the protective housing; and
said internal generally concave surface of the reflector member has a generally continuous grid structure, said generally continuous grid structure including a plurality of grid

sections having a reflective surface, wherein said generally continuous grid structure of the reflector member is defined by a plurality of spaced vertical curves intersecting with a plurality of spaced horizontal curves to define said plurality of grid sections, the reflective surface of



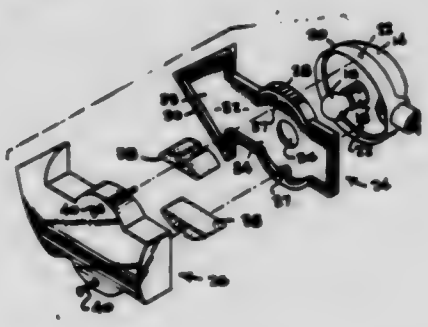
each said grid section being generally concave and shaped to reflect light eminating from said light source such that the pattern of light reflected from said generally continuous grid structure substantially conforms to a target pattern that defines a predetermined array of candlepower direction and magnitude.

4,495,553

VEHICLE LIGHT ASSEMBLY

Charles W. Haynes, Pine St., South Dayton, N.Y. 14138

Filed Jul. 14, 1983, Ser. No. 513,405
Int. Cl.³ F21V *3/00*
U.S. Cl. 362—311 19 Claims



1. A turn signal replacement lens assembly for mounting on a bulb housing having an outer housing portion positioned about a bulb socket, said lens comprising:

a base portion including mounting means matingly engageable with and supported on the outer housing portion and having a periphery defining a direction indicating symbol extending transversely outwardly beyond the periphery of the housing portion;

an outer translucent lens mounted on said base portion and having a periphery that is substantially concentric with the periphery of said base portion; and

retaining means for retaining said outer translucent lens and base portion on said bulb housing.

4,495,554

ISOLATED POWER SUPPLY FEEDBACK

Victor M. Simi, Jessamine County, and Jerry M. Sublette, Lexington, both of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 28, 1983, Ser. No. 479,615
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—21 9 Claims

4. A switched power supply comprising:

a source of direct current input voltage to provide power to said power supply,

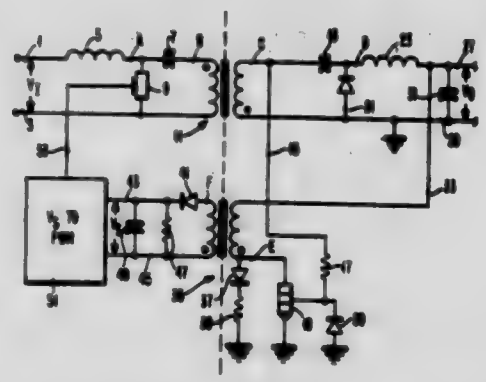
an inductor connected to said input voltage,

a first switch having a conductive state and a non-conductive state and connected, when switched to a first of said states, to connect said inductor for having increased current applied through said inductor by said input voltage and, when switched to a second state of said states, to steer current from said inductor to at least one capacitor,

a first transformer having its primary connected to be driven by said inductor, said first transformer having its secondary connected to the input of a first rectifier, the output of said first rectifier being the output of said power supply,

a second transformer having a primary with first and second terminals and having said first terminal connected to said output of said rectifier,

a second switch having a first terminal and a second terminal and a control terminal for switching said first and second



terminals between connected state and a disconnected state, said first terminal being connected to said second primary terminal, said second terminal being connected to a point having a reference potential, said control terminal of said second switch being connected between the secondary of said first transformer and said input of said first rectifier,

a second rectifier connected to the secondary of said second transformer, and

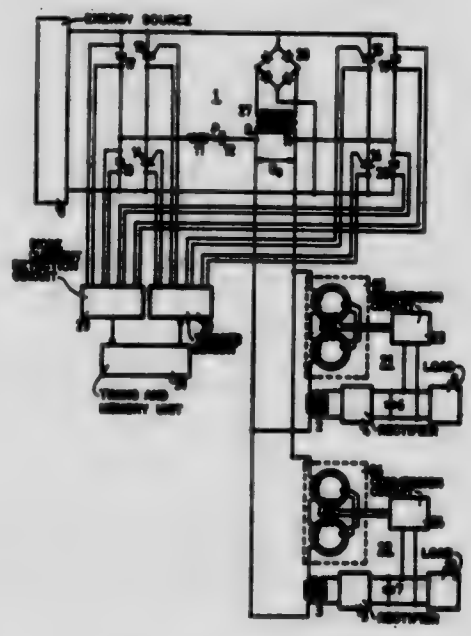
control means for said first switch connected to the output of said second rectifier to vary control in response to the level of the output of said second rectifier.

4,495,555

ENERGY CONVERTER

Lucas Eikelboom, Haaksbergen, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Jul. 14, 1982, Ser. No. 398,175
Claims priority, application Netherlands, Jul. 23, 1981, #103475
Int. Cl.³ H02M *3/315*
U.S. Cl. 323—28 9 Claims



1. An energy converter for coupling a plurality of loads to a source of electric energy comprising: a bridge circuit tuned to

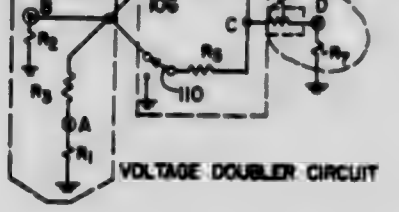
a constant frequency and including at least two thyristors and a series resonant circuit; a plurality of parallel-connected output transformers included in the series resonant circuit; energy buffers respectively coupled to the secondary windings of each of the output transformers whereby electric energy is supplied from said source to said plurality of loads, the number of loads being equal to the number of output transformers, and a plurality of control circuits activated by the voltages across the different energy buffers, each of said control circuits controlling the current through a primary winding of a relevant output transformer such that the voltage across the corresponding energy buffer remains constant.

4,495,556

VOLTAGE DOUBLER CIRCUIT

Robert J. Patnkonis, Ijamsville, and Harmon W. Banning, Derwood, both of Md., assignors to Weinschel Engineering, Gaithersburg, Md.

Filed Nov. 30, 1982, Ser. No. 445,389
Int. Cl.³ H02M 7/00
U.S. Cl. 363—59 **23 Claims**



VOLTAGE DOUBLER CIRCUIT

1. A voltage ratio doubler circuit comprising:
leveller means, having an input node, for maintaining the input voltage V_{IN} at the input node at a constant level;
an output node at an output voltage V_{OUT}; and
means, coupled between the input node and the output node, for selectively determining the ratio V_{OUT}/V_{IN} to equal either (a) a first predetermined value or (b) one-half said predetermined value.

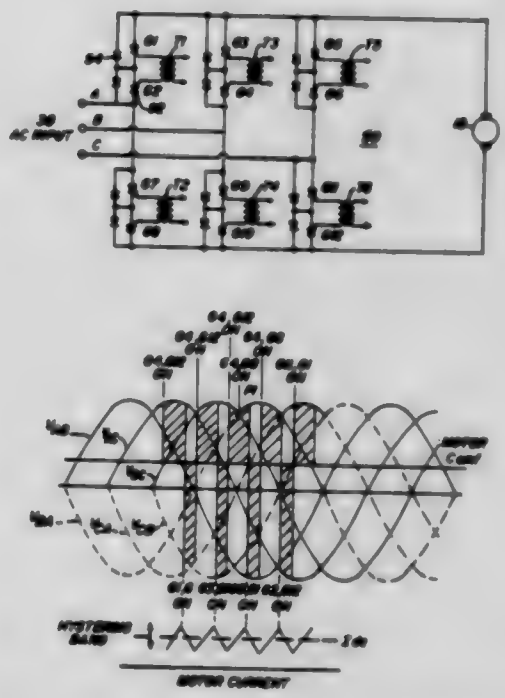
4,495,557

SWITCHING CONTROLLER DIRECTLY OPERABLE FROM AC

James G. Weit, Painesville, Ohio, assignor to Contraves Goerz Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 005,220, Jan. 22, 1979, abandoned. This application Dec. 15, 1981, Ser. No. 330,848
Int. Cl.³ H02P 13/26
U.S. Cl. 363—89 **3 Claims**

1. A high response switching controller, having a power input for connection to multi-phase power lines and a power output for supplying power to a load, comprising:
means for receiving an input current demand signal and a signal related to the current actually produced by the controller and generating a difference signal related to the difference between said demand and actual current signals;
a bridge configured output connected between the power input and the power output;
said bridge configured output comprises a plurality of controller switching means for switching on and off in response to a control signal and each of which is directly connected between the power input and the power output;
said plurality of controlled switching means disposed to supply power to the load for the power lines and to supply power from the load to the power lines;
sequencing logic means for selecting the power lines having the greatest magnitude of potential difference therebetween; and
output selecting and drive circuit means responsive to said sequencing logic and said difference signal for switching on and off the controlled switching devices connected



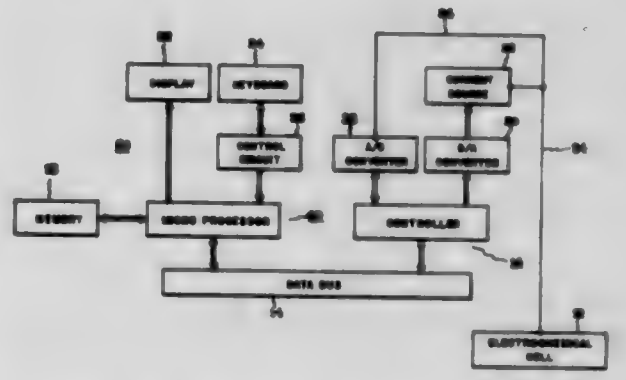
between the lines selected by said sequencing logic to provide the current demanded by the input current demand signal.

4,495,558

METHOD AND APPARATUS FOR DETERMINING OXIDE FILM THICKNESS

Pieter G. Cath, Orange Village; John Capp, Willowick, and William P. Loeffler, Mentor, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 25, 1982, Ser. No. 392,118
Int. Cl.³ G01B 13/02; B01D 59/40; C25F 5/00
U.S. Cl. 364—563 **17 Claims**



1. A method for determining the thickness of an electrically insulative metal oxide coating on an electrically conductive metal substrate sample which comprises:
(a) electrolytically reducing a sample of said oxide coating in an electrochemical cell at relatively constant current density while measuring the cell voltage,
(b) defining the relationship between cell voltage rise attributable to electrolytically reducing the oxide coating and the time interval of electrolytic reduction in the form of a mathematical curve, said curve defining the cell voltage rise with time passage from a predetermined threshold voltage value to a final cell voltage value achieved when said oxide coating has been removed by said electrolytic reduction,
(c) determining the final time value needed to completely remove said coating on said mathematical curve as the intersection point between a tangent to said curve at the region between said threshold voltage value and said final cell voltage value, and

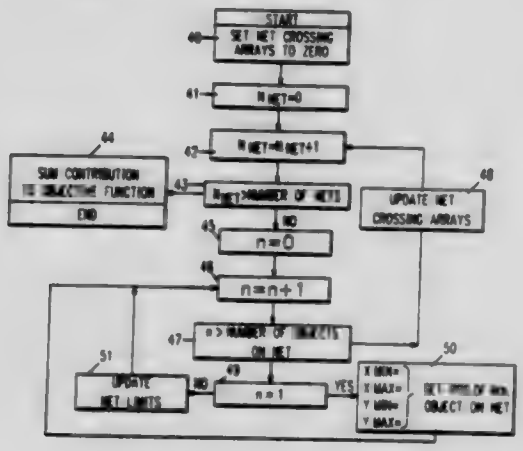
(d) computing the oxide thickness using the total elapsed time of electrolytic reduction as determined by said final time value.

4,495,559

OPTIMIZATION OF AN ORGANIZATION OF MANY DISCRETE ELEMENTS

Charles D. Gelatt, Jr., Chappaqua, and Edward S. Kirkpatrick, Croton-on-Hudson, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,651
Int. Cl.[3] G06F *15/46*
U.S. Cl. 364—148 6 Claims



4. A method of positioning all the physical elements of an interrelated configuration of said physical elements in a unitary functional entity wherein the interrelated positioning satisfies at least one specification related to the usefulness of said functional entity:

comprising in combination the steps of

providing a representation of all the interrelated individual physical elements in said collection,

providing a scoring capability capable of measuring the acceptability of a particular positioned configuration of said elements with respect to said usefulness specification and

interdependently

iteratively exchanging the physical position occupied in said configuration of successive subsets of said elements and for each repositioned subset of said physical elements accepting or rejecting the resulting arrangement in accordance with a measure provided by said scoring capability, and

varying the measure for acceptance of a subset position exchange in accordance with an incremental trend.

4,495,560

FLUCTUATING DRIVE SYSTEM

Gunji Sugimoto, Okazaki; Hideo Arakawa; Toshikazu Ishihara, both of Nagoya; Masahiro Sugiura, Aichi, and Katsuhiko Takahashi, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Jul. 7, 1981, Ser. No. 281,176
Claims priority, application Japan, Jul. 9, 1980, 55-94137
Int. Cl.[3] G05B *11/14, 11/36, 15/02*; G05D *23/00*
U.S. Cl. 364—154 51 Claims

1. A fluctuating drive system comprising:

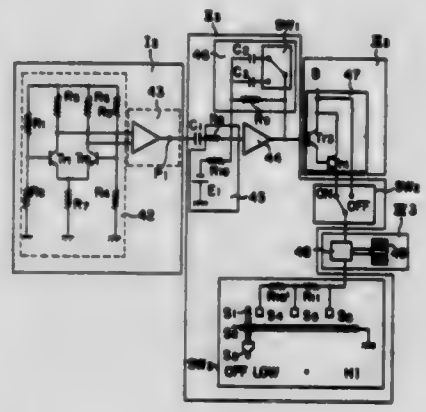
random generating means for generating a randomly varying physical quantity in which the proper spectral density for each frequency has a relation ship of $1/f^k$ (wherein k is a non-zero arbitrary value) to the frequency f and varies at random;

control means for controlling the randomly varying physical quantity wherein said randomly varying physical quantity has a fluctuating amplitude, a fluctuating frequency range and a mean level;

control means for controlling the randomly varying physical quantity;

amplifying means for amplifying the controlled physical quantity;

energy generating means; and



driving means for driving said energy generating means in accordance with the amplified physical quantity,

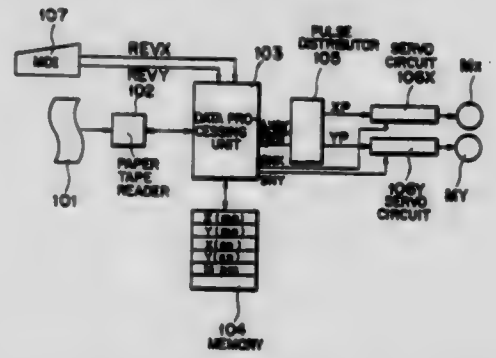
whereby a randomly varying energy is generated from said energy generating means.

4,495,561

NUMERICAL CONTROL METHOD

Hitoshi Matsuura, Hachioji-shi, and Hiroshi Sakurai, Hino-shi, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Jul. 7, 1982, Ser. No. 395,904
Claims priority, application Japan, Jul. 7, 1981, 56-105858
Int. Cl.[3] G06F *15/46*
U.S. Cl. 364—167 3 Claims



1. In a numerical control method for a numerical control system having means for executing a mirror image function wherein the moving direction of a movable member is reversed with respect to a commanded direction for each control axis, and memory means for storing coordinate values of a commanded position and coordinate values of a current machine position, the numerical control method for the numerical control system comprising the steps of:

(a) updating the current machine position coordinate value of the effective ocntrol axis for which the mirror image function is effective, in the direction which is the reverse of the commanded direction in accordance with the position of said movable member and updating the current machine position coordinate value of the ineffective control axis for which the mirror image function is ineffective, in the same direction as the commanded direction in accordance with the position of said movable member;

(b) storing respective axial coordinate values of the current machine position at the time that the mirror image function has become effective; and

(c) calculating the commanded position coordinate values of directly preceding numerical control data after the mirror image function has become effective, by using the current machine position coordinate values and the axial coordi-

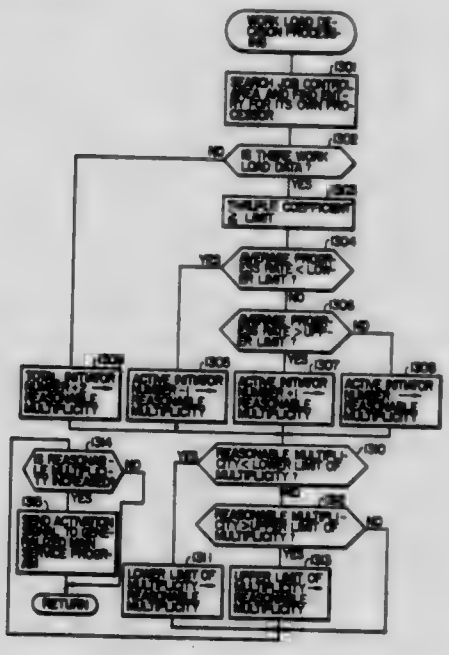
nate values at the time that the mirror image function has become effective.

4,495,562

JOB EXECUTION MULTIPLICITY CONTROL METHOD

Eiichi Yamaji, Ueno, and Yoshie Ohno, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 4, 1981, Ser. No. 271,048
Claims priority, application Japan, Jun. 4, 1980, 55-74258
Int. Cl.[3] G06F *15/16*
U.S. Cl. 364—200 18 Claims



1. A method of controlling multiplicity of job execution in a computer system including at least one processor for executing jobs in parallel, said method comprising steps of:

(a) measuring used time periods of a central processing unit and an input/output device of said processor, respectively for respective executed jobs which are being executed in parallel in said processor during a measurement time interval;

(b) calculating an average progress rate which represents an average of progress rates of the respective executed jobs at which rates the respective executed jobs are processed by means of the central processing unit and the input/output device during the measurement time interval, said calculation being done from the measured used time periods of the central processing unit and the input/output device for the respective executed jobs; and

(c) comparing the average progress rate with a predetermined limit; and

(d) controlling the execution of a new job on said computer system as a function of said comparison.

4,495,563

MICROCOMPUTER HAVING SEPARATE ACCESS TO COMPLETE MICROCODE WORDS AND PARTIAL MICROCODE WORDS

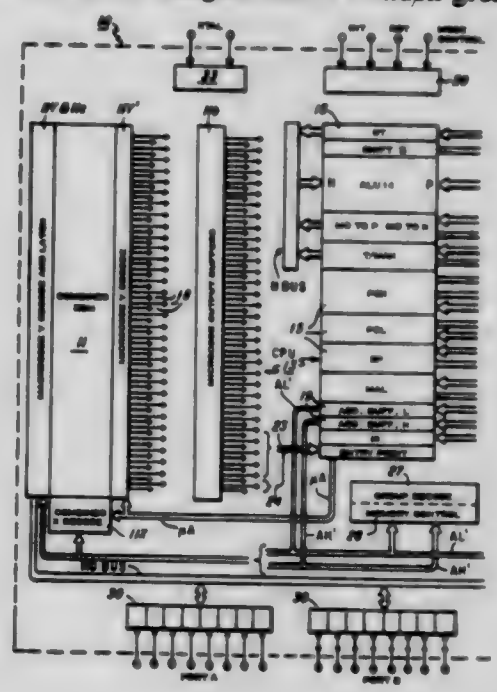
Kevin C. McDonough, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

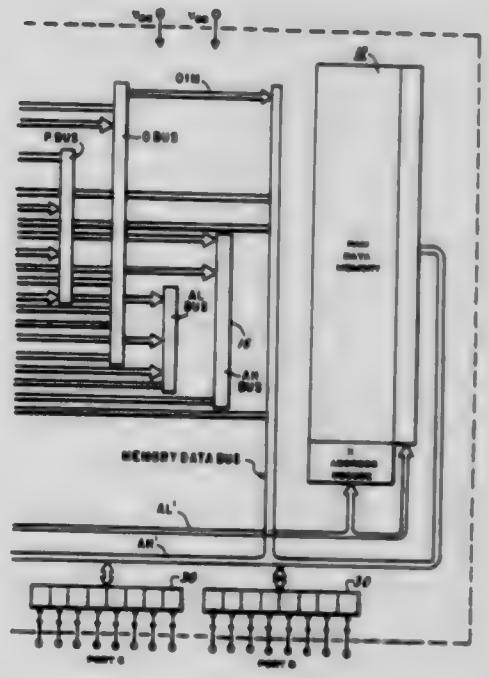
Filed Jul. 2, 1981, Ser. No. 279,902
Int. Cl.[3] G06F *9/26*
U.S. Cl. 364—200 20 Claims

1. A microcomputer device comprising:

a semiconductor integrated circuit having an arithmetic/logic unit, a plurality of registers for storing data and memory addresses, parallel busses for interconnecting the arithmetic/logic unit and the registers, and control means for generating command signals for controlling operation of the arithmetic/logic unit and accessing the busses and registers all within the integrated circuit;

wherein the control means includes a memory array for storing multi-bit microinstruction words defining said command signals, the array having a first output to said busses for parts of the microinstruction words and a second output for complete microinstruction words, the second output including a plurality of N bits in parallel, the first output including a plurality of M bits in parallel, where N and M are integers and N is much greater than M;





and addressing means for separately applying first and second types of micro addresses to the array via said registers and busses, the addressing means including first circuitry for selecting said parts of microinstruction words by said first type of micro addresses, the addressing means including second circuitry for selecting said complete microinstruction words by said second type of micro addresses.

4,495,564

MULTI SUB-CHANNEL ADAPTER WITH SINGLE STATUS/ADDRESS REGISTER

Wilburn D. Draper, Raleigh, and Melvin T. Laakso, Cary, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

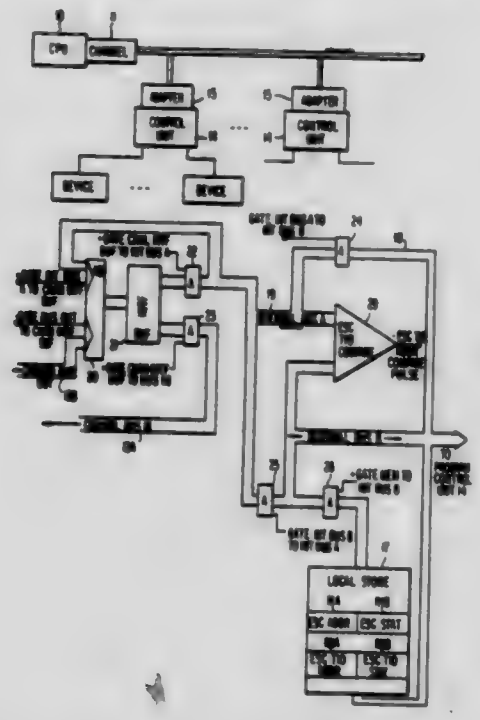
Filed Aug. 10, 1981, Ser. No. 291,741
Int. Cl.[3] G06F *3/04*
U.S. Cl. 364—200 10 Claims

1. A method for storing and presenting status information relative to a plurality of sub-channel devices in which the

status information for each sub-channel is stored in a random access memory means, the total access time of which is a substantial significant time factor in response to a request for the status of one said plurality of sub-channel devices comprising the steps of:

receiving a first status request for a particular device corresponding to a particular sub-channel from a communication channel connected to a requesting device,

responding immediately with a response that indicates that the information requested is not immediately available and that the requesting device is to independently present the



said first status request on said communication channel at a subsequent time,

accessing the random access memory means location which contains the requested status information and

transferring the said requested status to a single status storage register which serves all of said sub-channel devices, the access time of which is substantially shorter than the random access memory means,

and providing the status stored in the said single status storage register upon the receipt of the said subsequent status request for the status of the aforementioned sub-channel via the said communication channel.

4,495,565

COMPUTER MEMORY ADDRESS MATCHER AND PROCESS

Dennis J. Thompson, Geneva, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 9, 1981, Ser. No. 319,378
Int. Cl.[3] G06F *9/20*
U.S. Cl. 364—200 21 Claims



1. For use in a system having a computer memory with a plurality of addressable storage locations, a computer, and an address bus interconnecting the computer and memory for specifying a unique address of a said location in the memory on a memory read or write transaction, an address matcher for detecting memory read and write transactions to a memory address within a block of consecutive computer memory addresses specified by a lower block address and an upper block address, CHARACTERIZED BY

a plurality of matcher memories (30, 31, 32) each having a plurality of storage words individually addressable and a word address for each matcher memory being a different portion of said unique address and being supplied by a different prescribed subfield (ADDRO-7, ADDR8-15 ADDR16-23) of the computer memory address bus (ADDRO-23) to output data contained in a word of each matcher memory identified by the word address in the respective subfield and the data of each word of each matcher memory containing indications defining whether or not a word address used to address a matcher memory is within a range having lower and upper boundaries equal to values contained in respective subfields of the lower and upper block addresses corresponding to the subfields of the computer memory address bus supplying the word address, and

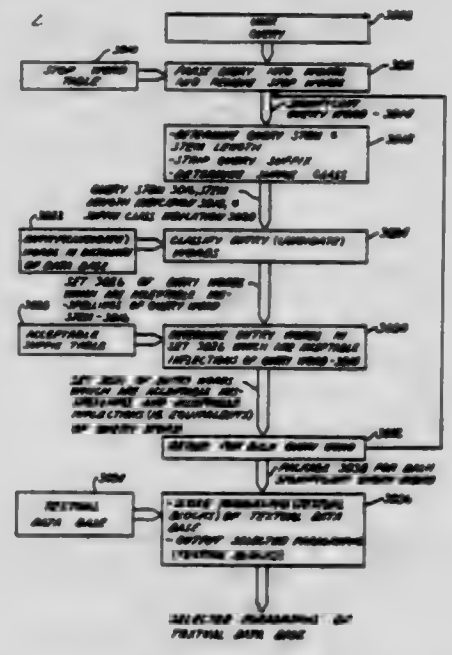
means (34, 35) responsive to the indications from each of the matcher memories occurring as a result of a memory transaction for determining if the computer memory address lies within the specified block of consecutive memory addresses.

4,495,566

METHOD AND MEANS USING DIGITAL DATA PROCESSING MEANS FOR LOCATING REPRESENTATIONS IN A STORED TEXTUAL DATA BASE

Robert V. Dickinson, Sandy Hook, and Louis M. Galie, Westport, both of Conn., assignors to System Development Corporation, Santa Monica, Calif.

Filed Sep. 30, 1981, Ser. No. 307,093
Int. Cl.[3] G06F *7/30*
U.S. Cl. 364—200 28 Claims



1. A method using digital data processing means and stored textual block identifiers in a table for locating in a stored data base having a plurality of textual blocks, those textual blocks having the best match with a query, the textual blocks in the data base having words grouped into such textual blocks, the textual block identifiers being grouped and each group of textual block identifiers corresponding to one of the blocks in the stored data base, each of the textual block identifiers providing an indication of one of the textual blocks in the stored data base which contains the word corresponding to the group of textual block identifiers in which the textual block identifier is located, the method comprising the steps of:

(a) receiving a query having representations of a plurality of

query words to be located in the textual blocks contained in the stored data base;

(b) determining, for each one of a plurality of the query words, at least one corresponding set of equivalent words which are contained in the stored data base, each of the equivalent words in such set being equivalent to the corresponding query word and corresponding to one of the groups of textual block identifiers;

(c) processing the textual block identifiers contained in the groups of textual block identifiers which correspond to the words in the determined sets of equivalent words to thereby form a representation of a score for at least a first of the textual blocks which is represented by said textual block identifiers, the representation of a score representing the total number of said sets of equivalent words which have at least one of said equivalent words in said at least a first of the textual blocks; and

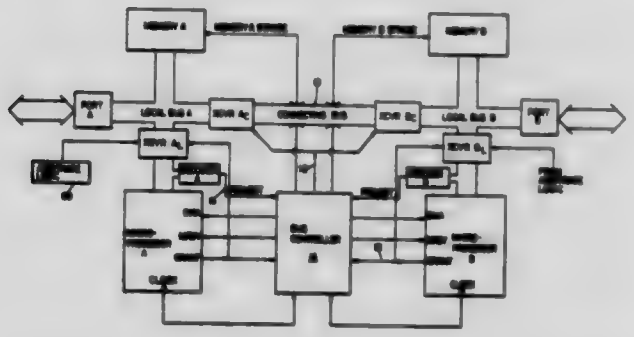
(d) utilizing said representation of a score to provide output data pertaining to at least one textual block, for which a representation of a score has been formed.

4,495,567

MULTIPROCESSOR/MULTIMEMORY CONTROL SYSTEM

Kevin L. Treen, North Attleboro, Mass., assignor to Codex Corporation, Mansfield, Mass.

Filed Oct. 15, 1981, Ser. No. 311,743
Int. Cl.[3] G06F *15/16*
U.S. Cl. 364—200 9 Claims



1. Apparatus for regulating access by each of a plurality of asynchronous data processors to each of a plurality of memories, each of said processors being associated with one of said memories, each of said processors needing access to its associated said memory and to said memory associated with each other of said processors, said apparatus comprising;

local bus circuitry for carrying data signals and connected to said processors and said associated memories to selectably permit each of said processors to have, or to prevent each of said processors from having, access over said local bus circuitry to said processor's associated memory,

connecting bus circuitry for carrying said data signals and connected to said processors and said associated memories to selectably permit each of said processors to have, or prevent each of said processors from having, direct access over said local bus circuitry to said memory associated with each other of said processors for reading and writing, and

control circuitry responsive to said processors and connected to trigger said local and connecting bus circuitries to give each of said processors making a request access over said connecting bus circuitry for reading and writing said data signals directly between said requesting processor and said memory associated with one other of said processors, and to give each of said processors access over said local bus circuitry to its associated memory except while access to said associated memory is being given to another of said processors.

8. The method of regulating access by each of a plurality of asynchronous data processors to each of a plurality of memories, each of said processors being associated, through local bus circuitry, with one of said memories, each of said processors needing access to its associated said memory and access, through connecting bus circuitry, to said memory associated with each other of said processors, said method comprising:

signaling a first one of said processors requesting said access to said memory associated with a second one of said processors to wait until its request has been satisfied,

signaling said second one of said processors to disconnect itself from said local bus circuitry, and

opening said connecting bus circuitry, during at least part of the time when said first one of said processors is waiting and said second one of said processors has disconnected itself, to permit said first one of said processors to have said access to said memory associated with said second one of said processors for reading and writing.

4,495,568

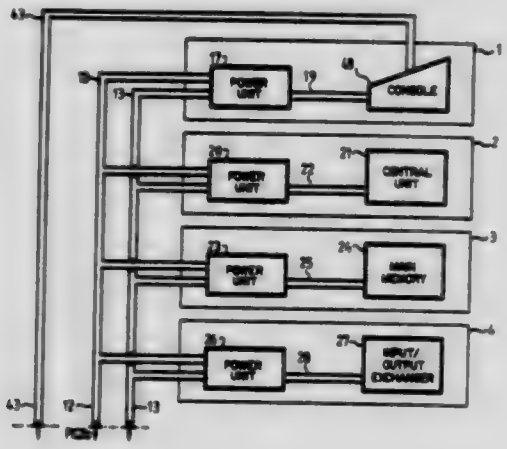
APPARATUS FOR THE CONTROL AND MONITORING OF POWER SUPPLY SOURCES FOR DATA PROCESSING SYSTEMS

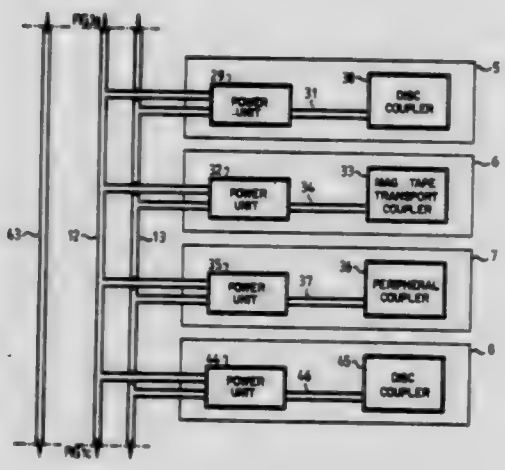
Takats Gilbert, Le Mesnil Saint Denis, and Dumay Gérald, Fontenay le Fleury, both of France, assignors to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull (Societe Anonyme), Paris, France

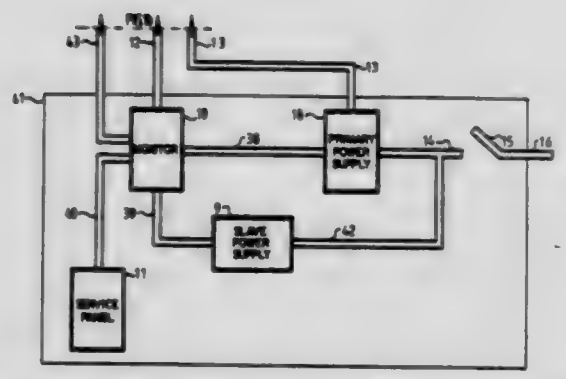
Filed Dec. 23, 1981, Ser. No. 333,796
Claims priority, application France, Dec. 30, 1980, 80 27770
Int. Cl.[3] G06F *11/30*
U.S. Cl. 364—200 28 Claims

1. Apparatus for controlling and monitoring a power supply system that includes a plurality of power sources for supplying power to a plurality of devices, the power sources being allocated among a plurality of power supply subsystems in a predetermined configuration, the apparatus comprising a control bus; first interface means for interfacing the power sources to the control bus and including first circuit means responsive to signals on the control bus for controlling and monitoring the power sources; second interface means for interfacing, to the control bus, operating console means for operating the system and power supply means for supplying power to the power sources, the second interface means including second circuit means responsive to signals on the control bus for controlling and monitoring the operating console means and the power supply means; a configuration definition unit connected to the control bus and including memory means for storing parameters defining the types, the numbers, and the configuration of the power sources; and a control unit for exchanging signals

over the control bus with the configuration definition unit and with the first and second interface means for controlling and







monitoring the power sources, the operating console means and the power supply means.

4,495,569

INTERRUPT CONTROL FOR MULTIPROCESSOR SYSTEM WITH STORAGE DATA CONTROLLING PROCESSOR INTERRUPTED BY DEVICES

Eiichi Kagawa, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 25, 1982, Ser. No. 392,302
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 7 Claims

1. A multiprocessor system comprising:

a plurality of processor means for generating a bus request signal,

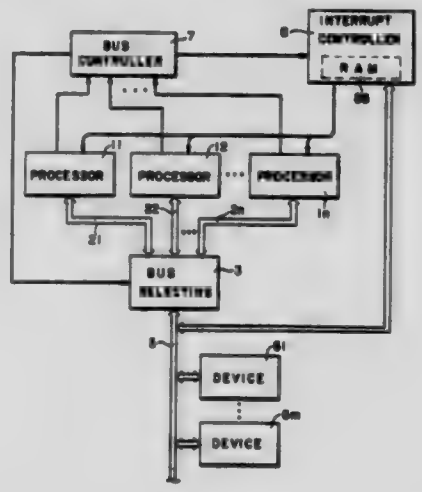
local buses individually connected to each of said processor means,

a plurality of device means for generating an interrupt request signal, respectively, said device means being commonly controlled by each of said processor means,

a common bus commonly connected to each of said device means,

data storing means for storing destination data for specifying at least one of said plurality of processor means which is requested to be interrupted by each of said device means,

interrupt controlling means responsive to the interrupt request signal from said device means for reading out the destination data from said data storing means for recognizing the processor means corresponding to the destination



according to said destination data for providing an interrupt signal to the corresponding processor means, and

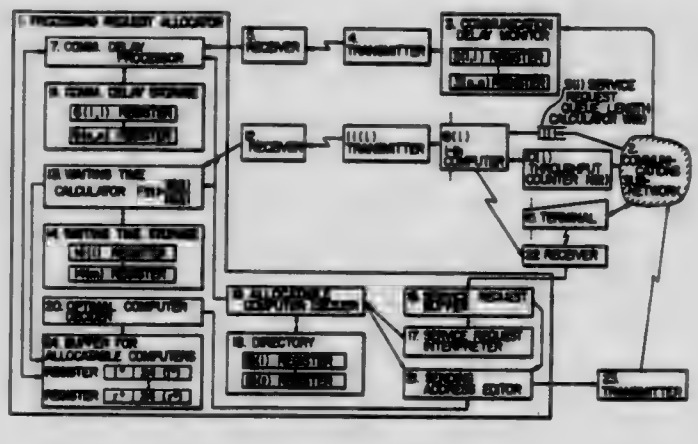
bus selecting means for connecting a local bus of the corresponding processor means to said common bus according to the bus request signal from the processor mean to which said interrupt signal is provided.

4,495,570

PROCESSING REQUEST ALLOCATOR FOR ASSIGNMENT OF LOADS IN A DISTRIBUTED PROCESSING SYSTEM

Hiroyuki Kitajima, and Kazuhiko Ohmachi, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 7, 1982, Ser. No. 337,812
Claims priority, application Japan, Jan. 14, 1981, 56-2793[U]
Int. Cl.³ G06F *15/16, 3/04*
U.S. Cl. 364—200 11 Claims



1. In a distributed processing system including a plurality of computers and terminals connected to each other through communication lines for performing service requests issued by one of said computers or terminals; a processing request allocator in communication with said computers and terminals for deciding which computer or terminal each service request is to be allotted to, comprising means for collecting information on the waiting time to start processing for a service request at each computer and terminal and on the communication delay time to receive information necessary to execute a service request from respective locations of each of said computers and/or terminals within the distributed processing system, means responsive to a service request for determining which program is necessary to perform the service request and fur-

ther determining which computers and/or terminals have the necessary program, and means responsive to said collecting means and said determining means for allotting said service request to a selected computer or terminal having the necessary program to execute the service request and where the sum of the processing waiting time at the selected computer or terminal and the communication delay time associated with the selected computer or terminal is a minimum as compared to that of the other allocatable computers as terminals for the service request.

4,495,571

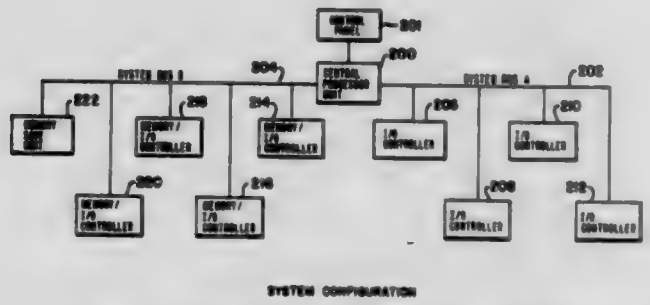
DATA PROCESSING SYSTEM HAVING SYNCHRONOUS BUS WAIT/RETRY CYCLE

Theodore R. Staplin, Jr., Chelmsford; John J. Bradley, Framingham, both of Mass.; Richard L. King, Hollis, N.H.; Robert C. Miller, Braintree, Mass.; Ming T. Mia, Chelmsford, Mass., and Jian-Kuo Shen, Watertown, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Continuation of Ser. No. 8,122, Jan. 31, 1979, abandoned. This application Jan. 15, 1982, Ser. No. 339,278

Int. Cl.[3] G06F *3/04, 13/00*

U.S. Cl. 364—200 16 Claims



SYSTEM CONFIGURATION

1. A data processing system comprising a plurality of units coupled by means of a common bus to transfer information between said units, said plurality of units comprising at least a first, second and third units, wherein said first unit is a resource shareable by at least said second and third units, said system comprising:

A. sequencing means, coupled to said common bus, for avoiding conflicts between two or more units of said plurality of units attempting to simultaneously request use of said common bus including means for generating sequencing signals on the common bus and means in said plurality of units responsive to the sequencing signals to avoid conflicts;

B. first means, included in said first unit and coupled to said common bus, for granting use of said common bus and processing a data transfer request from a one unit of said plurality of units in response to said one unit requesting use of said common bus by generating a data transfer request signal if said common bus is not already in use, said first means also for sending a command signal via said common bus to said second unit and for waiting for receipt of a proceed signal or a wait signal by a second means via said common bus from said second unit, said command signal being sent by said first means only if said first means is not processing said data transfer request, said command signal indicating that said first unit desires access to said second unit;

C. said second means, included in said first unit and coupled to said first means and to said common bus, for receiving said proceed signal or said wait signal via said common bus from said second unit, said proceed signal indicating that said second unit which issued said proceed signal has granted access to said first unit, said wait signal indicating that said second unit which issued said wait signal desires that said first unit wait and retry accessing said second unit by resending said command signal; and

D. third means, included in said first means and coupled to said second means, for reinitializing said first means in response to said second means receiving said wait signal such that said first means will resend said command signal to said second unit said first means suspending resending of said command signal to process a data transfer request if such request is received from one of said plurality of units.

4,495,572

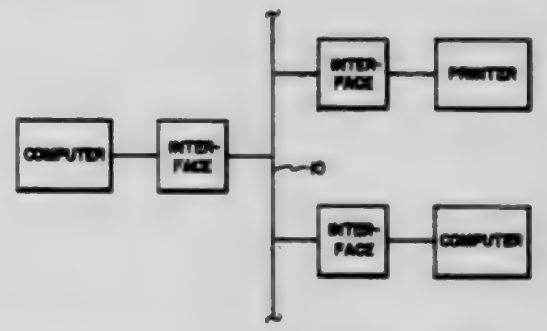
COMPUTER INTERCOMMUNICATION SYSTEM

Robert J. Bosen, Spanish Fork, Utah, assignor to Zeda Computers International Limited, Provo, Utah

Filed Feb. 8, 1982, Ser. No. 346,856

Int. Cl.[3] G06F *15/16*

U.S. Cl. 364—200 10 Claims



1. A computer intercommunication system, comprising an intercommunication bus; a plurality of computers; an equal plurality of interface means, each interface means being associated with and electrically connected to a respective one of said computers and to said bus to accept signals from the said one computer and to place such signals on said bus, or to accept signals from said bus and to feed them to the said one computer, said interface means being normally operable at a standarized speed but capable of operating at other speeds; program means within each computer for enabling that computer to assemble information to be communicated into a standardized information packet, such packet containig a place to introduce information that can be used by computers in intercommunication therewith by way of said bus to increase the speed of communication for the other information in the packet and to cause the sending computer to increase the speed of transmission of the packet after transmission of the speed information if the latter indicates increased speed, and to cause the receiving computer to increase the speed of receiving the other information in the packet after receiving the speed information, if the latter indicates increased speed.

4,495,573

METHOD AND DEVICE FOR TRANSMISSION OF DIGITAL DATA

Jean C. Ballegeer, and Duyet H. Nguyen, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 29, 1982, Ser. No. 363,389

Claims priority, application France, Apr. 8, 1981, 81 07037

Int. Cl.[3] G06F *9/06*

U.S. Cl. 364—200 20 Claims

1. In a data-processing system having a plurality of units and a data-transmission channel of the multiple-conductor bus type to which all said units are connected through interface circuits, at least one such unit being a master-type unit which is capable of requesting and acquiring instantaneous control of the transmission channel in order to address at least one other unit of said system and to initiate exchanges of data in said channel, and at least one such unit being a slave-type unit which can be addressed by said master-type unit, and a device for granting instantaneous control of said channel to said master-type unit which has requested instantaneous control of said channel, a method of transmitting digital data between said units comprising the steps of:

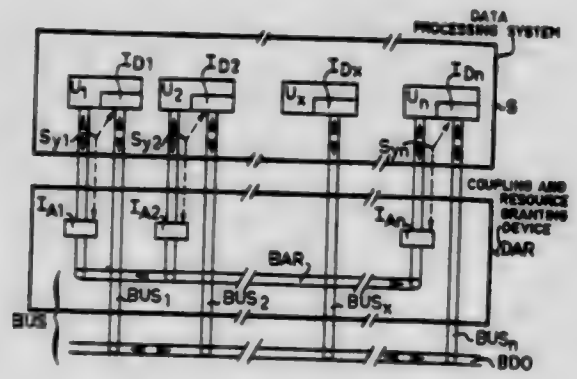
requesting, by said master unit, control of said channel;

granting, by said granting device, control of said channel to the master unit requesting control;

providing, by the master unit having obtained control of the channel, control information in the form of control signals on said channel by causing three control signal lines of said channel to assume desired states defining one of three possible different addressing modes, the addressing modes being mutually exclusive, each said control signal line being capable of assuming either a first or a second binary state, the status of the three control signal lines defining the addressing modes as follows:

setting the first control signal line to said first binary state defining an addressing mode permitting a point-to-point data transfer between the master-type unit which has acquired instantaneous control of the transmission channel and a slave-type unit addressed by said master-type unit;

setting the second control signal line to said first binary state



defining an addressing mode permitting a point-to-point data transfer between the master-type unit which has acquired instantaneous control of the transmission channel and a second master-type unit addressed by the first master-type unit;

setting the third control signal line to said second binary state simultaneously with setting the first or second control signal line to said second binary state defining an addressing mode permitting a general broadcast data transfer from the master-type unit which has acquired instantaneous control of the transmission channel to at least all the other master-type units of said system, all of said units being addressed simultaneously;

addressing one or more units in accordance with the addressing mode defined; and

transmitting digital data from the master unit having acquired control of the channel on said channel in accordance with the addressing mode defined.

4,495,574

BIDIRECTIONAL MULTI-MODE DATA TRANSFER BUS SYSTEM

Matthias Hofstetter, Flawil, Switzerland, assignor to Siemens-Albis AG, Zurich, Switzerland

Filed Jun. 24, 1982, Ser. No. 391,705

Claims priority, application Switzerland, Jul. 10, 1981, 4529/81

Int. Cl.³ G06F *3/04, 5/04*

U.S. Cl. 364—200 **10 Claims**

1. A bus system for the transfer of data between a central station and at least two circuit modules, comprising:

an interface circuit connected with said central station and containing:

a microcomputer for controlling data transfer via said interface circuit;

signal transfer lines;

a coupler circuit;

said coupler circuit containing:

a coupler sub-circuit for selecting said signal transfer lines;

a parallel-serial converter;

a serial-parallel converter;

said parallel-serial converter effecting the transfer of data between said microcomputer and said coupler circuit in a first direction of transfer;

said serial-parallel converter effecting the transfer of data between said microcomputer and said coupler circuit in a second, opposed direction of transfer;

a plurality of sub-units connected with said interface circuit;

each of said plurality of sub-units containing:

a respective switching stage;

control means for controlling said switching stage for determining the direction of transfer of the data;

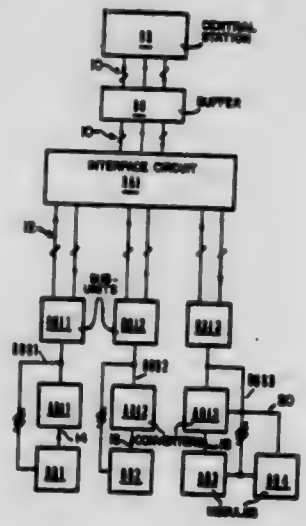
said coupler circuit being connected via said signal transfer lines with respective ones of the switching stages provided for said sub-units;

a control logic circuit operatively connected with said switching stage of the corresponding sub-unit;

a bus connected with said circuit modules;

each sub-unit containing:

a status-word generator for generating signals indicating a mode of operation; and



a first shift register for data signals;

said switching stage controlling via the control logic circuit said status-word generator and said first shift register in such a manner that the data present at the switching stage is delivered via said first shift register to said bus connected with the circuit modules and in such manner that the data present at the circuit modules is delivered via said bus and the status word generator connected therewith to the switching stage;

each sub-unit further containing:

a second shift register for said signals indicating the mode of operation; and

a third shift register for signals controlling the mode of operation;

said second shift register being incorporated between one branch of the switching stage and an output of the status-word generator; and

said third shift register being incorporated between another branch of the switching stage and the control logic circuit.

4,495,575

INFORMATION PROCESSING APPARATUS FOR VIRTUAL STORAGE CONTROL SYSTEM

Kazutoshi Eguchi, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 12, 1982, Ser. No. 441,095

Claims priority, application Japan, Dec. 9, 1981, 56-196185

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **7 Claims**

1. An information processing apparatus for a virtual storage control system, comprising:

a main memory;

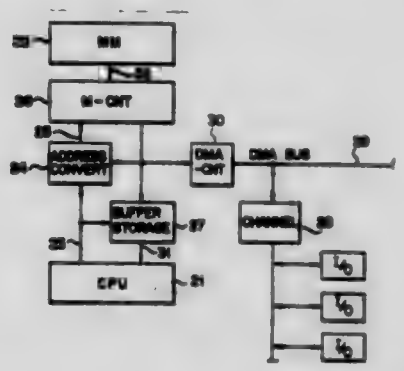
buffer storage means including a directory and a data storage

region for storing a copy of part of storage data in said main memory;

address converting means for converting a virtual address into an effective address;

a central processing element for simultaneously supplying the virtual address to said buffer storage means and to said address converting means is order to access said main memory;

a channel for simultaneously supplying the virtual address to said buffer storage means and to said address converting means in order to access said main memory; and



read means for reading data from the corresponding data storage region when an address information designated by the virtual address supplied from said central processing element or from said channel is registered in the directory of said buffer storage means and for reading data from said main memory using the effective address obtained from said address converting means which is accessed at the same time as said buffer storage means when the address information is not registered in the directory of said buffer storage means.

4,495,576

DEVICE AND METHOD FOR ACCURATELY CONTROLLING AUTOMATIC TRANSMISSION WITH LOCKUP CLUTCH

Hiroshi Ito, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Sichi, Japan

Filed Apr. 5, 1982, Ser. No. 365,306
Claims priority, application Japan, Jul. 21, 1981, 56-114062
Int. Cl.³ B60K *41/08, 41/22;* G06F *15/20*
U.S. Cl. 364—424.1 8 Claims

1. In a vehicle transmission comprising a gear transmission mechanism which comprises a plurality of first hydraulic fluid pressure activated friction engaging mechanisms and which includes a plurality of shift stages including a plurality of forward speed stages according to selective supply of hydraulic fluid pressure to said first hydraulic fluid pressure activated friction engaging mechanisms, said transmission also comprising a torque converter and a lock-up clutch which comprises at least one second hydraulic fluid pressure activated friction engaging mechanism, said torque converter functioning when said lock-up clutch is disengaged but being locked-up when said lock-up clutch is engaged so as to provide direct transmission of rotational power through said torque converter according to selective supply of hydraulic fluid pressure to said second hydraulic fluid pressure activated friction engaging mechanism, a transmission control method, comprising the steps of:

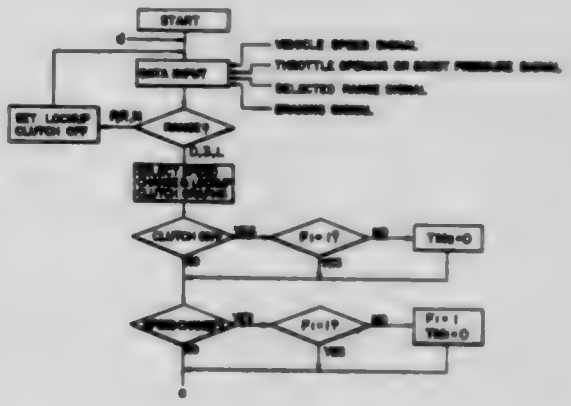
(a) determining which of said plurality of shift stages should be currently provided by said gear transmission mechanism according to current operational conditions of said vehicle;

(b) selectively controlling supply of activating hydraulic fluid pressure to at least two of said first hydraulic fluid pressure activated friction engaging mechanisms to cause said gear transmission mechanism to selectively engage one of said plurality of shift stages in accordance with the determination of step (a), and altering said selectively controlled supply of activating hydraulic fluid pressure to at least some of said first hydraulic fluid pressure activated friction engaging mechanisms to cause said gear transmission mechanism to shift between selected ones of said plurality of shift stages in accordance with the determination of step (a);

(c) selectively controlling supply of hydraulic fluid pressure to said second hydraulic fluid pressure activated friction engaging mechanism to cause said lock-up clutch to be engaged or disengaged in accordance with operational conditions of said vehicle and in accordance with said shifting between said selected ones of said shift stages;

(d) time shifting in a first programmed manner between a time point of said determination with regard to said shift stages and a time point of commencement of said alteration of said selective control of supply of activating hydraulic fluid pressure to at least some of said first hydraulic fluid pressure activated friction engaging mechanisms to cause said gear transmission mechanism to shift between said selected ones of said plurality of shift stages;

MANUAL SHIFT RANGE	SPEED STAGE	SOLENOID			FRICTION ENGAGING MECHANISM						ONE-WAY CLUTCH		
					C_0	B_0	C_1	C_2	B_1	B_2	B_3	F_0	F_1	F_2
D	1st	E	n	(E)	E		E					E		E
	2nd	E	E	(E)	E		E			E		E	E	
	3rd	n	E	(E)	E		E	E		E		E		
	O/D	n	n	(E)		E	E	E		E				
3	1st	E	n	(E)	E		E					E		E
	2nd	E	E	(E)	E		E		E	E		E	E	
	3rd	n	E	(E)	E		E	E				E		
L	1st	E	n	n	E		E				E	E		E
R	Rev	n	n	n	E			E			E	E		
P, N		n	n	n	E							E		



(e) time shifting in a second programmed manner between a time point of said determination with regard to said shift stages and a time point of commencement of said selective control of supply of activated hydraulic fluid pressure to said second hydraulic fluid pressure activated friction engaging mechanism to cause said lock-up clutch to be disengaged; and

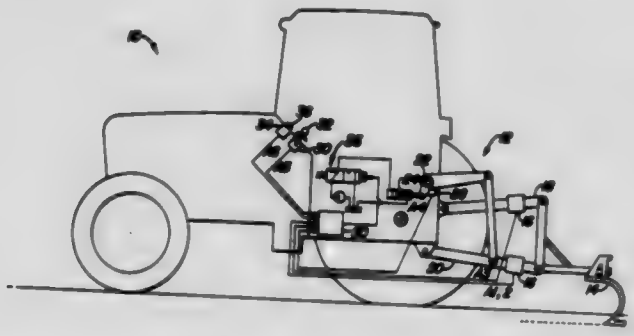
(f) time shifting in a third programmed manner between a time point of commencement of said alteration of said selective control of supply of activating hydraulic fluid pressure to at least some of said first hydraulic fluid pressure activated friction engaging mechanisms to cause said gear transmission mechanism to shift between said selected ones of said plurality of shift stages and a time point of commencement of said selective control of supply of activated hydraulic fluid pressure to said second hydraulic fluid pressure activated friction engaging mechanism to cause said lock-up clutch to be engaged.

4,495,577

MODEL REFERENCE ADAPTIVE IMPLEMENT CONTROL

Richard D. Strunk, East Moline; Robert E. Kasten, Moline, both of Ill., and Richard V. Monopoli, deceased, late of Hadley, Mass. (by Eileen F. Monopoli, executrix), assignors to Deere & Company, Moline, Ill.

Filed Aug. 6, 1982, Ser. No. 405,835
Int. Cl.³ A01B *63/112*
U.S. Cl. 364—424 12 Claims



1. In a control system for a vehicle having connecting means for attaching a ground-penetrating implement thereto and actuating means for raising and lowering the connecting means in response to control signals applied to an input thereof to vary the ground penetration of the implement, the improvement wherein the control system comprises:

means for generating a load error signal derived from sensed implement draft force;

means for generating a position signal representing sensed implement position;

adaptive means responsive to sensed operating parameters of the implement and connecting means for generating a variable gain signal, the variable gain signal automatically varying to compensate for changes in implement and ground conditions;

means for generating an adaptive control signal as a function of the load error signal multiplied by the variable gain signal and of the position signal; and

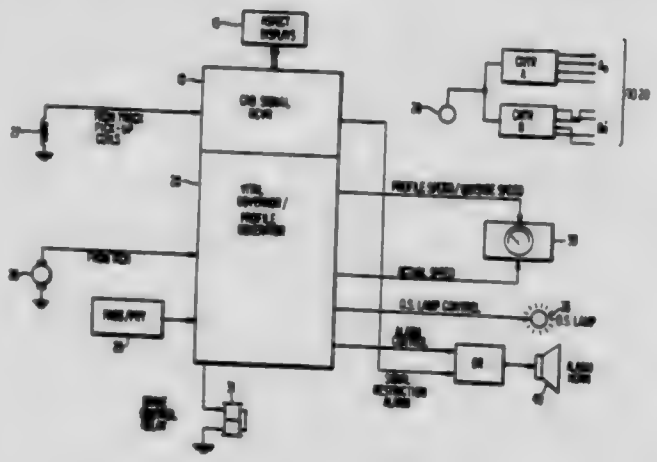
applying means for applying the control signal to the input of the actuating means.

4,495,578

MICROPROCESSOR BASED OVER/UNDER SPEED GOVERNOR

Henry C. Sibley, Adams Basin, and David B. Rutherford, Jr., Scottsville, both of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Filed Oct. 22, 1981, Ser. No. 313,926
Int. Cl.³ B60T *8/02*
U.S. Cl. 364—426 17 Claims



1. Vehicle carried control apparatus to control vehicle motion in the transition from a first speed limit to a second, lower, speed limit, comprising:

signal receiving means for receiving and registering wayside imposed speed limits,

vehicle speed measuring means for producing a signal representative of vehicle speed,

governor means responsive to said signal receiving means and to said vehicle speed measuring means for imposing a braking force or a requirement for a braking operation on said vehicle if said vehicle speed is greater than said wayside imposed speed limit,

wherein the improvement comprises:

speed profile generating means responsive to said signal receiving means receiving a second speed limit at a time when a first higher speed limit had been effective to generate a speed limit profile, monotonically decreasing from said first toward said second speed limit, and

means to withhold application of said braking force or requirement so long as said speed limit profile is generated and said vehicle speed is less than a current value of said speed limit profile.

6. A transitional speed limit generator responsive to a pre-existing speed limit and to signals indicative of vehicle travel for generating a series of transitional speed limits comprising:

first tachometer channel means for producing signals indicative of vehicle travel,

first processor means for generating a first time series of transitional speed limits in response to said first tachometer channel means,

second tachometer channel means for producing signals indicative of vehicle travel,

second processor means for generating a second time series of transitional speed limits in response to said second tachometer channel means,

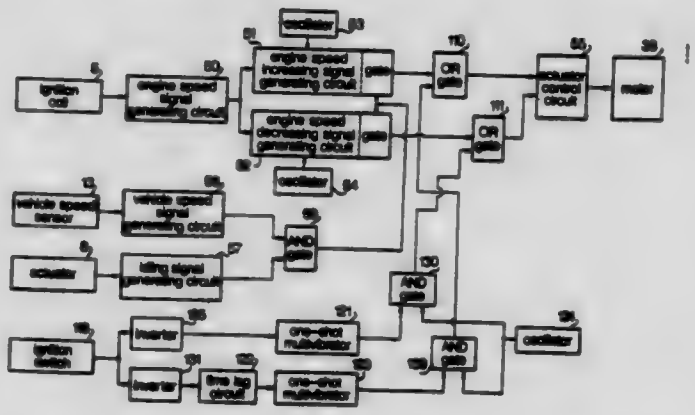
comparison means for comparing each transitional speed limit of said first series with a corresponding transitional speed limit from said second series to validate said transitional speed limit of said first series, but only if a relationship between sequential pairs of speed limits from said first and second series cycles between a first and a second relation.

4,495,579

ACTUATOR CONTROL SYSTEM FOR AN ENGINE IDLING SPEED GOVERNOR

Tatsuhisa Fukushima, Tama; Yoshiaki Kasai, Kiyose, and Mitsuo Nakamura, Tokyo, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1981, Ser. No. 334,059
Claims priority, application Japan, Dec. 27, 1980, 55-187179
Int. Cl.³ G05D *13/02*; F02M *3/00*; F02D *31/00*
U.S. Cl. 364—431.07 5 Claims



1. In an actuator control system for an engine idling speed governor of an internal combustion engine mounted on a vehicle having an ignition switch including a closed position and an open position, means for producing ignition pulses, actuator means for actuating a throttle valve in an induction passage of the engine, and a spring arranged to bias said throttle valve in

the closing direction, the improvement of the system comprising:

means responsive to said ignition pulses for producing an engine speed signal have a magnitude corresponding to said ignition pulses;

means comprising a vehicle speed sensor for producing an output voltage having a magnitude associated with the speed of the vehicle;

means comprising an idling signal generating circuit for producing an idling signal, indicating idling operation of said engine;

means comprising a vehicle speed signal generating circuit for producing a first logic signal when the magnitude of the output voltage of the vehicle speed sensor is lower than a predetermined value related with a corresponding vehicle speed;

first signal generating circuit means responsive to said engine speed signal, said first logic signal and said idling signal for producing an engine speed increasing signal when the magnitudes of said engine speed signal is higher than a lower limit magnitude related with an engine speed, and when said first logic signal and said idling signal are activated;

second signal generating circuit means responsive to said engine speed signal, said first logic signal and said idling signal for producing an engine speed decreasing signal when the magnitude of said engine speed signal is lower than an upper limit magnitude related with a second engine speed, and when said first logic signal and said idling signal are activated; and

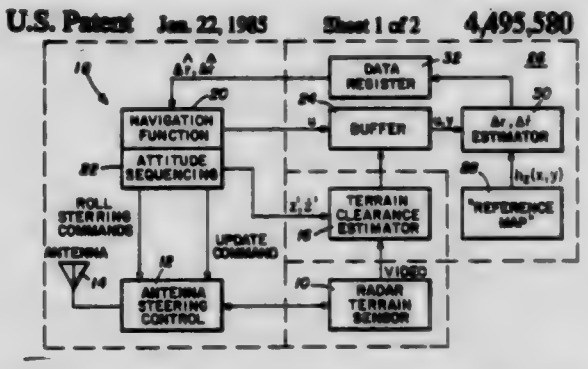
means comprising an actuator control circuit operatively connected to said actuator means and responsive to said engine speed increasing signal for opening the throttle valve to increase idling speed, and responsive to said engine speed decreasing signal for closing the throttle valve to decrease idling speed.

4,495,580

NAVIGATION SYSTEM

Larry R. Keearns, Dallas, Tex., assignor to E-Systems, Inc., Dallas, Tex.

Filed Mar. 30, 1981, Ser. No. 248,803
Int. Cl.³ G06F *15/50*
U.S. Cl. 364—450 **8 Claims**



1. Apparatus for determining the position and velocity of a vehicle independent of the nature of the vehicle path over a given terrain, comprising:

a navigation system generating output data representing the measured position, altitude and vertical velocity of the vehicle,

terrain clearance detector means receiving the vehicle altitude and vertical velocity outputs and generating output data representing the observed vehicle clearance above the terrain along the vehicle path,

means for storing data representing a terrain elevation map as a mathematical function,

a computational processor responsive to the position data from said navigation system, output data from said terrain clearance detector means, and data representing the terrain elevation map to generate correction vehicle velocity and vehicle position signals, and

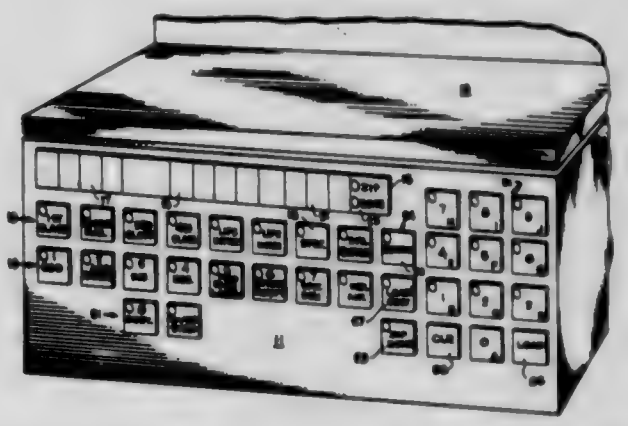
means for inputting the correction signals to said navigation system to generate corrected vehicle navigation signals.

4,495,581

USER PROGRAMMABLE POSTAL RATE CALCULATOR

James M. Piccione, 20958 Upper East Zayante Rd., Los Gatos, Calif. 95030

Filed Oct. 19, 1981, Ser. No. 312,530
Int. Cl.³ G06F *15/20*; G06G *19/40*
U.S. Cl. 364—466 **14 Claims**



1. An improved ZIP to zone converter for a postal scale or the like comprising,

first memory means containing a representation of a map of a geographic area, said area being divided into an irregular grid quad pattern, with grid quads generally corresponding to the geographic areas represented by the most significant digits of ZIP codes, each grid quad having X, Y digital coordinates, said first memory means for storing the X, Y digital coordinates of said grid quads,

second memory means for storing the most significant digits of an originating ZIP code and for storing ranges of distance related values corresonding to each postal zone,

third memory means for storing control information,

data entry means for entering the most significant digits of a destination ZIP code,

microprocessor means connected to a data bus, said first, second and third memory means and said data entry means connected to the microprocessor means via the data bus for converting the most significant digits of both the originating and destination ZIP codes into X, Y coordinates, computing a value for a distance function of the X, Y coordinates which identifies one of said ranges of distance related values and identifying the postal zone corresponding to said value.

4,495,582

CONTROL SYSTEM FOR PRE-SETTING AND OPERATION OF A PRINTING PRESS AND COLLATOR

Robert A. Dessert; Richard A. Gaspar; Richard T. Laubach; Dinesh G. Punater, all of Dayton, and Ralph E. Berrera, Casstown, all of Ohio, assignors to Harris Graphics Corporation, Melbourne, Fla.

Filed Jun. 4, 1982, Ser. No. 385,181
Int. Cl.³ B65H *43/00*; G06F *15/46*
U.S. Cl. 364—469 **26 Claims**

2. A process for manufacturing multi-part forms using at least one web press having one or more printing stations and one or more processing stations at which operations are performed on webs in registry with a series of printed images produced at a printing station, and also using a collator having a collating station at which job related webs from said press or presses are assembled in registry and having one or more processing stations at which additional operations are performed on the assembled webs in registry with a series of printed images thereon;

the steps comprising

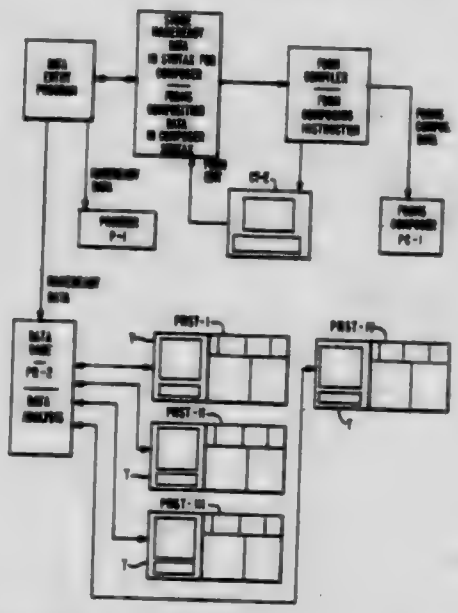
(a) creating a digital job description of a form including the

location and content of printed images on the several parts of the form and/or the location of process items such as perforations, holes, cuts or other markings on one or more parts of the form,

(b) storing said job description in a digital memory with a job identifying number,

(c) creating a digital description of the images to be printed on the parts of the form,

(d) storing said image descriptions in the memory associated with the job identifying number,



(e) using the digital job description from the memory to pre-set the printing sections and processing sections of a press for each part of the form,

(f) producing the several parts of the form on the press or presses and supplying the parts to the collator,

(g) using the digital job description to pre-set the processing stations of the collator, and

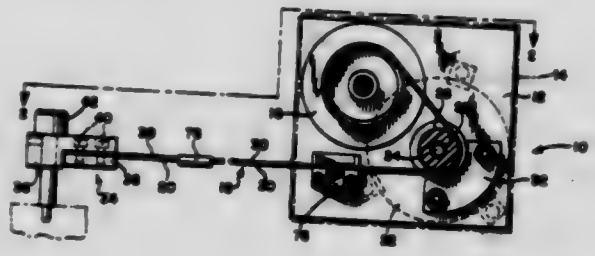
(h) assembling and completing the processing of the several parts on the collator into a quantity of multi-part forms sufficient to complete the job.

4,495,583

APPARATUS AND METHOD FOR ENCODING POSITIONS OF WEB PRESS MACHINES

Dinesh G. Punater, Dayton, Ohio, assignor to Harris Graphics Corporation, Melbourne, Fla.

Filed Jun. 4, 1982, Ser. No. 385,182
Int. Cl.[3] G06F *15/46*; G06G *7/78*
U.S. Cl. 364—471
15 Claims



1. An apparatus for encoding a lateral or circumferential setting within a web press of a laterally or circumferentially adjustable machine for operating on a web, said machine having an element which moves linearly as said machine is adjusted, comprising:

a linkage connectable to said linearly moving element for linear movement therewith;

means for generating an electric signal operatively connected to said linkage for operation in response to linear movement of said linkage;

means defining a reference point for describing the setting of said machine; and

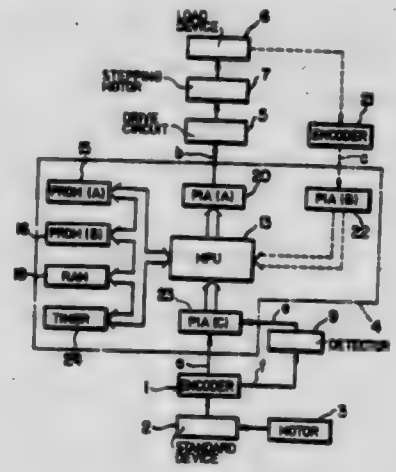
means for computing a code in response to said signal generated by said signal generating means for designating the setting of said machine with respect to said reference point.

4,495,584

INTERMITTENT DRIVING SYSTEM FOR SYNCHRONIZING CONTROL OF CONVEYOR AND DISPENSING SYSTEMS

Toshio Yoshida, Yokohama, Japan, assignor to Toyo Shokuhin Kikai Kabushiki Kaisha, Yokohama, Japan

Filed Mar. 22, 1982, Ser. No. 360,391
Claims priority, application Japan, Mar. 30, 1981, 56-047904
Int. Cl.[3] G05B *15/02*; G06F *15/46*
U.S. Cl. 364—479
6 Claims



1. A drive control synchronizing system for synchronizing the control of conveyor systems and dispensing systems;

standard position reference means providing a standard position reference;

encoding means detecting and encoding an output from said standard reference means;

rate detecting means receiving an output from said encoding means for detecting the rate of operation of said standard reference means;

digital processing means receiving inputs from said encoding means and said rate detection means;

at least one mechanical load means;

motor means for driving said mechanical load means;

said digital processing means generating rate pulse signals to directly control operation of said motor means whereby operation of said mechanical load means is synchronized with operation of said standard reference means.

4,495,585

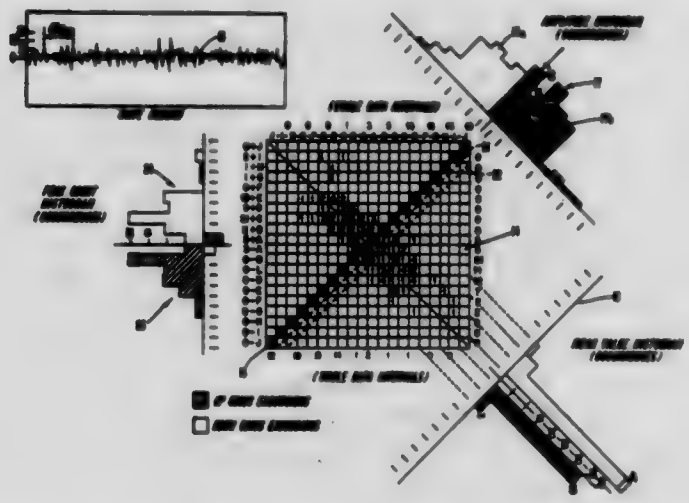
METHOD OF AND APPARATUS FOR INDICATING CHARACTERISTICS OF UNDULATING DATA

William H. Buckley, 15308 Emory La., Rockville, Md. 20853

Filed Jul. 8, 1981, Ser. No. 281,302
Int. Cl.[3] G01R *23/16*
U.S. Cl. 364—487
51 Claims

1. A method of indicating characteristics of undulating data having variations with oppositely directed peak values, the characteristics being indicated on a display having first and second mutually orthogonal coordinate directions, comprising the steps of determining the oppositely directed consecutive peak values of each variation, assigning each variation to a coordinate position on the display, the coordinate position in the first and second directions being respectively determined by the initial and final peak values of the variation, accumulating the variations having like initial and final peak values so an indication of the accumulated variations is displayed on the coordinate positions of the display, the display having discrete values in the first and second directions associated with different initial and final peak values, whereby a series of bins is formed in the first and second directions, the coordinate posi-

tions in the first and second directions being substantially determined by assigning each variation to an individual bin, the variations being accumulated by summing the number of variations assigned to each bin, each bin having a dead band associated with it, and in response to first and second adjacent like



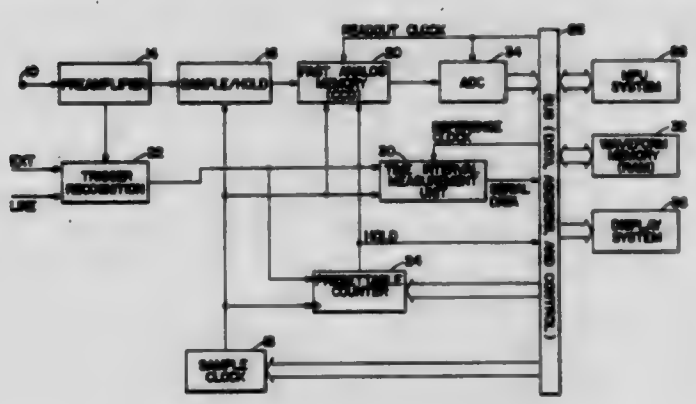
directed variations being associated with the same bin except for one of the values of the second variation differing from a corresponding value of the first variation by an amount less than the dead band assigning the second variation to the same bin as the first variation.

4,495,586

WAVEFORM ACQUISITION APPARATUS AND METHOD

Roland E. Andrews, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jul. 29, 1982, Ser. No. 402,872
Int. Cl.³ H02K *13/02*
U.S. Cl. 364—487 **2 Claims**



1. A method of acquiring an equivalent-time waveform over a plurality of cycles of a repetitive input signal, comprising the steps of:

taking one or more samples at equally spaced intervals of a sample clock along each cycle of said plurality of cycles;

measuring the time difference between a fixed point on said each cycle and a next occuring sample clock;

computing from said measured time difference an address of a memory for each of said samples, wherein said computed addresses are at equally-spaced intervals with respect to each other for each cycle, but shifted a number of addresses proportional to said time difference; and

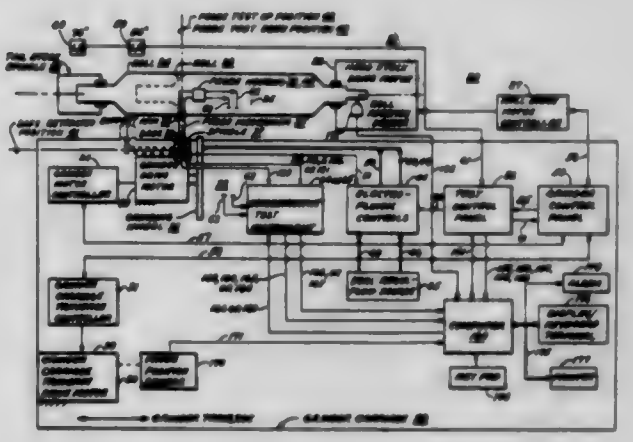
storing said samples in said memory at said computed addresses.

4,495,587

AUTOMATIC NONDESTRUCTIVE ROLL DEFECT INSPECTION SYSTEM

Arcade J. Plante, Center Valley, and Richard F. Wetzel, Bath, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Dec. 8, 1981, Ser. No. 328,345
Int. Cl.³ G01N *27/82, 29/04*
U.S. Cl. 364—507 **6 Claims**



1. A computer-based nondestructive testing system for automatically inspecting roll surface conditions of a rolling mill roll rotatable in a test fixture and operable with a carriage movable substantially parallel and lengthwise of the test roll longitudinal axis, said system comprising:

(a) nondestructive test probe means mounted on the movable carriage for generating at least one roll surface anomoly test signal;

(b) means for automatically spacing the test probe means (a) from the roll surface by a gap having a fluid therein;

(c) carriage movement sensor means on the carriage for generating a test probe means position signal relative to the distance along the roll length the test probe means has been carried by the movable carriage;

(d) roll rotation sensor means in the rotatable test fixture for generating a roll circumference signal;

(e) nondestructive test instrument means for processing at least one roll surface anomaly test signal from test probe means to produce an amplitude-variable roll surface defect signal; and

(f) computer means for processing the amplitude-variable roll surface defect signal of (e), the test probe means position signal of (c) and the roll circumference signal of (d) comprising:

(i) means for (1) converting the amplitude-variable roll surface defect signal into digital form, (2) detecting a digital defect signal peak and (3) allocating the digital defect signal peak into one of several preset levels in a memory device;

(ii) means for (1) converting the test probe means position signal into digital form and (2) storing the digital position signal in the memory device of (f)(i)(3);

(iii) means for (1) converting the roll circumference signal into digital form, and (2) storing the digital roll circumference signal in the memory device of (f)(i)(3); and

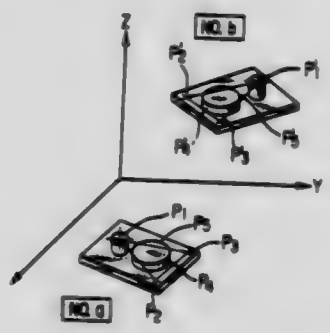
(iv) means for coordinating the defect signal, test probe position signal and roll circumference signal for each inch of length of test roll surface scanned.

4,495,588

ROBOT LOCUS CONTROL SYSTEM

Satoru Nio; Shinobu Sato; Hajime Fujii, all of Kitakyushu, and Toyoji Hamashima, Nakama, all of Japan, assignors to Kabushiki Kaisha Yaskawa Denki Seisakusho, Kitakyushu, Japan

Filed Mar. 18, 1982, Ser. No. 359,548
Claims priority, application Japan, Mar. 26, 1981, 56-44275
Int. Cl.[3] G05B *13/00*
U.S. Cl. 364—513
12 Claims



1. A method for robot arm locus control comprising the steps of:

a. teaching the robot coordinates of a first three representative points and first work points of an object to be worked on by the robot;

b. teaching the robot coordinates of a second three representative points of the object when a change in the relative position of the robot and the object occurs, said second representative points corresponding to said first representative points;

c. calculating coordinates of second work points from data representative of the relative positions of said first representative points and first work points and said second representative points, so that said second work points define a locus at a position different than that of said first work points, said second work points corresponding to said first work points;

d. using said coordinates of said second work points to provide commands for the robot; and

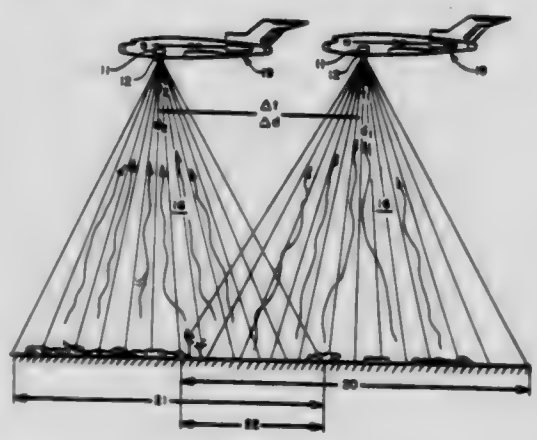
e. controlling the robot to follow said commands.

4,495,589

AIRCRAFT GROUND VELOCITY DETERMINATION SYSTEM

Edgar A. Hirzel, Granada Hills, Calif., assignor to Crane Co., New York, N.Y.

Filed Sep. 20, 1982, Ser. No. 419,996
Int. Cl.[3] G01P *3/36*
U.S. Cl. 364—565
31 Claims



6. Apparatus for determining the ground velocity of an aircraft comprising:

at least one optical image sensor, which includes a plurality of image forming elements, carried by the aircraft;

means for enabling said elements to form a first optical image of a first area of the earth's surface and, after a time delay, enabling said elements to form a second optical image of a second area of the earth's surface which overlaps in part with said first area;

means for controlling the length of time said elements are enabled and said time delay;

means for comparing said first image with said second image to produce a position shift signal representing the relative image position shift necessary to obtain the maximum degree of correlation between said first and second images;

means for generating an altitude correction signal;

means for multiplying said position shift signal by said altitude correction signal so as to produce a distance signal; and

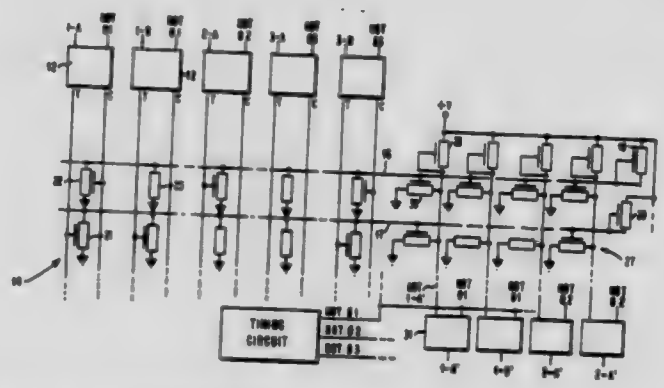
means for dividing said distance signal by said time delay to obtain a signal representing the ground velocity of the aircraft.

4,495,590

PLA WITH TIME DIVISION MULTIPLEX FEATURE FOR IMPROVED DENSITY

Ralph C. Mitchell, Jr., Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 221,595, Dec. 31, 1980, abandoned.
This application Oct. 14, 1983, Ser. No. 542,230
Int. Cl.[3] H03K *19/20*
U.S. Cl. 364—716
3 Claims



1. In a PLA of the type having

an array having input lines, output lines, and internal lines crossing over the input and output lines, and interconnection elements in a predetermined pattern at crossover points of the array,

means for supplying logic signals to be operated on by the array, and input circuits connected to receive a binary number of said logic signals and connected to a binary number of said input lines of the array for supplying partitioning functions of said logic signals to the connected input lines, where a binary number is a non-negative integral power of 2, and

output circuits for receiving logic signals from the output lines of the array,

wherein the improvement comprises,

means for producing timing signals defining a plurality of timing phases,

means connecting each of said timing signals to a disjunct plurality of said input circuits, whereby each timing phase corresponds to a set of input lines of the array, and means in each input circuit responsive to its timing signal to enable the input circuit to supply said partitioning function and responsive to the complement of its timing signal to inhibit the input circuit, and

means connecting said timing signals to said output circuits and means in each output circuit responsive to its phase of the timing signals to enable the associated output circuit to receive and store a signal on the associated output line and responsive to the complement of said corresponding phase to inhibit the output circuit,

whereby the internal lines of the PLA are shared by a plurality of sets of input lines, each set having a selected logic

function that is enabled at a separate time phase in the operation of the array.

4,495,591

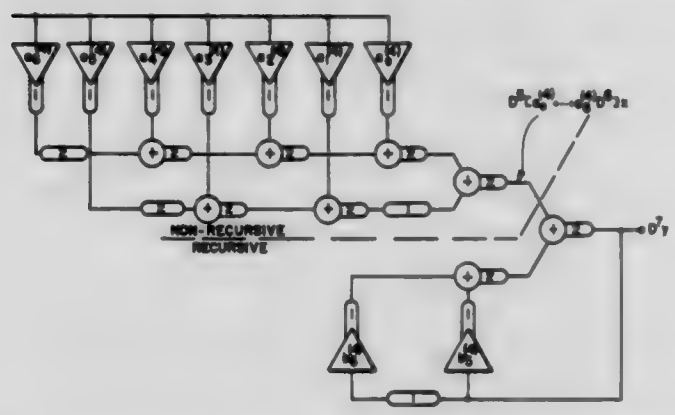
PIPELINED DIGITAL FILTERS

Herschel H. Loomis, Jr., Davis, Calif., assignor to The Regeants of the University of California, Berkeley, Calif.

Continuation of Ser. No. 238,812, Feb. 27, 1981,. This application Mar. 26, 1984, Ser. No. 574,297

Int. Cl.³ G06F *15/34, 1/02*

U.S. Cl. 364—724 **7 Claims**



1. An improvement in a digital filter having a non-recursive portion and a recursive portion, wherein said digital filter has a function $y=a_0x+a_1D^1x+a_2D^2x+\ldots a_mD^mx-(b_1D^1+\ldots +b_nD^ny)$, in which the terms containing a_m represent the non recursive portion and a_0, $a_1 \ldots a_m$ are constants, the terms containing $b_1 \ldots b_n$ represent the recursive portion and $b_1 \ldots b_n$ are constants, and D^m and D^n are delay operators, and wherein said digital filter operates at a clock frequency f_s, said clock frequency f_s also being the frequency at which an input signal x to said digital filter has been sampled, said non-recursive portion and said recursive portion each having at least one 1-stage parallel multiply-add means with one stage for multiplying digital signals by said constants and for adding two digital signals and for delaying digital signals by one clock period, wherein the improved digital filter comprises:

(a) said parallel muyltiply-add means in said recursive portion including parallel pipeline multiply-add means with more than one stage for multiplying digital signals by said constants and for adding two digital signals.

(b) said improved digital filter providing a higher order function which is operationally the same as said function y but delayed by a number D of sample times; and

(c) said improved digital filter being operable at a clock frequency which is greater than f_s and determined by the number of stages in said parallel pipeline multiply-add means.

4,495,592

ELECTRONIC DATA PROCESSING APPARATUS WITH EQUATION OPERATING SYSTEM HAVING IMPLIED MULTIPLICATION OF TWO HIERARCHICAL RANKS

David Caldwell; Linda J. Ferrio, and Arthur C. Hunter, all of Lubbock, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 25, 1982, Ser. No. 381,985

Int. Cl.³ G06F *7/52*

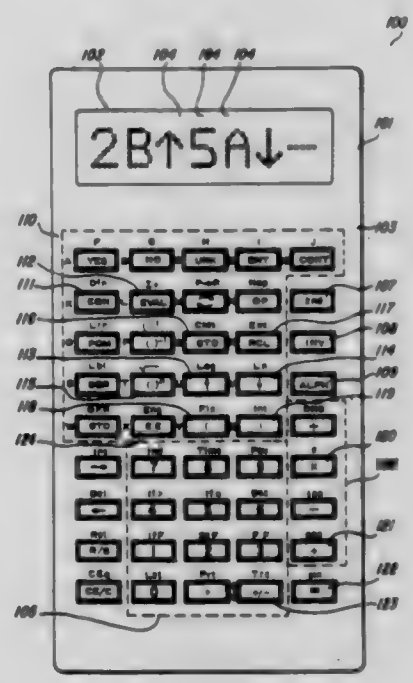
U.S. Cl. 364—754 **9 Claims**

1. An electronic data processing apparatus comprising:

an input means for entering data processing functions including numeric data and a plurality of operational commands corresponding to data processing operations;

an arithmetic means connected to said input means for performing entered data processing functions according to the respective hierarchial ranks of entered operational commands and generating a numeric result, said arithmetic means including an implied multiplication means for performing an implied multiplication of a first hierarchial rank when successive inputs include one of a prefix set followed by one of a first suffix set and for performing an implied multiplication of a second hierarchial rank lower than said first hierarchical rank when successive inputs include one of said prefix set followed by one of a second suffix set; and

output means for generating an operator perceivable indication of said numeric result generated by said arithmetic means.



4,495,593

MULTIPLE BIT ENCODING TECHNIQUE FOR COMBINATIONAL MULTIPLIERS

Frederick A. Ware, Los Altos Hills, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 1, 1982, Ser. No. 394,234

Int. Cl.³ G06F *7/50*

U.S. Cl. 364—757 **5 Claims**

1. An apparatus for multiplying first and second binary operands each having a nominal length of N bits where one of said bits of each operand may designate the sign of said operand comprising:

means for grouping pairs of bits of said first binary operand;

means for supplying a first carry in signal which is a 0;

means for encoding the first pair of bits of said first binary operand and said first carry-in signal into one member of a set of only four multiplier digits and a first carry-out signal;

means for passing the carry-out signal of one pair of bits of said first binary operand to the next subsequent pair of bits as the carry-in signal of said next subsequent pair of bits;

means for encoding said subsequent pairs of bits and said subsequent carry-in signals into a member of said set of only four multiplier digits and a further carry-out signal;

means for generating the partial products of said second binary operand and one of said four multiplier digits of said encoding set for each pair of bits of said first binary operand;

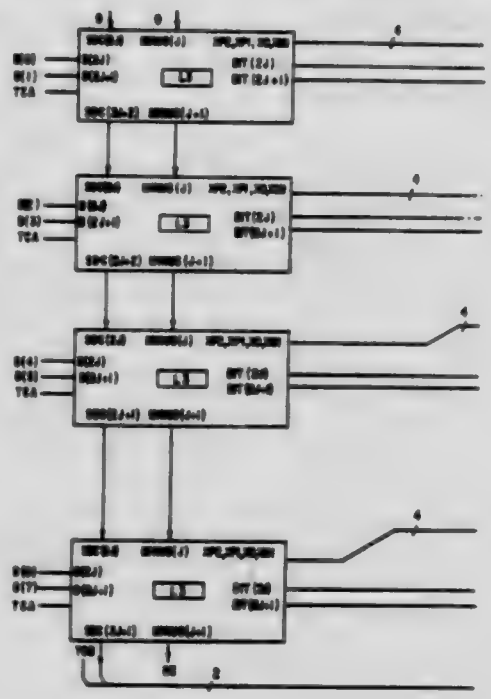
means for extending said sign bit of said partial products;

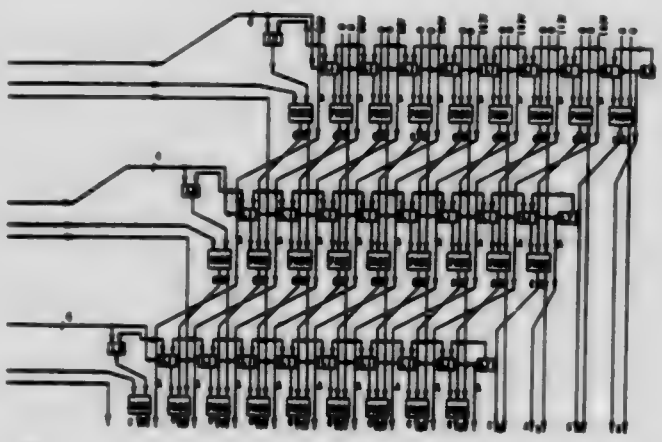
means for shifting said sign extended partial products by an amount equal to the weight of the less significant bit of the corresponding pair of bits of said first binary operand;

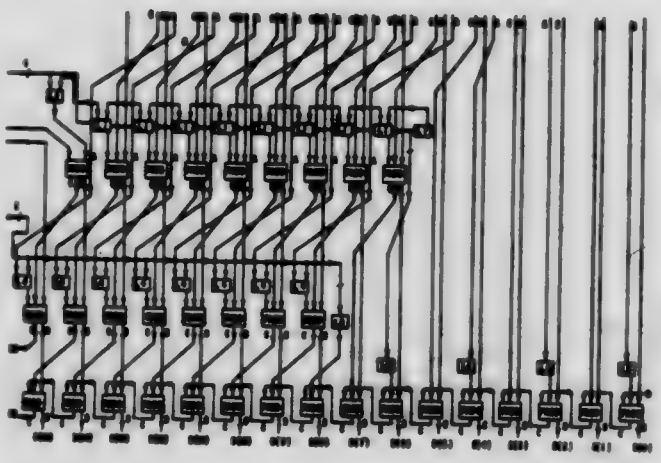
means for summing said shifted sign extended partial products; and

means for shifting said second binary operand by an amount equal to the weight of the more significant bit of the most

significant pair of bits of said first binary operand, and adding said shifted second binary operand to said sum of







shifted sign extended partial products when the final carry-out signal is a 1.

4,495,594

SYNCHRONIZATION OF CRT CONTROLLER CHIPS

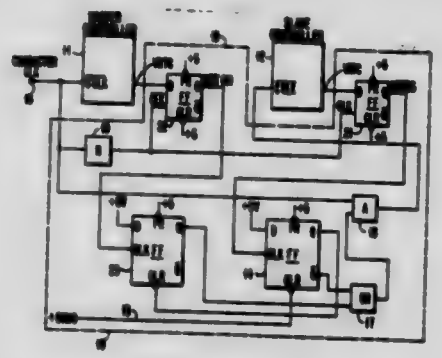
Lewis C. Eggebrecht, Rochester, Minn.; David A. Kummer, Boca Raton, and Jesus A. Saenz, Coral Springs, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 1, 1981, Ser. No. 279,368
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—900 2 Claims

1. In a system having a source of clock signals, a processor generating commands, an input/output device, and a first and second independently actuable controller for applying a counterpart first and second non-overlapping functionally distinct set of control signals to said device, each controller generating its counterpart set of control signals periodically conditioned by a processor command and in response to a predetermined number of clocking signals, wherein the improvement comprises means for synchronizing the controllers including:

gating means reponsive to processor command for applying clock signals selectively to said first and second controllers;

means for applying a subset of control signals from the first



controller to the second controller as a timing reference; and

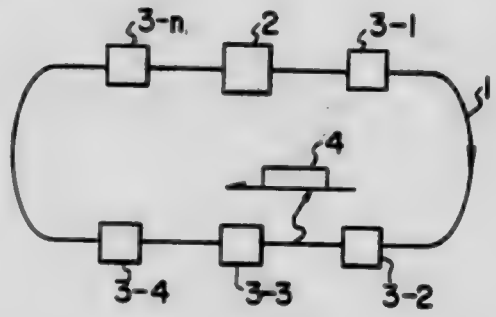
means responsive to the generation of the first and second set of control signals for selectively enabling or disabling the application of clocking signals to the controllers so as to enforce coincident generation of said first and second set of control signals.

4,495,595

METHOD AND SYSTEM OF LOOP TRANSMISSION

Susumu Nakayashiki, Yokohama; Isao Nakada; Masahiko Kida, both of Hadano; Toyokazu Hashimoto, Kanagawa, and Kazuo Yagyu, Atsugi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 1, 1982, Ser. No. 364,539
Claims priority, application Japan, Apr. 3, 1981, 56-49318; Jan. 29, 1982, 57-11640
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—900 12 Claims



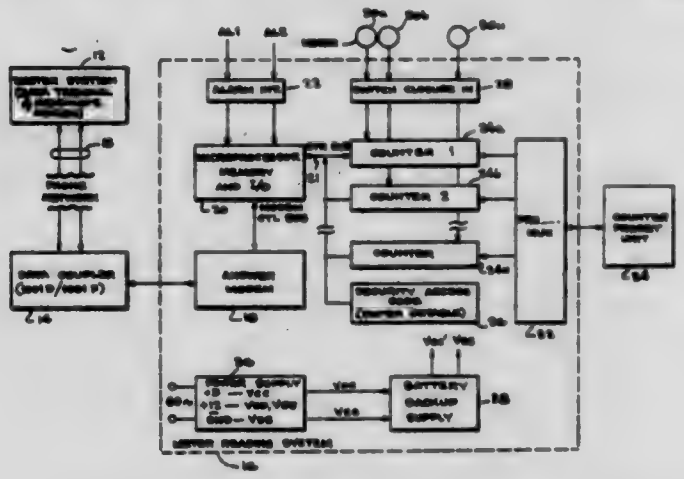
1. A method of loop transmission for a loop transmission system wherein a plurality of stations are coupled to a communication loop, comprising the steps of allotting to each station successively a right to transmission by detection in each station of a first specific signal pattern sent on said communication loop from a specified station when data exchanging is to be effected between the stations through the loop, sending from a station to the loop said first specific signal pattern when the sending of an exchanging data frame from that station on the loop is completed in that station, sending a second specific signal pattern to the loop from said specified station before sending said first specific signal pattern to the loop from the specified station, and sending said second specific signal pattern to the loop from a station before the exchanging data frame is sent from that station other than said specified station.

4,495,596

DATA ACCUMULATOR AND TRANSPONDER WITH POWER BACK-UP FOR TIME OF DAY CLOCK

Felice M. Sciulli, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jun. 10, 1982, Ser. No. 387,531
Int. Cl.³ G06F 1/00
U.S. Cl. 364—900 26 Claims



1. A timing system for maintaining an accurate manifestation of time in the event of the failure of a primary power source, said timing system comprising:

(a) clock means energizable for generating a train of clock pulses;

(b) a secondary power source;

(c) means responsive to the failure of the primary source for applying said secondary power source to energize said clock means to produce said train of clock pulses;

(d) primary memory means for receiving and accumulating said train of clock pulses to provide a first manifestation of time;

(e) secondary memory means energizable by said secondary power source for receiving and accumulating said train of clock pulses as an accumulated count providing a second manifestation of time; and

(f) transfer means responsive to the restoration of the primary power source for transferring said second time manifestation as stored in said secondary memory means to said primary memory means, whereby said second time manifestation is indicative of the time that the primary power source is restored.

4,495,597

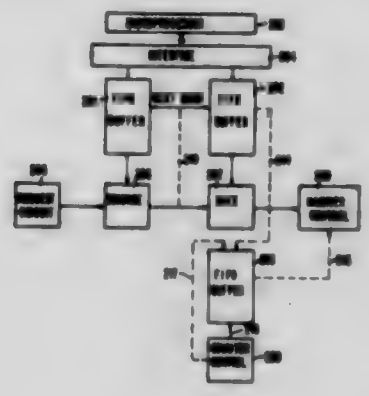
MICROPROCESSOR-CONTROLLED ADAPTER CIRCUIT FOR REAL-TIME CONTROLS, IN PARTICULAR FOR PRINT HAMMER CONTROLS

Jan Barthel, Holzgerlingen, and Hermann R. Bublitz, Boeblingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 2, 1982, Ser. No. 403,687
Claims priority, application European Pat. Off., Aug. 6, 1981, 81106153.0
Int. Cl.³ G06F 3/12
U.S. Cl. 364—900 11 Claims

1. A microprocessor-controlled adapter circuit for real time controls of output values, characterized in

that two asynchronously driven FIFO buffers (FIFO=-FIRST IN, FIRST OUT) are provided, one of which can be loaded with time values from the microprocessor, at which a control process is to be effected, and the other one of which can be loaded from the microprocessor with control information associated with these time values (such as address of an element to be controlled, type of control process), and that a request circuit is provided, by means of which the time values are successively read from the first FIFO buffer and are fed to a gate circuit for switching the control information associated with these



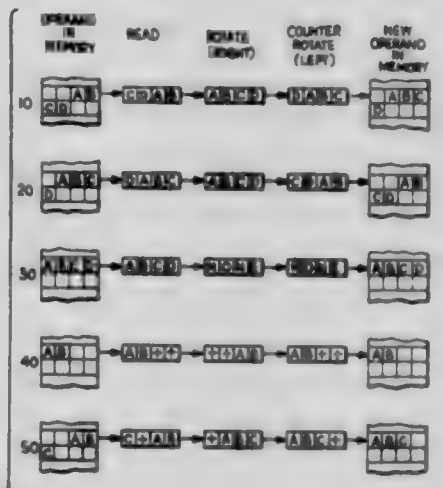
time values from the second FIFO buffer for controlling the output values.

4,495,598

COMPUTER ROTATE FUNCTION

Richard Vahlstrom, Villa Park; Dennis R. Keats, Irvine, and Peter T. Lee, Laguna Niguel, all of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Sep. 29, 1982, Ser. No. 427,947
Int. Cl.³ G06F 7/00
U.S. Cl. 364—900 13 Claims



1. In a computer system comprising central processing unit (CPU) means which operates on multi-byte word blocks and memory means, a rotation system comprising:

rotation controller means which provide output command information to reorder bytes in a multi-byte word block in response to input information describing the relative displacement of an end byte of a multi-byte word block from a double word boundary byte memory position;

byte shifting means responsive to the command information which consecutively reorder the bytes in the multi-byte word block; and

means to transfer reordered multi-byte word blocks between the CPU means and the memory means.

4,495,599

LOGIC STATE ANALYZER WITH SEQUENTIAL TRIGGERING AND RESTART

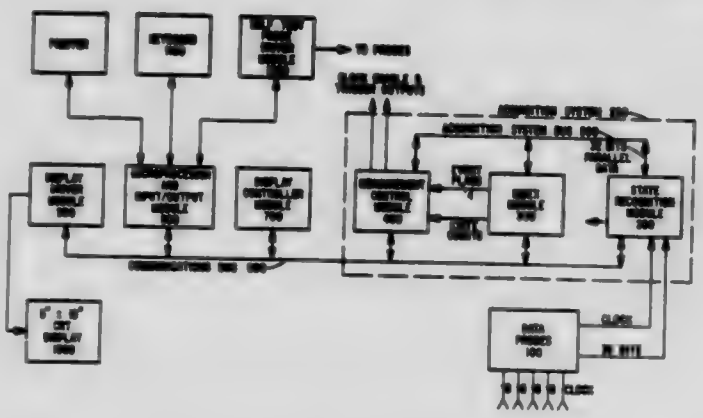
George A. Haag, Colorado Springs; O. Douglas Fogg, Loveland; Gordon A. Greenley; Steve A. Shepard, both of Colorado Springs, all of Colo., and F. Duncan Terry, Meridan, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 210,462, Nov. 25, 1980, Pat. No. 4,373,193, said Ser. No. 210,462, is a continuation of Ser. No. 75,787, Sep. 17, 1979, abandoned, said Ser. No. 75,787, Division of Ser. No. 828,138. This application Jan. 6, 1983, Ser. No. 456,155

Int. Cl.[3] G06F *3/05, 3/153*

U.S. Cl. 364—900

8 Claims



1. Apparatus for selecting, storing and displaying a set of logic states occurring in a collection of digital signals, the apparatus comprising:

first control means for designating a selected sequence of logic states $SS_1, \ldots, SS_n$;

second control means for designating a selected logic state as a trigger state;

input means coupled to receive the collection of digital signals for performing signal conditioning thereon according to preselected thresholds to produce a collection of conditioned logic signals;

sequence detection means coupled to at least the collection of conditioned logic signals and to the first and second control means for producing a trigger signal upon the occurrence of the trigger state subsequent to the occurrence of the state SS_n, whose occurrence is in turn subsequent to its predecessor, and so on, subsequent to the occurrence of the state SS_1,

storage means coupled to at least the collection of conditioned logic signals and to the trigger signal for storing logic states occurring in the collection of conditioned logic signals until a preselected number of logic states have been stored subsequent to the occurrence of the trigger signal; and

display means coupled to the storage means for displaying an indication of the logic states stored therein.

4,495,600

TABULATION SYSTEM

Yoshiyasu Kikuchi; Masamichi Shutoh; Hitoshi Miyai, and Hidetoshi Itoh, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 190,927. This application Jun. 28, 1983, Ser. No. 508,577

Claims priority, application Japan, Sep. 28, 1979, 54-124967; Oct. 2, 1979, 54-127621; Oct. 5, 1979, 54-129210

Int. Cl.[3] G06F *7/00, 3/14;* B41J *21/00*

U.S. Cl. 364—900

4 Claims

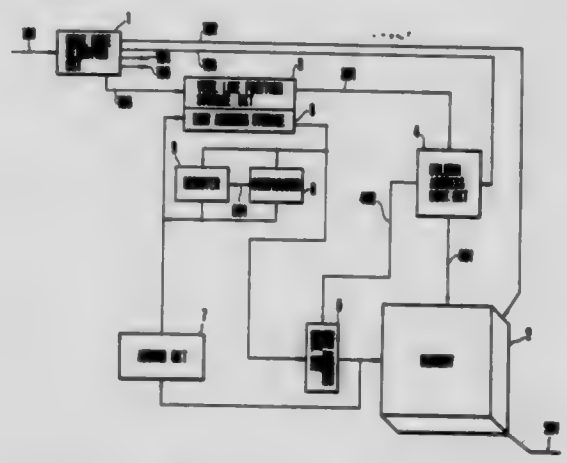
1. A tabulation system for delivering column and row address information to a medium, said column and row information providing for the tabulation of serial character strings and horizontal and vertical ruled lines to produce a selected array thereof in response to input coded information defining said array, said system comprising

detecting means responsive to said input coded information for providing first data information concerning the positions of said vertical and horizontal ruled lines and for providing second data information concerning said serial character strings to said medium;

means responsive to said first data information concerning said vertical ruled lines for storing vertical line position information;

means responsive to said first data information concerning said horizontal ruled lines for storing row address information corresponding to individual fields of said array between said vertical lines position;

column address control means responsive to said stored vertical line position information and row address control means responsive to said stored row address information for providing column and row address information, respectively, to said medium to permit the arraying of one or more serial character strings in one or more selected fields between adjacent vertical line positions, each selected character string being arranged in rows, a first portion of said character string starting from a row address corresponding to the first row of said selected field and the rest of said character string continuing on successive rows between the same vertical line positions each time one row has been filled;



means connected to said row address control means and responsive to a current row address for updating said current row address by adding a predetermined number of line spacings each time an end of a field is indicated by said input coded information and for supplying said updated row address to said row address storing means;

maximum row address determining means responsive to the last row address stored in said row address storing means, said last row address corresponding to the last row address of an individual field and further responsive to said first data information concerning horizontal line position corresponding to the individual field for determining the maximum row address of said corresponding field, said maximum row address determining mean including

comparator means and register means, said comparator means responsive to said last row address of said row address storing means and the contents of said register means for updating said contents of said register means to obtain the maximum row address for storage in said register means when the last-row address of the row address storing means is larger than the contents on the register means and for supply to said row address storing means.

4,495,601

MAGNETIC BUBBLE MEMORY APPARATUS

Tadaaki Etoh; Ryuji Yano; Kazuhiro Ishida, and Shoji Yoshimoto, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 10, 1982, Ser. No. 356,640

Claims priority, application Japan, Mar. 20, 1981, 56-39471

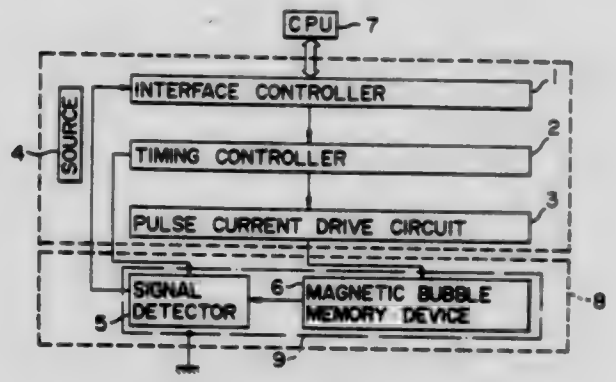
Int. Cl.[3] G11C *19/08*

U.S. Cl. 365—1

1 Claim

1. In a magnetic bubble memory apparatus of cassette type

comprising a magnetic bubble memory device including a magnetic bubble detector contained in a cassette, the improvement which comprises shield means made of electro-conductive material for surrounding said magnetic bubble memory device, said magnetic bubble detector and a signal detector,



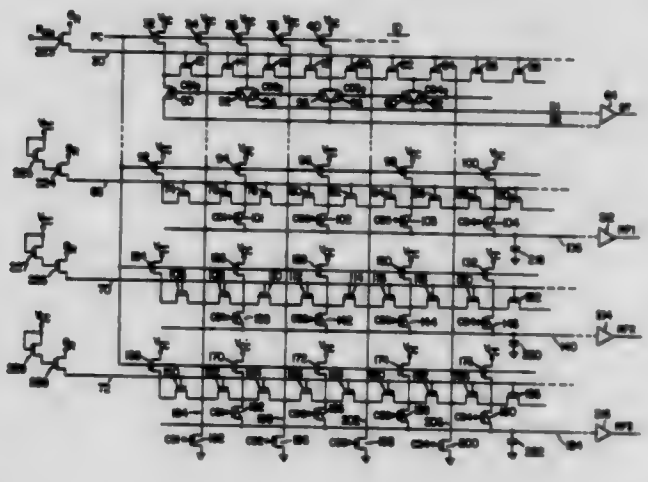
said signal detector responds to an electrical signal from said magnetic bubble memory detector to produce an output signal indicative of presence or absence of the magnetic bubble in order to shield external electrostatic noise wherein said shield means comprises a container of the cassette and said shield means is grounded.

4,495,602

MULTI-BIT READ ONLY MEMORY CIRCUIT

Douglas P. Sheppard, Grapevine, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Dec. 28, 1981, Ser. No. 335,164
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—104 **5 Claims**



5. A method of operation for a read only memory comprising the steps of:

applying concurrent time changing drive signals to a selected memory transistor and to a plurality of reference transistors to drive said transistors to create transitions from a first state to a second state in a manner to generate a time spacing between said transistions of said reference transistors and said memory transistors depending on the relative threshold voltages of said reference transistors and said memory transistor wherein the selected memory transistor has one of a plurality of threshold voltages, each corresponding to a data state and each of said reference transistors has a different threshold voltage from that of the other reference transistors,

comparing the time of transition of said selected memory transistor with respect to the time of transition of said reference transistors, and

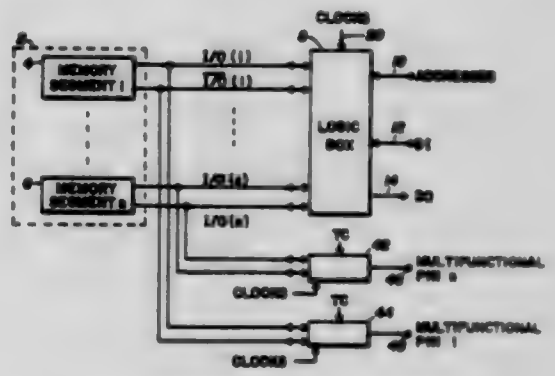
generating an output signal representing said data state of said selected memory transistor in response to said step of comparing.

4,495,603

TEST SYSTEM FOR SEGMENTED MEMORY

Ramesh C. Varshney, 2622 Ohlone Dr., San Jose, Calif. 95132

Filed Jul. 31, 1980, Ser. No. 174,112
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—233 **28 Claims**



1. A memory system, comprising:

a memory divided into a plurality of memory segments;

first logic means operatively coupled to each of said plurality of a memory segments, said first logic means for writing data into said memory and reading data from said memory;

a plurality of input/output lines for operatively coupling said first logic means to said plurality of memory segments; and

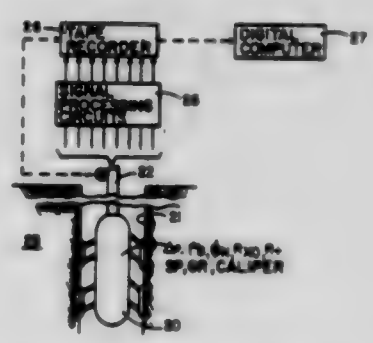
multifunctional means operatively coupled to said plurality of said input/output lines for writing data into and reading data from said memory segments during a predetermined "don't care" portion of a memory cycle, each of said plurality of input/output lines being operatively coupled to one of said plurality of memory segments.

4,495,604

MACHINE METHOD FOR DETERMINING THE PRESENCE AND LOCATION OF HYDROCARBON DEPOSITS WITHIN A SUBSURFACE EARTH FORMATION

Jean L. Dumanoir, Ridgefield, Conn., assignor to Schlumberger Technology Corp., New York, N.Y.

Continuation of Ser. No. 7,716. This application Mar. 12, 1979, Ser. No. 19,491
Int. Cl.³ B23K *9/18*; G01V *3/00*
U.S. Cl. 367—25 **61 Claims**



1. A machine method for exploring subsurface earth formations to determine the presence and location of hydrocarbon deposits within the earth formation surrounding a borehole formed in the earth formation by probing a plurality of depth levels of such subsurface earth formation with one or more signals produced in an investigating device adapted to be suspended in said borehole and acquiring and analyzing signals responsive to said probing signals, comprising the steps of:

(a) providing first electrical signals representative of the bulk density of the formation over a plurality of depth levels of the borehole, said first electrical signals being derived from signals responsive to the reaction of the subsurface

earth formation to gamma rays emitted into said subsurface earth formation surrounding the borehole from a source of gamma rays located in said investigating device;

(b) providing second electrical signals representative of the hydrogen content of the formation over a plurality of depth levels of the borehole, said second electrical signals being derived from signals responsive to the reaction of the subsurface earth formation to neutrons emitted into the subsurface earth formation surrounding the borehole from a source of neutrons located in said investigating device; and

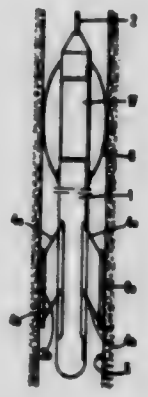
(c) combining said electrical signals indicative of the bulk density and hydrogen content of the formation to produce further electrical signals representative of the volume of structural shale or the portion of silt and clay in the earth formation and making a record thereof over a plurality of depth levels from which the presence and location of hydrocarbon deposits within said subsurface earth formation can be determined.

4,495,605

METHOD FOR DETERMINING THE DIP ANGLE OF GEOLOGICAL FORMATIONS TRAVERSED BY A BOREHOLE

Robert Desbrandes, Sevres, and Guy Norel, La Celle Saint-Cloud, both of France, assignors to Institut Francais du Petrole, Ruell-Malmaison, France

Filed Jul. 15, 1981, Ser. No. 283,323
Claims priority, application France, Jul. 15, 1980, 80 15587
Int. Cl.³ G01V *1/40*
U.S. Cl. 367—33
9 Claims



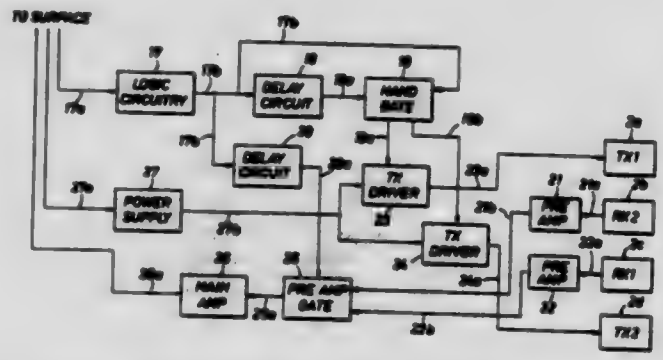
1. A method for determining the dip angle of geological formations traversed by a borehole of known orientation and inclination, comprising transmitting an acoustic signal in a direction substantially perpendicular to the borehole axis from different vertical levels of at least three determined generatrices of the borehole wall, and receiving from the same direction at the different vertical levels of these generatrices the acoustic wave which has been reflected at least on the interface between the borehole and the geological formations, producing a signal train representative of the reflected acoustic wave, depicting each signal train by at least one group of significant elements of this signal train, correlating the group of significant elements of the signals obtained along one generatrix with the corresponding groups of significant elements obtained along the other generatrices, and determining the differences between the respective depths at which there are received on said different generatrices signal trains corresponding to one and the same geological formation, said differences being equal to the vertical distances separating the borehole levels which correspond to the maximum correlation between the signals received on said different generatrices, and said differences being representative of the dip angle of said geological formation.

4,495,606

METHOD AND APPARATUS FOR COMBINED CEMENT BOND AND ACOUSTIC WELL LOGGING

John R. E. Smith, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 31, 1981, Ser. No. 297,812
Int. Cl.³ G01V *1/40*
U.S. Cl. 367—86
10 Claims



1. A method of investigating subsurface areas traversed by a borehole with a logging sonde comprising the steps of:

disposing said logging sonde within said borehole;

generating transmitter and receiver logic command signals, said command signals controlling said sonde between two acoustic logging measurement modes;

delivering said transmitter and receiver logic command signals to said sonde;

generating transmitter acoustic signals and receiver signals in response to said logic command signals;

generating an amplitude control signal in response to the relative states of said logic command signals; and

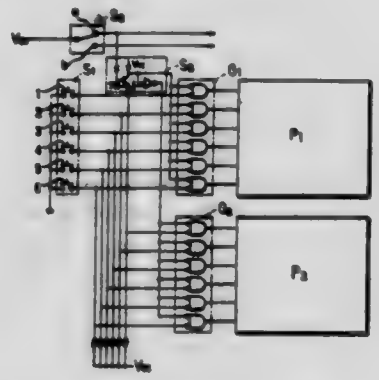
adjusting the amplitude of said received acoustic signal in response to said amplitude control signal and in accordance with said acoustic logging measurement modes.

4,495,607

CIRCUIT DEVICE FOR SELECTING STATION AND TAPE IN TAPE PLAYER WITH BUILT-IN RADIO

Katsumi Nishida, Higashi Matsuyama, Japan, assignor to Beltek Corporation, Japan

Continuation of Ser. No. 197,140. This application Sep. 23, 1983, Ser. No. 535,143
Claims priority, application Japan, Oct. 27, 1979, 54-139031
Int. Cl.³ H04B *1/20*; G11B *31/00, 15/18, 27/12*
U.S. Cl. 369—6
4 Claims



1. In a car tape player with a built-in radio, the player having a front panel with controls for operation thereof, tape selection circuit means (P_2) for selecting a piece of music on a tape having a plurality of pieces of music, interlocking means for loading and ejecting a tape to and from the player, and station selection circuit means (P_1) for selecting a station of the built-in radio, comprising:

a single group of preset switches (S_1) in the front panel of the tape player for selecting a desired station as well as a desired piece of music on the tape, said switches being

selectively connectable to said station selection circuit means or said tape selection circuit means;

station selection circuit/tape selection circuit changeover control switch means (S_2) connected to and switchable by the interlocking means, for selectively controlling changing over either one of said station selection circuit means and said tape selection circuit means, said changeover control switch means being associated with said station and tape selection circuit means and effective to cause changing over to said tape selection circuit means with a tape loaded in the interlocking means and to cause changing over to said station selection circuit means with a tape ejected from the interlocking means; and

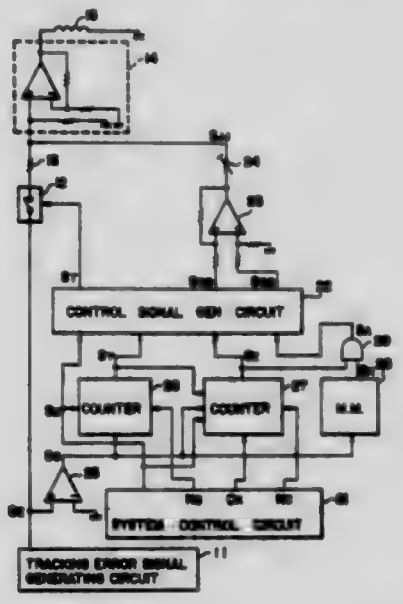
switching circuit means (S_3, G_1, G_2) connected to said station selection circuit means and said tape selection circuit means for rendering one of said tape and station selection circuit means inoperative while keeping the other of said tape and station selection circuit means in a waiting state for operation in response to a changeover operation of said changeover control switch means, said switching circuit means also being connected to said changeover control switch means and said group of preset switches, so that each preset switch of said group of preset switches is manipulatable to render operative that one of said tape and station selection circuit means which is in said waiting state.

4,495,608

DEVICE FOR RAPIDLY MOVING AN OPTICAL PICK-UP DEVICE IN AN OPTICAL REPRODUCING APPARATUS TO A DESIRED POSITION ON A RECORD DISC

Shuichi Kitsura, Saitama, and Akira Katsuyama, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 17, 1983, Ser. No. 458,553
Claims priority, application Japan, Jan. 16, 1982, 57-5265
Int. Cl.³ G11B *7/00, 17/00, 21/10*
U.S. Cl. 369—33 11 Claims



1. A device for rapidly moving pick-up means of an information signal reproducing apparatus to a desired position with respect to a record disc having at least one record track with an information signal recorded therein, comprising:

drive means for moving said pick-up means in a direction transverse to said at least one record track; and

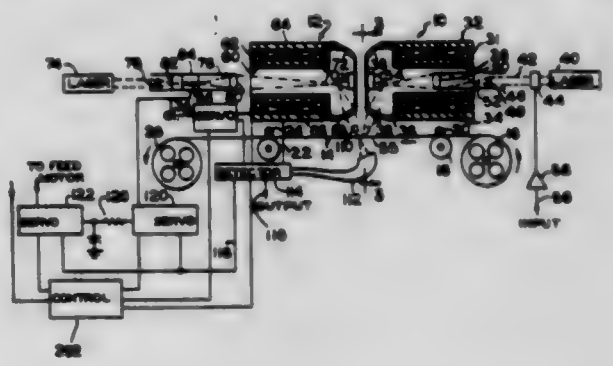
track jump means for producing a track jump signal comprised of a drive signal of a first duration followed by a brake signal of a second duration and for supplying said track jump signal to said drive means to control the latter to rapidly move said pick-up means in said transverse direction to said desired position, said track jumps means including speed detector means for detecting the speed of movement of said pick-up means relative to said disc during said second duration and timing means for determining the length of said second duration by terminating said brake signal in accordance with the detected speed of movement.

4,495,609

RECORDING AND PLAYBACK SYSTEM

James T. Russell, Richland, Wash., assignor to Digital Recording Corporation, Wilton, Conn.

Division of Ser. No. 935,152, is a division of Ser. No. 556,780, Mar. 10, 1975, abandoned. This application Nov. 23, 1981, Ser. No. 324,128
Int. Cl.³ G11B *7/08, 7/12;* H04N *5/84*
U.S. Cl. 369—44 27 Claims



1. Recording and reproducing apparatus comprising:

a record medium capable of receiving and recording electro-magnetic information,

a first optical scanner positioned in juxtaposition with said record medium for directing a beam of electro-magnetic radiation toward said record medium via a first radiation path scanned by said scanner substantially across said record medium along a track extending substantially crossways of said record medium, and means for modulating said beam to record information on said track,

means for producing relative movement between said first scanner and said record medium so that said first scanner in scanning crossways of said record medium records said track in substantially parallel segments across said record medium,

a second concurrently operating optical scanner independent from the first optical scanner and positioned along said record medium in juxtaposition therewith and in spaced relation from said first scanner for scanning along said track crossways of said record medium via a second radiation path to read informaton recorded on said track a predetermined time after the same has been recorded, with a delay determined by the spacing between said first and second radiation paths,

means for also producing relative movement between said second scanner and said record medium,

low inertia optical deflection means for deflecting said second radiation path relative to said second scanner in a direction along the record medium substantially independently of scanning along said track to produce a rapid movement of said second radiation path as compared with said relative movement between said second scanner and said record medium,

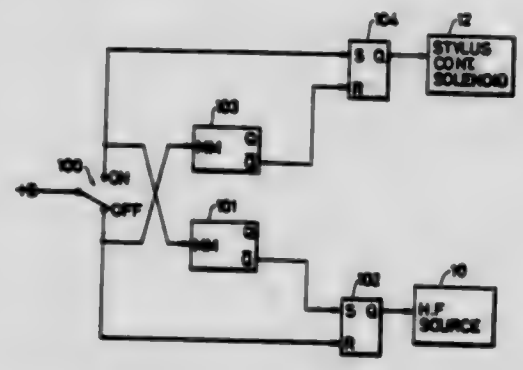
and detector means receiving the output produced via said second radiation path for energizing said deflection means to deflect said second radiation path rapidly toward the track being read in response to detection of said track.

4,495,610

CIRCUIT ARRANGEMENT FOR APPLYING HIGH FREQUENCY ENERGY TO A CAPACITANCE DETECTION RECORD STYLUS

Yoshiyo Wada, Yokohama, Japan, and Hideaki Takehara, Fujisawa, both of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Sep. 9, 1982, Ser. No. 416,715
Claims priority, application Japan, Sep. 12, 1981, 56-144332
Int. Cl.³ G11B *9/06, 17/00*
U.S. Cl. 369—126
5 Claims



5. A method for operating a record stylus having an electrode adapted for generating a high frequency field in the dielectric layer of a capacitance disc record for detecting a geometric surface variation formed thereon, comprising:

moving said stylus from an inoperative position to the surface of said record in response to the start of reproduction of said record;

introducing a first delay time in response to the start of reproduction of said record;

applying high frequency energy to said electrode at the termination of said first delay time;

terminating said high frequency energy in response to the termination of the reproduction of said record;

introducing a second delay time in response to the termination of said reproduction; and

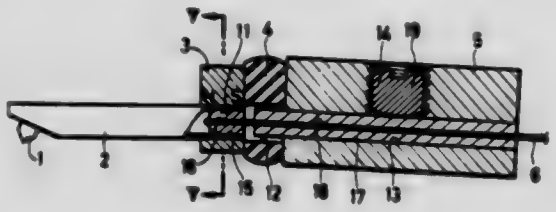
moving said stylus away from said record to said inoperative position in response to the termination of said second delay time.

4,495,611

VIBRATION SYSTEM OF PICKUP CARTRIDGE OF RECORD PLAYER

Yoshiaki Suzuki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 6, 1982, Ser. No. 405,902
Claims priority, application Japan, Aug. 14, 1981, 56-120914[U]
Int. Cl.³ G11B *3/50*
U.S. Cl. 369—170
12 Claims



1. A vibration system of a pickup cartridge of a record player, comprising:

a cantilever having a stylus tip at its forward end portion;

an armature secured to a rear end portion of said cantilever;

a damper disposed rearwardly of both the rear end portion of said cantilever and said armature;

a tension wire coupled to a rear end portion of said cantilever to rearwardly pull said cantilever; and

a holder for holding a rear end portion of said tension wire; said damper being positioned between the rear end portion of said cantilever and said holder;

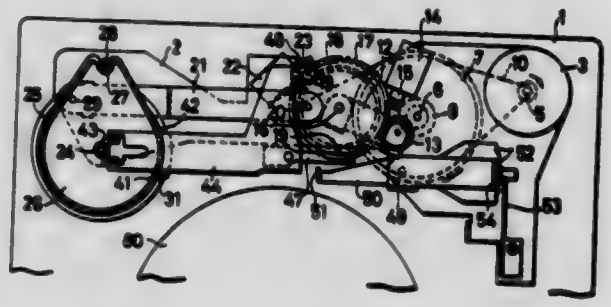
said armature, said damper and said holder being disposed so that their respective central axial lines are in alignment, and said tension wire is disposed along an axial line displaced downwardly of said aligned central axial lines.

4,495,612

TONE ARM CONTROL MECHANISM

Haruyoshi Miyako, Nagano, Japan, assignor to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Apr. 23, 1982, Ser. No. 371,167
Claims priority, application Japan, Apr. 27, 1981, 56-61132[U]; Apr. 30, 1981, 56-63868[U]
Int. Cl.³ G11B *17/30, 21/02*
U.S. Cl. 369—216
7 Claims



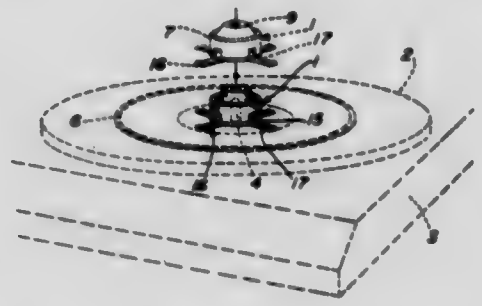
1. A tone arm control mechanism comprising; a drive means; a drive plate reciprocally rotated about an axis by said drive means; a tone arm mounted for horizontal pivotal movement about said axis a non-rotatable auxiliary drive plate mounted parallel to and adjacent said drive plate for vertical reciprocating movement, an arm rest formed on said auxiliary drive plate adapted to engage an intermediate part of said tone arm; an abutting portion formed on said drive plate adapted to engage said intermediate part of said tone arm; cam means including cam portions and slidable contact portions in slidable contact with said cam portions mounted on opposing portions of said drive plate and said auxiliary drive plate; and urging means for pressing said auxiliary drive plate toward said drive plate whereby upon rotation of said drive plate, said cam means cause said auxiliary drive plate to move up or down to raise or lower said tone arm when said intermediate portion of said tone arm engages said arm rest.

4,495,613

RECORD REMOVAL AND CENTERING DEVICE FOR 45 R.P.M. DEVICE

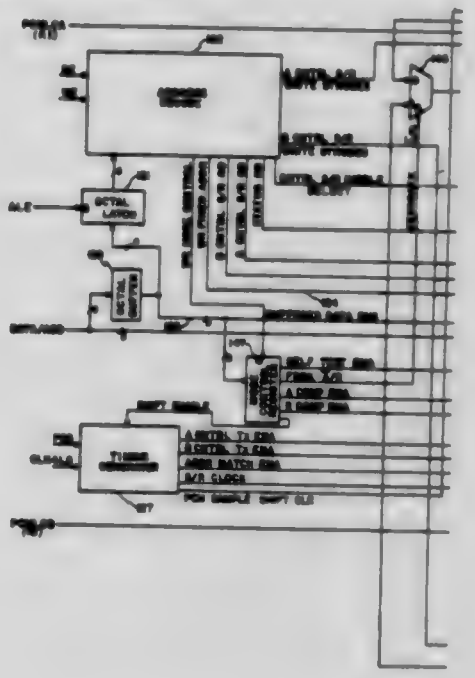
Bertrand Gagnon, Rangs 2 et 3 ouest, Les Hauteurs, Canada G0K 1C0

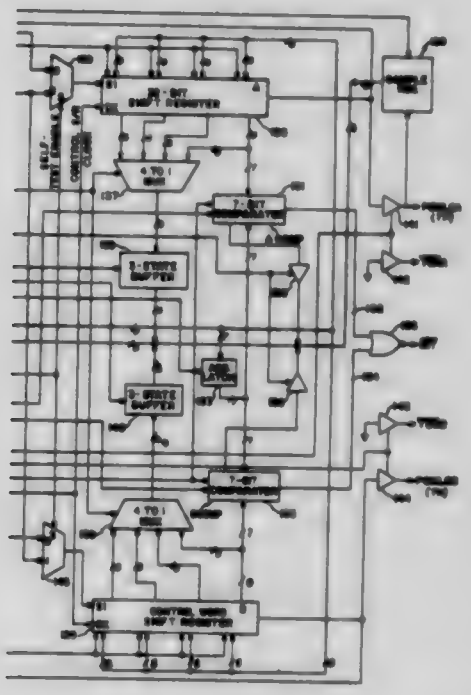
Filed May 23, 1984, Ser. No. 613,332
Int. Cl.³ G11B *17/04*
U.S. Cl. 369—270
7 Claims



1. A device for removing and centering at least one 45 r.p.m. record on a standard turntable having a central spindle, comprising: a cylindrical housing having a bottom surface and an open top; said bottom surface having a central hole for precisely receiving said spindle; the external diameter of said

housing being slightly less than the diameter of the large central hole of said record; said housing further having at least two equi-spaced, rectangular vertically oriented slots formed in its side wall wherein the lower edges of said slots are flush with said bottom surface; at least two elongated arms extending through said slots; each said arm having an outer straight radially projecting portion and an inner portion terminating radially short of the center of said housing; an intermediate segment joined to both said outer and said inner portions; fulcrum means between said intermediate segment and said inner portion; the latter being vertically spaced relative to said outer portion; further comprising a circular cap slidably mounted in said housing for vertical displacement therein; biasing,displacement limiting and guide means for said cap; the inner ends of said inner portions of said arms being arranged to raise said outer portions of said arms upwardly by lever action when said cap is pressed manually downwardly.





4,495,614

CIRCUIT FOR INTERFACING A PROCESSOR TO A LINE CIRCUIT

Ean Aro, Delaware; Leonard E. Bogan, Columbus; Richard A. Hamersley, Columbus; Paul H. Knapke, Columbus, and Robert L. Miller, Westerville, all of Ohio, assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 22, 1982, Ser. No. 371,052

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—58 **15 Claims**

1. An interface circuit for coupling a line circuit to a control processor and to at least one PCM bus, said interface circuit comprises:

a first set of terminals coupled to said one PCM bus;

a second set of terminals coupled to said control processor and including a control terminal, a data terminal and a clock terminal;

a third set of terminals coupled to said line circuit and including a pair of PCM terminals coupled to the PCM signal input and output of said line circuit;

first means coupled to said second set of terminals for receiving command information at said data terminal and for storing said command information in response to said control terminal having a predetermined state;

second means coupled to said data terminal and responsive to said first means for storing control information received at said data terminal;

third means responsive to said control information stored in said second means for coupling said PCM terminals to said first set of terminals.

4,495,615

METHOD AND DEVICE FOR CONTROLLING A SWITCHING NETWORK

Robert Wilcke, Leiden, Netherlands, assignor to Statt der Nederlanden (Stattsbedrijf der Posterijen, Telegrafie en Telefonie), The Hague, Netherlands

Filed Sep. 9, 1982, Ser. No. 416,347

Claims priority, application Netherlands, Sep. 22, 1981, #104358

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—58 **8 Claims**

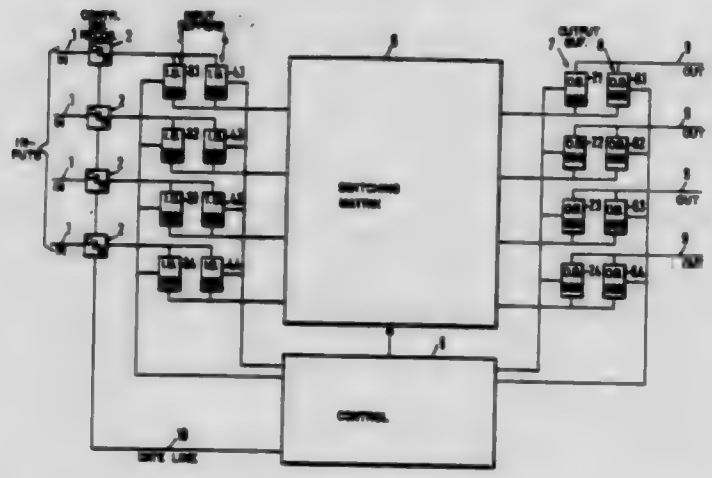
1. Method for controlling a switching network, which network comprises:

A. an input buffer, consisting of a number of input buffer segments for storing incoming signals to be switched through;

B. an output buffer, consisting of an equal number of output buffer segments for registering signals switched through;

C. a switching matrix having rows and columns of crosspoints via which switching paths are formed between the input buffer and the output buffer; and

D. a control device for periodically establishing switching paths, each of these switching paths being set up once in every one of a succession of equal frame periods each of which is divided into a number of internal time slots, in each of which a plurality of switching paths can be simultaneously provided by set-up as aforesaid,



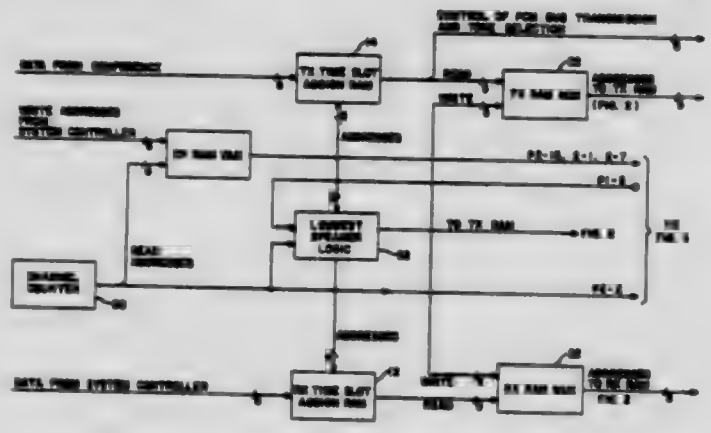
characterized in that the control device (5) performs a step of setting the switching matrix (6) during each internal time slot according to one of a number of fixed patterns of buffer segment interconnections, in such a way that in every internal time slot each of the rows is through-connected with a different column of the switching matrix.

4,495,616

PCM CONFERENCE CIRCUIT

Bruce D. Shuh, Guelph, Canada, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,970
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—62
2 Claims



1. A conference circuit for controlling multiple port conferences within a time division communication system arranged to transmit signals over a highway comprised of plurality of time spaced channels within a series of sequential time frames; said conference circuit including for each conference call in progress: storage means for storing therein multi-bit words with each multi-bit word representing a sample of voice data from one of the parties involved in a conference call, a latch circuit coupled to the output of said storage means to store for each conference at least one word from said storage means representing the sample read from said storage means during the prior frame having the highest amplitude, a comparator coupled to the input of said storage means and said latch circuit for comparing a plurality of bits of said word stored in said latch circuit against a currently read word from each other party to a conference, means coupled to said comparator and said storage means for replacing said word in said latch circuit with said currently read word when said comparison indicates that said currently read word has a higher amplitude than said word against which it was compared, a further means coupled to said latch circuit and the input of said storage means for storing said word indicating the highest amplitude from each conference call, means coupled to said further storage means for timing the duration of storage in said further storing means and for changing said stored word in said latch circuit to indicate a lower amplitude level when said duration of storage exceeds a predetermined plurality of time frames.

4,495,617

SIGNAL GENERATION AND SYNCHRONIZING CIRCUIT FOR A DECENTRALIZED RING NETWORK

Joseph W. Ampulski, Mount Prospect; James N. Furukawa, Chicago, both of Ill.; Donald R. Kesner, and Ronald D. Bernal, both of Phoenix, Ariz., assignors to A.B. Dick Company, Chicago, Ill.

Filed Sep. 9, 1982, Ser. No. 416,312
Int. Cl.³ H04J *3/00*
U.S. Cl. 370—86
11 Claims



1. A method of communicating data among a plurality of stations connected in a ring network while minimizing phase jitter and phase delay comprising the steps of:

(a) providing each station in the ring with a receive clock for sampling incoming signals including data and a transmit clock for permitting transmission of signals including data to the next station in the ring;

(b) coupling the receive and transmit clocks when a station is not transmitting to maintain approximately the same frequency for the transmit clock as the receive clock;

(c) decoupling a station's transmit clock from its receive clock during transmission of data whereby the transmission occurs at the fundamental frequency of the transmit clock;

(d) causing a station which has finished transmitting data to generate and transmit a phase delay identifier to the next station in the ring;

(e) causing stations which are not transmitting to detect and retransmit said phase delay identifier to the next station in the ring; and

(f) causing each station, upon detecting said identifier when not intending to transmit or upon regeneration of the identifier when transmitting, to jam sync its transmit clock and receive clock to the next detected transition in the incoming signals,

thereby re-establishing the coupling of step (b) in the station which has finished transmitting and whereby residual phase delay is passed with the identifier from station to station until it is blocked by step (c) when a subsequent station initiates a new transmission.

4,495,618

DIGITAL SWITCHING NETWORK

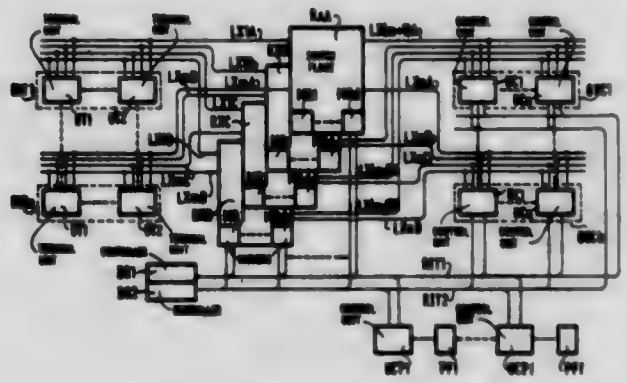
Bernard Dupuis, Montigny le Bretonneux; Jean-Pierre Pasquet, Villejuif, and Christian Coppens, Velizy, all of France, assignors to Campagnie Industrielle des Communications Cit-Alcatel, Paris, France

Filed Apr. 5, 1982, Ser. No. 365,693

Claims priority, application France, Apr. 3, 1981, 81 06809; Apr. 3, 1981, 81 06810

Int. Cl.³ H04J 3/00

U.S. Cl. 370—66 5 Claims



1. A digital switching network in an exchange having distributed control and a central switching network, for interconnecting selected terminal units from groups of terminal units each including a plurality of terminal units and each terminal unit including means for connecting to selected ones of a plurality of multiplex links, said central switching network comprising a single switching stage having a plurality of independent planes, each plane connecting to a plurality of said multiplex links wherein each multiplex link comprises inlet and outlet links for communicating in opposite directions between said terminal units and central switching network, each multiplex link being connected in common to all terminal units in a group of terminal units and to one of said planes, and each group of terminal units being coupled to all planes via respective multiplex links, each of said planes comprising a plurality of synchronized switches each equipped with a market, all switches in any given plane being connected in parallel to all inlet links coupled to said given plane and each switch being coupled to a respective group of the outlet links coupled to said given plane, each switch being modular and including a control memory circuit driven by the associated market and further including a plurality of square switching matrices, each of said square switching matrices in a given switch being coupled to a respective portion of the inlet links coupled to said given switch and to all outlet links coupled to said given switch, connection data stored in the control memory circuit of a given switch determining connections between inlet links and respective outlet links served by each switching matrix in said given switch, and said associated market of said given switch controlling said connection data stored in the control memory of said given switch.

4,495,619

TRANSMITTER AND RECEIVERS USING RESOURCE SHARING AND CODING FOR INCREASED CAPACITY

Anthony Acampora, Freehold, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 314,352, Oct., 1981, abandoned. This application Feb. 13, 1984, Ser. No. 579,521

Int. Cl.³ H04B 1/10

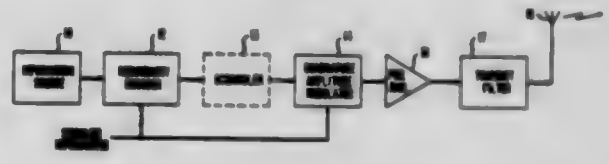
U.S. Cl. 370—104 7 Claims

1. A transmitter capable of transmitting each of one or more digital message burst input signals in at least one separate assigned time slot of a time division multiple access (TDMA) frame sequence which is destined for a separate one of a plurality of remote, spaced apart, receivers of a TDMA communication system, the transmitter comprising:

encoding means (12) capable of receiving each of the one or more digital message burst input signals to be transmitted, the encoding means comprising a plurality of redundancy encoders (33) which generate different redundancy codes and a control means (32) connected to the plurality of redundancy encoders for selecting one of said redundancy encoders and associated redundancy code to be used in encoding each of the one or more digital message burst input signals; and

modulating means (14) comprising a signal constellation encoder (42) capable of selectively generating any one of a plurality of signal constellations, where each signal constellation comprises a plurality of points and is not a scalar replica of another signal constellation, and converting each of the encoded digital message burst input signals from the encoding means into a selected one of the plurality of signal constellations, and control means (44) for causing the signal constellation encoder to selectively use a predetermined one of the plurality of signal constellations for each of the redundancy encoded digital message burst input signals;

the encoding means control means and the modulating means control means being capable of selecting a first pair



combination of a predetermined redundancy code and a predetermined signal constellation for encoding a digital message burst input signal for transmission in a single time slot of the frame sequence when the transmission between the transmitter and remote receiver destined to receive said transmitted message burst input signal is equal to or above a predetermined carrier-to-noise ratio (CNR), and selecting a second pair combination of a predetermined redundancy code and a predetermined signal constellation for encoding a digital message burst input signal for transmission in more than one time slot of the frame sequence when the transmission between the transmitter and a remote receiver destined to receive said transmitted message burst signal is below said predetermined CNR, the first pair combination being a fixed pair of a predetermined redundancy code and a predetermined signal constellation and the second pair combination comprising a selectively different pair of a predetermined redundancy code and a predetermined signal constellation than used for said first pair combination for achieving a high transmission capacity while maintaining low fade condition outage for each of the one or more message burst signal transmissions.

4,495,620

TRANSMITTING DATA ON THE PHASE OF SPEECH

Raymond Steele, Hazlet; Wai C. Wong, Aberdeen, both of N.J., and Costas S. Xydeas, Loughborough, England, assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 5, 1982, Ser. No. 405,507

Int. Cl.³ H04J 15/00; H04L 5/00

U.S. Cl. 370—118 11 Claims

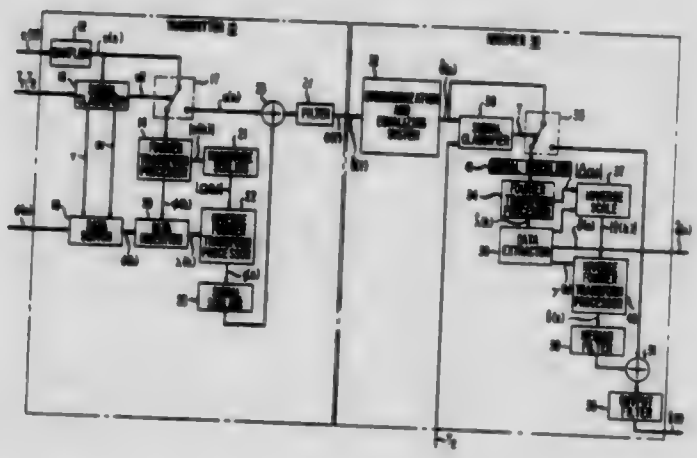
1. In a simultaneous transmission system for data and analog speech:

a transmitter responsive to both an analog speech signal (s(t)) and a data stream (d(n)) for simultaneously transmitting the analog speech signal and the data stream as a combined message signal (G(t)) wherein the transmitter comprises

combination means responsive to both said analog speech signal and said data stream for transforming said analog

speech signal from a time domain representation into a frequency domain representation, inserting a predetermined portion of said data stream in an appropriate form in place of a selected portion of the frequency domain representation, and transforming said frequency domain representation into a time domain representation of the combined message signal output of the transmitter; and

a receiver responsive to the combined message signal produced by said transmitter and recovering therefrom both said analog speech signal and said data stream wherein the receiver comprises



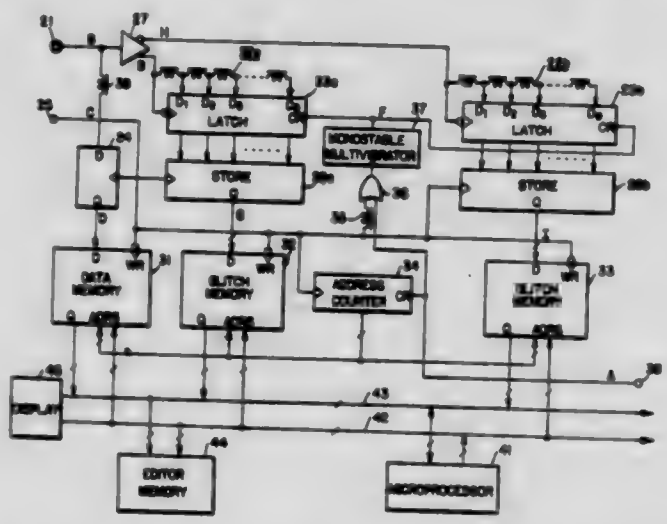
separation means responsive to said combined message signal for transforming said combined message signal from a time domain representation into a frequency domain representation, removing and producing as a data output the predetermined portion of said data stream therefrom, inserting a plurality of random components in place of the removed portion of said frequency domain representation, and transforming said frequency domain into a time domain representation of a recovered analog speech signal.

4,495,621

GLITCH DETECTING AND MEASURING APPARATUS

Koji Nakagomi, Gyoda; Tetsuo Aoki, Konosu, and Takayuki Nakajima, Gyoda, all of Japan, assignors to Takeda Riker Co. Ltd., Tokyo, Japan

Filed Dec. 17, 1982, Ser. No. 450,791
Claims priority, application Japan, Dec. 21, 1981, 56-206377
Int. Cl.[3] G01R *31/28*
U.S. Cl. 371—6 18 Claims



1. A device for detecting glitches and measuring their widths, wherein each correct data on a signal line is longer than the period of a clock signal of said device and the glitches on said signal line that are to be measured have a width that is shorter than said clock period, said glitches being limited effectively to positive glitches when the signal is at low level and negative glitches when the signal is at high level, said device comprising

delay means for effectively taking N samples of the signal on said signal line spaced at an interval that is a minor part of said clock period, the width of said interval depending on the desired resolution in the measurement of the width of the glitches, and for repeating said taking of N samples of the signal on said signal line with each clock period, each said taking of N samples providing a respective N-bit word of data,

store means coupled to said delay means for storing each said word of data, and

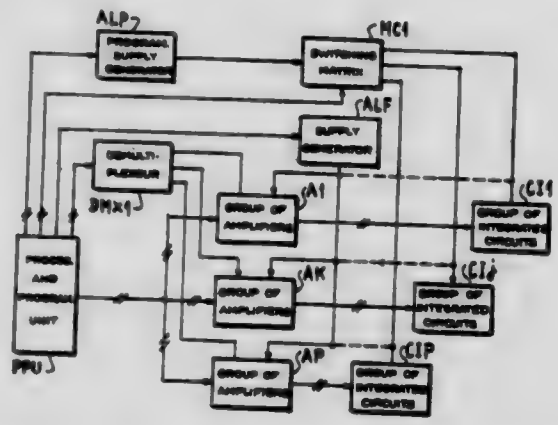
computer means coupled to said store means for examining said stored words of data, for recognizing glitches therein and for determining their widths, from the values of said samples of said signal line.

4,495,622

SYSTEM FOR SELECTING HIGH-RELIABILITY INTEGRATED CIRCUITS

Stéphane Charruau, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 13, 1982, Ser. No. 377,844
Claims priority, application France, May 15, 1981, 81 09757
Int. Cl.[3] G01R *31/28*
U.S. Cl. 371—20 11 Claims



1. A system for selecting high-reliabilit.y integrated circuits by thermal and dynamic treatment, comprising:

means for receiving the integrated circuits to be selected wherein said integrated circuits are constructed of P different types with respect to the number of terminal pins and wherein said integrated circuits are accordingly arranged in P separate groups on said means for receiving;

heat treatment means comprising a heat chamber in which said receiving means are disposed to provide a thermal treatment to said integrated circuits;

dynamic treatment means for generating dynamic signals to be applied to said integrated circuits, said dynamic signals consisting of P distributions of dynamic signals for exciting separately said P groups by signals conventional to the types of integrated circuits of each of said groups respectively, said P distributions being provided successively such that only one group of integrated circuits is excited at each instant considered, said P distributions being repeated periodically so that each of said groups receives sequentially its distribution of dynamic signals at the rate of said periodic repetition, said dynamic treatment means comprising a power amplifier assembly having first inputs for receiving digital control signals, second inputs for receiving enabling signals and outputs connected to said P groups of integrated circuits respectively for transmitting said P distributions and said dynamic treatment further comprising a programmable processing unit PPU for generating said control signals and a demultiplexing circuit for generating said enabling signals wherein said programmable processing unit has first outputs connected to said first inputs of said amplifier assembly and second outputs connected to said demultiplexing circuit to address said demultiplexing circuit by address signals, said control and address signals being determined to provide

said P successive distributions at said outputs during the length of each of said periods;

direct current supplying means for producing a plurality of different d.c. supply of voltages for each of said P different types of integrated circuits, said voltages being transmitted periodically to each of said integrated circuits at the same rate as said dynamic signals in order to supply the type of integrated circuits excited at the instant considered with the voltage specified for said type and during a interval slightly longer and overlapping the time of application of the dynamic signal supplied to said type, and further wherein said supply means comprises a programmable supply which is addressed from the programming processing unit and having an output connected to a switching matrix also addressed from said programming processing unit and said supply further having outputs connected respectively to each of said integrated circuits of said different groups so as to distribute the corresponding voltages to each of said groups successively;

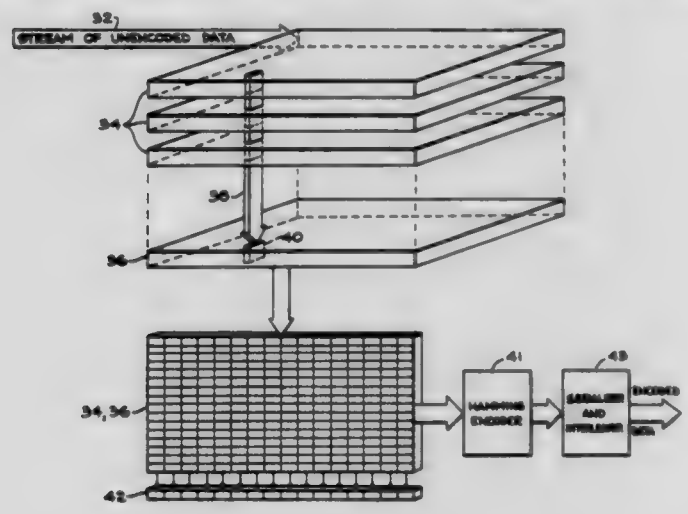
and further wherein said integrated circuits have at least one of said terminal pins for receiving said supply voltage and a plurality of other terminal pins for receiving said dynamic signals with the maximum number N of said other of said pins determining the minimum number of said first inputs of said power amplifier assembly according to the different types of integrated circuits wherein said assembly comprises at least one set of N power amplifiers.

4,495,623

DIGITAL DATA STORAGE IN VIDEO FORMAT

David J. George, Irvine; Hue V. Nguyen, Westminster, and Raymond Yardy, Irvine, all of Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Filed Sep. 2, 1982, Ser. No. 414,094
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—38 25 Claims



1. Apparatus for correcting errors in digital data stored on a storage medium and recovered therefrom, said apparatus comprising:

means for arranging the bytes of data to be stored on the storage medium into a plurality of code blocks each having a first predetermined number of columns and a second predetermined number of rows of bytes;

first order means for generating a parity block of first order parity bytes, said parity block having a number of columns and a number of rows of bytes corresponding to said first predetermined number and said second predetermined number, respectively, such that the first order parity bits in said parity block correspond to the computed parity of the combined corresponding bits in each of said code blocks;

second order means for generating a parity row of second order parity bytes for each of said data blocks and said parity block, such that each bit of each said second order parity byte corresponds to the computed parity of the combined corresponding bits in each byte in the column of the block associated with that parity row, said second order means adding each said row to its associated block; and

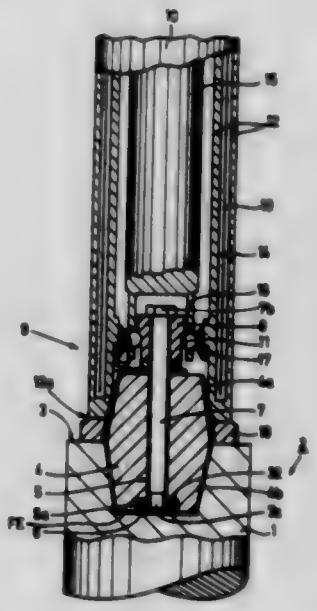
means for generating a correction control word for each byte of all of said blocks, and for adding each said correction control word to each said byte for which said correction control word is generated, to form a composite word.

4,495,624

GRAPHITE ELECTRODE NIPPLE

Uwe Reimpell, Burgallee 136; Anton Wamser, Karl-Bierschenk-strasse 8, both of D-6466 Hanau am Main; Otto Stenzel, Am Mühlrain 18a, D-6466 Gründau-4, and Wilhelm Burgmann, Latrasse, F-71670 Issy-L'Evêque, all of Fed. Rep. of Germany

Filed Nov. 16, 1981, Ser. No. 321,978
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1980, 3043318
Int. Cl.³ H05B *7/14, 7/08*
U.S. Cl. 373—93 8 Claims



1. In a graphite nipple (4) for use in a composite electrode system, the nipple having means (4b) associated with a first end (FE) for uniting the nipple (4) with a first graphite electrode portion (1) and a second, opposite end (SE) for projecting from the first graphite electrode portion (1) when the nipple (4) is united therewith, a surface of the nipple (4) projecting to the second end (SE) thereof having a screw thread (4a) for connecting the nipple with a second graphite electrode portion, whereby to extend with the second graphite electrode portion the electrode formed by the nipple and first electrode portion for continued use in an electric furnace, the electric furnace having electrode holder means (10) for holding the electrode from the nipple at least a portion (7) of the electrode holder means (10) not being made of graphite, the electrode holder (10) cooperating with the nipple (4) for supporting the graphite electrode portion (1) in the electric furnace, the improvement comprising:

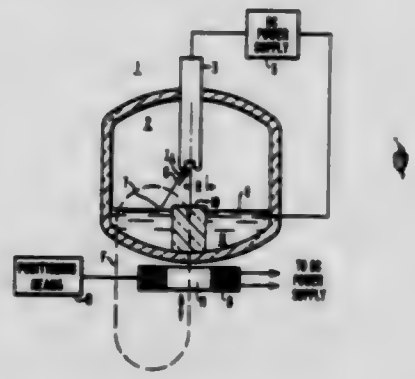
a supporting face (32) on the nipple (4), other than the screw thread (4a), for shape-locking engagement with the non-graphite portion (7) of the electrode holder means (10) when the nipple (4) is supporting the graphite electrode portion (1) in the electric furnace.

4,493,625

MAGNETIC FIELD STABILIZED TRANSFERRED ARC FURNACE

Joachim V. R. Heberlein, Forest Hills, and Maurice G. Fey, Plum Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 5, 1983, Ser. No. 510,785
Int. Cl.³ H05B 7/144, 7/20
U.S. Cl. 373—107 31 Claims



1. An electric arc furnace, comprising:
chamber means for containing melt therein;
an arcing electrode disposed with the chamber means and in communication with the interior portion thereof;
an arc attachment surface in the interior portion of the chamber means, the arc attachment surface and the arcing electrode positioned such that an electric arc can be started and is maintained therebetween;
DC power means which in combination with the arcing electrode and arc attachment surface creates an electric potential therebetween and provides current for flowing through the electric arc;
field coil means disposed with the chamber means, the field coil means being electrically connected to the DC power means inducing a DC magnetic flux field thereabout, the field coil means being disposed in relation to the arc attachment surface such that the magnetic flux field is substantially transverse to the arc root on the arc attachment surface causing a force to be applied to the arc root resulting in the continual rotation of the arc root about a closed path on the arc attachment surface thereby allowing increased contact of the arc root with the melt; and
electrical insulating means proximate the arc attachment surface about a region wherein the magnetic flux field is substantially parallel to the current flowing in the electric arc, the electrical insulating means angularly displacing of the arc from the longitudinal axis of the arc electrode and preventing the formation of the electric arc between the arcing electrode and the arc attachment surface thereby avoiding arc fixation.

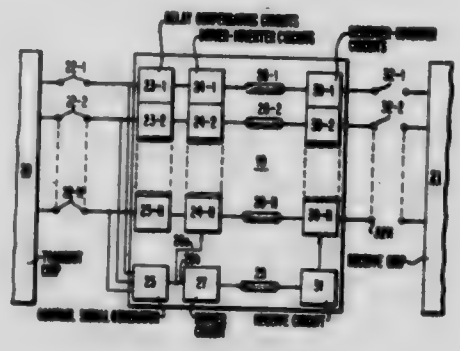
4,495,626

METHOD AND NETWORK FOR IMPROVING TRANSMISSION OF DATA SIGNALS BETWEEN INTEGRATED CIRCUIT CHIPS

Armand Brunin, Le Mee, and Guy D'Hervilly, Ris-Orangis, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 24, 1982, Ser. No. 391,813
Claims priority, application 06251981, Jun. 25, 1981, 81430018.2
Int. Cl.³ H04L 25/34
U.S. Cl. 375—19 13 Claims

1. A method for transmitting digital data signals from a first integrated circuit to a second integrated circuit, the first integrated circuit having multiple output devices which produce the data signals by assuming either a conductive or non-conductive state, the second integrated circuits having inputs for receiving the data signals, the method comprising:
analyzing the data signals of the first circuit to determine the number of first circuit output devices in a conductive state;
generating a control signal to invert the data signals produced by the first circuit when the number of output devices in a conductive state is equal to or greater than a pre-determined number and to not invert the data signals when the number of output devices in a conductive state is less than the predetermined number;



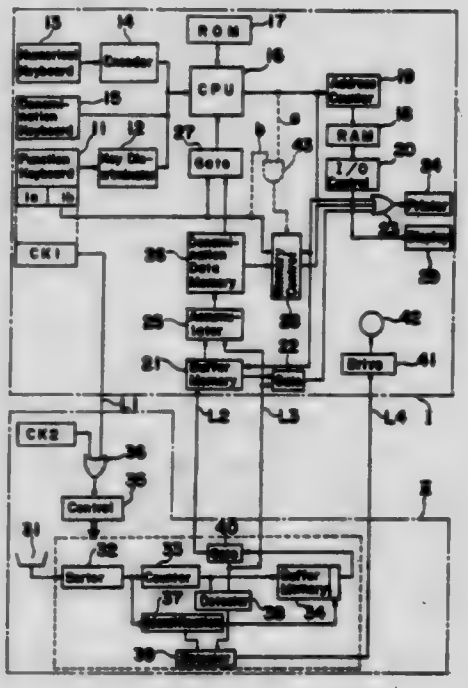
transmitting the data signals to the second circuit either inverted or non-inverted in accordance with the control signal;
transmitting the control signal to the second circuit; and
establishing the data signals as they originally appeared at the first circuit output devices in response to the control signal before the data signals are introduced to the second circuit inputs.

4,495,627

CASH ACCOUNTING SYSTEM

Katsuji Nishimura, Habikino, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 30, 1982, Ser. No. 403,324
Claims priority, application Japan, Aug. 7, 1981, 56-124445; Aug. 10, 1981, 56-125514
Int. Cl.³ G06F 15/30
U.S. Cl. 377—6 2 Claims



1. A cash accounting system which compriaes, in combination:
a cash register for recording various transactions of money;
a counting machine electrically connected with said cash register and operable to count the money including papers and coins used during each of the transactions;

printing means; and

totaling means for totaling according to denomination count data developed by said counting machine;

said printing means and said totaling means being provided in either one of said cash register and said counting machine;

whereby money information developed by said counting machine as a result of a counting operation is printed out by said printing means in response to completion of the counting operation while respective totals of the money of different denominations developed by said totaling means through a plurality of counting operations of said counting machine in a transaction are printed out by said printing means in accordance with an instruction indicative of completion of the transaction.

4,495,628

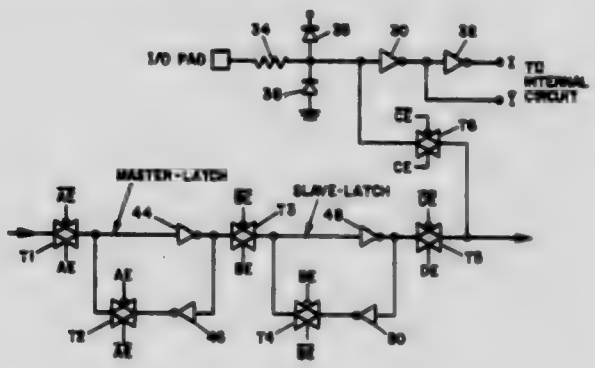
CMOS LSI AND VLSI CHIPS HAVING INTERNAL DELAY TESTING CAPABILITY

John J. Zasio, Sunnyvale, Calif., assignor to Storage Technology Partners, Louisville, Colo.

Filed Jun. 17, 1982, Ser. No. 389,573

Int. Cl.³ G11C *19/28*

U.S. Cl. 377—70 9 Claims



1. An integrated circuit having integral delay testing capability comprising:

an integrated circuit circuit chip having internal functional circuitry thereon;

a shift register circuit formed on said chip, said shift register circuit comprising a plurality of shift register stages connected in series, each stage being adapted to selectively allow data signals to pass directly therethrough;

a control circuit formed on said chip for controlling the operation of said shift register circuit;

means for selectively configuring said shift register circuit as a ring oscillator in response to control signals generated by said control circuit; said ring oscillator having a period of oscillation that is approximately two times the time it takes a data signal to propogate through said shift register circuit;

a plurality of input/output pads located near the periphery of said chip for providing input and output connections to said internal functional circuitry and said control circuit, one of said pads being an input pad through which a data signal may be directed towards said shift register circuit, and another of said pads being an output pad through which a data signal may be received from said shift register circuit;

whereby a time measurement may be made of the time it takes a data signal to propagate through said shift register circuit; which time measurement can be related to the delay times associated with the operation of said internal functional circuit.

4,495,629

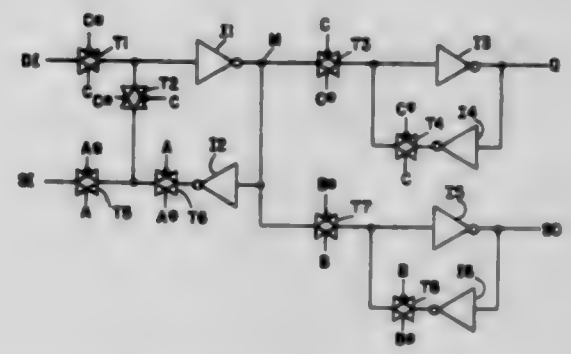
CMOS SCANNABLE LATCH

John J. Zasio, Sunnyvale, and Larry Cooke, Cupertino, both of Calif., assignors to Storage Technology Partners, Louisville, Colo.

Filed Jan. 25, 1983, Ser. No. 460,952

Int. Cl.³ G11C *11/28*

U.S. Cl. 377—70 12 Claims



1. A scannable latch circuit for selectively handling data bit signals under control of at least one clock signal, said scannable latch circuit comprising:

latch means, operable in a first mode of operation, for providing and maintaining a data output bit signal for an entire clock cycle of a first clock signal, said data output bit signal being equivalent to a data input signal immediately preceding said clock cycle, said latch means comprising a first circuit connected in tandem to a second latch circuit, said first and second latch circuits operating respectively as master and slave latch circuits during said first mode of operation;

shift means, operable in a second mode of operation, for selectively allowing data bit signals to be shifted into and out of said latch means, said shift means including output means for shifting data out of said latch means that is isolated from the data output bit signal provided by said latch means in said first mode of operation, said shift means comprising a third latch circuit coupled to said second latch circuit, said second and third latch circuits operating respectively as master and slave latch circuits during said second mode of operation; and

select means for selecting the mode of operation of said scannable latch circuit, said select means being operable during all useful portions of said clock cycle.

4,495,630

ADJUSTABLE RATIO DIVIDER

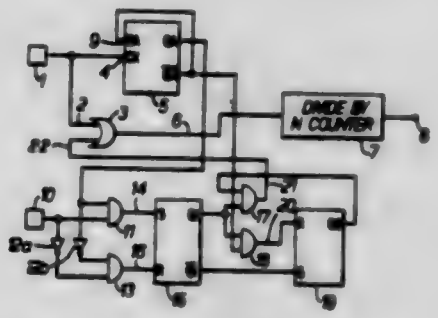
Norman C. Thompson, and Steven J. Poole, both of Wiltshire, England, assignors to Plessey Overseas Limited, Ilford, England

Filed Dec. 7, 1981, Ser. No. 328,248

Claims priority, application United Kingdom, Dec. 8, 1980, 8039315

Int. Cl.³ H03K *21/02, 21/06, 21/36*

U.S. Cl. 377—110 6 Claims



1. An adjustable ratio divider comprising a dividing counter having a fixed division ratio and which is clocked by an input pulse train fed to the counter via a gate associated with a logic

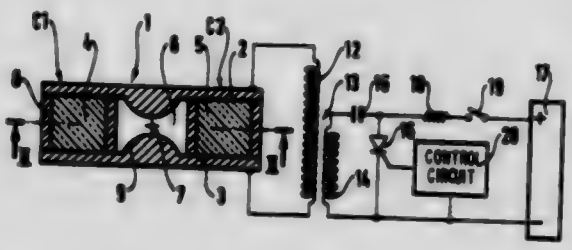
circuit, which logic circuit comprises dividing means arranged to frequency divide the input pulse train to provide a divided pulse train and a complementary divided pulse train, synchronising means arranged to generate a first control output and a complementary first control output, each of which is synchronised with the divided pulse train, in dependence on a control signal fed to the synchronising means and the divided pulse train, means for generating a second control output in response to the complementary first control output in dependence on the first control output and the complementary divided pulse train, and gate control means responsive to the first control output and the second control output to provide a gating signal to control the gate to remove one or more pulses from the input pulse train so that the division ratio of the divider is effectively variable in dependence on the number of control pulses received by the logic circuit during an output cycle of the dividing counter.

4,495,631

GAS LASER IN WHICH THE GAS IS EXCITED BY CAPACITOR DISCHARGE

Bernard Lacour, Marcoussis; Marc Maillet, Massy; Olivier de Witte, Gif-sur-Yvette, and Chantal Vannier, Saint-Michel sur Orge, all of France, assignors to Compagnie Generale D'Electricite, Paris, France

Filed Feb. 16, 1982, Ser. No. 349,105
Claims priority, application France, Feb. 16, 1981, 81 02974; Aug. 31, 1981, 81 16542
Int. Cl.³ H01S *3/097*
U.S. Cl. 372—38 8 Claims



1. A gas laser in which the gas is excited by discharges from capacitors, said laser comprising:

two spaced opposed metal plates;

two spaced dielectric members with high dielectric constant disposed between said plates, and defining a hollow volume along an axis;

two spaced opposed mirrors closing off said hollow volume along said axis and forming with said metal plates and said dielectric members an optical resonant cavity, said cavity containing an active laser gas;

one of said mirrors being partially transparent to laser radiation and forming a laser beam output;

said dielectric members and said metal plates constituting two laser capacitors connected in parallel, the middle portions of said metal plates in contact with the active gas constituting laser-triggering electrodes; and

a capacitor charging circuit for said laser capacitors, said circuit comprising:

a transformer having a primary winding connected in series with a charging circuit capacitor and having secondary windings ends connected to respective ones of said two plates;

a source of electric current for charging the charging circuit capacitor; and

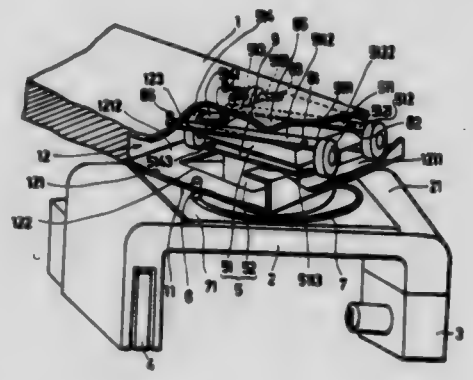
means for controlling the discharge of the charging circuit capacitor through the primary winding so as to generate an induced current in the secondary winding which induced current is capable of charging the laser capacitors so as to set up an electric discharge between the laser-triggering electrodes with said discharge exciting the active laser gas to form a laser beam.

4,495,632

RADIOGRAPHIC APPARATUS FOR PHOTOGRAPHING ENTIRE JAWS

Kozo Nakano, Kyoto, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Continuation of Ser. No. 277,721, Jun. 26, 1981, abandoned. This application Jan. 30, 1984, Ser. No. 575,317
Claims priority, application Japan, Jun. 27, 1980, 55-88058
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—40 3 Claims



1. An X-ray photographic apparatus for taking a radiograph of the entire jaws comprising a first support, a second support mounted on said first support so as to permit arcuate movement of the second support without rotating about an axis which passes through the second support, an arm mounted rotatably on said second support and having an X-ray generator on its one end and a film holding means in opposed relation with the generator a means for rotating said arm, a means for arcuately moving said second support when said arm is rotated, a single projection provided on either one surface of opposed surfaces of said first support and said arm, and a single curved guide groove provided on the other surface for slidably guiding said projection fitted into the inside of the other surface through said guide groove, said guide groove being generally semi-circular and of such a shape such that movement of the single projection in the single guide groove and arcuate movement of said second support during rotation of said arm control the rotation of said arm, rotates the film surface in said film holding means along the dental arch at an approximately constant distance from the arch and at an approximately equal speed and causes the X-ray beams from said X-ray generator to irradiate onto the film surface at right angles to the plane of the dental arch at any point of the arch.

4,495,633

PROCESS AND APPARATUS FOR THE DIMENSIONAL AND NON-DESTRUCTIVE CONTROL OF A HOLLOW MEMBER

Pierre De Conto, Chevigny Saint Sauveur, and Raymond Guipont, Venarey-les-Laumes, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 17, 1982, Ser. No. 419,476
Claims priority, application France, Sep. 23, 1981, 81 17927
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—55 9 Claims

1. Apparatus for non-destructively and absolutely measuring the thickness of the wall of a hollow member, comprising:

means for holding and positioning said member;

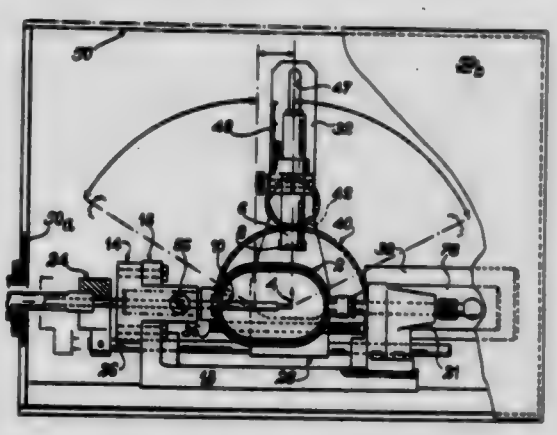
a radioactive source movable into said member for emitting gamma radiation in the direction of the inner surface of said wall of said member;

a single detector positionable outside said member so as to detect the gamma radiation passing through said wall of said member;

said source and said detector forming an assembly;

moving means for causing relative and continual movement between said assembly and said member, so that said assembly follows the wall profile of said member, wherein when said member has a rectilinear wall, in section, said

moving means simultaneously moves the source and the detector parallel to the rectilinear wall and wherein, when said member has a circular arc-like wall, in section, said source is maintained in the center of the arc, and the



detector moves along a larger radius arc centered on the source; and

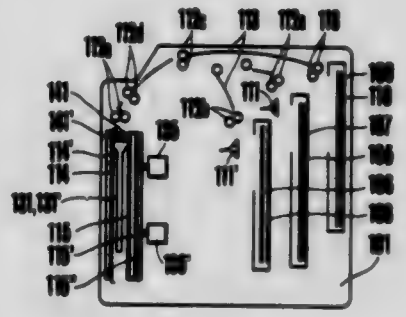
means for fixing the distance between the detector and the source, said distance remaining constant while the assembly moves.

4,495,634

X-RAY APPARATUS

Kenichi Suzuki, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1982, Ser. No. 370,848
Claims priority, application Japan, Apr. 28, 1981, 56-64837
Int. Cl.³ G01N *23/02*; G03B *41/16*
U.S. Cl. 378—173 **3 Claims**



1. An X-ray apparatus comprising:

converting means for exposing a sheet film disposed perpendicular to the horizontal direction;

film loading means for loading sheet films of different length;

transporting means for transporting a sheet film from the film loading means to the converting means along a descending direction; and

holding means for keeping the upper edge of the sheet film substantially at the same height in the converting means regardless of the length of the sheet film.

4,495,635

METHOD AND APPARATUS FOR PROFILING STRUCTURAL SECTIONS

John M. Dobbs, S. Hamilton, Mass., assignor to Analogic Corporation, Wakefield, Mass.

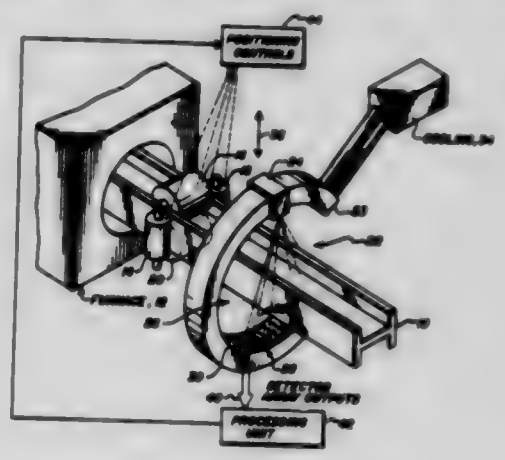
Continuation of Ser. No. 250,765, Apr. 3, 1981,. This application Sep. 19, 1983, Ser. No. 533,626
Int. Cl.³ G01B *15/02, 15/04*
U.S. Cl. 378—56 **6 Claims**

1. Apparatus for profiling a structural section having a spatial extent defining first and second outside edges, comprising:

a source for providing a fan-beam of penetrating radiation a portion of which passes through substantially the entire spatial extent of the structural section, and other portions of which pass through first and second regions respectively outwardly spaced from the first and second outside edges of the structural section;

an array of detectors spaced from the source having a first plurality of detectors responsive to the portion of the fan-beam of radiation which passes substantially through the entire spatial extent of the structural section to provide first data respectively representative of the thickness of corresponding ones of a plurality of predetermined physically adjacent regions of the structural section through which the fan-beam passes from the source to corresponding ones of the detectors of said first plurality of detectors, said regions together encompassing substantially the entire spatial extent of the structural section;

said array of detectors having a second and a third plurality of detectors disposed on respective ends of said first plurality of detectors of said array of detectors responsive to the portions of the fan-beam of radiation which pass



through the first and second regions respectively outwardly spaced from the first and second outside edges to provide second data respectively representative of the location of said first and second outside edges; and

means connected to the array of detectors including a processor and an associated memory having stored data representative of an ideal two-dimensional cross-section of the structural section, said means being operative in response to said first thickness data respectively representative of corresponding ones of said predetermined physically adjacent regions which together encompass the entire spatial extent of said structural section, and to said second outside edge location data respectively representative of the location of said first and second outside edges, to provide third data representative of the deviations of the two-dimensional cross-section of the structural section relative to the ideal two-dimensional cross-section.

4,495,636

MULTICHANNEL RADIOGRAPHY EMPLOYING SCATTERED RADIATION

Alan M. Jacobs, Gainesville, Fla.; Edward S. Kenney, State College, and Joseph J. McInerney, Hummelstown, both of Pa., assignors to Research Corporation

Filed Jan. 2, 1981, Ser. No. 222,133
Int. Cl.³ G01N *23/20*
U.S. Cl. 378—87 **20 Claims**

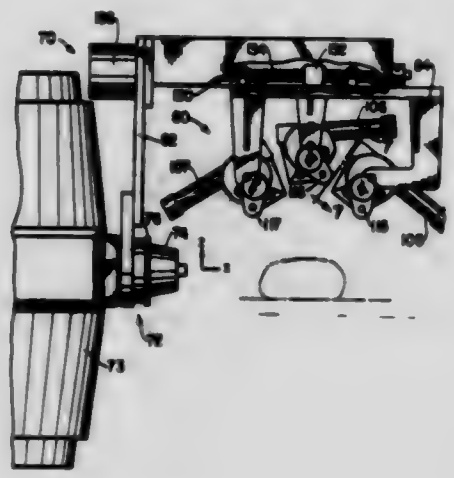
16. A process of collecting data which encodes the positions of a plurality of regions on an interfacial surface in the body of a subject for constructing an image of the interface, the interfacial surface dividing a first region from a second region in the body, contents of the first region differing from contents of the second region in the extent to which unit volumes of such contents scatter penetrating a radiation, the process comprising the steps of:

(a) directing a shaped beam of penetrating radiation into the body of the subject and through the interfacial surface;

(b) orienting each of a plurality of directional radiation detectors in a presearch orientation associated with the detector, each directional radiation detector being pivota-

bly supported outside of the body of the subject, each directional radiation detector having a directional radiation receptance port and a radiation-intensity signal output and being adapted to produce a radiation-intensity signal at the output which is a measure of the intensity of radiation receptance port and propagating in a direction admitted by the receptance port, each directional radiation receptance port having a limited field of view, an intersection of a field-of-view of a directional radiation receptance port of a radiation detector with the beam of radiation defining a sensitive volume;

(c) automatically pivoting each directional radiation detector to cause the sensitive volume associated with the radiation detector to intersect the interfacial surface;



(d) monitoring the radiation intensity signal from each radiation detector as the detector is automatically pivoted and automatically stopping the radiation detector at an orientation at which the radiation-intensity signal or an average value thereof at least approximately equals an operating point value associated with the detector corresponding to locating the sensitive volume associated with the radiation detector at a position straddling the interfacial surface; and

(e) transmitting detector-orientation data which encodes the orientation of each directional radiation detector to a data processing device thereby collecting data which encodes the positions of the sensitive volumes associated with the directional radiation detectors straddling the interfacial surface.

4,495,637

APPARATUS AND METHOD FOR ENHANCED PSYCHOACOUSTIC IMAGERY USING ASYMMETRIC CROSS-CHANNEL FEED

Paul F. Bruney, Silver Spring, Md., assignor to Sci-Coustics, Inc., Washington, D.C.

Continuation-in-part of Ser. No. 401,211, Jul. 23, 1982,. This application May 3, 1983, Ser. No. 491,297

Int. Cl.[3] H04R *5/00*; H04S *1/00*

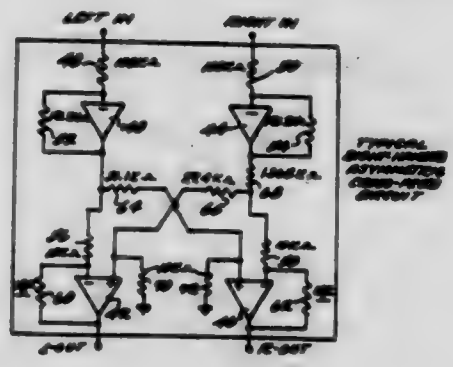
U.S. Cl. 381—1 24 Claims

1. An audio signal processing circuit for processing plural channels of related audio signals, said circuit comprising:

a first audio signal processing channel;

a second audio signal processing channel; and

asymmetric cross-feed means for feeding signal levels from the first to second channel and from the second to first channel that are substantially different in relative magnitude thus producing asymmetric bi-directional audio signal cross-feed between said first and second channels and an asymmeric output from said channels when different signals are applied to said first and second channels while causing said first and second channels to produce the same



output when the same signal is applied to both said channels.

4,495,638

AUDIO-BAND ELECTRO-MECHANICAL VIBRATION CONVERTER

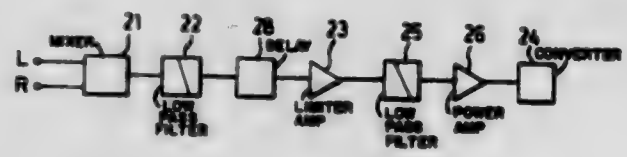
Kyota Yamada, and Akira Komatsu, both of Tokyo, Japan, assignors to Body Sonic Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 025,501, Mar. 30, 1979, Pat. No. 4,354,067. This application Feb. 23, 1981, Ser. No. 351,555

Claims priority, application Japan, May 17, 1978, 53-58518; May 31, 1978, 53-65486; May 31, 1978, 53-65487; May 31, 1978, 53-65488; Jun. 22, 1978, 53-75580; Jul. 27, 1978, 53-103285[U]; Jul. 27, 1978, 53-103286[U]; Aug. 7, 1978, 53-96014; Oct. 5, 1978, 53-137134[U]; Nov. 20, 1978, 53-159887[U]; Dec. 26, 1978, 53-181743[U]

Int. Cl.[3] H04R *5/00*

U.S. Cl. 381—27 3 Claims



1. Device to give an audio signal to a coil of a vibration converter and to generate a mechanical vibration in a casing thereof through magnetic interaction between the magnetic force developed in said coil and the magnetic force of a magnetic gap, said device comprising:

a mixer to blend the outputs from a stereo unit;

a first stage low-pass filter connected to said mixer to let pass a low-band audio signal for the converter;

a limiter means to limit the output of said low-pass filter when the output exceeds a specified level;

a second stage low-pass filter to correct a distortion of the wave form of a signal from said limiter means;

an amplifier connected to said low-pass filter, a delay circuit being added between the mixer and the low-pass filter.

4,495,639

ELECTRONIC DATA COMPRESSOR

John E. Mosier; Jim B. Surjaatmadja, and George B. McLawhon, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 8, 1982, Ser. No. 355,318

Int. Cl.[3] G10L *1/00*

U.S. Cl. 381—51 5 Claims

1. An apparatus for compressing data contained in a serial stream of binary bits provided by a binary bit stream generating means, the binary bit stream generating means also providing a master timing signal and a byte formed signal, the byte formed signal designating when a predetermined number of bits forming a byte has been placed in the binary bit stream, said apparatus comprising:

byte counter means, responsive to the byte formed signal, for counting the number of bytes in the binary bit stream, said byte counter means including:

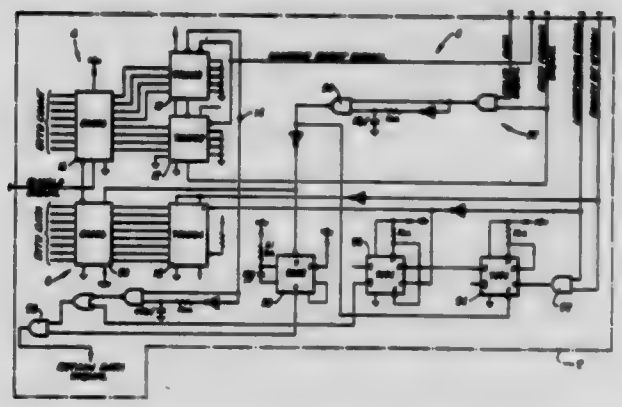
binary counter integrated circuit means for incrementing a count in response to the byte formed signal; and

byte counter buffer means for retaining the count provided by said binary counter integrated circuit means;

binary bit signal storage means, responsive to the binary bit stream and the master timing signal, for sequentially storing each binary bit within each of the bytes containing the predetermined number of binary bits, said binary bit signal storage means including:

shift register means having serial input means for receiving the serial binary bit stream and also having parallel output means, said parallel output means having a number of output lines equal in number to the predetermined number of binary bits in one of said bytes; and

shift register buffer means for retaining a byte of the binary bits provided on said parallel output means of said shift register means; and



control means, responsive to the binary bit stream, the master timing signal, and the byte formed signal, for generating a control signal for retaining the count of said byte counter means and the binary bits of said binary signal storage means when at least one of the stored binary bits has a predetermined logic value, said control means including:

first AND gate means for logically combining the master timing signal and the binary bit stream and for providing an output of the logical combination;

first flip-flop means having an output responsive to the output of said first AND gate;

second flip-flop means having an output responsive to the output of said first flip-flop means and the master timing signal;

third flip-flop means having an output responsive to the byte formed signal; and

second AND gate means for providing the control signal in response to the output of said second flip-flop means and the output of said third flip-flop means.

4,495,640

ADJUSTABLE DISTORTION GUITAR AMPLIFIER

Douglas R. Frey, 1980C Allwood Dr., Bethlehem, Pa. 18018

Filed Jun. 28, 1982, Ser. No. 392,538
Int. Cl.³ H03G *3/00*
U.S. Cl. 381—61 18 Claims

1. A programmable adjustable distortion amplifier, especially for amplifying music, comprising:

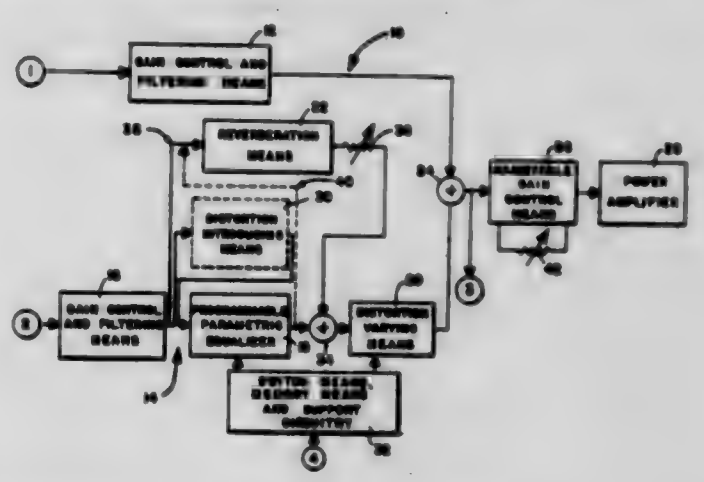
(a) means for adjustably controlling amplifier gain;

(b) means for adjustably filtering high and low frequency components of signal processed by said amplifier;

(c) means for selectably controlling amplitude of signal processed by said amplifier within an adjustably preselected bandwidth centered about an adjustably preselected frequency, all in response to a first control signal provided thereto;

(d) means for varying distortion and gain of signal processed by said amplifier by an adjustably preselectable amount in response to a second control signal provided thereto;

(e) means, responsive to operator input, for generating said first and second control signals; and



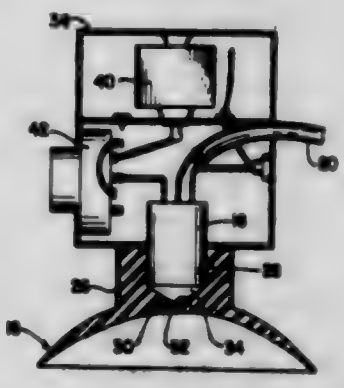
(f) memory means for storing a plurality of sets of said first and second control signals and delivering a selected one of said sets to said amplitude controlling means and distortion varying means in response to an operator supplied stimulus.

4,495,641

MICROPHONE PICKUP FOR MUSICAL INSTRUMENTS

Raymond Vernino, 155 Yo. Hubbard Rd., #9, Hubbard, Ohio 44425

Filed Jul. 11, 1983, Ser. No. 512,345
Int. Cl.³ H04R *1/46*
U.S. Cl. 381—91 5 Claims



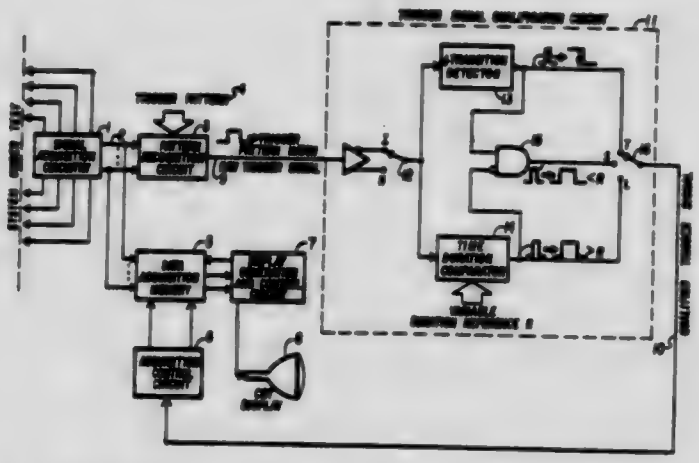
1. In combination, an audio pickup adapted to be secured to a musical instrument or the like comprising a suction cup in the general form of a hollow spherical segment formed from elastomeric material, a projection extending upwardly from the top of said spherical segment, an open-ended, cup-shaped recess formed in said projection, said recess having a closed bottom above the inner periphery of said segment, a condenser-type microphone received within said recess with the bottom of said microphone spaced from the bottom of said recess to form in said recess an airtight-resonating chamber, and a musical instrument having a resonator means including a sounding board, said suction cup being pushed against the sounding board to affix the audio pickup thereon with said microphone out of contact therewith such that sound vibrations from the sounding board are transmitted to said condenser-type microphone through said resonating chamber.

4,495,642

TIMING ANALYZER WITH COMBINATION TRANSITION AND DURATION TRIGGER

Joel A. Zellmer, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 26, 1982, Ser. No. 352,672
Int. Cl.³ G01R 13/32; G06K 9/00
U.S. Cl. 382—1 5 Claims



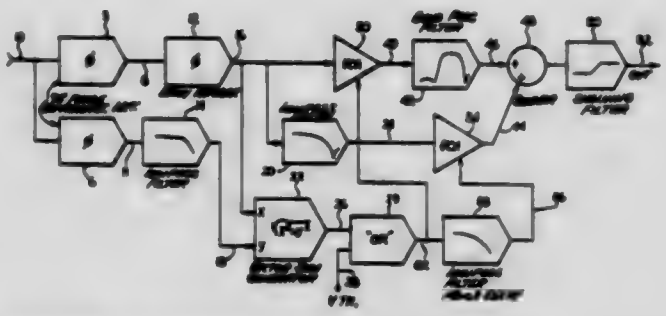
1. A logic timing analyzer or the like, comprising:
signal acquisition means for receiving a collection of fluctuating input data signals to be compared against logical thresholds and for producing from the fluctuating input data signals a corresponding collection of acquired signals;
pattern recognition means coupled to the collection of acquired signals for causing a recognition signal to appear for any duration that the collection of acquired signals matches a preselected pattern and for causing the recognition signal to disappear for any duration that the collection of acquired signals differs from the preselected pattern;
trigger signal generation means coupled to the recognition signal for producing a trigger signal when the duration between an appearance of the recognition signal and a subsequent disappearance thereof is less than a preselected duration;
a data acquisition memory, coupled to the collection of acquired signals and the trigger signal, and responsive to the trigger signal by ceasing to store the collection of acquired signals after a predetermined amount of time subsequent to the occurrence of the trigger signal; and
display means coupled to the data acquisition memory for displaying the contents thereof.

4,495,643

AUDIO PEAK LIMITER USING HILBERT TRANSFORMS

Robert A. Orban, Belmont, Calif., assignor to Orban Associates, Inc., San Francisco, Calif.

Filed Mar. 31, 1983, Ser. No. 480,921
Int. Cl.³ H04B 15/00
U.S. Cl. 381—94 21 Claims



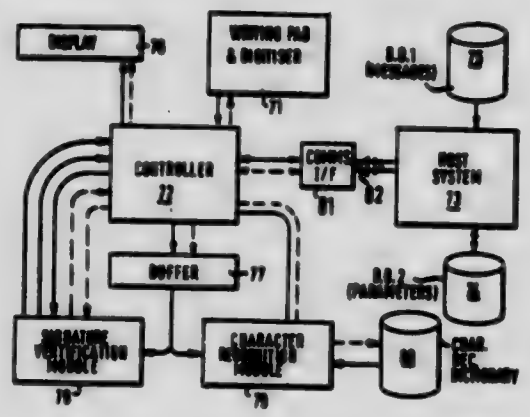
1. An audio-frequency peak limiter comprising:
filter means for filtering an audio frequency signal into a first band which includes low-frequency signals and a second band which includes high frequency signals;
first clipping means for providing clipping with substantially no harmonic distortion of a signal, coupled to said filter means for receiving said first band;
second clipping means for providing audio frequency clipping of a signal coupled to said filter means for receiving said second band;
combining means coupled to said first and second clipping means for combining the outputs of these means to provide a peak limited audio signal;
whereby a peak limiter is realized which provides low harmonic distortion for low-frequency signals and which permits harmonic distortion only when excited by high frequencies.

4,495,644

APPARATUS FOR SIGNATURE VERIFICATION

John R. Parks, West Byfleet; David R. Carr, Corfe Mullen, and Peter F. Fox, Verwood, all of England, assignors to Quest Automation Public Limited Company, Hampshire, England

Filed Apr. 26, 1982, Ser. No. 371,886
Claims priority, application United Kingdom, Apr. 27, 1981, 8112949
Int. Cl.³ G06K 9/62
U.S. Cl. 382—3 7 Claims



1. Apparatus for comparing a working signature of an individual to verify the working signature, comprising:
a transducer responsive to the pressure of a pointed writing instrument when the individual writes on a sheet of paper that overlies the transducer, which transducer generates digital electronic signals in real time representing the position of the tip of the writing instrument in terms of X and Y coordinates relative to a predetermined origin of coordinates,
means arranged to sample at a rapid rate the X and Y coordinates and therefrom to determine the changes from one sample of each coordinate to the next,
program memory means in which is stored algorithms for identifying significant features of the signature including upper and lower turning points of loops, points at which the writing instrument is applied to and lifted from the paper, and lengths of segments of the signature, and
digital electronic processor means arranged to operate according to said stored algorithms to:
a. compute from said changes in X and Y coordinates, from one sample of each coordinate to the next, mathematical parameters representing said significant features of said working and sample signatures,
b. derive from several specimen signatures for said individual means values and spread indicators of said mathematical parameters and to store said mean values and spread indicators for said individual in data memory means,
c. respond to a working signature of the individual by calculating the differences between said parameters of said working signature and said mean values of said

parameters for said individual retrieved from said data memory means,

d. calculate for each parameter according to said spread indicator a first difference limit and a second larger difference limit and to calculate a first score for said parameter that corresponds to less than the calculated difference if the difference is less than the first limit, to calculate a second score that corresponds to the calculated difference if the difference is between the first and second limits, and to calculate a third score that is substantially larger than the calculated difference if said calculated difference is greater than the second limit, and

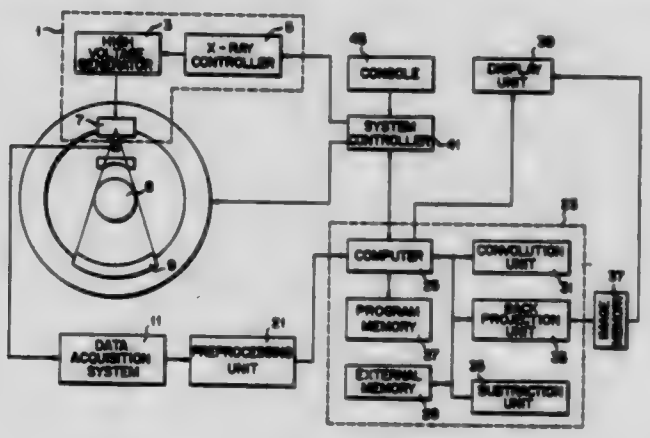
e. adds the scores for the several parameters and rejects the working signature if the total score exceeds a threshold, said substantially larger third score being such that said threshold will be exceeded if the calculated difference of any parameter exceeds the second limit.

4,495,645

COMPUTED TOMOGRAPHY DEVICE

Akinami Ohhashi, Omiya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 9, 1982, Ser. No. 347,334
Claims priority, application Japan, Feb. 12, 1981, 56-19476
Int. Cl.³ A61B *6/00*; G06F *15/42*
U.S. Cl. 382—6 16 Claims



1. A method for reconstructing an image by a computed tomography device which obtains reconstruction image data corresponding to a plurality of dynamic images generated by projection data strings which are acquired by rotary scanning through an angle exceeding an angle corresponding to one reconstruction image, comprising the steps of:

(a) acquiring a group of projection data strings, including time-serial projection data strings, corresponding to a desired reconstruction CT image and determining the difference between each said time-serial projection data string corresponding to said reconstruction CT image, and the respective projection data string corresponding in position therewith, to obtain differential data strings;

(b) convolving and back-projecting the projection data strings to produce the reconstruction CT image; and

(c) convolving the differential data strings and further back-projecting the convolved differential data on the reconstruction CT image which is obtained in the step (b).

4,495,646

ON-LINE CHARACTER RECOGNITION USING CLOSED-LOOP DETECTOR

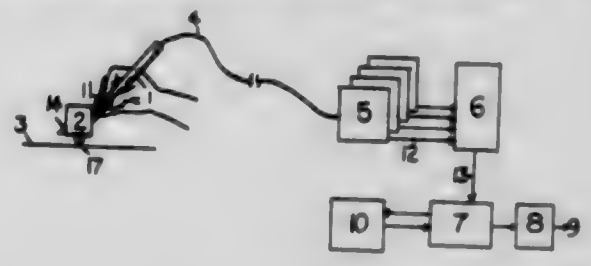
Nader Gharachorloo, H3F Lansing W., Ithaca, N.Y. 14850

Filed Apr. 20, 1982, Ser. No. 370,084
Int. Cl.³ G06K *9/24*
U.S. Cl. 382—13 17 Claims

1. The method of recognizing handwritten characters being written by a stylus upon a writing surface, comprising:

a. sensing stylus contact with the writing surface;

b. sensing all directions traveled by the stylus upon the writing surface using a closed-loop detector;



c. storing all directions sensed in the form of a data string;

d. sensing the end of stylus contact with the writing surface;

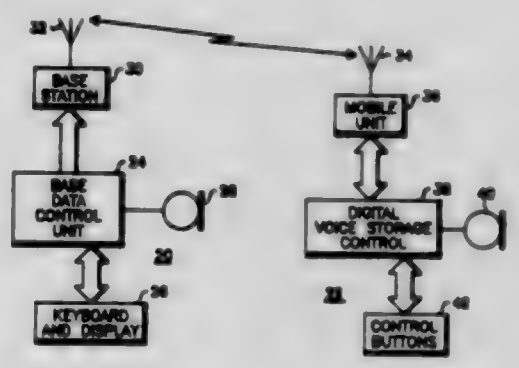
e. matching the stored string with a table of known strings.

4,495,647

DIGITAL VOICE STORAGE MOBILE

Timothy M. Burke, Fort Worth; Paul F. Smith, North Richland Hills; Scott W. Noble, and Eric R. Schorman, both of Bedford, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 6, 1982, Ser. No. 447,373
Int. Cl.³ H04B *7/24*
U.S. Cl. 455—38 6 Claims



4. A radio control terminal for the secondary stations in a multi-unit communications system for voice and communications, having a primary station and a plurality of secondary stations each primary station adapted to transmit and receive both a command data packet including an address and voice message, and each secondary station including a microphone to permit input of voice messages by an operator, said control terminal comprising:

means for receiving a command data packet from the primary station including a record command and an address corresponding to the predetermined station address of the respective secondary station; and,

memory means for digitizing and storing voice messages transmitted to the secondary station by the primary station in response to said record command receipt.

4,495,648

TRANSMITTER POWER CONTROL CIRCUIT

Adolf J. Giger, Boxford, Mass., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 27, 1982, Ser. No. 453,513
Int. Cl.³ H04B *1/38*
U.S. Cl. 455—73 18 Claims

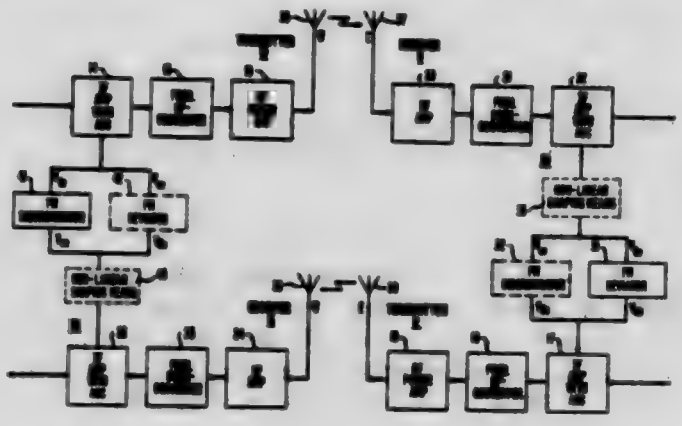
1. A radio transceiver comprising:

a receiver section capable of receiving an information signal destined for an end user in a predetermined channel from a remote, immediately preceding, transmitter of a radio system, the receiver section comprising amplifier means including an automatic gain control (AGC) arrangement capable of generating a d-c control signal which has a magnitude that (a) is a function of the amplitude of the received information signal at any instant of time and (b)

can vary between a predetermined range of amplitude levels;

means responsive to the d-c control signal from the AGC arrangement of the amplifier means in the receiver section for generating an a-c control signal whose frequency is (a) a function of the magnitude of the d-c control signal at any instant of time, and (b) lies within a predetermined band of frequencies within a range of a loop bandwidth of the AGC arrangement of the receiver section; and

a transmitter section capable of transmitting an information



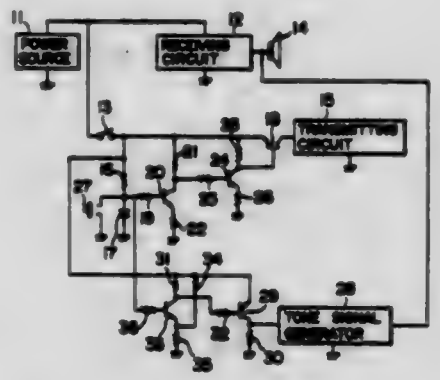
signal destined for a remote end user in a predetermined transmission channel to a remote, next sequential, receiver of the radio system associated with said remote transmitter, the transmitter section comprising amplifier means including an AGC arrangement which is responsive to the a-c control signal from the generating means for amplitude modulating (AM) the amplitude of the information signal transmitted in the predetermined transmission channel to the remote, next sequential, receiver in accordance with the frequency variations of said a-c control signal from the generating means.

4,495,649

POWER SOURCE DEVICE FOR PORTABLE TYPE RADIO APPARATUS

Keisuke Iwata, Tokyo, Japan, assignor to Iwata Electric Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1982, Ser. No. 454,411
Claims priority, application Japan, Dec. 30, 1981, 56-211401
Int. Cl.³ H04B *1/02, 17/00*
U.S. Cl. 455—115 3 Claims



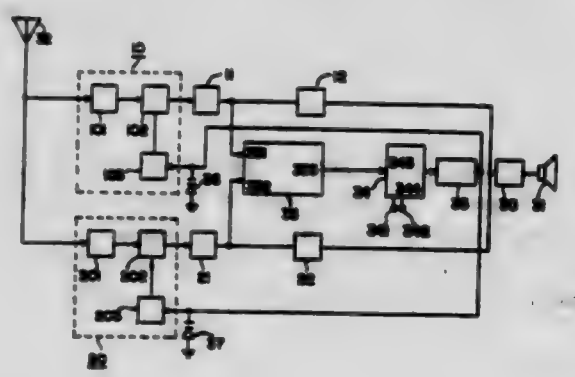
1. A power source device for operating a portable type radio apparatus having a transmitting circuit, comprising: a power source, a time constant circuit including a capacitor connected to the output side of said power source and a switching circuit coupled to said time constant circuit and said power source for applying the power source voltage to said transmitting circuit to effect the operation thereof for a predetermined time, delay timing circuit means operative to produce an output signal after the lapse of a preset time by an output signal of said time constant circuit, a tone signal generating circuit responsive to the output signal of said delay timing circuit means to generate a tone signal representative of the fact that a required time related to said preset time has passed, and switch means connected in parallel with the capacitor of said time constant circuit for effecting a continuation of the operation of said transmitting circuit.

4,495,650

ELECTRONIC TUNING TYPE RADIO RECEIVERS

Hideo Konishi; Kazunori Matsuoka, and Takao Gouya, all of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 330,609, Dec. 14, 1981, abandoned, which is a continuation of Ser. No. 124,852, Feb. 26, 1980, abandoned.
This application Aug. 25, 1983, Ser. No. 526,222
Claims priority, application Japan, Feb. 26, 1979, 54-22404
Int. Cl.³ H04B *1/26*
U.S. Cl. 455—144 3 Claims



1. A control circuit for detecting amplitude levels of either an AM intermediate frequency (IF) or an FM intermediate frequency (IF) signal and generating a control output signal therefrom when either said AM intermediate frequency signal or FM intermediate frequency signal exceeds a predetermined amplitude level comprising:

mode selector means for setting said control circuit in either an AM detection mode for detecting the level of an AM IF signal or an FM detection mode for detecting the level of an FM IF signal;

input terminal means responsive to said mode selector means for receiving either said AM IF signal in said AM detection mode or said FM IF signal in said FM detection mode;

oscillator means responsive to said mode selector means for generating an oscillating voltage output signal of a selected frequency when said mode selector switch is set in said FM detection mode;

mixer/amplifier means coupled to said input terminal means and an output of said oscillator means for mixing the FM IF signal at said input terminal means with said oscillating voltage output signal of said oscillator means to create a modified FM signal in the frequency range of said AM IF signal and amplifying either said AM IF signal or said modified FM signal; and

level detector means for measuring the amplitude level of said AM IF signal when said mode selector means is in said AM detection mode and the amplitude level of said modified FM signal when said mode selector means is in said FM detection mode, and generating said control output signal when either amplitude level exceeds a predetermined level.

4,495,651

BROADCAST RECEIVER COMPRISING AN ENTIRELY ELECTRONIC CONTROL DEVICE

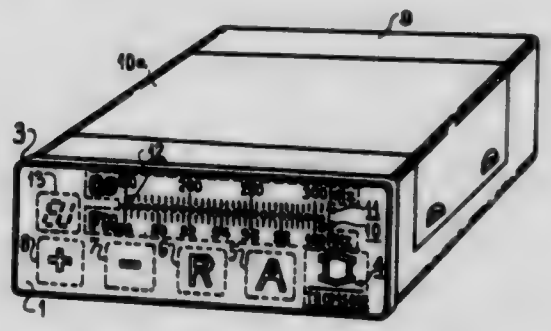
Denis Froeliger, Paris, France, assignor to Societe d'Electronique Industrielle d'Elbeuf-Elbeuf, Paris, France

Filed Dec. 6, 1982, Ser. No. 446,891
Claims priority, application France, Dec. 9, 1981, 81 23029
Int. Cl.³ H04B *1/08, 1/16*
U.S. Cl. 455—158 21 Claims

1. A radio receiver free of control knobs and mechanical

switches, which displays control information when operated and marks the information when not operated thereby disguising the identity of the receiver as such when not operated, the receiver comprising:

a receiver housing mounting a substantially planar front plate thereto which is tinted and light transmissive, said plate being free of any observable portions construable as enabling control of said receiver;



a plurality of control areas located at the rear of the plate for sensing touch of said plate and causing change in a respective plurality of control functions of the receiver thus altering its operation;

first light source means located at the rear of the front plate for displaying operating frequency information only when the receiver is operated; and

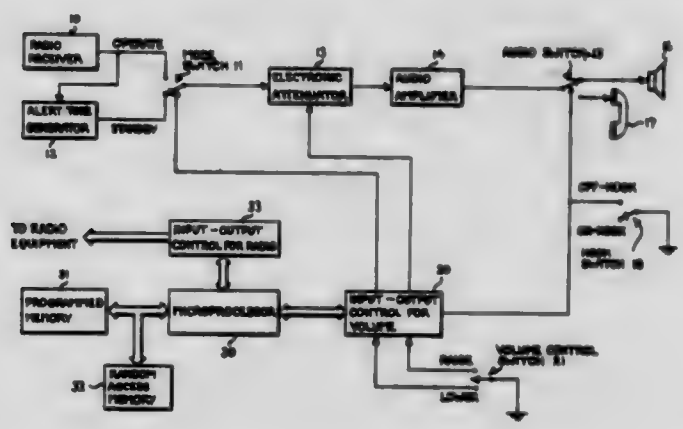
second light source means located at the rear of the front plate for back-lighting the control areas only when the receiver is operated.

4,495,652

CONTROL ARRANGEMENT FOR RADIO APPARATUS

Samuel A. Leslie, Forest, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Feb. 28, 1983, Ser. No. 470,096
Int. Cl.³ H04B 1/16
U.S. Cl. 455—234 **12 Claims**



1. Apparatus for controlling the output volume of radio apparatus having multiple output modes of operation comprising:

a. means for selecting an output mode of operation of the radio apparatus;

b. a single device for selectively setting volume and sending volume setting information to a microprocessor for each output mode of operation;

c. said microprocessor capable of sensing the selected mode of operation and receiving volume setting information;

d. a memory device associated with said microprocessor for storing volume setting information corresponding to each mode of operation; and

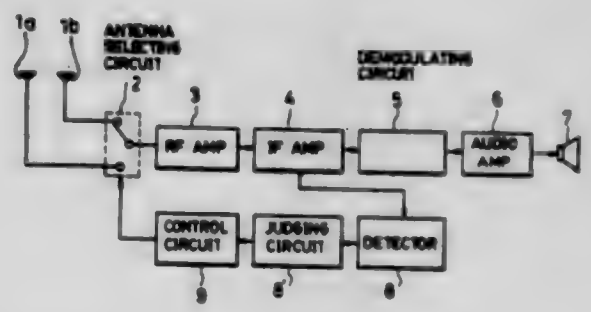
e. wherein said microprocessor, upon sensing a selected mode of operation, is capable of retrieving the corresponding volume setting information and sending it to an attenuator to adjust audio signals supplied by the radio apparatus, and wherein said microprocessor is further capable of monitoring volume setting information from said selective volume setting device and updating said memory for the selected mode.

4,495,653

DIVERSITY RECEIVER

Masanori Hamada, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1983, Ser. No. 488,293
Claims priority, application Japan, Apr. 30, 1982, 57-73840
Int. Cl.³ H04B 1/16, 7/08
U.S. Cl. 455—277 **1 Claim**



1. A diversity receiver which comprises:

a plurality of antennas;

an antenna selecting means to which said antennas are connected;

a receiver to which an antenna output from said antenna selecting means is applied;

a detector means to detect a signal voltage responsive to said antenna output from the output of an intermediate frequency amplifier of said receiver;

a judging means responsive to said signal voltage from said detector means to generate a judgement signal indicating whether receiving condition of operating one of the antennas is good or not;

a control means responsive to said judgement signal from said judging means to actuate said antenna selecting means so as to select one of said antennas which is in a good receiving condition;

said judging means including a comparator and two paths connecting two input terminals of said comparator to said detector means for comparing two inputs applied to said input terminals, one of said paths including a time constant circuit and the other including a bias applying means, at least one diode being connected between said detecting means and said two paths of the judging means.

4,495,654

REMOTE CONTROLLED RECEIVER WITH PROVISIONS FOR AUTOMATICALLY PROGRAMMING A CHANNEL SKIP LIST

Michael S. Deiss, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 29, 1983, Ser. No. 479,985
Int. Cl.³ H04B 1/00; H04N 5/44
U.S. Cl. 455—151 **7 Claims**

1. A remote control system of a communications receiver including channel tuning apparatus, comprising:

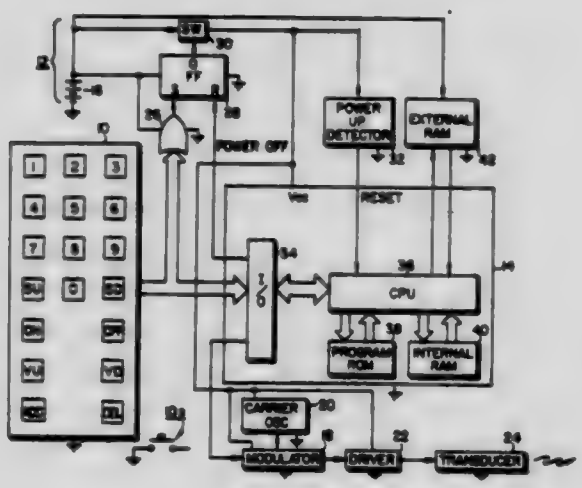
a remote control transmitter including a remote keyboard having at least one scan key; remote channel number generating means for causing coded signals representing sequential channel numbers to be generated when said scan key of said remote keyboard is activated; a remote memory including memory locations corresponding to respective channels which are addressable in response to said coded channel number representative signals, each of said memory locations storing a coded indication of whether or not the respective channel is preferred for reception; remote memory examining means for examining the contents of addressed ones of said memory loca-

DESIGNS

tions of said remote memory and causing said remote channel number generating means to stop changing said coded channel number representative signals when an addressed one of said memory locations contains a preferred channel indication; and transmitting means for transmitting in a remote control message the coded channel number representative signals generated by said remote channel number generating means;

a local keyboard mounted on said communications receiver including at least one scan key of the same type as said scan key of said remote keyboard;

a remote control receiver included within said communication receiver including receiving means for receiving a transmitted remote control message; local channel number generating means for causing coded signals representing sequential channel numbers to be generated when said scan key of said local keyboard is activated; a local memory including memory locations corresponding to respective channels which are addressable in response to said



coded channel number representative signals generated by said local channel number generating means, each of said memory locations of said local memory storing a coded indication of whether or not the respective channel is preferred for reception; local memory examining means for examining the contents of addressed ones of said memory locations of said local memory and causing said local channel number generating means to stop changing said coded channel number representative signals when an addressed one of said memory locations contains a preferred channel indication; and programming means responsive to said remote control message for automatically programming said local memory with the same preferred and nonpreferred channel information as is contained in said remote memory; and

tuning means included within said communications receiver and responsive to the coded channel number representative signals generated by said local channel number generating means to tune the corresponding channel.

4,495,655

TESTABLE OPTICALLY ISOLATED CONTROL CIRCUIT

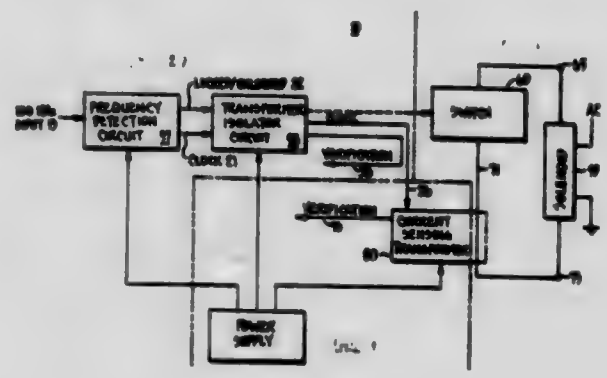
Michael R. Benson; William D. Hill; Garrett G. OBrien, and Dennis W. Hollenbeck, all of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Continuation-in-part of Ser. No. 402,368, Jul. 27, 1982,. This application Nov. 15, 1982, Ser. No. 442,395
Int. Cl.³ H04B 9/00
U.S. Cl. 455—603 5 Claims

1. In an electronic relay switch of the type controlled by an alternating input signal, and providing an operation verification output signal to, a controller from which said relay switch is otherwise isolated, said switch having an isolated ground terminal, and full wave rectifying means to rectify said alternating signal into a switch actuating control voltage, the improvement therewith comprising:

a frequency detection circuit including a narrow bandpass input filter connected to receive said alternating input signal and providing an alternating control signal to said rectifying means;

switch elements including first and second pluralities of hexfet transistors having drain leads connected to first and second nodes respectively, source leads connected to said isolated ground terminal, and gate leads connected to said rectifying means for receiving said switch actuating control voltage;



a fast turn-off circuit connected between said rectifying means and said gate leads for rapidly discharging the gate capacity of said hexfet transistors;

operation verification means including a switch current sensing transformer having two windings, a first of said windings being connected in series with said hexfet transistors between said first and second nodes whereby current in said first of said windings controls the voltage across the second of said windings; and

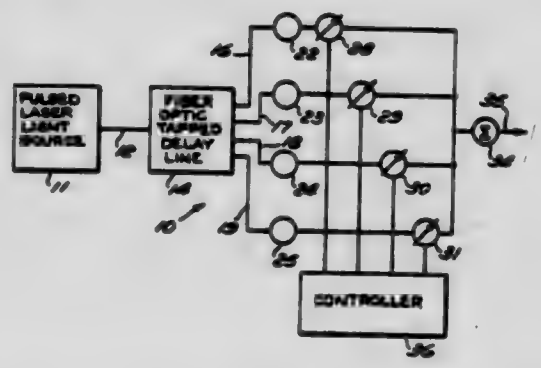
means controlled by said voltage across said second of said windings for providing said operation verification signal.

4,495,656

FIBER OPTIC WORD GENERATOR

Herbert J. Shaw, Stanford; Steven A. Newton, Menlo Park, both of Calif.; John E. Bowers, Milltown, N.J., and Kenneth P. Jackson, Stanford, Calif., assignors to Stanford Junior University, Stanford, Calif.

Filed Sep. 13, 1982, Ser. No. 417,506
Int. Cl.³ H04B 9/00
U.S. Cl. 455—608 14 Claims



1. A method for generating a digital word comprising the steps of:

introducing a pulsed optical signal into a tapped fiber optics delay line in which a portion of each pulse of the pulsed optical signal is removed from the fiber at each of a plurality if taps on the fiber to produce a sequence of optical pulses;

detecting the optical pulses;

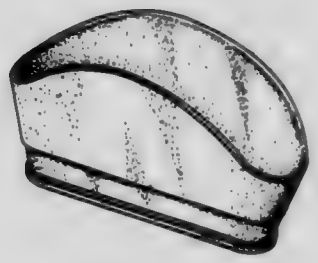
digitally weighting each optical pulse to produce a sequence of digital logic signals; and

combining the sequence of digital logic signals to produce a binary word.

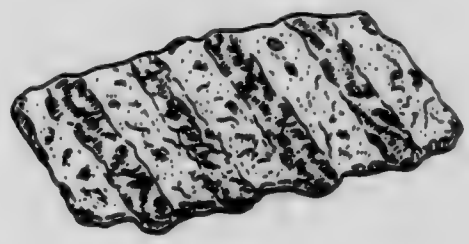
DESIGNS

JANUARY 22, 1985

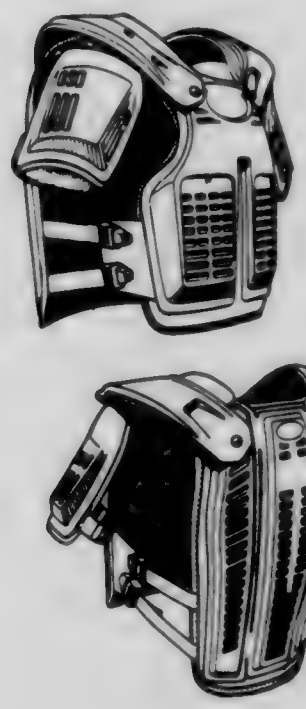
277,234
MOLDED EDIBLE CONTAINER
Herbert M. Bank, Owings Mills, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.
Continuation of Ser. No. 329,930, Dec. 11, 1981, abandoned. This application Jan. 6, 1984, Ser. No. 568,292
Term of patent 14 years
U.S. Cl. D1—122



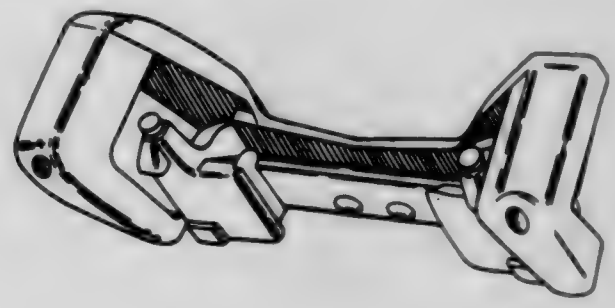
277,235
COOKED MEAT PRODUCT
Rene Arend, Chicago, Ill., assignor to Restaurant Technology, Inc.
Division of Ser. No. 228,193, Jan. 26, 1981, Pat. No. Des. 270,299. This application Sep. 30, 1982, Ser. No. 431,824
Term of patent 14 years
U.S. Cl. D1—199



277,236
CHEST PROTECTOR
John R. Gregory, 515 Otay Valley Rd., Chula Vista, Calif. 92011
Filed Jul. 6, 1982, Ser. No. 395,483
Term of patent 14 years
U.S. Cl. D2—27



277,237
HOLDER FOR FITTING AN ACCESSORY, ESPECIALLY AN EAR MUFF, TO A SAFETY HELMET
Bo G. Lönnstedt, Kvarnbergsvägen 23, S-141 45 Huddinge, Sweden
Filed Jul. 26, 1982, Ser. No. 401,931
Claims priority, application Sweden, Jan. 26, 1982, 82-0158
Term of patent 14 years
U.S. Cl. D2—233



277,238
BOXING GLOVE
George R. Cass, Brockamain, Leigh, Worcester, England
Filed Sep. 23, 1982, Ser. No. 422,298
Claims priority, application United Kingdom, Mar. 23, 1982, 1005751
Term of patent 14 years
U.S. Cl. D2—361

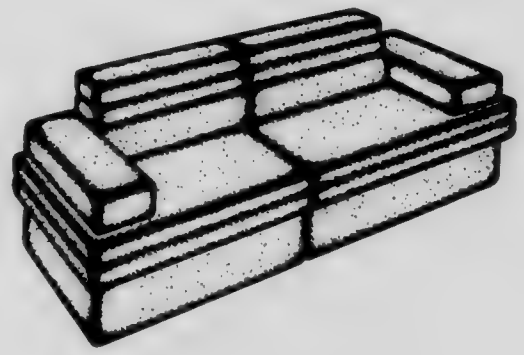




277,239
VEHICLE CREW SEAT OR THE LIKE
Thomas H. White, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Sep. 29, 1982, Ser. No. 426,598
Term of patent 14 years
U.S. Cl. D6—356



277,240
SOFA OR SIMILAR ARTICLE
Jack G. Dunbar, New York, N.Y., and Steven Brooks, Greenwich, Conn., assignors to Dunbar Furniture, Inc., Berne, Ind.
Filed Sep. 29, 1982, Ser. No. 426,525
Term of patent 14 years
U.S. Cl. D6—381



277,241
CHAIR
Henry Massonnet, Nurieux, France (01760)
Filed Sep. 17, 1982, Ser. No. 419,255
Claims priority, application France, Mar. 25, 1982, 821051
Term of patent 14 years
U.S. Cl. D6—368



277,242
SEAT
Gianbattista Giudici, Seveso, Italy, assignor to Altena Salotti s.r.1, Cabiate, Italy
Filed Sep. 3, 1982, Ser. No. 414,540
Claims priority, application Italy, Mar. 9, 1982, 21080 B/82
Term of patent 14 years
U.S. Cl. D6—381



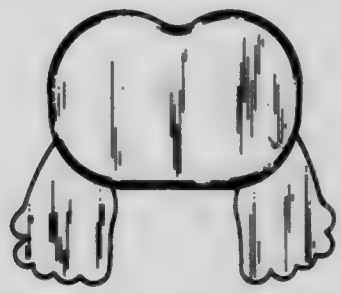
277,243
SEAT
Gianbattista Giudici, Seveso, Italy, assignor to Altena Salotti s.r.l, Cabiate, Italy
Filed Sep. 3, 1982, Ser. No. 414,541
Claims priority, application Italy, Mar. 9, 1982, 21082 B/82
Term of patent 14 years
U.S. Cl. D6—381



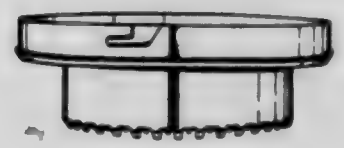
277,244
SEAT
Gianbattista Giudici, Seveso, Italy, assignor to Altena Salotti S.a.c., Cabiate, Italy
Filed Sep. 3, 1982, Ser. No. 414,687
Claims priority, application Italy, Mar. 9, 1982, 21077/82[U]
Term of patent 14 years
U.S. Cl. D6—381

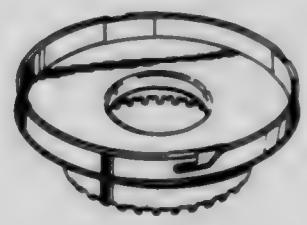


277,245
FURNITURE FOOT STOOL
Richard Unverzagt, 2742 NW. 30 Way, Ft. Lauderdale, Fla. 33311
Filed Sep. 17, 1982, Ser. No. 419,607
Term of patent 14 years
U.S. Cl. D6—351

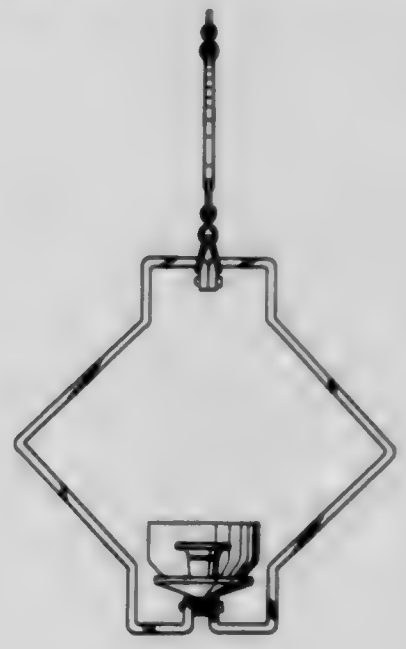


277,246
CUTTING ATTACHMENT FOR PAPER ROLL HOLDER OR SIMILAR ARTICLE
Ingemar Sjöstedt, Västra Frölunda, and Bertil Lundén, Hovås, both of Sweden, assignors to Molnlycke Aktiebolag, Gothenburg, Sweden
Filed Sep. 28, 1982, Ser. No. 425,267
Claims priority, application Sweden, Apr. 1, 1982, 82-0854
Term of patent 14 years
U.S. Cl. D6—523





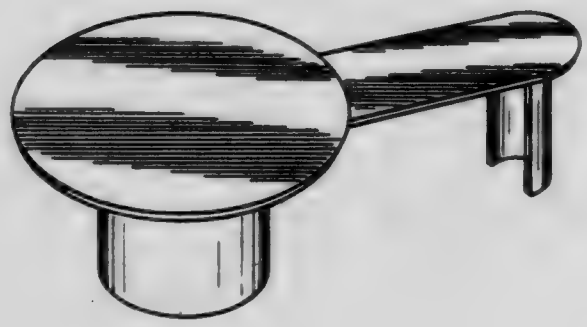
277,247
SUSPENDED HOLDER FOR PLANTS, CANDLES OR THE LIKE
David M. F. Chan, 1213 King Dr., El Cerrito, Calif. 94530, and Michael L. F. Chan, 1407 Arch St., Berkeley, Calif. 94708
Filed Sep. 15, 1983, Ser. No. 532,659
Term of patent 14 years
U.S. Cl. D6—405



277,248
EXTENDABLE TIE RACK
Charles E. Benedict, Tallahassee, Fla., assignor to Telescoping Tie Racks, Inc., Winter Haven, Fla.
Filed Dec. 27, 1982, Ser. No. 453,052
Term of patent 14 years
U.S. Cl. D6—324



277,249
COMBINED TABLE AND SIDE EXTENSION UNIT
Jack G. Dunbar, New York, N.Y., assignor to Dunbar Furniture, Inc., Berne, Ind.
Filed Sep. 29, 1982, Ser. No. 427,203
Term of patent 14 years
U.S. Cl. D6—483



277,250
COLLAPSIBLE TABLE
Claude Bernard, Summit, N.J., assignor to Charvoz-Carsen Corporation, Fairfield, N.J.
Filed Oct. 28, 1982, Ser. No. 437,458
Term of patent 14 years
U.S. Cl. D6—420

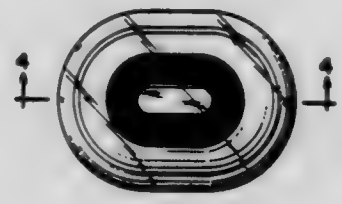


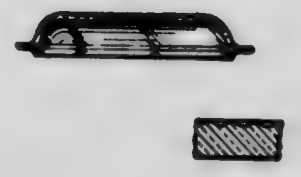
277,251
SERVING DISH OR THE LIKE
Gerald D. Guiotta, New City, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Aug. 16, 1982, Ser. No. 408,066
Term of patent 14 years
U.S. Cl. D7—20



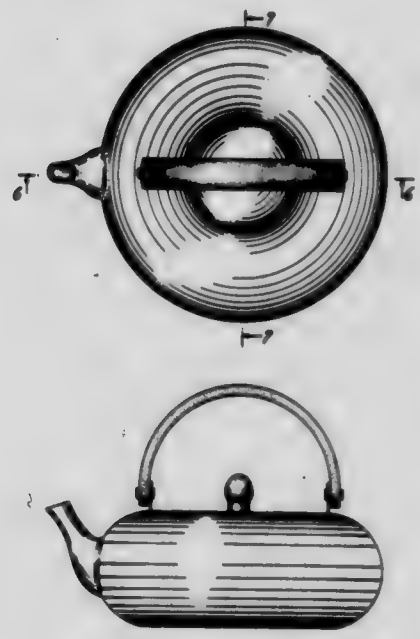


277,252
COVER FOR A BAKING DISH OR THE LIKE
Gerald D. Guiotta, New City, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Aug. 16, 1982, Ser. No. 408,067
Term of patent 14 years
U.S. Cl. D7—40





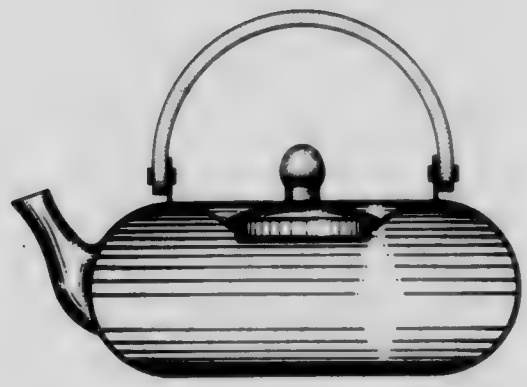
277,253
TEAKETTLE
Michael Lax, New York, N.Y., assignor to American Commercial Incorporated, Secaucus, N.J.
Filed Sep. 15, 1982, Ser. No. 418,473
Term of patent 14 years
U.S. Cl. D7—320



277,254
FRYING PAN
Shoji Matsuhisa, Osaka, Japan, assignor to The Nippon Aluminium Mfg. Co. Ltd. and The Nippon Alumi Tsurumaru Corp. Co., both of Osaka, Japan
Filed Jun. 1, 1982, Ser. No. 383,972
Claims priority, application Japan, Oct. 9, 1981, 56-44969
Term of patent 14 years
U.S. Cl. D7—359





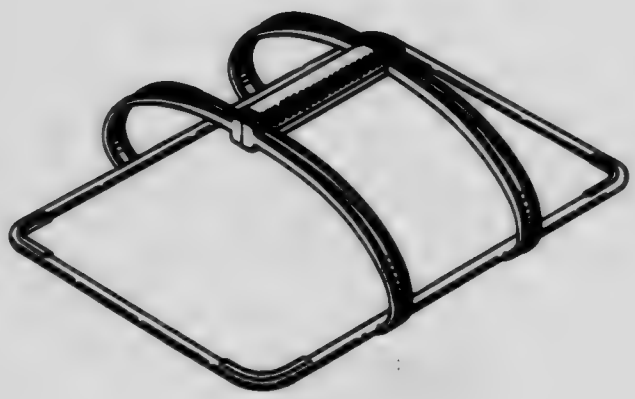




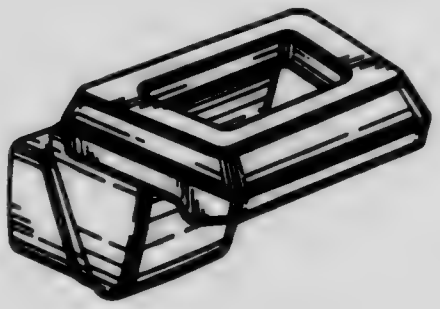
277,255
BOTTLED WATER DISPENSER INSERT
William R. Deruntz, 24672 Toledo La., El Toro, Calif. 92630
Filed Sep. 27, 1982, Ser. No. 424,650
Term of patent 14 years
U.S. Cl. D7—387



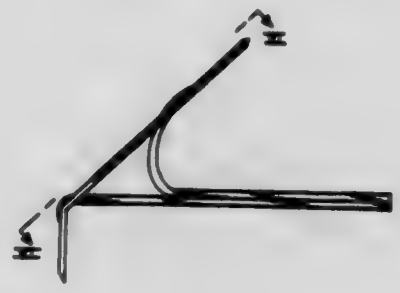
277,256
CARRIER WITH HANDLE OR THE LIKE
Augusto A. Picozza, Johnston, R.I., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Jul. 6, 1982, Ser. No. 395,437
Term of patent 14 years
U.S. Cl. D7—394



277,257
HANDLE
William C. Cesaroni, Glenview, Ill., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Nov. 15, 1982, Ser. No. 441,871
Term of patent 14 years
U.S. Cl. D7—394

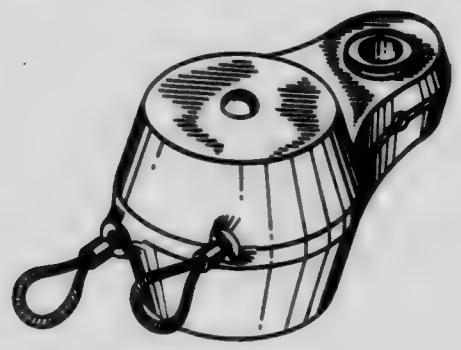


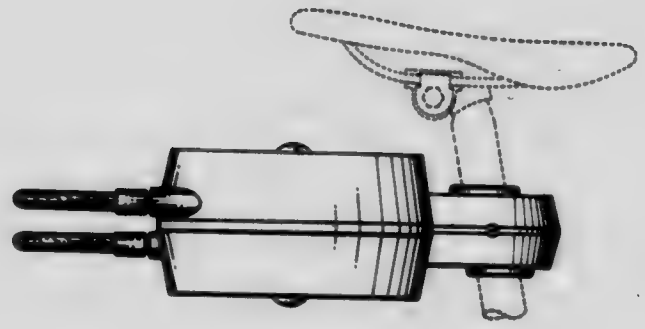
277,258
HOE HEAD
Jess G. Baty, Rte. 4, Box 218, Forrest City, Ark. 72335
Filed Sep. 20, 1982, Ser. No. 420,589
Term of patent 14 years
U.S. Cl. D8—11



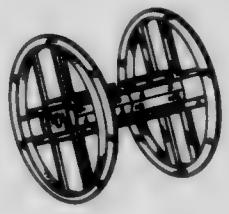


277,259
COMBINATION REEL HOUSING AND RETRACTABLE DUAL CABLE UNIT FOR SECURING A BICYCLE
Jack Darrell, 1646 Old Spanish Trail, Houston, Tex. 77054
Filed Apr. 28, 1982, Ser. No. 372,603
Term of patent 14 years
U.S. Cl. D8—358



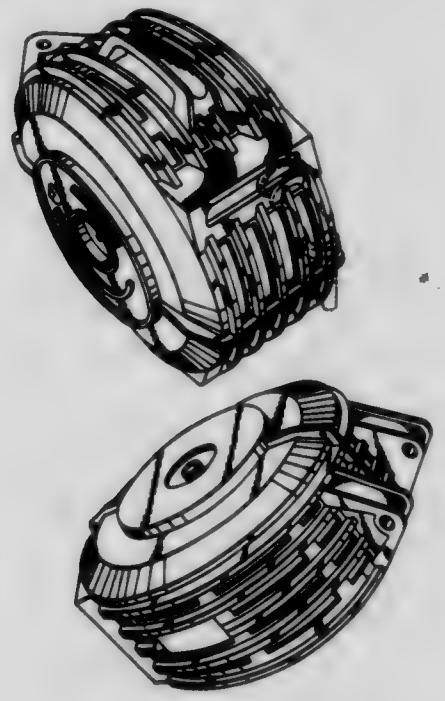


277,260
COLLAPSIBLE REEL
James A. Dickens, Greensboro, N.C., assignor to Percy O. Rucks, Greensboro, N.C.
Filed Jul. 21, 1982, Ser. No. 400,456
Term of patent 14 years
U.S. Cl. D8—358

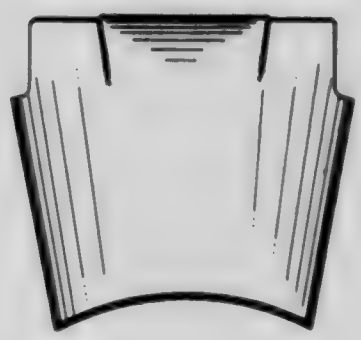




277,261
HOSE REELER
William King, 79 Allison Rd., Elsternwick, Victoria, 3185, Australia
Filed Sep. 13, 1982, Ser. No. 417,545
Claims priority, application Australia, Mar. 18, 1982, 86817
Term of patent 14 years
U.S. Cl. D8—358



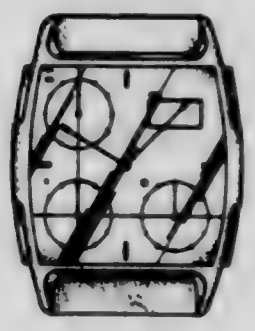
277,262
PACKAGING SLEEVE
David A. Jones, Kettering, Ohio, assignor to The Drackett Company, Cincinnati, Ohio
Filed Aug. 4, 1982, Ser. No. 405,140
Term of patent 14 years
U.S. Cl. D9—306



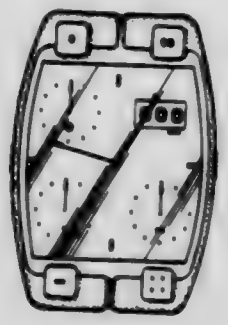
277,263
CLOCK
Ronnie Culpepper, 20194 Cooley, Detroit, Mich. 48219
Filed Sep. 30, 1982, Ser. No. 431,840
Term of patent 14 years
U.S. Cl. D10—26



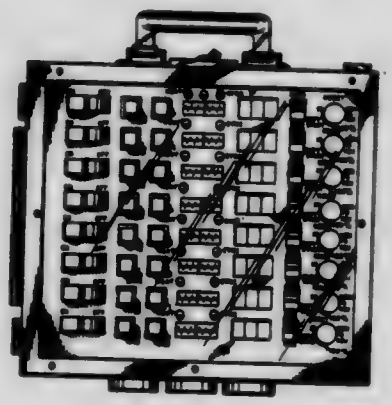
277,264
WATCH CASE
Umberto Maglioli, Via Ea Lissoni 25, Monza, Italy
Filed Jul. 6, 1982, Ser. No. 395,601
Term of patent 14 years
U.S. Cl. D10—31



277,265
WATCH CASE
Umberto Maglioli, Via En Lissoni 25, Monza, Italy
Filed Jul. 6, 1982, Ser. No. 395,602
Term of patent 14 years
U.S. Cl. D10—31



277,266
TEMPERATURE CONTROL APPARATUS
Richard Littlefield, P.O. Box 285, Kennebunk, Me. 04043
Filed Aug. 23, 1982, Ser. No. 410,314
Term of patent 14 years
U.S. Cl. D10—50



277,267
CLINICAL PROBE HOLDER AND CONNECTOR
Wallace L. Knute, Del Mar, Calif., assignor to Camino Laboratories, San Diego, Calif.
Filed Sep. 7, 1982, Ser. No. 415,239
Term of patent 14 years
U.S. Cl. D10—60



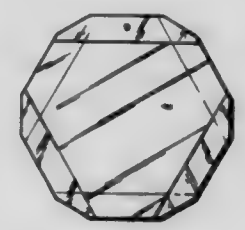


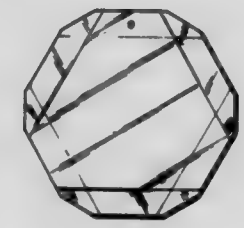
277,268
VELOCIPEDE HORN
David S. Cutlip, and Judyth A. Cutlip, both of 179 Candlewood Path, Dix Hills, N.Y. 11746
Filed Jun. 2, 1982, Ser. No. 384,377
Term of patent 14 years
U.S. Cl. D10—120





277,269
ORNAMENT
William J. Williams, Shelbyville, Ind., assignor to Williams Industries, Inc., Shelbyville, Ind.
Filed Sep. 27, 1982, Ser. No. 423,787
Term of patent 14 years
U.S. Cl. D11—121







277,270
ORNAMENT FOR TABLE OR OTHER SUPPORTING SURFACE

Frank Deeley, Villa Coolins, Ilsham Marine Dr.; Lawrence Deeley, 45 Broadley Dr., and Kevin P. Burnett, 11a Braddons Hill Rd. West, all of Torquay, Devon, England

Filed Jul. 14, 1982, Ser. No. 398,266

Claims priority, application United Kingdom, Jan. 15, 1982, 1004626

Term of patent 14 years

U.S. Cl. D11—158



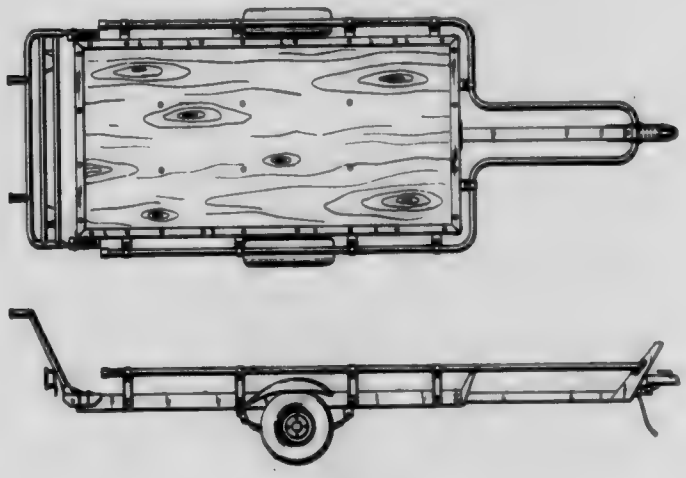
277,271
TRAILER

Denny B. Law, San Marcos, Calif., assignor to Unique Functional Products, San Marcos, Calif.

Filed Nov. 29, 1982, Ser. No. 445,057

Term of patent 14 years

U.S. Cl. D12—101



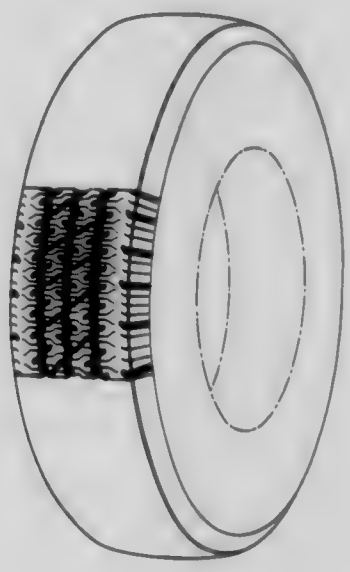
277,272
TIRE TREAD AND BUTTRESS

Donald J. Sladky, Cuyahoga Falls, and William J. Vande Water, Stow, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 14, 1982, Ser. No. 368,344

Term of patent 14 years

U.S. Cl. D12—146



277,273
AUTO SPOILER

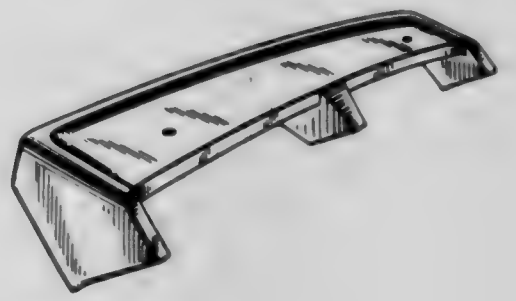
Gerhard Schmidt, Wuppertal, Fed. Rep. of Germany, assignor to Westfalische Metall Industrie KG Hueck & Co, Lippstadt, Fed. Rep. of Germany

Filed Oct. 20, 1982, Ser. No. 435,506

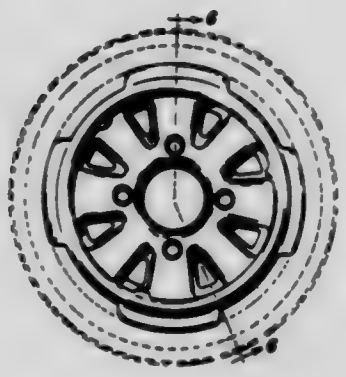
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1982, 8XA-004-317

Term of patent 14 years

U.S. Cl. D12—181



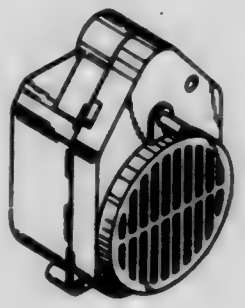
277,274
WHEEL SPIDER
Raymond D. Frazee, Waldron, Ind., assignor to Indus Wheel Company, Division of Carlisle Corporation, Cincinnati, Ohio
Filed Jul. 8, 1982, Ser. No. 396,459
Term of patent 14 years
U.S. Cl. D12—211



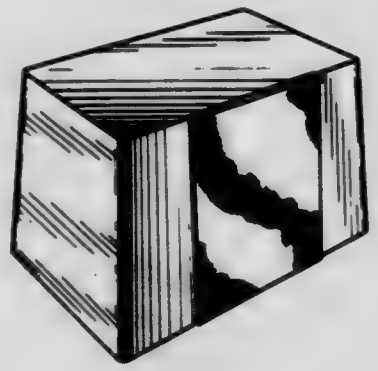
277,275
CONTROL PANEL
William R. Dickerson, Rte. 4, Box 251-A, Three & Twenty School Rd., Easley, S.C. 29640
Filed May 22, 1981, Ser. No. 266,358
Term of patent 14 years
U.S. Cl. D13—35



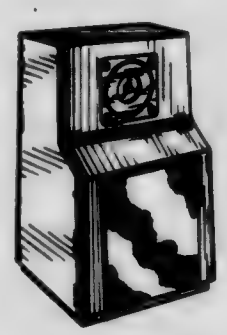
277,276
SPRING DRIVEN PHONOGRAPH FOR INTERNAL PLACEMENT IN TOYS OR THE LIKE
Katsumi Watanabe, Kawasaki, Japan, assignor to Ozen Corporation, Tokyo, Japan
Filed Aug. 27, 1981, Ser. No. 296,652
Claims priority, application Japan, May 12, 1981, 56/20111
Term of patent 14 years
U.S. Cl. D14—14



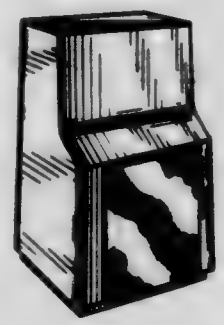
277,277
LOUDSPEAKER HOUSING
Hari Matsuda, Evanston, Ill., assignor to Aspen Recreational Products, Ltd., Aspen, Colo.
Filed Aug. 10, 1982, Ser. No. 405,622
Term of patent 14 years
U.S. Cl. D14—33



277,278
ELECTRONIC LOUDSPEAKER CABINET
Hari Matsuda, Evanston, Ill., assignor to Aspen Recreational Products, Ltd., Aspen, Colo.
Filed Aug. 10, 1982, Ser. No. 405,623
Term of patent 14 years
U.S. Cl. D14—33



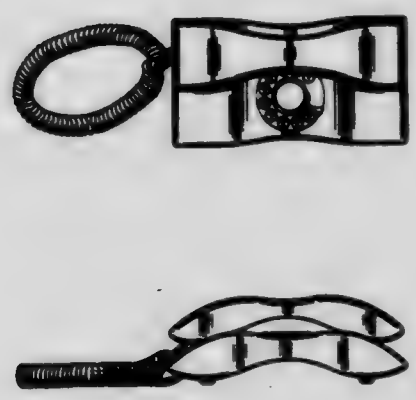
277,279
CABINET FOR LOUDSPEAKER
Hari Matsuda, Evanston, Ill., assignor to Aspen Recreational Products, Ltd., Aspen, Colo.
Filed Aug. 10, 1982, Ser. No. 405,624
Term of patent 14 years
U.S. Cl. D14—33



277,280
TELEPHONE

Myra Winkler, West Hartford, Conn., assignor to Teleconcepts, Inc., West Hartford, Conn.

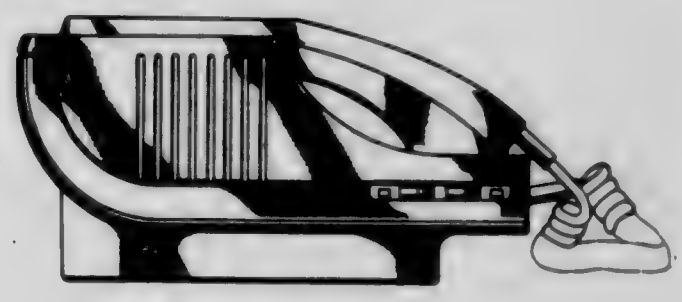
Continuation-in-part of Ser. No. 337,471, Jan. 6, 1982,. This application Mar. 15, 1982, Ser. No. 358,423
The portion of the term of this patent subsequent to Jan. 8, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—53

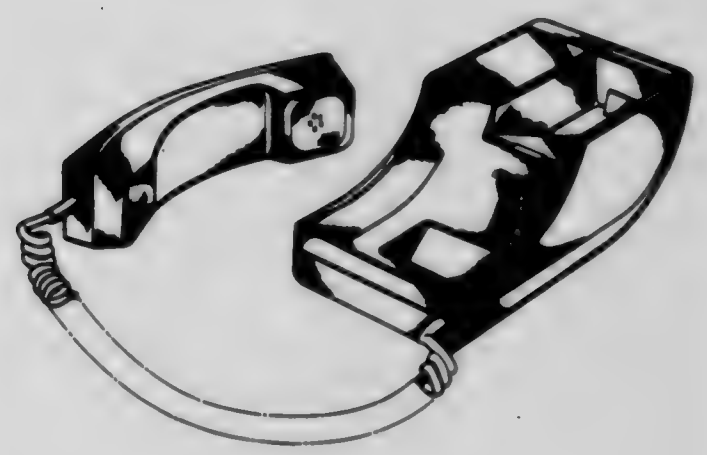


277,281
MOBILE TELEPHONE UNIT

Masakazu Tsukamoto, Funabashi, and Satoru Tsukiyama, Tokyo, both of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Sep. 28, 1982, Ser. No. 426,224
Claims priority, application Japan, Mar. 31, 1982, 57-13520
Term of patent 14 years
U.S. Cl. D14—53



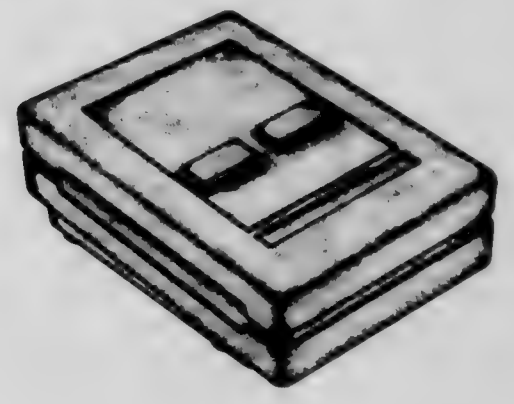




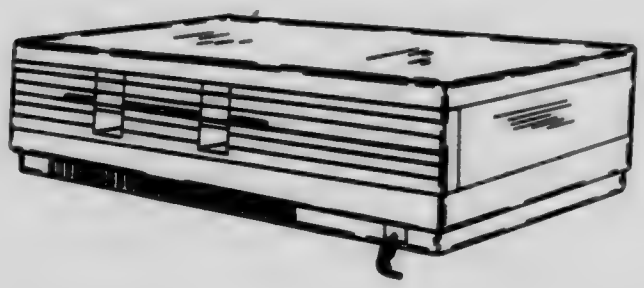
277,282
CONFERENCE TELEPHONE MICROPHONE CONTROL UNIT

William L. Barton, III, Holmdel; Edward J. Peterson, Eatontown, both of N.J., and Gordon E. Sylvester, Jamaica, N.Y., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

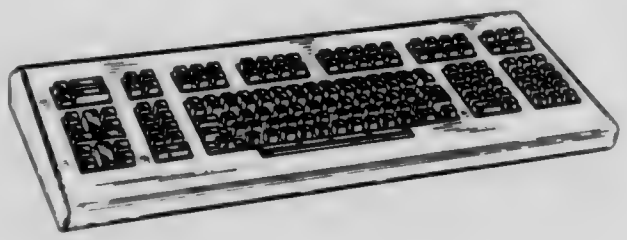
Filed Mar. 17, 1982, Ser. No. 358,915
Term of patent 14 years
U.S. Cl. D14—59



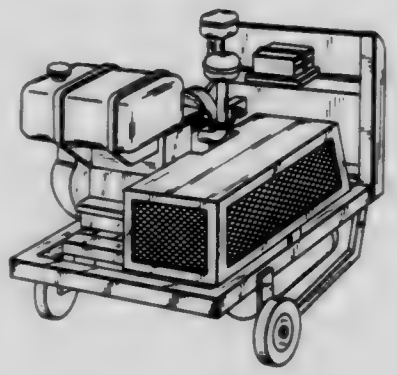
277,283
COMPUTER CONSOLE
Edward H. Empson, San Jose; Robert D. Brunner, Oakland, and Gerard A. Fubershaw, Mountain View, all of Calif., assignors to Fortune Systems Corporation, Redwood City, Calif.
Filed Jun. 1, 1982, Ser. No. 383,748
Term of patent 14 years
U.S. Cl. D14—100



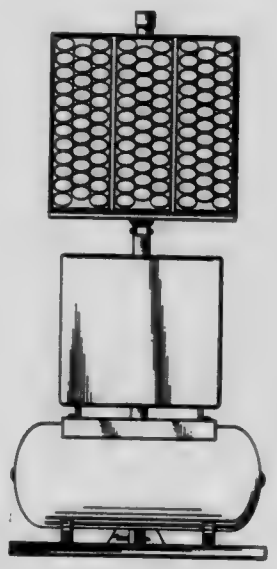
277,284
KEYBOARD
Gary D. Horne, Highland, N.Y., assignor to High Technology Solutions, Inc., Poughkeepsie, N.Y.
Filed Oct. 1, 1982, Ser. No. 432,311
Term of patent 14 years
U.S. Cl. D14—100



277,285
MULTI-PURPOSE PORTABLE POWER UNIT
Gilbert Lopez, 1520 Buster St., Simi, Calif. 93065
Filed Feb. 26, 1982, Ser. No. 352,870
Term of patent 14 years
U.S. Cl. D15—1



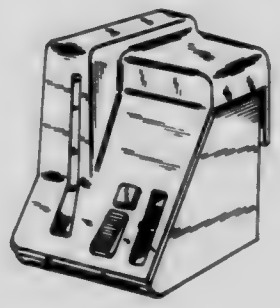
277,286
SOLAR POWERED VALVE CONTROL UNIT
Mark A. Schnatzmeyer, Lewisville, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Aug. 27, 1982, Ser. No. 412,381
Term of patent 14 years
U.S. Cl. D15—21



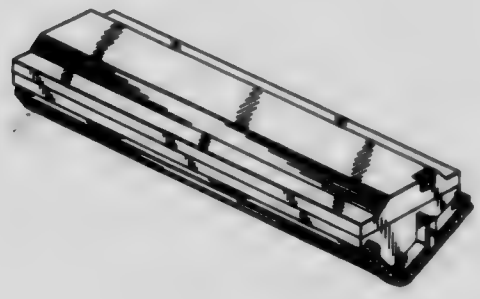
277,287
COMBINED ROUTER AND BEVELER FOR GLASS
William F. Baer, 1509 N. Darcy St., Simi Valley, Calif. 93065
Filed Aug. 19, 1982, Ser. No. 409,359
Term of patent 14 years
U.S. Cl. D15—124



277,288
PRINT UNIT FOR USE WITH FILM REPRODUCER
Norbert Schlagheck, Fürstenfeldbruck, Fed. Rep. of Germany, assignor to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 120,078, Feb. 7, 1980, Pat. No. Des. 266,430. This application Jun. 17, 1982, Ser. No. 389,229
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 5MR 570
Term of patent 14 years
U.S. Cl. D16—27



277,289
POWDER CARTRIDGE
Lowell E. Sabin, Spring Lake Park, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.
Filed Jun. 1, 1982, Ser. No. 383,762
Term of patent 14 years
U.S. Cl. D16—32



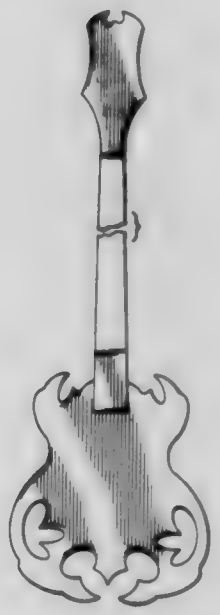
277,290
EYEGLASS FRAME
Ulrich J. Haas, Vienna, Austria, assignor to Optyl Corporation, Norwood, N.J.
Filed Feb. 9, 1983, Ser. No. 465,204
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1982, 13088
Term of patent 14 years
U.S. Cl. D16—117



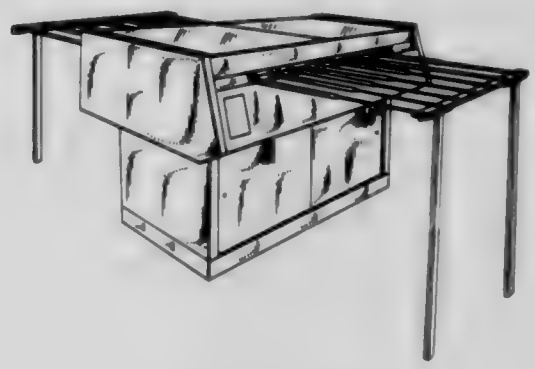
277,291
ELECTRIC GUITAR
Charles E. Deal, 45 Plymouth Ave., Mill Valley, Calif. 94941
Filed Oct. 14, 1982, Ser. No. 434,261
Term of patent 14 years
U.S. Cl. D17—14



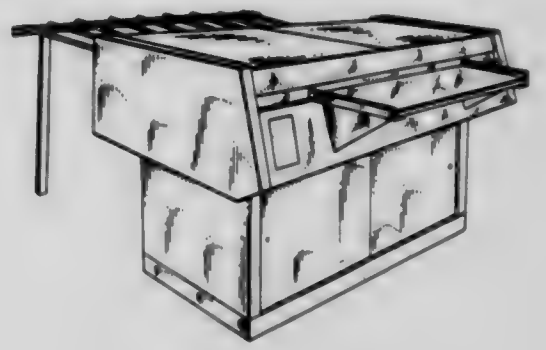
277,292
SOLID BODY GUITAR
Eric S. Leifheit, 7541 E. 34th St., Tucson, Ariz. 85711
Filed Sep. 24, 1982, Ser. No. 423,042
Term of patent 14 years
U.S. Cl. D17—19



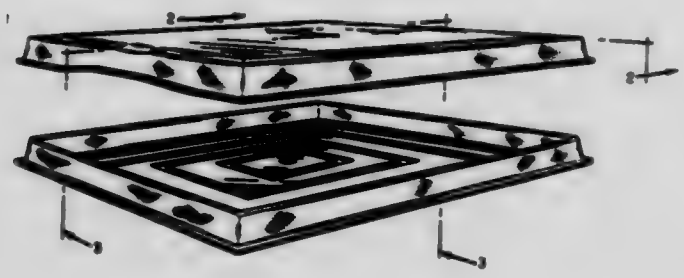
277,293
PRINTING PLATE PROCESSOR (II)
William Boeshardt, Armonk, N.Y., assignor to Polychrome Corporation, Yonkers, N.N.Y.
Filed Apr. 10, 1981, Ser. No. 252,729
Term of patent 14 years
U.S. Cl. D18—13



277,294
PRINTING PLATE PROCESSOR
William Boeshardt, Armonk, N.Y., assignor to Polychrome Corporation, Yonkers, N.Y.
Filed Apr. 10, 1981, Ser. No. 252,730
Term of patent 14 years
U.S. Cl. D18—13



277,295
PALETTE CASE
Jeffery L. Jones, 3341 Towerwood, Ste. 201, Dallas, Tex. 75234
Filed Apr. 16, 1982, Ser. No. 369,175
Term of patent 14 years
U.S. Cl. D19—35



277,296
PEN
Alvia Frazier, 3443 Pleasant View, Cincinnati, Ohio 45207
Division of Ser. No. 148,930, May 12, 1980, abandoned. This application Sep. 22, 1982, Ser. No. 421,274
Term of patent 14 years
U.S. Cl. D19—42

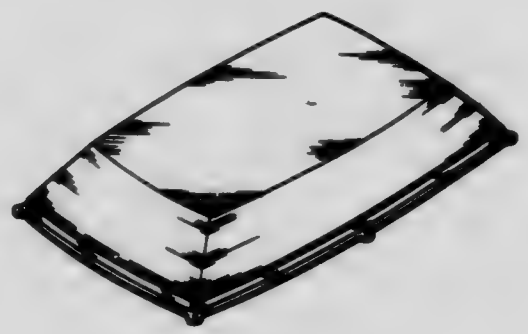


277,297
CONTAINER FOR DESK TOP MATERIALS OR SIMILAR ARTICLES
Joseph R. Jennings, Studio City, and Michael Minor, Los Angeles, both of Calif., assignors to Paramount Pictures Corporation, New York, N.Y.
Filed Jun. 7, 1982, Ser. No. 385,984
Term of patent 14 years
U.S. Cl. D19—75

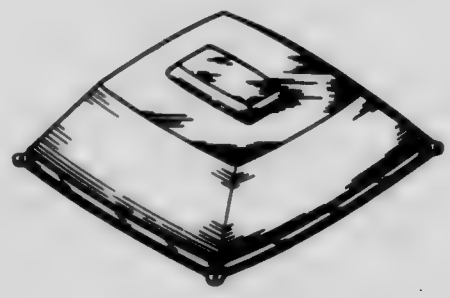




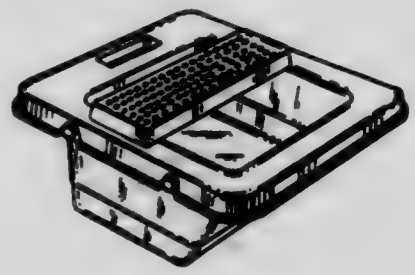
277,298
LIMOUSINE ADVERTISING SIGN
Eugene Nelson, Wynnewood, Pa., assignor to American Mobile Advertising Corp., Bensalem, Pa.
Filed Sep. 28, 1983, Ser. No. 536,543
Term of patent 14 years
U.S. Cl. D20—10



277,299
TAXICAB ADVERTISING SIGN
Eugene Nelson, Wynnewood, Pa., assignor to American Mobile Advertising Corp., Bensalem, Pa.
Filed Sep. 28, 1983, Ser. No. 536,544
Term of patent 14 years
U.S. Cl. D20—10



277,300
COMBINED TOY SANDBOX AND SIFTER
Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039, and George Kress, Scotch Plains, N.J., assignors to Mel Appel, Livingston, N.J.
Filed Jul. 30, 1982, Ser. No. 404,357
Term of patent 14 years
U.S. Cl. D21—59



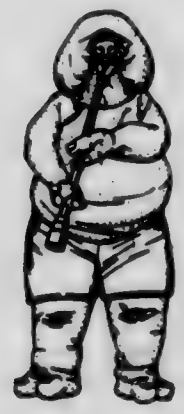
277,301
TOY GLIDER
Mark J. Sampson, Atlanta, Ga., assignor to Paradies Airport Shops, Inc., Atlanta, Ga.
Filed Aug. 6, 1982, Ser. No. 406,005
Term of patent 14 years
U.S. Cl. D21—89



277,302
PLAYHOUSE
Loris Kyle, 697 Arlington Ave., Berkeley, Calif. 94707
Filed Nov. 22, 1982, Ser. No. 443,280
Term of patent 14 years
U.S. Cl. D21—114



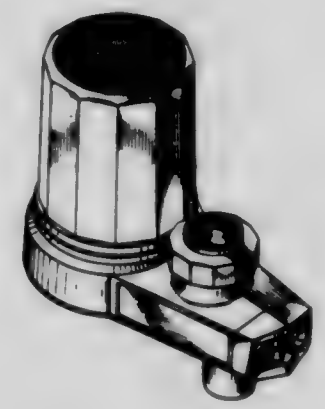
277,303
TOY FIGURE
Wesley R. Seeds, San Francisco, Calif., assignor to Lucasfilm, Ltd., San Rafael, Calif.
Filed Sep. 28, 1982, Ser. No. 426,040
Term of patent 14 years
U.S. Cl. D21—148



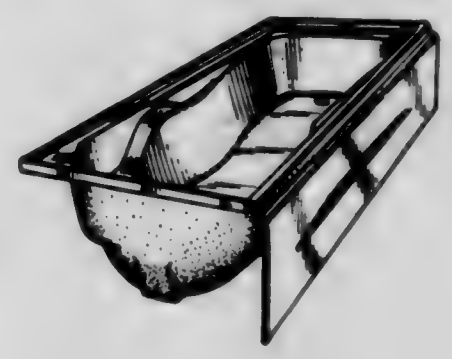
277,304
ROWING MACHINE
David B. Smith, 3811 W. Mercer Way, Mercer Island, Wash. 94040, and John M. Moore, Woodinville, Wash., assignors to David B. Smith, Mercer Island, Wash.
Filed Jul. 19, 1982, Ser. No. 399,358
Term of patent 14 years
U.S. Cl. D21—195



277,305
WATER FILTER
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Inc., Chicago, Ill.
Filed Jul. 15, 1982, Ser. No. 398,641
Term of patent 14 years
U.S. Cl. D23—3



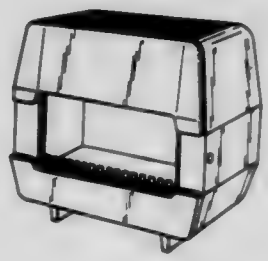
277,306
BATHTUB
Michael S. Lax, New York, N.Y., assignor to Flat Products, Inc., Monroe, Ohio
Division of Ser. No. 340,642, Jan. 19, 1982,. This application Mar. 26, 1984, Ser. No. 593,293
Term of patent 14 years
U.S. Cl. D23—55



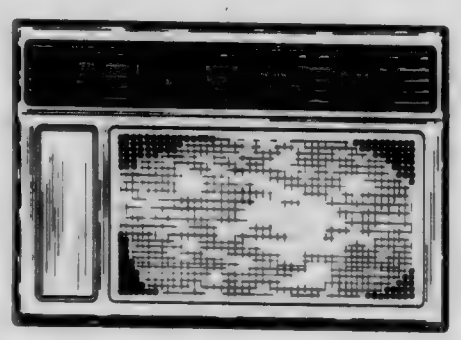
277,307
FIRE LIGHTER
Noel E. Zeller, Milford, Conn., and Bronislaw Zapolski, Princeton, N.J., assignors to Noel E. Zeller, White Plains, N.Y.
Filed Aug. 30, 1982, Ser. No. 412,726
Term of patent 14 years
U.S. Cl. D23—90.1



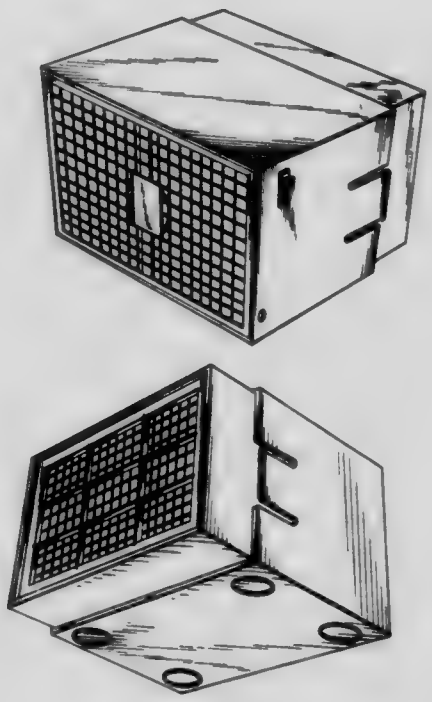
277,308
HEATER
Henri Bastien, Couvin, Belgium, assignor to Société Anonyme Fonderies du Lion, Frasnes les Couvin, Belgium
Filed Jan. 15, 1981, Ser. No. 225,300
Claims priority, application Benelux, Jul. 16, 1980, 54855
Term of patent 14 years
U.S. Cl. D23—97



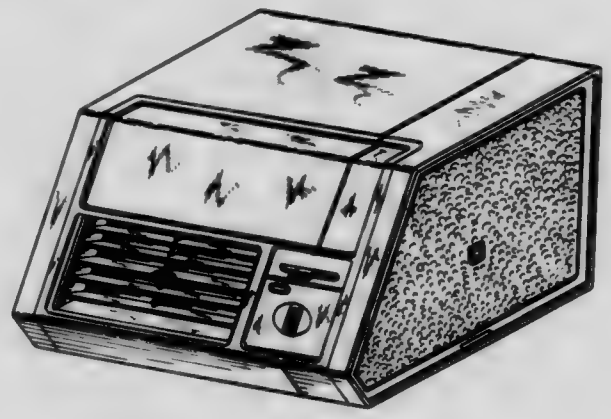
277,309
GRILLE FOR AN AIR CONDITIONING UNIT
Kentaro Yamamoto, Santa Monica, Calif., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Feb. 18, 1982, Ser. No. 349,808
Term of patent 14 years
U.S. Cl. D23—141



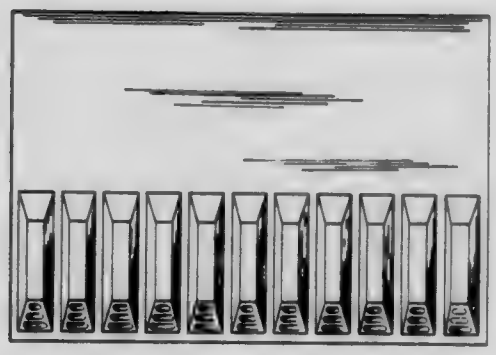
277,310
ELECTROSTATIC FILTER
Bertil Jacobsson, Grävlingsvägen 2, 53100 Lidköping, Sweden
Filed Jun. 11, 1982, Ser. No. 387,475
Claims priority, application Sweden, Dec. 15, 1981, 812958
Term of patent 14 years
U.S. Cl. D23—149



277,311
ROOM AIR CLEANER
Masao Tsuji, Old Lyme, Conn., assignor to North American Philips Corporation, New York, N.Y.
Filed Dec. 6, 1982, Ser. No. 447,072
Term of patent 14 years
U.S. Cl. D23—149



277,312
ROOF EDGE VENTILATOR
Jerry R. Williamson, and Keith A. Muters, both of P.O. Box 159, Woodburn, Oreg. 97071
Filed Sep. 13, 1982, Ser. No. 417,448
Term of patent 14 years
U.S. Cl. D23—153



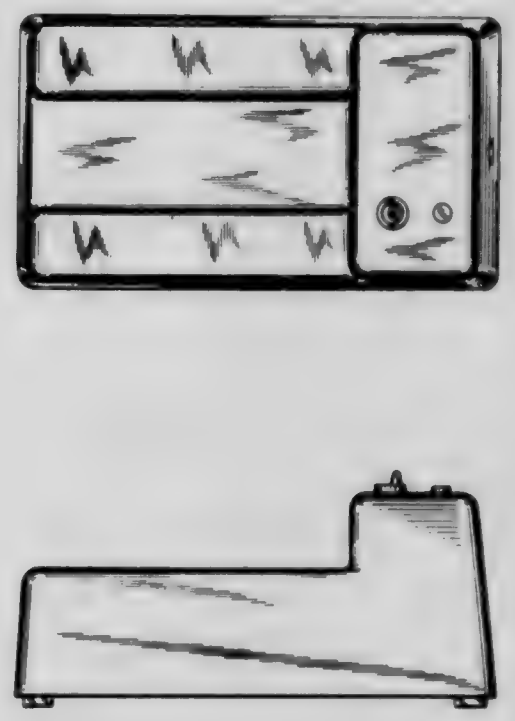
277,313
HAND-HELD PIPETTING DEVICE
Michael A. Alvarez, Haskell, N.J.; George Fried, Tarrytown, and George Payne, Bedford Hills, both of N.Y., assignors to Manostat Corporation, New York, N.Y.
Filed Sep. 30, 1982, Ser. No. 430,114
Term of patent 14 years
U.S. Cl. D24—55



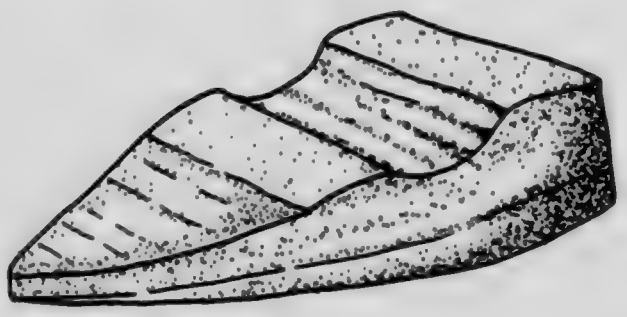
277,314
HAND-HELD PIPETTING DEVICE
Michael A. Alvarez, Haskell, N.J.; George Fried, Tarrytown, and George Payne, Bedford Hills, both of N.Y., assignors to Manostat Corporation, New York, N.Y.
Filed Sep. 30, 1982, Ser. No. 430,115
Term of patent 14 years
U.S. Cl. D24—55



277,315
BASE FOR A PIPETTING DEVICE
Michael A. Alvarez, Haskell, N.J.; George Fried, Tarrytown, and George Payne, Bedford Hills, both of N.Y., assignors to Manostat Corporation, New York, N.Y.
Filed Sep. 30, 1982, Ser. No. 430,116
Term of patent 14 years
U.S. Cl. D24—55



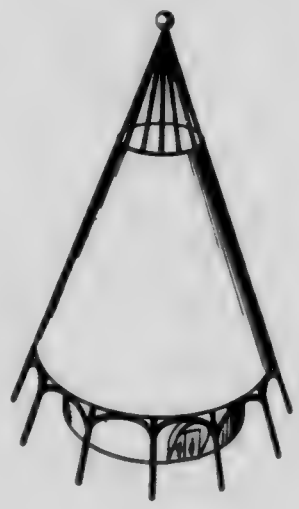
277,316
ORTHOPEDIC DEVICE FOR STABILIZING THE SCROILIAC
Hershel Meares, 9877 Grand Teton, Baton Rouge, La. 70814
Filed Jun. 16, 1982, Ser. No. 389,018
Term of patent 14 years
U.S. Cl. D24—64



277,317
SET OF RETRACTABLE EAR PLUGS
Daryl L. Eisenmenger, 143 Pebble Beach Dr., Little Rock, Ark. 72212
Filed Aug. 2, 1982, Ser. No. 404,579
Term of patent 14 years
U.S. Cl. D24—67



277,318
THEATRE STRUCTURE
Helen B. English, P.O. Box 571, San Fernando, Calif. 91341
Filed Dec. 6, 1982, Ser. No. 447,182
Term of patent 14 years
U.S. Cl. D25—7



277,319
BUILDING STRUCTURE
Joseph P. Rutherford, 3283 Rocks-Chrome Hill Rd., Jarrettsville, Md. 21084
Continuation-in-part of Ser. No. 154,085, May 28, 1980, abandoned. This application Sep. 1, 1982, Ser. No. 413,782
Term of patent 14 years
U.S. Cl. D25—23



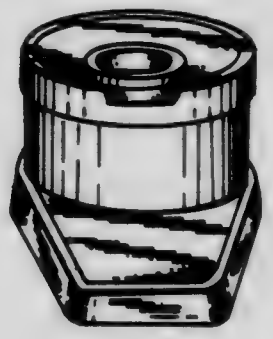
277,320
COMBINED LAMP AND MAGNIFIER LENS
Boynton Selden, West Hartford, Conn., assignor to Michele R., Trustee Selden, West Hartford, Conn.
Filed Jun. 30, 1982, Ser. No. 393,702
Term of patent 14 years
U.S. Cl. D26—51



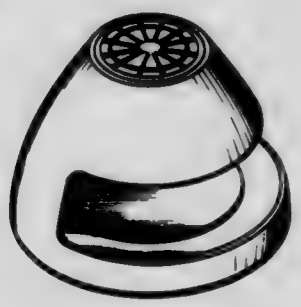
277,321
HANDLE FOR DISPOSABLE RAZOR BLADE CARTRIDGES
Clifford E. Gant, 3229 E. Monica, Phoenix, Ariz. 85032
Filed Jun. 9, 1982, Ser. No. 386,709
Term of patent 14 years
U.S. Cl. D28—46



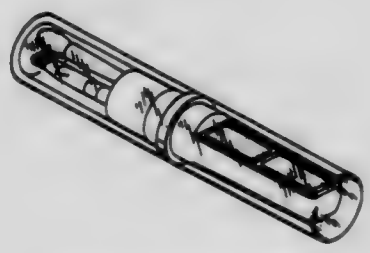
277,322
DEVICE FOR REMOVING FINGERNAIL POLISH
Toni A. West, P.O. Box 8400, Coral Springs, Fla. 33065
Filed Jun. 9, 1980, Ser. No. 157,990
Term of patent 14 years
U.S. Cl. D28—58



277,323
FINGERNAIL DRYER
Niclas P. Raicevic, 4700 Colfax, North Hollywood, Calif. 91602
Filed Sep. 29, 1982, Ser. No. 427,853
Term of patent 14 years
U.S. Cl. D28—58



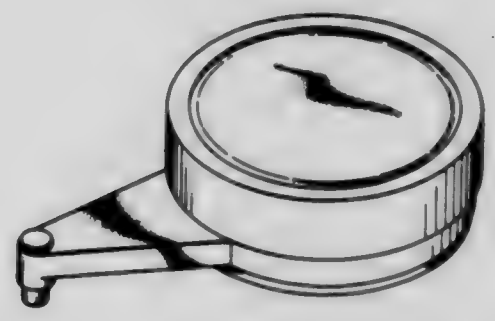
277,324
COSMETIC COMPACT
Brian Davey, North Shields, England, assignor to Lion Brush Works Limited, Newcastle-upon-Tyne, England
Division of Ser. No. 389,804, Jun. 18, 1982, Pat. No. 275,133. This application Apr. 12, 1984, Ser. No. 599,383
Claims priority, application United Kingdom, Dec. 21, 1981, 1 004 323; Jan. 13, 1982, 1 004 593
Term of patent 14 years
U.S. Cl. D28—77



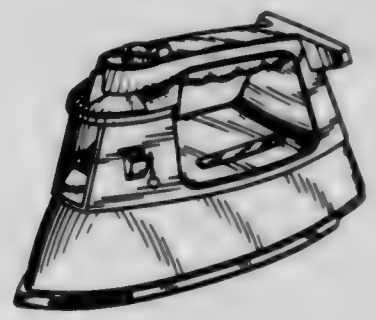
277,325
VACUUM CLEANER
Niklaus Hug, Romanshorn, Switzerland, assignor to Dipro AG, Romanshorn, Switzerland
Filed Apr. 19, 1982, Ser. No. 369,827
Term of patent 14 years
U.S. Cl. D32—22



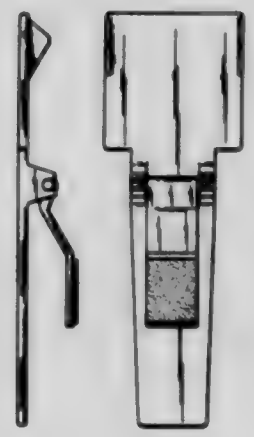
277,326
PHONORECORD CLEANER
Ivor J. Allsop, 2079 N. Shore Rd., Bellingham, Wash. 98225
Continuation-in-part of Ser. No. 311,639, Oct. 15, 1981,. This application Oct. 13, 1982, Ser. No. 434,130
Term of patent 14 years
U.S. Cl. D32—35



277,327
STEAM IRON
Robert O. Ernest, Oak Park, Ill., assignor to Sunbeam Corporation, Oak Brook, Ill.
Filed Feb. 1, 1982, Ser. No. 344,845
Term of patent 14 years
U.S. Cl. D32—70



277,328
PIVOTABLE MAILBOX SIGNAL
David A. Hollenbach, 777 Irvin-Shoots Rd., Marion, Ohio 43302
Filed Jun. 15, 1982, Ser. No. 388,671
Term of patent 14 years
U.S. Cl. D99—29



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF JANUARY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-Betong AB: *See—*
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Taylor, Chandler R., Jr., 4,495,183, Cl. 514-220.000.

A/S Alfred Benzon: *See—*
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A/S Neselco: *See—*
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A/S Niro Atomizer: *See—*
Jons, Ebbe S.; and Gude, Klaus E., 4,495,162, Cl. 423-171.000.

Abbas, Daniel C.: *See—*
Lawrence, David J.; Abbas, Daniel C.; Phelps, Daniel J.; and Smith, Frank T. J., 4,495,514, Cl. 357-67.000.

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Abe, Yasuaki; Hayashi, Mikio; Asagi, Kousaku; Morii, Akira; and Fujimura, Kazutoshi, to Sumitomo Chemical Company, Ltd. Process for continuous production of prepreg sheets. 4,495,017, Cl. 156-181.000.

Abe, Yoshinori: *See—*
Matsunawa, Masahiko; and Abe, Yoshinori, 4,495,522, Cl. 358-280.000.

Abel, Hal P., to Hughes Aircraft Company. Solderable plated plastic components and process for plating . 4,495,253, Cl. 428-624.000.

Abel, Heinz; and Guth, Christian, to Ciba-Geigy Corporation. Wetting agents and their use as mercerizing assistants. 4,494,952, Cl. 8-125.000.

Abishev, Dzhantore N.: *See—*
Bauer, Ivan K.; Malyshev, Vitaly P.; Abishev, Dzhantore N.; Belyaev, Sergei V.; Shirokov, Anatoly I.; Baltynova, Nazymkul; Alipchenko, Elena S.; Ekeibaev, Djusenkhan D.; and Abdulkhairov, Vakhit T., 4,494,930, Cl. 432-95.000.

Ablewhite, John H.: *See—*
Bennett, Walter; Ablewhite, John H.; and Bryant, Anthony J., 4,495,001, Cl. 148-11.50A.

Abrams, Lawrence M., to HRI, Inc. Quenching hydrocarbon effluent from catalytic reactor to avoid precipitation of asphaltene compounds. 4,495,060, Cl. 208-48.00Q.

Abrams, Richard L.; Henderson, David M.; Pinnow, Douglas A.; and Stephens, Ronald R., to United States of America, Air Force. Imaging apparatus for transverse electrode electro-optic tunable filter. 4,494,827, Cl. 350-385.000.

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Calapp, David E.; Ackert, Gail M.; and Brown, Roger J., 4,494,939, Cl. 441-70.000.

Acla, Howard L.: *See—*
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Acme Resin Corporation: *See—*
Armbruster, David R., 4,495,316, Cl. 523-139.000.

Adam, Roland; Krauth, Dieter; and Derndinger, Hans-Otto, to Daimler-Benz AG. Downdraft carburetor for internal combustion engines. 4,495,115, Cl. 261-44.00F.

Adenau, Marvin L.: *See—*
Simon, Virgil S.; Adenau, Marvin L.; and Skalski, John S., 4,494,658, Cl. 211-49.00R.

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Haskell, Jacob D., 4,495,025, Cl. 156-648.000.

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Ludovico, Bruni, 4,494,501, Cl. 123-193.0CP.

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Becker, Manfred; Klotzer, Sieghart; and Moisar, Erik, 4,495,277, Cl. 430-567.000.

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Aiba, Takeshi: *See—*
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Air Conditioning Corporation: *See—*
Lubin, David; Connor, Larry W.; and Glass, Samuel W., 4,495,383, Cl. 179-100.00L.

Aisan Industry Co., Ltd.: *See—*
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Furuta, Yohichi; Tsubouchi, Kaoru; and Nishii, Michiharu, 4,494,445, Cl. 91-369.00A.
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Akatsuka, Takao: *See—*
Uchida, Shigekatsu; Akatsuka, Takao; and Kawamura, Takahide, 4,494,497, Cl. 123-179.00B.

Aklin, George H., deceased; and Aklin, Marie M., Voluntary Administrator. Curved field photographic objective. 4,494,829, Cl. 350-464.000.

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A.B. Dick Company: *See—*
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Albany International Corp.: *See—*
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Albertsen, Peter S., to Corning Glass Works. Stove with catalytic converter. 4,494,525, Cl. 126-289.000.

Albright & Wilson Limited: *See—*
Cole, Robert; and Stephenson, James E., 4,494,951, Cl. 8-195.000.

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Funk, James E., 4,494,959, Cl. 44-51.000.

Ali-Khan, Imran; Dietz, Karl-Jurgen; Waelbroeck, Francois; and Wienhold, Peter, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Device utilized for separation of hydrogen isotopes from a gas mixture for separation of isotopes contained in a hydrogen isotope mixture. 4,494,965, Cl. 55-16.000.

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Allemano, Emilio. Depthometer for underwater diving. 4,494,407, Cl. 73-300.000.

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Butler, Russell H.; Limoncelli, Edward V.; Litwinowich, Michael J.; and Briggs, Michael L., 4,494,985, Cl. 75-93.00R.
Chacko, Varkki P.; and Kraft, Timothy J., 4,495,324, Cl. 524-504.000.
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Petersen, Carl C.; McKeown, Stephen A.; and Normann, Richard W., 4,494,818, Cl. 339-192.00R.

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Altemose, James L., to Creative Environments, Inc. Hand portable bottle rack. 4,494,788, Cl. 294-161.000.

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Bialczak, Edward C.; and Chernovitz, John J., 4,495,269, Cl. 430-150.000.

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Cosmo, Nicola, 4,494,807, Cl. 339-17.0CF.

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Schlitt, Steven C.; Yong, Thomas S.; Roche, William J.; and Anderson, John W., Jr., 4,495,440, Cl. 313-492.000.

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Aoki, Takao; Inoue, Takahiro; Goto, Masahiro; and Takeda, Kenji, to Canon Kabushiki Kaisha. Electrophotographic method and apparatus for providing accurate half-tone images. 4,494,856, Cl. 355-3.00R.

Aoki, Tetsuo: *See*—
Nakagomi, Koji; Aoki, Tetsuo; and Nakajima, Takayuki, 4,495,621, Cl. 371-6.000.

Aoki, Tsuyoshi: *See*—
Sugihara, Taizo; and Aoki, Tsuyoshi, 4,495,133, Cl. 264-504.000.

Apple Computer, Inc.: *See*—
Oyama, Terrell A., 4,494,814, Cl. 339-112.00R.

Arai, Yoshihiro; and Nahara, Akira, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,495,242, Cl. 428-336.000.

Arakawa, Hideo: *See*—
Sugimoto, Gunji; Arakawa, Hideo; Ishihara, Toshikazu; Sugiura, Masahiro; and Takahashi, Katsuhiko, 4,495,560, Cl. 364-154.000.

Araki, Kazumi; and Kuga, Tetsuro, to Kyowa Hakko Kogyo Co., Ltd. Process for producing L-histidine by fermentation. 4,495,283, Cl. 435-107.000.

Araki, Shigeyuki, to Ricoh Company, Ltd. Multi-phase stepping motor controller. 4,495,455, Cl. 318-696.000.

Araki, Yoshiharu: *See*—
Ishii, Kinichi; and Araki, Yoshiharu, 4,494,336, Cl. 49-352.000.

Archer, Donald H.; Gilbert, Michael A.; Loomis, Robert H.; and Maybell, Michael J., to Raytheon Company. Radio frequency antenna having a reflector with an edge in a pattern null region to reduce edge scattering. 4,495,504, Cl. 343-779.000.

Archibald, G. Kent, to Medical Plastics, Inc. Electrosurgery safety monitor. 4,494,541, Cl. 123-303.130.

Arent, Randy L. Portable work station. 4,494,627, Cl. 182-129.000.

Arlt, Dieter: *See*—
Jautelat, Manfred; Arlt, Dieter; and Jager, Gerhard, 4,495,370, Cl. 568-322.000.

Armbruster, David R., to Acme Resin Corporation. Acid-curable fluoride-containing no-bake foundry resins. 4,495,316, Cl. 523-139.000.

Armco Inc.: *See*—
Schumacher, William J.; and Tanczyn, Harry, 4,494,988, Cl. 75-128.00A.

Armour Pharmaceutical Company: *See*—
Orlowski, Ronald C.; and Seyler, Jay K., 4,495,097, Cl. 260-112.50T.

Arnold, Mary T., to Atlantic Richfield Company. Polyimide and/or polyamide-imide compositions in mixed solvents. 4,495,321, Cl. 524-104.000.

Arnold, Nancy L., to Procter & Gamble Company, The. Animal litter composition. 4,494,482, Cl. 119-1.000.

Aro, Enn; Bogan, Leonard E.; Hamersley, Richard A.; Knapke, Paul H.; and Miller, Robert L., to International Telephone and Telegraph Corporation. Circuit for interfacing a processor to a line circuit. 4,495,614, Cl. 370-58.000.

Arru, Pietro: *See*—
Cerise, Osvaldo; Arru, Pietro; and Vallana, Franco, 4,495,039, Cl. 204-130.000.

Asagi, Kousaku: *See*—
Abe, Yasuaki; Hayashi, Mikio; Asagi, Kousaku; Morii, Akira; and Fujimura, Kazutoshi, 4,495,017, Cl. 156-181.000.

Asahi Glass Company Ltd.: *See*—
Yamabe, Masaaki; and Munekata, Seiji, 4,495,364, Cl. 560-180.000.

ASEA Aktiebolag: *See*—
Immonen, Kari, 4,494,306, Cl. 29-809.000.
Larsson, Sten, 4,494,297, Cl. 29-527.600.

Ash Grove Cement Company: *See—*
Harris, Harry A., 4,494,990, Cl. 106-90.000.
Ashe, Bonnie M.: *See—*
Doherty, James B.; Zimmerman, Morris; and Ashe, Bonnie M., 4,495,197, Cl. 514-210.000.
Ashland Oil, Inc.: *See—*
Corn, John E., 4,495,110, Cl. 260-544.00A.
Walters, Paul W.; Benslay, Roger M.; and Barger, Dwight F., 4,495,063, Cl. 208-113.000.
Ast, Dale A., to Harper, Truck, Inc. Combination stepladder and hand truck apparatus. 4,494,626, Cl. 182-20.000.
Astech, Inc.: *See—*
Brown, William M.; and Dunn, Robert T., 4,495,386, Cl. 179-2.510.
Astra Lakemedel Aktieboiag: *See—*
Hagberg, Curt-Erik; Johansson, Karl N.; Kovacs, Zsuzsanna M. I.; and Stening, Goran B., 4,495,190, Cl. 514-262.000.
AT&T Bell Laboratories: *See—*
Acampora, Anthony, 4,495,619, Cl. 370-104.000.
Celler, George K.; Lischner, David J.; and Robinson, McDonald, 4,494,303, Cl. 29-576.00W.
Dwarakanath, Mirmira R., 4,495,472, Cl. 330-277.000.
Giger, Adolf J., 4,495,648, Cl. 455-73.000.
Pamiello, Gani, 4,495,515, Cl. 357-81.000.
Steele, Raymond; Wong, Wai C.; and Xydeas, Costas S., 4,495,620, Cl. 370-118.000.
Tamburro, Peter J., 4,494,816, Cl. 339-177.00R.
Thompson, Dennis J., 4,495,565, Cl. 364-200.000.
AT&T Technologies, Inc.: *See—*
Brzostek, Melvin W.; Hardesty, Edwin C.; and Hutchins, Erle M., 4,494,815, Cl. 339-123.000.
Draper, Clifton W.; and Poate, John M., 4,495,255, Cl. 428-669.000.
Fegley, Charles R.; and Regneth, Lorenz, 4,495,396, Cl. 219-85.00G.
Viriyayuthakorn, Montri; and DeBoo, Robert V., 4,495,022, Cl. 156-500.000.
Zado, Frank M., 4,495,007, Cl. 148-23.000.
Atasi Corporation: *See—*
Chambers, Aaron L., 4,495,533, Cl. 360-72.200.
Ateliers des Charmilles S.A.: *See—*
Janicke, Johan, 4,495,393, Cl. 219-69.00M.
Atlantic Richfield Company: *See—*
Arnold, Mary T., 4,495,321, Cl. 524-104.000.
Jones, C. A.; and Sofranko, John A., 4,495,374, Cl. 585-500.000.
Miller, Richard F., 4,495,105, Cl. 260-414.000.
Yoo, Jin S.; and Jaecker, John A., 4,495,304, Cl. 502-66.000.
Yoo, Jin S.; and Jaecker, John A., 4,495,305, Cl. 502-65.000.
Atlas Copco Aktiebolag: *See—*
Eklof, Ake T., 4,494,614, Cl. 173-116.000.
Ato Chimie: *See—*
Guerin, Bernard; Poisson, Pierre; and Sturtz, Georges, 4,495,111, Cl. 260-932.000.
Attila, Toth. Directly-heated electrical resistance unsoldering tip for simultaneous liquefying and removing solder from a joint. 4,495,403, Cl. 219-233.000.
Atwood, Warren C.: *See—*
Wolf, Stanley; and Atwood, Warren C., 4,495,220, Cl. 427-82.000.
August Bilstein GmbH & Co. KG: *See—*
de Baan, Johannes J.; and Honig, Michael, 4,494,632, Cl. 188-269.000.
Augustin, Ulrich, to Daimler-Benz Aktiengesellschaft. Hydraulic adjusting device for controlling the beginning of injection of an injection pump. 4,494,514, Cl. 123-504.000.
Aurora Industries, Inc.: *See—*
Smillie, John G., 4,494,318, Cl. 34-112.000.
Austin, Paul E.: *See—*
Allcock, Harry R.; Austin, Paul E.; and Neenan, Thomas X., 4,495,174, Cl. 424-78.000.
Autoipari Kutato Intezet: *See—*
Ratsko, Istvan; Ivony, Jozsef; Karaszi, Gyorgy; Madi, Jeno ; and Liptai, Nandor, 4,494,765, Cl. 280-432.000.
Automatismes Et Techniques Avancees: *See—*
Loustau, Desire, 4,494,580, Cl. 140-1.000.
Autry, Larry W.: *See—*
Poppe, Wassily; Chen, Yu-Tsai; and Autry, Larry W., 4,495,328, Cl. 524-606.000.
Avco Corporation: *See—*
Laskaris, A. Theodore; and Roy, Paul J., 4,495,231, Cl. 428-36.000.
Aves, Gary A.: *See—*
Aves, William L., Jr.; and Aves, Gary A., 4,495,006, Cl. 148-16.500.
Aves, William L., Jr., to Dresser Industries, Inc. Carbosiliconizing ferrous substrates. 4,495,005, Cl. 148-16.500.
Aves, William L., Jr.; and Aves, Gary A., to Dresser Industries, Inc. Borocarburizing ferrous substrates. 4,495,006, Cl. 148-16.500.
Avril, Pierre, to Jeumont-Schneider. Protective cover for an exhaust fan motor. 4,494,450, Cl. 98-42.020.
Azuma, Kazufumi; Nakatani, Mitsuo; Nate, Kazuo; Okunaka, Masaaki; and Yokono, Hitoshi, to Hitachi, Ltd. Process for forming thin film. 4,495,218, Cl. 427-53.100.
Azuma, Saburo: *See—*
Ida, Jinsei; Hagimoto, Yosio; Takahashi, Masao; and Azuma, Saburo, 4,494,282, Cl. 29-33.00P.
B. F. Goodrich Company, The: *See—*
Chasar, Dwight W., 4,495,320, Cl. 524-101.000.
Weisend, Norbert A., Jr., 4,494,715, Cl. 244-134.00A.
B.H.F. (Engineering) Ltd.: *See—*
Vilk, Peter; and Stephens, Alan, 4,494,974, Cl. 65-337.000.
Babcock-BSH Aktiengesellschaft Vormals Buttner-Schilde-Haas AG: *See—*
Roos, Friedrich; and Bahner, Friedrich, 4,494,315, Cl. 34-48.000.
Babitzka, Rudolf; Beck, Walter; and Linder, Ernst, to Robert Bosch GmbH. Electrically controllable valve. 4,494,727, Cl. 251-64.000.
Bach, Lloyd G.: *See—*
Kytta, Oswald O.; and Bach, Lloyd G., 4,494,378, Cl. 60-547.100.
Bachle, Wilfred H., to Ford Motor Company. Fluid actuated thermal compensator with adjustable stroke characteristics. 4,494,693, Cl. 236-100.000.
Backlund, Peter S., to Union Oil Company of California. Fertilizers containing nitrogen and micronutrients. 4,494,976, Cl. 71-28.000.
Badiali, Roberto, to Officine Savio S.p.A. Splicer device to disassemble and recompose yarn mechanically. 4,494,367, Cl. 57-22.000.
Badicel, Evelyn; and Porto, Gunnar O. Method of supplying concrete. 4,494,903, Cl. 414-376.000.
Bahner, Friedrich: *See—*
Roos, Friedrich; and Bahner, Friedrich, 4,494,315, Cl. 34-48.000.
Baika, Toyokazu: *See—*
Nakamura, Norihiko; Baika, Toyokazu; Miki, Toshio; and Kohigashi, Minoru, 4,494,495, Cl. 123-90.150.
Nakamura, Norihiko; and Baika, Toyokazu, 4,494,496, Cl. 123-90.150.
Bailey, Clarence W. Side-dumping, material-hauling conveyance. 4,494,798, Cl. 298-17.600.
Bairakovsky, Gennady M.: *See—*
Sidorov, Viktor V.; Tselniker, Efim Y.; Sidorov, Evgeny P.; Sukhov, Leonid V.; Gorb, Vyacheslav F.; and Bairakovsky, Gennady M., 4,495,401, Cl. 219-136.000.
Baji, Toru; Koizumi, Naohiko; Tsukada, Toshihisa; Yamamoto, Hideaki; Shimomoto, Yasuharu; and Tanaka, Yasuo, to Hitachi, Ltd. Photosensor with diode array. 4,495,409, Cl. 250-211.00J.
Baker Oil Tools, Inc.: *See—*
Beimgraben, Herbert W., 4,495,073, Cl. 210-448.000.
Baley, William D., to Lehigh Press, Inc., The. Sheet folding apparatus and method. 4,494,949, Cl. 493-432.000.
Balk, Albertus C.: *See—*
Duyker, Christiaan J. H.; and Balk, Albertus C., 4,494,684, Cl. 224-39.000.
Ballegeer, Jean C.; and Nguyen, Duyet H., to Thomson-CSF. Method and device for transmission of digital data. 4,495,573, Cl. 364-200.000.
Baltynova, Nazymkul: *See—*
Bauer, Ivan K.; Malyshev, Vitaly P.; Abishev, Dzhantore N.; Belyaev, Sergei V.; Shirokov, Anatoly I.; Baltynova, Nazymkul; Alipchenko, Elena S.; Ekeibaev, Djusenkhan D.; and Abdulkhairov, Vakhit T., 4,494,930, Cl. 432-95.000.
Banks, Bruce A., to United States of America, National Aeronautics and Space Administration. Diamondlike flakes. 4,495,044, Cl. 204-192.00C.
Banning, Harmon W.: *See—*
Patukonis, Robert J.; and Banning, Harmon W., 4,495,556, Cl. 363-39.000.
Baranoff-Rossine, Dimitri, to Societe Scome-France. Method and apparatus for identifying sound recordings. 4,495,526, Cl. 360-15.000.
Barathon, Jean-Claude; Moiny, Fernand; Soyez, Christian; and Soyez, Gerard, to Soyez FR. S.A. Packaging of drinking straws. 4,494,361, Cl. 53-553.000.
Barger, Dwight F.: *See—*
Walters, Paul W.; Benslay, Roger M.; and Barger, Dwight F., 4,495,063, Cl. 208-113.000.
Barley, Geoffrey W., to UOP Inc. Vehicle seats. 4,494,794, Cl. 297-307.000.
Barnard, Maxwell K. Inertial energy interchange system with energy makeup by combustion engine on demand. 4,495,451, Cl. 318-150.000.
Barnert, Eike; and Schmitz, Heinz, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Fluidized bed furnace and method of emptying the same. 4,495,215, Cl. 427-6.000.
Barnes, Marvin: *See—*
Hickling, Colin D.; and Barnes, Marvin, 4,495,481, Cl. 337-349.000.
Barone, Sam A. Removable freeze plug. 4,494,670, Cl. 220-235.000.
Barr & Stroud Limited: *See—*
Lidwell, Michael O., 4,494,819, Cl. 350-1.400.
Barrera, Ralph E.: *See—*
Dessert, Robert A.; Gaspar, Richard A.; Laubach, Richard T.; Punater, Dinesh G.; and Barrera, Ralph E., 4,495,582, Cl. 364-469.000.
Barrett, Ronald A., to Tektronix, Inc. Buffer amplifier. 4,495,471, Cl. 330-151.000.
Barrie, Andrew; and Freedman, Phillip A., to V.G. Isogas Limited. Automatic mass spectrometer inlet system. 4,495,414, Cl. 250-288.000.
Bartelme, Michael J., III: *See—*
Ciuba, Stanley J.; and Bartelme, Michael J., III, 4,495,225, Cl. 427-236.000.
Barth, Peter, to Lohmann GmbH & Co. KG. Process for the removal of impurities from a gas stream containing solvent vapors. 4,494,967, Cl. 55-74.000.
Barthel, Jan; and Bublitz, Hermann R., to International Business Machines Corporation. Microprocessor-controlled adapter circuit for real-time controls, in particular for print hammer controls. 4,495,597, Cl. 364-900.000.
Bartneck, Hans. Molded shoe. 4,494,266, Cl. 12-142.0RS.
Barzso, Craig. Wine aerator. 4,494,452, Cl. 99-323.100.
BASF Aktiengesellschaft: *See—*
Eicken, Karl; Goetz, Norbert; and Wuerzer, Bruno, 4,494,983, Cl. 71-118.000.

Schenck, Hans-Uwe; Blum, Rainer; Gulbins, Erich; Kempter, Fritz-Erdmann; and Schupp, Eberhard, 4,495,327, Cl. 524-556.000.
Steck, Werner; Kovacs, Jenoe; Mueller, Norbert; and Jakusch, Helmut, 4,495,246, Cl. 428-403.000.

BASF Farben & Fasern AG: *See—*
Geist, Michael; and Diefenbach, Horst, 4,495,335, Cl. 525-438.000.

BASF Wyandotte Corporation: *See—*
Schmolka, Irving R., 4,495,168, Cl. 424-45.000.
Schmolka, Irving R., 4,495,169, Cl. 424-47.000.

Bassetti, Piero, to Bassetti, S.p.A. Removable cover adapted to cover three-dimensional articles. 4,495,233, Cl. 428-81.000.

Bassetti, S.p.A.: *See—*
Bassetti, Piero, 4,495,233, Cl. 428-81.000.

Bateman, Charles D., to Sundstrand Corporation. Ground proximity warning system with time based mode switching. 4,495,483, Cl. 340-970.000.

Bates, Darrell R. Chain-powered pipe tong device. 4,494,424, Cl. 81-57.180.

Battelle Development Corporation: *See—*
Andrus, Paul G.; Smith, B. Thomas; and Dolash, Thomas M., 4,494,865, Cl. 355-32.000.

Battelle-Institut e.V.: *See—*
Rickus, Edmund; and Jager, Karlheinz, 4,495,375, Cl. 136-255.000.

Battelle Memorial Institute: *See—*
Puyane, Ramon; Gonzalez-Oliver, Carlos J. R.; and Harmer, Alan L., 4,495,297, Cl. 501-12.000.

Batty, John R., Jr.: *See—*
Slocum, Chester D.; and Batty, John R., Jr., 4,494,545, Cl. 128-419.00P.

Bauche, Heinrich: *See—*
Fricker, Wolfgang-Peter; Scholz, Manfred; Bauche, Heinrich; and Gollasch, Bernd, 4,495,147, Cl. 376-283.000.

Bauer, Ivan K.; Malyshev, Vitaly P.; Abishev, Dzhantore N.; Belyaev, Sergei V.; Shirokov, Anatoly I.; Baltynova, Nazymkul; Alipchenko, Elena S.; Ekeibaev, Djusenkhan D.; and Abdulkhairov, Vakhit T., to Khimiko-Metallurgicheskiy Institut. Shaft furnace for heat treatment of finely dispersed materials. 4,494,930, Cl. 432-95.000.

Bausch & Lomb Incorporated: *See—*
Friends, Gary D.; Melpolder, John B.; Kunzler, Jay F.; and Park, Joon S., 4,495,361, Cl. 556-419.000.

Bauser, Herbert; Kurz, Edmund; Schindler, Bernd; Zerweck, Klaus; Bolch, Thomas; Haller, Andreas; and Mager, Theo, to Irion & Vosseler GmbH & Co. & Zahlerfabrik. Stamping foils and methods. 4,495,232, Cl. 428-41.000.

Baustofftechnik GmbH & Co.: *See—*
Rohrbach, Hans-Joerg, 4,494,928, Cl. 432-13.000.

Bautista, John; and Miller, Lawrence H., to Ideal School Supply Corporation. Paper guide for paper cutter. 4,494,430, Cl. 83-468.000.

Baxter Travenol Laboratories, Inc.: *See—*
Thomas, William R., 4,495,278, Cl. 435-5.000.
White, Leonard A., 4,495,135, Cl. 264-553.000.

Bayer Aktiengesellschaft: *See—*
Jautelat, Manfred; Arlt, Dieter; and Jager, Gerhard, 4,495,370, Cl. 568-322.000.
Knops, Hans-Joachim; Kramer, Wolfgang; and Frohberger, Paul-Ernst, 4,495,184, Cl. 514-238.000.
Muschelknautz, Edgar; and Rink, Norbert, 4,494,970, Cl. 65-9.000.
Schroder, Rolf; and Lursaen, Klaus, 4,494,982, Cl. 71-97.000.
Werner, Friedrich; Blank, Heinz U.; Gramm, Gunther; Braden, Rudolf; and Ziemann, Heinz, 4,495,369, Cl. 564-480.000.

Bayerische Motoren Werke A.G.: *See—*
Seidl, Jiri, 4,494,489, Cl. 123-41.310.

Baylor University: *See—*
Busch, Kenneth W., 4,494,872, Cl. 356-328.000.

Beach, Douglas J.: *See—*
Klein, Elias; and Beach, Douglas J., 4,495,067, Cl. 210-87.000.

Bear Medical Systems, Inc.: *See—*
Chaoui, Samir M., 4,494,252, Cl. 3-1.300.

Beaufort, Ronald E., to Varco International, Inc. Fluid actuated jack mechanism. 4,494,376, Cl. 60-421.000.

Becherer, Walter; Geyken, Erwin; and Jelinek, Nikolaus, to Agfa-Gevaert Aktiengesellschaft. Apparatus for convoluting strips of photosensitive material or the like. 4,494,706, Cl. 242-65.000.

Beck, James R.; Gajewski, Robert P.; and Hackler, Ronald E., to Eli Lilly and Company. Xanthine oxidase inhibiting 3(5)-phenyl-substituted-5(3)-pyrazole-carboxylic acid derivatives, compositions, and methods of use. 4,495,195, Cl. 514-406.000.

Beck, Walter: *See—*
Babitzka, Rudolf; Beck, Walter; and Linder, Ernst, 4,494,727, Cl. 251-64.000.

Becker, Manfred; Klotzer, Sieghart; and Moisar, Erik, to Agfa-Gevaert Aktiengesellscaft. Photographic silver halide emulsion. 4,495,277, Cl. 430-567.000.

Beckman Instruments, Inc.: *See—*
Cook, William E.; Vodian, Morton A.; and Haunold, Otto, 4,495,150, Cl. 422-99.000.

Beckstrom, Ronald D.; and Anderson, Chester C., to Hunt-Wesson Foods, Inc. Pouring fitment with container and closure therefor. 4,494,682, Cl. 222-551.000.

Becton, Dickinson & Co.: *See—*
Youngman, George, 4,494,399, Cl. 73-1.00G.

Behers, Robert G.: *See—*
Divers, Edward F.; Lascola, John C.; and Behers, Robert G., 4,494,894, Cl. 405-290.000.

Beimgraben, Herbert W., to Baker Oil Tools, Inc. Retrievable screen device for drill pipe and the like. 4,495,073, Cl. 210-448.000.

Bekyarov, Georgi L.: *See—*
Futekov, Lyubomir P.; Bekyarov, Georgi L.; and Parichkova, Rina G., 4,494,871, Cl. 356-315.000.

Belferman, Leonid M.: *See—*
Eystratov, Vitaly A.; Elkin, Mikhail Y.; Danilenko, Viktor Y.; Stepunin, Ivan M.; Tsenta, Nikolai E.; Rud, Sergei A.; and Belferman, Leonid M., 4,494,448, Cl. 92-172.000.

Belin, Claude: *See—*
Le Mehaute , Alain; and Belin, Claude, 4,495,258, Cl. 429-103.000.

Bell, Harry. Manually operable post driver. 4,494,612, Cl. 173-1.000.

Bell & Howell Company: *See—*
Guenther, Kenneth L.; and Zemke, Edward H., 4,494,742, Cl. 270-58.000.
Toeppen, John S., 4,494,840, Cl. 353-101.000.

Bell, Michael; Kreuer, Klaus-Dieter; Rabenau, Albrecht; and Weppner, Werner, to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V. Solid proton conductors and their use. 4,495,078, Cl. 252-62.200.

Bell, Stanley C.: *See—*
Klaubert, Dieter H.; Bell, Stanley C.; Pattison, Thomas W.; and Rees, Richard W., 4,495,101, Cl. 260-239.30T.

Bell Telephone Laboratories, Incorporated: *See—*
McCune, Robert F., 4,495,494, Cl. 340-825.060.

Bellah, Glen R.; Mylander, Richard H.; Idelman, Lloyd B.; and Coons, Robert R., to International Harvester Co. Multi-directional single lever control for transmissions. 4,494,418, Cl. 74-475.000.

Beltek Corporation: *See—*
Nishida, Katsumi, 4,495,607, Cl. 369-6.000.

Belyaev, Sergei V.: *See—*
Bauer, Ivan K.; Malyshev, Vitaly P.; Abishev, Dzhantore N.; Belyaev, Sergei V.; Shirokov, Anatoly I.; Baltynova, Nazymkul; Alipchenko, Elena S.; Ekeibaev, Djusenkhan D.; and Abdulkhairov, Vakhit T., 4,494,930, Cl. 432-95.000.

Bendix Corporation, The: *See—*
Kytta, Oswald O.; and Bach, Lloyd G., 4,494,378, Cl. 60-547.100.
Schildkraut, Alan L., 4,494,810, Cl. 339-89.00M.
Schneider, Michael J., 4,494,696, Cl. 239-90.000.

Bennett, Walter; Ablewhite, John H.; and Bryant, Anthony J., to Alcan International Limited. Production of age hardenable aluminum extruded sections. 4,495,001, Cl. 148-11.50A.

Benslay, Roger M.: *See—*
Walters, Paul W.; Benslay, Roger M.; and Barger, Dwight F., 4,495,063, Cl. 208-113.000.

Benson, Michael R.; Hill, William D.; OBrien, Garrett G.; and Hollenbeck, Dennis W., to General Electric Company. Testable optically isolated control circuit. 4,495,655, Cl. 455-603.000.

Bentson, Wade A., to Amco Corporation. Tortilla basket fryer. 4,494,453, Cl. 99-353.000.

Berendt, Hans-Ulrich: *See—*
Schafer, Paul; and Berendt, Hans-Ulrich, 4,494,956, Cl. 8-543.000.

Berenger, Daniel, to Gerland S.A. Method of and apparatus for producing decorative floor and wall coverings. 4,495,012, Cl. 156-78.000.

Bergh, Daniel D.: *See—*
Timoshenko, John A.; and Bergh, Daniel D., 4,495,381, Cl. 174-178.000.

Bergman, Nils-Ake: *See—*
Widell, Harald; Widell, Jan; and Bergman, Nils-Ake, 4,494,808, Cl. 339-21.00R.

Bergmann, Kurt W.; and Westerhuis, Popko J., to Feldmuhle Aktiengesellschaft. Process for the preparation of coated paper and cardboard and coating materials for the performance of the process. 4,495,029, Cl. 162-135.000.

Berman, Daniel. Apparatus and technique for combustion of methanol or similar fuels. 4,494,467, Cl. 110-234.000.

Bernal, Ronald D.: *See—*
Ampulski, Joseph W.; Furukawa, James N.; Kesner, Donald R.; and Bernal, Ronald D., 4,495,617, Cl. 370-86.000.

Bernays, David J., Jr., to Charles Stark Draper Laboratory, Inc., The. Resettable feedback sensor. 4,495,460, Cl. 324-77.00A.

Bernhard, Horst; and Esselborn, Reiner, to Merck Patent Gesellschaft mit beschrankter Haftung. Nacreous pigments, their preparation and use. 4,494,993, Cl. 106-291.000.

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Berry, Larry R.; and Richert, Anton S., to Sun Studs, Inc. Veneer lathe. 4,494,588, Cl. 144-209.00R.

Bertaud, Francois X.; and Siedler, Hans J., to Abbott Laboratories. Sterile solution container. 4,494,663, Cl. 215-232.000.

Berte, Francois, to Societe Anonyme des Etablissements Jouvenel et Cordier. Electrovalve. 4,494,573, Cl. 137-625.500.

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Farnham, Robert A.; Zestar, Lawrence P.; and Bertelsen, Corey A., 4,495,058, Cl. 208-11.00R.

Berthollet, Pierre, to Societe A.C.B. Shrub-lifting machine with piston controlled anchor. 4,494,325, Cl. 37-2.00R.

Berthou, Jan-Olov K.: *See—*
Ohlsson, Stig L.; and Berthou, Jan-Olov K., 4,494,964, Cl. 51-296.000.

Berweger, Manfred. Multi-component delivery apparatus. 4,494,676, Cl. 222-63.000.

Bethlehem Steel Corporation: *See—*
Plante, Arcade J.; and Wetzel, Richard F., 4,495,587, Cl. 364-507.000.

Beyl, Jean J. A.; Buzon, Philippe; Campillo, Christian; Cursillat, Jackie; Le Faou, Daniel; and Peyre, Henri, to Ste Look. Ski-binding toe abutment member for a ski boot having a truncated sole. 4,494,769, Cl. 280-630.000.

Beymer, Glen E.: *See—*
Washburn, Philip J., 4,494,805, Cl. 312-215.000.

Beyts, Pamela K.; and Latymer, Zdenek, to Tate & Lyle Public Limited Company. Sweetening agents containing chlorodeoxysugar. 4,495,170, Cl. 424-48.000.

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Bibia Rubber B.V.: *See—*
Duyker, Christiaan J. H.; and Balk, Albertus C., 4,494,684, Cl. 224-39.000.

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Harvey, Peter, 4,494,822, Cl. 350-96.210.

Bicer, Demetrio. Cardiovascular valve prosthesis. 4,494,253, Cl. 3-1.500.

Biedermann, Siegfried M.: *See—*
Radtke, Carl T.; Kaiser, Ewald A.; Biedermann, Siegfried M.; and Chapman, Rick J., 4,494,256, Cl. 4-502.000.

Bijur Lubricating Corp.: *See—*
Keller, Philip J., 4,494,913, Cl. 417-349.000.

Bilan, Inc.: *See—*
Cross, Ronald H., 4,494,380, Cl. 62-3.000.

Billeter, Henry R., to Sloan Valve Company. Combination air cylinder and hydraulic slack adjuster. 4,494,631, Cl. 188-153.00R.

Biomeasure, Inc.: *See—*
Kim, Sun H.; and Moreau, Jacques-Pierre, 4,495,193, Cl. 514-385.000.

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Buon, Georges; and Fidel, Howard, 4,494,548, Cl. 128-660.000.

Bitterli, Peter; and Kaul, Bansi L., to Sandoz Ltd. Mass dyeing of polyester with pyrrocoline dye of his thermal stability. 4,494,955, Cl. 8-512.000.

Black, Kenneth G.; and McElhenny, Stuart W., to General Electric Company. Electric propulsion system for traction vehicles with automatic retard speed regulation. 4,495,449, Cl. 318-60.000.

Blaimschein, Gottfried, to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft m.b.H. Method and machine tool for a circular machining of eccentric shaft portions. 4,494,280, Cl. 29-6.000.

Blair, Robert E.; and Peede, Michael R., to Georgia-Pacific Resins, Inc. Phenolic resin compounds. 4,495,329, Cl. 524-774.000.

Blair, Timothy T.: *See—*
Gage, Charles A.; Blair, Timothy T.; and Morgan, Thomas W., 4,494,858, Cl. 355-3.0TR.

Blakeway, Richard S.: *See—*
Olds, Peter J.; and Blakeway, Richard S., 4,494,260, Cl. 5-446.000.

Blanc, Maurice: *See—*
Green, David; and Blanc, Maurice, 4,495,210, Cl. 426-422.000.

Blank, Heinz U.: *See—*
Werner, Friedrich; Blank, Heinz U.; Gramm, Gunther; Braden, Rudolf; and Ziemann, Heinz, 4,495,369, Cl. 564-480.000.

Blaser, Eric: *See—*
Ng, Tai-Wing; Wright, Arthur P. G.; Blaser, Eric; and Ambike, Suhas, 4,495,087, Cl. 252-315.700.

Blazek, Vladimir; and Wienert, Volker. Measuring apparatus for the non-invasive detection of venous and arterial blood flow and drainage disorders. 4,494,550, Cl. 128-664.000.

Blevins, Theodore J.; and Swiderski, Paul R., to Hoover Universal, Inc. Sofa bed mechanism. 4,494,258, Cl. 5-29.000.

Blizzard, John D.; and Swihart, Terence J., to Dow Corning Corporation. Curable masses producing carboxyfunctional silicone coatings. 4,495,340, Cl. 528-15.000.

Blum, Rainer: *See—*
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Bobst S.A.: *See—*
Schoch, Gregor, 4,494,455, Cl. 101-3.00R.

BOC Group plc, The: *See—*
Umeki, Masakazu, 4,494,966, Cl. 55-26.000.

Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and van Loveren, Augustinus G., to International Flavors & Fragrances Inc. Processes for preparing methyl substituted-2-oxohexane mixtures. 4,495,091, Cl. 252-522.00R.

Boden, Richard M., to International Flavors & Fragrances Inc. Prins reaction products of diisoamylene, derivatives thereof, organoleptic uses thereof and processes for preparing same. 4,495,359, Cl. 549-356.000.

Body Sonic Kabushiki Kaisha: *See—*
Yamada, Kyota; and Komatsu, Akira, 4,495,638, Cl. 381-27.000.

Boegh-Peterson, Allan. Windshield wiper control having a sensor and a repeatedly renewed offset signal. 4,495,452, Cl. 318-444.000.

Boeing Company, The: *See—*
Carlson, Albert A.; Owen, Darrel M.; and Van Winkle, George W., 4,495,549, Cl. 362-62.000.

Bogan, Leonard E.: *See—*
Aro, Enn; Bogan, Leonard E.; Hamersley, Richard A.; Knapke, Paul H.; and Miller, Robert L., 4,495,614, Cl. 370-58.000.

Bogner, Evelyn J.: *See—*
Nelson, Ralph E.; Nelson, Ann L.; Bogner, Evelyn J.; and Bogner, Paul M., 4,494,652, Cl. 206-366.000.

Bogner, Paul M.: *See—*
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Bohner, Beat: *See—*
Durr, Dieter; Rohr, Otto; and Bohner, Beat, 4,495,350, Cl. 544-167.000.

Bok, Edward. Method for deposition of fluid and gaseous media on substrates for their transport. 4,495,024, Cl. 156-646.000.

Bolch, Thomas: *See—*
Bauser, Herbert; Kurz, Edmund; Schindler, Bernd; Zerweck, Klaus; Bolch, Thomas; Haller, Andreas; and Mager, Theo, 4,495,232, Cl. 428-41.000.

Bolton, John D. Wire brush battery connector. 4,494,812, Cl. 339-95.00B.

Bommarito, Paul F. Pupil location gauge. 4,494,837, Cl. 351-204.000.

Bondar, Ljudmila S.; Okunev, Rostan A.; Polezhaev, Lev V.; Kolchin, Sergei P.; Cherkasova, Ljudmila V.; and Nikolaeva, Lilia F., to Institut Organicheskoi Khimii Imeni N.D. Zelinskogo; Vsesojuzny Kardiolgichesky Anuchny Tsentr; and Institut Fiologii Razvitia Imeni N.K. Koltsova Akademii Nauk SSSR. Pharmaceutical composition and method for treating heart diseases therewith. 4,495,201, Cl. 514-560.000.

Bonner, Cletus D., to Strayer Coin Bag Co. Inc. Mailing bag with address mounting pocket and tamper proof tie securing means attachable to card and slide zipper preventing surreptitious access thereinto. 4,494,592, Cl. 383-5.000.

Borsh, Richard J.: *See—*
Neff, Steven W.; and Borsh, Richard J., 4,494,779, Cl. 285-159.000.

Bosen, Robert J., to Zeda Computers International Limited. Computer intercommunication system. 4,495,572, Cl. 364-200.000.

Boston, Ernest B., to Phillips Petroleum Company. Metal passivation additive employed in a cracking process. 4,495,064, Cl. 208-120.000.

Boswell, George A., Jr., to Du Pont de Nemours, E. I., and Company. Antiinflammatory 4,5-diaryl-α-polyfluoroalkyl-1H-pyrrole-2-methanols and method for use thereof. 4,495,196, Cl. 514-427.000.

Bott, Lonnie C.: *See—*
Remington, Richard C.; and Bott, Lonnie C., 4,495,540, Cl. 361-172.000.

Bourget, Jean-Claude, to Les Cables de Lyon. Method of manufacturing electric cable having compressed mineral insulation and a titanium sheath. 4,494,307, Cl. 29-825.000.

Boutrois, Guy, to Thomson-CSF. Line-by-line document scanner equipped with a device for controlling the position of documents. 4,494,691, Cl. 235-470.000.

Bowers, Cecil W.; Thompson, Ivey G.; and Allan, Thomas T., to Flanders Filters, Inc. Filter testing apparatus and method. 4,494,403, Cl. 73-40.700.

Bowers, John E.: *See—*
Shaw, Herbert J.; Newton, Steven A.; Bowers, John E.; and Jackson, Kenneth P., 4,495,656, Cl. 455-608.000.

BP Chimie Societe Anonyme: *See—*
Raufast, Charles, 4,495,337, Cl. 526-88.000.

Bradberry, Laylon E.: *See—*
Lau, Wing-Yan T.; and Bradberry, Laylon E., 4,494,388, Cl. 66-178.00A.

Braden, Rudolf: *See—*
Werner, Friedrich; Blank, Heinz U.; Gramm, Gunther; Braden, Rudolf; and Ziemann, Heinz, 4,495,369, Cl. 564-480.000.

Bradley, John J.: *See—*
Staplin, Theodore R., Jr.; Bradley, John J.; King, Richard L.; Miller, Robert C.; Miu, Ming T.; and Shen, Jian-Kuo, 4,495,571, Cl. 364-200.000.

Bradshaw, Cyril E.: *See—*
Kelly, William W.; and Bradshaw, Cyril E., 4,494,510, Cl. 123-568.000.

Bradshaw, Norman F., to Haden Schweitzer Corporation. Method and apparatus for conditioning air temperature and humidity. 4,494,596, Cl. 165-20.000.

Bralorne Resources Limited: *See—*
Johnson, Clarence W., 4,494,778, Cl. 285-146.000.

Brander, Rita W.; and Raap, Teresa A., to General Foods Corporation. Meat analog product. 4,495,205, Cl. 426-104.000.

Bredow, Walter; and Otto, Gerhard, to C. Behrens AG. Machine for working flat workpieces by cutting. 4,495,398, Cl. 219-121.0LG.

Breedveld, Cornelis A.; and de Haan, Frans W., to Fokker B.V. Wing flap assembly and aircraft provided therewith. 4,494,716, Cl. 244-213.000.

Breidenbach, Dieter; Moesbach, Wilhelm; and Dellmann, Winfried, to Carl Still GmbH & Co. KG, Firma. Treatment of gas condensates. 4,495,031, Cl. 201-28.000.

Bremson Data Systems, Inc.: *See—*
Van Wandelen, Henri, 4,494,876, Cl. 356-404.000.

Brettbacher, Franz; and Rudolf, Buchegger, to Voest-Alpine Aktiengesellschaft. Hot-rolling plant. 4,494,395, Cl. 72-203.000.

Brezinski, Donald P., to Corning Glass Works. Replaceable junctions for reference electrodes. 4,495,052, Cl. 204-435.000.

Briggs, Michael L.: *See*—
Butler, Russell H.; Limoncelli, Edward V.; Litwinowich, Michael J.; and Briggs, Michael L., 4,494,985, Cl. 75-93.00R.

Briscoe, Peter F.: *See*—
Franklin, Robert W.; and Briscoe, Peter F., 4,494,299, Cl. 29-570.000.

Bristol, Lloyd R., to Tektronix, Inc. Offset balancing method and apparatus for a DC amplifier. 4,495,470, Cl. 330-9.000.

British Aerospace Public Limited Company: *See*—
Grainge, Richard W.; and Slow, Dennis, 4,494,830, Cl. 350-486.000.

British Petroleum Company Limited, The: *See*—
Budahn, Peter; and Ehlers, Jorn, 4,495,306, Cl. 502-185.000.

Britton, Frederick G.; and Clark, Thomas A., to Oil States Industries, Inc. Shock-absorbing joint and assembly with rotating arms and elastomeric spring action. 4,494,738, Cl. 267-140.000.

Broadbent, Eliot K., to Signetics Corporation. Variable rate semiconductor deposition process. 4,495,221, Cl. 427-88.000.

Brocklebank, Norman; and Deighton, Kenneth A., to Priestman Brothers Limited. Earthmoving machine. 4,494,906, Cl. 414-719.000.

Broere, Anton M. P.: *See*—
Bukkems, Franciscus H. J.; Plaschkes, Arnon; Buurman, Cornelis; and Broere, Anton M. P., 4,494,413, Cl. 73-863.430.

Brown, David; Hargreaves, Rodney B.; McLoughlin, Bernard J.; and Mills, Stuart D., to Imperial Chemical Industries, PLC. 1,2,4-Triazin-3(2H) ones. 4,495,185, Cl. 514-242.000.

Brown, Glenn E.: *See*—
Karpetsky, Timothy P.; and Brown, Glenn E., 4,495,279, Cl. 435-6.000.

Brown, M. Wayne, to IPT Corporation. Method for mixing gaseous fuel with air. 4,494,515, Cl. 123-527.000.

Brown, Richard A.; and Trew, John D., to Porter-Walker, Inc.; and Urethane Specialties, Inc., a part interest. Polyurethane spray nozzle for abrasive slurries. 4,494,698, Cl. 239-489.000.

Brown, Roger J.: *See*—
Calapp, David E.; Ackert, Gail M.; and Brown, Roger J., 4,494,939, Cl. 441-70.000.

Brown, Royden. Pollen trap for beehives with bee flight control. 4,494,263, Cl. 6-4.00R.

Brown, Thomas A.; Dissosway, Marc A.; Peil, William; and Vamvakas, Spiro, to General Electric Company. Lighting unit with improved control sequence. 4,495,446, Cl. 315-206.000.

Brown, William M.; and Dunn, Robert T., to Astech, Inc. Telephone extension system utilizing power line carrier signals. 4,495,386, Cl. 179-2.510.

Brown & Williamson Tobacco Corporation: *See*—
Wu, Dan T.; and Korte, Kevin R., 4,494,556, Cl. 131-302.000.

Brownbill, Thomas D., to Metal Box p.l.c. Mounting plastics members in openings in sheet metal members. 4,494,898, Cl. 413-14.000.

Bruce, George T. Apparatus and method for press forming. 4,494,393, Cl. 72-57.000.

Brueckner, Dietrich, to Ernst Leitz Wetzlar GmbH. Automatic focusing device for slide projectors. 4,494,839, Cl. 353-101.000.

Brule, Gerard; Roger, Loic; Fauquant, Jacques; and Piot, Michel, to Institut National de la Recherche Agronomique. Phosphopeptides from casein-based material. 4,495,176, Cl. 424-128.000.

Bruney, Paul F., to Sci-Coustics, Inc. Apparatus and method for enhanced psychoacoustic imagery using asymmetric cross-channel feed. 4,495,637, Cl. 381-1.000.

Brunin, Armand; and D'Hervilly, Guy, to International Business Machines Corporation. Method and network for improving transmission of data signals between integrated circuit chips. 4,495,626, Cl. 375-19.000.

Brunner, Josef: *See*—
Rock, Erich; and Brunner, Josef, 4,494,803, Cl. 308-3.800.

Bruno, Roberto; and Memmi, Massimo, to Zincroksid S.p.A. Process of making long-life thin metal plate for automobile bodies, and thin plate made thereby. 4,495,008, Cl. 148-31.500.

Bruseghini, Leonida: *See*—
Ribalta, Jose Miguel B.; Bruseghini, Leonida; Casadio, Silvano; and Iniesta, Jorge P., 4,495,199, Cl. 514-467.000.

Brustle, Walter, to Siemens Aktiengesellschaft. Electric roll-type capacitor. 4,495,544, Cl. 361-323.000.

Bryant, Anthony J.: *See*—
Bennett, Walter; Ablewhite, John H.; and Bryant, Anthony J., 4,495,001, Cl. 148-11.5QA.

Bryant, Robert J., to Sterling Drug Inc. Process for substitution of aromatic organic compounds. 4,495,353, Cl. 546-178.000.

Brzostek, Melvin W.; Hardesty, Edwin C.; and Hutchins, Erle M., to AT&T Technologies, Inc. Self-aligning cover for modular tricoupler. 4,494,815, Cl. 339-123.000.

Bublitz, Hermann R.: *See*—
Barthel, Jan; and Bublitz, Hermann R., 4,495,597, Cl. 364-900.000.

Buckler, Robert T.; and Ward, Frederick E., to Miles Laboratories, Inc. Tricyclic antidepressant drug immunogens, antibodies, labeled conjugates, and related derivatives. 4,495,281, Cl. 435-7.000.

Buckley, Thomas F., to Chevron Research Company. Methods and compositions for preventing the precipitation of zinc dialkyldithiophosphates which contain high percentages of a lower alkyl group. 4,495,075, Cl. 252-32.70E.

Buckley, William H. Method of and apparatus for indicating characteristics of undulating data. 4,495,585, Cl. 364-487.000.

Budahn, Peter; and Ehlers, Jorn, to British Petroleum Company Limited, The. Preparation of catalysts by the precipitation of a hydroxide or sulfide from an emulsion in the presence of carbonaceous solid. 4,495,306, Cl. 502-185.000.

Bugaut, Andree ; and Estradier, Francoise, to L'Oreal. 2,4-Dihydroxydiphenylamines and hair dyeing compositions and method. 4,494,953, Cl. 8-408.000.

Bujard, Hermann G.; Chang, Annie C. Y.; and Cohen, Stanley N., to Leland Stanford Jr. University, The Board of Trustees of the. Cloned high signal strength promoters. 4,495,280, Cl. 435-6.000.

Bukkems, Franciscus H. J.; Plaschkes, Arnon; Buurman, Cornelis; and Broere, Anton M. P., to Shell Oil Company. Homogeneous sampler for non-homogeneous flowing of fluid. 4,494,413, Cl. 73-863.430.

Buon, Georges; and Fidel, Howard, to Biosound, Inc. Ultrasonic sector scanner. 4,494,548, Cl. 128-660.000.

Buonomo, Franco: *See*—
Neri, Carlo; and Buonomo, Franco, 4,495,371, Cl. 568-427.000.

Burdick, Thomas H.; Vasconcellos, Alfred; and Whitney, William G., to W. G. Whitney Corporation. Warmer for temperature conditioning wet dressings and other articles. 4,495,402, Cl. 219-214.000.

Burgmann, Wilhelm: *See*—
Reimpell, Uwe; Wamser, Anton; Stenzel, Otto; and Burgmann, Wilhelm, 4,495,624, Cl. 373-93.000.

Burke, Timothy M.; Smith, Paul F.; Noble, Scott W.; and Schorman, Eric R., to Motorola, Inc. Digital voice storage mobile. 4,495,647, Cl. 455-38.000.

Burkhard, Herbert: *See*—
Ley, David A.; and Burkhard, Herbert, 4,495,366, Cl. 564-160.000.

Burkhead, Noel M.; and Weldon, Paul J. Techniques for repelling predatory animals by the use of aposematic patterns and coloration. 4,494,245, Cl. 2-2.000.

Burnett, Curtis E., to Romac Industries, Inc. Liquid piping saddle assembly connecting a branch pipe to a main pipe. 4,494,780, Cl. 285-177.000.

Burt, Dan L.: *See*—
Anderson, George F.; and Burt, Dan L., 4,495,222, Cl. 427-89.000.

Buryakov, Valery M.: *See*—
Zabotin, Viktor G.; Kosenko, Alexandr I.; Kozlov, Sergei P.; Pervyshin, Alexandr N.; Lukachev, Viktor P.; Mikhailov, Vladimir A.; Buryakov, Valery M.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Levin, Viktor Y., deceased; and Levin, Sofia N., administratrix, 4,494,925, Cl. 431-158.000.

Busch, Kenneth W., to Baylor University. Multiple entrance aperture dispersive optical spectrometer. 4,494,872, Cl. 356-328.000.

Butler, David V.: *See*—
Orlowski, Jan A.; Butler, David V.; and Kidd, Patrick D., 4,495,172, Cl. 424-61.000.

Butler, Russell H.; Limoncelli, Edward V.; Litwinowich, Michael J.; and Briggs, Michael L., to Allied Corporation. Filtration of inclusions from molten metal alloy. 4,494,985, Cl. 75-93.00R.

Buttner, Robert C., to Concrete Pipe & Products Corp. Reinforcing system for concrete pipe. 4,494,576, Cl. 138-175.000.

Buurman, Cornelis: *See*—
Bukkems, Franciscus H. J.; Plaschkes, Arnon; Buurman, Cornelis; and Broere, Anton M. P., 4,494,413, Cl. 73-863.430.

Buzon, Philippe: *See*—
Beyl, Jean J. A.; Buzon, Philippe; Campillo, Christian; Cursillat, Jackie; Le Faou, Daniel; and Peyre, Henri, 4,494,769, Cl. 280-630.000.

Byler, Richard E.: *See*—
McCarthy, James P.; and Byler, Richard E., 4,494,423, Cl. 74-869.000.

Bynum, Byron G., to Motorola, Inc. Voltage transient protection circuit. 4,495,536, Cl. 361-91.000.

C. Behrens AG: *See*—
Bredow, Walter; and Otto, Gerhard, 4,495,398, Cl. 219-121.0LG.

C. F. Sauer Company, The: *See*—
Cleevely, Bruce T., 4,494,679, Cl. 222-151.000.

C. Hoegger & Cie. AG: *See*—
Trottmann, Bruno, 4,494,276, Cl. 17-1.00F.

C-I-L Inc.: *See*—
Cameron, Gordon M.; and Orlando, John V., 4,495,161, Cl. 423-167.000.

Cadre Corporation, The: *See*—
Gitman, Grigory M., 4,494,927, Cl. 432-9.000.

Caillouet, Charles W., Jr. Holder for joystick controller for video games. 4,494,755, Cl. 273-148.00B.

Cal Custom Accessories, Inc.: *See*—
Graff, Henry W., 4,495,552, Cl. 362-297.000.

Cal Detect, Inc.: *See*—
Hutson, Donald G., 4,495,418, Cl. 250-343.000.

Calapp, David E.; Ackert, Gail M.; and Brown, Roger J., to Connelly Skis, Inc. Water ski binding. 4,494,939, Cl. 441-70.000.

Calderon, Albert. Method for direct reduction of iron oxide utilizing induction heating. 4,494,984, Cl. 75-11.000.

Caldwell, David; Ferrio, Linda J.; and Hunter, Arthur C., to Texas Instruments Incorporated. Electronic data processing apparatus with equation operating system having implied multiplication of two hierarchical ranks. 4,495,592, Cl. 364-754.000.

Calmes, Marc: *See*—
Monteyne, Guido; Calmes, Marc; and Schmeler, Robert, 4,494,971, Cl. 65-19.000.

Calvert, Robert B.; and Rollmann, Louis D., to Mobil Oil Corporation. Synthesis of ZSM-5 utilizing a mixture of quaternary ammonium ions and amines. 4,495,166, Cl. 423-329.000.

Cam Gears Limited: *See*—
Webber, Gordon E. G.; and Wilson, Alan G., 4,494,446, Cl. 91-375.00A.

Camden, Thomas M., Jr.; and Orr, William L., to Westinghouse Electric Corp. Maximum power capability blanket for nuclear reactors. 4,495,136, Cl. 376-172.000.
Cameron, Gordon M.; and Orlando, John V., to C-I-L Inc. Energy recovery method and system for combined sulphuric acid and phosphoric acid manufacturing plant. 4,495,161, Cl. 423-167.000.
Camillo Corvi S.p.A.: *See*—
Mora, Camillo C., 4,495,186, Cl. 514-255.000.
Campagnie Industrielle des Communications Cit-Alcatel: *See*—
Dupuis, Bernard; Pasquet, Jean-Pierre; and Coppens, Christian, 4,495,618, Cl. 370-66.000.
Campbell, Alexander F.: *See*—
Dufresne, Gilles L.; Devlin, George V.; Campbell, Alexander F.; and Campbell, David, 4,495,545, Cl. 361-384.000.
Campbell, David: *See*—
Dufresne, Gilles L.; Devlin, George V.; Campbell, Alexander F.; and Campbell, David, 4,495,545, Cl. 361-384.000.
Campbell, James B.: *See*—
Smith, Edgar C.; and Campbell, James B., 4,494,864, Cl. 355-22.000.
Campillo, Christian; and Michaud, Jean-Pierre, to Ste Look. Locking device for a ski binding. 4,494,767, Cl. 280-612.000.
Campillo, Christian: *See*—
Beyl, Jean J. A.; Buzon, Philippe; Campillo, Christian; Cursillat, Jackie; Le Faou, Daniel; and Peyre, Henri, 4,494,769, Cl. 280-630.000.
Canada Packers, Inc.: *See*—
Wein, Edward, 4,495,206, Cl. 426-250.000.
Cann, Gordon L. Micro-arc milling of metallic and non-metallic substrates. 4,495,399, Cl. 219-121.0PY.
Canon Denshi Kabushiki Kaisha: *See*—
Watanabe, Satoshi; Wakasawa, Toru; Hirano, Hirofumi; and Nishizawa, Hiroshi, 4,494,885, Cl. 400-145.200.
Canon Kabushiki Kaisha: *See*—
Aoki, Takao; Inoue, Takahiro; Goto, Masahiro; and Takeda, Kenji, 4,494,856, Cl. 355-3.00R.
Fujino, Masahisa; Sunouchi, Akio; Suzuki, Ryuji; and Konno, Tatsuo, 4,494,844, Cl. 354-241.000.
Katsuma, Makoto; Kawamura, Masaharu; and Yamada, Masanori, 4,494,850, Cl. 354-416.000.
Katsuma, Makoto; Murakami, Hiroyasu; and Hiramatsu, Akira, 4,495,432, Cl. 310-328.000.
Kawabata, Takashi, 4,495,415, Cl. 250-336.100.
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Durr, Dieter; Rohr, Otto; and Bohner, Beat, 4,495,350, Cl. 544-167.000.
Schafer, Paul; and Berendt, Hans-Ulrich, 4,494,956, Cl. 8-543.000.

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Clymer, Ronald S. Mounted spring device for resisting flexing. 4,494,662, Cl. 272-134.000.

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Cohen, Peter I.: *See—*
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Collonia, Harald, to VDO Adolf Schindling AG. Device for electric control of the speed of an automotive vehicle. 4,495,454, Cl. 318-663.000.

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Comer, William T.: *See—*
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Corsette, Douglas F. Manually operated dispensing pump. 4,494,680, Cl. 222-321.000.
Cosmo, Nicola, to AMP Incorporated. Low profile chip carrier contact. 4,494,807, Cl. 339-17.0CF.
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Coussau, Jean; and Clar, Georges, to Framatome. Positioning and removal device for a checking means or a tool in a receiver installation. 4,494,907, Cl. 414-749.000.
Covey, Ray M., Jr. Carburetor/vaporizer. 4,494,516, Cl. 123-557.000.
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Daley, Eugene E., Jr.; and O'Grady, Thomas R., to Carrier Corporation. Electric connector assembly. 4,494,813, Cl. 339-99.00R.
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Damon Biotech, Inc.: *See—*
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Dan T. Moore Co., The: *See—*
Moore, Dan T., III; Fischer, Michael F.; and Herceg, Laurie S., 4,494,671, Cl. 220-256.000.
Danilenko, Viktor Y.: *See—*
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Pryor, Michael J.; Winter, Joseph; and Dantzig, Jonathan A., 4,494,461, Cl. 102-464.000.
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Lyman, George F.; and Lowry, Alan, 4,495,289, Cl. 435-284.000.
Davco, Inc.: *See—*
Davis, Leland L., 4,495,069, Cl. 210-114.000.
David, Agoston: *See—*
Meszaros, Zoltan; Knoll, Jozsef; Szentmiklosi, Peter; Hermecz, Istvan; Horvath, Agnes; Virag, Sandor; Vasvari, Lelle; and David, Agoston, 4,495,189, Cl. 514-258.000.
Davidson, Charles: *See—*
Larson, Ove; and Davidson, Charles, 4,494,417, Cl. 74-469.000.
Davis, Charles E., to CF Industries, Inc. Cleaning assembly for a dryer feed chute. 4,494,647, Cl. 198-494.000.
Davis, Charles L.: *See—*
Deeken, William O.; and Davis, Charles L., 4,495,126, Cl. 264-137.000.
Davis, Duane J., to General Signal Corporation. Piston pump servo control. 4,494,911, Cl. 417-222.000.
Davis, Howard F., to 8-Track Shoe Corp. Shoe outsole. 4,494,320, Cl. 36-25.00R.
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Rica, Albert F.; Davis, John C.; and Reiss, Ronald J., 4,494,363, Cl. 53-426.000.
Davis, Leland L., to Davco, Inc. Drain system for fuel processor apparatus. 4,495,069, Cl. 210-114.000.
Dayco Corporation: *See—*
Miranti, Joseph P., Jr.; Foley, Mark P.; Holloway, Gerald C.; Oliver, Larry R.; Standley, Paul M.; and Lewis, James A., 4,494,947, Cl. 474-251.000.
de Baan, Johannes J.; and Honig, Michael, to August Bilstein GmbH & Co. KG. Piston guide and seal for dual-tube hydropneumatic shock absorber. 4,494,632, Cl. 188-269.000.
DeBergalis, Michael; and O'Fee, Robert P., to Du Pont de Nemours, E. I., and Company. Polymer-bound ultraviolet stabilizer coating compositions containing cross linkers. 4,495,325, Cl. 524-507.000.
DeBoo, Robert V.: *See—*
Viriyayuthakorn, Montri; and DeBoo, Robert V., 4,495,022, Cl. 156-500.000.
De Boodt, Marcel F. L. P.; and Verdonck, Omer F., to Labofina, S.A. Composing compositions. 4,494,975, Cl. 71-25.000.
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Grandvallet, Gilles; and Deborde, Albert H., 4,494,579, Cl. 139-429.000.
Decker, G. Warren. Insulated glass adaptive method and apparatus. 4,494,342, Cl. 52-203.000.
De Conto, Pierre; and Guipont, Raymond, to Commissariat a l'Energie Atomique. Process and apparatus for the dimensional and non-destructive control of a hollow member. 4,495,633, Cl. 378-55.000.
Dedolph, Richard R., to Gravi-Mechanics Co. Method of forming a urethane prepolymer and its use in consolidating aggregate material. 4,495,310, Cl. 521-99.000.
Deeken, William O.; and Davis, Charles L., to Goodyear Tire & Rubber Company, The. Adhesive activated emulsion to a polyester yarn. 4,495,126, Cl. 264-137.000.
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Kumar, Viraraghavan S.; and Olson, Rohn L., 4,494,726, Cl. 251-29.000.
Strunk, Richard D.; Kasten, Robert E.; and Monopoli, Richard V., deceased, 4,495,577, Cl. 364-424.000.
Winter, David C., 4,494,883, Cl. 384-439.000.
Deft Chemical Coatings, Inc.: *See—*
Albers, Richard A., 4,495,317, Cl. 523-414.000.
DeGroot, Rudolph C., Sr.: *See—*
Van Dyke, Helga M.; and DeGroot, Rudolph C., Sr., 4,494,554, Cl. 128-734.000.
Degussa Aktiengesellschaft: *See—*
Nauroth, Peter; Esch, Heinz; and Turk, Gunter, 4,495,167, Cl. 423-339.000.
de Haan, Frans W.: *See—*
Breedveld, Cornelis A.; and de Haan, Frans W., 4,494,716, Cl. 244-213.000.

DeHaan, Robert; and Gisvold, Lee D., to Amana Refrigeration, Inc. Flue pipe connection assembly and method of connection thereof. 4,494,598, Cl. 165-47.000.

Deighton, Kenneth A.: *See—*
Brocklebank, Norman; and Deighton, Kenneth A., 4,494,906, Cl. 414-719.000.

Deininger, Rolf: *See—*
Wolf, Erich; and Deininger, Rolf, 4,495,213, Cl. 426-548.000.

Deiss, Michael S., to RCA Corporation. Remote controlled receiver with provisions for automatically programming a channel skip list. 4,495,654, Cl. 455-151.000.

Dekker, Lambert: *See—*
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and van Loveren, Augustinus G., 4,495,091, Cl. 252-522.00R.

DeLacy, Thomas J., to Ford Aerospace & Communications Corporation. Method and apparatus for non-destructive testing of composite materials. 4,494,408, Cl. 73-587.000.

DeLau, Bruce E. Portable quick chilling and heating appliance. 4,494,600, Cl. 165-132.000.

Dellmann, Winfried: *See—*
Breidenbach, Dieter; Mosebach, Wilhelm; and Dellmann, Winfried, 4,495,031, Cl. 201-28.000.

De Lockerente, Serge R.: *See—*
Petit, Leon; and De Lockerente, Serge R., 4,495,080, Cl. 252-179.000.

Del Valle, Jamie L., to Master Modular Homes, Inc. Method for precasting steel reinforced concrete box-like modules. 4,495,131, Cl. 264-256.000.

Delvaux, Pierre: *See—*
Lalancette, Jean-Marc; Cossette, Marcel; and Delvaux, Pierre, 4,495,223, Cl. 427-215.000.

De Meo, Franco: *See—*
Grilli, Walter; De Meo, Franco; and Franchini, Ivan, 4,495,004, Cl. 148-16.500.

Denef, Dan E.: *See—*
Kravitz, Marvin; Freedman, Larry A.; Fredd, Elmer H.; and Denef, Dan E., 4,495,520, Cl. 358-219.000.

Dennison Manufacturing Company: *See—*
Price, Lewis C., Jr., 4,494,458, Cl. 101-391.000.

Deno, Koji, to Murata Kikai Kabushiki Kaisha. Yarn end untwisting device for a pneumatic yarn splicing device. 4,494,366, Cl. 57-22.000.

Derby, Palmer P., to Raytheon Company. Microwave simmer pot. 4,495,392, Cl. 219-10.55E.

DeReamer, Sharon M. B.; and Eifling, Dennis R., to Dresser Industries, Inc. Vibratory screening apparatus and method. 4,495,065, Cl. 209-243.000.

Derndinger, Hans-Otto: *See—*
Adam, Roland; Krauth, Dieter; and Derndinger, Hans-Otto, 4,495,115, Cl. 261-44.00F.

Desbrandes, Robert; and Norel, Guy, to Institut Francais du Petrole. Method for determining the dip angle of geological formations traversed by a borehole. 4,495,605, Cl. 367-33.000.

Descamps, Bernard, to Thomson-CSF. Bipolar transistor controlled by field effect by means of an isolated gate. 4,495,513, Cl. 357-43.000.

Dessert, Robert A.; Gaspar, Richard A.; Laubach, Richard T.; Punater, Dinesh G.; and Barrera, Ralph E., to Harris Graphics Corporation. Control system for pre-setting and operation of a printing press and collator. 4,495,582, Cl. 364-469.000.

Develop Dr. Eisbein GmbH & Co.: *See—*
Moser, Kurt, 4,494,746, Cl. 271-164.000.

Devlin, George V.: *See—*
Dufresne, Gilles L.; Devlin, George V.; Campbell, Alexander F.; and Campbell, David, 4,495,545, Cl. 361-384.000.

Dewing, Ernest W.: *See—*
Gesing, Adam J.; and Dewing, Ernest W., 4,495,047, Cl. 204-245.000.

de Witte, Olivier: *See—*
Lacour, Bernard; Maillet, Marc; de Witte, Olivier; and Vannier, Chantal, 4,495,631, Cl. 372-38.000.

D'Hervilly, Guy: *See—*
Brunin, Armand; and D'Hervilly, Guy, 4,495,626, Cl. 375-19.000.

Dickinson, Robert V.; and Galie, Louis M., to System Development Corporation. Method and means using digital data processing means for locating representations in a stored textual data base. 4,495,566, Cl. 364-200.000.

Diebold, Incorporated: *See—*
Graef, Harry T.; and Newton, Kevin H., 4,494,747, Cl. 271-263.000.

Diefenbach, Horst: *See—*
Geist, Michael; and Diefenbach, Horst, 4,495,335, Cl. 525-438.000.

Diehl GmbH & Co.: *See—*
Meixner, Alfred, 4,494,879, Cl. 368-76.000.

Diepers, Heinrich; and Schewe, Herbert, to Siemens Aktiengesellschaft. Pressure-sensitive transducer using piezo ceramic material. 4,495,434, Cl. 310-338.000.

Diesel Kiki Co., Ltd.: *See—*
Torizuka, Keizi, 4,494,513, Cl. 123-495.000.

Dietz, Gunther: *See—*
Schmidt, Hans-Jorg; Franke, Joachim; Scheffler, Reingard; Tonjes, Heinz; Kammann, Gunter; and Dietz, Gunther, 4,495,351, Cl. 544-234.000.

Dietz, Karl-Jurgen: *See—*
Ali-Khan, Imran; Dietz, Karl-Jurgen; Waelbroeck, Francois; and Wienhold, Peter, 4,494,965, Cl. 55-16.000.

DiFranco, Dionisio, to Peel Truck & Trailer Repair Ltd. Support bar. 4,494,896, Cl. 410-148.000.

DiGeronimo, Michael J., to International Paper Company. Sterilization of packaging material. 4,494,357, Cl. 53-167.000.

Digital Equipment Corporation: *See—*
Gregory, Jack; and Landry, Christian C., 4,494,720, Cl. 248-371.000.
Gustafson, Roy W., 4,495,529, Cl. 360-46.000.

Digital Recording Corporation: *See—*
Russell, James T., 4,495,609, Cl. 369-44.000.

DiMatteo, Paul; and Ross, Joseph, to Robotic Vision Systems, Inc. Detection of three-dimensional information using a projected point or line of light. 4,494,874, Cl. 356-376.000.

Dimensional Merchandising, Inc.: *See—*
Cullen, John F., 4,494,650, Cl. 206-45.340.

Director-General of Agency of Industrial Science and Technology: *See—*
Mita, Akio; and Kashiwabara, Susumu, 4,495,082, Cl. 252-194.000.

Director-General of the Agency of Industrial Science and Technology: *See—*
Niwa, Shuichi; Imamura, Juichi; Mizukami, Fujio; Shimizu, Kazuo; and Orito, Yoshio, 4,495,373, Cl. 585-269.000.

Discovision Associates: *See—*
George, David J.; Nguyen, Hue V.; and Yardy, Raymond, 4,495,623, Cl. 371-38.000.

Dissoway, Marc A.: *See—*
Brown, Thomas A.; Dissoway, Marc A.; Peil, William; and Vamvakas, Spiro, 4,495,446, Cl. 315-206.000.

Divers, Edward F.; Lascola, John C.; and Behera, Robert G., to United States of America, Interior. Extensible brattice support system for mine face ventilation. 4,494,894, Cl. 405-290.000.

Dobbs, John M., to Analogic Corporation. Method and apparatus for profiling structural sections. 4,495,635, Cl. 378-56.000.

Dobias, John J. Steam trap. 4,494,692, Cl. 236-59.000.

Dobler, Klaus; Schoor, Ulrich; Heinz, Rudolf; Frey, Thomas; and Grunwald, Werner, to Robert Bosch GmbH. Pressure sensor for the combustion chamber of an internal combustion engine. 4,494,401, Cl. 73-35.000.

Dobson, William E.: *See—*
Tunac, Josefino B.; Dobson, William E.; and Graham, Blanche D., 4,495,286, Cl. 435-253.000.

Docutel Corporation: *See—*
Kushmaul, Richard T.; Lafevers, James O.; and Webb, James E., 4,494,743, Cl. 271-11.000.

Dodge, William B.; and Halfon, Marc, to FMC Corporation. Process for producing alkali metal cyanates. 4,495,107, Cl. 260-453.00P.

Doherty, James B.; Zimmerman, Morris; and Ashe, Bonnie M., to Merck & Co., Inc. N-Carboxyl-thienamycin esters and analogs thereof as anti-inflammatory agents. 4,495,197, Cl. 514-210.000.

Dolak, Terence M.; and Martin, Tellis A., to Mead Johnson & Company. Antihypertensive isoindole derivatives. 4,495,194, Cl. 514-323.000.

Dolash, Thomas M.: *See—*
Andrus, Paul G.; Smith, B. Thomas; and Dolash, Thomas M., 4,494,865, Cl. 355-32.000.

Dolenc, Anton, to Steyr-Daimler-Puch Aktiengesellschaft. Fuel injection nozzle for air-compressing, self-igniting reciprocating internal combustion engines. 4,494,700, Cl. 239-533.300.

Dolkemeyer, Wilfried; Keim, Karl-Heinz; and Meisenburg, Ewald, to Rheinische Braunkohlenwerke AG. Process for the production of pumpable coal slurries. 4,494,960, Cl. 44-51.000.

Domtar Inc.: *See—*
Nguyen, Xuan T., 4,495,163, Cl. 423-244.000.

Donatelli, Thomas F.; and Murray, Philip F., to Firestone Tire & Rubber Company, The. Rubber compounds containing zinc dimethacrylate. 4,495,326, Cl. 524-533.000.

Donovan, Timothy F.: *See—*
Ryan, William P.; Mason, Richard A.; Maida, Vincent A.; and Donovan, Timothy F., 4,495,380, Cl. 174-138.00D.

Doolin, Thomas J. Blending asphaltite with lignite or bituminous coal. 4,494,958, Cl. 44-1.00G.

Doryokuro Kakunenryo Kaihatsu Jigyodan: *See—*
Otsubo, Akira, 4,495,137, Cl. 376-171.000.
Ozaki, Satoru, 4,495,141, Cl. 376-251.000.

Dotzer, Richard; and Lechner, Ernst-Friedrich, to Siemens Aktiengesellschaft. Heat-removing circuit boards. 4,495,378, Cl. 174-68.500.

Doulton Industrial Products Limited: *See—*
Taylor, Derek; Howlett, Stephen P.; Farr, Howard J.; and Tickle, Barbara L., 4,495,302, Cl. 501-125.000.

Douwe Egberts Koninklijke Tabakfabriek Koffiebranderijen Theehandel N.V.: *See—*
Mooiweer, Gerben D., 4,495,211, Cl. 426-422.000.

Dow Chemical Company, The: *See—*
So, Ying-Hung, 4,495,036, Cl. 204-59.00R.
Sutton, Tonja R.; and Hughes, David W., 4,495,309, Cl. 521-51.000.
Vanderhider, James A.; and Lancaster, Gerald M., 4,495,081, Cl. 252-182.000.

Dow Corning Corporation: *See—*
Blizzard, John D.; and Swihart, Terence J., 4,495,340, Cl. 528-15.000.
Smith, Jari K., 4,495,226, Cl. 427-326.000.

Drake, Charles A.; and Turk, Stanley D., to Phillips Petroleum Company. Copolyamide from cycloaliphatic subetituted nonane diamine. 4,495,344, Cl. 528-340.000.

Draper, Clifton W.; and Poate, John M., to AT&T Technologies, Inc. Laser surface alloying. 4,495,255, Cl. 428-669.000.

Draper, Wilburn D.; and Laakso, Melvin T., to International Business Machines Corporation. Multi sub-channel adapter with single status-/address register. 4,495,564, Cl. 364-200.000.

Dresser Industries, Inc.: *See*—
Aves, William L., Jr., 4,495,005, Cl. 148-16.500.
Aves, William L., Jr.; and Aves, Gary A., 4,495,006, Cl. 148-16.500.
DeReamer, Sharon M. B.; and Eifling, Dennis R., 4,495,065, Cl. 209-243.000.
Smith, John R. E., 4,495,606, Cl. 367-86.000.
Sutor, Peter T., 4,495,301, Cl. 501-124.000.

Drummond, Charles E. Ventilated toilet device. 4,494,255, Cl. 4-213.000.

Drury, F. Robert; and Graham, Marshall D., to Coulter Electronics, Inc. Slide preparation apparatus. 4,494,479, Cl. 118-120.000.

Dubi, Bernard: *See*—
Guillaume, Paul; Vezin, Luc; and Dubi, Bernard, 4,494,923, Cl. 431-9.000.

Duffy, Patrick E.: *See*—
Sgroi, Nunzio B.; and Duffy, Patrick E., 4,494,533, Cl. 128-75.000.

Dufresne, Gilles L.; Devlin, George V.; Campbell, Alexander F.; and Campbell, David, to Northern Telecom Limited. Enclosure for electrical and electronic equipment with temperature equalization and control. 4,495,545, Cl. 361-384.000.

Dumanoir, Jean L., to Schlumberger Technology Corp. Machine method for determining the presence and location of hydrocarbon deposits within a subsurface earth formation. 4,495,604, Cl. 367-25.000.

Dumbeck, Robert F. Means and method of sensing motor rotation speed from stray escaping flux. 4,495,448, Cl. 318-54.000.

Dunn, Robert T.: *See*—
Brown, William M.; and Dunn, Robert T., 4,495,386, Cl. 179-2.510.

Du Pont de Nemours, E. I., and Company: *See*—
Boswell, George A., Jr., 4,495,196, Cl. 514-427.000.
DeBergalis, Michael; and O'Fee, Robert P., 4,495,325, Cl. 524-507.000.
Falcoff, Allan F., 4,494,677, Cl. 222-63.000.
Gebrian, Peter L.; and Jones, Charles B., 4,495,014, Cl. 156-80.000.
Gramm, Jeffrey S.; Mongan, Edwin L., Jr.; and Sheeran, Patrick J., 4,495,108, Cl. 260-453.700.
Rorer, Morris P., 4,494,979, Cl. 71-92.000.
Shapiro, Rafael, 4,494,980, Cl. 71-92.000.
Sowell, Lyles H., 4,494,921, Cl. 425-198.000.
Vasta, Joseph A., 4,495,247, Cl. 428-422.000.
Vasta, Joseph A., 4,495,248, Cl. 428-422.000.
Zunker, David W., 4,495,245, Cl. 428-403.000.

Dupuis, Bernard; Pasquet, Jean-Pierre; and Coppens, Christian, to Campagnie Industrielle des Communications Cit-Alcatel. Digital switching network. 4,495,618, Cl. 370-66.000.

Dupuis, Emmanuel F. Container. 4,494,690, Cl. 232-22.000.

Duret, Jean, to Vallourec, S.A. Closed angle thread pipe joint. 4,494,777, Cl. 285-55.000.

Durr, Dieter; Rohr, Otto; and Bohner, Beat, to Ciba-Geigy Corporation. Heterocyclic esters of 2-nitro-5-(o-chloro-p-trifluoromethylphenoxy)-benzoic acid. 4,495,350, Cl. 544-167.000.

Duyker, Christiaan J. H.; and Balk, Albertus C., to Bibia Rubber B.V. Luggage binder for a bicycle or like vehicle. 4,494,684, Cl. 224-39.000.

Dwarakanath, Mirmira R., to AT&T Bell Laboratories. Stable fast-settling voltage reference buffer amplifier. 4,495,472, Cl. 330-277.000.

E-Systems, Inc.: *See*—
Keearns, Larry R., 4,495,580, Cl. 364-450.000.

Eastman Kodak Company: *See*—
Evans, Steven; and Elwood, James K., 4,495,099, Cl. 534-651.000.
Lambeth, David N., 4,494,868, Cl. 356-1.000.
Lawrence, David J.; Abbas, Daniel C.; Phelps, Daniel J.; and Smith, Frank T. J., 4,495,514, Cl. 357-67.000.
Marcus, Michael A., 4,494,841, Cl. 354-21.000.
Moore, Leslie G.; and Lee, Te-Hsung, 4,495,516, Cl. 358-54.000.
Phillips, Bobby M., 4,495,244, Cl. 428-399.000.
Reczek, James A.; and Elwood, James K., 4,495,098, Cl. 534-651.000.
Reczek, James A.; and Elwood, James K., 4,495,100, Cl. 534-651.000.
VanderValk, Paul D., 4,495,263, Cl. 430-60.000.

Eaton Corporation: *See*—
Kelly, William W.; and Bradshaw, Cyril E., 4,494,510, Cl. 123-568.000.

Ebara Corporation: *See*—
Ito, Kanichi; Hirayama, Yoshio; Takeuchi, Ryoichi; Kodaira, Masanori; and Iizuka, Gorou, 4,495,290, Cl. 435-315.000.

Ebtron, Inc.: *See*—
Komons, Michael; Wiseman, Donald F.; and Galanis, Andreas I., 4,494,406, Cl. 73-204.000.

Economics Laboratory, Inc.: *See*—
Ciuba, Stanley J.; and Bartelme, Michael J., III, 4,495,225, Cl. 427-236.000.

Edwards, James B.: *See*—
Rodriguez, Pedro A.; Edwards, James B.; and Habermehl, Fred M., 4,494,481, Cl. 119-1.000.

Edwards, Thomas C., to Rovac Corporation. Vapor refrigeration cycle system with constrained rotary vane compressor and low vapor pressure refrigerant. 4,494,386, Cl. 62-402.000.

Eggebrecht, Lewis C.; Kummer, David A.; and Saenz, Jesus A., to International Business Machines Corporation. Synchronization of CRT controller chips. 4,495,594, Cl. 364-900.000.

Eguchi, Kazutoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Information processing apparatus for virtual storage control system. 4,495,575, Cl. 364-200.000.

Ehlers, Jorn: *See*—
Budahn, Peter; and Ehlers, Jorn, 4,495,306, Cl. 502-185.000.

Ehrenfellner, Hubert: *See*—
Knudson, Robert M.; and Ehrenfellner, Hubert, 4,494,919, Cl. 425-83.100.

Ehrhardt, Heinz; Mildenberger, Hilmar; Sachse, Burkhard; and Hartz, Peter, to Hoechst Aktiengesellschaft. Fungicidal 3-1,2,4-triazol-1-yl-1,2-diaryl-1-halogeno-prop-1-ene derivatives, compositions, and method of use. 4,495,191, Cl. 514-383.000.

Eichelberger, Charles W.; Wojnarowski, Robert J.; and Cohen, Peter I., to General Electric Company. Shielded plastic microwave oven cavity. 4,495,251, Cl. 428-548.000.

Eicken, Karl; Goetz, Norbert; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Chloroacetic acid cyclohexylamides, their preparation, their use for controlling weeds and agents for this use. 4,494,983, Cl. 71-118.000.

Eifling, Dennis R.: *See*—
DeReamer, Sharon M. B.; and Eifling, Dennis R., 4,495,065, Cl. 209-243.000.

8-Track Shoe Corp.: *See*—
Davis, Howard F., 4,494,320, Cl. 36-25.00R.

Eikelboom, Lucas, to Hollandse Signaalapparaten B.V. Energy converter. 4,495,555, Cl. 323-28.000.

Ekeibaev, Djusenkhan D.: *See*—
Bauer, Ivan K.; Malyshev, Vitaly P.; Abishev, Dzhantore N.; Belyaev, Sergei V.; Shirokov, Anatoly I.; Baltynova, Nazymkul; Alipchenko, Elena S.; Ekeibaev, Djusenkhan D.; and Abdulkhairov, Vakhit T., 4,494,930, Cl. 432-95.000.

Eklof, Ake T., to Atlas Copco Aktiebolag. Hydraulically operated impact device. 4,494,614, Cl. 173-116.000.

Electrolux Corporation: *See*—
Ritzau, William P.; Casselli, Aveo J.; and Fleischer, Gene S., 4,494,270, Cl. 15-377.000.

Electromotive, Inc.: *See*—
Long, Alexander, 4,494,509, Cl. 123-416.000.

Elektroschmelzwerk Kempten GmbH: *See*—
Hunold, Klaus; Lipp, Alfred; and Reinmuth, Klaus, 4,495,123, Cl. 264-69.000.

Elfin Corporation: *See*—
Kruesi, August H., 4,494,436, Cl. 87-23.000.

Eli Lilly and Company: *See*—
Beck, James R.; Gajewski, Robert P.; and Hackler, Ronald E., 4,495,195, Cl. 514-406.000.
Hoehn, Marvin M.; and Marconi, Gary G., 4,495,179, Cl. 514-9.000.
Matsumoto, Ken; and Ward, John S., 4,495,202, Cl. 514-721.000.

Elitex, koncern textilniho strojirenstvi: *See*—
Svaty, Vladimir; and Sevcik, Ladislav, 4,494,577, Cl. 139-20.000.

Elkin, Mikhail Y.: *See*—
Eystratov, Vitaly A.; Elkin, Mikhail Y.; Danilenko, Viktor Y.; Stepunin, Ivan M.; Tsenta, Nikolai E.; Rud, Sergei A.; and Belferman, Leonid M., 4,494,448, Cl. 92-172.000.

Ellis, Peter J.: *See*—
Mason, Ross S.; and Ellis, Peter J., 4,495,416, Cl. 250-338.000.

Elliston, Thomas L., to Hydra-Rig, Incorporated. Liquid nitrogen pump. 4,494,415, Cl. 74-44.000.

Ellwein, Rebecca A. Needlework art form. 4,495,230, Cl. 428-13.000.

Elwood, James K.: *See*—
Evans, Steven; and Elwood, James K., 4,495,099, Cl. 534-651.000.
Reczek, James A.; and Elwood, James K., 4,495,098, Cl. 534-651.000.
Reczek, James A.; and Elwood, James K., 4,495,100, Cl. 534-651.000.

Endo, Hiroshi; Sone, Masazumi; Imai, Iwao; and Kasuya, Hideo, to Nissan Motor Company, Limited. Optical power supply switching apparatus. 4,495,421, Cl. 250-551.000.

Endo, Norio; Danno, Yoshiaki; Nakagami, Tatsuro; and Murakami, Nobuaki, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Idling controller of variable displacement engine. 4,494,502, Cl. 123-198.00F.

Energy Research Corporation: *See*—
Christner, Larry G.; and Fan, Jen-Jung, 4,495,154, Cl. 422-203.000.

Engelstein, Charles; Kassel, David L.; and Goodman, Harry, to Memory Protection Devices, Inc. Horizontal battery holder for cylinder cells. 4,495,257, Cl. 429-100.000.

Enuma Chain Manufacturing Co., Ltd.: *See*—
Ogino, Teiji, 4,494,945, Cl. 474-231.000.

Erb, Robert C. Universal microslad. 4,494,540, Cl. 128-303.100.

Eriksen, Tor, to Moss Rosenberg Verft A/S. System for mooring a floating structure. 4,494,475, Cl. 114-230.000.

Ernst Leitz Wetzlar GmbH: *See*—
Brueckner, Dietrich, 4,494,839, Cl. 353-101.000.

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Nauroth, Peter; Esch, Heinz; and Turk, Gunter, 4,495,167, Cl. 423-339.000.

Esselborn, Reiner: *See*—
Bernhard, Horst; and Esselborn, Reiner, 4,494,993, Cl. 106-291.000.

Essex Group, Inc.: *See*—
Hedrick, Paul A., 4,495,130, Cl. 264-255.000.

Essilor International: *See*—
Cogez, Jean, 4,494,836, Cl. 351-204.000.

Essilor International Cie General d'Optique: *See*—
Tagnon, Luc; and Waja, Georges, 4,494,569, Cl. 137-563.000.

Esteveny, Serge: *See—*
Lacour, Gilles; and Esteveny, Serge, 4,494,478, Cl. 118-50.000.
Estradier, Francoise: *See—*
Bugaut, Andree ; and Estradier, Francoise, 4,494,953, Cl. 8-408.000.
Etablissements Andre Zalkin et Cie: *See—*
Zalkin, Michel, 4,494,358, Cl. 53-331.500.
Etoh, Tadaaki; Yano, Ryuji; Ishida, Kazuhiro; and Yoshimoto, Shoji, to Hitachi, Ltd. Magnetic bubble memory apparatus. 4,495,601, Cl. 365-1.000.
Evans, Lyle B. Infinite speed transmission with reciprocating yokes. 4,494,416, Cl. 74-119.000.
Evans, Robert F. Seal assemblies. 4,494,749, Cl. 277-22.000.
Evans, Steven; and Elwood, James K., to Eastman Kodak Company. Non-diffusible magenta compound capable of releasing a 4-(2-heterocyclazo)phenol having a heterocyclic ring fused thereto. 4,495,099, Cl. 534-651.000.
Everest, Charles E. Intra-optical light beam sighting system for an infrared thermometer. 4,494,881, Cl. 374-124.000.
Everman, Carl G. Split hub wheel apparatus. 4,495,032, Cl. 202-105.000.
Excell Manufacturing Company: *See—*
Kilgus, Howard M., 4,494,279, Cl. 24-336.000.
Excoffon, Charles: *See—*
Ricard, Jean; and Excoffon, Charles, 4,495,155, Cl. 422-248.000.
Exner, Rainer: *See—*
Knothe, Erich; Melcher, Franz-Josef; Stadler, Eberhard; and Exner, Rainer, 4,494,620, Cl. 177-25.000.
Exxon Nuclear Company, Inc.: *See—*
Gehri, Aime A., 4,495,145, Cl. 376-261.000.
Gheri, Aime A., 4,495,146, Cl. 376-261.000.
Eystratov, Vitaly A.; Elkin, Mikhail Y.; Danilenko, Viktor Y.; Stepunin, Ivan M.; Tsenta, Nikolai E.; Rud, Sergei A.; and Belferman, Leonid M., to Vsesojuzny Nauchno-Issledovatelsky I Proektno-Konstruktorsky Institut Promyshelennykh Gidroprivodov I Girodoavtomatiki. Composite piston of positive displacement hydraulic machine and method for manufacturing same. 4,494,448, Cl. 92-172.000.
Ezaki, Norio: *See—*
Koyama, Masao; Tsuruoka, Takashi; Ezaki, Norio; Miyauchi, Keinosuke; and Inouye, Shigeharu, 4,495,358, Cl. 548-550.000.
F. William Carr: *See—*
Sciarra, Michael J.; and Cestaro, Victor L., 4,494,553, Cl. 128-721.000.
Fairchild Camera and Instrument Corporation: *See—*
Smith, Donald L.; and Jones, David B., 4,495,382, Cl. 179-81.00R.
Falcoff, Allan F., to Du Pont de Nemours, E. I., and Company. Apparatus for delivering accurate volume of liquid. 4,494,677, Cl. 222-63.000.
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Christner, Larry G.; and Fan, Jen-Jung, 4,495,154, Cl. 422-203.000.
Farsone, Lorenzo, to RCA Corporation. Method of making semiconductor device with multi-levels of polycrystalline silicon conductors. 4,494,301, Cl. 29-571.000.
Faria, Sixdeniel, to GTE Products Corporation. Electrophotographic copper doped cadmium sulfide material and method of making. 4,495,265, Cl. 430-95.000.
Farnham, Robert A.; Zestar, Lawrence P.; and Bertelsen, Corey A., to Chevron Research Company. Process for generating superheated steam using retorted solids. 4,495,058, Cl. 208-11.00R.
Farr, Howard J.: *See—*
Taylor, Derek; Howlett, Stephen P.; Farr, Howard J.; and Tickle, Barbara L., 4,495,302, Cl. 501-125.000.
Fauquant, Jacques: *See—*
Brule, Gerard; Roger, Loic; Fauquant, Jacques; and Piot, Michel, 4,495,176, Cl. 424-128.000.
Fay, Philip J.: *See—*
Chavin, Stephen I.; and Fay, Philip J., 4,495,175, Cl. 424-101.000.
Fegley, Charles R.; and Regneth, Lorenz, to AT&T Technologies, Inc. Aligning a workpiece to a body. 4,495,396, Cl. 219-85.00G.
Feiccabrino, Joseph A., to Uniroyal, Inc. Preparation of mono-nitro aromatic compounds. 4,495,372, Cl. 568-929.000.
Feldmuhle Aktiengesellschaft: *See—*
Bergmann, Kurt W.; and Westerhuis, Popko J., 4,495,029, Cl. 162-135.000.
Leimer, Gerhard; and Gugel, Ernst, 4,495,122, Cl. 264-65.000.
Felt Products Mfg. Co.: *See—*
Rogers, Ernest E., 4,495,423, Cl. 290-44.000.
Ferag Ag: *See—*
Honegger, Werner, 4,494,359, Cl. 53-430.000.
Honegger, Werner, 4,494,646, Cl. 198-459.000.
Ferrio, Linda J.: *See—*
Caldwell, David; Ferrio, Linda J.; and Hunter, Arthur C., 4,495,592, Cl. 364-754.000.
Ferry, Jean-Claude: *See—*
Capdebosco, Andre; and Ferry, Jean-Claude, 4,494,602, Cl. 166-65.00R.
Fetsch, Elisabeth: *See—*
Geissler, Ulrich; Herwig, Walter; and Fetsch, Elisabeth, 4,495,271, Cl. 430-277.000.
Feulner, Walter: *See—*
Schramm, Peter; and Feulner, Walter, 4,494,875, Cl. 356-402.000.
Feurer, Bernard; and Pigot, Gilles, to Alcon Pharmaceuticals, Limited. Method for the manufacture of contact lenses using microwave energy. 4,495,117, Cl. 264-1.400.
Fey, Maurice G.: *See—*
Heberlein, Joachim V. R.; and Fey, Maurice G., 4,495,625, Cl. 373-107.000.
Fichtel & Sachs AG: *See—*
Lutz, Manfred, 4,494,782, Cl. 292-96.000.
Fick, Charles M., Jr. Table for use with automobile trunks and the like. 4,494,465, Cl. 108-44.000.
Fidel, Howard: *See—*
Buon, Georges; and Fidel, Howard, 4,494,548, Cl. 128-660.000.
Fidler, Raymond E., Jr. Enclosure and frame therefor. 4,494,558, Cl. 135-102.000.
Fielder, William V. B., Jr., to Roper Corporation. Venetian blind assembly with improved ladder supporting tilt drums. 4,494,593, Cl. 160-177.000.
Fields, Larry D., to Yardney Corporation. Filter screen device. 4,495,072, Cl. 210-238.000.
Figgie International Inc.: *See—*
Ansite, William K., 4,494,538, Cl. 128-205.250.
Findley Adhesives, Inc.: *See—*
Scharfenberg, Paul M.; and Findley, Kenneth N., Jr., 4,495,011, Cl. 156-78.000.
Findley, Kenneth N., Jr.: *See—*
Scharfenberg, Paul M.; and Findley, Kenneth N., Jr., 4,495,011, Cl. 156-78.000.
Fini, Vincenzo: *See—*
Biagi, Gino; and Fini, Vincenzo, 4,494,317, Cl. 34-73.000.
Finnigan Mat GmbH: *See—*
Lerche, Heinz; Rache, Horst; and Wedde, Reiner, 4,495,413, Cl. 250-252.100.
Firbimatic S.R.L.: *See—*
Biagi, Gino; and Fini, Vincenzo, 4,494,317, Cl. 34-73.000.
Firestone Tire & Rubber Company, The: *See—*
Donatelli, Thomas F.; and Murray, Philip F., 4,495,326, Cl. 524-533.000.
Fischell, Robert E., to Johns Hopkins University, The. Plural module medication delivery system. 4,494,950, Cl. 604-66.000.
Fischer, David L.; and Waterstreet, William E., to Rudolf, John M. Tissue cutting and interfolding apparatus for Z webs. 4,494,741, Cl. 270-39.000.
Fischer, Jochen; and Scholl, Hans, to Kochs Adler AG. Method for identifying size and/or type of workpiece receiving means and sewing apparatus for carrying out said method. 4,494,470, Cl. 112-121.120.
Fischer, Michael F.: *See—*
Moore, Dan T., III; Fischer, Michael F.; and Herceg, Laurie S., 4,494,671, Cl. 220-256.000.
Fishel, Clark N. Valve accentuation mechanism for opposed inverted V engine. 4,494,442, Cl. 91-181.000.
Flanders Filters, Inc.: *See—*
Bowers, Cecil W.; Thompson, Ivey G.; and Allan, Thomas T., 4,494,403, Cl. 73-40.700.
Fleischer, Gene S.: *See—*
Ritzau, William P.; Casselli, Aveo J.; and Fleischer, Gene S., 4,494,270, Cl. 15-377.000.
Flensburg, Carl G. A.; and Isaksson, Rolf H. V. Apparatus for bundling sheets for fascicles. 4,494,360, Cl. 53-528.000.
Flood, Robert A.; Talkington, Howard R.; Wheelock, Richard A.; and Watts, Robert L., to United States of America, Navy. Master buoy system for acoustic array deployment, using underwater glide bodies remotely launched from a submerged pod. 4,494,938, Cl. 441-33.000.
Flores, Luis: *See—*
Taracatac, Corazon A.; Flores, Luis; and Chaudhry, Viren, 4,495,177, Cl. 424-147.000.
Flowerday, Carl, to Prince Corporation. Visor covering. 4,494,789, Cl. 296-97.00H.
FMC Corporation: *See—*
Dodge, William B.; and Halfon, Marc, 4,495,107, Cl. 260-453.00P.
Hill, Jerry M., 4,494,400, Cl. 73-1.00B.
Fogg, O. Douglas: *See—*
Haag, George A.; Fogg, O. Douglas; Greenley, Gordon A.; Shepard, Steve A.; and Terry, F. Duncan, 4,495,599, Cl. 364-900.000.
Fohl, Artur, to REPA Feinstanzwerk GmbH. Belt band-clamping arrangement for safety belts in motor vehicles. 4,494,774, Cl. 280-806.000.
Fokker B.V.: *See—*
Breedveld, Cornelis A.; and de Haan, Frans W., 4,494,716, Cl. 244-213.000.
Van Bochove, Gijsbertus F. J.; and Somers, Petrus A. A. M., 4,494,410, Cl. 73-644.000.
Foley, Mark P.: *See—*
Miranti, Joseph P., Jr.; Foley, Mark P.; Hollaway, Gerald C.; Oliver, Larry R.; Standley, Paul M.; and Lewis, James A., 4,494,947, Cl. 474-251.000.
Folkerth, Harold E., to Shopsmith, Inc. Tilting table for a woodworking tool. 4,494,591, Cl. 144-286.00A.
Foltz, Carl L., to Halkey-Roberts Corporation. Conductor tube for flashlights. 4,495,551, Cl. 362-205.000.
Fonstad, Clifton G.: *See—*
Tabatabaie-Alavi, Kamal; Choudhury, Abu N. M. M.; Slater Gabriel, Nancy J.; and Fonstad, Clifton G., 4,494,995, Cl. 148-1.500.
Ford Aerospace & Communications Corporation: *See—*
DeLacy, Thomas J., 4,494,408, Cl. 73-587.000.
Ford, Michael B.; and Griffin, Jim B. Method of cleaning and inhibiting sucker rod corrosion. 4,494,607, Cl. 166-311.000.
Ford Motor Company: *See—*
Bachle, Wilfred H., 4,494,693, Cl. 236-100.000.
Godwin, Paul K., Jr.; and Kell, Howard A., Jr., 4,494,712, Cl. 242-191.000.
Ma, Thomas T., 4,494,508, Cl. 123-406.000.
McCarthy, James P.; and Byler, Richard E., 4,494,423, Cl. 74-869.000.

Rao, Vemulapalli D. N.; and Wade, Wallace R., 4,494,375, Cl. 60-296.000.

Forestier, Alexandre, to S.N.E.C.M.A. Damping device for turbojet engine fan blades. 4,494,909, Cl. 416-190.000.

Forsman, Donald. Gold extracting process and apparatus. 4,494,986, Cl. 75-109.000.

Foster, John E., to Coulter Electronics, Inc. Automatic control system including error processing loop. 4,495,405, Cl. 219-510.000.

Foster Manufacturing Company: *See*—
Cruse, Lee H., 4,494,728, Cl. 251-149.900.

Foster Wheeler Energy Corporation: *See*—
Schroeder, Joseph W., 4,494,392, Cl. 72-56.000.

Fox, Peter F.: *See*—
Parks, John R.; Carr, David R.; and Fox, Peter F., 4,495,644, Cl. 382-3.000.

Framatome: *See*—
Coussau, Jean; and Clar, Georges, 4,494,907, Cl. 414-749.000.

Frame, Warren C. Crosscut saw carriage. 4,494,429, Cl. 83-435.100.

France Bed Co., Ltd.: *See*—
Masuda, Teruo; and Yamaguchi, Kazuyuki, 4,494,532, Cl. 128-71.000.

Franchini, Ivan: *See*—
Grilli, Walter; De Meo, Franco; and Franchini, Ivan, 4,495,004, Cl. 148-16.500.

Franke, Joachim: *See*—
Schmidt, Hans-Jorg; Franke, Joachim; Scheffler, Reingard; Tonjes, Heinz; Kammann, Gunter; and Dietz, Gunther, 4,495,351, Cl. 544-234.000.

Franklin, Robert W.; and Briscoe, Peter F., to International Standard Electric Corporation. Method of manufacturing solid electrolytic capacitors. 4,494,299, Cl. 29-570.000.

FranRica Mfg. Inc.: *See*—
Rica, Albert F.; Davis, John C.; and Reiss, Ronald J., 4,494,363, Cl. 53-426.000.

Franz, John E., to Monsanto Co. Esters of N-phosphonomethylglycine. 4,495,363, Cl. 560-155.000.

Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V.: *See*—
Koschke, Peter; and Novak, Pavel, 4,494,411, Cl. 73-724.000.

Fredd, Elmer H.: *See*—
Kravitz, Marvin; Freedman, Larry A.; Fredd, Elmer H.; and Denef, Dan E., 4,495,520, Cl. 358-219.000.

Fredley, C. Thomas. Brush cleaner and artist's kit. 4,494,267, Cl. 15-104.920.

Fredriksson, Boris: *See*—
Carlsson, Valdemar; and Fredriksson, Boris, 4,494,758, Cl. 277-14.00V.

Freedman, Larry A.: *See*—
Kravitz, Marvin; Freedman, Larry A.; Fredd, Elmer H.; and Denef, Dan E., 4,495,520, Cl. 358-219.000.

Freedman, Phillip A.: *See*—
Barrie, Andrew; and Freedman, Phillip A., 4,495,414, Cl. 250-288.000.

French, Charles R.: *See*—
Wiechel, John F.; French, Charles R.; and Hall, Wilbur L., 4,494,605, Cl. 166-288.000.

Frey, Douglas R. Adjustable distortion guitar amplifier. 4,495,640, Cl. 381-61.000.

Frey, Thomas: *See*—
Dobler, Klaus; Schoor, Ulrich; Heinz, Rudolf; Frey, Thomas; and Grunwald, Werner, 4,494,401, Cl. 73-35.000.

Frias, Ronald J.; Jagielski, David; and Schetter, Nicholas R., to Micron Corporation. Modular reader/printer developer apparatus. 4,494,859, Cl. 355-5.000.

Fricker, Wolfgang-Peter; Scholz, Manfred; Bauche, Heinrich; and Gollasch, Bernd, to Kraftwerk Union Aktiengesellschaft, r Ruhr; and Grunzweig & Hartmann Montage GmbH. Heat-retarding closure system for pressure relief openings of partitions, in nuclear reactor buildings. 4,495,147, Cl. 376-283.000.

Friedman, Herman H.; and Popp, Walter R., to General Foods Corporation. Shelf-stable high moisture pet food. 4,495,208, Cl. 426-335.000.

Friedrich, John P.: *See*—
Christianson, Donald D.; and Friedrich, John P., 4,495,207, Cl. 426-312.000.

Friends, Gary D.; Melpolder, John B.; Kunzler, Jay F.; and Park, Joon S., to Bausch & Lomb Incorporated. Polysiloxane composition with improved surface wetting characteristics and biomedical devices made thereof. 4,495,361, Cl. 556-419.000.

Froeliger, Denis, to Societe d'Electronique Industrielle d'Elbeuf-Elindel. Broadcast receiver comprising an entirely electronic control device. 4,495,651, Cl. 455-158.000.

Frohberger, Paul-Ernst: *See*—
Knopa, Hans-Joachim; Kramer, Wolfgang; and Frohberger, Paul-Ernst, 4,495,184, Cl. 514-238.000.

Fu, Wallace Y., to Union Carbide Corporation. Process for making thiobiscarbamates. 4,495,093, Cl. 260-453.300.

Fuji Jukogyo Kabushiki Kaisha: *See*—
Fukushima, Tatsuhisa; Kasai, Yoshiaki; and Nakamura, Mitsuo, 4,495,579, Cl. 364-431.070.
Morikawa, Kouji; and Suzuki, Hitoshi, 4,494,493, Cl. 123-52.00M.
Sakakiyama, Ryuzo, 4,494,641, Cl. 192-0.076.
Takano, Toshio; and Sakakiyama, Ryuzo, 4,494,639, Cl. 192-0.052.

Fuji Photo Film Co., Ltd.: *See*—
Aoki, Haruo; and Terahata, Masahiro, 4,494,845, Cl. 354-297.000.
Arai, Yoshihiro; and Nahara, Akira, 4,495,242, Cl. 428-336.000.
Kogane, Mikio, 4,494,432, Cl. 83-559.000.
Takimoto, Masaaki; Saida, Takashi; and Murata, Masataka, 4,495,276, Cl. 430-527.000.
Tsubota, Motohiko; and Moriguchi, Masakazu, 4,495,270, Cl. 430-218.000.
Yagihara, Morio; Hirano, Tsumoru; Hirano, Mitsunori; and Umemoto, Makoto, 4,495,272, Cl. 430-381.000.
Yokoyama, Shigeki; and Ohga, Kunihiko, 4,495,275, Cl. 430-527.000.

Fuji Xerox Co., Ltd.: *See*—
Moriguchi, Fujio; and Kurata, Masami, 4,495,307, Cl. 346-76.0PH.
Ozawa, Takashi, 4,495,523, Cl. 358-293.000.

Fujii, Hajime: *See*—
Nio, Satoru; Sato, Shinobu; Fujii, Hajime; and Hamashima, Toyoji, 4,495,588, Cl. 364-513.000.

Fujii, Isao: *See*—
Yagi, Shizuo; Otani, Junji; Fujii, Isao; and Kogure, Hiroshi, 4,494,504, Cl. 123-308.000.

Fujii, Toshifumi: *See*—
Uchida, Ryohei; and Fujii, Toshifumi, 4,495,525, Cl. 360-10.300.

Fujimura, Kazutoshi: *See*—
Abe, Yasuaki; Hayashi, Mikio; Asagi, Kousaku; Morii, Akira; and Fujimura, Kazutoshi, 4,495,017, Cl. 156-181.000.

Fujino, Masahisa; Sunouchi, Akio; Suzuki, Ryuji; and Konno, Tatsuo, to Canon Kabushiki Kaisha. Light shading device for a camera. 4,494,844, Cl. 354-241.000.

Fujioka, Masato; Kobayashi, Katsuyoshi; Yuta, Koichi; and Nishihara, Nobuyoshi, to Nippon Steel Corporation. Continuous heat treatment furnace. 4,494,929, Cl. 432-59.000.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,495,182, Cl. 514-226.000.

Fujita, Eiichi; Nagao, Yoshimitsu; Ikeda, Takao; and Inoue, Takehisa, to Yamasa Shoyu Kabushiki Kaisha. Optically-active diamide derivatives. 4,495,355, Cl. 546-209.000.

Fujita, Kazuo. Castor wheel carriage. 4,494,464, Cl. 105-170.000.

Fujita, Yuko; Kudo, Hisashi; and Tanigawa, Ikuo, to Japan Storage Battery Company Limited. Galvanic cell type oxygen sensor. 4,495,051, Cl. 204-408.000.

Fujitsu Fanuc Limited: *See*—
Inaba, Hajimu; Sakakibara, Shinsuke; Inagaki, Shigemi; and Torii, Nobutoshi, 4,495,453, Cl. 318-568.000.
Kozai, Yoshinori; Amemiya, Yoichi; and Iwamatsu, Noboru, 4,495,464, Cl. 324-174.000.

Fujitsu Limited: *See*—
Kato, Takashi; and Toyokura, Nobuo, 4,495,219, Cl. 427-82.000.
Minami, Takatoshi; and Nishimoto, Hiroshi, 4,495,410, Cl. 250-214.0AG.

Fukami, Akira; Okamoto, Kunio; and Noguchi, Hiroki, to Nippon Soken, Inc. Ventilating device for automotive vehicle. 4,494,597, Cl. 165-41.000.

Fukuda, Kumio: *See*—
Shimoma, Taketoshi; Fukuda, Kumio; and Shimoogi, Toshio, 4,495,439, Cl. 313-412.000.

Fukuda, Yutaka: *See*—
Kohri, Naomichi; Fukuda, Yutaka; and Muramatsu, Hiroshi, 4,495,535, Cl. 360-96.300.

Fukui, Osamu, to Nissan Motor Company, Limited. Tiltable steering for industrial vehicle or the like. 4,494,773, Cl. 280-775.000.

Fukumi, Hiroshi: *See*—
Sato, Yasunobu; Fukumi, Hiroshi; Koike, Hiroyuki; and Kitahara, Nobuaki, 4,495,188, Cl. 514-260.000.

Fukuroi, Takeo; Omori, Shigenori; and Tanaka, Akira, to Yoshida Kogyo K. K. Apparatus for stamping filamentary material for helically coiled slide-fastener coupling elements. 4,494,922, Cl. 425-324.100.

Fukushima, Takashi: *See*—
Matsuura, Tamiaki; Aiba, Takeshi; Fukushima, Takashi; Nishimura, Masanori; Ohtsuki, Hiroshi; Yabuki, Fujio; and Kusakabe, Tomio, 4,494,298, Cl. 29-563.000.

Fukushima, Tatsuhisa; Kasai, Yoshiaki; and Nakamura, Mitsuo, to Fuji Jukogyo Kabushiki Kaisha. Actuator control system for an engine idling speed governor. 4,495,579, Cl. 364-431.070.

Fuller Company: *See*—
Lukacz, Stephen A., 4,494,564, Cl. 137-527.600.

Funk, James E., to Alfred University Research Foundation, Inc. Coal-water slurry and method for its preparation. 4,494,999, Cl. 44-51.000.

Funke, Maurice F.; and Morris, Joseph W., to United States of America, Army, by said Joseph W. Morris. Fluidic transmission controller. 4,494,422, Cl. 74-867.000.

Furukawa, James N.: *See*—
Ampuhki, Joseph W.; Furukawa, James N.; Kesner, Donald R.; and Bernal, Ronald D., 4,495,617, Cl. 370-86.000.

Furukawa, Masamichi: *See*—
Yamaga, Shigeru; and Furukawa, Masamichi, 4,494,854, Cl. 354-484.000.

Furuta, Yohichi; Tsubouchi, Kaoru; and Nishii, Michiharu, to Aisin Seiki Kabushiki Kaisha. Tandem-type brake booster. 4,494,445, Cl. 91-369.00A.

Futekov, Lyubomir P.; Bekyarov, Georgi L.; and Parichkova, Rina G., to Nauchno-Proizvodstveno Predpriyatie "Balkan". Device for pulse dosage of liquid microsamples into the flame of atom absorption spectrophotometer. 4,494,871, Cl. 356-315.000.

Fyfe, Donald W.: *See*—
Wurst, William C.; and Fyfe, Donald W., 4,494,526, Cl. 126-419.000.

G. D. Searle & Co.: *See—*
Hansen, Donald W., Jr.; Jones, David A., Jr.; Mazur, Robert H.; and Schlatter, James M., 4,495,178, Cl. 514-17.000.
Nysted, Leonard N., 4,495,102, Cl. 260-239.500.

Gage, Charles A.; Blair, Timothy T.; and Morgan, Thomas W., to Xerox Corporation. Geometric design reproducing apparatus. 4,494,858, Cl. 355-3.0TR.

Gagnon, Bertrand. Record removal and centering device for 45 r.p.m. device. 4,495,613, Cl. 369-270.000.

Gailey, J. Lynn, to Alcan Aluminum Corporation. Ceiling system and panel-securing device therefor. 4,494,346, Cl. 52-489.000.

Gaines, Henry F. "Automatic set" mole trap. 4,494,335, Cl. 43-80.000.

Gainey, Michael D. Foldable ski and pole carrier. 4,494,787, Cl. 294-147.000.

Gajewski, Robert P.: *See—*
Beck, James R.; Gajewski, Robert P.; and Hackler, Ronald E., 4,495,195, Cl. 514-406.000.

Galanis, Andreas I.: *See—*
Komons, Michael; Wiseman, Donald F.; and Galanis, Andreas I., 4,494,406, Cl. 73-204.000.

Galie, Louis M.: *See—*
Dickinson, Robert V.; and Galie, Louis M., 4,495,566, Cl. 364-200.000.

Gallagher, William: *See—*
McHugh, Edward L.; McHugh, James C.; McHugh, Gerard J.; Gallagher, William; and Schmidt, David, 4,494,766, Cl. 280-444.000.

Gamma-Metrics: *See—*
Lingren, Clinton L.; and Miller, James F., 4,495,144, Cl. 376-255.000.

Garcea, Giampaolo: *See—*
Surace, Filippo; and Garcea, Giampaolo, 4,494,761, Cl. 277-67.000.

Garneau, Richard P.: *See—*
Perlin, Morton J.; and Garneau, Richard P., 4,494,271, Cl. 16-21.000.

Garrison, Harold K.: *See—*
Hill, Amos G.; and Garrison, Harold K., 4,494,904, Cl. 414-491.000.

Gas Research Institute: *See—*
Kendall, Robert M.; and Schreiber, Richard J., 4,494,485, Cl. 122-250.00R.

Gaspar, Richard A.: *See—*
Dessert, Robert A.; Gaspar, Richard A.; Laubach, Richard T.; Punater, Dinesh G.; and Barrera, Ralph E., 4,495,582, Cl. 364-469.000.

Gates Rubber Company, The: *See—*
Uba, Toshio, 4,495,259, Cl. 429-161.000.

Gaudet, Arthur D.: *See—*
Lewis, John R.; McCurdy, Andrew; and Gaudet, Arthur D., 4,494,821, Cl. 350-6.500.

Gearhart Industries, Inc.: *See—*
Pratt, Donna K.; and Terrell, Jamie B., 4,494,601, Cl. 166-55.000.

Geberth, John D., Jr. Spray control valve. 4,494,697, Cl. 239-124.000.

Gebrian, Peter L.; and Jones, Charles B., to Du Pont de Nemours, E. I., and Company. Laminating and trimming process. 4,495,014, Cl. 156-80.000.

Gebrueder Heller Maschinenfabrik GmbH: *See—*
Schmid, Karlheinz, 4,494,281, Cl. 29-6.000.

Gehri, Aime A., to Exxon Nuclear Company, Inc. Spherical nuclear fuel loading probe. 4,495,145, Cl. 376-261.000.

Geipel, Stanley W., to Hickory Pond Corp. Gasket and gasket manufacturing method. 4,494,762, Cl. 277-206.00R.

Geissler, Ulrich; Herwig, Walter; and Fetsch, Elisabeth, to Hoechst Aktiengesellschaft. Radiation polymerizable mixture and copying material produced therefrom. 4,495,271, Cl. 430-277.000.

Geist, Michael; and Diefenbach, Horst, to BASF Farben & Fasern AG. Self-crosslinking heat-curable binder. 4,495,335, Cl. 525-438.000.

Gelatt, Charles D., Jr.; and Kirkpatrick, Edward S., to International Business Machines Corporation. Optimization of an organization of many discrete elements. 4,495,559, Cl. 364-148.000.

Gell, Harold A., Jr. Coffee roaster. 4,494,314, Cl. 34-10.000.

General Binding Corporation: *See—*
Vercillo, Alfredo J.; and Kuehn, Arthur, 4,495,456, Cl. 318-755.000.

General Dynamics, Pomona Division: *See—*
Maudal, Inge, 4,494,460, Cl. 102-293.000.

General Electric Company: *See—*
Anthony, Blair T., 4,495,360, Cl. 556-436.000.
Benson, Michael R.; Hill, William D.; OBrien, Garrett G.; and Hollenbeck, Dennis W., 4,495,655, Cl. 455-603.000.
Black, Kenneth G.; and McElhenny, Stuart W., 4,495,449, Cl. 318-60.000.
Brown, Thomas A.; Dinosoway, Marc A.; Peil, William; and Vamvakas, Spiro, 4,495,446, Cl. 315-206.000.
Cath, Pieter G.; Capp, John; and Loeffler, William P., 4,495,558, Cl. 364-563.000.
Chung, Rack H., deceased; and Chung, Betsy A., executrix, 4,495,330, Cl. 524-783.000.
Chung, Rack H., deceased, 4,495,331, Cl. 524-783.000.
Eichelberger, Charles W.; Wojnarowski, Robert J.; and Cohen, Peter I., 4,495,251, Cl. 428-548.000.
Kresge, James S., 4,495,459, Cl. 324-72.000.
Leslie, Samuel A., 4,495,632, Cl. 455-234.000.
Milkovic, Miran, 4,495,463, Cl. 324-142.000.
Philipp, Herbert R., 4,495,482, Cl. 338-21.000.
Sawyer, Quentan T., 4,494,439, Cl. 89-12.000.
Smith, Peter H., 4,495,485, Cl. 340-365.00C.
Timoshenko, John A.; and Bergh, Daniel D., 4,495,381, Cl. 174-178.000.
Turney, Stephen D., 4,495,445, Cl. 315-169.100.
White, Dwain M., 4,495,333, Cl. 525-150.000.
Ziemba, Richard T., 4,494,459, Cl. 102-235.000.

General Foods Corporation: *See—*
Brander, Rita W.; and Raap, Teresa A., 4,495,205, Cl. 426-104.000.
Friedman, Herman H.; and Popp, Walter R., 4,495,208, Cl. 426-335.000.

General Signal Corporation: *See—*
Davis, Duane J., 4,494,911, Cl. 417-222.000.
Sibley, Henry C.; and Rutherford, David B., Jr., 4,495,578, Cl. 364-426.000.

George, David J.; Nguyen, Hue V.; and Yardy, Raymond, to Discovision Associates. Digital data storage in video format. 4,495,623, Cl. 371-38.000.

George, John A., to Xomox Corporation. Plug valve with improved plastic sleeve. 4,494,730, Cl. 251-309.000.

Georgia-Pacific Resins, Inc.: *See—*
Blair, Robert E.; and Peede, Michael R., 4,495,329, Cl. 524-774.000.

Gerald, Dumay: *See—*
Gilbert, Takats; and Gerald, Dumay, 4,495,568, Cl. 364-200.000.

Gerber Garment Technology, Inc.: *See—*
Gerber, Heinz J., 4,494,433, Cl. 83-374.000.

Gerber, Heinz J., to Gerber Garment Technology, Inc. Apparatus for working on sheet material and having movable vacuum chamber. 4,494,433, Cl. 83-374.000.

Gerland S.A.: *See—*
Berenger, Daniel, 4,495,012, Cl. 156-78.000.

Gesing, Adam J.; and Dewing, Ernest W., to Alcan International Limited. Electrolytic reduction cells. 4,495,047, Cl. 204-245.000.

Geyken, Erwin: *See—*
Becherer, Walter; Geyken, Erwin; and Jelinek, Nikolaus, 4,494,706, Cl. 242-65.000.

GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft m.b.H.: *See—*
Blaimschein, Gottfried, 4,494,280, Cl. 29-6.000.

Gharachorloo, Nader. On-line character recognition using closed-loop detector. 4,495,646, Cl. 382-13.000.

Gheri, Aime A., to Exxon Nuclear Company, Inc. Spherical nuclear fuel loading system. 4,495,146, Cl. 376-261.000.

Ginchetti, Ettore: *See—*
Mayr, Adolfo; Susa, Ermanno; and Giachetti, Ettore, 4,495,338, Cl. 526-125.000.

Gianturco, Cesare, to Cook, Incorporated. Expandable blood clot filter. 4,494,531, Cl. 128-1.00R.

Gibson, Kirk R., to Chevron Research Company. Two-region spherical catalysts. 4,495,308, Cl. 502-355.000.

Gibson, Lawrence: *See—*
Casilli, Joseph C.; Gibson, Lawrence; and Hessler, William D., 4,494,574, Cl. 137-625.600.

Giger, Adolf J., to AT&T Bell Laboratories. Transmitter power control circuit. 4,495,648, Cl. 455-73.000.

Giglia, Robert D., to American Cyanamid Company. Filter paper. 4,495,030, Cl. 162-145.000.

Gilbert, Michael A.: *See—*
Archer, Donald H.; Gilbert, Michael A.; Loomis, Robert H.; and Maybell, Michael J., 4,495,504, Cl. 343-779.000.

Gilbert, Takats; and Gerald, Dumay, to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull (Societe Anonyme). Apparatus for the control and monitoring of power supply sources for data processing systems. 4,495,568, Cl. 364-200.000.

Gilliam, John E., to U.S. Philips Corporation. Waveform crossing detector. 4,495,461, Cl. 324-86.000.

Gisvold, Lee D.: *See—*
DeHaan, Robert; and Gisvold, Lee D., 4,494,598, Cl. 165-47.000.

Gitman, Grigory M., to Cadre Corporation, The. Centralized ladle heating and drying system. 4,494,927, Cl. 432-9.000.

Gladstone, Robert S., to Coopers Filters Limited. Gravity dump valve. 4,494,575, Cl. 137-846.000.

Glass, Samuel W.: *See—*
Lubin, David; Connor, Larry W.; and Glass, Samuel W., 4,495,383, Cl. 179-100.00L.

Glockner, Gary: *See—*
Sinclair, Franklin H.; and Glockner, Gary, 4,494,565, Cl. 137-555.000.
Sinclair, Franklin H.; and Glockner, Gary, 4,494,566, Cl. 137-556.000.

GNS Gesellschaft fur Nuklear-Service mbH: *See—*
Janberg, Klaus G.; and Methling, Dieter, 4,495,139, Cl. 376-203.000.

Godwin, Paul K., Jr.; and Kell, Howard A., Jr., to Ford Motor Company. Tape deck with non-contacting unidirectional rotation sensor configured to prevent capstan tape windup. 4,494,712, Cl. 242-191.000.

Goetz, Norbert: *See—*
Eicken, Karl; Goetz, Norbert; and Wuerzer, Bruno, 4,494,983, Cl. 71-118.000.

Golden Team Sportartikel GmbH: *See—*
Klagmann, Josef, 4,494,322, Cl. 36-28.000.

Goldstein, Theodore P., to Mobil Oil Corporation. Photochemical process using shape-selective photoassisted heterogenous catalyst compositions. 4,495,041, Cl. 204-158.00R.

Goldsworthy Engineering, Inc.: *See—*
Goldsworthy, William B., 4,495,021, Cl. 156-425.000.

Goldsworthy, William B., to Goldsworthy Engineering, Inc. Apparatus for producing fiber reinforced plastic sheet structures. 4,495,021, Cl. 156-425.000.

Gollasch, Bernd: *See*—
Fricker, Wolfgang-Peter; Scholz, Manfred; Bauche, Heinrich; and Gollasch, Bernd, 4,495,147, Cl. 376-283.000.

Gonzalez-Oliver, Carlos J. R.: *See*—
Puyane, Ramon; Gonzalez-Oliver, Carlos J. R.; and Harmer, Alan L., 4,495,297, Cl. 501-12.000.

Good, Allen H. Facial skin cleanser capable of softening and removing sebum plaque. 4,495,079, Cl. 252-106.000.

Goodman, Harry: *See*—
Engelstein, Charles; Kassel, David L.; and Goodman, Harry, 4,495,257, Cl. 429-100.000.

Goodyear Tire & Rubber Company, The: *See*—
Deeken, William O.; and Davis, Charles L., 4,495,126, Cl. 264-137.000.

Gorb, Vyacheslav F.: *See*—
Sidorov, Viktor V.; Tselniker, Efim Y.; Sidorov, Evgeny P.; Sukhov, Leonid V.; Gorb, Vyacheslav F.; and Bairakovsky, Gennady M., 4,495,401, Cl. 219-136.000.

Gordon, Marvin, to Whitman Medical Corporation. Isolation of forestream and midstream portions of collected urine samples. 4,494,581, Cl. 141-1.000.

Goshima, Takahiro: *See*—
Takei, Toshihiro; Goshima, Takahiro; Hattori, Yoshiyuki; and Matsui, Kazuma, 4,494,943, Cl. 474-28.000.

Goto, Jiro: *See*—
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,495,182, Cl. 514-226.000.

Goto, Masahiro: *See*—
Aoki, Takao; Inoue, Takahiro; Goto, Masahiro; and Takeda, Kenji, 4,494,856, Cl. 355-3.00R.

Goto, Satoshi: *See*—
Takahashi, Jiro; Komamura, Tawara; Sawada, Kiyoshi; Sasaki, Ssamu; Goto, Satoshi; and Kinoshita, Akira, 4,495,261, Cl. 430-58.000.

Gotoda, Yusuke; and Yoshimura, Toshimitsu, to Honda Giken Kogyo Kabushiki Kaisha. Power transmission system for vehicles. 4,494,637, Cl. 192-48.400.

Gottlieb, Mark P. Breathing apparatus for supplying fluid to a user on demand. 4,494,537, Cl. 128-204.260.

Gould, Russell J.: *See*—
Van Erden, Donald L.; Gould, Russell J.; and Matsunaga, Yukio A., 4,495,124, Cl. 264-130.000.

Gouya, Takao: *See*—
Konishi, Hideo; Matsuoka, Kazunori; and Gouya, Takao, 4,495,650, Cl. 455-144.000.

Graef, Harry T.; and Newton, Kevin H., to Diebold, Incorporated. Paper currency dispenser friction picker mechanism. 4,494,747, Cl. 271-263.000.

Graf, Michael, to Mannesmann Aktiengesellschaft. Process for making fine-grain weldable steel sheet for large-diameter pipes. 4,494,999, Cl. 148-2.000.

Graff, Henry W., to Cal Custom Accessories, Inc. Forward shining vehicle lamp. 4,495,552, Cl. 362-297.000.

Graham, Blanche D.: *See*—
Tunac, Josefino B.; Dobson, William E.; and Graham, Blanche D., 4,495,286, Cl. 435-253.000.

Graham Magnetics Incorporated: *See*—
Rainey, Charles E., Jr., 4,494,878, Cl. 366-341.000.

Graham, Marshall D.: *See*—
Drury, F. Robert; and Graham, Marshall D., 4,494,479, Cl. 118-120.000.

Grainge, Richard W.; and Slow, Dennis, to British Aerospace Public Limited Company. Mounting assembly for optical elements. 4,494,830, Cl. 350-486.000.

Gramm, Gunther: *See*—
Werner, Friedrich; Blank, Heinz U.; Gramm, Gunther; Braden, Rudolf; and Ziemann, Heinz, 4,495,369, Cl. 564-480.000.

Gramm, Jeffrey S.; Mongan, Edwin L., Jr.; and Sheeran, Patrick J., to Du Pont de Nemours, E. I., and Company. Process for preparing dialkyl propanediimidate dihydrohalides. 4,495,108, Cl. 260-453.700.

Grandvallet, Gilles; and Deborde, Albert H., to Saurer Diederichs Societe Anonyme. Thread clamp, particularly for jet looms. 4,494,579, Cl. 139-429.000.

Grapha-Holding AG: *See*—
Linder, Heinz, 4,494,705, Cl. 242-59.000.

Graphic Controls Corporation: *See*—
Lawton, William R., 4,495,291, Cl. 436-1.000.

Grapho Metronic Mess- und Regeltechnik GmbH & Co. KG: *See*—
Schramm, Peter; and Feulner, Walter, 4,494,875, Cl. 356-402.000.

Grasselli, Robert K.; Suresh, Dev D.; and Miller, Arthur F., to Standard Oil Company, The. Production of unsaturated nitriles using catalysts promoted with various metals. 4,495,109, Cl. 260-465.300.

Gravi-Mechanics Co.: *See*—
Dedolph, Richard R., 4,495,310, Cl. 521-99.000.

Gray, Robert A., to Robert Alan Gray Ltd. Easy access knife holder. 4,494,309, Cl. 30-151.000.

Great Lakes Carbon Corporation: *See*—
Secrist, Duane R.; and Clark, James M., 4,495,049, Cl. 204-292.000.

Green, David; and Blanc, Maurice, to Societe D'Assistance Technique Pour Produits Nestle S.A. Caffeine adsorption. 4,495,210, Cl. 426-422.000.

Greenley, Gordon A.: *See*—
Haag, George A.; Fogg, O. Douglas; Greenley, Gordon A.; Shepard, Steve A.; and Terry, F. Duncan, 4,495,599, Cl. 364-900.000.

Greenwood, Walter, Jr., to Wisne Automation & Engineering Co. Accumulating conveyor. 4,494,649, Cl. 198-718.000.

Gregory, Jack; and Landry, Christian C., to Digital Equipment Corporation. Tilt swivel base. 4,494,720, Cl. 248-371.000.

Gretz, Charles, to Life-Like Products, Inc. Model aircraft. 4,494,940, Cl. 446-61.000.

Grieves, Colin G.: *See*—
Venardos, Dean G.; and Grieves, Colin G., 4,495,056, Cl. 208-11.00R.

Griffin, Jim B.: *See*—
Ford, Michael B.; and Griffin, Jim B., 4,494,607, Cl. 166-311.000.

Griffith, John M., to Coburn Optical Industries, Inc. Lens tray. 4,494,667, Cl. 220-19.000.

Grilli, Walter; De Meo, Franco; and Franchini, Ivan, to Italtractor ITM SpA. Process for high-temperature carburizing treatment of track bushes for tractors or tracked vehicles. 4,495,004, Cl. 148-16.500.

Grimes, Fred K., to Lance Austin Enterprises, Inc. Fixture support installation method. 4,494,296, Cl. 29-432.000.

Grollier, Jean-Francois; Rosenbaum, Georges; Allec, Josiane; and Shroot, Braham, to Societe Anonyme dite: L'OREAL. Anhydrous composition, stable to oxidation, based on anthralin or one of its derivatives, in a carrier consisting of a fatty acid alkyl ester and a thickener, and its use in the treatment of skin diseases. 4,495,203, Cl. 514-732.000.

Gross, Kenny C.; and Laug, Matthew T., to United States of America, Energy. Gas tagging and cover gas combination for nuclear reactor. 4,495,143, Cl. 376-251.000.

Grudkowski, Thomas W., to United Technologies Corporation. Low reflectivity surface-mounted electrodes on semiconductor saw devices. 4,495,431, Cl. 310-313.00B.

Grunwald, Werner: *See*—
Dobler, Klaus; Schoor, Ulrich; Heinz, Rudolf; Frey, Thomas; and Grunwald, Werner, 4,494,401, Cl. 73-35.000.

Grunzweig & Hartmann Montage GmbH: *See*—
Fricker, Wolfgang-Peter; Scholz, Manfred; Bauche, Heinrich; and Gollasch, Bernd, 4,495,147, Cl. 376-283.000.

GTE Communication Products Corporation: *See*—
Magee, Mark R.; and James, Richard D., 4,495,541, Cl. 361-225.000.

GTE Laboratories Incorporated: *See*—
Klinedinst, Keith A.; and Schlaikjer, Carl R., 4,495,266, Cl. 429-105.000.
Proud, Joseph M.; and Lapatovich, Walter P., 4,495,433, Cl. 313-231.310.

GTE Products Corporation: *See*—
Faria, Sixdeniel, 4,495,265, Cl. 430-95.000.
Ritsko, Joseph E.; and Acia, Howard L., 4,495,158, Cl. 423-65.000.
Schlitt, Steven C.; Yong, Thomas S.; Roche, William J.; and Anderson, John W., Jr., 4,495,440, Cl. 313-492.000.

Guala, Piergiacomo, to Angelo Guala, S.p.A. Tamper evident closure. 4,494,664, Cl. 215-252.000.

Gude, Klaus E.: *See*—
Jons, Ebbe S.; and Gude, Klaus E., 4,495,162, Cl. 423-171.000.

Guenther, Kenneth L.; and Zemke, Edward H., to Bell & Howell Company. Inserter with improved media transport having pivotal spring biased sheet hold-downs adjacent transport belt. 4,494,742, Cl. 270-58.000.

Guerin, Bernard; Poisson, Pierre; and Sturtz, Georges, to Ato Chimie. Hemiesters of phosphonic acids. 4,495,111, Cl. 260-932.000.

Gugel, Ernst: *See*—
Leimer, Gerhard; and Gugel, Ernst, 4,495,122, Cl. 264-65.000.

Guidicelli, Charles, to Societe Anonyme D.B.A. Device for fixing a flexible conduit to a panel. 4,494,719, Cl. 248-27.100.

Guillaume, Paul; Vezin, Luc; and Dubi, Bernard, to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude. Oxy-fuel burners. 4,494,923, Cl. 431-9.000.

Guipont, Raymond: *See*—
De Conto, Pierre; and Guipont, Raymond, 4,495,633, Cl. 378-55.000.

Gulbins, Erich: *See*—
Schenck, Hans-Uwe; Blum, Rainer; Gulbins, Erich; Kempter, Fritz-Erdmann; and Schupp, Eberhard, 4,495,327, Cl. 524-556.000.

Gulf Oil Corporation: *See*—
Venardos, Dean G.; and Grieves, Colin G., 4,495,056, Cl. 208-11.00R.

Gumplo, Eugene L.: *See*—
Stubbs, James A.; and Gumplo, Eugene L., 4,494,708, Cl. 242-67.30R.

Gunther, Arthur G.; Willsie, Douglas H.; and Hawkins, Leo D., to Pizza Hut, Inc. Salad bar insert. 4,494,654, Cl. 206-562.000.

Gurza, Guillermo R. Method of purification of phosphoric acid. 4,495,165, Cl. 423-321.00R.

Gustafson, Roy W., to Digital Equipment Corporation. Qualifier circuit. 4,495,529, Cl. 360-46.000.

Gustin, Pol A. G. J.: *See*—
Thoone, Martinus L. G.; Khoe, Giok D.; Kuppers, Dieter; and Gustin, Pol A. G. J., 4,495,412, Cl. 250-227.000.

Guth, Christian: *See*—
Abel, Heinz; and Guth, Christian, 4,494,952, Cl. 8-125.000.

Guttmann, Friedrich W., to Klockner-Humboldt-Deutz AG. Device for generating a convective reaction system between a reaction agent and a molten bath. 4,494,736, Cl. 266-265.000.

Haag, George A.; Fogg, O. Douglas; Greenley, Gordon A.; Shepard, Steve A.; and Terry, F. Duncan, to Hewlett-Packard Company. Logic state analyzer with sequential triggering and restart. 4,495,599, Cl. 364-900.000.

Haantera, Antti I., to Valmet Oy. Method and apparatus for supporting lighters in lighter-transport ships. 4,494,476, Cl. 114-260.000.

Haar, Lucas H.: *See—*
Stoka, Roberto; and Haar, Lucas H., 4,494,630, Cl. 188-71.800.

Habermehl, Fred M.: *See—*
Rodriguez, Pedro A.; Edwards, James B.; and Habermehl, Fred M., 4,494,481, Cl. 119-1.000.

Hackler, Ronald E.: *See—*
Beck, James R.; Gajewski, Robert P.; and Hackler, Ronald E., 4,495,195, Cl. 514-406.000.

Haden Schweitzer Corporation: *See—*
Bradshaw, Norman F., 4,494,596, Cl. 165-20.000.

Hagberg, Curt-Erik; Johansson, Karl N.; Kovacs, Zsuzsanna M. I.; and Stening, Goran B., to Astra Lakemedel Aktiebolag. Derivatives of guanine for combating herpes virus infections. 4,495,190, Cl. 514-262.000.

Hagimoto, Yosio: *See—*
Ida, Jinsei; Hagimoto, Yosio; Takahashi, Masao; and Azuma, Saburo, 4,494,282, Cl. 29-33.00P.

Hagiwara, Michiaki; and Tomohiro, Yoshitaka, to Unitika, Ltd. Method and apparatus for filtration using ferromagnetic metal fibers. 4,495,074, Cl. 210-695.000.

Hagiwara, Tsuneo: *See—*
Iwata, Kaoru; Hagiwara, Tsuneo; and Matsuzawa, Hiroshi, 4,495,343, Cl. 528-292.000.

Hagyuda, Nobuyoshi: *See—*
Maida, Osamu; Hasegawa, Hiroshi; Hagyuda, Nobuyoshi; and Iida, Yoshikazu, 4,494,851, Cl. 354-421.000.

Hahn, Michael; and Sperber, Franz, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschrankter Haftung. Large surface structural component, especially rotor blade. 4,494,910, Cl. 416-226.000.

Haig, Armen C. Hip nail. 4,494,535, Cl. 128-92.0BA.

Haiges, Frank, to Suevia Haiges GmbH & Co. Container for the receiving and dispensing of animal rearing and feeding materials, particularly for watering young animals. 4,494,483, Cl. 119-77.000.

Halfon, Marc: *See—*
Dodge, William B.; and Halfon, Marc, 4,495,107, Cl. 260-453.00P.

Halkey-Roberts Corporation: *See—*
Foltz, Carl L., 4,495,551, Cl. 362-205.000.

Hall, Wilbur L.: *See—*
Wiechel, John F.; French, Charles R.; and Hall, Wilbur L., 4,494,605, Cl. 166-288.000.

Haller, Andreas: *See—*
Bauser, Herbert; Kurz, Edmund; Schindler, Bernd; Zerweck, Klaus; Bolch, Thomas; Haller, Andreas; and Mager, Theo, 4,495,232, Cl. 428-41.000.

Halliburton Company: *See—*
Mosier, John E.; Surjaatmadja, Jim B.; and McLawhon, George B., 4,495,639, Cl. 381-51.000.

Hamada, Masa: *See—*
Umezawa, Hamao; Shimada, Nobuyoshi; Naganawa, Hiroshi; Takita, Tomohisa; Hamada, Masa; and Takeuchi, Tomio, 4,495,347, Cl. 536-24.000.

Hamada, Masanori, to Clarion Co., Ltd. Diversity receiver. 4,495,653, Cl. 455-277.000.

Hamano, Hiroaki: *See—*
Kunishima, Mamoru; Yabuuchi, Masahiko; Masuda, Minoru; Imazumi, Kikuo; and Hamano, Hiroaki, 4,495,348, Cl. 544-021.000.

Hamano, Isao, to Mitsubishi Denki Kabushiki Kaisha. Starter with a planetary gear reduction facilities. 4,494,414, Cl. 74-7.00E.

Hamashima, Toyoji: *See—*
Nio, Satoru; Sato, Shinobu; Fujii, Hajime; and Hamashima, Toyoji, 4,495,588, Cl. 364-513.000.

Hamersley, Richard A.: *See—*
Aro, Enn; Bogan, Leonard E.; Hamersley, Richard A.; Knapke, Paul H.; and Miller, Robert L., 4,495,614, Cl. 370-58.000.

Hamid, Michael; and Lionis, Anastasios, to United States of America, Navy. Polyconductor device for laser beam detection and protection. 4,494,835, Cl. 351-158.000.

Hamilton, William A.: *See—*
Seltzer, Edward; and Hamilton, William A., 4,495,214, Cl. 426-557.000.

Handi-Pac, Inc.: *See—*
Klawitter, Ronald R., 4,494,820, Cl. 350-4.100.

Handy, Richard L.: *See—*
Pitt, John M.; Handy, Richard L.; and Lamb, Robert O., 4,494,694, Cl. 238-2.000.

Hansen, Craig C.: *See—*
Mark, John G.; Steele, James R.; and Hansen, Craig C., 4,495,475, Cl. 331-12.000.

Hansen, Craig N., to Hansen Engine Corporation. Rotary valve assembly. 4,494,500, Cl. 123-190.00E.

Hansen, Donald W., Jr.; Jones, David A., Jr.; Mazur, Robert H.; and Schlatter, James M., to G. D. Searle & Co. Enkephalin analogs. 4,495,178, Cl. 514-17.000.

Hansen Engine Corporation: *See—*
Hansen, Craig N., 4,494,500, Cl. 123-190.00E.

Hansen, Robert S. Holding device for pencils and the like. 4,494,660, Cl. 211-69.100.

Hansson, Erik. Glove. 4,494,249, Cl. 2-161.00R.

Harada, Atsuhi: *See—*
Kiyooka, Katsumi; Harada, Atsuhi; and Anbo, Kiyoshi, 4,494,490, Cl. 123-41.560.

Harada, Tosiharu: *See—*
Okuda, Yosiro; and Harada, Tosiharu, 4,495,164, Cl. 423-266.000.

Harakawa, Masaji: *See—*
Horikiri, Shozo; Kadokura, Hidekimi; Harakawa, Masaji; Saeguna, Kunio; and Yamagiwa, Masao, 4,495,121, Cl. 264-56.000.

Hardesty, Edwin C.: *See—*
Brzostek, Melvin W.; Hardesty, Edwin C.; and Hutchins, Erle M., 4,494,815, Cl. 339-123.000.

Hardigg Industries, Inc.: *See—*
Hardigg, James S.; and Turner, E. Wayne, 4,495,260, Cl. 429-180.000.

Hardigg, James S.; and Turner, E. Wayne, to Hardigg Industries, Inc. Sliding seal lead bushing. 4,495,260, Cl. 429-180.000.

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Horwitz, Christopher M., to Massachusetts Institute of Technology. Gas mixtures for aluminum etching. 4,495,090, Cl. 252-372.000.
Hoshide, Yasuo: *See*—
Inoue, Yoichi; Matsumoto, Toshio; Niwa, Hirosuke; Suzuki, Kenichi; and Hoshide, Yasuo, 4,495,356, Cl. 546-268.000.
Hosokawa, Seiya: *See*—
Hata, Hiroyoshi; Honda, Seiichirou; Hosokawa, Seiya; Kanki, Kazuhiko; Matsumiya, Toshiharu; and Sakamoto, Kazuo, 4,495,312, Cl. 523-105.000.
Hosono, Yoichi: *See*—
Honda, Tadatoshi; and Hosono, Yoichi, 4,495,362, Cl. 560-20.000.
Howard, Philip H., to International Cube Corporation. Low tack microsphere glue. 4,495,318, Cl. 524-375.000.
Howell, Dan M.: *See*—
Hopper, Beth R.; Howell, Dan M.; and Kolpek, Robert A., 4,495,490, Cl. 340-709.000.
Howlett, Stephen P.: *See*—
Taylor, Derek; Howlett, Stephen P.; Farr, Howard J.; and Tickle, Barbara L., 4,495,302, Cl. 501-125.000.
Hoxan Corporation: *See*—
Kurasoka, Yasuo; and Sakao, Nobuo, 4,494,385, Cl. 62-306.000.
Hoyt/Easton Archery Co.: *See*—
Quartino, Miguel A., 4,494,521, Cl. 124-24.00R.
HRI, Inc.: *See*—
Abrams, Lawrence M., 4,495,060, Cl. 208-48.00Q.
Comolli, Alfred G.; and Hippo, Edwin J., 4,495,055, Cl. 208-10.000.

Hsi-Shan, Chen, to Sun Longitude Corporation. Swinging door hinge assembly having a rolling member. 4,494,275, Cl. 16-314.000.

Huang, Chi-Hao. Feeder connector assembly for coaxial cable. 4,494,817, Cl. 339-177.00R.

Hudgin, Donald E.; and Zawadzki, Thomas, to Princeton Polymer Laboratories, Inc. Degradable hydrocarbon polymers. 4,495,311, Cl. 523-126.000.

Hudson Engineering Company: *See*—
Napolitano, Pellegrino E., 4,494,560, Cl. 137-117.000.

Huffman, Ronald E., to KV33 Corporation. Dental model base. 4,494,934, Cl. 433-213.000.

Hughes Aircraft Company: *See*—
Abel, Hal P., 4,495,253, Cl. 428-624.000.
Knechtli, Ronald C.; Loo, Robert Y.; and Kamath, G. Sanjiv, 4,494,302, Cl. 29-575.000.
Landis, Abraham L., 4,495,342, Cl. 528-125.000.
Roth, John A.; and Roth, Lynette B., 4,495,510, Cl. 357-5.000.

Hughes, David W.: *See*—
Sutton, Tonja R.; and Hughes, David W., 4,495,309, Cl. 521-51.000.

Hull, Maury L., to University of California, The Regents of the. Apparatus for programmed release in ski bindings. 4,494,768, Cl. 280-612.000.

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Loveless, Stanley M., 4,494,572, Cl. 137-596.170.

Hung, William M.: *See*—
Schmidt, Paul J.; and Hung, William M., 4,494,989, Cl. 106-21.000.

Hunold, Klaus; Lipp, Alfred; and Reinmuth, Klaus, to Elektroschmelzwerk Kempten GmbH. Dense shaped articles consisting of polycrystalline hexagonal boron nitride and process for their manufacture by isostatic hot pressing. 4,495,123, Cl. 264-69.000.

Hunt-Wesson Foods, Inc.: *See*—
Beckstrom, Ronald D.; and Anderson, Chester C., 4,494,682, Cl. 222-551.000.

Hunter, Arthur C.: *See*—
Caldwell, David; Ferrio, Linda J.; and Hunter, Arthur C., 4,495,592, Cl. 364-754.000.

Hurco Manufacturing Co., Inc.: *See*—
Roch, Gerald V., 4,494,312, Cl. 33-170.000.

Huret et ses Fils: *See*—
Coue , Maurice E. L., 4,494,944, Cl. 474-82.000.

Hurwitz, Scott L., to Magnum Shielding Corp. Sheathing system for automotive or marine ignition wires. 4,494,520, Cl. 123-633.000.

Hutchins, Erle M.: *See*—
Brzostek, Melvin W.; Hardesty, Edwin C.; and Hutchins, Erle M., 4,494,815, Cl. 339-123.000.

Hutson, Donald G., to Cal Detect, Inc. Method of standardizing IR breath alcohol device. 4,495,418, Cl. 250-343.000.

Hutson, Floyd E., to Medical Designs, Inc. Universal leg brace system. 4,494,534, Cl. 128-80.00F.

Hydra-Rig, Incorporated: *See*—
Elliston, Thomas L., 4,494,415, Cl. 74-44.000

Hydra Systems International, Inc.: *See*—
Stevens, Frederick G., 4,494,328, Cl. 42-1.00A.

Hyodo, Kaneaki: *See*—
Murakami, Shinjiro; Hashimoto, Osamu; Morimoto, Kazuo; and Hyodo, Kaneaki, 4,495,009, Cl. 148-128.000.

IBG International: *See*—
Radtke, Carl T.; Kaiser, Ewald A.; Biedermann, Siegfried M.; and Chapman, Rick J., 4,494,256, Cl. 4-502.000.

Ibuki, Hideaki: *See*—
Miyake, Yuzuru; Sugioka, Takami; Murakami, Shoichi; and Ibuki, Hideaki, 4,494,702, Cl. 242-18.00R.

Ichihara, Kazuyoshi: *See*—
Sasaki, Ken; Matsuyama, Shigeru; Koyama, Masaharu; and Ichihara, Kazuyoshi, 4,494,825, Cl. 350-343.000.

Ichikawa, Masaru: *See*—
Yaguchi, Kenichi; Ichikawa, Masaru; and Kinoshita, Takuji, 4,494,831, Cl. 351-41.000.

Ida, Jinsei; Hagimoto, Yosio; Takahashi, Masao; and Azuma, Saburo, to Honda Giken Kogyo Kabushiki Kaisha. Jig table apparatus for a machine tool. 4,494,282, Cl. 29-33.00P.

Ideal School Supply Corporation: *See*—
Bautista, John; and Miller, Lawrence H., 4,494,430, Cl. 83-468.000.

Idelman, Lloyd B.: *See*—
Bellah, Glen R.; Mylander, Richard H.; Idelman, Lloyd B.; and Coons, Robert R., 4,494,418, Cl. 74-475.000.

Idesawa, Isao, to Nisshin Kogyo Kabushiki Kaisha. Automatic braking-gap adjuster system for mechanical drum brakes. 4,494,633, Cl. 188-329.000.

Ihara, Hiroyuki; Takahashi, Kazuo; Matsubara, Michiro; Kumata, Fumio; and Sanami, Yoshitomo, to Mitsubishi Oil Company, Limited. Continuous process for the production of solvents for coal liquefaction. 4,495,089, Cl. 252-364.000.

Iida, Yoshikazu: *See*—
Maida, Osamu; Hasegawa, Hiroshi; Hagyuda, Nobuyoshi; and Iida, Yoshikazu, 4,494,851, Cl. 354-421.000.

Iijima, Kenzaburo, to Nippon Gakki Seizo Kabushiki Kaisha. Magnetic tape. 4,495,241, Cl. 428-328.000.

Iizuka, Gorou: *See*—
Ito, Kanichi; Hirayama, Yoshio; Takeuchi, Ryoichi; Kodaira, Masanori; and Iizuka, Gorou, 4,495,290, Cl. 435-315.000.

Iizuka, Yo: *See*—
Shiiki, Zenya; Iizuka, Yo; and Kawakami, Yukichika, 4,495,332, Cl. 524-800.000.

Ikami, Hideo, to Nippon Chemiphar Co., Ltd. Ceramic plates and method for the production thereof. 4,495,118, Cl. 264-25.000.

IKARUS Karosszeria es Jarmugyar: *See*—
Ratsko, Istvan; Ivony, Jozsef; Karaszi, Gyorgy; Madi, Jeno ; and Liptai, Nandor, 4,494,765, Cl. 280-432.000.

Ikeda Bussan Co., Ltd.: *See*—
Shimomura, Kenji, 4,495,120, Cl. 264-51.000.

Ikeda, Takao: *See*—
Fujita, Eiichi; Nagao, Yoshimitsu; Ikeda, Takao; and Inoue, Takehisa, 4,495,355, Cl. 546-209.000.

Ikeda, Toshimitsu: *See*—
Honda, Nobuyasu; Yamakawa, Toshiro; and Ikeda, Toshimitsu, 4,495,267, Cl. 430-106.600.

Ilitch, Michael, to Little Caesar Enterprises, Inc. Carryout food tray. 4,494,689, Cl. 229-30.000.

Imada, Isuke; Okutani, Tetsuya; and Watanabe, Masazumi, to Takeda Chemical Industries, Ltd. Quinone carboxylic acids and ester derivatives. 4,495,104, Cl. 260-396.00R.

Imahori, Seiichi: *See*—
Imazeki, Shuji; Mukoh, Akio; Morishita, Hirosada; Imahori, Seiichi; Kaneko, Masaharu; and Ono, Hitoshi, 4,495,083, Cl. 252-299.100.

Imai, Iwao: *See*—
Endo, Hiroshi; Sone, Masazumi; Imai, Iwao; and Kasuya, Hideo, 4,495,421, Cl. 250-551.000.

Imamura, Juichi: *See*—
Niwa, Shuichi; Imamura, Juichi; Mizukami, Fujio; Shimizu, Kazuo; and Orito, Yoshio, 4,495,373, Cl. 585-269.000.

Imanishi, Masamichi: *See*—
Ueda, Toshihiro; Imanishi, Masamichi; and Miyano, Takayoshi, 4,494,681, Cl. 222-485.000.

Imazeki, Shuji; Mukoh, Akio; Morishita, Hirosada; Imahori, Seiichi; Kaneko, Masaharu; and Ono, Hitoshi, to Hitachi, Ltd.; and Mitsubishi Chemical Industries, Limited. Guest-host type liquid crystal composition and liquid crystal display device using the same. 4,495,083, Cl. 252-299.100.

Imazumi, Kikuo: *See*—
Kunishima, Mamoru; Yabuuchi, Masahiko; Masuda, Minoru; Imazumi, Kikuo; and Hamano, Hiroaki, 4,495,348, Cl. 544-021.000.

Immell, Raymond G.: *See*—
Sasser, Bill H.; Walker, Scott H.; and Immell, Raymond G., 4,495,506, Cl. 343-909.000.

Immonen, Kari, to ASEA Aktiebolag. Tool for assembly of halves of a valve stem key for retaining valve springs. 4,494,306, Cl. 29-809.000.

Impact Systems, Inc.: *See*—
Stephansen, Erik; Sharma, Rajeeva; and Richie, Michael, 4,494,316, Cl. 34-68.000.

Imperial Chemical Industries, PLC: *See*—
Brown, David; Hargreaves, Rodney B.; McLoughlin, Bernard J.; and Mills, Stuart D., 4,495,185, Cl. 514-242.000.
Walker, Brian J.; and Hodgson, Victor F., 4,495,013, Cl. 156-79.000.

Imperial Clevite Inc.: *See*—
O'Brien, James W.; and Spevak, Frank, 4,495,252, Cl. 428-555.000.

Inaba, Hajimu; Sakakibara, Shinsuke; Inagaki, Shigemi; and Torii, Nobutoshi, to Fujitsu Fanuc Limited. System for controlling an industrial robot. 4,495,453, Cl. 318-568.000.

Inagaki, Shigemi: *See*—
Inaba, Hajimu; Sakakibara, Shinsuke; Inagaki, Shigemi; and Torii, Nobutoshi, 4,495,453, Cl. 318-568.000.

Inagaki, Takeshi: *See*—
Kobayashi, Takashi; Inagaki, Takeshi; Takahashi, Hiroshi; and Ohisa, Takayuki, 4,494,843, Cl. 354-214.000.

Ing. C. Olivetti & C., S.p.A.: *See*—
Rattin, Luciano; and Vigliermo, Amerigo, 4,494,866, Cl. 355-57.000.

Inger, Siegfried, to Palitex Project-Company GmbH. Stop motion for textile machines. 4,494,370, Cl. 57-81.000.

Iniesta, Jorge P.: *See*—
Ribalta, Jose Miguel B.; Bruseghini, Leonida; Casadio, Silvano; and Iniesta, Jorge P., 4,495,199, Cl. 514-467.000.

Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,495,038, Cl. 204-129.200.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method of and apparatus for electroerosively wire-cutting a conductive workpiece. 4,495,038, Cl. 204-129.200.

Inoue, Takahiro: *See*—
Aoki, Takao; Inoue, Takahiro; Goto, Masahiro; and Takeda, Kenji, 4,494,856, Cl. 355-3.00R.

Inoue, Takehisa: *See*—
Fujita, Eiichi; Nagao, Yoshimitsu; Ikeda, Takao; and Inoue, Takehisa, 4,495,355, Cl. 546-209.000.

Inoue, Yoichi; Matsumoto, Toshio; Niwa, Hirosuke; Suzuki, Kenichi; and Hoshide, Yasuo, to Nikken Chemicals Co., Ltd.; and Institute of Organic Synthesis Academy of Sciences Latvian SSR. 1,4-Dihydropyridine compound. 4,495,356, Cl. 546-268.000.

Inouye, Shigeharu: *See*—
Koyama, Masao; Tsuruoka, Takashi; Ezaki, Norio; Miyauchi, Keinosuke; and Inouye, Shigeharu, 4,495,358, Cl. 548-550.000.

Inresco, Inc.: *See*—
Martin, George L.; and Melick, Howard G., 4,495,480, Cl. 335-199.000.

Institut Elektrosvarki Imeni E.O.Patona: *See*—
Medovar, Boris I.; Andreev, Vladimir P.; Kozik, Vladimir V.; Shevchenko, Nikolai T.; Spisarenko, Dmitry U.; Malevanny, Vladimir P.; Karpov, Vladimir F.; Chernykh, Viktor V.; Chepur-

noi, Anatoly D.; Matsegora, Evgeny A.; and Shuruev, Lev A., 4,495,395, Cl. 219-73.100.
Institut Fiologii Razvitia Imeni N.K. Koltsova Akademii Nauk SSSR: *See*—
Bondar, Ljudmila S.; Okunev, Rostan A.; Polezhaev, Lev V.; Kolchin, Sergei P.; Cherkasova, Ljudmila V.; and Nikolaeva, Lilia F., 4,495,201, Cl. 514-560.000.
Institut Francais du Petrole: *See*—
Desbrandes, Robert; and Norel, Guy, 4,495,605, Cl. 367-33.000.
Institut National de la Recherche Agronomique: *See*—
Brule, Gerard; Roger, Loic; Fauquant, Jacques; and Piot, Michel, 4,495,176, Cl. 424-128.000.
Institut Organicheskoi Khimii Imeni N.D. Zelinskogo: *See*—
Bondar, Ljudmila S.; Okunev, Rostan A.; Polezhaev, Lev V.; Kolchin, Sergei P.; Cherkasova, Ljudmila V.; and Nikolaeva, Lilia F., 4,495,201, Cl. 514-560.000.
Institut Textile De France: *See*—
Wattiez, Daniel; and Hennion, Jean-Claude, 4,494,264, Cl. 8-150.000.
Institute of Organic Synthesis Academy of Sciences Latvian SSR.: *See*—
Inoue, Yoichi; Matsumoto, Toshio; Niwa, Hirosuke; Suzuki, Kenichi; and Hoshide, Yasuo, 4,495,356, Cl. 546-268.000.
International Business Machines Corporation: *See*—
Barthel, Jan; and Bublitz, Hermann R., 4,495,597, Cl. 364-900.000.
Brunin, Armand; and D'Hervilly, Guy, 4,495,626, Cl. 375-19.000.
Draper, Wilburn D.; and Laakso, Melvin T., 4,495,564, Cl. 364-200.000.
Eggebrecht, Lewis C.; Kummer, David A.; and Saenz, Jesus A., 4,495,594, Cl. 364-900.000.
Gelatt, Charles D., Jr.; and Kirkpatrick, Edward S., 4,495,559, Cl. 364-148.000.
Hermann, Karl, 4,495,479, Cl. 333-238.000.
Hopper, Beth R.; Howell, Dan M.; and Kolpek, Robert A., 4,495,490, Cl. 340-709.000.
Isaac, Randall D.; and Ning, Tak H., 4,495,512, Cl. 357-34.000.
Johnson, Charles L.; and Ryba, John M., 4,495,377, Cl. 174-68.500.
Mitchell, Ralph C., Jr., 4,495,590, Cl. 364-716.000.
Safai, Sohrab, 4,494,305, Cl. 29-764.000.
Simi, Victor M.; and Sublette, Jerry M., 4,495,554, Cl. 363-21.000.
International Business Machines, Inc.: *See*—
Schwuttke, Guenter H.; and Yang, Kuei H., 4,494,300, Cl. 29-571.000.
International Cube Corporation: *See*—
Howard, Philip H., 4,495,318, Cl. 524-375.000.
International Flavors & Fragrances Inc.: *See*—
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and van Loveren, Augustinus G., 4,495,091, Cl. 252-522.00R.
Boden, Richard M., 4,495,359, Cl. 549-356.000.
International Harvester Co.: *See*—
Bellah, Glen R.; Mylander, Richard H.; Idelman, Lloyd B.; and Coons, Robert R., 4,494,418, Cl. 74-475.000.
International Paper Company: *See*—
DiGeronimo, Michael J., 4,494,357, Cl. 53-167.000.
International Standard Electric Corporation: *See*—
Franklin, Robert W.; and Briscoe, Peter F., 4,494,299, Cl. 29-570.000.
Hopfensperger, Reinhold, 4,494,908, Cl. 415-206.000.
Shuh, Bruce D., 4,495,616, Cl. 370-62.000.
International Telephone and Telegraph Corporation: *See*—
Aro, Enn; Bogan, Leonard E.; Hamersley, Richard A.; Knapke, Paul H.; and Miller, Robert L., 4,495,614, Cl. 370-58.000.
Casilli, Joseph C.; Gibson, Lawrence; and Hessler, William D., 4,494,574, Cl. 137-625.600.
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Iowa State University Research Foundation, Inc.: *See*—
Pitt, John M.; Handy, Richard L.; and Lamb, Robert O., 4,494,694, Cl. 238-2.000.
IPT Corporation: *See*—
Brown, M. Wayne, 4,494,515, Cl. 123-527.000.
Irion & Vosseler GmbH & Co. & Zahlerfabrik: *See*—
Bauser, Herbert; Kurz, Edmund; Schindler, Bernd; Zerweck, Klaus; Boich, Thomas; Haller, Andreas; and Mager, Theo, 4,495,232, Cl. 428-41.000.
Isaac, Randall D.; and Ning, Tak H., to International Business Machines Corporation. Self-aligned bipolar transistor with inverted polycide base contact. 4,495,512, Cl. 357-34.000.
Isaksson, Rolf H. V.: *See*—
Flensburg, Carl G. A.; and Isaksson, Rolf H. V., 4,494,360, Cl. 53-528.000.
Ishida, Kazuhiro: *See*—
Etoh, Tadaaki; Yano, Ryuji; Ishida, Kazuhiro; and Yoshimoto, Shoji, 4,495,601, Cl. 365-1.000.
Ishigaki, Yukinobu, to Victor Company of Japan, Ltd. Circuit arrangement for deriving a level control signal using silicon diodes. 4,495,428, Cl. 307-490.000.
Ishihara, Toshikazu: *See*—
Sugimoto, Gunji; Arakawa, Hideo; Ishihara, Toshikazu; Sugiura, Masahiro; and Takahashi, Katsuhiko, 4,495,560, Cl. 364-154.000.
Ishii, Kinichi; and Araki, Yoshiharu, to Kabushiki Kaisha Johnan Seisakusho. Wire-type door window regulator for an automotive vehicle. 4,494,336, Cl. 49-352.000.
Ishikawa, Shozo: *See*—
Takahashi, Hideyuki; and Ishikawa, Shozo, 4,495,264, Cl. 430-58.000.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See*—
Iwanami, Toshio; and Watanabe, Hajime, 4,494,396, Cl. 72-243.000.
Ishimi, Haruyoshi: *See*—
Yahiro, Tetsuji; and Ishimi, Haruyoshi, 4,494,494, Cl. 123-55.0VS.
Ishizuka, Hiroshi. Method for electrolytically obtaining magnesium metal. 4,495,037, Cl. 204-70.000.
Itagaki, Takaharu; Ouchi, Hidenaga; and Shimura, Akihiro, to Mitsubishi Chemical Industries, Limited. Anion exchange resin of surface functional type and the process for producing the same. 4,495,250, Cl. 428-520.000.
Itai, Reiichi: *See*—
Murakami, Katsuyuki; Hirakata, Kaoru; Shimoda, Shinichi; and Itai, Reiichi, 4,495,048, Cl. 204-267.000.
Itakura, Tomiya: *See*—
Ito, Tomoo; Kamifuji, Hiroshi; Kobayashi, Haruhiko; and Itakura, Tomiya, 4,494,498, Cl. 123-179.00G.
Italtractor ITM SpA: *See*—
Grilli, Walter; De Meo, Franco; and Franchini, Ivan, 4,495,004, Cl. 148-16.500.
Ito, Hiroshi, to Toyota Jidosha Kabushiki Kaisha. Device and method for accurately controlling automatic transmission with lockup clutch. 4,495,576, Cl. 364-424.100.
Ito, Kanichi; Hirayama, Yoshio; Takeuchi, Ryoichi; Kodaira, Masanori; and Iizuka, Gorou, to Ebara Corporation. Apparatus for composting. 4,495,290, Cl. 435-315.000.
Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Suzuki, Yutaka; and Hasegawa, Takashi, to Nippondenso Co., Ltd. Fuel injection system for internal combustion engines. 4,494,511, Cl. 123-463.000.
Ito, Tetsuo: *See*—
Suminoe, Taro; Ito, Tetsuo; Kiyomatsu, Yasuhiro; and Shimizu, Takao, 4,494,954, Cl. 8-507.000.
Ito, Tomoo; Kamifuji, Hiroshi; Kobayashi, Haruhiko; and Itakura, Tomiya, to Hitachi, Ltd.; and Hitachi Automotive Engineering Co., Ltd. Air-fuel ratio control system for engine starting. 4,494,498, Cl. 123-179.00G.
Itoh, Hidetoshi: *See*—
Kikuchi, Yoshiyasu; Shutoh, Masamichi; Miyai, Hitoshi; and Itoh, Hidetoshi, 4,495,600, Cl. 364-900.000.
Itou, Takaaki; Katou, Takashi; and Morino, Toshiharu, to Toyota Jidosha Kabushiki Kaisha; and Aisan Industry Co., Ltd. Variable venturi-type carburetor. 4,495,112, Cl. 261-41.00D.
ITT Industries, Inc.: *See*—
Carlsson, Valdemar; and Fredriksson, Boris, 4,494,758, Cl. 277-14.00V.
Kornaker, Walter, 4,495,438, Cl. 313-412.000.
Stoka, Roberto; and Haar, Lucas H., 4,494,630, Cl. 188-71.800.
Ivony, Jozsef: *See*—
Ratsko, Istvan; Ivony, Jozsef; Karaszi, Gyorgy; Madi, Jeno ; and Liptai, Nandor, 4,494,765, Cl. 280-432.000.
Iwahashi, Haruo: *See*—
Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,495,508, Cl. 346-159.000.
Iwamatsu, Noboru: *See*—
Kozai, Yoshinori; Amemiya, Yoichi; and Iwamatsu, Noboru, 4,495,464, Cl. 324-174.000.
Iwamoto, Tomio: *See*—
Yoshida, Kenichi; Ono, Kimizo; and Iwamoto, Tomio, 4,494,823, Cl. 350-96.220.
Iwanami, Toshio; and Watanabe, Hajime, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Multistage rolling mill with flatness control function. 4,494,396, Cl. 72-243.000.
Iwata Electric Co., Ltd.: *See*—
Iwata, Keisuke, 4,495,649, Cl. 455-115.000.
Iwata, Kaoru; Hagiwara, Tsuneo; and Matsuzawa, Hiroshi, to Teijin Limited. Visible light-sensitive polyester polymer and visible light-sensitive resin composition containing said polymer. 4,495,343, Cl. 528-292.000.
Iwata, Keisuke, to Iwata Electric Co., Ltd. Power source device for portable type radio apparatus. 4,495,649, Cl. 455-115.000.
Iwata, Toyotaro; Nakajima, Kunio; and Otsuki, Hiroyuki, to Toa Medical Electronic Co., Ltd. Optical-type automatic analyzing and measuring apparatus. 4,495,149, Cl. 422-65.000.
IXI Laboratories, Inc.: *See*—
Johnson, Ronald R.; Melville, James A.; and Schuelke, Richard D., 4,494,900, Cl. 414-27.000.
Izadi, Said: *See*—
Cruzen, Gerald S.; Izadi, Said; and Nagy, Peter, 4,494,287, Cl. 29-156.80R.
Jaakonmaki, Matti; and Raura, Pentti, to Rauma-Repola Oy Loviisan Tehtaat. Wood chip shaver. 4,494,587, Cl. 144-162.00R.
Jackson, Kenneth P.: *See*—
Shaw, Herbert J.; Newton, Steven A.; Bowers, John E.; and Jackson, Kenneth P., 4,495,656, Cl. 455-608.000.
Jackson, Thomas R. Electrolytic dental etching apparatus. 4,495,045, Cl. 204-224.00R.
Jacob, Rudi: *See*—
Pechau, Gerhard; Wyzgol, Ewald; and Jacob, Rudi, 4,494,427, Cl. 83-306.000.
Jacobs, Alan M.; Kenney, Edward S.; and McInerney, Joseph J., to Research Corporation. Multichannel radiography employing scattered radiation. 4,495,636, Cl. 378-87.000.
Jacobson, Hubert B. Fishing rod handle with reel seat. 4,494,333, Cl. 43-22.000.

Jaecker, John A.: *See—*
Yoo, Jin S.; and Jaecker, John A., 4,495,304, Cl. 502-66.000.
Yoo, Jin S.; and Jaecker, John A., 4,495,305, Cl. 502-65.000.
Jaffe, Wolfgang: *See—*
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Wood, David, 4,494,901, Cl. 414-28.000.
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Jager, Karlheinz: *See—*
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Jagielski, David: *See—*
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Jakusch, Helmut: *See—*
Steck, Werner; Kovacs, Jenoe; Mueller, Norbert; and Jakusch, Helmut, 4,495,246, Cl. 428-403.000.
James, Richard D.: *See—*
Magee, Mark R.; and James, Richard D., 4,495,541, Cl. 361-225.000.
Janberg, Klaus G.; and Methling, Dieter, to GNS Gesellschaft fur Nuklear-Service mbH. Radioactive-waste container with leak monitor. 4,495,139, Cl. 376-203.000.
Janicke, Johan, to Ateliers des Charmilles S.A. Fluid jetstream threading mechanism and method for travelling wire EDM apparatus. 4,495,393, Cl. 219-69.00M.
Janik, Rudolf: *See—*
Chudy, Martin; Janik, Rudolf; and Povinec, Pavol, 4,495,420, Cl. 250-367.000.
Jansma, Wytze; Mars, Jan; Stoutjesdijk, Pieter G.; and Vegter, Herman J., to Latenstein Zetmeel B.V. Separation of gluten and starch from wheat flour. 4,494,530, Cl. 127-69.000.
Japan Carlit Co., Ltd., The: *See—*
Murakami, Katsuyuki; Hirakata, Kaoru; Shimoda, Shinichi; and Itai, Reiichi, 4,495,048, Cl. 204-267.000.
Japan Storage Battery Company Limited: *See—*
Fujita, Yuko; Kudo, Hisashi; and Tanigawa, Ikuo, 4,495,051, Cl. 204-408.000.
Japan Synthetic Rubber Co., Ltd.: *See—*
Suminoe, Taro; Ito, Tetsuo; Kiyomatsu, Yasuhiro; and Shimizu, Takao, 4,494,954, Cl. 8-507.000.
Jarvis, Allan P., Jr.; and Lim, Franklin, to Damon Biotech, Inc. Method of culturing anchorage dependent cells. 4,495,288, Cl. 435-241.000.
Jautelat, Manfred; Arlt, Dieter; and Jager, Gerhard, to Bayer Aktiengesellschaft. Preparation of 5-aryloxy-1-chloro-3,3-dimethyl-2-pentanones. 4,495,370, Cl. 568-322.000.
Jelinek, Nikolaus: *See—*
Becherer, Walter; Geyken, Erwin; and Jelinek, Nikolaus, 4,494,706, Cl. 242-65.000.
Jenoptik Jena G.m.b.H.: *See—*
Hentschel, Peter; Meyl, Wolfgang; and Seipelt, Egon, 4,494,870, Cl. 356-152.000.
Jeumont-Schneider: *See—*
Avril, Pierre, 4,494,450, Cl. 98-42.020.
Johansson, Karl N.: *See—*
Hagberg, Curt-Erik; Johansson, Karl N.; Kovacs, Zsuzsanna M. I.; and Stening, Goran B., 4,495,190, Cl. 514-262.000.
John, William W.: *See—*
Andrea, Tariq A.; John, William W.; and Steffens, James J., 4,494,981, Cl. 71-93.000.
Johns Hopkins University, The: *See—*
Fischell, Robert E., 4,494,950, Cl. 604-66.000.
Johnson, Charles L.; and Ryba, John M., to International Business Machines Corporation. Substrate wiring patterns for connecting to integrated-circuit chips. 4,495,377, Cl. 174-68.500.
Johnson, Clarence W., to Bralorne Resources Limited. Casing hanger. 4,494,778, Cl. 285-146.000.
Johnson Engineering Corp.: *See—*
Miller, Scott A., III, 4,495,496, Cl. 340-825.540.
Johnson, Joseph A., to Texas Industries, Inc. Method and apparatus for making antique brick. 4,495,132, Cl. 264-293.000.
Johnson, Lloyd D.; and Lewis, Jack H., to Standard-Knapp, Inc. Case feeding apparatus for drop packer. 4,494,355, Cl. 53-69.000.
Johnson, Ronald R.; Melville, James A.; and Schuelke, Richard D., to IXI Laboratories, Inc. Flexible disk sorter slide apparatus. 4,494,900, Cl. 414-27.000.
Johnson, Roy A., to Upjohn Company, The. Pyridyl-substituted-benzofurans. 4,495,357, Cl. 546-269.000.
Johnston, James R., to National Manufacturing Co. Door frame construction. 4,494,354, Cl. 52-814.000.
Jones, C. A.; and Sofranko, John A., to Atlantic Richfield Company. Methane conversion. 4,495,374, Cl. 585-500.000.
Jones, Charles B.: *See—*
Gebrian, Peter L.; and Jones, Charles B., 4,495,014, Cl. 156-80.000.
Jones, David A., Jr.: *See—*
Hansen, Donald W., Jr.; Jones, David A., Jr.; Mazur, Robert H.; and Schlatter, James M., 4,495,178, Cl. 514-17.000.
Jones, David B.: *See—*
Smith, Donald L.; and Jones, David B., 4,495,382, Cl. 179-81.00R.
Jones, Kenneth R., to Mustang Tripsaver, Inc. Jarring tool. 4,494,615, Cl. 173-119.000.
Jons, Ebbe S.; and Gude, Klaus E., to A/S Niro Atomizer. Preparation of a calcium sulfate anhydrite material of low chloride content. 4,495,162, Cl. 423-171.000.
Jorgensen, H. A.: *See—*
Reeves, Robert H., Jr.; Chandler, Don G.; and Jorgensen, H. A., 4,494,583, Cl. 141-83.000.
Joslyn Mfg. and Supply Co.: *See—*
Lusk, George E., 4,494,890, Cl. 403-267.000.
Jost, Bernhard. Plant for utilization of wind and waves. 4,495,424, Cl. 290-53.000.
Jouk, Leo. Folding wheelchair. 4,494,791, Cl. 297-45.000.
Joy Manufacturing Company: *See—*
Young, Terry G., 4,494,568, Cl. 137-561.00A.
Julius Blum Gesellschaft m.b.H.: *See—*
Rock, Erich; and Brunner, Josef, 4,494,803, Cl. 308-3.800.
Jullien, Georges: *See—*
Thevenin, Michel; and Jullien, Georges, 4,495,138, Cl. 376-203.000.
K-Tron Soder A.G.: *See—*
Klein, Karl-Heinz, 4,494,678, Cl. 222-77.000.
Kabelmetal Electro GmbH: *See—*
Schauer, Friedrich, 4,494,308, Cl. 29-858.000.
Kabushiki Kaisha Daikin Seisakusho: *See—*
Hashimoto, Yasuyuki, 4,494,642, Cl. 192-106.200.
Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See—*
Ohnishi, Haruo; and Mitsuhashi, Masakazu, 4,495,282, Cl. 435-68.000.
Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Matsuno, Tadaaki, 4,494,619, Cl. 177-25.000.
Kabushiki Kaisha Johnan Seisakusho: *See—*
Ishii, Kinichi; and Araki, Yoshiharu, 4,494,336, Cl. 49-352.000.
Kabushiki Kaisha Komatsu Seisakusho: *See—*
Nagata, Yoshihiro, 4,494,621, Cl. 180-6.200.
Tamaki, Hiroaki; and Nakamura, Joji, 4,494,613, Cl. 173-74.000.
Kabushiki Kaisha Medos Kenkyusho: *See—*
Ouchi, Teruo; and Shibuya, Hiromichi, 4,495,134, Cl. 264-516.000.
Kabushiki Kaisha Morita Seisakusho: *See—*
Matsui, Takahiro, 4,494,933, Cl. 433-98.000.
Nakano, Kozo, 4,495,632, Cl. 378-40.000.
Kabushiki Kaisha Sankyo Seiki Seisakusho: *See—*
Miyako, Haruyoshi, 4,495,612, Cl. 369-216.000.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Morita, Takayuki; Tsunekawa, Takahiko; and Amano, Hisao, 4,494,371, Cl. 57-263.000
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Kondo, Haruyoshi; Tsukada, Koji; and Takeuchi, Masaharu, 4,494,409, Cl. 73-651.000.
Sugimoto, Gunji; Arakawa, Hideo; Ishihara, Toshikazu; Sugiura, Masahiro; and Takahashi, Katsuhiko, 4,495,560, Cl. 364-154.000.
Kabushiki Kaisha Yanagiya Tekkosho: *See—*
Takiguchi, Tetsuo, 4,494,356, Cl. 53-122.000.
Kabushiki Kaisha Yaskawa Denki Seisakusho: *See—*
Nio, Satoru; Sato, Shinobu; Fujii, Hajime; and Hamashima, Toyoji, 4,495,588, Cl. 364-513.000.
Kadokura, Hidekimi: *See—*
Horikiri, Shozo; Kadokura, Hidekimi; Harakawa, Masaji; Saegusa, Kunio; and Yamagiwa, Masao, 4,495,121, Cl. 264-56.000.
Kagawa, Eiichi, to Mitsubishi Denki Kabushiki Kaisha. Interrupt control for multiprocessor system with storage data controlling processor interrupted by devices. 4,495,569, Cl. 364-200.000.
Kaiser, Ewald A.: *See—*
Radtke, Carl T.; Kaiser, Ewald A.; Biedermann, Siegfried M.; and Chapman, Rick J., 4,494,256, Cl. 4-502.000.
Kajihara, Takehiro: *See—*
Kaneno, Masayuki; and Kajihara, Takehiro, 4,495,116, Cl. 264-1.200.
Kajikawa, Yoshimitsu; Souma, Keinosuke; Ogaki, Kohei; Uzuka, Tadashi; and Minato, Yoshihiko, to Uroko Seisakusho Co., Ltd. Veneer lathe. 4,494,589, Cl. 144-213.000.
Kajikawa, Yoshimitsu; Souma, Keinosuke; Ogaki, Kohei; Uzuka, Tadashi; and Minato, Yoshihiko, to Uroko Seisakusho Co., Ltd. Veneer lathe. 4,494,590, Cl. 144-213.000.
Kakuhashi, Takeshi; and Tahara, Hiroshi, to Nitto Electric Industrial Co., Ltd. Part for a slide variable resistor. 4,495,524, Cl. 338-314.000.
Kals, Walter, to Niagara Blower Company. Vacuum producing condenser. 4,494,599, Cl. 165-67.000.
Kamatani, Yoshio: *See—*
Nakabayashi, Masamitsu; Miyaji, Masuo; and Kamatani, Yoshio, 4,495,020, Cl. 156-314.000.
Kamath, G. Sanjiv: *See—*
Knechtli, Ronald C.; Loo, Robert Y.; and Kamath, G. Sanjiv, 4,494,302, Cl. 29-575.000.
Kamifuji, Hiroshi: *See—*
Ito, Tomoo; Kamifuji, Hiroshi; Kobayashi, Haruhiko; and Itakura, Tomiya, 4,494,498, Cl. 123-179.00G.
Kammann, Gunter: *See—*
Schmidt, Hans-Jorg; Franke, Joachim; Scheffler, Reingard; Tonjes, Heinz; Kammann, Gunter; and Dietz, Gunther, 4,495,351, Cl. 544-234.000.
Kanai, Shunichiro; and Miyauchi, Teruo, to Nissan Motor Company, Limited. Exhaust unit support device. 4,494,722, Cl. 248-621.000.
Kanamori, Hiroshi, to Nissan Motor Company, Limited. Electroluminescent display structure for motor vehicle window. 4,494,326, Cl. 40-593.000.
Kane, John J., to Pittsburgh & Conneaut Dock Company, The. Thaw shed heater. 4,494,462, Cl. 104-1.00R.
Kaneko, Masaharu: *See—*
Imazeki, Shuji; Mukoh, Akio; Morishita, Hirosada; Imahori, Seiichi; Kaneko, Masaharu; and Ono, Hitoshi, 4,495,083, Cl. 252-299.100.

Kaneno, Masayuki; and Kajihara, Takehiro, to NGK Insulators, Ltd. Polycrystalline translucent alumina sintered body, a method for producing the same and a high pressure vapor discharge lamp obtained by using said sintered body. 4,495,116, Cl. 264-1.200.

Kanki, Kazuhiko: *See*—
Hata, Hiroyoshi; Honda, Seiichirou; Hosokawa, Seiya; Kanki, Kazuhiko; Matsumiya, Toshiharu; and Sakamoto, Kazuo, 4,495,312, Cl. 523-105.000.

Kao Soap Co., Ltd.: *See*—
Matsunaga, Kinjiro; Okumura, Takeo; and Tsushima, Rikio, 4,495,173, Cl. 424-70.000.

Karaszi, Gyorgy: *See*—
Ratsko, Istvan; Ivony, Jozsef; Karaszi, Gyorgy; Madi, Jeno ; and Liptai, Nandor, 4,494,765, Cl. 280-432.000.

Karpetsky, Timothy P.; and Brown, Glenn E., to United States of America, Health and Human Services. Isoelectric focusing-polynucleotide/polyacrylamide gel electrophoresis. 4,495,279, Cl. 435-6.000.

Karpov, Vladimir F.: *See*—
Medovar, Boris I.; Andreev, Vladimir P.; Kozik, Vladimir V.; Shevchenko, Nikolai T.; Spisarenko, Dmitry U.; Malevanny, Vladimir P.; Karpov, Vladimir F.; Chernykh, Viktor V.; Chepurnoi, Anatoly D.; Matsegora, Evgeny A.; and Shuruev, Lev A., 4,495,395, Cl. 219-73.100.

Kasai, Yoshiaki: *See*—
Fukushima, Tatsuhisa; Kasai, Yoshiaki; and Nakamura, Mitsuo, 4,495,579, Cl. 364-431.070.

Kashiwabara, Susumu: *See*—
Mita, Akio; and Kashiwabara, Susumu, 4,495,082, Cl. 252-194.000.

Kassel, David L.: *See*—
Engelstein, Charles; Kassel, David L.; and Goodman, Harry, 4,495,257, Cl. 429-100.000.

Kastelic, Rudolph F. Pre-engineered modular building panel assembly. 4,494,348, Cl. 52-588.000.

Kasten, Robert E.: *See*—
Strunk, Richard D.; Kasten, Robert E.; and Monopoli, Richard V., deceased, 4,495,377, Cl. 364-424.000.

Kasuga, Muneo: *See*—
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,494,748, Cl. 271-288.000.

Kasuya, Hideo: *See*—
Endo, Hiroshi; Sone, Masazumi: Imai, Iwao; and Kasuya, Hideo, 4,495,421, Cl. 250-551.000.

Katalco Corporation: *See*—
Clements, Porter, 4,495,307, Cl. 502-305.000.

Katayama, Hiroomi; and Hirosawa, Yoshiaki, to New Nippon Electric Co., Ltd.; and Honda Giken Kogyo Kabushiki Kaisha. Engine ignition interpolation apparatus. 4,494,518, Cl. 123-612.000.

Kato, Katuo, to NHK Spring Co., Ltd. Impact damper. 4,494,634, Cl. 188-380.000.

Kato, Kiichi: *See*—
Kodama, Hiroshi; Sakamoto, Masaharu; Ohshima, Ken; Yoshikawa, Shoji; Yamamiya, Kunio; and Kato, Kiichi, 4,495,407, Cl. 250-201.000.

Kato, Takashi; and Toyokura, Nobuo, to Fujitsu Limited. Process for producing dielectric layers for semiconductor devices. 4,495,219, Cl. 427-82.000.

Katou, Takashi: *See*—
Itou, Takaaki; Katou, Takashi; and Morino, Toshiharu, 4,495,112, Cl. 261-41.00D.

Katsuma, Makoto; Kawamura, Masaharu; and Yamada, Masanori, to Canon Kabushiki Kaisha. Flash photographing system. 4,494,850, Cl. 354-416.000.

Katsuma, Makoto; Murakami, Hiroyasu; and Hiramatsu, Akira, to Canon Kabushiki Kaisha. Piezoelectric vibration wave motor with sloped drive surface. 4,495,432, Cl. 310-328.000.

Katsuyama, Akira: *See*—
Kimura, Shuichi; and Katsuyama, Akira, 4,495,608, Cl. 369-33.000.

Kaufman, Vernon R., to Tecumseh Products Company. Connecting rod arrangement. 4,494,286, Cl. 29-156.50A.

Kaul, Bansi L.: *See*—
Bitterli, Peter; and Kaul, Bansi L., 4,494,953, Cl. 8-512.000.

Kavesh, Sheldon; Sellers, Gregory J.; and Witte, Wayne H., to Allied Corporation. Amorphous antipilferage marker. 4,495,487, Cl. 340-572.000.

Kawabata, Takashi, to Canon Kabushiki Kaisha. Radiation sensing system. 4,495,415, Cl. 250-336.100.

Kawahira, Hiroto: *See*—
Nagatomo, Hideaki; Kawahira, Hiroto; Nishizawa, Toshizo; and Yasuda, Mitsuo, 4,494,383, Cl. 62-196.200.

Kawakami Co., Ltd.: *See*—
Noboru, Nasu; and Tatsuo, Inada, 4,494,740, Cl. 270-31.000.

Kawakami, Koichi, to Yoshida Kogyo K.K. Method and apparatus for attaching pin fittings to slide fastener having separable end stop. 4,494,293, Cl. 29-408.000.

Kawakami, Sota; Murata, Hideki; Matsunaga, Satoshi; and Kiriki, Toshihiko, to Konishiroku Photo Industry Co., Ltd. Optical element and optical polycarbonate resin composition for the preparation thereof. 4,495,345, Cl. 528-372.000.

Kawakami, Yukichika: *See*—
Shiiki, Zenya; Iizuka, Yo; and Kawakami, Yukichika, 4,495,332, Cl. 524-800.000.

Kawakatsu, Shiro; and Kawasaki, Toshikazu, to Daihatsu Motor Co., Ltd. Alarming apparatus of vehicle. 4,495,484, Cl. 340-52.00D.

Kawamura, Masaharu: *See*—
Katsuma, Makoto; Kawamura, Masaharu; and Yamada, Masanori, 4,494,850, Cl. 354-416.000.

Kawamura, Setuo, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Negative pressure control apparatus. 4,494,559, Cl. 137-116.500.

Kawamura, Takahide: *See*—
Uchida, Shigekatsu; Akatsuka, Takao; and Kawamura, Takahide, 4,494,497, Cl. 123-179.00B.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Takada, Toshiyuki; and Tamba, Shinichi, 4,494,491, Cl. 123-41.720.

Kawasaki Steel Corporation: *See*—
Murakami, Shinjiro; Hashimoto, Osamu; Morimoto, Kazuo; and Hyodo, Kaneaki, 4,495,009, Cl. 148-128.000.

Kawasaki, Toshikazu: *See*—
Kawakatsu, Shiro; and Kawasaki, Toshikazu, 4,495,484, Cl. 340-52.00D.

Keats, Dennis R.: *See*—
Vahlstrom, Richard; Keats, Dennis R.; and Lee, Peter T., 4,495,598, Cl. 364-900.000.

Keck, Donald B.: *See*—
Bhagavatula, Venkata A.; and Keck, Donald B., 4,494,968, Cl. 65-3.120.

Keck, Marvin C.: *See*—
Paulus, John R.; and Keck, Marvin C., 4,494,786, Cl. 294-26.000.

Keearns, Larry R., to E-Systems, Inc. Navigation system. 4,495,580, Cl. 364-450.000.

Keegan, James J., to Warner-Lambert Company. Denture adhesive creams with improved extrudability. 4,495,314, Cl. 523-120.000.

Keim, Karl-Heinz: *See*—
Dolkemeyer, Wilfried; Keim, Karl-Heinz; and Meisenburg, Ewald, 4,494,960, Cl. 44-51.000.

Kell, Howard A., Jr.: *See*—
Godwin, Paul K., Jr.; and Kell, Howard A., Jr., 4,494,712, Cl. 242-191.000.

Keller, Philip J., to Bijur Lubricating Corp. Positive displacement injector. 4,494,913, Cl. 417-349.000.

Kelley Company Inc.: *See*—
Schwab, James M., 4,494,341, Cl. 52-173.0DS.

Kelley, Richard W. Motorcycle lift and method. 4,494,764, Cl. 280-293.000.

Kelly, Michael J., to Trace Athletic Corporation. Knee/elbow guard treated to increase durability and a process for producing same. 4,494,247, Cl. 2-24.000.

Kelly, William W.; and Bradshaw, Cyril E., to Eaton Corporation. Controlling EGR in an internal combustion engine and fluid pressure signal controller therefor. 4,494,510, Cl. 123-568.000.

Kempter, Fritz-Erdmann: *See*—
Schenck, Hans-Uwe; Blum, Rainer; Gulbins, Erich; Kempter, Fritz-Erdmann; and Schupp, Eberhard, 4,495,327, Cl. 524-556.000.

Kendall Company, The: *See*—
Lau, Wing-Yan T.; and Bradberry, Laylon E., 4,494,388, Cl. 66-178.00A.

Kendall, Robert M.; and Schreiber, Richard J., to Gas Research Institute. Fired heater. 4,494,485, Cl. 122-250.00R.

Kennedy, Thomas M.: *See*—
McGregor, John R.; Rupert, Gary F.; and Kennedy, Thomas M., 4,495,394, Cl. 219-69.00C.

Kenney, Edward S.: *See*—
Jacobs, Alan M.; Kenney, Edward S.; and McInerney, Joseph J., 4,495,636, Cl. 378-87.000.

Kernforachungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Ali-Khan, Imran; Dietz, Karl-Jurgen; Waelbroeck, Francois; and Wienhold, Peter, 4,494,965, Cl. 55-16.000.
Barnert, Eike; and Schmitz, Heinz, 4,495,215, Cl. 427-6.000.

Kersen, Matthew F.: *See*—
Uherek, Vladimir; and Kersen, Matthew F., 4,494,628, Cl. 187-29.00R.

Kesner, Donald R.: *See*—
Ampulski, Joseph W.; Furukawa, James N.; Kesner, Donald R.; and Bernal, Ronald D., 4,495,617, Cl. 370-86.000.

Khimiko-Metallurgicheskiy Institut: *See*—
Bauer, Ivan K.; Malyshev, Vitaly P.; Abishev, Dzhantore N.; Belyaev, Sergei V.; Shirokov, Anatoly I.; Baltynova, Nazymkul; Alipchenko, Elena S.; Ekeibaev, Djusenkhan D.; and Abdulkhairov, Vakhit T., 4,494,930, Cl. 432-95.000.

Khoe, Giok D.: *See*—
Thoone, Martinus L. G.; Khoe, Giok D.; Kuppers, Dieter; and Gustin, Pol A. G. J., 4,495,412, Cl. 250-227.000.

Kice, John E., to Kice Metal Products Co., Inc. Rotary mixing damper method and means. 4,495,113, Cl. 261-64.00R.

Kice Metal Products Co., Inc.: *See*—
Kice, John E., 4,495,113, Cl. 261-64.00R.

Kida, Masahiko: *See*—
Nakayashiki, Susumu; Nakada, Isao; Kida, Masahiko; Hashimoto, Toyokazu; and Yagyu, Kazuo, 4,495,595, Cl. 364-900.000.

Kidd, Patrick D.: *See*—
Orlowski, Jan A.; Butler, David V.; and Kidd, Patrick D., 4,495,172, Cl. 424-61.000.

Kieffer, Robert A. Seal for relatively rotatable parts. 4,494,759, Cl. 277-25.000.

Kikuchi, Tatsuro: *See*—
Nakamura, Tsuneshi; and Kikuchi, Tatsuro, 4,495,546, Cl. 361-398.000.

Kikuchi, Yoshiyasu; Shutoh, Masamichi; Miyai, Hitoshi; and Itoh, Hidetoshi, to Nippon Electric Co., Ltd. Tabulation system. 4,495,600, Cl. 364-900.000.

Kilguss, Howard M., to Excell Manufacturing Company. Jewelry chain clasp assembly. 4,494,279, Cl. 24-336.000.

Kim, He B.: *See*—
Lemnios, Zachary J.; and Kim, He B., 4,494,997, Cl. 148-1.500.

Kim, Kyusik. Shockcone and channeled disk-airframe. 4,494,713, Cl. 244-15.000.

Kim, Sun H.; and Moreau, Jacques-Pierre, to Biomeasure, Inc. Imidazole compounds which reduce gastric acid secretion. 4,495,193, Cl. 514-385.000.

Kimball International, Inc.: *See*—
Trinkel, Steven F.; Strange, Patrick E.; and Slaats, Mathew A., 4,494,721, Cl. 248-406.200.

Kimura, Hiroyuki; Yazaki, Mutsunobu; Taka, Hideo; and Masunaga, Makoto, to Canon Kabushiki Kaisha. Automatic rewinding device for film in camera. 4,494,842, Cl. 354-173.110.

Kimura, Katsuhiko: *See*—
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,494,748, Cl. 271-288.000.

Kimura, Shuichi; and Katsuyama, Akira, to Sony Corporation. Device for rapidly moving an optical pick-up device in an optical reproducing apparatus to a desired position on a record disc. 4,495,608, Cl. 369-33.000.

King, Richard L.: *See*—
Staplin, Theodore R., Jr.; Bradley, John J.; King, Richard L.; Miller, Robert C.; Miu, Ming T.; and Shen, Jian-Kuo, 4,495,571, Cl. 364-200.000.

Kinjyo, Masasige: *See*—
Hayama, Nobuhiro; Kinjyo, Masasige; Okimoto, Haruo; and Matsuda, Ikuo, 4,494,506, Cl. 123-348.000.

Kinoshita, Akira: *See*—
Takahashi, Jiro; Komamura, Tawara; Sawada, Kiyoshi; Sasaki, Ssamu; Goto, Satoshi; and Kinoshita, Akira, 4,495,261, Cl. 430-58.000.

Kinoshita, Taketoshi: *See*—
Shimizu, Kimihiro; Nakahara, Tsuguji; and Kinoshita, Taketoshi, 4,495,285, Cl. 435-215.000.

Kinoshita, Takuji: *See*—
Yaguchi, Kenichi; Ichikawa, Masaru; and Kinoshita, Takuji, 4,494,831, Cl. 351-41.000.

Kiriki, Toshihiko: *See*—
Kawakami, Sota; Murata, Hideki; Matsunaga, Satoshi; and Kiriki, Toshihiko, 4,495,345, Cl. 528-372.000.

Kirkpatrick, Edward S.: *See*—
Gelatt, Charles D., Jr.; and Kirkpatrick, Edward S., 4,495,559, Cl. 364-148.000.

Kirkwood, Wayne E.: *See*—
Scott, Brian L.; and Kirkwood, Wayne E., 4,495,384, Cl. 179-107.0FD.

Kishi, Noriyuki; and Hasagawa, Shumpei, to Honda Giken Kogyo Kabushiki Kaisha. Method of controlling a fuel supplying apparatus for internal combustion engines. 4,494,512, Cl. 123-489.000.

Kishi, Takaji, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Release agent and product. 4,495,243, Cl. 428-352.000.

Kitagawa Industries Co., Ltd.: *See*—
Matsui, Kazuhiro, 4,495,548, Cl. 361-413.000.

Kitahara, Nobuaki: *See*—
Sato, Yasunobu; Fukumi, Hiroshi; Koike, Hiroyuki; and Kitahara, Nobuaki, 4,495,188, Cl. 514-260.000.

Kitahara, Tsuyoshi; Sone, Kohki; and Uchida, Masaaki, to Nissan Motor Company, Limited. Air/fuel ratio monitoring system in IC engine using oxygen sensor. 4,494,374, Cl. 60-276.000.

Kitahiro, Isamu: *See*—
Hatada, Kenzo; and Kitahiro, Isamu, 4,494,688, Cl. 228-180.00A.

Kitajima, Hiroyuki; and Ohmachi, Kazuhiko, to Hitachi, Ltd. Processing request allocator for assignment of loads in a distributed processing system. 4,495,570, Cl. 364-200.000.

Kitao, Zenichi; and Koizumi, Haruyuki, to Omron Tateisi Electronics Co. Alternate on-off switch mechanism. 4,495,391, Cl. 200-153.00J.

Kiyomatsu, Yasuhiro: *See*—
Suminoe, Taro; Ito, Tetsuo; Kiyomatsu, Yasuhiro; and Shimizu, Takao, 4,494,954, Cl. 8-507.000.

Kiyooka, Katsumi; Harada, Atsushi; and Anbo, Kiyoshi, to Komatsu Zenoah Co. Cylinder cover. 4,494,490, Cl. 123-41.560.

Kjelgaard, Tom: *See*—
Viberg, Rolf; Harrysson, Goran; and Kjelgaard, Tom, 4,495,016, Cl. 156-152.000.

Klagmann, Josef, to Golden Team Sportartikel GmbH. Shoe. 4,494,322, Cl. 36-28.000.

Klatt, Alfred: *See*—
Seegers, Gunter; Sebesta, Gunter; and Klatt, Alfred, 4,494,571, Cl. 137-596.160.

Klaubert, Dieter H.; Bell, Stanley C.; Pattison, Thomas W.; and Rees, Richard W., to American Home Products Corporation. Antiinflammatory 5H-tetrazolo (5,1-c)(1,4)benzodiazepine derivatives. 4,495,101, Cl. 260-239.30T.

Klawitter, Ronald R., to Handi-Pac, Inc. Kaleidoscope assembly. 4,494,820, Cl. 350-4.100.

Kleber, Kurt. Steam kiln. 4,494,683, Cl. 223-51.000.

Klein, Elias; and Beach, Douglas J., to Tracor, Inc. Apparatus for preparation of infusion grade water. 4,495,067, Cl. 210-87.000.

Klein, Karl-Heinz, to K-Tron Soder A.G. Apparatus for compensating a pressurized vessel on a scale. 4,494,678, Cl. 222-77.000.

Klinedinst, Keith A.; and Schlaikjer, Carl R., to GTE Laboratories Incorporated. High rate electrochemical cell. 4,495,266, Cl. 429-105.000.

Klockner-Humboldt-Deutz AG: *See*—
Guttmann, Friedrich W., 4,494,736, Cl. 266-265.000.
Steinbiss, Eberhard; Herchenbach, Horst; Ramesohl, Hubert; and Wolter, Albrecht, 4,494,991, Cl. 106-100.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Zenker, Walter, 4,494,638, Cl. 192-48.910.

Klotzer, Sieghart: *See*—
Becker, Manfred; Klotzer, Sieghart; and Moisar, Erik, 4,495,277, Cl. 430-567.000.

Knapke, Paul H.: *See*—
Aro, Enn; Bogan, Leonard E.; Hamersley, Richard A.; Knapke, Paul H.; and Miller, Robert L., 4,495,614, Cl. 370-58.000.

Knechtli, Ronald C.; Loo, Robert Y.; and Kamath, G. Sanjiv, to Hughes Aircraft Company. Accelerated annealing of gallium arsenide solar cells. 4,494,302, Cl. 29-575.000.

Knoblock, Dennis F.: *See*—
Nash, Robert W.; Andre, Paul R.; and Knoblock, Dennis F., 4,494,775, Cl. 285-26.000.

Knoll, Jozsef: *See*—
Meszaros, Zoltan; Knoll, Jozsef; Szentmiklosi, Peter; Hermecz, Istvan; Horvath, Agnes; Virag, Sandor; Vasvari, Lelle; and David, Agoston, 4,495,189, Cl. 514-258.000.

Knops, Hans-Joachim; Kramer, Wolfgang; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Morpholino propanol derivatives, fungicidal compositions and use. 4,495,184, Cl. 514-238.000.

Knothe, Erich; Melcher, Franz-Josef; Stadler, Eberhard; and Exner, Rainer, to Sartorius GmbH. Electric balance. 4,494,620, Cl. 177-25.000.

Knuchel, Max, to SIG- Schweizerische Industrie-Gesellschaft. Apparatus for aligning elongated articles. 4,494,643, Cl. 198-392.000.

Knudson, Robert M.; and Ehrenfellner, Hubert, to MacMillan Bloedel Limited. Apparatus for laying a mat of wood strands. 4,494,919, Cl. 425-83.100.

Kobayashi, Haruhiko: *See*—
Ito, Tomoo; Kamifuji, Hiroshi; Kobayashi, Haruhiko; and Itakura, Tomiya, 4,494,498, Cl. 123-179.00G.

Kobayashi, Katsuyoshi: *See*—
Fujioka, Masato; Kobayashi, Katsuyoshi; Yuta, Koichi; and Nishihara, Nobuyoshi, 4,494,929, Cl. 432-59.000.

Kobayashi, Takashi; Inagaki, Takeshi; Takahashi, Hiroshi; and Ohisa, Takayuki, to Konishiroku Photo Industry Co., Ltd. Automatic film rewind method for camera. 4,494,843, Cl. 354-214.000.

Kobayashi, Yuji: *See*—
Yamaji, Hiromasa; and Kobayashi, Yuji, 4,494,905, Cl. 414-584.000.

Kobuki, Shinzo; Kubota, Hazime; and Miyamaru, Tsuneo, to Toyota Jidosha Kabushiki Kaisha. Device for mounting an engine on a vehicle body. 4,494,723, Cl. 248-635.000.

Koch, Keith C., to Metromail, Inc. Package forming web folder. 4,494,362, Cl. 53-550.000.

Kochanowski, Hans-Alfred, to Motorenfabrik Hatz GmbH & Co. KG. Liquid-cooled power aggregate or engine having an arrangement for suppressing vibration. 4,494,492, Cl. 123-41.840.

Kochiyama, Shigekichi: *See*—
Tanaka, Toshio; Miyanaka, Motoshi; and Kochiyama, Shigekichi, 4,494,924, Cl. 431-78.000.

Kochka, Edgar L.; Tobin, Joseph M., deceased; and Neve, Arlene F., administratrix, to Westinghouse Electric Corp. Permanent desctivation of nuclear reactor. 4,495,140, Cl. 376-207.000.

Kochs Adler AG: *See*—
Fischer, Jochen; and Scholl, Hans, 4,494,470, Cl. 112-121.120.

Kodaira, Masanori: *See*—
Ito, Kanichi; Hirayama, Yoshio; Takeuchi, Ryoichi; Kodaira, Masanori; and Iizuka, Gorou, 4,495,290, Cl. 435-315.000.

Kodama, Hiroshi; Sakamoto, Masaharu; Ohshima, Ken; Yoshikawa, Shoji; Yamamiya, Kunio; and Kato, Kiichi, to Olympus Optical Co., Ltd. System for focusing an optical head onto a flat surface. 4,495,407, Cl. 250-201.000.

Kogane, Mikio, to Fuji Photo Film Co., Ltd. Interchangeable cutter mechanism. 4,494,432, Cl. 83-559.000.

Kogure, Hiroshi: *See*—
Yagi, Shizuo; Otani, Junji; Fujii, Isao; and Kogure, Hiroshi, 4,494,504, Cl. 123-308.000.

Kohigashi, Minoru: *See*—
Nakamura, Norihiko; Baika, Toyokazu; Miki, Toshio; and Kohigashi, Minoru, 4,494,495, Cl. 123-90.150.

Kohno, Takeshi: *See*—
Horii, Tetsuo; and Kohno, Takeshi, 4,494,655, Cl. 209-569.000.

Kohri, Naomichi; Fukuda, Yutaka; and Muramatsu, Hiroshi, to Victor Company of Japan, Ltd. Wheel-driven mode switching mechanism for cassette tape recorders. 4,495,535, Cl. 360-96.300.

Koike, Hiroyuki: *See*—
Sato, Yasunobu; Fukumi, Hiroshi; Koike, Hiroyuki; and Kitahara, Nobuaki, 4,495,188, Cl. 514-260.000.

Koine, Richard, to Rheinmetall GmbH. Arming sets for weapons system. 4,494,440, Cl. 89-33.040.

Koito Seisakusho Co., Ltd.: *See*—
Sakuma, Toranosuke, 4,494,420, Cl. 74-479.000.

Koizumi, Haruyuki: *See*—
Kitao, Zenichi; and Koizumi, Haruyuki, 4,495,391, Cl. 200-153.00J.

Koizumi, Naohiko: *See—*
Baji, Toru; Koizumi, Naohiko; Tsukada, Toshihisa; Yamamoto, Hideaki; Shimomoto, Yasuharu; and Tanaka, Yasuo, 4,495,409, Cl. 250-211.00J.

Kojima, Tadashi: *See—*
Nishikawa, Meisei; Nakamura, Yukio; and Kojima, Tadashi, 4,495,474, Cl. 331-11.000.

Kolchin, Sergei P.: *See—*
Bondar, Ljudmila S.; Okunev, Rostan A.; Polezhaev, Lev V.; Kolchin, Sergei P.; Cherkasova, Ljudmila V.; and Nikolaeva, Lilia F., 4,495,201, Cl. 514-560.000.

Kolpek, Robert A.: *See—*
Hopper, Beth R.; Howell, Dan M.; and Kolpek, Robert A., 4,495,490, Cl. 340-709.000.

Komamura, Tawara: *See—*
Takahashi, Jiro; Komamura, Tawara; Sawada, Kiyoshi; Sasaki, Ssamu; Goto, Satoshi; and Kinoshita, Akira, 4,495,261, Cl. 430-58.000.

Komatsu, Akira: *See—*
Yamada, Kyota; and Komatsu, Akira, 4,495,638, Cl. 381-27.000.

Komatsu Zenoah Co.: *See—*
Kiyooka, Katsumi; Harada, Atsushi; and Anbo, Kiyoshi, 4,494,490, Cl. 123-41.560.

Komons, Michael; Wiseman, Donald F.; and Galanis, Andreas I., to Ebtron, Inc. Means for measuring large area mass flow. 4,494,406, Cl. 73-204.000.

Komori, Haruyuki, to Seiko Seiki Kabushiki Kaisha. Bearing structure for an air compressor. 4,494,917, Cl. 418-69.000.

Kondo, Haruyoshi; Tsukada, Koji; and Takeuchi, Masaharu, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Engine vibration sensor. 4,494,409, Cl. 73-651.000.

Kondo, Hiroatsu; Ozawa, Toshiaki; and Yamada, Yasuaki, to Canon Kabushiki Kaisha. Printing device. 4,494,886, Cl. 400-208.000.

Konishi, Hideo; Matsuoka, Kazunori; and Gouya, Takao, to Sharp Kabushiki Kaisha. Electronic tuning type radio receivers. 4,495,650, Cl. 455-144.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Kawakami, Sota; Murata, Hideki; Matsunaga, Satoshi; and Kiriki, Toshihiko, 4,495,345, Cl. 528-372.000.
Kobayashi, Takashi; Inagaki, Takeshi; Takahashi, Hiroshi; and Ohisa, Takayuki, 4,494,843, Cl. 354-214.000.
Matsunawa, Masahiko; and Abe, Yoshinori, 4,495,522, Cl. 358-280.000.
Matsuzaki, Masatoshi; Yamazaki, Toshinori; Myokan, Isao; Shima, Tetsuo; and Nomori, Hiroyuki, 4,495,262, Cl. 430-58.000.
Takahashi, Jiro; Komamura, Tawara; Sawada, Kiyoshi; Sasaki, Ssamu; Goto, Satoshi; and Kinoshita, Akira, 4,495,261, Cl. 430-58.000.
Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,495,508, Cl. 346-159.000.
Watanabe, Koji, 4,494,853, Cl. 354-478.000.
Yoshida, Kazuhiro, 4,495,274, Cl. 430-523.000.

Konno, Tatsuo: *See—*
Fujino, Masahisa; Sunouchi, Akio; Suzuki, Ryuji; and Konno, Tatsuo, 4,494,844, Cl. 354-241.000.

Korenko, Michael K., to United States of America, Energy. Precipitation hardening austenitic superalloys. 4,494,987, Cl. 75-124.000.

Kornaker, Walter, to ITT Industries, Inc. Device for adjusting electron beams in a cathode-ray tube. 4,495,438, Cl. 313-412.000.

Korte, Kevin R.: *See—*
Wu, Dan T.; and Korte, Kevin R., 4,494,556, Cl. 131-302.000.

Koschke, Peter; and Novak, Pavel, to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V. Pressure detector comprising a cylindrical cavity resonator having a front surface made as a diaphragm. 4,494,411, Cl. 73-724.000.

Kosenko, Alexandr I.: *See—*
Zabotin, Viktor G.; Kosenko, Alexandr I.; Kozlov, Sergei P.; Pervyshin, Alexandr N.; Lukachev, Viktor P.; Mikhailov, Vladimir A.; Buryakov, Valery M.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Levin, Viktor Y., deceased; and Levin, Sofia N., administratrix, 4,494,925, Cl. 431-158.000.

Kovacs, Jenoe: *See—*
Steck, Werner; Kovacs, Jenoe; Mueller, Norbert; and Jakusch, Helmut, 4,495,246, Cl. 428-403.000.

Kovacs, Zsuzsanna M. I.: *See—*
Hagberg, Curt-Erik; Johansson, Karl N.; Kovacs, Zsuzsanna M. I.; and Stening, Goran B., 4,495,190, Cl. 514-262.000.

Koyama, Masaharu: *See—*
Sasaki, Ken; Matsuyama, Shigeru; Koyama, Masaharu; and Ichihara, Kazuyoshi, 4,494,825, Cl. 350-343.000.

Koyama, Masao; Tsuruoka, Takashi; Ezaki, Norio; Miyauchi, Keinosuke; and Inouye, Shigeharu, to Meiji Seika Kaisha, Ltd. Antibiotic pyrrolomycin E. 4,495,358, Cl. 548-550.000.

Koyo Seiko Kabushiki Kaisha: *See—*
Nakamura, Norihiko; Baika, Toyokazu; Miki, Toshio; and Kohigashi, Minoru, 4,494,495, Cl. 123-90.150.

Kozai, Yoshinori; Amemiya, Yoichi; and Iwamatsu, Noboru, to Fujitsu Fanuc Limited. Non-contacting, speed-detecting device of a direct-current generator type. 4,495,464, Cl. 324-174.000.

Kozik, Vladimir V.: *See—*
Medovar, Boris I.; Andreev, Vladimir P.; Kozik, Vladimir V.; Shevchenko, Nikolai T.; Spisarenko, Dmitry U.; Malevanny, Vladimir P.; Karpov, Vladimir F.; Chernykh, Viktor V.; Chepurnoi, Anatoly D.; Matsegora, Evgeny A.; and Shuruev, Lev A., 4,495,395, Cl. 219-73.100.

Kozlov, Sergei P.: *See—*
Zabotin, Viktor G.; Kosenko, Alexandr I.; Kozlov, Sergei P.; Pervyshin, Alexandr N.; Lukachev, Viktor P.; Mikhailov, Vladimir A.; Buryakov, Valery M.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Levin, Viktor Y., deceased; and Levin, Sofia N., administratrix, 4,494,925, Cl. 431-158.000.

Kozuki, Susumu; Maeda, Masaya; and Takimoto, Hiroyuki, to Canon Kabushiki Kaisha. Video recording system with focusing device. 4,495,527, Cl. 360-33.100.

Kraft, Timothy J.: *See—*
Chacko, Varkki P.; and Kraft, Timothy J., 4,495,324, Cl. 524-504.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Fricker, Wolfgang-Peter; Scholz, Manfred; Bauche, Heinrich; and Gollasch, Bernd, 4,495,147, Cl. 376-283.000.

Kramer, Wolfgang: *See—*
Knops, Hans-Joachim; Kramer, Wolfgang; and Frohberger, Paul-Ernst, 4,495,184, Cl. 514-238.000.

Kranzer, Ditmar, to Siemens Aktiengesellschaft. Method for manufacturing fast bipolar transistors. 4,495,010, Cl. 148-175.000.

Kratt, Alfred; Peter, Cornelius; Ruppmann, Claus; and Schillinger, Rainer, to Robert Bosch GmbH. Method and apparatus for controlling at least one throttle cross section in a control line. 4,494,517, Cl. 123-585.000.

Krauth, Dieter: *See—*
Adam, Roland; Krauth, Dieter; and Derndinger, Hans-Otto, 4,495,115, Cl. 261-44.00F.

Kravitz, Marvin; Freedman, Larry A.; Fredd, Elmer H.; and Denef, Dan E., to United States of America, National Aeronautics and Space Administration. Television camera video level control system. 4,495,520, Cl. 358-219.000.

Kreighbaum, William E.; and Comer, William T., to Mead Johnson & Company. Heterocyclic substituted aryloxy 3-indolyl-tertiary butylaminopropanols. 4,495,352, Cl. 544-284.000.

Kresge, James S., to General Electric Company. Surge arrester discharge counting apparatus. 4,495,459, Cl. 324-72.000.

Kreuer, Klaus-Dieter: *See—*
Bell, Michael; Kreuer, Klaus-Dieter; Rabenau, Albrecht; and Weppner, Werner, 4,495,078, Cl. 252-62.200.

Kroe, Rudolf; and Vetter, Harald, to Siemens Aktiengesellschaft. Electric roller-type capacitor and method and device for producing the capacitor. 4,495,542, Cl. 361-301.000.

Kroyer, Karl K. K.; and Rasmussen, Torben, to Kroyer, Karl Kristian Kobs. Apparatus for the production of a fibrous web. 4,494,278, Cl. 19-304.000.

Kroyer, Karl Kristian Kobs: *See—*
Kroyer, Karl K. K.; and Rasmussen, Torben, 4,494,278, Cl. 19-304.000.

Kruesi, August H., to Elfin Corporation. Apparatus for manufacturing resin impregnated fiber braided products. 4,494,436, Cl. 87-23.000.

Kruger, Hermann, to Volkswagenwerk Aktiengesellschaft. Valve operating mechanism, in particular for an automobile internal combustion engine. 4,494,729, Cl. 251-229.000.

Krusche, Kurt, to Allstar Verbrauchsguter GmbH & Co., KG. Storage device. 4,494,661, Cl. 211-87.000.

Kubo, Naomi, to Usui Kokusai Sangyo Kabushiki Kaisha. Manufacturing a steel tube including tufftriding. 4,495,003, Cl. 148-15.500.

Kubota, Hazime: *See—*
Kobuki, Shinzo; Kubota, Hazime; and Miyamaru, Tsuneo, 4,494,723, Cl. 248-635.000.

Kudo, Hisashi: *See—*
Fujita, Yuko; Kudo, Hisashi; and Tanigawa, Ikuo, 4,495,051, Cl. 204-408.000.

Kuehl, Guenter H., to Mobil Oil Corporation. Process for making zeolite ZSM-45 with a dimethyldiethylammonium directing agent. 4,495,303, Cl. 502-62.000.

Kuehn, Arthur: *See—*
Vercillo, Alfredo J.; and Kuehn, Arthur, 4,495,456, Cl. 318-755.000.

Kuga, Tetsuro: *See—*
Araki, Kazumi; and Kuga, Tetsuro, 4,495,283, Cl. 435-107.000.

Kumar, Viraraghavan S.; and Olson, Rohn L., to Deere & Company. Control valve. 4,494,726, Cl. 251-29.000.

Kumata, Fumio: *See—*
Ihara, Hiroyuki; Takahashi, Kazuo; Matsubara, Michiro; Kumata, Fumio; and Sanami, Yoshitomo, 4,495,089, Cl. 252-364.000.

Kume, Hisao; and Sanma, Takahide, to Sony Corporation. Grid apparatus for use with a color cathode ray tube. 4,495,437, Cl. 313-403.000.

Kummer, David A.: *See—*
Eggebrecht, Lewis C.; Kummer, David A.; and Saenz, Jesus A., 4,495,594, Cl. 364-900.000.

Kunishima, Mamoru; Yabuuchi, Masahiko; Masuda, Minoru; Imazumi, Kikuo; and Hamano, Hiroaki, to Nippon Kayaku Kabushiki Kaisha. Derivative of cephamycin C. 4,495,348, Cl. 544-021.000.

Kuno, Akira; Matsumoto, Muneaki; and Numata, Koji, to Nippon Soken, Inc. Apparatus for simultaneous measurement of magnetic field components in mutually perpendicular directions. 4,495,467, Cl. 324-244.000.

Kunzler, Jay F.: *See—*
Friends, Gary D.; Meipolder, John B.; Kunzler, Jay F.; and Park, Joon S., 4,495,361, Cl. 556-419.000.

Kuperman, Gilbert G.: *See—*
Wallquist, Donald L.; and Kuperman, Gilbert G., 4,494,838, Cl. 351-206.000.

Kuppens, Bernardus J.; and Wardenaar, Hendrik C., to U.S. Philips Corporation. Method of and device for feeding electric and/or electronic elements to given positions. 4,494,902, Cl. 414-223.000.

Kuppers, Dieter: *See*—
Thoone, Martinus L. G.; Khoe, Giok D.; Kuppers, Dieter; and Gustin, Pol A. G. J., 4,495,412, Cl. 250-227.000.
Kurafuji, Takamasa, to Tokyo Shibaura Denki Kabushiki Kaisha. Tape player. 4,495,534, Cl. 360-74.100.
Kurafuzi, Takamasa; and Tokura, Kimihide, to Tokyo Shibaura Denki Kabushiki Kaisha. Tape player. 4,495,532, Cl. 360-71.000.
Kurahashi, Kazuo: *See*—
Takamura, Masayuki; and Kurahashi, Kazuo, 4,494,832, Cl. 351-41.000.
Takamura, Masayuki; and Kurahashi, Kazuo, 4,494,833, Cl. 351-41.000.
Kuraoka, Yasuo; and Sakao, Nobuo, to Hozan Corporation. Method of preserving organ and apparatus for preserving the same. 4,494,385, Cl. 62-306.000.
Kuraseko, Takao: *See*—
Hayashi, Gentaro; Yamamoto, Kenji; and Kuraseko, Takao, 4,494,390, Cl. 68-23.700.
Kurata, Masami: *See*—
Moriguchi, Fujio; and Kurata, Masami, 4,495,507, Cl. 346-76.0PH.
Kurata, Noboru; Miyazaki, Kunio; and Yamamoto, Kuniyuki, to Honda Giken Kogyo Kabushiki Kaisha. Power transmission casing apparatus in motorized two-wheeled vehicle. 4,494,623, Cl. 180-230.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Ohya, Masaki; Nishimoto, Yoshiharu; and Yamazaki, Kengo, 4,495,249, Cl. 428-516.000.
Shiiki, Zenya; Iizuka, Yo; and Kawakami, Yukichika, 4,495,332, Cl. 524-800.000.
Kurosu, Tomio; and Yoshikawa, Yukio, to Copal Company Limited. Electromagnetic shutter. 4,494,846, Cl. 354-400.000.
Kurz, Edmund: *See*—
Bauser, Herbert; Kurz, Edmund; Schindler, Bernd; Zerweck, Klaus; Bolch, Thomas; Haller, Andreas; and Mager, Theo, 4,495,232, Cl. 428-41.000.
Kurzinski, Cass R., to AMB Technology, Inc. Spray cooling system for continuous steel casting machine. 4,494,594, Cl. 164-443.000.
Kusakabe, Tomio: *See*—
Matsuura, Tamiaki; Aiba, Takeshi; Fukushima, Takashi; Nishimura, Masanori; Ohtsuki, Hiroshi; Yabuki, Fujio; and Kusakabe, Tomio, 4,494,298, Cl. 29-563.000.
Kushmaul, Richard T.; Lafevers, James O.; and Webb, James E., to Docutel Corporation. Dispenser picker apparatus. 4,494,743, Cl. 271-11.000.
KV33 Corporation: *See*—
Huffman, Ronald E., 4,494,934, Cl. 433-213.000.
Kwon, Tae M.; and Williams, Howard E., to Litton Systems, Inc. Cavity resonator for atomic frequency standard. 4,495,478, Cl. 333-230.000.
Kyowa Gas Chemical Industry Co., Ltd.: *See*—
Shimizu, Tohru; and Nakagawa, Junji, 4,495,084, Cl. 252-301.170.
Kyowa Hakko Kogyo Co., Ltd.: *See*—
Araki, Kazumi; and Kuga, Tetsuro, 4,495,283, Cl. 435-107.000.
Muto, Kenji; Takemoto, Yoshinori; Hatta, Takao; Hashimoto, Tamotsu; Yamada, Koji; and Watanabe, Minoru, 4,495,192, Cl. 514-318.000.
Kytta, Oswald O.; and Bach, Lloyd G., to Bendix Corporation, The. Fluid pressurizing device. 4,494,378, Cl. 60-547.100.
L.C.C.-C.I.C.E.-Compagnie Europeenne de Composants Electroniques: *See*—
Roy, Claude, 4,494,704, Cl. 242-56.100.
La Calhene: *See*—
Picard, Claude, 4,494,586, Cl. 141-384.000.
La Telemecanique Electrique: *See*—
Lafosse, Jean, 4,494,781, Cl. 292-60.000.
Thomas, Christian, 4,495,538, Cl. 361-115.000.
Laakso, Melvin T.: *See*—
Draper, Wilburn D.; and Laakso, Melvin T., 4,495,564, Cl. 364-200.000.
LaBate, Micheal D.; and LeBate, Michael D., II. Slag retaining device for use during tapping of converters and method. 4,494,734, Cl. 266-45.000.
Labofina, S.A.: *See*—
De Boodt, Marcel F. L. P.; and Verdonck, Omer F., 4,494,975, Cl. 71-25.000.
Lacour, Bernard; Maillet, Marc; de Witte, Olivier; and Vannier, Chantal, to Compagnie Generale D'Electricite. Gas laser in which the gas is excited by capacitor discharge. 4,495,631, Cl. 372-38.000.
Lacour, Gilles; and Esteveny, Serge, to Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement. Device for the introduction and/or the removal, in an airtight manner of solid bodies across one aperture at least of an enclosure treatment, more particularly under low pressure. 4,494,478, Cl. 118-50.000.
Laferty, John M.: *See*—
Sebenik, Roger F.; LaValle, Pablo P.; Laferty, John M.; and May, William A., 4,495,157, Cl. 423-54.000.
Lafevers, James O.: *See*—
Kushmaul, Richard T.; Lafevers, James O.; and Webb, James E., 4,494,743, Cl. 271-11.000.
Lafosse, Jean, to La Telemecanique Electrique. Self-locking lock assembly. 4,494,781, Cl. 292-60.000.
Laguilharre S.A.: *See*—
Ciboit, Jacques J., 4,495,212, Cl. 426-492.000.
Lahann, Richard W.: *See*—
Siebert, Robert M.; and Lahann, Richard W., 4,495,292, Cl. 436-25.000.
Laing, John R., to Xerox Corporation. Cleaning apparatus for a charge retentive surface. 4,494,863, Cl. 355-15.000.
L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude: *See*—
Guillaume, Paul; Vezin, Luc; and Dubi, Bernard, 4,494,923, Cl. 431-9.000.
Lakin, Kenneth M., to United States of America, Air Force. Eddy current test probe with circumferential Segments and method of testing material surrounding fastener holes. 4,495,466, Cl. 324-242.000.
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Gregory, Jack; and Landry, Christian C., 4,494,720, Cl. 248-371.000.
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Lemnios, Zachary J.; and Kim, He B., to Westinghouse Electric Corp. Ion implant mask and cap for gallium arsenide structures. 4,494,997, Cl. 148-1.500.
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Les Cables de Lyon: *See*—
Bourget, Jean-Claude, 4,494,307, Cl. 29-825.000.
Thevenon, Henri, 4,495,379, Cl. 174-88.00R.
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Williams, V. Harold; and Tomsu, David L., 4,494,806, Cl. 312-333.000.
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Powell, Justin C.; and Levine, Stephen A., 4,495,077, Cl. 252-51.50A.
Lew, Hyok S. Solar trap. 4,494,529, Cl. 126-439.000.
Lewis, Alvin W. Method of manufacturing and building preformed modular building wall sections. 4,494,353, Cl. 52-741.000.
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Gretz, Charles, 4,494,940, Cl. 446-61.000.
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Lisec, Peter. Apparatus for fitting spacer frames. 4,495,023, Cl. 156-562.000.
Liston, Thomas V., to Chevron Research Company. Method for improving fuel economy of internal combustion engines. 4,495,088, Cl. 252-32.70E.
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Ilitch, Michael, 4,494,689, Cl. 229-30.000.
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Anderson, Robert H.; Ross, William E.; and Maki, Theodore R., 4,495,492, Cl. 340-783.000.
Kwon, Tae M.; and Williams, Howard E., 4,495,478, Cl. 333-230.000.
Mark, John G.; Steele, James R.; and Hansen, Craig C., 4,495,475, Cl. 331-12.000.
Wincent, Karl T., 4,494,887, Cl. 400-568.000.
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Long, Alexander, to Electromotive, Inc. High resolution electronic ignition control system. 4,494,509, Cl. 123-416.000.
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Knechtli, Ronald C.; Loo, Robert Y.; and Kamath, G. Sanjiv, 4,494,302, Cl. 29-575.000.
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Archer, Donald H.; Gilbert, Michael A.; Loomis, Robert H.; and Maybell, Michael J., 4,495,504, Cl. 343-779.000.
Lopez, Osvaldo. Intraocular lens. 4,494,254, Cl. 3-13.000.
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Abrioux, Andre H.; Corcuff, Pierre; and Leveque, Jean L., 4,494,555, Cl. 128-755.000.
Bugaut, Andree ; and Estradier, Francoise, 4,494,953, Cl. 8-408.000.
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Lott, Judy A.: *See*—
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Lottick, Edward A. Stackable non-spillable drinking container. 4,494,668, Cl. 220-90.400.
Loustau, Desire, to Automatismes Et Techniques Advancees. Method and machine for cutting electric leads of specific length and for processing and equipping the two ends of these leads. 4,494,580, Cl. 140-1.000.

Loveless, Stanley M., to Humphrey Products Company. Four-way poppet valve assembly. 4,494,572, Cl. 137-596.170.
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Lowry, Alan: *See*—
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Lozano, Raymond L.: *See*—
Yan, Tsoung-yuan; and Lozano, Raymond L., 4,495,152, Cl. 422-159.000.
Lubin, David; Connor, Larry W.; and Glass, Samuel W., to Air Conditioning Corporation. Hands-free telephone-speaker interfacer. 4,495,383, Cl. 179-100.00L.
Lucas, Frank. Waste effluent treatment and solvent recovery system. 4,495,034, Cl. 202-181.000.
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Lukachev, Viktor P.: *See*—
Zabotin, Viktor G.; Kosenko, Alexandr I.; Kozlov, Sergei P.; Pervyshin, Alexandr N.; Lukachev, Viktor P.; Mikhailov, Vladimir A.; Buryakov, Valery M.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Levin, Viktor Y., deceased; and Levin, Sofia N., administratrix, 4,494,925, Cl. 431-158.000.
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Lusk, George E., to Joslyn Mfg. and Supply Co. Multi-wedge connector. 4,494,890, Cl. 403-267.000.
Lutz, Manfred, to Fichtel & Sachs AG. Drive device for a fastening mechanism of a motor vehicle door lock or the like. 4,494,782, Cl. 292-96.000.
Lyman, George F.; and Lowry, Alan, to Data Packaging Corporation. Tissue culture cluster dish. 4,495,289, Cl. 435-284.000.
M-O Valve Company Limited, The: *See*—
Cook, Kenneth G., 4,495,539, Cl. 361-124.000.
Ma, Thomas T., to Ford Motor Company. Ignition system. 4,494,508, Cl. 123-406.000.
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Knudson, Robert M.; and Ehrenfellner, Hubert, 4,494,919, Cl. 425-83.100.
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Hurwitz, Scott L., 4,494,520, Cl. 123-633.000.
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Maida, Vincent A.: *See*—
Ryan, William P.; Mason, Richard A.; Maida, Vincent A.; and Donovan, Timothy F., 4,495,380, Cl. 174-138.00D.
Maillet, Marc: *See*—
Lacour, Bernard; Maillet, Marc; de Witte, Olivier; and Vannier, Chantal, 4,495,631, Cl. 372-38.000.
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Malcolm, Donald A., to W. R. Grace & Co., Cryovac Div. Electrically conductive anti-static work station. 4,494,651, Cl. 206-328.000.
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Malof, A. Paul. Cutting tool insert assembly for shears. 4,494,428, Cl. 83-389.000.
Malyshev, Vitaly P.: *See*—
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Marconi, Gary G.: *See*—
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Marcus, Michael A., to Eastman Kodak Company. Acoustic transducers for acoustic position sensing apparatus. 4,494,841, Cl. 354-21.000.
Marets, Maurice, to Trailigaz, Compagnie Generale de L'Ozone. Process for supplying electric power to an ozonizer. 4,495,043, Cl. 204-176.000.
Mark, Harold W.: *See*—
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Mason, Richard A.: *See*—
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Mason, Ross S.; and Ellis, Peter J., to New Zealand Government Property Corporation. Remote sensing instrument. 4,495,416, Cl. 250-338.000.
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Masse, Joseph H. Apparatus for cutting glass. 4,494,444, Cl. 83-886.000.
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Del Valle, Jamie L., 4,495,131, Cl. 264-256.000.
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Masuno, Katsuyoshi, to Mitsubishi Denki Kabushiki Kaisha. Ignition system for internal combustion engine. 4,494,519, Cl. 123-615.000.
Mathes, H. Bernard, to United States of America, Navy. Axial acoustic wave attenuator for ramjets. 4,494,625, Cl. 181-213.000.
Matievich, Michael. Firearm capable of firing different-sized cartridges. 4,494,332, Cl. 42-77.000.
Matlock, Gordon E. Cross tie end plating machine. 4,494,685, Cl. 227-41.000.
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Matsumoto, Ken; and Ward, John S., to Eli Lilly and Company. Terphenyl derivatives and pharmaceutical uses thereof. 4,495,202, Cl. 514-721.000.
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Nakayama, Tadakazu; Tsuruoka, Ryozo; and Matsumoto, Masaki, 4,495,142, Cl. 376-251.000.
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Van Erden, Donald L.; Gould, Russell J.; and Matsunaga, Yukio A., 4,495,124, Cl. 264-130.000.
Matsunawa, Masahiko; and Abe, Yoshinori, to Konishiroku Photo Industry Co., Ltd. Recording apparatus and method of picture image. 4,495,522, Cl. 358-280.000.
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Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,495,508, Cl. 346-159.000.
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Hatada, Kenzo; and Kitahiro, Isamu, 4,494,688, Cl. 228-180.00A.
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Matsuura, Kazuo; Yamaoka, Noboru; Yanahashi, Shinichi; Usui, Katumi; and Miyoshi, Mituji, to Nippon Oil Company Ltd. Ethylene polymer blend compositions. 4,495,334, Cl. 525-240.000.
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Matthews, Leslie N. Boat hull. 4,494,477, Cl. 114-287.000.
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Maudal, Inge, to General Dynamics, Pomona Division. High acceleration support and positioning device. 4,494,460, Cl. 102-293.000.
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May, William A.: *See*—
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Mayr, Adolfo; Susa, Ermanno; and Gischetti, Ettore, to Montecatini Edison S.p.A. Components of catalysts for the polymerization of olefins. 4,495,338, Cl. 526-125.000.
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Hayama, Nobuhiro; Kinjyo, Massige; Okimoto, Haruo; and Matsuda, Ikuo, 4,494,506, Cl. 123-348.000.
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McCabe, Francis J. Insulated lay-in diffuser. 4,494,449, Cl. 98-40.050.
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McCarthy, James P.; and Byler, Richard E., to Ford Motor Company. Automatic transmission control for an automotive vehicle driveline having fail-safe logic. 4,494,423, Cl. 74-869.000.
McCullough, Timothy J. Meat trimming knife. 4,494,311, Cl. 30-276.000.
McCune, Robert F., to Bell Telephone Laboratories, Incorporated. Detector circuit for communication lines. 4,495,494, Cl. 340-825.060.
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McDonnell Douglas Corporation: *See*—
Vahlstrom, Richard; Keats, Dennis R.; and Lee, Peter T., 4,495,598, Cl. 364-900.000.
McDonough, Kevin C., to Texas Instruments Incorporated. Microcomputer having separate access to complete microcode words and partial microcode words. 4,495,563, Cl. 364-200.000.
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Black, Kenneth G.; and McElhenny, Stuart W., 4,495,449, Cl. 318-60.000.
McFarland, Lorrell C. Vapor driven power system. 4,494,379, Cl. 60-671.000.
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McHugh, Edward L.; McHugh, James C.; McHugh, Gerard J.; Gallagher, William; and Schmidt, David, 4,494,766, Cl. 280-444.000.
McHugh, Edward L.; McHugh, James C.; McHugh, Gerard J.; Gallagher, William; and Schmidt, David, to McHugh Brothers Crane Rentals, Inc. Trailer for carrying large vehicles. 4,494,766, Cl. 280-444.000.
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McKee, George B. Apparatus and methods for the aeration of cesspools. 4,494,616, Cl. 175-67.000.
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McKenzie, James A., to Motorola, Inc. V_{BE} Voltage reference circuit. 4,495,425, Cl. 307-297.000.
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Petersen, Carl C.; McKeown, Stephen A.; and Normann, Richard W., 4,494,818, Cl. 339-192.00R.
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Mosier, John E.; Surjaatmadja, Jim B.; and McLawhon, George B., 4,495,639, Cl. 381-51.000.
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Brown, David; Hargreaves, Rodney B.; McLoughlin, Bernard J.; and Mills, Stuart D., 4,495,185, Cl. 514-242.000.
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Dolak, Terence M.; and Martin, Tellis A., 4,495,194, Cl. 514-323.000.
Kreighbaum, William E.; and Comer, William T., 4,495,352, Cl. 544-284.000.
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Hutson, Floyd E., 4,494,534, Cl. 128-80.00F.
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Little, Charles A., III; and Patterson, Raymond B., III, 4,494,551, Cl. 128-696.000.
Medovar, Boris I.; Andreev, Vladimir P.; Kozik, Vladimir V.; Shevchenko, Nikolai T.; Spisarenko, Dmitry U.; Malevanny, Vladimir P.; Karpov, Vladimir F.; Chernykh, Viktor V.; Chepurnoi, Anatoly D.; Matsegora, Evgeny A.; and Shuruev, Lev A., to Institut Elektrosvarki Imeni E.O.Patona. Method for electroslag welding with consumable plate electrodes. 4,495,395, Cl. 219-73.100.
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Martin, George L.; and Melick, Howard G., 4,495,480, Cl. 335-199.000.
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Mendler, Oliver J., to Westinghouse Electric Corp. Sandwich nipple plate for a steam generator dryer. 4,494,486, Cl. 122-491.000.
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Alexander, Jose, 4,495,180, Cl. 514-46.000.
Doherty, James B.; Zimmerman, Morris; and Ashe, Bonnie M., 4,495,197, Cl. 514-210.000.
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Bernhard, Horst; and Esselborn, Reiner, 4,494,993, Cl. 106-291.000.
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Moller, Karl-Heinz, 4,495,000, Cl. 148-9.00R.
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Meyn, Pieter. Apparatus for packing fowls in plastic bags. 4,494,364, Cl. 53-570.000.
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Michaud, Jean-Pierre: *See—*
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Frias, Ronald J.; Jagielski, David; and Schetter, Nicholas R., 4,494,859, Cl. 355-5.000.
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Cross, Laurence A., Jr., 4,495,066, Cl. 209-608.000.
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Svoboda, Edward J., 4,494,398, Cl. 72-393.000.
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Miles Laboratories, Inc.: *See—*
Buckler, Robert T.; and Ward, Frederick E., 4,495,281, Cl. 435-7.000.
Milkovic, Miran, to General Electric Company. Electronic watt and/or watthour measuring circuit having active load terminated current sensor for sensing current and providing automatic zero-offset of current sensor DC offset error potentials. 4,495,463, Cl. 324-142.000.
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Grasselli, Robert K.; Suresh, Dev D.; and Miller, Arthur F., 4,495,109, Cl. 260-465.300.
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Lingren, Clinton L.; and Miller, James F., 4,495,144, Cl. 376-255.000.
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Bautista, John; and Miller, Lawrence H., 4,494,430, Cl. 83-468.000.
Miller, Richard F., to Atlantic Richfield Company. Preparation of higher tin carboxylates in improved yields using an inert gas. 4,495,105, Cl. 260-414.000.
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Mima, Hiroshi, to Murata Kikai Kabushiki Kaisha. Method of preventing irregular untwisting of yarn ends in splicing spun yarns. 4,494,368, Cl. 57-22.000.
Minami, Kazuo, to Tokyo Institute of Technology. Cold-cathode magnetron injection gun. 4,495,442, Cl. 315-3.000.
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Namba, Yasuhiro, 4,494,849, Cl. 354-406.000.
Tanaka, Atsuyuki, 4,494,862, Cl. 355-14.00C.
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Ryan, William P.; Mason, Richard A.; Maida, Vincent A.; and Donovan, Timothy F., 4,495,380, Cl. 174-138.00D.
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Imazeki, Shuji; Mukoh, Akio; Morishita, Hirosada; Imahori, Seiichi; Kaneko, Masaharu; and Ono, Hitoshi, 4,495,083, Cl. 252-299.100.
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Mitsui Toatsu Chemicals, Incorporated: *See—*
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Miyakawa, Nobuhiro, to Mita Industrial Co., Ltd. Electrophotographic process using transfer-type one-component magnetic developer. 4,495,268, Cl. 430-122.000.

Miyake, Yuzuru; Sugioka, Takami; Murakami, Shoichi; and Ibuki, Hideaki, to Teijin Seiki Co., Ltd. Yarn winding apparatus. 4,494,702, Cl. 242-18.00R.
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Miyano, Takayoshi: *See*—
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Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, to Olympus Optical Co., Ltd. Collator. 4,494,748, Cl. 271-288.000.
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Miyoshi, Hiroshi; Mori, Hirohumi; and Tanoue, Yoriko, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Photo-degradable styrene resin compositions. 4,495,315, Cl. 523-125.000.
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Calvert, Robert B.; and Rollmann, Louis D., 4,495,166, Cl. 423-329.000.
Chibnik, Sheldon, 4,495,076, Cl. 252-38.000.
Goldstein, Theodore P., 4,495,041, Cl. 204-158.00R.
Hohensang, Lutz, 4,495,417, Cl. 250-343.000.
Kuehl, Guenter H., 4,495,303, Cl. 502-62.000.
Venkat, Chaya; and Walsh, Dennis E., 4,494,961, Cl. 44-57.000.
Wagner, John R., Jr.; and Hein, Carl C., 4,495,027, Cl. 156-244.110.
Yan, Tsoung-yuan; and Lozano, Raymond L., 4,495,152, Cl. 422-159.000.
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Ohnishi, Haruo; and Mitsuhashi, Masakazu, 4,495,282, Cl. 435-68.000.
Moden, James R., to United States of America. Navy. Dual electrochemical system. 4,495,256, Cl. 429-17.000.
Moiny, Fernand: *See*—
Barathon, Jean-Claude; Moiny, Fernand; Soyez, Christian; and Soyez, Gerard, 4,494,361, Cl. 53-553.000.
Moisar, Erik: *See*—
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Molin, Soeren: *See*—
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Moller, Karl-Heinz, to Messer Griesheim GmbH. Device for cutting a strip cast in a continuous casting machine. 4,495,000, Cl. 148-9.00R.
Molnar, Kalman, to National Semiconductor Corporation. Circuit arrangement for controlled interconnection of signal sources and signal destinations. 4,495,497, Cl. 340-825.630.
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Weaver, Robert L.; Van Gheluwe, Joris E. A.; and McKee, John A., 4,495,204, Cl. 426-16.000.
Mongan, Edwin L., Jr.: *See*—
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Monopoli, Eileen F., executrix: *See*—
Strunk, Richard D.; Kasten, Robert E.; and Monopoli, Richard V., deceased, 4,495,577, Cl. 364-424.000.
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Franz, John E., 4,495,363, Cl. 560-155.000.
Montecatini Edison S.p.A.: *See*—
Mayr, Adolfo; Susa, Ermanno; and Giachetti, Ettore, 4,495,338, Cl. 526-125.000.
Monteyne, Guido; Calmes, Marc; and Schmeler, Robert, to Paul Wurth S.A. Process and apparatus for granulation of slag. 4,494,971, Cl. 65-19.000.
Mooiweer, Gerben D., to Douwe Egberts Koninklijke Tabakfabriek Koffiebranderijen Theehandel N.V. Process for the decaffeination of green coffee beans. 4,495,211, Cl. 426-422.000.
Moore Business Forms, Inc.: *See*—
Chao, Hung-Ya, 4,495,509, Cl. 346-215.000.
Moore, Dan T., III; Fischer, Michael F.; and Herceg, Laurie S., to Dan T. Moore Co., The. Automobile body panel hole closure. 4,494,671, Cl. 220-256.000.
Moore, Leslie G.; and Lee, Te-Hsung, to Eastman Kodak Company. Film video player having flash illuminated area image sensor and single frame CCD image sensor for use therewith. 4,495,516, Cl. 358-54.000.
Moote, Truman P.; and Reed, Robert L., to Standard Oil Company, The. Removal and recovery of magnesium, strontium and barium from brines. 4,495,160, Cl. 423-158.000.
Mora, Camillo C., to Camillo Corvi S.p.A. Organometal complexes of N-cyclohexyl-piperazino acetamides or propionamides, preparation and use thereof as antiulcer-antisecretive-buffering drugs. 4,495,186, Cl. 514-255.000.
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Mori, Kei. Sunlight direction sensor. 4,495,408, Cl. 250-203.00R.
Moriguchi, Fujio; and Kurata, Masami, to Fuji Xerox Co., Ltd. Multicolor transfer heat-sensitive recording apparatus. 4,495,507, Cl. 346-76.0PH.
Moriguchi, Masakazu: *See*—
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Morii, Akira: *See*—
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Morikawa, Kouji; and Suzuki, Hitoshi, to Fuji Jukogyo Kabushiki Kaisha. Intake system for an automotive engine. 4,494,493, Cl. 123-52.00M.
Morimoto, Kazuo: *See*—
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Morita, Natsuo. Reversible caster device having brake mechanism. 4,494,272, Cl. 16-35.00R.
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Morman, William H. Slow wave antenna. 4,495,503, Cl. 343-746.000.
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Morrow, Winston G., to Spinal Dynamics, Inc. Head and neck cushion. 4,494,261, Cl. 5-436.000.
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Moser, Kurt, to Develop Dr. Eisbein GmbH & Co. Copying machine with a cassette guide. 4,494,746, Cl. 271-164.000.
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Myers, John A., to North Carolina Central University. 2H-isoindolediones, their synthesis and use as radiosensitizers. 4,494,547, Cl. 128-659.000.

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Nagata, Yoshihiro, to Kabushiki Kaisha Komatsu Seisakusho. Steering control system for crawler tractor type vehicles. 4,494,621, Cl. 180-6.200.

Nagatomo, Hideaki; Kawahira, Hiroto; Nishizawa, Toshizo; and Yasuda, Mitsuo, to Mitsubishi Denki Kabushiki Kaisha. Air-conditioner for an automobile. 4,494,383, Cl. 62-196.200.

Nagaura, Yoshiaki. Lens-shaped article or the like and a method and apparatus for the manufacture of same. 4,494,338, Cl. 51-33.00W.

Nagel, Gerald D. Method of conditioning hair. 4,494,557, Cl. 132-7.000.

Nagoh, Chiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Electronic copying apparatus. 4,495,521, Cl. 358-256.000.

Nagy, Peter: *See*—
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Nakahara, Chizuko; Tanaka, Shigenori; Tamura, Hiroshi; and Matsumoto, Akiyoshi, to Seikagaku Kogyo Co., Ltd. Method for determining bacterial endotoxin and kit therefor. 4,495,294, Cl. 436-502.000.

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Nilsson, Einar W. Straightening machines and methods. 4,494,394, Cl. 72-98.000.
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Kunishima, Mamoru; Yabuuchi, Masahiko; Masuda, Minoru; Imazumi, Kikuo; and Hamano, Hiroaki, 4,495,348, Cl. 544-021.000.
Nippon Kogaku K.K.: *See*—
Maida, Osamu; Hasegawa, Hiroshi; Hagyuda, Nobuyoshi; and Iida, Yoshikazu, 4,494,851, Cl. 354-421.000.
Yaguchi, Kenichi; Ichikawa, Masaru; and Kinoshita, Takuji, 4,494,831, Cl. 351-41.000.
Nippon Oil Company Ltd.: *See*—
Matsuura, Kazuo; Yamaoka, Noboru; Yanahashi, Shinichi; Usui, Katumi; and Miyoshi, Mituji, 4,495,334, Cl. 525-240.000.
Nippon Sheet Glass Co., Ltd.: *See*—
Noguchi, Yukio; and Yamagishi, Takashi, 4,495,299, Cl. 501-72.000.
Yamagishi, Takasi; and Noguchi, Yukio, 4,495,298, Cl. 501-55.000.
Nippon Soken, Inc.: *See*—
Fukami, Akira; Okamoto, Kunio; and Noguchi, Hiroki, 4,494,597, Cl. 165-41.000.
Kuno, Akira; Matsumoto, Muneaki; and Numata, Koji, 4,495,467, Cl. 324-244.000.
Nippon Steel Corporation: *See*—
Fujioka, Masato; Kobayashi, Katsuyoshi; Yuta, Koichi; and Nishihara, Nobuyoshi, 4,494,929, Cl. 432-59.000.
Ueda, Masanori; Takahashi, Ryousuke; and Takeuchi, Hidemaro, 4,494,998, Cl. 148-2.000.
Nippondenso Co., Ltd.: *See*—
Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Suzuki, Yutaka; and Hasegawa, Takashi, 4,494,511, Cl. 123-463.000.
Kawamura, Setuo, 4,494,559, Cl. 137-116.500.
Matuoka, Hirosi, 4,494,421, Cl. 74-600.000.
Takei, Toshihiro; Goshima, Takahiro; Hattori, Yoshiyuki; and Matsui, Kazuma, 4,494,943, Cl. 474-28.000.
Nishida, Katsumi, to Beltek Corporation. Circuit device for selecting station and tape in tape player with built-in radio. 4,495,607, Cl. 369-6.000.
Nishihara, Nobuyoshi: *See*—
Fujioka, Masato; Kobayashi, Katsuyoshi; Yuta, Koichi; and Nishihara, Nobuyoshi, 4,494,929, Cl. 432-59.000.
Nishii, Michiharu: *See*—
Furuta, Yohichi; Tsubouchi, Kaoru; and Nishii, Michiharu, 4,494,445, Cl. 91-369.00A.
Nishikawa, Meisei; Nakamura, Yukio; and Kojima, Tadashi, to Tokyo Shibaura Denki Kabushiki Kaisha. PLL Control circuit for recovery of data from audio disk. 4,495,474, Cl. 331-11.000.
Nishimoto, Hiroshi: *See*—
Minami, Takatoshi; and Nishimoto, Hiroshi, 4,495,410, Cl. 250-214.0AG.
Nishimoto, Yoshiharu: *See*—
Ohya, Masaki; Nishimoto, Yoshiharu; and Yamazaki, Kengo, 4,495,249, Cl. 428-516.000.
Nishimura, Katsuji, to Sharp Kabushiki Kaisha. Cash accounting system. 4,495,627, Cl. 377-6.000.
Nishimura, Masanori: *See*—
Matsuura, Tamiaki; Aiba, Takeshi; Fukushima, Takashi; Nishimura, Masanori; Ohtsuki, Hiroshi; Yabuki, Fujio; and Kusakabe, Tomio, 4,494,298, Cl. 29-563.000.
Nishizawa, Hiroshi: *See*—
Watanabe, Satoshi; Wakasawa, Toru; Hirano, Hirofumi; and Nishizawa, Hiroshi, 4,494,885, Cl. 400-145.200.
Nishizawa, Toshizo: *See*—
Nagatomo, Hideaki; Kawahira, Hiroto; Nishizawa, Toshizo; and Yasuda, Mitsuo, 4,494,383, Cl. 62-196.200.
Nissan Motor Company, Limited: *See*—
Endo, Hiroshi; Sone, Masazumi; Imai, Iwao; and Kasuya, Hideo, 4,495,421, Cl. 250-551.000.
Fukui, Osamu, 4,494,773, Cl. 280-775.000.
Hirano, Hiroyuki; Yamamuro, Sigeaki; Morimoto, Yoshiro; and Tanaka, Yoshikazu, 4,494,942, Cl. 474-28.000
Kanai, Shunichiro; and Miyauchi, Teruo, 4,494,722, Cl. 248-621.000.
Kanamori, Hiroshi, 4,494,326, Cl. 40-593.000.
Kitahara, Tsuyoshi; Sone, Kohki; and Uchida, Masaaki, 4,494,374, Cl. 60-276.000.
Midorikawa, Minoru, 4,495,153, Cl. 422-171.000.
Naramura, Masaru, 4,494,505, Cl. 123-325.000.
Omura, Yutaka, 4,494,790, Cl. 296-154.000.
Yasuhara, Seishi, 4,494,507, Cl. 123-357.000.
Nisshin Kogyo Kabushiki Kaisha: *See*—
Idesawa, Isao, 4,494,633, Cl. 188-329.000.
Niswonger, John O. Portable radial arm saw. 4,494,431, Cl. 83-471.300.
Nitto Electric Industrial Co., Ltd.: *See*—
Kakuhashi, Takeshi; and Tahara, Hiroshi, 4,495,524, Cl. 338-314.000.
Niwa, Hirosuke: *See*—
Inoue, Yoichi; Matsumoto, Toshio; Niwa, Hirosuke; Suzuki, Kenichi; and Hoshide, Yasuo, 4,495,356, Cl. 546-268.000.
Niwa, Shuichi; Imamura, Juichi; Mizukami, Fujio; Shimizu, Kazuo; and Orito, Yoshio, to Director-General of the Agency of Industrial Science and Technology. Method for partial nuclear hydrogenation of aromatic hydrocarbon compounds and a hydrogenation catalyst therefor. 4,495,373, Cl. 585-269.000.
Niwa, Toshio; Himeno, Kiyoshi; and Maeda, Shuichi, to Research Association of Synethtic Dyestuffs. Dye compositions for polyester fibers. 4,494,957, Cl. 8-639.000.
Nixon, John. Engine efficiency unit. 4,494,487, Cl. 123-1.00A.
Noble, Scott W.: *See*—
Burke, Timothy M.; Smith, Paul F.; Noble, Scott W.; and Schorman, Eric R., 4,495,647, Cl. 455-38.000.
Noboru, Nasu; and Tatsuo, Inada, to Kawakami Co., Ltd. Spreading equipment having selvage engaging independently rotated needle wheels. 4,494,740, Cl. 270-31.000.
Noguchi, Hiroki: *See*—
Fukami, Akira; Okamoto, Kunio; and Noguchi, Hiroki, 4,494,597, Cl. 165-41.000.
Noguchi, Yukio; and Yamagishi, Takashi, to Nippon Sheet Glass Co., Ltd. Thallium-containing optical glass composition. 4,495,299, Cl. 501-72.000.
Noguchi, Yukio: *See*—
Yamagishi, Takasi; and Noguchi, Yukio, 4,495,298, Cl. 501-55.000.

Nomori, Hiroyuki: *See*—
Matsuzaki, Masatoshi; Yamazaki, Toshinori; Myokan, Isao; Shima, Tetsuo; and Nomori, Hiroyuki, 4,495,262, Cl. 430-58.000.
Nordstrom, Kurt: *See*—
Uhlin, Bernt E.; Nordstrom, Kurt; and Molin, Soeren, 4,495,287, Cl. 435-231.000.
Norel, Guy: *See*—
Desbrandes, Robert; and Norel, Guy, 4,495,605, Cl. 367-33.000.
Norman, Anthony W.; and Mayer, Eberhard, to University of California, The Regents of the. 1,25-Dihydroxy-24-oxo-vitamin D_3 and 1,23,25-trihydroxy-24-oxo-vitamin D_3 . 4,495,181, Cl. 514-167.000.
Normann, Richard W.: *See*—
Petersen, Carl C.; McKeown, Stephen A.; and Normann, Richard W., 4,494,818, Cl. 339-192.00R.
North American Philips Corporation: *See*—
Rao, N. Vasanth; and Shaulov, Avner, 4,495,441, Cl. 313-388.000.
North Carolina Central University: *See*—
Myers, John A., 4,494,547, Cl. 128-659.000.
Northern Telecom Limited: *See*—
Dufresne, Gilles L.; Devlin, George V.; Campbell, Alexander F.; and Campbell, David, 4,495,545, Cl. 361-384.000.
Notelteirs, Victor R., to U.S. Philips Corporation. Electric lamp having a lamp cap which is connected without cement. 4,495,436, Cl. 313-318.000.
Novak, Pavel: *See*—
Koschke, Peter; and Novak, Pavel, 4,494,411, Cl. 73-724.000.
Novatome: *See*—
Thevenin, Michel; and Jullien, Georges, 4,495,138, Cl. 376-203.000.
Nozaki, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Auxiliary radially shifting mechanism for vanes in a pump of the vane type. 4,494,918, Cl. 418-260.000.
Numata, Koji: *See*—
Kuno, Akira; Matsumoto, Muneaki; and Numata, Koji, 4,495,467, Cl. 324-244.000.
Numata, Tatsuo, to Pioneer Electronic Corporation. Differential amplifier output leading circuit, and intermediate frequency amplifier using same. 4,495,469, Cl. 330-2.000.
Nuttall, Herbert E., Jr.: *See*—
Amirijafari, Bahram; and Nuttall, Herbert E., Jr., 4,495,057, Cl. 208-11.00R.
Nysted, Leonard N., to G. D. Searle & Co. Aminoalkyl steroids. 4,495,102, Cl. 260-239.500.
O M Industrial Co., Ltd.: *See*—
Hiraishi, Hideki, 4,494,673, Cl. 220-288.000.
Obara, Masaaki; Tajima, Yoshio; and Suzuki, Yukiji, to Yokohama Rubber Co. Ltd., The. Pressure-sensitive electrically conductive composite sheet. 4,495,236, Cl. 428-172.000.
O'Boyle, Matthew, to Windsor Medical, Inc. Method of making a member defining a lumen for a peristaltic pump and member produced by said method. 4,494,285, Cl. 29-156.40R.
OBrien, Garrett G.: *See*—
Benson, Michael R.; Hill, William D.; OBrien, Garrett G.; and Hollenbeck, Dennis W., 4,495,655, Cl. 455-603.000.
O'Brien, James W.; and Spevak, Frank, to Imperial Clevite Inc. Wear-resistant metallic article. 4,495,252, Cl. 428-555.000.
Oda, Takashi; and Nagata, Koichi, to Nippon Electric Co., Ltd. Limiter amplifier. 4,495,429, Cl. 307-491.000.
O'Fee, Robert P.: *See*—
DeBergalis, Michael; and O'Fee, Robert P., 4,495,325, Cl. 524-507.000.
Officine Savio S.p.A.: *See*—
Badiali, Roberto, 4,494,367, Cl. 57-22.000.
Ogaki, Kohei: *See*—
Kajikawa, Yoshimitsu; Souma, Keinosuke; Ogaki, Kohei; Uzuka, Tadashi; and Minato, Yoshihiko, 4,494,589, Cl. 144-213.000.
Kajikawa, Yoshimitsu; Souma, Keinosuke; Ogaki, Kohei; Uzuka, Tadashi; and Minato, Yoshihiko, 4,494,590, Cl. 144-213.000.
Ogasawara, Yoshinari, to CKD Corporation. Condensate discharging apparatus. 4,494,561, Cl. 137-204.000.
Ogawa, Masahiko, to Canon Kabushiki Kaisha. Distance measuring device. 4,494,848, Cl. 354-403.000.
Oger, Jacques: *See*—
Hauer, Jean-Claude; and Oger, Jacques, 4,494,891, Cl. 404-4.000.
Ogg, Richard. Plywood bending. 4,495,019, Cl. 156-222.000.
Ogino, Shuji: *See*—
Masumoto, Hisayuki; and Ogino, Shuji, 4,494,828, Cl. 350-427.000.
Ogino, Teiji, to Enuma Chain Manufacturing Co., Ltd. Roller chain link construction and method of manufacture. 4,494,945, Cl. 474-231.000.
O'Grady, Thomas R.: *See*—
Daley, Eugene E., Jr.; and O'Grady, Thomas R., 4,494,813, Cl. 339-99.00R.
Ohashi, Mikio: *See*—
Watanabe, Hiroyuki; and Ohashi, Mikio, 4,494,337, Cl. 49-374.000.
Ohga, Kunihiko: *See*—
Yokoyama, Shigeki; and Ohga, Kunihiko, 4,495,275, Cl. 430-527.000.
Ohhashi, Akinami, to Tokyo Shibaura Denki Kabushiki Kaisha. Computed tomography device. 4,495,645, Cl. 382-6.000.
Ohisa, Takayuki: *See*—
Kobayashi, Takashi; Inagaki, Takeshi; Takahashi, Hiroshi; and Ohisa, Takayuki, 4,494,843, Cl. 354-214.000.
Ohlsson, Stig L.; and Berthou, Jan-Olov K., to Perstorp AB. Porous ceramic abrasive wheel or ceramic filter. 4,494,964, Cl. 51-296.000.

Ohmachi, Kazuhiko: *See*—
Kitajima, Hiroyuki; and Ohmachi, Kazuhiko, 4,495,570, Cl. 364-200.000.
Ohmori, Taiji; Sato, Makoto; and Tsuchiya, Yoshikazu, to Honda Giken Kogyo Kabushiki Kaisha. Antilock brake system with separate front- and rear-wheel safety means. 4,494,801, Cl. 303-92.000.
Ohnishi, Haruo; and Mitsuhashi, Masakazu, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo; and Mochida Seiyaku Kabushiki Kaisha. Process for producing target cell lysis factor and uses therewith. 4,495,282, Cl. 435-68.000.
Ohno, Junichi; and Ohta, Takao, to Tokyo Shibaura Denki Kabushiki Kaisha. Implanting yttrium and oxygen ions at semiconductor/insulator interface. 4,494,996, Cl. 148-1.500.
Ohno, Katsutoshi: *See*—
Hashimoto, Shunichi; and Ohno, Katsutoshi, 4,495,085, Cl. 252-301.40F.
Ohno, Yoshie: *See*—
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Ohshima, Ken: *See*—
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Ohtsuki, Hiroshi: *See*—
Matsuura, Tamiaki; Aiba, Takeshi; Fukushima, Takashi; Nishimura, Masanori; Ohtsuki, Hiroshi; Yabuki, Fujio; and Kusakabe, Tomio, 4,494,298, Cl. 29-563.000.
Ohya, Masaki; Nishimoto, Yoshiharu; and Yamazaki, Kengo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Heat shrinkable multi-layered laminate film. 4,495,249, Cl. 428-516.000.
Ohyama, Kunio; Nakagawa, Nobuaki; and Watanabe, Susumu, to Toyo Jozo Kabushiki Kaisha. Element for immunoassay. 4,495,151, Cl. 422-102.000.
Ohyama, Yoshishige: *See*—
Oosuga, Minoru; and Ohyama, Yoshishige, 4,494,405, Cl. 73-118.000.
Oil States Industries, Inc.: *See*—
Britton, Frederick G.; and Clark, Thomas A., 4,494,738, Cl. 267-140.000.
Okamoto, Kunio: *See*—
Fukami, Akira; Okamoto, Kunio; and Noguchi, Hiroki, 4,494,597, Cl. 165-41.000.
Okamoto, Seiji: *See*—
Nakamura, Takeshi; Okamoto, Seiji; and Hirayama, Kazuyoshi, 4,494,824, Cl. 350-334.000.
O'Keeffe, Lonnie. Storage cabinet with parts sorter. 4,494,804, Cl. 312-211.000.
Oki Electric Industry Co., Ltd.: *See*—
Yoshioka, Kentaro, 4,494,304, Cl. 29-578.000.
Okimoto, Haruo: *See*—
Hayama, Nobuhiro; Kinjyo, Masasige; Okimoto, Haruo; and Matsuda, Ikuo, 4,494,506, Cl. 123-348.000.
Okuda, Yosiro; and Harada, Tosiharu, to Toda Kogyo Corp. Process for producing acicular magnetite or acicular maghemite. 4,495,164, Cl. 423-266.000.
Okumura, Takeo: *See*—
Matsunaga, Kinjiro; Okumura, Takeo; and Tsushima, Rikio, 4,495,173, Cl. 424-70.000.
Okunaka, Masaaki: *See*—
Azuma, Kazufumi; Nakatani, Mitsuo; Nate, Kazuo; Okunaka, Masaaki; and Yokono, Hitoshi, 4,495,218, Cl. 427-53.100.
Okunev, Rostan A.: *See*—
Bondar, Ljudmila S.; Okunev, Rostan A.; Polezhaev, Lev V.; Kolchin, Sergei P.; Cherkasova, Ljudmila V.; and Nikolaeva, Lilia F., 4,495,201, Cl. 514-560.000.
Okutani, Tetsuya: *See*—
Imada, Isuke; Okutani, Tetsuya; and Watanabe, Masazumi, 4,495,104, Cl. 260-396.00R.
Oldenkamp, Jerry. Integral housing member for removing magnetic articles from a flow of loosely packed material and method. 4,494,657, Cl. 209-636.000.
Olds, Peter J.; and Blakeway, Richard S. Body support. 4,494,260, Cl. 5-446.000.
Olin Corporation: *See*—
Pryor, Michael J.; Winter, Joseph; and Dantzig, Jonathan A., 4,494,461, Cl. 102-464.000.
Oliver, Larry R.: *See*—
Miranti, Joseph P., Jr.; Foley, Mark P.; Hollaway, Gerald C.; Oliver, Larry R.; Standley, Paul M.; and Lewis, James A., 4,494,947, Cl. 474-251.000.
Olson, Rohn L.: *See*—
Kumar, Viraraghavan S.; and Olson, Rohn L., 4,494,726, Cl. 251-29.000.
Olsson, Jan. Enclosure for animals. 4,494,733, Cl. 256-10.000.
Olympus Optical Co., Ltd.: *See*—
Kodama, Hiroshi; Sakamoto, Masaharu; Ohshima, Ken; Yoshikawa, Shoji; Yamamiya, Kunio; and Kato, Kiichi, 4,495,407, Cl. 250-201.000.
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,494,748, Cl. 271-288.000.
Namba, Akihiro; and Sakai, Mitsugu, 4,494,549, Cl. 128-660.000.
Yanagida, Tuneo, 4,495,530, Cl. 360-59.000.

Omori, Shigenori: *See*—
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Omron Tateisi Electronics Co.: *See*—
Kitao, Zenichi; and Koizumi, Haruyuki, 4,495,391, Cl. 200-153.00J.
Omura, Yutaka, to Nissan Motor Company, Limited. Rain gutter arrangement for automotive vehicle. 4,494,790, Cl. 296-154.000.
Onishi, Yasunobu: *See*—
Hayase, Shuzi; Onishi, Yasunobu; and Suzuki, Shuichi, 4,495,042, Cl. 204-159.140.
Ono, Hitoshi: *See*—
Imazeki, Shuji; Mukoh, Akio; Morishita, Hirosada; Imahori, Seiichi; Kaneko, Masaharu; and Ono, Hitoshi, 4,495,083, Cl. 252-299.100.
Ono, Kimizo: *See*—
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Oosuga, Minoru; and Ohyama, Yoshishige, to Hitachi, Ltd. Air-flow meter for internal combustion engine. 4,494,405, Cl. 73-118.000.
Opprecht, Jurg: *See*—
Opprecht, Paul; and Opprecht, Jurg, 4,495,397, Cl. 219-93.000.
Opprecht, Paul; and Opprecht, Jurg, to Opprecht, Paul. Projection for resistance welding of soft metals. 4,495,397, Cl. 219-93.000.
Opti-Copy, Inc.: *See*—
Wally, Joseph H., Jr., 4,494,867, Cl. 355-73.000.
Orban Associates, Inc.: *See*—
Orban, Robert A., 4,495,643, Cl. 381-94.000.
Orban, Robert A., to Orban Associates, Inc. Audio peak limiter using Hilbert transforms. 4,495,643, Cl. 381-94.000.
Orcutt, John W.: *See*—
Hightower, Angus W.; Smith, Reginald W.; and Orcutt, John W., 4,495,376, Cl. 174-52.0FP.
Orito, Yoshio: *See*—
Niwa, Shuichi; Imamura, Juichi; Mizukami, Fujio; Shimizu, Kazuo; and Orito, Yoshio, 4,495,373, Cl. 585-269.000.
Orlando, John V.: *See*—
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Orlowski, Jan A.; Butler, David V.; and Kidd, Patrick D., to Scientific Pharmaceuticals, Inc. Nail coating. 4,495,172, Cl. 424-61.000.
Orlowski, Ronald C.; and Seyler, Jay K., to Armour Pharmaceutical Company. Des-serine^2-glycine^8 calcitonin. 4,495,097, Cl. 260-112.50T.
Ormanns, Siegfried; and Neumann, Helmut, to Ruhrkohle Aktiengesellschaft. Staff-location and signalling system for use in mines. 4,495,495, Cl. 340-825.450.
Orr, William L.: *See*—
Camden, Thomas M., Jr.; and Orr, William L., 4,495,136, Cl. 376-172.000.
Osterhoff, Heinz: *See*—
Rigler, Josef-Karl; Leithauser, Horst; and Osterhoff, Heinz, 4,495,224, Cl. 427-222.000.
Otani, Junji: *See*—
Yagi, Shizuo; Otani, Junji; Fujii, Isao; and Kogure, Hiroshi, 4,494,504, Cl. 123-308.000.
Otis Engineering Corporation: *See*—
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Otsubo, Akira, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Nuclear reactor. 4,495,137, Cl. 376-171.000.
Otsuka, Nobuyuki: *See*—
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Otsuki, Hiroyuki: *See*—
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Ouchi, Hidenaga: *See*—
Itagaki, Takaharu; Ouchi, Hidenaga; and Shimura, Akihiro, 4,495,250, Cl. 428-520.000.
Ouchi, Teruo; and Shibuya, Hiromichi, to Kabushiki Kaisha Medos Kenkyusho. Method for manufacturing a flexible tube for an endoscope. 4,495,134, Cl. 264-516.000.
Owen, Darrel M.: *See*—
Carlson, Albert A.; Owen, Darrel M.; and Van Winkle, George W., 4,495,549, Cl. 362-62.000.
Owens-Illinois, Inc.: *See*—
Perry, Jack I., 4,494,973, Cl. 65-260.000.
Oy Fiskars AB: *See*—
Carter, Larry D., 4,494,340, Cl. 51-214.000.
Oyama, Terrell A., to Apple Computer, Inc. Heat dissipating lead connector for semiconductor packages. 4,494,814, Cl. 339-112.00R.
Ozaki, Satoru, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Tagging gas releasing element. 4,495,141, Cl. 376-251.000.
Ozawa, Takashi, to Fuji Xerox Co., Ltd. Signal processing unit for original reading device. 4,495,523, Cl. 358-293.000.
Ozawa, Toshiaki: *See*—
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Ozeki, Fumitaka: *See*—
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Palermo, Anthony, Jr., to Picker Corporation. High voltage connector assembly with internal oil expansion chamber. 4,494,811, Cl. 339-94.00R.
Palitex Project-Company GmbH: *See*—
Inger, Siegfried, 4,494,370, Cl. 57-81.000.
Pall Corporation: *See*—
Adiletta, Joseph G., 4,495,238, Cl. 428-215.000.
Pallos, Ferenc M., to Stauffer Chemical Co. N-Acylsulfonamide herbicidal antidotes. 4,495,365, Cl. 564-91.000.
Pamiello, Gani, to AT&T Bell Laboratories. Electrically isolating two piece mounting washer arrangement. 4,495,515, Cl. 357-81.000.
Panico, C. Richard, to Xenon Corporation. Photomagnetic catalysis process. 4,495,040, Cl. 204-155.000.
Pannocchia, Mario, to Minnesota Mining and Manufacturing Company. Color photographic elements with improved mechanical properties. 4,495,273, Cl. 430-510.000.
Parichkova, Rina G.: *See*—
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Parisheva, Snejana G. Preparation for treating gum disease. 4,495,171, Cl. 424-58.000.
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Friends, Gary D.; Melpolder, John B.; Kunzler, Jay F.; and Park, Joon S., 4,495,361, Cl. 556-419.000.
Parks, John R.; Carr, David R.; and Fox, Peter F., to Quest Automation Public Limited Company. Apparatus for signature verification. 4,495,644, Cl. 382-3.000.
Parma Corporation: *See*—
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Patterson, Fred R. Pyramidal core structure. 4,495,237, Cl. 428-178.000.
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Pattison, Thomas W.: *See*—
Klaubert, Dieter H.; Bell, Stanley C.; Pattison, Thomas W.; and Rees, Richard W., 4,495,101, Cl. 260-239.30T.
Patukonis, Robert J.; and Banning, Harmon W., to Weinschel Engineering. Voltage doubler circuit. 4,495,556, Cl. 363-59.000.
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Monteyne, Guido; Calmes, Marc; and Schmeler, Robert, 4,494,971, Cl. 65-19.000.
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Paulus, John R.; and Keck, Marvin C., to Pizza Hut, Inc. Pizza oven tool. 4,494,786, Cl. 294-26.000.
Pearson, Robert E. Flip top can cover. 4,494,672, Cl. 220-263.000.
Pechau, Gerhard; Wyzgol, Ewald; and Jacob, Rudi, to Veb Schwermaschinenbau-Kombinat "Ernst Thalmann" Magdeburg. Rotating shear for high-speed wire-rolling line. 4,494,427, Cl. 83-306.000.
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Brown, Thomas A.; Dissosway, Marc A.; Peil, William; and Vamvakas, Spiro, 4,495,446, Cl. 315-206.000.
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Perlin, Morton J.; and Garneau, Richard P., to Perlin Materials Handling Development Co. Caster having a three piece encapsulating bearing assembly. 4,494,271, Cl. 16-21.000.
Perlmutter, Michael; and Clampitt, Lawrence L., to Raytheon Company. Electromagnetic wave reflections absorber. 4,494,873, Cl. 356-350.000.
Perry, Jack I., to Owens-Illinois, Inc. Take-out arm for bottle forming machine. 4,494,973, Cl. 65-260.000.
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Ohlsson, Stig L.; and Berthou, Jan-Olov K., 4,494,964, Cl. 51-296.000.
Pervyshin, Alexandr N.: *See*—
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Petcen, Donald H., to Coburn Optical Industries, Inc. Wrinkle prevention frame for lens manufacture. 4,494,344, Cl. 38-102.200.
Petcen, Donald H., to Coburn Optical Industries, Inc. Controlled wafer relaxing in making composite lenses. 4,495,015, Cl. 156-80.000.
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Petersen, Carl C.; McKeown, Stephen A.; and Normann, Richard W., to Allied Corporation. Mounting member for electrical contacts. 4,494,818, Cl. 339-192.00R.
Peterson, Bruce M. Back flow valve. 4,494,345, Cl. 137-414.000.
Petit, Leon; and De Lockerente, Serge R., to Societe internationale de Pulicite et d'Agences commerciales, enabrege: "Sipac". Method for preparing a cation exchanger. 4,495,080, Cl. 252-179.000.

Petrelis, Peter G.; and Alexander, John A., to TRW Inc. N by M planar configuration switch for radio frequency applications. 4,495,498, Cl. 340-825.790.

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Hausler, Rudolf H.; and Thompson, Neil E. S., 4,495,336, Cl. 252-8.55E.
Quinlan, Patrick M., 4,494,977, Cl. 71-67.000.

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Lawrence, David J.; Abbas, Daniel C.; Phelps, Daniel J.; and Smith, Frank T. J., 4,495,514, Cl. 357-67.000.

Philipp, Herbert R., to General Electric Company. Metal oxide varistor with controllable breakdown voltage and capacitance and method of making. 4,495,482, Cl. 338-21.000.

Phillips, Bobby M., to Eastman Kodak Company. Continuous filament slub yarn. 4,495,244, Cl. 428-399.000.

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Boston, Ernest B., 4,495,064, Cl. 208-120.000.
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Lindstrom, Merlin R.; Henshaw, Leslie J.; Mark, Harold W.; and Clark, James B., 4,495,200, Cl. 424-286.000.
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Piccione, James M. User programmable postal rate calculator. 4,495,581, Cl. 364-466.000.

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Pierson, Henri G. W. Horizontal vacuum belt filter. 4,495,070, Cl. 210-139.000.

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Place, Donald E., to Therm-O-Disc, Incorporated. Pressure switch. 4,495,389, Cl. 200-83.00P.

Plante, Arcade J.; and Wetzel, Richard F., to Bethlehem Steel Corporation. Automatic nondestructive roll defect inspection system. 4,495,587, Cl. 364-507.000.

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Plastic Specialties, Inc.: *See*—
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Poppe, Wassily; Chen, Yu-Tsai; and Autry, Larry W., to Standard Oil Company (Indiana). Crystalline copolyamides from terephthalic acid and hexamethylenediamine and trimethylhexamethylenediamine. 4,495,328, Cl. 524-606.000.

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Porter, Carl W. Auxilliary fishing sinker. 4,494,334, Cl. 43-43.120.

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Proud, Joseph M.; and Lapatovich, Walter P., to GTE Laboratories Incorporated. Plasma switch. 4,495,435, Cl. 313-231.310.

Pryor, Michael J.; Winter, Joseph; and Dantzig, Jonathan A., to Olin Corporation. Method and apparatus for forming a thixoforged copper base alloy cartridge casing. 4,494,461, Cl. 102-464.000.

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Pusch, Gunter; Hoffmann, Alexander; and Aisslinger, Dieter E. Camouflage materials having a wide-band effect and system incorporating same. 4,495,239, Cl. 428-192.000.

Puyane, Ramon; Gonzalez-Oliver, Carlos J. R.; and Harmer, Alan L., to Battelle Memorial Institute. Method for making a gradient doped polysiloxane gel. 4,495,297, Cl. 501-12.000.

Quartino, Miguel A., to Hoyt/Easton Archery Co. Archery bow having bow limb assembly and adjustment. 4,494,521, Cl. 124-24.00R.

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Rashleigh, Scott C., to United States of America, Navy. Fiber optic sensors operating at DC. 4,495,411, Cl. 250-227.000.
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Reczek, James A.; and Elwood, James K., to Eastman Kodak Company. Non-diffusible cyan compound capable of releasing a 6-heterocyclylazo-3-pyridinolcu4,495,100, Cl. 534-651.000.
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Riha, Hans J. Wick holder for a liquid-fuel lampcu4,494,926, Cl. 431-321.000.
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Muschelknautz, Edgar; and Rink, Norbert, 4,494,970, Cl. 65-9.000.
Ritsko, Joseph E.; and Acla, Howard L., to GTE Products Corporation. Process for the recovery of tantalum valuescu4,495,158, Cl. 423-65.000.
Ritzau, William P.; Casselli, Aveo J.; and Fleischer, Gene S., to Electrolux Corporation. Vacuum cleaner wandcu4,494,270, Cl. 15-377.000.
Rizzo, Joseph P., Sr., to Scott Paper Company. Conveyor systemcu4,494,644, Cl. 198-409.000.
Robert Alan Gray Ltd.: *See*—
Gray, Robert A., 4,494,309, Cl. 30-151.000.
Robert Bosch GmbH: *See*—
Babitzka, Rudolf; Beck, Walter; and Linder, Ernst, 4,494,727, Cl. 251-64.000.
Dobler, Klaus; Schoor, Ulrich; Heinz, Rudolf; Frey, Thomas; and Grunwald, Werner, 4,494,401, Cl. 73-35.000.
Kratt, Alfred; Peter, Cornelius; Ruppmann, Claus; and Schillinger, Rainer, 4,494,517, Cl. 123-585.000.
Steinmann, Helmut, 4,495,476, Cl. 331-111.000.
Roberts, Jon A.; and Hendrickson, Thomas E., to Honeywell Inc. Acoustic microphonecu4,495,385, Cl. 179-111.00R.
Robertson, Carl L. Waterbed mattress covercu4,494,262, Cl. 5-451.000.
Robinson, McDonald: *See*—
Celler, George K.; Lischner, David J.; and Robinson, McDonald, 4,494,303, Cl. 29-576.00W.
Robotgruppen HB: *See*—
Larson, Ove; and Davidson, Charles, 4,494,417, Cl. 74-469.000.
Robotic Vision Systems, Inc.: *See*—
DiMatteo, Paul; and Ross, Joseph, 4,494,874, Cl. 356-376.000.
Roch, Gerald V., to Hurco Manufacturing Co., Inc. Press brake gauging apparatuscu4,494,312, Cl. 33-170.000.
Roche, William J.: *See*—
Schlitt, Steven C.; Yong, Thomas S.; Roche, William J.; and Anderson, John W., Jr., 4,495,440, Cl. 313-492.000.
Rock, Erich; and Brunner, Josef, to Julius Blum Gesellschaft m.b.H. Pull-out guide assembly for drawerscu4,494,803, Cl. 308-3.800.
Rockwell International Corporation: *See*—
Sciulli, Felice M., 4,495,596, Cl. 364-900.000.
Treise, Jan E., 4,495,473, Cl. 331-10.000.
Rodriguez, Pedro A.; Edwards, James B.; and Habermehl, Fred M., to Procter & Gamble Company, The. Animal litter compositioncu4,494,481, Cl. 119-1.000.
Roger, Loic: *See*—
Brule, Gerard; Roger, Loic; Fauquant, Jacques; and Piot, Michel, 4,495,176, Cl. 424-128.000.
Rogers, Ernest E., to Felt Products Mfg. Co. Wind energy conversion systemcu4,495,423, Cl. 290-44.000.
Rogers, Eugene A. Damage prevention void filler for separating loads during transitcu4,494,897, Cl. 410-154.000.
Rogers, Walter C., Jr., to Parma Corporation. Trigger release mechanism for reclining chaircu4,494,793, Cl. 297-85.000.
Rognoni, Antonio. Device for filling a pipe with fluids, for emptying fluids from a pipe and for drying a pipecu4,494,584, Cl. 141-98.000.
Rohm GmbH: *See*—
Liebler, Ralf, 4,495,322, Cl. 524-198.000.
Rohowetz, Stanley E., to American Can Company. Primary systemcu4,495,156, Cl. 427-384.000.
Rohr, Otto: *See*—
Durr, Dieter; Rohr, Otto; and Bohner, Beat, 4,495,350, Cl. 544-167.000.
Rohrbach, Hans-Joerg, to Rohrbach Technologie KG; and Baustofftechnik GmbH & Co. Method and apparatus for producing expanded clay and expanded shalecu4,494,928, Cl. 432-13.000.
Rohrbach Technologie KG: *See*—
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Rollmann, Louis D.: *See*—
Calvert, Robert B.; and Rollmann, Louis D., 4,495,166, Cl. 423-329.000.
Romac Industries, Inc.: *See*—
Burnett, Curtis E., 4,494,780, Cl. 285-177.000.
Rommerskirchen, Hans J.: *See*—
Schmid, Karl H.; Rommerskirchen, Hans J.; Reuter, Herbert; Seiter, Wolfgang; and Piorr, Robert, 4,495,092, Cl. 252-559.000.
Roof, G. Wayne. Resealable closure and container structurecu4,494,674, Cl. 220-306.000.
Roos, Friedrich; and Bahner, Friedrich, to Babcock-BSH Aktiengesellschaft Vormals Buttner-Schilde-Haas AG. Continuous drier for plywood sheetscu4,494,315, Cl. 34-48.000.
Roossien, Charles P.; Chambers, Brian; and Hiemstra, Bruce, to Steelcase Inc. Variable back adjuster for chairscu4,494,795, Cl. 297-355.000.
Roper Corporation: *See*—
Fielder, William V. B., Jr., 4,494,593, Cl. 160-177.000.
Rorer, Morris P., to Du Pont de Nemours, E. I., and Company. Benzofuran sulfamatescu4,494,979, Cl. 71-92.000.
Rosaen, Nils O. Fluid filtering devicecu4,495,068, Cl. 210-91.000.
Rosenbaum, Georges: *See*—
Grollier, Jean-Francois; Rosenbaum, Georges; Allec, Josiane; and Shroot, Braham, 4,495,203, Cl. 514-732.000.
Ross, James W., Jr. Temperature insensitive potentiometric electrode systemcu4,495,050, Cl. 204-408.000.
Ross, Joseph: *See*—
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Ross, William E.: *See*—
Anderson, Robert H.; Ross, William E.; and Maki, Theodore R., 4,495,492, Cl. 340-783.000.
Rossi, Cristiano, to Comau S.p.A. Expanded car body welding assembly systemcu4,494,687, Cl. 228-47.000.
Rotesco Inc.: *See*—
Tomaiuolo, Frank G.; and Lang, John G., 4,495,465, Cl. 324-232.000.
Roth, John A.; and Roth, Lynette B., to Hughes Aircraft Company. Improved superconductor/semiconductor junction structurecu4,495,510, Cl. 357-5.000.
Roth, Lynette B.: *See*—
Roth, John A.; and Roth, Lynette B., 4,495,510, Cl. 357-5.000.
Rougerie, Jacques. Floating and nonsubmersible nautical craftcu4,494,472, Cl. 114-66.000.
Rovac Corporation: *See*—
Edwards, Thomas C., 4,494,386, Cl. 62-402.000.
Rowe, Fred, to Phillips Petroleum Company. Process control for flash concentrating solutions containing polyolefinscu4,495,028, Cl. 159-47.100.
Roy, Claude, to L.C.C.-C.I.C.E.-Compagnie Europeenne de Compsants Electroniques. Process and device for manufacturing mother capacitors by helical windingcu4,494,704, Cl. 242-56.100.
Roy, Paul J.: *See*—
Laskaris, A. Theodore; and Roy, Paul J., 4,495,231, Cl. 428-36.000.
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Eystratov, Vitaly A.; Elkin, Mikhail Y.; Danilenko, Viktor Y.; Stepunin, Ivan M.; Tsenta, Nikolai E.; Rud, Sergei A.; and Belferman, Leonid M., 4,494,448, Cl. 92-172.000.
Rudolf, Buchegger: *See*—
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Fischer, David L.; and Waterstreet, William E., 4,494,741, Cl. 270-39.000.
Rudt, Robert J., to Albany International Corp. Dryer felt fabric and dryer beltcu4,494,319, Cl. 34-116.000.
Ruger, William B.; and Melcher, Roy L., to Sturm, Ruger & Company, Inc. Inactivating selector arrangement for bolt action firearmscu4,494,330, Cl. 42-16.000.
Ruhrkohle Aktiengesellschaft: *See*—
Ormanns, Siegfried; and Neumann, Helmut, 4,495,495, Cl. 340-825.450.
Ruhrtal Elektrizitatsgesellschaft Hartig GmbH & Co.: *See*—
Leppers, P. H.; and Schnoor, Walter, 4,495,390, Cl. 200-145.000.
Rupert, Gary F.: *See*—
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Ruppmann, Claus: *See*—
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Russell, James T., to Digital Recording Corporation. Recording and playback systemcu4,495,609, Cl. 369-44.000.
Russo, Joseph L.: *See*—
Miller, Robert E.; Russo, Joseph L.; Sonder, Richard; and Soni, Abraham H., 4,494,259, Cl. 5-66.000.
Rutgers Research & Educational Foundation: *See*—
Seltzer, Edward; and Hamilton, William A., 4,495,214, Cl. 426-557.000.
Rutherford, David B., Jr.: *See*—
Sibley, Henry C.; and Rutherford, David B., Jr., 4,495,578, Cl. 364-426.000.
Rutledge, Seth E. Split bushing and tool kitcu4,494,290, Cl. 29-280.000.
Ruzek, Wolfgang, to Sulzer Brothers Limited. Heat exchanger for a process gascu4,494,484, Cl. 122-34.000.
Ryan, William P.; Mason, Richard A.; Maida, Vincent A.; and Donovan, Timothy F., to Mite Corporation. Combined metal and plastic standoffcu4,495,380, Cl. 174-138.00D.
Ryba, John M.: *See*—
Johnson, Charles L.; and Ryba, John M., 4,495,377, Cl. 174-68.500.
Rymarchyk, Nicholas M., Jr.; and Meinert, Leo L., to Pullman Berry Company. Lance for repairing the lining of steelmaking vesselscu4,494,737, Cl. 266-281.000.
Rzewinski, Leonard, to Cooper LaserSonics, Inc. Dental cleaning apparatus and methodcu4,494,932, Cl. 433-88.000.
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Heath, Roger L., 4,494,552, Cl. 128-696.000.
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Forestier, Alexandre, 4,494,909, Cl. 416-190.000.
Saab-Scania Aktiebolag: *See*—
Stahl, Hans V., 4,495,457, Cl. 364-424.100.
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Sachse, Burkhard: *See*—
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Sackis, John J.; and Anderson, Paul H., to W. R. Meadows, Inc. Water based concrete curecu4,495,319, Cl. 524-96.000.
Saegusa, Kunio: *See*—
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Safai, Sohrab, to International Business Machines Corporation. Contact extraction toolcu4,494,305, Cl. 29-764.000.
Safeway Stores, Incorporated: *See*—
Meyer, Jerome K., 4,494,582, Cl. 141-9.000.
Safilo, S.p.A.: *See*—
Tabacchi, Vittorio, 4,494,834, Cl. 351-153.000.
Saida, Takashi: *See*—
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Saito, Ryosuke, to Sumitomo Gomu Kogyo Kabushiki Kaisha. Fender and life ladder in onecu4,494,474, Cl. 114-219.000.
Sakai, Mitsugu: *See*—
Namba, Akihiro; and Sakai, Mitsugu, 4,494,549, Cl. 128-660.000.
Sakai, Yoshio; and Yamada, Takeshi, to Totoku Electric Co., Ltd. Heating sheetcu4,495,406, Cl. 219-528.000.
Sakakibara, Shinsuke: *See*—
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Sakakiyama, Ryuzo, to Fuji Jukogyo Kabushiki Kaisha. Electromagnetic clutch control system for automobilescu4,494,641, Cl. 192-0.076.
Sakakiyama, Ryuzo: *See*—
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Sakamaki, Hisashi: *See*—
Tachika, Tetsuji; Sakamaki, Hisashi; and Hattori, Hiroyuki, 4,494,861, Cl. 355-14.00R.
Sakamoto, Kazuo: *See*—
Hata, Hiroyoshi; Honda, Seiichirou; Hosokawa, Seiya; Kanki, Kazuhiko; Matsumiya, Toshiharu; and Sakamoto, Kazuo, 4,495,312, Cl. 523-105.000.
Sakamoto, Masaharu: *See*—
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Sakao, Nobuo: *See*—
Kurasoka, Yasuo; and Sakao, Nobuo, 4,494,385, Cl. 62-306.000.
Sakuma, Toranosuke, to Koito Seisakusho Co., Ltd. Rotary-to-linear converter mechanism for a remotely controlled rearview mirror tilting device or the likecu4,494,420, Cl. 74-479.000.
Sakurai, Hiroshi: *See*—
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Salmela, Jouko J.; Hietanen, Jukka; and Syrjanen, Timo. Apparatus for spreading a fluid onto a moving web of materialcu4,494,480, Cl. 118-411.000.
Sanami, Yoshitomo: *See*—
Ihara, Hiroyuki; Takahashi, Kazuo; Matsubara, Michiro; Kumata, Fumio; and Sanami, Yoshitomo, 4,495,089, Cl. 252-364.000.
Sandoz Ltd.: *See*—
Bitterli, Peter; and Kaul, Banu L., 4,494,955, Cl. 8-512.000.
Sankyo Company Limited: *See*—
Sato, Yasunobu; Fukumi, Hiroshi; Koike, Hiroyuki; and Kitahara, Nobuaki, 4,495,188, Cl. 514-260.000.
Sanma, Takahide: *See*—
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Sano, Shiro, to Agency of Industrial Science and Technology, Ministry of International Trade and Industry. Method for manufacture of low thermal expansion cordierite ceramicscu4,495,300, Cl. 501-102.000.
Sanoian, Corigan. Infrared test for wooden utility poles for structural soundnesscu4,495,518, Cl. 358-113.000.
Sanyo Electric Co., Ltd.: *See*—
Hayashi, Gentaro; Yamamoto, Kenji; and Kuraseko, Takao, 4,494,390, Cl. 68-23.700.
Tokizaki, Hisashi; and Sato, Hironobu, 4,495,450, Cl. 318-138.000.
Sarges, Reinhard, to Pfizer Inc. Method of using [1,2,4]triazolo[4,3-a]quinoxaline-4-amine derivatives as antidepressant and antifatigue agentscu4,495,187, Cl. 514-250.000.
Sarnes, Reiner; and Heinrich, Emil. Process and apparatus for removing combustible lubricants from sinterable workpiecescu4,495,148, Cl. 419-57.000.
Sartorius GmbH: *See*—
Knothe, Erich; Melcher, Franz-Josef; Stadler, Eberhard; and Exner, Rainer, 4,494,620, Cl. 177-25.000.
Sasaki, Ken; Matsuyama, Shigeru; Koyama, Masaharu; and Ichihara, Kazuyoshi, to Hitachi, Ltd. Fill port seal with first and second photosensitizerscu4,494,825, Cl. 350-343.000.
Sasaki, Ssamu: *See*—
Takahashi, Jiro; Komamura, Tawara; Sawada, Kiyoshi; Sasaki, Ssamu; Goto, Satoshi; and Kinoshita, Akira, 4,495,261, Cl. 430-58.000.
Sasamura, Kohhei; and Moriyama, Masaru, to Victor Company of Japan, Ltd. Magnetic reproducing system for a digital signalcu4,495,528, Cl. 360-40.000.
Sasamura, Kouhei, to Victor Company of Japan, Ltd. Equalizer circuit for signal waveform reproduced by apparatus for magnetic digital data recording and playbackcu4,495,531, Cl. 360-65.000.
Sasser, Bill H.; Walker, Scott H.; and Immell, Raymond G., to Motorola, Inc. Image spatial filtercu4,495,506, Cl. 343-909.000.
Sato, Hironobu: *See*—
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Sato Koki Company Ltd.: *See*—
Shigemi, Igarashi, 4,495,447, Cl. 315-241.00P.
Sato, Makoto: *See*—
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Sato, Shinobu: *See*—
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Sato, Yasunobu; Fukumi, Hiroshi; Koike, Hiroyuki; and Kitahara, Nobuaki, to Sankyo Company Limited. Acylaminoquinazoline derivatives and a pharmaceutical composition containing themcu4,495,188, Cl. 514-260.000.
Sato, Yasuo. Brake booster operated also by solenoidcu4,494,377, Cl. 60-545.000.
Saurer Diederichs Societe Anonyme: *See*—
Grandvallet, Gilles; and Deborde, Albert H., 4,494,579, Cl. 139-429.000.
Sawada, Kiyoshi: *See*—
Takahashi, Jiro; Komamura, Tawara; Sawada, Kiyoshi; Sasaki, Ssamu; Goto, Satoshi; and Kinoshita, Akira, 4,495,261, Cl. 430-58.000.
Sawyer, Quentan T., to General Electric Company. Firing mechanism for high rate of fire revolving battery guncu4,494,439, Cl. 89-12.000.
Schafer, Paul; and Berendt, Hans-Ulrich, to Ciba-Geigy Corporation. Process for pad dyeing cellulosic textile materialscu4,494,956, Cl. 8-543.000.
Scharfenberg, Paul M.; and Findley, Kenneth N., Jr., to Findley Adhesives, Inc. Method of manufacturing dual arch corrugated paperboard productcu4,495,011, Cl. 156-78.000.
Schauer, Friedrich, to Kabelmetal Electro GmbH. Connecting a cable to a P.C. boardcu4,494,308, Cl. 29-858.000.
Scheffler, Reingard: *See*—
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Schenck, Hans-Uwe; Blum, Rainer; Gulbins, Erich; Kempter, Fritz-Erdmann; and Schupp, Eberhard, to BASF Aktiengesellschaft. Aqueous cationic surface-coating system and its usecu4,495,327, Cl. 524-556.000.
Schetter, Nicholas R.: *See*—
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Scheuerle, Willy; and Prechtel, Georg, to Willy Scheuerle Fahrzeugfabrik GmbH & Co. Hydraulic driving system with protection against overspeedcu4,494,624, Cl. 180-308.000.
Schewe, Herbert: *See*—
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Schildkraut, Alan L., to Bendix Corporation, The. Anti-decoupling device for an electrical connectorcu4,494,810, Cl. 339-89.00M.
Schilling, Peter; and Schreuders, Hans G., to Westvaco Corporation. Amphoterics as emulsifiers for bituminous emulsionscu4,494,992, Cl. 106-277.000.
Schillinger, Rainer: *See*—
Kratt, Alfred; Peter, Cornelius; Ruppmann, Claus; and Schillinger, Rainer, 4,494,517, Cl. 123-585.000.
Schindler, Bernd: *See*—
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Schlaikjer, Carl R.: *See*—
Klinedinst, Keith A.; and Schlaikjer, Carl R., 4,495,266, Cl. 429-105.000.
Schlatter, James M.: *See*—
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Schlitt, Steven C.; Yong, Thomas S.; Roche, William J.; and Anderson, John W., Jr., to GTE Products Corporation. Arc-extinguishing ampul and fluorescent lamp having such ampul mounted on each electrode structurecu4,495,440, Cl. 313-492.000.
Schlumberger Technology Corp.: *See*—
Dumanoir, Jean L., 4,495,604, Cl. 367-25.000.
Schmehl, Stewart J. Radiation detection devicecu4,495,419, Cl. 250-363.00S.
Schmeler, Robert: *See*—
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Schmid, Karl H.; Rommerskirchen, Hans J.; Reuter, Herbert; Seiter, Wolfgang; and Piorr, Robert, to Henkel Kommanditgesellschaft auf Aktien. Viscosity regulators for high-viscosity surfactant concentratescu4,495,092, Cl. 252-559.000.
Schmid, Karlheinz, to Gebrueder Heller Maschinenfabrik GmbH. Crankshaft milling machinecu4,494,281, Cl. 29-6.000.
Schmid, Lawrence A. Temperature-controllable heat valvecu4,494,595, Cl. 165-1.000.
Schmidt, David: *See*—
McHugh, Edward L.; McHugh, James C.; McHugh, Gerard J.; Gallagher, William; and Schmidt, David, 4,494,766, Cl. 280-444.000.
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dioxy-4(1H)-oxo-cinnolin-3-carboxylic acidscu4,495,351, Cl. 544-234.000.
Schmidt, Herbert; and Steinort, Hans, to Senkingwerk GmbH KG. Method operating a tunnel-type batch washing machinecu4,494,265, Cl. 8-159.000.
Schmidt, Paul J.; and Hung, William M., to Hilton-Davis Chemical Co., The. Compounds, processes and marking systemscu4,494,989, Cl. 106-21.000.
Schmitt, Felix: *See*—
Wolf, Elmar; and Schmitt, Felix, 4,495,229, Cl. 427-388.200.
Schmitt, Frederick L.: *See*—
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Schmolka, Irving R., to BASF Wyandotte Corporation. Aerosol gelcu4,495,168, Cl. 424-45.000.
Schmolka, Irving R., to BASF Wyandotte Corporation. Aerosol gel shaving creamcu4,495,169, Cl. 424-47.000.
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Post, Helmut, 4,494,284, Cl. 29-123.000.
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Schneider, John R.; and Mangione, Joseph F., to Schneider, John R. Horizontal plate filter with self-aligning platescu4,495,071, Cl. 210-230.000.
Schneider, Michael J., to Bendix Corporation, The. Unit injectorcu4,494,696, Cl. 239-90.000.
Schnell, Josef. Exercise machinecu4,494,751, Cl. 272-117.000.
Schnoor, Walter: *See*—
Leppers, P. H.; and Schnoor, Walter, 4,495,390, Cl. 200-145.000.
Schoch, Gregor, to Bobst S.A. Device for preparing die members of a platen presscu4,494,455, Cl. 101-3.00R.
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Fricker, Wolfgang-Peter; Scholz, Manfred; Bauche, Heinrich; and Gollasch, Bernd, 4,495,147, Cl. 376-283.000.
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Schorman, Eric R.: *See*—
Burke, Timothy M.; Smith, Paul F.; Noble, Scott W.; and Schorman, Eric R., 4,495,647, Cl. 455-38.000.
Schramm, Peter; and Feulner, Walter, to Grapho Metronic Mess- und Regeltechnik GmbH & Co. KG. Method and apparatus for monitoring and evaluating the quality of color reproduction in multi-color printingcu4,494,875, Cl. 356-402.000.
Schreiber, Richard J.: *See*—
Kendall, Robert M.; and Schreiber, Richard J., 4,494,485, Cl. 122-250.00R.
Schreiber, Thilo: *See*—
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Schreuders, Hans G.: *See*—
Schilling, Peter; and Schreuders, Hans G., 4,494,992, Cl. 106-277.000.
Schroder, Rolf; and Lurssen, Klaus, to Bayer Aktiengesellschaft. Plant growth-regulating 1-amino-cyclopropanecarboxylic acid metal complexescu4,494,982, Cl. 71-97.000.
Schroeder, Joseph W., to Foster Wheeler Energy Corporation. Apparatus for forming an explosively expanded tube-tube sheet joint including a low energy transfer cord and boostercu4,494,392, Cl. 72-56.000.
Schrum, Timothy J. Method for applying powdered coatingscu4,495,217, Cl. 427-27.000.
Schuelke, Richard D.: *See*—
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Schumacher, William J.; and Tanczyn, Harry, to Armco Inc. Galling and wear resistant steel alloycu4,494,988, Cl. 75-128.00A.
Schupp, Eberhard: *See*—
Schenck, Hans-Uwe; Blum, Rainer; Gulbins, Erich; Kempter, Fritz-Erdmann; and Schupp, Eberhard, 4,495,327, Cl. 524-556.000.
Schwab, James M., to Kelley Company Inc. Dock shelter with improved adjustable head padcu4,494,341, Cl. 52-173.0DS.
Schwartz, Michael A.; and Yamagata, Toshio, to Press Machinery Corporation. Apparatus for conversion of a printing press to offset printingcu4,494,457, Cl. 101-217.000.
Schweitzer, Edmund O., Jr. Fault indicator with improved flag indicator assemblycu4,495,489, Cl. 340-664.000.
Schwendemann, Kenneth L., to Otis Engineering Corporation. Test treecu4,494,609, Cl. 166-336.000.
Schwuttke, Guenter H.; and Yang, Kuei H., to International Business Machines, Inc. Process for forming transistors using silicon ribbons as substratescu4,494,300, Cl. 29-571.000.
Sci-Coustics, Inc.: *See*—
Bruney, Paul F., 4,495,637, Cl. 381-1.000.
Sciarra, Michael J.; and Cestaro, Victor L., to F. William Carr. Vital signs monitorcu4,494,553, Cl. 128-721.000.
Scientific Pharmaceuticals, Inc.: *See*—
Orlowski, Jan A.; Butler, David V.; and Kidd, Patrick D., 4,495,172, Cl. 424-61.000.
Sciulli, Felice M., to Rockwell International Corporation. Data accumulator and transponder with power back-up for time of day clockcu4,495,596, Cl. 364-900.000.
Scott, Brian L.; and Kirkwood, Wayne E., to Scott Instruments Corporation. Real time cochlear implant processorcu4,495,384, Cl. 179-107.0FD.
Scott, Doyce E. Three point bow sightcu4,494,313, Cl. 33-265.000.
Scott Instruments Corporation: *See*—
Scott, Brian L.; and Kirkwood, Wayne E., 4,495,384, Cl. 179-107.0FD.
Scott Paper Company: *See*—
Rizzo, Joseph P., Sr., 4,494,644, Cl. 198-409.000.
Sea Savory, Inc.: *See*—
Tolley, Calvert B.; and Tolley, Andrew T., 4,494,277, Cl. 17-71.000.
Sebenik, Roger F.; LaValle, Pablo P.; Laferty, John M.; and May, William A., to Amax Inc. Recovery of metal values from spent hydrodesulfurization catalystscu4,495,157, Cl. 423-54.000.
Sebesta, Gunter: *See*—
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Secrist, Duane R.; and Clark, James M., to Great Lakes Carbon Corporation. Anode for molten salt electrolysiscu4,495,049, Cl. 204-292.000.
Seegers, Gunter; Sebesta, Gunter; and Klatt, Alfred, to WABCO Fahrzeugbremsen GmbH. Electropneumatic door control valvecu4,494,571, Cl. 137-596.160.
Segarra, Gerard; and Allain, Jean L., to U.S. Philips Corporation. Method of controlling the transmission/reception of data in a local communication network, and data transmission system for performing the methodcu4,495,493, Cl. 340-825.500.
Seidl, Jiri, to Bayerische Motoren Werke A.G. Cylinder head for four-cycle internal combustion enginescu4,494,489, Cl. 123-41.310.
Seikagaku Kogyo Co., Ltd.: *See*—
Nakahara, Chizuko; Tanaka, Shigenori; Tamura, Hiroshi; and Matsumoto, Akiyoshi, 4,495,294, Cl. 436-502.000.
Seiko Seiki Kabushiki Kaisha: *See*—
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Seiler, James F. N., Jr., to United States of America, Army. Fluid safety valvecu4,494,563, Cl. 137-496.000.
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Honda, Hiroshi; and Hasegawa, Mitsuru, 4,494,888, Cl. 139-435.000.
Seiter, Wolfgang: *See*—
Schmid, Karl H.; Rommerskirchen, Hans J.; Reuter, Herbert; Seiter, Wolfgang; and Piorr, Robert, 4,495,092, Cl. 252-559.000.
Seiwa Kagaku Kabushiki Kaisha: *See*—
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Hata, Hiroyoshi; Honda, Seiichirou; Hosokawa, Seiya; Kanki, Kazuhiko; Matsumiya, Toshiharu; and Sakamoto, Kazuo, 4,495,312, Cl. 523-105.000.
Kishi, Takaji, 4,495,243, Cl. 428-352.000.
Miyoshi, Hiroshi; Mori, Hirohumi; and Tanoue, Yoriko, 4,495,315, Cl. 523-125.000.
Sellers, Gregory J.: *See*—
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Seltzer, Edward; and Hamilton, William A., to Rutgers Research & Educational Foundation. Process for producing quick-cooking productscu4,495,214, Cl. 426-557.000.
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Seton Company: *See*—
Cioca, Gheorghe; Siegler, Marcel; and Spiliadis, Apostol, 4,494,994, Cl. 106-308.00P.
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Seyler, Jay K.: *See*—
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Sgroi, Nunzio: *See*—
Sgroi, Nunzio B.; and Duffy, Patrick E., 4,494,533, Cl. 128-75.000.
Sgroi, Nunzio B.; and Duffy, Patrick E., to Sgroi, Nunzio. Asymetrically adjustable traction devicecu4,494,533, Cl. 128-75.000.
Shaffar, Mark R., to Abbott Laboratories. Fluorometric assaycu4,495,293, Cl. 436-172.000.
Shaklee Corporation: *See*—
Taracatac, Corazon A.; Flores, Luis; and Chaudhry, Viren, 4,495,177, Cl. 424-147.000.
Shapiro, Rafael, to Du Pont de Nemours, E. I., and Company. Herbicidal ortho-(azinyl)-benzenesulfonamidescu4,494,980, Cl. 71-92.000.
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Sharp, Joseph F., to Ceiling Dynamics, Inc. Aluminum suspension systemcu4,494,350, Cl. 52-665.000.
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Nakamura, Takeshi; Okamoto, Seiji; and Hirayama, Kazuyoshi, 4,494,824, Cl. 350-334.000.
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Shaulov, Avner: *See*—
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Shaw, Herbert J.; Newton, Steven A.; Bowers, John E.; and Jackson, Kenneth P., to Stanford Junior University. Fiber optic word generatorcu4,495,656, Cl. 455-608.000.
Shaw, James E.; and Stapp, Paul R., to Phillips Petroleum Company. Extraction of acidic materials from organic liquids and use thereof in enhanced oil recoverycu4,494,604, Cl. 166-273.000.
Shay, Timothy W.; and Claypool, Mark P., to Powers Manufacturing, Inc. Down and stuck ware inspection method and apparatuscu4,494,656, Cl. 209-524.000.
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Andrea, Tariq A.; John, William W.; and Steffens, James J., 4,494,981, Cl. 71-93.000.
Bukkems, Franciscus H. J.; Plaschkes, Arnon; Buurman, Cornelis; and Broere, Anton M. P., 4,494,413, Cl. 73-863.430.
Collins, James H., 4,495,323, Cl. 524-426.000.
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Shepard, Steve A.: *See*—
Haag, George A.; Fogg, O. Douglas; Greenley, Gordon A.; Shepard, Steve A.; and Terry, F. Duncan, 4,495,599, Cl. 364-900.000.
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Sheppard, Mark T.; and Timbers, Lynda J. Modified angle, bias crotch, front pocket pantscu4,494,250, Cl. 2-227.000.
Sheridan, Anthony A., to United States of America, Navy. Dual capability piezoelectric shakercu4,495,433, Cl. 310-329.000.
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Shiiki, Zenya; Iizuka, Yo; and Kawakami, Yukichika, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for producing aromatic sulfide polymerscu4,495,332, Cl. 524-800.000.
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Shimada, Nobuyoshi: *See*—
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Shimizu, Takao: *See*—
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Shimizu, Tohru; and Nakagawa, Junji, to Kyowa Gas Chemical Industry Co., Ltd. Plastic scintillatorcu4,495,084, Cl. 252-301.170.
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Siebert, Robert M.; and Lahann, Richard W., to Conoco Inc. Determination of expandable clay minerals at well sitescu4,495,292, Cl. 436-25.000.
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Dotzer, Richard; and Lechner, Ernst-Friedrich, 4,495,378, Cl. 174-68.500.
Herberg, Helmut, 4,495,026, Cl. 156-652.000.
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Kros, Rudolf; and Vetter, Harald, 4,495,542, Cl. 361-301.000.
Pollok, Hans-Jurgen, 4,494,882, Cl. 384-307.000.
Postl, Wolfgang, 4,495,491, Cl. 340-709.000.
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Hofstetter, Matthias, 4,495,574, Cl. 364-200.000.
SIG- Schweizerische Industrie-Gesellschaft: *See*—
Knuchel, Max, 4,494,643, Cl. 198-392.000.
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Broadbent, Eliot K., 4,495,221, Cl. 427-88.000.
Signode Corporation: *See*—
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Simi, Victor M.; and Sublette, Jerry M., to International Business Machines Corporation. Isolated power supply feedbackcu4,495,554, Cl. 363-21.000.
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Simon, Virgil S.; Adenau, Marvin L.; and Skalski, John S., to Thomas A. Schutz Co., Inc. Modular display for cigarette packacu4,494,658, Cl. 211-49.00R.
Simpson, Anthony Y., to Textron Inc. Surface effect ship stern sealcu4,494,473, Cl. 114-67.00A.
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Sims, James O. Method of manufacture of hydraulic cylinders utilizing bronze overlays for engaging surfacescu4,494,294, Cl. 29-412.000.
Sinclair, Franklin H.; and Glockner, Gary, to Westlock Controls Corporation. Indicator assemblycu4,494,565, Cl. 137-555.000.
Sinclair, Franklin H.; and Glockner, Gary, to Westlock Controls Corporation. Indicator assemblycu4,494,566, Cl. 137-556.000.
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Smith, Frank T. J.: *See—*
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Smith, John R. E., to Dresser Industries, Inc. Method and apparatus for combined cement bond and acoustic well loggingcu4,495,606, Cl. 367-86.000.
Smith, Paul. Anti-arch vehicle suspensioncu4,494,772, Cl. 280-712.000.
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Lalancette, Jean-Marc; Cossette, Marcel; and Delvaux, Pierre, 4,495,223, Cl. 427-215.000.
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Soerensen, Gunnar; and Svendsen, Leo G., to A/S Neselco. Powder for use in dry sensitization for electroless platingcu4,495,216, Cl. 427-25.000.
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Sone, Kohki: *See—*
Kitahara, Tsuyoshi; Sone, Kohki; and Uchida, Masaaki, 4,494,374, Cl. 60-276.000.
Sone, Masazumi: *See—*
Endo, Hiroshi; Sone, Masazumi; Imai, Iwao; and Kasuya, Hideo, 4,495,421, Cl. 250-551.000.
Song, Ho K. Adjustable handheld round sandwich holdercu4,494,785, Cl. 294-1.00R.
Soni, Abraham H.: *See—*
Miller, Robert E.; Russo, Joseph L.; Sonder, Richard; and Soni, Abraham H., 4,494,259, Cl. 5-66.000.
Sonneville International Corporation: *See—*
Sonneville, Roger P., 4,494,695, Cl. 238-265.000.
Sonneville, Roger P., to Sonneville International Corporation. Device for affixing a rail to a concrete supportcu4,494,695, Cl. 238-265.000.
Sony Corporation: *See—*
Hashimoto, Shunichi; and Ohno, Katsutoshi, 4,495,085, Cl. 252-301.40F.
Kimura, Shuichi; and Katsuyama, Akira, 4,495,608, Cl. 369-33.000.
Kume, Hisao; and Sanma, Takahide, 4,495,437, Cl. 313-403.000.
Matsuura, Tamiaki; Aiba, Takeshi; Fukushima, Takashi; Nishimura, Masanori; Ohtsuki, Hiroshi; Yabuki, Fujio; and Kusakabe, Tomio, 4,494,298, Cl. 29-563.000.
Sorin Biomedica S.p.A.: *See—*
Cerise, Osvaldo; Arru, Pietro; and Vallana, Franco, 4,495,039, Cl. 204-130.000.
Souma, Keinosuke: *See—*
Kajikawa, Yoshimitsu; Souma, Keinosuke; Ogaki, Kohei; Uzuka, Tadashi; and Minato, Yoshihiko, 4,494,589, Cl. 144-213.000.
Kajikawa, Yoshimitsu; Souma, Keinosuke; Ogaki, Kohei; Uzuka, Tadashi; and Minato, Yoshihiko, 4,494,590, Cl. 144-213.000.
Souza, Raymond L., to Corning Glass Works. Replaceable junctions for reference electrodescu4,495,053, Cl. 204-435.000.
Sowell, Lyles H., to Du Pont de Nemours, E. I., and Company. Filter elementcu4,494,921, Cl. 425-198.000.
Soyez, Christian: *See—*
Barathon, Jean-Claude; Moiny, Fernand; Soyez, Christian; and Soyez, Gerard, 4,494,361, Cl. 53-553.000.
Soyez FR. S.A.: *See—*
Barathon, Jean-Claude; Moiny, Fernand; Soyez, Christian; and Soyez, Gerard, 4,494,361, Cl. 53-553.000.
Soyez, Gerard: *See—*
Barathon, Jean-Claude; Moiny, Fernand; Soyez, Christian; and Soyez, Gerard, 4,494,361, Cl. 53-553.000.
Spademan, Richard G. Dynamic internal fitting system with a movable foot bed for a sport shoecu4,494,324, Cl. 36-119.000.
Spargo, John D., to United States of America, Navy. Pressure balanced floating sealcu4,494,760, Cl. 277-30.000.
Sparks, Conrad. Taco Boardcu4,494,454, Cl. 99-426.000.
Spees, Arthur T., to Visu-Flex Company. Compressor for microfiche cards and the likecu4,494,659, Cl. 211-51.000.
Sperber, Franz: *See—*
Hahn, Michael; and Sperber, Franz, 4,494,910, Cl. 416-226.000.
Sperry Corporation: *See—*
Teyssier, Emil G., Jr., 4,494,948, Cl. 493-11.000.
Spevak, Frank: *See—*
O'Brien, James W.; and Spevak, Frank, 4,495,252, Cl. 428-555.000.
Spiliadis, Apostol: *See—*
Cioca, Gheorghe; Siegler, Marcel; and Spiliadis, Apostol, 4,494,994, Cl. 106-308.00P.
Spils, Richard W. Valve having a movable interface isolating an actuating mechanismcu4,494,731, Cl. 251-355.000.
Spinal Dynamics, Inc.: *See—*
Morrow, Winston G., 4,494,261, Cl. 5-436.000.
Spisarenko, Dmitry U.: *See—*
Medovar, Boris I.; Andreev, Vladimir P.; Kozik, Vladimir V.; Shevchenko, Nikolai T.; Spisarenko, Dmitry U.; Malevanny, Vladimir P.; Karpov, Vladimir F.; Chernykh, Viktor V.; Chepurnoi, Anatoly D.; Matsegora, Evgeny A.; and Shuruev, Lev A., 4,495,395, Cl. 219-73.100.
Sportelli, Frank A. Printing screen and method of making samecu4,495,517, Cl. 358-75.000.

SRI International: *See—*
Vickers, Roger S., 4,495,500, Cl. 343-5.0CM.
Stadler, Eberhard: *See—*
Knothe, Erich; Melcher, Franz-Josef; Stadler, Eberhard; and Exner, Rainer, 4,494,620, Cl. 177-25.000.
Stahl, Hans V., to Saab-Scania Aktiebolag. Method of preventing erroneous gear selection in a vehicle transmissioncu4,495,457, Cl. 364-424.100.
Stamberger, Paul, to Union Carbide Corporation. Epoxy-modified polyols and polymer-polyols useful in the preparation of improved plastics, including polyurethane foams, elastomers and the likecu4,495,341, Cl. 528-110.000.
Standard-Knapp, Inc.: *See—*
Johnson, Lloyd D.; and Lewis, Jack H., 4,494,355, Cl. 53-69.000.
Standard Oil Company, The: *See—*
Grasselli, Robert K.; Suresh, Dev D.; and Miller, Arthur F., 4,495,109, Cl. 260-465.300.
Moote, Truman P.; and Reed, Robert L., 4,495,160, Cl. 423-158.000.
Standard Oil Company (Indiana): *See—*
Hensley, Albert L., Jr.; and Quick, Leonard M., 4,495,062, Cl. 208-111.000.
Poppe, Wassily; Chen, Yu-Tsai; and Autry, Larry W., 4,495,328, Cl. 524-606.000.
Venardos, Dean G.; and Grieves, Colin G., 4,495,056, Cl. 208-11.00R.
Standley, Paul M.: *See—*
Miranti, Joseph P., Jr.; Foley, Mark P.; Hollaway, Gerald C.; Oliver, Larry R.; Standley, Paul M.; and Lewis, James A., 4,494,947, Cl. 474-251.000.
Stanford Junior University: *See—*
Shaw, Herbert J.; Newton, Steven A.; Bowers, John E.; and Jackson, Kenneth P., 4,495,656, Cl. 455-608.000.
Staplin, Theodore R., Jr.; Bradley, John J.; King, Richard L.; Miller, Robert C.; Miu, Ming T.; and Shen, Jian-Kuo, to Honeywell Information Systems Inc. Data processing system having synchronous bus wait/retry cyclecu4,495,571, Cl. 364-200.000.
Stapp, Paul R.: *See—*
Shaw, James E.; and Stapp, Paul R., 4,494,604, Cl. 166-273.000.
Startevant, Roger C.: *See—*
Resnick, Marlene; and Startevant, Roger C., 4,494,527, Cl. 126-422.000.
State Die & Engineering, Inc.: *See—*
Valentine, Al L., 4,494,739, Cl. 269-32.000.
Statt der Nederlanden (Stattsbedrijf der Posterijen, Telegrafie en Telefonie): *See—*
Wilcke, Robert, 4,495,615, Cl. 370-58.000.
Stauffer Chemical Co.: *See—*
Pallos, Ferenc M., 4,495,365, Cl. 564-91.000.
Ste Look: *See—*
Beyl, Jean J. A.; Buzon, Philippe; Campillo, Christian; Cursillat, Jackie; Le Faou, Daniel; and Peyre, Henri, 4,494,769, Cl. 280-630.000.
Campillo, Christian; and Michaud, Jean-Pierre, 4,494,767, Cl. 280-612.000.
Steck, Werner; Kovacs, Jenoe; Mueller, Norbert; and Jakusch, Helmut, to BASF Aktiengesellschaft. Acicular ferromagnetic chromium dioxide particlescu4,495,246, Cl. 428-403.000.
Steelcase Inc.: *See—*
Roossien, Charles P.; Chambers, Brian; and Hiemstra, Bruce, 4,494,795, Cl. 297-355.000.
Steele, James R.: *See—*
Mark, John G.; Steele, James R.; and Hansen, Craig C., 4,495,475, Cl. 331-12.000.
Steele, Raymond; Wong, Wai C.; and Xydeas, Costas S., to AT&T Bell Laboratories. Transmitting data on the phase of speechcu4,495,620, Cl. 370-118.000.
Steffens, James J.: *See—*
Andrea, Tariq A.; John, William W.; and Steffens, James J., 4,494,981, Cl. 71-93.000.
Steiman, Nancy. Maternity bathing suitcu4,494,546, Cl. 128-431.000.
Stein, Robert A., to Tech Development Inc. System and apparatus providing a two step starting cycle for diesel engines using a pneumatic startercu4,494,499, Cl. 123-179.00F.
Steinbiss, Eberhard; Herchenbach, Horst; Ramesohl, Hubert; and Wolter, Albrecht, to Klockner-Humboldt-Deutz AG. Method and apparatus for burning fine grained product, particularly raw cement mealcu4,494,991, Cl. 106-100.000.
Steinmann, Helmut, to Robert Bosch GmbH. Sawtooth voltage generatorcu4,495,476, Cl. 331-111.000.
Steinort, Hans: *See—*
Schmidt, Herbert; and Steinort, Hans, 4,494,265, Cl. 8-159.000.
Stening, Goran B.: *See—*
Hagberg, Curt-Erik; Johansson, Karl N.; Kovacs, Zsuzsanna M. I.; and Stening, Goran B., 4,495,190, Cl. 514-262.000.
Stenzel, Otto: *See—*
Reimpell, Uwe; Wamser, Anton; Stenzel, Otto; and Burgmann, Wilhelm, 4,495,624, Cl. 373-93.000.
Stephansen, Erik; Sharma, Rajeeva; and Richie, Michael, to Impact Systems, Inc. Apparatus for drying a moving webcu4,494,316, Cl. 34-68.000.
Stephens, Alan: *See—*
Vilk, Peter; and Stephens, Alan, 4,494,974, Cl. 65-337.000.
Stephens, James B., to Coast Foundry & Manufacturing Company. Float valve system flow proportioning devicecu4,494,562, Cl. 137-436.000.
Stephens, Ronald R.: *See—*
Abrams, Richard L.; Henderson, David M.; Pinnow, Douglas A.; and Stephens, Ronald R., 4,494,827, Cl. 350-385.000.
Stephenson, James E.: *See—*
Cole, Robert; and Stephenson, James E., 4,494,951, Cl. 8-195.000.
Stepunin, Ivan M.: *See—*
Eystratov, Vitaly A.; Elkin, Mikhail Y.; Danilenko, Viktor Y.; Stepunin, Ivan M.; Tsenta, Nikolai E.; Rud, Sergei A.; and Belferman, Leonid M., 4,494,448, Cl. 92-172.000.
Sterling Drug Inc.: *See—*
Bryant, Robert J., 4,495,353, Cl. 546-178.000.
Stevens, Frederick G., to Hydra Systems International, Inc. Mount for attaching a device to a firearmcu4,494,328, Cl. 42-1.00A.
Steyr-Daimler-Puch Aktiengesellschaft: *See—*
Dolenc, Anton, 4,494,700, Cl. 239-533.300.
Stickles, Bonnie J. Episiotomy trauma repair teaching aidcu4,494,936, Cl. 434-273.000.
Stoffelsma, Jan U., to Wavin B.V. Method for coloring polyvinylchloridecu4,495,128, Cl. 264-211.000.
Stoka, Roberto; and Haar, Lucas H., to ITT Industries, Inc. Floating-caliper spot-type disc brakecu4,494,630, Cl. 188-71.800.
Storage Technology Corporation: *See—*
Van Pelt, Richard, 4,494,711, Cl. 242-184.000.
Storage Technology Partners: *See—*
Zasio, John J., 4,495,628, Cl. 377-70.000.
Zasio, John J.; and Cooke, Larry, 4,495,629, Cl. 377-70.000.
Stoutjesdijk, Pieter G.: *See—*
Jansma, Wytze; Mars, Jan; Stoutjesdijk, Pieter G.; and Vegter, Herman J., 4,494,530, Cl. 127-69.000.
Stoverock, Paul H., to Harris Corporation. Bushing for use between a control knob and a housingcu4,495,547, Cl. 361-400.000.
Strange, Patrick E.: *See—*
Trinkel, Steven F.; Strange, Patrick E.; and Slaats, Mathew A., 4,494,721, Cl. 248-406.200.
Strata Bit Corporation: *See—*
Radtke, Robert P., 4,494,618, Cl. 175-393.000.
Straus, Albert E. Swing control hingecu4,494,273, Cl. 16-50.000.
Strauss, Walter C. Leaf spring diffuser with amplitude limitcu4,495,114, Cl. 261-81.000.
Strayer Coin Bag Co. Inc.: *See—*
Bonner, Cletus D., 4,494,592, Cl. 383-5.000.
Streib, Stephen F., to Chevron Research Company. Ultrasensitive apparatus and positioning method for detecting change in fluid flow conditions in relief flowlines associated with a chemical or refinery complexcu4,495,488, Cl. 340-606.000.
Strick, Nathan: *See—*
Neurath, A. Robert; and Strick, Nathan, 4,495,296, Cl. 436-530.000.
Strifler, Paul, to Daimler-Benz AG. Fuel-consumption monitoring system for motor vehicles with manually-shifted transmissionscu4,494,404, Cl. 73-113.000.
Strunk, Richard D.; Kasten, Robert E.; and Monopoli, Richard V., deceased (by Monopoli, Eileen F., executrix), to Deere & Company. Model reference adaptive implement controlcu4,495,577, Cl. 364-424.000.
Stubbs, James A.; and Gumplo, Eugene L. Paper tape rewinding devicecu4,494,708, Cl. 242-67.30R.
Sturm, Ruger & Company, Inc.: *See—*
Ruger, William B.; and Melcher, Roy L., 4,494,330, Cl. 42-16.000.
Sturtz, Georges: *See—*
Guerin, Bernard; Poisson, Pierre; and Sturtz, Georges, 4,495,111, Cl. 260-932.000.
Stutsman, Richard R., to Vertx Corporation. Article dispensing machine with anti-theft structurecu4,494,675, Cl. 221-13.000.
Su, Wen-Kuang. Foldable clock dialcu4,494,880, Cl. 368-232.000.
Sublette, Jerry M.: *See—*
Simi, Victor M.; and Sublette, Jerry M., 4,495,554, Cl. 363-21.000.
Suda, Hisao: *See—*
Niibori, Kenji; and Suda, Hisao, 4,494,707, Cl. 242-67.200.
Suevia Haiges GmbH & Co.: *See—*
Haiges, Frank, 4,494,483, Cl. 119-77.000.
Sugihara, Taizo; and Aoki, Tsuyoshi, to Chisso Corporation. Process for the production of pile-surfaced textile structurescu4,495,133, Cl. 264-504.000.
Sugimori, Masamichi: *See—*
Terashima, Shiro; Tamoto, Katsumi; and Sugimori, Masamichi, 4,495,103, Cl. 260-351.100.
Sugimoto, Gunji; Arakawa, Hideo; Ishihara, Toshikazu; Sugiura, Masahiro; and Takahashi, Katsuhiko, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Fluctuating drive systemcu4,495,560, Cl. 364-154.000.
Sugioka, Takami: *See—*
Miyake, Yuzuru; Sugioka, Takami; Murakami, Shoichi; and Ibuki, Hideaki, 4,494,702, Cl. 242-18.00R.
Sugiura, Masahiro: *See—*
Sugimoto, Gunji; Arakawa, Hideo; Ishihara, Toshikazu; Sugiura, Masahiro; and Takahashi, Katsuhiko, 4,495,560, Cl. 364-154.000.
Sukhov, Leonid V.: *See—*
Sidorov, Viktor V.; Tselniker, Efim Y.; Sidorov, Evgeny P.; Sukhov, Leonid V.; Gorb, Vyacheslav F.; and Bairakovsky, Gennady M., 4,495,401, Cl. 219-136.000.
Sulzer Brothers Limited: *See—*
Ruzek, Wolfgang, 4,494,484, Cl. 122-34.000.
Suminoe, Taro; Ito, Tetsuo; Kiyomatsu, Yasuhiro; and Shimizu, Takao, to Japan Synthetic Rubber Co., Ltd.; and Ricky Contact Lens Research Institute Inc. Process for producing colored contact lenscu4,494,954, Cl. 8-507.000.

Sumitomo Chemical Company, Ltd.: *See*—
Abe, Yasuaki; Hayashi, Mikio; Asagi, Kousaku; Morii, Akira; and Fujimura, Kazutoshi, 4,495,017, Cl. 156-181.000.
Horikiri, Shozo; Kadokura, Hidekimi; Harakawa, Masaji; Saegusa, Kunio; and Yamagiwa, Masao, 4,495,121, Cl. 264-56.000.
Terashima, Shiro; Tamoto, Katsumi; and Sugimori, Masamichi, 4,495,103, Cl. 260-351.100.

Sumitomo Electric Industries, Ltd.: *See*—
Yoshida, Kenichi; Ono, Kimizo; and Iwamoto, Tomio, 4,494,823, Cl. 350-96.220.

Sumitomo Gomu Kogyo Kabushiki Kaisha: *See*—
Saito, Ryosuke, 4,494,474, Cl. 114-219.000.

Sumitomo Heavy Industries, Ltd.: *See*—
Yamaji, Hiromasa; and Kobayashi, Yuji, 4,494,905, Cl. 414-584.000.

Sun Longitude Corporation: *See*—
Hsi-Shan, Chen, 4,494,275, Cl. 16-314.000.

Sun Studs, Inc.: *See*—
Berry, Larry R.; and Richert, Anton S., 4,494,588, Cl. 144-209.00R.

Sundstrand Corporation: *See*—
Bateman, Charles D., 4,495,483, Cl. 340-970.000.

Sunouchi, Akio: *See*—
Fujino, Masahisa; Sunouchi, Akio; Suzuki, Ryuji; and Konno, Tatsuo, 4,494,844, Cl. 354-241.000.

Suntory Limited: *See*—
Ueda, Toshihiro; Imanishi, Masamichi; and Miyano, Takayoshi, 4,494,681, Cl. 222-485.000.

Surace, Filippo; and Garcea, Giampaolo, to Alfa Romeo S.p.A. Lubricating oil seal device for rotating shaft bearingscu4,494,761, Cl. 277-67.000.

Suresh, Dev D.: *See*—
Grasselli, Robert K.; Suresh, Dev D.; and Miller, Arthur F., 4,495,109, Cl. 260-465.300.

Surjaatmadja, Jim B.: *See*—
Mosier, John E.; Surjaatmadja, Jim B.; and McLawhon, George B., 4,495,639, Cl. 381-51.000.

Susa, Ermanno: *See*—
Mayr, Adolfo; Susa, Ermanno; and Giachetti, Ettore, 4,495,338, Cl. 526-125.000.

Sutor, Peter T., to Dresser Industries, Inc. Insulating refractoriescu4,495,301, Cl. 501-124.000.

Sutton, Tonja R.; and Hughes, David W., to Dow Chemical Company, The. Reaction injection molded polyurethanes, polyureas and polyurea-urethanes employing thiapolycyclic polyisocyanatescu4,495,309, Cl. 521-51.000.

Suzuki, Hitoshi: *See*—
Morikawa, Kouji; and Suzuki, Hitoshi, 4,494,493, Cl. 123-52.00M.

Suzuki, Kenichi, to Canon Kabushiki Kaisha. X-Ray apparatuscu4,495,634, Cl. 378-173.000.

Suzuki, Kenichi: *See*—
Inoue, Yoichi; Matsumoto, Toshio; Niwa, Hirosuke; Suzuki, Kenichi; and Hoshide, Yasuo, 4,495,356, Cl. 546-268.000.

Suzuki, Ryuji: *See*—
Fujino, Masahisa; Sunouchi, Akio; Suzuki, Ryuji; and Konno, Tatsuo, 4,494,844, Cl. 354-241.000.

Suzuki, Shuichi: *See*—
Hayase, Shuzi; Onishi, Yasunobu; and Suzuki, Shuichi, 4,495,042, Cl. 204-159.140.

Suzuki, Yoshiaki, to Nippon Gakki Seizo Kabushiki Kaisha. Vibration system of pickup cartridge of record playercu4,495,611, Cl. 369-170.000.

Suzuki, Yukiji: *See*—
Obara, Masaaki; Tajima, Yoshio; and Suzuki, Yukiji, 4,495,236, Cl. 428-172.000.

Suzuki, Yutaka: *See*—
Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Suzuki, Yutaka; and Hasegawa, Takashi, 4,494,511, Cl. 123-463.000.

Svaty, Vladimir; and Sevcik, Ladislav, to Elitex, koncern textilniho strojirenstvi. Weft inserting device for jet loomscu4,494,577, Cl. 139-20.000.

Svendsen, Leo G.: *See*—
Soerensen, Gunnar; and Svendsen, Leo G., 4,495,216, Cl. 427-25.000.

Svoboda, Edward J., to Midas International Corporation. Tubing expander apparatuscu4,494,398, Cl. 72-393.000.

Swearingen, Judson S. Fluid handling method with improved purificationcu4,495,035, Cl. 203-23.000.

Swiderski, Paul R.: *See*—
Blevins, Theodore J.; and Swiderski, Paul R., 4,494,258, Cl. 5-29.000.

Swihart, Terence J.: *See*—
Blizzard, John D.; and Swihart, Terence J., 4,495,340, Cl. 528-15.000.

Swiss Aluminium Ltd.: *See*—
Hershey, Robert E., 4,494,735, Cl. 266-218.000.

Switzer, Jay A., to Union Oil Company of California. Electrode containing thallium (III) oxidecu4,495,046, Cl. 204-242.000.

Sydansk, Robert D., to Marathon Oil Company. Process for improving vertical conformance in a near well bore environmentcu4,494,606, Cl. 166-295.000.

Synek, Ervin H.; and Volejnicek, David. Table with a mechanism for automatically varying the size of the tabletopcu4,494,466, Cl. 108-85.000.

Syrjanen, Timo: *See*—
Salmela, Jouko J.; Hietanen, Jukka; and Syrjanen, Timo, 4,494,480, Cl. 118-411.000.

System Development Corporation: *See*—
Dickinson, Robert V.; and Galie, Louis M., 4,495,566, Cl. 364-200.000.

Szentmiklosi, Peter: *See*—
Meszaros, Zoltan; Knoll, Jozsef; Szentmiklosi, Peter; Hermecz, Istvan; Horvath, Agnes; Virag, Sandor; Vasvari, Lelle; and David, Agoston, 4,495,189, Cl. 514-258.000.

Tabacchi, Vittorio, to Safilo, S.p.A. Hinge for the pivoting of an elastically divertible temple piece to an eyeglass framecu4,494,834, Cl. 351-153.000.

Tabatabaie-Alavi, Kamal; Choudhury, Abu N. M. M.; Slater Gabriel, Nancy J.; and Fonstad, Clifton G., to United States of America, Navy. Dual species ion implantation of ternary compounds based on In-Ga-Ascu4,494,995, Cl. 148-1.500.

Tabuse, Katsuyoshi: *See*—
Zenitani, Toshio; and Tabuse, Katsuyoshi, 4,494,539, Cl. 128-303.100.

Tachika, Tetsuji; Sakamaki, Hisashi; and Hattori, Hiroyuki, to Canon Kabushiki Kaisha. Copying apparatuscu4,494,861, Cl. 355-14.00R.

Tada, Yoshinori: *See*—
Hiroshima, Koichi; and Tada, Yoshinori, 4,495,086, Cl. 252-314.000.

Tagnon, Luc; and Wajs, Georges, to Essilor International Cie General d'Optique. Apparatus for circulating and regenerating a degradable solution such as a saturable absorber for a lasercu4,494,569, Cl. 137-563.000.

Tahara, Hiroshi: *See*—
Kakuhashi, Takeshi; and Tahara, Hiroshi, 4,495,524, Cl. 338-314.000.

Tajima, Yoshio: *See*—
Obara, Masaaki; Tajima, Yoshio; and Suzuki, Yukiji, 4,495,236, Cl. 428-172.000.

Taka, Hideo: *See*—
Kimura, Hiroyuki; Yazaki, Mutsunobu; Taka, Hideo; and Masunaga, Makoto, 4,494,842, Cl. 354-173.110.

Takada, Juichiro. Seat belt retractor with an automatically memorized tensionless positioncu4,494,709, Cl. 242-107.600.

Takada, Toshiyuki; and Tamba, Shinichi, to Kawasaki Jukogyo Kabushiki Kaisha. Liquid-cooled internal combustion enginecu4,494,491, Cl. 123-41.720.

Takahashi, Hideyuki; and Ishikawa, Shozo, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member comprising disazo compoundcu4,495,264, Cl. 430-58.000.

Takahashi, Hiroshi: *See*—
Kobayashi, Takashi; Inagaki, Takeshi; Takahashi, Hiroshi; and Ohisa, Takayuki, 4,494,843, Cl. 354-214.000.

Takahashi, Jiro; Komamura, Tawara; Sawada, Kiyoshi; Sasaki, Ssamu; Goto, Satoshi; and Kinoshita, Akira, to Konishiroku Photo Industry Co., Ltd. Electrophotographic substituted p,p'-bisazo diphenyl acrylonitrile compounds for photoreceptorscu4,495,261, Cl. 430-58.000.

Takahashi, Katsuhiko: *See*—
Sugimoto, Gunji; Arakawa, Hideo; Ishihara, Toshikazu; Sugiura, Masahiro; and Takahashi, Katsuhiko, 4,495,560, Cl. 364-154.000.

Takahashi, Kazuo: *See*—
Ihara, Hiroyuki; Takahashi, Kazuo; Matsubara, Michiro; Kumata, Fumio; and Sanami, Yoshitomo, 4,495,089, Cl. 252-364.000.

Takahashi, Masao: *See*—
Ida, Jinsei; Hagimoto, Yosio; Takahashi, Masao; and Azuma, Saburo, 4,494,282, Cl. 29-33.00P.

Takahashi, Ryousuke: *See*—
Ueda, Masanori; Takahashi, Ryousuke; and Takeuchi, Hidemaro, 4,494,998, Cl. 148-2.000.

Takamura, Masayuki; and Kurahashi, Kazuo, to Nippon Gakki Seizo Kabushiki Kaisha. Eyeglass-framecu4,494,832, Cl. 351-41.000.

Takamura, Masayuki; and Kurahashi, Kazuo, to Nippon Gakki Seizo Kabushiki Kaisha. Eyeglass-framecu4,494,833, Cl. 351-41.000.

Takano, Toshio; and Sakakiyama, Ryuzo, to Fuji Jukogyo Kabushiki Kaisha. Electro-magnetic clutch control system for automobilescu4,494,639, Cl. 192-0.052.

Takeda Chemical Industries, Ltd.: *See*—
Imada, Isuke; Okutani, Tetsuya; and Watanabe, Masazumi, 4,495,104, Cl. 260-396.00R.
Nakabayashi, Masamitsu; Miyaji, Masuo; and Kamatani, Yoshio, 4,495,020, Cl. 156-314.000.

Takeda, Kenji: *See*—
Aoki, Takao; Inoue, Takahiro; Goto, Masahiro; and Takeda, Kenji, 4,494,856, Cl. 355-3.00R.

Takeda Riker Co. Ltd.: *See*—
Nakagomi, Koji; Aoki, Tetsuo; and Nakajima, Takayuki, 4,495,621, Cl. 371-6.000.

Takehara, Hideaki: *See*—
Wada, Yoshiyo; and Takehara, Hideaki, 4,495,610, Cl. 369-126.000.

Takei, Toshihiro; Goshima, Takahiro; Hattori, Yoshiyuki; and Matsui, Kazuma, to Nippondenso Co., Ltd. Power transmission device for vehiclescu4,494,943, Cl. 474-28.000.

Takemoto, Yoshinori: *See*—
Muto, Kenji; Takemoto, Yoshinori; Hatta, Takao; Hashimoto, Tamotsu; Yamada, Koji; and Watanabe, Minoru, 4,495,192, Cl. 514-318.000.

Takeuchi, Hidemaro: *See*—
Ueda, Masanori; Takahashi, Ryousuke; and Takeuchi, Hidemaro, 4,494,998, Cl. 148-2.000.

Takeuchi, Masaharu: *See*—
Kondo, Haruyoshi; Tsukada, Koji; and Takeuchi, Masaharu, 4,494,409, Cl. 73-651.000.

Takeuchi, Ryoichi: *See—*
Ito, Kanichi; Hirayama, Yoshio; Takeuchi, Ryoichi; Kodaira, Masanori; and Iizuka, Gorou, 4,495,290, Cl. 435-315.000.
Takeuchi, Tomio: *See—*
Umezawa, Hamao; Shimada, Nobuyoshi; Naganawa, Hiroshi; Takita, Tomohisa; Hamada, Masa; and Takeuchi, Tomio, 4,495,347, Cl. 536-24.000.
Takiguchi, Tetsuo, to Kabushiki Kaisha Yanagiya Tekkosho. Producing apparatus for fish meat processed foodcu4,494,356, Cl. 53-122.000.
Takimoto, Hiroyuki: *See—*
Kozuki, Susumu; Maeda, Masaya; and Takimoto, Hiroyuki, 4,495,527, Cl. 360-33.100.
Takimoto, Masaaki; Saida, Takashi; and Murata, Masataka, to Fuji Photo Film Co., Ltd. Photosensitive materials having improved antistatic propertycu4,495,276, Cl. 430-527.000.
Takita, Tomohisa: *See—*
Umezawa, Hamao; Shimada, Nobuyoshi; Naganawa, Hiroshi; Takita, Tomohisa; Hamada, Masa; and Takeuchi, Tomio, 4,495,347, Cl. 536-24.000.
Talkington, Howard R.: *See—*
Flood, Robert A.; Talkington, Howard R.; Wheelock, Richard A.; and Watts, Robert L., 4,494,938, Cl. 441-33.000.
Tamaki, Hiroaki; and Nakamura, Joji, to Kabushiki Kaisha Komatsu Seisakusho. Method and apparatus for driving hollow piles into the groundcu4,494,613, Cl. 173-74.000.
Tamba, Shinichi: *See—*
Takada, Toshiyuki; and Tamba, Shinichi, 4,494,491, Cl. 123-41.720.
Tamburro, Peter J., to AT&T Bell Laboratories. Coaxial cable connectorcu4,494,816, Cl. 339-177.00R.
Tamoto, Katsumi: *See—*
Terashima, Shiro; Tamoto, Katsumi; and Sugimori, Masamichi, 4,495,103, Cl. 260-351.100.
Tamura, Hiroshi: *See—*
Nakahara, Chizuko; Tanaka, Shigenori; Tamura, Hiroshi; and Matsumoto, Akiyoshi, 4,495,294, Cl. 436-502.000.
Tanaka, Akira: *See—*
Fukuroi, Takeo; Omori, Shigenori; and Tanaka, Akira, 4,494,922, Cl. 425-324.100.
Tanaka, Atsuyuki, to Minolta Camera Kabushiki Kaisha. Computerized information processing system equipped with copying apparatuscu4,494,862, Cl. 355-14.00C.
Tanaka, Masaki, to Shin-Etsu Chemical Co., Ltd. Foamable silicone-containing composition for treatment of fabric materialscu4,495,227, Cl. 427-373.000.
Tanaka, Shigenori: *See—*
Nakahara, Chizuko; Tanaka, Shigenori; Tamura, Hiroshi; and Matsumoto, Akiyoshi, 4,495,294, Cl. 436-502.000.
Tanaka, Toshio; Miyanaka, Motoshi; and Kochiyama, Shigekichi, to Hitachi, Ltd. Flame detector for pulse combustion apparatuscu4,494,924, Cl. 431-78.000.
Tanaka, Yasuo: *See—*
Baji, Toru; Koizumi, Naohiko; Tsukada, Toshihisa; Yamamoto, Hideaki; Shimomoto, Yasuharu; and Tanaka, Yasuo, 4,495,409, Cl. 250-211.00J.
Tanaka, Yoshikazu: *See—*
Hirano, Hiroyuki; Yamamuro, Sigeaki; Morimoto, Yoshiro; and Tanaka, Yoshikazu, 4,494,942, Cl. 474-28.000.
Tanczyn, Harry: *See—*
Schumacher, William J.; and Tanczyn, Harry, 4,494,988, Cl. 75-128.00A.
Tanigawa, Ikuo: *See—*
Fujita, Yuko; Kudo, Hisashi; and Tanigawa, Ikuo, 4,495,051, Cl. 204-408.000.
Tanoue, Yoriko: *See—*
Miyoshi, Hiroshi; Mori, Hirohumi; and Tanoue, Yoriko, 4,495,315, Cl. 523-125.000.
Tapco Products Company, Inc.: *See—*
Rhoades, James J., 4,494,397, Cl. 72-320.000.
Taracatac, Corazon A.; Flores, Luis; and Chaudhry, Viren, to Shaklee Corporation. Gel tableting agentcu4,495,177, Cl. 424-147.000.
Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Electrostatic reproducing apparatuscu4,495,508, Cl. 346-159.000.
Tate & Lyle Public Limited Company: *See—*
Beyts, Pamela K.; and Latymer, Zdenek, 4,495,170, Cl. 424-48.000.
Tatsuo, Inada: *See—*
Noboru, Nasu; and Tatsuo, Inada, 4,494,740, Cl. 270-31.000.
Tau-Tron, Inc.: *See—*
Richards, Edward W.; and Chang, Paul T., 4,495,468, Cl. 328-155.000.
Taylor, Chandler R., Jr., to A. H. Robins Company, Incorporated. Aryl substituted pyrido[1,4]benzodiazepines for treatment of depressioncu4,495,183, Cl. 514-220.000.
Taylor, Derek; Howlett, Stephen P.; Farr, Howard J.; and Tickle, Barbara L., to Doulton Industrial Products Limited. Ceramics compactcu4,495,302, Cl. 501-125.000.
Tech Development Inc.: *See—*
Stein, Robert A., 4,494,499, Cl. 123-179.00F.
Tecumseh Products Company: *See—*
Kaufman, Vernon R., 4,494,286, Cl. 29-156.50A.
Teijin Limited: *See—*
Iwata, Kaoru; Hagiwara, Tsuneo; and Matsuzawa, Hiroshi, 4,495,343, Cl. 528-292.000.
Teijin Seiki Co., Ltd.: *See—*
Miyake, Yuzuru; Sugioka, Takami; Murakami, Shoichi; and Ibuki, Hideaki, 4,494,702, Cl. 242-18.00R.
Tektronix: *See—*
Murphy, Desmond L., 4,495,458, Cl. 324-57.00R.
Tektronix, Inc.: *See—*
Andrews, Roland E., 4,495,586, Cl. 364-487.000.
Barrett, Ronald A., 4,495,471, Cl. 330-151.000.
Bristol, Lloyd R., 4,495,470, Cl. 330-9.000.
Wahlquist, Clayton C., 4,495,519, Cl. 358-139.000.
Terahata, Masahiro: *See—*
Aoki, Haruo; and Terahata, Masahiro, 4,494,845, Cl. 354-297.000.
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, to Fujisawa Pharmaceutical Co., Ltd. Cephem compoundscu4,495,182, Cl. 514-226.000.
Terashima, Shiro; Tamoto, Katsumi; and Sugimori, Masamichi, to Sumitomo Chemical Company, Ltd. Preparation of optically active 4-demethoxydaunomycinonecu4,495,103, Cl. 260-351.100.
Terrell, Jamie B.: *See—*
Pratt, Donna K.; and Terrell, Jamie B., 4,494,601, Cl. 166-55.000.
Terry, F. Duncan: *See—*
Haag, George A.; Fogg, O. Douglas; Greenley, Gordon A.; Shepard, Steve A.; and Terry, F. Duncan, 4,495,599, Cl. 364-900.000.
Tesch, Guenter H. Process for the preparation of fiber-reinforced flat bodies containing a hardenable bindercu4,495,235, Cl. 428-137.000.
Teshima, Kenzo: *See—*
Hatakeyama, Yoshiharu; and Teshima, Kenzo, 4,495,125, Cl. 264-132.000.
Tetra Pak International AB: *See—*
Viberg, Rolf; Harrysson, Goran; and Kjelgaard, Tom, 4,495,016, Cl. 156-152.000.
Texaco Development Corporation: *See—*
Reich, Erwin A., 4,494,963, Cl. 48-69.000.
Texaco Inc.: *See—*
Powell, Justin C.; and Levine, Stephen A., 4,495,077, Cl. 252-51.50A.
Walker, Clarence O., 4,494,610, Cl. 166-301.000.
Wiechel, John F.; French, Charles R.; and Hall, Wilbur L., 4,494,605, Cl. 166-288.000.
Texas Industries, Inc.: *See—*
Johnson, Joseph A., 4,495,132, Cl. 264-293.000.
Texas Instruments Incorporated: *See—*
Caldwell, David; Ferrio, Linda J.; and Hunter, Arthur C., 4,495,592, Cl. 364-754.000.
Hightower, Angus W.; Smith, Reginald W.; and Orcutt, John W., 4,495,376, Cl. 174-52.0FP.
Leach, Jerald G., 4,495,426, Cl. 307-453.000.
McDonough, Kevin C., 4,495,563, Cl. 364-200.000.
Textron Inc.: *See—*
Simpson, Anthony Y., 4,494,473, Cl. 114-67.00A.
Teyssier, Emil G., Jr., to Sperry Corporation. Air controlled paper stackercu4,494,948, Cl. 493-11.000.
Thalheimer, Albert J.: *See—*
Rathbun, Robert G.; and Thalheimer, Albert J., 4,495,033, Cl. 202-118.000.
Therm-O-Disc, Incorporated: *See—*
Place, Donald E., 4,495,389, Cl. 200-83.00P.
Thevenin, Michel; and Jullien, Georges, to Novatome. Junction device between the delivery duct of a primary pump and a duct joined to the core support of a fast neutron nuclear reactorcu4,495,138, Cl. 376-203.000.
Thevenon, Henri, to Les Cables de Lyon. Splice for electric cable armorcu4,495,379, Cl. 174-88.00R.
Thim, Stig, to A-Betong AB; and Sabema Material AB. Method of manufacturing concrete sleeper blockscu4,495,127, Cl. 264-157.000.
Thomas A. Schutz Co., Inc.: *See—*
Simon, Virgil S.; Adenau, Marvin L.; and Skalski, John S., 4,494,658, Cl. 211-49.00R.
Thomas, Christian, to La Telemecanique Electrique. Contactor apparatus comprising means for automatically opening power circuits and a local control devicecu4,495,538, Cl. 361-115.000.
Thomas, Francis J. Vehicle lighting systemcu4,495,444, Cl. 315-82.000.
Thomas, William R., to Baxter Travenol Laboratories, Inc. Process for making novel blood clotting enzyme compositionscu4,495,278, Cl. 435-5.000.
Thomasson, William R., to Coles Cranes Limited. Booms for cranes or the likecu4,494,351, Cl. 52-690.000.
Thompson, David L. Motorcycle power transmission and brake assemblycu4,494,622, Cl. 180-227.000.
Thompson, Dennis J., to AT&T Bell Laboratories. Computer memory address matcher and processcu4,495,565, Cl. 364-200.000.
Thompson, Dennis R., to Reliance Electric Company. Shaft bushing and hub assemblycu4,494,889, Cl. 403-4.000.
Thompson, Floyd M., to Crutcher Resources Corporation. Method and apparatus for positioning a welding torch in automatic electric weldingcu4,495,400, Cl. 219-125.120.
Thompson, Ivey G.: *See—*
Bowers, Cecil W.; Thompson, Ivey G.; and Allan, Thomas T., 4,494,403, Cl. 73-40.700.
Thompson, Neil E. S.: *See—*
Hausler, Rudolf H.; and Thompson, Neil E. S., 4,495,336, Cl. 252-8.55E.
Thompson, Norman C.; and Poole, Steven J., to Plessey Overseas Limited. Adjustable ratio dividercu4,495,630, Cl. 377-110.000.
Thomson-CSF: *See—*
Ballegeer, Jean C.; and Nguyen, Duyet H., 4,495,573, Cl. 364-200.000.

Boutrois, Guy, 4,494,691, Cl. 235-470.000.
Charruau, Stephane, 4,495,622, Cl. 371-20.000.
Descamps, Bernard, 4,495,513, Cl. 357-43.000.

Thoone, Martinus L. G.; Khoe, Giok D.; Kuppers, Dieter; and Gustin, Pol A. G. J., to U.S. Philips Corporation. Device for the optical scanning of a documentcu4,495,412, Cl. 250-227.000.

Three Dimensional Photography Corp., The: *See—*
Smith, Edgar C.; and Campbell, James B., 4,494,864, Cl. 355-22.000.

Thrush, Roger L., to White Consolidated Industries, Inc. Rotary selector switchcu4,495,387, Cl. 200-6.00B.

Thurlow, Heida L. Cookware with covers having metal handlescu4,494,274, Cl. 16-110.00A.

Thurman, Robert L.: *See—*
Williams, Charles R.; Yonker, John H.; and Thurman, Robert L., 4,494,608, Cl. 166-317.000.

Thyssen-Bornemisza Inc.: *See—*
Neff, Steven W.; and Borsh, Richard J., 4,494,779, Cl. 285-159.000.

Tickle, Barbara L.: *See—*
Taylor, Derek; Howlett, Stephen P.; Farr, Howard J.; and Tickle, Barbara L., 4,495,302, Cl. 501-125.000.

Tillbrook, Anthony A. C. Protective clothingcu4,494,246, Cl. 2-2.10R.

Timbers, Lynda J.: *See—*
Sheppard, Mark T.; and Timbers, Lynda J., 4,494,250, Cl. 2-227.000.

Timoshenko, John A.; and Bergh, Daniel D., to General Electric Company. Dynamic load bearing transmission line support membercu4,495,381, Cl. 174-178.000.

Toa Medical Electronic Co., Ltd.: *See—*
Iwata, Toyotaro; Nakajima, Kunio; and Otsuki, Hiroyuki, 4,495,149, Cl. 422-65.000.

Tobin, Joseph M., deceased: *See—*
Kochka, Edgar L.; Tobin, Joseph M., deceased; and Neve, Arlene F., administratrix, 4,495,140, Cl. 376-207.000.

Toda Kogyo Corp.: *See—*
Okuda, Yosiro; and Harada, Tosiharu, 4,495,164, Cl. 423-266.000.

Toeppen, John S., to Bell & Howell Company. Dual lens image rotation systemcu4,494,840, Cl. 353-101.000.

Toishi, Yoshiyuki, to Yoshida Kogyo K. K. Method for securing bottom end stop to fastener chaincu4,494,292, Cl. 29-408.000.

Tokhunts, Roman D.: *See—*
Zabotin, Viktor G.; Kosenko, Alexandr I.; Kozlov, Sergei P.; Pervyshin, Alexandr N.; Lukachev, Viktor P.; Mikhailov, Vladimir A.; Buryakov, Valery M.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Levin, Viktor Y., deceased; and Levin, Sofia N., administratrix, 4,494,925, Cl. 431-158.000.

Tokizaki, Hisashi; and Sato, Hironobu, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Electric Co., Ltd. Control device for brushless motorcu4,495,450, Cl. 318-138.000.

Tokunaga, Hiroshi: *See—*
Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,495,508, Cl. 346-159.000.

Tokura, Kimihide: *See—*
Kurafuzi, Takamasa; and Tokura, Kimihide, 4,495,532, Cl. 360-71.000.

Tokyo Institute of Technology: *See—*
Minami, Kazuo, 4,495,442, Cl. 315-3.000.

Tokyo Sanyo Electric Co., Ltd.: *See—*
Tokizaki, Hisashi; and Sato, Hironobu, 4,495,450, Cl. 318-138.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Eguchi, Kazutoshi, 4,495,575, Cl. 364-200.000.
Hayase, Shuzi; Onishi, Yasunobu; and Suzuki, Shuichi, 4,495,042, Cl. 204-159.140.
Horii, Tetsuo; and Kohno, Takeshi, 4,494,655, Cl. 209-569.000.
Kurafuji, Takamasa, 4,495,534, Cl. 360-74.100.
Kurafuzi, Takamasa; and Tokura, Kimihide, 4,495,532, Cl. 360-71.000.
Nagoh, Chiaki, 4,495,521, Cl. 358-256.000.
Nishikawa, Meisei; Nakamura, Yukio; and Kojima, Tadashi, 4,495,474, Cl. 331-11.000.
Ohhashi, Akinami, 4,495,645, Cl. 382-6.000.
Ohno, Junichi; and Ohta, Takao, 4,494,996, Cl. 148-1.500.
Shimoma, Taketoshi; Fukuda, Kumio; and Shimaoogi, Toshio, 4,495,439, Cl. 313-412.000.
Ueno, Tsuyoshi; Hashimoto, Shinichi; Matsuyama, Kouzou; and Wakao, Nobutaka, 4,494,857, Cl. 355-3.0CH.

Tolley, Andrew T.: *See—*
Tolley, Calvert B.; and Tolley, Andrew T., 4,494,277, Cl. 17-71.000.

Tolley, Calvert B.; and Tolley, Andrew T., to Sea Savory, Inc. Crab holder for processing machinecu4,494,277, Cl. 17-71.000.

Tomaiuolo, Frank G.; and Lang, John G., to Rotesco Inc. Method and apparatus for non-destructive testing of magnetically permeable bodies using a first flux to saturate the body and a second flux opposing the first flux to produce a measurable fluxcu4,495,465, Cl. 324-232.000.

Tominaga, Masahiro; Nakamura, Kenichi; and Mishima, Kunio. Weather strip for automobilescu4,495,234, Cl. 428-122.000.

Tomohiro, Yoshitaka: *See—*
Hagiwara, Michiaki; and Tomohiro, Yoshitaka, 4,495,074, Cl. 210-695.000.

Tomsu, David L.: *See—*
Williams, V. Harold; and Tomsu, David L., 4,494,806, Cl. 312-333.000.

Tonjes, Heinz: *See—*
Schmidt, Hans-Jorg; Franke, Joachim; Scheffler, Reingard; Tonjes, Heinz; Kammann, Gunter; and Dietz, Gunther, 4,495,351, Cl. 544-234.000.

Tooley, Mark A.: *See—*
Corrie, John D.; and Tooley, Mark A., 4,494,717, Cl. 246-28.00F.

Torii, Nobutoshi: *See—*
Inaba, Hajimu; Sakakibara, Shinsuke; Inagaki, Shigemi; and Torii, Nobutoshi, 4,495,453, Cl. 318-568.000.

Torizuka, Keizi, to Diesel Kiki Co., Ltd. Fuel injection pump for internal combustion engines, free from erosion of the pump housingcu4,494,513, Cl. 123-495.000.

Totoku Electric Co., Ltd.: *See—*
Sakai, Yoshio; and Yamada, Takeshi, 4,495,406, Cl. 219-528.000.

Toyo Jozo Kabushiki Kaisha: *See—*
Ohyama, Kunio; Nakagawa, Nobuaki; and Watanabe, Susumu, 4,495,151, Cl. 422-102.000.

Toyo Shokuhin Kikai Kabushiki Kaisha: *See—*
Yoshida, Toshio, 4,495,584, Cl. 364-479.000.

Toyokura, Nobuo: *See—*
Kato, Takashi; and Toyokura, Nobuo, 4,495,219, Cl. 427-82.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Inui, Masaki; and Yasui, Yasuyoshi, 4,494,419, Cl. 74-477.000.
Ito, Hiroshi, 4,495,576, Cl. 364-424.100.
Itou, Takaaki; Katou, Takashi; and Morino, Toshiharu, 4,495,112, Cl. 261-41.00D.
Kawamura, Setuo, 4,494,559, Cl. 137-116.500.
Kobuki, Shinzo; Kubota, Hazime; and Miyamaru, Tsuneo, 4,494,723, Cl. 248-635.000.
Matsuura, Tsuyoshi, 4,494,289, Cl. 29-227.000.
Nakamura, Norihiko; Baika, Toyokazu; Miki, Toshio; and Kohigashi, Minoru, 4,494,495, Cl. 123-90.150.
Nakamura, Norihiko; and Baika, Toyokazu, 4,494,496, Cl. 123-90.150.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Uchida, Shigekatsu; Akatsuka, Takao; and Kawamura, Takahide, 4,494,497, Cl. 123-179.00B.

Toyota Tidosha Kabushiki Kaisha: *See—*
Watanabe, Hiroyuki; and Ohashi, Mikio, 4,494,337, Cl. 49-374.000.

Trace Athletic Corporation: *See—*
Kelly, Michael J., 4,494,247, Cl. 2-24.000.

Tracor, Inc.: *See—*
Klein, Elias; and Beach, Douglas J., 4,495,067, Cl. 210-87.000.

Trailigaz, Compagnie Generale de L'Ozone: *See—*
Marets, Maurice, 4,495,043, Cl. 204-176.000.

Treen, Kevin L., to Codex Corporation. Multiprocessor/multimemory control systemcu4,495,567, Cl. 364-200.000.

Treise, Jan E., to Rockwell International Corporation. Digital phase shifting apparatus which compensates for change of frequency of an input signal to be phase shiftedcu4,495,473, Cl. 331-10.000.

Trew, John D.: *See—*
Brown, Richard A.; and Trew, John D., 4,494,698, Cl. 239-489.000.

Tri-Star Enterprises, Inc.: *See—*
Hoang, Tan; and Smiley, James B., 4,494,899, Cl. 414-22.000.

Trigometer, Inc.: *See—*
Hickling, Colin D.; and Barnes, Marvin, 4,495,481, Cl. 337-349.000.

Trinkel, Steven F.; Strange, Patrick E.; and Slaats, Mathew A., to Kimball International, Inc. Seat adjustment mechanism for a chaircu4,494,721, Cl. 248-406.200.

Trottmann, Bruno, to C. Hoegger & Cie. AG. Feeding machine and receiving device for apportioned sausage chainscu4,494,276, Cl. 17-1.00F.

Troyen, Harry D. Apparatus for supplying a flow of liquid to a turbinecu4,494,567, Cl. 137-561.00A.

TRW Inc.: *See—*
Petrelis, Peter G.; and Alexander, John A., 4,495,498, Cl. 340-825.790.
Wolf, Stanley; and Atwood, Warren C., 4,495,220, Cl. 427-82.000.

Tselniker, Efim Y.: *See—*
Sidorov, Viktor V.; Tselniker, Efim Y.; Sidorov, Evgeny P.; Sukhov, Leonid V.; Gorb, Vyacheslav F.; and Bairakovsky, Gennady M., 4,495,401, Cl. 219-136.000.

Tsenta, Nikolai E.: *See—*
Eystratov, Vitaly A.; Elkin, Mikhail Y.; Danilenko, Viktor Y.; Stepunin, Ivan M.; Tsenta, Nikolai E.; Rud, Sergei A.; and Belferman, Leonid M., 4,494,448, Cl. 92-172.000.

Tsubakimoto-Morse Co., Ltd.: *See—*
Wakabayashi, Shozo; and Narita, Kinzo, 4,494,636, Cl. 192-41.00A.

Tsubota, Motohiko; and Moriguchi, Masakazu, to Fuji Photo Film Co., Ltd. Color diffusion transfer photographic elementcu4,495,270, Cl. 430-218.000.

Tsubouchi, Kaoru, to Aisin Seiki Kabushiki Kaisha. Reaction force apparatus for a vacuum boostercu4,494,443, Cl. 91-369.00A.

Tsubouchi, Kaoru: *See—*
Furuta, Yohichi; Tsubouchi, Kaoru; and Nishii, Michiharu, 4,494,445, Cl. 91-369.00A.

Tsuchiya, Yoshikazu: *See—*
Ohmori, Taiji; Sato, Makoto; and Tsuchiya, Yoshikazu, 4,494,801, Cl. 303-92.000.

Tsuda, Hiroshi: *See—*
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,494,748, Cl. 271-288.000.

Tsukada, Koji: *See*—
Kondo, Haruyoshi; Tsukada, Koji; and Takeuchi, Masaharu, 4,494,409, Cl. 73-651.000.
Tsukada, Toshihisa: *See*—
Baji, Toru; Koizumi, Naohiko; Tsukada, Toshihisa; Yamamoto, Hideaki; Shimomoto, Yasuharu; and Tanaka, Yasuo, 4,495,409, Cl. 250-211.00J.
Tsunekawa, Takahiko: *See*—
Morita, Takayuki; Tsunekawa, Takahiko; and Amano, Hisao, 4,494,371, Cl. 57-263.000.
Tsuruoka, Ryozo: *See*—
Nakayama, Tadakazu; Tsuruoka, Ryozo; and Matsumoto, Masaki, 4,495,142, Cl. 376-251.000.
Tsuruoka, Takashi: *See*—
Koyama, Masao; Tsuruoka, Takashi; Ezaki, Norio; Miyauchi, Keinosuke; and Inouye, Shigeharu, 4,495,358, Cl. 548-550.000.
Tsushima, Rikio: *See*—
Matsunaga, Kinjiro; Okumura, Takeo; and Tsushima, Rikio, 4,495,173, Cl. 424-70.000.
Tsuzuki, Yoshihiko: *See*—
Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Suzuki, Yutaka; and Hasegawa, Takashi, 4,494,511, Cl. 123-463.000.
Tunac, Josefino B.; Dobson, William E.; and Graham, Blanche D., to Warner-Lambert Company. Antibiotic complex producing bacterial culturecu4,495,286, Cl. 435-253.000.
Turk, Gunter: *See*—
Nauroth, Peter; Esch, Heinz; and Turk, Gunter, 4,495,167, Cl. 423-339.000.
Turk, Stanley D.: *See*—
Drake, Charles A.; and Turk, Stanley D., 4,495,344, Cl. 528-340.000.
Turner, E. Wayne: *See*—
Hardigg, James S.; and Turner, E. Wayne, 4,495,260, Cl. 429-180.000.
Turney, Stephen D., to General Electric Company. Brightness control for a vacuum fluorescent displaycu4,495,445, Cl. 315-169.100.
Uba, Toshio, to Gates Rubber Company, The. Vibration resistant batterycu4,495,259, Cl. 429-161.000.
Uchida, Masaaki: *See*—
Kitahara, Tsuyoshi; Sone, Kohki; and Uchida, Masaaki, 4,494,374, Cl. 60-276.000.
Uchida, Ryohei; and Fujii, Toshifumi, to Mitsubishi Denki Kabushiki Kaisha. Magnetic video reproducing apparatus having still picture reproducing functioncu4,495,525, Cl. 360-10.300.
Uchida, Shigekatsu; Akatsuka, Takao; and Kawamura, Takahide, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic engine stop-restart systemcu4,494,497, Cl. 123-179.00B.
Ueda, Masanori; Takahashi, Ryousuke; and Takeuchi, Hidemaro, to Nippon Steel Corporation. Process for producing austenitic stainless steels less susceptible to rolling defectscu4,494,998, Cl. 148-2.000.
Ueda, Toshihiro; Imanishi, Masamichi; and Miyano, Takayoshi, to Suntory Limited. Method and dispenser for dispensing beercu4,494,681, Cl. 222-485.000.
Ueno, Tsuyoshi; Hashimoto, Shinichi; Matsuyama, Kouzou; and Wakao, Nobutaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Imaging method using a charged insulating layercu4,494,857, Cl. 355-3.0CH.
Uherek, Vladimir; and Kersen, Matthew F., to Westinghouse Electric Corp. Elevator systemcu4,494,628, Cl. 187-29.00R.
Uhlig, Raimer, to Hilti Aktiengesellschaft. Method and assembly for fastening facade panels or facade supports in spaced relation to a support surfacecu4,494,347, Cl. 52-508.000.
Uhlin, Bernt E.; Nordstrom, Kurt; and Molin, Soeren, to A/S Alfred Benzon. Process for producing gene products of plasmid having temperature dependent plasmid copy numbercu4,495,287, Cl. 435-231.000.
UMC Industries, Inc.: *See*—
Press, Irving D., 4,494,776, Cl. 285-55.000.
Umeki, Masakazu, to BOC Group plc, The. Process for nitrogen enrichmentcu4,494,966, Cl. 55-26.000.
Umemoto, Makoto: *See*—
Yagihara, Morio; Hirano, Tsumoru; Hirano, Mitsunori; and Umemoto, Makoto, 4,495,272, Cl. 430-381.000.
Umezawa, Hamao; Shimada, Nobuyoshi; Naganawa, Hiroshi; Takita, Tomohisa; Hamada, Masa; and Takeuchi, Tomio, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Antibiotic oxanosine and process for the preparation thereofcu4,495,347, Cl. 536-24.000.
Union Camp Corporation: *See*—
Lawson, Nelson E.; and Amer, Gamal I., 4,495,095, Cl. 260-97.700.
Union Carbide Corporation: *See*—
Fu, Wallace Y., 4,495,093, Cl. 260-453.300.
Stamberger, Paul, 4,495,341, Cl. 528-110.000.
Union Oil Company of California: *See*—
Backlund, Peter S., 4,494,976, Cl. 71-28.000.
Switzer, Jay A., 4,495,046, Cl. 204-242.000.
Union Power Construction Company: *See*—
Waymire, Frank, 4,494,732, Cl. 254-134.30R.
Uniroyal, Inc.: *See*—
Feiccabrino, Joseph A., 4,495,372, Cl. 568-929.000.
United States of America
Agriculture: *See*—
Christianson, Donald D.; and Friedrich, John P., 4,495,207, Cl. 426-312.000.
Air Force: *See*—
Abrams, Richard L.; Henderson, David M.; Pinnow, Douglas A.; and Stephens, Ronald R., 4,494,827, Cl. 350-385.000.
Creed, Durwood L., 4,495,501, Cl. 343-7.700.
Lakin, Kenneth M., 4,495,466, Cl. 324-242.000.
Masak, Raymond J., 4,495,502, Cl. 343-380.000.
Shields, Michael W., 4,495,505, Cl. 343-821.000.
Wallquist, Donald L.; and Kuperman, Gilbert G., 4,494,838, Cl. 351-206.000.
Army: *See*—
Funke, Maurice F.; and Morris, Joseph W. (said Joseph W. Morris assors. to), 4,494,422, Cl. 74-867.000.
Magnuson, Roland A., 4,494,441, Cl. 89-38.000.
Seiler, James F. N., Jr., 4,494,563, Cl. 137-496.000.
Vanderbeck, William E., 4,494,331, Cl. 42-70.00D.
Energy: *See*—
Gross, Kenny C.; and Laug, Matthew T., 4,495,143, Cl. 376-251.000.
Korenko, Michael K., 4,494,987, Cl. 75-124.000.
Health and Human Services: *See*—
Karpetsky, Timothy P.; and Brown, Glenn E., 4,495,279, Cl. 435-6.000.
Interior: *See*—
Divers, Edward F.; Lascola, John C.; and Behers, Robert G., 4,494,894, Cl. 405-290.000.
National Aeronautics and Space Administration: *See*—
Banks, Bruce A., 4,495,044, Cl. 204-192.00C.
Kravitz, Marvin; Freedman, Larry A.; Fredd, Elmer H.; and Denef, Dan E., 4,495,520, Cl. 358-219.000.
Lauver, Richard W., 4,495,339, Cl. 526-262.000.
Navy: *See*—
Flood, Robert A.; Talkington, Howard R.; Wheelock, Richard A.; and Watts, Robert L., 4,494,938, Cl. 441-33.000.
Hamid, Michael; and Lionis, Anastasios, 4,494,835, Cl. 351-158.000.
Mathes, H. Bernard, 4,494,625, Cl. 181-213.000.
Moden, James R., 4,495,256, Cl. 429-17.000.
Rashleigh, Scott C., 4,495,411, Cl. 250-227.000.
Sheridan, Anthony A., 4,495,433, Cl. 310-329.000.
Spargo, John D., 4,494,760, Cl. 277-30.000.
Tabatabaie-Alavi, Kamal; Choudhury, Abu N. M. M.; Slater Gabriel, Nancy J.; and Fonstad, Clifton G., 4,494,995, Cl. 148-1.500.
Vetter, Ronald F.; Hicks, Theodore A.; and Compton, Warren R., 4,494,373, Cl. 60-253.000.
Yoder, Max N., 4,495,511, Cl. 357-22.000.
U.S. Philips Corporation: *See*—
Gilliam, John E., 4,495,461, Cl. 324-86.000.
Kuppens, Bernardus J.; and Wardenaar, Hendrik C., 4,494,902, Cl. 414-223.000.
Notelteirs, Victor R., 4,495,436, Cl. 313-318.000.
Segarra, Gerard; and Allain, Jean L., 4,495,493, Cl. 340-825.500.
Thoone, Martinus L. G.; Khoe, Giok D.; Kuppers, Dieter; and Gustin, Pol A. G. J., 4,495,412, Cl. 250-227.000.
United Technologies Corporation: *See*—
Grudkowski, Thomas W., 4,495,431, Cl. 310-313.00B.
Unitika, Ltd.: *See*—
Hagiwara, Michiaki; and Tomohiro, Yoshitaka, 4,495,074, Cl. 210-695.000.
University of California, The Regents of the: *See*—
Hull, Maury L., 4,494,768, Cl. 280-612.000.
Norman, Anthony W.; and Mayer, Eberhard, 4,495,181, Cl. 514-167.000.
University of Rochester: *See*—
Chavin, Stephen I.; and Fay, Philip J., 4,495,175, Cl. 424-101.000.
Univerzita Komenskeho: *See*—
Chudy, Martin; Janik, Rudolf; and Povinec, Pavol, 4,495,420, Cl. 250-367.000.
UOP Inc.: *See*—
Barley, Geoffrey W., 4,494,794, Cl. 297-307.000.
Cleary, Michael T., 4,495,094, Cl. 260-97.600.
Cleary, Michael T.; and Laughlin, William C., 4,495,106, Cl. 260-419.000.
Harguindey, Julian E., 4,494,603, Cl. 166-231.000.
Upjohn Company, The: *See*—
Johnson, Roy A., 4,495,357, Cl. 546-269.000.
Skulnick, Harvey I.; Smith, Herman W.; Smith, Robert J.; and Wierenga, Wendell, 4,495,349, Cl. 544-97.000.
Upmeier, Hartmut; and Schreiber, Thilo, to Windmoller & Holscher. Funnel member for single-screw extrudercu4,494,877, Cl. 366-76.000.
Uranium Pechiney Ugine Kuhlmann: *See*—
Maurel, Pierre, 4,495,159, Cl. 423-87.000.
Urethane Specialties, Inc.: *See*—
Brown, Richard A.; and Trew, John D., 4,494,698, Cl. 239-489.000.
Uroko Seisakusho Co., Ltd.: *See*—
Kajikawa, Yoshimitsu; Souma, Keinosuke; Ogaki, Kohei; Uzuka, Tadashi; and Minato, Yoshihiko, 4,494,589, Cl. 144-213.000.
Kajikawa, Yoshimitsu; Souma, Keinosuke; Ogaki, Kohei; Uzuka, Tadashi; and Minato, Yoshihiko, 4,494,590, Cl. 144-213.000.
USM Corporation: *See*—
McCarthy, Bruce C., 4,495,240, Cl. 428-319.100.
Usui, Katumi: *See*—
Matsuura, Kazuo; Yamaoka, Noboru; Yanahashi, Shinichi; Usui, Katumi; and Miyoshi, Mituji, 4,495,334, Cl. 525-240.000.
Usui Kokusai Sangyo Kabushiki Kaisha: *See*—
Kubo, Naomi, 4,495,003, Cl. 148-15.500.
Uzuka, Tadashi: *See*—
Kajikawa, Yoshimitsu; Souma, Keinosuke; Ogaki, Kohei; Uzuka, Tadashi; and Minato, Yoshihiko, 4,494,589, Cl. 144-213.000.

Kajikawa, Yoshimitsu; Souma, Keinosuke; Ogaki, Kohei; Uzuka, Tadashi; and Minato, Yoshihiko, 4,494,590, Cl. 144-213.000.

V.G. Isogas Limited: *See*—
Barrie, Andrew; and Freedman, Phillip A., 4,495,414, Cl. 250-288.000.

Vahlstrom, Richard; Keats, Dennis R.; and Lee, Peter T., to McDonnell Douglas Corporation. Computer rotate functioncu4,495,598, Cl. 364-900.000.

Valentine, Al L., to State Die & Engineering, Inc. Power operated rotatable clamping assemblycu4,494,739, Cl. 269-32.000.

Valeo: *See*—
Villeval, Denis, 4,494,669, Cl. 220-204.000.

Vallana, Franco: *See*—
Cerise, Osvaldo; Arru, Pietro; and Vallana, Franco, 4,495,039, Cl. 204-130.000.

Vallourec, S.A.: *See*—
Duret, Jean, 4,494,777, Cl. 285-55.000.

Valmet Oy: *See*—
Haantera, Antti I., 4,494,476, Cl. 114-260.000.

Vamvakas, Spiro: *See*—
Brown, Thomas A.; Dissosway, Marc A.; Peil, William; and Vamvakas, Spiro, 4,495,446, Cl. 315-206.000.

Van Bochove, Gijsbertus F. J.; and Somers, Petrus A. A. M., to Fokker B.V. Convertor apparatus for accurate and consistent non-destructive testing of objectscu4,494,410, Cl. 73-644.000.

Vanderbeck, William E., to United States of America, Army. Firearm safety devicecu4,494,331, Cl. 42-70.00D.

Vanderhider, James A.; and Lancaster, Gerald M., to Dow Chemical Company, The. Compositions containing polyether polyols and aliphatic primary aminescu4,495,081, Cl. 252-182.000.

VanderValk, Paul D., to Eastman Kodak Company. Electrophotographic elements containing polyamide interlayerscu4,495,263, Cl. 430-60.000.

Van Dyke, Helga M.; and DeGroot, Rudolph C., Sr., to Van Dyke, Helga M. Skin test device using I.C. comparator circuitcu4,494,554, Cl. 128-734.000.

Van Erden, Donald L.; Gould, Russell J.; and Matsunaga, Yukio A., to Signode Corporation. Method for producing polypropylene sheetcu4,495,124, Cl. 264-130.000.

Van Gheluwe, Joris E. A.: *See*—
Weaver, Robert L.; Van Gheluwe, Joris E. A.; and McKee, John A., 4,495,204, Cl. 426-16.000.

van Loveren, Augustinus G.: *See*—
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and van Loveren, Augustinus G., 4,495,091, Cl. 252-522.00R.

Vannier, Chantal: *See*—
Lacour, Bernard; Maillet, Marc; de Witte, Olivier; and Vannier, Chantal, 4,495,631, Cl. 372-38.000.

Van Pelt, Richard, to Storage Technology Corporation. Dual mode control system for controlling tape position in a reel to reel transport apparatuscu4,494,711, Cl. 242-184.000.

Van Wandelen, Henri, to Bremson Data Systems, Inc. Integrator for analyzing the spectral content of printing illuminationcu4,494,876, Cl. 356-404.000.

Van Winkle, George W.: *See*—
Carlson, Albert A.; Owen, Darrel M.; and Van Winkle, George W., 4,495,549, Cl. 362-62.000.

Varco International, Inc.: *See*—
Beaufort, Ronald E., 4,494,376, Cl. 60-421.000.

Varshney, Ramesh C. Test system for segmented memorycu4,495,603, Cl. 365-233.000.

Vasconcellos, Alfred: *See*—
Burdick, Thomas H.; Vasconcellos, Alfred; and Whitney, William G., 4,495,402, Cl. 219-214.000.

Vasicek, Vladimir: *See*—
Cech, Miloslav; Slezak, Adolf; and Vasicek, Vladimir, 4,494,578, Cl. 139-188.00A.

Vasovich, Dimitrije R. Size dresser for grinding wheelscu4,494,522, Cl. 125-11.0DF.

Vasta, Joseph A., to Du Pont de Nemours, E. I., and Company. Primer coating composition of a fluorocarbon polymer and an amino alkyl alkoxy silanecu4,495,247, Cl. 428-422.000.

Vasta, Joseph A., to Du Pont de Nemours, E. I., and Company. Coating composition of a fluorocarbon polymer and a polyamine curing agentcu4,495,248, Cl. 428-422.000.

Vasvari, Lelle: *See*—
Meszaros, Zoltan; Knoll, Jozsef; Szentmiklosi, Peter; Hermecz, Istvan; Horvath, Agnes; Virag, Sandor; Vasvari, Lelle; and David, Agoston, 4,495,189, Cl. 514-258.000.

VDO Adolf Schindling AG: *See*—
Collonia, Harald, 4,495,454, Cl. 318-663.000.

Veb Arzneimittelwerk Dresden: *See*—
Schmidt, Hans-Jorg; Franke, Joachim; Scheffler, Reingard; Tonjes, Heinz; Kammann, Gunter; and Dietz, Gunther, 4,495,351, Cl. 544-234.000.

Veb Schwermaschinenbau-Kombinat "Ernst Thalmann" Magdeburg: *See*—
Pechau, Gerhard; Wyzgol, Ewald; and Jacob, Rudi, 4,494,427, Cl. 83-306.000.

Vegter, Herman J.: *See*—
Jansma, Wytze; Mars, Jan; Stoutjesdijk, Pieter G.; and Vegter, Herman J., 4,494,530, Cl. 127-69.000.

Velasco Scale Company: *See*—
Reeves, Robert H., Jr.; Chandler, Don G.; and Jorgensen, H. A., 4,494,583, Cl. 141-83.000.

Venardos, Dean G.; and Grieves, Colin G., to Standard Oil Company (Indiana); and Gulf Oil Corporation. Oil shale retorting and retort water purification processcu4,495,056, Cl. 208-11.00R.

Venkat, Chaya; and Walsh, Dennis E., to Mobil Oil Corporation. Increasing the octane number of diesel fuel by partial oxidation cu4,494,961, Cl. 44-57.000.

Vercillo, Alfredo J.; and Kuehn, Arthur, to General Binding Corporation. Automatic reversing system for shreddercu4,495,456, Cl. 318-755.000.

Verdonck, Omer F.: *See*—
De Boodt, Marcel F. L. P.; and Verdonck, Omer F., 4,494,975, Cl. 71-25.000.

Vermont Toy Works, Inc.: *See*—
Winer, Gordon E., 4,494,756, Cl. 273-156.000.

Vernino, Raymond. Microphone pickup for musical instrumentscu4,495,641, Cl. 381-91.000.

Vertx Corporation: *See*—
Stutsman, Richard R., 4,494,675, Cl. 221-13.000.

Vetter, Harald: *See*—
Kros, Rudolf; and Vetter, Harald, 4,495,542, Cl. 361-301.000.

Vetter, Ronald F.; Hicks, Theodore A.; and Compton, Warren R., to United States of America, Navy. Fail safe rocket motorcu4,494,373, Cl. 60-253.000.

Vezin, Luc: *See*—
Guillaume, Paul; Vezin, Luc; and Dubi, Bernard, 4,494,923, Cl. 431-9.000.

Viberg, Rolf; Harrysson, Goran; and Kjelgaard, Tom, to Tetra Pak International AB. Method of making a packing laminate webcu4,495,016, Cl. 156-152.000.

Vickers, Roger S., to SRI International. Topographic data gathering methodcu4,495,500, Cl. 343-5.0CM.

Victor Company of Japan, Ltd.: *See*—
Ishigaki, Yukinobu, 4,495,428, Cl. 307-490.000.
Kohri, Naomichi; Fukuda, Yutaka; and Muramatsu, Hiroshi, 4,495,535, Cl. 360-96.300.
Sasamura, Kohhei; and Moriyama, Masaru, 4,495,528, Cl. 360-40.000.
Sasamura, Kouhei, 4,495,531, Cl. 360-65.000.
Wada, Yoshiyo; and Takehara, Hideaki, 4,495,610, Cl. 369-126.000.

Vidal, Henri: *See*—
Wojciechowski, Longine J., 4,494,892, Cl. 404-6.000.

Vigliermo, Amerigo: *See*—
Rattin, Luciano; and Vigliermo, Amerigo, 4,494,866, Cl. 355-57.000.

Vilk, Peter; and Stephens, Alan, to B.H.F. (Engineering) Ltd. Forehearth for conditioning glasscu4,494,974, Cl. 65-337.000.

Villeval, Denis, to Valeo. Stopper for a heat exchanger circuitcu4,494,669, Cl. 220-204.000.

Virag, Sandor: *See*—
Meszaros, Zoltan; Knoll, Jozsef; Szentmiklosi, Peter; Hermecz, Istvan; Horvath, Agnes; Virag, Sandor; Vasvari, Lelle; and David, Agoston, 4,495,189, Cl. 514-258.000.

Viriyayuthakorn, Montri; and DeBoo, Robert V., to AT&T Technologies, Inc. Extrusion method and apparatuscu4,495,022, Cl. 156-500.000.

Visciano, Joseph. Flexible flashlightcu4,495,550, Cl. 362-189.000.

Visu-Flex Company: *See*—
Spees, Arthur T., 4,494,659, Cl. 211-51.000.

Vodian, Morton A.: *See*—
Cook, William E.; Vodian, Morton A.; and Haunold, Otto, 4,495,150, Cl. 422-99.000.

Voest-Alpine Aktiengesellschaft: *See*—
Brettbacher, Franz; and Rudolf, Buchegger, 4,494,395, Cl. 72-203.000.

Vohrer, Christoph. Process for producing a reinforced tubecu4,495,018, Cl. 156-187.000.

Volejnicek, David: *See*—
Synek, Ervin H.; and Volejnicek, David, 4,494,466, Cl. 108-85.000.

Volkswagenwerk Aktiengesellschaft: *See*—
Honig, Ernst-August, 4,494,640, Cl. 192-0.052.
Kruger, Hermann, 4,494,729, Cl. 251-229.000.

Volund Miljoteknik A/S: *See*—
da Silva Pinto, Gabriel, 4,494,469, Cl. 110-281.000.

von Maydell, Ignaz, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, er Haftung 03. Arrangement in low-flying weapons carriers for combating ground targetscu4,494,437, Cl. 89-1.510.

Vsesojuzny Kardiolgicheshy Anuchny Tsentr: *See*—
Bondar, Ljudmila S.; Okunev, Rostan A.; Polezhaev, Lev V.; Kolchin, Sergei P.; Cherkasova, Ljudmila V.; and Nikolaeva, Lilia F., 4,495,201, Cl. 514-560.000.

Vsesojuzny Nauchno-Issledovatelsky I Proektno-Konstruktorsky Institut Promyshelennykh Gidroprivodov I Girodoavtomatiki: *See*—
Eystratov, Vitaly A.; Elkin, Mikhail Y.; Danilenko, Viktor Y.; Stepunin, Ivan M.; Tsenta, Nikolai E.; Rud, Sergei A.; and Belferman, Leonid M., 4,494,448, Cl. 92-172.000.

W. G. Whitney Corporation: *See*—
Burdick, Thomas H.; Vasconcellos, Alfred; and Whitney, William G., 4,495,402, Cl. 219-214.000.

W. R. Grace & Co., Cryovac Div.: *See*—
Malcolm, Donald A., 4,494,651, Cl. 206-328.000.

W. R. Meadows, Inc.: *See*—
Sackis, John J.; and Anderson, Paul H., 4,495,319, Cl. 524-96.000.

WABCO Fahrzeugbremsen GmbH: *See*—
Seegers, Gunter; Sebesta, Gunter; and Klatt, Alfred, 4,494,571, Cl. 137-596.160.

Wada, Yoshiyo; and Takehara, Hideaki, to Victor Company of Japan, Ltd. Circuit arrangement for applying high frequency energy to a capacitance detection record styluscu4,495,610, Cl. 369-126.000.
Wade, Wallace R.: *See*—
Rao, Vemulapalli D. N.; and Wade, Wallace R., 4,494,375, Cl. 60-296.000.
Waelbroeck, Francois: *See*—
Ali-Khan, Imran; Dietz, Karl-Jurgen; Waelbroeck, Francois; and Wienhold, Peter, 4,494,965, Cl. 55-16.000.
Wagner, John R., Jr. Apparatus for playing home video gamescu4,494,754, Cl. 273-148.00B.
Wagner, John R., Jr.; and Hein, Carl C., to Mobil Oil Corporation. Method of making an oriented multilayer heat sealable packaging filmcu4,495,027, Cl. 156-244.110.
Wagner, Lee. Centrifugal heating unitcu4,494,524, Cl. 126-247.000.
Wahlquist, Clayton C., to Tektronix, Inc. Test pattern generatorscu4,495,519, Cl. 358-139.000.
Wajs, Georges: *See*—
Tagnon, Luc; and Wajs, Georges, 4,494,569, Cl. 137-563.000.
Wakabayashi, Shozo; and Narita, Kinzo, to Tsubakimoto-Morse Co., Ltd. One-way clutchcu4,494,636, Cl. 192-41.00A.
Wakao, Nobutaka: *See*—
Ueno, Tsuyoshi; Hashimoto, Shinichi; Matsuyama, Kouzou; and Wakao, Nobutaka, 4,494,857, Cl. 355-3.0CH.
Wakasawa, Toru: *See*—
Watanabe, Satoshi; Wakasawa, Toru; Hirano, Hirofumi; and Nishizawa, Hiroshi, 4,494,885, Cl. 400-145.200.
Waldecker, Donald E. Funnel having a primary vent and an auxiliary vent/siphoncu4,494,585, Cl. 141-98.000.
Walker, Brian J.; and Hodgson, Victor F., to Imperial Chemical Industries PLC. Apparatus and method for the continuous manufacture of foam boardcu4,495,013, Cl. 156-79.000.
Walker, Clarence O., to Texaco Inc. Method for releasing stuck drill pipecu4,494,610, Cl. 166-301.000.
Walker, Scott H.: *See*—
Sasser, Bill H.; Walker, Scott H.; and Immell, Raymond G., 4,495,506, Cl. 343-909.000.
Wallman, P. Henrik, to Chevron Research Company. Steam recycle used as stripping gas in oil shale retortingcu4,495,059, Cl. 208-11.00R.
Wallquist, Donald L.; and Kuperman, Gilbert G., to United States of America, Air Force. Retinal information mapping systemcu4,494,838, Cl. 351-206.000.
Wally, Joseph H., Jr., to Opti-Copy, Inc. Pin mounting plate for vacuum film holdercu4,494,867, Cl. 355-73.000.
Walsh, Dennis E.: *See*—
Venkat, Chaya; and Walsh, Dennis E., 4,494,961, Cl. 44-57.000.
Walters, Paul W.; Benslay, Roger M.; and Barger, Dwight F., to Ashland Oil, Inc. Carbometallic oil conversion with ballistic separationcu4,495,063, Cl. 208-113.000.
Wampler, George S. Three-dimensional toy mazecu4,494,753, Cl. 273-113.000.
Wamser, Anton: *See*—
Reimpell, Uwe; Wamser, Anton; Stenzel, Otto; and Burgmann, Wilhelm, 4,495,624, Cl. 373-93.000.
Ward, Frederick E.: *See*—
Buckler, Robert T.; and Ward, Frederick E., 4,495,281, Cl. 435-7.000.
Ward, John S.: *See*—
Matsumoto, Ken; and Ward, John S., 4,495,202, Cl. 514-721.000.
Ward Machinery Company, The: *See*—
Ward, William F., Sr.; and West, John B., 4,494,745, Cl. 271-95.000.
Ward, Peter: *See*—
Marsh, Brian; Rigby, Malcolm J.; and Ward, Peter, 4,494,972, Cl. 65-114.000.
Ward, William F., Sr.; and West, John B., to Ward Machinery Company, The. Feeding apparatus for paperboard sheetscu4,494,745, Cl. 271-95.000.
Wardenaar, Hendrik C.: *See*—
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Ware, Frederick A., to Hewlett-Packard Company. Multiple bit encoding technique for combinational multiplierscu4,495,593, Cl. 364-757.000.
Warner-Lambert Company: *See*—
Keegan, James J., 4,495,314, Cl. 523-120.000.
Tunac, Josefino B.; Dobson, William E.; and Graham, Blanche D., 4,495,286, Cl. 435-253.000.
Washburn, Philip J., to Beymer, Glen E. Equipment lockercu4,494,805, Cl. 312-215.000.
Watanabe, Hajime: *See*—
Iwanami, Toshio; and Watanabe, Hajime, 4,494,396, Cl. 72-243.000.
Watanabe, Hiroyuki; and Ohashi, Mikio, to Toyota Tidosha Kabushiki Kaisha. Construction of door in motor vehiclecu4,494,337, Cl. 49-374.000.
Watanabe, Koji, to Konishiroku Photo Industry Co., Ltd. Photometric method for camerascu4,494,853, Cl. 354-478.000.
Watanabe, Masazumi: *See*—
Imada, Isuke; Okutani, Tetsuya; and Watanabe, Masazumi, 4,495,104, Cl. 260-396.00R.
Watanabe, Minoru: *See*—
Muto, Kenji; Takemoto, Yoshinori; Hatta, Takao; Hashimoto, Tamotsu; Yamada, Koji; and Watanabe, Minoru, 4,495,192, Cl. 514-318.000.
Watanabe, Satoshi; Wakasawa, Toru; Hirano, Hirofumi; and Nishizawa, Hiroshi, to Canon Kabushiki Kaisha; and Canon Denshi Kabushiki Kaisha. Compact printercu4,494,885, Cl. 400-145.200.
Watanabe, Susumu: *See*—
Ohyama, Kunio; Nakagawa, Nobuaki; and Watanabe, Susumu, 4,495,151, Cl. 422-102.000.
Waterstreet, William E.: *See*—
Fischer, David L.; and Waterstreet, William E., 4,494,741, Cl. 270-39.000.
Wattiez, Daniel; and Hennion, Jean-Claude, to Institut Textile De France. Element permitting to wash different textile articles in the same bath and washing method using said elementcu4,494,264, Cl. 8-150.000.
Watts, Robert L.: *See*—
Flood, Robert A.; Talkington, Howard R.; Wheelock, Richard A.; and Watts, Robert L., 4,494,938, Cl. 441-33.000.
Wavin B.V.: *See*—
Stoffelsma, Jan U., 4,495,128, Cl. 264-211.000.
Waymire, Frank, to Union Power Construction Company. Apparatus and method for stringing center cables on power towerscu4,494,732, Cl. 254-134.30R.
Weaver, Richard D.: *See*—
Hensley, Thomas E.; and Weaver, Richard D., 4,494,701, Cl. 239-585.000.
Weaver, Robert L.; Van Gheluwe, Joris E. A.; and McKee, John A., to Molson Companies Limited, The. Neutral tasting alcoholic beveragecu4,495,204, Cl. 426-16.000.
Webb, James E.: *See*—
Kushmaul, Richard T.; Lafevers, James O.; and Webb, James E., 4,494,743, Cl. 271-11.000.
Webber, Gordon E. G.; and Wilson, Alan G., to Cam Gears Limited. Power assisted steering gearcu4,494,446, Cl. 91-375.00A.
Weber, Herbert, to Licentia Patent-Verwaltungs-GmbH. Multiple amplitude and phase shift keyed signal modulation methodcu4,495,477, Cl. 332-10.000.
Wedde, Reiner: *See*—
Lerche, Heinz; Rache, Horst; and Wedde, Reiner, 4,495,413, Cl. 250-252.100.
Wein, Edward, to Canada Packers, Inc. High protein, solid dietary food productcu4,495,206, Cl. 426-250.000.
Weinschel Engineering: *See*—
Patukonis, Robert J.; and Banning, Harmon W., 4,495,556, Cl. 363-59.000.
Weisend, Norbert A., Jr., to B. F. Goodrich Company, The. Deicercu4,494,715, Cl. 244-134.00A.
Weit, James G., to Contraves Goerz Corporation. Switching controller directly operable from ACcu4,495,557, Cl. 363-89.000.
Weldon, Paul J.: *See*—
Burkhead, Noel M.; and Weldon, Paul J., 4,494,245, Cl. 2-2.000.
Weldon, Thomas G., to Raytheon Company. Current source test circuitrycu4,495,462, Cl. 324-120.000.
Wells, Raymond C., to Motorola, Inc. Wire sawcu4,494,523, Cl. 125-16.00R.
Weppner, Werner: *See*—
Bell, Michael; Kreuer, Klaus-Dieter; Rabenau, Albrecht; and Weppner, Werner, 4,495,078, Cl. 252-62.200.
Werner, Friedrich; Blank, Heinz U.; Gramm, Gunther; Braden, Rudolf; and Ziemann, Heinz, to Bayer Aktiengesellschaft. Process for the preparation of neopentylaminecu4,495,369, Cl. 564-480.000.
Werner Lehara, Inc.: *See*—
Anderson, Joseph R., 4,494,920, Cl. 425-190.000.
West, John B.: *See*—
Ward, William F., Sr.; and West, John B., 4,494,745, Cl. 271-95.000.
Westerhuis, Popko J.: *See*—
Bergmann, Kurt W.; and Westerhuis, Popko J., 4,495,029, Cl. 162-135.000.
Westinghouse Brake & Signal Co., Ltd.: *See*—
Corrie, John D.; and Tooley, Mark A., 4,494,717, Cl. 246-28.00F.
Westinghouse Electric Corp.: *See*—
Anello, Joseph G., 4,495,002, Cl. 148-12.00E.
Camden, Thomas M., Jr.; and Orr, William L., 4,495,136, Cl. 376-172.000.
Heberlein, Joachim V. R.; and Fey, Maurice G., 4,495,625, Cl. 373-107.000.
Hoffman, Richard A., 4,495,254, Cl. 428-632.000.
Kochka, Edgar L.; Tobin, Joseph M., deceased; and Neve, Arlene F., administratrix, 4,495,140, Cl. 376-207.000.
Lemnios, Zachary J.; and Kim, He B., 4,494,997, Cl. 148-1.500.
Mendler, Oliver J., 4,494,486, Cl. 122-491.000.
Sisk, Francis J., 4,494,447, Cl. 92-13.300.
Uherek, Vladimir; and Kersen, Matthew F., 4,494,628, Cl. 187-29.00R.
Westlock Controls Corporation: *See*—
Sinclair, Franklin H.; and Glockner, Gary, 4,494,565, Cl. 137-555.000.
Sinclair, Franklin H.; and Glockner, Gary, 4,494,566, Cl. 137-556.000.
Westvaco Corporation: *See*—
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Wetzel, Richard F.: *See*—
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Weykam, Gottfried: *See*—
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Wheatley, William M., to Ram Automotive Company. Fuel charging system for high performance vehiclescu4,494,488, Cl. 123-1.00A.

Wheelock, Richard A.: *See—*
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White Consolidated Industries, Inc.: *See—*
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White, Dwain M., to General Electric Company. Polyphenylene oxide/polystyrene block copolymerscu4,495,333, Cl. 525-150.000.
White, Hollis N., Jr. Hydrostatic steering unit with cylindrical slide member within clindrical valve sleevecu4,494,915, Cl. 418-61.00B.
White, Hollis N., Jr. Hydrostatic steering unit with cylindrical slide member within cylindrical valve sleevecu4,494,916, Cl. 418-61.00B.
White, John D. Simplified alarm for a sliding door or the likecu4,495,486, Cl. 340-546.000.
White, Leonard A., to Baxter Travenol Laboratories, Inc. Method for forming container having re-entrant flangecu4,495,135, Cl. 264-553.000.
Whitehead, Richard A. Wheeled rocker toycu4,494,763, Cl. 280-1.175.
Whiteside, Michael G. Method of forming, filling and hermetically sealing containerscu4,495,209, Cl. 426-392.000.
Whitman Medical Corporation: *See—*
Gordon, Marvin, 4,494,581, Cl. 141-1.000.
Whitney, William G.: *See—*
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Widell, Harald; Widell, Jan; and Bergman, Nils-Ake. Electrical collector rail with connectable adaptercu4,494,808, Cl. 339-21.00R.
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Wiggins, Douglas G., to Xerox Corporation. Illumination control for raster input scannerscu4,495,422, Cl. 250-578.000.
Wilcke, Robert, to Statt der Nederlanden (Stattsbedrijf der Posterijen, Telegrafie en Telefonie). Method and device for controlling a switching networkcu4,495,615, Cl. 370-58.000.
Wilcox, John P., to Cummins Engine Company, Inc. Flexible continuous torque transmitting devicecu4,494,946, Cl. 474-242.000.
Wildman, Alexander J. Method and pad with index tabs for applying orthodontic bracketscu4,494,931, Cl. 433-8.000.
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Pittaway, Alan K., 4,494,339, Cl. 51-204.000.
William Nash Company, Inc.: *See—*
Nash, Robert W.; Andre, Paul R.; and Knoblock, Dennis F., 4,494,775, Cl. 285-26.000.
Williams, Charles R.; Yonker, John H.; and Thurman, Robert L., to Otis Engineering Corporation. Well injection systemcu4,494,608, Cl. 166-317.000.
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Williams, V. Harold; and Tomsu, David L., to Leslie Metal Arts Company. Spring loaded drawer assembly with mechanical dampingcu4,494,806, Cl. 312-333.000.
Willsie, Douglas H.: *See—*
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Wilson, Alan G.: *See—*
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Wincent, Karl T., to Litton Systems, Inc. High speed printer assemblycu4,494,887, Cl. 400-568.000.
Windmoller & Holscher: *See—*
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Winer, Gordon E., to Vermont Toy Works, Inc. Cube puzzlecu4,494,756, Cl. 273-156.000.
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Wisconsin Alumni Research Foundation: *See—*
Anderson, Laurens; and Nashed, Mina A., 4,495,346, Cl. 536-18.500.
Wiseman, Donald F.: *See—*
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Wisne Automation & Engineering Co.: *See—*
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Wissler, Josef H., to Max-Planck Gesellschaft Zur Forderung der Wissenchaften. Process for producing and obtaining anaphylatoxin- and cocytotaxin-containing leucotaxine preparations and of anaphylatoxin and cocytotaxin proteins in molecularly homogeneous, biologically active formcu4,495,096, Cl. 260-112.00B.
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Eichelberger, Charles W.; Wojnarowski, Robert J.; and Cohen, Peter I., 4,495,251, Cl. 428-548.000.
Wolf, Elmar; and Schmitt, Felix, to Chemische Werke Huls A.G. One-component, heat-curing polyurethane-coatings, stable in storagecu4,495,229, Cl. 427-388.200.
Wolf, Erich; and Deininger, Rolf, to Chimicasa GmbH. Water-soluble sweetening tabletcu4,495,213, Cl. 426-548.000.
Wolf, Stanley; and Atwood, Warren C., to TRW Inc. Polyimide intermetal dielectric processcu4,495,220, Cl. 427-82.000.
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Solow, Joseph E., 4,494,391, Cl. 70-428.000.
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Wright, Arthur P. G.: *See—*
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Wu, Dan T.; and Korte, Kevin R., to Brown & Williamson Tobacco Corporation. Pneumatic conveying tobacco drying apparatuscu4,494,556, Cl. 131-302.000.
Wu, Edwin S., to Pennwalt Corporation. Antihypertensive chromonoxypropanolaminescu4,495,198, Cl. 514-456.000.
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Laing, John R., 4,494,863, Cl. 355-15.000.
Povio, Raymond A.; and Rebres, Robert P., 4,494,744, Cl. 271-34.000.
Wiggins, Douglas G., 4,495,422, Cl. 250-578.000.
Xomox Corporation: *See—*
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Yabuuchi, Masahiko: *See—*
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Yagi, Shizuo; Otani, Junji; Fujii, Isao; and Kogure, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Stratified burn internal combustion enginecu4,494,504, Cl. 123-308.000.
Yagihara, Morio; Hirano, Tsumoru; Hirano, Mitsunori; and Umemoto, Makoto, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive materialcu4,495,272, Cl. 430-381.000.
Yaguchi, Kenichi; Ichikawa, Masaru; and Kinoshita, Takuji, to Nippon Kogaku K.K. Spectacle framecu4,494,831, Cl. 351-41.000.
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Yamabe, Masaaki; and Munekata, Seiji, to Asahi Glass Company Ltd. Process for producing fluorinated acid fluoride having ester groupcu4,495,364, Cl. 560-180.000.

Yamada, Koji: *See*—
Muto, Kenji; Takemoto, Yoshinori; Hatta, Takao; Hashimoto, Tamotsu; Yamada, Koji; and Watanabe, Minoru, 4,495,192, Cl. 514-318.000.

Yamada, Kyota; and Komatsu, Akira, to Body Sonic Kabushiki Kaisha. Audio-band electro-mechanical vibration convertercu4,495,638, Cl. 381-27.000.

Yamada, Masanori, to Canon Kabushiki Kaisha. Distance measuring systemcu4,494,847, Cl. 354-403.000.

Yamada, Masanori: *See*—
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Yamada, Takeshi: *See*—
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Yamada, Yasuaki: *See*—
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Yamaga, Shigeru; and Furukawa, Masamichi, to Ricoh Company, Ltd. Energy saving cameracu4,494,854, Cl. 354-484.000.

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Yamagishi, Takasi; and Noguchi, Yukio, to Nippon Sheet Glass Co., Ltd. Thallium-containing optical glasscu4,495,298, Cl. 501-55.000.

Yamagiwa, Masao: *See*—
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Yamaji, Hiromasa; and Kobayashi, Yuji, to Sumitomo Heavy Industries, Ltd. Apparatus for stopping truck at preselected positioncu4,494,905, Cl. 414-584.000.

Yamakawa, Toshiro: *See*—
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Yamamiya, Kunio: *See*—
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Yamamoto, Kenji: *See*—
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Kurata, Noboru; Miyazaki, Kunio; and Yamamoto, Kuniyuki, 4,494,623, Cl. 180-230.000.

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Yamazaki, Masaru: *See*—
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Yan, Tsoung-yuan; and Lozano, Raymond L., to Mobil Oil Corporation. Leach apparatus including means to protect ion exchange resincu4,495,152, Cl. 422-159.000.

Yanagida, Tuneo, to Olympus Optical Co., Ltd. Method of processing information signal with respect to opto-magnetic record mediumcu4,495,530, Cl. 360-59.000.

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Yardney Corporation: *See*—
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Yasuhara, Seishi, to Nissan Motor Company, Limited. Control system for a fuel injection internal combustion engine including a fuel injection rate detectorcu4,494,507, Cl. 123-357.000.

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Yoder, David A. Bin level detector and filling switchcu4,495,388, Cl. 200-61.210.

Yoder, Max N., to United States of America, Navy. Permeable base transistor structurecu4,495,511, Cl. 357-22.000.

Yokohama Rubber Co. Ltd., The: *See*—
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Yokono, Hitoshi: *See*—
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Yokoyama, Shigeki; and Ohga, Kunihiko, to Fuji Photo Film Co., Ltd. Silver halide photographic materialscu4,495,275, Cl. 430-527.000.

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Yonker, John H.: *See*—
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Yoo, Jin S.; and Jaecker, John A., to Atlantic Richfield Company. Catalyst for conversion of hydrocarbonscu4,495,304, Cl. 502-66.000.

Yoo, Jin S.; and Jaecker, John A., to Atlantic Richfield Company. Catalyst for conversion of hydrocarbonscu4,495,305, Cl. 502-65.000.

Yoshida Industry Co., Ltd.: *See*—
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Yoshida, Kazuhiro, to Konishiroku Photo Industry Co., Ltd. Direct-positive silver halide photographic materialcu4,495,274, Cl. 430-523.000.

Yoshida, Kenichi; Ono, Kimizo; and Iwamoto, Tomio, to Sumitomo Electric Industries, Ltd. Optical connector systemcu4,494,823, Cl. 350-96.220.

Yoshida Kogyo K. K.: *See*—
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Toishi, Yoshiyuki, 4,494,292, Cl. 29-408.000.

Yoshida Kogyo K.K.: *See*—
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Yoshida, Toshio, to Toyo Shokuhin Kikai Kabushiki Kaisha. Intermittent driving system for synchronizing control of conveyor and dispensing systemscu4,495,584, Cl. 364-479.000.

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Yoshimoto, Shoji: *See*—
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Yoshimura, Toshimitsu: *See*—
Gotoda, Yusuke; and Yoshimura, Toshimitsu, 4,494,637, Cl. 192-48.400.

Yoshioka, Kentaro, to Oki Electric Industry Co., Ltd. Forming channel-stops by selectively implanting impurity ions through field-oxide layer during later stage of MOS-device fabricationcu4,494,304, Cl. 29-578.000.

Young, Hartley F.; Remes, Wally A.; and Collins, John L., to Ralph McKay Limited. Rail fastener applicatorcu4,494,463, Cl. 104-17.00A.

Young, Robert W. Quick positioning cut-off guide for hand power sawscu4,494,434, Cl. 83-745.000.

Young, Terry G., to Joy Manufacturing Company. High pressure sensor basecu4,494,568, Cl. 137-561.00A.

Youngman, George, to Becton, Dickinson & Co. Toxic gas detection system calibratorcu4,494,399, Cl. 73-1.00G.

Yuta, Koichi: *See*—
Fujioka, Masato; Kobayashi, Katsuyoshi; Yuta, Koichi; and Nishihara, Nobuyoshi, 4,494,929, Cl. 432-59.000.

Zabotin, Viktor G.; Kosenko, Alexandr I.; Kozlov, Sergei P.; Pervyshin, Alexandr N.; Lukachev, Viktor P.; Mikhailov, Vladimir A.; Buryakov, Valery M.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Levin, Viktor Y., deceased; and by Levin, Sofia N., administratrix. Device for gas jet cutting of materialscu4,494,925, Cl. 431-158.000.

Zado, Frank M., to AT&T Technologies, Inc. Soldering fluxcu4,495,007, Cl. 148-23.000.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Shimada, Nobuyoshi; Naganawa, Hiroshi; Takita, Tomohisa; Hamada, Masa; and Takeuchi, Tomio, 4,495,347, Cl. 536-24.000.

Zalkin, Michel, to Etablissements Andre Zalkin et Cie. Torsional torque controlled friction screwing head for cap installationcu4,494,358, Cl. 53-331.500.

Zasio, John J., to Storage Technology Partners. CMOS LSI and VLSI chips having internal delay testing capabilitycu4,495,628, Cl. 377-70.000.

Zasio, John J.; and Cooke, Larry, to Storage Technology Partners. CMOS scannable latchcu4,495,629, Cl. 377-70.000.

Zawadzki, Thomas: *See*—
Hudgin, Donald E.; and Zawadzki, Thomas, 4,495,311, Cl. 523-126.000.

Zeda Computers International Limited: *See*—
Bosen, Robert J., 4,495,572, Cl. 364-200.000.

Zellmer, Joel A., to Hewlett-Packard Company. Timing analyzer with combination transition and duration triggercu4,495,642, Cl. 382-1.000.

Zemke, Edward H.: *See*—
Guenther, Kenneth L.; and Zemke, Edward H., 4,494,742, Cl. 270-58.000.

Zenitani, Toshio; and Tabuse, Katsuyoshi. Method and apparatus for surgical operation using microwavescu4,494,539, Cl. 128-303.100.

Zenker, Walter, to Klockner-Humboldt-Deutz Aktiengesellschaft. Synchronizing device, especially for the transmission of a motor vehiclecu4,494,638, Cl. 192-48.910.

Zerweck, Klaus: *See*—
Bauser, Herbert; Kurz, Edmund; Schindler, Bernd; Zerweck, Klaus; Boich, Thomas; Haller, Andreas; and Mager, Theo, 4,495,232, Cl. 428-41.000.

Zestar, Lawrence P.: *See*—
Farnham, Robert A.; Zestar, Lawrence P.; and Bertelsen, Corey A., 4,495,058, Cl. 208-11.00R.

Ziemann, Heinz: *See*—
Werner, Friedrich; Blank, Heinz U.; Gramm, Gunther; Braden, Rudolf; and Ziemann, Heinz, 4,495,369, Cl. 564-480.000.

Ziemba, Richard T., to General Electric Company. Explosive projectilecu4,494,459, Cl. 102-235.000.

Zimmerman, Morris: *See*—
Doherty, James B.; Zimmerman, Morris; and Ashe, Bonnie M., 4,495,197, Cl. 514-210.000.

Zincroksid S.p.A.: *See*—
Bruno, Roberto; and Memmi, Massimo, 4,495,008, Cl. 148-31.500.

Zunker, David W., to Du Pont de Nemours, E. I., and Company. Inorganic fillers modified with vinyl alcohol polymer and cationic melamine-formaldehyde resincu4,495,245, Cl. 428-403.000.

Zvs Vyzkumnevyvojovy ustav, koncernova: *See*—
Cech, Miloslav; Slezak, Adolf; and Vasicek, Vladimir, 4,494,578, Cl. 139-188.00A.

Zylbert, Thaddeus J., to Singer Company, The. Buttonhole foot and shank assemblycu4,494,471, Cl. 112-235.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF JANUARY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ag-Bag Corporation: *See*—
Lee, Richard H., Re. 31,810, Cl. 141-114.000.

Aldegheri, Roberto: *See*—
Danieletto, Giuseppina; De Bastiani, Giovanni; Faccioli, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Cavazzana, Andrea, Re. 31,809, Cl. 128-92.00A.

Brivio, Lodovico R.: *See*—
Danieletto, Giuseppina; De Bastiani, Giovanni; Faccioli, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Cavazzana, Andrea, Re. 31,809, Cl. 128-92.00A.

Burlington Industries, Inc.: *See*—
London, Joe F., Jr.; and Pugh, Charles D., Re. 31,808, Cl. 57-6.000.

Cavazzana, Andrea: *See*—
Danieletto, Giuseppina; De Bastiani, Giovanni; Faccioli, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Cavazzana, Andrea, Re. 31,809, Cl. 128-92.00A.

Danieletto, Giuseppina; De Bastiani, Giovanni; Faccioli, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Cavazzana, Andrea, to Orthofix S.r.l. External axial fixation unitcuRe. 31,809, Cl. 128-92.00A.

De Bastiani, Giovanni: *See*—
Danieletto, Giuseppina; De Bastiani, Giovanni; Faccioli, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Cavazzana, Andrea, Re. 31,809, Cl. 128-92.00A.

Faccioli, Giovanni: *See*—
Danieletto, Giuseppina; De Bastiani, Giovanni; Faccioli, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Cavazzana, Andrea, Re. 31,809, Cl. 128-92.00A.

Foreman, Ronald. Baseball bat with modified internal air pressurecuRe. 31,811, Cl. 273-72.00A.

Fugate, Philip E.; and Roy, Kenneth L., to Ledex, Inc. Print wire solenoidcuRe. 31,813, Cl. 335-271.000.

Knowles, James. Truss-web connectorcuRe. 31,807, Cl. 52-693.000.

Kuntz, Emile, to Rhone-Poulenc Industries. Catalytic hydroformylation of olefinscuRe. 31,812, Cl. 568-454.000.

Ledex, Inc.: *See*—
Fugate, Philip E.; and Roy, Kenneth L., Re. 31,813, Cl. 335-271.000.

Lee, Richard H., to Ag-Bag Corporation. Agricultural bag loading apparatus braking mechanismcuRe. 31,810, Cl. 141-114.000.

London, Joe F., Jr.; and Pugh, Charles D., to Burlington Industries, Inc. Novelty yarn productioncuRe. 31,808, Cl. 57-6.000.

Lubin, Barry D., to Motorola, Inc. Three-party conference circuit for digital time-division-multiplex communication systemscuRe. 31,814, Cl. 370-62.000.

Motorola, Inc.: *See*—
Lubin, Barry D., Re. 31,814, Cl. 370-62.000.

Orthofix S.r.l.: *See*—
Danieletto, Giuseppina; De Bastiani, Giovanni; Faccioli, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Cavazzana, Andrea, Re. 31,809, Cl. 128-92.00A.

Pugh, Charles D.: *See*—
London, Joe F., Jr.; and Pugh, Charles D., Re. 31,808, Cl. 57-6.000.

Rhone-Poulenc Industries: *See*—
Kuntz, Emile, Re. 31,812, Cl. 568-454.000.

Roy, Kenneth L.: *See*—
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Altena Salotti S.n.c.: *See*—
Giudici, Gianbattista, 277,244, Cl. D6-381.000.

Altena Salotti s.r.l: *See*—
Giudici, Gianbattista, 277,242, Cl. D6-381.000.
Giudici, Gianbattista, 277,243, Cl. D6-381.000.

Alvarez, Michael A.; Fried, George; and Payne, George, to Manostat Corporation. Hand-held pipetting devicecu277,313, 1-22-85, Cl. D24-55.000.

Alvarez, Michael A.; Fried, George; and Payne, George, to Manostat Corporation. Hand-held pipetting devicecu277,314, 1-22-85, Cl. D24-55.000.

Alvarez, Michael A.; Fried, George; and Payne, George, to Manostat Corporation. Base for a pipetting devicecu277,315, 1-22-85, Cl. D24-55.000.

American Commercial Incorporated: *See*—
Lax, Michael, 277,253, Cl. D7-320.000.

American Mobile Advertising Corp.: *See*—
Nelson, Eugene, 277,298, Cl. D20-10.000.
Nelson, Eugene, 277,299, Cl. D20-10.000.

Appel, Mel; and Kress, George, to Appel, Mel. Combined toy sandbox and siftercu277,300, 1-22-85, Cl. D21-59.000.

Arend, Rene, to Restaurant Technology, Inc. Cooked meat productcu277,235, 1-22-85, Cl. D1-199.000.

Aspen Recreational Products, Ltd.: *See*—
Matsuda, Hari, 277,277, Cl. D14-33.000.
Matsuda, Hari, 277,278, Cl. D14-33.000.
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Associated Mills, Inc.: *See*—
Grube, Clifford E., 277,305, Cl. D23-3.000.

AT&T Bell Laboratories: *See*—
Barton, William L., III; Peterson, Edward J.; and Sylvester, Gordon E., 277,282, Cl. D14-59.000.

Baer, William F. Combined router and beveler for glasscu277,287, 1-22-85, Cl. D15-124.000.

Bank, Herbert M., to Maryland Cup Corporation. Molded edible containercu277,234, 1-22-85, Cl. D1-122.000.

Barton, William L., III; Peterson, Edward J.; and Sylvester, Gordon E., to AT&T Bell Laboratories. Conference telephone microphone control unitcu277,282, 1-22-85, Cl. D14-59.000.

Bastien, Henri, to Societe Anonyme Fonderies du Lion. Heatercu277,308, 1-22-85, Cl. D23-97.000.

Baty, Jess G. Hoe headcu277,258, 1-22-85, Cl. D8-11.000.

Benedict, Charles E., to Telescoping Tie Racks, Inc. Extendable tie rackcu277,248, 1-22-85, Cl. D6-324.000.

Bernard, Claude, to Charvoz-Carsen Corporation. Collapsible tablecu277,250, 1-22-85, Cl. D6-420.000.

Boeing Company, The: *See*—
White, Thomas H., 277,239, Cl. D6-356.000.

Bosshardt, William, to Polychrome Corporation. Printing plate processor (II)cu277,293, 1-22-85, Cl. D18-13.000.

Bosshardt, William, to Polychrome Corporation. Printing plate processorcu277,294, 1-22-85, Cl. D18-13.000.

Brooks, Steven: *See*—
Dunbar, Jack G.; and Brooks, Steven, 277,240, Cl. D6-381.000.

Brunner, Robert D.: *See*—
Empson, Edward H.; Brunner, Robert D.; and Fubershaw, Gerard A., 277,283, Cl. D14-100.000.

Burnett, Kevin P.: *See*—
Deeley, Frank; Deeley, Lawrence; and Burnett, Kevin P., 277,270, Cl. D11-158.000.

Camino Laboratories: *See*—
Knute, Wallace L., 277,267, Cl. D10-60.000.

Carrier Corporation: *See*—
Yamamoto, Kentaro, 277,309, Cl. D23-141.000.

Cass, George R. Boxing glovecu277,238, 1-22-85, Cl. D2-361.000.

Cesaroni, William C., to Dart Industries Inc. Handlecu277,257, 1-22-85, Cl. D7-394.000.

Chan, David M. F.; and Chan, Michael L. F. Suspended holder for plants, candles or the likecu277,247, 1-22-85, Cl. D6-405.000.

Chan, Michael L. F.: *See*—
Chan, David M. F.; and Chan, Michael L. F., 277,247, Cl. D6-405.000.

Charvoz-Carsen Corporation: *See*—
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Corning Glass Works: *See*—
Gulotta, Gerald D., 277,251, Cl. D7-20.000.
Gulotta, Gerald D., 277,252, Cl. D7-40.000.

Culpepper, Ronnie. Clockcu277,263, 1-22-85, Cl. D10-26.000.

Cutlip, David S.; and Cutlip, Judyth A. Velocipede horncu277,268, 1-22-85, Cl. D10-120.000.

Cutlip, Judyth A.: *See*—
Cutlip, David S.; and Cutlip, Judyth A., 277,268, Cl. D10-120.000.

Darrell, Jack. Combination reel housing and retractable dual cable unit for securing a bicyclecu277,259, 1-22-85, Cl. D8-358.000.
Dart Industries Inc.: *See*—
Cesaroni, William C., 277,257, Cl. D7-394.000.
Picozza, Augusto A., 277,256, Cl. D7-394.000.
Davey, Brian, to Lion Brush Works Limited. Cosmetic compactcu277,324, 1-22-85, Cl. D28-77.000.
Deal, Charles E. Electric guitarcu277,291, 1-22-85, Cl. D17-14.000.
Deeley, Frank; Deeley, Lawrence; and Burnett, Kevin P. Ornament for table or other supporting surfacecu277,270, 1-22-85, Cl. D11-158.000.
Deeley, Lawrence: *See*—
Deeley, Frank; Deeley, Lawrence; and Burnett, Kevin P., 277,270, Cl. D11-158.000.
Deruntz, William R. Bottled water dispenser insertcu277,255, 1-22-85, Cl. D7-387.000.
Dickens, James A., to Rucks, Percy O. Collapsible reelcu277,260, 1-22-85, Cl. D8-358.000.
Dickerson, William R. Control panelcu277,275, 1-22-85, Cl. D13-35.000.
Drackett Company, The: *See*—
Jones, David A., 277,262, Cl. D9-306.000.
Dunbar Furniture, Inc.: *See*—
Dunbar, Jack G.; and Brooks, Steven, 277,240, Cl. D6-381.000.
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Dunbar, Jack G.; and Brooks, Steven, to Dunbar Furniture, Inc. Sofa or similar articlecu277,240, 1-22-85, Cl. D6-381.000.
Dunbar, Jack G., to Dunbar Furniture, Inc. Combined table and side extension unitcu277,249, 1-22-85, Cl. D6-483.000.
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Eisenmenger, Daryl L. Set of retractable ear plugscu277,317, 1-22-85, Cl. D24-67.000.
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English, Helen B. Theatre structurecu277,318, 1-22-85, Cl. D25-7.000.
Ernest, Robert O., to Sunbeam Corporation. Steam ironcu277,327, 1-22-85, Cl. D32-70.000.
Fiat Products, Inc.: *See*—
Lax, Michael S., 277,306, Cl. D23-55.000.
FIG. 1 is a front elevational view of a wheel spider showing my new design, , it being understood that the broken lines are for illustrative purposes only: *See*—
Frazee, Raymond D., 277,274, Cl. D12-211.000.
Firestone Tire & Rubber Company, The: *See*—
Sladky, Donald J.; and Vande Water, William J., 277,272, Cl. D12-146.000.
Fortune Systems Corporation: *See*—
Empson, Edward H.; Brunner, Robert D.; and Fubershaw, Gerard A., 277,283, Cl. D14-100.000.
Frazee, Raymond D., to FIG. 1 is a front elevational view of a wheel spider showing my new design, , it being understood that the broken lines are for illustrative purposes only; and Indus Wheel Company, Division of Carlisle Corporation. Wheel spidercu277,274, 1-22-85, Cl. D12-211.000.
Frazier, Alvin. Pencu277,296, 1-22-85, Cl. D19-42.000.
Fried, George: *See*—
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Alvarez, Michael A.; Fried, George; and Payne, George, 277,314, Cl. D24-55.000.
Alvarez, Michael A.; Fried, George; and Payne, George, 277,315, Cl. D24-55.000.
Fubershaw, Gerard A.: *See*—
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Gant, Clifford E. Handle for disposable razor blade cartridgescu277,321, 1-22-85, Cl. D28-46.000.
Giudici, Gianbattista, to Altena Salotti s.r.l. Seatcu277,242, 1-22-85, Cl. D6-381.000.
Giudici, Gianbattista, to Altena Salotti s.r.l. Seatcu277,243, 1-22-85, Cl. D6-381.000.
Giudici, Gianbattista, to Altena Salotti S.n.c. Seatcu277,244, 1-22-85, Cl. D6-381.000.
Gregory, John R. Chest protectorcu277,236, 1-22-85, Cl. D2-27.000.
Grube, Clifford E., to Associated Mills, Inc. Water filtercu277,305, 1-22-85, Cl. D23-3.000.
Gulotta, Gerald D., to Corning Glass Works. Serving dish or the likecu277,251, 1-22-85, Cl. D7-20.000.
Gulotta, Gerald D., to Corning Glass Works. Cover for a baking dish or the likecu277,252, 1-22-85, Cl. D7-40.000.
Haas, Ulrich J., to Optyl Corporation. Eyeglass framecu277,290, 1-22-85, Cl. D16-117.000.
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Hollenbach, David A. Pivotable mailbox signalcu277,328, 1-22-85, Cl. D99-29.000.
Horne, Gary D., to High Technology Solutions, Inc. Keyboardcu277,284, 1-22-85, Cl. D14-100.000.
Hug, Niklaus, to Dupro AG. Vacuum cleanercu277,325, 1-22-85, Cl. D32-22.000.
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Jacobsson, Bertil. Electrostatic filtercu277,310, 1-22-85, Cl. D23-149.000.
Jennings, Joseph R.; and Minor, Michael, to Paramount Pictures Corporation. Container for desk top materials or similar articlecu277,297, 1-22-85, Cl. D19-75.000.
Jones, David A., to Drackett Company, The. Packaging sleevecu277,262, 1-22-85, Cl. D9-306.000.
Jones, Jeffery L. Palette casecu277,295, 1-22-85, Cl. D19-35.000.
King, William. Hose reelercu277,261, 1-22-85, Cl. D8-358.000.
Knute, Wallace L., to Camino Laboratories. Clinical probe holder and connectorcu277,267, 1-22-85, Cl. D10-60.000.
Kress, George: *See*—
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Kyle, Loris. Playhousecu277,302, 1-22-85, Cl. D21-114.000.
Law, Denny B., to Unique Functional Products. Trailercu277,271, 1-22-85, Cl. D12-101.000.
Lax, Michael, to American Commercial Incorporated. Teakettlecu277,253, 1-22-85, Cl. D7-320.000.
Lax, Michael S., to Fiat Products, Inc. Bathtubcu277,306, 1-22-85, Cl. D23-55.000.
Leifheit, Eric S. Solid body guitarcu277,292, 1-22-85, Cl. D17-19.000.
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Lopez, Gilbert. Multi-purpose portable power unitcu277,285, 1-22-85, Cl. D15-1.000.
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Maglioli, Umberto. Watch casecu277,265, 1-22-85, Cl. D10-31.000.
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Meares, Hurshel. Orthopedic device for stabilizing the scroiliaccu277,316, 1-22-85, Cl. D24-64.000.
Minnesota Mining & Manufacturing Company: *See*—
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Polychrome Corporation: *See*—
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Bosshardt, William, 277,294, Cl. D18-13.000.

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Rucks, Percy O.: *See*—
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Rutherford, Joseph P. Building structurecu277,319, 1-22-85, Cl. D25-23.000.

Sabin, Lowell E., to Minnesota Mining & Manufacturing Company. Powder cartridgecu277,289, 1-22-85, Cl. D16-32.000.

Sampson, Mark J., to Paradies Airport Shops, Inc. Toy glidercu277,301, 1-22-85, Cl. D21-89.000.

Schlagheck, Norbert, to Agfa-Gevaert AG. Print unit for use with film reproducercu277,288, 1-22-85, Cl. D16-27.000.

Schmidt, Gerhard, to Westfalische Metall Industrie KG Hueck & Co. Auto spoilercu277,273, 1-22-85, Cl. D12-181.000.

Schnatzmeyer, Mark A., to Otis Engineering Corporation. Solar powered valve control unitcu277,286, 1-22-85, Cl. D15-21.000.

Seeds, Wesley R., to Lucasfilm, Ltd. Toy figurecu277,303, 1-22-85, Cl. D21-148.000.

Selden, Boynton, to Selden, Michele R., Trustee. Combined lamp and magnifier lenscu277,320, 1-22-85, Cl. D26-51.000.

Selden, Michele R., Trustee: *See*—
Selden, Boynton, 277,320, Cl. D26-51.000.

Sjostedt, Ingemar; and Lunden, Bertil, to Molnlycke Aktiebolag. Cutting attachment for paper roll holder or similar articlecu277,246, 1-22-85, Cl. D6-523.000.

Sladky, Donald J.; and Vande Water, William J., to Firestone Tire & Rubber Company, The. Tire tread and buttresscu277,272, 1-22-85, Cl. D12-146.000.

Smith, David B.; and Moore, John M., to Smith, David B. Rowing machinecu277,304, 1-22-85, Cl. D21-195.000.

Societe Anonyme Fonderies du Lion: *See*—
Bastien, Henri, 277,308, Cl. D23-97.000.

Sunbeam Corporation: *See*—
Ernest, Robert O., 277,327, Cl. D32-70.000.

Sylvester, Gordon E.: *See*—
Barton, William L., III; Peterson, Edward J.; and Sylvester, Gordon E., 277,282, Cl. D14-59.000.

Teleconcepts, Inc.: *See*—
Winkler, Myra, 277,280, Cl. D14-53.000.

Telescoping Tie Racks, Inc.: *See*—
Benedict, Charles E., 277,248, Cl. D6-324.000.

Tsuji, Masao, to North American Philips Corporation. Room air cleanercu277,311, 1-22-85, Cl. D23-149.000.

Tsukamoto, Masakazu; and Tsukiyama, Satoru, to Iwatsu Electric Co., Ltd. Mobile telephone unitcu277,281, 1-22-85, Cl. D14-53.000.

Tsukiyama, Satoru: *See*—
Tsukamoto, Masakazu; and Tsukiyama, Satoru, 277,281, Cl. D14-53.000.

Unique Functional Products: *See*—
Law, Denny B., 277,271, Cl. D12-101.000.

Unverzagt, Richard. Furniture foot stoolcu277,245, 1-22-85, Cl. D6-351.000.

Vande Water, William J.: *See*—
Sladky, Donald J.; and Vande Water, William J., 277,272, Cl. D12-146.000.

Watanabe, Katsumi, to Ozen Corporation. Spring driven phonograph for internal placement in toys or the likecu277,276, 1-22-85, Cl. D14-14.000.

West, Toni A. Device for removing fingernail polishcu277,322, 1-22-85, Cl. D28-58.000.

Westfalische Metall Industrie KG Hueck & Co: *See*—
Schmidt, Gerhard, 277,273, Cl. D12-181.000.

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Williams Industries, Inc.: *See*—
Williams, William J., 277,269, Cl. D11-121.000.

Williams, William J., to Williams Industries, Inc. Ornamentcu277,269, 1-22-85, Cl. D11-121.000.

Williamson, Jerry R.; and Muters, Keith A. Roof edge ventilatorcu277,312, 1-22-85, Cl. D23-153.000.

Winkler, Myra, to Teleconcepts, Inc. Telephonecu277,280, 1-22-85, Cl. D14-53.000.

Yamamoto, Kentaro, to Carrier Corporation. Grille for an air conditioning unitcu277,309, 1-22-85, Cl. D23-141.000.

Zapolski, Bronislaw: *See*—
Zeller, Noel E.; and Zapolski, Bronislaw, 277,307, Cl. D23-90.100.

Zeller, Noel E.; and Zapolski, Bronislaw, to Zeller, Noel E. Fire lightercu277,307, 1-22-85, Cl. D23-90.100.

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M. Lek en Zonen, B.V.: *See*—
Sarneel, J. F., 5,395, Cl. 72.000.

Rice, Jake W.; and Rice, Patricia A. Bougainvillea plantcu5,393, 1-22-85, Cl. 54.000.

Rice, Patricia A.: *See*—
Rice, Jake W.; and Rice, Patricia A., 5,393, Cl. 54.000.

Sarneel, J. F. Carnation named Odeoncu5,394, 1-22-85, Cl. 70.000.

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Strawn, Leslie E. Miniature rose plantcu5,392, 1-22-85, Cl. 7.000.

CLASSIFICATION OF PATENTS

CLASSIFICATION OF PATENTS

ISSUED JANUARY 22, 1985

NOTE.—First number, class; second number, subclass; third number, patent number

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2	4,494,245
2.1 R	4,494,246
24	4,494,247
69	4,494,248
161 R	4,494,249
227	4,494,250
425	4,494,251

CLASS 3

1.3	4,494,252
1.5	4,494,253
13	4,494,254

CLASS 4

213	4,494,255
502	4,494,256
508	4,494,257

CLASS 5

29	4,494,258
66	4,494,259
436	4,494,261
446	4,494,260
451	4,494,262

CLASS 6

4 R	4,494,263

CLASS 8

125	4,494,952
150	4,494,264
159	4,494,265
195	4,494,951
408	4,494,953
507	4,494,954
512	4,494,955
543	4,494,956
639	4,494,957

CLASS 12

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CLASS 15

104.92	4,494,267
176	4,494,268
203	4,494,269
377	4,494,270

CLASS 16

21	4,494,271
35 R	4,494,272
50	4,494,273
110 A	4,494,274
314	4,494,275

CLASS 17

1 F	4,494,276
71	4,494,277

CLASS 19

304	4,494,278

CLASS 24

336	4,494,279

CLASS 29

6	4,494,280
	4,494,281
33 K	4,494,283
33 P	4,494,282
123	4,494,284
156.4 R	4,494,285
156.5 A	4,494,286
156.8 R	4,494,287
157.3 A	4,494,288
227	4,494,289
280	4,494,290
281.4	4,494,291
408	4,494,292
	4,494,293
412	4,494,294
432	4,494,295
	4,494,296
527.6	4,494,297
563	4,494,298
570	4,494,299
571	4,494,300
	4,494,301
575	4,494,302
576 W	4,494,303
578	4,494,304
764	4,494,305
809	4,494,306
825	4,494,307
858	4,494,308

CLASS 30

151	4,494,309
155	4,494,310
276	4,494,311

CLASS 33

170	4,494,312
265	4,494,313

CLASS 34

10	4,494,314
48	4,494,315
68	4,494,316
73	4,494,317
112	4,494,318
116	4,494,319

CLASS 36

25 R	4,494,320
28	4,494,321
	4,494,322
42	4,494,323
119	4,494,324

CLASS 37

2 R	4,494,325

CLASS 38

102.2	4,494,344

CLASS 40

593	4,494,326

CLASS 42

1 A	4,494,328
1 D	4,494,329
1 S	4,494,327
16	4,494,330
70 D	4,494,331
77	4,494,332

CLASS 43

22	4,494,333
43.12	4,494,334
80	4,494,335

CLASS 44

1 G	4,494,958
15 D	4,494,962
51	4,494,959
	4,494,960
57	4,494,961

CLASS 48

69	4,494,963

CLASS 49

352	4,494,336
374	4,494,337

CLASS 51

33 W	4,494,338
204	4,494,339
214	4,494,340
296	4,494,964

CLASS 52

173 DS	4,494,341
203	4,494,342
309.11	4,494,343
489	4,494,346
508	4,494,347
588	4,494,348
633	4,494,349
665	4,494,350
690	4,494,351
693	Re.31,807
741	4,494,352
	4,494,353
814	4,494,354

CLASS 53

69	4,494,355
122	4,494,356
167	4,494,357
331.5	4,494,358
426	4,494,363
430	4,494,359
528	4,494,360
550	4,494,362
553	4,494,361
570	4,494,364

CLASS 55

16	4,494,965
26	4,494,966
74	4,494,967

CLASS 56

256	4,494,365

CLASS 57

6	Re.31,808
22	4,494,366
	4,494,367
	4,494,368
76	4,494,369
81	4,494,370
263	4,494,371

CLASS 60

39.07	4,494,372
253	4,494,373
276	4,494,374
296	4,494,375
421	4,494,376
545	4,494,377
547.1	4,494,378
671	4,494,379

CLASS 62

3	4,494,380
55.5	4,494,381
160	4,494,382
196.2	4,494,383
279	4,494,384
306	4,494,385
402	4,494,386

CLASS 65

3.12	4,494,968
	4,494,969
9	4,494,970
19	4,494,971
114	4,494,972
260	4,494,973
337	4,494,974

CLASS 66

117	4,494,387
178 A	4,494,388

CLASS 68

5 C	4,494,389
23.7	4,494,390

CLASS 70

428	4,494,391

CLASS 71

25	4,494,975
28	4,494,976
67	4,494,977
92	4,494,979
	4,494,980
93	4,494,981
97	4,494,982
117	4,494,978
118	4,494,983

CLASS 72

56	4,494,392
57	4,494,393
98	4,494,394
203	4,494,395
243	4,494,396
320	4,494,397
393	4,494,398

CLASS 73

1 B	4,494,400
1 G	4,494,399
35	4,494,401
40	4,494,402
40.7	4,494,403
113	4,494,404
118	4,494,405
204	4,494,406
300	4,494,407
587	4,494,408
644	4,494,410
651	4,494,409
724	4,494,411
761	4,494,412
863.43	4,494,413

CLASS 74

7 E	4,494,414
44	4,494,415
119	4,494,416
469	4,494,417
475	4,494,418
477	4,494,419
479	4,494,420
600	4,494,421
867	4,494,422
869	4,494,423

CLASS 75

11	4,494,984
93 R	4,494,985
109	4,494,986
124	4,494,987
128 A	4,494,988

CLASS 81

57.18	4,494,424
57.34	4,494,425

CLASS 83

164	4,494,426
306	4,494,427
374	4,494,433
389	4,494,428
435.1	4,494,429
468	4,494,430
471.3	4,494,431
559	4,494,432
745	4,494,434
880	4,494,435
886	4,494,444

CLASS 87

23	4,494,436

CLASS 89

1.51	4,494,437
1.813	4,494,438
12	4,494,439
33.04	4,494,440
38	4,494,441

CLASS 91

181	4,494,442
369 A	4,494,443
	4,494,445
375 A	4,494,446

CLASS 92

13.3	4,494,447
172	4,494,448

CLASS 98

40.05	4,494,449
42.02	4,494,450

CLASS 99

276	4,494,451
323.1	4,494,452
353	4,494,453
426	4,494,454

CLASS 101

3 R	4,494,455
35	4,494,456
217	4,494,457
391	4,494,458

CLASS 102

235	4,494,459
293	4,494,460
464	4,494,461

CLASS 104

1 R	4,494,462
17 A	4,494,463

CLASS 105

170	4,494,464

CLASS 106

21	4,494,989
90	4,494,990
100	4,494,991
277	4,494,992
291	4,494,993
308 P	4,494,994

CLASS 108

44	4,494,465
85	4,494,466

CLASS 110

234	4,494,467
	4,494,468
281	4,494,469

CLASS 112

121.12	4,494,470
235	4,494,471

CLASS 114

66	4,494,472
67 A	4,494,473
219	4,494,474
230	4,494,475
260	4,494,476
287	4,494,477

CLASS 118

50	4,494,478
120	4,494,479
411	4,494,480

CLASS 119

1	4,494,481
	4,494,482
77	4,494,483

CLASS 122

34	4,494,484
250 R	4,494,485
491	4,494,486

CLASS 123

1 A	4,494,487
	4,494,488
41.31	4,494,489
41.56	4,494,490
41.72	4,494,491
41.84	4,494,492
52 M	4,494,493
55 VS	4,494,494
90.15	4,494,495
	4,494,496
179 B	4,494,497
179 F	4,494,499
179 G	4,494,498
190 E	4,494,500
193 CP	4,494,501
198 F	4,494,502
	4,494,503
303.13	4,494,541
308	4,494,504
325	4,494,505
348	4,494,506
357	4,494,507
406	4,494,508
416	4,494,509
463	4,494,511
489	4,494,512
495	4,494,513
504	4,494,514
527	4,494,515
557	4,494,516
568	4,494,510
585	4,494,517
612	4,494,518
615	4,494,519
633	4,494,520

CLASS 124

24 R	4,494,521

CLASS 125

11 DF	4,494,522
16 R	4,494,523

CLASS 126

247	4,494,524
289	4,494,525
419	4,494,526
422	4,494,527
429	4,494,528
439	4,494,529

CLASS 127

69	4,494,530

CLASS 128

1 R	4,494,531
71	4,494,532
75	4,494,533
80 F	4,494,534
92 A	Re.31,809
92 BA	4,494,535
133	4,494,536
204.26	4,494,537
205.25	4,494,538
303.1	4,494,539
	4,494,540
305	4,494,542
354	4,494,543
419 D	4,494,544
419 P	4,494,545
431	4,494,546
659	4,494,547
660	4,494,548
	4,494,549
664	4,494,550
696	4,494,551
	4,494,552
721	4,494,553
734	4,494,554
755	4,494,555

CLASS 131

302	4,494,556

CLASS 132

7	4,494,557

CLASS 135

102	4,494,558

CLASS 136

255	4,495,375

CLASS 137

116.5	4,494,559
117	4,494,560
204	4,494,561
414	4,494,345
436	4,494,562
496	4,494,563
527.6	4,494,564
555	4,494,565
556	4,494,566
561 A	4,494,567
	4,494,568
563	4,494,569
590	4,494,570
596.16	4,494,571
596.17	4,494,572
625.5	4,494,573
625.6	4,494,574
846	4,494,575

CLASS 138

175	4,494,576

CLASS 139

20	4,494,577
188 A	4,494,578
429	4,494,579
435	4,494,888

CLASS 140

1	4,494,580

CLASS 141

	4,494,581
9	4,494,582
83	4,494,583
98	4,494,584
	4,494,585
114	Re.31,810
384	4,494,586

CLASS 144

162 R	4,494,587
209 R	4,494,588
213	4,494,589
	4,494,590
286 A	4,494,591

CLASS 148

1.5	4,494,995
	4,494,996
	4,494,997
2	4,494,998
	4,494,999
9 R	4,495,000
11.5 A	4,495,001
12 E	4,495,002
15.5	4,495,003
16.5	4,495,004
	4,495,005
	4,495,006
23	4,495,007

31.5 4,495,008
128 4,495,009
175 4,495,010

CLASS 156

78 4,495,011
4,495,012
79 4,495,013
80 4,495,014
4,495,015
152 4,495,016
181 4,495,017
187 4,495,018
222 4,495,019
244.11 4,495,027
314 4,495,020
425 4,495,021
500 4,495,022
562 4,495,023
646 4,495,024
648 4,495,025
652 4,495,026

CLASS 159

47.1 4,495,028

CLASS 160

177 4,494,593

CLASS 162

135 4,495,029
145 4,495,030

CLASS 164

443 4,494,594

CLASS 165

1 4,494,595
20 4,494,596
41 4,494,597
47 4,494,598
67 4,494,599
132 4,494,600

CLASS 166

55 4,494,601
65 R 4,494,602
231 4,494,603
273 4,494,604
288 4,494,605
295 4,494,606
301 4,494,610
311 4,494,607
317 4,494,608
336 4,494,609

CLASS 172

32 4,494,611

CLASS 173

1 4,494,612
74 4,494,613
116 4,494,614
119 4,494,615

CLASS 174

52 FP 4,495,376
68.5 4,495,377
4,495,378
88 R 4,495,379
138 D 4,495,380
178 4,495,381

CLASS 175

67 4,494,616
86 4,494,617
393 4,494,618

CLASS 177

25 4,494,619
4,494,620

CLASS 179

2.51 4,495,386
81 R 4,495,382
100 L 4,495,383
107 FD 4,495,384
111 R 4,495,385

CLASS 180

6.2 4,494,621
227 4,494,622
230 4,494,623
308 4,494,624

CLASS 181

213 4,494,625

CLASS 182

20 4,494,626
129 4,494,627

CLASS 187

29 R 4,494,628

CLASS 188

65.5 4,494,629
71.8 4,494,630
153 R 4,494,631
269 4,494,632
329 4,494,633
360 4,494,634

CLASS 192

0.052 4,494,639
4,494,640
0.076 4,494,641
12 C 4,494,635
41 A 4,494,636
48.4 4,494,637
48.91 4,494,638
106.2 4,494,642

CLASS 198

392 4,494,643
409 4,494,644
414 4,494,645
459 4,494,646
494 4,494,647
500 4,494,648
718 4,494,649

CLASS 200

6 B 4,495,387
61.21 4,495,388
83 P 4,495,389
145 4,495,390
153 J 4,495,391

CLASS 201

28 4,495,031

CLASS 202

105 4,495,032
118 4,495,033
181 4,495,034

CLASS 203

23 4,495,035

CLASS 204

59 R 4,495,036
70 4,495,037
129.2 4,495,038
130 4,495,039
155 4,495,040
158 R 4,495,041
159.14 4,495,042
176 4,495,043
192 C 4,495,044
224 R 4,495,045
242 4,495,046
245 4,495,047
267 4,495,048
292 4,495,049
408 4,495,050
4,495,051
435 4,495,052
4,495,053

CLASS 206

45.34 4,494,650
328 4,494,651
366 4,494,652
370 4,494,653
562 4,494,654

CLASS 208

8 R 4,495,054
10 4,495,055
11 R 4,495,056
4,495,057
4,495,058
4,495,059
48 Q 4,495,060
89 4,495,061
111 4,495,062
113 4,495,063
120 4,495,064

CLASS 209

243 4,495,065
524 4,494,656
569 4,494,655
608 4,495,066
636 4,494,657

CLASS 210

87 4,495,067
91 4,495,068
114 4,495,069
139 4,495,070
230 4,495,071
238 4,495,072
448 4,495,073
695 4,495,074

CLASS 211

49 R 4,494,658
51 4,494,659
69.1 4,494,660
87 4,494,661

CLASS 215

232 4,494,663
252 4,494,664
330 4,494,665

CLASS 219

10.55 E 4,495,392
69 C 4,495,394
69 M 4,495,393
73.1 4,495,395
85 G 4,495,396
93 4,495,397
121 LG 4,495,398
121 PY 4,495,399
125.12 4,495,400
136 4,495,401
214 4,495,402
233 4,495,403
281 4,495,404
510 4,495,405
528 4,495,406

CLASS 220

3 4,494,666
19 4,494,667
90.4 4,494,668
204 4,494,669
235 4,494,670
256 4,494,671
263 4,494,672
288 4,494,673
306 4,494,674

CLASS 221

13 4,494,675

CLASS 222

63 4,494,676
4,494,677
77 4,494,678
151 4,494,679
321 4,494,680
485 4,494,681
551 4,494,682

CLASS 223

51 4,494,683

CLASS 224

39 4,494,684

CLASS 227

41 4,494,685
147 4,494,686

CLASS 228

47 4,494,687
180 A 4,494,688

CLASS 229

30 4,494,689

CLASS 232

22 4,494,690

CLASS 235

470 4,494,691

CLASS 236

59 4,494,692
100 4,494,693

CLASS 238

2 4,494,694
265 4,494,695

CLASS 239

90 4,494,696
124 4,494,697
489 4,494,698
499 4,494,699
533.3 4,494,700
585 4,494,701

CLASS 242

18 R 4,494,702
55.19 A 4,494,703
56.1 4,494,704
59 4,494,705
65 4,494,706
67.2 4,494,707
67.3 R 4,494,708
107.6 4,494,709
156 4,494,710
184 4,494,711
191 4,494,712

CLASS 244

15 4,494,713
98 4,494,714
134 A 4,494,715
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CLASS 246

28 F 4,494,717

CLASS 248

1 4,494,718
27.1 4,494,719
371 4,494,720
406.2 4,494,721
621 4,494,722
635 4,494,723

CLASS 249

148 4,494,724
219 R 4,494,725

CLASS 250

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203 R 4,495,408
211 J 4,495,409
214 AG 4,495,410
227 4,495,411
4,495,412
252.1 4,495,413
288 4,495,414
336.1 4,495,415
338 4,495,416
343 4,495,417
4,495,418
363 S 4,495,419
367 4,495,420
551 4,495,421
578 4,495,422

CLASS 251

29 4,494,726
64 4,494,727
149.9 4,494,728
229 4,494,729
309 4,494,730
355 4,494,731

CLASS 252

8.55 E 4,495,336
32.7 E 4,495,075
4,495,088
38 4,495,076
51.5 A 4,495,077
62.2 4,495,078
106 4,495,079
179 4,495,080
182 4,495,081
194 4,495,082
299.1 4,495,083
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301.4 F 4,495,085
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315.7 4,495,087
364 4,495,089
372 4,495,090
522 R 4,495,091
559 4,495,092

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134.3 R 4,494,732

CLASS 256

10 4,494,733

CLASS 260

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97.7 4,495,095
112 B 4,495,096
112.5 T 4,495,097
239.3 T 4,495,101
239.5 4,495,102
351.1 4,495,103
396 R 4,495,104
414 4,495,105
419 4,495,106
453 P 4,495,107
453.3 4,495,093
453.7 4,495,108
465.3 4,495,109
544 A 4,495,110
932 4,495,111

CLASS 261

41 D 4,495,112
44 F 4,495,115
64 R 4,495,113
81 4,495,114

CLASS 264

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1.4 4,495,117
25 4,495,118
37 4,495,119
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132 4,495,125
137 4,495,126
157 4,495,127
211 4,495,128
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256 4,495,131
293 4,495,132
504 4,495,133
516 4,495,134
553 4,495,135

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218 4,494,735
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281 4,494,737

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140 4,494,738

CLASS 269

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CLASS 270

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CLASS 271

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34 4,494,744
95 4,494,745
164 4,494,746
263 4,494,747
288 4,494,748

CLASS 272

93 4,494,750
117 4,494,751
134 4,494,662

CLASS 273

72 A Re.31,811
73 A 4,494,752
113 4,494,753
148 B 4,494,754
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14 V 4,494,758
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67 4,494,761
206 R 4,494,762

CLASS 280

1.175 4,494,763
293 4,494,764
432 4,494,765
444 4,494,766
612 4,494,767
4,494,768
630 4,494,769
685 4,494,770
711 4,494,771
712 4,494,772
775 4,494,773
806 4,494,774

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26 4,494,775
55 4,494,776
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146 4,494,778
159 4,494,779
177 4,494,780

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53 4,495,424

CLASS 292

60 4,494,781
96 4,494,782
155 4,494,783
233 4,494,784

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161 4,494,788

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97 H 4,494,789
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333 4,494,806

CLASS 313

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412 4,495,438
4,495,439
492 4,495,440

CLASS 315

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241 P 4,495,447

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444 4,495,452
568 4,495,453
663 4,495,454
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755 4,495,456

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199 4,495,480
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403 4,494,847
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421 4,494,851
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3 R 4,494,856
3 TR 4,494,858
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13 4,494,860
14 C 4,494,862
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22 4,494,864
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57 4,494,866
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315 4,494,871
328 4,494,872
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376 4,494,874
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43 4,495,513
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55 4,495,633
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3 4,495,644
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13 4,495,646

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5 4,494,592

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4 4,494,889
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6 4,494,892

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290 4,494,894

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236 4,494,895

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154 4,494,897

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14 4,494,898

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749 4,494,907

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373 4,495,227
384 4,495,156
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388.2 4,495,229

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520 4,495,250
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669 4,495,255

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277 4,495,271
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510 4,495,273
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527 4,495,275
4,495,276
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		4,495,331	15		4,495,340	18.5		4,495,346	178		4,495,353	436		4,495,360		CLASS 560	
800		4,495,332	110		4,495,341	24		4,495,347	209		4,495,355		CLASS 560		322		4,495,370
	CLASS 525		125		4,495,342		CLASS 544		268		4,495,356	20		4,495,362	427		4,495,371
150		4,495,333	292		4,495,343	97		4,495,349	269		4,495,357	155		4,495,363	454		Re.31,812
240		4,495,334	340		4,495,344	021		4,495,348		CLASS 548		180		4,495,364	929		4,495,372
438		4,495,335	372		4,495,345	167		4,495,350	550		4,495,358		CLASS 564			CLASS 585	
	CLASS 526			CLASS 534		234		4,495,351		CLASS 549		91		4,495,365	269		4,495,373
88		4,495,337	651		4,495,098	284		4,495,352	356		4,495,359	160		4,495,366	500		4,495,374
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D2—	27	277,236		40	277,252		120	277,268			277,284	D21—	39	277,300		64	277,316
	233	277,237		320	277,253	D11—	121	277,269	D15—	1	277,285		89	277,301		67	277,317
	361	277,238		359	277,254		158	277,270		21	277,286		114	277,302	D25—	7	277,318
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	351	277,245		394	277,256		146	277,272	D16—	27	277,288		195	277,304	D26—	51	277,320
	356	277,239			277,257		181	277,273		32	277,289	D23—	3	277,305	D28—	46	277,321
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		277,244	D9—	306	277,262			277,278			277,294		149	277,310	D32—	22	277,325
	405	277,247	D10—	26	277,263			277,279	D19—	35	277,295			277,311		35	277,326
	420	277,250		31	277,264		53	277,280		42	277,296		153	277,312		70	277,327
	483	277,249			277,265			277,281		75	277,297	D24—	55	277,313	D99—	29	277,328

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,494,294		4,494,713		4,495,365		4,495,187		4,494,466		4,495,654
02 :	4,494,731		4,494,725		4,495,382		4,495,238		4,494,531	19 :	4,494,362
04 :	4,494,263		4,494,749		4,495,399		4,495,269		4,494,552		4,494,598
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Jan. 3, 1985 and was announced in the *PCT Gazette* at No. 26/1984 page 3241 on Nov. 8, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1985 and were announced in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	690.00
International fees	
Basic fee (first 30 pages)	265.00
Basic Supplemental fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	64.00
Designation fee for 11th and subsequent designations	no charge

Dec. 24, 1984.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Jan. 26, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,312,076 through 4,313,228

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Board of Appeals Decisions Rendered in the Month of Dec. 1984

Affirmed	122
Affirmed in Part	18
Reversed	51
Total	191

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,360,804, Re. S.N. 673,135, Filed Nov. 19, 1984, Cl. 340/703, PATTERN DISPLAY SYSTEM, Toshio Ohura, Owner of Record: *Nippon Electric Co., Ltd., Tokyo, Japan,* Attorney or Agent: Maurice E. Gauthier, et al., Ex. Gp.: 264

4,395,182, Re. S.N. 673,145, Filed Nov. 19, 1984, Cl. 414/299, FILLING AND DISTRIBUTION APPARATUS AND METHOD FOR SILOS, Donald W. Suwyn, Owner of Record: *Inventor*, Attorney or Agent: Merl E. Sceales, et al., Ex. Gp.: 317

Erratum

The Official Gazette of Sept. 11, 1984 contained an incorrect patent number in the listing of the "REISSUE APPLICATIONS FILED".

Incorrect Listing:

4,341,370, Re. S.N. 634,771, Filed July 26, 1984, Cl. 251/282. ATOMIC ABSORPTION SPECTROSCOPY, Clive Parker, et al., Owner of Record: *Inventor*, Attorney or Agent: Edward S. Irons, Ex. Gp.: 345.

Correct Listing:

4,341,470, Re. S.N. 634,771, Filed July 26, 1984, Cl. 356/307. ATOMIC ABSORPTION SPECTROSCOPY, Clive Parker, et al., Owner of Record: *Varian Associates, Inc., Palo Alto, Calif.*, Attorney or Agent: Edward S. Irons, Ex. Gp.: 255.

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,511,282, Reexam. No. 90/000,686, Requested: Dec. 12, 1984, Cl. 138/113, PRESTRESSED CONDUIT FOR HEATED FLUIDS, Glen P. Willhite, et al., Owner of Record: *Conoco, Inc., Ponca City, Okla.*, Attorney or Agent: Stephen A. Littlefield, Ex. Gp.: 243, Requester: General Electric Co., Washington, D.C.

3,999,756, Reexam. No. 90/000,676, Requested: Dec. 3, 1984, Cl. 273/73C, TENNIS RACKET, Howard Head, Owner of Record: *Prince Manufacturing, Inc., Princeton, N.J.*, Attorney or Agent: Pennie & Edmonds, Ex. Gp.: 334, Requester: Prince Manufacturing, Inc., New York, N.Y.

4,226,728, Reexam. No. 90/000,698, Requested: Dec. 21, 1984, Cl. 252/8, FIRE EXTINGUISHER AND FIRE EXTINGUISHING COMPOSITION, Shin H. Kung, Owner of Record: *Pat Evans, Cleveland, Tenn.*, Attorney or Agent: Holland, Armstrong, et al., Ex. Gp.: 223, Requester: Keith D. Nowak, New York, N.Y.

4,232,679, Reexam. No. 90/000,700, Requested: Dec. 31, 1984, Cl. 128/419PG, PROGRAMMABLE HUMAN TISSUE STIMULATOR, Joseph H. Schulman, Owner of Record: *Pacesetter System, Inc., Sylmar, Calif.*, Attorney or Agent: Donald L. Cox and Robert R. Meads, Ex. Gp.: 335, Requester: Medtronic, Inc., Minneapolis, Minn.

4,270,596, Reexam. No. 90/000,696, Requested: Dec. 27, 1984, Cl. 165/171, TUBE MAT HEAT EXCHANGER, Michael F. Zinn, et al., Owner of Record: *Bio-Energy Systems, Inc., Ellenville, N.Y.*, Attorney or Agent: Charles J. Brown, Ex. Gp.: 346, Requester: Charles J. Brown, Windham, N.Y.

4,270,606, Reexam. No. 90/000,692, Requested: Dec. 18, 1984, Cl. 166/181, APPARATUS FOR SELECTIVE DISENGAGEMENT OF A FLUID TRANSMISSION CONDUIT AND FOR CONTROL FLUID TRANSMISSION FROM A WELL ZONE, David M. McStravick, et al., Owner of Record: *Baker International Corp., Orange, Calif.*, Attorney or Agent: William C. Norvell, Ex. Gp.: 356, Requester: Dresser Industries, Inc., Houston, Tex.

4,396,600, Reexam. No. 90/000,687, Requested: Dec. 17, 1984, Cl. 424/88, ADULT SCHISTOSOME WORM-DERIVED ANTIGENIC SUBSTANCE AND METHOD OF OBTAINING SAME, Luigi Messineo, et al., Owner of Record: *Galluccis & Lowers, Akron, Ohio & Leesburg, Va.*, Attorney or Agent: Sherman & Shalloway, Ex. Gp.: 120, Requester: Oswaldo Cruz Foundation, Manguinhos, Brasil

4,439,475, Reexam. No. 90/000,685, Requested: Dec. 7, 1984, Cl. 428/92, NAP MAT OR CARPET OF WASHABLE TYPE HAVING INCREASED LIQUID REMOVAL THEREFROM DURING WASHING THEREOF, Aage Lang, Owner of Record: *Clean-Tex A/S, Morke, Denmark*, Attorney or Agent: E. R. Marden, Ex. Gp.: 150, Requester: Owner

4,451,996, Reexam. No. 90/000,689, Requested: Dec. 18, 1984, Cl. 36/114, ATHLETIC SHOE WITH COLLAR, Edward J. Norton, et al., Owner of Record: *New Balance Athletic Shoe, Inc., Boston, Mass.*, Attorney or Agent: S. B. Smith, Ex. Gp.: 350, Requester: Owner

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Requests for Application Files

Applicants or attorneys requesting files from the Publishing Division, Office of Publications, should make their request at least twenty-four hours in advance to ensure file availability. Attention is especially directed to out-of-town requestors who visit the Office, anticipating same day service. Although the Office is usually able to respond promptly, unexpected inconvenience can be avoided if arrangements are made in advance.

Inquiries and requests should be directed to the Correspondence Section at (703) 557-6397 or (703) 557-6398 between the hours of 8:30 a.m. through 5:00 p.m. on weekdays.

Dec. 28, 1984.

THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

Department of the Treasury
United States Customs Service
Application for Recordation of Trade Name: "GERBER PRODUCTS COMPANY"

Agency: U.S. Customs Service, Department of the Treasury

Action: Notice of Application for Recordation of Trade Name

Summary: Application has been filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "GERBER PRODUCTS COMPANY" used by Gerber Products Company, a corporation organized under the laws of the State of Michigan, located at 445 State St., Fremont, Mich. 49412.

The application states that the trade name is used in connection with plush toys, crib toys and other merchandise intended for use by infants and small children manufactured in Hong Kong, Taiwan, Malaysia, West Germany, Japan and Thailand.

Before final action is taken on the application, consideration will be given to any person in opposition to the recordation of this trade name. Notice of the action taken on the application for recordation of this trade name will be published in the Federal Register.

Date: Comments must be received on or before Feb. 15, 1985.

Address: Written comments should be addressed to the Commissioner of Customs, Attention: Entry, Licensing

and Restricted Merchandise Branch, 1301 Constitution Ave., NW., Rm. 2417, Washington, D.C. 20229.
For Further Information Contact: Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, 1301 Constitution Ave., NW., Washington, D.C. 20229 (202-566-5765).

Dec. 12, 1984.

DONALD W. LEWIS,
Director, Entry Procedures and Penalties Division.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of any of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before Mar. 1, 1985:

Dec. 27, 1984.

WILLIAM FELDMAN,
Director, Office of Enrollment and Discipline.

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Weber, Kenneth A., 1526 Blakeslee St., Kalamazoo, Mich. 49007
Weiner, Paul J., 305 E. 86th St., #8MW, New York, N.Y. 10028
Weissburg, Steven J., 72 Eustis St., Cambridge, Mass. 02140
Welsh, Robert W., 2106 Jenkins Dr., Midland, Mich. 48640
Wetherell, John R. Jr., 13917 Castle Blvd. #12, Silver Spring, Md. 20907
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Wight, Christopher L., 11E-654 Wymount Terr., Provo, Utah 84604
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Wurm, Mark A., 7456 Drew Ave., N., Minneapolis, Minn. 55443

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Youmatz, Vincent W., RR 1, Box 121, Suncook, N.H. 03275

Patents Available for License or Sale

D. 273,228. BUILDING STRUCTURE. *Sammy Cotton*, 1314 West 69th St., Los Angeles, Calif. 90044.

3,624,918. CLOTHES DRYERS. Correspondence to: *National Bank of Detroit*, 611 Woodward, Detroit, Mich. 48226.

4,181,763. PROCESS FOR PRODUCING SIMULATED WOODEN ARTICLES. *Robert L. Shellenberger*, Correspondence to G. Frank, 229 Gypsy La., Wynnewood, Pa. 19096.

4,239,030. FIELD BURNER APPARATUS. *Everett H. Benson* and *Ruth L. Benson*, 20568 S.E. Norse Rd., Eagle Creek, Oreg. 97022.

4,323,118. APPARATUS FOR CONTROLLING AND PREVENTING OIL BLOWOUTS. Correspondence to: *Mr. Conrad Bergmann*, Bergmann's Department Store, 1365 Lincoln Ave., San Jose, Calif. 95113.

4,420,398. FILTRATION METHOD FOR CELL PRODUCED ANTIVIRAL SUBSTANCES. *Franco Castino*. Correspondence to: Marvin R. Stern, Holman & Stern, 2401 Fifteenth St., N.W., Washington, D.C. 20009. (202)483-2234.

4,434,981. CROSS COUNTRY SKIING SIMULATING EXERCISER. *Desmond H. Norton*. Correspondence to: Mallinckrodt, Mallinckrodt, Russell and Osburn, Attention: A. Ray Osburn, 914 - 1st Security Bank Bldg., Ogden, Utah 84401.

4,477,149. RESETTABLE MIRROR ASSEMBLY. *Serge Crespy*. P.O. Box 383, Collingwood, Ontario, Canada L9Y 3Z7.

4,458,509. TREATED REVERSIBLE SKIN AND A PROCESS FOR TREATING ANIMAL SKINS TO FORM SUCH A REVERSIBLE SKIN. *Claude Pechdo*, Correspondence to: Neil F. Greenblum, Sandler & Greenblum, 701 S. 23rd St., Arlington, Va. 22202.

4,464,141. SHAFT COUPLING. *James A. Oliff*, Parkhurst & Oliff, 277 S. Washington St., Suite 212, Alexandria, Va. 22314 (703-836-6400).

4,466,593. COPYHOLDER, LECTERN, BOOK SUPPORT. *Clayton P. Odenath*, 108 Peach Rd., Bellmawr, N.J. 08031.

The following patents are offered by: Joseph C. Firey, P.O. Box 15514, Seattle, Wash. 98115-0514.

4,333,423. ENGINE STEAM STRATIFIER.

4,425,892. ENGINE INTAKE STRATIFIER FOR CONTINUOUSLY VARIABLE STRATIFIED MIXTURES.

4,381,745. POROUS BURNER DIESEL ENGINE.

4,412,511. CHAR AND OIL BURNING ENGINE.

The following patents are offered by William H. Cochran, P.O. Box 32, Stonington, Conn. 06378.

3,348,992. TUFTED PRODUCTS.

3,383,259. METHOD OF MAKING A TUFTED FABRIC.

3,685,343. APPARATUS FOR DETERMINING FLAMMABILITY.

3,702,797. ANTISTATIC TEXTILE PRODUCT.

3,713,960. ANTISTATIC TUFTED PRODUCT.

3,728,204. TEXTILE PRODUCT AND PROCESS FOR MAKING SAME.

4,308,304. ANTISTATIC TUFTED PRODUCT.

General Electric Co. is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license may be addressed to: Group Patent Counsel, Major Appliance Business Group, General Electric Co., Appliance Park, AP1-230, Louisville, Ky. 40225.

3,522,906. CARTON FLAP SUPPORT.

3,727,421. ROOM AIR-CONDITIONER ONE-PIECE CHASSIS.

3,861,283. ROOM AIR CONDITIONER MOUNTING ARRANGEMENT.

3,864,844. SOLID STATE DRYER CONTROL.

3,871,800. HERMETICALLY SEALED COMPRESSOR SUCTION TUBE ASSEMBLY.

4,006,339. MICROWAVE HEATING APPARATUS WITH MULTIPLE COUPLING ELEMENTS AND MICROWAVE POWER SOURCES.

4,006,338. MICROWAVE HEATING APPARATUS WITH IMPROVED MULTIPLE COUPLERS AND SOLID STATE POWER SOURCE.

4,031,745. METHOD OF FORMING CONSTRICTION IN TUBING.

4,059,970. AUTOMATIC ICEMAKER INCLUDING MEANS FOR MINIMIZING THE SUPERCOOLING EFFECT.

4,062,201. AUTOMATIC ICEMAKER INCLUDING MEANS FOR MINIMIZING THE SUPERCOOLING EFFECT.

4,150,679. DISHWASHER WITH IMPROVED BYPASS FILTER ARRANGEMENT.

4,158,950. HEAT PUMP DEFROST SYSTEM.

4,196,462. PROTECTIVE CONTROL CIRCUIT FOR INDUCTION MOTORS.

4,263,962. HEAT PUMP CONTROL SYSTEM.

4,283,928. TRANSMISSION FOR WASHING MACHINE.

4,285,212. ICE DISPENSER STORAGE ASSEMBLY.

4,285,214. FLEXIBLE COUPLING.

4,286,391. CONTROL SYSTEM FOR AN AUTOMATIC CLOTHES DRYER.

4,288,995. HOUSEHOLD REFRIGERATOR MOVABLE STORAGE ASSEMBLY.

4,298,110. TWO-SPEED CLUTCH WITH NEUTRAL.

4,301,666. LUBRICATION SYSTEM FOR TRANSMISSION OF AUTOMATIC CLOTHES WASHING MACHINE.

4,303,818. MICROWAVE OVEN HUMIDITY SENSING ARRANGEMENT.

4,317,343. DRIVE ARRANGEMENT WITH A WASHING MACHINE.

4,320,614. PANEL ASSEMBLY FOR SHEET METAL PANELS HAVING DOUBLE WALL CONSTRUCTION CORNERS.

4,323,342. BURNER IGNITION AND CONTROL SYSTEM.

4,325,234. ADJUSTABLE STROKE AGITATION SYSTEM.

4,330,081. WATER TEMPERATURE CONTROL SYSTEM FOR A CLOTHES WASHING MACHINE.

4,385,082. PREPARATION OF SHIELDED PLASTIC MICROWAVE OVENS.

4,386,347. METHOD OF, AND APPARATUS FOR, INCREASED RESOLUTION SLEWING OF A BAR-GRAPH-DISPLAY DATA INPUT/OUTPUT SYSTEM.

4,390,769. INDUCTION HEATING APPARATUS PROVIDING SMOOTH POWER CONTROL.

4,392,766. AUTOMATIC FEEDING APPARATUS.

4,394,564. SOLID PLATE HEATING UNIT.

4,394,565. POWER DISCONNECT ASSEMBLY FOR ELECTRIC HEATING ELEMENTS.

4,413,672. CENTRAL DESK AIR CONDITIONING CONTROL SYSTEM.

4,418,744. AIR CONDITIONING CONTROL SYSTEM WITH USER POWER UP.

4,424,439. PROTECTIVE METHOD AND CIRCUIT ARRANGEMENT FOR APPLIANCE INCORPORATING SHEATHED HEATING ELEMENT.

4,426,564. PARALLEL RESONANT INDUCTION COOKING SURFACE UNIT.

4,434,344. SELF-STORING MEAL RACK FOR A MICROWAVE OVEN.

4,435,993. CONTROL KNOB TO SHAFT ASSEMBLY.

4,437,715. RACK-SUPPORTING CHANNEL AND STOP.

4,440,004. WOBBLE WASHER.

4,441,015. COOKING APPARATUSEMPLOYING A ROTISSERIE MODE WITH STATIONARY FOOD.

4,441,545. AIR CONDITIONING THERMOSTATIC CONTROL SYSTEM HAVING MODULAR INCLUSION OF REMOTE TEMPERATURE SET-BACK CAPABILITY.

4,441,770. APPLIANCE ANTI-TIP DEVICE.

4,443,690. POWER CONTROL FOR COOKING APPLIANCE WITH TRANSIENT OPERATING MODES.

4,446,349. MICROWAVE PHASE SHIFTING DEVICE.

4,447,799. HIGH TEMPERATURE THERMISTOR AND METHOD OF ASSEMBLING THE SAME.

4,451,224. MOLD DEVICE FOR MAKING PLASTIC ARTICLES FROM RESIN.

4,453,065. MICROWAVE OVEN DOOR ALIGNING ASSEMBLY.

4,455,467. METAL RACK FOR MICROWAVE OVEN.

Applications for license may be addressed to Patent Counsel, Steam Turbine-Generator Legal Operation,

General Electric Co., 1 River Rd., Schenectady, N.Y. 12345.

4,404,486. STAR CONNECTED AIR GAP POLYPHASE ARMATURE HAVING LIMITED VOLTAGE GRADIENTS AT PHASE BOUNDARIES.

4,408,709. METHOD OF MAKING TITANIUM-STABILIZED FERRITIC STAINLESS STEEL FOR PREHEATER AND REHEATER EQUIPMENT APPLICATIONS.

4,417,476. CHARGE CONVERTER FOR VIBRATION MONITORING INSTRUMENTATION.

4,418,859. METHOD OF MAKING APPARATUS FOR THE EXCHANGE OF HEAT USING ZIRCONIUM STABILIZED FERRITIC STAINLESS STEELS.

4,430,575. TURBIN TURNING GEAR WITH HYDRAULIC OVERSPEED DRIVE.

4,451,786. HIGH SENSITIVITY BRUSH ARCING MONITOR FOR A DYNAMOELECTRIC MACHINE.

4,462,913. PROCESS FOR TREATING WASTEWATER CONTAINING FAT AND HEAVY METAL IONS.

Applications for licenses should be addressed to: Patent Counsel-SSD, General Electric Co., P.O. Box 8555, Philadelphia, Pa. 19101.

4,413,766. METHOD OF FORMING A CONDUCTOR PATTERN INCLUDING FINE CONDUCTOR RUNS ON A CERAMIC SUBSTRATE.

4,430,803. CIRCUIT FOR LEVITATED BALL INCLINOMETER.

4,437,109. SILICON-ON-SAPPHIRE BODY WITH CONDUCTIVE PATHS THERETHROUGH.

4,442,165. LOW-DENSITY THERMALLY INSULATING CARBON-CARBON SYNTACTIC FOAM COMPOSITE.

4,465,097. TURBOMACHINERY ROTOR & METHOD OF MANUFACTURE.

4,467,329. LOADED WAVEGUIDE LENSES.

Applications for license may be addressed to: General Electric Co., Component Products Group, 1635 Broadway, P.O. Box 2204, Fort Wayne, Ind. 46801-2204.

4,319,299. COMBINATION STARTER-PROTECTOR DEVICE, APPARATUS UTILIZING SUCH DEVICE, AND METHOD OF ASSEMBLING.

4,334,162. RELEASABLE COMBINATION AND METHOD OF ASSEMBLY.

Adverse Decisions in Interference

In the designated interference involving the indicated claims of the following patents, final decision having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 4,101,810, Jerry D. Schermerhorn, and John W. V. Miller, SYSTEM FOR AND METHOD OF OPERATING GAS DISCHARGE DISPLAY AND MEMORY, Interference No. 100,674, decided Aug. 29, 1984, claims 1-10, 19, 20, 22, 24-26 and 34-39.

Patent No. 4,128,901, John W. V. Miller, GROUND-REFERENCE POWER SUPPLY FOR GAS DISCHARGE DISPLAY/MEMORY PANEL DRIVING AND ADDRESSING CIRCUITRY, Interference No. 100,673, decided Aug. 29, 1984, claims 1, 2 and 4-7.

Patent No. 4,158,987, Joseph E. Smith, PRESSURE FOOT FOR MACHINE TOOL, Interference No. 100,786, decided June 7, 1984, claims 1, 2, 3, 4, 11, 13, 26 & 27.

Patent No. 4,264,288, Peter Wusthof, and Johann Schneider, GEROTOR MACHINE WITH FLOW CONTROL RECESSES IN THE INNER GEAR MEMBER, Interference No. 101,236, decided Oct. 30, 1984, claims 1-7.

Patent No. 4,278,345, Austin E. Davis, Raymond G. Cormier and Christopher A. Caggiula, DRUM CLEANING APPARATUS, Interference No. 101,212, decided Oct. 26, 1984, claims 1-4.

Patent No. 4,340,203, Verne P. Donner, THREE WAY SLIDE VALVE WITH CENTER RETURN, Interference No. 100,994, decided Aug. 3, 1984, claim 4.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Interferences.

Status of PTO Services

The following is an update of the status of PTO services for December 1984:

Service Item	FY 1985 Performance Goal (Calendar Days)	Monthly Average	Comment
Filing Receipts:			
Patents	22	30	Due to automation problems.
Trademarks	30	30	
Patent/Trademark Copies:			
Window Coupons	5	90% within 5 days	
Mail Coupons	29	93% within 29 days*	
Letter Orders	34	93% within 34 days*	
Date of oldest unfilled order		December 18, 1984**	
Date being processed		December 28, 1984**	New reporting format see below.
Certified Copies:			
Trademark Registrations	30	20	
Status Copies (excluding title)	15	96% within 15 days	
Applications-As-Filed	20	97% within 7 days	
File-Wrapper/Contents	N/A	95% within 7 days	
Walk-up Certification	1	97% within 24 hours	
Trademark Search Library:			
Filing Drawings	21	32	
Filing Reg. Certificates	3	8	
Assignments:			
Patents	25	22	
Trademarks	25	15	
Avg. Days from Issue Fee Payment to Issue Date	90–100	88	
Patent Official Gazette:			
In Bookstore	Issue Date	On schedule	
Mailed	Issue Date	Avg. 1 day late	
Patent Grants Mailed	Issue Date	Avg. 9 days late	Delay due to new printing contractor.
Patent Copies Available	Issue Date	94% on issue date	Delay due to new printing contractor.
Trademark Copies Available	Issue Date	99% on issue date	
Trademark Official Gazette:			
In Bookstore	Issue Date	Issue Date	
Mailed	Issue Date	Issue Date	
Trademark Regs. Mailed	Issue Date	Issue Date	

*Figures include postal processing and delivery time.
**Dates are day of receipt for (1) the single oldest order and (2) the majority of orders in process.

IMPROVEMENTS TO SERVICE

- *Manual of Patent Examining Procedure on CASSIS* — The Classification and Search Support Information System (CASSIS) has been enhanced to make your search for patent and classification information easier and more effective. This is the fourth revision and includes access commands to allow viewing of the Manual of Patent Examining Procedure (MPEP). A new users guide (Oct. 1984) is available in the Public Search Room.
- *More Informative Service Statistics* — Under Patent/Trademark copies, we had previously been reporting the "Date of oldest unfilled order", which was in fact our oldest order currently being processed. This could be misleading and we have now decided to also report "Date being processed". With these two dates one can now be aware of our current processing date, as well as the date of the oldest order awaiting to be completed.

HELPFUL HINTS FROM THE PTO

- *Requests for Application Files* — Applicants or attorneys requesting files from the Publishing Division, Office of Publications, should make their request at least twenty-four hours in advance to ensure file availability. Attention is especially directed to out-of-town requesters who visit the Office, anticipating same day service. Although the Office is usually able to respond promptly, unexpected inconvenience can be avoided if arrangements are made in advance. Inquiries and requests should be directed to the Correspondence Section at (703) 557-6398 between the hours of 8:30 a.m. through 5:00 p.m. on weekdays.

FIRST MAINTENANCE FEES RECEIVED

- The Patent and Trademark Office has received the first payments from a patentee under provisions of a law passed by Congress in 1980 and amended in 1982 providing for patent maintenance fees. The first payments were made by American Home Products Corp. of N.Y.

Jan. 7, 1985.

THERESA A. BRELSFORD
Assistant Commissioner
for Administration.

DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Part 1

[Docket No. 40104-4151]

Patent Interference Proceedings

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Final rule.

SUMMARY: The Patent and Trademark Office is amending its rules of practice in patent interference cases. The Patent Law Amendments Act of 1984, Pub. L. 98-622, sections 201-202, abolished the Board of Appeals and Board of Patent Interferences and created in their place a Board of Patent Appeals and Interferences which will decide *ex parte* appeals from adverse decisions of patent examiners and interference cases. The Patent and Trademark Office, through this amendment of its rules, intends to provide guidance on the procedures the Office will be following in conducting interference cases before the Board of Patent Appeals and Interferences.

DATE: The effective date of these rules is: February 11, 1985.

FOR FURTHER INFORMATION CONTACT: Fred E. McKelvey by telephone at (703) 557-4025 (if no answer, message may be left at 703-557-4103) or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: The Patent and Trademark Office (PTO) conducts interference proceedings to determine who as between two or more applicants for patent or one or more applicants and one or more patentees is the first inventor of a patentable invention. Heretofore, the determination was made by a Board of Patent Interferences. The Patent Law Amendments Act of 1984, Pub. L. 98-622, sections 201-202 combines the Board of Appeals and the Board of Patent Interferences into a single Board of Patent Appeals and Interferences (Board) and authorizes the Board to consider priority and patentability in interference cases.

In view of the discretion given the Board under 35 U.S.C. 135(a), as amended by Pub. L. 98-622 ("The Board . . . may determine questions of patentability. . . ."), these new rules will apply to all interferences declared on or after February 11, 1985, except in special circumstances, such as: (1) Interferences which are declared as a result of a motion made in another interference which was pending before the Board before February 11, 1985 (e.g., an interference declared as a result of a motion under 37 CFR 1.231 to declare an additional interference); (2) an interference related to another interference declared prior to February 11, 1985 (e.g., an interference involving a method of using a compound where an interference involving the same parties and the compound was declared prior to February 11, 1985); and (3) an interference reinstituted after having been dissolved under the old rules (37 CFR 1.201-1.288) (e.g., an interference reinstituted after having been dissolved as a result of a motion under 37 CFR 1.231 to dissolve on the grounds of unpatentability where the applicant has obtained allowance of the claims held unpatentable in the decision on motions).

Through these new rules the PTO seeks to improve interference procedure so that the rights of parties in interferences are determined at an early date and the overall process of examining patent applications which become involved in interferences is simplified.

In order to obtain maximum input from the public prior to formally proposing revisions to the rules, on August 1, 1983, the PTO published in the **Federal Register** an advance notice of proposed rulemaking for interference rules. 48 FR 34836-34855. The advance notice was not published in the *Official Gazette*. Twenty-one written comments were received. All comments are available for public inspection in Room 10C01, Crystal Gateway II, 1225 Jefferson Davis Highway, Arlington, Virginia.

On January 30, 1984, the PTO published in the **Federal Register** a notice of proposed rulemaking. 49 FR 3786-3802. The notice was also published in the *Official Gazette* on February 14, 1984. 1039 O.G. 11; 1039 TMOG 11. The notice also appeared in the Bureau of National Affairs' Patent, Trademark & Copyright Journal, Vol. 27, pp. 312-346 (February 2, 1984), hereinafter "BNA." Eighteen written comments were received in response to the notice of proposed rulemaking. The comments are analyzed herein. A hearing was held on May 15, 1984. Three individuals appeared at the hearing. Oral comments made at the hearing are also analyzed herein. The eighteen comments and copy of the transcript of the hearing are available for public inspection in Room 10C01, Crystal Gateway II, 1225 Jefferson Davis Highway, Arlington, Virginia.

The new rules for interferences are set forth herein in §§ 1.601 through 1.666. The new rules replace entirely the present interference rules (37 CFR 1.201 through 1.288). A "six hundred" number series is used for the new rules. The use of a six hundred number series for the new rules will permit interested individuals to research published decisions (e.g., F.2d, USPQ) or computerized legal research services (e.g., LEXIS) citing the new rules.

An index of the headings of §§ 1.601-1.666 and a table correlating 37 CFR 1.201 through 1.286 (old rules) to §§ 1.601 through 1.666 (new rules) appears below.

Under the new rules, interferences are decided by the Board. The Board has jurisdiction to determine (1) priority of invention, (2) patentability of any claim corresponding to a count both as to applicants and patentees, (3) any issue of interference-in-fact as to any count, and (4) any other issue necessary to resolve the interference. The rules permit an interference to be declared on the basis of a single count defining one patentable invention in interferences involving patents as well as applications. The Board also has jurisdiction to determine whether counts are patentably distinct.

When an interference is declared, an examiner-in-chief is assigned to handle the interlocutory stages of the interference. An examiner having full signatory authority determines when one or more applications and a patent claim the same patentable invention. When the examiner makes such determination, the examiner will forward any involved applications or patents to the Board. The examiner will designate, at the time the involved applications or patents are sent to the Board, the claims of any application and patent which correspond to each count. The examiner-in-chief can subsequently designate additional claims to correspond to a count. The examiner-in-chief assigned to handle the interference will issue a notice to the parties declaring the interference.

The object of the interference will be to resolve all controversies as to all interfering subject matter defined by one or more counts. A final decision in the interference will determine who, if anyone, is entitled to claims which correspond to a count. Any decision adverse to an applicant by the Board will constitute a final refusal by the PTO to that applicant of the claims involved. Any decision adverse to a patentee constitutes cancellation from the patent of the claims involved.

Any decision by the Board on any issue is binding on the examiner and would govern further proceedings in the PTO.

The designation of a single examiner-in-chief to handle the interlocutory phases of an interference will permit better management of, and control over, interference proceedings. The rules provide that times be set and the examiner-in-chief exercise control over proceedings in the interference such that pendency of the interference before the Board from declaration to final decision will not normally exceed 24 months. The examiner-in-chief should be familiar with the history of the interference and will be accessible to counsel for the parties. For example, an examiner-in-chief, where appropriate, may conduct telephone conference calls to obtain agreement of the parties on the setting of schedules. The rules also permit the examiner-in-chief to hold hearings in the PTO or by conference telephone call in order to expedite or settle interlocutory issues in interferences. Any hearing can be transcribed by a court reporter under such conditions as an examiner-in-chief or the Board deems appropriate. The examiner-in-chief, where appropriate, will be available by phone to rule on the admissibility of evidence in the event parties encounter unusual problems during the taking of depositions. The examiner-in-chief will also be available to rule on requests for production of documents which take place during cross-examination. Oral orders given by phone will be followed by written orders.

At the time an interference is declared, the examiner-in-chief will set a time for filing preliminary motions. The preliminary motions can include:

(1) A motion for judgment on the ground that a claim corresponding to the count is not patentable to an opponent under 35 U.S.C. 102, 103, 112, or any other provision of law.

(2) A motion for judgment on the ground that there is no interference-in-fact between the claims of the opponents in the interference.

(3) A motion to add or to substitute new counts, to amend a claim corresponding to a count, to designate an application or patent claim to correspond to a count, to designate an application or patent claim as not corresponding to a count, or to require an applicant to present a claim to be designated to correspond to a count.

(4) A motion to substitute another application for the application involved in the interference or to add an application for reissue to the interference.

(5) A motion to declare another interference.

(6) A motion to be accorded the benefit of an earlier application or to attack the benefit of an earlier application which has been accorded to an opponent.

Other motions are permitted as necessary, such as a motion to amend the count and/or a claim corresponding to the count in response to a preliminary motion for judgment.

Oppositions to motions are permitted if filed within a time set by the examiner-in-chief. Replies are also authorized. Papers which are not authorized by the rules or requested by the examiner-in-chief can be returned unfiled.

A preliminary statement will be filed prior to or concurrently with the preliminary motions outlined above.

Motions will be decided by an examiner-in-chief, who may consult with an examiner on questions of patentability which have not previously been decided by the examiner. The examiner-in-chief may grant a motion, deny a motion, defer consideration on the merits of a motion to final hearing, or take such other action with respect to a motion as may be appropriate, e.g., dismiss an entirely inappropriate motion.

At the time preliminary motions are decided, the preliminary statements will be opened. If a decision on a motion or inspection of the preliminary statement results in entry of an order to show cause why a judgment should not be entered, the party against whom judgment might be entered can request a hearing before the examiner-in-chief and two additional examiners-in-chief. The decision will govern further proceedings. If adverse, the decision will constitute a final agency action. If favorable, the interference will proceed before the examiner-in-chief.

After preliminary motions are decided and assuming judgment does not result, a period may be set for the parties to file motions for additional discovery. The scope of the additional discovery would be the same as under current practice.

When a time period is set for filing discovery motions, or after discovery has closed, the examiner-in-chief will set a period for taking testimony. Any party wishing to take the testimony of a witness can elect to have the testimony of the witness taken by deposition or presented by affidavit. A transcript of an *ex parte* deposition can be used as an affidavit. If an affidavit is presented, the opposing party may then cross-examine on oral deposition. Any redirect will take place at the deposition. The party calling the witness is responsible for securing a court reporter and filing the transcript and record associated with cross-examination of its witness.

In the event a party needs testimony from a third-party who will not appear unless a subpoena is issued, including a hostile witness, direct and cross-examination testimony may be taken on oral deposition. The rules provide that prior authorization of an examiner-in-chief is required before a party can take testimony by issuance of a subpoena under 35 U.S.C. 24. The rule thus adopts the policy of *Sheehan* v. *Doyle*, 513 F.2d 895, 898, 185 USPQ 489, 492 (1st Cir.), *cert. denied*, 423 U.S. 874 (1975), and *Sheehan* v. *Doyle*, 529 F.2d 38, 40, 188 USPQ 545, 546 (1st Cir.), *cert. denied*, 429 U.S. 870 (1976), *rehearing denied*, 429 U.S. 987 (1976), and rejects the policy announced in *Brown* v. *Braddick*, 595 F.2d 961, 967, 203 USPQ 95, 101–102 (5th Cir. 1979). Testimony obtained in other proceedings, e.g., another interference or an infringement action, may be used if otherwise admissible.

Under the rules, the Federal Rules of Evidence are made applicable to interferences, except for those portions which relate to criminal actions, juries, and other matters not relevant to interferences. Those portions include:

(1) Rule 103(c).

(2) Rule 104 (c), (d), and (e).

(3) The language in Rule 105 which reads "and instruct the jury accordingly."

(4) Rule 201(g).

(5) The language in Rule 403 which reads "or misleading the jury."

(6) Rule 404(a) (1) and (2).

(7) The word "charge" in Rule 405(b).

(8) The language "or criminal" and proviso (ii) in Rule 410.

(9) Rule 412.

(10) Rule 606.

(11) The language "whether by an accused" and "other" in the last sentence of Rule 607.

(12) The provisions of the first sentence of Rule 611(c) relating to leading questions on direct examination do not apply to statements made in an affidavit authorized to be filed under the rules.

(13) The language "Except as otherwise provided in criminal proceedings by section 3500 of title 18, United States Code" and "except that in criminal cases when the prosecution elects not to comply, the order shall be one striking the testimony or, if the court in its discretion determines that the interests of justice so require, declaring a mistrial" in Rule 612.

(14) Rule 614.

(15) Rule 706.

(16) The language "excluding, however, in criminal cases matters observed by police officers and other law enforcement personnel" and "and against the Government in criminal cases" in Rule 803(8).

(17) The language "but not including, when offered by the Government in a criminal prosecution for purposes other than impeachment, judgments against persons other than the second" in Rule 803(22).

(18) The language "prosecution for homicide or in a" in Rule 804(b)(2).

(19) The language "A statement tending to expose the declarant to criminal liability and offered to exculpate the accused is not admissible unless corroborating circumstances clearly indicate the trustworthiness of the statement" in Rule 804(b)(3).

(20) Rule 1101(a), (b), (d)(2), (d)(3), and (e).

The examiner-in-chief will set a period for filing the record and briefs. Oral hearings normally will be held before a panel consisting of the examiner-in-chief assigned to the interference and two other examiners-in-chief. The panel will render a final decision in the interference. Requests for reconsideration are permitted.

In rendering its decision, the Board will consider only that evidence which can be made available to the public under § 1.11(a). Accordingly, the Board will not consider evidence which is submitted under a protective order issued by a court if release of that evidence under § 1.11(a) would be inconsistent with the terms of the court's order.

A final decision of the Board is reviewable in the U.S. Court of Appeals for the Federal Circuit or an appropriate U.S. district court. Any reviewing court can review all aspects of the decision including patentability, priority, and all relevant interlocutory orders, such as denials of discovery.

Except as noted above, these new rules are applicable to all interferences declared on or after February 11, 1985. Interferences declared prior to February 11, 1985, continue to be governed by the prior rules (37 CFR 1.201–1.288 (July 1, 1984)) and will be decided by personnel of the Board of Patent Appeals and Interferences. Actions presently taken by a patent interference examiner or examiners of interferences will be taken by an examiner-in-chief.

An anticipated time schedule for a two-party interference follows.

Sections 1.601 through 1.688 would introduce new concepts in interference practice. Some of the more significant aspects of the rules, as well as some of the new concepts, include the following.

Section 1.1 codifies a practice announced in a Commissioner's Notice of November 28, 1983, "Mailing of Papers to the PTO in Patent Interference Proceedings," 1037 *Official Gazette* 25 (December 27, 1983) and authorizes a party in an interference to direct mail to the PTO intended for the interference to a special box in the Mail Room for interference papers. Amendments copying claims which are filed prior to the time an interference is declared would continue to be addressed in accordance with § 1.5(a).

Section 1.5 provides that when a paper filed in the PTO concerns an interference which has been declared, it should state the names of the parties (e.g., Smith v. Jones) and the number of the interference. The name of the examiner-in-chief assigned to the interference (§ 1.610) and the name of the party filing the paper should also appear conspicuously on the first page of the paper. Identification of the examiner-in-chief assigned to the interference and the name of the party filing the paper will greatly assist the Board in its administration of interference cases.

Section 1.8 excludes from the certificate of mailing practice any paper in an interference which an examiner-in-chief orders filed by hand or "Express Mail." Papers filed by "Express Mail" in an interference case would be addressed as set forth in § 1.1(e).

Section 1.11 sets forth when the interference file would become available to the public without a petition for access.

Section 1.48 provides that when a request is filed to correct inventorship of an application involved in an interference, the request shall comply with the requirements of § 1.48 and shall be accompanied by a motion under § 1.634. The request will be placed in the file of the application and the motion will be placed in the file of the interference. The request will be decided as part of the interference.

Section 1.138 permits an attorney or agent to sign and file a paper abandoning an application involved in an interference.

Section 1.196 more clearly sets forth the options open to an applicant when the Board makes a new ground of rejection under § 1.196(b). The last sentence of paragraph (b)(1) is intended to clarify practice in certain situations. One situation involves a case where (1) the Board affirms an examiner's rejection of a "first" claim and makes a new ground of rejection under § 1.196(b) of a "second" claim, (2) the applicant elects to have further proceedings before the examiner on the new ground of rejection on the second claim, and (3) those proceedings do not result in a further appeal (i.e., the second claim is allowed or is cancelled). The last sentence of § 1.196(b)(1) permits the Board to make its decision final on the first claim. By making its decision final on the first claim, the time period under § 1.304 for seeking judicial review begins. Another situation involves a case where (1) the Board affirms an examiner's rejection of a claim over reference A, (2) the Board also enters a new ground of rejection of the claim over reference B, (3) the applicant elects to have further proceedings before the examiner on the new ground of rejection, and (4) those proceedings result in applicant overcoming the new ground of rejection based on reference B. The last sentence of § 1.196(b)(1) permits the Board to make its decision final as to its affirmance of the rejection over reference A. Entry of an order making its decision final would start the period under § 1.304 for seeking judicial review. Thus, an applicant does not forego possible judicial review by electing further prosecution before the examiner when a new ground of rejection is made by the Board. Under paragraph (d), a recommendation by the Board that an allowed claim be rejected is binding on the examiner (rather than being a mere recommendation as was previously the case) in the absence of (1) an amendment, (2) showing of facts by affidavit or other appropriate evidence, or (3) both. The last sentence of paragraph (d) is intended to clarify that the Board may enter a final decision in certain circumstances. When the Board affirms an examiner's rejection of a "first" claim and makes a recommendation under paragraph (d) as to a "second" claim, the application is remanded to the examiner and the Board's decision affirming the rejection of the first claim is not a final decision. If proceedings before the examiner on remand do not result in a further appeal (i.e., the second claim is allowed or is cancelled), the Board may then make its decision final as to the first claim. By making its decision final as to the first claim, the time period under § 1.304 for seeking judicial review starts. Thus, an applicant does not forego judicial review on the first claim merely because of the remand proceedings with respect to the second claim.

Most of the current interference rules (§§1.201 through 1.247 and 1.251 through 1.288) are removed, but will continue to govern interferences declared prior to February 11, 1985. Section 1.248 is retained and governs service of papers in all patent cases except interference proceedings. Section 1.646 governs service of papers in interference proceedings.

Under § 1.292, it is intended to modify public use proceedings only to the extent that public use and on sale issues

which arise during an interference shall be raised by a preliminary motion under §1.633(a). There is no fee for filing the motion in the interference, but a fee would continue to be necessary when a petition is filed for institution of a public use proceeding apart from an interference. When a public use proceeding is instituted apart from an interference, the Commissioner will designate an appropriate official to conduct the proceeding including the setting of times for taking testimony under §§1.671 through 1.685. There will continue to be no "additional discovery" (see §§1.687 and 1.688) in public use proceedings.

Section 1.304 makes clear that the provisions of § 1.136 do not apply when judicial review is sought of a decision of the Board of Patent Appeals and Interferences in (1) a reexamination proceeding or (2) an interference. An extension of time to seek judicial review of a decision of the Board in a reexamination proceeding may be obtained under § 1.550(c). An extension of time to seek judicial review of a decision of the Board of an interference proceeding may be obtained under § 1.645. Section 1.304 also establishes an "excusable neglect" standard for seeking judicial review in interference cases when a notice of appeal is untimely filed or a civil action is not timely commenced. The excusable neglect standard is intended to be the same as the standard under Rule 4(a)(5) of the Federal Rule of Appellate Procedure.

Section 1.322 provide that when a request for a certificate of correction under 35 U.S.C. 254 (PTO mistake) is filed to make a correction of a patent involved in an interference, the request shall comply with the requirements of § 1.322 and shall be accompanied by a motion under § 1.635. The request will be placed in the file of the patent and the motion will be placed in the file of the interference. The request will be decided as part of the interference.

Section 1.323 provides that when a request for a certificate of correction under 35 U.S.C. 255 (patentee's mistake) is filed to make a correction of a patent involved in an interference, the request shall comply with the requirements of § 1.323 and shall be accompanied by a motion under §1.635. The request will be placed in the file of the patent and the motion will be placed in the file of the interference. The request will be decided as part of the interference.

Section 1.324 provides that when a request is filed to correct inventorship of a patent involved in an interference, the request shall comply with the requirements of § 1.324 and shall be accompanied by a motion under proposed § 1.634. The request will be placed in the file of the patent and the motion will be placed in the file of the interference. The request will be decided as part of the interference.

Section 1.565 provides that when a patent is involved in an interference proceeding and a reexamination proceeding, both the interference proceeding and the reexamination proceeding *will* continue unless one of the proceedings is stayed. A stay of a reexamination proceeding will be made by the Commissioner. A stay of an interference proceeding will be made by an examiner-in-chief, subject to review by the Commissioner. Section 1.565 continues the present practice of the Commissioner determining in every instance whether to stay a reexamination proceeding when the patent involved in the reexamination proceeding is sought to be reissued or becomes involved in litigation.

Under § 1.601, the rules shall be construed to secure the just, speedy, and inexpensive determination of interferences. Section 1.601 defined various terms used in Subpart E including "additional discovery," "affidavit," "case-in-chief," "case-in-rebuttal," "count," "effective filing date," "filing date," "interference," "interference-in-fact," "junior party," "lead" attorney, "party," "phantom count," "same patentable invention," "separate patentable invention," "senior party," "sworn," and "United States." "Affidavits" include declarations under 35 U.S.C. 25 and 37 CFR 1.68 as well as statutory declarations under 28 U.S.C. 1746. The definition of "United States" is the same as the definition of United States isn 35 U.S.C 100(c).

The definition of "interference" permits an interference between one or more applications and one of more patents. Thus, these new rules follow the policy of *Wilson* v. *Yakel*, 1876 Dec. Comm'r. Pat. 245 (Comm'r. Pat. 1876) and, to the extent inconsistent therewith, do not follow the policy announced in *Touval* v. *Newcombe*, 194 USPQ 509 (Comm'r. Pat. 1976). However, in view of the statutory requirement for the presence of at least one application in an interference, if an applicant were to concede priority or otherwise be terminated from an interference involving only one application and more than one patent, the interference would have to be terminated for lack of subject matter jurisdiction unless one or more of the patentees filed an application for reissue which could be added to the interference under § 1.633(h). A "count" defines interfering subject matter. An interference may have two counts only if the second count defines a "separate patentable invention" from the first count. The reason the second count must define a separate patentable invention is to permit the PTO to lawfully issue separate patents to different parties in an interference when a single party does not prevail as to all counts. A "separate patentable invention" is defined in § 1.601 (n):

> Invention (A) is a "separate patentable invention" with respect to invention (B) when invention (A) is new (35 U.S.C. 102) and non-obvious (35 U.S.C. 103) in view of invention (B) assuming invention (B) is prior art with respect to invention (A).

Section 1.602(a) continues the present PTO practice (37 CFR 1.201(c)) of not declaring or continuing an interference between (1) two or more applications owned by the same party or (2) an application and a patent owned by a single party unless good cause is shown. A corporation and its wholly-owned subsidiary are considered a "single party" within the meaning of § 1.602(a). Under prior rules, when a patent and an application involved in an interference became commonly owned, the interference was not "dissolved." Rather, the PTO required that the interference be terminated with a judgment. *Chillas* v. *Weisberg*, 1928 Dec. Comm'r. Pat. 24 (Comm'r. Pat. 1928); *Malone* v. *Toth*, 202 USPQ 397 (Comm'r. Pat. 1978); and *Morehouse* v. *Armbruster*, 209 USPQ 514 (Comm'r. Pat. 1980). Under these new rules, all interferences, including those involving only applications, will be terminated with a judgment. As noted in *Chillas* v. *Weisberg*, *supra* at 25 "the common owner can allow a judgment against the junior party to be rendered by default or it can file a concession of priority from one party to the other." Paragraphs (b) and (c) of § 1.602 continue the present PTO practice (37 CFR 1.201(c)) of requiring a party to notify the PTO of any real party in interest not apparent on the face of the notice declaring the interference (see § 1.611) or of any change in the real party in interest after the interference is declared. The PTO needs to know the identity of any real party in interest to properly enforce § 1.602(a) and to enable an examiner-in-chief to determine whether recusal is necessary or appropriate. A new requirement in paragraphs (b) and (c), not present in 37 CFR 1.201(c), is a 20-day time period for advising the PTO of the identity of, or any change in, the real party in interest.

Under §§ 1.601(f), 1.603, and 1.606, the interfering subject matter would be defined by one or more counts. All the claims in an application or a patent

which define the same patentable invention as a count would be designated to correspond to the count. An interference would have two counts only if one count defines a separate patentable invention from another count. Under § 1.606, at the time an interference is declared between a patent and an application, a count would not be narrower in scope than any patent claim which corresponds to the count. Thus, a patent claim would be presumed, subject to a motion under § 1.633(c), not to embrace "separate patentable inventions." Some examples illustrate how the PTO would formulate counts and designate patent and application claims to correspond to counts.

Example 1: Application A contains patentable claim 1 (engine). Application B contains patentable claim 8 (engine). If an interference is declared, there would be one count (engine). Claim 1 of application A and claim 8 of application B would be designated to correspond to the count.

Example 2: Application C contains patentable claims 1 (engine) and 2 (6-cylinder engine). Application D contains patentable claim 8 (engine). An engine and a 6-cylinder engine define the same patentable invention. If an interference is declared, there would be one count (engine). Claims 1 and 2 of application C and claim 8 of application D would be designated to correspond to the count.

Example 3: Application E contains patentable claims 1 (engine), 2 (6-cylinder engine), and 3 (engine with a platinum piston). Application F contains patentable claims 11 (engine) and 12 (8-cylinder engine). Claims 1 and 2 of application E and claims 11 and 12 of application F define the same patentable invention. Claim 3 of application E defines a separate patentable invention from claims 1 and 2 of application E and claims 11 and 12 of application F. If an interference is declared, there would be one count (engine). Claims 1 and 2 of application E and claims 11 and 12 of application F would be designated to correspond to the count. Claim 3 of application E would not be designated to correspond to the count.

Example 4: Application G contains patentable claims 1 (engine), 2 (6-cylinder engine), and 3 (engine with a platinum piston). Application H contains patentable claims 11 (engine) and 15 (engine with a platinum piston). Claims 1 and 2 of application G and claim 11 of application H define the same patentable invention. Claim 3 of application G and claim 15 of application H define a separate patentable invention from claims 1 and 2 of application G and claim 11 of application H. If an interference is declared, there would be two counts: Count 1 (engine) and Count 2 (engine with a platinum piston). Claims 1 and 2 of application G and claim 11 of application H would be designated to correspond to Count 1. Claim 3 of application G and claim 15 of application H would be designated to correspond to Count 2.

Example 5: Application J contains patentable claims 1 (engine), 2 (combination of an engine and a carburetor) and 3 (combination of an engine, a carburetor, and a catalytic converter). Application K contains patentable claims 31 (engine), 32 (combination of an engine and a carburetor), and 33 (combination of an engine, a carburetor, and an air filter). The engine, combination of an engine and carburetor, and combination of an engine, carburetor, and air filter define the same patentable invention. The combination of an engine, carburetor, and catalytic converter define a separate patentable invention from engine. If an interference is declared, there would be one count (engine). Claims 1 and 2 of application J and claims 31, 32, and 33 of application K would be designated to correspond to the count. Claim 3 of application J would not be designated as corresponding to the count.

Example 6: The PTO will continue to follow *Waldeck* v. *Lewis*, 120 USPQ 88 (Comm'r.Pat. 1955). Application L contains patentable claims 1 (Markush group of benzene or toluene), 2 (benzene), and 3 (toluene). Application M contains patentable claim 11 (benzene). Benzene and toluene define the same patentable invention. If an interference is declared, there would be one count (Markush group of benzene or toluene). Claims 1, 2, and 3 of application L and claim 11 of application M would be designated to correspond to the count.

Example 7: Application N contains patentable claim 1 (benzene). Application P contains patentable claim 11 (xylene). Benzene and xylene define the same patentable invention. If an interference is declared, there would be one count (benzene or xylene). Claim 1 of application N and claim 11 of application P would be designated to correspond to the count.

Example 8: Application Q contains patentable claims 1 (Markush group of benzene or chloroform), 2 (benzene), and 3 (chloroform). Application R contains patentable claim 33 (benzene). If benzene and chloroform define the same patentable invention and an interference is declared, there would be one count (Markush group of benzene or chloroform). Claims 1, 2, and 3 of application Q and claim 33 of application R would be designated to correspond to the count. If chloroform defines a separate patentable invention from benzene and an interference is declared, there would be one count (benzene). Claims 1 and 2 of application Q and claim 33 of application R would be designated to correspond to the count. Claim 3 of application Q would not be designated to correspond to the count.

Example 9: Application S contains patentable claims 1 (Markush group of benzene or chloroform), 2 (benzene), and 3 (chloroform). Application T contains patentable claims 11 (Markush group of benzene or chloroform), 12 (benzene), and 13 (chloroform). If benzene and chloroform define the same patentable invention and an interference is declared, there would be one count (Markush group of benzene or chloroform). Claims 1, 2, and 3 of application S and claims 11, 12, and 13 of application T would be designated to correspond to the count. The PTO will continue to adhere to *Becker* v. *Patrick*, 47 USPQ 314 (Comm'r.Pat. 1939). An interference can have two counts only if one count defines a separate patentable invention from another count. If chloroform defines a separate patentable invention from benzene and an interference is declared, there would be two counts: Count 1 (benzene) and Count 2 (chloroform). Claims 1 and 2 of application S and claims 11 and 12 of application T would be designated to correspond to Count 1. Claims 1 and 3 of application S and claims 11 and 13 of application T would be designated to correspond to Count 2.

Example 10: Patent A contains claim 1 (engine). Application U contains patentable claim 11 (engine). If an interference is declared, there would be one count (engine). Claim 1 of patent A and claim 11 of application U would be designated to correspond to the count.

Example 11: Patent B contains claims 1 (engine) and 2 (6-cylinder engine). Application V contains patentable claim 8 (engine). An engine and a 6-cylinder engine define the same patentable invention. If an interference is declared, there would be one count (engine). Claims 1 and 2 of patent B and claim 8 of application V would be designated to correspond to the count.

Example 12: Patent C contains claims 1 (engine), 2 (6-cylinder engine), and 3 (engine with a platinum piston). Application W contains patentable claims 11 (engine) and 12 (8-cylinder engine). Claims 1 and 2 of patent C and claims 11 and 12 of application W define

the same patentable invention. Claim 3 of patent C defines a separate patentable invention from claims 1 and 2 of patent C and claims 11 and 12 of application W. If an interference is declared, there would be one count (engine). Claims 1 and 2 of patent C and claims 11 and 12 of application W would be designated to correspond to the count. Claim 3 of patent C would not be designated to correspond to the count.

Example 13: Patent D contains claims 1 (engine), 2 (6-cylinder engine), and 3 (engine with a platinum piston). Application X contains patentable claims 11 (engine) and 15 (engine with a platinum piston). Claims 1 and 2 of patent D and claim 11 of application X define the same patentable invention. Claim 3 of patent D and claim 15 of application X define a separate patentable invention from claims 1 and 2 of patent D and claim 11 of application X. If an interference is declared, there would be two counts: Count 1 (engine) and Count 2 (engine with a platinum piston). Claims 1 and 2 of patent D and claim 11 of application X would be designated to correspond to Count 1. Claim 3 of patent D and claim 15 of application X would be designated to correspond to Count 2.

Example 14: Patent E contains claims 1 (Markush group of benzene or toluene), 2 (benzene), and 3 (toluene). Application Y contains patentable claim 11 (benzene). Benzene and toluene define the same patentable invention. If an interference is declared, there would be one count (Markush group of benzene or toluene). Claims 1, 2, and 3 of patent E and claim 11 of application Y would be designated to correspond to the count.

Example 15: In this example, the claims of patent E and application Y in Example 14 are reversed. Patent E contains claim 1 (benzene). Application Y contains patentable claims 11 (Markush group of benzene or toluene), 12 (benzene), and 13 (toluene). If an interference is declared, the count would be the same as the count in Example 14—(Markush group of benzene or toluene). Claim 1 of patent E and claims 11, 12, and 13 of application Y would be designated to correspond to the count.

Example 16: The PTO will continue to follow cases such as *Case* v. *CPC International, Inc.*, 730 F.2d 745, 221 USPQ 196 (Fed. Cir. 1984); *cert. denied*, 105 S.Ct. 233 (1984); *Aelony* v. *Arni*, 547 F.2d 566, 192 USPQ 486 (CCPA 1977); and *Nitz* v. *Ehrenriech*, 537 F.2d 539, 190 USPQ 413 (CCPA 1976), and declare interferences where interfering patent and application claims are mutually exclusive provided the claims define the same patentable invention. Patent F contains claim 1 (benzene). Application Z contains patentable claim 11 (xylene). Benzene and xylene define the same patentable invention. If an interference is declared, there would be one count (benzene or xylene). Claim 1 of patent F and claim 11 of application Z would be designated to correspond to the count.

Example 17: It will be the practice of the PTO under § 1.606 to initially declare interferences with counts which are identical to or broader than patent claims which correspond to the counts. A single patent claim would be presumed, subject to a motion under § 1.633(c), not to define separate patentable inventions. Patent G contains claims 1 (Markush group of benzene or chloroform), 2 (benzene), and 3 (chloroform). Application AA contains patentable claim 33 (benzene). If an interference is declared, initially it would be presumed by the PTO, subject to a later motion under § 1.633(c), that benzene and chloroform define the same patentable invention. There would be one count (Markush group of benzene or chloroform). Claims 1, 2, and 3 of patent G and claim 33 of application AA would be designated to correspond to the count. If a party believes benzene and chloroform define separate patentable inventions, that party could file a motion under § 1.633(c) to redefine the count and the claims corresponding to the counts.

Example 18: Patent H contains claims 1 (Markush group of benzene or chloroform), 2 (benzene), and 3 (chloroform). Application AB contains patentable claims 11 (Markush group of benzene or chloroform), 12 (benzene), and 13 (chloroform). Benzene and chloroform initially would be presumed, subject to a motion under § 1.633(c), to define the same patentable invention, because they are recited as a Markush group in a single patent claim. If an interference is declared, there would be one count (Markush group of benzene or chloroform). Claims 1, 2, and 3 of patent H and claims 11, 12, and 13 of application AB would be designated to correspond to the count. If a party believes benzene and chloroform define separate patentable inventions, the party could move under § 1.633(c) to substitute a count (benzene) for (Markush group of benzene or chloroform) and to add a count (chloroform). See Example 36.

Example 19: Under § 1.606, the PTO will continue to follow the practice announced in *Ex parte Card and Card*, 1904 Dec.Comm'r.Pat. 383 (Comm'r.Pat. 1904). Patent J contains claim 1 (method of mixing, grinding, and heating). Application AC contains patentable claim 8 (method of mixing and heating) and does not disclose or claim a grinding step. In the context of the inventions disclosed in patent J and application AC, a method of mixing, grinding, and heating is the same patentable invention as a method of mixing and heating. Under current practice, it would be said that "grinding" is an "immaterial" limitation in claim 1 of patent J. Under § 1.606, the fact application AC does not disclose grinding would not preclude an interference. If an interference is declared, there would be one count (method of mixing and heating). Claim 1 of patent J and claim 8 of application AC would be designated to correspond to the count.

Under § 1.605, timely filing of an amendment presenting a claim suggested by the examiner for purposes of an interference would stay *ex parte* proceedings in the application in which the claim is presented pending a determination by the examiner of whether an interference will be declared. Also under § 1.605(a), when an examiner suggests a claim, the applicant will be required to copy verbatim the suggested claim. At the time the suggested claim is copied, however, the applicant may also (1) call the examiner's attention to other claims already in the application or which are presented with the copied claim and (2) explain why the other claims would be more appropriate to be included in any interference which may be declared.

Under § 1.607(b), when an applicant seeks an interference with a patent, e.g., by copying claims from the patent, examination of the application including any appeal would be handled with special dispatch within the PTO. "Special dispatch" would be construed to be the same as special dispatch in a reexamination proceeding. See 35 U.S.C. 305.

Under § 1.608, the PTO will continue current practice (37 CFR 1.204(c)) of requiring an applicant seeking to provoke an interference with a patent to submit evidence which demonstrates that the applicant is *prima facie* entitled to a judgment relative to the patentee. Evidence would be submitted only when the earlier of the filing date or effective filing date of the application is more than three months after the earlier of the filing date or effective filing date under 35 U.S.C. 120 of the patent. The evidence may relate to patentability and need not be restricted to priority. When the evidence (1) consists of prior printed publications and patents and (2) shows that the claims of the application are not

patentable, the claims in the application would be rejected and the applicant could file a request for reexamination of the patent.

Section 1.609 sets forth what an examiner shall forward to the Board when an interference is declared. For the most part, § 1.609 continues current practice. However, under § 1.609(b)(3), the examiner would identify all claims in an application which the examiner believes are patentable over the proposed counts. Thus, a claim in an application would either correspond to a count or would be indicated as being patentable over the count. For instance, in Example 3, *supra*, the examiner would indicate that (1) claims 1 and 2 of application E and claims 11 and 12 of application F correspond to the count and (2) claim 3 of application E defines a separate patentable invention from the count.

Under § 1.610, each interference will be declared by an examiner-in-chief. The examiner-in-chief enters all interlocutory orders in the interference. As necessary, another examiner-in-chief may act in place of the examiner-in-chief assigned to the interference. At the discretion of the examiner-in-chief assigned to the interference, a panel of two or more examiners-in-chief may enter an interlocutory order. The examiner-in-chief will set times and control proceedings such that pendency of the interference normally will not exceed 24 months. Under § 1.610(d), the examiner-in-chief is authorized to hold conferences. Any conference can be by a telephone conference call. Under § 1.610(e), an examiner-in-chief is authorized to determine a proper course of conduct for any situation not specifically covered by the rules.

Under § 1.611(a), the PTO will normally notify each party at its correspondence address (37 CFR 1.33(a)) that an interference is declared. This practice will save the PTO the administrative burden of sending multiple notices as is required by the present rules. Under § 1.611(a), the PTO could, in an appropriate circumstance, also send a notice to a patentee or an assignee. An appropriate circumstance for sending an additional notice would be a situation where a patent was issued on the basis of an application filed under 37 CFR 1.47. The matters to be specified in a notice declaring an interference are set out in § 1.611(c). One item to be set out is the "order of the parties," meaning the order in which the parties will take testimony. If Jones is the junior party and Smith is the senior party, the order of the parties is: Jones v. Smith. The order of the parties may change as a result of the granting of a motion under § 1.633 (d), (f), or (g). Under § 1.611(d), the notice declaring the interference may also set dates for filing preliminary statements, notices that preliminary statements have been filed, motions under § 1.633, oppositions to those motions, and replies to the oppositions. Alternatively, an examiner-in-chief may set those times in a separate order before or after consultation with counsel for the parties. Under § 1.611(e), the PTO may place a notice in the *Official Gazette* each time an interference is declared involving a patent. The notice would make it easier for patent practitioners throughout the country to determine whether a given patent is or has been involved in an interference.

Under § 1.612, except for affidavits under § 1.131 and any evidence and explanation under § 1.608(b) filed separate from an amendment, each party shall have access to the file of every other party after an interference is declared. The files of applications and patents involved in an interference will be maintained in the Service Branch of the Board of Patent Appeals and Interferences for inspection and copying. Any explanation which is filed as part of an amendment or an amendment which discusses details contained in an affidavit under § 1.131 would not be sealed under § 1.612(a). Thus, § 1.612(a) continues the practice discussed in *Moorman* v. *Martin*, 103 USPQ 273 (Comm'r.Pat. 1950) and Calvert, *An Overview of Interference Practice*, 62 J. Pat. Off. Soc'y. 290, 293 (1980). Under § 1.612(b), each party will have access to an opponent's affidavit under § 1.131 or an opponent's evidence and explanation under § 1.608(b) when a decision is rendered on motions under § 1.633. Under § 1.612(c), a party would be required to serve any evidence and explanation under § 1.608(b) if an order to show cause is issued under § 1.617(a) and the party responds to the order under § 1.617(b). Under § 1.612(d), the parties may agree to exchange copies of their respective files.

Under § 1.613(a), when a party has appointed more than one attorney or agent of record, the party may be required to designate a "lead" attorney or agent. A lead attorney or agent would be a registered attorney or agent of record who is primarily responsible for prosecuting an interference on behalf of a party and is the individual whom an examiner-in-chief can contact to set times and take other action in the interference. Section 1.613(b) continues the practice of not permitting the same attorney or agent to represent two or more parties in an interference except as permitted by Chapter 1, see e.g., § 1.344. Under § 1.613(c), an examiner-in-chief can make an appropriate inquiry to determine whether an attorney or agent should be disqualified from representing a party. A final decision to disqualify an attorney or agent is made by the Commissioner under 35 U.S.C. 32.

Section 1.614 specifies when the Board gains jurisdiction over an interference. The section also indicates when an interference becomes a contested case within the meaning of 35 U.S.C. 24. A remand to the examiner is authorized and may be useful in certain situations, such as, when a party moves under § 1.633(c) to add a proposed count which is broader than any count in an interference. Alternatively, an examiner-in-chief would be able to obtain informal opinions from examiners during the course of an interference. Nothing in the rules, however, is intended to authorize informal conferences between an examiner-in-chief and an examiner with respect to the merits of an application before the board in an *ex parte* appeal from an adverse decision of the examiner.

Section 1.616 permits an examiner-in-chief or the Board to impose appropriate sanctions against a party who fails to comply with the rules or with an order entered in the interference. Paragraphs (a) through (e) set forth some of the possible sanctions which can be entered. The particular sanction to be entered would depend on the facts of a given case and ordinarily would not be entered prior to giving the affected party an opportunity to present its views. An individual examiner-in-chief could not impose sanction granting judgment inasmuch as entry of a judgment requires action by the Board. See § 1.610(a). A party desiring sanctions imposed against an opponent could move under § 1.635 for entry of an order imposing sanctions.

Section 1.617 retains summary judgment proceedings in those cases where a junior party applicant is required to file evidence and an explanation under § 1.608(b). To avoid summary judgment, the junior party applicant must establish that it is *prima facie* entitled to judgment relative to the senior party patentee. For the most part, practice under § 1.617 will be the same as the current practice under 37 CFR 1.228. The major changes would be the following: (1) A *prima facie* case could be based on patentability as well as priority. (2) A stricter standard would be imposed for presenting additional evidence after entry of an order to show cause. Under current practice (37 CFR

1.228), additional evidence may be submitted with a response to an order to show cause "when a showing in excuse of . . . [its] omission from the original" showing is made. The "good cause" showing required by § 1.617(b) imposes a stricter standard than was required under the prior rules. The stricter standard is necessary to encourage applicants copying claims from a patent to better prepare their initial showings under proposed § 1.608(b). Under current practice, the Board of Patent Interferences has found that substantial time is lost in issuing orders to show cause based on an inadequate initial showing only to have an adequate showing made with the response to the order to show cause. Under the "good cause" standard, ignorance by a party or counsel of the provisions of the rules or the substantive requirements of the law would not constitute good cause. (3) When an interference involves more than two parties, all opponents would be permitted to participate in summary judgment proceedings. Thus, the new rules overrule *Chan* v. *Akiba* v. *Clayton*, 189 USPQ 621 (Comm'r. Pat. 1975). (4) Currently, and applicant must file two copies of its initial showing under 37 CFR 1.204(c). Under § 1.608(b), a party would file only one copy of the showing. However, any party responding to an order to show cause would be required to serve a copy of its initial showing under § 1.608(b) with any response to the order to show cause. (5) A single examiner-in-chief may order an interference to proceed after issuance of an order to show cause under § 1.608(b) and the filing of a response by an applicant under § 1.617(b). Only the Board, however, may enter a summary judgment. See § 1.617(b).

Under § 1.618, the PTO has authority to return to a party any paper presented in an interference which is not authorized by, or is not in compliance with the requirements of, Subpart E. When an improper paper is filed, a party may be given an opportunity to file a proper paper under such conditions as an examiner-in-chief may deem appropriate: Two examples of improper papers are: (1) Replies to replies which are not authorized by the rules and (2) papers presented which have attached thereto a paper previously filed in the interference.

Sections 1.621 through 1.629 govern preliminary statements which continue to be required in interference cases.

Under § 1.621, a preliminary statement can be signed by any individual having knowledge of the facts (e.g., the inventor) or by an attorney or agent of record. Permitting an attorney or agent of record to sign a preliminary statement eliminates unnecessary mailing of papers between parties and their attorney or agent.

Under § 1.622, the preliminary statement would identify the inventor who made the invention defined by each count. If the inventor identified in the preliminary statement is not an inventor named in the application or patent involved in the interference, a motion under § 1.634 must be diligently filed to correct inventorship.

Sections 1.623, 1.624, and 1.625 respectively set out the allegations which should be made in, and the attachments which should accompany, a preliminary statement when (1) the invention was made in the United States, (2) the invention was made abroad and was introduced into the United States, and (3) derivation by an opponent from a party is to be an issue.

Section 1.626 permits a party to file a preliminary statement which states that the party only intends to rely on the filing date of an earlier United States or foreign application. Ordinarily, a junior party who fails to file a preliminary statement is not entitled to access to any other preliminary statement filed (see § 1.631(b)). Section 1.626 would permit a junior party who only intends to rely on an earlier application to have access to any opponent's preliminary statement.

Section 1.628 sets out how an error in a preliminary statement may be corrected.

Section 1.629 sets out the effect of a preliminary statement. A party who fails to file a preliminary statement will not be permitted to prove (1) that the party made the invention defined by a count prior to the party's filing date or (2) that an opponent derived the invention from the party.

Under § 1.631, preliminary statements normally will be opened for inspection when an examiner-in-chief decides preliminary motions filed under § 1.633. A junior party who does not file a preliminary statement is not entitled to access to a preliminary statement of any other party. When an interference is terminated before preliminary statements are opened, any preliminary statement which has been filed will be returned unopened to the party who submitted the statement.

Under § 1.632, a notice must be filed by a party who intends to argue that an opponent abandoned, suppressed, or concealed an actual reduction to practice. 35 U.S.C. 102(g). A party will not be permitted to brief (§ 1.656) or argue at final hearing (§ 1.654) that an opponent abandoned, suppressed, or concealed an actual reduction to practice unless the notice is timely filed. A notice is timely if filed within ten (10) days of the close of the testimony-in-chief period of an opponent. while a party has the burden of proving that an opponent abandoned, suppressed, or concealed, the burden may be discharged on the basis of the opponent's evidence alone. *Shindelar* v. *Holdeman*, 628 F.2d 1337, 207 USPQ 112 (CCPA 1980). See also *Correge* v. *Murphy*, 705 F.2d 1326, 217 USPQ 753 (Fed. Cir. 1983); *Horwath* v. *Lee*, 564 F.2d 948, 195 USPQ 701 (CCPA 1977); and *Peeler* v. *Miller*, 535 F.2d 647, 190 USPQ 117 (CCPA 1976). Under current practice where notice is not required, it is possible that a party may learn for the first time that abandonment, suppression, or concealment is an issue when the party receives an opponent's brief at final hearing. See *Klug* v. *Wood*, 212 USPQ 767, 771 n. 2 (Bd.Pat.Int. 1981). At that point, it is often too late to reopen proceedings in the interference. The purpose of requiring the notice under § 1.632 is to make the parties and the Board aware during the interlocutory stage of an interference that abandonment, suppression, or concealment may be an issue in the interference. Early notice will permit the parties to ask for and the examiner-in-chief to set appropriate testimony periods for a party to present evidence related to abandonment, suppression, and concealment, particularly in those cases where long unexplained delays tend to prove the allegation of suppression or concealment. Early notice will also eliminate the need for the party moving to reopen the testimony period. *Klug* v. *Wood*, *supra*.

Under § 1.633, a party may file preliminary motions for judgment, to redefine the interference, to substitute a different application in the interference, to declare an additional interference, to be accorded the benefit of an earlier application, to attack benefit previously accorded an opponent, or to add a reissue application to the interference. The motions are called "preliminary motions" in order to distinguish the motions from other motions which might be filed during the course of an interference. The preliminary motions would replace motions currently authorized by 37 CFR 1.231.

Under § 1.633(a), a motion to dissolve would be replaced with a motion for judgment. A party can file a motion for judgment on the ground that an opponent's *claim* corresponding to a count is unpatentable to the opponent. With two exceptions, unpatentability can be based on prior art (35 U.S.C. 102,

103), insufficiency of disclosure (35 U.S.C. 112, first paragraph), indefiniteness of claims (35 U.S.C. 112, second paragraph), double patenting, estoppel, or any other ground which would support a holding that claims corresponding to a count are not patentable. The two exceptions are (1) priority of invention of the subject matter of a count by the moving party as against any opponent and (2) derivation of the subject matter of a count by the opponent from the moving party. The two exceptions are directed to issues which are traditional "priority" issues, e.g., which inventor made the invention defined by a count first or, when derivation is an issue, who made the invention. Resolution of those "priority" issues almost always requires the taking of testimony. A motion for judgment, however, would be proper when a party believed an individual not involved in the interference made the invention defined by the count prior to an opponent in the interference, but subsequent to the moving party. Thus, a patentability issue, such as that raised under 35 U.S.C. 102(g) in *Sutter Products Co.* v. *Pettibone Mulliken Corp.*, 428 F.2d 639, 166 USPQ 100 (7th Cir. 1970). properly could be raised with a motion for judgment under § 1.633(a). Derivation by an opponent from an individual not involved in the interference could also be raised under § 1.633(a).

Under § 1.633(b), a party could move for a judgment when the party believes there is no interference-in-fact. A motion for judgment on the ground of no interference-in-fact is only proper under one of three conditions: (1) When an interference involves designs, (2) when the interference involves plant applications or a plant application and plant patent, or (3) when no claim of a party which corresponds to a count is identical to any claim of an opponent which corresponds to that count. An example illustrates when a motion under § 1.636(b) is proper.

Example 20. Application AD contains patentable claim 1 (6-cylinder engine). Application AE contains patentable claim 3 (8-cylinder engine). An interference is declared with a single count (6 or 8-cylinder engine). Claim 1 of application AD and claim 3 of application AE are designated to correspond to the count. Applicant AD believes that a 6-cylinder engine is a "separate patentable invention" (see § 1.601(n)) from an 8-cylinder engine. Applicant AD would file a motion under § 1.633(b) for a judgment on the ground of no interference-in-fact stating why a 6-cylinder engine is patentably distinct from an 8-cylinder engine. If the Board ultimately agrees with applicant AD, a patent could issue to AD containing claim 1 of application AD and a second patent could issue to AE containing claim 3 of application AE.

Under §1.633(c), a party may move to redefine interfering subject matter. One way to redefine interfering subject matter would be to add or substitute a count. When a party seeks to add a count, the party is required to demonstrate that the proposed count to be added is directed to a "separate patentable invention" from every other count in the interference.

A motion may be filed to amend an application claim which has already been designated to correspond to a count. See § 1.633(c)(2). Such a motion might be filed when a party believes an application claim designated to correspond to a count is unpatentable and the amended claim is believed to be patentable.

An applicant may move to add a claim to the applicant's application and to designate the claim to be added to correspond to a count. See § 1.633(c)(2). Such a motion may be filed when the applicant discloses specific subject matter which is not claimed, would like to claim the subject matter, and wants the subject matter involved in the interference.

Another way to redefine interfering subject matter would be to designate a claim as corresponding or not corresponding to a count. See §1.633 (c)(3) and (c)(4). Examples 21 and 22 illustrate this latter point.

Example 21. Application AF contains patentable claim 1 (engine). Patent K contains claims 3 (engine) and 5 (6-cylinder engine). Claim 1 of application AF and claim 3 of patent K are designated to correspond to the count. Applicant AF believes a 6-cylinder engine is the "same patentable invention" (see § 1.601(n)) as engine. Applicant AF would file a motion under § 1.633(c)(3) to designate claim 5 of patent K as corresponding to the count. If the motion is granted and applicant AF prevails in the interference, judgment would be entered against patentee K and both claims 3 and 5 of patent K would be cancelled under 35 U.S.C. 135(a).

Example 22. Application AG contains patentable claim 1 (engine). Patent L contains claims 3 (engine) and 5 (8-cylinder engine). An interference is declared with one count (engine). Claim 1 of application AG and claims 3 and 5 of patent L are designated to correspond to the count. Patentee L believes that an 8-cylinder engine defines a "separate patentable invention" (see § 1.601(n)) from engine. Patentee L should file a motion under § 1.633(c)(4) to designate claim 5 of patent L as "not corresponding" to the count. If the motion is granted and an adverse judgment is entered against patentee L, only claim 3 would be cancelled from the patent pursuant to 35 U.S.C. 135(a).

A motion to redefine the interfering subject matter may also request that an opponent who is an applicant be required to add a claim to the opponent's application and to designate the claim to correspond to a count. See § 1.633(c)(5). Such a motion might be filed when a party sees that the opponent discloses, but does not claim, subject matter which the party believes should be involved in the interference.

Section 1.633(i) would continue present practice (37 CFR 1.231) of allowing a party to move to redefine the subject matter of the interference or substitute a different application when an opponent moves for judgment (see § 1.633(a) and (b)) or to attack benefit (see § 1.633(g)).

Paragraph (j) of § 1.633 will permit an opponent to move for benefit when a party moves to add or substitute a count. Thus, when a motion to add a count is filed by a party and an opponent wants benefit of an earlier application in the event the motion to add is granted, the opponent should file a motion under § 1.633(j) to be accorded benefit. The mere fact that the opponent had been accorded benefit of an earlier application when the interference was declared does not mean the opponent will be accorded benefit as to some other count which may be added on motion of some other party.

Section 1.634 authorizes a motion to correct inventorship in an application (see § 1.48) or a patent (see § 1.324) involved in an interference.

Section 1.635 authorizes the filing of motions other than those specified in §§ 1.633 or 1.634. Motions filed under § 1.635 would be referred to as "miscellaneous motions" to distinguish from "preliminary motions" under § 1.633. Instances where a miscellaneous motion would be filed include motions to correct an error in a preliminary statement, to extend time for taking action or to seek judicial review, to obtain permission to proceed under 35 U.S.C. 24, or to obtain additional discovery.

Section 1.636 sets out the times within which a motion would be filed.

Section 1.637 sets out the content of motions. In prior interference practice, parties and their counsel have had difficulty meeting all the "unwritten"

requirements for motions under 37 CFR 1.231. Section 1.637 is quite specific in setting out the requirements for each type of motion, particularly the preliminary motions. By setting out with specificity the requirements for each type of motion, it is intended to minimize disposition of motions on technicalities. A vast majority of the comments in response to the advanced notice published in the **Federal Register** on August 1, 1983, commenting on then proposed § 1.637 were in favor of the requirements for motions being specifically set out in the regulations.

Section 1.638 authorizes oppositions to motions. Any opposition would have to identify any material fact in dispute. A reply to an opposition would be authorized for all motions. A reply to a reply is not authorized.

Section 1.639 sets forth the evidence which may accompany a motion, opposition, or reply. Every material fact alleged in a motion, opposition, or a reply would have to be supported by proof. Section 1.639(b) authorizes affidavits to be used as proof for any motion. The affidavit may later be used by a party during the testimony period (see §§ 1.671(e) and 1.672(b)). When a party believes that testimony is necessary to decide a motion under § 1.633 or § 1.634, the party would have to describe the nature of the testimony needed. If an examiner-in-chief agrees that testimony is needed, appropriate interlocutory relief would be granted and testimony would be ordered.

Example 23. An interference is declared with one count between application AH and application AJ. Applicant AH files a preliminary motion under § 1.633(c)(1) to redefine the interference by adding a second count. In order to succeed, applicant AH must show that the proposed count to be added is directed to a "separate patentable invention" (see § 1.601(n)) from the count already in the interference. In the motion, applicant AH sets forth in detail the testimony which would be required to prove that the subject matter of the proposed count is to a separate patentable invention from the subject matter of the count in the interference. Applicant AJ opposes the motion on the ground that the proposed and present counts define the "same patentable invention" (see § 1.601(n)). An examiner-in-chief determines that a material fact is in dispute and that applicant AH has established testimony is needed to properly rule on the motion. Under the circumstances, the motion would be deferred to final hearing and a testimony period would be ordered. The questions of (1) whether the proposed and present counts define the same patentable invention and (2) priority would be decided at final hearing.

Under § 1.640, an examiner-in-chief would decide all motions. A hearing could be held on a motion in the discretion of an examiner-in-chief. Where appropriate, an examiner-in-chief could consult with an examiner on a question of patentability which arises in the first instance in the interference. Consulation would not be necessary where the examiner had already ruled on the patentability question which comes before the examiner-in-chief or the Board. Moreover, nothing in § 1.640 authorizes conferences between examiners-in-chief and examiners in *ex parte* appeals under 35 U.S.C. 134 from an adverse decision of an examiner. A party is entitled to request reconsideration of a decision on a motion by a single examiner-in-chief. An opposition to a request for reconsideration could not be filed unless ordered by an examiner-in-chief or the Board, but the decision by the single examiner-in-chief would not normally be modified unless an opposition has been requested. The request for reconsideration would be acted on by a panel of the Board consisting of at least three examiners-in-chief, one of whom would normally be the examiner-in-chief who decided the motion. Several comments were received in response to the advance notice questioning why the examiner-in-chief who decided the motion would form part of the panel deciding the request for reconsideration. The decision to propose, and now adopt, a regulation which would permit the examiner-in-chief who decided the motion to participate in the decision on reconsideration was made after careful balancing of all the factors involved. It could have been proposed to permit the examiner-in-chief to individually decide the request for reconsideration. However, it is believed that parties in interference cases would feel that their requests for reconsideration are being more fully considered if more than one person considers their request. The two additional examiners-in-chief would be able to consult with the examiner-in-chief most familiar with the case, but would be able to control the decision on reconsideration by a majority vote. Use of the examiner-in-chief who decided the motion and two additional examiners-in-chief would (1) minimize delay which would occur if three new examiners-in-chief were used who were unfamiliar with the record and (2) minimize the possibility that reversible error occurred if only the examiner-in-chief who decided the motion also individually decided the request for reconsideration.

Under § 1.644, petitions to the Commissioner are authorized in interference cases under certain restricted conditions. Petitions in interferences have been the source of substantial delay. Section 1.644 attempts to minimize those delays. Section 1.644 authorizes a petition to the Commissioner from a decision of an examiner-in-chief or a panel when the examiner-in-chief or the panel shall be of the opinion (1) that the decision involves a controlling question of procedure or an interpretation of a rule as to which there is a substantial ground for a difference of opinion and (2) that an immediate decision on petition would materially advance the ultimate termination of the interference. The standard is intended to be analogous to that of a district court certifying a question to a court of appeals under 28 U.S.C. 1292(b). A petition could be filed seeking to invoke the supervisory authority of the Commissioner. However, the petition could not be filed prior to entry of judgment and could not relate to the merits of priority or patentability or the admissibility of evidence under the Federal Rules of Evidence. A petition could also be filed seeking waiver of a rule. A fee of $120 would be charged for each petition and for each request for reconsideration of a decision on petition. Any petition would be decided on the record made before the examiner-in-chief or the Board and additional evidence could not be submitted with the petition. An opposition could not be filed unless ordered by the Commissioner. Where reasonably possible, service of a petition would have to be such that delivery is accomplished within one day. Service by hand or "Express Mail" would comply with this requirement.

Section 1.645 permits a party to file a motion to seek an extension of time to take action in an interference or to seek judicial review. The motion would have to be filed within sufficient time to actually reach an examiner-in-chief prior to expiration of the time for taking action. Under § 1.645, a moving party would not be able to assume that a motion for an extension of time would be granted. Under § 1.610(d)(6), a request for an extension of time could be made orally and an appropriate order would then be entered thus eliminating considerable paper work. The order would be the written record of the request and decision. See § 1.2. Extensions of time have caused numerous delays in interference cases.

Under present interference practice, some delays are caused because attorneys and agents on many occasions unexpectedly receive orders setting times. Under the new practice, attorneys and agents can expect times to be set for filing preliminary statements, preliminary motions, motions for additional discovery, testimony, and briefs after a conference call. It is expected that use of conference calls will permit an examiner-in-chief and attorneys or agents for parties to set a time schedule which is mutually satisfactory. A motion to extend time would not be granted unless a party shows good cause. The use of conference calls would allow schedules to be set before orders setting time are entered and therefore the press of other business which arises after the examiner-in-chief and attorneys and agents agree to times would not normally be considered good cause.

Under § 1.647, when a party relies on a document in a foreign language, an English language translation of the document and an affidavit attesting to the accuracy of the translation would be required. The rule would apply to any document, including evidence submitted with motions, foreign applications for which a party seeks benefit, testimony, and exhibits introduced in evidence during testimony.

Under § 1.651, after a decision is entered on preliminary motions, an examiner-in-chief would set times for filing motions for additional discovery and for taking testimony. Any motion for additional discovery would be to obtain answers to interrogatories, requests for admissions, and documents and things necssary for a party to prepare its case-in-chief.

Section 1.653 sets out what shall be in the record to be considered by the Board at final hearing. The record would continue to be printed or typed on paper 8½" by 11" in size. Accordingly, when a party files an affidavit, the party should use 8½" by 11" paper for the affidavit.

Section 1.654 continues the practice of holding a final hearing where oral argument may be presented by all parties. No fee would be charged for appearing at oral argument at final hearing in an interference.

Section 1.655 specfies the matters which can be considered in rendering a final decision. Patentability is an issue which may be raised. The Board can also consider whether any interlocutory order was manifestly erroneous or an abuse of discretion, although any interlocutory order would be presumed to be correct and burden of showing error shall be on the party attacking the order. This last procedural provision permits the Board to correct any manifest error before a party seeks judicial review of an interlocutory order along with judicial review of the Board's final decision.

Section 1.656 sets forth the requirements for briefs for final hearing. In large measure, § 1.656 follows the requirements of Rule 28 of the Federal Rules of Appellate Procedure. An original and three copies of a brief is required. Under § 1.656(h), if a party wants the Board in rendering its final decision to rule that any evidence is inadmissible, the party must file with its opening brief an original and three copies of a motion to suppress the evidence. Any previous objection to the admissibility of evidence is waived unless the motion to suppress is filed. This procedural provision makes clear that an objection to the admissibility of evidence must be renewed at final hearing and will be considered by the Board in rendering its final decision. When a junior party fails to file a brief, an order can be issued requiring the junior party to show cause why failure to file the brief should not be taken as a concession of priority.

Under § 1.658 the Board would enter a final decision. The decision can (1) enter judgment, in whole or in part, (2) remand the interference to an examiner-in-chief, or (3) take further action not inconsistent with law. A judgment as to a count shall state whether or not each party is entitled to a patent containing claims which correspond to the count. When judgment is entered as to all counts, the decision of the Board is considered final for the purpose of judicial review. Section 1.658(c) defines the doctrine of interference estoppel as it is to be applied in the PTO after an interference is terminated. The definition of interference estoppel is designed to encourage parties in interference cases to settle as many issues as possible in one proceeding. Section 1.658(c) creates an estoppel both as to senior and junior parties unlike the present practice (37 CFR 1.257) which limits estoppel in some instances to junior parties. An estoppel would *not* apply with respect to any claims which correspond, or which properly could have corresponded, to a count as to which the party was awarded a favorable judgment. A few examples illustrate how estoppel would be applied.

Example 24. Junior party applicant AL and senior party applicant AK both disclose separate patentable inventions "A" and "B" and claim only invention A in their respective applications. An interference is declared with a single count to invention A. Neither party files a preliminary motion (see § 1.633(c)(1)) to add a count to invention B. Judgment as to all of AL's claims corresponding to the sole count is awarded to junior party applicant AL. Senior party applicant AK would be estopped to thereafter obtain a patent containing claims to invention B, because applicant AK failed to move to add a count to invention B in the interference. Junior party applicant AL would not be estopped to obtain a patent containing claims to invention B.

Example 25. In this example, the facts are the same as in Example 24 except that judgment is awarded as to all AK's claims corresponding to the count to senior party applicant AK. Junior party applicant AL would be estopped to obtain a patent containing claims to invention B in the interference. Senior party applicant AK would not be estopped to obtain a patent containing claims to invention B.

Example 26. Junior party applicant AM and senior party applicant AP both disclose separate patentable inventions "C", "D", and "E" and claim inventions C and D in their respective applications. An interference is declared with two counts. Count 1 is to invention C and Count 2 is to invention D. Neither party files a preliminary motion to add a proposed Count 3 to invention E. Judgment as to all AM's claims corresponding to Counts 1 and 2 is awarded to junior party applicant AM. Senior party applicant AP would be estopped to thereafter obtain a patent containing claims to invention E, because applicant AP failed to move to add a count to invention E in the interference. Junior party applicant AM would not be estopped to obtain a patent containing claim to invention E.

Example 27. In this example, the facts are the same as in Example 26 except that judgment is awarded as to all AP's claims corresponding to Counts 1 and 2 to senior party applicant AP. Junior party applicant AM would be estopped to obtain a patent containing claims to invention E, because applicant AM failed to move to add a count to invention E in the interference. Senior party applicant AP would not be estopped to obtain a patent containing claims to invention E.

Example 28. In this example, the facts are the same as in Example 28 except that judgment is awarded on all of AM's claims corresponding to Count 1 to junior party applicant of AM and judgment is awarded on all AP's claims corresponding to Count 2 to senior party applicant AP. Both parties would be estopped to obtain a patent containing claims to invention E, because neither moved to add a count to invention E during the interference. Assume that junior party AM could have properly moved under § 1.633(f) to be accorded the benefit of an earlier application, but did not do so during the interference. Junior party AM would not be estopped in subsequent *ex parte* prosecution from asking for benefit of the earlier application as to the invention defined by Count 1. Accordingly, if the examiner were to reject junior party AM's claim corresponding to Count 1 on the basis of some newly discovered prior art, junior party AM could properly antedate the prior art by seeking the benefit under 35 U.S.C. 120 of the earlier application. Thus, even though junior party AM was a "losing party" as to Count 2 (an adverse judgment as to junior party AM's claims corresponding to Count 2 having been entered), junior party AM was awarded a favorable judgment (§ 1.658(c)) as to Count 1. Junior party AM would be estopped in subsequent *ex parte* prosecution from attempting to be accorded the benefit of the earlier application as to the invention of Count 2.

Example 29. Applicant AQ discloses and claims invention "F." Applicant AR discloses and claims separate patentable inventions "F" and "G." The assignee of applicant AQ also owns an application AS which discloses and claims invention "G." An interference is declared between applicant AQ and applicant AR. The sole count is directed to invention F. No motion is filed by applicant AQ or its assignee to declare an additional interference between applicant AR and applicant AS with a count to invention G. A judgment as to all of AR's claims corresponding to the sole count is awarded to applicant AR. Applicant AS and the assignee would be estopped to obtain a patent containing claims to invention G, because applicant AR and the assignee failed to move to declare an additional interference with a count to invention G.

Example 30. The facts in this example are the same as the facts in Example 29 except that judgment as to all of AQ's claims corresponding the sole count is awarded to applicant AQ. Applicant AS and the assignee would not be estopped, because applicant AQ was not a "losing party" (§ 1.658(c)).

Example 31. Applicant AT discloses a generic invention to "solvent" and a species to "benzene." Application AT contains a patentable claim 1 (solvent) and no other claims. Applicant AU discloses the generic invention to "solvent" and species to "benzene" and "toluene." Application AU contains patentable claim 3 (solvent) and no other claims. An interference is declared with a single count (solvent). Claims 1 of application AT and claim 3 of application AU are designated to correspond to the count. No preliminary motions are filed. A judgment is entered in favor of applicant AT on the claim corresponding to the sole count. Applicant AU would be estopped to obtain a patent containing a claim to benzene, because applicant AU failed to file a preliminary motion under § 1.633(c)(1) seeking to add a count to benzene and benzene was disclosed in winning party AT's application. Applicant AU would also be estopped to obtain a patent containing a claim to toluene, unless "toluene" defines a "separate patentable invention" from "solvent." A basis for interference estopped (§ 1.658(c)) exists if "toluene" and "solvent" define the "same patentable invention," because a claim to "toluene" could properly have been added and designated to correspond to the count. See § 1.633(c)(2).

Under § 1.659, the Board would be able to make recommendations to examiners and the Commissioner, including recommendations that application claims not involved in the interference be rejected and that a patent be reexamined as to patent claims not involved in the interference.

Under § 1.660, a party would be required to notify the Board when the party's patent or application becomes involved in other PTO proceedings (reexamination, reissue, or protest) or litigation.

Section 1.661 sets forth when an interference is considered terminated after a judgment is entered in the interference. For the purpose of filing copies of settlement agreements, an interference is considered terminated when the time for all appeals has expired. *Tallent* v. *Lemoine*, 204 USPQ 1058 (Comm'r . Pat. 1979). See also *Nelson* v. *Bowler*, 212 USPQ 760 (Comm'r. Pat. 1981).

Section 1.662 provides that a party may request that an adverse judgment be entered. The section also provides that when a written disclaimer (not a statutory disclaimer), concession of priority or unpatentability, abandonment of the invention, abandonment of an application, or abandonment of the contest is filed, the disclaimer, concession, or abandonment would be treated as a request for entry of an adverse judgment. Section 1.662(b) provides that when a patentee files a reissue application and omits all claims of a patent corresponding to the counts of an interference for the purpose of avoiding the interference, judgment would be entered against the patentee. Under § 1.662(c), the filing of a statutory disclaimer would not be treated as a request for entry of an adverse judgment unless all patent claims corresponding to a count are disclaimed. Under § 1.662(d), if after entry of a judgment or after filing of a statutory disclaimer no interference exists, the interference would be terminated as to any party against whom judgment has not been entered and any further prosecution of any application involved in the interference would be *ex parte* before the examiner.

Section 1.666 sets out the procedure for filing settlement agreements in interference cases. The PTO is merely a repository for copies of agreements filed under 35 U.S.C. 135(c) and does not undertake to rule on whether the statute requires that a copy of any particular agreement be filed. *Nelson* v. *Bowler*, 212 USPQ 760 (Comm'r.Pat. 1981).

Section 1.671 sets out what would be considered evidence. The Federal Rules of Evidence, with certain exceptions, are made applicable to interference cases. Under § 1.671(e), a party cannot rely on a previously filed affidavit unless the affidavit is served and notice is given that the party intends to rely on the affidavit. The purpose for the notice is to permit an opponent to determine whether a deposition for cross-examination is necessary (see §§ 1.672(b) and 1.673(e)).

Section 1.671(e) is intended to overrule prior construction of PTO rules in *Holmes* v. *Kelly*, 586 F.2d 234, 237 n. 7, 199 USPQ 778, 782 n. 7 (CCPA 1978) and *Brecker* v. *Jennings*, 204 USPQ 663 (Bd.Pat. Int. 1978), which considered a Rule 132 affidavit in the file of an involved application to be part of the "record" in an interference. Under § 1.671(e), a party intending to rely on such an affidavit must give notice and serve a copy of the affidavit on the opponent.

Under § 1.671(f), the significance of documentary and other exhibits must be discussed with particularity by a witness during oral deposition or in an affidavit. Section 1.671(f) sets out in the regulations an evidentiary requirement imposed by precedent. See *Popoff* v.

Orchin, 144 USPQ 762 (Bd.Pat. Int. 1963) (unexplained experimental data should not be considered); *Chandler* v. *Mock*, 150 F.2d 563, 66 USPQ 209 (CCPA 1945) (records standing alone were held to be meaningless), and *Smith* v. *Bousquet*, 111 F.2d 157, 45 USPQ 347 (CCPA 1940) (unexplained tests in stipulated testimony are entitled to little weight). See also *In re Borkowski*, 505 F.2d 713, 184 USPQ 29 (CCPA 1974) and *Triplett* v. *Steinmayer*, 129 F.2d 869, 54 USPQ 409 (CCPA 1942). Under § 1.671(g), a party is required to obtain permission from an examiner-in-chief prior to proceeding under 35 U.S.C. 24. This requirement insures that a subpoena is necessary (e.g., a subpoena ordinarily should not be necessary where testimony of an opponent is sought) and that testimony sought through a section 24 subpoena is relevant before a subpoena is issued. The motion seeking permission to proceed under section 24, any opposition thereto, and the order of an examiner-in-chief authorizing the moving party to proceed under section 24 will be of assistance to a federal court in the event a party is required to resort to a court to enforce the subpoena or to compel answers to questions propounded at any deposition where a witness is appearing pursuant to a subpoena. See *Sheehan* v. *Doyle*, 529 F.2d 38, 188 USPQ 545 (1st Cir.), *cert. denied*, 429 U.S. 870 (1976), *rehearing denied*, 429 U.S. 987 (1976).

Under § 1.671(h), any evidence which is not taken or sought and filed in accordance with the regulations will not be admissible.

Section 1.672 sets forth the manner in which testimony shall be taken. Testimony can be taken by deposition or affidavit at the election of the party presenting the testimony. A party presenting testimony by affidavit must file and serve the affidavit. If the party presents testimony by affidavit and an opponent elects to cross-examine the affiant, the party is required to notice a deposition for the purpose of cross-examination. Re-direct and re-cross will take place at the deposition. Where the parties agree, testimony can be presented by affidavit without opportunity for cross-examination (see § 1.672(e)) or by an agreed statement of facts (see § 1.672(f)).

Section 1.673 sets out how a deposition must be noticed. A deposition can be noticed for any reasonable place in the United States. The extent to which parties, witnesses, and attorneys or agents have to travel may be considered in determining whether a place is reasonable. Prior to serving a notice for a deposition, a party is required to take two procedural steps. Under § 1.673(b), a party would be required to serve a copy of the documents and a list of the things in its possession, custody, and control upon which it intended to rely. Under § 1.673(g), the party is required to have an oral conference (in person or by telephone) with all opponents to attempt to agree on a mutually acceptable time and place for taking the deposition. An examiner-in-chief may set the time and place if agreement is not reached. A single notice listing all the witnesses and the general nature of their expected testimony is then served. Under § 1.673(c) and except as provided, a party can not rely on any witness not mentioned in the notice, any document not served, or any thing not listed. Under § 1.673(h), a copy of any notice must be attached to the certified transcript of each deposition filed.

Section 1.674 sets out the persons before whom depositions can be taken.

Section 1.675 sets out how a deposition is to be taken.

Section 1.676 sets out how a court reporter should prepare and file a certified transcript of a deposition. Section 1.676(d) sets out how exhibits are to be marked for identification, used at depositions, and filed. Provisions similar to those of Rule 30(f)(1)(A) and (B) of the Federal Rules of Civil Procedure are applicable to interferences.

Section 1.677 sets out the form of a transcript of a deposition.

Under § 1.678, a transcript of a deposition must be filed in the PTO within 45 days of the date of the deposition.

Section 1.682 sets out how a party may introduce in evidence, if otherwise admissible, official records or printed publications. When a notice is served, a party is also required to serve (but not file) copies of the official records and printed publications. Any objection to the notice or to the admissibility of any official record or publication must be filed within 15 days of the date of service of the notice.

Section 1.683 sets out how a party may use testimony from another interference or proceeding.

Section 1.684 sets out how a party may take testimony in a foreign country.

Section 1.685 sets out how objections during the taking of depositions must be raised. Under § 1.685(a), an error in a notice of deposition is waived unless a motion to quash the notice is filed as soon as the error is, or could have been, discovered. Under § 1.685(b), any objection to the qualifications of an officer is waived unless (1) the objection is noted on the record of the deposition before a witness begins to testify or (2) if discovered after the deposition, a motion to suppress is filed as soon as the objection is, or could have been, discovered. Under § 1.685(c), any error in the manner in which testimony is transcribed, the transcript is signed by a witness, or the transcript is prepared or otherwise handled by the court reporter is waived unless a motion to suppress is filed as soon as the error is, or could have been, discovered. Under § 1.685(d), any objection on the merits to the admissibility of evidence (e.g., under the Federal Rules of Evidence) is waived unless an objection is made on the record at the deposition stating the specific ground of objection. Often objections are cured by subsequent testimony. Accordingly, any objection which a party wants the Board to consider at final hearing must also be made the subject of a motion under § 1.656(h).

Section 1.687 sets out how a party could seek and obtain additional discovery. "Additional discovery" is defined in § 1.601(a). Section 1.687 does not change the standard ("interest of justice") for obtaining discovery.

Section 1.688 sets out how a party can introduce into evidence admissions and answers to interrogatories obtained as a result of additional discovery.

Changes in Text

Several changes have been made to the text of the proposed rules published in the **Federal Register** on January 30, 1984. The changes are discussed below. Additional rationale for the changes are further discussed under the heading "Analysis of Comments."

All references to the "Board of Appeals and Interferences" have been changed to "Board of Patent Appeals and Interferences" in view of Pub. L. 98-622.

In § 1.11(a) the language "or after termination of an interference without an award of judgment" has been deleted. This change has been made in view of changes made in paragraphs (c) and (d) of § 1.662.

In response to comment, the fee required for a petition in an interference under § 1.644(e) and a request for reconsideration of a decision on petition in an interference under § 1.644(f) have been set out as separate items.

Section 1.136 was changed to refer to § 1.611 rather than § 1.610(a).

The following sentence was inadvertently omitted as the third sentence of § 1.136 in the notice of proposed rulemaking: "A registered attorney or agent acting under the

provision of § 1.34(a), or of record, may also expressly abandon a prior application as of the filing date granted to a continuing application when filing such a continuing application." This sentence presently appears in § 1.138.

In 1.196(d), second sentence, "thirty days" has been changed to "one month".

In 1.197(b), "thirty days" has been changed to "one month".

In the last sentence of § 1.304, "The Commissioner" has been changed to "An examiner-in-chief" and "of a decision of the Board of Patent Appeals and Interferences in an interference case" has been inserted after "time for seeking judicial review." This change is made to limit the "excusable neglect" standard to interference cases only.

In § 1.601(j), the language "all the claims of a party which correspond" has been changed to read "at least one claim of a party which corresponds". The language "all the claims of an opponent which correspond" has been changed to read "at least one claim of an opponent which corresponds".

Section 1.605(a) has been changed by deleting from the third sentence the language "a claim which is the same or substantially the same as" and by adding the following sentence as the fourth sentence: "At the time the suggested claim is presented, the applicant may also (1) call the examiner's attention to other claims already in the application or which are presented with the suggested claim and (2) explain why the other claims would be more appropriate to be included in any interference which may be declared." In the second sentence, "30 days" has been changed to "one month".

In the last sentence of § 1.606, the language "to define one patentable invention" has been changed to read: "not to contain separate patentable inventions."

The word "and" has been inserted in § 1.607(a) before "(3)". The word "must" in the first sentence of §1.607(c) has been changed to "shall" in response to a suggestion in a comment.

Pursuant to two separate suggestions, the following is being added after the first sentence in § 1.608(b): "Where the basis upon which an applicant is entitled to judgment relative to a patentee is priority of invention, the evidence shall include affidavits by the applicant, if possible, and one or more corroborating witnesses, supported by documentary evidence, if available, each setting out a factual description of acts and circumstances performed or observed by the affiant, which collectively would *prima facie* entitle the applicant to judgment on priority with respect to the earlier of the filing date or effective filing date of the patent. To facilitate preparation of a record (§ 1.653 (g) and (h) for final hearing, an applicant should file affidavits on paper which is 8½ by 11 inches (21.8 by 27.9 cm.)."

In § 1.609(b) (1), the language "count or counts" has been changed to "proposed count or counts". In § 1.609(b) (2), each occurrence of "the count" has been changed to "each count".

In § 1.613(a), "§ 1.344" has been changed to "this Chapter." This change is being made to obviate the need to again amend § 1.613 in the event new rules relating to practice before the PTO are issued. See the notice of proposed rulemaking published in the **Federal Register** on August 24, 1984, 49 FR 33790, proposed §§ 10.62 and 10.66. The language "or members of the same firm of attorneys or agents" has been added after "agent" in § 1.613(b).

In § 1.615(a), second sentence, "which are" has been deleted and "in the interference" has been added after "will not be entered or considered".

Several changes have been made in § 1.617. In § 1.617(a), the language "the interference shall proceed before the examiner-in-chief" has been changed to read: "the interference shall proceed in the normal manner under the regulations of this part". The second sentence of § 1.617(b) ("A response may include a request by the applicant for a hearing before the Board.") has been changed to read: "Any request by the applicant for a hearing before the Board shall be made in the response." This change was made to clarify when and how a hearing must be requested by the applicant. The second sentence of § 1.617(d) has been changed to read: "The statement may set forth views as to why summary judgment should be granted against the applicant, but the statement shall be limited to discussing why all the evidence presented by the applicant does not overcome the reasons given by the examiner-in-chief for issuing the order to show cause." Section 1.617(e) has been re-written as follows: "Within a time authorized by the examiner-in-chief, an applicant may file a reply to any statement filed by any opponent." The language "examiner-in-chief or the" has been added after "by the applicant is timely filed, the" in the first sentence of § 1.617(g). The language "Board decides that" has been deleted from the second sentence of § 1.617(g). The language "If the Board decides otherwise" has been replaced with "Otherwise" in the third sentence of § 1.617(g). The language "before the examiner-in-chief" in the third sentence of § 1.617(g) has been changed to read: "in the normal manner under the regulations of this part." These changes will authorize either an examiner-in-chief or a Board to authorize an interference to proceed under § 1.617(g). It will continue to be necessary for the Board to enter an order *granting* summary judgment. In the last sentence of § 1.617(h), "patentee" has been changed to "any opponent".

The language "the name of" has been deleted from the first sentence of § 1.622(a). The second sentence of § 1.622(a) in the notice of proposed rulemaking ("When an inventor identified in the preliminary statement is not identical to the inventor named in the party's application or patent, the party shall file a motion . . . .") has been changed to read: "When an inventor identified in the preliminary statement is not an inventor named in the party's application or patent, the party shall file a motion . . . ." This change is being made in view of section 105(a) of Pub. L. 98-622 which amended 35 U.S.C. 116 to permit joint inventors to be named "even though . . . (3) each did not make a contribution to the subject matter of every claim . . . ."

The following changes have been made in § 1.623(c). In the first sentence, "copy of the drawing" has been changed to "copy of the first drawing". In the second sentence, "copy of the written description" has been changed to "copy of the first written description". In the third sentence, "when a drawing or written description" has been changed to "when a copy of the first drawing or first written description".

Several changes have been made to § 1.624. The following has been added as a second sentence in § 1.624(a)(5): "If an actual reduction to practice of the invention was not introduced into the United States, the preliminary statement shall so state." The following changes have been made in § 1.624(c). Each occurrence of "was made" has been changed to "was introduced into the United States." In the first sentence, "copy of the drawing" has been changed to "copy of that drawing". In the second sentence, "copy of the written description" has been changed to "copy of that written description". In the third sentence, "a drawing or written description" has been changed to "a copy of the first drawing or first written description introduced in the United States".

The following changes have been made in § 1.625(c). In the first sentence, "copy of the drawing" has been changed to "copy of the first drawing". In the second sentence, "copy of the written

description" has been changed to "copy of the first written description". In the third sentence, "a drawing or written description" has been changed to "a first drawing or first written description".

The language of § 1.628(b) which read: "because the drawing or written description is not in the party's possession, custody, or control, the party may file a motion . . . to amend its preliminary statement promptly after it secures possession, custody, or control of a copy of the drawing or written description" has been changed to read as follows: "the party (1) shall show good cause and explain in the preliminary statement why a copy of the drawing or written description cannot be attached to the preliminary statement and (2) shall attach to the preliminary statement the earliest drawing or written description made in or introduced into the United States which is available. The party shall file a motion . . . to amend its preliminary statement promptly after the first drawing, first written description or drawing or written description first introduced into the United States becomes available."

The first sentence ("A preliminary statement should be carefully prepared.") has been deleted from § 1.629(a).

In § 1.629(b), the language "no earlier than" has been changed to "as early as".

In § 1.629(d), the following has been added after "allegation": "Unless the party complies with § 1.628(b)."

A new § 1.632 has been added to require a party to give timely notice of the party's intent to argue that an opponent has abandoned, suppressed, or concealed an actual reduction to practice. A companion change has been made to § 1.654.

Two changes have been made to § 1.633(c). Paragraph (c)(2) has been changed by adding thereto the following language: "Or adding a claim in the moving party's application to be designated to correspond to a count". In addition, in § 1.633(c), the "or" before "(4)" has been deleted and the following has been added to the end of the first sentence: ", or (5) requiring an opponent who is an applicant to add a claim and to designate the claim to correspond to a count."

Paragraph (j) has been added to § 1.633.

In § 1.636(b), "(i)" has been changed to "(i) or (j)" in view of the addition of paragraph (j) to § 1.633. The language "filed as soon as practical" in § 1.636(c) has been changed to "diligently filed" in order to conform § 1.636 to § 1.48. A party must exercise diligence in correcting inventorship. *Van Otteren* v. *Hafner*, 278 F.2d 738, 126 USPQ 151 (CCPA 1960).

Several changes have been made to § 1.637. The language "Where appropriate," has been deleted from the following paragraphs of § 1.637: (c)(1)(vi); (c)(2)(iv); (c)(3)(iii); (d)(4); (e)(1)(viii); (e)(2)(vii); and (h)(4). The following has been added in § 1.637(c)(2) before "shall": "or adding a claim to be designated to correspond to a count". The language "amended claim" in § 1.637(c)(2)(i) has been changed to read: "amended or added claim". The language "Apply the terms of each proposed claim to the disclosure of the application" in § 1.637(c)(2)(ii) has been changed to read: "Show that the proposed or added claim defines the same patentable invention as the count." The language "proposed amended claim" in § 1.637(c)(2)(iii) has been changed to read "amended or added claim." The language "adding the proposed claim" in § 1.637(c)(2)(iii) has been changed to read: "making the amended or added claim".

The word "interferences" in § 1.637(c)(4)(ii) has been corrected to read: "interference".

Subparagraph (c)(5) has been added to § 1.637.

The following has been added as the last sentence to § 1.637(f)(2): "If the earlier application filed abroad is not in English, the requirements of § 1.647 must also be met."

In paragraph § 1.637(f)(3), the language "discloses an embodiment with the scope" had been changed to read: "constitutes a constructive reduction to practice".

The first sentence, originally proposed in § 1.638(b) ("A reply to an opposition shall not be filed unless authorized by this subpart or an examiner-in-chief or the motion was filed under §§ 1.633 or 1.634"), has been deleted. The language "any authorized reply" in § 1.638(b) has been changed to "a reply".

The language "or a motion to correct inventorship under § 1.634" has been added to the first sentence of § 1.639(c) after "preliminary motion under § 1.633."

The following has been added after the first sentence of § 1.640(b)(1): "Failure or refusal of a party to timely present an amendment required by an examiner-in-chief shall be taken without further action as a disclaimer by that party of the invention involved." The fourth sentence of § 1.640(c) ("A request for reconsideration will ordinarily not be granted unless an opposition has been requested by an examiner-in-chief or the Board") has been changed to read: "A decision of a single examiner-in-chief will not ordinarily be modified unless an opposition has been requested by an examiner-in-chief or the Board." In the last sentence of § 1.640(c), the language "shall be decided by a panel" has been changed to read: "shall be acted on by a panel".

The word "application" in the paragraph heading and text of § 1.642 has been changed to read: "application or patent".

Three changes have been made in § 1.644. The following language has been added after "Commissioner" in § 1.644(a)(2): "and is not filed prior to the decision of the Board awarding judgment and does not relate to (i) the merits of priority of invention or patentability or (ii) the admissibility of evidence under the Federal Rules of Evidence". The following language has been deleted from the second sentence of § 1.644(b): "and shall not relate to (1) the merits of priority of invention or patentability or (2) the admissibility of evidence under the Federal Rules of Evidence". The language "A request for reconsideration will ordinarily not be granted unless" in the second sentence of § 1.644(f) has been changed to read: "The decision will not ordinarily be modified unless such".

Two changes have been made in § 1.645. The word "to" has been added before "file a notice of appeal" and "commence a civil action" in the first sentence of paragraph (a). The language, "accompanied by an affidavit," has been deleted from paragraph (b).

Three changes have been made to § 1.646. The word "service" has been added after "additional" in the third sentence of paragraph (b). The language "or except as otherwise provided by this part," has been added after "otherwise ordered by an examiner-in-chief," in paragraph (c). The language in paragraph (c) "paper may be made" has been changed to "paper shall be made". The word "time" has been changed to "date" in the last sentence of paragraph (e).

A new paragraph (c) has been added to § 1.654 to require that a party give timely notice of the party's intent to argue that an opponent has abandoned, suppressed, or concealed an actual reduction to practice. Section 1.632 specifies the time within which the notice shall be filed.

Three changes have been made in § 1.658. The language "paragraph (a) of the section" in the last sentence of § 1.658(b) has been changed to "paragraph (a) of this section". The "(i)" in the first sentence of § 1.658(c) has been changed to "(j)" in view of the addition of § 1.633(j). In the notice of

proposed rulemaking, the second sentence of § 1.658(c) reads: "A party, other than a party awarded a favorable judgment as to all counts, who could have properly moved, but failed to move, under §§ 1.633 or 1.634, shall be estopped to take *ex parte* or *enter partes* action in the Patent and Trademark Office after the interference which is inconsistent with the party's failure to properly move." This sentence has been changed to read: "A losing party who could have properly moved, but failed to move, under § 1.633 or 1.634, shall be estopped to take *ex parte* or *inter partes* action in the Patent and Trademark Office after the interference which is inconsistent with that party's failure to properly move, except that a losing party shall not be estopped with respect to any claims which correspond, or properly could have corresponded, to a count as to which that party was awarded a favorable judgment."

Several changes have been made in § 1.662. In § 1.662(a), the word "construed" has been changed to "treated." The first sentence of § 1.662(c) in the notice of proposed rulemaking read: "The filing of a statutory disclaimer under 35 U.S.C. 253 by a patentee will not be treated as a request for entry of an adverse judgment against the patentee, but will delete any statutorily disclaimed claims from being involved in the interference." That first sentence has been changed to read: "The filing of a statutory disclaimer under 35 U.S.C. 253 by a patentee will delete any statutorily disclaimed claims from being involved in the interference." The second sentence of § 1.662(c) in the notice of proposed rulemaking read: "A statutory disclaimer of any claim involved in an interference shall in subsequent proceedings have the same effect with respect to the patentee as an adverse judgment." That second sentence has been changed to read: "A statutory disclaimer will not be treated as a request for entry of an adverse judgment against the patentee unless it results in the deletion of all patent claims corresponding to a count." In view of this change, proposed § 1.662(d) has been deleted as unnecessary, and a change has also been made in § 1.11(a) to delete any reference to a termination of an interference by any means other than judgment.

The last sentence of § 1.671(g) has been changed from "The motion shall describe the general nature and show the admissibility in the interference of the testimony, document, or thing" to: "The motion shall describe the general nature and the relevance of the testimony, document, or thing."

Three changes have been made to § 1.672(b). In the second sentence after "witness by affidavit shall" the following has been added: ", prior to the close of the party's relevant testimony period." The language "file an affidavit" has been changed to "file and serve an affidavit." The following has been added after the third sentence: "A party shall not be entitled to rely on any document referred to in the affidavit unless a copy of the document is filed with the affidavit. A party shall not be entitled to rely on anything mentioned in the affidavit unless the opponent is given reasonable access to the thing. A thing is something other than a document."

Several changes have been made in § 1.673(b). The introductory sentence of paragraph (b) ("Unless the parties agree otherwise, at least three days prior to the conference required by paragraph (g) of this section, a party shall serve, but not file, the following:") has been changed to read: "Unless the parties agree otherwise, a party shall serve, but not file, at least three days prior to the conference required by paragraph (g) of this section, if service is made by hand or "Express Mail," or at least ten days prior to the conference if service is made by any other means, the following:" In § 1.673(b)(1) the word "copy" has been changed to "list and copy."

In the last sentence of § 1.675(d), the language "signed by the witness in the presence of any notary" has been changed to read "signed by the witness in the form of (1) an affidavit in the presence of any notary or (2) a declaration." This change conforms § 1.675(d) to § 1.68.

In § 1.682(a)(4), ", where appropriate," has been added prior to "be accompanied" and "[§ 1.671(d)]" has been added after "printed publication."

The word "admissible" in § 1.684(a)(4) has been changed to "revelant."

The following sentence has been deleted from § 1.687(b): "If the witness refuses to produce a requested document or thing, the party may file a motion (§ 1.635) for additional discovery under paragraph (c) of this section."

Section 1.688 has been revised to more clearly describe how a party may introduce in evidence an answer to a request for admission or an answer to a written interrogatory.

Analysis of Comments

Eighteen written comments were received. Three individuals testified at a hearing held on May 15, 1984. The following is an analysis of the written comments and the oral comments made at the hearing.

One comment suggested that § 1.8 not be amended to exclude from the certificate of mailing practice a paper in an interference which an examiner-in-chief orders to be filed by hand or "Express Mail." The comment argues that "[s]ome parties might not have an attorney in the Washington area or they may live in an area not serviced by Express Mail." The suggestion is not being adopted. Experience has shown that there are situations in interferences where it is desirable to have and the parties need a prompt ruling on a written motion. It is difficult for an examiner-in-chief to render a prompt ruling if the motion and any opposition are not promptly served and filed. In those situations where a party has no Washington, D.C. metropolitan area attorney or where a party resides in an area not served by "Express Mail," it may not be possible to hand-file or use "Express Mail." The examiner-in-chief would then exercise discretion by not invoking the exception of new subparagraph (xii) of § 1.8(a).

One comment suggested that it would be clearer if the fee for a petition in an interference and the fee for a request for reconsideration of a decision on petition in an interference were set out in § 1.17(h) as separate items. This suggestion has been adopted and the two fees have been set out in § 1.17(h) as separate items.

A suggestion was made that a reference be made in § 1.136 to § 1.611 rather than § 1.610(a). The suggestion is being adopted, because a reference to § 1.611 is believed to be more appropriate. Once an interference is declared involving an application, *ex parte* prosecution of the application is suspended and the applicant need not respond to any PTO action outstanding as of the date the interference is declared.

One comment made the following remark concerning § 1.196: "I do not understand the need or desire of the PTO to start the time to appeal to a Court from a PTO *final* decision on one claim, while PTO action is continuing on a second claim." As explained in the notice of proposed rulemaking (49 FR 3770, columns 2–3; 1039 O.G. 20–21; 1039 TMOG 20–21), when there are further proceedings before the examiner following a decision by the Board of Patent Appeals and Interferences, judicial review is not appropriate. Hence, under § 1.196, the PTO will not start a time for seeking judicial review of a PTO decision on one claim while PTO action is continuing on another claim. The last sentences of § 1.196(b)(1) and § 1.196(d) authorize the Board to enter an order making its decision final as to one claim when remand

proceedings as to another claim result in a favorable decision for the applicant. Section 1.196 is intended to eliminate piecemeal appeals.

With respect to § 1.292(c), one commentator said: "[a] party should be able to raise public use and [on] sale issues at any stage [of an interference proceeding] provided the issue is raised in a timely manner after learning of the use of sale." Public use and on sale issues are to be raised in interferences by way of a preliminary motion under § 1.633(a). If a motion under § 1.633(a) cannot be timely filed, a belated motion may be filed provided the moving party complies with the provisions of § 1.645(b). Whether or not a belated motion will be accepted where a public use or sale is discovered after the time for filing § 1.633(a) motions which has passed will manifestly depend on the facts of a given case.

One comment suggested that the language "speedy, and inexpensive" be deleted from the second sentence of the preamble of § 1.601. This suggestion is not being adopted. The second sentence of the preamble of § 1.601 provides that the rules "shall be construed to secure the just, speedy, and inexpensive determination of every interference." The provision is modeled in part after the second sentence of Rule 1 of the Federal Rules of Civil Procedure which states that the Federal Rules "shall be construed to secure the just, speedy, and inexpensive determination of every action." The "just, speedy, and inexpensive determination" provision of § 1.601 will prove useful in construing other provisions in the rules.

Two comments received which suggested a change in language in § 1.601(j). One comment correctly noted that "[i]f even one claim of each party defines the same patentable invention, there is an interference-in-fact." The comment went on to correctly note that "[t]he remaining claims can be disposed of by a motion under § 1.633(c)(4)." A second comment noted that under the definition proposed, all the claims of both parties corresponding to a count must define the same patentable invention. The comment went on to correctly note the intent of the PTO is, however, that an interference-in-fact exists if at least one of the claims of a party corresponding to a count defines the same patentable invention as one of the corresponding claims of an opponent. In view of the suggestions made in the two comments, § 1.601(j) has been changed to state that an interference-in-fact exists when at least one claim of a party which corresponds to a count and at least one claim of an opponent which corresponds to the count defines the same patentable invention.

Two comments were received which suggested that the language "earliest filing date" in § 1.601(m) be changd to read "earliest effective filing date." The suggestion is not being adopted. Section 1.601(m) defines "senior party." The definition of "senior party" in § 1.601(m) is consistent with current practice and is intended to codify current practice. In an interference where there are no benefit applications, the "senior party" is the party with the earliest "filing date." There are interferences where a party may be "senior" with respect to a first count based on the filing dates of the applications involved in the interference and "junior" with respect to a second count because the opponent is entitled to benefit of an earlier application as to the second count only. Under these circumstances in the past, the PTO has designated the party who is "senior" based on the filing dates of the applications involved as the "senior party." The designation of the party as "senior party" is for procedural purposes only, i.e., setting who takes testimony first, and does not affect which party has the burden of proof. Section 1.601(m) preserves this past practice.

Comments were received regarding § 1.601(n) which defines "same patentable invention" and "separate patentable invention." One written comment suggested that § 1.601(n) be deleted. The commentator appeared at the hearing and also urged orally that § 1.601(n) be deleted. The suggestion is not being adopted. In view of the nature of the comment and the importance of the definitions in § 1.601(n), the written comment is reproduced in its entirety:

Comment: The paragraph to be deleted contains an explicit definition of both "same patentable invention" and "separate patentable invention". It requires application of a two-prong test for determining "sameness" or "separateness". Two inventions are considered to be the "same patentable invention" when they are the same under 35 U.S.C. 102 or obvious variants under 35 U.S.C. 103 when one is considered as "prior art" with respect to the other. Application of this standard may lead to results which are anomalous or in conflict with statutory requirements if, as the proposed rules apparently assume, the award of priority as to counts embodying "separate patentable inventions" will inherently and finally resolve the question of entitlement to a patent as between the parties on involved claims corresponding to those counts. Three specific problems with the definition of Rule 601(n) have been identified as follows:

(1) If the standard of separate patentability as between two counts is applied on a mutual basis (i.e., Invention A must be separately patentable from Invention B considered as prior art and Invention B must be separately patentable from Invention A considered as prior art), then the conduct of interferences with separate counts directed to both a generic invention and an included specific embodiment thereof (i.e., a species) are frustrated. If, however, such mutuality is not applied (i.e., if Invention A is the existing count, then a count directed to Invention B is proper so long as Invention B would be considered patentable over Invention A as prior art), then a number of irreconcilable anomalies in count modification through preliminary motions practice will be manifest.

(2) "Separate patentability" as a non-obviousness issue is in every context *except* interference practice before the PTO determined with finality only when an *affirmative* determination has been reached or the applicant *elects* to discontinue further prosecution of any applications embodying the invention or to admit obviousness. Because in the ex parte context an applicant may continue to marshal additional evidence supportive of non-obviousness until separate patentability over a prior art invention has been established, "separate patentability" is always a fluid concept where ultimate resolution can neither be predicted nor foreclosed. On certain cases interference proceedings under the proposed rules will be conducted and judgment rendered on the assumption of a lack of "separate patentability", which would ordinarily be subject to change or rebuttal as additional argument, evidence or other supportive activity of non-obviousness were marshalled. Thus, simply determining a proposed count is not yet "separately patentable" for the purposes of count formation ought not to foreclose post-interference reconsideration of separate patentabilty questions when the party proposing the count would not have been foreclosed on priority grounds.

(3) The underlying assumption that "separate patentability" is to be established under the proposed rules for one invention when a second invention is considered as "prior art" does not have any necessary correspondence to the *effect* of an adverse judgment in an interference on the question of priority. While a lost count in interference is not patentable to the loser, the lost count will be considered as "prior art" against the losing party only if the status of prior art for the purposes of 35 U.S.C. 103 is established by the record in the interference, (i.e., by representing a prior invention of another made in the United States, not abandoned, suppressed or concealed under 35 U.S.C. 102). A party entitled to priority for a count under the benefit provisions of 35 U.S.C. 119 creates no "prior art" under 35 U.S.C. 102(g)/103 against his opponent. Separate counts ought not to be created or denied in an interference on the basis of a rule which fails to account for whether the interference record will confirm the assumption in the definition that a lost count will become "prior art".

The following examples are provided as indicative of perceived difficulties in the application of the definition embodied in Rule 601(n):

Example A: Rule 601(n) is applied in a mutuality sense to an interference where the existing count (Invention A) is a broad genus over organic compounds. Both parties disclose a species (Invention B) which one of the parties alleges represents a "selection invention", i.e., is neither anticipated by the genus nor obvious therefrom. The party proposing to add a species count to Invention B must demonstrate that the genus was neither the same as nor obvious in view of the species, an impossibility since *disclosure of the species anticipates the genus under 35 U.S.C. 102.* In effect, no party could ever propose sub-generic or species counts included within broader generic counts. Since all potential patentability and priority questions with respect to possible sub-generic and species claims are intended to be resolved in the unified patentability/priority proceedings, loss of such a broad generic count might be construed as estopping the losing party from arguing entitlement to a patent for species and sub-genera within the lost count. Since proof of a single species is dispositive of the question of priority as to a genus, no matter how large, this is a more severe result than would appear to be proper or intended.

Example B: Under the facts of Example A, if the standard under which the propriety for including a second sub-generic or species count is merely that the *proposed* count must be non-obvious over the *existing* count considered as prior art, then, an interference could conceivably proceed with both the generic and the species count in the interference. The usual criteria for "selection inventions" could be employed. However, when an interference is declared with a species count embodying Invention A, then utilization of a test requiring that a proposed count be non-obvious over the existing count as prior art leads literally to the conclusion that a proposed count to a generic Invention B is *anticipated* by the existing species count and therefore may not be added to the interference. This artificial distinction can certainly not have been intended, and yet the rules provide no clear indication of which result is the "correct" one or whether another test will be employed, e.g., the narrower count need only be non-obvious over the broader count.

Example C: A party moves to substitute two sub-generic counts to allegedly separately patentable inventions, Inventions A and Invention B, in place of a broad generic count to the "Markush" group of Invention A *and* Invention B. The party alleges Invention B has surprising and unexpected properties over Invention A and is separately patentable thereover. Because, however, a consideration of Invention B as "prior art" suggests Invention A would not be non-obvious thereover, the motion is denied. The moving party establishes priority as to Invention B, but loses the sole count of the interference to an opponent who filed a foreign application disclosing a single species from Invention A. The result is that the moving party with clear evidence of priority apparently loses the right to patent an invention on the technicality of "count formation" in interference. The result is substantially more severe than had he been simply faced with a statutory bar!

Example D: The senior party, a foreign applicant, relies on a priority application disclosing Embodiment A. Subsequently the junior party files a United States application directed to an Embodiment B. Thereafter both parties file applications in the United States disclosing a generic invention including both Embodiments A and B. An interference is declared on the generic invention and the junior party moves to substitute two counts, one count to Embodiment A and a second count to Embodiment B on the ground that they represent separate patentable inventions. Since the junior party's invention date for Embodiment B is after the senior party's priority date, the junior party will be obliged to concede priority on the sole count in the interference unless his motion to substitute counts is granted.

Accordingly, the junior party undertakes laboratory tests which indicate that both Embodiments A and B achieve substantially the same result in substantially the same manner without any significant differences in effectiveness. Without evidence of separate patentability to support the motion to substitute, the junior party is unsuccessful and priority is awarded to the senior party.

The junior party abandons his claim to the generic invention of the lost count, but persists in his assertion he is entitled to a patent on Embodiment B since the interference record indicates no actual priority for this embodiment in favor of the senior party. Ultimately, the junior party obtains evidence that Embodiment B is unexpectedly more useful than anticipated in a commercial setting, while Embodiment A is substantially unsuitable for practical use in a commercial setting.

Is the junior party entitled to a patent notwithstanding the disposition of the issue of its separate patentability in an *inter partes* proceeding? If indeed, the junior party would be entitled to such a patent, must a second interference now be declared with the senior party to again litigate the issue of priority? Had the junior party failed to have made the motion to substitute counts in view of his utter lack of supporting evidence of separate patentability, would the estoppel under 37 CFR 1.658(c) have applied? Finally, would the ends of justice be better served by a standard for count formation which could be finally determined contemporaneously with the filing of the preliminary motions themselves? All of these questions suggest that the utilization of a fluid concept such as non-obviousness as the basis for count formation will give unintended and unsupportable results in situations where the lack of separate patentability is prematurely assumed.

Example E: In the scenario of Example D, the non-entitlement to contest Embodiment B as a separate count was premised on a failure to demonstrate that Embodiment B was non-obvious over Embodiment A considered as prior art. However, an award of priority to the senior party based on the disclosure of Embodiment A in a foreign priority application does not render Embodiment A as available prior art (35 U.S.C. 102(g)/103) inasmuch as Embodiment A would not have been a prior invention of another made in the United States which had not been abandoned, suppressed or concealed. The junior party's entitlement to a patent on Embodiment B should depend, therefore, solely on his entitlement to priority with respect to Embodiment B. Priority is a necessary condition for entitlement to a patent since both parties disclose the embodiment and a sufficient condition since regardless of the party entitled to priority on Embodiment A, it should not become obviousness-generating prior art. Therefore, any standard or count formation which fails to reach the result of the junior party is entitled to contest priority and a patent on Embodiment B is contrary to current statutory requirements for entitlement to a patent.

The proposed rules attempt to rationally define counts in an interference so that the judgment in the interference settles all questions of entitlement to a patent. This not only cannot be done *prospectively*, but should not be done at all. Judgment should be made on *claims*, not counts and unpatentability determinations made against a party subject to the normal *ex parte* standard that additional evidence of non-obviousness, or other evidence or patentability wholly independent of priority itself, could compel a reconsideration of the judgment of unpatentability.

With respect to paragraph (1) of the comment, the standard of patentability will *not* be applied "on a mutual basis." Thus, if a species is patentable over a genus, the species is a "separate patentable invention" from the genus. Compare *In re Taub*, 348 F.2d 556, 146 USPQ 384 (CCPA 1965) (fluorine species might be patentable over genus of Markush group of hydrogen and halogen). A first count to a genus and a second count to a species which is patentable over the genus may properly appear in an interference. See e.g., Example 4. The comment suggests that if "such mutuality is not applied * * * then a number of irreconcilable anomalies * * * will be manifest." The urged "irreconcilable anomalies" are not readily apparent to the PTO.

The PTO disagrees with the concept expressed in paragraph (2) of the comment that there should be "post-interference reconsideration of separate patentability." One of the principal objects of Pub. L. 98–622 and these new rules is to encourage complete determination of all rights between parties in an interference and to avoid post-interference reconsideration in an *ex parte* environment of issues which were or could have been raised *inter partes* in an interference.

The commentator remarks in paragraph (3) of the comment that "[a] party entitled to priority for a count under the benefit of 35 U.S.C. 119 creates no 'prior art' under 35 U.S.C. 102(g)/103 against his opponent. *In re*

McKellin, 529 F.2d 1324, 188 USPQ 428 (CCPA 1976), arguable provides support for the commentator's remark. It should be noted, however, that in defining "same patentable invention" and "separate patentable invention" in § 1.601(n), the PTO is not establishing a new definition of "prior art." Rather, the PTO is providing defintions which will determine—both initially and ultimately in an interference—how *claims* in an application or patent will be designated to correspond to counts. See §§ 1.603 and 1.606. Examples 1–19 illustrate how the PTO proposes to initially designate claims to correspond to counts. The designation of claims to correspond (or not correspond) to a count is significant because, as noted by the plurality opinion in *McKellin*, 529 F.2d at 1327, 188 USPQ at 432: "[a]n applicant [or patentee] who has lost an interference is not entitled to claims which correspond to the subject matter of the counts, of the interference." Section 1.658(c) estops a party from obtaining a claim which could have been added and which would have been designated to correspond to the lost count. The definitions of "same patentable invention" and "separate patentable invention" in § 1.601(n), the availability of motions to designate or not designate claims as corresponding to a count under § 1.633(c), and the estoppel provisions of § 1.658(c) provide the basis for accomplishing the PTO's objective of resolving *inter partes* in a single proceeding all issues which are or could have been raised between parties in an interference.

Examples illustrate how §§ 1.601(n), 1.633(c) and 1.658(c) accomplish the PTO's objective.

Example 32. Application AV discloses engines in general and in particular a 6-cylinder engine. Application AV contains only claim 1 (engine). Application AW discloses engines in general, but does not specifically disclose a 6-cylinder engine. Application AW contains only a single claim 3 (engine). The U.S. "filing date" (§ 1.601(h)) of the AV application is prior to the U.S. filing date of the AW application, but the AW application claims a foreign priority date under 35 U.S.C. 119 based on an application filed in a foreign country prior to the filing date of the AV application. An interference is declared. The sole count of the interference is to "an engine." Claim 1 of the AV application and claim 3 of the AW application are designated to correspond to the count. During the interference, applicant AV does not move under § 1.633(c)(2) to add a claim to a 6-cylinder engine and to designate the claim to correspond to the count. Applicant AW is awarded a judgment in the interference based on the earlier filing date of the foreign patent application. After the interference, applicant AV adds claim 2 (6-cylinder engine) to the AV application. Whether AV would be entitled to a patent containing a claim to a 6-cylinder engine will depend solely on whether a 6-cylinder engine is a "separate patentable invention" from "engine"—the subject matter of the count. If a 6-cylinder engine is a "separate patentable invention" within the meaning of § 1.601(n), applicant AV could not have successfully moved under § 1.633(c)(2) to add claim 2 and to designate it to correspond to the count. Therefore applicant AV could obtain a patent containing claim 2. If, on the other hand, a 6-cylinder engine is not a "separate patentable invention," claim 2 of the AV application would be rejected on the basis of interference estoppel because claim 2 could have been added by a motion under § 1.633(c)(2). See § 1.658(c). See also Example 37.

Example 33. This example is basically the same as Example 32, except that application AV initially contains claim 1 (engine) and claim 2 (6-cylinder engine). When the interference is declared, both claims 1 and 2 of application AV are designated to correspond to the count. During the interference, applicant AV does not move under § 1.633(c)(4) to designate claim 2 as not corresponding to the count. A judgment in the interference is entered for applicant AW based on the earlier filing date of the foreign patent application. After the interference, applicant AV would not be able to obtain a patent containing claim 2, because that claim was designated to correspond to a count and entry of the judgment constitutes a final decision by the PTO refusing to grant applicant AV a patent containing claim 2.

In the written comment, Examples A through E were set out to illustrate what the commentator believed were "perceived difficulties." These examples are set out above and are analyzed below.

Analysis of Commentator's Example A. Example A does not describe any practice under these rules, because "same patentable invention" and "separate patentable invention" under § 1.601(n) are not intended to be "applied in a mutuality sense." Where a first count is to a genus and a second count is to a species within the scope of the genus, there may be two counts if the species is separately patentable from the genus. The species is "invention A" referred to in § 1.601(n); the genus is "invention B" referred to in § 1.601(n).

Analysis of Commentator's Example B. Commentator's Example B suggests—incorrectly—that if an interference is declared with a count to a species that no motion under § 1.633(c)(1) to add a count to a genus can ever be granted. If the species ("invention A" referred to in § 1.601(n)) is not anticipated by or obvious in view of the genus ("invention B" referred to in § 1.601(n)), a motion to add a separate count to the genus may be proper. The commentator uses the language "selection inventions" in both Examples A and B. Insofar as the PTO is aware, the language is not a term of art in the patent law. The PTO has not ascribed any particular meaning to the language in analyzing Examples A or B.

Analysis of Commentator's Example C. The result suggested in commentator's Example C can come to pass only if the moving party accepts as final the denial of the motion to substitute two "sub-generic counts" for the "broad generic count." Unlike practice under the rules which have been in effect, under these new rules a decision denying a motion to substitute a count is reviewable by the Board (see § 1.640(c) and § 1.655(a), second sentence). Additionally, the party could seek judicial review (35 U.S.C. 141, 146) of any final decision by the Board. However, if the party accepts as final the PTO's determination that inventions A and B are the "same patentable invention," the party would be precluded from obtaining a patent to invention B. After the interference is terminated, the only conceivable way that the moving party could seek to obtain a patent containing claims to invention B would be to first successfully move to reopen the interference for the purpose of presenting additional evidence. If the motion to reopen is granted (and it would be expected that such a motion will rarely be granted), the moving party would then have to successfully establish that invention A and invention B are not the same patentable invention. The PTO will continue to follow the general guidelines of 4 Rivise & Caesar, *Interference Law and Practice*, section 821 *et seq.* (Michie Co. 1948), in determining motions to reopen an interference after entry of judgment. It should be additionally noted that interferences in which a judgment has been entered by a district court in an action brought under 35 U.S.C. 146 or a mandate has been entered by the U.S. Court of Appeals for the Federal Circuit (35 U.S.C. 141 or 28 U.S.C. 1295(a)(4)(C)) will not be reopened until the district

court vacates its judgment and/or the Federal Circuit withdraws its mandate.

Analysis of Commentator's Example D. Several questions asked in the commentator's Example D can be answered as follows:

Question: Is the junior party entitled to a patent notwithstanding the disposition of the issue of its separate patentability in an *inter partes* proceeding? *Answer:* No. The junior party should have presented the "evidence that Embodiment B is unexpectedly more useful than anticipated in a commercial setting" during the interference. The PTO expects to resolve issues *inter partes* in the interference. If the PTO was to permit the evidence to be presented after the interference is terminated and after *ex parte* prosecution resumes, a principal purpose of the overall change to interference practice would be defeated. It may be unfortunate that the evidence was not known to the junior party. However, it may also be true that the winning party—had the evidence been presented in the interference—could have produced probative counter-evidence. Why should the winning party be put to the expense of a second interference?

Question: If indeed, the junior party would be entitled to such a patent, must a second interference now be declared with the senior party to again litigate the issue of priority? *Answer:* The premise in the question is not correct. The junior party is not entitled to a patent to Embodiment B and therefore there will not be a second interference.

Question: Had the junior party failed to have made the motion to substitute counts in view of his utter lack of supporting evidence of separate patentability, would the estoppel under 37 CFR 1.658(c) have applied? *Answer:* Yes, unless the junior party can successfully move to reopen the interference.

Question: Would the ends of justice be better served by a standard for count formation which could be finally determined contemporaneously with the filing of the preliminary motions themselves? *Answer:* While the question is not fully understood, it should be recognized that counts will initially be formed when an interference is declared and are subject to being changed by a motion (§ 1.633(c)) or by the Board (§ 1.640(c) and § 1.655, second sentence). The correctness of the PTO's ultimate decision on what counts should be is subject to judicial review (35 U.S.C. 141, 146).

Analysis of Commentator's Example E. The PTO, without agreeing or disagreeing with all of the commentator's statements in Example E, disagrees with any ultimate conclusion that the junior party is entitled to a patent on Embodiment B and that such a result "is contrary to current statutory requirements for entitlement to a patent." Interference estoppel precludes granting a patent claiming Embodiment B to the junior party even if Embodiment A is not prior art with respect to Embodiment B.

One comment asked whether "invention A" and "invention B" mentioned in § 1.601(n) "refer to the entire scope of subject matter recited in a claim or to the disclosed embodiment(s) supporting the claim (a la *In re Vogel*, [422 F.2d 438,] 164 USPQ 619 (CCPA 1970))?" The question is somewhat difficult, if not impossible, to answer in the abstract. Whether "invention A" refers to the entire scope or to the embodiments which support a claim is not controlling under these new rules. One fundamental change being made unde the new rules is that judgments will be in the form of whether an applicant or patentee is or is not entitled to a *claim*. In the past, the Board of Patent Interferences has entered an "award of priority." The use of an "award of priority" does not always accurately express the "judgment" entered in many interferences. See e.g., *Applegate* v. *Scherer*, 332 F.2d 571, 573 n. 1, 141 USPQ 796, 798 n. 1 (CCPA 1964). Whether an applicant or patentee is or is not entitled to a particular claim in any given interference will depend on many factors, some of which include the scope of the claim, the scope of the opponent's claim, and the prior art. An example illustrates the point.

Example 34. Applicant AX discloses an apparatus having fastening means. The specific means disclosed are rivets. Applicant AY discloses a similar apparatus having fastening means. The specific means disclosed are a nut and bolt. The prior art reveals that items have been fastened with numerous fastening means including both rivets and nuts and bolts. In determining whether AX's apparatus with rivet fastening means is the "same patentable invention" as AY's apparatus with nut and bolt fastening means, it would be proper to consider the specific apparatus disclosed by AX, the specific apparatus disclosed by AY, the fact that both AX and AY disclose the use of "fastening means" broadly, and the prior art which shows rivets and nuts and bolts to be known fastening means.

One comment suggested that the last sentence of § 1.604(b) and the last sentence of §1.607(c) be deleted in view of a proposed rule (§10.23(c)(7); 49 FR 10028; 49 FR 33809) which defines "misconduct" as including "[k]nowingly withholding from the Office information identifying a patent or application of another from which one or more claims have been copied." The proposed rule is still being considered. In any event, the last sentences of §§ 1.604(b) and 1.607(c) are instructions to examiners whereas proposed 37 CFR 10.23(c)(7) defines misconduct for those registered to practice before the PTO. Another comment suggested deletion of § 1.604(b) because "existing rules [37 CFR 1.56] already provide a duty of disclosure of subject matter *material* to examination." There is no inconsistency between the rule relating to the duty of disclosure and § 1.604. The comment also suggested that by identifying another application, an applicant "might be construed as having *admitted* that the claims" of the other application are directed to the same patentable invention as the claims in the applicant's application. The filing of such a paper is a statement by the applicant that the claims presented are "*known* to the applicant to define the same patentable invention" (emphasis added). If an applicant wishes to call another application to the attention of an examiner and the applicant believes that the other application does *not* claim the same patentable invention, but nevertheless may be relevant within the meaning of 37 CFR 1.56, the applicant may identify the other applications and at the same time state why the invention claimed in the other application is not the same patentable invention as the invention claimed in the applicant's application. For the reasons given, the suggestions made in the two comments are not being adopted.

Three comments relating to § 1.605 were received. One comment suggested that the language "or substantially the same as the suggested claim" be deleted from the third sentence of §1.605. The suggestion is being adopted to the extent that the language "a claim which is the same or substantially the same as" is being deleted. Under § 1.605, when the examiner requests an applicant to copy a suggested claim, the applicant will be required to copy verbatim the claim suggested by the examiner. A second comment suggested that the second and third sentences of § 1.605 be changed to read as follows:

> The applicant to whom the claim is suggested shall amend the application by presenting the suggested claim, or shall identify in the application one or more pending claims which the applicant regards as being directed to the same or substantially the same invention as the suggested claim, within a time specified by the Examiner, not

less than thirty days. Failure or refusal of an applicant to timely present a claim or to timely identify one or more claims which are directed to the same or substantially the same invention as the suggested claim shall be taken without further action as a disclaimer by the applicant of the invention defined by the suggested claim.

A third comment suggested that the second and third sentences of §1.605 fail to take into account the case where an applicant is already claiming the invention. The third comment suggested addition of the following at the end of the third sentence of § 1.605(a): ", unless the application already contains claims to the same patentable invention." The suggestions made in the second and third comments are not being adopted as such. However, the following sentence is being added as the fourth sentence of §1.605: "At the time the suggested claim is presented, the applicant may also: (1) Call the examiner's attention to other claims already in the application or which are presented with the suggested claim and (2) explain why the other claims would be more appropriate to be included in any interference which may be declared." A major deficiency of the suggestions made in the second and third comments was the inability of the PTO to efficiently and effectively handle situations where the applicant: (1) Presents a claim which is "substantially the same as" the suggested claim or (2) points to a claim already in the application *and* the examiner is of the opinion that the claim is not to the same patentable invention. Under those circumstances, the examiner could not properly declare an interference. Accordingly, the applicant will be required to present verbatim the suggested claim. The applicant may, however, also present any other claim which the applicant believes is more appropriate. Alternatively, the applicant, in addition to presenting verbatim the suggested claim, may also call the examiner's attention to a claim already in the application which the applicant believes is more appropriate for interference purposes. In either case, the applicant must explain to the examiner why a claim other than the suggested claim is more appropriate for inclusion in the interference. Upon consideration of the suggested claim and the applicant's alternative claims and any explanation, the examiner is in a position to forward the application to the Board for declaration of an interference. If the applicant is dissatisfied with the claims of the application designated to correspond to the count, the applicant may file an appropriate motion under §1.633(c).

Two comments were received which suggested that the last sentence of § 1.606 is not entirely clear. One comment suggested that the language in the last sentence which reads: "to define one patentable invention" be changed to read: "not to contain separate patentable invention." This suggestion is being adopted. The use of the language "*one* patentable invention" was unfortunate and rendered the actual intent of the rule unclear. Under § 1.606, at the time an interference is declared a *rebuttable* presumption will exist that any patent claim designated to correspond to a count does not embrace separate patentable inventions. Moreover, at the time the interference is declared, no count will be narrower in scope than the broadest patent claim designated to correspond to that count. The presumption is *rebuttable* and may be challenged and overcome by a motion under § 1.633(c). Examples 17 and 18 illustrate practice under § 1.606.

Two comments were received discussing § 1.607. A first comment suggested that the word "must" in the first sentence of § 1.607(c) be changed to "shall". The suggestion is being adopted. Use of "shall" makes § 1.607(c) consistent with § 1.604(b). A second comment asked the following question:

> If the examiner determines that the applicant's claim is patentable but that there is no interfering subject matter, and the examiner accordingly allows the claim but refuses to declare an interference, is that determination appealable [to the Board of Appeals and Interferences under 35 U.S.C. 1.134]?

The commentator suggests that "such a determination" is appealable and rationale in support of the commentator's position appears in Gholz, *Board of Appeals Jurisdiction Over Appeals from Decisions by Primary Examiners Refusing to Institute Interferences on Modified or Phantom Counts*, 64 J. Pat. Off. Soc'y 651 (1982). At the hearing, the commentator orally urged that the rules be amended to permit an appeal to the Board when an examiner allows a claim, but refuses to declare an interference involving the allowed claim. The suggestion is not being adopted. A decision by an examiner to allow a claim, but not to declare an interference involving the allowed claim, is petitionable and not appealable. See Gholz, *supra*, at 652 n.13. The rule being suggested would enlarge the jurisdiction of the Board. Action by Congress would be necessary to accomplish what is embodied in the suggestion.

Several written comments and one oral presentation at the hearing were made concerning § 1.608. One comment suggested that § 1.608 be expanded to provide for summary judgment in interferences involving applications where the earlier of the filing date or effective filing date of one application was three months earlier than the date of the other application. This suggestion is not being adopted. Ordinarily, interferences are not declared between applications having effective dates more than three months apart. Moreover, expanding summary judgment proceedings to application-application interferences would result in delay in resolving interferences. Currently in application-patent summary judgment proceedings under 37 CFR 1.204(c), very few summary judgments are entered against applicants who are junior to a patentee by more than three months. There is no reason to expect that a significant number of summary judgments would be entered in application-application interferences. As noted in the notice of proposed rulemaking, the PTO has already declined to expand summary judgment proceedings to cases where a patentee is junior to an applicant by more than three months. See 49 FR 3775 (paragraph bridging columns 1 and 2); 1039 O.G. 34; 1039 TMOG 34; 27 BNA 319.

Two written comments were received which suggested that § 1.608(b) should be more specific in indicating the kind of evidence which should be submitted when an applicant attempts to make out a *prima facie* case based on priority of invention. The suggestions in the comments are being adopted. The following sentence has been added to § 1.608(b):

> Where the basis upon which an applicant is entitled to judgment relative to a patentee is priority of invention, the evidence shall include affidavits by the applicant, if possible, and one or more corroborating witnesses, supported by documentary evidence, if available, each setting out a factual description of acts and circumstances performed or observed by the affiant, which collectively would *prima facie* entitle the applicant to judgment on priority with respect to the earlier of the filing date or effective filing date of the patent.

Similar language appears in the current rule: 37 CFR 1.204(c). The PTO agrees entirely with the following discussion made by one commentator:

> The material added to Rule 608(b) currently appears in existing 37 CFR 1.204(c). A comparison of the existing language of 37 CFR 1.204(c) with the proposed rule might be construed as suggesting that the allegations which are now expressly required where priority is an issue will be changed, specifically relaxed in some manner. Since under proposed Rule 617 this clearly is *not*

the case, the proposed addition to Rule 608(b) should assist the practitioner in understanding the intent of the PTO.

The commentator has accurately pointed out that the PTO intends to apply a stricter standard for filing additional evidence in summary judgment proceedings after an order to show cause has been issued. See the notice of proposed rulemaking, 49 FR 3775 (column 1); 1039 O.G. 34; 1039 TMOG 1039; 27 BNA 319 (column 1).

At the hearing, it was suggested that § 1.608 should encourage the use of 8½ by 11 inch paper for affidavits. This suggestion is being adopted and the following sentence has been added to § 1.608(b): "To facilitate preparation of a record (§ 1.653 (g) and (h)) for final hearing, an applicant should file affidavits on paper which is 8½ × 11 inches (21.8 by 27.9 cm.)." The commentator at the hearing suggested that "many people submitting a Rule 608(b) showing are going to want to rely upon that showing under Rule 672(b)" in those cases where an interference is allowed to proceed. Use of 8½ by 11 inch paper will facilitate preparation of the ultimate record.

Two comments were received with respect to § 1.609. The first comment suggested that the language "count or counts" in § 1.609(b)(1) be changed to "proposed count or counts" and that each occurrence of "the count" in § 1.609(b)(2) be changed to "each count". The suggestion is being adopted. These changes are editorial in nature and are designed to enhance the clarity of the rule. A second comment indicated that it was not clear to the commentator why it was necessary under § 1.609(b)(3) for the examiner to identify the claims in an application or patent which are deemed to be patentable over any count. The commentator went on to say that the examiner "could probably readily identify claims which would clearly be unpatentable over a count and perhaps this would be all that is needed. If the examiner simply said all claims are considered unpatentable over the count, what recourse does the applicant have if he disagrees?" The purpose of having the examiner identify all claims which are patentable over the count or counts is to place the parties on notice that those claims are allowable notwithstanding any decision in the interference. Thus, in an interference between Jones and Smith if the examiner indicates that claim 8 of Jones is patentable over the proposed count or counts, Smith will know that Jones may receive a patent containing claim 8 even if Smith wins the interference. This will permit Smith to move under § 1.633(c) to add claim 8 as corresponding to a count if Smith believes claim 8 defines the same patentable invention as one of the counts. Contrary to the suggestion in the comment, an examiner will not indicate that a claim is unpatentable over a count; rather, the examiner will designate the claim to correspond to a count. Each claim in a patent or application which is directed to the same patentable invention as a count will be designated to correspond to the count. Under the new practice, an examiner will no longer have occasion to indicate that a claim will be rejected over a lost count. To fully answer the commentator's question, if a claim is designated to correspond to a count and the applicant believes the claim does not define the same patentable invention as the count, the applicant may move under § 1.633(c) to designate the claim as *not* corresponding to the count. If the motion is granted, the examiner would be authorized to issue the applicant a patent containing the claim even if the applicant loses the interference.

Several comments were received which discuss § 1.611. One comment suggested addition of a paragraph (f) to permit expanded summary judgment proceedings in application-application interferences. Since expanded summary judgment proceedings are not contemplated, the suggestion is not being adopted. See the discussion above under analysis of comments of § 1.608(b). Two comments suggested that § 1.611(c)(8), which provides that a notice declaring the interference shall specify among other things the "order of the parties," fails to take into account the fact one party may be "senior" as to one count and "junior" as to another count. As explained above in connection with the analysis of the comments concerning §1.601(m), the "order of the parties" is a procedural tool. It indicates the "style" of the case—which practitioners are encouraged to use. It there are two counts and one party is "senior" as to one count and "junior" as to another count, the party has the burden of proof as to that count to which the party is "junior." See § 1.657. Appropriate testimony periods will be set (§ 1.651(b)) to accommodate differing burdens of proof in cases where a party is "senior" on one count and "junior" on another count. The suggestions to change the meaning of "order of the parties" are not being adopted. Another comment suggested that §1.611(e) be changed to indicate that notice "shall" (as opposed to "may") be given in the *Official Gazette* when an interference has been declared involving a patent. No useful purpose would be served by changing "may" to "shall" inasmuch as the rights of parties involved in an interference are not affected by publication or non-publication of the fact that a patent is involved in the interference. By § 1.611 the PTO intends to exercise discretion to publish in the *Official Gazette* an identification of patents which become involved in interferences; however, the PTO does not intend to undertake an absolute obligation to do so. The use of "may" better expresses the PTO's intent behind § 1.611(e).

No written comments were received relating to § 1.612. However, at the hearing two suggestions were made orally. The first suggestion was that where a "party" has obtained a copy of his "opponent's affidavit under § 1.131 or § 1.608(b) (see § 1.612(b)), the party should be required to notify the opponent. According to the suggestion, if the opponent then intends to rely on the affidavit (§ 1.671(e)), the opponent would have to "re-serve" the affidavit on the party. This suggestion is not being adopted. When the party gains access to the affidavit under § 1.612(b), the party may or may not make an accurate copy. On the other hand, the opponent knows exactly those portions of the affidavit upon which the opponent intends to rely. After careful consideration, the PTO believes on balance that it is better for the opponent to serve a copy of the evidence upon which the opponent intends to rely. Service avoids issues as to whether the party obtained under § 1.612(b) a complete and/or accurate copy of the evidence upon which the opponent intends to rely.

The second suggestion concerning § 1.612 made orally at the hearing was that a party should have access to an opponent's "predecessor application, even though the application may not be relied upon for 35 U.S.C. 120 benefit." According to the suggestion, access to a "predecessor application" may be needed to uncover relevant evidence, including violations of 37 CFR 1.56. Specifically, the commentator called attention to *Driscoll* v. *Cebalo*, 731 F.2d 878, 221 USPQ 745 (Fed. Cir. 1984), *rehearing denied mem.* (Fed. Cir. July 25, 1984). The suggestion is not being adopted. The Patent Statute (35 U.S.C. 122) provides that applications for patent will be preserved in secrecy by the PTO unless special circumstances are shown. Section 1.687(c) provides for "additional discovery" when required in the interest of justice. Additional discovery is believed to provide the necessary procedural vehicle for

obtaining access to an opponent's "predecessor application."

One comment was received which suggessted that the language "or members of the same firm of attorneys and agents" be added after "agent" in §1.613(b). The suggestion is being adopted because it is believed to make the rule clearer.

One comment was received which said the following with respect to § 1.616: "Sanctions should not be left to the Examiner-in-Chief (EIC) or BAI [Board of Patent Appeals and Interferences]—This Rule is *unnecessary* and should be deleted. An alternative would be to give sanction power only to the BAI." The suggestion to delete § 1.616 is not being adopted. There are cases where sanctions are warranted. See e.g., *Woods* v. *Tsuchiya*, 207 USPQ 228 (Comm'r. Pat. 1979) and *Tezel* v. *Bellantoni*, 188 USPQ 688 (Bd.Pat.Int. 1975). The PTO continues to believe that imposition of a sanction (except judgment) by a single examiner-in-chief is appropriate. In any event, a party may ask a 3-member panel of the Board to reconsider any sanction which may be imposed by a single examiner-in-chief. See § 1.640(c).

Several written and oral comments were received regarding § 1.617.

One oral comment made at the hearing suggested that "it should be explicitly stated in Rule 617(a) that the decision of the examiner-in-chief to permit the interference to proceed is without prejudice to the right of any other party to attack the sufficiency of the Rule 608(b) showing when offered as Rule 672 testimony." The suggestion is not being adopted. While no explicit statement to that effect will be placed in § 1.617(a), it necessarily follows that any opponent may attack the sufficiency of an applicant's showing under § 1.608(b) when that showing is presented as evidence under § 1.672. In summary judgment proceedings, all an applicant need do is make out a *prima facie* case. If the interference is allowed to proceed in the normal manner, the applicant must prove priority by a preponderance of evidence (when the application and the patent are copending) or beyond a reasonable doubt (when the application was filed after the patent issued). Manifestly, the burden in summary judgment proceedings is not as strict as the burden in proceedings following summary judgment. *Breuer* v. *DeMarinis*, 558 F.2d 22, 28, 194 USPQ 308, 313 (CCPA 1977) and *Schwab* v. *Pittman*, 451 F.2d 637, 640, 172 USPQ 69, 71 (CCPA 1971).

Several comments suggested that an applicant should be permitted as a matter of right to file a reply to any statement filed by any opponent under § 1.617(d). The suggestion that a reply be permitted is being adopted. Accordingly, § 1.617(e) has been changed to read: "[w]ithin a time authorized by the examiner-in-chief, an applicant may file a reply to any statement filed by any opponent." Some of the comments indicated that the applicant should be able to reply to a statement by a patentee or another opponent. The language "any opponent" in § 1.617(e) is intended to include both the patentee and any other opponent. The change in the last sentence of § 1.617(h) of "patentee" to "any opponent" is intended to make clear that all parties may appear at a hearing if the applicant requests a hearing.

One comment suggested that the patentee (and presumably any other opponent) should be allowed to present "evidence" during summary judgment proceedings. This suggestion is not being adopted. A change in the second sentence of § 1.617(d) is intended to make clear that opponents may file statements in response to an applicant's "response," but the statement "shall be limited to discussing why all the evidence presented by the applicant does not overcome the reasons given by the examiner-in-chief for issuing the order to show cause." The PTO does not intend to expand summary judgment proceedings into a "mini-interference." An applicant presents evidence under § 1.608(b). If the examiner-in-chief finds that evidence insufficient, an order to show cause stating reasons for the insufficiency is issued. An applicant may respond and, if appropriate, file "additional evidence." The PTO intends to be rather strict in permitting the filing of new evidence. After the applicant responds (with or without additional evidence), any opponent may file a statement. In the statement, the opponent should be free to comment on all the evidence (original and additional) which the applicant presents. Compare *In re Plockinger*, 461 F.2d 1327, 179 USPQ 103 (CCPA 1973). Under § 1.617(d) the opponent may not urge a rationale for summary judgment which does not appear in the order to show cause issued by the examiner-in-chief. However, it is not the PTO's intent to interpret § 1.617(d) in the narrow manner the Court of Customs and Patent Appeals interpreted 37 CFR 1.204(c) in *Kahl* v. *Scoville*, 609 F.2d 991, 995–996, 203 USPQ 652, 656 [headnote 6] (CCPA 1979). An example will illustrate how the PTO intends to interpret § 1.617(d).

Example 35. An applicant copies claims from a patent and is required to submit a showing under § 1.608(b). Upon review of the showing under § 1.608(b), the examiner-in-chief concludes that the showing fails to make out a *prima facie* case of priority, because applicant has failed to show an actual reduction to practice. Applicant files a response and includes additional evidence which purports to show an actual reduction to practice. The patentee then files a statement in which two arguments are made. *First*, patentee argues that the additional evidence has not been properly authenticated. *Second*, patentee argues that even if applicant has shown an actual reduction to practice, summary judgment is nevertheless appropriate because applicant suppressed and concealed after the actual reduction to practice. The first argument is proper, but the second argument is not. A patentee may comment on the sufficiency of the applicant's evidence. Fairness, however, dictates that summary judgment be granted only after fair notice in the order to show cause. Accordingly, summary judgment will not be based on a rationale raised by a patentee in a statement which does not correspond to the rationale used by the examiner-in-chief in the order to show cause.

A change has been made in § 1.617(a) and § 1.617(g) to make clear that once summary judgment proceedings have concluded, an interference will proceed "in the normal manner." The change is intended to codify the decisions in *Walsh* v. *Sakai*, 167 USPQ 465 (Comm'r. Pat. 1967) and *Ing* v. *Chiou*, 207 USPQ 321 (Comm'r. Pat. 1979). This change is further discussed in the discussion of the comments received with respect to § 1.635.

One comment was received which indicated that § 1.618:

> needs qualification. It may be appropriate to resubmit certain papers (See also 1.644(d) last sentence).

The precise "qualification" needed was not set forth in the comment. Likewise, no example of "certain papers" was set forth. Under the circumstances, the PTO declines to make any change in § 1.618.

Several comments were received which discussed the rules relating to preliminary statements.

Three comments were received which suggested that § 1.622(a) be amended to "take into account several court decisions holding that joint inventors need not be joint inventors of [the subject matter of] all claims." Changes have been made in § 1.622(a) consistent with the amendment to 35 U.S.C. 116 made by Pub. L. 98–622.

One comment was critical of §§ 1.623(c); 1.624(c); and 1.625(c), because § 1.628(b) does not cover the

possibility that a drawing might not be available, e.g., a drawing destroyed in "a fire." Section 1.628(b) has been amended to permit a party to allege a date when a first drawing or first written description was made in those circumstances where the first drawing or first written description is not available. The party will be required: (1) To show good cause and explain in the preliminary statement why a copy of the drawing or written description cannot be attached to the preliminary statement and (2) attach to the preliminary statement the earliest drawing or written description made in or introduced into the United States which is available. The party would also be required to file a motion to amend its preliminary statement promptly after the drawing or written description becomes available. It is the PTO's intent by the amendment § 1.628(b) to overrule the holding of headnote [1] of *Reddy* v. *Davis*, 187 USPQ 386, 388 (Comm'r.Pat. 1975).

Another comment was critical of the language "conceived" in § 1.623(a)(4). The current rules do not require a party to allege a conception; rather, they require one to allege the date of the certain acts which, if proved, would establish conception. See 37 CFR 1.216(a)(4). According to the commentator, an allegation of conception is "unprovable and meaningless." The use of "conception" in § 1.623(a)(4) is intentional and is designed to permit a party to "plead" the earliest date on which it believes conception occurred. Contrary to the suggestion in the comment, "conception" is not meaningless and may be proved during the testimony period. See *Gould* v. *Schawlow*, 363 F.2d 908, 150 USPQ 634 (CCPA 1966); *Meitzner* v. *Corte*, 410 F.2d 433, 161 USPQ 599 (CCPA 1969); and *Mergenthaler* v. *Scudder*, 11 App.D.C. 264, 1897 C.D. 724 (D.C.Cir. 1897). There is no need to prove "conception" in the preliminary statement.

A preliminary statement serves several useful purposes in an interference: (1) It serves to limit a party's proofs as to time, (2) it serves as a vehicle for permitting the examiner-in-chief or the Board to issue orders to show cause in those cases where it would be futile to take testimony, and (3) it serves as notice to an opponent of the case which is alleged by a party. Under the rules being announced herein, the issues which will be raised and decided by the Board at final hearing are made known during the interlocutory stage through: (a) The preliminary statement, (b) motions under § 1.633 and decisions thereon, and (c) notices under § 1.632 of a party's intent to argue abandonment, suppression, or concealment. Section 1.632(a)(4) requires a party to allege a date of conception—it does not require proof of conception. The allegation puts the opponent on notice that the party intends to prove conception as of a date no earlier than the date alleged in the preliminary statement.

One comment suggested that the rules relating to preliminary statements are deficient because they do not permit one to allege allegations concerning tapes. Specifically, the commentator said: "What about a taped transcript of an invention, a practice being followed in a number of research departments of corporations?" If making a tape is the last act of conception, a party may allege the date the tape was made as the conception date under § 1.623(a)(4).

Several comments were received which suggested that a party should not have to allege derivation in a preliminary statement because the party may not know derivation occurred until the testimony period. Section 1.625 requires a party to file a preliminary statement when derivation is an issue. If derivation is not known or discovered prior to the date the preliminary statement is due, a party may move to amend the preliminary statement and allege derivation promptly after existence of derivation is discovered.

Several comments discussing § 1.624 were received. One comment suggested that § 1.624.(a)(5) should require a party to state, where appropriate, that no actual reduction to practice of an invention made in a foreign country was introduced into the United States. This suggestion is being adopted and a second sentence has been added to § 1.624(a)(5) which provides: "If an actual reduction to practice of the invention was not introduced into the United States, the preliminary statement shall so state." This sentence conforms § 1.624(a)(5) to the allegation required in the second sentence of § 1.623(a)(5). Another comment suggested that the language "in the United States" be inserted after "reasonable diligence" in § 1.624(a)(6) and that all occurrences of the language "was made" in § 1.624(c) be changed to "was introduced into the United States". This suggestion is being adopted. As noted in the comment, "[t]he changes . . . are necessary to clarify that for an invention made abroad the only relevant activities are those which occur in the United States." See 35 U.S.C. 104.

One comment asked "how does one introduce 'an actual reduction to practice of the invention' in the United States?" *Breuer* v. *DeMarinis*, 558 F2d 22, 194 USPQ 308 (CCPA 1971), illustrates a case where an actual reduction to practice abroad was introduced into the United States.

One comment suggested that § 1.627(a) be changed to require preliminary statements "be enclosed in an outer envelope addressed to the Commissioner of Patents and Trademarks and be additionally marked Box Interference—Preliminary Statement." According to the comment, the confidentiality of preliminary statements "envisioned under the proposed rules would be further enhanced. . . . " The suggestion is not being adopted. The PTO believes it is sufficient if preliminary statements are enclosed in a sealed envelope as specified in § 1.627(a). The Board will not permit access to preliminary statements which have not been ordered opened by an examiner-in-chief.

Several comments discussing § 1.629 were received. One comment suggested that the first sentence ("A preliminary statement should be carefully prepared.") should not appear in § 1.629(a). This suggestion is being adopted. The PTO agrees with the commentator that the sentence:

> no longer appears necessary or appropriate in the context of rulemaking. The remainder of the paragraph makes the admonition redundant at best.

Two comments were received which suggested that the word "normally" be deleted from the last sentence of § 1.629(d). The suggestions are not being adopted. A preliminary statement is a pleading. The Board does not evaluate or consider the content of a drawing or written description prior to final hearing. At final hearing, in fact, the Board will only consider the drawing or written description if a party places the drawing or written description in evidence. The word "normally" first appeared in 37 CFR 1.223(c), last sentence, in 1978 (see e.g., 973 TMOG 19 (August 1, 1978)). The last sentence of 37 CFR 1.223(c) was intended to codify headnote [2] of *Reddy* v. *Davis*, 187 USPQ 386 (Comm'r. Pat. 1975). The word "normally" appears in the rule to permit the Board to exercise discretion to evaluate or consider the content of a drawing or written description in some unusual and presently unforeseen circumstance.

One comment suggested that "no earlier than" in § 1.629(b) be changed to "as early as". The suggestion is being adopted inasmuch as it is believed to more clearly state the intent of the rule.

One comment suggested that § 1.629(d) "is improper because it fails to

take into account testimony which can show that a drawing and/or written description were actually made even though the drawing and/or written description are not now available." A change to § 1.628(d) and addition of "unless the party complies with § 1.628(b)" to the first sentence of § 1.629(d) eliminates the problem raised by the commentator.

One comment discussing § 1.631(a) was received which expressed the view that a junior party should be required to send a copy of its preliminary statement to the senior party even if the senior party does not file a preliminary statement. According to the commentator, the senior party is *prima facie* the first inventor and at some time it will have to know the earliest dates alleged by the junior party. The rules require all parties to file a preliminary statement. If a junior party does not file a preliminary statement, it will be denied access to any other preliminary statement which is filed. A senior party, however, is always entitled to access to any preliminary statement filed by a junior party. See e.g., § 1.631(b). However, a junior party will only be required to serve a senior party who files a statement.

Numerous comments were received discussing § 1.633.

One commentator asked: "What sort of a judgment is in order if a count is not patentable over the prior art to an opponent?" Section 1.633(a) authorizes a party to bring a motion for judgment on the ground that the opponent's *claim* corresponding to a count is not patentable. It is important to note that the motion raises the patentability of the opponent's *claim* not the count. Accordingly, by a motion under § 1.633(a), a party seeks entry of a judgment that the opponent is not entitled to a patent containing a claim corresponding to a count.

Two comments questioned the nature of the judgment when a motion under § 1.633(b) is granted. Section 1.633(b) authorizes the filing of a motion for judgment on the ground that there is no interference-in-fact. If a motion under § 1.633(b) is granted, the judgment would provide that each party is entitled to a patent containing that party's claims corresponding to the count. Judgments in interferences under these rules will determine a party's entitlement or lack of entitlement to *claims* corresponding to a count.

One comment expressed the hope that "third party inventorship" would not be made an issue in interferences. Contrary to the hope expressed by the commentator, "third party inventorship" can be made the subject of a motion under § 1.633(a). Any ground of unpatentability may be made the subject of a motion under § 1.633(a) except: (1) Priority of invention of the subject matter of a count by the moving party as against any opponent or (2) derivation of the subject matter of a count by an opponent from the moving party. It should be noted that under past practice, third party inventorship has not been considered "ancillary" to priority. *Sheffner* v. *Gallo*, 515 F.2d 1169, 185 USPQ 726 (CCPA 1975). However, under these rules, the question of whether an issue is "ancillary" no longer arises. See 130 Cong. Rec. H10528 (daily ed. Oct. 1, 1984) (statement by Rep. Kastenmeier). Pub. L. 98-622 gives the Board authority to consider priority and *patentability*. Third party inventorship involves a question of patentability. 35 U.S.C. 102(f).

One comment pointed out that § 1.633(a) adopts the estoppel rule approved by the Court of Customs and Patent Appeals in *Avery* v. *Chase*, 101 F.2d 205, 40 USPQ 343 (CCPA 1939), *cert. denied*, 307 U.S. 638 (1939), while rejecting the rule announced by the U.S. Court of Appeals for the District of Columbia Circuit in *International Cellucotton Products Co.* v. *Coe*, 35 F.2d 869, 30 USPQ 366 (D.C. Cir. 1936). See also *American Cyanamid Co.* v. *Coe*, 106 F.2d 851, 42 USPQ 302 (D.C. Cir. 1939). The commentator is correct in noting that the rules adopt the estoppel rule approved in *Avery* v. *Chase*. The following comment by the CCPA in its opinion in *In re Shimer*, 69 F.2d 556, 558, 21 USPQ 161, 163 (CCPA 1934), accurately expresses the intent of the PTO in promulgating §§ 1.633(a) and 1.658(c):

> It may be stated that this rule works no hardship to him who is diligent in pursuit of his rights. When an interference is declared, the files of his contestants are open to him. He has full cognizance of their disclosures and claims. So advised, it becomes his duty to put forward every claim he has. [Rule 1.633(a)] . . . affords him this opportunity. If the rule be not enforced or enforceable, then delays and litigation are greatly increased. It is quite obvious that the doctrine of estoppel, as applied in these cases, results in the better conduct of the business of the Patent [and Trademark] Office and in the public good.

One comment suggested that the following be added to the end of § 1.633(c):

> A motion to add or substitute a count shall be construed as an automatic request for the benefit of any earlier application [filing] dates accorded the existing count, and also as encompassed by a contemporaneous motion under § 1.633 (f) or (g), unless indicated otherwise. Any opposition thereto must be raised in a motion opposition pursuant to § 1.638.

The suggestion is not being adopted. A specific reference to § 1.637(c) appears in § 1.633(c). The provisions of § 1.637(c) spell out in detail the steps which a moving party must take in filing a motion under § 1.633(c). One of those steps requires the moving party to request benefit of any earlier application. The mere fact that benefit has been accorded for a "first" count does not establish that benefit should be accorded for a "second" count. The PTO believes the burden should be on the moving party to point out where an earlier application supports a count rather than placing the burden on an opponent in the first instance to point out where an earlier application fails to support particular subject matter. There is no compelling reason to force the opponent "to prove a negative." It should be noted that the language "Where appropriate," has been deleted in every instance from §1.637 to make clear that the burden lies on the moving party to request benefit when that party files a motion under § 1.633.

At the hearing, one individual commented that § 1.633(a) is not clear as to whether a motion for judgment based on "fraudulent appropriation of the moving party's invention by his opponent" excluded. The "fraudulent appropriation of the moving party's invention by his opponent" is derivation. Section 1.633(a)(2) excludes both "innocent" derivation (e.g., through a third party and unknown to either party in an interference) or "fraudulent" derivation (e.g., where one party knowingly takes the invention from an opponent). In either event if derivation by an opponent of a party's invention is proved, the party will be awarded judgment.

One comment made the following statement:

> An opponent faced with a motion for judgment on the ground that a count is unpatentable may not be able to prove patentability in the short time periods. Provision should be made for extensions of time in such cases.

Provisions for extensions of time are made in § 1.645.

One comment addressed Example 23 which appeared in the notice of proposed rulemaking. Example 23 also appears in a slightly modified form herein and, as modified, takes into account discussion in the comment. The commentator believed that the motion mentioned in Example 23 should be denied and that a testimony period should be set. Accordingly to the commentator, the granting of the motion would shift the burden to the opponent of the motion. The commentator's point

is well taken. Actually, the motion should be deferred to final hearing and a testimony period would be set. In ruling on motions under § 1.633, it will not always be possible for the examiner-in-chief to grant or deny outright a motion. When testimony is needed to rule on a motion, the proper course of action is to defer a decision on the motion to final hearing and permit testimony. See § 1.639(c). The moving party retains the burden. If testimony is taken on patentability, the parties would also have to take testimony on priority. With all testimony at its disposal, the Board would then be in a position to rule on all issues and award a judgment.

One comment asked how the claims of the parties would be designated to correspond to the counts if in Example 18 a motion to substitute Count 2 (benzene) and add Count 3 (chloroform) was granted. The following Example 36 answers the commentator's question.

Example 36. The facts in this example are the same as Example 18. Assume that applicant AB believes that benzene and chloroform define separate patentable inventions. Applicant AB would file a motion under § 1.633(c)(1) to substitute Count 2 (benzene) for Count 1 (Markush group of benzene or chloroform) and add Count 3 (chloroform). If the examiner-in-chief grants the motion, the interference would be redeclared by deleting Count 1 and substituting in its place Counts 2 and 3. Claims 1 and 2 of the patent H and claims 11 and 12 of application AB would be designated to correspond to Count 2. Claims 1 and 3 of patent H and claims 11 and 13 of application AB would be designated to correspond to Count 3. If one party proves priority with respect to both benzene and chloroform, that party would be entitled to all claims in its application or patent corresponding to Counts 2 and 3. The other party would not be entitled to a patent containing any claim corresponding to Counts 2 and 3. If patentee H proves priority with respect to benzene and applicant AB proves priority with respect to chloroform (assuming there was no issue raised at final hearing with respect to the patentable distinctness of benzene and chloroform), the judgment would provide that patentee H is not entitled to a patent with claims 1 and 3, but is entitled to a patent with claim 2 and that applicant AB is not entitled to a patent with claims 11 and 12, but is entitled to a patent with claim 13. If an issue is properly raised at final hearing as to whether benzene and chloroform are the same patentable invention and the Board holds that they are the same patentable invention, the party proving the earliest priority as to either benzene or chloroform would prevail as to all claims. Thus, if patentee H invented benzene before applicant AB invented benzene or chloroform, patentee H would be entitled to a patent containing claims 1 through 3 even if applicant AB invented chloroform before patentee H invented chloroform. Applicant AB would not be entitled to a patent with claims 11 through 13.

An oral comment was received by telephone which raised the question of whether a party is, or could be, required to present in the party's application every claim which the party may ever seek to obtain in a patent based on the party's application. According to the commentator, such a requirement would prevent the party from proceeding *ex parte* after the interference on any claim on which a favorable judgment was not entered. It is not the PTO's intent to require a party who is an applicant to present at the outset all claims which the party may ever seek to obtain in a patent based on his application. Parties in interference cases should recognize, however, that the interference estoppel provisions of § 1.658(c) have been expanded with the view to eliminating much of the *ex parte* maneuvering which has taken place in the past after an interference is terminated. Accordingly, a party who fails to move to place a matter in issue runs a considerable risk that the party will not be able to raise the issue *ex parte* after an interference is terminated. Nevertheless, the PTO has determined that it will not, at this time, adopt the requirement suggested by the commentator. The commentator also suggested, contingent on his earlier suggestion being rejected, that the rules provide that a party be authorized to file a motion to require an opponent who is an applicant to add a claim to the opponent's application and to designate the claim as corresponding to a count. This suggestion is being adopted by addition of § 1.633(c)(5). Paragraph (c)(5) authorizes the filing of a motion to redefine the interfering subject matter by requiring an opponent who is an applicant to add a claim and to designate the claim to correspond to a count. A companion addition of paragraph (c)(5) to § 1.637 sets out the requirements of a motion under § 1.633(c)(5). Those requirements are: the moving party must: (1) Propose a claim to be added to the opponent's application, (2) show the patentability of the claim to the opponent and apply the terms of the claim to the disclosure of the opponent's application, (3) identify the count to which the proposed claim shall be designated to correspond, and (4) show that the proposed claim defines the same patentable invention as the count to which it will be designated to correspond. The following example illustrates how practice under §§ 1.633(c)(5) and 1.637(c)(5) is expected to occur.

Example 37. In this example, some of the facts set out in Example 32 will be used. Application AV discloses engines and in particular a 6-cylinder engine. Application AV contains only claim 1 (engine). Application AW discloses engines in general, but does not specifically disclose a 6-cylinder engine. Application AW contains only a single claim 3 (engine). Seeing that application AV specifically discloses a 6-cylinder engine and believing that a 6-cylinder engine is the same patentable invention as "engine," AW could move under § 1.633(c)(5) to require applicant AV to add a claim (6-cylinder engine) and to have the claim designated to correspond to the count (engine). Applicant AV could oppose on the ground that a 6-cylinder engine is not the "same patentable invention" as "engine." If the motion is granted, applicant AV would be required to add a claim to 6-cylinder engine and the claim would be designated to correspond to the count. If applicant AV loses the interference, the judgment would preclude applicant AV from obtaining a patent with claims to "engine" or "6-cylinder engine." If the motion is denied on the basis that a 6-cylinder engine is not the same patentable invention, applicant AV would not be required to present a claim to 6-cylinder engine and would be able to pursue such a claim *ex parte* even if applicant AV loses the interference.

If an applicant is ordered by an examiner-in-chief to file an amendment to present a claim and the applicant fails or refuses to timely present the amendment, the failure or refusal will be taken without further action as a disclaimer by the applicant of the subject matter of the claim. See the second sentence of § 1.640(b)(1).

At the hearing, one commentator indicated that it is not clear whether § 1.635 "would permit a motion for judgment in a situation where a junior party's case-in-chief fails as a matter of law to overcome a senior party's effective filing date." Under the rules, it is not the intent of the PTO to allow a senior party to test the sufficiency of the case-in-chief of a junior party prior to final hearing. Thus, a "motion for a directed verdict" (see Rule 50(a) of the Federal Rules of Civil Procedure) at the conclusion of the junior party's case-in-chief and prior to a senior party's case-

in-chief is not authorized under the rules. If a senior party believes the case-in-chief of the junior party is insufficient as a matter of law, the senior party may *elect* to proceed immediately to final hearing. If the senior party is incorrect, however, the senior party will have waived any right to present any case-in-chief or rebuttal. See e.g., *Comstock* v. *Kroekel*, 200 USPQ 548, 550 n. 4 (Comm'r.Pat. 1978); *Lorenian* v. *Winstead*, 127 USPQ 501, 508 (Bd.Pat.Int. 1959); and, more recently, *Burson* v. *Carmichael*, 731 F.2d 849, 221 USPQ 664 (Fed. Cir. 1984) ("There is no support in law for repeated bites at the apple"). This would be true even if the only evidence relied upon by the junior party is a showing under 1.608(b). In this respect, the rules codify the decision in *Walsh* v. *Sakai*, 167 USPQ 465 (Comm'r.Pat. 1970).

Two comments were received which suggested that the twenty-day period in § 1.636(b) is too short. It was suggested that a longer time period be set and one comment suggested thirty (30) days. The suggestions are not being adopted. The time period set for filing oppositions will normally be set during a telephone conference call between the examiner-in-chief and the attorneys for the parties. The twenty-day period appears in the rule in the event a specific time for filing oppositions is not set by an examiner-in-chief. The twenty-day period is deemed to be sufficient in most cases. Twenty days are currently allowed to respond to a motion. See 37 CFR 1.231(b). It should be noted that the twenty-day period is longer than the minimum period allowed by the Federal Rules of Civil Procedure for responding to motions. See Rule 6 (d) and (e).

Two comments were received which discussed § 1.637. Both comments suggested that a sentence be added to § 1.637(f)(2) to require a translation to be filed when a party moves for benefit of an earlier foreign application which is not in English. The suggestions are being adopted and the following has been added as the last sentence of § 1.637(f)(2): "If the earlier application filed abroad is not in English, the requirements of §1.647 must also be met." Section 1.647 requires a translation whenever a party relies on a document in a language other than English. One comment suggested that the language of § 1.637(f)(3) ("Show that the earlier application discloses an embodiment within the scope of each count.") may be "contrary to past decisions of the CCPA which have held a disclosure can be good without a specific embodiment." The critical issue in each benefit situation is whether the earlier application constitutes a constructive reduction to practice of the invention defined by the count. The issue is necessarily resolved on a case-by-case basis and the presence or absence of an embodiment is only one factor to be considered. Accordingly, the language of § 1.647(f)(2) has been changed to read: "Show that the earlier application constitutes a constructive reduction to practice of each count." The comment also criticized the use of the word "each" in § 1.647(f)(2). The term "each" is used to make clear that when there are two or more counts, the moving party must show that the earlier application constitutes a constructive reduction to practice for each count. There are cases where a disclosure in an earlier application would constitute a constructive reduction to practice for one count but not for another count.

Several changes have been made to § 1.637 which were not made as a result of a comment submitted from the public. Each occurrence of the language "Where appropriate," in § 1.637 has been deleted as being unnecessary and possibly confusing. Whenever a party wants or believes that it is entitled to benefit of an earlier application, the party must file a motion under § 1.633(f) for benefit. The language "Where appropriate" may have given parties the mistaken impression that a motion was not necessary where benefit of the earlier application had been accorded in the papers declaring the interference. See the discussion above of the suggested change to §1.633(c) which was rejected.

The language "or adding a claim to be designated to correspond to a count" has been added to § 1.637(c)(2). The change supplements a change made in § 1.633(c)(2). Section 1.637(c)(2) sets out the requirements for a preliminary motion to redefine the interfering subject matter by adding a claim in the moving party's application and to designate the claim to correspond to a count.

In § 1.637(c)(2)(ii), the language "Apply the terms of each proposed claim to the disclosure of the application" has been changed to "Show that the proposed or added claim defines the same patentable invention as the count". This change was made to add the requirement of showing that the new claim defines the same patentable invention as the count and to eliminate a requirement already contained in §1.637(c)(2)(iii).

Section 1.637(c)(2)(iii) was changed to refer to an "amended or added claim" and thereby conform the language of the section to the language of § 1.633(c)(2).

Paragraph (c)(5) was added to set out the requirements of a motion under § 1.633(c)(5) which permits a party to move to require an opponent who is an applicant to add a claim to the application and to designate the claim to correspond to a count. See Example 37.

Two comments were made concerning § 1.638. One comment suggested that the twenty-day periods of paragraphs (a) and (b) were too short. The PTO has evaluated the time periods of paragraphs (a) and (b) and has decided that no change will be made to those periods. Attention is directed to the discussion above of the comments concerning § 1.636(b) which also contains a twenty-day period.

Another comment made at the hearing suggested that a reply to an opposition to a motion should be permitted as a matter of course. Upon consideration of the comment, it has been decided to authorize the filing of replies to opposition to all motions. Presently, replies are permitting as a matter of course only for oppositions to motions under 37 CFR 1.231. Section 1.638(b), as changed, would permit the reply in every instance. The PTO over the years has received complaints concerning the inability of a party to file replies. The change being made in § 1.638(b) will be reviewed sometime in the future to determine whether authorizing replies is helpful to the Board and/or whether undue delay in resolving interference occurs because replies are filed. Moreover, the PTO will make a judgment on whether "new issues" are being raised as a matter of course in replies. It can thus be seen that the change in authorizing replies may be considered experimental and could be changed in the future if found to be counter-productive or inconsistent with the objective of resolving interferences in a relatively prompt manner.

One comment discussing § 1.639 was received. The comment states:

> The requirement that proofs of alleged material facts *must* be filed may be difficult or impossible to meet in view of the shortened times. [The] rule should make provisions for timely submission of proofs within reasonable times.

To the extent that the comment suggests setting specific times in the rules, the suggestion is not being adopted. It should be noted that if affidavits cannot be timely prepared to be filed with a motion, the moving party may wish to take advantage of paragraph (c) which requires a party to specify any testimony needed to resolve a motion.

One change was made in § 1.639(c) to make clear that a moving party or an opponent may describe any testimony

needed to resolve a motion under either § 1.633 or § 1.634. Often, testimony is needed to resolve inventorship disputes. Accordingly, a party may describe testimony needed to resolve motions to correct inventorship under § 1.634. It should be noted that if a party relies solely on affidavits in support of a motion (under § 1.633 or § 1.634) and the issue raised in the motion is to be considered at final hearing, the party must comply with § 1.671(e).

Several comments were received which discussed § 1.640. One comment asked: "When the final sentence speaks of a panel deciding the request for reconsideration, does this mean that the panel decides whether to reconsider or whether to modify the decision?" It was the PTO's intent that the panel make a decision on whether to modify the decision made by the single examiner-in-chief. Accordingly, the language "shall be decided by a panel" in the last sentence of § 1.640(c) has been changed to read: "shall be acted on by a panel". Another change in language to the fourth sentence of § 1.640(c) has been made to make clear that a decision of a single examiner-in-chief will not ordinarily be modified by a panel without an opportunity to file an opposition.

Another comment suggested that § 1.640(a) be changed to "allow, even encourage, the examiner-in-chief to travel to conferences where more convenient/practical for all concerned." This suggestion is not being adopted. The use of a telephone conference call eliminates the need to adopt the suggestion. The same comment suggested that the "speedy and inexpensive" language of the second sentence of § 1.640(b) be deleted. The suggestion is not being adopted. The comment fails to explain why the language should be deleted. It is obvious that a motion cannot always be granted or denied; other action is often appropriate, e.g., deferring consideration of a motion to final hearing. Section 1.640(b) gives the examiner-in-chief discretion to take appropriate action and the "just, speedy, and inexpensive determination" language provides some standard which an examiner-in-chief may follow in those cases where granting or denying a motion is not appropriate.

One comment was received which suggested that § 1.640 be changed to provide that an examiner-in-chief hold a hearing to determine whether an interference should proceed in those cases where a junior party fails to allege a date prior to the senior party and remains in an interference only because the junior party is alleging "fraud" by the senior party. The suggestion is not being adopted. If a party believes that an opponent has committed "fraud" or has engaged in "inequitable conduct," the party may file a motion under § 1.633(a) for judgment. Obviously, a motion for judgment on the basis of "fraud" or "inequitable conduct" must make out a case by clear and convincing evidence. The examiner-in-chief has sufficient authority under the rules to preclude a party from proceeding in an interference on a baseless charge of "fraud" or "inequitable conduct."

One oral comment was received which suggested that the examiner-in-chief be required to consult with an examiner prior to deciding a preliminary motion for judgment under § 1.633(a) based on patentability. The oral comment suggested alternate proposals:

(1) The examiner-in-chief will normally obtain a patentability report when deciding motions involving a question of patentability.

(2) The examiner-in-chief will consult with a primary examiner prior to deciding a motion raising an issue of patentability.

The suggestion of the oral comment is not being adopted. An examiner-in-chief is a person having "competent legal knowledge and scientific ability." 35 U.S.C. 7. Examiners-in-chief review decisions of examiners on questions of patentability. Accordingly, there is no reason to *require* an examiner-in-chief to consult with an examiner on a question of patentability. The PTO recognizes that many examiners possess special expertise in particular arts. It is for this reason that § 1.640(b) provides that "[a]n examiner-in-chief *may* consult with an examiner in deciding motions involving a question of patentability" (emphasis added). Thus, an examiner-in-chief is authorized to consult with an examiner on a question of patentability where the examiner-in-chief believes consultation will be beneficial.

One comment suggested that § 1.642 be changed to permit an examiner-in-chief to add a newly discovered patent, as well as newly discovered applications, to an interference. Inasmuch as 35 U.S.C. 135(a) authorizes interferences between applications and patents, the suggestion is being adopted. The language "application" in § 1.642 has been changed to read: "application or patent".

Several comments discussing § 1.644 were received. One commentator made four suggestions, none of which are being adopted. First, the commentator suggested that there should be no fee for a petition under § 1.644(a)(1). This suggestion is not being adopted. A decision on a petition is a service performed by the PTO on behalf of a petitioner. The Commissioner is authorized to charge fees for services performed. 35 U.S.C. 41(d). Second, the commentator suggested that the last sentence of § 1.644(d) be deleted. This suggestion is not being adopted. In the past when parties have filed petitions, copies of documents already in the interference file have been attached to the petition. The copies tend to increase unnecessarily the size of the file of an interference. Inasmuch as the document submitted with the petition is already in the interference, there is no need to file a "second" copy of the document. Parties can expect that petitions will be returned (§ 1.618) if the petition is accompanied by documents which are already in the interference file. Third, the commentator argued that the "requirement of service within one (1) day is too onerous and should be deleted" from § 1.644(g). No rationale was given in support of the argument. Petitions have caused considerable delay in interference cases in the past. To avoid unnecessary delay and surprise on the part of the opponent, the PTO has decided to require that service of a petition be such that delivery to the opponent is within one (1) working day. Service within one day should not ordinarily be difficult in view of "Express Mail" and numerous commercial one-day delivery services available. Lastly, the commentator suggested that § 1.644(i) be changed to provide that decision on a petition would not be delegated to the examiner-in-chief handling the interference. The suggestion to change § 1.644(i) is not being adopted. However, when a PTO employee is granted authority to decide a petition in an interference case, the employee would not be the examiner-in-chief handling the interference or an employee on a panel of the Board deciding the petition. It would be expected that an employee deciding a petition by delegation of authority would be one who could exercise independent judgment on the petition bearing in mind that a petition will be decided on the record made before the examiner-in-chief or the panel. In connection with this latter point, findings of fact by an examiner-in-chief or the Board will be presumed to be correct unless shown to be clearly erroneous. Discretionary action by an examiner-in-chief or the Board will not be overturned unless it is shown that an abuse of discretion occurred.

One commentator asked the following: "Is § 1.644(g) intended to

apply only to 'oppositions' to § 1.644 petitions, or is it also applicable to § 1.638 oppositions?" The provisions of § 1.644(g) apply only to petitions filed under § 1.644; those provisions do not apply to oppositions under § 1.638.

Two comments suggested that § 1.644(a)(2) be changed to include an express statement that a petition under paragraph (a)(2) could not be filed until after the Board has entered judgment and that the petition could not relate to the merits of priority of invention or patentability or a question of whether evidence is admissible under the Federal Rules of Evidence. The suggestions are being adopted and appropriate language has been added to § 1.644(a)(2) after the word "Commissioner". The change was suggested by the commentators so that no reasonable person could possibly overlook the fact that a petition to exercise supervisory authority can be filed *only after entry of judgment*. It should be noted that the language "and shall not relate to (1) the merits of priority of invention or patentability or (2) the admissibility of evidence under the Federal Rules of Evidence" has been deleted from § 1.644(b) in view of the change to § 1.644(a)(2).

One comment suggested that the last sentence of § 1.644(f) be changed to make clear that a decision would not ordinarily be modified until the Commissioner had requested an opposition to a request for reconsideration. This suggestion has been adopted and an appropriate change has been made to the last sentence of § 1.644(g).

One comment suggested that the word "shall" in the last sentence of § 1.644(b) precludes the filing of an opposition beyond the 15-day period specified in the rules. According to the commentator, the opposition should also be considered timely if filed within "any appropriate extension." A party may move to extend the time for filing an opposition. See § 1.645.

One comment argued that § 1.644(a)(1) cannot "be squared with the statute as interpreted in *Myers* [v. *Feigelman*, 455 F.2d 596, 172 USPQ 580 (CCPA 1972)]." The rationale in support of the comment is the following:

> I presume that the limitation in subparagraph (b) that a petition under subparagraph (a)(2) "shall not relate to . . . the merits of priority of invention or patentability or . . . the admissibility of evidence" is intended to avoid conflict with *Myers* v. *Feigelman*, 172 USPQ 580 (CCPA 1972), and its progeny. However, I read *Myers* as saying that, if the board has statutory authority to make a decision (including all the myriad of ancillary decisions that the panels and/or the single examiner-in-chief will be making under the new procedure), then the Commissioner does not have authority to review the board's or the single examiner-in-chief's decision. Or, to put it the other way around, if the Commissioner reviews an examiner-in-chief's decision, he is stepping into the shoes of the examiner-in-chief, and the Commissioner's decision is in turn reviewable by the panel (which is, of course, the only entity authorized to exercise the *statutory* jurisdiction of the board—see *Knickerbocker Toy Co.* v. *Faultless Starch Co.*, 175 USPQ 417 n.8 (CCPA 1972)). Thus, I don't see how proposed section 1.644(a)(1) can possibly be squared with the statute as interpreted in *Myers*.

It is true that the CCPA has stated that, "in performing his duties, the Commissioner cannot usurp the functions or impinge upon the jurisdiction of the Board . . . established by 35 U.S.C. 135." *In re Dickinson*, 299 F.2d 954, 958, 133 USPQ 39, 43 (CCPA 1962). See also *Myers* v. *Feigelman*, *supra*, 455 F.2d at 599 n. 8, 172 USPQ at 583 n. 8. However, it is also true that the Commissioner "shall superintend or perform all duties required by law respecting the granting and issuing of patents . . . ." 35 U.S.C. 6; *Kingsland* v. *Carter Carburetor Corp.*, 83 U.S. App. D.C. 266, 168 F.2d 565, 77 USPQ 499 (D.C.Cir. 1948); *In re Staeger*, 189 USPQ 284, 285 n. 2 (Comm'r.Pat. 1974). The Commissioner, subject to approval of the Secretary of Commerce, establishes the procedure by which the examiners-in-chief and the Board will consider interference cases. 35 U.S.C. 6. See also 35 U.S.C. 23 relating to affidavits and depositions.

Under the rules, the Commissioner will not determine on petition either "priority of invention" or "patentability." See § 1.644(b). Likewise, the Commissioner will not consider whether evidence should have been admitted or excluded under the Federal Rules of Evidence. The PTO believes that the federal courts, which routinely rule on admissibility under the Federal Rules, are in a better position to determine whether the Board properly interpreted the Federal Rules of Evidence.

While the Commissioner will not decide "priority of invention" or "patentability" under 35 U.S.C. 135(a), it does not follow that the Commissioner is precluded from interpreting PTO rules on procedural matters, including procedural matters related to the admissibility of evidence on some basis other than the Federal Rules of Evidence, e.g., whether a party has complied with a PTO rule such as § 1.671(e) (procedure for relying on affidavits) or § 1.671(g) (permission required for obtaining evidence by subpoena).

Full consideration has been given to the comment. The PTO nevertheless believes that § 1.644(a)(1) is not inconsistent with law.

Several comments concerning § 1.645 were received. One comment suggested that "to" be inserted in the first sentence of paragraph (a) before "file a notice of appeal" and "commence a civil action". According to the comment, "[t]he use of parallel infinitive verb forms provides greater clarity to the rule." The suggestion has been adopted.

Another commentator said the following:

> No good reason is seen to require a notarized oath from an attorney merely to explain why a paper was filed late, if there is no claim of substantive prejudice by other parties. Attorneys and examiners-in-chief should not be spending unnecessary time and effort on merely procedural formalities. That is contrary to the intent of the new rules.

The PTO agrees with the commentator and has deleted the language "accompanied by an affidavit" from § 1.645(b).

One comment suggested that a reference to § 1.610(d)(6) which provides for oral requests should be inserted into § 1.645 to reflect intent stated in the comments [of the notice of proposed rulemaking] on proposed § 1.645." This suggestion is not being adopted. As the commentator notes, § 1.610(d) authorizes an examiner-in-chief to hold a conference call to resolve issues and to enter an appropriate order following the conference call. A conference call may be used to obtain an extension of time. If the examiner-in-chief grants the request, an order may be entered—in which case a written motion is not necessary. The order provides the written record required by 37 CFR 1.2. However, it would unduly lengthen the rules to insert a reference to § 1.610(d) in each rule to which it may be applicable. Section 1.645(a) specifies the procedure to be used when a written motion is filed. It should be noted that an examiner-in-chief may require a written motion notwithstanding a conference call.

One comment stated that "[t]he 'other business' may be more pressing than the Interference. In order to serve the ends of justice, the PTO should be considerate in this matter." The PTO intends to evaluate each request for an extension of time on a case-by-case basis. However, extensions of time in interference cases have become "routine." A recent survey of a file in one interference revealed the following. The interference was declared on March

30, 1976. Preliminary statements were filed on May 5, 1979. A decision on motions was entered on June 28, 1982. Testimony was filed on January 3, 1984. During the period between declaration and filing of testimony, sixty-four (64) requests or stipulations for extension of time were filed.

When counsel and an examiner-in-chief agree to a schedule and times are set, the parties will be expected to adhere to the schedule unless there are unusual circumstances. Apart from work that counsel may have in an interference, an examiner-in-chief will have a docket and must manage not only the interference involving counsel, but numerous other interferences. The U.S. Court of Appeals for the Federal Circuit recently said the following in *Rosemount, Inc.* v. *Beckman Instruments, Inc.*, 727 F.2d 1540, 1549–1550, 221 USPQ 1, 10 (Fed. Cir. 1984):

> The conduct of a trial, granting of continuances and the like, is not, however, solely or entirely a matter of balancing conveniences of the parties. The Federal Rules of Civil Procedure recognize another consideration—the need for the exercise of discretion by the trial court in carrying out its duty of managing the judicial process, the business of the court, and the administration of justice.

Likewise, these rules also recognize the need for the exercise of discretion by an examiner-in-chief in carrying out his or her duty of managing the interference (§ 1.610), the business of the PTO (§ 1.610), and the administration of justice (§ 1.601).

Several comments were received which discussed § 1.646. One comment suggested that it would be clearer if "service" was inserted after "additional" in the last sentence of § 1.646(b). This suggestion has been adopted.

Another comment suggested that "or except as otherwise provided in these Rules" be added to § 1.646(c) after "otherwise ordered by an examiner-in-chief". The commentator pointed out that the change was needed because certain rules (§§ 1.644(g) and 1.658(b)) require service by "Express Mail" or by hand. The commentator accurately pointed out that adding the suggested phrase "will call attention to the fact that there are other rules which have their own requirements for service of papers." The suggestion has been adopted, except that "this part" has been used instead of "these Rules."

One comment suggested changing "time" to "date" in the last sentence of § 1.646(e). The suggestion has been adopted. The change is necessary to conform with the language of the rule to actual practice and other language in the rule.

Two comments suggested that § 1.646(d), which authorizes an examiner-in-chief to order service by hand or "Express Mail," be deleted. This suggestion is not being adopted. The use of "Express Mail" or delivery by hand is often desirable to expedite matters or to avoid unnecessary delay. One comment argued that delivery by hand may be prohibitive. Commercial couriers may be used to accomplish delivery by hand. The fee charged by most commercial couriers is not "prohibitive." The other comment argued that "there are circumstances when . . . [delivery by hand] is [not] possible." The use of § 1.646(d) is discretionary on the part of an examiner-in-chief. If delivery by hand, i.e., personal delivery or delivery by commercial courier, or by "Express Mail" is impossible, it would be expected that the examiner-in-chief would exercise discretion and permit service by first class mail.

One comment suggested that the language "present case," which was said to appear in § 1.651(b)(1) and § 1.651(c), be changed to "prepared case." The suggestion is not being adopted because the language "present case" does not appear in § 1.651. In any event, a testimony period is set for a party to present its testimony—either case-in-chief or case-in-rebuttal.

One comment was received which made two suggestions regarding § 1.652. First, the comment suggested that a period longer than 15 days be set for filing a response to a paper answering an order to show cause. This suggestion is not being adopted. The fifteen-day period is believed to be adequate in most cases. If more time is needed, a party may file a motion under § 1.645. Second, the comment suggested that the party placed under an order to show cause should be permitted as a matter of course to file a "reply" brief. This suggestion is not being adopted. In those instances where the Board believes a "reply" brief is desirable it may authorize the filing of a "reply."

One comment argued that § 1.653(i) "fails to make provision for exhibits which are too big to file or are too dangerous to file." If an "exhibit" cannot be filed, it will not be given consideration. A party will have to rely on testimony and/or pictures or sketches for "exhibits" (e.g., a large machine in a factory) which are too large or too dangerous to be filed in the PTO.

While no comments were received concerning § 1.654, it should be noted that a new paragraph (c) has been added and paragraph (c) as set out in the notice of proposed rulemaking has been redesignated as paragraph (d). New paragraph (c) provides that a party shall not be entitled to argue that an opponent abandoned, suppressed, or concealed an actual reduction to practice unless a notice under § 1.632 was timely filed.

Two comments discussing § 1.655 were received. The first comment made the following statement regarding § 1.655(a):

> Last sentence—interlocutory orders are reviewed only for 'manifest error' etc. It is not clear whether this includes show cause orders under § 1.640 resulting from unpatentability determined under § 1.633(a). However, if so, it precludes proper review of the patentability determination.

Patentability will initially be determined by a single examiner-in-chief. See §§ 1.610(a) and 1.640(b). If the examiner-in-chief determines that a claim of a party is unpatentable to that party, an order to show cause why judgment should not be entered as to that claim will be issued to that party. See § 1.640(d). If a response to the order to show cause is filed, a decision will be entered by the Board. See §§1.610(a) and 1.640(e). If the Board determines that the claim is not patentable to the party, a final decision and judgment will be entered holding the claim to be unpatentable. Review of the final decision and judgment is by judicial review under 35 U.S.C. 141 or 146. It should be noted, however, that if there are other claims in the party's application or patent which are deemed to be patentable, an interlocutory order would be entered holding only that certain claims are unpatentable. A final order holding those claims unpatentable would be entered after final hearing on other issues. Such a practice will avoid piecemeal judicial review.

Another comment suggested that § 1.655 be changed to preclude consideration of patentability at final hearing. Pub. L. 98–622 authorizes consideration of patentability assuming patentability is properly raised by a party during the interlocutory phase of an interference.

Two comments discussing § 1.656 were received. One comment suggested that "[b]riefs should be letter size for consistency." The PTO has no preference for the size of briefs. Briefs may be filed on letter or legal-size paper. Inasmush as the federal courts now require letter-size paper, parties who intend to use a PTO brief as an exhibit in a federal court should use letter-size paper.

Another comment suggested that § 1.656 be amended to preclude a single examiner-in-chief from ruling on admissibility of evidence. The introductory remarks to the notice of proposed rulemaking (and this notice) state that "[t]he examiner-in-chief, *where appropriate*, will be available by phone to rule on the admissibility of evidence in the event parties encounter *unusual* problems during the taking of depositions" (emphasis added). The commentator states:

> If an examiner-in-chief has ruled certain evidence inadmissible, that evidence would presumably not be before the Board at final hearing. Proposed Rule 1.656(h) provides a means for a party to obtain suppression of evidence to which he has made timely objection, but the Rule does not provide for any means for a party whose proffered evidence has been held inadmissible by the examiner-in-chief, to have that holding considered by the Board

The change suggested by the comment will not be adopted. However, a brief explanation of how practice is expected to work is in order. The introductory remarks indicate that a single examiner-in-chief may rule on admissibility of evidence "where appropriate" and in "unusual" circumstances. There are times during interferences where a motion *in limine* can be helpful. For example, a junior party during its case-in-chief may wish to examine a witness on a document which was *not* served as required by § 1.673(b)(1). The senior party objects and realizes that if the junior party is permitted to examine the witness on the document, extensive cross-examination using numerous documents would be necessary. In order to avoid wasting considerable time, the parties could contact the examiner-in-chief by phone for a determination *in limine* whether the junior party should be able to examine the witness on the document. Under the circumstances outlined the examiner-in-chief in his or her discretion could enter an order excluding the document from evidence. The order would be subject to a request for reconsideration. See § 1.640(c). Ordinarily, however, it would be expected that parties would present evidence subject to objection. See § 1.675(c), last sentence. It is not envisioned that single examiner-in-chief will routinely rule on the admissibility of evidence.

Several comments discussing § 1.658 were received. One comment suggested that the 14-day time period in § 1.658(b) is too short. Section 1.658(b) provides that a party may file a request for reconsideration within 14 days of a final decision by the Board. The 14-day time period is the same period authorized for filing requests for reconsideration by the U.S. Court of Appeals for the Federal Circuit. See Rule 40(a) of the Federal Rules of Appellate Procedure.

Several individuals suggested that a less restricted "interference estoppel" be set out in § 1.658(c). While full consideration has been given to the suggestion, it has been decided to retain in these rules the interference estoppel provisions of § 1.658(c) essentially as proposed. "Interference estoppel" under § 1.658(c) is designed to implement the PTO's intent to have as many issues resolved as possible in a single *inter partes* proceeding. Numerous examples in this notice illustrate how practice is expected to take place under § 1.658(c).

The language in the second sentence of § 1.658(c) has been changed to more clearly state the nature of the estoppel and the exception to estoppel. The word "counts" in the second sentence of § 1.658(c) means the counts as they exist at the time a final decision is entered.

One comment was received concerning § 1.658(c) which requires a specific answer. The commentator made the following statement:

> You state that an estoppel would not apply against a party awarded a favorable judgment as to *all* counts. However, it seems to me that there will be occasion when it would not be appropriate to have estoppel where there was a split decision. For instance, consider an interference between applicants A and B in which A was awarded priority as to count 1 and B was awarded priority as to count 2. If I understand you correctly, A would be estopped in post-interference *ex parte* practice to present an additional claim X which was patentably indistinct from his claim corresponding to count 1 if B had support for claim X. I think this result would be unfortunate, and that A should be permitted to further refine his claim structure after the interference—that is, after he has been assured that he is entitled to claims to the basic invention recited in count 1.

Under the circumstances described by the commentator, inventor A would *not* be estopped to present a claim to X because X is "patentably indistinct" (the proper terminology under the rules would be to say X is the "same patentable invention" as the subject matter of count 1) from the subject matter of count 1. Inventor A would be entitled to claim any disclosed invention which is directed to the "same patentable invention" as count 1. The change in the second sentence of § 1.658(c) more clearly reflects the PTO's intent in this regard. Inventor A would *not* be entitled to claim any invention which is the "same patentable invention" as the subject matter of lost count 2. See Examples 26, 27, and 28 for illustrations of interference estoppel practice when a "split" judgment is entered.

Two comments were received discussing § 1.659. One comment suggested that the first sentence of § 1.659(b) should "reflect" that a reexamination may be based only *on* patents and printed publications. The suggestion is not being adopted. The basis upon which a reexamination may be instituted are set out elsewhere in the statute and rules. 35 U.S.C. 301–308; 37 CFR 1.501–1.570. There is no further need to set that basis out again in § 1.659(b). Another comment suggested that the language "not involved in the judgment of the interference" be deleted from § 1.659(b). The rationale in support of the comment was as follows:

> Besides introducing a potential ambiguity as to what claims were 'involved in the judgment,' there does not appear to be any good reasons to draw this distinction, particularly unless it is made more specific. Why should the Board be prevented from recommending reexamination of some (less relevant) patent claims and not other patent claims which are potentially even more relevant to the public, unless *all* of the *same art* has already been fully evaluated against the *same claims* in the Board's decision? (emphasis in original).

When a patent is involved in an interference, each claim of the patent will be designated to (1) correspond to a count *or* (2) not correspond to a count. All claims which are *ultimately* determined to correspond to a count will be "involved in the judgment of the interference." Inasmuch as they are involved in the judgment of the interference, there is no need to recommend reexamination of those claims. The claims involved in the interference are either patentable or unpatentable based on the final decision of the Board. Section 1.659(b) merely authorizes the Board to recommend reexamination of patent claims which (1) are *not* involved in the judgment and (2) for one reason or another neither party saw fit to move to designate as corresponding to a count.

One comment was received which suggested that the requirements of § 1.660 are unnecessary. The PTO disagrees. The requirements of § 1.660 are designed to keep the PTO and a party's opponent informed of activity which is relevant to an interference. These rules attempt, to the extent possible, to eliminate procedural surprise. Inasmuch as mail delays occur and the PTO cannot react instantaneously to every paper filed in connection with every application or patent, the provisions of § 1.660 are believed helpful in preventing surprise

on the part of opponent's and unnecessary work by examiners-in-chief or the Board due to a lack of knowledge of relevant activity which may be taking place in the PTO.

One comment suggested that at the end of § 1.661 the following be added: "and the time for any such available appeal or review has expired." The suggestion is not being adopted. Section 1.661 already provides for finality when "no appeal . . . can be taken. . . ." The language finds antecedent basis in 35 U.S.C. 135(a).

Several comments discussing § 1.662 were received. Two comments suggested a change be made to provide that when a patentee files a statutory disclaimer under 35 U.S.C. 253 and deletes *all* claims corresponding to a count, the disclaimer will be treated as a request for judgment. As one of the comments pointed out, "[s]ince . . . [the filing of a statutory disclaimer disclaiming all claims corresponding to a count] by the patentee could have no other conceivable effect, the proposed rule should be changed to require judgment when all corresponding claims are disclaimed." The suggestion has been adopted and appropriate changes have been made to §1.662(c). In view of the changes, the following language in § 1.662(c), as proposed, is not necessary: "A statutory disclaimer of any claim involved in an interference shall in subsequent proceedings have the same effect with respect to the patentee as an adverse judgment." When a patentee disclaims less than all claims corresponding to a count, the claims which remain in the patent continue to be involved in the interference and any patentability or priority issues involving those remaining claims will be involved in the judgment on the merits in the interference.

Two comments suggested that the word "dissolved" in § 1.662(d) be changed to "terminated". This suggestion is being adopted, because § 1.662(d) has been deleted. However, all interferences will be terminated with a "judgment." A change has been made in the language of §1.11(a) to delete any reference to terminating an interference other than by judgment.

One comment suggested that the word "construed" in § 1.662(a) be changed to "treated". This suggestion has been adopted and more clearly states the intent of the PTO. The filing of the various papers mentioned paragraphs (a) and (c) of § 1.662 will result in certain action by the PTO. The word "treated" more appropriately describes the consequences of filing such papers.

One comment suggested that § 1.662(a) "is too sweeping." According to the commentator, a patentee may file a disclaimer because it has "become aware of a statutory bar or cannot afford the expense of an interference." If the patentee becomes aware of a statutory bar, the patentee should call the "bar" to the attention of the PTO or file an appropriate motion under §1.633(a) for judgment if the "bar" applies to the opponent. If a junior party patentee decides that an interference is too expensive and for that reason files a disclaimer, there is no reason why judgment should not be entered in favor of the opponent. The comment also suggested that § 1.662(c) "needs revision" because a patentee may disclaim one claim corresponding to a count, but not another. Section 1.662(c), as revised, takes into account the possibility that less than all claims corresponding to a count may be disclaimed. When some of the patent claims corresponding to a count are disclaimed, the interference proceeds on the basis of the remaining claims which correspond to the count. If all patent claims corresponding to a count are disclaimed, judgment will be entered.

One comment made the following statement regarding the third sentence of § 1.662(a):

> What of abandonment in favor of a CIP [continuation-in-part application]? Would this be construed as [a] request to enter [an] adverse judgment? Language should reflect procedural moves of substituting CIP for abandoned application and/or declaring new interference.

The third sentence of § 1662(a) does not apply to an application which is *not* involved in an interference. If an applicant files a continuation-in-part application and successfully moves (§ 1633(d)) to substitute the continuation-in-part for the application involved in the interference, abandonment of the application originally involved in the interference would have no bearing on the interference. Accordingly, no additional language is needed in § 1.662(a).

Two comments discussing § 1.663 were received. One comment suggested that an explanation of the status of patent claims involved in an adverse judgment should be stated in the rule. This suggestion is not being adopted. The status of patent claims involved in an adverse judgment is stated in 35 U.S.C. 135(a). Another comment suggested that the status of "claims which could have been counts . . . should be made of record." Unless a motion (§ 1.633(c)) to add claims to correspond to counts is filed, no reference will be made in a judgment as to claims "which could have been made counts."

One comment suggested that the language "then owned by either party but" be inserted after "application" in § 1.665. This suggestion is not being adopted. The language "same parties" in § 1.665 is intended to cover a party and any assignee. The suggested language "then owned" would narrow the scope of the rule in a manner not intended by the PTO.

An oral comment at the hearing suggested that § 1.671(e) be changed so that a party would not have to serve copies of affidavits relied upon under § 1.608(b) in those cases where an opponent had already obtained copies of the Rule 608(b) affidavits. This suggestion is not being adopted. See the discussion above answering comments related to § 1.612(b). Another comment made at the hearing noted that the PTO is "adopting" the Federal Rules of Evidence. The Federal Rules include a "shop book" rule—Rule 803(b)(6). The commentator expressed the view that adopting of a "shop book" rule might make an important change in evidence which is admissible in interferences and suggested that "it would be helpful if the Patent and Trademark Office would publicly comment on this extremely important evidentiary rule. . . ." The PTO believes that adoption of Rule 803(b)(6) of the Federal Rules of Evidence does not constitute a change in the admissibility of "shop book" evidence in interference cases. Rule 803(b)(6) is very similar to the former Federal Shop Book Rule (28 U.S.C. 1732) which it replaced. The courts have articulated a rule of law which the PTO will continue to apply in determining admissibility of laboratory note books under the "shop book" Rule 803(b)(6) of the Federal Rules of Evidence. See e.g., *Alpert* v. *Slatin*, 305 F.2d 891, 134 USPQ 296 (CCPA 1962) and *Elliott* v. *Barker*, 481 F.2d 1337, 179 USPQ 100 (CCPA 1973).

One comment suggested that § 1.671(f) be eliminated on the ground that a rule should not be used to train attorneys and agents. The suggestion is not being adopted. The problem addressed by § 1.671(f) is significant. By providing in the rules that documentary evidence must be explained, the PTO hopes to save both parties and the Board considerable difficulty in presenting and evaluating evidence.

One comment suggested that § 1.671(g) should be changed to require a party only to show the "relevancy" of expected testimony as opposed to the "admissibility" of the testimony. This suggestion is being adopted and an

appropriate change has been made to § 1.671(g) to require a moving party to "describe the general nature and the relevance of the testimony, document, or thing."

An oral comment was received which asked whether permission to issue a subpoena would be needed in the event a party seeks to call a witness under the control of an opponent. Ordinarily, the examiner-in-chief can order a party to produce an individual for a deposition as long as the individual is a party or is under the control of the party, e.g., an employee of an assignee. Where so-called "third parties" are concerned, however, issuance of a subpoena may be necessary, because the PTO has no authority to compel attendance of third parties.

Several comments concerning § 1.672 were received. One comment at the hearing pointed out that use of 8½ by 11 inch paper for affidavits appears to be optional. The commentator is correct in pointing out that the use is optional. By using 8½ by 11 inch paper, however, a party will save considerable time when filing a record (§ 1.653).

Two comments asked questions concerning § 1.672(b), and in particular, the meaning of the word "party" in the phrase "a party shall not be entitled to rely on any document or thing not mentioned in one or more of the affidavits. . . ." Specifically, one commentator stated:

> It is the scope of the words "the party" which leave doubt as to the meaning of the passage. If "the party" refers *only* to the party proffering the affidavit testimony, then the passage is fair since such party had the opportunity to use whatever documents it deemed favorable to its position. But if "the party" also encompasses the opponent, i.e., the cross-examining party not proffering the affidavit testimony, then the passage improperly restricts the scope of cross-examination. Surely, the proponent party cannot, simply by confining the affidavit to favorable documents, insulate the witness from cross-examination on unfavorable documents.

Section 1.672(b) refers to a "party" and an "opponent." The "party" is the party filing the affidavit and not an opponent of that party. Any "opponent" conducting cross-examination of an affiant may properly rely on documents and things not referred to in the affidavit.

One comment suggested that the language "a witness whose testimony will not be compelled under 35 U.S.C. 24" should be deleted or revised. According to the commentator:

> This is often not determinable in advance. Even a "voluntary" witness may develop cold feet and require a subpoena, or demand one for his own protection. Nor will all witnesses agreeable to affidavits be agreeable to depositions.

The suggestion is not being adopted. An affidavit may be used only when a witness agrees to sign the affidavit. If an individual refuses to sign an affidavit or voluntarily appear at a deposition, the party calling the witness will have to compel attendance at a deposition by a subpoena under 35 U.S.C. 24 after receiving permission from an examiner-in-chief.

One comment asked why there is "no express provision * * * [in the rules] for simply taking appropriate testimony of an adverse party by notice * * * rather than requiring a subpoena?" In many cases, notice will be sufficient inasmuch as an examiner-in-chief or the Board may generally order an adverse party to appear and give testimony. Thus, in many cases a subpoena is not needed to require attendance at a deposition of an adverse party.

Two comments suggested that a time be set out in the rules by which an affidavit should be filed. The suggestion is being adopted and the second sentence of § 1.672(b) has been changed to provide that affidavits shall be filed prior to the close of the party's relevant testimony period. The two comments also suggested that the rules specify that documents relied upon in an affidavit be filed with the affidavit. This suggestion is also being adopted by an appropriate change to § 1.672(b) which will provide that a party cannot rely on any document referred to in an affidavit unless a copy of the document is filed with the affidavit. Any document filed with an affidavit must also be served (§ 1.646). Section 1.672(b) will also provide that a party may not rely on any "thing" mentioned in an affidavit unless the opponent is given reasonable access to the "thing." A "thing" is something other than a document. The comments has suggested that the "things' be limited to those under the possession, custody, or control of the party submitting the affidavit. This suggestion is not being adopted. If a "thing" is not under the possession, custody, or control of a party, the party should resort the use of a deposition and compel production of the "thing" by a subpoena under 35 U.S.C. 24.

Four comments were received discussing § 1.673. It was suggested that the time for service under § 1.673(b) be three days if service is accomplished by hand or "Express Mail" and ten days if service is accomplished by any other means. This suggestion is being adopted. An appropriate change has been made in the introductory sentence of § 1.673(b). It was also suggested that the word "copy" in § 1.673(b) (1) be changed to read "list and copy". In support of the suggestion, one commentator states:

> In connection with the service of documents, the amendment to the proposed rule would require that a listing of documents accompany the documents themselves. This would permit cross-checking between lists and documents to ascertain whether or not discrepancies exists and reduce the possibility for later controversy.

The suggestion is being adopted. Under § 1.673(b) (1) a list of the documents would have to accompany the documents. One comment suggested that documents served should be "Bates numbered." While this suggestion is not being adopted in the sense of changing the language of a rule, it must be remembered that the party serving documents may be required to later prove exactly what was served. Using "Bates" numbers or an equivalent scheme may prove invaluable in later stages of an interference.

One comment discussing § 1.682 suggested that the language "not identified on the record during the taking of testimony of a witness" be deleted. This suggestion is not being adopted. If an official record or printed publication is made an exhibit during a deposition or in an affidavit, it need not be submitted under § 1.682. Section 1.682 permits a party to make an official record or printed publication part of the evidence being considered at final hearing without calling a witness. The official record or printed publication must, however, be self-authenticating. On the other hand, a party may present the official record or printed publication as an exhibit during testimony. When this latter course is followed, there is no need to take advantage of the provisions of § 1.682. The comment also suggested that a change be made in § 1.682(a) (4) because the requirement therein for a "certified" copy appeared to be inconsistent with § 1.671(d) which provides that a record of the PTO need not be certified. The suggestion is being adopted by adding "where appropriate" at the beginning of § 1.682(a) (4) and a reference to § 1.671(d) at the end of § 1.682(a) (4). If the official record is not a record of the PTO, it will be necessary to submit a certified copy of the official record.

Comments were received discussing § 1.684. One comment suggested that language be inserted in § 1.684(a) to make clear that the testimony authorized is for a case-in-chief or a case-in-rebuttal. The suggestion is not being adopted. The testimony authorized by § 1.684(a) is necessarily testimony for a case-in-chief or a case-

in-rebuttal. The commentator correctly notes that the use of written interrogatories under § 1.684 "for cross-examination would seem neither appropriate or justified." Section 1.684 does not apply to cross-examination. If a party submits an affidavit under § 1.672(b) or intends to rely on an affidavit under § 1.617(e), the party must make the affiant available for cross-examination at a deposition. See § 1.673(e). A deposition may be noticed only "for a reasonable time and place in the United States." See § 1.673(a). Accordingly it is not expected that § 1.684(a) will be used to cross-examine affiants residing in foreign countries. The party filing the affidavit will be required to make the affiant available for cross-examination in the United States.

One comment suggested that the provisions of § 1.685(d) are "harsher" than the corresponding provisions of 37 CFR 1.285(c). The comment is not fully understood. Section 1.685(d) requires an objection to be stated on the record. An objection to the admissibility of evidence must be stated on the record *and* a motion under § 1.656(h) renewing the objection at final hearing must be filed. No longer will a party be permitted to attend a deposition and fail to enter an objection only to raise the objection at final hearing. The current practice permits a party to delay the objection until it is often too late to permit an opponent to correct the evidentiary basis on which the objection is bottomed.

One comment suggested that the second sentence of § 1.687(b) ("If the witness refuses to produce a requested document or thing, the party may file a motion (§1.635) for additional discovery under paragraph (c) of this section.") be deleted. This suggestion is being adopted. the PTO agrees with the following remark by the commentator: "[o]mission of the sentence is recommended since it is clear from [paragraph] (c) [of § 1.687] that such a motion could be made in an appropriate case."

One comment at the hearing suggested that the PTO's inability to enter protective orders makes discovery unduly complicated. The commentator suggested that under § 1.687(c), as set out in the notice of proposed rulemaking, it is possible to obtain appropriate protective orders. The commentator correctly concedes that the maximum sanction which the PTO can enter upon a proven violation of a PTO entered protective order is judgment. See § 1.616. The commentator suggested, however, that additional discovery may be conditioned on the issuance of a subpoena *duces tecum* under 35 U.S.C. 24. Upon issuance of the subpoena, the commentator stated that the opponent could move the district court for entry of a protective order. If a party violates a protective order entered by a district court, the party would be subject to such sanctions as the district court might deem appropriate as well as a sanction by the PTO, including entry of judgment against the party. The PTO, unlike the district court, would not be able to apply a sanction after an interference is terminated.

The Commentator's suggestion is believed to be sound. No change in the language of §1.687(b) is believed to be necessary inasmuch as paragraph (b) authorizes the PTO to "specify the terms of conditions of such additional discovery." One of those terms could be requiring a party to issue a subpoena under 35 U.S.C. 24. By making a party proceed in the first instance in the PTO, appropriate PTO orders may be entered suggesting the scope of any protective order and stating the underlying basis for requiring a party to produce documents. The order could be of assistance to the district court in subsequent enforcement or contempt proceedings.

Additional discovery obtained under a protective order issued by either the PTO or a district court will not be admitted in evidence in the PTO in determining the interference. All evidence submitted in an interference must be made available to the public under the provisions of § 1.11(a). Accordingly, any protective orders have to be vacated before a document could be admitted in evidence in the PTO which is subject to a protective order.

Example 38 illustrates how the practice would work.

Example 38. An interference involves party X and party Y. During the interference, party X files a motion for additional discovery under § 1.687(c) asking that party Y be required to produce certain documents. Party Y opposes on the sole ground that the documents contain trade secret and confidential information. Party Y indicates that it has no objection to producing the documents for inspection by counsel for party X, but insists that party X not be permitted to inspect the documents. Accordingly, party Y asks the examiner-in-chief to authorize the discovery subject to entry of a protective order. Party Y argues, however, that the sanctions of § 1.616 are not sufficient in the event of a violation of the protective order. An examiner-in-chief concludes that additional discovery should be ordered, that a protective order is appropriate, and that the sanctions of § 1.616 are not sufficient in the event of a violation of the protective order. Under the circumstances, the examiner-in-chief would enter an order directing party Y to produce the documents for inspection by counsel of party X on the condition that party X seek production of the documents by a subpoena *duces tecum* under 35 U.S.C. 24. Upon issuance of any subpoena, party Y could move the district court for entry of a protective order. If the district court enters the protective order, party Y can produce the documents to counsel for party X. If the protective order of the examiner-in-chief is violated, an appropriate sanction up to and including judgment may be entered by the Board. In addition, party Y would be in a position to seek contempt or other sanctions in the district court. The documents produced for inspection by counsel for party X could not be admitted in evidence in the interference (until the protective order is vacated), because those documents are not documents which can be made available to the public under § 1.11(a).

The following is an anticipated time schedule for a two-party interference:

Event in interference	Time from last event in the interference (months)	Total time in interference (months)
Interference declared (1.611)		
Filing of preliminary statements (1.621) and preliminary motions (1.633)	3	3
Filing oppositions to preliminary motions (1.638(a))	½	3½
Filing replies to oppositions (1.638(b))	½	4
Decision on preliminary motions (1.640 (b)(1)), open preliminary statements (1.631), set times for filing motions for discovery (1.687 (c) and testimony (1.651(a))	1	5
Filing of motions for discovery (1.635, 1.651(a), 1.687(c))	1	6
Filing of opposition to motion for discovery (1.638(a))	½	7
Filing reply to opposition to motion for discovery (1.638(b))	½	7½
Decision on motion for discovery	½	8
Time for compliance with any discovery	½	8
Junior party testimony (case-in-chief; 1.672(b)):		
Testimony	3	11
Senior party cross-examination of affiants if needed	1	12
Senior party testimony (case-in-chief and case-in-rebuttal, 1.672(b)):		
Testimony	2	13½
Junior party cross-examination of affiants if needed	1	14½
Junior party testimony (case-in-rebuttal):		
Testimony	½	15
Senior party cross-examination of affiants if needed	½	15½
Filing of record (1.653(c))	1½	17
Brief for junior party (1.656)	1	18
Brief for senior party (1.656)	1	19
Reply brief for junior party (1.656)	½	19½
Final hearing (1.654)	1	20½
Decision (1.656)	2	22½

The following is an index for §§ 1.601 through 1.688:

Rule Index

Sec.
1.601 Scope of rules, definitions.
1.602 Interest in applications and patents involved in interference.
1.603 Interference between applications; subject matter of the interference.
1.604 Request for interference between applications by an applicant.
1.605 Suggestion of claim to applicant by examiner.
1.606 Interference between an application and a patent; subject matter of the interference.
1.607 Request by applicant for interference with patent.
1.608 Interference between an application and a patent; *prima facie* showing by applicant.
1.609 Preparation of interference papers by examiner.
1.610 Assignment of interference to examiner-in-chief, time period for completing interference.
1.611 Declaration of interference.
1.612 Access to applications.
1.613 Lead attorney, same attorney representing different parties in an interference, withdrawal of attorney or agent.
1.614 Jurisdiction over interference.
1.615 Suspension of *ex parte* prosecution.
1.616 Sanctions for failure to comply with rules or order.
1.617 Summary judgment against applicant.
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1.621 Preliminary statement, time for filing, notice of filing.
1.622 Preliminary statement, who made invention, where invention made.
1.623 Preliminary statement; invention made in United States.
1.624 Preliminary statement; invention made abroad.
1.625 Preliminary statement; derivation by an opponent.
1.626 Preliminary statement; earlier application.
1.627 Preliminary statement, sealing before filing, opening of statement.
1.628 Preliminary statement, correction of error.
1.629 Effect of preliminary statement.
1.630 Reliance on earlier application.
1.631 Access to preliminary statement, service of preliminary statement.
1.632 Notice of intent to argue abandonment, suppression, or concealment by opponent.
1.633 Preliminary motions.
1.634 Motion to correct inventorship.
1.635 Miscellaneous motions.
1.636 Motions, time for filing.
1.637 Content of motions.
1.638 Opposition and reply, time for filing opposition and reply.
1.639 Evidence in support of motion, opposition, or reply.
1.640 Motions, hearing and decision, redeclaration of interference, order to show cause.
1.641 Unpatentability discovered by examiner-in-chief.
1.642 Addition of application or patent to interference.
1.643 Prosecution of interference by assignee.
1.644 Petitions in interference.
1.645 Extension of time, late papers, stay of proceedings.
1.646 Service of papers, proof of service.
1.647 Translation of document in foreign language.
1.651 Setting times for discovery and taking testimony, parties entitled to take testimony.
1.652 Judgment for failure to take testimony or file record.
1.653 Record and exhibits.
1.654 Final hearing.
1.655 Matters considered in rendering a final decision.
1.656 Briefs for final hearing.
1.657 Burden of proof as to date of invention.
1.658 Final decision.
1.659 Recommendation.
1.660 Notice of reexamination, reissue, protest, or litigation.
1.661 Termination of interference after judgment.
1.662 Request for entry of adverse judgment; reissue filed by patentee.
1.663 Status of claim of defeated applicant after interference.
1.664 Action after interference.
1.665 Second interference.
1.666 Filing of interference settlement agreements.
1.671 Evidence must comply with rules.
1.672 Manner of taking testimony.
1.673 Notice of examination of witness.
1.674 Persons before whom depositions may be taken.
1.675 Examination of witness, reading and signing transcript of deposition.
1.676 Certification and filing by officer, marking exhibits.
1.677 Form of a transcript of deposition.
1.678 Transcript of deposition must be filed.
1.679 Inspection of transcript.
1.682 Official records and printed publications.
1.683 Testimony in another interference, proceeding, or action.
1.684 Testimony in a foreign country.
1.685 Errors and irregularities in depositions.
1.687 Additional Discovery.
1.688 Use of discovery.

The following is a table correlating the present rules (37 CFR 1.201 through 1.288) to the rules (37 CFR 1.601 through 1.688).

RULE CORRELATION TABLE

Old	New
1.201(a)	1.601(a).
1.201(b)	1.601 (b), (c).
1.201(c)	1.602.
1.202	None.
1.203(a)	1.603 (a), (b).
1.203(b)	1.605(a).
1.203(c)	1.605(b).
New	1.604(a).
1.203(d)	1.604(b).
1.204(a)	None.
1.204(b)	1.606(b).
1.204(c)	1.606(c).

RULE CORRELATION TABLE—Continued

Old	New
1.205(a)	1.606 (a), (b).
1.205(b)	1.607 (a), (c).
1.205(c)	1.607(d).
New	1.608(a).
1.206(a)	1.607(b).
1.207(a)	1.608.
New	1.610.
1.207(b)	1.611.
1.208	1.613.
1.211	1.614.
1.212	1.615.
New	1.616.
1.220	1.617.
New	1.618.
1.215(a)	1.621(a).
1.215(b)	1.621(b).
1.215(c)	1.629(c).
1.216(a)	1.622 (a), (b).
1.216(a) (1)-(6)	1.623(a).
1.216(b)	1.623(b), 1.624(b), 1.625(b).
1.216(c)	1.626.
1.217(a)	1.624(a), 1.625(a).
1.217(b)	1.623(a).
1.218	1.621(a).
1.219	1.627.
1.222	1.628.
1.223	1.629.
1.224	1.630.
1.225	1.640 (d), (a), and 1.651(c)(4).
1.226	1.612.
1.227	1.631.
New	1.632.
1.231	1.633, 1.634.
1.237	1.641.
1.238	1.642.
1.242	1.643.
1.243	1.635, 1.636, 1.667(b), 1.638 through 1.640.
1.244	1.644.
1.245	1.645.
1.246	1.645.
1.247	1.646.
1.248	1.646.
New	1.647.
1.251	1.651.
1.252	1.652.
1.253	1.653.
1.254	1.656.
1.255	1.656(c).
1.256	1.654.
1.257(a)	1.657.
1.257(b)	1.658 (c), (d).
1.258	1.656.
1.259	1.656.
New	1.660
1.262	1.662(a).
1.263	1.662 (a) and (d).
1.264	1.662 (b) and (c).
New	1.662(e).
1.265	1.663.
1.266	1.664.
1.267	1.665.
1.268	1.666.
1.271	1.671.
New	1.671(g).
1.272(a)	1.672 (a), (b).
1.272(b)	1.672(c).
1.272(c)	1.672 (d), (e).
1.273(a)	1.673 (a), (c), (d).
New	1.673(e).
1.273(b)	1.673(f).
1.274	1.674.
1.275	1.675.
1.276	1.676.
1.277	1.677.
1.278	1.678.
1.279	1.679.
1.281	1.645.
1.282	1.682.
1.283	1.683.
1.285	1.685
1.286	Eliminated.
1.287(a)(1)(i), (ii)	1.673(b).
1.287(a)(1)(iii)	1.673(a)
1.287(a)(2), (3)	Eliminated.
1.287(b)	Eliminated.
1.287(c)	1.687
1.287(d)(1)	1.673(c).
1.287(d)(2)	1.616
1.287(e)	1.687(d).
1.288	1.688.

Other Considerations

These rules do not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rules are in conformity with the requirements of the (1) Regulatory Flexibility Act (Pub. L. 96–354), (2) Executive Order 12291, and (3) the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

The General Counsel of the Department of Commerce has certified to the Small Business Administration that these rules will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act; Pub. L. 96–354). The rules govern the conduct of interference cases which arise in the Patent and Trademark Office. In fiscal 1983, the Patent and Trademark Office received 105,704 patent applications. During the same period, 180 interferences were declared. It is expected that the overall cost will be reduced for obtaining a patent based on applications which become involved in an interference. See a "section-by-section" analysis submitted for the Record by Representative Kastenmeier during discussion of H.R. 6286 on the floor of the House in which the following statement appears (130 Cong. Rec. H10528, columns 2 and 3):

> It is expected that interferences will become simpler, more expeditious, and less costly. Under the bill, all issues of patentability and priority which arise in an interference can be decided in a single proceeding rather than in a series of complicated *inter parte* and *ex parte* proceedings.

These rules, therefore, will have no significant economic impact on small entities.

The Patent and Trademark Office has determined that this rule is not a major rule under Executive Order 12291. The annual effect on the economy would be less than $100 million. There would be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There would be no adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

These rules do not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no record keeping or reporting requirements within the coverage of the Act are placed upon the public.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations, Conflict of interests, Courts, Inventions and patents, Lawyers.

PART 1—RULES OF PRACTICE IN PATENT CASES

For the reasons set out in the preamble and under the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, 23, 41, and 135, Part 1 of Title 37 CFR is amended as set forth below.

1. Section 1.1 is amended by adding a new paragraph (e) to read as follows:

§ 1.1 All communications to be addressed to Commissioner of Patents and Trademarks.

* * * * *

(e) Communications relating to interferences and applications or patents involved in an interference should be additionally marked "BOX INTERFERENCE."

2. Section 1.4 is amended by revising paragraph (a)(2) and reprinting the introductory text of paragraph (a) to read as follows:

§ 1.4 Nature of correspondence.

(a) Correspondence with the Patent and Trademark Office comprises:

* * * * *

(2) Correspondence in and relating to a particular application or other proceeding in the Office. See particularly the rules relating to the filing, processing, or other proceedings of national applications in Subpart B, §§ 1.31 to 1.352; of international applications in Subpart C, §§ 1.401 to 1.482; of reexamination of patents in Subpart D, §§ 1.501 to 1.570; of interferences in Subpart E, §§ 1.601 to 1.688; and of trademark applications §§ 2.11 to 2.189.

* * * * *

3. Section 1.5 is amended by adding a new paragraph (e) to read as follows:

§ 1.5 Identification of application, patent or registration.

* * * * *

(e) When a paper concerns an interference, it should state the names of the parties and the number of the interference. The name of the examiner-in-chief assigned to the interference (§ 1.610) and the name of the party filing the paper should appear conspicuously on the first page of the paper.

4. Section 1.8 is amended by adding paragraph (a)(xii) to read as follows:

§ 1.8 Certificate of mailing.

* * * * *

(xii) The filing of a paper in an interference which an examiner-in-chief orders to be filed by hand or "Express Mail."

* * * * *

5. Section 1.9 is amended by adding a new paragraph (g) to read as follows:

§ 1.9 Definitions.

* * * * *

(g) For definitions in interferences see § 1.601.

6. Section 1.11 is amended by revising paragraph (a) to read as follows:

§ 1.11 Files open to the public.

(a) After a patent has been issued, the specification, drawings and all papers relating to the case in the file of the patent are open to inspection by the general public, and copies may be obtained upon paying the fee therefor. After entry of a judgment in an interference by the Board of Patent Appeals and Interferences as to all parties, the file of any interference which involved a patent, or an application on which a patent has issued, is similarly open to public inspection and procurement of copies. See § 2.27 for trademark files.

* * * * *

§ 1.14 [Amended]

7. Section 1.14 is amended by removing from paragraph (d) the words "Board of Patent Appeals or the Board of Patent Interferences" and inserting, in their place, the words "Board of Patent Appeals and Interferences."

8. Section 1.17 is amended by revising paragraphs (e), (g), (h), and (i) to read as follows:

§ 1.17 Patent application processing fees.

* * * * *

(e) For filing a notice of appeal from the examiner to the Board of Patent Appeals and Interferences:

By a small entity (§ 1.9(f)) $57.50
By other than a small entity 115.00

* * * * *

(g) For filing a request for an oral hearing before the Board of Patent Appeals and Interferences in appeal under 35 U.S.C. 134:

By a small entity (§ 1.9(f)) $50.00
By other than a small entity 100.00

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph, $120.00.

§ 1.47—for filing by other than all the inventors or a person not the inventor.
§ 1.48—for correction of inventorship.

§ 1.182—for decision on questions not specifically provided for.
§ 1.183—to suspend the rules.
§ 1.377—for review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of patent.
§ 1.378(e)—for reconsideration of decision on petition refusing to accept delayed payment of maintenance fee in expired patent.
§ 1.644(e)—for petition in an interference.
§ 1.644(f)—for request for reconsideration of a decision on petition in an interference.
§ 1.666(c)—for late filing of interference settlement agreement.
§§ 5.12, 5.13 & 5.14—for expedited handling of foreign filing license.
§ 5.15—for changing the scope of a license.
§ 5.25—for retroactive license.

(i) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph, $60.00.

§ 1.12—for access to an assignment record.
§ 1.14—for access to an application.
§ 1.55—for entry of late priority papers.
§ 1.102—to make application special.
§ 1.103—to suspend action in application.
§ 1.177—for divisional reissues to issue separately.
§ 1.312—for amendment after payment of issue fee.
§ 1.313—to withdraw an application from issue.
§ 1.314—to defer issuance of a patent.
§ 1.334—for patent to issue to assignee, assignment recorded late.
§ 1.666(b)—for access to interference settlement agreement.

* * * * *

9. Section 1.36 is revised as follows:

§ 1.36 Revocation of power of attorney or authorization; withdrawal of attorney or agent.

A power of attorney or authorization of agent may be revoked at any stage in the proceedings of a case, and an attorney or agent may withdraw, upon application to and approval by the Commissioner. An attorney or agent, except an associate attorney or agent whose address is the same as that of the principal attorney or agent, will be notified of the revocation of the power of attorney or authorization, and the applicant or patent owner will be notified of the withdrawal of the attorney or agent. An assignment will not of itself operate as a revocation of a power or authorization previously given, but the assignee of the entire interest may revoke previous powers and be represented by an attorney or agent of the assignee's own selection. See § 1.613(d) for withdrawal of an attorney or agent of record in an interference.

10. Section 1.48 is revised as follows:

§ 1.48 Correction of inventorship.

If the correct inventor or inventors are not named in an application for patent through error without any deceptive intention on the part of the actual inventor or inventors, the application may be amended to name only the actual inventor or inventors. Such amendment must be diligently made and must be accompanied by (a) a petition including a statement of facts verified by the original named inventor or inventors establishing when the error without deceptive intention was discovered and how it occurred; (b) an oath or declaration by each actual inventor or inventors as required by § 1.63; (c) the fee set forth in § 1.17(h); and (d) the written consent of any assignee. When the application is involved in an interference, the petition shall comply with the requirements of this section and shall be accompanied by a motion under § 1.634.

§ 1.55 [Amended]

11. Section 1.55 is amended by removing from paragraph (a) "1.224" and inserting, in its place, "1.630".

12. Section 1.59 is revised as follows:

§ 1.59 Papers of application with filing date not to be returned.

Papers in an application which has received a filing date pursuant to § 1.53 will not be returned for any purpose whatever. If applicants have not preserved copies of the papers, the Office will furnish copies at the usual cost of any application in which either the requried basic filing fee (§ 1.16) or the processing and retention fee (§ 1.21(1)) has been paid. See § 1.618 for return of unauthorized and improper papers in interferences.

13. Section 1.68 is revised as follows:

§ 1.68 Declaration in lieu of oath.

Any document to be filed in the Patent and Trademark Office and which is required by any law, rule, or other regulation to be under oath may be subscribed to by a written declaration. Such declaration may be used in lieu of the oath otherwise required, if, and only if, the declarant is on the same document, warned that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001) and may jeopardize the validity of the application or any patent issuing thereon. The declarant must set forth in the body of the declaration that all statements made of the declarant's own knowledge are true and that all statements made on information and belief are believed to be true.

14. Section 1.103 is amended by revising paragraph (d) as follows:

§ 1.103 Suspension of action.

* * * * *

(d) Action on applications in which the Office has accepted a request filed under § 1.139 will be suspended for the entire pendency of these applications except for purposes relating to interference proceedings under §§ 1.601 through 1.688.

15. Section 1.122 is amended by revising paragraph (b) as follows:

§ 1.122 Entry and consideration of amendments.

* * * * *

(b) Ordinarily all amendments presented in a paper filed while the application is open to amendment are entered and considered, subsequent cancellation or correction being required of improper amendments. Untimely amendatory papers may be refused entry and consideration in whole or in part. For amendments presented during an interference see § 1.664.

§ 1.136 [Amended]

16. Section 1.136 is amended by removing "§ 1.207" and inserting, in its place, "§ 1.611" and by removing "§ 1.245" and inserting, in its place, "§ 1.645".

17. Section 1.138 is revised as follows:

§ 1.138 Express Abandonment.

An application may be expressly abandoned by filing in the Patent and Trademark Office a written declaration of abandonment signed by the applicant and the assignee of record, if any, and identifying the application. An application may also be expressly abandoned by filing a written declaration of abandonment signed by the attorney or agent of record. A registered attorney or agent acting under the provision of § 1.34(a), or of record, may also expressly abandon a prior application as of the filing date granted to a continuing application when filing such a continuing application. Express abandonment of the application may not be recognized by the Office unless it is actually received by appropriate officials in time to act thereon before the date of issue.

18. Section 1.181 is amended by revising paragraph (a) as follows:

§ 1.181 Petition to the Commissioner.

(a) Petition may be taken to the Commissioner: (1) From any action or requirement of any examiner in the *ex parte* prosecution of an application which is not subject to appeal to the Board of Patent Appeals and Interferences or to the court; (2) in cases in which a statute or the rules specify that the matter is to be determined directly by or reviewed by the

Commissioner; and (3) to invoke the supervisory authority of the Commissioner in appropriate circumstances. For petitions in interferences, see § 1.644.

* * * * *

19. The center heading preceding § 1.191 is revised to read:

Appeal to the Board of Patent Appeals and Interferences

20. Section 1.191 is amended by revising the section heading and paragraphs (a) and (c) as follows:

§ 1.191 Appeal to Board of Patent Appeals and Interferences.

(a) Every applicant for a patent or for reissue of a patent, or every owner of a patent under reexamination, any of the claims of which have been twice rejected or who has been given a final rejection (§ 1.113), may, upon the payment of the fee set forth in § 1.17(e), appeal from the decision of the examiner to the Board of Patent Appeals and Interferences within the time allowed for response.

* * * * *

(c) An appeal when taken must be taken from the rejection of all claims under rejection which the applicant or patent owner proposes to contest. Questions relating to matters not affecting the merits of the invention may be required to be settled before an appeal can be considered.

* * * * *

§ 1.194 [Amended]

21. Section 1.194 is amended by removing the words "Board of Appeals" and inserting, in their place, the words "Board of Patent Appeals and Interferences."

22. Section 1.196 is revised as follows:

§ 1.196 Decision by the Board of Patent Appeals and Interferences.

(a) The Board of Patent Appeals and Interferences, in its decision, may affirm or reverse the decision of the examiner in whole or in part on the grounds and on the claims specified by the examiner. The affirmance of the rejection of a claim on any of the grounds specified constitutes a general affirmance of the decision of the examiner on that claim, except as to any ground specifically reversed.

(b) Should the Board of Patent Appeals and Interferences have knowledge of any grounds not involved in the appeal for rejecting any appealed claim, it may include in the decision a statement to that effect with its reasons for so holding, which statement shall constitute a new rejection of the claims. When the Board of Patent Appeals and Interferences make a new rejection of an appealed claim, the appellant may exercise any one of the following three options:

(1) The appellant may submit an appropriate amendment of the claims so rejected or a showing of facts, or both, and have the matter reconsidered by the examiner in which event the application will be remanded to the examiner and the decision of the Board of Patent Appeals and Interferences shall not be considered final for the purpose of judicial review. The statement shall be binding upon the examiner unless an amendment or showing of facts not previously of record be made which, in the opinion of the examiner, overcomes the new ground for rejection stated in the decision. When appropriate, upon conclusion of proceedings on remand before the examiner, the Board of Patent Appeals and Interferences may enter an order otherwise making its decision final.

(2) The appellant may have the case reconsidered under § 1.197(b) by the Board of Patent Appeals and Interferences upon the same record. Where request for such reconsideration is made the Board of Patent Appeals and Interferences shall, if necessary, render a new decision which shall include all grounds upon which a patent is refused.

(3) The appellant may treat the decision, including the new grounds for rejection given by the Board of Patent Appeals and Interferences, as a final decision in the case.

(c) Should the decision of the Board of Patent Appeals and Interferences include an explicit statement that a claim may be allowed in amended form, appellant shall have the right to amend in conformity with such statement which shall be binding on the examiner in the absence of new references or grounds of rejection.

(d) Although the Board of Patent Appeals and Interferences normally will confine its decision to a review of rejections made by the examiner, should it have knowledge of any grounds for rejecting any allowed claim it may include in its decision a recommended rejection of the claim and remand the case to the examiner. In such event, the Board shall set a period, not less than one month, within which the appellant may submit to the examiner an appropriate amendment, a showing of facts or reasons, or both, in order to avoid the grounds set forth in the recommendation of the Board of Patent Appeals and Interferences. The examiner shall be bound by the recommendation and shall enter and maintain the recommended rejection unless an amendment or showing of facts not previously of record is filed which, in the opinion of the examiner, overcomes the recommended rejection. Should the examiner make the recommended rejection final the applicant may again appeal to the Board of Patent Appeals and Interferences. Whenever a decision of the Board of Patent Appeals and Interferences includes a remand, that decision shall not be considered a final decision. When appropriate, upon conclusion of proceedings on remand before the examiner, the Board of Patent Appeals and Interferences may enter an order otherwise making its decision final.

23. Section 1.197 is amended by revising paragraphs (a) and (b) as follows:

§ 1.197 Action following decision.

(a) After decision by the Board of Patent Appeals and Interferences, the case shall be returned to the examiner, subject to the appellant's right of appeal or other review, for such further action by the appellant or by the examiner, as the condition of the case may require, to carry into effect the decision.

(b) A single request for reconsideration or modification of the decision may be made if filed within one month from the date of the original decision, unless that decision is so modified as to become, in effect, a new decision, and the Board of Patent Appeals and Interferences so states.

* * * * *

§ 1.198 [Amended]

24. Section 1.198 is amended by removing the words "Board of Appeals" and inserting, in their place, the words "Board of Patent Appeals and Interferences."

25. The center heading preceding § 1.201 is removed.

§§ 1.201 through 1.212 [Removed]

26. Sections 1.201 through 1.212 are removed.

27. The center heading preceding § 1.215 is removed.

§§ 1.215 through 1.228 [Removed]

28. Sections 1.215 through 1.228 are removed.

29. The center heading preceding § 1.231 is removed.

§§ 1.231 through 1.238 [Removed]

30. Sections 1.231 through 1.238 are removed.

31. The center heading preceding § 1.242 is removed.

§§ 1.242 through 1.247 [Removed]

32. Sections 1.242 through 1.247 are removed.

33. A center heading preceding § 1.248 is added which reads:

Miscellaneous Provisions

34. Section 1.248 is amended by adding paragraph (c) and revising the section heading as follows:

§ 1.248 Service of Papers; manner of service; proof of service in cases other than interferences.

* * * * *

(c) See § 1.646 for service of papers in interferences.

35. The center heading preceding § 1.251 is removed.

§§ 1.251 through 1.259 [Removed]

36. Sections 1.251 through 1.259 are removed.

37. The center heading preceding § 1.261 is removed.

§§ 1.261 through 1.268 [Removed]

38. Sections 1.261 through 1.268 are removed.

39. The center heading preceding § 1.271 is removed.

§§ 1.271 through 1.288 [Removed]

40. Sections 1.271 through 1.288 are removed.

41. Section 1.292 is amended by revising paragraph (a) and adding paragraph (c) as follows:

§1.292 Public use proceedings.

(a) When a petition for the institution of public use proceedings, supported by affidavits or declarations and the fee set forth in § 1.17(j) is filed by one having information of the pendency of an application and is found, on reference to the examiner, to make a *prima facie* showing that the invention claimed in an application believed to be on file had been in public use or on sale more than one year before the filing of the application, a hearing may be had before the Commissioner to determine whether a public use proceeding should be instituted. If instituted, the Commissioner may designate an appropriate official to conduct the public use proceeding, including the setting of times for taking testimony, which shall be taken as provided by §§ 1.671 through 1.685. The petitioner will be heard in the proceedings but after decision therein will not be heard further in the prosecution of the application for patent.

* * * * *

(c) A petition for institution of public use proceedings shall not be filed by a party to an interference as to an application involved in the interference. Public use and on sale issues in an interference shall be raised by a preliminary motion under § 1.633(a).

§ 1.301 [Amended]

42. Section 1.301 is amended by removing the words "Board of Appeals" and the words "Board of Patent Interferences" and inserting, in each of their places, the words "Board of Patent Appeals and Interferences."

§ 1.302 [Amended]

43. Section 1.302 is amended by removing from paragraph (b) "1.248" and inserting, in its place, "1.646" and by removing "and other contested cases".

§ 1.303 [Amended]

44. Section 1.303 is amended by removing from paragraph (a) the words "Board of Appeals" and the words "Board of Patent Interferences" and inserting, in each of their places, the words "Board of Patent Appeals and Interferences" and by removing from paragraph (c) "1.248" and inserting, in its place, "1.646".

45. Section 1.304 is amended by revising paragraph (a) as follows:

§ 1.304 Time for appeal or civil action.

(a) The time for filing the notice and reasons of appeal to the U.S. Court of Appeals for the Federal Circuit (§ 1.302) or for commencing a civil action (§ 1.303) is sixty days from the date of the decision of the Board of Patent Appeals and Interferences. If a request for reconsideration or modification of the decision is filed within the time provided under § 1.197(b) or § 1.658(b), the time for filing an appeal or commencing a civil action shall expire at the end of the sixty-day period or thirty days after action on the request, whichever is later. Except for an appeal from or commencing a civil action after a decision of the Board of Patent Appeals and Interferences in a reexamination proceeding or an interference proceeding, the time periods set forth herein are subject to the provisions of § 1.136. See § 1.550(c) for extensions of time to appeal or commence a civil action in a reexamination proceeding. See § 1.645(a) for extensions of time to appeal or commence a civil action in an interference. An examiner-in-chief, upon a showing of excusable neglect, may extend the time for seeking judicial review of a decision of the Board of Patent Appeals and Interferences in an interference case when a request is untimely filed after expiration of the time prescribed by this section.

* * * * *

46. Section 1.322 is amended by revising paragraph (a) as follows:

§ 1.322 Certificate of correction of Office mistake.

(a) A certificate of correction under 35 U.S.C. 254 may be issued at the request of the patentee or the patentee's assignee. Such certificate will not be issued at the request or suggestion of anyone not owning an interest in the patent, nor on motion of the Office, without first notifying the patentee (including any assignee of record) and affording the patentee an opportunity to be heard. When the request relates to a patent involved in an interference, the request shall comply with the requirements of this section and shall be accompanied by a motion under § 1.635.

* * * * *

47. Section 1.323 is revised as follows:

§ 1.323 Certificate of correction of applicant's mistake.

Whenever a mistake of a clerical or typographical nature or of minor character which was not the fault of the Office, appears in a patent and a showing is made that such mistake occurred in good faith, the Commissioner may, upon payment of the fee set forth in § 1.20(a), issue a certificate, if the correction does not involve such changes in the patent as would constitute new matter or would require reexamination. A request for a certificate of correction of a patent involved in an interference shall comply with the requirements of this section and shall be accompanied by a motion under § 1.635.

48. Section 1.324 is revised as follows:

§ 1.324 Correction of inventorship in patent.

Whenever a patent is issued and it appears that the correct inventor or inventors were not named through error without deceptive intention on the part of the actual inventor or inventors, the Commissioner may, on petition of all the parties and the assignees and satisfactory proof of the facts and payment of the fee set forth in § 1.20(b), or on order of a court before which such matter is called in question, issue a certificate naming only the actual inventor or inventors. A request to correct inventorship of patent involved in an interference shall comply with the requirements of this section and shall be accompanied by a motion under § 1.634.

§ 1.550 [Amended]

49. Section 1.550 is amended by removing from paragraph (a) "Board of Appeals" and inserting, in its place, "Board of Patent Appeals and Interferences."

50. Section 1.565 is amended by revising paragraph (b) and adding paragraph (e) as follows:

§ 1.565 Concurrent office proceedings.

* * * * *

(b) If a patent in the process of reexamination is or becomes involved in litigation or a reissue application for the patent in filed or pending, the Commissioner shall determine whether or not to stay the reexamination or reissue proceeding.

* * * * *

(e) If a patent in the process of reexamination is or becomes involved in an interference, the Commissioner may stay reexamination or the interference. The Commissioner will not consider a request to stay an interference unless a motion (§ 1.635) to stay the interference has been presented to, and denied by, an examiner-in-chief and the request is filed within ten (10) days of a decision by an examiner-in-chief denying the motion for a stay or such other time as the examiner-in-chief may set.

51. A new subpart entitled "Subpart E—Interferences" is added which reads as follows:

Subpart E—Interferences

Sec.

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1.603 Interference between applications; subject matter of the interference.
1.604 Request for interference between applications by an applicant.
1.605 Suggestion of claim to applicant by examiner.
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Authority: 35 U.S.C. 6, 23, 41, and 135.

Subpart E—Interferences

§ 1.601 Scope of rules, definitions.

This subpart governs the procedure in patent interferences in the Patent and Trademark Office. This subpart shall be construed to secure the just, speedy, and inexpensive determination of every interference. For the meaning of terms in the Federal Rules of Evidence as applied to interferences, see § 1.671(c). Unless otherwise clear from the context, the following definitions apply to this subpart:

(a) "Additional discovery" is discovery to which a party may be entitled under § 1.687 in addition to discovery to which the party is entitled as a matter of right under § 1.673 (a) and (b).

(b) "Affidavit" means affidavit, declaration under § 1.68, or statutory declaration under 28 U.S.C. 1746. A transcript of an *ex parte* deposition may be used as an affidavit.

(c) "Board" means the Board of Patent Appeals and Interferences.

(d) "Case-in-chief" means that portion of a party's case where the party has the burden of going forward with evidence.

(e) "Case-in-rebuttal" means that portion of a party's case where the party presents evidence in rebuttal to the case-in-chief of another party.

(f) A "count" defines the interfering subject matter between (1) two or more applications or (2) one or more applications and one or more patents. When there is more than one count, each count shall define a separate patentable invention. Any claim of an application or patent which corresponds to a count is a claim involved in the interference within the meaning of 35 U.S.C. 135(a). A claim of a patent or application which is identical to a count is said to "correspond exactly" to the count. A claim of a patent or application

which is not identical to a count, but which defines the same patentable invention as the count, is said to "correspond substantially" to the count. When a count is broader in scope than all claims which correspond to the count, the count is a "phantom count." A phantom count is not patentable to any party.

(g) The "effective filing date" of an application or a patent is the filing date of an earlier application accorded to the application or patent under 35 U.S.C. 119, 120, or 365.

(h) In the case of an application, "filing date" means the filing date assigned to the application. In the case of a patent, "filing date" means the filing date assigned to the application which issued as the patent.

(i) An "interference" is a proceeding instituted in the Patent and Trademark Office before the Board to determine any question of patentability and priority of invention between two or more parties claiming the same patentable invention. An interference may be declared between two or more pending applications naming different inventors when, in the opinion of an examiner, the applications contain claims for the same patentable invention. An interference may be declared between one or more pending applications and one or more unexpired patents naming different inventors when, in the opinion of an examiner, any application and any unexpired patents contain claims for the same patentable invention.

(j) An "interference-in-fact" exists when at least one claim of a party which corresponds to a count and at least one claim of an opponent which corresponds to the count define the same patentable invention.

(k) A "lead" attorney or agent is a registered attorney or agent of record who is primarily responsible for prosecuting and interference on behalf of a party and is the attorney or agent whom an examiner-in-chief may contact to set times and take other action in the interference.

(l) A "party" is (1) an applicant or patentee involved in the interference or (2) a legal representative or an assignee of an applicant or patentee involved in an interference. Where acts of a party are normally performed by an attorney or agent, "party" may be construed to mean the attorney or agent. An "inventor" is the individual named as inventor in an application involved in an interference or the individual named as inventor in a patent involved in an interference.

(m) A "senior party" is the party with earliest effective filing date as to all counts or, if there is no party with the earliest effective filing date as to all counts, the party with the earliest filing date. A "junior party" is any other party.

(n) Invention "A" is the "same patentable invention" as a invention "B" when invention "A" is the same as (35 U.S.C. 102) or is obvious (35 U.S.C. 103) in view of invention "B" assuming invention "B" is prior art with respect to invention "A". Invention "A" is a "separate patentable invention" with respect to invention "B" when invention "A" is new (35 U.S.C 102) and non-obvious (35 U.S.C. 103) in view of invention "B" assuming invention "B" is prior art with respect to invention "A".

(o) "Sworn" means sworn or affirmed.

(p) "United States" means the United States of America, its territories and possessions.

§ 1.602 Interest in applications and patents involved in an interference.

(a) Unless good cause is shown, an interference shall not be declared or continued between (1) applications owned by a single party or (2) applications and an unexpired patent owned by a single party.

(b) The parties, within 20 days after an interference is declared, shall notify the Board of any and all right, title, and interest in any application or patent involved or relied upon in the interference unless the right, title, and interest is set forth in the notice declaring the interference.

(c) If a change of any right, title, and interest in any application or patent involved or relied upon in the interference occurs after notice is given declaring the interference and before the time expires for seeking judicial review of a final decision of the Board, the parties shall notify the Board of the change within 20 days of the change.

§ 1.603 Interference between applications; subject matter of the interference.

Before an interference is declared between two or more applications, the examiner must be of the opinion that there is interfering subject matter claimed in the applications which is patentable to each applicant subject to a judgment in the interference. The interfering subject matter shall be defined by one or more counts. Each count shall define a separate patentable invention. Each application must contain, or be amended to contain, at least one claim which corresponds to each count. All claims in the applications which define the same patentable invention as a count shall be designated to correspond to the count.

§ 1.604 Request for interference between applications by an applicant.

(a) An applicant may seek to have an interference declared with an application of another by (1) suggesting a proposed count and presenting a claim corresponding to the proposed count, (2) identifying the other application and, if known, a claim in the other application which corresponds to the proposed count, and (3) explaining why an interference should be declared.

(b) When an applicant presents a claim known to the applicant to define the same patentable invention claimed in a pending application of another, the applicant shall identify that pending application, unless the claim is presented in response to a suggestion by the examiner. The examiner shall notify the Commissioner of any instance where it appears an applicant may have failed to comply with the provisions of this paragraph.

§ 1.605 Suggestion of claim to applicant by examiner.

(a) The examiner may suggest that an applicant present a claim in an application for the purpose of an interference with another application or a patent. The applicant to whom the claim is suggested shall amend the application by presenting the suggested claim within a time specified by the examiner, not less than one month. Failure or refusal of an applicant to timely present the suggested claim shall be taken without further action as a disclaimer by the applicant of the invention defined by the suggested claim. At the time the suggested claim is presented, the applicant may also (1) call the examiner's attention to other claims already in the application or which are presented with the suggested claim and (2) explain why the other claims would be more appropriate to be included in any interference which may be declared.

(b) The suggestion of a claim by the examiner for the purpose of an interference will not stay the period for response to any outstanding Office action. When a suggested claim is timely presented, *ex parte* proceedings in the application will be stayed pending a determination of whether an interference will be declared.

§ 1.606 Interference between an application and a patent; subject matter of the interference.

Before an interference is declared between an application and an unexpired patent, an examiner must determine that there is interfering subject matter claimed in the

application and the patent which is patentable to the applicant subject to a judgment in the interference. The interfering subject matter will be defined by one or more counts. Each count shall define a separate patentable invention. Any application must contain, or be amended to contain, at least one claim which corresponds to each count. All claims in the application and patent which define the same patentable invention as a count shall be designated to correspond to the count. At the time an interference is initially declared (§ 1.611), a count shall not be narrower in scope than any patent claim which corresponds to the count and any single patent claim will be presumed, subject to a motion under § 1.633(c), not to contain separate patentable inventions.

§ 1.607 Request by applicant for interference with patent.

(a) An applicant may seek to have an interference declared between an application and an unexpired patent by (1) presenting a proposed count and a claim corresponding to the proposed count and, if any claim of the patent or application does not correspond exactly to the proposed count, explaining why an interference should be declared, (2) identifying the patent and indicating which claim in the application and which claim or claims of the patent correspond to the proposed count, and (3) applying the terms of the application claim corresponding to the count to the disclosure of the application.

(b) When an applicant seeks an interference with a patent, examination of the application, including any appeal to the Board, shall be conducted with special dispatch within the Patent and Trademark Office. The examiner shall determine whether there is interfering subject matter claimed in the application and the patent which is patentable to the applicant subject to a judgment in an interference. If the examiner determines that there is any interfering subject matter, an interference will be declared. If the examiner determines that there is no interfering subject matter, the examiner shall state the reasons why an interference is not being declared and otherwise act on the application.

(c) When an applicant presents a claim which corresponds exactly or substantially to a claim of a patent, the applicant shall identify the patent and the number of the patent claim, unless the claim is presented in response to a suggestion by the examiner. The examiner shall notify the Commissioner of any instance where an applicant fails to identify the patent.

(d) A notice that an applicant is seeking to provoke an interference with a patent will be placed in the file of the patent and a copy of the notice will be sent to the patentee. The identity of the applicant will not be disclosed unless an interference is declared. If a final decision is made not to declare an interference, a notice to that effect will be placed in the patent file and will be sent to the patentee.

§ 1.608 Interference between an application and a patent; prima facie showing by applicant.

(a) When the earlier of the filing date or effective filing date of an application is three months or less after the earlier of the filing date or effective filing date of a patent, the applicant, before an interference will be declared, shall file an affidavit alleging that there is a basis upon which applicant is entitled to a judgment relative to the patentee.

(b) When the earlier of the filing date or the effective filing date of an application is more than three months after the earlier of the filing date or the effective filing date under 35 U.S.C. 120 of a patent, the applicant, before an interference will be declared, shall file (1) evidence which may consist of patents or printed publications, other documents, and one or more affidavits which demonstrate that applicant is *prima facie* entitled to a judgment relative to the patentee and (2) an explanation stating with particularity the basis upon which the applicant is *prima facie* entitled to the judgment. Where the basis upon which an applicant is entitled to judgment relative to a patentee is priority of invention, the evidence shall include affidavits by the applicant, if possible, and one or more corroborating witnesses, supported by documentary evidence, if available, each setting out a factual description of acts and circumstances performed or observed by the affiant, which collectively would *prima facie* entitle the applicant to judgment on priority with respect to the earlier of the filing date or effective filing date of the patent. To facilitate preparation of a record (§ 1.653 (g) and (h)) for final hearing, an applicant should file affidavits on paper which is 8½ x 11 inches (21.8 by 27.9 cm.). The significance of any printed publication or other document which is self-authenticating within the meaning of Rule 902 of the Federal Rules of Evidence or § 1.671(d) and any patent shall be discussed in an affidavit or the explanation. Any printed publication or other document which is not self-authenticating shall be authenticated and discussed with particularity in an affidavit. Upon a showing of sufficient cause, an affidavit may be based on information and belief. If an examiner finds an application to be in condition for declaration of an interference, the examiner will consider the evidence and explanation only to the extent of determining whether a basis upon which the applicant would be entitled to a judgment relative to the patentee is alleged and, if a basis is alleged, an interference may be declared.

§ 1.609 Preparation of interference papers by examiner.

When the examiner determines that an interference should be declared, the examiner shall forward to the Board:

(a) All relevant application and patent files and

(b) A statement identifying:

(1) The proposed count or counts;

(2) The claims of any application or patent which correspond to each count, stating whether the claims correspond exactly or substantially to each count;

(3) The claims in any application which are deemed by the examiner to be patentable over any count; and

(4) Whether an applicant or patentee is entitled to the benefit of the filing date of an earlier application and, if so, sufficient information to identify the earlier application.

§ 1.610 Assignment of interference to examiner-in-chief, time period for completing interference.

(a) Each interference will be declared by an examiner-in-chief who may enter all interlocutory orders in the interference, except that only a panel consisting of at least three members of the Board shall (1) hear oral argument at final hearing, (2) enter a decision under §§1.617, 1.640(c) or (e), 1.652, 1.656(i) or 1.658 or (3) enter any other order which terminates the interference.

(b) As necessary, another examiner-in-chief may act in place of the one who declared the interference. Unless otherwise provided in this section, at the discretion of the examiner-in-chief assigned to the interference, a panel consisting of two or more members of the Board may enter interlocutory orders.

(c) Unless otherwise provided in this subpart, times for taking action by a party in the interference will be set on a case-by-case basis by the examiner-in-chief assigned to the interference. Times for taking action shall be set and the examiner-in-chief shall exercise control over the interference such that the pendency of the interference before the Board does not normally exceed two years.

(d) An examiner-in-chief may hold a conference with the parties to consider: (1) Simplification of any issues, (2) the necessity or desirability of amendments to counts, (3) the possibility of obtaining admissions of fact and genuineness of documents which will avoid unnecessary proof, (4) any limitations on the number of expert witnesses, (5) the time and place for conducting a deposition (§ 1.673(g)), and (6) any other matter as may aid in the disposition of the interference. After a conference, the examiner-in-chief may enter any order which may be appropriate.

(e) The examiner-in-chief may determine a proper course of conduct in an interference for any situation not specifically covered by this part.

§ 1.611 Declaration of interference.

(a) Notice of declaration of an interference will be sent to each party.

(b) When a notice of declaration is returned to the Patent and Trademark Office undelivered, or in any other circumstance where appropriate, an examiner-in-chief may (1) send a copy of the notice to a patentee named in a patent involved in an interference or the patentee's assignee of record in the Patent and Trademark Office or (2) order publication of an appropriate notice in the *Official Gazette*.

(c) The notice of declaration shall specify:

(1) The name and residence of each party involved in the interference;

(2) The name and address of record of any attorney or agent of record in any application or patent involved in the interference;

(3) The name of any assignee of record in the Patent and Trademark Office;

(4) The identity of any application or patent involved in the interference;

(5) Where a party is accorded the benefit of the filing date of an earlier application, the identity of the earlier application;

(6) The count or counts;

(7) The claim or claims of any application or any patent which correspond to each count; and

(8) The order of the parties.

(d) The notice of declaration may also specify the time for: (1) Filing a preliminary statement as provided in § 1.621(a); (2) serving notice that a preliminary statement has been filed as provided § 1.621(b); and (3) filing preliminary motions authorized by § 1.633, oppositions to the motions, and replies to the oppositions.

(e) Notice may be given in the *Official Gazette* that an interference has been declared involving a patent.

§ 1.612 Access to applications.

(a) After an interference is declared, each party shall have access to and may obtain copies of the files of any application set out in the notice declaring the interference, except for affidavits filed under § 1.131 and any evidence and explanation under § 1.608(b) filed separate from an amendment.

(b) After preliminary motions under § 1.633 are decided (§ 1.640(b)), each party shall have access to and may obtain copies of any affidavit filed under § 1.131 and any evidence and explanation filed under § 1.608(b) in any application set out in the notice declaring the interference.

(c) Any evidence and explanation filed under § 1.608(b) in the file of any application identified in the notice declaring the interference shall be served when required by § 1.617(b).

(d) The parties at any time may agree to exchange copies of papers in the files of any application identified in the notice declaring the interference.

§ 1.613 Lead attorney, same attorney representing different parties in an interference, withdrawal of attorney or agent.

(a) Each party may be required to designate one attorney or agent of record as the lead attorney or agent.

(b) The same attorney or agent or members of the same firm of attorneys or agents may not represent two or more parties in an interference except as may be permitted under this Chapter.

(c) An examiner-in-chief may make necessary inquiry to determine whether an attorney or agent should be disqualified from representing a party in an interference. If an examiner-in-chief is of the opinion that an attorney or agent should be disqualified, the examiner-in-chief shall refer the matter to the Commissioner. The Commissioner will make a final decision as to whether any attorney or agent should be disqualified.

(d) No attorney or agent of record in an interference may withdraw as attorney or agent of record except with the approval of an examiner-in-chief and after reasonable notice to the party on whose behalf the attorney or agent has appeared. A request to withdraw as attorney or agent of record in an interference shall be made by motion (§ 1.635).

§ 1.614 Jurisdiction over interference.

(a) The Board shall assume jurisdiction over an interference when the interference is declared under § 1.611.

(b) When the interference is declared the interference is a contested case within the meaning of 35 U.S.C. 24.

(c) The examiner shall have jurisdiction over any pending application until the interference is declared. An examiner-in-chief, where appropriate, may for a limited purpose restore jurisdiction to the examiner over any application involved in the interference.

§ 1.615 Suspension of ex parte prosecution.

(a) When an interference is declared, ex parte prosecution of an application involved in the interference is suspended. Amendments and other papers related to the application received during pendency of the interference will not be entered or considered in the interference without the consent of an examiner-in-chief.

(b) *Ex parte* prosecution as to specified matters may be continued concurrently with the interference with the consent of the examiner-in-chief.

§ 1.616 Sanctions for failure to comply with rules or order.

An examiner-in-chief or the Board may impose an appropriate sanction against a party who fails to comply with the regulations of this part or any order entered by an examiner-in-chief or the Board. An appropriate sanction may include among others entry of an order:

(a) holding certain facts to have been established in the interference;

(b) precluding a party from filing a motion or a preliminary statement;

(c) precluding a party from presenting or contesting a particular issue;

(d) precluding a party from requesting, obtaining, or opposing discovery; or

(e) granting judgment in the interference.

§ 1.617 Summary judgment against applicant.

(a) An examiner-in-chief shall review any evidence filed by an applicant under § 1.608(b) to determine if the applicant is *prima facie* entitled to a judgment relative to the patentee. If the examiner-in-chief determines that the evidence shows the applicant is *prima facie* entitled to a judgment relative to the patentee, the interference shall proceed in the normal manner under the regulations of this part. If in the opinion of the examiner-in-chief the evidence fails to show that the applicant is *prima facie* entitled to a judgment relative to the patentee, the examiner-in-chief shall, concurrently with the notice declaring the interference, enter an order stating the reasons for the opinion and directing the applicant, within a time set in the

order, to show cause why summary judgment should not be entered against the applicant.

(b) The applicant any file a response to the order and state any reasons why summary judgment should not be entered. Any request by the applicant for a hearing before the Board shall be made in the response. Additional evidence shall not be presented by the applicant or considered by the Board unless the applicant shows good cause why any additional evidence was not initially presented with the evidence filed under § 1.608(b). At the time an applicant files a response, the applicant shall serve a copy of any evidence filed under § 1.608(b) and this paragraph.

(c) If a response is not timely filed by the applicant, the Board shall enter a final decision granting summary judgment against the applicant.

(d) If a response is timely filed by the applicant, all opponents may file a statement within a time set by the examiner-in-chief. The statement may set forth views as to why summary judgment should be granted against the applicant, but the statement shall be limited to discussing why all the evidence presented by the applicant does not overcome the reasons given by the examiner-in-chief for issuing the order to show cause. Evidence shall not be filed by any opponent. An opponent may not request an oral hearing.

(e) Within a time authorized by the examiner-in-chief, an applicant may file a reply to any statement filed by any opponent.

(f) When more than two parties are involved in an interference, all parties may participate in summary judgment proceedings under this section.

(g) If a response by the applicant is timely filed, the examiner-in-chief or the Board shall decide whether the evidence submitted under § 1.608(b) and any additional evidence properly submitted under paragraph (b) of this section shows that the applicant is *prima facie* entitled to a judgment relative to the patentee. If the applicant is not *prima facie* entitled to a judgment relative to the patentee, the Board shall enter a final decision granting summary judgment against the applicant. Otherwise, an interlocutory order shall be entered authorizing the interference to proceed in the normal manner under the regulations of this part.

(h) Only an applicant who filed evidence under § 1.608(b) may request a hearing. If that applicant requests a hearing, the Board may hold a hearing prior to entry of a decision under paragraph (g) of this section. The examiner-in-chief shall set a date and time for the hearing. Unless otherwise ordered by the examiner-in-chief or the Board, the applicant and any opponent will each be entitled to no more than 30 minutes of oral argument at the hearing.

§ 1.618 Return of unauthorized papers.

(a) The Patent and Trademark Office shall return to a party any paper presented by the party when the filing of the paper is not authorized by, or is not in compliance with the requirements of, this subpart. Any paper returned will not thereafter be considered by the Patent and Trademark Office in the interference. A party may be permitted to file a corrected paper under such conditions as may be deemed appropriate by an examiner-in-chief.

(b) When presenting a paper in an interference, a party shall not submit with the paper a copy of a paper previously filed in the interference.

§ 1.621 Preliminary statement, time for filing, notice of filing.

(a) Within the time set for filing preliminary motions under § 1.633, each party may file a preliminary statement. The preliminary statement may be signed by any individual having knowledge of the facts recited therein or an attorney or agent of record.

(b) When a party files a preliminary statement the party shall also simultaneously file and serve on all opponents in the interference a notice stating that a preliminary statement has been filed. A copy of the preliminary statement need not be served until ordered by an examiner-in-chief.

§ 1.622 Preliminary statement, who made invention, where invention made.

(a) A party's preliminary statement must identify the inventor who made the invention defined by each count and must state on behalf of the inventor the facts required by paragraph (a) of §§ 1.623, 1.624, and 1.625 as may be appropriate. When an inventor identified in the preliminary statement is not an inventor named in the party's application or patent, the party shall file a motion under § 1.634 to correct inventorship.

(b) The preliminary statement shall state whether the invention was made in the United States or abroad. If made abroad, the preliminary statement shall state whether the party is entitled to the benefit of the second sentence of 35 U.S.C. 104.

§ 1.623 Preliminary statement; invention made in United States.

(a) When the invention was made in the United States or a party is entitled to the benefit of the second sentence of 35 U.S.C. 104, the preliminary statement must state the following facts as to the invention defined by each count:

(1) The date on which the first drawing of the invention was made.

(2) The date on which the first written description of the invention was made.

(3) The date on which the invention was first disclosed by the inventor to another person.

(4) The date on which the invention was first conceived by the inventor.

(5) The date on which the invention was first actually reduced to practice. If the invention was not actually reduced to practice by or on behalf of the inventor prior to the party's filing date, the preliminary statement shall so state.

(6) The date after the inventor's conception of the invention when active exercise of reasonable diligence toward reducing the invention to practice began.

(b) If a party intends to prove derivation, the preliminary statement must also comply with § 1.625.

(c) When a party alleges under paragraph (a)(1) of this section that a drawing was made, a copy of the first drawing shall be filed with and identified in the preliminary statement. When a party alleges under paragraph (a)(2) of this section that a written description of the invention was made, a copy of the first written description shall be filed with and identified in the preliminary statement. See § 1.628(b) when a copy of the first drawing or written description cannot be filed with the preliminary statement.

§ 1.624 Preliminary statement; invention made abroad.

(a) When the invention was made abroad and a party intends to rely on introduction of the invention into the United States, the preliminary statement must state the following facts as to the invention defined by each count;

(1) The date on which a drawing of the invention was first introduced into the United States.

(2) The date on which a written description of the invention was first introduced into the United States.

(3) The date on which the invention was first disclosed to another person in the United States.

(4) The date on which the inventor's conception of the invention was first introduced into the United States.

(5) The date on which an actual reduction to practice of the invention was first introduced into the United States. If an actual reduction to practice of the invention was not introduced into the United States, the preliminary statement shall so state.

(6) The date after introduction of the inventor's conception into the United

States when active exercise of reasonable diligence in the United States toward reducing the invention to practice began.

(b) If a party intends to prove derivation, the preliminary statement must also comply with § 1.625.

(c) When a party alleges under paragraph (a)(1) of this section that a drawing was introduced into the United States a copy of that drawing shall be filed with and identified in the preliminary statement. When a party alleges under paragraph (a)(2) of this section that a written description of the invention was introduced into the United States a copy of that written description shall be filed with and identified in the preliminary statement. See § 1.628(b) when a copy of the first drawing or first written description introduced in the United States cannot be filed with the preliminary statement.

§ 1.625 Preliminary statement; derivation by an opponent.

(a) When the invention was made in the United States or abroad and a party intends to prove derivation by an opponent from the party, the preliminary statement must state the following as to the invention defined by each count:

(1) The name of the opponent.

(2) The date on which the first drawing of the invention was made.

(3) The date on which the first written description of the invention was made.

(4) The date on which the invention was first disclosed by the inventor to another person.

(5) The date on which the invention was first conceived by the inventor.

(6) The date on which the invention was first communicated to the opponent.

(b) If a party intends to prove priority, the preliminary statement must also comply with § 1.623 or § 1.624.

(c) When a party alleges under paragraph (a)(2) of this section that a drawing was made, a copy of the first drawing shall be filed with and identified in the preliminary statement. When a party alleges under paragraph (a)(3) of this section that a written description of the invention was made, a copy of the first written description shall be filed with and identified in the preliminary statement. See § 1.628(b) when a first drawing or first written description cannot be filed with the preliminary statement.

§ 1.626 Preliminary statement; earlier application.

When a party does not intend to present evidence to prove a conception or an actual reduction to practice and the party intends to rely solely on the filing date of an earlier application filed in the United States or abroad to prove a constructive reduction to practice, the preliminary statement may so state and identify the earlier application with particularity.

§ 1.627 Preliminary statement, sealing before filing, opening of statement.

(a) The preliminary statement and copies of any drawing or written description shall be filed in a sealed envelope bearing only the name of the party filing the statement and the style (e.g., Jones v. Smith) and number of the interference. The sealed envelope should contain only the preliminary statement and copies of any drawing or written description. If the preliminary statement is filed through the mail, the sealed envelope should be enclosed in an outer envelope addressed to the Commission of Patents and Trademarks in accordance with § 1.1(e).

(b) A preliminary statement may be opened only at the direction of an examiner-in-chief.

§ 1.628 Preliminary statement, correction of error.

(a) A material error arising through inadvertence or mistake in connection with (1) a preliminary statement or (2) drawings or a written description submitted therewith or omitted therefrom, may be corrected by a motion (§ 1.635) for leave to file a corrected statement. The motion shall be supported by an affidavit and shall show that the correction is essential to the ends of justice and shall be accompanied by the corrected statement. The motion shall be filed as soon as practical after discovery of the error.

(b) When a party cannot attach a copy of a drawing or a written description to the party's preliminary statement as required by § 1.623(c), 1.624(c), or 1.625(c), the party (1) shall show good cause and explain in the preliminary statement why a copy of the drawing or written description cannot be attached to the preliminary statement and (2) shall attach to the preliminary statement the earliest drawing or written description made in or introduced into the United States which is available. The party shall file a motion (§ 1.635) to amend its preliminary statement promptly after the first drawing, first written description, or drawing or written description first introduced into the United States becomes available. A copy of the drawing or written description may be obtained, where appropriate, by a motion (§ 1.635) for additional discovery under §1.687 or during a testimony period.

§ 1.629 Effect of preliminary statement.

(a) A party shall be strictly held to any date alleged in the preliminary statement. Doubts as to (1) definiteness or sufficiency of any allegation in a preliminary statement or (2) compliance with formal requirements will be resolved against the party filing the statement by restricting the party to the earlier of its filing date or effective filing date or to the latest date of a period alleged in the preliminary statement as may be appropriate. A party may not correct a preliminary statement except as provided by § 1.628.

(b) Evidence which shows that an act alleged in the preliminary statement occurred prior to the date alleged in the statement shall establish only that the act occurred as early as the date alleged in the statement.

(c) If a party does not file a preliminary statement, the party:

(1) Shall be restricted to the earlier of the party's filing date or effective filing date and

(2) Will not be permitted to prove that:

(i) The party made the invention prior to the party's filing date or

(ii) Any opponent derived the invention from the party.

(d) If a party files a preliminary statement which contains an allegation of a date of first drawing or first written description and the party does not file a copy of the first drawing or written description with the preliminary statement as required by § 1.623(c), § 1.624(c), or § 1.625(c), the party will be restricted to the earlier of the party's filing date or effective filing date as to that allegation unless the party complies with § 1.628(b). The content of any drawing or written description submitted with a preliminary statement will not normally be evaluated or considered by the Board.

(e) A preliminary statement shall not be used as evidence on behalf of the party filing the statement.

§ 1.630 Reliance on earlier application.

A party shall not be entitled to rely on the filing date of an earlier application filed in the United States or abroad unless (a) the earlier application is identified (§ 1.611(c)(5)) in the notice declaring the interference or (b) the party files a preliminary motion under § 1.633 seeking the benefit of the filing date of the earlier application.

§ 1.631 Access to preliminary statement, service of preliminary statement.

(a) Unless otherwise ordered by an examiner-in-chief, concurrently with entry of a decision by the examiner-in-chief on preliminary motions filed under

§ 1.633, any preliminary statement filed under § 1.621(a) shall be opened to inspection by the senior party and any junior party who filed a preliminary statement. Within a time set by the examiner-in-chief, a party shall serve copies of its preliminary statement on every opponent who served a notice under § 1.621(b).

(b) A junior party who does not file a preliminary statement shall not have access to the preliminary statement of any other party.

(c) If an interference is terminated before the preliminary statements have been opened, the preliminary statements will remain sealed and will be returned to the respective parties who submitted the statements.

§ 1.632 Notice of intent to argue abandonment, suppression or concealment by opponent.

A notice shall be filed by a party who intends to argue that an opponent has abandoned, suppressed or concealed an actual reduction to practice (35 U.S.C. 102(g)). A party will not be permitted to argue abandonment, suppression, or concealment by an opponent unless the notice is timely filed. Unless authorized otherwise by an examiner-in-chief, a notice is timely when filed within ten (10) days of the close of the testimony-in-chief of the opponent.

§ 1.633 Preliminary Motions.

A party may file the following preliminary motions:

(a) A motion for judgment on the ground that an opponent's claim corresponding to a count is not patentable to the opponent. In determining a motion filed under this paragraph, a claim may be construed by reference to the prior art of record. A motion under this paragraph shall not be based on: (1) Priority of invention of the subject matter of a count by the moving party as against any opponent or (2) derivation of the subject matter of a count by an opponent from the moving party. See § 1.637(a).

(b) A motion for judgment on the ground that there is no interference-in-fact. A motion under this paragraph is proper only if: (1) The interference involves a design application or patent or a plant application or patent or (2) no claim of a party which corresponds to a count is identical to any claim of an opponent which corresponds to that count. See § 1.637(a).

(c) A motion to redefine the interfering subject matter by (1) adding or substituting a count, (2) amending an application claim corresponding to a count or adding a claim in the moving party's application to be designated to correspond to a count, (3) designating an application or patent claim to correspond to a count, (4) designating an application or patent claim as not corresponding to a count, or (5) requiring an opponent who is an applicant to add a claim and to designate the claim to correspond to a count. See § 1.637 (a) and (c).

(d) A motion to substitute a different application owned by a party for an application involved in the interference. See § 1.637 (a) and (d).

(e) A motion to declare an additional interference (1) between an additional application not involved in the interference and owned by a party and an opponent's application or patent involved in the interference or (2) when an interference involves three or more parties, between less than all applications and any patent involved in the interference. See § 1.637 (a) and (e).

(f) A motion to be accorded the benefit of the filing date of an earlier application filed in the United States or abroad. See § 1.637 (a) and (f).

(g) A motion to attack the benefit accorded an opponent in the notice declaring the interference of the filing date of an earlier application filed in the United States or abroad. See § 1.637 (a) and (g).

(h) When a patent is involved in an interference and the patentee has on file or files an application for reissue under § 1.171, a motion to add the application for reissue to the interference. See § 1.637 (a) and (h).

(i) When a motion is filed under paragraph (a), (b), or (g) of this section, an opponent, in addition to opposing the motion, may file a motion to redefine the interfering subject matter under paragraph (c) of this section or a motion to substitute a different application under paragraph (d) of this section.

(j) When a motion is filed under paragraph (c)(1) of this section an opponent, in addition to opposing the motion, may file a motion for benefit under paragraph (f) of this section as to the count to be added or substituted.

§ 1.634 Motion to correct inventorship.

A party may file a motion to (a) amend its application involved in an interference to correct inventorship as provided by § 1.48 or (b) correct inventorship of its patent involved in an interference as provided in § 1.324. See § 1.637(a).

§ 1.635 Miscellaneous motions.

A party seeking entry of an order relating to any matter other than a matter which may be raised under §§ 1.633 or 1.634 may file a motion requesting entry of the order. See § 1.637 (a) and (b).

§ 1.636 Motions, time for filing.

(a) A preliminary motion under § 1.633 (a) through (h) shall be filed within a time period set by an examiner-in-chief.

(b) A preliminary motion under § 1.633 (i) or (j) shall be filed within 20 days of the service of the preliminary motion under § 1.633 (a), (b), or (g) unless otherwise ordered by an examiner-in-chief.

(c) A motion under § 1.634 shall be diligently filed after an error is discovered in the inventorship of an application or patent involved in an interference unless otherwise ordered by an examiner-in-chief.

(d) A motion under § 1.635 shall be filed as specified in this subpart or when appropriate unless otherwise ordered by an examiner-in-chief.

§ 1.637 Content of motions.

(a) Every motion shall include (1) a statement of the precise relief requested, (2) a statement of the material facts in support of the motion, and (3) a full statement of the reasons why the relief requested should be granted.

(b) A motion under § 1.635 shall contain a certificate by the moving party stating that the moving party has conferred with all opposing parties in an effort in good faith to resolve by agreement the issues raised by the motion. A moving party shall indicate in the motion whether any other party plans to oppose the motion. The provisions of this paragraph do not apply to a motion to suppress evidence (§ 1.656(h)).

(c) A preliminary motion under § 1.633(c) shall explain why the interfering subject matter should be redefined.

(1) A preliminary motion seeking to add or substitute a count shall:

(i) Propose each count to be added or substituted.

(ii) When the moving party is an applicant, show the patentability to the applicant of all claims in, or proposed to be added to, the party's application which correspond to each proposed count and apply the terms of the claims to the disclosure of the party's application; when necessary a moving party applicant shall file with the motion an amendment adding any proposed claim to the application.

(iii) Identify all claims in an opponent's application which should be designated to correspond to each proposed count; if an opponent's application does not contain such a claim, the moving party shall propose a

claim to be added to the opponent's application. The moving party shall show the patentability of any proposed claims to the opponent and apply the terms of the claims to the disclosure of the opponent's application.

(iv) Designate the claims of any patent involved in the interference which define the same patentable invention as each proposed count.

(v) Show that each proposed count defines a separate patentable invention from every other count in the interference.

(vi) Be accompanied by a motion under § 1.633(f) requesting the benefit of the filing date of any earlier application filed in the United States or abroad.

(2) A preliminary motion seeking to amend an application claim corresponding to a count or adding a claim to be designated to correspond to a count shall:

(i) Propose an amended or added claim.

(ii) Show that the proposed or added claim defines the same patentable invention as the count.

(iii) Show the patentability to the applicant of each amended or added claim and apply the terms of the amended or added claim to the disclosure of the application; when necessary a moving party applicant shall file with the motion an amendment making the amended or added claim to the application.

(iv) Be accompanied by a motion under § 1.633(f) requesting the benefit of the filing date of any earlier application filed in the United States or abroad.

(3) A preliminary motion seeking to designate an application or patent claim to correspond to a count shall:

(i) Identify the claim and the count.

(ii) Show the claim defines the same patentable invention as the count.

(iii) Be accompanied by a motion under § 1.633(f) requesting the benefit of the filing date of any earlier application filed in the United States or abroad.

(4) A preliminary motion seeking to designate an application or patent claim as not corresponding to a count shall:

(i) Identify the claim and the count.

(ii) Show the claim does not define the same patentable invention as any other claim designated in the notice declaring the interference as corresponding to the count.

(5) A preliminary motion seeking to require an opponent who is an applicant to add a claim and designate the claim as corresponding to a count shall:

(i) Propose a claim to be added by the opponent.

(ii) Show the patentability to the opponent of the claim and apply the terms of the claim to the disclosure of the opponent's application.

(iii) Identify the count to which the claim shall be designated to correspond.

(iv) Show the claim defines the same patentable invention as the count to which it will be designated to correspond.

(d) A preliminary motion under § 1.633(d) to substitute a different application shall:

(1) Identify the different application.

(2) Certify that a complete copy of the file of the different application, except for documents filed under § 1.131 or § 1.608(b), has been served on all opponents.

(3) Show the patentability to the applicant of all claims in, or proposed to be added to, the different application which correspond to each count and apply the terms of the claims to the disclosure of the different application; when necessary the applicant shall file with the motion an amendment adding a claim to the different application.

(4) Be accompanied by a motion under § 1.633(f) requesting the benefit of the filing date of an earlier application filed in the United States or abroad.

(e) A preliminary motion to declare an additional interference under § 1.633(e) shall explain why an additional interference is necessary.

(1) When the preliminary motion seeks an additional interference under § 1.633(e)(1), the motion shall:

(i) Identify the additional application.

(ii) Certify that a complete copy of the file of the additional application, except for documents filed under §§ 1.131 or 1.608(b), has been served on all opponents.

(iii) Propose a count for the additional interference.

(iv) Show the patentability to the applicant of all claims in, or proposed to be added to, the additional application which correspond to each proposed count for the additional interference and apply the terms of the claims to the disclosure of the additional application; when necessary the applicant shall file with the motion an amendment adding a claim to the additional application.

(v) When the opponent is an applicant, show the patentability to the opponent of any claims in, or proposed to be added to, the opponent's application which correspond to the proposed count and apply the terms of the claims to the disclosure of the opponent's application.

(vi) When the opponent is a patentee, designate the claims of the patent which define the same patentable invention defined by the proposed count.

(vii) Show that each proposed count for the additional interference defines a separate patentable invention from all counts of the interference in which the motion is filed.

(viii) Be accompanied by a motion under § 1.633(f) requesting the benefit of the filing date of an earlier application filed in the United States or abroad.

(2) When the preliminary motion seeks an additional interference under § 1.633(e)(2), the motion shall:

(i) Identify any application or patent to be involved in the additional interference.

(ii) Propose a count for the additional interference.

(iii) When the moving party's is an applicant, show the patentability to the applicant of all claims in, or proposed to be added to, the party's application which correspond to each proposed count and apply the terms of the claims to the disclosure of the party's application; when necessary a moving party applicant shall file with the motion an amendment adding any proposed claim to the application.

(iv) Identify all claims in any opponent's application which should be designated to correspond to each proposed count; if an opponent's application does not contain such a claim, the moving party shall propose a claim to be added to the opponent's application. The moving party shall show the patentability of any proposed claims to the opponent and apply the terms of the claims to the disclosure of the opponent's application.

(v) Designate the claims of any patent involved in the interference which define the same patentable invention as each proposed count.

(vi) Show that each proposed count for the additional interference defines a separate patentable invention from all counts in the interference in which the motion is filed.

(vii) Be accompanied by a motion under § 1.633(f) requesting the benefit of the filing date of an earlier application filed in the United States or abroad.

(f) A preliminary motion for benefit under § 1.633(f) shall:

(1) Identify the earlier application.

(2) When the earlier application is an application filed in the United States, certify that a complete copy of the file of the earlier application, except for documents filed under § 1.131 or § 1.608(b), has been served on all opponents. When the earlier application is an application filed abroad, certify that a copy of the application filed abroad has been served on all opponents. If the earlier application filed abroad is not in English, the requirements of § 1.647 must also be met.

(3) Show that the earlier application constitutes a constructive reduction to practice of each count.

(g) A preliminary motion to attack benefit under § 1.633(g) shall explain, as to each count, why an opponent should not be accorded the benefit of the filing date of the earlier application.

(h) A preliminary motion to add an application for reissue under § 1.633(h) shall:

(1) Identify the application for reissue.

(2) Certify that a complete copy of the file of the application for reissue has been served on all opponents.

(3) Show the patentability of all claims in, or proposed to be added to, the application for reissue which correspond to each count and apply the terms of the claims to the disclosure of the application for reissue; when necessary a moving applicant for reissue shall file with the motion an amendment adding a claim to the application for reissue.

(4) Be accompanied by a motion under § 1.633(f) requesting the benefit of the filing date of an earlier application filed in the United States or abroad.

§ 1.638 Opposition and reply, time for filing opposition and reply.

(a) Unless otherwise ordered by an examiner-in-chief, any opposition to any motion shall be filed within 20 days after service of the motion. An opposition shall (1) identify any material fact set forth in the motion which is in dispute and (2) include an argument why the relief requested in the motion should be denied.

(b) Unless otherwise ordered by an examiner-in-chief, a reply shall be filed within 15 days after service of the opposition. A reply shall be directed only to new points raised in the opposition.

§ 1.639 Evidence in support of motion, opposition, or reply.

(a) Proof of any material fact alleged in a motion, opposition, or reply must be filed and served with the motion, oppposition, or reply unless the proof relied upon is part of the interference file or the file of any patent or application involved in the interference or any earlier application filed in the United States of which a party has been accorded or seeks to be accorded benefit.

(b) Proof may be in the form of patents, printed publications, and affidavits.

(c) When a party believes that testimony is necessary to support or oppose a preliminary motion under § 1.633 or a motion to correct inventorship under § 1.634, the party shall describe the nature of the testimony needed. If the examiner-in-chief finds that testimony is needed to decide the motion, the examiner-in-chief may grant appropriate interlocutory relief and enter an order authorizing the taking of testimony and deferring a decision on the motion to final hearing.

§ 1.640 Motions, hearing and decision, redeclaration of interference, order to show cause.

(a) A hearing on a motion may be held in the discretion of the examiner-in-chief. The examiner-in-chief shall set the date and time for any hearing. The length of oral argument at a hearing on a motion is a matter within the discretion of the examiner-in-chief. An examiner-in-chief may direct that a hearing take place by telephone.

(b) Motions will be decided by an examiner-in-chief. An examiner-in-chief may consult with an examiner in deciding motions involving a question of patentability. An examiner-in-chief may grant or deny any motion or take such other action which will secure the just, speedy, and inexpensive determination of the interference.

(1) When preliminary motions under § 1.633 are decided, the examiner-in-chief will, when necessary, set a time for filing any amendment to an application involved in the interference and for filing a supplemental preliminary statement as to any new counts involved in the interference. Failure or refusal of a party to timely present an amendment required by an examiner-in-chief shall be taken without further action as a disclaimer by that party of the invention involved. A supplemental preliminary statement shall meet the requirements specified in §§ 1.623, 1.624, 1.625, or 1.626, but need not be filed if a party states that it intends to rely on a preliminary statement previously filed under § 1.621(a). After the time expires for filing any amendment and supplemental preliminary statement, the examiner-in-chief will, if necessary, redeclare the interference.

(2) After a decision is entered or preliminary motions filed under § 1.633, a further motion under § 1.633 will not be considered except as provided by § 1.655(b).

(c) When a decision on any motion under §§ 1.633, 1.634, or 1.635 is entered which does not result in the issuance of an order to show cause under paragraph (d) of this section, a party may file a request for reconsideration within 14 days after the date of the decision. The filing of a request for reconsideration will not stay any time period set by the decision. The request for reconsideration shall specify with particularity the points believed to have been misapprehended or overlooked in rendering the decision. No opposition to a request for reconsideration shall be filed unless requested by an examiner-in-chief or the Board. A decision of single examiner-in-chief will not ordinarily be modified unless an opposition has been requested by an examiner-in-chief or the Board. The request for reconsideration shall be acted on by a panel of the Board consisting of at least three examiners-in-chief, one of whom will normally be the examiner-in-chief who decided the motion.

(d) An examiner-in-chief may issue an order to show cause why judgment should not be entered against a party when:

(1) A decision on a motion is entered which is dispositive of the interference against the party as to all counts;

(2) The party is a junior party who fails to file a preliminary statement; or

(3) The party is a junior party whose preliminary statement fails to overcome the earlier of the filing date or effective filing date of another party.

(e) When an order to show cause is issued under paragraph (d) of this section, the Board shall enter a judgment in accordance with the order unless, within 20 days after the date of the order, the party against whom the order issued filed a paper which shows good cause why judgment should not be entered in accordance with the order. Any other party may file a response to the paper within 20 days of the date of service of the paper. If the party against whom the order was issued fails to show good cause, the Board shall enter judgment against the party. If a party wishes to take testimony in response to an order to show cause, the party's response should be accompanied by a motion (§ 1.635) requesting the testimony period. See § 1.651(c)(4).

§ 1.641 Unpatentability discovered by examiner-in-chief.

During the pendency of an interference, if the examiner-in-chief becomes aware of a reason why a claim corresponding to a count may not be patentable, the examiner-in-chief may notify the parties of the reason and set a time within which each party may present its views. After considering any timely filed views, the examiner-in-chief shall decide how the interference shall proceed.

§ 1.642 Addition of application or patent to interference.

During the pendency of an interference, if the examiner-in-chief

becomes aware of an application or a patent not involved in the interference which claims the same patentable invention as a count in the interference, the examiner-in-chief may add the application or patent to the interference on such terms as may be fair to all parties.

§ 1.643 Prosecution of interference by assignee.

(a) An assignee of record in the Patent and Trademark Office of the entire interest in an application or patent involved in an interference is entitled to conduct prosecution of the interference to the exclusion of the inventor.

(b) An assignee of a part interest in an application or patent involved in a interference may file a motion (§ 1.635) for entry of an order authorizing it to prosecute the interference. The motion shall show (1) the inability or refusal of the inventor to prosecute the interference or (2) other cause why the ends of justice require that the assignee of a part interest be permitted to prosecute the interference. The examiner-in-chief may allow the assignee of a part interest to prosecute the interference upon such terms as may be appropriate.

§ 1.644 Petitions in interferences.

(a) There is no appeal to the Commissioner in an interference from a decision of an examiner-in-chief or a panel consisting of more than one examiner-in-chief. The Commissioner will not consider a petition in an interference unless:

(1) The petition is from a decision of an examiner-in-chief or a panel and the examiner-in-chief or the panel shall be of the opinion (i) that the decision involves a controlling question of procedure or an interpretation of a rule as to which there is a substantial ground for a difference of opinion and (ii) that an immediate decision on petition by the Commissioner may materially advance the ultimate termination of the interference;

(2) The petition seeks to invoke the supervisory authority of the Commissioner and is not filed prior to the decision of the Board awarding judgment and does not relate to (i) the merits of priority of invention or patentability or (ii) the admissibility of evidence under the Federal Rules of Evidence; or

(3) The petition seeks relief under § 1.183.

(b) A petition under paragraph (a)(1) of this section filed more than 15 days after the date of the decision of the examiner-in-chief or the panel may be dismissed as untimely. A petition under paragraph (a)(2) of this section shall not be filed prior to decision by the Board awarding judgment. Any petition under paragraph (a)(3) of this section shall be timely if it is made as part of, or simultaneously with, a proper motion under §§ 1.633, 1.634, or 1.635. Any opposition to a petition shall be filed within 15 days of the date of service of the petition.

(c) The filing of a petition shall not stay the proceeding unless a stay is granted in the discretion of the examiner-in-chief, the panel, or the Commissioner.

(d) Any petition must contain a statement of the facts involved and the point or points to be reviewed and the action requested. Briefs or memoranda, if any, in support of the petition or opposition shall accompany or be embodied therein. The petition will be decided on the basis of the record made before the examiner-in-chief or the panel and no new evidence will be considered by the Commissioner in deciding the petition. Copies of documents already of record in the interference shall not be submitted with the petition or opposition.

(e) Any petition under paragraph (a) of this section shall be accompanied by the petition fee set forth in § 1.17(h).

(f) Any request for reconsideration of a decision by the Commissioner shall be filed within 15 days of the decision of the Commissioner and must be accompanied by the fee set forth in § 1.17(h). No opposition to a request for reconsideration shall be filed unless requested by the Commissioner. The decision will not ordinarily be modified unless such an opposition has been requested by the Commissioner.

(g) Where reasonably possible, service of any petition, opposition, or request for reconsideration shall be such that delivery is accomplished within one working day. Service by hand or "Express Mail" complies with this paragraph.

(h) An oral hearing on the petition will not be granted except when considered necessary by the Commissioner.

(i) The Commissioner may delegate to appropriate Patent and Trademark Office employees the determination of petition under this section.

§ 1.645 Extension of time, late papers, stay of proceedings.

(a) A party may file a motion (§ 1.635) seeking an extension of time to take action in an interference, to file a notice of appeal (§§ 1.302, 1.304), or to commence a civil action (§§ 1.303, 1.304). The motion shall be filed within sufficient time to actually reach the examiner-in-chief before expiration of the time for taking action, filing the notice, or commencing the civil action. A moving party should not assume that the motion will be granted even if there is no objection by any other party. The motion will be denied unless the moving party shows good cause why an extension should be granted. The press of other business arising after an examiner-in-chief sets a time for taking action will not normally constitute good cause. A motion seeking additional time to take testimony because a party has not been able to procure the testimony of a witness shall set forth the name of the witness, any steps taken to procure the testimony of the witness, the dates on which the steps were taken, and the facts expected to be proved through the witness.

(b) Any paper belatedly filed will not be considered except upon motion (§1.635) which shows sufficient cause why the paper was not timely filed.

(c) The provisions of § 1.136 do not apply to time periods in interferences.

(d) In an appropriate circumstance, an examiner-in-chief may stay proceedings in an interference.

§ 1.646 Service of papers, proof of service.

(a) A copy of evey paper filed in the Patent and Trademark Office in an interference or an application or patent involved in the interference shall be served upon all other parties except:

(1) Preliminary statements when filed under § 1.621; preliminary statements shall be served when service is ordered by an examiner-in-chief.

(2) Certified transcripts and exhibits which accompany the transcripts filed under §§ 1.676 or 1.684; copies of transcripts shall be served as part of a party's record under § 1.653(c).

(b) Service shall be on an attorney or agent for a party. If there is no attorney or agent for the party, service shall be on the party. An examiner-in-chief may order additional service or waive service where appropriate.

(c) Unless otherwise ordered by an examiner-in-chief, or except as otherwise provided by this part, service of a paper shall be made as follows:

(1) By handing a copy of the paper to the person served.

(2) By leaving a copy of the paper with someone employed by the person at the person's usual place of business.

(3) When the person served has no usual place of business, by leaving a copy of the paper at the person's residence with someone of suitable age and discretion then residing therein.

(4) By mailing a copy of the paper by first class mail; when service is by mail

the date of mailing is regarded as the date of service.

(5) When it is shown to the satisfaction of an examiner-in-chief that none of the above methods of obtaining or serving the copy of the paper was successful, the examiner-in-chief may order service by publication of an appropriate notice in the *Official Gazette*.

(d) An examiner-in-chief may order that a paper be served by hand or "Express Mail".

(e) Proof of service must be made before a paper will be considered in an interference. Proof of service may appear on or be affixed to the paper. Proof of service shall include the date and manner of service. In the case of personal service under paragraphs (c)(1) through (c)(3) of this section, proof of service shall include the names of any person served and the person who made the service. Proof of service may be made by an acknowledgment of service by or on behalf of the person served or a statement signed by the party or the party's attorney or agent containing the information required by this section. A statement of an attorney or agent attached to, or appearing in, the paper stating the date and manner of service will be accepted as *prima facie* proof of service.

§ 1.647 Translation of document in foreign language.

When a party relies on a document in a language other than English, a translation of the document into English and an affidavit attesting to the accuracy of the translation shall be filed with the document.

§ 1.651 Setting times for discovery and taking testimony, parties entitled to take testimony.

(a) At an appropriate stage in an interference, an examiner-in-chief shall set (1) a time for filing motions (§ 1.635) for additional discovery under § 1.687(c) and (2) testimony periods for taking any necessary testimony.

(b) Where appropriate, testimony periods will be set to permit a party to:

(1) Present its case-in-chief and/or case-in-rebuttal and/or

(2) Cross-examine an opponent's case-in-chief and/or a case-in-rebuttal.

(c) A party is not entitled to take testimony to present a case-in-chief unless:

(1) The examiner-in-chief orders the taking of testimony under § 1.639(c);

(2) The party alleges in its preliminary statement a date of invention prior to the ealier of the filing date or effective filing date of the senior party;

(3) A testimony period has been set to permit an opponent to prove a date of invention prior to the earlier of the filing date or effective filing date of the party and the party has filed a preliminary statement alleging a date of invention prior to that date; or

(4) A motion (§ 1.635) is filed showing good cause why a testimony period should be set.

(d) Testimony shall be taken during the testimony periods set under paragraph (a) of this section.

§ 1.652 Judgment for failure to take testimony or file record.

If a junior party fails to timely take testimony authorized under § 1.651, or file a record under § 1.653(c), an examiner-in-chief, with or without a motion (§ 1.635) by another party, may issue an order to show cause why judgment should not be entered against the junior party. When an order is issued under this section, the Board shall enter judgment in accordance with the order unless, within 15 days after the date of the order, the junior party files a paper which shows good cause why judgment should not be entered in accordance with the order. Any other party may file a response to the paper within 15 days of the date of service of the paper. If the party against whom the order was issued fails to show good cause, the Board shall enter judgment against the party.

§ 1.653 Record and exhibits.

(a) Testimony shall consist of affidavits under § 1.672 (b) and (e), transcripts of depositions under §§ 1.672 (b) and (c), agreed statements of fact under § 1.672(f), and transcripts of interrogatories, cross-interrogatories, and recorded answers under § 1.684(c).

(b) An affidavit shall be filed as set forth in § 1.672 (b) or (e). A certified transcript of a deposition including a deposition cross-examining an affiant, shall be filed as set forth in § 1.676. An original agreed statement shall be filed as set forth in § 1.672(f). A transcript of interrogatories, cross-interrogatories, and recorded answers shall be filed as set forth under § 1.684(c).

(c) In addition to the items specified in paragraph (b) of this section and within a time set by an examiner-in-chief each party shall file three copies and serve one copy of a record consisting of:

(1) An index of the names of each witness giving the pages of the record where the direct testimony and cross-examination of each witness begins.

(2) An index of exhibits briefly describing the nature of each exhibit and giving the page of the record where each exhibit is first identified and offered into evidence.

(3) The count or counts.

(4) Each (i) affidavit, (ii) transcript, including transcripts of cross-examination of any affiant, (iii) agreed statement relied upon by the party, and (iv) transcript of interrogatories, cross-interrogatories, and recorded answers filed under paragraph (b) of this section.

(5) Each notice, official record, and publication relied upon by the party an filed under § 1.682(a).

(6) Any evidence from another interference, proceeding, or action relied upon by the party under § 1.683.

(7) Each request for an admission and the admission and each written interrogatory and the answer upon which a party intends to rely under § 1.688.

(d) The pages of the record shall be consecutively numbered.

(e) The name of each witness shall appear at the top of each page of each affidavit or transcript.

(f) The record may be typewritten or printed.

(g) When the record is printed, it may be produced by standard typographical printing or by any process capable of producing a clear black permanent image. All printed matter except on covers must appear in at least 11 point type on opaque, unglazed paper. Margins must be justified. Footnotes may not be printed in type smaller than 9 point. The pages size shall be 6½ by 11 inches (21.8 by 27.9 cm.) with type matter 6½ by 9½ inches (16.5 by 24.1 cm.). The record shall be found to lie flat when open.

(h) When the record is typewritten, it must be clearly legible on opaque, unglazed, durable paper approximately 8½ by 11 inches (21.8 by 27.9 cm.) in size (letter size). Typing shall be double-spaced on one side of the paper in not smaller than pica-type with a margin of 1½ (3.8 cm.) on the left-hand side of the page. The pages of the record shall be bound with covers at their left edges in such manner to lie flat when open in one or more volumes of convenient size (approximately 100 pages per volume is suggested). Multigraphed or otherwise reproduced copies conforming to the standards specified in this paragraph may be accepted.

(i) Each party shall file its exhibits with the record specified in paragraph (c) of this section. One copy of each documentary exhibit shall be served. Documentary exhibits shall be filed in an envelope or folder and shall not be bound as part of the record. Physical exhibits, if not filed by an officer under § 1.676(d), shall be filed with the record.

Each exhibit shall contain a label which identifies the party submitting the exhibit and an exhibit number, the style of the interference (e.g., Jones v. Smith), and the interference number. Where possible, the label should appear at the bottom right-hand corner of each documentary exhibit. Upon termination of an interference, an examiner-in-chief may return and exhibit to the party filing the exhibit. When any exhibit is returned, the examiner-in-chief shall enter an appropriate order indicating that the exhibit has been returned.

(j) Any testimony, record, or exhibit which does not comply with this section may be returned under § 1.618(a).

§ 1.654 Final hearing.

(a) At an appropriate stage of the interference, the parties will be given an opportunity to appear before the Board to present oral argument at a final hearing. An examiner-in-chief shall set a date and time for final hearing. Unless otherwise ordered by an examiner-in-chief or the Board, each party will be entitled to no more than 60 minutes of oral argument at final hearing.

(b) The opening argument of a junior party shall include a fair statement of the junior party's case and the junior party's position with respect to the case presented on behalf of any other party. A junior party may reserve a portion of its time for rebuttal.

(c) A party shall not be entitled to argue that an opponent abandoned, suppressed, or concealed an actual reduction to practice unless a notice under §1.632 was timely filed.

(d) After final hearing, the interference shall be taken under advisement by the Board. No further paper shall be filed except under § 1.658(b) or as authorized by an examiner-in-chief or the Board. No additional oral argument shall be had unless ordered by the Board.

§ 1.655 Matters considered in rendering a final decision.

(a) In rendering a final decision, the Board may consider any properly raised issue including (1) priority of invention, (2) derivation by an opponent from a party who filed a preliminary statement under §1.625, (3) patentability of the invention, (4) admissibility of evidence, (5) any interlocutory matter deferred to final hearing, and (6) any other matter necessary to resolve the interference. The Board may also consider whether any interlocutory order was manifestly erroneous or an abuse of discretion. All interlocutory orders shall be presumed to have been correct and the burden of showing manifest error or an abuse of discretion shall be on the party attacking the order.

(b) A party shall not be entitled to raise for consideration at final hearing a matter which properly could have been raised by a motion under §§ 1.633 or 1.634 unless (1) the motion was properly filed, (2) the matter was properly raised by a party in an opposition to a motion under §§1.633 or 1.634 and the motion was granted over the opposition, or (3) the party shows good cause why the issue was not timely raised by motion or opposition.

(c) To prevent manifest injustice, the Board may consider an issue even though it would not otherwise be entitled to consideration under this section.

§ 1.656 Briefs for final hearing.

(a) Each party shall be entitled to file briefs for final hearing. The examiner-in-chief shall determine the briefs needed and shall set the time and order for filing briefs.

(b) The opening brief of a junior party shall contain under appropriate headings and in the order indicated:

(1) A table of contents, with page references, and a table of cases (alphabetically arranged), statutes, and other authorities cited, with references to the pages of the brief where they are cited.

(2) A statement of the issues presented for decision in the interference.

(3) A statement of the facts relevant to the issues presented for decision with appropriate references to the record.

(4) An argument, which may be preceded by a summary, which shall contain the contentions of the party with respect to the issues to be decided, and the reasons therefor, with citations to the cases, statutes, other authorities, and parts of the record relied on.

(5) A short conclusion stating the precise relief requested.

(6) An appendix containing a copy of the counts.

(c) The opening brief of the senior party shall conform to the requirements of paragraph (b) of this section except:

(1) a statement of the issues and of the facts need not be made unless the party is dissatisfied with the statement in the opening brief of the junior party and

(2) an appendix containing a copy of the counts need not be included if the copy of the counts in the opening brief of the junior party is correct.

(d) Briefs may be printed or typewritten. If typewritten, legal-size paper may be used. The opening brief of each party in excess of 50 legal-size double-spaced typewritten pages or any other brief in excess of 25 legal-size double-spaced typewritten pages shall be printed unless a satisfactory reason be given why the brief should not be printed. Any printed brief shall comply with the requirements of § 1.853(g). Any typewritten brief shall comply with the requirements of § 1.653(h), except legal-size paper may be used and the binding and covers specified are not required.

(e) An original and three copies of each brief must be filed.

(f) Any brief which does not comply with the requirements of this section may be returned under § 1.618(a).

(g) Any party, separate from its opening brief, but filed concurrently therewith, may file an original and three copies of concise proposed findings of fact and conclusions of law. Any proposed findings of fact shall be supported by specific references to the record. Any proposed conclusions of law shall be supported by citation of cases, statutes, or other authority. Any opposing party, separate from its opening or reply brief, but filed concurrently therewith, may file a paper accepting or objecting to any proposed findings of fact or conclusions of law; when objecting, a reason must be given. The Board may adopt the proposed findings of fact and conclusions of law in whole or in part.

(h) If a party wants the Board in rendering its final decision to rule on the admissibility of any evidence, the party shall file with its opening brief an original and three copies of a motion (§ 1.635) to suppress the evidence. The provisions of § 1.637(b) do not apply to a motion to suppress under this paragraph. Any objection previously made to the admissibility of an opponent's evidence is waived unless the motion required by this paragraph is filed. An original and three copies of an opposition to the motion may be filed with an opponent's opening brief or reply brief as may be appropriate.

(i) When a junior party fails to timely file an opening brief, an order may issue requiring the junior party to show cause why the Board should not treat failure to file the brief as a concession of priority. If the junior party fails to respond within a time period set in the order, judgment may be entered against the junior party.

§ 1.657 Burden of proof as to date of invention.

A rebuttable presumption shall exist that, as to each count, the inventors made their invention in the chronological order of the earlier of their filing dates or effective filing dates. The burden of proof shall be upon a party who contends otherwise.

§ 1.658 Final decision.

(a) After final hearing, the Board shall enter a decision resolving the issues raised at final hearing. The decision may (1) enter judgment, in whole or in part, (2) remand the interference to an examiner-in-chief for further proceedings, or (3) take further action not inconsistent with law. A judgment as to a count shall state whether or not each party is entitled to a patent containing the claims in the party's patent or application which correspond to the count. When the Board enters a decision awarding judgment as to all counts, the decision shall be regarded as a final decision.

(b) Any request for reconsideration of a decision under paragraph (a) of this section shall be filed within 14 days after the date of the decision. The request for reconsideration shall specify with particularity the points believed to have been misapprehended or overlooked in rendering the decision. Any reply to a request for reconsideration shall be filed within 14 days of the date of service of the request for reconsideration. Where reasonably possible, service of the request for reconsideration shall be such that delivery is accomplished by hand or "Express Mail." The Board shall enter a decision on the request for reconsideration. If the Board shall be of the opinion that the decision on the request for reconsideration significantly modifies its original decision under paragraph (a) of this section, the Board may designate the decision on the request for reconsideration as a new decision.

(c) A judgment in an interference settles all issues which (1) were raised and decided in the interference, (2) could have been properly raised and decided in the interference by a motion under § 1.633 (a) through (d) and (f) through (j) or § 1.634 and (3) could have been properly raised and decided in an additional interference with a motion under § 1.633(e). A losing party who could have properly moved, but failed to move, under §§ 1.633 or 1.634, shall be estopped to take *ex parte* or *inter partes* action in the Patent and Trademark Office after the interference which is inconsistent with that party's failure to properly move, except that a losing party shall not be estopped with respect to any claims which correspond, or properly could have corresponded, to a count as to which that party was awarded a favorable judgment.

§ 1.659 Recommendation.

(a) Should the Board have knowledge of any ground for rejecting any application claim not involved in the judgment of the interference, it may include in its decision a recommended rejection of the claim. Upon resumption of *ex parte* prosecution of the application, the examiner shall be bound by the recommendation and shall enter and maintain the recommended rejection unless an amendment or showing of facts not previously of record is filed which, in the opinion of the examiner, overcomes the recommended rejection.

(b) Should the Board have knowledge of any ground for reexamination of a patent involved in the interference as to a patent claim not involved in the judgment of the interference, it may include in its decision a recommendation to the Commissioner that the patent be reexamined. The Commissioner will determine whether reexamination will be ordered.

(c) The Board may make any other recommendation to the examiner or the Commissioner as may be appropriate.

§ 1.660 Notice of reexamination, reissue, protest, or litigation.

(a) When a request for reexamination of a patent involved in an interference is filed, the patent owner shall notify the Board within 10 days of receiving notice that the request was filed.

(b) When an application for reissue is filed by a patentee involved in an interference, the patentee shall notify the Board within 10 days of the day the application for reissue is filed.

(c) When a protest under § 1.291 is filed against an application involved in an interference, the applicant shall notify the Board within 10 days of receiving notice that the protest was filed.

(d) A party in an interference shall notify the Board promptly of any litigation related to any patent or application involved in an interference, including any civil action commenced under 35 U.S.C. 146.

§ 1.661 Termination of interference after judgment.

After a final decision is entered by the Board, an interference is considered terminated when no appeal (35 U.S.C. 141) or other review (35 U.S.C. 146) has been or can be taken or had.

§ 1.662 Request for entry of adverse judgment; reissue filed by patentee.

(a) A party may, at any time during an interference, request and agree to entry of an adverse judgment. The filing by an applicant or patentee of a written disclaimer of the invention defined by a count, concession of priority or unpatentability of the subject matter of a count, abandonment of the invention defined by a count, or abandonment of the contest as to a count will be treated as a request for entry of an adverse judgment against the applicant or patentee as to all claims which correspond to the count. Abandonment of an application by an applicant, other than an applicant for reissue having a claim of the patent sought to be reissued involved in the interference, will be treated as a request for entry of an adverse judgment against the applicant as to all claims corresponding to all counts. Upon the filing by a party of a request for entry of an adverse judgment, the Board may enter judgment against the party.

(b) If a patentee involved in an interference files an application for reissue during the interference and omits all claims of the patent corresponding to the counts of the interference for the purpose of avoiding the interference, judgment may be entered against the patentee. A patentee who files an application for reissue other than for the purpose of avoiding the interference shall timely file a preliminary motion under § 1.633(h) or show good cause why the motion could not have been timely filed.

(c) The filing of a statutory disclaimer under 35 U.S.C. 253 by a patentee will delete any statutorily disclaimed claims from being involved in the interference. A statutory disclaimer will not be treated as a request for entry of an adverse judgment against the patentee unless it results in the deletion of all patent claims corresponding to a count.

§ 1.663 Status of claim of defeated applicant after interference.

Whenever an adverse judgment is entered as to a count against an applicant from which no appeal (35 U.S.C. 141) or other review (35 U.S.C. 146) has been or can be taken or had, the claims of the application corresponding to the count stand finally disposed of without further action by the examiner. Such claims are not open to further *ex parte* prosecution.

§ 1.664 Action after interference.

(a) After termination of an interference, the examiner will promptly take such action in any application previously involved in the interference as may be necessary. Unless entered by order of an examiner-in-chief, amendments presented during the interference shall not be entered, but may be subsequently presented by the applicant subject to the provisions of this part provided prosecution of the application is not otherwise closed.

(b) After judgment, the application of any party may be held subject to further examination, including an interference with another application.

§ 1.685 Second interference.

A second interference between the same parties will not be declared upon an application not involved in an earlier interference for an invention defined by a count of the earlier interference. See § 1.658(c).

§ 1.686 Filing of interference settlement agreements.

(a) Any agreement or understanding between parties to an interference, including any collateral agreements referred to therein, made in connection with or in contemplation of the termination of the interference, must be in writing and a true copy thereof must be filed before the termination of the interference (§ 1.661) as between the parties to the agreement or understanding.

(b) If any party filing the agreement or understanding under paragraph (a) of this section so requests, the copy will be kept separate from the file of the interference, and made available only to Government agencies on written request, or to any person upon petition accompanied by the fee set forth in § 1.17(i) and on a showing of good cause.

(c) Failure to file the copy of the agreement or understanding under paragraph (a) of this section will render permanently unenforceable such agreement or understanding and any patent of the parties involved in the interference or any patent subsequently issued on any application of the parties so involved. The Commission may, however, upon petition accompanied by the fee set forth in § 1.17(h) and on a showing of good cause for failure to file within the time prescribed, permit the filing of the agreement or understanding during the six month period subsequent to the termination of the interference as between the parties to the agreement or understanding.

§ 1.671 Evidence must comply with rules.

(a) Evidence consists of testimony and exhibits, official records and publications filed under § 1.682, evidence from another interference, proceeding, or action filed under § 1.683, and discovery relied upon under § 1.686, and the specification (including claims) and drawings of any application or patent:

(1) Involved in the interference,

(2) To which a party has been accorded benefit in the notice declaring the interference or by a preliminary motion granted under § 1.633,

(3) For which a party has sought, but has been denied, benefit by a preliminary motion under § 1.633,

(4) For which benefit was rescinded by a preliminary motion granted under § 1.633.

(b) Except as otherwise provided in this part, the Federal Rules of Evidence shall apply to interference proceedings. Those portions of the Federal Rules of Evidence relating to criminal actions, juries, and other matters not relevant to interferences shall not apply.

(c) Unless the context is otherwise clear, the following terms of the Federal Rules of Evidence shall be construed as follows:

(1) "Courts of the United States," "U.S. Magistrate," "court," "trial court," or "trier of fact" means examiner-in-chief or Board as may be appropriate.

(2) "Judge" means examiner-in-chief.

(3) "Judicial notice" means official notice.

(4) "Civil action," "civil proceeding," "action," or "trial," mean interference.

(5) "Appellate court" means United States Court of Appeals for the Federal Circuit or a United States district court when judicial review is under 35 U.S.C. 146.

(6) "Before the hearing" in Rule 703 means before giving testimony by oral deposition or affidavit.

(7) "The trial or hearing" in Rules 803(24) and 804(5) means the taking of testimony by oral deposition.

(d) Certification is not necessary as a condition to admissibility when the record is a record of the Patent and Trademark Office to which all parties have access.

(e) A party may not rely on an affidavit filed by that party during *ex parte* prosecution of an application, an affidavit under § 1.608(b), or an affidavit under § 1.639(b) unless: (1) A copy of the affidavit is or has been served and (2) a written notice is filed prior to the close of the party's relevant testimony period stating that the party intends to rely on the affidavit. When proper notice is given under this paragraph, the affidavit shall be deemed filed under § 1.672(b). A copy of the affidavit shall be included in the record (§ 1.653).

(f) The significance of documentary and other exhibits shall be discussed with particularity by a witness during oral deposition or in an affidavit.

(g) A party must file a motion (§ 1.635) seeking permission from an examiner-in-chief prior to taking testimony or seeking documents or things under 35 U.S.C. 24. The motion shall describe the general nature and the relevance of the testimony, document, or thing.

(h) Evidence which is not taken or sought and filed in accordance with this subpart shall not be admissible.

§ 1.672 Manner of taking testimony.

(a) Testimony of a witness may be taken by oral deposition or affidavit in accordance with this subpart.

(b) A party wishing to take the testimony of a witness whose testimony will not be compelled under 35 U.S.C. 24 may elect to present the testimony of the witness by affidavit or deposition. A party electing to present testimony of a witness by affidavit shall, prior to the close of the party's relevant testimony period, file and serve an affidavit of the witness or, where appropriate, a notice under § 1.671(e). To facilitate preparation of the record (§ 1.653 (g) and (h)), a party shall file an affidavit on paper which is 8½ by 11 inches (21.8 by 27.9 cm). A party shall not be entitled to rely on any document referred to in the affidavit unless a copy of the document is filed with the affidavit. A party shall not be entitled to rely on any thing mentioned in the affidavit unless the opponent is given reasonable access to the thing. A thing is something other than a document. After the affidavit is filed and within a time set by an examiner-in-chief, any opponent may file a request to cross-examine the witness on oral deposition. If any opponent requests cross-examination of an affiant, the party shall notice a deposition under § 1.673(e) for the purpose of cross-examination by any opponent. Any redirect and recross shall take place at the deposition. At any deposition for the purpose of cross-examination of a witness whose testimony is presented by affidavit, the party shall not be entitled to rely on any document or thing not mentioned in one or more of the affidavits filed under this paragraph, except to the extent necessary to conduct proper redirect. A party electing to present testimony of a witness by deposition shall notice a deposition of the witness under § 1.673(a). The party who gives notice of a deposition shall be responsible for obtaining a court reporter and for filing a certified transcript of the deposition as required by § 1.676.

(c) A party wishing to take the testimony of a witness whose testimony will be compelled under 35 U.S.C. 24 must first obtain permission from an examiner-in-chief under § 1.671(g). If permission is granted, the party shall notice a deposition of the witness under § 1.673 and may proceed under 35 U.S.C. 24. The testimony of the witness shall be taken on oral deposition.

(d) Notwithstanding the provisions of this subpart, if the parties agree in writing, a deposition may be taken before any person authorized to administer oaths, at any place, upon any notice, and in any manner, and when so taken may be used like other depositions.

(e) If the parties agree in writing, the testimony of any witness may be submitted in the form of an affidavit without opportunity for cross-examination. The affidavit of the witness shall be filed in the Patent and Trademark Office.

(f) If the parties agree in writing, testimony may be submitted in the form of an agreed statement setting forth: (1) How a particular witness would testify if called or (2) the facts in the case of one or more of the parties. The agreed statement shall be filed in the Patent and Trademark Office. See § 1.653(a).

§ 1.673 Notice of examination of witness.

(a) A party electing to take testimony of a witness by deposition shall, after complying with paragraphs (b) and (g) of this section, file and serve a single notice of deposition stating the time and place of each deposition to be taken. Depositions may be noticed for a reasonable time and place in the United States. Unless the parties agree in writing, a deposition may not be noticed for any other place without approval of an examiner-in-chief (see § 1.684). The notice shall specify the name and address of each witness and the general nature of the testimony to be given by the witness. If the name of a witness is not known, a general description sufficient to identify the witness or a particular class or group to which the witness belongs may be given instead.

(b) Unless the parties agree otherwise, a party shall serve, but not file, at least three days prior to the conference required by paragraph (g) of this section, if service is made by hand or "Express Mail," or at least ten days prior to the conference if service is made by any other means, the following:

(1) A list and copy of each document in the party's possession, custody, or control and upon which the party intends to rely at any deposition and

(2) A list of and a proffer of reasonable access to things in the party's possession, custody, or control and upon which the party intends to rely at any deposition.

(c) A party shall not be permitted to rely at any deposition on any witness not listed in the notice, or any document not served or any thing not listed as required by paragraph (b) of this section: (1) Unless all opponents agree in writing or on the record to permit the party to rely on the witness, document, or thing or (2) except upon a motion (§ 1.635) promptly filed which is accompanied by any proposed notice, additional documents, or lists and which shows sufficient cause why the notice, documents, or lists were not served in accordance with this section.

(d) Each opposing party shall have a full opportunity to attend a deposition and cross-examine. If an opposing party attends a deposition of a witness not named in a notice and cross-examines the witness or fails to object to the taking of the deposition, the opposing party shall be deemed to have waived any right to object to the taking of the deposition for lack of proper notice.

(e) A party electing to present testimony by affidavit and who is required to notice depositions for the purpose of cross-examination under § 1.672(b), shall, after complying with paragraph (g) of this section, file and serve a single notice of deposition stating the time and place of each cross-examination deposition to be taken.

(f) The parties shall not take depositions in more than one place at the same time or so nearly at the same time that reasonable opportunity to travel from one place of deposition to another cannot be had.

(g) Before serving a notice of deposition and after complying with paragraph (b) of this section, a party shall have an oral conference with all opponents to attempt to agree on a mutually acceptable time and place for conducting the deposition. A certificate shall appear in the notice stating that the oral conference took place or explaining why the conference could not be had. If the parties cannot agree to a mutually acceptable place and time for conducting the deposition at the conference, the parties shall contact an examiner-in-chief who shall then designate the time and place for conducting the deposition.

(h) A copy of the notice of deposition shall be attached to the certified transcript of the deposition filed under § 1.676(a).

§ 1.674 Persons before whom depositions may be taken.

(a) Within the United States or a territory or insular possession of the United States a deposition shall be taken before an officer authorized to administer oaths by the laws of the United States or of the place where the examination is held.

(b) Unless the parties agree in writing, the following persons shall not be competent to serve as an officer: (1) A relative or employee of a party, (2) a relative or employee of an attorney or agent of a party, or (3) a person interested, directly or indirectly, in the interference either as counsel, attorney, agent, or otherwise.

§ 1.675 Examination of witness, reading and signing transcript of deposition.

(a) Each witness before giving an oral deposition shall be duly sworn according to law by the officer before whom the deposition is to be taken.

(b) The testimony shall be taken in answer to interrogatories with any questions and answers recorded in their regular order by the officer or by some other person, who shall be subject to the provisions of § 1.674(b), in the presence of the officer unless the presence of the officer is waived on the record by agreement of all parties.

(c) All objections made at the time of the deposition to the qualifications of the officer taking the deposition, the manner of taking it, the evidence presented, the conduct of any party, or any other objection to the proceeding shall be noted on the record by the officer. Evidence objected to shall be taken subject to any objection.

(d) Unless the parties agree in writing or waive reading and signature by the witness on the record at the deposition, when the testimony has been transcribed a transcript of the deposition shall be read by the witness and then signed by the witness in the form of: (1) An affidavit in the presence of any notary or (2) a declaration.

§ 1.676 Certification and filing by officer, marking exhibits.

(a) The officer shall prepare a certified transcript of the deposition by attaching to a transcript of the deposition a copy of the notice of deposition, any exhibits to be annexed to the certified transcrip, and a certificate signed and sealed by the officer and showing:

(1) The witness was duly sworn by the officer before commencement of testimony by the witness.

(2) The transcript is a true record of the testimony given by the witness.

(3) The name of the person by whom the testimony was recorded and, if not recorded by the officer, whether the testimony was recorded in the presence of the officer.

(4) The presence or absence of any opposing party.

(5) The place where the deposition was taken and the day and hour when the deposition began and ended.

(6) The officer is not disqualified under § 1.674.

(b) If the parties waived any of the requirements of paragraph (a) of this section, the certificate shall so state.

(c) The officer shall note on the certificate the circumstances under which a witness refuses to sign a transcript.

(d) Unless the parties agree otherwise in writing or on the record at the deposition, the officer shall securely seal the certified transcript in an envelope endorsed with the style of the interference (e.g., Smith v. Jones), the interference number, the name of the witness, and the date of sealing and shall promptly forward the envelope to BOX INTERFERENCE, Commissioner of Patents and Trademarks, Washington, D.C. 20231. Documents and things produced for inspection during the examination of a witness, shall, upon request of a party, be marked for identification and annexed to the certified transcript, and may be inspected and copied by any party, except that if the person producing the documents and things desires to retain them, the person may: (1) Offer copies to be marked for identification and annexed to the certified transcript and to serve thereafter as originals if the person affords to all parties fair opportunity to verify the copies by comparison with the originals or (2) offer the originals to be marked for identification, after giving to each party an opportunity to inspect and copy them, in which event the documents and things may be used in the same manner as if annexed to the certified transcript. The exhibits shall then be filed as specified in § 1.653(i). If the weight or bulk of a document or thing shall reasonably prevent the document or thing from being annexed to the certified transcript, it shall, unless waived on the record at the deposition by all parties, be authenicated by the officer and fowarded to the Commissioner in a separate package marked and addressed as provided in this paragraph.

§ 1.677 Form of a transcript of deposition.

(a) A transcript of a deposition must be typewritten on opaque, unglazed, durable paper approximately 8½ by 11 inches (21.8 by 27.9 cm.) in size (letter size). Typing shall be double-spaced on one side of the paper in not smaller than pica-type with a margin of 1½ inches (3.8 cm.) on the left-hand side of the page. The pages must be consecutively numbered throughout the entire record of each party (§ 1.653(d)) and the name of the witness must be typed at the top of each page (§ 1.653(e)). The questions propounded to each witness must be consecutively numbered unless paper with numbered lines is used and each question must be followed by its answer.

(b) Exhibits must be numbered consecutively and each must be marked as required by § 1.653(i).

§ 1.678 Transcript of deposition must be filed.

Unless otherwise ordered by an examiner-in-chief, a certified transcript of a deposition must be filed in the Patent and Trademark Office within 45 days from the date of the deposition. If a party refuses to file a certified transcript, the examiner-in-chief or the Board may take appropriate action under § 1.616. If a party refuses to file a certified transcript, any opponent may move for leave to file the certified transcript and include a copy of the transcript as part of the opponent's record.

§ 1.679 Inspection of transcript.

A certified transcript filed in the Patent and Trademark Office may be inspected by any party. The certified transcript may not be removed from the Patent and Trademark Office for printing (§ 1.653(g)) unless authorized by an examiner-in-chief upon such terms as may be appropriate.

§ 1.682 Official records and printed publications.

(a) A party may introduce into evidence, if otherwise admissible, any official record or printed publication not identified on the record during the taking of testimony of a witness, by filing a notice offering the official record or publication into evidence. If the evidence relates to the party's case-in-chief, the notice shall be filed prior to close of testimony of the party's case-in-chief. If the evidence relates to rebuttal, the notice shall be filed prior to the close of testimony of the party's case-in-rebuttal. The notice shall: (1) Identify the official record or printed publication, (2) identify the portion thereof to be introduced in evidence, (3) indicate generally the relevance of the portion sought to be introduced in evidence, and (4) where appropriate, be accompanied by a certified copy of the official record or a copy of the printed publication (§ 1.671(d)).

(b) A copy of the notice, official record, and publication shall be served.

(c) Unless otherwise ordered by an examiner-in-chief, any written objection to the notice or to the admissibility of the official record or printed publication shall be filed within 15 days of service of the notice. See also § 1.656(h).

§ 1.683 Testimony in another interference, proceeding, or action.

(a) Prior to close of a party's appropriate testimony period or within such time as may be set by an examiner-in-chief, a party may file a motion (§ 1.635) for leave to use in an interference testimony of a witness from another interference, proceeding, or action involving the same parties, subject to such conditions as may be deemed appropriate by an examiner-in-chief. The motion shall specify with particularity the exact testimony to be used and shall demonstrate its relevance.

(b) Any objection to the admissibility of the testimony of the witness shall be made in an opposition to the motion. See also § 1.656(h).

§ 1.684 Testimony in a foreign country.

(a) An examiner-in-chief may authorize testimony of a witness to be taken in a foreign country. A party seeking to take testimony in a foreign country shall, prior to the close of the party's appropriate testimony period or within such time as may be set by an examiner-in-chief, file a motion (§ 1.635):

(1) Naming the witness.

(2) Describing the particular facts to which it is expected that the witness will testify.

(3) Stating the grounds on which the moving party believes that the witness will so testify.

(4) Demonstrating that the expected testimony is relevant.

(5) Demonstrating that the testimony cannot be taken in this country at all or cannot be taken in this country without hardship to the moving party greatly exceeding the hardship to which all opposing parties will be exposed by the taking of the testimony in a foreign country.

(6) Accompanied by an affidavit stating that the motion is made in good faith and not for the purpose of delay or harassing any party.

(7) Accompanied by written interrogatories to be asked of the witness.

(b) Any opposition under § 1.638(a) shall state any objection to the written interrogatories and shall include any cross-interrogatories to be asked of the witness. A reply under § 1.638(b) may be filed and shall be limited to stating any objection to any cross-interrogatories proposed in the opposition.

(c) If the motion is granted, the moving party shall be responsible for obtaining answers to the interrogatories and cross-interrogatories before an officer qualified to administer oaths in the foreign country under the laws of the United States or the foreign country. The officer shall prepare a transcript of the interrogatories, cross-interrogatories, and recorded answers to the interrogatories and cross-interrogatories

and shall transmit the transcript to BOX INTERFERENCE, Commissioner of Patents and Trademarks, Washington, D.C. 20231, with a certificate signed and sealed by the officer and showing:

(1) The witness was duly sworn by the officer before answering the interrogatories and cross-interrogatories.

(2) The recorded answers are a true record of the answers given by the witness to the interrogatories and cross-interrogatories.

(3) The name of the person by whom the answers were recorded and, if not recorded by the officer, whether the answers were recorded in the presence of the officer.

(4) The presence or absence of any party.

(5) The place, day, and hour that the answers were recorded.

(6) A copy of the recorded answers was read by or to the witness before the witness signed the recorded answers and that the witness signed the recorded answers in the presence of the officer. The officer shall state the circumstances under which a witness refused to read or sign recorded answers.

(7) The officer is not disqualified under § 1.674.

(d) If the parties agree in writing, the testimony may be taken before the officer on oral deposition.

(e) A party taking testimony in a foreign country shall have the burden of proving that false swearing in the giving of testimony is punishable as perjury under the laws of the foreign country. Unless false swearing in the giving of testimony before the officer shall be punishable as perjury under the laws of the foreign country where testimony is taken, the testimony shall not be entitled to the same weight as testimony taken in the United States. The weight of the testimony shall be determined in each case.

§ 1.686 Errors and irregularities in depositions.

(a) An error in a notice for taking a deposition is waived unless a motion (§ 1.635) to quash the notice is filed as soon as the error is, or could have been, discovered.

(b) An objection to a qualification of an officer taking a deposition is waived unless:

(1) The objection is made on the record of the deposition before a witness begins to testify.

(2) If discovered after the deposition, a motion (§ 1.635) to suppress the deposition is filed as soon as the objection is, or could have been, discovered.

(c) An error irregularity in the manner in which testimony is transcribed, a certified transcript is signed by a witness, or a certified transcript is prepared, signed, certified, sealed, indorsed, forwarded, filed, or otherwise handled by the officer is waived unless a motion (§ 1.635) to suppress the deposition is filed as soon as the error or irregularity is, or could have been, discovered.

(d) An objection to the competency of a witness, admissibility of evidence, manner of taking the deposition, the form of questions and answers, any oath or affirmation, or conduct of any party at the deposition is waived unless an objection is made on the record at the deposition stating the specific ground of objection. Any objection which a party wishes considered by the Board at final hearing shall be included in a motion to suppress under § 1.656(h).

(e) Nothing in this section precludes taking notice of plain errors affecting substantial rights although they were not brought to the attention of an examiner-in-chief or the Board.

§ 1.687 Additional discovery.

(a) A party is not entitled to discovery except as authorized in this subpart.

(b) Where appropriate, a party may obtain production of documents and things during cross-examination of an opponent's witness or during the testimony period of the party's case-in-rebuttal.

(c) Upon a motion (§ 1.635) brought by a party within the time set by an examiner-in-chief under § 1.651 or thereafter as authorized by § 1.645 and upon a showing that the interest of justice so requires, an examiner-in-chief may order additional discovery, as to matters under the control of a party within the scope of the Federal Rules of Civil Procedure, specifying the terms and conditions of such additional discovery.

(d) The parties may agree to discovery among themselves at any time. In the absence of an agreement, a motion for additional discovery shall not be filed except as authorized by this subpart.

§ 1.688 Use of discovery.

(a) If otherwise admissible a party may introduce into evidence, an answer to a written request for an admission or an answer to a written interrogatory obtained by discovery under § 1.687 by filing a copy of the request for admission or the written interrogatory and the answer. If the answer relates to a party's case-in-chief, the answer shall be filed prior to the close of testimony of the party's case-in-chief. If the answer relates to the party's rebuttal, the admission or answer shall be filed prior to the close of testimony of the party's case-in-rebuttal. Unless otherwise ordered by an examiner-in-chief, any written objection to the admissibility of an answer shall be filed within 15 days of service of the answer.

(b) A party may not rely upon any other matter obtained by discovery unless it is introduced into evidence under this subpart.

Dated: November 8, 1984.

Donald J. Quigg,

Acting Commissioner of Patents and Trademarks.

[FR Doc. 84-32145 Filed 12-11-84; 8:45 am]

BILLING CODE 3510-16-M

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

PATENT NOTICES

Certificates of Correction for the Week of Jan. 29, 1985

Re. 31,235	4,405,000	4,434,186	4,452,179
D. 274,776	4,407,694	4,436,873	4,454,787
4,093,859	4,410,742	4,437,757	4,455,188
4,298,626	4,411,985	4,439,123	4,456,178
4,320,488	4,413,343	4,439,504	4,456,495
4,346,227	4,417,652	4,440,701	4,456,668
4,356,329	4,419,011	4,441,814	4,456,945
4,360,826	4,420,773	4,443,691	4,457,283
4,369,398	4,420,966	4,443,714	4,458,385
4,378,354	4,421,428	4,444,081	4,458,427
4,387,713	4,424,314	4,444,179	4,459,539
4,391,183	4,426,548	4,445,191	4,459,804
4,394,383	4,427,093	4,445,586	4,462,434
4,394,657	4,427,424	4,447,660	4,462,460
4,396,524	4,429,604	4,448,566	4,466,047
4,397,795	4,431,185	4,448,686	4,466,088
4,400,467	4,432,745	4,449,739	4,467,872
4,401,509	4,433,084	4,450,787	4,473,955
4,403,416	4,433,712	4,451,770	4,481,153

Disclaimers

3,510,062.—*Donald J. Waldman*, Peoria, Ill. DELIVERY VALVE FOR ENGINE FUEL PUMP. Patent dated May 5, 1970. Disclaimer filed Dec. 1, 1983, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,281,749.—*Mark John Fogelberg*, Muncie, Ind. AUTOMATIC LOCKING CLUTCH. Patent dated July 30, 1981. Disclaimer filed Nov. 9, 1984, by the assignee, *Borg-Warner Corp.*

Hereby enters this disclaimer to claims 46, 47 and 48 of said patent.

4,356,299.—*Michael S. Cholod*, Cornwells Heights, Pa. and *Nipun M. Shah*, Fayetteville, N.C. CATALYST SYSTEM FOR A POLYETHYLENE TEREPHTHALATE POLYCONDENSATION. Patent dated Oct. 26, 1982. Disclaimer filed Aug. 8, 1983, by the assignee, *Rohm and Haas Co.*

Hereby enters this disclaimer to claims 1 through 24 of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 579-5001
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis-Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: University of Massachusetts Library	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 22, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	8-20-81
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	9-29-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	8-11-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	4-21-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—B. R. GRAY, Director	3-28-83
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	10-06-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-08-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	2-18-83
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	2-23-82
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	9-12-80
DESIGN, GROUP 290—K. L. CAGE, Director	9-17-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—(Vacant)	4-17-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	12-13-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	11-1-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	9-02-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	12-04-81

Expiration of patents: The patents within the range of numbers indicated below expire during December 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,355,744 to 3,360,799, inclusive

Plant Patents ..... Numbers 2,781 to 2,783 inclusive

REISSUES

JANUARY 29, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,815

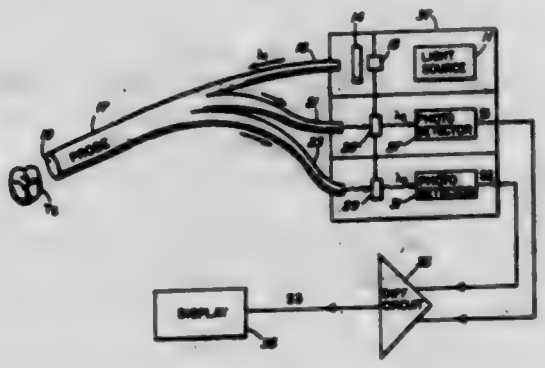
METHOD AND APPARATUS FOR DETECTING THE PRESENCE OF CARIES IN TEETH USING VISIBLE LUMINESCENCE

Robert R. Alfano, Bronx, N.Y., assignor to Philips Medical Systems, Inc., Shelton, Conn.

Original No. 4,290,433, dated Sep. 22, 1981, Ser. No. 67,771, Aug. 20, 1979. Application for reissue May 24, 1982, Ser. No. 381,170

Int. Cl.³ A61B *6/00*

U.S. Cl. 128—665 33 Claims



1. A method for detecting the presence of caries in the teeth of a person comprising:

(a) exciting a region of the teeth to be examined with a beam of light that is at least subetantially monochromatic,

(b) measuring the intensity of the visible luminescence emitted from the region at two predetermined wavelengths, one where the relative intensity dependence of the spectra is about the same for caries and non-decayed regions and the other where the intensity [increases] *changes* measurably in the presence of caries, and

(c) determining if caries is present in accordance with said measurements.

Re. 31,816

METHOD OF INCREASING THE SPECIFIC VOLUME OF TOBACCO RIBS

Waldemar Wochnowski, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Original No. 4,298,012, dated Nov. 3, 1981, Ser. No. 898,337, Apr. 20, 1978. Application for reissue Jun. 8, 1983, Ser. No. 502,155

Claims priority, application United Kingdom, Apr. 26, 1977, 17428/77

Int. Cl.³ A24B *3/18*

U.S. Cl. 131—296 12 Claims

1. A method of increasing the specific volume of tobacco ribs which are separated from tobacco leaf laminae, comprising the steps of conveying a stream of ribs along a predetermined path; agitating the ribs including subjecting the ribs to the action of steam which is conveyed upwardly across said path to cause the ribs of said stream to float in the ascending steam; condensing the steam on the external surfaces of the ribs to thereby wet such external surfaces and to cause release of heat as a result of condensation; effecting penetration of released heat and of condensate into the interior of ribs; maintaining said action for an interval of the time which suffices to cause evaporation of moisture in and resulting expansion of ribs; and rolling, severing and drying the expanded ribs immediately upon completion of said maintaining step.

Re. 31,817

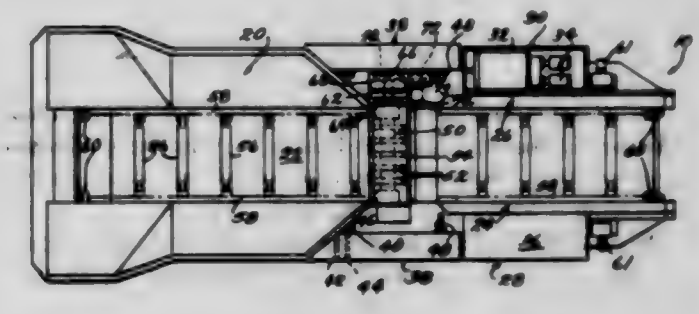
RAISIN SEPARATING DEVICE

Douglas H. Melkonian; Mark S. Melkonian, both of 6058 E. Butler, Fresno, Calif. 93727; Dennis J. Melkonian, 8336 E. North Ave., Sanger, Calif. 93657, and Suren M. Melkonian, 6058 E. Butler, Fresno, Calif. 93727

Original No. 4,267,930, dated May 19, 1981, Ser. No. 18,936, Feb. 28, 1979. Application for reissue Apr. 13, 1983, Ser. No. 484,547

Int. Cl.³ B07C *5/02*

U.S. Cl. 209—3.1 18 Claims



13. A method for separating moldy raisins from a mixed batch of moldy raisins and unspoiled raisins, comprising the steps of:

immersing said mixed batch of raisins and unspoiled raisins, a sufficient amount of time to make the moldy raisins substantially softer than the unspoiled raisins;

loading said mixed batch of raisins in a bulk mass onto a surface of an inclined, resilient moving conveyor, said conveyor having an upper portion and a lower portion;

agitating said conveyor at a predetermined frequency whereby the difference in resilience of the moldy raisins and unspoiled raisins will cause the firmer unspoiled raisins to bounce progressively off the lower portion of the inclined conveyor in a series of bounces while the softer moldy raisins move in the direction of movement of the conveyor; and

removing said softer raisins from said surface.

Re. 31,818

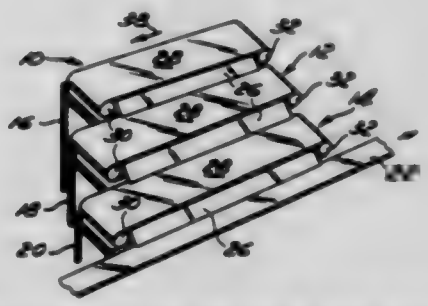
FEEDER CRUSHER

David Clouch, Bristol, Va., assignor to S & S Corporation, Cedar Bluff, Va.

Original No. 4,073,445, dated Feb. 14, 1978, Ser. No. 746,819, Dec. 1, 1976. Application for reissue May 31, 1979, Ser. No. 44,266

Int. Cl.³ B02C *13/30*

U.S. Cl. 241—101.7 18 Claims



1. A feeder-crusher machine for use in low clearance mines comprising an elongated low-profile body supported from the ground on traction means so as to be movable along the ground longitudinally, said body having side walls and a bottom and including, in end-to-end relationship along the length of the machine, a receiving section, a crushing section and a dis-

charge section; said crushing section including a rotary crusher shaft mounted transversely in said body and carrying a plurality of radial breaker arms the outer ends of which define a circle spaced from a wall of the machine; means for urging material residing on said bottom in said receiving section to the space between said circle and said wall so as to be crushed therein and for urging the resulting crushed material along the discharged section in a direction away from said crusher section; and drive means mounted on said body for rotating said crusher shaft, said drive means including a constant-speedmotor, a mechanical speed reduction unit having a high speed input driven by said motor, a low speed output driving said crusher shaft, a gear system connected between the input and the output for rotating the output at a speed proportional only to the speed of the input and a flywheel connected to rotate with said high speed input to said speed reduction unit whereby amplified torque produced by the high speed flywheel is transmitted through the gear connections in said reduction unit to the more slowly rotating crusher shaft.

Re. 31,819

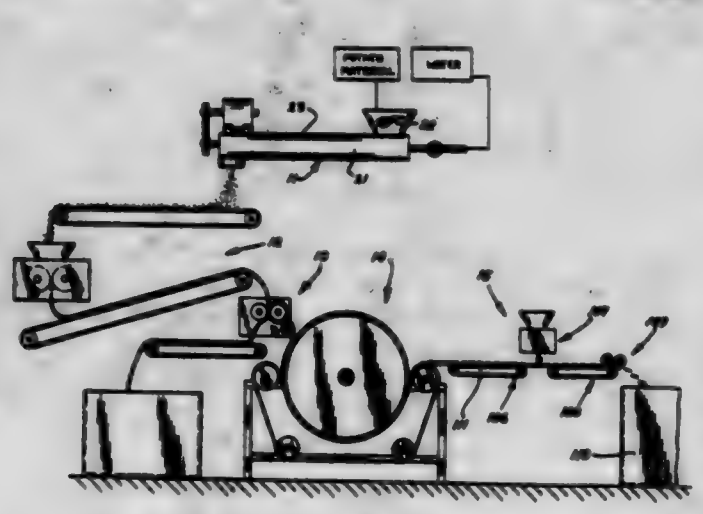
CHIP SEPARATING FROM A FRIED RIBBON

Verne E. Weiss, Wayzata; Glenn M. Campbell, Plymouth, and Gerald L. Wilson, Minneapolis, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Original No. 3,935,322, dated Jan. 27, 1976, Ser. No. 355,260, Apr. 27, 1973. Application for reissue Jun. 2, 1976, Ser. No. 692,054

Int. Cl.[3] A23L *1/01*

U.S. Cl. 426—439 12 Claims



11. A method of preparing chip-type snacks comprising:

(1) mixing a farinaceous material and water to form a farinaceous dough, said water being present in an amount sufficient to provide a dough having sufficient cohesiveness to stick together as a sheet, the moisture content of said dough being about 25 to 45 percent by weight;

(2) forming the dough into a ribbon having alternating wide portions and narrow portions;

(3) frying the ribbon of dough in an oil bath, said oil bath having an entrance and an exit, said ribbon being conveyed through said oil bath from said entrance to said exit and said ribbon extending continuously from said entrance to said exit, thereby frying said ribbon;

(4) molding said ribbon between a pair of surfaces during the drying of step (3), such that said ribbon assumes the shape of a U, the U shape being the cross section facing in the direction of advance of the ribbon, whereby chips resulting from separating the ribbon at the narrow portions will be round or oval or similarly shaped and will have a U-shaped cross section;

(5) removing the shaped fried ribbon from said oil bath and substantially changing the direction of the path of travel of said shaped fried ribbon to bend said shaped fried ribbon; and then

(6) separating the ribbon at the narrow portions to provide individual chips which are round or oval or similarly shaped and are of U-shaped cross section.

Re. 31,820

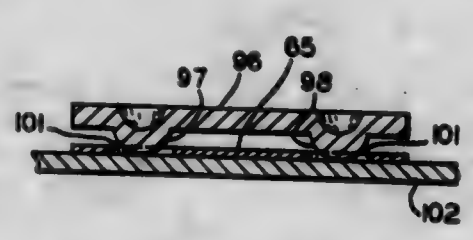
METHODS OF MAKING TORSIONAL VIBRATION ISOLATING MOTOR MOUNTING SYSTEMS AND ARRANGEMENTS

Ernest W. Litch, III, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Original No. 4,063,060, dated Dec. 13, 1977, Ser. No. 636,547, Dec. 1, 1975. Application for reissue Dec. 10, 1979, Ser. No. 101,846

Int. Cl.[3] B23K *11/14*

U.S. Cl. 219—93 18 Claims



16. A method of manufacturing a torsionally flexible vibration isolating electric motor mounting arrangement comprising first and second weldable members that cooperate as heat sink means, and a flexible mounting arm formed from a martensitic type of steel and having a motor end, said method comprising: positioning together the flexible mounting arm, and first and second weldable members, and trapping the motor end of the flexible mounting arm between the first and second weldable members; passing welding current through the first and second weldable members while urging the first and second weldable members toward one another, thereby to weld the first and second weldable members together at at least two spaced apart interfaces therebetween, and dissipating welding heat caused by the welding current along the heat sink means whereby excessive heating of the mounting arm is minimized, thereby to avoid destruction of the martensitic type of steel strength characteristics of the mounting arm.

PLANT PATENTS

GRANTED JANUARY 29, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,396

CLIMBER ROSE PLANT—METZALITAF VARIETY

Marie L. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Jun. 28, 1983, Ser. No. 508,717
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—2 1 Claim

1. A new and distinct variety of Climber rose plant, substantially as illustrated and described, characterized particularly by (a) a vigorous well branched growth habit with long arching canes, (b) buds which open into extremely attractive relatively large blossoms of a richly colored yellow-rouge blend, and (c) attractive leathery and glossy foliage of deep green coloration.

5,397

MINIATURE ROSE PLANT CV AROPRAWN

Jack E. Christensen, Ontario, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Jun. 10, 1983, Ser. No. 503,047
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of rose plant of the hybrid miniature class, substantially as herein shown and described, and being especially characterized in that its consistently classically formed flowers are produced in good proportion to the foliage and plant; its abundant and nearly continual production of flowers borne both singly and in clusters, well above the foliage; its consistently low, round, well-branched bush; its attractive and abundant semi-glossy foliage clothes even the lower branches and in its unique petal coloration of soft cream edge with a delicate pink.

5,398

ROSE PLANT CV. AROWEDYE

Jack E. Christensen, and Herbert C. Swim, both of Ontario, Calif., assignors to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Jun. 10, 1983, Ser. No. 503,046
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—11 1 Claim

1. A new and distinct variety of rose plant of the Hybrid Tea class, substantially as herein shown and described, being particularly characterized by large pointed buds that are usually produced singly on long strong stems; its clear yellow coloration lasts throughout the life of the bloom and longer than most other yellow roses; its large blooms open very slowly and are uniquely (for yellow rose cultivars) long-lasting in the garden and in the vase; it is significantly more vigorous than most other yellow roses and provides an attractive, easy-to-grow garden specimen; its flowering stems are long and low-thorned, and it has an abundance of large foliage during the growing season.

5,399

ROSE PLANT CV. AROJECHS

Jack E. Christensen, and Herbert C. Swim, both of Ontario, Canada, assignors to Armstrong Nurseries, Inc., Ontario, Canada

Filed Jun. 10, 1983, Ser. No. 503,045
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—22 1 Claim

1. A new and distinct variety of Floribunda rose plant cv. Arojechs, substantially as herein shown and described, and being especially characterized in the unique multicoloration of the flowers which is basically yellow blushing to orange and finishing red; in the abundance of its glossy foliage, which covers the entire bush; in the abundance and nearly continuous production of flowers distributed well over the tall bush, in its ability to continue to flower despite the presence of maturing hips, and in its high level of disease resistance and overall vigor.

PATENTS

GRANTED JAN. 29, 1985

ERRATA

For CLASS	See PATENT NO.
052–023	4,495,843
297–118	4,495,587
128–419	4,495,917
128–130	4,495,934
384–474	4,496,199
225–065	4,496,276
273–249	4,496,327
534–794	4,496,480
534–579	4,496,481
534–577	4,496,482
514–012	4,496,521
514–019	4,496,540
514–002	4,496,541
514–002	4,496,542
514–011	4,496,543
514–013	4,496,544
514–016	4,496,545
514–029	4,496,546
514–025	4,496,547
514–027	4,496,548
514–027	4,496,549
514–054	4,496,550
514–063	4,496,551
514–147	4,497,552
514–166	4,496,553
514–179	4,496,554
514–182	4,496,555
514–178	4,496,556
514–211	4,496,557
514–213	4,496,558
514–188	4,496,559
514–204	4,496,560
514–209	4,496,561
514–207	4,496,562
514–222	4,496,563
514–237	4,496,564
514–222	4,496,565
514–254	4,496,566
514–272	4,496,567
514–301	4,496,568
514–311	4,496,569
514–282	4,496,570
514–340	4,496,571
514–337	4,496,572
514–344	4,496,573
514–195	4,496,574
514–390	4,496,575

(ERRATA—Continued)

For CLASS	See PATENT NO.
514–389	4,496,576
514–392	4,496,577
514–423	4,496,578
514–411	4,496,579
514–443	4,496,580
514–438	4,496,581
514–450	4,496,582
428–288	4,496,583
514–510	4,496,584
514–514	4,496,585
514–531	4,496,586
514–573	4,496,587
514–564	4,496,588
514–565	4,496,589
514–646	4,496,590
514–477	4,496,591
562–443	4,496,703
548–455	4,496,719
337–006	4,496,919

GRANTED JANUARY 29, 1985

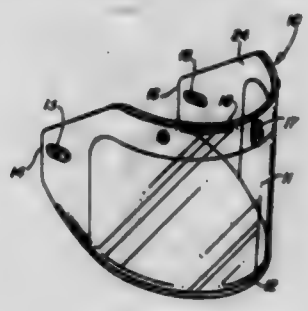
GENERAL AND MECHANICAL

4,495,657

HELMET SHIELD APPARATUS

William P. Bay, Rte. 1, Box 53, Ormond Beach, Fla. 32074

Filed Sep. 30, 1982, Ser. No. 428,682
Int. Cl.³ A61F 9/04; A63B 71/10
U.S. Cl. 2—10 11 Claims



1. A helmet snap on shield comprising in combination:
a transparent shield shaped to fit onto a helmet and having two sides and a top, bottom and two end edges;
a polymer center snap fastener portion formed in said shield adjacent the top edge of said shield; and
a pair of side polymer snap fastener portions formed in said shield, one located adjacent each end side edge of said shield, each said side polymer snap fastener portion having an elongated groove having an elongated lip formed along each elongated edge of said groove and protruding over a portion of said groove, said elongated lips having a predetermined shape to receive a male snap fastener portion therein along said elongated groove, said pair of side polymer snap fastener portions having a back portion thereto protruding from the front of said transparent shield, whereby said helmet shield can be fitted to different helmets having male fastener portions in different positions.

4,495,658

BIB HAVING A DUPLEX REFASTENABLE TAPE-TAB FASTENER

David M. Moret, and Nicholas A. Ahr, both of Cincinnati, Ohio, assignors to The Procter and Gamble Company, Cincinnati, Ohio

Filed Feb. 10, 1983, Ser. No. 465,237
Int. Cl.³ A41B 13/10
U.S. Cl. 2—49 R 10 Claims



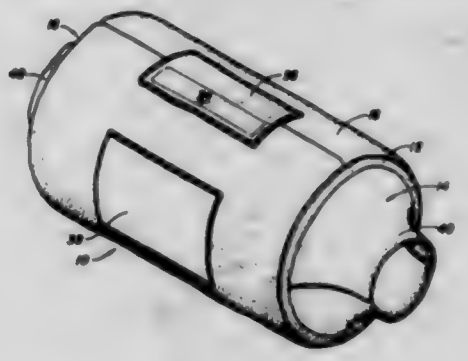
2. A bib comprising a body member of sheet material having a front surface and a back surface, two separability members of sheet material each having a front face and a back face, and an adhesive-faced tape-tab fastener, said body member being comprised of material which obviates refastenable application of said tape-tab fastener directly to the front surface of said body member, said body member having a neck-accommodating aperture disposed adjacent the top end thereof and having a cut extending from the edge defining said aperture to an adjacent outer edge of said body member, said separability members comprising material which enables oppositely disposed end portions of said tape-tab fastener to be refastenably adhered to said from faces, said separability members being non-releasably secured to said front surface of said body member and so disposed that they are on opposite sides of said cut and adjacent thereto, said tape-tab fastener having one surface coated with an adhesive which enables refastenable adhesion to said front faces of said separability members, and said tape-tab fastener being configured and disposed to bridge across said cut and to bridge between said separability members when said end portions of said tape-tab fastener are adhesively secured to said front faces thereof.

4,495,659

COLD-WEATHER MUFF

Herman Madnick, and Ralph F. Goldman, both of Framingham, Mass., assignors to Multi-Tech Corporation, Natick, Mass.

Filed Nov. 1, 1983, Ser. No. 547,754
Int. Cl.³ A41D 5/00
U.S. Cl. 2—66 14 Claims



1. A cold-weather muff, comprising:
first means defining a generally cylindrical insulative tube having a longitudinally extending channel and opened ends;
second means disposed in said longitudinally extending channel for providing a left hand receiving pocket having an open end in communication with one of said opened ends of said insulative tube and having a sealed end terminating inside said longitudinally extending channel;
third means disposed in said longitudinally extending channel for providing a right hand receiving pocket having an open end in communication with the other one of said opened ends of said insulative tube and having a sealed end terminating inside said longitudinally extending channel; and
fourth means disposed in said longitudinally extending channel for providing a chamber intermediate said left hand receiving and right hand receiving pockets dimensioned to accept a chemical heating element.

4,495,660

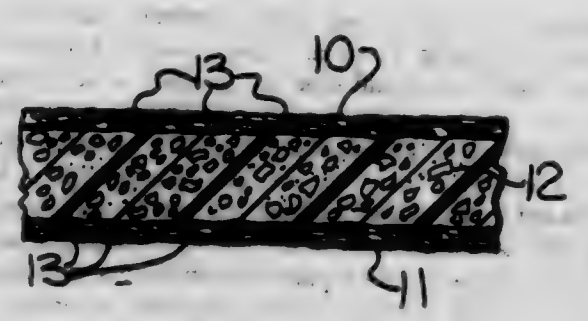
NECK GARMENT

Sharon M. Hayden, 14448 Garden, Livonia, Mich. 48154

Filed Apr. 14, 1983, Ser. No. 484,898
Int. Cl.³ A41D 23/00
U.S. Cl. 2—91 4 Claims

1. A garment for insulating the head, neck, chest and shoulder areas of a person, said garment comprising a muffler portion and an integrally depending apron portion formed of a single piece of elastically stretchable material, said single piece of elastically stretchable material having two edges disposed substantially parallel to each other along said muffler portion of said garment and arcuately diverging away from each other

along said apron portion of said garment when laid open flat, said garment further comprising a set of inter-engageable fastening means, wherein each portion of said set of fastening



means is disposed proximate one of said edges of said piece of material and extends across substantially the entire distance thereof such that engagement of said fastening means holds said piece of material in a tubular configuration.

4,495,661

COMPOSITE INTERLINING MATERIAL

Dattatraya V. Kamat, Yardley, Pa., assignor to Crown Textile Company, Jenkintown, Pa.

Filed Mar. 28, 1983, Ser. No. 479,441
Int. Cl.³ A41D 27/02
U.S. Cl. 2—97 5 Claims



1. A garment panel comprising a base fabric cut to the desired shape for being connected to other panels to form the garment, and a bulky and lightweight composite interlining material attached to the inner surface of said base fabric for providing bulk and durability thereto, said interlining material comprising a first outside layer of fabric, a second outside layer of fabric, at least one of said outside layers of fabric comprising a nonwoven batt of fibers, a middle layer of foam material sandwiched between said first and second outside layers, and means adhesively connecting the adjacent surfaces of said first and second outside layers of fabric to the opposed surfaces of said middle layer of foam material to form the composite interlining material, the total weight of said composite interlining material being within the range of approximately three to seven ounces per square yard, said foam material providing bulk and resiliency to said interlining material, and said first and second outside layers of fabric providing smooth and nonabrasive surfaces to said interlining material and while restricting the normal tendency of said foam material to stretch and tear.

4,495,662

NIGHTTIME GARMENT FOR OSTOMY POUCH USER

Janine Miller, 43 Ardale Rd., Paramus, N.J. 07652

Filed Sep. 24, 1982, Ser. No. 423,161
Int. Cl.³ A41D 1/14, 27/20; A61F 5/44
U.S. Cl. 2—311 9 Claims

1. A nighttime garment to be worn by a person for concealing an ostomy pouch used by the person, the ostomy pouch having a neck, the garment comprising:

a wrap-around skirt-like member including a waist portion and a depending skirt portion, the skirt portion having an inner surface and an opposite outer surface;

a pocket on the inner surface;

securing means at the waist portion for securing the skirt-like member at the waist of the person, with the skirt-like member wrapped around the person, the inner surface confronting the person, and the pocket juxtaposed with the ostomy pouch;



an opening in the pocket for passing the ostomy pouch therethrough; and

a closure for selectively closing at least a portion of the opening, while a further portion of the opening remains unclosed, for securing the ostomy pouch within the pocket, concealed behind the outer surface of the skirt portion, with the ostomy pouch resting in the pocket and the neck of the ostomy pouch extending through the unclosed further portion of the opening.

4,495,663

STRAP FOR USE WITH DIVING GOGGLES

Steve Shieh, 2-4th Fl. 13, Lane 118, Chung Ching S. Rd., Sec. 1, Taipei, Taiwan (100)

Filed Aug. 20, 1982, Ser. No. 410,179
Int. Cl.³ A42B 1/24; A61F 9/02; A63B 33/00
U.S. Cl. 2—422 1 Claim

1. A strap for use with a pair of diving goggles and an aspiration pipe, the strap comprising:

an elongated member having first and second ends releasably connected to the pair of goggles, each end having an upper and a lower edge;

an arm integrally connected to both the upper and the lower edges of one of the ends of the strap, the longitudinal axes of the arms being coextensive with each other and disposed obliquely with respect to the upper and lower edges; and

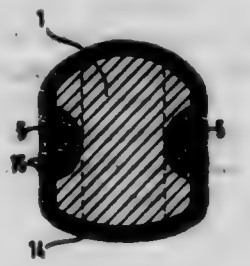
a ring integrally attached to the free end of each arm, the rings being adapted to support the aspiration pipe at an oblique angle relative to the strap when the rings are at substantially right angles to the arms so the aspiration pipe will in use tend to be substantially perpendicular to water level to minimize the chance of water entering the open end of the aspiration pipe.

4,495,664

TITANIUM OR TITANIUM ALLOY PIN FOR CEMENT-FREE FIXING IN A LONG BONE TO FORM A PROSTHESIS

Daniel Blanquaert, Paris, France, assignor to Caraver, Paris, France

Filed Jul. 28, 1982, Ser. No. 402,699
Claims priority, application France, Jul. 30, 1981, 81 14841
Int. Cl.³ A61F 1/04, 5/04
U.S. Cl. 3—1.913 6 Claims



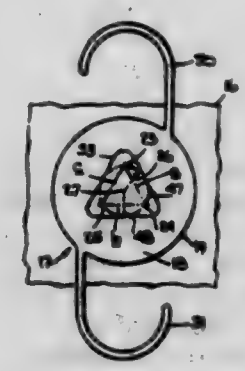
1. A pin of titanium or titanium alloy for cement-free fixing in a long bone to form a prosthesis of a joint or for bone repair, surrounded by a lattice of titanium wire with a mesh size of at least 0.3 mm, wherein said pin and said lattice are coated with a coating of titanium oxide which protects them against long-term corrosion, and said lattice is further coated with an outer coating of a biodegradable and biocompatible material having a low modulus of elasticity and wherein said coating of said biodegradable and biocompatible material extends 0.3 to 1.5 mm beyond the envelope of said lattice thereby protecting said lattice during the fitting of the pin into the bone repair site.

4,495,665

POSTERIOR CHAMBER INTRAOCULAR LENS AND METHOD OF MAKING AN OPENING IN A CAPSULE

Charles D. Kelman, 269 Grand Central Pkwy., Floral Pk., N.Y. 11005

Filed Jan. 4, 1983, Ser. No. 455,537
Int. Cl.³ A61F 1/16, 1/24
U.S. Cl. 3—13 10 Claims



1. A posterior chamber intraocular lens comprising:

a lens body including a rear surface having thereon at least two projections together having a total length along said rear surface in a direction transverse to the distance between said projections which is small relative to said distance between said projections; and

position-fixation means extending from said lens body for positioning said lens body in the capsule of an eye and for pressing said projections against the posterior capsule, each of said projections shaped so as to make substantially single point contact with said posterior capsule and said projections being effective to cause tension of the posterior capsule in said region between at least two of said projections sufficient to tear the posterior capsule after perforation of the capsule in said region between at least two of said projections.

9. A method of making an opening in the posterior capsule of an eye comprising:

inserting into the capsule of an eye an intraocular lens having spaced projecting portions on the rear surface of the lens body, said projecting portions together having a total length along said rear surface in a direction transverse to the distance between said projecting portions which is small relative to the distance between said projecting portions, each of said projecting portions shaped so as to make substantially single point contact with said posterior capsule thereby causing said projecting portions to press against the posterior capsule for forming at least one line of tension in the posterior capsule in the region between said projecting portions; and

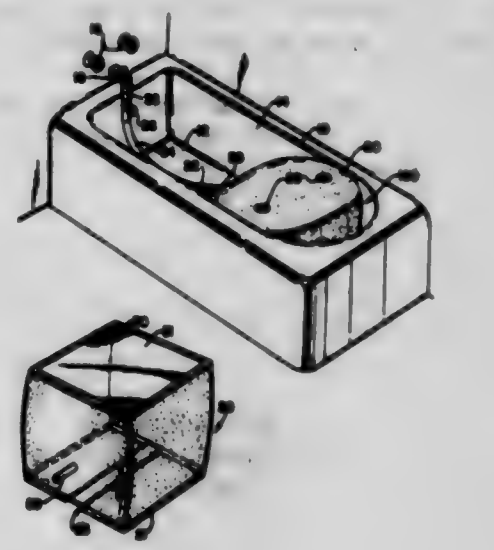
perforating the posterior capsule with a laser beam in a direction transverse to the line of tension of the posterior capsule, whereby the posterior capsule tears to form an opening.

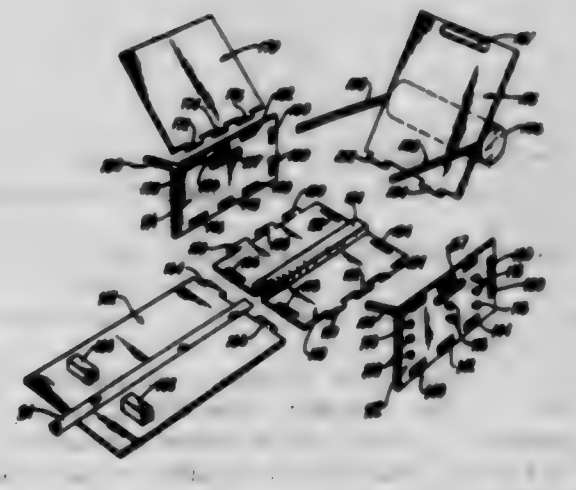
4,495,666

BATHTUB CUSHION LIFT ASSEMBLY

Harry H. Herman, Jr., Chevy Chase, Md., assignor to International Healthcare Products, Inc., Washington, D.C.

PCT No. PCT/US81/00298, § 371 Date Mar. 1, 1983, § 102(e) Date Mar. 1, 1983, PCT Pub. No. WO82/03002, PCT Pub. Date Sep. 16, 1982
Continuation-in-part of Ser. No. 054,794, Jul. 10, 1979.
PCT Filed Mar. 9, 1981, Ser. No. 483,301
Int. Cl.³ A47K 3/12
U.S. Cl. 4—564 30 Claims





1. A bathtub lift assembly for use in a bathtub including a bathtub lift adapted to be disposed in and supported by the bathtub and having a seat for supporting a bather, means for positioning said seat at any selected elevation intermediate a first position substantially coplanar with the rim of the side walls of the bathtub and a second position adjacent to the floor of the bathtub, at least one side plate adapted to be disposed

adjacent to the interior surface of a bathtub side wall, means for releasably maintaining said side plate in a stationary relation with respect to the adjacent bathtub side wall, and means associated with said side plate against which the bather may apply a force to aid his locomotion in the vicinity of the bathtub.

15. A bathtub lift assembly for use in a bathtub including a floor plate adapted to be disposed adjacent to the bathtub floor, a bathtub lift adapted to be supported by said floor plate and having a seat for supporting a bather, means for positioning said seat at any selected elevation intermediate a first position substantially coplanar with the rim of the side walls of the bathtub and a second position adjacent to the floor plate, a floor mat adapted to be disposed adjacent to the floor of the bathtub beside said floor plate, and means for maintaining said floor mat in a stationary relation with respect to said floor plate, and means for connecting said floor plate to said floor mat.

17. In a cushion lift assembly for use in a bathtub having a floor and side walls, said assembly having a water inflatable cushion shell of flexibly substantially non-elastic material with side wall portions compressively engaging the bathtub side walls, the improvement comprising:

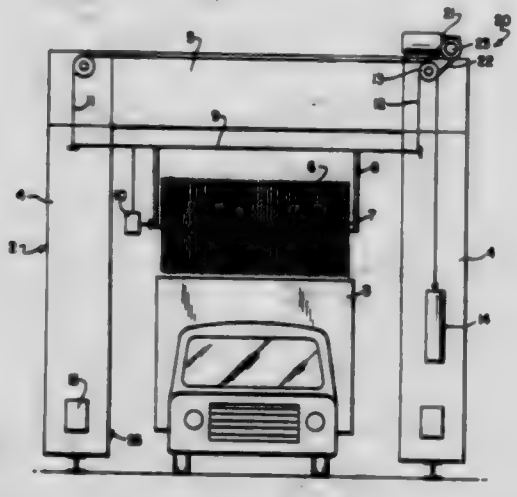
a bottom panel of said assembly being adapted to be disposed in interfacial engagement with the floor of said bathtub and having a substantially rigid portion for substantially preventing displacement of the cushion shell in the bathtub during use.

4,495,667

VEHICLE WASHING APPARATUS

James W. Roncaglione, Vienna, and Daniel E. Roncaglione, Chatham, both of Va., assignors to Caravelle Industries, Inc., Manassas, Va.

Filed Jan. 14, 1983, Ser. No. 458,099
Int. Cl.³ B60S 3/06
U.S. Cl. 15—53 A 3 Claims



1. A vehicle washing apparatus, comprising:

a frame member having an opening adapted to receive a vehicle;

a horizontal cleaning brush rotatable about a horizontal axis of rotation disposed in said frame member;

contant speed motor means for rotating said brush at a constant speed;

current sensing means for sensing an increase in current above a predetermined value drawn by said constant speed motor means, said increased current being caused by a greater than desired pressure contact between said brush and said vehicle;

vertically adjustable mounting means for adjustably mounting said brush in said opening;

counterweight means for partially counterweighting said brush and said vertically adjustable mounting means wherein said brush naturally descends under the force of gravity and contacts said vehicle being washed, said counterweight means allowing said rotating brush to descend into contact with said vehicle to achieve desired pressure contact between said brush and said vehicle;

a brush lifting motor responsive to said current sensing means for lifting said vertically adjustable mounting means against the excess weight of said counterweight means when said current exceeds said predetermined value;

clutch means responsive to said current sensing means for operably connecting said brush lifting motor with said vertically adjustable mounting means, said clutch means being actuated to transmit torque from said brush lifting motor to said vertically adjustable mounting means when said current exceeds said predetermined value; and

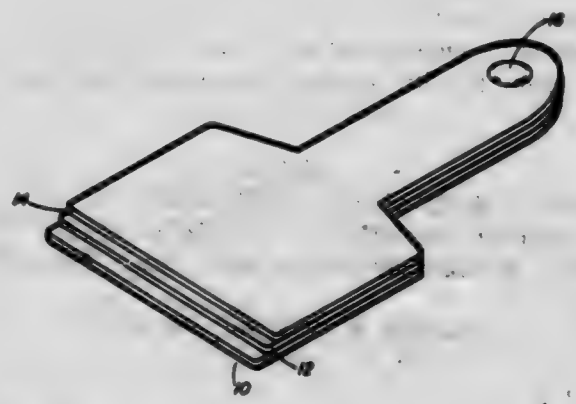
movement means responsive to said current sensing means for causing relative movement in a first horizontal direction between said frame member and said vehicle during a representative cleaning cycle wherein said movement means is actuated when said current is below said predetermined value and said movement means is not actuated when said current is above said predetermined value.

4,495,668

MULTISTATE PRECIPITATION REMOVAL TOOL

Bruce M. Adams, 704 Felipe Pl., Sante Fe, N. Mex. 87501

Filed Sep. 27, 1982, Ser. No. 424,388
Int. Cl.³ A47L 1/06
U.S. Cl. 15—105 24 Claims



1. A tool for removing ice, snow and slush from delicate surfaces, polishing frost, and squeegeeing water thereon without damage to these surfaces, which tool comprises in combination:

a. a plurality of substantially parallel blade members, each of said blade members having a substantially constant, chosen flexibility, said blade members varying in flexibility from soft to stiff, each having a leading edge for scraping and a second edge, each being adapted to be held by hand, said leading edge of the softest of said blade members protruding forward of that of the next stiffest blade member lying next to it, said stiffer blade members being recessed in a stepwise manner from soft to stiff; and

b. means for rigidly and detachably fastening said blade members, said fastening means being spaced apart from said leading edges of said blade members.

4,495,669

DUAL-GRIP HANDLE BRUSH FOR PAINTING AND THE LIKE

Roger Hooper, P.O. Box 14271, Baton Rouge, La. 70898

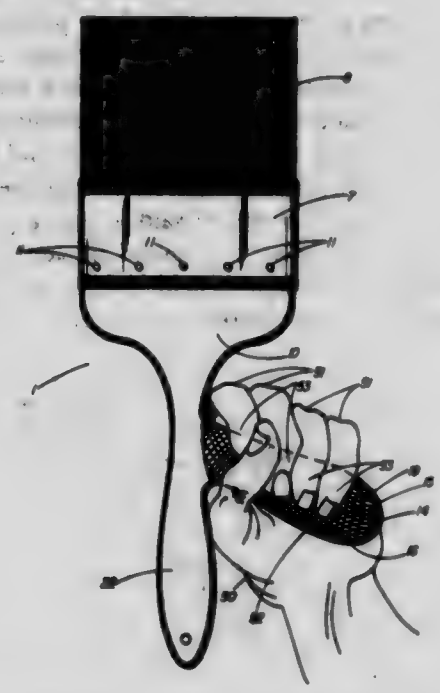
Filed Jan. 6, 1983, Ser. No. 456,246
Int. Cl.³ A46B 5/02
U.S. Cl. 15—143 R 7 Claims

1. A dual-grip paint brush comprising:

a. a brush body portion having a brushing means and a sheath for securably holding said brushing means, said sheath having a central axis;

b. a longitudinally elongated handle member extending

along said central axis of said sheath, said handle member comprising an enlarged portion attached to said sheath, a neck portion, and a hand gripping portion connected to said neck portion;



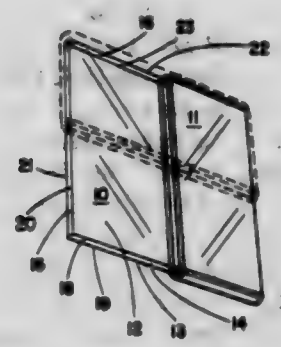
c. a pistol-grip handle connected to said neck portion, said pistol-grip handle extending outwardly away from said brushing means at an angle of approximately 60° with respect to said central axis.

4,495,670

HAND-HELD SCRAPER

Alan J. Baker, 346 E. Mulberry St., Lancaster, Ohio 43130

Continuation of Ser. No. 409,422, Aug. 23, 1982, abandoned. This application Jan. 31, 1983, Ser. No. 462,520
Int. Cl.³ A47L *1/06*; B60S *1/04*
U.S. Cl. 15—236 R 6 Claims



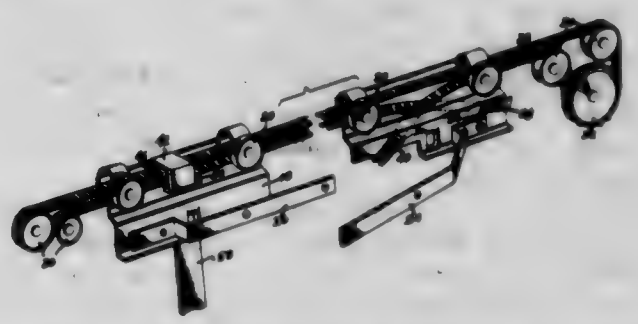
1. A two piece hand-held scraper comprising:
(a) a plate-like structure having a pair of relatively opposing, predominantly smooth, equilateral faces and forming therewith a plurality of rigid working edges of equal length completely bordering each of said equilateral faces; and
(b) a hand guard provided with an elongated cavity for selectively and removably receiving each of the side surfaces of said plate-like structure and the working edges immediately adjacent to the selected side surface, said cavity sized to fit snugly about said surfaces and said hand guard composed of a flexible material to removably adhere to said plate-like structure, the removal and placement of said hand guard about said side surfaces changing said working edges to be used for scraping.

4,495,671

MASTER CARRIER AND PERFORATED TAPE DRIVE COMBINATION

Paul E. Comeau, Warwick, and Anthony Torti, Cranston, both of R.I., assignors to Kenney Manufacturing Company, Warwick, R.I.

Filed Dec. 6, 1982, Ser. No. 447,268
Int. Cl.³ A74H *5/032*
U.S. Cl. 16—87 R 1 Claims



1. A tape-drive and master carrier combination for telescoping traverse rods for curtains comprising:
(a) a hollow traverse rod including a pair of elongated adjustable telescoping tubes each of a given length adapted to be mounted on a wall;
(b) a first and second master curtain carrier mounted in said rod for longitudinal motion relative thereto from respectively fully opened to fully closed positions;
(c) a length of a flexible, uniformly perforated, essentially non-stretchable, drive-tape for said master carriers;
(d) a toothed drive-sprocket for driving said tape with the teeth of said sprocket fitting in positive driving relation into the perforations in said tape;
(e) pulley means at each end of said rod;
(f) said drive-tape in said tubes in the form of a loop passing over the pulley means at each end of said rod, said loop having an upper leg extending the length of said rod and a lower leg formed by two free ends of said loop terminating at said first master carrier;
(g) adjustable means at said first master carrier accessible from outside of said rod for securing said ends of said tape loop to said first master carrier whereby slack may be substantially removed from said loop after telescoping adjustment of the length of said rod has been made;
(h) adjustable means at said second master carrier accessible from the outside of said rod for securing said second master carrier to the upper leg of said tape loop at a point on said upper leg which corresponds to the fully opened position of said second master carrier when the first master carrier is in the first master carrier's fully opened position; the adjustable means (h) at the second master carrier comprising a locking detent mounted on a control arm, means for slidably interconnecting the control arm and the second master carrier so that said locking detent can be placed in locking relation in a perforation in the upper leg of said tape loop, and the control arm extending through the second master carrier to the outside of said rod so that the second master carrier can be locked to the tape by operation of the control arm from the outside of said rod.

4,495,672

HINGE LATCH

Mark J. Adams, Bainbridge Island, Wash., assignor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US83/00244, § 371 Date Feb. 22, 1983, § 102(e) Date Feb. 22, 1983, PCT Pub. No. WO84/03325, PCT Pub. Date Aug. 30, 1984
PCT Filed Feb. 22, 1983, Ser. No. 491,954
Int. Cl.³ E05D *7/10*, *15/50*
U.S. Cl. 16—229 11 Claims

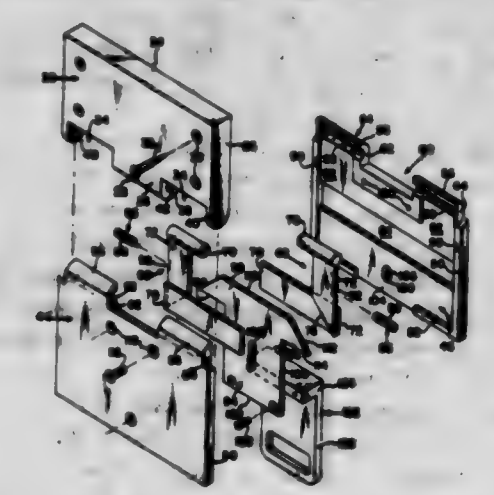
1. A hinge latch configured for selectively releasable, pivot-

able hinging securement of one structural member moveable relative to another cooperative structural member, comprising:

(a) a first hinge latch plate in operative association with a first structural member, having a pair of transverse pintle recesses separated one from another and bounded intermediately by a hinge boss including hinge bores disposed transversely toward said pintle recesses;

(b) a second hinge latch plate in operative association with a second structural member moveable relative to said first member, having a pair of transverse pintle guides of complementary geometric configuration with respect to said pintle recesses for mating engagement therein, said pintle guides separated one from another and bounded intermediately by a pintle guide recess for receiving said hinge boss when said pintle guides are disposed within said pintle recesses;

(c) first and second pintle means disposed for transverse reciprocable motion interiorly of said second hinge latch plate, each comprised of a hinge pin member received within a respective one of said pintle guides and having a free distal end for projection within a respective one of



said hinge bores for pivotal hinging movement of said first and second latch plates about a transverse axis and a hinge pin plate secured to said hinge pin member disposed in guiding receipt within a cooperative plate slot interiorly of said second hinge latch plate and having a lateral leg terminating at its distal end in a dingonally disposed abutment edge;

(d) biasing means for urging each of said pintle means into a normal hinging configuration with said hinge pins disposed within said hinge bores; and,

(e) latch actuator means received interiorly of said second hinge latch plate for lateral movement therein, having an actuator stem and a generally trapezoidal head including opposed, diagonally disposed abutment edges for mating engagement with the abutment edges of said first and second pintle means;

wherein lateral displacement of said actuator stem with an unlatching force is translated across said abutment edges to a transverse force displacing said hinge pins transversely out of engagement with said hinge bores releasing said hinge latch plates.

4,495,673

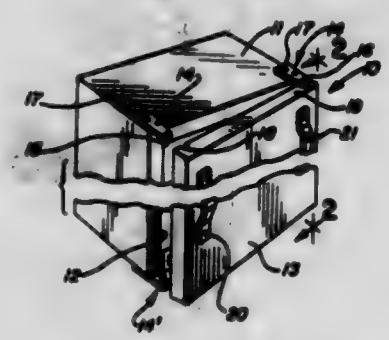
DOUBLE-ACTING REFRIGERATOR DOOR HINGE WITH DUAL LATCH MEMBERS

Aman U. Khan, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 29, 1982, Ser. No. 427,114
Int. Cl.³ E05D 15/50
U.S. Cl. 16—232 9 Claims

1. In an enclosure having a cabinet defining an access opening with a pair of hinge pins disposed on the cabinet at laterally opposite sides of the opening, and a closure door for selectively closing the opening, improved means for mounting the door to the opposite hinge pins for selective opening of the door from either side of the opening, said mounting means comprising:

a pair of hub structures on the door removably associated one each with said hinge pings, each said hub structure comprising a first lever mounted for pivotal movement about a first pivot axis, a first hub portion on said first lever spaced from said first pivot axis, a second lever mounted for pivotal movement about a second pivot axis spaced from said first pivot axis, a second hub portion on said second lever spaced from said second pivot axis, said hub portions being configured complementarily to said hinge pins, a slot in one of said levers, a pin on the other of said levers movably received in said slot for causing concurrent movement of said levers, and means for biasing said levers concurrently to a closed position where



said hub portions are juxtaposed to fit about and pivotally capture an associated hinge pin and to an open position wherein said hub portions are spaced apart to permit lateral withdrawal of the associated hinge pin; and

a rod longitudinally movable between said hub structures and having ends selectively engaging one lever of each of the respective hub structures for positively locking either hub structure in the closed position when the other hub structure is in the open position, wherein said means for biasing the levers comprising spring-biased detent means engaging one of said levers and said one of said levers including first and second cam surfaces which cooperate with said detent means to provide overcenter movement of said one of said levers between said open and closed positions.

4,495,674

CONCEALED DOOR HINGE HAVING A DOUBLE PIVOTAL MOUNTING

Louis A. Haddock, Jr., Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Mar. 5, 1982, Ser. No. 355,008
Int. Cl.³ E05F 1/08
U.S. Cl. 16—302 6 Claims

5. The combination of a door opening having a jamb on one side, a door adapted to close said opening, and a hinge mechanism carrying the door for operation, comprising

a support bracket mounted in fixed spaced relation with said jamb,

said support bracket being inside when the door is closed,

a hinge member pivotally mounted on said support bracket and extending toward said jamb in the door closed position,

a link pivotally mounted on said support bracket and extending toward said jamb in the door closed position,

a pivot arm pivotally connected at the distal ends of said hinge member and said link,

a projection on said pivot arm,

a spring connected between said projection and said support bracket in a manner to bias said hinge member to move to an intermediate door position,

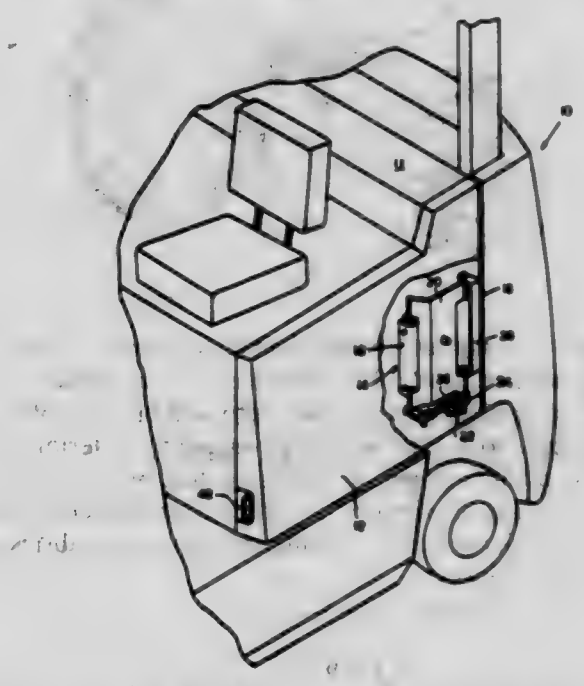
the distal end of said hinge member following an arcuate path having two components of motion during a move from the closed to the intermediate position, one compo-

nent being toward the center of said door opening from the jamb and the other outwardly of the door opening,

an abutment on said support bracket which is contacted by said hinge member when said intermediate position is reached,

a double pivotal mounting at the distal end of said hinge member,

said door mounted on said double pivotal mounting for swinging movement between said intermediate position and a fully open position,



an abutment on said pivot arm positioned to be contacted by said door as it moves from said intermediate position to said closed position causing said pivot arm to move to the door closed position,

a resilient stop on said hinge member which is contacted by said door when it reaches said closed position, and

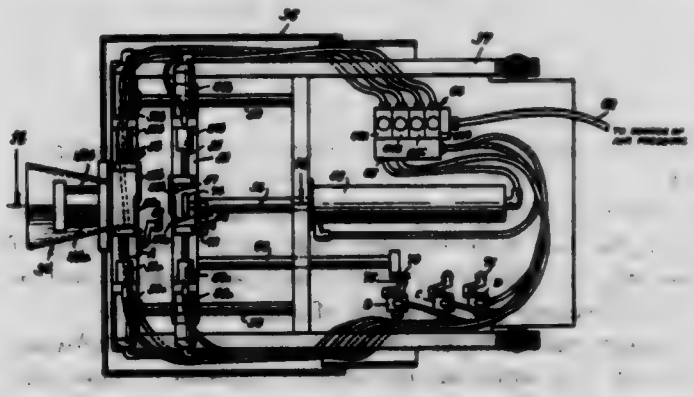
a latch on said door opposite said jamb selectively holding said door in the closed position.

4,495,675

METHOD AND APPARATUS FOR REMOVING MEAT FROM THE ENUCLEED END OF A BONE

Carl J. Hill, deceased, late of Ball Ground, Ga., and by Hazel R. Hill, executrix, Rte. 3, Box 229, Ball Ground, Ga. 30107

Filed Apr. 12, 1982, Ser. No. 367,249
Int. Cl.³ A22C 17/04, 21/00
U.S. Cl. 17—1 G 13 Claims



9. Apparatus for boning animal or poultry parts having an elongate bone with a knuckle joint at each end thereof, comprising:

holding means for holding said bone at one knuckle joint end;

a pair of blades for stripping the meat from said bone, said blades defining an opening adjustable to a first predetermined size to accommodate said animal or poultry part, a second predetermined size to accommodate the general diameter of the elongate portion of said bone, and a third predetermined size to accommodate the general diameter of the other knuckle joint; and

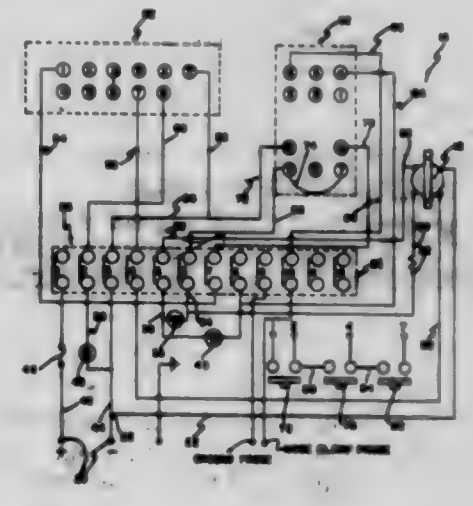
means for automatically adjusting the opening of said blade means between said three predetermined sizes in a single boning cycle, including means for moving only one of said blades for adjusting said opening from said second predetermined size to said third predetermined size.

4,495,676

APPARATUS FOR ELECTRICALLY STIMULATING AN ANIMAL CARCASS

Gerald J. Hartmetz, II, Harnedo, Inc., 616 Pennsylvania, Wichita, Kans. 67202

Filed Aug. 2, 1982, Ser. No. 404,370
Int. Cl.³ A22C 9/00
U.S. Cl. 17—25 1 Claim



1. An apparatus for electrically stimulating an animal carcass to tenderize the same comprising in combination a nose clamp means and an insert plug means for respectively engaging the animal carcass in proximity to the nose and the hock of the same, a housing, an electrical impulse-generating means positioned in said housing and electrically connected to said nose clamp means and said insert plug means, said impulse-generating means including a step-down transformer to reduce the input voltage from an alternating current power source to between 44 and 48 volts and the amperage to less than about 1 amps., said step-down transformer has a primary winding including one primary terminal connected to the alternating power source and another primary terminal connected to a point terminal strip means, the secondary winding of said step-down transformer includes a pair of secondary terminals that connect to said point terminal strip means, an interval cycle timer means electrically attached to said terminal connected to the alternating power source, and a repeat cycle pulsation timer means electrically connected to said terminal strip means for automatically controlling the on-off of the electric current to the carcass, said interval cycle timer means includes four interval terminals electrically engaged to said terminal strip means, and said repeat cycle pulsation timer means comprises five pulsation terminals electrically engaged to said terminal strip means, one of said interval terminals and one of said pulsation terminals connect to a common terminal on said terminal strip means; a resistor means engaging a secondary terminal, a first low voltage lamp means electrically engaging the secondary terminal having the resistor means to indicate when low voltage is available for stimulation, a second low voltage lamp means electrically engaged to the first low voltage lamp means and the point terminal strip means; a first switch means electrically engaging the terminal strip means; a second switch means electrically engaged to the first switch means and to the terminal strip means which when closed energizes step-down transformer and lights up the first low voltage lamp means; and a third switch means electrically

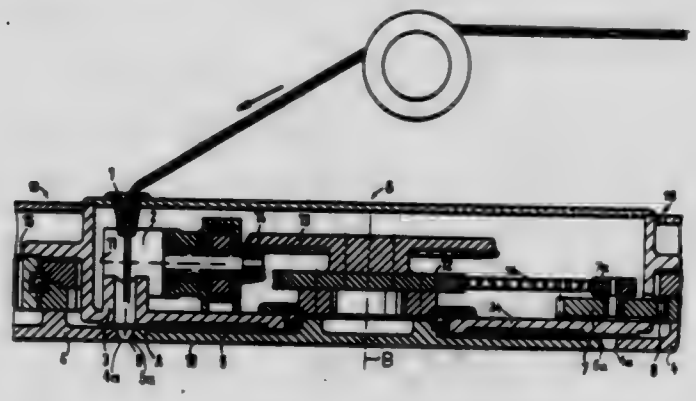
engaged to the second switch means and the terminal strip means which closed starts said interval timer means and said repeat cycle timer means.

4,495,677

METHOD AND APPARATUS FOR COILING FIBER SLIVER

Albert Rosink, Nordhorn, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Mönchengladbach, Fed. Rep. of Germany

Filed Mar. 29, 1983, Ser. No. 480,116
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1982, 3213397
Int. Cl.³ D65H 54/80
U.S. Cl. 19—159 R 10 Claims



3. A coiler for depositing sliver in a can, comprising

(a) a coiler head having an axis of rotation and including

(1) an inlet opening through which sliver enters into the coiler head;

(2) an outlet opening through which sliver leaves the coiler head; said outlet opening being provided eccentrically with respect to said rotary axis, whereby said outlet opening travels in a circular path upon rotation of said coiler head;

(3) sliver advancing means drawing sliver through said inlet opening and delivering sliver through said outlet opening;

(b) support means for supporting said coiler head for rotation about said axis;

(c) driving means for rotating said coiler head; and

(d) stationary means defining an annular chamber immediately adjoining said outlet opening and being in alignment with said circular path; said annular chamber having an open top oriented towards said outlet opening and an open bottom oriented away from said outlet opening; said sliver being received in said annular chamber through said open top and being discharged from said annular chamber through said open bottom.

4,495,678

BUTTON FOR RECEIVING AND SECURING A FABRIC COVERING THEREFOR AND FABRIC-COVERED BUTTON ASSEMBLY FORMED THEREWITH

Charles R. Coley, Blowing Rock, and J. Roger Hall, Hickory, both of N.C., assignors to Plus One Ltd., Blowing Rock, N.C.

Filed Apr. 11, 1983, Ser. No. 483,569
Int. Cl.³ A44B 1/12
U.S. Cl. 24—113 R 18 Claims

1. A button for receiving and securely holding in place a fabric covering therefor, comprising:

a. an expandable base element having a shaped fabric-engaging exterior surface portion and a second surface portion extending inwardly with respect to the periphery of said exterior surface portion, said base element being formed with an opening extending into said base element generally centrally of said exterior surface portion; and

b. a cap member formed of resilient material and having an interior surface portion shaped to receive said base element for engaging fabric therebetween, said cap member having an annular lip extending inwardly for disposition immediately adjacent said second surface portion of said base element to resist removal thereof from said cap member and having projection means extending generally centrally from said interior surface portion for insertion into said opening of said base element, said projection means having at least a portion thereof which is larger



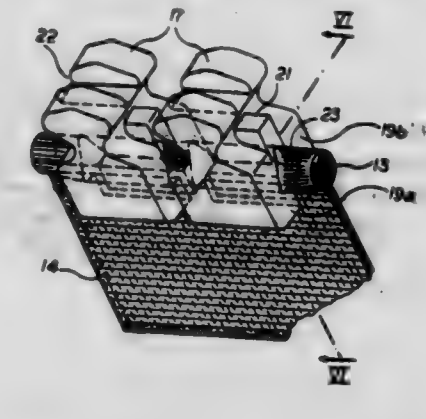
than said opening and being shaped to cause increasing radial expansion of said base element as said projection is inserted to predetermined depths into said opening of said base element to locate said fabric-engaging exterior surface of said base element in corresponding predetermined fabric-engaging proximities to said interior surface of said cap member for securely holding therebetween fabrics of varying thicknesses.

4,495,679

SLIDE-FASTENER HALF AND METHOD OF MAKING SAME

Manuela Scarpini, Milan, Italy, assignor to Interbrev S.A., Luxembourg, Luxembourg

Filed May 28, 1982, Ser. No. 383,127
Claims priority, application Switzerland, May 30, 1981, 3521/81
Int. Cl.³ A44B 19/06
U.S. Cl. 24—414 8 Claims



1. A method of making a slide-fastener half, comprising the steps of:

(a) providing a stringer tape with a carrier cord attached to a longitudinal edge thereof, said carrier cord being of generally circular cross-section with a diameter substantially exceeding the thickness of said stringer tape;

(b) clamping said stringer tape and said carrier cord between jaws of two mold halves defining recesses of generally triangular profile on opposite sides of a plurality of cavities, with closure of said jaws about said carrier cord and resulting deformation of the latter into spaced-apart portions of corresponding generally triangular configuration having bases perpendicular to said stringer tape at said longitudinal edge and vertices pointing away from said stringer tape, the deformation extending into unclamped parts of said carrier cord lying within said cavities; and

(c) molding coupling elements in said cavities with tail sections embracing said unclamped parts and an adjacent

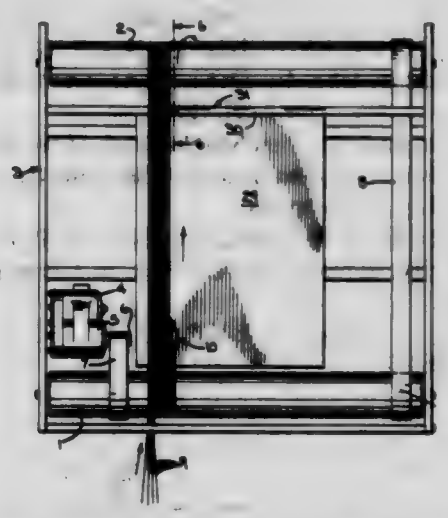
marginal zone of said stringer tape and with heads projecting beyond said carrier cord for interfitting with heads of similar coupling elements of another slide-fastener half, said deformation producing shoulders extending transversely from opposite surfaces of said stringer tape into positive engagement with the coupling elements molded therearound.

4,495,680

METHOD AND APPARATUS FOR FORMING A HELICAL WOUND SUBSTRATE COMPOSED SOLELY OF LONGITUDINAL YARNS

David A. Beck, Appleton, Wis., assignor to Appleton Mills, Appleton, Wis.

Filed Feb. 17, 1982, Ser. No. 349,573
Int. Cl.³ D04H *3/00, 5/02*
U.S. Cl. 28—100 15 Claims



13. An apparatus for producing an endless helically wound substrate composed solely of longitudinally extending yarns, comprising a pair of parallel smooth surfaced rolls, drive means to drive at least one of said rolls, a winding member having a leading end and a trailing end, an endless loop disposed around the rolls with one end of said loop connected to the leading end of the winding member and the opposite end of the loop being connected to the trailing end of the winding member, the connections of said loop to said winding member being offset laterally, a plurality of generally parallel yarns connected to the trailing end of the winding member and disposed generally parallel to said loop, spacing means spaced from one of said rolls and having a plurality of spaced guideways to receive and space said yarns, operation of said drive means causing said loop to travel in an endless path around said rolls to wind said yarns in a generally helical pattern on said rolls.

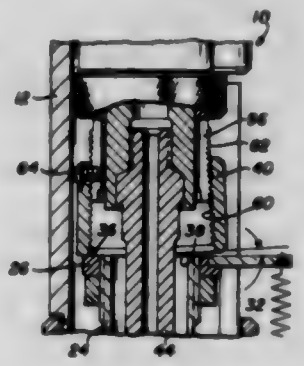
14. A method of forming a helically wound substrate composed solely of longitudinally extending yarns, comprising the steps of mounting a loop around a pair of spaced parallel smooth surfaced guide members, connecting a first end of the loop to a forward end of a winding member at a first connection, connecting a second end of the loop to the rear of the winding member at a second connection spaced laterally from said first connection, connecting the leading ends of a plurality of spaced generally parallel yarns contained on a supply to the rear end of said winding member at a location in general longitudinal alignment with said first connection, moving said winding member forwardly in an endless path of travel around said guide members to draw the yarns from said supply and wind said yarns in helical convolutions about said guide members, and maintaining the wound yarns in spaced parallel relation by passing said wound yarns through said spaced guideways located in spaced relation to said guide members.

4,495,681

DWELL AND DEPTH ATTACHMENT FOR POWER DRILLS

Richard E. Eckman, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 6, 1983, Ser. No. 539,765
Int. Cl.³ B23Q *5/52*; B23B *39/00*
U.S. Cl. 29—26 A 4 Claims



1. An improved dwell and depth attachment for power drills and the like wherein the drill includes an output shaft that is movable longitudinally and rotatably therein for feeding and rotating drill bits and the like, the improvement comprising:

elongate hollow housing means having a free end and an end connected with the drill;

drive spindle means having one end connected with the output shaft, said spindle means extending through said housing and having a distal end arranged for connection to the drill bit;

an elongate sleeve projecting from the free end of said housing means and encircling said spindle means and having a first end for engaging a work piece that is to be drilled and having a second end;

adjustable depth control means located within said housing means, said control means encircling said spindle means and connected for movement with said spindle means, said control means including a first portion having an end engageable with the second end of said sleeve to limit the movement of said spindle means relative to said sleeve and work piece, said first portion being generally annular, having a threaded interior and having a plurality of circumferentially spaced, radially extending holes therethrough, said control means including a second portion having a threaded exterior mating loosely with the threaded interior of said first portion, whereby said first portion can float relative to said second portion regardless of the relative positions of said portions and having slots substantially equally spaced about said exterior traversing said threaded exterior, said slots forming radially oriented surfaces on said second portion, and also including rotation preventing means located in one of said radially extending holes and only engaging one of the radially oriented surfaces in said second portion, whereby said rotation means does not exert a radially directed force on said first or second portions thereby permitting said first and second portions to float relative to one another when said first portion engages said sleeve means.

4,495,682

APPARATUS FOR MAKING ELECTRICAL HARNESSES

Minoru Matsui, Toyamashi, and Yoshihiro Saijyo, Ibaragishi, both of Japan, assignors to Nippon Acchakutanshi Seizo Kabushiki Kaisha, Japan

Filed Jun. 30, 1982, Ser. No. 393,995
Claims priority, application Japan, Jan. 19, 1982, 57-7300
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—33 M 11 Claims

1. An apparatus for making electrical harnesses that include wires and electrical connector means, the apparatus comprising:

a wire feed path extending substantially horizontally and axially of the apparatus;

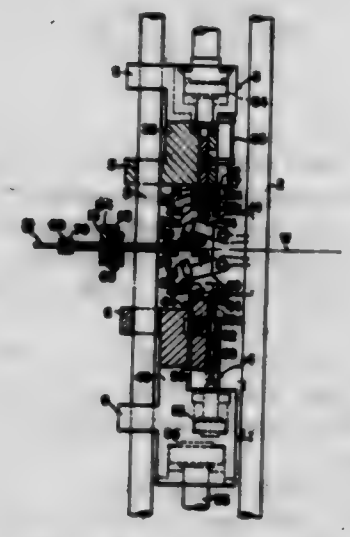
cutter means disposed on opposite sides of the wire feed path for cutting wires fed along the wire feed path into a first and second group of wires having terminal ends adjacent the cutter means;

a first assembly means arranged on respective sides of the wire path adjacent one side of said cutter means for assemblying the terminal end of said first group of wires to electrical connector means;

a second assembly means arranged on respective sides of the wire path adjacent a side of the cutter means opposite the first assembly means for assemblying the terminal ends of the second group of wires to electrical connector means;

means for supplying electrical connector means to said first and second assembly means;

a substantially fixed chuck means disposed adjacent said first



assembly means for equally spaced guiding of the wires to a position adjacent the cutter means;

a further chuck means mounted for movement along said wire feed path for extracting wires from a point adjacent the cutting means for a distance corresponding to a desired length of the electrical harness;

means for actuating said first and second assembly means whereby the terminal ends of the first group of wires and second group of wires are assembled to the electrical connector means by the first and second assembly means in a single assemblying operation; and

guide means arranged along outer sides of said first and second assembly means for guiding the electrical connector means therein, means are provided for selectively raising and lower said guide means, said guide means in a raised position defining a guide wall for guiding the first and second assembly means and, in a lower position, providing access to the first and second assembly means.

4,495,683

ROLLER, IN PARTICULAR TRANSPORT ROLLER

Johannes C. Delhaas, Voerendaal, Netherlands, assignor to Rubber-En Kunststoffabriek Enbi B.V., Voerendaal, Netherlands

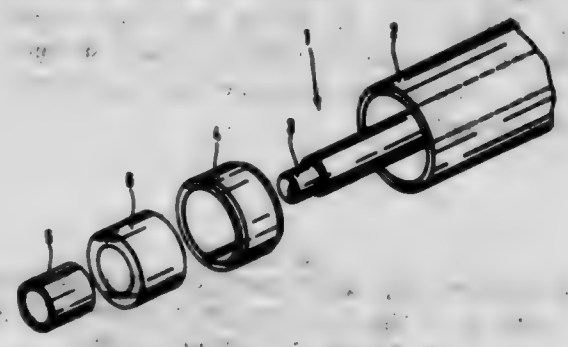
Filed Oct. 8, 1982, Ser. No. 433,373

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1981, 3140546

Int. Cl.³ B60B 7/00

U.S. Cl. 29—119 1 Claim

1. A transport roller or the like comprising a spindle, a tubular jacket surrounding and concentrically aligned with said spindle, said jacket having an inner circumferential portion, a coupling assembly operatively connecting said spindle and said jacket for conjoint rotation, while permitting limited radial movement between said jacket and spindle, said coupling assembly comprising a clamp-on split ring member seated on said spindle and exerting a radial inward force thereagainst, a clamp-in split ring member engaging said inner circumference portion of said jacket and exerting a radial outward force thereagainst, and an elastomeric annulus interposed between



said split ring members, said annulus being in radial compressed condition.

4,495,684

PROCESS OF JOINING A CERAMIC INSERT WHICH IS ADAPTED TO BE EMBEDDED IN A LIGHT METAL CASTING FOR USE IN INTERNAL COMBUSTION ENGINES

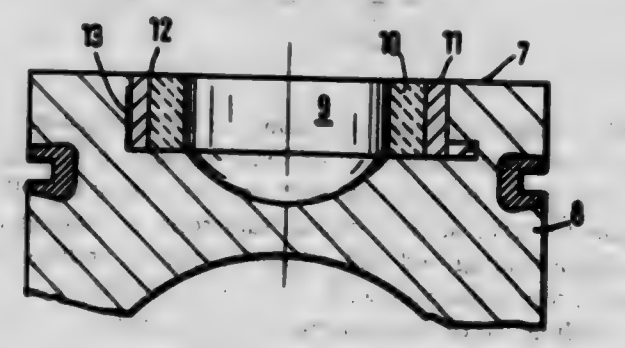
Wilfried Sander, and Siegfried Mielke, both of Neckarsulm, Fed. Rep. of Germany, assignors to Karl Schmidt GmbH, Neckarsulm, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,776

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1982, 3230388

Int. Cl.³ B23P 15/10

U.S. Cl. 29—156.5 R 6 Claims



1. A process of joining an insert of ceramic material having a thermal conductivity below 10 W/mk, a coefficient of expansion below 10×10^{-6}/K and a modulus of elasticity below 7×10^{4} N/mm^2 in the combustion chamber recess of a cast light metal piston, comprising shrinking aroupd the insert a ring of metallic material which resists creep and/or relaxation at temperatures up to at least 300° C. and casting said piston body about said ring and insert assemble.

4,495,685

ROTARY TABLET MACHINE

Jeffrey R. Durik, 199 Ocean Ave., Lakewood, N.J. 08701

Filed Sep. 7, 1982, Ser. No. 415,127

Int. Cl.³ B23P 7/00

U.S. Cl. 29—402.08 9 Claims

1. A method of reclaiming a rotary tablet machine, comprising:

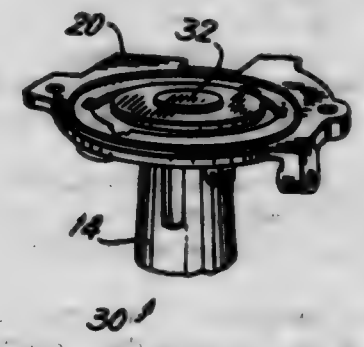
disassembling said rotary tablet machine;

removing a spindle cast integral with a top surface of said machine except for a small raised portion of said spindle;

machining said small raised portion to a predetermined dimension for forming a truncated base;

providing locating means in said truncated base;

fastening a spindle base having corresponding locating means to said truncated base;
inserting a replacement spindle into said spindle base; and



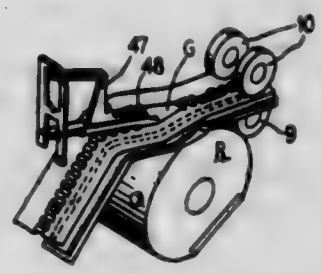
reassembling said rotary tablet machine, whereby said machine will operate as said rotary tablet machine.

4,495,686

APPARATUS FOR PRODUCING SLIDE FASTENERS FROM CONTINUOUS FASTENER CHAIN

Harry Fisher, Whitestone, and Stuart Fisher, Floral Park, both of N.Y., assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jan. 17, 1983, Ser. No. 458,547
Int. Cl.³ B21D 53/54; A41H 37/06
U.S. Cl. 29—409 9 Claims



1. Apparatus for assembling sliders and bottom stops to the slide fastener stringers of a continuous fastener chain formed with fastener-element-engaged and fastener-element-free gap portions at longitudinally spaced intervals and disposed for successive longitudinal movement through an assembly station comprising sensing means for detecting a gap portion in said chain and stopping movement of said chain, said sensing means including a movable means for extending into said gap portion and transversely spreading said gap portion uncoupling engaged fastener elements, a rotor disposed for rotation in said station beneath said sensing means, said rotor having a slider holding portion and a die plate circumferentially spaced from each other on said rotor, a slider feed means for dispensing a slider for pick-up by said slider holding portion, and a bottom stop assembler means for punching a bottom stop to said chain, such that said rotor rotates to thread said slider carried by said slider holding portion into said gap portion and onto the chain fastener elements and bring said die plate beneath said bottom stop assembler means which punch fixes said bottom stop to said chain at the free end of chain fastener elements closed by said slider.

4,495,687

HOLLOW METAL DOOR MORTISER AND METHOD OF USING SAME

Robert Sievoking, 1211 4th Ave., Rockford, Ill. 61104

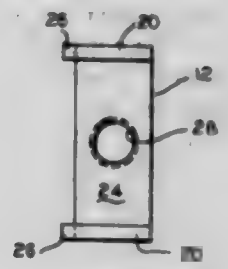
Filed Jun. 9, 1982, Ser. No. 386,720
Int. Cl.³ B23P 19/00; B21D 9/05, 31/00
U.S. Cl. 29—426.1 10 Claims

1. A mortiser for applying a mortise to the edge of a hollow metal door comprising: a die block adapted to be positioned inside of said door edge at a point adjacent where a mortise is to be formed in said door edge, a cavity in said die block, mortising block means operatively connected to said die block by pressure application means, said mortising block means disposed on the outer side of said door edge adjacent said die block whereby a portion of said door edge extends between said die block and said mortising block, said pressure application means extending between said die block and said mortising block through an aperture in said door edge, said pressure application means including

a threaded bolt mating with a threaded aperture in said die block, said mortising block having an aperture therein, said bolt passing through said aperture in said mortising block whereby said mortising block is freely mounted on said threaded bolt, head means on said bolt extending beyond the aperture in said mortising block whereby rotation of said threaded bolt into said die block causes said head of said threaded bolt to move said mortising block and said portion of said door edges into said cavity in said die block and create an offset in said door edge.

8. The method of applying a rectangular mortise to the edge panel of a hollow metal door having two spaced apart parallel panels adjacent said edge panel, said hollow door comprising an opening therein for location of an entry lockset, an entry lockset mounted in said opening in said hollow metal door, the method comprising the steps of:

forming a first hole in the door edge at the location where said mortise is to be formed;



forming second and third holes in said two spaced apart parallel panels adjacent said first hole;
removing said entry lockset from said door;
inserting a die block having a threaded aperture and a cavity in one face thereof through the opening from which said entry lockset was removed;
positioning said die block in said door behind said first hole whereby said door edge adjacent said first hole is positioned over said cavity in said die block;
inserting pressure application means through said first hole and operably connecting said pressure application means to said die block, said pressure application means including mortising block means extending along the portion of said door edge where said mortise is to be applied, and a threaded bolt extending through said mortising block means and into said threaded aperture of said die block;
applying pressure to said mortising block by means of said pressure application means whereby said mortising block and said portion of said door edge extending along said mortising block are pressed into said cavity of said die block, whereby an offset is formed in said door edge;
removing said threaded bolt from said threaded aperture after formation of said offset in said door edge;
removing said die block from inside said door; and applying a face plate to the offset portion of said door edge.

4,495,688

PREFABRICATED CONCRETE PANEL WITH TRUSS

Francois Lougpré, 6200 Chemin Bannalec; Yves Lougpré, Casier Postal 94, rue Léas, and Pierre Lougpré, 4974 Chemin Ste-Catherine, all of Rock Forest, Quebec, Canada J0B 2J0

Filed Sep. 7, 1983, Ser. No. 530,105
Int. Cl.³ B23P 19/04; E04B 1/16
U.S. Cl. 29—460 13 Claims

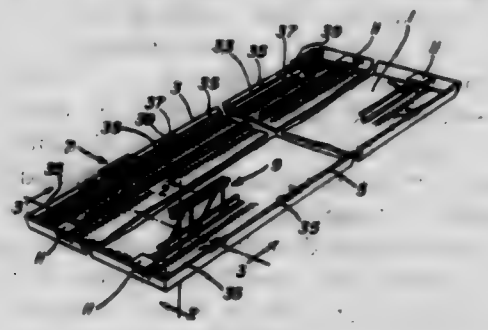
1. Method of manufacturing reinforced concrete flooring tile

by pouring concrete in a mold containing a reinforcement, which comprises:

providing rectangular molds in which at least two opposite sides are flaring up;

pouring concrete in one of said mold while introducing a reinforcement therein, and continuing said pouring until the mold is completely filled with concrete;

separately preparing at least two steel trusses provided with seating pads at both ends thereof, each truss being formed of a base and a rod head, connected together by means of metallic rods arranged in zigzag;



arranging said two trusses spacedly parallel to one another and with the two flaring up sides, disposing said parallel trusses above the surface of freshly poured concrete in said mold, allowing the head to penetrate therein until the seating pads of said trusses are flush with the surface of the concrete, and allowing the concrete in which the head of the trusses are embedded to harden;

removing the reinforced concrete tile from the mold; and

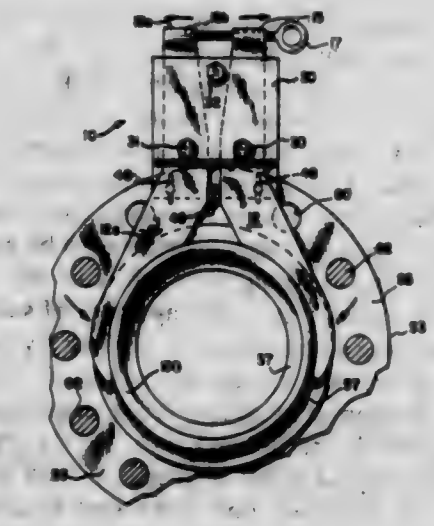
rotating said tile 180° along its longitudinal axis so as to enable it to be readily available for placement on a framework to constitute a flooring tile.

4,495,689

TOOL FOR PLACEMENT OF O-RINGS AND METHOD

Lawrence N. McNeal, 2461 Brahms Blvd., Dayton, Ohio 45449, and Robin A. McNeal, 1301 Levee Dr., Houma, La. 70360

Filed Aug. 24, 1983, Ser. No. 525,851
Int. Cl.[3] B23Q *3/00*; B25B *1/20*
U.S. Cl. 29—468 5 Claims



1. A tool for positioning an "O" ring in the "O" ring seating groove cut into the face of a section of flanged pipe or the like comprising in combination:

(a) a set of thin, substantially flat tongs whose grasping jaws define the circumference of a circle, the thickness of said grasping jaws being less than the cross-sectional diameter of the annulus of the "O" ring to be grasped by said jaws, each of said tongs having a hole therein,

(b) a pair of parallel facing plates to grasp and hold therebetween the upper ends of said tongs, each of said plates having three or more aligned holes therein,

(c) a plurality of three or more bolts or like fastening means passing through said facing plates, two of said bolts also passing though the tongs and forming pivot points about which said tongs rotate,

(d) means mounted on said bolts to hold the facing plates in fixed parallel relationship,

(e) means for rotating said tongs about their pivot points so that their grasping jaws move toward or away from each other to define circles having varying radii, and

(f) a support member to hold said parallel facing plates and tongs in a fixed vertical plane and to support the tool on a flange.

5. A method for sealing two complementary flanged fittings to provide a leakproof seal therebetween without requiring a worker to place a hand between the two fittings to be joined which comprises:

(a) adjusting the grasping jaws of the tongs of a tool of claim 1 so that the circumference of the circle defined by said jaws is substantially equal to the circumference of the "O" ring seating grooves provided in the said fittings,

(b) inserting into the grasping jaws of the tongs an "O" ring whose annulus has a cross-sectional diameter greater than the thickness of said jaws,

(c) adjusting the position of said tool, if necessary, so that the "O" ring is seated in the seating groove provided in one of said fittings,

(d) attaching said tool onto the flange of said fitting,

(e) moving the second flanged fitting into loose, non-touching engagement with the first flanged fitting, the distance between said flange faces being less than the cross-sectional diameter of the annulus of the "O" ring,

(f) releasing the "O" ring from the tongs by spreading their grasping jaws apart,

(g) detaching the tool from the first flanged fitting and withdrawing the tongs from between the adjoining fittings, and

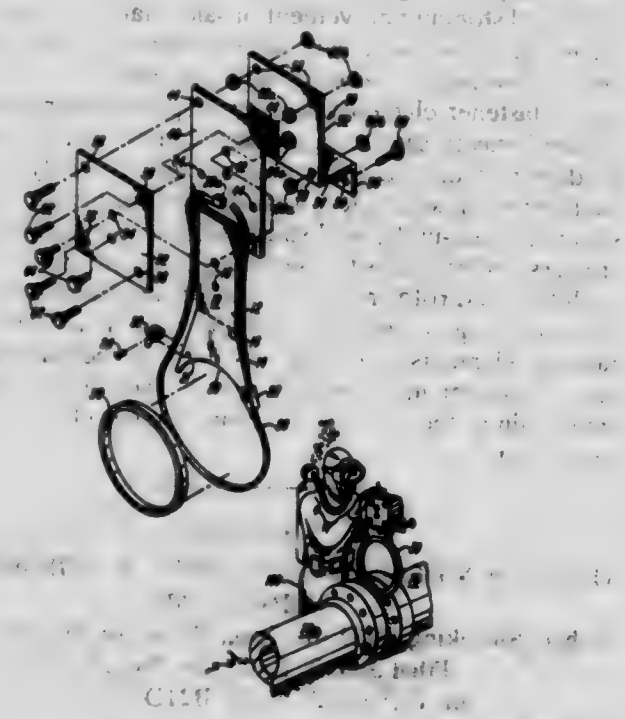
(h) urging said fittings into tight engagement to compress said "O" ring and provide a leakproof seal between said fittings.

4,495,690

O-RING PLACEMENT TOOL

Lawrence N. McNeal, 2461 Brahms Blvd., Dayton, Ohio 45449

Filed Aug. 24, 1983, Ser. No. 525,852
Int. Cl.[3] B23Q *3/00*; B25B *1/20*
U.S. Cl. 29—468 4 Claims



1. A tool for positioning an "O" ring in the "O" ring seating groove cut into the face of a section of flanged pipe or the like comprising in combination:

(a) a thin, flat "O" ring positioning plate, the thickness of

said plate being less than the cross-sectional diameter of the annulus of the "O" ring to be positioned by said tool, said plate having;

(i) an upper section of generally rectangular cross-section which has a plurality of holes therein,

(ii) a lower section which;

(a) is integral with said upper section,

(b) has complementary side walls which flare outwardly from the side walls of the upper plate to define a depending skirt,

(c) has a complementary pair of guide members attached to lower sections of the skirt of (a) (ii)

(b) above and which define channels between said guide members and the walls of said skirt, and

(d) has an arcuate lower face adapted to snuggly fit onto an "O" ring to be seated by said tool,

(b) a pair of flat parallel facing plates to grasp and hold therebetween the upper section of said "O" ring positioning plate, said facing plates being wider than the upper section of the "O" ring positioning plate, each of said facing plates having;

(i) a plurality of holes aligned with the holes provided in the upper section of the "O" positioning plate, and

(ii) an additional plurality of aligned holes positioned in the outer sections of said facing plates and beyond the area to be covered by the "O" ring support plate,

(c) a plurality of bolts or like fastening means passing through the holes in said facing plates and said "O" ring positioning plate to hold said plates in fixed parallel relationship,

(d) a length of a flexible "O" ring support band having fastening means on its ends so that the length of the band in the tool can be varied, said band being of a width less than the cross-sectional diameter of said "O" ring and adapted to;

(i) pass through the channels defined by the outer walls of the "O" ring positioning plate, the parallel facing plates and at least one of the bolts of (b) (ii) above,

(ii) pass through the channels defined by the guide members of (a) (ii) (c),

(iii) define a generally circular loop depending from the lower section of the "O" ring positioning plate, and

(e) a support member to hold said facing plates and said "O" ring positioning plate in a fixed plane and to support the tool on a flange.

4. A method for sealing two complementary flanged fittings to provide a leakproof seal therebetween without requiring a worker to place a hand between the two fittings to be joined which comprises:

(a) adjusting the length of the "O" ring support band of a tool of claim 1 so that the circumference of the loop defined by the lower arcuate face of the "O" ring support plate and the "O" ring support band is substantially equal to the circumference of the "O" ring seating grooves provided in said fittings,

(b) inserting into the loop of (a) an "O" ring whose annulus has a cross-sectional diameter greater than the thickness of the "O" ring support plate and width of said band,

(c) adjusting the position of said tool, if necessary, so that the "O" ring is seated in the seating groove provided in one of said fittings,

(d) attachig said tool onto the flange of said fitting,

(e) moving the second flanged fitting into loose, non-touching engagement with the first flanged fitting, the distance between said flange faces being less than the cross-sectional diameter of the annulus of the "O" ring,

(f) unfastening the ends of the "O" ring support band and withdrawing the "O" ring support band from the tool,

(g) detaching the tool from the first flanged fitting and withdrawing the tool from between the adjoining fittings, and

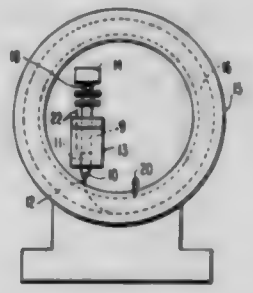
(h) urging said fittings into tight engagement to compress said "O" ring and provide a leakproof seal between said fittings.

4,495,691

PROCESS FOR THE PRODUCTION OF FINE AMORPHOUS METALLIC WIRES

Tsuyoshi Masumoto, No. 8-22, Uesugi 3-chome, Sendai-shi, Miyagi, Japan; Akihisa Inoue, Miyagi, and Michiaki Hagiwara, Kyoto, both of Japan, assignors to Tsuyoshi Masumoto, Miyagi and Unitika Ltd., Amagasaki, both of, Japan

Filed Mar. 29, 1982, Ser. No. 362,791
Claims priority, application Japan, Mar. 31, 1981, 56-48153
Int. Cl.[3] B22D *11/12*; C22C *30/00*
U.S. Cl. 29—527.5 3 Claims



1. A process for producing a fine amorphous metallic wire of substantially circular cross-section comprising the steps of:

(a) selecting an Fe base alloy comprising: from 0.01 to 75 atom% of one or more groups selected from the groups as set forth below, with the remainder being composed substantially of Fe:

(1) 0.01 to 35 atom% of one or more of P, C, Si, B and Ge;

(2) 0.01 to 40 atom% of one or two of Co and Ni;

(3) 0.01 to 15 atom% of one or more of Cr, Nb, Ta, V, Mo, W, Ti, and Zr;

(4) 0.01 to 5.0 atom% of one or more of Mn, Be, Pd, A, Au, Cu, Zn, Cd, Sn, As, Sb, Hf, and Pt;

(b) providing a sufficient quantity of said alloy in a molten state;

(c) jetting said molten alloy, said alloy having an amorphous substance forming ability, through a spinning nozzle into a cooling liquid contained within a rotary member, whereby said liquid causes solidification of said molten alloy thereby producing said fine amorphous metallic wire;

(d) continuously winding upon the inner walls of said rotary member by the action of centrifugal force, the alloy wire thus formed;

(e) removing said alloy wire from said rotary member; and

(f) passing said alloy wire through a die thus drawing said alloy wire within an area reduction percentage range from about 5% to about 90%.

4,495,692

COIL PLACING MACHINE WITH READILY CONVERTIBLE WEDGE MAKING ARRANGEMENT

Robert G. Walker, Ossian, Ind., assignor to Industra Products, Inc., Fort Wayne, Ind.

Filed Jun. 18, 1982, Ser. No. 389,856
Int. Cl.[3] H02K *15/00*
U.S. Cl. 29—564.1 4 Claims

1. A device for placing prewound coils and insulating wedges into slots of a dynamoelectric machine stator core member, comprising:

a coil placing apparatus including a cylindrical array of stator-receiving blades and wedge guide members,

a wedge making apparatus connected to said coil placing apparatus, said wedge making apparatus including

(a) a wedge magazine assembly having a cylindrical wedge-receiving magazine coaxial with said coil placing apparatus, said magazine having a toothed ratchet plate,

(b) means for cutting off insulating wedges from an elongated strip of insulating material, and

(c) means for forming the wedges into said magazine for subsequent insertion into the stator core slots,

said cutting means and said forming means being attached to said wedge magazine assembly,

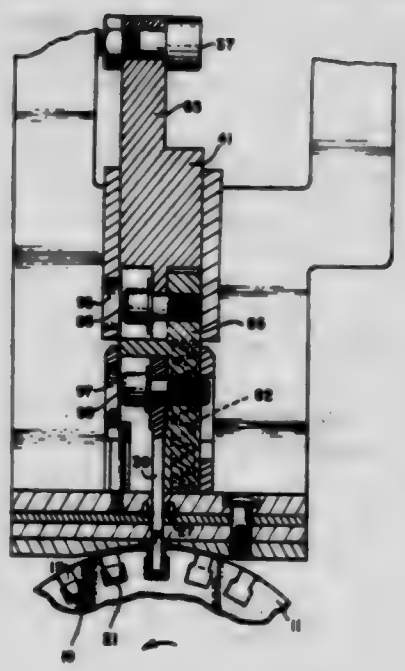
said coil placing apparatus and said wedge making apparatus being a unitary assembly removable as a unit for substitution of differently configured coil placing apparatus and wedge making apparatus,

a drive means for driving said wedge making apparatus, an actuating apparatus for said wedge making apparatus including

(a) a bipartite cut-off drive bar coupling said drive means to said cutting means,

(b) a bipartite forming drive bar coupling said drive means to said forming means,

each said bipartite drive bar having first and second separable parts, said first parts being operatively connected to said drive means, said second parts being respectively



operatively connected to said cutting means and said forming means, said second parts of both said drive bars forming parts of said wedge making apparatus,

means for releasably connecting said first parts to respective said second parts comprising clamp means at one end of one part and a clamp receiving means at one end of the other bipartite part, and

a bipartite actuating arm for indexing said wedge-receiving magazine, said bipartite actuating arm including

(a) a first segment operatively connected to said drive means, and

(b) a second segment having a spring loaded pawl for engaging and pushing said ratchet plate to thereby index said wedge-receiving magazine, said first segment and said second segment being in abutting engagement only with each other, said second segment forming a part of said wedge making apparatus whereby said pawl and said ratchet plate are removable with said coil placing apparatus and said wedge making apparatus.

4,495,693

METHOD OF INTEGRATING MOS DEVICES OF DOUBLE AND SINGLE GATE STRUCTURE

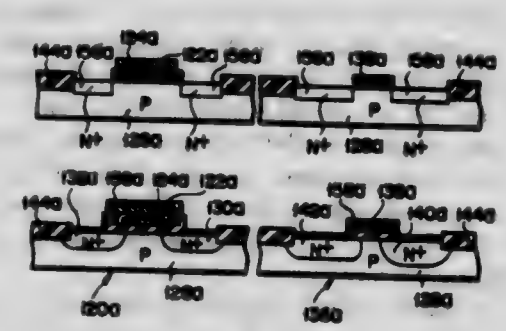
Hiroshi Iwahashi, Yokohama; Masamichi Asano; Kuniyoshi Yoshikawa, both of Tokyo, and Masaaki Mita, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Division of Ser. No. 273,245, Jun. 12, 1981,. This application Apr. 22, 1983, Ser. No. 487,765

Claims priority, application Japan, Jun. 17, 1980, 55-81724

Int. Cl.³ G11C *11/40*; B01J *17/00*; H01L *29/27*

U.S. Cl. 29—571 9 Claims



1. In a method for manufacturing a nonvolatile semiconductor memory device a method of forming an MOS device of double gate structure comprising the steps of:

forming a first electroconductive layer which is superposed on a semiconductor substrate with a first insulating film interposed therebetween;

forming a second electoconductive layer which is superposed on said first electroconductive layer with a second insulating film interposed therebetween;

forming a control gate by selectively etching said second electroconductive layer;

forming a floating gate by selectively etching said first electroconductive layer with said control gate as a mask, said floating gate being formed to have a length as viewed in a channel direction shorter than that of said control gate in the same direction; and

introducing impurities by ion implantation into said semiconductor substrate with said control gate as a mask to form source and drain regions; and thermally processing said source and drain regions to extend these regions into those portions of said semiconductor substrate being under the end portions of said floating gate.

4,495,694

METHOD OF FABRICATING AN ISOLATED GATE JFET

James D. Beasom, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 309,194, Oct. 6, 1981, Pat. No. 4,456,918. This application Apr. 13, 1984, Ser. No. 599,817

Int. Cl.³ H01L *29/80, 27/02, 27/04*

U.S. Cl. 29—571 6 Claims



1. A method of fabricating a thin channel junction field effect transistor comprising:

diffusing impurities into a bottom gate region of a first conductivity type to form an isolation region of a second conductivity type opposite said first impurity type;

diffusing impurities into said bottom gate region to form spaced source and drain regions of said second conductivity type;

diffusing impurities into said isolation region to form a top

gate contact region of said first conductivity type isolated from said bottom gate region by said isolation region;

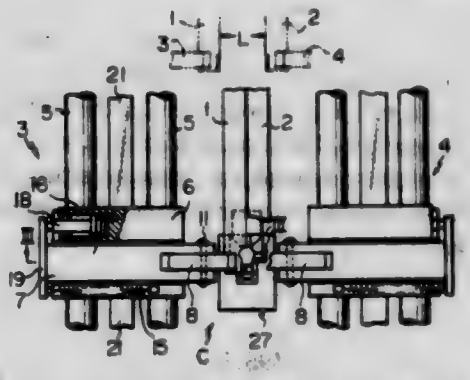
ion implanting impurities into said bottom gate region and said isolation region to form a channel isolation region of said second conductivity type and a top gate region of said first conductivity type covering said channel isolation region and contacting said top gate contact region.

4,495,695

APPARATUS FOR MANUFACTURING SLIDE FASTENER HAVING SEPARABLE END STOP

Mitsuga Umino, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jul. 7, 1983, Ser. No. 511,644
Claims priority, application Japan, Jul. 10, 1982, 57-120179
Int. Cl.³ A41H *37/06*; B21D *53/50*
U.S. Cl. 29—767 3 Claims



1. An apparatus for manufacturing a slide fastener having a separable end stop through the steps of attaching a pin, box pin, slider and box to a pair of stringers while the stringers are being fed in a parallel state by grippers, said stringers having a space portion devoid of fastener elements and upper stoppers affixed adjacent to the space portion, characterized in that said apparatus comprises a pin fitting attaching unit for attaching the pin and box pin to the core portions of the stringers, a slider attaching unit, and a box attaching unit for attaching the box to the box pin, said pair of stringers being fed so as to pass through said pin attaching unit, said slider attaching unit and said box attaching unit, said slider attaching unit having a transfer holder for carrying the slider into the path of travel of the stringers from a slider supply device, and a retaining device for retaining the slider between itself and said holder, said retaining device including a stopper block having a portion for embracing the slider between itself and the transfer holder, and a shoulder portion for impeding movement of the slider in the travelling direction of the stringers, as well as an engaging block having a portion for embracing the slider between itself and the transfer holder, these two blocks being driven so as to assume positions where both blocks cooperate with the transfer holder to retain the slider when the stringers are passed through the slider, after which the stopper block is driven so as to separate from the slider, whereby the slider is freed from between the transfer holder and engaging block automatically when the upper stoppers of said stringers engage the slider.

4,495,696

SCISSORS SHEATH HAVING INTEGRAL BLADE SHARPENER

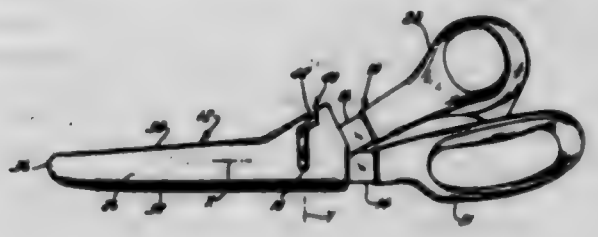
Wayne G. Fethke, Wausau, and Daniel D. Call, Athens, both of Wis., assignors to Oy Fiskars AB, Helsinki, Finland

Filed Dec. 29, 1982, Ser. No. 454,465
Int. Cl.³ B26B *13/00*; B24D *7/16*
U.S. Cl. 30—138 7 Claims

1. In combination:

a scissors sheath including an elongated passage open at one end for accommodating insertion and withdrawal along a path of travel in said passage of the closed blades of a pair of scissors;

blade sharpening means on said sheath comprising a sharpening slot extending from a side of said sheath transversely into said passage for receiving the scissor blades, said blade sharpening means further comprising a blade sharpening element mounted on said sheath within said slot intermediately of outer and inner slot portions of said slot; and



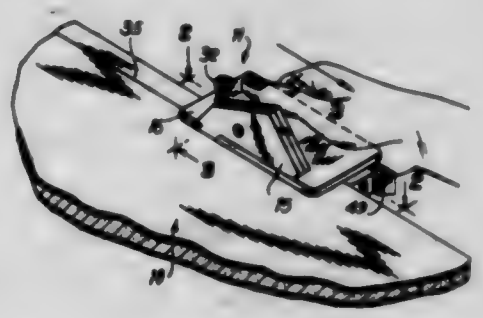
latch means for releaseably securing said pair of scissors in said sheath comprising a resiliently flexible member integrally formed on said sheath within said passage and normally biased into said path of travel but displaceable therefrom for releaseable engagement with a pair of scissors inserted into said sheath.

4,495,697

PLASTERBOARD TRIMMING TOOL

Stanley Ruff, 9 Arbor Dr., New Rochelle, N.Y. 10804

Filed Aug. 31, 1982, Ser. No. 413,267
Int. Cl.³ B26B *29/00*
U.S. Cl. 30—294 15 Claims



1. A plasterboard trimming tool, comprising:

(a) a support including

(i) at least two arms and

(ii) an interconnecting portion connecting said arms and keeping the same apart, said interconnecting portion including a web rigid with said arms and constituting a main support element therewith;

(b) means for guiding said support on a marginal portion of the plasterboard in a position in which said support embraces the marginal portion, including

(i) lateral guiding surfaces on said arms facing one another and spaced from each other by a distance substantially equal to the thickness of the plasterboard to engage the major surfaces of the latter in said position, and

(ii) a transverse guiding surface extending between said lateral guiding surfaces substantially normal thereto on said interconnecting portion to engage the edge face of the plasterboard in said position;

(c) means for simultaneously scoring the plasterboard at both of the major surfaces thereof in continuous straight cuts parallel to and spaced a predetermined distance from the edge surface of the plasterboard during the movement of said support in said position along the marginal portion of the plasterboard, including

(i) at least a pair of cutting blades each having at least one cutting edge, and

(ii) at least a pair of holders each arranged on one of said arms of said support and operative for holding the associated cutting blade in at least one cutting position relative to the respective arm in which said cutting blade projects beyond the associated lateral guiding

surface into the space between said lateral guiding surfaces at said predetermined distance from said transverse guiding surface, and said cutting edge thereof faces in the direction of movement of said support along the marginal portion of the plasterboard; and

(d) means for selectively changing said predetermined distance, including

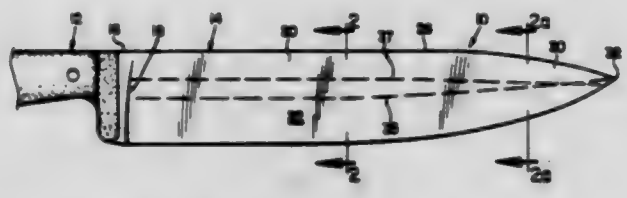
(i) an auxiliary support element constituting a part of said interconnecting portion and being removably mounted on said web, said auxiliary support element having two elongated sections each extending along said web in a mounted position of said auxiliary support member on said web and having a surface facing away from the latter and spaced a different distance therefrom to selectively serve as said transverse guiding surface when the respective section is received in the space between said arms and thus to change said predetermined distance on reversal of the position of said auxiliary support element.

4,495,698

CONCAVE GRIND KNIFE BLADE AND METHOD OF MAKING

Joseph R. Gerber, Jr., Lake Oswego, Oreg., assignor to Gerber Legendary Blades, Portland, Oreg.

Filed Sep. 1, 1982, Ser. No. 413,666
Int. Cl.³ B26B *3/03*; B21K *11/02*
U.S. Cl. 30—357 8 Claims



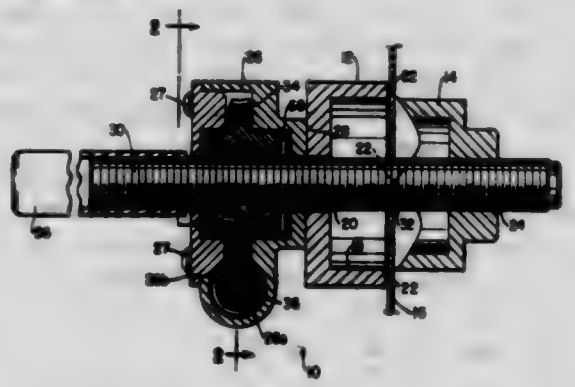
1. An improved knife blade configuration wherein the blade comprises a pair of opposite side faces, a blunt edge and a sharpened cutting edge, the surface of each side face from said blunt edge to said sharpened cutting edge in a longitudinal mid-portion of the blade being slightly concave about a large, single radius of constant curvature, the blade having a median thickness substantially nearer the blunt edge than the cutting edge over a substantial portion of the length of the blade, the side faces being substantially parallel immediately above the sharpened cutting edge.

4,495,699

HOLE PUNCH APPARATUS

Harry C. Oakes, 3771 Club Rd., Perry, N.Y. 14530

Filed Sep. 30, 1982, Ser. No. 431,286
Int. Cl.³ B26F *1/00*; B23B *5/00*
U.S. Cl. 30—360 5 Claims



1. Hole punch apparatus comprising:

first and second cooperating dies respectively mountable on opposite sides of a workpiece, said first die and workpiece each being formed with an aperture therein,

a housing engageable with said first die,

a shaft supported within said housing, insertable through said apertures, and engageable with said second die,

a worm wheel threaded on said shaft,

a worm engageable with said worm wheel,

drive means including a power drill and means coupling said drill and said worm, whereby, when said drive means is actuated, said second die is drawn against said workpiece, compressing said workpiece between said first and second dies, and said first and second dies cooperate to punch a hole in said workpiece,

said coupling means comprising a first portion rotatable by said drill, a second portion rotatable with said worm, and shearable means cooperating with said first and second portions for normally constraining them to rotate together but shearing in case of overload to permit said first portion to be rotated by said drill while said second portion remains stationary, and

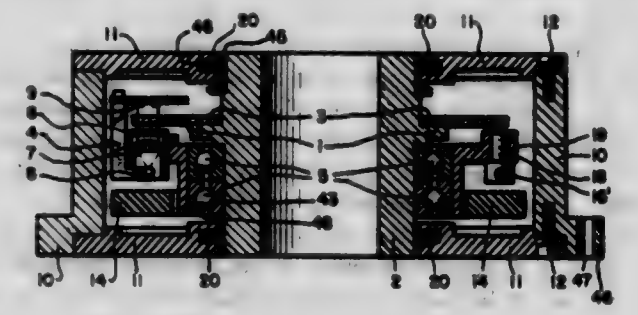
said first and second portions being concentric, said first portion surrounding said second portion, and said second portion being formed with means comprising a pair of flats respectively formed on opposite sides thereof for facilitating engagement by a hand tool, whereby, when said shearable means shears, a hand tool can be employed to turn said worm in reverse and disengage said apparatus from said workpiece.

4,495,700

APPARATUS FOR MEASURING THE ANGULAR DISPLACEMENT OF TWO OBJECTS RELATIVE TO EACH OTHER

Alfons Ernst, Traunreut, Fed. Rep. of Germany, assignor to Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Feb. 17, 1983, Ser. No. 467,332
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3206875; Jan. 15, 1983, 3301205
Int. Cl.³ G01B *11/26*
U.S. Cl. 33—1 N 23 Claims



1. In an apparatus for measuring the angular position of a first and second object rotatable relative to one another of the type in which a graduated plate is attached to a rotatable shaft, and the angular displacement of the graduated plate is measured by a scanning unit, the improvement comprising:

means for rigidly securing said rotatable shaft and graduated plate to the first object;

a housing enclosing said graduated plate and scanning unit;

means for rigidly securing said housing to the second object;

means disposed within the housing for supporting said scanning unit on said rotatable shaft; and

coupling means disposed within the housing for securing said scanning unit to said housing to prevent said scanning unit from twisting with respect to said housing;

said housing cooperating with the second object to protect the graduated plate, the scanning unit, the shaft, and the coupling means from external forces by conducting external forces to the second object.

4,495,701

DIGITAL INDICATION TYPE MICROMETERHEAD

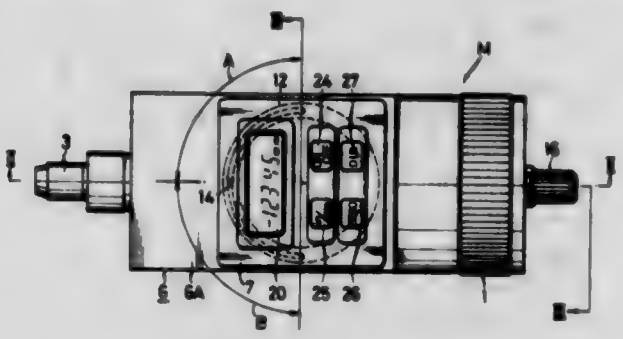
Tetsuya Nakadoi, Hiroshima, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1983, Ser. No. 479,337

Claims priority, application Japan, Mar. 31, 1982, 57-46364[U]

Int. Cl.³ G01B 3/18, 7/02

U.S. Cl. 33—166 16 Claims



1. A digital indication type micrometer head comprising: a spindle made displaceable in the axial direction thereof by rotation of a thimble through a screw feed mechanism; a displacement detector for detecting displacement values of said spindle; and operational means for processing detection signals emitted from said displacement detector and calculating a digital indication value; and a digital indicator secured rotatably to a surface of a casing for indicating the result of calculation of said operational means so that said digital indicator can take a normal position with a portion thereof at the side of the forward end of the spindle being disposed upwardly and a position or positions rotated through substantially 90° from said normal position.

4,495,702

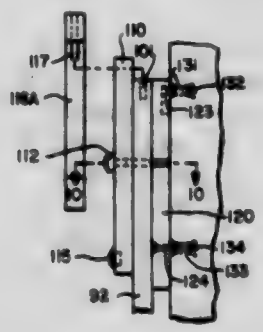
CHILD'S GROWTH MEASURING AND REGISTERING DEVICES

Lowell C. Bergstedt, 47 Dartmouth St., San Francisco, Calif. 94134

Filed Aug. 25, 1982, Ser. No. 411,431

Int. Cl.³ G01B 3/00

U.S. Cl. 33—169 R 7 Claims



1. In a growth measuring and indicating unit for children, an elongated stick and a height marking means adapted to be removably mounted to said elongated stick and including a flat stick-abutting surface, and a flat gaging surface extending transverse to said stick-abutting surface and adapted to contact the head of a child standing next to said stick and thereby to indicate the height of said child on said stick, said elongated stick comprising a plurality of separate stick sections and means for releasably fastening said stick sections together in end-to-end butting relationship including aligning means cooperatively engaging adjacent stick sections to maintain vertical alignment therebetween, said unit further comprising stand means adapted to rest on the floor of a room and means for releasably securing said stick to said stand means, including aligning means for maintaining said stick in a vertical upright orientation on said stand means, said height marking means comprising a generally flat, paddle shaped board having a threaded means in one broad surface thereof, said stick having an aperture through a top section thereof, and said unit further comprises a threaded fastener adapted to extend through said aperture in said stick and to thread into said threaded means in said height marking means to mount said height marking means to said stick.

4,495,703

COORDINATE MEASURING INSTRUMENT

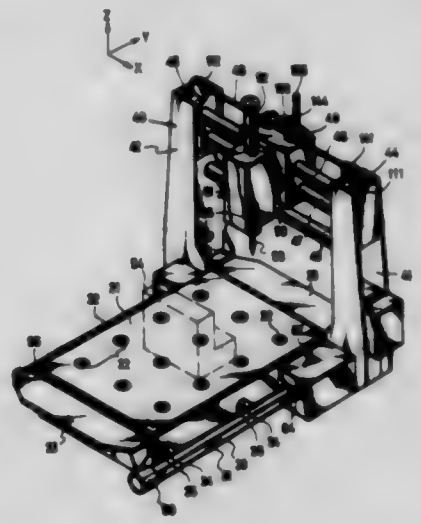
Hideo Sakata, and Masami Saito, both of Kawasaki, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1982, Ser. No. 441,149

Claims priority, application Japan, Nov. 25, 1981, 56-188926; Nov. 25, 1981, 56-188927; Nov. 25, 1981, 56-188928; Nov. 25, 1981, 56-188929; Nov. 25, 1981, 56-188930; Nov. 25, 1981, 56-188931; Nov. 25, 1981, 56-188932; Nov. 25, 1981, 56-188933; Nov. 25, 1981, 56-188934; Nov. 25, 1981, 56-188935; Nov. 25, 1981, 56-175011[U]

Int. Cl.³ G01B 7/03

U.S. Cl. 33—174 L 18 Claims



1. A coordinate measuring instrument comprising:

a bedplate for mounting thereon a workpiece to be measured, directions with respect to said bedplate being definable by mutually intersecting X and Y and Z axes fixedly oriented with respect to said bedplate;

a pair of guide rails located to flank opposite sides of said bedplate, which sides extend in the direction of the Y axis, said guide rails each having means inserted into and supported by openings provided in opposite side surfaces of said bedplate and by which said guide rails are aligned in the direction of the Y axis, the upper surface of at least one said guide rail being parallel to the upper surface of said bedplate;

a measuring element support member including a pair of supports guided along said guide rails, a slider guide rail racked across the upper end portions of said supports, a slider slidable along said slider guide rail in the direction of the X axis, and a spindle movably supported in said slider in the direction of the Z axis;

a measuring element mounted on one end of said spindle; and

detectors for detecting displacement values of said measuring element in the directions of the X, Y and Z axes.

7. A coordinate measuring instrument comprising:

a bedplate;

a measuring element;

a measuring element support member for supporting said measuring element for displacement with respect to the upper surface of said bedplate along mutually perpendicularly intersecting X, Y and Z axes;

an X axis direction displacement detector, a Y axis direction displacement detector and a Z axis direction displacement detector for respectively detecting displacements of said

measuring element in the directions of the X, Y and Z axes;

guide rails for guiding said measuring element support member in the direction of the Y axis, at least one of said guide rails projecting from a side surface of said bedplate and the upper surface of said one guide rail being in parallel to the upper surface of said bedplate said measuring element support member including a pair of supports, two slider guide rails parallel to each other and racked across said supports, a slider slidable along said slider guide rails in the direction of the X axis, and a measuring element supported by said slider in a manner to be movable in the direction of the Z axis; and adjusting means for making said measuring element displaceable in the direction of the X, Y and Z axes at connecting portions between the slider guide rails and at least one of said pair of supports.

17. A coordinate measuring instrument comprising:

a bedplate;

a measuring element;

a measuring element support member for supporting said measuring element for displacement with respect to the upper surface of said bedplate along mutually perpendicularly intersecting X, Y and Z axes;

an X axis direction displacement detector, and Y axis direction displacement detector and a Z axis direction displacement detector for respectively detecting displacements of said measuring element in the directions of the X, Y and Z axes;

guide rails for guiding said measuring element support member in the direction of the Y axis, at least one of said guide rails projecting from a side surface of said bedplate, the upper surface of said one guide rail being parallel to said bedplate; and

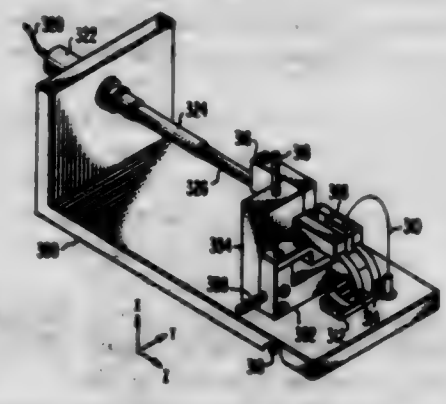
a fine feed device on said measuring element support member for finely feeding said measuring element support member relative to one said guide rail, said fine feed device including clamp means actuable to releasably clamp said guide rail and fine feed means connecting said measuring element support member to said clamp means and rotatable to finely adjust the former along said guide rail with said clamp means clamping said guide rail.

4,495,704

MICROTRANSLATOR AND MICROTRANSLATOR ASSEMBLY

Jacob M. Hammer, Princeton, N.J., and Clyde C. Neil, Levittown, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 20, 1983, Ser. No. 505,737
Int. Cl.³ G01B 5/00
U.S. Cl. 33—180 R 6 Claims



1. A microtranslator for holding a device and translating said device, with a positioning resolution of the order of 200 nanometers or less, in a direction substantially parallel to a given spatial axis; said microtranslator comprising:

a stationary rigid base element having a longitudinal dimension perpendicular to said given axis;

a rigid beam element situated in cooperative spatial relationship with said base element with a longitudinal dimension of said beam element being oriented substantially parallel to the longitudinal dimension of said base element, said beam element supporting a holder for said device which is located at a given position along the longitudinal dimension of said beam element;

a spring element coupling said beam element to said base element to permit limited movement over a range of said beam element with respect to said base element, said movement being in a direction essentially parallel to said given axis, with said spring element being biased so as to urge said beam element in a direction of movement toward said base element; and

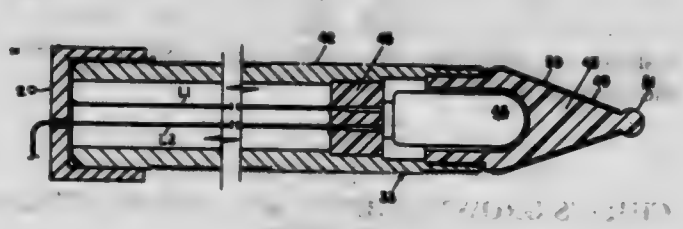
precision adjustment means coupled to said beam and base elements for controlling the amount of separation between said beam and base elements and thereby varying the value of said bias of said spring element as a given linear function of the amount of said separation between said beam and base elements, said adjustment means being settable with a precision which provides a positioning resolution in the value of the separation spacing distance between said beam and base elements at said given position along the longitudinal dimension of said beam element of the order of 200 nanometers or less.

4,495,705

ILLUMINATED SIGHT FOR AIMING A BOW

Robert J. Kowalski, 540 Old Plank Rd., Rte. 8, Butler, Pa. 16001, and William C. Wilmeth, 233 Cameron Dr., Mars, Pa. 16046

Filed May 16, 1983, Ser. No. 495,137
Int. Cl.³ F41G 1/46, 1/34
U.S. Cl. 33—265 9 Claims



1. A device for use in aiming a bow, said device comprising, in combination, first and second members having between them a releasable interlocking connection, said second member having a light-conductive pathway communicating with an end portion of said first member at said releasable interlocking connection, said first member having an internal cavity extending to the sight of said connection, a light bulb socket supported in said internal cavity in said first member for access by disengaging said releasable interlocking connection, an incandescent light bulb accessible in said first member while operatively engaged with said socket, said second member having a cavity to received a portion of said bulb such that the bulb confronts and irradiates the light-conductive pathway of said second member, said second member having a reduced size body position extending to a light-dispersing end portion communicating with said light-conductive pathway, power means including a switch coupled by an electrical conductor in said first member for energizing said incandescent light bulb, and holder means adapted to be secured to the bow above an arrow-receiving portion thereof for supporting said first and second cylindrical members such that said light-dispersing end portion can extend in a line-of-sight with a target.

4,495,706

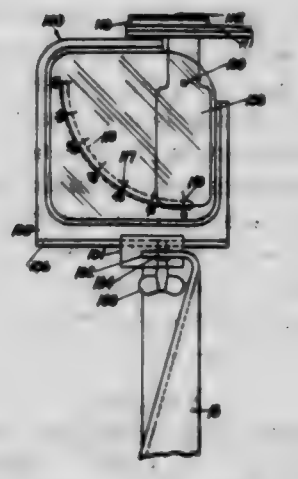
ALIGNMENT GAGE FOR DISH ANTENNA

Elton G. Kaminski, Sidney, Ohio, assignor to The Stolle Corporation, Sidney, Ohio

Filed Jul. 19, 1982, Ser. No. 399,307
Int. Cl.³ G01C 17/18, 23/00
U.S. Cl. 33—333 9 Claims

1. In a receiving antenna structure having a dish antenna fixed in a predetermined position, the improvement in combi-

nation therewith comprising an alignment gage for establishing the correct azimuthal and elevational orientation of the pointing axis comprising the electrical boresight of the antenna including means for visually measuring the azimuthal position of the pointing axis including means for measuring the angular deviation in the horizontal plane from magnetic north, said azimuthal measuring means comprising a magnetic compass having a rotatably mounted partially magnetized movable indicator and a graduated angular scale surrounding said indicator; means for visually measuring the elevational position of the pointing axis including means for measuring angular deviation in the vertical plane from a true vertical axis, said elevational position measuring means comprising a graduated angular scale generally vertically disposed when the gage is



mounted on the antenna, a pivotally mounted vertically hanging weighted pendulum having indicating means on one end thereof cooperating with said scale to display the vertical angular deviation, a plate like mounting bracket, means for pivotally mounting said pendulum to said bracket, said scale comprising a plurality of equally spaced indicia spaced equal distances from the pivot point on one surface of the bracket, and means for mounting said compass to said pendulum such that said movable indicator remains substantially horizontal with changes in inclination of the antenna; and means for temporarily and detachably mounting said gage to the antenna so that said azimuthal and elevational measuring means are readily visible to permit easy adjustment of the pointing axis to a predetermined desired position.

4,495,707

BIDIRECTIONAL PLUMB BOB LEVEL

James R. Rousey, Rte. 1, Box 193J, Eatonville, Wash. 98328

Filed Feb. 16, 1984, Ser. No. 580,661
Int. Cl.³ G01C 15/10
U.S. Cl. 33—392 33 Claims

1. A plumb bob level comprising:

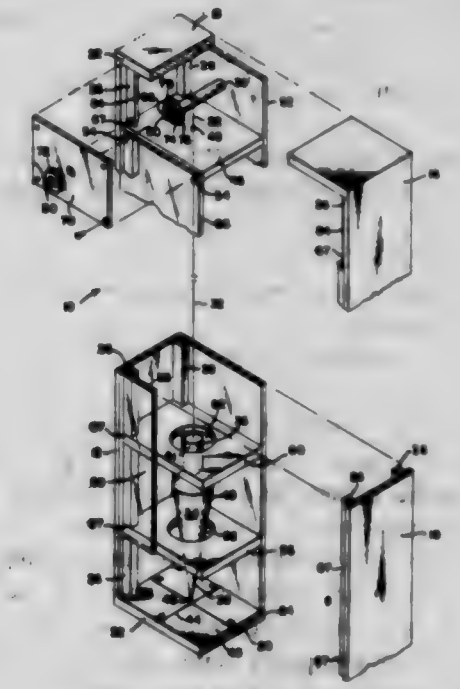
a rigid metallic casing having two parallel, spaced-apart, opposed elongated sidewalls, each of said sidewalls having a planar exterior surface parallel with said exterior surface of the opposing sidewall, said sidewalls being rigidly connected together by an upper end wall and a lower end wall positioned at the longitudinal ends of said sidewalls, said end walls each having a planar exterior surface oriented perpendicular to both of said sidewall exterior surfaces, said sidewalls and end walls each having two opposed, parallel, planar exterior edge surfaces oriented perpendicular to said sidewall and end wall exterior surfaces and defining outwardly facing, planar front and rear surfaces, each of said sidewalls having a pair of spaced-apart, longitudinally extending, interior flanges recessed inward from said sidewall exterior edge surfaces;

a shaft positioned and rotatably supported toward said upper end wall and having a flexible line attached thereto and extending longitudinally within said casing toward said lower end wall, said shaft being selectively rotatable for adjusting the length of said line extending from said shaft;

an elongated plumb bob with longitudinal upper and lower end portions and an enlarged midportion therebetween, said upper end portion being secured to said line toward said lower end wall for suspension from said shaft and positioning of a pointed tip of said lower end portion in proximity and alignment with a cross-hair-type target formed on an interior surface of said lower end wall, said plumb bob being free-swinging for movement in all directions responsive to the angular orientation of said casing with respect to true vertical;

a guide plate positioned toward said upper end wall below said shaft and extending between said sidewalls for maintaining the spacing therebetween, said guide plate having an aperture laterally aligned with said target and having said line extending through said aperture to maintain said line laterally centered within said casing relative to said target, regardless of the position of said line on said shaft, said aperture being sized large enough to permit free passage of said line therethrough but small enough to substantially limit lateral movement of said line therein;

transparent front and rear face plates attached to said casing in position against said flanges, with an outward surface of



said face plates being positioned at or inward of said respective front and rear casing surfaces, said face plates extending between said sidewalls and at least partially enclosing said casing while permitting substantially uninhibited viewing of the plumb bob, shaft, line and target;

a transparent first gusset plate positioned toward said lower end wall and intermediate said plumb bob upper and lower end portions, said first gusset plate extending between said sidewalls for maintaining the spacing therebetween and having an aperture with said plumb bob positioned therein, said aperture being sized large enough to permit free-swinging of said plumb bob during normal usage but small enough to prevent said plumb bob from swinging into contact with said sidewalls or face plates; and

a transparent second gusset plate positioned intermediate said first gusset plate and said plumb bob upper end portion, above said plumb bob midportion, said second gusset plate extending between said sidewalls for maintaining the spacing therebetween and having an aperture with said plumb bob positioned therein, said aperture being sized large enough to permit free-swinging of said plumb bob during normal usage but small enough to prevent said plumb bob midportion from passing therethrough when the level is inverted.

4,495,706

DRAWING HEAD FOR A DRAWING MACHINE

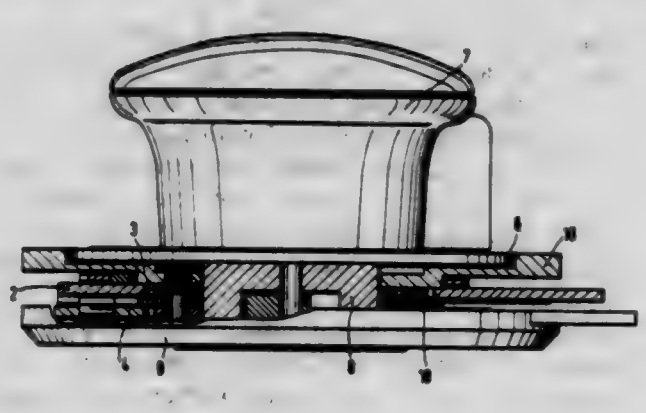
Uwe Jopt, Wilhelmshaven, and Hans Eder, Schortens, both of Fed. Rep. of Germany, assignors to Franz Kuhlmann Praezisionsmechanik und Maschinenbau GmbH & Co. KG, Wilhelmshaven, Fed. Rep. of Germany

Filed Feb. 23, 1983, Ser. No. 468,969

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1982, 3206550

Int. Cl.³ B43L *13/02*

U.S. Cl. 33—438 21 Claims



1. A drawing head:

a base plate adapted to be attached to the drawing machine, the base plate having a central bore;

a straightedge support adjacent to the base plate and rotatable with respect to the base plate;

a central pin which extends through the central bore and being operatively connected with the straightedge support;

a cover plate attached to the pin;

a gripping handle attached to the pin and projecting above the cover plate;

a spacing ring rotatably mounted between the base plate and the cover plate;

first locking means for releasably retaining the straightedge support with respect to the spacing ring;

second locking means for releasably retaining the spacing ring with respect to the base plate; and

bearing means which are rotatably surrounding the central pin and which are rotatably mounted in the bore of the base plate and which are rotatable with the spacing ring, the straightedge support being axially supported and rotatably positioned on the bearing means.

4,495,709

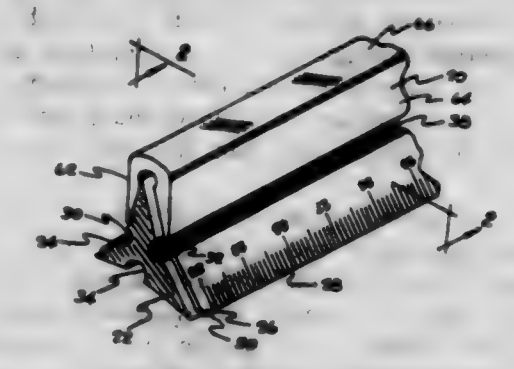
SNAP-ON ADAPTOR FOR ARCHITECT'S SCALE

Joseph S. Maimenti, 16 Libre Ct., Wayne, N.J. 07470

Filed Nov. 5, 1982, Ser. No. 439,338

Int. Cl.³ G01B *3/04*; B43L *7/00*

U.S. Cl. 33—484 9 Claims



1. An adapter to a triangular ruler having three sides and a central groove along each of said sides, said adapter comprising:

two parallel outer edges of nearly the same or a slightly shorter length than the length of said ruler;

an inner contour surface extending inward from one of said outer edges and terminating at the second edge;

an outer surface extending outward from one of said edges and terminating at the second edge;

two elongated beads on said inner contour surface, each of said beads being adaptable to be snapped into one of said central grooves so as to hold said adapter firmly against ruler;

outer indentures on said outer surface opposite and parallel to each of said beads;

a flap between each of said edges and each of said outer indentures on the outer surface, the inner surface of each of said flaps extending from one of said edges to one of said beads;

a substantially smooth and substantially flat portion on said outer surface midway between said outer indentures; and

a circular inner groove within said inner contour surface parallel to and midway between said beads and directly opposite said flat portion, the distance between said inner groove and said beads being separated by substantially flat sections tapered at approximately the same angles of said triangular ruler and being such that the deepest portion of said inner groove abuts an edge of said ruler when said beads are snapped into said central grooves.

4,495,710

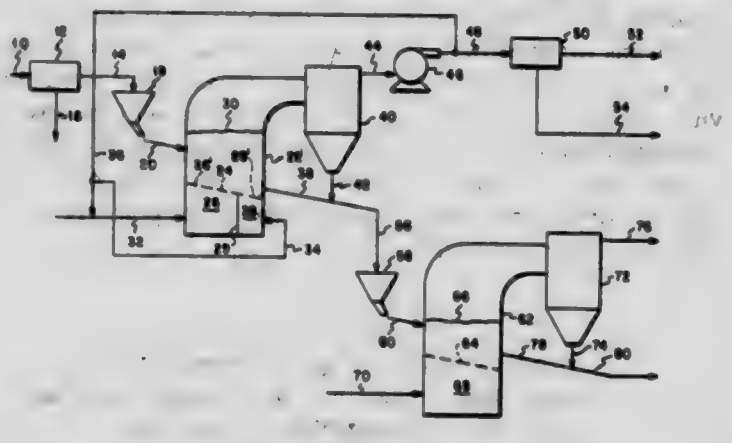
METHOD FOR STABILIZING PARTICULATE LOW RANK COAL IN A FLUIDIZED BED

Javan D. Ottoson, Anchorage, Ak., assignor to Atlantic Richfield Company, Los Angles, Calif.

Filed Aug. 1, 1983, Ser. No. 519,177

Int. Cl.³ F26B *3/08*; C10L *5/00*; F27B *15/00*

U.S. Cl. 34—10 10 Claims



1. In a method for drying particulate low rank coal in a fluidized bed, said method consisting essentially of:

(a) charging said coal to a coal drying zone;

(b) supporting said coal above a support means in said coal drying zone, said support means being adapted to the flow of a hot fluidizing gas upwardly through said support means and said coal;

(c) flowing hot fluidizing gas through said support means and said coal to fluidize said coal and dry said coal; and,

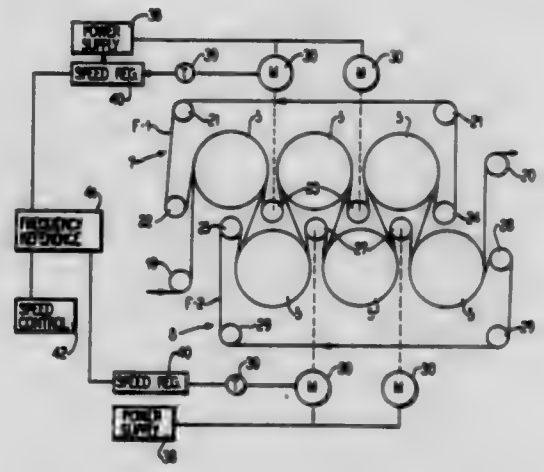
(d) retaining said coal in said drying zone for a time sufficient to reduce the water content of said coal to a desired level;

an improvement comprising, fluidizing said coal above a first portion of said support means with a hot fluidizing gas at a temperature from about 400° to about 900° F. to dry said coal and fluidizing said coal above a second portion of said support means with a recycle gas stream, from said coal drying zone and at a temperature below about 200° F. to stabilize the temperature of of said coal, said second portion of said support means being adjacent the coal discharge from said coal drying zone.

4,495,711
DRYER SECTION DRIVE ARRANGEMENT FOR PAPER MAKING MACHINES

Edgar J. Justus, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Continuation-in-part of Ser. No. 392,720, Jun. 28, 1982, now Defensive Publication No.
Int. Cl.³ F26B *13/08*
U.S. Cl. 34—23 14 Claims



1. In a paper making machine dryer section of the type having a plurality of rotatably mounted heated dryer rolls arranged in cooperative upper and lower tiers and each having a peripheral drum surface over which a paper web to be dried is adapted to be run in a sinuous path successively around the dryer rolls of the tiers, and respective dryer felts for guiding and holding the web onto the dryer roll peripheral drum surfaces in each tier, said felts also functioning to maintain substantial drum surface running speed synchronism of the rolls in the respective tier with which each felt is associated, the improvement comprising:

each of said dryer felts being trained over guide rollers exclusively for that felt and maintained under roll driving tension against said dryer roll drum surfaces;

a plurality of electrical felt driving motors operatively coupled respectively to the guide rollers of the upper tier felt;

a plurality of electrical felt driving motors drivingly coupled respectively to the guide rollers of the lower tier felt; and,

means for synchronizing only one of said motors for each felt with only one said motors for the other felt for synchronizing the running speed of said dryer felts and thereby synchronizing the running speed of said roll tiers, and comprising a frequency reference device connected to respective speed regulators for each of said one motors, a tachometer connected between each of the speed regulators and each of said one motors, a speed control connected to said frequency reference device, and a power supply for all of said motors.

4,495,712
PAPER MAKING MACHINE DRYER SECTION DRIVE

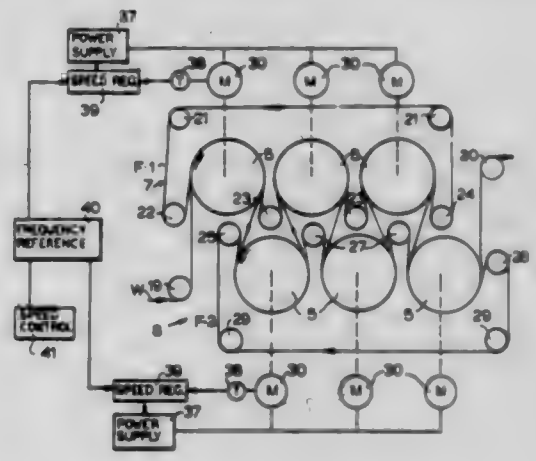
Edgar J. Justus, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Jun. 28, 1982, Ser. No. 392,720
Int. Cl.³ F26B *13/08*
U.S. Cl. 34—52 11 Claims

1. In a paper making machine dryer section of the type having a plurality of rotatably mounted heated dryer rolls arranged in cooperative upper and lower tiers each having a drum surface over which a paper web to be dried is adapted to be run in a sinuous path successively around the dryer rolls of the tiers, and respective dryer felts for guiding and holding the web onto the dryer roll peripheral surfaces in each tier, said felts also functioning to maintain substantial drum surface running speed synchronism of the rolls in the respective tier with which each felt is associated, the improvement comprising:

each tier of rolls having a plurality of electrical driving motors for driving exclusively the rolls in that tier;

means for effecting a driving coupling for the motors in each tier with the respective dryer rolls in that tier;

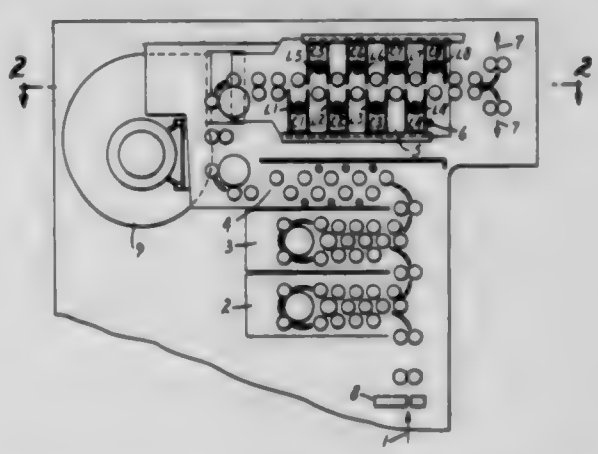


and means for synchronizing only one of the motors of each tier with only one of the motors of the other tier for synchronizing the drum surface running speed of each roll tier with respect to the other roll tier.

4,495,713
INFRARED DRYING FOR WATER-IMPREGNATED PHOTOGRAPHIC FILMS

Mario Williner, Ferrania, Italy, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 4, 1982, Ser. No. 385,048
Claims priority, application Italy, Jun. 19, 1981, 48720 A/81
Int. Cl.³ F26B *23/04*
U.S. Cl. 34—68 9 Claims



1. An apparatus for drying a photographic film impregnated with water, which comprises a drying chamber provided with an inlet and an outlet, conveying means at least partially placed inside said chamber, infrared radiation sources of elongated shape turned towards the film conveying plane and means for the circulation of air at the actual working temperature inside said drying chamber, characterized in that said apparatus includes:

(a) means to measure the temperature of the air circulating inside the drying chamber;

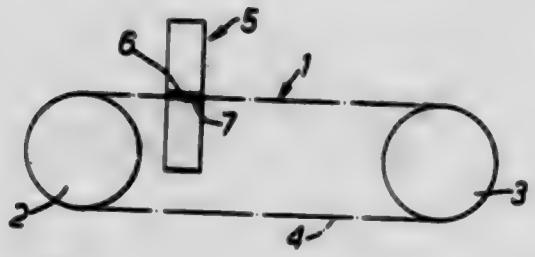
(b) means to vary the electric power applied to the infrared ray sources;

(c) means which, dependent upon the result of said measurement of the air temperature, increase or decrease said applied power if the temperature is respectively found to be lower or higher than a predetermined value,

the lamp power decrease variation, in the presence of a film to be dried, being unable to reach a value lower than a given minimum power threshold which, combined with the air at the

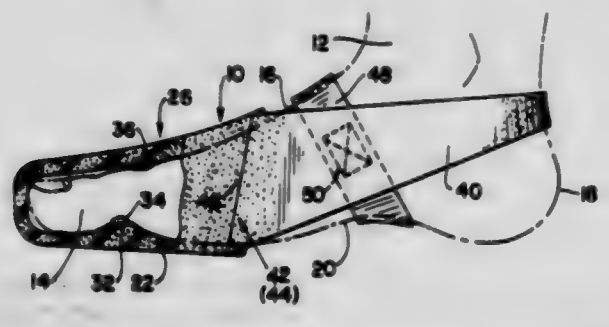
actual working temperature, is capable of providing for the drying of the film.

4,495,714
ASSEMBLY FOR HEAT TREATMENT OF A PAPERMAKING WIRE OR FELT
Gunnar Eriksen, Asker, Norway, assignor to Thune-Eureka A/S, Tranby, Norway
Filed Apr. 13, 1983, Ser. No. 484,609
Claims priority, application Norway, Apr. 13, 1982, 821205
Int. Cl.³ F26B 13/02
U.S. Cl. 34—111
7 Claims



1. An assembly for heat treatment of travelling papermaking wire or felt, comprising mutually opposing heating surfaces, which are stationary when the travelling wire or felt moves between them but which may be moved together toward the felt/wire said heating surfaces being alternately offset with respect to the opposing heating surface toward and away from the felt/wire in the direction of travel of the felt/wire.

4,495,715
FOOT APPLIANCE
James C. Fredrickson, 629 Tollis Pkwy., Broadview Hts., Ohio 44147; Patricia J. Noga, 4775 Columbia Rd., North Olmsted, Ohio 44070, and Frank M. Strasek, 21851 Center Ridge, Rocky River, Ohio 44116
Filed May 14, 1981, Ser. No. 263,694
Int. Cl.³ A43B 3/00, 3/18, 3/20
U.S. Cl. 36—113
3 Claims



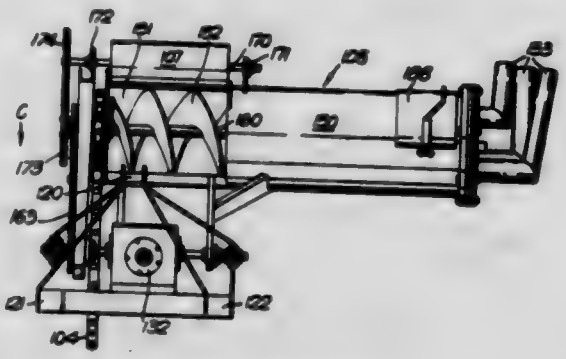
1. A foot appliance for use in the martial arts comprising in combination:

a generally cup-shaped member of soft flexible material adapted to be closely placed over the toes of the foot, said member covering the toes of the foot for providing support therefor and having portions in contact with the foot extending toward the foot ball and instep areas;

ridges disposed on the interior surface of said cup-shaped member, one of said ridges adapted to engage the underside of the foot and another of said ridges adapted to engage the upper surface of the foot, the engagement of said ridges occurring at generally the areas of interconnection of the toes with the foot; and,

a first strap element which is adapted to closely surround the heel of the foot to retain said cup-shaped member in close relation to the toes.

4,495,716
APPARATUS FOR HARVESTING PEAT
Michael Finan, Ballintubber; Peter Finan, Ballymoe, and Michael Divilly, Glenamaddy, all of Ireland, assignors to Ballintubber Enterprises Limited, Ireland
Continuation of Ser. No. 373,867, Apr. 30, 1982, abandoned.
This application Feb. 7, 1984, Ser. No. 577,914
Claims priority, application Ireland, Jun. 10, 1981, 1279/81
Int. Cl.³ E21C 49/00
U.S. Cl. 37—3
9 Claims



1. Peat cutting apparatus comprising:

(a) a support frame;

(b) a boom connected to the support frame and movable between a transport position and an operational position, the boom comprising an elongate endless cutting chain for cutting peat and delivering the cut peat to a position above the boom;

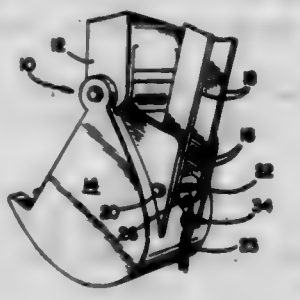
(c) peat deflecting means above the boom and in the path of the delivered peat and defining a moving surface for deflecting the delivered peat;

(d) an extrusion press mounted to one side of the boom, the extrusion press comprising a housing having (i) a collection aperture in the roof of the housing and in the path of the deflected peat, (ii) an exit aperture, and (iii) an auger rotatable in the housing for delivering the collected peat to the exit aperture and for extruding the delivered peat through the exit aperture; and

(e) drive means for operating the cutting chain, the auger and the moving surface;

the support frame being connectable to a prime mover for conveying the apparatus over a bog, for operating the drive means and for swinging the boom between its operational and transport positions.

4,495,717
COMBINATION SPACER AND LIFTING DEVICE FOR BACKHOE MACHINERY
Michael Lockwood, 623 1/3 E. Haley St., Santa Barbara, Calif. 93103
Filed Dec. 30, 1982, Ser. No. 454,661
Int. Cl.³ E02F 3/76
U.S. Cl. 37—117.5
3 Claims



1. In combination

(a) an arm supported backhoe bucket having two laterally spaced protruding plates which extend in vertical planes, said bucket having an outer surface which is convexly

curved downwardly, and from a location between said plates,

(b) a tubular sleeve extending laterally and having a lateral axis and confined endwise between said flanges, and a pin extending laterally through the sleeve and carried by the plates so that the sleeve may rotate about the pin,

(c) a tab integral with the sleeve and extending downwardly therefrom, outwardly of said bucket surface,

(d) a hook having a stem pivotally attached to said tab to hang downwardly outwardly of but close to the bucket surface between said plates,

(e) a chain having a link engaging and carried by said hook, the chain extending downwardly to freely and variably engage said bucket curved surface as the bucket is lifted and lowered by said arm supporting the bucket,

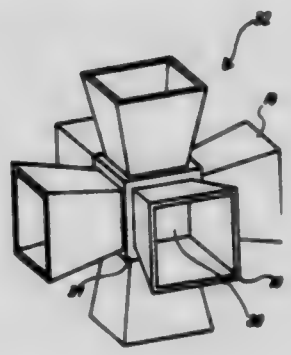
(f) the stem having two upwardly projecting yoke arms forming a space therebetween, the tab projecting downwardly in a plane which is normal to said plates to extend between the yoke arms for pivotal connection therewith and about an axis which extends forwardly from the bucket surface, a vertical plane through said forward axis extending normal to the lateral axis of the sleeve.

4,495,718

PHOTOGRAPHIC DISPLAY DEVICE

Benjamin Margalit, 3165 Meadowbrook Blvd., Cleveland Heights, Ohio 44118

Filed May 27, 1983, Ser. No. 498,983
Int. Cl.³ A47G *1/06*
U.S. Cl. 40—152.2 22 Claims



1. A display structure for artwork embodied upon a light transmitting substrate comprising:

a hollowed frustum having a closable end opposing an open end, the hollowed frustum being defined by a structural material interconnecting the ends and providing any closing of the closable end, thereby defining inner and outer surfaces of the hollowed frustum;

a circumference of the open end being greater than a corresponding circumference of the closable end;

the structural material of the frustum and the closed end being a substance substantially transmitting light; and

the light transmitting artwork substrate being applied to portions of at least one of the surfaces, configured for viewing from inside the hollowed frustum via the open end.

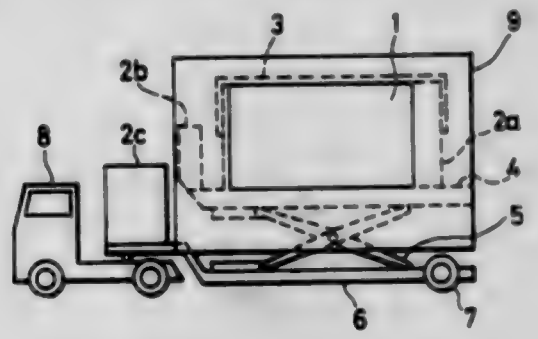
4,495,719

MOVABLE DISPLAY APPARATUS

Shunichi Futatsuishi; Shozo Fujita, and Takeshi Takashima, all of Nagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1982, Ser. No. 363,687
Claims priority, application Japan, Mar. 2, 1981, 56-30064[U]
Int. Cl.³ G09F *21/04*
U.S. Cl. 40—590 3 Claims

1. A moveable display apparatus comprising a display board having a vertically disposed flat display surface mounted on a vehicle for supplying information to a large audience, lift means for raising and lowering said display board relative to said vehicle, and a plurality of flat plate members moveably associated with said display board, said flat plate members being assembled around said vertical display surface of said display board in parallel flush relation thereto when said display board is disposed in the raised position for hiding said lift



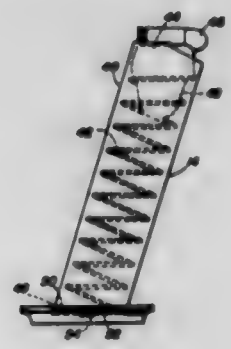
means and providing a peripheral frame for said display surface and said flat plate members being assembled about said display board in the lowered position to cover said display board to protect said display board from damage during transport.

4,495,720

HANDGUN MAGAZINE WITH POMMEL BASE

Robert Bross, Ballville Rd., Bolton, Mass. 01740

Filed Dec. 1, 1982, Ser. No. 445,925
Int. Cl.³ F41C *25/00*
U.S. Cl. 42—7 8 Claims



1. Means for mounting a pommel to a cartridge magazine which is slidable into a recess in a butt end of a grip of a handgun, the magazine having a cartridge discharging end and a closed end,

the pommel having a first surface engageable with the butt end of the grip and a smooth continuous, uninterrupted surface opposite the first surface, a recessed interior formed in the first surface and an exterior periphery complementary to and coincident with the shape of the butt end of the grip of the handgun,

a releasable interlock means on the closed end of the magazine and complementary releasable interlock means wholly within the internal confines of the recessed interior of the pommel,

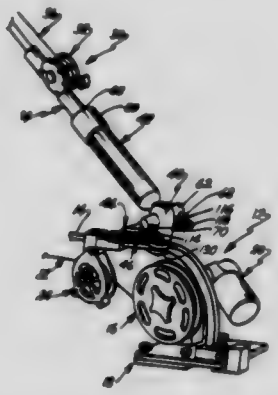
whereby the pommel and the magazine may be secured together with said interlock means completely obscured from view when the magazine is inserted into the grip of the handgun and only the interrupted surface and the exterior periphery of the pommel are visible.

4,495,721

ROD HOLDER ASSEMBLY

John E. Emory, Jr., Traverse City, Mich., assignor to Big Jon, Inc., Traverse City, Mich.

Filed Jul. 11, 1983, Ser. No. 512,360
Int. Cl.[3] A01K *97/10*
U.S. Cl. 43—21.2 16 Claims



1. A rod holder assembly primarily adapted for use with a downrigger to position a fishing rod having a line releasably secured to a downrigger line, said holder comprising:

a base, said base having a mounting portion, a bifurcated upper portion defining a slot and a throughbore extending through said upper portion and transversely of said slot;

a cylindricl rod holder member having an open end adapted to receive a fishing rod;

a pivot pin extending through said bore in said bifurcated upper portion of said base, said rod holder being secured to said pivot pin within said slot;

a bracket extending from said base; and

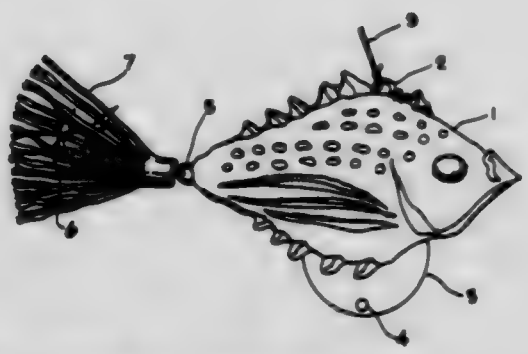
spring means attached to said bracket for biasing said pivot pin and said holder to a strike position away from said bracket, said rod holder being movable from said strike position to a set position against the bias of said spring means.

4,495,722

DEEP WATER FISHING LURE

Dean Hess, and Karen Hess, both of 3879 Modesto St., Castro Valley, Calif. 94546

Filed Feb. 10, 1983, Ser. No. 465,441
Int. Cl.[3] A01K *85/00*
U.S. Cl. 43—42.39 6 Claims



1. A bottom fishing lure, comprising:

an elongated solid body weighing not substantially less than one pound, said body being fabricated from material having a density approximately equal to that of heavy metal;

line-attachment means affixed on the upper surface of said body, such that a fishing line may be attached to said body;

hook means attached to one end of said body; and

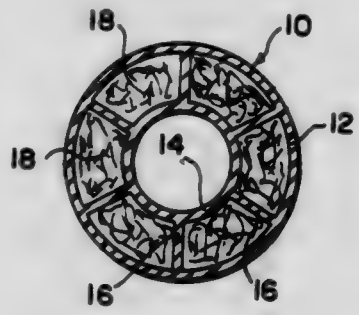
fin means rigidly attached to the lower surface of said body, said fin means forming a foil structure extending below said body along the vertical line passing through the center of gravity of said body when said lure is suspended by said fishing line in water, wherein said foil structure comprises a vertical planar foil parallel to the longitudinal axis of said body, said foil having an edge that is substantially semicircular in shape of diameter approximately one-third the length of said body and being located directly below the center of gravity of said lure, such that when said lure is jigged and descends in the water said fin means tends to cause said lure to invert its orientation by rotating 180 degrees about a horizontal axis.

4,495,723

METHOD OF PREVENTING FROST DAMAGE OF VEGETATION

Kurt J. Wasserman, Westtown, N.Y., assignor to Phase Change Technology, Inc., Port Jervis, N.Y.

Filed Jul. 25, 1983, Ser. No. 516,918
Int. Cl.[3] A01G *13/00*
U.S. Cl. 47—2 19 Claims



1. The method of maintaining vegetation above the frost damage temperature level associated with the particular vegetation comprising the steps of:

a. in an outdoor environment, substantially surrounding said vegetation with an encased phase change material having a melting point in excess of the frost damage temperature for the vegetation, said phase change material being in heat transfer proximity to said vegetation;

b. providing a path for heat transfer fluid to circulate between a location remote from the vegetation and a location in heat transfer relationship with said phase change material;

c. collecting solar thermal energy, when available, at said remote location;

d. heating said fluid at said remote location with said collected thermal energy to a temperature in excess of said melting point;

e. recirculating said heated fluid along said path for a sufficient time to melt said phase change material with thermal energy from said fluid; and

f. heating said vegetation with thermal energy released by said phase change material in response to ambient temperature dropping below said melting point.

4,495,724

PRODUCT AND METHOD OF MAKING A SEED COATING FOR INCREASED YIELD

Edmund R. Kirkland, Rte. 3, Box 342, Lumberton, N.C. 28358; Elko Palanuik, P.O. Box 910, and Harlan V. Ingman, Rte. 3, both of, Belfield, N. Dak. 58622

Continuation-in-part of Ser. No. 251,097, Apr. 6, 1981, abandoned. This application Jan. 16, 1983, Ser. No. 504,085
Int. Cl.[3] A01C *1/06*
U.S. Cl. 47—57.6 17 Claims

1. A method of making a seed coating which will increase the percentage of seeds germinated and decrease germinating time comprising:

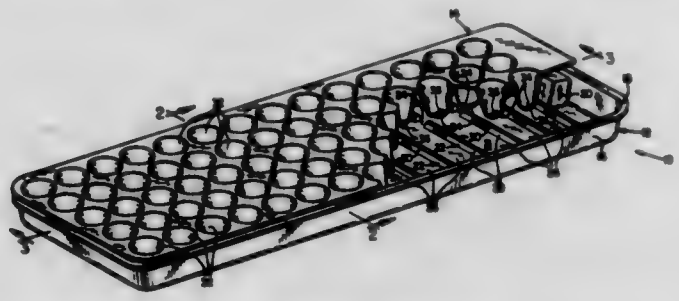
mixing dry powdered graphite with a dry hygroscopic material to form a uniform mixture in which said dry powder graphite is from about 10% to about 25% by weight of the mixture.

4,495,725

SEED GERMINATING APPARATUS AND METHOD

Gene B. Talbott, Rte. 2, Box 200, Banks, Oreg. 97106

Filed Mar. 12, 1984, Ser. No. 588,560
Int. Cl.[3] A01G *9/82*
U.S. Cl. 47—85 8 Claims



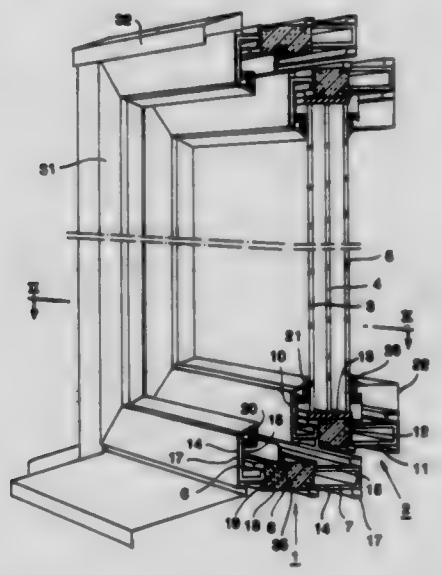
1. Apparatus for growing plants, comprising:
a pan having a floor with a plurality of raised projections defining trough regions therebetween and being adapted to hold plant watering fluid at a predetermined level relative to the upper periphery of said projections; and
an insert for the pan having a plurality of spaced, downwardly extending cells, the position of which corresponds to the position of said projections, each said cell including a bottom defining an opening, said insert being shiftable between a first position in which said bottoms are disposed in said trough regions below the level of the fluid so that the fluid can enter the openings, and a second position in which at least some of said bottoms rest upon said projections such that said openings are less than fully obstructed by said projections so that excess fluid within said cells can drain therefrom.

4,495,726

SILL AND FRAME FOR WINDOWS OR DOORS

Wictor C. O. Lindström, Furulund, Sweden, assignor to Credence Finance Association, St. Mary, Channel Islands

Filed Nov. 8, 1982, Ser. No. 440,165
Claims priority, application Sweden, Nov. 9, 1981, 8106614
Int. Cl.[3] E05D *7/00*
U.S. Cl. 49—401 11 Claims



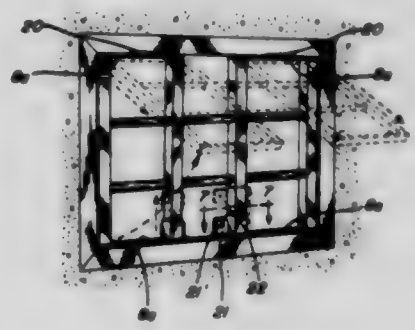
1. A sill and frame construction for windows or doors comprising:
a sill;
a frame;
each of said sill and said frame having front and rear sections, and connecting means for connecting said front section to said rear section;
wherein each of said sections is formed by roll forming and comprises two shanks and a transition portion connecting the shanks to each other, said shanks being disposed close to each other in proximity to said transition portion to provide a double-walled support portion for retainment of a seal and wherein said shanks are extended from the support portion into coupling portions for connecting said shanks to said connecting means.

4,495,727

ANTI-THEFT WINDOW BAR

Réjean Gelinas, 2519 Père Daniel St., Trois-Rivières, Canada G8Z 2K7

Filed Jun. 17, 1983, Ser. No. 506,397
Int. Cl.[3] E06B *3/68*
U.S. Cl. 49—56 1 Claim



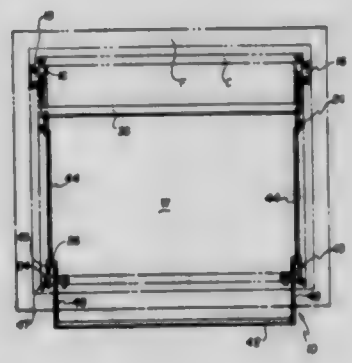
1. An anti-theft window guard for securing to a window frame, comprising two laterally-spaced hollow posts; a holder element associated with both opposite ends of said two posts; each said holder element having an outer flat seating flange adapted to extend within said window frame and two spaced dowel pins extending away from said flange and slidably extending within respective ends of said hollow posts, rod members slidably extending at least partially through holes made therefor in each said vertical post, with said rod members extending transversely of said posts, whereby a rigid grill structure can be formed in said window frame from separate holder elements, hollow posts and rod members, those of said holder elements at the top of said grill structure having hinges to hingedly secure said last-named holder elements to the upper rail of said window frame, and further including lock means to releasably keep the grill structure in operative position within the window frame, said lock means comprising an L-shape tab adapted to be secured to the lower rail of said window frame adjacent the lower end of one of said posts and having an upstanding portion formed with a hole, a collar member slidably surrounding said one of said posts and provided with a laterally-extending flange portion provided with a hole adapted to register with the first-mentioned hole; said two holes, when in registry, adapted to receive the bolt of a padlock.

4,495,728

WINDOW ESCAPE DEVICE

Gary Lynn, Box 2042, Boulder, Colo. 80306

Filed Mar. 17, 1983, Ser. No. 476,109
Int. Cl.[3] E05B *65/10*
U.S. Cl. 49—141 14 Claims



1. A device for facilitating egress form a window comprising in combination:

latching means adjacent a top area of the window cooperating with latch retention means disposed on an associated window frame upper portion in registry with said latching means,

fastening means removeably interconnecting a lower area of the window with the adjacent associated window frame lower portion,

whereby activation of said latching means allows the window to move in relation to the frame initially and thereafter allow dissociation of the window from the frame through said fastening means separation,

said latching means operatively conditioned by ladder means which is adapted to move form a first stored position to a second deployed position whereupon said latching means is automatically tripped, and

wherein said ladder means includes an upwardly extending U shaped portion having a bite portion and two upwardly extending legs, said bite portion disposed on a ledge of the window frame and fixed thereto by pivot means, said upwardly extending legs having termimi adapted to engage said latching means.

4,495,729

PIVOTABLE SLIDING DOOR FOR VEHICLES

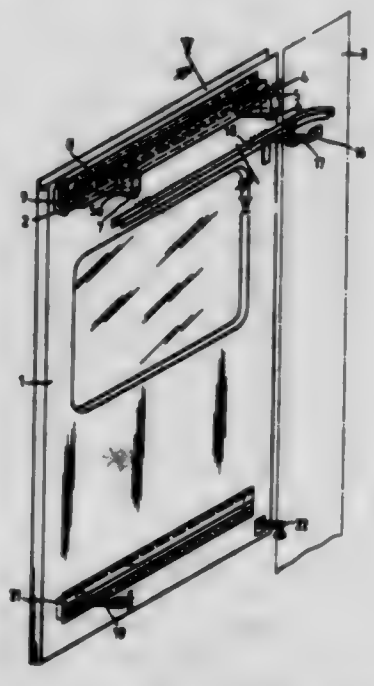
Ingo Britzke, Kassel, and Dietmar Dilcher, Vellmar, both of Fed. Rep. of Germany, assignors to Gebr. Bode & Co. GmbH, Kassel, Fed. Rep. of Germany

Filed Dec. 17, 1981, Ser. No. 331,628

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3049189

Int. Cl.³ E05D *15/10*

U.S. Cl. 49—212 7 Claims



1. A pivotable sliding door apparatus in the door frame of a vehicle comprising: a pivotable main track mounted upon the door frame; a running track fixedly mounted on the door panel; and a suspension means comprising two staggered and connected elongated partial carriages, said partial carriages each having a plurality of rollers, one of said partial carriages being rollably mounted in said main track, the other of said partial carriages being rollably mounted in said running track.

4,495,730

AUTOMATIC FARM GATE

James R. Kennedy, Box 169, Page, Nebr. 68766

Filed Sep. 1, 1983, Ser. No. 528,614

Int. Cl.³ E05D *7/06*

U.S. Cl. 49—280 11 Claims

1. An automatic gate assembly, comprising

an elongated gate having top and bottom edges and opposite ends,

means hingedly suporting one end of said gate for swinging movement of the gate between open and closed positions,

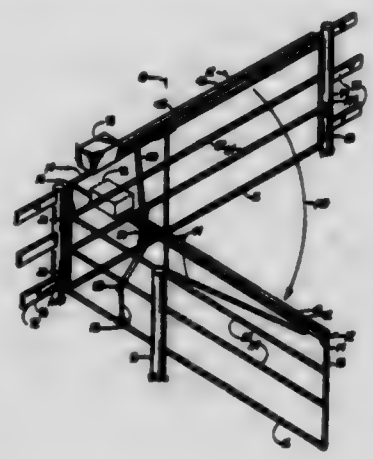
a control arm post secured to the ground at a position in spaced relation from the plane of said gate in its closed position,

a trolley,

track means on said gate for supporting said trolley for movment longitudinally of said gate,

drive means on said gate for advancing and retracting said trolley in opposite directions along said track means,

an elongated control arm having one end pivotally connected to said trolley and an opposite end pivotally connected to said control arm post such that said gate is



constrained to swing to its open position in response to advancing movement of said trolley to a gate open position and to swing to its closed position in response to retracting movement of the trolley to a gate closed position,

a latch supported on the opposite end of the gate for movement between latched and unlatched positions,

means for moving said latch to the latched position in response to overtravel retracting movement of the trolley beyond said gate closed position, and

slack adjustment means for taking up said overtravel retracting movement of the trolley so the gate will remain in its closed position while being latched said slack adjustment means comprising means for shortening the length of said control arm.

4,495,731

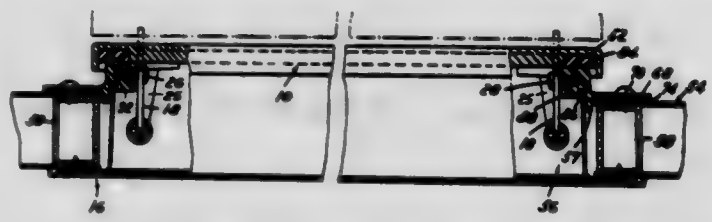
VEHICLE HATCH MOUNTING ASSEMBLY

Ronald E. Sears, Bloomfield Hills, Mich., assignor to Transpec, Inc., Troy, Mich.

Continuation of Ser. No. 317,944, Nov. 4, 1981,. This application Nov. 1, 1982, Ser. No. 438,511

Int. Cl.³ E05D *7/00*

U.S. Cl. 49—402 6 Claims



1. In an assembly of the type for mounting an outwardly opening hatch (10) in a passenger vehicle enclosure or the like, said assembly including a mounting ring (16), said ring having an integral continuous sealing flange portion (76) having one edge (78) thereof disposed outwardly and laying in a common plane to form a hatch sealing edge, said mounting ring includ-

ing a locating flange (57) for centering the sealing flange with a vehicle hatch opening (56), said ring having an integral mounting flange portion (68) extending laterally outwardly from the sealing flange portion for overlaying the outside marginal edge of the hatch opening, and a plurality of hinge devices (12 and 14) respectively connected both to the hatch and the mounting ring to permit the hatch to be opened and closed relative to the vehicle hatch opening, each hinge device (12 and 14) being disposed within the hatch opening (56) and including a first member (25) fixed to the interior of the hatch, a plurality of hinge supporting elements (88, 90, 92, 94) integrally formed on and projecting laterally inwardly from said mounting ring, each hinge device including second members (18 and 20) pivotally connected to various of the mounting ring supporting elements to enable the hatch to be raised equidistantly above the hatch opening, the improvement comprising:

a. a downwardly opening bezel receiving pocket (86) formed in the sealing flange of the mounting ring, and

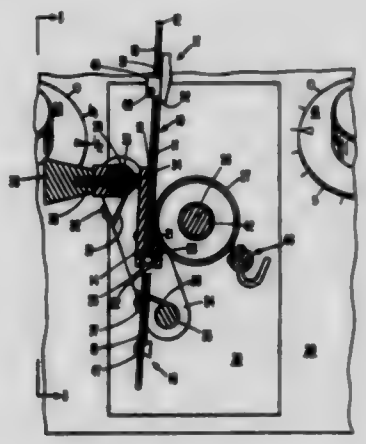
b. a trim bezel (100) of generally L-shaped configuration having a laterally extending first flange (102) adapted to overlie the inner surface of the vehicle at the marginal edge of the opening (56) in which the hatch mounting assembly is disposed, said bezel including a second flange (108) projecting upwardly within the bezel receiving pocket of the mounting ring whereby the trim bezel conceals the edge of the hatch opening and trims the same.

4,495,732

SEMICONDUCTOR WAFER SECTIONING MACHINE

Roger S. Turner, 620 Carpenter La., Philadelphia, Pa. 19119

Filed Sep. 13, 1982, Ser. No. 416,975
Int. Cl.³ B24B 5/36
U.S. Cl. 51—91 R 10 Claims



1. In a sectioning machine of the type having an abrasive tool rotatably mounted on a housing and having a wafer holding chuck adapted to engage a wafer in uniform line contact with said abrasive tool comprising:

a fixed housing,

an abrasive tool rotatable mounted on said housing,

a wafer holding chuck mounted on said housing and adapted to be moved to engage said wafer with said abrasive tool, said wafer holding chuck comprising,

a substantially flat chuck plate having a front face juxtaposed said abrasive tool and adapted to support a wafer to be sectioned thereon,

resilient strip means on said front face of said chuck plate parallel to the rotational axis of said abrasive tool and adapted to engage and movably support the rear surface of a wafer thereon which is spaced apart from and adjacent to said front face of said chuck plate,

edge fastening means for positioning and holding said wafer into engagement with said resilient strip means, and

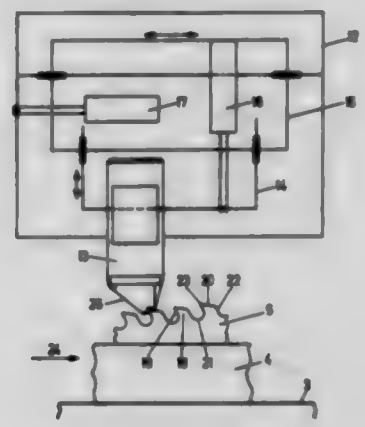
upon engagement of said abrasive tool against said wafer, said wafer supporting resilient strip means compresses and permits the front face of said wafer to conform and self align to and to make uniform line contact with said abrasive tool.

4,495,733

SCANNING FINGER FOR A SCANNING DEVICE OF A MACHINE FOR THE AUTOMATIC SHARPENING OF BROACHING OR REAMING TOOLS

Roland Börner; Herbert Holstein, and Jürgen Seuswald, all of Solingen, Fed. Rep. of Germany, assignors to Oswald Forst Maschinenfabrik und Apparatebauanstalt GmbH & Co. KG, Solingen, Fed. Rep. of Germany

Filed Jul. 16, 1982, Ser. No. 399,884
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1981, 3131557
Int. Cl.³ B24B 49/00
U.S. Cl. 51—165 R 4 Claims



1. An apparatus for use in a scanning device of a machine for the automatic sharpening of a cutting tooth of a tool said cutting tooth having a free face, a cutting face and a rounded-off cutting edge, which machine has a horizontal slide for receiving said tool having cutting teeth to be sharpened and a vertical slide provided with at least one grinding spindle, said apparatus comprising a scanning finger movable relative to the scanning device and coupled to at least one member for emitting signals in a displacement-dependent manner for triggering drive mechanisms for said slides; the scanning finger including:

(a) a scanning face having a scanning edge being undercut to form (b) an undercut face, said undercut face defined at one end by said scanning edge and at the other end by (c) a measuring edge, for resting on said tooth cutting face, extending upwardly from (d) a face downwardly offset from the scanning face and intended for ascertaining the cutting face of the cutting tooth;

said undercut face extending for a distance so that the horizontal distance between said measuring edge and said scanning edge is larger than the largest possible rounding-off of the cutting edge, said scanning edge being capable of resting upon said free face of said cutting tooth.

4,495,734

GRINDING ARRANGEMENT FOR CHOPPING CUTTER OF DRUM-CHOPPER MACHINE

Hans Rauch, Saulgau, Fed. Rep. of Germany, assignor to Claas Saulgau GmbH, Saulgau, Fed. Rep. of Germany

Filed Nov. 17, 1982, Ser. No. 442,446
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1981, 3146433
Int. Cl.³ B24B 3/55
U.S. Cl. 51—249 14 Claims

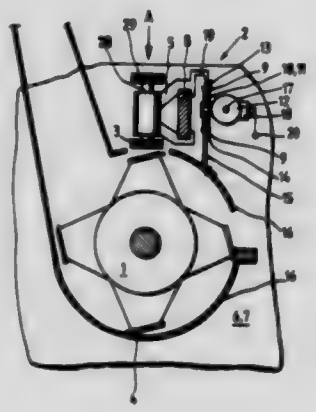
1. An arrangement for grinding a chopping cutter of a drum-chopper machine having a chopper drum rotatable about an axis, the arrangement comprising

a grinding tool;

a grinding carriage which carries said grinding tool and is reciprocable parallel to the axis of rotation of the chopper drum over a length of the latter;

drive means for driving said grinding carriage and including a double-acting cylinder-and-piston unit with a cylinder movable parallel to the axis of rotation of the chopper drum;

control means for reversing a direction of movement of said cylinder of said cylinder-and-piston unit and including a control valve connected with said cylinder and two abutment members located at opposite sides of said control valve, as considered in the direction of movement of said cylinder, and arranged so that when said control member meets a respective one of said abutment members the direction of movement of said cylinder is reversed; and



wherein said cylinder-and-piston unit of said drive means has a piston rod, said cylinder of said cylinder-and-piston unit being guidingly movable on said piston and having two ends provided with deflecting wheels and a dragging member moving around the latter, said dragging member having one run which is fixedly supported and another run which is connected with said grinding carriage for driving the latter.

4,495,735

UNITARY RACK WITH LATCH MEANS

Johnny C. Elkins, P.O. Box 2599, San Angelo, Tex. 76902

Continuation-in-part of Ser. No. 244,219, Mar. 16, 1981, Pat. No. 4,402,164. This application Sep. 2, 1983, Ser. No. 529,138
Int. Cl.³ A47F 5/08
U.S. Cl. 52—27 10 Claims



1. In a window frame having a gasket which encapsultes one marginal end therof, a glass having a marginal edge portion encapsulated within the gasket; the glass, gasket, and frame being fixed respective to one another, the combination with said window frame, glass, and gasket of a rack;

said rack includes a main body having a lip formed at the upper end thereof and a hook formed at the lower end thereof, said lip extends laterally from said main body in opposition to said hook, said hook is in the form of an upwardly opening curved configuration and is adapted to support articles which can be hung thereon;

said lip is bent into an acute angle respective to the main body, siad lip curves about and bears against an upper longitudinally extending edge portion of the window frame; and the lip, and adjacent marginal end portion of the rack is encapsulated within the gasket;

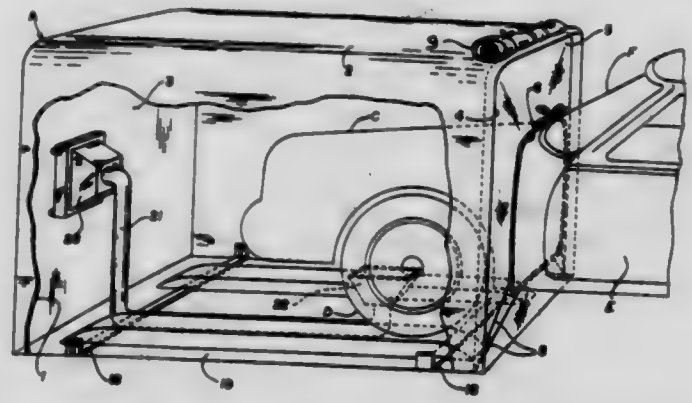
said main body, including said lip and hook, are of unitary construction.

4,495,736

AUTOMOBILE SHELTER

André Lamontagne, 1083A, boul. Saint-Joseph, Charlesbourg West, Quebec, Canada (G2K 1G3)

Filed Feb. 24, 1983, Ser. No. 469,156
Int. Cl.³ E04B 1/34
U.S. Cl. 52—63 2 Claims



1. A shelter for automobiles having an engine compartment and a passenger compartment, said shelter of sufficient height, width and depth to house said engine compartment with the front wheels of the automobile, said shelter including two lateral walls, a rear wall, a roof, said roof including two sections joined one to the other along the longitudinal axis of said roof, each section being integral with one of said lateral walls, said rear wall consisting of a panel fixed to the rear edge of the two half-sections in a dismantable manner, braces detachably connected to the lower edge of said lateral walls and transversely extending along the ground, parallel separate running boards longitudinally positioned relative to the shelter to be used as path-ways for said front wheels of the automobile, said lateral walls and roof defining a front shelter opening which allows said engine compartment to engage into said shelter, a membrane for closing said front opening around said engine compartment at the rear portion of the latter, said membrane defining a central aperture, the periphery of which being provided with elastic strings to tighten said membrane around said engine compartment, elastic bands joining the lower corners of said aperture to the lower front edges of said lateral walls, a flexible closure, fixed to the front roof edge, and capable of closing said opening exteriorly of said membrane when said shelter is not used by an automobile, and warming means to warm up the internal spaced defined by said shelter, said warming means including means to discharge an upward flow of warm air located between said running boards and under said engine compartment when the latter is inside said shelter.

4,495,737

DEFORMABLE SEAL OF THE GAP BETWEEN A BUILDING OPENING AND A VEHICLE DRIVEN UP TO IT

Kurt Alten, Ringstr. 14, D-3015 Wennigsen, Fed. Rep. of Germany

Filed Jul. 30, 1982, Ser. No. 403,580
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1981, 3130657; Jan. 25, 1982, 3202252
Int. Cl.³ E04H 14/00; E01D 1/00
U.S. Cl. 52—173 DS 5 Claims

1. A deformable seal for a gap between the edges of an opening of a building and a back end of a vehicle driven up to a location adjoining said opening, said seal in combination therewith comprising:

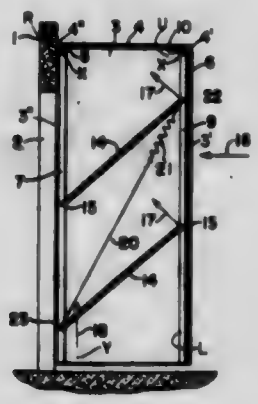
a rigid inverted U-shaped frame which is spaced from the building, said frame having a U-shape open at the bottom;

two inclined parallel guides each having a first end connected to said frame and a second end which is operatively connected to the building and which is unchangeable in height thereof at the second end thereof where said

guides connected to the building are also rigidly fixed to the frame;

an apron having a first outer edge fastened to said frame and having a second edge thereof directed inwardly for effecting sealing with the vehicle; and

a resilient yieldable covering located between said apron and the building as well as being provided along two sides thereof as well as along the upper edge of the apron, which covering is fastened with one edge thereof secured to said frame and with the other second edge thereof being fastened to the building, the edge toward the building of



said covering being fixed only at an upper edge thereof and in a remaining range thereof, however, being guided in a height adjustable manner and, furthermore, said rigid guides being provided therewith; a tension apring intregrally connected to a cable forming a first end and a second end, said tension spring and cable extending between the two parallel guides, the first end of said spring and cable being secured to the first end of one of the guides at said frame, the second end of said spring and cable being secured to the other guide, said other guide being adjacent to and connected to the building.

4,495,738

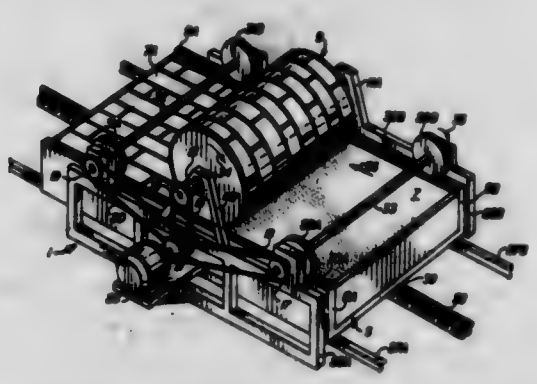
EMBOSSED CONCRETE BUILDING PANELS

Thomas F. Sheber, 640 W. Chapala Dr., Tucson, Ariz. 85704

Continuation of Ser. No. 218,835, Dec. 22, 1980, abandoned, which is a division of Ser. No. 960,041, Nov. 23, 1978, Pat. No. 4,271,111. This application Jun. 8, 1982, Ser. No. 386,329

Int. Cl.³ E06B *1/24*; B44F *7/00*; E04B *2/64*

U.S. Cl. 52—204 5 Claims



1. A pre-formed concrete building panel comprising in combination:

(a) a concrete wall section having a height, a width and a thickness, said wall section including an outer surface and an inner surface, said wall section also having an upper edge and an opposed lower edge and first and second opposed vertical edges;

(b) a plurality of vertical tapered reinforcing concrete ribs integral with the concrete of said wall section and extending along said inner surface, said reinforcing ribs extending substantially perpendicularly from said inner surface by a distance greater than said thickness, said reinforcing ribs each having at least one tapered side and an outermost flat surface substantially parallel to said inner surface.

(c) reinforcing mesh means disposed in the concrete of said wall section for reinforcing concrete of which said wall section is composed;

(d) a plurality of reinforcing bars disposed, respectively, in said reinforcing ribs for reinforcing concrete of which said reinforcing ribs are respectively composed;

(e) a plurality of nailing strips disposed along said respective outermost surfaces of said reinforcing ribs;

(f) anchoring means for anchoring said nailing strips to said respective outermost flat surfaces of said reinforcing ribs, said anchoring means extending into and being anchored into the concrete of which said respective reinforcing bars are composed; and

(g) a decorative pattern embossed in said outer surface and integral with said concrete wall section, said decorative pattern including a plurality of irregular, non-repetitive, non-uniform raised concrete surface features on said outer surface that are integral with said concrete wall section, said plurality of irregular, non-repetitive, non-uniform raised concrete surface features being transferred to said outer surface from a pre-existing, hand-crafted wall surface and therefore being substantially identical to a plurality of precisely corresponding irregular, non-repetitive, non-uniform raised surface features of said hand-crafted pre-existing wall section, respectively.

4,495,739

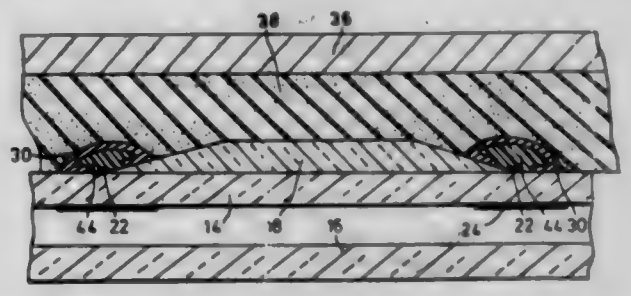
BEVELLED GLASS WINDOW

Frank E. Drennan, Etobicoke, Canada, assignor to Dor Seal Limited, Toronto, Canada

Continuation-in-part of Ser. No. 258,060, Apr. 28, 1981,. This application Nov. 18, 1983, Ser. No. 552,928

Int. Cl.³ E04C *1/42*

U.S. Cl. 52—308 2 Claims



1. A window having multiple individual lites with configurations defined by came, said individual lites including marginal edges at multiple different elevations, comprising:

(a) a base pane having a plane surface;

(b) at least one window lite comprising a decorative pane having a thickness of about ⅛ of an inch at its marginal edge areas laminated to the surface of the base pane in the configuration of one of said multiple lites;

(c) a channeled came comprising individual came lengths jointed at their ends and shaped to define the marginal edges of the configurations of said lites, and said lengths of came comprising channels having longitudinal flanges therewithin which extend inwardly of the came below the channels;

(d) the edges of the lengths of came being fitted to conform with the surfaces of the marginal areas of the lites including said different elevations of the decorative pane marginal areas and the surfaces of the base pane, all of the edges of the came lying flat against the associated marginal surfaces of the lites along their entire lengths, the edges which overlie decorative pane areas being elevated above the plane of the surface of the base pane; and

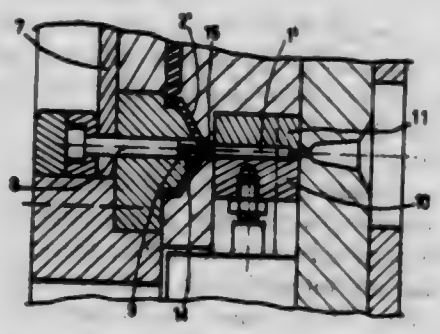
(e) adhesive in the channeled came securing the came to the panes, whereby the came ornamentally divides the face of the window into said configurations.

4,495,740

WINDOW WITH INTEGRAL MOLDED FRAME AND PROCESS FOR MAKING SAME

Jean-Michel Serrania, Sainte Luce sur Mer, and Bernard Chessel, Bagneux, both of France, assignors to Compagnie des Produits Industriels de l'Ouest, Nantes, France

Filed Jul. 14, 1982, Ser. No. 398,411
Claims priority, application France, Jul. 17, 1981, 81 13996
Int. Cl.³ E04C 2/20; B29D 9/00, 31/00; B29C 1/14
U.S. Cl. 52—309.1 2 Claims



1. In a process for molding and assembling a unitary transparent plastic window and stile assembly, the steps comprising:
forming a first elongated mold cavity;
positioning a movable rod in a first position in said first mold cavity, said movable rod having a core positioned at a side portion of said first mold cavity;
positioning a movable mold member in a first position such that said movable mold member closes said side portion of said first mold cavity;
filling said first mold cavity with a first hardenable plastic material selected for strength;
permitting said first material to harden so as to form said stile;
moving said rod in a first direction from said first position to a second position, such that a space occupied by said core in said first position defines an open passage through said stile, and said core in said second position, together with surrounding members, defining an enclosure adjacent said stile in said first direction from said stile and communicating with said passage;
moving said movable mold member transverse to said first direction such that a second mold cavity in said movable mold member is positioned adjacent said side portion of said first mold cavity and along said first mold cavity, and communicates with said passage;
filling said second mold cavity, said passage and said enclosure with a second transparent plastic material which welds with said first material upon hardening; and
permitting said second material to harden and weld with said first material to form said assembly, with said window being interlocked with said stile through said passage.

2. Unit of at least two plastic parts, wherein said parts are molded and assembled according to the method of claim 1.

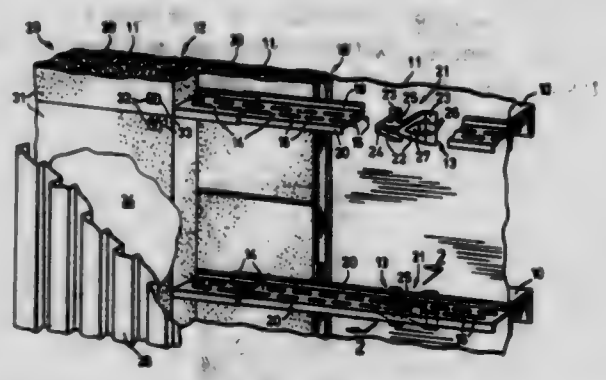
4,495,741

ADJUSTABLE SPACER KIT OF PARTS, AND BUILDING WALL OR ROOF STRUCTURE INCORPORATING THE SAME

Eugene Pasiecznik, Hamilton, Canada, assignor to Westeel-Rosco Limited-Westeel-Rosco Limitee, Toronto, Canada

Filed Jul. 26, 1982, Ser. No. 401,940
Int. Cl.³ E04B 1/74
U.S. Cl. 52—404 10 Claims

1. An adjustable spacer kit of parts comprising a member having a first edge portion and an opposed second edge portion and having at least one hole provided therein, and a bracket having a first end portion and an opposed second end portion and presenting a projecting tab spaced from the first end portion of said bracket, the first edge portion of said member presenting a projecting flange, said member being adapted to be mounted on said bracket in one of a plurality of alternative positions which compise a first position in which the tab projects through the hole in said member whereby the spacing between the first end portion of said bracket and the second edge portion of said member is of a first predetermined magnitude, and a second position in which the flange of said member is in abutting contact with the tab of said bracket whereby the spacing between the first end portion of said bracket and the



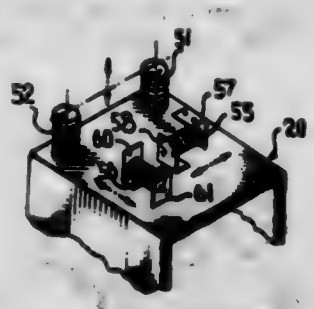
second edge portion of said member is of a second pre-determined magnitude greater than said first pre-determined magnitude, and said bracket comprising two spaced, parallel side plates, and a web interconnecting the side plates only at the second end portion of said bracket, with the tab being presented by the web of said bracket.

4,495,742

THERMAL INSULATING SYSTEM PARTICULARLY ADAPTED FOR BUILDING CONSTRUCTION

Harrison G. Dyar, P.O. Box 188, Tampa, Fla. 33601

Continuation of Ser. No. 312,287, Oct. 15, 1981, abandoned, which is a division of Ser. No. 215,083, Dec. 10, 1980, Pat. No. 4,334,395. This application Nov. 15, 1983, Ser. No. 552,011
Int. Cl.³ E04B 1/78
U.S. Cl. 52—407 2 Claims



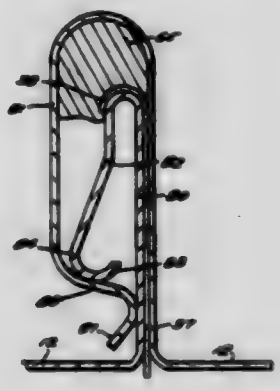
1. A system for insulating building walls, ceilings, floors or the like structure comprising wall means for forming a hollow insulated panel defining an interior chamber under negative pressure, said panel including relatively spaced top and bottom walls, first means located at each of said top and bottom walls for supporting said panel against the force of gravity and maintaining said panel in generally spaced relationship from an associated building wall, ceiling, floor or like structure, second means located at each of said top and bottom walls for limiting movement of said panel in a first direction generally normal to the direction of the effect of gravity, third means located at each of said top and bottom walls for limiting movement of said panel in a second direction generally normal to said first direction, each of said first, second and third means include at least one coil spring located at each of said top and bottom walls, and axes of said coil springs at each top and bottom wall are all normal to each other and occupy one each of X, Y and Z axes.

4,495,743

STANDING SEAM ROOF SYSTEM

Burian E. Ellison, Duluth; Harry P. Sprance, Dunwoody, and Christopher C. Hooper, Decatur, all of Ga., assignors to Atlantic Building Systems, Inc., Atlanta, Ga.

Division of Ser. No. 56,943, Jul. 12, 1979, Pat. No. 4,361,998.
This application Dec. 6, 1982, Ser. No. 447,213
Int. Cl.³ E04B 5/52
U.S. Cl. 52—478 8 Claims



1. A standing seam fastening assembly for fastening adjacent sheet metal panels together along adjacent longitudinal edges thereof, the panels extending generally in a first plane; said assembly comprising

one of the panels having a first raised edge comprising a male locking member including an upstanding portion extending generally perpendicular to said first plane, a downturned end parallel to but spaced from said upstanding portion, and a bulge extending outwardly from the downturned end away from said upstanding portion continuously along substantially the entire length of the panel, said bulge having a rounded bottom surface adjacent a terminating edge thereof; and

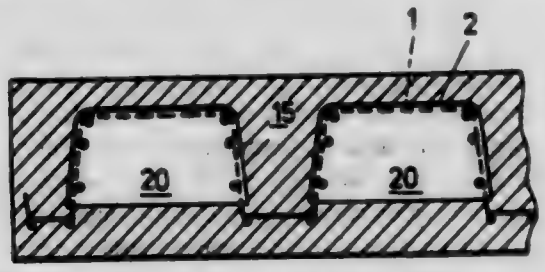
the other of the panels having a second raised edge, at an end thereof, comprising a female locking member including an upstanding portion extending generally perpendicular to said first plane and parallel to the male locking member upstanding portion; a downturned portion parallel to the male locking member downturned portion and connected thereto by a rounded bend; and an inwardly turned elongated flat portion immediately adjacent said end thereof and having an extent greater than the width of said panel, and abutting said rounded bottom surface of said continuous bulge of said male locking member and providing locking interfering engagement therewith.

4,495,744

DISPLACEMENT BODY

Heinz Carl, Waldstrasse 16, D-8644 Presslg, Fed. Rep. of Germany

Filed May 10, 1982, Ser. No. 376,605
Claims priority, application Fed. Rep. of Germany, May 18, 1981, 3119703; May 18, 1981, 3119704; May 18, 1981, 3119705; Jul. 23, 1981, 3129165
Int. Cl.³ E04C 1/06
U.S. Cl. 52—576 15 Claims



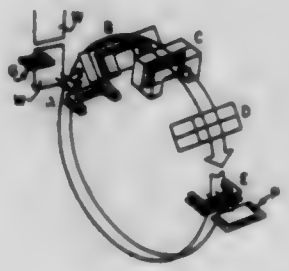
1. A displacement body for forming a cavity in a concrete structure and comprising: at least one hollow section in the shape of said cavity, said hollow section comprising a wall determining the contours of said cavity, characterized in that said wall comprises a grid structure (1) formed of construction steel mat and a flexible plastic shrinkable sheet (2a) covering the side of said grid structure facing towards the concrete and attached to said grid structure by being shrunk thereonto so as to close at least some of the grid openings.

4,495,745

SEALING WHEEL FOR FORMING FIN SEAL PACKAGE

Francis C. Crescenzo, Springfield, and Paul J. LaFleur, Jr., Williraham, both of Mass., assignors to Package Machinery Company, East Longmeadow, Mass.

Division of Ser. No. 107,174, Dec. 26, 1979, Pat. No. 4,346,545.
This application Aug 27, 1982, Ser. No. 412,108
Int. Cl.³ B65B 11/28, 57/00
U.S. Cl. 53—77 13 Claims



1. A sealing wheel comprising a wheel body, drive means for rotatably indexing said wheel body, means on said wheel body defining a plurality of angular spaced radially outwardly opening pockets for receiving articles and wrappers therein, a plurality of sets of opposing sealing jaws supported on said wheel body, the jaws of each of said sets being supported on said wheel body in association with one of said pockets for movement between open and closed positions, means for heating at least one of the jaws of each of said sets, means for moving said jaws between open and closed positions in response to said indexing movement of said wheel body, said jaws in said closed positions being engageable with marginal portions of wrappers disposed within said pockets to seal said marginal portions, sensing means for detecting an interruption of predetermined duration in the cyclical movement of said wheel body, and shut-down means for simultaneously moving all of said jaws in said closed position to said open position and including a shut-down member operably associated with said jaws and supported for coaxial angular movement with and relative to said wheel body and means for angularly moving said shut-down member relative to said wheel body to open said jaws in response to the detection of an interruption of a predetermined duration by said sensing means.

4,495,746

PACKAGING APPARATUS FOR PRODUCING AND FEEDING BLANKS TO A PACKAGING STATION

Heinz Focke, and Kurt Liedtke, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co., Verden, Fed. Rep. of Germany

Filed Jul. 14, 1982, Ser. No. 398,148
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1981, 3131687
Int. Cl.³ B65H 41/00, 5/22
U.S. Cl. 53—389 16 Claims

1. A packaging apparatus for severing successive blanks (11) of desired length from a continuous web (14) of thin and delicate wrapping material and for individually conveying the blanks in succession to a packaging station (12, 13), comprising:

(a) a rotatably driven, perforate suction drum (17),

(b) means (15, 16) for supplying said web to the suction drum,

(c) transverse severing means (18, 19) operatively associated

with the suction drum for cutting the web into successive blanks,

(d) means (20–24) for applying a vacuum to an outer surface of the suction drum over a predetermined peripheral zone of travel thereof to positively retain the web and blanks thereon throughout said zone, and

(e) a blank conveyor (26) disposed between the suction drum and the packaging station, and comprising:

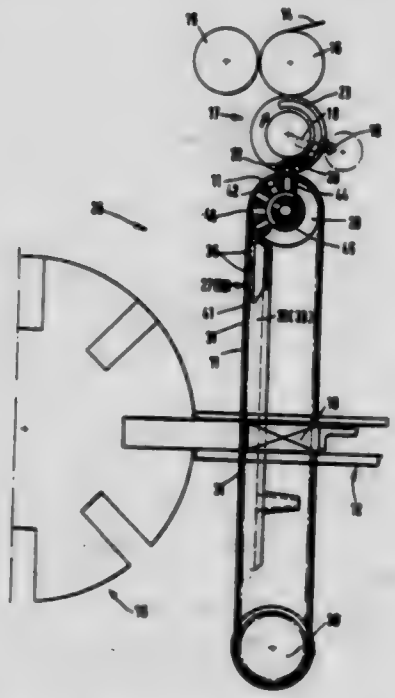
(1) a pair of transversely spaced, parallel, endless, commonly rotatably driven, perforated (36) belts (27, 28),

(2) respective upper and lower, parallel axes deflecting rollers (29, 30) mounting said belts, and

(3) suction means disposed behind the belts along a conveying run thereof for applying a vacuum thereto to positively but releasably retain the blanks thereon throughout said run,

(f) the suction drum being mounted such that a leading end portion of the peripheral zone thereof, in the direction of rotation, adjoins a trailing end portion of the conveying run of the belts to ensure the positive and continuous retention of the blanks without deformation during the transfer thereof from the drum to the belts, and

(g) the packaging station being disposed sufficiently downstream of a transfer zone between the drum and belts that trailing ends of severed blanks have left said transfer zone before central portions of said blanks arrive at said packaging station.



4,495,747

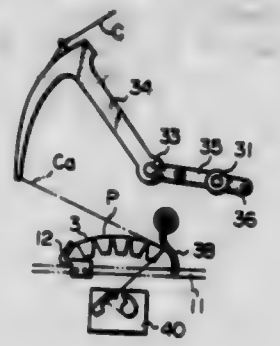
METHOD AND APPARATUS FOR AUTOMATICALLY PREPARING FLEXIBLE, DISPOSABLE PACKING CONTAINERS

Koichi Shimofuri, Kyoto, Japan, assignor to Todo Seisakusho Ltd., Japan

Filed Jan. 18, 1982, Ser. No. 340,354
Int. Cl.³ B65B 61/18
U.S. Cl. 53—412 12 Claims

1. A method for providing a flexible container of the type which includes a receptacle section and a cover section connected to one another by a substantially straight elongated joint with an opener cord surrounding said joint, said method comprising the steps of:

bending said flexible container along said joint in such a manner that said joint is bent into an arc as viewed in a plane which passes through the entire length of said joint;



placing an opener cord around said joint while it is bent into said arc, the length of said cord being approximately twice the length of said joint; and, thereafter,

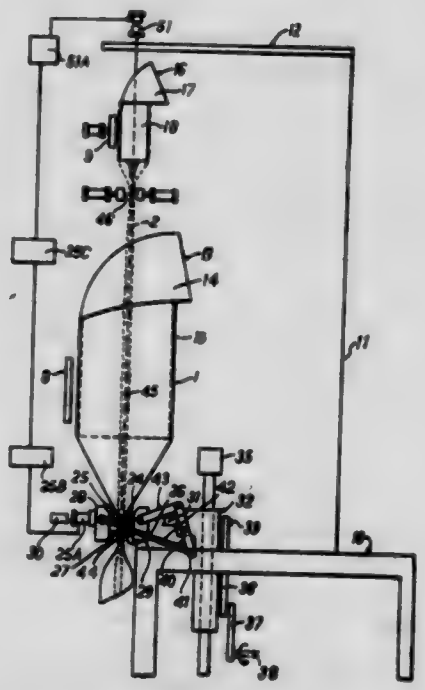
permitting said container to assume its original shape.

4,495,748

CONTAINERS AND MACHINE FOR MAKING THEM

Frank J. Rowell, Fishponds Farm, Brook, Near Ashford, Kent, England

Filed Oct. 8, 1981, Ser. No. 309,746
Claims priority, application United Kingdom, Oct. 14, 1980, 8033091; Jul. 31, 1981, 8123457
Int. Cl.³ B65B 9/12, 3/16, 3/17
U.S. Cl. 53—449 8 Claims



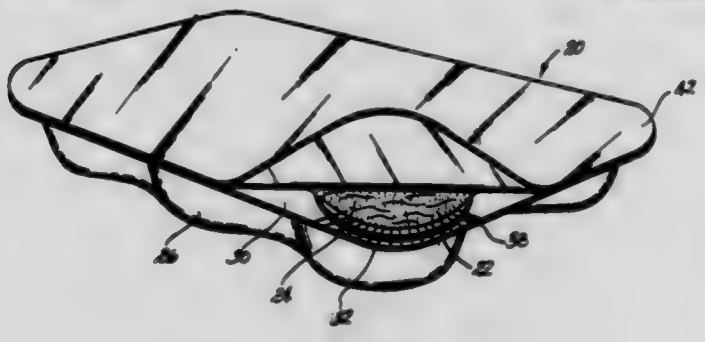
1. A method of making containers comprising forming a first sheet of liquid-impervious material into a first tube for successive bags, forming a second such sheet into a smaller diameter second tube for making successive tubular valve members, feeding contents into the first tube at successive intervals, locating the second tube in the first tube, providing first and second seals between successive tops and bottoms of successive containers and separating successive containers from each other, forming third seals (3A or 5) partly across each of the second tubes between the upper and lower ends of the containers, making said first and second seals (4,6A) as seals across the tubes, said first and second seals being in pairs closely adjacent to one another and parallel to each other, one of said pairs of seals making the top of one container, making openings (4) through the seals forming the tops of the containers by means of a rod inserted through these seals, while the second seal makes the bottom of the preceding container.

4,495,749

FOOD TRAY AND PACKAGING PROCESS

Rudolph A. Faller, Edina, Minn., assignor to Champion International Corporation, Stamford, Conn.

Division of Ser. No. 182,855, Sep. 2, 1980, Pat. No. 4,355,755.
This application Jun. 21, 1982, Ser. No. 390,214
Int. Cl.³ B65B 7/28, 47/04, 51/22
U.S. Cl. 53—471 5 Claims



1. A method for forming a paperboard tray from a paperboard blank, said method comprising the steps of:

(a) deep drawing said blank to form a tray having a bottom wall, a continuous upstanding side wall having a plurality of corners, and a flange extending outwardly from a top edge of said side wall throughout the entirety of said side wall;

(b) forming a series of alternating ridges and depressions during said deep drawing step, which ridges and depressions extend across said flange at each of said corners from outer edges of said flange toward said corners of said side wall; and

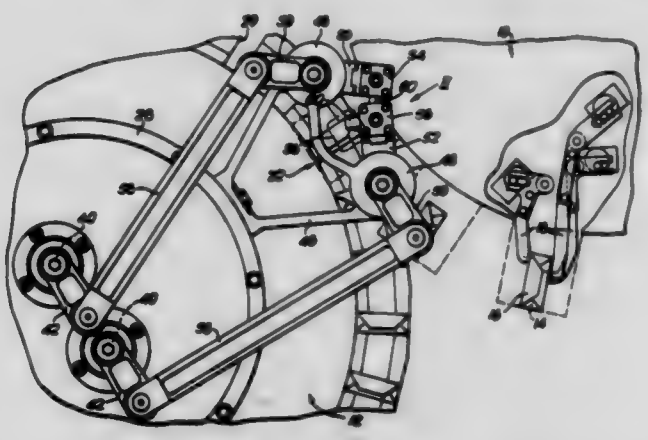
(c) forming a curvilinear trough in the upper surface of said flange and only in each of said corners which trough extends across all of said ridges and depressions in each corner, and opening at least one end of said trough through said side wall.

4,495,750

TRANSFERRING PACKETS

Austin L. Fox, London, England, assignor to Molins PLC, London, England

Filed Mar. 22, 1982, Ser. No. 360,522
Int. Cl.³ B65B 19/24
U.S. Cl. 53—575 6 Claims



1. Apparatus for transferring packets, such as soft packs of cigarettes, each said packet having at least one folded end, comprising:

(a) means defining a plurality of adjacent pockets, each of which is open at its axial ends and at one side;

(b) a pusher for transferring each successive packet axially into a pocket through one of said open ends with said at least one folded end of the packet leading;

(c) a pair of restraining devices operable alternately in different pockets to engage said at least one folded end of each of said successive packets;

(d) means mounting each of said restraining devices for movement in a direction transverse to the axis of said pockets and for movement in a direction axially of said pockets; and

(e) control means to alternately move each of said restraining devices in said transverse direction into alternate of said pockets through said one side thereof and for moving said devices axially in said pockets;

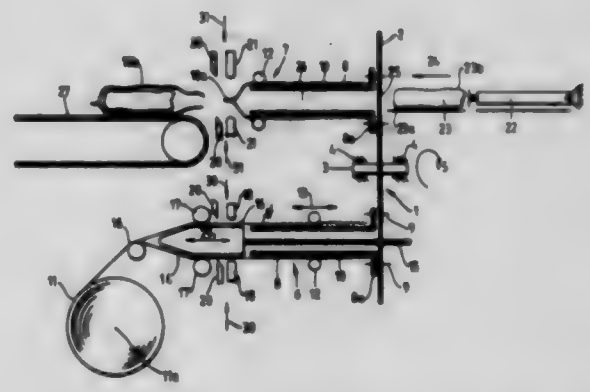
(f) whereby as said pusher transfers each successive packet through one of said open ends of a pocket said at least one folded end of said packet engages one of said restraining devices which is thereby caused to pass axially through said pocket while restraining said folded end during transfer thereof.

4,495,751

APPARATUS AND METHOD FOR PACKAGING ARTICLES IN A FLEXIBLE WRAPPING MATERIAL

Ambrogio Galbiati, Milan, Italy, assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Filed Nov. 2, 1981, Ser. No. 317,692
Claims priority, application United Kingdom, Nov. 11, 1980, 8036189
Int. Cl.³ B65B 43/42
U.S. Cl. 53—576 22 Claims



1. A process for packaging an article in a wrapper comprising the steps of:

loading a portion of a flat-folded tubular film wrapper stock material onto an external periphery of a hollow tubular mandrel at a stock-receiving station by advancing the flat-folded tubular film wrapper stock material about a guide bullet means adapted to open said flat-folded tubular film wrapper stock material and guide said material onto said external periphery;

severing said loaded portion of said tubular film wrapper stock material from the remainder of said material;

moving the hollow tubular mandrel and said loaded portion of tubular film wrapper stock material from the stock-receiving station to a stock-dispensing station;

dispensing the tubular film wrapper stock material from the external periphery of the hollow mandrel at said stock-dispensing station to form a wrapper;

advancing an article passed through an interior of the hollow tubular mandrel into said wrapper; and

moving the hollow tubular mandrel from the stock-dispensing station to the stock-receiving station.

2. A process for packaging articles in flexible wrappers, comprising the steps of:

providing a rotatable turret having at least two apertures and at least two hollow mandrels secured thereto wherein each hollow mandrel is communicatively aligned with one of said apertures and whereby the turret is adapted to rotatively index said mandrels from a tubular film stock-receiving station to a tubular film stock-dispensing station;

providing a supply of flat-folded tubular film wrapper stock material at the stock-receiving station;

advancing the tubular film wrapper stock material about a guide bullet means adapted to open said flat-folded tubular film wrapper stock material and guide said material onto an external periphery of a hollow mandrel at said stock-receiving station to build-up tubular film wrapper stock material on the external periphery of said hollow mandrel;

severing the tubular film wrapper stock material on said external surface from the supply of tubular film wrapper stock material at the stock-receiving station;

closing a severed end of the build-up of tubular film wrapper stock material at the stock-receiving station;

rotating the turret to index the hollow mandrel and the tubular film wrapper stock material on the external surface thereof from said stock-receiving station to said stock-dispensing station; and

dispensing said tubular film wrapper stock material from the external periphery of the hollow mandrel at the stock-dispensing station;

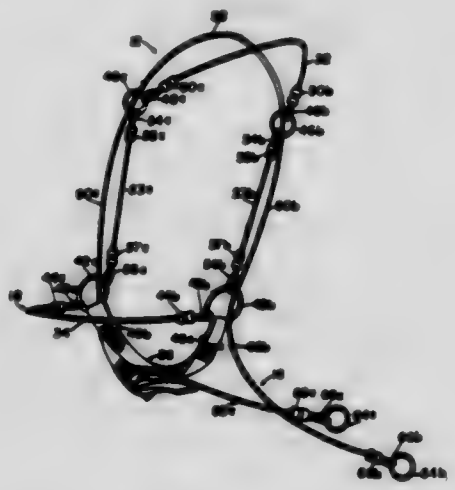
advancing articles through an aperture in said turret and through an interior of the hollow mandrel at the stock-dispensing station whereby the articles are inserted within said tubular film wrapper stock material.

4,495,752

CONTROL HALTER WITH SLIDING HEADPIECE

Roy G. Simpson, Cookeville, Tenn., assignor to Adams Plastics, Cookeville, Tenn.

Filed Jul. 15, 1983, Ser. No. 514,163
Int. Cl.³ B68B 1/02
U.S. Cl. 54—24 7 Claims



1. A control halter for use in conjunction with a tie-down to develop and maintain a desired head set in a riding horse, comprising:

a nosepiece for being disposed about the nose of the horse;

a crownpiece for passing over the poll of the horse;

two cheek-pieces for being disposed on either side of the horse's head, said cheek-pieces being attached to and connecting between said nosepiece and said crownpiece;

a sliding headpiece having a midsection, having two downwardly extending sections for extending along the sides of the horse's head, and two ends for attachment to the tie-down; and

means for slidably holding said downwardly extending sections of said sliding headpiece adjacent to the interconnection of said crownpiece and said cheek-pieces and adjacent to said nosepiece, whereby, said midsection of said sliding headpiece is selectively movable into a position for extending over the poll of the horse and into a position for extending over the brown of the horse.

4,495,753

CONTROL HALTER

Roy G. Simpson, Cookeville, Tenn., assignor to Adams Plastics, Inc., Cookeville, Tenn.

Filed Jul. 15, 1983, Ser. No. 514,164
Int. Cl.³ B68B 1/02
U.S. Cl. 54—24 10 Claims



1. A control halter for use in conjunction with a tie-down to develop and maintain a desired head set in a riding horse, comprising:

a loose-fitting nosepiece for loosely encircling the nose of the horse and disposed high on the nose of the horse and having upper and lower portions;

means for connecting the tie-down to said nosepiece;

a keeper strap for being disposed about the horse's head and neck, said keeper strap being dimensioned to extend over the poll and under the throttle of the horse; and

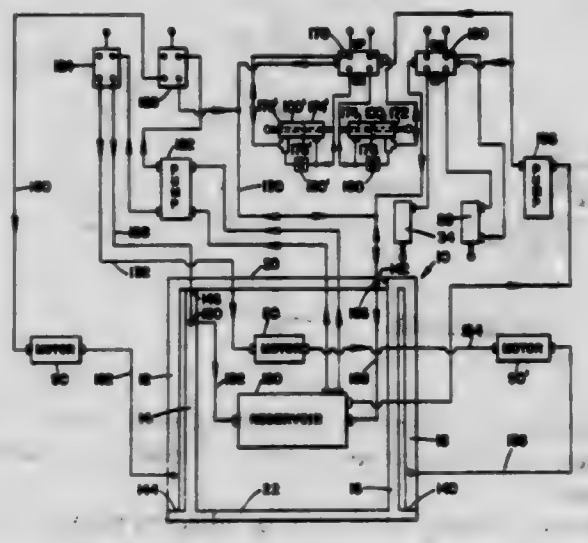
two substantially parallel connecting pieces extending between the top of said nosepiece and the top of said keeper strap, each of said connecting pieces being operable to extend along the horse's face and along the inside of one of the horse's ears whereby, said connecting pieces apply the same amount of pressure to the horse's head over the ears and to the nose when the horse raises its head or moves its head forward and the tie-down pulls on said nosepiece, said nosepiece being connected at its upper and lower portions to only said tie-down and said connecting pieces.

4,495,754

TRAILING WING MOWER WITH HYDRAULIC BREAKAWAY SYSTEM

Jack O. Cartner, 1006 N. Eighth, Cambridge, Ohio 43725

Continuation-in-part of Ser. No. 377,347, May 12, 1982, Pat. No. 4,442,658. This application Dec. 8, 1982, Ser. No. 447,789
Int. Cl.³ A01D 35/28
U.S. Cl. 56—11.9 18 Claims



1. A trailing wing mower comprising:

a first mower section including supporting means for movably supporting the first section above and substantially parallel to the ground immediately thereunder and a first

motor means operatively connected with the first section for providing motive power to a first cutting means;

a second mower section including support means for movably supporting the section above the ground and means operatively connected with the second section for providing motive power to a second cutting means;

a first hinge means extending above and substantially parallel to the ground immediately thereunder operatively connecting the first and second sections such that the second section is angularly displaceable relative to the first section about the first hinge means; and,

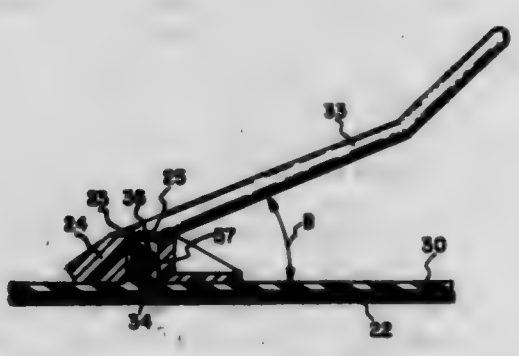
a first angular position controlling means for limiting the angular position of the second section relative to the first section to a selected angular displacement range, the angular displacement range extending between a generally perpendicular angular position and a selected limit angular position, the first angular position controlling means including a first hydraulic cylinder operatively connected between the first and second sections, hydraulic fluid supply means for selectively supplying hydraulic fluid to the first hydraulic cylinder to control the relative extension of the first hydraulic cylinder, and first hydraulic pressure relief means for relieving hydraulic fluid pressure a preselected force such that the relative extension of the first hydraulic cylinder is altered, the first hydraulic cylinder and the hydraulic fluid supply means select the limit angular position, such that the first hydraulic cylinder is adapted for selectively fixing the second section cantilevered over the ground when the ground thereunder is lower than the ground under the first section by an angle outside of the angular displacement range, and the first hydraulic pressure relief means allows the extension of the first hydraulic cylinder to be altered to permit the first and second sections to be angularly displaced between the perpendicular and limit angular positions as the sections follow the contour of the ground thereunder, such that the first section remains substantially parallel to the ground thereunder, whereby the first hinge and a portion of the first section thereadjacent are not lifted further above the ground and out of the parallel relationship therewith by the second section when the ground under the second section is higher than the ground under the first section.

4,495,755

CONVEYOR FOR A COMBINE HARVESTER

David W. Johnson, Bennet, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 19, 1983, Ser. No. 515,338
Int. Cl.³ A01D *43/02, 89/00*
U.S. Cl. 56—364 13 Claims



12. A flexible endless conveyor for a harvester pickup apron comprising in combination:

at least one elastomeric belt having a longitudinal direction and a transverse direction and an integral, unitary, elastomeric base with a plurality of integrally molded elastomeric cleats raised from the base and oriented in a plurality of transverse rows across the belt with transversely adjacent cleats interrupted by a space exceeding one-half the transverse dimension of said cleats, each of said cleats having a cleat bore therethrough with an axis parallel to the base, said cleat bores being aligned substantially perpendicular to the longitudinal direction of the belt;

a plurality of tine bodies mounted on said belt to abuttingly rest on the base, each tine body having a tine mounting bore therethrough with an axis substantially parallel to the base of the belt such that the tine mounting bore substantially aligns with said cleat bore when said tine bodies are mounted on said belt, said tine bodies having at least one flexible tine extending therefrom;

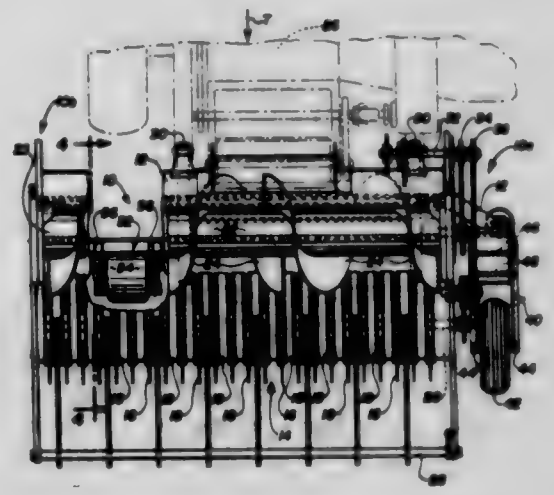
a means for detachably attaching said tine bodies to said belt through said tine mounting bore and at least one of said cleat bores.

4,495,756

PICKUP ATTACHMENT FOR HARVESTING MACHINES

James G. Greiner, Leola, and Edward H. Priepke, Lancaster, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Aug. 15, 1983, Ser. No. 523,476
Int. Cl.³ A01D *89/00*
U.S. Cl. 56—364 13 Claims



1. In a pickup attachment for use on crop harvesting machines, said pickup attachment having a frame, a reel supported on said frame, said reel including fingers connected to and rotatable about a shaft in a predetermined path to engage and pick up crop material on the ground, the improvement comprising:

a wheel connected to said frame for supporting one side of said pickup attachment, said wheel being positioned so that its center is located substantially in alignment vertically with the axis of said shaft;

a roller connected to said frame and located underneath said pickup attachment for supporting the other side of said pickup attachment, said roller being positioned so that its center is located rearward of the axis of said shaft and rearward of the center of said wheel; and

said one side of said pickup attachment being supported solely by said wheel and said other side of said pickup attachment being supported solely by said roller to allow said predetermined path of said reel fingers to follow the contour of the ground in proximity thereto.

4,495,757

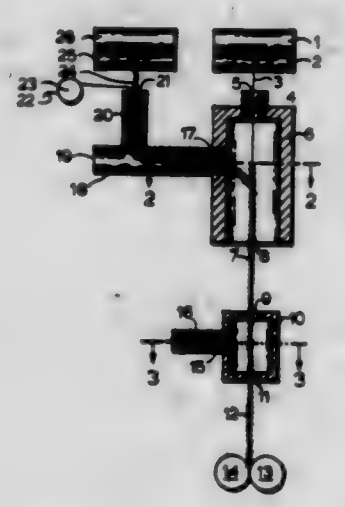
METHOD OF AND APPARATUS FOR MANUFACTURING YARN WITH A CORE

Milko D. Dimitrov, Sofia, Bulgaria, assignor to N P S P "Novoter", Sofia, Bulgaria

Filed Feb. 15, 1983, Ser. No. 466,647
Claims priority, application Bulgaria, Feb. 15, 1982, 55375
Int. Cl.³ D02G *3/36, 3/34*
U.S. Cl. 57—5 14 Claims

1. A method for manufacturing yarn with a core, comprising feeding a first core made of fibrous material by a pair of feeding

rollers, passing the first core through a first jet of gas, driving fibers laterally into said first jet by a tangential gas current to form a wrapping about the first core, at the time of passing the fibers through the first gas jet for the formation of wrapping upon the first core imparting a false twisting to the composite material made up of the first core and the wrapping simulta-



neously with the lateral driving in of fibers by a tangential air current in the first jet leading in a second additional core thread at the linear velocity of the fibrous material for forming the wrapping core from the laterally driven in fibers, and false twisting the composite thread resulting from the confluence of the wrapping, the first core, and the additional core thread by a tangentially fed gas current in a second, subsequent, gas jet.

4,495,758

APPARATUS AND METHOD FOR FORMING A WRAPPED YARN

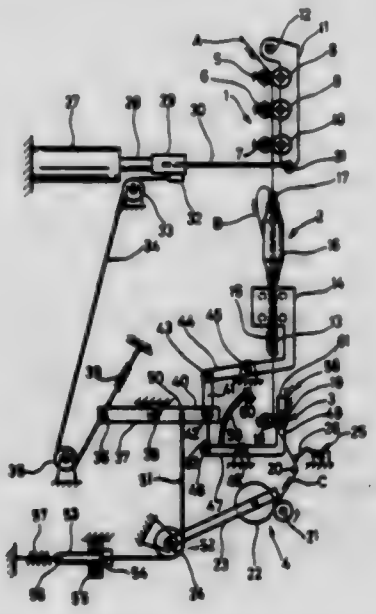
Fritz Stahlecker, Bad Ueberkingen, and Hans Braxmeier, Suessen, both of Fed. Rep. of Germany, assignors to Fritz Stahlecker and Hans Stahlecker, both of Fed. Rep. of Germany

Filed May 3, 1983, Ser. No. 491,021

Claims priority, application Fed. Rep. of Germany, May 5, 1982, 3216749

Int. Cl.³ D01H *13/22, 13/16*

U.S. Cl. 57—19 **25 Claims**



1. A yarn forming apparatus adapted to form a wrapped yarn composed of a core strand having a binder strand spirally wrapped thereabout, and comprising

means for advancing a core strand along a path of travel and to a rotating take-up package,

means for withdrawing a binder strand from a supply package and spirally wrapping the same about the advancing core strand to form a wrapped yarn,

monitoring means for detecting a break in at least the core strand, and

control means responsive to said monitoring means detecting a break in the core strand for terminating the advance of the core strand and including means for positively terminating the withdrawal of the binder strand from its supply package, so as to avoid undue winding of the binder strand on the take-up package.

4,495,759

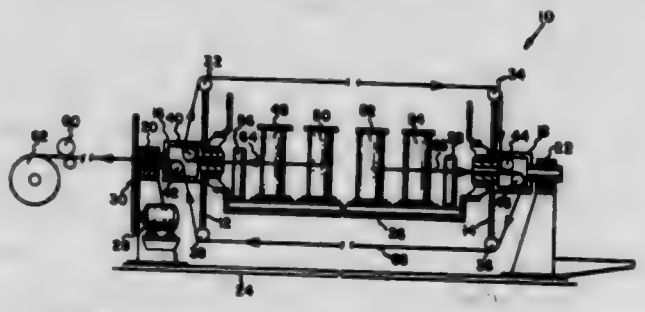
MANUFACTURE OF METALLIC CABLE

Dennis R. Brandyberry, Canton, and Grover W. Rye, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 5, 1983, Ser. No. 539,191

Int. Cl.³ D07B *3/12*

U.S. Cl. 57—58.52 **3 Claims**



1. A method of manufacturing a metallic cable comprising the steps of:

(a) forming a first strand by drawing a plurality of metallic filaments from a plurality of bobbin means attached to a non-rotating cradle of a cable making machine and aligning said plurality of filaments along the axis of rotation of first and second coaxial rotating flyers of said cable making machine;

(b) drawing said first strand next to and partially around a first sunken rotating pulley attached to the inside of a hollow bearing of said first rotating flyer to impart a first twist to the filaments of said first strand in a first direction;

(c) drawing said first strand past said first and second rotating flyers;

(d) drawing said first strand next to and partially around a second rotating pulley attached to the inside of a hollow bearing of said second rotating flyer to impart a second twist to said first strand in said first direction;

(e) forming a second strand by drawing at least one metallic filament from a bobbin means attached to said non-rotating cradle and aligning said at least one filament along the axis of rotation of said first and second flyers;

(f) forming a cable by drawing said first and second strands next to and partially around a third sunken rotating pulley attached to the inside of the hollow bearing of said second rotating flyer to impart a first twist to said first and second strands in a second direction and partially untwist the filaments of said first strand;

(g) drawing said cable past said second and first rotating flyers; and

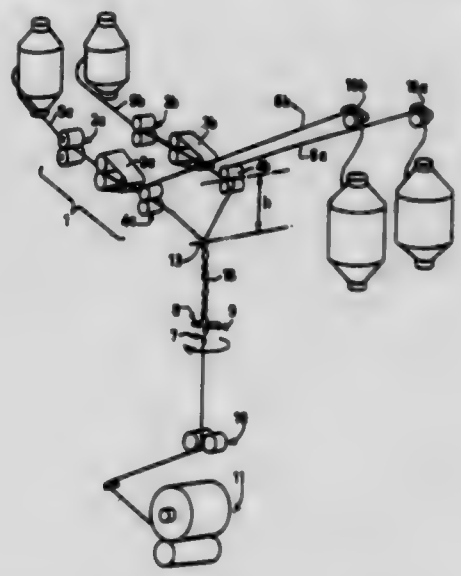
(h) drawing said cable next to and partially around a fourth sunken rotating pulley attached to the inside of the hollow bearing of said first rotating flyer to impart a second twist to said strands in said second direction and completely untwist the filaments of said first strand.

4,495,760

PROCESS AND APPARATUS FOR SPINNING CORED FILAMENTS, AND CORED FILAMENTS THUS OBTAINED

Michel E. A. Vanbelle, 33, promenade Michel Simon, 93160 Noisy Le Grand, France

Filed Jun. 7, 1982, Ser. No. 385,676
Claims priority, application France, Jun. 12, 1981, 81 11642
Int. Cl.³ D02G 3/38
U.S. Cl. 57—211 18 Claims



1. A process for spinning a cored filament comprising the steps of

drawing at least one fiber sheath between a point of introduction of the sheath and a pair of drawing cylinders, introducing at least one continuous filament upstream of said drawing cylinders to form at least two strands, twisting a strand comprising at least a fiber sheath with at least one other strand comprising at least a continuous filament,

introducing the strands at a single convergence point upstream of a winding mechanism;

regulating the tension of the strands,

winding the strands to form a filament, and

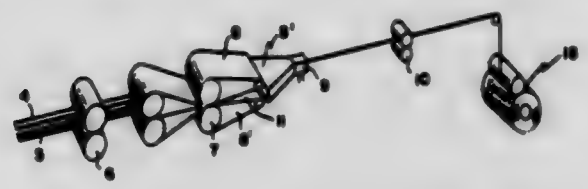
retwisting the filament thus formed.

4,495,761

MULTICOLORED YARN AND METHOD

Takashi Nakayama; Kohji Kajita, and Seiichi Yamagata, all of Shiga, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 238,566, Feb. 26, 1981, Pat. No. 4,383,403, which is a continuation of Ser. No. 56,391, Jul. 10, 1979, abandoned. This application Feb. 7, 1983, Ser. No. 464,655
Claims priority, application Japan, Oct. 7, 1978, 53-82972
Int. Cl.³ D02G 3/00; D01H 13/00
U.S. Cl. 57—328 12 Claims



1. A method of manufacturing a multicolored yarn comprising:

(a) feeding two or more kinds of sliver differing from each other in color tone or in dyeability and arranging them substantially parallel to each other;

(b) continuously drafting said slivers;

(c) feeding the drafted slivers through nip rollers;

(d) false twisting a core portion of the slivers to produce a false twisted bundle of staple fibers while leaving untwisted a plurality of outside staple fibers which are not twisted into said false twisted bundle of staple fibers;

(e) shifting said core portion back and forth in a sidewise direction;

(f) integrating the false twisted bundle of staple fibers and the free outside staple fibers into a whole; and

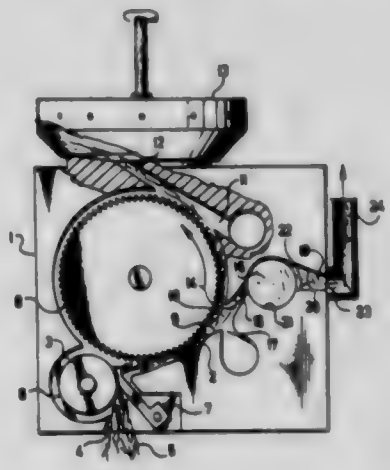
(g) detwisting the integrated bundle to produce a substantially detwisted core and a plurality of said outside fibers wrapped substantially helically about said core to produce a multicolored yarn.

4,495,762

APPARATUS FOR SEPARATING FIBERS IN OPEN-END SPINNING UNITS

Jan Junek, Dukla; Václav Vorborník, Komenskeho Letohrad; Josef Ripka, Tvardkova; Frantisek Jaros, Dukla; Ludmila Lihtarová , Dukla; Frantisek Hortlík, Dukla; Zdenek Kotrba, Tvardkova; Bozena Rehácková, and Ladislav Dvorák, both of Polska, all of Czechoslovakia, assignors to Vyzkumny ustav bavinarsky, Usti nad Orlici, Czechoslovakia

Filed Feb. 23, 1983, Ser. No. 468,887
Claims priority, application Czechoslovakia, Mar. 4, 1982, 1465-82
Int. Cl.³ D01H 7/888
U.S. Cl. 57—411 4 Claims



1. In an apparatus for separating fibers in open-end spinning units, said apparatus having a fiber separating cylinder in a cavity of a housing in which on a cylindrical surface there is provided a cleaning aperture with an impurity separating duct which latter opens by its impurity rebounding wall into a cylindrical impurity collecting chamber communicating, on the one hand, with an air supply aperture and, on the other hand, with an impurity sucking-off duct having a first and a second wall, the improvement wherein the first wall of the sucking-off duct tangentially merges into the cylindrical wall of the cylindrical impurity collecting chamber downstream of the outlet of the impurity separating duct and is oriented in the direction of rotation of an air vortex in said cylindrical collecting chamber toward an impurity ejecting duct the axial height of said sucking-off duct in the region of joining said collecting chamber is the same as or larger than the axial height of the outlet from said impurity separating duct into said collecting chamber.

4,495,763

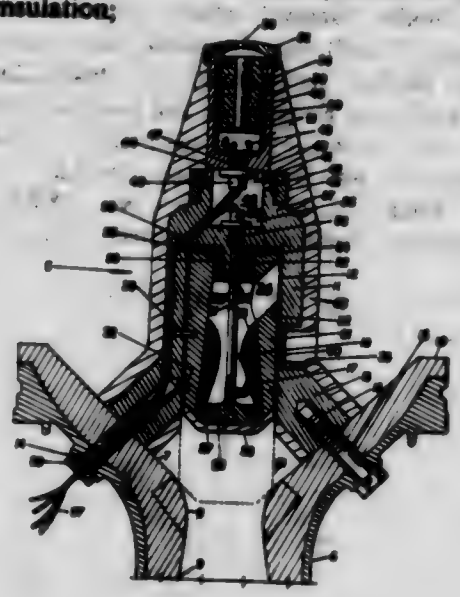
DUAL-THRUST NOZZLE APPARATUS FOR ROCKETS

Dell A. Johnson, Nibley, and Christopher W. Bolleau, Brigham City, both of Utah, assignors to Thiokol Corporation, Chicago, Ill.

Filed Mar. 21, 1983, Ser. No. 476,986
Int. Cl.³ F02K 1/18
U.S. Cl. 60—242 20 Claims

1. Apparatus for imparting dual-thrust capability to a convergent-divergent primary thrust nozzle for rockets, having a throat, comprising:

a housing having a cavity therein;
means for mounting the housing upstream of said nozzle throat, so that the cavity opens to the aft of the housing, and so that the housing is spaced away from the convergent portion of the primary nozzle to avoid obstructing propulsive gases that must pass through the nozzle;
a coat of thermal insulation covering and encasing the housing and the means for mounting the housing for the protection thereof from the high temperatures and erosiveness of the propulsive gases;
a secondary convergent-divergent nozzle member installed for aftward movement in the cavity of the housing and having a throat that is smaller in diameter than that of said primary nozzle, the aft end of the secondary nozzle member being sealed and covered by a portion of the coat of thermal insulation;



means for temporarily retaining the secondary nozzle in said cavity;
means for moving the secondary nozzle member aftwardly at a desired moment, so that it becomes seated against the convergent portion of the primary nozzle in axial alignment therewith; and
means for automatically opening the secondary nozzle member to propulsive gases of the rocket and for opening the aft end of the secondary nozzle member and for removing therefrom the said portion of the coat of thermal insulation when the secondary nozzle member is seated against the convergent portion of the primary nozzle for discharge of the propulsive gases through the secondary nozzle.

4,495,764

INTEGRATED INSULATION WALL ASSEMBLY

Clayton C. Gregy, Enumclaw, Wash., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 26, 1983, Ser. No. 498,335
Int. Cl.³ F02K 9/34
U.S. Cl. 60—255 12 Claims



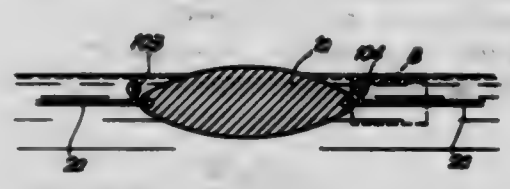
1. An integrated insulation wall assembly, comprising:
a. means for providing a fire barrier for said wall assembly, with this means including a first wall component made of ablative composite material bonded by ablative matrix material and having an external surface, and an internal surface which functions as the internal surface of said wall assembly;
b. means for providing thermal insulation for said wall assembly, with this means including a second wall component made of non-metallic honeycomb core material and having an external surface, and an internal surface in contact with and joined to said external surface of said fire barrier providing means; and
c. means for providing structural stability to said thermal insulation providing means, with said structural stability providing means including a third wall component made of a composite material and having an external surface, and an internal surface in contact with and joined to said external surface of said thermal insulation providing means, and with said external surface of said structural stability providing means functioning as the external surface of said wall assembly.

4,495,765

WAVE-ENERGY CONVERTER

Michael J. French, United Kingdom Atomic Energy Authority, 11 Charles II St., London, SW1Y 4QP, England

Division of Ser. No. 361,973, Mar. 25, 1982, abandoned, which is a continuation of Ser. No. 94,855, Nov. 16, 1979, Pat. No. 4,341,074. This application Nov. 1, 1983, Ser. No. 547,645
Claims priority, application United Kingdom, Feb. 9, 1979, 7904658
Int. Cl.³ F03B 13/12
U.S. Cl. 60—398 7 Claims



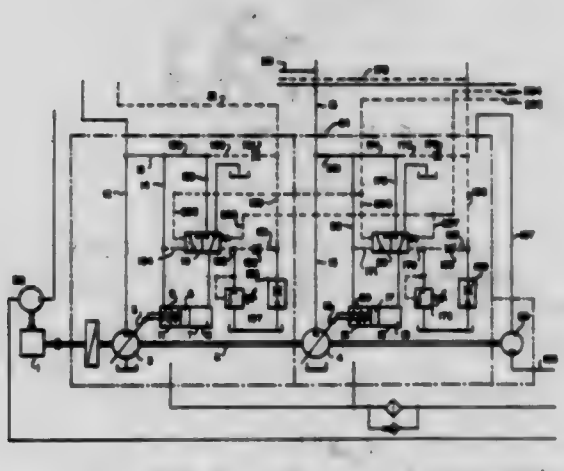
1. A device for converting the energy of waves on a liquid into useful work, the device comprising a plurality of bodies each being just buoyant in the liquid, a plurality of tubular elongate tie members arranged to be disposed between the bodies in substantially horizontal directions in the liquid to form a net-like arrangement with a respective body connected at each of the notional intersections of the elongate members for reciprocating horizontal motion relative to adjacent bodies, the bodies being spaced apart so that waves cause reciprocating horizontal displacement of the bodies relative to one another, each elongate member defining a bore therein adapted to contain a fluid and comprising an elastomeric material reinforced with layers of helically wound relatively inelastic filaments, such that application of an axial tensioning load on the elongate member causes a reduction in volume of the bore and thereby discharge of the fluid from the bore, adjacent layers of the filaments having the filaments thereof wound in opposite relationship, inlet valve means and outlet valve means connected to the bore, and means for performing useful work from discharge of the fluid from the bore through the outlet valve means, the arrangement being such that reciprocating horizontal relative motion of the bodies in response to waves causes corresponding changes in elongation of the elongate members and thereby discharge of the fluid to the work performing means.

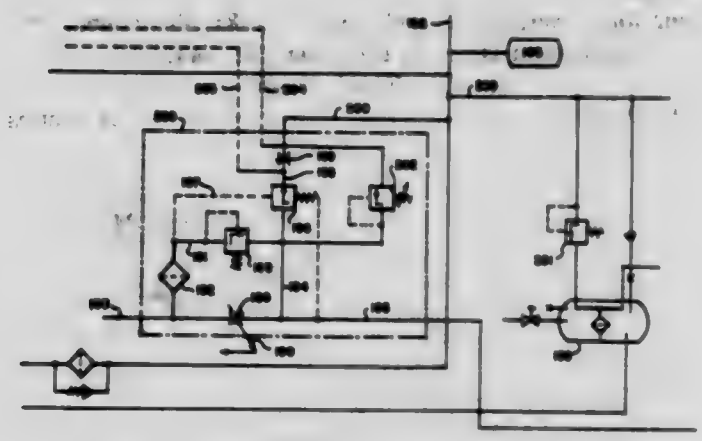
4,495,766

CONTROLS FOR HYDROSTATIC SYSTEMS

Alfred Kruecke, Johannesberg, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Nov. 24, 1981, Ser. No. 325,032
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1980, 3044143
Int. Cl.³ F16D 33/00, 33/02
U.S. Cl. 60—428 8 Claims





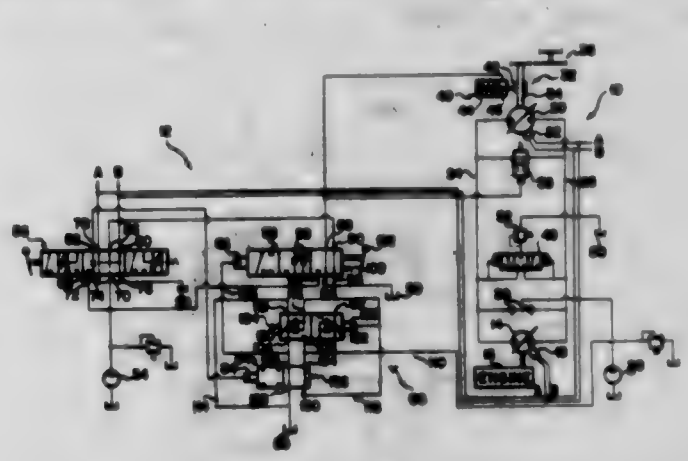
1. In a control for a hydrostatic drive system with a primary energy source and with at least two adjustable pumps driven by a common power source and at least one adjustable consumer of hydrostatic energy and with a pump adjusting piston connected with the adjusting element of each of the at least two pumps and capable of sliding in a pump adjustment cylinder, where the load on the pump adjustment cylinder of each of the at least two pumps is regulated by means of a separate servo control valve, and a constant pump connected to and driven by the power source in common with said at least two adjustable pumps; a delivery line connected to and receiving fluid from said constant pump, a restrictor in said delivery line, a signal-pressure line connected to the delivery line in front of the restrictor, a control-signal line connected to each servo control valve, a relief valve jet in said control-signal line and connected to and regulated by said signal pressure line, the improvement characterized in that the control-signal line is bifurcated between the relief valve jet and each servo control valve and an additional restrictor is located in the bifurcated control-signal line to provide a pressure gradient and means are provided for operatively connecting the two sides of the bifurcated signal line to the separate servo control valves whereby to control the loading of the pump adjusted cylinder.

4,495,767

ANTICAVITATION CONTROL SYSTEM FOR A HYDROSTATIC TRANSMISSION

Teruo Akiyama, Yokohama, and Koichi Morita, Kamakura, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Nov. 30, 1982, Ser. No. 445,533
Claims priority, application Japan, Nov. 30, 1981, 56-190911
Int. Cl.³ F16D 31/02
U.S. Cl. 60—436 4 Claims



1. In a hydrostatic transmission of the type including a hydraulic, bidirectional, variable-displacement drive pump having a first servo control for controlling the output thereof, a hydraulic, bidirectional, variable-displacement propelling motor having a second servo control for controlling the output thereof and and connected in circuit with the drive pump to be driven thereby, a charging pump connected to the circuit of the drive pump and the propelling motor, and a brake assembly provided to an output shaft of the propelling motor for normally locking same against rotation, the brake assembly being adapted to release the output shaft of the propelling motor only while being supplied with a hydraulic brake release, a control system comprising:

(a) a control pump;

(b) a speed control valve actuated manually for delivering servo control signals, derived from the control pump, to the first and second servo controls to cause same to control the outputs from the drive pump and the propelling motor;

(c) a brake control valve normally held in a first position for allowing the brake assembly to lock the output shaft of the propelling motor against rotation, the brake control valve being pilot actuated from the first to a second position for delivering the brake release signal, derived from the control pump, to the brake assembly, the brake control valve further providing a fluid connection from the speed control valve to a reservoir to prevent the speed control valve from putting out the servo control signals when the brake control valve is in the first position; and

(d) sensor valve means for allowing the output from the charging pump to pilot-actuate the brake control valve from the first to the second position only when the charging pump output pressure rises to a predetermined level and, at the same time, when the speed control valve is being actuated manually and for causing the brake control valve to return to the first position regardless of the position of the speed control valve when the charging pump output pressure falls below the predetermined level.

4,495,768

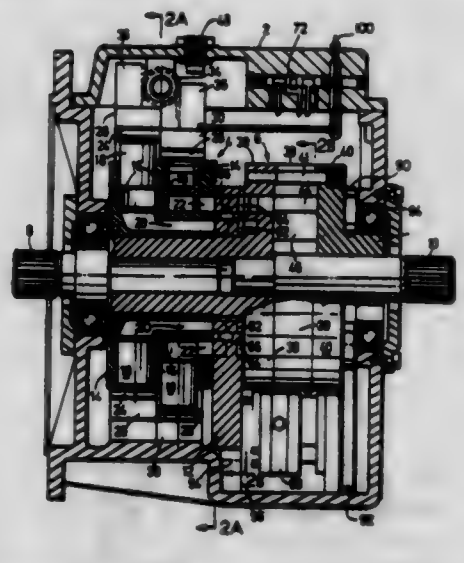
HYDROSTATIC TRANSMISSIONS

Viljo K. Valavaara, Milton, Canada, assignor to Inventors Compendium International Corp., Don Mills, Canada

Filed Mar. 12, 1982, Ser. No. 357,495
Int. Cl.³ F16D 31/06
U.S. Cl. 60—414 6 Claims

1. A hydraulic variable speed transmission comprising a

casing, an input shaft, an output shaft, a first hydrostatic pump-/motor unit within the casing having at least two similar reaction surfaces supported for coordinated non rotative eccentric movement in radial directions equiangularly spaced abot the unit axis, a second hydraulic pump/motor unit coaxial with the first unit within the casing and having means defining at least two similar equiangularly spaced reaction surfaces supported for rotation together about the axis of the unit, each unit having rotor equipped with radially movable displacement control members engaging the reaction surfaces of that unit and coupled to the input and output shafts respectively, the reaction surface defining means of the second unit being supported by a



rotatable member coupled to the input shaft, a stationary commutating valve member establishing two independent paths for fluid flow between the units whereby to coordinate the transfer of fluid in an internal circuit between the pump/motor units, and an external hydraulic circuit including at least one source of pressurized hydraulic fluid, said valve member including means establishing external connections between said independent paths and said external hydraulic circuit whereby pressurized fluid may be transferred bidirectionally between said internal circuit and said external circuit and whereby a difference in the fluid pressure in said two independent paths may be selectively responded to or maintained by said external circuit.

4,495,769

BOOSTER POWER STEERING

Werner Tischer, Böblingen; Karl-Heinz Liebert, Schwäbisch Gmünd, and Rolf Fassbender, Mutlangen, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Aug. 13, 1981, Ser. No. 292,632

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1980, 3031230

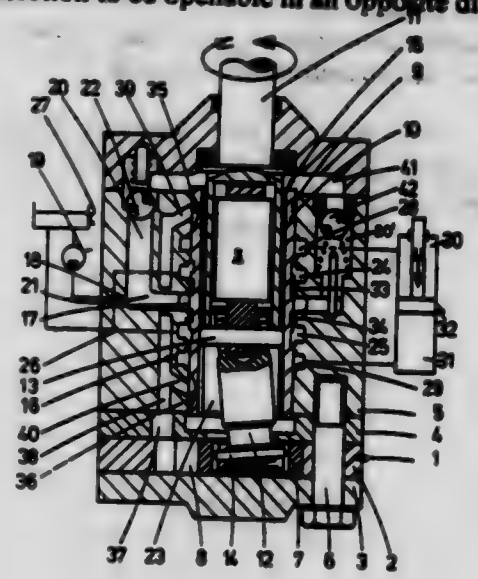
Int. Cl.³ F16D *31/02*

U.S. Cl. 60—451 2 Claims

1. A booster steering valve comprising a housing (5) with a valve sleeve (10) therein having an inner bore (23) and being actuatable relative to said housing responsive to operation of a manually operable steering shaft (11) wherein said housing and valve sleeve have coacting passages and grooves for controlling pressure and exhaust flow to and from the chambers of a servomotor including a servopump pressure groove (17) in said housing; further including a metering pump (1) actuated by operation of said steering shaft; said housing and valve sleeve having a neutral position wherein pressure flow from said servopump is bypassed to a tank from said pressure groove; and wherein said housing has a servopump pressure passage means (20, 21) with a back pressure valve (22) therein openable in one direction by pressure in said pressure passage means to the inlet of said metering pump via said valve sleeve bore;

the improvement comprising:

a passage means (20') having a connection from said pressure passage means to the downstream side of said back pressure valve (22) and having a pressure limiting valve (42) in said connection to be openable in an opposite direction by



pressure in said valve sleeve bore (23) to relieve pressure therein to said pressure passage means in a neutral position of said valve.

4,495,770

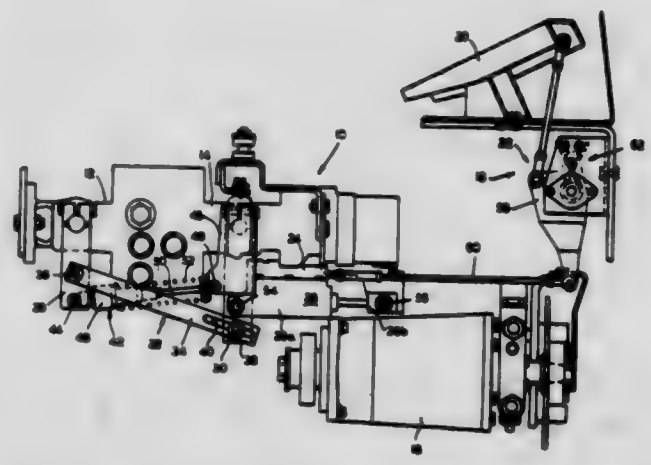
HYDROSTATIC CONTROL SYSTEM

Thomas M. Sagaser; Patrick Kuhn, and Kaute K. Brock, all of Bismarck, N. Dak., assignors to Clark Equipment Company, Buchanan, Mich.

Continuation of Ser. No. 251,440, Apr. 6, 1981, abandoned. This application Dec. 21, 1983, Ser. No. 541,828

Int. Cl.³ F16H *39/48*

U.S. Cl. 60—486 21 Claims



1. An improved hydrostatic control system for controlling the output of a hydrostatic drive unit for a vehicle, the drive unit comprising:

a pair of output pumps axially aligned, each of the output pumps having an infinitely variable swash plate operatively connected thereto to control the output of the respective pumps;

a drive motor;

cooperative means between the drive motor and the output pumps to couple the output pumps to the drive motor without intervening valves or other flow control devices;

operative means to control the output of the drive motor; and

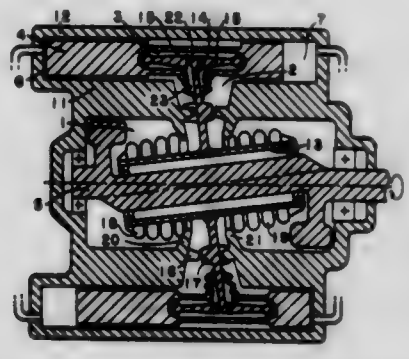
the improvement comprising a lost motion connecting means provided between the swash plates of the aligned drive pumps, such lost motion connecting means including a single operator control device to sequentially control the output of one or both pumps.

4,495,771

STIRLING-CYCLE ENGINE

Claude Chauveau, Chalabre, France, assignor to Creusot-Loire, Paris, France

Filed Apr. 11, 1983, Ser. No. 484,029
Claims priority, application France, Jun. 4, 1982, 82 09776
Int. Cl.³ F02G 1/00
U.S. Cl. 60—525 5 Claims



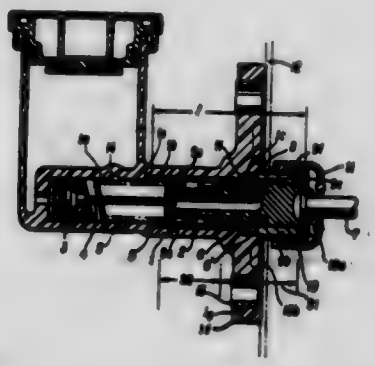
1. A stirling-cycle engine, comprising a housing in which are assembled a rotating shaft, at least three working cylinders arranged in parallel about said shaft, a double-acting piston in each of said cylinders, and a mechanical transmission converting reciprocating movement of said pistons to rotary movement of said shaft, said housing having a first chamber (1) in which said rotating shaft is assembled, and a second chamber (2) in which said mechanical transmission is assembled, said mechanical transmission consisting of an oscillating plate (13, 14) which is immobile against rotation and has an orbital movement and the axis of which describes a conical surface about said rotating shaft, and of articulated connections (15–22) linking each said piston (4) to said oscillating plate, an elastic gasket (18, 19) being located between said housing (11) and said oscillating plate (13, 14) so as to prevent any communication between said first chamber (1) and said second chamber (2), each of said articulated connections (15, 22) being placed in a receptacle (3) of a component rigidly connected to said piston (4), a third chamber contained in said receptacle (3) being isolated from said second chamber (2) by elastic gaskets (23).

4,495,772

BRAKE MASTER CYLINDER

Yohichi Furuta, Chiryu; Kaoru Tsubouchi, Toyota, and Kaoru Nanamura, Anjo, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 263,723, May 14, 1981, abandoned.
This application Oct. 31, 1983, Ser. No. 547,447
Claims priority, application Japan, May 16, 1980, 55-67696[U]
Int. Cl.³ F15B 7/00
U.S. Cl. 60—533 2 Claims



1. A brake master cylinder having a push rod and a reservoir, comprising:

a body of resin material having an open and closed end and an inner cylindrical portion which includes a small diameter portion at said closed end, a large diameter portion at said open end and a middle diameter portion located between said large and small diameter portions;

a metal liner inserted within said body wherein said metal liner includes a through-hole formed therein which has substantially the same diameter as said small diameter portion of said body and wherein an outer diameter portion of the metal liner includes a small outer diameter portion which engages with said middle diameter portion of said body and a large diameter portion which engages with said large diameter portion of said body and wherein said metal liner further comprises a voidless cylindrical liner;

seal means positioned in an annular space formed by said middle and large diameter portions of said body and said small and large diameter portions of said metal liner;

a piston including piston cup means formed in a large diameter portion of said piston, said piston being slidably positioned within said through-hole of said metal liner and directly actuated by said push rod, wherein the length of said metal liner is slightly longer but of substantially the same length as a length of said large diameter portion of said piston plus a length defined by a range of stroke of said piston;

a support member for securely holding said metal liner and limiting movement of said push rod, said body further including a flange portion;

a dashboard member connected to said flange of said body wherein said support member includes at one end thereof an extension securely positioned between said flange portion of said body and said dashboard member and wherein said flange portion has a hole formed therein; and

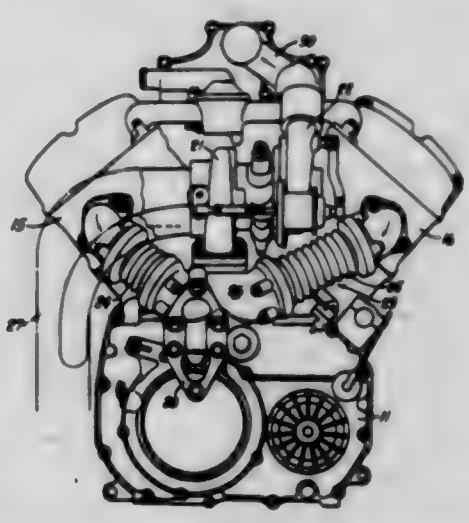
a metal collar member secured to said extension of said support member and securely positioned within said hole in said flange portion of said body and wherein said body includes an outlet port and a hole for communicating with said reservoir formed in said small diameter portion of said body and, said outlet port and said hole are open to said small diameter portion of said body.

4,495,773

TURBOCHARGER FOR MOTORCYCLES

Kazuo Inoue, Tokyo, and Kentaro Kato, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 17, 1981, Ser. No. 303,144
Claims priority, application Japan, Sep. 17, 1980, 55-128014
Int. Cl.³ F02B 37/00
U.S. Cl. 60—605 6 Claims



1. A turbocharger system for a motorcycle having a multicylinder V-engine with a crankshaft, the engine being supported on a body frame between front and rear wheels with the centerline of the engine extending fore-and-aft of the motorcycle, the turbocharge system comprising

an exhaust manifold including a hollow support rigidly fixed to the engine and exhaust pipes connected to the engine cylinders and extending toward the axis of the crankshaft and converging to said hollow support; and

a turbocharger mounted to and positioned atop said hollow support adjacent one end of the V of the multicylinder V-engine and including an engine intake pipe extending toward the engine.

4,495,774

PROCESS FOR GENERATING ELECTRIC POWER BY MEANS OF TURBOGENERATORS USING HIGH PRESSURE VAPOR

Otto Domdey, Buchenstrasse 58, Ludwigshafen, Fed. Rep. of Germany

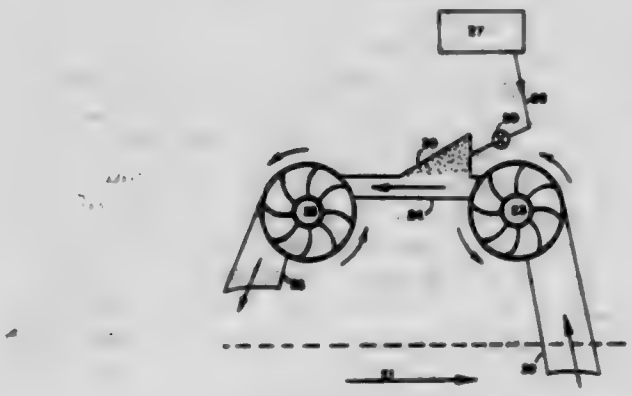
PCT No. PCT/EP80/00012, § 371 Date Nov. 6, 1980, § 102(e) Date Nov. 6, 1980, PCT Pub. No. WO80/01932, PCT Pub. Date Sep. 18, 1980

Continuation-in-part of Ser. No. 224,571, Nov. 6, 1980, Pat. No. 4,394,815. This PCT application Mar. 3, 1980, Ser. No. 484,918

The portion of the term of this patent subsequent to Dec. 27, 2000, has been disclaimed.

Int. Cl.³ F01K 25/06

U.S. Cl. 60—649 5 Claims



1. An improvement in a process for generating electrical current by means of hydraulic turbogenerators, wherein a conduit connects a water reservoir with turbines of said turbogenerator, said conduit containing a water stream supplying motive power to said turbines, said water stream being subjected to common air pressure conditions at said reservoir, with a vapor generating chamber adjacent the water stream conduit at a point outside of the turbine space and in fluid communication with said water stream conduit, said improvement comprising:

inserting the high pressure vapor into said water stream conduit at said point outside of said turbine space into one side of said water stream, said water stream having a very high flow rate in said conduit,

such that continuous pressure and velocity increases are caused in said water stream, and that practically no heat exchange takes place between the inserted vapor and the water prior to contact with the turbines.

4,495,775

SHIPPING CONTAINER FOR STORING MATERIALS AT CRYOGENIC TEMPERATURES

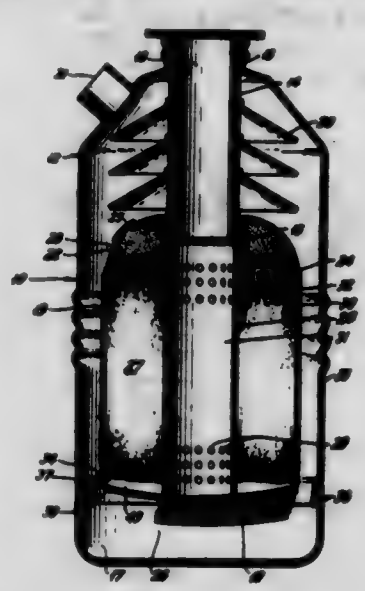
John K. Young, Carmel, and Alfred Barthel, Indianapolis, both of Ind., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 22, 1983, Ser. No. 506,791

Int. Cl.³ F17C 11/00

U.S. Cl. 62—48 14 Claims

1. A shipping container for transporting materials at cryogenic temperatures having a micro-fibrous structure with randomly oriented fiber particles adapted for holding a liquefied gas such as liquid nitrogen in adsorption and capillary suspension within the interior of the container, said micro-fibrous structure comprising a core permeable to gaseous and/or to liquid nitrogen, with said core being disposed in said container and having at least one void adapted for the removable placement of the transportable materials; and a liquefied gas adsorption matrix composed of a mass of very small diameter substantially non-porous inorganic fibers in a range from 0.03 to 8 microns in diameter with the fibrous particles surrounding said core as a homogeneous body having an outside diameter conforming to the diameter of the shipping container.



4,495,776

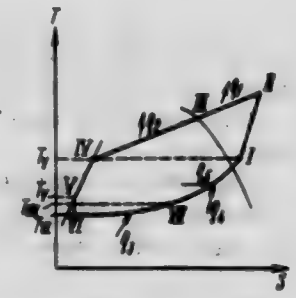
METHOD AND COOLING AGENT FOR FREEZING AND STORING PRODUCTS

Vladimir A. Nikolsky; Valery M. Yagodin, both of Kiev; Evgeny N. Vazhnov, Moscow; Efim S. Bondar, Kiev; Igor P. Naumenko, Kiev; Valery F. Vozny, Kiev; Vladimir N. Orlov, Kiev, and Vladimir I. Tikhonov, Kiev, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Experimetalno Konstruktorsky Institut Elektrobytovyky Machin I Priborov, U.S.S.R.

Filed Oct. 13, 1981, Ser. No. 311,059

Int. Cl.³ F25B 9/00

U.S. Cl. 62—114 15 Claims



1. A method of refrigeration, comprising the steps of

compressing a multi-component cooling agent to a working pressure, said multi-component cooling agent comprising 10–50 volume percent of difluorodichloromethane as a first component 10–50 volume percent of a compound selected from the group consisting of carbon dioxide, trifluoromonochloromethane and trifluoromonobromomethane as a second component, 10–50 volume percent of a compound selected from the group consisting of difluoromonochloromethane and propane as a third component, and 10–75 volume percent of a compound selected from the group consisting of difluoromonochloroethane, difluoromonochlorobromomethane and octafluorocyclobutane as a fourth component,

condensing the compressed cooling agent at said working pressure to liquify the cooling component of higher boiling point, said cooling component of lower boiling point dissolving in the liquified component of higher boiling

point, thus forming a liquified cooling agent of said cooling components at said working pressure,

throttling said cooling agent to a lower pressure, thereby cooling the same,

at least partially evaporating the thus-cooled cooling agent which is at said lower pressure, thereby effecting cooling, and

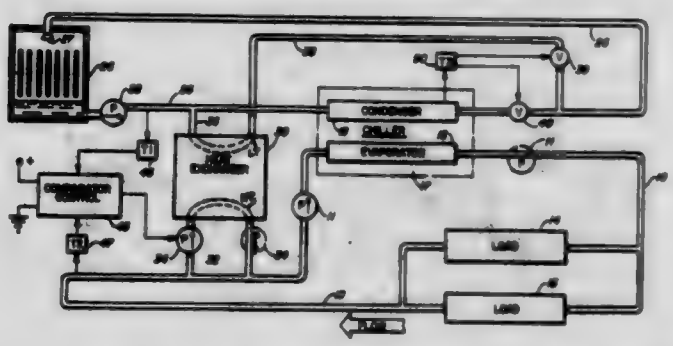
recycling the at least partially evaporated cooling agent to the compressing step.

4,495,777

LOAD SHAVING SYSTEM

Thomas G. Babington, 913 S. Hohokam Dr., Tempe, Ariz. 85281

Filed Jan. 10, 1983, Ser. No. 456,703
Int. Cl.³ F25D 17/02; B60H 1/00
U.S. Cl. 62—185 9 Claims



1. A load shaving system for a closed loop fluid cooling system including in combination:

a closed loop fluid system for circulating working fluid through a load to remove heat from the load;

primary heat exchange means in said closed loop and having an input to receive said working fluid after passage thereof through the load to remove heat from said working fluid and having an output coupled to the load to deliver cooled fluid thereto;

secondary heat exchange means located between the load and said primary heat exchange means and having a shunt path interconnected with said closed loop working fluid system between said load and the input to said primary heat exchange means;

means for shunting at least some of said working fluid through said secondary heat exchange means;

means for providing a secondary source of cooling for working fluid shunted through said secondary heat exchange means;

first means for sensing the temperature of said working fluid after passage through the load and producing an output signal representative of such temperature;

second means for sensing a temperature proportional to the temperature of a cooling medium for said secondary heat exchange means and producing an output signal representative of such temperature; and

means for comparing the signals from said first and second temperature sensing means for producing an output signal coupled with said means for shunting working fluid to vary the proportion of working fluid shunted through said secondary heat exchange means.

4,495,778

TEMPERATURE AND PRESSURE ACTUATED CAPACITY CONTROL SYSTEM FOR AIR CONDITIONING SYSTEM

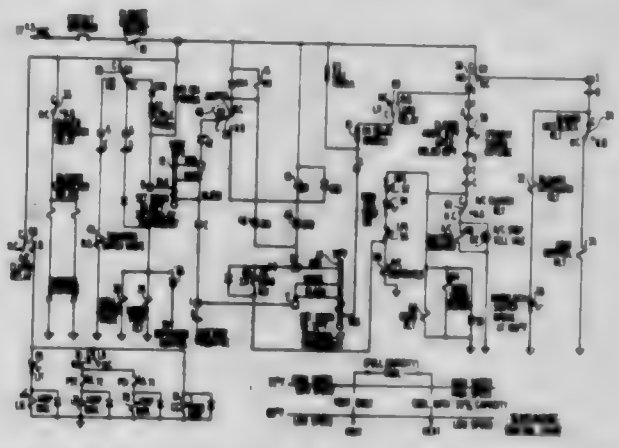
David N. Shaw, Unionville, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Filed Feb. 14, 1984, Ser. No. 580,047
Int. Cl.³ F25B 1/00
U.S. Cl. 62—209 12 Claims

1. A control apparatus for a climate control system for controlling the temperature of air in a controlled area, said system including a compressor operable at a plurality of different load levels and said system being capable of at least a cooling mode wherein said compressor is activated to reduce said air temperature, said control system comprising:

temperature sensing means for monitoring said air temperature;

further sensing means for sensing at least one operating parameter of said climate control system other than said air temperature; and



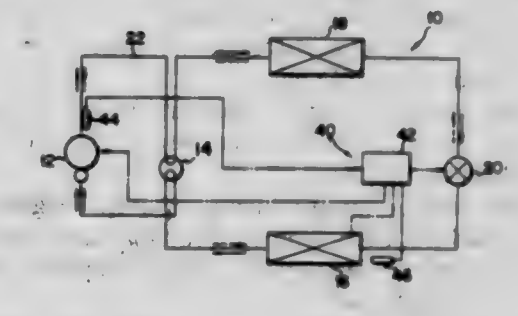
control means for varying the load level of said compressor above a first predetermined air temperature in accordance with said operating parameter, and for fixing the load level of said compresaor at a predetermined load level below said first predetermined temperature regardless of the value of said sensed parameter.

4,495,779

AIR CONDITIONER

Tatsuo Tanaka; Hiroshi Itoh, and Akihiko Sugiyama, all of Fuji, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 15, 1984, Ser. No. 590,056
Claims priority, application Japan, Mar. 17, 1983, 58-44710
Int. Cl.³ F25B 41/00
U.S. Cl. 62—211 5 Claims



1. An air conditioner comprising:

a refrigeration cycle circuit having a compressor of variable exhaust amount type, a first heat exchanger for condensing refrigerant, being connected to the compressor, a second heat exchanger for evaporating the refrigerant, being connected to the compressor, and a regulating valve capable of adjusting the opening degree thereof and connected between the first and second heat exchangers; and

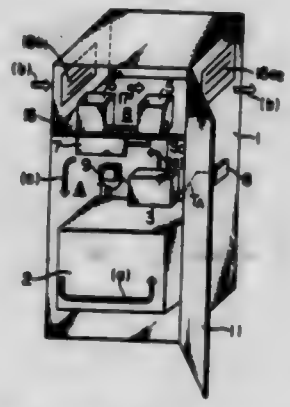
regulating means for regulating the refrigerant flow rate to the first or second heat exchanger by adjusting the opening degree of the regulating valve in response to the amount of the refrigerant exhausted from the compressor to set the exhaust temperature of the refrigerant from the compressor to a predetermined temperature responsive to the amount of the refrigerant exhausted from the compressor.

4,495,780

COOLING METHOD AND APPARATUS FOR HERMETIC TYPE CONTROL BOX

Tomonori Kaneko; Shunji Mori; Tetsuo Ichikawa, all of Hitachi; Yoichi Hiroki, Hitachiota, and Takashi Kariya, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 8, 1982, Ser. No. 447,798
Claims priority, application Japan, Dec. 9, 1981, 56-196849
Int. Cl.³ F25B 41/00; H05K 7/20
U.S. Cl. 62—229 6 Claims



1. An apparatus for cooling a hermetic type control box accommodating therein electronic apparatus with the aid of a cooling apparatus, comprising:

a cooling section of said cooling apparatus disposed at an upper portion of a hermetically closed portion of said control box;

an intra-box temperature detector for detecting an intra-box temperature (T_R) within said control box;

a first comparator for comparing said detected intra-box temperature (T_R) with a predetermined set temperature (T_C) to thereby produce an output signal when said intra-box temperature (T_R) is not lower than said predetermined set temperature (T_C),

an extra-box temperature detector for detecting an extra-box temperature (T_A) outside of said control box;

a second comparator comparing said detected extra-box temperature (T_A) with said predetermined set temperature (T_C) to produce an output signal when said extra-box temperature (T_A) is lower than said predetermined set temperature (T_C);

a first AND gate for determining a logical product of the output signals of said first and second comparators, said cooling apparatus being driven in response to the output signal of said first AND gate;

a third comparator for producing an output signal when said extra-box temperature (T_A) is not lower than said predetermined set temperature (T_C);

a fourth comparator for producing an output signal when said detected intra-box temperature (T_R) becomes higher than said extra-box temperature (T_A) by a predetermined temperature (T_D); and

a second AND gate for producing an output signal when the logical product of the output signals of said third and fourth comparators is valid, wherein said cooling apparatus is driven in response to the output signal of said second AND gate.

4,495,781

UNDERGROUND COOLING SYSTEM AND METHOD

Grafton G. Gatling, Rte. 1, P.O. Box 116A, Eure, N.C. 27935

Filed Feb. 17, 1983, Ser. No. 467,320
Int. Cl.³ F25D 23/00
U.S. Cl. 62—260 32 Claims

1. An underground cooling system using cooled air for cooling at least one building comprising:

(a) an air conveying means for conveying air underground including:

(i) an inlet for receiving air;

(ii) a blower for blowing air into said inlet;

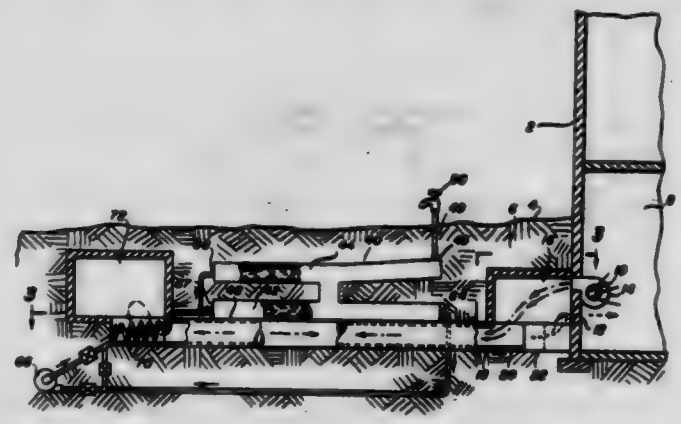
(iii) an outlet for emitting cooled air into said building;

(iv) an air line for transmitting air there-through, connecting said inlet to said outlet; and

(b) a container means for containing a liquid, including:

(i) an upper compartment;

(ii) a lower compartment, spaced apart from said upper compartment, at a different vertical height and in communication therewith so that when a liquid is in said container means said liquid may flow therebetween, wherein said container means is disposed at a depth beneath the ground such that when liquid is in said lower compartment, said liquid is at a lower temperature than air in said air conveying means, wherein said



air conveying means conveys air to a location where the air will become cooled by an exchange of heat with liquid from said lower compartment, a first liquid conveying means, attached at one end to said lower compartment and connected at its other end to said container means, for conveying liquid from said lower compartment therethrough, wherein a section of said first liquid conveying means is interposed in the path of air in said air line, said air line has first and second sections and said air conveying means further includes a junction chamber connecting said first and second sections wherein said junction chamber has a greater cross-sectional area than said air line and wherein at least a portion of said first liquid conveying means is interposed in said junction chamber.

4,495,782

TRANSMISSIVE DEWAR COOLING CHAMBER FOR OPTICALLY PUMPED SEMICONDUCTOR RING LASERS

Michael M. Salour, La Jolla, Calif., and Adrian Fuchs, Cham, Switzerland, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 16, 1983, Ser. No. 552,555
Int. Cl.³ F25B 19/00
U.S. Cl. 62—514 R 20 Claims

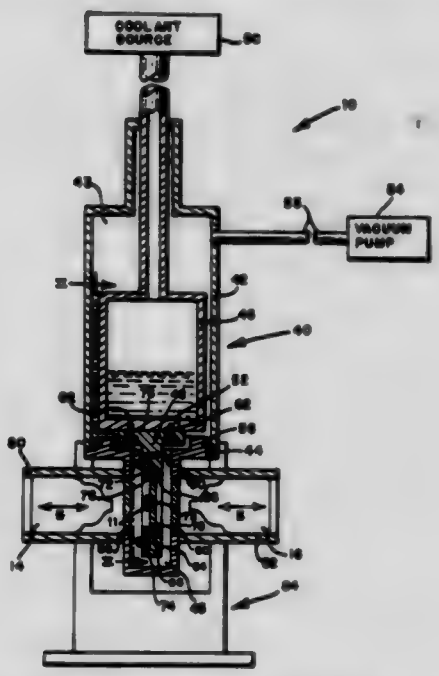
1. A transmissive Dewar cooling chamber comprising:

a housing, said housing having an upper chamber and a lower chamber, and said housing having walls made partially of material transmissive to a preselected wavelength, said transmissive material being situated juxtaposed said lower chamber in order to allow the passing of a beam of electromagnetic radiation of said preselected wavelength completely through said lower chamber of said housing;

means located within said lower chamber and extending into said upper chamber for supporting an object in said lower chamber, said object being optically aligned with said transmissive material so that said beam of electromagnetic radiation is capable of passing completely through said object;

means located in said upper chamber for providing a cooling

environment for said object, said object supporting means being operably secured to said cooling means; and



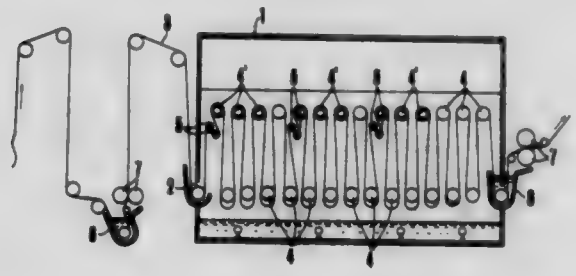
means operably secured to said housing for moving said housing and thereby said object in at least two dimensions.

4,495,783

APPARATUS FOR CONTINUOUS WET-HEAT TREATMENT OF CLOTH

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama, Japan

Filed Sep. 7, 1983, Ser. No. 530,125
Claims priority, application Japan, Sep. 16, 1982, 57-161399; Sep. 16, 1982, 57-161400; Sep. 16, 1982, 57-161401
Int. Cl.³ D06B *3/12, 23/20*
U.S. Cl. 68—5 D 3 Claims



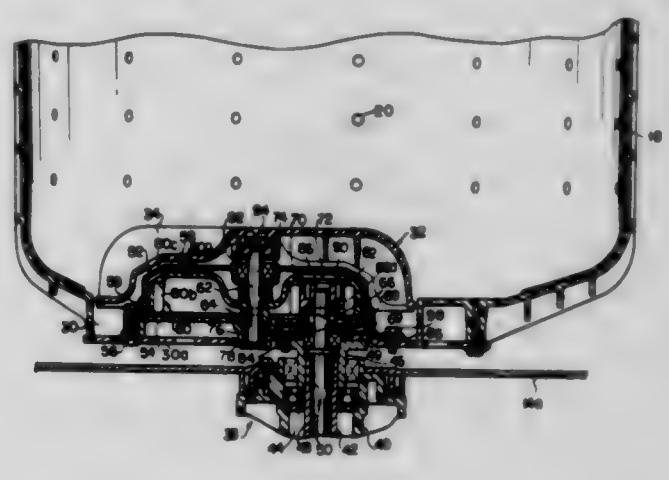
1. An apparatus for continuous wet-heat treatment of a cloth, comprising a non-tightly sealed wet-heat treating chamber provided with a plurality of liquid applying rollers for applying a treating liquid such as a treating liquid and/or water to a cloth running continuously through the wet-heat treating chamber, said liquid applying rollers being provided with numerous irregular, curved and bent communicating pores allover its periphery, and a high temperature liquid generating mechanism for generating a superheated treating liquid, said high temperature liquid generating mechanism being provided with a treating liquid heating pipe and/or a water heating pipe communicating to said liquid applying rollers.

4,495,784

WASHER-DEHYDRATOR HAVING A DRIVING GEAR SUPPORTED IN A SEALING CASE

Yoshio Ikeda, Aichi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 7, 1982, Ser. No. 386,083
Claims priority, application Japan, Jun. 8, 1981, 56-88491
Int. Cl.³ D06F *23/04*
U.S. Cl. 68—23.6 14 Claims



1. A washer-dehydrator which comprises:
a water tank;
a rotary tub rotatably disposed in the water tank;
a pulsator shaft rotatably attached to the inside of the rotary tub in an eccentric manner;
a pulsator coaxially fixed to the pulsator shaft;
a washing shaft coaxial with the rotary tub and having a projected end portion projecting into the rotary tub a given distance;
driving means for rotatably driving the washing shaft;
a driven gear coaxially fixed to the pulsator shaft;
a driving gear in mesh with the driven gear;
a sealing case housing the driven gear and the driving gear in a watertight manner, detachably fixed to the inside of the rotary tub, the sealing case having a penetrating hole to allow insertion of the projected end portion of the washing shaft, said driving gear having a cylindrical boss section fitted in the penetrating hole of the sealing case so as to be supported in the sealing case; and
engaging means for detachably engaging the projected end portion of the washing shaft with the driving gear to transmit the rotary force of the washing shaft to the driving gear in an engaged state.

4,495,785

APPARATUS FOR WET TREATMENT OF ENDLESS TEXTILE MATERIAL

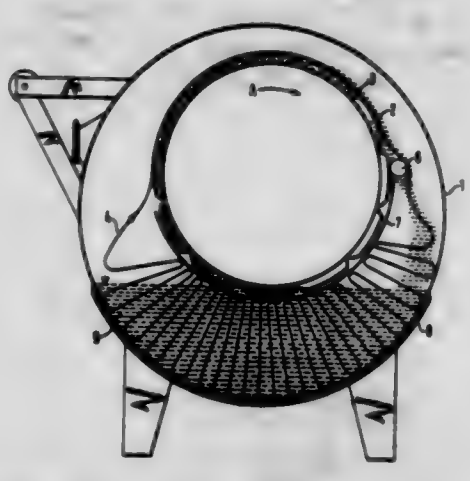
Gunter Eckrodt, Coesfeld, Fed. Rep. of Germany, assignor to Thies GmbH & Co., Fed. Rep. of Germany

Filed Jun. 3, 1983, Ser. No. 500,953
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1982, 3220990
Int. Cl.³ D06B *1/04, 3/16, 23/04*
U.S. Cl. 68—62 12 Claims

1. An apparatus for wet-treating an endless segment of textile material, comprising:
a closed, generally cylindrical container;
a drum rotatably mounted about the longitudinal axis thereof in said container with a bottom of said drum spaced from a bottom of said container;
a plurality of dippers carried by said drum, each of said dippers having a tangentially directed opening facing in the direction of drum rotation such that liquid therein empties from each dipper as each dipper passes an apogee of drum rotation;
means for filling said dippers with treatment liquid as said

dippers rotate with said drum through a lowest point thereof; and

means for conveying an endless segment of textile over an outer surface of said drum such that said textile is repeatedly treated with liquid emptying from said dippers onto a surface of said textile closest to said drum adjacent said apogee.

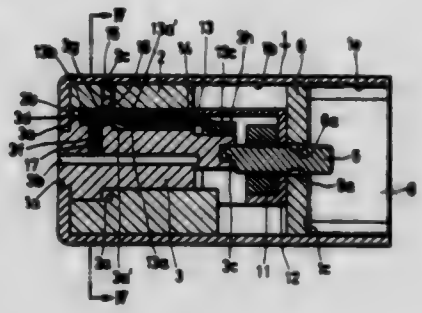


4,495,786

STEERING LOCK FOR AUTOMOTIVE VEHICLES

Mikio Masaki; Etuo Naru; Keiichi Shimizu, all of Tokyo, and Takeshi Fukasawa, Yokohama, all of Japan, assignors to Kokusan Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1982, Ser. No. 390,865
Int. Cl.³ E05B 17/04; B60R 25/02
U.S. Cl. 70—186 5 Claims



1. A steering lock for an automobile having a steering shaft, comprising:

a frame;

a key cylinder rotatably mounted in said frame and having at one end thereof a cam, a locking step, and a radial slot, said key cylinder including a key insertion slot;

a check lever mounted axially movable on said key cylinder and having one end engageable with said cam or said locking step;

a locking rod movably supported in said frame and movable between a retracted position in which the locking rod is held out of locking engagement with the steering shaft and a locking position in which the locking rod is held in locking engagement with the steering shaft, said check lever having the other end engageable with said locking rod to keep the latter in said retracted position;

a first spring for normally urging said check lever to move in a direction to disengage the latter from said locking rod;

a central member slidably disposed in said radial slot;

said check lever being axially movable in a first direction in response to rotation of said key cylinder with a key inserted in said key insertion slot for causing said cam to displace said one end of the check lever toward said locking step until said other end engages said locking rod to keep the latter in said retracted position; and

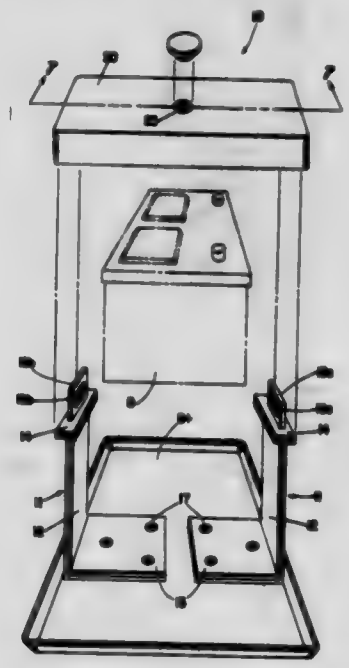
said check lever being axially movable in a second direction opposite to said first direction in response to removal of the key out of said key insertion slot for returning said one end toward said cam while depressing said control member into said key insertion slot, whereby said other end of the check lever can be disengaged from said locking rod to allow the latter to move into said locking position.

4,495,787

LOCKING MEANS FOR BATTERY, ETC.

Harold N. Comstock, 1113 E. 64th St., Cleveland, Ohio 44103

Filed Jan. 24, 1983, Ser. No. 460,610
Int. Cl.³ E05B 65/12
U.S. Cl. 70—258 7 Claims



1. A tamper resistant lock for attachment to a battery comprising in combination a frame structure including a pair of pedestals secured to spaced opposite ends of a battery tray on which the battery rests, a lock box having a solid cover portion and a recessed bolt containing bottom portion adapted to be mounted on said pedestals, said bottom portion being provided with spaced openings on opposite sides of the bottom thereof through which vertical upwardly extending portions of the pedestals project, each of said vertical legs being provided with an elongated slot adjacent its upper projecting end, a pair of flat bolts slidably secured in the recessed portion of the bottom portion on opposite sides thereof, a key actuated lock recessed in the cover having a locking bar adapted to be rotated by the key lock to slide each of said bolts in the recessed portion of the cover through said each of said elongated slots to form a battery enclosing lock.

4,495,788

MULTIPLE CURVATURE BENDER

Zeno P. Traub, Vista, Calif., assignor to Eaton-Leonard Corporation, Carlsbad, Calif.

Filed Aug. 2, 1982, Ser. No. 404,531
Int. Cl.³ B21D 7/04
U.S. Cl. 72—157 12 Claims

1. Bending apparatus comprising

an elongated machine bed,

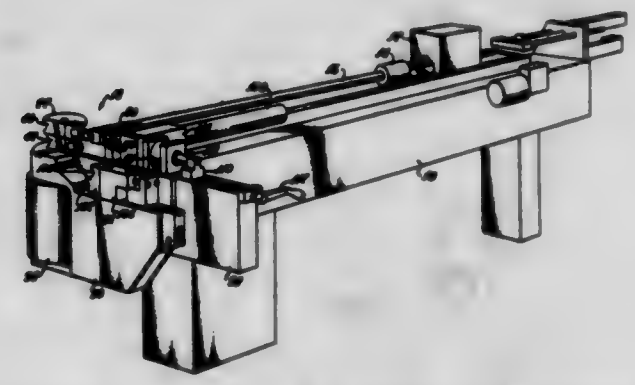
a carriage mounted for motion on the machine bed in a direction toward and away from a forward end of said bed,

a pipe holding chuck mounted on the carriage for holding a pipe with its axis aligned in said direction,

a bending head carried by the forward end of said machine bed and including first and second bend dies for bending a pipe about a bend axis,

means for mounting said bending head on said machine bed for reciprocal motion in a second direction parallel to said bend axis and in a third direction transverse to said bend axis and to said first direction, and

said bending head comprising a stationary arm assembly, and said means for mounting said bending head comprising a slide block slidably mounted on a forward end of said machine bed for motion in one of said second and third directions, means for mounting said stationary arm assembly to said slide block for slidable motion in the other of said second and third directions, a swinging bend arm



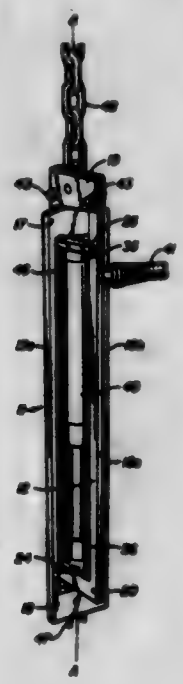
assembly mounted on said stationary arm assembly for rotation about said bend axis, said bend dies being mounted on said swinging bend arm assembly, whereby the bend dies move together with both said stationary and swinging bend arm assemblies in said second and third directions, and clamp die means carried by said swinging bend arm assembly for motion toward and away from said bend dies.

4,495,789

FRAME-STRAIGHTENING DEVICE

Peter Ivanov, 1826 S. Fitch Mountain Rd., Healdsburg, Calif. 95448

Filed Oct. 18, 1982, Ser. No. 434,769
Int. Cl.³ B21D 1/14, 3/12
U.S. Cl. 72—302 1 Claim



1. A device for use with a jack cylinder for straightening frame members, comprising:

first and second outer members, each outer member comprising a pair of elongate substantially parallel arms and first and second cross members connecting said arms at the ends thereof;

said outer members being slidably mounted to one another for relative longitudinal movement with the arms of said outer members being angularly spaced about a central longitudinal axis and said first cross member of each said outer member being provided with the first and second guide members projecting to opposite sides and slidably engaging the arms of the opposite outer member to retain said first cross member therebetween;

each said guide member being formed with an outward opening U-shaped member sized to receive an arm of said opposite outer member;

retaining means secured to said first cross member of each said outer member and adapted to receive an end of a jack cylinder whereby said cylinder can be removably mounted interiorly between both said pairs of arms along said central axis;

means biasing said first cross members of said outer members toward one another for preventing accidental release of said cylinder from said retaining means;

at least one of said arms being detachably connected at an end thereof to a cross member whereby said detachably connected arm may be urged outward from its engaging U-shaped member to facilitate mounting and removal of said cylinder between said pairs of arms; and

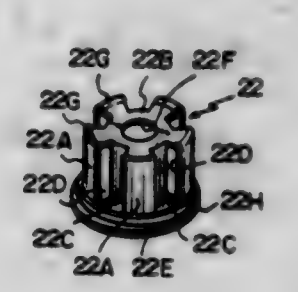
wherein said second cross member of each said outer member is adapted for connection to a frame member to be straightened.

4,495,790

METHOD FOR MANUFACTURING VALVE GUIDE FOR A HYDRAULIC DAMPER

Toshiaki Muto, and Akio Goto, both of Kanagawa, Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Jul. 16, 1982, Ser. No. 399,133
Claims priority, application Japan, Jul. 20, 1981, 56-107479[U]; Aug. 18, 1981, 56-129180; Aug. 18, 1981, 56-129181
Int. Cl.³ B21D 53/10
U.S. Cl. 72—326 2 Claims



1. A method for manufacturing a valve guide for use in a hydraulic damper of the type including a cylinder, a piston slidably disposed in said cylinder and partitioning the interior of said cylinder into first and second oil chambers, a rod secured to said piston and extending through said first chamber to the outside, a damping force generating valve mechanism provided in said cylinder and at one end of said second oil chamber, said valve mechanism having a bottom member defining an annular valve seat thereon, a flexible valve disc cooperating with said valve seat, and a generally tubular said valve guide having a plurality of axially extending large and small diameter portions being formed integrally and alternately along the circumference thereof, said large and small diameter portions defining therebetween radially and axially extending cutouts which act as oil passages, said method comprising:

stamping or drawing a sheet metal member into a generally hat shaped configuration having an upper end wall, a cylindrical wall and a flange extending radially outwards from the lower end of said cylindrical wall;

cutting and die-forming a plurality of circumferentially spaced portions of said upper end wall and said cylindrical wall to form a plurality of circumferentially spaced small diameter cylindrical portions and a plurality of cut-outs defined between said small diameter cylindrical portions and remaining portions of said cylindrical wall; and

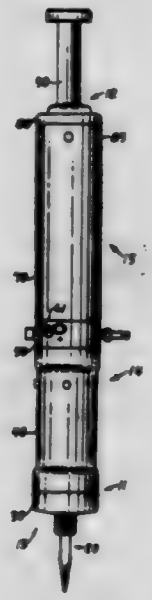
punching a central opening in the upper end wall.

4,495,791

DENT REMOVING PNEUMATIC PULLER

Jerry E. Kennitz, 1817 Skilak Cir., Anchorage, Ak. 99504, and Ray A. Kennitz, S. 918 Cannon, Spokane, Wash. 99204

Filed May 6, 1983, Ser. No. 492,424
Int. Cl.³ B21D 1/12
U.S. Cl. 72—453.02
11 Claims



1. A pneumatic puller for engaging and pulling a sheet of material, comprising:

a structural housing having a front end and a rear end; the structural housing having a piston cylinder therein near the rear end;

a piston slidably positioned within the piston cylinder for travel back and fourth therein; the piston having a front end and rear end corresponding to the front and rear ends of the structural housing; piston biasing means for biasing the piston toward the front end of the structural housing;

gas connection means for connecting a source of compressed gas to the pneumatic puller;

piston control means for controlling the flow of compressed gas to the piston and piston cylinder;

a point assembly rotatably mounted at the front end of the structural housing for engaging the sheet of material;

pneumatic motor means mounted to the structural housing near the front end thereof and adapted to rotate the point assembly in either direction;

pneumatic motor control means for controlling the pneumatic motor means to turn in either direction or be stationary.

4,495,792

METHOD FOR SIMULATING A SHOCK PULSE

Monty W. Bai, Scottsdale, and Alfred B. Meyer, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 2, 1983, Ser. No. 490,694
Int. Cl.³ G01N 3/30
U.S. Cl. 73—12
7 Claims

1. A method for simulating a shock pulse on an encapsulated component comprising the steps of:

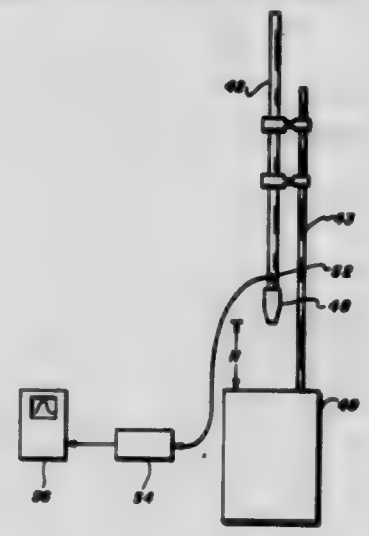
providing a pressure bar, an encapsulated component, a specimen container, and an anvil;

choosing a pressure bar mass and drop height for simulating the shock pulse;

placing said encapsulated component in said specimen container;

fixing the position of said pressure bar at said height above said anvil so that an end of said pressure bar is directed toward said anvil;

affixing said specimen container to said end of said pressure bar directed toward said anvil; and



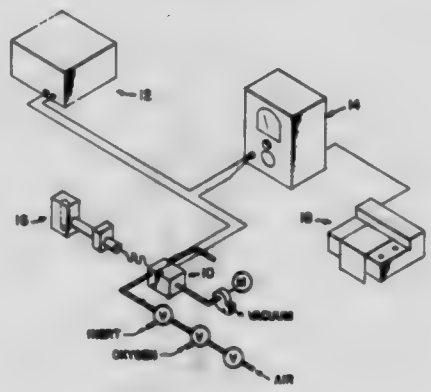
releasing said pressure bar so that said specimen container strikes said anvil.

4,495,793

SENSING DEVICE FOR DETECTING THE PRESENCE OF A GAS CONTAINED IN A MIXTURE THEREOF

Harold E. Hager, King County, Wash., assignor to Washington Research Foundation, Seattle, Wash.

Filed Aug. 30, 1982, Ser. No. 412,840
Int. Cl.³ G01N 27/12
U.S. Cl. 73—23
15 Claims



1. A sensor for detecting the presence of an oxidizable gas contained in a mixture of gases, at ambient temperature comprising:

a semiconductive film sensor surface maintained at ambient temperature and having a resistivity of at least 10^4 ohm-s/inch, the ability to chemisorb on its surface the oxidizable gas whose presence is to be detected, and a bandgap energy of from 0.5 eV to 5.0 eV, the surface exposed to the mixture of gases;

means for establishing an electrical potential across the sensor surface of the semiconductive film;

means for illuminating the film sensor surface with light energy having an intensity of 90 to 350 microwatts/Cm^2 at a frequency ranging from 380 to 680 nm to cause photodesorption/photoabsorption/photoreaction of the oxidizable gas in the gas mixture desired to be detected; and

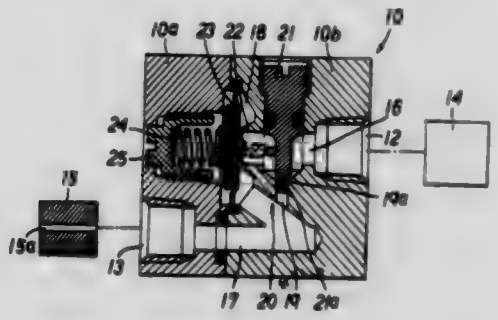
means for measuring the transient and steady state change in conductivity of the semiconductive film as a measure of the oxidizable gas being detected.

4,495,794

AUTOMATIC ON-OFF VALVE FOR USE WITH A PNEUMATIC MICROMETER

Susumu Takada, and Hisao Sagara, both of Soka, Japan, assignors to Huskvarna Transportkonstruktioner AB, Huskvarna, Sweden

Filed Feb. 7, 1983, Ser. No. 464,557
Claims priority, application Japan, Mar. 8, 1982, 57-36093
Int. Cl.[3] G01B *13/00*
U.S. Cl. 73—37.5 2 Claims



1. An automatic on-off valve for use with a pneumatic micrometer, comprising:

a valve body provided with an inlet for admitting pressurized air from a main body of a pneumatic micrometer and an outlet for supplying the pressurized air to a measuring head;

a main flow passage and a sub-flow passage, respectively, for providing communication between said inlet and said outlet, said main flow passage having an inlet flow passage and an outlet flow passage which communicate with one another by way of a back pressure chamber which is defined by a valve seat provided in said inlet flow passage and a valve member for opening and closing said valve seat, said sub-flow passage having a by-pass flow passage including a flow restrictor said by-pass flow passage branching from said inlet flow passage for providing continuous communication between said inlet and outlet flow passages,

a spring for biasing said valve member toward said valve seat, said spring having a biasing force sufficient to permit said valve member to open due to back pressure exerted on said valve member from said measuring head only during a measuring state and to cause said valve member to close during a not-measuring state;

a frusto-conical protrusion on said valve member at a position wherein said protrusion throttles said main flow passage during valve closing and accelerates closure of said valve member,

wherein said flow restrictor is a variable flow restritor including an adjustment screw adjustable from outside of said valve body, said adjustment screw having a needle for operating with a needle seat in said by-pass passage, the total open cross sectional area for said valve seat of said main flow passage and said flow restrictor of said sub-flow passage is set to be 6 to 9 times as large as the cross sectional area for a flow passage defined between a nozzle of said measuring head and an object to be measured upon measurement of a maximum gap.

4,495,795

PERMEAMETER

Krishna M. Gupta, Ithaca, N.Y., assignor to Porous Materials, Inc., Ithaca, N.Y.

Filed Dec. 21, 1981, Ser. No. 332,955
Int. Cl.[3] G01N *15/08*
U.S. Cl. 73—38 12 Claims

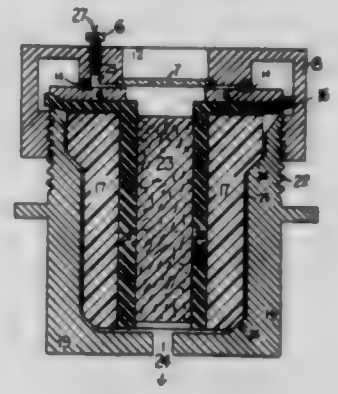
1. A sample holder for permeable materials, comprising:

a. pliable, non-porous, sleeve means for closely containing a sample, having smooth, parallel inside and outside walls, whereby the circumference of the sample is entirely enclosed by the sleeve means, leaving the ends exposed;

b. constriction means of relatively rigid material for compressing the walls of the sleeve means around the sample, surrounding the outside walls of the sleeve means, having an inside diameter which is constant over the length of the constriction means, and is approximately equal to the outside diameter of the sleeve means;

c. said inside diameter of the constriction means being adapted to reduce to a smaller diameter which is still constant over the length of the constriction means;

d. seat means for receiving the constriction means, having exit port means for escape of fluid, adapted to acting upon



the constriction means whereby as the constriction means is pressed into the seat means, the said constriction means is so constrained as to reduce in inside diameter along its length, evenly compressing the walls of the sleeve means;

e. retaining ring means for pressing the constriction means into the seat means, having fitting means for introduction of pressurized fluid;

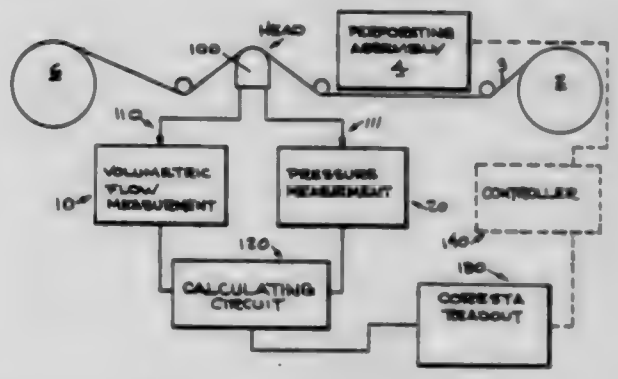
f. said compression of the walls of the sleeve means causing the inside walls of the sleeve means to seal tightly around the circumference of the sample.

4,495,796

APPARATUS AND METHOD FOR MEASURING PERMEABILITY OF A MOVING WEB

Benny L. Hester, and William F. Fleming, III, both of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Oct. 25, 1982, Ser. No. 436,239
Int. Cl.[3] G01N *15/08*
U.S. Cl. 73—38 14 Claims



1. Apparatus for measuring the permeability of a continuous moving web, comprising:

a sensing head assembly in contact with the web;

means for directing a fluid flow through the web and said head;

means for measuring the volumetric flow rate of said fluid flow and generating signals analogous thereto;

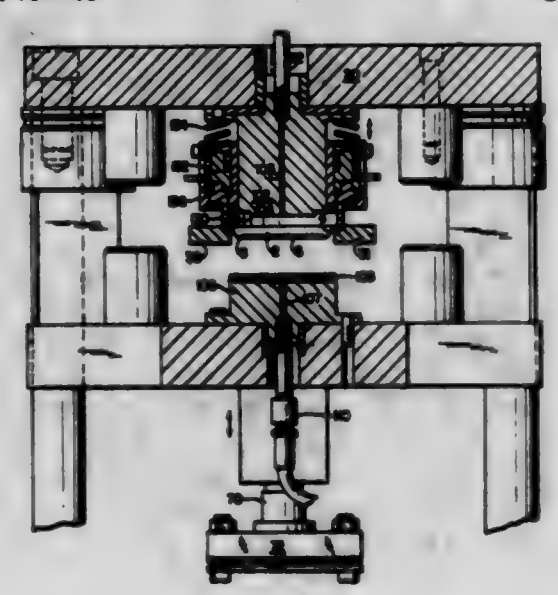
means for measuring the pressure drop in said fluid flow across the web and generating signals analogous thereto, said pressure measurement simultaneous to and independent of said flow measurement;

means for calculating the permeability of the web according to the formula:

$$\text{Permeability} = \frac{\text{Measured flow rate}}{\dfrac{\text{Measured pressure drop}^N}{\text{Standard pressure drop}^N}}$$

where N is a constant;
means for communicating the results of said calculation as a permeability signal.

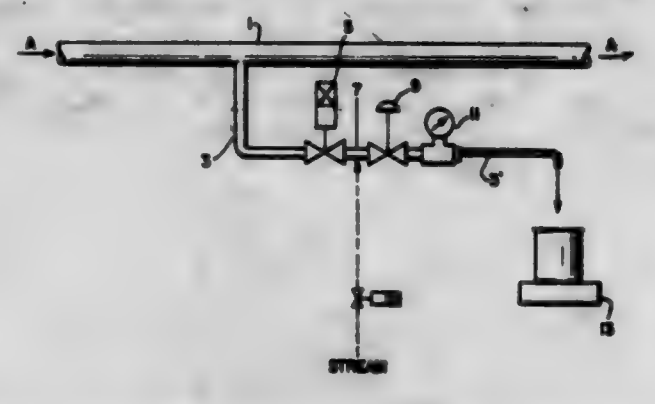
4,495,797
CAN END TESTER
Ernest W. Cassell, Jr., Sullivan County, Tenn., and Edward C. Gilliam, Washington County, Va., assignors to Reynolds Metals Company, Richmond, Va.
Filed Jun. 27, 1983, Ser. No. 508,081
Int. Cl.³ G01M 3/04
U.S. Cl. 73—40 10 Claims



1. An apparatus for testing can ends comprising an entry station, a first and a second punishment station, a testing station, an output station, means for transporting said can ends between adjacent stations, and means for reciprocating opposing portions of at least some of said stations, said first punishment station comprising a first die member and a first punch member, said first die member and said first punch member being constructed and arranged to provide a downwardly deflective force on a central portion of said can end and said second punishment station comprising a second die member and a second punch member, said second die member and said second punch member being constructed and arranged to provide an upwardly deflective force on said central portion of said can end.

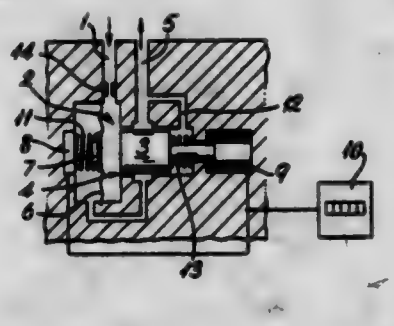
4,495,798
METHOD AND APPARATUS FOR MEASURING CONSISTENCY OF NON-NEWTONIAN FLUIDS
Charles W. Ehrgott, Madison, Conn., assignor to Chesebrough-Pond's Inc., Greenwich, Conn.
Filed Dec. 21, 1982, Ser. No. 451,672
Int. Cl.³ G01N 11/02
U.S. Cl. 73—54 15 Claims

1. A method of measuring USDA Bostwick value consistency of a continuous production stream of tomato paste containing soluble, solids, the method comprising the steps of: establishing and maintaining a stream of said tomato paste; diverting a partial stream of said paste into a second stream thereof; regulating the flow of said paste in the second stream to achieve a predetermined pressure drop; measuring the weight flow rate of said paste in said second stream at the predetermined pressure drop; measuring the temperature of the partial stream and making a correction on the measured weight flow rate by a predetermined factor when the measured temperature differs from a predetermined temperature value; measuring the soluble solids content of said tomato paste partial stream and making a correction on the measured weight flow rate by predetermined factor when the measured amount of soluble solids differs from a predetermined soluble solids



value; and correlating, in a predetermined functional relationship the said measured weight flow rate, to obtain the USDA Bostwick consistency value of the paste flowing in said established stream.

4,495,799
DETERMINING THE LEVEL OF CONTAMINANTS IN A HYDRAULIC SYSTEM
Martin J. Fisher, Milton Keynes; Roger A. Heron, Stagsden, and Martin L. Hughes, Newport Pagnell, all of England, assignors to National Research Development Corporation, London, England
Filed Dec. 3, 1982, Ser. No. 446,619
Claims priority, application United Kingdom, Dec. 4, 1981, 8136634
Int. Cl.³ G01N 15/06
U.S. Cl. 73—61 R 18 Claims



1. A device for determining the level of particulate contamination in a hydraulic system, comprising:
inlet means for hydraulic fluid;
outlet means for hydraulic fluid;
releasable and restorable collecting means for collecting particulate contaminants in hydraulic fluid flow between said inlet means and said outlet means, said collecting means comprising first and second components capable of relative movement and defining between them a clearance for said hydraulic fluid flow, said clearance being dimensioned to effect entrapment of said particulate contaminants and so become obstructed, said two components being a piston of circular section movable within a bore of similar section, said piston and said bore being separated by an annular gap which constitutes said clearance, and said relative movement being usable to effect said release of said collected particulate contaminants;
detecting means for detecting particulate contaminant obstruction at said collecting means above a predetermined level, and
means responsive to said detecting means for recording the occurrence of said level of obstruction, for releasing the said collected contaminants from said collecting means, and for restoring said collecting means to their unobstructed state.

4,495,800

METHOD FOR DETERMINING OPTIMUM CONCENTRATION OF HYDRATION INHIBITOR FOR CLAYS IN DRILLING FLUIDS

Roy D. Wilcox, Bellaire, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Nov. 15, 1982, Ser. No. 441,855
Int. Cl.³ G01N *15/06*
U.S. Cl. 73—61.4 17 Claims

1. A method for determining the optimum inhibitor concentration required in an aqueous inhibited fluid for maximum clay swelling and dispersion inhibition of water-wettable argillaceous materials encountered in drilling operations comprising:

(a) determining a parameter for said aqueous inhibited fluid having dispersed therein a quantity of the water-swelling argillaceous material which parameter is a function of the swelling of the argillaceous material and approaches a substantially constant value with increasing concentration of said inhibitor; and

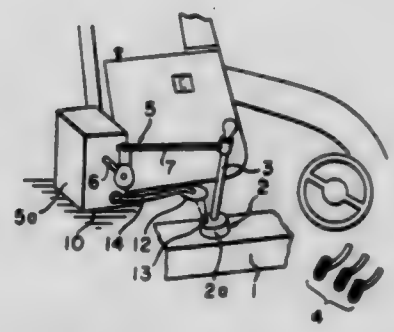
(b) determining from said parameter the minimum inhibitor concentration at which said substantially constant value is first obtained.

4,495,801

MANIPULATOR FOR SHIFTING SPEED CHANGING GEARS IN AUTOMOTIVE VEHICLES

Hiroshi Sugimoto, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1982, Ser. No. 384,761
Claims priority, application Japan, Jul. 15, 1981, 56-111133
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—117 4 Claims



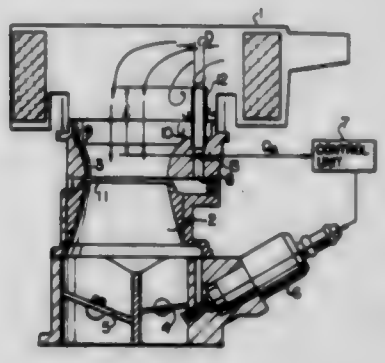
1. An automobile driving robot device having a speed changing mechanism operating device, said device being provided with means for detecting variations in a relative position between a speed changing mechanism to be operated and said speed changing mechanism operating device, and variations in the relative position and moving direction of said speed changing mechanism to be operated with respect to said speed changing mechanism operating device, and for rectifying a reference point operating said speed changing mechanism operating device, wherein said means for rectifying the reference point for operating the speed changing mechanism operating device comprises a light projecting lamp, a reflector mounted on the speed changing mechanism to be operated, and a light detector to detect light reflected from the reflector, thereby detecting the relative positional relationship between the speed of changing mechanism operating device and the speed changing mechanism to be operated.

4,495,802

AIR FLOW METER ASSEMBLY

Mineo Kashiwaya, and Kinzaku Yamada, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 331,277, Dec. 16, 1981, abandoned.
This application Feb. 29, 1984, Ser. No. 584,896
Claims priority, application Japan, Dec. 22, 1980, 55-182272
Int. Cl.³ G01N *15/00*
U.S. Cl. 73—118 17 Claims



1. An air flow meter assembly for internal combustion engines, the air flow meter assembly comprising:

an air cleaner means for intaking air supplied to said engine;

throttle valve means for controlling the air flow to be supplied to said engine;

an air passage extending between said air cleaner means and said throttle valve means and having a venturi portion;

a bypass air passage means for bypassing an air flow around the venturi portion including a first by-pass air passage, a first end of said by-pass air passage having an inlet opening disposed at a portion of said air passage at a position upstream of said venturi portion, a second end of said first by-pass air passage opening into said venturi portion, and means for forming a second by-pass air passage and having a first end attached to the first end of said first by-pass passage;

means disposed in said first by-pass air passage for detecting the air flow through said by-pass air passage means; and

wherein said second by-pass air passage has a predetermined length such that a second end of said second by-pass passage is spaced from said means for detecting the air flow such that the air flowing into the by-pass air passage means is settled prior to the air flow reaching said means for detecting the air flow, and said second end of said second by-pass passage projects into said air passage.

4,495,803

METHOD OF MONITORING THE GROWTH OF CUTTINGS BEDS IN ANGLED WELL BORES

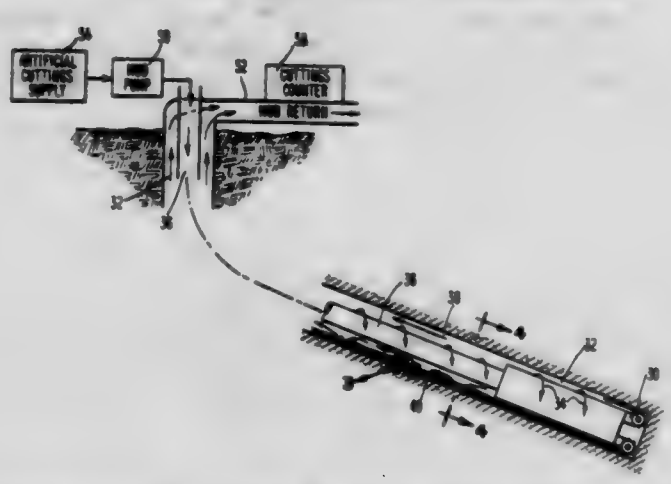
Roy D. Beasley, Denton, and James H. LaGrone, Lake Jackson, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 6, 1983, Ser. No. 529,192
Int. Cl.³ E21B *47/00*
U.S. Cl. 73—151 6 Claims

1. Method for monitoring the growth or erosion of a cuttings bed in a well being drilled in the earth comprising the steps of:

injecting artificial cuttings distinguishable from cuttings generated during said drilling operation and having a density and size comparable to the cuttings generated during the drilling operation into a stream of drilling fluid

pumped into said well during drilling to wash away cuttings generated during drilling; and



monitoring the rate of return of said artificial cuttings with respect to the rate of injection thereof.

4,495,804

METHOD OF AND APPARATUS FOR MINING ANALYSIS

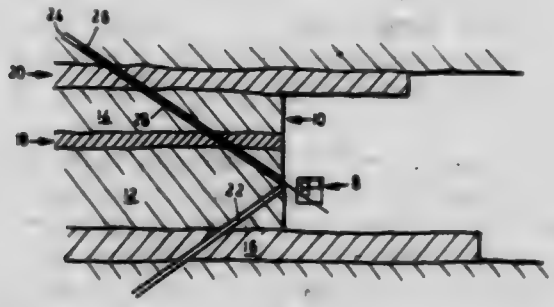
Guy Le Blanc Smith, Randburg, and Derik Howard, Johannesburg, both of South Africa, assignors to Grathnail Development Company Limited, St. Peter, Channel Islands

Filed Feb. 16, 1982, Ser. No. 348,954

Claims priority, application South Africa, Feb. 17, 1981, 81/1035

Int. Cl.³ E21B *49/00*

U.S. Cl. 73—152 7 Claims



1. A method of mining analysis in an underground mine comprising the steps of:

forming a plurality of boreholes in predetermined directions in rock ahead of a rock face in said underground mine, at least one of said bore holes being at an angle to the others;

for each borehole, locating a probe in the borehole;

causing the probe to move along the borehole; and

logging data which is obtained from the probe and which relates to the rock, in a recorder.

4,495,805

IN-SITU PERMEABILITY DETERMINING METHOD

Donald J. Dowling; Albert P. Richter, Jr.; Wayne F. Warren, and Dan M. Arnold, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 15, 1983, Ser. No. 475,590

Int. Cl.³ E21B *47/10*

U.S. Cl. 73—155 8 Claims

1. A method of determining the permeability of a stratum in an earth formation traversed by a borehole which comprises the steps of:

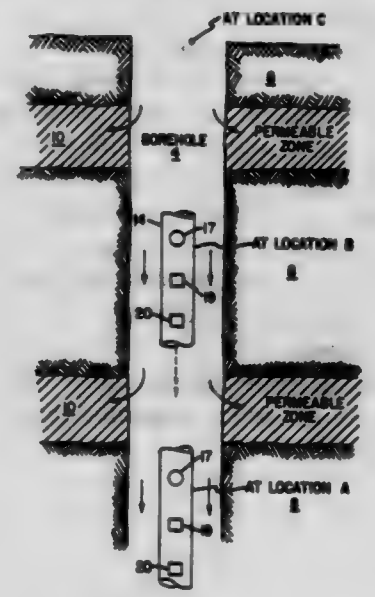
injecting a liquid into the borehole at a first pressure so as to cause liquid flow into the stratum,

determining a first flow rate of the liquid into the stratum at the first pressure,

injecting the liquid into the borehole at a second pressure causing liquid flow into the stratum,

determining a second flow rate of the liquid into the stratum at the second pressure, and

deriving an indication of the permeability of the stratum in accordance with the pressure, the two flow rates and a known characteristic of the stratum; and



each determining step includes;

measuring the flow rate of the liquid in the borehole below the stratum, and

deriving the flow rate of the liquid into the stratum in accordance with the difference between the two measured flow rates.

4,495,806

INDICATOR INSTRUMENTS

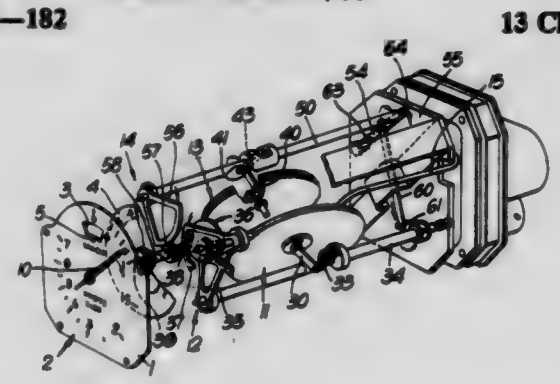
Maurice S. Jones, Cheltenham, England, assignor to Smiths Industries Public Limited Company, London, England

Filed Mar. 28, 1983, Ser. No. 479,395

Claims priority, application United Kingdom, Apr. 2, 1982, 8209770

Int. Cl.³ G01C *21/10*

U.S. Cl. 73—182 13 Claims



13. A Mach/airspeed indicator instrument comprising: a first pressure capsule the deflection of which is representative of Mach number; a first finger member; means mounting said first finger member on said first pressure capsule; first indicator means that provides a display representation of Mach number; a first shaft; means coupling said first shaft with said first indicator means such that rotation of said first shaft effects displacement of said first indicator means; a first arm member; means mounting said first arm member fixedly on said first shaft to extend radially therefrom to contact said first finger member at a pivot point; a lever; means mounting said first shaft rotatably on said lever, said lever extending substantially radially of said first shaft; means mounting said lever for angular displacement about an axis substantially parallel with and separated from the axis of said first shaft; a second pressure capsule the deflection of which is representative of airspeed; a second shaft extending generally parallel with said first shaft;

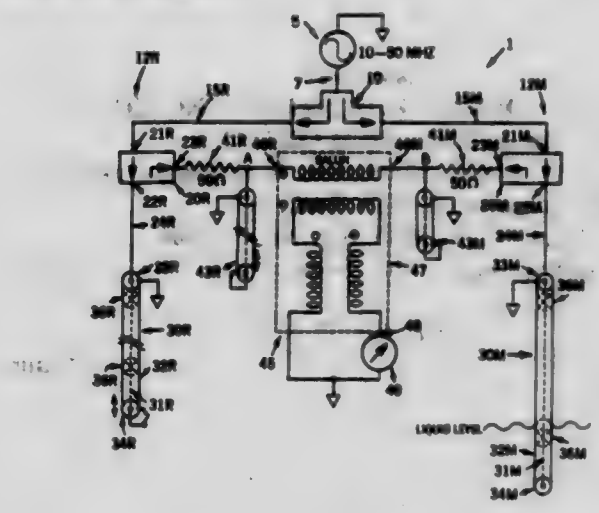
means coupling said second shaft with said second pressure capsule such that said second shaft is rotated by deflection of said second pressure capsule; second indicator means that provides a display representation of airspeed; means coupling said second shaft with said second indicator means such that rotation of said second shaft effects displacement of said second indicator means; and means coupling said second shaft with said lever such that rotation of said second shaft rotates said lever and thereby displaces said first shaft transversely of its length about said pivot point such that change in airspeed thereby alters the coupling of said first pressure capsule with said first shaft.

4,495,807

PRECISION LIQUID LEVEL SENSOR

Michael E. Field, and William H. Sullivan, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 24, 1983, Ser. No. 469,596
Int. Cl.³ G01F 23/28
U.S. Cl. 73—290 R 9 Claims



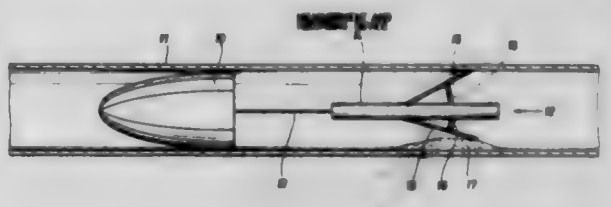
1. A precision liquid level sensor comprising:
output port means of a signal generator for providing an electrical signal;
null detector means for detecting a signal difference across two input terminals; and
power splitter means connected to said output port means for dividing said output signal into reference and measurement signal paths, each said path including:
hybrid means for conducting electrical signals substantially only from a first port to a second port and from said second port to a third port, said first port being connected to said power splitter means and said third port being connected to an input terminal of said null detector means;
said measurement path including an air dielectric line having one end connected to said second port; and
said reference path including a transmission line connected to said second port;
at least one of said paths including means for nulling the signal at said null detector means when a signal is applied to said output port;
whereby after said system is nulled, a change in liquid level along said air dielectric line of said measurement path causes a change in the signal at said null detector means, providing an indication of the change in the liquid level.

4,495,808

PARACHUTE PROFILER

Ferdinand J. Fischer, III, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 13, 1982, Ser. No. 417,269
Int. Cl.³ G01B 21/20, 21/30
U.S. Cl. 73—432 R 3 Claims



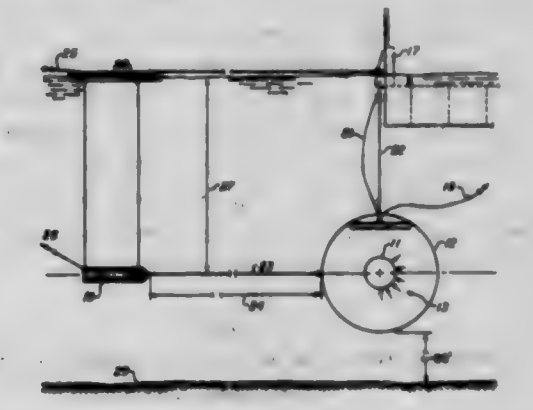
1. A fluid-propelled pipeline sensor comprising:
an umbrella-shaped tow means which is a fiber-reinforced plastic film resistant to abrasion and to decomposition by pipeline contents and collapsible to allow passage of the tow means past a substantial pipeline restriction or obstruction;
a profiler for sensing a location-specific property of the pipeline, the profiler having retractable feeler arms which allow passage of the profiler past a substantial pipeline restriction or obstruction; and
means connecting the tow means and the sensing means.

4,495,809

DEEP DEPTH UNDEX SIMULATOR

Robert R. Higginbotham, Portsmouth, and Alexander Malakhoff, Arlington, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 29, 1983, Ser. No. 480,180
Int. Cl.³ G01N 33/22, 37/00; G01M 10/00
U.S. Cl. 73—432 SD 1 Claim



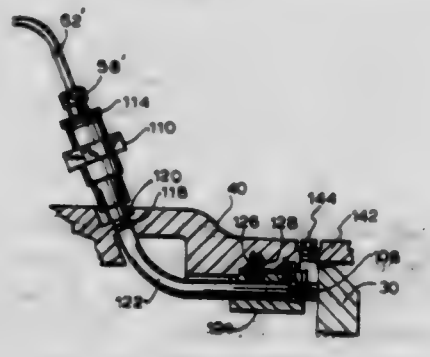
1. A deep depth underwater shockwave and hydrostatic pressure simulator means for determining the dual effects of nuclear type underwater shockwaves and hydrostatic pressures on a test vessel located in a shallow water means comprising:
a test vessel filled with air at atmospheric pressure and positioned and suspended within a pressure vessel, said pressure vessel containing fluid between the outer shell of the test vessel and the inner shell of the pressure vessel,
a pressure means for pressurizing said fluid,
a shallow body of water for positioning and suspending the pressure vessel therein,
an explosive tapered charge with the smaller tapered portion facing the pressure vessel and positioned a predetermined standoff distance from the pressure vessel within the shallow body of water,
instrument means located on and within the test vessel and the pressure vessel for recording the underwater shockwave and the hydrostatic pressure, upon exploding of the explosive tapered charge.

4,495,810

PROBE MOUNTING SYSTEM

Juergen M. Tessarzik, Scholarie; Albert Myers, Amsterdam, and James D. Yuille, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 26, 1983, Ser. No. 486,786
Int. Cl.³ G01M *13/00*
U.S. Cl. 73—432 R
23 Claims



1. A system for mounting a sensing probe a predetermined distance from a target surface to be monitored comprising:
a probe adapter;
said sensing probe being affixed at a forward end of said probe adapter;
an intermediate portion of said probe adapter;
said intermediate portion including means for providing lateral flexibility and torsional stiffness thereto;
a quill positioned in a supporting member in a predetermined location with respect to said target surface;
means for guiding said sensing probe from an entry location to said quill;
said means for guiding including at least one smooth bend therein;
wherein said means for providing lateral flexibility and torsional stiffness provides sufficient lateral flexibility and torsional stiffness to permit said probe adapter to traverse said means for guiding between said entry location and said quill, past said at least one smooth bend therein;
abutment means on said quill and said probe adapter for establishing said predetermined distance; and
means at said entry location for producing abutment of said abutment means and for maintaining said abutment.

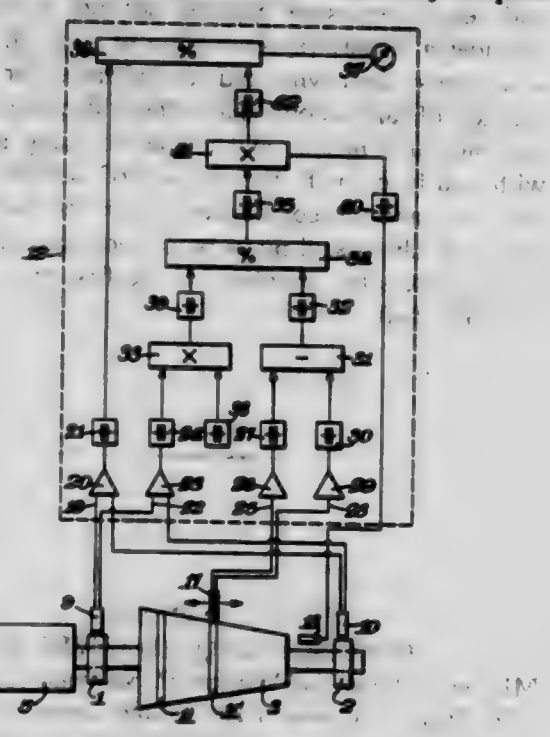
4,495,811

CORRELATION PROCEDURE AND DEVICE FOR ROTOR BALANCING

Michael Müller, Erzhausen; Alfred Giers, Rossdorf, and Manfred Heiland, Darmstadt-Kranichstein, all of Fed. Rep. of Germany, assignors to Carl Schenck AG:, Fed. Rep. of Germany

Filed Apr. 4, 1983, Ser. No. 481,903
Claims priority, application European Pat. Off., Apr. 8, 1982, 82103027.7
Int. Cl.³ G01M *1/22*
U.S. Cl. 73—462
9 Claims

1. A procedure for determining the correlation between an unbalance in at least one correction plane of a rotor and a measuring signal generated thereby on at least one support for a rotor, particularly of a balancing machine, characterized thereby, that particularly on a flexible rotor, the deflection of the rotor is first measured at the balancing speed at one correction plane of the rotor, whereafter the vibration characteristics of at least one support are tuned and the vibrations of the rotor are measured again in the at least one correction plane and additionally at the tuned support, and that thereafter, the correlation between the unbalance and the measuring signal is described by means of the quotient derived from the difference of the deflections of the rotor in the at least one correction plane with tuned and untuned support, multiplied by the rotational frequency to the second power and divided by the product of the deflection of the tuned at least one support and a factor describing the tuning.

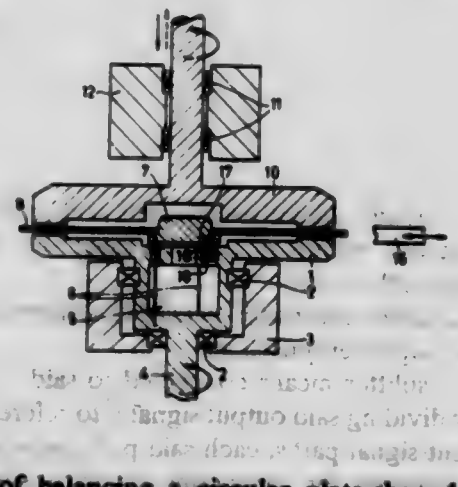


4,495,812

METHOD AND DEVICE FOR BALANCING CIRCULAR PLATE-SHAPED OBJECTS

Joannes J. H. M. Gorris, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 9, 1983, Ser. No. 530,806
Claims priority, application Netherlands, Sep. 22, 1982, 8203669
Int. Cl.³ G01M *1/38*
U.S. Cl. 73—468
7 Claims



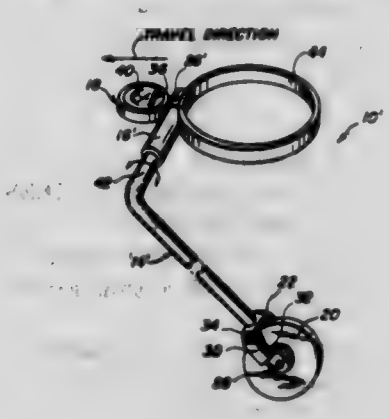
1. A method of balancing a circular plate-shaped object about a central axis of the object, the axis being perpendicular to the plane of the object, the method comprising:
providing mounting means which are movable against a spring force disposed in a plane;
centering the object on said mounting means with said object being disposed substantially in the plane of the spring force;
clamping the object against at least one rotatable part of said mounting means;
rotating the one rotatable part at a predetermined speed about a vertical axis;
then interrupting the clamping to release the object;
then clamping the object against the one rotatable part again;
then changing the contour of the outer edge of said object to achieve a balance.

4,495,813

JOGGER SPEEDOMETER AND ODOMETER

Josef Lojko, Brooklyn, and Richard L. Miller, Dix Hills, both of N.Y., assignors to Josef Lojko, Brooklyn, N.Y.

Filed Oct. 5, 1983, Ser. No. 539,094
Int. Cl.³ G01P 1/00; G01B 3/12
U.S. Cl. 73—490 2 Claims



1. A jogger speedometer and odometer device adapted to travel over a surface which comprises:

(a) a shaft made of aluminum having a bottom forked end;

(b) a handle made of plastic attached to top end of said shaft, the configuration of said shaft having a 90 degree sidewardly bent pivotable section adjacent said handle, and a waist band attached to said handle so as to free jogger's hand for jogging more comfortably and in a normal manner; and

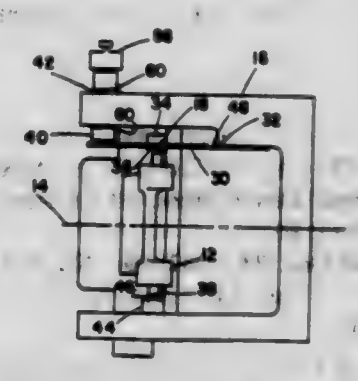
(c) an indicator unit attached to said handle; wherein said indicator unit further comprises, a drive mechanism activated by a wheel, a flexible shaft connected between said drive mechanism and said indicator unit, means for indicating total distance traveled by a jogger, and means for indicating the maximum speed attained by a jogger, said wheel being made of plastic and rotatably connected between the bifurcations of the bottom forked end of said shaft, said wheel being mechanically connected to said indicator unit to actuate said indicator unit in accordance with the relative movement between said wheel and the surface.

4,495,814

ACCELEROMETER PENDULUM SUPPORT ASSEMBLY

Kurt E. Steinke, Bellevue, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Jun. 28, 1982, Ser. No. 393,015
Int. Cl.³ G01P 15/00
U.S. Cl. 73—514 12 Claims



1. A support assembly for pivotally supporting a force responsive pendulum having an axle in an accelerometer having a support frame comprising:

a flexure member having first and second ends, and secured in a cantilevered manner with said first end secured to the accelerometer support frame wherein said flexure member is configured with a hinge portion and a statically determinate beam portion;

a first bearing secured to said flexure member adapted to receive one end of the pendulum axle;

preload means for applying a preload force to the beam portion of said flexure member; and

a second bearing adapted to receive the other end of the pendulum axle, and

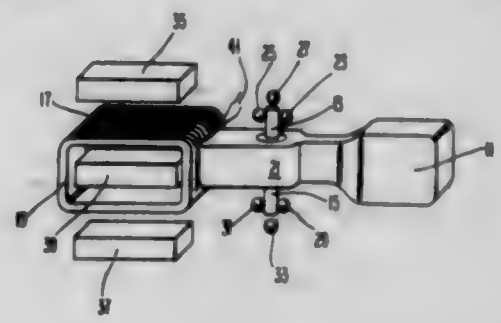
means for supporting said second bearing with respect to the accelerometer support frame.

4,495,815

MASS AND COIL ARRANGEMENT FOR USE IN AN ACCELEROMETER

Leo M. Stratton, West Chester; Kenneth J. Sipple, Chester Heights, both of Pa., and Mario B. Tatonetti, Voorhees, N.J., assignors to Columbia Research Laboratories, Inc., Woodlyn, Pa.

Filed Nov. 23, 1982, Ser. No. 443,949
Int. Cl.³ G01P 15/13
U.S. Cl. 73—517 B 3 Claims



1. A mass and coil assembly for use in the accelerometer comprising in combination: beam means having first and second halves, said beam means formed to have a different mass in its second half than in its first half; responsive mass means formed integral with said first half of said beam; wire coil means secured to said second half of said beam, said wire coil means and said responsive means formed such that said responsive means and said first half of said beam substantially counterbalance said wire coil means and said second half of said beam; first and second shaft means secured on opposing sides of said beam means and disposed to be between said mass means and said coil means and further disposed to lie approximately orthogonal to the axis of said coil so that when forces are applied to said mass means and/or said coil means, said assembly will rotate about said first and second shaft means; and a pair of magnets each of which is formed to have a length dimension, a width dimension and a depth dimension, and formed to have magnetic flux emanating from a first area defined by its width and length dimensions, and wherein each of said magnets is disposed to have its first area lying parallel to the axis of said coil means and wherein said magnets are disposed to have a gap therebetween and further disposed so that said coil means is located within said gap.

4,495,816

PROCESS AND SYSTEM FOR ANALYZING DISCONTINUITIES IN REASONABLY HOMOGENEOUS MEDIUM

Etienne Schlumberger, Paris, France, assignor to Medical Devices, Inc., San Francisco, Calif.

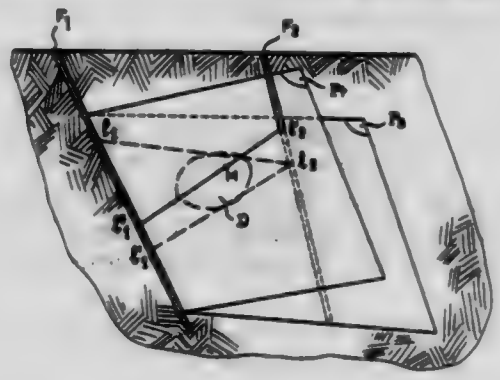
Filed May 17, 1983, Ser. No. 495,265
Claims priority, application France, May 21, 1982, 82 08083
Int. Cl.³ G01N 29/04
U.S. Cl. 73—600 17 Claims

1. A method for imaging discontinuities in an otherwise reasonably homogeneous medium, comprising the steps of:

providing at least two non-intersecting and non-parallel base lines, on opposite sides of the discontinuity to be imaged;

transmitting signals which will pass through the medium

toward said discontinuity from a succession of transmission points along a first one of said base lines;
picking up signals at a succession of points along a second one of said base lines from each of a plurality of said transmission points;
measuring transmission characteristics for said signals between each transmission point and each pick-up point;
determining characteristics of signal transmission through said homogeneous medium outside of said discontinuity;



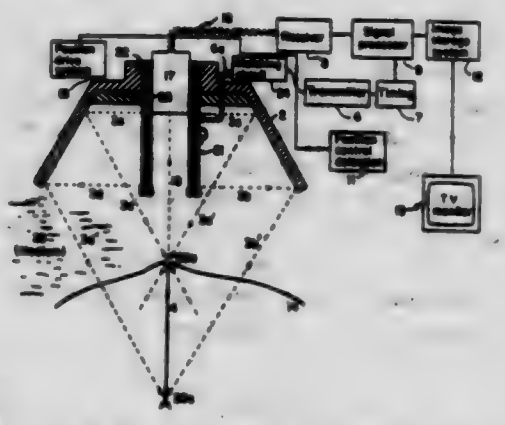
determining the difference between the measured signal and the calculated signal for the distance in a homogeneous medium between each pair of transmission and pick-up points;
determining whether each said point-to-point transmission occurred entirely outside of or partly through said discontinuity;
determining the distance of travel within the discontinuity for each said point-to-point transmission; and
calculating the configuration and location of said discontinuity from said measurement.

4,495,817

ULTRASONIC IMAGING DEVICE

John W. Hunt, and Michael S. Patterson, both of Toronto, Canada, assignors to The Ontario Cancer Institute, Toronto, Canada

Filed May 25, 1983, Ser. No. 498,007
Claims priority, application United Kingdom, May 26, 1982, 8215357
Int. Cl.³ G01N 29/04
U.S. Cl. 73—624
12 Claims



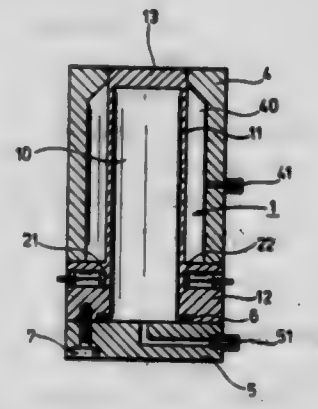
2. An ultrasonic imaging device, comprising a transducer assembly for transmitting ultrasound pulses into a portion of a structure to be imaged and receiving ultrasound scattered by said structure portion and generating signals in response thereto, means to energize said transducer assembly to transmit said pulses, scanning means for progressively relating said transducer assembly to successive portions of said structure according to a scanning pattern, and receiver and signal processing means for assembling an image from said generated signals, the transducer assembly comprising separate transmitting and receiving transducers, one of said transducers being a simulated conical transducer having a line focus, and the other of said transducers having its axis in parallel alignment with said line focus, the scanning means being operative to move said line focus in relation to a structure to be imaged in accordance with said scanning pattern, wherein the simulated conical transducer compriaes a transducer element and an associated acoustic reflector system such that an active surface of the transducer element is perceived at said line focus as a conical transducer having a surface of much larger area than said active surface and having a half angle such that rays converge on said line focus at a predetermined angle of at least 20° to the latter.

4,495,818

CYLINDRICAL VIBRATOR TYPE PRESSURE TRANSDUCER

Kyoichi Ikeda; Kinji Harada, and Katsumi Isozaki, all of Tokyo, Japan, assignors to Yokogawa Hokushin Electric Corporation, Tokyo, Japan

Filed Dec. 30, 1982, Ser. No. 454,874
Claims priority, application Japan, Feb. 12, 1982, 57-20776
Int. Cl.³ G01N 9/00
U.S. Cl. 73—702
9 Claims



1. A pressure gauge comprising
a cylindrical vibrator;
a cover for said vibrator;
means for supplying a reference pressure to said gauge;
means for supplying pressure to be measured to said gauge;
driving means for driving said vibrator; and
detector means for detecting the vibration of said vibration caused by said driving means; and wherein
said cylindrical vibrator consists essentially of a thin wall cylindrical portion, a first thick wall cylindrical portion extending from one end of said thin wall cylindrical portion, and a second thick wall end portion closing an opening at the opposite end of said thin wall cylindrical portion; and wherein
at least said thin wall cylindrical portion is installed within said cover; and wherein
said second thick wall end portion is securely attached to said cover.

4,495,819

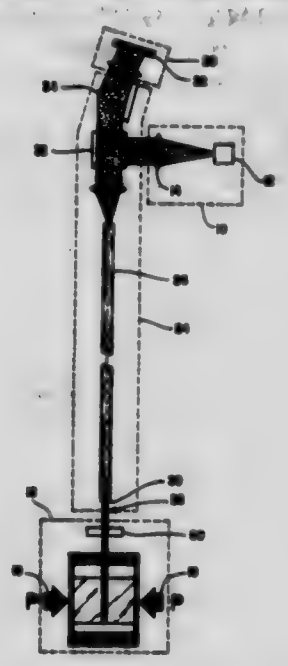
OPTICAL PRESSURE SENSOR

Vincent J. Tekippe, Des Plaines, Ill., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Dec. 23, 1982, Ser. No. 452,760
Int. Cl.³ G01L 9/00
U.S. Cl. 73—705
16 Claims

1. An optical device for monitoring pressure comprising:
(a) light-generating means for generating polychromatic light traveling in a path;
(b) pressure-sensitive means for modifying said polychromatic light in response to an applied pressure to produce wavelength dependent intensity variations of the polychromatic light said pressure-sensitive means having an integral all-glass outer housing;
(c) signal processing means for comparing said polychro-

matic light with said wavelength dependent intensity variations of polychromatic light; and



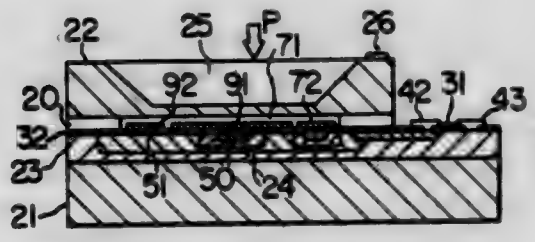
(d) transport means for transporting said polychromatic light from said light generating means to said pressure-sensitive means and for transporting light from said pressure-sensitive means to said signal-processing means.

4,495,820

CAPACITIVE PRESSURE SENSOR

Satoshi Shimada; Kazuji Yamada, both of Hitachi; Seikou Suzuki, Hitachiota, and Motohisa Nishihara, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 28, 1982, Ser. No. 426,084
Claims priority, application Japan, Sep. 30, 1981, 56-153611
Int. Cl.[3] H01G *7/00*; H01L *29/84*
U.S. Cl. 73—724 14 Claims



1. A capacitive pressure sensor comprising:

a first semiconductor substrate with an amplifier formed on the main surface;

an insulating layer formed on said amplifier;

at least one electrode formed on said amplifier through said insulating layer and electrically connected to said amplifier;

a second semiconductor substrate serving as a diaphragm and disposed in opposition to said electrode for forming a capacitor; and

a glass layer anodically bonding said first and second semiconductor substrates to each other in the region of peripheral portions of said electrode and said diaphragm.

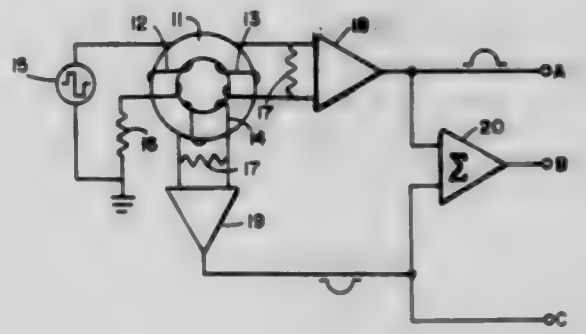
4,495,821

MAGNETOSTRICTIVE PRESSURE DETECTOR

James H. Terhune, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Jan. 31, 1983, Ser. No. 462,328
Int. Cl.[3] G01L *9/15*
U.S. Cl. 73—753 7 Claims

1. A pressure detection arrangement for self-checking the operability status of said pressure detection arrangement comprising at least a single magnetostrictive means for responding to pressure, an input winding and at least a pair of output windings, each of said windings communicating magnetically with said magnetostrictive means, said output windings effective for producing respective output indications representative



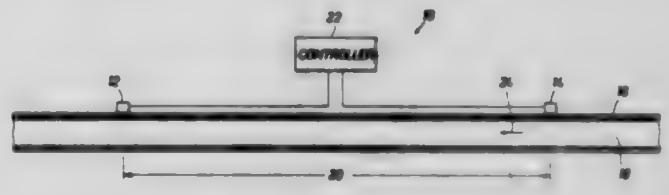
of an input signal on said input winding and the pressure applied at said magnetostrictive means, and circuitry means for developing an indication of the operability status of said arrangement in view of output indications from said output windings.

4,495,822

FLUID FLOW METER

Thomas R. Schmidt, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 23, 1982, Ser. No. 452,688
Int. Cl.[3] G01F *1/66*
U.S. Cl. 73—861.27 2 Claims



1. An apparatus for determining the velocity of a stream in a tubular member, said apparatus comprising: a first source means for providing a first pulse of ultrasonic energy to a wall of said tubular member at a first predetermined location so that said first pulse of ultrasonic energy induces a first compressional wave in said stream; a second source means for providing a second pulse of ultrasonic energy to said wall of said tubular member at a second predetermined location so that said second pulse of ultrasonic energy induces a second compressional wave in said stream, said second predetermined location being spaced from said first predetermined location by a distance that is at least as large as the distance required for said first pulse of ultrasonic energy to induce said first compressional wave in said stream, said distance between said first and second predetermined locations also being at least as large as a distance equal to two times the diameter of said tubular member; a first means for sensing said second compressional wave at said first predetermined location; a second means for sensing said first compressional wave at said second predetermined location, said first source means and said first sensing means comprising the same first piezoelectric transducer and said second source means and said second sensing means comprising the same second piezoelectric transducer, said first and second transducers being positioned on the same side of said tubular member; controller means for determining a first amount of time elapsed between the providing of said first pulse of ultrasonic energy by said first source means and the sensing of said first compressional wave by said second sensing means, for determining a second amount of time elapsed between the providing of said second pulse of ultrasonic energy by said second source means and the sensing of said second compressional wave by said first sensing means and for determining the flow velocity of the stream in the tubular member in accordance with the following equation:

$$T_D = L \div (V_s + V_f)$$

$$T_U = L \div (V_s - V_f)$$

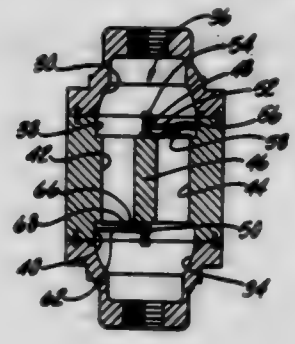
wherein
T_D = transit time downstream
T_U = transit time upstream
L = distance between the transducers
V_s = velocity of sound in fluid comprising the stream
V_f = velocity of flow.

4,495,823

BIDIRECTIONAL FLOW METER

Lars O. Rosaen, Hazel Park, Mich., assignor to Universal Filters, Inc., Hazel Park, Mich.

Filed May 31, 1983, Ser. No. 499,300
Int. Cl.³ G01F 1/28
U.S. Cl. 73—861.76
10 Claims



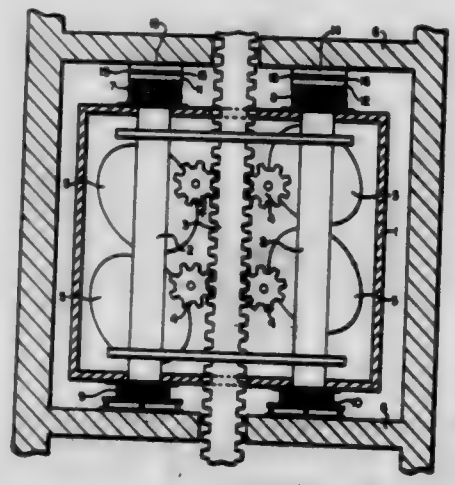
1. A bidirectional fluid flow indicator comprising:
a housing having a fluid inlet and a fluid outlet, and having means for defining separated first and second fluid passageways intermediate said inlet and said outlet, a first end of each of said first and second passages being in fluid communication with one of said inlet or said outlet, a second end of each said first and second passage being in fluid communication with the other of said inlet or outlet;
a first vane and means for pivotally securing said first vane across said first end of said first passageway so that said first vane is pivotable to and from a first position at which said first vane closes said first passageway when fluid flows in a first direction between said inlet and said outlet, and a second position at which said first vane opens said passageway as fluid flows in a second, opposite direction between said inlet and said outlet;
a second vane, and means for pivotally securing said second vane across said second end of said second passageway so that said second vane is pivotable to and from a first position at which said second vane closes said second passageway when fluid flows in said second opposite direction between said inlet and said outlet, and a second position at which said second vane opens said second passageway when fluid flows in said first direction between said inlet and said outlet;
wherein said second position of said first and second vanes is variable and dependent upon the amount of fluid flowing between said inlet and said outlet;
first indicating means for indicating the position of said first vane exteriorly of said housing; and
second indicating means for indicating the position of said second vane exteriorly of said housing.

4,496,824

MEANS OF MEASURING STRESS AFFECTING MOUNTINGS FOR JACKING MECHANISMS ON OCEAN PLATFORMS

Olivier Dantan, Bougenais, France, assignor to Brissonneau et Lotz Marine, France

Filed Jan. 27, 1983, Ser. No. 461,542
Claims priority, application France, Feb. 1, 1982, 82 01536
Int. Cl.³ G01L 1/14
U.S. Cl. 73—862.64
5 Claims



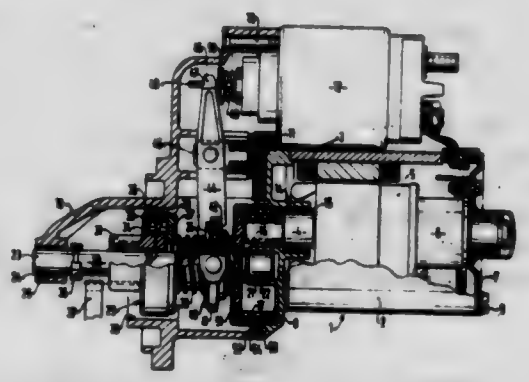
1. In an ocean platform and the like in which the weight of the platform is applied, in compression, to legs by means of jacking mechanisms attached to the platform by mountings that include flexible components and that allow limited movement of the legs relative to the platform, the improvement comprising a combination of calibrated compressible components situated between the platform and at least one of the mountings, and at least one sensor device situated between the platform and said one of the mountings, said sensor device including means for producing an electrical output dependent upon the stress applied to said one of the mountings.

4,495,825

STARTER FOR INTERNAL COMBUSTION ENGINES

Walter Rühle, Korntal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE81/00184, § 371 Date Aug. 11, 1982, § 102(e) Date Aug. 11, 1982, PCT Pub. No. WO82/02419, PCT Pub. Date Jul. 22, 1982
PCT Filed Oct. 31, 1981, Ser. No. 413,343
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1981, 3100869
Int. Cl.³ F02N 15/06
U.S. Cl. 74—7 E
6 Claims



1. A starter for an internal combustion engine comprising:
a starter motor (1) having an output drive shaft (4) with a toothed end section (16);
a starter pinion (31), disposed in a rotatable and longitudinally movable manner on a gear shaft (20);
a sleeve (18) disposed around said gear shaft (20) and having a highly pitched spirally splined section (19);

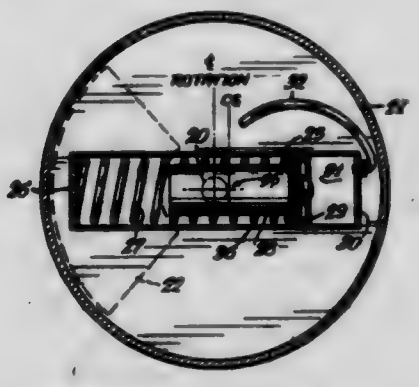
a spur gear arrangement (16,17,18) including said drive shaft,
a freewheel (29) and a coupling element (26), which is movably disposed on said high-pitch thread (spiral spline) section (19), operatively connecting the starter pinion (31) to the spur gear,
wherein
the spur gear arrangement has an internally geared wheel (17),
said internally geared wheel (17) is integrally formed with said sleeve (18);
said coupling element (26) is seated on said sleeve (18); and
said internally geared wheel (17) is journalled on the gear shaft (20) and is in meshing engagement with said toothed end section (16) provided on the drive shaft (4).

4,495,826

VIBRATORY APPARATUS

Albert Muschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

Continuation-in-part of Ser. No. 250,112, Apr. 2, 1981, abandoned. This application Sep. 20, 1982, Ser. No. 420,602
Int. Cl.³ F16H *33/10*
U.S. Cl. 74—87 14 Claims



1. Apparatus for varying the vibratory force generated by a rotating mass comprising a rotatably mounted shaft, an eccentric weight mounted in a fixed position on the shaft, means for rotating the shaft, a cylinder carried by the shaft, said cylinder extending radially on either side of said shaft, a weight mounted for axial movement in the cylinder, a tension and compression spring in the cylinder urging the movable weight toward a position with the center of gravity on one side of the axis of the shaft, said spring being attached at one end to the cylinder and at the other end to the movable weight, fluid pressure responsive means in the cylinder and bearing on the side of the movable weight opposite to the spring to move the movable weight from the position on one side of the axis of the shaft toward a position on the other side of the axis of the shaft and means connecting said fluid pressure responsive means to a source of fluid under pressure.

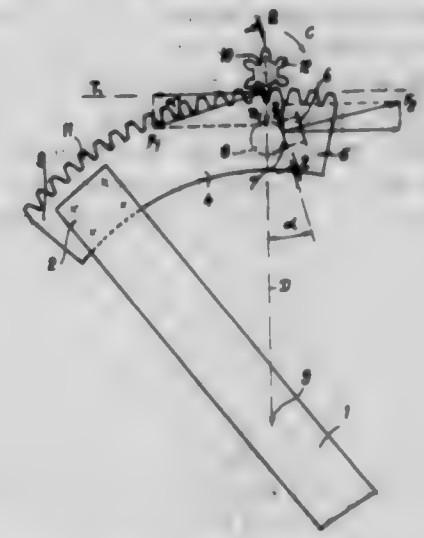
4,495,827

GEAR DRIVE DEVICE AND THE APPLICATION THEREOF IN A WINDOW WINDER OF AN AUTOMOBILE VEHICLE

Roger Parizet, Bonnee, France, assignor to Compagnie Industrielle De Mecanismes en abrege C.I.M., France

Filed Aug. 19, 1982, Ser. No. 409,741
Claims priority, application France, Aug. 31, 1981, 81 16555
Int. Cl.³ F16H *27/02, 29/02, 29/20;* E05F *11/44*
U.S. Cl. 74—89.18 7 Claims

1. A gear drive device comprising a support member, a drive pinion rotatably mounted on the support member, a driven toothed element movably mounted on the support member, a stop element mounted in a fixed position on the support member, an abutment in a fixed position on the toothed element and capable of abutting against the stop element at an end-of-travel position of the toothed element, the pinion and the toothed element respectively having teeth engaging each other so as to generate a driving force at a positive pressure angle relative to the tangent to the pitch circle of the pinion, and means for pressing the toothed element and the pinion against each other



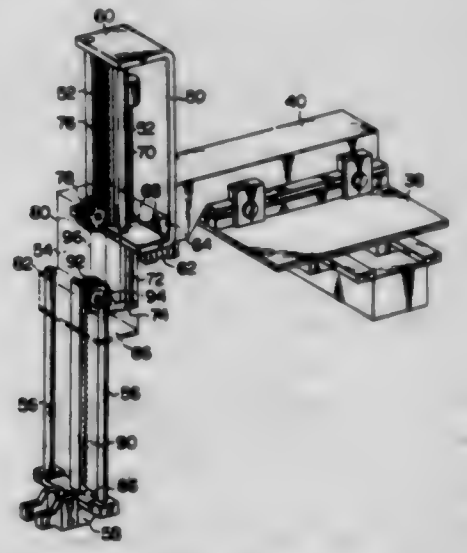
so as to generate an abutment force which is parallel and substantially opposed to said driving force when the abutment is cooperative with the stop element.

4,495,828

STROKE ENLARGING MECHANISM

Norihiro Iwamoto, Zama, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1982, Ser. No. 362,543
Claims priority, application Japan, Mar. 31, 1981, 56-48200
Int. Cl.³ F16H *19/04, 19/06*
U.S. Cl. 74—110 4 Claims



1. A stroke enlarging mechanism comprising:
a stationary supporting frame having a predetermined length L;
a stationary guide member secured to said supporting frame so as to extend along the length of said supporting frame;
a saddle member movable along said guide member;
an operating arm supported by said saddle member to be movable along the length of said supporting frame;
an actuator secured to said supporting frame for driving said saddle member along said guide member;
a first rack secured to said supporting frame and extending along its length;
a second rack secured to said operating arm to be movable therewith along the length of the supporting frame;
said stationary guide member, said saddle member, said actuator, said operating arm and said first and second racks having lengths substantially equal to the length L of said supporting frame and disposed at positions substantially included within the length L of said frame;
a first pinion rotatably mounted on said saddle member at a first position thereof to be engageable with said first rack;

a second pinion rotatably mounted on said saddle member at a second position thereof, which is spaced apart from said first position by a predetermined distance D along the length of said supporting frame, so that said second pinion is engageable with said second rack; and

means for coupling said first pinion with said second pinion for transmitting power therebetween, so that not only a predetermined ratio of stroke enlargement can be obtained, but also the length of the entire mechanism in an inoperative state can be minimized to substantially be equal to L.

4,495,829

POWER DRIVE LINE HAVING A WIDE RANGE OF SPEED RATIOS

Yves J. Kemper, Birmingham, Mich., assignor to Ipanema Company, Birmingham, Mich.

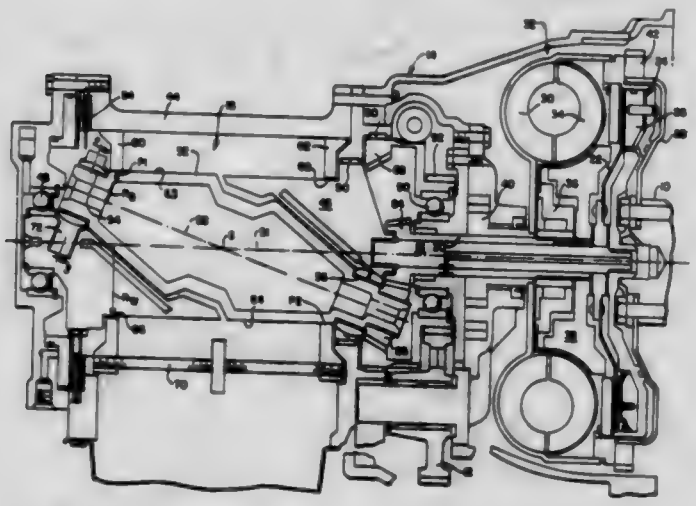
PCT No. PCT/US80/00584, § 371 Date Dec. 23, 1981, § 102(e) Date Dec. 23, 1981, PCT Pub. No. WO81/03370, PCT Pub. Date Nov. 26, 1981

PCT Filed May 19, 1980, Ser. No. 335,510

Int. Cl.³ F16H *15/16*; G05G *1/00*; F16H *47/08, 37/06*

U.S. Cl. 74—191

13 Claims



1. A drive line comprising:

a continuously variable transmission unit having an alpha body rotatable on a first axis, a beta body rotatable on a second axis revolvable about said first axis, said beta body being carried by said alpha body so that said second axis is inclined with respect to and intersects said first axis at a point of axes intersection, said beta body having at least one rolling beta surface of revolution about said second axis, and variable means for controlling relative movement of said bodies, said variable means including means defining at least one rolling omega surface of revolution about said first axis, means to retain said beta and omega surfaces in rolling friction contact and means to vary the radius ratio of one of said beta and omega rolling surfaces to the other of said rolling surfaces;

planetary gear means including a sun gear rotatable on said first axis, a ring gear rotatable on said first axis and planet gear means in mesh with said sun and ring gears, said planet gear means being coupled for rotation with and carried on said other working body;

a power input;

a power output drivably connected to said ring gear; and

means for coupling said power input to one or the other of said sun gear and said alpha body to provide a low drive line speed ratio range when said power input is coupled with said alpha body, the speed ratio in each of said ranges being determined by said variable means.

4,495,830

AUTOMATIC TRANSMISSION FOR A VEHICLE

Hideki Yasue, and Kagenori Fukumura, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

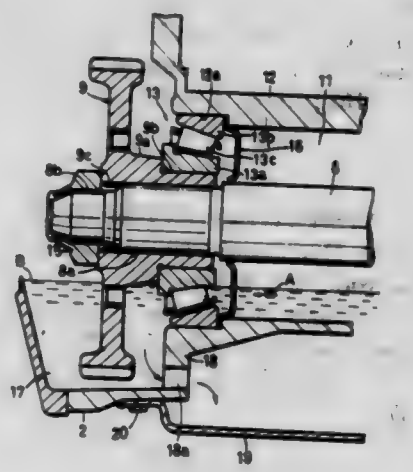
Filed Jul. 1, 1982, Ser. No. 394,307

Claims priority, application Japan, Sep. 11, 1981, 56-144335

Int. Cl.³ F16H *57/04*

U.S. Cl. 74—467

5 Claims



1. In combination with an automatic transmission for a vehicle having a torque converter adapted to be driven by an engine, an input shaft into which an output from said torque converter is transmitted, a gear train into which an output from the input shaft is transmitted, an output shaft into which an output changed by said gear train is transmitted, a counter drive gear fixed to said output shaft at one end thereof opposite said input shaft, a counter shaft arranged in substantially parallel relation with said output shaft, a counter driven gear fixed to said counter shaft at one end thereof and meshed with said counter drive gear, a differential drive pinion gear fixed to said counter shaft at the other end thereof and meshed with a drive gear for a differential gear, first and second tapered roller bearings provided in the vicinity of said counter driven gear and said differential drive pinion gear, respectively, for supporting said counter shaft, said counter shaft being accommodated in a counter shaft chamber of a transmission casing, said counter driven gear being accommodated in a transfer chamber adjacent to said counter shaft chamber and separated therefrom by said first tapered roller bearing, transmission oil being stored in the lower spaces of said counter shaft chamber and said transfer chamber, the lower portions of said counter driven gear and said first tapered roller bearing being immersed in said transmission oil; the improvement comprising a disc-like oil deflector having a central aperture and fixed to the inner wall of said counter shaft chamber adjacent to the smaller end of said first tapered roller bearing, said counter shaft being loosely inserted into said central aperture of said oil deflector.

4,495,831

SHIFT FORK

Kotei Takahashi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

Continuation of Ser. No. 350,385, Feb. 19, 1982, abandoned. This application Jun. 8, 1984, Ser. No. 618,759

Claims priority, application Japan, Feb. 20, 1981, 56-22892

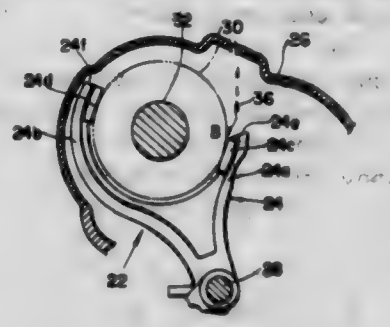
Int. Cl.³ G05G *3/00*; F16D *13/58*

U.S. Cl. 74—473 R

2 Claims

1. A shifting mechanism in an automotive transmission comprising a collar and a shift fork having a pair of upwardly extending forked branches engaging said collar for shifting the transmission, at least one of said branches having an upper end located radially outward from the collar and which is bevelled along substantially entirely an upper end face thereof so as to be inclined downwardly toward said collar so that lubricant

dripping downward from a position vertically offset and radially outward from the collar is introduced to portions of said



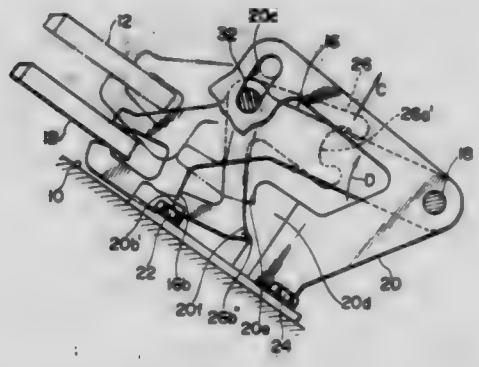
collar engaging with said shift fork by dripping onto said bevelled upper end of the shift fork branch to flow therealong to the collar.

4,495,832

GEAR OPERATING MECHANISM OF AN AUTOMOTIVE MANUAL TRANSMISSION

Kazuyoshi Hiraiwa, and Akio Kawaguchi, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Japan

Filed May 18, 1982, Ser. No. 379,508
Claims priority, application Japan, May 19, 1981, 56-74100
Int. Cl.³ B60K *20/00*; G05G *5/10*
U.S. Cl. 74—475 **11 Claims**



1. In a selected gear sliding type manual transmission having a gear being axially movable from a neutral position where it disengages from the associated gears to an operating position where it engages with the associated gears by means of a speed change shift lever of the transmission, a gear operating mechanism comprising:

a supporting bracket secured to a case of the transmission;

a first lever pivotally connected to said supporting bracket to move said gear between said neutral and operating positions in response to movement of the speed change shift lever; and

means connecting the first lever to the speed change shift lever and being movable between first and second conditions in response to movement of the shift lever to move the first lever between positions corresponding to neutral and operating positions of the gear, wherein said means includes a pivotal latch mechanism which in said first condition enables said first lever to be locked in a position to cause the gear to assume the operating position, and in said second condition enables said first lever to assume another position to cause the gear to assume the neutral position,

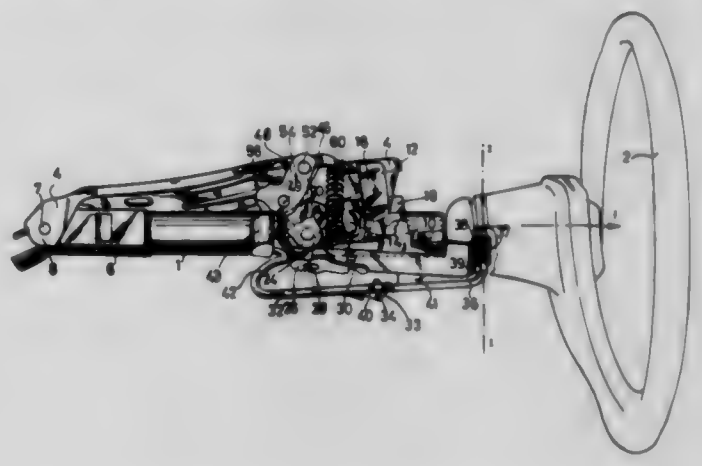
said latch mechanism including a pawl being engageable with the supporting bracket and arranged to prevent disengagement of the gear from the operating position to neutral position.

4,495,833

STEERING COLUMN ADJUSTABLE IN HEIGHT

Francois Fourrey, Montbeliard, and Jean-Francois Mauffrey, Danjoutin, both of France, assignors to Cycles Peugeot, Valentigney, France

Filed Sep. 30, 1981, Ser. No. 307,266
Claims priority, application France, Oct. 13, 1980, 80 21809
Int. Cl.³ B62D *1/18*; G05G *5/18*
U.S. Cl. 74—493 **11 Claims**



1. A steering structure for a vehicle and comprising a steering column which has a tube, a first steering shaft portion within the tube, an articulation connecting the first shaft portion to a second steering shaft portion adjacent a lower end of the first steering shaft portion, a steering wheel mounted on the first steering shaft portion adjacent an end of the first steering shaft portion opposed to said articulation, a plate for supporting associated controls and rigid with the tube, a fixed support for fixing to said vehicle, the support plate being mounted on the fixed support to pivot about an axis coaxial with said articulation, a locking device for locking said plate with respect to said support, the locking device including a movable member which is movable between a first position in which the locking device is operative to lock said plate to said support and a second position in which the locking device is inoperative, a cranked unlocking lever which is pivotable substantially in a plane parallel to a plane containing said tube and extending laterally of said tube, from a position in which the unlocking lever is at rest and spaced away from said movable member of said locking device to a position of engagement with said movable member of said locking device, and then farther to an unlocking position for shifting said movable member to said second position thereof, and means for elastically biasing said lever from said unlocking position to said position of rest which position of rest corresponds to the locking of said plate by said locking device, said lever having an actuating knob which is spaced sufficiently away from said steering wheel to avoid hindrance to hands of the user on said steering wheel in said position of rest and is in closer proximity to said steering wheel in said position of engagement with said movable member so as to enable the user to bring said lever to said unlocking position thereof while maintaining his hands on the steering wheel.

4,495,834

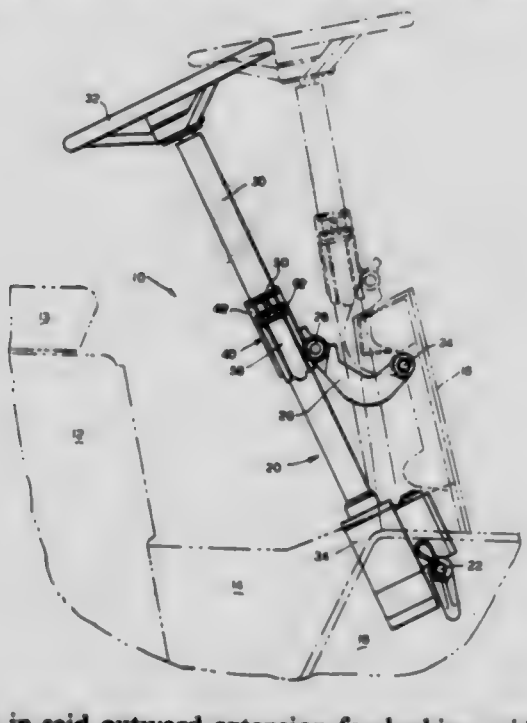
ADJUSTABLE STEERING COLUMN

James J. Bauer, Richland, and Vilnis Strautins, Kalamazoo, both of Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Feb. 22, 1982, Ser. No. 351,084
Int. Cl.³ B62D *1/18*
U.S. Cl. 74—493 **5 Claims**

1. An adjustable steering column assembly for vehicles having a hand wheel and steering column for steering the vehicle pivotally adjustable forwardly and rearwardly of the vehicle, a first pivot fixed in relation to the vehicle on which the steering

column is mounted and about which it is adjustable, a second pivot located above the steering column and fixed in relation to the vehicle, a third and movable pivot operatively connected to the steering column and connection to said second pivot by a swingable link, said third pivot being connected to a latch assembly which is mounted on the steering column and is slidable longitudinally thereof, said latch assembly including a collar and housing slidable along the steering column and extending outwardly of one side thereof, a detent device



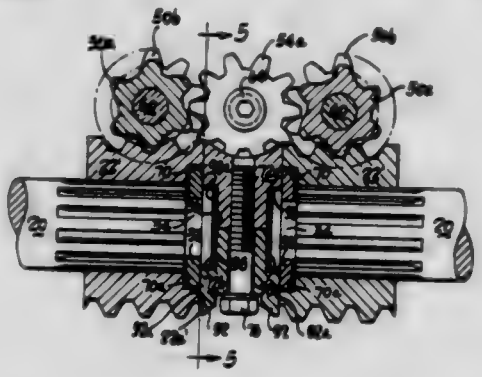
mounted in said outward extension for locking said latch assembly to a selected position axial of said steering column, and a manually operated latch for actuating said detent device to release said latch assembly for axial adjustment on said steering column, said detent device including a spring actuated element and a locking element movable between said engaged and disengaged positions by said spring actuated element such that when said latch assembly is engaged the angle of said steering column is fixed by said locked condition of said latch assembly at which a detent device engages said steering column.

4,495,835

DIFFERENTIAL GEARING ASSEMBLY

Vernon E. Gleasman, Cleveland Heights, Ohio, assignor to The Gleason Works, Rochester, N.Y.

Filed Mar. 15, 1983, Ser. No. 475,526
Int. Cl.³ F16H *1/38, 1/42, 57/02*
U.S. Cl. 74—715 7 Claims



1. In a differential assembly of the type including a differential case having means for receiving a pair of axle ends, side gears disposed within said case and rotatably coupled to said axle ends, at least one transfer gear associated with each side gear defining a side gear engaging portion and a balancing gear portion at each end, said transfer gears being arranged in pairs such that a transfer gear associated with one side gear is paired with a transfer gear associated with the other side gear, and each transfer gear pair being rotatably mounted in a window defined by said case, an improvement in said differential assembly employing internal locking elements for retaining said axle ends within said case comprising:

(a) a pair of axle ends, each defining an annular groove for receiving locking rings;

(b) locking rings engaged by said grooves and abutting side surface portions of said side gears for preventing outward movement of said axle ends;

(c) axle spacing thrust means disposed between said axle ends defining spaced thrust surfaces for said axle ends and side gears;

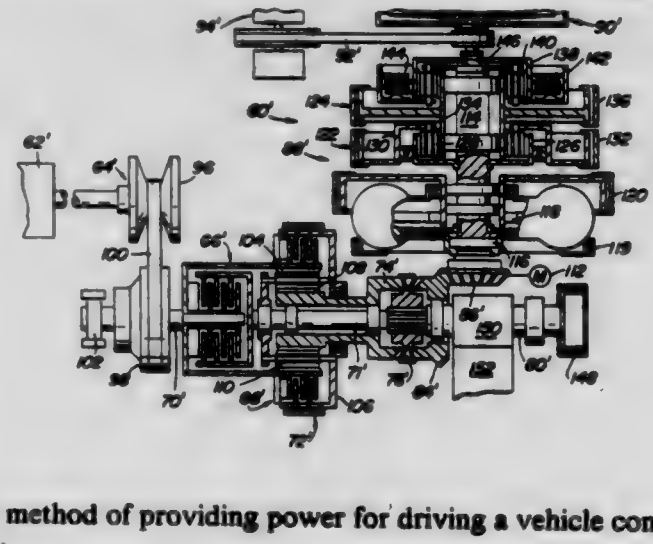
(d) reversible idler gears rotatably mounted in said window and engaging said balancing gear portions for rotatably coupling respective transfer gears of said transfer gear pair, said reversible idler gears operating to balance end thrust between said side gears and said reversible idler gears defining a clearance opening within said window of sufficient expanse to allow removal of said axle spacing thrust means and in turn said locking rings.

4,495,836

AUTOMOTIVE VEHICLE POWER DRIVE SYSTEM

Max Cohen, 489 Locust La., Cape May Courthouse, N.J. 08210

Filed Jun. 14, 1982, Ser. No. 388,055
Int. Cl.³ F16H *3/74, 37/06, 37/00*; G05G *1/00*
U.S. Cl. 74—751 17 Claims



5. A method of providing power for driving a vehicle comprising:

(a) providing a differential mechanism with three elements;

(b) providing an output shaft which at one end is operatively connected to the vehicle wheels and at the other end is operatively connected to a first element of said differential mechanism;

(c) providing a prime mover operatively connected to a second element of said differential mechanism;

(d) providing an energy accumulating flywheel operatively connected to a third element of said differential mechanism;

(e) storing energy from time to time in said accumulating flywheel by causing it to accelerate its rotation without drawing energy from the prime mover using a braking force on said output shaft caused by application of a braking force against rotation of said second element so that said output shaft drives said flywheel through said third element;

(f) providing the driving power to drive said first element of said differential mechanism when said flywheel is turning so that said prime mover and said flywheel both simultaneously mechanically independently drive said output shaft through said differential mechanism, permitting the speed of said wheels to vary or remain constant regardless of the speed of said flywheel, over a range of speeds without it being necessary to change a transmission ratio, and driving said output shaft by variably controlling the driving torque applied to said second element of said differential mechanism by said prime mover;

(g) providing consistent and uniform vehicle acceleration performance by:

(1) conserving flywheel energy for acceleration by disconnecting the coupling between the flywheel and the drivewheels except during acceleration and braking, and

(2) controlling automatically in a preprogrammed manner the amount of energy withdrawn during acceleration over the vehicle operating speed range by controlling the relationship of power delivered by the prime mover and flywheel by controlling the relationship of the speeds of the second and third elements of the differential,

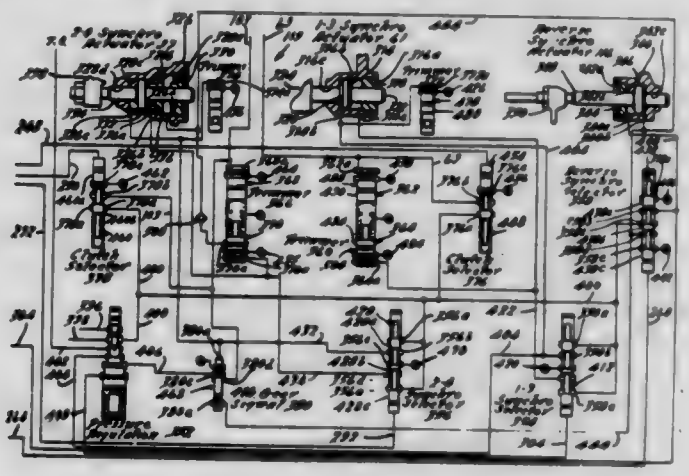
(h) including controlling by variable ratio transmission means the relative speeds of the second and third elements of said differential during acceleration of the vehicle, so as to control the amount of power consumed from the flywheel during acceleration from one vehicle speed to a higher vehicle speed to an amount equal to that available from the average brake energy recovery and storage process when braking the vehicle between those two speeds.

4,495,837

TRIMMER VALVE

Timothy J. Morscheck, Kalamazoo, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 16, 1981, Ser. No. 331,391
Int. Cl.[3] B60K *41/08*; F16H *5/42, 3/08*
U.S. Cl. 74—869 9 Claims



1. In a trimmer valve of the type including a bore, a first port adapted to receive a first pressurized fluid, an exhaust port axially spaced from the first port, a valving member disposed in the bore with one end in direct communication with the first port and slidably moveable from a position blocking communication between the ports in response to the first pressure applying a fluid force to the surface area of the one end of the valving member, a first piston slidably disposed in the bore at the other end of the valving member and defining therewith an expandable chamber communicating with the first port via an orifice, and a spring having one end biasing the piston toward the valving member for moving the valving member to the blocking position with a spring force which yields to said fluid force and increases with said fluid force, whereby initial application of the pressure of the first fluid at the first port moves the valving member from the blocking position and whereby the first fluid also flows to the expandable chamber via the orifice to expand the chamber and gradually move the valving member back to the blocking position, the improvement comprising:

a second port adapted to receive a second pressurized fluid independent of the first fluid; and

a second piston slidably disposed in the bore and providing a moveable reaction surface for the spring, said second piston moveable from a position allowing a maximum extension of the spring in the absence of said second pressure and moveable to a position allowing a minimum extension of the spring in response to the presence of said second pressure.

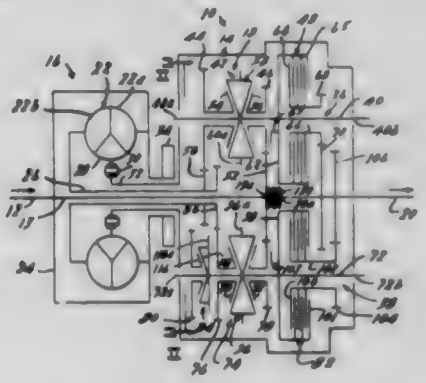
4,495,838

REVERSE PRESELECT CONTROL

Douglas C. Gooch, Galesburg, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 16, 1981, Ser. No. 331,393
Int. Cl.[3] B60K *41/10*; F16H *3/08, 5/42*
U.S. Cl. 74—869 7 Claims

4. In a transmission of the type including input and output shafts; a plurality of power paths disconnectable from both shafts; a plurality of forward speed ratio gears associated with one path and in constant driving relation with one of the shafts; at least one forward and one reverse speed ratio gear associated with another path and in constant driving relation with the one shaft; clutch means associated with each gear and selectively engageable to connect one of the gears with the associated path while the path is otherwise disconnected from the shafts; a powershift clutch associated with each path and alternately engageable to complete driving communications between the shafts via the selected one gears for up, down, and reverse shifting the transmission; and an improved control system comprising:



shift selector means including means moveable between forward, neutral, and reverse positions; and

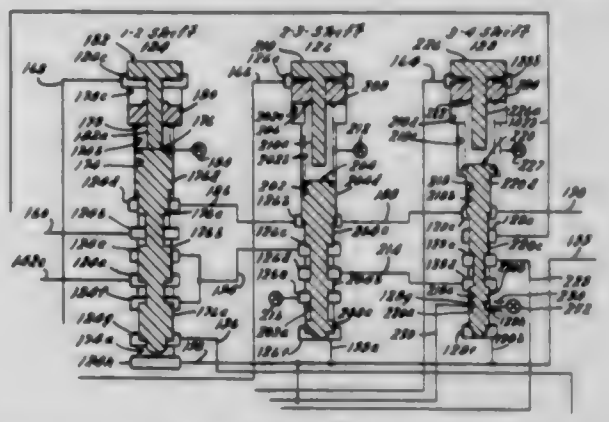
reverse means operative to effect engagement of the clutch means associated with the reverse gear in response to neutral positioning of said shift selector means position.

4,495,839

TRANSMISSION SHIFT VALVE

Timothy J. Morscheck, Kalamazoo, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 16, 1981, Ser. No. 331,397
Int. Cl.[3] B60K *41/08*
U.S. Cl. 74—869 6 Claims



1. In a transmission of the type including at least two step ratio gears automatically shifted into and out of engagement at predetermined shift points in response to substantially simultaneous and alternate engagement and disengagement of at least two powershift clutches by a control system including shift selector means having at least two selectable positions, means providing a force proportional to the transmission output speed, and a shift valve having a valving member biased in opposite directions by a resilient force and the proportional force with valving member moved to a first position effecting engagement and disengagement of selected ones of the

clutches when the resilient force exceeds the proportional force and moved to a second position effecting opposite engagement and disengagement of the selected ones of the clutches when the proportional force exceeds the resilient force; the improvement wherein the shift valve further comprises:

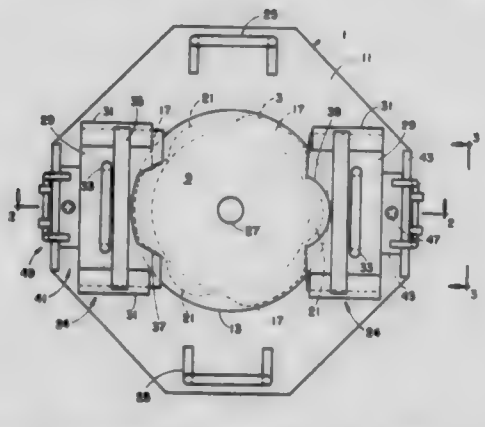
means operative to vary the resilient force biasing the valving member in response to the position of the shift selector means, the valving member being a spool valve disposed in a bore, the resilient force being provided by a spring acting at one end on the spool and reacting at the other end against a piston moveable in the bore in response to the position of the shift selector.

4,495,840

BIT BREAKER

Gary T. Freitag, Webster, and Roger C. Smith, Houston, both of Tex., assignors to Reed Rock Bit Company, Houston, Tex.

Filed Jul. 15, 1983, Ser. No. 514,389
Int. Cl.³ B25B *13/00*
U.S. Cl. 81—54 **10 Claims**



1. A bit breaker adapted to be fitted in the Kelly drive of a drill rig for detachably securing a rotary drill bit to the Kelly drive to enable the latter to rotate the bit relative to a drill string having an internally threaded lower end portion in one direction to effect a threaded connection between the threaded pin of the bit and the string, and in the other direction to disconnect the bit from the string; said bit breaker comprising:

a bottom engageable by the bottom of a bit for supporting the bit;

a top having an opening therein through which the bit may be lowered into engagement with the bottom of the bit breaker and may be raised to remove the drill bit from the bit breaker; and

means for selectively securing the bit in fixed annular position in said opening in the bit breaker comprising a stop member slidably mounted on the top of the bit breaker adjacent the opening therein for movement inwardly and outwardly relative to the opening between an extended position in which the stop member engages the side of the drill bit when in the opening for holding the drill bit against rotation relative to the bit breaker and a retracted position in which the stop member is spaced from the drill bit to enable the drill bit to be raised and lowered through the opening, and means for selectively locking the stop member in its extended position, thereby preventing retraction of the stop member when the drill bit is rotated.

4,495,841

AUTOMATIC SCREWDRIVER

Takashi Mori, Koriyama; Kouichi Mizu, Hirakata, and Yasunori Jo, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Apr. 21, 1982, Ser. No. 370,194
Int. Cl.³ B25B *23/06*
U.S. Cl. 81—430 **11 Claims**

1. An automatic screwdriver for driving a screw into a workpiece, comprising:

a frame;

a chute mounted on said frame for supporting a plurality of screws arranged in a row in the chute, said screws having shanks directed generally parallel to each other in a first direction;

a gate mounted on said frame at one end of said chute and being selectively openable to allow the screws to be discharged one at a time out of said chute;

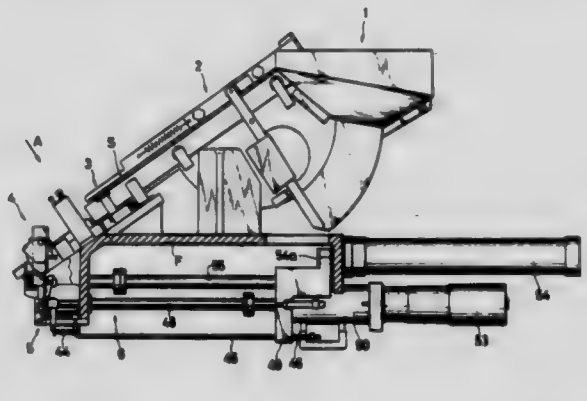
an index mechanism mounted on said frame and having a carrier arm angularly movable between a first position in which said carrier arm receives a screw discharged by said gate and a second position in which said screw is oriented in a second direction different from said first direction;

a catcher unit mounted on said frame at said second position to receive the screw supplied from said index mechanism;

a screwdriver bit unit mounted on said frame and having an axially movable suction pipe for drawing the screw from said catcher unit into the pipe and towards a screwdriver bit rotatably disposed in said suction pipe for axial movement therewith to advance the screw past said catcher unit;

means for actuating the gate and said index mechanism; and means for actuating said screwdriver bit unit;

wherein said chute has a groove extending therealong to receive the shanks of said screws, said gate including an



escape slide having a curved slot, the escape slide being slidable transversely of said chute for allowing one of the screws at a time to move along said groove and said curved slot past said gate and wherein said escape slide has a roller cam follower, said gate and index mechanism actuating means having a cam surface engageable with said roller cam follower for moving said escape slide to open said gate in response to movement of said carrier arm to said first position.

4,495,842

THRUST BEARING SCRAPING TOOL

Daniel G. Starta, Trafford, and Richard W. Hood, Greensburg, both of Pa., assignors to Elliott Turbomachinery Co., Inc., Jeannette, Pa.

Filed Apr. 18, 1983, Ser. No. 486,135
Int. Cl.³ B23B *5/00*
U.S. Cl. 82—4 R **3 Claims**

1. A bearing scraping tool comprising:

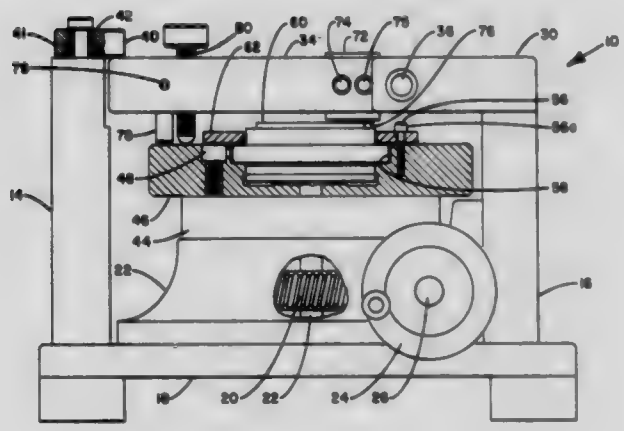
means mounting a bearing;

means rotating said means mounting a bearing;

cutting means;

means pivotally mounting said cutting means with respect to said means mounting a bearing whereby said cutting means moves vertically and angularly with respect to said means mounting a bearing when pivoted;

means resiliently biasing said means pivotally mounting towards said means mounting a bearing;



means pivotally moving said cutting means when said means mounting a bearing is being rotated.

4,495,843

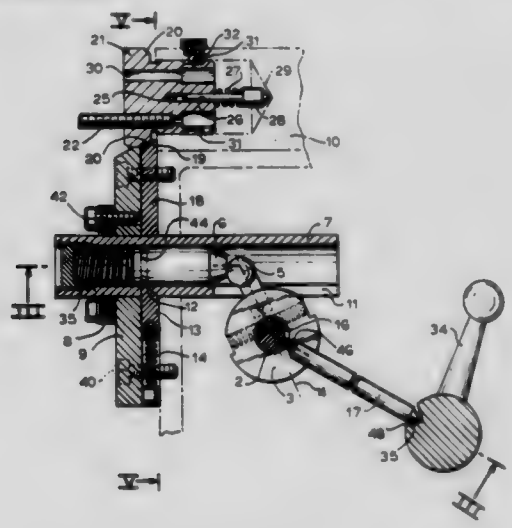
AUTOMATIC UNCOUPLING DEVICE

Romeu Romi, Sao Paulo, Brazil, assignor to Industrias Romi S/A, Sao Paulo, Brazil

Filed Jul. 23, 1982, Ser. No. 401,325

Int. Cl.³ B23B *21/00*

U.S. Cl. 82—23 **19 Claims**



1. An automatic uncoupling device for opening half-nuts for cutting threads mounted on a machine having an apron supporting the half-nuts and a stop means, the device being mounted in the apron and comprising a control lever supported on a turnable shaft having means thereon operatively connecting said shaft to said half-nuts; a disc rigidly supported on said turnable shaft and having an arm radially outwardly extending therefrom; said arm having a free end and including a ball at said free end rigidly connected to the arm; a hollow cartridge mounted in the machine apron; a movable pin in said cartridge and having one end engaged with said ball and an opposite end, said one end being tapered, first spring means urging said pin towards said ball and ensuring a permanent contact of said tapered end with said ball, a trigger element having a portion aligned with said opposite end so as to be engageable with said opposite end; second spring means biasing said trigger element towards said opposite end; and displaceable means operatively connected to said trigger element and operated when upon an advancing movement of the apron towards the stop means an element of the displaceable means abuts against the stop means and is displaced to cause another element thereof to move said trigger element against a force of said second spring means to release the trigger element from engagement with said opposite end of said pin whereby said first spring means urge said pin and said ball to move within said cartridge to cause the rotation of said arm, said disc and said turnable shaft therewith to uncouple the half-nuts.

4,495,844

ROTARY MICROTOME DRIVE

Brian L. Jackson, Foxelwood, Oakington, Cambridge CB4 5AR, and Philip Parker, 6 Conley Close, Ramsey, Cambridge PE17 1EL, both of England

PCT No. PCT/GB81/00006, § 371 Date Sep. 15, 1981, § 102(e) Date Sep. 15, 1981, PCT Pub. No. WO81/02063, PCT Pub. Date Jul. 23, 1981

PCT Filed Jan. 16, 1981, Ser. No. 302,415

Claims priority, application United Kingdom, Jan. 17, 1980, 8001672

Int. Cl.³ G01N *1/06*

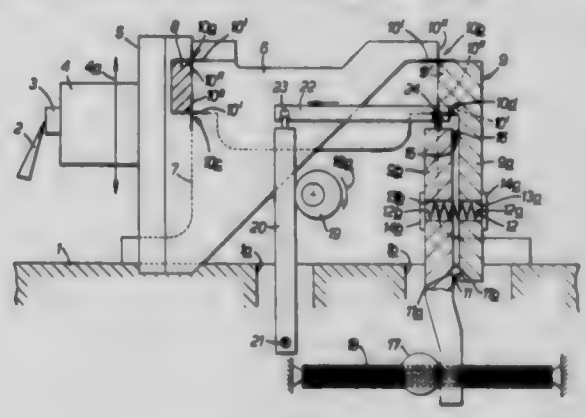
U.S. Cl. 83—715 **7 Claims**

1. An improved rotary microtome of the type in which a specimen table and a knife are mounted for relative reciprocable movement therebetween in a first direction for cutting a slice from the specimen, and for incremental movement in a second direction to incrementally advance the specimen mounted on said specimen table and said knife relative to each other, said microtome comprising,

a base,

a first link connected to said base for pivotal movement about a first hinge secured to said base for pivotal movement about a first hinge secured on said base,

a second link parallel to said first link and connected to said base for pivotal movement about a second hinge secured on said base and spaced from the first hinge,



a third link connected to said first link at a third hinge and pivotally connected to said second link at a fourth hinge,

said hinges having pivot axes parallel to each other and being located respectively at corners of a parallelogram so that pivotal movement of said first link about said first hinge in a first direction causes said third link to move parallel to a line extending through said axes of said first and second hinges, to incrementally advance the specimen and knife relative to each other, and

rotatable drive means for pivoting said first link in said first direction to cause said incremental advance.

4,495,845

PATTERN CUTTER

James E. Sherby, Wilkinsburg, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 1, 1981, Ser. No. 279,495

Int. Cl.³ B26D *3/08*

U.S. Cl. 83—886 **12 Claims**

1. An apparatus for generating a pattern in a work piece, comprising:

(a) means for supporting said work piece;

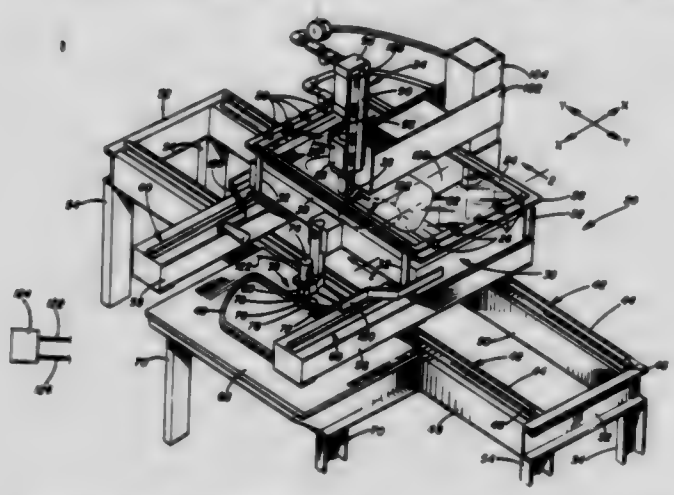
(b) disc marking means for marking said work piece;

(c) three-dimensional pattern defining means having peripheral edge portions corresponding to the edge configuration of the pattern to be generated in said workpiece;

(d) means for providing relative movement between said marking means and said supporting means along a first reciprocating path and a second reciprocating path transverse to said first path; and

(e) means responsive to said peripheral edge portions of said

pattern defining means and acting on said marking means and said providing relative movement means including means to rotate said marking means about an axis transverse to said first and said second paths and means to



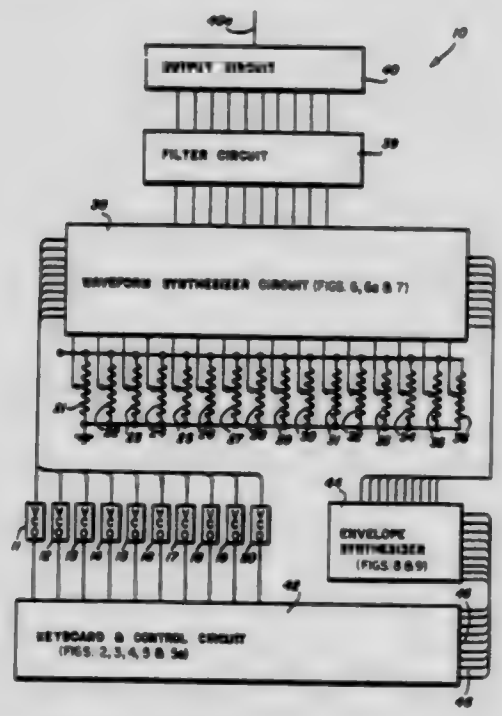
move said providing relative movement means along said first and said second paths to generate said pattern in said workpiece to be supported on said supporting means.

4,495,846

ELECTRONIC MUSICAL INSTRUMENT

S. Keith Williams, 1432 Cleveland St., Evanston, Ill. 60202

Continuation-in-part of Ser. No. 851,444, Nov. 14, 1977, abandoned. This application Jul. 14, 1980, Ser. No. 168,713
The portion of the term of this patent subsequent to Nov. 29, 2000, has been disclaimed.
Int. Cl.³ G10H *7/00*
U.S. Cl. 84—1.01 18 Claims



1. An electronic musical instrument comprising wave synthesis means for the production of a plurality of stepwise complex waveforms associated with a corresponding plurality of channel means associated with a corresponding plurality of frequency signals each having a rate of repetition proportional to the fundamental frequency of the corresponding said stepwise complex waveform wherein said waveform synthesis means comprises:

means for scanning said plurality of frequency signals,

means for detecting changes in state of said plurality of frequency signals from one said scan to the next,

memory means containing a plurality of step number code words associated with the corresponding said plurality of channel means, and

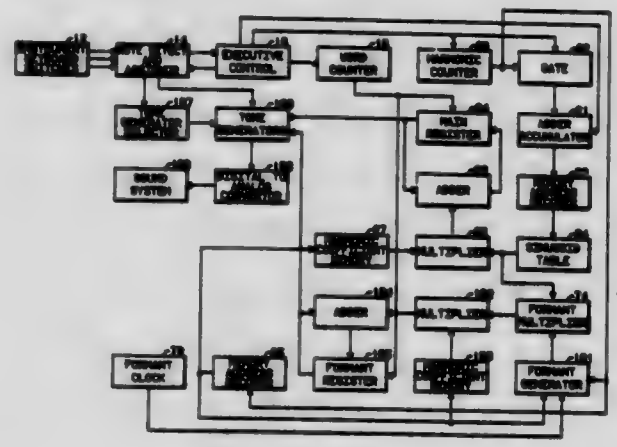
incrementer means connected in a feedback loop with said memory means.

4,495,847

COMBINED TONE GENERATION ON A SINGLE KEYBOARD FOR AN ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, and Leslie J. Deutsch, Sepulveda, both of Calif., assignors to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Jun. 21, 1983, Ser. No. 506,468
Int. Cl.³ G10H *1/00*
U.S. Cl. 84—1.01 10 Claims



1. In a musical having a first tone generator for producing a first preselected musical tone and having a plurality of second tone generators for producing a second preselected musical tone and in which said first and second tone generators are assigned to actuated keyswitches contained in a keyboard array of keyswitches corresponding to musical notes wherein each keyswitch is operable in an unactuated or in an acutated keyswitch state, apparatus for assigning the keyboard keyswitch corresponding to the highest frequency musical note to said first tone generator and for assigning all other actuated keyboard keyswitches to corresponding ones of said plurality of second tone generators comprising;

a note detection means for detecting the keyswitch states of keyswitches in said keyboard array of keyswitches and wherein a state change signal is generated each time that a keyswitch changes its keyswitch state and wherein a new note signal is generated corresponding to each keyswitch whose keyswitch state changes from an unactuated to an actuated keyswitch state,

a high note detector which generates a high note data word identifying the keyswitch corresponding to the highest frequency of the actuated keyswitches only upon each occurrence of a said new note signal, and

an assignor means responsive to said new note signal and responsive to said high note data word whereby said first tone generator is assigned only to the keyswitch identified by said high note data word and whereby all other keyswitches in an actuated state at the time of occurence of a said new note signal are assigned only to members of said plurality of second tone generators.

4,495,848

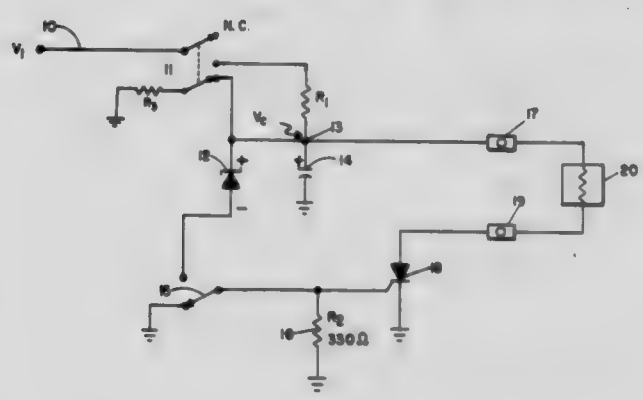
PYRO-GUN

Alexander G. Rozner, Potomac; Daniel S. Lenko, and James H. Carter, both of Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 6, 1981, Ser. No. 285,174
Int. Cl.³ B23K *7/10*; F23Q *7/12*
U.S. Cl. 89—1.1 9 Claims

1. An electrically operated pyrotechnic torch comprising an igniter and power source wherein, the power source is in a first power circuit with means to control current flow to an energy storage unit including a safety feature with means to discharge

the energy storage unit to prevent inadvertent firing and a secondary circuit with an igniter in combination with means to



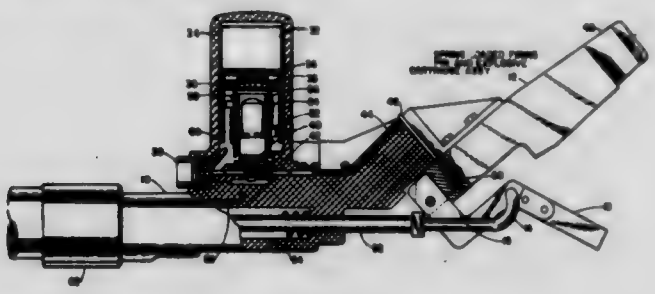
control flow of current to the igniter and a separate trigger circuit.

4,495,849

REMOTELY ACTIVATED CABLE CUTTER

Michael W. Cooke, El Cajon; Arturo Arriola, San Diego; Julius M. Stegman, Del Mar, and Kenneth D. Collins, San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 27, 1982, Ser. No. 424,818
Int. Cl.[3] B26D *1/00*; B63B *43/00*
U.S. Cl. 89—1.14 10 Claims



1. An improved underwater cable cutter which can be attached by submersible vehicles, marine mammals or human divers to cables to be cut, said cable cutter having a chisel and anvil assembly whereby a chisel is activated by a spring loaded firing pin which strikes an explosive cartridge, wherein the improvement comprises:

means for holding firmly the spring loaded firing pin in a cocked postion until a later predetermined time whereat the cocked position is to be terminated thereby allowing the firing pin to strike the explosive cartridge;

means connected to the holding means for removing the holding means from holding firmly the spring loaded firing pin in a cocked position, thereby allowing the firing pin to strike the explosive cartridge;

means in contact with the removing means for controlling the activation and operation of the removing means, said controlling means being activated in response to a predetermined coded signal received at an input to said controlling means;

means for admitting the coded signal, and connected to the input of the controlling means for inputting said signal to the controlling means, said preselected coded signal originating from a distant and separate source;

means connected to the removing means, the controlling means, and the admitting means for powering them; and

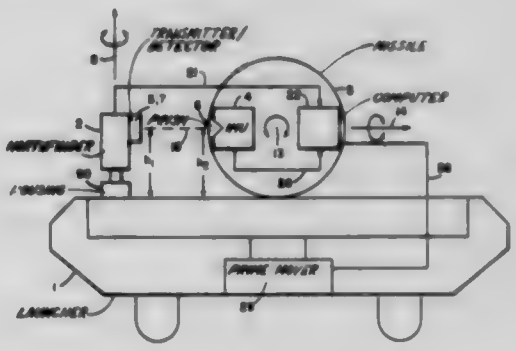
means sealed to the cable cutter in a watertight manner for housing the removing means, the controlling means, and the powering means, said housing being capable of withstanding hydrostatic pressures at the depths found in the worlds oceans.

4,495,850

AZIMUTH TRANSFER SCHEME FOR A STRAPDOWN INERTIAL MEASUREMENT UNIT

Harold V. White, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 26, 1982, Ser. No. 411,744
Int. Cl.[3] F41G *3/02*
U.S. Cl. 89—1.8 6 Claims



1. In a missile launching system having a launcher with a missile mounted thereon; the improvement comprising a northfinder mounted on the launcher separately from the missile; a laser diode transmitter mounted to said northfinder for transmitting a laser beam to said missile while it is located on said launcher; a beam detector mounted about said laser diode transmitter for receiving reflected energy from said laser beam; and a reflector mounted on said missile for receiving said laser beam and reflecting said beam back to said beam detector whereby the relative position of said missile and said northfinder can be determined.

4,495,851

APPARATUS FOR SETTING AND/OR MONITORING THE OPERATION OF A SHELL FUSE OR DETONATOR

Hans-Gerhard Koerner, Schriesheim; Helmut Lang, Sandhausen; Rainer Berthold, Gaiberg; Rainer Strietzel, Heidelberg, and Friedrich Melchior, Laudenbach, all of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

Filed Dec. 17, 1982, Ser. No. 450,759
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 3150172
Int. Cl.[3] F42C *17/00*
U.S. Cl. 89—6.5 9 Claims



1. Apparatus for performing at least one of the functions of setting and monitoring the operation of an electronic fuse for shells to be fired from a gun, by transmitting a microwave data signal and a microwave energy signal to a device inside the fuse from a device outside the fuse, the device inside the fuse including an energy receiver with a rectifier for generating a supply voltage, a data receiver, a data processing unit and a fuse electronic system, and the device outside the fuse including an energy transmitter, an input/output unit and a data transmitter, comprising means for disposing the device outside the fuse so that the transmission of the microwave signals occurs at the latest during loading of the shell carrying the fuse into the gun; means for transmitting the energy signal and the data signal together and simultaneously; a reply signal transmitter additionally included in the device inside the fuse; a

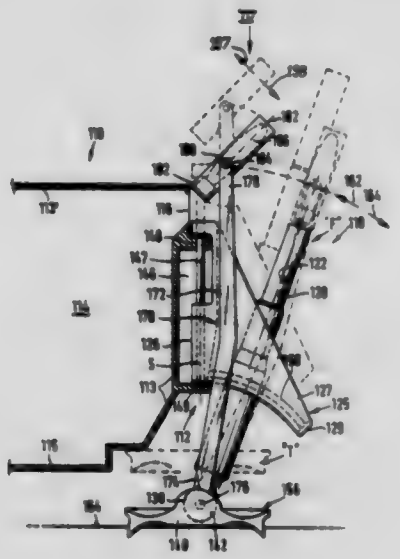
reply signal receiver additionally included in the device outside the fuse; said data-signal transmitting means and said reply signal transmitter being actuable for transmitting and exchanging information in opposite directions; and a respective single antenna located at the fuse and at the device outside the fuse for receiving and transmitting energy, data and reply signals.

4,495,852

ARMOR CAR-MOUNTED MORTAR

Gert Winkler, Meerbusch; Wilfried Becker, Düsseldorf, and Erich Zielinski, Haan, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Jun. 3, 1982, Ser. No. 385,007
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1981, 3121998; Jun. 3, 1981, 3121999
Int. Cl.³ F41F *1/06*
U.S. Cl. 89—46 10 Claims



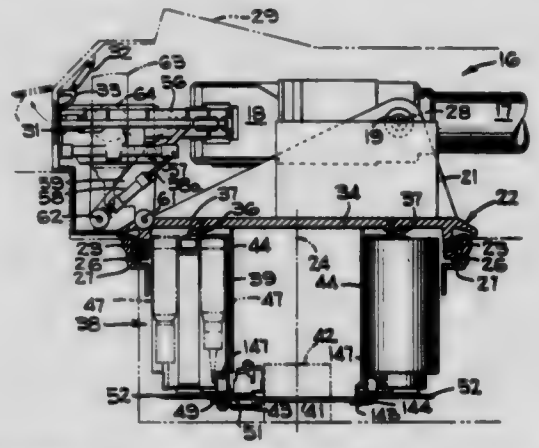
1. A weapons system comprising:
a mortar having a tube with a bore axis;
a vehicle having a body including a side wall, said sidewall having a region constructed for receiving said mortar;
means connected with said vehicle for mounting said mortar for movement between a traveling position in which said mortar is positioned to travel with said vehicle and a firing position in which said mortar is positioned to fire a projectile, said traveling position being delimited by the region provided in said side wall for receiving said mortar and said firing position being located on the ground in the vicinity of said vehicle; and
a loading rocker means for loading said mortar tube with a projectile, said loading rocker means including: a rod assembly having an upper free end and a lower end with a pivot axis; means mounting said rod assembly for pivotal movement about said pivot axis between said vehicle body and said mortar tube; and a projectile holder having a longitudinal axis and being pivotally articulated at the upper free end of said rod assembly, said projectile holder including a releasable clamping unit for releasably holding a projectile in said projectile holder; wherein said rod assembly is pivotable about said pivot axis toward said vehicle into a receiving position for insertion of a projectile into said projectile holder and said rod assembly is pivotable toward said mortar tube into a discharge position in which the longitudinal axis of said projectile holder is aligned with the bore axis of said mortar tube, and in said discharge position said clamping unit is releasable for discharging the projectile into said mortar tube, whereupon said rod assembly is immediately returnable into said receiving position.

4,495,853

FIXED ELEVATION AUTOMATIC LOADING SYSTEM FOR FIXED AMMUNITION

Paul R. Gottwaldt, Coon Rapids, Minn., assignor to FMC Corporation, Chicago, Ill.

Filed Jul. 13, 1982, Ser. No. 397,722
Int. Cl.³ F41H *7/06*
U.S. Cl. 89—46 11 Claims



1. An automatic loading system for moving large caliber fixed ammunition within a turret which is rotatable about an azimuth axis relative to a support structure and which has a gun barrel mounted there for movement in elevation relative thereto, comprising
an ammunition storage ring disposed in the turret and rotatable about an axis substantially parallel to the azimuth axis, said storage ring including a carousel, and a plurality of rotating drums mounted on said carousel and each having a plurality of ammunition holding cells therein, whereby combined rotation of said carousel and said drums brings predetermined ones of said holding cells to a transfer position,
means for indexing said storage ring to position predetermined ones of said holding cells at said transfer position,
a transfer tray assembly mounted on the turret having means to receive, engage and discharge fixed ammunition rounds,
means for moving said transfer tray assembly between said transfer position wherein an ammunition round may be moved between a holding cell and said tray and a predetermined elevation position aligned with the gun breech, whereby an ammunition round may be moved between said tray and the breech of the gun barrel when the barrel is at said predetermined elevation relative to the turret,
means for moving ammunition rounds into and out of said transfer tray,
means for receiving from the breech and discharging spent ammunition round cases, and
means for controlling actuation of said means for indexing, means for moving said transfer tray, means for moving ammunition rounds, and means for receiving and discharging spent cases in appropriate sequence to operate the system in a selected mode.

4,495,854

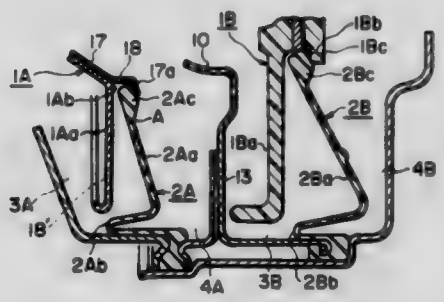
POWER SERVO BOOSTER

Sadanobu Hibino, Saitama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 153,294, May 27, 1980, abandoned.
This application Nov. 29, 1982, Ser. No. 444,916
Claims priority, application Japan, Jul. 11, 1979, 54-87589
Int. Cl.³ F01B *19/00*
U.S. Cl. 91—438 2 Claims

1. A power servo booster comprising a shell, at least one power piston and at least one diaphragm operatively disposed within said shell, said piston and diaphragm cooperating to divide said shell into at least one negative pressure chamber and at least one atmospheric pressure chamber, a supporting

plate coupled to one side of the piston, said supporting plate having an outer peripheral end portion extending substantially radially outwardly to define an annular groove with a surface of said piston, said diaphragm having a thickened inner peripheral end disposed in said groove and having an arcuate edge surface on the side thereof toward said surface of said piston, said outer peripheral end portion of said plate being inclined at an angle relative to the radial direction of said piston in a range



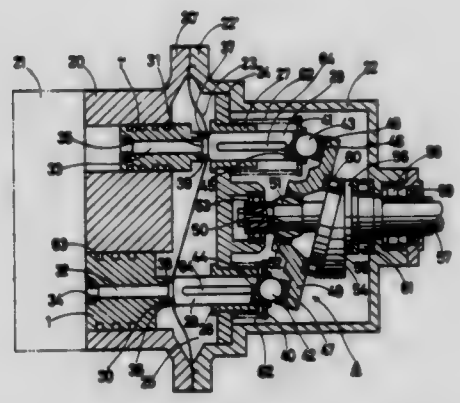
from 10° to 45° whereby said inner peripheral end of said diaphragm can freely pivot in said annular groove so that said diaphragm is not caused to bend in the vicinity of said inner peripheral end during a vacuum pressure failure in order to prevent said diaphragm from folding and collapsing during said vacuum pressure failure and a communication hole disposed in said supporting plate to provide communication between said chambers upon pivoting of said inner peripheral end of said diaphragm in said annular groove.

4,495,855

RECIPROCATING TYPE OIL-FREE GAS COMPRESSOR

Muneo Murakami, Nishinomiya, and Zentaro Ishizaki, Kamakura, both of Japan, assignors to Showa Precision Machinery Co., Ltd., Amagasaki and Kabushiki Kaisha Ecti Kenkyusho, Kamakura, both of, Japan

Filed Dec. 9, 1983, Ser. No. 562,242
Claims priority, application Japan, May 31, 1983, 58-97520
Int. Cl.³ F01B *3/02*
U.S. Cl. 92—71 **4 Claims**



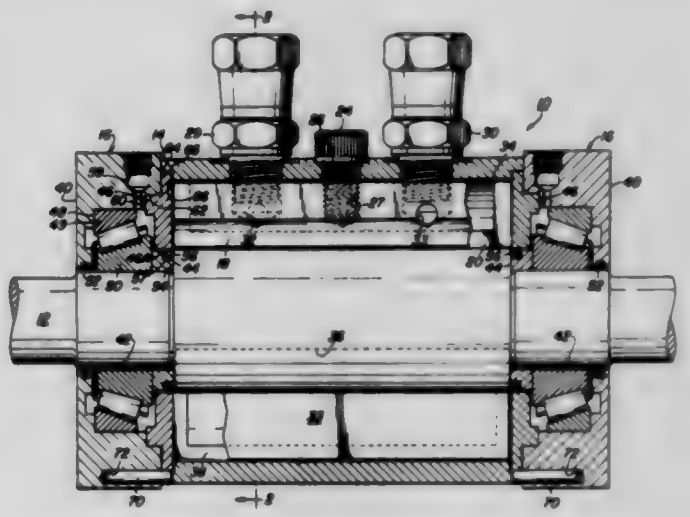
1. In a multistage gas compressor in which cylinders having a plurality of compression pistons are connected to a transmission case, an oil-free gas compressor characterized in that guide pistons for imparting reciprocating movements to these compression pistons are respectively connected in series to said compression pistons, a common space where these pistons come in and out is defined adjacent the connections, and a single diaphragm is installed in said space, said diaphragm oil-tightly separating said compression pistons from said guide pistons.

4,495,856

ROTARY ACTUATOR

Phillip Sollami, P.O. Box 627, R.R. 2, Weaver Rd., Herrin, Ill. 62948

Filed Nov. 7, 1983, Ser. No. 548,950
Int. Cl.³ F01C *9/00*
U.S. Cl. 92—125 **12 Claims**



1. A fluid operated, reciprocatory rotary motor, comprising in combination,
a body having a cylindrical bore therein,
first and second head assemblies fixedly mounted to said body over the respective ends of said bore,
a shaft extending through said bore and through said head assemblies,
a radially disposed, longitudinal stator mounted in said body between said head assemblies,
first and second annular thrust bearings respectively disposed in said first and second head assemblies, said shaft being journalled in said bearings,
a radially disposed, longitudinal vane fixedly mounted to said shaft and extending from said first head assembly to said second head assembly,
first sealing means carried by said stator for sealing said stator to said shaft and to said head assemblies,
second seal means carried by said vane for sealing said vane to said body and to said head assemblies, and
means for admitting fluid under pressure into said bore to one side or the other of said stator,
said first head assembly including a head member having a central bore and a counterbore through which said shaft extends,
an annular thrust bushing compressed between an annular shoulder on said shaft and said first thrust bearing
an annular end plate compressed between an annular end surface of said body and an annular facial surface on the inner side of said head, the radius of said facial surface being less than the radius of said annular end surface, and
an annular sealing member compressed between said thrust bushing and the inner diameter of said end plate.

4,495,857

LABYRINTH VENTILATOR

Paul E. Morgan, Bridgewater, N.J., assignor to CTI International Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 286,854, Jul. 27, 1981, abandoned. This application Apr. 23, 1984, Ser. No. 602,913
Int. Cl.³ B60H *1/24*
U.S. Cl. 98—6 **11 Claims**

1. A labyrinth ventilator to be placed upon the sidewall of a container at the site of at least one air breather opening in the sidewall, said ventilator being formed as a unitary structure comprising:
a housing having a front wall and a perimetric wall extending from a periphery of said front wall towards an open

rear portion of said housing, there being a set of air inlet apertures disposed in said perimetric wall and extending transversely along a bottom of said housing;

a set of baffles including a lower baffle and an upper baffle extending transversely within said housing from one side of said housing to the opposite side of said housing, said lower baffle extending from said front wall part way toward said rear portion to provide a space for air flow between said lower baffle and said container sidewall upon emplacement of said ventilator on said container



sidewall, said upper baffle having an air-flow opening at said front wall, said upper baffle extending to said rear portion to block a flow of air along said container sidewall, thereby to provide a sinuous path to airflow;

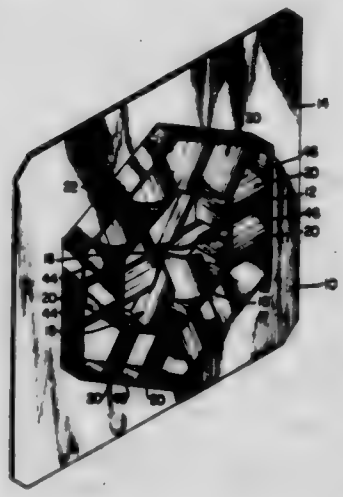
means for securing said ventilator to said container sidewall; and wherein the extension of each of said baffles toward said open rear portion is in a direction sufficiently close to a normal to said front wall to permit said baffles and said housing to be formed integrally in a single molding operation.

4,495,858

FIXED BLADE AIR BLENDER APPARATUS

Donald P. Erickson, Arvada, Colo., assignor to Rocky Mountain Sheet Metal Company, Inc., Denver, Colo.

Filed May 7, 1982, Ser. No. 376,253
Int. Cl.³ F24F *13/04*
U.S. Cl. 98—38.1 16 Claims



1. Air mixing apparatus adapted for intermixing airstreams of different temperatures flowing through a common passage, comprising:

an outer enclosure traversing said passageway;

a central hub; and

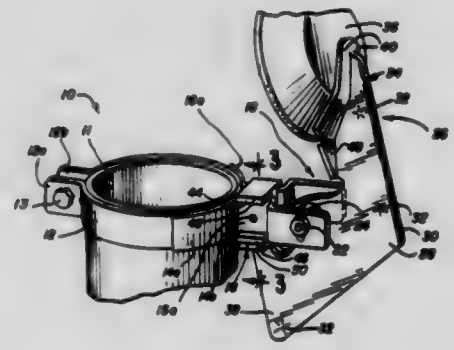
a plurality of radially extending vanes diverging away from said hub and terminating at their outer distal ends adjacent to said outer enclosure, each of said vanes including a straight leading edge portion across its length extending rearwardly in the direction of air flow and curving laterally into a straight trailing edge at a uniform acute angle along its length to the direction of air flow through said flow passageway, and an inner convergent end on each vane tapering forwardly and inwardly from said trailing edge to said leading edge and terminating at said central hub, each said convergent end defining a lateral clearance space between said inner convergent end of each vane and said leading edge portion of each next adjacent vane.

4,495,859

COVER ASSEMBLY FOR VERTICAL EXHAUST PIPES

Edwin R. Janke, Crystal Lake, and Earl Conrad, Lake in the Hills, both of Ill., assignors to Mercury Metal Products, Inc., Schaumburg, Ill.

Filed Jul. 25, 1983, Ser. No. 516,678
Int. Cl.³ F01N *7/00*; F23L *17/02*
U.S. Cl. 98—59 12 Claims



1. A gravity actuated protective cover assembly adapted to be secured upon the upstanding exhaust stack of an internal combustion engine to prevent entry of extraneous matter therein through the open end thereof during the inoperative condition of the engine and comprising:

A. a clamp member adapted to be secured to the exhaust stack and including clamping means therefor;

B. a pair of separate support straps, means fixedly connecting said straps to said clamp member, said straps extending laterally from the clamp member in transversely spaced apart relationship to each other for the full extent of said straps laterally of said clamp member, the support straps having a pivot structure mounted thereon;

C. a balance arm mounted on said pivot structure for pivotal movement about said pivot structure in a vertical plane, the balance arm having a cover member connected to a front end thereof and an opposing counterweight vane, the vane and cover member being on respective opposite sides of the pivot structure to enable pivotal movement of the balance arm between a first position which is to dispose the cover member over the open end of the exhaust stack, and a second position having the cover member substantially rotated away from the stack to expose said open end;

D. the balance arm being heavier on the cover member side of the pivot structure than on the vane side of the pivot structure so that the normal condition of the balance arm is with the cover member in the first of said positions when the engine is not operating;

E. said straps including flange portions spaced apart to form a bifurcated end formation in which the pivot structure is mounted with said balance arm straddled by said flanged portions, said straps further including spaced opposing neck formations between said end formation and said clamp member, said neck formations defining a space therebetween and having bumper means mounted thereon for limiting said pivotal movement and preventing en-

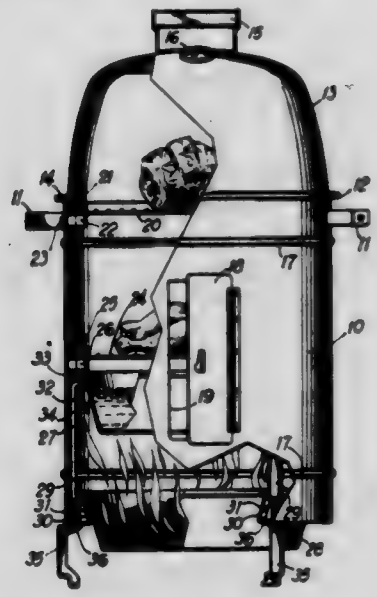
gagement of said cover member with the open end of the stack.

4,495,860

FOOD GRILLING, ROASTING, SMOKING AND STEAMING APPARATUS

Robert J. Hitch, and Mason Holland, both of Columbus, Ga., assignors to W. C. Bradley Enterprises, Inc., Columbus, Ga.

Filed Mar. 8, 1984, Ser. No. 587,553
Int. Cl.[3] A47J *37/04*
U.S. Cl. 99—340 7 Claims



1. A cooking apparatus comprising a shell having lifting handles, a removable dome for the shell, spaced superposed food racks liftably positioned within the shell, the shell having an upright axis in use and being open-ended, and a coacting charcoal pan and water pan assembly including support legs to which a charcoal pan is fixed and upon which a water pan is freely liftably mounted in spaced superposed relationship to the charcoal pan, said charcoal pan and water pan assembly being free-standing, and the legs of said assembly having support shoulders upon which the shell may rest and be supported with its lower portion in surrounding relationship to said charcoal and water pans and with a lowermost food rack of the shell disposed near and above the top of the water pan, said shell and food racks being liftable as a unit from the charcoal pan and water pan assembly to fully expose the latter.

4,495,861

COOKING UTENSIL

Shirley L. Jacks, 109 Arroyo Dr., Danville, Calif. 94526, and Sun W. Ng, 18 Barcelona Ave., San Francisco, Calif. 94115

Filed Oct. 24, 1983, Ser. No. 544,626
Int. Cl.[3] A47J *37/06*
U.S. Cl. 99—422 12 Claims



1. A cooking utensil for use on a barbeque-type device which includes a bowl for containing a heating medium, comprising:

means defining a generally planar, substantially imperforate cooking surface having peripheral dimensions less than the cross dimensions of the upper rim of said bowl to define a space about the periphery of the cooking surface and the upper rim of the bowl for air circulation to the heating medium; and

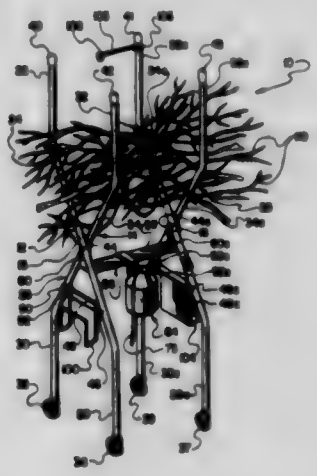
handle mans projecting outwardly from the periphery of the cooking surface means a sufficient distance for supporting said cooking surface means on the rim of said bowl and beyond said rim to facilitate lifting the cooking surface means off said bowl.

4,495,862

LIMB BUNDLER AND BAG HOLDER

Douglas A. Davis, 6664 Royer Ave., Canoga Park, Calif. 91307

Filed Sep. 19, 1983, Ser. No. 533,289
Int. Cl.[3] B65B *13/00*
U.S. Cl. 100—34 13 Claims



1. A trash bundler and collector comprising:

a frame member further comprising:

a pair of leg assemblies, each including a pair of legs, each said leg having a top and a bottom end;

structural means interconnecting said bottom ends of each said pair of legs;

pivot means intermediate said ends and interconnecting said legs in each said leg assembly with said legs in the other said leg assembly, fixing the relative positions of said leg assemblies and facilitating relative pivotal movement therebetween; and

latch means for interconnecting and further securing said pair of legs in each said assembly against movement relative to the other said pair of legs.

4,495,863

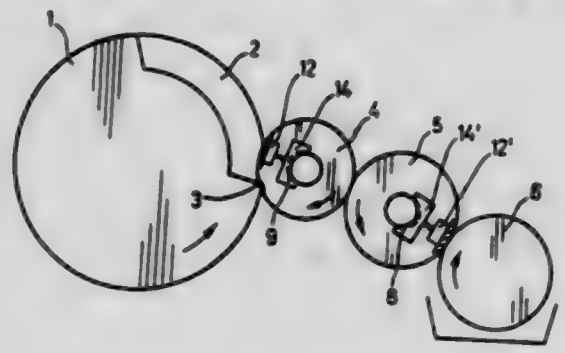
ARRANGEMENT FOR PREVENTION OF ROLLER MARKS ON ROLLER UNITS IN A PRINTING PRESS

Janko Despot, and Paul Abendroth, both of Offenbach am Main, Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 7, 1983, Ser. No. 472,592
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1982, 3211154
Int. Cl.[3] B41F *31/30*
U.S. Cl. 101—350 2 Claims

1. In a rotary printing machines having a plate cylinder (1), a frame (7), and arrangement for mounting to the frame (7) an applicator roller (4) for applying fluid to the plate cylinder (1) and a preceding roller (5) in a fluid feed system (6,5,4,1) for applying fluid to the applicator roller (4), and said plate cylinder being journalled to said frame without substantial bearing play and being formed with a recessed gap (2) over a segment of its outer periphery which defines a leading plate cylinder edge (3) which cyclically engages the applicator roller (4), wherein the improvement comprises means for preventing undesirable roller marks in the fluid applied to the plate cylin-

der upon cyclic engagement of the leading edge of the plate cylinder with the applicator roller, said means including means mounting the applicator roller and preceding roller for movement toward and away from the plate cylinder, said means mounting consisting of journal means for each of said rollers, each of said journal means having substantial bearing play, a pressure plate (14) acting on the bearing journal (11) of the applicator roller (4) under the force of a first spring (13) to



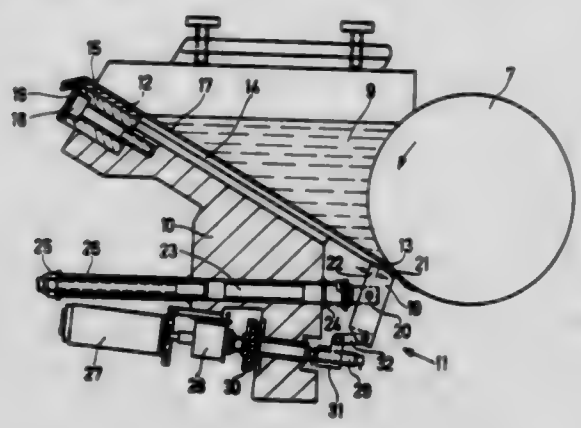
force the applicator roller journal (11) toward the bearing surface away from the plate cylinder (1), and a pressure plate (14') acting on the bearing journal (10) of the preceding roller (5) under the force of a second spring (13') to urge the preceding roller (5) into contact with the applicator roller (4) so as to prevent excessive increases in pressure between the applicator roller (4) and preceding roller (5) upon said cyclic engagement of the leading edge (3) of the plate cylinder (1) with the applicator roller.

4,495,864

INK KNIFE AND ADJUSTING DEVICE THEREFOR ON AN INK DUCT OF A ROTARY PRINTING MACHINE

Rudi Junghans, Wilhelmsfeld, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Feb. 2, 1983, Ser. No. 463,330
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1982, 3203500
Int. Cl.³ B41F *31/04, 31/06;* B41L *27/06*
U.S. Cl. 101—365
8 Claims



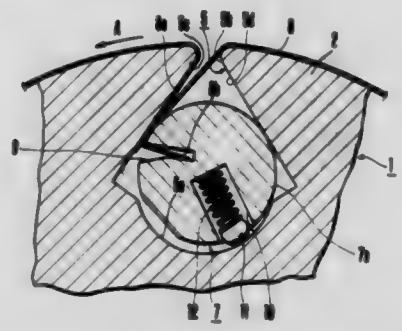
1. In an ink duct assembly of a rotary printing machine having an ink duct formed with an ink duct roller, the improvement therein comprising an ink knife having a wiper edge and being divided into individually controllable zone-wide tongues in vicinity of said wiper edge, and adjusting means for adjusting a gap width between said wiper edge and said ink duct roller, said tongues having slits therebetween which are very narrow compared to the width of said tongues, said tongues being positionable by said adjusting means starting from a uniform zero position, and said tongues being covered with an elastic covering formed of a thin, hard and elastic foil having a smooth surface and having a part thereof overlapping said wiper edge and engaging tangentially with said ink duct roller, said elastic covering, at a forward region thereof, being bent at an angle towards said ink duct roller so as to wipe excessive ink emerging from the ink duct onto said wiper edge back onto an ink film on said ink duct roller.

4,495,865

PLATE CLAMPING DEVICE OF WEB-FED ROTARY PRINTING PRESS

Hiroyoshi Kamoda, Kashiwa, Japan, assignor to Komori Printing Machinery Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 475,537, Mar. 15, 1983,. This application Jun. 11, 1984, Ser. No. 619,682
Int. Cl.³ B41F *27/12*
U.S. Cl. 101—415.1
3 Claims



1. A device for clamping a printing plate having first and second ends adapted to be held by clamping means on a web-fed rotary printing press comprising:

a plate cylinder, said plate cylinder being provided with a longitudinal slot having a narrow opening on a peripheral surface of said plate cylinder, said slot having a cross section formed by a semicircular bottom surface, outward diverging surfaces extending from the edges of said semicircular bottom and first and second oppositely inclined converging plane side walls interconnecting opposite edges of said opening and said diverging surfaces;

a round plate clamping shaft in said slot sized to provide substantial clearance from the inner walls of said slot thereby to loosely fit into said slot beneath the peripheral surface of said plate cylinder, said plate clamping shaft having: a plurality of radially projecting spring loaded balls contacting said semicircular bottom to urge said shaft against said converging side walls as said shaft is rotated each of said balls being partially contained in an opening in said shaft, a peripheral surface including a flat surface generally parallel to the radial direction of movement of said spring loaded balls, the flat surface in a first position of rotation of said shaft allowing space for said first end of said printing plate to being inserted between said first side wall and said shaft, and a groove in said shaft opposed to said opening when said shaft is in said first position for receiving said second end of said printing plate;

wherein for said first position said spring loaded balls urge said plate clamping shaft against said second side wall to provide said space for said first end of said printing plate to be inserted between said first side wall and the flat surface of said shaft, and

wherein for a second position of rotation of said shaft said spring loaded balls urge said plate clamping shaft against both said first and second walls to hold both ends of said printing plate securely between said first side wall and said shaft.

4,495,866

FLASH GUIDE TUBE ARRANGEMENT FOR PROPELLANT CHARGE IGNITERS

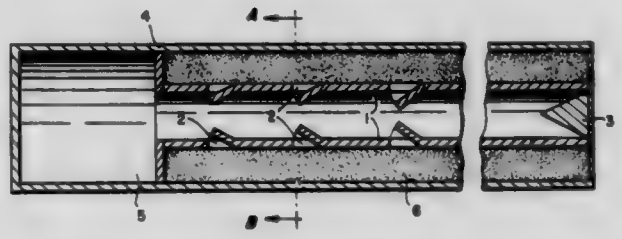
Uwe Brede, Furth; Günter Hübsch, Kalchreuth, and Rudolf Stahlmann, Furth, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 427,185

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1981, 3151673

Int. Cl.³ F42C 19/08

U.S. Cl. 102—202 9 Claims



1. A flash guide tube arrangement for propellant charge igniters for ammunition comprising an elongated tube having front and rear ends and lateral openings for the exiting of ignition gases, and axially arranged indentation means of the flash guide tube emanating from and adjoining the openings, the indentation means projecting inwardly toward the interior of the flash guide tube with the individual indentation means having a depth which decreases in the direction toward the rear end of the flash guide tube.

4,495,867

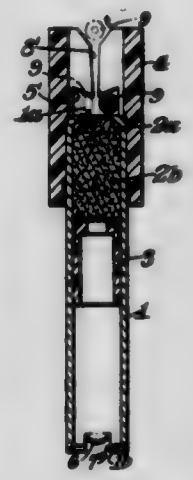
ASSEMBLY FOR INITIATING EXPLOSIVES WITH LOW-ENERGY DETONATING CORD

Hardin D. Mitchell, Jr., Monument, Colo., and Malak E. Yunan, Boonton Township, Morris County, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 18, 1982, Ser. No. 389,621

Int. Cl.³ C06C 5/00

U.S. Cl. 102—275.4 33 Claims



26. A cord/initiator connector comprising a plastic tube having, at one end thereof, a transverse slot communicating with its bore and adapted to engage a length of LEDC, and its opposite end surface being tapered to form a package-piercing spike of sufficient length to protrude beyond the end of an initiator shell which said tube is adapted to hold, said tube being provided with retaining means adjacent said transverse slot for preventing the disengagement of a length of LEDC therefrom.

4,495,868

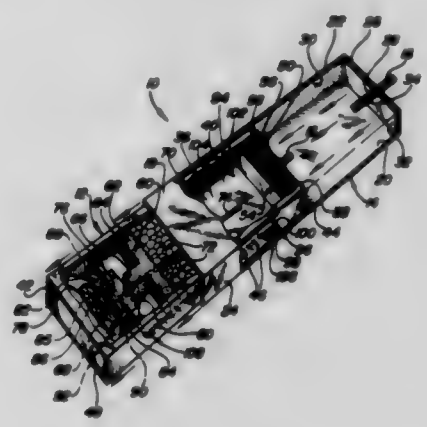
SAFE FIRECRACKER

Johnnie V. Matthews, P.O. Box 1171, East Orange, N.J. 07018

Filed Feb. 16, 1982, Ser. No. 348,920

Int. Cl.³ F42B 4/04, 4/22, 4/24

U.S. Cl. 102—357 13 Claims



7. A firecracker assembly comprising:

a casing member; and a firecracker member positioned in said casing member, said firecracker member including a first powder portion and a first fuse attached thereto extending to the exterior of said casing member, a second powder portion and a second fuse attached thereto, and a first chamber having a container member containing a liquid for soaking said second powder portion and said second fuse upon release of the liquid from the container member.

4,495,869

FUZELESS ANNULAR WING PROJECTILE

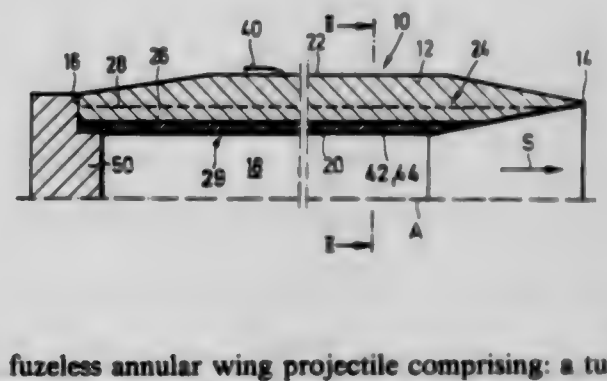
Bernhard Bisping, Ratingen, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Mar. 24, 1982, Ser. No. 361,452

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1981, 3111725

Int. Cl.³ F42B 13/18, 13/00

U.S. Cl. 102—503 8 Claims



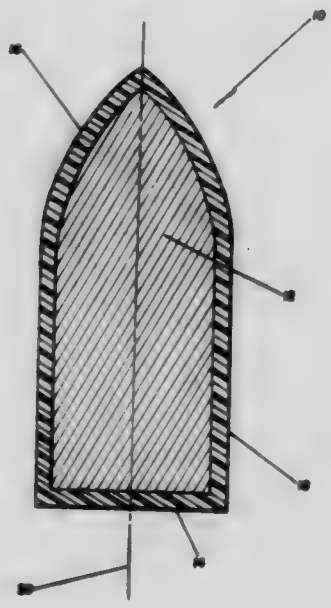
1. A fuzeless annular wing projectile comprising: a tubular projectile body having smooth interior and exterior cylindrical faces extending in the longitudinal direction of said body; and a guide band mounted on said body; said body having recesses which reduce the thickness of said body and constitute desired break locations in the region of at least one of said faces and at least at a location between the front end of said body and the location of said guide band; and wherein said body further comprises a hardened plastic material filling said recesses in order to give said one face a smooth form, and at least one metallic component embedded in said plastic material and made of a metallic material selected from among magnesium, zirconium, or depleted uranium.

4,495,870

EXTERNAL TRACER FOR GUN LAUNCHED PROJECTILES

Frank H. Bell, Logan, Utah, assignor to Thiokol Corporation, Chicago, Ill.

Filed Aug. 2, 1982, Ser. No. 403,980
Int. Cl.³ F42B 11/20, 11/16
U.S. Cl. 102—511
5 Claims



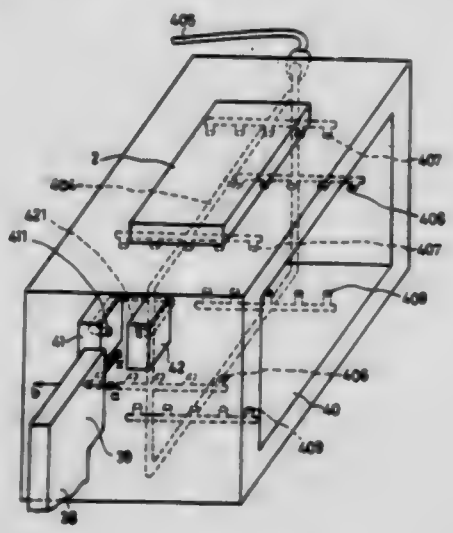
1. An external burning tracer-type projectile comprising:
a metallic core, and
a tracer composition jacket completely encasing said core, said jacket being composed of a combustible mixture of fuel and oxidizer, said oxidizer serving also as a lubricant upon firing of the projectile from the rifle barrel of a gun for reducing the bore friction.

4,495,871

TABLE SLIDING APPARATUS

Keiji Nagata, Hirakata City; Syuji Ueda, Neyagawa City, and Yoshiyuki Tanigawa, Hirakata City, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jul. 29, 1982, Ser. No. 403,150
Claims priority, application Japan, Aug. 11, 1981, 56-125659
Int. Cl.³ A47B 85/00
U.S. Cl. 108—20
3 Claims



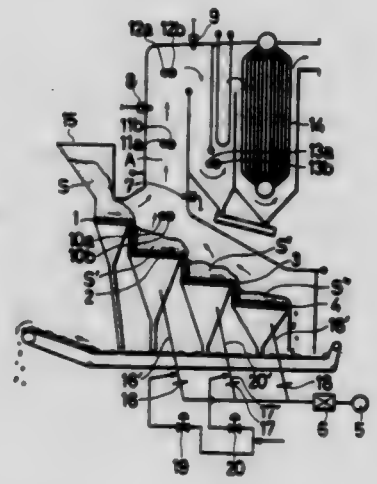
1. A table slider apparatus comprising:
a sliding table slidably held in a predetermined direction along a guide block by a sliding bearing on a guide block,
a driving screw rod which is driven to rotate around its axis by a motor, the axis being in a direction parallel to said predetermined direction,
a moving bracket having a driven screw hole with a female screw thread and screw-engaged on said driving screw rod by the driven screw hole,
a guide means which holds said moving bracket in sliding relation in the direction parallel to said predetermined direction, and
an elastic coupling means for coupling said moving bracket in elastic relation with said sliding table.

4,495,872

INCINERATOR AND METHOD OF REDUCING NO_x EMISSIONS

Masanobu Shigaki, Ibaragi, Japan, assignor to Kabushiki Kaisha Takuma, Osaka, Japan

Filed Feb. 27, 1984, Ser. No. 584,221
Claims priority, application Japan, Aug. 28, 1981, 56-135970
Int. Cl.³ F23N 5/02
U.S. Cl. 110—190
4 Claims



1. An incinerator comprising:
stoker means comprising at least three stokers, said stokers including an ignition stoker, a gas generation stoker, and a complete combustion stoker, said stokers being installed within said incinerator to have stoker surfaces of successively lower elevations;
a combustion chamber positioned above said stokers;
means for selectively communicating heated air to each of said stokers;
detector means proximate said stoker means for detecting temperature and analyzing gas constituency;
means for controlling the communication of heated air to each of said ignition and gas generation stokers whereby said ignition and gas generation stokers are supplied with an amount of air less than the amount of air theoretically required for essentially complete combustion of refuse on said stokers;
means for selectively controlling the communication of heated air to said complete combustion stoker whereby said complete combustion stoker is supplied with an amount of air greater than the amount of air theoretically required for the essentially complete combustion of refuse on said stoker;
a plurality of further detector means for detecting temperature and analyzing gas constituency, said further detector means being positioned in said combustion chamber at successive points along the flow route of combustion gas inside said combustion chamber;
a plurality of nozzle means for introducing air into said combustion chamber, the introduction of air through said nozzle means being controlled by signals produced by said further detector means whereby the gas generated at said stoker means is combusted in said combustion chamber at a temperature below a predetermined temperature;
means for selectively communicating steam to said ignition stoker and to said gas generation stoker; and,
means for controlling the communication of steam to each of

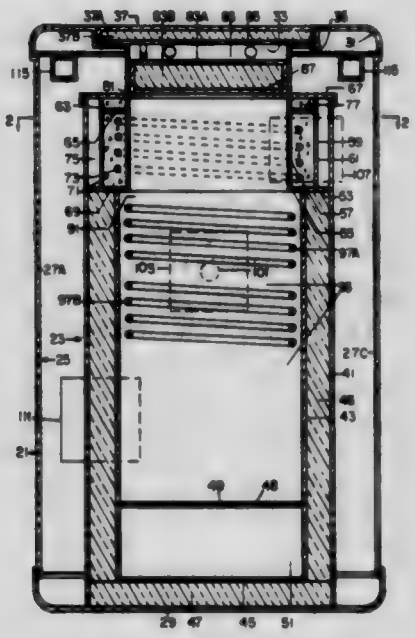
said ignition and gas generation stokers, said control means operatively connected to and responsive to signals produced by said detector means proximate said stoker means.

4,495,873

INCINERATOR FOR BURNING ODOR FORMING MATERIALS

Ernest B. Blankenship, Dallas, Tex., assignor to Research Products/Blankenship Corporation, Dallas, Tex.

Filed Jul. 26, 1983, Ser. No. 517,285
Int. Cl.³ F23G 3/04
U.S. Cl. 110—250 15 Claims



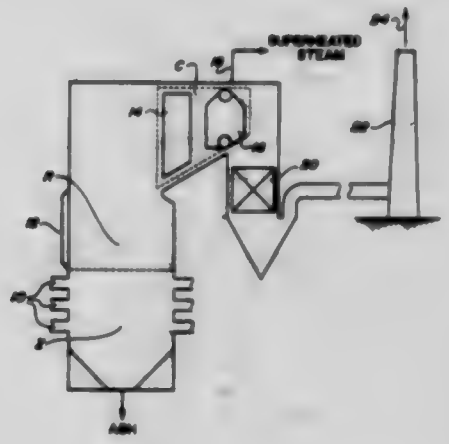
1. An incinerator apparatus, comprising:
an inner housing located within an outer housing,
said outer housing having an upper opening adapted to be closed with an insulated outer housing closure means,
said inner housing having an upper opening adapted to be closed with an insulated inner housing closure means,
said inner housing having its side wall spaced from the side wall of said outer housing,
said inner housing defining a central chamber extending from its upper opening to a lower position for receiving material to be burned,
the upper portion of said central chamber having an inner perforated wall,
a second perforated wall surrounding said inner perforated wall defining a surrounding chamber for holding an odor reducing heat activated catalyst,
a surrounding wall spaced from and surrounding said second perforated wall defining a surrounding gas collection chamber,
first exhaust means in fluid communication with said collection chamber for exhausting gas from said central chamber by way of said heat activated catalyst and said collection chamber to the interior space of said outer housing between said inner housing and said outer housing,
second exhaust means in fluid communication with the interior space of said outer housing for exhausting gas therein to the atmosphere,
first electrical heating means for preheating said odor reducing catalyst,
the lower portion of said side wall of said inner housing comprising insulating material,
second electrical heating means located in a combustion portion of said central chamber below said first electrical heating means for incinerating material deposited therein,
air inlet means formed through the side wall of said inner housing, and
blower means for forcing air within said interior space of said outer housing into said combustion portion of said chamber by way of said inlet means.

4,495,874

COMBUSTION OF HIGH ASH COALS

Eugene J. Grenkovich, Allentown, and Walter A. Zaschuk, Walnutport, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 18, 1983, Ser. No. 495,868
Int. Cl.³ F23D 1/00
U.S. Cl. 110—347 15 Claims



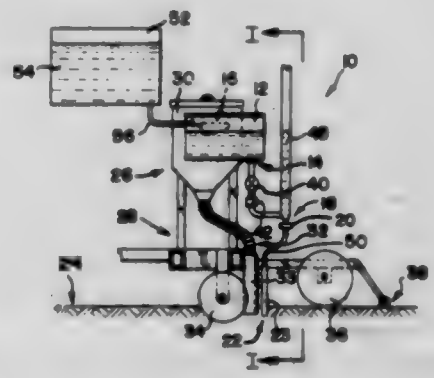
1. A method for combusting high ash content coal in a furnace comprising a firebox and at least one injection nozzle having a bore for a primary airstream and an annular passage for a secondary airstream, the nozzle communicating with the firebox, which method comprises:
(a) injecting a primary airstream containing a pulverized coal which is at least 7 wt % ash and a secondary airstream through the injection nozzle into the flame zone of the furnace firebox and combusting the coal to yield a flame of combustion, and
(b) injecting a sufficient amount of oxygen into the secondary airstream such that an oxygen enriched secondary airstream emanates from the injection nozzle and the oxygen concentration of the combined primary and secondary air streams is 22 to 25 vol %, whereby the amount of ash fines less than one micron in diameter is reduced.

4,495,875

ADMINISTERING OF AGRICULTURAL CHEMICALS IN LIQUID FORM

Andrew E. Makkink, P.O. Box 14, Saanieshof, 2760, Transvaal Province, R.S.A., South Africa

Filed Sep. 21, 1982, Ser. No. 420,657
Claims priority, application South Africa, Oct. 23, 1981, 81/7370
Int. Cl.³ A01C 3/00
U.S. Cl. 111—7 5 Claims



1. A method of administering at least one agricultural chemical in liquid form to an agricultural land, the method comprising

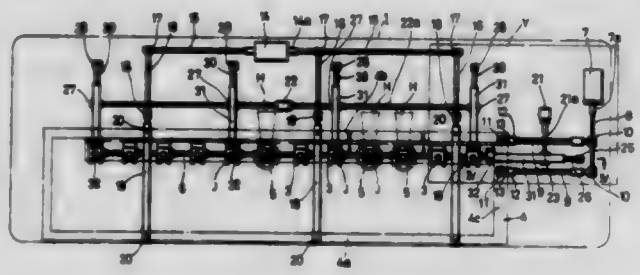
providing at least one supply of said at least one liquid chemical at an elevation position above the agricultural land;
causing said at least one supply of said at least one liquid chemical to traverse the agricultural land;
opening the surface of the agricultural land to create a plurality of laterally spaced furrows selectively at desired different depths while traversing the agricultural land;
permitting the liquid chemical to flow under gravity to the agricultural land;
maintaining the hydraulic head of the liquid chemical at a substantially constant level while outflow is taking place;
guiding the liquid chemical flowing under gravity via different flow paths to discharge into said furrows;
restricting the flow rate of the liquid chemical in each flow path to a desired constant flow rate in dependence on the hydraulic head; and
closing the furrows after discharge of the liquid chemical.

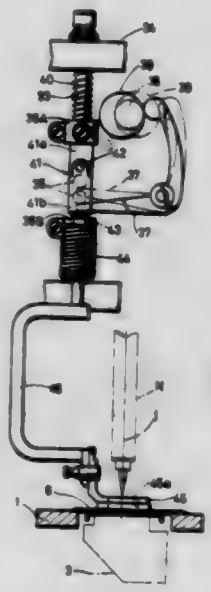
4,495,876

EMBROIDERY MACHINE

Ikuo Tajima, Nagoya, Japan, assignor to Tokai Kogyo Mishin Kabushiki Kaisha, Aichi, Japan

Filed Mar. 24, 1983, Ser. No. 478,354
Claims priority, application Japan, Apr. 8, 1982, 57-60213; Apr. 10, 1982, 57-60048; Apr. 19, 1982, 57-65991
Int. Cl.[3] D05C *9/04*
U.S. Cl. 112—103
4 Claims





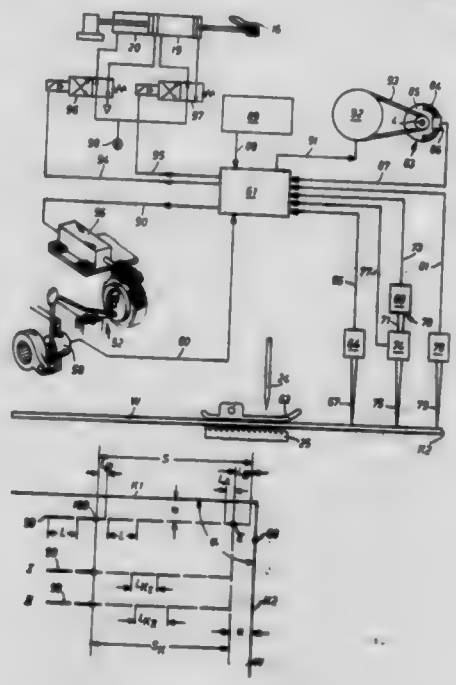
1. An embroidery machine having a table on which a cloth is spread to be fed, and a plurality of heads disposed above said table in parallel relation to each other, each of said heads having a needle for forming embroidery stitches on said cloth, said needle having an axis of rotation which is the origin of the X and Y axes of the Cartesian coordinates with respect to said table, comprising:
a frame placed on said table and means for horizontally moving said frame in the directions of said X and Y axes in response to signals produced by a control unit for feeding the cloth;
a feed plate provided horizontally under the cloth and means for moving said feed plate horizontally in the direction of movement of said frame and for returning said feed plate independently to its original position; and
a cloth-pressing member surrounding said needle and means for vertically moving said cloth-pressing member for selective cooperating with said feed plate so as to tightly hold the cloth around the needle location therebetween, and means for allowing movement of said cloth-pressing member horizontally in any direction around said needle and for returning said cloth-pressing member independently to its original position;
wherein said feed plate and said cloth-pressing member, when said frame moves horizontally, synchronously moves in the same direction where said frame moves; and
wherein said cloth-pressing member moves upwardly to release the cloth around the needle location prior to the subsequent horizontal movement of said frame; and
said feed plate and said cloth-pressing member returning to their respective original positions after a stitch is made.

4,495,877

SEWING MACHINE EQUIPPED FOR PRODUCING SHAPED SEAMS

Erich Willenbacher, Kaiserslautern, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Jan. 13, 1983, Ser. No. 457,648
Claims priority, application Fed. Rep. of Germany, May 6, 1982, 3216993
Int. Cl.[3] D05B *19/00, 27/22*
U.S. Cl. 112—121.11
11 Claims



1. In a sewing machine having a needle with drive means for driving the needle, feed means for feeding a workpiece having a guiding and a trailing edge extending at an angle relative to each other, a setting device for setting the feed means, and means for producing shaped seams having a first sensor which is positioned ahead of the needle in a feed direction of the workpiece for sensing the trailing edge of the workpiece, a pulse generator coupled to a main shaft of the sewing machine, and a program controlled switching circuit by which the sewing machine is stopped at a predetermined end point in response to pulses issued from the sensor and the pulse generator, the improvement comprising: sensing means for determining an actual feed distance; and setting means associated with the switching circuit and the setting device for controlling the setting device in response to a determined difference amount between a desired and the actual feed distance and an angular position of the main shaft at an instant of response of the first sensor, which angular position corresponds to a displacement of the feed means, said setting means being operable to adjust

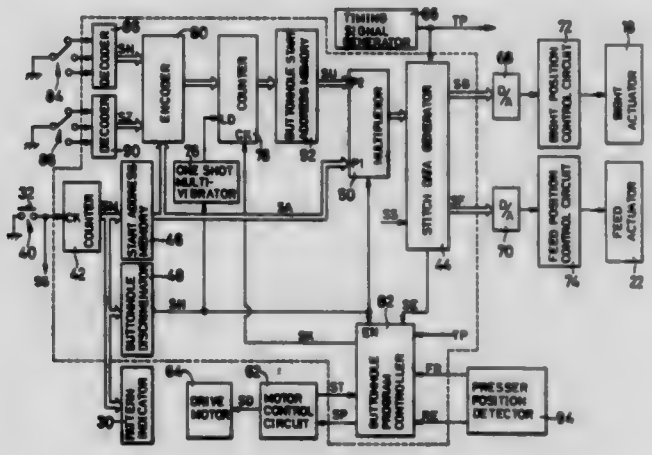
the setting device to form stitches of various lengths from zero to a maximum stitch length.

4,495,878

ELECTRONIC SEWING MACHINE

Yoshimi Asai; Michitaka Takiguchi, and Fujio Horie, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed May 16, 1983, Ser. No. 494,681
Claims priority, application Japan, Jun. 1, 1982, 57-93657
Int. Cl.[3] D05B *3/08*
U.S. Cl. 112—158 B 6 Claims



1. An electronic sewing machine having actuating means for varying a relative position of a needle and a workpiece in accordance with stitch data which influences each stitch of a buttonhole, comprising:

manual means for setting the thickness of thread;

means for generating a thread code signal representative of the thread thickness set by said manual means;

means responsive to said thread code signal for designating one of plural buttonholes each of which has a circular stitching part at its end and corresponds to each of different thicknesses of various threads to be used, said buttonholes being different in the number of stitches to be formed in said circular stitching part to maintain a constant thread density; and

data generating means capable of selectively generating one of plural different groups of stitch data which respectively correspond to said plural buttonholes, said data generating means operating in timed relation with reciprocation of said needle for supplying said actuating means with each stitch data of the group corresponding to the designated buttonhole.

4,495,879

METHOD AND APPARATUS FOR PRESSING SEAMS OPEN ON SEWING MACHINES

Toshiki Yamamoto, Uchida Higashi-cho 4-7, Inuyama-shi, Aichi-ken 484, Japan

Filed Mar. 21, 1983, Ser. No. 477,275
Claims priority, application Japan, May 10, 1982, 57-078961
Int. Cl.[3] D05B *29/00, 1/02, 35/02;* D06F *71/30*
U.S. Cl. 112—217 8 Claims

1. A method of pressing open a sewn seam of upper and lower fabric pieces on a sewing machine, comprising the steps of:

separating the upper and lower fabric pieces by means of a presser foot;

sewing the upper and lower fabric pieces along a seam with respective edges left along said seam;

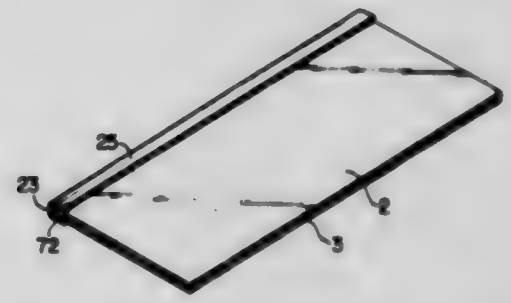
feeding the upper and lower fabric pieces in a specific direction on a main feed dog;

folding back the edge of the upper fabric piece on the latter by means of a guide member disposed above a throat plate;

heating the guide member to heat the seam;

folding back the edge of the lower fabric piece on the latter below the throat plate by means of a guide rod mounted on the throat plate;

lifting the folded edge of the lower fabric piece up to the throat plate by means of an auxiliary feed dog;



guiding the folded edge of the lower fabric piece onto a bearing plate by means of a guide body movable with the main feed dog; and

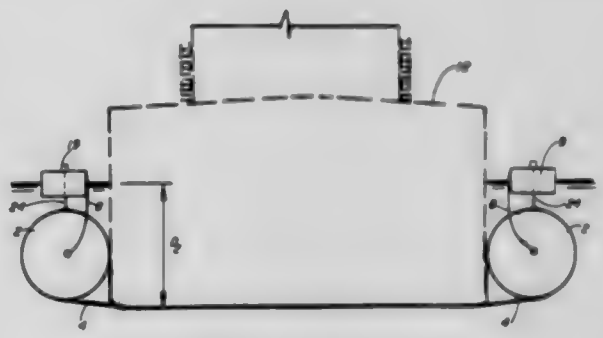
pressing the upper and lower fabric pieces with their folded edges with heat between a roller and the bearing plate while rotating the roller to move the upper and lower fabric pieces in said direction.

4,495,880

DRAFT ASSISTED DELIVERY SYSTEM

Philip M. Maniscalco, New Orleans, La., and Frank Marino, Sands Point, N.Y.

Filed May 19, 1982, Ser. No. 379,940
Int. Cl.[3] B63B *35/42*
U.S. Cl. 114—123 29 Claims



1. A draft assisted delivery system for reducing the draft of a marine vessel, comprising:

a. at least one control tender vessel disposed adjacent to the marine vessel;

b. air supply means associated with said control tender vessel(s);

c. air regulator means associated with said air supplying means;

d. a computer associated with said air regulator means;

e. at least one inflatable/deflatable module, each module having two, laterally opposed, inflatable/deflatable pneumatic lift cells with a base extending under the vessel connecting said inflatable/deflatable pneumatic lift cells together;

f. a plurality of surface floating containers disposed above said module(s);

g. a plurality of positioning means mounted on said floating containers for positioning said module(s) about the marine vessel;

h. a plurality of air delivery means emanating from said air supplying means connected to said pneumatic lift cells for facilitating the inflation/deflation thereof;

i. float/module connection means associated with said positioning means on said floatable containers and said modu-

le(s) for connecting said floating containers to said module(s); said connection means including support means being tautly attached from each floating container to each module below each of said containers for maintaining each said floating container in a relatively fixed position above each said module;

i. information-transmitting means associated with the system for transmitting relevant hull aspect information concerning the vessel to said computer;

k. utilization means associated with said computer for converting said information concerning the marine vessel into control signals;

l. transmission means for transmitting said control signals from said computer to said air regulator means, said air regulator means utilizing said control signals to regulate said air delivery means into said pneumatic lift cells, to facilitate inflation/deflation thereof, altering the draft of the marine vessel while simultaneously minimizing any full aspect difficulties of the marine vessel;

m. incoming vessel basepoint grid means initially associated with the vessel for initially receiving the marine vessel for draft reducing engagement with said module(s); and

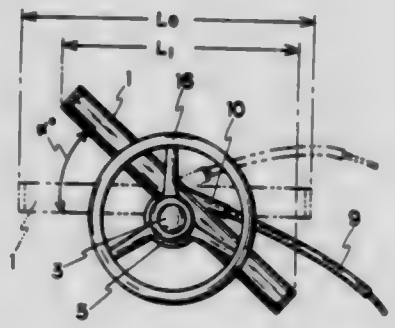
n. departure basepoint grid means subsequently associated with the marine vessel located a distance away from said incoming basepoint grid means for receiving the marine vessel for disengagement from said module(s).

4,495,881

BOAT STEERING MECHANISM

Makoto Terazu, Takarazuka, Japan, assignor to Nippon Cable System Inc., Takarazuka, Japan

Filed May 16, 1983, Ser. No. 495,112
Claims priority, application Japan, Jul. 5, 1982, 57-117089
Int. Cl.³ B63H *25/10*
U.S. Cl. 114—159 3 Claims



1. A boat steering mechanism for controlling a remotely mounted rudder by means of a push-pull control cable having an outer casing and an inner cable which is slidably pushed and pulled in said outer casing, comprising

(a) a pinion attached to a steering shaft;

(b) A linear rack having teeth meshing with teeth of said pinion and being formed with a longitudinal groove for receiving said inner cable;

(c) a rack casing into which said linear rack is slidably inserted;

(d) a projection projecting from the center or its vicinity of said rack casing, and a member on the top end of said projection for fastening one end of said outer casing to said rack casing;

(e) an inclined hole for slidably inserting said inner cable, extending from the top end of said projection to said groove; and

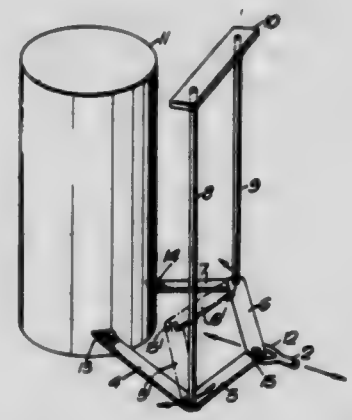
(f) a fitting member for fastening one end of said inner cable to said rack at one end of said groove; said rack casing being mounted to the boat at a prescribed rotational angle to a horizontal direction around the steering shaft.

4,495,882

HAWSER ATTACHMENT

Ivar Krogstad, Arendal, Norway, assignor to A/S Punnes Marine and Offshore Services, Norway

Filed Apr. 20, 1983, Ser. No. 486,818
Claims priority, application Norway, Apr. 27, 1982, 821389
Int. Cl.³ B63B *21/20*
U.S. Cl. 114—230 2 Claims



1. A device for reducing tensile forces in a mooring hawser (2) occurring when a ship such as a tanker is moored to a loading buoy or a fixed or jointed (16) tower (17) having a rotatable top (11), comprising, in combination:

(a) a symmetrical linkage (4–7) comprising four links (4, 5, 6, 7) and to which the said hawser (2) is attached (15) on the axis of symmetry thereof,

(b) means (13, 14) pivotally connecting said linkage (4–7) to the said rotatable top (11),

(c) a pair of torsion bar means (8, 9) with one end of said pair being non-rotatably attached to one or more of the links (4, 5, 6, 7) in said linkage (4–7) and the other end of said pair being secured against rotation in a common yoke (10) so that torsion moments are entirely absorbed as internal forces in said yoke (10),

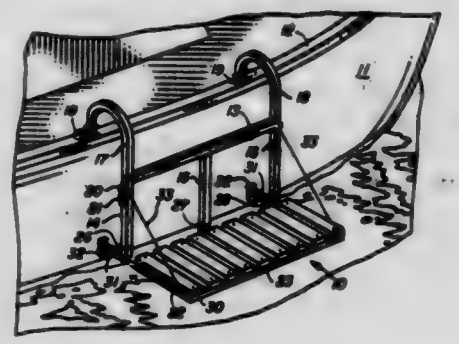
(d) each of said pair of torsion bar means (8, 9) comprising several torsion bars (22) which are non-rotatably attached at each end to a plate (20, 20') having an axis (21), so that when one of said plates (20) is rotated about said axis (21), the rotation angle for each torsion bar (22) is the same as for said one of said plates (20).

4,495,883

ADJUSTABLE DIVING PLATFORM

Paul E. Hoy, 4808 Escobar Ave., Naples, Fla. 33940

Filed Jul. 18, 1983, Ser. No. 514,571
Int. Cl.³ B63B *17/00*
U.S. Cl. 114—343 4 Claims



1. An adjustable diving platform for mounting on a boat to provide a horizontal diving platform at the boat's waterline comprising

a platform consisting of a series of slats mounted on a rectangular frame,

a vertical frame consisting of a horizontal bar and a plurality of vertical bars depending from said horizontal bar,

means including a plurality of pins for hingedly connecting the rear of the rectangular frame of the platform to the lower ends of the vertical bars of the vertical frame,

a pair of hangers for suspending the diving platform from the boat, each of said hangers being in telescoping adjustment within one of the vertical bars of the vertical frame so as to position the platform along the side of the boat and adjacent the waterline,

a pair of flexible wires connected between the upper end of the vertical frame and the front portion of platform's rectangular frame for supporting the platform in a horizontal plane adjacent the waterline, and

a pair of rods having ends of resilient material for resting against the side of the boat, each of said rods being in telescoping adjustment within one of the two side members of the platform's rectangular frame.

4,495,884

BOAT CONSTRUCTION AND METHOD

Terry R. Stark, Newport, N.C., assignor to Williams Lumber Yard, Beaufort, N.C.

Filed May 6, 1983, Ser. No. 492,491
Int. Cl.³ B63B *5/24*
U.S. Cl. 114—357 9 Claims



1. A method of forming a high strength-to-weight ratio boat hull which is stackable so the inner deck of the lower hull can contact the bottom of the upper hull comprising: preforming a polymeric outer shell with outwardly extending relatively thin sides and a laterally flat, relatively thick bottom with respect to said sides, placing a first mat saturated with a hardenable resin on the bottom inside the outer shell, positioning a first flotation log member longitudinally athwartwise from side to side on the first mat, extending said first mat alongside said first log member, abutting said first mat with a second mat placed on the bottom of said shell, placing a second log member beside said first log member athwartwise on said second mat along the bottom of the shell to allow said first log and said second log members to be separated by said first mat, and applying a gel coat over said first log member whereby said log members are totally encapsulated.

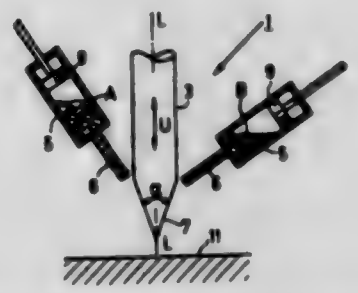
4,495,885

APPARATUS FOR TRANSPORTING AND DEPOSITING VISCOUS MATERIALS

Pierre L. L. M. Derks, and Gerardus Van Herwijnea, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 497,465, May 23, 1983, Pat. No. 4,460,619.
This application Jan. 27, 1984, Ser. No. 574,330
Claims priority, application Netherlands, May 27, 1982, 8202164
Int. Cl.³ B05C *1/00*
U.S. Cl. 118—241 8 Claims

1. An apparatus for transporting and depositing viscous materials, in which a quantity of a viscous material to be transported and deposited is supplied by means of a vibrating tool to a substrate and is deposited on the substrate, having at least one vibratory tool serving as a transport member, characterized in that the vibratory tool comprises a sonotrode which forms part of an ultrasonic vibration device and which has at least one transport pin having a cross-section which decreases gradually towards the free end of the pin, said transport pin having an apical angle, and having at least one transport surface which is inclined relative to the direction of vibration of the sonotrode, said sonotrode vibrating in a direction parallel to its longitudinal axis, the apparatus being further characterized in that it has



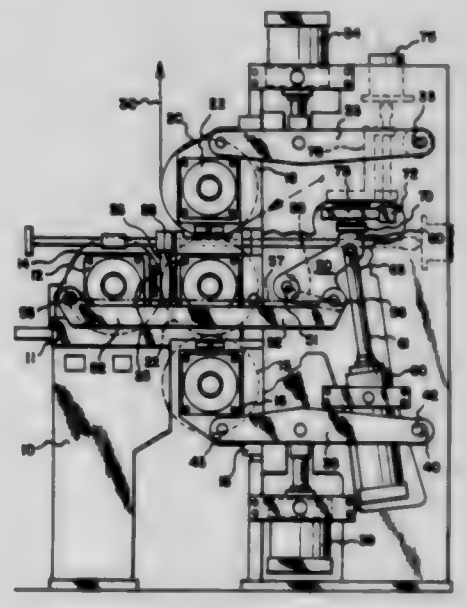
at least one metering device dispensing a quantity of viscous material on said sonotrode.

4,495,886

PRECISION ROLL COATER

Richard W. Phelps, Fulton, N.Y., assignor to The Black Clawson Company, Middletown, Ohio

Filed Sep. 26, 1983, Ser. No. 536,021
Int. Cl.³ B05C *1/08*
U.S. Cl. 118—249 8 Claims



1. In a precision roll type coater in which a coating transfer roll applies a metered quantity of coating material to a moving web of paper or the like supported on a back-up roll, which quantity of coating material is controlled by a metering roll running in close relation to a coating transfer roll, the improvement comprising:

a frame,

bearing block means mounting said coating transfer roll on said frame,

means for applying an excess of coating material to the coating transfer roll for metering by said metering roll,

guideways on said frame for mounting said metering roll providing for translatory movement of said metering roll toward and away from said coating transfer roll,

bearing blocks mounting said metering roll in said guideways for such translatory movement,

links having one end pivotally connected to said metering roll bearing blocks,

a bellcrank for each of said links, each said bellcrank having a pivotal connection to said frame and further having a pivotal connection to one of said links so that rotational movement of said bellcranks is accompanied by translatory movement of said metering roll along the path of said guideways,

the pivotal connection of each of said links on the respective said bellcranks being positioned such that an imaginary line through the pivotal connections of said links with said blocks and said bellcranks approaches parallelism with a

radius from the bellcrank pivot axis to the link pivot connection, as said metering roll approaches said coating transfer roll, and said imaginary line approaches a generally right-angle relationship to said radius when said bellcranks are rotated to move said metering roll away from said transfer roll, so that rotation of said bellcranks from a first open position to a second operable position results in an initially rapid movement of said metering roll toward said coating transfer roll followed by a slowing down of the rate of movement of said metering roll as said metering roll approaches said coating transfer roll,

movable stop means positioned to engage said bellcranks as said link approaches its second said position,

fixed stop means between the bearing block means of said coating transfer roll and said metering roll bearing block defining the metering position of said metering roll with respect to said transfer roll,

said movable stop means being operable to retreat from engagement with said bellcranks following contact of said bearing blocks with said fixed stop means, to provide for the biasing of said bearing blocks against said fixed stop means by said bell crank, and

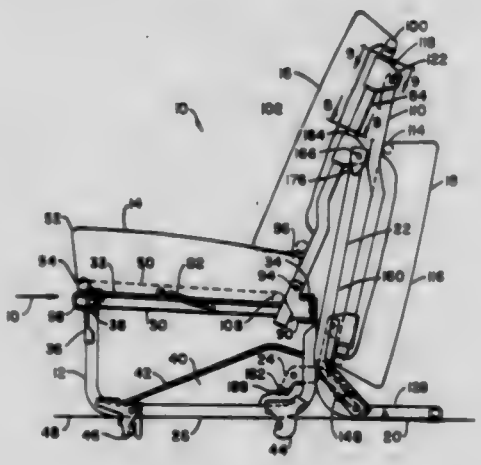
actuator means connected to rotate said bellcranks.

4,495,887

SEAT

Ronald L. Moodrush, 37819 Rhonswood, Northville, Mich. 48167

Filed Dec. 20, 1978, Ser. No. 971,357
Int. Cl.³ A47C *13/00*
U.S. Cl. 297—118 11 Claims



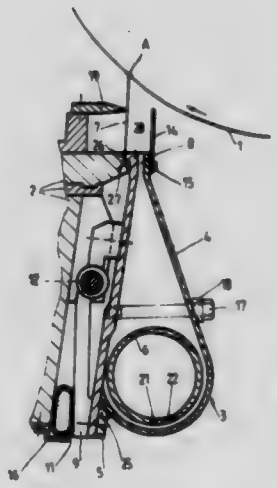
1. A seat comprising a seat base including U-shaped members at each side thereof, a rectangular frame secured to the free ends of the U-shaped members and means for securing the U-shaped members at the connecting portions thereof to the floor of a van or the like, seat bottom structure including a generally rectangular frame, a seat cushion constructed on the seat bottom structure frame, a clip secured to the rectangular frame of the seat base at the front thereof in a lost motion connection and in engagement with the seat bottom structure frame at the front thereof permitting limited relative horizontal movement between the seat base and seat bottom structure and pivotal movement of the seat bottom structure about the front lower edge thereof, resilient means operable between the seat base and seat bottom structure for urging the seat bottom structure backward on the seat base, seat back structure including seat back supporting members pivotally mounted on the seat base having portions extending above the seat bottom structure for supporting a seat back cushion and portions extending below the seat bottom structure for engaging the seat bottom structure to pivot the back of the seat bottom structure up and allowing it to move backward on pivoting of the seat back structure into a horizontal position, a seat back structure rectangular frame secured to the seat back structure supporting members and a seat back cushion constructed on the seat back structure frame, auxiliary seat structure including auxiliary seat structure supporting a rectangular frame secured to the auxiliary seat structure supporting members and an auxiliary seat structure cushion constructed on the auxiliary seat structure frame, and releasable locking means secured to the seat base and auxiliary seat structure and automatically, releasably engageable on movement of the seat back structure and auxiliary seat structure into the substantially vertical positions thereof.

4,495,888

COATING MECHANISM

Albert Wöhrle, Heidenheim, and Franz Krautzberger, Heidenheim-Grosskuchen, both of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed May 17, 1983, Ser. No. 495,249
Claims priority, application Fed. Rep. of Germany, May 28, 1982, 3220075
Int. Cl.³ B05C *5/02*
U.S. Cl. 118—410 7 Claims



1. Coating mechanism for coating continuous webs of product, especially paper, including a horizontal supporting member having a coating blade held thereon by clamping means and having a coating surface and a coating edge, said clamping means having at least one deformable pressure member spaced apart from said coating blade, said pressure member adapted to be connected to a source of pressure medium, said coating surface of said coating blade and the web of product forming therebetween an application slot, and a rigid pressure chamber having an opening therein and adapted for supplying a coating composition through said opening to said application slot for application of the composition to the web, characterized in that said pressure chamber is pivotally connected to said supporting member and pivotable about a pivot axis disposed intermediate the ends of said pressure chamber said axis further being between said coating edge of said coating blade and said pressure member, and said clamping means including said coating blade being securely pressed between said supporting member and said pressure chamber acting as a transfer medium for the expansion force of said pressure member.

4,495,889

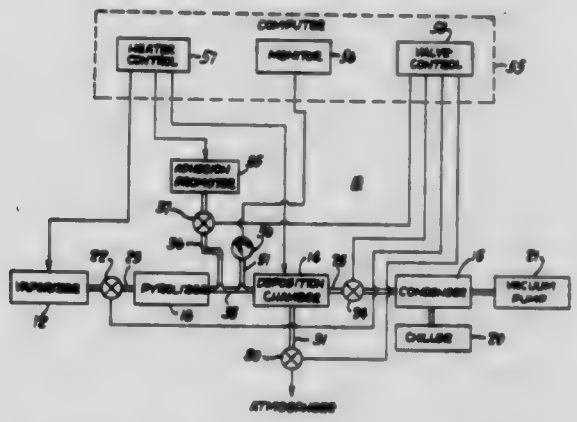
POLYMERIC FILM COATING APPARATUS

Thomas J. Riley, 905 Richmar Dr., Westlake, Ohio 44145

Filed Nov. 24, 1982, Ser. No. 444,486
Int. Cl.³ B05C *15/00*
U.S. Cl. 118—666 4 Claims

2. In an apparatus for coating workpieces with polymer film based on p-xylylene by vapor-phase polymerization including a vaporizer, a pyrolizer and a deposition chamber connected in series, the improvement comprising means for sensing pressure of monomer vapor downstream from the pyrolizer, means for continuously comparing the monomer pressure to a predetermined pressure needed to minimize the time to effect a com-

pleted polymeric reaction in the deposition chamber, and means for continuously controlling the temperature of vapori-



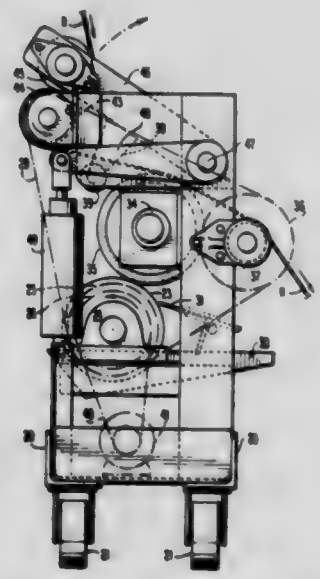
zation in response to differences between the actual pressure and the predetermined pressure.

4,495,890

MOBILE COATER

Willem A. Nikkel, Covington, and John B. Young, Richmond, both of Va., assignors to Westvaco Corporation, New York, N.Y.

Filed Jul. 13, 1983, Ser. No. 513,361
Int. Cl.[3] B05C *1/08, 11/02*
U.S. Cl. 118—674 6 Claims



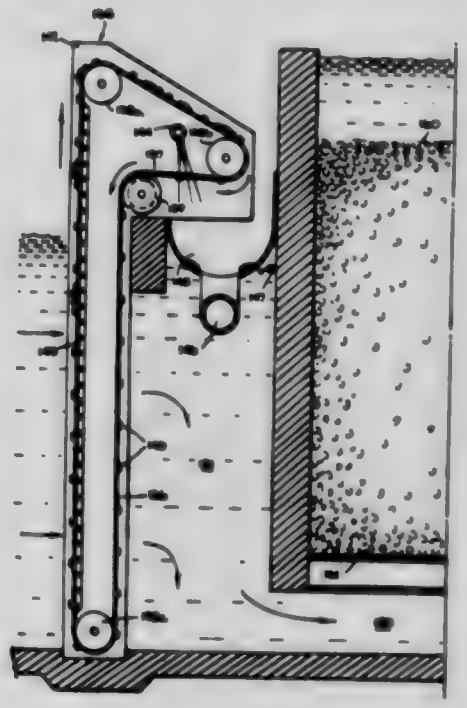
1. A web coating apparatus comprising manually mobile frame means for supporting a rotatively driven gravure roll in surface drive nip contact with a resiliently covered transfer roll for transfer of a doctored film thickness of liquid coating material to one side of a traveling web, a counter-rotatively driven smoothing roll in surface contact with the coated side of said traveling web, a pair of drive rolls pressed into mutual, rolling nip contact for receiving said web therebetween for rotationally powering said drive rolls prior to receipt of said coating material, rotary drive elements secured to one of said drive rolls and to said gravure and smoothing rolls, respectively, and, rotational drive linkage means connecting said drive elements for driving said gravure and smoothing rolls with the rotational power delivered by said traveling web to said one drive roll.

4,495,891

METHOD AND APPARATUS FOR REARING AQUATIC ANIMALS

Charles Dugan, Goulds, and Timothy Dugan, Homestead, both of Fla., assignors to Farm Fresh Shrimp Corporation, Fort Lauderdale, Fla.

Division of Ser. No. 57,322, Jul. 13, 1979, Pat. No. 4,382,423, which is a continuation-in-part of Ser. No. 952,664, Oct. 19, 1978, Pat. No. 4,285,298. This application Feb. 11, 1983, Ser. No. 465,764
Int. Cl.[3] A01K *61/00*
U.S. Cl. 119—2 8 Claims



1. A particulate filter for use in a system for rearing aquatic animals having at least one rearing means including a tank containing a medium, and a filtration system, said tank and said filtration system having a common wall, said particulate filter comprising:

an endless belt formed of material which is substantially permeable to said medium and substantially impermeable to particulate matter, whereby particulate matter is collecting on the surface of said belt immediately contacting said medium when said medium passes through said belt, said belt having a first surface with evenly spaced elongated teeth secured thereto and a substantially smooth second surface opposite said first surface;

means for positioning and transporting said belt comprising a drive roller having a plurality of lengthwise slots for engaging said elongated teeth, and at least one driven roller disposed to contact said second surface;

means for driving said positioning and transporting means;

means for dislodging from the surface of said belt the particulate matter collected thereon;

means for housing said positioning and transporting means, said driving means and said dislodging means, said housing means being slidably and removably mounted in said common wall between said tank and said filtration system;

means for receiving particulate matter dislodged from said belt; and

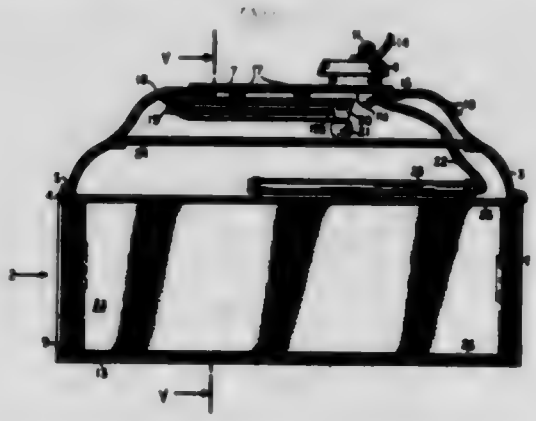
means responsive to the medium level immediately downstream of the particulate filter for actuating said driving means and said dislodging means.

4,495,892

INCUBATOR FOR PIGLETS

Francisco Y. Jodar, and Agustin A. Arcas, both of Lorca, Spain, assignors to D. Agustin Amador Arcas Y Nipor S.A., Lorca, Spain

Filed Jan. 10, 1983, Ser. No. 456,755
Claims priority, application Spain, Oct. 29, 1981, 261.111
Int. Cl.³ A01K 1/00, 1/02
U.S. Cl. 119—16 14 Claims



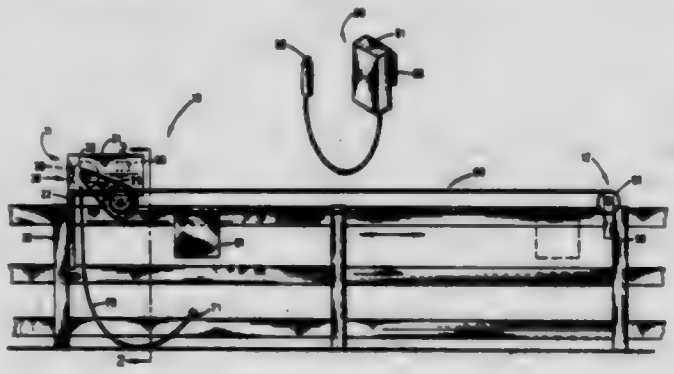
1. A pig incubator, comprising a container for holding piglets therein, said container including a housing of a substantially rectangular cross-section, a cover carrying at least one heating element mounted on an inner side thereof such that the piglets which enter the container are situated under the heating element, and a floor plate at the bottom of said housing; a temperature control means; an emergency heating element; a light, said temperature control means, said emergency heating element and said light being accommodated in said cover, said light functioning as a lure for grouping the piglets under the heating element, said temperature control means including a thermostat located outside said cover and a pilot light mounted on said thermostat for indicating that the heating element is in operation, said cover having a base of a rectangular cross-section and a peripheral surface having a front side and a back side, said base being connected to said housing, said front side and back side being symmetrically curved, said cover having a top provided with a central slit-like opening; and an insert mounted in said slit-like opening, said insert including two superimposed metal plates vertically spaced from each other, a lower one of said plates being a reflecting plate, said thermostat being mounted on an upper one of said plates, said heating element being mounted on said reflecting plate.

4,495,893

METHOD FOR ELICITING RESPONSES BY ANIMALS TO MOVING, VISUALLY DISCERNIBLE STIMULI, AND APPARATUS FOR PROVIDING A MOVING VISUALLY DISCERNIBLE STIMULUS

Gregory U. Genelin, 14788 Sky View Rd., Madera, Calif. 93638

Filed Nov. 4, 1983, Ser. No. 548,621
Int. Cl.³ A01K 15/02
U.S. Cl. 119—29 2 Claims



1. An apparatus for providing a stimulus visually discernible by a horse surmounted by a rider, the movement and cessation of movement of the stimulus being adapted to elicit responses from a horse, the apparatus comprising:

a first pulley assembly adapted to be deployed in an elevated attitude and providing at least one pulley mounted for rotation about an axis of rotation;

a second pulley assembly adapted to be deployed remotely from the first pulley assembly and providing at least one pulley mounted for rotation about an axis of rotation;

a endless cord adapted to be supported on a pulley of the first pulley assembly and a pulley of the second pulley assembly for movement of the cord upon rotation of the pulleys;

a visually discernible target carried by the cord for movement therewith;

a motor connected in driving relation to the first pulley assembly and operable to impart rotation to the pulley thereof on which the cord is supported, the motor being selectively operable to cause the cord to move the target in a predetermined first direction and to cease such movement after the target has been moved a selected distance, and subsequently to cause the cord to move the target in a second, opposite direction, the motor further being selectively operable to cause the cord to resume moving in the first direction after such cessation of movent without movement in the second direction;

signal means operable by the rider of the horse for causing the motor to drive the pulley assembly to move the target in a selected direction; and

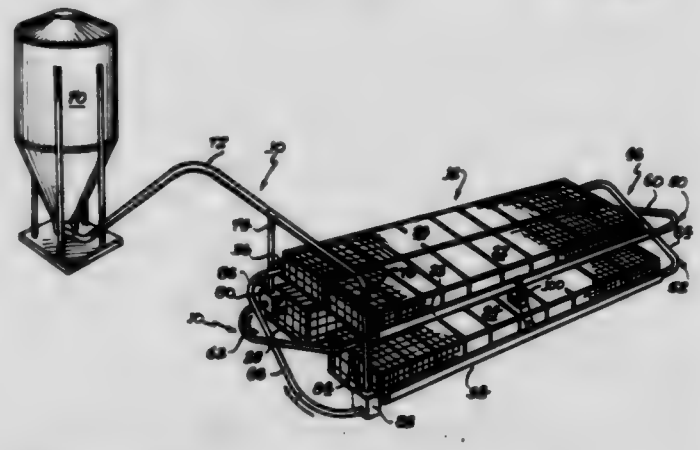
a housing bearing the motor and first pulley assembly and adapted to be mounted on an upright support for pivotal movement about a substantially vertical axis between a first position wherein the motor is deployed in an operative attitude and a second, stored position when the apparatus is not in use.

4,495,894

FEED DISTRIBUTION APPARATUS

Ray E. Swartzendruber, Syracuse, Ind., assignor to Chore-Time Equipment, Inc., Milford, Ind.

Filed Sep. 28, 1983, Ser. No. 536,768
Int. Cl.³ A01K 39/012
U.S. Cl. 119—51 R 20 Claims



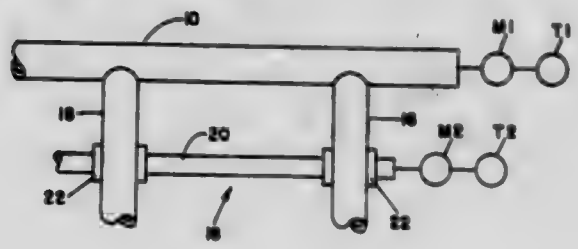
20. A method of delivering feed to a plurality of poultry cages which are organized in an oppositely facing, multi-level array, the method comprising the steps of endlessly urging a first mass of feed particles along a first path past an upper level of cages facing in a first direction and past a lower level of cages facing in an opposite direction for presenting the feed particles to birds in said cages, endlessly urging a second mass of feed particles along a second path past an upper level of cages facing in that second or opposite direction, and past a lower level of cages facing in the first direction for presenting the feed particles to birds in said cages, and transferring said feed paticles between said first and said second endless paths to adjust the level of feed in the paths.

4,495,895

LIVESTOCK FEEDER

Donald G. Reeder, R.R. #6, Box 120, Galesburg, Ill. 61401

Filed Sep. 19, 1983, Ser. No. 533,290
Int. Cl.³ A01K 5/02
U.S. Cl. 119—52 AF 3 Claims



1. A livestock feeder having an elongated horizontal housing including means for moving feed material lengthwise thereof, said housing having a bottom provided with a plurality of feed openings spaced apart lengthwise the bottom and through which feed material is dropped, a plurality of similar, cylindrical, vertical drop tubes equal in number to the openings and arranged to receive material gravitationally respectively from the openings, and metering means for intercepting and then gravitationally dispensing predetermined amounts of material through the drop tubes, characterized in that the metering means comprises a plurality of elements, one for each drop tube, said elements being disposed below the housing and journaled respectively in the drop tubes on a common horizontal axis intersecting the drop tubes, each element being basically cylindrical about the horizontal axis and of a diameter equal to the inside diameter of a drop tube, the cylindrical nature of each element being interrupted to provide a pocket initially facing upward to receive material from above, each element being invertible about said horizontal axis to dump received material downwardly into its drop tube while presenting an uninterrupted portion of its surface upwardly to temporarily prevent further receipt of material by the element until the element is re-inverted, said elements being separate from each other and arranged initially with all pockets facing upwardly, and shaft means coaxially interconnecting the elements, each element further comprising a pair of complementary cylindrical members coaxially disposed and fixed to the shaft in abutting end-to-end relationship to each other, each member having a recess therein at its end abutting the other member, the recesses being alined to combine to provide the pockets.

4,495,896

DISC FOR THE PROTECTION OF THE UDDER OF A COW

Gerardus C. Baas, Meentweg 87A, 3755 PB Eemnes, Netherlands

PCT No. PCT/EP82/00078, § 371 Date Sep. 30, 1982, § 102(e) Date Sep. 30, 1982, PCT Pub. No. WO82/03312, PCT Pub. Date Oct. 14, 1982
PCT Filed Apr. 2, 1982, Ser. No. 433,202
Claims priority, application Netherlands, Apr. 7, 1981, 8101698
Int. Cl.³ A01K 29/00
U.S. Cl. 119—146 4 Claims

1. A disc protecting the udder and the nipples of a cow against injuries inflicted by her hind legs and hooves, said disc comprising:

a flexible material in a wedge-like, circular configuration decreasing in thickness from a central region towards a soft outer rim with smooth upper and lower surfaces, said material being of wedge-like configuration to slide under the udder of the cow upon contact with the udder, said material being of sufficient thickness to bend upon contact with the udder; and

said flexible material defining a hole at its center to surround the hind leg of the cow and to be attached to the cow near a hoof of the hind leg of the cow, said surface of said material is uninterrupted except for at least one incision running from said center hole towards said outer rim and



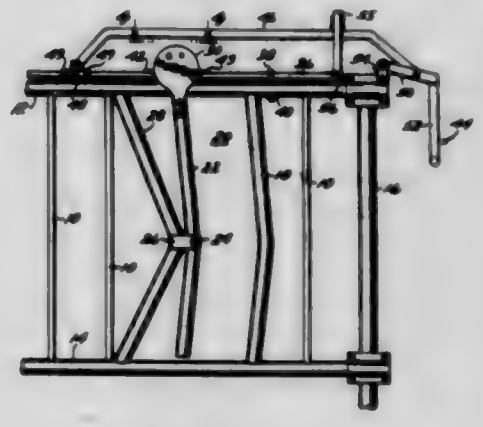
terminating before said outer rim to position the disc on the hind leg of the cow.

4,495,897

CATTLE STANCHION APPARATUS

Teo Albers, Sr., 18007 Arline Ave., Artesia, Calif. 90701

Continuation-in-part of Ser. No. 431,264, Sep. 30, 1982,. This application Jul. 22, 1983, Ser. No. 516,384
Int. Cl.³ A01K 1/06
U.S. Cl. 119—148 16 Claims



10. In cattle stanchion apparatus including fixed and release stanchions laterally spaced apart to define a head opening for an animal; a horizontally extending top rail above said release stanchion; mounting means mounting said release stanchion for pivotal movement between an open position in which the upper part of said head opening is enlarged to enable an animal to place its head through said opening, and a closed position in which said upper part of said head opening is narrowed to hold the animal's head in said opening; a generally horizontally extending positioner adjacent and parallel to said top rail, longitudinally movable between extended and retracted positions, and pivotable about a longitudinal axis; rotating means operative to rotate said positioner about said longitudinal axis between a first position and a second position; and operator means operative to move said positioner between said extended and retracted positions, the improvement comprising:

a first coupler carried by said positioner and projecting outwardly thereof;

an elongated latch having an inner extremity pivotally mounted to the upper extremity of said release stanchion, the outer extremity of said latch being slidable along said positioner in one direction to enable movement of said release stanchion from said closed position to said open position, said outer extremity of said latch being slidable along said positioner in the opposite direction for engagement with said first coupler in said first position to stop movement of said release stanchion in a direction away from said open position and past said closed position to a downed cattle release position wherein the lower extremity of said release stanchion is spaced farther from said fixed stanchion to define a wider space at the bottom of

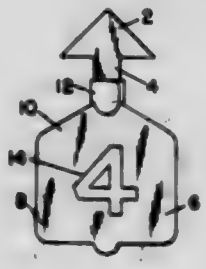
said head opening, said latch being manually actuable to disengage said first coupler.

4,495,898

PEST CONTROLLING ANIMAL TAG

Ali A. Akhavein, Goldsboro, and Gavin B. Braithwaite, Fremont, both of N.C., assignors to ICI Americas Inc., Wilmington, Del.

Continuation of Ser. No. 267,631, May 27, 1981, Pat. No. 4,366,777. This application Sep. 22, 1982, Ser. No. 421,139
The portion of the term of this patent subsequent to Jan. 4, 2000, has been disclaimed.
Int. Cl.³ A01K *13/00*
U.S. Cl. 119—156 13 Claims



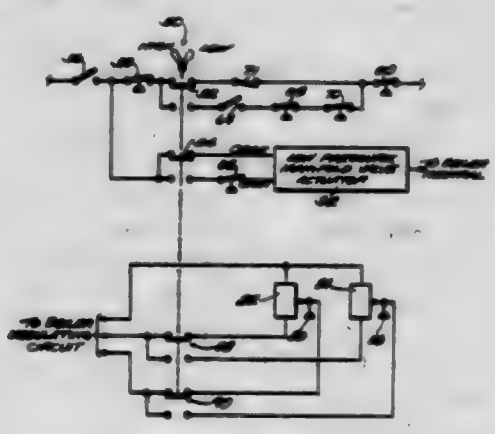
1. A pest controlling device for animals comprising:
(i) an animal identification tag adapted to be attached to an animal; and
(ii) a reservoir of a pest controlling active ingredient surrounding a portion of said tag,
said reservoir comprising a relatively flexible tape portion and attached thereto, a depository of said pest controlling active ingredient.

4,495,899

LOW PRESSURE RELIEF VALVE ASSEMBLY FOR HIGH PRESSURE BOILER

Victor V. Carberry, X N55 W21404 Logan Dr., Menomonee Falls, Wis. 53051

Filed Apr. 11, 1984, Ser. No. 599,016
Int. Cl.³ F22B *37/42*
U.S. Cl. 122—504 11 Claims



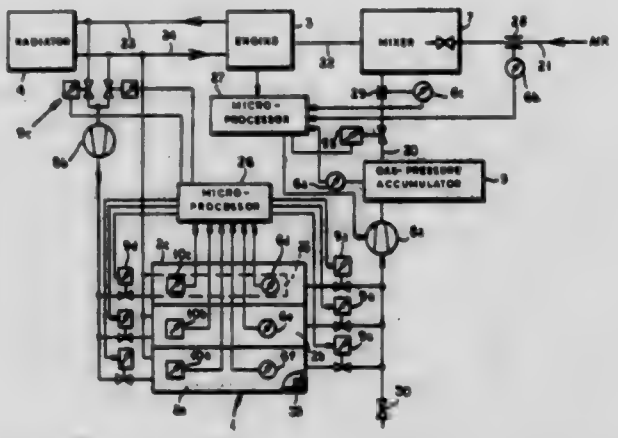
1. Apparatus for providing for low pressure operation of a high pressure boiler, the high pressure boiler including a high pressure relief valve, a boiler burner, and means for controlling operation of the boiler burner to provide for high pressure operation of the boiler, the apparatus comprising:
a low pressure relief valve mounted on the boiler and adapted to release steam from the boiler at a steam pressure lower than the pressure developed during high pressure operation of the boiler,
means for selectively connecting said low pressure relief valve to the boiler.

4,495,900

METHANE STORAGE FOR METHANE-POWERED VEHICLES

Rolf Stockmeyer, Linnich-Tetz, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschrankter Haftung, Jülich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 158,113, Jun. 10, 1980, abandoned. This application Oct. 20, 1982, Ser. No. 435,492
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1979, 2923561; May 13, 1980, 3018196
Int. Cl.³ F02B *43/04*
U.S. Cl. 123—1 A 10 Claims



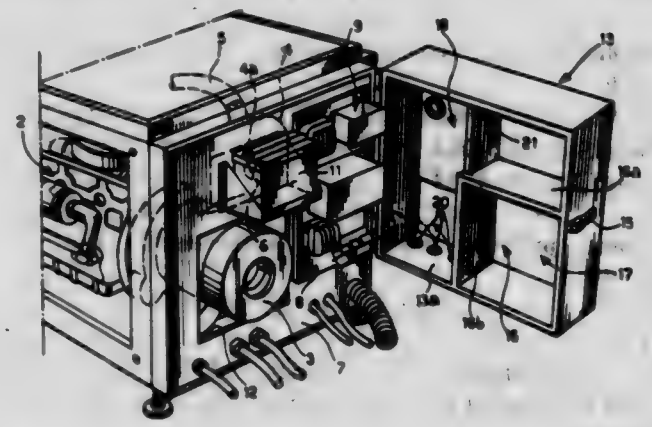
1. A methane-storage system for a methane-powered vehicle, comprising:
a pressure-retentive tank adapted to contain a pressure of up to about 15 bar; and
a methane-storage filler in said tank consisting of a mass of binder-free compacts of zeolite having a density of at least 0.7 g/cm³ and forming a solid adapted to hold methane with a minimum packing density of about 10, with respect to the empty tank, at room temperature and at a pressure of 10 bar.

4,495,901

GENERATOR APPARATUS FOR THE COMBINED PRODUCTION OF ELECTRICAL ENERGY AND HEAT

Alessandro Nannini, Bruino, and Roberto Pagano, Turin, both of Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Filed Mar. 28, 1983, Ser. No. 479,546
Claims priority, application Italy, Mar. 31, 1982, 53142/82[U]
Int. Cl.³ F02B *63/04*
U.S. Cl. 123—2 1 Claim



1. A generator apparatus for the combined production of electrical energy and heat comprising a parallelepiped-shaped housing, a combination internal combustion engine and electrical machine mounted in said housing, said housing having a side wall provided with first and second apertures adjacent one vertical edge thereof with said first aperture located above said second aperture, duct means in said housing communicating said first aperture with said internal combustion engine for

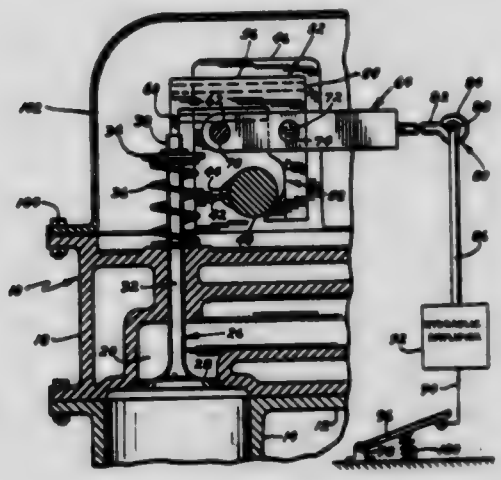
supplying air thereto with said electrical machine extending outwardly of said housing through said second aperture, a battery mounted on said side wall outside of said housing in spaced relation to said aperture, electrical equipment means mounted on said side wall adjacent the opposite vertical edge thereof, a cover member in the form of a substantially parallelepiped box open at one side thereof hinged to one of said vertical side edges of said housing covering said electrical machine, said battery and said electrical equipment means when pivoted against said side wall, a partition in said cover member adapted to engage said side wall in the closed position for dividing said cover member into a first chamber which completely encloses said electrical machine and a second chamber which completely encloses said electrical equipment means and said battery with said first and second chambers being isolated from each other, and opening means in said cover member adjacent the bottom thereof whereby upon operation of said internal combustion engine, air will be drawn into said cover member through said opening means and pass over said electrical equipment means and said battery before being drawn into said internal combustion engine through said first aperture and duct means as preheated air.

4,495,902

MECHANISM FOR VARIABLY CONTROLLING AN INTERNAL COMBUSTION ENGINE VALVE

Corliss O. Burandt, Plymouth, Minn., assignor to Investment Rarities, Incorporated, Minneapolis, Minn.

Filed May 5, 1983, Ser. No. 491,819
Int. Cl.³ F01L *1/34*
U.S. Cl. 123—90.16 25 Claims



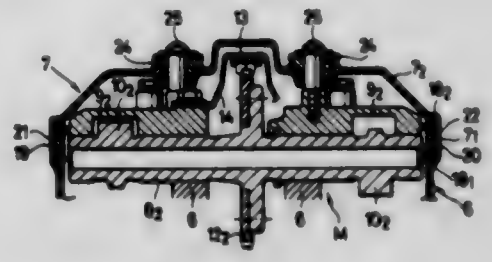
9. A mechanism for operating a valve of an internal combustion engine having a rotatable camshaft, a cam on said camshaft, a combustion chamber and a reciprocable valve member for opening and closing a valve port in communication with the combustion chamber, the mechanism comprising a rocker arm having first and second angularly disposed and integrally connected legs, said first leg having a cam follower surface thereon including a first linear section and a second nonlinear section, means mounting said rocker arm for rocking movement about a first axis, and means for shifting said first axis relative to said camshaft so that various portions of the cam follower surface on said first leg are relatively engageable with said cam, said linear and nonlinear sections providing said various portions, said second leg including a single portion thereof engaging said valve member so that only said single portion acts on said valve member, and an eccentric ramp portion on said camshaft adjacent one side of said cam, said first leg having a nonlinear edge adjacent one side of said linear section, said nonlinear edge being engageable with said eccentric ramp portion.

4,495,903

INTERNAL COMBUSTION ENGINE

Akira Asano, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1982, Ser. No. 418,957
Claims priority, application Japan, Sep. 19, 1981, 56-148184
Int. Cl.³ F01L *1/46*
U.S. Cl. 123—90.38 8 Claims



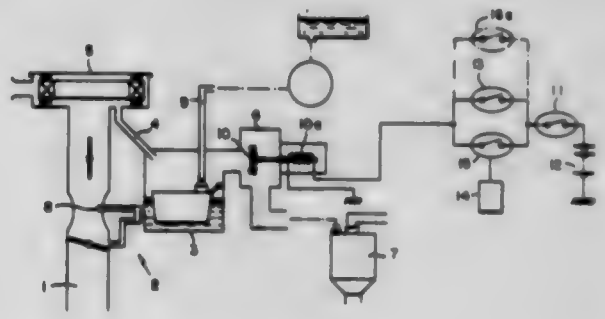
1. An over head cam internal combustion engine for mounting adjacent a frame member, comprising a valve actuating mechanism having a camshaft accommodated in a space defined by both a cylinder head and a head cover joined to the upper face of said cylinder head, said head cover including an annular member removably overlaid on the upper face of said cylinder head, and a dish-shaped member removably overlaid on said upper face of said annular member, wherein the distance to said cylinder head from the boundary surface between said dish-shaped member and said annular member is greater than the distance to said cylinder head from said camshaft and wherein the boundary surface between said annular member and said cylinder head is located substantially level with the longitudinal axis of said camshaft wherein said distances are such that said head cover can be removed through a clearance between said valve mechanism and said frame which is smaller than the collective height of said head cover.

4,495,904

APPARATUS FOR FACILITATING ENGINE STARTING

Michio Sakaino, Saitama; Hiroshi Igarashi, Tokyo, and Yutaka Taniguchi, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 429,623
Claims priority, application Japan, Jan. 14, 1982, 57-3333
Int. Cl.³ F02N *17/00*
U.S. Cl. 123—179 G 7 Claims

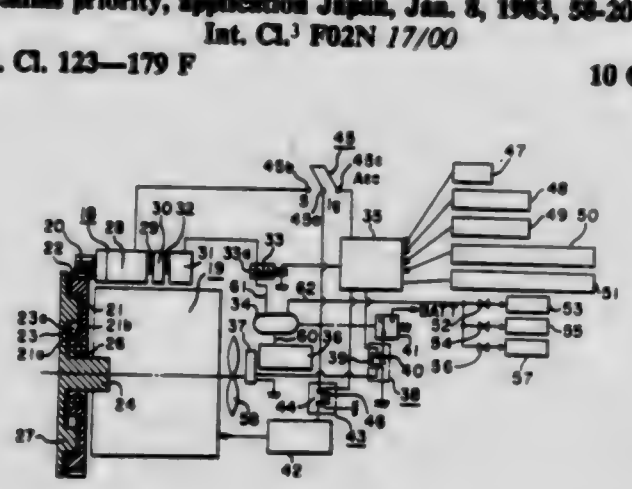


1. Apparatus for facilitating the starting of an internal combustion engine, the engine having an air intake passage and a carburetor interposed in said passage, the carburetor including a float chamber having a fuel inlet, and a fuel nozzle communicating with the float chamber and the intake passage, the improvement comprising, in combination: a vent passage leading from said chamber, a cut valve operable to close said vent passage, means for opening said cut valve and maintaining it open during restarting in response to high engine temperature and at least one other engine starting condition to prevent an increase in pressure within the float chamber from delivering an excessive amount of fuel through said fuel nozzle.

4,495,905
STARTING DEVICE

Akira Morishita; Toshinori Tanaka, both of Himeji; Kouichi Matsumoto, Tatsuno, and Takeo Gotou, Himeji, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 3, 1984, Ser. No. 567,880
Claims priority, application Japan, Jan. 8, 1983, 58-2075
Int. Cl.³ F02N 17/00
U.S. Cl. 123—179 F
10 Claims

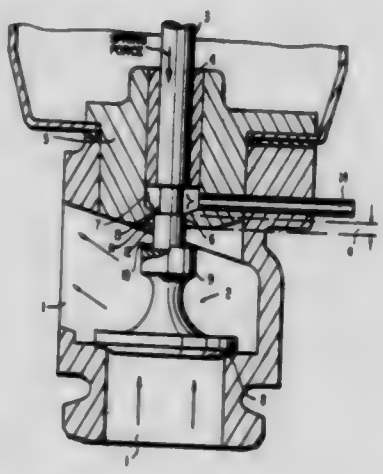


1. A starting device which comprises a first power transmitting device connected to a crank shaft of the engine of a car, a compressor driven by a power output from said first power transmitting device, an air motor whose rotary shaft is driven by feeding compressed air of said compressor through an air reservoir via an air feeding tube, a valve device placed in said air feeding tube, a second power transmitting device installed between said rotary shaft and said crank shaft, a stopping device for stopping said engine when a burden of said engine disappears during car driving, and a controlling device which causes said air motor to actuate by opening said valve device at the time of restarting said engine to control starting of said crank shaft through said second power transmitting device.

4,495,906
VALVE GUIDE ARRANGEMENT FOR THE VALVE STEM OF A VALVE IN AN INTERNAL COMBUSTION ENGINE

Franz Bender, Wendlingen; Gernot Hertweck, Fellbach; Michael Groha, Esslingen, and Peter Moser, Weinstadt, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Dec. 7, 1982, Ser. No. 447,665
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1981, 3149776
Int. Cl.³ F01L 3/08
U.S. Cl. 123—188 GC
3 Claims



1. A valve guide arrangement for a valve controlling the exhaust gas flow of an internal combustion engine, comprising a bush fixed rigidly in a housing part as a valve guide, an annular settling space between the valve guide and a valve head, the annular settling space disposed in a housing part and surrounding a valve stem of the valve, the annular settling space being connected with the exhaust gas flow by means of an annular throttling gap formed by the housing part and the valve stem, wherein the valve comprises

a blow down valve means opening automatically in the flow direction against a spring force and towards the valve guide and leads the exhaust gas flow to a bypass duct,

the annular throttling gap formed by the housing part and the valve stem has a length corresponding to approximately half the diameter of the valve stem, and

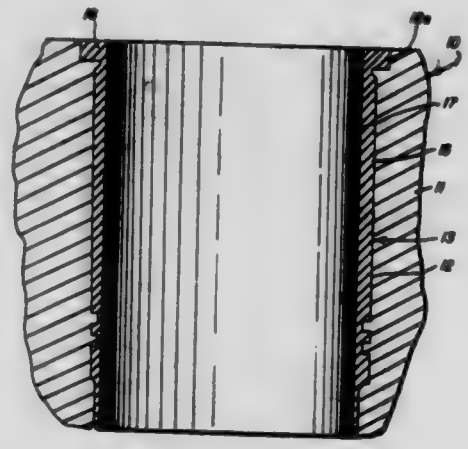
the valve stem compriaes a part which is reduced relative to the normal diameter of the stem, this part lying in the region of the annular settling space when the valve is closed,

the length of the reduced part is such that it is not immersed completely into the valve guide when the valve is fully opened.

4,495,907
COMBUSTION CHAMBER COMPONENTS FOR INTERNAL COMBUSTION ENGINES

Roy Kamo, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jan. 18, 1983, Ser. No. 458,804
Int. Cl.³ B32B 15/04
U.S. Cl. 123—193 C
7 Claims



1. A combustion chamber defining component of an internal combustion engine having on a surface thereof a layer of a thermally insulative material with particles of chromium oxide dispersed at least partially therewithin and wherein the thermally insulative material is secured to the surface of the combustion chamber defining component by a coating of a bond material wherein the bond material is an alloy of nickel, iron and chrome.

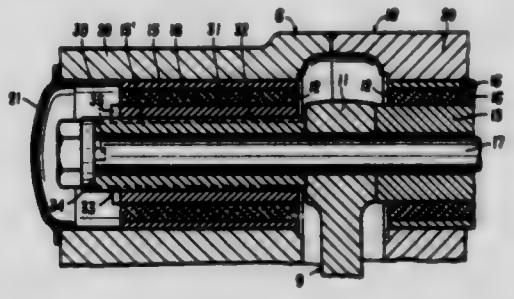
4,495,908
INTERNAL COMBUSTION ENGINE WITH IMPROVED SOUND-INSULATION

Thomas Eidenböck, Graz, Austria, assignor to Avl Gesellschaft fur Verbrennungskraftmaschinen und Messtechnik m.b.H., Graz, Austria

Filed Sep. 30, 1983, Ser. No. 537,519
Claims priority, application Austria, Dec. 3, 1982, 4418/82
Int. Cl.³ F02B 77/00
U.S. Cl. 123—195 C
5 Claims

1. An internal combustion engine having an engine unit and an engine unit support, said engine unit comprising such sound-generating parts as cylinders, cylinder head, pistons, piston rods, crankshaft bearings and crankshaft, a crankcase, said support being attached to said crankcase by means of several sound-insulating and force-transmitting elements insulating said crankcase against structure-borne sound, said elements being of substantially hollow cylindrical shape and located outside of an oil-wetted area in said crankcase with their axes being parallel to the axis of said crankshaft, wherein a multi-

arm bracket is mounted at least at an output end of said engine unit support for reducing relative movements of said support to swinging movements around said crankshaft axis, said bracket being attached to seats of said crankshaft bearings and being provided with at least one of said sound-insulating elements at an end of each arm thereof, said bracket arms and said sound-insulating elements being positioned symmetrically to said crankshaft axis, and wherein at least some of said sound-insulating elements are provided with inner sleeves coaxially



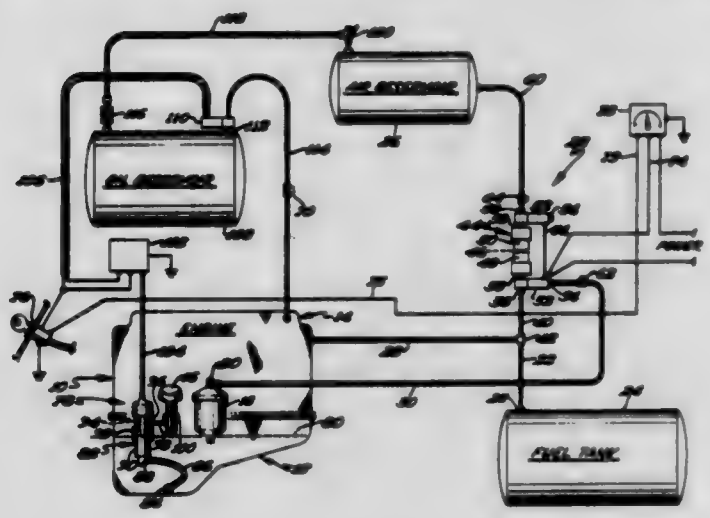
contained within outer sleeves directly unattached thereto with flexible material therebetween, said inner sleeves comprising setting elements being axially adjustable to a position relative to said outer sleeves when said engine unit support has been mounted in said crankcase so that the position of said setting elements fastened to said bracket arms relative to said crankcase can be adjusted in such a way as to make pre-stressing of said sound-insulating elements completely independent of this position.

4,495,909

OIL CLEANING AND RECYCLING SYSTEM

Erwin E. Hurner, 2605 S. Rivershore Dr., Moorhead, Minn. 56560

Continuation-in-part of Ser. No. 218,918, Dec. 22, 1980, , which is a continuation-in-part of Ser. No. 192,077, Sep. 29, 1980, abandoned. This application Jul. 26, 1982, Ser. No. 401,533
Int. Cl.³ F02B *13/00*
U.S. Cl. 123—196 R 8 Claims



1. A process for maintaining a predetermined oil level within an oil pan of an internal combustion engine comprising the steps of:

sensing the amount of oil at a predetermined level;

signaling the sensing of an oil level below said predetermined level;

delaying response to said signaling for a first predetermined period of time after initiation of operation of said internal combustion engine;

delaying a transimission of said signaling until said sensing of an oil level below said predetermined level has perrsisted for a second predetermined period of time independent of said first predetermined period of time; and

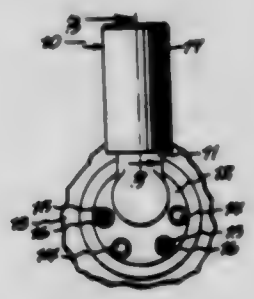
after both first and second predetermined periods of time have elapsed adding oil to said oil pan so as to maintain said predetermined level.

4,495,910

LOCKING VALVE CONSTRUCTION

John H. Taylor, Orchard Park, N.Y., assignor to McGard, Inc., Buffalo, N.Y.

Filed Apr. 21, 1982, Ser. No. 370,355
Int. Cl.³ F02B *77/00*
U.S. Cl. 123—198 B 9 Claims



9. In a diesel engine having an engine block, a fuel pump mounted relative to said engine block, and a fuel inlet in said fuel pump: a fuel locking valve comprising a housing, a fuel locking valve inlet in said housing, a fuel locking valve outlet in said housing, mounting means mounting said housing on said fuel pump with said fuel locking valve outlet in communication with said fuel inlet of said fuel pump, a valve member in said housing, key means for moving said valve member between a first position for effecting communication between said fuel locking valve inlet and said fuel locking valve outlet for providing fuel to said fuel inlet of said fuel pump and a second position for preventing communication between said fuel locking valve inlet and said fuel locking valve outlet for preventing flow of fuel to said fuel inlet of said fuel pump, and locking means operatively associated with said mounting means for locking said fuel locking valve to said fuel pump for preventing unauthorized removal therefrom without destroying said fuel pump.

4,495,911

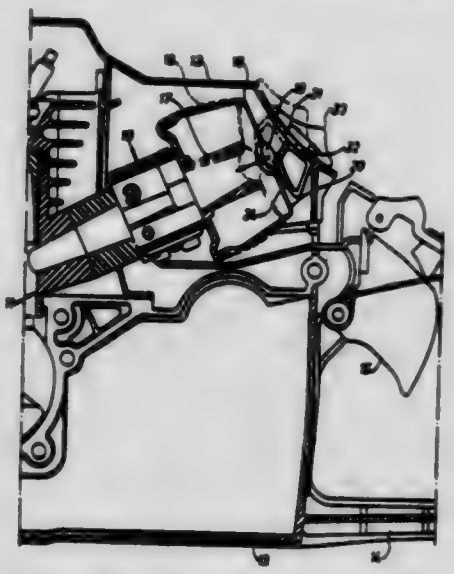
CHOKE DEVICE

Jan Y. N. Andreasson, Huskvarna, Sweden, assignor to EMAB Electrolux Motor Aktiebolag, Sweden

PCT No. PCT/SE81/00350, § 371 Date Jul. 16, 1982, § 102(e) Date Jul. 16, 1982, PCT Pub. No. WO82/01917, PCT Pub. Date Jun. 10, 1982
PCT Filed Dec. 1, 1981, Ser. No. 403,646
Claims priority, application Sweden, Dec. 2, 1980, 8008463
Int. Cl.³ F02B *77/00*; F02M *1/02*
U.S. Cl. 123—198 R 7 Claims

1. In an internal combustion engine system having an air filter mounted on the intake opening of a carburetor; the improvement wherein the air filter comprises elastic frame means resiliently supporting a limiting wall means at a position spaced

from said intake opening, and further comprising manually operable means mounted to selectively engage said limiting



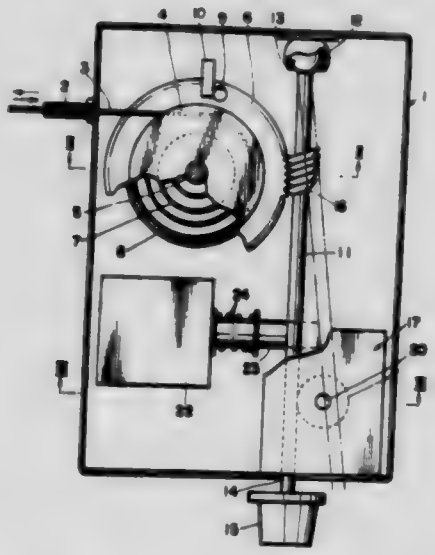
wall means to enable the blocking of said intake opening with said limiting wall means.

4,495,912

CONSTANT SPEED RUNNING DEVICE FOR AUTOMOBILE

Saburo Yanagisawa, No. 3-8-17, Tsukushino, Machida-shi, Tokyo, and Yoshinori Yonemori, No. 5-1-11, Higashigotandan, Shinagawa-ku, Tokyo, both of Japan

Filed Aug. 5, 1983, Ser. No. 520,570
Claims priority, application Japan, Aug. 5, 1982, 57-136788
Int. Cl.³ F02D 5/00
U.S. Cl. 123—350
2 Claims



1. A constant speed running device for an automobile which has an engine with a movable member which influences a fuel/air/mixture, and a wire attached to said member operating and adjusting said member by being pulled and relaxed, said device comprising:

a casing,

a drum rotatably mounted in said casing and having an axis, said wire being partially wound on said drum and extending out of said casing to said member,

a gear coaxially fixed to said drum,

a spring biasing said drum and said gear to rotate in a direction to wind said wire onto said drum when said wire is relaxed,

a shaft having opposite ends and axis, one of said ends of said shaft being mounted in said casing for rotational and pivotal movement, said axis of said shaft being perpendicular to said axis of said drum,

a worm gear on said shaft, said shaft being laterally pivotable to and from a first set position with said worm engaging said gear and a second reset position with said worm disengaged from said gear, and

means for alternatively holding said shaft in said first set position or in said reset second position,

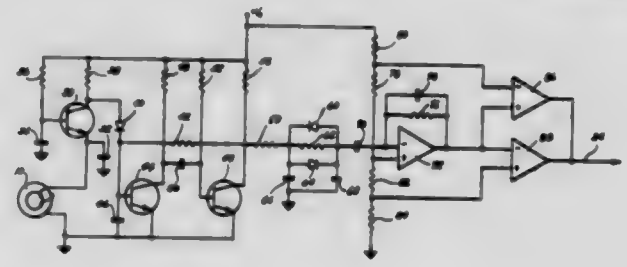
said set-reset holding means comprising a solenoid mounted in said casing, said solenoid including a coil, movable plunger mounted co-axially in said coil, and a spring urging said plunger in a direction opposite to the direction of urging by said coil when energized, said plunger having an end surface and a side surface; said solenoid being positioned in said casing so that when said coil is not energized and said shaft is in said second reset position, said end surface of said plunger contacts the outer periphery of the other end portion of said shaft and is urged thereagainst by said spring, and when said shaft is moved from said second reset position to said first set position, the contact by the end surface is broken, said plunger moves by force of said spring and said side surface of said plunger contacts the outer periphery of said other end of said shaft on a side opposite to said gear thereby holding said shaft in said first set position, the contact of the side surface and the outer periphery being broken when said coil is energized moving said plunger against the urging of the spring to release said shaft from said first set position.

4,495,913

IGNITION CURRENT SENSOR FOR AN ELECTRONIC SPEED CONTROL SYSTEM

Larry O. Gray, Laurinburg, N.C., assignor to Dana Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 475,555, Mar. 15, 1983, abandoned. This application Oct. 18, 1983, Ser. No. 542,560
Int. Cl.³ F02D 11/10
U.S. Cl. 123—352
15 Claims



1. In a vehicle including an engine having a plurality of cylinders and an ignition system for generating pulses of electric current cyclically to each of the plurality of cylinders, an electronic speed control system for controlling the speed of the vehicle comprising:

means responsive to the ignition current pulses generated to one of the plurality of cylinders for generating a pulse train at a frequency proportional to the speed of the engine;

means responsive to the pulse train signal for generating a signal proportional to the speed of the engine;

means for generating a signal representing a desired speed of the vehicle;

means operatively connected to the engine and responsive to the engine speed signal and the desired speed signal for controlling the speed of the vehicle in response thereto;

means for bypassing said engine speed signal generating means when the engine speed signal changes by more than a predetermined rate;

differentiator means responsive to said engine speed signal generating means and said bypassing means for generating a signal representing the rate of change of the speed of the engine; and

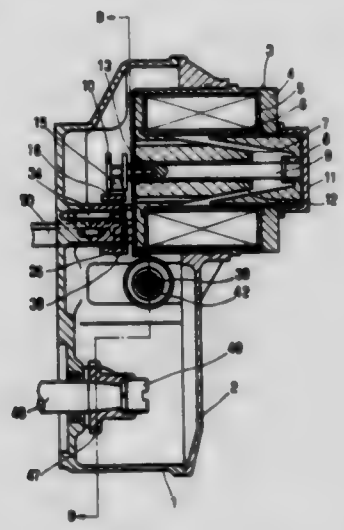
limit detector means responsive to the engine speed rate of change signal for generating a signal to disengage said means for controlling the speed of the vehicle when the engine speed rate of change signal changes beyond a predetermined range.

4,495,914

ELECTRIC GOVERNOR

Yoshiya Ishii, Toyota; Shuji Hachitani, Anjo, and Yasushi Tanaka, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 30, 1982, Ser. No. 373,782
Claims priority, application Japan, May 7, 1981, 56-68950
Int. Cl.³ F02D 1/04, 1/06
U.S. Cl. 123—357 1 Claim



1. An electric governor for attachment to a fuel injection pump for an internal combustion engine, the pump having an elongated movable fuel injection regulating member and a cam shaft, comprising:

a governor casing attachable to the fuel injection pump with the regulating member and the cam shaft projecting into said governor casing;

a solenoid type electromagnetic actuator fixed to said governor casing including a first coil, the axis of which is substantially parallel to the regulating member, and an output rod which is inserted into said coil to be substantially parallel to the regulating member, said output rod being movable axially in response to an electric signal to be applied to said coil;

a position detector detachably secured to said casing transversely of the regulating member, said first coil and said output rod, and including a second coil and a core which are positioned transversely of the regulating member, said first coil and said output rod, said core being movable reciprocally in said second coil and extending from said position detector into said casing, said position detector being removable from said casing from the exterior thereof,

a link mechanism positioned in said casing between said output rod and said core with the regulating member therebetween, said mechanism including:

a block detachably fixed to said casing;

a shaft extending through said block, said shaft being positioned at a side of said output rod opposite said position detector and at a side of the regulating member remote from said actuator;

a first lever connected between said output rod and said shaft to transmit reciprocal movements of said output rod to said shaft to oscillate the latter, said first lever being substantially in transverse relationship to said output rod;

a second lever positioned between said shaft and the regulating member to transmit oscillating movements of said shaft to the regulating member to reciprocate the latter, said second lever being substantially parallel to said first lever; and

a third lever positioned between said shaft and said core of said position detector to transmit oscillating movements of said shaft to said core to reciprocate the latter, said third lever being substantially normal to said first and second levers;

a spring supported by said position detector and said core in such a manner that said spring biases said third lever so as to balance with the electromagnetic force generated by said electromagnetic actuator; and

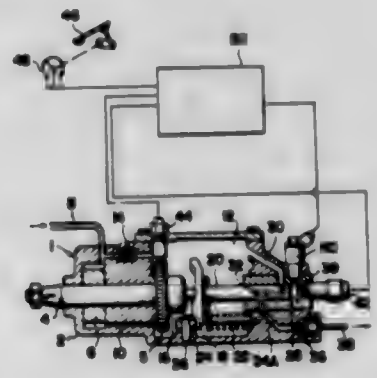
an electromagnetic pick-up fixed to said casing for detecting the rotational speed of the cam shaft, an electric signal from said pick-up being used to energize said first coil of said electromagnetic actuator.

4,495,915

FUEL INJECTION DEVICE FOR INTERNAL COMBUSTION ENGINE

Kazuo Shinoda, and Nobuyuki Kobayashi, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 8, 1983, Ser. No. 483,276
Claims priority, application Japan, Apr. 19, 1982, 57-65078
Int. Cl.³ F02D 31/00
U.S. Cl. 123—357 16 Claims



1. A fuel injection device for an internal combustion engine, comprising:

a fuel injection pump including;

a high pressure chamber wherein fuel is applied with high pressure,

plunger means rotatably and slidably reciprocable in synchronism with rotation of the engine for introducing said fuel into said high pressure chamber, applying high pressure to said fuel in said high pressure chamber by slidable movement toward said high pressure chamber and feeding said fuel under high pressure to any one of cylinders in said engine, said slidable movement of said plunger beginning at a constant angular position of a crank shaft without regard to rotational speed of said engine,

a spill port formed in a wall defining said high pressure chamber for discharging said fuel in said high pressure chamber;

a solenoid valve for opening or closing said spill port;

a pressure sensor mounted facing said high pressure chamber for detecting pressure in said high pressure chamber; and

a control circuit for controlling said solenoid valve to close said spill port at a closing time to thereby inject fuel and open said port at a fuel injection ending time to stop fuel injection, said control circuit including;

first calculation means for calculating a fuel injection time period in accordance with operating conditions of the engine,

detection means for detecting a fuel injection starting time when pressure in said high pressure chamber as detected by said pressure sensor exceeds a predetermined pressure,

second calculation means for calculating said fuel injection ending time based on said fuel injection time period and said fuel injection starting time, and

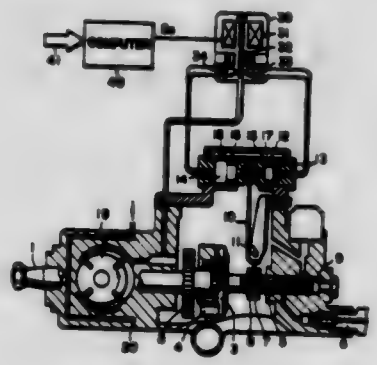
third calculation means for calculating said closing time so that a next fuel injection takes place at said closing time if slidable movement of said plunger begins prior to said closing time.

4,495,916

FUEL INJECTION PUMP CONTROL SYSTEM IN DIESEL ENGINE

Kazuo Shinoda, Aichi, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Sep. 30, 1982, Ser. No. 429,432
Claims priority, application Japan, Dec. 14, 1981, 56-201142
Int. Cl.³ F02D 1/06, 1/02
U.S. Cl. 123—387
11 Claims



1. A fuel injection pump control system in a diesel engine wherein injection timing of fuel from an engine-driven feed pump is controlled by a plunger rotatably and axially movable in synchronism with engine rotation and fuel injection flow rate is controlled by the position of a spill ring movably associated with said plunger, said system comprising:

an electronic control section providing an output command signal in accordance with engine operating conditions;

control valve means selectively dividing a portion of fuel from said feed pump into two parts in response to a command signal; and

a spill ring adjusting means for positioning said spill ring independent of feed pump pressure including:

a cylinder,

a piston reciprocally received in said cylinder, respective ones of said two fuel parts being separately applied to said cylinder at opposite ends of said piston, said piston being linkingly connected to the spill ring, and

a pair of flow discharge means operatively connected to said cylinder for continually releasing said two fuel parts from said cylinder, the flow rate through each individual flow discharge means being determined by the position of said piston in said cylinder so that an increase in the flow rate of one of said two fuel parts provides an increase in the flow rate through a corresponding one of the flow discharge means and a decrease in the flow rate through the other flow discharge means.

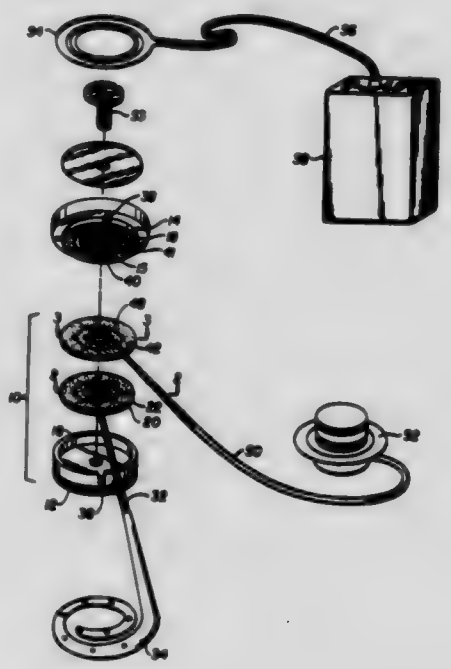
4,495,917

SURGICALLY IMPLANTABLE DISCONNECT DEVICE

Charles L. Byers, Vacaville, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Mar. 26, 1982, Ser. No. 362,344
Int. Cl.³ A61N 1/04; A61F 11/04
U.S. Cl. 128—419 R
12 Claims

1. A connector comprising a case, including a base member and a lid, the base member and lid being shaped to provide a cavity between them, a first contact pad of elastomeric material, a first set of electrical contacts embedded in the first contact pad, the contact pad being dimensioned to fit within the cavity, the contact pad being interposed between the lid and the base member, a second set of electrical contacts carried by the lid within the cavity, means for providing separate electrical connections through the case to the first and second sets of electrical contacts, and means for pressing the lid against the base member and the contact pad to exert a predetermined pressure on the pad, causing it to form a fluid tight seal around the first and second sets of electrical contacts,



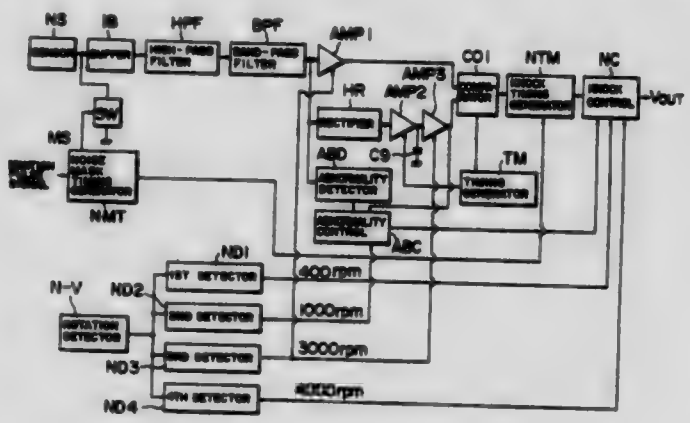
some of which are thereby placed in electrical contact with each other.

4,495,918

IGNITION TIMING RETARD ANGLE CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Noboru Sugiura, and Terumi Okado, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 28, 1980, Ser. No. 211,288
Claims priority, application Japan, Nov. 30, 1979, 54-154263; Nov. 30, 1979, 54-154264
Int. Cl.³ F02P 5/04
U.S. Cl. 123—425
16 Claims



1. An ignition retard angle control for use in an internal combustion engine, comprising:

first means for detecting vibrations of the engine to produce an output in the form of an electrical signal;

second means for discriminating part of the output signal of said first means in a characteristic frequency range in which a knock-induced vibration component appears remarkably when a knock is generated;

third means for amplifying an output signal of said second means at a first amplification degree;

fourth means for rectifying the output signal of said second means;

fifth means for averaging out an output signal of said fourth means;

sixth means for amplifying an output signal of said fifth means at a second amplification degree, said first and second amplification degrees being determined in such a manner that the peak of the instantaneous values of the

amplitude of the output signal of said third means exceeds the instantaneous value of the amplitude of the output signal of said sixth means only in the presence of a knock;

seventh means for comparing the output signals of said third and sixth means with each other to produce a knock signal showing the presence of a knock when the instantaneous value of the output signal of said third means exceeds that of the output signal of said sixth means; and

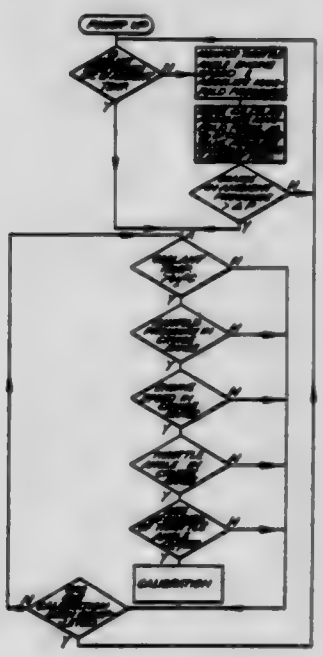
eighth means for generating a voltage signal having an amplitude corresponding to an ignition advance angle determined by the number of revolutions per unit time of the engine, the amplitude of said voltage signal being changed in a manner to retard the ignition advance angle by a predetermined amount in response to the generation of the knock signal.

4,495,919

CONTROL SYSTEM FOR AIR/FUEL RATIO ADJUSTMENT SYSTEM

Neville H. Daniel, Sutton Coldfield, and Hugh M. Duncan, Moseley, both of England, assignors to Austin Rover Group Limited, England

Filed Jul. 26, 1984, Ser. No. 634,585
Int. Cl.³ F02B 3/00
U.S. Cl. 123—440 6 Claims



1. A control system for an air/fuel ratio measurement and adjustment system for an internal combustion engine, the control system comprising: an ambient temperature sensor, an engine coolant temperature sensor and means for initiating measurement of the air/fuel ratio in response to the engine coolant temperature not exceeding ambient temperature by more than a predetermined amount.

4,495,920

ENGINE CONTROL SYSTEM AND METHOD FOR MINIMIZING CYLINDER-TO-CYLINDER SPEED VARIATIONS

Toshimi Matsumura, Aichi; Masahiko Miyaki; Hitoshi Tomishima, both of Oobu, and Akira Maeda, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 7, 1983, Ser. No. 482,884
Claims priority, application Japan, Apr. 9, 1982, 57-60164; Jun. 7, 1982, 57-97286; Jun. 8, 1982, 57-98373
Int. Cl.³ F02B 3/00
U.S. Cl. 123—436 8 Claims

1. A method for injecting fuel in an internal combustion engine having a plurality of cylinders, comprising the steps of:

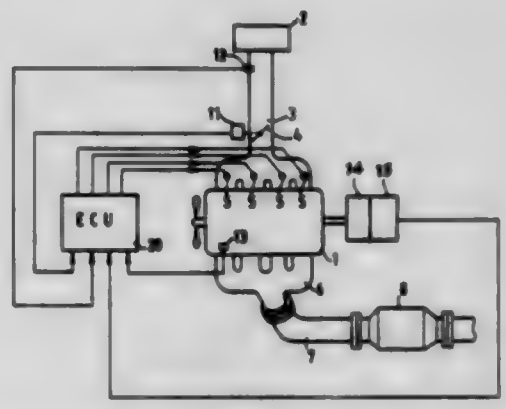
(a) successively detecting the speed of said engine at predetermined angular positions of an output shaft of said engine which correspond to said cylinders respectively and generating therefrom a series of first signals representing individual engine speed values of said cylinders;

(b) generating a basic injection control value representing the quantity of fuel to be injected in each of said cylinders as a function of said detected engine speed;

(c) sensing for each of said cylinders when the detected engine speed is steady;

(d) when said detected engine speed is steady, deriving a second signal representing an average value of said first signals during a predetermined period;

(e) successively detecting a deviation of each of said first signals from said second signal;



(f) generating a fuel injection trimming value for each of said cylinders in response to said deviation;

(g) detecting whether said trimming value is smaller or greater than a predetermined value;

(h) if said trimming value is smaller than said predetermined value, trimming said basic injection control value according to said trimming value;

(i) if said trimming value is greater than said predetermined value, resetting said trimming value to zero; and

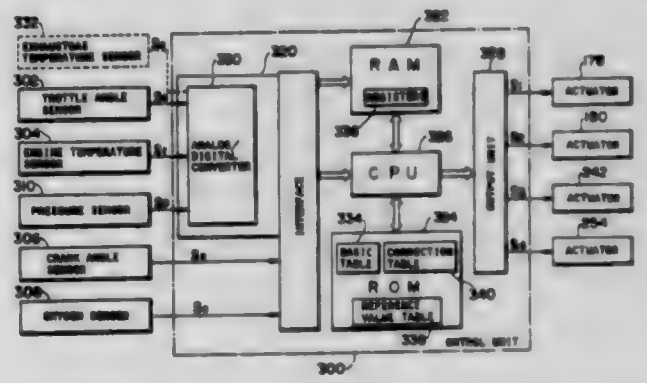
(j) operating each of said fuel injectors in response to said trimmed basic injection control value.

4,495,921

ELECTRONIC CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE CONTROLLING AIR/FUEL RATIO DEPENDING ON ATMOSPHERIC AIR PRESSURE

Kunifumi Sawamoto, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 24, 1982, Ser. No. 351,901
Claims priority, application Japan, Mar. 10, 1981, 56-33062
Int. Cl.³ F02M 7/00
U.S. Cl. 123—438 17 Claims



1. An air/fuel ratio control system for an internal combustion engine for controlling the air/fuel ratio in response to engine operating conditions, and for correcting the air/fuel ratio depending on atmospheric air pressure, comprising:

first means for detecting at least one of said engine operating conditions and producing a first signal indicative of the detected engine operating condition;

second means for measuring an intake manifold absolute

pressure and producing a second signal representative of the measured intake manifold absolute pressure;

third means, responsive to said first signal, for determining a reference value signal to be compared with said second signal to obtain a difference value between the reference value signal and the second signal, said reference value signal having a value variable depending upon the value of said first signal and representative of an intake manifold absolute pressure;

fourth means, responsive to said difference value, for determining a correction value for said air/fuel ratio and producing a control signal having a value indicative of the corrected air/fuel ratio; and

fifth means, responsive to said control signal, for controlling the engine air/fuel ratio.

6. A method for controlling a metering amount of fuel to an induction system in an internal combustion engine, comprising steps of:

detecting a load condition on the engine;

detecting revolution speed of the engine;

detecting an absolute pressure of said induction system;

calculating a basic fuel metering amount based upon the detected engine load condition and the engine speed to derive a control signal for controlling a fuel metering means through which a controlled amount of fuel is supplied to said induction system;

calculating a standard absolute pressure in said induction system based on said engine load condition and said engine speed to derive a reference signal;

comparing said detected absolute pressure and said calculated standard absolute pressure to determine the difference therebetween;

deriving a correction value for said fuel metering amount based on the difference of detected absolute pressure and said calculated absolute pressure; and

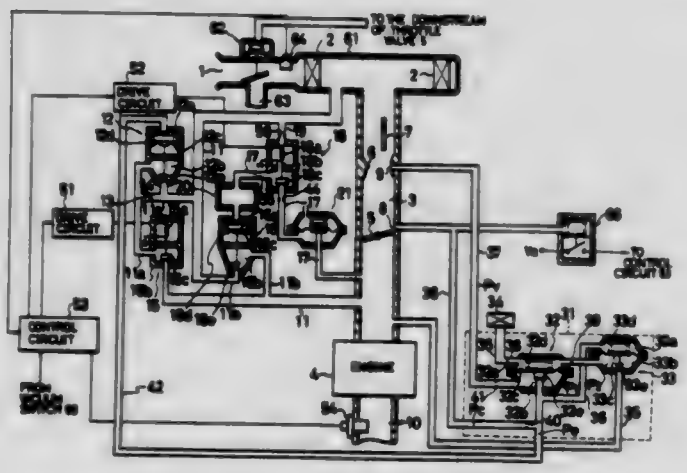
modifying said control signal value by said correction value to derive a modified control signal to control said fuel metering means by said modified control signal.

4,495,922

AIR/FUEL RATIO CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Akira Fujimura, Saitama, and Shunnburo Ozaki, Sakado, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 3, 1984, Ser. No. 576,833
Claims priority, application Japan, Feb. 10, 1983, 58-21145
Int. Cl.³ F02M *23/04*
U.S. Cl. 123—440
2 Claims



1. An air/fuel ratio control system for an internal combustion engine having an air induction system equipped with a choke valve, and an exhaust system, comprising:

a secondary air passage communicated with an intake air passage of said air induction system, downstream of a throttle valve disposed in said intake air passage;

a control vacuum generating means for generating a control vacuum by combining a vacuum around or downstream of said throttle valve with a vacuum of the inside of a venturi formed in said intake air passage;

an air control valve disposed in said secondary air passage for varying a cross sectional are of said secondary air passage in response to said control vacuum;

an oxygen sensor disposed in an exhaust passage of said exhaust system;

a discrimination means for discriminating an air/fuel ratio on the basis of an output signal level of said oxygen sensor and producing an air/fuel ratio discrimination signal;

an open/close valve disposed in said secondary air passage for opening and closing said secondary air passage in accordance with said air/fuel ratio discrimination signal;

an intake air temperature sensor for detecting the temperature of an intake air of said engine and producing an intake air temperature signal; and

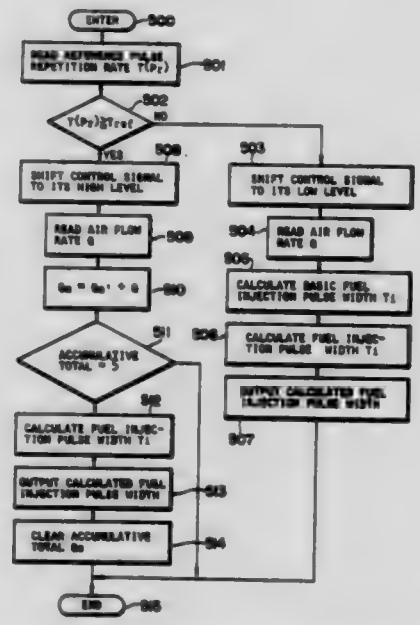
a control means responsive to said intake air temperature signal, for preventing the supply of the secondary air through said secondary air passage when said intake air temperature is below a predetermined level.

4,495,923

FUEL INJECTION CONTROL SYSTEM

Sadao Takase, and Akio Hosaka, both of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 18, 1982, Ser. No. 349,867
Claims priority, application Japan, Feb. 20, 1981, 56-23132
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—478
4 Claims



1. A fuel injection control system for use in an internal combustion engine having at least one fuel injector, comprising:

an airflow sensor for generating a signal indicative of the flow rate of air to said engine;

a digital computer receiving the engine air flow rate indicative signal from said airflow sensor for reading engine air flow rate values, said digital computer calculating a fuel-injection pulse-width value from the read engine air flow rate values;

a trigger pulse generator for generating a series of trigger pulses at a predetermined constant repetition rate shorter than the period of rotation of said engine at its maximum speeds;

an injection command signal generator for generating an injection command pulse having a pulse width corresponding to the calculated fuel-injection pulse-width value to said fuel injector each time an injection initiation pulse is received; thereby controlling the supply of fuel to said engine;

a reference pulse generator for generating a series of reference pulses in synchronism with engine rotation;

a control signal generator for generating a control signal changeable between low and high levels; and

a gate circuit having inputs from said trigger pulse generator and said reference pulse generator, said gate circuit, responsive to a high level control signal from said control signal generator, for passing trigger pulses as said injection initiation pulses from said trigger pulse generator to said injection command signal generator, said gate circuit, responsive to a low level control signal from said control signal generator, for passing reference pulses as said injection initiation pulses from said reference pulse generator to said injection command signal generator;

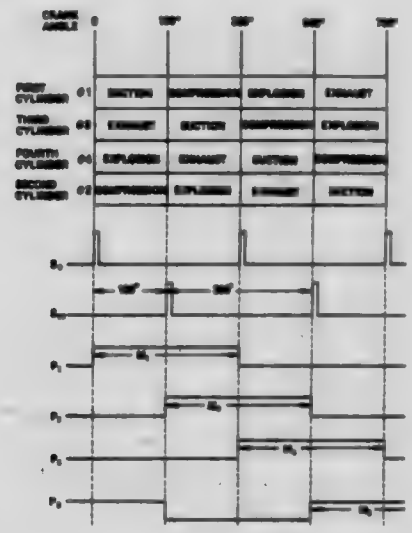
said digital computer normally reading engine speed values from the reference pulses, calculating the fuel-injection pulse-width value by dividing the read air flow rate value by the read engine speed value, and holding the control signal at its low level, said digital computer changing the control signal to its high level and calculating the fuel-injection pulse-width value by adding a predetermined number of engine air flow rate values successively read at predetermined intervals when a failure occurs in said reference pulse generator or the associated circuit, said predetermined repetition rate of said trigger pulse generator being based on the time interval during which the predetermined number of engine air flow rate values are added.

4,495,924

FUEL INJECTION CONTROL SYSTEM FOR A DIRECT INJECTION TYPE INTERNAL COMBUSTION ENGINE

Takashi Ueno, Yokosuka, and Sadao Takase, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 6, 1983, Ser. No. 482,566
Claims priority, application Japan, Apr. 14, 1982, 57-60989
Int. Cl.³ F02B *3/00*; F02M *51/00*
U.S. Cl. 123—478 7 Claims



1. A fuel injection control system for a direct injection type, multi-cylinder, internal combustion engine having a crankshaft, comprising:

(a) a plurality of fuel injection valves, respectively disposed in a combustion chamber of each cylinder of said engine through which an amount of fuel is directly injected into the combustion chamber in response to an associated timed injection signal having a pulse width, the amount of fuel injected varying in accordance with said pulse width;

(b) means for calculating the start timing and pulse width of the injection signal for each fuel injection valve according to current engine operating conditions;

(c) means for producing a plurality of pulse signals, each corresponding to one of said cylinders and having a period extending through a predetermined angle of crankshaft rotation, said period including at least a suction and a compression stroke of the corresponding cylinder and a timing corresponding to a predetermined stroke of said cylinder; and

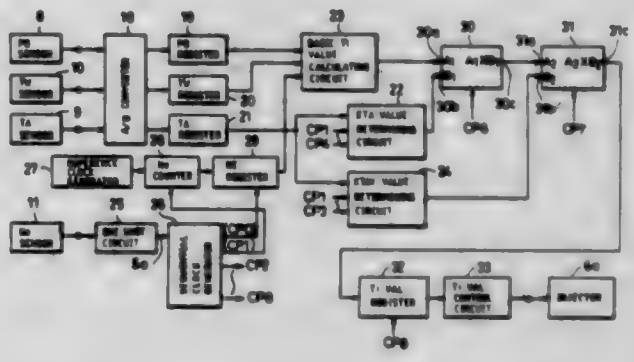
(d) injection signal producing means associated with each engine cylinder and responsive to said pulse signals for producing and outputting said injection signals based on data calculated by said calculating means and synchronized with said pulse signals, whereby each fuel injection has a duration corresponding to said calculated pulse width and occurs over a period which includes at least the suction and compression strokes of the corresponding cylinder.

4,495,925

DEVICE FOR INTAKE AIR TEMPERATURE-DEPENDENT CORRECTION OF AIR/FUEL RATIO FOR INTERNAL COMBUSTION ENGINES

Shunpei Hasegawa, Niiza, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1982, Ser. No. 442,449
Claims priority, application Japan, Nov. 19, 1981, 56-185763
Int. Cl.³ F02M *51/00*
U.S. Cl. 123—480 7 Claims



1. In a fuel supply control system for use with an internal combustion engine having an intake pipe and at least one electromagnetically controlled fuel injection valve arranged for injecting fuel into said engine and having a valve opening period thereof adapted to determine a quantity of fuel being supplied to said engine, said system including means for determining a basic value of the valve opening period of said fuel injection valve as a function of at least one parameter representing operating conditions of said engine, to thereby control the air/fuel ratio of an air/fuel mixture being supplied to said engine, an air/fuel ratio correcting device comprising: a sensor for detecting a value of intake air temperature in said intake pipe of said engine; means for arithmetically calculating a value of a correction coefficient as a function of a value of the intake air temperature detected by said sensor; and means for correcting a basic value of the air/fuel ratio of said air/fuel mixture determined by said basic value determining means, by an amount corresponding to a value of said correcting coefficient arithmetically calculated by said arithmetically calculating means: wherein said arithmetically calculating means is adapted to arithmetically calculate the value of said correction coefficient by the following equation:

$$KTA=[(TAO+273)/(TA+273)-1]\times CTA+1$$

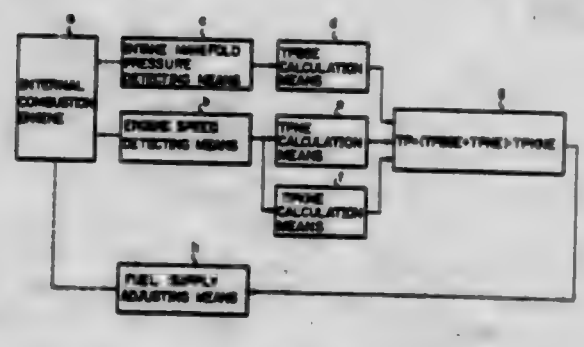
where TA represents a detected value (°C.) of the intake air temperature, TAO a predetermined reference value (°C.) of the intake air temperature, and CTA a constant having a value thereof determined by said engine.

4,495,926

APPARATUS FOR CONTROLLING THE FUEL SUPPLY OF AN INTERNAL COMBUSTION ENGINE

Nobuyuki Kobayashi, and Takashi Hattori, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 28, 1983, Ser. No. 566,418
Claims priority, application Japan, Apr. 4, 1983, 58-57779
Int. Cl.³ F02M 51/02
U.S. Cl. 123—486
5 Claims



1. An apparatus for controlling the fuel supply of an internal combustion engine comprising:

means for detecting the intake manifold pneumatic pressure and producing a first electrical signal;

means for detecting the engine running speed and producing a second electrical signal;

means for calculating, in response to said first electrical signal, a first fuel supply amount TPBSE from at least one one-dimensional function the variable for which is the intake manifold pneumatic pressure;

means for calculating, in response to said second electrical signal, a second fuel supply amount TPNE from a one-dimensional function the variable for which is the engine running speed;

means for calculating, in response to said second electrical signal, a correction coefficient TPKNE from a one-dimensional function the variable for which is the engine running speed;

means for calculating, from said first and second fuel supply amounts TPBSE and TPNE and from said correction coefficient TPKNE, a third fuel supply amount TP, said calculation being performed by using the function $TP=(TPBSE+TPNE)TPKNE$; and

means for adjusting, in accordance with said calculated third fuel supply amount, the actual fuel supply to the engine.

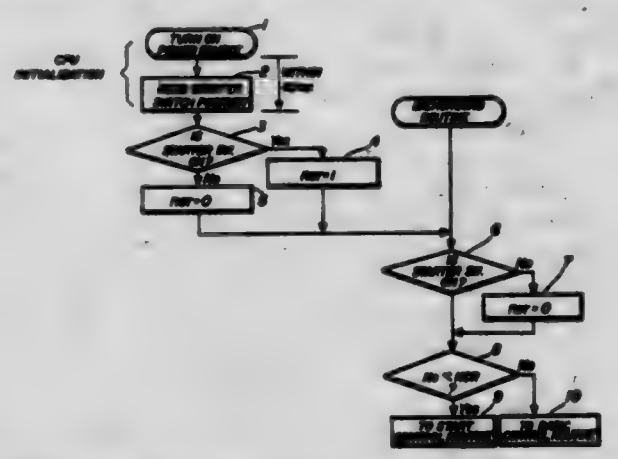
4,495,927

METHOD FOR CONTROLLING THE OPERATION OF AN INTERNAL COMBUSTION ENGINE AT THE START OF SAME

Akihiro Yamato, Shiki, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 16, 1983, Ser. No. 505,069
Claims priority, application Japan, Jun. 18, 1982, 57-104904
Int. Cl.³ F02N 17/00; F02M 51/00
U.S. Cl. 123—491
11 Claims

1. A method for controlling the operation of an internal combustion engine having an ignition switch and a starter switch, while it is in a starting condition, by means of a control system including a central processing unit which is supplied with an operating voltage from a power source while said ignition switch of said engine is closed, and adapted to normally operate with an operating voltage above a predetermined level, the method comprising the steps of: (1) detecting the value of said operating voltage being supplied from said power source to said central processing unit; (2) initializing said central processing unit when said operating voltage increases above said predetermined level after said ignition switch has been closed; (3) determining whether said starter switch of said engine is in a closed position or in an open position while said central processing unit is being initialized; (4) selecting one of a plurality of predetermined manners of controlling the operation of said engine while it is in said starting condition, depending upon the result of said determination in said step (3); and (5) controlling the operation of said engine while it is in said starting condition, in accordance with said one manner selected in said step (4).

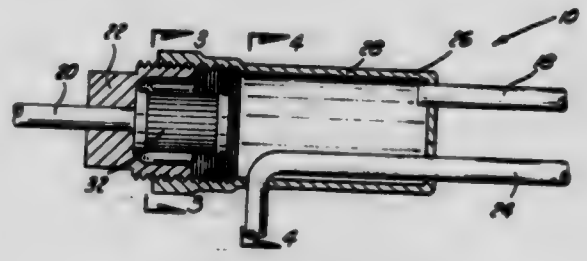


4,495,928

COMBINATION FUEL HEATER AND FUEL FILTER DEVICE

William R. Cook, Rte. #1, Wellington, Kans. 67412

Filed Sep. 8, 1983, Ser. No. 530,420
Int. Cl.³ F02M 31/00
U.S. Cl. 123—557
2 Claims



1. A combination fuel heater and fuel filter device for improving fuel consumption in an internal combustion engine, the heater and fuel filter adapted for attachment to the engine's water heater hose and fuel line, the device comprising:

a fuel housing, cylindrical in shape and having a first end portion and a threaded second end portion;

a fuel inlet in the first end portion of the housing and adapted for connection to the fuel line and receiving fuel in the housing;

a hot water tube received in the housing and running along the length of the housing, one end of the tube extending outwardly from the first end portion of the housing and adapted for connection to one end of the water heater hose, the other end of the tube extending outwardly from the side of the housing and adapted for connection to the other end of the water heater hose, the diameter of the tube in a range of ¼ to ½ of the diameter of the fuel housing for properly heating without vaporizing the fuel before it enters a carburetor of the engine;

a threaded end cap connected to the threaded second end portion of the housing and having a fuel outlet adapted for connection to the fuel line; and

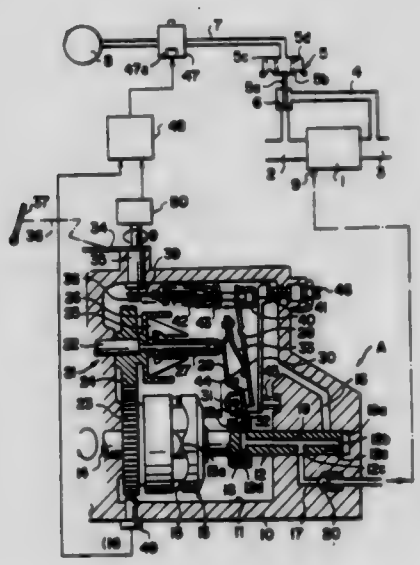
a fuel filter received inside the threaded end cap.

4,495,929

EXHAUST GAS RECIRCULATION SYSTEM FOR DIESEL ENGINES

Teoru Maeda, and Tsuneo Yajima, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Feb. 18, 1982, Ser. No. 349,706
Claims priority, application Japan, Feb. 19, 1981, 56/23722
Int. Cl.[3] F02M *25/06*
U.S. Cl. 123—569 6 Claims



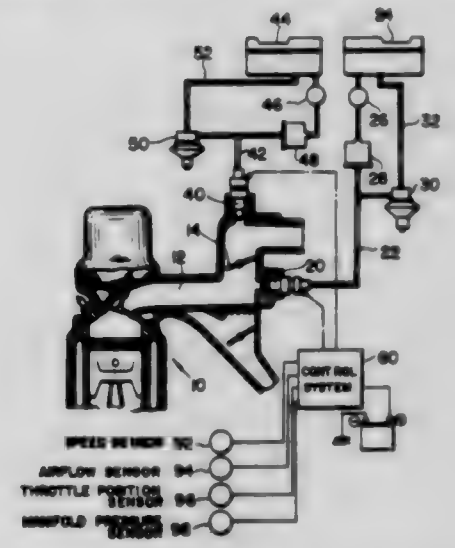
1. A diesel engine comprising combustion chamber means, intake passage means leading to said combustion chamber means, fuel injection nozzle means, fuel injection pump means for providing a supply of fuel to said fuel injection nozzle means said fuel injection pump means including fuel displacing plunger means of variable effective stroke and fuel amount adjusting means for determining the effective stroke of said plunger means, said adjusting means including an adjusting member for adjusting the effective stroke of the plunger means, externally actuatable control lever means adapted to be actuated by an engine control member for forcing the adjusting member in a direction of increasing fuel supply as the engine control member is moved in direction of increasing engine output and engine speed responsive governor means for forcing the adjusting member in a direction of decreasing the fuel supply as the engine speed increases, exhaust passage means leading from said combustion chamber means, exhaust gas recirculation passage means extending between said exhaust and intake passage means for passing a part of the exhaust gas from said exhaust passage means to said intake passage means, control valve means provided in said recirculation passage means for controlling the exhaust gas which is to be passed from the exhaust passage means to said intake passage means, first sensing means for detection the position of the control lever means and producing a lever position signal, second sensing means for detecting the engine speed and producing an engine speed signal, control means adapted to receive said lever position signal and said engine speed signal and actuate said control valve means to close said recirculation passage means in a range beyond a specific value of fuel supply which is determined in accordance with said signals, said control means including transducer means which receives the control lever position signal from the first sensing means and produces a cut-off signal which changes in response to a change in the control lever position so that it becomes equal to the engine speed signal at a predetermined amount of fuel supply which is determined by said adjusting member, comparator means provided in said control means to compare the cut-off signal with the engine speed signal and to produce a valve actuating signal when the engine speed signal is smaller than the cut-off signal to thereby close the control valve means.

4,495,930

FUEL CONTROL SYSTEM

Yasuo Nakajima, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Jul. 27, 1981, Ser. No. 287,180
Claims priority, application Japan, Jul. 28, 1980, 55-103314
Int. Cl.[3] F02B *75/12;* F02D *19/08*
U.S. Cl. 123—575 23 Claims



1. In an internal combustion engine including an intake passage, a first fuel injector for discharging, into said intake passage, a first kind of fuel having a first calorific value, a second fuel injector for discharging, into said intake passage, a second kind of fuel having a second calorific value different from said first calorific value of said first kind of fuel, said first and second fuel injectors being repeatedly energized to discharge fuel for time periods corresponding to pulse widths of first and second injection command signals applied thereto, respectively, a method controlling the amounts of said first and second kinds of fuel discharged into said intake passage comprising the steps of:

determining a basic pulse width of said first injection command signal to provide a quantity of said first kind of fuel having said first calorific value required for said engine in response to air flow rate to said engine;

determining a ratio between the pulse widths of said first and second injection command signals in response to engine load;

determining the pulse widths of said first and second injection command signals from the determined basic pulse width and the determined pulse width ratio; and

operating said first and second fuel injectors in response to said first and second injection command signals having the predetermined pulse widths, respectively, so that the total of the caloric values of said first and second kinds of fuel discharged corresponds to the caloric value of said quantity of said first kind of fuel corresponding to the determined pulse width of said first injection command signal.

4,495,931

ENGINE IGNITION SYSTEM

Immanuel Krauter, Erbstetten, and Hartmut Schweizer, Korntal, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 3, 1983, Ser. No. 520,076
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1982, 3229202
Int. Cl.[3] F02P *1/00, 1/08, 9/00, 3/04*
U.S. Cl. 123—651 6 Claims

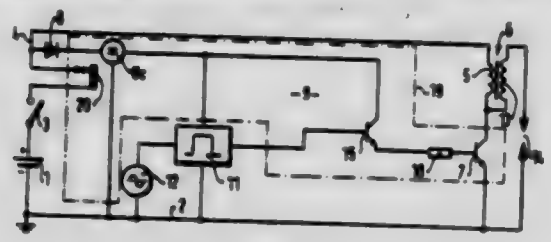
1. An ignition system for internal combustion engines, comprising:

an output switching transistor (7), the emitter-collector path of which is in a series circuit with the primary winding (5) of an ignition coil (6),

control means coupled to the base of said output switching

transistor (7) for supplying switching control current to said base of said output switching transistor (7),

said control means including a constant-current source (9) for supplying said control current at a current level selected such that, during conduction of said emitter-collector path of said output switching transistor for storing



ignition energy in said ignition coil (6), the saturated operation of said output switching transistor (7) is maintained,

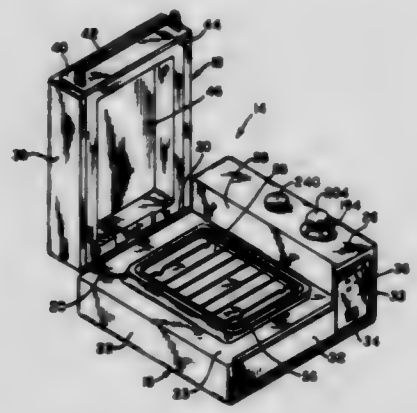
said constant-current source comprising a driver transistor (15), a resistor (10), and a constant-voltage source (U_c) connected in series with the emitter-collector path of said driver transistor (15) and with said resistor (10).

4,495,932

FOOD STEAM HEATING APPARATUS

Ronald E. Bratton, Fort Wayne, Ind., assignor to Lincoln Manufacturing Company, Inc., Fort Wayne, Ind.

Filed Feb. 3, 1981, Ser. No. 231,249
Int. Cl.³ A21B 1/36
U.S. Cl. 126—20 18 Claims



1. A steam heating device for heating and freshening foodstuffs comprising:

a cabinet,

a heat exchanger assembly mounted in said cabinet and having an upper surface,

a lid connected to said cabinet and enclosing the upper surface of said heat exchanger assembly to form therewith a food compartment adapted for receiving foodstuffs to be heated,

said heat exchanger assembly including a steam generating chamber below the food compartment and having a lower surface, heating element means directly under said chamber for heating the lower surface thereof, and nozzle means for directing water into said chamber on the lower surface thereof, said steam generating chamber lower surface being a substantially flat, continuous surface unobstructed by barriers thereon so that water injected into the steam generating chamber can flow to substantially all areas thereof,

said heat exchanger assembly further including two steam superheating chambers each having a lower surface, the total combined surface area of said steam superheating chambers lower surfaces being much smaller than the surface area of said steam generating chamber lower surface, said generating and superheating chambers communicating through respective throttling passages each having a cross-sectional flow area less than the cross-sectional flow area of the respective superheating chambers in said steam generating chamber, whereby the steam increases in velocity as it enters the throttling passage from the steam generating chamber and expands upon entering the superheating chambers from the throttling passages,

narrow, elongated connecting passages respectively connected directly to said superheating chambers so that steam leaving said superheating chambers directly enters the respective connecting passages, said connecting passages having cross-sectional flow areas that are smaller than the cross sectional flow areas of the respective superheating chambers, and

a plurality of small outlet passages in said heat exchanger assembly connected to said connecting passages and opening into said food compartment, whereby superheated steam is introduced into the food compartment to heat and freshen the foodstuffs therein,

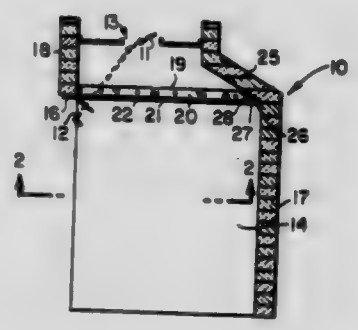
said throttling passage including an inlet opening into the generating chamber, and said heat exchanger assembly comprising two barrier means positioned respectively between said nozzle and the inlets to said throttling passages to form tortuous paths for the steam produced in said generating chamber and prevent water droplets from directly entering the superheating chambers.

4,495,933

FIREPLACE INSERT AND METHOD

Steven E. Schinbeckler, 212 Gaslight La., Greenfield, Ind. 46140

Filed Jul. 26, 1982, Ser. No. 401,846
Int. Cl.³ F24B 7/00
U.S. Cl. 126—123 6 Claims



1. An apparatus for converting a fireplace for use with a stove having a flue, the fireplace having opposed side walls, a back wall, and a front opening defined at the top by a lintel secured to a front wall, said apparatus comprising:

a pair of side wall supports;

first mounting means for mounting each side wall support to one of the side walls of the fireplace;

a back wall support;

second mounting means for mounting said back wall support to the back wall of the fireplace, said side and back wall supports being positioned to form a substantially continuous surface along the side and back walls of the fireplace;

a cover plate including an aperture for reception of the stove flue;

slide attachment means mounted to said side and back wall supports for slidingly receiving said cover plate for supporting said cover plate on said side wall supports, said slide attachment means including S-shaped brackets, said cover plate being received by said slide attachment means and being configured to substantially close the area defined by the front, side and rear walls of the fireplace;

said wall supports comprising L-shaped brackets, the S-shaped brackets defining upper and lower recesses facing in opposite directions, the upper recess receiving a respective one of the L-shaped brackets for securement thereto and the lower recess receiving a respective edge of said cover plate; and

securement means for securing said cover plate to the lintel of the fireplace.

4,495,934

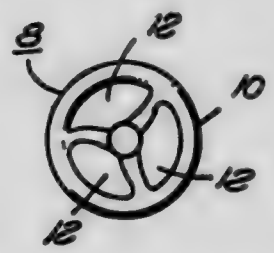
IUD ARRANGEMENT

Seth T. Shaw, Jr., 30036 Via Borica, Rancho Palos Verdes, Calif.

Continuation-in-part of Ser. No. 927,765, Jul. 25, 1978, abandoned, Ser. No. 928,093, Jul. 26, 1978, Pat. No. 4,233,968, and Ser. No. 928,106, Jul. 26, 1978,. This application Jul. 9, 1979, Ser. No. 55,900

Int. Cl.[3] A61F *5/46*

U.S. Cl. 128—130 27 Claims



1. A medicated intrauterine device of the type insertable into the uterus for retention therein for a predetermined time period and comprising, incombination:

a uterus insertable body member having an external surface adapted to contact the uterus, and said body member comprising a polymer matrix and at least one drug with said polymer matrix and said at least one drug providing an anti-fibrinolytic effect, a reversible anti-fertility effect, and an antiproteolytic effect, and said at least one drug selected from the class consisting of a guanidine and an amidine, and said at least one drug and said polymer matrix selected to provide said at least one drug releasable at a predetermined rate from said body member to the uterus; and

said body member has a predetermined geometrical configuration and said at least one drug is in at least one of a biodegradable polymer an biodegradable copolymer form and is mixed with said polymer matrix.

4,495,935

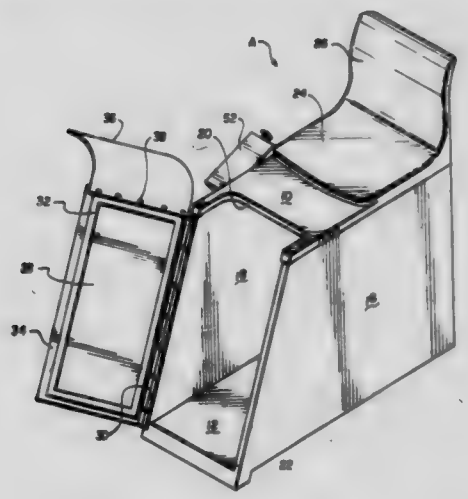
FOOT WARMER

Jack K. Lanier, P.O. Box 6397, Jacksonville, Fla. 32205

Filed Aug. 25, 1983, Ser. No. 526,449

Int. Cl.[3] A61F *7/00*

U.S. Cl. 126—204 10 Claims



1. A boot and foot warming device for skiers and other outdoor sportsman comprising:

(a) a chamber bounded by a top wall having a front and a rear portion, a bottom wall, a back wall and side walls;

(b) a leg receiving opening in said front portion of said top wall;

(c) said top wall including a seat positioned rearwardly of said leg receiving opening;

(d) a swinging door hinged to said side wall and providing a front wall for said chamber;

(e) an air circulating heater mounted within said chamber;

(f) said bottom wall being sloped for allowing water run-off;

(g) a drain in said sloped bottom wall;

(h) a dividing wall extending transversely through said chamber and engaging said top wall, said bottom wall and said side walls; and

(i) said dividing wall partitioning said chamber into a front chamber and a rear chamber.

4,495,936

FLEXIBLE SOLAR HEAT COLLECTOR

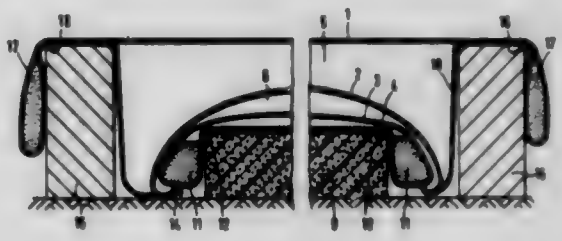
Joachim Frommbold, Popitzweg 13/22/224, 1000 Berlin 13, Fed. Rep. of Germany

Filed Feb. 22, 1983, Ser. No. 468,308

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3206866

Int. Cl.[3] F24J *3/02*

U.S. Cl. 126—426 4 Claims



1. A flexible solar heat collector for use in connection with supporting means defining two opposite upright sides, comprising at least two superposed flexible foils joined together along their rims to form a heat collecting chamber therebetween, means for feeding heat carrying medium through said collecting chamber, and pliant tensioning weights provided at two opposite rim portions of at least one of said foils to hang over the edges of said upright sides of the supporting means and to stress the foils by the force of gravity, the two opposite rim portions of said foils being formed with marginal chambers adjoining the foils, and said pliant tensioning weights being provided in said marginal chambers to prevent bulging of the upper foil when internal pressure in the collecting chamber increases.

4,495,937

THERMAL COLLECTOR AND STORAGE SYSTEM

D. Larry Fisher, Harrisonburg, Va., assignor to Sunwood Energy Systems, Inc., Harrisonburg, Va.

Filed Aug. 31, 1981, Ser. No. 298,295

Int. Cl.[3] F24J *3/02*

U.S. Cl. 126—430 10 Claims

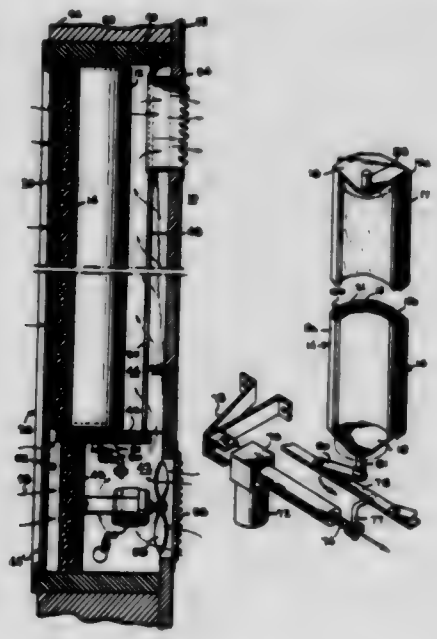
1. Thermal collector and storage apparatus adapted to be disposed within a wall defining at least in part a conditioned space to be heated by solar energy, said apparatus comprising:

(a) enclosure means having an opening to permit solar rays to pass therethrough and a heat exchange chamber;

(b) a plurality of energy storage elements supported by said enclosure means within said heat exchange chamber for receiving said solar rays, each energy storage element containing a phase change material selected to have a solid to liquid transition at a temperature sufficiently above the desired interior housing temperature to permit efficient heat transfer to the conditioned space and a high heat of fusion associated with said transition, said plurality of energy storage elements is disposed in an array with each of said energy storage elements parallel to its adjacent energy storage element, and

(c) a plurality of heat insulating members, each heat insulating member being associated with a corresponding energy storage element and mounted for movement between a first position, wherein said heat insulating members are

disposed between said opening and said plurality of energy storage elements to retard heat loss from said energy storage elements, and a second position wherein the solar rays are permitted to be directed through said opening and onto said plurality of heat energy storage elements, each of said plurality of heat insulating members is configured so that when they are disposed in their second positions there is provided a space between adjacent heat insulating members to permit the solar rays to be directed through said spaces and, thus, directly radiate heat throughout said



heat exchange chamber, adjacent of said insulating members of said plurality are adapted to mate with each other when disposed in their first position to form a substantially continuous insulating barrier between said plurality of energy storage elements and said opening, each of said heat insulating members having at least one leading edge adapted to mate in a heat sealing relationship with an adjacent one of said heat insulating members, when said heat insulating members are disposed to their first positions.

4,495,938

SOLAR ENERGY COLLECTOR

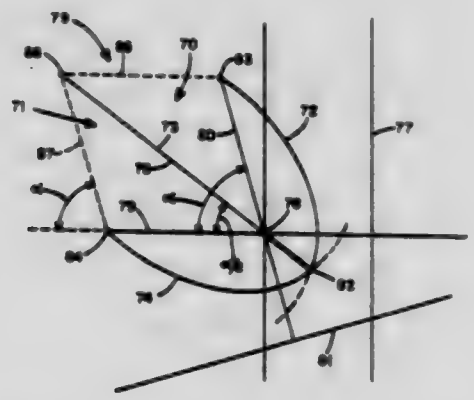
Wallace G. Hanson, Rte. 2, Box 103, Dodge Center, Minn. 55927

Division of Ser. No. 295,749, Aug. 24, 1981, Pat. No. 4,444,176, which is a division of Ser. No. 12,838, Feb. 16, 1979, Pat. No. 4,297,988. This application Dec. 5, 1983, Ser. No. 579,989

Int. Cl.³ F24J 3/02

U.S. Cl. 126—439

4 Claims



1. A stationary solar collector fixed with respect to the surface of the earth at a latitude where the maximum solar altitude angle is α, comprising:

an elongated bidirectional energy receiver affixed to the earth and lying along a line substantially in the east-west direction;

a first planar reflector affixed at an angle not greater than $\alpha/2$ relative to the surface of the earth and having two planar reflective surfaces extending from said energy receiver to a predetermined first end;

a second elongated and curved reflector having a parabolic cross section and having a concave reflective surface facing one of said planar reflective surfaces, said second reflector having a focal line lying in a plane aligned with said energy receiver, and having a parabolic surface length defined by a first line of intersection with a planar extension of said first reflector, and a second line of intersection with a plane constructed from said first reflector first end, said constructed plane having a maximum inclination defined by the horizontal; and

a third elongated and curved reflector having a parabolic cross section and having a concave reflective surface facing the other of said planar reflective surfaces, said third reflector having a focal line lying in a plane aligned with said energy receiver, and having a parabolic surface length defined by said first line of intersection with a planar extension of said first reflector, and a second line of intersection with a plane constructed from said first reflector first end at an angle not greater than α relative to the surface of the earth.

4,495,939

SOLAR HEAT COLLECTOR WITH JOINT STRUCTURE

Nobushige Arai, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

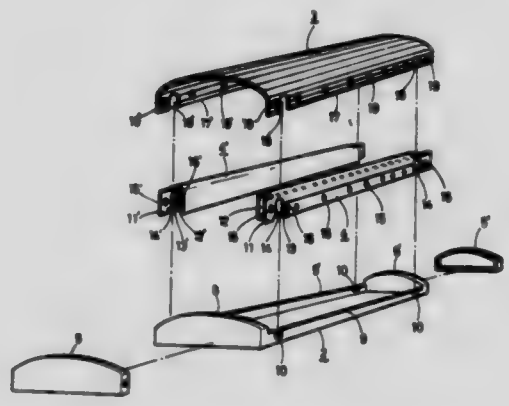
Filed Nov. 10, 1982, Ser. No. 440,522

Claims priority, application Japan, Nov. 10, 1981, 56-168169[U]

Int. Cl.³ F24J 3/02

U.S. Cl. 126—450

14 Claims



1. A solar heat collector assembly comprising:

a base having a bottom and a pair of oppositely disposed upstanding sidewalls;

at least one heat collector disposed on said base;

a substantially rigid member extending along each said sidewall, each said member comprising at least a first groove opening in a first direction and receiving a respective sidewall therewithin and at least a second groove opening in a second direction;

a transparent cover having a substantially U-shaped configuration including oppositely disposed side portions, wherein said side portions are spaced at a distance from each other corresponding to a distance between said second grooves of said members and said cover side portions are positioned within said respective second grooves;

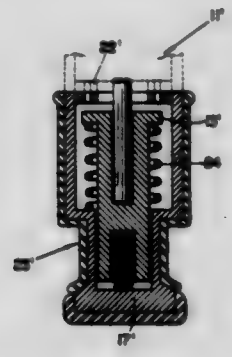
wherein said cover is made of material having air cavities therein serving as heat insulators and said base is made of a heat insulating material, whereby said heat collector is completely enclosed within an insulated chamber.

4,495,940

MASSAGER

Hiroshi Takaishi, 73-2, Uchikaburaki-machi, Sakura-shi, Chiba-ken, Japan

Filed Jun. 9, 1982, Ser. No. 386,654
Int. Cl.³ A61N 23/00
U.S. Cl. 128—55 2 Claims



1. A massager comprising:

(A) a variable frequency oscillatory motion drive unit;

(B) an oscillator rod with upper and lower ends; the upper end connected to said drive unit;

(C) an intermediate idler with upper and lower parts and upper and lower axial cavities; the lower end of said oscillator rod fitting fully into and sliding freely within the upper axial cavity of the intermediate idler;

(D) a control spring fitting into the lower axial cavity of said intermediate idler;

(E) a hitting pad with an upper tubular portion; said lower part of said intermediate idler fitting into and sliding freely within the upper tubular portion of the hitting pad; said control spring defining a gap between the hitting pad and said intermediate idler for vibration.

4,495,941

CAST MOVING DEVICE

Kathryn P. Rathvon, and William P. Rathvon, both of 1607 Berkeley Way, Berkeley, Calif. 94703

Filed May 10, 1982, Ser. No. 376,859
Int. Cl.³ A61F 3/00
U.S. Cl. 128—80 G 11 Claims



1. A limb maneuvering device for use in positioning a limb of a user comprising:

a flexible line having inner and outer ends;

a cast surrounding the limb;

means for coupling said outer end to said cast;

a handle mounted to said inner end by which the user can position their limb by manipulating said handle; and

means for releasably attaching said handle to a chosen point on said cast, said chosen point within reach of the user.

4,495,942

DYNAMIC ANKLE BRACE

Pasquale M. Palumbo, 906 Frome La., McLean, Va. 22101

Continuation of Ser. No. 327,706, Dec. 4, 1981, abandoned. This application Jan. 31, 1984, Ser. No. 575,532
Int. Cl.³ A61F 3/00
U.S. Cl. 128—80 H 10 Claims



1. A dynamic ankle brace for bracing an ankle of a lower extremity comprising:

a U-shaped pad means adapted to fit around the lateral malleolus of the ankle when said brace is in use for applying pressure to the area surrounding the lateral malleolus;

an elastic strap means, having a first end connected to said U-shaped pad means and a second end, said elastic strap means adapted to be wrapped around the ankle and foot in a predetermined manner, for applying force against said U-shaped pad when said brace is in use; and

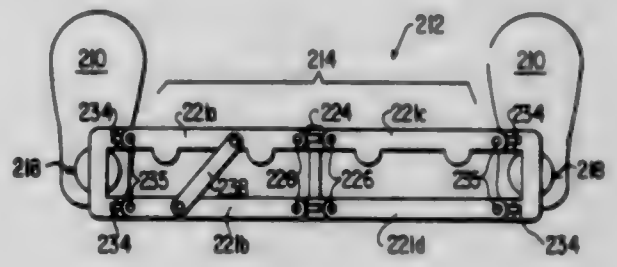
means, operably associated with said elastic strap, for releasably holding said elastic strap in the wrapped position when said brace is in use.

4,495,943

ORTHOPEDIC FOOT SPLINT WITH SWIVEL

Robert J. Kurtz, New York, and Joseph LiCausi, Port Jefferson Station, both of N.Y., assignors to Bioresearch, Farmingdale, N.Y.

Continuation of Ser. No. 531,583, Sep. 9, 1983, , which is a continuation of Ser. No. 358,531, Mar. 16, 1982, abandoned. This application May 18, 1984, Ser. No. 611,713
Int. Cl.³ A61F 3/00
U.S. Cl. 128—80 A 11 Claims



1. An orthopedic foot splint which is attached to the shoes of a user comprising:

a pair of shoe engaging plates, each said plate having a longitudinal axis approximately parallel to the longitudinal axis of the shoe which is attachable thereto;

an elongate connecting means for horizontally interconnecting said pair of shoe engaging plates, said connecting means including

(a) two elongate sections each of which is pivotally attached at one end to a respective shoe engaging plate, at least one of said two sections being a pair of parallelogram links which are pivotable in a horizontal plane relative to each other and to said shoe engaging plates, and

(b) a central joint means interconnecting the other end of said sections which allows said sections to pivot in a plane relative to one another;

a flexible non-extensible tether attached at an angle to said

parallelogram links such that said links are prevented from pivoting in the horizontal plane beyond a predetermined angle with respect to the longitudinal axis of the adjacent shoe engaging plate but which can pivot in the opposite direction freely; and

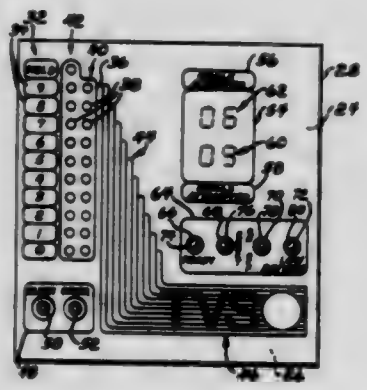
swivel means provided between said connecting means and at least one of said shoe engaging plates for allowing said shoe engaging plate to swivel about a vertical axis with respect to said connecting means, said swivel means including a stop means for selectively restricting the movement of said swivel means such that the toe or heel of the respective shoe can only swivel toward or away from said connecting means from an initial position where the longitudinal axis of said shoe engaging plate is approximately perpendicular to said longitudinal axis of said connecting means.

4,495,944

INHALATION THERAPY APPARATUS

Alfred Brisson, and Christopher Nowacki, both of Arlington Hts., Ill., assignors to Trutek Research, Inc., Arlington Hts., Ill.

Filed Feb. 7, 1983, Ser. No. 464,219
Int. Cl.³ A61B 5/08
U.S. Cl. 128—725 4 Claims



1. Inhalation therapy apparatus comprising a mouthpiece for insertion in patient's mouth for inhalation therethrough and having pneumatic means producing a pneumatic signal corresponding to the volume of air inhaled, and an electric module pneumatically inter-connected with said mouthpiece, said module comprising means for converting said pneumatic signal to electrical information, and display means visible to said patient and comprising means indicating a desired inhalation volume, means adjacent to said desired inhalation volme indicating means for indicating the volume of inhalation attained, said indicating means comprising a pair of parallel adjacent rows of light, said rows being oriented on said module in a vertical rectilinear manner with the lights in one row being horizontally aligned with the lights in the other row, and further including means representing a stair step arrangement with each step respectively being aligned with a pair of lights, one in each of said rows.

4,495,945

BITE BLOCK

Kenneth B. Liegner, 315 Bear Ridge Rd., Pleasantville, N.Y. 10570

Filed Mar. 29, 1982, Ser. No. 362,524
Int. Cl.³ A61M 16/00
U.S. Cl. 128—200.26 2 Claims

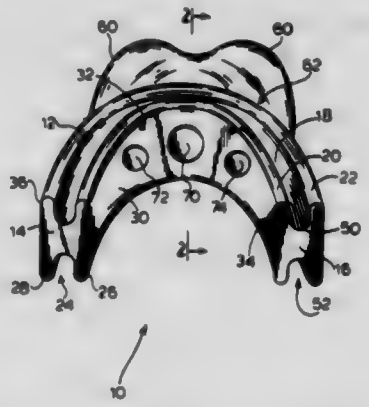
1. A bite block which is useful in conjunction with endoscopy, bronchoscopy, endotracheal intubation and like procedures, which comprises;

(a) a "U" shaped plate having first and second ends, each end being at the terminus of a separate leg of the "U" joined by a bridging section, said plate compriaing a plate body intermediate between and joining the first and second ends, said plate body being fabricated from a polymeric resin having sufficient strength to resist biting through but which is resilient enough that injury to the biter's teeth and gums does not occur, said "U" shape plate having (1) an upper surface delineated by the ends and inner and outer marginal zones; (2) a lower surface delineated by the ends and inner and outer marginal zones; (3) an inner side delineated by the ends and upper and lower marginal zones; and (4) an outer side delineated by the ends and upper and lower marginal zones; the inner side joining at its upper marginal zone with the inner marginal zone of the upper surface and at its lower marginal zone with the inner marginal zone of the lower surface; the outer side joining at its upper marginal zone with the outer marginal one of the upper surface and at its lower marginal zone with the outer marginal zone of the lower surface;

(b) a ridge on the outer side of the plate body, positioned between the upper and the lower marginal zones of the outer side at the bridging section of the "U" and extending outwardly from the outer side to a ridge terminus;

(c) an upper flange on and projecting upwardly from the ridge terminus, providing an open space between the upper flange, the upper marginal zone of the outer side and the upper side of the ridge, said space being of a size and configuration to receive the labium superiori oris of a human in sealing engagement with said flange, outer side and ridge;

(d) a lower flange on and projecting downwardly from the ridge terminus, providing an open space between the lower flange, the lower marginal zone of the outer side



and the lower side of the ridge, said space being of a size and configuration to receive the labium inferiori oris of a human in sealing engagement with said lower flange, outer side and ridge;

(e) an open bore traversing the plate and ridge at the bridging section of the "U", communicating between the inner side of the plate and the ridge terminus, said bore being of a dimension to pass an endoscope, a bronchoscope, an endotracheal tube or the like therethrough;

(f) said plate body further having

(1) a groove in the upper surface extending from said first end to said second end and between the inner and the outer marginal zones of the upper surface adapted by size and configuration to receive therein the upper teeth (or, in the absence of teeth, the associated gums) of a human being; and

(2) a groove in the lower surface extending from said first end to said second end and between the inner and the outer marginal zones of the lower surface, adapted by size and configuration to receive therein the lower teeth (or in the absence of teeth, the associated gums) of a human being; whereby when the plate is inserted into the vestibulum oris of a human being, the upper teeth or gums will be received in the upper surface groove and held apart by the plate body from the lower teeth or gums which are received in the lower surface groove; said groove in the upper surface and said groove in the lower surface each defining a smooth inside surface and subtending an acute angle in relation to each other, the

apex of said angle being directed toward the first and second ends of the "U";

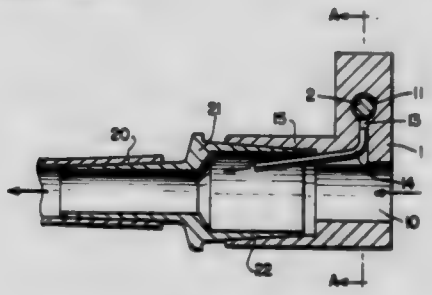
(g) at least one additional open bore traversing the plate and ridge adjacent to the bridging section of the "U", communicating between the inner side of the plate and the ridge terminus, said additional bore being of a dimension to pass an endotracheal tube, oropharyngeal or orogastric tube; said bite block being of a size and configuration permitting insertion of the "U" shaped plate component into the vertibulum oris of a human as described above and whereby the ridge and flange components sealingly engage the labium oris so that the oral cavity is restricted to communication to the exterior through the bore and optional bores.

4,495,946

ARTIFICIAL BREATHING DEVICE

Joseph Lemer, 15 Bracha-Habas St., Haifa, Israel 33393

Filed Mar. 17, 1981, Ser. No. 244,751
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—204.25 7 Claims



1. A device for artificial respiration adapted to introduce predetermined quantities of air or oxygen into the lungs at predetermined intervals, comprising: an automatic time-cycled source of air or oxygen; a valve housing containing an inlet passage connected to said time-cycled source of compressed air or oxygen; a manually adjustable regulating valve mounted within said inlet passage to throttle said inlet opening and to be manually adjusted to the required air or oxygen quantity; and an air duct perforating said valve housing distanced from said regulating valve and having its one end open to the atmosphere during the introduction of said respirating gas into said lungs, while its other end is provided with means for attaching to it a patient; a rigid, small bore tube having one end connected to said air duct and an opposite end connected to said passage downstream said regulating valve, said tube entering said air duct downstream of said regulating valve and extending close to the wall of said air duct with its open end directed in the direction of said attaching means, said small bore tube being dimensioned such that a venturi effect is created when said compressed air or oxygen passes through said small bore tube, whereby said timed-cycled source forces air or oxygen through said small bore tube creating a venturi effect drawing atmospheric air into said duct through said open end and forcing a mixture of said atmospheric air and said air or oxygen from said source into the lungs of said patient.

4,495,947

HIGH SPEED MEDICAL VENTILATOR

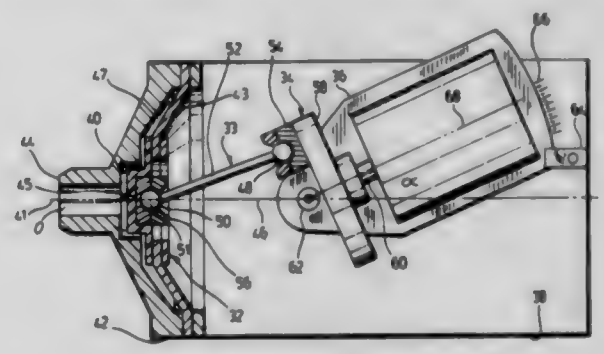
Jiri Motycka, Etobicoke, Canada, assignor to Imasco-CDC Research Foundation, Toronto, Canada

Filed Sep. 23, 1982, Ser. No. 421,894
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—205.14 15 Claims

6. A high frequency medical ventilator for converting rotary motion about a rotary axis to reciprocatory motion along a fixed reciprocation axis inclined to said rotary axis comprising:

a support frame defining a longitudinally extending reciprocating axis,

a motor having an output shaft rotatable about a longitudinally extending rotary axis, a swash plate mounted on said output shaft, said swash plate being mounted normally to said output shaft, a chamber mounted on said support frame having an open end and outlet means adapted to be connected to patient breathing circuitry, a reciprocating diaphragm for establishing ventilation mounted on said open end, said chamber being oriented such that said diaphragm reciprocates along said reciprocating axis, linkage means for interconnecting said swash plate with said reciprocating diaphragm and having opposite ends, said swash plate having first connector means eccentrically mounted thereto and rotatable in a plane parallel to said swash plate, one end of said linkage means being connected to said first connector means, said reciprocating diaphragm having second connector means mounted centrally thereof, the opposite end of said linkage means being connected to said second connector means, said first and second connector means permitting universal move-



ment of said opposite ends therewith whereby a component of reciprocating motion developed at said swash plate is transferred to said reciprocating diaphragm, and

said motor being pivotally mounted to said support means about a pivot located at the intersection of said reciprocating axis and the plane in which said first connector rotates such that pivoting said motor pivots said swash plate and shaft as a unit and varies the angle of inclination of the rotary axis to the reciprocating axis,

said linkage means comprising ball joint means including a first bearing housing connected to said swash plate for rotation therewith, and a second bearing housing connected to said diaphragm for reciprocatory motion therewith and first and second spherical bearings being connected by a rod, said first spherical bearing being bearingly mounted in said first bearing housing, and said second spherical bearing being bearingly mounted in said second bearing housing.

4,495,948

TRACHEAL TUBES

Seymour W. Shapiro, Lowell, Ind., assignor to Bivona Surgical Instruments, Inc., Gary, Ind.

Filed Aug. 10, 1981, Ser. No. 291,322
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—207.15 9 Claims

1. A tracheal tube comprising

a. a first elongated tube having an outer surface, a proximal end and a distal end,

b. a cuff mounted on said first elongated tube adjacent to said distal end and in spaced relation to said proximal end,

c. said cuff comprising

(1) a flexible tubular cover

(a) disposed on said first elongated tube in surrounding relation thereto, and

(b) having its ends secured to said outer surface, and

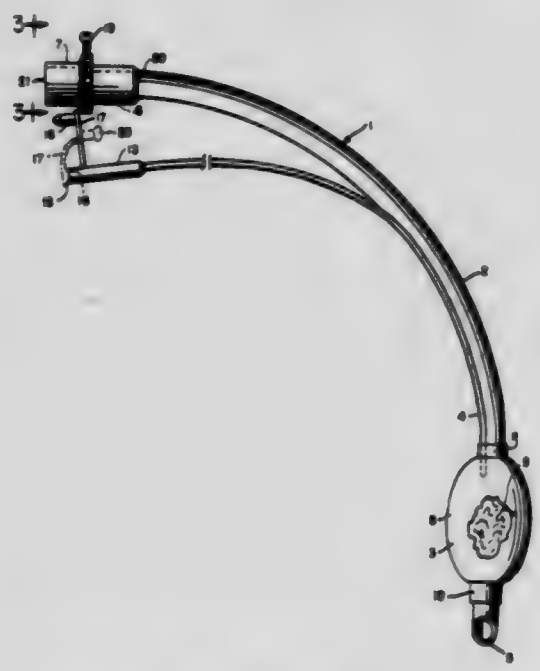
(2) a resilient body portion mounted in said cover,

d. said body portion having

(1) normally an expanded position wherein it is effective to hold a portion of said cover outwardly away from said first elongated tube, and

(2) a collapsed position wherein the outer surface thereof is disposed closer to said first elongated tube than in said expanded position to thereby permit said portion of said cover to assume a position closer to said first elongated tube,

e. means for delivering positive and negative pressures, respectively, to the interior of said cover whereby when a negative pressure is delivered, said body portion moves toward said collapsed position and when said negative pressure is removed, said body portion moves toward said expanded position, said delivery means having first connection means adapted to be connected to positive and negative pressures, respectively, and



f. second connection means having one end fluidically connected directly to the interior of said first elongated tube and an opposite end adapted to be connected to said first connection means and whereby said first connection means is first connected to a negative pressure to collapse said body portion to permit insertion of said tracheal tube into a trachea, disconnected to permit expansion of said body portion within said trachea and subsequently connected to said second connection means to communicate the pressure in the interior of said first elongated tube to the interior of said cover.

4,495,949

TRANSILLUMINATION METHOD

Milton Stoller, West Hartford, Conn., assignor to Spectrascan, Inc., So. Windsor, Conn.

Division of Ser. No. 399,866, Jul. 19, 1982, Pat. No. 4,467,812. This application Jun. 13, 1984, Ser. No. 620,272
Int. Cl.[3] A61B 6/12
U.S. Cl. 128—664
11 Claims

1. A non-invasive and non-destructive examination method comprising the steps of:

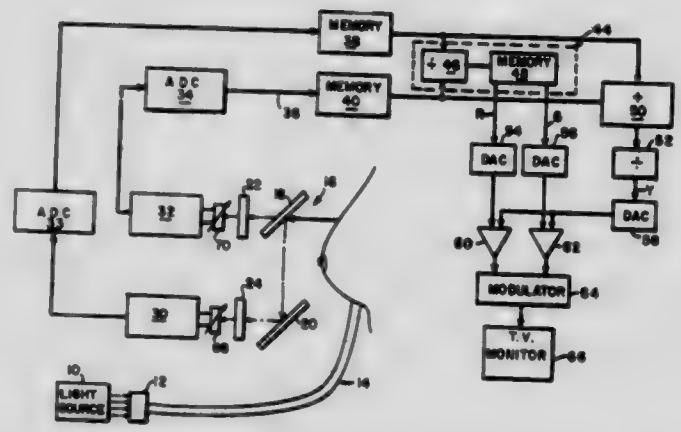
illuminating the object to be examined with light comprising at least two different wavelengths;

detecting light at each of said at least two different wavelengths which has passed through the illuminated object;

recording information commensurate with the intensity of the detected light at each of said at least two different wavelengths, the information commensurate with the same points in the illuminated object being recorded at simultaneously readable locations;

storing display correlated data values for each of a plurality of ratios of the information commensurate with the detected light at each of said at least two different wavelengths which may be recorded;

employing said recorded information for the same points in the illuminated object to select stored display correlated data values; and



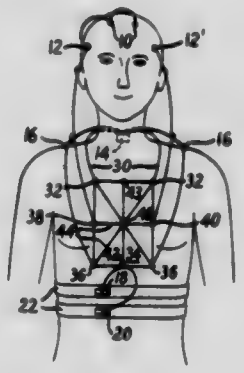
employing the thus selected display correlated data values read to produce a display which represents the absorption characteristics of the object at the said at least two different wavelengths.

4,495,950

QREEG PROCESS MATRIX SYNCHRONIZER SYSTEM

Daniel E. Schneider, 61 E. 93rd St., New York, N.Y. 10028

Filed Jan. 21, 1983, Ser. No. 460,094
Int. Cl.[3] A61B 5/04
U.S. Cl. 128—670
9 Claims



1. A system, comprising:

(a) electrode means for obtaining—under the aegis of a "master" QREEG tracing signal—at least EEG and EKG simultaneous and synchronized life-process data signals from a person's body;

(b) controllable QREEG matrix synchronizer means supported on the person's body for collecting the life-process data signals from the electrode means in separate channels as determined by the control of the matrix, wherein the controllable matrix means comprises means for combining the EEG and EKG signals to provide a QREEG signal on one channel and for providing the EKG signal on another channel; and

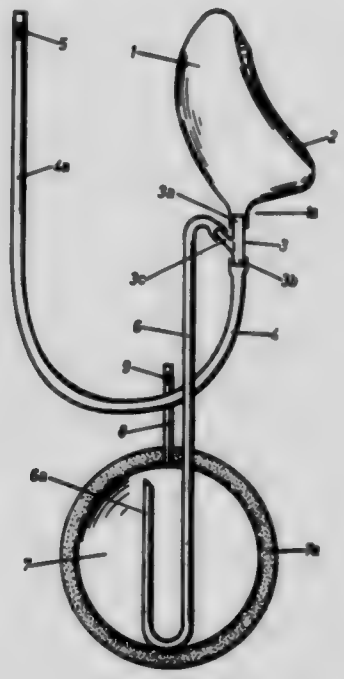
(c) signal processor means for processing the life-process data signals on the separate channels from the controllable matrix means, wherein the signal processor means comprises means operative on the QREEG signal in the one channel for detecting the QR wave peaks of the QREEG signal, means responsive to the detected QR wave peaks for counting the alpha wave in the QREEG signal following each QR wave peak and interposed between any two QR peaks, and means operative on the EKG signal in the other channel for identifying a portion of the EKG signal occurring at a predetermined count of the alpha waves in the QREEG signal.

4,495,951

APPARATUS FOR SEPARATELY CATCHING SUCCESSIVE STREAMS OF URINE AT TAKING SAMPLES TO LABORATORIAL AND BACTERIOLOGICAL EXAMINATION

Rajko Kenda, Prazakova 6, 61000 Ljubljana, Yugoslavia

Filed Oct. 14, 1981, Ser. No. 311,316
Int. Cl.³ A61F *5/44*; A61M *1/00*
U.S. Cl. 128—762 3 Claims



1. Apparatus for separately catching and retaining successive parts of a stream of urine for taking samples for laboratorial and bacteriological examination, said apparatus adapted for use with a seated patient and comprising:

adapter means for catching a stream of urine and including an adapter outlet;

separating means for automatic separation of the initial, the medial and the final (approximately 2 cc) parts of the urine stream that is caught, said separating means including a first chamber means for receiving and retaining an initial part of the urine stream and accumulating vessel means for receiving and collecting a medial part of the urine stream, flexible tube means providing communication between said adapter means and said accumulating vessel means, said medial stream passing directly from said adapter means through said flexible tube means to said accumulating vessel, said flexible tube means comprising a flexible tube having an upwardly directed free end extending within said accumulating vessel and another end connected to the adapter outlet by an upwardly inclined branch of a connecting piece positioned between said adapter means and said first chamber means, said flexible tube means also serving to receive and retain the final part of the urine stream; and

said accumulating vessel means for receiving and retaining the medial part of the urine stream serving as a transporting means between the patient and a laboratory.

4,495,952

APPARATUS FOR MEASURING JAW MOVEMENT

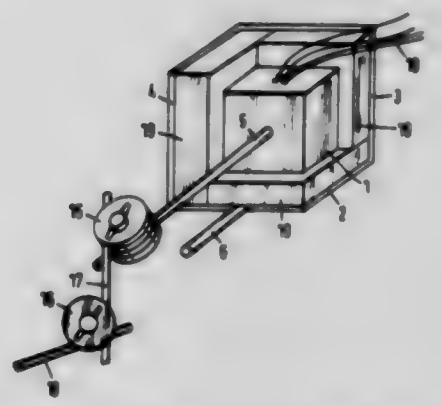
Rolf Klett, Nikolaushöhe 15a, D-8702 Gerbrunn, Fed. Rep. of Germany

Filed Apr. 26, 1982, Ser. No. 371,578
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1981, 3117174; Jul. 8, 1981, 3126911
Int. Cl.³ A61B *5/10*
U.S. Cl. 128—777 9 Claims

1. In an apparatus for the contactless measuring of movements of the jaw and of the condyle in the temporo-mandibular joint, respectively, comprising:

optoelectronic signal transmitters and signal receivers, between which light signals are transmitted, part of the apparatus being adapted to be secured to the lower jaw of the patient;

the improvement wherein the apparatus comprises a measuring head mounting said transmitters and receivers, measuring plates extending in three intersecting planes each having a reflecting surface positioned facing said measuring head;



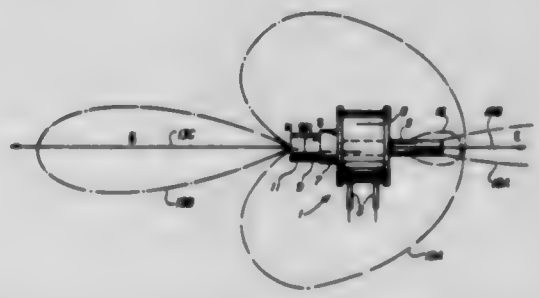
said transmitters and receivers comprising for each orthogonal direction a light transmitting means and a light receiving means mounted on said head adjacent to each other opposite each reflecting surface and positioned so that the light transmitted by the transmitting means and reflected by the facing reflecting surface is received by the receiving means.

4,495,953

APPARATUS AND METHOD FOR PRODUCING AND USING DIRECTIONAL, ELECTRICAL AND MAGNETIC FIELDS

Paul F. Bennewitz, 1413 Wagontrain, SE., Albuquerque, N. Mex. 87123

Filed Dec. 15, 1981, Ser. No. 331,020
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—789 25 Claims



1. A method for producing an extending, highly directional electrical field, said method comprising the steps of:

(a) placing a plurality of magnets end to end so that opposite poles of the respective adjacent magnets are adjacent; and

(b) positioning a paramagnetic flux concentrating element having first and second ends and a longitudinal axis so that the longitudinal axis is approximately aligned with the axes of said plurality of magnets and said first end of the flux concentrating element is located a predetermined distance from the closest magnet, said positioning of said flux concentrating element causing a directional electric field to extend outwardly from said second end of the flux concentrating element and beyond a magnetic field produced by said magnets and said flux concentrating element, the directional electric field decreasing approximately linearly along a line colinear with the axis of said flux concentrating element.

4,495,954

THRESHING CONCAVE FILLER STRIP RETAINER

Don L. Yarbrough, Coal Valley, Ill., assignor to Deere & Company, Moline, Ill.

Filed May 15, 1984, Ser. No. 610,536
Int. Cl.³ A01F *12/18, 12/28*
U.S. Cl. 130—27 E
5 Claims



1. A filler strip assembly for a threshing concave of the type used in cooperation with a cylindrical threshing cylinder, the concave including a plurality of parallel rods extending circumferentially with respect to the threshing cylinder and cross-connected by a plurality of spaced apart parallel grate bars normal to the rods and parallel to the axis of the threshing cylinder and presenting threshing portions projecting above the rods and thus defining elongated axially extending recesses, the filler strip assembly being supportable by the rods in one of the receases and partially filling said recess to limit the passage of crop material outwards through the concave and comprising:

an elongated filler strip having an inner surface and an opposite generally parallel outer surface for being engaged by the rods and at least one through hole connecting said inner and outer surfaces; and

a fastener assembly for attachment to the filler strip including;

a shank for passing through the hole in the filler strip;

an inner shoulder member carried by the shank for abutting the inner surface of the filler strip;

a deformable body threadable onto the shank for abutting the outer surface of the filler strip;

an outer shoulder member carried by the shank and having a shoulder face for abutting the deformable body member so that, in assembly, the body and the filler strip are contained between the respective opposed shoulder faces; and

means responsive to manipulation of the inner shoulder member for biasing the shoulder members axially one towards the other, so that when the strip is placed in the recess with the outer surface of the strip adjacent the rods and the fastener assembly extending between a pair of neighboring rods, and the deformable body extending between a pair of adjacent rods, the inner shoulder member may be manipulated so that the deformable body becomes axially compressed and, responsive to such compression, expands to engage the adjacent rods so as to secure the filler strip assembly to the concave.

4,495,955

WINDING DEVICE

Wilhelmus P. L. Boogers, Eindhoven, Netherlands, assignor to P.M.B. Patent Machinebouw B.V., Best, Netherlands

Filed Jun. 24, 1981, Ser. No. 276,788
Claims priority, application Netherlands, Jul. 11, 1980, 8004023
Int. Cl.³ A24C *1/28, 1/02*
U.S. Cl. 131—105
10 Claims

8. A device for storing tobacco leaves or portions thereof in sandwiched relation between the windings of a belt, comprising a table having a rounded side edge, a driven roller disposed parallel to and above said rounded side edge of the table, a take-up reel upon which a belt is to be wound, means mounting said reel parallel to said rounded edge and to said driven roller for movement toward and away therefrom and for free rotation about an axis parallel thereto, supply means for issuing a belt flatwise over said table, beneath said roller and over said rounded edge and onto said take-up reel, said means mounting the reel including mechanism yieldably urging said reel toward the driven roller and said rounded edge of the table whereby to press an outermost winding of the belt on said take-up reel continuously against said driven roller, said driven roller being rotatably driven to effect winding of the belt on said take-up reel such that said belt passes over said rounded edge of the

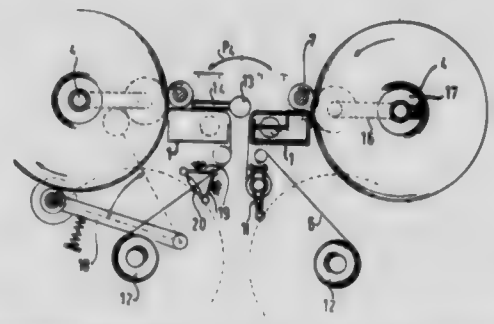


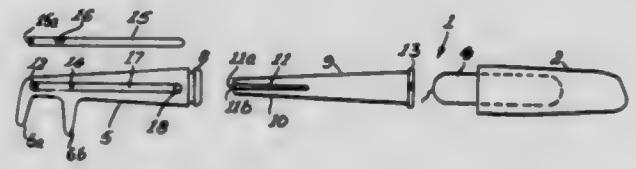
table and downardly to form, on the reel, said outermost winding and said supply means including brake mechanism which tensions said belt and therefore said outermost winding to a selected degree whereby all of the windings are uniformly tensioned independently of the increasing size of the windings on the reel and dependent only upon the frictional engagement of said driven roller against said outermost winding.

4,495,956

DEVICE FOR CLEANING TEETH

Phillippus J. Fourie, 34 Park Plaza, 21 Gregory Ave., Melrose North, Johannesburg, South Africa 2196

Filed Sep. 28, 1982, Ser. No. 426,131
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—92 R
11 Claims



1. A device for cleaning teeth comprising: a housing adapted to house a quantity of dental floss; a locking member having at least one aperture therein; and a formation adapted to support a span of the dental floss; said housing being defined by a housing member, and said formation comprising a fork formation provided on a fork member, and said housing member and fork member being rotatable relative to one another about the longitudinal axis of the device; said formation having at least one aperture therein such that floss from said housing, in an operative position, passes through said aperture and said formation, and thereafter forms the span of floss; and wherein in said operative position the floss from said housing also passes through said aperture in said locking member; and wherein said at least one aperture in said formation comprises at least one hole through the fork member, the aperture in the locking member comprising a slot therein located along its axis, the slot in said operative position being in registry with said at least one hole through said fork member.

4,495,957

FLOSSING DEVICE

George Beggs, 1740 Spruce La., and Thomas H. Richardson, 610 Southerncross Dr., both of Colorado Springs, Colo. 80906

Filed Nov. 5, 1982, Ser. No. 439,537
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—92 A
21 Claims

1. A flossing device comprising:

a body having a handle portion dimensioned for grasping by one hand of the user, and a barrel portion having a rear end extending from one end of said handle portion, the

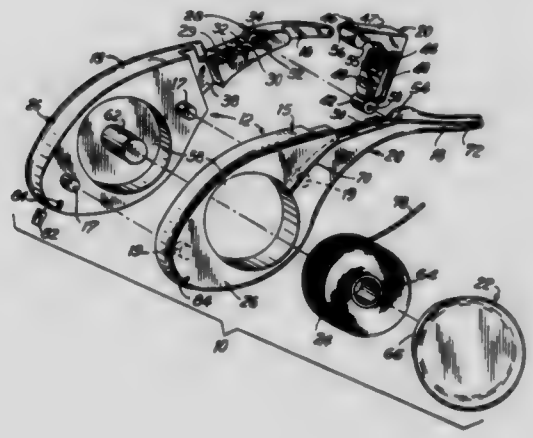
free end of said barrel portion comprising a pair of prongs defining a space therebetween;

means for securing a spool of floss to said body for rotation relative thereto;

said body defining a path for said floss from said securing means, over a surface portion of said body, across said space between said prongs, and back over said body surface portion, said body having a vertically extending bore therethrough at the rear end of said barrel portion and adjacent said surface portion;

a trigger member disposed in said bore, said trigger member including a portion defining a trigger surface, an upper part protruding through the upper end of said bore, and a lower part protruding through the lower end of said bore; and

means for securing said trigger member to said body for movement between a first position wherein said trigger surface contacts said body surface portion for securing





both lengths of floss passing over said body surface portion against movement thereby tensioning the floss extending across said space between said prongs, and a second position wherein said trigger surface is spaced from said body surface portion for accommodating advancement of said floss for disposing a clean length of floss across said space by pulling on the free floss end with the other hand, said trigger member being movable between said two positions by pushing on the upper and lower parts of said trigger member, the positioning of said bore at the rear end of said barrel acommodating use of the thumb of said user's one hand for pushing on the upper part of said trigger member and the use of another finger on said user's one hand for pushing on the lower part of said trigger member, said trigger member thereby being movable between said two positions by the fingers of said user's one hand while said one hand is simultaneously holding said flossing device by grasping said handle portion.

4,495,958

MEDICATION DISPENSER

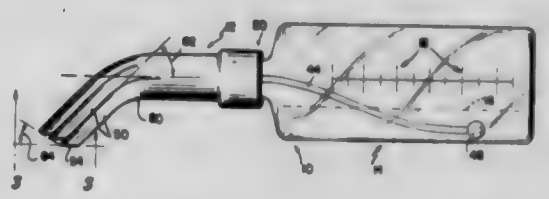
Malcholm O. Roeder, 414 E. Mill St., Danville, Ind. 46122

Filed Feb. 22, 1983, Ser. No. 468,388

Int. Cl.³ A45D *24/26*

U.S. Cl. 132—113 24 Claims

1. A dispenser for dispensing medication or the like onto animals comprising a head, a medication container, means for removably coupling the head to the container to permit flow of medication or the like from the container to the head when the container is coupled to the head and to permit recharging or replacement of the container when it is removed from the head, means providing a removable orifice having therein an inner surface around an interior fluid chamber for selectively regulating flow of medication or the like from the container through the head via the fluid chamber, a plurality of teeth extending from the head defining channels for the passage of medication or the like onto the animal, and means for coupling the fluid chamber to the channels comprising means defining a



plurality of separate passageways between the fluid chamber and the channels, the orifice-providing means comprising orifice inserts removably received in the passageways to regulate the flow of medication through each channel separately, each insert having an outer surface acting in conjunction with the inner surface to provide means for collecting sediment of the like.

4,495,959

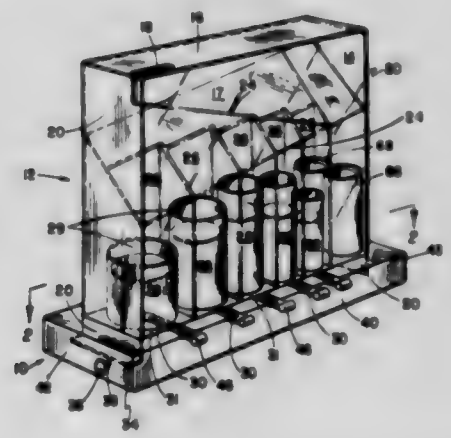
COIN COUNTING DEVICE

Hobart A. Farber, Luther Crest, Apt. 324, 800 Hausman Rd., Allentown, Pa. 18104

Filed Dec. 23, 1983, Ser. No. 564,690

Int. Cl.³ G07D *3/04;* B65B *5/00*

U.S. Cl. 133—1 A 3 Claims



1. A device for counting coins to be used in conjunction with a compartmentalized coin sorter, said device comprising:

(a) a generally parallelpipedal, hollow base of a size to receive an open bottom end of a coin sorter on said base's top, said base including also side walls, a compartment forming wall, back and front walls and a partially open bottom;

(b) at least one tube compartment of a size to hold a coin receiving tube, said compartment(s) extending vertically from said sorter, through said base's top, each defining an opening in said base's top, said compartments placed between a first side wall to said compartment forming wall;

(c) a plurality of coin receiving tubes, each open at one end and each sized circumferentially to receive coins of a different given denomination in stacked relationship, said tubes being removably mounted in said sorter's compartment(s);

(d) tube retaining means in said base to prevent said tube(s) from dropping from said compartment(s) through said base's bottom opening, said tube retaining means including:

(i) at least one transverse channel in said base's top from said front wall to said compartment openings to receive a tube retainer, said channel including a pin and a

washer, said pin extending vertically through each slot so that said tube retainer(s) may not be completely removed from said slot(s), said washer placed between said pin and said retainer to hold said retainer level;

(ii) a tube retainer slidably mounted in each of said channels and out of a length to extend horizontally through said channel(s) and across said tube compartment's(s') base end, supporting said tube's closed bottom thereon, said tube retainer being generally a slotted rectangular bar having one end of said bar extending out of said base's top, said extending end enlarged for grasping by a user's finger;

(e) a U-shaped encasement on said coin sorter's top and side walls, said encasement attached to said base; and,

(f) means to lock said tube(s) in said base, said locking means including:

(i) a locking rod slidably and removably mounted through said base's first side wall, into an aperture in said compartment forming wall, said rod's one end ending in an eye; and,

(ii) an eye bolt located on said first side wall proximate said rod's entrance opening so that a lock may be placed through said eye bolt and said rod's eye to secure said device,

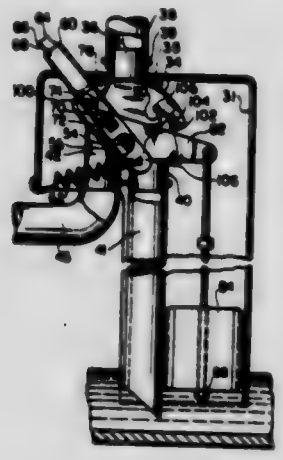
so that when said locking means is removed and said tube retaining means is withdrawn, said coin receiving tube falls through said base's bottom opening.

4,495,960

SUDS RETURN VALVE FOR AUTOMATIC WASHERS

Roger J. Cartier, St. Joseph Township, Berrien County; Victor W. Cathbert, and Anthony Mason, both of Lincoln Township, Berrien County, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 24, 1982, Ser. No. 423,175
Int. Cl.³ F16K *31/18*
U.S. Cl. 137—122 12 Claims



1. For use with an automatic washing machine operable through a sequence of washing operations in a wash cycle and a wash tub having a liquid storage receptacle and a drain, a suds return valve for returning wash liquid removed from said machine in a latter wash cycle, said suds return valve comprising:

a housing having a valve body, said valve body having a single inlet in liquid communication with said machine for receiving and returning washing liquid and two outlets, a first of said outlets communicating with said storage receptacle, a second of said outlets communicating with said drain,

a flapper valve means in said valve body operative to alternatively close said first outlet in first position and said second outlet in a second position,

means to normally hold said flapper valve in said first position,

means to manually position and retain said flapper valve in said second position,

float means vertically movable in response to the level of liquid in said storage receptacle and pivotally connected to a rotatable sector cam said sector cam rotated by the vertical movement of said float means and having means for automatically releasing said flapper valve retaining means fo return said flapper valve to said first position during said wash cycle upon a sufficient rotation of said sector cam, and

means for manually releasing said flapper valve to return to said first position,

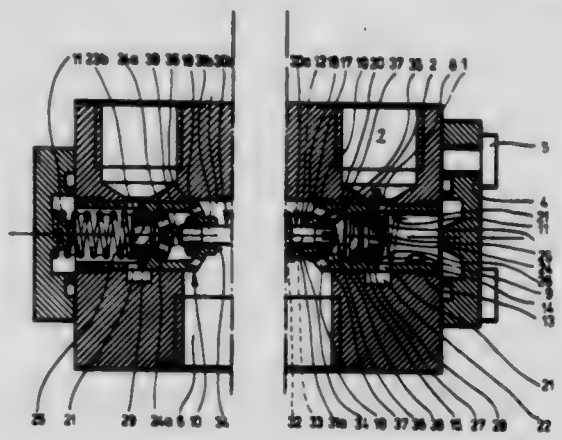
whereby wash liquid passing through said valve body passes through either said first outlet or said second outlet depending on the position of said flapper valve.

4,495,961

FLOW DIVIDER

Rudolf Brunner, Baldham, Fed. Rep. of Germany, assignor to Heilmeier & Weinlein, Fabrik fur Oel-Hydraulik GmbH & Co., KG, Munich, Fed. Rep. of Germany

Filed Feb. 11, 1983, Ser. No. 465,805
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1982, 3205368
Int. Cl.³ G05D *11/02*
U.S. Cl. 137—101 15 Claims



1. A flow divider for carrying out a load-independent division of a stream of hydraulic fluid, comprising a basic body including an internal bore, a central main connection and two outer consumer connections leading to said internal bore and further comprising two approximately coaxial control pistons (9, 10) wich are displaceably guided in said internal bore and which are each provided with a flow orifice and with at least one radial control opening, said control pistons being connected by a coupling device such that they can be moved towards each other and away from each other to a limited extent, characterized in that the support areas between the coupling device (30*a*, 30*b*) and the two control pistons are, respectively, substantially complemental concave and convex support areas, and further characterized in that the coupling device (30*a*) is an element (31*a*) which engages both control pistons and which, adjacent each respective free end thereof, is designed as a ball and socket joint part in combination with the respective control piston.

4,495,962

FLUID CONTROL VALVE

Noboru Hattori, Yokosuka, and Yoshitomo Suzuki, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 17, 1983, Ser. No. 458,328
Claims priority, application Japan, Mar. 23, 1982, 57-46118
Int. Cl.³ G05D *11/03*
U.S. Cl. 137—117 4 Claims

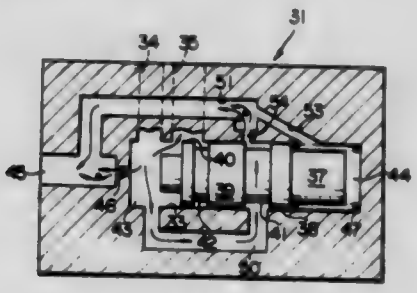
1. A fluid control valve assembly for use in a hydraulic system, the fluid control valve assembly being provided be-

tween the hydraulic system and a fluid feed pump having suction and discharge ports, comprising:

a valve body having a valve cavity extending axially thereof and fluid inlet and outlet ports communicating respectively with said discharge and suction ports of said fluid feed pump;

a valve spool received in said valve cavity and having at least one annular groove formed therein, said valve body and the valve spool defining in combination in the valve cavity high-pressure and low-pressure chambers axially spaced apart from each other across the valve spool, said high-pressure chamber being held in communication with said fluid inlet port, said valve spool being axially movable between a first axial position where said valve spool closes said fluid outlet port to block communication between said fluid inlet and outlet ports and a second axial position where said valve spool opens said fluid outlet port to provide communication between said fluid inlet and outlet ports;

biasing means for biasing said valve spool toward said high-pressure chamber; and



stop means for stopping said valve spool against the biasing force of said biasing means and having said valve spool held at the first axial position;

said valve body further having a discharge passageway held in communication with said high-pressure chamber through an orifice passageway, a first fluid control passageway having an upstream end open to said high-pressure chamber and a downstream end open to said annular groove of said valve spool, a second fluid control passageway having an upstream end and a downstream end open to said discharge passageway, and a third fluid control passageway having one end held in communication with the upstream end of said second fluid control passageway and the other end open to said low-pressure chamber;

wherein said valve body is formed with a flow restriction passageway having one end held in communication with the upstream end of said second fluid control passageway and the other end communicating with said annular groove of said valve spool when the valve spool is held at the first axial position thereof.

4,495,963

REMOTELY ACTUATED OIL DRAIN FOR MOTOR VEHICLES

William H. Hensley, 6745 E. Boston St., Mesa, Ariz. 85205

Filed Jan. 31, 1983, Ser. No. 462,219
Int. Cl.³ F16L 3/00
U.S. Cl. 137—351 8 Claims

1. Apparatus mounted within the engine compartment of a motor vehicle for the remote actuation of a drain valve for the engine crankcase of said motor vehicle which comprises:

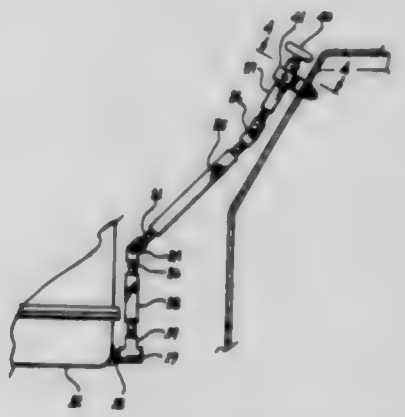
(a) valve means having an extension adapted for insertion into a crankcase, said valve means having an actuating stem extending outwardly of said crankcase, the rotation of said stem actuating said valve;

(b) a first universal joint coupled to said valve stem for imparting rotation thereto;

(c) means for connecting said first U-joint to the portion of said valve stem extending outwardly of said crankcase;

(d) a first rigid motion translating arm having first and second ends, said first end being secured to said first universal joint; and

(e) receiving means mounted within the engine compartment of said motor vehicle remote from said crankcase for



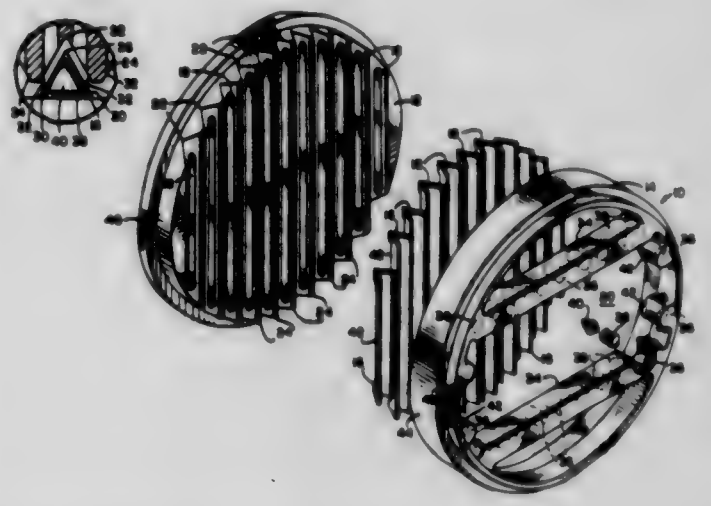
removably receiving the second end of said arm and preventing rotation thereof, the removal of said arm from the receiving means and the rotation thereof actuating said valve means to permit the remote draining of the engine crankcase.

4,495,964

UNIDIRECTIONAL-FLOW FLUID VALVE

Robert A. Bennitt, Corning, N.Y., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed May 12, 1983, Ser. No. 493,994
Int. Cl.³ F16K 15/02
U.S. Cl. 137—512.1 17 Claims



9. A unidirectional-flow, fluid valve, comprising:

a valve seat; and

a stop plate; wherein

said seat and plate are in coupled engagement;

said seat has pluralities of openings formed therethrough;

said plate has a void formed therewithin; and

valving means, interposed between said seat and said plate, operative, in response to pressured fluid addressed thereto, for opening and closing communication between said openings and said void; wherein

said valving means comprises a plurality of individual valving elements;

said valve seat has a plurality of lands;

each of said lands is intermediate a pair of said openings;

said elements each have a given surface which closes upon, and removes from, a given one of said lands;

said lands are of angular cross-section;

each of said valving elements is of a substantially right-angular, channel configuration, having an apex and integral walls divergent from said apex; and

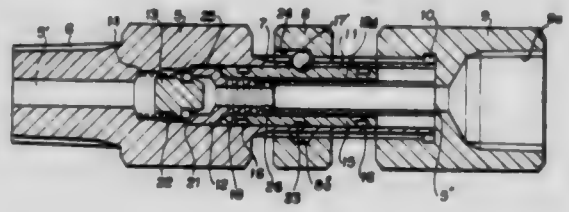
said apexes of said valving elements sealingly nest in, and remove from, said lands;
each pair of said openings is of a given length;
each valving element has a length which is greater than such given length of the pair of openings upon which it closes, and from which it removes; and
each valving element has an elongated aperture, formed in the apex thereof, having a length corresponding to said given length of the pair of openings upon which said element closes, and from which it removes.

4,495,965

FLOW REGULATING VALVE

Yoji Ise, Tokyo, Japan, assignor to Myotoku Ltd., Tokyo, Japan

Filed Aug. 13, 1982, Ser. No. 407,909
Claims priority, application Japan, Aug. 21, 1981, 56-123866[U]
Int. Cl.³ F16K *11/10*
U.S. Cl. 137—599
9 Claims



1. A flow regulating valve comprising an elongate cylindrical valve body having an axial bore with ports at opposite ends opening into said bore, means for connecting opposite ends of said valve body respectively to fluid flow lines,
a valve member axially slidable in said axial bore of said valve body and having an axial bore,
a sleeve fixed in said axial bore of said valve body and having a portion slidably received in an end portion of said axial bore of said valve member and grooved with a helical groove, said sleeve further having an axial bore surrounded by an annular check valve seat,
a check valve member seatable on said check valve seat and a spring acting on said check valve member to bias said check valve member to seat on said check valve seat and thereby close said axial bore of said sleeve to flow of fluid through said axial bore of said sleeve in one direction while permitting flow of fluid in the opposite direction,
means providing a flow path bypassing a check valve comprising said check valve seat and said check valve member, and including in said flow path said helical groove of said grooved portion of said sleeve, and
means for moving said valve member axially of said valve body and positioning it to embrace and thereby cover a selected portion of said helically groove portion of said sleeve so as to vary the flow resistance of said helical groove,
whereby said flow regulating valve permits free flow of fluid in a direction to open said check valve and regulates flow of fluid in the opposite direction by the position of said valve body relative to said sleeve.

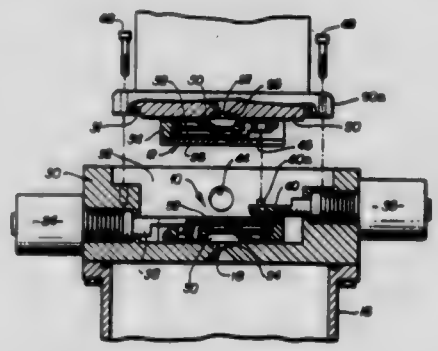
4,495,966

SEPARABLE HIGH VACUUM VALVE

Robert G. Longanore, Newbury Park, Calif., assignor to Electron Beam Corporation, San Diego, Calif.

Filed May 24, 1982, Ser. No. 381,646
Int. Cl.³ F16L *37/28*; F16K *25/00*
U.S. Cl. 137—614.01
10 Claims

1. Apparatus permitting separation or assembly of two vacuum chambers without breaking the vacuum on either chamber, said apparatus comprising:
a first valve permanently attachable to a first vacuum chamber to seal an opening therein;
a second valve permanently attachable to a second vacuum chamber to seal an opening therein;
a valve housing extending around said first and second valves;
means for sealing said valve housing against said vacuum chambers to form a valve lock chamber between said first and second vacuum chambers;
actuating means for opening and closing said first and second valves, said actuating means being operable while said valve lock chamber is attached to said vacuum chambers and while said valve lock chamber is evacuated; and



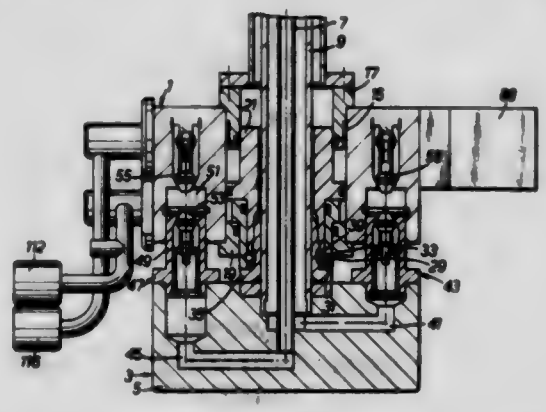
means for connecting a vacuum pump to said valve lock chamber;
whereby the first and second chambers are separable by closing said first and second valves and venting said valve lock chamber to the atmosphere or said first and second vacuum chambers may be assembled by connecting said vacuum chambers to said valve lock chamber, evacuating said valve lock chamber and opening said first and second valves.

4,495,967

FLUID INJECTORS

Arthur M. Needham, Surrey, and Laurie E. Helyer, Berkshire, both of England, assignors to Tectron (Eng) Ltd., Surrey, England

Filed Aug. 9, 1983, Ser. No. 521,630
Claims priority, application United Kingdom, Aug. 10, 1982, 8223010
Int. Cl.³ F16L *37/28*
U.S. Cl. 137—614.06
13 Claims



1. A fluid injector comprising
a housing structure having inlet and outlet ports;
a pair of fluid connections and means defining passageways for fluid between the ports and respective ones of the fluid connections; and
valve means for controlling the flow of fluid along said passageways;
a body assembly including an elongate tubular portion having provision for receiving a nozzle at its outer end;
a pair of fluid connections and means defining passageways for fluid between each of the fluid connections and said outer end of the tubular portion;
said housing structure providing a support for the body assembly and including fluid pressure means for displacing

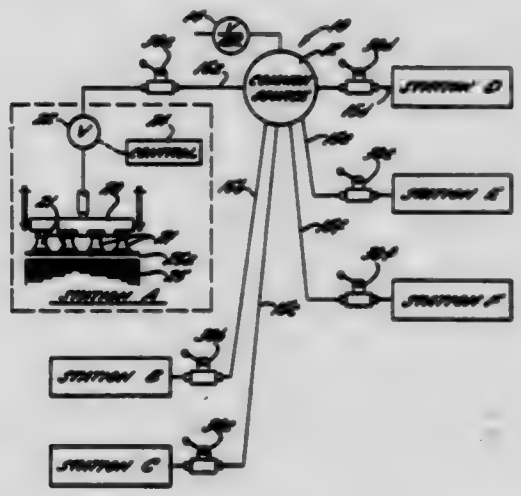
the assembly relative to the housing between a first position, in which the fluid connections on the body assembly are coupled to respective fluid conections on the housing structure, and a second position, in which the fluid connections on the body assembly are disconnected from the fluid connections on the housing structure, and mechanical interlock means arranged to allow said valve means to be operable to permit the flow of fluid along the passageways when the body assembly is in the first position, but not operable when the body assembly is in the second position, and for preventing the body assembly from being moved from the first to the second position when said valve means permit the flow of fluid along the passageways.

4,495,968

PNEUMATIC CONTROL SYSTEM

William J. Kist, Barrington, Ill., assignor to Combined Fluid Products Company, Highland Park, Ill.

Filed Jul. 16, 1982, Ser. No. 398,983
Int. Cl.³ F16K *11/10*
U.S. Cl. 137—624.2 10 Claims



1. A pneumatic control system comprising a common pneumatic source of sufficient capacity to maintain a determined air flow at a predetermined minimum pressure level during the operating sequence of the system,

a plurality of intermittently operated pneumatic use points each adapted to draw upon the capacity of said common pneumatic source during their operation,

means connecting each said use point to said common source,

non-pressure responsive selectively adjustable throttling valve means interposed in each said connecting means for establishing and maintaining a predetermined relatively constant pressure at said use point during the operating sequence of said system, said throttling valve means being set to establish different pressures at at least some of said use points, and

means for controlling the operating sequence and rate of operation of said use points such that the draw upon the capacity of said common source by said use points remains substantially constant throughout their operation.

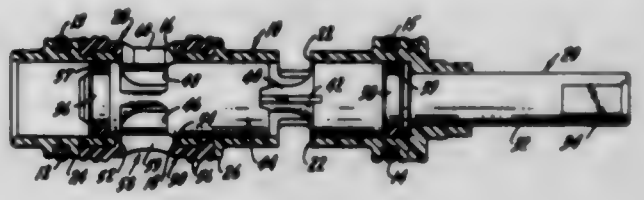
4,495,969

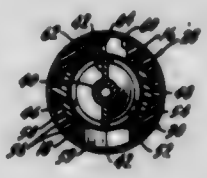
MIXING VALVE WITH WATER MODULATION SEALING MEANS

John D. Givler, Avon Lake, Ohio, assignor to Stanadyne, Inc., Windsor, Conn.

Continuation of Ser. No. 323,925, Nov. 23, 1981,. This application Sep. 28, 1983, Ser. No. 536,229
Int. Cl.³ F16K *11/02*
U.S. Cl. 137—625.17 13 Claims

1. In a mixing valve having a stationary member and a movable member with relative movement therebetween controlling the volume and temperature of water passing therethrough, a hot water inlet port and a cold water inlet port in said stationary member, seal members positioned in said inlet ports and each having an opening therein which controls the





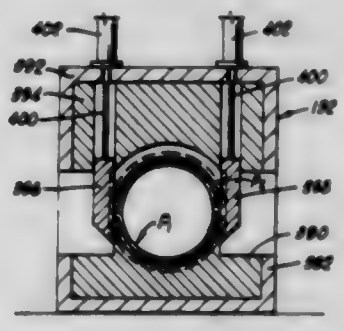
flow of water therethrough, one of said port seal openings having a cross sectional area less than that of said other port seal opening, said one port seal further having a restricted passage, gradually increasing in size toward said opening, controlling the access of water to said seal opening.

4,495,970

LARGE DIAMETER PLASTIC PIPE

Harold T. Pate, Solon, Ohio; William R. Laney, Tecumseh, and Donald H. Shell, Bethany, both of Okla., assignors to Thyssen-Bornemisza Inc., New York, N.Y.

Filed Apr. 18, 1983, Ser. No. 485,865
Int. Cl.³ F16L *9/18*
U.S. Cl. 138—148 10 Claims



1. A synthetic resin pipe comprising:

a first synthetic resin pipe section, having both internal and external surfaces in the shape of a semi-cylinder;

a second synthetic resin pipe section having a configuration identical to said first pipe section;

a flange projecting radially outwardly from the longitudinal edges of each of said sections, said first and second sections being fused together along said flanges to form a cylindrical pipe;

a first synthetic resin external pipe element having a corrugated body which includes alternating peaks and troughs formed transversely to the longitudinal axis of said element, said element having a transverse cross section which forms a slightly less than 180° arc;

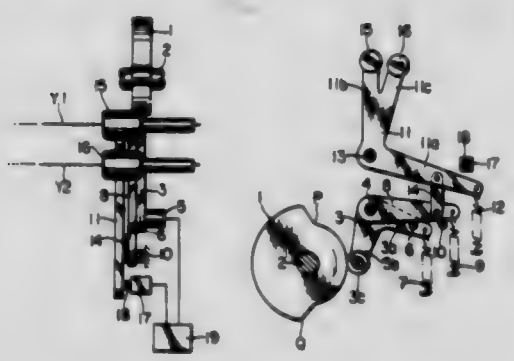
a second synthetic resin external pipe element having a configuration identical to said first synthetic resin external pipe element, said first and second external pipe elements being fitted over said pipe sections and having the peaks on their radially inner surfaces in contact with the radially outer surface of the pipe sections along the length of each peak, each of the longitudinal edges of said elements being fused to one of said flanges.

4,495,971

WEFT INSERTING DEVICE FOR A JET LOOM

Hajime Suzuki, Anjo, and Masao Shiraki, Toyoda, both of Japan, assignors to Seisakusho Kabushiki Kaisha Toyoda Jidoshokki, Kariya, Japan

Filed Aug. 8, 1983, Ser. No. 521,109
Claims priority, application Japan, Aug. 27, 1982, 57-149738
Int. Cl.³ D03D 47/30
U.S. Cl. 139—435 4 Claims



1. A weft inserting device for a jet loom, comprising:
a main nozzle supporting member carrying a plurality of juxtaposed main nozzles adapted for inserting weft yarns supplied from a plurality of weft yarn suppy means, said supporting member being movably mounted in the neighborhood of the weft inserting position for selectively setting the main nozzles at the weft inserting position;
a driving member operatively linked with movable parts of the loom and thereby driven continually and reciprocably;
electrically actuated means for operatively releasably connecting said driving member and said main nozzle supporting member;
means for holding a predetermined one of said main nozzles in the weft inserting position when said one of said main nozzles is placed in such position; and
means for controlling the connecting timing of said connecting means and the operating timing of said holding means.

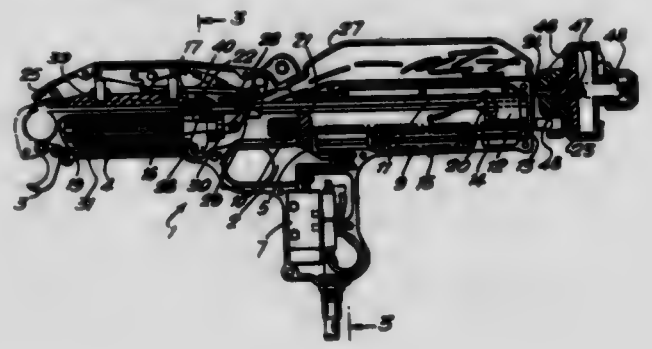
4,495,972

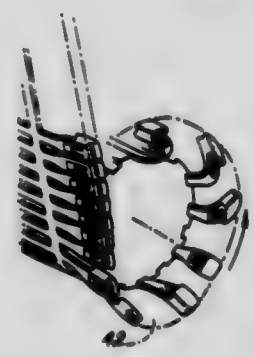
AUTOMATIC TIE GUN

John G. Walker, Hamble, England, assignor to Bowthorpe-Hellermann Limited, Crawley, England

Continuation-in-part of Ser. No. 236,583, Feb. 20, 1981, abandoned, and Ser. No. 236,584, Feb. 20, 1981, abandoned. This application Feb. 24, 1982, Ser. No. 351,997
Claims priority, application United Kingdom, Feb. 27, 1980, 8006529; Feb. 26, 1981, 8106130; Sep. 22, 1981, 8128479
Int. Cl.³ B21F 9/02
U.S. Cl. 140—93.2 14 Claims

1. A tool for automatically applying a flexible tie having a tail and an apertured head around an elongate roll or bundle, said tool being provided with a supply of said ties wherein the supply of ties is in the form of a belt with integral bridging pieces interconnecting the tail portions of adjacent ties, comprising a push rod, driving means for causing said push rod to perform an operating cycle consisting of a forward stroke and a rearward stroke, indexing means driven by said push rod during said rearward stroke of said operating cycle causing a tie to be stepped laterally into a tail forward position in front of the retracting push rod with the apertured head turned into an orientation in which said apertured head is ready to receive said tie tail, said indexing means including a rotary drum rotatable about an axis parallel to the axis of longitudinal movement of said push rod, said rotary drum having a plurality of longitudinal grooves axially extending along its periphery for receiving ties which are to be successively advanced by stepped rotation of said drum into said tail forward position in front of said push rod, said rotary drum further including at least one cicumferential groove peripherally interconnecting said longitudinal grooves, said circumferential groove being positioned to receive the integral bridging pieces in said belt supply of ties, and guide means at the forward end of the tool whereby, said push rod drives said tie forwardly during said forward





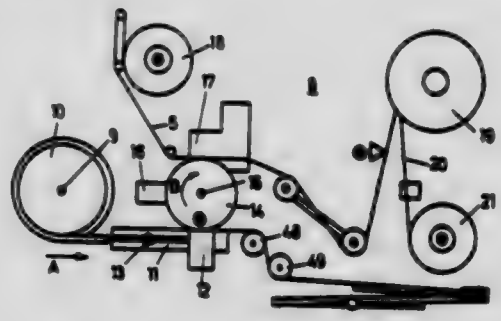
stroke of the next operating cycle of said push rod to advance said tie tail in a loop around said guide means to cause said tie tail to enter the pre-oriented apertured head.

4,495,973

DEVICE FOR RETAPING ELECTRICAL COMPONENTS

Georg Sillner, Buchenstrasse 23, 8411 Zeitlarn, Fed. Rep. of Germany

Filed Oct. 28, 1982, Ser. No. 437,469
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1981, 8135962[U]
Int. Cl.³ B21F 1/00
U.S. Cl. 140—102 22 Claims



1. Apparatus for retaping axially taped electrical components having pigtails into quasi-radially taped components, which comprises a machine frame, a first work station arranged fixed in space on said machine frame, means for stepwise feeding said axially taped components to said first work station, bending menas at said first work station for bending at least one pigtail of said axially taped components, transport means for stepwise transport of bent components away from said first work station, said bending means including a bending mandrel having an axis which lies approximately parallel to an axis in space that extends transverse to the direction of movement of said transport means, a carrier at the first work station swingably mounted about an axis extending in the direction of said axis in space, said carrier bearing, on a side facing the transport means, a protruding bending element which is staggered from the bending mandrel and which forms a mating

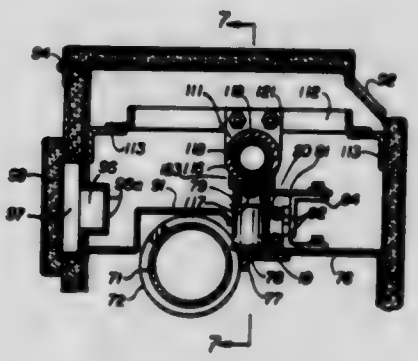
surface for the bending mandrel, inserter means at said first work station for inserting a bent component into said transport means, said inserter means including a component resting surface, said resting surface facing said transport means with one end of said bending mandrel protruding beyond said resting surface, said inserter means being displaceable in the direction of said axis in space from a rest position lying remote from said transport means to a work position lying adjacent to said transport means, and cutting means at said first work station for cutting said axially taped components from said taping.

4,495,974

HOT AIR ASEPTIC PACKAGING SYSTEM AND METHOD

Daniel W. Pohorski, San Jose, Calif., assignor to James Dole Corporation, Redwood City, Calif.

Division of Ser. No. 236,766, Feb. 23, 1981, abandoned. This application May 13, 1983, Ser. No. 494,276
Int. Cl.³ B65B *43/42*
U.S. Cl. 141—132 8 Claims



1. A filler for use with a hot air aseptic packaging system comprising,

a tunnel, a straight-line conveyor in said tunnel receiving sterile, empty containers at a first end and discharging said containers filled with sterile product at a second end, a filler in said tunnel positioned above said conveyor, first means for delivering said sterile product to said filler, second means for delivering sterile air under pressure to said tunnel,

support means supporting said filler from said tunnel, said filler comprising a casing extending longitudinally above the path of said containers as they are moved along said conveyor, said casing being formed at its bottom with an elongated longitudinal first slit,

a tube of lesser diameter than the interior of said casing disposed within said casing perforated at its top and connected to said first means, said tube being separated from said casing by a space, an elongated insert formed with a second slit disposed in said first slit, and detachable means securing said insert to said casing, whereby said insert may be replaced with another insert having a second slit of different width, product received by said tube flowing into said space between said tube and said casing, thence out through said second slit and into said containers.

4,495,975

SAMPLE TREATMENT DEVICE

Karl U. Harström, Lennaholm; Bengt-Ake Nilsson, Upsala, both of Sweden, and Richard J. Wheeler, Warren, N.J., assignors to Pharmacia AB, Upsala, Sweden

Filed Sep. 21, 1982, Ser. No. 420,911
Claims priority, application Sweden, Sep. 22, 1981, 8105590
Int. Cl.³ B67D *5/00*
U.S. Cl. 141—157 7 Claims

1. A sample treatment device comprising:

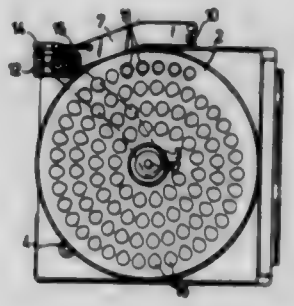
(a) a plurality of test containers,

(b) a treatment unit,

(c) drive means for creating a relative motion between said test containers and said treatment unit so that the test containers are in turn subjected to one or more treatment steps by said treatment unit,

(d) sensor means arranged for relative motion between said test container and said sensor means and arranged to trigger said one or more treatment steps when said sensor means contacts a given area on a test container,

(e) spring means biasing said sensor means against the test containers, and



(f) a guide plate carrying said sensor means and extending essentially in the direction of relative motion between the test containers and the sensor means, said sensor means being arranged to stop, at least for certain test containers, the relative motion between a test container and the treatment unit upon contact with said given area on the test container, and said test containers are carried by a rotatable cassette and are arranged along a helical path thereon.

4,495,976

COMBINATION RADIAL TIRE FOR HEAVY LOAD VEHICLES

Shigeo Makino, Tokorozawa, and Noboru Sugimura, Kodaira, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation of Ser. No. 216,716, Dec. 15, 1980, abandoned. This application Mar. 24, 1983, Ser. No. 478,802
Claims priority, application Japan, Dec. 25, 1979, 54-167631
Int. Cl.³ B60C *9/08, 15/06*
U.S. Cl. 152—354 R 7 Claims



1. A combination radial tire for heavy load vehicles comprising; a carcass composed of at least two plies including polyester fiber cords arranged in a plane containing a rotational axis of the tire or inclined at an extremely small angle with respect to said plane, all plies of said carcass being wound around a bead core from the inside toward the outside thereof to form a turn-up portion, a rubber stock disposed on the bead core and interposed between the carcass itself and the turn-up portion thereof, and at least one bead portion reinforcing layer arranged along the turn-up portion of the carcass and including cords crossed with the cords of the turn-up portion of the carcass, at least one additional reinforcing layer arranged at the lower half region of the carcass itself along said rubber stock wherein a lower end of said at least one additional reinforcing layer is fixed to said bead core, said additional reinforcing layer interposed at least between said plies of the carcass itself and/or between said carcass itself and said rubber stock, said

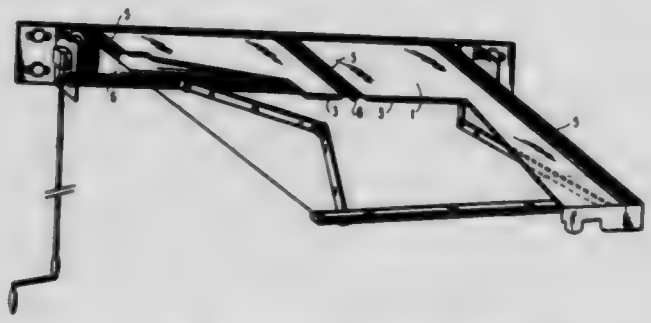
additional layer including aromatic polyamide textile cords which are substantially in parallel with said carcass ply cords, and said additional reinforcing layer extending along said carcass itself over a region having a vertical height measured from the bead base and corresponding to 15% to 45% of a tire height measured from the same bead base.

4,495,977

WIND-UP THERMAL INSULATING AWNING

René E. Delinc, 2, Square du Berry, 91300 Massy, France

Filed Jul. 14, 1982, Ser. No. 398,147
Claims priority, application France, Sep. 21, 1981, 81 17760
Int. Cl.³ E04F *10/06*
U.S. Cl. 160—70 5 Claims



1. A thermally insulating exterior awning adapted to be wound up into an elongate roll, comprising:

(a) a sheet of canvas (1) having one edge adapted to be secured to a winding roll,

(b) a plurality of elongate, flexible spacer bead strips (5, 6) attached to the canvas sheet perpendicular to said one edge and spaced apart from each other, and

(c) a thermally insulating foam plastic sheet (3) attached to an underside of the canvas sheet between adjacent spacer bead strips,

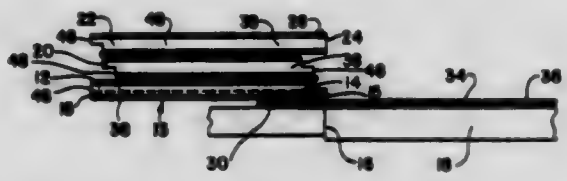
(d) wherein the height of the spacer bead strips is greater than the thickness of the foam plastic sheet to thereby maintain a sufficient spacing between adjacent layers of the canvas sheet upon wind-up to prevent the destructive compression of the foam plastic sheet.

4,495,978

INSULATING SHUTTER PANELS FOR BUILDING OPENINGS

Frank E. Carroll, 237 Maple Rd., Barrington, Ill. 60010

Filed Dec. 10, 1981, Ser. No. 329,196
Int. Cl.³ E06B *3/48, 3/26*
U.S. Cl. 160—117 29 Claims



18. Apparatus for insulating a window or other opening in a building comprising:

a plurality of horizontal rail means secured to the interior of said building adjacent to and extending only outwardly from at least one generally vertical edge of said opening;

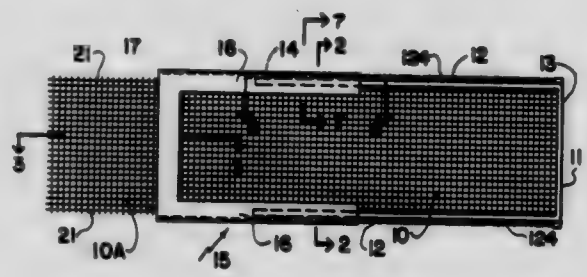
at least one insulated shutter panel slidably engaged with said rail means, said rail means extending horizontally a distance substantially less than the width of said slidably engaged shutter panel to provide concealment of said rail means when said slidably engaged shutter panel is in extreme slidable position in each direction and capable of substantially exposing or substantially covering said opening due to the sliding action of said slidable shutter panel relative to said vertical edge.

4,495,979

ADJUSTABLE WINDOW GRILL

Robert J. Schwob, 28 Thurlow Rd., Hampstead, London, England NW3 5PP

Filed Jan. 13, 1984, Ser. No. 570,641
Int. Cl.³ F06B *3/12*
U.S. Cl. 160—226 3 Claims



1. A longitudinally adjustable grill for a window comprising a first rigid frame member including two spaced and parallel arms and base extending between adjacent ends of said arms at one end thereof, a mesh screen spanning said first frame between the arms and base thereof and extending a predetermined amount beyond the open end of said first frame, means for fixing the edges of the screen to the arms and to the base to prevent movement relative thereto, a second frame member comprising a base and two arms, each of the arms comprising a hollow cross section for receiving telescopically slidably therein the arms of the first frame member to complete a variable length of rectangular frame, the cross section being closed except for a slot in the inner surface thereof through which the screen passes, the first frame member having a compressible plush fabric on the outer surface of the arms thereof to engage the respective arm of said second frame member to provide a resistance fit therewith and to extend outwardly from the outer surface of the arm a distance substantially equal to the thickness of the outer surface of the hollow cross section of the second arm.

4,495,980

BINDERS FOR FOUNDRY CORES AND MOULDS

John G. Morley, Kings Coughton, England, assignor to BCIRA, Birmingham, England

Filed Oct. 7, 1982, Ser. No. 433,231
Claims priority, application United Kingdom, Oct. 10, 1981, 8130649; Apr. 28, 1982, 8212339
Int. Cl.³ B22C *9/12*
U.S. Cl. 164—16 11 Claims

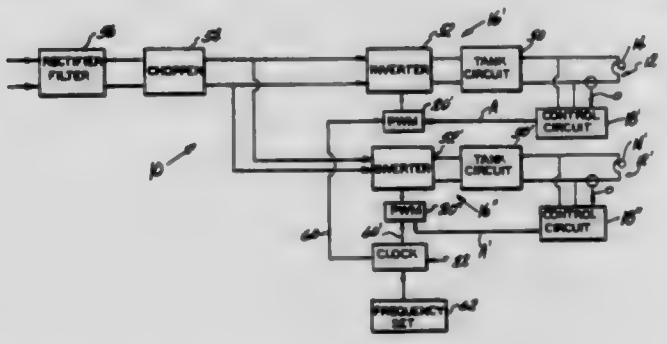
1. A method of forming a foundry mould or core comprising adding to a body of granular refractory particles a binder consisting essentially of an alkali metal salt of a polyvalent organic acid or of a polymerised monovalent organic acid, together with an alkaline earth metal hydroxide and water, said acid having a pKa of not less than 2.5 and the total weight of the non-organic constituent of the binder comprising between 25 and 400% of the weight of said alkali metal salt, and then passing an acid gas through the resulting body.

4,495,981

PROCESS AND APPARATUS FOR SYNCHRONIZED ELECTROMAGNETIC CASTING OF MULTIPLE STRANDS

Peter J. Kindlmann, Guilford; John C. Yarwood, Madison; Gary L. Ungarean, Woodbridge, and Derek E. Tyler, Cheshire, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 2, 1981, Ser. No. 317,373
Int. Cl.[3] B22D *27/02*
U.S. Cl. 164—452 8 Claims



1. A multi-strand apparatus for casting molten material into ingots of desired shape, comprising:

a plurality of means for receiving and electromagnetically forming said molten material into ingots of said desired shape, each of said receiving and forming means including:

an inductor for applying a magnetic force field to the molten material, said inductor in operation being spaced from said molten material by a gap extending from the surface of the molten material to the opposing surface of the inductor;

means associated with each said inductor for sensing variations in its corresponding gap;

means for applying an alternating current to each said inductor to generate the magnetic force field associated with each inductor;

means for controlling the application of alternating current to each said inductor in response to the gap variation sensing means whereby variations in the gap of each said inductor are minimized;

said current applying means includes a plurality of inverters, each of said inverters connected with one of the inductors for applying current thereto; and

clock means connected with said current applying means for simultaneously directing a turn-on signal to turn on all of said inverters at substantially the same time so as to synchronize the operating frequency of the inductors and substantially eliminate the development of beat frequencies.

6. A process for casting molten material into ingots of desired shape, comprising the following steps:

receiving and electromagnetically forming molten material into a plurality of ingots of desired shape, said step of receiving and forming including the steps of:

providing a plurality of inductors for applying magnetic force fields to the molten material, each of said inductors in operation being spaced from said molten material by a gap extending from the surface of the molten material to the opposing surface of the inductor;

sensing variations in each of the gaps;

applying an alternating current to each of said plurality of inductors to generate the magnetic force field associated with each inductor;

providing a plurality of inverters connected with said plurality of inductors, each of said inverters being connected with one of said plurality of inductors for applying said alternating current thereto;

controlling the application of alternating current to each of said plurality of inductors in response to the sensed variations of their corresponding gaps whereby variations in the gaps are minimized;

providing a clock connected to each of said inverters;

simultaneously applying a turn-on signal with said clock to turn-on all of said inverters at substantially the same time; and

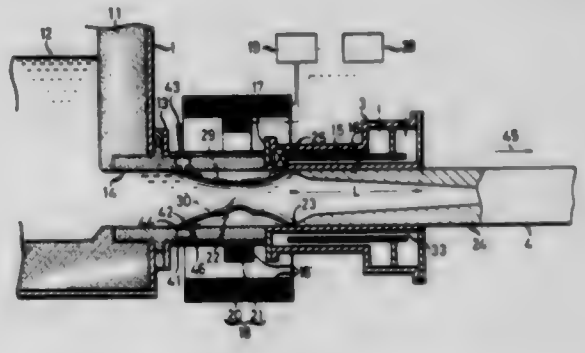
applying a turn-off signal simultaneously to each of said inverters so in order to synchronize the operating frequency of the inductors and substantially eliminate the development of beat frequencies.

4,495,982

HORIZONTAL CONTINUOUS CASTING METHOD

Hideo Kaneko; Hatuyoshi Kumashiro, and Akira Iwata, all of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Nov. 15, 1982, Ser. No. 441,704
Claims priority, application Japan, Nov. 18, 1981, 56-185880; Nov. 18, 1981, 56-185881; Nov. 18, 1981, 56-185882
Int. Cl.[3] B22D *11/10, 11/16*
U.S. Cl. 164—452 11 Claims



1. A horizontal continuous casting method wherein electromagnetic field generating means is arranged in the vicinity of the boundary between a tundish nozzle and a mold, in order to apply an electromagnetic force to a molten metal flowing through the vicinity of the boundary to constrict the molten metal in the vicinity of the boundary, to thereby cause the molten metal to separate itself from the inner surface of the tundish nozzle anterior to the boundary and bring it into contact with the inner surface of the mold posterior to the boundary, said method comprising:

(a) sensing an actual point at which the molten metal begins to come into contact with the inner surface of said mold with respect to the flowing direction of the molten metal;

(b) comparing said actual point with a set point at which the molten metal is designed to begin to come into contact with the inner surface of said mold; and

(c) applying a control signal corresponding to the difference of said actual point and said set point to said electromagnetic field generating means, to thereby control said electromagnetic field generating means to bring the point at which the molten metal begins to come into contact with the inner surface of the mold into coincidence with said set point.

4,495,983

DETERMINATION OF LIQUID-SOLID INTERFACE AND HEAD IN ELECTROMAGNETIC CASTING

Peter J. Kindlmann, Northford; Gary L. Ungarean, Woodbridge; John C. Yarwood, Madison, and Derek E. Tyler, Cheshire, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 137,645, Apr. 7, 1980, abandoned. This application Feb. 10, 1983, Ser. No. 465,239
Int. Cl.[3] B22D *27/02*
U.S. Cl. 164—452 10 Claims

1. In an electromagnetic casting system for casting material comprising:

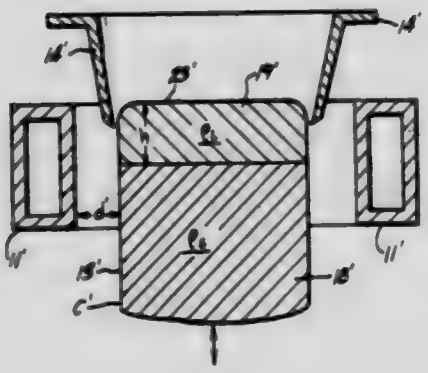
means for electromagnetically containing molten material and for forming said molten material during a casting run into a casting of desired shape, said casting including during said casting run a liquid-solid interface defining

molten material head and solid material portions of said casting, said electromagnetic containing and forming means including an inductor for applying a magnetic field to said molten material, said magnetic field defining a containment zone for said molten material and a gap between said molten material and said inductor, means for applying an alternating current to said inductor to generate said magnetic field, means for controlling the current applied to said inductor whereby said gap remains substantially constant, a non-magnetic shield for attenuating and shaping said magnetic field, the improvement comprising:

means for monitoring the location of said liquid-solid interface, said liquid-solid interface monitoring means including first means for determining at least a first electrical parameter of said electromagnetic casting system which varies with variations in the location of the liquid-solid interface, wherein said first electrical parameter substantially corresponds to the equivalent series resistance of the electromagnetic casting system; and

means responsive to said first determining means for generating a readout signal representative of the location of said liquid-solid interface.

8. In a process for continuously and semi-continuously elec-



tromagnetically containing and forming molten material during a casting run into a casting of desired shape, said casting having during said casting run a liquid-solid interface defining a head of molten material and a solid material portion of said casting, said electromagnetic containing and forming including the steps of: providing an inductor, applying a current in and a voltage across said inductor to generate and apply a magnetic field to said molten material; and applying said magnetic field to said molten material to define a containment zone of said molten material and a gap between said molten material and said inductor; controlling the current to the inductor so that the gap remains substantially constant; providing a non-magnetic shield for attenuating and shaping said magnetic field; the improvement comprising the steps of:

monitoring the location of the liquid-solid interface by determining at least a first electrical parameter of the electromagnetic casting system during said run, said at least first electrical parameter varying with variations in the location of the liquid-solid interface, wherein said first electrical parameter substantially corresponds to the equivalent series resistance of the electromagnetic casting system; and

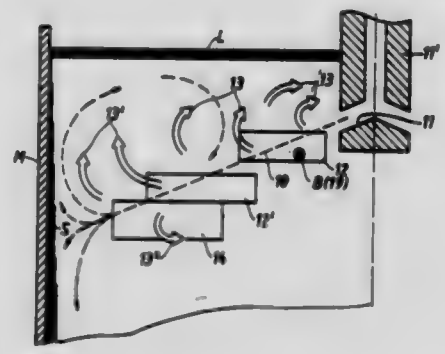
responsive to said step of determining, generating a readout signal representative of the magnitude of the liquid-solid interface.

4,495,984

CONTINUOUS CASTING MOLD STIRRING

Sten Kollberg, Västerås, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Continuation of Ser. No. 264,709, May 18, 1981, abandoned.
This application Aug. 30, 1983, Ser. No. 527,508
Claims priority, application Sweden, May 19, 1980, 8003695
Int. Cl.³ B22D *11/10, 27/02*
U.S. Cl. 164—468 2 Claims



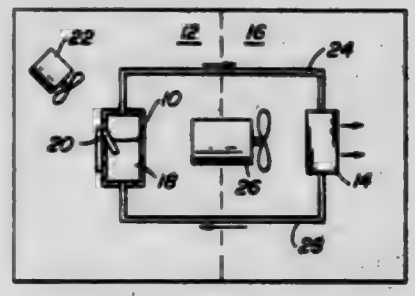
1. A continuous casting mold stirring method for a continuous casting mold of slab cross section having wide side walls and narrow edge walls and containing a body of molten metal maintained by molten metal poured from above the mold through a pipe having a lower end provided with outlets pointing angularly downwardly towards the mold's narrow edge walls and immersed in the upper portion of said body of molten metal so as to inject therein molten metal streams traveling towards the mold's narrow edge walls; wherein the improvement comprises for each of said streams projecting at least one stationary static magnetic field of constant direction through the mold's wide side walls from their outside and into said body and transversely through the stream so as to abruptly reduce the stream's velocity and momentum when in said field with an effect similar to that of an eddy current brake and cause the stream's portion traveling towards said field to push against the stream's portion in said field and split or break up into smaller streams which stir into said body.

4,495,985

DISASSOCIATIVE/REASSOCIATIVE CHEMICAL HEAT PUMP

Stephen Feldman, 110 Lombard St., Philadelphia, Pa. 19147

Filed Aug. 8, 1983, Ser. No. 520,936
Int. Cl.³ F28D *21/00, 15/00*
U.S. Cl. 165—1 20 Claims



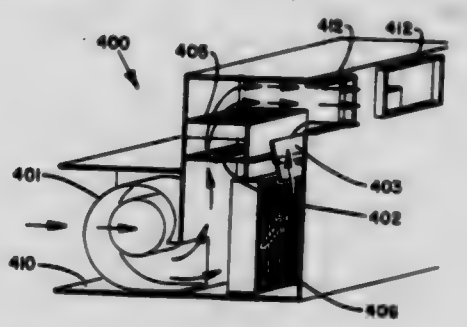
16. A method for transferring heat energy between two different temperatures comprising disassociating a chemical with a spontaneous and complete change of phase, transferring heat from the disassociated chemical to a heat sink, reassociating the disassociating chemical and transferring heat to the reassociated chemical from a heat source.

4,495,986

METHOD OF OPERATING A VARIABLE VOLUME MULTIZONE AIR CONDITIONING UNIT

William E. Clark, Syracuse, and Donald C. Wellman, Marcellus, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jun. 21, 1982, Ser. No. 390,606
Int. Cl.³ F24F 3/044
U.S. Cl. 165—2 6 Claims



1. A method of simultaneously supplying a variable volume of warm, cool or neutral air, as required, to a plurality of zones including the steps of:

supplying neutral air from a variable supply means through an air cooling means only to all zones requiring cool air;

regulating the amount of cooled neutral air supplied by the variable supply means to each zone requiring cool air;

supplying neutral air from the variable supply means to all zones requiring warm or neutral air;

regulating the amount of neutral air supplied by the variable supply means to each zone requiring warm or neutral air; and

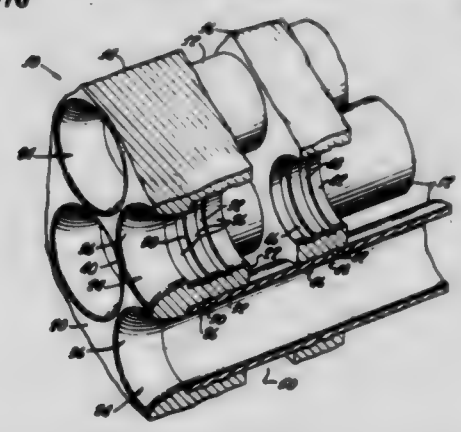
heating the neutral air supplied to those zones requiring warm air.

4,495,987

TUBE AND TUBE SHEET ASSEMBLY

Marshall N. Fisman, Santa Ana, Calif., assignor to Occidental Research Corporation, Los Angeles, Calif.

Filed Feb. 18, 1983, Ser. No. 467,726
Int. Cl.³ F28F 9/16
U.S. Cl. 165—70 18 Claims



1. A tube and tube sheet assembly for a heat exchange device comprising:

a plurality of heat exchanger tubes; and

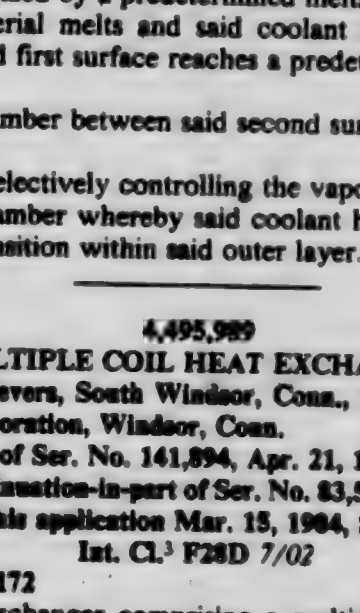
a tube sheet having a front and a back face and means defining a plurality of generally circular holes therein, each hole corresponding to one of the heat exchanger tubes and communicating with a reamed portion of the tube sheet back face, said reamed portion being sized for insertion of the corresponding heat exchanger tube and communicating with at least one groove in a wall of the reamed portion to enable a portion of the corresponding tube to flow thereinto upon explosive forming of the tube after insertion of the tube into the reamed portion, the hole diameter being of the same diameter as the tube inside diameter after explosive forming to provide a smooth, continuous transition therebetween, said tube sheet front face having means defining an opening communicating with each of said holes, each said opening having a convex surface defined by the surface of revolution of an arc extending outwardly from the circumference of each hole said last mentioned means further defining a smooth continuous curved surface interconnecting adjacent holes.

4,495,988

CONTROLLED HEAT EXCHANGER SYSTEM

Arthur Grossman, Framingham, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Apr. 9, 1982, Ser. No. 366,931
Int. Cl.³ F28F 27/00
U.S. Cl. 165—96 1 Claim



1. A system for transferring heat from a first surface through a second surface, said second surface being characterized by substantially uniform thermal envelope, comprising:

an inner porous layer adjacent to said first surface, said inner layer being characterized by relatively high porosity and thermal conductivity, and being adapted to house coolant,

an outer porous layer between said inner layer and said second surface, said outer layer being characterized by a relatively low porosity and relatively high thermal conductivity, wherein said outer layer is thermally coupled to said inner layer and the pores of said outer layer are coupled to the pores of said inner layer permitting coolant flow therebetween, wherein the pores of one of said porous layers are filled with a material whereby coolant flow is prevented between inner and outer pores, said material characterized by a predetermined melting point whereby said material melts and said coolant flow is permitted when said first surface reaches a predetermined temperature,

a vapor chamber between said second surface and an outer member,

means for selectively controlling the vapor pressure in said vapor chamber whereby said coolant has a liquid vapor phase transition within said outer layer.

4,495,989

MULTIPLE COIL HEAT EXCHANGER

Richard W. Sievers, South Windsor, Conn., assignor to Spiral Tubing Corporation, Windsor, Conn.

Continuation of Ser. No. 141,894, Apr. 21, 1980, abandoned, which is a continuation-in-part of Ser. No. 83,568, Oct. 11, 1979, abandoned. This application Mar. 15, 1984, Ser. No. 589,846
Int. Cl.³ F28D 7/02
U.S. Cl. 165—172 16 Claims

1. A heat exchanger comprising a multiple coil structure having a common axis and formed from a continuous tube having inlet and outlet ends, said structure including an inner coil formed of said tube beginning from said inlet end and having a plurality of abutting and substantially identical turns coiled about and spaced along said common axis to the other end of said structure, an outer coil formed of said tube and having a plurality of abutting and substantially identical turns coiled concentrically and substantially coextensive with said inner coil and spaced along said common axis toward said inlet end, and a continuous transition segment joining said inner and said outer coils at said other end of said structure and having a

first curved portion substantially parallel to said inner coil radially extending said tube relative to said inner coil and a



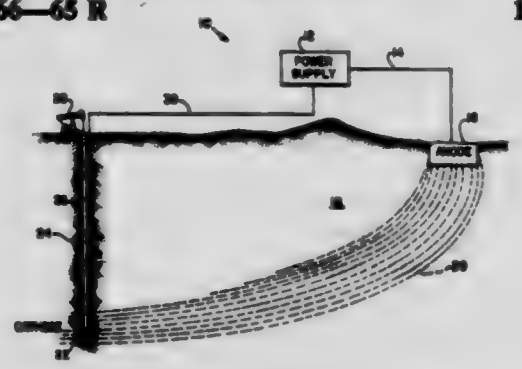
second curved portion substantially parallel to said outer coil which extends over said inner coil.

4,495,990

APPARATUS FOR PASSING ELECTRICAL CURRENT THROUGH AN UNDERGROUND FORMATION

Charles H. Titus, Newtown Sq.; John K. Wittle, Chester Springs, and Christy W. Bell, Berwyn, all of Pa., assignors to Electro-Petroleum, Inc., Wayne, Pa.

Filed Sep. 29, 1982, Ser. No. 427,708
Int. Cl.[3] E21B *43/00*
U.S. Cl. 166—65 R 13 Claims



2. An apparatus for passing electrical current from a D.C. power source having first and second terminals through an underground formation in the extraction of carbonaceous fluids from beneath the earth's surface, the apparatus comprising an anode and a cathode remote from the anode, the anode comprising:

a containment positioned proximate to the underground formation;

a first layer of generally wet conduction material suitable for ion conduction positioned in the containment to enhance conduction between the anode and the underground formation, the containment permitting conduction between the first layer of conduction material and the underground formation;

conductor means connected with the first terminal of the power source for providing a flow of electrical current for the anode; and

a second layer of generally dry condition material positioned in the containment in contact with the first layer of conduction material and generally surrounding the conductor means to isolate the conductor means to prevent deterioration of the conductor means by electrolysis; the cathode comprising:

a screen housing comprised of an electrically conductive material, the screen housing positioned within a well bore proximate to the underground formation;

means for supporting the screen housing at a predetermined position within the well bore; and

second means connecting the screen housing to the second terminal of the power source for conducting current from the screen housing to the power source,

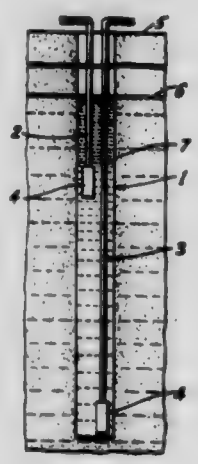
whereby electrical current from the power source is passed through the conductor means, the anode, the underground formation, the cathode, and the second means and back to the power source.

4,495,991

PROCEDURE FOR DRAWING WATER FROM A GROUND WATER STORE

Veli Reijonen, Takametsäntie 11, 00620 Helsinki 62, Finland

Filed Jul. 8, 1982, Ser. No. 396,318
Claims priority, application Finland, Jul. 15, 1981, 812220
Int. Cl.[3] E21B *47/04*
U.S. Cl. 166—250 4 Claims



1. Procedure for drawing water from a ground water store wherein the ground water store has a considerable vertical height containing water layers of different quality relative to the water quality suitable for consumption with a first layer having an impurity content so that the water is suitable for consumption and a second layer having a higher impurities content which renders the water less suitable for consumption, determining the location of the first and second layers, installing at least two separate lifting pipes into the ground water store so that the inlet to each lifting pipe is located in a different one of the first and second layers, selectively drawing water during a given relatively short period of time from each of the lifting pipes extending into the first and second layers so that water is drawn from the first and second layers during the given period of time, drawing a sufficient quantity of the water from the second layer during the given relatively short period of time to limit movement of water from the second layer to the first layer for preventing the mixture of the water in the second layer with the water in the first layer for maintaining the quality of the water in the first layer, and supplying the water only from the first layer for use in normal consumption.

4,495,992

HYDRAULIC LOGGING TECHNIQUE FOR INVERTED OIL WELLS

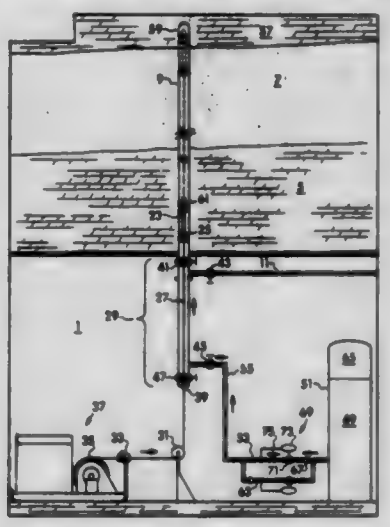
John S. Hutchins, Littleton, and Mervyn A. DeFours, Golden, both of Colo., assignors to Tetra Systems, Inc., Golden, Colo.

Filed Jul. 6, 1983, Ser. No. 511,541
Int. Cl.[3] E21B *47/00*
U.S. Cl. 166—250 20 Claims

1. A method for raising and lowering a tool such as a logging tool within a well hole extending upwardly from a mining drift, said well hole being separated from said drift by sealing means to prevent the passage of fluid therebetween, said tool having a flexible cable attached thereto and passable through a substantially fluid-tight seal in said sealing means, said tool further having means for engaging said well hole in a substantially fluid-tight, sealing engagement, said method including the steps of:

(a) positioning said tool within said well hole in said fluid-tight, sealing engagement with said well hole with said flexible cable attached thereto passing through said fluid-tight seal in said sealing means,

(b) supplying fluid under a first pressure to said well hole below said sealing engagement of said tool therewith, said first pressure being sufficient to overcome any fluid head within said well hole on said tool and to raise said tool and attached cable upwardly within said well bore,



(c) halting the upward travel of said tool and attached cable within said well hole,

(d) drawing the cable and attached tool downwardly to create a second pressure in the fluid within said well hole below said sealing engagement of said tool therewith,

(e) continuing to draw said cable and attached tool downwardly, and

(f) maintaining the pressure in the fluid within said well hole below said sealing engagement of said tool therewith substantially constant at said second pressure during step (e).

11. An arrangement for raising and lowering a tool such as a logging tool within a well hole extending upwardly from a mining drift, said arrangement including:

said tool, a flexible cable, and means for attaching said cable to said tool,

means for forming a substantially fluid-tight, sealing engagement between said tool and said well hole,

means for sealing said well hole from said drift to prevent passage of fluid therebetween, said sealing means including a substantially fluid-tight seal for passing said flexible cable therethrough,

means for positioning said tool within said well hole in said fluid-tight, sealing engagement with said well hole with said flexible cable attached thereto passing through said fluid-tight seal in said sealing means,

means for supplying fluid under a first pressure to said well hole below said sealing engagement of said tool therewith, said first pressure being sufficient to overcome any fluid head within said well hole on said tool and to raise said tool and attached cable upwardly within said well bore,

means for drawing the cable and attached tool downwardly to create a second pressure in the fluid within said well hole below said sealing engagement of said tool therewith, and

means for maintaining the pressure in the fluid within said well hole below said sealing engagement of said tool therewith substantially constant at said second pressure as said cable and attached tool are being drawn downwardly.

4,495,993

METHOD FOR IN-SITU RECOVERY OF ENERGY RAW MATERIALS BY THE INTRODUCTION OF CRYOGENIC LIQUID CONTAINING OXYGEN

Leonard M. Andersen, 46 Alexander Ave., Yonkers, N.Y. 10704

Filed Nov. 30, 1981, Ser. No. 325,925
Int. Cl.[3] E21B *43/243*
U.S. Cl. 166—261 9 Claims

1. A method for recovering energy raw materials such as oil and gas from a subterranean formation penetrated by a borehole, comprising the steps of:

introducing into said borehole a fluid material which will prevent combustion of a cryogenic liquid containing oxygen to be subsequently introduced;

thereafter continuously introducing a cryogenic liquid containing oxygen into said borehole through a suitable pipe so that said cryogenic liquid contacts the adjacent subterranean formation; and

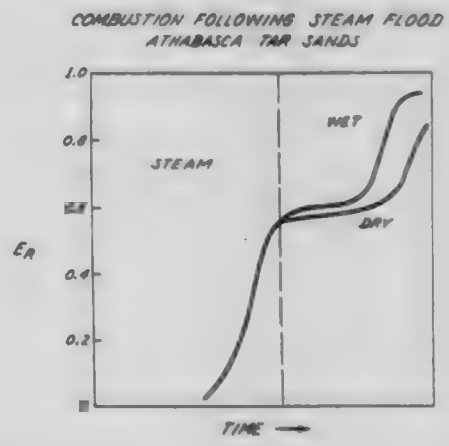
closing the borehole and permitting the oxygen to vaporize, the amount of oxygen and its pressure being sufficient to enable a limited combustion of the available energy raw materials in the borehole.

4,495,994

THERMAL INJECTION AND IN SITU COMBUSTION PROCESS FOR HEAVY OILS

Alfred Brown; Wann-Sheng Huang, and Yick-Mow Shum, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 2, 1983, Ser. No. 463,203
Int. Cl.[3] E21B *43/243*
U.S. Cl. 166—261 13 Claims



1. A method for stimulating the production of hydrocarbons from a subterranean heavy oil or tar sand formation penetrated by an injection well and a production well, which comprises:

(a) stimulating the production well by injecting steam into the production well, shutting in the production well and then producing the well;

(b) injecting about 0.6 to about 1.2 pore volumes of steam having a quality greater than about 75% into the injection well;

(c) after injection of greater than 75% quality steam, injecting about 0.1 to about 0.6 pore volume of steam into the injection well while gradually decreasing the quality of the steam from its initial quality of greater than about 75% to a quality less than about 20%;

(d) after injection of decreasing quality steam, injecting about 0.5 to about 1.5 pore volumes of water into the injection well;

(e) after water injection, injecting air into the formation and creating an in situ combustion front; and

(f) injecting water into the formation along with the air after the combustion front has propagated about thirty to about fifty feet from the point of injection.

4,495,995

METHOD FOR PLUGGING AND SUBSEQUENT TREATMENT OF SUBTERRANEAN FORMATIONS

Hsiu Kuo Chen, Mission Viejo, Calif., and Charles P. Thomas, Littleton, Colo., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 19, 1980, Ser. No. 150,832
Int. Cl.[3] E21B *33/138, 43/22*
U.S. Cl. 166—273 6 Claims

1. A process for temporarily plugging permeable portions of

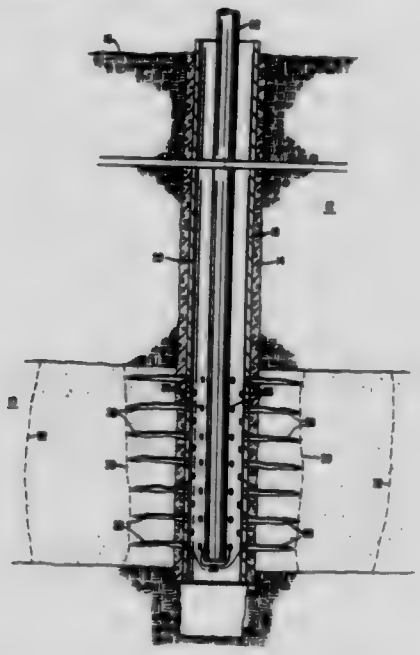
a subterranean formation which comprises driving a composition formed by interacting aqueous surfactant solution and CO_2 in the form of a dense fluid or a liquid into said permeable portions of the underground formation wherein the subterranean formation is at a pressure in a range of about 700 to about 5000 psi and a temperature in a range of about 50° to about 200° F.

4,495,996

METHOD FOR SCALE REMOVAL AND SCALE INHIBITION IN A WELL PENETRATING A SUBTERRANEAN FORMATION

Kevin O. Meyers, Plano, and Harry L. Skillman, Jr., Dallas, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 1, 1983, Ser. No. 556,758
Int. Cl.³ E21B *43/27, 43/28*
U.S. Cl. 166—279 6 Claims



1. A method for removing scale and inhibiting the formation of scale in a well penetrating a subterranean formation for the production of fluids from said formation, said method comprising;

(a) injecting an aqueous solution of a mineral acid into said well in an amount and for a a time effective to remove scale from said well;

(b) injecting an aqueous solution of EDTA into said well in an amount and for a time effective to remove scale from said well; and,

(c) injecting a scale inhibitor through said well into said formation about said well.

4,495,997

WELL COMPLETION SYSTEM AND PROCESS

James B. Scott, and Fred J. Radd, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

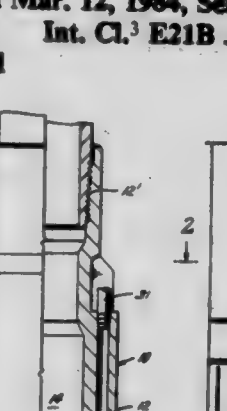
Filed May 11, 1983, Ser. No. 493,559
Int. Cl.³ E21B *33/14*
U.S. Cl. 166—285 13 Claims

9. In the completion of a well extending to a subterranean location in the earth's crust, the method comprising:

(a) providing a plurality of casing joints with a wrapping of perforated metal ribbon disposed about the outer surface of said joints in a helically wound conformation;

(b) installing said joints in the well to form a casing string therein and provide an annular space between said casing string and the wall of said well;

(c) flowing a slurry of hydraulic cement into said annular space and allowing said cement slurry to set to form a cement sheath between said casing string and the wall of said well;





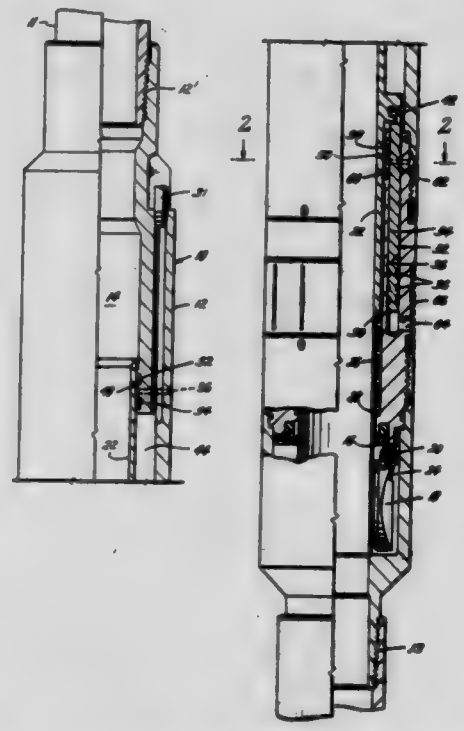
wherein successive helical turns of said ribbon partially overlap one another.

4,495,998

TUBING PRESSURE BALANCED WELL SAFETY VALVE

Ronald E. Pringle, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Mar. 12, 1984, Ser. No. 588,609
Int. Cl.³ E21B *34/10*
U.S. Cl. 166—321 8 Claims



1. In a well safety valve for controlling the fluid flow through a well conduit and including a tubular housing and a valve closure member moving between open and closed positions, a longitudinally tubular member telescopically movable in the housing for controlling the movement of the valve closure member, means for biasing the tubular member in a first direction for causing the valve closure member to move to the closed position, a piston and cylinder assembly positioned in the housing, one of which is connected to the tubular member, one side of the assembly adapted to be in communication with hydraulic fluid extending to the well surface for moving the valve closure member to the open position, the improve-

ment in means for preventing pressure in the well conduit from affecting the opening and closing of the valve comprising,

first and second spaced seal means between the tubular member and the housing for preventing fluid pressure in the tubular member from communicating with the piston and cylinder assembly,

the outside diameter of the said tubular member on which the first and second seal means engage being of the same diameter whereby the forces on the tubular member from the pressure in the tubular member is balanced, and

a vent port in communication with the second side of the piston and cylinder assembly for allowing operation of the assembly by hydraulic fluid from the surface acting on said one side of the assembly.

4,495,999

DEEP WATER HYDROSTATIC HEAD CONTROL

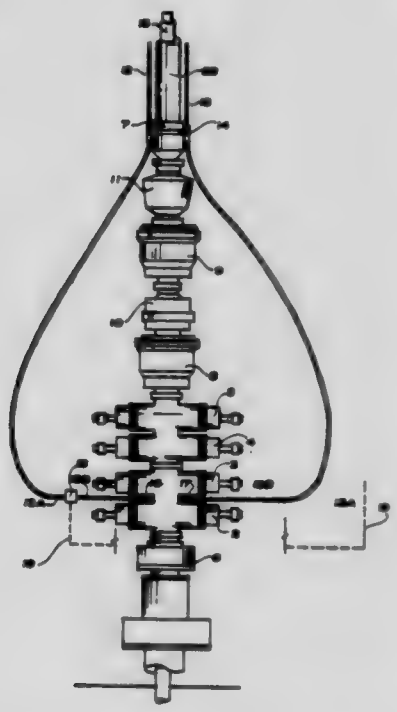
James H. Sykora, P.O. Box 64677, Baton Rouge, La. 70896

Continuation-in-part of Ser. No. 376,409, May 10, 1982, Pat. No. 4,427,073. This application Nov. 21, 1983, Ser. No. 553,772

The portion of the term of this patent subsequent to Jan. 24, 2001, has been disclaimed.

Int. Cl.³ E21B *43/01*

U.S. Cl. 166—364 2 Claims



1. In a marine riser and BOP stack assembly positioned near the bottom of a water body and having multiple rams, a kill line and a choke line, the improvement to which comprises connecting an eductor to said kill line to receive any kick gas from said assembly through an eductor intake opening wherein said eductor comprises a suction end openable to said water body to allow water to mix with said kick gas in said eductor.

4,496,000

METHOD OF AND APPARATUS FOR SETTING A MECHANICAL LINER HANGER BY RIGHT-HAND ROTATION

Benjamin R. Weeks, Corpus Christi, Tex., assignor to Texas Independent Tools and Unlimited Service, Inc., Corpus Christi, Tex.

Filed Feb. 11, 1983, Ser. No. 465,738

Int. Cl.³ E21B *23/00*

U.S. Cl. 166—382 6 Claims

1. A right-hand set mechanical liner hanger for engaging the inside of a well conduit comprising,

a mandrel having an annular wedge cone around the outer circumference of the mandrel,

a lug connected to the outside of the mandrel below the cone,

a cage telescopically and rotationally movable on the mandrel between the cone and said lug,

said cage including,

a plurality of slips extending upwardly adapted to move upwardly onto the cone and outwardly to a set position for engaging a well conduit,

a plurality of bow springs extending outwardly for engaging a well conduit for allowing longitudinal and rotational movement of the cage relative to the mandrel,

said cage including an upwardly directed opening for engagement by the lug whereby the cage can be moved downwardly in a well conduit with the mandrel while preventing the slips from setting,



said cage including a clockwise downwardly extending and downwardly directed spiral surface extending from above the opening to past the bottom of the opening whereby an upward movement of the mandrel will move the lug out of the opening onto the downwardly directed surface and right-hand rotation of the mandrel will move the slips upwardly onto the cone for setting,

the rotational extent of the downwardly directed surface is greater than 360 degrees, and

a vertical passageway in the cage for said lug extending between the upper and lower extents of said downwardly directed surface.

4,496,001

VACUUM SYSTEM FOR REDUCING HEAT LOSS

Harrison W. Sigworth, Jr., Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 30, 1982, Ser. No. 431,417

Int. Cl.³ E21B *36/00, 43/24*

U.S. Cl. 166—387 29 Claims

1. A method for reducing heat loss from steam injection tubing located in a well casing penetrating through the earth to an oil producing formation for producing oil therefrom comprising the steps of:

(a) sealing the upper portion of said well casing to form an air-tight chamber therein;

(b) extending steam injection tubing from the earth's surface, through the sealed upper portion of said well casing in air-tight relationship therewith and terminating adjacent the lower portion of the well casing suitable for injecting steam into the oil producing formation;

(c) packing off the space between said steam injection tubing and the well casing adjacent the lower portion of the tubing string and above the oil producing formation to form a substantially annular chamber between the upper portion of said well casing and the packed off portion thereof;

(d) maintaining a partial vacuum within said annular cham-

ber said minimum and maximum vacuum within said annular chamber being 25" mercury and 29" mercury, respectively, such that condensation of water vapor cannot occur on the surfaces forming said annular chamber;

(e) filling at least a portion of said annular chamber with loose fill insulating material; and

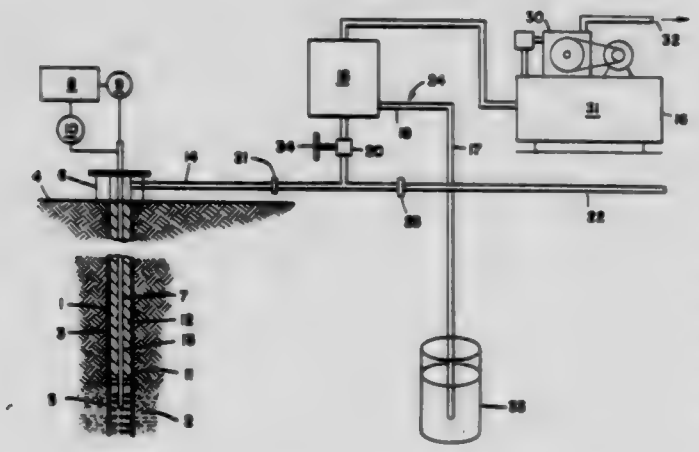
(f) isolating the vacuum producing means so pressure in excess of a predetermined value does not damage any components thereof.

14. A system for reducing heat loss from steam injection tubing located in a well comprising:

(a) a tubular well casing positioned in a well and extending from the earth's surface to an oil producing formation;

(b) a sealing means at the upper portion of said well casing forming an air-tight seal thereon, the lower portion of said casing adapted to allow oil to be produced up said well from said producing formation;

(c) steam injection tubing extending through said sealing means into said well casing and terminating adjacent the lower portion thereof, said tubing string providing a flow path for steam from the earth's surface to the producing formation;



(d) a thermal packer, adjacent the lower portion of the well, and closing off the space between said tubing and said well casing above said producing formation, forming a substantially annular chamber between said sealing means and said thermal packer;

(e) vacuum producing means, including a vacuum pump communicating with a vacuum pump tank, said vacuum pump having a vacuum outlet tube, said vacuum pump tank having a vacuum inlet tube, said inlet connected to the well casing and communicating with the annular chamber to impose a partial vacuum therein to draw vapor from within the annular chamber toward the outlet; and

(f) a means for condensing the vapor drawn by the vacuum prior to the vapor reaching the vacuum producing means, a condensing drain outlet in said condensing means for discharging fluid therethrough, means for producing a second partial vacuum at the outlet having a pressure at most equal to the pressure of the first partial vacuum connected to said outlet.

4,496,002

HORSESHOE

Joseph W. Jones, 6119 Bermuda Dunes Dr., Houston, Tex. 77069, and Edward W. Bishop, Box 47H, Brookshire, Tex. 77423

Filed Jul. 21, 1983, Ser. No. 515,830
Int. Cl.[3] A01L *5/00*
U.S. Cl. 168—4 9 Claims

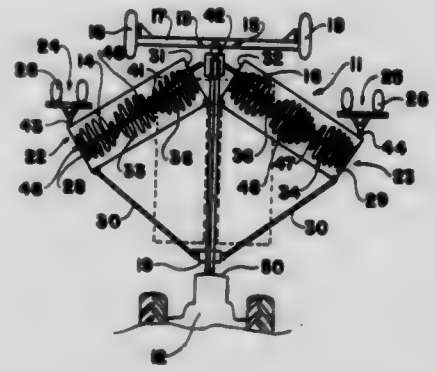
1. A working horseshoe fabricated from an ultra-high molecular weight ethylene polymer having a molecular weight of at least about 1 million.

4,496,003

ROCK GATHERING APPARATUS

Colonel N. Bynum, Box 455, Choteau, Mont. 59422

Filed Jan. 3, 1983, Ser. No. 455,406
Int. Cl.[3] A01B *43/00*
U.S. Cl. 171—63 8 Claims



1. Rock gathering apparatus including a frame portion, a rock advancing portion, a control portion and a drive portion; said frame portion including a first wheeled carriage section, an elongated hitch member extending from said first wheeled carriage section; said rock advancing portion including a pair of pivotable wing sections extending outwardly from said frame portion in opposite directions, second wheeled carriage means disposed adjacent the outer end of each wing section, said wing sections being normally disposed with the outer ends thereof forward of the adjacent inner ends thereof and pivotable forwardly to positions closely adjacent and parallel to one another and to said hitch member, each of said wing sections including a rake section, each of said rake sections including a central horizontal axle, a plurality of spaced finger members extending radially from said central axle, said finger members being arranged in continuous compounded spiral patterns with the spacing along said central axis between adjacent finger members being substantially less than the rock contacting face of each finger member, said finger members being affixed to said central axis through an extended length arcuate cutout in each finger member adjacent said axis; said control portion including hydraulic cylinder means operatively connected to said first and second wheeled carriages for adjusting the position of said rake sections with respect to the ground; said drive portion including means for rotating said central axles, said drive portion including separable shaft means and universal joints therebetween connectable to a power takeoff, said drive means including an arrangement of gears disposed adjacent the outer ends of said wing sections, said gear arrangements including interchangeable gears for changing the rotational rate of said rake sections; whereby as said rock gathering apparatus is moved over a field said rocks are advanced by said rake sections toward the space between the adjacent inner ends of said wing sections and collected in a continuous windrow.

4,496,004

REARWARDLY FOLDING AGRICULTURAL IMPLEMENT

Roland J. Frase, Roselle, and Leonard A. Bettin, Lyons, both of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed Apr. 30, 1982, Ser. No. 373,752
Int. Cl.[3] A01B *73/00*
U.S. Cl. 172—311 29 Claims

1. A rearwardly folding agricultural implement comprising:

a. a wheeled cart adapted to be connected to and drawn by a tractor;

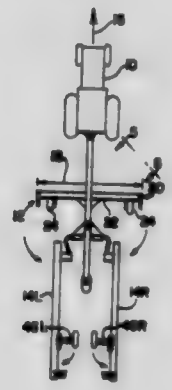
b. a pair of toolbars supporting around working elements, with each toolbar being pivotally mounted on said cart generally adjacent the bar inner end for movement between a first lowered field operating position wherein said bars are transversely aligned to the direction of implement travel and said ground working implements are mounted rearwardly of said toolbars in ground engaging relation

and an elevated transverse second position above said first position and then to a third road transit position in which the toolbars are pivoted rearwardly;

c. ground engaging steerable wheel support means mounted on each toolbar generally adjacent the bar outer end and supporting the toolbar in all of said positions;

d. latch means for connecting each toolbar to the cart in the field operating and elevated positions;

e. first hydraulic means for moving each toolbar between said first operating position and said second elevated position;



f. second hydraulic means for actuating each said latch means;

g. third hydraulic means for steering each said wheel support means;

h. control means for operating said first, second and third hydraulic means independently in sequence; and

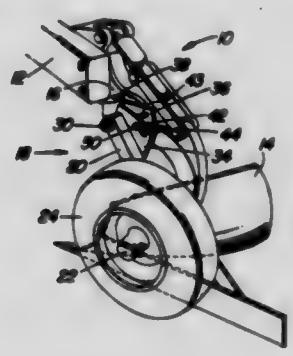
i. a hydraulic circuit for said first, second, and third hydraulic means including a flow divider for providing substantially equal flow to each said third hydraulic means for movement of said toolbars between the elevated second and rearward road transit positions upon movement of the implement.

4,496,005

CONTINUOUS GAUGE WHEEL ARM ADJUSTMENT DEVICE WITH SCISSORS ACTION LOCKING

James A. Swartzendruber, Bettendorf, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jul. 13, 1983, Ser. No. 513,534
Int. Cl.³ A01B *15/00*
U.S. Cl. 172—395 **11 Claims**



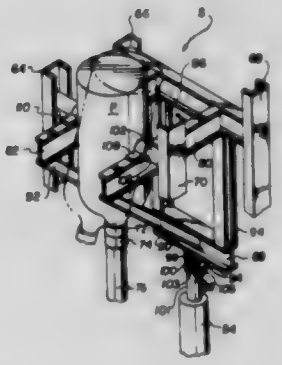
1. In a framed implement, a continuously adjustable gauge wheel arm assembly comprising: a gauge wheel arm having a first end pivotally connected for rocking with respect to the implement frame about a pivotal axis, a first plate member connected for rocking with the arm about the axis, a second plate member fixed with respect to the frame parallel and adjacent the first plate member, said plate members including a plurality of elongated slots extending generally radially outwardly from the pivotal axis, said first and second plate members including first and second slots, respectively, having an area of overlapping, said area of overlapping moving radially with respect to the pivotal axis between the ends of one of said slots as the arm is rocked between first and second positions, and securing means including a shank portion extending through the overlapping area of the slots for preventing the plate members from rocking, wherein the axes of the slots form an acute angle with respect to each other so that the edges of the slots in the overlapping area act generally on opposite sides of the shank in scissors fashion and help to prevent relative rocking between the plate members, a gauge wheel connected to the other end of the gauge wheel arm, and wherein at least one of the plate members includes a plurality of slots, said plurality of slots so arranged to provide continuous areas of overlapping between said plurality of slots and the slot in the other of the plate members as the arm is rocked to any position between said first position and a third position beyond said second position.

4,496,006

CYLINDER DISPLACEABLE POWER SWIVEL FOR A PORTABLE DRILLING APPARATUS AND A PROCESS THEREFOR

Albert W. Smith, 2415 Holley St., Tyler, Tex. 75701

Filed May 4, 1983, Ser. No. 491,531
Int. Cl.³ E21B *7/02*
U.S. Cl. 173—28 **9 Claims**



1. A cylinder displaceable slide gate and power swivel for well drilling rigs and the like, comprising:

(a) a longitudinally extending rig frame having an upper end and a lower end and including a ground supported base connected to said lower end;

(b) a first cooperating pair and a second cooperating pair of guide means secured to said frame and extending substantially between said upper end and said lower end, each of said pairs of guide means includes a pair of guide members;

(c) multi-stage cylinder and piston means secured to said base between a first one of said first and second pair of guide means and generally equidistant the guide members thereof;

(d) a slide gate assembly secured above and to said cylinder and piston means and displaceable therewith substantially between said upper end and said lower end;

(e) a plurality of guide means extend from said slide gate assembly and cooperate with said guide members of said first and second pair of guide means for guiding said slide gate assembly during displacement thereof;

(f) a plurality of spaced generally parallel support members are secured to said frame generally transverse to said guide members and are adapted for preventing bending of said frame during operation of said drilling rig;

(g) a power swivel connected to said slide gate assembly and displaceable therewith and adapted for rotating drill pipe on an axis parallel to and spaced from said cylinder and piston means axis;

(h) said power swivel axis being aligned with and spaced generally equidistant from the guide members of the other pair of said first and second pair of guide means; and,

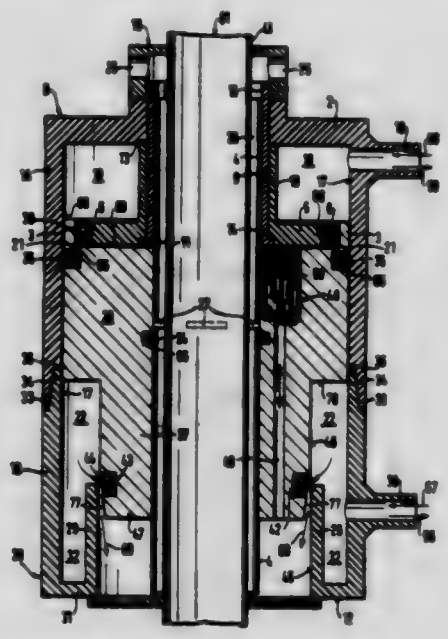
(i) means for operating said cylinder and piston means and for operating said power swivel.

4,496,007

COMPRESSED-AIR PILE-DRIVER

Eugen Zinck, Hüffelsheimer Str. 2, 6550 Bad Kreuznach, Fed. Rep. of Germany

Filed Mar. 29, 1982, Ser. No. 363,158
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112463; Sep. 25, 1981, 3138130
Int. Cl.³ B25D 9/00; E21B 1/00
U.S. Cl. 173—127
18 Claims



1. A compressed-air pile-driver, comprising in combination:

a housing;

a ram which divides the interior of said housing into an upper expansion/compression chamber including a pressure chamber and a lower expansion/compression chamber, each of which has its own air-outlet orifice; said ram having a first end face which faces said upper expansion chamber;

a control valve connected to a source of compressed air;

a first air connection pipe connected to and opening exclusively into the pressure chamber of said upper expansion chamber;

a second air connection pipe connected to said lower expansion chamber, said first and second air connection pipes being alternately connectable to said source of compressed air via said control valve, with said air-outlet orifices of said upper and lower expansion chambers being alternately opened by said ram;

an intermediate plate which is approximately parallel to said first end face of said ram and divides off the pressure chamber in said upper expansion chamber remote from said lower expansion chamber, said first air connection pipe communicating with said pressure chamber to effect said connection with said upper expansion chamber; said intermediate plate including at least one axial orifice as an air inlet which extends from said pressure chamber to said upper expansion chamber, said at least one orifice of said intermediate plate being closed in a leak-proof manner by said ram in its upper dead-center position;

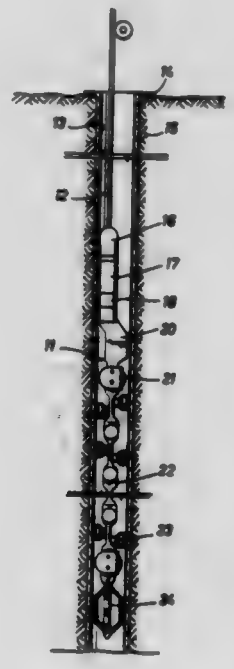
a retaining device associated with said ram and said intermediate plate for firmly axially retaining said ram in its upper dead-center position, said ram including an axial extension which, in the upper dead-center position of said ram, is located in said at least one inlet orifice of said intermediate plate to effect closing thereof; and including a sealing ring located in said intermediate plate and resting with radial pressure against said extension so as to seal off air, said extension and said sealing ring at the same time forming said retaining device for said ram, said at least one air-inlet orifice of said intermediate plate being formed by an annular gap located between the radially outer edge of said intermediate plate and said housing; said sealing ring being provided in said outer edge and having a sealing edge projecting radially into said annular air-inlet gap; said axial extension of said ram being designed as an annular extension and being located, in the upper dead-center position of said ram, in said annular air-inlet gap, and a guide tube passing centrally and in a largely air-tight manner through said housing, said intermediate plate, and said ram, said guide tube terminating approximately at the lower end face of said housing, to which it is fastened, the shaft of a tool or of a probe tube being inserted into said guide tube at a radial distance from the wall of the latter; said housing having a head on which is arranged a spacer which has a central bore corresponding to the diameter of said shaft, and which has air-channels through which outgoing air flowing between said guide tube and said shaft escapes into outside air.

4,496,008

WELL PERFORATING APPARATUS

Alain Pottier, Houston, Tex., and Pierre Chesnel, Savigny-sur-Orge, France, assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Aug. 10, 1981, Ser. No. 291,869
Claims priority, application France, Aug. 12, 1980, 80 17723; Feb. 10, 1981, 81 02547
Int. Cl.³ E21B 43/111
U.S. Cl. 175—4.6
10 Claims



1. In a well perforating apparatus including an elongated support, means forming longitudinally spaced attachment holes in the support, explosive charges having sealed cases fixed to the support in the attachment holes wherein each charge case comprises a metallic body member of sufficient strength for attachment to said support and detonating means connected to said charges to fire them, the improvement comprising:

(a) means on said support forming a series of angularly offset flat-faced support portions around and in the longitudinal direction thereof,

(b) means on each of said support portions forming pairs of the longitudinally spaced attachment holes therein with a distance between the centers of each hole within the pair being smaller than the maximum diameter of a charge perpendicular to its axis, each of said attachment holes being configured to support a charge with the axis of the charge substantially perpendicular to said support portion flat faces,

(c) rear parts in the charge cases adapted for engaging said charge cases in said attachment holes such that two charges are fixed on each of said support portions with the axes of said two charges oriented in opposite radial directions, and

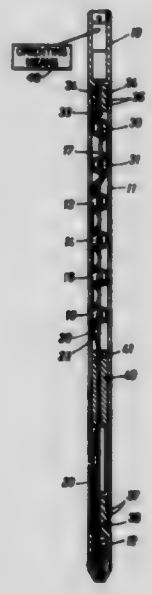
(d) a cover member for each of said charge cases made of brittle material for breaking into small size debris after the explosion of the charge, wherein said metallic body is made of extruded steel having a better breaking resistance in the direction of the charge axis than perpendicular to this axis so that the major part of said body opens under the effect of the explosion of the charge while remaining attached by the rear part of the charge to said support after the explosion.

4,496,009

THROUGH THE TUBING PERFORATING GUN ASSEMBLY

Raymond W. DerMott, Brenham, Tex., and Kenneth J. Hartwein, New Orleans, La., assignors to Shell Oil Company, Houston, Tex. and Schlumberger Technology Corp.

Filed Sep. 20, 1983, Ser. No. 534,014
Int. Cl.[3] E21B *43/116*
U.S. Cl. 175—4.52 10 Claims



1. A through the tubing perforating gun assembly comprising:

a uniform non-frangible tubular charge carrier;

an upper head member, said head member being attached to said carrier by frangible means;

a plurality of focused perforating charges, said charges being disposed on a loading strip, said charges being disposed in said carrier and said loading strip being secured to said head member by a frangible means;

at least one non-focused charge disposed at the top of said loading strip for opening a hole in the tubular charge carrier member to allow an inrush of well fluids for fracturing both said frangible means and separating said carrier and said loading strip from said upper head member;

a lower end cap disposed to close the lower end of said carrier; and

a filler member disposed in the lower end of said carrier to prevent the collapse of the tubular carrier when said tubular carrier separates from said head member.

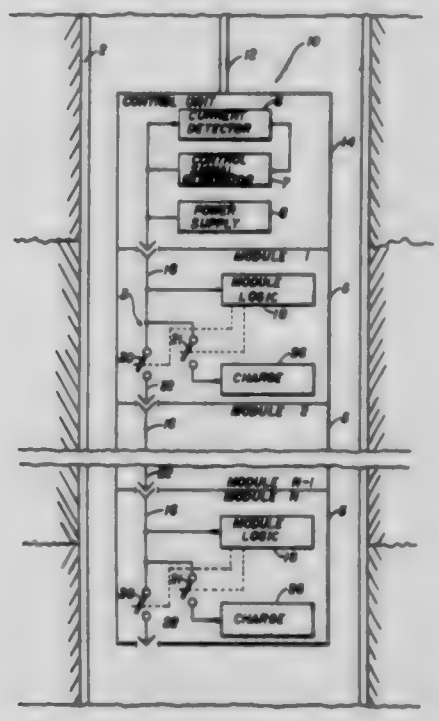
4,496,010

SINGLE-WIRE SELECTIVE PERFORMATION SYSTEM

Joseph E. Chapman, III, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Jul. 2, 1982, Ser. No. 394,948
Int. Cl.[3] E21B *43/116*
U.S. Cl. 175—4.55 59 Claims

1. In a single-line selective perforating system having a single firing line for electrically connecting a firing control unit to each of a plurality of shot modules, one at a time in a predetermined sequence, where each module is adapted for connecting the connected control unit to a next module, a method of selecting a module for firing comprising the step of connecting each module one at a time in the predetermined sequence to the firing line under control of module active time intervals internally generated in the modules, where each module generates



its active time interval in response to being connected to the firing line with the next module in the sequence automatically connected to the firing line at the end of the active time for the last connected module if that module was not selected for firing during its active time interval.

4,496,011

TOOL FOR FORMING EARTH HOLES HAVING FIXED WALLS AND METHOD THEREFOR

Boris M. Mazo, and Valentin I. Feklin, both of Dnepropetrovsk, U.S.S.R., assignors to Dnepropetrovsky Inzhenerno-Stroitelny Institut, Dnepropetrovsk, U.S.S.R.

Filed Jul. 26, 1982, Ser. No. 402,073
Claims priority, application U.S.S.R., Sep. 22, 1981, 3330152; Sep. 22, 1981, 3330153
Int. Cl.[3] E21B *7/26*
U.S. Cl. 175—19 4 Claims



1. A tool for forming earth holes having fixed walls, said tool comprising:

a leading casing provided with a cylindrical portion and frontal and rear conical tips, said frontal and rear conical tips being provided with spiral tapered surfaces for consolidating soil and said frontal and rear conical tips each being disposed on one side of said cylindrical portion;

a trailing casing disposed above said leading casing coaxially with the leading casing and said trailing casing being provided with a cylindrical portion whose diameter is greater than that of said cylindrical portion of said leading case, the diameter of the cylindrical portion of said trailing casing corresponding to the diameter of the hole being formed;

a frontal conical reamer positioned below the cylindrical portion of said trailing casing and said frontal conical reamer provided with spiral tapered surfaces for consolidating soil;

an axial duct defined by the trailing casing; and

a tubular element connecting said leading and trailing casings, said tubular element communicating with the axial duct in said trailing casing and said tubular element being provided with ports.

3. A method of forming earth holes having fixed walls, said method comprising the steps of:

(a) forming a pilot hole whose diameter is smaller than a predetermined diameter, using a tool comprising a leading casing with a cylindrical sizing portion, a trailing casing disposed above said leading casing, and a tubular element connecting said leading and trailing casings, communicating with an axial duct in said trailing casing, and provided with a port for discharging fixing materials into the hole;

(b) forming a hole of the predetermined diameter with said tool with advance of the step (a);

(c) feeding the fixing material into the pilot hole at the regions thereof to be fixed;

(d) lifting the tool after forming the hole of the predetermined diameter until the tool leaves the pilot hole;

(e) feeding the fixing material into the hole following the step (d), and then

(f) repeated sinking of the hole, whereby the fixing material is pressed into the walls and the bottom of the hole; and

(g) withdrawing the tool from the finished hole.

4,496,012

METHOD FOR IMPROVING CUTTINGS TRANSPORT IN DEVIATED WELLS

Joseph G. Savins, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 2, 1983, Ser. No. 490,914
Int. Cl.³ E21B *43/00*
U.S. Cl. 175—65 **4 Claims**

1. A method for increasing the cuttings transport efficiency during the drilling of a deviated well in the earth, comprising the steps of:

(a) circulating a drilling fluid through said deviated well having a viscosity sufficient to transport non-entrapped cuttings up the annulus of said deviated well between the drill string and the borehole wall to the earth's surface, and

(b) periodically terminating the circulation of said drilling fluid and injecting a slug of a shear thickening fluid which is spotted for a predetermined time period, and

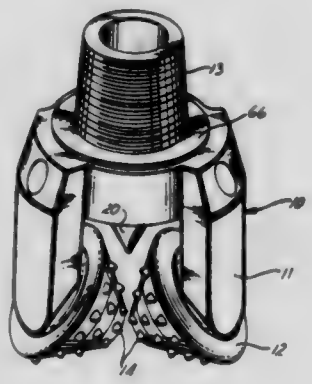
(c) resuming the circulation of said drilling fluid after said predetermined time period whereby said injected slug of thickening fluid will undergo a locally increased viscosity change during circulation due to an increased shear stress along the length of the face of any cuttings bed that may have formed in that part of said annulus where the drill string lies along the lower side of the borehole wall, whereby said cuttings bed is dislodged, the lower injection viscosity of said slug of fluid being sufficient to transport the dislodged cuttings up the remaining portion of said annulus to the earth's surface.

4,496,013

PREVENTION OF CONE SEAL FAILURES IN ROCK BITS

Richard E. Serpa, Arcadia, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Aug. 23, 1982, Ser. No. 410,428
Int. Cl.³ E21B *10/08*
U.S. Cl. 175—374 **16 Claims**



1. A rock bit for drilling subterranean formations comprising:

a steel bit body including a dome and a plurality of legs, each leg having a journal pin;

a cutter cone mounted on each journal pin;

a cone seal at the base of each journal pin between the journal pin and cutter cone; and

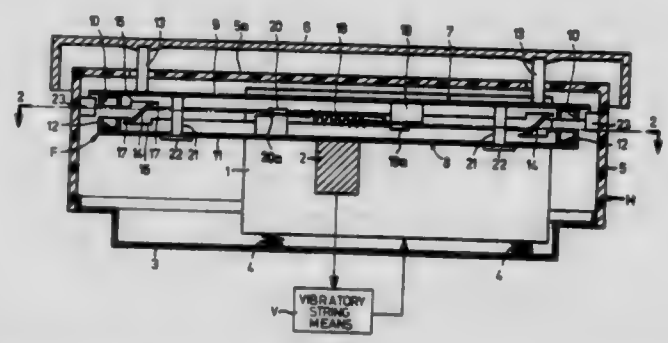
a sacrificial anode electrically connected to the dome of the bit body comprising a shape for diverting flow of drilling mud around the cutter cones, said anode being formed of a material less noble than steel.

4,496,014

WEIGHING APPARATUS INCLUDING OVERLOAD PROTECTION MEANS

Ernst Willi, Dürnten, Switzerland, assignor to Mettler Instrumente AB, Greifensee, Switzerland

Filed Mar. 22, 1983, Ser. No. 477,723
Claims priority, application Switzerland, Jul. 20, 1982, 4412/82
Int. Cl.³ G01G *21/10*
U.S. Cl. 177—187 **7 Claims**



1. Weighing apparatus, comprising

(a) a hollow housing (3,5) containing a chamber;

(b) load cell means mounted within said housing chamber and including a stationary member (1) and a vertically movable load receiving member (2);

(c) a weighing pan (6) arranged above said housing; and

(d) means including overload protection means connecting said weighing pan with said load receiving member, said connecting means including

(1) upper and lower open generally-rectangular vertically spaced frame members (7,8) mounted horizontally within said chamber concentrically about said stationary load cell member;

(2) means connecting said upper and lower frame members

with said weighing pan and with said load receiving member, respectively; and

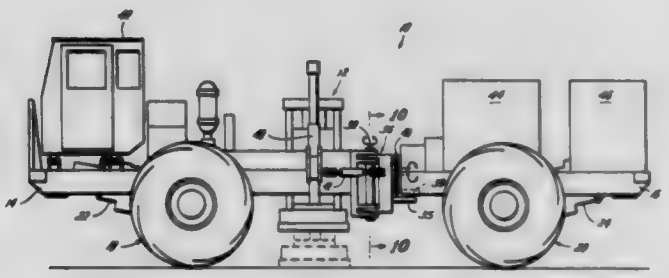
(3) snap spring means (14,18) normally biasing said upper frame member upwardly relative to said lower frame member to establish an operating condition in which a force applied to said weighing pan is transmitted to said load receiving member via said upper frame member, said snap spring means, and said lower frame member, said snap spring means being operable, when an overload force is applied to said weighing pan that exceeds the biasing force of said snap spring means, to relax said frame members and thereby isolate said load receiving member from said weighing pan.

4,496,015

INTERCHANGEABLE DRIVE MEANS FOR A VEHICLE

James A. Porter, Jr., Houston; Joe D. Shivers, Friendswood; Marek Rozycki, Houston, and Otis Johnston, League City, all of Tex., assignors to Litton Resources Systems, Inc., Alvin, Tex.

Filed Aug. 30, 1982, Ser. No. 412,428
Int. Cl.³ B60D *7/00*; B60P *1/04*
U.S. Cl. 180—9.26 **3 Claims**



1. An articulated vehicle for cross country seismic exploration comprising:

a front bed frame and a rear bed frame pivotally coupled relative to each other about a vertical axis and a longitudinal axis;

first pair of drive means having a first configuration disposed so as to support each said bed frame, each said drive means being capable of receiving motive power from separate and independent power sources,

a self-contained means for enabling the replacement of said first drive means having a first configuration by second drive means having a second different configuration, under said front bed frame, said second drive means being capable of receiving motive power from a first independent power source; and

a detachable means for inhibiting relative rotation of said bed frame about said longitudinal axis when said enabling means is operative to enable the replacement of said first drive means having a first configuration by a second drive means having a second configuration beneath said rear bed frame, said second drive means being capable of receiving motive power from a second independent power source.

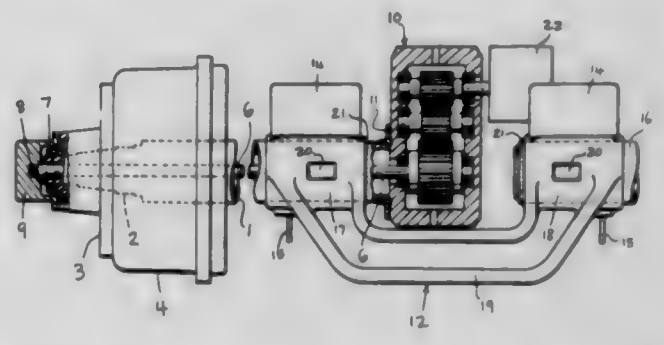
4,496,016

LAND VEHICLES

Derek Unsworth, 4 Farmside, Borris Park, Wrexham, Clwd, Wales, and Edward J. Digga, 8 Lime Tree Dr., Frandon, Cheshire, England

Filed Nov. 10, 1982, Ser. No. 440,621
Claims priority, application United Kingdom, Oct. 15, 1982, 8229544; Oct. 15, 1982, 8134024
Int. Cl.³ B60K *17/28, 25/08*
U.S. Cl. 180—53.6 **12 Claims**

1. In a wheeled land vehicle having a non-rotary hollow axle shaft, a free-running ground-engaging wheel on one end of said shaft, a power take-off input shaft extending coaxially through said axle shaft, a power take-off mechanism, and means drivingly connecting the said power take-off shaft to the said wheel at the outer end of the shaft and to the said power take-off mechanism at its inner end, the improvement comprising, in combination: the axle shaft being divided in its length to provide a space for locating the said power take-off mechanism on the axle shaft axis, a bridge rigidly connecting the two parts of



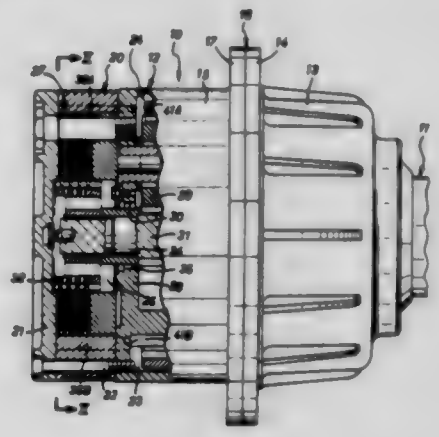
the axle shaft and having a part thereof laterally displaced from the axle shaft axis to provide said space for the said power take-off mechanism, said mechanism being mounted in said space in cantilever fashion on the inboard termination of the outer one of said axle shaft parts.

4,496,017

WHEEL HUB ASSEMBLY WITH INTEGRATED REDUCTION GEAR AND BRAKE MECHANISM

Léonce Rogier, Saint-Denis, France, assignor to Valeo, Paris, France

Filed Dec. 20, 1982, Ser. No. 451,441
Claims priority, application France, Dec. 22, 1981, 81 23949
Int. Cl.³ F16D *55/02, 65/84*
U.S. Cl. 180—70.1 **7 Claims**



1. A wheel hub assembly for heavy-duty vehicles, said wheel hub assembly comprising a hollow body adapted to contain a liquid lubricant and having a first compartment for housing a wheel drive reduction gear and a second compartment adjacent to said first compartment for housing a wheel brake mechanism, said hollow body including a sidewall, at least a portion of said sidewall which annularly surrounds one of said compartments has at least a pair of longitudinally extending, oppositely sloping generally oblique grooves defining means for longitudinally circulating the liquid lubricant between said compartments when said wheel hub assembly is in operation.

4,496,018

STEERING COLUMN-OPERATED ACCELERATING AND BRAKING DEVICE FOR AUTOMOBILES

Lo Hsin-Min, 47, Shih Chien St., Hsin Chu City, Taiwan

Filed Apr. 13, 1983, Ser. No. 484,615
Int. Cl.³ B62D *1/18*
U.S. Cl. 180—78 **5 Claims**

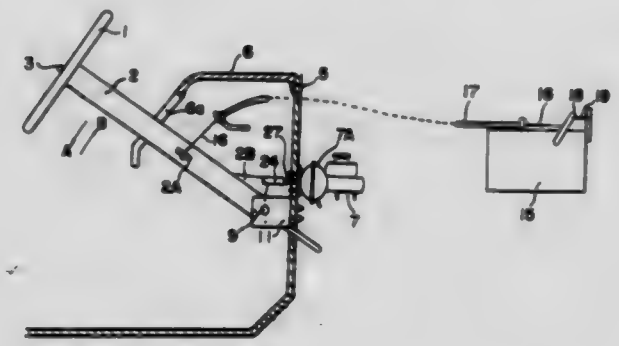
1. A steering column-operated accelerating and braking device for automobiles, comprising:

a steering column having an upper end and a lower end, the

upper end having a steering wheel rotatably mounted thereto and the lower end being pivotally mounted with a mounting base onto a structural part of the automobile so that the upper end of the column can be selectively moved fore and aft;

an accelerator cable having one end operatively connected to said steering column and another end operatively connected to an accelerating unit adapted to accelerate the automobile when said steering column is pivoted in one direction;

a master brake cylinder having a piston rod operable by said steering column, said master brake cylinder being adapted to apply the brake on the automobile when said steering column is pivoted in the opposite direction;



magnetic means for holding said steering column in position when it is not being selectively moved fore and aft;

wherein said magnetic means comprises a magnetic holding device to hold said steering column in fixed position when said steering column is not being pivotally operated;

wherein said magnetic holding device is provided on said mounting base and disposed in a frictional engagement with a pivotal part of said steering column; and

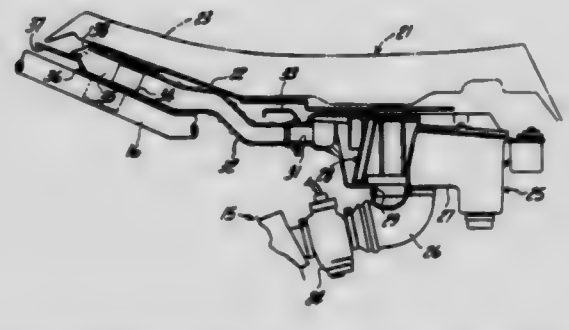
wherein said magnetic holding device is an electromagnetic piece electrically connected to a series electric circuit having a battery, an ignition switch of the automobile, a fuse and a control switch.

4,496,019

OFFROAD AUTO TRICYCLE

Ko Tanaka, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Filed Jun. 18, 1982, Ser. No. 389,954
Claims priority, application Japan, Jun. 22, 1981, 56-96150
Int. Cl.³ B62K *5/04*
U.S. Cl. 180—215 **7 Claims**



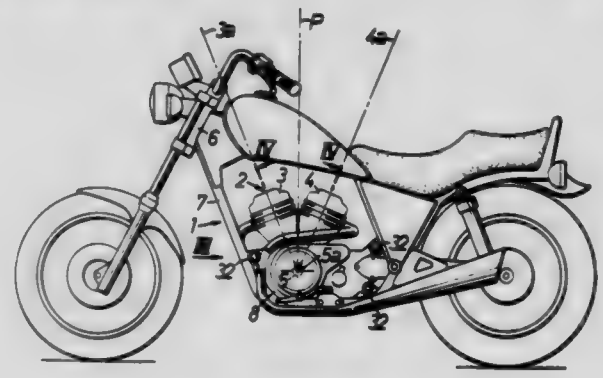
1. In an induction system for an off the road vehicle having a pair of driven rear wheels and at least one dirigible front wheel, an engine positioned continuous to said rear wheels and having a rearwardly facing induction system inlet, a seat extending forwardly from said rear wheels, and an air cleaner positioned in proximity to and to the rear of said engine and said induction system inlet and contiguous to said rear wheels, the improvement comprising an inlet device comprising an elongated tube means terminating at an outlet end rearwardly of the engine and communicating with a forwardly facing inlet of said air cleaner for supplying air to said air cleaner from an inlet end forwardly of the engine and disposed in a protected area contiguous to the front of said vehicle, said inlet end being disposed so that foreign materials will be precluded from entry thereto, an outlet from said air cleaner, and conduit means connecting said air cleaner outlet with said induction system inlet.

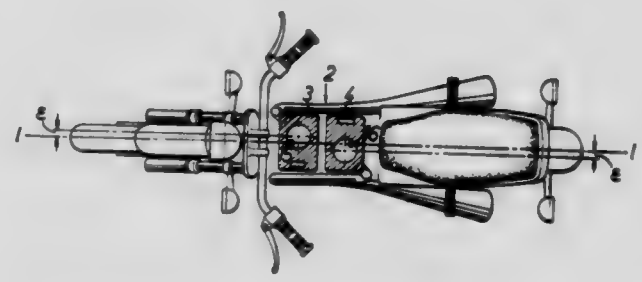
4,496,020

V-TYPE MULTI-CYLINDER ENGINE FOR MOTORCYCLE

Toshiro Mitsuishi, Tokorozawa, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1982, Ser. No. 452,431
Claims priority, application Japan, Dec. 26, 1981, 56-209518
Int. Cl.³ B62D *61/02*; F16F *15/26*
U.S. Cl. 180—219 **10 Claims**





1. A V-type multi-cylinder engine for motorcycles, including first and second engine blocks arranged on a frame so as to form a V shape, said engine blocks having first and second cylinders, respectively, pistons reciprocatably and slidably received by said first and second cylinders, and a crankshaft having first and second crank pins connected through piston rods to said pistons, wherein the improvement comprises that the rotational phase of said second crank pin is offset from that of said first crank pin by an angle $\pi-2\alpha$ in the opposite side of the central axis of said first cylinder to the axis of said second cylinder, α representing an angle included between the central axes of said first and second cylinders, and that a balancer weight is attached to that portion of said crank shaft positioned opposite to said first and second crank pins and on the bisector line of the angle formed between said crank pins around said crankshaft.

4,496,021

360 DEGREE RADIAL REFLEX ORTHOSPECTRAL HORN FOR HIGH-FREQUENCY LOUDSPEAKERS

Emmanuel Berlant, 5600 Kensington Way, #206, Culver City, Calif. 90230

Filed Feb. 18, 1983, Ser. No. 467,736
Int. Cl.³ H05K *5/02*
U.S. Cl. 181—152 **13 Claims**

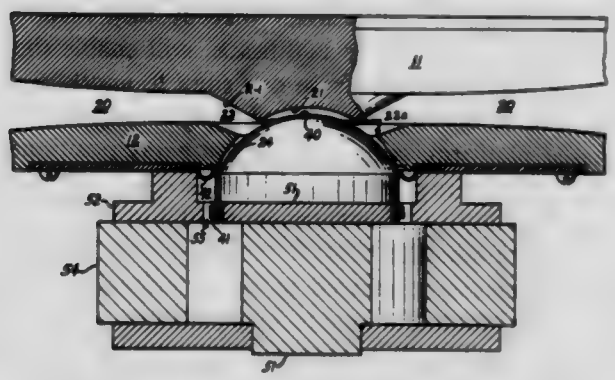
1. A 360° radial reflex orthospectral expanding acoustical horn loudspeaker for high frequency operation having a wide frequency band of operation and relatively uniform amplitude output over the wide frequency band, said loudspeaker comprising:

a. an electro-acoustic driver coupled into an annular throat

having a width approximately a quarter-wavelength of the highest frequency to be reproduced by the loudspeaker;

b. a first annular horn coupled to said throat and disposed at an upward and outward angle to the axis of said driver, said first annular horn expanding at a predetermined first rate;

c. said first annular horn being reflectively coupled into a second annular horn extending on a horizontal axis radially from said first annular horn, said second annular horn



having a different expansion rate than said first annular horn, and successive annular elements of said second annular horn being coupled to one another, each successive element having a somewhat larger expansion rate than the expansion rate of the element preceding it,

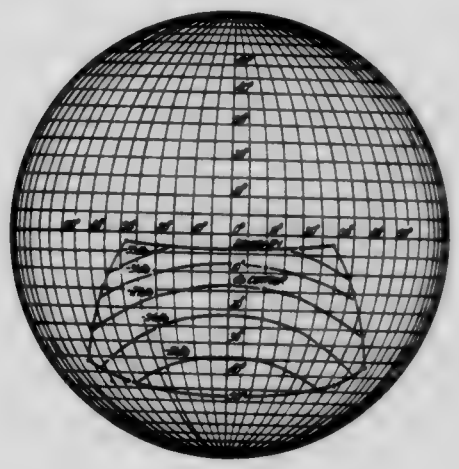
d. whereby acoustic energy over a wide range of high frequencies is emitted from the ultimate one of said annular acoustical horn elements over 360° laterally from said radial orthospectral loudspeaker, with relatively uniform amplitude over said wide range of high frequencies.

4,496,022

SYSTEM FOR INTERRELATING SOUND TRANSDUCERS OR SOUND SOURCES AND THEIR ENVIRONMENT

John R. Prohs, 233 S. Orange Grove Blvd., Apt. 233, Pasadena, Calif. 91105

Filed Feb. 22, 1983, Ser. No. 468,850
Int. Cl.³ G10K *11/00*
U.S. Cl. 181—175 16 Claims



1. A method of selection and positioning of a transducer in an environmental volume, comprising the steps of:

a. mapping selected positions in the volume on a spherical surface, the surface having a radial center representing the position of the transducer;

b. overlaying on the mapped spherical surface a mating spherical map of spatial characteristics of the transducer;

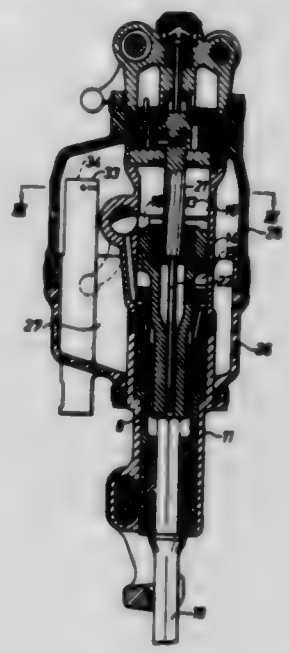
whereby a distortion-free spherical-surface composite map of the transducer characteristics and volume positions is provided to enable selection and positioning of a transducer appropriate to the positions.

4,496,023

PNEUMATICALLY OPERATED IMPACT TOOL

Eric T. Lindberg, Bromma, and Anna M. Friedman, Älta, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Sep. 12, 1983, Ser. No. 531,603
Claims priority, application Sweden, Sep. 16, 1982, 8205318
Int. Cl.³ F01N *1/08*
U.S. Cl. 181—230 1 Claim



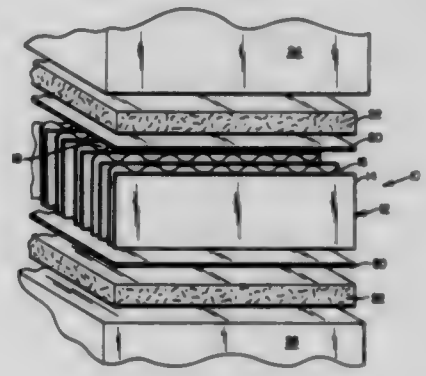
1. Pneumatically operated impact tool in which a pneumatically actuated hammer piston (14) is reciprocable in a cylinder (13) to repeatedly impact upon an anvil (8) and an exhaust chamber (27) is arranged to receive the exhaust air from the cylinder, said exhaust chamber having at least one outlet tube (31,32) that has its inlet end inside said exhaust chamber, characterized by a number of holes (35, 36) through the tube (31, 32) adjacent the inlet end thereof so that air will flow from the exhaust chamber (27) to the tube (31, 32) both through the inlet of the tube and through said holes which hava a small total area as compared to the area of the inlet of the tube.

4,496,024

SOUND ABSORPTION PANEL AND METHOD OF MAKING

Jerry M. Wolf, Westerville, and Wilbur D. Holbea, Ostrander, both of Ohio, assignors to Midwest-Acoust-A-Fiber, Inc., Ostrander, Ohio

Filed Aug. 26, 1983, Ser. No. 526,894
Int. Cl.³ E04B *1/82*
U.S. Cl. 181—292 15 Claims



1. A method of making a sound absorption panel comprising,

assembling a substantially planar sandwich structure of two fiberglass pelts, two non-porous thermoplastic sheets and a paper honeycomb core in the sequence pelt-sheet-core-sheet-pelt;

said assembled pelts each having a density in the range of about twelve to about forty Kg/m^3 and incorporating about sixteen to about twenty-five percent by weight of

phenolic resin; said assembled sheets being selected from the group consisting of polypropylene, polyethylene, polyvinylchloride, and polyvinylacetate and having a thickness in the range of about 0.013 mm to about 0.102 mm and the assembled honeycomb structure having a thickness in the range of about twenty-five to thirty-eight mm and with the cells of the honeycomb oriented perpendicular to the plane of the sheets;

arranging the pelts, sheets and core to have substantially coextensive peripheries and between a pair of planar presses,

moving the presses toward each other to compress the pelts to no more than about one-fourth their original thickness without compressing the core,

stopping the movement of the presses by means unrelated to the resistance force of the sandwich structure,

heating the presses to a temperature of about 450° F. for a period of about one and one-half to about three annd one-half minutes to (1) cause the phenolic resin to hold the fibers of the pelts in the compressed condition and (2) melt the thermoplastic and thereby allow passage of gases from the cells of the honeycomb through the pelts;

cooling the sandwich to freeze the melted thermoplastic and thereby bond the pelts to the core.

9. A sound absorption panel comprising a paper honeycomb core having a plurality of cell walls defining cells and first and second cell end planes, and a compressed porous fiberglass pelt bonded to at least one of said cell end planes by melted thermoplastic wherein the thermoplastic has penetrated the fibers of said fiberglass pelt and flowed around the edges of said cell walls, said core and pelt having the physical property of allowing gas to pass through the pelt into the cells of the core, said pelt including about sixteen to about twenty-five percent by weight of phenolic resin binder and having a density in the range of about 96 to about 289 Kg/m^3,

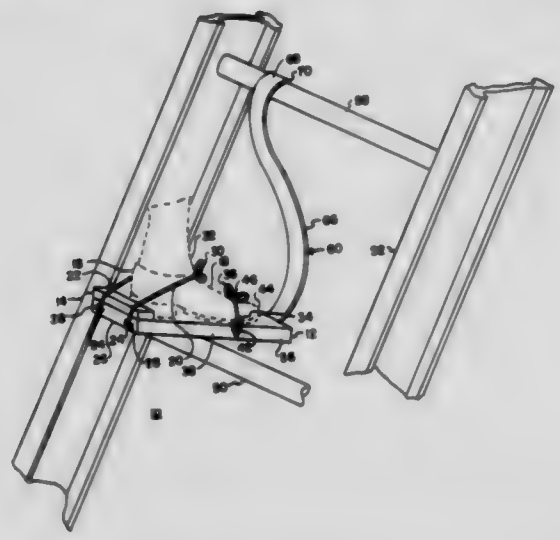
said thermoplastic being selected from the group consisting of polypropylene, polyethylene, polyvinylchloride, and polyvinylacetate.

4,496,025

FOOT SUPPORT FOR LADDER

John W. Gattman, 801 E. Sixth St., Muscle Shoals, Ala. 35660

Filed May 16, 1983, Ser. No. 495,145
Int. Cl.[3] E06C 7/16; A43B 3/00
U.S. Cl. 182—121 11 Claims



1. A support for supporting an individual shoe of a wearer on a ladder comprising:

a generally rigid, elongated platform having a generally planar upper surface and being sized to approximate the length and width dimensions of a single shoe, said platform having a front region and a back region to coordinately receive the toe and heel regions of a shoe, said platform including a vertically extending region in at least a portion of said back region of said upper surface and configured to block rearward movement of the heel of said shoe;

an elongated brace having a first end region fixedly secured to said front region of said platform, said brace extending upward above said front region and having an end region configured in the shape of an open U-shaped hook having a turned forward and downward region for removably extending over and partially around a rung of a ladder for supporting said front region of said platform, and the region below the opening formed by said open U-shaped hook being unobstructed, whereby any raising of said platform, and thereby said brace, will enable the support to be readily moved from one rung to another;

a transverse notch region in a bottom surface of said elongated platform, said notch region being positioned closer to said back region than said front region of said platform for inclining said platform forward and downward about a rung of a ladder; and

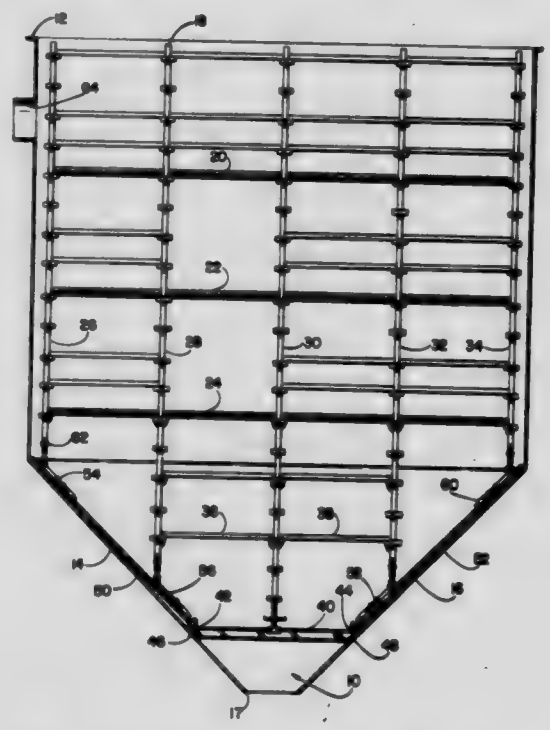
securing means connected to said platform for securing a shoe and foot of a user to said platform.

4,496,026

FOUNDING LADDER SYSTEM

Richard G. Meehan, Laguna Niguel, Calif., assignor to Kwikform America, Inc., Fountain Valley, Calif.

Filed Aug. 10, 1981, Ser. No. 291,275
Int. Cl.[3] E04G 1/36, 3/02
U.S. Cl. 182—128 32 Claims



1. A readily assemblable system for supporting scaffolding inside a boiler having a converging pair of downwardly sloping lower boiling walls, said assemblable system capable of use with a variety of different size boilers having different internal configurations, wherein said system comprises:

a generally horizontal founding truss for spanning between said lower boiler walls; and

a pair of sidewall supports mounted on opposite ends of said founding truss for extending upwardly from said truss and along the lower boiler sidewalls, said sidewall supports contacting said boiler sidewalls, transferring a portion of the weight of said scaffolding to said downwardly sloping boiler walls; and

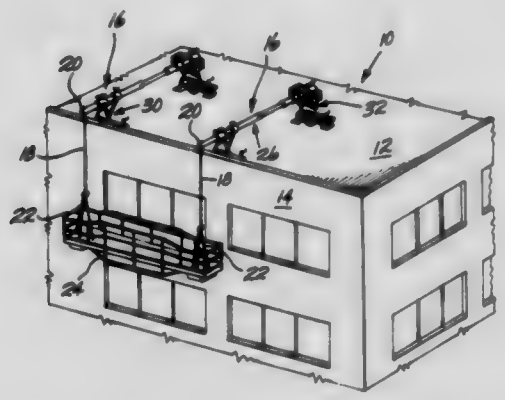
detachable post support means adapted for positioning at any of a plurality of locations along the length of said sidewall supports, said support means adapted to connect said scaffolding to said sidewall supports.

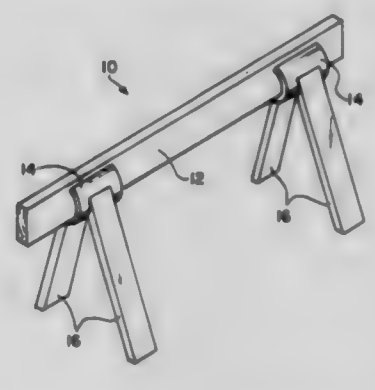
4,496,027

MOBILE OUTRIGGER FOR SUSPENDING SCAFFOLD

Harry S. Fisher, Renton, Wash., assignor to Spider Staging, Inc., Renton, Wash.

Filed Jan. 31, 1983, Ser. No. 462,303
Int. Cl.³ E04G 3/10
U.S. Cl. 182—142 33 Claims





1. An end support for an elongated outrigger beam which during use is supported on a building roof or the like, by a pair of such supports, spaced apart longitudinally of the beam and supporting such beam with an outboard end portion thereof extending outwardly from the side of the building, to provide an upper end support for a suspended staging, said end support comprising:

a frame having an upper portion connectable to the beam, and first and second support feet spaced apart from each other, laterally of the beam, with the first support foot being located on one side of the beam and the second support foot being located on the opposite side of the beam;

a wheel mounted on said frame between the support feet, for rotation about an axis which is parallel to the beam;

means for adjusting the relative vertical positions of the first and second support feet and a lower support surface contacting portion of the wheel, between a first position in which the first and second support feet are both on the support surface and the wheel is elevated above the support surface, and the system is fixed in position on the support surface, and a second position in which the wheel is down on the support surface and both support feet are spaced above the support surface, and the system is mobile on the wheel, said means for adjusting comprising means for moving the second foot in position vertically relative to said frame, between a lower position in which said first and second support feet are both on the roof or other support surface and the wheel is elevated above the support surface, and an upper position in which the wheel is down on the support surface and both support feet are spaced above the support surface; and

a small caster mounted on said frame proximate the second foot, said caster being positioned to be elevated above the support surface contacting portion of the wheel when the second support foot is in said lower position and to be in contact with the support surface when the said second support foot is in its said upper position, so that when the second support foot is in its said upper position, the end support is supported for movement by said wheel and said caster.

4,496,028

INSTANT SAWHORSE

Theodore A. Peterson, P.O. Box 113, Chuluota, Fla. 32766

Filed Feb. 21, 1984, Ser. No. 581,737
Int. Cl.³ F16M 11/00
U.S. Cl. 182—186 11 Claims

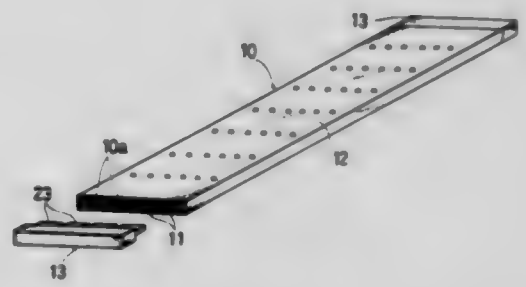
1. A sawhorse member utilizing no nails or other fasteners in its construction, comprising an elongate, generally circular member having a comparatively thick sidewall, but being otherwise hollow, said member being made of resilient material, with its sidewall being longitudinally cut for its entire length in a direction generally parallel to the centerline of said generally circular member, thus in effect to define a generally circular spring, a pair of holes cut through the sidewall of said generally circular member at a location substantially opposite from said longitudinal cut, said holes being circumferentially spaced apart, and each being substantially equidistant from the ends of said circular member, each of said holes being arranged to receive the upper end of an elongate leg member, whereby as the bottoms of said leg members are drawn together, the edges of said cut are caused to move apart, so as to be able to receive the central beam of a sawhorse, and to tightly grasp such beam in a pincers-like grip when said leg members are released.

4,496,029

SCAFFOLD PLANK

Shigeharu Kuroda, No. 1-13, Tomigaoka 5-chome, Nara, Japan

Filed Mar. 30, 1983, Ser. No. 480,452
Int. Cl.³ E04G 5/08
U.S. Cl. 182—222 20 Claims



1. A scaffold plank which comprises

a plurality of hollow elongated members arranged in side-by-side contact relationship to one another to provide a plurality of transversely aligned, opening mouths respectively at opposite ends of said plurality of hollow elongated members,

each of said hollow elongated members being substantially rectangular in cross section,

each of said hollow elongated members including a pair of opposed vertical side walls,

at least one layer of covering member enclosing said plurality of hollow elongated members,

a pair of end members serving as connectors mounted to said opposite ends of said plurality of hollow elongated members for maintaining said hollow elongated members in side-by-side contact relationship,

each of said pair of end members including a plurality of plug portions which are transversely aligned in spaced-apart relation and inwardly project into mating engagement with said plurality of transversely aligned opening mouths, and

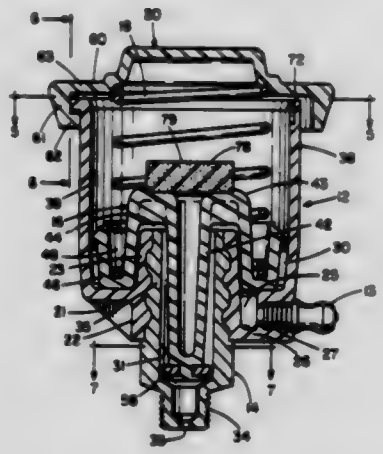
each of said pair of end members further including inner engaging walls which are in abutment with end walls of said plurality of hollow elongated members.

4,496,030

AUTOMATIC LUBRICATION ASSEMBLY

John A. Gloviak, Chicago, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed Mar. 7, 1983, Ser. No. 473,072
Int. Cl.³ F16N 11/04
U.S. Cl. 184—45 R 18 Claims



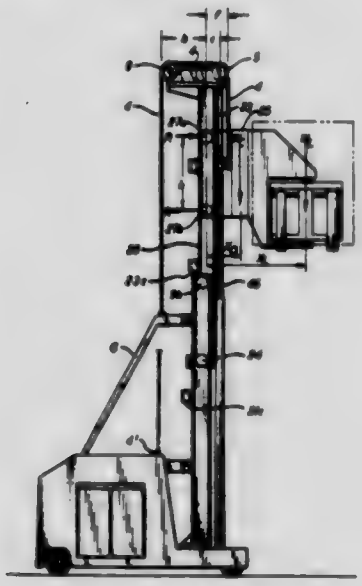
11. An automatic lubrication assembly comprising; an one-piece plastic base and lubricant reservoir cup, an outlet fitting connected to the base constructed of metal and having an outlet opening communicating with the reservoir cup and adapted to be connected to the machine to be lubricated, said cup having an open rear end, a plunger slidable in the cup, a spring biasing the plunger in a direction to dispense lubricant in the reservoir cup through the outlet fitting, and an easily removable cap over the open end of the reservoir cup against which one end of the spring reacts, whereby the spring may be changed to vary the flow of lubricant by removing the cap without contacting lubricant in the reservoir cup, a clearance between the removable cap and the cup communicating with the exterior of the assembly, and axially extending recess means in the interior of the cup adjacent the open end adapted to carry overflow lubricant from the cup to the clearance when the piston reaches its extreme rearward position to prevent overfilling the reservoir cup.

4,496,031

MATERIAL HANDLING APPARATUS

Ralph E. Allen, and Christian D. Gibson, both of Greene, N.Y., assignors to The Raymond Corporation, Greene, N.Y.

Continuation-in-part of Ser. No. 31,187, Apr. 18, 1979, abandoned.
This application Feb. 7, 1980, Ser. No. 114,911
Int. Cl.³ B66B 9/20
U.S. Cl. 187—9 R 17 Claims



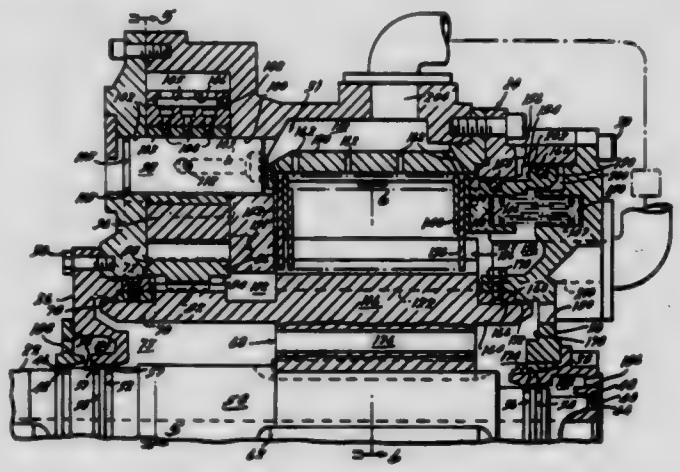
1. In a lift truck mast assembly which includes a vertically-extending mast having pulley means journalled on said mast adjacent the upper end of said mast, a load carriage guided for vertical movement by said mast, lift cable means connected to said load carriage and trained over said pulley means to suspend said load carriage on said mast, said load carriage being adapted to carry a load with the center-of-gravity of said load horizontally displaced from said mast on a forward first side of said mast whereby said load carriage applies a force couple to said mast, said lift cable means including at least one first vertical course extending between said pulley means and said load carriage on said first side of said mast and at least one second vertical course extending between said pulley means and means vertically fixed with respect to said mast on a second rearward side of said mast opposite from said first side, the improvement which comprises said second vertical course being spaced sufficiently rearwardly from said mast that a maximum rated load on said carriage causes the maximum bending moment occurring in the portion of said mast below said force couple to be within 70% to 130% of the magnitude of and opposite in direction to the maximum bending moment occurring in the portion of said mast above said force couple.

4,496,032

BRAKE UNIT

Gordon M. Sommer, Boca Raton, Fla., assignor to Sommer Co., Warren, Mich.

Division of Ser. No. 333,314, Dec. 22, 1981, Pat. No. 4,424,887, which is a continuation of Ser. No. 80,456, Oct. 1, 1979, abandoned. This application Jul. 29, 1983, Ser. No. 518,664
Int. Cl.³ B60T 8/12; F16D 65/78, 57/00
U.S. Cl. 188—180 5 Claims



1. A self-brake assembly for a drawworks of the oil shear type having automatic speed governing means, said drawworks including apparatus for raising and lowering stands of pipe, comprising:

a housing;

an input shaft rotatably journaled within said housing and rotatably associated with said apparatus for raising and lowering stands of pipe;

a plurality of brake discs axially movably mounted on said input shaft and rotatable therewith;

a plurality of brake plates nonrotatably axially movably mounted within said housing and interposed between said brake discs;

clamping means for axially moving said brake discs and said brake plates into braking relationship;

control means for releasing said clamping means whereby said input shaft is allowable to rotate; and

means responsive to the speed of rotation of said input shaft only in one direction of rotation for overriding said control means and causing said clamping means to move said brake discs and said brake plates into braking relationship to automatically keep the speed of said shaft below a selected speed, wherein said means for overriding is entirely unresponsive to rotation of said input shaft in the opposite direction to said one direction, said speed of rotation responsive means comprising fluid pumping means driven by said input shaft and operative to generate

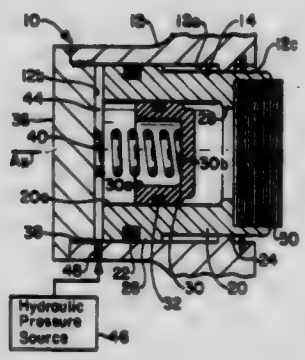
a fluid pressure, the magnitude of said pressure varying directly with the speed of rotation of said input shaft, and passage means within said housing for conducting said fluid pressure to said clamping means.

4,496,033

DUAL PISTON ACTUATOR

John M. Hall, Uniontown, and Milan Pantic, Akron, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Dec. 28, 1981, Ser. No. 334,707
Int. Cl.³ B60T *11/00*; F01B *7/20*
U.S. Cl. 188—347 1 Claim



1. In an aircraft hydraulic disk brake system, an actuator for applying an axial force on a disk brake stack to effect brake actuation by compression of the disk stack comprising:

a housing defining a primary bore having a closed end and an open end and a central axis;

a primary piston slidably and sealingly mounted within the primary bore to move axially within the bore to effect an output brake actuation force, said piston defining a secondary bore axially aligned with the primary bore;

a secondary piston slidably and sealingly mounted within the secondary bore, said primary and secondary pistons and the closed end of the housing defining a pressure chamber;

a tension spring fastened to the closed end of the housing at one of its ends and to the secondary piston at the opposite end to apply a reverse bias on said secondary piston; and

means communicating hydraulic fluid pressure to the pressure chamber to provide an increasing pressure force on said pistons, the primary piston movable in response to the hydraulic pressure to provide an output force that effects brake actuation while the secondary piston moves with the primary piston and adds to the output actuation force only when the hydraulic pressure exceeds a threshold value as established by the tension spring and the relative area of the pistons whereupon the secondary piston engages the primary piston and the combined effect of the primary and secondary pistons provides an increasing output brake actuation force.

4,496,034

VISCOUS COUPLING FOR TORQUE CONVERTER BYPASS

Warren G. Bopp, Farmington Hills, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 15, 1982, Ser. No. 388,557
Int. Cl.³ F16D *39/00*
U.S. Cl. 192—3.28 18 Claims

1. A viscous coupling for use as a bypass element in a torque converter transmission including a torque converter housing containing a torque converter having an output shaft, said coupling comprising:

(A) an annular housing assembly adapted to be positioned within the torque converter housing and having axially spaced, radially extending annular side wall members defining an annular chamber therebetween containing a viscous fluid;

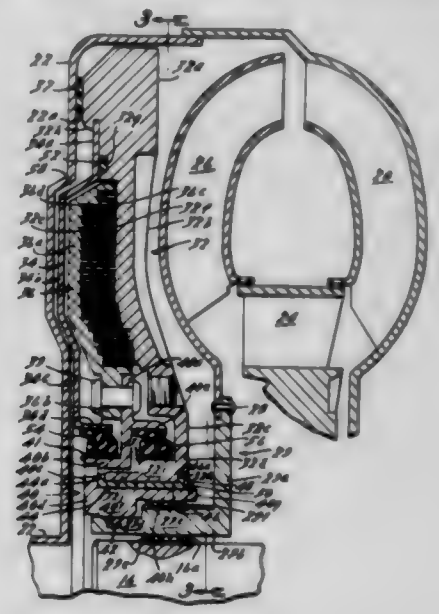
(B) a radially extending annular clutching surface defined on an outer peripheral portion of said annular housing assembly and adapted for clutching coaction with a confronting inner surface of the torque converter housing;

(C) an annular clutch assembly disposed within said chamber in the viscous fluid and including:

1. an annular radially extending portion having working means on an annular side face thereof for clutching coaction with corresponding clutching means on a confronting annular face on one side wall member of said annular housing assembly; and

2. an annular axially extending hub portion adapted to be drivingly connected to the torque converter output shaft;

(D) an annular axially extending hub portion defined at a radially inner edge of said one side wall member of said annular housing assembly, said hub portion having radially inner and outer peripheral surfaces, and said inner peripheral surface journaled on the outer peripheral surface of the hub portion of said clutch assembly and providing the sole load bearing support for said annular housing assembly;



(E) an annular axially extending lip portion defined at a radially inner edge of the other side wall member of said annular housing assembly disposed in spaced, non load-bearing relation to said clutch assembly; and

(F) a first seal disposed between the radially outer peripheral surface of the hub portion of said one side wall member and a radially inwardly directed, axially extending confronting surface on said clutch assembly; and

(G) a second seal disposed between a peripheral surface of said lip portion of said other side wall member and a confronting surface on said clutch assembly.

4,496,035

NEUTRALIZING MECHANISM FOR A HYDROSTATIC TRANSMISSION

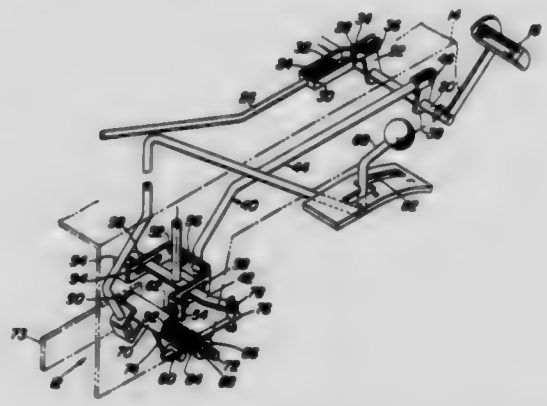
Lee J. Wanie, Horicon, Wis., assignor to Deere & Company, Moline, Ill.

Filed Jun. 21, 1982, Ser. No. 390,148
Int. Cl.³ B60K *41/26*
U.S. Cl. 192—4 C 5 Claims

1. In a hydrostatic transmission control including a control arm secured to a transmission control element and movable about a pivot axis among a central neutral position and forward and reverse drive positions, respectively, in opposite directions from the neutral position, the improvement comprising: said pivot axis being located intermediate the length of the control arm; a neutralizing member mounted for movement generally crosswise to the length of said arm and including a pair of spaced legs extending in the direction of movement of the member; said legs each being provided with a slot; said arm being positioned in the slots of the legs with the legs being

located at opposite sides of the pivot axis of the arm; first and second abutments respectively located on said spaced legs to engage a common surface of the arm at locations on opposite sides of the axis and at least one of the abutments being formed by an end of one of the slots;

said neutralizing member being movable between a disengaged position wherein the abutments are spaced from said arm sufficiently to permit the arm to move freely between extreme forward and reverse drive positions and an engaged position, corresponding to the neutral position



of the arm, wherein both abutments are in engagement with the arm; said control including a brake pedal mounted for pivotal movement between brake-release and brake-engage positions; and a brake control linkage connected to said pedal by a lost motion connection and a transmission control linkage being conected between the pedal and the neutralizing member such that the neutralizing member begins movement toward its engaged position before the brake pedal begins to move the brake control linkage.

4,496,036

TORSIONAL DAMPERS

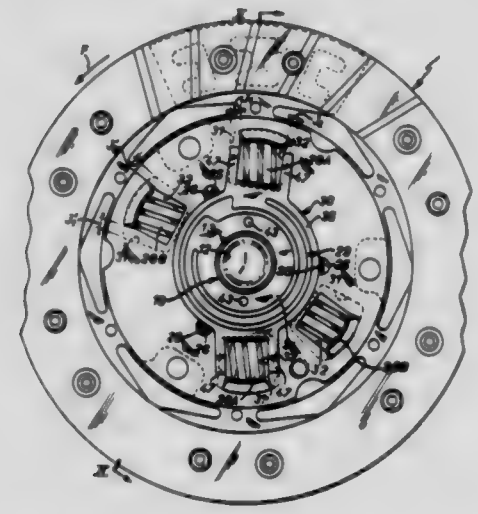
Pierre Loizeau, Ville D'Avray, France, assignor to Valeo, Paris, France

Filed Nov. 2, 1981, Ser. No. 317,175

Claims priority, application France, Nov. 3, 1980, 80 23447; Nov. 3, 1980, 80 23446

Int. Cl.³ F16D *3/66*

U.S. Cl. 192—106.2 **25 Claims**



1. A torsional damper suitable for use in a friction clutch plate, comprising at least two coaxial parts mounted to rotate relative to each other within a defined range of relative angular movement, circumferentially acting elastic means between said parts resisting such relative angular movement and incorporating at least one elastically deformable arm of thin plate configuration, two support members between which said elastically deformable arm extends and with at least one of which it is integral via a root area, means for positively engaging one of said support members with one of said parts so as to rotate therewith, and drive means on the other of said support members for engaging it for rotation with the other of said parts for at least part of said defined range of relative angular movement, wherein a first of said parts includes a hub designed to engage on a shaft so as to rotate therewith and a first of said support members is in the form of a slotted ring with an internal profile analogous to that of said hub so as to engage on the aforementioned shaft so as to rotate therewith, whereby said first support member is engaged with said first part so as to rotate therewith via the aforementioned shaft.

4,496,037

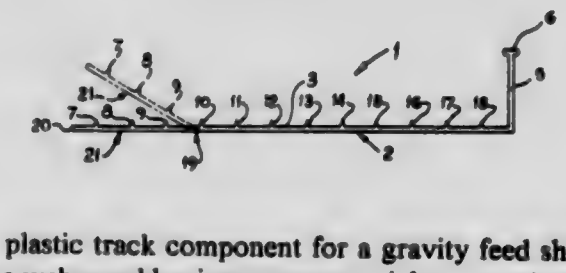
GRAVITY-FEED SHELF AND COMPONENTS THEREFOR

William S. Spamer, Roswell, Ga., assignor to The Mead Corporation, Dayton, Ohio

Continuation of Ser. No. 210,964, Nov. 28, 1980, abandoned. This application Jan. 19, 1983, Ser. No. 459,090

Int. Cl.³ A47F *7/00*

U.S. Cl. 193—2 R **2 Claims**



1. A plastic track component for a gravity feed shelf comprising a web panel having an upper article supporting surface, a flange panel integral with one side edge of said web panel and forming therewith a substantially "L"-shaped structure, a plurality of spaced ribs formed on said article supporting surface and extending the length of said web panel parallel with said flange panel, said ribs projecting upwardly from said article supporting surface and being of generally triangular cross section, an elongate notch formed in said web panel and extending parallel to and adjacent the other side edge of said web panel and remote from said flange panel and providing a frangible zone by which a portion of said web panel between said notch and said other side edge can be broken away from said web panel so as to reduce the width of said web panel, said notch extending the length of said web panel intermediate a pair of said ribs and being formed in the surface of said web panel opposite to said article supporting surface, said track component being formed of high-impact polystyrene having a lubricant material dispersed therein.

4,496,038

MECHANISM FOR DIRECT TRANSMISSION OF FEED MOVEMENTS TO THE OPERATING UNITS OF AN AUTOMATIC MACHINE WITH REVOLVING TABLE

Aldo Mandozzi, Ponte Capriasca, Switzerland, assignor to Azypatent AG, Vaduz, Liechtenstein

Filed Jul. 1, 1982, Ser. No. 394,471

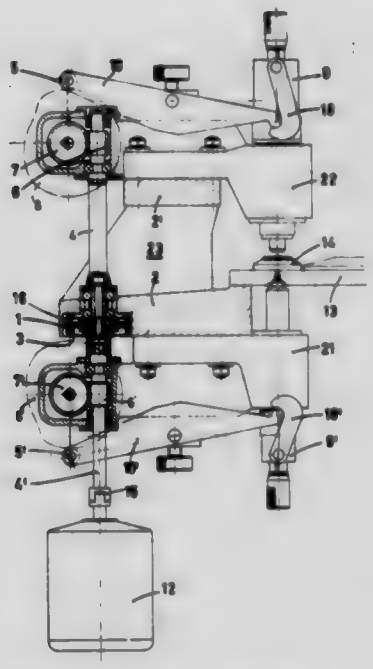
Claims priority, application Switzerland, Jul. 9, 1981, 4524/81

Int. Cl.³ B65G *47/00*

U.S. Cl. 198—339 **6 Claims**

1. An automatic machine with a revolving table having a plurality of work stations spaced about the table, upper and lower operating units at each said station for performing working operations on a workpiece, a toothed wheel for each work station, an endless flexible toothed member engaging all the toothed wheels so as to drive them simultaneously and in synchronism, at least one motor to circulate the endless flexible member, an upper shaft and a lower shaft being driven in rotation by each said toothed wheel, upper speed reduction members and an upper cam and an upper roller and an upper lever drivingly interconnecting the upper shaft with the upper

operating unit of each work station, and lower speed reduction members and a lower cam and a lower roller and a lower lever



drivingly interconnecting the lower shaft with the lower operating unit of each work station.

4,496,039

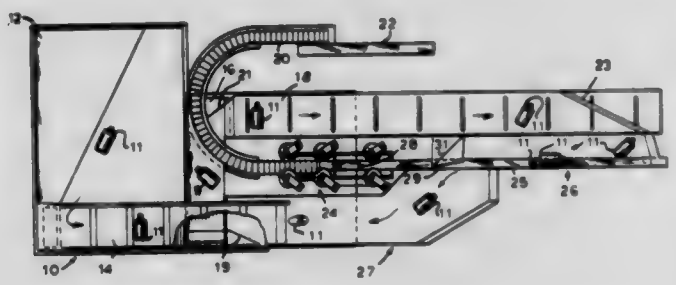
BOTTLE ALIGNMENT APPARATUS

Robert J. Krooss, 74 Ball Rd., Mountain Lakes, N.J. 07046

Continuation of Ser. No. 257,368, Apr. 24, 1981, abandoned. This application Nov. 17, 1983, Ser. No. 552,018

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—396 **1 Claim**



1. Bottle alignment apparauts, for aligning a plurality of bottles having a base, main section and a neck in linear alignment, said apparatus comprising:

a downwardly sloping trough for receiving said bottles, said trough causing each of said bottles entering it to align its major axis with the general direction of said trough, and having said bottles move along said trough by gravity;

a movable wall, said wall being a part of an outer wall position of said trough where said movable wall is automatically opened to relieve a jammed condition in alignment chute caused by a plurality of bottles;

a slide surface fixed to an edge of said trough and being sloped upwardly from said edge and the upper portion said trough, a supply conveyor for supplying said bottles to said slide surface and placing said bottles on said slide surface, so that said bottles placed on a portion of said slide surface remote from said edge are in a non-upright position and are caused by gravity to slide toward said trough and where they further enter a stand-up chute;

a plow affixed to the bottom-most portion of said trough in a predetermined position, so as to divert and deflect a non-aligned bottle from a path followed by an aligned bottle, whereby a portion of randomly aligned bottles placed onto said slide surface leave from said downwardly sloping trough in a base leading or neck leading condition, and with the major axis of all of said bottles leaving in said portion being in linear alignment with the general direction of said trough: and

a return chute whereby said non-aligned bottles are returned to said supply conveyor.

4,496,040

APPARATUS FOR WIDENING AND SLOWING DOWN A STREAM OF UPRIGHT BOTTLES

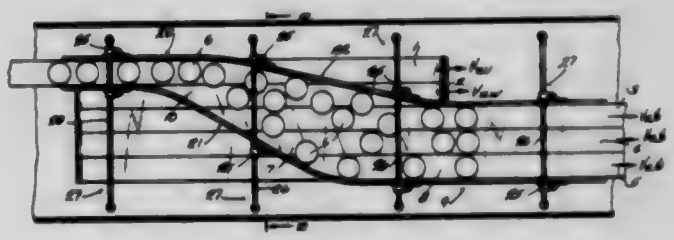
Hermann Kronseder, Worth, and Egon Schneider, Neutraubling, both of Fed. Rep. of Germany, assignors to Krones AG Hermann Kronseder Maschinenfabrik, Neutraubling, Fed. Rep. of Germany

Filed Jul. 18, 1983, Ser. No. 514,554

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1983, 3228453

Int. Cl.³ B65G *47/26*

U.S. Cl. 198—434 **6 Claims**



1. Apparatus having an input region for containers being transported longitudinally in single file and an output region for the containers after they have been rearranged in rows containing a plurality of containers substantially abreast of each other, comprising a longitudinally moving supply conveyor for feeding said containers into the input region, a longitudinally moving intermediate conveyor disposed adjacent and in parallelism with the supply conveyor and moving at a lower speed than the supply conveyor, and a longitudinally movable discharge conveyor disposed adjacent the intermediate conveyor and in parallelism therewith and moving at a lower speed than the intermediate conveyor, and

the improvement wherein the container supporting surfaces of said supply conveyor, at least in said input region, and said intermediate conveyor, and said discharge conveyor, at least up to the discharge region are all inclined to form a continual transversely inclined surface such that said containers will slide down the inclined surface from the supply conveyor to the discharge conveyor as they progress toward said output region.

4,496,041

APPARATUS FOR INTRODUCING PROJECTILES INTO ARTILLERY TURRETS

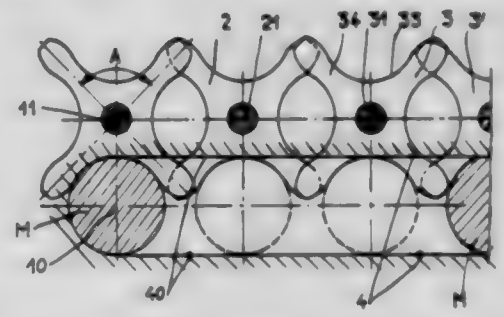
Hervé Voillot, Sartrouville, France, assignor to Creusot-Loire, Paris, France

Filed Jun. 3, 1982, Ser. No. 384,688

Claims priority, application France, Jun. 9, 1981, 81 11306

Int. Cl.³ B65G *47/26*

U.S. Cl. 198—457 **5 Claims**



1. In an artillery turret installation, apparatus for transferring projectiles (M) from a feed corridor (10) along which said projectiles are moved axially in sequence, separated by safety intervals, into a transfer corridor (4) in which said projectiles

are moved side by side perpendicularly to their axes, said transfer corridor being defined by parallel guide members, a series of transfer star wheels (3') being mounted for rotation about axes at right angles to said guide members and rotationally driven in synchronism by a main drive means (33), each of said transfer star wheels (3') having at least one socket of a section corresponding to that of a said projectile, said socket being associated with two arms respectively taking over a projectile coming from a preceding star wheel and propelling it toward a succeeding star wheel, the improvement comprising:

(a) a receiving wheel (1) for receiving said projectiles (M) at the outlet of said feed corridor (10), said guide members extending to said receiving wheel, said receiving wheel having at least one socket for centering on the axis of said feed corridor by rotation about an axis (11) at right angles to said guide members, the safety interval separating said projectiles corresponding to the time required for replacement of a said socket by a succeeding socket;

(b) means (5, 53) for controlling, at regular intervals corresponding to the rhythm of succession of said projectiles at the outlet of said feed corridor, the rotation of said receiving wheel (1) through an angle (A) corresponding to the replacement of the socket by the next socket in the axis of said feed corridor;

(c) at least one intermediate wheel (2) also associated with said guide members and provided with a number of sockets equal to the number of sockets in said transfer star wheels, said intermediate wheel being interposed between said receiving wheel (1) and a first said transfer star wheel (3) for passing said projectiles (M) from one wheel to the other by rotation about an axis (21) at right angles to said guide members;

(d) means for continuously rotationally driving said intermediate wheel (2) at variable speed; and

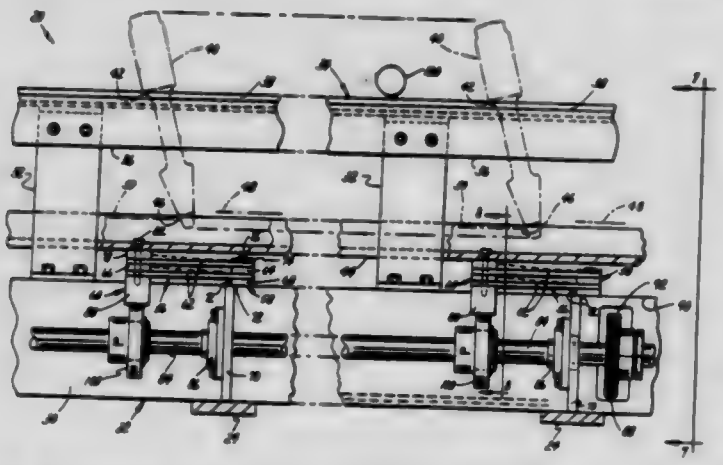
(e) means (6, 7) for controlling periodic progressive variations of said speed of rotation between an angular velocity equal to that of said receiving wheel (1) and an angular velocity equal to that of said transfer star wheel (3) for each fraction of a revolution corresponding to the passing of an object from said receiving wheel to said transfer star wheel.

4,496,042

HUMPER CONVEYOR

William E. Rise, Utica, Mich., assignor to Android Corporation, Auburn Heights, Mich.

Filed May 24, 1982, Ser. No. 381,613
Int. Cl.³ B65G *25/00*
U.S. Cl. 198—774
15 Claims



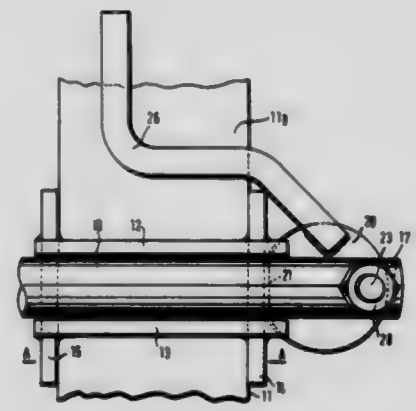
13. In a humper type conveyor for conveying articles along a path of travel having frame structure, rail structure supported on the frame structure, and lift bar structure which is cyclically displaceable toward and away from the rail structure, said rail and lift bar structures being constructed and arranged in substantial parallelism along the path of travel to cooperatively support conveyed articles along the path of travel and to convey them in such a manner that displacement of the lift bar structure toward the rail structure causes the articles to pivot about their points of support on the lift bar structure with the result that their points of support on the rail structure move forwardly along the path of travel and such that during displacement of the lift bar structure away from the rail structure the articles pivot about their points of support on the rail structure with the result that their points of support on the lift bar structure move forwardly along the path of travel, the improvement for mounting the lift bar structure on the frame structure which comprises support arm structure disposed generally parallel to the path of travel of the articles, mounting structure via which the support arm structure mounts on the frame structure and mounting structure via which the lift bar structure mounts on the support arm structure, and wherein the support arm structure comprises plural elements disposed in parallelism with each other, and the plural elements comprise resiliently yieldable elements which are normally flat in their free state but which flex from their normally flat condition during operation of the conveyor.

4,496,043

SUPPORTING ASSEMBLY FOR TROUGHING ROLLS OF CONVEYOR BELTS

Lawson C. Wooldridge, Stourbridge, England, assignor to Brockway Engineering Company Limited, United Kingdom

PCT No. PCT/GB82/00007, § 371 Date Aug. 27, 1982, § 102(e) Date Aug. 27, 1982, PCT Pub. No. WO82/02374, PCT Pub. Date Jul. 22, 1982
PCT Filed Jan. 13, 1982, Ser. No. 414,375
Claims priority, application United Kingdom, Jan. 13, 1981, 8100963
Int. Cl.³ B65G *15/08*
U.S. Cl. 198—827
4 Claims



1. An idler roller assembly for supporting a conveyor belt in a trough formation and carried in a conveyor frame, said assembly including two outer rollers supported in said frame on shafts extending outwardly of said rollers, at least one of said shafts being supported in the said frame by a suppor means operable to move said idler roller assembly between an operative position in which said rollers support the conveyor belt and an inoperative position in which the said rollers do not support the conveyor belt, wherein said support means includes elements rigidly secured to the frame and in which the said one shaft is supported against lateral movement by said elements, whereby the said outer roller is positioned substantially normal to the conveyor line; said support means further including a disc member carried at the end of said one shaft for pivotal movement about an eccentric axis between a first position in which the said disc member maintains the said assembly in the operative position and a second position in which the assembly is in the inoperative position; said disc member cooperating with said frame and being provided with means which

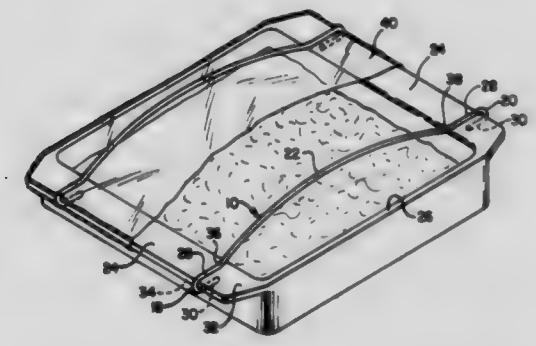
cooperates with a portion of said support means which is rigidly attached to said frame to resist rotation of said disc in said first position.

4,496,044

FLEXIBLE COVERING SUPPORT BRACKET

Charles M. Cummings, 156 Winthrop St., Watertown, N.Y. 13601

Filed Aug. 19, 1983, Ser. No. 524,672
Int. Cl.³ B65D *65/16*
U.S. Cl. 206—45.33 21 Claims



1. A support bracket for supporting a flexible sheet covering a container in spaced relation to the contents of the container, comprising:

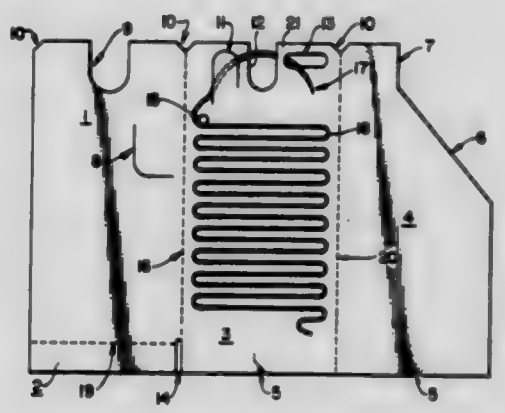
an elongated resilient member generally extending in a horizontal direction, having U-shaped end portions for removably engaging opposite top edges of the container, and an elongated, generally horizontally extending bowed upward portion between said U-shaped end portions for supporting thereabove the flexible sheet.

4,496,045

MULTI-PANEL FOLDER FOR SURGICAL SUTURES

Douglas M. Ferguson; William M. Owens; Michael Lang, and Jay P. Lincoln, all of Flagstaff, Ariz., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Jun. 14, 1984, Ser. No. 620,605
Int. Cl.³ A61L *15/00*
U.S. Cl. 206—63.3 18 Claims



1. A folded elongated folder for a surgical suture comprising:

a first panel foldably connected to a second panel along a major edge thereof and a third panel foldably connected along a major edge to said second panel along the opposite major edge of said second panel;

said first panel having optionally chamfered upper corners, a generally U-shaped notch disposed in the center of the upper edge, means for locking said first panel to said third panel when folded, a fold line near the bottom of said first panel to form a foldable flap, and a clearance notch disposed at the lower corner of said first panel adjacent said second panel;

said second panel having optionally chamfered upper corners, a generally U-shaped notch disposed in the center of the upper edge, integral incised means for holding a needle in place disposed on each side adjacent said notch, an optional folder-loading registration aperture disposed below and to the left of said needle holding means adjacent the fold line connecting said first and second panels, and means for locking said second panel with said third panel;

said third panel optionally having a chamfered corner at the fold line between said third panel and the second panel, the major edge opposite said fold line having a contour to avoid overlapping the upper edge generally U-shaped notches of said first and second panels, and means for locking said third panel with said second panel;

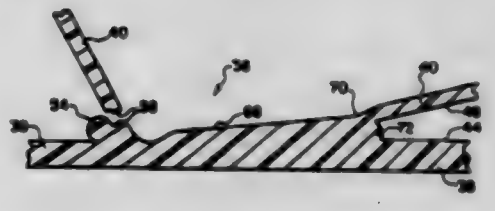
said folder when folded with said foldable flap disposed at the bottom of said first panel inwardly folded, said first panel folded to cover said second panel adapted to hold in place a surgical suture disposed thereon and to retain in place any needles attached thereto, said third panel folded to cover said first panel, and said third panel interlocked with said first and second panels at said interlocking means thereon to provide for the dispensing of said suture without opening said folder.

4,496,046

MULTIPLE CHAMBER CONTAINER WITH INNER DIAPHRAGM AND INTERMEDIATE CHAMBER

Albert Stone, Buffalo Grove; Edwin Pyde, Desplaines, and Peter Carveth, Glen Ellyn, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 532,428, Sep. 15, 1983,. This application Jun. 15, 1984, Ser. No. 619,648
Int. Cl.³ B65D *25/08*
U.S. Cl. 206—219 9 Claims



1. A container having two chambers for the separate storage and selective mixing of two components, comprising:

(a) a first sheet including

(i) a first inner surface of a thermoplastic material, and

(ii) a first outer surface;

(b) a second, diaphragm sheet including

(i) a second inner surface of a thermoplastic material, said second inner surface having melt-flow characteristics substantially identical with the melt-flow characteristics of said first inner surface, and

(ii) a second outer surface;

(c) said second, diaphragm sheet sealed about at least a portion of its periphery to said first sheet and to a third sheet opposite said first sheet;

(d) said first sheet and said third sheet sealed about their entire peripheries, forming the exterior wall of said container;

(e) an externally, selectively, manually openable seal line between said first and said second, diaphragm sheets, said openable seal line extending across the width of said container, wherein a cross section taken through said seal line, perpendicular to said seal line at the cross section defines a seal, said seal formed by applied pressure and a focused energy source, which melts said first and second inner surfaces at said seal, said seal defining

(i) a bead area of increased thickness at a break end of said seal, between said first and second inner surfaces, said bead area of increased thickness coextensive with said first and second inner surfaces along less than all of the surface of said bead area,

(ii) a break line inwardly of said break end, between said second, diaphragm sheet and said bead area of increased thickness, the thickness of said seal at said break line being at the least not substantially less than the thickness of said second sheet, and

(iii) an arcuate depression having a concave downward surface extending from substantially adjacent said break line to a minimum seal thickness point;

(f) a permanent line of securement between said second and third sheets extending substantially parallel to and the length of said openable seal line;

(g) at least said second, diaphragm sheet, said openable seal line, said permanent line of securement and said third sheet defining a first chamber for holding the first component;

(h) at least said first sheet, said openable seal line, said permanent line of securement and said second, diaphragm sheet defining a second chamber for holding the second component;

(i) barrier means secured to the exterior surface of the exterior wall of said container, at one of that portion of said third sheet which defines said first chamber and that portion of said first sheet which defines said second chamber;

(j) wherein said barrier means comprises a virtually absolute barrier to at least one of gas, liquid and light;

(k) whereby manual separation of said first and second sheets near said openable seal line will rupture said seal line and said second sheet, placing said first and second chambers in open communication.

4,496,047

PACK FOR RAZORS

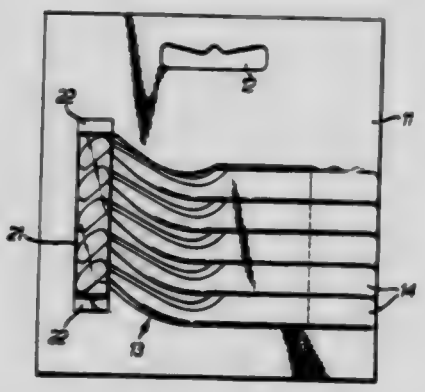
Derrick R. Gatley, Reading, England, assignor to Wilkinson Sword Limited, High Wycombe, England

Continuation of Ser. No. 357,361, Mar. 12, 1982,. This application Apr. 18, 1984, Ser. No. 601,114

Int. Cl.[3] B65D *85/00, 73/00*

U.S. Cl. 206—354

7 Claims



1. A pack of razors comprising a card having an opening spaced from the sides of the card for the reception of a stack of razors each of which has a plane of symmetry, a head and a handle extending from said head, each handle having a slot therein extending along said handle from the outer end thereof, a said stack of said razors disposed within the opening such that the plane of symmetry of each razor lies substantially in the plane of the card and the card has a portion thereof along the margin of said opening which portion extends into said slot in the handle of each razor at the outer end thereof, and means for holding the heads of the razors to the card.

4,496,048

VIDEO CASSETTE CARRIER

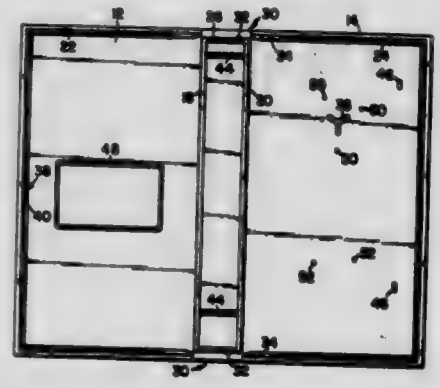
Philip K. Sykes, Maple Grove, Minn., assignor to Blackbourn, Inc., Eden Prairie, Minn.

Filed Dec. 13, 1982, Ser. No. 448,954

Int. Cl.[3] B65D *85/67, 85/672*

U.S. Cl. 206—387

11 Claims



11. An album type package for a cassette including at least one tape reel therein, which comprises:

an elongate spine having inside and outside surfaces;

first and second covers connected to opposite edges of said spine being pivotal between open and closed positions relative to said spine, said covers each having inside and outside surfaces with complementary flanges on the inside surfaces for defining a peripheral wall when said covers are closed;

rectangular boot means secured to the inside surfaces of said spine for receiving the cassette in edge-wise relationship therein and substantially constraining the cassette against longitudinal and lateral movement relative to said spine;

rib and detent means releasably securing said second cover to said boot means in a closed position;

means mounted on said second cover for constraining the cassette against movement out of said boot means when said second cover is closed;

means positioned within said boot means for longitudinally locating a relatively smaller cassette for engagement with said constraining means;

press-type latch means releasably securing said first cover to said second cover in a closed position so that the package is fully closed; and

spacer means mounted on the inside surfaces of said first and second covers for engaging opposite sides of the cassette received in said boot means when said covers are closed.

4,496,049

LABEL ROLL HOLDER FOR HAND-HELD LABELER, HOLDER BLANK, AND METHOD OF MAKING SAME

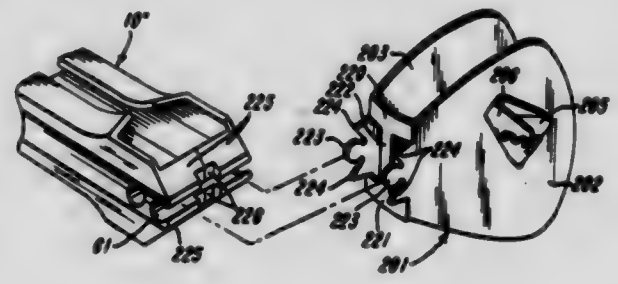
Robert M. Pabodie, Dayton, and Paul H. Hamisch, Jr., Franklin, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Apr. 13, 1983, Ser. No. 484,403

Int. Cl.[3] B65C *11/00*

U.S. Cl. 206—395

19 Claims



2. Method of making a labeler, comprising the steps of:

providing a hand-held labeler having means defining a pathway for a carrier web having a series of pressure sensitive labels adhered thereto, means for delaminating labels from the carrier web, means adjacent the delaminating means for applying labels, means for advancing the carrier web, means for receiving a projection, and means defining a recess cooperable with a detent; cutting out of a sheet a label roll holder member having a side portion, a mounting member hingedly connected to the side portion by a hinge, and cuts defining a projection and a detent whereby the holder member is adapted to be releasably attached to a labeler; folding the mounting member at an angle with respect to the side portion so that the mounting member can mount a label roll; folding the mounting member at an angle with respect to the side portion so that the mounting member can mount a label roll; folding the holder member so that the projection and detent can engage a labeler; and connecting the projection of the holder member to the receiving means of the labeler and bringing the detent into cooperation with the recess.

19. A holder adapted to be connected to a hand-held labeler, the holder comprising: a holder member having a pair of laterally spaced side portions and a connecting portion, the holder member having means disposed between the side portions for mounting a label roll, the holder having means for connecting the holder to a labeler, the connecting means including a pair of laterally spaced first projections adapted to be received in a slot in the labeler and laterally spaced pairs of second and third projections, each pair of second and third projections straddling a said first projection, and the pairs of second and third projections being adapted to contact the labeler and stabilize the holder.

4,496,050

CASE FOR HOLDING FLAT ARTICLES

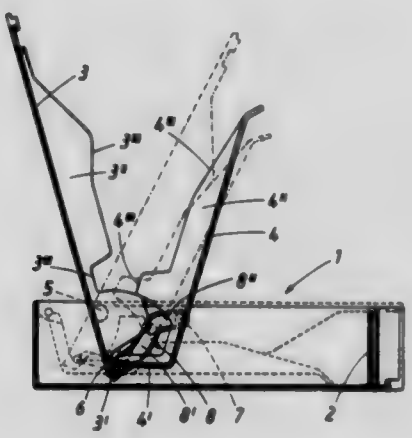
Balthasar Kirchner, and Schleicher Siegfried, both of Eferding, Austria, assignors to Ernst Stadelmann Gesellschaft m.b.H., Eferding, Austria

Filed Dec. 9, 1983, Ser. No. 559,800

Claims priority, application European Pat. Off., Jun. 24, 1983, 83890104.9

Int. Cl.³ B65D *43/16, 85/57*

U.S. Cl. 206—444 **3 Claims**



1. In a case for holding flat articles, comprising
a boxlike body,
a cover,
a first hinge connecting said cover to said body on a first hinge axis, said cover having a rear edge, which is parallel to and disposed adjacent to said first hinge axis, said first hinge axis being spaced from said rear edge by a distance which is approximately as large as the height of said body so that said box is adapted to be opened by an upward movement of said cover about said first hinge axis,
a lid, which is disposed on the inside of said cover and defines a compartment with said cover and is movable relative to said cover to a position in which said compartment is closed, and
a second hinge, which is disposed at said rear edge and connects said lid to said cover on an axis which is parallel to said first hinge axis,
the improvement residing in that
said body is provided with two cam tracks, which are spaced apart along said axes and face opposite sides of said lid,
each of said cam tracks has a circular portion, which corresponds to an arc of a circle that is centered on said first hinge axis, and a cam track end portion, which succeeds said circular portion in the direction of said upward movement and deviates outwardly from said circle, and
said lid is provided with two cam follower pins, which protrude from said lid in mutually opposite lateral directions and each of which cooperates with one of said cam tracks.

4,496,051

CONTAINER WITH INFORMATION-CARRYING ELEMENT

Georg J. Ortner, Thome Strasse 14, D-3300 Braunschweig, Fed. Rep. of Germany

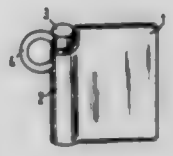
PCT No. PCT/EP82/00106, § 371 Date Jan. 28, 1983, § 102(e) Date Jan. 28, 1983, PCT Pub. No. WO82/04428, PCT Pub. Date Dec. 23, 1982

PCT Filed May 19, 1982, Ser. No. 464,509

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1981, 3122775; Apr. 23, 1982, 3215221

Int. Cl.³ B65D *23/00, 51/24;* G09F *3/04*

U.S. Cl. 206—459 **11 Claims**



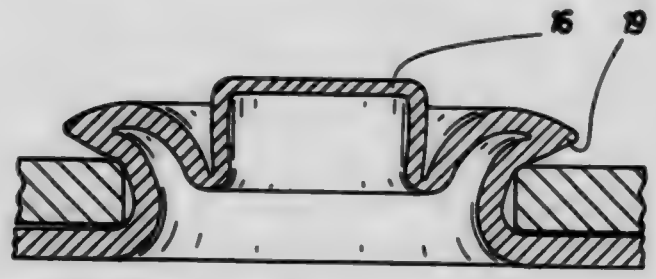
1. A combination including a vertically oriented container with a product dispensing opening therein, the container being of a size too limited to carry sufficient advertisement and/or other information relative to the product within the container, and further including as part of the combination an information tab with advertising and/or other information thereon and having a surface area substantially larger than the surface area of the container, said information tab extending laterally from the container outer surface and having a vertical extent at least equal to that of the container, stopper means for closing the container dispensing opening for preventing dispensing of the container product when the stopper means is applied to the container to close the opening, and holder means for said information tab, said holder means effectively inseparably connecting the information tab to the container, said container, said information tab, said stopper means and said holder means comprising an injection molded one piece product unit which, on attempted separation of the information tag from the container, is destroyed.

4,496,052

BLISTER PACKAGE WITH MEANS FOR SECURING BLISTER

Inge Nertman, Kungälv, Sweden, assignor to AB Volvo, Goteborg, Sweden

PCT No. PCT/SE82/00236, § 371 Date Feb. 22, 1983, § 102(e) Date Feb. 22, 1983, PCT Pub. No. WO83/00133, PCT Pub. Date Jan. 20, 1983
PCT Filed Jul. 5, 1982, Ser. No. 474,593
Claims priority, application Sweden, Jul. 6, 1981, 8104179
Int. Cl.³ B65D 73/00
U.S. Cl. 206—470
1 Claim



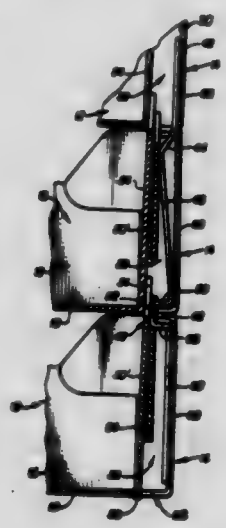
1. Means for securing a first part, of plastic material, such as a blister package, to a second part, such as a sheet of cardboard, said securing means comprising: at least one projection to be passed through a hole in the second part, each projection having an inner tubular portion to be located in the respective hole, and an outer portion, said outer portion having a first tubular portion connected to said inner tubular portion, a second tubular portion of a diameter smaller than said first tubular portion, an annular shoulder portion interconnecting said first and second tubular portions, and a vaulted termination portion connected to said second tubular portion and closing said projection; said projection being adapted to occupy a first position in which said first and second tubular portions project outwardly beyond the respective hole, and a second position in which said second tubular portion is snapped inside said shoulder portion and at least partly inside said first tubular portion and in which said first tubular portion is widened radially outwardly beyond the width of and outside the hole, whereby said projection forms a rivet locking said first part to said second part.

4,496,053

STACKING WIRE FOR PRODUCE CONTAINERS

Walton B. Crane, Sherman Oaks, Calif., assignor to Industrial Designs & Services, Oxnard, Calif.

Filed Sep. 29, 1982, Ser. No. 427,557
Int. Cl.³ B65D 5/46
U.S. Cl. 206—510
20 Claims



1. A stacking wire for use in stacking produce containers or the like having a double-layer end wall defining a vertically open slot for receiving the stacking wire, comprising:

a handle portion including a cross piece having a length generally corresponding with the transverse width of the end wall slot;

a pair of first spacers joined to opposite ends of said handle portion and extending in a direction generally perpendicular with respect to said cross piece for a distance generally corresponding with the thickness of the end wall slot;

a pair of legs joined respectively to said first spacers and extending generally downwardly therefrom; and

a pair of feet joined respectively to the lower ends of said legs, each of said feet including an intermediate spacer extending from the lower end of the associated leg in a direction generally perpendicular to said cross piece for a distance generally corresponding with the thickness of the end wall slot, a relatively short riser extending generally downwardly from said intermediate spacer, a wing projecting laterally outwardly from the lower end of said riser, and a second spacer extending generally perpendicular with respect to said cross piece for a distance generally corresponding with the thickness of the end wall slot and being joined generally to the laterally outer end of said wing;

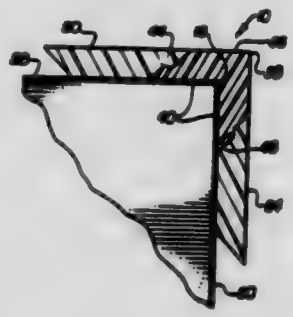
said wing and second spacer of said feet being receivable into the upper extent of an end wall slot in a first container to maintain the end wall layers thereof in a predetermined spacing, said intermediate spacers of said feet being receivable into the lower extent of an end wall slot in a second container stacked onto said first container to maintain the end wall layers of said second container in said predetermined spacing and in vertical alignment with the end wall layers of said first container, said first spacers being thereupon positioned to maintain the upper extent of the second container end wall layers at said predetermined spacing, said cross piece being receivable into the lower extent of the end wall slot in a third container stacked onto said second container.

4,496,054

CORNER PROTECTOR FOR CONTAINERIZED ARTICLE

Harry M. Koltun, Palos Verdes Estates, Calif., assignor to Arrow Container & Packaging Corp., Pico Rivera, Calif.

Filed Apr. 18, 1984, Ser. No. 601,724
Int. Cl.³ B65D 81/02, 85/30
U.S. Cl. 206—586
6 Claims



1. A protector which substantially forms a hollow base tetrahedron for covering a corner of a box-like article, said protector comprising:

a hollow base shell having three walls joined to form a truncated portion of the tetrahedron, said shell including an aperture near an apex of the tetrahedron opposite the base, the portion of said shell forming said aperture also forming a retaining sleeve; and

a plug which cooperates with said shell when inserted through said aperture to provide an apex section for the hollow base tetrahedron, said plug including sidewalls which cooperate with said retaining sleeve to hold and position said plug within said aperture, and a bottom surface forming a tetrahedral cavity in connection with an undersurface of said shell, said bottom surface and said

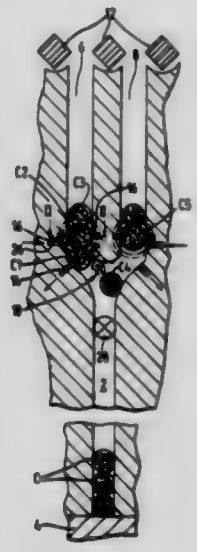
undersurface covering a portion of three perpendicular surfaces of the article adjacent the protected corner.

4,496,055

APPARATUS FOR FORMING GROUPS OF CIGARETTES

Robert J. Green, and Dennis Hinchcliffe, both of London, England, assignors to Molins PLC, London, England

Filed Sep. 28, 1982, Ser. No. 425,365
Int. Cl.[3] A24C 5/48; B07C 5/00, 5/342
U.S. Cl. 209—536 9 Claims



1. Apparatus for continuously forming groups of cigarettes, wherein each group has the same predetermined number of cigarettes arranged in the same predetermined number of rows, from a plurality of streams of cigarettes from which defective cigarettes are rejected, said apparatus comprising:

(a) means defining a plurality of downwardly directed passageways each for containing a column of horizontally disposed cigarettes, the number of said passageways corresponding to the number of cigarettes in the longest row of each group;

(b) pusher means for ejecting cigarettes at the bottom of said plurality of passageways in a direction transverse to said passageway to form said groups of cigarettes;

(c) a cigarette hopper mounted above said passageways;

(d) means defining a pair of channels extending between each of said passageways and said hopper, each channel being adapted for receiving horizontally disposed cigarettes from said hopper and having an exit leading to the associated passageway;

(e) escapement means at said exits of each pair of channels adapted to alternately release single cigarettes from said pair of channels through alternate exits;

(f) testing means in each channel for checking at least one end of each cigarette passing therethrough for a defect; and

(g) rejection means in each channel connected to said testing means in the respective channel, for rejecting cigarettes having at least one defective end from said channel in a direction transverse to said channel.

4,496,056

AUTOMATED INSPECTION SYSTEM

Frederick C. Schoenig, Jr., Wilmington; Leonard N. Grossman, Wrightsville Beach, both of N.C.; Ching C. Lai, Pleasanton, Calif.; William Masaitis, Castle Hayne, and Robert O. Canada, Wilmington, both of N.C., assignors to General Electric Company, San Jose, Calif.

Filed Mar. 25, 1982, Ser. No. 361,933
Int. Cl.[3] B07C 5/02, 5/342
U.S. Cl. 209—539 7 Claims

1. A system for inspecting a succession of discrete, substantially cylindrical pellets for conformance to predetermined criteria, including length and diameter, wherein said pellets are presented for inspection in a stack with said pellets disposed substantially coaxially and with the interfaces of said pellets in end-to-end abutment, said system comprising in combination;

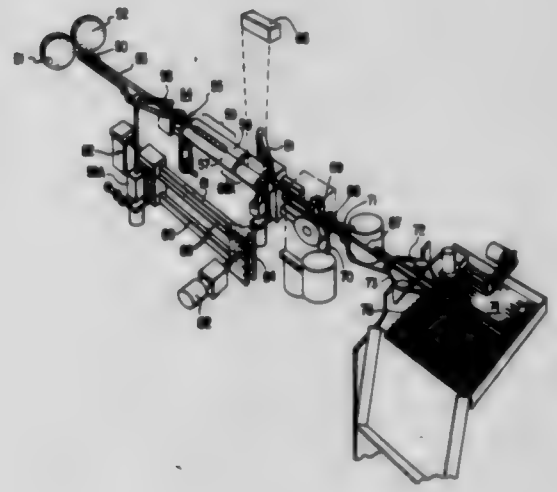
transport means for advancing said stack of said pellets along a path for presentation to an optical inspection station by spiraling around the stack axis at a controlled linear and angular velocity respectively;

said optical inspection station including means for illuminating an elongated inspection region of said path while said pellets travel within the limits of a stationary viewing region, said elongate portion of said path exceeding in length that of at least a single pellet;

a linear array of photosensitive elements, disposed in said stationary viewing region, each photosensitive element adapted to provide an output signal as a function of the intensity of light reflected thereto from said illuminated pellets; and

means for periodically scanning said output signals to derive a video signal from successive scans representative of selective characteristics of each pellet under inspection; and

a first preprocessing circuit, including:



means for extracting data from said video signal indicative of said conformance of the pellet under inspection to said predetermined criteria;

means for compressing said extracted data to collapse the rate at which preprocessed data is provided for further data processing;

means for normalizing said video signal to compensate for signal variations caused by factors extraneous to the inspection of said pellets for conformance to said criteria;

means responsive to said video signal for detecting each of said interfaces as a plurality of diminished video signal amplitudes each occurring at the same selective array position during a plurality of scans;

means responsive to said detecting means for generating a track gate by selecting signals corresponding to a group of successive array elements whose output signals correspond to illumination received from a single pellet; and

means responsive to the linear velocity of said single pellet for advancing said track gate;

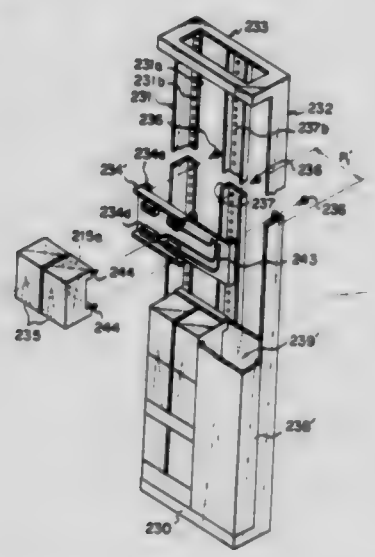
whereby said track gate tracks the interfaces of said linearly moving single pellet and continuously brackets the signals corresponding to said pellet by means of leading and trailing track gate edges.

4,496,057

RACK STRUCTURE FOR MOUNTING A COMMUNICATION APPARATUS

Hideki Zenitani, Yokohama; Akira Oka, Tokyo; Itsuo Okamoto, Kawasaki; Hisao Hayashi, and Masajiro Taniguchi, both of Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 15, 1983, Ser. No. 514,027
Claims priority, application Japan, Jul. 26, 1982, 57-128991; Jul. 27, 1982, 57-129642
Int. Cl.³ A47F 7/00
U.S. Cl. 211—26 4 Claims



1. A rack for mounting a communication apparatus, said rack comprising

right and left vertical side frames,

a plurality of block-mounting plates, each for mounting at least one block which houses at least one printed board, said block-mounting plates being rectangular and being longitudinally disposed between said right and left vertical side frames,

each said at least one block being mounted on the front face of the respective block-mounting plate,

the upper portion and the lower portion of said block-mounting plates being folded frontward so as to form an upper reinforcing rim and a lower reinforcing rim,

said right and left vertical side frames both having an L-shaped horizontal cross section, with folded edges of said L-shaped right and left vertical side frames being arranged inward so as to face each other, and

said block-mounting plates having securing members along the left edge and the right edge thereof, said securing members projecting backward and having an L-shaped horizontal cross section, with folded edges of said L-shaped securing members being arranged inward so as to face each other, the depth of said L-shaped securing members projecting behind said block-mounting plates being selectable in accordance with the depth of said at least one block to be mounted on the respective block-mounting plate, and said folded edges of said L-shaped securing members being secured to said folded edges of said L-shaped vertical side frames.

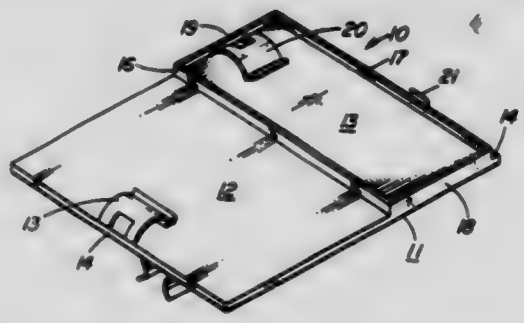
4,496,058

SHOPPING ORGANIZER

Garrett R. Harris, and Frances T. Harris, both of 4118 - 50 A St., Red Deer, Alberta, T4N 1Y9, Canada

Filed Jun. 1, 1983, Ser. No. 499,993
Int. Cl.³ A47F 5/00
U.S. Cl. 211—86 14 Claims

1. A shopper's helper assembly comprising: (a) a base; (b) an open bin disposed adjacent one portion of said base, said open bin including a clip located therein for releasably retaining a plurality of sheets of paper, said bin being spaced a predetermined close distance from one side edge of said base to provide a first flat surface, and a predetermined large distance from the other side edge, thereby providing a second, flat, paper-supporting surface; (c) a clip located along a side edge of said first flat surface for releasably holding a cylindrical writing instrument thereon, and a hole at the top of said first flat surface for selectively releasably supporting said cylindrical writing instrument therein; (d) a clip located at an edge of said second,



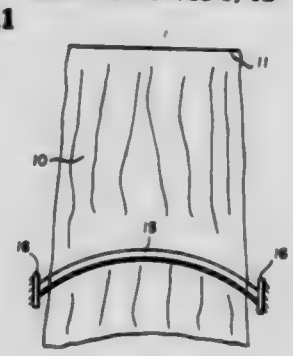
flat, paper-supporting surface for releasably retaining a pad of paper or a plurality of sheets of paper; and (e) at least one longitudinally extending, downwardly open, cross-section clamp secured to the undersurface of said base for releasably retaining said shopper's helper assembly on a complementarily-shaped support.

4,496,059

CURTAIN BOW

Raymond J. Leiter, 134 Long Meadow Dr., Rochester, N.Y. 14621

Filed Apr. 13, 1981, Ser. No. 253,613
Int. Cl.³ A47H 1/02
U.S. Cl. 211—105.1 5 Claims



1. Curtain bow apparatus for use to support a curtain hanging over an opening defined between two opposing vertical walls which comprises, a pair of end supports having front faces and back faces and adapted to be attached by the back faces each to a different one of said walls with said front faces opposing and opposite to each other, each of said end supports having a socket provided by a rectangular slot disposed at an acute angle to the vertical, said slots being directly opposite to each other, a bow of rectangular cross section similar to the shape of said slots and being of longitudinally uncompressible material flexible enough to be bowed and longer than the distance between said bottom of said sockets in said end supports, the opposite ends of said bow being received in said sockets to form a curved surface at said acute angle to the vertical for holding said curtain outward from the opening while being self-supporting in said sockets.

4,496,060

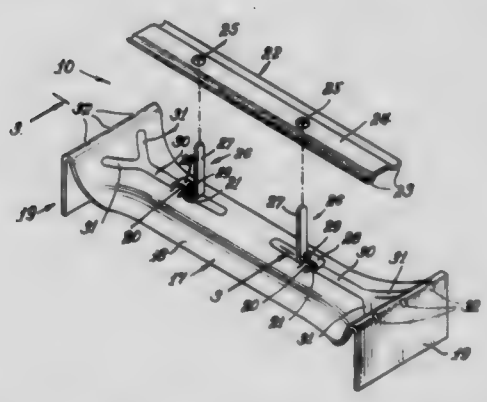
GARMENT HANGER SUPPORT FOR TRANSPORTABLE WARDROBE

William J. Anderson, and Wayne R. Anderson, both of Taylorsville, Miss., assignors to Enamel Products and Plating Co., McKeesport, Pa.

Filed May 27, 1982, Ser. No. 382,533
Int. Cl.³ A47F 5/00
U.S. Cl. 211—124 7 Claims

1. In a garment hanger support for use with a transportable

wardrobe of the type including a hanger bar having a downwardly opening main channel extending between support ends, a locking cap extending for substantially the full length of the main channel and adapted for overlying the main channel to secure hanger hooks therebetween, the improvement comprising at least one struck-up bracket integrally formed with the hanger bar along the main channel thereof and forming a slot, at least one hole extending through the locking cap in positional correspondence with said struck-up bracket, a hold down clip having a long arm and bracket engageable means at one end thereof, said bracket engageable means comprising a



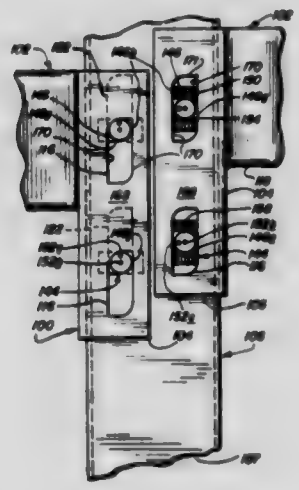
short arm rebent over the long arm and spaced apart therefrom to receive the bracket therebetween, said long arm being capable of passing through said bracket slot and said short arm having a length sufficient to overlap said struck-up bracket upon passage of said long arm through said bracket slot whereby to facilitate engagement with said bracket at said bracket engageable means, said long arm being bendable to extend upward for passage through said locking cap hole to be rebent over said locking cap to secure said locking cap to the hanger bar, said clip being a part separate and fully removable from said hanger bar and said locking cap, and said bracket engageable means being detachably engageable to said bracket.

4,496,061

CONNECTOR MEANS FOR SECURING SLOTTED MEMBERS

Charles E. Highsmith, Springfield, Tenn., assignor to Unarco Industries, Inc., Chicago, Ill.

Filed Oct. 9, 1980, Ser. No. 195,656
Int. Cl.³ B01D 23/24
U.S. Cl. 211—191 15 Claims



1. A bolt and nut assembly for use in storage racks and other structures to secure a plurality of slotted members having a predetermined combined thickness, which bolt and nut assembly comprises:

(a) a generally T-shaped bolt, said bolt having a tee head and an elongated shank with threads thereon, said shank having a longitudinal axis and a terminal end located opposite said tee head, said bolt having a neck positioned between and connecting said shank and said tee head, said tee head having portions extending laterally outward from said neck for a predetermined total length and having a substantially smaller width,

the cross section of said neck normal to said longitudinal axis of the bolt shank having a maximum length measured in a first direction intersecting said shank axis, and a substantially smaller maximum width measured in a second direction intersecting said shank axis and normal to said first direction, the angle from the longitudinal axis of the tee head to said first direction being an acute angle when said angle is measured in the angular direction opposite to the direction of said shank thread,

the distance between the two planes parallel to the longitudinal axis of the tee head and tangent to said bolt neck cross section being substantially less than said predetermined tee head length; and

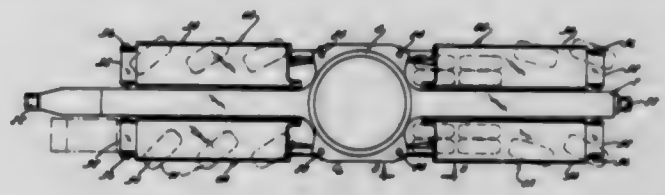
(b) an internally threaded nut, said nut being threadable on said threaded shank to a position in which the distance between said tee head and said nut, minus said predetermined combined thickness of said slotted members, is less than the length of said bolt neck, said nut in said position resisting further threading upon said shank except under application of a torque of at least a predetermined minimum magnitude greater than is applicable by manual twisting.

4,496,062

CRANE HAVING STABILIZING OUTRIGGERS

Narahari Gattu, and Joseph C. Terranova, III, both of Cedar Rapids, Iowa, assignors to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Mar. 7, 1983, Ser. No. 472,732
Int. Cl.³ B66C 23/62
U.S. Cl. 212—189 3 Claims



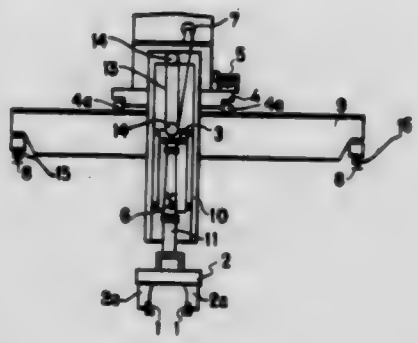
1. A crane having an elongated main frame and ground wheels located along the length of said frame on either side thereof for supporting said frame for travel along the ground; said main frame having a generally central portion, a revolvable upper mounted on said central portion, outriggers pivotably mounted to said main frame adjacent said central portion; means for pivotably mounting each of said outriggers to said main frame for swinging said outrigger between a radially extending, crane-stabilizing position and a transport position wherein said outriggers are located alongside said main frame and above said wheels; each of said outriggers being elongated and having a longitudinal axis and also having a major transverse axis and a minor transverse axis; power operated means for rotating said outriggers about their longitudinal axes whereby said major transverse axis of an outrigger assumes a horizontal position when said outrigger is stored alongside said main frame and above said wheels, and said major transverse axis assumes a vertical position when said outrigger is in said radially extending, crane-stabilizing position.

4,496,063

METHOD OF HANDLING SLABS BY AN OVERHEAD TRAVELING CRANE PROVIDED WITH A SLAB GRIP LIFTER

Sugao Ishii; Susumu Itou, both of Chiba; Mikio Kawamura, Ichihara, and Tadashi Tsukamoto, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Oct. 22, 1982, Ser. No. 436,058
Claims priority, application Japan, Oct. 27, 1981, 56-172597
Int. Cl.³ B66C *17/00, 17/06;* B65G *3/00, 9/04*
U.S. Cl. 212—270 1 Claim



1. A method for handling slabs with an overhead traveling crane which includes a device for gripping and lifting a slab, said device comprising a crab disposed on and movable along a movable girder of said crane, a crab moving means, a brake for said crab moving means, a rotatable vertically movable lifter, a lifter swinging means, a brake for said lifter swinging means, at least two laterally spaced apart lifter arms on said lifter, at least two laterally spaced apart pairs of pawls on said lifter arms, means for actuating said lifter arms and brakes for said lifter arm actuating means,

said method being especially adapted for lifting a slab which has a centerline angled relative to a centerline of said lifter or which has a centerline deviating from a centerline of said lifter, said method comprising the sequential steps of:

moving said crab and lifter into a position substantially above the slab to be gripped;

lowering said lifter onto the slab to be gripped;

actuating, with said brake for said lifter swinging means and said brake for said crab moving means disengaged, said lifter arms containing said two laterally spaced apart pairs of pawls with said lifter arm actuating means, so that two pawls contact said centerline angled or deviated slab and further actuating said lifter arms to adjust the position of said lifter by a reaction force from said slab so that both of said two pairs of pawls of said lifter arms contact said slab and grip it firmly;

detecting a lack of motion of said lifter arms;

stopping said lifter arm actuating means when a lack of motion of said lifter arms is detected;

engaging said brakes for said lifter arm actuating means so that said lifter can be raised for subsequent operations;

vertically moving said lifter with said slab; and

moving at least one of said crab and said girder to transfer said slab to a second position.

4,496,064

BLOW MOLDED CONTAINER AND METHOD OF FORMING THE SAME

Martin H. Beck, Brookline, and Suppayan M. Krishnakumar, Nashua, both of N.H., assignors to The Continental Group, Inc., Stamford, Conn.

Filed Nov. 23, 1981, Ser. No. 324,162
Int. Cl.³ B65D *23/00;* B29C *17/12*
U.S. Cl. 215—1 C 13 Claims

1. An intermediate article of manufacture comprising a blow molded thermoplastic article, said article including a lower portion in the form of a container having a tubular body, an open mouth and a peripheral closure receiving portion, all of said container having a high degree of biaxial orientation with the degree of biaxial orientation of said peripheral closure receiving portion approaching that of said tubular body, and an upper portion in the form of an accommodation element terminating in an open neck portion having substantially no orientation, and said peripheral closure receiving portion being of an outline materially greater than that of said open neck portion

10. A method of forming a blow molded thermoplastic container of the type wherein all portions of said container have a high degree of biaxial orientation, said method comprising the steps of blow molding from a thermoplastic preform an



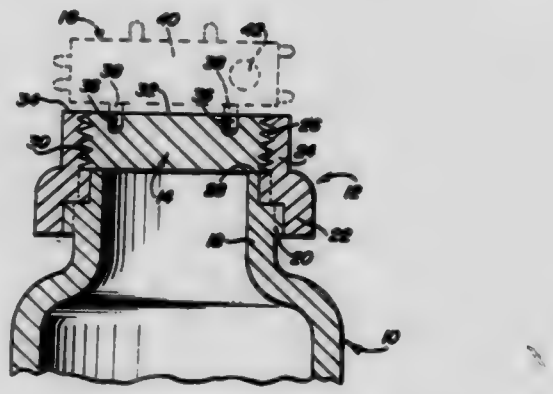
intermediate article of manufacture including a lower portion in the form of a container having a tubular body, an open mouth and a peripheral closure receiving portion, all of said container having a high degree of biaxial orientation with the degree of biaxial orientation of said peripheral closure receiving portion approaching that of said tubular body, and an upper portion in the form of an accommodation element terminating in an open neck portion having substantially no orientation, and said peripheral closure receiving portion being of an outline materially greater than that of said open neck portion, and severing said accommodation element from said container in an area having a high degree of biaxial orientation.

4,496,065

KEY OPERATED SECURITY CAP

David L. Nagy, 5114 N. Western Ave., Chicago, Ill. 60625

Filed Jan. 13, 1984, Ser. No. 570,453
Int. Cl.³ B65D *51/16*
U.S. Cl. 215—207 13 Claims



1. A security cap structure for containers such as medicine bottles and the like having an opening defined by a container neck, the structure comprising a cap member having a skirt portion for gripping around the neck of the container and a hollow cylindrical portion with an internal thread for projection above the rim of the container, a threaded plug for threading into the cylindrical portion of the cap member to a position such that an outer surface of the plug does not project substantially above the rim of the cylindrical portion, at least one key-receiving depression in an outer surface of the plug, and a key having a projection related to the key-receiving depression in the plug, whereby threading of the plug out of the cylindri-

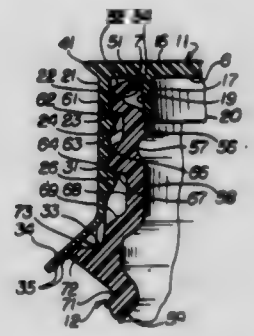
cal portion of the cap member from said position is dependent upon use of the key.

4,496,066

NECK FINISH FOR PLASTIC CONTAINERS

Joseph J. Bullock, III, Atherton, Calif., assignor to Three Sisters Ranch Enterprises PTRs, San Carlos, Calif.

Filed Jul. 27, 1983, Ser. No. 517,584
Int. Cl.[3] B65D *41/18*
U.S. Cl. 215—320 8 Claims



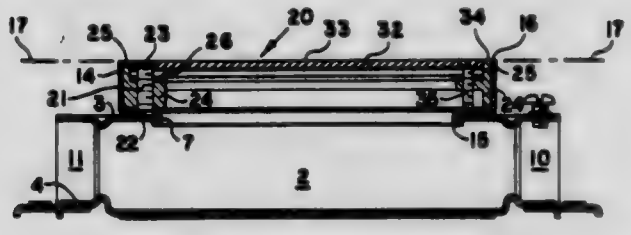
1. In combination, a neck for a container formed of a flexible plastic material comprising a straight, thin top flange extending inward from the upper end of said neck, said flange slanting upwardly at an acute angle of approximately 20° from the horizontal, first locking means on said neck below said flange, a cap having a disc, an inner and an outer skirt depending from said disc, second locking means on said outer skirt cooperable with said first locking means, whereby when said first and second locking means are engaged said flange is depressed and seals against the underside of said disc, said flange being dimensioned and positioned to slant upward-inward into the annular space between said skirts with the inner edge of said flange fitting tightly into the corner where the outside of said inner skirt intersects the underside of said disc.

4,496,067

UNDERFLOOR JUNCTION BOX

Richard D. Benscoter, Vienna, W. Va., assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed Mar. 28, 1984, Ser. No. 594,215
Int. Cl.[3] H02Q *3/08*
U.S. Cl. 220—3.7 4 Claims



1. An underfloor system junction box with a panless access system for use with both floor carpet and floor tile comprising:

hollow housing means having a top opening and a plurality of side openings, the top opening providing for hand access to the interior of the housing and the side openings providing means for securing underfloor ducts to the box and the housing being adapted to be mounted in the floor with said top opening extending generally horizontally;

an annular plaster ring secured to said housing and extending around the periphery of said top opening for use in preventing entry of concrete to the interior of the housing during the pour;

a plurality of adjusting screws disposed inside of said plaster ring and each rotatably mounted on said housing and spaced around the periphery of said top opening and extending upwardly from the housing;

an adjusting ring disposed inside of said plaster ring and mounted on said adjusting screws and having an upwardly extending filler flange disposed adjacent the interior of the plaster ring, rotation of said adjusting screws causing the ring to move in a vertical direction;

annular gasket means mounted on said adjusting ring;

a plurality of support buttons each having a head section and a body section, the body section removably mounting the button on said adjusting ring with its head section engaging said gasket;

a cover disposed inside of said adjusting ring filler flange and engaging the head sections of said buttons with the top surface of the cover substantially flush with the top edge of said filler flange;

hold-down screw means removably securing said cover to head sections;

a plurality of openings in said cover providing access to said adjusting screws, the screws being adjusted to cause the cover and the top edge of the filler flange to be substantially flush with the top edge of the plaster ring and in said substantially flush condition the cover, the top edge of the filler flange, and the top edge of the plaster ring being adapted for use with floors employing a carpet surface with carpet on the cover and on the floor adjacent thereto; and

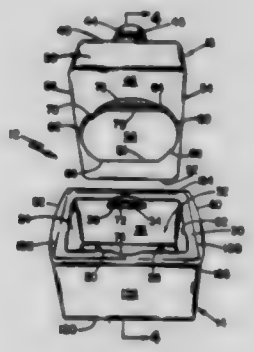
said components providing the option for said cover to be removed, said buttons to be removed, the cover replaced to engage said gasket means with the gasket means positioning the cover below the top edge of said filler flange a distance substantially equal to the thickness of the tile and then the adjusting ring adjusted upwardly so that the top portion of said filler flange is raised above the top edge of said plaster ring a distance substantially equal to the thickness of the tile and in said raised condition, the cover, the top section of the filler flange, and the top edge of the plaster ring being arranged for use in floors employing a tile surface wherein the top portion of the filler flange can function as a tile trim for tile on the cover and the floor adjacent thereto.

4,496,068

CONTAINER ASSEMBLY

Wilfred J. Blease, Greenville, N.H., assignor to Pioneer Plastics, Inc., Greenville, N.H.

Continuation of Ser. No. 164,580, Jun. 30, 1980, abandoned.
This application Feb. 13, 1984, Ser. No. 579,729
Int. Cl.[3] B65D *21/02*; A47G *23/64*
U.S. Cl. 220—4 D 4 Claims



1. A container assembly including a generally rectangular open top container and a cover adapted to be releaseably assembled and locked on top of said container by their relative rotation,

said container having generally rectangular inner and outer spaced parallel bottom walls, generally rectangular inner and outer spaced parallel end and side walls, and a generally rectangular planar peripheral top wall extending between said inner and outer end and side walls and defining a generally rectangular central top opening having a central axis of rotation perpendicular to the plane of said container peripheral top wall

said container inner side walls having integral aligning and locking means including

opposed arcuate recessed aligning surfaces of predetermined radius from said central axis of rotation extending outwardly into both said container inner side walls and said container top wall and extending downwardly from said container top wall, and

outwardly extending opposed arcuate locking grooves concentric with and of greater radius from said central axis of rotation than that of said recessed surfaces, said arcuate locking grooves extending outwardly into said container inner side walls, located below and parallel with said recessed aligning surfaces, and spaced downwardly from and parallel to the plane of said container peripheral top wall, and

said cover having a top wall and a bottom wall with a generally rectangular generally planar peripheral outer wall portion

said cover bottom wall having integral aligning and locking means extending downwardly therefrom generally centrally thereof including

generally arcuate aligning surface portions extending downwardly from said cover bottom wall, said aligning surface portions having a radius from said central axis of rotation slightly less than the radius of said recessed aligning surfaces for cooperating with said container recessed aligning surfaces to align said cover and container in their initial assembled position with said cover bottom wall and said container top wall in planar contact at a horizontal angle to one another

opposed outwardly extending arcuate locking flanges in a plane parallel to and spaced downwardly from said aligning surface portions, said locking flanges in the initial assembled position of said container and cover having a radius from said axis of rotation greater than that of said arcuate aligning surface portions and slightly less than that of said arcuate locking grooves and cooperating with said container opposed locking grooves for locking assembly of said cover and container upon unidirectional relative rotation of said cover and said container in the plane of said container peripheral top wall and said cover bottom wall from its initial assembled position to its locked position, and

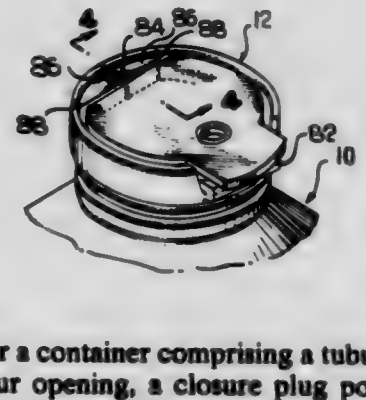
said container assembly having, in its assembled and locked position, the peripheral outer portion of said cover bottom wall in contact with said container peripheral top wall with the outer end and sides edges of said cover bottom wall generally contiguous with the outer end and side edges of said container peripheral top wall.

4,496,069

CLOSURE BREAK-AWAY TABS

Robert A. Winkless, Oak Lawn, and Edmund M. Kulesa, South Holland, both of Ill., assignors to Continental Can Company, Inc., Stamford, Conn.

Filed Nov. 23, 1983, Ser. No. 554,856
Int. Cl.[3] B65D *51/16, 39/00*
U.S. Cl. 220—260 5 Claims



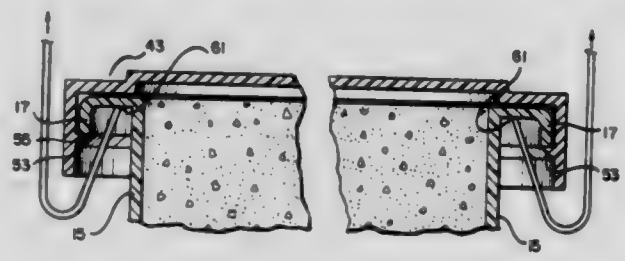
1. A closure for a container comprising a tubular neck member having a pour opening, a closure plug portion hingedly connected to said neck member by a first hinge and having a pour opening plug for closing said pour opening and a vent opening, and a venting portion hingedly connected to said closure plug portion by a second hinge and having a vent plug for closing said vent opening, said neck member having adjacent said pour opening an upstanding fulcrum post and said venting portion including a lever engageable with said fulcrum post to lift one end of said closure plug portion relative to said neck member and to initiate removal of said pour opening plug from said pour opening, said closure in its closed condition having said second hinge disposed adjacent said fulcrum post wherein a pry tool may be used to pry said closure plug portion relative to said neck member in a tampering action, said fulcrum post having weakening means formed therein for effecting distortion thereof by a pry tool to provide tamper-indicating means.

4,496,070

CONTAINER AND LID FORMING A DISPOSABLE MOLD

Samuel H. Lane, Jr., 1807 Cedar Elm Dr. W., Arlington, Tex. 76012

Continuation-in-part of Ser. No. 428,153, Sep. 29, 1982, abandoned. This application Feb. 27, 1984, Ser. No. 583,760
Int. Cl.[3] B65D *41/16, 41/18*
U.S. Cl. 220—306 11 Claims



1. A combination container and mold comprising:

a. a container bucket portion including a unitary plastic piece having a closed bottom end; a cylindrical, tubular wall extending substantially perpendicular to said bottom end and connected therewith and terminating in an open end; said cylindrical tubular wall being so nearly cylindrical that all diameters thereof are within Δd specifications allowed by the American Society for Testing Materials (ASTM) C-470; an annular lip being connected to said cylindrical tubular wall adjacent said open end to reinforce said open end and keep said open end within Δd inch of being circular so as to be within ASTM Specification C-470; and removing means for facilitating removal of said mold from the set test sample; said lip having an underside; said removing means being disposed longitudinally of said cylindrical, tubular wall and adapted to facilitate rending said wall for removal of said mold;

b. a locking, moisture-proof lid consisting essentially of a circular portion having a substantially flat top for extending across said open end of said bucket portion and having a downwardly depending skirt at its periphery for grippingly encompassing the outside periphery of said lip on said bucket; said skirt including a tapered shoulder means for being slid downwardly over said lip and snapping into conforming engagement with said underside of said lip; and

c. a carrying tong having a handle at least as long as the diameter of said bucket portion, downwardly depending bail sections at each end of said handle and connected therewith, and a carrying means for picking up and carrying said container bucket portion and lid and any sample of material therewithin.

4,496,071

PRESSURE VESSELS HAVING END CLOSURES AND RETAINERS

Duncan R. Stewart, Newent, England, assignor to Valve Conversions Limited, Gloucester, England

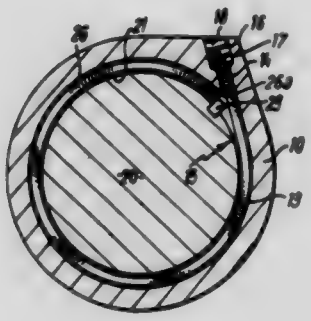
Filed Jul. 15, 1983, Ser. No. 514,083

Claims priority, application United Kingdom, Jul. 17, 1982, 8220796

Int. Cl.[3] B65D *45/32*

U.S. Cl. 220—319

9 Claims



1. A pressure vessel comprising two members in telescopic relationship, the two members comprising a hollow member and an end closure, flexible continuous means extending around the end closure and located in cooperating grooves in the two members so as to operatively connect the end closure and the hollow member for resisting separating movment therebetween, a passage in one of said two members and extending from the said groove in the one member to the exterior of said one member for insertion and withdrawal of the continuous means, a removable plug closing said passage for resisting removal of the continuous means and for sealing the passage from the exterior, and annular seals between the hollow member and the end closure on both sides of the continuous means.

4,496,072

INSULATED CABINET COLLAR CORNER ELEMENT

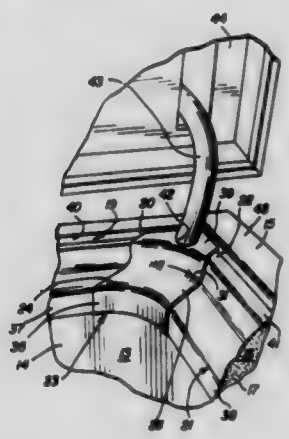
George J. Fleck, Arnegard, N. Dak., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 29, 1982, Ser. No. 428,414

Int. Cl.[3] F25D *23/08;* B65D *88/74*

U.S. Cl. 220—432

16 Claims



1. In a cabinet structure having an upstanding sidewall defining a vertical corner, said wall comprising an inner liner, an outer shell defining with said liner an intermediate insulation space, foamed-in-place insulation in said space, a first breaker collar extending between said shell and liner over said space and having an end adjacent one side of said corner, and a second breaker collar extending between said shell and liner over said space and having an end adjacent the other side of said corner, said cabinet structure further defining a closure and torsion bar hinge means for removably mounting said closure to said sidewall comprising a connector element extending from said closure downwardly into said insulation space at said corner, the improvement comprising

a collar corner element extending between said shell and liner over said space at said corner, said corner element having

edge portions overlying said breaker collar ends,

flange means underlying at least one of said breaker collar ends for retaining the corner element in association with said breaker collar ends, and

locking means extending downwardly on said corner element into said insulation space and embedded in said foamed-in-place insulation to lock the corner element effectively in the cabinet structure, said corner element further defining a through opening through which said connector element extends.

4,496,073

CRYOGENIC TANK SUPPORT SYSTEM

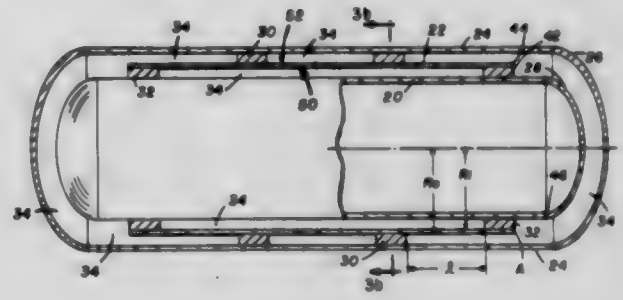
David M. Silver, Bethesda, and Newman Dehaas, Silver Spring, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Feb. 24, 1983, Ser. No. 469,451

Int. Cl.[3] F17C *1/12*

U.S. Cl. 220—445

18 Claims



1. A support system for an internal mass at a first temperature comprising:

an internal mass;

a support tube with a longitudinal axis and a cross sectional area, surrounding the internal mass and attached thereto via a first area of contact;

an external shell at a second temperature enclosing the support tube and attached thereto via a second area of contact which is positioned a predetermined distance along the support tube axis from the first area of contact such that a substantial temperature gradient exist through the support tube area between first and second areas of contact;

wherein the support tube is dimensioned such that beam dynamics apply thereto; and the support system is a single-stage system dimensioned to not have a natural frequency below a predetermined frequency.

4,496,074

NEWSPAPER VENDING MACHINE

Walter K. Owens, Florala, Ala., assignor to Mfg. Design, Inc., Florala, Ala.

Filed Aug. 12, 1982, Ser. No. 407,329

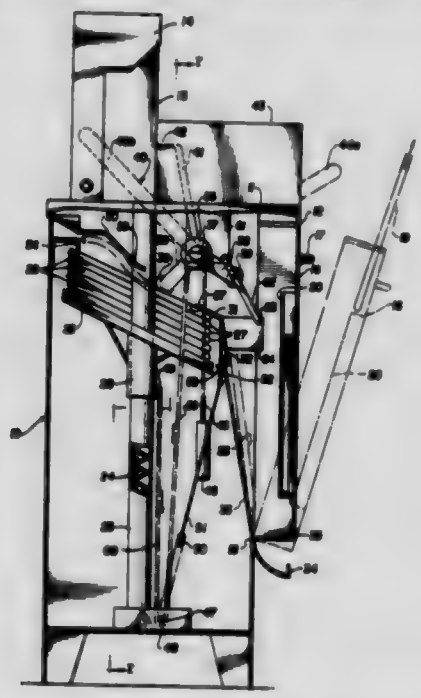
Int. Cl.[3] B65G *59/02;* G07F *11/24*

U.S. Cl. 221—39

10 Claims

1. In a newspaper and magazine vending machine, a cabinet body portion, a conventional coin mechanism on the cabinet body portion, fixed vertical guide posts in the cabinet body portion, a vertically movable inclined tray for a stack of newspapers having their folded edges arranged forwardmost on the tray, yielding means biasing the tray and stack of newspapers upwardly, a fixed abutment in the cabinet body portion bearing on the unfolded edge portion of each topmost newspaper in the stack, a hold-down plate in the cabinet body portion overlying and pressing downwardly on the folded edge portion of each topmost newspaper in the stack, yielding means constantly biasing the hold-down plate downwardly relative to the stack

of newspapers and said tray, an inclined single newspaper delivery chute at the front of the cabinet body portion from which a customer can receive a single newspaper and being disposed at the forward end of said hold-down plate, a transverse horizontal axis rocker shaft journaled on the cabinet body portion above the hold-down plate and said tray, a dispensing lever secured to the rocker shaft exteriorly of the cabinet body portion and adapted to be pulled forwardly by a customer to a single newspaper dispensing position following insertion of proper coins into said coin mechanism, a control element on the rocker shaft within the cabinet body portion adapted to engage a releasable locking element of the coin mechanism, free wheeling sprocket gears on the rocker shaft in the cabinet body portion, sprocket chains engaged with said



sprocket gears and descending therefrom and engaging guides near the bottom of the cabinet body portion and then ascending and being connected with a part of said tray, drivers for said sprocket chains on the rocker shaft and turning therewith so that the chains are driven in one direction when said dispensing lever is pulled to the single newspaper dispensing position to thereby momentarily relieve the tray from its upward biasing force, and a newspaper release roller carried by the rocker shaft in eccentric relation thereto and being movable by the rocker shaft into pressure contact with each topmost newspaper so as to distort the same and thus effect withdrawal of its folded forward edge from beneath said hold-down plate, whereby such withdrawn newspaper can then gravitate with the assistance of said roller during its return stroke into said delivery chute.

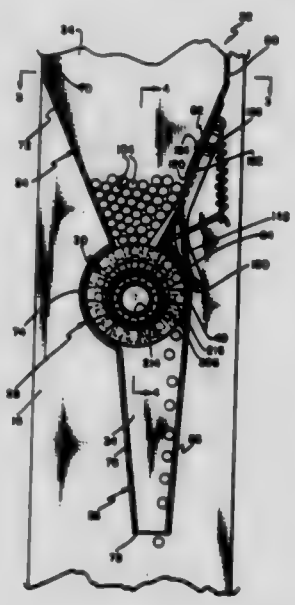
4,496,075

ROTARY METERING AND DISPENSING APPARATUS

Frank L. Ray, Rte. #2, Winfield, Kans. 67156

Continuation-in-part of Ser. No. 178,135, Aug. 14, 1980, Pat. No. 4,444,130. This application Sep. 30, 1982, Ser. No. 431,347
Int. Cl.³ G01F *11/14*
U.S. Cl. 221—235 10 Claims

1. For use in metering and dispensing apparatus, a circular cylindrical sleeve having a central horizontal axis and being adapted for rotation about its axis, said sleeve having a substantial wall thickness and being provided with a plurality of circumferentially and equiangularly spaced radial openings therethrough that lie in a common plane perpendicular to the axis of the sleeve, each of said openings being provided with a plunger that extends thereinto from within the sleeve with a free radial movement therein that is limited in extent to an amount less than the wall thickness of the sleeve between a radially extended position and a radially retracted position, with such plunger substantially obstructing the opening radially throughout its movement between said extended and retracted positions, and a common gravity actuated means disposed within the sleeve for rotation therewith that is operatively connected to all the plungers for operation in response to rotation of the sleeve to cyclically urge radial reciprocation of each of the plungers in such phased relation that the plungers associated with uppermost openings in the sleeve are radially retracted and those associated with lowermost openings in the sleeve are radially extended, whereby the radially outermost unobstructed volumes of the uppermost openings are maximized



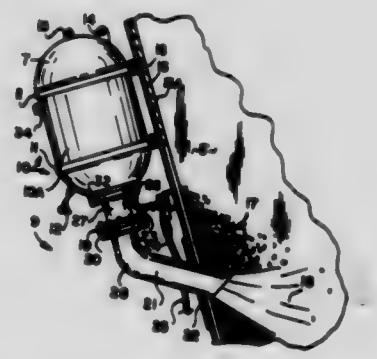
and those of the lowermost openings are minimized, said gravity actuated means having a generally cylindrical overall configuration and having a central axis with said plungers extending radially outward therefrom, and means loosely connecting each of the plungers to the gravity actuated means that enables each plunger a limited degree of angular freedom about a direction that is normal to the axis of said gravity actuated means.

4,496,076

MULTIPLE BLAST AERATOR SYSTEM

L. Kirk Tompkins, Little Rock, Ark., assignor to Global Manufacturing Co. Inc., Little Rock, Ark.

Filed Apr. 16, 1982, Ser. No. 369,100
Int. Cl.³ B65D *88/72*
U.S. Cl. 222—3 7 Claims



1. A multiple blast aerator hopper system comprising:
a generally upright, rigid storage bin having walls, an outlet and an inlet;
a plurality of blast aerators mounted on said bin at radially spaced-apart intervals about the periphery thereof, each aerator comprising:
a generally cylindrical, rigid tank having an axis, and a front end fitted with a blast discharge opening coaxially aligned with reapect to said axis;
a rigid, elongated, tubular, blast discharge pipe adapted to be coaxially secured and aligned within said tank, said pipe having a front output end, a rear end positioned interiorly of said tank, a counter-bored, internal front

shoulder seat, and a predetermined intermediate internal diameter;

a piston seat assembly coaxially positioned within said blast discharge pipe in abutting relation with respect to said internal shoulder, said seat assembly including a rear, chamfered seat;

a resilient, generally cylindrical, dual diameter piston coaxially disposed within said blast discharge pipe and axially displaceable between an aerator tank fill position and an aerator tank exhaust position; a main body portion of said piston having a diameter substantially equal to said blast output pipe predetermined intermediate diameter and a front portion of said piston having a diameter less than said discharge pipe intermediate diameter and terminating in a front, chamfered portion adapted to matingly engage said piston seat assembly chamfered seat when said piston assumes said aerator fill position;

vent means defined in said blast discharge pipe for outputting air temporarily stored within said tank through said blast discharge pipe front output end in response to movement of said piston to said aerator tank exhaust position;

end cap means adapted to be coaxially, sealingly coupled to said blast discharge pipe rear end for limiting rearward axial displacement of said piston, the end cap means operable to define a sealed cavity between it and said piston at the rear of said blast discharge pipe; and,

valve control means in fluid flow communication with said cavity for filling said cavity and thus said tank and for subsequently initiating an output blast by venting said cavity;

the first of said blast aerators mounted closest to said storage bin outlet, and each successive blast aerator being mounted higher than the previous blast aerator; and,

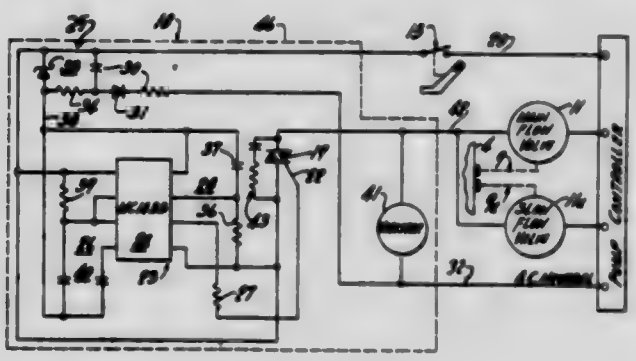
timing means for initiating a timed sequence of air blasts by firing said blast aerators in a predetermined operational sequence.

4,496,077

LEAK DETECTOR MONITOR FOR PRESSURIZED FLOW SYSTEMS

James J. Zuehlsdorf, Sussex, Wis., assignor to Uni-Pump, Inc., Menomonee Falls, Wis.

Filed Mar. 3, 1983, Ser. No. 471,653
Int. Cl.[3] B67D 5/32
U.S. Cl. 222—61
11 Claims



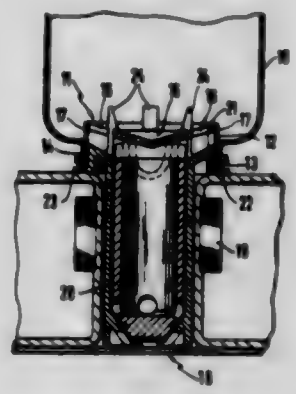
1. A fluid flow system having a pump means for withdrawing of fluid from a storage tank and supplying such fluid through a main distribution line to at least one individual dispenser under pressure and wherein said supply line pressure can vary over a range between a low pressure in the presence of a leak in the system and a significantly higher delivery pressure in the absence of said leaks and wherein said supply line pressure is subject to variations upon initial operation of said pump means simulating a leak condition, leak detector valve means connected to said supply line and responsive to the differential pressure between the supply line pressure and the delivery pressure from said storage tank to prevent free flow from the storage tank to the supply line, the improvement in a leak detector monitor comprising an individual flow control means having an electrical operator one each for each of said dispensers, a control switch means operable to provide power to said pump means and to said individual flow control means within the corresponding dispenser, each of said dispensers including an interlock means including an interlock switch connected in series between said control switch means and said individual flow control means to prevent operation of said flow control means during the initial operation of said pump means, and timing means connected in circuit through said control switch means and having an output connected to said interlock switch means, said timing means being responsive to closing of said control switch means to generate a turn-on signal to said interlock switch means only a predetermined time after the closing of said control switch means.

4,496,078

CONTAINER, ESPECIALLY A DISPOSABLE CONTAINER FOR BEVERAGE CONCENTRATES, WITH A PREFERABLY MAGNETICALLY-ACTUATED REUSABLE MEASURER ATTACHED TO THE OPENING OF THE CONTAINER

Hartmann Nelzow; Färber Karlheinz, both of Giengen, and Anton Deininger, Bachhagel, all of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgerate GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 4, 1981, Ser. No. 299,639
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1980, 3033874
Int. Cl.[3] B67B 7/24
U.S. Cl. 222—87
9 Claims



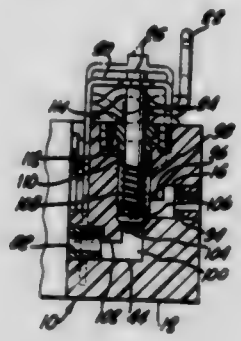
1. Container mounting and metered dispensing assembly for beverage concentrates, comprising a container having an opening formed therein, a seal including a carrier disposed in said opening and a sealing membrane also disposed in said opening and, together with said carrier, sealing said opening of said container, a reusable measuring device disposed coaxially with said carrier and having an end section for attachment to said container at said opening, at least one tab projecting from said end section for punching through said seal, and at least one barbed hook disposed on said at least one tab and being solidly snappable onto said carrier when attaching said measuring device to said container at said opening, said measuring device being detachable from said container, after being attached to said container, exclusively by destructively ripping said carrier from said opening, said seal having a rim formed thereon, said barbed hook having a notch formed therein, and said carrier being in the shape of a star having a centrally-disposed solid plate snappable into said notch and having ridges extending substantially radially from said plate to said rim.

4,496,079

COMBINATION LOCK FOR MULTIPLE FAUCETS

Donald Verley, Valencia, Calif., assignor to McCann's Engineering and Manufacturing Company, Los Angeles, Calif.

Filed Jan. 15, 1982, Ser. No. 339,769
Int. Cl.³ B67D 5/56
U.S. Cl. 222—129.1 8 Claims



1. A lock assembly for rigidly attaching a nozzle assembly to a fluid source having a storage supply line, the lock assembly having a housing and a fluid supply line and a fluid output line with a lock assembly channel connecting the fluid supply line to the fluid output line, a nozzle assembly having a nozzle channel and a pole receivable into the housing to accommodate alignment of the nozzle channel with the fluid output line, the lock assembly further comprising:

a movable piston positioned within the lock assembly channel and biased into a position to close the lock assembly channel;

a locking element, said locking element connected to said piston, said locking element having a portion selectively adapted to engage the pole and retain the pole within the housing;

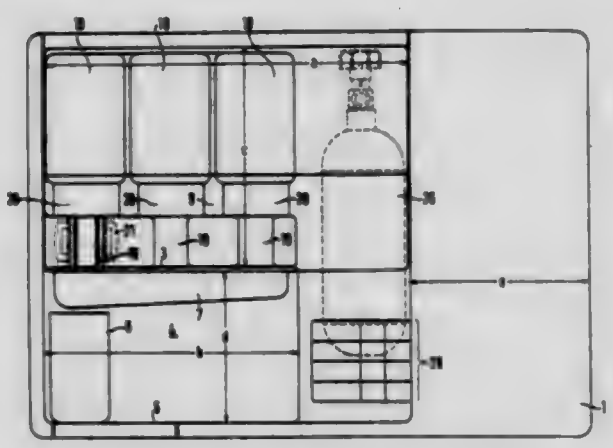
a movable arm pivotably attached to said locking element, said arm adapted to simultaneously cause engagement of said locking element portion with the pole to rigidly attach the housing to the nozzle assembly and to cause movement of said piston to open the lock assembly channel.

4,496,080

AUTOMATIC HOUSEHOLD BEVERAGE DISPENSER

Karlheinz Farber, and Hartmann Nelzow, both of Giengen, Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeraete GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 468,804, Feb. 28, 1983, abandoned.
This application Jul. 28, 1983, Ser. No. 517,928
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1979, 7930729[U]
Int. Cl.³ B67D 5/56
U.S. Cl. 222—129.3 6 Claims



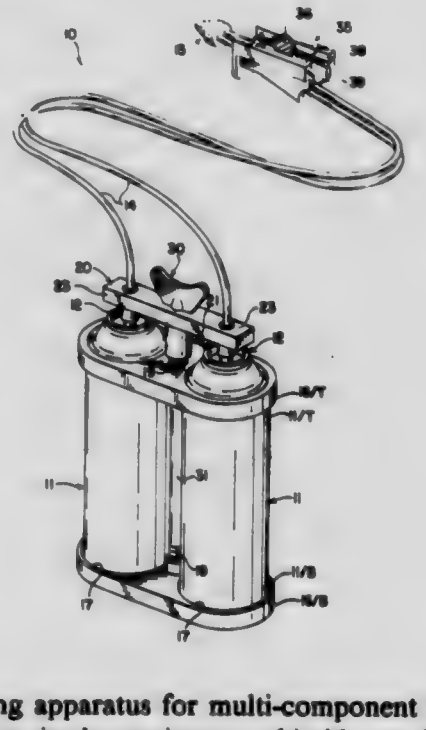
1. Automatic household beverage dispenser, comprising an equipment cabinet having a front, a mixing chamber formed in said cabinet, an equipment chamber formed in said cabinet, a wall separating a portion of said equipment chamber from the remainder of said cabinet including said mixing chamber, said mixing chamber having a dispensing station disposed therein and said mixing chamber having electrical and flow means disposed therein separate from said wall for proportionate dispensing of concentrate, for forming a mixture of concentrate and water and for conducting the mixture to said dispensing station, said portion of said equipment chamber having detachable and replaceable functional parts disposed together therein including supply tanks for beverage concentrate and means for dispensing carbon dioxide, and said equipment chamber having a coverable opening formed at said front of said equipment cabinet for removal and replacement of all of said functional parts disposed therein, said equipment chamber formed in said equipment cabinet being subdivided into one chamber at said front of said equipment cabinet being open toward said opening for said supply tanks and carbon dioxide dispensing means, and at least one other chamber being disposed behind said one chamber and open toward said opening for functional parts requiring routine servicing.

4,496,081

DISPENSING APPARATUS

Merlyn F. Farrey, Akron, Ohio, assignor to Fomo Products, Inc., Akron, Ohio

Filed Jul. 8, 1983, Ser. No. 512,029
Int. Cl.³ B67D 5/60
U.S. Cl. 222—135 4 Claims



1. A dispensing apparatus for multi-component foam reactants in two pressurized containers, each said container including a projecting dispensing valve in the top end thereof, comprising: two parallel brackets for holding the top end and the base end of said two containers in a side-by-side fixed position, each bracket having a medial bore therethrough; a T-shaped member having a projecting medial sleeve with a bore therethrough and laterally extending rigid side bars for engagement with said container valves; a length of flexible tubing connected to each of said container valves and extending from one of said rigid side bars to a dispensing nozzle; a manual means for controlling the flow of foam reactants through said lengths of flexible tubing when said container valves are open; a manual key having an elongated shank extending coaxially within said bracket medial bores and said T-shaped member sleeve bore; and thread means having an internal component on said key shank and an external component in one of said bores whereby manual rotation of said key will move said T-shaped member toward one of said brackets to open said container valves in unison.

4,496,082

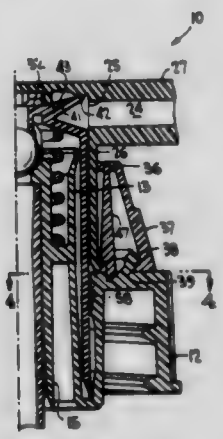
LIQUID DISPENSING PUMP

Douglas F. Corsette, 6559 Firebrand St., Los Angeles, Calif. 90045

Continuation-in-part of Ser. No. 332,338, Dec. 18, 1981, Pat. No. 4,410,107. This application Feb. 23, 1983, Ser. No. 469,118

Int. Cl.[3] B67D *5/32*

U.S. Cl. 222—153 9 Claims



1. A dispensing pump comprising, a pump body capable of being mounted on a container of product to be dispensed, a stationary piston having a valve-controlled inlet mounted on said pump body, finger actuacted plunger means mounted on said piston for sliding reciprocating engagement and forming a variable volume pump chamber therewith, said plunger means having a valve-controlled discharge passage, a return spring acting between said piston and said plunger means for urging said plunger means into a fully raised position above said body, a control ring rotatably mounted on said pump body and having means engaging said plunger means for limiting same in said fully raised position and having means for locking said plunger means at least in a fully depressed position relative to said pump body, a container vent opening in said pump body, an annular wall on said pump body spaced from said piston and therewith defining a vent chamber in open communication with the interior of the container via said vent opening, said plunger means having an annular skirt extending into said vent chamber for closing same at least in said depressed position and for opening said chamber in other than said fully depressed position, said skirt engaging a lower portion of said wall in said fully depressed position for closing said chamber, and said wall having means establishing an open vent passage with said skirt in said other than said fully depressed position for opening said chamber, whereby the interior of the container is vented to atmosphere in said other than said fully depressed position, and any leakage of product through said vent opening is positively prevented as said skirt engages said lower wall portion when said plunger means is locked in said fully depressed position.

4,496,083

LOOSE OR BULK GOOD CONTAINER EQUIPPED WITH A DEVICE FOR THE DISCHARGE OF LOOSE OR BULK GOODS

Hermann Gericke, Küsnacht, Switzerland, and Robert Schavilje, Hilzingen, Fed. Rep. of Germany, assignors to Gericke AG, Regensdorf, Switzerland

Filed May 14, 1982, Ser. No. 378,439

Claims priority, application Switzerland, May 22, 1981, 3380/81

Int. Cl.[3] G01F *11/00*

U.S. Cl. 222—231 19 Claims

1. A bulk good container arrangement comprising:

a container having a lower container portion;

a lower discharge connection provided at the lower container portion;

a rotatable discharge spiral arranged at the lower container portion;

said discharge spiral having an outer end extending into the lower discharge connection;

said discharge spiral having an inner end portion which is rotatably mounted;

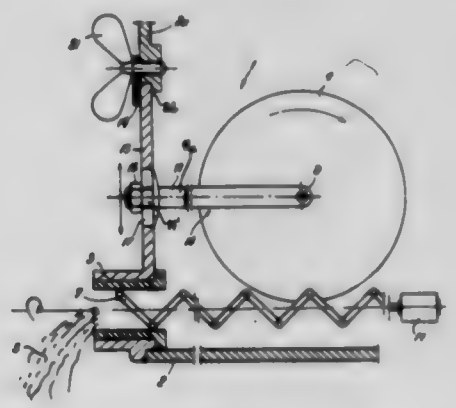
rotatable drive means for driving said discharge spiral;

at least one loosening wheel for the bulk goods and arranged within the container;

a loosening wheel-holder device for rotatably mounting said at least one loosening wheel within the container above the discharge spiral;

said loosening wheel serving for loosening the portion of the bulk goods which are ready to be discharged out of the container;

said loosening wheel having an axis of rotation and defining a plane containing said axis of rotation;



said discharge spiral having an axis of rotation;

said plane containing the axis of rotation of the loosening wheel forming with the axis of rotation of the discharge spiral at least approximately a right angle;

said loosening wheel being structured to be wider than the discharge spiral;

said container having a removable wall portion;

said loosening wheel and said loosening wheel-holder device being secured to said removable wall portion of said container; and

said removable wall portion of said container being arranged transversely with respect to said discharge spiral and being fixedly connected with said lower discharge connection.

4,496,084

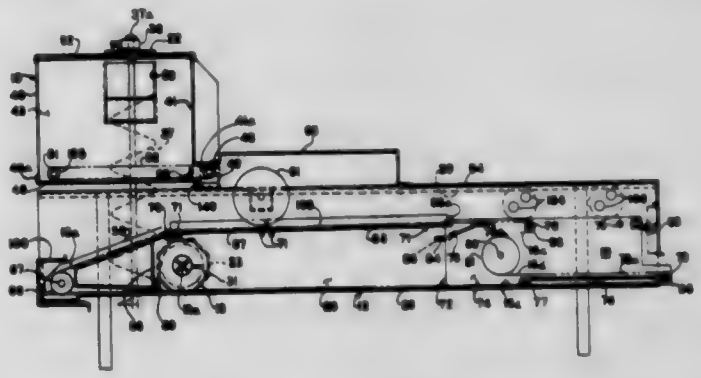
BREADING MACHINE

Raymond E. Booth, Sandusky, and Michael E. Miller, Bellevue, both of Ohio, assignors to Sam Stein Associates, Inc., Sandusky, Ohio

Filed Sep. 22, 1982, Ser. No. 421,169

Int. Cl.[3] B05C *19/00*

U.S. Cl. 222—282 12 Claims



1. A hopper adapted for use with a breading machine for dispensing flour breading or free flowing breading onto work product, said hopper comprising a bottom wall in a horizontal plane and four vertical walls forming right angles between adjacent vertical walls, said four vertical walls including a feed

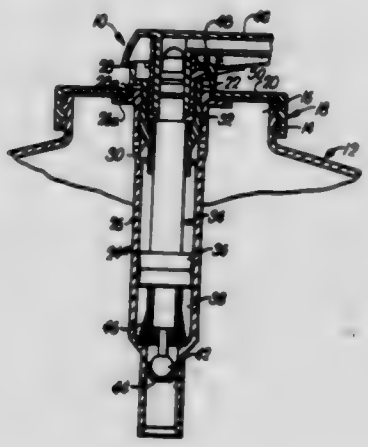
side wall and an imperforate end wall and an imperforate side wall and a discharge end wall having a bottom edge spaced above said bottom wall to form a slot between said bottom edge of said discharge end wall and said bottom wall, an endless open mesh conveyor belt with a bottom run of said conveyor belt moving in close proximity to the top of said bottom wall in a direction toward said discharge end wall and a top run of said conveyor belt moving in a direction toward said imperforate end wall and spaced above said bottom wall and all edges of said conveyor belt spaced away from said feed side wall and said imperforate side wall, said bottom run and said top run extending through said slot at said bottom of said discharge end wall to a belt driving pulley means, said bottom run and said top run also extending to an idler pulley means within said hopper and in close proximity to both said imperforate end wall and said bottom wall, a partial closure bar extending horizontally between said feed side wall and said imperforate side wall with one face of said closure bar in approximately the same vertical plane as said discharge end wall and with the top surface of said closure bar being spaced below said top run and with the bottom surface of said closure bar being spaced above said bottom run, the space between said top and said bottom runs intermediate said idler pulley and said closure bar being unobstructed for movement of dry breading material through the open mesh of said top run to said bottom wall, said closure bar being movable so as to selectively vary the space between the bottom of said closure bar and said bottom run, means for furnishing a continuous supply of finely divided dry breading material near said feed side wall, said top run and said bottom run of said conveyor belt working in concert so that said bottom run may convey said dry breading material through the rectangular slot above said bottom wall and below said bottom surface of said closure bar to discharge said dry breading material outside said hopper, and said conveyor belt being said open mesh and operative to allow sufficient dry breading material to pass through said upper run and supply said rectangular slot, said top run also being operative to move any excess of said dry breading material backing up at the bottom of said closure bar, toward said imperforate end wall.

4,496,085

DISPENSING PUMP FOR CONTAINERS WITH LARGE CLOSURES

John M. B. Ford, Lee's Summit, and Donald D. Foster, Kingsville, both of Mo., assignors to Realex Corporation, Kansas City, Mo.

Filed Jul. 22, 1982, Ser. No. 400,701
Int. Cl.³ B05B 11/00
U.S. Cl. 222—321 2 Claims



1. In combination with a container having an outlet circumscribed by a neck:

a closure secured to said neck in covering relationship to said outlet,

said closure having a top wall provided with an opening therethrough; and

a dispensing pump suspended from said closure into the interior of said container and including a tubular body passing through said opening,

said pump further including a plunger reciprocable within said body and apparatus operably associated with said plunger for use in pumping products out of the container during successive strokes of the plunger,

said body having a collar attached thereto adjacent the upper end of the body provided with a tubular shank portion inserted into the upper end of the body and an annular locking portion disposed above and against said top wall of the closure and projecting radially outwardly beyond the shank portion,

said plunger being rotatable relative to the body and the collar and having a lock which is engageable and disengageable with said locking portion of the collar through said relative rotation for selectively retaining the plunger against actuation,

said body including a flange projecting radially outwardly therefrom below and against the underside of said top wall of the closure,

said flange having an outermost periphery spaced inwardly from said neck of the container,

said top wall and said body having interengaging structure precluding rotation of the body relative to the closure during said rotation of the plunger to engage and disengage the lock,

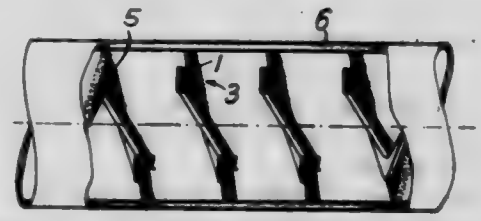
said structure including an annular boss at the upper end of said body projecting upwardly from said flange and received within said opening in the closure directly beneath said locking portion of the collar, said boss having an external surface within said opening disposed at a non-uniform distance from the axis of rotation of the plunger, said structure further including a mating edge on said top wall at least partially defining said opening and complementally engageable with said surface.

4,496,086

DEVICES WHICH COMPRISE A HELICAL SPRING USED AS CONVEYING, EXTRACTING, QUANTITY-CONTROLLING OR MIXING MEANS

Pierre Duchadeau, Sevres, France, assignor to Pari-Symac, France

Filed May 5, 1982, Ser. No. 375,228
Claims priority, application France, May 14, 1981, 81 09624
Int. Cl.³ B65G 33/08
U.S. Cl. 222—412 6 Claims



1. In a conveying, extracting, quantity-controlling or mixing apparatus having a rotating helical spring moving with respect to a rigid wall, the improvement comprising:

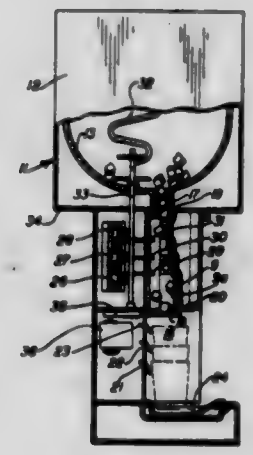
a helical brush member of outwardly extending supple filaments which are gripped by one of their ends in a helical member of U-shaped cross-section which is fixed laterally on the helical spring and presents the free ends of the supple filaments in contact with the rigid wall.

4,496,087

ICE DISPENSER CONTROL

James R. Marks, Lincoln Township, Berrien County, Mich., assignor to King-Seeley Thermos Co., Albert Lea, Minn.

Continuation of Ser. No. 234,170, Feb. 13, 1981, abandoned.
This application Sep. 27, 1983, Ser. No. 535,554
Int. Cl.³ G01F 11/46
U.S. Cl. 222—638 2 Claims



1. In an ice dispenser having storage means for storing ice bodies, means defining a delivery passage for conducting ice bodies from the storage means through a delivery end of the passage to a delivery space, closure means for selectively closing the passage at said delivery end for retaining ice bodies in said passage, and a plurality of divider means operable for selectively (a) permitting said passage to be undivided or (b) dividing said passage into different volume portions extending from said delivery end to permit different quantities of ice bodies to be selectively delivered through said delivery end concurrently with said closure means being disposed to open said passage at said delivery end, the improvement comprising:

stirring means for stirring ice bodies in said storage means; and

control circuit means for operating said stirring means for a first preselected period of time in response to the actuation of any of said divider means, and for operating said stirring means for said first preselected period of time in response to the passage of a second preselected period of time since the last actuation of one of said divider means, said stirring means being operated in response to said passage of said second preselected period of time only if none of said divider means has been actuated during said second period of time, said second period of time being substantially greater than said first period of time;

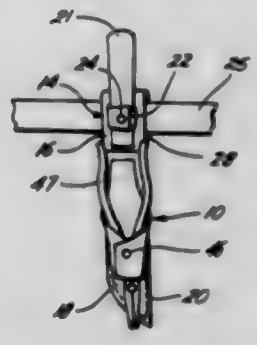
said control circuit means including first integrated circuit timer means for determining said first period of time, second integrated circuit timer means for determining said second period of time, clock means for providing clock pulses to said first and second timer means, logic gating means for causing said second timer means to be reset and restarted in response to the actuation of any of said divider means and for causing said first timer means to generate an output control signal for said first period of time either in response to the actuation of any of said divider means or in response to a completion of said second period of time without any of said divider means being actuated, and power supply controlling means for operating said stirring means in response to said output control signal from said first timer means.

4,496,088

TOOL HOLDER

Frederick W. Tuthill, 7601 Park Place Blvd., Houston, Tex. 77087

Filed Oct. 20, 1983, Ser. No. 543,827
Int. Cl.³ A45C 11/00
U.S. Cl. 224—253 7 Claims



1. A first tool holder for use in conjunction with a second tool holder, the second tool holder being removably attachable to a person's clothing, comprising:

a sheath body;

pocket means disposed on said sheath body for receiving and supporting a first tool; and

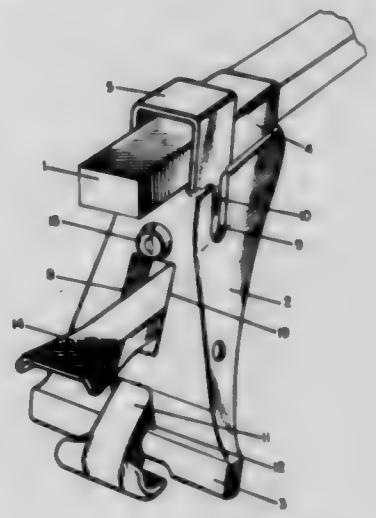
means disposed on said sheath body for superimposingly attaching the first tool holder to said second tool holder, said sheath body in unassembled form including a flat panel of flexible material, said flat panel including a lower, generally rectangular portion and a generally triangular portion extending upwardly from said rectangular portion, the side ends of said rectangular portion in assembled form being folded over fowardly and inwardly and interconnected, thereby forming said pocket means as a tapered pocket with an open bottom for receiving and supporting the first tool therewithin.

4,496,089

LOAD HOLDER

Tore Eklund, Larstorpsvägen 13, S-591 70 Motala, Sweden

Filed Jul. 27, 1983, Ser. No. 517,648
Claims priority, application Sweden, Aug. 2, 1982, 8204548-5
Int. Cl.³ B60R 9/04
U.S. Cl. 224—329 9 Claims



1. A load holder comprising

a support leg having an upper end for attachment to one end of an elongated carrying element and a lower end for engagement with an upper surface of drip moulding of a vehicle, said upper end including an opening;

a yoke extending into said opening of said leg, said yoke having an upper and lower portion and being slidably moveable relative to said leg, said upper portion including

an opening for insertion of said carrying element and said lower portion including a stud extending therefrom;

a first protrusion, having a guide groove therein, extending from said leg at a position between said upper and lower ends of said leg, said stud extending into said groove in said first protrusion;

an operating arm extending through an opening in said support leg and having one end for movement by an operator, and a second end;

a tensioning arm extending through an opening in said support leg and having one end including a tensioning hook for engagement with a lower surface of said drip moulding, and a second end pivotally attached to said second end of said operating arm, whereby when said operating arm is rotated about said pivotal attachment so that said stud moves to a first position relative to said guide groove said yoke is caused to move away from said upper end of said leg and said tensioning hook is caused to move away from said lower end of said leg, and when said operating arm is rotated about said pivotal attachment so that said stud moves to a second position relative to said guide groove said yoke is caused to move towards said upper end of said leg and said tensioning hook is caused to move towards said lower end of said leg.

4,496,090

SURGICAL STAPLER

Paul H. Crevier, 436 Melbourne Ave., Mount Royal, Quebec, Canada (H3P 1H2), and Istvan Lindmayer, 4390 Gilles St., Pierrefonds, Quebec, Canada (H9H 2N4)

Filed Mar. 10, 1982, Ser. No. 356,813
Int. Cl.³ A61B *17/04*
U.S. Cl. 227—19 **2 Claims**



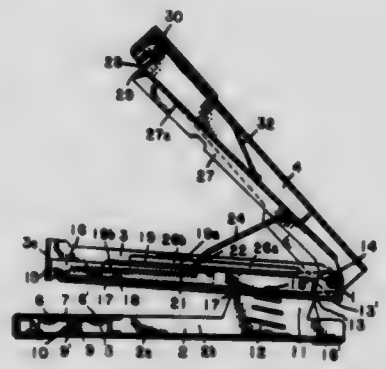
1. A stapler for inserting a staple into a pair of adjacent articles to facilitate interconnection of the articles comprising a casing including handle means thereof for manual operation of the stapler, an elongated barrel integral with said handle means defining the other end of said casing, support means at the free end of said barrel remote from said handle means for supporting a deformable staple, and fixed, substantially V-shaped anvil means at said free end of said barrel for forcing overlapping pointed free ends of a substantially U-shaped staple out of the barrel in opposite directions perpendicular to the longitudinal axis of said barrel into both said articles; plunger means slidably mounted in said barrel for bearing against the staple to deform the latter and force the pointed ends of the staple out of the barrel into said articles; trigger means at said one end of said casing for moving said plunger means from a rest position to a staple ejecting position; spring means in said casing for returning said plunger means to the rest position; control sleeve means rotatably mounted on said one end of said plunger means and projecting out of said casing for controlling movement of said plunger means in said barrel; and pin means in said casing for engaging said control sleeve means to permit or prevent movement of said plunger means in said barrel; said control sleeve means including an annular flange and an annular groove on the inner end thereof, said groove slidably receiving said pin means, a slot in said flange permitting passage of said pin means through said flange for assembling and dismantling of the stapler, the remainder of said flange preventing movement of said plunger against the staple, and a longitudinally extending channel in said sleeve connected to and perpendicular to said groove permitting longitudinal movement of said plunger against a staple.

4,496,091

STAPLER

Yasuo Yasuda, 2265-24, Tognaki, Misato-shi, Saitama-ken, Japan

Filed Sep. 28, 1982, Ser. No. 425,394
Int. Cl.³ B25C *5/02, 5/11*
U.S. Cl. 227—123 **6 Claims**



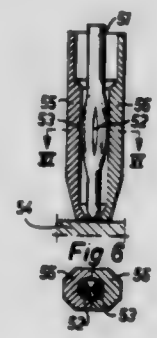
1. A stapler having a base member provided with an anvil plate, a staple magazine member and a driving member provided with a staple drive plate, said base member, staple magazine member and said driving member being pivotally secured at their base ends to one another by means of a pivot pin, characterized in that: a staple guide member is mounted in said staple magazine member for sliding movement in forward and backward directions and is spaced from the end of said magazine member to leave a staple drive clearance therebetween; a staple feeder connected to said driving member and mounted in said staple guide member for sliding movement in the forward and backward directions; and a resilient member having front and rear ends disposed around said pivot pin; said resilient member engaging said staple guide member at its front end and said staple magazine member at its rear end to bias said staple guide member forwardly.

4,496,092

ARRANGEMENT IN APPARATUS FOR MECHANICAL NAILING

Lars Billing, Värmlandsgatan 2, S-252 52 Helsingborg, Sweden

PCT No. PCT/SE81/00244, § 371 Date Apr. 30, 1982, § 102(e) Date Apr. 30, 1982, PCT Pub. No. WO82/00792, PCT Pub. Date Mar. 18, 1982
PCT Filed Sep. 1, 1981, Ser. No. 380,678
Claims priority, application Sweden, Sep. 4, 1980, 8006182
Int. Cl.³ B25C *1/00*
U.S. Cl. 227—149 **2 Claims**



1. A nail holder for supporting and guiding a headed nail into position to be driven by a nail driver, the headed nail having a laterally displaced bulged guide portion restricted to a portion of the nail shank adjacent the point of the nail opposite its head, said nail holder comprising:

a main body, a nail-receiving cavity defined in the main body of the nail holder, said nail holder being positioned to abut

material to be nailed and said nail holder being adapted for simultaneously holding the nail in the nail-receiving cavity and to orient the nail with respect to the material to be nailed; and

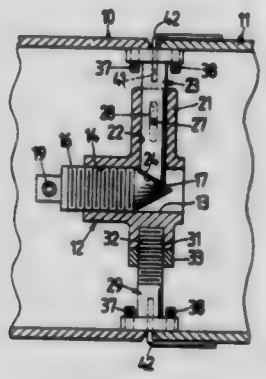
said nail receiving cavity including a nail receiving portion and a guide seat portion of oblong cross-section complementary in shape to the cross section of the laterally displaced bulged guide portion of the nail, to hold the nail in a definitely fixed angle of orientation about its longitudinal axis relative to the nail holder and said nail receiving first portion being of different and larger cross section than said guide seat portion to permit the laterally displaced bulged guide portion of the nail to move through said nail receiving first portion and into alignment with said guide seat portion whereby the nail is held in a fixed orientation when driven by a nail driver.

4,496,093

APPARATUS FOR ALIGNING ABUTTING PIPES

Julius E. Taylor, Jr., P.O. Box 721, Rte. 2, Guntersville, Ala. 35976

Filed Jun. 6, 1983, Ser. No. 501,122
Int. Cl.³ B23K *37/09*
U.S. Cl. 228—49 B **10 Claims**



1. Apparatus for aligning abutting pipes comprising:

(a) a body having an elongated opening therein adapted to extend axially of said abutting pipes with at least a portion of said opening being threaded,

(b) an elongated externally threaded actuator member in threaded engagement with the threaded portion of said opening and having a conical end defining a tapered cam surface,

(c) a radially extending extendible member carried by said body with the outer portion thereof in position to engage the internal surfaces of said abutting pipes and the inner portion thereof extending inwardly of said opening in said body and having a cam surface on its inner end in position to engage said tapered cam surface on said actuator member,

(d) at least two radially extending fixed members secured to said body in angularly spaced relation to each other and to said radially extending extendible member with the angle between adjacent radially extending members being substantially equal and the distance from the center line of said body to the outer end of each said radially extending fixed member being equal the radius of the inner surface of said abutting pipes,

and

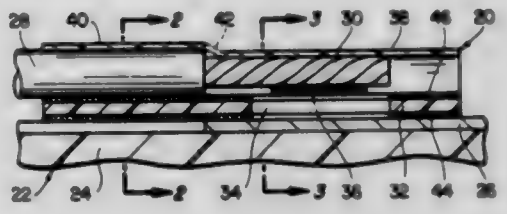
(e) means to rotate said actuator member in one direction to move it axially of said abutting pipes so that its tapered cam surface engages said cam surface on said extendible member and moves it radially and outwardly toward said internal surfaces of said abutting pipes and in an opposite direction to release said extendible member for radial movement inwardly of said internal surfaces of said abutting pipes.

4,496,094

PADDLECARD TERMINATOR

Leslie J. Allen, Swindon, England, assignor to Raychem Corporation, Menlo Park, Calif.

Filed Dec. 8, 1981, Ser. No. 328,761
Int. Cl.³ B23K *3/00*
U.S. Cl. 228—56 **9 Claims**



1. A terminator which comprises:

(a) a first, heat stable, polymeric layer having window means therein;

(b) a second, heat recoverable, polymeric layer bonded to said first layer to form a pocket containing said window means to receive a conductor to be terminated; and

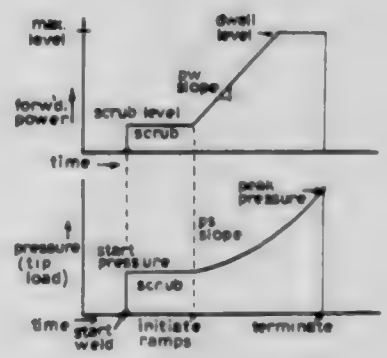
(c) a strip of solder disposed between and in operative contact with said polymeric layers and adjacent said window means; said window means being adapted to direct the flow of solder and flux from said solder strip and to permit the formation of a soldered electrical interconnection between a conductor inserted in said pocket and a substrate adjacent said first layer wherein said heat stable layer having said window means is interposed between the conductor and the substrate, and said second layer being capable of recovery to entirely encapsulate said interconnection when said terminator is heated.

4,496,095

PROGRESSIVE ULTRASONIC WELDING SYSTEM

Theodore A. Renshaw, North Babylon, and Albert Sarrantonio, Woodbury, both of N.Y., assignors to Fairchild Industries, Inc., Germantown, Md.

Filed Apr. 12, 1983, Ser. No. 484,244
Int. Cl.³ B23K *20/10*
U.S. Cl. 228—102 **19 Claims**



1. A method of welding workpieces using ultrasonic vibratory spot welding apparatus of the type having welding elements including a welding tip and a complimentary anvil both mounted on a welding frame and between which the workpieces are adapted to be inserted for welding, said welding apparatus further including clamping means for clamping together the workpieces to be welded and maintaining alignment thereof during the welding operation, said method comprising the steps of:

introducing said workpieces between said anvil and said welding tip and clamping said workpieces in a welding position;

causing one of said welding elements to move to the other of said elements to exert a first predetermined amount of pressure against the workpieces;

introducing a first predetermined amount of high frequency

ultrasonic energy into said workpieces from said welding tip;

simultaneously increasing the amounts of pressure and energy to second predetermined amounts, said second predetermined amounts being sufficient to effect a weld between said workpieces;

releasing the pressure and terminating the ultrasonic energy introduced into the workpieces; and

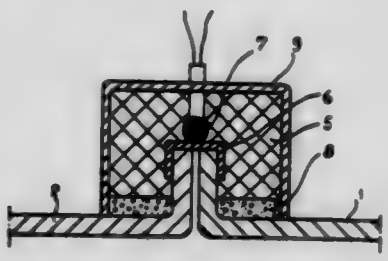
removing the workpieces from between the welding elements.

4,496,096

METHOD OF JOINING METAL ELEMENTS BY EXPLOSION WELDING

Per I. Persson, Nora, Sweden, assignor to Nitro Nobel A.B., Gyttorp, Sweden

Filed Sep. 29, 1982, Ser. No. 427,366
Claims priority, application Sweden, Oct. 26, 1981, 8106319
Int. Cl.³ B23K *27/00*
U.S. Cl. 228—107 12 Claims



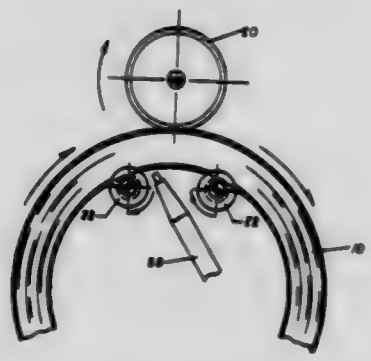
1. Method of joining two or more metal pieces wherein two of said metal pieces are normally substantially coplanar with a reference plane, comprising the steps of: (1) providing each of said coplanar pieces with a flange at an angle to said plane (2) bringing each of said flanges into proximity, and (3) detonating at least one explosive charge to weld said flanges together.

4,496,097

AUTOMATIC BELLOWS WELDER AND METHOD FOR USING SAME

Richard R. Larsen, Daytona Beach, Fla., assignor to Pacific Scientific Company, Anaheim, Calif.

Division of Ser. No. 313,283, Oct. 21, 1981,. This application Jun. 11, 1984, Ser. No. 619,776
Int. Cl.³ B23K *37/04*
U.S. Cl. 228—212 3 Claims



1. A method for welding together thin metallic objects each having an aperture therein comprising placing the surfaces defining the apertures in the thin metallic objects in contacting relationship with each other, rotatably engaging the outer surfaces of the thin metallic objects, rotatably engaging the surfaces defining the apertures in the thin metallic objects, and welding the contacting surfaces defining the apertures in the thin metallic objects during the rotation thereof.

4,496,098

PROCESS FOR PRODUCING A TIN/LEAD ALLOY SOLDER JOINT WITH LESS WETTING AGENT RESIDUE

Ichiro Kawakatsu, 30-13-3 chome, Saginomiya, Nakano-ku, Tokyo, Japan

Filed Mar. 25, 1982, Ser. No. 361,612
Int. Cl.³ B23K *1/02*
U.S. Cl. 228—219 4 Claims

1. In a soldering process in which a tin/lead solder alloy is to be melted to form a joint with a surface of a piece of copper or brass while the surface is protected against oxidation by being surrounded by a non-oxidizing gaseous atmosphere,

the improvement comprising:

as a preliminary step, coating said surface with a liquid wetting agent which is a mixture consisting essentially of an organic solvent having a boiling point in the range of 30° C. to 160° C., a relatively viscous polyhydric alcohol derivative having a boiling point in the range of 170° C. to 320° C., and an organic halogen-containing activator, so that as the solder joint is made so little oxidation and wetting agent residue is formed that no residue removal step likely to generate corrosion is needed; and

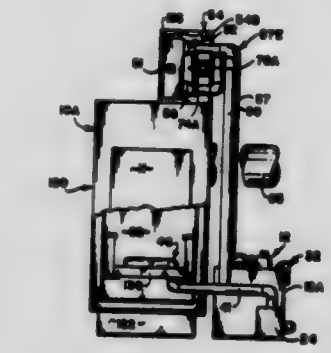
the step of melting the tin/lead solder alloy is conducted so soon after said coating step, that resulting vaporization of said organic solvent during the solder melting step contributes to said gaseous atmosphere.

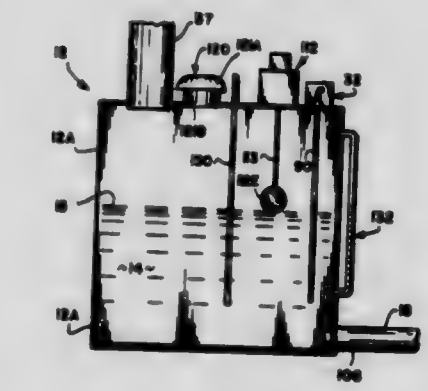
4,496,099

LOW PRESSURE HEATING SYSTEM

Garland Bull, Rte. 1, Box 235, Dardanelle, Ark. 72834

Filed Mar. 5, 1984, Ser. No. 586,138
Int. Cl.³ F24H *3/06*
U.S. Cl. 237—7 15 Claims





1. A low-pressure heating device for warming the areas in which the device is disposed by extracting heat from a wood burning or coal burning stove, fireplace or the like, said wood or coal burning stove, fireplace or the like having an internal fuel combustion zone, the device comprising:

a first heat exchanger adapted to be disposed within said stove or the like within said fuel combustion zone therewithin, said first heat exchanger having a first fluid inlet and a first fluid outlet;

a reservoir adapted to be disposed remotely with respect to said combustion zone for containing a preselected volume of a working heat exchange fluid such as water or the like, said reservoir being vented to the atmosphere and having at least one reservoir inlet and a reservoir outlet;

a circulating pump for extracting said heat exchange fluid from said reservoir and for pumping it to said first heat exchanger, said pump having an inlet in fluid flow communication with said reservoir outlet and a pump outlet in fluid flow communication with said first fluid inlet associated with said first heat exchanger;

a second heat exchanger adapted to be disposed remotely from said reservoir and combustion zone but elevated above said reservoir, said second heat exchanger having a second fluid flow inlet and a second fluid flow outlet;

said second fluid flow inlet coupled in fluid flow communication with said first fluid flow outlet;

said second fluid flow outlet coupled in fluid flow communication with at least one of said reservoir inlet(s);

fan means for forcing air through said second heat exchanger to extract and distribute heat therefrom;

immersion control switch means operatively associated with said reservoir for initiating operation of said pump whereby to establish fluid recirculation between said reservoir and said first and second heat exchangers;

fan control means for energizing said fan means when the temperature of fluid within said second heat exchanger reaches a first preselected temperature; and,

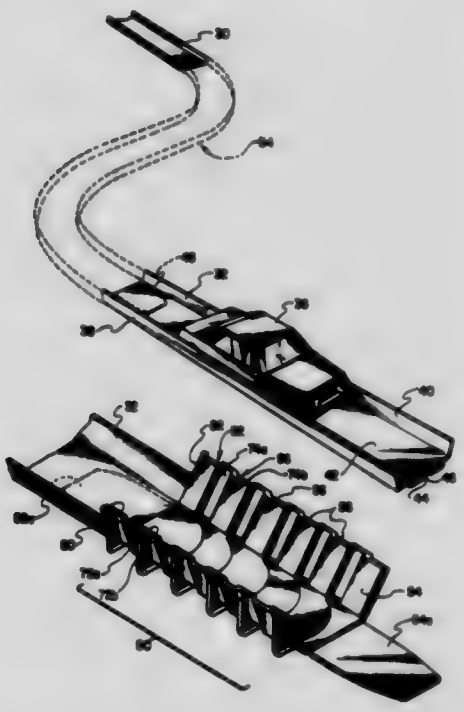
said immersion control means being responsive to thermocouple means disposed within said reservoir for turning off said pump when the temperature of fluid within said reservoir exceeds a preselected safe maximum temperature, whereupon hot fluid disposed within said second heat exchanger will drop downwardly into said reservoir.

4,496,100

FLEXIBLE TRACK

Frederic A. Schwager, and Willis C. Kainsinger, both of Manhattan Beach, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Oct. 18, 1982, Ser. No. 434,815
Int. Cl.³ A63H *18/02*
U.S. Cl. 238—10 R 20 Claims



1. In a track system for forming a roadway for travel thereon of miniature vehicles, the combination comprising:

at least a first and second track sections;

means on said first track section including an arcuate surface portion having rib means in depending relation to the periphery thereof; and

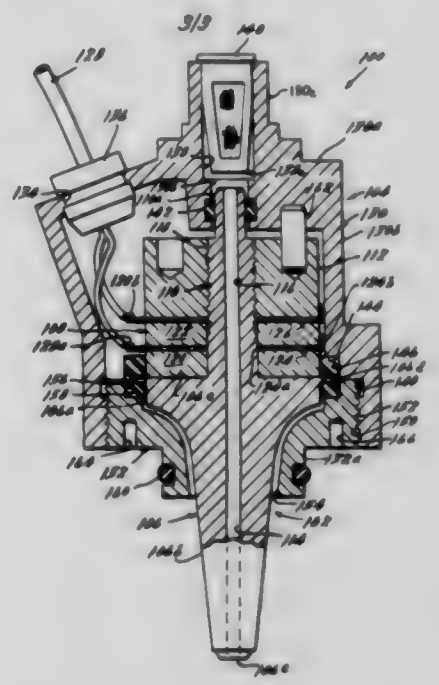
means on said second track section including a first surface portion having slot means therein configured for interlocking relation with said rib means and a second surface portion having an arcuate edge of substantially the same radius as the edge of said arcuate surface portion, the two edges being in proximate relation with the sections interlocked with said second surface portion and the surface of said arcuate surface portion defining part of the roadway, said rib means and said slot means being so dimensioned and configured for enabling pivoting between adjacent sections when so interconnected while providing friction for maintaining the pivoted position once fixed.

4,496,101

ULTRASONIC METERING DEVICE AND HOUSING ASSEMBLY

Bradley L. Northman, Oak Park, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 11, 1982, Ser. No. 387,388
Int. Cl.³ B05B *3/14*
U.S. Cl. 239—102 6 Claims



1. In a fluid injector including an acoustic horn defining a nozzle assembly having a longitudinal axis, a longitudinally extending passage, and means at one end of the nozzle assembly for discharging fluid from the passage; means at the other end of the nozzle assembly for longitudinally vibrating the nozzle assembly; a housing assembly having the discharge end of the nozzle assembly extending therefrom; and a fluid inlet defined by the housing assembly; the improvement comprising:

passage means disposed within the housing assembly for supplying pressurized fluid from the fluid inlet to the longitudinally extending passage, said passage means having at least one end disposed along an axis substantially parallel to the longitudinal axis and moveable relative to at least one of the assemblies;

first and second disk-shaped piezoelectric crystals each having a central opening;

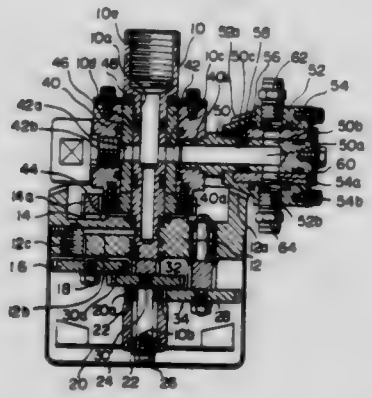
a disk-shaped conductor element sandwiched between said crystals and, said conductor having a central opening somewhat larger than the central openings in said crystals and having means to concentrically orient at least one of the crystal openings with the conductor opening; and

fastener means extending through said openings for securing said crystals to the nozzle.

4,496,102
CLEANING APPARATUS

Takao Miura, Urawa, and Isao Miura, Kawaguchi, both of Japan, assignors to Miura Machinery Works Co., Ltd., Kawaguchi, Japan

Filed Jun. 24, 1982, Ser. No. 391,661
Claims priority, application Japan, Sep. 8, 1981, 56-133373
Int. Cl.[3] B05B *3/02, 3/04*
U.S. Cl. 239—227 16 Claims

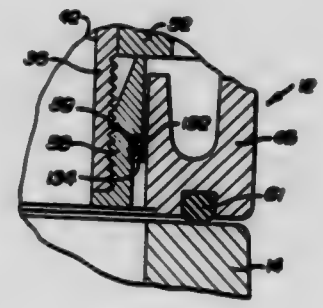


1. A cleaning apparatus for an enclosure comprising:
a stationary support member having a first ejection port;
a first shaft securely mounted to the support member and formed with a first axial bore from one end toward the other end;
an impeller journaled to said other end of the first shaft adjacent to the first ejection port;
a first distribution path branching off the first axial bore in the first shaft to distribute to the first ejection port liquid under high pressure communicated from a source of pressurized liquid supply to the first axial bore;
a first hollow cylindrical member supported on the support member to be rotatable about a longitudinal axis of the first shaft, said first cylindrical member having a first sleeve slidably engaging the first shaft;
a second shaft fixedly connected to the first cylindrical member such that a longitudinal axis thereof extends perpendicularly to the axis of the first shaft;
an ejector assembly rotatably mounted on the second shaft and having at least one second ejection port therein and a second sleeve engaged with the second shaft;
a second distribution path branching off the first axial bore in the first shaft to distribute to the second ejection port in the ejector assembly the liquid under high pressure communicated from the source of pressurized liquid supply to the first axial bore;
transmission means for transmitting rotation of the impeller to the first cylindrical member to cause the ejector assembly to revolve about the axis of the first shaft through the first cylindrical member and the second shaft;
means for causing the ejector assembly to rotate about the axis of the second shaft simultaneously with the revolution around the axis of the first shaft;
ejection control means for controlling the pressure of the driving jet to a desired value, regardless of the pressure of the cleaning jet, said ejection control means including a nozzle housing securely mounted to the first ejection port of the support member, said nozzle housing having a nozzle hole and an adjustable nozzle needle in the nozzle hole, and
sealing means interposed between the first sleeve on the first cylindrical member and the first shaft and between the second sleeve of the ejector assembly and the second shaft, each of the sealing means comprising an annular flat strip made of a material having a low friction coefficient and wound on the bottom of a first annular recess which is formed in the outer periphery of the shaft, an O-ring and a plurality of backup rings which are coupled side by side on the flat strip in the first annular recess;
whereby the liquid from the source of pressurized liquid supply is ejected from the first ejection port of the support member as a driving jet for driving the impeller and from the second ejection port of the ejector assembly as a cleaning jet for cleaning the interior of the enclosure.

4,496,103
REACTION DRIVE SPRINKLER

Edward J. Pitchford, Glendora, Calif., assignor to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.

Division of Ser. No. 377,552, May 12, 1982, Pat. No. 4,434,937.
This application Sep. 22, 1983, Ser. No. 534,804
Int. Cl.[3] B05B *3/08*
U.S. Cl. 239—230 9 Claims



1. In a rotatable water sprinkler having a range tube for rotatable connection with respect to a water supply pipe to receive water from the supply pipe and to project the water in the form of at least one water stream in a generally lateral direction with a selected angle of inclination with respect to the supply pipe, the improvement comprising:
reaction drive means including a drive arm pivoted with respect to the range tube and supporting at least one deflector spoon oriented for selectively interrupting the projected water stream resulting in reaction forces to rotate the range tube with respect to the supply pipe;
means for mounting said range tube at the end of the water supply pipe for rotation with respect thereto; and
means responsive to increases in the pressure of water in the supply pipe for increasing frictional resistance to rotation of said range tube with respect to the water supply pipe, said pressure responsive means comprising an annular lip seal interposed between said mounting means and said range tube and having a generally U-shaped cross section opening toward the water supply pipe, and an annular spring received into said lip seal for biasing the opposite leg of said lip seal into normal frictional sealing engagement respectively with said mounting means and said range tube, said spring having a generally *U*-shaped cross section opening toward the water supply pipe such that increases in water pressure supplement the spring force to increase frictional resistance to rotation of said range tube.

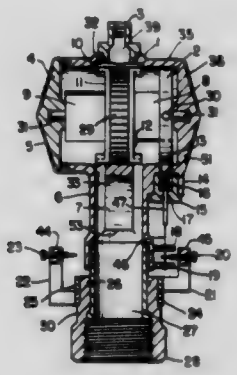
4,496,104
AUTOMATIC SPRINKLING DEVICE

Joseph C. V. Ducasse, 391 Donegal Pl., Martinez, Calif. 94553

Filed May 21, 1982, Ser. No. 380,992
Int. Cl.[3] B05B *03/04*
U.S. Cl. 239—240 11 Claims

1. An automatic sprinkling device comprising:
a hollow casing including a generally vertically extending cylindrical portion having lower and upper ends and a generally horizontally extending cylindrical portion integral with said upper end of said vertical portion;
coupling means, rotatably and sealingly connected to said lower end of said vertical portion of said casing, for connecting said casing to a source of pressurized fluid;
a nozzle fixed to and extending from said horizontal portion of said casing and communicating with the interior thereof for spraying therefrom a jet of pressurized fluid;
propeller means positioned within said casing to be con-

tacted by pressurized fluid passing therethrough for causing said casing and said nozzle to rotate with respect to said coupling means, said propeller means comprising a first turbine wheel mounted within said horizontal portion, and propeller blades fixed to and extending axially from opposite ends of said first turbine wheel, said propeller blades being noncoplanar with respect to each other;



control means for selectively regulating and reversing the rotation of said casing and said nozzle with respect to said coupling means; and

means mounted within said casing and contacted by the pressurized fluid passing therethrough for periodically restricting the jet of pressurized fluid sprayed from said nozzle.

4,496,105

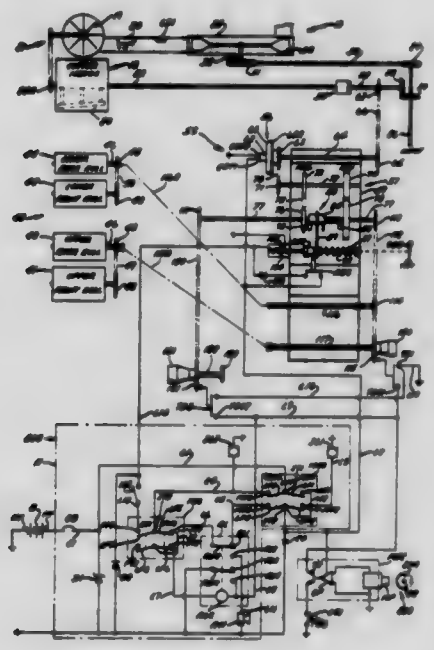
FORAGE HARVESTER DRIVE AND ELECTRIC CONTROL THEREFOR

Philip F. Fleming; Virgil B. Martin, both of West Bend; Roger L. Villers, Waubeka, and Jaime J. Shutes, West Bend, all of Wis., assignors to Gehl Company, West Bend, Wis.

Filed Nov. 15, 1982, Ser. No. 441,946

Int. Cl.³ B02C *25/00*

U.S. Cl. 241—32 **12 Claims**



1. A forage harvester adapted to be propelled and powered by a tractor comprising:

a blower;

a cutterhead mechanism for supplying cut crop material to said blower;

a feed roll mechanism for feeding crop material to said cutterhead mechanism;

an attachment drive shaft;

drive means for driving said blower and said cutterhead mechanism;

a drive mechanism for supplying motive power from said drive means to said feed roll mechanism and said attachment drive shaft, said drive mechanism comprising an electric clutch and a shiftable forward/reverse transmission;

a first torque responsive mechanical clutch connected between said transmission and said feed roll mechanism;

a second torque responsive mechanical clutch connected between said transmission and said attachment drive shaft;

each of said torque responsive mechanical clutches being adapted to disengage when overloaded;

means selectively operable to effect shifting of said transmission between forward and reverse;

and an electrical control system comprising switch means selectively operable to effect engagement and disengagement of said electric clutch;

and fault switch means responsive to disengagement of either of said first and second torque responsive clutches to effect disengagement of said electric clutch.

4,496,106

AGITATOR-GRINDER

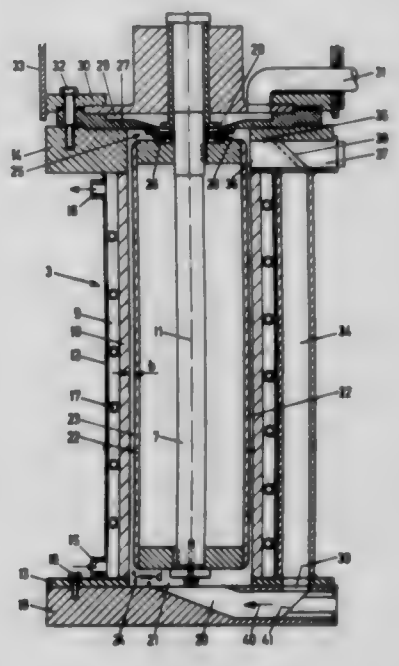
Horst Gross, Lampertheim, Fed. Rep. of Germany, assignor to Draiswerke GmbH, Mannheim, Fed. Rep. of Germany

Filed Feb. 5, 1982, Ser. No. 346,365

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1981, 3106062

Int. Cl.³ B02C *17/16*

U.S. Cl. 241—46.17 **10 Claims**



1. An agitator-grinder for performing wet-grinding of stock material comprising:

a grinding vessel having an agitator mechanism comprising a cylindrical hollow body disposed in the grinding vessel and drivable at high speed,

a narrow annular-cylindrical chamber partially filled with auxiliary grinding bodies defining a grinding chamber between said agitator mechanism and a wall of the grinding vessel, the inner walls of said grinding chamber being of complementary cylindrical shape and forming therebetween a gap of from 5 mm to 10 mm width, the ratio of gap width b to grinding body diameter d being about 5 to 20, and the speed of the agitator mechanism at its periphery being froms 5 to 40 m/sec,

a grinding stock inflow conduit discharging into said grinding chamber at one end and a separating device at the other end thereof for separating ground stock from the auxiliary grinding bodies,

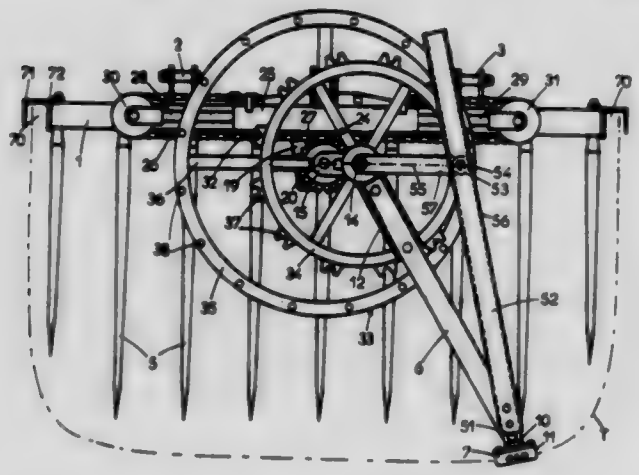
a return flow conduit extending from said grinding chamber in the vicinity of said separator device back into the vicinity of said grinding stock inflow conduit,

said conduit being attached in a stationary manner to said grinding vessel, and including means for varying the cross-section of a portion of said return flow conduit.

4,496,107
MACHINE FOR REMOVING BLOCKS OF FORAGE FROM A SILO

Edmond Oberle, Saverne; Bernard Wattron, Marmoutier, and Jeannot Hironimus, Saverne, all of France, assignors to Kuhn S.A., Saverne, France

Filed Jul. 16, 1982, Ser. No. 398,964
Claims priority, application France, Jul. 23, 1981, 81 14512
Int. Cl.[3] A01F *29/00*
U.S. Cl. 241—101.7 27 Claims



1. A machine for removing blocks of forage from inside a horizontal silo,

comprising in combination,

a chassis having a lower part;

a plurality of prongs arranged on the lower part of the chassis and extending substantially horizontally;

an arm located above the prongs at a predetermined distance and having an outer extremity;

a cutting device arranged on the outer extremity of the arm;

a crank;

a substantially vertical first axle hingedly connecting the arm with the cutting device to the crank; and

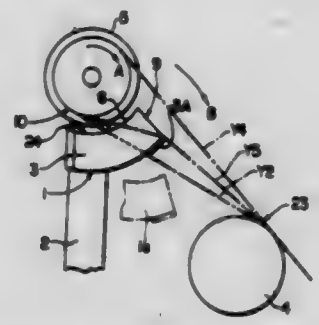
a second axle hingedly connecting the crank to the chassis and offset from said first axle;

crank driving means for driving said crank about said second axle, said means including a double acting hydraulic jack, a chain driven by said jack and a crown gear integral with each crank.

4,496,108
BUNCH WINDING DEVICE IN WINDING MACHINE

Syoichi Tone, Kyotoshi; Koji Deno, Ohmihachimanshi, and Akio Matsushima, Kyotoshi, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

Filed Oct. 17, 1980, Ser. No. 197,965
Claims priority, application Japan, Oct. 22, 1979, 54-136575
Int. Cl.[3] B65H *54/02, 67/04*
U.S. Cl. 242—18 PW 4 Claims

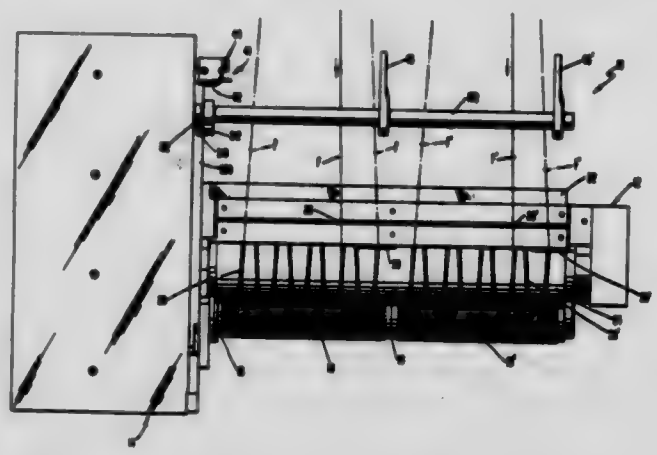


1. A bunch winding device for a winding machine including a cradle arm, a drum having a traverse region, a bobbin holder secured to the cradle arm for rotatably mounting a bobbin adjacent the drum, and means for mounting said cradle arm for movement between a first position wherein the bobbin engages said drum and a lifted position wherein said bobbin holder and bobbin are spaced from said drum, comprising an L-shaped bunch winding-regulating guide having a longitudinal plate with a top end and top face being attached to the cradle arm below the bobbin holder so that the bunch winding-regulating guide is in engagement with a yarn extending from the drum toward the yarn end gripped by an end face of the bobbin and bobbin holder when the cradle arm is located in said lifted position, and it releases said engagement with the yarn on movement of the cradle arm from said lifted position to said first position, wherein the longitudinal plate of said L-shaped bunch winding-regulating guide is located outside the traverse region of the drum and is also positioned between the traverse region of the drum and the end face of the bobbin.

4,496,109
APPARATUS FOR CUTTING, ASPIRATING AND RETHREADING A TRAVELING FILAMENTARY YARN

Max L. Cardell, Shelby, N.C., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 258,309, Apr. 28, 1981, abandoned. This application May 27, 1983, Ser. No. 499,005
Int. Cl.[3] B65H *54/02, 67/04*
U.S. Cl. 242—18 R 22 Claims



1. Automatic filamentary yarn handling apparatus for use with a filamentary yarn winder of the type comprising a yarn package support, and means for rotating at least one package about an axis of said support to wind-up at least one filamentary yarn continuously fed along a yarn path toward the winder, said yarn handling apparatus comprising:

gathering means upstream of said package's rotary axis for displacement from a rest position toward the path of travel of the yarn, said gathering means including:

cutter means for severing said yarn as said gathering means is displaced toward said yarn's path of travel,

suction means including an inlet disposed adjacent said cutter means for continuously drawing-in said yarn after severing has occurred,

yarn transfer means, including at least one guide associated with said yarn being transferred, mounted for movement relative to said gathering means between spaced positions,

said guide being arranged to engage said yarn upon said gathering means returning to its rest position with the severed yarns, and

displacement means for:

moving said transfer means relative to said gathering means with the yarn remaining engaged with said guide, and

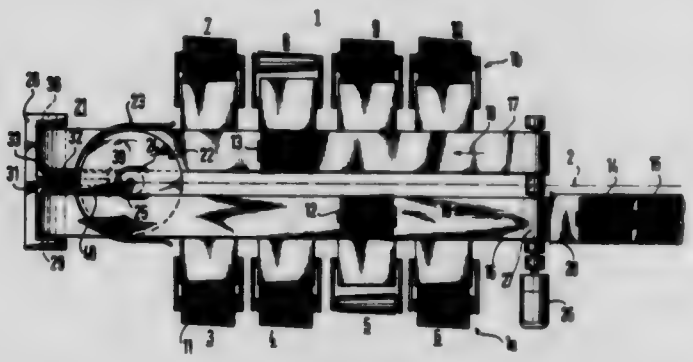
moving said guide toward the package axis during a yarn rethreading sequence.

4,496,110

DOUBLE-SIDED TEXTILE MACHINE

Hans Rasch; Hans Grecksch, and Klaus Bock, all of Monchen-Gladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Mar. 15, 1984, Ser. No. 590,015
Int. Cl.³ B65H *54/20, 67/04*
U.S. Cl. 242—35.5 A 10 Claims



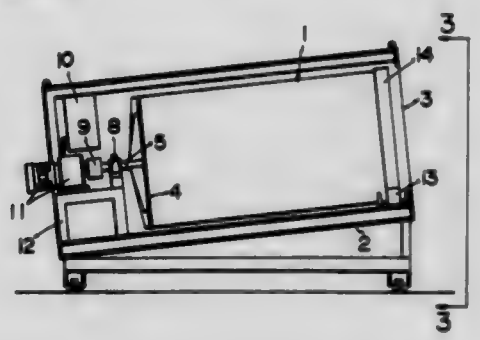
1. Double-sided textile machine, comprising a plurality of spool assemblies for producing cross wound bobbins, a spool collecting station at an end of the machine, a first spool transport belt disposed at one side of the machine for receiving cross wound bobbins from at least one of said spool assemblies and for transporting the bobbins toward said spool collecting station in a given transporting direction with the bobbins axially aligned in said given transporting direction, a second spool transport belt disposed at the other side of the machine for receiving cross wound bobbins from at least one of said spool assemblies and for transporting the bobbins in a direction opposite said given transporting direction, and a device for successively receiving the cross wound bobbins from said second spool transport belt, for turning the bobbins through substantially 180° and for transferring the bobbins to said first spool transport belt.

4,496,111

APPARATUS FOR AND METHOD OF REMOVING WOUND PAPER FROM A CORE ROD

Kishiro Ohishi, and Choji Kato, both of Niigata, Japan, assignors to Hokuetsu Kamiseisen Kabushikikaisha, Niigata, Japan

Filed Feb. 16, 1983, Ser. No. 467,091
Int. Cl.³ B65H *75/02*
U.S. Cl. 242—55 4 Claims



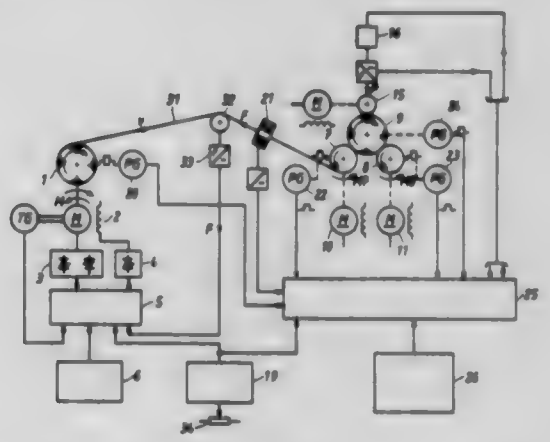
1. A method of removing wound paper from a core rod, said method comprising the steps of rotating a cylindrical container around its axis and placing said core rod inside said container in the direction of said axis, said container being adapted to maintain said rod in the direction of said axis.

4,496,112

METHOD OF CONTROLLING A WEB WINDING PROCESS

Ingemar Olsson; Göran Ottosson, and Bengt Sinner, all of Västerås, Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Filed Mar. 30, 1983, Ser. No. 480,280
Claims priority, application Sweden, Apr. 1, 1982, 8202095
Int. Cl.³ B65H *17/08, 59/08*
U.S. Cl. 242—66 5 Claims



1. A method of controlling the web tension of a web roll, in particular a paper web roll, being wound in a winder including two individually driven web roll supporting rollers, comprising:

deriving separate signals representative of the speed of rotation of each supporting roller:

controlling the speed or rotation of each driven supporting roller, in dependence on the difference between the said signals, thereby to control the said web tension of the web roll;

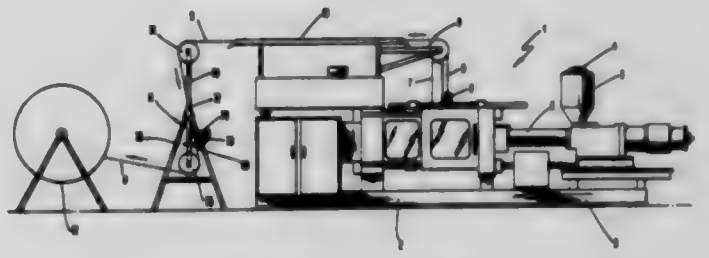
including measuring the number of wound turns and the wound web length of the web of a measuring period, the resulting measurement signals being supplied with information about the surface weight of the web to a device for computing a density signal for the portion of the web roll formed during the measuring period, the density signal being used as a superordinate control signal for controlling the web tension of the web roll.

4,496,113

INTEGRATED PROCESS FOR PREPARING A CONTINUOUS STRING OF MOLDED ARTICLES WOUND IN A COIL

C. Bruce Dawson, Winchester, Va., assignor to O'Sullivan Corporation, Winchester, Va.

Continuation-in-part of Ser. No. 316,033, Oct. 28, 1981, Pat. No. 4,445,836. This application Apr. 4, 1983, Ser. No. 481,825
Int. Cl.³ B65H *17/02*
U.S. Cl. 242—67.1 R 8 Claims



1. In a process for winding-up a continuous element which is being advanced toward a winder, the process including the steps of intermittently winding the element and taking-up slack in the element in between the winding sequences, said process comprising the steps of:

taking-up slack in the element which would otherwise occur when the element is advanced and the winder is stopped, by:

engaging a tensioning member against the element,

biasing the tensioning member with a biasing force in a first direction for taking-up slack, so that the tensioning member is displaced by the biasing force when the element is advanced,

actuating rotation of the winder to initiate a wind-up sequence following a given extent of travel of the tensioning member in the first direction while the tensioning member yieldably opposes the winding of the element with a biasing force of a first strength, and

deactivating the winder after a given extent of travel of the tensioning member in a second direction opposite the first direction and increasing the strength of the biasing force to a second strength so that the tensioning member takes-up subsequent slack in the element under the increased second strength.

4,496,114

WINDING SHAFT PROVIDED ON SURFACE WITH SPOOL FIXING ROLLERS

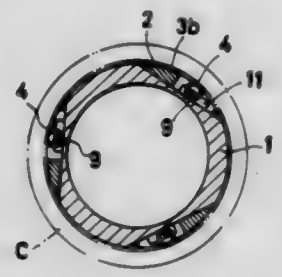
Hiroshi Kataoka, 1-5-8 Asahi, Iyo-Mishima-shi, Ehime-ken, Japan

Filed Jul. 14, 1982, Ser. No. 398,439

Claims priority, application Japan, Jul. 22, 1981, 56-113619; Aug. 3, 1981, 56-120670; Oct. 13, 1981, 56-161975

Int. Cl.³ B65H *75/24*

U.S. Cl. 242—68.2 **16 Claims**



2. A winding shaft for a strip of sheet material, said winding shaft being provided on the surface thereof with rolling bars for fixing a spool, said winding shaft comprising:

flat recesses disposed equidistantly in the circumferential direction on the outer periphery of the winding shaft, said flat recesses being flat surfaces formed by cutting surface segments of a width slightly larger than the length of rolling bars off the outer periphery of the winding shaft;

opposed side walls defining the axial ends of said flat recesses, said opposed side walls having opposed lateral grooves formed in their lower portions;

rolling bars each having hollow portions formed on the opposite ends thereof and being capable of being rolled on said flat recesses in a posture parallel to the axis of the winding shaft, said rolling bars having a thickness such that, even when they are located at the positions most separated from the peripheral surface of the winding shaft, they slightly protrude from the peripheral surface of the winding shaft and, as they roll from said positions, they protrude increasingly from said peripheral surface; and

means for restraining said rolling bars in such a manner that said rolling bars are allowed to roll on said flat recesses but are prevented from falling off said flat recesses, said means comprising axles of a diameter smaller than the diameter of said hollow portions of said rolling bar and said opposed lateral grooves formed in the said opposite side walls, the end portions of each of said axles, when passed through said hollow portions of said rolling bars, entering said lateral grooves and being allowed to move independently in a straight line parallel to said flat surfaces over a necessary distance in consequence of the rolling motion of saidrolling bars to enable said rolling bars to protrude greatly.

4,496,115

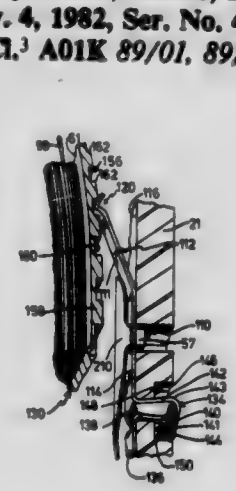
RATCHET SPRING

John R. Kreft, and Elvis W. Moss, both of Tulsa, Okla., assignors to Brunswick Corporation, Skokie, Ill.

Filed Nov. 4, 1982, Ser. No. 439,367

Int. Cl.³ A01K *89/01, 89/02*

U.S. Cl. 242—84.1 R **4 Claims**



1. In a fishing reel having a body with a deck plate having an opening therein, a line-carrying spool rotatable about an axis extending lengthwise of the fishing reel and a rearwardly facing surface on the spool with serrations arranged annularly about the surface, a ratchet spring comprising:

a first spring portion having a flat surface for engagement with the deck plate;

a second portion extending from the first portion angularly and away from the deck plate and toward the rearwardly facing surface of the spool, and movable relative to the first portion towards and away from the deck plate;

means on the first portion engaging within the opening in the deck plate to secure the ratchet spring relative to the deck plate, said means engaging the opening comprising a protrusion extending from the plane of the first portion and having outwardly disposed sides, the sides being press fit within the opening to anchor the ratchet spring relative to the deck plate, the second portion having means engaging the serrations such that upon rotation of the spool a clicking is audible as a result of the spring addressing the serrations to alert an operator of the reel that line carried on the spool is being withdrawn.

4,496,116

AUTOMATIC LOCKING RETRACTOR

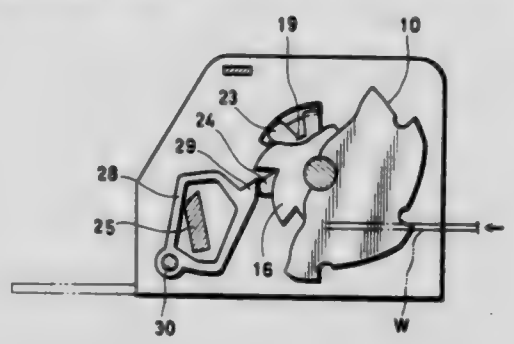
Katsuyasu Ono, Fujisawa, Japan, assignor to Nsk-Warner K. K., Japan

Filed Aug. 22, 1983, Ser. No. 525,308

Claims priority, application Japan, Aug. 31, 1982, 57-132200[U]

Int. Cl.³ A62B *35/00;* B65H *75/48*

U.S. Cl. 242—107.4 D **6 Claims**



1. An automatic locking retractor comprising a casing, a take-up spindle rotatably supported on the casing and urged in the winding direction of an webbing, a cog wheel mounted integrally on the take-up spindle, a ratchet wheel rotatable together with the cog wheel, a disk rotatable in association with rotation of the take-up spindle by virtue of a friction force, turnable over a predetermined angle and defining a first and second projections on the outer circumference thereof, a

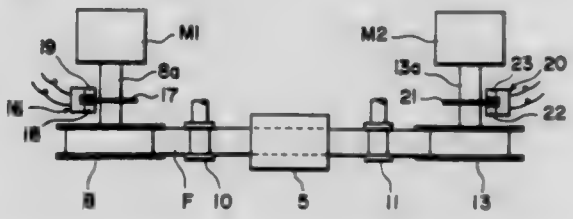
lock lever displaceable between a first position where the lock lever is in engagement with the cog wheel and a second position where the lock lever permits free rotation of the cog wheel, a pawl displaceable between an engagement position where the pawl is in engagement with the ratchet wheel, an intermediate position where the pawl is engageable with the ratchet wheel and a non-engagement position where the pawl is kept out of engagement with the ratchet wheel, and sensor means coupled with the pawl and adapted to hold the pawl in the non-engagement position when the webbing has been wound up over a predetermined length or longer, in which the pawl assumes the non-engagement position and is kept in contact with the first projection of the disk when the webbing, which has been wound up on the take-up spindle, is pulled out, assumes the intermediate position and is kept in contact with the second projection of the disk when the webbing has then been rewound over a predetermined small length, and is then guided to the engagement position when the webbing is again pulled out; and means for displacing the lock lever from the second position to the first position as the pawl is displaced from the intermediate position to the engagement position.

4,496,117

WEB TRANSPORT DEVICE

Kazuo Kashiwagi, Tokyo, and Masanari Shirai, Chigasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1983, Ser. No. 545,924
Claims priority, application Japan, Nov. 1, 1982, 57-192189; Nov. 1, 1982, 57-192190
Int. Cl.³ B65H *59/38;* G03B *1/02;* G11B *15/13*
U.S. Cl. 242—191 6 Claims



1. A web transport device for transporting a web wound on an unwinding rotary member to a winding rotary member by the rotation thereof, comprising:

measuring means for measuring the rotating speed of the unwinding rotary member and of the winding rotary member;

first computing means for calculating the ratio of the rotating speed of the unwinding rotary member and of the winding rotary member within a predetermined period in the course of web transport;

second computing means for calculating the ratio of the rotating speeds of the unwinding rotary member and of the winding rotary member at the end of web transport on the basis of a value calculated by said first computing means at the start of web transport; and

transport control means for comparing the results of calculations of said first and second computing means and controlling the drive for said rotary members in response to the result of said comparison.

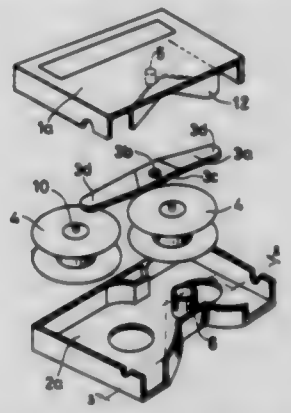
4,496,118

MAGNETIC TAPE CASSETTE

Kengo Oishi, and Osamu Suzuki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 13, 1983, Ser. No. 494,483
Claims priority, application Japan, May 13, 1982, 57-68717
Int. Cl.³ G03B *1/04;* G11B *15/32*
U.S. Cl. 242—198 5 Claims

1. A magnetic tape cassette comprising: upper and lower half portions joined to define a cassette body, said lower half portion having a photo-sensor insertion hole, a tape supply reel and a tape winding reel disposed in said cassette body, an elastic reel retaining plate for depressing the tops of said reels and, means for securing said retaining plate to an inner surface



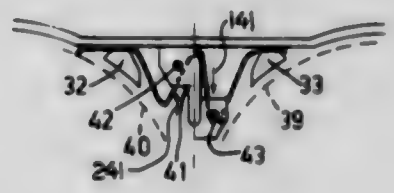
of said upper half portion in alignment with said photo-sensor insertion hole.

4,496,119

MAGNETIC-TAPE CASSETTE WITH SIMPLIFIED REEL BRAKE

Joannes H. F. C. Sieben, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 29, 1983, Ser. No. 527,058
Claims priority, application Netherlands, Feb. 9, 1983, 8300476
Int. Cl.³ G03B *1/04;* G11B *15/22, 15/32*
U.S. Cl. 242—198 6 Claims



1. A magnetic-tape cassette comprising a housing having a major wall and a rear wall; two adjacent reels mounting in the housing for rotation about respective axes perpendicular to said major wall, each of said reels having a flange; and brake means for tensioning a tape wound around and extending between said reels, and preventing rotation of said reels in the direction which loosens said tape when the cassette is not in use,

characterized in that said brake means comprises a ridge arranged on the inner side of said major wall of the housing, and extending substantially perpendicularly to the rear wall between said reels,

two projections arranged on said major wall, each projection being arranged adjacent a respective reel, one to each side of said ridge,

a single brake spring having a central portion secured near an end of said ridge, respective intermediate portions arranged in a space between the rear wall and the respective projections, and braking portions near the two respective ends of the brake spring for engaging respective flanges, and

a slide member slidable along said ridge, having means for engaging said brake spring at locations disposed to each side of the central portion of the spring, arranged such that movement of the slide member along said ridge in either of first and second opposite directions respectively moves said braking portions of the brake spring toward the flanges, and away from said flanges.

4,496,120

ARRANGEMENTS OF OR TO PROPELLERS TO IMPROVE THE CAPABILITIES OF PROPELLER-DRIVEN CRAFT

Karl Eickmann, 2420 Ishiki, Hayama-machi, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 110,157, Jan. 7, 1980, which is a continuation-in-part of Ser. No. 895,687, Apr. 12, 1978, abandoned, which is a continuation-in-part of Ser. No. 760,006, Jan. 17, 1977, Pat. No. 4,136,845, which is a continuation-in-part of Ser. No. 104,676, Mar. 8, 1971, Pat. No. 3,823,898, said Ser. No. 330,980, is a division of Ser. No. 954,555, Oct. 25, 1978, Pat. No. 4,358,073, and Ser. No. 973,780, Dec. 27, 1978, which is a continuation-in-part of Ser. No. 760,006, Jan. 17, 1977, Pat. No. 4,136,845. This application Dec. 15, 1981, Ser. No. 330,980
Int. Cl.³ B64D *27/00*
U.S. Cl. 244—56 5 Claims



1. On an airfoiled wing, in combination, a streamlined sectional configuration of said wing with a longitudinal span and a relatively thereto normal chord, a fluid motor associated to said wing to carry and to revolve by fluid which flows from a fluid supply source through a rotor of said motor a propeller which is fastened to said rotor,

wherein said motor is connected to said wing by a structure,

wherein said structure includes means to swing said motor upwards and downwards in normal direction relative to said span and parallel to said chord of said wing,

wherein said structure is provided with means to keep the axes of said rotor and propeller at all times substantially parallel to said chord, and,

wherein fluid line portions which include rigid pipes and moveable fluid line portions are provided in said structure and between the ports of said motor and said supply source to permit the flow of fluid to and from different locations of said ports of said motor.

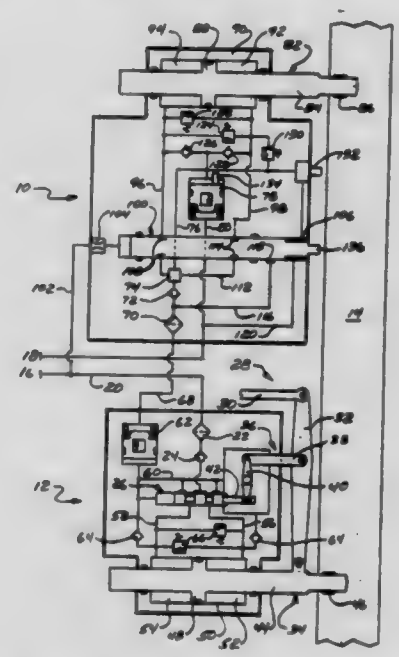
4,496,121

CONTROL SURFACE LOCK FOR FLUTTER CONSTRAINT

J. Burton Berlin, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 21, 1982, Ser. No. 420,725
Int. Cl.³ B64C *13/14, 13/42*
U.S. Cl. 244—75 A 15 Claims

10. A hydromechanical lock adapted for flutter constraint redundancy in the restraint of an aircraft control surface, comprising an hydraulic cylinder receiving reciprocable piston means disposed intermediate first and second charged chambers and in operative communication with an hydraulically-actuated surface to be locked upon loss of hydraulic pressure; biased bypass valve means having first and second sets of flow ports each disposed in registration for series flow of fluid between said first and second chambers respectively, said bypass valve means being biased for registration of said flow ports by said hydraulic pressure; flow splitter means having a first flow path in said series flow between said chambers and a second, fluid-interchanging, parallel flow path in communication with hydraulic return; wherein loss of said hydraulic pressure removes open biasing on said bypass valve means,



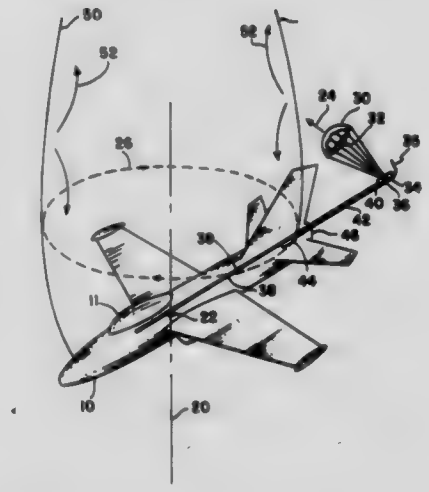
interrupts said series flow and locks said piston means and associated surface to be locked.

4,496,122

EXTENDED MOMENT ARM ANTI-SPIN DEVICE

Raymond D. Whipple, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 27, 1983, Ser. No. 508,371
Int. Cl.³ B64C *17/00*
U.S. Cl. 244—75 R 4 Claims



1. A device which corrects aerodynamic spin during aircraft operation comprising:

an aircraft;

extendable boom means housed completely within the aircraft;

said extendable boom means forming an extension of an anti-spin moment arm of said aircraft when extended from the tail of the aircraft;

parachute means carried by said extendable boom means at the end thereof remote from the aircraft;

means for deploying said parachute means for exerting an anti-spin force at the end of said moment arm;

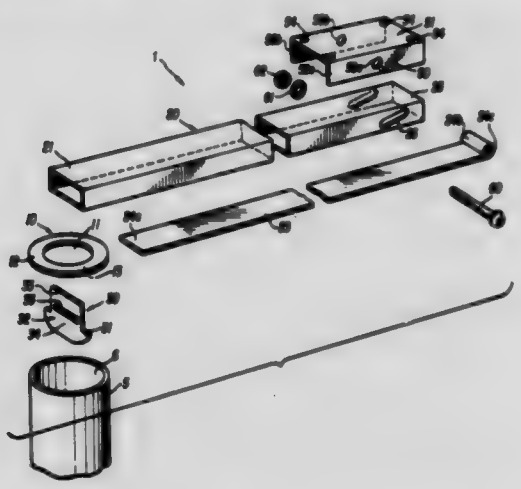
said parachute means having a diameter and said extendable boom means having a length permitting relative reduction in parachute size necessary to accomplish spin correction and continued flight of the aircraft without release of the parachute means.

4,496,123

EXTENDABLE SUPPORT

Roland A. Laramie, 13 Cedar Dr., Sterling, Va. 22170

Filed Dec. 14, 1982, Ser. No. 449,673
Int. Cl.[3] F16L *3/00*
U.S. Cl. 248—121 20 Claims



1. An extendable mailbox support for selectively supporting a mailbox in either an unextended or a horizontally extended position, comprising:

(a) a support member including a recess;

(b) an extension arm for horizontally extending said mailbox which is slidably extendable out of and retractable into said recess and which connects said mailbox to said support member, wherein said arm includes:

(i) a proximal pivotal mounting on its proximal end for supporting said mailbox in said horizontally extended position when said arm is slidably extended out of said recess and pivoted, and

(ii) a distal pivotal mounting on its distal end for reorienting said mailbox back into its initial orientation when said arm is slidably extended out of said recess and pivoted into a generally horizontal position

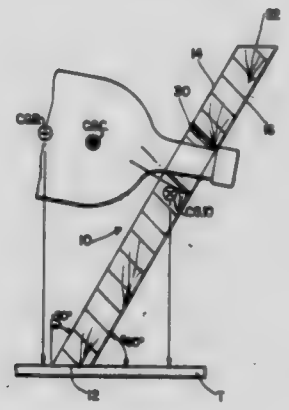
wherein said proximal pivotal mounting is completely retractable into said recess when said extension arm is retracted into the recess of the support member.

4,496,124

BOTTLE SUPPORT

Gerald Cole, Victor, N.Y., assignor to Creative Cellars, Inc., Ft. Washington, Md.

Filed Sep. 15, 1983, Ser. No. 532,805
Int. Cl.[3] A47G *23/02*
U.S. Cl. 248—146 13 Claims



1. A bottle and support comprising:

(a) a body including a base surface,

(b) said body extending upwardly from said base surface at an angle to the vertical,

(c) the center of gravity of said body being above a point outside said base surface,

(d) means on said body for supporting a bottle,

(e) said bottle supported by said supporting means and having a center of gravity above a point on the opposite side of that edge of the base surface nearest said first point from said first point,

(f) the combined center of gravity of said body and said bottle being above a point within said base surface,

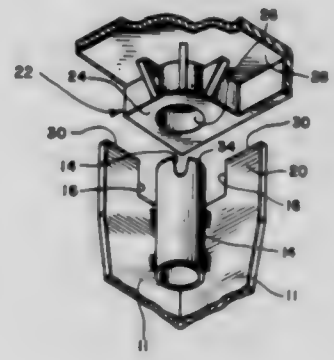
(g) said base surface being the sole support for said body and said bottle.

4,496,125

SUPPORT LEG ASSEMBLY

Thomas J. Walsh, Evanston; Robert Bachman, Highland Park, both of Ill., and Ronald Aderhold, Selden, N.Y., assignors to Fist Products Incorporated, Plainview, N.Y.

Filed Aug. 26, 1982, Ser. No. 411,618
Int. Cl.[3] F16M *11/20*
U.S. Cl. 248—188 29 Claims



1. A supporting leg for use with a leg coupler which defines a socket within a base located at a lower surface of an object to be supported, the socket being constructed to receive a tubular element, said supporting leg comprising:

a longitudinally extending, elongated leg member having at least two longitudinal leg sections joined together with an angle therebetween, each of said sections defining a respective end surface extending across a portion of the width of the leg;

a tube attached to said leg member at one end thereof adjacent the end surfaces and defining a tube end surface extending across the width of the tube;

said tube sized and shaped to fit into said socket when said supporting leg is engaged with said leg coupler such that load bearing contact is made by said leg end surfaces against the lower surface of said object to be supported and load bearing contact is made by the tube end surface against an abutting surface of said socket;

wherein each leg section is formed with a slot adjacent the respective leg end surface cut from the angle therebetween to a point along the width of the leg member sufficiently far from the angle to permit the slot to fit over the leg coupler and to allow said load bearing contacts to be made.

4,496,126

TABLE MOUNTED UNIVERSALLY POSITIONABLE BOOK HOLDER ENABLING READERS TO TURN PAGES EASILY WITHOUT HANDS

R. Stanley Melton, Rte. 2, Box 199A, and James R. Davis, Rte. 2, Box 234, both of Ellenboro, N.C. 28040

Filed Jul. 13, 1982, Ser. No. 397,917
Int. Cl.[3] A47B *23/04*
U.S. Cl. 248—447.2 1 Claim

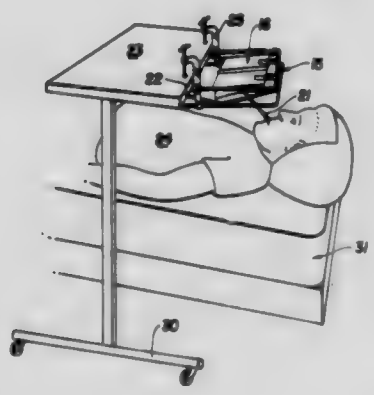
1. A book holder for use by readers without arm mobility adapted to hold a book in position for reading with pages displayed to enable turning by means of a rubber tipped stick held in the mouth, comprising in combination:

a pair of spaced front and rear juxtaposed rectangular frames of open framework metal rod construction for holding and positioning a book opened in reading posture with the

book pages displayed at a substantially unobstructed sighting position for reading,

book cover holder means carried by the rear rectangular frame for engaging and holding in place in opened posture for reading the two covers of a book,

a pair of monofilament lines connected on opposite ends of said front rectangular frame facing the reader and disposed across the sighting position to contact open pages of the book and hold them open for reading without substantial visual interference of book pages said monofilament



lines permitting manipulation of the pages by the stick employed by a reader,

mounting means carried by said frames for attaching the framework to the edge of a table to hold the book in said reading posture comprising a pair of clamps extending from said framework for clamping to a table edge,

a pivotable mount for said clamps on said framework to permit varying of the angular relationship of the framework with the clamp, and

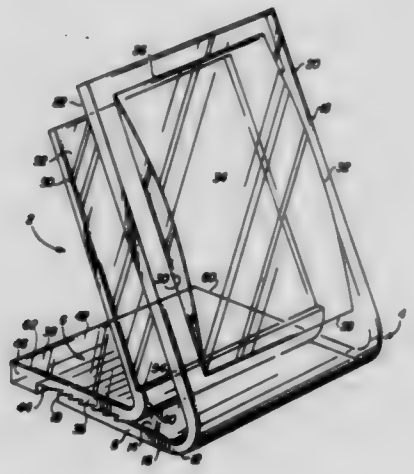
locking means to hold the pivotable mount secure in a selected mount position.

4,496,127

ADJUSTABLE BOOK HOLDER INCLUDING MAGNIFYING FRONT PANEL

M. Gene Nelson, 4414 N. 21st Ave., Phoenix, Ariz. 85015

Filed Jul. 12, 1982, Ser. No. 397,030
Int. Cl.[3] A47B *97/00*
U.S. Cl. 248—441.1 7 Claims



1. A holder for supporting a book or the like in an opened position, comprising in combination:

a. a front member including a first generally horizontal base portion having front and rear ends and upper and lower surfaces, the lower surface of said base portion being adapted to engage and rest upon a generally horizontal support surface, said front member also including a first support panel portion extending upwardly and rearwardly from the front edge of said first base portion and including front and rear surfaces, the rear surface of said first support panel portion being adapted to engage the exposed pages of the opened book, said first support panel portion being substantially transparent for permitting the exposed pages of the opened book to be viewed by the user while protecting such exposed pages from foreign matter;

b. a rear member including a second generally horizontal base portion having a front and rear ends and upper and lower surfaces, the lower surface of said second base portion being adapted to rest upon the upper surface of said first base portion, said rear member also including a second support panel portion having a front surface and extending upwardly and rearwardly from the front edge of said second base portion and generally parallel to said first support panel portion for supporting the covers of the opened book; and

c. positioning means for adjustably positioning the lower surface of said second base portion at a predetermined position upon the upper surface of said first base portion to maintain said second support panel portion by a predetermined distance commensurate with the thickness of the opened book to be supported by said holder; said positioning means comprising:

a. a first toothed rack formed upon the upper surface of said first base portion; and

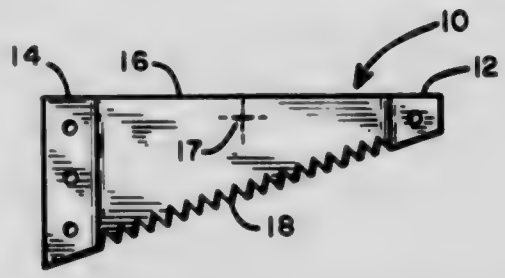
b. a second toothed rack formed upon the lower surface of said second base portion to releasably engage and interlock with said first toothed rack for adjustably maintaining said second support panel portion spaced apart from said first support panel portion by adjustable increments as determined by the distance between successive teeth within each of said first and second toothed racks; said first toothed rack includes a plurality of teeth directed generally toward the front end of said first base portion and said second toothed rack includes a plurality of teeth directed generally toward the rear end of said base portion to facilitate sliding motion of said rear member toward said front member while opposing sliding motion of said rear member away from said front member.

4,496,128

HANGING DEVICES FOR PICTURES AND THE LIKE

Verlyn N. Larsen, Sioux Falls, S. Dak., assignor to Design Concepts, Inc., Sioux Falls, S. Dak.

Filed Sep. 2, 1982, Ser. No. 414,508
Int. Cl.[3] A47G *1/24*
U.S. Cl. 248—496 7 Claims



1. Apparatus for hanging and leveling picture frames and the like, comprising a pair of generally triangular shaped members, each such member having means for attachment to a picture frame proximate a top rear corner comprising an edge channel adapted for nesting about said frame; each member further comprising a notched edge surface along a diagonal line which is the longest edge of said triangular shape.

4,496,129

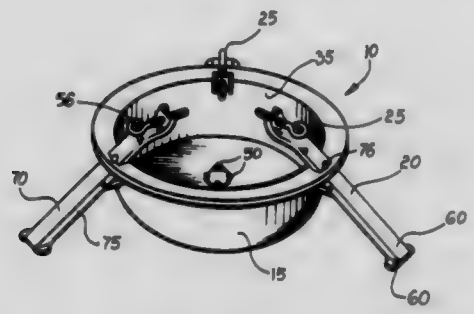
TREE STAND

George W. Waterman, East Longmeadow, and Arthur F. Dionne, Wilbraham, both of Mass., assignors to Standex International Corp., Salem, N.H.

Filed Dec. 6, 1982, Ser. No. 446,947
Int. Cl.[3] A47G *33/12*
U.S. Cl. 248—527 12 Claims

1. A tree stand comprising a bowl for receiving a tree trunk

therewithin, said bowl having a sidewall portion and a rim portion including a plurality of spaced apertures therein, said tree stand further comprising a plurality of legs extending through said apertures, said legs including inner end portions carrying means thereon for collectively clamping said tree trunk therebetween, said tree stand further comprising means extending radially inwardly from said legs and pivotally connected thereto and engaging said sidewall of said bowl, engagement of said clamping means with said tree trunk exerting outwardly directed reactive forces on the inner ends of said legs thereby pivotally urging said legs inwardly toward portions of said bowl rim portion adjacent said apertures and urging said sidewall engaging means radially inwardly into compressive engagement with said bowl at said sidewall portion thereof.

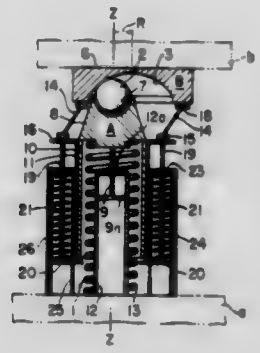


4,496,130

SUPPORT DEVICE

Jun Toyama, 4-11, Mejiro 2-Chome, Toshima-ku, Tokyo-To, Japan

PCT No. PCT/JP82/00051, § 371 Date Sep. 29, 1982, § 102(e) Date Sep. 29, 1982, PCT Pub. No. WO82/02930, PCT Pub. Date Sep. 2, 1982
PCT Filed Feb. 24, 1982, Ser. No. 433,134
Claims priority, application Japan, Feb. 25, 1981, 56-25421
Int. Cl.[3] F16M *13/00*
U.S. Cl. 248—585 10 Claims



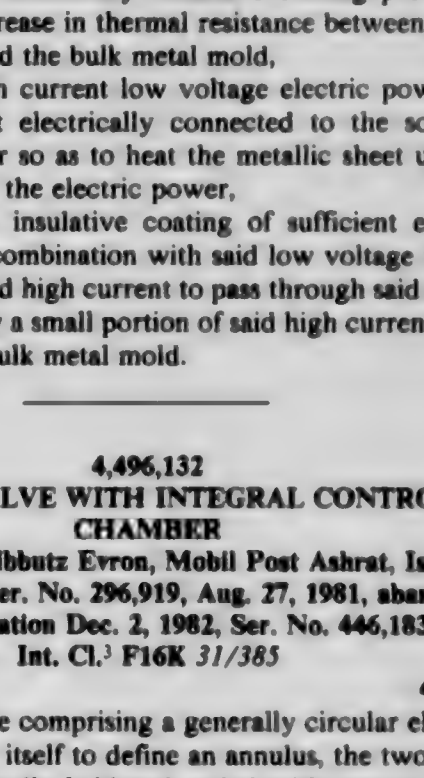
1. A support device constituted by having a first component disposed on the side of either one of a supporting structure and a supported structure, a second component disposed on the side of the other and provided with a concave surface, a spherical structure held by said first component and being in rollable contact with the concave surface of the second component, an elastic support mechanism elastically supporting either one of said first component and second component on a confronting support surface, a holding mechanism of the second component held in a manner to be slidable along the outer side of said first component and hinge-coupled to said second component, and a pulling mechanism for pulling said second component in one direction so that said concave surface and spherical structure will be in pressing contact.

4,496,131

APPARATUS FOR INJECTION MOLDING A FOAMED RESIN PRODUCT HAVING A SMOOTH SURFACE INVOLVING SURFACE HEATING OF THE MOLD BY APPLYING HIGH CURRENT LOW VOLTAGE ELECTRIC POWER

Wen-Jei Yang, 3925 Waldenwood, Ann Arbor, Mich. 48104

Division of Ser. No. 337,852, Jan. 7, 1982, Pat. No. 4,390,485.
This application May 25, 1983, Ser. No. 498,021
Int. Cl.[3] B29F *1/08*; B29D *27/00*
U.S. Cl. 249—78 20 Claims



1. Apparatus for heating several hundred degrees Fahrenheit within a matter of seconds or less at least a portion of the interior surface of a metal mold without substantially heating the bulk of the metal mold, the apparatus comprising,

a relatively thin metallic sheet of substantially high electrical resistivity covering the portions of the metal mold surface to be heated, said metallic sheet electrically insulated from the bulk metal mold surface at the interface therebetween by a relatively thin non-structural electrically insulative coating, said electrically insulative coating providing a negligible increase in thermal resistance between the metallic sheet and the bulk metal mold,

a source of high current low voltage electric power, said metallic sheet electrically connected to the source of electric power so as to heat the metallic sheet upon the application of the electric power,

said electrically insulative coating of sufficient electrical resistivity in combination with said low voltage to cause the bulk of said high current to pass through said metallic sheet and only a small portion of said high current to pass through the bulk metal mold.

4,496,132

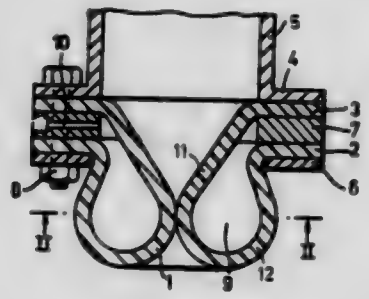
SLEEVE VALVE WITH INTEGRAL CONTROL CHAMBER

Zvi Weingarten, Kibbutz Evron, Mobil Post Ashrat, Israel

Continuation of Ser. No. 296,919, Aug. 27, 1981, abandoned.
This application Dec. 2, 1982, Ser. No. 446,183
Int. Cl.[3] F16K *31/385*
U.S. Cl. 251—5 4 Claims

1. A sleeve valve comprising a generally circular elastomer sleeve folded onto itself to define an annulus, the two peripheral ends being fixedly held and sealed with respect to each other to provide an entirely integral, expandable control chamber formed within said annulus, means providing an opening to said chamber for connection to a source of control pressure,

portions of the inner wall of the annulus closed together when said chamber is pressurized to seal the valve, said portions



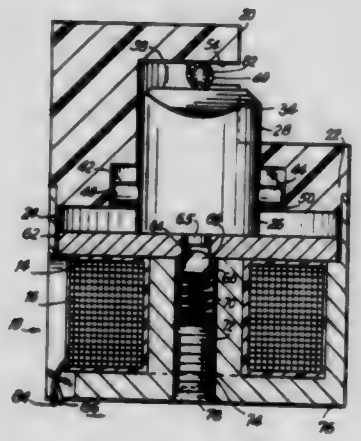
closed together at a position including a plane axially spaced downstream from any position between said peripheral ends.

4,496,133

PINCH VALVE ASSEMBLY

Akos Sule, 4 Gates Ave., Roseland, N.J. 07068

Filed Mar. 2, 1982, Ser. No. 354,053
Int. Cl.[3] F16K *7/04*
U.S. Cl. 251—7 8 Claims



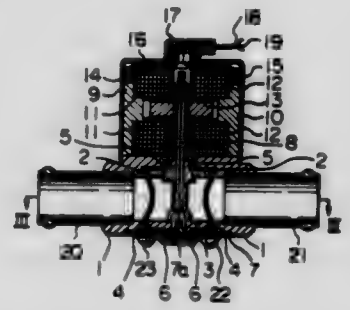
1. A pinch valve assembly comprising a valve body,
a solenoid housing mounted on said valve body,
a solenoid coil mounted in said solenoid housing with said solenoid coil having a central bore,
spring means disposed in said central bore,
armature means supported by said spring means,
a plunger member supported by said armature means,
guide means disposed on said valve body and disposed to guide said plunger relative to said valve body, with said guide means comprising a pin member projecting from the surface of said plunger and slideably disposed with respect to a slot formed in said valve body,
resilient tubing means disposed between said plunger and said valve body and with said spring means disposed to force said plunger against said tubing means and said tubing means against said valve body causing said tubing means to collapse and preventing flow through said tubing means until said solenoid coil is electrically energized, thereby drawing said armature means toward said solenoid, releasing said tubing means, and permitting flow through said tubing means.

4,496,134

ROTARY SOLENOID ACTUATOR

Takaharu Idogaki, Okazaki; Hisasi Kawai, Toyohashi; Kyo Hattori, Susono, and Kazuhiro Sakurai, Gotenba, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Aug. 27, 1981, Ser. No. 296,805
Claims priority, application Japan, Sep. 3, 1980, 55-122752
Int. Cl.[3] F16K *31/08*
U.S. Cl. 251—65 6 Claims



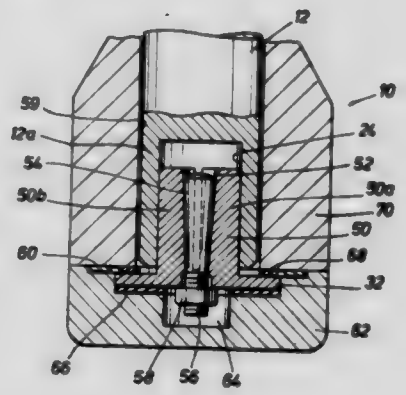
1. A rotary solenoid actuator for proportionally controlling the flow of fluid in a pipe, comprising:
a housing mounted on said pipe;
a coreless coil, attached to said housing, for generating a magnetic field in response to a control current flowing therethrough, said coreless coil having two coaxial coil sections;
a rotatable shaft disposed in a space between the coil sections of said coreless coil and having a longitudinal axis that is approximately perpendicular to the magnetic axis of said coreless coil;
a rotatable permanent magnet fixed coaxially to said rotatable shaft and disposed within said coreless coil;
a return spring having one end attached to said shaft and the other end attached to said housing; and
a valve rotor rotatably disposed within the housing, the valve rotor being fixed to said rotatable shaft and being coaxial to said rotatable permanent magnet, and wherein said rotatable shaft is a hollow shaft, and said return spring comprises a torsion bar disposed within said hollow shaft.

4,496,135

ALIGNMENT MAINTAINING APPARATUS FOR TRUNNION MOUNTED VALVES

William B. Scobie, Houston, Tex., assignor to Keystone International, Inc., Houston, Tex.

Continuation of Ser. No. 344,503, Feb. 1, 1982,. This application May 25, 1984, Ser. No. 614,300
Int. Cl.[3] F16K *1/22*
U.S. Cl. 251—308 13 Claims



1. An apparauts for maintaining a trunnion mounted valve closure element in a predetermined relationship relative to a valve seat disposed in a valve body comprising:
shaft means, said shaft means being connectable to said valve

element, the end of such shaft means distal said valve element having an axial bore defining a wall;

plug means, at least a portion of which is received in said bore, said plug means having means to axially fix said plug means relative to said shaft means, said plug means being laterally expandable, said plug means having an exterior surface provided with means for preventing axial movement of said shaft means relative to said plug means when said plug means is laterally expanded said shaft and said plug means being rotatable relative to said valve body; and

means for laterally expanding said plug means.

4,496,136

HOIST

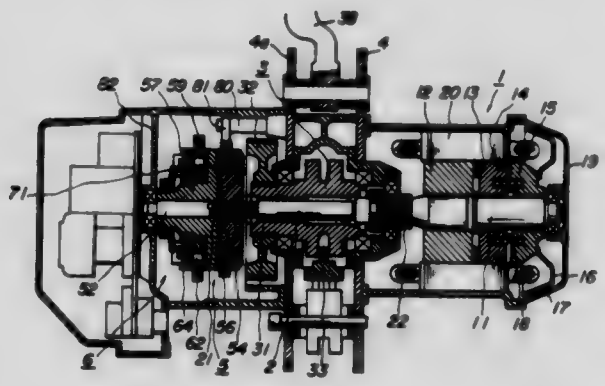
Kazuo Maeda, Yokohama, Japan, assignor to Kabushiki Kaisha Kito, Kawasaki, Japan

Filed Aug. 19, 1983, Ser. No. 524,636

Claims priority, application Japan, Aug. 25, 1982, 57-146212

Int. Cl.³ B66D *1/14*; F16D *7/00*

U.S. Cl. 254—350 **5 Claims**



1. A hoist including a shaft driven by external force, a driving shaft connected to said shaft, a reduction gear train for transmitting rotation of said driving shaft to a load sheave, and a mechanical brake assembly in said reduction gear train, said hoist comprising an overload safety device arranged in said reduction gear train, said overload safety device comprising a driven gear having a one-way clutch and rotatably driven by said driving shaft, a movable member threadedly engaged with a driven shaft of said mechanical brake assembly, a disc rotatably arranged on said movable member and carrying thereon said one-way clutch, radially inward friction plates interposed between said movable member and said disc and between said disc and a radially inward retainer member fitted axially slidably but against rotation on said movable member and radially outward friction plates arranged outwardly of said radially inward friction plates and between said driven gear and said movable member and between said driven gear and a radially outward retainer member axially slidably but against rotation on said radially inward retainer member, and resilient urging means for urging said radially inward and outward friction plates.

4,496,137

DIAPHRAGM SPRING FOR USE IN FRICTION CLUTCHES AND THE LIKE

Wolfgang Reik, Bühl, Fed. Rep. of Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

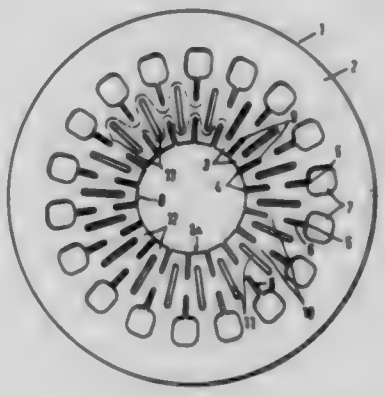
Filed Jul. 9, 1982, Ser. No. 396,805

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1982, 3204621

Int. Cl.³ F16D *13/44*; F16F *1/34*

U.S. Cl. 267—161 **10 Claims**

1. A diaphragm spring having a substantially centrally located opening and comprising an annular outer marginal portion and a plurality of prongs disposed inwardly of said marginal portion and extending toward said opening, said spring further having elongated first slots disposed between said prongs and elongated second slots extending toward said opening and disposed between said first slots and said marginal portion and having enlarged portions in the region of said marginal portion, said first slots being spaced apart from said



second slots, as considered in the radial direction of said marginal portion, and said spring further having cutouts disposed radially inwardly of said marginal portion and overlying portions of said first and second slots, as considered in the radial direction of said marginal portion, and being spaced apart from said opening.

4,496,138

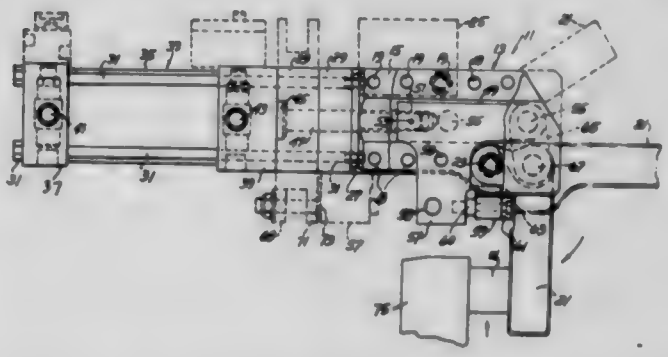
POWER OPERATED CLAMP

Leland F. Blatt, 31915 Groesbeck Hwy., Fraser, Mich. 48026

Filed Mar. 26, 1982, Ser. No. 362,512

Int. Cl.³ B23Q *3/08*

U.S. Cl. 269—32 **11 Claims**



1. In a fluid operated clamp for securing a workpiece relative to a workpiece support, including a cylinder having a reciprocal piston and connected piston rod projecting from said cylinder; a hollow body axially aligned with and connected to said cylinder and mounted upon a first support; said body being open at its top, bottom and front and including a pair of opposed spaced side plates with their one ends outturned and secured to said cylinder; said piston rod extending into said body between said side plates; a pivot bolt extending between forward portions of said side plates and secured thereto; a clamp arm at one end pivotally mounted upon said pivot bolt and in one position adapted to retainingly engage a workpiece relative to said workpiece support; and a pair of links at their one ends bearing against opposite sides of said clamp arm and pivotally connected thereto;

the improvement comprising;

a series of vertically spaced pairs of longitudinally spaced mounting holes extending through said side plates adjacent their tops and bottoms;

some of said mounting holes selectively at said tops and bottoms being adapted for registry with said first support for selective longitudinal adjustment of said body relative to said first support;

aperture spacers interposed between said side plates; a plurality of pivot bolts extending through some of said side

plate mounting holes and spacers interconnecting said side plates;

said side plates upon their interiors having a pair of opposed guide slots therein;

an elongated rod end between said side plates axially connected to said piston rod;

a pair of longitudinally spaced front and rear pivot slide pins supportably extending transversely through said rod end and at their ends slidably mounted within said side plate slots;

said pair of links at their outer ends being pivotally connected to said front slide pin;

an apertured protrusion block secured upon and extending transversely of said rod end between said side plates and outwardly thereof;

and a pre-stop spanning and secured to said side plates normally spaced from said protrusion block and spaced from and aligned with said clamp arm;

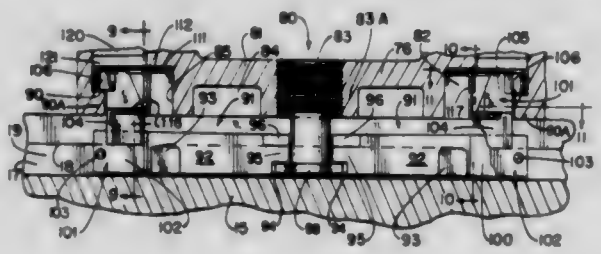
adapted for retaining engagement with said clamp arm and said protrusion block when moved to workpiece retaining position, said pre-stop limiting forward movement of said protrusion block and rod end.

4,496,139

VISE CLAMP AND SWIVEL BASE VISE USING SUCH CLAMP

John O. Lenz, Coon Rapids, Minn., assignor to Kurt Manufacturing Company, Inc., Minneapolis, Minn.

Division of Ser. No. 252,286, Apr. 9, 1981, Pat. No. 4,413,819.
This application Jun. 27, 1983, Ser. No. 508,340
Int. Cl.[3] B23Q *3/02*
U.S. Cl. 269—81 18 Claims



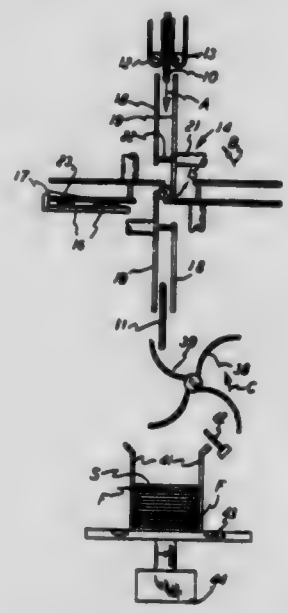
1. In combination, a vise body adapted to be supported on a tool table having a tool slot formed in an inverted T shape, said vise body including a recess formed into the base thereof and defined by a generally cylindrical first annular surface generated around a central axis of said body, and a second surface spaced outwardly from said first annular surface and defining an outer edge of said recess, said second surface including an inturned ledge portion formed so that the ledge portion includes a surface that faces away from a tool table on which the vise is positioned, a clamp member comprising an elongated body having a head end, a remote end, and a pair of laterally extending pivot lugs between the head end and the remote end, said pivot lugs being adapted to fit within a T slot of a tool table and being retained to cause the elongated body to pivot relative to the plane of such a table when a force is placed on the remote end of the elongated body, and head means mounted on said head end and extending upwardly through such slot and into the recess formed in the base of the vise, said head means having an overhanging surface that fits over said ledge, and means mounted on said vise body adjacent the central axis and engagable with the remote end of said clamp member to exert a force tending to move said overhanging surface of said head means against the ledge to clamp the ledge against a table on which the vise body is placed.

4,496,140

APPARATUS FOR HANDLING A SIGNATURE

Walter J. Stobb, Pittstown, N.J., assignor to Stobb, Inc., Clinton, N.J.

Filed Sep. 19, 1983, Ser. No. 533,302
Int. Cl.[3] B65H *39/02*
U.S. Cl. 270—54 9 Claims



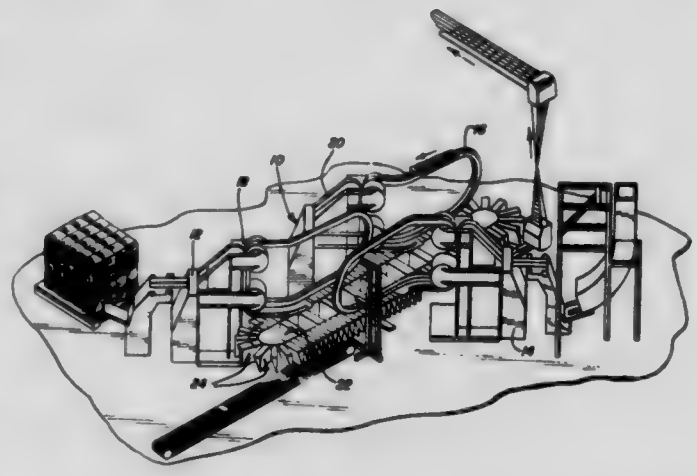
1. Apparatus for handling a signature, comprising a conveyor for moving a signature and having a terminal end for releasing the signature, a rotatably mounted signature holder (movably) disposed adjacent said terminal end for receiving the signature from said conveyor and with an edge of the signature extending beyond said holder, a stationary cutter disposed adjacent said holder and in the path of movement of the extending edge of the signature for trimming the extending edge of the signature when the signature is rotationally moved past said cutter.

4,496,141

METHOD AND APPARATUS FOR OPENING FOLDED NEWSPAPERS

Pramod D. Nayate, Wheaton, Ill., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Dec. 17, 1982, Ser. No. 450,592
Int. Cl.[3] B65H *5/30*
U.S. Cl. 270—55 6 Claims



1. A method of opening folded newspapers for a stuffer that are individually deposited into separate conveyor receptacles of the type having first and second cooperating panel members defining a pocket with a generally V-shaped cross-sectional configuration, which includes the steps of:

(a) moving the opposed groups of cut edges of a folded newspaper from contact with a first panel member into contact with the second panel member;

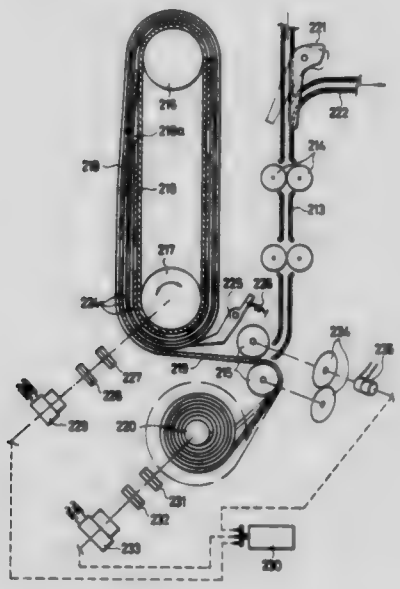
(b) applying vacuum gripping members to the exterior of the folded newspaper;
(c) pivoting the gripping vacuum members away from each other to form a center opening;
(d) pivoting a separator arm into said center opening for engaging and holding one of the groups of cut edges in contact with the second panel;
(e) discontinuing activation of said gripping member while pivoting the separator arm, and returning the other group of cut edges into contact with the first panel member.

4,496,142

SHEET SUPPLYING DEVICE FOR TWO-SIDED COPYING

Yasuo Iwasaki, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 22, 1983, Ser. No. 487,661
Claims priority, application Japan, Apr. 22, 1982, 57-66219; Aug. 28, 1982, 57-148501
Int. Cl.³ B65H *5/22*
U.S. Cl. 271—3 **16 Claims**



1. A sheet supplying device for two-sided copying, comprising:
a branched passage provided on the sheet discharge side of a reproduction apparatus;
sheet delivery switching means provided in said branched passage;
sheet winding belt means in one sheet delivery passage;
means for unwinding said sheet winding belt means; and
sheet conveying means for conveying a sheet unwound from said winding belt to the sheet supply side of said apparatus in a manner such that a non-recorded side of said sheet is presented for recording.

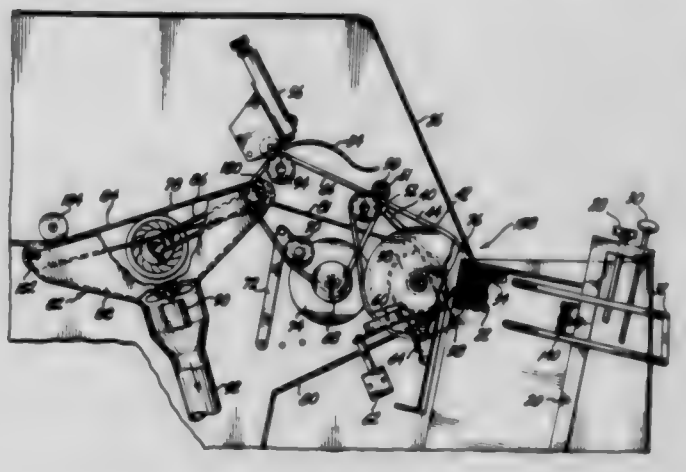
4,496,143

SHEET FEEDER

Robert K. Weyer, Mercer Island, Wash., assignor to EMF Corporation, Redmond, Wash.

Filed Jun. 1, 1982, Ser. No. 384,064
Int. Cl.³ B65H *3/64*
U.S. Cl. 271—112 **10 Claims**

1. A feed mechanism for feeding sheets seriatim from a stack of sheets comprising;
tray means for receiving a stack of sheets with said sheets positioned in a plane angled slightly from the vertical and with a top edge of said stack exposed;
feed drive wheels mounted for rotation about an axis substantially parallel to said plane; and
means to induce an air flow to pass first across the top edge of said stack and thence through said feed drive wheels whereby the top portion of the first front sheet from said stack is bendingly urged forward by said air flow into engagement with said feed drive wheels for removal of said first front sheet from said stack, said induced air flow across the top edge of said stack being temporarily and substantially interrupted by the first front sheet's full



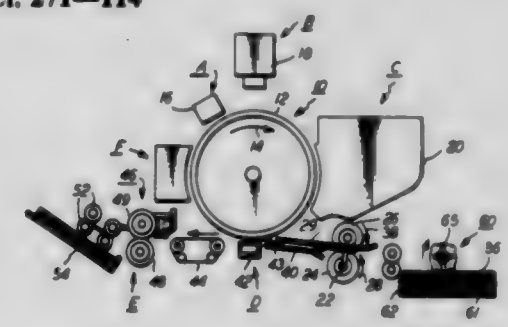
engagement with said feed drive wheels whereby the next front sheet of said stack remains quiescent until said first front sheet begins its disengagement from said feed drive wheels, thereby allowing the induced air flow to again begin to pass across the top edge of said stack.

4,496,144

PADDLE WHEEL FEEDER WITH NORMAL FORCE OPTIMIZATION AND BLADE CONTROL

William D. Perun, Webster, and Gerald M. Garavuso, Macedon, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 19, 1982, Ser. No. 409,392
Int. Cl.³ B65H *3/06*
U.S. Cl. 271—114 **7 Claims**



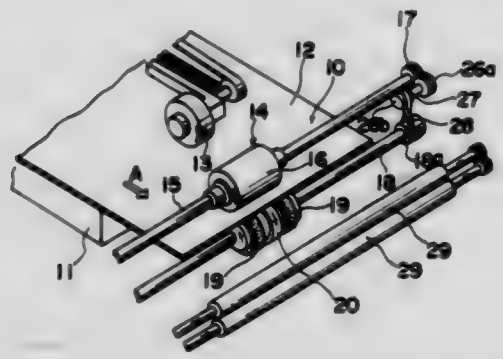
1. A paddle wheel feeder adapted to feed sheets seriatim from a stack of sheets with a diminished normal force spike, comprising:
support means for supporting a stack of sheets to be fed;
paddle wheel means supported on a shaft and having a plurality of blades positioned to sweep the top of said stack of sheets and feed sheets individually therefrom; and
control means adapted to reduce the normal force spike resulting from individual blades striking the top sheet in said stack of sheets, said control means including means for incrementally rotating said paddle wheel means to a position where each blade is immediately adjacent the top sheet in said stack of sheets, stopping the rotation momentarily as each blade of said paddle wheel means is in said position and then continuing the rotation such that the normal force produced by the sweep of said plurality of blades across said stack of sheets is less peaked and thereby reducing multifeeding of sheets.

4,496,145

SHEET FEEDING APPARATUS

Kazuyuki Fukui, Toyohashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Azuchi, Japan

Filed Mar. 11, 1982, Ser. No. 357,318
Claims priority, application Japan, Mar. 14, 1981, 56-38093
Int. Cl.[3] B65H *3/52*
U.S. Cl. 271—122 16 Claims



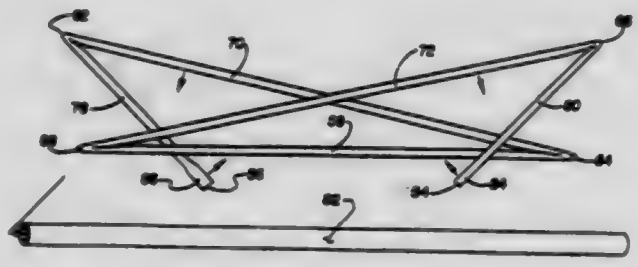
1. An automatic sheet feeding apparatus for use in a copying machine and the like which comprises: a hopper base for accommodating stack of sheet material thereon; a driven roller for feeding the sheet material in the hopper base forward one by one; a sheet separating means for receiving the sheets fed by the driven roller and separating a single uppermost sheet from other sheets below the uppermost sheet and also feeding the uppermost sheet forward; and conveyance rollers for feeding the top sheet fed by the separating means forward, said separating means comprising a feeding rotatable member which rotates in the direction of movement of the sheets to feed the single uppermost sheet forward, a separating rotatable member which contacts the feeding rotatable member and rotates in the direction opposite to the movement of sheets to prevent the sheets below the uppermost sheet from moving forward, and a follower rotatable member which contacts the feeding rotatable member and rotates together with the feeding rotatable member, said feeding rotatable member having a peripheral surface which is harder than that of the separating rotatable member, said follower rotatable member having a peripheral surface of a material having coefficient of friction smaller than that of each of the feeding rotatable member and the separating rotatable member, and the width of the contact area, in the direction perpendicular to the rotational axes of said rotatable members, between the separating rotatable member and the feeding rotatable member being greater than that between the follower rotatable member and the feeding rotatable member.

4,496,146

COMPRESSIBLE PORTABLE EXERCISING APPARATUS WITH CONTAINER

James E. Jackemeyer, 21 Cedar St., Gardner, Mass. 01440

Division of Ser. No. 130,747, Mar. 17, 1980, abandoned. This application Jul. 30, 1982, Ser. No. 403,730
Int. Cl.[3] A01B *5/22*
U.S. Cl. 272—74 13 Claims



10. A portable exercise apparatus for manipulation by a user comprising: a container, a self-supporting elongated member of a generally quadrilateral configuration, said member having spaced-apart distal and proximal portions hingedly joined to side portions of equal length, said member being disjoined at opposite ends thereof, said side, distal and proximal portions being folded upon one another into a generally parallel relationship with one another to form a compressible elongated configuration, said member in said folded condition being compressed to an extent to be received within said container, and said member in said folded condition being frictionally held in said container.

4,496,147

EXERCISE STAIR DEVICE

Richard J. DeCloux, Manchester, N.H.; Herbert H. Loeffler, Arlington, Mass.; James S. MacConkey, Winchester, Mass., and E. Hubbard Yonkers, Watertown, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed Mar. 12, 1982, Ser. No. 357,791
Int. Cl.[3] A63B *21/00, 23/04*
U.S. Cl. 272—130 10 Claims



1. An exercise device comprising:
a pair of inclined side-by-side tracks;
a pair of steps, each mounted for translation in a different one of said tracks and each unrestricted in the amount of stroke during exercise, said steps being phased only hydraulically by an open loop system such that increased fluid expansion during usuage results only in the raising of the steps, thereby eliminating pressure increase due to thermal expansion, said open loop system including said steps and a pair of hydraulic actuators for respective steps, each actuator including a cylinder and a rod disposed therein, with one end of a rod supporting a respective step; means for coupling fluid from one actuator to the other such that as one rod moves in one direction within the associated cylinder, the rod in the other cylinder moves in an opposite direction, said rods in unison being permitted to extend further up each cylinder during usage in accordance with the expansion of the fluid volume in the system due to the energy introduced into the system during usage such that the thermally induced pressure within the system stays substantially contant; and, fluid metering means interposed in said coupling means and including a variable restricted orifice, the size of said orifice determining the fluid flow rate, the stepping frequency, and thus the exercise rate, whereby excercise rate may be easily adjusted.

4,496,148

SPORTING EVENT ANALYSIS DEVICE

Barry R. Morstain, 28 E. Cleveland Ave., Newark, Del. 19711, and Melvin F. Danner, Frederick, Md., assignors to Barry R. Morstain, Newark, Del.

Filed Dec. 9, 1981, Ser. No. 329,140
Int. Cl.[3] A63B *71/04;* A63F *7/00*
U.S. Cl. 273—1 E 19 Claims

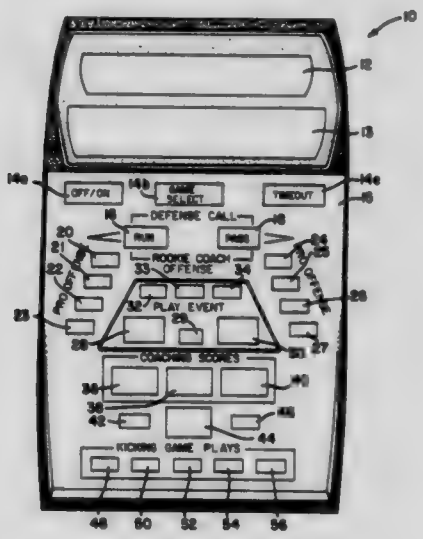
18. A sports analysis device for use by at least one user in conjunction with observation of an actual sporting event,

involving actual plays and actual teams, wherein said analysis device is utilized simultaneously with the course of the actual sporting event to analyze the effectiveness of said at least one user in choosing play strategy when compared with the team's actual plays and actual results, said actual sporting event being of a type selected from a plurality of types of events, said device comprising:

selection means actuable by said at least one user to select a play strategy choice deemed by said at least one user to be a play strategy appropriate for implementation in the actual sporting event;

memory means for memorizing each said play strategy choice selected by said at least one user;

entry means for entering into said device the actual team's actual play strategy and the quantitative empirical results of the actual play that took place in the actual sporting event, wherein the quantitative empirical results can be positive or negative numbers;



processing means for processing said play strategy choice, actual play strategy, and quantitative empirical results entered into said device by said at least one user, said processing means serving to analyze the same and to evaluate the effectiveness of said play strategy choice selected by each said at least one user by comparing the same with the actual team's actual play strategy and based upon the quantitative empirical results of the said actual play; and

display means for displaying feedback messages apprising each said at least one user of the analysis and evaluation of said effectiveness of said selected play strategy;

wherein said selection means and said entry means are implemented by a keypad scanner removably mounted on said device, said keypad scanner being removable so as to be interchangeable with another keypad scanner, whereby to convert said device from one type of sporting event to another.

4,496,149

GAME APPARATUS UTILIZING CONTROLLABLE AUDIO SIGNALS

Robert B. Schwartzberg, 41 Madison Ave., Fanwood, N.J. 07023

Filed Nov. 10, 1982, Ser. No. 440,544

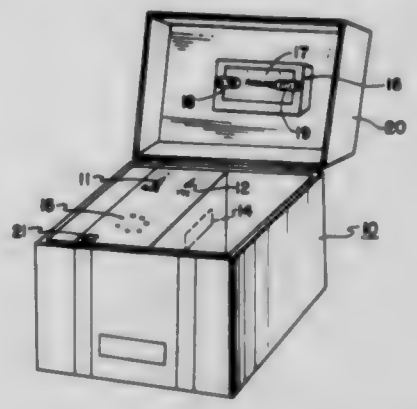
Int. Cl.³ A63H *5/00*

U.S. Cl. 273—1 E **5 Claims**

1. A game apparatus employing an object capable of emitting an audible signal to enable one successful player of a plurality of players to locate the object, when hidden, by responding to the sound emanating from said object, comprising:

a housing manifesting said object and having an internal hollow, said housing being of a box-like configuration with an opened top and having a cover member pivotally secured to said housing for selectively covering said opened top,

an oscillator circuit located in the hollow of said housing and operative when energized to provide an output signal manifesting a repetitive waveform of an adjustable amplitude and rate; control means positioned in said housing and coupled to said oscillator circuit to selectively adjust the amplitude and rate of said waveform wherein said control means includes a first control means for independently varying the amplitude of said oscillator circuit and a second control means for independently varying the rate of said oscillator whereby a player can select both the amplitude and frequency of the waveform according to



his preference, said oscillator providing a ramp voltage output signal where the duration between ramps is controlled by said second control means,

sound producing means responsive to said ramp output signal to produce an audible signal according to said ramp waveform, and

repository means located in said housing for retaining an award deposited therein by a player as an incentive to said successful player capable of locating said housing by responding to the sound emitted from said housing.

4,496,150

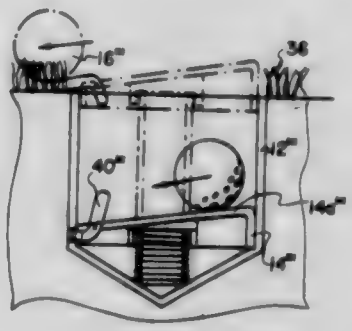
GOLF BALL EJECTOR FOR GOLF GREEN HOLE LINER

John J. McGlew, Box 823, Tuxedo Park, N.Y. 10987

Filed Jul. 15, 1982, Ser. No. 398,597

Int. Cl.³ A63B *57/00*

U.S. Cl. 273—34 A **5 Claims**



1. A golf ball ejection device for use with a golf course hole liner such as used in golf course greens and putting greens, comprising a golf ball support adapted to be positioned in the liner, and means associated with said golf ball support for enabling a golf ball entering said cup to actuate a release which allows said support to be moved upwardly to eject a golf ball which has entered into the hole liner and move it out of the liner, and indicator means associated with said ball support for recording when a ball has been ejected out of the liner.

4,496,151

BOWLING AID DEVICE

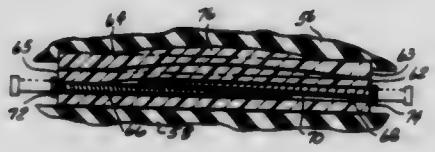
Aloysius K. Tureaud, 213 E. Washington St., Ann Arbor, Mich. 48104

Continuation-in-part of Ser. No. 302,924, Sep. 16, 1981, abandoned. This application Nov. 10, 1982, Ser. No. 440,781

Int. Cl.[3] A63B *69/00*

U.S. Cl. 273—54 B 10 Claims





1. A bowling aid device, comprising:

a palm member for maintaining a preselected spacing between the palm of a bowler's hand and a bowling ball gripped by the bowler, said palm member having a first face adapted to engage said palm and having a second face adapted to conformingly engage said bowling ball,

said palm member including a plurality of discrete layers interposed between said first and second faces and means for releasably securing said layers between said first and second faces,

at least portions of the outer edges of said layers defining sections of said first face of said palm member,

whereby individual ones of said layers may be added or removed from said palm member and thereby alter the spacing between siad palm and said bowling ball.

4. A bowling aid device for maintaining a preselected spacing between the palm of a bowler's hand and a bowling ball, comprising:

a first section adapted to engage said bowler's palm;

a second section adapted to engage said bowling ball; and

means interposed between said first and second sections for altering the spacing between said first and second sections, including a member which is extensible in a direction extending between said first and second sections upon the application of compressive force on opposite lateral sides thereof, whereby extension of said member alters the spacing between said first and second sections, said altering means further including means for applying compressive force on said opposite lateral sides of said member.

4,496,152

RACQUETS WITH PROTECTIVE BUMPER STRIP

Jonathan C. Mott, Cranary Cottage, Dunsford Rd., Loxhill, Near Godalming, Surrey, England

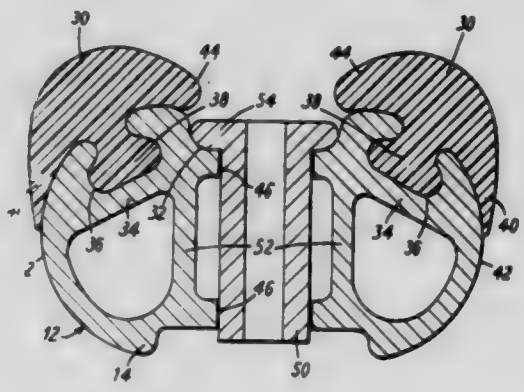
Filed Nov. 3, 1981, Ser. No. 317,773

Claims priority, application United Kingdom, Nov. 4, 1980, 8035375

Int. Cl.[3] A63B *49/14*

U.S. Cl. 273—73 C 6 Claims

1. A racquet having a metal head and a handle attached to said head, the outer surface of the head having at least two grooves therein which are disposed one on each side of the median plane of the head and each extend around a substantial proportion of the circumference of the head on each side of a point opposite the attachment of the handle to the head, said grooves having a base annd mouth, each groove being wider at its base than at its mouth and having secured therein a respective relatively soft bumper member which extends over and serves to cover a substantial proportion of the outer surface of the head, each bumper member having a mounting portion shaped to substantially fill its respective groove, whereby the bumper members are locked into their respective grooves, and wherein the outer surface of the head has a further groove



therein which extends around the greater part of the circumference of the head and lies in the median plane of the head between the two bumper members, the further groove containing grommets through which the stringing of the racquet passes, at least one bumper member being shaped and dimensioned to slightly overlie its respective edge of the mouth of the further groove and trap the grommets therein.

4,496,153

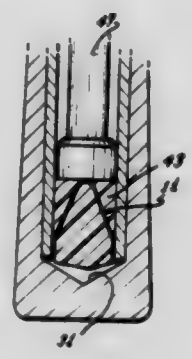
METHOD OF WEIGHTING AN ARTICLE

Rudolph J. Kochevar, 252 Arbolada Dr., Arcadia, Calif. 91006

Filed Jan. 10, 1984, Ser. No. 569,583

Int. Cl.[3] A63B *53/02*

U.S. Cl. 273—80.8 20 Claims



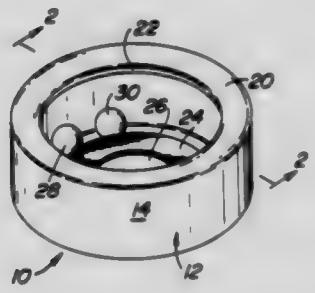
1. A method of making a weighted article comprising:

providing a member having a cavity with an anchor affixed to said member and extending within the cavity at least part way across the cavity;

placing a mass of permanently deformable weight composition into the cavity with such mass being sufficient to give the member approximately the desired weight; and

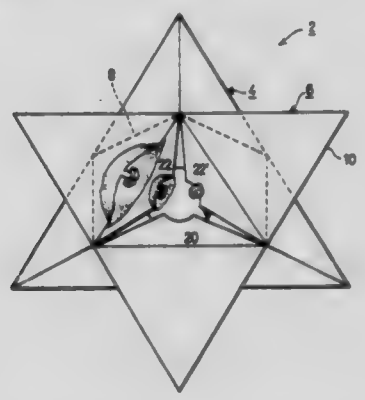
deforming the mass of weight composition in the cavity to substantially embed at least a portion of the anchor in the mass of weight composition with the mass of weight composition substantially circumscribing at least a region of the anchor to interlock the mass of weight composition and the anchor whereby the mass of weight composition is retained in the cavity.

4,496,154
WHIRLEY BALLS AMUSEMENT DEVICE
Dov Shazeer, 1425 Magee Ave., Philadelphia, Pa. 19111
Filed Aug. 10, 1982, Ser. No. 406,811
Int. Cl.[3] A63F 7/00
U.S. Cl. 273—109 10 Claims



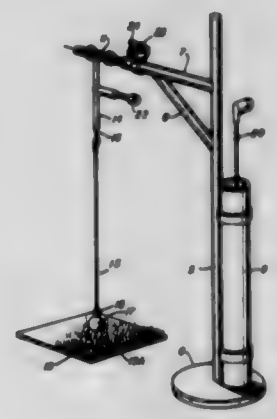
4. A device for demonstrating the principal of conservation of momentum comprising a housing having an open top and a horizontally disposed upwardly facing circular groove, said groove being defined on its outer periphery by a vertical wall substantially higher than the depth of the groove, said groove defined by a rough surface on inner and outer walls of said groove, at least two balls of hard material in said groove, said balls being of equal mass, said balls having snug fit in said groove and substantially simultaneously contacting said rough surface on both the inner and outer walls of said groove, said housing being of a size so that it can be hand-held and manipulated to cause the balls to move in opposite directions in said groove and contact one another, and said inner wall having a sufficient height to prevent movement of the balls radially inwardly during normal use.

4,496,155
HAND-MANIPULATABLE THREE-DIMENSIONAL PUZZLE
Israel Goldfarb, 206 Bnei Efraim St., Maoz Aviv, Tel-Aviv, Israel
Filed Sep. 8, 1982, Ser. No. 415,923
Claims priority, application Israel, Jan. 22, 1982, 64833
Int. Cl.[3] A63F 9/08
U.S. Cl. 273—153 S 15 Claims



12. A hand-manipulatable, three-dimensional puzzle including a center sphere enclosed by eight segments, one of said segments being fixed to said sphere and the others being movable over its outer face along a plurality of orbits including at least one orbit for each of three orthogonal planes, each of said plurality of segments being of congruent triangular shape and having an outer flat triangular face, all said pluality of segments together defining an octahedron-shaped body; each of said triangular segments carrying an outer element in the shape of a tetrahedron having its vertex directed outwardly, whereby said outer elements define with said octahedron-shaped body, a pair of inter-penetrating tetrahedra presenting the outline appearance of a six-pointed star whenever the device is viewed along any axis extending through the vertex of each of the eight outer tetrahedra.

4,496,156
GOLF PRACTICE DEVICE
Rocco Centafanti, 27 India St., Portland, Me. 04101
Filed Feb. 24, 1983, Ser. No. 469,229
Int. Cl.[3] A63B 69/36
U.S. Cl. 273—184 B 1 Claim

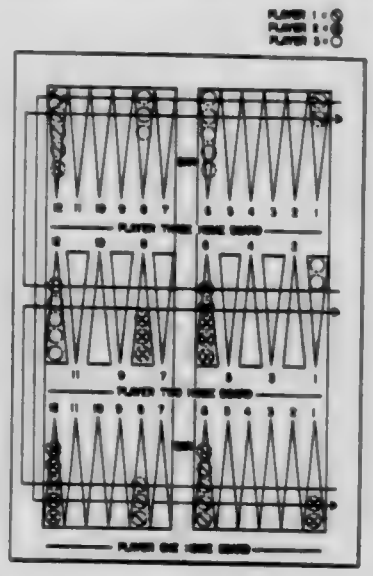


1. Apparatus for use in practicing golf ball driving with a golf ball, said apparatus including a vertical support provided with a laterally disposed arm, a counter mounted on said arm and having an actuator operated by a downward push, a rotor, means connecting said rotor to said support with the rotor axis horizontal and the rotor offset relative to the support to overlie a theoretical tee site, said rotor including a rigid member disposed normal to the axis thereof and provided with a horizontal arm disposed towards the vertical support and including a member positioned to have a path inclusive of the actuator as the rotor turns, the counter so positioned that the actuator is engaged immediately after the ball passes through the zenith of its orbit, a golf ball, a flexible tether connecting said ball to the free end of the rigid member, said rotor axis spaced from the tee site a distance such that a ball struck with driving force will have an orbital path greater than the height of the person using the apparatus, and the length of said rigid member such as both to initiate the turning of said rotor and to limit the extent to which the path of a struck ball can depart from the normal plane established by the rigid member.

4,496,157
THREE PLAYER BACKGAMMON GAMEBOARD
Claire Gilliland, 2616 Gibson, Everett, Wash. 98204
Division of Ser. No. 230,718, Feb. 2, 1981,. This application Sep. 29, 1982, Ser. No. 428,047
Int. Cl.[3] A63F 3/00
U.S. Cl. 273—248 5 Claims

1. A game board especially suited for three-person play comprising a field of play including a rectangular, planar area substantially free from holes including three substantially parallel rows of twelve points each,

and a bar intersecting each of the three rows between its sixth and seventh point, the bar dividing the field into two



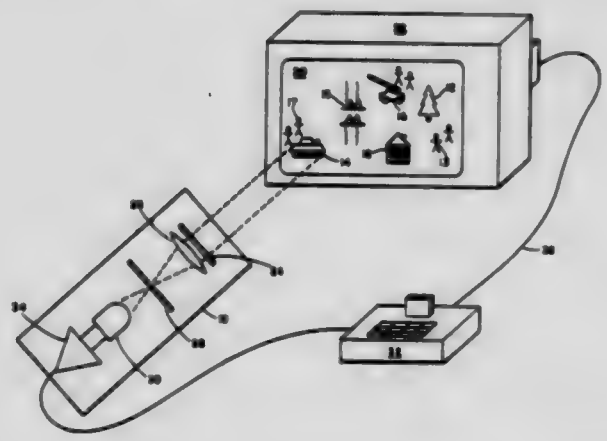
smaller rectangles each rectangle including eighteen points having six points from each row.

4,496,158

ELECTRO-OPTICAL SENSOR FOR COLOR TELEVISION GAMES AND TRAINING SYSTEMS

Ralph H. Baer, Manchester, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Dec. 13, 1982, Ser. No. 449,069
Int. Cl.[3] A63F *9/22*
U.S. Cl. 273—312 6 Claims



1. Apparatus for sensing at a distance one or more colored symbols shown on a display from among at least one other symbol of a different color, comprising:

an electro-optical sensor disposed at a distance from a display and capable of receiving light rays from symbols representing objects shown on the display;

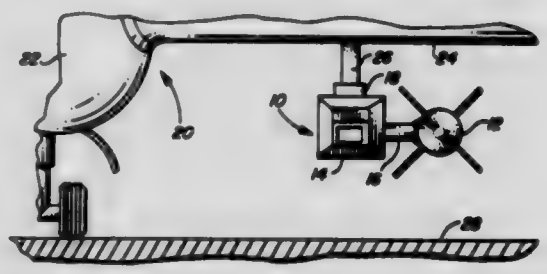
said electro-optical sensor including a photosensitive detector and only a single color filter associated therewith to limit the reception of light detected by the photosensitive detector to light from displayed symbols of predetermined colors while light from displayed symbols of other colors is not detected by the photosensitive detector, said color filter comprising an optical filter including a material which passes visible radiation of certain predetermined wavelengths and excludes visible radiation of certain other wavelengths, wherein the beam of light entering said single color filter has not been split by a beam splitter.

4,496,159

AERIAL GUNNERY TARGET DEPLOYMENT SYSTEM

Elmo A. Dugan, 8639 Hatillo Ave.; Louis G. Kish, 8542 Lurline Ave., both of Canoga Park, Calif. 91306; Edwin J. Miller, 30473 Mulholland Hwy., Space 18, Agoura, Calif. 91301, and George J. Fabian, 6640 Darby Ave., No. 11, Reseda, Calif. 91335

Filed May 24, 1983, Ser. No. 497,570
Int. Cl.[3] B64D *3/02*
U.S. Cl. 273—341 6 Claims



1. An improved aerial gunnery target and tow reel system, said system comprising, in combination:

(a) an aerial target;

(b) a housing affixable to an airframe and disposed substantially parallel to and to one side of said target, said housing and target lying, in a target stored position, outside the slipstream of the airframe;

(c) a cable spool secured for rotation in said housing, said cable spool having a towline cable wound therearound, said cable being connected to said target for towing said target;

(d) reel motive and control means in said housing for reeling and unreeling said cable from said spool; and,

(e) an improved target launcher assembly in said housing for launching said target away from said housing, said launcher assembly including:

(1) a launcher arm extending horizontally from the side of the housing, releasably secured to said target and movable with said target between a target stored position and a target launch position, and

(2) launcher arm motive means for rotating said arm and target about an axis longitudinally of said housing approximately 90 degrees downwardly between said target stored and a target launch position beneath the housing whereby only said target is outside the aircraft pressure field when rotated into said launch position.

4,496,160

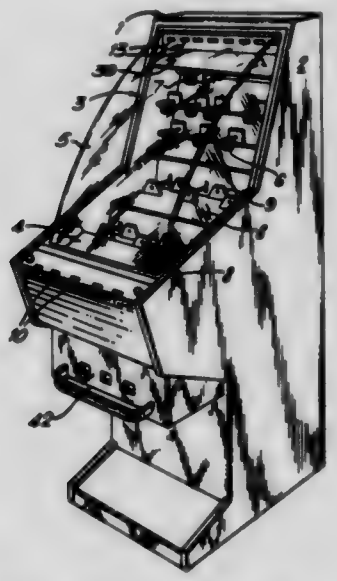
COIN PROJECTING AND TARGET GAME APPARATUS

Michael Wichinsky, and LeRoy N. Gutknecht, both of 2607 S. Highland Dr., Las Vegas, Nev. 89109

Filed Dec. 14, 1982, Ser. No. 449,742
Claims priority, application United Kingdom, Dec. 15, 1981, 8137785
Int. Cl.[3] A63F *9/02*
U.S. Cl. 273—369 12 Claims

1. A game apparatus comprising a cabinet defining a playing area, means for receiving and accepting or rejecting a playing piece such as a coin or token, means for projecting an accepted playing piece within the playing area, a plurality of shrouded sensors disposed within an upper portion of the playing area and which may be actuated by a projected playing piece and operative to cause the apparatus to register a predetermined award, and at least one shelf disposed in a lower portion of the

playing area and onto which projected playing pieces may fall after projection, said shelf being traversed by pusher means



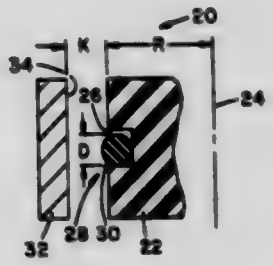
which push playing pieces collected thereon towards an edge of the shelf.

4,496,161

RADIALLY EXTENSIBLE JOINT PACKING WITH O-RING

Richard J. Fischer, Aurora, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Oct. 25, 1982, Ser. No. 436,241
Int. Cl.[3] F16J *15/10, 15/56*
U.S. Cl. 277—1 7 Claims



7. A method for sealing between a cylindrical type bore and a piston-type member with an O-ring assembly comprising the steps of:

providing a radially extensible elastomeric body having an exterior surface portion that is substantially circular when viewed in axial cross section with an O-ring receiving, circumferential groove;

fitting an elastomeric O-ring in the groove; radially extending the body and contacting a portion of the bore while simultaneously circumferentially extending the groove and O-ring;

pressing the O-ring into sealing engagement with the cylindrical bore by means of the radially extensible elastomeric body whereby the generally piston-shaped elastomeric body provides the step of adjusting the O-ring assembly to accommodate various size cylindrical bores to the extent that there is zero clearance between the body and bore.

4,496,162

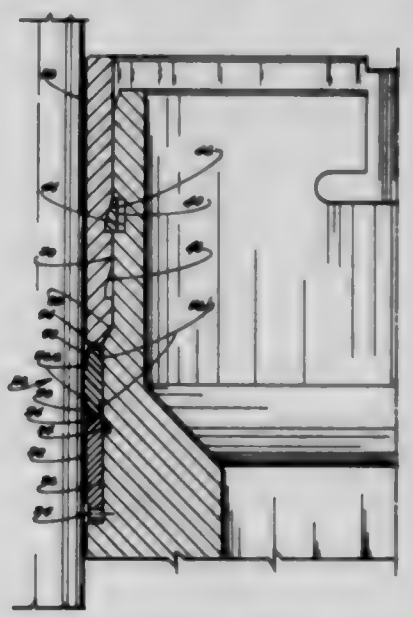
WELL SEALING ASSEMBLY HAVING RESILIENT SEAL RING WITH METAL END CAPS

James P. McEver, and James Lewandowski, both of Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Aug. 23, 1982, Ser. No. 410,503
Int. Cl.[3] F16J *15/12;* E21B *33/128*
U.S. Cl. 277—9.5 4 Claims

1. A well sealing assembly for sealing between the interior surface of a housing and the exterior of a tubular body, said tubular body having a first exterior surface, a second exterior surface which has a larger diameter than said first exterior surface and a tapered surface between said first and second surfaces, comprising

a seal ring assembly having a resilient ring with upper and lower flat surfaces, an interior convex surface and an exterior flat surface and annular metal end caps having flat portions bonded on said upper and lower flat surfaces of said resilient ring, inner legs tapering with the convex interior surface of said resilient ring and outer legs on the flat exterior surface of said resilient ring, the interior surface of said resilient ring being in close spaced relation-



ship to said first surface of said tubular member when said seal ring assembly surrounds said first surface, and

means for moving said seal ring assembly axially from its position surrounding said first surface of said tubular member, over said tapered surface and into its set position surrounding said second surface,

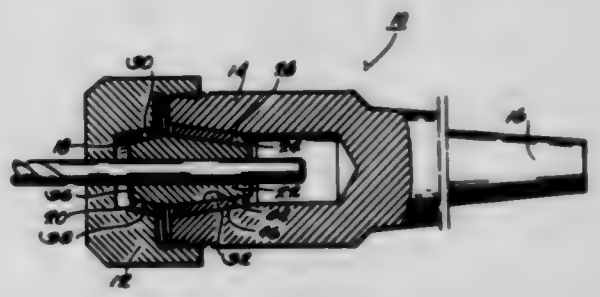
said resilient ring having sufficient resiliency and volume to expand outward when moved to said set position to seal against said interior housing surface and to move the exterior legs of said end caps into metal-to-metal sealing engagement with said interior housing surface and to seal against said second surface with said interior legs in metal-to-metal sealing engagement with said second surface.

4,496,163

ADAPTORS FOR A COLLET CHUCK

Kenneth G. Bernfeld, 5119 62nd St., Kenosha, Wis. 53142

Filed Aug. 3, 1981, Ser. No. 289,346
Int. Cl.[3] B23B *5/22, 31/10, 5/00;* B25G *3/10*
U.S. Cl. 279—1 A 2 Claims



1. In a collet chuck assembly including a selected collet for a pre-selected drill size and a collet nut for a collet chuck wherein the collet chuck has an inside taper which mates with the outside rearwardly extending taper of the collet and the collet nut has an inside taper which mates with the outside forwardly extending taper of the collet, the improvement comprising a set of first and second adaptor rings, each adaptor ring having an inside frusto-conical surface and an outside

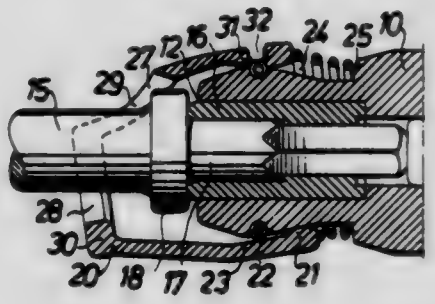
frusto-conical surface parallel to the inside frusto-conical surface, said first adaptor ring having an inside taper complementary to the outside forwardly extending taper of the collet and an outside taper complementary to the inside taper of the collet nut and said second adaptor ring having an inside taper complementary to the outside rearwardly extending taper of the collect and an outside taper complementary to the inside taper of the collet chuck and wherein said adaptor rings enable use of any of a plurality of selected collets for a wide range of pre-selected drill sizes in a single collet chuck.

4,496,164

CHISEL RETAINING DEVICE

Gunnar C. Hansson, Stockholm, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Nov. 24, 1981, Ser. No. 324,436
Claims priority, application Sweden, Nov. 27, 1980, 8008307
Int. Cl.[3] B23B *31/08*
U.S. Cl. 279—19.6 5 Claims



1. A chisel retaining device for a power operated percussion tool producing an impact in a given direction, wherein the percussion tool includes a housing (10) having a front end, and the chisel includes a chisel stem (17), the chisel retaining device comprising:

a tubular lock shell (20) surrounding the chisel stem (17) as well as the front end of the tool housing (10) and being pivotably supported on the tool housing (10) for movement between a chisel locking position and a chisel releasing position;

said lock shell (20) having a rear end with an internal annular shoulder (21) facing an impact direction of the tool;

said tool housing (10) having an annular peripheral groove (23) formed thereon;

a toroidal support spring (22) received in said peripheral groove (23) of said tool housing (10) for abutting cooperation with said annular shoulder (21);

said lock shell (20) having an inwardly projecting heel (31) which together with said annular shoulder (21) and said toroidal support spring (22) forms a pivot means for the lock shell (20).

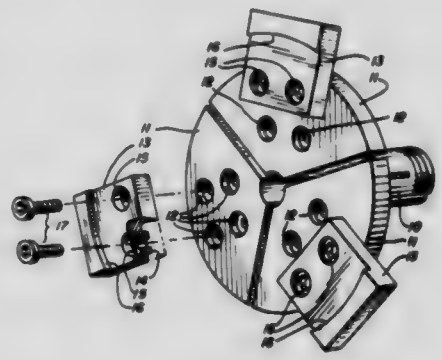
4,496,165

ADJUSTABLE COLLET

Josef Schrekeis, Niles, and Gerard P. Murphy, Chicago, both of Ill., assignors to The Board of Trustees of The University of Illinois, Urbana, Ill.

Filed Jan. 18, 1983, Ser. No. 443,856
Int. Cl.[3] B23B *31/20*
U.S. Cl. 279—46 R 2 Claims

1. An adjustable collet comprising in combination a step collet, a plurality of extension bars, and a plurality of jaws for securely holding a work-piece, the step collet face having counter-bored and threaded holes spaced thereon, the extension bars having hollow bosses projecting from one surface which are aligned with counter-bored holes on the opposite surface, and the jaws having hollow bosses projecting from one surface which are aligned with counter-bored holes on the opposite surface, the extension bars being fastened to the collet face by mating the bosses with the holes in the collet face and by engaging screws passing through the counter-bored holes and the hollow bosses to the threaded hole in the collet face, and the jaws being fastened to the extension bars by mating the jaw bosses with the counter-bored holes in the extension bars



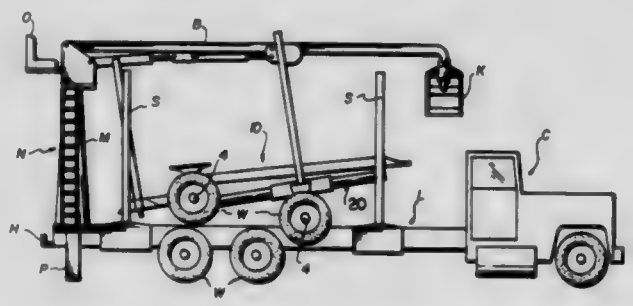
and engaging screws passing through the counter-bored and hollow bosses in both jaws and extension bars to the threaded hole in the collet face.

4,496,166

TRANSLOTOR LOG TRAILER

Clifford W. Anderson, Rte. 1, Box 205-H, Spearfish, S. Dak. 57783

Filed Mar. 23, 1982, Ser. No. 360,935
Int. Cl.[3] B62D *53/06*
U.S. Cl. 280—401 4 Claims



1. A trailer for increasing the payload of a truck which is adapted to carry elongate articles such as logs, pipes or the like and is stored on said truck when not in use comprising, in combination:

a forward trailer segment attached to a rear portion of said truck,

a rearward trailer segment attached to a back portion of said forward trailer,

means on a trailing portion of said truck for placing first said rearward and then said forward trailer segments on and off said truck and to load and unload said truck and trailers of their payload, and means for nesting said forward trailer segment and said rearward trailer segment,

wherein said nesting means comprises a wheeled axle on said forward trailer segment and cradle members on said rearward trailer segment dimensioned to receive said forward trailer axle,

wherein said rearward trailer segment includes an axle assembly slidably and rotatably disposed about and along the length of said rearward trailer segment to respectively provide nesting clearance during storage and a rear suspension system,

wherein said rearward trailer segment axle assembly includes locking means to limit relative sliding motion when in use,

wherein said forward trailer segment includes a support means graspable by said placing means which includes a tined claw on the truck for placement of said forward trailer between a stored and used position,

wherein said forward trailer segment includes a fifth wheel extending up from an axle assembly which carries said

wheeled axle, said fifth wheel pivot thereto and adapted to attach to said rearward trailer segment,

including a support beam extending forwardly of said forward trailer axle assembly and having a latching eyelet at a leading end thereof, said latching eyelet adapted to connect to a hitch on the truck,

wherein said rearward trailer segment includes a forward fifth wheel assembly adapted to connect to said fifth wheel of said forward trailer segment, a rearwardly extending substantially cylindrical support beam upon which said axle assembly is disposed, said axle assembly and said fifth wheel supporting cross-beams transverse to said cylindrical support means having vertically extending posts to form log cradles,

wherein said locking means extends between said axle assembly to said support beam and includes a pivoted locking arm on said axle assembly engageable on a ring on said beam,

including electrical and hydraulic conduits extending rearwardly of the truck and carried on said trailers to operate respectively lights and brakes,

wherein said fifth wheel of said forward trailer includes a central bore defined by a depending cylindrical sleeve reinforced to a bottom face of said forward trailer fifth wheel,

said axle assembly of substantially inverted U shaped configuration having bearing means to fix said axle thereto,

brackets on both said U shaped axle assembly and said fifth wheel facing each other and interleaved, interconnected by axles between said brackets to provide articulation of said fifth wheel thereabout.

4,496,167

HEEL HOLDER COMBINED WITH A SKI BRAKE

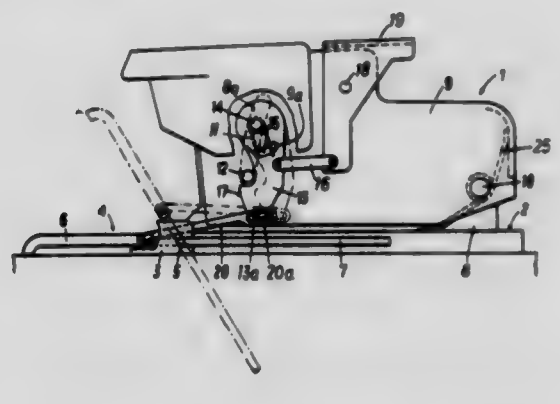
Erwin Krob, Vienna; Friedrich Leichtfried, Traiskirchen, and Helmut Bauer, Vienna, all of Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Feb. 22, 1982, Ser. No. 350,659

Claims priority, application Austria, Feb. 20, 1981, 798/81; Mar. 13, 1981, 1187/81

Int. Cl.³ A63C 7/10

U.S. Cl. 280—605 **29 Claims**



1. A heel holder for a ski binding which is adapted to releasably hold a ski boot on a ski, comprising a ski brake, a bearing block supported on a base plate which can be secured on the ski, and a housing which is supported on said bearing block for pivotal movement about a transverse axis, said housing having sole down-holding means thereon, being biased by a torsion spring, and being releasably held in a skiing position approximately parallel to an upper side of the ski by means which includes at least one locking lever which is biased by a locking spring, said ski brake having braking mandrels which are supported for pivotal movement about a transverse pivot axis on said base plate, having a stepping plate, and being operationally connected by a coupling member to said locking lever; wherein said coupling member is a linking rod which is pivotally supported at one end on said ski brake and is pivotally supported at its other end on an end of said locking lever; wherein said linking rod is pivotally supported on a half of said stepping plate which is adjacent said pivot axis of said braking mandrels of said ski brake.

4,496,168

CURRENT SUPPLY CIRCUIT FOR ELECTRONIC SAFETY SKI BINDINGS

Nicholas F. D'Antonio, Liverpool, N.Y.; Walter Knabel, Farchant, and Lorenz Stempfhuber, Garmisch-Partenkirchen, both of Fed. Rep. of Germany, assignors to Marker-Patentverwertungsgesellschaft mbH, Baar, Switzerland and Kinetronic Industries, Inc., Media, Pa.

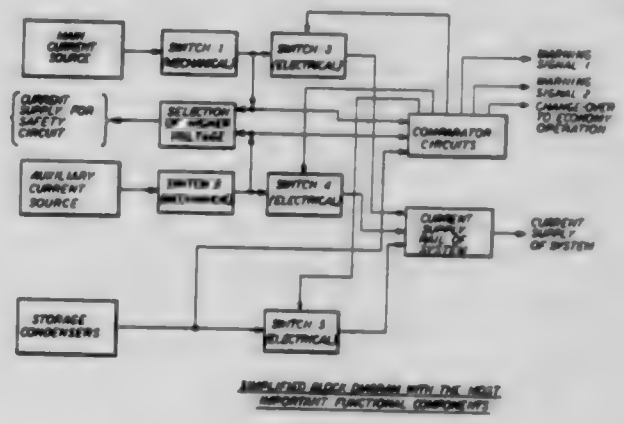
PCT No. PCT/EP81/00138, § 371 Date Apr. 22, 1982, § 102(e) Date Apr. 22, 1982, PCT Pub. No. WO82/00594, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 25, 1981, Ser. No. 373,506

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1980, 3031981

Int. Cl.³ A63C 9/085

U.S. Cl. 280—612 **14 Claims**



SIMPLIFIED BLOCK DIAGRAM WITH THE MOST IMPORTANT FUNCTIONAL COMPONENTS

1. A power supply system for release circuitry of an electronic ski binding, said system comprising:

a first electrical source including a first battery electrically connectable to said release circuitry;

a second electrical source including a second battery electrically connectable to said release circuitry;

switching means including first switching means connected to said first and second electrical sources, said first switching means being actuable for alternately connecting one of said sources to said release circuitry and the remaining non-connected electrical source(s) being isolated from the connected electrical source, and second switching means for actuating said first switching means in response to selection signals; and

comparison means electrically connected to said electrical sources and to said second switching means for continuously monitoring the electrical potentials of said electrical sources and for generating selection signals indicative of the one of said electrical sources having the highest electrical potential, the potentials of said electrical sources defining a floating reference valve as a basis for the generation of said selection signals; said second switching means actuating said first switching means to connect the one of said electrical sources having the highest electrical potential to said release circuitry in response to the generation of said selection signals.

4,496,169

STEP-IN SKI BINDING

Georges P. J. Salomon, Annecy, and Jacques Quellais, Saint-Jorioz, both of France, assignors to Salomon S.A., Annecy, France

Filed Jan. 7, 1982, Ser. No. 337,824

Claims priority, application France, Jan. 13, 1981, 81 00836

Int. Cl.³ A63C 9/10

U.S. Cl. 280—615 **21 Claims**

1. Step-in binding for securing a ski shoe or boot onto a ski, wherein said boot comprises a latching element having a trans-

verse bit across and in front of said shoe or boot, said binding comprising:

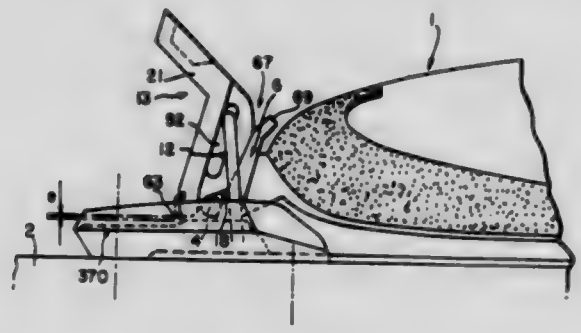
(a) a support element adapted to be mounted on a ski;

(b) a movable latch adapted to be secured to said ski, said latch comprising a movable pressure element;

(c) means for biasing said movable pressure element towards said support element when said boot is unsecured to said binding, wherein said biasing means comprises:

a mounting comprising a transverse mounting bit extending through a slot in said movable pressure element;

pivot means adapted to be mounted on said ski, said movable



pressure element being held by said mounting whereby said movable pressure element is pivotable around said pivot means; and

elastic means adapted to resist pivotable movement of said movable pressure element away from said support element,

whereby said shoe or boot may be secured by said binding to said ski by inserting said transverse bit between said support element and said pressure element when said movable pressure element is biased toward said support element and lowering said transverse bit between said movable pressure element and said support element.

4,496,170

SEAT BELT DEVICE FOR VEHICLES

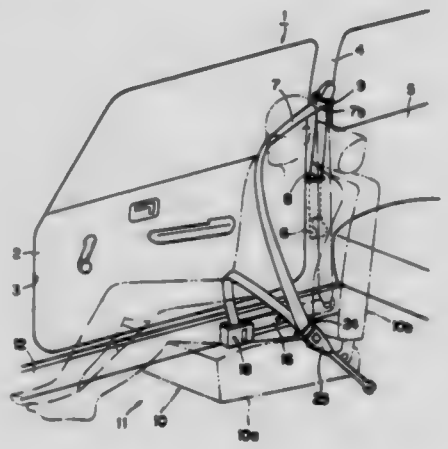
Kiichi Suzuki; Tateo Kawade, and Seiichiro Nemoto, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 425,052

Claims priority, application Japan, Sep. 30, 1981, 56-145194[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—801 **15 Claims**



1. A three-way seat belt device for a vehicle having a body provided with a pillar and a side wall, the combination of: a retractor mounted on the pillar, a seat belt connected at one end thereof to said retractor, an anchor member pivotally mounted at one end thereof on said body for swinging motion, means connecting the other end of said seat belt to the swinging end of said anchor member, a detachable catch mechanism provided substantially in the center of the width of the body, releasable means for fastening said belt by engaging a part thereof with said catch mechanism and means for locking said anchor member in a forward position substantially parallel to the side wall of said body and substantially horizontal for using the seat belt.

4,496,171

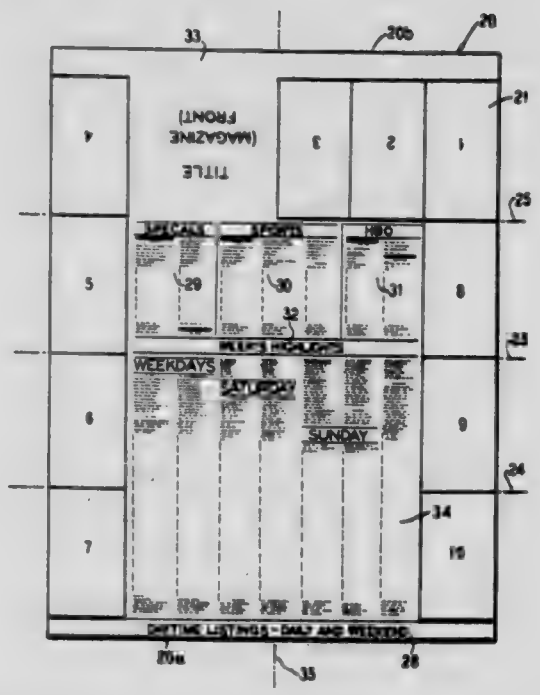
MEDIA GUIDE

Martin Cherry, 550 E. Grand Ave., Beloit, Wis. 53511

Filed Sep. 29, 1982, Ser. No. 426,610

Int. Cl.³ B42B *15/00*; G09B *29/04*; G09F *9/00*

U.S. Cl. 283—61 **9 Claims**



9. A self-indexing television program guide and advertising medium comprising in combination:

a sheet containing programming areas and advertising areas on a front surface and on a back surface and provided with foldlines in predetermined locations interrelated to said programming areas;

a first laterally extending foldline located a small distance about the center of the sheet to leave a laterally extending third indexing strip at the lower edge of the back surface and accommodating folding of the back surfaces toward each other;

a second program about a second indexing strip exposed on the first surface when the sheet is folded about said first foldline;

a third program printed on said back surface about the third indexing strip;

second and third laterally extending foldlines located slightly about the center of the sheet when folded about the first foldline and lying together when the sheet is folded about the first foldline and leaving exposed the laterally extending third indexing strip at the lower edge of the front surface when the sheet is folded about said foldlines;

a first program on the portion of the front surface exposed when the sheet is folded about said first, second and third foldlines, said programs interrelated so that a user moves from said first to said second to said third programs for progressively detailed programming information; and

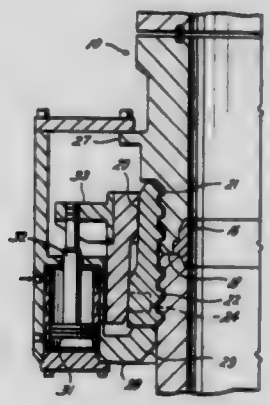
advertising information printed adjacent said programs for exposure of a user of said information with folding change for each of the programs.

4,496,172

SUBSEA WELLHEAD CONNECTORS

James M. Walker, Houston, Tex., assignor to Dril-Quip, Inc., Houston, Tex.

Filed Nov. 2, 1982, Ser. No. 438,601
Int. Cl.³ F16L 55/00, 37/00, 39/00
U.S. Cl. 285—18 37 Claims



1. A remotely operable, subsea wellhead connector, comprising a first tubular member adapted to be connected to the upper end of a first wellhead member mounted in an upright position beneath the water surface, a second tubular member adapted to be connected to the lower end of a second wellhead member so that it may be lowered therewith into end-to-end relation with the first tubular member, said first tubular member having first locking grooves thereabout, said second tubular member having second locking grooves thereabout, a split lock ring having first and second axially spaced locking teeth which are carried by the second tubular member for radial movement together between expanded positions in which the second teeth are generally opposite and spaced from the second grooves and in which the first teeth may be moved past the end of the first tubular member for disposal opposite and spaced from the first grooves, when said second member is lowered into end-to-end relation with the first member, and contracted positions in which the first and second teeth are in locking engagement with the first and second grooves, respectively, said teeth having tapered surfaces thereon which are slidable over tapered surfaces of the grooves to urge end surfaces on said members into tight engagement with one another as the lock ring moves to contracted position, a cam ring arranged about the lock ring for movement between a first position in which the lock ring is expanded and a second position in which the cam ring is slidable over follower means on the lock ring to wedge said lock ring into contracted position, a plurality of remotely operable, extendible and retractible actuators arranged about the cam ring, and means connecting opposite ends of the actuators to the second tubular member and the cam ring for moving said cam ring between said positions.

4,496,173

THREADED COUPLING

Joseph R. Roche; Charles D. Morrill, and Joseph H. Hynes, all of Houston, Tex., assignors to Hydril Company, Los Angeles, Calif.

Continuation of Ser. No. 182,120, Aug. 28, 1980, abandoned.
This application May 10, 1983, Ser. No. 493,422
Int. Cl.³ F16L 35/00
U.S. Cl. 285—24 34 Claims

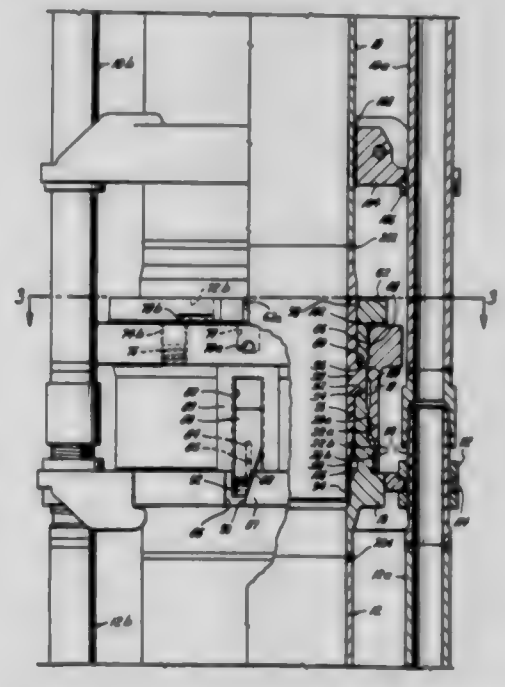
1. A coupling adapted for releasably securing vertically disposed first and second relatively large diameter pipe sections with a circumferentially uniform distributed preload, comprising:

(a) end portions on the first and second pipe sections which are shaped and dimensioned so that the end portion of the first pipe section is telescopically positionable in the end portion of the second pipe section, and first and second shoulder means on the outer surface of the first pipe section, the second shoulder means for limiting telescopic positioning of the first pipe section relative to the second pipe section;

(b) the outer surface of the end of the second pipe section disposed adjacent to the first section including at least a first set of continuous helical spin-up threads extending substantially continuously about the circumference of said outer surface;

(c) a union box rotatably mounted to the first section, the inner surface of the union box including at least a first set of continuous helical spin-up threads interengaged with the set of threads on the second pipe section for releasably securing the union box to said second pipe section by substantially continuous spin-up thread engagement, the union box further including an additional set of helical power threads;

(d) a power ring located around the first pipe section and



including a set of helical power threads interengaged with the helical power threads formed on the union box for operably securing the power ring to the union box in a predetermined axial relationship, said interengaged helical power threads extending substantially continuously about the circumference of said power ring;

(e) the power ring operably engaging the first shoulder means of the first pipe section for applying a predetermined circumferentially uniform distributed preload force to the coupling connection when the power threads are interengaged an additional increment after make-up of said helical spin-up threads and for preventing the pipe sections from moving axially apart relative to each other; and

(f) sealing means for providing a fluid tight seal between the first and second pipe sections to prevent leakage of fluid therebetween.

4,496,174

INSULATED DRILL COLLAR GAP SUB ASSEMBLY FOR A TOROIDAL COUPLED TELEMETRY SYSTEM

William J. McDonald; William C. Maurer, and David D. Nagel, all of Houston, Tex., assignors to Tele-Drill, Inc., Richardson, Tex.

Filed Jan. 30, 1981, Ser. No. 229,800
Int. Cl.³ F16L 11/12
U.S. Cl. 285—53 13 Claims

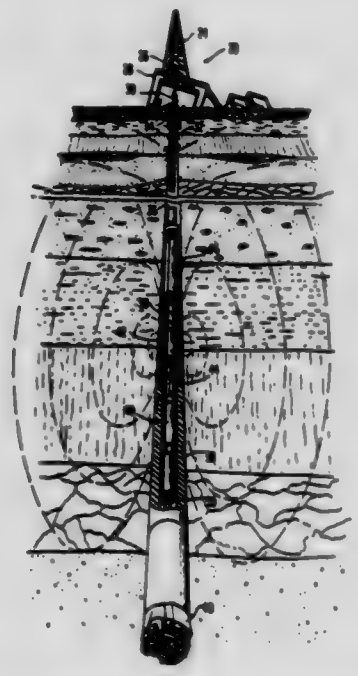
13. An insulated drill collar gap sub for a toroidal coupled telementary system comprising:

a first annular sub member operable to be connected at one end to a drill collar and form a part of the drill collar, said first annular sub member having an interconnecting structure formed at the other end thereof;

a second annular sub member operable to form a part of a drill collar sub,

said second annular sub member having an interconnecting structure formed at one end thereof operable to structurally cooperate and interengage with said interconnecting structure formed at the other end of said first annular sub member;

said interconnecting structure formed at the other end of said first annular sub member and said interconnecting structure formed at said one end of said second annular sub member being dimensioned to be mutually contiguous but spaced when said first annular member is structurally interengaged and extending to longitudinally interfere with said second annular member while simultaneously forming a generally uniform space between said first and second annular sub members;



dielectric material positioned within and occupying the void of said generally uniform spacing between the intergaged surfaces of said first annular sub member and said second annular sub member to form a connection of structural integrity and concomitant electrical isolation;

said interconnecting structure of said first and second annular sub members comprises sinusoidal-shaped, thread-like structures which structurally interengage; and

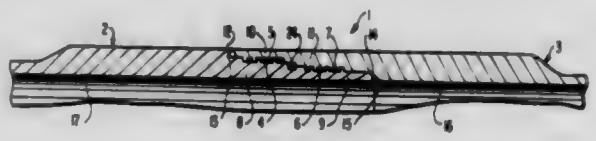
bearing means, coated with a dielectric, positioned between said first annular sub member and said second annular sub member to cooperate with said interconnecting structure of said first annular sub member and said second annular sub member to form a load bearing, insulated drill collar sub of enhanced structural integrity.

4,496,175

HYDRIL-TYPE CONNECTOR

James B. N. Morris, 22 Colony Rd., Gretna, La. 70053

Division of Ser. No. 736,492, Oct. 28, 1976, Pat. No. 4,085,951.
This application Jan. 23, 1978, Ser. No. 871,336
The portion of the term of this patent subsequent to Apr. 25, 1995, has been disclaimed.
Int. Cl.[3] F16L *15/00*
U.S. Cl. 285—334 7 Claims



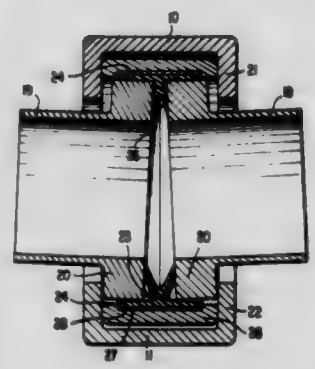
1. A damaged but repaired oil well pipe joint for interconnecting a pair of pipes, suitable to operate in an environment of high pressure differential, said joint comprising coaxial pin and box members respectively including interengaged external and internal first threads, and interengaged external and internal second threads, said first threads on said pin member being adjacent the free terminal forward end of said pin member and being of smaller outer diameter than said second threads, said threads holding the pipes against separation, said first threads and said second threads having substantially the same pitch and outline characteristics, said pin member being screwed about its axis longitudinally forwardly into said box member, at least one pair of metal-to-metal seating surfaces on said pin and box members, wherein a seating surface is located at or adjacent the free terminal forward end of said pin member and/or at or adjacent the free terminal forward end of said box member, said at least one pair of seating surfaces being sealingly interengageable when undamaged, at least one seating surface being damaged, an annular pin member shoulder area providing a stepped portion on said pin member between said first threads and said second threads, an annular box member shoulder area providing a stepped portion on said box member between said first threads and said second threads, a shoulder area having an annular recess opening radially outwardly and extending about said shoulder area, and an annularly continuous ring of relatively rigid, internally tenacious plastic or rubber material received in said recess and compressed by and between said pin member and said box member when said joint is made up to form the primary high pressure seal of said joint to seal the interior of said pipe from the exterior of said pipe.

4,496,176

DEVICE FOR CONNECTING FLANGED PIPES

Karl Weinhold, Im Jagdfeld 43, 4040 Neuss, Fed. Rep. of Germany

Filed Dec. 10, 1982, Ser. No. 448,801
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1981, 3149833
Int. Cl.[3] F16L *17/00, 23/00*
U.S. Cl. 285—365 19 Claims



1. A device for connecting the ends of two pipes wherein each of said ends is provided with an annular collar having a front face at an end of the pipe, a rear face spaced axially from said front face and a peripheral surface between the front and rear faces thereof, comprising:

a clamp having at least two sections, each section of said clamp including a radially inwardly projecting flange at each axial end thereof for engaging the rear surfaces of said collars when the ends of said pipes are placed adjacent each other;

an annular elastic inner profiled member having a pair of sealing lips for contacting the front faces of said collars, said inner profiled member being disposed between the front faces of said collars and forming an approximately V-shaped cross-section extending radially inward; and

an outer annular member surrounding the peripheral surfaces of said collars and being attached to said inner profiled member, said outer annular member extending axially to the radially inwardly projecting flanges of said clamp thereby substantially preventing axial movement of said inner profiled member with respect to said clamp

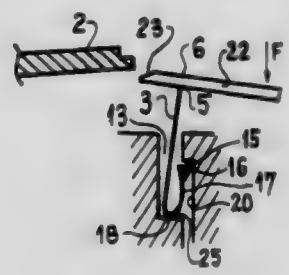
regardless of the relative deflection of said collars from a co-axial position.

4,496,177

LATCH FOR THE CLOSURE PANEL OF A UNIT SUCH AS A CASSETTE READER AND A UNIT FITTED WITH SAID LATCH

Guy Pissot, Paris, France, assignor to Thomson-Brandt, Paris, France

Filed Jun. 25, 1982, Ser. No. 391,991
Claims priority, application France, Jun. 26, 1981, 81 12609
Int. Cl.³ E05C *19/18*
U.S. Cl. 292—87 11 Claims



1. A cassette reader unit having a unit body, a closure panel and a latch for said closure panel, wherein said latch comprises:

a locking head;

a latch body attached to said locking head;

an arm attached to said latch body and including snap action engagement means for retaining said arm in a recess of said unit body; and

a flexible connecting member joining said arm to said latch body; and

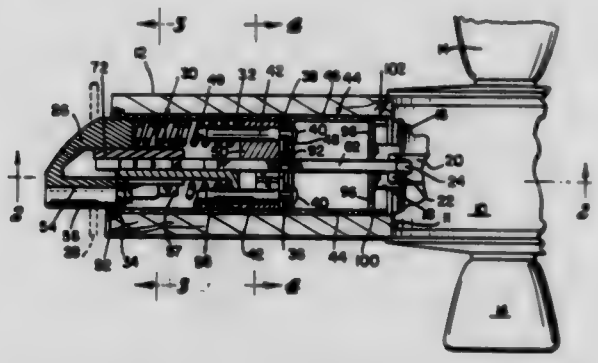
wherein said connecting member is constructed such that flexural deformation of said connecting member permits the pivoting of the latch body for the operation of the latch and permits the introduction of a part of said latch body, said connecting member and the arm in said recess of said unit body.

4,496,178

EXTENDED LATCH TUBE ASSEMBLY

Walter E. Best, and William R. Foshee, both of Indianapolis, Ind., assignors to Best Lock Corporation, Indianapolis, Ind.

Filed Sep. 3, 1982, Ser. No. 414,826
The portion of the term of this patent subsequent to Mar. 9, 1997, has been disclaimed.
Int. Cl.³ E05C *1/12*; E05B *9/00*
U.S. Cl. 292—169.13 24 Claims



1. An extended latch tube assembly for operative interconnection with a chassis and a retractor of a cylindrical lock mounted at a backset position in a door, comprising

a latch tube having an outer and an inner end and having a substantially closed end wall,

bolt means including a latch bolt and auxiliary bolt mounted for movement axially of said latch tube at the outer and thereof,

first tailpiece guide means at the inner end of said latch tube,

a latch tube extension having an outer and an inner end, a substantially closed end wall, and means at its inner end for interconnection with the chassis of the cylindrical lock, the closed end walls of the latch tube and of the latch tube extension being securely fastened together to rigidly and permanently fix the latch tube and the latch tube extension to one another in axial alignment so that the fastened latch tube and latch tube extension cannot be disassembled, and

tailpiece means for connecting the bolt means for retraction by the retractor of the cylindrical lock chassis,

said tailpiece means including a forward portion connected for retracting the bolt and guided by the bolt and by said guide means in said latch tube for movement axially of the latch tube,

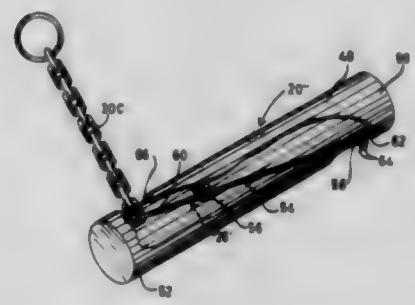
said tailpiece means also including a rearward portion extending to the inner end of the latch tube extension and having a connecting means thereon for engagement with the retractor of the cylindrical lock for retraction movement thereby to retract the bolt.

4,496,179

APPARATUS FOR MOVING ROLLED SHEET GOODS

Terry B. Ogle, Rte. 115, Box 408, Pigeon Forge, Tenn. 37863

Filed Dec. 14, 1982, Ser. No. 449,598
Int. Cl.³ B65G *7/12*
U.S. Cl. 294—26 6 Claims



1. An apparatus for assisting a worker in moving a roll of sheet goods such as a roll of carpet having opposite end portions, such sheet goods being rolled upon a centrally disposed cylindrical tube defining an interior surface and which forms the core of the sheet goods roll, said tube having opposite end portions, which comprises:

a handle,

a cylindrical roll engaging member having a first end portion and a further end portion and being proportioned for being received within an end portion of such tube, said roll engaging member including means at said further end portion for frictionally engaging such interior surface to prevent said roll engaging member from inadvertently disengaging from said roll during moving operations, and

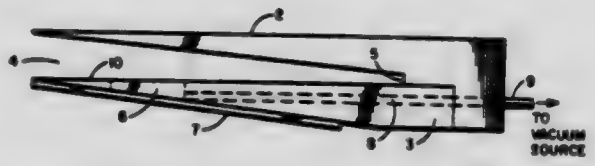
means for joining said handle and said first end of said roll engaging member, said means for joining said handle and said roll engaging member having an adjustable length such that such worker can position said handle at a preselected distance from said roll engaging member thereby enhancing the comfort and ease of movement of such worker during such moving operation while said roll engaging member is frictionally engaged with such interior surface of such tube.

4,496,180

VACUUM HANDLING APPARATUS

Joseph T. Hillman, Cincinnati, and Michael B. Miller, Milford, both of Ohio, assignors to Cincinnati Milacron Industries, Inc., Cincinnati, Ohio

Filed Jul. 20, 1983, Ser. No. 515,573
Int. Cl.³ B66C 1/02
U.S. Cl. 294—64 R 7 Claims



1. An apparatus for releasably grasping a thin solid article comprising in fixed relation to each other a rigid upper arm and a rigid lower arm each arm having a forward end and a rear end, wherein the upper arm and the lower arm are rigidly joined together at their rear ends to define a closed end gap therebetween having two open sides and an open forward end for receiving said article and the lower arm having a port that communicates with the gap and with an enclosed passageway for connection to a vacuum source for releasably grasping said article.

4,496,181

METHOD AND A DEVICE FOR LIFTING AND LOWERING OF A LOAD

Otto Byding, Granvägen, and Rolf Ströberg, Låangsjövägen, both of Sweden, assignors to ITT Industries, Inc., New York, N.Y.

Filed Apr. 7, 1982, Ser. No. 366,440
Claims priority, application Sweden, May 7, 1981, 8102854
Int. Cl.³ B66C 1/14
U.S. Cl. 294—78 R 7 Claims



1. A method of moving a load by a lifting device, the load having a weight supporting member attached thereto, comprising the steps of:

attaching a guiding wire element of a strength insufficient to carry the load to the weight supporting member;

sliding a guide member, which is connected to the lifting device and slidably joined to the guiding wire element, to the weight-supporting member; and

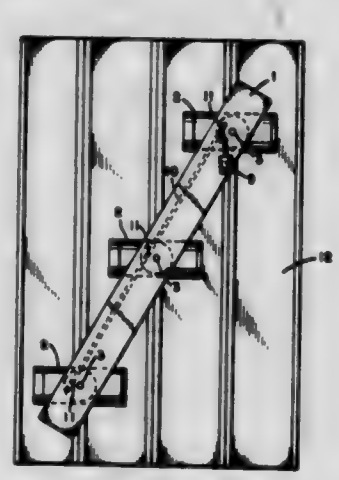
maneuvering the guiding wire for engaging the guide member with the weight-supporting member in a locked position and for disengaging the guide member from the weight supporting member in an unlocking position.

4,496,182

GRIPPER SYSTEM FOR LOAD TRANSPORT

Friedrich Krieger, Würzburg, Fed. Rep. of Germany, assignor to Gg. Noell GmbH, Würzburg, Fed. Rep. of Germany

Filed Oct. 13, 1982, Ser. No. 433,884
Int. Cl.³ B66C 1/64
U.S. Cl. 294—81 R 9 Claims



1. A gripper system for industrial transporting comprising:

a lifting mechanism;

support means attached to the lifting mechanism; a plurality of gripper support members each rotatable around an about vertical axis and attached to the bottom side of the support means;

a gripper element including clamping jaws where the clamping surfaces are disposed about vertical and where the claws are open at the bottom such as to grip from above and where a gripper element is rigidly attached to each gripper support member; and

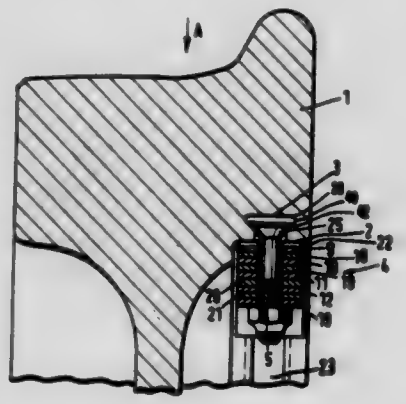
a linkage mechanism connected to the gripper support members for synchronizing the angular position of the gripper support members relative to a plurality of objects.

4,496,183

VIBRATION-DAMPED WHEEL FOR RAIL VEHICLES

Willi Kasper; Helmut Licht, both of Bochum; Erwin Raquet, Witten, and Jürgen Schneider, Bochum, all of Fed. Rep. of Germany, assignors to Krupp Stahl Aktiengesellschaft, Bochum, Fed. Rep. of Germany

Filed Aug. 17, 1981, Ser. No. 293,468
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1980, 3033246
Int. Cl.³ B60B 17/00, 19/00; F16F 15/10
U.S. Cl. 295—7 20 Claims



1. A vibration-damped wheel, comprising:

a wheel body formed with an abutment forming recess and having a continuous circumferential undercut groove in the rim of the rail wheel having greater width at the interior bottom of the groove than at the top;

said groove being concentric with the wheel body axis;

at least one vibration-damping block element for connection

to said undercut groove distributed over the length of said groove; and

screw means having their heads inserted in the groove for securely spacing and directly connecting said undercut groove thereof.

12. A vibration-damped wheel comprising:

a wheel body formed with an abutment-forming recess having one continuous circumferential undercut groove of V-cross-section formed therein concentric with the wheel body axis;

several vibration-damping blocks for connection to said undercut groove at selectable circumferential locations so that wheel imbalances are eliminated; and

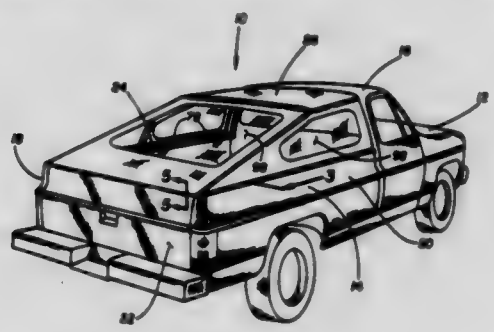
screw means having heads inserted and held in said groove for securely spacing and directly connecting said damping blocks directly to said undercut groove of said wheel with said connecting means being lockable thereto at said circumferential locations of said wheel while maintaining said vibration-damping blocks external of said undercut groove to mitigate tension concentration caused by heat and expansion of the wheel.

4,496,184

TRUCK CAP

David A. Byrd, R.R. 1, Box 111, and Max R. Byrd, R.R. 1, Box 110A, both of Craigville, Ind. 46731

Filed Mar. 14, 1983, Ser. No. 474,871
Int. Cl.[3] B60P 7/02
U.S. Cl. 296—100 30 Claims



1. A truck cap comprising:

a plurality of frame members, said frame members being repeatedly detachably connectable to each other to form a frame, said frame having a top portion and a base portion, said top portion being resilient, said base portion being relatively rigid, and a flexible cover disposable over said frame, said cover being detachably connectable to said base portion of said frame, said cover being tensioned by said top portion of said frame to maintain said cover in a predetermined configuration.

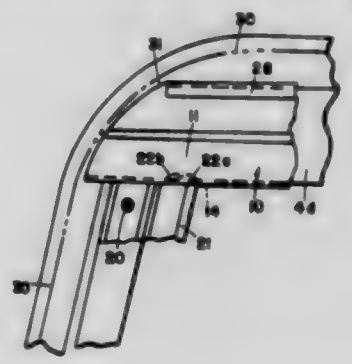
4,496,185

DOOR FRAME CONSTRUCTION FOR PICKUP TRUCK CAP AND METHOD OF MANUFACTURE

Donald C. McGaughey, and Bruce R. Bostian, both of Bristol, Ind., assignors to State Wide Aluminum of Indiana, Inc., Elkhart, Ind.

Filed Sep. 29, 1982, Ser. No. 427,877
Int. Cl.[3] B60J 1/00
U.S. Cl. 296—106 5 Claims

3. A trapezoidal frame and door assembly for a vehicle cap, said assembly including a door and a frame formed of two opposed side frame members inclined upwardly toward each other and terminating at an extruded top frame member, said top frame member having a plate-like part having a first surface adapted to abut against and be secured to the horizontal frame member of said cap, said plate-like part having a second surface on the opposite side thereof and located on a plane, a projection extending from said second surface; said projection including a channel for slideably receiving said hinge part of said door whereby when assembled said door hinge part is slid lengthwise in said channel and is supported thereby; the improvement comprising: said projection of said top frame member at the extreme ends thereof having a severed edge perpendicular to the plane of said second surface, said plate like part



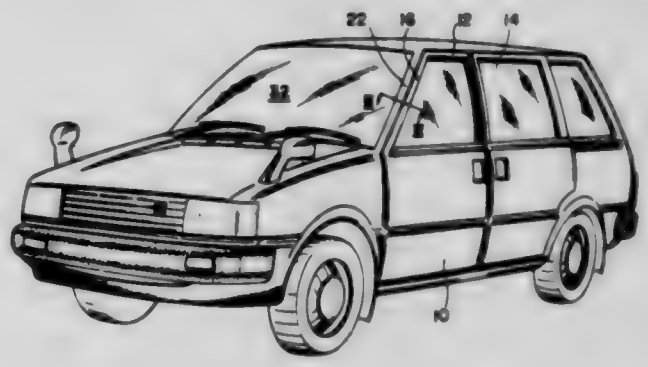
adjacent said severed edge of said channel being cut to produce arcuate-shaped ends; and said severed edges of said projection terminating short of the arcuate-shaped ends.

4,496,186

SEALING STRUCTURE FOR AN AUTOMOTIVE VEHICLE

Yoshimasa Tuchiya, Ebina; Takayo Chikaraishi, Kawasaki, and Kazunori Kawamo, Atsugi, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama and Nissan Shatai Company, Limited, Hiratsuka, both of, Japan

Filed Aug. 18, 1983, Ser. No. 524,349
Claims priority, application Japan, Aug. 21, 1982, 57-145354
Int. Cl.[3] B60J 5/02
U.S. Cl. 296—146 10 Claims



1. A sealing structure for the automotive vehicle comprising:

first and second members of a vehicle body having edges opposing each other with a clearance therebetween, said first and second members having outer surfaces arranged to form substantially smooth vehicle body surface and defining an internal space extending from said clearance;

a weatherstrip disposed within said internal space and secured to one of said first and second members and having a sealing lip portion sealingly contacting the other of said members so as to establish water-tight seal therebetween; and

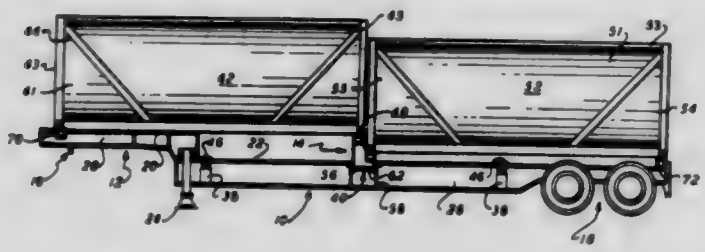
an elastically deformable extension integral with said weatherstrip and extending towards said clearance so that said extension elastically contacts said edges of both of said first and second members to establish a seal therebetween, part of the surface of said extension lying approximately in alignment with said outer surfaces of said first and second member.

4,496,187

TRAILER CONSTRUCTION

John J. Postecorvo, 11 McCampbell Rd., Holmdel, N.J. 07733

Filed Dec. 28, 1982, Ser. No. 454,169
Int. Cl.[3] B62D *27/06*
U.S. Cl. 296—182 10 Claims



1. A trailer construction for transporting a pair of intermodular containers, comprising:

(a) a front section having a hitch means for attaching the trailer to a towing vehicle, and a longitudinal generally horizontally aligned upper deck portion;

(b) a drop frame section extending rearwardly of the front section, said drop frame section including ground engageable support wheels and having a longitudinal generally horizontal lower deck portion, wherein the lower deck is a distance below the said upper deck;

(c) pedestal means mounted on said drop frame section, said means being movable between first and second positions, said pedestal means in said first position including first support means above said lower deck portion for supporting the rear end of a first said container to maintain said container substantially horizontal when the front end of the container is supported on said upper deck, and in said second position being substantially flush with said lower deck portion, permitting carrying of a single container which is entirely positioned upon said lower deck portion; and

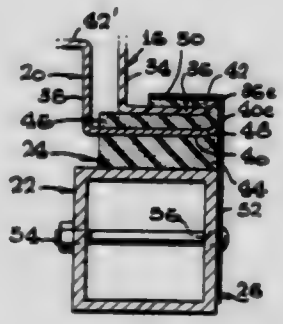
(d) the lower deck portion extending rearwardly of said pedestal means, being of at least sufficient length to carry a second container thereupon, the front end of which is supported at said pedestal means.

4,496,188

FLOATING CAB

James J. Eaell, Clovis, and Paul V. Garin, III, San Mateo, both of Calif., assignors to A G Motor Corp., Fresno, Calif.

Filed Jan. 13, 1983, Ser. No. 457,725
Int. Cl.[3] B62D *27/04*
U.S. Cl. 296—190 3 Claims



1. In a vehicle with a metal chassis, the improvement of a vehicle cab comprising:

a plastic molded cab housing having largely vertical side walls and a largely horizontally-extending flange at the bottom of the side walls;

a metal frame lying under said cab housing flange, for coupling to said vehicle chassis;

a spacer formed of resilient material, and having a top wall lying over said cab housing flange, a bottom wall lying between said frame and said flange, and a connecting wall connecting said top and bottom walls and lying beside the edge of said flange;

a metal clamp which includes a top part lying on top of said spacer top wall, and a side part with an upper portion lying against said connecting wall on a side thereof which is opposite said flange edge and a lower portion which lies against said frame, said clamp closely surrounding said connecting wall of said resilient spacer to resist sideward shifting of the cab, but said clamp being substantially free of direct contact with said cab flange; and

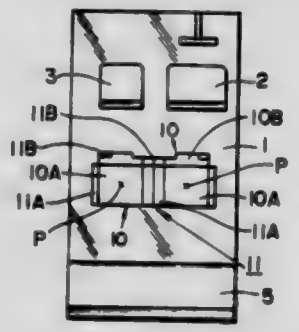
a plurality of fasteners which fasten said clamp to said frame.

4,496,189

SEAT DEVICE

Hiroyuki Tanizaki; Sakae Ebihara, both of Yokohama; Akimitsu Hatanaka, Aichi; Takayoshi Ogawa, Ogaki, and Yuzo Kanazawa, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama; Aichi Machine Industry Company, Limited, Nagoya and Ikeda Bussan Company Limited, Yokohama, all of, Japan

Filed Aug. 20, 1982, Ser. No. 409,879
Claims priority, application Japan, Aug. 22, 1981, 56-131885
Int. Cl.[3] A47C *13/00*
U.S. Cl. 297—63 5 Claims



1. In a van type automotive vehicle an arrangement comprising:

a vehicle compartment;

a floor formed in the bottom of the vehicle compartment;

a driver seat arranged at a front portion of the vehicle compartment on the floor;

a rear seat arranged on the floor at a rear portion of the vehicle compartment;

two seat devices adjacently arranged side by-side in an intermediate position between the driver seat and the rear seat in the vehicle compartment;

each seat device including:

a main seat portion pivotally mounted about a vertical axis to be selectively set in a forward facing position or a rearward facing position thereof by turning it about said axis;

a main seat back portion projecting upwardly from a rear edge portion of the main seat portion;

a pair of auxiliary seat portions attached to both sides of the main seat portion,

the auxiliary seat portions being movable between an extended position and an unextended position in such a manner that, when the auxiliary seat portions are in the extended position, the auxiliary seat portions extend laterally from each main seat portion, said auxiliary seat portions thereby forming a continuous generally planar seat portion in combination with said main seat portions, and when the auxiliary seat portions are in the unextended position, the auxiliary seat portions do not substantially protrude from the main seat portion;

a pair of auxiliary seat back portions attached to both sides of the main seat back portion,

the auxiliary seat back portions being movable between an extended position and an unextended position in such a manner that, when the auxiliary seat back portions are in the extended position, the auxiliary seat back portions extend laterally from each main seat back portion, said

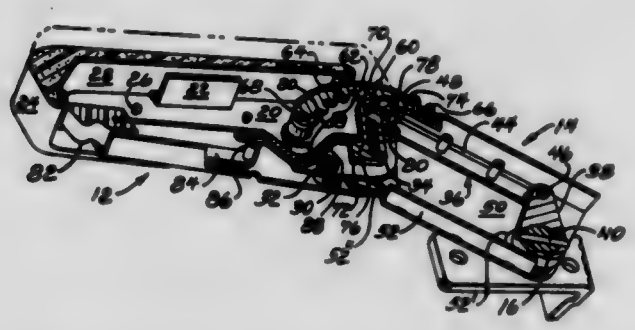
auxiliary seat back portions thereby forming a continuous generally planar seat back portion in combination with said main seat back portions, and when the auxiliary seat back portions are in the unextended position, the auxiliary seat back portions do not substantially protrude from the main seat back portion.

4,496,190

PARALLEL FOLDING ARMREST

Geoffrey W. Barley, Brookfield, Wis., assignor to UOP Inc., Des Plaines, Ill.

Filed Feb. 10, 1983, Ser. No. 465,238
Int. Cl.³ A47C 7/54
U.S. Cl. 297—411 **11 Claims**



1. A height-adjustable parallel folding armrest assembly for a seat comprising an elongated hollow support housing structure having a transverse bearing opening at its rearward end for receiving one end of a round support bar, the other end of the support bar being adapted to be non-rotatably mounted to the frame of a seat with which the assembly is to be used; an armrest member pivotally mounted adjacent its lower rear corner to an armrest pivot pin transversely mounted at a lower, generally forward, portion of said elongated housing structure which is longitudinally spaced from said bearing opening which receives said support bar; a curved rack member fixedly mounted internally of the forward portion of said elongated housing structure, tips of the internally positioned toothed surface of said rack member and the external surface of said housing structure which is behind said rack member lying in curved planes which have their centers coincident with said armrest pivot pin; a parallelogram linkage mounted interiorly of said hollow housing structure, said housing structure solely comprising one of the longer links of said linkage and said round support bar and said armrest pivot pin, respectively, comprising the pivot joints between said housing and the rearward and forward shorter links of said linkage, the rearward shorter link of said linkage being non-rotatably affixed to said support bar at one of its ends and to an elongated link means at its other end, the forward shorter link of said linkage comprising at least one plate-like member on which a locking pawl is mounted for selective movement into spring biased locking engagement with one of the teeth of said rack member, said locking pawl being movable by a manually actuated lever out of engagement with said rack member when it is desired to adjust the position of said housing structure and the height of said armrest.

4,496,191

SELECTIVE MINING FROM HORIZONTAL HOLES

Dai-Shik Choi, and David L. McCain, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Sep. 1, 1982, Ser. No. 413,653
Int. Cl.³ E21C 37/12
U.S. Cl. 299—17 **4 Claims**

1. A method of selectively mining only the high grade portion of an ore body comprising:

(a) locating said high grade portions in said ore body;

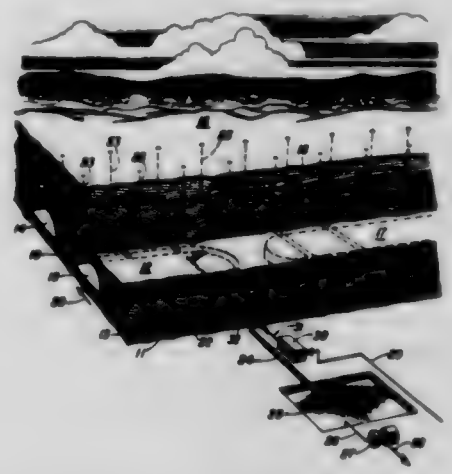
(b) forming an access to said ore body of a depth and width to permit horizontally drilling into said ore body;

(c) boring a horizontal hole into said ore body so that said hole penetrates as many of said high grade portions as possible;

(d) providing casing in said horizontal hole except at the high grade portion farthest from the said trench;

(e) inserting a jet mining tool into the horizontally bored hole to the high grade portion farthest from the said trench;

(f) jet mining said high grade portion in a manner to slurry



said mined material from said high grade portion of said ore out of said horizontally bored hole and casing;

(g) collecting said slurry material for further processing;

(h) moving said jet mining tool from said farthest location to the next adjacent high grade portion along said horizontally bored hole and removing the casing from that portion; and

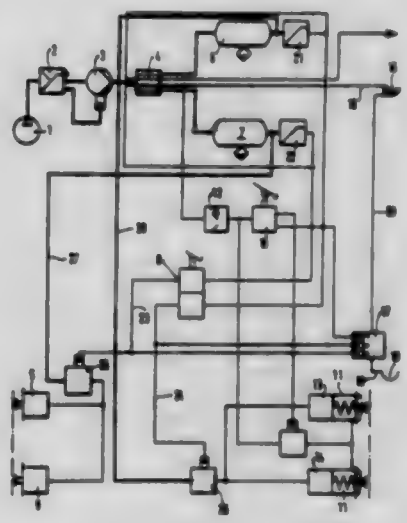
(i) repeating steps (f), (g) and (h) until all the located high grade portions are mined.

4,496,192

PRESSURE MEDIUM BRAKE SYSTEM

Ingolf Grauel, Vaihingen/Enz; Gerald Höfer, Flacht; Günter Kulke, Esslingen, and Werner Stumpe, Kornwestheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 7, 1982, Ser. No. 395,878
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1981, 3133963
Int. Cl.³ B60T 11/24
U.S. Cl. 303—13 **7 Claims**



1. In a pressure medium brake system for motor vehicles having different pressure circuits, the system including: a high-pressure fluid producing system; a normal-pressure fluid brake system; and pressure limiting means connected to the high-pressure producing system and the normal-pressure brake system to regulate the high pressure downward to the normal pressure, the improvement comprising,

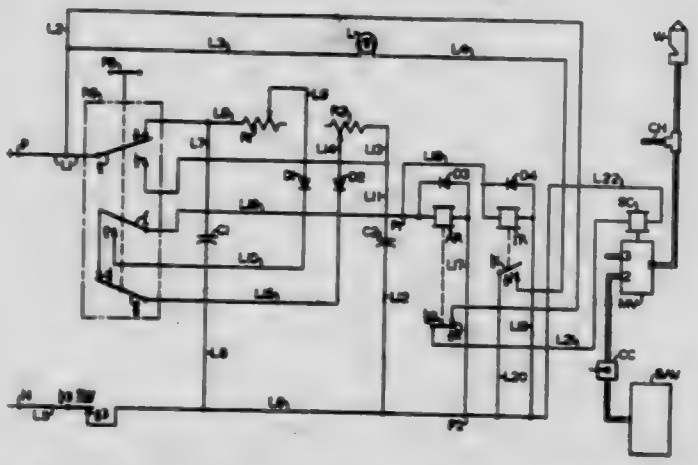
valve means having an outlet connected to different pressure circuits and an inlet connected to the high-pressure producing system and a dual circuit brake valve for controlling fluid under normal pressure to control said valve means to control fluid under high pressure for a rapid pressure increase at the pressure circuits to a maximum level of the normal pressure.

4,496,193

VIGILANCE SAFETY CONTROL SYSTEM

Steven C. Ramsey, N. Huntingdon, Pa., assignor to American Standard Inc., Wilmerding, Pa.

Filed Sep. 20, 1982, Ser. No. 419,652
Int. Cl.³ B60T 7/14
U.S. Cl. 303—19 9 Claims



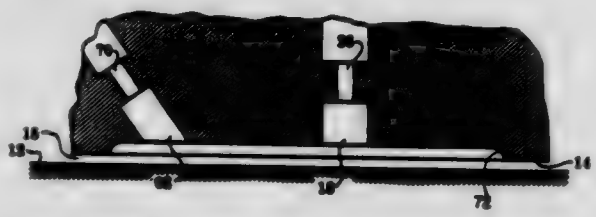
1. A vigilance safety control system for periodically checking the alertness of a train operator comprising, a pair of charging circuits connectable to a source of voltage, a pair of discharging circuits connectable to a first relay, a reversing switch for selectively and periodically connecting one of said pair of charging circuits to the voltage source and one of said pair of discharging circuits to said first relay for causing a magnet valve to maintain the brakes of the train in their released position, and said reversing switch connects one of said pair of discharging circuits to a second relay which controls a warning device to alert the train operator to shift said reversing switch.

4,496,194

GAS BEARING

Edward H. Phillips, Middletown, Calif., assignor to Optimetrix Corporation, Mountain View, Calif.

Division of Ser. No. 288,680, Jul. 31, 1981, Pat. No. 4,413,864.
This application Oct. 19, 1983, Ser. No. 543,432
The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.
Int. Cl.³ F16C 32/06
U.S. Cl. 308—5 R 18 Claims



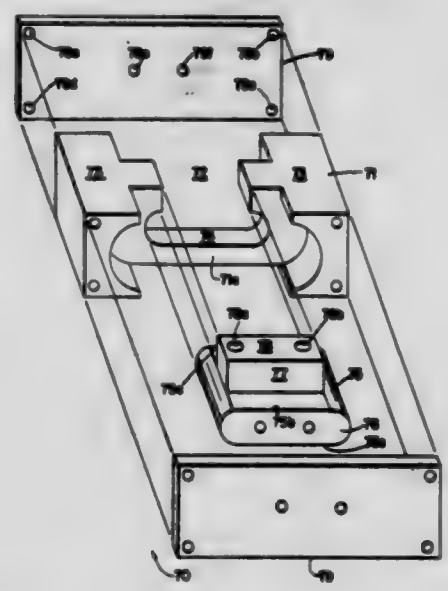
1. A gas bearing comprising:
a gas inlet;
a body having a pocket formed in a surface thereof and having first and second openings in the pocket;
a first passage through a portion of the body connected to the gas inlet and the first opening;
first restrictive means for restricting the flow of gas through the first passage;
an enclosed chamber disposed in the body and associated exclusively with the aforementioned pocket;
a second passage through a portion of the body, the second passage being connected to the chamber and the second opening; and
second restrictive means for restricting the flow of gas through the second passage.

4,496,195

RECIRCULATING BEARING ASSEMBLY

Ki C. Kwon, Charlotte, and Thomas A. Luther, Matthews, both of N.C., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 24, 1982, Ser. No. 444,292
Int. Cl.³ F16C 29/06
U.S. Cl. 308—6 C 4 Claims



1. A bearing assembly for use in supporting a pair of members for relative movement, said bearing assembly comprising first and second circuitous arrays of rotatable bearing elements disposed adjacent opposite sides of said bearing assembly, each of said arrays of bearing elements including a first linear group of bearing elements having outer side surfaces which roll on a surface of a first one of the members, a second linear group of bearing elements which extends parallel to the first linear group of bearing elements, and arcuate end groups of bearing elements extending between said first and second groups of bearing elements, one-piece bearing block means for engaging said arrays of bearing elements and transmitting a load applied against said bearing block means by the first linear group of bearing elements in each of said arrays of bearing elements to a second one of the members, said one-piece bearing block means including a load section having a continuous flat load surface which faces in a first direction toward the first linear group of bearing elements in each of said arrays of bearing elements, said load surface including a first surface area which is engaged by the first linear group of bearing elements in the first array of bearing elements, a second surface area which is engaged by the first linear group of bearing elements in the second array of bearing elements and a connector surface area which extends between the first and second surface areas, said load section of said bearing block means further including a third surface area which is disposed on a side of said load section opposite from and extends parallel to said first surface area and which is engaged by the second linear group of bearing elements in the first array of bearing elements, a fourth surface area which is disposed on a side of said load section opposite from and extends parallel to said second surface area and which is engaged by the second linear group of bearing elements in the second array of bearing elements, first and second arcuate end surface areas which extend between said first and third surface areas and are disposed at opposite ends of said load section in engagement with the arcuate end groups

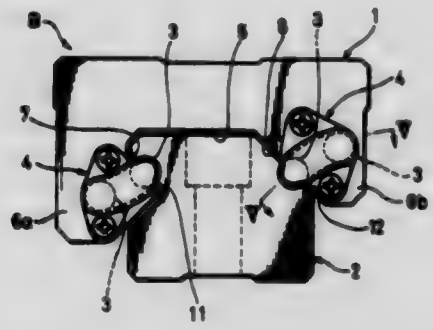
of bearing elements in said first array of bearing elements, and third and fourth arcuate end surface areas which extend between said second and fourth surface areas and are disposed at opposite ends of said load section in engagement with the arcuate end groups of bearing elements in said second array of bearing elements, said one-piece bearing block means further including mounting means which projects from a side of said load section opposite from said load surface and is adapted to be connected with the second one of the members, said mounting means being integrally formed as one piece with said load section of said bearing block means, said mounting means including a mounting section connected with said load section of said bearing block means at a location between said third and fourth surface areas and projecting from said load section in a second direction opposite from the first direction, said bearing assembly further including housing means for partially enclosing said first and second arrays of bearing elements and said bearing block means, said housing means including a frame having a central portion which engages said load section of said bearing block means and a pair of end portions which engage the arcuate end groups of bearing elements in said first and second arrays of bearing elements, said central portion of said frame having an open ended recess through which said load section of said one-piece bearing block means extends, said recess in said central portion of said frame having a flat side surface which faces in the second direction and is disposed in abutting engagement with said connector surface area on said load section, said recess having an opening through which said mounting section of said one-piece bearing block means extends in the second direction away from said flat side surface of said recess.

4,496,196

LINEAR SLIDE BEARING AND LINEAR SLIDE TABLE USING THIS BEARING

Hiroshi Teramachi, 34-8, Higashi-Tamagawa 2-chome, Setagaya-ku, Tokyo 158, Japan

Filed Mar. 29, 1983, Ser. No. 479,928
Claims priority, application Japan, Mar. 29, 1982, 57-49170
Int. Cl.[3] F16C *29/06*
U.S. Cl. 308—6 C 8 Claims



1. A linear slide bearing comprising:

a slide block having a recess formed on the underside, the slide block being formed in cross section into the shape of letter C, the slide block having an upwardly facing inclined surface on the upper inner side of one arm thereof and a downwardly facing inclined surface on the inner side of the other arm, the upwardly and downwardly facing inclined surfaces, each having a load ball groove semicircular in cross section, cut in the downwardly and upwardly facing inclined surfaces so that these grooves extend longitudinally along these surfaces, each arm of the slide block having a no-load ball hole cut longitudinally therethrough;

a guide rail having its upper portion formed into the shape similar in cross section to that of the recess of the slide block, the guide rail having a downwardly facing inclined surface formed by a V-shaped recess on one side and an upwardly facing inclined surface on the shoulder on the other side, the downwardly and upwardly facing inclined surfaces having longitudinally extending ball-rotating grooves semicircular in cross section; a plurality of balls acting as a series of load-carrying balls when running in the load region formed by the load ball grooves on the slide block and the mating ball-rotating grooves on the guide rail, the plurality of balls also acting as a series of no-load balls when running in the no-load ball holes in the slide block; and

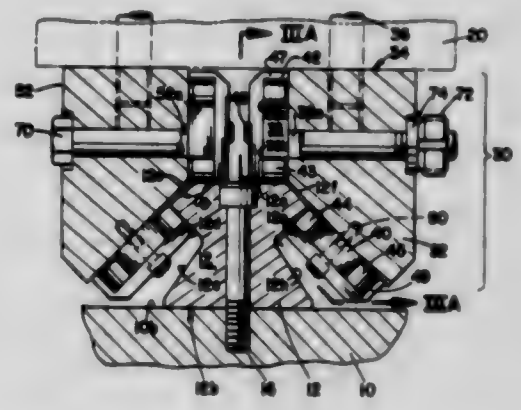
guide covers mounted to both ends of the slide block, the guide covers having guide grooves for guiding the balls between the load groove and the no-load hole.

4,496,197

LINEAR MOTION BEARING TRUCK AND RAIL ASSEMBLY

Ki C. Kwon, Charlotte, N.C., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 11, 1983, Ser. No. 484,019
Int. Cl.[3] F16C *29/06*
U.S. Cl. 308—6 C 10 Claims



1. A bearing assembly for use in supporting a member for movement along a rail having a longitudinally extending end surface, a first longitudinally extending side surface diposed adjacent to a first edge of the end surface and skewed at an acute angle to the end surface and a second longitudinally extending side surface disposed adjacent to a second edge of the end surface and skewed at an acute angle to the end surface, said bearing assembly comprising a first base section adapted to be disposed adjacent to the first side surface and first edge of the end surface of the rail, first connector means for use in connecting said first base section with the member, a first bearing block connected with said first base section and disposed adjacent to the first side surface of the rail, said first bearing block having a side surface extending parallel to the first side surface of the rail, a first circuitous array of bearing elements circumscribing said first bearing block, said first circuitous array of bearing elements including a first linear group of bearing elements having outer side surfaces which roll on the side surface of said first bearing block and the first side surface of the rail to enable force to be transmitted between said first bearing block and the first side surface of the rail, a second bearing block connected with said first base section and disposed adjacent to the end surface of the rail, said second bearing block having opposite side surfaces extending parallel to the end surface of the rail and extending at an acute angle to the side surface of said first bearing block, a second circuitous array of bearing elements circumscribing said second bearing block, said second circuitous array of bearing elements including a first linear group of bearing elements having outer side surfaces which roll on a first one of the side surfaces of said second bearing block and on the end surface of the rail to enable force to be transmitted between said second bearing block and the end surface of the rail, said second circuitous array of bearing elements including a second linear group of bearing elements having side surfaces which roll on a second one of the side surfaces of said second bearing block, a second base section formed separately from said first base section and adapted to be disposed adjacent to the second side

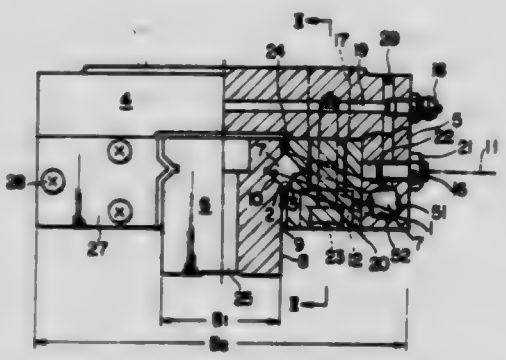
surface and second edge of the end surface of the rail, second connector means for use in connecting said second base section with the member, a third bearing block connected with said second base section and disposed adjacent to the second side surface of the rail, said third bearing block having a side surface extending parallel to the second side surface of the rail, a third circuitous array of bearing elements circumscribing said third bearing block, said third circuitous array of bearing elements including a first linear group of bearing elements having outer side surfaces which roll on the side surface of said third bearing block and the second side surface of the rail to enable force to be transmitted between said third bearing block and the second side surface of the rail, a fourth bearing block connected with said second base section and disposed adjacent to the end surface of the rail, said fourth bearing block having opposite side surfaces extending parallel to the end surface of the rail and extending at an acute angle to the side surface of said third bearing block, a fourth circuitous array of bearing elements spaced from said second circuitous array of bearing elements and circumscribing said fourth bearing block, said fourth circuitous array of bearing elements including a first linear group of bearing elements having outer side surfaces which roll on a first one of the side surfaces of said fourth bearing block and on the end surface of the rail to enable force to be transmitted between said fourth bearing block and the end surface of the rail, said fourth circuitous array of bearing elements including a second linear group of bearing elements having side surfaces which roll on a second one of the side surfaces of said fourth bearing block, and force transmitting means interconnecting said first and second base sections and disposed between a plane containing the end surface of the rail and a plane extending parallel to the end surface of the rail and through said second linear groups of bearing elements in said second and fourth circuitous arrays of bearing elements to hold said first and second base sections against separation under the influence of force components transmitted between said first and third bearing blocks and the first and second side surfaces of the rail.

4,496,198

ROLLER BEARING FOR ENDLESS LINEAR MOTION

Toshiaki Geka, Fussbeshi, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Sep. 27, 1983, Ser. No. 536,373
Claims priority, application Japan, Dec. 2, 1982, 57-211689
Int. Cl.³ F16C *29/06*
U.S. Cl. 308—6 C 7 Claims



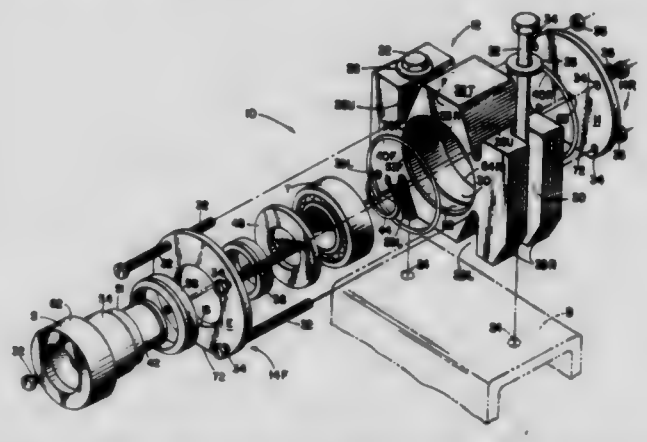
1. A roller bearing for endless linear motion wherein a casing mounted on a track rail of linear shape can perform endless linear motion through a plurality of rollers which circulate endlessly, characterized in that a circulating path of the rollers comprises, two linear ways including a load track made of right angle V grooves formed on a side surface of said track rail and an inner side surface of casing opposing said side surface of said track rail and a return hole which is parallel to said load track and which does not have its center on the bisecting plane of the V groove of said load track, and a direction changing path which is of a circular arc joining both ends of said two linear ways and allowing smooth direction change motion of the rollers, said return hole having a section of approximately square shape and being symmetric to said load track with respect to the perpendicular bisector of the line segment joining the centers of the rollers rolling in said return hole and load track, said direction changing path being a cylindrical surface of revolution which is approximately square shape in section and which is formed by revolving 180° between said load track and return hole with said perpendicular bisector being the axis of revolution.

4,496,159

PILLOW BLOCK ASSEMBLY AND SEALING SYSTEM THEREFOR

Mathieu J. Vertenstein, Denver, and Albert A. Amerigian, Aurora, both of Colo., assignors to Silver Engineering Works, Inc., Aurora, Colo.

Filed Oct. 12, 1983, Ser. No. 541,045
Int. Cl.³ F16C *19/28*
U.S. Cl. 384—474 12 Claims



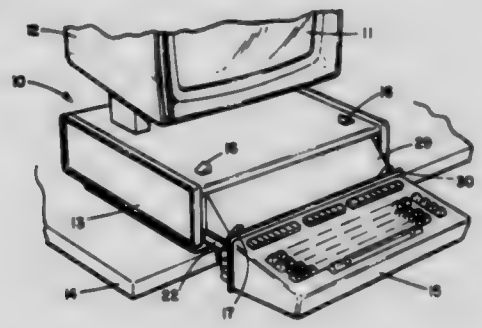
1. The pillow block for journalling a cylindrical element for rotational movement wherein said element has front and rear cylindrical surfaces separated by an annular shoulder, which comprises: a metal body cast to include front and rear substantially planar end surfaces, right and left sidewalls extending between said end surface each having at least one vertically-disposed passageway sized to loosely receive the shank portion of a fastener used for attaching same to a support therebeneath, surfaces atop each of said sidewall passageways defining a seat for the head of the fastener having its shank portion located within the latter, at least three horizontally-disposed oversize passageways spaced around the outside of the body extending between the ends thereof, a bored hole extending from end to end at least a portion of which is sized to receive a bearing and retain same in coaxial relation to said bore, and annular grooves surrounding said bored hole in both the front and rear faces thereof for receiving annular endplate seals; continuous annular static endplate seals seated within grooves in the front and rear faces of the body; front and rear endplates sized to cover both the bored hole and the horizontally-disposed passageways in the body, said endplates having apertures therein horizontally alignable with one another and with one of the horizontally-disposed passageways at opposite ends thereof, and at least one of said endplates having an oversize opening therein sized to loosely receive the cylindrical element for relative rotation; fastener means passing through the horizontally-disposed passageways in the body and aligned apertures in the endplates holding the aforesaid elements in fluid-tight assembled relation against the annular static endplate seals; and, first annular dynamic seal means carried by the cylindrical element for rotation therewith in continuous annular wiping contact with a surface bordering an oversize opening in one or both of the endplates.

4,496,200

DESK TOP KEYBOARD DISPLAY TERMINAL WITH AN ARTICULATED KEYBOARD

Arthur A. Hagstrom, Hoffman Estates, and Carl D. Swanson, Arlington Heights, both of Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed Sep. 30, 1982, Ser. No. 430,580
Int. Cl.³ A47B *21/00*
U.S. Cl. 312—208 3 Claims



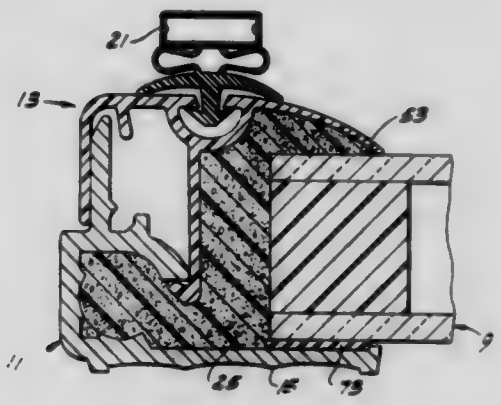
1. A desk top keyboard display terminal comprising:
a pedestal forming an enclosure and having at least top, bottom and front surfaces;
a housing for containing a CRT display, the housing mounted on top of the pedestal;
a keyboard mounted on the front surface of the pedestal; and
means for latching the keyboard to the pedestal, the means includes two substantially parallel members, each member having one end pivotably connected to the keyboard and the other end to the pedestal, each end connected to the keyboard having a slot;
a pair of movable spring loaded latches, each having a portion located above the top of the pedestal and each having a portion terminating in a tab projecting into the pedestal, wherein the tabs are arranged to engage the slots when the keyboard is moved up against the front of the pedestal, preventing further movement of the two pivotably connected members, thereby latching the keyboard to the front of the pedestal.

4,496,201

CLOSURE SUCH AS A GLASS DOOR FOR A REFRIGERATION OR FREEZER

David F. Allgeyer, Conway, Ark., assignor to UMC Industries, Inc., Stamford, Conn.

Filed Jul. 23, 1982, Ser. No. 401,117
Int. Cl.³ E06B *3/64*
U.S. Cl. 312—296 1 Claim



1. A door for a refrigerator or freezer exposed to relatively warm ambient air, which may be humid, at one face constituting its front and to relatively cold ambient air at its other face constituting its rear, comprising:
an open rectangular frame having a top, bottom and sides and a glass panel in the frame, the top, bottom and both sides of the frame each comprising a front member of metal and a rear member of plastic, the front member having a part extending in front of the glass panel and the rear member having a part extending in back of the glass panel, and means for securing said members together with the glass panel between said parts;
the plastic rear members being of low thermal conductivity relative to the metal front members for reduced heat transfer from the metal front members through the plastic rear members to maintain the metal front members warmer and avoid condensation of moisture on the exposed surfaces thereof;
each front member being a length of an aluminum extrusion of such transverse cross section as to have a front flange comprising the part extending in front of the glass panel, a web extending rearward from the outer margin of the front flange a distance less than the thickness of the glass panel, a rear flange extending inward from the web at the rear of the web narrower than the front flange and having its inner margin spaced outward from the edge of the glass panel, said rear flange having a lip at its inner margin curved toward the front flange, and a rib extending rearward from the rear flange, the rib being spaced inward from the web;
said web and rear flange in conjunction with said front flange defining a formation for receving hinge pins at the top and bottom of one side of the door;
each rear member being a length of plastic extrusion of such transverse cross section as to have a second flange providing the part extending in back of the glass panel, a rim extending forward from the outer margin of said rear member flange in interengagement with the rib of the front member, and a hook member extending forward from said rear member flange in interengagement with said rear flange of a front member, said hook member comprising a resilient flexible web extending forward from said rear flange member having a hook formation at its forward edge engageable with said curved lip, said rear member flange comprising an outer portion and an inner lip portion joined by a bridge portion with a slot between the inside edge of the outer portion and the outside edge of the inner lip portion, the hook member extending forward from the bridge portion, and a gasket being provided all around the rear of the frame having a portion extending through the slot securing it in place, the gasket being engageable with the cabinet of the refrigerator or freezer;
said door having a space within the frame all around the glass panel bounded by the frame, the front flange, web and rear flange of each front member, and the hook member, the bridge portion and the inner lip portion of each rear member, said space being filled with a foamed-in-place plastic foam thermal insulation material.

4,496,202

DEVICE FOR HIGH VOLTAGE TRANSFER BETWEEN TWO PARTS WHICH ARE ROTATABLE RELATIVE TO EACH OTHER

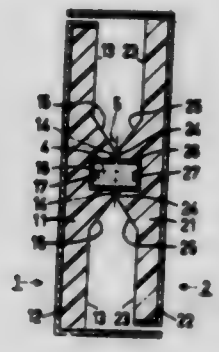
Friedrich K. Beckmann, Schenefeld; Thomas Heinzl, Norderstedt, and Horst Peemöller, Hamburg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 9, 1983, Ser. No. 502,888
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1982, 3221791
Int. Cl.³ H01R *39/02*
U.S. Cl. 339—5 R 6 Claims

1. A device for transferring high voltage between two parts which are rotatable with respect to each other, said device comprising:
a first insulator body arranged around an axis of rotation;
a first electrode arrangement partially embedded in the first insulator body so as to be concentric with the axis of rotation;
a second insulator body arranged around the axis of rotation to be rotatable with respect to the first insulator body; and
a second electrode arrangement partially embedded in the

second insulator body so as to be concentric with the axis of rotation;

characterized in that the second electrode arrangement comprises a screen having a U-shaped cross-section in a plane which includes the axis of rotation, said U-shaped cross-section opening toward the first electrode arrangement, the second electrode arrangement extending to within such a small distance of the first electrode arrangement that the two electrode arrangements bound an annular cavity which is substantially free of electric fields.



4,496,203

DRILL PIPE SECTIONS

Alan Meadows, Burton-on-Trent, England, assignor to Coal Industry (Patents) Limited, London, England

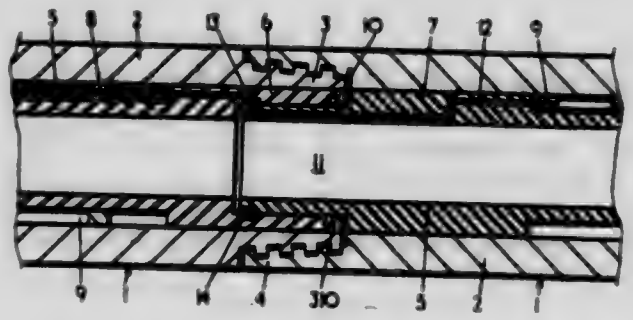
Filed May 20, 1982, Ser. No. 380,385

Claims priority, application United Kingdom, May 22, 1981, 8115799

Int. Cl.³ H01R *15/30*

U.S. Cl. 339—16 C

12 Claims



1. A drill pipe section for connection to adjacent drill pipe sections which, in use, are connected end to end to form a drill pipe string extending along a borehole, comprising a generally cylindrical housing member of electrically conductive material, a generally cylindrical lining member of relatively high resistance to electrical conduction and fixedly mounted inside and co-axial with the housing member, an electrically conductive element extending in a general direction along the two generally cylindrical members and effectively sandwiched between portions of the two generally cylindrical members, the electrically conductive element being electrically isolated from the housing member, and two annular electrically conductive coupling components associated with the ends of the electrically conductive element, respectively, one of the electrically conductive coupling components defining a radially inwardly directed electrically conductive coupling margin and the other of the two electrically conductive coupling components defining a radially outwardly directed electrically conductive coupling margin, the electrically conductive coupling components being formed by recessing the annular component into the lining member.

4,496,204

BOOSTER CABLE ASSEMBLY

William J. Conley, 36 Harvey St., Brockton, Mass. 02401

Continuation-in-part of Ser. No. 21,957, Mar. 19, 1979, abandoned. This application Mar. 30, 1983, Ser. No. 480,319

Int. Cl.³ H01R *11/22*

U.S. Cl. 339—29 B

5 Claims



1. In a booster-cable assembly of the type used to start automotive batteries, and formed of two conduits, each with a clamp means on each end thereof, the improvement wherein said conduits are joined in a common elongated segment over a major portion of their lengths, wherein each conduit comprises terminal segments, at each end thereof, for independent movement at each end of said common segment, and wherein the terminal segments at first end thereof differ substantially in length one from the other; wherein the terminal segments suitable for independent movement at the other end of said assembly are about equal in length with each other and with said shorter terminal segment at said first end thereof, wherein a longer terminal segment at said first end thereof is at least two times longer than said shorter terminal segment, and wherein said longer terminal cable comprises a reinforcing tube thereover, said tube comprising telescoped members, slidable, and snugly fitting one into the other and forming means to straighten said longer terminal segment.

4,496,205

LOW OR ZERO INSERTION FORCE CONNECTOR FOR MULTI-PIN ARRAYS

Gordon D. Christensen, San Jose, and Charles J. Donaher, Los Altos Hills, both of Calif., assignors to Thomas & Betts Corporation, Raritan, N.J.

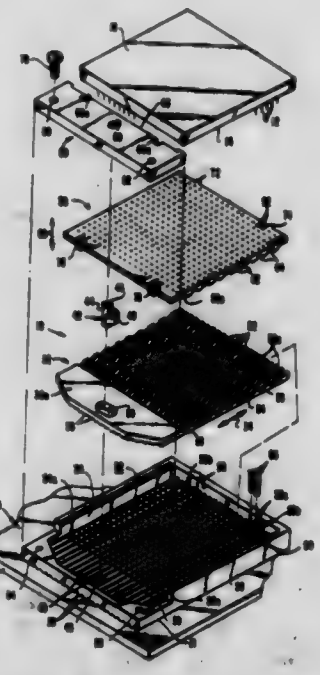
Filed Jul. 23, 1982, Ser. No. 401,369

The portion of the term of this patent subsequent to Dec. 27, 2000, has been disclaimed.

Int. Cl.³ H01R *13/629*

U.S. Cl. 339—74 R

16 Claims



1. An electrical connector for interconnecting a plurality of

terminal pins in predetermined array to companion apparatus, comprising:

(a) a housing;

(b) a plurality of contacts supported by said housing in said array and extending in a common direction, each such contact having a first terminal for connection to said companion apparatus and a second terminal adapted for receiving one such terminal pin and having facing elements self-biased into preselected attitude, each facing element defining a partial boundary surface for said terminal pin upon receipt thereof;

(c) cam means supported for movement in said housing in said common direction, said cam means adapted for receiving said terminal pins and defining a further partial boundary surface for each said terminal pin upon receipt thereof, said cam means being movable between a first position wherein said cam means engages said facing elements of all such second terminals to oppose such self-bias thereof and displace said facing elements from said preselected attitude whereby said pins may be readily received in said second terminals, and a second position wherein said cam means does not oppose said second terminal self-bias whereby said facing elements may exert full force of said self-bias upon pins therebetween; and

(d) cam actuator means movable in a direction transverse to said common direction for moving said cam means between said first position and said second position.

4,496,206

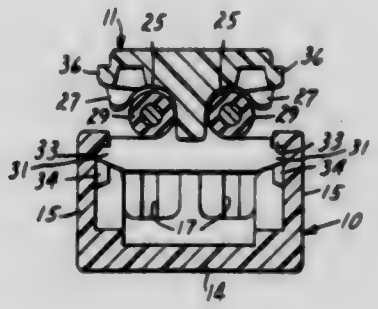
SIDE ENTRY ELECTRICAL WIRE CONNECTOR

Terrance L. Markwardt, Maplewood, and Gerald W. Telken, North Branch, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 24, 1982, Ser. No. 381,341

Int. Cl.³ H01R *11/20*

U.S. Cl. 339—98 3 Claims



1. An electrical wire connector comprising:

a hollow, open-topped, insulating body having a base wall and a pair of generally parallel side walls extending generally perpendicularly from said base wall,

a flat plate, wire connector element formed with a plurality of wire connecting slots retained in said body perpendicular to said side walls and said base wall, and

an insulating cover formed to telescope with said body, said cover having wire receiving channels for supporting wires, one in each channel, to carry a wire into each said connector element slot upon telescoping of said cover and said body fully together, at least one of said wire receiving channels being open-sided for insertion of a wire transversely into the channel when said body and said cover are in their open position, and at least one deformable resilient finger at the outer edge of each open-sided channel which the smallest wire size to be connected will snap past and which the largest wire size to be connected will readily press down upon insertion to retain the full range of wire sizes in the channel until the body and cover are telescoped together,

said body and cover being formed with complementary latch members to retain said body and cover in said open position to permit one wire for each wire connecting slot in said wire connector element to be inserted into said wire receiving channels and to retain said body and cover in a crimped position with said cover and body fully telescoped together.

4,496,207

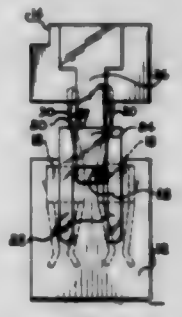
ELECTRICAL CONNECTOR WITH DUAL POSITION LATCHES

Joseph M. Ensminger, Long Lake, Minn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 962,077, Nov. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 824,156, Aug. 12, 1977, abandoned. This application May 27, 1980, Ser. No. 153,207

Int. Cl.³ H01R *13/38*

U.S. Cl. 339—99 R 1 Claim



1. In a connector for terminating a multiconductor flat cable having a base member with insulation-displacing contacts projecting therefrom, a unitary cover member having a guide slot therein containing spaced parallel scalloped surfaces for receiving a cable and apertures for receiving said contacts and a latching arrangement to hold the base and cover together in the assembled position, the improvement comprising,

having a dual latch arrangement wherein said cover member has a single parallel beam projecting from each side therefrom with a pair of integral spaced stops one above the other on each of said beams and said base member has an integral latching yoke with a pair of arms that extend upwardly from said base at each end, each said yoke having a cross-piece separating said arms located between stops in a pre-assembly position and beyond the stops in a latched position of the cover member with respect to the base member, each said beam being slidable between the arms of the yoke and between the cross-piece and the side wall of said base member, the ends of said contacts being enclosed in said apertures in the pre-assembly position and projecting through the guide slots in the latched position.

4,496,208

PLUG INNER CONDUCTOR FOR HF COAXIAL CABLES

Georg Spinner, Westerham, and Franz X. Pitschi, Rottach-Egern, both of Fed. Rep. of Germany, assignors to Spinner GmbH Elektrotechnische Fabrik, Fed. Rep. of Germany

Filed Apr. 22, 1982, Ser. No. 370,920

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1981, 8112282[U]

Int. Cl.³ H01R *17/18*

U.S. Cl. 339—177 R 9 Claims

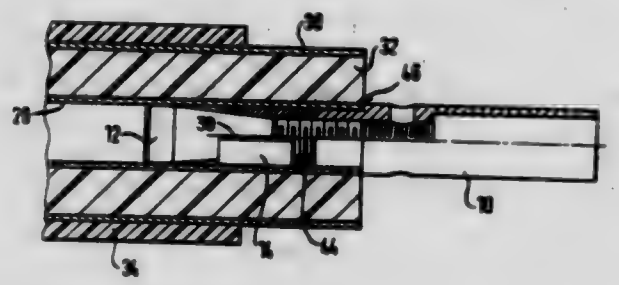
1. A plug inner conductor for connection to a tubular inner conductor of a coaxial cable, said plug inner conductor comprising:

a spreading sleeve having a slot formed therein which permits the effective diameter of said sleeve to be increased;

a clamping cone inserted through said spreading sleeve, the shape of said spreading sleeve and said clamping cone being such that said clamping cone places a radially outward force on said spreading sleeve, and thereby tends to increase the effective diameter of said spreading sleeve, as said clamping cone is moved axially through said spreading sleeve;

an inner conductor sleeve;

means for coupling said inner conductor sleeve to said clamping cone in such a manner that said clamping cone is moved axially with respect to said inner conductor sleeve as said inner conductor sleeve is rotated with respect to said clamping cone; and



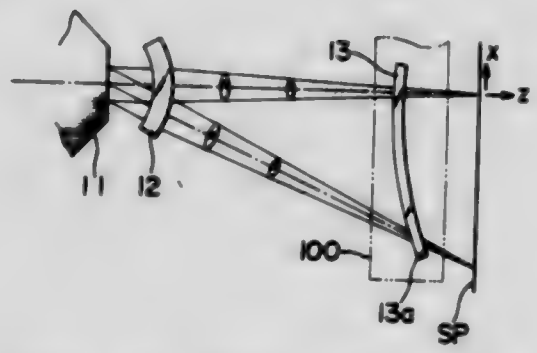
a compression spring located between confronting radial surfaces of said inner conductor sleeve and said spreading cone.

4,496,209

OPTICAL BEAM SCANNING APPARATUS INCLUDING A CYLINDRICAL LENS HAVING ITS OPPOSITE ENDS CLOSER TO THE SCANNED PLANE THAN ITS MEDIAL PORTION

Toyotsugu Itoh, Hachioji, and Toshio Muramatsu, Musashino, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1983, Ser. No. 476,811
Claims priority, application Japan, Mar. 21, 1982, 57-45058; Mar. 21, 1982, 57-45059
Int. Cl.³ G02B 27/17, 7/02
U.S. Cl. 350—6.8
16 Claims



1. In an optical beam scanning apparatus wherein a light beam from a light source is reflected by a rotary polygonal mirror and then radiated to a scanned plane through a condensing lens for scanning of the beam, the improvement in that a beam shaping means for forming a flat light beam which has a large width in the scanning direction and which is substantially parallel with the direction of the optical axis is disposed between said light source and said rotary polygonal mirror, and a cylindrical lens bent to have both ends in the longitudinal direction thereof approaching to said scanned plane is disposed between said condensing lens and said scanned plane in the vicinity of the latter.

4,496,210

LOW TEMPERATURE-FLEXIBLE RADIATION-CURABLE UNSATURATED POLYSILOXANE COATED FIBER OPTIC

Robert E. Ansel, Hoffman Estates; Orvid R. Cutler, Rolling Meadows, and Elias P. Moschovis, Morton Grove, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Jul. 19, 1982, Ser. No. 398,161
Int. Cl.³ B05D 5/06; G02B 5/172
U.S. Cl. 350—96.3
18 Claims

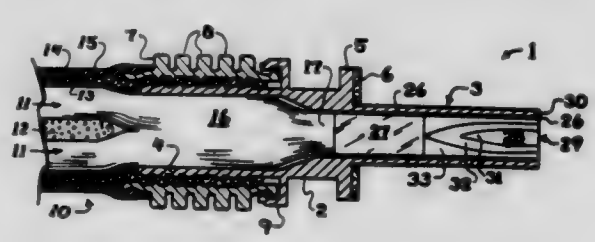
1. An optical glass fiber prime coated with an ultraviolet-cured coating composition having a modulus of elasticity at room temperature and at −60° C. below 3000 psi. said coating composition being a liquid, polyethylenically unsaturated, radiation-curable coating composition consisting essentially of an organic polysiloxane having from 2 to 6 reactive side chains each of which carry a functional group providing one reactive site which has been reacted to provide a single radiation-curable monoethylenically unsaturated side chain, there being about one such side chain for every 500 to 5,000 units of molecular weight.

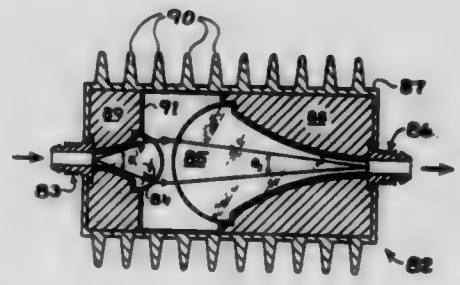
4,496,211

LIGHTPIPE NETWORK WITH OPTICAL DEVICES FOR DISTRIBUTING ELECTROMAGNETIC RADIATION

Maurice Daniel, 550 Jaycox Rd., Avon Lake, Ohio 44012

Filed Dec. 5, 1980, Ser. No. 213,462
Int. Cl.³ G02B 5/17
U.S. Cl. 350—96.20
21 Claims





1. In combination, a lightpipe and optical coupler assembly for terminating said lightpipe comprising a plurality of optical fibers each having an optical core section with an optical index of refraction, said optical fibers forming said lightpipe, and a coupler assembly connected to one end of said lightpipe, said coupler assembly including a body having a hollow inner sleeve structure for receiving one end of said optical fibers, the end of said optical fibers within said inner sleeve structure being fused into a single rod, and a hollow shaft section extending coaxially from said inner sleeve structure, said hollow shaft section including optical mixing means mounted therein for receiving light from the fused end of said optical fibers, said optical mixing means having an index of refraction which is substantially equal to the index of refraction of the optical core section of said optical fibers.

4,496,212

DEAD END FITTING FOR USE IN OVERHEAD ELECTRIC AND OPTICAL TRANSMISSION SYSTEMS

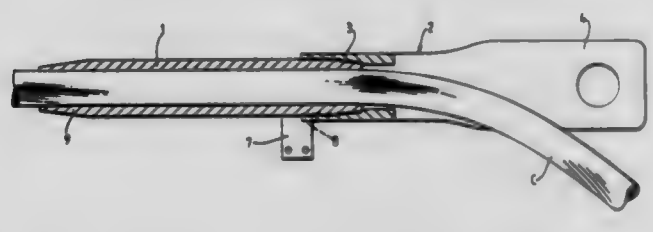
Peter Harvey, London, England, assignor to BICC Public Limited Company, London, England

Filed Feb. 15, 1983, Ser. No. 466,742
Claims priority, application United Kingdom, Feb. 18, 1982, 8204766
Int. Cl.³ G02B 7/26; H02G 7/00
U.S. Cl. 350—96.20
7 Claims

1. A dead end fitting for connection to an end of an overhead electric conductor having, within a substantially circumferentially rigid central core, an elongate compartment in which is loosely housed at least one optical fibre, which dead end fitting comprises a sleeve of malleable metal or metal alloy, open at each of its ends, for compression jointing to an overhead electric conductor; a separately formed termination of metal or metal alloy of high mechanical strength which, over a part of

its length at one of its ends, is of generally tubular form and is in screw threaded engagement with an end of the sleeve and which, at the other of its ends, is in the form of a clevis; and, for effecting electrical connection to an electric jumper cable, a separately formed lug which is permanently secured to the sleeve, a part of the lug engaging in a notch in the adjacent end of the termination to positively lock the screw threaded engagement between the sleeve and termination.

2. An overhead electric and optical transmission system of the kind in which at least one overhead electric conductor has, loosely housed in an elongate compartment in a central core, at least one optical fibre, in which system at least one said over-



head electric conductor is mechanically secured to a tower through at least one electric insulator by means of a dead end fitting comprising a sleeve of malleable metal or metal alloy, open at each of its ends, and compression jointed at one end to the overhead electric conductor to such an extent that the central core of the overhead conductor is not so distorted that there is risk of damage to the or any optical fibre loosely housed in the elongate compartment in the central core; means at the other end of the sleeve securing the fitting to said electric insulator and of such a form that access to said other open end of the sleeve is not impeded; and means on the sleeve electrically connecting the sleeve to an electric cable.

4,496,213

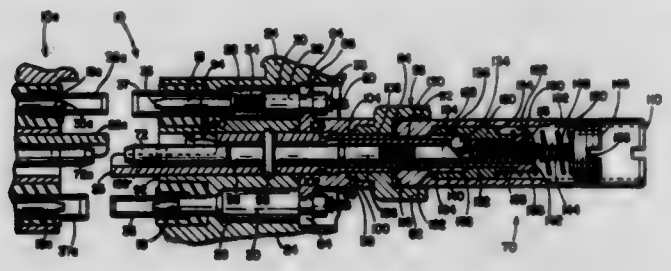
AUDIBLE INDICATOR FOR A CONNECTOR

Leslie M. Borsuk, Los Alamitos, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 29, 1982, Ser. No. 437,738

Int. Cl.³ G02B *7/26*

U.S. Cl. 350—96.22 **16 Claims**



1. A connector member adapted to mate with a second connector member having an actuating surface thereon comprising:

a connector body containing at least one contact;

said connector body having a front face;

a movable actuating element slidable in an axially extending passage in said body, said actuating element being exposed at said front face of said body and adapted to be moved by the actuating surface of said second connector member when said connector members are mated; and

means in said connector body for providing an audible indication of mating of said connector members, said means being responsive to movement of said actuating element by said actuating surface of said second connector member.

4,496,214

OPTICAL CABLE

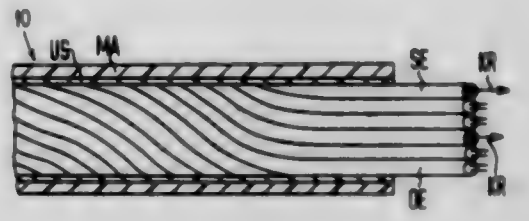
Ulrich Oestreich, and Werner Schubert, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 17, 1982, Ser. No. 349,452

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1981, 3108381

Int. Cl.³ H02B *5/16*

U.S. Cl. 350—96.23 **10 Claims**



1. In an optical cable having a plurality of optical transmission elements and a plurality of auxiliary elements for supporting tension loads, said transmission elements each having at least one optical fiber and being stranded with the auxiliary elements on a central core with an alternating direction of twist to form at least one layer of SZ stranded elements, said cable including a common jacket surrounding the SZ stranded elements, the improvement comprising means for holding the SZ stranded optical transmission elements and auxiliary elements inside of the jacket so that a longitudinal pull on at least one auxiliary element at a point of separation of the cable causes the SZ stranding of both the auxiliary element and the adjacent optical transmission elements to be cancelled over a limited length of the elements and provides an excess length for each of the elements.

4,496,215

FIBER OPTIC CABLE

Joseph M. Shaheen, La Habra, and Herbert W. Yancey, Downey, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 23, 1982, Ser. No. 421,761

Int. Cl.³ G02B *5/16*

U.S. Cl. 350—96.23 **12 Claims**

1. A relatively flat fiber optic cable having at least one contour for connecting at least one optical transmitter to at least one optical sensor in an electronic assembly, said relatively flat fiber optic cable comprising:

at least one flat, straight segment, each flat, straight segment having;

a first surface layer;

a second surface layer, said first and second surface layers being stacked in parallel plane relation;

a resin layer, said first surface layer and said second surface layer being bonded together by said resin layer;

a plurality of fiber optic filaments, each said fiber optic filament being embedded in said resin layer in a predetermined pattern; each said fiber optic filament being spaced in precise predetermined parallel relation with adjacent fiber optic filaments within said flat straight segment of said fiber optic cable, said flat fiber optic cable also having;

at least one curved segment, each respective curved segment having;

an entry segment,

an exit segment, and

a contoured segment having a predetermined contour and being interposed between said entry segment and said exit segment;

each respective entry segment and each respective exit segment having;

a top surface layer,

an adhesive layer interposed between said top surface

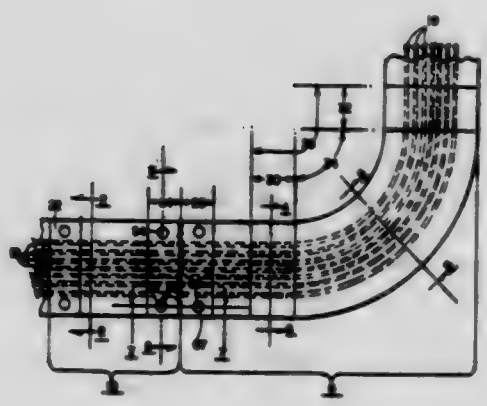
layer and said first surface layer, said top surface layer being laminated to said first surface layer;

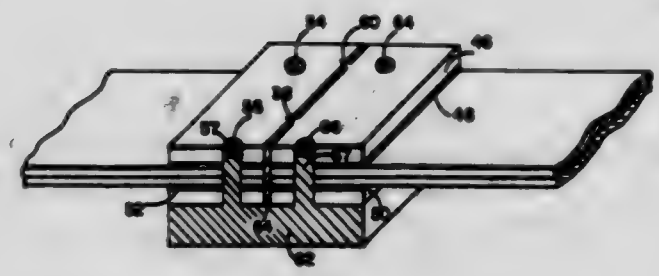
a bottom surface layer,

a bottom adhesive layer interposed between said bottom surface layer and said second surface layer, said bottom surface layer being laminated to said second surface layer by said bottom adhesive layer;

means for terminating each respective fiber optic filament to facilitate optically coupling each respective optical transmitter to a respective optical sensor;







whereby, said first surface layer, said second surface layer, said resin layer and said fiber optic filament form a relatively flat, thin, flexible, ribbon fiber optic cable having at least one contour and a cross section relatively free of voids; said fiber optic cable's relative flatness, thinness and flexibility facilitating installation of said fiber optic cable in an electronic assembly and wherein said entry segment and said exit segment couple said contoured segment to said fiber optic cable.

4,496,216

METHOD AND APPARATUS FOR EXPOSING PHOTOSENSITIVE MATERIAL

James J. Cowan, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 30, 1982, Ser. No. 454,728

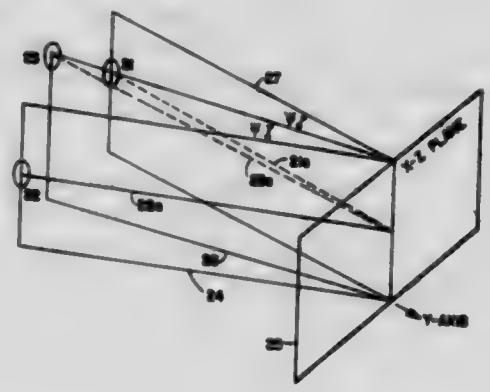
Int. Cl.³ G02B *5/18*

U.S. Cl. 350—162.17 16 Claims

1. An apparatus for simultaneously exposing a photosensitive material to at least three coherent beams of exposing radiation which comprises

a laser;

means for dividing the wavefront of said beam emanating from said laser into equal parts; at least three mirrors reflecting said divided beams, the number of said mirrors corresponding to the number of parts of said beam, and wherein



said mirrors are located symmetrically around an axis perpendicular to the plane of the surface of said photosensitive material.

4,496,217

ACTUATING DEVICE FOR PHOTOGRAPHIC LENS ASSEMBLY

Masao Aoyagi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

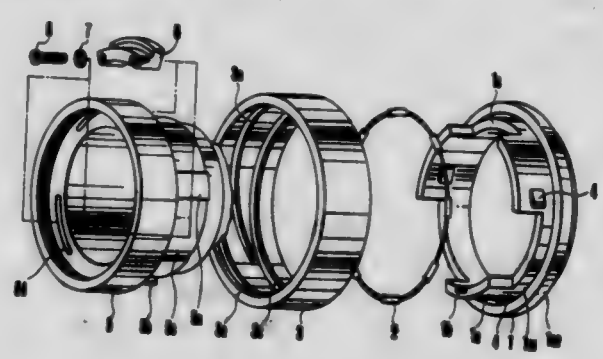
Continuation of Ser. No. 324,521, Nov. 24, 1981, abandoned.

This application Feb. 28, 1984, Ser. No. 583,293

Claims priority, application Japan, Nov. 28, 1980, 55-170716[U]

Int. Cl.³ G02B *7/04*; F16H *53/06*

U.S. Cl. 350—255 7 Claims



1. A device for actuating a movable lens defining an optical axis comprising:

a lens holding member having said movable lens mounted therein, said lens holding member having an outer peripheral surface having formed thereon a cam part for controlling movement of said movable lens;

a supporting member for supporting said lens holding member;

an operating member for operating said movable lens;

a cam following member fixedly mounted on said operating member; and

adjusting means to adjust fixed positions of said cam following member and said lens holding member, said adjusting means operating to adjust the fixed position of said cam following member in the direction around said optical axis.

4,496,218

HYDRAULIC AUTOMATIC LIGHT CONTROL

Charles E. Woods, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 24, 1982, Ser. No. 391,817

Int. Cl.³ G05D *25/00*

U.S. Cl. 350—267 12 Claims

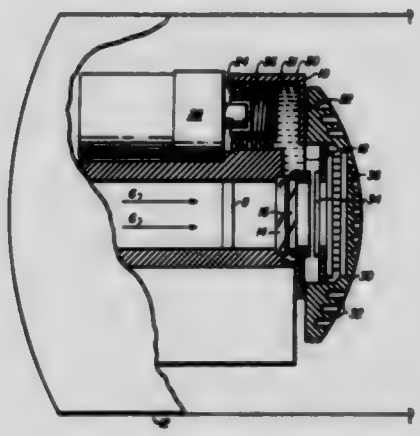
1. A hydraulic automatic light control consisting of:

a housing;

a fixed optical element mounted in said housing for permitting light to pass through said housing;

a movable optical element attached to said housing by a diaphragm and placed in proximity to but not against said fixed optical housing such that light must pass through both optical elements and the space between them to pass through said housing;

a working fluid in the space between said optical elements for creating an absorption path;



a piston sealing said working fluid in said space between optical elements for exerting a pressure on said fluid; and

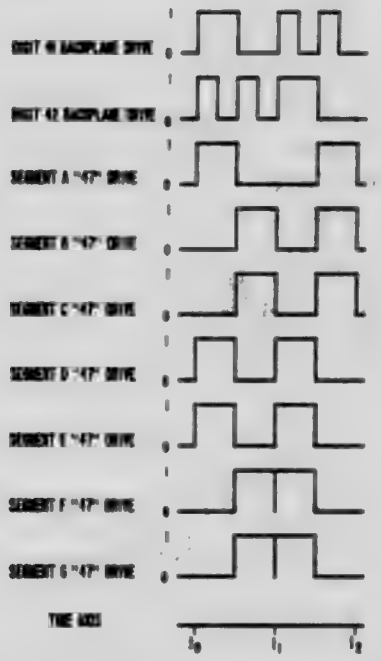
a drive motor connected to said piston for moving said piston such that the change of pressure on said fluid varies the amount of flexing by said diaphragm which in turn changes the thickness of working fluid between the optical elements.

4,496,219

BINARY DRIVE CIRCUITRY FOR MATRIX-ADDRESSED LIQUID CRYSTAL DISPLAY

Ted N. Altman, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 4, 1982, Ser. No. 432,780
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—332 **5 Claims**



1. A matrix-addressed liquid crystal display system including:

an electrically controlled liquid crystal display divided into modules, each module having a common electrode and a plurality of opposed segment electrodes between which potential gradients may be selectively established through the liquid crystal;

means for time-division-mulitplex addressing the common electrodes of said modules during sequential addressing intervals, including

means for applying a first phase of square-wave signal of a predetermined amplitude and a first square-wave repetition rate to the common electrode of the selected one of said modules during each addressing interval;

means for parallelly addressing the segment electrodes of said modules with a second phase of square-wave signal of said predetermined amplitude and said first square-wave repetition rate during each of said addressing intervals, or with first phase of square-wave signal of said predetermined amplitude and first square-wave repetition rate, depending on whether or not the common electrode of a selected one of said modules is to have a field between it and the respective ones of those segment electrodes opposed to it, said first and second phases of said first square-wave repetition rate being opposite each other; and

the improvement wherein said means for time-division-multiplex addressing the common electrodes of said modules during sequential addressing intervals also comprises:

means for applying to the common electrode of each non-selected one of said modules a square-wave signal of said predetermined amplitude, but of a second square-wave repetition rate which is an even harmonic of that applied to the common electrode of said selected module.

3. A method for deselecting a segment in a matrix-addressed liquid crystal display device which receives on the first of first and second opposing electrodes associated therewith a square-wave drive voltage of a predetermined amplitude and of a first frequency, said method comprising the step of:

applying on the second electrode a square-wave drive voltage of said predetermined amplitude and of a second frequency, which second frequency is an even harmonic of said first frequency.

5. A method for deselecting a segment in a matrix-addressed liquid crystal display device which receives on the first of first and second opposing electrodes associated therewith a first binary-valued drive voltage of a relatively high value for half of a segment selection time interval and of a relatively low value for the remaining portion of that segment selection time interval, said method comprising the steps of:

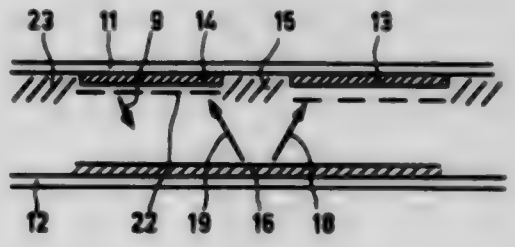
applying on the second electrode a second binary-valued drive voltage, which is of said relatively high value half the time said first binary-valued signal is said relatively high value and half the time said first binary-valued signal is said relatively low value, and which is of said relatively low value half the time said first binary-valued signal is said relatively high value and half the time said first binary signal is said relatively low value.

4,496,220

INFORMATION DISPLAY DEVICE COMPRISING A LIQUID CRYSTAL CELL

Michel Goscianski, Limeil-Brevannes, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 10, 1978, Ser. No. 885,302
Claims priority, application France, Mar. 21, 1977, 77 08403
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—341 **11 Claims**



1. A picture display device comprising

a liquid crystal cell including a layer of nematic liquid crystal between two sets of electrodes,

said liquid crystal having molecules in proximity to said electrodes with a predetermined orientation within parallel planes that are perpendicular to the plane of said electrodes, said orientation being variable under an electric field, and

intermediate spaces between portions of said electrodes at least at one side of said liquid crystal, said liquid crystal having molecules in proximity to said intermediate spaces being at an angle differing from the angle of said molecules in proximity to said electrodes by a difference ranging from a few degrees to a few tens of degrees.

4,496,221

LIQUID CRYSTAL COMPOSITIONS WITH PLEOCHROIC ANTHRAQUINES DYES

Kenneth J. Harrison, Malvern Link; Edward P. Raynes, Malvern; Frances C. Saunders, Malvern Wells, and David J. Thompson, Whitefield, all of England, assignors to Secretary of State for Defence in Her Britanic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland of Whitehall, London, England

Filed Feb. 24, 1982, Ser. No. 352,060

Claims priority, application United Kingdom, Feb. 25, 1981, 8105959; Feb. 25, 1981, 815961; Mar. 5, 1981, 8106995; Sep. 30, 1981, 8129530

The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.

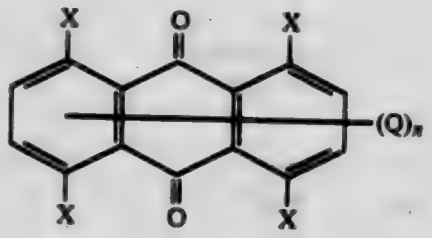
Int. Cl.³ C09K 3/34; G02F 1/13

U.S. Cl. 350—349

37 Claims

1. A composition adapted for use in a guest-host liquid crystal device, said composition comprising a solution of a liquid crystal material and a pleochroic dye in which the pleochroic dye comprises at least one anthraquinone compound free from water solubilizing and ionic substituents and has the formula:

Formula I

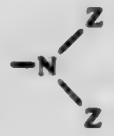


wherein:

n is zero or an integrer between 1 and 4 inclusive;

each Q is independently selected from NH_2, OH, C_1 to C_{20} alkyl, mono- and bi-carboxycyclic aryl, NO_2 and halo;

each X is independently selected from H, —SR,



and Q;

each R is independently selected from C_1 to C_{20} alkyl, mono- and bi-carbocyclic aryl and C_4 to C_8 cycloalkyl;

each Z is independently selected from H, C_1 to C_{20} alkyl, mono- and bi-carbocyclic aryl and C_4 to C_8 cycloalkyl;

provided that at least two of the groups X are different —SR groups.

4,496,222

APPARATUS AND METHOD FOR PHOTOLITHOGRAPHY WITH PHASE CONJUGATE OPTICS

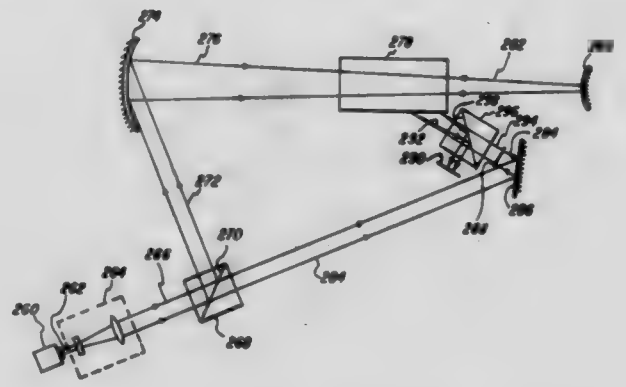
Rajiv R. Shah, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 332,384, Dec. 21, 1981, abandoned. This application May 1, 1984, Ser. No. 605,984

Int. Cl.³ G02F 1/35

U.S. Cl. 350—354

4 Claims



1. A system for producing a reduced image on a surface sensitive electromagnetic radiation comprising:

(a) an emitting device producing a beam of coherent electromagnetic radiation;

(b) a beam splitter incident to said beam separating said beam into a power beam and an imaging beam;

(c) a mask incident to said imaging beam with said original image thereon to amplitude modulate said imaging beam to form an imaged beam;

(d) a convergence device incident to said power beam to produce a converging power beam;

(e) a divergence device incident to said converging power beam to produce a diverging power beam being collinear and coextensive with said converging power beam;

(f) a nonlinear medium incident to said converging power beam, said diverging power beam, and said imaged beam to produce a phase conjugated beam; and

(g) a target object having said surface disposed thereon incident to said phase conjugated beam producing a reduced image.

4,496,223

COMPACT AFOCAL ATTACHMENT FOR USE WITH PHOTOGRAPHIC OBJECTIVES

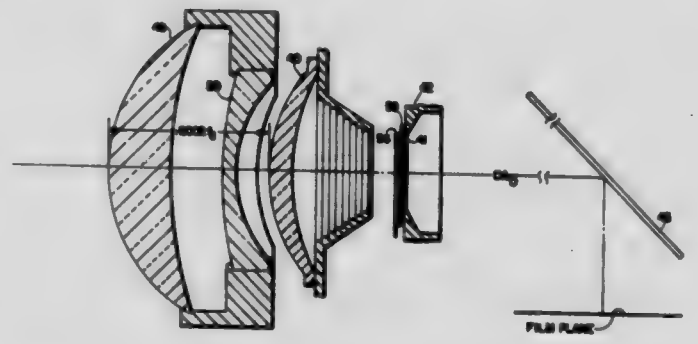
James G. Baker, Bedford, N.H., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 4, 1981, Ser. No. 318,105

Int. Cl.³ G02B 9/10, 9/12, 13/18

U.S. Cl. 350—432

16 Claims



1. A substantially afocal lens of Galilean form for use with a following objective lens to increase its focal length, said afocal lens consisting of no more than three lens elements the first of which is a positive meniscus element and the last of which is a

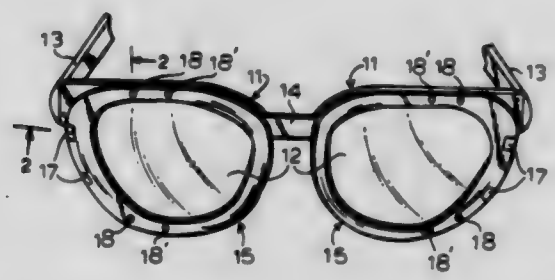
negative plastic element spaced behind said positive meniscus element, the ratio of the radius of the front surface of said first positive meniscus element to the axial separation between the first surface of said first meniscus element and the last surface of said negative plastic element being no greater than 1.3 and the angular magnification of said afocal lens being no greater than 1.5.

4,496,224

EYEGLASS FRAME WITH POCKET CLIP

Charles B. Allen, 5 Briarfield La., Huntington, N.Y. 11743

Filed Sep. 29, 1982, Ser. No. 426,696
The portion of the term of this patent subsequent to Feb. 23, 1999, has been disclaimed.
Int. Cl.³ G02C 3/00
U.S. Cl. 351—155 10 Claims



1. An improved frame for eyeglasses, comprising:
a pair of interconnected rims, each of which is configured to surround and support an eyeglass lens, said rims each having a top, bottom and two side segments which cooperatively define an outer surface; and
at least one clasp superimposed over at least about ⅓ of the outer surface of one of said rims and resiliently secured to the side segment thereof which is distal to the other of said rims by means of at least one spring element, said clasp being configured and dimensioned to correspond to the configuration and width of the portion of the outer surface over which it is superimposed, said clasp having a central section which normally overlies said distal side segment and two arms extending from opposite ends of said central segment which normally overlie at least a portion of said top and bottom segments of the associated rim, said clasp also being generally spaced above said portion of said outer surface to permit a portion of a user's garment to be inserted between said clasp and said rim and so as to effect releasable securement of said frame to a user's garment so inserted therebetween.

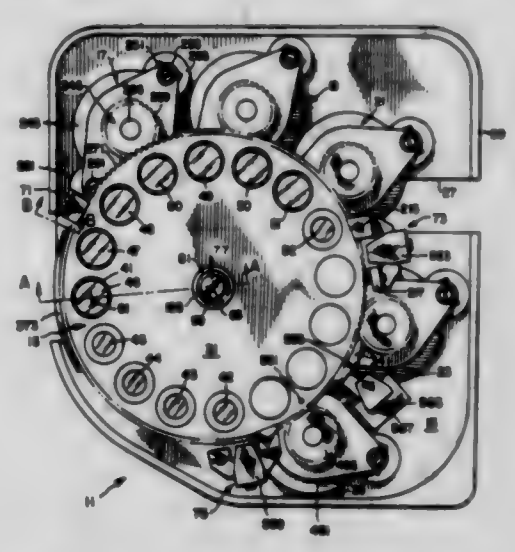
4,496,225

MOTOR CONTROL SYSTEM FOR MOTORIZED OPHTHALMIC INSTRUMENT

Peter Augusto, Huntington Beach, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Jul. 22, 1981, Ser. No. 285,716
Int. Cl.³ A61B 3/02
U.S. Cl. 351—234 14 Claims

1. In an ophthalmic instrument including a base and one or more optical elements positionable along an optical axis:
(a) a disk including a plurality of openings for supporting at least some of said optical elements, said disk supported relative to said base for rotation about an axis from a position where one of said openings is aligned with said optical axis to at least one other position where another of said openings is aligned with said optical axis, one of said positions on said disk constituting a reset position when aligned with said optical axis;
(b) a stepping motor having a plurality of detent positions and a shaft for driving said disk about said rotation axis, said motor being in one of said detent positions when said disk is in said reset position;
(c) means for sending signals to said motor to rotate said disk; and
(d) means for interrupting said signals to said motor before



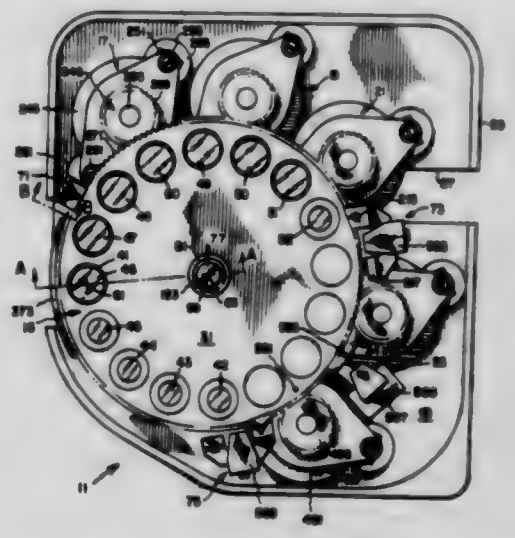
the magnetic detent position where said disk is in said reset position but subsequent to the immediately preceding detent position, said means including a reflective block on said disk and an encoder secured relative to said base.

4,496,226

ANDED MOTOR CONTROL SYSTEM FOR MOTORIZED OPHTHALMIC INSTRUMENT

Peter Augusto, Huntington Beach, Calif., and Donn E. Stevens, Rochester, N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Jul. 22, 1981, Ser. No. 285,717
Int. Cl.³ A61B 3/02
U.S. Cl. 351—234 6 Claims



1. In an ophthalmic instrument comprising: a base; a rotatable optical element; a stepping motor having a plurality of detent positions and a shaft for rotating said element; means, including a rotatable support for said element, for coupling said shaft to said element, whereby said motor can rotate said element relative to said base, one of the positions of said element wherein said motor is in one of said detent positions, constituting a reset or zero position; means for sending signals to said motor to rotate said element; and means for interrupting said signals to said motor before the magnetic detent position where said element is in said reset position but subsequent to the immediately preceding detent position, said means including at least two reflective blocks secured to said coupling means, a pair of encoders, decoder logic means for transforming analog signals to digital signals coupled to said encoders, and latch means coupled to both said decoder logic means and said means for sending signals to said motor, each of said encoders including an LED and a phototransistor, each of said

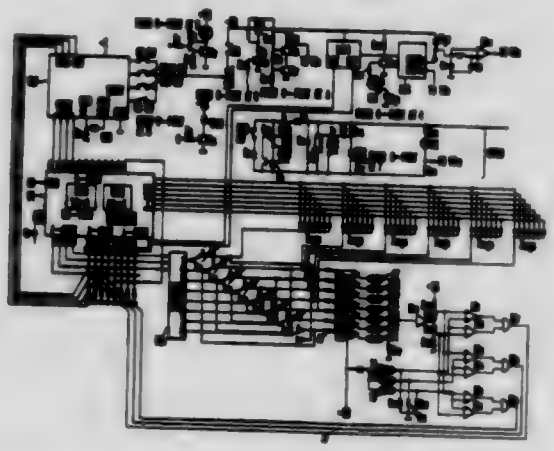
phototransistors sending analog signals to said decoder logic means, which signals change when the light emitted by said corresponding LED is reflected back to said phototransistor by said corresponding block, said decoder logic means changing said digital signal when said analog signals from said encoders are concurrently above their threshold values and the resultant signals ANDed, said latch latching as a function of said change in digital signal and sending a signal to said means for sending signals to said motor.

4,496,227

PHOTOGRAPHIC OPERATION CONTROL CIRCUIT FOR CAMERA

Isao Harigaya; Shuichi Tamura; Mutsuhide Matsuda, all of Kanagawa; Michio Hirohata, Inagi; Fumio Ito, and Tetsuya Taguchi, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 105,659, Dec. 20, 1979, Pat. No. 4,458,996. This application May 27, 1981, Ser. No. 267,669
Claims priority, application Japan, Dec. 27, 1978, 53-165878
Int. Cl.³ G03B *17/00*
U.S. Cl. 354—289.12 10 Claims



1. A display device for camera comprising:

(a) signal forming means for producing a signal representative of the set value of distance by a distance setting member;

(b) distance detecting means for detecting the object distance, said means producing a signal corresponding to the detected object distance;

(c) a digital display circuit responsive to the signals from said signal forming means and said distance detecting means for displaying the set value of distance, and the detected object distance value;

(d) said digital circuit including a plurality of display elements, and means for activating the display elements which are prescribed by the said detected object distance signal and set distance value; and

(e) said means for activating including a control circuit responsive to said distance detecting means for activating prescribed ones of said elements to form a first mark and responsive to said signal forming means for activating others of said display elements according to the set value to form a second mark different from the first mark.

4,496,228

CAMERA SUPPORT

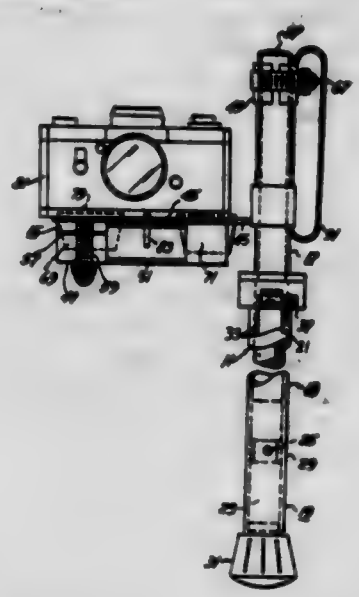
John D. Schmidt, 1634 Ovwrbrook Dr., Englewood, Fla. 33533

Filed Sep. 29, 1982, Ser. No. 426,262
Int. Cl.³ G03B *17/00*
U.S. Cl. 354—293 16 Claims

1. A camera support comprising:

(a) an angle-shaped base having two legs and having fixed to each leg thereof a tubular member;

(b) an elongated member slidably disposed in one of said tubular members; and



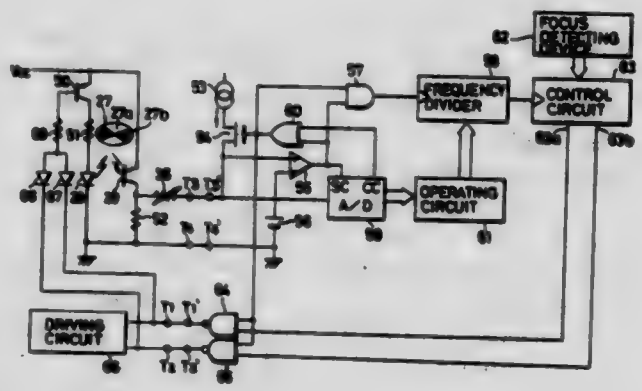
(c) means for positioning and holding said angle-shaped base in position on said elongate member.

4,496,229

APPARATUS FOR TRANSMITTING INFORMATION SIGNALS IN A CAMERA

Akira Ogasawara, Kanagawa, Japan, assignor to Nippon Kogaku K.K., Japan

Filed Jul. 26, 1983, Ser. No. 517,283
Claims priority, application Japan, Jul. 26, 1982, 57-129939
Int. Cl.³ G03B *3/10, 13/02*
U.S. Cl. 354—400 13 Claims



1. An auto-focusing camera having an imaging optical system with a focusing lens movable along the optical axis and means for driving said focusing lens said camera comprising:

(a) a taking lens unit with said imaging optical system including terminal means having a first electrical contact, first transmission means which, in response to the movement of said focusing lens, feeds said first electrical contact with a voltage having a substantially constant and periodically repeating peak value, and second transmission means which is energized to feed said first electrical contact with a voltage associated with the focal length of said imaging optical system; and

(b) a camera body including means for generating an information signal indicating the deviation from a predetermined focal plane of the image of the object that is formed by said imaging optical system, terminal means inclusive of a second electrical contact coupled to said first electrical contact and which is coupled to the terminal means in said taking lens unit, response means connected to said second electrical contact which, in response to said first transmission means, feeds an output signal for energizing said second transmission means between peaks of said periodic voltage, and control means preparing a signal for

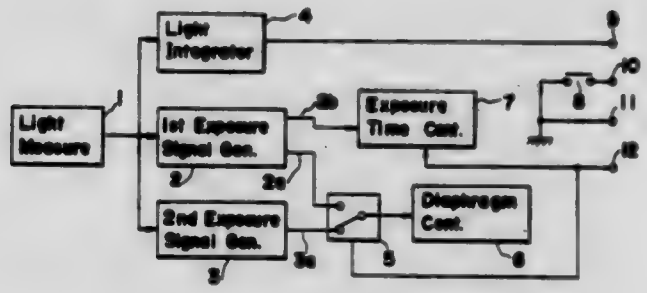
controlling said drive means from the voltage generated at said second electrical contact and said information signal.

4,496,230

EXPOSURE CONTROL DEVICE FOR CAMERAS

Masaaki Nakai, Kitakatsuragi; Masayoshi Sahara, Sennan; Hiroshi Hosomizu, Sakai, and Tokuji Ishida, Daito, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 16, 1982, Ser. No. 395,991
Claims priority, application Japan, Jul. 17, 1981, 56-112812
Int. Cl.³ G03B *15/05*
U.S. Cl. 354—416 11 Claims



1. An exposure control system for a camera adapted to be coupled with an electronic flash device which supplies a control signal to the camera representing a ready condition of the device, said system comprising:

a light measuring means including a first photoelectric member for receiving light of a scene to be photographed, through a camera objective lens and the diaphragm aperture, and generating a first photoelectric signal as a function of the intensity of the received light;

a first programed signal means for generating a first exposure control signal which changes with said first photoelectric signal according to a first program for natural light photography;

a second programed signal means for generating a second exposure control signal changing in dependence on said first photoelectric signal obtained before actuation of the diaphragm without illumination of said scene by flash light and according to a second program for flash photography;

a diaphragm control means for controlling said diaphragm aperture in accordance with either said first or second exposure control signal;

a first switch means for connecting said diaphragm control means normally with said first programed signal means and with said second programed signal means in response to said control signal;

an exposure time control means for controlling camera exposure time in accordance with the photoelectric signal which is generated with said photoelectric member receiving the light through the diaphragm aperture determined by said diaphragm control means in accordance with the first exposure control signal; and

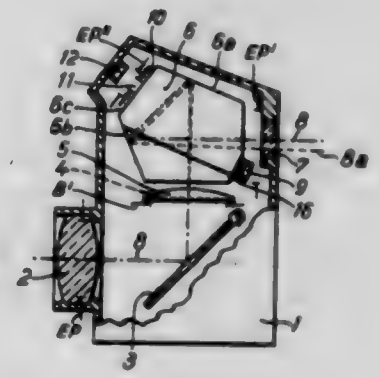
means responsive to said control signal for switching said exposure time control means to a condition for providing a predetermined exposure time suitable for flash photography.

4,496,231

MIRROR REFLEX CAMERA WITH EXPOSURE METER

Knut Heitmann, Wetzlar, and Klaus-Dieter Schaefer, Braunfels, both of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Jul. 21, 1982, Ser. No. 400,253
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1981, 3129069
Int. Cl.³ G03B *7/099*
U.S. Cl. 354—429 8 Claims



1. A mirror reflex camera comprising:

(a) a picture taking objective having a horizontal optical axis and an exit pupil (EP) projected by said picture taking objective;

(b) exposure metering means comprising first and second photoelectric detection systems (9,12);

(c) a viewer system located along said optical axis comprising in series a focusing screen having a plane, a field lens, a pentaprism and an eyepiece, said optical axis offset in parallel from its original path by two reflections in said pentaprism and exiting said eyepiece;

(d) said pentaprism having means (6*b*,6*c*) for deviating said exit;

(e) mirror means comprising a partly transmitting concave mirror (16) provided at the lower edge of the exit surface of said pentaprism (6); said mirror means receiving light flux of said exit pupil for reflection to a surface (6*c*) of said pentaprism; and

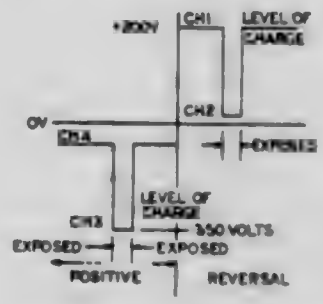
(f) said first photoelectric detection system located behind said concave mirror in the direction of said light flux and said second photoelectric detection system located behind said surface in the direction of said light flux reflected by said concave mirror.

4,496,232

APPARATUS FOR AND METHODS OF MAKING BIMODAL ELECTROPHOTOGRAPHIC COPIES

Rudolph Guzik, Chicago, Ill., assignor to Bell & Howell, Chicago, Ill.

Division of Ser. No. 110,427, Jan. 7, 1980, abandoned. This application Jun. 8, 1981, Ser. No. 271,154
Int. Cl.³ G03G *15/00*; G01D *15/06*
U.S. Cl. 355—3 CH 7 Claims



1. A bimodal electrophotographic imaging reader/printer for reading and printing either black on white or white on

black original documents, with the printing always being black on white copy, whereby said reader/printer may operate in either a positive or a reversal mode of operation, said reader/-printer comprising:

means for selectively applying a positive bias for a reversal mode of printout interchangeably with a removal of said bias for a positive mode of operation;

means responsive to a selection of the positive mode of operating for applying a negative electrostatic charge to one surface of a layer of a coated material, means for exposing the negatively charged surface to an image having light and dark areas for causing the negative surface charge to dissipate in varying degrees depending on the amount of light in the exposed image areas, magnetic brush means with said bias removed for applying a positively charged toner to said exposed image area;

means responsive to a selection of the reversal mode of operating for applying a positive electrostatic charge to one surface of a layer of a coated material, means for exposing the positively charged surface to an image having light and dark areas for causing the positive surface charge to dissipate in varying degree depending on the amount of light in the exposed image areas, magnetic brush means having said positive bias applied thereto for applying said positively charged toner to said exposed image area; and

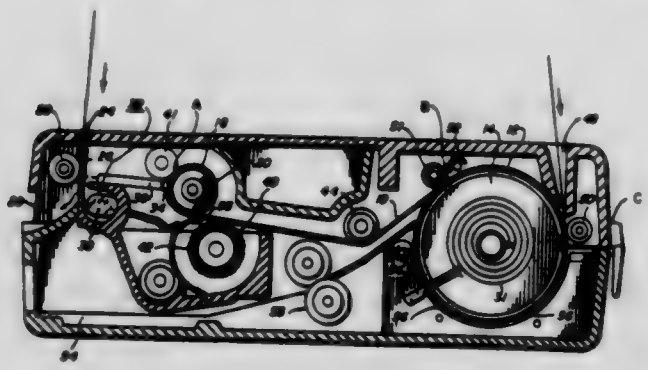
means for fusing the deposited toner onto the coated material in both of said modes of operation.

4,496,233

ELECTROSTATIC REPRODUCING MACHINE

Charles A. Gage, Webster; Timothy T. Blair, Shortsville, and Thomas W. Morgan, Macedon, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 28, 1983, Ser. No. 489,622
Int. Cl.³ G03G *15/16*
U.S. Cl. 355—3 TR 20 Claims



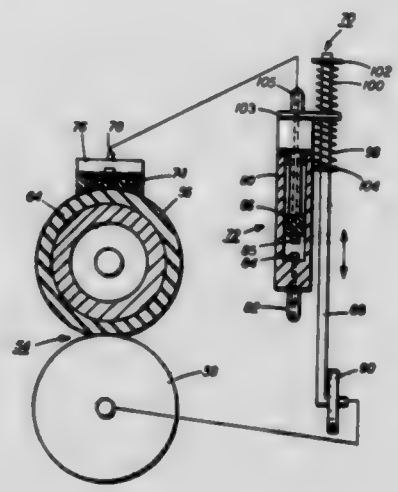
1. An electrostatographic reproducing apparatus comprising a movable resuable electrostatographic imaging web having an insulating imaging surface on an electrically grounded conductive substrate, a web supply roll and a web take up roll comprising a conductive substrate and a dielectric coating thereon, one end of said web being fastened to said web supply roll, the other end of said web being fastened to said web take up roll, said web supply roll and said web take up roll being spaced apart, means to transport an imaging surface along a path past a series of operational processing stations including means to form an electrostatic latent image on said web, means to develop said electrostatic latent image on said web with toner to form a toner image, said means to form and said means to develop being sequentially positioned along said web between said web supply roll and said web take up roll; a developed toner image and copy substrate contact station, said apparatus also including a copy substrate entrance to the apparatus, a copy substrate path to guide said copy substrate from said entrance to said copy substrate contact station, means to transport said copy substrate along said copy substrate path, the distance along the imaging surface path from said image forming station where the lead edge of an image is formed on the imaging surface to the initial line of contact of the imaging surface with the copy substrate being equal to the distance along said copy substrate path from the copy sheet entrance to the initial line of contact of the lead edge of the copy substrate with the lead edge of the image on the imaging surface, drive means to contact the leading edge of the toner image on said web with said lead edge of a copy substrate, means to wind said imaging web with said developed toner image thereon and said copy substrate around said take up roll to form a sandwich comprising said insulating layer bearing said electrostatic latent image and toner image, said sandwich comprising in sequential order a conductive substrate support for said insulating layer, said insulating layer, the toner image, copy substrate, dielectric layer, and conductive electrode; means for applying a potential to said conductive electrode after said sandwich is formed of a magnitude and potential sufficient to create an electric field to transfer toner from the insulating layer to the copy substrate, means to discharge the electrostatic latent image on said insulating layer before separation of said sandwich, and means to strip said copy substrate from said dielectric layer while said field is applied, drive means to unwind said web from said take up roll and to rewind said web on said supply roll in preparation for the next imaging cycle.

4,496,234

RELEASE AGENT MANAGEMENT SYSTEM FOR HEAT AND PRESSURE FUSER APPARATUS

Joseph G. Schram, Liverpool, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 2, 1983, Ser. No. 490,616
Int. Cl.³ G03G *15/20*
U.S. Cl. 355—3 FU 8 Claims



1. Release agent management apparatus for use with a heat and pressure fuser for fixing toner images to copy substrates by passage of the substrates between two pressure engaged rolls, said apparatus comprising:

a pump including a piston;

means operatively coupling said pump to one of said two rolls whereby said pump is actuated upon the engagement and disengagement of said two rolls; and

means responsive to actuation of said coupling means for causing said pump to operate at a variable velocity.

4,496,235

FUSER APPARATUS

Ernest J. Tamary, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

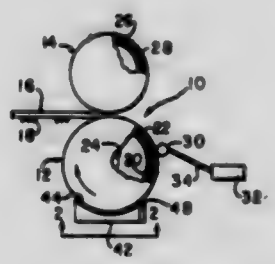
Filed May 31, 1983, Ser. No. 499,638
Int. Cl.³ G03G *15/20*
U.S. Cl. 355—3 FU 8 Claims

7. Fuser apparatus comprising

means having a fusing surface for fusing an unfused image carried by a support brought into contact with said surface, said surface (1) being dimensioned to fuse supports of

a maximum predetermined dimension and supports of at least one lesser dimension and (2) being coated with release material; and

means for removing excess release material in the areas of



said fusing means surface between the ends of said lesser dimensioned support and the ends of said maximum dimensioned support and for redistributing such removed release material to the portion of said surface in contact with said lesser dimensioned support.

4,496,236

ANODIZED ELECTROSTATIC IMAGING SURFACE

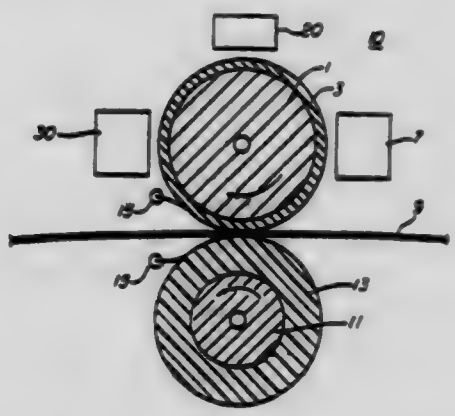
Leo A. Beaudet, Milford, and Donald J. Lennon, Acton, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Continuation of Ser. No. 346,349, Feb. 5, 1982, Pat. No. 4,413,049, which is a continuation-in-part of Ser. No. 164,482, Jun. 30, 1980, , which is a continuation-in-part of Ser. No. 155,354, Jun. 2, 1980,. This application Sep. 6, 1983, Ser. No. 529,195

The portion of the term of this patent subsequent to Nov. 1, 2000, has been disclaimed.

Int. Cl.[3] G03G *15/22*

U.S. Cl. 355—3 DR 17 Claims



1. Electrostatic imaging apparatus, comprising:

a dielectric image member, comprising a substrate of a material selected from the group aluminum and aluminum alloys, with a dielectric surface layer having a resistivity of at least 10^{12} ohm-centimeters produced by hardcoat anodizing the substrate to form an oxide surface layer, dehydrating the oxide surface layer, impregnating the dehydrated surface layer with a material selected from the group consisting of compounds of Group II or Group III metals with fatty acids, and removing excess material from the member's surface;

means for forming a latent electrostatic image on the dielectric image member;

means for toning the latent electrostatic image; and

means for simultaneously transferring and fusing the toned image from the image member to an image receptor.

4,496,237

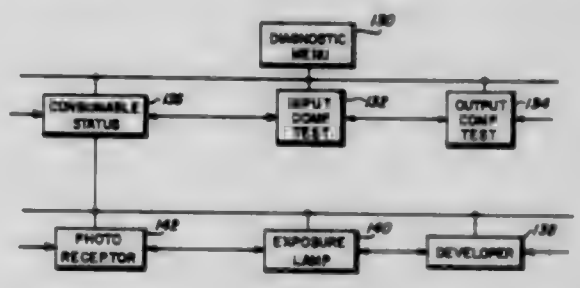
CONSUMABLE STATUS DISPLAY

Steven M. Schroa, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 9, 1982, Ser. No. 406,652

Int. Cl.[3] G03G *15/00*

U.S. Cl. 355—14 C 3 Claims



1. In a reproduction machine having a plurality of discrete operating components cooperable with one another to produce images on copy sheets and including an operator console having an alphanumeric display and a scrolling switch and a controller with a nonvolatile memory for storing indications of the operation of selected operating components, the operating components being grouped into categories, each category having subcomponents for monitoring, the method of monitoring the operation of a selected operating component including the steps of

entering a display mode to display a diagnostic menu,

scrolling the categories of reproduction machine components on the display in response to the activation of said scrolling switch,

selecting a category of machine components,

scrolling a set of subcomponents on the alphanumeric display within the said first selected category in response to the activation of said scrolling switch, and

selecting one of said subcomponents for monitoring.

4,496,238

IMAGE RECORDING APPARATUS

Masaharu Tsukada, Kawasaki; Junichi Kimizuka, and Haruo Shimizu, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 7, 1983, Ser. No. 482,893

Claims priority, application Japan, Apr. 15, 1982, 57-54726[U]

Int. Cl.[3] G03G *15/00*

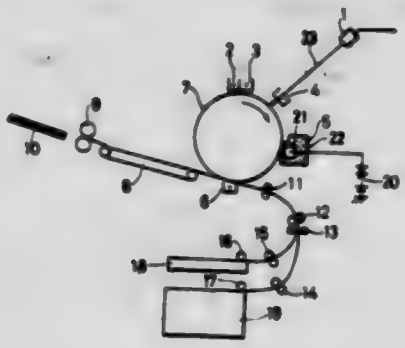
U.S. Cl. 355—14 D 2 Claims

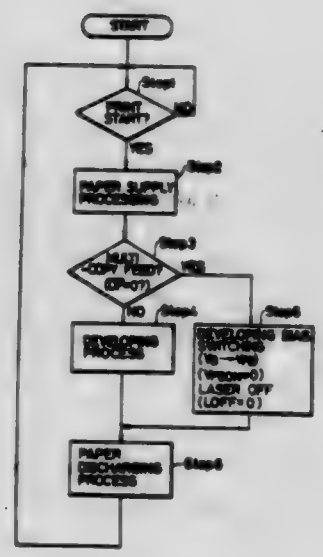
1. An image recording apparatus having:

a developer carrying member for guiding and supplying developer to a latent image on the surface of an image bearing member to cause the developer to adhere to said latent image;

means for supplying a bias voltage to said developer carrying member;

means for detecting the feed of multiple transfer mediums; and





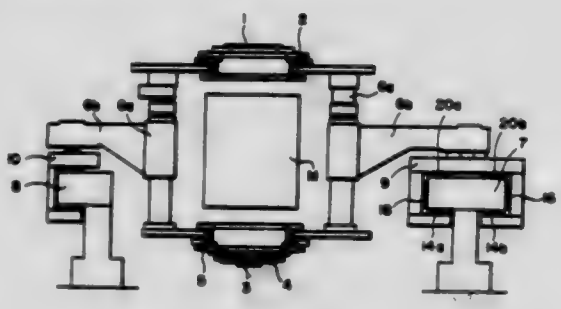
means for varying the bias voltage to said developer carrying member in response to the detecting operation of said multi-copy feed detecting means.

4,496,239

PROJECTION EXPOSURE APPARATUS

Junji Isohata, and Mitsuya Sato, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1982, Ser. No. 440,429
Claims priority, application Japan, Dec. 29, 1981, 56-215336
Int. Cl.³ G03B 27/52, 27/42, 27/32
U.S. Cl. 355—30
8 Claims



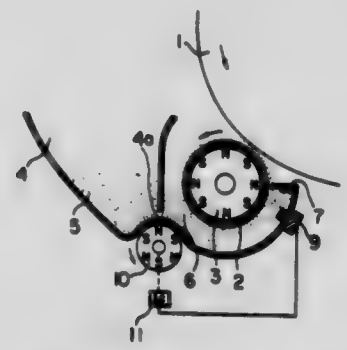
1. A projection exposure apparatus comprising:
negative holding means for holding a negative;
photosensitive member holding means for holding a photosensitive member;
a projection optical system for projecting an image of the negative upon the photosensitive member;
movable means for coupling said negative holding means and said photosensitive member holding means;
guide means for guiding said movable means in a scanning direction;
first compensating means for compensating for distortion of the image of the negative by said projection optical system by controlling the temperature of at least one of the negative and the photosensitive member; and
second compensating means for compensating for inclination of the posture of said movable means during the movement thereof and for compensating for distortion of the image of the negative on the photosensitive member.

4,496,240

APPARATUS FOR CONTROLLED DELIVERY OF MAGNETIC TONER

Keitaro Yamashita, Saitama, and Hiromi Kashiwagi, Kumagaya, both of Japan, assignors to Hitachi Metals, Ltd., Japan

Continuation of Ser. No. 298,172, Aug. 31, 1981, abandoned.
This application Oct. 17, 1983, Ser. No. 541,492
Claims priority, application Japan, Sep. 1, 1980, 55-120893
Int. Cl.³ G03G 15/00
U.S. Cl. 355—14 D
3 Claims



1. An apparatus for developing an electrostatic latent image by means of a single component magnetic toner, having a non-magnetic cylindrical sleeve disposed to oppose a surface of a photo-sensitive member, and a magnetic roll disposed in said sleeve and having a plurality of magnetic poles, said apparatus further comprising:
a container provided with developing tank means for receiving the magnetic toner to be supplied onto the non-magnetic cylindrical sleeve and for receiving any excess magnetic toner carried by said sleeve and not transferred to said latent image, said container further including toner supply tank means for holding a supply of the magnetic toner, said toner supply tank means being in communication with said developing tank means via a communication portion including a wall;
a doctor blade disposed at a toner outlet of said developing tank means and adapted to adjust the thickness of a layer of the magnetic toner conveyed to said latent image on said non-magnetic sleeve due to relative rotation between said non-magnetic sleeve and said magnet roll;
means for detecting the amount of the magnetic toner attracted onto said non-magnetic sleeve and for generating a signal in response to said detected amount, said detecting means being disposed in the developing tank means upstream of said doctor blade as viewed in the direction of conveyance of the magnetic toner;
rotating means for supplying the magnetic toner from the toner supply tank means to the developing tank means, said rotating means comprising a magnet roll with a plurality of magnetic poles provided on a surface thereof, and being disposed to control the flow of toner through said communication portion, said magnet roll positioned adjacent said communication wall and being rotatable in a predetermined direction to move the magnetic toner from said toner supply tank means to said developing tank means along said wall; and
means for actuating said rotating means in accordance with the signal generated by said detecting means, thereby controlling the delivery of the magnetic toner from said toner supply tank means to said developing tank means based on the amount of toner in said developing tank means.

4,496,241

PROCESS AND DEVICE FOR RELATIVELY ALIGNING THE IMAGE AND OBJECT SURFACES IN OPTICAL COPYING SYSTEMS

Herbert E. Mayer, Eschen, Liechtenstein, assignor to Censor Patent- und Versuchs-Anstalt, Vaduz, Liechtenstein

PCT No. PCT/AT80/00007, § 371 Date Oct. 14, 1980, § 102(e) Date Oct. 10, 1980, PCT Pub. No. WO80/01721, PCT Pub. Date Aug. 21, 1980

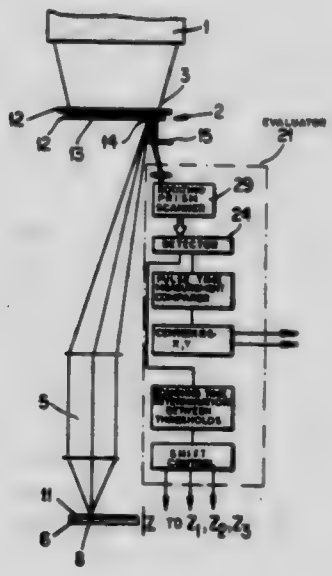
Continuation-in-part of Ser. No. 197,991, Oct. 10, 1980,. This PCT application Feb. 6, 1980, Ser. No. 476,249

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1979, 2905635

Int. Cl.³ G01B *11/26*

U.S. Cl. 356—152

8 Claims



1. A process for relatively aligning an object surface and an image surface in a projection-copying system, comprising the steps of:

providing a window with two parallel edges on said object surface;

providing a line mark parallel to said edges on an area of said image surface designed to coincide with an image of said window;

projecting an image of said window upon said area through a projection objective and a semitransparent mirror inserted between said object surface and said objective;

retroprojecting an image of the projected window image along with an image of said line mark by way of said objective and said semitransparent mirror upon a detection plane to form a composite image thereon;

scanning said composite image in a direction perpendicular to said line mark and said parallel edges, thereby generating electrical signals corresponding to the luminous intensity of the scanned image elements;

comparing a time interval elapsing between a first pulse and a second pulse, respectively representing a traverse of one of said edges and of said line mark, with a time interval elapsing between said second pulse and a third pulse, representing a traverse of the other of said edges, as a measure of the position of said line mark relative to said window;

relatively displacing said object and image surfaces to center the image of said line mark in the retroprojected image of said window;

determining the scanning time required for one of said pulses to pass between a predetermined lower and a predetermined higher intensity threshold as a measure of sharpness of focus; and

varying the distance between said object and image surfaces along the optical axis of said objective until said scanning time attains a minimum value.

4,496,242

APPARATUS FOR POSITIONING A CONTACT LENS UNDER A RADIUSCOPE

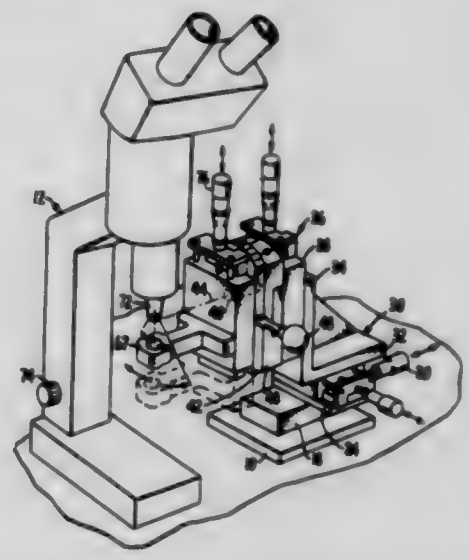
John Clough, Clearwater, and Henry H. Hollidge, Seminole, both of Fla., assignors to Automated Optics, Inc., Clearwater, Fla.

Filed Dec. 22, 1981, Ser. No. 333,261

Int. Cl.³ G01N *21/01*

U.S. Cl. 356—244

5 Claims



1. An apparatus for positioning the curved surface of a lens relative to a lens examining device to facilitate inspection of the entire lens surface, comprising:

a support base;

a first slide for providing linear translation along a vertical axis relative to said support base;

a support member affixed to said first slide so as to be rotatable relative to said slide about a horizontal pivot axis;

a second slide mounted on said support member and providing linear translation along a normally vertical axis perpendicular to said horizontal pivot axis; and

a lens support structure mounted on said second slide, the distance between said lens support structure and said horizontal pivot axis being variable by means of movement of said second slide along its axis of translation in accordance with the radius of curvature of a lens to be inspected so that a portion of the lens surface is always maintained in a fixed focal area with rotation of said support member about said horizontal axis.

4,496,243

CONTACT LENS HOLDER

Takeshi Machida, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

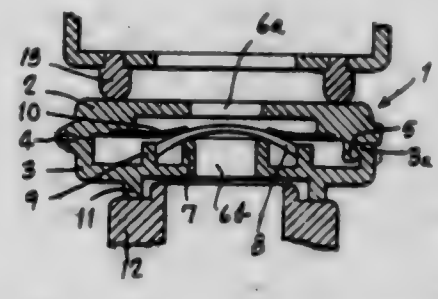
Filed Mar. 29, 1982, Ser. No. 363,153

Claims priority, application Japan, May 29, 1981, 56-78564[U]

Int. Cl.³ G01N *21/01*

U.S. Cl. 356—244

2 Claims



1. A contact lens holder for use between the lens presser and lens support of a lens meter for measurement of a contact lens, comprising a cover and a casing which are openably joined to

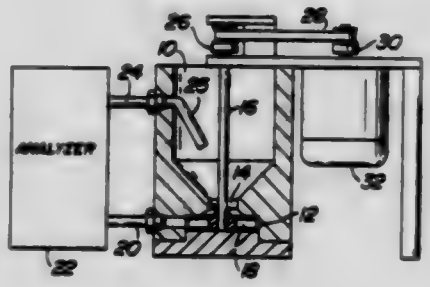
each other, said casing having a leg adapted to support said lens holder on the lens support of said lens meter, said cover and said casing having first and second aligned openings, respectively, for passage therethrough of a beam of light emitted from the lens meter, said casing having an annular wall which defines said second opening and has a diameter which is less than the diameter of the contact lens to be measured, said annular wall adapted to engage the concave side of the contact lens and support the contact lens with the concave side thereof directed toward said second opening, an annular projection surrounding said annular wall in spaced relation thereto, said annular projection having a diameter such that it engages the peripheral edge of the contact lens to assure the proper positioning of the contact lens with respect to said lens meter and prevent lateral movement of said contact lens, and said cover having a plurality of angularly spaced resilient tongues attached in a cantilevered fashion to said cover for engaging the convex side of the contact lens to resiliently hold the contact lens against said annular wall to prevent movement of the contact lens axially of said first and second openings, whereby said contact lens is accurately positioned with respect to said lens meter and prevented from movement in the vertical or horizontal directions.

4,496,244

SMALL VOLUME MIXING AND RECIRCULATING APPARATUS

Albert R. Ludwig, Holiday, Fla., assignor to General Signal Corporation, Stamford, Conn.

Filed Jan. 17, 1983, Ser. No. 458,230
Int. Cl.³ B01F *7/02, 7/16, 15/02*
U.S. Cl. 366—136 **3 Claims**



1. A small volume mixing and delivery system for supplying small particles suspended in a vehicle so as to form a slurry for delivery and recirculation, comprising:

a mixing chamber having cylindrical sides, a conical bottom having an opening at its lowest point and a pivotable inlet tube adjustable to introduce recirculated slurry into said chamber in a manner to selectively enhance or diminish the establishment of a vortex in said chamber;

a high speed rotatable impeller;

an outlet tube;

an impeller housing encasing said impeller and connected to said chamber at said opening and to said outlet tube, said opening being such that the housing receives the slurry from the mixing chamber and closely couples the housing with the mixing chamber so that the high speed rotation of the impeller coupled with the force of the recirculated slurry produces a vortex in said chamber for mixing said slurry in the chamber while the impeller pumps said slurry through said outlet tube;

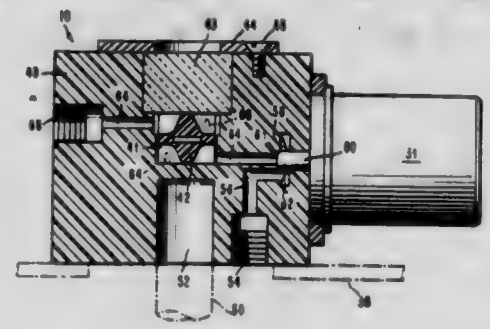
shaft means for rotating said impeller in said housing, said shaft means extending through said slurry to a point above the level of said slurry for connection to a power drive train arranged to drive said impeller.

4,496,245

LIQUID CHROMATOGRAPHY PROPORTIONING VALVE AND MIXER

Frederick L. Conrad, Poughkeepsie, N.Y.; Louis R. Palmer, Newtown, and Arthur A. Roberts, Danbury, both of Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 7, 1983, Ser. No. 472,903
Int. Cl.³ B01F *7/16, 13/08, 15/02*
U.S. Cl. 366—143 **11 Claims**



1. In a device for continuously mixing solvents flowing into a liquid chromatography system, the combination of:

a body having a cylindrical mixing chamber therein, said chamber having a cylindrical first portion of a constant first diameter and a cylindrical second portion of a constant second diameter larger than that of said first diameter, said first and second portions constituting the entire mixing chamber, said body further having inlet passage means communicating with said first portion of said chamber for continuously admitting solvents to be mixed into said chamber, and outlet passage means communicating with said second portion of said chamber for conducting solvents mixed in said chamber away therefrom and into said chromatography system; and

a magnetic star wheel stirrer rotatably disposed in and substantially filling said chamber, said stirrer being rotatable about an axis of said chamber, said star wheel stirrer extending through said first and second portions and being adapted to be driven by a rotary magnetic field, said star wheel stirrer having a central web and two spoked sections on either side of said web, one spoked section being disposed in said first portion for mixing solvents therein and the other spoked section being disposed in said second portion inwardly of said outlet passage means for mixing solvent in said second portion, said stirrer rotating in a cylindrical volume within said chamber which volume has a diameter slightly less than said first diameter, whereby the larger diameter of said second portion allows any gases in said mixing chamber to flow around said stirrer and outwardly through said outlet passage means without becoming entrapped in said other spoked section and blocking the flow of liquids through said device.

4,496,246

TIMEPIECE CONSTRUCTION

Tomio Ota; Mamoru Miyasaka, and Inao Hiraga, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Oct. 20, 1981, Ser. No. 313,109
Claims priority, application Japan, Oct. 21, 1980, 55-147448; Nov. 7, 1980, 55-157192
Int. Cl.³ G04B *00/00*
U.S. Cl. 368—88 **10 Claims**

1. An electronic wristwatch driven by a stepping motor comprising:

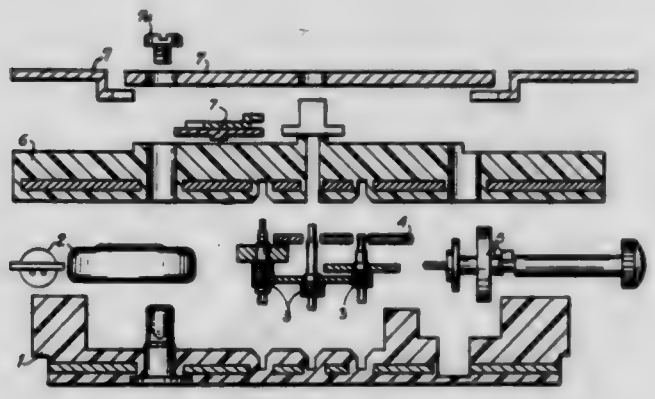
at least a first frame and a second frame, said first and second frames being formed of metal plates with plastic layers integrated to said metal plates, said plastic layers being substantially separated, in a plan view, into concave and convex portions, the concave and convex portions at each said separated plan view portion being adapted to mount

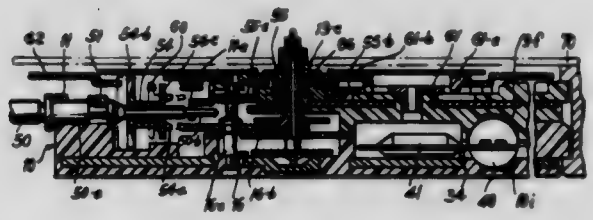
components substantially of a functional block of said wristwatch;

a gear train including a rotor portion of said stepping motor for driving said display, said gear train being positioned between said first and second frames;

a ring-shaped date dial and a date dial guard disposed between a dial and one of said first and second frames; said date dial guard supporting said ring-shaped date dial, said dial guard being a metal plate, said first and second frames and said date dial guard each having a hole, said holes being concentric;

a threaded tube fixed in the concentric hole of the other one of said first and second frame;





a bridge screw passing through said concentric holes from the side of said dials to engage said threaded tube, said first and second frames and said date dial guard being supported together in common by said bridge screw when said gear train and said rotor are arranged on the concave portion of said plastic layer, at least a part of the convex portion being used as a spacer between said two frames, the heads of said threaded tube and said bridge screw being respectively overlapped with the metal plate in the frame and the metal of the dial guard so that the axial forces created by the bridge screw are supported by the metal of the frame and dial guard.

4,496,247

DISPLAY DEVICE WITH TRANSPARENT COVER AS A VIBRATOR OF A SOUND GENERATOR

Akio Kumada, Kokubunji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

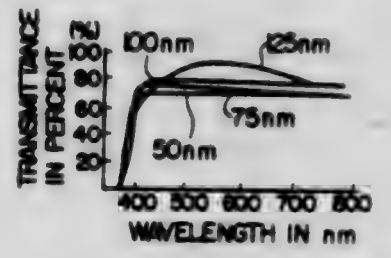
Division of Ser. No. 199,231, Oct. 21, 1980, abandoned. This application Dec. 30, 1982, Ser. No. 454,531

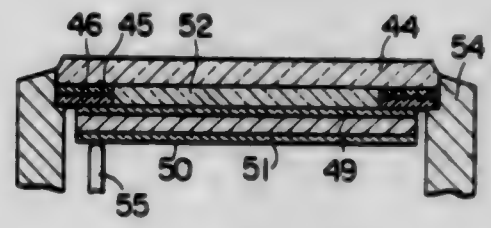
Claims priority, application Japan, Oct. 22, 1979, 54-135170; Oct. 22, 1979, 54-135171; Oct. 24, 1979, 54-136402; Oct. 24, 1979, 54-136405

Int. Cl.³ G04C *21/16*

U.S. Cl. 368—255 **8 Claims**

1. A display device having a transparent cover serving as a vibrator of a sound generator, said transparent cover having a transparent piezoelectric element coated with transparent electrodes on both surfaces thereof, bonded to an inner surface of said transparent cover by transparent adhesive material, said transparent cover being arranged in front of a display panel of said display device, wherein each of said transparent electrodes has a thickness in the range from 75 nm to 125 nm, which corresponds to one quarter of the wavelength of the





near ultraviolet light from 300 nm to 500 nm so as to serve as an anti-reflection film for the near ultraviolet light.

4,496,248

STRUCTURE FOR A WATCH CASE MADE OF CEMENTED CARBIDE

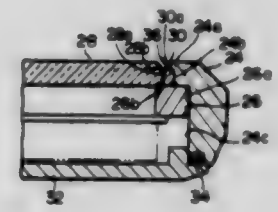
Masahiko Waki; Seiji Umezawa; Tsuneji Takasugi; Hiroshi Koide, and Takao Kasai, all of Tokyo, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

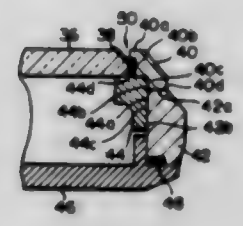
Filed Jan. 26, 1982, Ser. No. 342,749

Claims priority, application Japan, Feb. 20, 1981, 56-23200; Jul. 16, 1981, 56-106475

Int. Cl.³ G04B *37/00*

U.S. Cl. 368—280 **3 Claims**





1. A structure for a watch case made of cemented carbide, comprising:

a watchglass having an outer peripheral surface formed with a vertical portion and an upper inclined surface formed at a portion above said outer peripheral surface;

a case band composed of a cemented carbide alloy, said case band having an inwardly projecting ring-shaped flange formed at an upper portion thereof, an inwardly facing annular step formed at a lower portion of said inwardly facing annular surface;

a watch glass supporting ring composed on an alloy consisting of iron and nickel, said watchglass supporting ring having an outer diametrical surface brazed to said annular step of said case band and an upper surface for supporting a bottom surface of said watchglass;

a packing for providing a waterproof seal; and

a back cover secured to said case band;

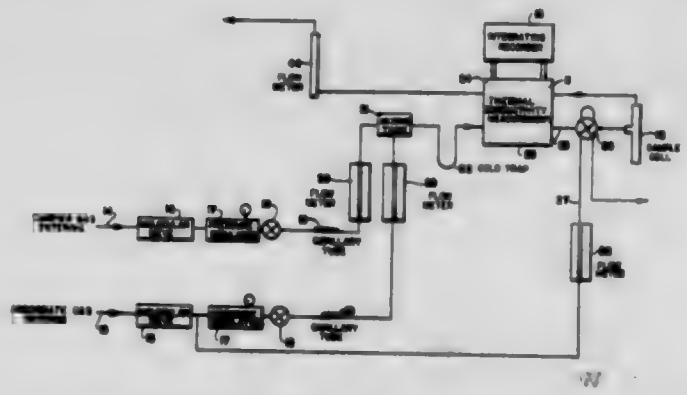
wherein said packing is provided and compressed between said outer peripheral surface of said watchglass and an annular groove formed by said flange and annular surface of said case band and said upper surface of said watchglass supporting ring, and includes a protrusion protruding into the space between said flange of said case band and said upper inclined surface of said watchglass, said protrusion engaging said upper inclined surface of said watchglass to retain said watchglass in a fixed place.

4,496,249

METHOD AND APPARATUS FOR DETERMINING RELATIVE SURFACE AREAS OF A COATED MATERIAL ON A SUBSTRATE

Hoag H. Lee, Gainesville, Fla., and Dennis J. Miller, Haslett, Mich., assignors to University of Florida, Gainesville, Fla.

Filed Sep. 23, 1982, Ser. No. 421,905
Int. Cl.³ G01K *17/06, 25/22*
U.S. Cl. 374—7 10 Claims



1. A method of determining the proportion of the surface area of a solid support that is covered by a catalytic material which comprises passing a known volume of an adsorbate gas under controlled steady-state conditions of pressure, temperature, and flow rate, over a catalyst material deposited on a solid support maintained at a selected low temperature near the liquefaction temperature of said adsorbate gas and determined first the desorption kinetics of the adsorbate gas adsorbed on said catalyst and said support by heating said catalyst material and said support from near said liquefaction temperature to ambient temperature and continuously measuring the volume of adsorbate gas desorbed from said catalyst material and from said support so as to generate data representing the volume of adsorbate gas adsorbed as a function of temperature; in a similar fashion determining secondly the desorption kinetics of said adsorbate gas adsorbed on said catalyst in the absence of said solid support at the same range of temperatures; in a similar fashion determining thirdly the desorption kinetics of said adsorbate gas adsorbed on said solid support in the absence of said catalyst at the same range of temperatures; comparing the above-determined said first, second and third desorption kinetics of adsorbate gas over identical temperature ranges and calculating therefrom the proportion of surface area of said catalyst material deposited on a solid support that is covered by said catalyst material.

4,496,250

THERMOCOUPLE OPEN CIRCUIT DETECTOR

Thomas J. Walsh, Hatboro, Pa., assignor to General Signal Corporation, Stamford, Conn.

Filed Mar. 3, 1983, Ser. No. 471,914
Int. Cl.³ G01K *01/02;* G01R *31/02*
U.S. Cl. 374—186 1 Claim

1. In an apparatus for detecting an open circuit condition in at least one thermocouple circuit selectively connected to a measuring input circuit, the improvement comprising:

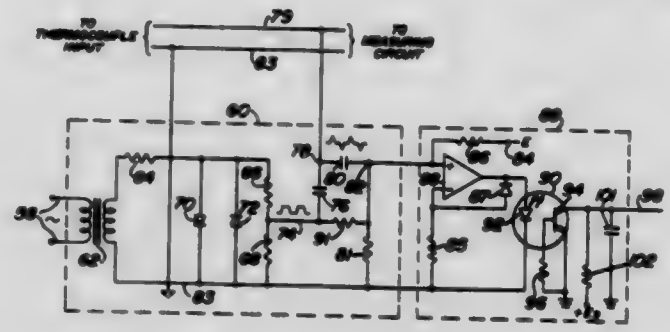
a pulse generator for generating pulses;

a first capacitor connecting said generator to said thermocouple circuit at a junction so that said pulses are conducted through said thermocouple circuit when it is a complete circuit;

an amplifier;

a second capacitor connecting said junction to the input of said amplifier;

a voltage divider means connected at its tap to the input of said amplifier so as to produce a bias of polarity and magnitude to maintain the amplifier output cut off when noise signals appear in the thermocouple circuit and when said



at least one thermocouple in the thermocouple circuit is a complete circuit; and

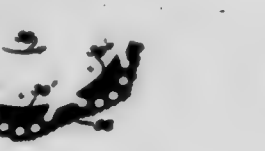
resistance means for connecting the pulses to said amplifier input in shunt to said first and second capacitors so that when said thermocouple is open-circuited said bias is overcome by the signal supplied through said resistance means and said pulses are conducted to the input of said amplifier to trigger it and produce an output therefrom to provide an indication of the open-circuited condition.

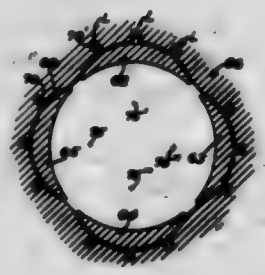
4,496,251

PAD-TYPE HYDRODYNAMIC BEARING

Russell D. Ide, P.O. Box 744, Coventry, R.I. 02816

Filed May 14, 1984, Ser. No. 610,140
Int. Cl.³ F16C *32/06*
U.S. Cl. 384—117 6 Claims





1. A hydrodynamic bearing supporting an opposing moving part, a plurality of bearing pads, each pad having a face member and a support member, said pad being separated from said support member and by a plurality of web-like ligaments, the face of said pad having a load-engaging surface, said pad under the action of friction on the face thereof rocking to cause the trailing edge to approach the member being supported in bearing relationship.

4,496,252

RESILIENT SUPPORT ARRANGEMENT FOR SHAFT BEARINGS OF HIGHSPEED ROTORS, IN PARTICULAR ROTORS OF TURBO MACHINES

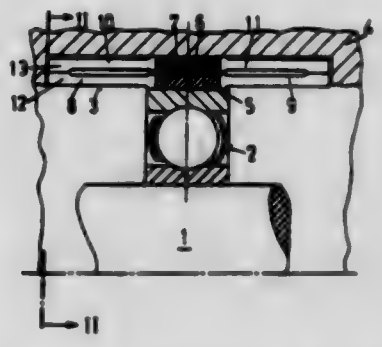
Hansulrich Hörler, Zurich, and Rudolf Koller, Hochdorf, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Apr. 20, 1983, Ser. No. 486,867

Claims priority, application Switzerland, May 26, 1982, 3223/82

Int. Cl.³ F16C 27/04

U.S. Cl. 384—215 8 Claims



1. A resilient support arrangement for shaft bearings of high-speed rotors, said support arrangement being intended to resiliently absorb forces acting from the rotor upon the shaft bearing located transversely to an axis of a rotor shaft, said support arrangement including an inner strap, an outer strap and a plurality of bending spring bars arranged around the periphery of said two straps, said bending spring bars extending from end faces of said two straps in a direction generally parallel to a common longitudinal axis of the two straps, said bending bars having free ends, associated inner and outer spring bars being joined together at their free ends, the bending spring bars being of such a shape that an annular gap is present between the two straps.

4,496,253

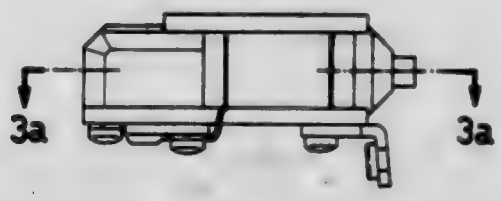
IMPACT HAMMER

Gijsbertus B. Morsing, Heumen, Netherlands, assignor to Daisy Systems, Holland B.V., Netherlands

Filed Apr. 20, 1983, Ser. No. 486,696

Int. Cl.³ B41J 9/38

U.S. Cl. 400—163.1 4 Claims



1. An electromagnetic hammer assembly comprising:

a hammer element having a hammer tip;

control means for guiding said hammer element in reciprocating movement between a rest position and a striking position;

means for selectively producing an electric field for urging the hammer element from said rest position toward said striking position;

a return spring for biasing said hammer element toward said rest position; and

a bumper assembly delimitting said rest position and adapted to debounce said hammer element as it is returned from said striking to said rest position, said bumper assembly comprising a housing, a stationary shock absorbing element affixed to said housing and two rigid pieces, each having a weight equal to the hammer element weight, said rigid pieces being positioned on two opposed sides of said shock absorbing element and movable with respect to said housing and each other to absorb the kinetic energy of said hammer element after each collision between said hammer element and one of said rigid pieces.

4,496,254

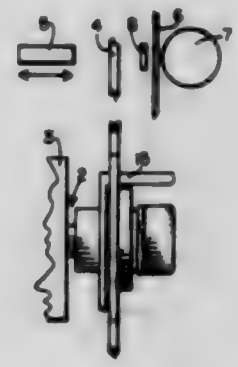
METHOD AND APPARATUS FOR MOUNTING A DAISY PRINT WHEEL ON THE SHAFT OF A PRINT HEAD

Edward H. Lau, Westbury, and Kenneth Colonel, Ronkonkoma, both of N.Y., assignors to Primages, Inc., Bohemia, N.Y.

Filed Mar. 18, 1983, Ser. No. 476,502

Int. Cl.³ B41J 1/60

U.S. Cl. 400—175 25 Claims



1. Apparatus for attaching a print wheel to an angular drive means, said apparatus comprising a hub fixed to the print wheel and engagable in driving relation with the angular drive means such that rotation of the drive means imparts corresponding rotation to the print wheel, and holder means on said hub to secure the hub on the angular drive means in said driving relation, said holder means and hub being cooperatively constructed and arranged to provide interference engagement therebetween with resilient deformation in a locked position of said holder means and hub with said hub engaged in driving relation with said drive means whereas in an unlocked position the resilient deformation is released and the holder means and hub are removable from the drive means, said hub comprising a collet means, said holder means comprising a cap including sleeve means lockably engageable on the collet means with interference engagement and resilient deformation to secure the hub on the drive means, said drive means comprising a drive shaft with splines thereon, said collet means including angular segments of cantilever formation engaged between the splines of the drive shaft with interference fit when the sleeve means is lockably engaged on the collet means in interference engagement.

4,496,255

INVERTIBLE MULTIPLE-PASS RIBBON CARTRIDGE HAVING TWO CAPSTANS

David R. Meintrup, Affton, and Janis Dumpis, St. Ann, both of Mo., assignors to NEC Corporation, Tokyo, Japan

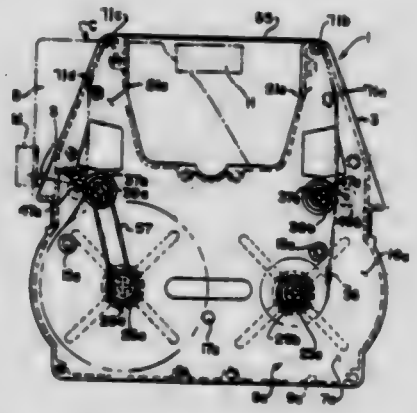
Filed Sep. 4, 1980, Ser. No. 184,098

Int. Cl.³ B41J 32/00

U.S. Cl. 400—208 14 Claims

1. A ribbon cartridge for use in a serial printer, said cartridge comprising a casing having two opposed broad faces, two ribbon spools in said casing, and an inked ribbon wound on said spools and including a reach extending out of said casing between said spools for engagement by a print head in the serial printer, characterized in that said cartridge further comprises two capstans spaced from said spools, said capstans being spaced laterally apart from one another, one of said capstans being associated with each of said ribbon spools for alternatively advancing said ribbon toward its associated spool, first means on a first of said capstans for interconnection with a drive means in the printer to transmit rotational power through a first of said broad faces of said casing, and second means on

the second of said capstans for interconnection with the drive means in the printer to transmit rotational power through the



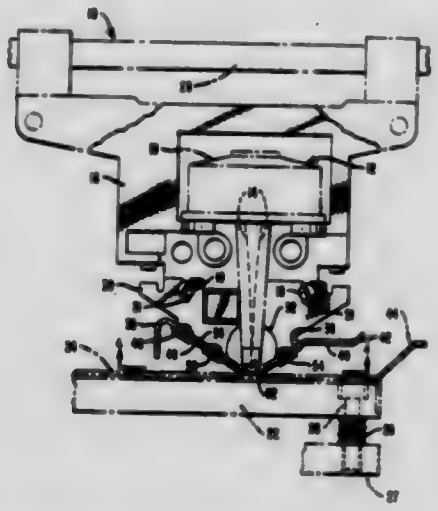
second of said broad faces of said casing when said cartridge is inverted.

4,496,256

IMPACT PRINTING APPARATUS

Harold L. McMorrow, Kettering, and Theodore T. Trzaska, Dayton, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 29, 1983, Ser. No. 480,050
Int. Cl.³ B41J *35/26*
U.S. Cl. 400—248 9 Claims



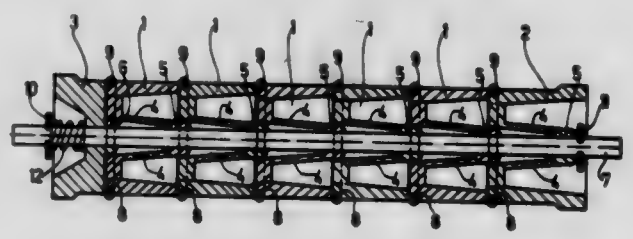
1. Printing apparatus comprising:
platen means for supporting record media for printing:
printing means comprising a plurality of impact printing elements and a frame for mounting said printing elements for reciprocating printing movement;
means for maintaining a predetermined distance between said platen means and said printing means during a printing operation;
ribbon guide means secured to said printing means for guiding a printing ribbon into cooperative relation between the ends of said print elements and the platen means on which record media may be positioned for printing;
ribbon mask support means secured to said printing means;
ribbon mask means secured adjacent one end thereof to said ribbon mask support means and slidingly coupled to said support means adjacent the other end of said ribbon mask means, said ribbon mask means being positioned to receive the printing ribbon between said mask means and the ribbon guide means, and having an aperture therein to accommodate movement therethrough by the printing elements;
a cam surface on the ribbon mask support means comprising an angled extension thereof; and
a cam surface on the platen means comprising a planar element secured at an end of the platen means and disposed at an angle to the reciprocating direction of movement of the platen means for cooperative engagement with the angled extension of the ribbon mask support means to increase the predetermined distance between the printing means and the platen means at the end of a printing line, whereby printing ribbon insertion is facilitated.

4,496,257

TRANSPORT ROLLER FOR A RECORD CARRIER IN A PRINTER

Gerhard Habelt, and Franz Mucha, both of Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 403,174, Jul. 29, 1982, abandoned. This application Jan. 17, 1984, Ser. No. 571,401
Int. Cl.³ B41J *13/02, 15/02*
U.S. Cl. 400—578 8 Claims



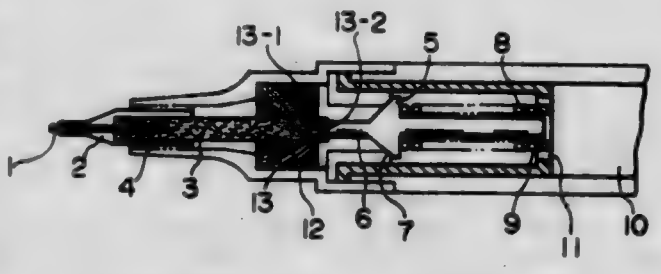
1. A transport roller for a record carrier in a printer, comprising a plurality of toroidal rings spaced axially from one another along the longitudinal axis of the roller, and a ring support having a correaponding plurality of circumferential grooves, each ring being arranged in a respective groove, characterized in that
the roller further comprises a shaft, and
said ring support comprises a corresponding plurality of laterally adjoining, mainly hollow, cylindrical roller sections having first and second lateral ends, a hub portion and a carrier portion,
each hub portion has an axial hole therethrough through which the shaft is fitted for locating each of said sections radially and locking the hub portion against relative rotation with respect to the shaft,
each carrier portion extends between the hub portion and the first lateral end,
the first lateral end of each roller section has an inwardly extending groove about the circumference, the groove having a sidewall at the groove side toward the second lateral end, and being open toward the first lateral end, said ring arranged in each groove being positioned radially by the respective groove, and
the adjoining roller section second lateral end forms the other sidewall of the groove.

4,496,258

WRITING PEN WITH SPACE BEHIND NIB

Isao Tanaka, and Takao Inaba, both of Aichi, Japan, assignors to Pilot Ink Co., Ltd., Aichi, Japan

Continuation of Ser. No. 311,356, Oct. 14, 1981, abandoned. This application Jun. 2, 1983, Ser. No. 499,026
Claims priority, application Japan, Oct. 17, 1980, 55/148604[U]
Int. Cl.³ B43K *8/02, 5/08*
U.S. Cl. 401—206 1 Claim



1. A writing pen wherein a valve element is operated to

supply a writing nib in a pen holder with ink from an ink reservoir, the improvement comprising:

a holder formed with a small bore in its front end and a large bore in its rear end, said bores in communication with each other and axially aligned;

said writing nib formed of synthetic resin having an outer diameter of not more than 2 mm and having an axially extending ink passage bored through its interior, said small bore supporting said writing nib with the tip thereof protruding therefrom; and

an ink guide stem between said writing nib and said valve element, said ink guide stem formed of porous resin-treated fiber material and adapted to receive the ink flowing from said ink reservoir and to supply said ink to said writing nib by capillary action, said large bore supporting said ink guide stem which extends rearward from said holder, said ink guide stem being formed with a recess at its front end, said recess extending in an axial direction of said ink guide stem and having an inner diameter substantially equal to an outer diameter of said writing nib to receive the rear end portion of said writing nib, said recess providing a small ink-retaining space defined between the rear end face of said writing nib and said ink guide stem for temporarily retaining therein a small amount of ink that exceeds the ink retaining capacity of said ink guide stem.

4,496,259

CONNECTOR FOR CONNECTING TWO ROTORS TOGETHER

Gérard Foucher, Tremblay les Gonesse, France, assignor to Alsthom-Atlantique, Paris, France

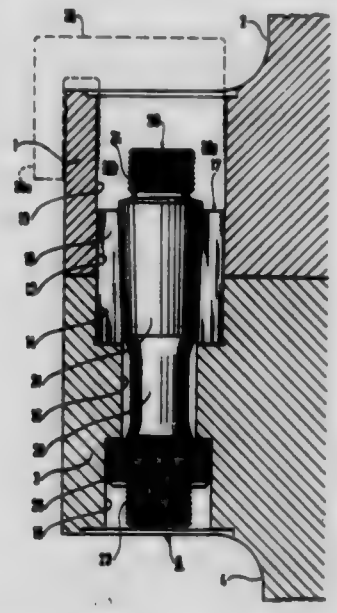
PCT No. PCT/FR81/00065, § 371 Date Nov. 30, 1981, § 102(e) Date Nov. 30, 1981, PCT Pub. No. WO81/03529, PCT Pub. Date Dec. 10, 1981

PCT Filed May 19, 1981, Ser. No. 328,542

Claims priority, application France, May 28, 1980, 80 11779

Int. Cl.³ F16D 1/00

U.S. Cl. 403—14 2 Claims



1. A connector for connecting two rotors together, said connector comprising a plate at the end of each rotor ending, each plate having a plurality of orifices disposed around its circumference, the orifices of one plate being adjacent respective orifices of the other plate, fixing components inserted in said orifices to connect the plates together, said fixing components being of a first type and of a second type, said fixing components of the first type each being constituted by a clamping bolt whose dimensions allow it to enter with play into an orifice before machining, said adjacent orifices receiving the fixing components of the second type and being provided with precision-reamed bores of the same cross-section obtained by reaming adjacent orifices, said adjacent orifices located one facing another when the clamping bolts are in place, each fixing component of the second type having firstly a pair of sleeve parts which are conical on the inside, and secondly a shank which has firstly a conical portion which pushes the sleeve parts against the walls of the precision-reamed bores, secondly a threaded portion at one end bearing a nut screwed onto it, said nut fixing the shank in position and thirdly an end which allows gripping, and wherein the sleeve parts are two parts having an axial plane of separation formed by longitudinal sawing, each of said sleeve parts being slightly smaller than a half cylinder, and said connector further comprising means for initially positioning and maintaining said two parts spaced equally apart circumferentially prior to screwing down said nut on said shank threaded portion so that when in position, the two parts of the sleeve are maintained in their spaced apart positions.

4,496,260

DEVICE FOR THE CONNECTION OF TWO STRUTS BY INSERTING A SUPPORT BETWEEN AND VERTICALLY TO THEM

Oswald Brunn, Bunzlauer Platz 1, D-8000 Munich 50, Fed. Rep. of Germany

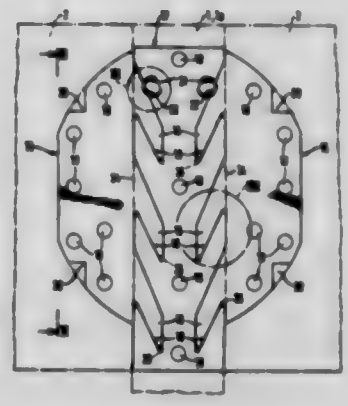
PCT No. PCT/EP81/00207, § 371 Date Aug. 26, 1982, § 102(e) Date Aug. 26, 1982, PCT Pub. No. WO82/02578, PCT Pub. Date Aug. 5, 1982

PCT Filed Dec. 29, 1981, Ser. No. 414,244

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1981, 3102027

Int. Cl.³ F16B 7/22

U.S. Cl. 403—189 14 Claims



1. A device for connecting the ends of two horizontal struts each in abutment with a corresponding contact surface of a vertical post comprising:

a pair of strut plates one attached to each of said struts within a slit extending lengthwise along a portion of the strut, each of said strut plates having a first connecting means on an abutting side adjacent to the abutting end of the strut; and,

a post plate attached to said vertical post and mounted within a slit extending continuously through said post from one of said contact surfaces to the other of said contact surfaces, said post plate having a second connecting means on opposite abutting sides adjacent to where each of said struts abuts said post;

one of said first and second connecting means comprising at least one tooth extending outward from an abutting side of one of said plates and slanting downward with the upper and lower flanks of said at least one tooth converging in a wedge shape,

the other of said first and second connecting means comprising at least one pocket extending inward from an abutting side of another of said plates and slanting downward with the upper and lower flanks of said at least one pocket converging in a wedge shape,

the upper flank of each tooth and the upper flank of each pocket having a lower steeper part and an upper less steep part such that the lower part encloses a relatively large

angle and the upper part encloses a comparatively smaller angle relative to the opposing lower flank,

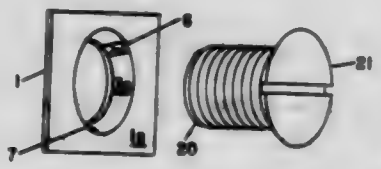
and the wedge shape and length of each tooth relative to the wedge shape and length of each corresponding pocket providing a gap at the bottom of the pocket adjacent to the lower end of the tooth so that each of the struts abuts the post and the flanks of the tooth are prestressed by contact with the flanks of the pocket when the tooth is wedged into the pocket.

4,496,261

COLUMN/SHEET METAL INTERFACE

Samuel Cohen, Massapequa Pk., and Edward F. Wisser, Port Jeff Sta., both of N.Y., assignors to Hazeltine Corporation, Commack, N.Y.

Filed Jun. 12, 1981, Ser. No. 272,847
Int. Cl.³ F16B *39/00*
U.S. Cl. 403—320 8 Claims



1. An apparatus comprising:

(a) a housing having opposing first and second portions,

said first portion including a first planar member with an inner side and an outer side,

said first portion having a first opening therein defined by an inwardly projecting tapered portion,

said inwardly projecting tapered portion having an inner surface corresponding to the inner side of the first planar member and an outer surface corresponding to the outer side of the first planar member,

said inwardly projecting tapered portion having a first inwardly projecting porjection adjacent said first opening, and

said second portion including a second planar member having a second opening therein;

(b) a longitudinal member having first and second ends located within said housing and spanning between said first and second openings, the first end of said longitudinal member for engaging the inner surface of the inwardly projecting tapered portion, the first end having a first indentation therein for engaging said first projection;

(c) first means interconnecting the first end of said longitudinal member and said first portion via said first opening whereby said first end engages the inner surface and said first indentation engages said first projection; and

(d) second means interconnecting the second end of said longitudinal member and said second portion via said second opening.

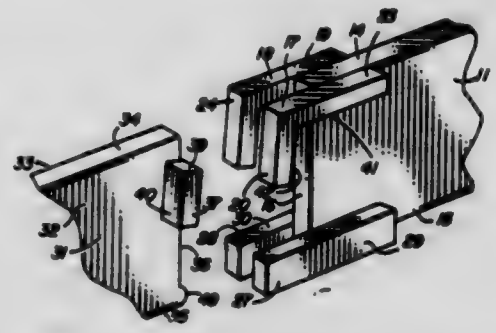
4,496,262

LINKING MEANS

George G. Sangster, 1719 E. Claremont, Phoenix, Ariz. 85016

Filed Jun. 1, 1982, Ser. No. 383,676
Int. Cl.³ F16B *5/07*
U.S. Cl. 403—335 16 Claims

1. A quick disconnect linking device for joining two adjacent discrete members to each other comprising: a first member and a second member said first member having a body portion having a front and rear surface, an upper and lower edge extending between said surfaces, and a leading edge extending between said upper and lower edge and between said surfaces; a first pair of outwardly extending flanges respectively secured one to each of said surfaces adjacent said upper edge, each of said first pair of flanges being disposed in spaced registered relationship to the other flange of said pair and having an axially extending body portion and an end portion formed integrally with said body portion and angularly disposed thereto and defining an interior angle therewith of approximately 115–125 degrees, said end portion being disposed in spaced relationship to said leading edge and defining a gap therebetween; and a second pair of outwardly extending flanges respectively secured, one to each of said surfaces adjacent said lower edge in spaced relationship to said first pair of flanges, each of said second pair of flanges being disposed in spaced registered relationship to the other flange of said pair and having an elongated body portion extending outwardly



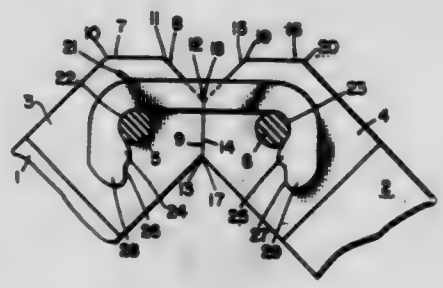
beyond said leading edge approximately the same distance as does said end portion of each of said first pair of flanges and adapted to sandwich a portion of said second member therebetween; and said second member having a pair of flanges integrally formed therewith in spaced registered relationship to each other and adapted, when said first member is brought into axially aligned physical proximity to said second member, to engage and support the corresponding one of said first pair of flanges on said first member while fitting between said second pair of flanges on said first member.

4,496,263

COUPLING DEVICE FOR COUPLING PANELS AND LIKE STRUCTURAL MEMBERS

Franciscus L. Laarhoven, The Hague, Netherlands, assignor to Laarhoven Design B. V., Zoeterwoude, Netherlands

Filed Jun. 22, 1982, Ser. No. 390,899
Claims priority, application Netherlands, Jun. 23, 1981, 8103030
Int. Cl.³ F16B *5/06*
U.S. Cl. 403—402 6 Claims



1. An arrangement for coupling structural members, such as panels, wall members and frame members, in edge-to-edge relationship, the arrangement comprising:

a coupling member for cooperating with at least two edges to be connected to lock the structural members together;

at least one coupling pin provided in each of the structural members to be coupled, said coupling pin having an axis extending longitudinally substantially along an edge of an associated structural member and being spaced inwardly thereof, said edge being formed with faces arranged radially exterior of said axis of said coupling pin and forming an odd number of successive chord planes of an imaginary cylinder having an axis which coincides with that of said coupling pin, the middle one of said chord planes forming a perpendicular end face of the structural member, with the remaining planes forming faces that extend symmetrically on both sides thereof at one and the same angle to the

adjacent face, and with each face being provided with longitudinal grooves; and

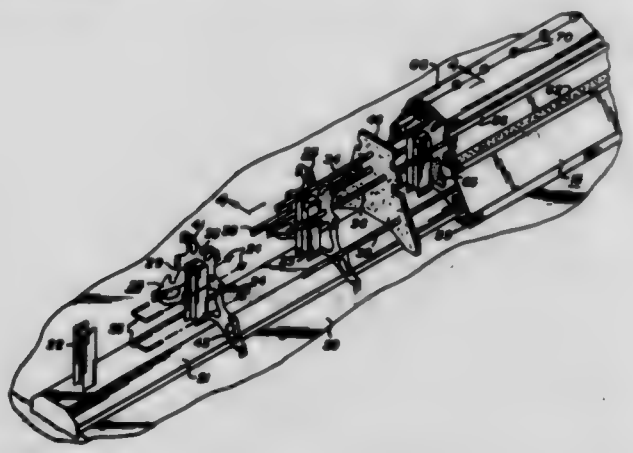
said coupling member being provided with clip-on means for engaging around at least two adjacent coupling pins, for holding two adjacent edge faces in contact with each other, and fixing the structural members with respect to each other, said coupling member having a substantially U-shaped body in cross section formed by a web portion and two legs, and said clip-on means comprising a pair of clip-on recesses for engaging respective coupling pins of two of said structural members, each clip-on recess being formed at the inside corner of the junction between the web portion and a respective one of the legs, a locking projection on the inner surface of each leg adjacent to the respective clip-on recess, and a pair of inner faces located at the free edges of the legs, the pair of inner faces being spaced apart by a distance at least equal to the spacing of the clip-on recesses to facilitate mounting the clip-on members onto said coupling pins.

4,496,264

BARRIER STRUCTURE

Steven M. Casey, 102 Monroe Dr., Harleysville, Pa. 19438

Filed Apr. 1, 1982, Ser. No. 364,411
Int. Cl.[3] E01F *15/00*
U.S. Cl. 404—6 31 Claims



1. A hollow barrier structure assembly for receiving into its hollow interior a solidifiable plastic material which when solidified forms a monolithic barrier structure integral with the hollow barrier structure assembly, said hollow barrier structure assembly comprising in combination,

(a) a plurality of form plates having spaced apart sides and the major plane of each of which form plates is oriented transversely to the running length of the barrier assembly, said form plates being spaced apart at intervals along the length of the barrier assembly and each having a cross-sectional area less than the cross sectional area of the barrier structure assembly interior, and including at least one aperture therethrough through which solidifiable, plastic material is penetrable,

(b) a pair of spaced apart pre-formed thin walled opposite side panels of predetermined shape and length fixedly securable to said form plates and extending longitudinally along the sides of said form plates to form a substantially dimensionally stable assembly, said side panels having upper edges and lower edges with said lower edges being substantially seatable against the underlying surface over which said barrier structure assembly is supported,

(c) means for fixedly intersecuring said form plates and side panels,

(d) reinforcing rods extending longitudinally within said barrier structure transversely to and through the major plane of said form plates, and means for mechanically interengaging said reinforcing rods with said form plates,

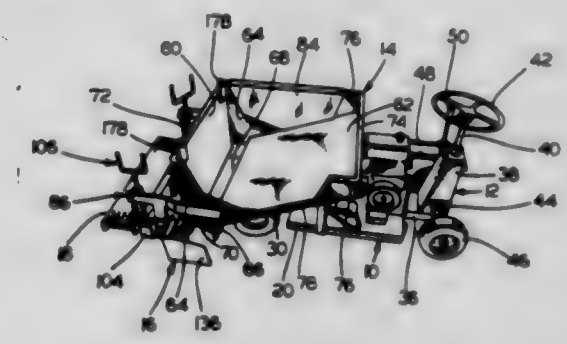
whereby, said form plates and side panels when intersecured as aforesaid form a hollow barrier structure into which solidifiable plastic material may be poured and retained to form a continuous plastic mass between said side panels around said reinforcing rods and on both sides of said form plates, which mass when solidified locks said form plates and reinforcing rods therewithin between said side panels.

4,496,265

COMPACT ASPHALT LAYING MACHINE FOR SIDEWALKS AND THE LIKE

Joseph V. Fregale, 93 Chestnut Hill Rd., Torrington, Conn. 06790

Filed Jan. 28, 1983, Ser. No. 461,941
Int. Cl.[3] E01C *19/18*
U.S. Cl. 404—110 5 Claims



1. In a self-propelled paving machine, the combination including:

A. a wheel-mounted body comprised of

(1) a main body portion, and

(2) a steering assembly disposed forwardly of said main body portion and comprising a first pair of laterally aligned wheels, said assembly including means for permitting independent pivotable movement of said first pair of wheels relative to said main body portion about a longitudinal axis;

B. drive means mounted on said main body portion for propelling said machine;

C. a gravity-fed hopper mounted in fixed position on said main body portion, said hopper having forward, rearward and sidewall components and a transversely extending discharge opening in the bottom portion thereof, the upper edge portions of said forward and rearward components lying substantially on a common plane, and the sidewall components thereof being indented downwardly from said plane to provide areas on both sides of said hopper dimensioned and configured to provide access and support for wheelbarrow loading, said hopper also having a panel disengageably mounted on each of said sidewall components closing said access area thereof and providing upper edge portions lying substantially on said common plane;

D. a second pair of wheels transversely aligned on said main body portion and positioned beneath said hopper in close proximity to said discharge opening thereof, said wheels being operatively connected to said drive means; and

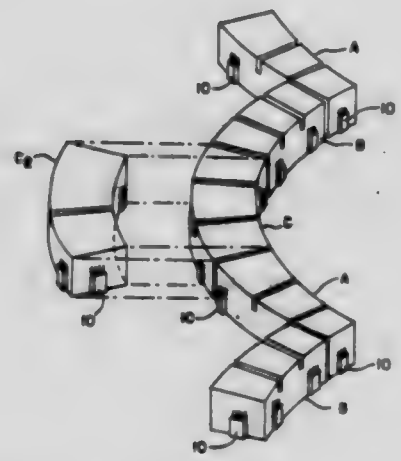
E. a screed assembly mounted at the rear of said hopper for pivotable movement about a transverse axis therethrough, said screed assembly lying substantially behind said discharge opening and having a member for forming the paving material as it is discharged from said machine.

4,496,266

CURVED LIKE PAVING STONE ELEMENT FOR USE IN SETTING A CURVED PAVING

Willi Ruckstuhl, Kloten, Switzerland, assignor to Kronimus & Sohn GmbH & Co. KG, Iffezheim, Fed. Rep. of Germany, a part interest

Filed Dec. 6, 1982, Ser. No. 446,987
Claims priority, application Switzerland, Dec. 30, 1981, 3151876
Int. Cl.³ E01C 5/00
U.S. Cl. 404—41 6 Claims



1. In a curved like paving stone element for setting of a curved paving, wherein the curved element is defined by an outer circular curve and an inner circular curve having equal radii, the center points of the circular curves being disposed on a radial straight, being the line including these points, the improvement comprising the center points of the circular curves being disposed at a distance which corresponds to the largest width of the curved element, the curved element including two outer stones and a center stone of about the same curvature length, the outer stones having upper surfaces subdivided into three segments and the center stone having an upper surface subdivided into at least two segments, said subdivisions formed by means of grooves, wherein the curved element is asymmetrically offset with respect to the radial straight in such a manner that the outer edge of an outer stone is similar than the opposing outer edge of the other outer stone, the size of the offset corresponding to about the width of the individual stone having the smaller outer edge, whereby a second curved element having an outer stone corresponding to the outer stone of the first curved element can be positioned adjacent to said first curved element so that its outer stone is located in said offset.

4,496,267

LIME OR LIME:FLY ASH PRETREATED PAVEMENT CONSTRUCTION MATERIAL AND METHOD

John P. Gnaedinger, Kenilworth, Ill., assignor to John P. Gnaedinger Research Corporation, Kenilworth, Ill.

Filed Dec. 16, 1982, Ser. No. 450,560
Int. Cl.³ E01C 19/00; C04B 7/14, 1/00, 7/34
U.S. Cl. 404—82 6 Claims

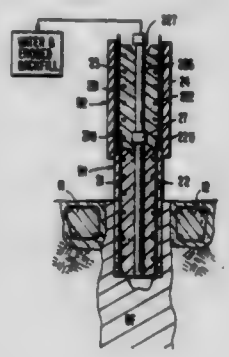
1. In a method for the formation of a pavement construction wherein a base course is disposed in overlying relationship with respect to a subgrade, the improvement comprising a method for forming said base course, said method comprising the steps of reacting uncompacted incinerator ash for several days with 2–10% by weight of a pretreatment agent consisting essentially of lime, adding a binding mixture consisting essentially of 2–10% by weight lime and 20–25% by weight water, and disposing the mixture over said subgrade, said incinerator ash comprising the product achieved by burning refuse in an incinerator at a temperature between 1600 and 2000° F. to form a residue wherein the incinerator ash recovered from the incinerator is sifted prior to use through a ¾ inch to 1 inch screen, the resulting ash having a typical particle size distribution wherein 60 to 90% of the ash passes through a No. 4 screen, 10 to 30% of the ash passes through a No. 30 screen, 2 to 12% of the ash passes through a 100-mesh screen, and 1.5 to 8% will pass through a 200-mesh screen, wherein the base course formed from said mixture is permitted to stand prior to actual use, and wherein a reaction between the lime and residue content of said incinerator ash takes place during such period.

4,496,268

METHOD AND APPARATUS FOR CONSTRUCTING REINFORCED CONCRETE WALLS IN THE EARTH

Arturo L. Rossi di Cervia, New York, N.Y., assignor to Finic, B.V., Rotterdam, Netherlands

Filed Mar. 1, 1983, Ser. No. 471,100
Int. Cl.³ E02D 5/18; E21D 1/00, 5/00
U.S. Cl. 405—133 9 Claims



1. A method of constructing a reinforced concrete wall in the ground comprising:

I. forming a pair of concrete guide walls spaced apart along the line of said wall, the spacing between said guide walls being greater than the width of the reinforced concrete walls to be constructed,

II. excavating a trench between said pair of guide walls and backfilling said trench with an erodable mixture capable of sustaining the excavation walls, said erodable backfill materials having no large aggregates,

III. placing forms along said wall and above the surface of said trench and spaced apart the width of said reinforced concrete walls, installing steel reinforcement between said forms and casting concrete between said forms from the surface of said erodable mixture and filling said forms to thereby form an initial concrete wall section,

IV. after the concrete has set in said initial concrete wall section, injecting a fluid material below said initial concrete wall section to erode said backfill and removing the eroded backfill material and injected fluid from below said concrete wall section, lowering said initial concrete wall section into the trench while eroding said erodable backfill materials, said initial concrete wall section being lowered to a level wherein a portion thereof projects above the ground,

V. forming at least one further wall section directly on said first wall section by placing forms therealong, and

VI. after the concrete has set in said at least one further concrete section, lowering the said sections while eroding said backfill material below said initial concrete section to the bottom of said trench.

4,496,369

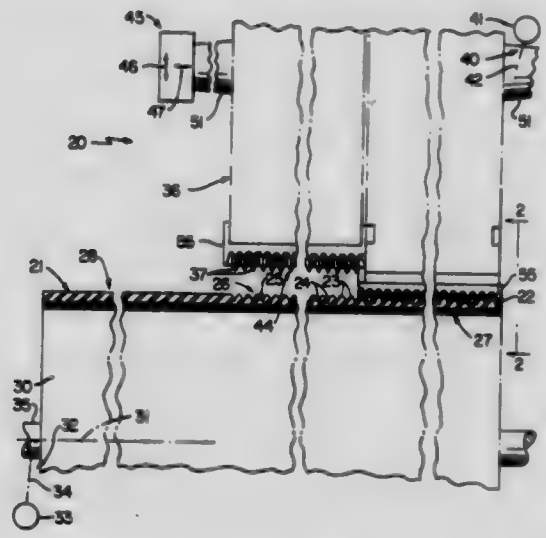
POLYMERIC BELT CUTTING APPARATUS AND METHOD OF MAKING SAME

G. Brian Hetz, 1733 E. Holiday, Springfield, Mo. 65807

Filed May 26, 1981, Ser. No. 267,189
Int. Cl.³ B23C 3/04; B29H 7/22
U.S. Cl. 409—132 11 Claims

1. In a method for cutting a non-contoured and cured polymeric belt sleeve to define an endless power transmission belt construction having at least one pair of opposed non-parallel side portions, said method comprising the steps of disposing

said belt sleeve on a mandrel for supporting said belt sleeve for rotation about a longitudinal axis, rotating said mandrel and belt sleeve about said longitudinal axis, rotating a cutting instrument having at least one pair of substantially identical symmetrically arranged and outwardly diverging integral cutting means for cutting said pair of side portions, and cutting said belt sleeve by moving said rotating cutting instrument toward said sleeve to urge said cutting instrument during rotation thereof against the rotating belt sleeve to define said



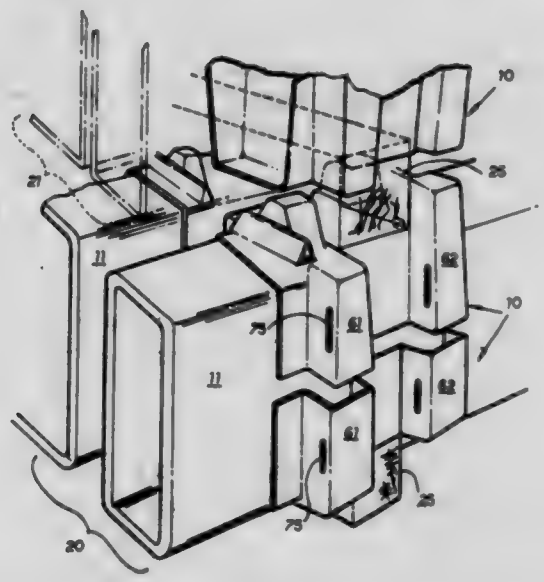
belt construction, the improvement wherein said step of rotating a cutting instrument comprises the step of rotating a support body having a central axis and having at least one rake-like cutting bar having an elongate axis and having said one pair of cutting means provided thereon as an integral part thereof, said bar being supported on said body with said elongate axis parallel to and in radially spaced relation from said central axis with said one pair of cutting means extending perpendicular to said elongate axis.

4,496,270

CHAIN CAP FOR FORMING A STABLE LOAD

Curtiss W. Miller, Marne, Mich., assignor to Urban Systems Streetscape, Inc., Grand Rapids, Mich.

Filed Sep. 20, 1982, Ser. No. 422,456
Int. Cl.[3] B60P *7/12*; B65D *81/00*
U.S. Cl. 410—32 15 Claims



1. A chain cap for forming a stable load suitable for vehicular travel comprising:

a body;

interfitting surfaces disposed on said body, said interfitting surfaces interlocking to prevent lateral movement thereof when a plurality of said chain caps are stacked one atop the other;

a tie bar surface disposed on said body for defining a channel for receiving tie bars when a plurality of said chain caps are arranged in a side-by-side relationship;

a conformal surface disposed on said body for engaging an article forming a part of the load;

pairs of said chain caps being adapted for engaging opposing sides of an article forming a part of the load, so that the articles may be stacked one atop the other and side-by-side to form a stable load with said interfitting surfaces preventing lateral movement between articles stacked one atop the other and tie bar surfaces engaging tie bars to stabilize articles stacked in a side-by-side relationship;

said interfitting surfaces and said conformal surfaces being disposed on opposing sides of said chain cap said interfitting surfaces comprising first, second and third projections extending from one side of said chain cap, said third projection extending between said first and second projections on each chain cap stacked thereatop for stabilizing each of said chain caps in a lateral direction when a plurality of said chain caps are stacked with said interfitting surfaces facing; and

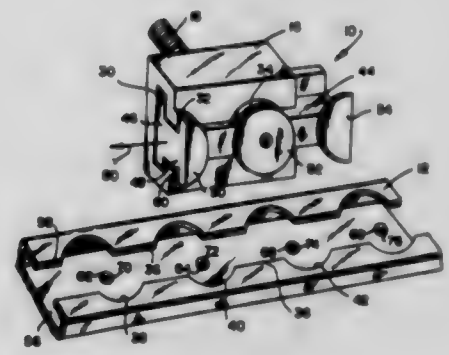
means for receiving a clamping tension band for securing a plurality of said chain caps and a plurality of articles into a stable load suitable for vehicular travel.

4,496,271

RESTRAINING FITTINGS

Dominic J. Spinosa, Wantagh, and Frank Knoll, Huntington Station, both of N.Y., assignors to East/West Industries, Inc., Farmingdale, N.Y.

Filed Sep. 30, 1982, Ser. No. 431,837
Int. Cl.[3] B60P *7/08*
U.S. Cl. 410—105 20 Claims



1. A restraining fitting suitable for use with a mating track member having a plurality of bore holes provided in a longitudinal undercut channel, comprising:

(A) an upper member having a lower surface, upper surface and a restraining means provided, thereon, said lower surface of said upper member being provided with;

(a) channel means, and

(b) downwardly depending spaced apart protrusions formed to cooperate with and be received by said track member bore holes; and

(B) a lower member having an upper surface formed to be slidably retained by said upper member channel means and cooperate therewith, said lower member being provided with;

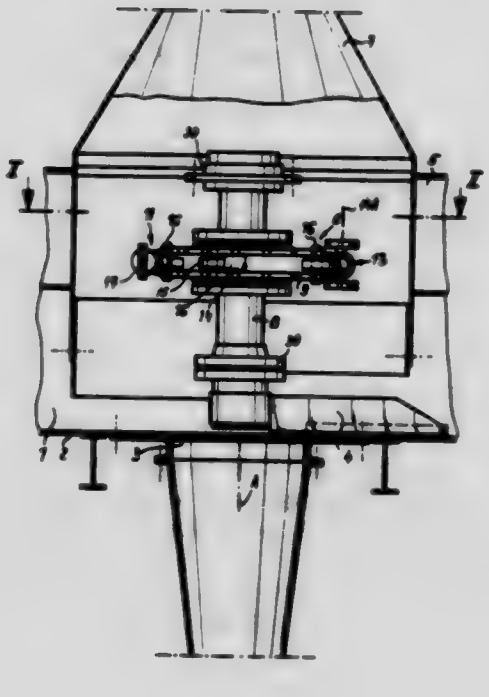
(a) a lower surface having a plurality of downwardly depending spaced apart protrusions positioned to extend beyond and to coincide with said depending protrusions provided on said lower surface of said upper member in a first position and to be displaced therefrom when moved to a second position.

4,496,272

ROTARY ARM-TYPE UNLOADER FOR BULK-STORAGE BIN

Lothar Teske, Hegelstrasse 15, D-5000 Köln 90, Fed. Rep. of Germany

Filed May 3, 1983, Ser. No. 491,084
Claims priority, application Fed. Rep. of Germany, May 5, 1982, 3216795
Int. Cl.³ B65G 65/00
U.S. Cl. 414—323 8 Claims



1. An apparatus for unloading bulk material from a bin having a floor formed with a discharge port, the apparatus comprising:

a housing vertically spaced from the port in the bin;

a shaft defining and rotatable about an upright axis generally at the port;

at least one arm extending at least generally radially from the shaft and being sweepable through the material and over the port on rotation of the shaft;

a toothed drive wheel centered on the axis and fixed on the shaft;

first and second pairs of actuators each having an outer end pivoted on the housing and an inner end constituted as a pusher engageable tangentially with the teeth of the wheel, the actuators being generally angularly equispaced around the axis and the actuators of the first pair alternating with those of the second pair; and

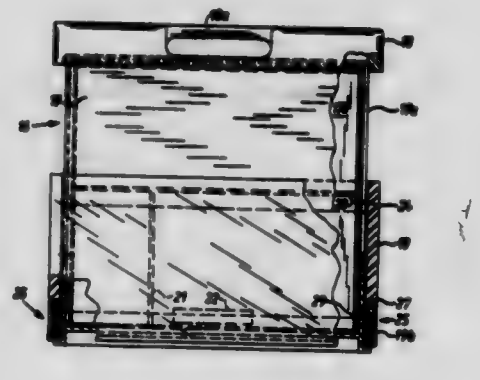
control means for extending the first-pair actuators with their pushers in force-transmitting engagement with the wheel while contracting the second-pair actuators and for alternately contracting the first-pair actuators while extending the second-pair actuators with their pushers in force-transmitting engagement with the wheel, with the contraction stroke of each pair commencing after the start of and terminating before the end of the expansion stroke of the other pair, whereby before each alternation all of the actuators are in force-transmitting engagement with the wheel.

4,496,273

ARRANGEMENT FOR SUPPLYING UNEXPOSED X-RAY FILMS TO A HANDLING APPARATUS

Kurt Thate; Heinrich Färber, and Jürgen Müller, all of Munich, Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 1, 1982, Ser. No. 384,159
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1981, 3122582
Int. Cl.³ B65G 65/00
U.S. Cl. 414—411 10 Claims



10. An arrangement for supplying photosensitive sheets, especially X-ray films of a magazine, in an ambient light unexposed manner, comprising:

a receptacle for holding the magazine and being movable between an open and a closed position:

a channel member containing an inlet passage;

a tubular casing member being axially shiftably mounted and surrounding said receptacle in said closed position and during which overlapping only a part of the magazine surface, said tubular casing member having a wide side on which there extends a film discharge opening through which the magazine is displaced to said open position of said receptacle, said tubular casing member forming a light tight seal between inself and the magazine as well as between the magazine and said channel member during said open and closed positions of said receptacle and during the transfer of the magazine from said open to said closed position of said receptacle and vice versa; and

suction means situated after said inlet passage as considered in the direction of introduction of said receptacle into said inlet passage, said receptacle member having a cutout juxtaposed with said suction means when said tubular casing member assumes releasing position in said channel member and said receptacle is in said open position.

4,496,274

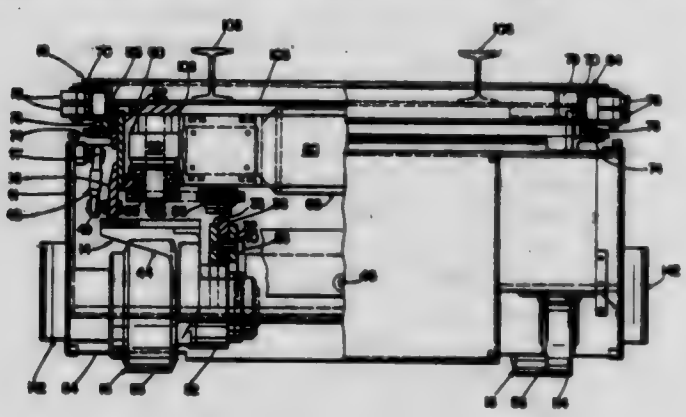
MATERIAL HANDLING VEHICLE

George R. Pipes, Salt Lake City, Utah, assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 11, 1982, Ser. No. 406,258
Int. Cl.³ B65G 67/00; B60P 1/02; B62D 25/00
U.S. Cl. 414—340 13 Claims

1. A vehicle comprising a first frame, a second frame attached to said first frame for pivotal movement about a first horizontal axis perpendicular to the longitudinal axis of the vehicle, a third frame attached to said first frame for pivotal movement about a second horizontal axis parallel to the longitudinal axis of the vehicle, first and second motor wheel units mounted on said third frame, each of said motor wheel units

including a drive wheel having its rotational axis substantially vertically aligned with said first horizontal axis, and a load



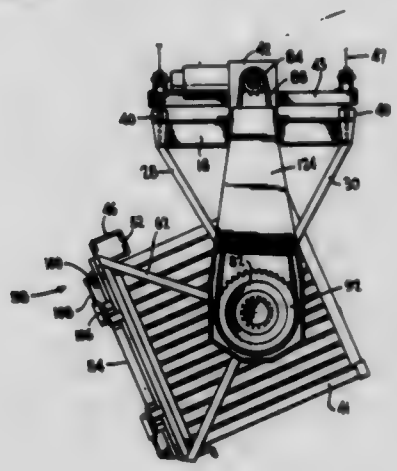
platform suspended from said first and second frames for swinging movement in a plurality of planes.

4,496,275

APPARATUS AND METHOD FOR TIPPING CARGO CONTAINERS

James J. Harp, Annandale, Va., assignor to Resource Ventures, Inc., Alexandria, Va.

Filed May 4, 1982, Ser. No. 374,706
Int. Cl.[3] B65G *63/00, 65/34;* B63B *27/00;* B66C *1/00*
U.S. Cl. 414—420 34 Claims



16. Apparatus for delivering bulk material into a designated receiving space from a cargo container of the type including a generally rectangular, frame-like border surrounding an upper edge thereof and a plurality of spaced, lock-receiving openings disposed along the border, said apparatus comprising:

a drive support member;

a pivotal member;

engagement means for engaging said drive support member and said pivotal member for mutual pivotal displacement about a horizontal pivot axis;

a plurality of twist lock members depending from said pivotal member spaced to engage respective lock-receiving openings along the container border for selectively securing said pivotal member to the cargo container in fixed relation; and

selectively actuable drive means secured to said drive support member for selectively pivoting said pivotal member about said pivot axis with respect to said drive support member so as to pivot the container through an angle of at least 90° to dump the bulk material.

27. A tipping adapter for use in connecting a cargo container to a cargo container spreader suspended from a gantry cantilever crane in order to permit selective tipping of the container for the purpose of pouring bulk material therefrom, the cargo container being of the type which has first portions of respective plural latching engagements disposed thereon in spaced relation, the container spreader having second portions of the plural latching engagements disposed thereon in spaced relation so as to permit selective engagment between the spreader and the container, said adapter comprising:

a drive support member having disposed thereon plural first latching engagement portions which are spaced to provide selective engagement with the second latching engagement portions of the container spreader;

a pivotal member having disposed thereon plural second latching engagement portions which are spaced to provide selective engagement with the first latching engagement portions of the cargo container;

means for pivotally engaging said drive support member and said pivotal member for mutual rotation about a pivot axis; and

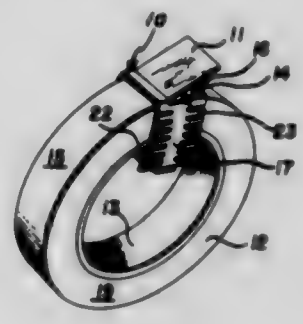
motor means for selectively pivoting said pivotal member relative to said drive support member about said pivot axis.

4,496,276

SHEAR

Lev Shulyak, Worcester, Mass., assignor to Shel Industries, Inc., Boston, Mass.

Filed Sep. 2, 1982, Ser. No. 414,569
Int. Cl.[3] B26F *3/02*
U.S. Cl. 225—65 4 Claims



1. Shear for tape in a roll having an inner circumferential surface which defines a central opening, comprising:

(a) a main body adapted to lie along the outer periphery of the roll, the main body having a blade extending radially of the roll, and a window for the passage of the tape from the outer periphery of the roll to the blade,

(b) a wing hingedly connected to each side of the main body and adapted to lie along a radial surface of the roll, said wing being provided with laterally-extending springy fingers, each finger having an inwardly-extending peg adjacent its outer end which is adapted to bear against the radial surface of the roll, and

(c) locking means adapted to extend into said central opening for joining the inner ends of the wings together to hold the wings against the roll so that the pegs of the fingers which are aligned with the radial surfaces of the roll bear against said radial surfaces under tension and the pegs of the fingers which are aligned with said central opening are urged into said central opening, so that at least one of the pegs which extends into said central opening bears against said inner circumferential surface for maintaining the outer periphery of the roll against the main body of the shear, whereby the shear is self adjusting to the changing diameter of the roll as it is used.

4,496,277

LIFTING DEVICE AND METHOD

Emil A. Jungmann, Escondido, Calif., assignor to Jungmann, Inc., Monroe, La.

Filed Apr. 12, 1982, Ser. No. 367,437
Int. Cl.[3] B66C *23/32*
U.S. Cl. 414—589 8 Claims

1. A lifting device for use on the outside of a structure and designed for lifting elongated objects from a lower elevation outside of the structure to a higher elevation inside the struc-

ture by turning the elongated object when required, comprising:

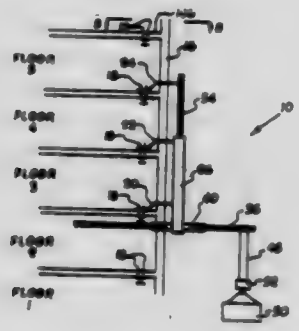
(a) a generally vertical frame;

(b) means for attaching the frame to the structure;

(c) a pair of boom carriages mounted on the frame and designed for a normal operative position horizontally on the frame so that a portion of the boom carriages are located within the structure and a portion of the boom carriages are located outside the structure;

(d) means, associated with the frame and each boom carriage, for horizontally positioning the boom carriages on the frame at pre-determined positions for independent transverse movement along the structure on the frame within pre-determined limits;

(e) a movable boom positioned within each boom carriage



and movable horizontally within the boom carriages within pre-determined limits;

(f) a trolley and cargo block positioned in and carried by each boom;

(g) activating means, associated with the frame, boom carriages, boom trolleys and cargo blocks for raising and lowering the cargo blocks and moving the trolleys and cargo blocks along the booms, the activating means capable of also moving the booms within the boom carriages into and out of the structure, and moving the boom carriages and booms apart or together as desired; the combined action of the activating means serving to allow an elongated object to be picked up by the cargo blocks and to be raised to a desired upper elevation whereupon the object may be turned from a transverse position to a longitudinal position and may then be moved into the structure.

4,496,278

INDUSTRIAL ROBOT EQUIPPED WITH ARTICULATED ARM UNIT

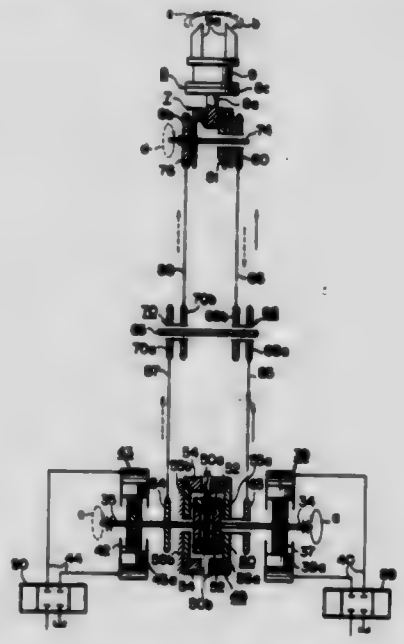
Tatsuo Kaise, Yokosuka, Japan, assignor to Okamura Corporation, Yokohama, Japan

Filed Jun. 21, 1982, Ser. No. 390,372
Claims priority, application Japan, Apr. 7, 1982, 57-56496
Int. Cl.³ B66C *23/00*
U.S. Cl. 414—735 8 Claims

1. In an industrial robot equipped with an articulated arm unit including a first arm pivotally attached at its basal end portion to a shoulder shaft, a second arm pivotally coupled at its basal end portion to the free end of the first arm by means of an elbow shaft, a holder case pivotally connected to the free end of the second arm by means of a wrist shaft, and a holder supported by the holder case in such a way that the holder is turnable about an axis, which extends perpendicularly to the wrist shaft, by means of a shaft journalled on the wrist shaft, wherein the improvement comprises:

a first shaft and a second shaft disposed on the same axis and rotatable independently from each other to thereby form the shoulder shaft for the first arm;

a differential transmission mechanism comprising a floating shaft extending perpendicularly to the second shaft and journalled on the second shaft, a pair of small bevel gears journalled on the floating shaft with the floating shaft interposed therebetween, a pair of large bevel gears journalled on the floating shaft respectively at locations adjacent to both free ends of the floating shaft, a pair of small bevel gears provided respectively on the first shaft and the second shaft in a face-to-face relationship and with the first mentioned pair of small bevel gears interposed therebetween so as to form an inner bevel gear unit, and a pair of large bevel gears provided respectively on the first shaft and the second shaft in a face-to-face relationship and with the first mentioned pair of large bevel gears interposed therebetween so as to form an outer bevel gear unit, said differential transmission mechanism arranged over mutually-opposing end portions of the first and the second shafts; and



a first drive means formed by the first shaft and a first coupling means comprising a combination of a pair of sprockets and endless chain extending therebetween and being connected thereto for rotating the holder, and a second drive means formed by the second shaft and a second coupling means comprising a combination of a pair of sprockets and another endless chain extending therebetween, and being connected thereto for rotating the holder case as well as by a third coupling means connected to the differential transmission mechanism so as to compensatively rotate the holder.

4,496,279

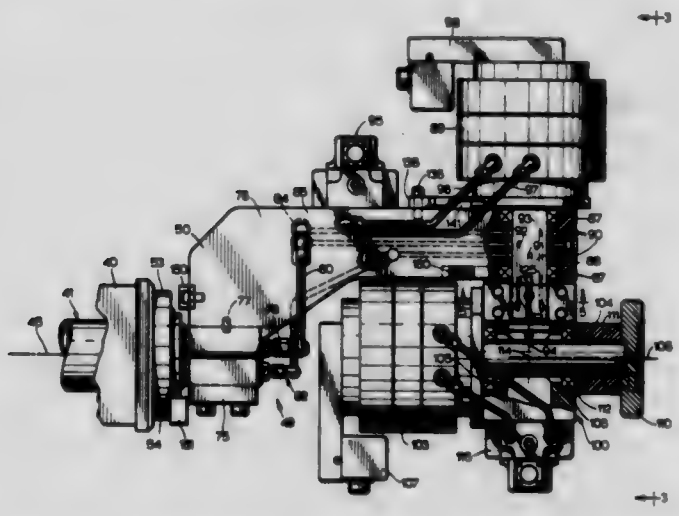
ROBOT ARM AND WRIST ASSEMBLY

William J. Langer, Eden Prairie, Minn., assignor to MTS Systems Corporation, Eden Prairie, Minn.

Filed Dec. 9, 1982, Ser. No. 448,217
Int. Cl.³ B25J *17/02*
U.S. Cl. 414—735 11 Claims

1. A robot arm and wrist assembly comprising a mounting arm, a coupling member having a base mounted on said mounting arm for rotation about a first axis, and the coupling member having an offset bracket portion offset from the base and extending in direction along and spaced from the first axis to provide an unobstructed space around said first axis when the coupling member is rotated about the first axis, a first actuator mounted on said offset bracket portion of the coupling member, said first actuator having a housing mounted on an opposite side of the offset bracket portion from the first axis and a first rotatable output shaft extending from the housing toward the first axis and rotatable relative to the housing and the coupling member about a second axis perpendicular to the first axis, said first and second axes intersecting, and a second actuator drivably mounted on the rotatable output shaft of the first actuator within the unobstructed space defined by the offset bracket portion, said second actuator having a second output shaft rotatable about a third axis which generates a plane in

which the first axis lies when the second actuator is rotated with the first output shaft about the second axis, in at least one rotational position of the second actuator about the second axis



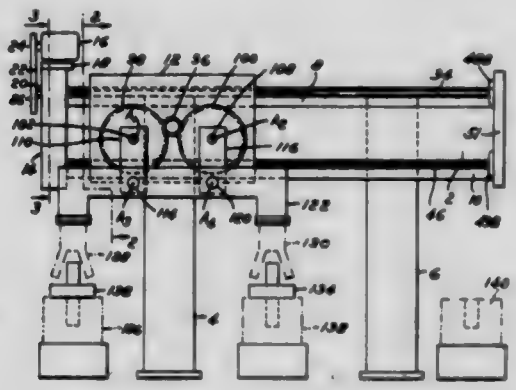
the first and third axes coinciding, the unobstructed space around the first axis permitting the second actuator to be rotated to position between the base of the coupling member and the second axis with the first output shaft.

4,496,280

WORKPIECE TRANSFER MECHANISM

John H. Brems, 2800 S. Ocean Blvd., Apt. 16-D, Boca Raton, Fla. 33432

Filed Dec. 22, 1982, Ser. No. 452,327
Int. Cl.³ B65G *47/34*
U.S. Cl. 414—749 10 Claims



1. In a transfer system in which one or more workpieces are sequentially moved along a line of fixtures, pallets or other workpiece holding devices, with each move along a continuous predetermined path, comprising a first relatively short motion in a first direction such as lifting, a second relatively long motion generally at right angles to the first motion such as a horizontal transfer, and a third motion generally parallel to and in the opposite direction to the first motion such as lowering, a mechanically interrelated system comprising:

(a) a structural frame,

(b) carriage means mounted on said structural flame for movement along a substantially linear first path,

(c) linear drive means mounted to said carriage means for movement in a substantially linear path parallel to said first path,

(d) transfer means mounted on said carriage means for movement in a circular path of translation with respect to said carriage means,

(e) cam means interconnecting said linear drive means and said carriage means, and

(f) interrelated drive means for driving said linear drive means along said structural frame at a first rate, and simultaneously driving said transfer means in a circular path of translation with respect to said carriage means at a rate proportional to said first rate, and simultaneously driving said cam means,

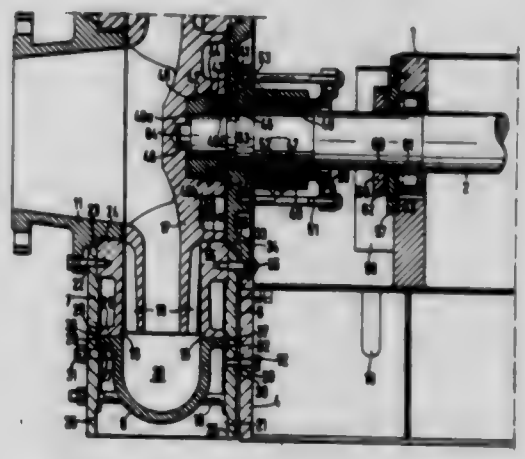
whereby said transfer means move in a general path characterized as the superposition of a linear motion on a proportional circular motion, and whereby said transfer means move in a specific predetermined path created by the additional superposition on said general path of a modifying motion generated by said cam means between said carriage means and said linear drive means.

4,496,281

CENTRIFUGAL PUMP

Horst-Günter Noack, Witten-Annen, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Continuation of Ser. No. 185,875, Sep. 9, 1980, , which is a continuation of Ser. No. 901,629, May 1, 1978,. This application Aug. 25, 1983, Ser. No. 526,447
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1977, 2719168
Int. Cl.³ F03B *11/02*
U.S. Cl. 415—111 2 Claims



1. A centrifugal pump for the conveyance of abrasive media under large pressure, comprising:

an axial inlet pipe;

an impeller arranged in overhung fashion on an impeller shaft;

a stuffing box housing surrounding the shaft;

a pump housing connecting to the inlet pipe and stuffing box housing, said pump housing comprising two similarly constructed wall parts, one wall part extending from the inlet pipe outwardly and the other wall part extending from the stuffing box housing outwardly, a spiral housing of annular shape and a laterally projecting ring on each side thereof, said spiral housing being in contact with outer portions of the wall parts to create an enclosed area within which the impeller is housed, and two planar holding discs constructed of rolled material between which the two wall parts and spiral housing are mounted, one of said holding discs extending from the inlet pipe outwardly and the other holding disc extending from the stuffing box housing outwardly, connecting bolts positioned external to the spiral housing pulling the two holding discs toward each other so as to provide direct contact with the laterally projecting ring on the spiral housing;

a holding plate connecting to one of the holding discs to support the pump housing;

a rib projecting radially outwardly from and beyond the spiral housing between the holding discs in a direction perpendicularly thereto and directly adjacent each of the connecting bolts, each rib having an outer processing in the form of a projecting abutment portion abutting in a corresponding recess in an outer rim completely outwardly of the connecting bolts of each of the holding discs so as to provide an outer support of the holding discs outwardly of the connecting bolts and so as to strengthen

the pump housing to permit handling large pressure heads; whereby

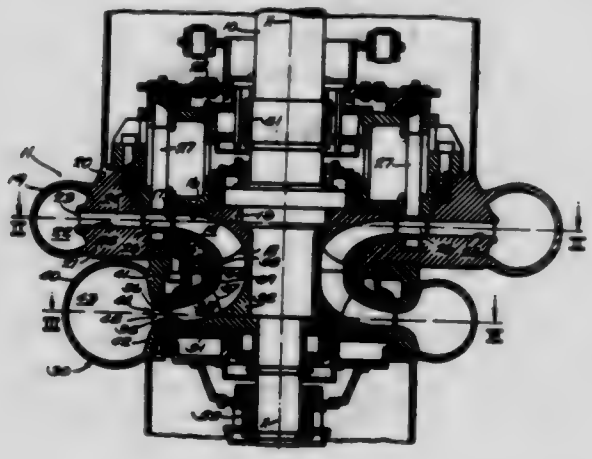
the rib projecting abutment portions and spiral housing ring cooperate with the holding discs and connecting bolts to provide a centrifugal pump having a spiral housing formed of low cost material and able to withstand large pressure heads.

4,496,282

REVERSIBLE TWO-STAGE HYDRAULIC MACHINE

Alexander Gokhman, York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 6, 1982, Ser. No. 375,701
Int. Cl.³ F01D 13/02
U.S. Cl. 415—161 11 Claims



1. A reversible two-stage hydraulic machine having a rotary shaft operable to rotate about an axis of rotation in both a clockwise and counterclockwise direction, the improvements comprising:

a first-stage hydraulic machine runner affixed to said shaft for rotation therewith; said runner having a plurality of runner blades cooperating to define a plurality of fluid passages through said runner; each of said passages having a radial opening which opens along a plane perpendicular to said shaft and an axial opening parallel to said shaft;

a second-stage hydraulic machine runner affixed to said shaft for rotation therewith; said runner having a plurality of runner blades cooperating to define a plurality of fluid passages through said runner; each of said passages having a radial opening which opens along a plane perpendicular to said shaft and an axial opening parallel to said shaft; said axial openings of said second-stage runner facing said axial openings of said first-stage runner in fluid flow communication;

means for connecting said radial openings of said first-stage runner in fluid flow communication with an upper water reservoir; and,

means for connecting said radial openings of said second-stage runner in fluid flow communication with a lower water reservoir at an elevation below said upper reservoir.

4,496,283

WIND TURBINE

Andrej A. Kodric, 340 Dixon Rd., Apt. #1808, Weston, Ontario, Canada M9R 1T1

Continuation-in-part of Ser. No. 470,915, Mar. 1, 1983, abandoned. This application Mar. 26, 1984, Ser. No. 594,462
Int. Cl.³ F03D 7/06
U.S. Cl. 416—44 17 Claims

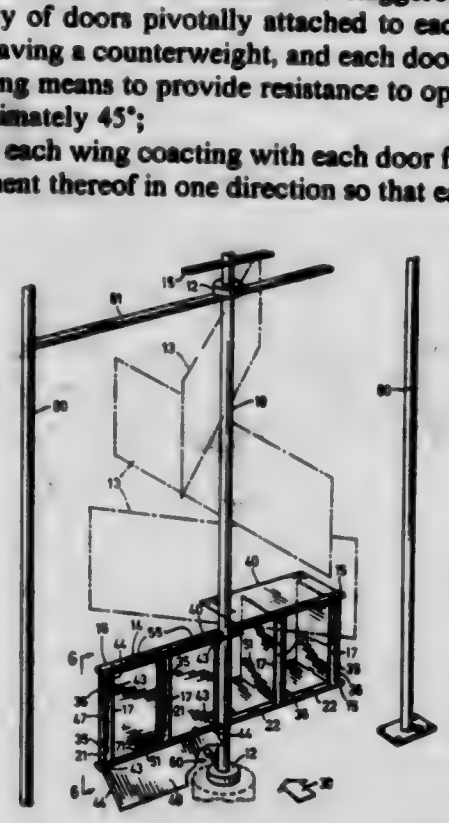
1. A wind turbine comprising:

a vertical shaft being rotatable about its longitudinal axis;

a plurality of vanes attached to the shaft for capturing the force of the wind thereby imparting rotation to the shaft, each vane comprising two wings disposed planarly opposite one another about the shaft, each wing having at least an upper and a lower substantially horizontal arm, each vane being situated along the height of the shaft at a separate level so as not to overlap any other vane, and adjacent vanes being disposed along the shaft at the same dihedral angle to one another in a staggered fashion;

a plurality of doors pivotally attached to each wing, each door having a counterweight, and each door being biased by spring means to provide resistance to opening beyond approximately 45°;

means on each wing coacting with each door for preventing movement thereof in one direction so that each door may



pivot between a closed and an open position in response to the force of the wind; and

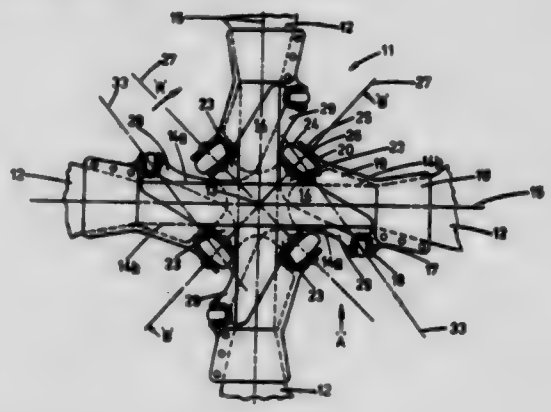
a pair of auxiliary panels pivotally attached to each wing, one panel being attached to the upper arm and the other panel being attached to the lower arm of each wing, the panels having means for restricting movement thereof beyond about 45° from the horizontal, said panels cooperating with the doors to capture the force of the wind as each wing moves with the wind, and said panels cooperating with the doors to minimize resistance to the force of the wind as each wing moves against the wind.

4,496,284

HELICOPTER ROTORS

Kenneth Watson, Yeovil, England, assignor to Westland plc, Yeovil, England

Filed Mar. 18, 1983, Ser. No. 476,484
Claims priority, application United Kingdom, Mar. 18, 1982, 8207962
Int. Cl.³ B64C 27/38
U.S. Cl. 416—138 8 Claims



1. A helicopter rotor including, rotor drive means, pitch control means, at least one pair of diametrically opposed rotor blades arranged for rotation about an axis, a generally flattened strap member interconnecting opposed blade pairs with its major dimension coincident with the plane of rotation and extending between leading and trailing edges, the strap mem-

ber being flexible in torsion and in a plane perpendicular to the plane of rotation, lever means attached to each rotor blade and including first connection means pivotally attached to said rotor drive means externally of the strap member and adjacent one of its edges so that the pivotal attachments of opposed blades are on a common axis parallel to the plane of rotation and intersecting the axis of rotation at approximately 45 degrees to the longitudinal axis of the strap member, and second connection means pivotally attached to said pitch control means externally of the strap member and adjacent the other of its edges.

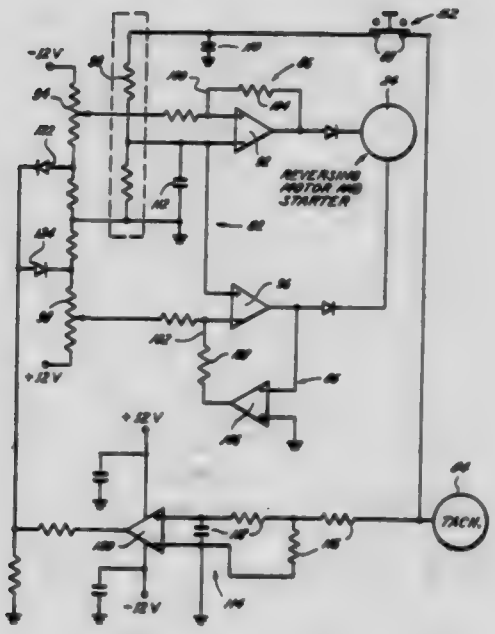
4,496,285

RECIPROCATING DRIVE AND VELOCITY CONTROL FOR LONG STROKE WELL PUMPING UNIT

James W. Albert, and Weems D. Turner, both of Houston, Tex., assignors to Baker ProLift, Inc., Houston, Tex.

Filed Aug. 30, 1983, Ser. No. 527,738
Int. Cl.[3] F04B *49/00*
U.S. Cl. 417—12 14 Claims





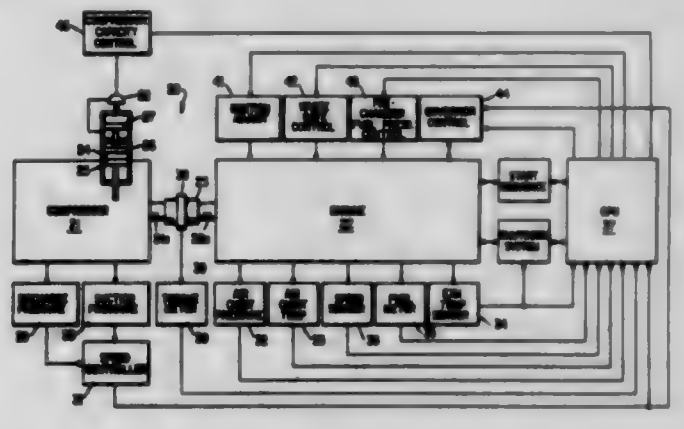
1. A long stroke, well pumping unit comprising: a base platform; a tower on the base platform; drive train means including a rotatable, winding drum means on the base platform and power means to rotate the drum means; a flexible element attached at one end to the drum means and at its other end to the polish rod of a pump; freely rotatable means mounted atop the tower, the flexible element being trained over the rotatable means; a counterweight attached to the flexible element on the opposite side of the rotatable means from the polish rod; means for reversing the power means thus to cyclically wind and unwind the flexible element from the winding drum means and thereby to impart reciprocating movement to the polish rod of the pump, said reversing means including means for de-energizing the power means as the polish rod approaches a desired length of upstroke whereby the polish rod decelerates, reverses direction and accelerates again in the reverse direction or downstroke under the force of gravity; and velocity control means for re-energizing the power means when the polish rod reaches a predetermined velocity in the downstroke, said velocity control means including means for monitoring the velocity of the polish rod, and comparator means responsive to the monitoring means and comparing the velocity of the polish rod with a predetermined reference level, to re-energize the power means when the velocity of the polish rod reaches the pre-determined reference level.

4,496,286

CONTROL SYSTEM FOR ENGINE-DRIVEN COMPRESSOR UNIT AND METHOD OF OPERATION THEREOF

James J. Gagnon, Spring, Tex., assignor to J-W Operating Company, Dallas, Tex.

Filed Jul. 18, 1983, Ser. No. 514,411
Int. Cl.[3] F02B *37/12;* F02D *19/00, 23/02;* F04B *35/00*
U.S. Cl. 417—22 8 Claims



3. An engine-driven compressor unit comprising:
a gaseous fueled engine having:
a prechamber for each combustion cylinder of said engine in which the ignition is initiated;
a prechamber fuel pressure regulator for controlling gaseous fuel flow to the prechamber;
an air chest for storing air under pressure for mixing with the fuel for said engine;
a turbocharger driven by the exhaust from the engine to supply said air under pressure to said air chest;
a waste gate for controlling the amount of exhaust to drive said turbocharger;
ignition timing means; and
a drive shaft;
a compressor having a driven shaft;
a flexible coupling connecting said drive shaft and said driven shaft together; and
means for continuously measuring the torque developed in said flexible coupling during operation and for generating a signal representative of said measured torque.

4,496,287

SENSORS FOR DETECTION OF FLUID CONDITION, AND CONTROL SYSTEMS UTILIZING THEIR SIGNALS

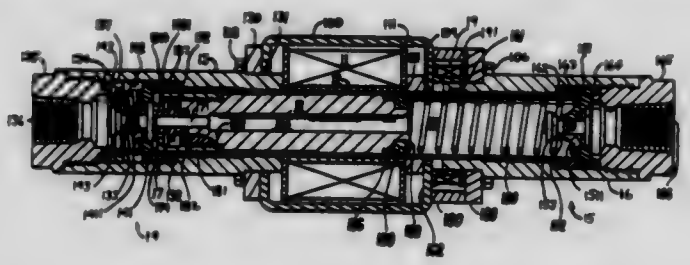
Robert M. Nelson, Willow Springs Village, Rte. 1, Box 215, Rosamond, Calif. 93560, and Robert E. Nelson, Rosamond, Calif., assignors to Robert M. Nelson, Rosamond, Calif.

Division of Ser. No. 121,463, Feb. 14, 1980,. This application Jun. 11, 1982, Ser. No. 387,417

Int. Cl.[3] F04B *21/00*; G01N *7/00*

U.S. Cl. 417—63

8 Claims



1. A sensor for responding to the opposition of a fluid to its own physical displacement, said sensor comprising:

a body having a cavity therein, a flow conduit means enabling entry and exit of fluid to and from said cavity;

a fluid displacement member comprising a plunger having an axis of movement movable in order to vary the volume within said cavity which is available to be occupied by said fluid;

force means adapted to give repetitively a known single impetus to said fluid displacement member for the purpose of ballistically moving it repetitively, each time from a known datum point, repetitively to change said volume; and

sensing means responsive to the motion developed by said member in response to said impetus, as such motion may vary with the varying opposition of said fluid to its own physical displacement by said member, to produce a signal respective to such opposition, said sensing means comprising a coil responsive to change of magnetic flux linking it and thereby to generate a signal proportional to the rate of such change, and magnetizable material integral with said plunger, so disposed and arranged as to cause said flux linking said coil to change when said plunger moves.

4,496,288

VANE TYPE PUMP WITH A VARIABLE CAPACITY FOR POWER STEERING DEVICES

Keiichi Nakamura, Kariya; Yoshiharu Inaguma, Nagoya, and Yutaka Mori, Toyokawa, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

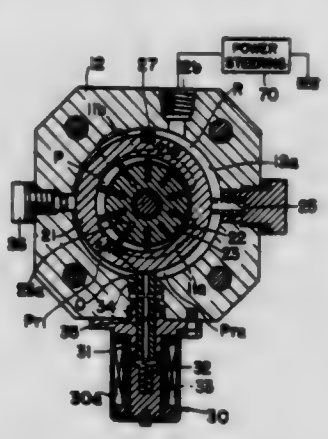
Filed Dec. 22, 1982, Ser. No. 452,136

Claims priority, application Japan, Dec. 22, 1981, 56-207745

Int. Cl.[3] F04B *49/00*

U.S. Cl. 417—213

8 Claims



1. A vane type pump with a variable capacity for a power steering device, comprising:

a pump housing having an inlet port and an outlet port and defining a closed chamber therein, a part of said closed chamber being defined by a pair of flat end surfaces extending in parallel relation;

a movable member received in said closed chamber and guided by said pair of said flat end surfaces for movement in said closed chamber, said movable member having a cylindrical bore for dividing said closed chamber into a pressure chamber partly defined by an external surface of said movable member and a pump chamber partly defined by an internal surface of said cylindrical bore;

a drive shaft supported in said pump housing for rotation about an axis parallel to the axis of said cylindrical bore and having one end thereof extending into said pump chamber;

a rotor received in said pump chamber and connected with said one end of said drive shaft for integral rotation therewith, said rotor being formed with a plurality of radial slots at its circumferential surface;

a plurality of vanes respectively received in said plurality of radial slots and movable radially of said rotor and along said internal surface of said cylindrical bore;

urging means for urging said movable member to move in a radial direction of said rotor so as to deflect the axis of said movable member from the axis of said rotor;

a suction port formed on one of said pair of said flat end surfaces of said pump housing at a position opening to a first part of said pump chamber, said suction port communicating with said inlet port for conducting fluid to said first part of said pump chamber;

a discharge port formed on one of said pair of said flat end surfaces of said pump housing at a position opening to another part of said pump chamber and communicating with said pressure chamber for discharging pressurized fluid from said pump chamber to said pressure chamber;

sealing means forming a seal in a first part of said pressure chamber for cutting off a flow of pressurized fluid from said discharge port into said outlet port through said first part of said pressure chamber;

a valve element at another part of said pressure chamber which is opposite said sealing means in the radial direction of said rotor and is movable in said radial direction of said rotor, said valve element defining a throttle in cooperation with a part of said external surface of said movable member for dividing said pressure chamber into first and second pressure chamber portions respectively communicating with said discharge port and said outlet port, thereby generating a pressure difference between said first and second pressure chamber portions; and

a solenoid operated actuator secured to said pump housing and having a solenoid energized by an electric signal applied thereto for magnetically attracting said valve element so as to move said valve element in said radial direction of said rotor.

4,496,289

DEVICE FOR CONTROLLING AND/OR MEASURING OPERATIONAL PARAMETERS OF AN AXIAL PISTON MACHINE

Joachim Heiser, Stuttgart, and Gerhard Wilke, Korntal, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 427,265

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1982, 3208250

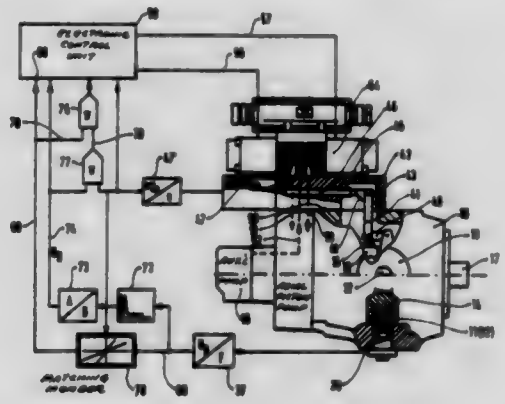
Int. Cl.[3] F04B *1/26*

U.S. Cl. 417—217

13 Claims

1. A device for controlling and/or measuring operational parameters of an adjustable axial piston machine including axial pistons, a tilting plate cooperating with the pistons and being supported for angular displacement on two opposite pivot points, and means for adjusting the angular position of the tilting plate, said device comprising a data processing unit for producing control signals, means controlling said adjusting

means in response to said control signals, at least one of said pivot pins being provided with a strain sensor which converts forces acting upon the pin into data indicative of delivery pressure and rotary speed of the machine; means for separating and feeding the data into said data processing means; said one



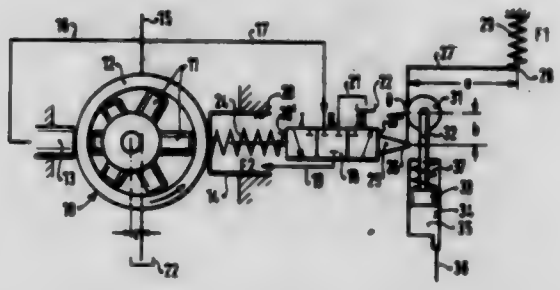
pivot pin having a tubular configuration and being made of a soft magnetic material, said sensor being located in said one pivot pin and including a pick-up transformer operating on magnetoelastic principle and having an open magnetic circuit cooperating with the material of said one pin.

4,496,290

CONTROL DEVICE FOR MAINTAINING THE PRODUCT OF THE LIFTING PRESSURE AND LIFTING VOLUME TIMES FLOW CONSTANT IN AN ADJUSTABLE PUMP

Gerhard Nonnenmacher, Korntal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,960
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1982, 3200867; Mar. 5, 1982, 3207961
Int. Cl.³ F04B 49/00
U.S. Cl. 417—220 15 Claims



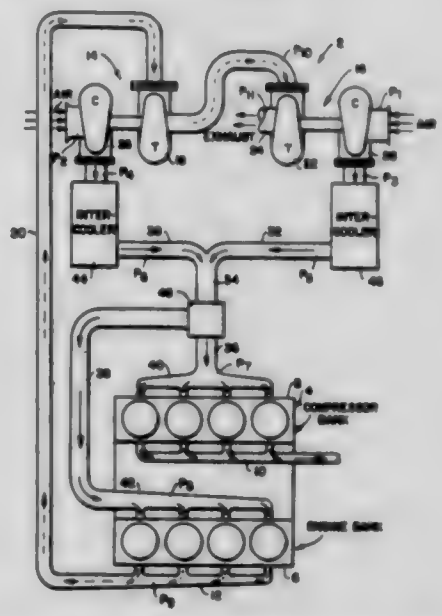
1. A control device for maintaining the product of the pumping pressure and pumping volume times flow constant in a pumping system of the type including an adjustable pump furnishing a pumping pressure and a pumping volume at an output side and having a regulating element for adjusting said volume, and a first and second pressure-controlled pistons for adjusting the regulating element, the control device comprising control valve means adapted to control the pressure on said second piston; an adjusting lever operatively connected to said control valve means; means for producing a first force acting on said adjusting lever and including a first spring with approximately linear characteristic, said first spring acting upon said second piston and being operatively connected to said valve control means, said first spring having a prestressing corresponding to a linear proportional path of the pumping volume of the pump; means for producing a second force acting on said adjusting lever, said adjusting lever having at least one arm operatively connected to said valve control means; and means for varying the length of said arm proportionally in accordance with a working pressure of the pump and including a cylinder and a piston slidably positioned therein, said piston in said cylinder being loaded by a pumping pressure of the pump and being connected to said arm and being adapted to vary the length of said arm in accordance with the pressure in said cylinder, whereby in the case of unbalance between said first force and said second force said control valve means is actuated by said arm so as to control the regulating member of the pump via said second piston until the pumping volume of the pump is corrected and a balance between said first force and said second force is reached to maintain said valve control means in equilibrium position.

4,496,291

COMPOUND TURBOCHARGER SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

John E. Grimmer, Franklin, Ind. 46131

Filed Nov. 13, 1981, Ser. No. 321,089
Int. Cl.³ F04B 17/00
U.S. Cl. 417—247 10 Claims



1. A method for forming a turbocharged engine/compressor unit from a conventional multi-cylinder internal combustion engine having plural pistons mounted, respectively, for reciprocatory motion within the cylinders and a single crankshaft for interconnecting the pistons, comprising the steps of

(a) converting at least one engine cylinder to operate as an air compressor cylinder by isolating the cylinder from the engine fuel supply and by supplying air to the compressor cylinder during the corresponding piston downstroke and by exhausting air during the corresponding piston upstroke and further by diverting the compressed air through a compressed air outlet which is isolated from the engine exhaust system;

(b) providing a pair of turbocharger units each of which includes a compressor and a mechanically connected, exhaust driven turbine for supplying air to both said engine cylinder and to said compressor cylinder to increase engine cylinder output torque and to increase the volume of compressed air supplied to the air outlet by the compressor cylinder, said step of providing turbocharger units for supplying air including the substeps of:

(1) providing means for connecting the exhaust turbines fluidically in series to receive exhaust gases in series solely from the engine cylinder, and

(2) providing means for connecting the compressors fluidically in parallel for receiving air from the atmosphere and for providing air under pressure in parallel to both the engine and compressor cylinders.

4,496,292

ELECTROMAGNETIC FUEL DELIVERY AND METERING PUMP

Karl Panick, Plieningen, and Joseph Glass, Ottobrunn, both of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH & Co., Gauting, Fed. Rep. of Germany

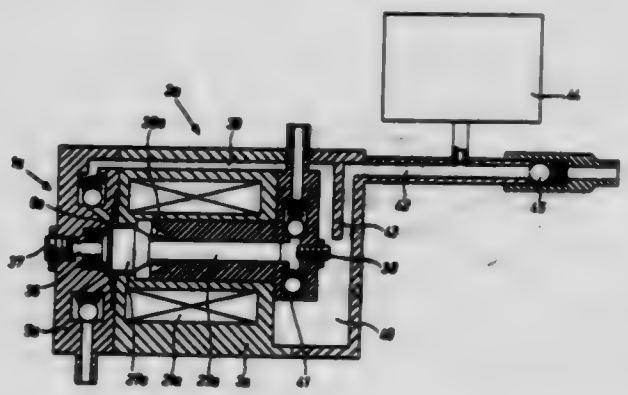
Division of Ser. No. 58,622, Jul. 18, 1979, Pat. No. 4,309,153. This application Dec. 7, 1981, Ser. No. 328,225

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1978, 2831437

Int. Cl.³ F04B *3/00, 17/04*

U.S. Cl. 417—252

6 Claims



1. Electromagnetic fuel delivery pump comprising a diaphragm pump and a metering piston pump, said pumps having working chambers and means enabling interconnection thereof when the diaphragm pump executes a delivery stroke and the metering piston pump executes a suction stroke, said metering piston pump having a piston connected with an armature of an electromagnet, and a common return spring being provided for executing the delivery stroke of the diaphragm pump and the suction stroke of the piston metering pump, characterized in that the working chambers of the diaphragm pump and the metering piston pump are interconnected, and comprising a storage chamber which is connected with the working chamber of the diaphragm pump, with the suction side of the metering piston pump and with a reflux line that carries off fuel in excess of the capacity of said storage chamber, wherein the connection between the storage chamber and the working chamber of the diaphragm pump is by a conduit opening into a top portion of the storage chamber, wherein the connection between the suction side of the metering piston pump and the storage chamber is at a bottom portion thereof, wherein the connection between the reflux line and the storage chamber is at a top portion thereof.

4,496,293

COMPRESSOR OF THE SCROLL TYPE

Toshiyuki Nakamura; Tsutomu Inaba, and Tadashi Kimura, all of Wakayama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 16, 1982, Ser. No. 450,551

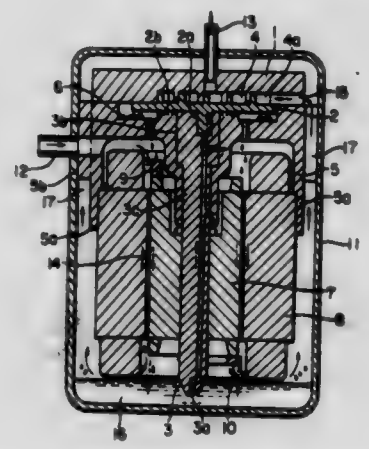
Claims priority, application Japan, Dec. 28, 1981, 56-215823

Int. Cl.³ F04B *39/06;* F04C *18/02, 29/04;* H02K *9/00*

U.S. Cl. 417—371

8 Claims

1. A compressor of the scroll type comprising a compression part including a stationary and a movable scroll each having a convolute shape and contacting one another so as to form compressing chambers, including a suction portion, therebetween; a motor to drive said movable scroll; a shell containing said compression part and said motor and having an oil sump at the bottom thereof; a frame separating the inside of said shell into said compression part and a motor chamber containing said motor, said frame being provided therein with an upper portion of said motor chamber and means, including an inlet passage respectively communicating at opposite ends with the exterior of said compressor and with said upper portion of said motor chamber, delivering a suction gas through said inlet passage into said upper portion of said motor chamber; and means for guiding the suction as from said upper portion of said motor chamber downward into said oil sump and then upward from said oil sump to said suction portion of said compression part; said delivering means and said suction gas guiding means including means for preventing the suction gas



passing through said inlet passage from flowing into said oil sump before being delivered to said upper portion of said motor chamber and from passing into said suction portion of said compression part before passing into said oil sump.

4,496,294

DIAPHRAGM PUMP

Jozsef Frikker, Dreieich, Fed. Rep. of Germany, assignor to Champion Spark Plug Company, Toledo, Ohio

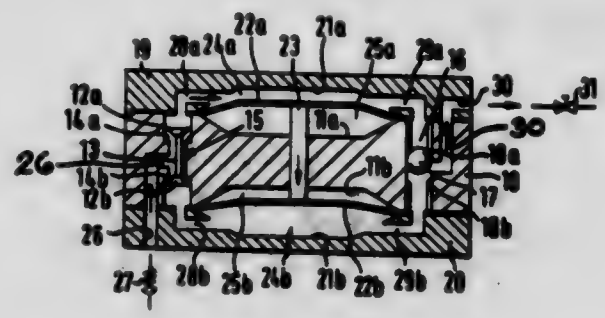
Filed Dec. 21, 1982, Ser. No. 451,981

Claims priority, application United Kingdom, Dec. 22, 1981, 8138785

Int. Cl.³ F04B *43/06;* F01L *25/02*

U.S. Cl. 417—393

9 Claims



1. An improved diaphragm pump comprising:

a housing having a material inlet port and a material discharge port, said housing defining a first chamber and second chamber; a first diaphragm means fixed within said first chamber to define a first fluid chamber and a first material chamber, said material chamber being in communication with said material inlet port and said material discharge port and a second diaphragm means fixed within said second chamber to define a second fluid chamber and a second material chamber, said second material chamber being in communication with said material inlet port and said material discharge port, said first diaphragm means and said second diaphragm means operatively interconnected to alternate between a forward stroke in which working fluid supplied under pressure from a working fluid source is admitted to said first fluid chamber to pump material contained in said first material chamber through said material discharge port and working fluid is discharged from said second fluid chamber to draw material to be pumped through said material inlet port into said second material chamber and a return stroke in which the working fluid is supplied under pressure to said second fluid chamber to pump material contained in said second material chamber through said material discharge port

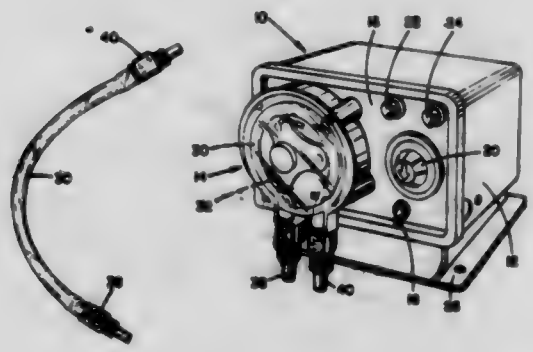
and working fluid is discharged from said first fluid chamber to draw material through said material inlet port into said first material chamber; a first pilot valve in said housing positioned between and in communication with said first fluid chamber and said second fluid chamber and a second pilot valve in said housing positioned between and in communication with said first fluid chamber and said second fluid chamber, said first and second pilot valves being in a normally closed state and positioned for engagement by said first and second diaphragm means respectively, said first diaphragm means engaging and actuating said first pilot valve when the working fluid is exhausted from said first fluid chamber, said first pilot valve opening upon engagement by said first diaphragm and directing a portion of the working fluid contained under pressure in said second fluid chamber into said first fluid chamber to initiate expansion of said first fluid chamber, said second diaphragm means engaging and actuating said second pilot valve when the working fluid is exhausted from said second fluid chamber, said second pilot valve opening upon engagement by said second diaphragm and directing a portion of such working fluid contained under pressure in said first fluid chamber into said second fluid chamber to initiate expansion of said second fluid chamber; and a control valve means for reversing the stroke of said pump, said control valve means being adapted to receive and exhaust the working fluid under pressure.

4,496,295

PERISTALTIC PUMPS

Oswald M. King, 3321 Devon Cir., Huntington Harbor, Calif. 92649

Continuation-in-part of Ser. No. 360,406, Mar. 22, 1982, abandoned. This application Mar. 20, 1984, Ser. No. 591,430
Int. Cl.[3] F04B *43/12*
U.S. Cl. 417—477 10 Claims



1. For use in a peristaltic pump of the kind in which a length of tubing is disposed in a housing, the housing having an end wall and having an inner wall whose shape defines a segment of a circle, and a set of rollers rotatable about an axis which extends through the end wall, said rollers serving to compress said tubing against said side wall at successive points along said side wall, and the housing being formed with locking elements for engaging key structures at the ends of the tubing and preventing relative rotation of the tubing ends about the central axis of the tubing from a given angular orientation of said key structures:

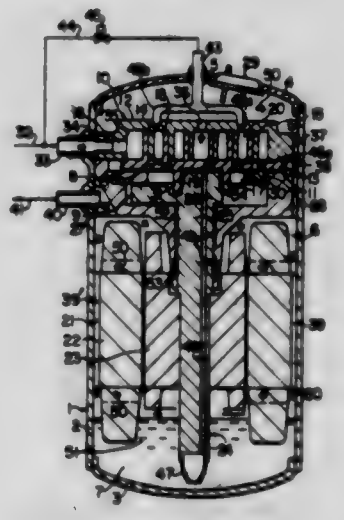
a length of resilient peristaltic pump tubing each end of which is fitted with a respectively associated key structure fixed to the tubing such that when the tubing is relaxed the two key structures have a relative angular orientation about the center line of the tubing which differs from said given angular orientation by a substantial amount not more than one-half turn about said central axis.

4,496,296

DEVICE FOR PRESSING ORBITING SCROLL MEMBER IN SCROLL TYPE FLUID MACHINE

Nobukatsu Arai; Shigeru Machida; Eiji Sato, all of Ibaraki; Kenji Tojo, and Naoshi Uchikawa, both of Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 7, 1983, Ser. No. 456,486
Claims priority, application Japan, Jan. 13, 1982, 57-2699
Int. Cl.[3] F01C *1/02, 19/00;* F04B *49/02*
U.S. Cl. 418—55 26 Claims



1. A scroll type fluid machine comprising:

a stationary scroll member having an end plate and a spiral wrap formed on one side of said stationary scroll member so as to protrude upright therefrom;

an orbiting scroll member having an end plate and a spiral wrap formed on one side of said end plate so as to protrude upright therefrom, and adapted to be coupled with said stationary scroll member such that said wraps on both scroll members mate with each other to define a plurality of working chambers therebetween;

a frame means fixed to said stationary scroll member;

a driving means for causing an orbiting movement of said orbiting scroll member, said driving means including a main shaft rotatably carried by said frame means through bearings, an eccentric shaft adapted to transmit the movement of said main shaft to said orbiting scroll member at a position spaced by a distance substantially equal to a radius of relative orbiting movement between said scroll members;

a high pressure port means;

a low pressure port means;

a rotation prevention means disposed between said orbiting scroll member and a stationary part of said machine so as to maintain a fixed angular relationship of said orbiting scroll member to said stationary scroll member;

a first back pressure chamber defined by a cooperation of said frame means, said drive shaft and said orbiting scroll member, said first back pressure chamber being adapted to hold a fluid pressure which imparts an axial pressing force to said orbiting scroll member;

a first back pressure passage means providing a communication between said first back pressure chamber and at least one of said working chambers which holds an intermediate pressure of the fluid and does not substantially communicate with said low pressure port means and never communicates with said high pressure port means;

a second back pressure chamber defined by said eccentric shaft of said driving means and by a shaft supporting portion rotatably and axially movably engaging with said eccentric shaft, said second back pressure chamber being adapted to hold a fluid pressure for imparting an axial pressing force to said orbiting scroll member;

a second back pressure passage means including a fluid passage formed in said driving means and adapted to introduce the fluid pressure into said second back pressure

chamber so as to impart an axial pressing force to said orbiting scroll member; and

wherein the first back pressure chamber and the second back pressure chamber have a volume such that a total axial pressing force applied therefrom to the orbiting scroll member is in accordance with the following relationship:

$$Pb \cdot Ab + Pd \cdot Ad = Fpa + (Ms/Rb) + Fs$$

where:

Pb=a suitable intermediate pressure in the first back pressure chamber,

Ab=an area of the back surface of the orbiting scroll member to which the pressure Pb is applied,

Pd=a high pressure of gas or lubricating oil in the second back pressure chamber,

Ad=an area to which the pressure Pd is applied,

Fpa=an axial fluid force within the working chambers,

Ms=moment imparted to the orbiting scroll member by the radial fluid force within the working chambers,

Rb=radius of the end plate of the orbiting scroll member, and

Fs=force applied to the sliding surfaces of the end plates caused by hydraulic pressure.

4,496,297

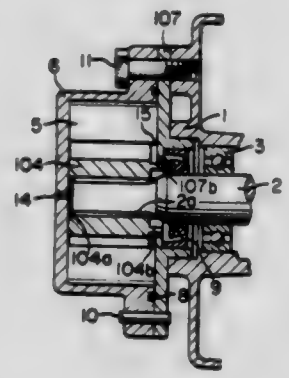
ROTARY VANE PUMP WITH OVERLAPPING ROTOR AND HOUSING PORTIONS

Hitoshi Ogawa, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 269,661, Jun. 2, 1981, abandoned. This application Nov. 28, 1983, Ser. No. 555,415

Int. Cl.³ F04C *2/00, 15/00*

U.S. Cl. 418—133 3 Claims



1. A pump means comprising: a housing means having a cylindrical inner peripheral surface and provided with an inlet port and an outlet port, an integral end wall with an inner surface closing one end and the other end being open; a disc means secured to said open end of said housing means to constitute a working chamber together therewith and having a central opening eccentric to the center of said cylindrical inner surface of said housing means, a rotor means rotatively contained within said working chamber and abutting only in sliding relationship against said end wall and said disc means for permitting radial sliding movement relative thereto and having a splined axial bore therethrough adapted to slide onto a splined shaft introduced into said working chamber through said central opening of said disc means, a plurality of radial vanes each shiftably received within a corresponding slot in said rotor means and adapted to have its outer end surface always shiftably abut against said cylindrical inner surface of said housing means, and means for limiting radial sliding movement of said rotor within said working chamber when said rotor is not secured on a shaft and consisting of an overlapping portion on at least one of said disc means and said rotor means and extending axially thereof into axial overlapping relation with the other of said disc means and said rotor means and having a peripheral surface spaced radially a slight distance from the other of said disc means and said rotor means.

4,496,298

DIE PLATE FOR GRANULATION PRESSING, PARTICULARLY FOR THE MANUFACTURE OF FEED GRANULES

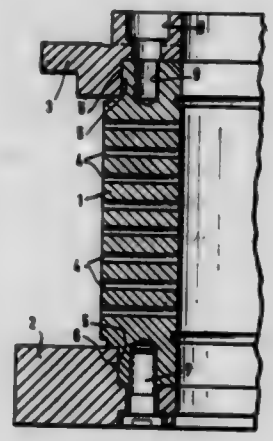
Peter Münch, In der Beek 126 b, 5600 Wuppertal 1, Fed. Rep. of Germany

Filed Jul. 7, 1982, Ser. No. 395,901

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1981, 3127506

Int. Cl.³ B29F *3/012*

U.S. Cl. 425—192 R 11 Claims



1. Die for granulation presses, particularly for the manufacture of feed granulates, comprising:

a one-piece cylindrical, cross-sectionally circular center element consisting of wear-resistant steel having a plurality of granulating openings,

a drive flange arranged on one axial end of the center element for connecting the center element to a drive element of the granulation press; and

a connecting flange arranged on the other axial end of the center element, said connecting flange having a greater outside diameter and radial strength than said drive flange;

means for rigidly fixing said drive flange and said connecting flange to said center element;

wherein the connecting flange and drive flange are formed and used as mounting flanges for holding the center element and are made of a high durability steel.

4,496,299

UNIT CONTAINING A MOULDING TOOL FOR SEMI-ISOSTATIC COMPACTION OF A POWDER CONTAINED IN THE PRESS TOOL CAVITY

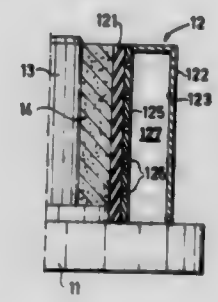
Ola Pettersson, Vipvägen, Sweden, assignor to KB Cold Isostatic Press Systems CIPS, Hoganas, Sweden

Filed Nov. 2, 1983, Ser. No. 548,002

Claims priority, application Sweden, Nov. 18, 1982, 8206586

Int. Cl.³ B30B *5/02*

U.S. Cl. 425—405 H 7 Claims



1. A molding system for semi-isostatic compaction of powder, said system including a hydraulic press and a mold unit positionable in a chamber of said press, said mold unit comprising:

an elastomeric jacket defining a cavity for containing the powder;

a sleeve sealingly joined to said elastomeric jacket, said sleeve and said elastomeric jacket defining a cavity; and

a pressure transferring medium in said cavity for transmitting pressure acting upon said sleeve to said elastomeric jacket.

4,496,300

DISC RECORD PRESS FORMING

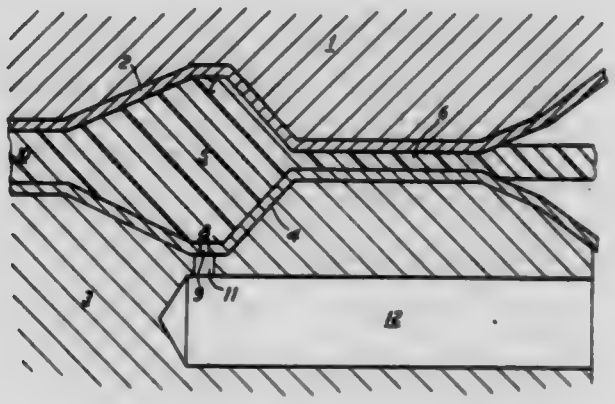
Hermann Stransfeld, Cologne, Fed. Rep. of Germany, assignor to Emi Electrola Gesellschaft mit beschrankter Haftung, Cologne, Fed. Rep. of Germany

Filed Apr. 20, 1983, Ser. No. 486,885

Claims priority, application United Kingdom, Apr. 21, 1982, 8211533

Int. Cl.[3] B29D *17/00*

U.S. Cl. 425—408 5 Claims



1. A record press, for the press forming of disc records, including a pair of jaws and a press tool, said press tool comprising a pair of backing plates with stamper plates affixed thereto, said press tool being mounted between said pair of jaws such that, when said press is closed, said stamper plates face one another to form a disc record shaped cavity and, in use, said record press acts on a shot of plastics material to form a disc record surrounded by flash, said press tool having a number of apertures facing said cavity and vented to atmosphere such that, in use, air present in the vicinity of said apertures is permitted to escape therethrough, wherein said cavity is shaped such that an annular ridge of plastics material encircles the information region of a disc record formed by said press tool, and said apertures are positioned in an annular recess adjacent to said annular ridge such that air present in said annular ridge may escape therethrough.

4,496,301

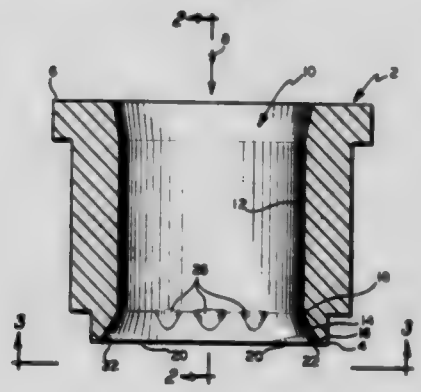
PLASTIC MOLDING APPARATUS

Larry P. Mozer, and Bill T. Morgan, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 30, 1982, Ser. No. 413,030

Int. Cl.[3] B29F *3/04*

U.S. Cl. 425—532 13 Claims



1. A die ring having a first end, a second end, a longitudinal axis, and a borehole extending along the longitudinal axis from the first end to the second end, said borehole defining an interior surface of the die ring characterized by a generally frustoconical portion having a first end and a second end and converging from the first end to the second end, the first end of the frustoconical portion being connected to the first end of the die ring and being characterized by a generally opposed pair of one or more first depressions which extend from the first end of the generally frustoconical portion of the borehole toward the second end of the generally frustoconical portion of the borehole, the second end of the generally frustoconical portion of the borehole being characterized by a generally opposed pair of one or more second depressions which extend toward the first end of the generally frustoconical portion of the borehole from the second end of the generally frustoconical portion of the borehole, the generally opposed pair of second depressions being positioned about normally from the generally opposed pair of first depressions, as measured from the centers of each of the pair of first depressions and the pair of second depressions, with respect to the longitudinal axis of the die ring.

4,496,302

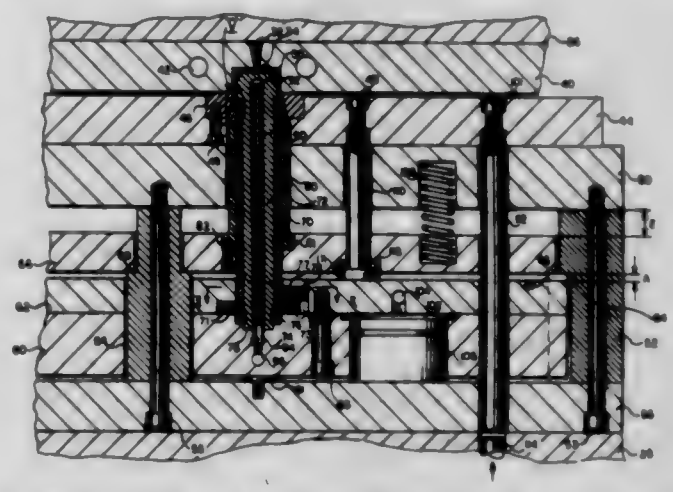
APPARATUS FOR MOLDING PLASTIC ARTICLES

Paul Brown, Orangeville, Canada, assignor to Husky Injection Molding Systems Inc., Bolton, Canada

Filed Jun. 4, 1982, Ser. No. 385,064

Int. Cl.[3] B29D *1/00*; B29F *1/14*

U.S. Cl. 425—547 7 Claims



1. An apparatus for integrally molding a plastic article having a hollow body and an adjoining skirt provided with a plurality of internal projections inclined in a transverse plane at similar acute angles to an inner periphery of the skirt, comprising:

a mold with a male and a female portion relatively displaceable between a mold-closed and a mold-open position, said portions defining in said mold-closed position a cavity connected to a supply of flowable plastic material hardenable into an elastic solid, said cavity including an annular gap centered on an axis and bounded by a sleeve forming part of said male portion and by a surrounding shell forming part of said female portion, said male portion further including a core coaxial with said sleeve, said cavity further having extensions formed by undercut recesses in an outer periphery of said sleeve open toward said gap and inclined at substantially identical acute angles to said outer periphery;

drive means coupled with said male and female portions for alternately establishing said mold-open and mold-closed positions, with full exposure of a molded article adhering to said male portion in said mold-open position while a skirt of a molded article embraces said sleeve with internal projections respectively molded in said recesses; and

ejection means synchronized with said drive means for rotating said sleeve relatively to said core in the direction of divergence of said recesses from said outer periphery to extract molded projections from said recesses and to de-

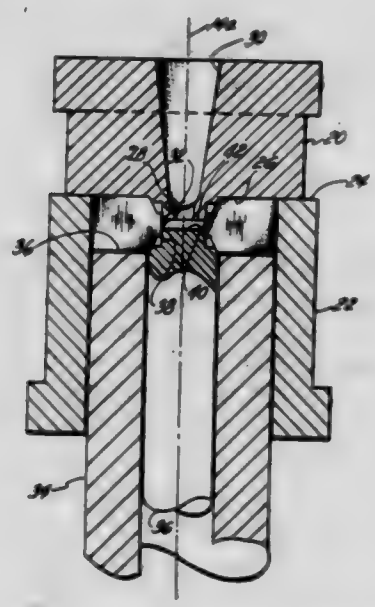
flect molded projections so extracted toward the inner periphery of a skirt embracing said sleeve with resultant elastic radial expansion of such a skirt, said ejection means including a stripper operable to exert upon the expanded skirt an axial thrust removing the molded article from said male portion.

4,496,303

METHOD OF FABRICATING A PERMANENT MAGNET

Robert J. Loubier, Fort Wayne, Ind., assignor to Xolox Corporation, Fort Wayne, Ind.

Filed May 27, 1982, Ser. No. 382,391
Int. Cl.³ B29F *1/03*
U.S. Cl. 425—569 6 Claims



1. The method of fabricating a permanently magnetizable body of plastic material filled with particles which are permanently magnetizable, said body having opposite ends and an axis of symmetry extending therebetween, comprising the steps of mixing quantities of plastic material and solid magnetizable particles to obtain a substantially uniform mixture, injection molding said body using said mixture; said molding step including injecting said mixture with said plastic in molten form into a cavity having the form of said body and through a gating orifice on said axis, said orifice opening radially into said cavity uninterruptedly completely around said axis whereby the molten mixture fills said cavity uniformly radially from said orifice, said orifice being of a size in relation to said particles which causes at least some of said particles to become physically oriented in a common direction as they enter said cavity, and causing said molten plastic to solidify thereby securing said particles in position, said particles being thus dispersed substantially uniformly throughout the solidified body.

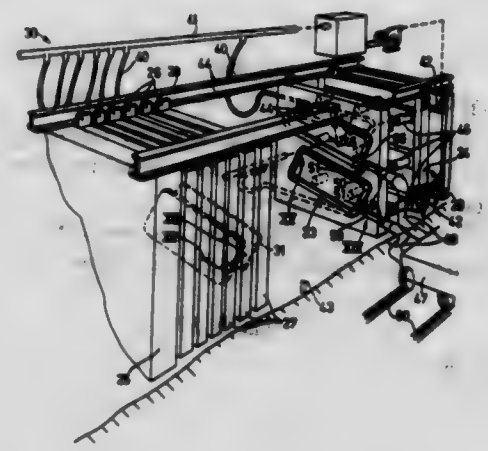
4,496,304

MOULD FOR SHAPING SYNTHETIC MATERIAL AND MOULD FOR RENOVATING A CARRYING BOARD

Hendrik Bouwhuis, Nieuwe Haven 24, Hardenberg, Netherlands

PCT No. PCT/NL82/00003, § 371 Date Oct. 1, 1982, § 102(e) Date Oct. 1, 1982, PCT Pub. No. WO82/02698, PCT Pub. Date Aug. 19, 1982
PCT Filed Feb. 4, 1982, Ser. No. 438,884
Int. Cl.³ B29C *1/00*
U.S. Cl. 425—569 7 Claims

1. A device for producing carrying boards to be used in the production of bricks, thereby giving the boards a predetermined thickness, comprising: a series of plural moulds, each of the plural moulds of each of said series of moulds being a peripheral mould frame sandwiched between an associated pair of spaced, opposed carrier plates of a battery of a plurality of movable carrier plates; said battery having common high pressure closing means for moving said carrier plates toward each other into said spaced relation so as to sandwich said moulds firmly therebetween, said moulds having inlets out of contact with said spaced carrier plates which are individually connectable to a common outlet of a common resin injection



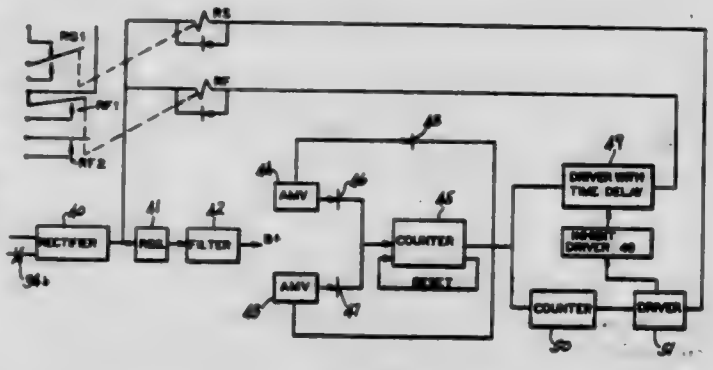
moulding device, said common outlet being movable to the individual inlets of said series of moulds, said plural mould frames being vertically spaced and positioned with open ends facing opposing movable carrier plates.

4,496,305

IGNITION CONTROL CIRCUIT FOR A BOILER SYSTEM

Joseph W. Beatz, Clinton, Conn., assignor to Precision Timer Co., Inc., Westbrook, Conn.

Continuation-in-part of Ser. No. 387,246, Jun. 10, 1982, abandoned. This application Aug. 12, 1983, Ser. No. 522,522
Int. Cl.³ F23C *11/04*
U.S. Cl. 431—1 10 Claims



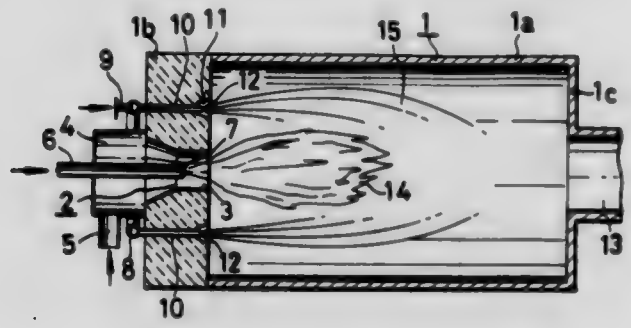
1. A circuit for providing a predetermined number of pulses between predetermined time intervals comprising first and second pulse generators, said first generator providing pulses having a substantially longer period than said second generator, a pulse counter providing an output upon overflow, means coupling said pulse generators to said counter, said second generator being inhibited by absence of one output state of said counter, but rendered active upon occurrence of the other output state of said counter, whereby when said first generator is operating, said counter generates an output pulse upon overflow and enables said second generator, and terminates the output pulse upon overflow of counts of pulses from said second generator, means applying the overflow from said counter due to said first generator to an ignition circuit, means for counting the number of pulses applied to said ignition circuit, and means responsive to said means for counting reaching a predetermined number for inhibiting input of pulses to said ignition circuit.

4,496,306

MULTI-STAGE COMBUSTION METHOD FOR INHIBITING FORMATION OF NITROGEN OXIDES

Nobora Okigami; Hiroshi Hayasaka; Yoshitoshi Sekiguchi, and Harushige Tamura, all of Osaka, Japan, assignors to Hitachi Shipbuilding & Engineering Co., Ltd., Osaka, Japan

Continuation of Ser. No. 914,146, Jun. 9, 1978, abandoned. This application Apr. 18, 1984, Ser. No. 601,105
Int. Cl.³ F23M *3/02*
U.S. Cl. 431—8 6 Claims



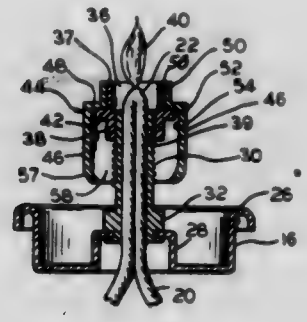
1. A multi-stage combustion method for inhibiting the formation of nitrogen oxides comprising injecting a primary fuel and primary air into a furnace at an upstream end thereof to burn the fuel and form a first-stage combustion zone downstream of said end, the primary air being supplied at a rate in excess of the stoichiometric rate required for the combustion of the primary fuel, so that a ratio of air actually provided to air stoichiometrically required for combustion is at least 1.4 in the first-stage combustion zone, and injecting only a secondary fuel in the absense of air into the furnace at said upstream end in a plurality of streams spaced from a location of injecting said primary fuel and primary air into the vicinity of the first-stage combustion zone at a rate approximately equal to the stoichiometric rate required for the consumption of the excess oxygen resulting from the combustion in the first-stage zone and diluting the secondary fuel with surrounding combustion gas prior to combusting with said excess oxygen to form a second stage combustion zone spaced from a location of injecting of said plurality of streams and in the vicinity of the first-stage zone.

4,496,307

CANDLE INCLUDING FLAME ADJUSTMENT MEANS AND AUTOMATIC FLAME EXTINGUISHER MEANS

Jack L. Ginardi, Western Springs, Ill., assignor to Valley Candle Mfg. Co., Inc., Brooklyn, N.Y.

Filed Jul. 29, 1983, Ser. No. 518,425
Int. Cl.³ F23Q *25/00*
U.S. Cl. 431—34 13 Claims



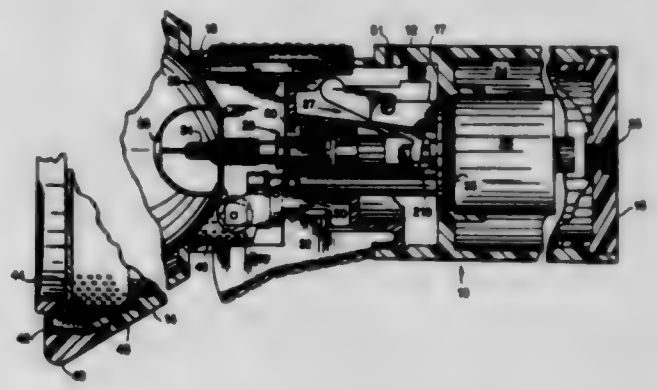
1. A candle comprising:
a receptacle terminating into an open end;
a combustible fuel contained in the receptacle;
a cap covering said open end and having an opening therethrough;
a hollow tubular member secured to the cap;
a wick passing through said cap and tubular member, so that an upper tip portion of the wick protrudes out from the outermost end of the tubular member and a bottom portion of the wick extends into the fuel, said tip being the location for the candle flame;
a flame adjuster movable along said tubular member for varying the intensity of the flame, said flame adjustor including a support means secured to the outside thereof and having an upper side and a lower side; and
a flame extinquisher means normally supported on said upper side of said support means, said flame extinquisher means being slightly movable in a lateral direction for contacting the flame adjustor to enable outward and inward adjustment of the position of the flame adjuster, said flame extinquisher means being freely movable in an outward direction to extend over the flame for extinquishing the flame when the candle tilts over or becomes unstable; and
the lower side of the support means cooperating with the flame extinquisher means to prevent the flame extinquisher means from flying off the candle when said flame extinquisher extends over the flame.

4,496,308

SHOCK MOUNTING FOR INCANDESCENT MANTLE

George P. Gruner, Andover, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Aug. 16, 1982, Ser. No. 408,553
Int. Cl.³ F21H *7/00*
U.S. Cl. 431—101 10 Claims



1. A hand-held lighting device powered by a combustible fuel and including a mantle, comprising a housing, an elongated cantilevered member anchored within said housing and mantle mounting means disposed at the unanchored end of said cantilevered member, said cantilevered member including axial shock absorbing means including a first elongated member, a second elongated member coaxially and slidingly mated with said first member and biasing means for biasing relative coaxial movement between said first and second members, said shock absorbing means including knuckle joint means for canting a first portion of said cantilevered member with respect to a second portion of said cantilevered member in response to transverse shock forces acting on said device.

4,496,309

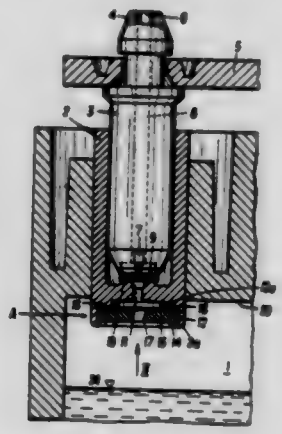
LIQUID GAS-OPERATED LIGHTER, PARTICULARLY POCKET LIGHTER

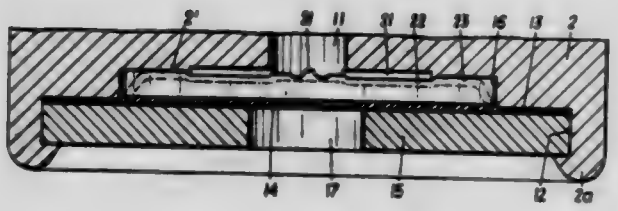
Friedrich Schächter, Draschestrasse 31, A-1232 Vienna, Austria

PCT No. PCT/AT82/00004, § 371 Date Nov. 19, 1982, § 102(e) Date Nov. 19, 1982, PCT Pub. No. WO82/03262, PCT Pub. Date Sep. 30, 1982
PCT Filed Mar. 18, 1982, Ser. No. 444,594
Claims priority, application Austria, Mar. 19, 1981, 1306/81
Int. Cl.³ F23D *13/04*
U.S. Cl. 431—344 9 Claims

1. Liquid-gas operated lighter, such as isobutane gas operated pocket lighter, comprising a burner tip, a closable valve in communication with said burner tip, a valve bore having first and second openings, said first opening arranged adjacent said closable valve, a fuel tank and a non-adjustable control device

arranged between said tank and said valve bore, an annular surface facing said fuel tank and having a recess of limited depth, said recess defining an end face extending transversely to said bore, said end face arranged contiguous with said second opening of said valve bore, a structural component having a passage for fuel, a proportioning disk whose periphery is pressed in a gas tight manner by said structural component against said annular surface, said proportioning disk formed by a fuel-permeable flexible film having microscopically small individual pores permitting flow of gas through said proportioning disk essentially perpendicularly to the film surface, said recess, said end face and said proportioning disk defining a





proportioning chamber, said control device being formed by said proportioning disk and said proportioning chamber, so that when said valve is open the pressure in said tank causes said proportioning disk to be deflected in the direction of said second opening into said proportioning chamber toward said end face, a texture including recessed portions formed in the surface of said end face for controlling flow of gas from said proportioning disk toward said valve bore when said proportioning disk is in contact with said end face, said texture in said end face closing more and more pores of said proportioning disk as the pressure difference between the pressure in the tank and the ambient pressure increases in dependence upon the temperature.

4,496,310

BURNER FOR PRODUCING A FLOW OF HOT GAS IN PARTICULAR FOR SHRINKING A PLASTIC FOIL

Rainer W. Hannes, Goch, Fed. Rep. of Germany, assignor to MSK-Verpackungs-Systeme GmbH, Kleve, Fed. Rep. of Germany

Filed Jul. 14, 1983, Ser. No. 513,670
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1982, 3226615
Int. Cl.³ F23D *13/24*
U.S. Cl. 431—350 17 Claims

1. A burner for producing a flow of hot gas, in particular for shrinking a plastic foil, comprising:

(a) Mixture inlet means;

(b) a pressure distribution chamber connected to and in flow communication with said inlet means;

(c) a transition section connected to and in flow communication with said pressure distribution chamber;

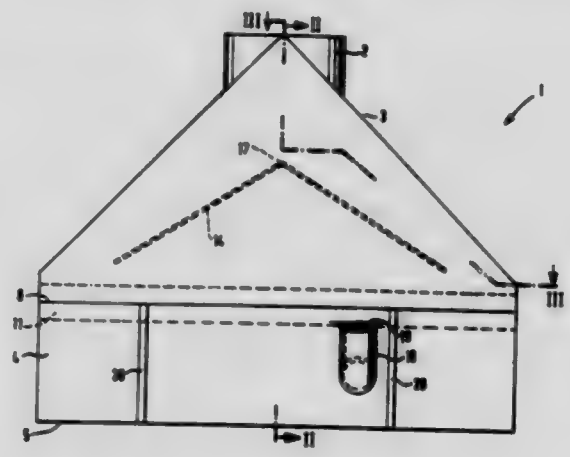
(d) a combustion chamber connected to and in flow communication with said transition section and said combustion chamber having a discharge opening;

(e) said combustion chamber have an elongated inlet of substantial length in cross section;

(f) said transition section being tapered and having substantial planar side walls converging on said inlet of said combustion chamber;

(g) a flame holder positioned substantially in said transition section generally in the area of connection of said transition section with said combustion chamber and said flame holder having a length substantially equal to said inlet length and thereby substantially spanning said combustion chamber inlet; and,

(h) said flame holder is a substantially cylindrical member positioned in close proximity with said side walls and therewith forming passageway gaps adapted for accelerating flow of a mixture to said combustion chamber.

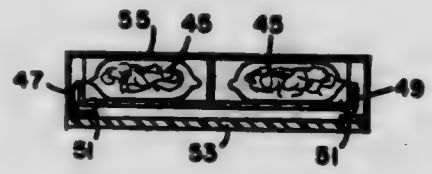


4,496,311

MULTILAMP PHOTOFLASH ARRAY FABRICATION

Donald E. Armstrong, Williamsport, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Division of Ser. No. 359,467, Mar. 18, 1982,. This application May 4, 1984, Ser. No. 607,030
Int. Cl.³ F21K *5/00*
U.S. Cl. 431—359 5 Claims



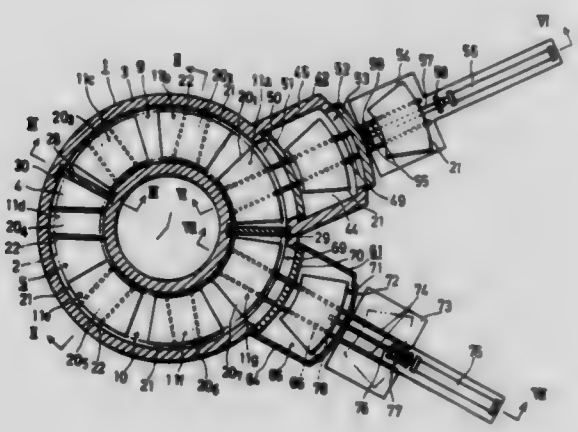
1. A miniaturized multilamp photoflash array comprising a circuit board having a printed circuit on the inner surface thereof, a reflector unit affixed to said circuit board and having a plurality of cavities, a plurality of photoflash lamps with each lamp disposed within a cavity and a transparent cover member telescoped over said photoflash lamps, reflector unit and printed circuit and affixed to said circuit board, said array characterized by the improvement wherein each of said lamps includes a pair of electrically conductive leads passing through, embedded in and wrapped about one of the ends of said reflector unit whereby each of said lamps is nested within a cavity of said reflector unit.

4,496,312

HEAT-TREATMENT SYSTEM AND PROCESS

Shunsuke Yamada; Kenji Kawate; Takashi Ono; Hideo Arakawa, and Tsuyoshi Suda, all of Aichi, Japan, assignors to Daidotokushuko Kabushikikaisha, Japan

Filed Jun. 1, 1983, Ser. No. 502,779
Claims priority, application Japan, Jun. 9, 1982, 57-99075
Int. Cl.[3] F27D *3/00*; F27B *9/16, 9/02*
U.S. Cl. 432—11 6 Claims



1. A heat-treatment system comprising:

(a) a hollow furnace comprising a circular enclosure body having an exterior wall provided with an opening for supplying a material to be treated from exterior to interior and an opening for discharging the material to be treated from interior to exterior;

(b) moving means for circulating and moving the material to be treated along a predetermined locus within said furnace body;

(c) the interior of said furnace being provided with a plurality of stay spaces each having an area capable of positioning the material to be treated and equidistantly spaced from each other along said locus;

(d) the number of said stay spaces being a value obtained by adding 1 to a value twice the repetition frequency (N) of heating and cooling applied to the material to be treated, such that (2N+1) represents said value;

(e) a part of the space within said furnace body being partitioned by partioning walls so as to include consecutive stay spaces of at least the number (N) equal to said repetition frequency, to form heating areas;

(f) a part of the space within said furnace body being partitioned by partitioning walls so as to include consecutive stay spaces of at least the number (N) equal to said repetition frequency, to form cooling areas;

(g) the respective partitioning walls of said heating and cooling areas being positioned within said locus and provided with movable doors for permitting the material to be treated to move between the heating chamber and cooling chamber; and

(h) moving means for alternately transferring the material between the heating chamber and cooling chamber, by a predetermined distance so that the place to which the material is transferred will always be a new stay space in each chamber not previously occupied during the transferring cycle between heating and cooling; and

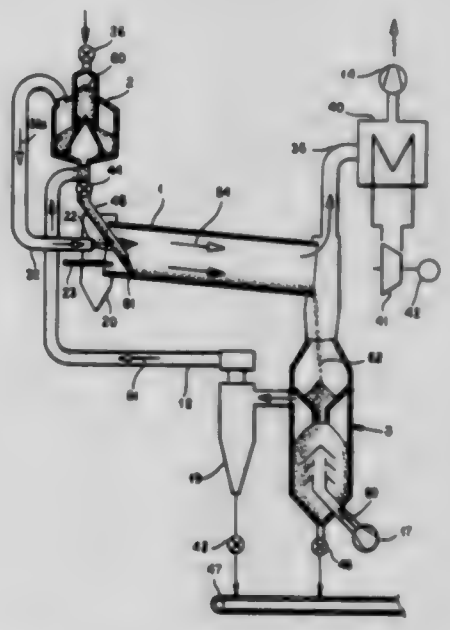
(i) said furnace having an enclosed means for receiving material to be preheated, projecting radially from the exterior wall thereof, said supply opening registering with the interior of said enclosed means and a removable closure means for said opening.

4,496,313

METHOD OF CALCINING MINERALS CONTAINING HEAT-VALUE COMPONENTS

Wolfram Quittkat, Gauting; Gerhard Reuter, Aschheim, and Rüdiger Schmidt, Munich, all of Fed. Rep. of Germany, assignors to BKMI Industrieanlagen GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 24, 1982, Ser. No. 423,247
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1981, 3146891
Int. Cl.[3] F27B *15/00*; C04B *7/02*
U.S. Cl. 432—14 2 Claims



1. A method of calcining mineral matter containing heat value in the form of volatilizable combustible organic substances, comprising the steps of:

(a) burning a gas mixture of air and said volatilizable substances from the volatilization thereof and calcining the mineral matter following removal of at least a substantial portion of said volatilizable substances therefrom to form a hot calcined product at a location different from that at which the removal was effected;

(b) recovering heat from said hot calcined product; and

(c) subjecting the mineral matter containing the volatilizable substances to the recovered heat at a location different from that at which calcination occurs to drive said volatilizable substances from said mineral matter containing same to thereby form a combustible gas mixture from said substances for use in step (a) and a mineral matter from which said substances have been removed for calcination in a repetition of step (a) for the latter mineral matter, said hot product being subjected to cooling with air, said gas mixture in step (a) including cooling air heated by said hot product, the volatilizable substances being driven out of said mineral matter by passing same and a hot gas in codirectional flow in a rotary furnace and thereafter passing the burning gas mixture and said mineral matter for calcination in a codirectional flow through a rotary furnace.

4,496,314

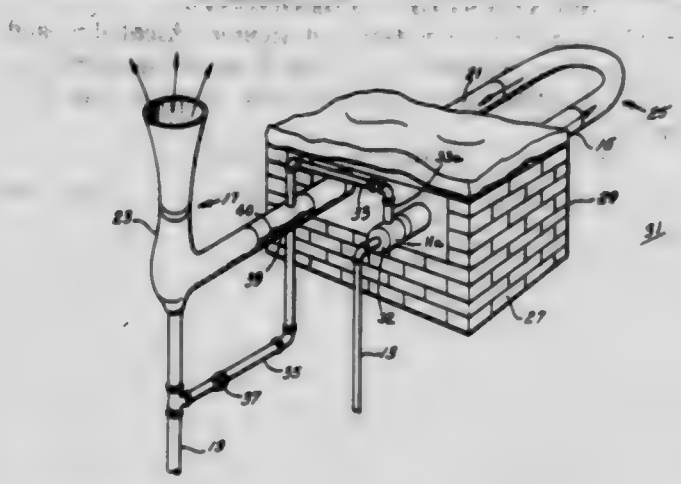
RECUPERATOR

Beresford N Clarke, 3723 W. Hamilton Rd., Fort Wayne, Ind. 46819

Filed Feb. 28, 1983, Ser. No. 470,213
Int. Cl.[3] F27B *5/14*; F23D *11/44*; F24C *3/00*
U.S. Cl. 432—29 18 Claims

9. The method of reducing heat loss from a radiant tube type fuel burner system having a burner unit near one tube end for introducing a combustible fuel-air mixture into the tube com-

prising the steps of: transferring heat from exhaust gas within the tube to combustion air to be supplied to the burner; and



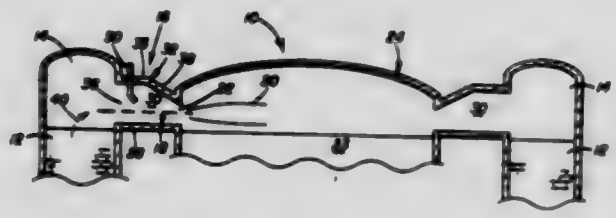
reflecting radiation heat loss from the system through the tube ends.

4,496,315

PORT WALL AIR JET FOR CONTROLLING COMBUSTION AIR

Edward P. Savolskis, Carlisle, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 5, 1983, Ser. No. 510,807
Int. Cl.[3] F24H *7/00*; F27D *17/00*
U.S. Cl. 432—30
11 Claims



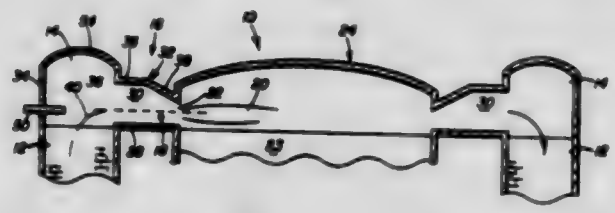
1. A method of operating a regenerative furnace wherein combustion gas is preheated in a regenerator bed and then is passed to a plenum communicating along its length with a plurality of ports through which the combustion gas passes into the furnace, and fuel is combined with the combustion gas at the ports; the improvement comprising apportioning the flow of combustion gas among the plurality of ports by injecting a stream of gas into at least one of the ports so as to affect the portion of the combustion gas flowing therethrough.

4,496,316

TARGET WALL AIR JET FOR CONTROLLING COMBUSTION AIR

Yih-Wan Tsai, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 5, 1983, Ser. No. 510,808
Int. Cl.[3] F24H *7/00*; F27D *17/00*
U.S. Cl. 432—30
12 Claims



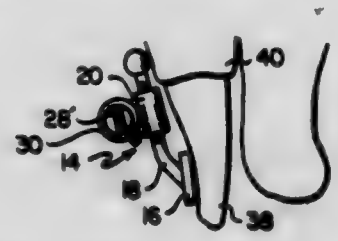
1. A method of operating a regenerative furnace wherein combustion gas is preheated in a regenerator bed and then is passed to a plenum communicating along its length with a plurality of ports through which the combustion gas passes into the furnace, and fuel is combined with the combustion gas at the ports; the improvement comprising apportioning the flow of combustion gas among the plurality of ports by injecting a stream of gas in the plenum at the entrance to at least one of the ports so as to affect the portion of the combustion gas entering that port.

4,496,317

ADJUSTABLE ORTHODONTIC APPLIANCE

Charles M. Hulsey, 911 E. Valley Parkway, Escondido, Calif. 92025

Filed Jun. 27, 1983, Ser. No. 507,731
Int. Cl.[3] A61C *7/00*
U.S. Cl. 433—10
13 Claims



1. An orthodontic appliance, comprising:

a base member having a generally planar surface for attachment to a tooth,

an elongated arm secured at an inner end to said base and extending generally parallel to said planar surface for extending generally parallel to a tooth to which the base is attached and terminating at an outer end at a position offset from said base and from the crown of the tooth, and

a wire lock comprising a wire receiving slot and closure means for closing said slot mounted on the outer end of said arm for attachment of an arch wire.

4,496,318

CONVERTERS FOR ORTHODONTIC TREATMENT

Harold R. Connelly, Jr., 2499 Main St., Stratford, Conn. 06497

Filed May 17, 1982, Ser. No. 379,089
Int. Cl.[3] A61C *7/00*
U.S. Cl. 433—14
17 Claims



1. An orthodontic converter for adapting a first appliance member associated with an orthodontic treatment system of a first type, for use with an orthodontic treatment system of a second type, the first appliance member having a notch for receipt of an archwire associated with an orthodontic treatment system of the first type, the first appliance member defining a channel and having a peripheral edge at one end thereof, which comprises, a second appliance member having integral clip means formed of a pair of separable flexible snap clip members configured and dimensioned for insertion through the channel so that said snap clip members flex toward each other during insertion through the channel and for snap locking engagement against the peripheral edge so as to provide for selective attachment and detachment to the first appliance member, said second appliance member defining cut-out means

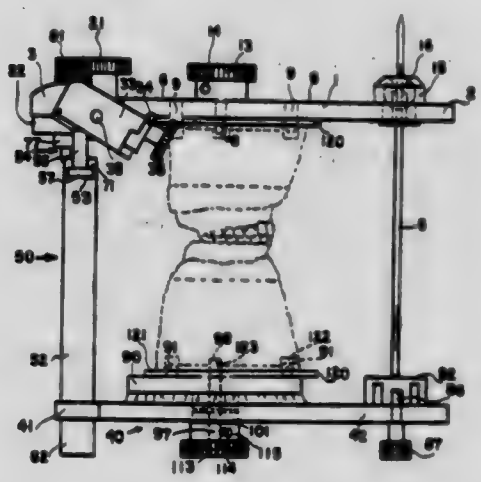
for reception of an archwire associated with said second system.

4,496,319

DENTAL ARTICULATOR WITH SPATIALLY ORIENTED MOUNTING TABLE

Allen F. Steinbock, Louisville, Ky., assignor to Whip-Mix Corporation, Louisville, Ky.

Filed Aug. 19, 1982, Ser. No. 409,592
Int. Cl.³ A61C *11/00*
U.S. Cl. 433—57 14 Claims



1. A dental articulator for the support of dental casts in opposed relation to each other, including:

A. an upper frame;

B. a lower frame;

C. a joint means, simulating the mandibular condylar joint for mounting said upper and lower frames together at the rear end, for movement in a manner simulating the movement of the mandible relative to the maxilla;

D. mounting plates for attachment to said frames for mounting of dental casts in opposed relation to each other;

E. a mounting plate table, having a planar surface on one side and being permanently bonded on the other side to one of said frames at the frame's mid-portion in precise vertical and horizontal planar relation to the other frame for mounting of one of said mounting plates in precise vertical and horizontal planar relation to said other mounting plate;

1. said precise vertical and horizontal planar relation of said mounting plate table, relative to one frame, having been established by a standard gauge means positioned between the upper and lower frames at both the mid-portion and front of said frames; and

F. bonding means for permanently securing said mounting plate table to one of said frames in precise vertical and horizontal planar relation to said other frame.

4,496,320

CONNECTION OF TRAY TO DENTAL ARTICULATOR

Chong S. Hwang, Flushing, and Barry Lampert, Lloyd Harbor, both of N.Y., assignors to Rab Tec Products Corp., Freeport, N.Y.

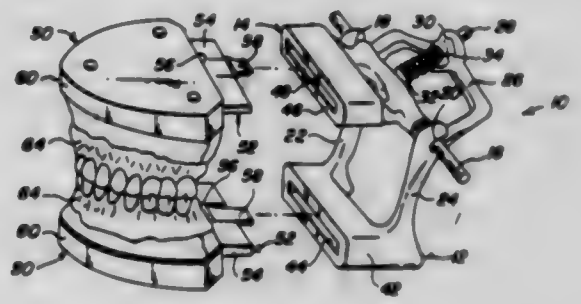
Filed Aug. 22, 1983, Ser. No. 525,447
Int. Cl.³ A61C *11/00*
U.S. Cl. 433—60 4 Claims

1. An improved connection of tray to dental articulator having a lower jaw and an upper jaw pivotally mounted to the lower jaw which comprises:

(a) a lower member having a female receiving aperture, said lower member carried by the lower jaw;

(b) an upper member having a female receiving aperture, said upper member carried by the upper jaw, wherein the female receiving apertures in said lower and said upper members being of the same size, rectangular formed and tapered inwardly from an edge thereof; and

(c) a dental model tray for each said member being formed with a male hold-release portion being sized to releasably mount within either of the female receiving apertures, wherein the male hold-release portion being formed as a rectangular tapered projection extending outwardly from a back portion of said dental model tray thereof and having a semi-flexible central tab extending outwardly form



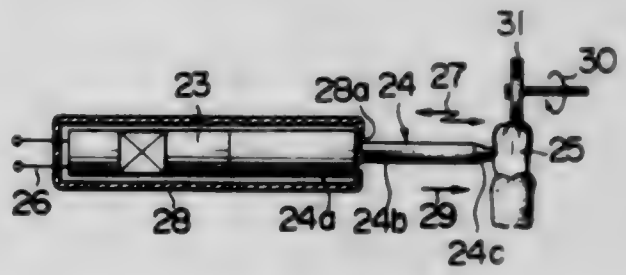
said rectangular projection whereby said tab will flex a little and will automatically lock with said member, said male hold-release portion being fully inserted into the female receiving aperture, and whereby said tab will flex in an opposite direction when finger pressure is applied thereby releasing said tab and said male hold-release portion from the female receiving aperture.

4,496,321

VIBRATION METHOD FOR CUTTING TEETH

Junichiro Kumabe, Tokyo, Japan, and Masaru Kumabe, 1-1, Ise 4-Chome, Kofu-shi, Yamanashi, Japan, assignors to Masaru Kumabe, Kofu, Japan

Filed Jun. 1, 1982, Ser. No. 383,622
Claims priority, application Japan, Aug. 24, 1981, 56-132515
Int. Cl.³ A61C *5/00*
U.S. Cl. 433—215 11 Claims



1. A method of cutting a tooth with a cutting tool having a tip which rotates at a high speed, comprising the steps of: exciting a tooth to be cut for vibration at a frequency which is greater than the natural frequency of the tooth, bringing the cutting tool into contact with the vibrationally-excited tooth to be cut under a suitable pressure, and operating the cutting tool such that the feed rate of the cutting tool is less than the maximum vibrational speed of the tooth, as viewed in the feed direction, to effect cutting of the tooth.

4,496,322

BENZOIN ANTIMICROBIAL DENTAL VARNISHES

H. James Sandham, Thorhill, and Thomas E. Balazyk, Toronto, both of Canada, assignors to University of Toronto Innovations Foundation, Toronto, Canada

Filed May 11, 1983, Ser. No. 493,755
Int. Cl.³ A61K *6/08*
U.S. Cl. 433—217 5 Claims

1. A dental varnish composition suitable for painting onto teeth to combat oral infection, said composition consisting essentially of:

an orally acceptable liquid vehicle;

benzoin;

and at least one dentally acceptable antimicrobial agent selected from the group consisting of erythromycin,

chlorhexidine and salts thereof and compatible with the liquid vehicle and the benzoin;

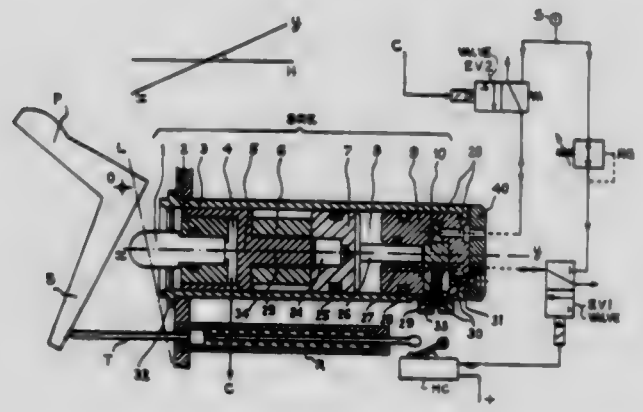
said composition being capable of drying to form a solid transparent, translucent or tooth colored coating on teeth to which it is applied and releasing said at least one antimicrobial agent over a sustained period of time into contact with infected sites on said teeth.

4,496,323

FORCE RESTORATION SYSTEM FOR THE SIMULATION OF VEHICLE DRIVING MEMBERS

Robert Alet, and Eric Vignault, both of Cergy, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 13, 1983, Ser. No. 560,974
Claims priority, application France, Dec. 14, 1982, 82 20966
Int. Cl.³ G09B *9/02*
U.S. Cl. 434—29 5 Claims



1. A force restoration system for the simulation of vehicle driving members, which comprises:

an envelope forming a cylinder open at one end and closed at the other;

a first member sliding in said cylinder to receive the thrust exerted by the driver by the open end of the cylinder;

a piston sliding in the cylinder between the first member and the closed end of the cylinder and defining with said closed end a back-pressure chamber;

a tubular elastomer spring, whose ends respectively bear on the first member and the piston to transmit between them the pressures to which they are exposed;

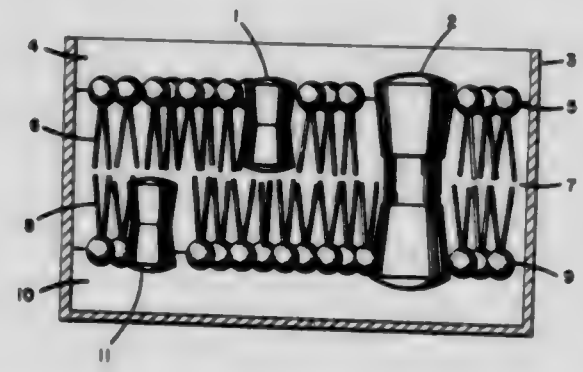
means for supplying the back-pressure chamber with compressed air, when the first member reaches a given position in the cylinder.

4,496,324

BIOMEMBRANE DEMONSTRATION APPARATUS

Werner W. Schulz, 3525 Norcross La., Dallas, Tex. 75229

Filed Sep. 29, 1982, Ser. No. 428,391
Int. Cl.³ G09B *23/36*
U.S. Cl. 434—295 4 Claims



1. A biomembrane demonstration apparatus, comprising:

a transparent fluid containing vessel;

a first fluid disposed in said vessel and having a first density;

a second fluid disposed in said vessel and having a density less than said first density;

a third fluid disposed in said vessel and having a density less than said second density, said first, second and third fluids being transparent;

a plurality of first type phospholipid molecular models, each comprised of a head region having a greater density than said second fluid and a tail region having a density less than said second fluid, each of said first models having an average density intermediate between said first and second densities and disposed on said container such that said head region of said first molecular models maintain a position at the boundary between said first and second fluids and said tail segments of said first molecular models orient upwards into said second fluid; and

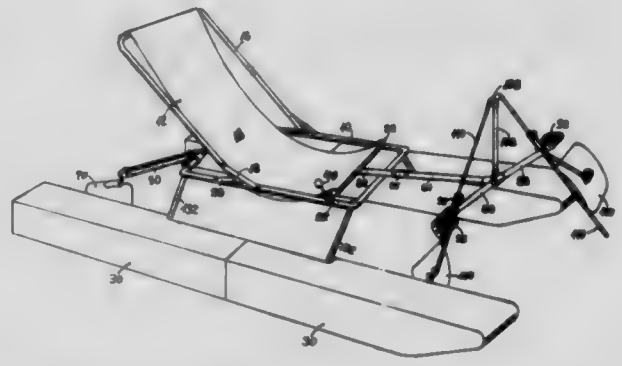
a plurality of second type phospholipid molecular models, each comprised of a head region having a lower density than said second fluid and a tail region having a higher density than said second fluid, each of said second models having an average density intermediate between said second and third fluids and disposed in said vessel such that the position of said head regions of said second molecular model is maintained at the boundary between said second and third fluids and said tail segments of said second molecular models orient downwards into said second fluid.

4,496,325

COLLAPSIBLE PADDLE BOAT

Edward Tweg, 51 Shderot Herzl, Ramle, Israel

Filed Aug. 12, 1982, Ser. No. 407,463
Claims priority, application Israel, May 13, 1982, 65768
Int. Cl.³ B63H *16/12*
U.S. Cl. 440—26 9 Claims



1. A foldable, portable paddle boat comprising:

a main frame;

foldable driving and propelling means pivotably mounted upon said frame;

said foldable driving and propelling means comprising:

a stationary base element pivotably mounted onto said main frame and defining a first rotation axis;

a crank shaft defining at least one arm and an axle portion rotatably mounted onto said stationary base for rotation about said first rotation axis;

a stationary extension element pivotably coupled to said base element and defining a second rotation axis parallel to and spaced from said first rotation axis;

at least one rod rotatably mounted onto said extension element and arranged for rotation about said second rotation axis through a restricted arc; and

a member arranged for slideable relative movement with relation to said at least one rod and fixedly mounted onto said at least one arm, whereby rotation of said arm about said first rotation axis causes said member to move slideably with relation to said rod and cause its rotation about said second rotation axis;

a paddle coupled to said member;

said paddle being adapted for movement along the length of said rod as it rotates through said restricted arc such that

said paddle remains in a substantially vertical orientation throughout its movement;

steering means foldably mounted upon said frame; and a plurality of floats;

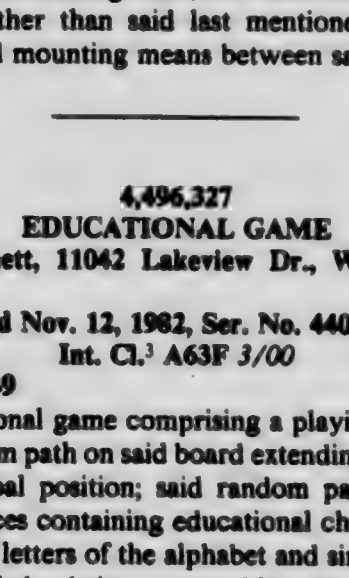
said frame being removably mountable upon said floats.

4,496,326

SELECTIVELY DISENGAGEABLE, TILLER ACTUATED VANE STEERING SYSTEM

James C. Boda, Winnecoane, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 20, 1982, Ser. No. 451,611
Int. Cl.[3] B63H *21/26*
U.S. Cl. 440—62 10 Claims



1. A steering system for a marine drive having a propulsion unit pivotally mounted on a watercraft for moving and steering the watercraft through the water, said marine drive further having a tiller, said steering system comprising:

a steering vane rotatably mounted on the propulsion unit for generating a hydrodynamic torque on the propulsion unit upon rotation tending to pivot the propulsion unit with respect to the watercraft;

mounting means intermediate the propulsion unit and the tiller for mounting the tiller on the propulsion unit, said mounting means being operable to a first condition in which the tiller can move relative to the propulsion unit and to a second condition in which the tiller does not move relative to the propulsion unit; and

means coupling the tiller to said steering vane for causing movement of the tiller with respect to the propulsion unit to rotate said steering vane, the tiller being movable in a direction other than said last mentioned movement to operate said mounting means between said conditions.

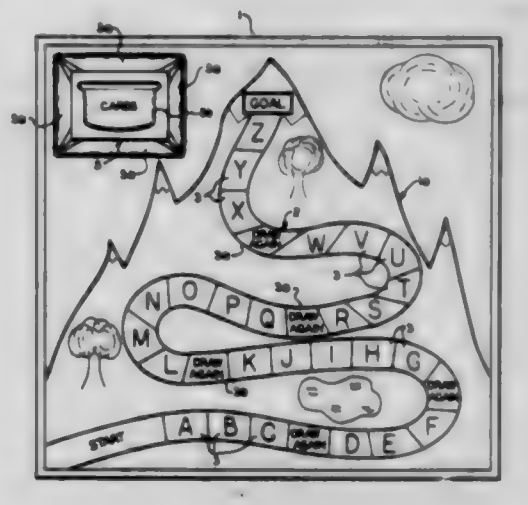
4,496,327

EDUCATIONAL GAME

Robert A. Bennett, 11042 Lakeview Dr., Whitehouse, Ohio 43571

Filed Nov. 12, 1982, Ser. No. 440,876
Int. Cl.[3] A63F *3/00*
U.S. Cl. 273—249 10 Claims

1. An educational game comprising a playing board, means defining a random path on said board extending from a starting position to a goal position; said random path comprising a sequence of spaces containing educational characters selected from a group of letters of the alphabet and simple words, said letters of the alphabet being arranged in proper sequence from said start position to said goal; a set of playing cards, at least one of said cards having one of said educational characters represented thereon and a plurality of number cards each having a number represented thereon; and a marker for each player; said marker being moved toward or away from said goal to the educational character on said path corresponding to the educational character appearing on said one card when drawn by the player and whereby a player drawing a number



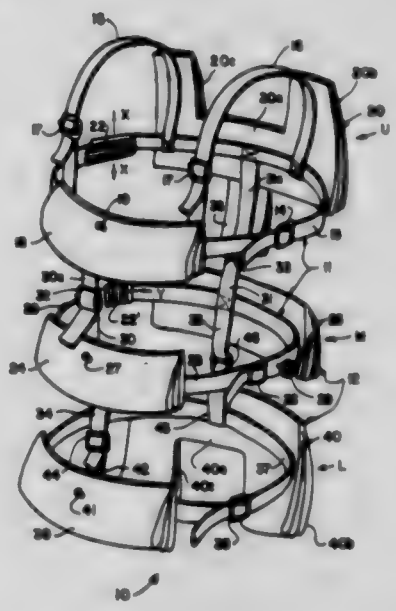
card may advance said player's marker a number of said spaces corresponding to the number on the drawn card.

4,496,328

COMBINED SWIMMING AID AND LIFESAVING DEVICE

William P. Asher, Rte. 3, Harness Creek, Annapolis, Md. 21403, and Otto J. Munz, deceased, late of Arlington, Va. (by Gerta H. Munz, executrix)

Division of Ser. No. 296,062, Aug. 25, 1981, abandoned. This application Mar. 19, 1984, Ser. No. 590,863
Int. Cl.[3] B63C *9/12*
U.S. Cl. 441—55 6 Claims



1. A combined swimming aid and lifesaving device, comprising:

a torso-encircling buoyant harness means for releasable attachment to the body of a swimmer to impart substantially neutral equilibrium to the swimmer;

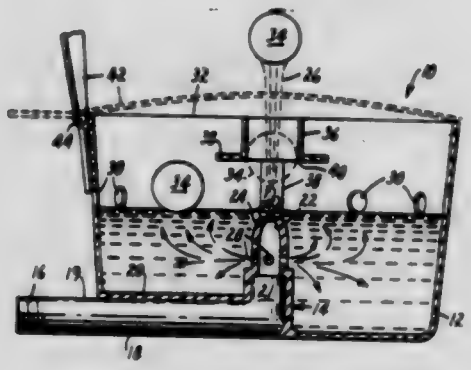
a plurality of separate inflatable buoyant means carried by the harness for selective inflation to impart desired buoyancy to the swimmer; and

said buoyant means remaining at least partially slack when inflated and having a narrower leading edge than trailing edge, and having accordian or bellows-like pleats or folds along the leading and trailing edges, whereby the buoyant means presents a streamlined configuration for passage through water and said buoyant means may undulate to reduce drag during use.

4,496,329
WATER JET TOY

James F. Kubiatowicz, Fridley, Minn., assignor to Custom Concepts, Incorporated, Minneapolis, Minn.

Filed Apr. 29, 1983, Ser. No. 489,710
Int. Cl.³ A63H 29/10
U.S. Cl. 446—167 6 Claims



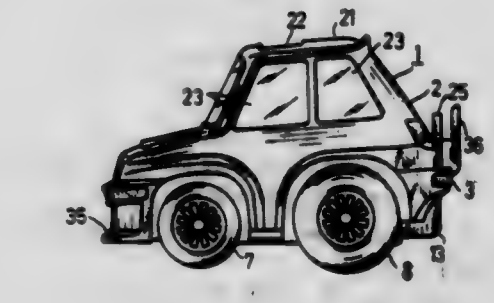
1. A water-activated toy comprising:
a bowl adapted for containing water;
a water-distribution assembly at the bottom of said bowl adapted to be coupled to a source of water under pressure, said assembly including means for directing water into said bowl, for agitating water within said bowl, and for forming and directing a jet of water along a path vertically upwardly from within said bowl;
means for maintaining water at a predetermined level within said bowl slightly above the beginning of said jet of water;
a plurality of light, buoyant generally spherical objects having similar diameter dimensions adapted to float on the agitated water within said bowl;
a tube having an axis, an inlet end, and an inside diameter slightly larger than said object diameter; and
means for supporting said tube on said bowl with said axis vertically oriented coaxial with said path and said inlet end sufficiently above said predetermined level that an object on agitated water within said bowl that is moved into contact with the jet of water can be drawn into said inlet end and projected through said tube by said jet.

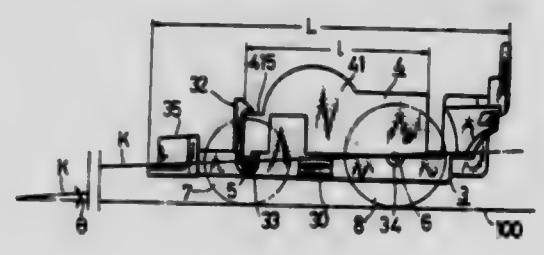
4,496,330
MINIATURE TOY VEHICLE ASSEMBLY

Masumi Terui, Matsudo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1983, Ser. No. 476,622
Claims priority, application Japan, Dec. 29, 1982, 57-201732[U]
Int. Cl.³ A63H 29/00
U.S. Cl. 446—464 19 Claims

1. A miniature toy vehicle assembly consisting of:
a plastic resin housing member including an upper body shell and a lower frame member;
a front wheel assembly attached to said housing member and including a front axle and a pair of front wheels;
a rear wheel assembly attached to said housing member and including a rear axle and a pair of rear wheels; and
a motor assembly having a spring-powered prime mover attached to said housing member and adapted to drive the rear axle of said rear wheel assembly,
wherein said motor assembly is fixed to a substantially central portion of the upper surface of said lower frame member, the ratio (l/L) of the length (l) of said motor assembly to the length (L) of said lower frame member being approximately 0.5;
said front axle is rotatably supported in the vicinity of the longitudinal front end of said motor assembly, the distance between said front axle and said rear axle being within the range of the length (l) of said motor assembly;
said front axle and said rear axle are attached to said housing member so that when said miniature toy vehicle assembly is placed on a flat support surface, the plane including said front axle and rear axle will intersect said flat support surface in front of said front axle at a predetermined angle (θ); and



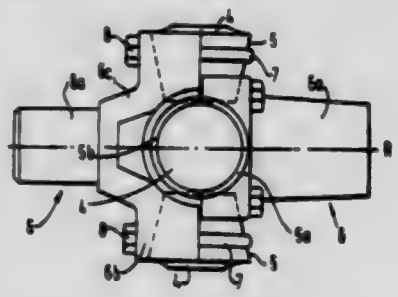


the relationship between the total weight (w) of said front wheel assembly, rear wheel assembly and motor assembly, and the overall weight (W) of said miniature toy vehicle assembly is: $w/W > 0.5$.

4,496,331
FLEXIBLE COUPLINGS

Howard S. Atkin, Sutton Coldfield, England, assignor to Dunlop Limited, London, England

Filed Jan. 25, 1982, Ser. No. 342,414
Claims priority, application United Kingdom, Feb. 13, 1981, 8104573; Apr. 2, 1981, 8110411
Int. Cl.³ F16D 3/28
U.S. Cl. 464—70 18 Claims



1. A flexible coupling for connecting two rotatable components lying along an axis of rotation comprising:
a driven component and a driving component with a torque transmitting means radially disposed between said components;
said torque transmitting means comprising at least two separate elements, each element having a central portion in a common plane generally transverse to said axis of rotation, each element further having inclined limbs depending from said central portions, said inclined limbs lying along radius lines and in said transverse plane, one limb of each element being connected to the driving component and the other limb of each element being connected to the driven component and the driving and driven components respectively being connected by the limbs of each element at substantially diametrically opposed points;
bearing means on each inclined limb, said bearing means permitting rotation of a respective limb about an axis inclined relative to the normal axis of rotation of the coupling; means connecting said bearing means to said driving and driven components so as to permit axial move-

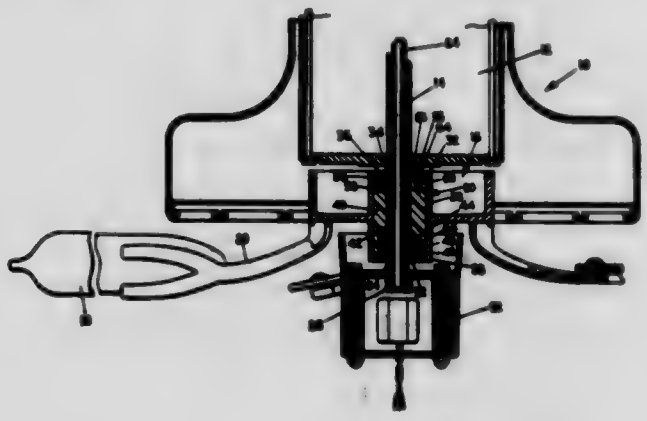
ment between said components by the limb of one element rotating about the axis of the other limb of that element.

4,496,332

ROTARY VIBRATION ISOLATOR BUSHING

Frederick P. Keller, Grand Rapids, and Theodore C. Zwiep, Holland, both of Mich., assignors to Cascade Engineering, Inc., Grand Rapids, Mich.

Filed Feb. 25, 1982, Ser. No. 352,307
Int. Cl.³ F16D *3/72, 3/76*
U.S. Cl. 464—89 10 Claims



1. In a rotary fan device including a rotatable cylindrical hub, a rotary drive shaft coaxially mounted within said hub with an annular space therebetween, and bushing means for operatively connecting said shaft with said hub for transmitting torque from said shaft to said hub and for dampening vibrations in said shaft and hub, the improvement comprising:

a bushing constructed of elastomeric material and mounted in the annular space in a substantially uncompressed state so as to maintain vibration dampening properties of said elastomeric material;

said bushing having first and second end surfaces each having a central aperture therein and a central bore extending therethrough between said end surfaces, said central bore having a diameter slightly larger than a diameter of said shaft;

said shaft having an end portion terminating within said central bore and close to the second end surface;

hub fastening means located adjacent said first end surface for rigidly connecting said first end surface of said bushing to said hub; and

shaft fastening means for rigidly connecting said end portion of said shaft to said bushing adjacent said second end surface, wherein a substantial axial length of said bushing extends between said hub fastening means and said shaft fastening means, and said bushing is adjacent and unconnected to both said hub and said shaft along said axial length so as to provide vibration dampening of said shaft and hub.

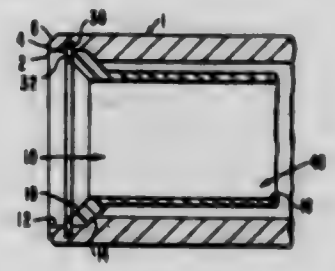
4,496,333

LOW FRICTION POWER TAKEOFF SHAFT

Donald C. Cleveland, Rochester, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jul. 21, 1982, Ser. No. 400,515
Int. Cl.³ F16D *3/06*
U.S. Cl. 464—162 1 Claim

1. A low friction telecopying power takeoff shaft apparatus having a first hollow shaft with an opening in one end, an inner surface having an inner wall portion defining an elongated cylindrical recess extending axially inward from the end of said first hollow shaft, the inner surface of said shaft having at least a portion with a non-round cross section adjacent said inner wall portion for receiving a second shaft having a non-round cross section, a non-round friction-reducing lower sleeve is interposed between the second shaft and the inner surface of the first shaft, said sleeve has an outer end spaced slightly axially outward from the inner surface portion with a non-round cross section, said outer end of the sleeve has a radially outwardly extending annular flange which is positioned in said recess, an annular groove provided in the inner wall portion, said groove is spaced axially between the opening and the annular flange a short distance from the end of said first shaft, a retainer ring is positioned in the groove in front of at least a portion of the annular flange to retain the sleeve in fixed posi-



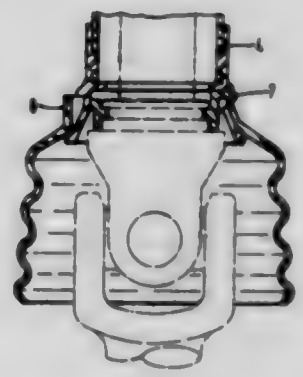
tion relative to the first shaft, the inner wall portion has plural circumferentially spaced cavities, the flange has complementing plural circumferentially spaced lobes, which fit in the cavities of the inner wall portion, the retainer ring is a split washer-like device with flat radial walls having a relatively narrow cylindrical mid-portion and having relatively axially enlarged spaced end portions with openings therein for inserting a tool to circumferentially compress the retainer ring for inserting and removing the ring.

4,496,334

GUARD FOR A DRIVE SHAFT

Felix Mikeska, Siegburg, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Mar. 3, 1983, Ser. No. 471,786
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1982, 3208541
Int. Cl.³ F16D *3/84*
U.S. Cl. 464—175 7 Claims



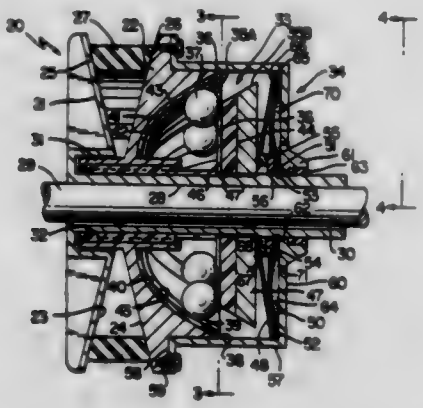
1. A guard for enclosing a drive shaft assembly including a drive shaft and a universal joint connected to the drive shaft, comprising axially extending tubular means for laterally enclosing the drive shaft assembly, a bearing ring arranged to engage the drive shaft assembly so that it is secured against axial displacement on the assembly, said bearing ring having radially outwardly directed locking tongues, said tubular means includes a stop surface, said tubular means being axially displaceable over and relative to said bearing ring until said stop surface contacts said bearing ring, wherein the improvement comprises that said tubular means has axially extending passageways arranged to be aligned with and to receive said locking tongues so that said tubular means can be moved axially relative to said bearing ring with said locking tongues located within said passageways during such axial movement, said tubular means includes an axially extending funnel-shaped member, a tubular member, and an intermediate tubular part interconnecting said funnel-shaped member and said tubular member, said passageways being formed by said funnel-shaped

member, said stop surface is formed on said intermediate tubular part, said funnel-shaped member having an end surface extending transversely of the axis thereof and spaced closely axially from and facing said stop surface, sand said funnel-shaped member being rotatable about the axis thereof from the position with said bearing ring in contact with said stop surface where said tongues aligned with said passageways to a position where said tongues are spaced angularly from said passageways and are located between said stop surface and said end surface on said funnel-shaped member, and said tubular means are held on the drive shaft assembly against axial displacement.

4,496,335
PULLEY CONSTRUCTION AND METHOD OF MAKING THE SAME

Terrence R. Quick, Springfield; Joseph P. Miranti, Jr., Porter Township; Christian County, and Randy C. Foster, Springfield, all of Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Dec. 13, 1982, Ser. No. 449,046
Int. Cl.³ F16H *11/06*
U.S. Cl. 474—15 10 Claims



1. In a pulley construction having a pair of opposed flanges respectively provided with surface means for engagement with a V-belt construction when said V-belt construction is disposed therebetween, said pulley construction having means for moving one of said flanges axially relative to the other of said flanges either in a direction toward said other flange or in a direction away from said other flange, said pulley construction having fluid dampening means separate from said means for moving and being operatively associated with said one flange to dampen said axial movement of said one flange in either of said directions relative to said other flange with a restrictive force, the improvement within said dampening means comprises a flexible bladder having one part thereof operatively interconnected to said one flange.

4,496,336
PULLEY DEVICE

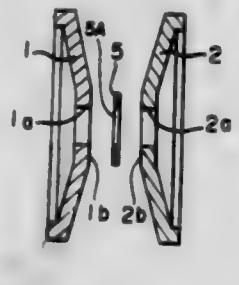
Akio Matsumoto, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 29, 1982, Ser. No. 373,104
Int. Cl.³ F16H *55/42, 55/36*
U.S. Cl. 474—181 1 Claim

1. A pulley device having an axis of rotation and a V-groove for passing a V-belt, said pulley device comprising:

(a) a pair of steel plates formed by stamping, said steel plates having centrally located, mutually opposing planar surfaces perpendicular to the axis of rotation of said pulley device and diverging away from each other to form the V-groove outwardly of said centrally located planar surfaces; (b) a generally planar metal plate formed from a metal having a melting temperature lower than the melting temperature of said steel plates and selected from the group consisting of copper and copper alloys sandwiched between said steel plates so as to make planar contact with said planar surfaces on said steel plates, the ratio of the thickness of said planar metal plate to the thickness of said steel plates being less than 1:10, said planar metal plate being coextensive with said planar surfaces on said steel plates and being positioned so as to prevent contact between said steel plates in the welded, assembled condition of the pulley device;

(c) said steel plates and said planar metal plate having concentric, axial through-holes therethrough for receiving a shaft; and

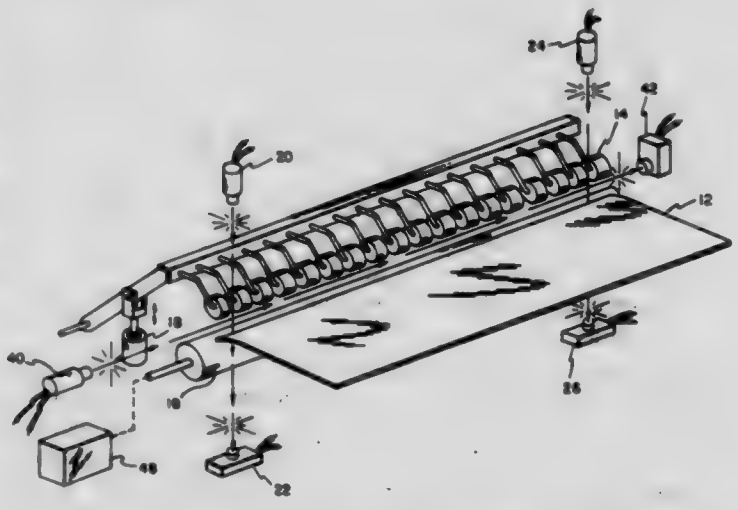


(d) the elements of the pulley device having been friction welded together by rotating at least one of said steel plates so as to melt bond said planar metal plate to both of said steel plates at a temperature beneath the melting temperature of said steel plates, thereby minimizing heat stresses in said steel plates.

4,496,337
CONTROL APPARATUS FOR FOLDING MACHINE

Raymond P. Meenen, Hawthorne, N.J., assignor to Mayflower Electronic Devices Inc., Little Ferry, N.J.

Filed Jul. 6, 1983, Ser. No. 511,188
Int. Cl.³ B65H *45/18*
U.S. Cl. 493—14 7 Claims



1. In a folding machine having a horizontally elongated input plate with front and rear horizontal edges, a mechanism including input wheels disposed at the rear edge, said mechanism having a first position at which said wheels are disposed above the plate and a second position at which said wheels are lowered to said plate, a horizontally elongated roller rotatable about its own axis and disposed at the rear edge, said wheels being engaged with the roller when the mechanism is in the second position and a motor for rotating said roller, in combination:

first and second spaced apart photoelectric circuits, each circuit producing a vertical light beam, which, when not interrupted, passes said rear edge, said beams defining a vertical plane;

a third photoelectric circuit producing a horizontal light beam which, when not interrupted, passes horizontally along said rear edge parallel to said plane;

first means connected between said first and second circuits and said mechanism and responsive to the interruption of

both vertical beams when material to be folded is placed upon said plate in the path of both beams to place said mechanism in said second position, said mechanism being otherwise in the first position; and

second means coupled to said first means, said third circuit and said motor to actuate said motor and rotate said roller only when said mechanism is in the second position and the horizontal beam is not interrupted.

4,496,338

FOLDING BLADE CYLINDER

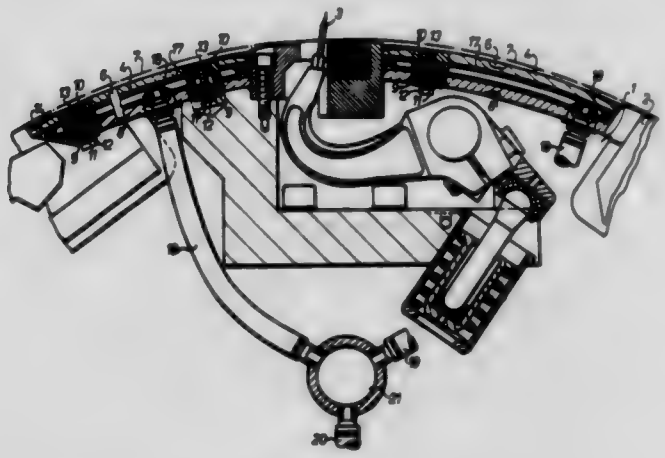
Horst B. Michalik, Hochberg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Fed. Rep. of Germany

Filed May 2, 1983, Ser. No. 490,606

Claims priority, application Fed. Rep. of Germany, May 7, 1982, 3217169

Int. Cl.³ B21B *13/02*

U.S. Cl. 493—367 8 Claims



1. A folding blade cylinder for use in a rotary printing machine, said folding blade cylinder comprising:

a plurality of slots spaced side by side in the direction of the longitudinal axis of said cylinder and extending circumferentially around a portion of the periphery of said cylinder;

a plurality of radially adjustable carrying bows disposed in said slots and biased radially inwardly in said slots;

expandable means positioned within said slots radially inwardly of said carrying bows; and

means for pressurizing said expandable means to force said carrying bows radially outwardly against said inward bias.

4,496,339

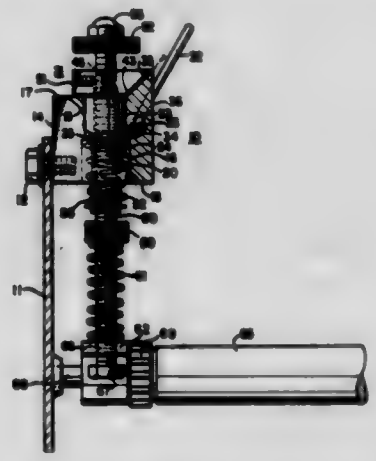
APPARATUS FOR SETTING ROLLER CLEARANCE

Richard J. Moll, c/o Dick Moll & Sons 415 Constance Dr., Warminster, Pa. 18974

Filed Apr. 18, 1983, Ser. No. 485,730

Int. Cl.³ B65H *45/14*

U.S. Cl. 493—420 5 Claims



1. In apparatus for setting roller clearances in machines for folding paper having at least one pair of rollers, said pair having one stationary roller and one roller axially movable therefrom with at least one arm extending from said movable roller, the improvement which comprises

a stem block secured to said machine,

said stem block having top and bottom walls, and a front wall,

an angularly related wall connected to said top wall and said front wall,

an upper and lower passageway extending from said top wall to said bottom wall,

a transverse passageway in said block extending perpendicularly to said upper passageway,

a shaft in said transverse passageway,

said shaft including a central portion with a shoulder,

actuation means engaged with said shaft for rotation thereof,

a gage block,

said gage block having an extension slidably engaged in said upper and said lower passageways,

said gage block having top and bottom walls,

a front angularly related wall connecting said gage block top and bottom walls at the same angle as said angularly related wall of said stem block,

said gage block extension having a shoulder for engagement with said shoulder of said transverse shaft in said stem block,

spring means on said extension,

stem means engaged with said stem block and one of said roller arms,

said stem means including spring means between said first mentioned spring means and said roller arm.

4,496,340

SCREW CENTRIFUGE WITH A WASHING DEVICE

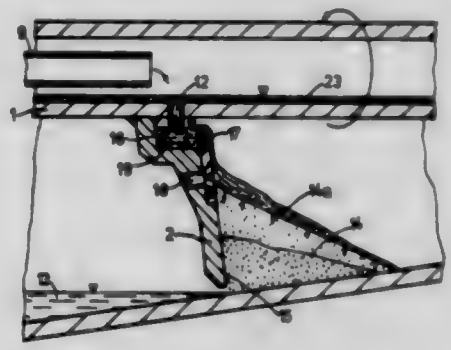
Detmar Redeker, Cologne, and Dieter Mrotzek, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 19, 1983, Ser. No. 486,465

Claims priority, application Fed. Rep. of Germany, May 3, 1982, 3216393

Int. Cl.³ B04B *15/12*

U.S. Cl. 494—29 11 Claims



1. In a screw centrifuge having a drum and a screw core forming a cylindrical clarifying part and a conical desiccating part, an axial supply pipe into the screw core for a washing liquid and openings in the screw core for the passage of the washing liquid into a chamber between the drum and the screw core, the improvement comprising: liquid distributing means in communication with the openings and positioned around the screw core axis along a cylindrical helix for regularly distributing the washing liquid along the screw flank over at least one turn in the vicinity of the screw core, wherein the liquid distributing means comprises an overflow channel having a weir and wherein the overflow channel is positioned in the screw flank.

4,496,341
APPARATUS FOR VAGINAL MEDICATION APPLICATION

Anton B. Brucks, 9601 Trailhill, Dallas, Tex. 75238

Filed Apr. 12, 1982, Ser. No. 367,167
Int. Cl.³ A61F 15/00
U.S. Cl. 604—14 4 Claims



1. Apparatus for use in the repetitive intravaginal application of medication comprising:

a reversable hollow tubular member suitable for vaginal insertion;

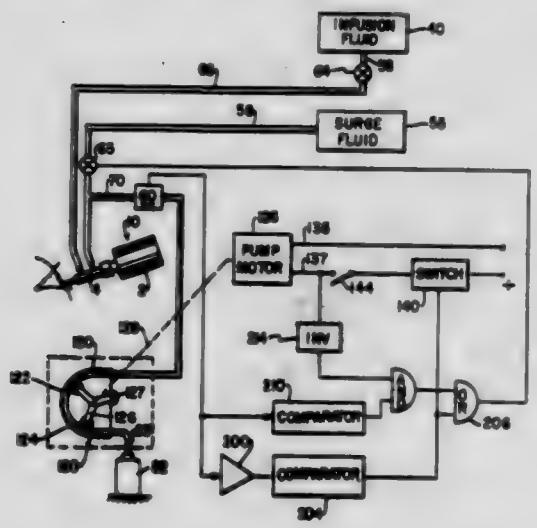
a separate, disposable flexible tubular membrane having a closed end and an open end and adapted to be disposed in sleeved relationship with and along the exterior surface of said hollow tubular member covering substantially all of said hollow tubular member, said closed end adapted to be axially depressed into a first end of said hollow tubular member wherein a cavity is formed within said first end of said hollow tubular member for receiving medication; and

a piston member, adapted to be inserted into a second end of said hollow tubular member for outwardly extending said closed end of said tubular membrane whereby said medication may be dispensed without contamination of said hollow tubular member and said piston member.

4,496,342
SURGE PREVENTION SYSTEM FOR AN OPHTHALMIC INSTRUMENT

Anton Banko, Bronx, N.Y., assignor to Surgical Design Corporation, Long Island City, N.Y.

Filed Mar. 20, 1981, Ser. No. 245,664
Int. Cl.³ A61M 1/00
U.S. Cl. 604—27 8 Claims



1. A material removal system for an ophthalmic instrument comprising:

instrument means having an evacuation port for placement into an operating site and a flow line communicating with said evacuation port of said instrument means for evacuating material from said site,

pump means communicating with said flow line for creating a liquid fluid flow through said flow line,

means for sensing the rate of fluid flow in said flow line,

a source of liquid, means for admitting liquid from said source into said flow line at a point between the evacuation port of said instrument and said pump means,

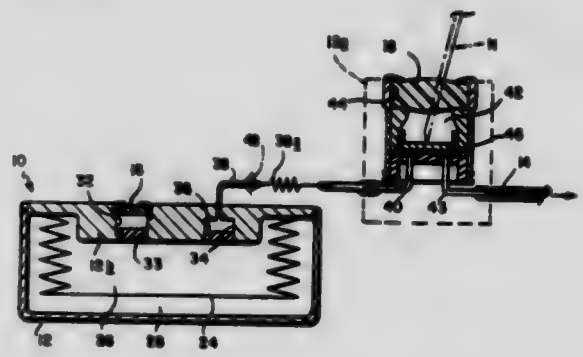
means including comparator means coupled to said sensing means for producing a signal corresponding to a rapid rate change going from a low fluid flow rate condition such that if the flow line were clogged to a high fluid flow rate condition in said flow line above a predetermined level, and

means responsive to said signal for operating said liquid admitting means to supply the liquid from said source into said flow line to aid in filling the empty volume in said line and to tend to equalize the pressure in said line between the operating site and said pump means and for stopping the operation of said pump means.

4,496,343
INFUSATE PUMP

Frank R. Preul, Duxbury, and Edward J. Sampson, Carlisle, both of Mass., assignors to Infusaid Corporation, Norwood, Mass.

Continuation of Ser. No. 388,483, Jun. 14, 1982, abandoned. This application Feb. 6, 1984, Ser. No. 577,301
Int. Cl.³ A61M 5/00, 31/00
U.S. Cl. 604—86 7 Claims



1. Implantable infusion apparatus comprising:

A. an infusate reservoir;

B. an entry port into said infusate reservoir;

C. a self-sealing penetrable septum closing said entry port;

D. a small fixed-volume chamber;

E. an entry port into said chamber;

F. a second self-sealing penetrable septum closing the entry port into said chamber, the exposed surfaces of both said septa being located near one another in substantially the same plane or in parallel planes to that, when the apparatus is implanted in the body, both said septa are accessible extracorporeally by transcutaneous injection at nearby locations on the body surface;

G. means defining a fluid inlet passage extending from said reservoir to said chamber;

H. means for moving the contents of said reservoir to said chamber; and

I. means defining a substantially unrestricted fluid outlet passage from said chamber for connection to a conduit leading to an infusion site so that an injection of infusate into said chamber flows substantially immediately to the infusion site.

4,496,344
MULTIPLE-COMPARTMENT SYRINGE

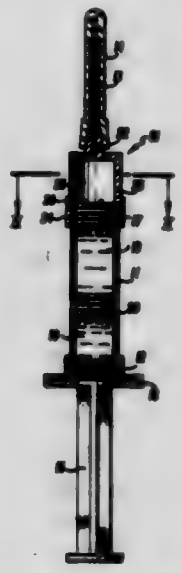
Paulus R. Kamstra, Oist, Netherlands, assignor to Duphar International Research B.V., Weesp, Netherlands

Filed Aug. 5, 1982, Ser. No. 405,366
Claims priority, application Netherlands, Aug. 10, 1981, 8103745
Int. Cl.³ A61M 5/00
U.S. Cl. 604—90 6 Claims

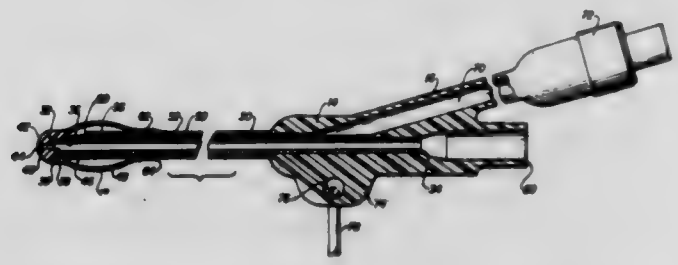
1. A syringe for injecting two or more different injection liquids which may not be in contact with each other for a long period of time, comprising:

a rotationally symmetrical barrel which is open at each end, to which barrel a finger grip means is connectable;

a piston which is movable in the barrel and seals same, to which piston a piston rod is connectable;
a needle or means to connect same to the front end of the barrel;
a sealing stopper, the dimensions of which are such that it can be provided sealingly in the opening on the front end of the barrel;
at least one separating stopper to be provided in the barrel and movable therein, said stopper having a circumference that sealingly adjoins the inner wall of the barrel, thereby keeping the injection liquids present in the barrel separated from each other prior to use of the syringe; and
a needle holder comprising a collar which is sealingly engageable with the front end of the barrel; a neck for sealable attachment to an injection needle; a hollow shaft between the collar and the neck; a plurality of spacing supports included in the rear face of the neck; and a passage formed in the inner wall of the shaft and the rear face of the neck, said syringe being characterized in that the space bounded by the inner wall of the shaft and the spacing supports on the rear face of the neck has the same or a slightly larger circumference than the circumference of the inner wall of the barrel and is slightly longer than the length of the collective stoppers, so that in the extreme forward position the collective stoppers can substantially entirely fill said space, in which however at least one opening remains between the stoppers and the inner wall of the shaft, said opening extending to a point behind the stoppers.

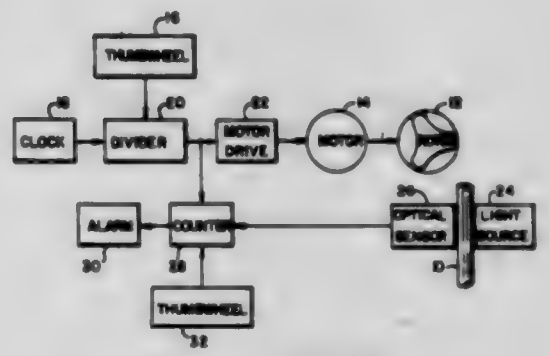


4,496,345
BALLOONED CANNULA
Harrith M. Hasson, 2043 N. Sedgwick, Chicago, Ill. 60614
Filed Aug. 30, 1982, Ser. No. 413,152
Int. Cl.³ A61M *25/00*
U.S. Cl. 604—103 7 Claims



1. In a ballooned cannula, the combination of an elongated tube having two spaced ports in fluid communication with each other via the interior of the tube;
a housing formed of a biologically inert, soft plastic material surrounding said tube along the length thereof and having an end disposed such that at least one end of said tube extends from said housing, said housing including
an inlet in fluid communication with one of said ports, a pressurizing conduit extending to substantially said housing end, and a
pressurizing port in fluid communication with said conduit and adapted to be connected to a source of pressurizing fluid; and
a biologically inert, expandable one piece balloon secured to said tube one end and comprised of a radially inner integral sleeve disposed about said tube one end, a radially outer integral sleeve of thin construction connected and sealed to said housing near said housing end, and a smooth tip interconnecting said sleeves adjacent said tube one end and having an outlet in fluid communication with the other of said ports, the interface of said sleeves being in fluid communication with said pressurizing conduit, said radially inner sleeve having a lesser axial length than said radially outer sleeve, said other port being defined by an open end of said tube, and said outlet opening into the interior of said radially inner sleeve.

4,496,346
INFUSION MONITORING APPARATUS
Thomas F. Mosteller, Lansdale, Pa., assignor to Air-Shields, Inc., Hatboro, Pa.
Filed Aug. 17, 1983, Ser. No. 523,870
Int. Cl.³ A61M *5/14*
U.S. Cl. 604—123 13 Claims

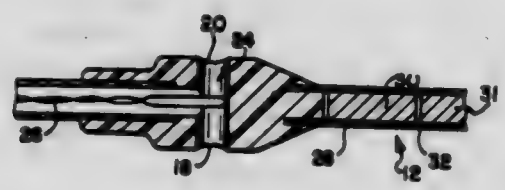


1. Infusion monitoring apparatus comprising:
an infusion tube for conducting liquid;
sensing means responsive to fluid flow through said infusion tube for sensing the presence of gas bubbles in said liquid and for developing a control signal having a first characteristic representative of liquid flow through said infusion tube and a second characteristic representative of a gas bubble flowing through said infusion tube;
timing means for developing a series of timing signals having a rate proportional to the rate of fluid flow through said infusion tube;
counting means responsive to said second characteristic of said control signal and said timing signals for counting said timing signals during the presence of a gas bubble and for developing an alarm signal after a predetermined number of said timing signals have been counted;
and an alarm means responsive to said alarm signal for developing an alarm.

4,496,347
FEEDING TUBE STYLET
David MacLean, and Robert B. Edwards, II, both of Libertyville, Ill., assignors to Viridian, Inc., Wheeling, Ill.
Filed Sep. 24, 1982, Ser. No. 422,564
Int. Cl.³ A61M *25/00*
U.S. Cl. 604—164 2 Claims

1. A wire stylet for use with a feeding tube assembly for

selective enteric administration and aspiration of fluids to and from the gastrointestinal tract of a patient, the assembly including a flexible tube for conducting fluids having at least one aperture in the tube wall near the distal end of said tube; and having a weighted guide tip on the distal end of said tube; said stylet including a single strand of wire insertable into said tube for aiding the insertion of said feeding tube assembly into said patient and extendable throughout the length of said tube, said



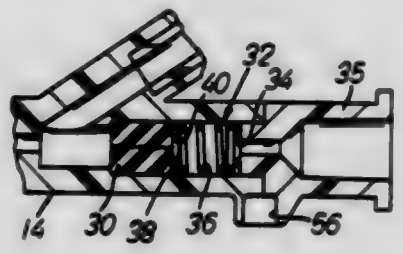
wire being bent upon itself and having its two resulting ends twisted about each other simultaneously forming a double helix configuration and an elongated continuing loop at its distal end, the width of said elongated loop being slightly less than the diameter of said tube but greater than the major diameter of said apertures, whereby said loop is inhibited from exiting said apertures when guiding the tube internally, while allowing for the free flow of fluids from said tube even though said stylet remains inserted into said tube.

4,496,348

VENIPUNCTURE DEVICE

Joseph N. Genese, Waukegan, and Charles H. Seberg, Libertyville, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Nov. 29, 1979, Ser. No. 98,566
Int. Cl.³ A61M 5/00, 25/00
U.S. Cl. 604—167 3 Claims



1. An improved venipuncture device comprising catheter means having a catheter hub attached thereto at a first end;

needle means having needle hub means attached thereto at a first end and a sharpened tip at a second end, said needle means extending coaxially through said catheter means with said sharpened tip extending from said catheter means at a second end and being adapted for insertion and removal from said catheter means;

a penetrable elastic sealing member positioned within and adapted for sealing said catheter hub;

compression means for the compression of said penetrable elastic sealing member coincident with the longitudinal axis of said penetrable elastic sealing member, said compression means having an aperture therethrough for the passage of said needle means;

said compression means being constructed and arranged to reseal the opening through said penetrable elastic sealing member created by the withdrawal of said needle means from said penetrable elastic sealing member;

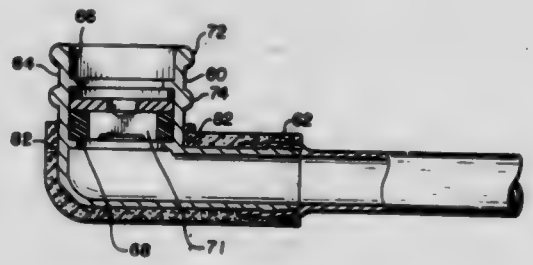
said compression means comprising; a plurality of spring members coaxially aligned and juxtaposed to said penetrable elastic sealing member for the compression of said penetrable elastic sealing member.

4,496,349

PERCUTANEOUS IMPLANT

Louis C. Cosentino, Wayzata, Minn., assignor to Renal Systems, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 261,719, May 8, 1981, abandoned, which is a continuation of Ser. No. 138,579, Apr. 8, 1980, abandoned. This application Oct. 26, 1981, Ser. No. 314,569
Int. Cl.³ A61M 5/00
U.S. Cl. 604—175 3 Claims



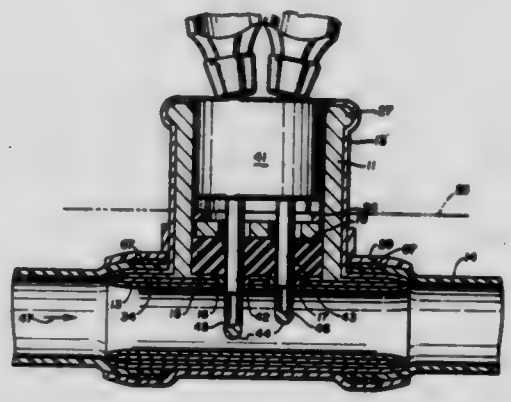
1. A surgically implantable percutaneous device for providing communication between an animal body exterior and an animal body interior the device comprising a rigid, flangeless tubular body of biologically compatible material, said tubular body having an exterior surface including a smooth upper portion which extends through the skin when implanted and a lower portion entirely below the surface of the skin when implanted, said lower portion including a porous tissue ingrowth media thereon for anchoring the device to the animal body, said tubular body including in the interior thereof an elastomeric septum member and means for holding said septum member in sealed relationship therein, said septum member defining an excutaneous cavity within the device.

4,496,350

BLOOD ACCESS DEVICE

Louis C. Cosentino, Wayzata, Minn., assignor to Renal Systems, Inc., Minneapolis, Minn.

Continuation of Ser. No. 261,719, May 8, 1981, abandoned, which is a continuation of Ser. No. 138,579, Apr. 8, 1980, abandoned. This application Jun. 23, 1983, Ser. No. 507,197
Int. Cl.³ A61M 5/00
U.S. Cl. 604—175 21 Claims



1. An implantable access device for providing access to the circulatory system comprising:

a rigid body of biologically compatible material, said body having a generally T-shaped tubular configuration with the stem of the T joined to and in fluid communication with the arms of the T, support means internal to and at the junction of the stem and arms, a elastomeric septum member within the stem having first and second sides and positioned therein so that a portion of said first side is contiguous with and supported by said support means with the remaining portion of said first side that is exposed to the tube of said arms generally parallel with the upper

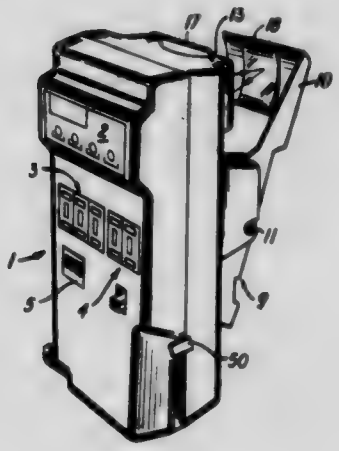
inner surface of said arms, and septum retaining means within said stem member above said second side for compressively supporting said septum member therein in fixed relationship to said arms thereby sealing said stem opening when it is positioned within the cavity of said stem.

4,496,351

INFUSION MONITOR

Arie Hillel, White Plains, N.Y., and Simcha Borovsky, Givatayim, Israel, assignors to Ipco Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 365,595, Apr. 5, 1982, abandoned. This application Jun. 9, 1983, Ser. No. 502,585
Int. Cl.³ A61M 5/16
U.S. Cl. 604—250 7 Claims



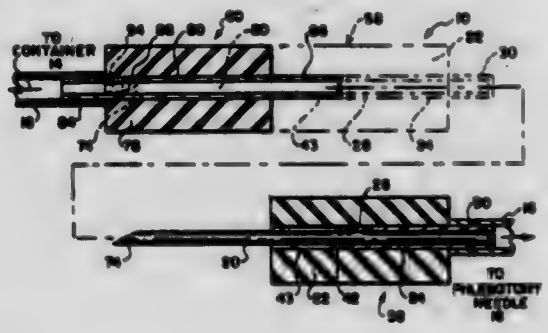
1. An infusion monitor comprising a cartridge, sensing means operatively associated with said cartridge for monitoring the flow of liquid in a transparent infusion tube assembly, said sensing means comprising a sensing beam for sensing a liquid being infused through said transparent infusion tube assembly, means for directing said sensing beam from said cartridge, a movable clamp assembly pivotly mounted on said cartridge, reflecting means on said clamp assembly for redirecting said sensing beam back toward said cartridge, said cartridge having openings therein for said sensing beam, said reflecting means being opposite said openings, an emitter and a receiver for said sensing beam within said cartridge adjacent said openings, said clamp assembly being movable relative to said openings to reflect said beam and to permit the cartridge to be mounted on said infusion tube assembly and support said cartridge on said infusion tube assembly.

4,496,352

CANNULA SUPPORT ASSEMBLY AND ITS METHOD OF MANUFACTURE

Emil H. Soika, Mundelein, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 326,739, Dec. 2, 1981, Pat. No. 4,413,992. This application Oct. 6, 1983, Ser. No. 517,546
Int. Cl.³ A61M 5/14
U.S. Cl. 604—263 9 Claims



1. An assembly for supporting a cannula having an operative end and for interconnecting the cannula to a fluid conduit, said assembly comprising

a hub including

a first member having a bore, and

a second member having opposite end portions and occupying a portion of said bore with one of said end portions disposed outwardly of said bore for attachment to the fluid conduit, the opposite end portion thereof being confined within said portion of said bore, said second member further including a bore extending between said opposite end portions and accommodating the cannula with the operative end thereof extending from said confined end portion of said second member and outwardly beyond said first member bore, and

a cover including

an outer member, and

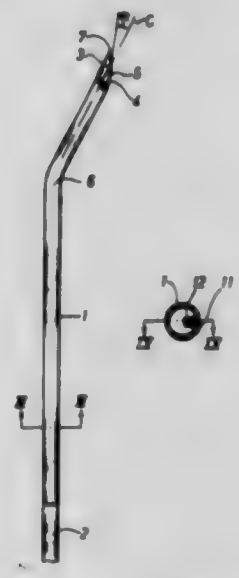
an inner member having an open interior and including a main body portion carried within said outer member and an end portion disposed outwardly of said outer member, said outwardly disposed end portion being removably engageable in an interference fit relationship within the remaining portion of said first member bore not occupied by said second member to secure said cover to said hub with the outwardly extending operative cannula end enclosed within said open interior.

4,496,353

HOLLOW SURGICAL DISPOSABLE NEEDLE, PREFERABLY OF THE REDON TYPE

Christian Overland, L.O. Rasmussensvej 10, DK-3390 Hundested, Denmark, and Knud-Werner Gaarde, Bakkegaardsvej 108, DK-3050 Humlebaek, Denmark

Filed Sep. 9, 1982, Ser. No. 416,371
Claims priority, application Denmark, Sep. 11, 1981, 4056/81
Int. Cl.³ A61M 27/00
U.S. Cl. 604—272 7 Claims



1. A disposable surgical needle to be used for drawing a flexible drain catheter into a body comprising:

an elongated strip of material having longitudinal edges and forming a tubular shaped needle body,

the longitudinal edges abutting each other along the length of the needle body and extending generally radially inwardly from the peripheral edge of the needle body,

the anterior end of the needle body having a flat planar section extending through and parallel to the abutting longitudinal edges,

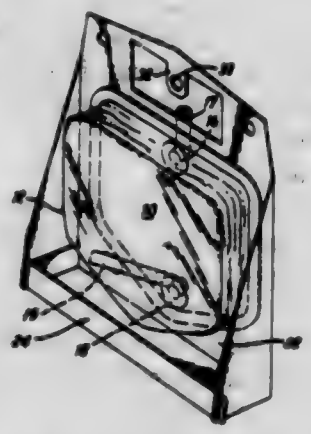
the planar portion having an edge extending diagonally to the longitudinal axis of the tubular needle body and defining a cutting edge, the posterior end being capable of receiving the catheter.

4,496,354

DRAINAGE BAG ASSEMBLY WITH DRIP TRAY

Peter L. Steer, and John V. Edwards, both of Sussex, England, assignors to Craig Medical Products Limited, Sussex, England

Filed Nov. 22, 1982, Ser. No. 443,812
Claims priority, application United Kingdom, Nov. 23, 1981, 8135253
Int. Cl.³ A61M 1/00
U.S. Cl. 604—322
6 Claims



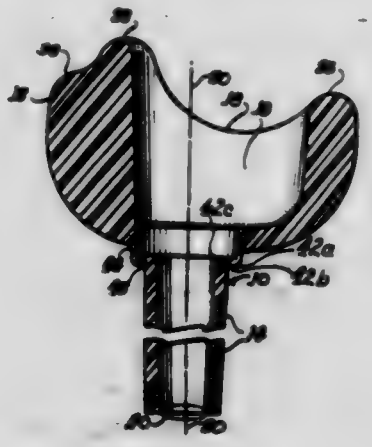
1. A self-supporting closed body drainage bag assembly comprising a first wall formed of a substantially rigid sheet of liquid-impermeable material and a second wall formed of a flexible liquid-impermeable material, said second wall secured to said first wall so as to define a container, said first wall extending beyond the upper and lower edges of said second wall and having wing portions extending beyond the side edges of said second wall, said first wall wing portions being folded forwardly and said first wall extended lower portion being folded and joined to said folded wing portion to form a drip tray means extending beneath said container, said upper extended first wall having at least one hole above said container that serves in use as a hanger, and at least two aperture means forming the inlet and outlet in said first wall for communicating within the confines of the container to one of which is fixed an inlet fitting and to the other of which is fixed an outlet fitting.

4,496,355

EXTERNAL FEMALE URINARY APPLIANCE

Kenneth F. Hall, Arvada, Colo., and William H. Beecher, Elmhurst, Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Nov. 16, 1982, Ser. No. 442,068
Int. Cl.³ A61M 1/00; A61F 5/44
U.S. Cl. 604—327
12 Claims



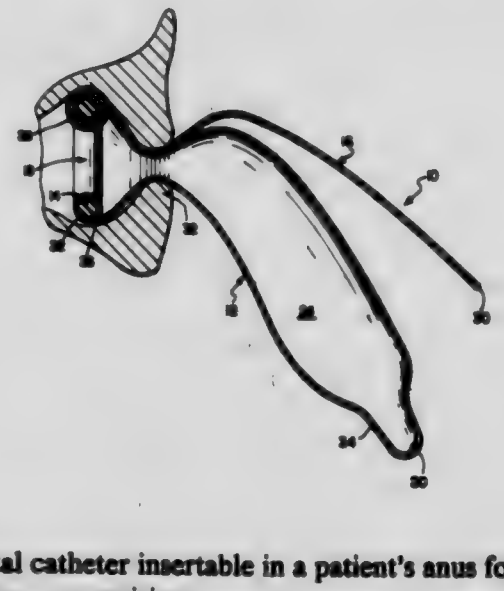
1. A one-piece external female urine collection receptacle adapted to be positioned within the labia folds of the user and in contact with the vestibular tissue around the meatus defining the urethral opening, said device comprising a generally ovoid and open cup-shaped member having a cavity and a generally centrally disposed open bore opening through said member defining a vertical axis of the receptacle, the upper periphery of said member having an inner and outer adjacent generally locally outwardly protuberant exterior surfaces around the bore opening, and a substantially continuously curved ridge extending upwardly from the upper periphery of the receptacle defining the upper portions of said cavity within said receptacle, said upper periphery and ridge generally defining a generally adjacent pair of sealing surfaces, said receptacle having a substantially elliptical cross section in a plane perpendicular to the vertical axis, said sealing surfaces having a concave surface along a major axis of the elliptical cross section and a convex surface along a minor axis of the elliptical cross section said inner one of said adjacent surfaces generally disposed farther vertically relative to an outer one of said adjacent surfaces, for sealingly and continuously contacting and engaging with the labia folds and said vestibular tissue.

4,496,356

ANAL EXCRETION COLLECTING RECTAL CATHETER

Leon Lognion, 2730 E. Lucas Dr., Beaumont, Tex. 77703

Filed Sep. 29, 1982, Ser. No. 426,999
Int. Cl.³ A61F 5/44
U.S. Cl. 604—328
8 Claims



1. A rectal catheter insertable in a patient's anus for collecting excretions, comprising:

an excretion receiving tube having an open end and a closed end;

a solid ring of resilient material fixed to said tube open end; and

a thin, elongated flexible member means having opposite first and second longitudinal ends, said first end being secured to said ring, said second end being detached from said tube and forming a free end of said flexible member, said flexible member extending exteriorly of said tube from said first end and extending over and into said open end of said tube;

whereby, the device can be easily removed from the anus of a patient by pulling said flexible member means.

4,496,357

SKIN BARRIER COMPOSITION

Frank G. Osburn, Hanover Park, Ill., assignor to Hollister Incorporated, Libertyville, Ill.

Filed Jun. 10, 1981, Ser. No. 272,192
Int. Cl.³ A61F 5/44; B01J 13/00
U.S. Cl. 604—336
8 Claims

1. A skin barrier composition in the form of integral rings or blankets for application around a stoma composed substantially entirely of a continuous polyisobutylene phase having dispersed therein particulate hydrocolloid together with fumed silica, said composition containing on a weight percent basis from 50 to 90% of the polyisobutylene phase, from 10 to 35% hydrocolloid, and from 1 to 10% fumed silica, at least 3 parts

by weight of said polyisobutylene phase being present per part of said hydrocolloid.

4,496,358

DIAPER HAVING VARIABLE DENSITY ABSORBENT PAD

Hamseh Karami, Embourg; Myriam Delvaux, Hasnet, and Terence Cooper, Embourg, all of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 13, 1982, Ser. No. 449,327
Int. Cl.³ A61F 13/16
U.S. Cl. 604—379 4 Claims



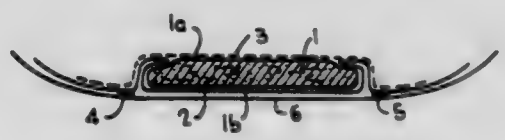
1. A disposable diaper comprising, in order, a top sheet, an absorbent pad assembly including a fist absorbent pad, a second absorbent pad separate from said first pad and below said first pad, wadding means including an upper wadding layer above said first pad, and a lower wadding layer below said second pad, said wadding means enveloping both said pads, and a water impervious backing sheet, and water spray means integrally stabilizing said lower wadding layer to said second pad while varying the density of said second pad increasingly away from said top sheet.

4,496,359

SANITARY ARTICLES TO ABSORB BODY LIQUIDS

Raymond Pigneul, Durrenentzen, France, assignor to Beghin-Say S.A., Thumeries, France

PCT No. PCT/FR82/00055, § 371 Date Nov. 18, 1982, § 102(e) Date Nov. 18, 1982, PCT Pub. No. WO82/03170, PCT Pub. Date Sep. 30, 1982
PCT Filed Mar. 19, 1982, Ser. No. 445,374
Claims priority, application France, Mar. 19, 1981, 81 05477
Int. Cl.³ A61F 13/16
U.S. Cl. 604—387 7 Claims



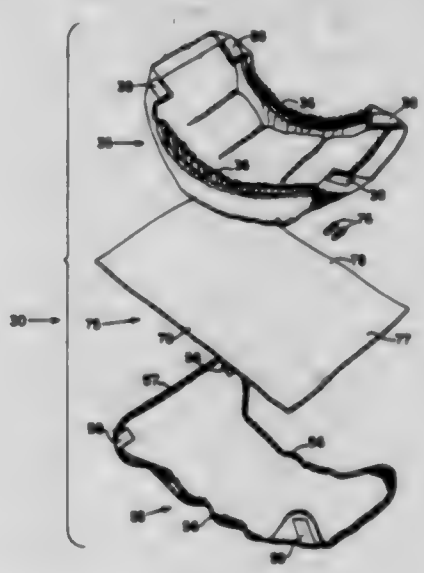
1. Sanitary article to absorb body liquids of the type including an absorbing-material pad (1, 11) with one side facing the human body, clad by a liquid-permeable sheet (3, 13) to be in contact with the body, and an opposite side, clad by an external liquid-impermeable sheet (2, 12), characterized in that said external liquid-impermeable sheet (2, 12) envelops said pad on said opposite side (1*b*, 11*b*) over the entire thickness of said pad and then is pleated along the longitudinal edges of that pad side (1*a*, 11*a*) which faces the human body so as to extend beyond each longitudinal edge to form side-ways extensions (2*a*, 2*b*/12*a*, 12*b*) beyond the surface bounded by the absorbing pad (1, 11).

4,496,360

METHOD OF USING A COMPOSITE WASTE-CONTAINMENT GARMENT HAVING DISPOSABLE ELASTICIZED INSERT

Frederick M. Joffe, and John K. Dysart, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 27, 1983, Ser. No. 508,443
Int. Cl.³ A61F 13/16
U.S. Cl. 604—397 7 Claims



1. A method of using an elasticized-leg-cuff waste-containment insert having a predetermined degree of elastic induced contractability of said leg-cuffs in a non-elasticized over-garment, said method comprising the steps of:

stretching said insert to subetantially reduce its elastic induced contraction;

securing longitudinally spaced oppositely disposed end portions of said insert to equally longitudinally spaced inwardly facing surface regions of said over-garment while said insert is maintained in said reduced state of contraction; and

so applying said over-garment to a wearer that the elasticized-leg-cuffs of said insert are sufficiently stretched to be sealingly juxtaposed the wearer's skin by the action of stretching induced tension.

4,496,361

PLATELET STORAGE CONTAINER

Henn Kilkson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 290,328, Aug. 5, 1981, abandoned. This application Jun. 29, 1982, Ser. No. 392,295
Int. Cl.³ A61M 5/00
U.S. Cl. 604—408 7 Claims

1. A method of storing platelet concentrate comprising placing the concentrate in a container, sealing the container, maintaining a temperature of 22° C., and agitating said container, with the proviso that the container is made from a copolymeric film material capable of being heat sealed at a low temperature and having

an oxygen permeability of at least about 1.8×10^5 μm^3 (STP)/(m^2.sec.Pa),

a carbon dioxide permeability of from about 4.4×10^5 to about 8.0×10^5 μm^3 (STP)/(m^2.sec.Pa),

a tensile strength of at least about 8 mPa,

a seal strength of at least about 1000 g/cm,

a stiffness low enough that the container can be extended by liquid to a capacity of about 275 ml,

a durability sufficient to provide a dart drop value of at least about 100, and

a thickness of from about 0.08 to about 0.23 mm.

4,496,362

CONTAINER FOR LIQUIDS FOR USE IN MEDICINE AND SURGERY

Hendrik J. Leurink, Terneuzen, Netherlands, assignor to Stichtig Centraal Laboratorium Van De Bloedtransfusiedienst Van Het Nederlandse Rode Kruis, Amsterdam, Netherlands

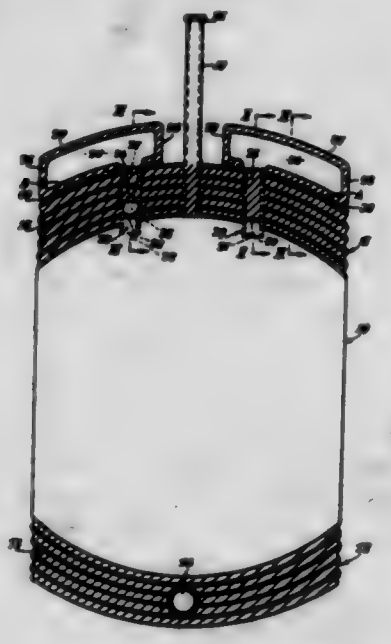
Continuation of Ser. No. 197,476, Oct. 16, 1980, Pat. No. 4,439,192, which is a continuation of Ser. No. 95,975, Nov. 20, 1979, abandoned, which is a continuation of Ser. No. 869,102, Jan. 13, 1978, abandoned, which is a continuation of Ser. No. 690,731, May 27, 1976, abandoned. This application Jan. 12, 1984, Ser. No. 570,519

Claims priority, application United Kingdom, May 30, 1975, 23632/75

Int. Cl.³ A61M 5/00

U.S. Cl. 604—408

8 Claims



1. A container for liquids, comprising:

opposing layers of flexible plastic film, end joints joining said layers of film together at their ends and said layers being enclosed in the longitudinal direction along the sides, between said ends, to define an enclosure for liquid,

at least one of said end joints including a peel resistant fusion weld, at least a first portion of which extends continuously across said end joint,

at least one duct of plastic material sealed between said layers at said end joint, and extending in the said longitudinal direction, the inner end of said duct communicating with the inside of said enclosure, at least a finite width of said first portion, taken in the axial direction relative to the duct, being non-peelably fusion welded to the exterior of the duct, about its entire circumference, such that the continuous fusion weld is continuous around the circumference of the duct,

a rupturable obstruction within the duct,

an expansion chamber formed at said end joint, between facing portions of the two layers which are unattached to each other, said expansion chamber communicating with the outer end of the duct,

closing means at said end joint which completely and non-peelably encloses said expansion chamber except for its communication with the outer end of the duct, said closing means including, at least in part, said fusion weld, the area of said expansion chamber confined by the layers and the closing means being dimensioned to accommodate during sterilization, without pressure induced film separation at said welds, expansion of gas contained in the combined space of said chamber and the portion of the duct outwardly of said obstruction and communicating with the expansion chamber,

means in said first portion of the fusion weld for defining a tear line in said end joint beneath the expansion chamber, exposing the outer end of the duct when the end joint is torn along the tear line, said obstruction being spaced below the tear line, such that at least a part of the said finite width of the first portion, in the region between the tear line and the obstruction, remains after tearing along the tear line.

4,496,363

ANTIMICROBIAL FABRICS

Louis J. DeFilippi, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 21, 1983, Ser. No. 554,491
Int. Cl.[3] D06M *13/18, 15/66*
U.S. Cl. 8—115.5 16 Claims

1. An antimicrobial product comprising an aminoalkylsilylated fabric whose terminal amino functionality is covalently bonded to one terminus of a polyfunctional spacer moiety, with another terminus of the polyfunctional spacer moiety covalently bonded to an amino group of an antimicrobial agent.

4,496,364

METHOD OF DYEING VOLUMINOUS SUBSTRATES WITH ANIONIC DYES

Hans-Peter Stakelbeck, Binzen, Fed. Rep. of Germany, assignor to Sandoz Ltd., Basel, Switzerland

Filed Apr. 25, 1983, Ser. No. 488,009
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1982, 3215872; May 21, 1982, 3219115
Int. Cl.[3] D06P *3/06, 3/24*
U.S. Cl. 8—641 20 Claims

1. In a process wherein a dyeing liquor containing one or more anionic dyestuffs is applied to a voluminous flat form synthetic polyamide substrate at a liquor:goods ratio below 10:1 and the thus-treated substrate is rolled up and rotated at a temperature of 20°–60° C. to effect fixation of the dyestuff, the improvement which comprises (1) employing a dyeing liquor which contains no thickening, swelling or foaming agent and which has an initial pH within a range, depending on the affinity of the substrate for anionic dyestuffs and on the molecular weight of the anionic dyestuffs, as will give a substantially linear exhaustion of the dyeing liquor, and (2) applying the dyeing liquor to the substrate in an amount such that it flows on the rolled-up substrate during the rotation thereof.

4,496,365

METHOD OF PRODUCING BRIQUETTES FROM ORGANIC WASTE PRODUCTS

Rolf W. Lindemann, Birkenhügel 6, Ritterhude, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 242,126, Mar. 9, 1981, abandoned. This application Jul. 27, 1983, Ser. No. 517,922
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1980, 3010259
Int. Cl.[3] C10L *5/44, 5/46*
U.S. Cl. 44—1 D 2 Claims

1. A method of producing fuel briquettes from organic waste products by enriching waste products with organic materials of high heating value, such as coal, comprising compressing the organic waste products with the addition to them, together with coal or other organic products of high heating value used for enriching, lime (CaO) under high pressures of at least 1000 bar whereupon a compressing process with reaction temperatures of about 100°–120° C. results and a product of a desired high heating value is obtained.

4,496,366

CONFIGURED FUEL BRIQUET AND METHOD

Susan M. Peters, Livermore, Calif., assignor to The Clorox Company, Oakland, Calif.

Filed Nov. 10, 1982, Ser. No. 440,688
Int. Cl.[3] C10L *5/36*
U.S. Cl. 44—14 13 Claims

1. A charcoal briquet having a geometry configured to produce a selected burn performance including a first ignition phase and a second, burn phase, said briquet being configured to provide an ignition phase defined as a selected percent of visual ash on the outer surface of the briquet formed in a preselected time.

2. The charcoal briquet of claim 1 in which said ignition phase is selected as 20 minutes and the briquet is configured in accordance with the equation:

$$\text{Desired Percent Visual Ash} = -207(V \cdot d/A + 163).$$

6. A method of constructing a fuel briquet to provide desired ignition time comprising empirically deriving an ignition time formula for said desired ignition time as a function of briquet volume to area times density by linear regression, and choosing briquet dimensions for a selected briquet shape which provides said volume to area ratio for a selected briquet density.

4,496,367

PUMPABLE AQUEOUS SLURRY OF A SOLID FUEL AND A PROCESS FOR THE PRODUCTION THEREOF

Mait M. Mathiesen, Arild; Lars I. Gillberg, Lund; Kari M. E. Hellsten, Ödsmål, and Gunvor B. T. Karlsson, Stenungsund, all of Sweden, assignors to AB Carbogel, Helsingborg and Berol Kemi AB, Stenungsund, both of, Sweden

Filed May 6, 1983, Ser. No. 492,195
Claims priority, application Sweden, May 7, 1982, 8202878
Int. Cl.[3] C10L *1/32*
U.S. Cl. 44—51 9 Claims

1. A pumpable aqueous slurry of a solid fuel in the form of a pulverized, carbonaceous material, characterized in that the aqueous slurry consists essentially of up to about forty percent by weight, based upon the total weight of the aqueous slurry, of coarse grains of the carbonaceous material having a particle size of at least about 1 mm up to 25 mm, said grains being suspended in a carrier liquid having a solids content of 65–90% by weight and consisting essentially of water, pulverized carbonaceous material with a particle size of at most about 0.5 mm, and 0.02–2% by weight of at least one additive which incorporates a water-soluble, surface active compound which is an alkylene oxide adduct having a hydrophobic part and a hydrophilic part, said hydrophilic part consisting essentially of at least one polyalkylene oxide chain having a length of 40–200 alkylene oxide units.

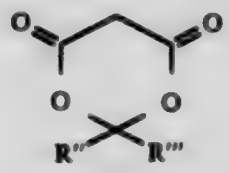
4,496,368

ISOPROPYLIDENE MALONATE-N-ALKYL ALKYLENEDIAMINE CONDENSATION PRODUCTS

Benjamin J. Kaufman, Wappingers Falls, and Rodney L. Sung, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 17, 1983, Ser. No. 505,511
Int. Cl.[3] C10L *1/18*
U.S. Cl. 44—63 2 Claims

1. A fuel comprising a major amount of a mixture of hydrocarbons boiling in the gasoline boiling range and a minor detergent and corrosion-inhibiting amount of the condensation product of a compound represented by the formula:



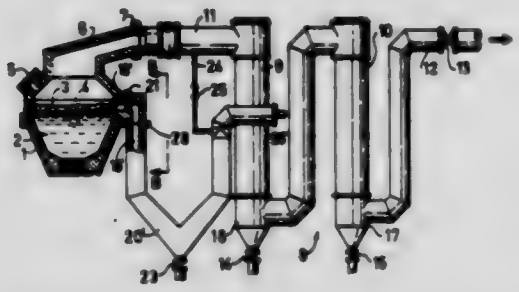
wherein R″ and R‴ are hydrogen or C_1–C_5 alkyl groups and an N-alkyl-1,3-propanediamine in which the alkyl radical has from 6 to 18 carbon atoms.

4,496,369

APPARATUS FOR GASIFICATION OF CARBON

Björn Törnesman, Västerås, Sweden, assignor to IPS Interproject Service AB, Stockholm, Sweden

Filed Jun. 20, 1983, Ser. No. 505,985
Claims priority, application Sweden, Jul. 1, 1982, 8204089
Int. Cl.³ C10J 3/68; C21C 5/40
U.S. Cl. 48—92 4 Claims



1. Apparatus for gasification of carbon in the form of carbon, hydrocarbons, or hydrocarbon compounds, under total pressure exceeding atmospheric pressure, comprising:

A. reactor means for containing molten iron, said reactor including injection means for injecting carbon, oxygen gas, and iron oxides beneath the surface of the molten iron, and for injection of carbon in stoichiometric excess relative to the amount of oxygen contained in the molten iron in the form of oxide compounds;

B. an exhaust pipe connected to said reactor means for discharge of exhaust gas therefrom;

C. cooling means for cooling said gas connected to said exhaust pipe to form a sealed unit with said reactor means;

D. valve means for regulating and maintaining pressure greater than atmospheric pressure in said unit, said valve means being positioned on said cooling means;

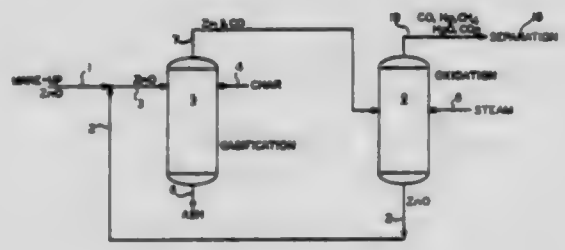
E. first tapping means for discharge of slag from said reactor means, and second tapping means for discharge of crude iron from said reactor means, each of said first and second tapping means connected to said exhaust pipe by a pressure equalizing pipe, in order to maintain said first and second tapping means at the same pressure as said unit.

4,496,370

ZINC OXIDE-CHAR GASIFICATION PROCESS

William G. Billings, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 4, 1983, Ser. No. 481,956
Int. Cl.³ C10J 3/46
U.S. Cl. 48—197 R 18 Claims



1. A process for the gasification of solid carbon-containing materials which comprises:

(a) heating under reaction conditions said carbon-containing material as finely divided carbon-containing particles with finely divided particulate zinc oxide, thereby producing a first hot gaseous stream comprising zinc vapor, carbon monoxide, and traces of carbon dioxide,

(b) contacting said first hot gaseous stream with a first steam in a separate zone in the absence of solid carbon containing material at a temperature in the range of about 700° C. to 1300° C., thereby converting said zinc to solid zinc oxide, and producing a second hot gas stream comprising carbon monoxide, hydrogen, methane, water, and carbon dioxide, separating said solid zinc oxide from the second hot gas stream, and

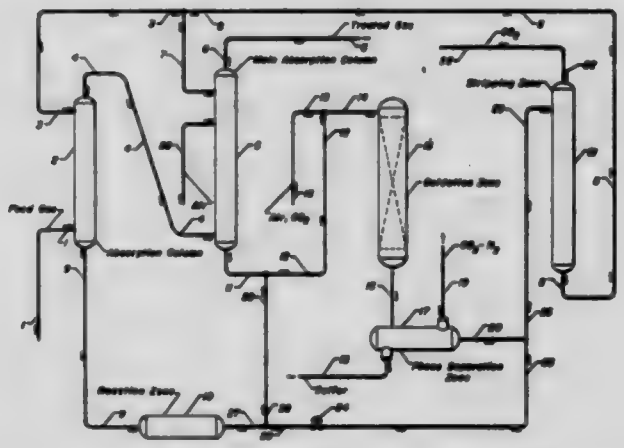
(c) recycling said zinc oxide to said step (a).

4,496,371

PROCESS FOR REMOVAL OF HYDROGEN SULFIDE AND CARBON DIOXIDE FROM GAS STREAMS

Peter Urban, Northbrook, and Russell W. Johnson, Villa Park, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Sep. 21, 1983, Ser. No. 534,227
Int. Cl.³ C10J 00/00; C10K 1/12
U.S. Cl. 48—197 R 20 Claims



11. A gas treating process which comprises the steps of:

(a) contacting a feed gas stream which comprises a normally vaporous hydrocarbon, hydrogen sulfide, and carbon dioxide with a first liquid stream which comprises a lean aqueous carbonate solution containing thiosulfate ions in a first absorption zone operated under conditions which promote the selective removal of hydrogen sulfide from the feed gas stream and thereby producing a first vapor stream, which comprises the normally vaporous hydrocarbon, hydrogen sulfide, and carbon dioxide, and a second liquid stream comprising the aqueous carbonate solution and which is rich in hydrogen sulfide;

(b) contacting the first vapor stream with a third liquid stream which comprises a lean aqueous carbonate solution in a second absorption zone operated under conditions which effect the removal of hydrogen sulfide and carbon dioxide from the first vapor stream and thereby producing a treated gas stream, which is withdrawn from the process, and a fourth liquid stream comprising the aqueous carbonate solution and which is rich in hydrogen sulfide and carbon di- oxide;

(c) passing the second liquid stream through a reaction zone in which a reaction between hydrogen sulfide and a thiosulfate is catalytically promoted at conditions which result in the formation of sulfur;

(d) contacting at least major portions of the second liquid stream and the fourth liquid stream with an oxygen-containing gas stream in an oxidation zone in the presence of an oxidation catalyst under conditions which promote the oxidation of hydrogen sulfide to sulfur, including a temperature at which sulfur is present as a liquid, and effecting the production of a mixed phase stream comprising liquid sulfur, the aqueous carbonate solution and residual compounds present in the oxygen-containing gas stream;

(e) separating the mixed phase stream in a phase separation zone and thereby producing an effluent gas stream, a liquid phase sulfur stream which is withdrawn from the process, and a fifth liquid stream comprising the aqueous carbonate solution and which is rich in carbon dioxide; and,

(f) releasing carbon dioxide from the fifth liquid stream in a stripping zone operated at stripping conditions and thereby producing a second vapor stream, which comprises carbon dioxide, and is withdrawn from the process,

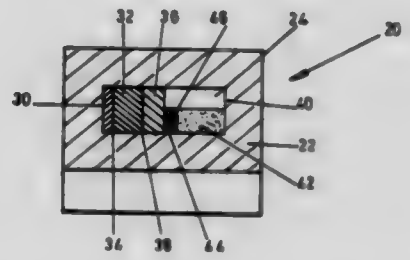
and a sixth liquid stream comprising an aqueous carbonate solution comprising thiosulfate ions which is lean in both hydrogen sulfide and carbon dioxide, and recycling at least a portion of the sixth liquid stream to the first and the second absorption zones as the first and the third liquid streams.

4,496,372

ABRASIVE BODIES

Eric A. Almond, 34 Weston Ave., West Molesey, Surrey, England (KT8 9RG), and Mark G. Gee, 20, Morland Close, Hampton, Teddington, Middlesex, England

Filed Mar. 30, 1983, Ser. No. 480,485
Claims priority, application United Kingdom, Mar. 31, 1982, 8209410; Jan. 31, 1983, 8302620
Int. Cl.³ B24D 3/02
U.S. Cl. 51—309 17 Claims



1. A method of bonding an abrasive compact to a metal-containing support body including the steps of:

(a) bonding a layer of nickel, copper, cobalt, iron or an alloy containing one or more of these metals to a surface of the support body;

(b) bringing the compact and support body together so that the metal layer contacts a surface of the compact;

(c) urging the compact and support body together by applying a transverse pressure thereto;

(d) raising the temperature of the metal layer to a temperature below its melting point and in the range of 650° C. to 950° C.; and

(e) maintaining the pressure and temperature for a time sufficient to cause diffusion bonding between the compact and the support body, steps (d) and (e) being carried out in an inert atmosphere.

4,496,373

DIFFUSION MEMBRANE AND PROCESS FOR SEPARATING HYDROGEN FROM GAS MIXTURE

Friedrich Behr, Essen; Rudolf Schulten, Aachen Richterich, and Walter Weirich, Aachen, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 446,068, Dec. 2, 1982, abandoned. This application Jun. 6, 1984, Ser. No. 617,831
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1981, 3149084; Dec. 11, 1981, 3149155
Int. Cl.³ B01D 53/22
U.S. Cl. 55—16 20 Claims

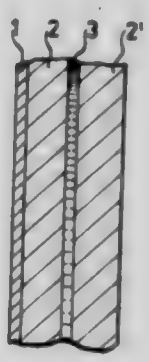
1. Hydrogen diffusion membrane consisting essentially of a metallic material selected from the group consisting of tantalum, niobium, titanium, vanadium, nickel and alloys and mixtures of two or more of the foregoing, which material is nonporous but selectively permeable for hydrogen, having a palladium alloy coating on the hydrogen entry side and having the improvement wherein:

said palladium alloy coating is of an alloy of palladium and an alloy partner metal selected from the group consisting of copper, silver and yttrium with a content of at least 45 atomic % copper or at least 50 atomic % silver or at least 7 atomic % yttrium, and

said material of said membrane itself has a content of the same alloy partner metal as in said palladium alloy which is in a concentration at least sufficient for equilibrium with the palladium alloy.

14. Method for the separation of hydrogen from gas mixtures by diffusion at elevated temperature through a membrane of a metallic material having a coating of a palladium alloy on the hydrogen entry side, said method comprising the steps of:

utilizing a membrane in which said palladium alloy coating is an alloy of palladium and an alloy partner metal selected from the group consisting of copper, silver and yttrium with a content of at least 45 atomic % copper, or at least 50 atomic % silver, or at least 7 atomic % yttrium, while the metallic material of the membrane itself has a content



of the same alloy partner metal as in said palladium alloy which is in a concentration at least sufficient for equilibrium with the palladium alloy;

causing the hydrogen, after passing through a layer of the metallic material of said membrane, to come into contact with a melt containing a substance selected from the group consisting of alkali metals, alkaline earth metals and mixtures of alkali and alkaline earth metals having an affinity for hydrogen which is higher than that of the metallic material of said membrane and of that of the hydrogen bonding in said gas mixture and which is capable of forming a hydride either in solution in said melt or as a suspension therein.

4,496,374

COMPOUND AND PROCESS FOR DENATURING HIGH SOLIDS PAINTS

Donald P. Murphy, Madison Heights, Mich., assignor to Parker Chemical Company, Madison Heights, Mich.

Filed Feb. 23, 1983, Ser. No. 467,282
Int. Cl.³ B01D 47/00
U.S. Cl. 55—84 7 Claims

1. A process for denaturing captured high-solids paint particles entrained in an aqueous wash solution of a gas scrubbing device comprising the steps of contacting paint overspray particles entrained in a gas stream with an aqueous wash solution consisting essentially of water and a dispersion of substantially wash solution insoluble talc particles predominantly of a particle size of less than about 15 microns present in an amount effective for coagulating the captured high-solids paint particles and effecting a denaturing thereof.

4,496,375

AN ELECTROSTATIC AIR CLEANING DEVICE HAVING IONIZATION APPARATUS WHICH CAUSES THE AIR TO FLOW THERETHROUGH

Allan D. Le Vantine, 18225 Rancho St., Tarzana, Calif. 91356

Continuation of Ser. No. 282,420, Jul. 13, 1981, abandoned. This application Jan. 14, 1983, Ser. No. 504,273
Int. Cl.³ B03C 3/12, 3/82
U.S. Cl. 55—131 14 Claims

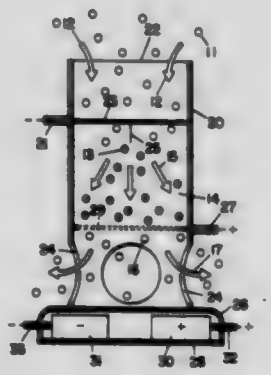
1. A device for pumping air and collecting airborne particulates by electrostatic techniques comprising:

a case means, tubular in shape and constructed of electrically non-conductive material, for supporting the components of the device and for providing a channel for the convec-

tion of air through the device, having a first opening for the admittance of air and having a second opening for the exit of air, between the openings and within the case means are the following:

a first grid means located near the first opening and positioned in a plane orthagonal to the axis of the case means occupying the entire plane extending to the internal surface of the wall of the case means, said first grid means formed of metal wire of circular cross section, said first grid means is connected to a negative high voltage source, said first grid means is constructed and arranged so as to provide a defined negative field across the convection channel within the case means to repel negatively charged molecules and particulates, generated within the case means, away from the first opening and causing them to flow toward the interior of the case means;

an electrode means, adjacent to the first grid means located near the center of the first grid means and on the side of the first grid means away from the first opening, said electrode means having a sharp point facing in a direction away from the first grid means and toward the second opening, said electrode means is connected to a high voltage negative source, said electrode means is constructed and arranged in relation to the first grid means so that the negatively charged field produced by the first



grid means encompasses the electrode means and in combination with the negative potential produced by the electrode means acts to generate a high charge density at its sharp point sufficient to transfer a negative electric charge to atmospheric molecules and particulates adjacent thereto;

a second grid means spaced apart from the electrode means toward the second opening, said second grid means positioned in a plane orthogonal to the axis of the case means and occupying the entire plane extending to the internal surface of the wall of the case means, said second grid means formed of metal wire of circular cross section, providing a tortuous pathway while maintaining minimal impedance to the flow of air through the case means, said second grid means is connected to a positive high voltage source, said second grid means is constructed and arranged so as to attract negatively charged molecules and particulates away from the electrode means causing the molecules and particulates to flow through the case means in a direction toward the second opening of the case means and also serving to provide surface area to which negatively charged particulates will adhere and to which negatively charged molecules will give up their negative charge and flow through;

said negative high voltage source and said positive high voltage source are mounted externally of said case means.

4,496,376

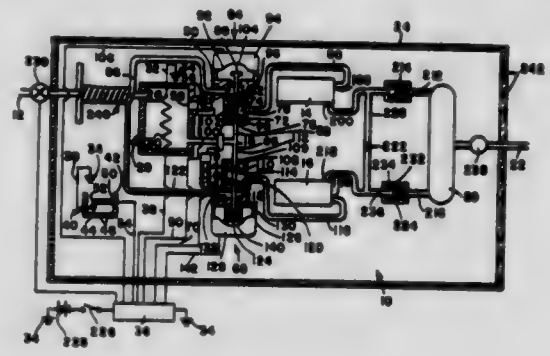
VARIABLE AREA MOLECULAR SIEVE CONTAINER HAVING A THERMAL CONTROL SYSTEM

Richard W. Hradek, Davenport, Iowa, assignor to Litton Systems, Inc., Davenport, Iowa

Division of Ser. No. 872,694, Jan. 26, 1978, abandoned. This application Nov. 2, 1981, Ser. No. 317,101

Int. Cl.[3] B01D *53/04*

U.S. Cl. 55—163 9 Claims



1. A material separator system comprising:

a first container having a first separator chamber connected to a second separator chamber, said first and second separator chambers each holding a quantity of adsorption material in particle form to create a first bed, said first and second chambers each having a cross-sectional area that varies linearly with distance to compensate for changes in the flow of the fluid from the first chamber to the second chamber caused by retention of a component in the fluid mixture by the particles contained in the first bed;

a second container having a third separator chamber connected to a fourth separator chamber, said third and fourth separator chambers each holding a quantity of adsorption material in particle form to create a second bed, said third and fourth chambers each having a cross sectional area that varies linearly with distance to compensate for changes in the flow of fluid from the third chamber to the fourth chamber caused by retention of a component in the fluid mixture by the particles contained in the second bed;

supply conduit means for connecting a source of pressurized fluid mixture to said first and third chambers;

an outlet conduit having a first branch connected to said second chamber and a storage container, and a second branch connected to said fourth chamber and the storage chamber;

an intermediate conduit for connecting said first branch to said second branch;

a restrictive member located in said intermediate conduit to limit the flow communication between the first and second branches;

valve means connected to said supply conduit for sequentially controlling the communication of said source of fluid mixture to one of said first and second containers where an element in the fluid mixture is adsorbed in the particles to produce a product fluid as the fluid mixture flows from the first chamber toward the second chamber and from the third chamber toward the fourth chamber, respectively, said varying of the cross sectional area providing substantially uniform adsorption throughout the entire first and second beds as the fluid mixture flows therethrough, said product fluid flow through the outlet conduit while a portion thereof flows through the intermediate conduit to purge the element from the particles in the other of said first and second containers by flowing from the second chamber toward the first chamber and the fourth chamber toward the third chamber, respectively;

heater means associated with said supply conduit means for maintaining said pressurized fluid mixture within a predetermined temperature range;

shroud means for insulating at least said heater means, supply conduit, said valve means, and said first and second containers from the surrounding environment;

first sensor means connected to said heater means for monitoring the temperature of said presaurized fluid mixture in said supply conduit to establish a first operational temperature signal;

second sensor means located in said shroud for measuring the temperature therein to establish a second operational temperature signal;

bleed valve means connected to said supply conduit; and

electronic control means for supplying said first and second valve means with an operational signal to sequentially transfer the supply of fluid mixture from the first container to the second container after a predetermined time period, said electronic control means being connected to said first and second sensor means for supplying said heater means with a first operational input in response to said first temperature signal below a predetermined value and for supplying said bleed valve means with a second operational input to allow a portion of the fluid mixture in said supply conduit to flow into the shroud means and maintain the temperature therein within said predetermined temperature range in order that optimum adsorption of the element occurs in the first and second containers with the presentation of the fluid mixture thereto.

4,496,377

BAG FILTER APPARATUS

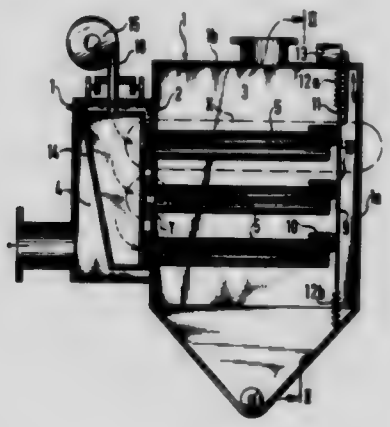
Adolf Margraf, Am Schleplingsbach 46, 3060 Stadthagen, Fed. Rep. of Germany

Filed Mar. 7, 1983, Ser. No. 473,003

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1982, 8206750[U]

Int. Cl.³ B01D *46/04*

U.S. Cl. 55—287 **3 Claims**



1. In a bag filter apparatus comprising, a housing having at least one filter chamber which is sub-divided into a clean gas room having a clean gas outlet, and a dust gas room having a dust gas inlet, by a partition wall provided with perforations, a plurality of horizontal and cross-sectionally flattened oval filter bags arranged in vertical and parallel rows, and received in the dust gas room between a rear wall of the housing and the partition wall, to be impinged upon by dust gas from the outside toward the inside thereof, each of said filter bags being provided with a rigid internal spacing element, and being supported at the closed extremity thereof in the dust gas room, and having the open extremity thereof releasably fastened to the partition wall, and a sealing frame having rigid parts disposed at the clear gas side of the partition wall releasably and sealingly fastening the open extremities of said filter bags to the partition wall in alignment with the perforations of the partition wall, the improvement which comprises the spacing element of each of said filter bags terminates before the partition wall, and is loosely supported thereat by the rigid parts of said sealing frame, at least one vertical spring-borne auxiliary wall extending freely and parallel to the rear wall of the housing for supporting said filter bags at the closed extremity thereof, and an intermittently operable oscillation generator coupled to said at least one auxiliary wall for oscillating the same, said filter bags being releasably connected at the closed extremity thereof to said at least one auxiliary wall.

4,496,378

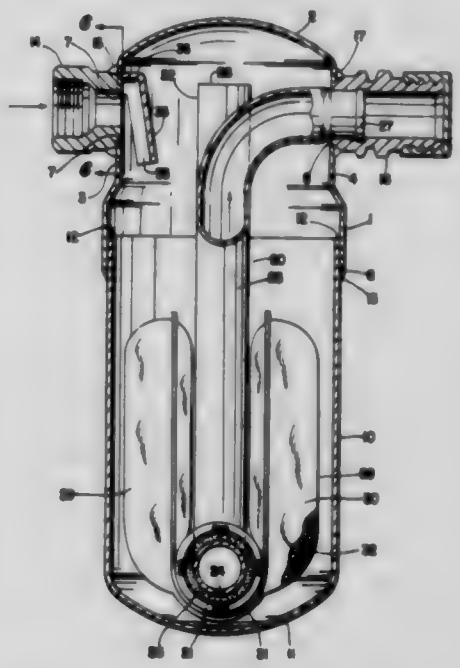
ACCUMULATOR DEHYDRATOR

Arthur S. Kish, Lyndhurst, Ohio, assignor to Murray Corporation, Cockeysville, Md.

Filed Dec. 16, 1982, Ser. No. 432,257

Int. Cl.³ B01D *50/00*; F25B *43/00*

U.S. Cl. 55—316 **6 Claims**



1. An accumulator dehydrator comprising:

a casing having an inlet opening and an outlet opening,

a dessicant container in said casing,

deflector means in said casing having a body in close proximity to said inlet opening for engagement by refrigerant entering said casing through said inlet opening,

said deflector means comprising an arcuate flange,

an inlet fitting having a portion extending into said inlet opening,

said arcuate flange extending into said opening, and

means for securing said portion of said fitting and said arcuate flange in said opening in said casing.

4,496,379

CANISTER FOR VOLATILE FUEL CONTROLLING DEVICE

Tadashi Kozawa, Aichi, Japan, assignor to Aisan Industry Co., Ltd., Aichi, Japan

Division of Ser. No. 337,651, Jan. 7, 1982, Pat. No. 4,448,594. This application Feb. 29, 1984, Ser. No. 584,838

Claims priority, application Japan, Jan. 27, 1981, 56-10580[U]

Int. Cl.³ B01D *39/00*

U.S. Cl. 55—387 **6 Claims**

1. A lateral type canister for a volatile fuel controlling device comprising

a laterally oriented canister case having a rectangular cross-section,

a single volatile fuel inlet and a volatile fuel outlet at one lateral end of said canister case,

said canister case containing a volatile fuel adsorbent,

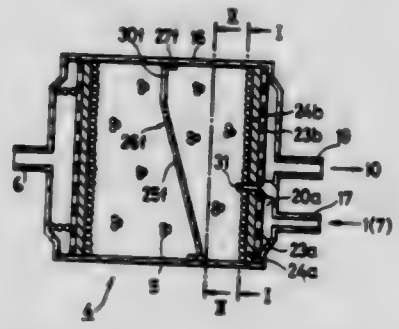
a separation plate divides the adsorbent into two parts between said fuel inlet and said fuel outlet,

an air introduction port disposed at another end of said canister case for introduction of scavenging air into said canister case,

a plate-like baffle disposed inside said canister in an adsorbent layer of said volatile fuel adsorbent,

retainer means for securing said plate-like baffle to the inner wall of the canister case, and

said baffle is inclined with respect to said canister case and



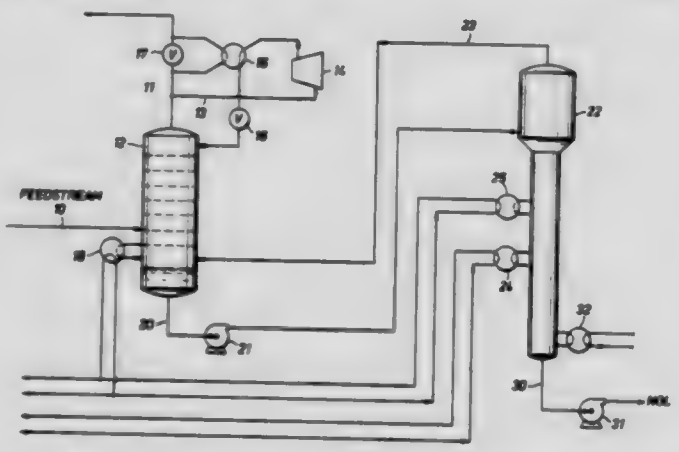
has an edge extending to a predetermined position spaced from a side of the inner wall of said canister case beyond the fuel inlet and fuel outlet defining a passage between said edge of said baffle and the inner wall of said canister case for movement of both volatile fuel and the scavenging air to the volatile fuel outlet.

4,496,380

CRYOGENIC GAS PLANT

John M. Harryman, New Orleans, La., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 324,361, Nov. 24, 1981, abandoned. This application Jul. 7, 1983, Ser. No. 511,448
Int. Cl.³ F25J 3/02
U.S. Cl. 62—24
8 Claims



1. A process for separating ethane and heavier components from a natural gas stream utilizing a cryogenic plant having a cold feedstream, said process comprising:

retrofitting said process to include a rectifier section upstream of a demethanizer;

introducing the cold feedstream into the rectifier section to recover ethane from the feedstream stream and withdrawing the methane through the overhead stream;

passing 1 to 17 percent of the overhead stream back to the top of said rectifier as a reflux stream, the pressure of said reflux stream being increased above the pressure of said overhead stream and then condensed;

directly introducing the bottoms of said rectifier as the feed to a demethanizer column;

directly returning the top stream of said demethanizer as a bottom feed to said rectifier;

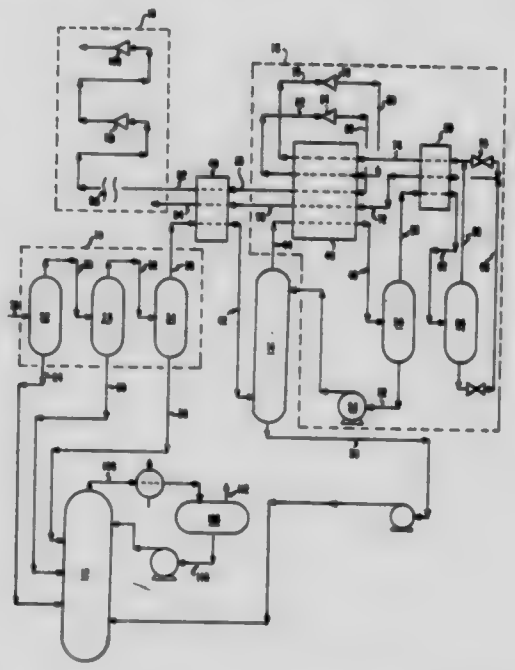
withdrawing substantially all of said ethane and heavier components from the bottom of said demethanizer.

4,496,381

APPARATUS AND METHOD FOR RECOVERING LIGHT HYDROCARBONS FROM HYDROGEN CONTAINING GASES

Johannes Norenburg, Marblehead, Mass., assignor to Stone & Webster Engineering Corp., Boston, Mass.

Filed Feb. 1, 1983, Ser. No. 462,982
Int. Cl.³ F25J 3/02
U.S. Cl. 62—30
18 Claims



1. An apparatus comprising: elements designed, dimensioned and arranged for recovering ethylene from a cracked gas containing ethylene, methane and hydrogen, said apparatus including,

(a) a rectifier tower through which the cracked gas passes;

(b) an overhead line extending from the rectifier tower;

(c) a refrigeration system in communication with the rectifier tower, said refrigeration system comprising:

indirection heat exchange means in communication with said rectifier tower for cooling and partially condensing an overhead vapor passing from said rectifier tower overhead line through the hot side of said indirect heat exchange means; an expansion means in communication with said heat exchange means for expanding the non-condensed portion of the partially condensed overhead vapor discharged from the hot side of the heat exchange means and recirculating said non-condensed portion to the cold side of said indirect heat exchange means for refrigeration; and

(d) a reflux means in communication with the hot side of said indirect heat exchange means and said rectifier tower for directing the condensed portion of the partially condensed rectifier tower overhead vapor from the hot side of the heat exchange means to the rectifier tower for reflux, thereby producing an ethylene rich bottoms product from said rectifier tower.

8. A method for recovering ethylene from a cracked gas comprised of ethylene, methane and hydrogen comprising the steps of:

(a) directing a stream of the cracked gas to a rectifier tower;

(b) removing an overhead vapor from said rectifier tower;

(c) directing the overhead vapor from said rectifier tower through the hot side of an indirect heat exchanger;

(d) cooling and partially condensing said overhead vapor in the hot side of said heat exchanger;

(e) expanding and recirculating the non-condensed portion of the overhead vapor to the cold side of the indirect heat exchanger;

(f) refluxing the rectifier tower with the condensed portion of the overhead vapor; and

(g) recovering ethylene as a bottoms product from said rectifier tower.

4,496,382

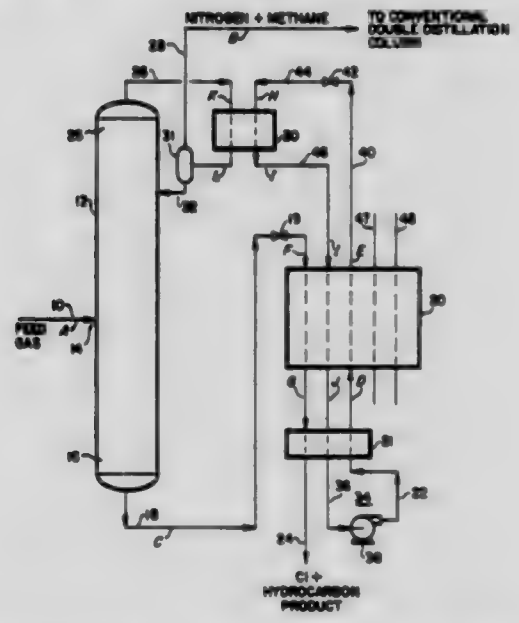
PROCESS USING SERPENTINE HEAT EXCHANGE RELATIONSHIP FOR CONDENSING SUBSTANTIALLY SINGLE COMPONENT GAS STREAMS

Jacob M. Geist, Allentown; Harvey L. Vines, Emmaus; Miguel R. Alvarez, Allentown; Howard C. Rowles, Center Valley, and Donald W. Woodward, New Tripoli, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 21, 1983, Ser. No. 477,200

Int. Cl.[3] F25J *1/02*

U.S. Cl. 62—31 12 Claims



5. In a cryogenic nitrogen rejection process for a natural gas feed stream containing nitrogen, mathane and ethane-plus hydrocarbons which comprises cryogenically separating the natural gas stream into at least one hydrocarbon stream and a nitrogen stream and providing refrigeration for the process by means of a methane heat pump cycle which comprises compressing a methane stream, cooling the compressed methane stream through a heat exchange relationship with a vaporizing multicomponent hydrocarbon stream to essentially totally condense the methane stream, expanding the condensed methane stream and warming the expanded methane stream to provide refrigeration, the method for treating a natural gas stream containing a variable composition, which method comprises precluding condensed phase backmixing of the compressed methane stream and pot boiling of the vaporizing multicomponent hydrocarbon coolant stream by passing the compressed methane stream through a serpentine pathway containing a series of horizontal passes in a cold-end up heat exchange relationship with the vaporizing multicomponent hydrocarbon stream.

10. In a nitrogen rejection unit comprising a fractional distillation column for separating a natural gas feed stream into a multicomponent hydrocarbon bottoms stream and a nitrogen and methane overhead stream, a double distillation column which comprises a high pressure distillation zone and a low pressure distillation zone for separating the overhead stream from the fractional distillation column into a nitrogen stream and a methane stream, and a methane heat pump cycle for providing refrigeration for the nitrogen rejection unit, which methane cycle includes means for cooling the compressed methane recycle stream through a heat exchange relationship with the multicomponent hydrocarbon stream, the improvement which comprises means designed, sized and arranged for precluding condensed phase backmixing of the compressed methane stream and pot boiling of the vaporizing multicomponent hydrocarbon stream comprising a cold-end up heat exchanger having a serpentine pathway containing a series of horizontal passes for cooling and condensing the methane recycle stream of the methane heat pump cycle in an overall upward flow against the multicomponent hydrocarbon stream.

4,496,383

PRODUCTION OF NITROGEN FROM AIR

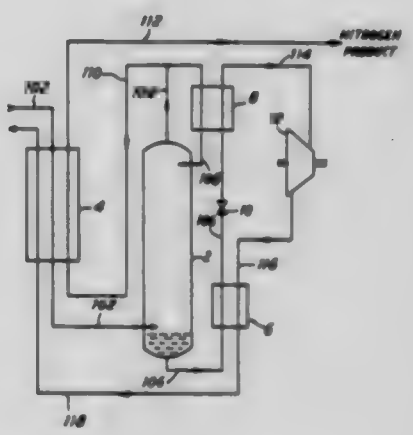
Colin Hubbard, Manchester; David I. Limb, and Melvyn Duckett, both of Cheshire, all of England, assignors to Petrocarbon Developments Limited, Manchester, England

Filed May 3, 1983, Ser. No. 491,024

Claims priority, application United Kingdom, May 11, 1982, 82/13605

Int. Cl.[3] F25J *3/02, 3/04*

U.S. Cl. 62—31 3 Claims



1. A method for the recovery of nitrogen from air by cryogenic separation, comprising the steps of

(i) cooling and distilling compressed air, from which components such as moisture and carbon dioxide which would solidify at the temperatures employed for the separation have been removed, in a single column to produce a nitrogen-rich stream overhead and an oxygen rich liquid at the bottom;

(ii) expanding said oxygen-rich liquid from the bottom to an intermediate pressure;

(iii) condensing a first portion of the overhead stream by indirect heat exchange in a reflux condenser with said intermediately expanded oxygen-rich liquid from the bottom of the column, thereby evaporating said oxygen-rich liquid and providing reflux for said distillation;

(iv) work expanding said evaporated oxygen-rich liquid from said reflux condenser, either directly after recovery from said reflux condenser or indirectly after first subcooling the oxygen-rich liquid recovered from the bottom of the column prior to step (ii), by indirect heat exchange with the evaporated-oxygen rich liquid obtained from said reflux condenser prior to said work-expansion, said evaporated oxygen-rich liquid entering said work-expanding step at an initial temperature not substantially greater than at which it was recovered from said reflux condenser, or if said evaporated-oxygen rich liquid obtained from said reflux condenser has been first passed through said subcooler, at an initial temperature not substantially greater than at which it was recovered from the subcooler;

(v) subcooling the oxygen-rich liquid recovered from the bottom of the column prior to step (ii) by indirect heat exchange in a sub-cooler with work-expanded evaporated oxygen-rich liquid from step (iv), said work-expanded evaporated oxygen-rich liquid entering said cooler at temperature not substantially greater than that to which it has been lowered by work expansion;

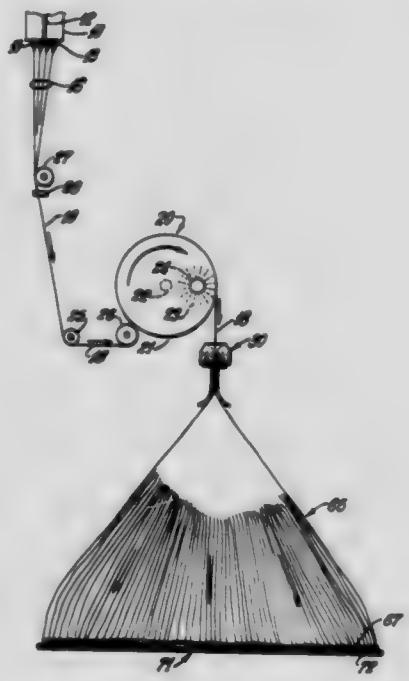
(vi) cooling the compressed air feed to the distillation column by indirect heat exchange with a second portion of the overhead stream from the distillation and work-expanded oxygen recovered from the subcooler in step (v).

4,496,384

METHOD AND APPARATUS FOR PRODUCING A CONTINUOUS GLASS FILAMENT MAT

David C. K. Lin, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 11, 1983, Ser. No. 522,883
Int. Cl.³ C03B *37/06*
U.S. Cl. 65—4.4 12 Claims



1. Apparatus for producing a mat of continuous glass filaments comprising:

(a) feeder means for supplying a plurality of streams of molten glass;

(b) pull roll means for drawing streams into said filaments;

(c) means for orienting said filaments as a planar band;

(d) a collection surface for collecting said filaments as said mat; and

(e) distribution means for receiving said band from the pull roll means comprising:

a first blower means adapted to supply a stream of gas;

a second blower means adapted to supply a stream of gas, said second blower means being spaced from said first blower means, said filaments advancing from said pull roll means between said first and second blower means;

a first control surface terminating in a tapered, receding arcuate section, said first control surface being associated with said first blower means; and

a second control surface terminating in a tapered, receding arcuate section, said second control surface being associated with said second blower means, said tapered, receding arcuate sections being diagonally opposed to direct said gaseous streams to orient said advancing filaments as a diverging planar array for collection as said mat.

4,496,385

APPARATUS FOR PRODUCING A CONTINUOUS GLASS FILAMENT MAT

David C. K. Lin, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 4, 1983, Ser. No. 520,091
Int. Cl.³ C03B *37/06*
U.S. Cl. 65—9 6 Claims

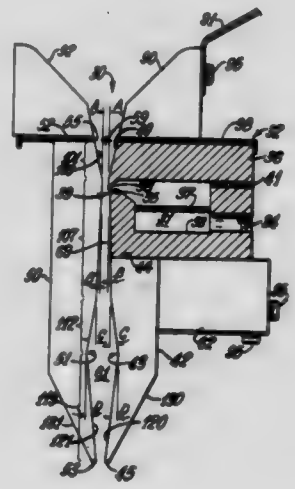
1. Apparatus for producing a mat of continuous glass filaments comprising:

feeder means for supplying a plurality of streams of molten glass;

pull roll means for drawing streams into said filaments, said pull roll having an axis of rotation;

a collection surface for collecting said filaments as said mat;

distribution means having (a) an inlet adapted to receive said plurality of filaments arranged as a substantially planar band, said inlet being oriented substantially parallel to the axis of rotation of the pull roll, (b) a blower section adapted to supply a substantially planar high velocity gaseous stream to contact said filaments, (c) a first control surface extending from said blower section, and (d) a second control surface opposite said first control surface, said first and second control surfaces and said blower section forming (a) a throat section to receive said planar gaseous stream from said blower section; (b) a pre-outlet divergent section extending from said throat section, said divergent section having an angle of divergence within



the range from about 10° to about 40°; and (c) a convergent outlet section extending from said diverging section to (i) reduce the velocity of the gaseous stream and advancing filaments and (ii) impart lateral movement to some of the gaseous streams and filaments to advance said filaments as a diverging planar array having a width at said collection surface at least about 4 times the width of the band of filaments entering said inlet; and

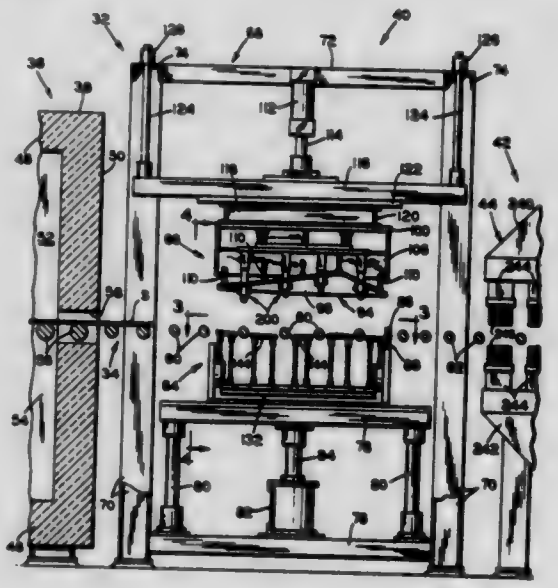
means for moving said distribution means to deposit the array filaments discharged from distribution means across the width of the mat being formed.

4,496,386

METHOD OF AND APPARATUS FOR BENDING GLASS SHEETS

Frank J. Hymore, Oregon, Ohio, and Paul H. Kreinbrink, Temperance, Mich., assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Jan. 16, 1984, Ser. No. 570,792
Int. Cl.³ C03B *23/023*
U.S. Cl. 65—106 12 Claims



1. A method of bending a glass sheet comprising the steps of:

heating a glass sheet to the softening point thereof;

conveying the heated glass sheet on a series of spaced apart

conveyor rolls along a path positoned in spaced relation to a press member including a shaping rail corresponding to the marginal outline of the heated glass sheet, and having interruptions therein to permit passage of the press member upwardly through the conveyor rolls, and an array of shaping rail extensions adapted to substantially fill at least a portion of the interruptions of the shaping rail;

moving the shaping rail of the press member along a path generally normall to and through the conveyor rolls; and

moving the array of shaping rail extensions relative to the interruptions of the shaping rail to substantially fill at least a portion of the interruptions of the shaping rail to effect a bending of the glass sheet to impart a final desired shape to the glass sheet.

4. Apparatus for bending a glass sheet comprising:

a plurality of spaced apart conveyor rolls for moving a heat softened glass sheet along a path;

a movable bending member including an outline shaping rail provided with a shaping surface conforming to the marginal outline of the glass sheet to be bent, at least a portion of the rail being interrupted to permit passage of said member upwardly through said conveyor rolls;

an auxiliary array of shaping rail extensions adapted to substantially fill at least a portion of the interruptions of the outline shaping rail of said bending member above said conveyor rolls;

means for moving said bending member and the associated shaping surfaces along a path normal to and through said conveyor rolls; and

means for moving said array of shaping rail extensions relative to the interruptions of the outline shaping rail to effect the desired bending of the glass sheet.

4,496,387

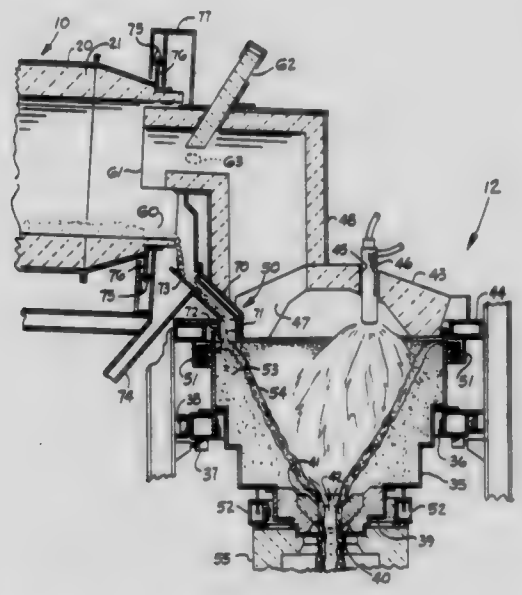
TRANSITION BETWEEN BATCH PREHEATING AND LIQUEFYING STAGES APPARATUS

Robert B. Heithoff, LaVale; John K. Groetzinger, Cumberland, both of Md., and Ronald L. Schwenninger, Ridgeley, W. Va., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 31, 1983, Ser. No. 547,169

Int. Cl.³ C03B *5/10*

U.S. Cl. 65—335 **9 Claims**



1. Apparatus for liquefying batch materials comprising: rotary kiln means for preheating batch materials comprised of an elongated cylindrical vessel mounted for rotation about its cylindrical axis, batch feeding means for feeding batch to a first end of the rotary kiln, a batch liquefying vessel adjacent to the opposite end of the rotary kiln and including combustion means for heating batch materials to a liquefying temperature, batch transfer means for collecting preheated batch being discharged from the rotary kiln and for directing the batch into the liquefying vessel, duct means for directing exhaust gas from the liquefying vessel, a portion of the duct means extending into the interior of the rotary kiln at a location adjacent to and spaced above the location of batch discharge from the rotary kiln.

4,496,388

TRIAZOLYLALKANETRIOL DERIVATIVES

John M. Clough, Buckinghamshire, England, assignor to Imperial Chemical Industries PLC, London, England

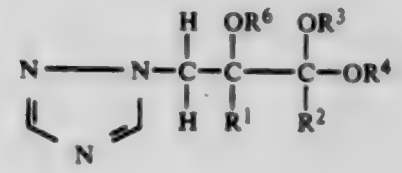
Filed Jul. 27, 1982, Ser. No. 402,796

Claims priority, application United Kingdom, Aug. 19, 1981, 8125378; Feb. 9, 1982, 8203708; Apr. 1, 1982, 8209705

Int. Cl.³ A01N *43/50, 43/64*; C07D *233/60, 249/08*

U.S. Cl. 71—76 **6 Claims**

1. A compound selected from compounds having the formula (I):



(I)

and stereoisomers thereof, wherein R^1 is alkyl having from 1 to 6 carbon atoms, or phenyl substituted with halogen atoms or alkyl of 1 to 6 carbons; R^2 is hydrogen, alkyl having from 1 to 6 carbon atoms or phenyl; R^3 and R^4, which may be the same or different, are alkyl or alkenyl each having up to 6 carbon atoms, or together form an alkylene bridging group containing from 1 to 3 carbon atoms between the two oxygen atoms and which may be optionally substituted with methyl groups; R^6 is hydrogen or alkyl having from 1 to 6 carbon atoms and acid salts and metal complexes thereof.

4. A fungicidal, or plant growth regulating composition comprising an effective amount of a compound of general formula (I) as defined in claim 1, and a carrier or diluent.

4,496,389

AMIDE DERIVATIVES OF N-TRIFLUOROACETYL-N-PHOSPHONOMETHYLGLYCINE, HERBICIDAL COMPOSITIONS AND USE

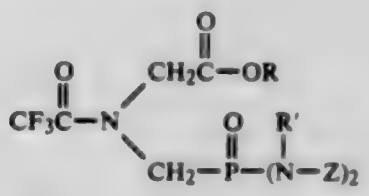
John E. Franz, Crestwood, and Robert J. Kaufman, University City, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 441,480, Nov. 15, 1982, abandoned, which is a continuation of Ser. No. 922,923, Jul. 10, 1978, Pat. No. 4,359,332. This application May 11, 1984, Ser. No. 609,263

Int. Cl.³ A61K *57/28*; C07F *9/36*

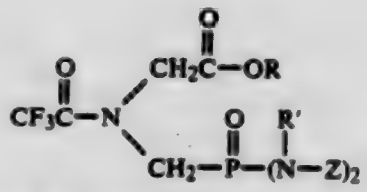
U.S. Cl. 71—86 **15 Claims**

1. A compound of the formula



wherein R is an alkyl group of from 1 to 10 carbon atoms, a chloro lower alkyl group, a lower alkoxy lower alkyl group containing from 3 to 6 carbon atoms or a lower alkoxy lower alkoxy lower alkyl group containing from 5 to 9 carbon atoms, R′ is hydrogen, lower alkyl, lower alkenyl or lower alkynyl, Z is a member of the class consisting of alkyl of from 1 to 6 carbon atoms, alkenyl of from 2 to 6 carbon atoms, alkynyl of from 3 to 6 carbon atoms, cycloalkyl containing from 3 to 7 carbon atoms.

6. A herbicidal composition comprising an inert adjuvant and a compound of the formula



wherein R is an alkyl group of from 1 to 10 carbon atoms, a chloro lower alkyl group, a lower alkoxy lower alkyl group containing from 3 to 6 carbon atoms or a lower alkoxy lower alkoxy lower alkyl group containing from 5 to 9 carbon atoms, R′ is hydrogen, lower alkyl, lower alkenyl or lower alkynyl, Z is a member of the class consisting of alkyl of from 1 to 6 carbon atoms, alkenyl of from 2 to 6 carbon atoms, alkynyl of from 3 to 6 carbon atoms, cycloalkyl containing from 3 to 7 carbon atoms.

4,496,390

N-PHENYLPYRAZOLE DERIVATIVES

Leslie R. Hatton, Chelmsford; Edgar W. Parnell, Hornchurch, and David A. Roberts, Bedford, all of England, assignors to May & Baker Limited, Essex, England

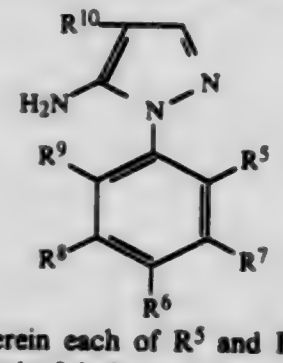
Continuation-in-part of Ser. No. 237,661, Feb. 24, 1981, abandoned. This application Jul. 15, 1982, Ser. No. 398,337

Claims priority, application United Kingdom, Feb. 26, 1980, 806428; Jul. 17, 1981, 8122143; Jul. 17, 1981, 8122142; Feb. 5, 1982, 8203371; Feb. 5, 1982, 8203369

Int. Cl.³ A01N *43/56*

U.S. Cl. 71—92 **30 Claims**

1. A method of controlling the growth of weeds at a locus which comprises applying to the locus a herbicidally effective amount of an N-phenylpyrazole derivative in a herbicidal composition which comprises, as active ingredient, an effective amount of an N-phenylpyrazole derivative of the formula:



(wherein each of R^5 and R^6 represents an alkyl or alkoxy radical of 1 through 4 carbon atoms, a trifluoromethyl, trifluoromethoxy, nitro, cyano or primary amino radical or a fluorine, chlorine or bomine atom, each of R^7, R^8 and R^9 represents a hydrogen atom, an alkyl or alkoxy radical of 1 through 4 carbon atoms, a trifluoromethyl, trifluoromethoxy, nitro, cyano or primary amino radical or a fluorine, chlorine or bromine atom, or R^5, R^7, R^8 and R^9 each represents a hydrogen atom and R^6 represents a trifluoromethoxy or trifluoromethyl radical and R^{10} represents a cyano radical or substituted carbamoyl radical —CONHR[11], wherein R^{11} represents a methyl or ethyl radical), or when at least one of symbols R^5, R^6, R^7, R^8 and R^9 represents a primary amino radical or an agriculturally acceptable acid addition salt thereof, in association with one or more capatible herbicidally-acceptable diluents or carriers.

4,496,391

HERBICIDES CONTAINING 3-ARYL-5-METHYLPYRAZOLE-4-CARBOXYLIC ACID ESTERS, THEIR MANUFACTURE AND USE

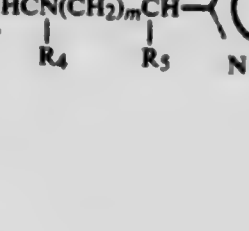
Peter Plath, Ludwigshafen; Wolfgang Rohr, Wachenheim, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 150,751, May 19, 1980, abandoned. This application Jan. 21, 1983, Ser. No. 459,988

Int. Cl.³ A01N *43/56, 43/10*

U.S. Cl. 71—92 **1 Claim**

1. A process for combating the growth of unwanted plants, wherein the plants are treated with a herbicidally effective amount of a pyrazole derivative of the formula



where R^1 denotes hydrogen, R^2 denotes phenyl which is unsubstituted or mono-substituted by fluorine, chlorine, bormine, methyl methoxy, cyano trifluoromethyl, trifluoromethoxy or methoxycarbonyl, R^2 further denotes, an unsubstituted or methyl- or chloro-substituted thienyl, furyl, oxazolyl or pyridyl, or R^2 denotes α-naphthyl or β-naphthyl, and R^3 denotes methyl, or a salt thereof.

4,496,392

HERBICIDAL HETEROCYCLIC ALKYLAMINOCARBONYLSULFONAMIDES

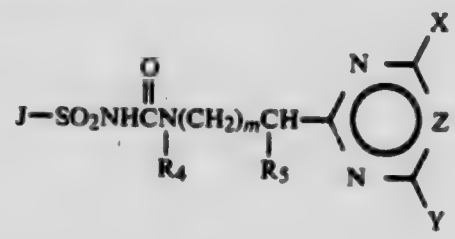
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 377,371, May 12, 1982, abandoned. This application Mar. 14, 1983, Ser. No. 472,879

Int. Cl.³ C07D *251/46, 401/12, 405/04*; A01N *43/66*

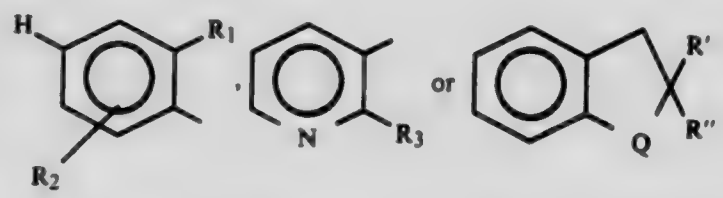
U.S. Cl. 71—93 **19 Claims**

1. A compound of the formula:

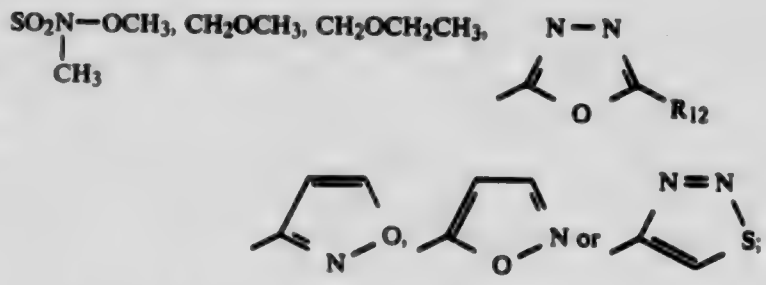


wherein

J is



R_1 is NO_2, F, Cl, Br, CF_3, C_1–C_3 alkyl, $CH_2CH_2OCH_3$, CO_2R_6, $S(O)_nR_7$, $SO_2NR_8R_9$, SCF_2H, OR_{10}, OSO_2R_{11},



R_2 is H, F, Cl, Br, CH_3, OCH_3 or CF_3;

R_3 is Cl, SO_2CH_3 or $SO_2N(CH_3)_2$;

R_4 and R_5 are independently H or CH_3;

R_6 is C_1–C_3 alkyl, $CH_2CH{=}CH_2$, CH_2CH_2Cl or $CH_2CH_2OCH_3$;

R_7 is C_1–C_3 alkyl or $CH_2CH{=}CH_2$;

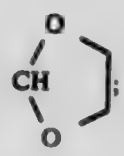
R_8 is CH_3;

R_9 is C_1–C_3 alkyl;

R_{10} is C_1–C_3 alkyl, CF_2H or $CH_2CH_2OCH_3$;

-continued

R_{11} is C_1–C_3 alkyl;
R_{12} is H or CH_3;
n is 0 or 2;
m is 0 or 1; Q is O, S or SO_2;
R′ is H or CH_3;
R″ is H or C_1–C_3 alkyl;
Z is N;
X is CH_3 or OCH_3;
Y is CH_3, C_2H_5, OCH_3, OC_2H_5, CH_2OCH_3, $CH(OCH_3)_2$
or



provided that

(1) R_4 and R_5 cannot simultaneously be CH_3 and when either R_4 or R_5 is CH_3, then R_2 must be H;

and their agriculturally suitable salts.

8. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of claim 1 and at least one of the following: surfactant, solid or liquid inert diluent.

4,496,393

IMMERSION AND VAPORIZATION CHAMBER

Hans Lustenberger, Schaffhausen, Switzerland, assignor to George Fischer Limited, Schaffhausen, Switzerland

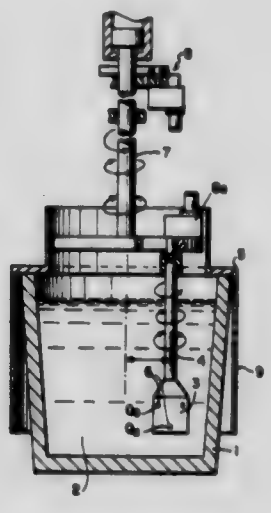
PCT No. PCT/CH82/00065, § 371 Date Jan. 7, 1983, § 102(e) Date Jan. 7, 1983, PCT Pub. No. WO82/03875, PCT Pub. Date Nov. 11, 1982

PCT Filed May 4, 1982, Ser. No. 459,539

Claims priority, application Switzerland, May 8, 1981, 2990/81

Int. Cl.³ C22C *33/10*

U.S. Cl. 75—58 19 Claims



19. A process for introducing magnesium into pig iron, cast iron or cast steel melt in a treatment vessel for desulfurization or production of nodular graphite iron, vermicular graphite iron or magnesium treated cast iron, comprising the steps of:

filling a chamber of a capsule with liquid magnesium, the capsule having a vertical wall with an upper portion forming two-thirds of the wall and a lower portion forming one-third of the wall, an outlet opening in the upper portion with a first transverse cross-sectional area and a inlet opening in the lower portion with a second transverse cross-sectional area less than the first transverse cross-sectional area;

solidifying the magnesium; and

submerging the capsule filled with solidified magnesium into the melt in the treatment vessel.

4,496,394

CONTINUOUS METHOD OF REMOVING TIN FROM LEAD

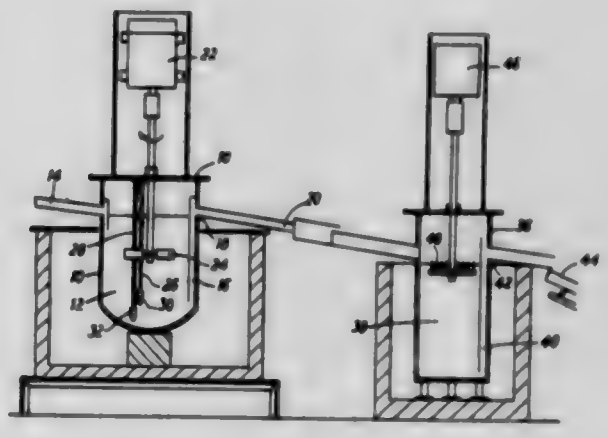
John E. Bowers, Oxford, assignor to BNF Metals Technology Centre, Oxfordshire, England

Filed Jul. 15, 1983, Ser. No. 514,023

Claims priority, application United Kingdom, Jul. 16, 1982, 8220733

Int. Cl.³ C22B *13/06*

U.S. Cl. 75—63 9 Claims



1. A continuous method of removing tin from lead, which method comprises maintaining a pool of molten lead in a reaction vessel at a temperature of from 510° to 570° C., continuously introducing molten lead containing tin as an impurity into the pool, injecting chlorine and oxygen gas into the molten lead in an amount to react with the tin present in the lead to form a tin-containing dross, the residence time of the molten lead in the reaction vessel being from 5 to 60 minutes, and separating the lead from the dross.

4,496,395

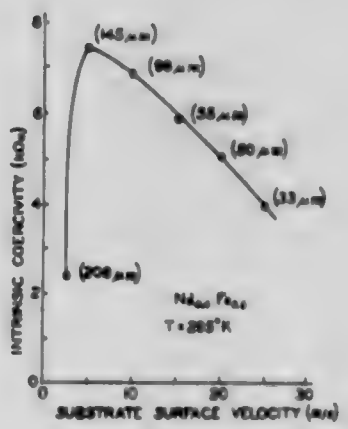
HIGH COERCIVITY RARE EARTH-IRON MAGNETS

John J. Croat, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 16, 1981, Ser. No. 274,070

Int. Cl.³ C22C *33/00*

U.S. Cl. 75—123 E 21 Claims



1. A method of making an alloy with permanent magnetic properties at room temperature comprising the steps of forming a mixture of iron and one or more rare earth elements;

heating said mixture to form a homogeneous molten alloy; and

quenching said molten alloy at a rate such that it solidifies substantially instantaneously to form an alloy having an inherent room temperature magnetic coercivity of at least about 5,000 Oersteds as quenched.

4,496,396

METHOD AND APPARATUS FOR BURNING FINE GRAINED MATERIAL, PARTICULARLY RAW CEMENT MEAL

Eberhard Steinbiss, Düsseldorf; Horst Herchenbach, Hennef; Hubert Rameeohl, Bergisch Gladbach, and Albrecht Wolter, Cologne, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Sep. 12, 1983, Ser. No. 531,275

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1982, 3236652

Int. Cl.[3] C04B *7/50*

U.S. Cl. 106—100 20 Claims

1. In a method for burning a fine grained product such as raw cement meal which comprises:

preheating said meal in a preheating stage,

calcining the preheated meal in a calcining stage,

burning the calcined meal into clinker in a burning stage, and

cooling the clinker in a cooling stage, the improvement which comprises:

rapidly heating said calcined meal to a temperature between 900° C. and 1250° C. by passing said meal in suspension in a gas in concurrent relation with hot gases in said burning stage,

grading the clinker into a coarse grained fraction and a fine grained fraction upon leaving said burning stage, and

separately cooling said coarse grained and fine grained fractions.

4,496,397

PROCESS FOR PURIFYING AND STABILIZING CATECHOL-CONTAINING PROTEINS AND MATERIALS OBTAINED THEREBY

J. Herbert Waite, Collinsville, Conn., assignor to University of Connecticut, Farmington, Conn.

Filed Mar. 7, 1984, Ser. No. 587,181

Int. Cl.[3] A23J *1/04*; C07G *7/00*; C08L *89/00*; C09J *3/20*

U.S. Cl. 106—161 29 Claims

1. A process for purifying and stabilizing catechol-containing polyphenolic proteins comprising the steps of:

(a) providing an acid soluble extract of a catechol-containing polyphenolic proteins in an acid medium;

(b) removing from the extract those acid soluble components having a low average molecular weight to provide a remaining extract fraction of relatively higher molecular weight catechol-containing proteins;

(c) reacting said remaining extract fraction with a soluble borate at a pH in the range of 7.0 to 9.0 to form selective soluble borate complexes of the catechol-containing proteins; and

(d) separating the borate complexes while maintaining the pH between 7.0 and 9.0 to permit stabilized storage of the proteins and subsequent use thereof.

20. A purified and stabilized polyphenolic proteinaceous material comprising polypeptide proteins rich in 3,4 dihydroxyphenylalanine (dopa) and hydroxyproline (hyp) having a molecular weight in the range of about 110,000–140,000 with a repeated decapeptide having an amino acid sequence wherein dopa is sequenced predominantly at positions five and nine and hyp is sequenced predominantly at positions six and seven; said material having a dopa/protein index of purity ratio of at least about 0.10 and being free from collagens and other alkaline-insoluble proteins incapable of forming borate complexes at a pH of 7.0–9.0.

4,496,398

ANTIREFLECTIVE COATING COMPOSITION

Daniel L. Whitehouse, Clarksburg, Md., assignor to Solarex Corporation, Rockville, Md.

Continuation-in-part of Ser. No. 341,128, Jan. 20, 1982, Pat. No. 4,411,703. This application Oct. 24, 1983, Ser. No. 544,975

Int. Cl.[3] C08L *1/28*; C07F *7/28*; B05D *1/18*

U.S. Cl. 106—181 10 Claims

1. A composition suitable for application onto the light impinging surface of a substrate for forming an antireflective coating thereon comprising:

(a) a thickening or suspension agent;

(b) a metal alkoxide, said metal being selected from the group consisting of tantalum, titanium, niobium, yttrium, zirconium, tellurium, and mixtures thereof;

(c) a solvent for said thickening or suspension agent; and

(d) an anhydride containing four to twelve carbon atoms, said anhydride being present in an amount effective to provide a denser film of a higher refractive index.

4,496,399

METHOD AND AQUEOUS COATING COMPOSITIONS FOR FORMING ANTI-STICK AND INSULATIVE COATINGS ON SEMI-PROCESSED AND FULLY-PROCESSED ELECTRICAL STEELS

Michael H. Haselkorn, Franklin, Ohio, assignor to Armco Inc., Middletown, Ohio

Filed May 21, 1984, Ser. No. 612,741

Int. Cl.[3] C23F *7/10*

U.S. Cl. 148—6.15 R 20 Claims

1. An aqueous coating composition for forming an anti-stick and insulative coating on cold-rolled, non-oriented, semi-processed steel; cold-rolled, non-oriented, fully-processed steel; cold-rolled motor lamination steel; and punching quality oriented electrical steel, said coating composition having an inorganic portion and an organic portion, said inorganic portion comprising, on a water-free basis, from 3% to 11% by weight Al^{+++} calculated as Al_2O_3, from 3% to 15% by weight Mg^{++} calculated as MgO, from 78% to 87% by weight $H_2PO_4^-$ calculated as H_3PO_4, the total weight percentage of Al^{+++} (as Al_2O_3), Mg^{++} (as MgO) and $H_2PO_4^-$ (as H_3PO_4) being 100% on a water-free basis, said concentration of Al^{+++}, Mg^{++} and $H_2PO_4^-$ totaling 100 parts by weight on a water-free basis calculated as Al_2O_3, MgO and H_3PO_4, respectively, and an additional compound chosen from the class consisting of (1) from 33 to 250 parts by weight colloidal silica on a water-free basis, together with from 10 to 25 parts by weight chromic anhydride for every 100 parts by weight $H_2PO_4^-$ calculated as H_3PO_4, and (2) from 30 to 250 parts by weight aluminum silicate calculated as $Al_2O_3.SiO_2$ per 100 parts Al_2O_3, MgO and H_3PO_4 on a water-free basis, said inorganic portion containing by weight at least 60% water when colloidal silica is used and at least 40% water when aluminum silicate is used, said organic portion comprising an aqueous resin containing by weight at least 40% water, said organic and inorganic portions being combined so that the organic portion of the coating composition is present in an amount of from about 15 to about 1350 parts by weight per 100 parts Al_2O_3, MgO and H_3PO_4 on a water-free basis.

4,496,400

THIN STEEL SHEET HAVING IMPROVED BAKING HARDENABILITY AND ADAPTED FOR DRAWING AND A METHOD OF PRODUCING THE SAME

Toshio Irie, Chiba, and Susumu Sato, Ichihara, both of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

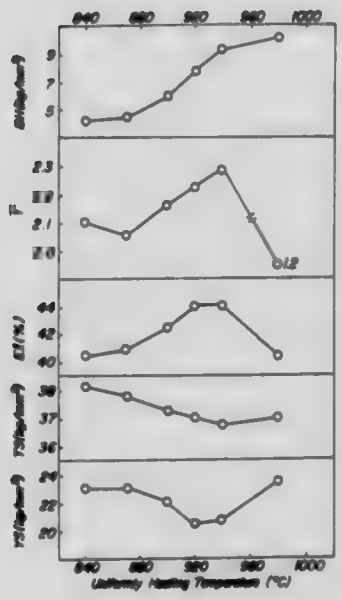
PCT No. PCT/JP81/00289, § 371 Date Jun. 16, 1982, § 102(e) Date Jun. 16, 1982, PCT Pub. No. WO82/01566, PCT Pub. Date May 13, 1982

PCT Filed Oct. 19, 1981, Ser. No. 395,049

Claims priority, application Japan, Oct. 18, 1980, 55-145951; Oct. 28, 1980, 55-150053; Nov. 25, 1980, 55-165536

Int. Cl.³ C21D *8/04*

U.S. Cl. 148—12 C 11 Claims



1. A thin steel sheet having high baking hardenability and adapted for drawing, having a composition consisting of 0.002–0.008% by weight of C; 0.05–1.2% by weight of Mn; not more than 0.5% by weight of Si; not more than 0.10% by weight of P; 0.01–0.1% by weight of Al, said amount being not less than 8 times amount of N incidentally incorporated into the steel; Nb in an amount within the range of from ((C content)×3) to ((C content)×8+0.02)% by weight; and the remainder being substantially Fe, and having an $\bar{r}$ value greater than 2.0, an ageing index of not higher than 4 kg/mm^2 and a bake-hardening degree of at least 5 kg/mm^2.

2. A method of producing a thin steel sheet having a high baking hardenability of at least 5 kg/mm^2, an ageing index of not higher than 4 kg/mm^2, an $\bar{r}$ value greater than 2.0, and adapted for drawing, comprising forming a molten steel having a composition containing 0.002–0.008% by weight of C; 0.05–1.2% by weight of Mn; not more than 0.5% by weight of Si; not more than 0.10% by weight of P; 0.01–0.10% by weight of Al, said amount being not less than 8 times amount of N incidentally incorporated into the steel; and Nb in an amount within the range of from ((C content)×3) to ((C content)×8+0.02)% by weight into a slab, hot rolling the slab, cold rolling the hot rolled sheet, subjecting the cold rolled sheet to a continuous annealing under a condition of a temperature of 750°–900° C. and a time of at least 10 seconds, and cooling the annealed sheet under a condition that the annealed sheet is cooled to a temperature of not higher than 650° C. at an average cooling rate of at least 10° C. per second.

4,496,401

CORROSION RESISTANT STEEL COMPONENTS AND METHOD OF MANUFACTURE THEREOF

Cyril Dawes, Sutton Coldfield, and John D. Smith, Solihull, both of England, assignors to Lucas Industries, Birmingham, England

Filed Oct. 8, 1982, Ser. No. 433,380

Claims priority, application United Kingdom, Oct. 15, 1981, 8131133; Dec. 18, 1981, 8138318; Feb. 26, 1982, 8205999; Jul. 15, 1982, 8220495

Int. Cl.³ C23C *11/14*

U.S. Cl. 148—16.5 17 Claims

1. A method of manufacturing a corrosion resistant non-alloy steel component comprising the steps of nitriding a non-alloy steel component and producing an epsilon iron nitride surface layer thereon, and subsequently heat treating the component in an oxidising atmosphere to provide an oxiderich surface layer consisting mainly of Fe_3O_4, said layer having a thickness which does not exceed 1 micrometer, and then quenching the component into an oil/water emulsion with the component at a temperature such that nitrogen is retained in solid solution in the ferritic matrix of the steel microstructure.

12. A nitrided corrosion resistant non-alloy steel component comprising:

(a) a ferritic matrix bearing nitrogen in solid solution in the steel microstructure thereof,

(b) an epsilon iron nitride or carbonitride layer of at least about 15 micrometers on said ferritic matrix, said epsilon iron nitride or carbonitride layer having an outer porous portion, (c) an oxide-rich layer consisting mainly of Fe_3O_4 and having a thickness of at least about 0.2 micrometers and which does not exceed about 1 micrometer on the epsilon nitride layer and

(d) an oil or wax layer absorbed into the outer porous portion of the epsilon nitride layer.

4,496,402

FE-CR-CO TYPE MAGNET BODY OF COLUMNAR STRUCTURE AND METHOD FOR THE PREPARATION OF SAME

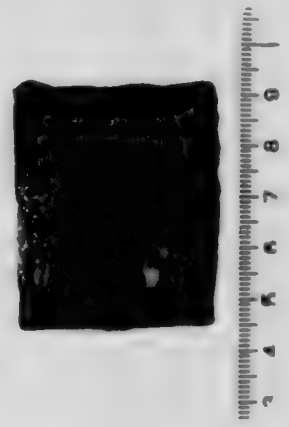
Masaji Endo, and Takami Hikone, both of Osaka, Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka, Japan

Filed Mar. 9, 1982, Ser. No. 356,262

Claims priority, application Japan, Mar. 10, 1981, 56-34795

Int. Cl.³ H01F *1/04*

U.S. Cl. 148—31.57 7 Claims



1. An Fe-Cr-Co type magnet body consisting essentially of columnar structure having a maximum energy product $(BH)_{max}$ of 7 MGOe or higher consisting essentially of by weight ratio, 5–30% cobalt, 15–40% chromium, 0.1–10% molybdenum, 0.05–1.2% titanium and 0.1–5% vanadium, with the balance being iron and inevitable impurities, said body having been subjected to columnar crystallization treatment.

4,496,403

METHOD OF MAKING A COMPOUND SEMICONDUCTOR LASER

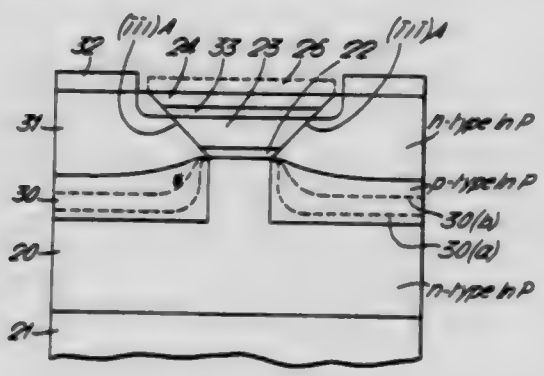
Stephen E. H. Turley, Harlow, England, assignor to ITT Industries, Inc., New York, N.Y.

Filed Nov. 30, 1982, Ser. No. 445,618

Claims priority, application United Kingdom, Dec. 1, 1981, 8136167

Int. Cl.³ H01L *21/208*

U.S. Cl. 148—171 6 Claims



1. A method of making a compound semiconductor buried rib heterostructure laser constructed in the InP/(In,Ga)(As,P) semiconductive system including the steps of growing by liquid phase epitaxy upon a semiconductive substrate three layers comprising an active layer sandwiched between upper and lower pasive layers of higher band gap and lower refractive index material than that of the active layer, of selectively etching through said active and passive layers to leave a protruding rib whose sides are profiled having regard to the crystal orientation such that in a subsequent step of epitaxial regrowth the nucleation on the sides of the rib at and above the active layer is discriminated against by said profile in favour of nucleation beneath said active layer whereby in said regrowth the regrowth up the sides of the rib is temporarily arrested in the vicinity of the junction between the active layer and the lower passive layer.

4,496,404

COMPOSITION AND PROCESS FOR TREATMENT OF FERROUS SUBSTRATES

Peter F. King, Farmington Hills, Mich., assignor to Parker Chemical Company, Madison Heights, Mich.

Filed May 18, 1984, Ser. No. 611,663

Int. Cl.³ C23F *7/04*

U.S. Cl. 148—6.14 R 16 Claims

1. A process for treating ferrous substrates to inhibit surface corrosion thereof which comprises the steps of contacting the ferrous substrate with an aqueous acidic composition containing aluminum present in an amount up to its solubility limit, fluoride present in an amount up to about 200 ppm, up to about 1000 ppm of a second metal selected from the group consisting of zirconium, titanium, hafnium and mixtures thereof and hydrogen ions to provide a pH of about 2 to about 5.5, and thereafter rinsing the treated ferrous substrate.

4,496,405

EXPLOSIVE

Michael Cechanski, Skördevägen, Number 13, 713 00 Nora, Sweden

Filed Sep. 8, 1983, Ser. No. 530,465

Int. Cl.³ C06B *45/00*

U.S. Cl. 149—2 7 Claims

1. In an explosive composition of water-in-oil having a discontinuous phase of an aqueous solution containing oxygen-releasing salts, the improvement in combination therewith comprising a high viscosity continuous phase of a carbonaceous fuel which is essentially wax-free having a liquid water-insoluble lipophilic polymer as a viscosity index improver in sufficient amount to produce a final composition adaptable to various geometrical shapes.

4,496,406

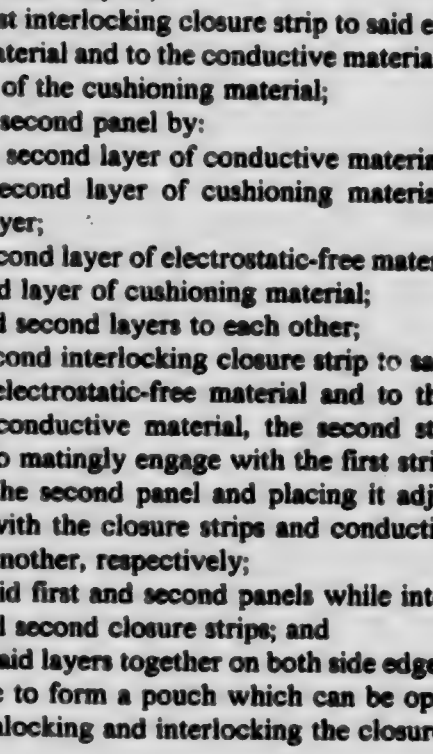
METHOD OF MAKING A CONDUCTIVE RESEALABLE POUCH

Karen A. Dedow, West Covina, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Division of Ser. No. 429,872, Sep. 30, 1982, Pat. No. 4,471,872. This application Jul. 11, 1983, Ser. No. 512,182

Int. Cl.³ B32B *31/10*; B65D *85/42*

U.S. Cl. 156—66 4 Claims



1. A method for fabricating a reusable pouch for containing electro-sensitive electronic components comprising the steps of:

(a) forming a first panel by:
providing a first layer of conductive material;
placing a first layer of cushioning material on said first layer;
placing a first layer of electrostatic-free material on top of said layer of cushioning material;
aligning said first layers;
sealing a first interlocking closure strip to said electrostatic-free material and to the conductive material on opposite sides of the cushioning material;

(b) forming a second panel by:
providing a second layer of conductive material;
placing a second layer of cushioning material on said second layer;
placing a second layer of electrostatic-free material on the top of said layer of cushioning material;
aligning said second layers to each other;
sealing a second interlocking closure strip to said second layer of electrostatic-free material and to the second layer of conductive material, the second strip being selected to matingly engage with the first strip;

(c) inverting the second panel and placing it adjacent the first panel with the closure strips and conductive layers facing one another, respectively;

(d) aligning said first and second panels while interlocking said first and second closure strips; and

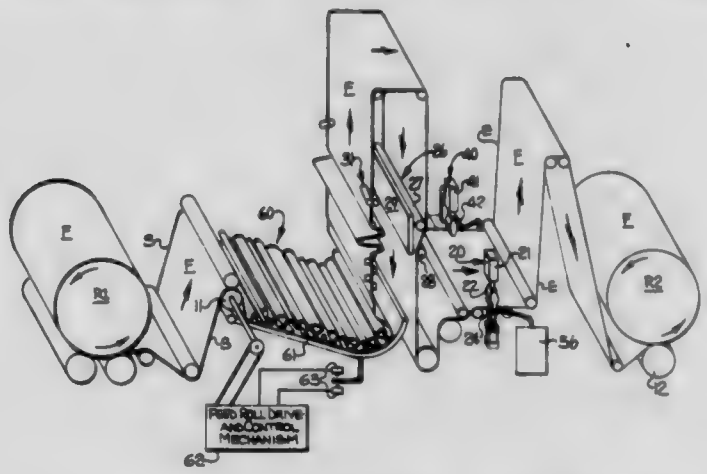
(e) sealing all said layers together on both side edges and the bottom edge to form a pouch which can be opened and closed by unlocking and interlocking the closure strips.

4,496,407

APPARATUS AND PROCESS FOR ULTRASONICALLY CUTTING OFF PREDETERMINED WIDTHS OF SELVAGES AND SEALING THE CUT EDGES OF TEXTILE FABRIC

Jack R. Lowery, Sr., Lancaster, and George L. Payet, Fort Mill, both of S.C., assignors to Springs Industries, Inc., Fort Mill, S.C.

Filed Nov. 28, 1983, Ser. No. 555,451
Int. Cl.[3] B29C *27/08*; B32B *31/18*
U.S. Cl. 156—73.3 7 Claims



4. An apparatus for ultrasonically cutting off undesirable selvage and sealing the longitudinal cut edges of continuous lengths of textile fabric having at least some thermoplastic fibers therein and being characterized by a construction designed to cut off a predetermined width of the undesirable selvage from each side edge of the textile fabric regardless of transverse variations in the path of travel of the fabric through the apparatus or width of the fabric, said apparatus comprising

frame means;

means carried by said frame means for feeding the textile fabric in a longitudinal path of travel through said apparatus;

first ultrasonic cutting and sealing means mounted in a stationary position on said frame means for receiving one side edge of the moving textile fabric and for cutting off undesirable selvage and simultaneously sealing the cut edge along the one side edge;

means mounted on said frame means in advance of said first ultrasonic cutting and sealing means in the path of travel of the textile fabric through said apparatus for transverse shifting of the moving textile fabric to align the one side edge of the textile fabric with said stationary ultrasonic cutting and sealing means so that a predetermined width of the undesirable selvage will be cut off from the one side edge, said textile fabric shifting means comprising friction roll means transversely engaging the moving textile fabric and mounted on said frame means for movement transversely of the path of travel of the textile fabric for shifting the textile fabric therewith, drive means mounted on said frame means and connected with said friction roll means for being actuated to move said friction roll means back and forth predetermined distances, and means mounted on said frame means in advance of said friction roll means in the path of travel of the textile fabric for sensing the position of the one side edge of the moving textile fabric and for actuating said drive means;

second ultrasonic cutting and sealing means mounted on said frame means after said textile fabric shifting means in the path of travel of the textile fabric for movement in a direction transverse to the moving textile fabric and for receiving the other side edge of the moving textile fabric and for cutting off undesirable selvage and simultaneously sealing the cut edge along the other side edge; and

means mounted on said frame means and connected with said second ultrasonic cutting and sealing means for transverse shifting of said second ultrasonic cutting and sealing means to align said second ultrasonic cutting and sealing means with the other side edge of the moving textile fabric so that a predetermined width of the undesirable selvage will be cut off from the other side edge of the textile fabric regardless of transverse shifting of the textile fabric by said fabric shifting means or variations in the width of the textile fabric; said means for shifting said second ultrasonic cutting and sealing means comprises drive means connected with said second ultrasonic cutting and sealing means for being actuated to move said second ultrasonic cutting and sealing means back and forth predetermined distances, and means mounted on said frame means between said second ultrasonic cutting and sealing means and said textile fabric shifting means in the path of travel of the textile fabric for sensing the position of the other side of the moving textile fabric and for actuating said drive means.

6. Process for ultrasonically cutting off undesirable selvages and sealing the longitudinal cut edges of moving continuous lengths of textile fabric having at least some thermoplastic fibers therein and being characterized by cutting off a predetermined width of the undesirable selvage from each side of the moving textile fabric regardless of transverse variations in the path of travel of the fabric or width of the fabric, said process comprising

feeding the textile fabric in a longitudinal path of travel;

cutting off undersirable selvage and simultaneously sealing the cut edge along one side edge of the moving textile fabric by the use of a stationary ultrasonic mechanism as the fabric is fed thereby;

transversely shifting the moving textile fabric in advance of the stationary ultrasonic mechanism to align the one side edge of the fabric in a predetermined position with the stationary ultrasonic mechanism so that a desired width of the undesirable selvage will be cut off from the one side edge;

thereafter cutting off undesirable selvage and simultaneously sealing the cut edge along the other side edge of the moving textile fabric by the use of a transversely movable ultrasonic mechanism as the fabric is fed thereby; and

transversely shifting the movable ultrasonic mechanism into a predetermined position relative to the path of travel of the fabric past the movable ultrasonic mechanism so that a desired width of the undesirable selvage will be cut off from the other side edge.

4,496,408

METHOD FOR PRODUCING BIAXIALLY ORIENTED HOLLOW ARTICLES

Granville J. Hahn, Big Spring, Tex., assignor to Cosden Technology, Inc., Dallas, Tex.

Continuation of Ser. No. 299,612, Sep. 4, 1981, abandoned. This application Mar. 28, 1983, Ser. No. 479,624
Int. Cl.[3] B29C *27/08*, *17/04*
U.S. Cl. 156—73.5 20 Claims



1. A process for the production of a hollow article comprised of biaxially oriented thermoplastic resinous material, comprising the steps of:

providing a sheet of a thermoplastic material;

heating said sheet of thermoplastic material to a temperature above the orientation temperature of the thermoplastic material;

clamping an area of the heated thermoplastic sheet between a first mold half and a second mold half by closure of said mold halves, the first mold half containing a pre-form mold surface having a configuration predetermined to provide for a uniform wall thickness of the hollow article

to be formed, said surface being at a temperature which is not higher than the orientation temperature of the thermoplastic material, and the second mold half having a cavity which corresponds to the shape of the hollow article to be produced, said clamping mold closure causing the top of said pre-form mold surface to contact the thermoplastic sheet, whereby the sheet is caused to tent into said cavity;

directly after said clamping step, forcing the heated thermoplastic sheet by pressure differential, from said tented configuration into the first mold to instantaneously move it into contact against substantially the entirety of said pre-form mold surface;

maintaining the thermoplastic sheet in contact with said pre-form mold surface for a period of time sufficient to bring the thermoplastic sheet to its orientation temperature; and

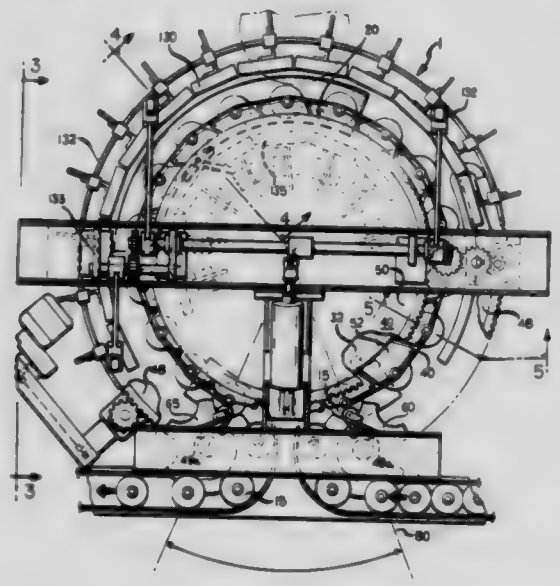
immediately thereafter forcing the thermoplastic sheet into the second mold half by means of a pressure differential which is sufficient to cause the thermoplastic sheet to conform with the cavity in the second mold half to form a hollow article, with a force sufficient to substantially, molecularly orient the thermoplastic material in both the longitudinal and lateral directions, wherein the process is repeated at a mold cycle time of from about 1.5 to 4 seconds.

4,496,409

METHODS AND MACHINES FOR PLACING AND HEATING ORIENTED PLASTIC HEAT-SHRINKABLE SLEEVES ON CONTAINERS

Robert F. Kontz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 5, 1983, Ser. No. 510,482
Int. Cl.[3] B29C *27/00*
U.S. Cl. 156—85 13 Claims



1. A machine for putting heat-shrinkable oriented plastic sleeves on containers, the machine comprising a turret having an upper portion and a lower portion, there being means for transporting containers around the periphery of the upper turret portion including a rope drive so constructed and arranged that a rope contacts the upper portion of the container and holds and simultaneously rotates each of the containers as the container is transported around the turret periphery, the lower turret portion including means for transporting tubular sleeves of heat-shrinkable plastic around the turret periphery, and means for bringing a sleeve from the bottom of each of the containers up and around the container to form a sleeve thereon.

11. A method of placing and heating heat-shrinkable oriented plastic sleeves on containers, the method comprising

A. supplying containers in an upright position for travel around a turret periphery;

B. engaging the neck of each container with a rope to hold and rotate each container as it travels around the turret periphery;

C. forming the sleeve around the container as it travels around the turret periphery; and

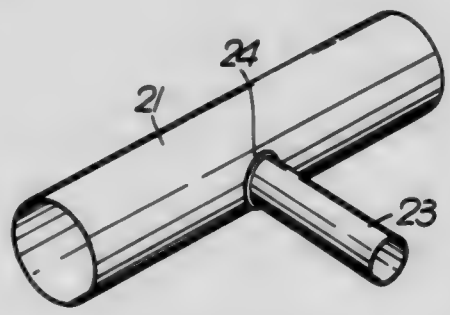
D. heating the sleeve to heat-shrink it around the container.

4,496,410

PRODUCTION OF DIMENSIONALLY RECOVERABLE ARTICLES

Frederick J. Davis, Swindon, and Donald G. Peacock, Kempsford, both of England, assignors to Raychem Limited, England

Filed Mar. 24, 1982, Ser. No. 361,294
Claims priority, application United Kingdom, Apr. 2, 1981, 8110397
Int. Cl.[3] B32B *31/18*
U.S. Cl. 156—84 16 Claims



1. A process for the production of a heat-recoverable article comprising at least two component parts having different directions of recovery, which process comprises

(a) deforming a first body of fusion bondable polymeric material constituting one of the component parts at a temperature below the softening point of the material to render the material heat-recoverable,

(b) forming a bond between one or more parts of the first body and a second body of fusion bondable polymeric material constituting another of the component parts which has been deformed at a temperature below the softening point of the material to render the material heat-recoverable, so that the direction of deformation of the first body is at an angle to the direction of deformation of the second body, and

(c) cross-linking the bond between the deformed first body and the second body.

4,496,411

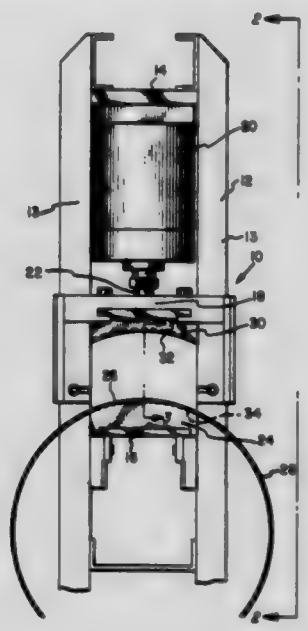
BEAD JAMMING OR CRIMPING METHOD

Richard A. Davies, Union City, Tenn.; Michael W. Lee, Arlington, Ky.; Frank A. Rodenberger, Woodland Mills, Tenn.; James R. Hill, Hokes Bluff, Ala.; David P. Kulavich, Attalla, Ala., and Donald L. Sowell, Jacksonville, Ala., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 423,733, Sep. 27, 1982, Pat. No. 4,452,660.
This application Mar. 26, 1984, Ser. No. 593,561
Int. Cl.[3] B29H *17/32*
U.S. Cl. 156—136 4 Claims

1. A method of crimping a bead ring having strands coated with an elastomeric material and coiled in a plurality of convolutions with the inside ends of the strands positioned at the radially inner surface of the ring and the outside ends of the strands positioned at the radially outer surface of the ring comprising hanging said bead ring over an inner groove of an inner die member, compressing said coated strands in said inner groove between the side portions of said groove by pressing an upper die member against said bead ring, compress-

ing said inside ends and said outside ends of the strands against said bead ring by movement of said upper die member and said



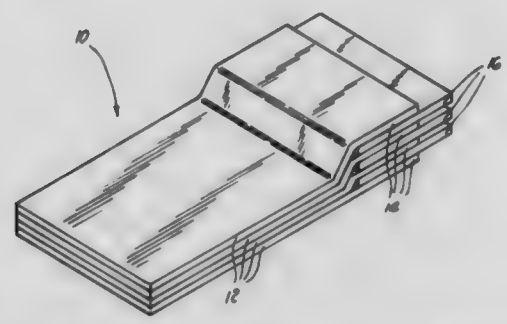
inner die member together, and removing said bead ring from said inner groove of said inner die member.

4,496,412

MULTIPLE LAP-JOINT FOR THERMOPLASTIC LAMINATES AND METHOD OF MAKING THE LAP-JOINT

James D. Ritter, Wichita, Kans., assignor to The Boeing Company, Seattle, Wash.

Filed Jan. 3, 1984, Ser. No. 567,773
Int. Cl.[3] B31F *5/00*; B32B *3/00*
U.S. Cl. 156—157 1 Claim



1. A method of forming a multiple lap-joint between two sheets of thermoplastic ply laminates, the steps including:
inserting high temperature film separators between the edges of the plies of the two laminate sheets;
heating and bonding together the plies of the two laminate sheets;
removing the film separators from the edges of the two sheets thereby forming feathered edges;
interleaving together the feathered edges of the sheets; and
reheating and bonding together the feathered edges of the sheets and forming a lap-joint therebetween.

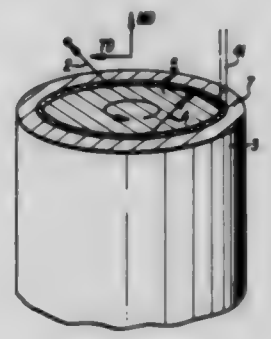
4,496,413

METHOD OF FORMING A BLOCKED CROSS-PLIED POLYMER FILM

Gordon V. Sharpe, Jr., Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 11, 1983, Ser. No. 474,658
Int. Cl.[3] B29D *23/04*
U.S. Cl. 156—244.13 5 Claims

1. A method of manufacturing a polymer film comprising the steps of:
extruding at least one layer of polymer through a tubular die having inner and outer die walls defining an annular extrusion passage which terminates at an annular die gap;
rotating at least one of the die walls relative to the other to produce orientation of polymer molecules in the transverse direction in the extruded film;
feeding the extruded tubular film to a blocking means; and,



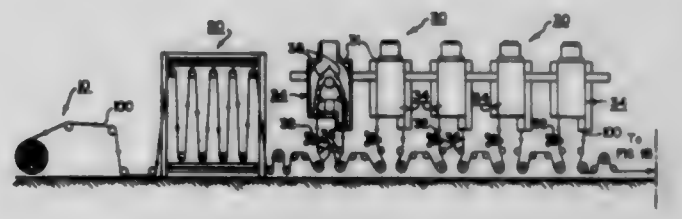
blocking the extruded film with said blocking means to produce a cross-plied layered film in which the transverse direction molecular orientation of one layer crosses the transverse direction molecular orientation of the other layer.

4,496,414

METHOD OF FORMING A BACKING MATERIAL

Merrill M. Smith, Morrisville, Pa., and Donald C. Ferguson, Trenton, N.J., assignors to American Biltrite, Inc., Cambridge, Mass.

Division of Ser. No. 234,402, Feb. 13, 1981, Pat. No. 4,379,185. This application Aug. 13, 1982, Ser. No. 407,918
Int. Cl.[3] B29D *3/02*; B32B *27/12*
U.S. Cl. 156—246 2 Claims



1. A method of forming a backing material comprising the steps of:
depositing a first layer of plastisol on a release paper, said first layer of plastisol having a thickness of at least approximately 6 mils (0.15 mm.);
depositing an open mesh webbing on said first layer;
depositing a second layer of plastisol on said webbing and first layer;
curing the two layers of plastisol to form a substantially unitary layer encompassing said webbing; and
stripping the release paper from the substantially unitary layer formed by curing.

4,496,415

METHOD FOR IMPREGNATING RESIN POWDER DIRECTLY INTO A LAMINATE LAY UP

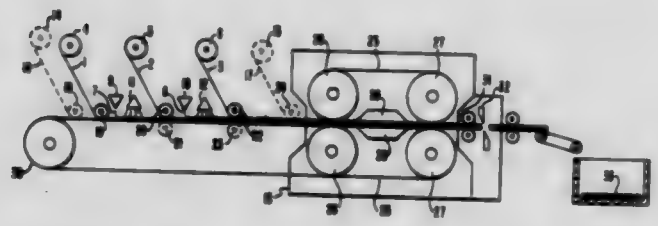
Gerhard R. Spraegling, Derry Township, Westmoreland County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 8, 1982, Ser. No. 366,623
Int. Cl.[3] B32B *31/00*
U.S. Cl. 156—283 14 Claims

1. A method of making a metal clad laminate, useful for circuit boards, comprising the steps of:
(A) uniformly applying a uniform deposit of dry, thermosettable, B-staged resin particles as a powder, having a particle size of between about 20 microns and about 1,000 microns, directly onto a bare, porous, fibrous sheet mate-

rial, to provide a sheet uniformly covered with a uniform deposit of resin powder particles, and having resin powder particles sifted into interstices of the porous sheet,

(B) contacting the powder coated sheet with a metal foil sheet, and then



(C) applying heat and pressure to the sheets, to cause the resin powder particles on top of and sifted within the fibrous sheet material to melt flow into and through the fibrous sheet material, to fill the pores and impregnate the fibrous sheet material, and to also bond said impregnated sheet material to the metal foil, to provide a unitary, consolidated metal clad laminate.

4,496,416

METHOD AND APPARATUS FOR ADJUSTING AND MOUNTING OPTICAL COMPONENTS IN OPTICAL INSTRUMENTS

Meinrad Mächler, Ellwangen; Richard Sachse, Königsbronn; Horst Stacklies, Aalen, and Achim Schindler, Oberkochen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

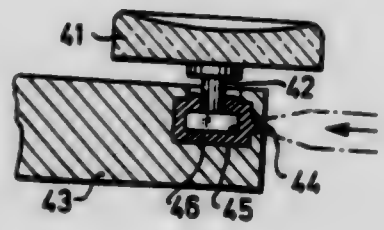
Filed Mar. 25, 1983, Ser. No. 478,892

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1982, 3211867

Int. Cl.³ B29C *19/00;* B32B *31/00;* B31F *5/00;* B65H *29/00*

U.S. Cl. 156—293

18 Claims



1. The method of adjusting the position of an optical unit relative to an optical instrument and mounting the optical unit on the optical instrument when the proper adjusted position has been determined, which comprises the steps of:

(a) providing an optical instrument;

(b) providing an optical unit to be adjusted relative to and then mounted on said instrument;

(c) providing an adjusting device separate from said instrument and capable of supporting said optical unit and also capable of moving said optical unit in a plurality of directions in space and of rotating it about a plurality of axes of rotation in space;

(d) attaching said device to said instrument and supporting said unit on said device;

(e) operating said device to effect precise adjustment of said unit relative to said instrument while said unit is unconnected to said instrument except through said device;

(f) firmly attaching said unit and said instrument to each other in the adjusted position of said unit by applying between adjacent portions of said unit and said instrument a flowable substance capable of hardening to form a firm connection; and

(g) detaching said device from said unit and said instrument and removing said device, after said substance has hardened, leaving said unit mounted in adjusted position on said instrument and maintained in said position by said hardened substance.

4,496,417

CONTROL STRETCH LAMINATING DEVICE

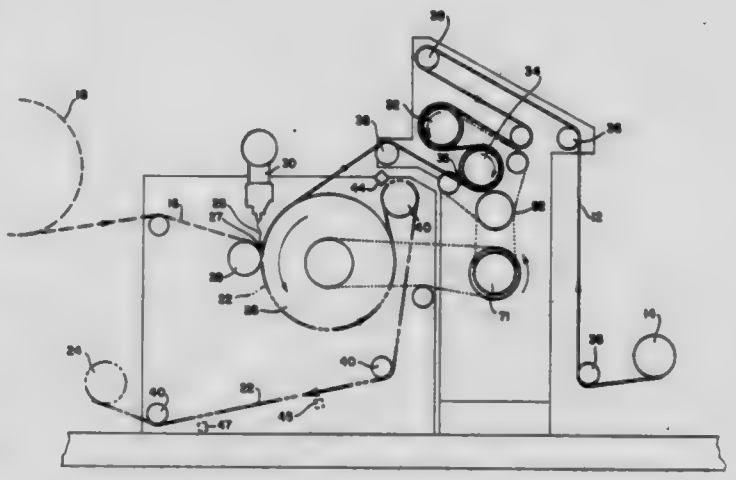
Joseph R. Haake, Broomfield; Tracy J. Fowler, Denver, and James W. Jensen, Boulder, all of Colo., assignors to Adolph Coors Company, Golden, Colo.

Filed Nov. 12, 1982, Ser. No. 441,276

Int. Cl.³ B32B *31/00, 31/04;* B65H *25/00;* B65C *11/04*

U.S. Cl. 156—361

29 Claims



1. An apparatus for laminating extensible film material to a paper material to form a laminated composite said apparatus having a continuous sheet of extensible film advancing therethrough comprising:

(a) support means for supporting various rotational elements of said apparatus;

(b) film supply means for supplying a continuous sheet of film to be laminated mounted on said support means;

(c) paper supply means for supplying a continuous sheet of paper to be laminated mounted on said support means;

(d) first S-wrap roll means operably mounted on said support means for advancing a portion of the film wrapped about the surface thereof;

(e) second s-wrap roll means operably mounted on said support means in parallel alignment with said first S-wrap roll, for advancing a portion of the film wrapped about the surface thereof said sheet of film being wrapped about said first and second S-wrap roll means in nonslipping frictional contact therewith in an S-shaped configuration whereby said film sheet is advanced by the rotation of said S-wrap rolls;

(f) S-wrap drive means linkingly attached to said first and second S-wrap roll means for rotating said S-wrap roll means in opposite directions;

(g) main roll means operably mounted on said support means for advancing a portion of the laminated composite wrapped about the surface thereof;

(h) main roll drive means linkingly attached to said main roll means for drivingly rotating said main roll means;

(i) compression roll means operably mounted in said support means in parallel alignment with said main roll means for rollingly compressing said sheet of film and said sheet of paper between said main roll means and said compression roll means whereby the film and paper are simultaneously laminated and advanced at a rate equal to the surface speed of said main roll means;

(j) composite take up means for collecting the composite formed from lamination of said film and paper, said take up means comprising a tension means for maintaining tension in said composite;

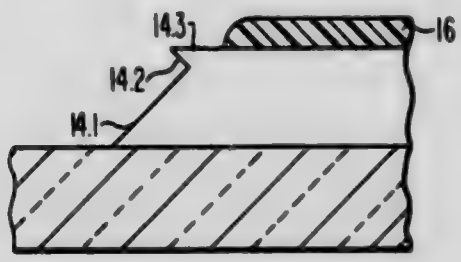
(k) stretch detection means for detecting the spacing between preprinted marks on said film;
(l) data processing means for receiving input from said stretch detection means and computing the stretch or relaxation in said film therefrom;
(m) speed control means for controlling the speed of said S-wrap drive means, said speed control means receiving control commands from said data processing means, said control commands being dependent on input from said stretch detection means;
wherein said first and second S-wrap rolls are positioned downstream of said film supply means, said main roll and said compression roll are positioned downstream of said first and second S-wrap rolls and said composite take up means is positioned downstream of said main roll and said compression roll with respect to the direction of said film advance; and
wherein the rate of rotation of said S-wrap rolls is selectably variable with respect to the rate of rotation of said main roll and compression roll during composite formation whereby the portion of said sheet of film positioned therebetween may be stretched or relaxed.

4,496,418

PROCESS FOR FORMING AN IMPROVED SILICON-ON-SAPPHIRE DEVICE

William E. Ham, Andover, Mass., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 30, 1982, Ser. No. 393,616
Int. Cl.³ C23F *1/00*
U.S. Cl. 156—643 10 Claims



1. A process for forming a projection-free island of silicon, the island having slanted side walls producing a bottom surface that is broader and longer than the top surface thereof and characterized by the presence of an objectionable projecting point at the upper surface of the side walls adjacent the top surface, comprising the steps of:
forming a layer of masking material covering only a central portion of the top surface of the island, the remaining uncovered portion forming a border of exposed silicon around the outer edges of the top surface thereby exposing all of the projecting point; and
etching only the exposed portion of the island to remove the projecting point.

4,496,419

FINE LINE PATTERNING METHOD FOR SUBMICRON DEVICES

Jaime Nulman, Cali, Colombia, and J. Peter Krusius, Helsinki, Finland, assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation of Ser. No. 470,808, Feb. 28, 1983. This application Sep. 6, 1983, Ser. No. 529,661
Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—643 18 Claims

1. A process for fine line patterning for submicron devices, comprising:
defining a fine line pattern in a positive resist;
transferring the fine line pattern to an underlying oxidation mask material to define therein a positive oxidation mask and to expose corresponding portions of the surface of a metal film underlying said oxidation mask layer;
oxidizing the exposed surface portions of said metal film through said oxidation mask to transfer said fine line pattern to said metal film;



COMPOSITE FILM PATTERN

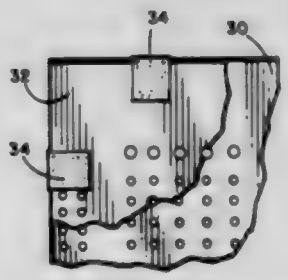
removing said oxidation mask; and
etching said metal film to selectively remove unoxidized portions of said metal film, thereby producing an inverted metal film pattern.

4,496,420

PROCESS FOR PLASMA DESMEAR ETCHING OF PRINTED CIRCUIT BOARDS AND APPARATUS USED THEREIN

Sigurd Frohlich, Santa Barbara, and James V. Morris, El Toro, both of Calif., assignors to BMC Industries, Inc., Saint Paul, Minn.

Filed Apr. 6, 1984, Ser. No. 597,676
Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*; B29C *17/08*
U.S. Cl. 156—643 19 Claims



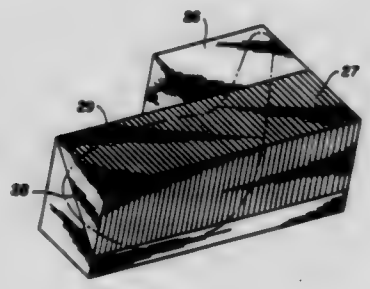
1. An improved process for desmearing and etching the drilled apertures of a multilayered printed circuit board, the board of the type having a plurality of laminated layers, the process of the type that employs an evacuatable chamber having at least one pair of electrode plates for generating a plasma field therebetween; the improvement comprising the steps of:
providing a pair of metal shields, each such shield being substantially identical in configuration to said circuit board and being substantially identical in aperture pattern to said circuit board,
securing said shields to opposite surfaces of said printed circuit board in substantially congruent relation thereto,
subjecting said shields and circuit board to plasma desmear and etching within said plasma chamber for a selected period of time, and
removing said shields from said printed circuit board upon the withdrawal of said shields and circuit board from said plasma chamber.

4,496,421

METHOD OF MAKING A GOLF CLUB

Larry W. Byars, Greenville, and Eric C. Jackson, Seneca, both of S.C., assignors to Tranoco, Inc., Travelers Rest, S.C. and Dunlop Sports Company, div. Dunlop Tire and Rubber Corp., Buffalo, N.Y.

Division of Ser. No. 398,967, Jul. 16, 1982, Pat. No. 4,432,550.
This application Sep. 19, 1983, Ser. No. 511,986
Int. Cl.[3] B32B *31/18*
U.S. Cl. 156—304.1
4 Claims



1. A method of making a golf club head comprising forming on an uncompressed and undensified hard wood blank to become the body portion of a finished club head a substantially flat forward inclined face rising from the bottom of the blank, producing a wedge element for attachment to the blank on said inclined face of the blank by assemling in stacked relationship a multiplicity of pre-weighed wood laminations and compressing, densifying and adhesively uniting said laminations to impart to the wedge element a high degree of density and hardness and strength as an integrated structure, adhesively permanently uniting one substantially flat face of the wedge element with said inclined face of the blank, and then shaping the united blank and wedge element into a finished golf club head which includes a rear uncompressed hard wood body portion and a forward compressed and densified laminated wood wedge element whose forward face forms the striking face of a finished club head and extends substantially from heel to toe and from the sole to the top of the club head.

4,496,422

Patent Not Issued For This Number

4,496,423

GAS FEED FOR REACTIVE ION ETCH SYSTEM

Frank J. Walton, Sunnyvale, Calif., assignor to GCA Corporation, Bedford, Mass.

Filed Nov. 14, 1983, Ser. No. 550,801
Int. Cl.[3] H01L *21/306;* C23F *1/00*
U.S. Cl. 156—345
8 Claims

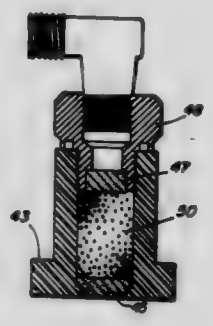
1. In a system for etching semi-conductor wafers by means of reactive ions in a gas plasma, the plasma being energized by an electrode which is adjacent the wafer and through which the gas is introduced, a gas feed comprising

a gas feed line which is electrically grounded;

a hollow insulating housing;

at one end of said housing, a porous metal plug which is in contact with said electrode;

at the other end of said housing; a second porous metal plug through which gas is fed from said feed line;



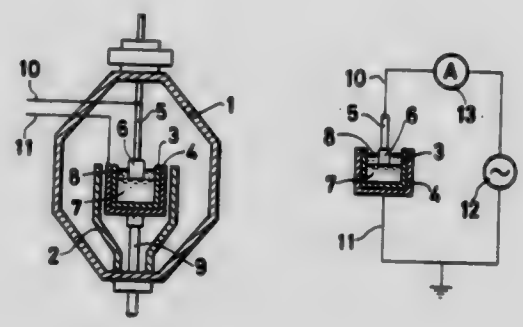
filling the space between said plugs, a porous insulating material.

4,496,424

METHOD FOR MANUFACTURE OF III-V COMPOUND SEMICONDUCTING SINGLE CRYSTAL

Kazutaka Terashima, Ebina, and Tsuguo Fukuda, Yokohama, both of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Technology, both of Tokyo, Japan

Filed Jan. 5, 1983, Ser. No. 455,734
Claims priority, application Japan, Mar. 30, 1982, 57-50031; Mar. 30, 1982, 57-50032
Int. Cl.[3] C30B *15/20, 27/02*
U.S. Cl. 156—601
3 Claims



1. A method for the manufacture of a III–V compound semiconducting single crystal by the pulling technique using an encapsulant, which comprises allowing the molten mass of material for said crystal melted in advance under high pressure to be placed under a pressure lower than the pressure to be exerted during the work of pulling said crystal thereby causing said molten mass to generate bubbles, bringing a seed crystal into contact with said molten mass and applying a potential to said molten mass and measuring the magnitude of electric current flowing consequently to said molten mass, and when the results of the measurement indicate that the purity of said molten mass has reached a prescribed level, increasing the pressure enveloping said molten mass to a level appropriate for the work of pulling said molten mass thereby effecting the work for growth of said crystal.

4,496,425

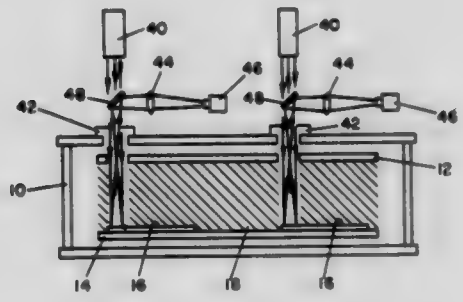
TECHNIQUE FOR DETERMINING THE END POINT OF AN ETCHING PROCESS

Birol Kuyel, Hopewell Township, Mercer County, N.J., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Jan. 30, 1984, Ser. No. 575,378

Int. Cl.³ C23F *1/02;* B44C *1/22;* C03C *15/00, 25/06*

U.S. Cl. 156—626 14 Claims



1. A method for detecting the end point of the etching of a pattern formed in a layer of material by etching through openings in an etch resistant coating on the surface of the material, the method comprising the steps of:

simultaneously etching: (1) the material, through the openings, and (2) a Fresnel zone plate, located proximate the pattern, comprised of a plurality of annular zones which are alternately formed of the etch resistant material and the exposed material to be etched;

monitoring light reflected from the Fresnel zone plate during etching; and

terminating the etch process when the intensity of light reflected from the Fresnel zone plate falls below a predetermined level.

4,496,426

PROCESS FOR THE CONTINUOUS EXTRACTION OF VEGETABLE-FIBER MATERIAL IN TWO STAGES

Manfred Baumeister, Gröbenzell, and Eugen Edel, Munich, both of Fed. Rep. of Germany, assignors to MD-Verwaltungsgesellschaft Nicolaus GmbH & Co. KG, Munich, Fed. Rep. of Germany

Filed Apr. 6, 1983, Ser. No. 482,462

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1982, 3212767

Int. Cl.³ D21C *3/02, 3/20*

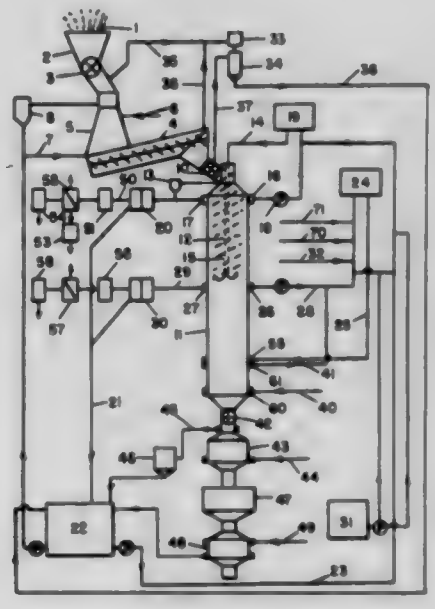
U.S. Cl. 162—19 13 Claims

1. A process for the continuous extraction of fibrous vegetable material comprising the steps of:

(a) impregnating an amount of fibrous vegetable matter with an organic solvent solution; then

(b) in a first extraction stage, digesting said fibrous vegetable material in a first extraction liquid comprising a mixture of methanol and water in a ratio of about 90:10 for a period of about 40 to about 120 minutes at a temperature of about 180° C. to about 210° C. and a pH of between about 3.8 to about 4.9; thereafter,

(c) in a separate second extraction stage, further digesting said fibrous material in a second extraction liquid for a



period of about 10 to about 80 minutes at a temperature of about 150° C. to about 190° C., said second extraction liquid comprising:

(i) said first extraction liquid from step (b);

(ii) an additional amount of water;

(iii) an aqueous sodium hydroxide solution in an amount of from about 5% to about 30% by weight of sodium hydroxide to dry wood; and

(iv) between about 0.01% and about 0.15% by weight of anthraquinone to dry wood.

4,496,427

PREPARATION OF HYDROPHILIC POLYOLEFIN FIBERS FOR USE IN PAPERMAKING

Robert W. Davison, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jan. 14, 1980, Ser. No. 112,030

Int. Cl.³ D21H *5/12*

U.S. Cl. 162—157.5 7 Claims

1. A process for the preparation of water-dispersible, uniformly hydrophilic polyolefin fibers which comprises forming an aqueous suspension of spurted polyolefin fibers, adding to said suspension, with stirring, an aqueous solution of a water-soluble ionized reagent capable of being converted into hy-

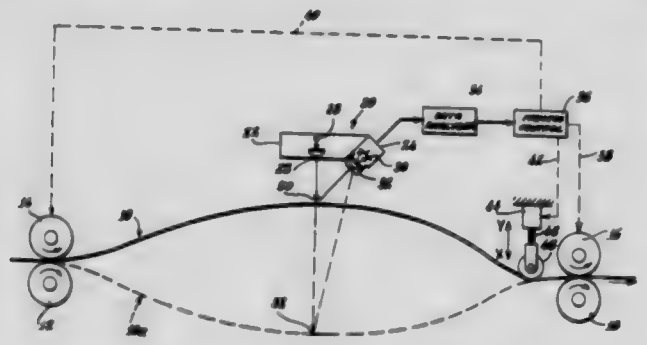
drated particles submicron in size, said ionized reagent being selected from the group consisting of the alkali metal and ammonium salts of rosin and modified rosins and mixtures thereof, and then adding to the fiber dispersion so formed an inorganic ionic precipitant for said ionized reagent, said inorganic ionic precipitant being selected from the group consisting of alum, sulfuric acid, blends of alum and sulfuric acid, and water-soluble calcium and magnesium salts, thereby effecting precipitation of said hydrated solid particles onto the surface of the polyolefin fibers.

4,496,428

APPARATUS FOR PAPER TENSION CONTROL BY MEASURING THE FREQUENCY AND FLUTTER OF A WEB

Henry A. Wells, Oxford, Ohio, assignor to Champion International Corporation, Stamford, Conn.

Filed Sep. 23, 1982, Ser. No. 422,001
Int. Cl.³ D21F *7/00*; G01N *21/86*; G01V *9/04*
U.S. Cl. 162—256
7 Claims



1. In an apparatus for moving a material web along a path, said apparatus having a driven roller for moving the web along the path, a web tension controller composing:

(a) first means spaced apart from the path of movement of the web, said first means being operable to project an energy beam onto a surface of the web along a line which is substantially perpendicular to the surface of the web, which energy beam is reflected by the web;

(b) second means spaced apart from the path of movement of the web and disposed on the same side thereof as said first means, said second means being operable to detect the energy beam reflected by the web to provide an indication of the spatial position of the web to enable measurement of the frequency and amplitude of flutter of the web; and

(c) control means operably connected to said second means for adjusting the tension of the web in response to variations in the spatial position of the web detected by said second means to maintain the frequency and amplitude of flutter of the web within a predetermined range.

4,496,429

EXTENDED NIP PRESS FOR A PAPER MACHINE

Kari Salminen, Ylöjärvi, and Nils Söderholm, Anjala, both of Finland, assignors to Oy Tampella Ab, Tampere, Finland

Filed Mar. 25, 1983, Ser. No. 478,907
Claims priority, application Finland, Apr. 1, 1982, 821139
Int. Cl.³ D21F *3/02, 3/06*
U.S. Cl. 162—358
3 Claims

1. An extended nip press for a paper machine for removing water from a wet paper, cardboard or that kind of a fibrous or porous web, which press comprises

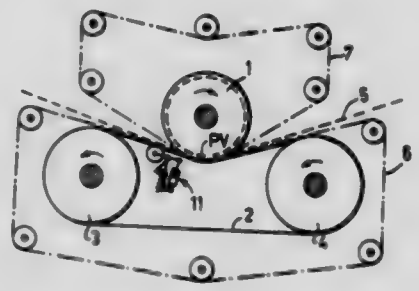
a rotatable press roll,

a press band, which includes several separate, parallel, running band strips, said band strips being close to each other in a pressure zone, said band strips being pressed against said press roll for forming an extended nip press zone with said press roll,

at least two band rolls, over which said press band passes,

at least one dewatering felt, which runs between said press roll and said press band for conveying said web to be dried through said press zone, and

stretching devices for regulating tension of said band strips,



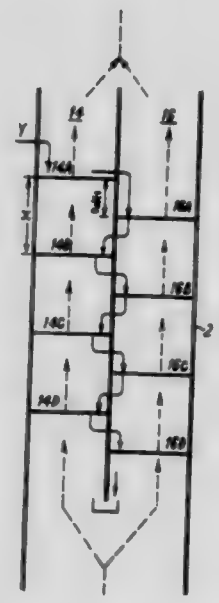
each band strip being equipped with its own respective stretching device for individual regulation of the tension of a respective band strip independently of each other band strip.

4,496,430

MASS TRANSFER APPARATUS

Arthur E. O. Jenkins, Porthcawl, Wales, assignor to Distillation Technology Limited, England

Filed Jan. 11, 1982, Ser. No. 338,541
Claims priority, application United Kingdom, Jan. 22, 1981, 8101937; May 18, 1981, 8105192
Int. Cl.³ B01D *3/26*
U.S. Cl. 202—158
8 Claims



1. A mass transfer apparatus which includes a columnar section to extend generally vertically during use, the columnar section containing a plurality of liquid/vapour contacting stages in axially spaced relationship with a downcomer for transferring a liquid stream from each stage to the next down the section and with space for upward vapour flow between the stages, said section further containing an axially extending divider which divides said upward vapour flow space into two parallel zones such that the vapour flow up the section will be in two parallel and separate streams, the liquid/vapour contacting stages being such that each zone has a plurality of the liquid/vapour contacting stages located at axially spaced intervals therealong with the locations of the stages in one zone being staggered axially relative to those of the stages in the other zone along the columnar section, each liquid/vapour contacting stage comprising an active liquid/vapour contact area and an inlet for the supply of liquid to the active area and outlet for the draining of liquid from the active area, each outlet being connected by a downcomer for liquid flow therethrough to an inlet of an active area of the next lower stage in the section whereby liquid flow down the section will be directed alternately from one zone to the other as it is passed successively from stage to stage down the section, the inlet and

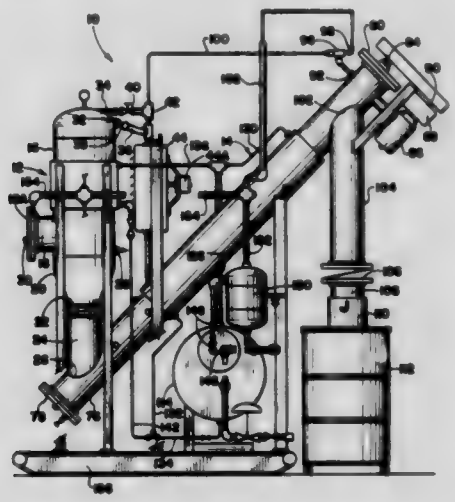
outlet of each stage being disposed on opposite sides of the active area and to the same side of the divider as the active area such that liquid flow from the inlet across the active area to the outlet will be generally rectilinear and parallel to the divider, and the location along the width of the divider of the active area of the stages in one zone corresponding with that of the corresponding active area of the stages in the other zone, and the locations of the inlet and outlet for the active area of the stages of the one zone corresponding with those of the outlet and inlet, respectively, of the corresponding active area of the stages of the other zone whereby the direction of liquid flow across the active area of each stage in the one zone will be in the opposite sense to the direction of liquid flow across the corresponding active area of each stage in the other zone.

4,496,431

CENTRIFUGAL EVAPORATION APPARATUS

Leslie L. Fowler, 1722 E. 59th St., Tulsa, Okla. 74105

Filed Aug. 23, 1982, Ser. No. 410,586
Int. Cl.³ B01D *1/24, 3/00*
U.S. Cl. 202—83 11 Claims



1. A centrifugal evaporation system for use in reclaiming used industrial solvent having water and solid contaminant therein, comprising:

a heated cyclonic still into which the contaminated solvent is injected in a manner to cause the contaminated solvent to move cyclonically within the still, the still having a bottom discharge opening, a vapor outlet, and a contaminated solvent inlet;

an inclined elongated heated closed conveyor-dryer having an inlet opening adjacent the lower end positioned under and connected directly to said still bottom discharge opening, the still serving to vaporize the solvent and water content of the contaminated sovent, the solid contaminant passing out said bottom discharge opening of said still as a wet sludge, the slude being drained of liquid and dried as it is upwardly conveyed in the conveyor-dryer, the closed conveyor-dryer having a vapor outlet and a solids discharge outlet adjacent its upper end;

a condenser having a vapor inlet and a liquid outlet;

conduit means connecting said cyclonic still vapor outlet and said conveyor-dryer vapor outlet to said condenser vapor inlet, the vapor being condensed to liquid in said condenser;

a separator having an inlet connected to receive liquid from said condenser liquid outlet, a water outlet, and a solvent outlet, the water and sovent liquids being separated in the separator for separate discharge; and

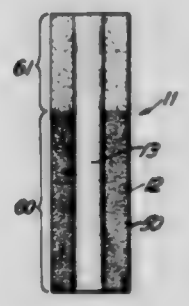
a dry slude receptacle having closed communication with said conveyor-dryer solids discharge outlet for receiving the solids extracted from the contaminated solvent.

4,496,432

ELECTROLYTIC METHODS FOR ENHANCING CONTRAST BETWEEN METALLIC SURFACES

Delbert A. Nauman, Indianapolis, Ind., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Jun. 27, 1983, Ser. No. 508,382
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—1 T 6 Claims



1. A method of enhancing the visible contrast in electrical contact material of parts thereof which respectively are, first, a substrate consisting of nickel, copper or an alloy primarily constituted by weight of nickel or copper and, second, an overlay bonded to and covering part of said substrate and provided by a noble metallic material selected from the group consisting of the noble metals gold, ruthenium, rhodium, platinum, iridium, osmium and alloys primarily constituted by weight of one or more of such metals, said method comprising, providing an aqueous solution of a readily soluable ionizable solute, applying an alternating voltage of a value in the range from about 3 r.m.s. volts a.c. to about 10 r.m.s. volts a.c. to a circuit comprising said electrolyte, a first electrode constituted of said substrate and overlay, and a second electrode in contact with said electrolyte and spaced from said first electrode, and exposing said substrate and overlay to current produced in said electrolyte by application of said voltage for a time period sufficient to produce noticeable visible darkening of the surface of said substrate relative to the surface of said overlay.

4,496,433

APPARATUS AND METHOD FOR DETERMINING THE AMOUNT OF A SAMPLE GAS COMPONENT

Raymond Annino, North Smithfield, R.I.; Maynard C. Cheney, Norfolk, and Kenneth S. Fletcher, Rehoboth, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Dec. 28, 1983, Ser. No. 566,345
Int. Cl.³ G01N *27/58, 31/08*
U.S. Cl. 204—1 T 24 Claims



1. An instrument for determining the amount of a selected gas component in a sample, comprising:

a solid-electrolyte oxygen-sensor cell;

means to furnish a continuous stream of oxygen at a fixed rate to the region adjacent one side of said cell;

voltage supply means coupled to said cell to develop a potential thereacross for transporting through said cell all of the oxygen present at said one side whereby the cell current normally is at a constant background level corresponding to said fixed rate of oxygen supply;

means to combine said selected gas component with said continuous stream of oxygen, so as to alter for a period of time the amount of oxygen available for transport through said cell; and

means responsive to the cell current for integrating the

deviation in current from said constant background level during said period of time, whereby the amount of said selected gas component may be determined by coulometric measurement effected by such integration.

8. Apparatus as claimed in claim 1, wherein said instrument forms part of a package supported within the stack of a boiler to monitor the stack gases;

said package further including chromatographic separation means to furnish said instruments with separated components of the stack gas.

12. The method of determining the weight of a selected sample gas component, comprising the steps of:

applying a continuous fixed-rate stream of oxygen to one side of a solid-electrolyte oxygen sensor cell;

transporting all of the oxygen on said one side through said cell by the application to said cell of an electrical potential;

sensing the background electrical current flow through said cell corresponding to said continuous stream of oxygen;

combining said selected gas component with the oxygen of said continuous stream, thereby to produce an altered electrical current flow corresponding to changes in oxygen available for transport through said cell as said component combines with the oxygen of said continuous stream; and

integrating the difference in current between said background current flow and said altered current flow to determine the weight of said component.

22. A stack gas analyzer comprising:

a protective outer shell arranged to extend through an access port in the stack to be monitored, and to be supported in that position;

a chromatographic separation column in said shell;

chromatographic sampling means in said shell for obtaining samples of the stack gas and directing said samples to the input end of said column;

a gas component detector comprising a solid-electrolyte oxygen-sensor measurement cell with one side thereof presented to a sealed chamber within said shell;

means coupling the output end of said column to said chamber;

means to supply oxygen to said chamber and to provide for combining such oxygen with at least one component of the gas sample;

means to supply oxygen to said chamber and to provide for combining such oxygen with at least one component of the gas sample;

a voltage source having positive and negative terminals connected respectively to the sides of said oxygen-sensor cell to provide a measurement current corresponding to the amount of oxygen transported through said cell; and

means responsive to said measurement current for producing an output signal representing the amount of said one sample component.

4,496,434

PROCESS OF ELECTROFORMING A METAL PRODUCT AND AN ELECTROFORMED METAL PRODUCT

Gerhardus H. Mornsinkhof, Boxmeer, Netherlands, assignor to Stork Screens B.V., Netherlands

Filed Nov. 14, 1983, Ser. No. 551,303

Claims priority, application Netherlands, Nov. 12, 1982, 8204381

Int. Cl.³ C25D *1/08, 7/00*

U.S. Cl. 204—11 12 Claims

1. A process of electroforming a metal screen by subjecting a first product skeleton formed upon a matrix in a first electrolytic bath and subsequently stripped from the matrix, to an electrolysis in a second electrolytic bath, comprising at least a metal structure having a hardness and ductility different from that of said metal screen and an organic compound improving a growth of metal in a direction substantially perpendicular to the plane of the skeleton, in which the first skeleton thickened in the second electrolytic bath is subjected to an electrolysis in at least one other electrolytic bath, also comprising at least a metal structure having a hardness and ductility different from that of said metal screen and an organic compound improving the growth of metal on the outer surface of the screen in a direction substantially perpendicular to said outer surface, said organic compound being a class 2 brightener containing a double or triple bond other than the =C—S=O group and presenting properties of a second class brightener, the said screen thickened in the second electrolytic bath being subjected to electrolysis in at least one other electrolytic bath, said other electrolytic bath also comprising at least said organic compound improving growth of metal on the outer surface of the thickened screen in a direction substantially perpendicular to said outer surface and causing the deposit of metal different from the metal deposited from the second bath.

4,496,435

METHOD OF MANUFACTURING THIN FILM CIRCUITS

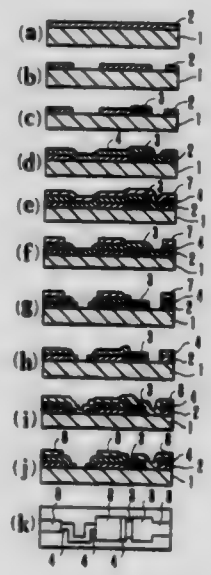
Keiji Harada, and Akio Sato, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 7, 1984, Ser. No. 577,821

Claims priority, application Japan, Feb. 8, 1983, 58-19217

Int. Cl.³ H01C *17/00*

U.S. Cl. 204—15 11 Claims



1. A method of manufacturing a thin film circuit comprising the steps of:

forming a tantalum film on insulating substrate;

covering a predetermined region of said tantalum film with a titanium film;

heat treating a resulting assembly;

removing said titanium film; and

covering said predetermined region with a metal film to provide ohmic contact therebetween.

3. A method of forming a thin film circuit including capacitor elements and resistor elements which are formed on the same insulating substrate, comprising the steps of:

forming a tantalum film for capacitor on said insulating substrate;

etching said tantalum capacitor film to form a predetermined circuit pattern;

anodizing a portion of said tantalum capacitor film to convert said portion into a dielectric layer of said capacitor;

forming a tantalum film for resistor on the entire surface of said substrate;

forming a titanium film on said tantalum resistor film;

patterning said titanium film to remove a portion thereof except portions at which conductor patterns and external lead terminal connectors are formed;

patterning said tantalum resistor film to form the resistor element;

removing a portion of said tantalum resistor film overlying said dielectric layer;

heat treating said resistor element for stabilizing the same;

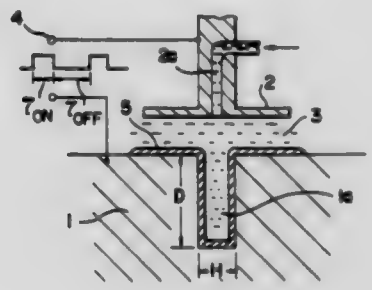
etching off said titanium film;
forming a metal film on the entire substrate; and
patterning said metal film to form terminals or conductor patterns of said resistor and capacitor elements.

4,496,436

PULSE ELECTRODEPOSITING METHOD

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Continuation of Ser. No. 828,902, Aug. 29, 1977, abandoned. This application Dec. 27, 1978, Ser. No. 973,608
Claims priority, application Japan, Sep. 1, 1976, 51-104724; Dec. 14, 1976, 51-150051; Jun. 10, 1977, 52-69129
Int. Cl.³ C25D *5/18*
U.S. Cl. 204—23 **8 Claims**



1. A method of electrodepositing a metal upon a workpiece from an electrolyte, said method comprising the steps of:
juxtaposing a surface of said workpiece formed with a recess having a depth D and a width H with an electrode having an electrode surface extending over the opening of said recess and disposed outside the recess;
flushing the electrolyte in the region of said electrode surface past said surfaces and through said recess; and
applying an electric current poled to electrodeposit metal from said electrolyte upon said workpiece and in the recess thereof to a uniform thickness, the ratio D/H being greater than 1/1 and up to 10/1, said electric current being passed through said electrode, said electrolyte and said workpiece in the form of pulses having a pulse duration between 1 and 50 microseconds.

4,496,437

METHOD FOR PRODUCING A DUAL POROSITY BODY

James A. McIntyre, and Robert F. Phillips, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 22, 1983, Ser. No. 506,912
Int. Cl.³ C25D *7/04*
U.S. Cl. 204—24 **14 Claims**

1. A method for producing a dual porosity body from a substrate having a plurality of passageways traversing the substrate and connecting a first surface with a generally opposing second surface, said method comprising
depositing a solid material onto the walls of at least a portion of the passageways adjoining only the first surface;
controlling the depth of penetration of the electrodeposition solution into the substrate by exposing one surface of the substrate to a pressurized gas; and
stopping the deposition when the diameter of the passageways being coated has been reduced to a predetermined value, wherein the solid material is deposited by a method selected from the group consisting of electroplating and electroless plating from an electrodeposition solution.

4,496,438

BATH COMPOSITION AND METHOD FOR COPPER-TIN-ZINC ALLOY ELECTROPLATING

Raymond L. Helton; Douglas W. Trobough, both of Beaverton, and Marianne McPherson, Portland, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 24, 1983, Ser. No. 508,292
Int. Cl.³ C25D *3/58*
U.S. Cl. 204—44 **22 Claims**

15. An electroplating bath composition for plating an alloy of copper, tin, and zinc, comprising a solution having a predetermined amount of copper, tin and zinc ions and an effective amount of nickel ions, available in the form of nickel acetate present in a concentration of about 0.004 oz/gal, sufficient to promote the plating of a corrosion-resistant, bright silvery-colored plate of copper-tin-zinc alloy.

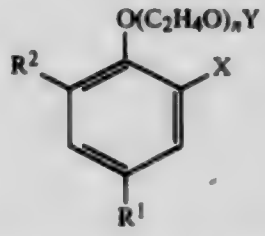
4,496,439

ACIDIC ZINC-PLATING BATH

Norbert Greif, Bobenheim; Knut Oppenlaender, Ludwigshafen; Albert Hettche, Hessheim, and Christos Vamvakaris, Kallstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 23, 1983, Ser. No. 565,217
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1982, 3248503
Int. Cl.³ C25D *3/22*
U.S. Cl. 204—55 R **2 Claims**

1. An aqueous acidic plating bath for the electrolytic deposition of zinc, which contains conductive salts, brighteners and surfactants, wherein one of the surfactants is a surfactant of the formula I



I

where R^1 is C_4-C_{20}-alkyl, R^2 is identical to R^1 or is hydrogen, X and Y are each a radical $-SO_3H$, where the hydrogen atom can be replaced by an alkali metal or alkaline earth metal atom or by one equivalent of zinc and n is an integer from 5 to 50.

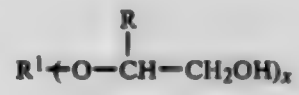
4,496,440

OXIDATION OF HYDROPHOBIC $-CH_2OH$ COMPOUNDS AT OXIDIZED NICKEL ANODES

Kent D. Campbell, Concord; Aylin H. Gulbenkian, Walnut Creek; Fred Y. Edamura, Concord, all of Calif., and Demetrios Kyriacou, Salonica, Greece, assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 4, 1984, Ser. No. 617,063
Int. Cl.³ C25B *3/02*
U.S. Cl. 204—78 **14 Claims**

1. The method of oxidizing a $-CH_2OH$ group in a hydrophobe to a —CHO or —COOH group which comprises electrochemically oxidizing said hydrophobe, in a basic aqueous medium, at an oxidized nickel anode, said hydrophobe being selected from the group consisting of:
(A) glycol ethers of the formula

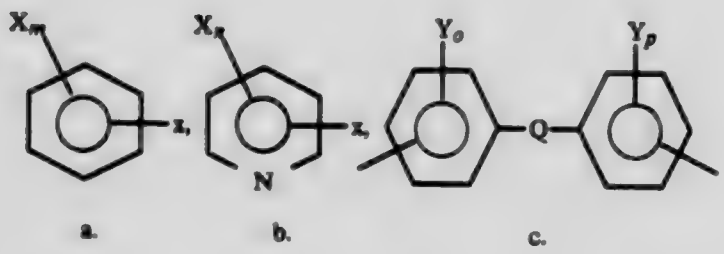


(I)

wherein
x=1 or 2,
R=H or a C_1-C_{40} hydrocarbyl or heterohydrocarbyl radi-

cal, optionally substituted with one or more non-interfering radicals,

R^1 is a mono- or divalent radical of one of the following formulas a, b or c



a. b. c.

wherein

x is 1 or 2,

X is halo, haloalkyl, alkyl, alkenyl, amino, nitro, alkoxy or haloalkoxy, independently in each occurrence,

m is 0 to 5 and n, o and p are each, independently, 0–4,

Q is a valence bond, a C_1–C_4 alkylene or alkenylene group, $>C(CF_3)_2$, —CO—, —S—, —SO_2— or —O—; and

Y is halo, alkyl, alkenyl alkoxy, haloalkoxy or nitro, independently in each occurrence,

with the provisos that:

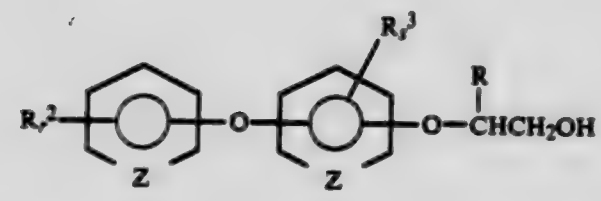
the maximum number of nitro groups per ring is 3 in formula a and 2 in formulas b and c;

the maximum number of alkyl, alkenyl, alkoxy and/or haloalkoxy groups per ring is 2 in formulas a and b and 1 in formula c;

the maximum number of amino groups per ring, in formulas a and b, is 2; and

the maximum number of haloalkyl groups per ring, in formulas a and b, is 2;

(B) phenoxyaryl- or phenoxyheteroaryloxyethanols of the formula



(II)

wherein

r=0, 1, 2, 3 or 4 and

s=0, 1, 2 or 3,

Z=CH or N, in one occurrence and N in the other,

R^2, independently in each occurrence, is alkyl, alkenyl, haloalkyl, halo, nitro, amino, C_2–C_{42} alkoxy or haloalkoxy or is —$OCHRCH_2OH$,

R is as defined with regard to formula I; and

R^3, independently in each occurrence, is alkyl, alkenyl, haloalkyl, halo, nitro, amino, alkoxy or haloalkoxy;

with the provisos that:

not more than one R^2 or R^3 group per ring is nitro,

not more than two R^2 or R^3 groups per ring are haloalkyl,

not more than one R^2 or R^3 group per ring is amino,

not more than one R^2 or R^3 group per ring is alkoxy or haloalkoxy,

not more than one R^2 is O—$CHRCH_2OH$,

not more than one R^2 or R^3 group per ring is alkyl or alkenyl; and

(C) polycycloaliphatics ring-substituted by one or two —CH_2OH groups and, optionally, with one or more non-interfering radicals.

4,496,441

DESULFURIZATION OF COAL

Charles T. Sweeney, and John K. Bird, both of Waco, Tex., assignors to Tetravalent Inc., Waco, Tex.

Filed Aug. 17, 1983, Ser. No. 523,843
Int. Cl.³ C25B *1/34, 9/00*
U.S. Cl. 204—98 20 Claims

1. A method for coal desulfurization which comprises

providing an oxidant gas generator comprising a hollow container having a wall dividing the same into two compartments and including an ion-permeable membrane permitting flow of cations therethrough,

a cathode in one of said compartments,

an anode in the other of said compartments,

a bipolar electrode in said other compartment positioned between said anode and said membrane,

said bipolar electrode being of a size and shape permitting free circulation of electrolyte therearound and being exposed on all sides to the same aqueous electrolyte,

providing water to said cathode compartment,

providing a water solution of a chloride salt to said anode compartment to surround said anode and said bipolar electrode,

passing a predetermined amount of direct current through said water and said a chloride salt solution to produce an oxidant gas at said anode and said bipolar electrode and to produce hydrogen and solium hydroxide at said cathode,

collecting said oxidant gas,

providing a quantity of sulfur-containing coal,

comminuting said sulfur-containing coal,

providing a gas/solid reactor,

supplying said comminuted sulfur-containing coal to said reactor, and

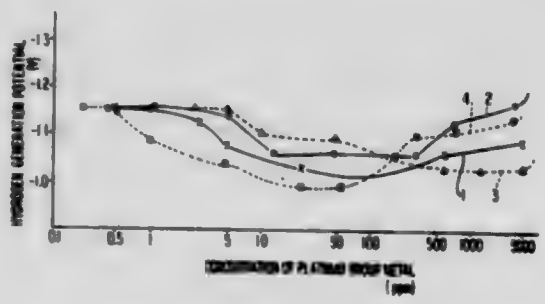
introducing said oxidant gas into said reactor and reacting the same with said sulfur-containing coal to oxidize and remove the sulfur components therein.

4,496,442

PROCESS FOR GENERATING HYDROGEN GAS

Toshimasa Okazaki; Akihiro Sakata; Kyozi Nagai, and Kazuo Nakashima, all of Aichi, Japan, assignors to Toagosei Chemical Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 292,981, Aug. 14, 1981, abandoned. This application Apr. 12, 1983, Ser. No. 482,519
Claims priority, application Japan, Aug. 14, 1980, 55-111066
Int. Cl.³ C25B *1/04, 1/14, 1/16*
U.S. Cl. 204—129 8 Claims



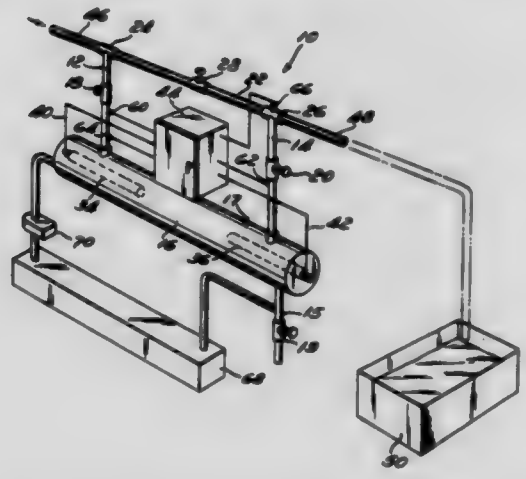
1. In a process for generating hydrogen gas by electrolysis of an aqueous alkali solution, the improvement comprising using a cathode produced by electrically plating the surface of an electrode substrate in a nickel plating bath having fine carbonaceous particles dispersed therein.

4,496,443

METHOD FOR ELECTRICALLY INTRODUCING SUBSTANCES INTO LIQUID SOLUTION

Michael H. Mack, 15111 Pipeline St.; Sterling C. Corley, 13149 6th St., both of Chino, Calif. 91710, and Leland G. Cole, P.O. Box 11812, Santa Ana, Calif. 92711

Filed Jun. 8, 1982, Ser. No. 386,358
Int. Cl.[3] C25B *1/20*
U.S. Cl. 204—130 8 Claims



1. A process for treating magnesium deficiency in organisms comprising:

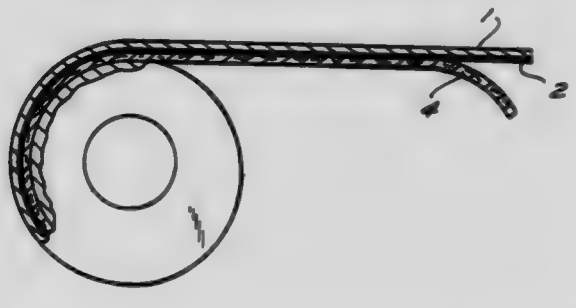
introducing into feed water ingested by the organism an effective amount of dissolved and suspended gelatinous, lyophilic colloids containing magnesium and its compounds obtained from electrolytically oxidizing a magnesium anode in said water.

4,496,444

METHOD OF CORROSION PROTECTION

Luigi Bagnulo, Milan, Italy, assignor to Caunned Aktiengesellschaft, Liechtenstein, Liechtenstein

Division of Ser. No. 793,870, May 4, 1977, abandoned, which is a continuation of Ser. No. 619,777, Oct. 6, 1975, abandoned, which is a continuation of Ser. No. 459,685, Apr. 10, 1974, abandoned. This application Jan. 5, 1981, Ser. No. 222,757
Claims priority, application Italy, Apr. 19, 1973, 23191 A/73; Feb. 11, 1974, 20367 A/74
Int. Cl.[3] C23F *13/00*
U.S. Cl. 204—148 22 Claims



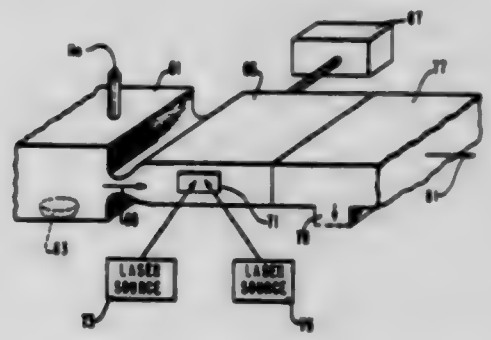
1. A method of anticorrosion protection of long steel pipes and other such structures, similar to that afforded by zinc plating, the method comprising the steps of providing an elongated continuous first layer of such corrodible metal as can serve as sacrificial-anode material; arranging on said first layer an elongated continuous second layer of electrically conductive adhesive composition which is adherent to metal surfaces so that said second layer extends along the entire length of, is bonded to and is in electrically conductive surface contact with said first layer over the whole of the facing surfaces of said first and second layers, whereby an elongated flexible anticorrosion tape is produced; and applying the thus-produced anti-corrosion tape at the side of said second layer onto long steel pipes or other such structures by spirally winding or otherwise putting on, so that said second layer and thereby also said first layer extends along the surface of the long steel pipes or other structures, and whereby said second layer and thus said first layer is bonded with, and is in electrically conductive surface contact there with.

4,496,445

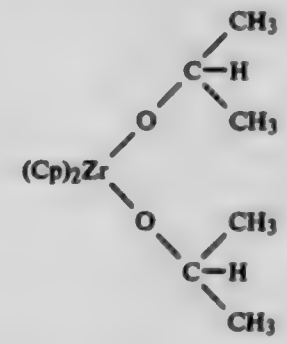
SEPARATION OF ISOTOPES OF ZIRCONIUM

Robert J. Nadalin, Penn Hills Township, Allegheny County, and Robert G. Charles, Allison Park, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

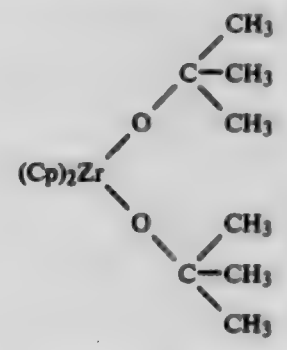
Filed Sep. 7, 1982, Ser. No. 415,095
Int. Cl.[3] B01D *59/00*
U.S. Cl. 204—158 R 5 Claims



1. The method of producing zirconium having a low neutron-absorption cross section for use in parts of a nuclear reactor the said method comprising producing a material comprising one or more compounds selected from the group consisting of dicyclopentadienyl zirconium dichloride, $(Cp)_2ZrCl_2$, dicyclopentadienyl zirconium di-isopropoxide



and dicyclopentadienyl zirconium di-tert-butoxide,



which are hydrolysis resistant, said material containing a plurality of isotopes of zirconium, subjecting the vapor of said material to radiation emitted from a carbon dioxide laser tuned to the vibration of an excitable bond directly or indirectly associated with a selected $^{\prime}Zr$ isotope of said material, whereby the $^{\prime}Zr$ component of said material is decomposed, separating the product of the decomposition of the $^{\prime}Zr$ component from the remainder of said irradiated material, and forming the said parts of that one of the separated $^{\prime}Zr$ component of said material or of the remainder of said material in which the zirconium has the minimum neutron-absorption cross section.

4,496,446

MODIFICATION OF POLYGLYCOLIC ACID STRUCTURAL ELEMENTS TO ACHIEVE VARIABLE IN-VIVO PHYSICAL PROPERTIES

Thomas A. Ritter, Bristol; Alan L. Kaganov, Stamford, and John P. Budris, Cheshire, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 198,565, Oct. 20, 1980, abandoned, and a continuation-in-part of Ser. No. 198,566, Oct. 20, 1980, abandoned. This application Jun. 16, 1983, Ser. No. 505,137

Int. Cl.³ C08G 63/70; C08J 3/28, 7/10

U.S. Cl. 204—159.14 3 Claims

1. A method of modifying a structural surgical element made from a bioabsorbable polymer having a glycolic ester linkage to controllably effect a rapid loss of its in vivo tensile strength, said element selected from the group consisting of a tubular support, tubular implant, tubular stenotic device and ring device, comprising subjecting the element to irradiation treatment in a dosage amount greater than that required for sterilization and in a controllable manner such that the time required for the element to undergo in vivo degradation into fragments, capable of being removed from or passed out of the body without absorption, is from about 8 to 15 days.

4,496,447

AROMATIC-ALIPHATIC KETONES USEFUL AS PHOTOINITIATORS

Jürgen Eichler, Weiterstadt; Claus Herz, Heidelberg; Karl-Heinz Neisius, and Gregor Wehner, both of Darmstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschraenkter Haftung, Darmstadt, Fed. Rep. of Germany

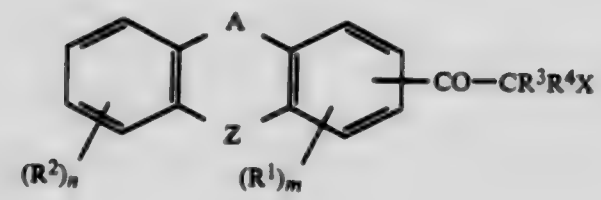
Division of Ser. No. 240,439, Mar. 4, 1981, Pat. No. 4,374,984. This application Dec. 21, 1982, Ser. No. 451,673

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1980, 3008411S

Int. Cl.³ C08F 2/50; C07D 335/16, 311/86

U.S. Cl. 204—159.16 7 Claims

1. A compound of the formula



wherein

A is —CO— or —CO—CO—;

X is —OR⁵;

Z is —S—, or —O—;

m is O or an integer of 1 to 3;

n is O or an integer of 1 to 3;

R¹ is alkyl of 1–12 C atoms, cycloalkyl of 5–6 C atoms, aryl of 6–14 C atoms, aralkyl of 7–9 C atoms, —OH, —OAlk, —OAr, —SAlk, —SCH₂CH₂OH, —SAr, —SO₂Alk, —SO₂phenyl, —SO₂NH₂, —SO₂NHAlk, —SO₂N(Alk)₂, —COOAlk, —NH₂, —NHAlk, —N(Alk)₂, —NHCOphenyl, —CN or halogen;

R² can be any of the groups defined for R¹ or another —CO—CR³R⁴X group;

R³ is H, alkyl of 1–8 C atoms, or alkyl of 1–8 C atoms substituted by —OH, —OAlk, acyloxy of 2–8 C atoms, —NR⁸R⁹, —COOAlk or —CN, or is alkenyl of 3–5 C atoms;

R⁴ can be any of the groups defined for R³ or —CH₂CH₂R¹³;

R⁵ is H, alkyl of 1–12 C atoms or alkyl of 1–8 C atoms substituted by —Cl, —Br, —OH, —OAlk, —SAlk, acyloxy of 2–8 C atoms, —COOAlk, —CONHAlk, —CON(Alk)₂ or —CN, or is alkenyl of 3–5 C atoms, or cyclohexyl;

R⁸ is alkyl of 1–12 C atoms, or alkyl of 2–4 C atoms substituted by —OH, —OAlk or —CN, or is alkenyl of 3–5 C atoms, or cyclohexyl;

R⁹ is alkyl of 1–12 C atoms, or alkyl of 2–4 C atoms substituted by —OH, —OAlk or —CN, or is alkenyl of 3–5 C atoms, or cyclohexyl, or, together with R⁸, is alkylene of 4–5 C atoms or C₄₋₅-alkylene interrupted by —O— or —NR¹⁴—, or, together with R⁴, is alkylene of 1–9 C atoms, oxa- or aza-alkylene of 2–3 C atoms;

R¹³ is —CONH₂, —CONHAlk, or —CON(Alk)₂;

R¹⁴ is alkyl of 1–4 C atoms;

Alk is alkyl of 1–4 C atoms; and

Ar is C₆₋₁₄ aryl or aryl substituted by alkyl groups and having a total of 6–14 C atoms;

wherein aryl stands for hydrocarbon aryl groups and acyl groups are derived from hydrocarbon carboxylic acids.

4. A process for photopolymerizing an ethylenically unsaturated compound, comprising, photopolymerizing the compound in the presence of at least one compound of claim 1 as a photoinitiator.

4,496,448

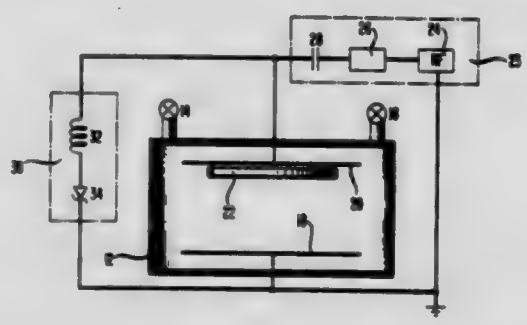
METHOD FOR FABRICATING DEVICES WITH DC BIAS-CONTROLLED REACTIVE ION ETCHING

King L. Tai, and Frederick Vratny, both of Berkeley Heights, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 13, 1983, Ser. No. 541,459

Int. Cl.³ C23C 15/00

U.S. Cl. 204—192 E 13 Claims



1. A method for fabricating a device, comprising the steps of:

establishing a plasma in a gaseous atmosphere which contacts a first electrode;

establishing a DC bias on said electrode relative to a point of reference potential; and

etching a substrate with entities in said plasma

characterized in that:

said method further comprises the step of discharging said electrode in response to a preselected criterion.

4,496,449

ELECTRON BEAM ETCHING OF INTEGRATED CIRCUIT STRUCTURES

Jorge J. Rocca, and George J. Collins, both of Fort Collins, Colo., assignors to Colromm, Inc., Fort Collins, Colo.

Filed Dec. 16, 1983, Ser. No. 562,457

Int. Cl.³ C23C 15/00

U.S. Cl. 204—192 E 20 Claims

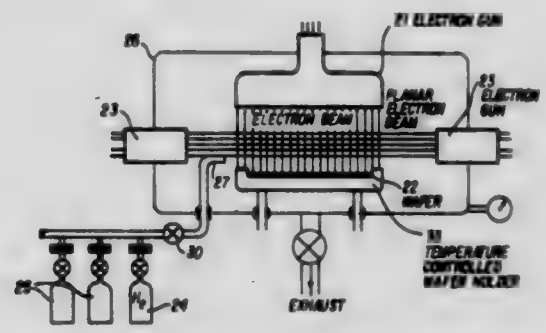
1. Electron beam induced etching apparatus for etching a surface of a solid material, the apparatus comprising:

a large area glow discharge electron gun for producing an energy controlled homogeneous source of collimated beam electrons travelling perpendicular to the surface of the solid material to be etched;

chamber means surrounding the large are glow discharge electron gun and the solid material to be etched to provide a controlled low pressure gas environment;

means for controlling the energy, current, and time dependence of the beam electrons;

means for selecting, admitting, and controlling the partial pressures of one or more gases in said chamber means; and



vacuum pump means for circulating the one or more gases through said chamber means.

4,496,450

PROCESS FOR THE PRODUCTION OF A MULTICOMPONENT THIN FILM

Hajime Hitotsuyanagi; Nobuhiko Fujita; Hideo Itozaki, and Hiromu Kawai, all of Itami, Japan, assignors to Director General of Agency of Industrial Science and Technology Michio Kawata, Tokyo, Japan

Filed Mar. 29, 1984, Ser. No. 594,828

Claims priority, application Japan, Mar. 1, 1983, 58-53850

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 R **15 Claims**

1. A process for the production of a multicomponent thin film, characterized by using jointly a sputtering method and a plasma CVD method at a pressure of not lower than a pressure capable of giving the maximum rate of film formation in the sputtering method.

4,496,451

ION EXCHANGE MEMBRANE MANUFACTURE FOR ELECTROLYTIC CELL

Tsuneji Ishii; Hiroaki Ito, and Takamichi Ishikawa, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed May 11, 1982, Ser. No. 377,016

Claims priority, application Japan, May 22, 1981, 56-76751; May 22, 1981, 56-76752

Int. Cl.³ C25B *9/00, 11/03, 13/08*

U.S. Cl. 204—252 **17 Claims**

1. A method of manufacturing an ion exchange membrane for use in an electrolytic cell comprising an anode, a cathode, an anode compartment, a cathode compartment, and a gas and liquid permeable porous non-electrode layer bonded to at least one surface of said ion exchange member, which comprises:

coating electric non-conductive or conductive particles on the surface of a support to form a thin layer,

drying the thin layer on the support,

transferring said dried thin layer onto said surface of said membrane, and

bonding said thin layer to said membrane by the application of heat and pressure.

4,496,452

APPARATUS AND PROCESS FOR PRODUCING CHLORINE GAS AND FOR EMPLOYING SUCH CHLORINE GAS FOR THE PRODUCTION OF CHLORINE WATER

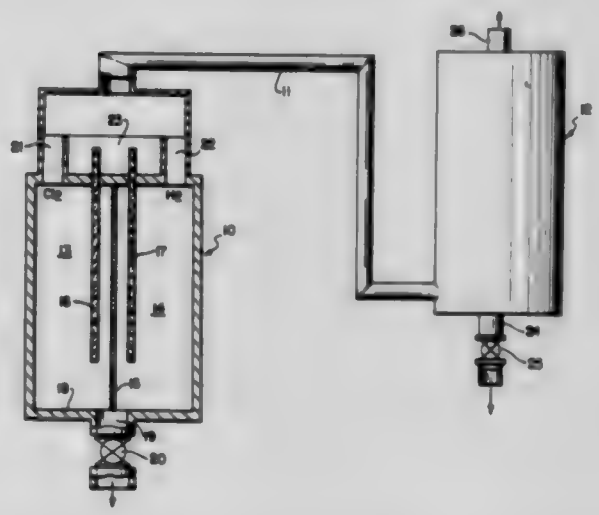
Guiseppe Bianchi, Milan, Italy, assignor to Industrie Zanussi S.p.A., Pordenone, Italy

Filed Dec. 7, 1983, Ser. No. 559,023

Claims priority, application Italy, Dec. 23, 1982, 24932 A/82

Int. Cl.³ C25B *9/00; C02C 5/12*

U.S. Cl. 204—266 **3 Claims**



1. An apparatus for producing chlorine gas and for employing said chlorine gas for the production of chlorine water, said apparatus comprising:

an electrolytic cell for the electrolysis of a sodium chlorine solution, said cell comprising a cathode compartment having therein a cathode for producing hydrogen during electrolysis and an anode compartment having therein an anode for producing chlorine gas during electrolysis, single conduit means at the bottom of said cell for charging sodium chloride solution into said compartments and for discharging therefrom solutions resulting from electrolysis, and a porous partition substantially separating said compartments, said partition having a lower end terminating above the bottom of said cell at said charging and discharging means, such that lower ends of said compartments are in free communication;

an absorption tower for contacting chlorine gas produced in said anode compartment with water, and thereby for forming chlorine water; and

means for supplying the hydrogen and chlorine gas produced in said compartments to said absorption tower, and for dynamically balancing the pressure in said compartments and thereby preventing mixing of the products of electrolysis from said cathode and anode compartments, said supplying and balancing means comprising a chamber connected to upper ends of said compartments for receiving therefrom and mixing said hydrogen and chlorine gas, and a conduit for passing the thus mixed gases to said absorption tower.

4,496,453

HYDROGEN-EVOLUTION ELECTRODE

Mitsuo Yoshida, and Hiroyuki Shiroki, both of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 219,518, Dec. 23, 1980, abandoned. This application Aug. 22, 1983, Ser. No. 525,603

Claims priority, application Japan, Dec. 26, 1979, 54-168180; Nov. 11, 1980, 55-157582

Int. Cl.³ C25B *11/04, 11/02*

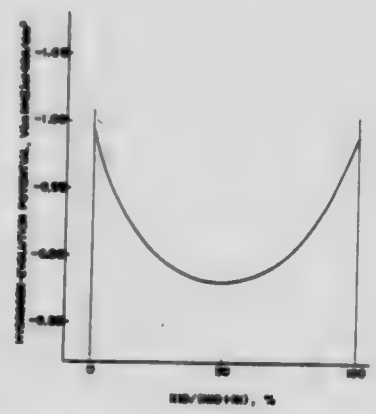
U.S. Cl. 204—290 R **17 Claims**

1. In a hydrogen-evolution electrode comprising an electri-

cally conductive substrate and a coating formed on the surface of said substrate, the improvement in which:

said electrically conductive substrate is nickel or a nickel alloy;

said coating on the surface of said substrate comprises at



least one metal oxide selected from the group consisting of nickel oxide (NiO) and cobalt oxide (CoO) and at least one metal selected from the group consisting of nickel and cobalt and has a degree of oxidation of 20 to 90%, said degree of oxidation of the coating being defined by the formula

$$\frac{H_1}{H_1 + H_0} \times 100$$

wherein H_0 represents the height of a peak showing the intensity of the highest intensity X-ray diffraction line of a metal selected from the group consisting of nickel and cobalt when the coating is analyzed by X-ray diffractometry; H_1 represents the height of a peak showing the intensity of the highest intensity X-ray diffraction line of an oxide of said metal; and in case the coating contains nickel, cobalt and oxides thereof, H_0 represents the arithmetic mean of the above-mentioned heights of peaks obtained with respect to the metals contained in the coating and H_1 represents the arithmetic means of the above-mentioned heights of peaks obtained with respect to oxides of said metals; and

said coating is a coating fabricated by the melt-spraying of an anti-corrosive powder material comprising at least one member selected from the group consisting of nickel, cobalt, nickel oxide and cobalt oxide.

4,496,454

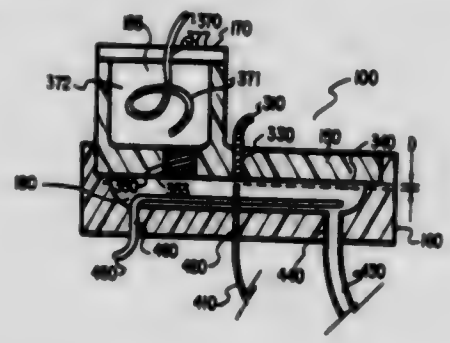
SELF CLEANING ELECTROCHEMICAL DETECTOR AND CELL FOR FLOWING STREAM ANALYSIS

Terry A. Berger, Landenberg, Pa., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 19, 1983, Ser. No. 543,663

Int. Cl.³ G01N *31/08*

U.S. Cl. 204—402 **27 Claims**



1. An electrochemical detector for detecting electroactive species in a flowing stream, comprising a detector cell having true wall-jet hydrodynamics, said detector cell having:

a counter electrode;

a working electrode with a surface of nominal radius R;

a fluid inlet jet having an orifice with an outer diameter A and an inner diameter a aligned with the center of the surface of the working electrode for supplying substantially all of the flowing stream to the cell in a direction normal to the surface of the working electrode; and

an exit tube for the flowing stream to leave the cell; wherein R is less than or equal to 1.5 millimeters, the ratio of R/a is greater than or equal to 4, and the ratio A/a is less than or equal to 4.

19. An electrochemical detector as in claim 1 further comprising:

a potentiostat having an output coupled to the counter electrode, said potentiostat responsive to an input control signal; and

output amplifier means coupled to the working electrode for measuring the electrical output signal of the detector cell.

20. An electrochemical detector as in claim 19 wherein the potentiostat output comprises a cyclic waveform having

a first period at an oxidizing potential for oxidizing the surface of the working electrode,

a second period at a reducing potential for reducing the surface of the working electrode, and

a third period at a working potential, less than the absolute value of the oxidizing and reducing potentials for measuring the electrochemical species in the fluid in the detector cell.

4,496,455

POLAROGRAPHIC SENSOR AND SENSING SYSTEM FOR DETERMINING OXYGEN CONTENT IN GASES

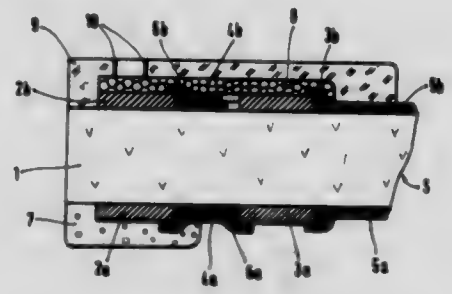
Ernst Linder, Mühlacker; Helmut Maurer, Vaihingen; Klaus Müller, Tamm, and Franz Rieger, Aalen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 27, 1984, Ser. No. 604,985

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1983, 3315654

Int. Cl.³ G01N *27/58*

U.S. Cl. 204—412 **7 Claims**



1. Polarographic sensor system to determine oxygen content in test gases having

a sensor element (S) exposed to the test gases and a first current source (B1),

said sensor element comprising

a solid electrolyte body (1);

a first cell including

a cathode (2*a*);

a gas diffusion layer (7) exposed to the test gases and covering said cathode; and

an anode (2*b*);

the first current source (B1) being connected across the cathode and anode to cause a limit current to flow therethrough, and comprising, in accordance with the invention,

a second cell including a cathode (3*a*) and an anode (3*b*);

means (8,9) to define an oxygen molecule communication duct between the anode (2*b*) of the first cell and the anode (3*b*) of the second cell,

the cathode (3*a*) of the second cell being exposed to the test gas; and

a second current source (B2) connected across the cathode (3*a*) and anode (3*b*) of the second cell to provide pumping energy for oxygen molecules to the anode of the second cell,

the communication duct (8,9) guiding pumped oxygen to the anode (2*b*) of the first cell.

4,496,456

METHOD FOR PREPARING THIN REGENERATED CELLULOSE MEMBRANES OF HIGH FLUX AND SELECTIVITY FOR ORGANIC LIQUIDS SEPARATIONS

Mahmoud M. Hafez, Sarnia, Canada, and Henry W. Pauls, Durham, N.C., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 3, 1983, Ser. No. 500,966
Int. Cl.³ C10G *73/08;* B01D *13/00*
U.S. Cl. 208—33 **30 Claims**

1. A method for producing a regenerated cellulose membrane comprising the steps of:

A. dissolving a cellulose material to form a solution;

B. Casting the cellulose solution into a film;

C. coagulating the cellulose solution film using an alcoholic-alkali solution;

D. washing the coagulated cellulose film in an alcohol;

E. regenerating the washed, coagulated cellulose film using an alcoholic acid solution;

F. washing the regenerated cellulose membrane using an alcohol.

25. A regenerated cellulose membrane prepared by the method of:

A. dissolving a cellulose material to form a solution;

B. casting the solution into the form of a film;

C. coagulating the cellulose solution film using an alcoholic alkali solution;

D. washing the coagulated cellulose film in an alcohol;

E. regenerating the washed, coagulated cellulose film using an alcoholic acid solution;

F. washing the regenerated cellulose film in an alcohol.

28. In a process for the dewaxing of waxy hydrocarbon oils comprising:

(a) solvent dewaxing the waxy hydrocarbon oil by combining the waxy oil with a dewaxing solvent selected from C_3–C_6 ketones and mixtures thereof, and mixtures of C_3–C_6 ketones and C_6–C_{10} aromatic hydrocarbons for a mixture and chilling said waxy oil-solvent mixture to form a slurry comprising solid particles of wax and a mixture of dewaxed oil and dewaxing solvent;

(b) passing said slurry to solid-liquid separation means to separate the solid particles of wax from the dewaxed oil/solvent mixture; and

(c) contacting at least a portion of said dewaxed oil/solvent mixture, under pressure, with one side of at least one semipermeable membrane made from regenerated cellulose to form a permeate richer in said solvent than said mixture and a retentate leaner in said solvent than said mixture, wherein said membrane is prepared from a hydrophilic regenerated cellulose membrane by sequentially permeating through the membrane, under a differential pressure across the membrane, a series of solvents of decreasing polarity wherein adjacent solvents in the series exhibit bulk liquid-liquid miscibility with each other and wherein the last solvent exhibits bulk liquid-liquid miscibility with the dewaxing solvent to be permeated through the membrane, the improvement comprising using as the membrane a regenerated cellulose membrane prepared by the method of:

(i) dissolving a cellulose material to form a solution;

(ii) casting the cellulose material into a film;

(iii) coagulating the cellulose solution film using an alcoholic alkali solution;

(iv) washing the coagulated cellulose film in an alcohol;

(v) regenerating the washed, coagulated cellulose film using an alcoholic acid solution;

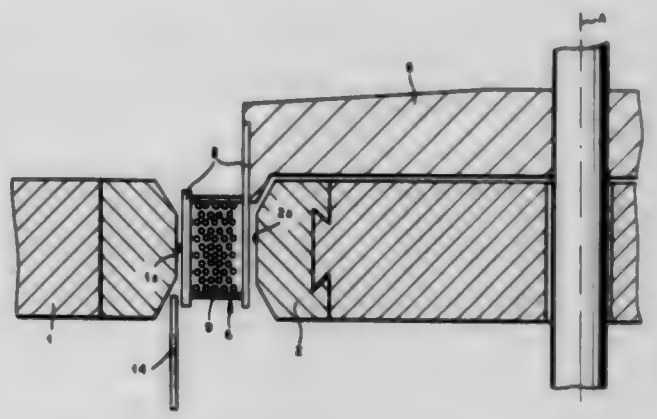
(vi) washing the regenerated cellulose film in an alcohol.

4,496,457

ROTOR-TYPE MAGNETIC PARTICLE SEPARATOR

Alfred Schickel, Freiberg, German Democratic Rep., assignor to Veb Schwermaschinenbau-Kombinat "Ernst Thälmann" Magdeburg, Magdeburg, German Democratic Rep.

Filed Sep. 24, 1982, Ser. No. 422,848
Claims priority, application German Democratic Rep., Sep. 29, 1981, 233668
Int. Cl.³ B03C *1/14*
U.S. Cl. 209—223 R **9 Claims**



1. A magnetic separator comprising:

a support defining an upright axis;

two stationary pole pieces spaced from and around said axis on said support;

a stationary inner ferromagnetic piece extending between said pole pieces and axially bridging same, said inner piece defining with said pole pieces respective angularly off-set gaps;

means for energizing said pole pieces and thereby creating a magnetic field extending radially across said gaps and through said inner piece;

an annular rotor centered on said upright axis and extending through said gaps, said rotor being formed of an endless annular succession of groups of nonradially extending and spaced-apart wholly nonmagnetic rotor elements disposed in an annulus around said inner piece;

means for rotating said rotor about said axis and thereby orbiting said rotor elements through said gaps;

means for feeding particulate material including magnetically attractable particles axially down through said gaps for interception by said elements of said rotor as said rotor rotates to orbit said elements through said gaps; and

means for washing said particles from said elements at a location angularly offset from said gaps.

4,496,458

DIALYSIS APPARATUS AND TECHNIQUE

Kyu H. Lee, King of Prussia, Pa., assignor to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.

Continuation of Ser. No. 799,582, May 23, 1977, abandoned, and a continuation-in-part of Ser. No. 629,082, Nov. 5, 1975, abandoned. This application Jul. 9, 1979, Ser. No. 55,881
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—90 **12 Claims**

7. An artificial kidney comprising a tubular casing having a first end, a second end, and an internal chamber;

first and second securing flanges,

said first flange encircling, and extending outwardly from, said casing near the first end thereof and said second flange encircling, and extending outwardly from, said casing near the second end thereof;

a bundle of hollow dialysis fibers in said internal chamber, said bundle of fibers having a first set of fiber ends and a second set of fibers ends,

the first set of fiber ends being potted in a potting resin

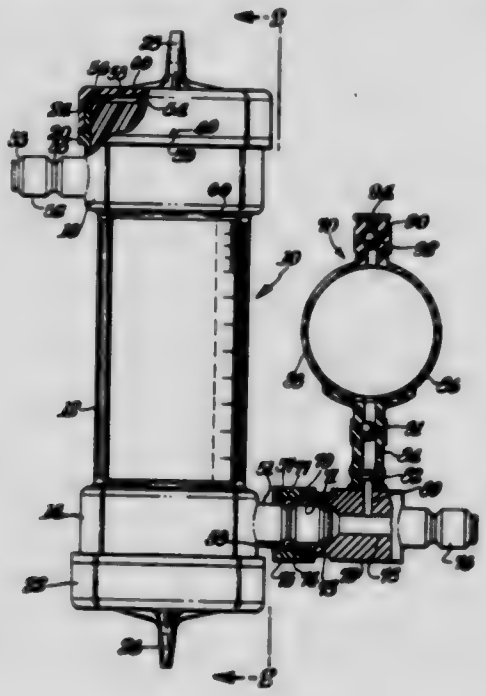
which defines a first internal wall near the first end of the casing,

the second set of fiber ends being potted in a potting resin which defines a second internal wall near the second end of the casing,

first and second end caps, each of said end caps comprising a body portion and a skirt portion and each skirt portion having an end edge;

first and second gaskets;

the end edge of the skirt portion of said first end cap being bonded to said first securing flange and said first gasket being disposed in sealing relationship between said first internal end wall and said first end cap, whereby there is provided at the first end of said casing a first sealed end chamber in fluid communication with said first set of fiber ends, said first end cap further comprising means for introducing blood into said first sealed end chamber;



the end edge of the skirt portion of said second end cap being bonded to said second securing flange and said second gasket being disposed in sealing relationship between said second internal end wall and said second end cap, whereby there is provided at the second end of said casing a second sealed end chamber in fluid communication with said second set of fiber ends, said second end cap further comprising means for withdrawing blood from said second sealed end chamber; one of said caps having a passageway therethrough at a location outside the sealed-in chamber associated with said one of said caps;

the lumens of said hollow fibers providing a path for the flow of blood between said first sealed end chamber and said second sealed end chamber;

said casing further comprising an inlet for liquids and an outlet for liquids, each said inlet and outlet being in fluid communication with the internal chamber of said casing and located between said first interior wall and said second interior wall.

4,496,459

FLEXIBLE FILTER DEVICE WITH MEANS TO POSITION FILTER BAG

Borje O. Rosaen, 4031 Thornoaks, Ann Arbor, Mich. 48104

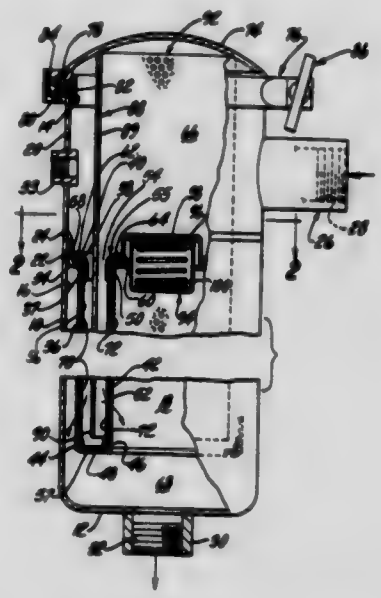
Filed Nov. 4, 1983, Ser. No. 549,246
Int. Cl.[3] B01D *27/10*
U.S. Cl. 210—310 10 Claims

1. A fluid filtering device comprising:

a tubular housing having an interior wall, an open top and defining an interior chamber,

said housing having an inlet and an outlet open to said chamber,

a filter assembly removably insertable into said chamber through said open top and to a filtering position in which said filter assembly is positioned between said inlet and said outlet, said filter assembly comprising a flexible filter bag having an outer periphery and a rim secured around said outer periphery, said rim engaging a portion of said housing when said filter assembly is in said filtering position,



a cover movable with respect to said housing between an open and a closed position in which said cover closes the open end of said housing,

means for detachably securing said cover to said housing when said cover is in said closed position,

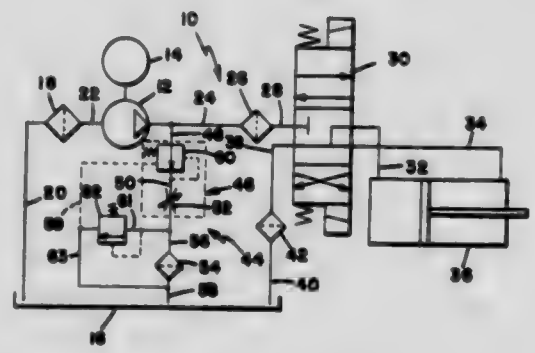
means carried by said cover for engaging and pushing said filter bag away from said open top of said housing as said cover is moved from said open and to said closed position.

4,496,460

SECONDARY FLOW FLUID FILTER

Richard O. Haarstad, New Brighton, and Jerry L. Kammerer, Plymouth, both of Minn., assignors to Hydraulic Specialty Company, Minneapolis, Minn.

Filed Aug. 11, 1983, Ser. No. 522,349
Int. Cl.[3] B01B *29/36*
U.S. Cl. 210—132 7 Claims



1. In a fluid circulation circuit including a powerdriven pump for creating high pressure flow from a reservoir through a full flow first filter and a fluid use device for return to said reservoir, a combination comprising:

a second filter;

base means for holding said second filter, said base means including a pressure reducing device upstream from said second filter, said device reducing fluid pressure from the high pressure of a high pressure line in said circuit, said base means further including means for limiting fluid flow rate to said second filter;

first means for communicating a portion of the fluid flowing in said high pressure line to said base means; and

second means for communicating fluid from said base means downstream from said second filter to said reservoir;

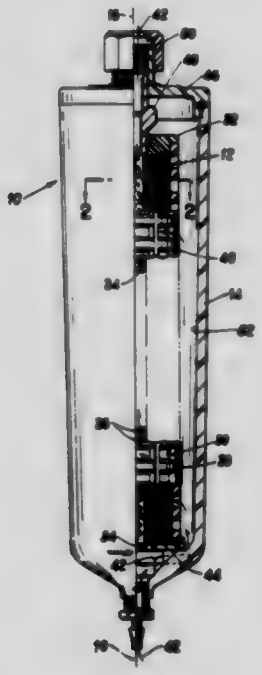
whereby said second filter continuously filters a portion of flowing fluid, said second filter being exposed through said pressure reducing device to controlled inlet pressure less than the working high pressure to said first filter and through said limiting means to predetermined flow rates of fluid so that said second filter may filter smaller contaminants than said first filter.

4,496,461

CHROMATOGRAPHY COLUMN

Gordon Leeke, Glastonbury; Chaokang Chu, E. Hartford, and Nils L. Dailey, Wallingford, all of Conn., assignors to AMF Incorporated, White Plains, N.Y.

Filed Jun. 17, 1983, Ser. No. 505,532
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—198.2 **20 Claims**



1. A chromatography column for effecting chromatographic separation of at least two components of a sample flowing radially therethrough comprising:

a housing;

at least one solid stationary phase in said housing having a longitudinal axis, said phase having chromatographic functionality and being effective for chromatographic separation;

a means for radially distributing the sample through the stationary phase;

a means for collecting the sample after the sample has radially flowed through the stationary phase;

wherein the stationary phase comprises:

(a) a swellable fibrous matrix in sheet form having chromatographic functionality and being effective for chromatographic separation, spirally wound around the longitudinal axis of the solid phase to form a plurality of layers around the axis;

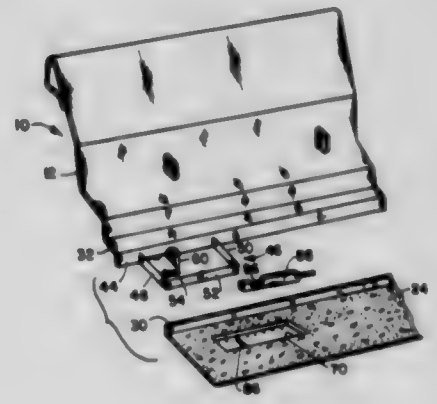
(b) a spacer means between each layer separating the layers for permitting controlled swelling of the matrix and enhancing the distribution of sample flowing radially through the stationary phase by channelling the sample flow through the matrix and substantially evenly dispersing the sample axially and circumferentially across the matrix.

4,496,462

ANCHORING DEVICE

Richard W. Steinkraus, 5111 Willowbrook La., Lakeland, Fla. 33803

Continuation-in-part of Ser. No. 541,127, Oct. 12, 1983, which is a continuation-in-part of Ser. No. 497,117, May 23, 1983, which is a continuation of Ser. No. 341,074, Jan. 20, 1982, Pat. No. 4,391,706. This application Oct. 14, 1983, Ser. No. 541,965
The portion of the term of this patent subsequent to Jul. 5, 2000, has been disclaimed.
Int. Cl.³ B01D *33/24, 33/34*
U.S. Cl. 210—232 **18 Claims**



18. An anchoring device for anchoring a grid relative a frame member of a filter pan, comprising in combination:

an aperture defined by the grid;

an open topped housing rigidly connected to the grid, said open top of said housing registering with said aperture;

an orifice defined by said housing;

an anchoring strap of inverted U-shaped configuration rigidly connected to the frame member of the filter pan for anchoring said housing relative the frame member, said strap removably extending through said orifice;

tapered means for cooperating with said anchoring strap, said tapered means being removably wedged between said anchoring strap and said housing; and

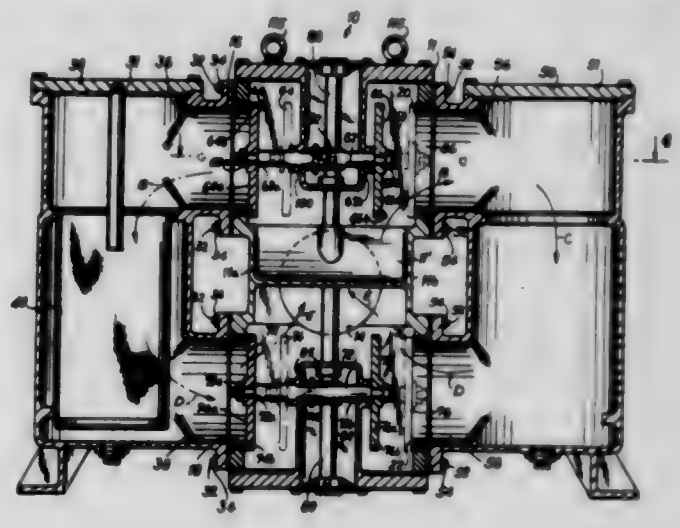
a tapered surface of said tapered means, said tapered surface cooperating with said strap to wedge said tapered pin between said strap and said housing.

4,496,463

DUPLEX STRAINER

Ashvin D. Desai, and Alvin Bujack, both of Lumberton, N.C., assignors to Mueller Steam Specialty, A Division of Core Industries, Inc., Lumberton, N.C.

Filed Dec. 8, 1983, Ser. No. 559,556
Int. Cl.³ B01D *35/12*
U.S. Cl. 210—341 **3 Claims**



1. A duplex strainer for straining a material supplied under pressure from upstream of the strainer and releasing the

strained material for use downstream of the strainer comprising a housing having an inlet port through which the material enters the housing and an outlet port through which the strained material leaves the housing, a first strainer chamber having first and second ports in separate fluid communication with the housing, a second strainer chamber having a third port which opposes said first port and a fourth port which opposes said second port in separate fluid communication with said housing, a first disk assembly slidably supported on said housing intermediate said first and third ports having a first surface which faces said first port and a third surface which faces said third port, a second disk assembly slidably supported on said housing intermediate said second and fourth ports having a second surface which faces said second port and a fourth surface which faces said fourth port, a first shaft rotatably supported on said housing and extending proximate said first and second disk assemblies, and coupling means for coupling said first shaft to said first and second disk assemblies so that when said first shaft is rotated in a first direction, said first and second disk assemblies are slid towards said first strainer chamber to move said first and second surfaces into engagement with said first and second ports, respectively, to close said first strainer chamber to flow while said third and fourth surfaces are moved away from said third and fourth ports, respectively, to open said second strainer chamber to flow, and when said first shaft is rotated in a second direction, said first and second disk assemblies are slid towards said second strainer chamber to move said third and fourth surfaces into engagement with said third and fourth ports, respectively, to close said second strainer chamber to flow while said first and second surfaces are moved away from said first and second ports, respectively, to open said first strainer chamber to flow, said coupling means including a first yoke means coupled to said first shaft and said first disk assembly for converting the rotation of said first shaft into reciprocal linear movement of said first disk assembly and a second yoke means coupled to said first shaft and said second disk assembly for converting the rotation of said first shaft into reciprocal linear movement of said second disk assembly, said first yoke means including first and second ends, said first end of said first yoke means being coupled to said first shaft for rotation therewith, said second end of said first yoke means being coupled to said first disk assembly for reciprocal lateral displacement therewith, said second yoke means including first and second ends, said first end of said second yoke means being coupled to said first shaft for rotation therewith, said second end of said second yoke being coupled to said second disk assembly for reciprocal lateral displacement therewith, said first and second disk assemblies including first and second disk shafts, respectively, said first disk shaft extending intermediate and coupling said first surface to said third surface, said second disk shaft extending intermediate and coupling said second surface to said fourth surface, said second end of said first yoke means being U-shaped in cross-section and extending over said first disk shaft, said second end of said second yoke means being U-shaped in cross-section and extending over said second disk shaft, said first disk shaft including a first roller pin extending therethrough, said second end of said first yoke means extending over said first disk shaft to capture said first roller pin for rolling movement therewith, said second disk shaft including a second roller pin extending therethrough, said second end of said second yoke means extending over said second disk shaft to capture said second roller pin for rolling movement therewith.

4,496,464

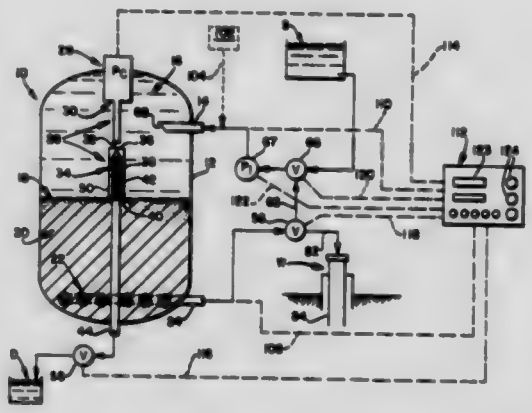
FILTER APPARATUS AND METHOD

Clifford J. Hensley, P.O. Box 6847, Odessa, Tex. 79762

Filed Oct. 3, 1983, Ser. No. 538,140
Int. Cl.³ B01D *23/24*
U.S. Cl. 210—792 14 Claims

1. Method of filtering contaminants from a stream of fluid comprising the steps of:

(1) placing a first screen means within a vessel;
(2) placing a filter media upstream of said first screen means and within said vessel, said filter media being made of a multiplicity of discrete pieces of filter material which substantially will not pass through said first screen means;
(3) flowing contaminated liquid into the vessel, through the media, through the first screen means, and away from the vessel, while the contaminant is deposited on the media;
(4) cleaning the media of most of the accumulated contaminant while the media predominately remains within the vessel by carrying out the following steps:
(a) placing the suction of a pump in communication with the liquid contained within the vessel;
(b) placing the discharge of said pump within the vessel in spaced relationship respective to said pump suction;
(c) placing a second screen means within said vessel and in spaced relationship respective to said discharge;



(d) flowing contaminated liquid contained within said vessel into said pump suction, through said pump discharge, and across said second screen means at a rate to cause substantially all of the liquid and the media to be agitated with great force, thereby scrubbing the media predominately within said vessel, and causing most of the contaminants to be translocated from the media into the liquid;
(e) discharging the liquid ladened with contaminants through the second screen means and from the vessel while flowing relative uncontaminated liquid into the vessel until most of the suspended contaminants have been removed from the vessel;
(5) reducing the velocity of flow to a value which enables the media to settle into a filter bed;
(6) repeating step (3).

4,496,465

WET-PROCESS PHOSPHORIC ACID BRIGHTENING REAGENT FOR ALUMINUM

Brooks M. Whitehurst, New Bern; Donald F. Clemens, Greenville; Taylor King, Beaufort, and Garnett B. Whitehurst, New Bern, all of N.C., assignors to Whitehurst Associates, Inc. and Excee Chemical Sales, Inc., both of New Bern, N.C., a part interest

Division of Ser. No. 425,573, Sep. 28, 1982,. This application Apr. 27, 1984, Ser. No. 604,463
Int. Cl.³ C09K *13/04, 13/08, 13/06;* C23F *1/00*
U.S. Cl. 252—79.2 4 Claims

3. A wet process phosphoric acid treating agent comprising about 50–55% P_2O_5 (90–94% con.) about 3% HNO_3 (68–73.5% con.), polyvalent metal cations, Fe^{++}, Fe^{+++}, Al^{+++}, Mg^{++}, and Cu^{++} up to about 3% in Al equivalents and Cu^{++} separately adjusted to positively measure 80–150 ppm.

4,496,466

WET-PROCESS PHOSPHORIC ACID BRIGHTENING REAGENT FOR ALUMINUM

Brooks M. Whitehurst, New Bern; Donald F. Clemens, Greenville; Taylor King, Beaufort, and Garnett B. Whitehurst, New Bern, all of N.C., assignors to Whitehurst Associates, Inc. and Encee Chemical Sales, Inc., both of New Bern, N.C., a part interest

Division of Ser. No. 425,573, Sep. 28, 1982,. This application Apr. 27, 1984, Ser. No. 604,464
Int. Cl.³ C09K *13/04, 13/08, 13/06;* C23F *1/00*
U.S. Cl. 252—79.3 9 Claims

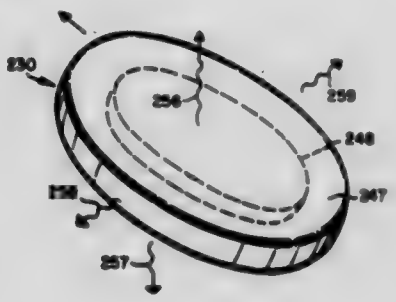
1. A brightening bath for aluminum derived from a wet-process phosphoric acid consisting essentially of:
(a) a majority amount of orthophosphoric acid;
(b) a subsidiary amount of nitric acid;
(c) trace amounts of SiO_2, chromium, and copper;
(d) trace amounts of fluoride ions sufficient to maintain a phosphorus to fluorine ratio in the range of about 35 to 1 to about 100 to 1;
(e) trace amounts of iron, magnesium, and aluminum sufficient to maintain less than about 3% based on aluminum equivalents of the total dissolved metals in said bath;
(f) less than about 500 ppm organic substances oxidizable in the presence of nitric acid; and
(g) fume inhibitors.

4,496,467

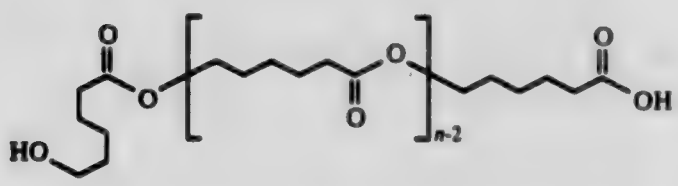
INSECT REPELLENT, PHEREMONAL, ANIMAL REPELLENT DIAGNOSTIC AND/OR AROMA AUGMENTING OR ENHANCING COMPOSITIONS AND ARTICLES CONTAINING AT LEAST A MAJOR PROPORTION OF POLY(EPSILON CAPROLACTONE)HOMOPOLYMERS, AND HAVING IMBEDDED THEREIN ONE OR MORE FUNCTIONAL

Marina A. Munteanu, New York, N.Y.; Edward S. Oltarzewski, Mercerville, N.J.; Leon Shechter, Summit, and Craig B. Warren, Rumson, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

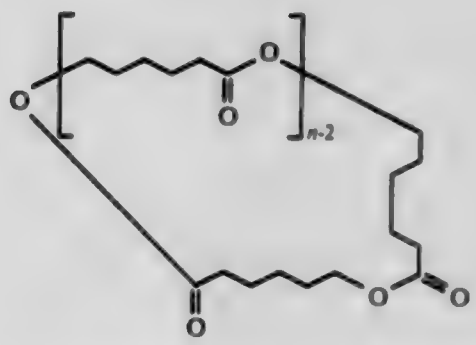
Division of Ser. No. 468,997, Feb. 23, 1983, Pat. No. 4,469,613. This application Dec. 21, 1983, Ser. No. 563,771
Int. Cl.³ C11D *17/00*
U.S. Cl. 252—92 2 Claims



1. A process for the preparation of a detergent bar by augmenting or enhancing the aroma of a void comprising;
(i) the step of placing into said void a scented poly(epsilon caprolactone) homopolymer having the structure:



and from 0 up to a minor proportion of the structure:



wherein n is an integer of from about 500 up to about 1,200 with the proviso that the average n in the system varies from about 600 up to about 800 in the solid phase and imbedded in said polymer an aromatizing agent which is compatible with said polymer and a stablilizing agent;
(ii) surrounding said plastic core and in intimate contact with the surface area of said plastic core, and adhering to said plastic core a detergent composition existing in the solid phase, said detergent composition having a defined outer surface the quantity of aromatizing agent within the plastic core, the physical properties of the plastic core, and the physical properties of the detergent composition surrounding the plastic core being such that the aromatizing agent is transported at a steady state from the plastic core into said detergent composition past the outer surface of said detergent composition and into the environment surrounding said detergent bar, said aromatizing agent being compatible with said detergent composition, said detergent bar being produced by the process consisting essentially of the steps of:
(a) forming a first flowable mass of said poly(epsilon caprolactone) homopolymer in intimate admixture with from 1% up to 30% by weight of aromatizing agent;
(b) casusing the flowable mass to be formed into an extruded rod;
(c) pelletizing the thus formed extruded rod to form pellets in the solid state; have imbedded therein from 1% up to 30% aromatizing agent;
(d) molding the resulting pellets into a functional article internal core for detergent bars; and
(e) placing the functional article into said void;
(f) propelling a detergent composition in the fluid state in such a manner as to cause said detergent to surround the aromatized plastic core; and
(g) causing the detergent composition surrounding the aromatized thermoplastic polymeric core to harden;
the amount of aromatizing agent in said poly(epsilon caprolactone) homopolymer being in the range of from about 1% up to about 30% by weight of the poly(epsilon caprolactone) homopolymer, said poly(epsilon caprolactone) homopolymer containing a stabilizer therefor, the aromatizing agent being transported as a steady state into said void surrounding the thus-produced article.

4,496,468

HYDRATED HYDROXYETHYL CELLULOSE COMPOSITIONS

Roy F. House, Houston, and Lonnie D. Hoover, Chappell Hill, both of Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Mar. 29, 1982, Ser. No. 362,672
The portion of the term of this patent subsequent to May 18, 1999, has been disclaimed.
Int. Cl.³ C09K *7/02;* E21B *43/00*
U.S. Cl. 252—8.5 A 10 Claims

1. A viscosifying composition which will hydrate in and viscosify heavy brines having a density greater than about 13.5 ppg at ambient temperature which consists essentially of from about 35% to about 55% by weight of an oleaginous liquid which is a liquid aliphatic or aromatic hydrocarbon, from about 0.25% to about 3% by weight based on said oleaginous

liquid of a compatibilizing agent comprising an organophilic clay, from about 15% to about 55% of an aqueous phase comprising water and an inorganic salt which has exothermic heat of solution wherein the concentration of said inorganic salt is greater than about 10% by weight of said aqueous phase, from about 10% to about 30% by weight of hydroxyethyl cellulose, and from about 20% to about 40% by weight, based on the weight of said organophilic clay, of a dispersant selected from the class consisting of aliphatic alcohols having from 1 to 2 carbon atom ketones having from 2 to 5 carbon atoms, and mixtures thereof.

4,496,469

HEAT-INSULATING REFRACTORY MATERIAL CONSISTING ALKALI TITANATE AND SILICON RESIN

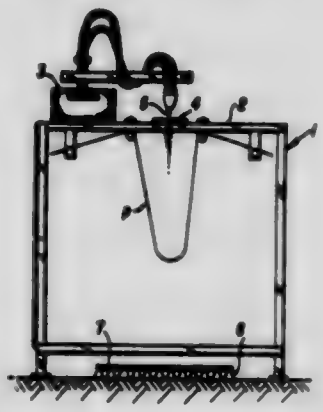
Takuo Morimoto, Kyoto; Kihachiro Nishiuchi, Tokushima; Mineo Izumi, Tokushima, and Noriyoshi Ejima, Tokushima, all of Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Osaka, Japan

Filed Jan. 4, 1983, Ser. No. 455,492

Claims priority, application Japan, Jan. 12, 1982, 57-3625; Jan. 26, 1982, 57-11421; Jan. 26, 1982, 57-11422

Int. Cl.³ C04B *43/02*

U.S. Cl. 252—62 **41 Claims**



1. A heat-insulating refractory material consisting essentially of an alkali titanate and a silicone resin.

4,496,470

CLEANING COMPOSITION

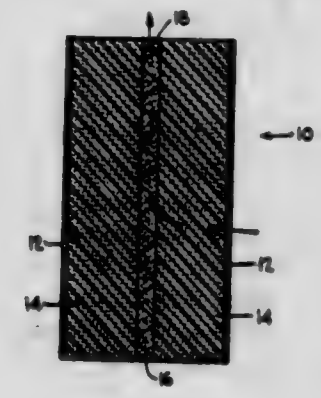
Anita G. Kapiloff, Washington, D.C., and Randolph T. Hatch, Silver Spring, Md., assignors to The B. F. Goodrich Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 224,011, Jan. 12, 1981, Pat. No. 4,357,254. This application Jan. 12, 1982, Ser. No. 338,849

The portion of the term of this patent subsequent to Nov. 2, 1999, has been disclaimed.

Int. Cl.³ C02B *5/04*

U.S. Cl. 252—181 **9 Claims**



1. A composition for cleaning solid surfaces in reverse osmosis water purification systems which are fouled with inorganic scale, comprising a 0.1 to 5 percent by weight water solution of a composition consisting essentially of (a) at least one of a monobasic alkali metal or ammonium phosphate; (b) at least one of a dibasic alkali metal or ammonium phosphate; (c) an effective amount of at least one of citric acid, malic acid, or sulfamic acid; and (d) an effective amount of a low-foaming nonionic detergent, and having a pH of from 2 to 4.

4,496,471

STABLE AQUEOUS SOLUTION-TYPE OXIDIZING AGENT COMPOSITION FOR EXPLOSIVES

Yoshikazu Hirosaki, and Katsuhide Hattori, both of Chita, Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1982, Ser. No. 441,738

Claims priority, application Japan, Dec. 10, 1981, 56-197632

Int. Cl.³ C06B *31/28*

U.S. Cl. 252—186.21 **4 Claims**

1. A stable aqueous solution-type oxidizing agent composition consisting of an aqueous solution of an oxidizing agent, which consists of 58–89.99% by weight of ammonium nitrate as a main component and 2–20% by weight of an inorganic chlorate, 8–20% by weight of water and 0.01–2% by weight of a water-soluble inorganic phosphate.

4,496,472

PROCESS FOR BLEACHING CELLULOSIC FIBRE MATERIALS USING OLIGOMERS OF PHOSPHONIC ACID ESTERS AS STABILIZERS IN ALKALINE, PEROXIDE-CONTAINING BLEACHING LIQUORS

Paul Schäfer, Riehen, and Hans-Ulrich Berendt, Allschwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

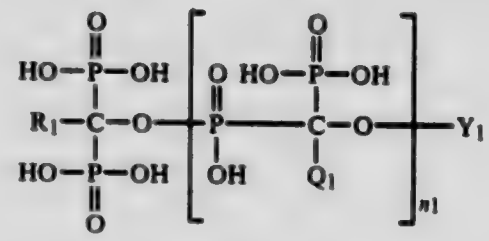
Filed Dec. 17, 1982, Ser. No. 450,718

Claims priority, application Switzerland, Dec. 23, 1981, 8299/81

Int. Cl.³ C09K *3/00*; D06L *3/02*

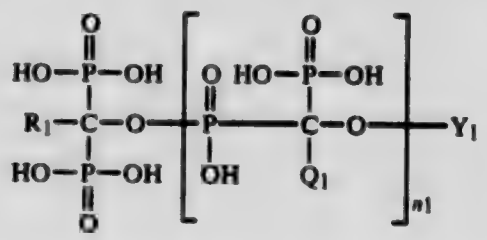
U.S. Cl. 252—186.22 **23 Claims**

1. A process for bleaching cellulosic textile fiber material with an aqueous peroxide-containing alkaline liquor, which process comprises applying to said material a liquor which is stabilized by addition of a water-soluble oligomer of the formula



wherein Y_1 is hydrogen or —CO—T_1, each of R_1, Q_1 and T_1 is alkyl having 1 to 4 carbon atoms and n_1 is 1 to 16, or an alkali metal salt thereof, and subsequently storing the impregnated material in the moist state.

4. An aqueous alkaline peroxide-containing bleaching liquor for carrying out a process for bleaching cellulosic textile fiber material with an aqueous peroxide-containing alkaline liquor, which liquor is stabilized with an oligomer of the formula



wherein Y_1 is hydrogen or —CO—T_1, each of R_1, Q_1 and T_1

is alkyl having 1 to 4 carbon atoms and n_1 is 1 to 16, or an alkali metal salt thereof.

5. The bleaching liquor of claim 4 which contains
(a) an alkali metal hydroxide,
(b) hydrogen peroxide and
(c) the oligomer of claim 4.

6. The bleaching liquor of claim 5 which further contains one or more of
(d) a peroxidisulfate,
(e) a wetting agent,
(f) an antifoaming or deaerating agent,
(g) a water-soluble alkali metal salt of a silicate and
(h) a fluorescent whitening agent.

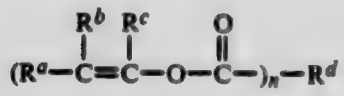
4,496,473

HYDROGEN PEROXIDE COMPOSITIONS

William R. Sanderson, Warrington, England, assignor to Interox Chemicals Limited, London, England

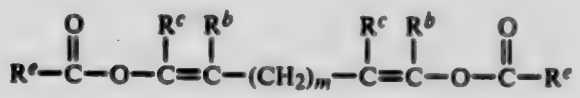
Filed Apr. 12, 1983, Ser. No. 484,209
Claims priority, application United Kingdom, Apr. 27, 1982, 8212149
Int. Cl.³ C11D 7/54
U.S. Cl. 252—186.41 13 Claims

1. A liquid composition for use in bleaching or disinfection comprising an emulsion containing an aqueous acidic solution of hydrogen peroxide, an organic phase and an emulsifying amount of an emulsifier, said organic phase comprising an enol ester activator having either of the following general formulae:



(i)

or



(ii)

in which
each of R^a and R^b represent hydrogen or a C_1 to C_5 alkyl radical or a C_2 to C_4 alkenyl radical or a phenyl radical, R^a and R^b being the same or different or combining together to form a carbocyclic di-radical,
R^c represents hydrogen or a C_1 to C_5 alkyl radical or a phenyl radical or is combined with R^a or R^b and the olefin group to form a carbocyclic radical,
R^e represents hydrogen or a C_1 to C_3 alkyl radical or a phenyl radical,
n is 1 or 2,
when n=1, R^d represents hydrogen or a C_1 to C_3 alkyl radical or a phenyl radical,
when n=2, R^d represents a C_2 to C_{10} alkylene di-radical or a phenylene di-radical,
and m is an integer from 0 to 8.

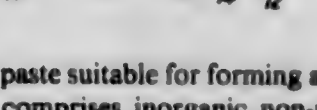
4,496,474

ASPHALT EMULSIONS COMPRISING N-ALIPHATIC-1,3-DIAMINOPENTANE EMULSIFIER AND PROCESS

Richard A. Reck, Hinsdale, Ill., assignor to Akzona Incorporated, Enka, N.C.

Filed Dec. 20, 1982, Ser. No. 451,639
Int. Cl.³ B01J 13/00
U.S. Cl. 252—311.5 2 Claims

1. A process for making an asphalt emulsion comprising emulsifying bitumen in water in the presence of an emulsifier of the formula:



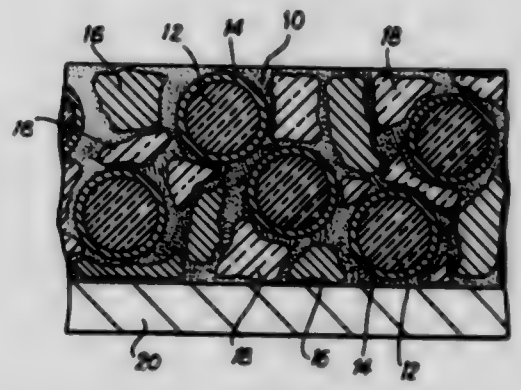
wherein R is tallow.

4,496,475

CONDUCTIVE PASTE, ELECTROCONDUCTIVE BODY AND FABRICATION OF SAME

John C. Abrams, Tappan, N.Y., assignor to Potters Industries, Inc., Hasbrouck Heights, N.J.

Division of Ser. No. 187,428, Sep. 15, 1980, Pat. No. 4,419,279.
This application Sep. 1, 1982, Ser. No. 413,608
Int. Cl.³ H01B 1/06
U.S. Cl. 252—514 14 Claims



1. A conductive paste suitable for forming an electroconductive body, which comprises inorganic non-metallic particles coated with silver, said silver-coated inorganic non-metallic particles being of a size, on average, of from 1 to 100 microns in maximum dimension, silver particles and particles of glassy material, said particles of glassy material having a fusion silver-coated glass beads, in an inert organic vehicle which is substantially eliminated from the remaining components of the conductive paste during formation of the electroconductive body, the total amount of silver in said paste constituting at least 10% by weight of the paste and the amount of silver in said silver particles constituting at least 5% by weight of the paste.

4,496,476

ODORANTS CONTAINING CIS-3,7-DIMETHYLOCTA-3,6-DIENOIC ACID

Peter Naegeli, Wettingen, Switzerland, and Martin Rohr, Glen Rock, N.J., assignors to Givaudan Corporation, Clifton, N.J.

Filed Aug. 23, 1982, Ser. No. 410,296
Claims priority, application Switzerland, Sep. 9, 1981, 5823/81
Int. Cl.³ A61K 7/46
U.S. Cl. 252—522 R 6 Claims

1. A fragrance composition comprising an olfactorily effective amount of cis-3,7-dimethylocta-3,6-dienoic acid and at least one other olfactory agent.

4,496,477

APPARATUS AND A PROCESS FOR HEATING A MATERIAL

Donald R. Ross, P.O. Box 11388, Fort Worth, Tex. 76110

Division of Ser. No. 787,713, Apr. 14, 1977, Pat. No. 4,263,163.
This application Mar. 5, 1980, Ser. No. 127,452
Int. Cl.³ G21F 9/16
U.S. Cl. 252—629 8 Claims

1. A process for treating readioactive material, said process comprising:
a. mixing said radioactive material with an expandable solid particle to form a mixture;

b. heating said mixture to expand and to encapsulate said radioactive material to form encapsulated material;
c. in heating said mixture burning fuel in the presence of said mixture to heat said mixture to assist in forming said encapsulated material;
d. contacting said mixture with a hot surface to assist in forming said encapsulated material;
e. reflecting heat energy radiating from said hot surface toward said mixture on said hot surface to assist in forming said encapsulated material; and,
f. said encapsulated material being a solid.

4,496,478

PROCESS FOR SEPARATING UNSAPONIFIABLES FROM FATTY AND ROSIN ACIDS

Sudhir S. Kulkarni, and Santi Kulprathipanja, both of Hoffman Estates, Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Feb. 27, 1984, Ser. No. 584,030
Int. Cl.[3] C09F *1/00, 5/10*
U.S. Cl. 260—97.6 11 Claims

1. A process for separating an unsaponifiable compound from a feed mixture comprising a fatty acid and a rosin acid, said process comprising:
(a) forming an emulsion with said feed mixture, an organic solvent in which said feed mixture is soluble and an emulsifying liquid capable of forming an emulsion with said feed mixture and said organic solvent, the polarity index of said emulsifying liquid being at least 2.4 higher than the polarity index of said organic solvent;
(b) effecting the formation of three phases from said emulsion, an organic solvent phase containing the major portion of said fatty acid and rosin acid, an emulsifying liquid phase and a semi-solid sludge phase containing the major portion of said unsaponifiable compound; and
(c) separating the three phases.

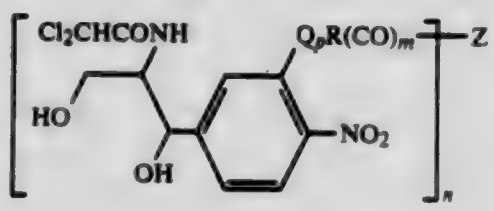
4,496,479

CHLORAMPHENICOL DERIVATIVES, ANTIGENS AND ANTIBODIES

Mae W. Hu, and Prithipal Singh, both of Sunnyvale, Calif., assignors to Syntex (U.S.A.) Company, Palo Alto, Calif.

Filed May 18, 1983, Ser. No. 495,851
Int. Cl.[3] A61K *31/04*
U.S. Cl. 260—112 R 15 Claims

1. A compound of the formula:



wherein:
Q is chalcogen of atomic number 8 to 16 or nitrogen;
p is 0 or 1;
R is a linking group of at least 1 carbon atom and not more than 12 atoms other than hydrogen;
Z is hydrogen, hydroxy, alkoxy of from 1 to 6 carbon atoms, a group forming an activated ester capable of amide formation in an aqueous medium, or a poly(amino acid) which is antigenic or an enzyme;
m is 0 or 1 when Z is a poly(amino acid) and is otherwise 1; and
n is 1 when Z is other than a poly(amino acid) and is otherwise a number between one and the molecular weight of Z divided by 1000.

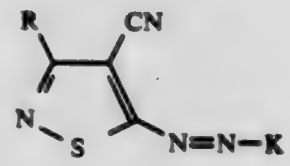
4,496,480

ISOTHIAZOLAZO DYES HAVING COUPLING COMPONENTS WHICH ARE FREE FROM UNSATURATED ALIPHATIC RADICALS

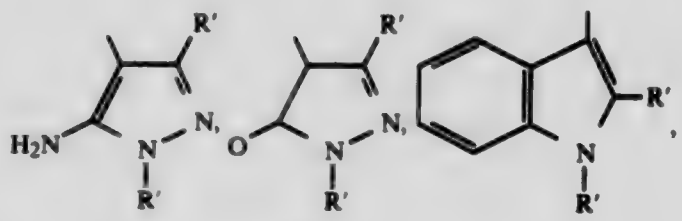
Udo Bergmann, Darmstadt; Johannes P. Dix, Neuhofen; Guenter Hansen, and Ernst Schefczik, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 1, 1983, Ser. No. 463,001
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1982, 3207209
Int. Cl.[3] C09B *29/039, 29/08, 29/095, 29/36*
U.S. Cl. 534—794 9 Claims

1. An isothiazolazo dye of the formula:



wherein R is a C_1–C_4 alkyl which is substituted by chlorine, bromine, cyano, hydroxyl, C_1–C_4-alkoxy, phenoxy, C_1–C_8-alkoxycarbonyl or an unsubstituted phenyl or a phenyl substituted by methyl, chloro, bromo, methoxy, ethoxy or nitro; and K is


R'
H2N
N
O
R'
R'
R'

4,496,481

PRODUCTION OF AZO COMPOUNDS

Ian R. Wheeler, Houston, Scotland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 11, 1981, Ser. No. 329,860

Claims priority, application United Kingdom, Dec. 23, 1980, 8041277

Int. Cl.³ C09B 29/32

U.S. Cl. 534—579 10 Claims

1. In an improved process for the production of an azo compound in one step by the simultaneous diazotisation and coupling with agitation of a mixture of a diazotisable amine, a coupling component and an organic or inorganic nitrite, each dissolved or dispersed in a water-insoluble liquid organic acid in the absence of any other solvent component, at a temperature of −20° to 100° C., the improvement comprises

carrying out the reaction in a straight or branched-chain alkanoic acid of 4 to 10 carbon atoms or in a mixture of said acids,

adding to the reaction mixture, after reaction is complete, sufficient aqueous alkali to convert said alkanoic acid to its water-soluble alkaline salt which is transferred into the aqueous phase, from which the free alkanoic acid is recovered, for eventual recycle in the process, by subsequent acidification of the aqueous phase of pH 4 with mineral acid to form a two-phase system from whence the free acid is recovered in high yield as the organic phase by gravitational or centrifugal means, and

isolating the insoluble azo compound from the resultant mixture.

4,496,482

LIQUID CRYSTAL SILANES

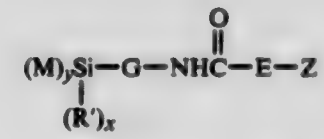
George E. Totten, West Haverstraw, N.Y., and Thomas C. Williams, Ridgefield, Conn., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 122,482, Feb. 19, 1980, Pat. No. 4,316,041. This application Oct. 22, 1981, Ser. No. 313,796

Int. Cl.³ C09B 29/08; C07J 9/00

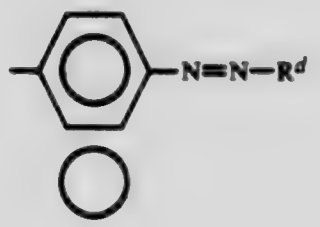
U.S. Cl. 534—577 20 Claims

1. A liquid crystal compound of the general formula



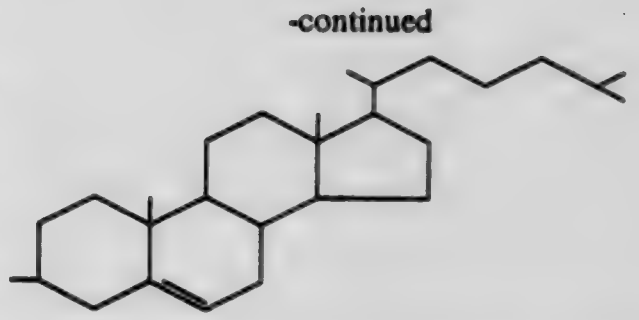
(I)

wherein y is an integer having a value of from 1 to 3; x is an integer having a value of from 0 to 2; M is methoxy, ethoxy, chloro or dimethylamino; R′ is hydrogen, methyl or ethyl; G is alkylene having from 2 to 4 carbon atoms, or arylene or aralkylene having from 6 to 8 carbon atoms; E is —O— or —NH—; and Z is a group of the formula:



(A)

-continued



(B)

wherein R^d is an unsubstituted or substituted phenyl, naphthyl or anthracenyl group; wherein the substituents on said groups can be chloro, nitro, methylthio, bromo, iodo, tertiary amino, acyl having from 2 to 12 carbon atoms, dialkylamino in which the alkyl group has from 1 to 5 carbon atoms, alkoxy having from 1 to 6 carbon atoms, alkyl having from 1 to 10 carbon atoms, cyano, esters which may contain substituted aryl or aralkyl moieties of from 1 to 12 carbon atoms or carbonates containing an alkyl group of from 1 to 10 carbon atoms.

4,496,483

N-HEXAMETHYLENEIMINO THIOLCARBAMATE COMPOUNDS

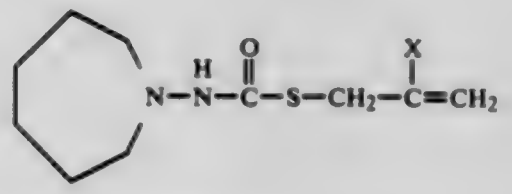
Don L. Hunter, Anaheim, Calif., assignor to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Sep. 12, 1983, Ser. No. 531,139

Int. Cl.³ A01N 47/12; C07D 295/00

U.S. Cl. 260—239 BF 5 Claims

1. Thiolcarbamates of the formula



wherein X represents halogen.

4,496,484

PENICILLIN DERIVATIVES

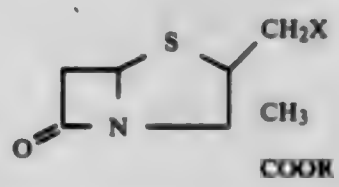
Ronald G. Micetich, Sherwood Park, Canada; Shigeru Yamabe, Kobe, Japan; Shoji Hirata, Matsudo, Japan, and Naobumi Ishida, Tokushima, Japan, assignors to Taiho Pharmaceutical Company, Limited, Tokyo, Japan

Filed Apr. 22, 1983, Ser. No. 487,557

Int. Cl.³ C07D 499/00; A61K 31/425

U.S. Cl. 260—245.2 R 8 Claims

1. A penicillin derivative represented by the following formula and alkali metal, alkaline earth metal, cyclohexylamine, trimethylamine, diethanolamine, alginine, lysine or ammonium salts thereof



wherein X represents chlorine atom or bromine atom, and R represents hydrogen atom, C_{1-6} alkyl, C_{1-6} alkyl substituted with 1 to 3 halogen atoms, methyl group substituted with 1 to 3 phenyl groups which may optionally be substituted with methoxy or nitro on the phenyl ring, C_{1-6} alkoxymethyl, C_{1-6} alkylcarbonyloxy-C_{1-6} alkyl, (C_{5-7} cycloalkyl)carbonyloxy-C_{1-6} alkyl, benzylcarbonyloxy-C_{1-6} alkyl, benzoyloxy-C_{1-6} alkyl, phthalidyl, tetahydropyranyl, 5-oxo-2-tetrahydrofuranyl, dimethylaminoethyl, dimethylchlorosilyl or trichlorosilyl.

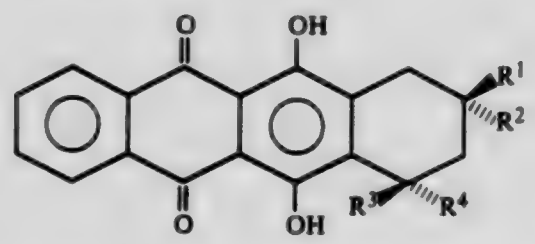
4,496,485

ASYMMETRIC 7-O-(SUBSTITUTED ACETYL)-4-DEMETHOXYDAUNOMYCINONES

Robert B. Garland, Northbrook, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Filed Nov. 25, 1983, Ser. No. 555,270
Int. Cl.³ C07C 50/27
U.S. Cl. 260—351.1 4 Claims

1. A compound of the formula:



wherein one of R^1 or R^2 is acetyl and the other is hydroxy;
wherein one of R^3 and R^4 is hydrogen and the other is $O(CO)CH_2OR^5$;
wherein the hydroxy and the $O(CO)CH_2OR^5$ are in a cis relationship; and
wherein R^5 is an asymmetric radical selected from the group consisting of 1-menthyl, d-menthyl, 1-isomenthyl, d-isomenthyl, d-neomenthyl, bornyl and 1-isopinocamphyl.

4,496,486

METHOD FOR THE PREPARATION OF PHOSPHATIDYL CHOLINE OF LOW OIL CONTENT

Bernd-Rainer Günther, Bergheim, Fed. Rep. of Germany, assignor to A. Nattermann & Cie. GmbH, Cologne, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 269,805, Jun. 3, 1981, abandoned. This application Mar. 30, 1983, Ser. No. 480,480
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023814
Int. Cl.³ A23J 7/02; C07F 9/10
U.S. Cl. 260—403 10 Claims

1. A method for the preparation of a substantially oil-free phosphatidyl choline fraction from an oil-containing phosphatide fraction comprising admixing a solution comprised of an alcohol and an oil-containing phosphatide resulting from the alcohol extraction of said phosphatide with between about 10 and 20 percent by volume of water based on said solution to cause oil present therein to separate from said solution, removing said oil from said solution and recovering a substantially oil-free phosphatidylcholine fraction from said solution.

4,496,487

HYDROXYMETHYL POLYOLS

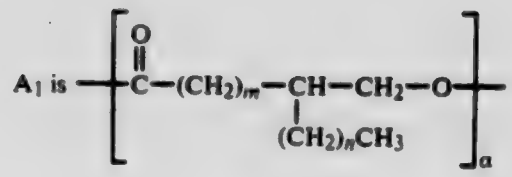
Dwight E. Peerman, and Edgar R. Rogier, both of Minnetonka, Minn., assignors to Henkel Corporation, Minneapolis, Minn.

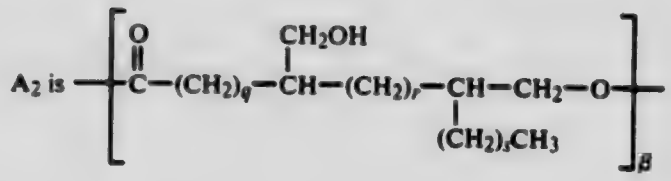
Filed Sep. 7, 1982, Ser. No. 415,718
Int. Cl.³ C09F 5/00, 7/00
U.S. Cl. 260—404 44 Claims

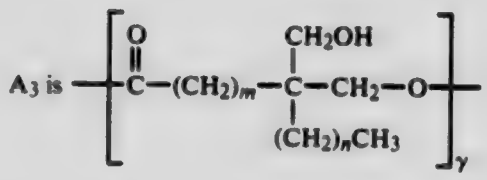
1. Non-gelling polyols of the formula:

$$R—X—A—H]_p$$

where
R is a polyol, polyamine or aminoalcohol residue;
X may be the same or different and is O, N or NH;
p is an integer from 2 to 6; and,
A may be the same or different and is selected from the group consisting of A_1, A_2 and A_3 and combinations of A_1, A_2 and A_3, where

A_1 is 

A_2 is 

A_3 is 

where m, n, q, r, s, α, β and γ are integers and where
$m > 3$
$n \geqq 0$ and
$m+n$ is from 11 to 19
$q > 3$
$r \geqq 0$
$s \geqq 0$ and
$q+r+s$ is from 10 to 18
α is from 0 to 10
β is from 0 to 10 and
γ is from 0 to 10, except that all α's, β's and γ's in any given compound are not all zero; with the proviso that when X is oxygen, p is 3, A is A_1 and each α is 1, R is not glycerol.

4,496,488

COPPER AND MANGANESE REMOVAL FROM C_6-C_9 SATURATED ALIPHATIC MONOCARBOXYLIC ACIDS

Clarence J. Duey, Jr., Bay City, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Mar. 30, 1983, Ser. No. 480,568
Int. Cl.³ C11C 1/00
U.S. Cl. 260—413 4 Claims

1. A process for removing cupric and manganous metal ions from a saturated aliphatic monocarboxylic acid containing from 6 to 9 carbon atoms comprising adding to said monocarboxylic acid, water and a mineral acid whose hydrogen can be replaced by said cupric and manganous metal ions, said extractant acid being present in an amount sufficient to extract said cupric and manganous metal ions in soluble form from said monocarboxylic acid into an aqueous layer; said monocarboxylic acid collecting in a water-immiscible organic phase and said metal ions collecting in an aqueous phase, separating said organic phase from said aqeous phase and recovering said monocarboxylic acid having a substantially reduced content of said cupric and manganous metal ions.

4,496,489

SEPARATION PROCESS AND PRODUCTS OBTAINED THEREBY

Achintya K. SenGupta, Schenefeld, Fed. Rep. of Germany, assignor to Lever Brothers Company, New York, N.Y.

Filed Oct. 1, 1981, Ser. No. 307,472
Claims priority, application United Kingdom, Oct. 2, 1980, 8031784
Int. Cl.³ C09F 5/10; C11B 3/00
U.S. Cl. 260—428.5 15 Claims

1. A process for the fractionation of mixtured containing phosphatides in a solution of said mixtures in a solvent system in which selective micelles formation occurs, which comprises an essentially non-polar solvent and a polar solvent which comprises the steps of:

(a) contacting said solution with a semipermeable membrane under-pressure;
(b) separating said solution into a permeate portion and a retentate portion, and
(c) recovering by solvent removal a fraction enriched in at least one of the component phosphatides from one of the portions separated by the semipermeable membrane.

4,496,490

NON-TOXIC ORGANOTIN STABILIZERS FOR VINYL CHLORIDE POLYMERS

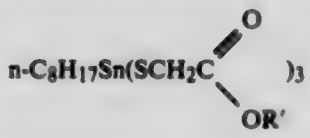
William A. Larkin, Morristown, N.J., assignor to M&T Chemicals Inc., Woodbridge, N.J.

Continuation-in-part of Ser. No. 43,997, May 31, 1979, abandoned, which is a continuation of Ser. No. 454,363, Mar. 25, 1974, abandoned, which is a division of Ser. No. 343,648, Mar. 22, 1973, abandoned. This application Feb. 12, 1980, Ser. No. 120,753

Int. Cl.³ C07F 7/22

U.S. Cl. 260—429.7 **4 Claims**

1. A food grade liquid organotin stabilizer for polyvinyl chloride and copolymers of vinyl chloride with copolymerizable ethylenically unsaturated compounds, wherein said stabilizer consists essentially of between 95 and 100% by weight of mono-n-octyltin compound of the general formula



wherein R′ represents an alkyl radical containing eight carbon atoms, the remaining 0–5% of said stabilizer consisting essentially of other octyltin compounds.

4,496,491

AROMATIC DIISOCYANATES CONTAINING N,N-DISUBSTITUTED SULFONAMIDE GROUPS AND PROCESSES FOR THEIR PRODUCTION

Richard Kopp, Cologne; Gerhard Grögler, Leverkusen; Helmut Reiff, Leverkusen, and Dieter Dieterich, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen Bayerwerk, Fed. Rep. of Germany

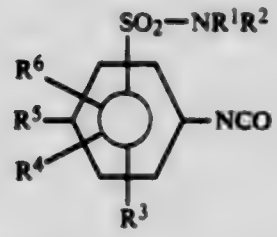
Filed Jul. 22, 1982, Ser. No. 401,036

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1981, 3130844

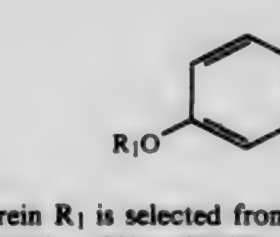
Int. Cl.³ C07C 119/048

U.S. Cl. 260—453 AR **3 Claims**

1. A diisocyanate corresponding to the general formula



in which
R^1 and R^2 (which may be the same or different) each represent an alkyl radical containing from 1 to 18 carbon atoms, an aryl radical containing from 6 to 10 carbon atoms, a cycloalkyl radical containing from 3 to 7 carbon atoms, an aralkyl radical containing from 7 to 15 carbon atoms or an alkaryl radical containing from 7 to 15 carbon atoms or, together with the nitrogen atom, form a 3-membered to 10-membered heterocyclic ring optionally containing further heteroatoms;
R^3, R^4 and R^5 (which may be the same or different) each represent hydrogen, an alkyl radical containing from 1 to 6 carbon atoms, an aryl radical containing from 6 to 10 carbon atoms, a cycloalkyl radical containing from 3 to 7 carbon atoms, an aralkyl radical containing from 7 to 15 carbon atoms, an alkaryl radical containing from 7 to 15 carbon atoms or a halogen atom; and
R^6 represents an isocyanate group or a radical corresponding to the formula



in which
R^7 represents hydrogen or a radical corresponding to the formula

$$-SO_2NR^1R^2$$

and X represents a methylene or a dimethyl methylene group.

4,496,492

SUBSTITUTED PHENYLALKYL COMPOUNDS

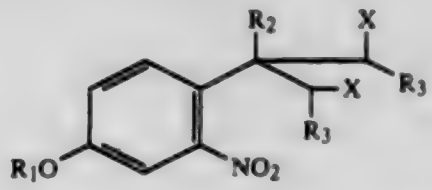
Wendell Wierenga, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 346,642, Feb. 8, 1982, abandoned, which is a division of Ser. No. 207,838, Nov. 18, 1980, abandoned. This application Jul. 19, 1983, Ser. No. 515,434

Int. Cl.³ C07C 143/68

U.S. Cl. 260—456 R **2 Claims**

1. A compound of the formula



wherein R_1 is selected from the group consisting of $—CH_3$, $—CH_2Ph$, $CH_2=CHCH_2—$, $—CH_2SCH_3$, $—CH_2OCH_3$, $—CH_2OCH_2CH_2OCH_3$, $—CH_2CCl_3$, and $—CH_2CH_2Si(R_2)_3$; R_2 and R_3 are hydrogen, alkyl of from 1 to 5 carbon atoms inclusive and phenyl; and X is selected from the group consisting of OSO_2R_2, Cl, Br and I with the proviso that R_2 in the OSO_2R_2 moiety is other than hydrogen.

4,496,493

PHOSPHOROUS ESTERS OF CYANOHYDRINS

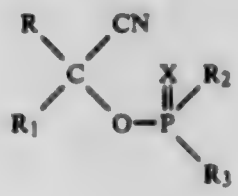
Leonard E. Hodakowski, Raleigh, and Hafez M. Ayad, Cary, both of N.C., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 169,284, Jul. 10, 1980, abandoned. This application Apr. 16, 1982, Ser. No. 369,307

Int. Cl.³ C07F 9/165; A01N 57/12, 57/16

U.S. Cl. 260—940 **8 Claims**

1. Compounds of the formula:



wherein X is O or S;
R and R_1 are the same or different and are independently

hydrogen, lower alkyl (C_1–C_{15}), whereby C_3–C_{15} can be branched or unbranched, and wherein the alkyl chain can be substituted or unsubstituted with alkylthio, alkoxy, or one or more halo; cycloalkyl (C_3–C_8), alkenyl, phenyl, benzyl, pyridinyl, naphthalene, all of which may be optionally substituted with one or more halogen, nitro, cyano, allyloxy trihalomethyl, alkyl, alkylthio, alkoxy, or aryloxy, aryloxy alkyl, which can be further substituted with alkoxy, halogen, alkyl, or trihalomethyl groups; taken together R and R_1 may form a 5 or 6 membered carbocyclic ring,

R_2 and R_3 can be the same or different and are independently:

(a) alkylthio (C_1–C_8), and

(b) alkoxy (C_1–C_8) with the proviso that R_2 and R_3 may not be alkoxy at the same time.

4,496,494

PROCESS FOR PREPARATION OF (HALO)(HYDROXY)-SUBSTITUTED PHOSPHITES AND PHOSPHORATES

Chester E. Pawloski, Bay City, and Sally P. Ginter, Sanford, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 250,449, Apr. 2, 1981, Pat. No. 4,365,026.
This application Jun. 15, 1982, Ser. No. 388,786
Int. Cl.³ C07F 9/11, 9/14
U.S. Cl. 260—977 2 Claims

1. A process for forming esters of phosphorus-containing acids containing at least one hydroxyl- and halogen-containing alkyl ester functionality comprising reacting at least one phosphorus-containing compound of the formula

$$R'''_n—\overset{O}{\overset{\|}{P}}—X_{3-n},\ R'''_n—P—X_{3-n} \text{ or } PX_5$$

wherein:

X is halo,

R''' is a moiety having up to 10 carbons selected from the group consisting of alkyl, aryl, haloalkyl, haloaryl, alkoxy and haloalkoxy; and

n is a number greater than or equal to zero and less than three,

with one or more non-hydroxyl-containing epoxy compounds provided that at least one of the epoxy compounds is capable of forming dealkylatable ring-opened reaction products; and subsequently dealkylating the reaction product to produce an ester of phosphorus-containing acids having both hydroxy and halogen moieties in at least one ester moiety.

4,496,495

STABILIZATION OF PHOSPHORODITHIOIC ACID DIESTERS

Gunter J. Caspari, Wheaton, and Steven E. Lindberg, Wheatland Township, Will County, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jan. 12, 1983, Ser. No. 457,450
Int. Cl.³ C07F 9/165
U.S. Cl. 260—989 20 Claims

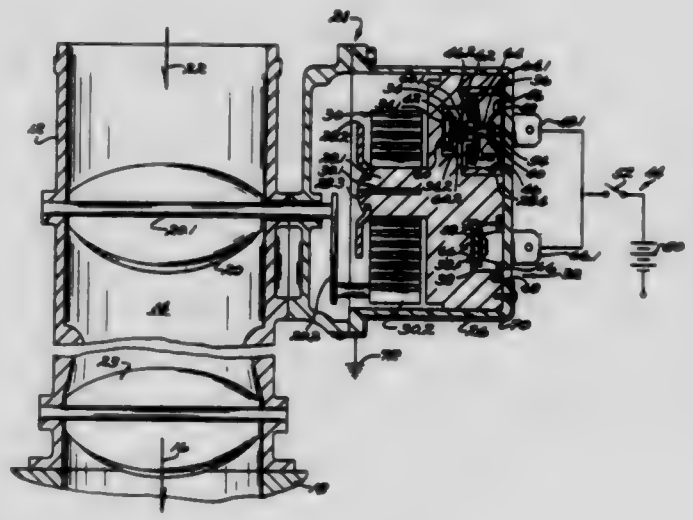
1. A method for stabilizing a phosphorodithioic acid diester which comprises adding to said diester a stabilizer which is selected from the group consisting of ammonia, ammonium carbonate, ammonium salts of carboxylic acids, the oxides, hydroxides and carbonates of lithium, sodium, potassium, rubidium, cesium, berylium, magnesium, calcium, strontium and barium, and mixtures thereof, wherein the amount of said stabilizer is effective to increase the thermal stability of the phosphorodithioic acid diester.

4,496,496

FUEL SUPPLY SYSTEM WITH ELECTRIC CHOKE AND CONTROL THEREFOR

Hidde Walstra, Almelo, Netherlands, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 1, 1982, Ser. No. 437,982
Int. Cl.³ F02M 1/12
U.S. Cl. 261—39 E 6 Claims



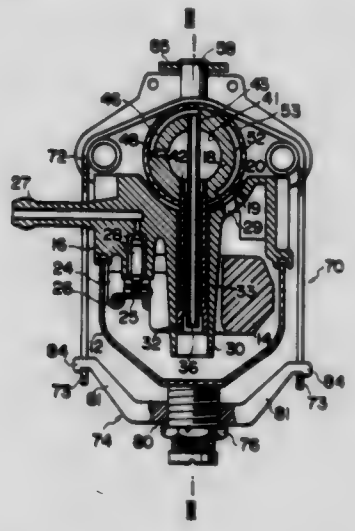
1. A fuel supply system for an automotive engine comprising a carburetor having an air-fuel induction passage for providing a mixture of air and fuel to the engine, an unbalanced-mounted air-movable choke valve mounted for movement across the passage to regulate air-flow into the passage, thermally responsive spring means operatively connected to the choke valve and movable in response to increase in temperature of the thermally responsive spring means for biasing the choke valve toward a position restricting air-flow into the passage with a force which decreases over a selected force range in response to increase in the temperature of the thermally responsive spring means over a selected temperature range, electrical heating means operable on initiation of engine operation for heating the thermally responsive spring means, and electrical control means for regulating operation of the heater means, characterized in that, the control means comprise movable and complementary contact means connectable between a power source and the heater means for activating at least a portion of the heater means when the contact means are engaged and for deactivating said portion of the heater means when the contact means are separated, and bimetallic means arranged to dispose the contact means in said engaged position when operation of the engine is initiated to provide a fast initial decrease in choke valve biasing force to enhance fuel use by the engine, to respond to heating thereof to move the contact means to said separated position with a delay after initiation of operation of the heater means for providing a subsequent period of relatively slower decrease in choke valve biasing force as the thermally responsive spring means is heated over a first part of said selected temperature range to provide improved engine driveability during engine warm up, and to be further operable in response to further heating thereof for returning the contact means to said engaged position to reactivate said portion of the heater means to provide a relatively faster decrease in choke valve biasing force over a final part of said selected force range for enhancing fuel use by the engine after suitable engine driveability has been assured by the engine warm up.

4,496,497

CARBURETOR ASSEMBLY

Yoichi Satoh, Zama, Japan, assignor to Nippon Carburetor Co., Ltd., Tokyo, Japan

Filed May 19, 1983, Ser. No. 496,183
Claims priority, application Japan, May 27, 1982, 57-88903
Int. Cl.³ F02M 3/08
U.S. Cl. 261—41 D 3 Claims



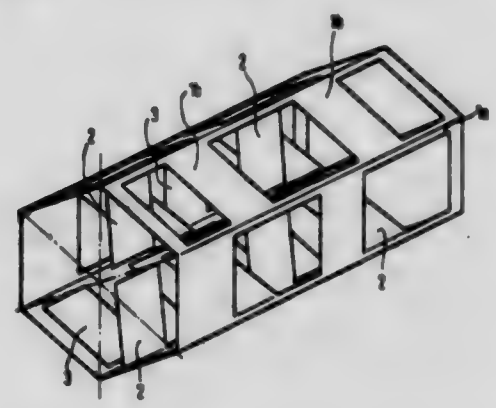
1. A carburetor assembly comprising an air intake pipe having a venturi section therein, an outer cylindrical body in which said air intake pipe is inserted, a float chamber, a cover for said float chamber, the outer wall of said air intake pipe having a plurality of grooves therein forming fuel and air passages, a main nozzle member for communicating said venturi section with said float chamber, a fuel pipe inserted into said main nozzle member, and a clamping means for securing said outer cylindrical body, said cover for the float chamber and said float chamber in assembled relation.

4,496,498

STATISTICAL PACKING

Raymond Pluss, Klein-Andelfingen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jul. 14, 1982, Ser. No. 398,187
Claims priority, application Switzerland, Jul. 30, 1981, 4928/81
Int. Cl.³ B01F 3/04
U.S. Cl. 261—95 9 Claims



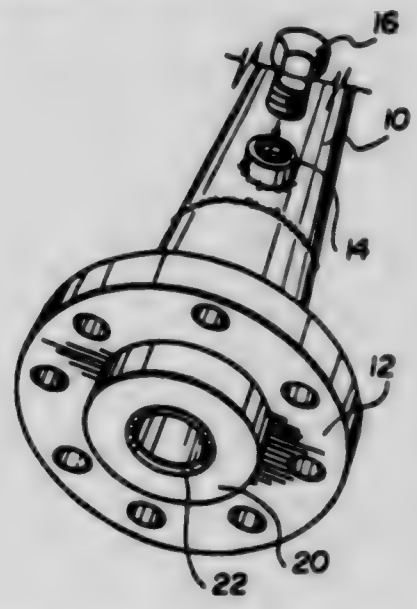
1. A statistical packing having a peripheral wall defining a polygonal shape, a plurality of tongues extending inwardly of said wall to define gaps in said wall, a plurality of apertures in said wall disposed circumferentially of said tongues and gaps, and solid surface portions disposed circumferentially of said tongues and apertures, said packing having a length greater than the diameter thereof.

4,496,499

PROCESS FOR LINING HIGH PRESSURE PIPELINE

Perry N. Brittain, 711 Willamette Dr., SE., and John D. Kirkpatrick, Suite 2008, 1200 6th St. SW., both of Calgary, Alberta, Canada

Continuation-in-part of Ser. No. 115,488, Jan. 25, 1980, abandoned. This application Mar. 18, 1982, Ser. No. 359,498
Int. Cl.³ B29C 17/07; B32B 31/04
U.S. Cl. 264—36 11 Claims



1. A method of lining a section of a high pressure pipeline which utilizes the structural strength of the pipeline to enable the lined pipeline section to be operated at high pressure, said section including first and second pipe flanges disposed at opposite ends thereof, the method comprising:

(a) providing a plastic liner having:

(i) a wall thickness and composition such that the liner is firm and self-sustaining in tubular form;

(ii) an outside diameter sufficiently less than the inside diameter of the pipeline to enable drawing the liner through the pipeline section, but sufficiently large so that the liner can be non-destructively radially expanded against the inside wall of the pipeline;

(b) drawing the liner in non-collapsed condition into the pipeline section by pulling the liner from one end area thereof through the pipeline section until the liner is substantially longitudinally co-extensive with the pipeline section;

(c) before concluding said drawing step, affixing a first liner flange to the end of said liner segment opposite said one end area;

(d) completing the drawing step to position said first liner flange against said first pipe flange;

(e) longitudinally stretching the liner within the pipeline section by elongating said liner without exceeding the elastic limit of the liner by pulling said one end area of the liner beyond the length of the pipeline section while said first liner flange prevents longitudinal movement of the opposite end of said liner along the pipeline section;

(f) after said stretching step, affixing a second liner flange to said one end area of said liner segment opposite said first liner flange;

(g) positioning said second liner flange against said second pipe flange by permitting the liner to elastically retract into the pipeline section;

(h) opening at least one bleeding port in the pipeline section;

(i) radially expanding the liner against the inside wall of the pipeline to an extent to permanently change the liner outside diameter from its original size to a size conforming to the inside diameter of the pipeline;

(j) during step (i), bleeding the space between the liner and the pipeline through the bleeding port; and

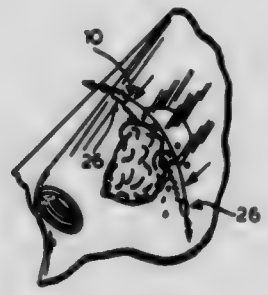
(k) closing the bleeding port.

4,496,500

METHOD FOR VEHICLE BODY SHAPING

Alexander Haber, 2296 Rockwood Ave., Baldwin, N.Y. 11510

Filed Mar. 28, 1983, Ser. No. 479,479
Int. Cl.[3] B29C *23/00*
U.S. Cl. 264—36 4 Claims



1. A method for shaping a curved motor vehicle panel comprising the steps of:

applying body filler material to a damaged panel area;

allowing said material to harden

applying a cutting blade having a substantially flat flexible body and a saw-toothed cutting edge to said panel;

bending the flat flexible body of said cutting blade into conformity with the shape of said panel; and

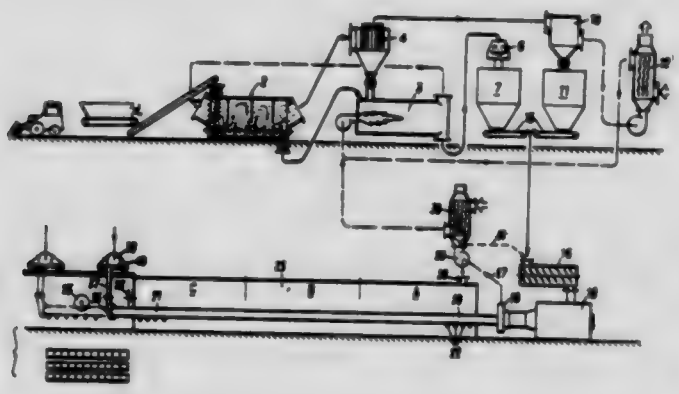
cutting said filler material to shape by moving said cutting blade across said material while applying firm back and forth strokes.

4,496,501

PROCESS AND APPARATUS FOR THE PRODUCTION OF ARTICLES CONSISTING OF CERAMIC MATERIAL

Walter Linke, Mauerbach; Peter Kirnbauer, Brunn, and Rudolf Indra, Vienna, all of Austria, assignors to Wienerberger Baustoffindustrie Aktiengesellschaft, Vienna, Austria

Filed Dec. 21, 1982, Ser. No. 451,898
Claims priority, application Austria, Dec. 22, 1981, 5520/81; Nov. 17, 1982, 4194/82
Int. Cl.[3] B29H *19/00*
U.S. Cl. 264—37 32 Claims



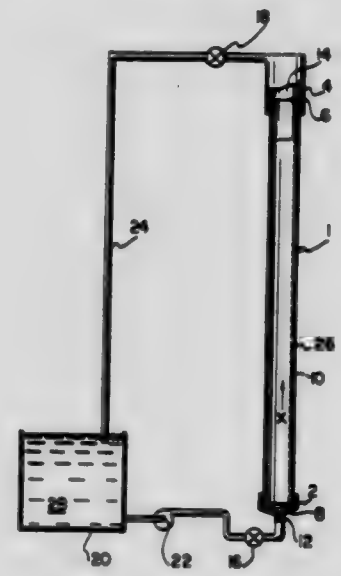
1. A process for producing plural articles made of a ceramic material, comprising the steps of: extruding a starting material which has a plastic consistency and contains clay so as to form an elongate string having a longitudinal channel therethrough; drying, firing and cooling said string, including the step of causing a stream of a gas to flow through said longitudinal channel in said string in a predetermined direction; and dividing said string into a plurality of said articles.

4,496,502

METHOD OF GELLING A GELATION SHRINKABLE, POLYMER CASTING SOLUTION

Oleh Kutowy, North Gover; William L. Thayer, and Srinivasa Sourirajan, both of Ottawa, all of Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Feb. 10, 1983, Ser. No. 465,548
Claims priority, application Canada, Mar. 31, 1982, 400321
Int. Cl.[3] B29D *27/04*
U.S. Cl. 264—41 6 Claims



1. A method of gelling a gelation shrinkable, polymer casting solution that has been cast on the internal surface of a tubular support, comprising:

(a) supporting the tubular support with the gelation shrinkable, polymer casting solution cast on the internal surface thereof and the outer surface thereof exposed to atmosphere, and

(b) pumping gelation liquid along the interior of the tubular support from the lower end thereof at a velocity in the range of the order of 10 to 100 cm/sec, and at a pressure of at least kPs gauge, to cause pressure gelation of the cast polymer solution at all points of contact between the gelation liquid and the cast polymer solution, the gelation liquid being pumped along the tubular support at least until substantially all of the polymer of the casting solution is gelled to form a semipermeable membrane, whereby

the formation of pockets between the cast polymer solution therein and the tubular support is avoided, and

the asymmetricity of the pore structure of the membrane, when viewing the membrane cross-section, is achieved by gelling the cast polymer solution outwardly from the inner surface thereof, and

the cast polymer solution is continuously in contact with the tubular support as a gelled membrane along the whole length of the tubular support.

4,496,503

METHOD OF MAKING A DENSIFIED SILICON NITRIDE/OXYNITRIDE COMPOSITE

Andre Ezis, Grosse Ile; Elaine C. Beckwith, Riverview, and Howard D. Blair, Romulus, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US83/01114, § 371 Date Jul. 19, 1983, § 102(e) Date Jul. 19, 1983
PCT Filed Jul. 19, 1983, Ser. No. 527,911
Int. Cl.[3] C04B *35/32*
U.S. Cl. 264—56 13 Claims

1. A method of making a densified silicon nitride comprising object, by the steps of:

(a) shaping a substantially homogeneous powder mixture of silicon nitride and yttrium silicon oxynitride, the latter being present in an amount sufficient to form a viscous solution with at least a portion of said silicon nitride dur-

ing fusion heating, said shaping being carried out to form an object of less than required dimension and density; and

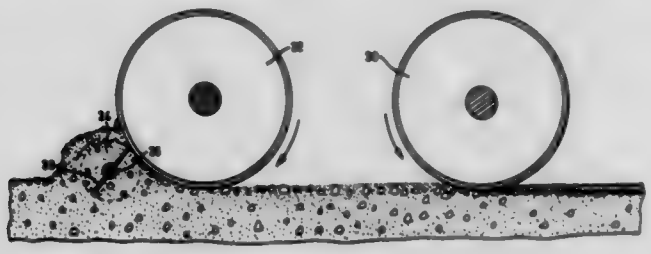
(b) densifying said shaped body by heat fusion, with or without the use of mechanical pressure, to constitute an object of required density and dimension.

4,496,504

METHOD OF EXPOSING AGGREGATE IN A POURED CONCRETE PANEL

Thomas W. Steenson, 408A Marybay Cres., Richmond Hill, Ontario, Canada (L4C 2X4), and William D. Paton, 14 Steeplechase Ave., Aurora, Ontario, Canada (L4G 3G8)

Filed Jun. 29, 1983, Ser. No. 508,737
Int. Cl.³ B28B *3/12*
U.S. Cl. 264—69 2 Claims



1. A method of making a cast concrete panel with coarse aggregate exposed on its upper face as cast comprising the steps of:

pouring and compacting wet concrete having a coarse aggregate content into a casting bed;

leveling the upper surface of the concrete to the desired height by means that includes the passage thereover of a screed roller rotating in a direction to push excess surface concrete in advance of the screed roller;

lifting coarse aggregate towards the upper surface of the concrete in advance of the screed roller by passing the free ends of rotating aggregate lifter arms through the concrete, the aggregate lifterarms being spaced apart a distance to support coarse aggregate therebetween, whereby to lift and concentrate coarse aggregate in the wet concrete towards the surface, and to deposit a high concentration of coarse aggregate in front of said screed roller, said aggregate lifter arms being mounted radially of a rotating shaft that rotates in the opposite direction to the direction of rotation of the screed roller;

compacting the concentrated coarse aggregate to leave cement and fine aggregate as an overlay to the compacted coarse aggregate by the passage over the surface layer of a compacting roller that is rotated in the opposite direction to the screed roller with respect to the direction of travel of roller rotation along the casting bed to compact coarse aggregate and deposit cement and fine aggregate as an overlay as aforesaid;

permitting the body of the concrete to cure; and

exposing the coarse aggregate on the upper face by removing cement and fine aggregate from between the coarse aggregate to expose the coarse aggregate on the flat upper surface of the panel as cast.

4,496,505

PROCESS FOR THE PRODUCTION OF A POLYESTER FIBER DYEABLE UNDER NORMAL PRESSURE

Hiroshi Tanji, Fuji; Michitaka Iwata, Minoo, and Hideo Sato, Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 340,895, Jan. 19, 1982, Pat. No. 4,415,726.
This application Aug. 29, 1983, Ser. No. 527,499
Claims priority, application Japan, Jan. 19, 1981, 56-5131; Feb. 9, 1981, 56-16902
Int. Cl.³ D01D *5/048*
U.S. Cl. 264—101 4 Claims



1. A process for producing polyester fiber consisting essentially of extruding a melt of polyester, passing the extruded filaments through a heating zone provided at the surface of the nozzle and having a length of at least about 5 cm and a temperature of about 150° C. to about the melting point of the polymer, applying a vacuum with an aspirator located below the heating zone, and then winding at a winding speed of at least about 7,000 m/min.

4,496,506

METHOD FOR SHAPING GREEN BODY OF CERAMIC POWDER AND CERAMIC BODY OBTAINED BY FIRING SAME

Naoyuki Sakato, Saitama, and Tetsuo Kitagaki, Kanagawa, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Aug. 30, 1982, Ser. No. 412,960
Claims priority, application Japan, Sep. 1, 1981, 56-137250
Int. Cl.³ C04B *35/64*
U.S. Cl. 264—109 6 Claims

1. A method for shaping a green body of a ceramic powder which comprises:

admixing 100 parts by weight of a ceramic powder with an aqueous solution containing from 0.1 to 10 parts by weight of, as a binder, a modified polyvinyl alcohol substantially composed of the monomeric units expressed by the formulas

$$-CH_2-\underset{\displaystyle OH}{\underset{|}{CH}}-,\quad -CH_2-\underset{\displaystyle OCOCH_3}{\underset{|}{CH}}-\quad \text{and}\quad -CH_2-\underset{\displaystyle (Z)_a-R}{\underset{|}{CH}}-$$

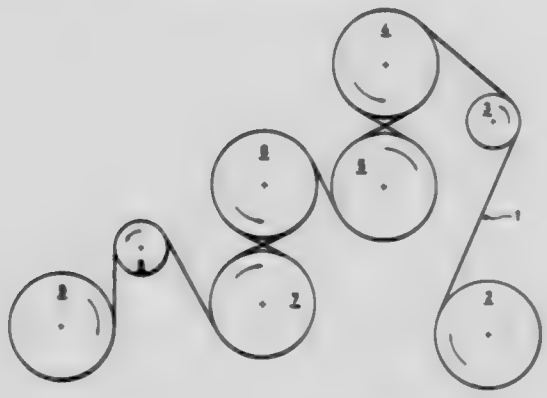
in mole fractions x, y and z, respectively, in which R is a monovalent hydrocarbon group having at least 4 carbon atoms, Z is a divalent linking unit which is either —O— or —O—CO—, a is a number of zero or 1, y is a positive number not exceeding 0.3 and z is a positive number in the range from 0.0001 to 0.1 with the proviso that $x+y+z$ is equal to 1, to give a blend wet with the aqueous solution, shaping the wet blend into a formed body, and drying the thus shaped formed body.

4,496,507

PRODUCTION OF STRING-LIKE POLYTETRAFLUOROETHYLENE

Koichi Okita, and Shigeru Asako, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 2, 1982, Ser. No. 394,958
Claims priority, application Japan, Jul. 4, 1981, 56-104758
Int. Cl.[3] B29F *5/02*
U.S. Cl. 264—127 3 Claims



1. A process for producing a string-like porous material of a polytetrafluoroethylene, comprising the steps of:

molding polytetrafluoroethylene into a string-like shape, the polytetrafluoroethylene containing a liquid lubricant, the molding being performed by a paste process:

removing the liquid lubricant;

providing a low speed set of heating rolls and a high speed set of heating rolls, wherein the heating rolls are each provided with a plurality of grooves, and the temperature of the low speed heating rolls is higher than the temperature of the high speed heating rolls;

placing the molded polytetrafluoroethylene on the low speed pair of heating rolls by threading it in a FIG. 8 configuration around the low speed rolls and within the grooves thereof;

placing the molded polytetrafluoroethylene on the high speed pair of heating rolls by threading it in a FIG. 8 configuration around the high speed rolls and within the grooves thereof;

rotating each of the high speed pair of rolls at the same speed and each of the low speed pair of rolls at the same speed, the high speed pair of rolls being rotated faster than the low speed pair of rolls to create a uniform compression force during the stretching, the force being applied in the peripheral direction of the string-like material;

sintering the stretched string-like material at a temperature of 327° C. or more.

4,496,508

METHOD FOR MANUFACTURING POLYPROPYLENE SPUN-BONDED FABRICS WITH LOW DRAPING COEFFICIENT

Ludwig Hartmann; Ivo Rüzek, and Engelbert Löcher, all of Kaiserslautern, Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim/Bergstrasse, Fed. Rep. of Germany

Filed Sep. 10, 1982, Ser. No. 416,701
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151322
Int. Cl.[3] D01D *5/20*
U.S. Cl. 264—167 14 Claims

1. A method for manufacturing polypropylene spun-bonded fabrics, from partially-drawn polypropylene filaments, comprising:

preparing a polypropylene melt at a temperature of about 240° C. to 280° C.;

forming polypropylene filaments by extruding the melt through a spinning nozzle at an extrusion velocity of about 0.02 meters/second to about 0.20 meters/second, said spinning nozzle having holes with a diameter less than about 0.8 millimeter;

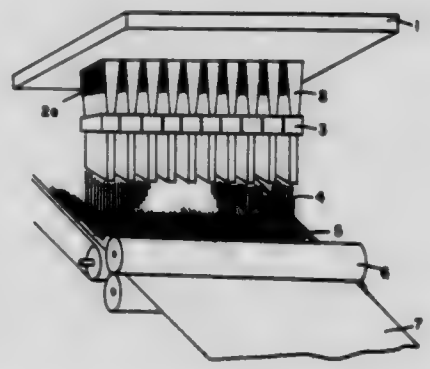
allowing the filaments extruded from the lower edge of the spinning nozzles to fall vertically a distance of at most about 0.8 meter;

quenching the filaments by means of transversely blowing air over said filaments at a temperature between about 20° C. to about 40° C.;

aerodynamically drawing the extruded filaments by means sufficient to create a filament withdrawal velocity between about 20 meters/second and 60 meters/second, and such that the ratio of the extrusion velocity to the withdrawal velocity is between about 1:200 and 1:1000;

forming a fabric web by depositing the aerodynamically drawn filaments onto a moving porous support that has a vacuum beneath it creating suction; and

bonding the fabric web to provide the spun-bnded fabric, wherein said aerodynamically drawn filaments have a maximum tensile elongation of at least about 200%, and have a fiber shrinkage determined in boiling water of less than about 10%.

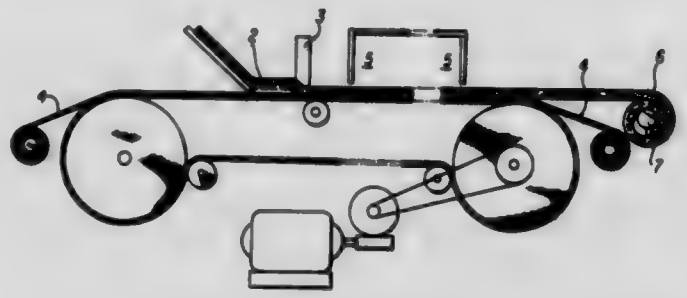


4,496,509

METHOD OF PRODUCING CERAMIC TAPES

Katsuhiko Kita; Junzo Fukuda, both of Nagoya, and Shiro Kawahito, Wakayama, all of Japan, assignors to Narumi China Corporation, Nagoya and Kao Soap Co., Ltd., Tokyo, both of, Japan

Filed Apr. 26, 1983, Ser. No. 488,722
Claims priority, application Japan, Apr. 26, 1982, 57-71086
Int. Cl.[3] B32B *5/16*
U.S. Cl. 264—175 10 Claims



1. A method of preparing green ceramic tapes, comprising:

adding to 100 parts by weight of a fine ceramic powder, 2 to 15 parts by weight, in terms of its resin content, of a binder mixture consisting of an aqueous polyurethane and a water-soluble acrylic resin, the amount of said water-soluble acrylic resin ranging from 10 to 1500 parts by weight per 100 parts by weight of said aqueous polyurethane in said binder mixture;

adding a small amount of a dispersing agent to the mixture followed by a sufficient amount of water;

kneading the resultant mixture for a time sufficient to prepare an aqueous slip;

forming a tape from said aqueous slip; and then

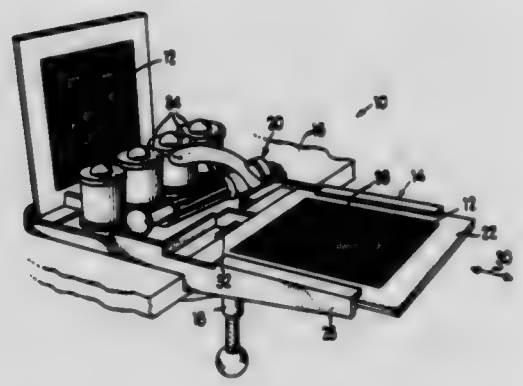
drying the green tape obtained.

4,496,510

ACTIVITY TOY

Steven P. Hanson, Winnetka, and Burton C. Meyer, Downers Grove, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Nov. 10, 1983, Ser. No. 550,576
Int. Cl.[3] B29C *21/00*; B29D *31/00*; B29F *3/00*
U.S. Cl. 264—176 R 12 Claims



1. A method of creating a textured design using an extrudable substance comprising the steps of:

filling an extruder having an extrusion opening with an extrudable substance;

positioning a screen with opposed sides and mesh spaces extending between the opposed sides so that one of the sides faces the user;

positioning the extruder with the extrusion opening adjacent the opposite side of the screen;

operating the extruder to cause extrusion of the plastic material through the opening and through the mesh spaces aligned with the opening; and

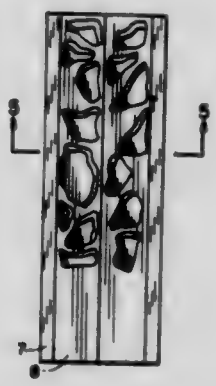
moving the extruder along the opposite side of the screen to force the plastic substance through a desired pattern of mesh openings thereby creating a textured design viewable from the side of the screen facing the user.

4,496,511

METHOD OF MOLDING STONE FACED PILLARS AND THE LIKE

John H. Virgili, 507 Oakwood Ave., Springdale, Pa. 15144

Filed Sep. 23, 1982, Ser. No. 422,039
Int. Cl.[3] B29C *1/02*
U.S. Cl. 264—225 5 Claims



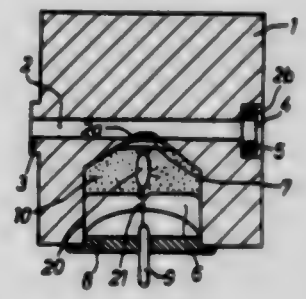
1. A method of forming a right angular mold for forming a pair of surfaces of a stone-faced rectangular pillar, comprising forming a rectangular base, attaching stone pieces to two sides of said base, providing separating strips at the corners of said base, applying molding material to said base and stone pieces, also to said strips so as to form two molding strips, each having molding flanges at the edges thereof, removing said strips, attaching two of said flanges together to form a right angular mold.

4,496,512

METHOD FOR MAKING AN ION-SENSITIVE CAPILLARY ELECTRODE

Hermann Marsoner, and Christoph Ritter, both of Graz, Austria, assignors to AVL AG, Schaffhausen, Switzerland

Division of Ser. No. 000,723, Jan. 3, 1979, abandoned. This application Dec. 8, 1982, Ser. No. 447,997
Claims priority, application Switzerland, Jan. 3, 1978, 47/78; Austria, Jun. 9, 1978, 4200/78
Int. Cl.[3] B29C *13/00*; B29D *31/00*; B29G *7/00*
U.S. Cl. 264—267 5 Claims



1. A method of manufacturing an ion-sensitive capillary electrode containing an electrode housing, the housing having an axial bore there along and a further bore intersecting said axial bore, comprising the steps of:

introducing an elastic hose into said axial bore; sealing an intersection location of the axial bore and the further bore by tightly applying the hose against the wall of the axial bore;

introducing a measured quantity of a polymerizable mixture in a liquid state into the further bore; said mixture being such that the polymerized mixture is releasable from said hose;

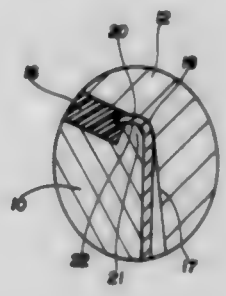
polymerizing said mixture and after polymerization thereof extending the elastic hose so that it constricts; and thereafter removing the hose from the electrode housing.

4,496,513

TUBULAR CONTAINER MOLDING METHOD AND APPARATUS

Tatsuo Ishikawa, Chiba, and Yoshiharu Hatakeyama, Tokyo, both of Japan, assignors to Yoshida Industry Co., Ltd., Tokyo, Japan

Filed May 23, 1983, Ser. No. 497,012
Claims priority, application Japan, May 25, 1982, 57-87265
Int. Cl.[3] B29C *5/00*; B29D *31/00*; B29F *1/10*
U.S. Cl. 264—267 2 Claims



1. A tubular container molding method comprising the steps of:

inserting a substantially cylindrical core block, including a gently sloped upper surface and an annular flange raised about the periphery of said upper surface and having a flat upper edge, into a tubular member formed of synthetic resin material as a container body to have a predetermined length and diameter, with an upper marginal portion of said tubular member being projected upwardly beyond said annular flange;

closing over said core block a cavity mold including a gently

sloped lower surface, a steeply sloped guide surface and an annular flat portion formed between said lower surface and said guide surface, thereby defining container conical and neck portion molding sections in an air gap between said core block and said cavity mold;

during said closing of said cavity mold, pressing said upper marginal portion of said tubular member against said annular flat portion of said cavity mold by said annular flange of said core block, to thereby inwardly bend said upper marginal portion to form a flange-like shoulder portion;

tightly holding said shoulder portion between said flat upper edge of said annular flange and said annular flat portion, with an end portion of said shoulder portion projecting into said conical portion molding section;

injecting molten synthetic resin material compatible with the material of said tubular member into said container conical and neck portion molding sections, thereby to mold a neck portion and a conical portion of the container with said end portion of said shoulder portion being embedded in said conical portion and fused together; and

disassembling said core block and said cavity mole after cooling said molten resin.

4,496,514

PROCESS USING SUPERCOOLED LIQUID LACTAM MIXTURES

Wei-Yeih W. Yang, Maple Heights, and Yoshihisa Okamoto, Sagamore Hills, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Jan. 27, 1983, Ser. No. 461,343
Int. Cl.³ B29F *1/00*
U.S. Cl. 264—328.6
10 Claims

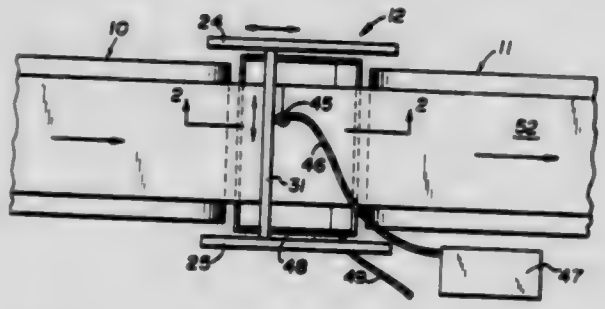
1. A process comprising the steps of preparing a polymerization mixture by mixing a lactam polymerization catalyst, a promoter, and a separate supercooled mixture of at least two lactams that remains in a liquid state at ambient temperature; introducing said mixture into a mold maintained at an elevated temperature at which polymerization of said lactams is carried out quickly; and extracting a molded object from the mold.

4,496,515

METHOD FOR CUTTING GYPSUM BOARD WITH HIGH VELOCITY FLUID CUTTING JET

Mitchell P. Ptasienski, Lake Zurich; Robert M. Mustoe, Winnetka, both of Ill., and Fred H. Zajonc, deceased, late of Richmond, Va. (by Margaret S. Zajonc, executrix), assignors to United States Gypsum Company, Chicago, Ill.

Filed Sep. 29, 1980, Ser. No. 191,888
Int. Cl.³ B32B *31/18*
U.S. Cl. 264—504
11 Claims



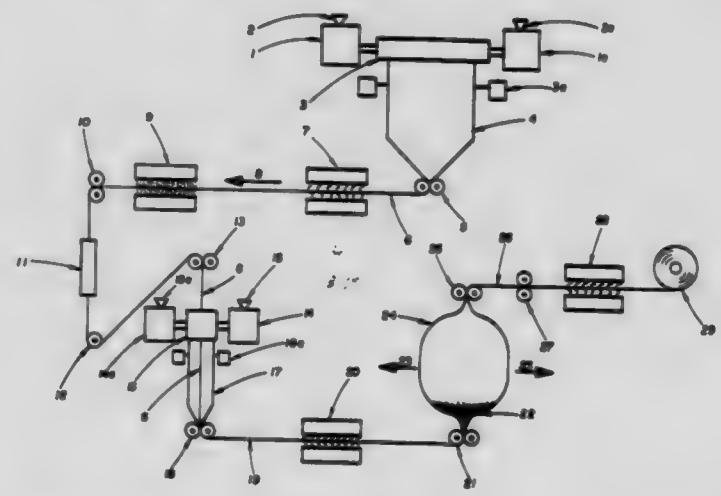
1. A method for making gypsum wallboard, which comprises preparing an aqueous slurry comprising calcined gypsum, depositing said slurry on a moving conveyor to form a continuous sheet, permitting said slurry to reach at least the initial stiffening stage, cutting said sheet transversely by means of a high pressure and high velocity fluid jet into individual boards before the calcined gypsum slurry has reached the temperature rise set stage, permitting the calcined gypsum in the cut gypsum board to set completely, and drying said board.

4,496,516

PROCESS FOR FORMING ORIENTED MULTI-LAYER FILMS HAVING A DIFFERENT ORIENTATION DISTRIBUTION BETWEEN LAYERS

Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Division of Ser. No. 406,590, Aug. 9, 1982, Pat. No. 4,442,147.
This application Apr. 27, 1983, Ser. No. 488,944
Int. Cl.³ B29D *7/24*
U.S. Cl. 264—514
8 Claims



1. A process for forming a multi-layer film having a different orientation distribution between the layers thereof comprising:

extruding a first tubular layer having a first non-stretched diameter;

longitudinally folding said first tubular layer;

extruding a second tubular layer of an orientable thermoplastic material, having a second non-stretched diameter, about said first folded tubular layer wherein said second non-stretched diameter is less than said first non-stretched diameter;

inflating said first tubular layer to no more than said first non-stretched diameter;

whereby said second tubular layer is stretched and oriented by the inflation of said first tubular layer.

4,496,517

PROCESS FOR PREPARING SATURATED POLYESTER RESIN BOTTLES

Harumi Kinoshita; Hideo Kushida; Takeshi Itakura; Masao Akutsu; Takuzo Takada, and Hiroaki Sugiura, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co. Ltd., Japan

Continuation of Ser. No. 128,351, filed as PCT 78/00036, Dec. 2, 1978, § 102(e) dated Jul. 30, 1979, abandoned. This application Apr. 22, 1982, Ser. No. 370,891
Claims priority, application Japan, Dec. 2, 1977, 52-144738; Dec. 29, 1977, 52-159073; Jan. 11, 1978, 53-1804; Jan. 12, 1978, 53-2296
Int. Cl.³ B29C *17/07*
U.S. Cl. 264—521
5 Claims

1. A process for preparing a saturated polyester resin bottle from a tubular intermediate piece made of saturated polyester resin having a bottom wall and a top opening, comprising the sequential steps of:

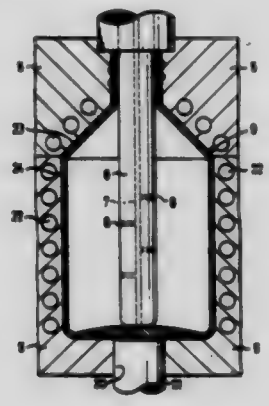
heating the intermediate piece to a temperature suitable for biaxial orientation and setting the same in a heated mold for blow molding;

blowing compressed gas into the intermediate piece while inserting a rod downwardly into the interior of the intermediate piece to conform the intermediate piece to the inner walls of the mold and effect biaxial orientation;

heat fixing the sidewalls of the bottle at a temperature higher than said temperature suitable for biaxial orientation to

which said intermediate piece has been heated while maintaining gas pressure in the bottle to effect thermal fixing of said sidewalls heated to said higher temperature after the formation of the bottle by said biaxial orientation, the duration of the last-mentioned heating step being sufficiently short that crystallization of the polyester resin and milky white discoloration thereof do not occur; and

lowering the temperature of the bottle and removing the bottle from the mold;



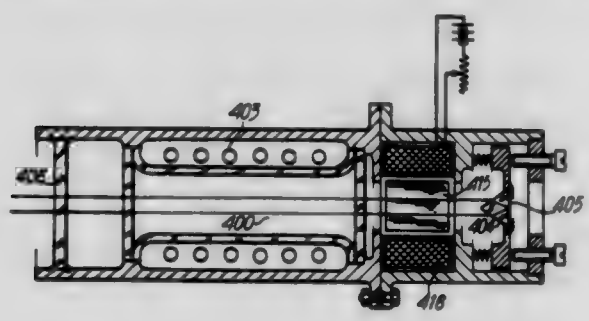
wherein, during biaxial orientation of the intermediate piece and while the bottle is kept along the inner walls of the mold, the center of the bottom wall of the bottle is protruded inwardly so that the thickness and degree of orientation of a lower half of the resulting tapering rising wall of the protrusion are substantially the same as those of the trunk portion of the bottle, thereby making it possible to prevent heat deformation of the bottom wall; and wherein the bottom of the bottle is also thermally fixed without crystallization and milky white discoloration.

4,496,518

TM_O AND TE_O CAVITY RESONATOR FOR PROJECTING PLASMA CONFINING TE_O MODE COMPONENTS

Georges R. P. Marie, 17, Ave. Raymond Croland, Fontenay-aux-Roses, France (92260)

Continuation-in-part of Ser. No. 125,089, Feb. 27, 1980, abandoned. This application Sep. 8, 1981, Ser. No. 300,151
Int. Cl.³ G21B *1/00*; H01S *3/082*
U.S. Cl. 376—104 5 Claims



1. An electromagnetic cavity resonator for sustaining TM_O and TE_O mode wave components, said cavity resonator being adapted for substantially increasing the TE_O mode components, decreasing the TM_O mode components and projecting plasma confining TE_O mode components on to a plasmatized material, said electromagnetic cavity resonator comprising:

a first electromagnetic wave semi-reflecting reflector forming a first outer boundary of said cavity resonator;

a second electromagnetic wave reflector forming a second outer boundary of said cavity resonator and facing the first reflector, said second reflector being an outer surface of a transparent material having an index of refraction n;

said transparent material including a conical member of revolution having an axial location integral with the second reflector on the side of the second reflector facing the first reflector, said conical member having an angular half aperture i equal to the complement of the Brewster's angle to $\pi 2$, so that $\tan(\pi/2-1)=1/n$, whereby said second reflector and member act simultaneously as a boundary of the cavity resonator and as a filter for removing TM_O mode components;

an active lasing medium located between the first and second reflectors so that TM_O mode components, at a given wavelength, propagate through the second reflector;

a TM_O—TM_m mode coverter means for rotating the polarization direction of the TM_O mode components propagating through the second reflector by an angle of $\pi/2$ to derive TE_O mode components; and

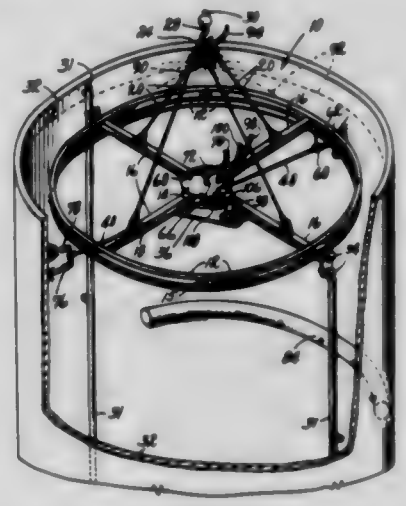
means for focusing said TE_O mode components on to a material to be plasmatized.

4,496,519

NUCLEAR REACTOR VESSEL DECONTAMINATION SYSTEMS

Paul J. McGuire, 7402 E. Wethersfield Rd., Scottsdale, Ariz. 85260

Filed Mar. 9, 1981, Ser. No. 241,597
Int. Cl.³ G21C *19/00*; B05B *3/00*; B08B *3/00*
U.S. Cl. 376—316 7 Claims



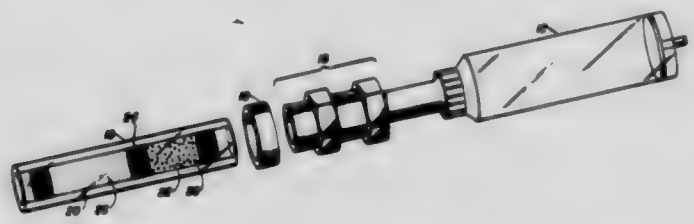
1. A decontamination system adapted to being temporarily installed by being raised above and thereafter lowered progressively into an upright open-topped cylindrical nuclear reactor vessel during a decontamination operation being performed on the interior of the vessel, comprising guide means installed within the reactor vessel, a circular horizontal track smaller than the diameter of the vessel, means on the track for engaging the guide means to center the track in the vessel, a pair of oppositely directed arms supported and guided on the track, a high pressure nozzle assembly on each arm, each assembly including a pair of nozzles spaced apart from each other in a vertical direction, at least one of the nozzles being formed to direct a generally cylindrical jet toward the wall and at least one other nozzle being formed to direct a generally fan shaped sweeping pattern toward the wall, means for imparting a rotary motion to the arms in a full circle around the track with the nozzle assemblies in close proximity to the interior wall of the vessel and means for targeting fluid under high pressure through the nozzles at the interior wall.

4,496,520

FIELD DETECTION OF 2,4,6-TRINITROTOLUENE IN WATER BY ION-EXCHANGE RESINS

Carl A. Heller; Eric D. Erickson, both of China Lake, Calif., and Sterling R. Greni, Newport, R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 20, 1982, Ser. No. 380,321
Int. Cl.³ G01N *33/18, 33/22*
U.S. Cl. 422—60 13 Claims



1. An indicator tube for the detection of the presence of trinitrotoluene in fresh water comprising:

a transparent tube having a first compartment and a second compartment, and having an entry end and an exit end allowing a flow through passage;

glass wool separating said first and second compartments, within said transparent tube;

strong base impregnated glass beads containing said strong base in an amount effective to convert trinitrotoluene to a highly colored anion, and retained within said first compartment, said first compartment positioned adjacent to said entry end;

and

a strongly basic anion exchange resin having an affinity for said highly colored anion, and retained within said second compartment, said second compartment positioned adjacent to said exit end for enabling observation of the length of color change caused by said highly colored anion combining with said exchange resin in said second compartment, for comparison with a set standard.

4,496,521

INSULIN-POTENTIATING PEPTIDES

U. James Lewis, La Jolla, Calif., assignor to The Whittier Institute for Diabetes and Endocrinology, La Jolla, Calif.

Filed Jul. 15, 1983, Ser. No. 514,158
Int. Cl.³ A61K *37/00*; C07C *103/52*
U.S. Cl. 514—12 13 Claims

1. A composition of matter in the form of a synthetic peptide having the formula: H—Phe—Pro—Thr—Ile—Pro—Leu—Ser—Arg—Leu—Phe—Asp—Asn—Ala—Met—Leu—Arg—Ala—His—Arg—Leu—His—Gln—Leu—Ala—Phe—Asp—Thr—Tyr—Gln—Glu—Phe—Glu—Glu—Ala—Tyr—Ile—Pro—Lys—Glu—Gln—Lys—Tyr—Ser—OH wherein one or more residues can be deleted beginning at the N-terminus and extending through Arg in the 16-position, or a nontoxic salt thereof.

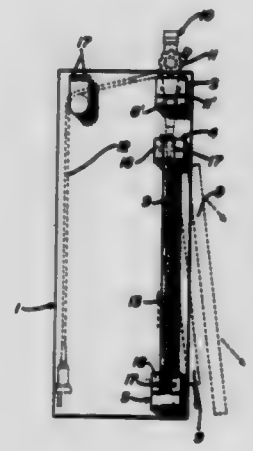
4,496,522

VERTICAL DECONTAMINATION BATH FOR FIBRESCOPES

Louise McConnell, 10 Terrasse Goyer, Deux Montagnes, Quebec, Canada H7R 4W1

Filed Apr. 1, 1983, Ser. No. 482,314
Int. Cl.³ A61L *2/18, 2/26*; B08B *9/00*; A47K *3/11*
U.S. Cl. 422—300 6 Claims

1. A decontamination bath and support assembly for fibrescopes of the type having a light source tube, a control section and an insertion tube, wherein the bath and support assembly comprises a light source tube support bracket having a round top portion of greater radius of curvature than that to which a light source tube can be bent without damage; a control section support bracket; a straight, rigid, and hollow bath tube adapted to contain a sterilization solution wherein said bath tube has an open top end and a sealed bottom end; an upper bath tube support bracket; a lower bath tube support bracket; and means for supporting said control section bracket, said upper bath tube bracket and said lower bath tube bracket in vertically spaced-apart and vertically-aligned relation for removably supporting said bath tube between said upper and lower bath



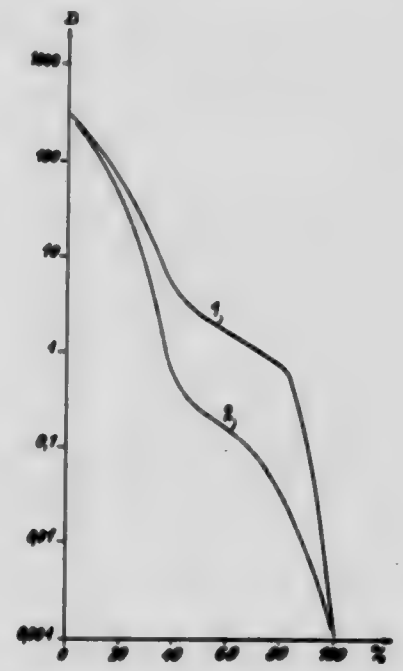
tube brackets, said light source tube bracket being supported on said support means in horizontally-spaced relation from said control section support bracket whereby a fibrescope may be supported thereon with a light source tube thereof supported on said light source tube bracket, the fibrescope control section supported on top of said control section bracket, and the fibrescope insertion tube inserted within said bath tube.

4,496,523

PROCESS FOR SEPARATING THE ACTINIDES AND LANTHANIDES PRESENT IN THE TRIVALENT STATE IN AN ACID AQUEOUS SOLUTION

Michelle Bonnin; Claude Musikas, both of Bures Sur Yvette, and Pierre Vitorge, Paris, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 2, 1982, Ser. No. 394,491
Claims priority, application France, Jul. 9, 1981, 81 13530
Int. Cl.³ C01G *56/00, 43/00*; C01F *17/00*
U.S. Cl. 423—9 8 Claims



1. A process for the separation of the actinides and lanthanides present in the trivalent state in an acid aqueous solution, wherein the actinides present in such aqueous solution are extracted selectively in an organic solvent by bringing the solution into contact with an organic solvent comprising a first extracting agent formed by an organic bonding agent having an electron-donor nitrogen atom and a second extracting agent formed by an acid organosoluble organic compound able to

exchange its H^+ ions for metal ions or by metallic salt of such compound.

2. A process according to claim 1, wherein the first extracting agent is a heterocyclic organic bonding agent with an electron-donor nitrogen atom.

7. A process according to claim 2, wherein the heterocyclic organic bonding agent is selected from the group consisting of 2,4,6-tri(2-pyridyl)-1,3,5 triazine, 1,10 orthophenanthroline and 4,7 diamyl orthophenanthroline.

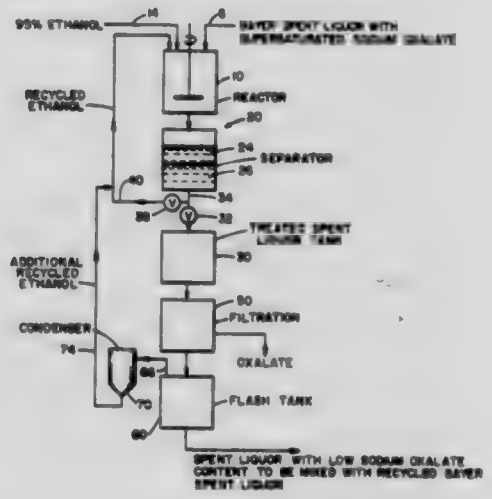
8. A process according to claim 1, wherein the acid organic compound is selected from the group consisting of di-nonyl naphthalene sulphonic acid, α-bromo caproic acid, caproic acid, and the alkaline salts of such acids.

4,496,524

PROCESS FOR THE REMOVAL OF SODIUM OXALATE COMPOUNDS FROM BAYER SPENT LIQUOR

J. Finley Bush, New Kensington, and Paul J. The, Murrysville, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 8, 1984, Ser. No. 587,589
Int. Cl.³ C01F *7/00, 7/06*
U.S. Cl. 423—122 **12 Claims**



1. A process for the purification of Bayer spent liquor from a Bayer-type caustic digestion process to remove organic impurities therein which comprises:

(a) treating said spent liquor with up to 50 vol. % ethanol to precipitate said organic impurities without precipitating substantially any alumina values and to form two layers comprising, respectively, ethanol in an upper layer, and spent liquor and said organic precipitate in a lower layer;

(b) separating the lower spent liquor layer containing said organic impurities from said upper ethanol layer;

(c) filtering said spent liquor layer to remove said precipitated organic impurities; and

(d) returning said filtered liquor to said Bayer-type caustic digestion process.

4,496,525

METHOD FOR USING CHEMICAL ADDITIVES TO PROTECT UTILITY BOILER AIR HEATERS WHILE INCREASING UNIT GENERATION CAPACITY

Vincent M. Albanese, Lisle, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Jul. 25, 1983, Ser. No. 517,111
Int. Cl.³ C01B *17/00*
U.S. Cl. 423—242 **3 Claims**

1. A method of improving the efficiency of large industrial boilers of the type using heat exchangers heated by superheated steam diverted from the steam used to produce energy, which heat exchangers elevate the temperature of the air heater section of such boilers to minimize corrosion caused by the condensation of SO_3 to produce sulfuric acid which comprises ratioing an effective amount of a sulfuric acid neutralizing chemical into the air heater section of such boilers to neutralize increases in sulfuric acid formed due to the reduction of air temperatures caused by throttling the steam fed to said heat exchangers.

4,496,526

PROCESS FOR THE PRODUCTION OF POTASSIUM MAGNESIUM PHOSPHATE

Karl-Richard Löblich, Barsinghausen, Fed. Rep. of Germany, assignor to Kali und Salz AG, Kassel, Fed. Rep. of Germany

Filed Feb. 7, 1983, Ser. No. 464,731
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1982, 3204238
Int. Cl.³ C01B *25/26*
U.S. Cl. 423—306 **5 Claims**

1. Process for the production of potassium magnesium phosphate through reaction of acid, phosphate ion-containing aqueous solutions with a potassium salt and basic reacting magnesium compounds and separation of crystallized potassium magnesium phosphate from a mother liquor, comprising the sequential steps of dispersing the potassium salt in excess stoichiometric amount and the stoichiometrically necessary amount of basic magnesium compound into a mixture of circulating mother liquor and fresh water to form a dispersion of 200 g/l or less solids content, quickly stirring the acid phosphate solution into the dispersion, adding potassium magnesium phosphate seed crystals to the dispersion, adjusting the pH-value of the reaction mixture to alkaline with a basic reacting alkali or earth alkali compound, and separating crystallized potassium magnesium phosphate hexahydrate as crude salt from the mother liquor.

4,496,527

DICALCIUM PHOSPHATE DIHYDRATE HAVING IMPROVED MONOFLUOROPHOSPHATE COMPATIBILITY AND PROCESS FOR THE PREPARATION THEREOF

Fawzy G. Sherif, Stony Point; Helmut W. Majewski, Nyack, and Francis A. Via, Yorktown Heights, all of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 336,214, Dec. 31, 1981, abandoned. This application Jul. 8, 1983, Ser. No. 511,973
The portion of the term of this patent subsequent to Dec. 11, 2001, has been disclaimed.
Int. Cl.³ C01B *25/32*
U.S. Cl. 423—309 **4 Claims**

1. A process for preparing dicalcium phosphate dihydrate having improved monofluorophosphate compatibility comprising the steps of:

(a) reacting a slaked lime slurry with phosphoric acid to form a monocalcium phosphate solution;

(b) adding to said solution additional slaked lime slurry and pyrophosphoric acid in amounts sufficient to form a dicalcium phosphate dihydrate slurry having a pH ranging from above about 2.2 to below 4.7; and

(c) separating said dicalcium phosphate dihydrate from said slurry.

4,496,528

PROCESS FOR THE PREPARATION OF ZEOLITE ZK 5

Michel Bourgogne, Reidisheim; Jean-Louis Guth, Brunstatt; Georges Szabo, Montivilliers, and Raymond Wey, Mulhouse, all of France, assignors to Compagnie Francaise de Raffinage, Paris, France

Filed Mar. 29, 1983, Ser. No. 480,037
Claims priority, application France, Apr. 1, 1982, 82 05665
Int. Cl.³ C01B *33/28*
U.S. Cl. 423—328 **38 Claims**

1. A process for the preparation of zeolite ZK 5 from a starting zeolite selected from the group consisting of zeolites P (Cl), P' (Cl), Q (Br) and Q' (Br), comprising extracting barium ions contained in the starting zeolite by means of a barium-

binding agent selected from the group consisting of precipitating agents which form with the barium ions a compound that precipitates, and of complexing agents which form with the barium ions a barium complex.

4,496,529

PREPARATION OF METAL CYANATES FROM ALKYL CARBAMATES

Theodore C. Kraus, Cheshire, Conn., assignor to Olin Corporation, Cheshire, Conn.

Filed Jun. 20, 1984, Ser. No. 622,365
Int. Cl.³ C01C *3/14*
U.S. Cl. 423—365 **5 Claims**

1. A process for preparing metal cyanates comprising reacting an alkyl carbamate having the formula

$$NH_2-\underset{\underset{O}{\|}}{C}-OR$$

wherein R is a lower alkyl group having 1 to 4 carbon atoms with an alkali metal hydride or an alkaline earth metal hydride.

4,496,530

PROCESS FOR THE PRODUCTION OF HYDROGEN AND CARBONYL SULFIDE FROM HYDROGEN SULFIDE AND CARBON MONOXIDE USING A METAL INTERCALATE OF GRAPHITE AS A CATALYST

Michael F. McGuiggan, Shaker Heights, and Philip L. Kuch, Aurora, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 10, 1982, Ser. No. 448,581
Int. Cl.³ C01B *31/26, 3/04*
U.S. Cl. 423—416 **20 Claims**

1. A process for the production of hydrogen and carbonyl sulfide, the process comprising contacting gaseous hydrogen sulfide with gaseous carbon monoxide in the presence of a catalytic amount of an intercalate of the formula:

$$M_aC_{100-a} \quad (I)$$

where

M is at least one of Co, Fe, Ni, Pd, Cu, Mo, W, V, Nb, Ta, Ru, Os, Rh, Ir and Ti;

C is graphite; and

a represents the weight percent of M present in the intercalate and has a value between about 0.1 and 30.

4,496,531

PROCESS FOR THE PRODUCTION OF HYDROGEN AND CARBONYL SULFIDE FROM HYDROGEN SULFIDE AND CARBON MONOXIDE USING A PRECIOUS METAL PROMOTED METAL OXIDE/SULFIDE CATALYST

Philip L. Kuch, Aurora, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 10, 1982, Ser. No. 448,883
Int. Cl.³ C01B *31/06, 3/04*
U.S. Cl. 423—416 **21 Claims**

1. A process for the production of hydrogen and carbonyl sulfide, the process comprising contacting gaseous hydrogen sulfide with gaseous carbon monoxide in the presence of a catalytic amount of a composition of the formula:

$$M_{0.1-2}M'_{0.01-1}M''_{0.01-1}O_xS_y \quad (I)$$

where

M is at least one of Mo, W and Fe;

M′ is at least one of Ru, Rh, Ag, Pt, Pd, Au, Re, Os and Ir;

M″ is at least one of V, Cr, Ti, Co, Ni and Cu; and the sum of x+y is a number that satisfies the valence requirements of the other elements present.

4,496,532

RUTHENIUM CARBONYLATES AND PROCESSES FOR THEIR PREPARATION

Sheldon G. Shore, and Alakananda Bhattacharyya, both of Columbus, Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ohio

Filed Jul. 27, 1983, Ser. No. 517,723
Int. Cl.³ C01G *1/04, 55/00;* C07F *15/00*
U.S. Cl. 423—417 **38 Claims**

1. The ruthenium carbonylate anion of the formula $[Ru_4(CO)_{11}]^{6-}$, the alkali metal, amine, quaternary ammonium and phosphonium salts of said anion and the completely protonated form of said anion, namely $H_6[Ru_4(CO)_{11}]$.

4. A process for preparing the ruthenium carbonylate anion of the formula $[Ru_4(CO)_{11}]^{6-}$ which comprises treating $Ru_3(CO)_{12}$ with a mixture of an alkali metal, a carrier compound which will carry an electron produced by the ionization of said alkali metal to said $Ru_3(CO)_{12}$, and a solvent which will solubilize at least the electron-bearing form of said carrier compound, each mole of said $Ru_3(CO)_{12}$ being treated with at least about 4.5 moles of said alkali metal, said process being carried out in an environment free from molecular oxygen and water.

4,496,533

PROCESS FOR PURIFYING GRAPHITE

Richard A. Clausius, Chicago, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Filed Nov. 3, 1982, Ser. No. 438,814
Int. Cl.³ C01B *31/04;* B03D *3/38, 1/00*
U.S. Cl. 423—448 **9 Claims**

1. A process for purifying graphite comprising:

(1) comminuting graphite containing mineral matter to liberate at least a portion of the graphite particles from the mineral matter;

(2) mixing the comminuted graphite particles containing mineral matter with water and hydrocarbon oil having a boiling point of from about 130° F. to 250° F. to form a fluid slurry;

(3) separating a water phase containing mineral matter and a hydrocarbon oil phase containing graphite particles; and

(4) separating the graphite particles from the hydrocarbon oil to obtain graphite particles reduced in mineral matter.

4,496,534

METHOD FOR RECONDITIONING BACTERIA-CONTAMINATED HYDROGEN SULFIDE REMOVING SYSTEMS

Dennis D. Delaney, Placentia, and Donald M. Fenton, Anaheim, both of Calif., assignors to Union Oil Company of California, Brea, Calif.

Continuation-in-part of Ser. No. 331,070, Dec. 16, 1981, Pat. No. 4,393,037, and a continuation-in-part of Ser. No. 441,669, Nov. 15, 1982, abandoned, which is a continuation-in-part of Ser. No. 331,070, Dec. 16, 1981,. This application Dec. 6, 1982, Ser. No. 447,227

The portion of the term of this patent subsequent to Jul. 12, 2000, has been disclaimed.

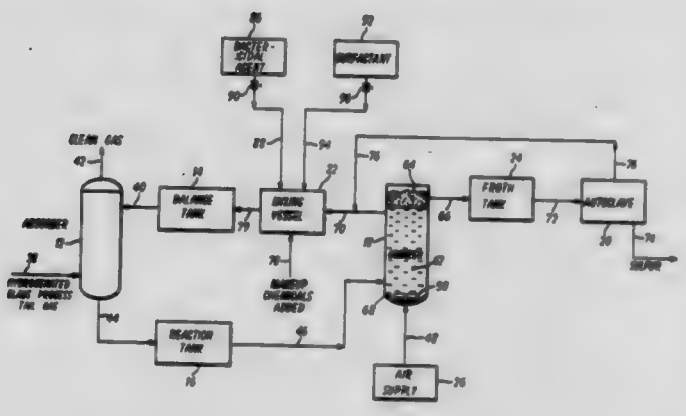
Int. Cl.³ B01D *53/34;* C01B *17/04, 17/14*
U.S. Cl. 423—573 R **19 Claims**

1. A method for reconditioning a hydrogen sulfide gas removal system employing an aqueous washing solution in which hydrogen sulfide is reacted to form elemental sulfur and which has means for agglomerating said particles to enable sulfur removal from said solution for reuse, after said system and said solution have become contaminated with living, sulfur-feeding bacteria to an extent that normal operations of said sulfur removal means and of said solution regenerating means are substantially impaired, said reconditioning method comprising the steps of:

(a) contacting said sulfur-feeding bacteria in said solution with a bactericidal agent to destroy substantially all of said sulfur-feeding bacteria; and

(b) contacting said sulfur particles in said solution with a surfactant to remove a sufficient number of destroyed sulfur-feeding bacteria from surfaces of said sulfur particles to enable said particles to agglomerate in said sulfur removal means;

wherein said bactericidal agent is sufficiently water soluble to allow the dissolving of a bacterially lethal concentration of said bactericidal agent into said washing solution, wherein said



surfactant is nonionic and, at least, partially water soluble, and wherein both said bactericidal agent and said surfactant are substantially (1) stable at the conditions existant within said washing solution, (2) innocuous to the oxidation of hydrogen sulfide to sulfur, (3) innocuous to the regeneration of said washing solution with oxygen, (4) innocuous to the recovery of product sulfur and (5) chemically nonreactive or decomposable within the washing solution except in cases where essentially all products of reaction and/or decomposition are substantially innocuous to the environment and substantially innocuous to the hydrogen sulfide removal system.

4,496,535

POLYURETHANE POLYENE COMPOSITIONS

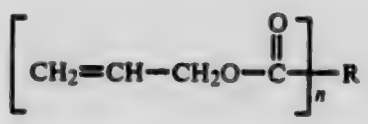
Francis E. Gould, Princeton, and Christian W. Johnston, Neshanic Station, both of N.J., assignors to Tyndale Plains-Hunter, Ltd., Princeton, N.J.

Division of Ser. No. 433,481, Oct. 8, 1982, Pat. No. 4,454,309, which is a continuation-in-part of Ser. No. 206,407, Nov. 12, 1980, Pat. No. 4,359,558. This application May 7, 1984, Ser. No. 607,676

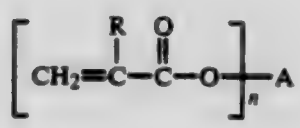
Int. Cl.[3] **B32B** *1/08;* **A61J** *3/06, 3/00*

U.S. Cl. 424—19 **23 Claims**

1. As an article of manufacture, a shaped, three-dimensional structure formed of a hydrophilic polyurethane polyene composition comprising from about 10 to about 50 parts by weight of a polyene selected from the group consisting of polyallyl esters having the formula:



wherein n is a whole number larger than 1 and smaller than 4, and R is the residue of a polybasic acid; and polyacrylic esters having the formula:



wherein n is a whole number larger than 2 and smaller than 7, R is hydrogen or a methyl radical and A is the residue of a polyhydric alcohol; and about 100 parts by weight of a hydrophilic polyurethane resin.

4,496,536

SEBOSUPPRESSIVE COSMETIC PREPARATIONS CONTAINING LONG-CHAINED ALKANOLS AND ANTIOXIDANTS

Hinrich Möller; Siegfried Wallat, both of Monheim; Horst Höffkes, Düsseldorf, and Karl Giede, Hilden, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Apr. 28, 1982, Ser. No. 372,474

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1982, 3201511

Int. Cl.[3] **A61K** *7/06, 7/08, 31/05, 31/355*

U.S. Cl. 424—70 **4 Claims**

1. A process for treating oily hair or seborrhea which comprises administering to an individual in need of such treatment a sebosuppressively effective amount of at least one branched, long-chain alkanol having from 12 to 26 carbon atoms and at least one antioxidant selected from the group consisting of 2,6-di-tert.-butyl-4-methoxyphenol, tocopherols, and alkyl esters of gallic acid, the weight ratio of long-chain alkanol to antioxidant being from about 4:1 to 1:4.

4,496,537

BIOLOGICALLY STABLE ALPHA-INTERFERON FORMULATIONS

Henry K. Kwan, Summit, N.J., assignor to Schering Corporation, Madison, N.J.

Continuation-in-part of Ser. No. 466,707, Feb. 15, 1983, abandoned, which is a continuation-in-part of Ser. No. 334,052, Dec. 23, 1981, abandoned. This application Sep. 16, 1983, Ser. No. 532,886

Claims priority, application South Africa, Nov. 19, 1982, 82/8580; European Pat. Off., Dec. 15, 1982, 82111665.4

Int. Cl.[3] **A61K** *45/02;* **C12P** *21/00*

U.S. Cl. 424—85 **7 Claims**

1. In a method for preparing a formulation of high specific activity alpha-type interferon having improved biological stability by lyophilizing a solution containing said alpha-type interferon to yield a reconstitutable lyophylizate, the improvement for further increasing said biological stability to a level such that the lyophilizate substantially retains its biological activity even when stored at 20° C. for at least six months which comprises: adding to said solution prior to lyophilization (a) a compatible buffer which will maintain the pH of the reconstituted solution within the range of about 6.5 to 8.0, and (b) glycine or alanine in an amount of 5 to 150 milligrams per milliliter of water to be added for reconstitution.

4,496,538

HAEMOPHILUS INFLUENZAE B POLYSACCHARIDE-DIPHTHERIA TOXOID CONJUGATE VACCINE

Lance K. Gordon, Mount Pocono, Pa., assignor to Connaught Laboratories, Inc., Swiftwater, Pa.

Filed Jan. 6, 1982, Ser. No. 395,743

Int. Cl.[3] **A61K** *39/102;* **C07G** *7/00*

U.S. Cl. 424—92 **3 Claims**

1. A water-soluble covalent polysaccharide-diphtheria toxoid conjugate

capable of producing T-cell dependent antibody response to polysaccharide from *Haemophilus influenzae b,*

of molecular size above 140,000 and below 4,500,000 dalton, and

of a ribose/protein ratio between 0.25 and 0.75,

prepared by mixing adipic hydrazide derivatized diphtheria toxoid in a substantially cyanogen halide-free solution with a cyanogen halide activated capsular *Haemophilus influenzae* b polysaccharide consisting of approximately equal parts of ribose, ribitol and phosphate, which had previously been sized

by heating until more than 60% of the polysaccharide was adjusted to a molecular size between 200,000 and 2,000,000 dalton.

4,496,539

METHOD FOR TREATING CANCER USING GALACTOSE-SPECIFIC LECTINS

George M. Plotkin, Lynn, Mass.; Charles J. Bendrick, Liverpool, N.Y., and George Wolf, Lexington, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 1, 1982, Ser. No. 344,497
Int. Cl.[3] A61K *37/48, 35/78*
U.S. Cl. 424—94 8 Claims

1. A method of treating cancer cells, comprising contacting the cells with a lectin which specifically binds galactose moieties on the surface of the cell membrane thereby weakening the cell membrane; and, thereafter, applying sufficient localized stress within the cell environs to rupture the weakened cell membrane.

4. A method of treating cancer cells comprising

contacting the cells with a lectin which specifically binds galactose moieties on the surface of the cell membrane, said lectin being bonded to an enzyme which catalyzes an exothermic reaction; and, then, contacting the cells with a substrate for said enzyme whereby the release of heat caused by the ensuing exothermic reaction provides stress sufficient to rupture the cell membrane.

7. A method of treating bladder cancer comprising

introducing into the bladder a lectin which binds specifically to galactose moieties on the surface of a cell membrane, said lectin being bound to an enzyme which catalyzes an exothermic reaction, and them, introducing into the bladder a substrate for said enzyme.

4,496,540

THERAPEUTIC COMPOUNDS

Sun K. Kim, Chestnut Hill, Mass., assignor to Biomeasure, Inc., Hopkinton, Mass.

Filed Dec. 30, 1982, Ser. No. 454,731
Int. Cl.[3] C07C *103/52;* A61K *37/02*
U.S. Cl. 514—19 20 Claims

1. A compound capable of inhibiting an endopeptidase responsible for a degradation pathway of enkephalin and having the general formula A—B—NHOH

wherein A is one of the aromatic group-containing amino acid residues L-tryptophyl, D-tryptophyl, L-tyrosyl, D-tyrosyl, L-phenylalanyl, or D-phenylalanyl, and B is one of the amino acids glycine, L-alanine, D-alanine, L-leucine, D-leucine, L-isoleucine, or D-isoleucine;

or a pharmaceutically acceptable salt thereof.

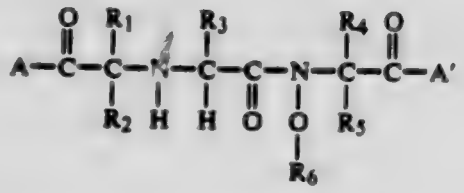
4,496,541

COMPOUNDS FOR TREATING HYPERTENSION

Fu-chih Huang, Boonton, N.J.; Howard Jones, Ossining; Clara Lin, and Bernard Loev, both of Scarsdale, all of N.Y., assignors to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed Jan. 12, 1983, Ser. No. 457,611
Int. Cl.[3] A61K *37/00;* C07C *103/50*
U.S. Cl. 514—2 16 Claims

1. Compounds of the formula



and their pharmaceutically-acceptable salts, wherein

A and A′ are independently hydroxy, C_1-C_9 alkoxy, aryloxy, or hydroxyamino;

R_2, R_4 and R_5 are independently hydrogen, or C_1-C_9 alkyl;

R_3 is hydrogen, C_1-C_9 alkyl or ω-amino C_1-C_9 alkyl;

R_1 is phenyl C_1-C_9 alkyl, C_1-C_9 alkyl, C_3-C_9 cycloalkyl, fused cyclo C_3-C_9 alkylphenyl, or phenoxy C_1-C_9 alkyl; and

R_6 is $(CH_2)_nX$ wherein n is 0–2 and

X is hydrogen, C_1-C_9 alkyl, C_1-C_9 alkoxy, C_3-C_9 cycloalkyl, adamantyl, norbornyl, phenyl, tolyl, benzyl, phen C_1-C_9 alkyl, indolyl, dimethoxyphenyl, hydroxybenzyl, indanyl, naphthyl, tetrahydronaphthyl, decanhydronaphthyl, pyridyl, quinolyl, guanidino, pyrrolidyl, pyrrolyl, morpholinyl, furyl, furfuryl, tetrahydrofurfuryl, benzimidazolyl, thienyl, or imidazolyl.

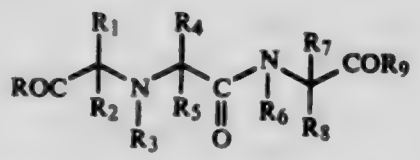
4,496,542

N-SUBSTITUTED-AMIDO-AMINO ACIDS

Jerry W. Skiles, Tuckahoe; Raymond D. Youssefyeh, Tarrytown, both of N.Y.; John T. Suh, Greenwich, Conn., and Howard Jones, Ossining, N.Y., assignors to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Continuation-in-part of Ser. No. 249,053, Mar. 30, 1981, abandoned. This application Apr. 13, 1983, Ser. No. 484,729
Int. Cl.[3] A61K *37/00, 31/40, 31/425;* C07C *103/52;* C07D *403/00, 233/66, 233/28, 233/00, 235/04, 405/00, 211/72, 211/56, 211/30, 215/00, 221/02, 415/00, 413/00, 265/30, 279/10*
U.S. Cl. 514—2 23 Claims

1. Compounds of the formula



wherein R and R_9 are independently hydroxy or lower alkoxy,

R_1 and R_2 are independently hydrogen, lower alkyl, or aryl-lower alkyl having from 7 to 12 carbon atoms,

R_3, R_4, R_5, R_7 and R_8 are hydrogen or lower alkyl,

R_6 is a heterocyclic group selected from the group consisting of pyrrolyl, pyrrolinyl, pyrrolidinyl, pyridinyl, dihydropyridinyl, piperidinyl, morpholinyl, thiomorpholinyl, imidazolyl, imidazolinyl, imidazolidinyl, furanyl, furfuryl, thienyl, benzimidazolyl, thiazolyl, thiazolinyl, thiazolidinyl, indolyl, quinolinyl, isoquinolinyl, tetrahydroquinolinyl,tetrahydroisoquinolinyl, and indolylethyl,

and wherein

alkyl where present can carry at least one substituent selected from the group consisting of hydroxy, lower alkoxy, thio, lower alkylmercapto, amino, lower alkylamino, di(lower alkyl) amino, halogen, and nitro;

the heterocyclic group can carry at least one substituent selected from the group consisting of lower alkyl, hydroxy, lower alkoxy, halogen and trifluoromethyl; and

their pharmaceutically acceptable, nontoxic acid addition salts and where R or R_9 or both are hydroxy, their pharmaceutically acceptable basic salts.

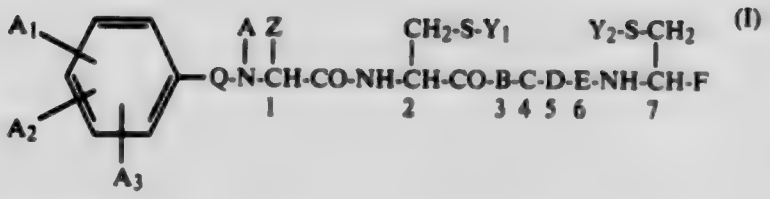
4,496,543

POLYPEPTIDES, PROCESSES FOR THEIR PRODUCTION, PHARMACEUTICAL COMPOSITIONS COMPRISING SAID POLYPEPTIDES AND THEIR USE

Wilfried Bauer, Lampenberg, and Janos Pless, Basel, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Aug. 18, 1983, Ser. No. 524,374
Claims priority, application Switzerland, Aug. 24, 1982, 5031/82
Int. Cl.[3] A61K *37/00;* C07C *103/52*
U.S. Cl. 514—11 17 Claims

1. A polypeptide of formula I



(I)

wherein

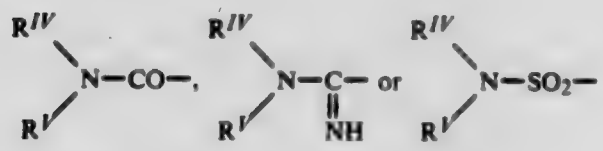
A is hydrogen, C_{1-3}alkyl or an acyl group of the formula

(a) $R^{I}CO$— wherein R^{I} is C_{1-20}alkyl, C_{3-20}alkenyl, C_{3-20}alkinyl, phenyl, naphthyl or C_{7-10}(phenylalkyl);

(b) $R^{II}SO_2$— wherein R^{II} is C_{1-10}alkyl, phenyl or C_{7-10}(phenylalkyl);

(c) $R^{III}O$—CO— wherein R^{III} is C_{1-10}alkyl or C_{7-10}(phenylalkyl); and

(d)



wherein

R^{IV} is hydrogen, C_{1-10}alkyl, phenyl or C_{7-10}(phenylalkyl) and

R^{V} is hydrogen or C_{1-10}alkyl;

A_1 is hydrogen, C_{1-3}alkyl, C_{1-3}alkoxy, halogen, OH, NO_2, esterified or amidated carboxy group of the formula

R_8O—CO— or R_8—NH—CO—

wherein

R_8 is C_{1-16}alkyl or an amide group of the formula R_9—CO—NH—

wherein

R_9 is C_{1-15}alkyl;

A_2 is hydrogen, C_{1-3}alkyl, C_{1-3}alkoxy, halogen, OH or NO_2,

A_3 is hydrogen, C_{1-3}alkyl or C_{1-3}alkoxy,

Q is C_{1-4}alkylene,

>N—CH(Z)—CO— is an (L)- or (D) phenylalanine residue optionally ring substituted by one or more members selected from the group consisting of halogen, NO_2, NH_2, OH, C_{1-3}alkyl and C_{1-3}alkoxy,

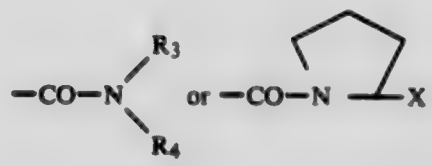
B is —Phe— optionally ring-substituted by one or more memebers selected from the group consisting of halogen, NO_2, NH_2, OH, C_{1-3}alkyl and C_{1-3}alkoxy,

C is —Trp— or (D)Trp— optionally α-N-methylated and optionally benzene-ring-substituted by one or more members selected from the group consisting of halogen, NO_2, NH_2, OH, C_{1-3}alkyl and C_{1-3}alkoxy,

D is —Lys— optionally α-N-methylated and optionally ϵ-N-C_{1-3}alkylated,

E is —Thr—

F is a group of formula —$COOR_1$, —CH_2OR_2,



wherein

R_1 is hydrogen or C_{1-3}alkyl,

R_2 is hydrogen or the residue of a physiologically acceptable, physiologically hydrolysable ester,

R_3 is hydrogen or methyl,

R_4 is —$CH(R_5)$—X,

R_5 is hydrogen, —$(CH_2)_2$—OH, —$(CH_2)_3$—OH, —CH_2OH, —CH(OH)—CH_3 or isobutyl,

X is a group of formula —$COOR_1$, —CH_2OR_2 or —$CON(R_6)R_7$

wherein

R_1 and R_2 have the meanings given above,

R_6 is hydrogen or C_{1-3}alkyl and

R_7 is hydrogen, C_{1-3}alkyl, phenyl or C_{7-10}phenylalkyl,

the group —$CH(R_5)$—X having the (D)- or (L)-configuration, and Y_1 and Y_2 are each hydrogen or together represent a direct bond,

whereby the residues in the 2- and 7-position each independently have the (L)- or (D)-configuration;

said polypeptide being in free or pharmaceutically acceptable protected form;

or a pharmaceutically acceptable salt or complex thereof.

4,496,544

ATRIAL PEPTIDES

Philip Needleman, Olivette, Mo., assignor to Washington University, St. Louis, Mo.

Continuation-in-part of Ser. No. 551,372, Nov. 10, 1983,. This application Jan. 10, 1984, Ser. No. 569,684

Int. Cl.³ A61K *37/00*; C07C *103/52*

U.S. Cl. 514—13 **17 Claims**

1. A peptide having potent natriuretic activity comprising the following amino acid sequence:

R_1-cys-phe-gly-gly-arg-ile-asp-arg-ile-gly-ala-gln-ser-gly-leu-gly-cys-asn-R_2

wherein

R_1=H, ser, ser-ser, and

R_2=OH, ser, ser-phe-arg, ser-phe-arg-tyr,

or the physiologically acceptable salts, esters or amides thereof.

4,496,545

NONAPEPTIDE FOR TREATING ADDICTIVE DRUG WITHDRAWAL CONDITIONS

Richard R. Scherschlicht, Inzlingen, Fed. Rep. of Germany, and René Tissot, Chene-Bourg, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 379,162, May 17, 1982, Published Application No. 4,444,758. This application Feb. 24, 1984, Ser. No. 583,520

Claims priority, application Switzerland, May 21, 1981, 3306/81

Int. Cl.³ A61K *37/00*; C07C *103/52*

U.S. Cl. 514—16 **6 Claims**

1. A pharmaceutical composition comprising a nonapeptide of the formula

Trp-Ala-Gly-Gly-Asp-Ala-Ser-Gly-Glu

or a pharmaceutically acceptable salt thereof in an amount between 0.55 mg and 1.1 mg and a pharmaceutically acceptable carrier for treating addictive drug withdrawal conditions in a subject.

4,496,546

ERYTHROMYCIN D AND ESTERS THEREOF

Walter D. Celmer, New London; Walter P. Cullen, East Lyme; Paul C. Watts, Mystic, all of Conn.; Riichiro Shibakawa, Handa, Japan, and Jumsuke Tone, Chita, Japan, assignors to Pfizer Inc., New York, N.Y.

Filed Apr. 12, 1982, Ser. No. 367,820

Int. Cl.³ A61K *31/71*; C07H *17/08*

U.S. Cl. 514—29 **12 Claims**

1. An ester of erythromycin D which is:

3″,4″-di-O-acetylerythromycin D;

3″-O-acetyl-4″-O-propionylerythromycin D, or

4″-O-acetylerythromycin D;

or a pharmaceutically-acceptable acid addition salt thereof.

9. A method for treating a bacterial infection in a mammal which comprises administering to said mammal an antibacterially effective amount of a compound of claim 1.

4,496,547

SACCHARIDE FATTY ACID ESTER FOR BLOAT-PREVENTION OR BLOAT-TREATMENT

Ryoji Kawashima, Kyoto; Akira Usegawa, Ishikawa, and Takayoshi Maeda, Aichi, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Dec. 20, 1982, Ser. No. 451,396
Claims priority, application Japan, Dec. 25, 1981, 56-209198
Int. Cl.³ A61K *31/70, 31/72;* C07H *13/06*
U.S. Cl. 514—25 13 Claims

7. A method for preventing or treating bloat in ruminants mammals, comprising feeding to said ruminant mammals an amount sufficient for bloat-prevention or bloat-treatment of a mixture of 3–97% saccharide fatty acid ester and 97–3% fatty acid salt.

4,496,548

COMPOSITION AND METHOD FOR REDUCING HANGOVER

Mervin J. Moldowan, and Carol Moldowan, both of 480 Benton View Dr., Philomath, Oreg. 97370

Filed Feb. 4, 1983, Ser. No. 463,736
Int. Cl.³ A61K *31/70;* C07H *17/04*
U.S. Cl. 514—27 7 Claims

3. A method for reducing effects associated with the consumption of ethyl alcohol by humans, which comprises ingestion prior to, during, or immediately following consumption of ethyl alcohol, an effective amount of a composition comprising:

(a) 12% to 80% by weight ascorbic acid;
(b) 5% to 70% by weight thiamine;
(c) 10% to 90% by weight of a compound selected from cysteine and cysteic acid; and
(d) 1.5% to 85% by weight of a flavonoid or flavonoid complex selected from the group consisting essentially of rutin, hesperidin, and hesperidin-methyl-chalcone.

4,496,549

TREATMENT OF MALARIA WITH ANTIBIOTICS

Arnold L. Oronsky, Chappaqua, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jan. 17, 1983, Ser. No. 458,242
Int. Cl.³ A61K *31/70, 31/71, 31/35*
U.S. Cl. 514—27 2 Claims

1. A method of treating malaria in warm-blooded animals comprising administering to a warm-blooded animal in need of said treatment an anti-malarial effective amount of a compound selected from the group consisting of X-14868A, LL-C23024 beta and LL-C23024 iota.

4,496,550

OLIGOSACCHARIDES HAVING SELECTIVE ANTICOAGULATION ACTIVITY

Ulf P. F. Lindahl, Uppsala; Gudrun E. Bäckström, Alunda, and John Y. L. Thunberg, Uppsala, all of Sweden, assignors to KabiVitrum AB, Stockholm, Sweden

Filed Sep. 11, 1981, Ser. No. 301,257
Claims priority, application Sweden, Sep. 15, 1980, 8006459
Int. Cl.³ A61K *31/725;* C08B *37/10*
U.S. Cl. 514—54 19 Claims

1. Oligosaccharide comprising 4–8 monosaccharide units, characterized in that it contains at least one glucosamine unit which is 3-O-sulfated, and at least one further glucosamine unit, whereby these units are connected by an iduronic unit linking monosaccharide unit, which is bound to the reducing end of the 3-O-sulfated glucosamine unit.

9. A pharmaceutical preparation, characterized in that it contains one or more oligosaccharides according to claim 1 in an amount sufficient for anticoagulation activity.

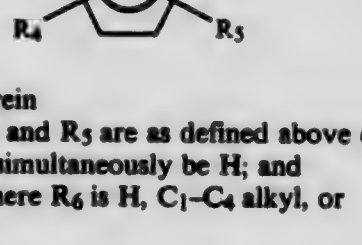
4,496,551

FUNGICIDAL IMIDAZOLE DERIVATIVES

William K. Moberg, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 474,872, Mar. 21, 1983, abandoned, which is a continuation-in-part of Ser. No. 377,121, May 12, 1982, abandoned, which is a continuation-in-part of Ser. No. 349,262, Feb. 16, 1982, abandoned, which is a continuation-in-part of Ser. No. 276,987, Jun. 24, 1981, abandoned. This application Jun. 22, 1983, Ser. No. 506,895
Int. Cl.³ A61K *31/695;* C07F *7/18*
U.S. Cl. 514—63 18 Claims

1. A compound of the formula:

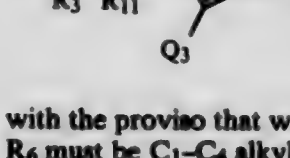


I

wherein

Q_1, Q_2 and Q_3 are independently H or CH_3;

R_1 is naphthyl, or



;

where

R_4 and R_5 are independently —H, halogen, —OCH_3, —OCF_3, —SCH_3, —SO_2CH_3, —CF_3, phenyl, phenyl substituted with halogen and/or C_1–C_4 alkyl and/or —CF_3, phenoxy or phenoxy substituted with halogen and/or C_1–C_4 alkyl and/or —CF_3;

with the proviso that both R_4 and R_5 may not simultaneously be H; and

R_2 and R_3 are independently C_1–C_6 alkyl, C_3–C_6 cycloalkyl, OR_6, or

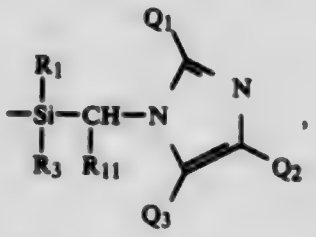


;

wherein

R_4 and R_5 are as defined above except that R_4 and R_5 may simultaneously be H; and

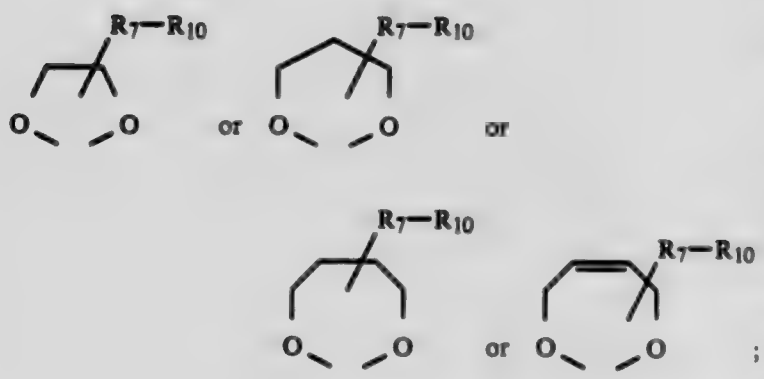
where R_6 is H, C_1–C_4 alkyl, or



,

with the proviso that when R_2 and R_3 are both OR_6, then R_6 must be C_1–C_4 alkyl; or

R_2 and R_3 together may be a 1,2- or 1,3- or 1,4-glycol bridge or a 1,4 unsaturated glycol bridge substituted by up to four alkyl groups R_7–R_{10} that have a total of up to four carbon atoms



R_{11} is H or C_1–C_4 alkyl;
and fungicidally active metal complexes or protic acid salts of said compounds.

13. A method for controlling fungus disease which comprises applying to the locus of infestation to be protected an effective amount of a compound of claim 1.

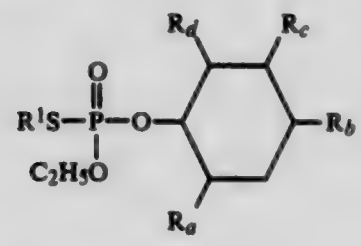
4,496,552

O-HALOPHENYL O-ALKYL S-TERT-BUTYL PHOSPHOROTHIOATES AS PESTICIDES

Mohamed A. H. Fahmy, Princeton, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Apr. 22, 1983, Ser. No. 487,773
Int. Cl.[3] A01N *57/14*; C07F *9/165*
U.S. Cl. 514—147 7 Claims

1. An O-halophenyl O-ethyl S-alkyl phosphorothioate compound of the formula



in which
R^1 is tertiary butyl,
R_a and R_b are each bromine or chlorine,
R_c is hydrogen, chlorine or bromine,
R_d is hydrogen, chlorine or bromine.

5. A method for control of foliar feeding insects which comprises applying to the above ground portions of a plant an insecticidal amount of the compound of claim 1, 2, 3, or 4.

4,496,553

PHARMACEUTICAL COMPOSITION AND METHOD FOR THE TREATMENT OF COLITIS ULCEROSA AND CROHN'S DISEASE BY ORAL ADMINISTRATION

Soren Halskov, Helsinge, Denmark, assignor to Farmaceutisk Laboratorium Ferring A/S, Vanlose, Denmark

Continuation of Ser. No. 270,517, May 29, 1981, abandoned. This application Nov. 28, 1983, Ser. No. 555,533
Claims priority, application Denmark, Mar. 20, 1980, 1202/80
Int. Cl.[3] A61K *9/22, 9/36, 31/60*
U.S. Cl. 514—166 2 Claims

1. A method for the treatment of ulcerative colitis or Crohn's disease comprising orally administering an effective amount of a composition consisting essentially of free 5-aminosalicylic acid in admixture with a pharmaceutically acceptable carrier which will control the release of said effective amount of 5-aminosalicylic acid to be administered according to the actual site of said ulcerative colitis or Crohn's disease in an individual patient.

4,496,554

OLEAGINOUS EMOLLIENT VEHICLE FOR STEROID FORMULATIONS

Thomas M. Wong, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation of Ser. No. 4,100, Jan. 17, 1979, abandoned. This application Oct. 15, 1981, Ser. No. 311,495
Int. Cl.[3] A61K *31/56*
U.S. Cl. 514—179 9 Claims

1. A composition for the topical administration of an antiinflammatory corticosteroid comprising an effective amount of the corticosteroid and not less than 40% by weight of the composition of isostearyl alcohol.

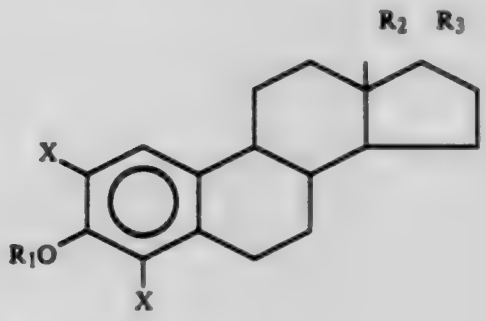
4,496,555

COMPOUNDS AND COMPOSITIONS FOR INHIBITING ESTROGEN SULFOTRANSFERASE TRANSFERASE ACTIVITY, PROCESS AND NOVEL INTERMEDIATES THEREIN

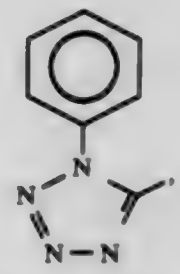
Samuel C. Brooks, Orchard Lake, and Jerome P. Horwitz, Oak Park, both of Mich., assignors to Wayne State University, Detroit, Mich.

Filed Jul. 19, 1983, Ser. No. 515,335
Int. Cl.[3] A61K *31/56*
U.S. Cl. 514—182 26 Claims

1. A compound having the formula

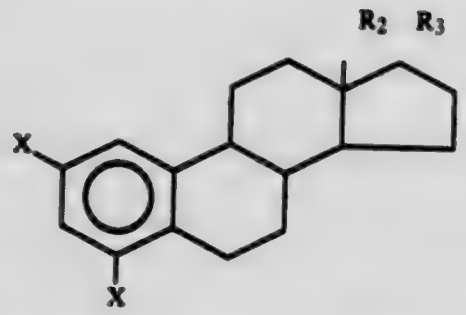


wherein R_1 is
(a) a substituent having the formula



T_1,
(b) perfluoroalkylsulfonyl of from 1–4 carbon atoms, inclusive;
and wherein R_2 and R_3 are the same or different and are
(a) hydrogen,
(b) hydroxy; or
(c) taken together are keto; and
with the proviso that both cannot be hydrogen at the same time; and wherein one of X is
(a) halogen,
(b) nitro,
(c) amino, or
(d) hydroxy; and
with the proviso that the other X must always be hydrogen.

15. A method of treating a female mammal to prevent implantation of a blastocyst which method comprises administering an effective dose of an estrogen sulfotransferase inhibiting compound selected from the group consisting of the formula



XX

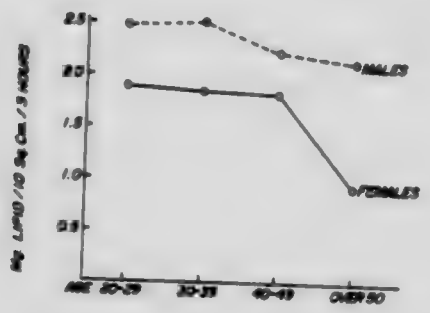
wherein R_2 and R_3 are the same or different and are
(a) hydrogen,
(b) hydroxy, or
(c) taken together are keto
with the proviso that both cannot be hydrogen at the same time; and wherein one of X is
(a) halogen,
(b) nitro,
(c) amino, or
(d) hydroxy and with the proviso that the other X must always be hydrogen; and a pharmaceutically acceptable carrier.

4,496,556

TOPICAL APPLICATIONS FOR PREVENTING DRY SKIN

Norman Orentreich, 140 E. 72nd St., New York, N.Y. 10021

Filed Aug. 16, 1982, Ser. No. 408,548
Int. Cl.[3] A61K *31/56*
U.S. Cl. 514—178 6 Claims



1. A method of treating dry skin in a patient which comprises topically administering to the area of dry skin on the patient an effective amount of dehydroepiandrosterone and/or a pharmaceutically acceptable, therapeutically effective derivative thereof.

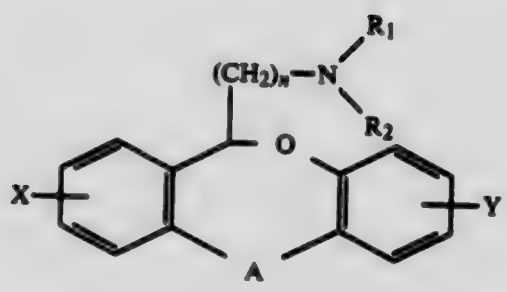
4,496,557

TRICYCLIC ETHERS, THEIR PREPARATION AND THE PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Charles Malen, Fresnes, and Jean-Claude Poignant, Bures s/Yvette, both of France, assignors to Adir, Neuilly-sur-Seine, France

Filed Aug. 16, 1982, Ser. No. 408,451
Claims priority, application France, Aug. 27, 1981, 81 16347
Int. Cl.[3] A61K *31/33, 31/335;* C07D *313/12, 267/18*
U.S. Cl. 514—211 13 Claims

1. A compound corresponding to the general formula:



(I)

in which
X and Y identical or different, represent a hydrogen or a halogen atom, a lower alkyl, a lower alkoxy or a trifluoromethyl group,
A represents a methylene group or an —NR_3— group in which R_3 is a hydrogen atom or a lower alkyl or lower alkanoyl group
R_1 and R_2 identical or different, each represents a hydrogen atom or a lower alkyl group, or together with the nitrogen atom to which they are attached they form a pyrrolidino, piperidino or 4-methylpiperazino group, and
n represents an integer from 1 to 3, inclusive, n being 2 when NR_1R_2 is a heterocyclic radical, in their racemic or optical isomeric forms, as well as their salts of addition with a therapeutically compatible mineral or organic acid.

8. Method for treating depression in a patient which comprises administering to said patient a therapeutically-effective dose of a compound according to claim 1.

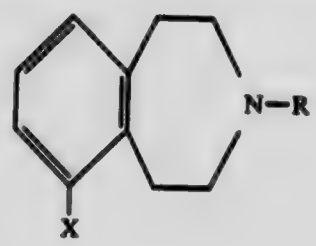
4,496,558

PHARMACEUTICAL COMPOSITIONS AND METHODS FOR PRODUCING ALPHA ANTAGONISM

Robert M. DeMarinis, Ardmore; Jacob P. Hieble, Philadelphia, and William D. Matthews, West Chester, all of Pa., assignors to Smithkline Beckman Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 325,249, Nov. 27, 1981, abandoned, and Ser. No. 398,015, Jul. 14, 1982,. This application Jan. 26, 1983, Ser. No. 461,058
Int. Cl.[3] A61K *31/33*
U.S. Cl. 514—213 13 Claims

1. A pharmaceutical composition for product alpha$_2$ antagonism comprising a pharmaceutically acceptable carrier and a nontoxic, effective amount to produce said antagonism of a 3-benzazepine compound of the formula:



in which:
R is allyl; and
X is halogen;
or a pharmaceutically acceptable, acid addition salt thereof.

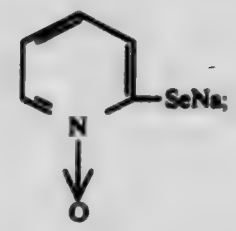
4,496,559

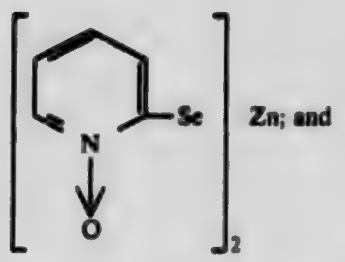
2-SELENOPYRIDINE-N-OXIDE DERIVATIVES AND THEIR USE AS FUNGICIDES AND BACTERICIDES

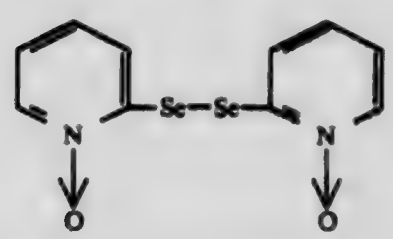
Richard Henderson, Bethany; Eugene F. Rothgery, North Branford, and Hansjuergen A. Schroeder, Hamden, all of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Sep. 2, 1981, Ser. No. 298,679
Int. Cl.[3] C07D *213/89;* A61K *31/555, 31/44*
U.S. Cl. 514—188 12 Claims

1. A derivative of 2-selenopyridine-N-oxide selected from the formulae which consisting of:







5. The method for controlling fungi which comprises contacting said fungi with a fungicidally effective amount of a compound of claim 1.

9. The method for controlling bacteria which comprises contacting said bacteria with bactericidally effective amount of a compound of claim 1.

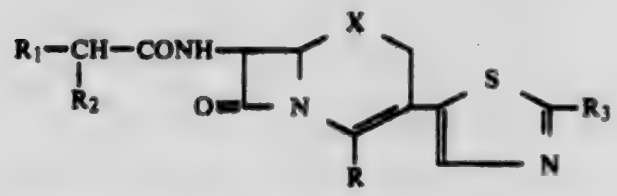
4,496,560

CEPHALOSPORIN DERIVATIVES, AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Daniel Farge; Pierre Le Roy, both of Thiais; Claude Moutonnier, Le Plessis Robinson; Jean-Francois Peyronel, Palaiseau, and Bernard Piau, Creteil, all of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

Filed Aug. 16, 1982, Ser. No. 408,676
Claims priority, application France, Aug. 17, 1981, 81 15804
Int. Cl.³ C07D *501/24*; A61K *31/545*
U.S. Cl. 514—204 **9 Claims**

1. A cephalosporin of the formula:



in which R_1 represents a radical selected from thienyl, furyl, 1,3-dithiol-2-on-4-yl, phenyl, p-hydroxyphenyl, phenoxy or dichlorophenylthio, and R_2 represents a hydrogen atom; or R_1 represents phenyl or p-hydroxyphenyl and R_2 represents amino; R_3 represents hydrogen, phenyl, alkanoylaminophenyl, alkylthio, alkylamino, dialkylamino or anilino, or R_3 represents alkanoylamino, benzoylamino, thenoylamino, N-alkyl-alkanoylamino, N-alkyl-benzoylamino, N-alkyl-thenoylamino, N-phenyl-alkanoylamino, N-phenyl-benzoylamino, N-phenyl-thenoylamino, alkoxycarbonylamino, dialkylaminoethylamino, dialkylaminomethyleneamino, alkylidenehydrazo, amino-acetamido, 2-aminoethylthio-acetamido or L-2-amino-2-carboxy-ethylthioacetamido, or R_3 represents a radical of the formula —A—R'$_3$, in which A represents —CH_2—, —NH— or —NHCO— amd R'$_3$ represents 1-methyl-3-pyridinio, 1-methyl-4-pyridinio, 1-benzoyl-methyl-3-pyridinio, 1-benzoyl-methyl-4-pyridinio, 1-carboxymethyl-3-pyridinio or 1-carboxymethyl-4-pyridinio; R represents a carboxyl radical or a carboxylato radical if R'$_3$ is a said substituted pyridinio radical; and X represents sulphur or oxygen, it being understood that the alkyl and alkanoyl radicals and moieties mentioned above are straight or branched and contain 1 to 4 carbon atoms each, in its D,L and D, L forms if R_2 is other than a hydrogen atom, and its pharmaceutically acceptable non-toxic metal salts, addition salts with non-toxic nitrogen-containing bases and, where they exist, addition salts with non-toxic acids.

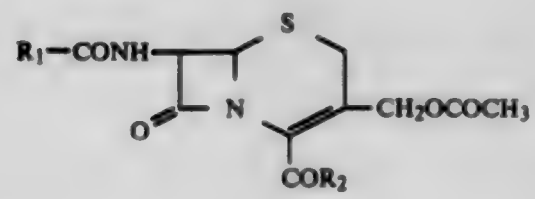
4,496,561

CEPHALOSPORIN DERIVATIVE

Shigeaki Muto, Tokyo; Kouichi Niimura, Sayama; Takao Ando, Tokyo; Akihiko Kanno, Tokyo; Takao Furuiko, Machida, and Chikao Yoshikumi, Kunitachi, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

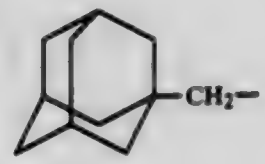
Filed Sep. 16, 1982, Ser. No. 418,762
Claims priority, application Japan, Sep. 22, 1981, 56-149870
Int. Cl.³ C07D *501/20*; A61K *31/545*
U.S. Cl. 514—209 **8 Claims**

1. A cephalosporin derivative having the formula (I):

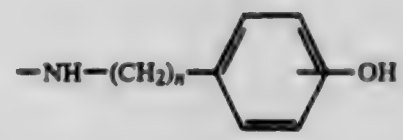


(I)

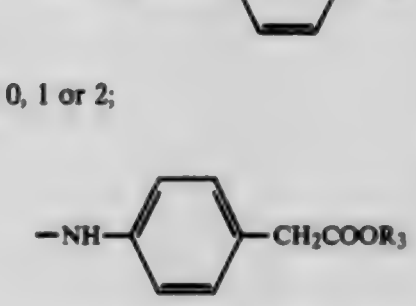
wherein R_1 is



and R_2 is



wherein n is 0, 1 or 2;



wherein R_3 is a hydrogen atom, an alkyl group having 1 to 4 carbon atoms or an alkali metal.

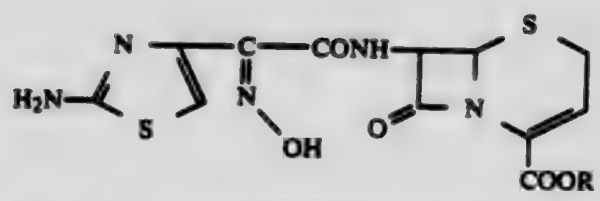
4,496,562

7-SUBSTITUTED-3-CEPHEM-4-CARBOXYLIC ACID ESTERS

Takao Takaya, Kawanishi; Hisashi Takasugi, Osaka; Kiyoshi Tsuji, Kishiwada, and Toshiyuki Chiba, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 886,340, Mar. 14, 1978, Pat. No. 4,425,341. This application Dec. 6, 1982, Ser. No. 447,218
Int. Cl.³ C07D *501/22*; A61K *31/545*
U.S. Cl. 514—207 **6 Claims**

1. A compound of the formula:



(I)

in which R is lower alkoxycarbonyloxy(lower)alkyl or 1-propionyloxyethyl, or a pharmaceutically acceptable acid addition salt thereof.

4,496,563

FUNGICIDAL THIADIAZINONES

Rolf-Dieter Acker, Leimen; Eberhard Ammermann, Ludwigshafen, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

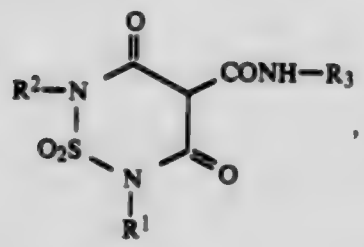
Filed Aug. 18, 1983, Ser. No. 524,202

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1982, 3230923

Int. Cl.³ C07D *285/16*; A61K *31/54*; A01N *43/88*

U.S. Cl. 514—222 4 Claims

1. A fungicidal composition comprising a liquid or solid carrier and a fungicidally effective amount of a thiadiazinone of the formula:



(I)

where R^1 and R^2 are identical or different and are each hydrogen, C_1–C_{10}-alkyl, C_3–C_8-cycloalkyl, phenyl or substituted phenyl and R^3 is phenyl or haloalkyl-substituted, alkyl-substituted, alkoxy-substituted, haloalkoxy-substituted or alkyl- and halo-substituted phenyl.

4,496,564

AMIDE DERIVATIVES

Tobias O. Yellin, Fremont, Calif., and David J. Gilman, Macclesfield, England, assignors to ICI Americas Inc., Wilmington, Del. and Imperial Chemical Industries PLC, London, England

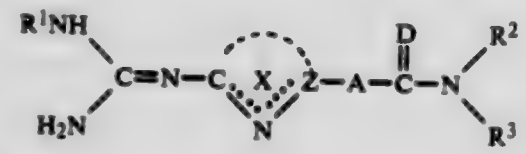
Filed Mar. 1, 1982, Ser. No. 353,423

Claims priority, application United Kingdom, Mar. 9, 1981, 8107272

Int. Cl.³ C07D *239/24*; A61K *31/505*

U.S. Cl. 514—237 9 Claims

1. A guanidine derivative of the formula I:



I

in which

R^1 is a hydrogen atom or a 1–10C alkyl, 3–8C cycloalkyl, 4–14C cycloalkylalkyl, 3–6C alkenyl, 3–6C alkynyl, 1–6C alkanoyl, phenyl, 7–11C phenylalkyl or benzoyl, the phenyl, phenylalkyl and benzoyl radicals being optionally substituted on the phenyl ring by one or two substituents selected from halogen atoms and 1–6C alkyl, 1–6C alkoxy, 1–6C alkylthio, trifluoromethyl, hydroxy and amino radicals;

in ring X the dotted line is a double bond on one side of the nitrogen atom and Z is a carbon or nitrogen atom such that ring X is a 6-membered aromatic heterocyclic ring and which is a pyrazine, pyridine, pyrimidine or 1,3,5-triazine ring, which heterocyclic ring may, where possible, carry one or two optional substituents, the optional substituents on ring X being selected from fluorine, chlorine and bromine atoms and 1–6C alkyl, 1–6C alkoxy, trifluoromethyl, hydroxy and amino radicals;

—A— is a phenylene or 5–7C cycloalkylene radical or a 1–8C alkylene chain which is optionally substituted by one or two 1–3C alkyl radicals and into which is optionally inserted, as part of the backbone of the chain, one or two groups selected from oxygen and sulphur atoms and NH, 1–6C N-alkyl, cis and trans vinylene, ethynylene, phenylene and 5–7C cycloalkylene radicals, provided that the shortest link between ring X and C=D is of at least 3 atoms, provided that when an optional insertion is made in chain A which results in the inserted group being directly attached to C=D the inserted group is other than an oxygen or sulphur atom or an NH or N-alkyl radical, and provided that no two insertions selected from oxygen and sulphur atoms and NH and N-alkyl radicals are directly attached one to the other;

D is an oxygen or sulphur atom;

R^2 is a hydrogen atom or a hydroxy, amino, 1–6C alkylamino, 1–6C haloalkylamino, 1–6C alkanoylamino, 1–6C alkyl, 3–8C cycloalkyl, 4–12C cycloalkylalkyl, 2–6C alkenyl, 2–6C alkynyl, 1–6C haloalkyl, 1–6C alkoxy, 1–6C hydroxyalkyl, 2–10C alkoxyalkyl, 2–10C alkylthioalkyl, 1–6C aminoalkyl, 2–8C alkylaminoalkyl, 3–12C dialkylaminoalkyl, 2–8C alkanoylaminoalkyl, 8–14C benzoylaminoalkyl, 3–10C alkoxycarbonylalkyl, 2–8C carbamoylalkyl, phenyl, 7–11C phenylalkyl, heteroaryl or heteroarylalkyl radicals, wherein the heteroaryl part is a furan, thiophene, pyrrole, thiazole, oxazole, imidazole, thiadiazole, oxadiazole, triazole, pyrazole, pyridine or pyrimidine ring and wherein, when R^2 is or contains phenyl or heteroaryl ring, that ring is optionally substituted by one or two groups selected from fluorine, chlorine, bromine and iodine atoms and 1–6C alkyl, 1–6C alkoxy, 1–6C alkylthio, 2–6C dialkylamino, 2–6C alkanoyl, trifluoromethyl, hydroxy and amino radicals;

R^3 is a hydrogen atom or R^2 and R^3 are joined to form, together with the nitrogen atom to which they are attached, a pyrrolidine, piperidine, morpholine, piperazine or N-methylpiperazine ring and the pharmaceutically-acceptable acid-addition salts thereof.

4,496,565

CHROMANS AND CHROMENES, COMPOSITIONS AND HYPERTENSIVE METHOD

John M. Evans, Roydon, and Valerie A. Ashwood, Harlow, both of England, assignors to Beecham Group p.l.c., England

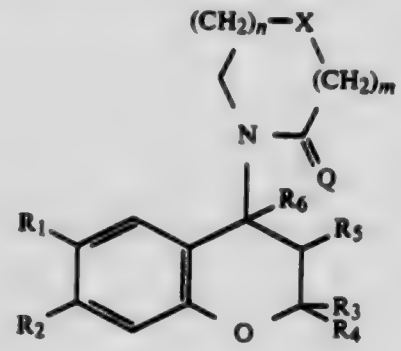
Filed Oct. 17, 1983, Ser. No. 542,658

Claims priority, application United Kingdom, Oct. 19, 1982, 8229789; May 18, 1983, 8313677

Int. Cl.³ A61K *31/425, 31/54*; C07D *413/04, 417/04*

U.S. Cl. 514—222 9 Claims

1. A compound of formula (I):



(I)

wherein:

either one of R_1 and R_2 is hydrogen and the other is selected

from the class of C_{1-6} alkylcarbonyl, C_{1-6} alkoxycarbonyl, C_{1-6} alkylcarbonyloxy, C_{1-6} alkylhydroxymethyl, nitro, cyano, chloro, trifluoromethyl, C_{1-6} alkylsulphinyl, C_{1-6} alkylsulphonyl, C_{1-6} alkoxysulphinyl, C_{1-6} alkoxysulphonyl, C_{1-6} alkylcarbonylamino, C_{1-6} alkoxycarbonylamino, C_{1-6} alkyl-thiocarbonyl, C_{1-6} alkoxy-thiocarbonyl, C_{1-6} alkyl-thiocarbonyloxy, C_{1-6} alkyl-thiolmethyl, formyl or aminosulphinyl, aminosulphonyl or aminocarbonyl, the amino moiety being optionally substituted by one or two C_{1-6} alkyl groups, or C_{1-6} alkylsulphinylamino, C_{1-6} alkylsulphonylamino C_{1-6} alkoxysulphinylamino or C_{1-6} alkoxysulphonylamino or ethylenyl terminally substituted by C_{1-6} alkylcarbonyl, nitro or cyano, or $—C(C_{1-6}$ alkyl)-NOH or $—C(C_{1-6}$ alkyl)NNH_2, or one of R_1 and R_2 is nitro, cyano or C_{1-3} alkylcarbonyl and the other is methoxy or amino optionally substituted by one or two C_{1-6} alkyl or by C_{2-7} alkanoyl;

one of R_3 and R_4 is hydrogen or C_{1-4} alkyl and the other is C_{1-4} alkyl or R_3 and R_4 together are C_{2-5} polymethylene;

either R_5 is hydrogen, hydroxy, C_{1-6} alkoxy or C_{1-8} acyloxy and R_6 is hydrogen or R_5 and R_6 together are a bond;

Q is O or S;

m is an integer from 0 to 2 and n is an integer from 0 to 2 such that m+n is 1 or 2;

X is O or S, or N—R_7, R_7 being hydrogen, C_{1-9} alkyl, C_{2-7} alkanoyl, phenylC_{1-4} alkyl, naphthylcarbonyl, phenylcarbonyl or benzylcarbonyl optionally substituted in the phenyl or naphthyl ring by one or two C_{1-6} alkyl, C_{1-6} alkoxy or halogen; mono- or bi-cycliheteroarylcarbonyl; the lactam or thiolactam group being trans to the R_5 group when R_5 and R_6 are not a bond; or, when one or the other of R_1 and R_2 is an amino or an amino-containing group, or when X is NR_7 and R_7 is hydrogen, a pharmaceutically acceptable salt or solvate thereof.

9. A method of treatment of hypertension in mammals including humans comprising the administration of a pharmaceutically effective amount of a compound according to claim 1 or a pharmaceutically acceptable salt thereof to the sufferer.

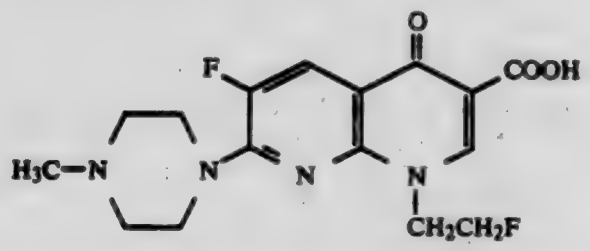
4,496,566

NAPHTHYRIDINE DERIVATIVES

Jun-ichi Matsumoto, Ikoma, and Shinichi Nakamura, Takatsuki, both of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan and Laboratoire Roger Bellon, Neuilly sur Seine, France

Filed Dec. 21, 1981, Ser. No. 333,181
Claims priority, application Japan, Dec. 24, 1980, 55-184417
Int. Cl.[3] A61K *31/495, 31/47;* C07D *401/04*
U.S. Cl. 514—254 3 Claims

3. A method for the treatment of a bacterial infectious disease which comprises administering to a warm-blooded animal suffering from such disease an antibacterially effective amount of a 1,8-naphthyridine compound of the formula



or a non-toxic pharmaceutically acceptable salt thereof.

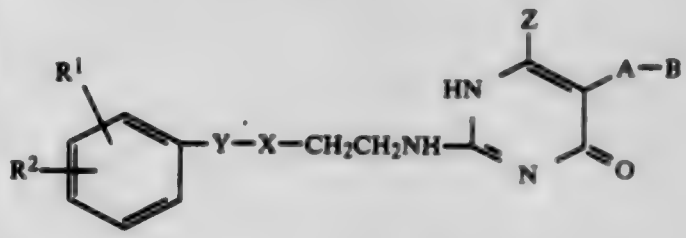
4,496,567

PHENYL ALKYLAMINOPYRIMIDONES

Thomas H. Brown, Tewin, and Robert J. Ife, Stevenage, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Filed Nov. 6, 1979, Ser. No. 91,850
Claims priority, application United Kingdom, Nov. 13, 1978, 44260/78; Aug. 21, 1979, 7929013
Int. Cl.[3] A61K *31/505;* C07D *239/36, 401/12, 405/12*
U.S. Cl. 514—272 10 Claims

1. A compound of Structure 1



(1)

in which R^1 is hydrogen or lower alkoxy; R^2 is in the 3-, 4- or 5-position and is lower alkyl substituted by R^3, or ethoxy or propoxy ω-substituted by R^3 where R^3 is amino, lower alkylamino, di(lower alkyl)amino, N-piperidino or N-pyrrolidino; Y is methylene or oxygen and X is methylene or sulphur provided that one or two of the groups X and Y is methylene; Z is hydrogen or lower alkyl; A is C_1–C_5 alkylene or $—(CH_2)_pW—(CH_2)_q—$ where W is oxygen or sulphur and p and q are such that their sum is from 1 to 4, and B is 6-methoxy-3-pyridyl, 2-methoxy-4-pyridyl, 6-hydroxy-3-pyridyl or 2-hydroxy-4-pyridyl, in the form of the free base or a pharmaceutically acceptable acid addition salt thereof.

8. A pharmaceutical composition having histamine H_2-receptor blocking activity comprising in an effective amount to block said receptors a compound of claim 1 and a pharmaceutically acceptable diluent or carrier.

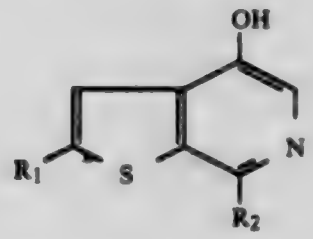
4,496,568

ANTIINFLAMMATORY THIENO [2,3-c]PYRIDINE DERIVATIVES

Jean-Pierre Maffrand, and Daniel Frehel, both of Toulouse, France, assignors to PACOR, Paris, France

Filed Apr. 25, 1983, Ser. No. 487,355
Claims priority, application France, Dec. 19, 1977, 77 38308
Int. Cl.[3] A61K *31/44;* C07D *495/04*
U.S. Cl. 514—301 21 Claims

14. A method for the treatment of inflammatory conditions in warm-blooded animals which comprises administering to a warm blooded animal an amount effective for that purpose of a substance selected from the group consisting of thieno(2,3-c)pyridine of the formula



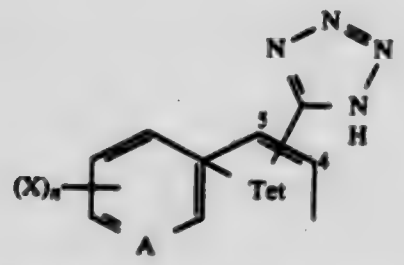
in which R_1 and R_2, which may be the same of different, represent hydrogen or a loweralkyl group, and the pharmaceutically acceptable acid addition salts thereof.

4,496,569
ANTIALLERGIC (1H-TETRAZOL-5-yl)TETRAZOLO[1,5-a]QUINOLINES AND DERIVATIVES THEREOF

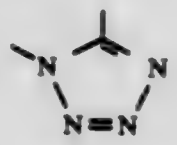
Terry L. Wright, Clayton, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 28, 1983, Ser. No. 478,964
Int. Cl.³ A61K 31/47, 31/44; C07D 471/04, 471/14
U.S. Cl. 514—311 13 Claims

11. A method for inhibiting the results of antibody-antigen reactions in mammals which comprises administration to a mammal susceptible to allergic reaction of an effective amount of a compound of the formula:



wherein Tet is the divalent tetrazolo group of the formula



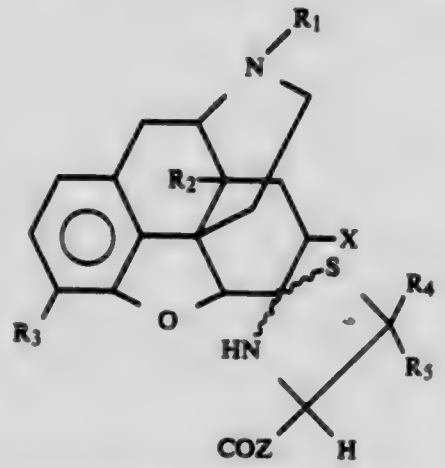
which is attached to the ring system to give either isomeric form; A is —CH= or —N=; n is 0, 1 or 2; X is H, alkyl or 1–4 C, alkoxy of 1–4 C, halogen, methylmercapto, methylsulfonyl, or two X's can be combined as methylenedioxy; with the proviso that, when X is methylmercapto or methylsulfonyl, then n must be 1; or a pharmaceutically acceptable salt thereof.

4,496,570
4,5αEPOXYMORPHINAN-6-SPIRO-2'-(4'-CARBOXY,1',3'-THIAZOLIDINE)DERIVATIVES

Nicholas S. Bodor, Gainesville, Fla., assignor to Key Pharmaceuticals, Inc., Miami, Fla.

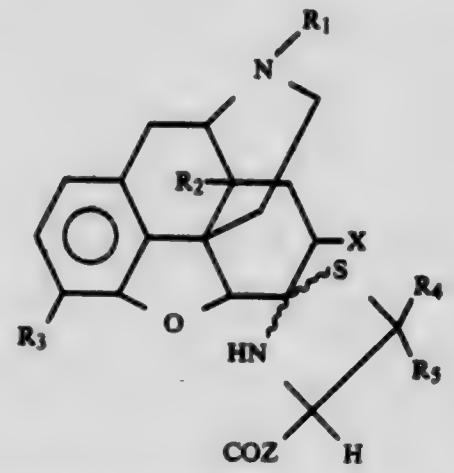
Filed Mar. 21, 1983, Ser. No. 477,447
Int. Cl.³ C07D 489/08; A61K 31/485
U.S. Cl. 514—282 12 Claims

1. A compound of the structural formula



or its pharmaceutically acceptable salts, wherein
X is H or CH_3,
Z is NH_2 or OR_6,
R_1 is a C_{3-6}-alkenyl or
C_{3-6}-cycloalkylmethyl,
R_2 is hydroxy, chloro or fluoro,
R_3 is hydrogen hydroxy, or —OCO—(C_{1-6}-alkyl),
R_4 and R_5 may be the same or different and are H or C_{1-6} alkyl,
R_6 is C_{1-4} alkyl.

10. Method of producing antagonism to the depressant action of an opioid drug in a mammal in which there is administered to said mammal an effective antagonist dose of a compound of the structural formula



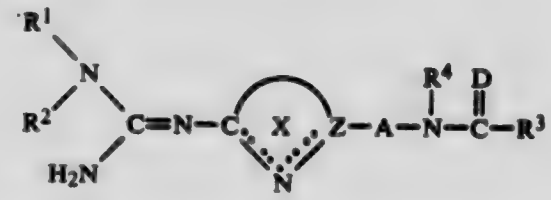
or its pharmaceutically acceptable salts, wherein
X is H or CH_3,
Z is NH_2 or OR_6,
R_1 is a C_{3-6}-alkenyl or
C_{3-6} cycloalkylmethyl,
R_2 is hydroxy, chloro or fluoro,
R_3 is hydrogen hydroxy, or —OCO—(C_{1-6}-alkyl),
R_4 and R_5 may be the same or different and are H or C_{1-6} alkyl,
R_6 is C_{1-4} alkyl.

4,496,571
HISTAMINE H2-ANTAGONISTS

Tobias O. Yellin, Fremont, Calif.; David J. Gilman, Tytherington; Philip N. Edwards, Bramhall; Michael S. Large, Congleton; Derrick F. Jones, Tytherington, and Keith Oldham, Cheadle, all of England, assignors to ICI Americas Inc., Wilmington, Del. and Imperial Chemical Industries, PLC, London, England

Filed Mar. 1, 1982, Ser. No. 353,422
Claims priority, application United Kingdom, Feb. 27, 1981, 8106376; May 5, 1981, 8113664
Int. Cl.³ C07D 249/04, 401/12; A01K 31/41
U.S. Cl. 514—340 10 Claims

1. A guanidine derivative of the formula I:



I

in which
R^1 and R^2, which may be the same or different, are hydrogen atoms or branched or unbranched 1–10C alkyl, 3–8C cycloalkyl or 4–14C cycloalkyl radicals, each alkyl, cycloalkyl or cycloalkyl alkyl radical being optionally substituted by one or more halogen atoms selected from fluorine, chlorine and bromine atoms, provided that at least one of R^1 and R^2 is a halogen-substituted alkyl, cycloalkyl or cycloalkylalkyl radical and provided that there is no halogen substituent on the carbon atom of the alkyl, cycloalkyl or cycloalkylalkyl radical which is directly attached to the nitrogen atom;
ring X is selected from oxazole, thiazole, imidazole, 1,2,4-thiadizole, 1,2,4-oxadiazole, 1,2,3-triazole, 1,2,4-triazole and pyrazole, and may, where possible, carry one or two

optional substituents, the optional substituents on ring X being selected from fluorine, chlorine, bromine atoms and 1–6C alkyl, 1–6C alkoxy, 1–6C alkylthio, trifluoromethyl, hydroxy and amino radicals;

—A— is a phenylene or a 5–7C cycloalkylene radical or a 1–8C alkylene chain which is optionally substituted by one or two 1–3C alkyl radicals and into which is optionally inserted, as part of the backbone of the chain, one or two groups selected from oxygen and sulphur atoms and NH, 1–6C N-alkyl, cis or trans vinylene, ethynylene, phenylene and 5–7C cycloalkylene radicals, provided that the shortest link between ring X and NR^4 is of at least 3 atoms, provided that when the optional insertion is made in chain A which results in the inserted group being directly attached to NR^4 the inserted group is other than an oxygen or sulphur atom or an NH and N-alkyl radical, and provided that no two insertions selected from oxygen and sulphur atoms and NH and NH and N-alkyl radicals are directly attached one to the other;

D is an oxygen or sulphur atom;

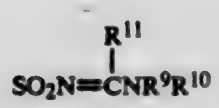
R^3 is a 1–6C alkyl radical which is substituted by one, two or three halogen atoms or by one or two substituents selected from hydroxy, amino, cyano, nitro, carboxy, carbamoyl, 1–6C alkoxy, 1–6C alkylthio 1–6C alkylamino, 2–10C dialkylamino, 1–6C alkanoylamino, phenoxy, heteroaryl, heteroaryloxy, benzoylamino, 1–6C alkanoyl, benzoyl and 2–6C alkoxycarbonyl radicals;

or R^3 is a 2–6C alkenyl radical optionally substituted by one or two radicals selected from carboxy, carbamoyl, cyano, nitro, 2–6C alkoxycarbonyl, phenyl and heteroaryl radicals,

or R^3 is a 2–6C alkynyl, phenyl, 7–11C phenylalkyl or heteroaryl radical or a radical of the formual COR^7 or $CONR^7R^8$ is which R^7 and R^8 are selected from hydrogen atoms and 1–6C alkyl and phenyl radicals,

wherein when R^3 is or contains a heteroaryl radical that radical is furyl, thienyl, pyrazolyl tiazolyl, oxazolyl, imidazolyl, thiazolyl, oxadiazolyl, triazolyl, pynazolyl, pyridyl or pyrimidyl radical, or such a radical fused with a benzene ring;

and wherein R^3 is or contains an phenyl or heteroaryl radical, that radical may optionally by substituted by one or two substituents selected from halogen atoms and 1–6C alkyl, 1–6C alkoxy, 1–6C alkylthio, trifluoromethyl, hydroxy, amino, carbamoyl, 2–6C alkylcarbamoyl, 3–10C dialkylcarbamoyl, phenylcarbamoyl, diphenylcarbamoyl, sulphamoyl, 1–6C alkylsulphamoyl, 2–10C dialkylsulphamoyl, phenylsulphamoyl, diphenylsulphamoyl, 1–6C aminoalkyl, 2–10C alkylaminoalkyl, 3–15C dialkylaminoalkyl, 1–6C hydroxyalkyl and 2–10C alkoxyalkyl radicals and radicals of the formula III:



III

in which R^9 and R^{10} are 1–6C alkyl radicals and R^{11} is a hydrogen atom or R^9 is a 1–6C alkyl radical and R^{10} and R^{11} are joined to form, together with the nitrogen and carbon atoms to which they are attached, a pyrrolidine or piperidine ring, and, when the group inseted in A is an ethynylene radical, R^3 may also be a 1–6C alkyl radical;

R^4 is a hydrogen atom or a 1–6C alkyo radical;

and the pharmaceutically-acceptable acid-addition salts thereof.

4,496,572

BENZO-FUSED THROMBOXANE SYNTHETASE INHIBITORS

Peter E. Cross, Canterbury, and Roger P. Dickinson, Dover, both of England, assignors to Pfizer Inc., New York, N.Y.

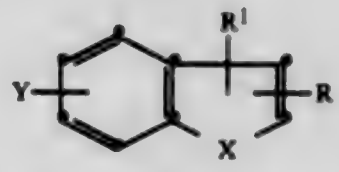
Filed Aug. 9, 1982, Ser. No. 406,140

Claims priority, application United Kingdom, Aug. 26, 1981, 8125976

Int. Cl.³ A61K *31/415, 31/44;* C07D *401/06*

U.S. Cl. 514—337 20 Claims

1. A compound of the formula:



or a pharmaceutically acceptable salt thereof, wherein

R^1 is hydrogen, F, Cl, Br, I, C_1–C_4 alkyl or —S(C_1–C_4 alkyl);

Y is —COOH, —COO(C_1–C_4 alkyl) or $CONH_2$;

X is O, S, NH or N(C_1–C_4 alkyl); and

R is 1-imidazolylmethyl or 3-pyridylmethyl; with the proviso that said Y is always other than $CONH_2$ when said X is NH or N(C_1–C_4 alkyl).

4,496,573

1-PYRIDYLMETHYL-3-ACYL GUANIDINES

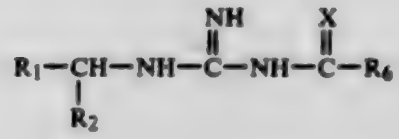
William L. Studt, Harleysville, and Harry K. Zimmerman, Kintnersville, both of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Aug. 24, 1982, Ser. No. 410,959

Int. Cl.³ C07D *213/53;* A61K *31/44*

U.S. Cl. 514—344 9 Claims

1. A compound of the formula



wherein:

X is O or S;

R_2 is H or lower alkyl;

R_6 is lower alkyl, cycloalkyl of 3 to 6 carbon atoms, lower alkenyl, lower alkynyl, phenyl lower alkyl or substituted phenyl lower alkyl;

R_1 is pyridyl or pyridyl having 1 to 4 ring substituents selected from the group consisting of halogen, lower alkyl, lower alkenyl, phenyl, lower alkynyl, phenyl lower alkyl, nitro, cyano, sulfonyl, hydroxyl, carboxyl, lower alkanoyl, lower alkoxy, phenyl lower alkoxy, halo lower alkoxy, amido, amino, lower alkanoyloxy, lower alkylamino, lower alkoxyamino, and phenyl lower alkoxyamino;

and the N-oxide thereof;

wherein substituted phenyl means a phenyl group in which one or more hydrogens is replaced by halo, lower alkyl, halo lower alkyl, nitro, amino, lower alkanoylamino, hydroxy, lower alkoxy, phenyl lower alkoxy, lower alkanoyloxy, cyano, halo lower alkoxy or lower alkyl sulfonyl;

or a pharmaceutically acceptable acid addition salt thereof.

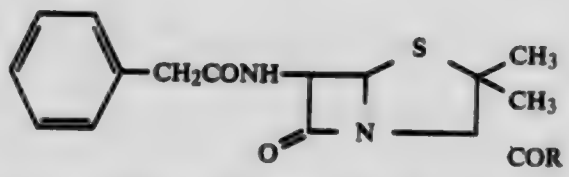
4,496,574

PENICILLIN DERIVATIVE

Shigeaki Muto, Tokyo; Kouichi Niimura, Sayama; Takao Ando; Akihiko Kanno, both of Tokyo; Takao Furusho, Machida, and Chikao Yoshikumi, Kunitachi, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

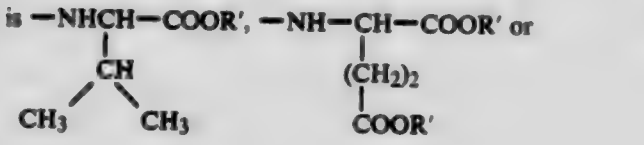
Filed Sep. 16, 1982, Ser. No. 419,077
Claims priority, application Japan, Sep. 22, 1981, 56/149869
Int. Cl.[3] A61K *31/43*; C07D *499/40*
U.S. Cl. 514—195 2 Claims

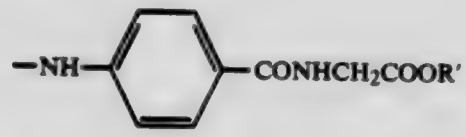
2. An antibacterial composition in a dosage unit form comprising an effective amount of a penicillin derivative having the formula (I):



(I)

wherein R is —NHCH—COOR′, —NH—CH—COOR′ or





wherein R′ is a hydrogen atom, an alkyl group having 1 to 4 carbon atoms or an alkali metal, and a pharmaceutically acceptable carrier.

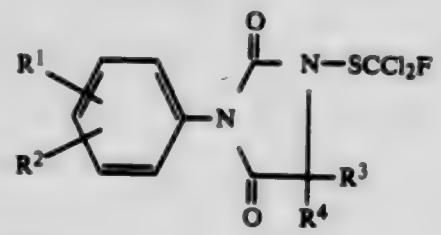
4,496,575

FUNGICIDAL N-SULPHENYLATED HYDANTOINS

Engelbert Kühle, Bergisch-Gladbach; Wilhelm Brandes, Leichlingen; Hans-Jürgen Roesslenbroich, Langenfeld, and Erich Klauke, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 3, 1983, Ser. No. 501,034
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1982, 3222523
Int. Cl.[3] A01N *43/50*; C07D *233/82*
U.S. Cl. 514—390 11 Claims

1. An N-sulphenylated hydantoin of the formula



in which:

R^1 is trihalogenomethoxy or trihalogenomethylmercapto,

R^2 is hydrogen, nitro or halogen, and

R^3 and R^4 each independently is hydrogen or alkyl having 1 to 4 carbon atoms, or, together with the ring carbon atom at which they are located, form a five-membered or six-membered cycloalkyl radical.

10. A method of combating fungi which comprises administering to such fungi a fungicidally effective amount of a compound according to claim 1.

4,496,576

COMPOSITIONS OF P-HYDROXYBENZOIC ACID ESTERS AND METHODS OF PREPARATION AND USE

Donald F. Loncrini, Ellisville; Thomas E. Haag, St. Louis County, and Steven R. Freebersyser, Florissant, all of Mo., assignors to Mallinckrodt, Inc., St. Louis, Mo.

Continuation of Ser. No. 363,026, Mar. 29, 1982, abandoned, which is a continuation of Ser. No. 199,717, Oct. 23, 1980, abandoned. This application Sep. 12, 1983, Ser. No. 531,064
Int. Cl.[3] A01N *43/50, 37/10*
U.S. Cl. 514—389 36 Claims

1. A freeze and heat stable composition having broad spectrum antimicrobial activity consisting of a clear solution containing approximately 10% to 90% by weight of a eutectic mixture of three or more lower alkyl esters of p-hydroxybenzoic acid, approximately 10% to 90% by weight of a solution containing 55% of 1,3-bis(hydroxymethyl)-5,5-dimethylhydantoin and 45% of water, and approximately 0.5% to 10% by weight based on the weight of said eutectic mixture and said 1,3-bis(hydroxymethyl)-5,5-dimethylhydantoin solution of an anionic surfactant.

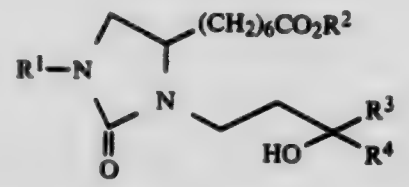
4,496,577

IMIDAZOLIDINONE PROSTAGLANDINS, COMPOSITIONS AND USE

Joseph M. Muchowski, Sunnyvale, Calif., and Angel Guzman, Estro, Mexico, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

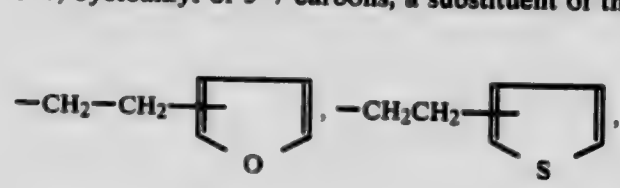
Filed Oct. 5, 1983, Ser. No. 539,197
Int. Cl.[3] A61K *31/415*; C07D *233/02*
U.S. Cl. 514—392 12 Claims

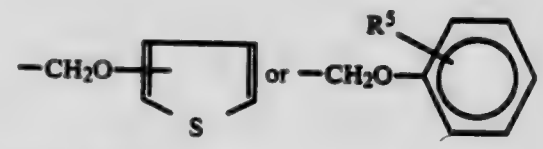
1. A compound of the formula



(I)

and the pharmaceutically acceptable salts thereof, wherein R^1 and R^2 are independently hydrogen or alkyl of 1 to 4 carbons; R^3 is hydrogen or methyl; and R^4 is $—(CH_2)_nCH_3$ wherein n is 3–7, cycloalkyl of 5–7 carbons, a substituent of the formula





wherein R^5 is hydrogen, alkyl of 1 to 4 carbons, alkoxy of 1 to 4 carbons, halo or trifluoromethyl.

11. A method of inhibiting platelet aggregation which method comprises administering an effective amount of a compound of claim 1 to a mammal either alone or in add mixture with a pharmaceutically acceptable excipient.

4,496,578

ANTIHYPERTENSIVE SULFUR-CONTAINING COMPOUNDS

Jun-ichi Iwao, Takarazuka; Masayuki Oya, Ibaraki, and Tadashi Iso, Tondabayashi, all of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

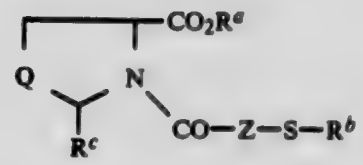
Division of Ser. No. 86,996, Oct. 22, 1979,. This application Jul. 6, 1982, Ser. No. 395,128

Claims priority, application Japan, Oct. 31, 1978, 53-135093; Dec. 14, 1978, 53-155166; Feb. 6, 1979, 54-012519; Feb. 19, 1979, 54-018812

Int. Cl.³ A61K *31/40*; C07D *207/16*

U.S. Cl. 514—423 9 Claims

1. A compound of the formula (I)



wherein

Q is methylene;

R^a is hydrogen, phenyl, alkoxy-lower alkyl, acyloxy-lower alkyl, imido-lower alkyl or substituted phenyl wherein the substituent(s) is lower alkyl, lower alkoxy, hydroxy, acyl, acyloxy, halogen, nitro, amino, lower alkylamino, acylamino or carboxy;

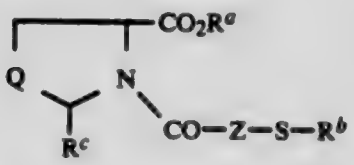
R^b is lower alkyl, aralkyl, lower alkanoyl, cycloalkanecarbonyl, phenyl-lower alkanoyl, pyridylcarbonyl, benzyloxycarbonyl, substituted benzoyl or substituted phenyl-lower alkanoyl wherein the substituent(s) is lower alkyl, halogen or lower alkoxy;

R^c is hydroxyphenyl; and

wherein the lower alkyl groups contain 1 to 6 carbon atoms, lower alkoxy groups contain 1 to 6 carbon atoms, aralkyl groups are phenyl-lower alkyl groups, acyloxy groups are lower alkanoyloxy, benzoyloxy, or benzyloxycarbonyloxy groups, acylamino groups are lower alkanoylamino, benzoylamino, or benzyloxycarbonylamino groups, and acyl group is acetyl or benzoyl groups; and

Z is straight or branched alkylene with 1 to 3 carbon atoms; and salts thereof.

6. A pharmaceutical composition comprising (i) a compound of the formula (I)



wherein

Q is methylene;

R^a is hydrogen, phenyl, alkoxy-lower alkyl, acyloxy-lower alkyl, imido-lower alkyl or substituted phenyl wherein the substituent(s) is lower alkyl, lower alkoxy, hydroxy, acyl, acyloxy, halogen, nitro, amino, lower alkylamino, acylamino or carboxy;

R^b is lower alkyl, aralkyl, lower alkanoyl, cycloalkanecarbonyl, phenyl-lower alkanoyl, pyridylcarbonyl, benzyloxycarbonyl, substituted benzoyl or substituted phenyl-lower alkanoyl wherein the substituent(s) is lower alkyl, halogen or lower alkoxy;

R^c is phenyl, furyl, thienyl, pyridyl, naphthyl, substituted phenyl, substituted furyl, substituted thienyl, substituted pyridyl or substituted naphthyl wherein the substituent(s) is lower alkyl, hydroxy, lower alkoxy, acyloxy, mercapto, acylmercapto, halogen, nitro, amino, lower alkylamino, acylamino, lower alkylenedioxy or carboxy; and

wherein the lower alkyl groups contain 1 to 6 carbon atoms, lower alkoxy groups contain 1 to 6 carbon atoms, aralkyl groups are phenyl-lower alkyl groups, acyloxy groups are lower alkanoyloxy, benzoyloxy, or benzyloxycarbonyloxy groups, acylamino groups are lower alkanoylamino, benzoylamino, or benzyloxycarbonylamino groups, acylmercapto groups are lower alkanoylmercapto, or benzoylmercapto groups, and acyl group is acetyl or benzoyl groups; and

Z is straight or branched alkylene with 1 to 3 carbon atoms; and pharmaceutically acceptable salts thereof;

in an amount sufficient to reduce blood pressure, and

(ii) at least one pharmaceutically acceptable excipient.

4,496,579

BENZODIOXINOPYRROLE DERIVATIVES AND PROCESSES FOR THEIR PREPARATION

Andrew J. Crame, Greenford, and Alan D. Borthwick, London, both of England, assignors to Glaxo Group Limited, London, England

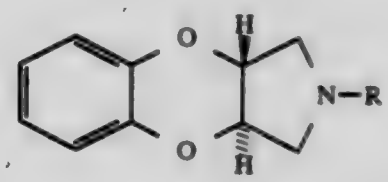
Filed Oct. 25, 1983, Ser. No. 545,191

Claims priority, application United Kingdom, Oct. 25, 1982, 8230379

Int. Cl.³ A61K *31/40*; C07D *209/48*

U.S. Cl. 514—411 11 Claims

1. A compound selected from the group consisting of compounds of formula (I):



(I)

wherein R is a hydrogen atom or a C_{1-6} alkyl (optionally substituted by C_{3-7} cycloalkyl), C_{3-6} alkenyl, C_{3-6} alkynyl, C_{3-7} cycloalkyl, aralkyl (in which the alkyl moiety contains 1-5 carbon atoms), or —CHO group,

and physiologically acceptable salts thereof.

9. A α_2-adrenoreceptor antagonist composition comprising a compound selected from the group consisting of compounds of formula (I), physiologically acceptable salts thereof and their mixtures together with a physiologically acceptable carrier or excipient.

4,496,580

OXOTHIENOBENZOXEPINS

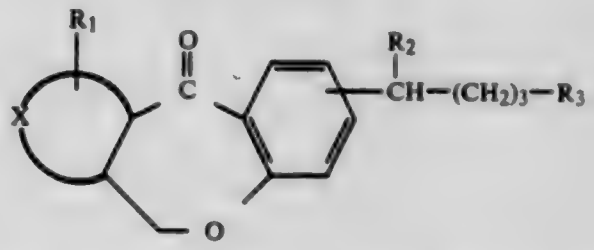
Lawrence L. Martin, Lebanon, and Linda L. Setescak, Somerville, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Jul. 23, 1981, Ser. No. 285,897

Int. Cl.³ H61K *31/38*; C07D *495/04*

U.S. Cl. 514—443 51 Claims

1. A compound of the formula



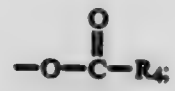
(I)

where X together with the carbon atoms to which it is attached is a thiophene ring;

R_1 is hydrogen, a straight or branched chain alkyl group having 1 to 5 carbon atoms or a halogen atom;

R_2 is hydrogen or a straight chain alkyl group having 1 to 5 carbon atoms; and

R_3 is hydroxyl or



where R_4 is a straight chain or branched chain alkyl group having 1 to 10 carbon atoms, a phenyl group or a trifluoromethyl group.

4,496,581

1,2-DIBROMO-2-CYANO-2-(HETEROCYCLIC)ALKANE COMPOUNDS AND ANTIMICROBIAL USE THEREOF

John E. Engelhart, Westfield; Marshall R. Angeles, Scotch Plains, both of N.J., and Michael J. D'Errico, Flossmoor, Ill., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 22, 1981, Ser. No. 333,277
Int. Cl.³ C07D *307/14, 333/12*
U.S. Cl. 514—438 7 Claims

1. 1,2-dibromo-2-cyano-3-(2-thienylpropane).

5. An antimicrobial composition comprising a carrier and an antimicrobially effective amount of a compound selected from the group consisting of 1,2-dibromo-2-cyano-3-(2-thienylpropane); 1,2-dibromo-2-cyano-2-(2-thienylethane); 1,2-dibromo-2-cyano-3-(3-furanylpropane); and 1,2-dibromo-2-cyano-2-(4-furanylethane)

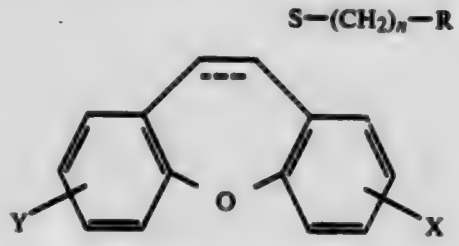
4,496,582

ANALGESIC DIBENZ[b,f]OXEPINS

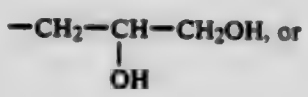
Helen H. Ong, Whippany, and Matthew J. Flynn, North Plainfield, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

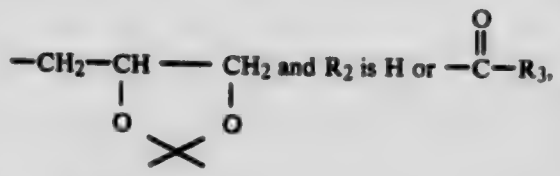
Filed Dec. 12, 1983, Ser. No. 560,717
Int. Cl.³ A61K *31/335;* C07D *313/14*
U.S. Cl. 514—450 38 Claims

1. A compound depicted by the formula



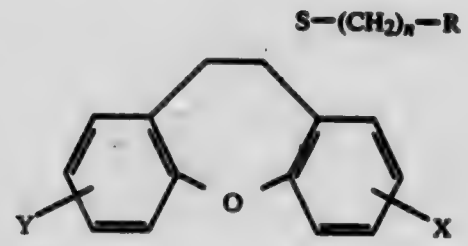
wherein n is an odd integer 1–7 inclusive; R is $—CO_2R_1$ or $—CH_2OR_2$ where R_1 is H, C_{1-15} lower alkyl, aralkyl,



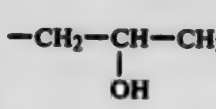


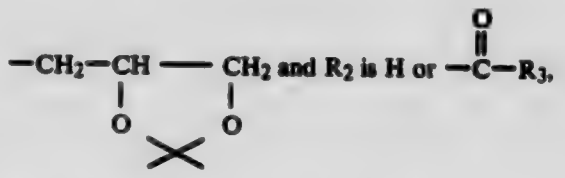
R_3 being C_{1-5} lower alkyl; X and Y are each independently hydrogen, halogen, trifluoromethyl, C_{1-5} lower alkoxy, C_{1-5} lower alkyl, C_{1-5} lower alkylthio, or hydroxy; and the dotted line ( ) may be a bond or nothing.

36. An analgesic composition which comprises an effective pain alleviating amount of a compound depicted by the formula



wherein n is an odd integer 1–7 inclusive; R is $—CO_2R_1$ or $—CH_2OR_2$ where R_1 is H, C_{1-5} lower alkyl, aralkyl,





R_3 being C_{1-5} lower alkyl; X and Y are each independently hydrogen, halogen, trifluoromethyl, C_{1-5} lower alkoxy, C_{1-5} lower alkyl, C_{1-5} lower alkylthio, or hydroxy; and the dotted line ( ) may be a bond or nothing.

4,496,583

PAPER-LIKE POLYESTER FIBER SHEET AND PROCESS FOR PRODUCING THE SAME

Tamio Yamamoto; Tsukasa Kobayashi, both of Matsuyama; Tadashi Hirakawa, Kusatsu; Makoto Yoshida, Ibaraki, and Masumi Okumura, Joyo, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 278,073, Jun. 29, 1981, abandoned.
This application Feb. 24, 1983, Ser. No. 469,578
Claims priority, application Japan, Jul. 7, 1980, 55-91663; Jul. 11, 1980, 55-93900; Nov. 11, 1980, 55-157628; Nov. 12, 1980, 55-158149
Int. Cl.³ D21F *11/00;* D04H *1/58*
U.S. Cl. 428—288 21 Claims

1. A paper-like polyester fiber sheet, comprising polyester staple fibers and having a coefficient of air flow resistance of from 2,500 to 23,500 dyn.s/cm⁴ at a volume fraction of the fibers of from 0.01 to 0.24, said polyester staple fibers containing drawn polyester staple fibers each having a denier of 0.01 to 0.9 and a length of from 0.3 to 20 mm.

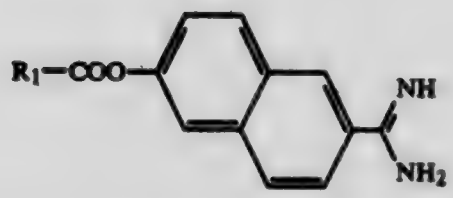
4,496,584

AMIDINE DERIVATIVES WITH ANTI-COMPLEMENT ACTIVITY

Setsuro Fujii, Toyonaka; Takashi Yaegashi; Toyoo Nakayama, both of Funabashi; Shigeki Nunomura, Chiba; Yojiro Sakurai, Kamakura, and Toshiyuki Okutome, Tokyo, all of Japan, assignors to Torii & Co. Ltd., Tokyo, Japan

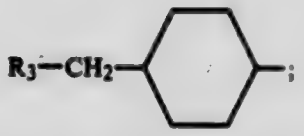
Filed Apr. 21, 1982, Ser. No. 370,647
Claims priority, application Japan, Apr. 28, 1981, 56-64943
Int. Cl.³ C11C *3/04;* C07C *69/035;* A61K *31/27, 31/23*
U.S. Cl. 514—510 2 Claims

2. An anti-complement agent comprising as an active ingredient an effective anti-complement amount of an amidine derivative represented by the formula (I) or a pharmaceutically acceptable acid addition salt thereof:



(I)

wherein R_1 represents a straight-chain or branched-chain alkyl group of 1 to 17 carbon atoms, a straight-chain or branched-chain alkenyl group of 2 to 6 carbon atoms having 1 to 3 double bonds, $R_2—(CH_2)_n—$, $R_3—(CH_2)_m—$, or



R_2 represents a cycloalkyl group of 3 to 6 carbon atoms or a cycloalkenyl group of 3 to 6 carbon atoms having 1 or 2 double bonds; n is 0, 1, 2 or 3; R_3 represents an amino or guanidino group or a protected amino or guanidino group; and m is an integer of 1 to 5;

and a pharmaceutically acceptable carrier therefor.

4,496,585

POWDERED OR GRANULAR SOLID PESTICIDE COMPOSITION

Mamoru Yoshida, Odawara; Hidejiro Yokoo, Tokyo, and Eiji Shirai, Omiya, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1983, Ser. No. 515,832

Claims priority, application Japan, Jul. 21, 1982, 57-125872

Int. Cl.³ A01N *47/46, 47/48*

U.S. Cl. 514—514 **4 Claims**

1. A powdered or granular solid pesticide composition comprising 0.05 to 0.5 parts by weight of methyl isothiocyanate supported on 1 part by weight of natural or synthetic faujasite type zeolite particles having an effective micro-pore diameter of 3.5 to 4.2 angstroms.

4,496,586

CYCLOPROPANECARBOXYLATES, THEIR PRODUCTION AND INSECTICIDE CONTAINING THEM AS AN ACTIVE INGREDIENT

Masanao Matsui; Lisa Chun-Eng, both of Tokyo; Kunio Kogami, Machida; Toshihiko Yano, Ikoma, and Noritada Matsuo, Itami, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

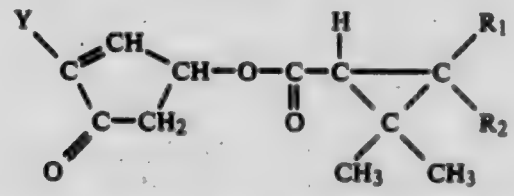
Continuation of Ser. No. 306,376, Sep. 28, 1981, Pat. No. 4,496,586

Claims priority, application Japan, Oct. 9, 1980, 55-141799; Dec. 19, 1980, 55-181012; Dec. 19, 1980, 55-181013

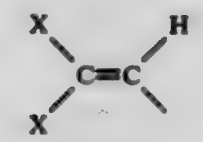
Int. Cl.³ C07C *69/747, 69/743*

U.S. Cl. 514—531 **3 Claims**

1. A compound of the formula



wherein R_1 is a hydrogen atom, R_2 is a group of the formula,



in which X is a methyl group.

4,496,587

INHIBITION OF BACTERIAL TOXIN RELEASE BY PROSTAGLANDINS

Harold E. Remis, Portage, and Mary J. Ruwart, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 293,899, Aug. 18, 1981, abandoned. This application Apr. 29, 1983, Ser. No. 488,528

Int. Cl.³ A61K *31/19*

U.S. Cl. 514—573 **9 Claims**

1. A method of preventing the release of toxins from bacteria capable of releasing a toxin which comprises contacting the bacteria with an amount of an antitoxic, non-antibicrobial, and non-bacteriacidal prostaglandin effective to prevent toxin release.

4,496,588

METHOD OF TREATING PSORIASIS

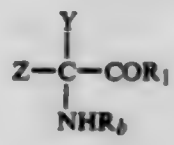
Philippe Bey, Strasbourg, and Michel Jung, Illkirch-Graffenstaden, both of France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

Continuation of Ser. No. 373,198, Sep. 29, 1982, abandoned, which is a continuation of Ser. No. 28,758, Apr. 10, 1979, abandoned, which is a continuation-in-part of Ser. No. 814,765, Jul. 11, 1977, abandoned. This application Apr. 28, 1983, Ser. No. 487,243

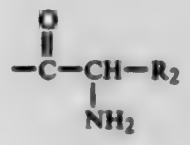
Int. Cl.³ A61K *31/195*

U.S. Cl. 514—564 **10 Claims**

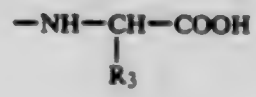
1. A method of treating psoriasis in a patient in need thereof which comprises administering to said patient an effective amount of a compound of the formula



wherein Y is $FCH_2—$, $F_2CH—$, $F_3C—$, $ClCH_2—$, or $Cl_2CH—$; Z is γ-guanidinopropyl or $R_aHN(CH_2)_n—$; n is the integer 3 or 4; each of R_a and R_b is hydrogen, alkylcarbonyl wherein the alkyl moiety has from 1 to 4 carbon atoms and is straight or branched, alkoxycarbonyl wherein the alkoxy moiety has from 1 to 4 carbon atoms and is straight or branched, or the group



wherein R_2 is hydrogen, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, benzyl or p-hydroxybenzyl; and R_1 is hydroxy, a straight or branched alkoxy group of from 1 to 8 carbon atoms, $—NR_4R_5$ wherein each R_4 and R_5 is hydrogen or a lower alkyl group of from 1 to 4 carbon atoms, or the group



wherein R_3 is hydrogen, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, benzyl or p-hydroxybenzyl; with the provisos that when Z is γ-guanidinopropyl, Y is FCH_2—, F_2CH—, or F_3C— and R_1 is hydroxy; and the lactams thereof when Z is $R_aHN(CH_2)_n$— and each of R_a and R_b is hydrogen; and pharmaceutically acceptable salts and individual optical isomers thereof.

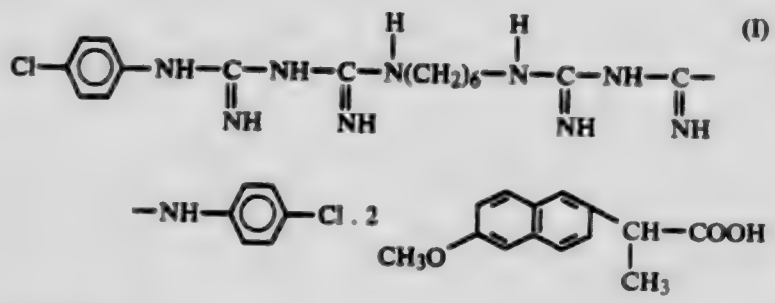
4,496,589

ANTI-INFLAMMATORY, DISINFECTANT AND ANTI-BACTERIAL COMPOUND

Leonardo De Vincentiis, Rome, Italy, assignor to Ausonia Farmaceutici s.r.l., Rome, Italy

Filed Nov. 4, 1982, Ser. No. 439,067
Claims priority, application Italy, Nov. 26, 1981, 25298 A/81
Int. Cl.³ C07C *143/63, 129/08;* A61K *31/155*
U.S. Cl. 514—565 **3 Claims**

2. Pharmaceutical compositions, for topical use having anti-inflammatory, disinfectant and anti-bacterial activity, containing 1–10% by weight of (+)-6-methoxy-α-methyl-2-naphthalene acetate of N,N″-bis (4-chlorophenyl)-3,12-diimino-2,4,11,13-tetraazatetradecan-diimidoamide possessing formula



(I)

and at least one member selected from the group consisting of carriers, excipients, adjuvants and dispersants.

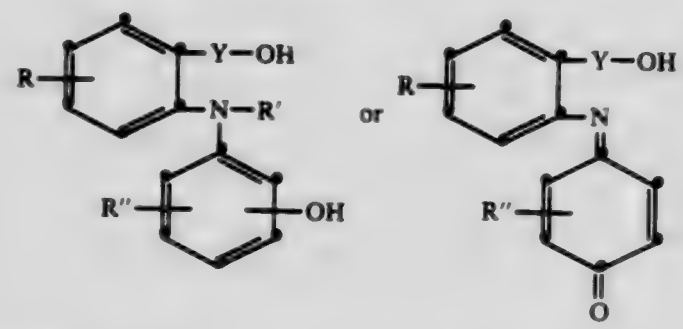
4,496,590

BENZYL ALCOHOL DERIVATIVES, THEIR PREPARATION AND USE

Donald C. Schlegel, Schodack, and Malcolm R. Bell, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Apr. 18, 1983, Ser. No. 485,936
Int. Cl.³ A01N *33/02;* A61K *31/335;* C07C *50/10, 97/10*
U.S. Cl. 514—646 **20 Claims**

1. A compound of the formula



wherein:
R is hydrogen, lower-alkyl, lower-alkoxy or halo;
R′ is hydrogen or lower-alkyl;
R″ is hydrogen, lower-alkyl or halo; and
Y is C_nH_{2n} wherein n is an integer from 1 to 2.

17. A composition for the treatment or prevention of allergic asthma which comprises an anti-asthmatically effective amount of a compound according to claim 1 together with one or more pharmaceutically acceptable excipients or diluents.

19. A method for treating or preventing allergic asthma in a mammal which comprises administering to said mammal a composition according to claim 17.

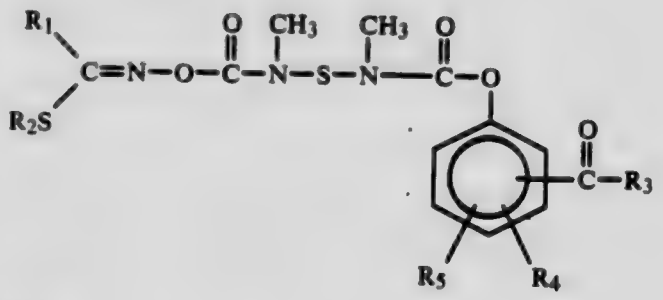
4,496,591

INSECTICIDAL BIS-CARBAMATE SULFIDES

John A. Durden, Raleigh, and Themistocles D. J. D'Silva, Chapel Hill, both of N.C., assignors to Union Carbide Corporation, Danbury, Conn.

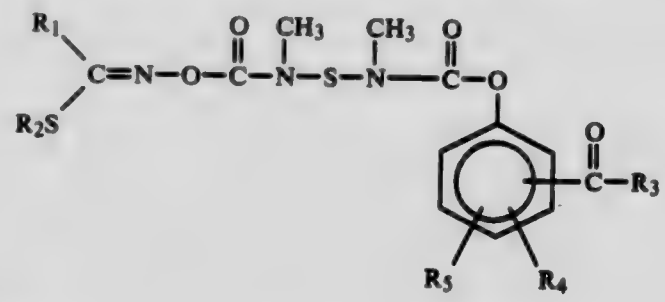
Filed Oct. 14, 1981, Ser. No. 311,306
Int. Cl.³ C07C *69/013*
U.S. Cl. 514—477 **15 Claims**

1. A compound of the formula:



wherein:
R_1 and R_2 independently are C_{1-4} alkyl
R_3 is hydrogen, C_{1-4} alkyl or a phenyl group; and
R_4 and R_5 independently are hydrogen, C_{1-4} alkyl or alkoxy.

11. A method of controlling insects and nematodes which comprises subjecting them to an insecticidally or nematocidally effective amount of a compound of the formula:



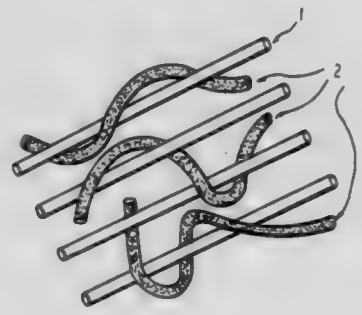
wherein:
R_1 and R_2 independently are C_{1-4} alkyl
R_3 is hydrogen, C_{1-4} alkyl or a phenyl group; and
R_4 and R_5 independently are hydrogen, C_{1-4} alkyl or alkoxy.

4,496,592

PROCESS FOR PRODUCING CHEWING GUM IN THE FORM OF COMPOSITE FIBERS

Rikiya Kuwahara; Akinaka Habuto, both of Kanagawa, and Hisayoshi Oiso, Tokyo, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed May 18, 1983, Ser. No. 495,876
Claims priority, application Japan, Oct. 5, 1982, 57-173924
Int. Cl.³ A23G *3/30*
U.S. Cl. 426—5 **15 Claims**



1. A process for producing a chewing gum in the form of composite fibers, which comprises feeding (A) a sweetener selected from the group consisting of sugar, a sugar mixture, candy and mixtures thereof, wherein said candy is formed from a combination of sugars which is boiled to a candy, after optionally adding water thereto, and (B) a chewing gum base or

a chewing gum composition into a fiberizing section of a candy floss making machine which is heated to a temperature sufficient to permit said materials to melt or to be maintained in a molten state, thereby to form composite fibers of said materials, wherein the proportion of the chewing gum base or the chewing gum base portion of the chewing gum composition is 0.2 to 1.5 parts by weight per part by weight of at least one of sugar and candy.

4,496,593

ROLLED CHEESE AND PROCESS FOR PRODUCING THE SAME

Michel Caillé, Sainte-Solange, France, assignor to Laiteris Hubert Triballat, d'Angillon, France

Continuation of Ser. No. 247,208, Mar. 24, 1981, abandoned. This application Nov. 26, 1982, Ser. No. 444,382
Claims priority, application France, Apr. 8, 1980, 80 07844
Int. Cl.³ A23C *19/00*; A23P *1/00*
U.S. Cl. 426—89 11 Claims

1. A rolled cheese consisting essentially of:

a layer of non-kneaded, uncooked, fresh curds and a layer of herbs placed upon the layer of fresh curds with both layers rolled together in a spiral, said rolled cheese being produced by a process consisting essentially of:

(a) molding uncooked fresh curds into a continuous, unbroken, non-kneaded curd layer, said curds having a solids content in the range of approximately 35% to less than 40% by weight,

(b) placing a coating of flavoring on the molded curd layer;

(c) rolling the curd layer and the coating together into a spiral to produce a rolled product, the coating being surrounded by the curd layer; and

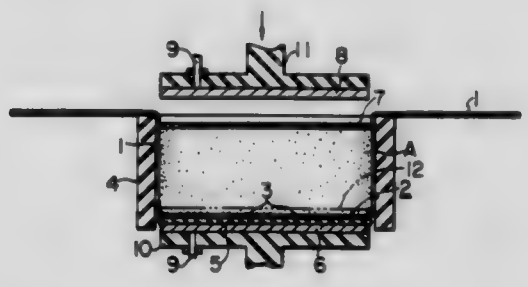
(d) draining the rolled product at a temperature in the range of 5° C.–7° C.

4,496,594

METHOD OF HEATING AND PACKAGING FOOD

Kingo Miyahara, Tokyo, Japan, assignor to Dowa Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 367,635, Apr. 12, 1982, abandoned. This application Oct. 14, 1983, Ser. No. 541,477
Claims priority, application Japan, Apr. 21, 1981, 56-59975; Apr. 21, 1982, 56-59976
Int. Cl.³ A23L *3/32*
U.S. Cl. 426—234 1 Claim



1. A method of producing packaged food comprising:

placing a single planar flexible sheet of heat resisting and insulating packing film down into the interior of a cylindrical insulating container completely open at the top and bottom, a portion of said single sheet having a plurality of current passing apertures, which apertures are formed substantially in the center thereof, and wherein said sheet lines the interior surface of the container with the edges of the sheet extending over and beyond the container top, and the portion of said sheet having a plurality of current apertures lies against a first salt solution impregnated electrical contact member provided at the open bottom of said container supported by a first electrode plate;

filling said single heat resisting sheet lined container with unprocessed foodstuff;

placing a second salt solution impregnated electrical contact member abutting a second electrode in the top of said container in pressing contact directly against said foodstuff;

passing an electrical current between said two electrode plates and through said foodstuff, salt impregnated contact member and plurality of current passing apertures of the single sheet, so that said unprocessed foodstuff is ripened and sterilized;

removing said second electrode plate and salt solution impregnated electrical contact member from said foodstuff; and

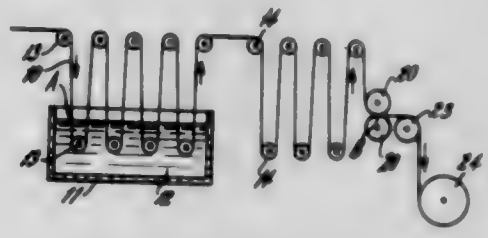
wrapping said processed foodstuff with the edges of said single heat resisting sheet.

4,496,595

METHOD FOR PRODUCING SMOKE COLORED AND SMOKE FLAVORED ENCASED FOODSTUFF

Myron D. Nicholson, Lockport, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 417,173, Sep. 14, 1982, Pat. No. 4,431,033, which is a continuation-in-part of Ser. No. 312,366, Oct. 16, 1981, abandoned. This application Nov. 30, 1983, Ser. No. 556,441
Int. Cl.³ A22C *11/00, 13/00*; A23L *1/22*
U.S. Cl. 426—284 15 Claims



1. A method for producing a smoke colored and smoke flavored foodstuff comprising the steps of: providing a tar-containing aqueous liquid smoke solution comprising a mixture of smoke coloring and smoke flavoring constituents having an absorptive power of at least about 0.25 at 340 nm. wave length and an organic liquid solvent which is either nonreactive with said liquid smoke solution or reactive with said liquid smoke solution to form a derivative liquid solvent, said liquid solvent being immiscible in the liquid smoke solution and having a hydrogen bonding solubility parameter in the liquid smoke environment of at least about 2.7; contacting said liquid smoke solution and said liquid solvent in a volume ratio between about 1:1 and 65:1 of liquid smoke solution to liquid solvent, under extraction conditions to form a tar-enriched liquid solvent fraction and a tar-depleted liquid smoke fraction; separating the fractions to provide said tar-depleted liquid smoke as an aqueous liquid smoke composition; treating a surface of a tubular food casing with said tar-depleted aqueous liquid smoke composition in sufficient quantity to provide an absorptive index of at least about 0.2 at 340 nm. wave length for the casing wall; stuffing the so-treated casing with foodstuff and processing the resulting encased foodstuff under conditions sufficient to transfer smoke color and smoke flavor constituents from the casing to the encased foodstuff.

4,496,596

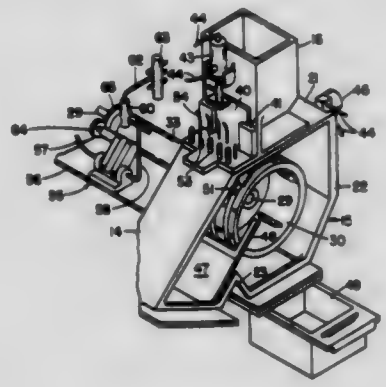
AROMATIZING METHOD

Oscar W. Stoeckli, Rye, N.Y., and David J. Berry, Montvale, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Division of Ser. No. 220,927, Dec. 29, 1980, Pat. No. 4,355,571. This application Mar. 16, 1982, Ser. No. 358,757
Int. Cl.³ A23F *5/46*
U.S. Cl. 426—388 4 Claims

1. A method for aromatizing a mass of adsorbent coffee particulates with a carrier oil enriched with a coffee aroma, comprising the steps of, feeding said coffee particulates onto

the surface of a circular member having a peripheral groove formed therein, rotating said member to advance the particulates contained within said groove from an in-feed position to a discharge position to form a continuously moving ribbon of coffee particulates, scraping from the surface of said member



said particulates other than that contained within said groove during the advance rotation thereof between said positions, and injecting into the continuously moving ribbon of coffee particulates within said groove before reaching said discharge position, a predetermined amount of said carrier oil enriched with coffee aroma.

4,496,597

PROCESS FOR DRYING AND/OR PRESERVING FRUITS HAVING A HIGH SUGAR CONTENT

Bruno Régès, "Cante-Lausette" Pinel Hauterive, 47380 Monclar d'Agenais, France

Filed Feb. 8, 1982, Ser. No. 346,540
Int. Cl.[3] A23B *7/00, 7/02*
U.S. Cl. 426—402 5 Claims

1. A process for drying and preserving a hygroscopic fruit to avoid sugaring consisting essentially of:

(a) dehydrating said hygroscopic fruit at a temperature of 55° to 80° C. for a period of about 16 hours until the water content of the fruit is not more than 40% nor less than about 29%;

(b) tightly packing the partially dehydrated fruit in its prevailing condition and temperature at the end of step (a) into sterile containers to minimize the amount of air present in said containers and, hermetically sealing said containers;

(c) heating the confined partially dehydrated fruit in said hermetically sealed containers at a temperature of 75° to 80° C. for three to four hours to avoid thermal shock when heating is stopped and the product cooled to ambient temperature and subsequently storing said container at room temperature until time of use.

4,496,598

PROCESS FOR PREPARING MUSTARD FLOUR

Shiro Sakai, No. 4-15-9, Nakamachi, Urawa-shi, Saitama-ken, Japan, and Etsuo Ebisawa, Soka, Japan, assignors to Shiro Sakai and Sumiko Sakai, both of Saitama, Japan

Filed Oct. 7, 1982, Ser. No. 433,218
Claims priority, application Japan, Oct. 8, 1981, 56-159432
Int. Cl.[3] A23L *1/225;* C11B *1/06*
U.S. Cl. 426—417 7 Claims

1. A process for producing flour from mustard seed comprising the steps of:

(a) compressing mustard seeds at a temperature below about 65° C. and at a pressure above about 1,000 Kg/cm^2, sufficient to remove oil therefrom;

(b) heating the so-compressed seeds under conditions to decrease the activity of myrosinase enzyme in the seeds and thereby suppress pungency; and then

(c) grinding the so-treated seeds to produce a mustard flour of reduced pungency and enhanced preservability.

4,496,599

PROCESS FOR PRODUCING DEFATTED AND DEBITTERED SOYBEAN MEAL

Keith H. Steinkraus, Geneva, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Mar. 10, 1983, Ser. No. 474,104
Int. Cl.[3] A23J *1/14*
U.S. Cl. 426—430 5 Claims

1. A process for preparing particulate, organolepically bland, defatted, debittered soybean product having improved water solubility and reduced phospholipid content, said process comprising the sequential steps of

(a) extracting utilizing a polar solvent by:

(1) contacting flaked or pulverized dehulled, unheated, raw soybeans with an extracting medium consisting of an undilute lower alkanol polar solvent for a time period in the range of 15 minutes to two hours;

(2) separating a substantial amount of the polar solvent together with extractants leaving partially defatted particulate soybean product;

(b) extracting the product resulting from step (a) utilizing an extracting medium consisting of a non-polar solvent in a plurality of extraction steps to leave less than 0.4 percent fat associated with the product, the last of the extraction steps utilizing non-polar extraction solvent which is essentially fat-free;

(c) desolventizing the product of step (b) to substantially remove residual solvents.

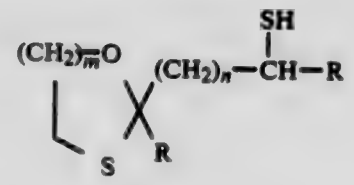
4,496,600

FLAVORING WITH 2-MERCAPTOALKYL OXATHIOLANES AND OXATHIANES

Thomas H. Parliment, New City, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Filed Oct. 3, 1983, Ser. No. 538,470
Int. Cl.[3] A23L *1/231;* C07D *327/04, 327/06*
U.S. Cl. 426—535 7 Claims

1. A foodstuff containing a compound having a structure selected from the group consisting of:



wherein:

each R is independently selected from the group consisting H and a hydrocarbon chain having from C_1 to C_4 carbon atoms;

η is an integer from 0 to 3; and

m represents 1 or 2,

wherein the compound is in an amount of 0.1 to 50 ppm on an as-consumed foodstuff basis.

4,496,601

PROCESSING FOR PREPARING A COATING MIX CONTAINING A FRIED COMPONENT

Joseph M. Rispoli, Massepequa Park; Morris A. Rogers, Mt. Vernon; Haig H. Sergenian, Yonkers, all of N.Y.; John S. Swartley, Westport, and Harry Topalian, Weston, both of Conn., assignors to General Foods Corporation, White Plains, N.Y.

Filed Nov. 5, 1982, Ser. No. 439,445
Int. Cl.[3] A21D *10/00*
U.S. Cl. 426—554 12 Claims

1. A process for preparing a dry coating mix which is effective to impart the texture, taste and appearance of deep fat fried foods to baked foodstuffs comprising the steps of:

(a) forming an aqueous, flour-based batter containing from

50 to 80% by weight of water, from 5 to 30% by weight of flour and from 5 to 20% by weight of starch;
(b) forming the batter into particles having a diameter of from about 1.0 to 2.0 mm;
(c) frying said particles in a vegetable oil having a temperature of from about 320° to 440° F.;
(d) removing the fried particles from the oil and removing excess oil from the surface of the particles;
(e) blending the fried particles with other coating ingredients at a level of from 10 to 50% by weight of the mix.

4,496,602

IMITATION BUTTERMILK DRY BLEND SUITABLE FOR RECONSTITUTION WITH MILK

Donald E. Miller, Norcross, Ga.; Cecilia Gilmore, Strongsville, Ohio; Steven R. Dimler, Bexley, Ohio, and Charles E. Werstak, Medina, Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Nov. 2, 1983, Ser. No. 547,894
Int. Cl.[3] A21D *10/00*; A23L *1/09*
U.S. Cl. 426—555 8 Claims

1. A non-dairy, fat-free dry blend suitable for reconstitution with milk to provide an imitation buttermilk product having the same color, flavor, consistency and texture as natural buttermilk, comprising

a major amount of maltodextrin having a dextrose equivalent less than about 20;

about 2.5–3.5% of a milk soluble hydrocolloid gum;

an acidifying amount, effective on reconstitution with milk, to provide a pH in the range of about 4.2–4.6, of a food grade acid, of which a flavoring amount is acetic acid;

the remainder being flavorants and colorants;

said major amount of maltodextrine, with other ingredients of the dry blend, being an effective amount which, on rehydration with milk in the approximate weight proportion of about 92% milk to about 8% dry blend, provides a viscosity in the range of about 200–500 cps.

4,496,603

PROCESS FOR PRODUCING PECTIN JELLY

Masatoshi Manabe, Kagawa, and Toshio Miyake, Okayama, both of Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed May 31, 1983, Ser. No. 501,068
Claims priority, application Japan, Jul. 24, 1982, 57-129482
Int. Cl.[3] A23L *1/06*; A23C *9/154*
U.S. Cl. 426—577 9 Claims

1. A process for producing a glycosylsucrose-containing pectin jelly, comprising:

providing an aqueous mixture containing at least high-methoxyl pectin, glycosylsucrose and organic acid; and

gelatinizing the mixture at a pH in the range of 3.3–3.5,

wherein the final concentration of said high-methoxyl pectin is in the range of 0.7–2.0% and the final concentration of said glycosylsucrose is in the range of 50–75%.

4,496,604

POWDERY INSTANT MILK COMPOSITION AND METHOD OF PRODUCING THE SAME

Toolchi Otsubo, Tokyo, Japan, assignor to The National Federation of Dairy Co-Operative Associations, Tokyo, Japan

Filed Dec. 30, 1982, Ser. No. 454,872
Claims priority, application Japan, Jan. 6, 1982, 57-800
Int. Cl.[3] A23C *9/152*
U.S. Cl. 426—588 14 Claims

1. A powdery instant milk composition having a crumb structure, which contains 0.5 to 3% by weight of propylene glycol.

4,496,605

PROCESS FOR PRODUCING BLACK BARLEY MALT EXTRACT

Ronald G. Targan, 80 Main St., West Orange, N.J. 07052

Filed Sep. 19, 1983, Ser. No. 533,733
Int. Cl.[3] C12C *1/18*; A23L *1/28*
U.S. Cl. 426—655 11 Claims

1. A process for producing a black barley malt extract comprising the steps of:

(a) Crushing a black barley malt having a Lovibond Tintometer reading greater than 400 and a moisture content of from about 1.5 to 2.5 percent by weight, said black barley malt having been made from substantially fully grown and fully germinated barley;

(b) Separating hulls from the crushed black barley malt;

(c) Combining the crushed black barley malt with water in a ratio of from about 4 to 5.5 gallons of water per pound of crushed black barley malt;

(d) Heating the mixture of the crushed black barley malt and water to a temperature of about 120° F.;

(e) Maintaining the temperature of the mixture of crushed black barley malt and water at about 120° F. for about 1 hour;

(f) Heating the mixture of the crushed black barley malt and water to a temperature of about 200° F. at a rate of about 20 Fahrenheit degrees per hour;

(g) Maintaining the temperature of the mixture of the crushed black barley malt and water at about 200° F. for about 2 hours to produce a black barley malt wort;

(h) Agitating the mixture of the crushed black barley malt and water during steps (e), (f) and (g);

(i) Cooling the black barley malt wort to a temperature of about 180° F.;

(j) Separating undissolved solids from the black barley malt wort; and

(k) Concentrating the black barley malt wort to produce a black barley malt extract.

4,496,606

GUAR GUM FOOD BAR

Jane Michnowski, Little Ferry, N.J., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed Apr. 29, 1983, Ser. No. 489,974
Int. Cl.[3] A23L *1/04*
U.S. Cl. 426—658 9 Claims

1. A ready-to-eat guar gum dietetic food bar comprising: approximately 50–75% carbohydrates, 10–15% protein, 8–15% fat and 8–12% guar gum by weight, based on the total weight of the product.

4,496,607

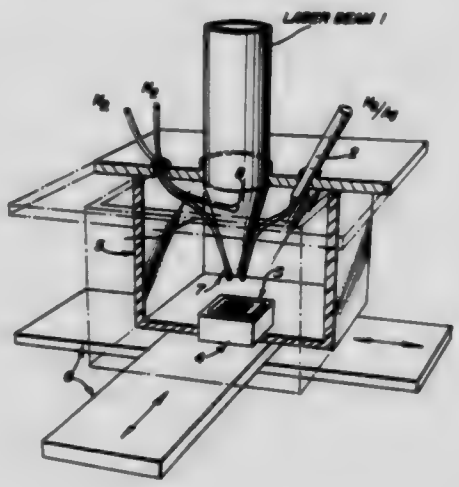
LASER PROCESS FOR PRODUCING ELECTRICALLY CONDUCTIVE SURFACES ON INSULATORS

Eckart Mathias, Catonsville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Jan. 27, 1984, Ser. No. 574,391
Int. Cl.[3] B05D *3/06, 5/12*
U.S. Cl. 427—53.1 7 Claims

1. A method of producing electrically conductive surfaces on insulator surfaces characterized in that it uses a laser beam

to melt tracks onto said insulator surfaces which are simultaneously impacted upon by conductive particles which, upon



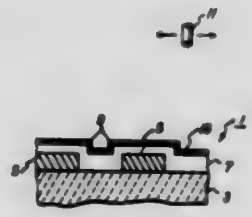
fusibly bonding to said molten insulator surface, constitute an electrical conductor.

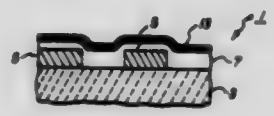
4,496,608

P-GLASS REFLOW TECHNIQUE

David K. Biegelsen, Portola Valley, and Eric R. Sirkin, Mountain View, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 2, 1984, Ser. No. 585,678
Int. Cl.[3] B05D *3/06*
U.S. Cl. 427—53.1 3 Claims





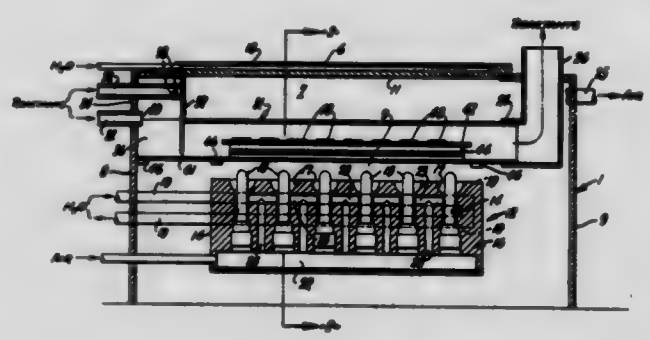
1. A method for reflowing a P-glass layer which comprises:
(a) overcoating said P-glass layer with a radiation absorbing material whose reflectivity increases upon melting;
(b) exposing said radiation absorbing material to radiation to heat said radiation absorbing material to its melting point; and
(c) continuing the radiation exposure of said radiation absorbing material until said P-glass layer has reflowed, said P-glass layer being heated at least in part by conduction of heat from said radiation absorbing material.

4,496,609

CHEMICAL VAPOR DEPOSITION COATING PROCESS EMPLOYING RADIANT HEAT AND A SUSCEPTOR

Michael A. McNeilly, and Walter C. Benzing, both of Saratoga, Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 109,044, Jan. 2, 1980, abandoned, which is a continuation of Ser. No. 608,878, Aug. 29, 1975, abandoned, which is a continuation of Ser. No. 310,444, Nov. 29, 1972, abandoned, which is a continuation-in-part of Ser. No. 195,505, Nov. 3, 1971, abandoned, which is a division of Ser. No. 866,473, Oct. 15, 1969, Pat. No. 3,623,712. This application Oct. 22, 1981, Ser. No. 313,814
Int. Cl.[3] B05D *3/06*
U.S. Cl. 427—55 6 Claims



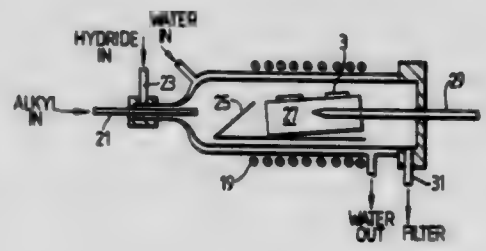
1. In a process for effecting chemical vapor deposition coating of a substrate in a reaction chamber, the steps of: placing the substrate in the reaction chamber on a susceptor of substantially greater size than the substrate and adapted to absorb and conduct radiant heat energy, transmitting radiant heat energy through a wall of the reaction chamber to the susceptor to heat the susceptor by absorption of the radiant heat energy without appreciable absorption of said energy by the chamber wall, maintaining the substrate in contact with the susceptor to permit a transfer of heat between the susceptor and the substrate whereby the substrate is heated and maintained at a substantially uniform temperature throughout, and introducing a gaseous reactant into the reaction chamber for contact with the heated substrate to form a film by chemical vapor deposition thereon.

4,496,610

ELECTROLUMINESCENT PANELS AND METHOD OF MANUFACTURE

Alan F. Cattell; Brian Cockayne, both of Malvern; Peter J. Wright, Lower Wick, and John Kirton, Malvern, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Mar. 22, 1983, Ser. No. 477,853
Claims priority, application United Kingdom, Mar. 25, 1982, 8208734; Oct. 18, 1982, 8229683
Int. Cl.[3] B05D *5/06, 5/12*
U.S. Cl. 427—66 7 Claims



1. A method for the manufacture of an electroluminescent panel wherein manganese doped zinc chalcogenide phosphor film is grown by exposing a heated electrode bearing substrate to alkyl zinc vapour and a gaseous hydride of one of the chal-

cogen elements sulphur or selenium, in the presence of tricarbonyl alkylcyclopentadienyl manganese vapor.

4,496,611

PROCESS FOR IMPROVING WEATHER RESISTANT ADHESION OF A COATING TO GLASS SURFACE

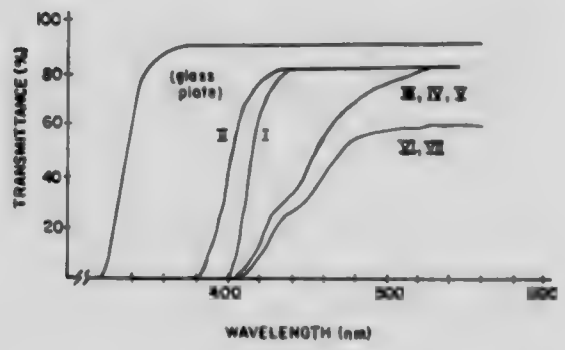
Fumio Kawakubo; Toshifumi Hirose; Tadashi Minokami, all of Kobe; Miyako Hosaka, Miki, and Katsuhiko Isayama, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 228,953, Jan. 27, 1981, abandoned. This application Sep. 23, 1982, Ser. No. 422,162

Claims priority, application Japan, Jan. 29, 1980, 55-9511

Int. Cl.³ B05B *5/00*; B05D *1/36, 5/06, 7/00*

U.S. Cl. 427—160 **3 Claims**



1. A process for improving the weather resistant adhesion of a cured coating to a glass surface, which process consists of the steps of coating a primer composition comprising a film forming component and an ultraviolet light absorbing component, onto a glass surface to form a film capable of substantially shielding light having a wavelength of 380 nm or less; and thereafter, coating a curable composition on top of said primer film; wherein said curable composition is a sealant selected from the group consisting of a modified silicone type sealant, a urethane type sealant, and a polysulfide type sealant; and wherein said ultraviolet light absorbing component comprises 0.5 to 35 weight percent; and wherein said film forming component is selected from the group consisting of silicon modified diallyl phthalate prepolymer, silicon modified epoxy resin, silicon modified acrylic polymer and mixtures thereof.

4,496,612

AQUEOUS FLUX FOR HOT DIP METALIZING PROCESS

James E. McNutt, Wilmington; Robert J. Scott, Newark, and Charles W. Welch, New Castle, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 369,076, Apr. 6, 1982, abandoned. This application Dec. 27, 1983, Ser. No. 565,773

Int. Cl.³ B05D *3/04*; B23K *35/34*

U.S. Cl. 427—310 **10 Claims**

1. A flux consisting essentially of 91 to 98.5 percent by weight zinc chloride, from 1.5 to 9 percent by weight ammonium chloride and, based on zinc chloride and ammonium chloride, from 0.6 to 3 percent by weight fluoride ions.

4,496,613

AQUEOUS MEDIA FOR THE TREATMENT OF WOOD AND WOODEN MATERIALS AND A PROCESS FOR SUCH TREATMENT

Hans-Dieter Zagefka, Haltern; Wilfried Bartz, and Alfred Konietzny, both of Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls AG, Marl, Fed. Rep. of Germany

Filed Jan. 13, 1983, Ser. No. 457,551

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1982, 3200782

Int. Cl.³ B05D *1/18*; C08F *8/32*

U.S. Cl. 427—440 **23 Claims**

21. In a method of deeply penetrating wood or a wooden material by applying thereto an impregnation composition consisting essentially of a wood preservative and a water-soluble or water-dispersible, oxidatively drying, organic binder based on a low-molecular weight, 1,3-butadiene homo- or co-polymer, wherein the wood or wooden material has open pores by which the composition may penetrate the wood or wooden material,

the improvement wherein the binder is a polymer carrying quaternary ammonium groups and is obtained by,

reacting an epoxy-group-containing, 1,3-butadiene homo- or co-polymer, wherein the basic polymer is made up of ≧70 mole % of 1,3-butadiene monomer units with an amine,

and then reacting the product of this amination with a low-molecular weight monoepoxide so that 0.05–0.5 mole of the quaternizable amino groups is quaternized per 100 g of the amination product,

and wherein the amine reacted with the epoxy-group-containing polymer is a secondary or primary aliphatic amine of the formula

$$R^1\text{-}NH\text{-}R^2$$

wherein R^1 and R^2, independently, each is

alkyl, hydroxyalkyl, or alkoxyalkyl, each of 1–7 carbon atoms, the OH or alkoxy not being in the α-position, or R^1 has the meaning above and R^2 is hydrogen.

4,496,614

COMPOSITION FOR DECORATIVE GRASS

Erwin H. Weder; Donald E. Weder, and Herbert A. Weder, all of Highland, Ill., assignors to Highland Manufacturing & Sales Company, Highland, Ill.

Division of Ser. No. 247,108, Mar. 24, 1981, Pat. No. 4,401,700. This application Jun. 23, 1983, Ser. No. 506,902

Int. Cl.³ A41G *1/00*

U.S. Cl. 428—7 **2 Claims**

1. A colored, non-toxic, resinous packaging material for direct food contact packaging which comprises a major amount of resin and a minor amount of a color formulation dispersed throughout said resin, said formulation comprising a pigment insoluble in said resin and selected from the group consisting of organic pigments and FD&C pigments, said formulation further comprising a metal stearate, a non-toxic oil and glycerol monooleate.

4,496,615

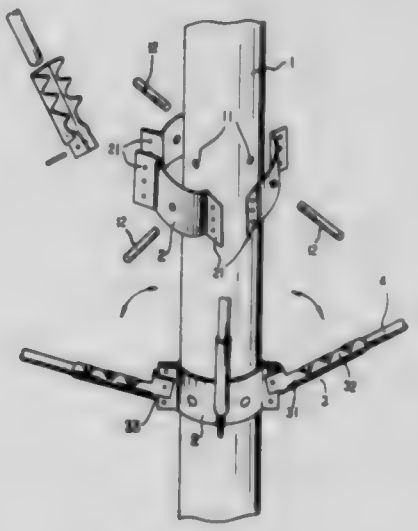
COLLAPSIBLE PLASTIC TREE

Herbert P. H. Huang, No. 1, Hsin-Hsing St., Shu Lin, Taipei Hsien, Taiwan

Filed Nov. 9, 1983, Ser. No. 550,132

Int. Cl.³ A47G *33/06*

U.S. Cl. 428—9 **2 Claims**



1. An improved collapsible plastic tree comprising:

a plastic trunk in the form of a cylindrical tube;

a plurality of collars each having a number of curved plates mounted to said trunk, each of said curved plates being formed with two flat portions each joined to a flat portion of another one of said curved plates to form a junction;

a plurality of ribs, each formed at one end with a serrated portion and at the other end with a U-shaped portion having an edge designed to limit the outward extent of the rib, said U-shaped portion being pivoted on the junction of two of said curved plates in such a way that said rib will swing to its outstretched, upswept position when said plastic trunk is vertically disposed and will collapse when said plastic trunk is inverted; and

a plurality of plastic branches, each tightly wrapped in the serrated portion of each said rib.

4,496,616

STRIP OF HEAT-RECOVERABLE ARTICLES

Robert H. McLoughlin, Highworth, nr. Swindon, and Stanley W. Kirkham, Swindon, both of England, assignors to Raychem Limited, England

Filed Mar. 15, 1982, Ser. No. 358,496

Claims priority, application United Kingdom, Mar. 23, 1981, 8109047

Int. Cl.[3] B32B *3/12*

U.S. Cl. 428—36

9 Claims



1. A strip of heat-recoverable articles formed by bonding together at intervals two superposed lengths of thermoplastic organic polymeric material, in which strip adjacent articles are connected together by elongate tear welds in the organic polymeric material, the welds extending transversely of the strip and permitting individual articles to be torn off, the articles being interconnected by a passage extending along the strip which passage is capable of conveying fluid pressure into the articles during expansion thereof.

4,496,617

ADHESIVE BINDING STRIP

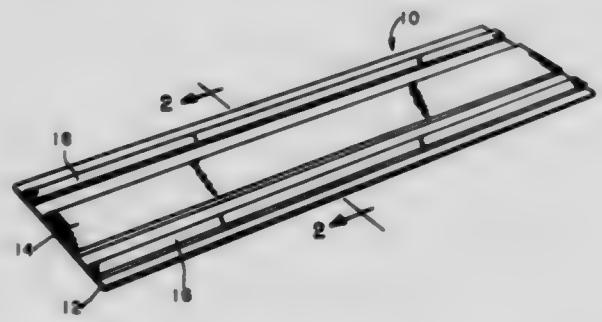
Kevin P. Parker, 2015 Del Norte St., Berkeley, Calif. 94707

Filed Jun. 1, 1983, Ser. No. 499,914

Int. Cl.[3] B42D *1/00*

U.S. Cl. 428—55

10 Claims



1. A device for binding pages together comprising:

an elongated substrate of formable material;

a first adhesive band disposed on said substrate along a longitudinal axis thereof, said first adhesive band comprising a heat-activated relatively low viscosity adhesive; and

second and third adhesive bands disposed on said substrate on opposite sides of said first adhesive band, said second and third adhesive bands comprising a heat-activated relatively high viscosity adhesive and having a thickness which is at least one-half the thickness of said first adhesive band.

4,496,618

HEAT TRANSFER SHEETING HAVING RELEASE AGENT COAT

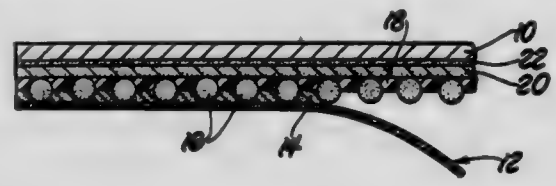
Vincent S. Pernicano, 2833 Railroad St., Boyne Falls, Mich. 49713

Filed Sep. 30, 1982, Ser. No. 430,835

Int. Cl.[3] B32B *3/18;* B41M *3/14*

U.S. Cl. 428—201

21 Claims



1. A heat transfer sheeting combination of the type for being applied to an article (10) to imprint a design thereon, said combination comprising: a substrate (12) including a fibrous material (24), a design coating disposed on said substrate (12); and an adhesive layer (22) disposed on said design coating for adhesively securing said design coating to the article (10) and characterized by said substrate (12) including a releasing agent coat (32) disposed between said design coating and said substrate (12) for facilitating the removal of said substrate (12) from said design coating after the application thereof onto the article (10), said fibrous material (24) having fibers individually coated by said releasing agent coat (32) to define a matrix of coated fibers.

4,496,619

FABRIC COMPOSED OF BUNDLES OF SUPERFINE FILAMENTS

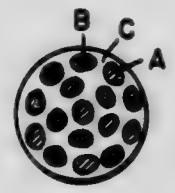
Miyoshi Okamoto, Takatsukishi, Japan, assignor to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 249,846, Apr. 1, 1981, Pat. No. 4,381,335, which is a continuation of Ser. No. 91,161, Nov. 5, 1979, abandoned. This application Nov. 16, 1982, Ser. No. 442,177

Int. Cl.[3] B32B *33/00;* D02G *3/00;* D03D *27/00*

U.S. Cl. 428—224

3 Claims



1. A fabric comprising an aggregation of a plurality of bundles of superfine filaments, each such bundle being obtained by separating multi-component composite filaments, each such bundle comprising at least two different kinds of superfine filaments, each such kind of superfine filament being a single component filament dispersed independently without maldistribution in said bundle, said bundle being further characterized by having a difference in coefficient of free contraction between the respective kinds of superfine filaments of at least 5%.

4,496,620

OPAQUE ORIENTED NON-THERMOPLASTIC POLYMER FILM AND METHOD OF FORMING SAME

Hee C. Park, Fairport, and Charles R. Ashcraft, Victor, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 25, 1983, Ser. No. 555,254
Int. Cl.[3] B32B *3/26, 7/02*
U.S. Cl. 428—323 16 Claims

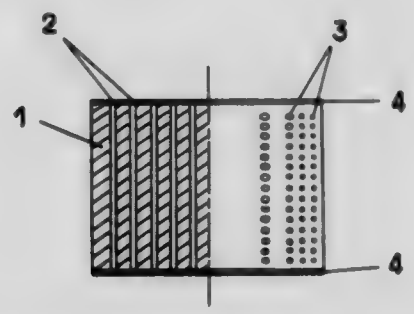
1. An opaque, oriented non-thermoplastic polymer film containing a strata of voids therein, positioned at least substantially within at least a substantial number of said voids, is at least one at least generally spherical void-initiating, solid particle which is phase-distinct and incompatible with said polymer, the void occupied by said particle being substantially less than the volume of said void, with one generally cross-sectional dimension of said particle at least approximately a corresponding cross-sectional dimension of said void, the population of voids in said film being such as to cause opacity.

4,496,621

REINFORCED IMPREGNATED GRAPHITE STRUCTURES AND PROCESS FOR MAKING SAME

Jean-Marie Hubert; Jean-Michel Bauer, and Serge Mollet, all of Pagny sur Moselle, France, assignors to Le Carbone-Lorraine, Courbevoie, France

Filed May 27, 1983, Ser. No. 498,735
Claims priority, application France, May 28, 1982, 82 09327
Int. Cl.[3] B32B *5/02*
U.S. Cl. 428—236 9 Claims



1. A shaped resin impregnated graphitic article having on at least a part of its surface a reinforcement formed of fibers of carbon, graphite, glass, silica, alumina or boron, impregnated with a resin, said resin integrally uniting said article and said reinforcement, prepared by the process comprising;

a. covering at least a part of said surface of said shaped graphitic article with said fibrous reinforcement,
b. impregnating the resulting assembly with a resin, and
c. allowing said resin to harden.

4,496,622

ARTICLE COATED WITH A SULFUR STABILIZED OXIDIZED POLYOLEFIN AND ASPHALT COMPOSITION

Irving B. Chang, and Robert E. Beckwith, Jr., both of Morristown, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 528,826, Sep. 2, 1983,. This application Jun. 22, 1984, Ser. No. 623,303
Int. Cl.[3] D04H *1/08*
U.S. Cl. 428—280 6 Claims

1. An article comprising

a substrate;

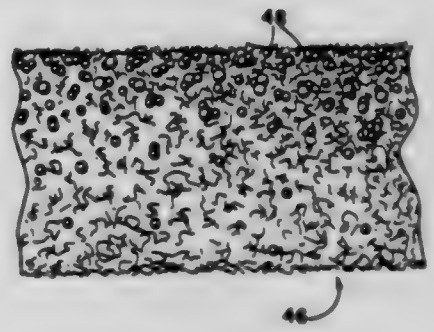
a coating on the substrate wherein the coating comprises asphalt, 1 to 25 weight percent based on the weight of the asphalt of an oxidized polyethylene having a Brookfield viscosity at 149° C. of from 100 to 40,000 centipoises, from 0.1 to 10 percent by weight based on the weight of the asphalt of sulfur, 0 to 40 percent by weight based on the weight of the asphalt of an initial viscosity modifier, and 0 to 150 percent by weight based on the weight of the asphalt of a filler.

4,496,623

BUOYANT FIBER PRODUCT

Richard Fraige, 11005 Hwy. 50 E., Carson City, Nev. 89701

Division of Ser. No. 337,122, Jan. 5, 1982,. This application Aug. 22, 1983, Ser. No. 524,871
Int. Cl.[3] B32B *5/16*
U.S. Cl. 428—283 24 Claims



1. A buoyant, readily water-permeable and therefore heat-convection-transparent, but wave-retarding fiber product for use in waterbeds to deter wave action; said product comprising:

a large multiplicity of lofted fibers, in the form of a matting that is readily water-permeable throughout;

a large multiplicity of buoyant particles spaced apart among the fibers to maintain the said readily water-permeable condition; and

a binder disposed on said fibers and on said particles, said binder causing substantially each of said fibers to be bound to at least one other fiber, respectively, and substantially each of said particles to be bound to at least one of said fibers, respectively;

said binder causing the material to be set in said lofted, readily water-permeable condition; whereby it is particularly adapted to float within and near the top of such waterbeds and to retard waves therein.

4,496,624

FIBROUS WEB IMPREGNATED WITH COAGULATED POLYURETHANE AND POLYOLEFIN ADMIXTURE

John R. McCartney, Westtown, Pa., assignor to Norwood Industries, Inc., Malvern, Pa.

Continuation-in-part of Ser. No. 398,260, Jul. 14, 1982, abandoned, which is a continuation-in-part of Ser. No. 188,329, Sep. 18, 1980, Pat. No. 4,376,148, and Ser. No. 188,330, Sep. 18, 1980, Pat. No. 4,342,805. This application Jan. 10, 1984, Ser. No. 569,754
Int. Cl.[3] B32B *5/06*
U.S. Cl. 428—288 24 Claims

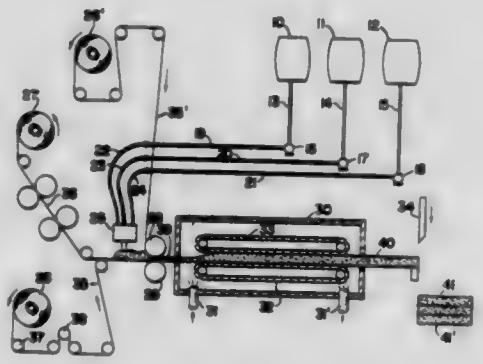
17. An impregnated fibrous web comprised of a fibrous web having impregnated therein a coagulated homogeneous admixture of anionic dispersion of a polyurethane polymer and a compatible anionic, cationic or nonionic dispersion or emulsion of a polymer selected from the group consisting of neoprene, polyvinyl chloride, polyacrylate polymers, polyolefin polymers and polyfloroolefin polymers wherein said polymers are water soluble in their coagulated state; said coagulated polymers are present at a level of 30 to 65 percent by weight based on the total weight of polymer in the impregnated fibrous web and said impregnated fibrous web having a uniform density throughout.

4,496,625

ALKOXYLATED AROMATIC AMINE-AROMATIC POLYESTER POLYOL BLEND AND POLYISOCYANURATE FOAM THEREFROM

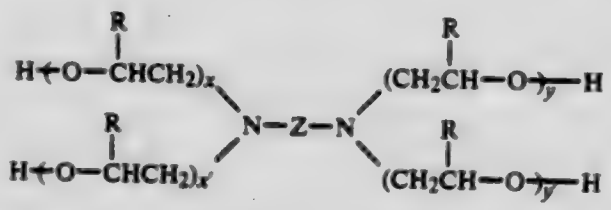
Scott C. Snider, Pinellas Park, and Alberto DeLeon, Clearwater, both of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Filed Oct. 12, 1983, Ser. No. 541,197
Int. Cl.[3] B32B *3/26, 5/18*
U.S. Cl. 428—318.4 42 Claims



1. A laminate comprising at least one facing sheet adhered to a polyisocyanurate foam which comprises the reaction product of an organic polyisocyanate, a blowing agent, a trimerization catalyst, and a minor amount of a polyol blend comprising

(a) about 5 percent to about 95 percent by weight of said blend of an alkylene oxide adduct of an aromatic amine of the formula



wherein Z is a divalent aromatic radical, x, x', y, and y' each independently have an average value from about 1 to about 5, and each R is independently selected from the group consisting of hydrogen, alkyl or aryl, provided that the adduct is capped with ethylene oxide units, and

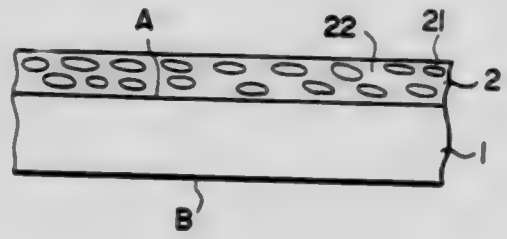
(b) about 5 percent to about 95 percent by weight of said blend of an aromatic polyester polyol material having a molecular weight of from about 150 to about 5,000.

4,496,626

MAGNETIC RECORDING MEDIUM

Akira Kasuga; Noburo Hibino, and Hajime Miyatsuka, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 23, 1982, Ser. No. 351,561
Claims priority, application Japan, Mar. 12, 1981, 56-35832
Int. Cl.[3] G11B *5/74, 5/64, 5/68*
U.S. Cl. 428—336 9 Claims



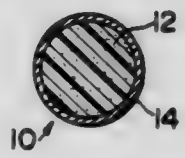
1. A magnetic recording medium which comprises a non-magnetic substrate and a magnetic layer provided on said non-magnetic substrate and containing, as main constituents, ferromagnetic grains and a binder, wherein the surface roughness of the non-magnetic substrate surface on the side adjoining said magnetic layer is 0.007μ or more and is higher than the surface roughness of the back surface of said non-magnetic substrate which is 0.02μ or less.

4,496,627

ELECTRICAL CONDUCTIVE FOAM BEADS AND MOLDED ELECTRICAL CONDUCTIVE FOAMED ARTICLES OBTAINED THEREFROM

Tadashi Azuma; Yoshihiro Akamatsu, both of Tokyo; Hiroyuki Akiyama, Hiratsuka, and Shohei Yoshimura, Tomioka, all of Japan, assignors to Fujimori Kogyo Co., Ltd. and Japan Styrene Paper Corporation, both of Tokyo, Japan

Filed Nov. 24, 1982, Ser. No. 444,191
Claims priority, application Japan, Nov. 25, 1981, 56-187864; Nov. 30, 1981, 56-191930; Jan. 6, 1982, 57-747
Int. Cl.[3] B32B *15/02, 3/06*
U.S. Cl. 428—336 20 Claims



1. An electrical conductive foam bead comprising a foamed bead core of a thermoplastic synthetic resin and an electrical conductive layer at least partially covering the surface of said foamed bead core.

4,496,628

LAMINATE FOR THE PROTECTION OF MOTOR VEHICLE BODIES

John H. Deatcher, Lake Peekskill, and Jagadish C. Goswami, New City, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 20, 1983, Ser. No. 515,403
Int. Cl.[3] C09J *7/02*
U.S. Cl. 428—337 15 Claims

1. A laminate adapted for the protection of motor vehicle bodies from abrasion and corrosion damage when secured thereto which consists essentially of:

(a) a film component having a thickness of at least about 200 microns comprising an internally plasticized vinyl chloride copolymer resin and an effective amount of a polymeric additive to enhance the flexibility characteristics of the film; and

(b) a layer of pressure sensitive adhesive attached to one side of the film.

4,496,629

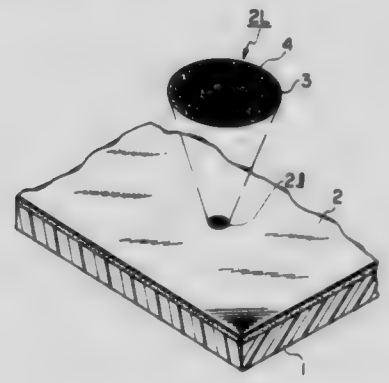
MATERIAL USED TO BEAR WRITING OR PRINTING

Masahiro Haruta, Funabashi, and Takashi Hamamoto, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 7, 1983, Ser. No. 456,381
Claims priority, application Japan, Jan. 12, 1982, 57-3004; Jan. 12, 1982, 57-3005
Int. Cl.[3] B32B *5/16*
U.S. Cl. 428—341 9 Claims

1. A material suitable for printing with ink which material comprises a substrate and a coating layer thereon, said coating

layer including a plurality of micro-cracks having the capability of passing liquid therethrough.



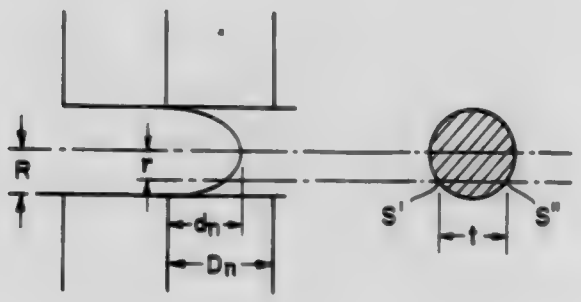
2. A material according to claim 1, wherein said coating layer is formed by coating said substrate with a coating material to give a dry coating weight of 1–10 g/m^2.

4,496,630

POLYAMIDE FIBERS HAVING IMPROVED PROPERTIES AND THEIR PRODUCTION

Kazuo Kurita, Otsu, and Hideaki Ishihara, Uji, both of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Feb. 4, 1983, Ser. No. 464,089
Claims priority, application Japan, Feb. 6, 1982, 57/18021
Int. Cl.^{3} D02G *3/00*
U.S. Cl. 428—364 12 Claims



1. A stretched polyamide fiber excellent in strength, which is characterized by having a relative viscosity of not less than 2.3 (measured on a 96% by weight sulfuric acid solution having a polyamide concentration of 10 mg/ml at 20° C.), having an index of birefringence in section which satisfies the following relationship:

$$\Delta n_A - \Delta n_B < 0$$

(wherein Δn_A is the index of birefringence of fiber at the position of r/R=0.9, Δn_B is the index of birefringence of fiber at the position of r/R=0.0, R is the radius of the fiber section and r is the distance from the central axis of the fiber section), and showing the following physical constants:

Index of birefringence of fiber (Δn) (measured after 24 hours under the conditions of 30° C. and 80% relative humidity) $\geqq 50\times10^{-3}$;

Break strength not less than 12 g/d;

Fiber long period spacing value at length by small angle X-ray diffraction $\geqq$ 100 Å;

Specific gravity $\geqq$ 1.140;

Dry heat shrinkage $\leqq$ 15%; Monofilament denier of less than 35 d

said polyamide being selected from the group consisting of polycapramide, polyhexamethylene adipamide, polyhexamethylene sebacamide, copolymers of the monomeric components of the aforestated polyamides, and condensation products of diamines and linear aliphatic dicarboxylic acids.

4,496,631

ACRYLIC FIBERS FOR PRODUCING CARBON FIBERS

Yasuo Adachi, Ehime, and Kiyoyuki Nabae, Iyo, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed May 26, 1983, Ser. No. 498,290
Claims priority, application Japan, May 26, 1982, 57-88210
Int. Cl.^{3} D02G *3/00*
U.S. Cl. 428—394 6 Claims

1. Acrylic fibers for producing carbon fiber, which have deposited thereon an aqueous oil composition comprising at least one compound selected from the group consisting of phosphate of stearyl alcohol, ethylene oxide adduct of stearyl alcohol containing about 20 to about 40 mols of ethylene oxide, ethylene oxide adduct of oleyl alcohol containing about 20 to about 40 mols of ethylene oxide, ethylene oxide adduct of behenyl alcohol containing about 20 to about 40 mols of ethylene oxide, ethylene oxide adduct of isopentacosanyl alcohol containing about 20 to about 40 mols of ethylene oxide, stearyl glyceride and stearic, oleic or sorbitan-oleic ester of polyalkylene ether glycol having a molecular weight of about 400 to about 1,000; an organic anti-oxidant; and a linear-chain organo silicone, as necessary ingredients.

4,496,632

PROCESS FOR LUBRICATING SYNTHETIC FIBERS

Ronald L. Camp, Riverview; Edward M. Dexheimer, and Basil Thir, both of Grosse Ile, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 16, 1982, Ser. No. 450,173
Int. Cl.^{3} B32B *27/34*; C10M *1/20*
U.S. Cl. 428—395 27 Claims

1. The process of lubricating thermoplastic synthetic fibers wherein problems presented by interaction of the lubricant with the polyurethane elastomers used in fiber processing machines are eliminated or substantially reduced comprising the application to said fibers of a modified polyoxyalkylene polyol which polyol is modified by capping all of the hydroxyl groups with benzyl, aryl, substituted benzyl, or substituted aryl groups or alkyl groups having 1 to 4 carbon atoms.

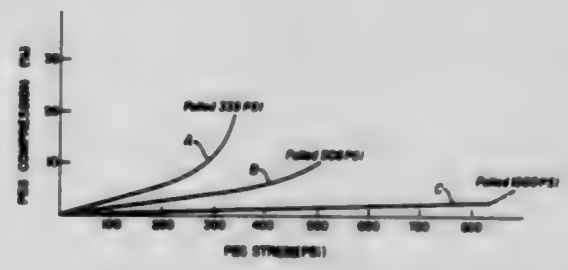
16. A lubricated thermoplastic, synthetic fiber selected from the group consisting of polyester, nylon, poly(benzimidazole), carbon or glass fiber wherein the lubricant is one which eliminates or substantially reduces problems presented by interacting of the lubricant with the polyurethane elastomers used in the fiber processing machinery and comprises a modified polyoxyalkylene polyol which is modified by capping all hydroxyl groups with benzyl, aryl, substituted benzyl or substituted aryl groups or alkyl groups having 1 to 4 carbon atoms.

4,496,633

HIGH DENSITY LOAD BEARING INSULATION PEG

Jeffert J. Nowobilski, Orchard Park, and William J. Owens, Kenmore, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 1, 1983, Ser. No. 547,561
Int. Cl.^{3} B32B *15/00*
U.S. Cl. 428—426 20 Claims



1. An insulating peg having a density of 30 to 80 pounds per cubic foot produced by a process comprising:

(A) providing a stack of substantially binderless glass fiber

sheets in an amount sufficient to achieve an insulation peg of desired density from 30 to 80 pounds per cubic foot;

(B) providing a press to compress the stack;

(C) heating the stack and the press to a temperature in the range of from the glass strain temperature to less than the glass softening temperature for a time sufficient to achieve thermal equilibration of the stack and the press surface;

(D) thereafter compressing the stack by applying a light vertically compressive force of from 2.0 to 20.0 pounds per square inch to the stack for a time period sufficient to produce said desired density and to substantially relieve stress within the compressed stack; and

(E) cooling the compressed glass fiber stack to ambient temperature.

10. A process for producing an insulation peg having a density of from 30 to 80 pounds per cubic foot comprising:

(A) providing a stack of substantially binderless glass fiber sheets in an amount sufficient to achieve an insulation peg of desired density from 30 to 80 pounds per cubic foot;

(B) providing a press to compress the stack;

(C) heating the stack and the press to a temperature in the range of from the glass strain temperature to less than the glass softening temperature for a time period sufficient to achieve thermal equilibration of the stack and the press surface;

(D) thereafter compressing the stack by applying a light vertically compressive force of from 2.0 to 20.0 pounds per square inch to the stack for a time period sufficient to produce said desired density and to substantially relieve stress within the compressed stack; and

(E) cooling the compressed glass fiber stack to ambient temperature.

4,496,634

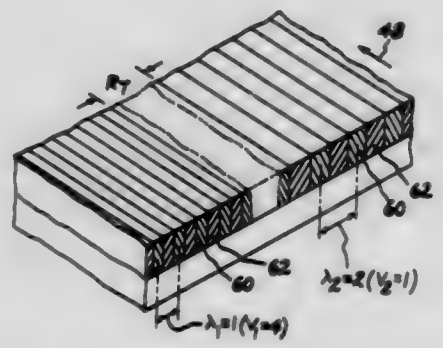
DIFFRACTION GRATING WIRE ARRAYS IN PARALLEL

Harvey E. Cline, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 320,995, Nov. 13, 1981,. This application Dec. 5, 1983, Ser. No. 558,123

Int. Cl.³ C22B *61/00, 9/00*

U.S. Cl. 428—611 **4 Claims**



1. A diffraction grating situate on a substrate comprising a plurality of eutectic fine wire arrays in parallel, said grating comprising:

(a) a first region of substantially mutually parallel wires situated on said substrate, said wires of said first region having a composition substantially corresponding to at least one phase of a eutectic alloy system, a first interwire spacing and a first width measured along a plane parallel to the plane of said substrate;

(b) at least a second region of substantially mutually parallel wires situated on said substrate, said wires of said second region having the same composition as the wires of said first region, a second interwire spacing and a second width measured along a plane parallel to the plane of said substrate, said second region being adjacent to said first region, the wires of said second region being substantially parallel to the wires of said first region; and

(c) a transition region between said first and second regions.

4,496,635

AMORPHOUS METAL ALLOY AND COMPOSITE

Rong Wang, and Martin D. Merz, both of Richland, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 138,951, Apr. 9, 1980, abandoned. This application Mar. 19, 1982, Ser. No. 360,117

Int. Cl.³ B32B *15/00*

U.S. Cl. 428—680 **9 Claims**

2. A substrate coated with an amorphous metal alloy capable of remaining amorphous at temperatures up to at least 400° C., consisting essentially of the formula $M_aCr_bT_c$ where M is at least one element selected from the group consisting of iron and nickel, T is at least one element selected from the group consisting of titanium, zirconium, hafnium, niobium, tantalum, molybdenum and tungsten and where a is 35 to 75 atom percent, b is 5 to 20 atom percent, c is 5 to 55 atom percent, and b and c are at least 25 atom percent.

4,496,636

PROCESS FOR DEPOSITING A COAT OF PAINT ON WOOD-CEMENT BOARDS

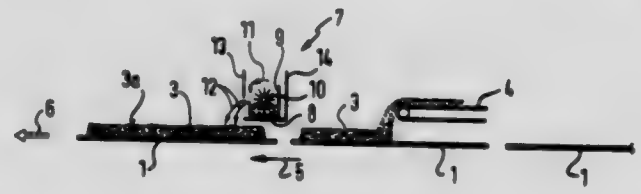
Günter Exner, Dettelbach, Fed. Rep. of Germany, assignor to Fulgurit GmbH & Co. Kommanditgesellschaft, Wunstorf, Fed. Rep. of Germany

Filed Aug. 18, 1982, Ser. No. 409,135

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1981, 3133974

Int. Cl.³ D04H *1/16;* B05D *1/00*

U.S. Cl. 428—703 **15 Claims**



1. In a process for depositing a coat of paint on wood-cement boards manufactured by pouring a strewable mixture of fibers and binder onto press plates followed by pressing the plates in a stack, the board surface after pressing having a base for applying said coat of paint upon which said coat of paint is applied, the improvement comprising:

depositing binder liquid on an upper layer of said strewable mixture of fibers and binder, said binder liquid being colored through with an inorganic dye, and in that the press plate together with the layers so deposited is fed to a press for said pressing, said base for applying said coat of paint comprising said binder liquid colored through with said inorganic dye.

13. The product produced by the process of claim 1.

4,496,637

ELECTRODE FOR FLOWCELL

Masayoshi Shimada; Yasuhiro Iizuka, and Tetuo Hukazu, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Dec. 22, 1983, Ser. No. 564,544

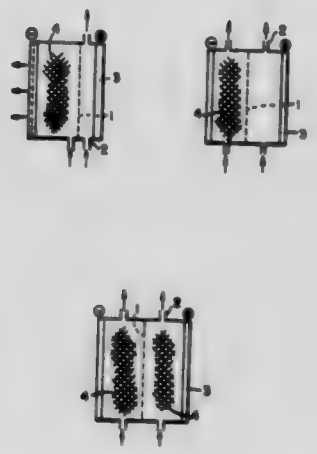
Claims priority, application Japan, Dec. 27, 1982, 57/229994

Int. Cl.³ H01M *4/96*

U.S. Cl. 429—44 **8 Claims**

1. An electrode for a flowcell which comprises an electrode material made of carbon fiber having <002> spacing of quasi-

graphite crystalline structure of not more than 3.70 Å, and an average C-axis size of crystallite of not less than 9.0 Å and at least 3% by mole of oxygen atom bound to the fiber surface based on carbon atom.

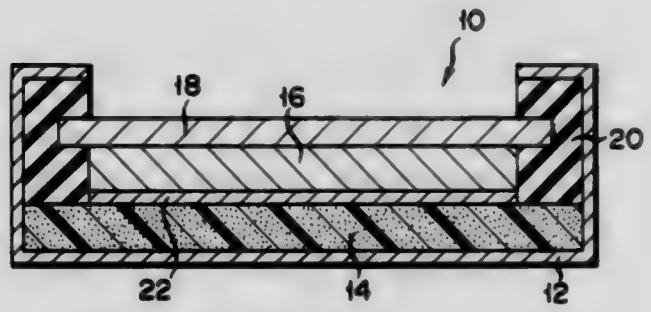


4,496,638

SOLID-ELECTROLYTE CELL

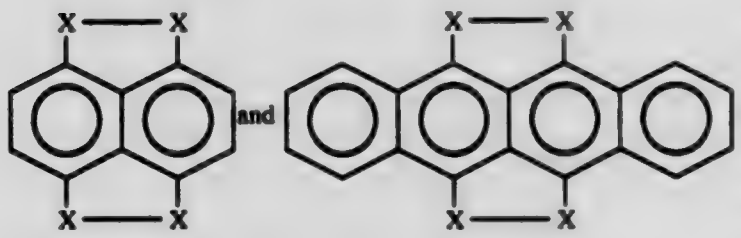
Masami Sugiuchi, and Atsuo Imai, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 30, 1983, Ser. No. 480,313
Claims priority, application Japan, Mar. 30, 1982, 57-50196
Int. Cl.[3] H01M 6/18
U.S. Cl. 429—192 8 Claims



1. A solid-electrolyte cell comprising:

a cathodic active material layer comprising a polymeric compound and a charge-transfer complex dispersed therein, the charge-transfer complex containing iodine as an electron acceptor and, as an electron donor, a compound selected from the group consisting of naphthalene and tetracene derivatives respectively represented by general formulas:



(wherein each X is sulfur, selenium or tellurium);

an anodic active material layer which comprises a light metal and which is formed in contact with the anodic active material layer; and

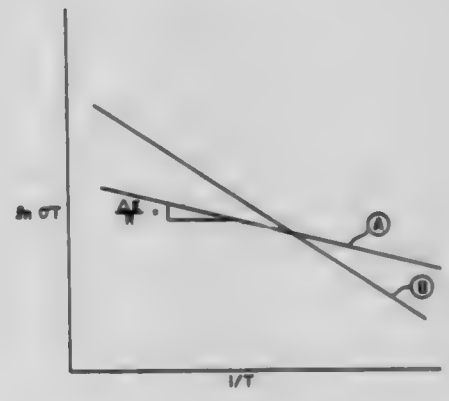
a solid-electrolyte layer which is formed in situ at an interface between the anodic and cathodic active material layers by a reaction between the iodine in the charge-transfer complex and the light metal.

4,496,639

HYDROGEN SELENIDE TREATMENT OF ELECTROLYTES

James R. Rasmussen, and Anil V. Virkar, both of Salt Lake City, Utah, assignors to Ceramatec, Inc., Salt Lake City, Utah

Filed Jul. 5, 1983, Ser. No. 510,818
Int. Cl.[3] H01M 6/18
U.S. Cl. 429—193 7 Claims



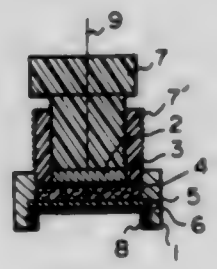
1. A method of adding selenium to a polycrystalline ceramic electrolyte comprising contacting said electrolyte with gaseous hydrogen selenide for a period sufficient to cause uptake of said hydrogen selenide by said electrolyte.

4,496,640

BATTERY HAVING ACETYLENE HIGH POLYMER ELECTRODE

Yukio Kobayashi, Tokyo; Masaaki Kira, Yokohama, and Kinya Yamaguchi, Tokyo, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 339,867, Jan. 18, 1982, abandoned. This application Sep. 12, 1983, Ser. No. 531,577
Claims priority, application Japan, Jan. 22, 1981, 56-7162; Sep. 1, 1981, 56-136073; Sep. 2, 1981, 56-137088; Sep. 2, 1981, 56-137090; Sep. 8, 1981, 56-140284; Sep. 28, 1981, 56-151951
Int. Cl.[3] H01M 4/60
U.S. Cl. 429—213 16 Claims

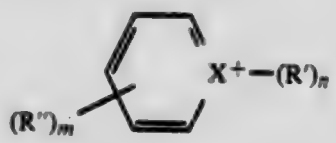


1. A battery comprising anode means, cathode means and an electrolyte, wherein the electrolyte comprises a compound capable of being ionized into at least one dopant selected from the group consisting of anion dopants and cation dopants and at least one of said anode means and said cathode means comprises, as its electrode-active material, an acetylene high polymer shaped article having a fibrous microcrystalline structure and a bulk density of 0.7 to 1.2 g/cc, which is prepared by shaping under pressure an acetylene high polymer swollen with an inert organic solvent and which is dopable to a more highly oxidized state by said anion dopant, or an electron-accepting compound consisting of the molecule of said anion or dopable to a more lowly oxidized state by said cation dopant, or an electron-donating compound consisting of the molecule of said cation.

13. A battery comprising anode means, cathode means and an electrolyte, wherein the electrolyte comprises a compound capable of being ionized into at least one dopant selected from the group consisting of anion dopants and cation dopants and

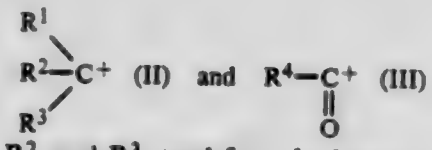
at least one of said anode means and said cathode means comprises, as its electrode-active material, an acetylene high polymer having a fibrous microcrystalline (fibril) structure and a bulk density of 0.7 to 1.2 g/cc, which is dopable to a more highly oxidized state by said anion dopant, or an electron-accepting compound consisting of the molecule of said anion or dopable to a more lowly oxidized state by said cation dopant, or an electron-donating compound consisting of the molecule of said cation, and wherein said anion dopant is HF_2^-.

16. A battery comprising anode means, cathode means and an electrolyte, wherein the electrolyte comprises a compound capable of being ionized into at least one dopant selected from the group consisting of anion dopants and cation dopants and least one of said anode means and said cathode means comprises, as its electrode-active material, an acetylene high polymer having a fibrous microcrystalline (fibril) structure and a bulk density of 0.7 to 1.2 g/cc, which is dopable to a more highly oxidized state by said anion dopant, or an electron-accepting compound consisting of the molecule of said anion or dopable to a more lowly oxidized state by said cation dopant, or an electron-donating compound consisting of the molecule of said cation, and wherein said cation dopant is selected from the group consisting of pyrylium and pyridinium cations represented by the following formula (I):



(I)

wherein X stands for an oxygen atom or nitrogen atom, R′ stands for a hydrogen atom, an alkyl group having 1 to 20 carbon atoms or an aryl group having 6 to 20 carbon atoms, R″ stands for a halogen atom, an alkyl group having 1 to 10 carbon atoms or an aryl group having 6 to 20 carbon atoms, n is zero when X is an oxygen atom or n is 1 when X is a nitrogen atom, and m is an integer of from 0 to 5; and carbonium cations represented by the following formula (II) and (III):



(II) and (III)

wherein R^1, R^2, and R^3 stand for a hydrogen atom, an alkyl group having 1 to 15 carbon atoms, an allyl group, an aryl group having 6 to 20 carbon atoms or a group $—OR^5$, in which R^5 stands for an alkyl group having 1 to 10 carbon atoms or an aryl group having 6 to 20 carbon atoms, with the proviso that the case where all of R^1, R^2 and R^3 are hydrogen atoms is excluded, and R^4 stands for a hydrogen atom, an alkyl group having 1 to 15 carbon atoms or an aryl group having 6 to 20 carbon atoms.

4,496,641

METHOD OF MANUFACTURING A COLOUR TELEVISION DISPLAY TUBE AND TUBE MANUFACTURED ACCORDING TO THIS METHOD

Jacob Van Den Berg; Johannes G. Van Lent, and Francis B. Strik, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 174,418, Aug. 1, 1980, abandoned, which is a continuation of Ser. No. 949,603, Oct. 10, 1978, abandoned, which is a continuation of Ser. No. 736,176, Oct. 27, 1976, abandoned. This application Jan. 18, 1983, Ser. No. 459,016

Claims priority, application Netherlands, Oct. 27, 1975, 7512513

Int. Cl.³ G03G *13/048*

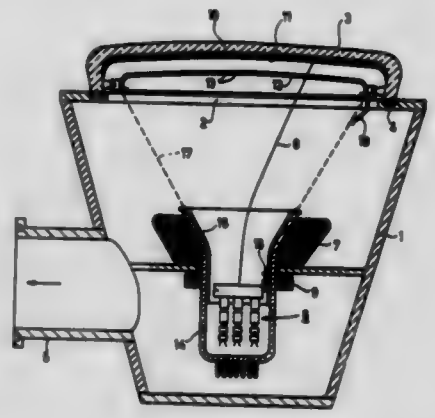
U.S. Cl. 430—23 **10 Claims**

1. A method of providing a predetermined pattern of a material on a color television display tube window, including the steps of:

(a) depositing a conductive layer on an inner surface of the window;

(b) depositing on the conductive layer an electron absorbing layer having a thickness at least equal to the average depth of penetration of incident electrons having a predetermined energy;

(c) mounting an apertured color selection electrode at a predetermined distance from the electron absorbing layer;



(d) producing a beam of electrons having said energy and emanating from an electron gun mounted at a predetermined position relative to the color selection electrode;

(e) exposing the electron absorbing layer by scanning the electron beam across the color selection electrode and passing it through the apertures in said electrode to directly form a negative charge pattern on said electron absorbing layer;

(f) removing the color selection electrode from its proximity to the color selection electrode; and

(g) developing the charge pattern by applying charged particles of said material to the electron absorbing layer.

4,496,642

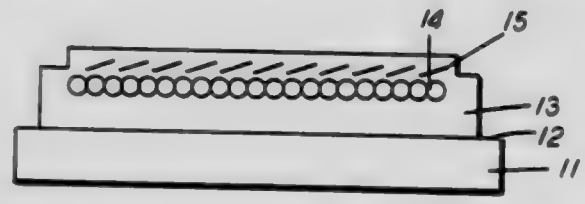
OVERCOATED MIGRATION IMAGING SYSTEM

Man C. Tam, and Gregory J. Kovacs, both of Mississauga, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed May 12, 1983, Ser. No. 493,914

Int. Cl.³ G03G *5/00, 5/14*

U.S. Cl. 430—41 **9 Claims**



1. A process for preparing a migration imaging member comprising providing a substrate, forming an electrically insulating, swellable, softenable layer on said substrate, said softenable layer having migration marking material located at least at or near the surface of said softenable layer spaced from said substrate, applying a material which swells at least said surface of said softenable layer, and applying a protective overcoating forming mixture comprising a film forming resin to said softenable layer, said softenable layer being sufficiently swollen by said material which swells said surface of said softenable layer to allow part of said film forming resin to penetrate said softenable layer to a depth of at least about 20 Angstroms to form a boundary zone comprising material from said softenable layer and said film forming resin while said softenable layer is swollen.

4,496,643

TWO-COMPONENT DRY ELECTROSTATIC DEVELOPER COMPOSITION CONTAINING ONIUM CHARGE CONTROL AGENT

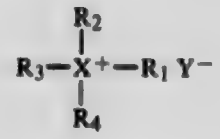
John C. Wilson, Rochester; Lawrence P. DeMejo, Pittsford; Thomas A. Jadwin, and Stewart H. Merrill, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 23, 1984, Ser. No. 592,996
Int. Cl.[3] G03G 9/10
U.S. Cl. 430—110 9 Claims

1. A dry, two-component electrostatic developer composition comprising:

(a) toner particles comprising a polymeric binder,

(b) an onium compound, as a charge-control agent, dispersed in the toner binder and having the formula:

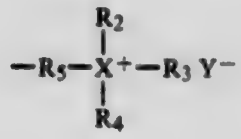


wherein:

X is a phosphorous, arsenic or antimony atom;

each of R_2, R_3 and R_4, which are the same or different, represents alkyl having from 1 to about 20 carbon atoms; aralkyl or alkaryl in which the alkyl group has 1 to about 20 carbon atoms and the aryl group has from about 6 to about 14 carbon atoms; or aryl having from about 6 to about 14 carbon atoms;

R_1 represents a group as defined with respect to R_2, R_3 and R_4; a hetero ring system when taken together with X and any one of R_2, R_3 and R_4; or the group:



wherein:

R_5 is alkylene having from about 1 to about 20 carbon atoms; oxydialkylene having from about 1 to about 20 carbon atoms in each alkylene group or dialkylenearylene having from about 1 to about 20 carbon atoms in each alkylene group and from about 6 to about 14 atoms in the arylene group; and

Y^- is an anion, and

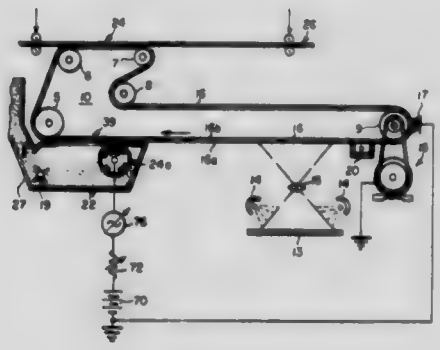
(c) carrier particles surface-coated with a fluoropolymer.

4,496,644

ELECTRIC FIELD ADJUSTMENT FOR MAGNETIC BRUSHES

Antoun I. Ateya, and Wei C. Lu, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,124
Int. Cl.[3] G03G 13/09, 15/09
U.S. Cl. 430—122 4 Claims



1. A method of reducing flaming and background development of an electrostatic image carried on a surface of a member comprising the steps of:

contacting the surface with a developer comprising a magnetic carrier and toner particles that have been triboelectrically charged,

applying a steady state electrical bias between the developer material and the member with the steady state bias being selected to minimize background development on the member,

applying an A.C. voltage signal between the developer material and the member,

adjusting the frequency of the A.C. signal to minimize flaming of images developed on such member, and

adjusting the peak-to-peak voltage of the A.C. signal until it is at a level which fully develops solid image areas on the member without mottle.

4,496,645

PROCESS FOR THE PRODUCTION OF A PHOTOGRAPHIC COLOR IMAGE BY IMAGE-WISE DYE DIFFUSION TRANSFER

Wilhelmus Janssens, Aarschot, and Daniël A. Claeys, Mortsel, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Oct. 26, 1983, Ser. No. 545,433
Claims priority, application United Kingdom, Nov. 12, 1982, 8232450
Int. Cl.[3] G03C 5/54, 1/40, 7/20
U.S. Cl. 430—239 10 Claims

1. A photographic colour diffusion transfer process comprising the steps:

(1) image-wise photo-exposing a photographic material which contains on a support at least one waterpermeable silver halide emulsion layer, the silver halide of which essentially consists of silver chloride, and in operative contact therewith at least one non-diffusing ballasted dye or dye precursor which when contacted with an aqueous alkaline liquid remains immobile in a waterpermeable colloid layer, and which when reacted with a reducing compound in the presence of an aqueous alkaline liquid sets free the diffusible dye or dye precursor,

(2) treating the photographic material with an alkaline processing liquid in the presence of a silver halide developing agent to effect development of the exposed silver halide emulsion layer, thereby image-wise oxidizing the developing agent and as an inverse function of image-wise silver halide development reducing said non-diffusing ballasted compound,

(3) maintaining said photographic material in contact with the alkaline processing liquid in the presence of said developing agent for a time sufficient to release said dye or dye precursor in diffusible state from the reduced ballasted compound(s); and

(4) transferring at least a portion of said released dye or dye precursor to a non-light-sensitive layer acting as a receptor layer to form a dye image thereon,

characterised in that the development proceeds in the presence of free iodide ions.

4,496,646

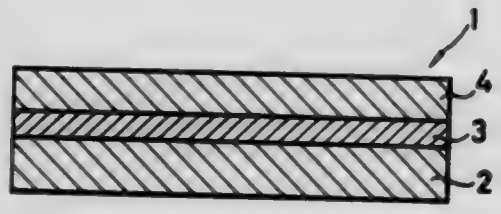
PHOTOSENSITIVE IMAGING MATERIAL

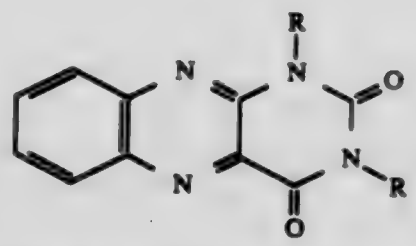
Kengo Ito, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP83/00107, § 371 Date Nov. 29, 1983, § 102(e) Date Nov. 29, 1983, PCT Pub. No. WO83/03687, PCT Pub. Date Oct. 27, 1983
PCT Filed Apr. 7, 1983, Ser. No. 557,167
Claims priority, application Japan, Apr. 7, 1982, 57-57654; Sep. 24, 1982, 57-167125
Int. Cl.[3] G03C 1/68, 5/00, 5/24; G08F 2/50
U.S. Cl. 430—271 23 Claims

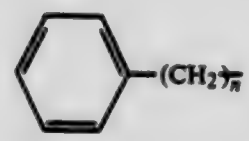
1. A photosensitive imaging material which comprises a

photosensitive composition containing an alloxazine derivative represnated by the general formula:





[wherein R's may be the same or different from each other and each represents an alkyl group having 1 to 20 carbon atoms or a phenylalkyl group of the general formula:



(wherein n represents an integer of 1 or more)] as a photopolymerization initiator, a binder and a polymerizable tackifying monomer.

4,496,647

TREATMENT OF IMAGE-FORMING LAMINATED PLATE

Norio Kawabe, Ohtsu; Mikio Tsuda, Ohmihachiman, and Sadao Kobeshi, Yokkaichi, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jul. 18, 1983, Ser. No. 514,963
Claims priority, application Japan, Jul. 21, 1982, 57-125757
Int. Cl.³ G03C 7/02
U.S. Cl. 430—303 14 Claims

1. A process for treating a dry planographic printing unprocessed plate comprising a base substrate, a photosensitive layer containing a quinonediazide and a silicone rubber layer in laminating order, characterized in that the dry planographic printing unprocessed plate is subjected to a treatment with a base after imagewise exposure but before or at the same time of development said base being present in an amount sufficient to enhance both the adhesion of the photosensitive layer to the silicone rubber layer and the solvent resistance of the photosensitive layer in non-image areas.

4,496,648

METHOD OF MAKING HIGH RELIABILITY LEAD-ALLOY JOSEPHSON JUNCTION

Peter L. Young, North Wales, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 26, 1982, Ser. No. 362,568
The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.
Int. Cl.³ H01L 39/22, 39/24
U.S. Cl. 430—312 16 Claims

1. A method of producing lead-gold base electrodes for superconducting Josephson junction devices having very high tolerance to thermal cycling, comprising:

providing a substrate wafer,

providing a photoresist mask on said substrate wafer,

placing said substrate wafer in a vacuum chamber,

producing a high vacuum in said chamber to at least 1×10^{-6} torr,

metering a predetermined amount of inert gas into said vacuum chamber to provide a pressure of approximately $(5 \text{ to } 30)\times10^{-3}$ torr in said high vacuum,

locating the surface of said substrate wafer approximately normal to the line of sight of metals to be evaporated and deposited thereon,

evaporating at least three layers on said substrate in said inert gas while maintaining said inert gas pressure in said chamber,

said layers comprising at least one layer of gold and one layer of lead, and a third layer of superconducting metal,

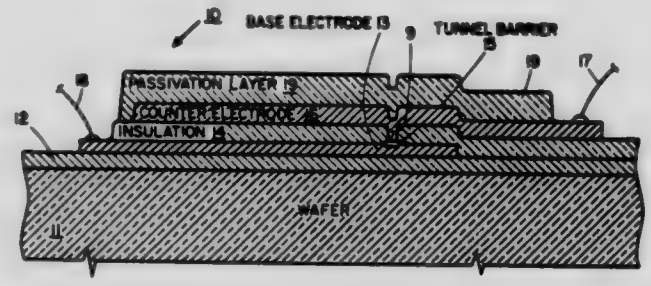
annealing said wafer at an elevated temperature to cause interdiffusion of said gold, lead and superconducting metal layers into one layer of fine-grain base electrode material,

removing said photoresist mask from said substrate wafer to provide a base electrode having very high tolerance to thermal cycling.

13. A method as set forth in claim 1 which further includes the additional steps of:

applying a second photoresist layer on top of said base electrode material,

baking the photoresist layer at temperatures in excess of seventy-five degrees centigrade,



exposing said photoresist layer to a pattern of ultra violet light applied through a mask,

developing portions of said exposed photoresist layer to provide a raised lift-off junction photoresist pattern thereon,

placing said substrate wafer in said vacuum chamber,

depositing a layer of silicon monoxide on said base electrode and said photoresist lift-off pattern,

removing said substrate wafer from said vacuum chamber,

removing said photoresist lift-off junction photoresist pattern,

applying a third photoresist layer,

exposing said third photoresist layer to a pattern of ultra violet light,

developing portions of said third photoresist layer to provide a raised lift-off counter electrode photoresist pattern to provide access to portions of said base electrode material,

placing said substrate wafer in said vacuum chamber,

oxidizing said pattern of exposed base electrode material to provide a tunnel barrier junction,

forming a counter electrode on top of said barrier junction and on portions of said silicon monoxide layer exposed by said counter electrode pattern,

removing said substrate wafer from said vacuum chamber, and

removing said counter electrode lift-off pattern to provide a Josephson junction device.

4,496,649

COLOR-PHOTOGRAPHIC RECORDING MATERIAL

David G. Leppard, Marly, and Jean Rody, Riehen, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

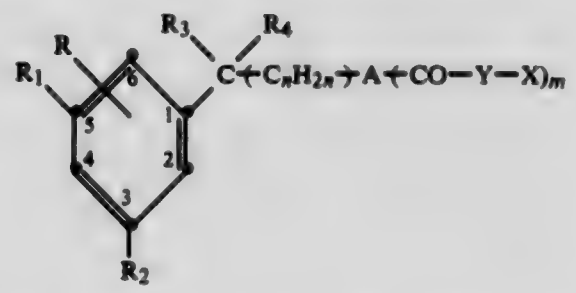
Filed Dec. 15, 1983, Ser. No. 562,189

Claims priority, application Switzerland, Dec. 16, 1982, 7315/82

Int. Cl.³ G03C 7/40, 7/26

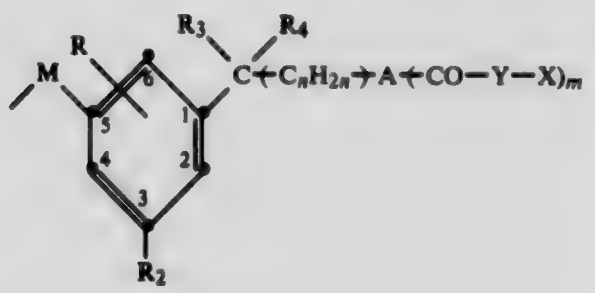
U.S. Cl. 430—372 24 Claims

1. A colour-photographic recording material which, in at least one light-sensitive silver halide emulsion layer, an interlayer and/or a protective layer, contains a light-stabilizing amount of at least one polyalkylpiperidine compound as a stabiliser, wherein the polyalkylpiperidine compound is of the formula I



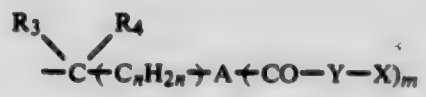
(I)

in which R is an OH group in the 2-position, 4-position or 6-position, R_1 is hydrogen, C_1-C_4-alkyl, a group of the formula II



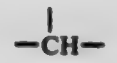
(II)

or a group of the formula III

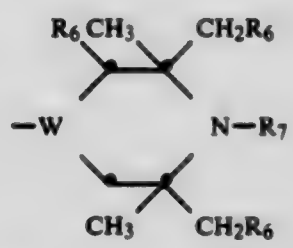


(III)

R_2 is C_1-C_4-alkyl, a group of the formula III or a group of the formula —CO—Y—X, R_3 and R_4 independently of one another are C_1-C_8-alkyl and, in addition, R_4 can, together with the group —(C_nH_{2n})—, form a C_5-C_{12}-cycloalkyl radical, n is a number from 1 to 20, m is 1 or 2, A is a direct C—C bond if m=1 or a radical

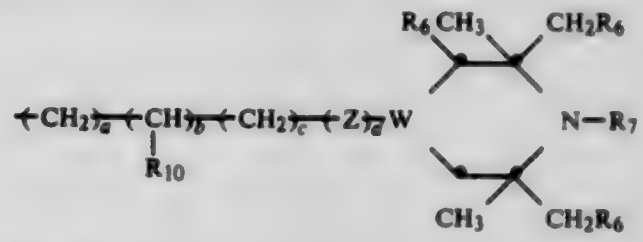


if m=2, Y is —O— or —N(R_5)—, wherein R_5 is hydrogen, C_1-C_{18}-alkyl, C_3-C_{12}-alkenyl, C_3-C_{12}-cycloalkyl, phenyl, C_7-C_{14}-aralkyl, C_7-C_{14}-alkaryl, C_2-C_{11}-alkoxyalkyl or a group of the formula IV

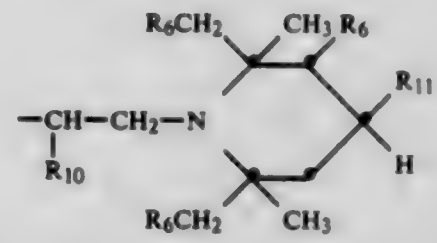


(IV)

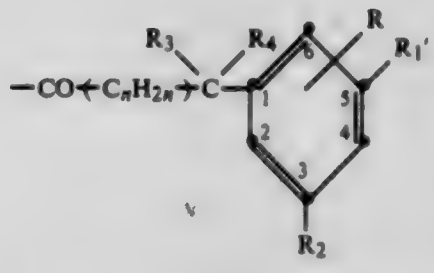
M is a direct bond, —O—, —S—, —S—S—, —SO—, —SO_2— or a group —CH_2OCH_2—, —CH_2SCH_2—, —CH(R_8)— or —N(R_9)—, wherein R_8 is hydrogen, C_1-C_{12}-alkyl or C_3-C_8-alkyl or C_3-C_8-alkyl interrupted by 1-3 sulfur atoms, and R_9 is hydrogen, C_1-C_{18}-alkyl or unsubstituted or C_1-C_4-alkyl-substituted phenyl or benzyl, X is a group of the formula



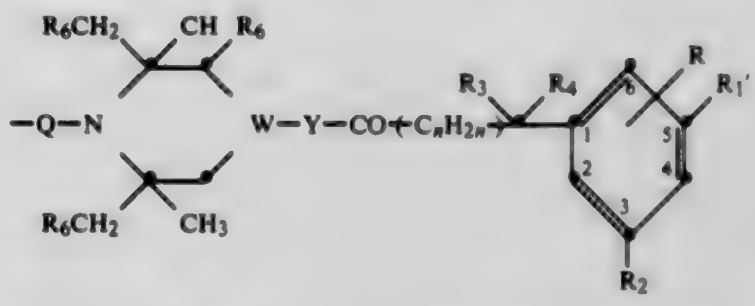
or of the formula



a is one of the numbers from 0 to 10, b, c and d independently of one another are the number 0 or 1, it being necessary for the sum a+b+c≠0 if d=1, R_6 is hydrogen or methyl, R_7 is hydroxyl, C_1-C_{12}-alkyl, C_3-C_6-alkenylmethyl, C_3-C_4-alkynylmethyl, C_7-C_{14}-aralkyl, glycidyl, C_1-C_4-alkyl substituted by halogen, cyano, —$COOR_{12}$ or —$CON(R_{13})$—(R_{14}), a group —COR_{15}, —$COOR_{12}$, —$CON(R_{13})$ (R_{14}), —CH_2—CH(R_{16})—OR_{17}, —SOR_{18}, —SO_2R_{18}, —OR_{12} or —$OCOR_{15}$, R_{12} being C_1-C_{12}-alkyl, alkyl, cyclohexyl or benzyl, R_{13} being C_1-C_{12}-alkyl, alkyl, cyclohexyl, benzyl, phenyl or C_7-C_{10}-alkylphenyl, R_{14} being hydrogen, C_1-C_{12}-alkyl, allyl, cyclohexyl or benzyl, or R_{13} and R_{14}, together with the N atom to which they are attached, forming a 5-membered or 6-membered heterocyclic ring, R_{15} being hydrogen, C_1-C_{12}-alkyl, C_2-C_6-alkenyl, chloromethyl, C_5-C_8-alkyl, C_7-C_{14}-aralkyl, phenyl, C_7-C_{10}-alkylphenyl or phenyl, phenylmethyl or phenylethyl which are substituted by 1 or 2 C_1-C_4-alkyls and 1 hydroxyl, R_{16} being hydrogen, C_1-C_4-alkyl, C_3-C_4-alkoxyalkyl, phenyl or phenoxymethyl, R_{17} being hydrogen, C_1-C_{12}-alkyl, a group —COR_{15} or —$CON(R_{13})$ (R_{14}) or a group of the formula

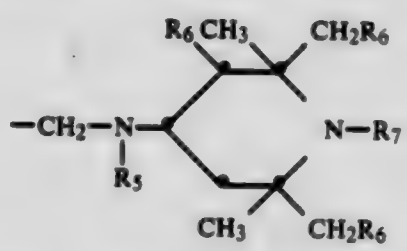


in which R_1 is hydrogen or C_1-C_4-alkyl, and R_{18} being C_1-C_{12}-alkyl, phenyl or C_7-C_{10}-alkylphenyl, or R_7 is a group of the formula

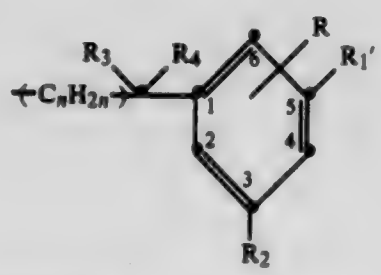


in which Q is a group —(C_rH_{2r})— wherein r is one of the numbers 2 to 12, or Q is C_4-C_8-alkylenylene, C_5-C_{12}-cycloalkylene, phenylene, xylylene, bitolylene or a group

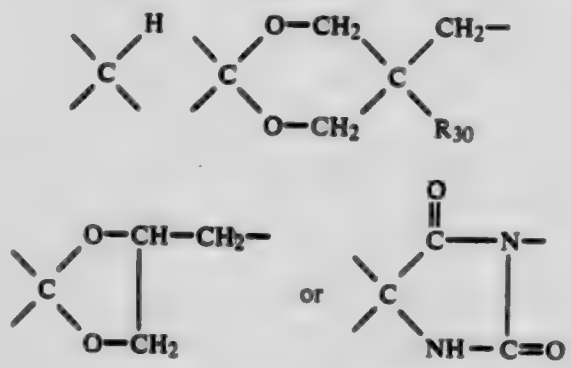
—CO—(C_rH_{2r})—CO—, Z is —O— or —N(R_{19})— wherein R_{19} is hydrogen, C_1–C_{18}-alkyl, C_3–C_{12}-alkenyl, C_3–C_{12}-cycloalkyl, phenyl, C_7–C_{14}-alkaryl, C_7–C_{14}-aralkyl, C_2–C_{11}-alkoxyalkyl or a group —COR_{20}, —$COOR_{21}$, —$CON(R_{22})(R_{23})$, —CH_2—$CH(R_{24})$—OR_{25}, —SOR_{26} or —SO_2R_{26}, R_{20} having one of the meanings defined for R_{15} or being a heterocyclic ring, R_{21} having one of the meanings defined for R_{12}, R_{22} having one of the meanings defined for R_{13}, R_{23} having one of the meanings defined for R_{14}, R_{24} having one of the meanings defined for R_{16}, R_{25} having one of the meanings defined for R_{17} and R_{26} having one of the meanings defined for R_{18}, or R_{19} is a group of the formula IV, R_{10} is hydrogen, C_1–C_{18}-alkyl, C_7–C_{23}-phenoxyalkyl, phenyl, C_7–C_{14}-aralkyl, C_2–C_{11}-alkoxyalkyl or a group



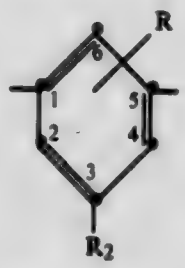
R_{11} is hydrogen, —OR_{27}, —$OCOR_{28}$, —$N(R_{29})$—COR_{28}, —OSO_2R_{28} and —$N(R_{29})$—SO_2R_{28}, R_{27} being hydrogen, C_1–C_{12}-alkyl, allyl or benzyl, R_{28} being hydrogen, C_1–C_{12}-alkyl, C_2–C_6-alkenyl, chloromethyl, C_5–C_8-cycloalkyl, C_7–C_9-phenylalkyl, C_7–C_{10}-alkylphenyl, phenyl or a group of the formula



and R_{29} being hydrogen, C_1–C_{12}-alkyl, C_5–C_8-cycloalkyl or benzyl, and W being one of the groups



in which R_{30} is methyl or ethyl, with the proviso that, if W is a cyclic ketal structure, d is 0 and the sum a+b+c must also be 0 and, if W is a hydantoin structure, d must be 0 and the sum a+b+c must be ≠0, the repeatedly mentioned radicals and symbols always being as defined in the first instance and, with repeated occurrence of the group



R always being in the same position.

24. A process for the production of photographic colour images by imagewise exposure and colour development of a colour-photographic recording material according to claim 1.

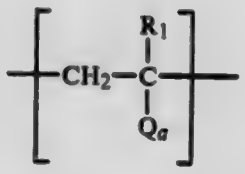
4,496,650

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Morio Yagihara; Tsumoru Hirano, and Makoto Umemoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

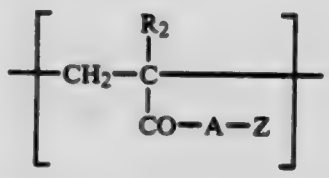
Filed Jan. 17, 1984, Ser. No. 571,628
Claims priority, application Japan, Jan. 17, 1983, 58-5446
Int. Cl.³ G03C 7/16, 7/26
U.S. Cl. 430—381 **25 Claims**

25. A method of forming a color image comprising imagewise exposing a silver halide color photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer containing a cyan color image forming polymer coupler latex which comprises at least one repeating unit capable of forming a dye upon coupling with an oxidation product of an aromatic primary amine developing agent represented by the general formula (Ia) described below and at least one repeating unit represented by the general formula (II) described below:



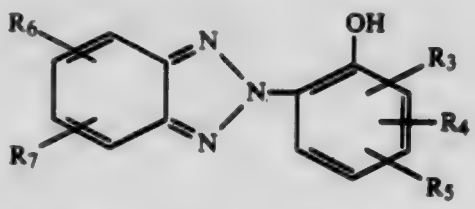
(Ia)

wherein R_1 represents a hydrogen atom, a lower alkyl group containing from 1 to 4 carbon atoms or a chlorine atom; and Q_a represents a cyan coupler moiety-containing group capable of forming a dye upon coupling with an oxidized aromatic primary amine developing agent,



(II)

wherein R_2 represents a hydrogen atom, a lower alkyl group containing from 1 to 4 carbon atoms or a chlorine atom; A represents —O— or —NH—; and Z represents



wherein R_3, R_4, R_5, R_6 and R_7, which may be the same or different, each represents a hydrogen atom, an alkyl group, an alkenyl group, an alkoxy group, a halogen atom, a carboxy group, a hydroxy group, a nitro group, an aryl group, an acyloxy group, an aryloxy group, an alkylthio group, an arylthio group, a mono- or dialkylamino group, an acylamino group, a sulfonamido group or a 5-membered or 6-membered heterocyclic group containing an oxygen atom or a nitrogen atom, or R_6 and R_7 may be bonded to each other to form a 5-membered or 6-membered aromatic ring consisting of carbon atoms; and A may be bonded to any of the phenol ring and the benzotriazole ring of Z, developing the exposed material using an alkaline aqueous solution containing an aromatic primary amine developing agent.

4,496,651

COLOR TRANSFER PHOTOGRAPHIC PROCESSES AND PRODUCTS

Leon D. Cerankowski, Carlisle; Gary S. LaPointe, Beverly, and Neil C. Mattucci, Billerica, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 516,597, Jul. 25, 1983, Pat. No. 4,456,674, which is a continuation-in-part of Ser. No. 437,896, Nov. 1, 1982, abandoned. This application Jun. 11, 1984, Ser. No. 619,626

Int. Cl.[3] G03C *5/54, 5/30*

U.S. Cl. 430—490 9 Claims

1. A rupturable container for use in diffusion transfer film units adapted to provide transfer images viewable by reflected light, said rupturable container releasably holding an aqueous alkaline processing composition comprising an aqueous solution of alkali metal hydroxide; a viscosity-imparting reagent; a light-reflecting pigment; colloidal silica; a metal chelating agent; and an alkali soluble calcium salt in an amount sufficient to stabilize the spreading characteristics of said processing composition.

4,496,652

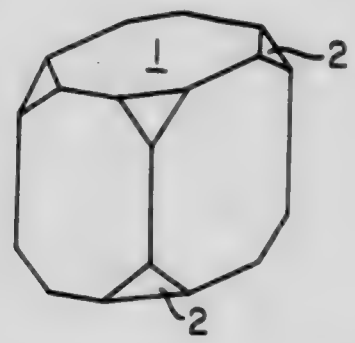
SILVER HALIDE CRYSTALS WITH TWO SURFACE TYPES

Eugene F. Haugh; Earle L. Kitts, Jr., both of Wilmington, and Daniel J. Mickewich, Arden, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 972,972, Dec. 26, 1978, abandoned. This application Jun. 16, 1980, Ser. No. 159,798

Int. Cl.[3] G03C *1/28, 1/02*

U.S. Cl. 430—569 3 Claims



1. In a process wherein silver iodobromide crystals are formed by precipitation under balanced double jet conditions, and subsequently the crystals are either sensitized with sulfur and gold sensitizers and used to form a high speed negative emulsion or the crystals are fogged and then used to produce a high speed direct positive, the improvement comprising precipitating the silver iodobromide crystals at a pAg of between about 8 and 9 and a temperature of 35°–50° C., with high agitation, to produce tetradecahedral crystals, followed by contacting said crystals with a solution of silver nitrate and a solution of ammonium or alkali metal chloride, bromide, or a mixture of both, at a temperature of 35°–50° C. and a pAg of 6 to 8, using high agitation, whereby silver bromide or silver chlorobromide is caused to deposit preferentially on the (111) surfaces of said tetradecahedral crystals, the molar ratio of the tetradecahedral body to the resulting corners being from 60-40 to 97-3.

4,496,653

PROCESS FOR THE DETERMINATION OF ANTITHROMBIN-BM

Helmut Lill, Wielenbach; Jürgen Schrenk, Weilheim, and Peter Wunderwald, Haunshofen, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

PCT No. PCT/DE81/00170, § 371 Date Jun. 9, 1982, § 102(e) Date Jun. 9, 1982, PCT Pub. No. WO82/01377, PCT Pub. Date Apr. 29, 1982

PCT Filed Oct. 8, 1981, Ser. No. 394,998

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1980, 3038163; Aug. 4, 1981, 3050268

Int. Cl.[3] C12Q *1/56, 1/38*

U.S. Cl. 435—7 10 Claims

1. A process for the determination of antithrombin-BM in a sample comprising

adding, to the sample, an antithrombin-BM cofactor, thrombin and a determinable thrombin substrate;

measuring the splitting of the thrombin substrate in the presence of a high concentration of cofactors, and in the presence of a low concentration of cofactors, the cofactors being selected from the group consisting of heparin, xylan and λ-carrageenan; and

determining the antithrombin-BM activity from the difference between the measurement at high and at low cofactor concentration.

4,496,654

DETECTION OF HCG WITH SOLID PHASE SUPPORT HAVING AVIDIN COATING

David H. Katz, La Jolla; Steven W. Cooper; Theodore T. Lee, both of San Diego, and Shung-Ho Chang, Encinitas, all of Calif., assignors to Quidel, La Jolla, Calif.

Filed Apr. 8, 1983, Ser. No. 483,231

Int. Cl.[3] G01N *33/54*

U.S. Cl. 435—7 16 Claims

1. In the method for determining human chorionic gonadotropin (HCG) which comprises reacting a solution suspected of containing HCG with labeled anti-HCG antibody and determining the presence of HCG bound antibody, the improvement comprising:

(a) coating a solid phase support with avidin to provide on the surface thereof binding sites for biotin;

(b) biotinylating anti-HCG antibody;

(c) reacting the biotinylated anti-HCG antibody with the avidin coated support;

(d) labeling anti-HCG antibody with indicator moiety which can be detected;

(e) reacting the biotinylated antibody of step (c) and the labeled antibody of step (d) with a test solution suspected of containing HCG; and

(f) measuring the labeled antibody bound through HCG to the support to show the presence or absence of human chorianic gonadotropin in the test solution.

11. As an article of manufacture, a solid phase support having a surface, an avidin coating on at least substantial portions of said surface, and biotinylated antibody or biotinylated antigen printed in a predetermined pattern on the avidin coated surface.

4,496,655

PROCESS FOR THE PRODUCTION OF TYRAMINE OXIDASE

Eiichi Yoshino; Kazuo Matsuura, and Hideo Misaki, all of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Dec. 28, 1982, Ser. No. 454,060

Claims priority, application Japan, Dec. 28, 1981, 56-209676

Int. Cl.[3] C12N *9/06;* C12Q *1/36, 1/26;* C12R *1/06*

U.S. Cl. 435—191 3 Claims

1. A process for the production of tyramine oxidase, which

comprises culturing Arthrobacter sp. B-0813 FERM-P No. 6240 in a nutrient medium, and isolating thus-produced tyramine oxidase from the cultured medium.

4,496,656

PROCESS FOR PRODUCTION OF CELLULASE

Katsumi Nakamura, Takasaki, and Kunpei Kitamura, Yoshioka, both of Japan, assignors to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1982, Ser. No. 439,131
Claims priority, application Japan, Nov. 10, 1981, 56-180133
Int. Cl.³ C12N *9/42, 1/20;* C12R *1/01*
U.S. Cl. 435—209 6 Claims

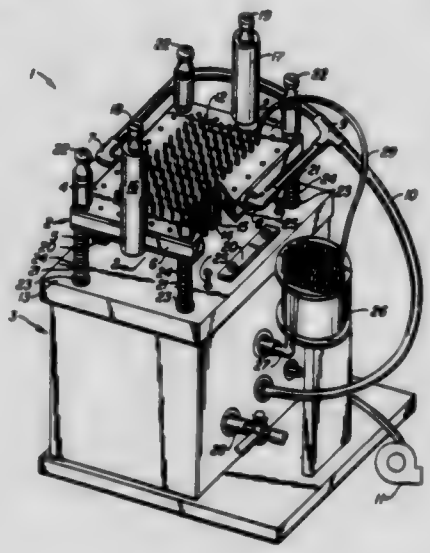
1. A process for producing a cellulase, which comprises culturing a cellulase-producing microorganism belonging to *Cellulomonas uda* CB4 in a cellulose-containing medium and recovering the cellulase produced.

4,496,657

MICROPLATE WASHER

Ward J. Coppersmith, San Diego, and George B. LaMotte, III, Larkspur, both of Calif., assignors to Scripps Clinic and Research Foundation, Calif.

Filed Oct. 14, 1982, Ser. No. 434,308
Int. Cl.³ C12M *1/00, 1/32;* B01L *3/00*
U.S. Cl. 435—287 10 Claims



1. An apparatus for the alternate filling and evacuation of all wells simultaneously of a multiwell microplate, said apparatus comprising:

a vacuum chamber defined by two parallel plates designated an upper plate and a lower plate, respectively, said plates separated by peripheral spacing means, said lower plate having affixed therein a plurality of tubes spaced apart from each other, each said tube passing through said lower plate and perpendicular thereto, said tubes forming a rectangular array such that, when said chamber is superimposed over said microplate, a pair of said tubes is aligned with each well of said microplate, the portions of each tube of said pair which extend below said lower plate being of unequal length, the tube with the shorter portion below the lower plate being designated a filling tube and the tube with the longer portion below the lower plate being designated an evacuation tube, said filling tube extending upward through said chamber and said upper plate, and said evacuation tube terminating within said chamber above the lower plate,

a support for said microplate, said support comprising a substantially flat horizontal surface containing guide means adapted to secure said microplate in a predetermined position on said support surface,

means for maintaining said vacuum chamber in vertical alignment with said support with said upper and lower plates of said vacuum chamber and said support surface in parallel relation, and for narrowing and widening the distance between said vacuum chamber and said support surface while substantially maintaining said parallel relation,

stop means for setting a minimum spacing distance between said vacuum chamber and said support surface such that when said distance is at said minimum, the exposed end of each said evacuation tube is sufficiently close to the bottom of the corresponding well in said microplate to permit evacuation of substantially all liquid from said well,

means for applying a vacuum to said vacuum chamber, and

means for supplying pressurized fluid to each said filling tube at the upper end thereof.

4,496,658

METHOD FOR ENZYME IMMUNOASSAY AND PRODUCTION OF ANTIBODY

Koichi Kondo, Osaka; Susumu Iwasa, Tsuzuki, and Isamu Yoshida, Hirakata, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 14, 1981, Ser. No. 311,327
Claims priority, application Japan, Oct. 15, 1980, 55-144689; Jan. 14, 1981, 56-4507
Int. Cl.³ G01N *33/54, 33/56, 33/58*
U.S. Cl. 436—510 8 Claims

1. In a method for immunochemical assay of human chorionic gonadotropin using an antibody immobilized on a carrier, an antigen and an antibody coupled with a labeling agent, the improvement which comprises using as the antibody to be immobilized on the carrier and the antibody to be coupled with the labeling agent different antibodies which are not overlapping in antigen-determining site, and wherein one of said different antibodies is specifically reactive to human chorionic gonadotropin,

said specifically reactive antibody being obtained by contacting a peptide of the formula:

H-R-Pro-Ser-Asp-Thr-Pro-Ile-Leu-Pro-Gln-OH

wherein R is a partial peptide of 1 to 14 amino acid residues including 14-Gly of the peptide Ala^{1}-Pro^{2}-Pro^{3}-Pro^{4}-Ser^{5}-Leu^{6}-Pro^{7}-Ser^{8}-Pro^{9}-Ser^{10}-Arg^{11}-Leu^{12}-Pro^{13}-Gly^{14}, as immobilized on a carrier, with a body fluid containing an anti-human chorionic gonadotropin antibody, and eluting the anti-human chorionic gonadotropin antibody thus specifically absorbed.

4,496,659

SULFUR CEMENT-AGGREGATE COMPOSITIONS AND METHODS FOR PREPARING

Edward L. Nimer, San Rafael, and Robert W. Campbell, Lafayette, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 414,716, Sep. 3, 1982, abandoned. This application Feb. 13, 1984, Ser. No. 579,327
Int. Cl.³ C04B *19/06*
U.S. Cl. 501—140 17 Claims

1. A sulfur cement and aggregate composition which comprises a sulfur cement, an aggregate, contaminated with up to 5% by weight of an expansive clay, and an amount of a carboxylic acid, selected from the group of acetic acid, dicarboxylic acids, and mixtures thereof, effective to substantially reduce the water expandability of said expansive clay and wherein said carboxylic acid has a boiling point above about 110° C. and is dispersed throughout said aggregate, with the proviso that said composition does not contain styrene or an alkene mercaptan.

4,496,660

CATALYST PREPARED FROM ORGANO-MAGNESIUM COMPOUND; OXYGEN- OR NITROGEN-CONTAINING COMPOUND; HALIDE SOURCE; TRANSITION METAL COMPOUND AND REDUCING AGENT

Donald E. Gessell, Baton Rouge, La.; Ronald L. Gibbs, Midland, Mich., and Ricardo Fuentes, Jr., Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 1, 1980, Ser. No. 192,959
Int. Cl.³ C08F 4/02
U.S. Cl. 502—111 29 Claims

21. A process for preparing a hydrocarbon insoluble catalyst, which process comprises:

(I) reacting in an inert diluent

(A) the reaction product of

(1) an organomagnesium component or a mixture or complex thereof represented by the formula $MgR^2.xMeR'_{x'}$ wherein each R is independently a hydrocarbyl group having from 1 to about 20 carbon atoms, each R' is independently hydrogen, a hydrocarbyl or a hydrocarbyloxy group having from 1 to about 20 carbon atoms, Me is Al, Zn or B, x has a value of from zero to about 10; and x' has a value equal to the valence of Me; and

(2) (a) an oxygen-containing compound, nitrogen-containing compound or mixture of such compounds in a quantity sufficient to lower the amount of hydrocarbyl groups present in component (A-1) such that the resultant product does not substantially reduce $TiCl_4$ at a temperature of about 25° C.; and optionally

(2) (b) having dissolved or dispersed in component (I-A-2-a) one or more transition metal compound(s) represented by the formula $Tm'Y_nX_{z-n}$ wherein Tm' is a transition metal selected from groups I-B, IV-B, V-B, VI-B, VII-B or VIII of the Periodic Table of the Elements and is not the same element as that represented by Tm in component (II); Y is oxygen, OR'' or NR''_2; each R'' independently hydrogen or a hydrocarbyl group having from 1 to about 20 carbon atoms; X is a halogen atom; z has a value corresponding to the valence of the transistion metal Tm'; n has a value of from zero to 5; the value of z-n is from zero up to the valence of the transition metal Tm'; and wherein said transition metal compound, when present, is present in a quantity such that the Tm':Tm, from component II, atomic ratio is from 0.01:1 to about 0.5:1; and

(B) a suitable halide source or mixture thereof represented by the formulas $AlR_{3-a}X_a$, $SiR_{4-b}X_b$, $SnR_{4-b}X_b$, POX_3, PX_3, PX_5, SO_2X_2, GeX_4, $R^4(CO)X$, TmY_nX_{z-n} and R^4X wherein each R is independently hydrogen, a hydrocarbyl or a hydrocarbyloxy group having from 1 to about 20 carbon atoms; R^4 is independently hydrogen or a hydrocarbyl group having from 1 to about 20 carbon atoms; each X is a halogen atom; a has a value of from 1 to 3; b has a value of from 1 to 4; Tm is a metal selected from groups IV-B, V-B and VI-B of the Periodic Table of Elements; Y is oxygen, OR'' or NR''_2; each R'' is independently hydrogen or a hydrocarbyl group having from 1 to about 20 carbon atoms; z has a value equal to the valence of said transition metal, n has a value of from zero to 5 with the value of z-n being from at least 1 up to a value equal to the valence of the transition metal; said halide source being present in a quantity sufficient to convert essentially all of the groups attached to a magnesium atom in component (A) to a halide group;

(II) recovering the resultant hydrocarbon insoluble product, washing said product with fresh inert diluent; and mixing the resultant washed product with fresh inert diluent; and

(III) combining the product from (II) with (C) a transition metal compound represented by the formula TmY_nX_{z-n} wherein Tm, Y, X, z and n are as defined as above; z-n has a value of from zero up to the valence of Tm; in a quantity so as to provide a Mg:Tm atomic ratio of from about 0.05:1 to about 50:1;

(IV) reacting the product from (III) with (D) a suitable reducing agent or mixture of reducing agents selected from compounds represented by the formulas $B(R^3)_{3-m}X_m$, $Al(R^3)_{3-m}X_m$, ZnR^3X, ZnR^3_2, MgR^3X or MgR^3_2 wherein each X is a halogen or a hydrocarbyloxy group having from 1 to about 20 carbon atoms or an NR^3_2 group; each R^3 is independently hydrogen or a hydrocarbyl group having from 1 to about 20 carbon atoms; m has a value from zero to 2; said reducing agent being employed in a quantity so as to provide an R^3:Tm ratio of from about 1:1 to about 50:1; and

(V) recovering and washing with fresh inert diluent the resultant solid hydrocarbon insoluble catalyst produced in step IV; and

with the proviso that when said halide source, component (I-B), is a reducing aluminum halide and is employed in a quantity such that the R^3:Tm ratio is satisfied, then steps II and IV may be omitted.

4,496,661

HIGH EFFICIENCY CATALYST FOR POLYMERIZING OLEFINS

Randall S. Shipley, Alvin, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 24, 1983, Ser. No. 545,311
Int. Cl.³ C08F 4/64
U.S. Cl. 502—115 7 Claims

1. In a catalytic reaction product of (A) a tetravalent titanium compound; (B) an organomagnesium component; and (C) a halide source, however if either component (B) or (C) does not contain sufficient quantities of aluminum, then (D) an organoaluminum compound is also present, said catalytic reaction product having atomic ratios of

Mg:Ti is from about 0.1:1 to about 500:1;

Al:Ti is from about 0.1:1 to about 500:1;

excess X:Al is from about 0.0001:1 to about 5:1;

the improvement which comprises employing as the tetravalent titanium compound, a mixture of at least one of (a) a tetrahydrocarbyloxytitanium compound or (b) a titanium tetrahalide with (c) a titaniumoxydihalide in a molar ratio of (a+b):(c) of from about 0.1:1 to about 10:1; and wherein excess X is the amount of excess halide above that which would be theoretically required to convert the magnesium compound to the dihalide.

4,496,662

CATALYSTS FOR PARA-ETHYLTOLUENE DEHYDROGENATION

Chin-Chiun Chu, North Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 23, 1982, Ser. No. 452,471
Int. Cl.³ B01J 23/78, 23/86
U.S. Cl. 502—183 4 Claims

1. In a dehydrogenation catalyst composition consisting essentially of the following components:

(a) from about 30% to 60% by weight of iron oxide, calculated as ferric oxide;

(b) from about 13% to 48% by weight of potassium compound, calculated as potassium oxide; and

(c) from about 0% to 5% of chromium compound, calculated as chromic oxide,

the improvement consisting essentially of combining with said components (a), (b), and (c) a modifying component (d), said modifying component (d) being capable of enhancing the conversion of para-ethyltoluene when said modified catalyst is used to promote the preferential formation of para-methylstyrene from para-ethyltoluene, said modifying component (d) being a magnesium compound, said magnesium compound being present to the extent of from about 1% to 15% by weight of said catalyst composition, calculated as magnesium oxide.

4,496,663

PRODUCTION OF CATALYSTS

Charles B. Hanson, and Colin R. Harrison, both of Guisborough, England, assignors to Imperial Chemical Industries PLC, United Kingdom

Filed Jun. 20, 1983, Ser. No. 505,820
Claims priority, application United Kingdom, Jun. 29, 1982, 8218709
Int. Cl.[3] B01J *27/14, 23/16, 21/00*
U.S. Cl. 502—209
5 Claims

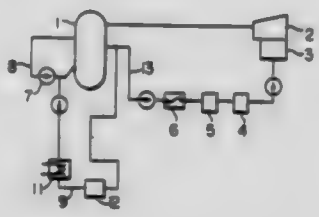
1. A process for producing a catalyst consisting essentially of a vanadium/phosphorus mixed oxide for the oxidation of butane to maleic anhydride, said process comprising the steps of milling a precursor of the mixed oxide catalyst in the substantial absence of liquid until the mean crystallite size of the catalyst precursor is at most 1000 Angstroms, and subsequently forming the milled catalyst precurosr into catalyst pellets.

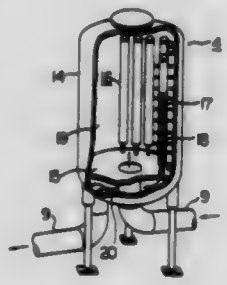
4,496,664

OXINE IMPREGNATED ACTIVATED CHARCOAL METAL ION ADSORBENT

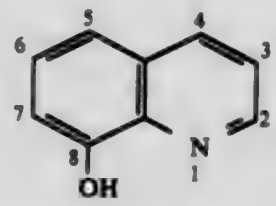
Kenji Motojima, Mito, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 24, 1982, Ser. No. 361,415
Claims priority, application Japan, Mar. 31, 1981, 56-46482
Int. Cl.[3] B01J *20/26, 20/20;* G21F *9/12*
U.S. Cl. 502—402
22 Claims



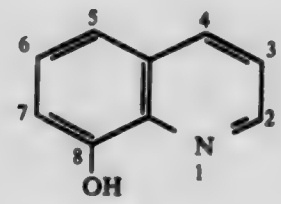


1. A process for preparing a metal ion adsorbent stable at temperatures up to about 300° comprising:
providing activated charcoal;
providing up to about 35 percent by weight based on the weight of the charcoal of an oxine having the following structure:



or its derivative substituted at positions 2–7 of the structure;
adsorbing the oxine or its derivative onto the activated charcoal; and
heating the oxine or oxine derivative adsorbed activated charcoal at a temperature of 150° to 200° C., thereby binding the oxine or its derivative to pores of the activated charcoal through polymerization or condensation.

3. A process for preparing a metal ion adsorbent comprising:
(a) adsorbing an oxine having the following structure:



or its derivative substituted at positions 2–7 of the structure; onto activated charcoal;
(b) dipping the material resulting from (a) into an aqueous aldehyde solution or or an aqueous solution of hexamethylenetetramine;
(c) synthesizing methyloloxine from the material resulting from (b) on the activated charcoal in the presence of acid or alkali as a reaction promoter; and
(d) heating the material resulting from (c) to bind it together and to the pores of the activated charcoal through polymerization or condensation.

6. A process according to claim 3, wherein a phenol is also adsorbed in step (b).

4,496,665

PROCESS FOR CRACKING HIGH-BOILING HYDROCARBONS USING CONTINUOUS ADDITION OF ACIDITY ENHANCING ADDITIVES

William P. Hettinger, Jr., Russell; Stephen M. Kovach, Ashland, and Hubert W. Beck, Russell, all of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 277,751, Mar. 30, 1981, Pat. No. 4,432,890. This application Mar. 11, 1983, Ser. No. 474,619
Int. Cl.[3] B01J *33/00, 21/00*
U.S. Cl. 502—521
7 Claims

1. A process for enhancing activity of a cracking catalyst contaminated with heavy metals in the range of about 0.3 to about 3 percent by weight based on the weight of the catalyst comprising contacting said catalyst with a feedstock having heavy metals and high Conradson carbon precursor content and adding to said cracking catalyst continually a metal selected from the group consisting of titanium and zirconium.

2. A process as described in claim 1 in which the additive is a compounds of titanium.

3. A process as described in claim 1 in which the additive is a zirconium compound.

7. A process as described in claim 1 in which the additive is combined with the feedstock prior to introduction to the reactor.

4,496,666

UPGRADING SYNTHESIS GAS

Frederick A. Pesa, Aurora, and Anne M. Graham, Northfield, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 333,218, Dec. 21, 1981, abandoned. This application Dec. 2, 1983, Ser. No. 557,725
Int. Cl.[3] C07C *1/04, 27/06*
U.S. Cl. 518—706
15 Claims

1. A process for the upgrading of synthesis gas wherein alcohol products are obtained comprising contacting carbon monoxide and hydrogen in the vapor phase at a reaction temperature of at least 250° C. and a reaction pressure of at least 500 psi with a catalyst of the formula

$$A_aRuM_bO_x$$

wherein
A is an alkali metal,
M is Pd, Pt or mixtures thereof, and
wherein
a is about 0.002 to about 2,
b is about 0.1 to about 10, and

x is the number of oxygens needed to fulfill the valence requirements of the other elements.

4,496,667

METHOD FOR CLEANING ORGANICALLY FOULED ANION EXCHANGE RESINS

David W. Reichgott, and Michael J. Leary, both of Richboro, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Aug. 15, 1983, Ser. No. 523,246
Int. Cl.[3] C08D 5/20; B01J 1/09
U.S. Cl. 521—26 6 Claims

1. In a method of removing organic foulants selected from the group consisting of humic acids, lignins, and tannins from anionic exchange resin beads wherein said foulants have coated the resin beads and have blocked or entered the pores thereof, and wherein said fouled resin is treated with a member or members selected from the group consisting of brine and caustic to aid in removal of said foulants, the improvement comprising also contacting said fouled resin with an aqueous solution comprising consisting essentially of an effective cleaning agent having the formula:

R—O—H

wherein R is alkyl (C_1–C_4).

4,496,668

CELLULAR THERMOSET POLY(DICYCLOPENTADIENE)

Norman R. Newburg, deceased, late of Wilmington, Del. (by Betty Newburg, executrix), assignor to Hercules Corporated, Wilmington, Del.

Continuation of Ser. No. 526,835, Aug. 26, 1983,. This application May 14, 1984, Ser. No. 610,156
Int. Cl.[3] C08J 9/14
U.S. Cl. 521—91 5 Claims

1. A cellular thermoset polymer comprised of polymerized units of dicyclopentadiene monomer, wherein the cells of said cellular polymer are small and uniform.

4,496,669

METHOD OF MAKING CELLULAR CROSSLINKED POLY(DICYCLOPENTADIENE)

Douglas R. Leach, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 552,872, Nov. 17, 1983, Pat. No. 4,458,037. This application Jun. 21, 1984, Ser. No. 623,307
The portion of the term of this patent subsequent to Jul. 3, 2002, has been disclaimed.
Int. Cl.[3] C08J 9/14; C08F 4/78
U.S. Cl. 521—93 12 Claims

1. A foamed cross-linked polymerized dicyclopentadiene polymer composition comprising:

(a) cross-linked polymerized dicyclopentadiene polymer; and

(b) a dialkylaluminum iodide component.

4,496,670

COATED PARTICULATE FILLERS COMPRISES A PHOSPHINIC ACID GROUP-CONTAINING UNSATURATED ORGANIC POLYMER

Gerson M. F. Vas, Welling, and Leslie E. Shiel, Gravesend, both of England, assignors to Blue Circle Industries PLC, London, England

Filed Nov. 15, 1983, Ser. No. 551,868
Claims priority, application United Kingdom, Nov. 24, 1982, 8233574
Int. Cl.[3] C08K 9/00; B32B 5/16
U.S. Cl. 523—205 21 Claims

1. A particulate filler which comprises filler particles to the surface of which there is bound a phosphinic acid group-containing unsaturated organic polymer.

4,496,671

CONTINUOUS CARBON FILAMENT FIBER BUNDLES

Minoru Yoshinaga, and Atsushi Sumida, both of Ehime, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jul. 7, 1982, Ser. No. 396,065
Claims priority, application Japan, Jul. 14, 1981, 56-108862
Int. Cl.[3] C08K 9/00; B32B 9/00
U.S. Cl. 523—206 12 Claims

1. A bundle of continuous carbon filament fibers treated with a sizing agent containing as an active component a water-dispersible resin composition consisting of about 65% to 95% by weight of a water-dispersible urethane compound having at least one epoxy group and at least one quaternary ammonium group and about 5% to 35% by weight an epoxy resin.

11. A carbon fiber-reinforced composite material which comprises at least one resin matrix and the bundle of continuous carbon filament fibers as defined in claim 1.

4,496,672

PROCESS FOR COATING AN ELECTRICALLY CONDUCTIVE SUBSTRATE

Wolfgang Batzill, Münster, and Horst Diefenbach, Nottuln, both of Fed. Rep. of Germany, assignors to BASF Farben & Fasern A.G., Hamburg, Fed. Rep. of Germany

Division of Ser. No. 320,504, Nov. 12, 1981, Pat. No. 4,416,753. This application Aug. 30, 1982, Ser. No. 413,145
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1980, 3044447
Int. Cl.[3] C08L 63/00
U.S. Cl. 523—404 10 Claims

1. In an aqueous dispersion comprising a cationic coating agent together with a pulverulent, synthetic resin for coating an electrically conductive substrate connected as a cathode in an electrocoating process and subsequently hardening the coating, the improvement comprising said aqueous dispersion consisting essentially of a mixture of:

(A) said cationic coating agent comprising water-dispersed or water-soluble cationic synthetic resins containing basic groups prepared by reacting resins containing epoxide groups and bases selected from the group consisting of organic amines and Mannich bases followed by protonation with acids to form a carrier resin; and

(B) said pulverulent, synthetic resin comprising dispersed, finely-divided, solid, ionic, plastic powders selected from the group consisting of epoxide resins, polyester resins, acrylate resins, polyurethane resins and polyamide resins having ionic groups selected from the group consisting of ammonium, sulfonium, and phosphonium ions.

4,496,673

CROSSLINKABLE POLYESTER BODY SOLDER OF POWDERED METAL

Paul L. Hester, Jr., Massillon; Nelson C. Bletso, Kent, and William C. T. Tung, Tallmadge, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 1, 1982, Ser. No. 432,204
Int. Cl.[3] C08K 3/08
U.S. Cl. 523—458 3 Claims

1. A blend of about an equivalent weight of a carboxyl terminated polyester having a carboxyl end group equivalent weight of 900 to 1200 with an 0.8 to 1.2 equivalent weight of an epoxy curing agent having an epoxy equivalent weight of about 70 to 1000, copolyester melt adhesive, and 20 to 70% by weight of metallic powder selected from the class of iron and aluminum, said copolyester melt adhesive having an intrinsic visosity of 0.05 to 1.0 measured at 30° C. in 60/40 phenol/tetrachloroethane and a melting point of 125° to 145° C. to give a blend that adheres to metals and is sandable in solid state to a feathered edge.

4,496,674

GASKET MATERIALS COMPRISING POLYESTER AND RICE HULLS

Wendell A. Ehrhart, Hellam; Ronald S. Lenox, East Hempfield Township, Westmoreland Co., and Moses Sparks, Jr., Manheim Township, Lancaster County, all of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Nov. 17, 1983, Ser. No. 552,622
Int. Cl.[3] C08K 5/00, 11/00
U.S. Cl. 523—500 63 Claims

1. A cured gasket composition obtained from a mixture comprising by weight

100 parts of a rubber binder;

from about 5 to about 1,000 parts of pulverized rice hulls; and

from about 1 to about 200 parts of a polyester derived from at least one monomeric diol and at least one monomeric diacid or acid derivative, said polyester being at least partially crystalline under ambient conditions and having a Tg of from about −50° to about +80° C. and a weight average molecular weight of from about 1,000 to about 500,000.

4,496,675

AQUEOUS DISPERSIONS BASED ON A POLYURETHANE SYNTHETIC RESIN

Hans-Dieter Hille, Bergisch Gladbach, and Rolf Harten, Münster, both of Fed. Rep. of Germany, assignors to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

Filed Aug. 18, 1983, Ser. No. 524,358
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1982, 3230851
Int. Cl.[3] C08L 93/02, 75/12
U.S. Cl. 524—77 21 Claims

1. In an aqueous dispersion based on a polyurethane synthetic resin obtained by reacting (a) a hydroxyl-containing polyester with (b) a diisocyanate to form a first intermediate product and reacting said first intermediate product with (c) a compound which contains at least two groups which react with isocyanate groups and at least one group capable of anion formation to form a second intermediate product, and with a chain-lengthening agent, the improvement comprising:

said hydroxyl-containing polyesters (a) comprising an unsaturated linear polyester or a mixture of an unsaturated linear polyester with a linear diol, said polyester having a molecular weight of 500 to 2,000, said polyester, or said mixture, containing at least 0.4 olefinically unsaturated double bonds per 1,000 molecular weight units, said first intermediate product having terminal isocyanate groups, said second intermediate product having terminal isocyanate groups, said group capable of anion formation having been neutralized by means of a tertiary amine before reaction, said second intermediate product transferred into a predominantely aqueous phase, and said isocyanate groups of said second intermediate product reacted with a diamine, polyamine or mixture thereof having primary amino groups, secondary amino groups or mixtures thereof, and subsequently added to said aqueous phase, as a further binder, base-hydrolyzed shellac, where in each case, based on the solids content, said polyurethane synthetic resin content is 40 to 70% by weight, said hydrolyzed shellac content is 60 to 30% by weight, and said polyurethane synthetic resin content and said hydrolyzed shellac content add up to 100%.

2. The dispersion of claim 1, which contains wetting agents, emulsifiers or mixtures thereof in an amount of 1 to 25% by weight, based on the total weight of dispersion.

3. The dispersion of claim 2, wherein said unsaturated polyester is a polyester of maleic anhydride and a diol.

4. The dispersion of claim 3, wherein said diisocyanate is aliphatic, cycloaliphatic or a mixture thereof.

5. The dispersion of claim 4, wherein said compound (c) is a dihydroxycarboxylic acid or a dihydroxysulfonic acid.

4,496,676

ULTRAVIOLET-ABSORBING STABILIZERS SUBSTITUTED BY AN ALIPHATIC HYDROXYL GROUP

Martin Dexter, Briarcliff Manor, and Roland A. E. Winter, Armonk, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 318,648, Nov. 5, 1981, Pat. No. 4,414,393.
This application Sep. 30, 1982, Ser. No. 431,499
Int. Cl.[3] C08L 77/10
U.S. Cl. 524—99 8 Claims

1. An ultraviolet-absorbing, matrix-reactive compound having the formula

$$E—(G—R)_n \quad (I)$$

$$L—(G—E)_m \quad (II)$$

or

$$[G—E_1—G—Q]_p \quad (III)$$

wherein

E or E_1 is a radical derived from an oxanilide,

G is $—OCH_2—CHOH—$ where E or E_1 is attached to the oxygen atom,

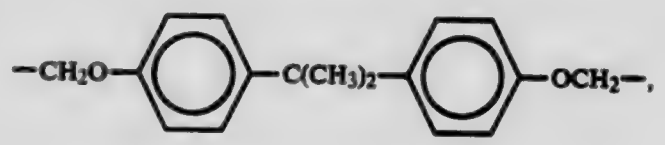
R is alkyl of 1 to 18 carbon atoms, phenyl, p-tolyl or $—CH_2OT$ where

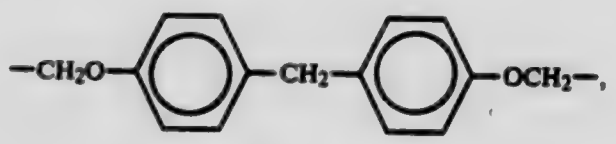
T is alkyl of 1 to 20 carbon atoms or alkenyl of 3 to 20 carbon atoms,

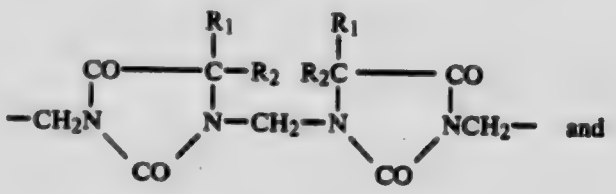
n is 1 or 2

m is 2 or 3,

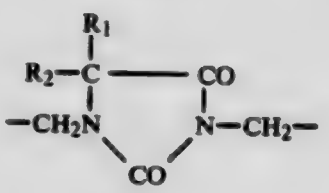
L, when m is 2, is a direct bond, alkylene of 1 to 6 carbon atoms, phenylene, or a radical selected from the group consisting of







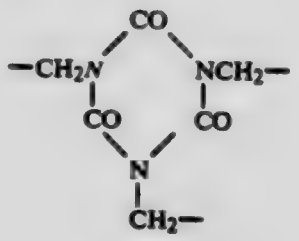
and



where

R_1 and R_2 are independently alkyl of 1 to 6 carbon atoms or together are tetramethylene or pentamethylene, or

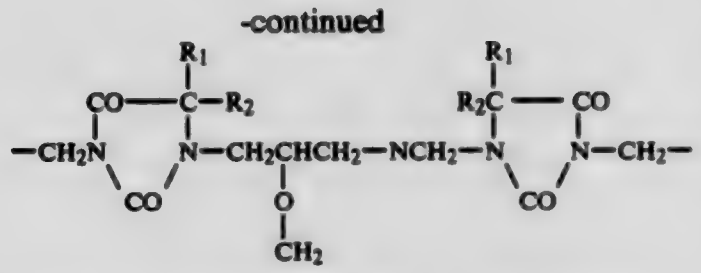
L, when m is 3, is



or



-continued



Q has the same meaning as L where m is 2, and p is 1 to 4.

4,496,677

STABILIZED FLUOROPOLYMER COMPOSITION

James E. Briggs, Jr., Hackettstown; Kwang-Ho Chu, Flemington, and Daniel C. Chung, Bridgewater, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

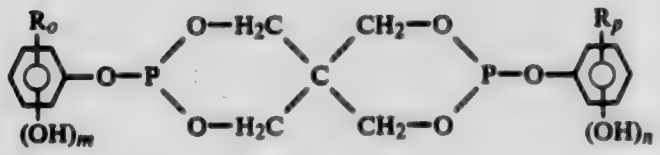
Filed Feb. 16, 1984, Ser. No. 580,964

Int. Cl.[3] C08L *27/12*

U.S. Cl. 524—108 8 Claims

1. A stabilized fluoropolymer composition having improved thermal stability which comprises a melt processable fluoropolymer, and

(a) 0.2 percent to 3 percent by weight of the polymer of hindered phenol pentaerythritol diphosphite having the general formula:



wherein the R substituents, which may be the same or different, are independently selected from the group consisting of hydrogen and alkyl, straight or branched chain, having from 1 to about 18 carbon atoms; and wherein m and n are integers from 1 to 2, and o and p are integers from 1 to 5, with the proviso that the sums of m+o, and n+p may not exceed 5, and

(b) 0.01 percent of 3.0 percent by weight of the polymer of a salt of a monocarboxylic acid having from 6 to 24 carbon atoms and a metal of Group II of the Periodic Table.

4,496,678

VISCOSITY STABILIZED DISPERSIONS

Wolfgang D. Wenzel, New Martinsville, and Michael N. Carmosino, Moundsville, both of W. Va., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed May 21, 1984, Ser. No. 612,278

Int. Cl.[3] C08K *5/05*

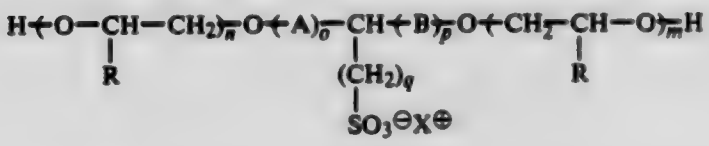
U.S. Cl. 524—157 6 Claims

1. A composition comprising:

(a) a dispersion of a polyurea and/or polyhydrazodicarbonamide in a relatively high molecular weight organic compound containing at least two hydroxyl groups, wherein the concentration of the polyurea and/or polyhydrazodicarbonamide is from 1 to 40% by weight of the dispersion.

(b) from 2 to 10% by weight of water based on the weight of component (a), and

(c) from 3 to 10% by weight based on the weight of components (a) and (b), of a sulphonate diol corresponding to the formula:



wherein

A and B may be the same or different and represent a difunctional aliphatic hydrocarbon radical containing from 1 to 6 carbon atoms;

R represents hydrogen, an aliphatic hydrocarbon radical containing from 1 to 4 carbon atoms, or a phenyl radical;

$X\oplus$ represents an alkali metal cation, or an ammonium group which may be substituted;

n and m represent the same or different numbers of from 1 to 30;

o and p each represent 0 or 1; and

q represents 0, 1 or 2.

4,496,679

STABILIZATION OF POLYPHENYLENE ETHER SOLUTIONS

Juergen Hambrecht, Heidelberg; Rudi W. Reffert, Beindersheim; Adolf Echte, and Johann Swoboda, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

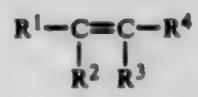
Filed Sep. 13, 1983, Ser. No. 531,656

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1982, 3234034

Int. Cl.[3] C08L *71/04*

U.S. Cl. 524—111 5 Claims

1. A process for the stabilization of solutions of high molecular weight polyphenylene ethers, which solutions are formed by conducting an oxidative coupling reaction of oxygen and a monohydric phenol at a temperature of from 15° to 50° C. in the presence of a catalyst complex of a copper salt and an organic amine in the presence of a solvent in a weight ratio of from 1:1 to 20:1, based on the monomeric phenol, said monohydric phenol having alkyl substituents in the two ortho-positions and optionally in the meta-positions but not in the para-position, which stabilization process comprises: contacting the formed reaction solution containing the high molecular weight polyphenylene ethers with from 0.1 to 100 mmoles per mole of monomeric phenol of a compound of the structure



(I)

where R^2 and R^3 can be identical or different and each is OH, NH_2, NHR^5, where R^5 is alkyl or cycloalkyl, or SH, and R^1 and R^2 are identical or different, being hydrogen, alkyl, cycloalkyl, aryl, carbonyl, carboxyl, carboxyalkyl or nitrile, and can be linked to form a ring.

4,496,680

SILICONE FLAME RETARDANTS FOR NYLON

Bruce A. Ashby, Schenectady, N.Y., assignor to General Electric Company, NY, N.Y.

Filed Mar. 14, 1984, Ser. No. 589,293

Int. Cl.[3] C08L *77/00*

U.S. Cl. 524—265 43 Claims

1. A flame retardant composition comprising:

(a) about 50 to about 90 percent by weight of one or more nylon materials, and

(b) about 10 to about 50 percent by weight of a composition effective for imparting flame resistance comprising:

(i) about 20 to about 75 percent by weight based on (b) of diphenylsilanediol, low molecular weight phenyl substituted siloxane diol, or mixture thereof;

(ii) about 3 to about 30 percent by weight based on (b) of Group IIA metal carboxylic acid salt;

(iii) about 10 to about 60 percent by weight based on (b) of aluminum trihydrate; and

(iv) about 10 to about 50 percent by weight based on (b) of organic halide.

4,496,681

FIRE RETARDANT CONCENTRATE

Frank E. Lordi, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 31, 1980, Ser. No. 221,858
Int. Cl.³ C08K 5/06
U.S. Cl. 524—371 2 Claims

1. A fire retardant concentrate consisting essentially of the combination of:

about 45% to about 55% of a radial block copolymeric resin having about 50 to about 80% styrene and about 50 to about 20% alkadiene,

about 30% to about 45% ether having two brominated phenyl groups said ether being selected from the group consisting of brominated phenyl ether and 1, 2, bis-phenoxy ethane having two brominated phenyl groups,

about 10 to about 25% antimony trioxide, and about 0.05 to about 5% modifiers comprising about 0.05 to about 0.15% antioxidant phenol having stericlly hindering alkyl substituents, said concentrate being pelleted, said pellets of concentrate being blendable with pellets of styrene-maleic anhydride copolymeric resin to provide blends having a slower burning rate than products made from said styrene-maleic anhydride pellets.

4,496,682

CURABLE FLUOROPOLYMER CONTAINING AROMATIC AMINE

Walter W. Schmiegel, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 500,055, Jun. 1, 1983, abandoned. This application Feb. 29, 1984, Ser. No. 584,582
Int. Cl.³ C08L 27/16
U.S. Cl. 524—545 15 Claims

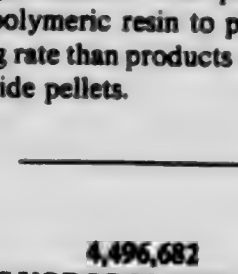
1. A fluoroelastomer composition comprising:

A. An elastomeric copolymer of vinylidene fluoride and at least one other fluorinated monomer,

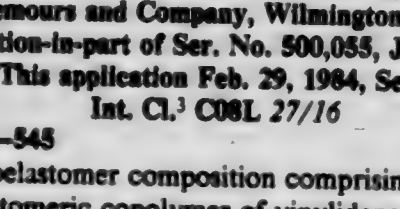
B. a vulcanization accelerator selected from the class consisting of quaternary phosphonium compounds and quaternary ammonium compounds,

C. a metal compound selected from the group consisting of divalent metal oxides, divalent metal hydroxides, and mixtures of such oxides or hydroxides with metal salts of weak acids,

D. a press-cure crosslinking agent selected from the class consisting of a bisphenol or an ammonium or a phosphonium salt thereof or a polyhydroxy phenol of the formula:

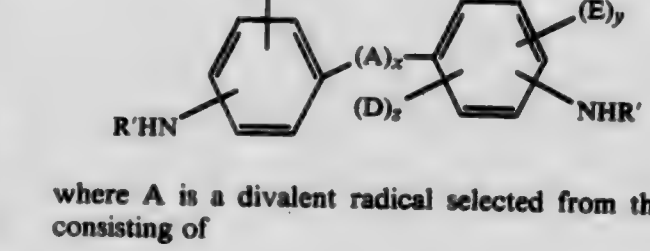


where R′ is H or akyl or aryl, or of the formula:

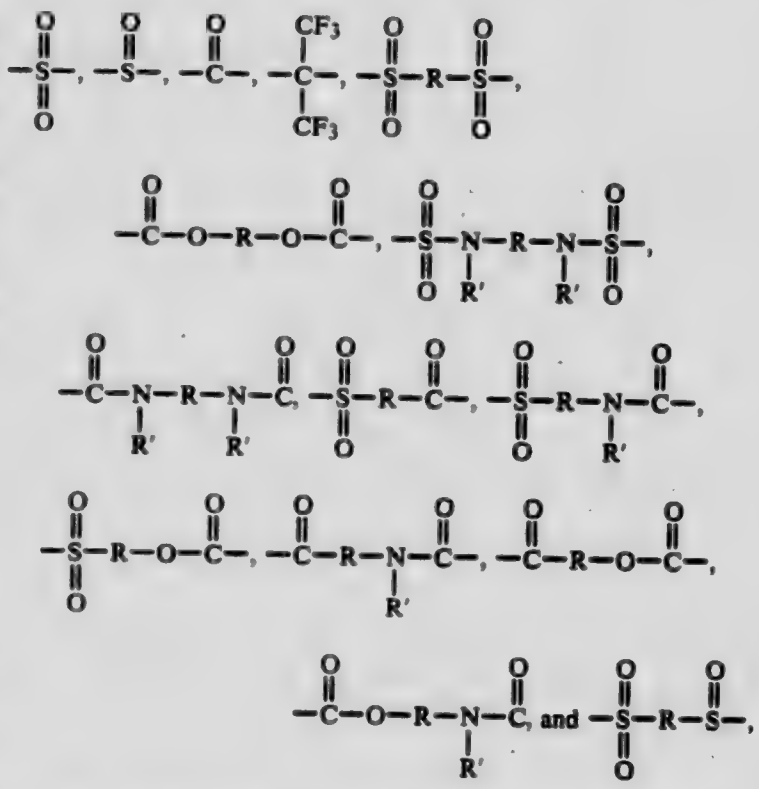


and

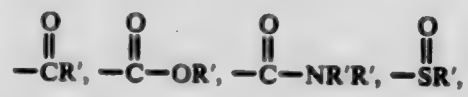
E. a postcure cross-linking agent having the formula:



where A is a divalent radical selected from the group consisting of



and x is zero or 1, but if x is zero then y is not zero; E is selected from the group consisting of



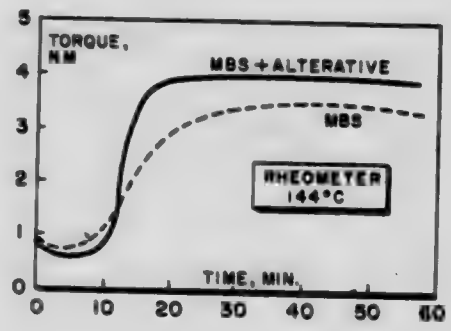
F, Cl, Br, I, —CF_3, —NO_2, and —CN; D is selected from the class consisting of R′ and E; R is alkylene, or arylene; R′ is alkyl, aryl or H; and y is zero, 1, 2, 3 or 4; and z is zero, 1, 2, 3, or 4.

4,496,683

RUBBER COMPOSITIONS CONTAINING A VULCANIZATION SYSTEM ALTERATIVE

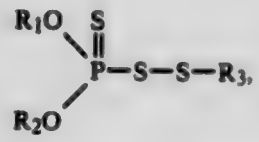
Elichi Morita, Mililani Town, Hi., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 11, 1982, Ser. No. 407,028
Int. Cl.³ C08K 3/04
U.S. Cl. 524—571 12 Claims



1. A composition comprising vulcanizable diene rubber, a cross-linking agent, a vulcanization accelerator selected from azoles, sulfenamides, thioureas, thiurams, xanthates, dithiocar-

bamates and guanidines and from 0.1 to 5.0 parts by weight per 100 parts of the rubber by weight of a vulcanization system alterative of the formula



wherein R_1 and R_2 are the same or different radicals selected from alkyl of 1–12 carbon atoms, phenyl, cycloalkyl of 3–8 carbon atoms and alkaryl and aralkyl of 7–12 carbon atoms, and R_3 is selected from the same radicals as R_1 or R_2, optionally substituted with one or more halogen, nitro, alkoxy, carboalkoxy, acyl, acyloxy, amido, cyano, thio or sulfonyl substituents.

4,496,684

URETDIONE GROUP-CONTAINING POLYURETHANE OLIGOMERS AND AQUEOUS DISPERSIONS THEREOF

James M. O'Connor, Clinton, and Wilhelm J. Schnabel, Branford, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Jun. 1, 1984, Ser. No. 616,349
Int. Cl.³ C08G *18/38*
U.S. Cl. 524—591 **25 Claims**

1. A process for preparing a polyurethane oligomer, comprising the steps of:

(a) reacting a uretdione group-containing organic polyisocyanate with an isocyanate reactive hydrogen atom-containing compound in an equivalent ratio of NCO to OH ranging from about 1/6 to about 1/1.8 to form a hydroxyl-terminated prepolymer, said isocyanate reactive hydrogen atom-containing compound having a molecular weight from about 62 to about 7,000 and an average functionality from about 2 to about 8; and

(b) reacting said hydroxyl-terminated prepolymer with a dicarboxylic acid anhydride to form a polyurethane oligomer having a final free OH content from about 0.2 to about 10 percent and a carboxylic acid group content from about 0.6 to about 13 percent.

4,496,685

ADHESIVE COMPOSITION

Takashi Nagasawa, Daito, and Tiaki Nakata, Ibaraki, both of Japan, assignors to Sumitomo Chemical Company, Limited and Taoka Chemical Company, Limited, both of Osaka, Japan

Filed Jun. 7, 1984, Ser. No. 618,413
Int. Cl.³ C08K *5/49*
U.S. Cl. 524—708 **7 Claims**

1. An adhesive composition comprising an alpha-cyanoacrylate monomer and a phosphazene compound incorporated therein.

4,496,686

RADIATION-CURABLE COATINGS CONTAINING REACTIVE PIGMENT DISPERSANTS

Robert E. Ansel, Des Plaines, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Filed May 7, 1984, Ser. No. 607,790
Int. Cl.³ C08K *3/10*
U.S. Cl. 524—850 **12 Claims**

1. A liquid coating composition adapted to be cured by exposure to ionizing radiation comprising, a liquid vehicle of coating viscosity having an ethylenically unsaturated portion comprising one or more polyethylenically unsaturated materials adapted to cure on radiation exposure, pigment dispersed in said vehicle, and an ethylenically unsaturated radiation-curable dispersant containing a carboxy group for wetting said pigment and assisting in the stable dispersion of said pigment in said vehicle, said dispersant being a half amide or half ester of an ethylenically unsaturated polycarboxylic acid anhydride with an organic compound having a molecular weight of from 100 to 4000 and which contains a single hydroxy group or a single amino group as the sole reactive group thereof.

4,496,687

AQUEOUS EMULSION-TYPE SILICONE COMPOSITIONS

Fumio Okada; Toshio Oba, and Morizo Nakazato, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 444,206, Nov. 24, 1982, abandoned. This application Jan. 27, 1984, Ser. No. 574,669
Claims priority, application Japan, Nov. 27, 1981, 56-190115
Int. Cl.³ C08L *83/02*
U.S. Cl. 524—859 **12 Claims**

1. An organopolysiloxane-containing aqueous emulsion composition which comprises

(A) an aqueous organopolysiloxane emulsion comprising

(A-1) 100 parts by weight of an organopolysiloxane having at least two hydroxy groups directly bonded to the silicon atoms in a molecule,

(A-2) from 0.3 to 20 parts by weight of an anionic surface active agent, and

(A-3) water as the dispersing medium of the components (A-1) and (A-2),

(B) from 1 to 60 parts by weight as solid of a uniform dispersion comprising

(B-1) from 0.1 to 20% by weight, based on the component (B-2) mentioned below as solid, of a reaction product of a carboxylic acid anhydride with an organosilane having a functional amino group in a molecule or a hydrolysis product thereof, and

(B-2) a colloidal silica in an aqueous suspension,

(C) a catalytic amount of a curing catalyst.

4,496,688

HEAT RESISTANT POLYESTER(AMIDE) COMPOSITION

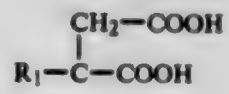
Robert E. Hefner, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 21, 1983, Ser. No. 477,102
The portion of the term of this patent subsequent to Mar. 6, 2001, has been disclaimed.
Int. Cl.³ C08L *67/06, 77/10*
U.S. Cl. 525—44 **8 Claims**

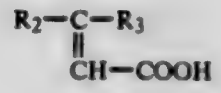
1. A curable resinous composition comprising

A. about 5 to about 95 weight percent of an unsaturated polyester, an unsaturated polyesteramide, or a mixture thereof

B. about 95 to about 5 weight percent of an unsaturated mixture consisting of 15 to 85 weight percent of an ethylenically unsaturated monomer and 85 to 15 weight percent of a non-halogenated dicyclopentadiene or polycyclopentadiene bis or tris ester of an unsaturated polycarboxylic acid having one of the formulae



I.



II.

where

R_1 is $=CH_2$ or $=C(CH_3)—CH_3$

R_2 is hydrogen or $—CH_2—COOH$

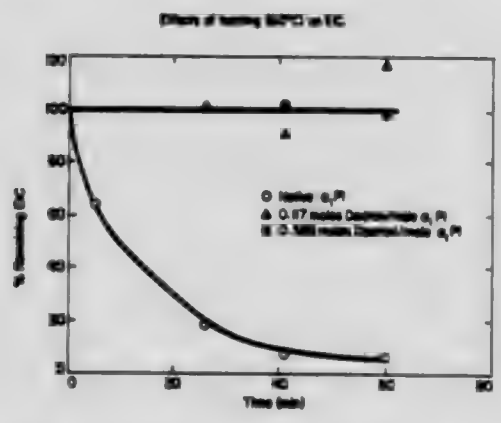
R_3 is hydrogen when R_2 is a $—CH_2—COOH$ group, or $—COOH$.

4,496,689

COVALENTLY ATTACHED COMPLEX OF ALPHA-1-PROTEINASE INHIBITOR WITH A WATER SOLUBLE POLYMER

Gautam Mitra, Kensington, Calif., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Dec. 27, 1983, Ser. No. 565,810
Int. Cl.³ C07G 7/00
U.S. Cl. 525—54.1 45 Claims



1. A process for producing a covalently attached complex of alpha-1-proteinase inhibitor with a water soluble polymer having hydroxy groups pendant to the polymer backbone, which hydroxy groups and amino groups pendant to alpha-1-proteinase inhibitor are chemically reactive with a polyfunctional coupling compound, comprising the steps of:

(a) contacting the water soluble polymer having hydroxy groups pendant to the polymer backbone, which hydroxy groups are chemically reactive with a polyfunctional coupling compound, with a polyfunctional coupling compound having functional groups which are reactive with said hydroxy groups in a chemical activation reaction to obtain an activated intermediate which is reactive with amino groups pendant to the protein, alpha-1-proteinase inhibitor; and

(b) contacting the activated intermediate from step (a) with alpha-1-proteinase inhibitor in a chemical coupling reaction to effect covalent attachment and to thereby obtain a covalently attached complex of alpha-1-proteinase inhibitor with the water soluble polymer.

4,496,690

ALLOYS OF STYRENIC RESINS AND POLYAMIDES

Thomas S. Grant, and Charles L. Myers, both of Vienna, W. Va., assignors to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Continuation of Ser. No. 326,149, Nov. 30, 1981, abandoned.
This application Jun. 3, 1983, Ser. No. 500,719
Int. Cl.³ C08L 77/00
U.S. Cl. 525—66 7 Claims

1. A polymer composition comprising from 5 to 95 wt.% of a polyamide and correspondingly from 95 to 5 wt% of a resin selected from the group consisting of copolymers consisting of a styrene, an acrylonitrile and an ethylenically-unsaturated carbonamide, and graft polymers thereof on a rubbery substrate polymer, said resin having incorporated therein from about 0.5 to about 15 parts by weight of said copolymerizable ethylenically-unsaturated carbonamide per hundred parts by weight resin.

4,496,691

ADDITIVES FOR LUBRICATING OILS CONTAINING STYRENE AND HEAVY C_{12}–C_{20} ALKYL ESTERS OF METHACRYLIC ACID, PREPARATION METHOD AND APPLICATIONS

Yves Proux, Paris, and Alain Perron, Herblay, both of France, assignors to Societe Francaise d'Organo-Synthese, Gennevilliers, France

Filed Jan. 8, 1982, Ser. No. 338,001
Claims priority, application France, Jan. 12, 1981, 81 00410
Int. Cl.³ C08L 39/04, 51/00
U.S. Cl. 525—73 18 Claims

1. An additive for lubricating oils, comprising a random copolymer consisting of a polymerized mixture of styrene or lower alkyl-substituted styrene, at least one C_{12}–C_{20} alkyl ester of methacrylic acid selected from the group consisting of C_{12}–C_{15} alkyl esters of methacrylic acid and C_{16}–C_{20} alkyl esters of methacrylic acid, and an ester of methacrylic acid selected from the group consisting of dialkylaminoalkyl esters of methacrylic acid;

said copolymer in addition having grafted onto it at least one dispersing monomer selected from the group consisting of N-vinylpyrrolidone, N-vinylimidazole, N-vinyl-2H-pyridine, and other N-vinyl monomers containing a nitrogen function, thereby producing a modified copolymer;

said alkyl esters of methacrylic acid containing at least 80% by weight of the C_{16}–C_{20} alkyl esters of methacrylic acid relative to the total alkyl esters of methacrylic acid employed;

said modified copolymer containing between 35 and 55% by weight of styrene or lower alkyl-substituted styrene, and having a polydispersity of from 1 to about 2.5, a solubility parameter of about 8, and a weight average molecular weight between 80,000 and 200,000.

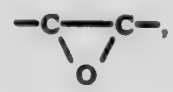
4,496,692

MOLDING COMPOSITIONS OF POLYVINYL CHLORIDE AND POLYMERIZABLE PLASTICIZERS

Changkiu K. Riew, and Frank H. Howard, both of Akron, Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 30, 1983, Ser. No. 567,285
Int. Cl.³ C08L 63/02, 27/22
U.S. Cl. 525—112 6 Claims

1. In a molding composition of polymeric materials containing polyvinyl chloride copolymers or homopolymers, free-radically polymerizable plasticizers, and a free radical initiator, the improvement which essentially comprises (1) one or more dehydrochlorinating agents, (2) one or more ionically polymerizable monomers and/or macromers containing the oxirane group



and (3) one or more heterofunctional monomers containing at least one oxirane group and at least one $CH_2{=}C<$ group per molecule.

4,496,693

COMPATIBILIZATION OF POLYCARBONATE BLENDS

Niles R. Rosenquist, Evansville, and John A. Tyrell, Mt. Vernon, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 1, 1983, Ser. No. 557,006
Int. Cl.³ C08L 69/00
U.S. Cl. 525—146 18 Claims

1. A composition comprising an admixture of

a. an aromatic carbonate polymer,

b. a polyolefin or modified polyolefin in sufficient quantity to impact modify the aromatic carbonate polymer, and

c. an amount of catalyst sufficient to compatibilize a and b

selected from the group consisting of hydroxides, oxides and amides of alkali and alkaline earth metals.

4,496,694

PROCESS FOR PRODUCING A STORAGE-STABLE, MISCIBLE CURING AGENT FOR ACRYLATE RESIN ADHESIVES

Imre Forgò , Birsfelden, Switzerland, and Jacques Francois, Huningue, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 18, 1983, Ser. No. 485,933
Claims priority, application Switzerland, Apr. 27, 1982, 2566/82; Dec. 27, 1982, 7561/82
Int. Cl.³ C08L *61/28*
U.S. Cl. 525—163 15 Claims

1. A process for producing a storage-stable curing agent for reactive acrylate adhesives, which curing agent is miscible with an acrylate resin adhesive, which process comprises

(a) adding to a polymerisable monomer containing an olefinic group or groups, at a temperature of 50°to 100° C., a thermoplast or elastomer, which is soluble in said monomer, and which is selected from the group consisting of a polyacetal, polyacrylate, polymethacrylate, polystyrene, polyamide, copolymer of styrene and an acrylate, copolymer of styrene and a methacrylate, copolymer of styrene and butadiene, copolymer of styrene and isoprene, terpolymer of styrene, butadiene and acrylonitrile, polyurethane, butyl rubber and butadiene/acrylonitrile copolymer, in an amount of 5 to 85% by weight, relative to the amount of curing agent;

(b) introducing into the thickened solution formed in step (a) a liquid aldehyde/amine condensation product; and

(c) homogenising the solution mixture of step (b) at elevated temperature.

4,496,695

CURABLE RESIN COMPOSITION

Akitoshi Sugio, Saitama; Masanobu Masu, Tokyo, and Masatugu Matunaga, Tonemachi, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Feb. 24, 1982, Ser. No. 352,029
Claims priority, application Japan, Feb. 28, 1981, 56-28972
Int. Cl.³ C08F *283/08;* C08L *71/04, 63/00*
U.S. Cl. 525—391 11 Claims

1. A curable resin composition, comprising:

(a) a polyphenylene ether resin;

(b) a component selected from the group consisting of:

a polyfunctional cyanate ester compound having at least two cyanate groups; and

a mixture of a polyfunctional cyanate ester compound and a polyfunctional maleimide compound;

wherein said polyfunctional cyanate ester compound is selected from the group consisting of:

(1) a polyfunctional cyanate ester monomer having at least two cyanate groups,

(2) a prepolymer of (1),

(3) a coprepolymer of (1) and an amine,

(4) a coprepolymer of (1) and a polyfunctional maleimide, and

(5) mixtures thereof;

and

said polyfunctional maleimide compound is selected from the group consisting of:

(i) a polyfunctional maleimide,

(ii) a prepolymer of a polyfunctional maleimide,

(iii) a coprepolymer of a polyfunctional maleimide and an amine, and

(iv) mixtures thereof;

and

(c) an epoxy compound;

said composition including a mixture of components (a), (b) and (c), a preliminary reaction product of components (a), (b) and (c), the combination of said mixture and said preliminary reaction product, and the combination of (a) and the preliminary reaction product of (b) and (c); wherein the amount of (a) is in the range of 4–95 wt% and the amount of (b)+(c) is in the range of 96–5 wt% on the basis of the total amount of (a), (b) and (c).

4,496,696

SILICONE SEALANT COMPOSITION

Atsushi Kurita, Ota, Japan, assignor to Toshiba Silicone Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1983, Ser. No. 560,071
Claims priority, application Japan, Dec. 15, 1982, 57-220816
Int. Cl.³ C08F *8/00*
U.S. Cl. 525—479 9 Claims

1. A silicone sealant composition comprising

(A) 100 parts by weight of a silanol terminated polydiorganosiloxane having a viscosity of 100 to 200,000 cSt at 25° C.,

(B) 0.1 to 30 parts by weight of an aminoxy group-containing organosilicon compound containing, on the average, more than two organoaminoxy groups per molecule,

(C) 5 to 300 parts by weight of an inorganic filler, and

(D) 1 to 30 parts by weight of an ultraviolet-curable oligomer containing acryl groups.

4,496,697

AUTOMATIC PROCESS CONTROL SYSTEM FOR CURING POLYMERIC MATERIAL

Andrew Zeolnay, Manhattan Beach, Calif.; Kelly M. Perkins, Anchorage, Ak., and Leiv H. Blad, Van Nuys, Calif., assignors to Lockheed Corporation, Burbank, Calif.

Division of Ser. No. 220,369, Dec. 29, 1980, Pat. No. 4,399,100. This application Aug. 24, 1982, Ser. No. 411,111
Int. Cl.³ C08J *3/00, 3/24*
U.S. Cl. 526—60 8 Claims

1. An improved method of automatically controlling curing of a thermosetting polymeric material comprising:

(a) applying heat to the polymeric material to initiate curing;

(b) measuring a selected characteristic of the polymeric material at various times during the curing thereof;

(c) generating a set of signals corresponding to the measurements made;

(d) determining from said signals the optimum time after the initiation of curing but before the polymeric material has hardened for applying pressure to the polymeric material; and

(e) automatically applying pressure to the polymeric material at said optimum time, in a closed-loop system.

4,496,698

PROCESS FOR PRODUCING POLYETHYLENE HAVING CONSTANT PHYSICAL AND CHEMICAL PROPERTIES

Jan L. J. Adriaans, Hulst, and Pieter G. Dees, Terneuzen, both of Netherlands, assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 26, 1982, Ser. No. 401,769
Int. Cl.³ C08F *10/02*
U.S. Cl. 526—64 3 Claims

1. A process for producing polymers or copolymers of ethylene in which ethylene, optionally together with one or more copolymerizable, unsaturated compounds, is polymerized at a total system pressure above 50,000 kPa and a temperature of between 100° and 400° C. in the presence of an initiator, and using a stirred autoclave reactor and a non-cooled tubular reactor connected in series with said autoclave reactor, characterized by passing a monomeric mixture in the presence of the initiator first into said autoclave in which it is partially polymerized, and thereafter discharging the reaction mixture from said autoclave, and passing it through a heat exchanger in which it is cooled to a predetermined value ranging between 220° and 250° C., and subsequently passing the reaction mix-

ture to said non-cooled tubular reactor, in which the further polymerization is carried out under adiabatic conditions.

4,496,699

PROCESS FOR POLYMERIZING HIGH MELT INDEX OLEFINS AND POLYMERIZATION CATALYSTS USED THEREFORE

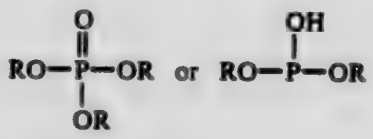
Louis J. Rekers, Wyoming, and Stanley J. Katzen, Cincinnati, both of Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Division of Ser. No. 243,677, Mar. 31, 1981, Pat. No. 4,379,075. This application Nov. 12, 1982, Ser. No. 440,889

Int. Cl.³ C08F *4/24, 10/00*

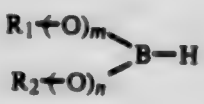
U.S. Cl. 526—105 **6 Claims**

1. A process for the polymerization of an olefin to provide a polyolefin of high melt index which comprises contacting the olefin with a catalyst system obtained by heat activating a supported organophosphoryl chromium compound obtained by the reaction of chromium trioxide with an organphosphorous compound having the formula:



wherein

R is alkyl, aralkyl, aryl, cycloalkyl, or hydrogen, but at least one R is other than hydrogen, and combining the heat activated supported material with a melt index increasing amount of at least one organoborane catalyst modifier having the formula:



wherein

m and n each is zero or 1, with the proviso that m and n are not both zero,

R_1 and R_2 are each a hydrocarbyl group of from 1 to 10 carbon atoms, or one of R_1 and R_2 is hydrogen, or together R_1 and R_2 constitute a hydrocarbyl group of from 2 to 10 carbon atoms.

4,496,700

POLYMERIZATION OF HALOALKYNES BY A NICKEL CATALYST

Ismael Colon, Piscataway, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Aug. 8, 1983, Ser. No. 521,452

Int. Cl.³ C08F *4/44, 4/72*

U.S. Cl. 526—111 **11 Claims**

1. Method of synthesizing highly conjugated, polyunsaturated organic polymers which consists essentially of contacting a haloalkyne having 3 to about 18 carbon atoms where the halogen constituent can be Cl, Br or I with a catalyst mixture in the presence of a reducing metal selected from the group consisting of zinc, magnesium and manganese or mixtures thereof in a dipolar aprotic solvent in which said haloalkyne is soluble, under essentially anhydrous conditions for a period of time and at a temperature sufficient to couple said haloalkyne until normally solid macromolecules are produced, wherein the catalyst mixture comprises an anhydrous nickel compound and at least one ligand selected from the group consisting of a triarylphosphine having from about 6 to about 14 carbon atoms in each aryl moiety and an aromatic bidentate compound containing at least one ring nitrogen atom and from about 5 to about 30 carbon atoms and wherein the ratio of gram atoms of nickel per mole of haloalkyne is from about 0.001 to about 0.01, the amount of ligand is from about 1 to about 50 moles per gram atom of nickel and the amount of reducing metal is at least about 0.5 mole of reducing metal per mole of haloalkyne.

4,496,701

PHOSPHORUS-CONTAINING IMIDE RESINS

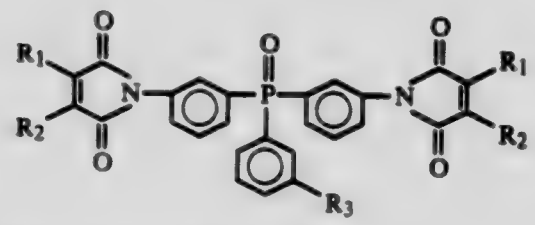
Indra K. Varma, New Delhi, India; George M. Fohlen, Millbrae, and John A. Parker, Los Altos, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 288,267, Jul. 30, 1981, Pat. No. 4,395,557, which is a continuation-in-part of Ser. No. 175,452, Aug. 5, 1980, Pat. No. 4,276,344. This application Jun. 9, 1983, Ser. No. 502,820

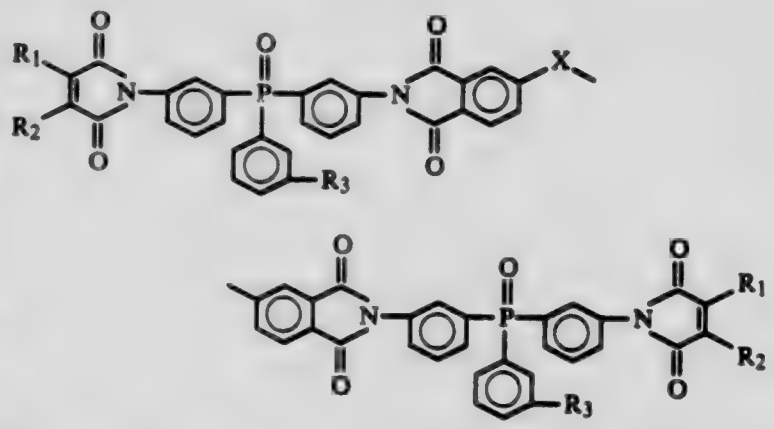
Int. Cl.³ C08F *20/70, 30/02*

U.S. Cl. 526—262 **13 Claims**

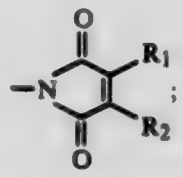
1. A resinous polymer of a monomer selected from imides having the structure



or from imides having the structure



wherein R_1 and R_2 are selected from the group consisting of hydrogen, chloro and lower alkyls; R_3 is the amino group or the imide group



X is a valence bond or X is a divalent linking radical selected from the group consisting of —O—, —S—,



$—SO_2—$ and $—C_nH_{2n}—$ wherein n is 1, 2, or 3.

4,496,702

POLYACETYLENE PRODUCTION

David C. Bott, Woking; John H. Edwards, Stockton-on-Tees, and William J. Feast, High Shincliffe, all of England, assignors to The British Petroleum Company p.l.c., London, England

Filed Nov. 16, 1982, Ser. No. 442,147

Claims priority, application United Kingdom, Nov. 20, 1981, 8134975

Int. Cl.[3] C08F *138/02*

U.S. Cl. 526—285 4 Claims

1. A coherent poly(acetylene) film, characterized in that said film is a solid film with no voids and with no basic structural units being visible under a scanning electron microscope at a magnification of 10,000 times.

4,496,703

PROCESS FOR RECOVERING AMINO ACIDS FROM PROTEIN HYDROLYSATES

Walter Steinmetzer, Süpplingen, Fed. Rep. of Germany, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Division of Ser. No. 327,593, Dec. 4, 1981, Pat. No. 4,384,136, which is a continuation of Ser. No. 119,111, Feb. 6, 1980, abandoned. This application Dec. 27, 1982, Ser. No. 452,905

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1979, 2906034

Int. Cl.[3] C07C *99/12*

U.S. Cl. 562—443 6 Claims

1. A process for recovering leucine, isoleucine, phenyl-alanine, tyrosine and valine from an acid protein hydrolysate containing amino acids comprising the steps of:

(a) forming a solution of amino acid hydrochlorides from the acid protein hydrolysate;

(b) saturating the solution with sodium chloride; and then

(c) extracting from the saturated solution the hydrochlorides of leucine, isoleucine, phenyl-alanine, tyrosine and valine with a water-immiscible alcohol.

2. A process for separating phenyl-alanine and tyrosine from a solution of amino acid hydrochlorides containing phenyl-alanine hydrochloride and tyrosine hydrochloride comprising the steps of:

(a) passing the solution of amino acid hydrochlorides over a weakly basic anion exchanger to obtain a neutral solution of amino acids; and then

(b) passing the solution of amino acids over a strongly basic anion exchanger of hydroxide form thereby adsorbing and separating the phenyl-alaninne and tyrosine from the solution of amino acids.

4,496,704

HIGH SLIP POLYESTER FILMS CONTAINING SILOXANE UNITS

Paul R. Ginnings, Wadsworth, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 7, 1983, Ser. No. 472,514

Int. Cl.[3] C08G *63/46, 77/46*

U.S. Cl. 528—26 9 Claims

1. A polyester film which has excellent slip characteristics and excellent haze values which is comprised of a random, linear, thermoplastic block copolyester consisting essentially of the polymeric reaction product of a mixture of reactants comprising

(A) at least one reactant selected from the groups of reactants consisting of

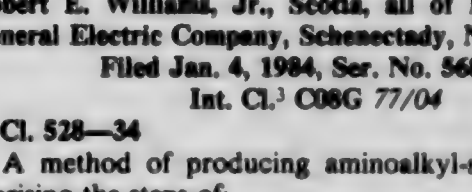
(1) aromatic dicarboxylic acids or the C_1 to C_4 dialkyl esters thereof and

(2) aliphatic dicarboxylic acids or the C_1 to C_4 dialkyl esters thereof

wherein the reactant selected from group (1) constitutes from 100 to 50 mol percent of the total mols of reactant (A) and the reactant selected from group (2) constitutes from 0 to 50 mol percent of the total mols of reactant (A);

(B) from about 100 to about 300 mol percent, based on the total mols of reactant (A) of at least one reactant selected from the group consisting of alkylene glycols containing from 2 to 10 carbon atoms; and

(C) from about 5.00 to about 12.0 weight percent, based on the weight of the polymeric reaction product, of a dihydroxy terminated polydimethylsiloxane block copolymer of the general formula



(I)

wherein n is an integer ranging from about 8 to about 15 and R and R′ are divalent polymethylene oxide radicals corresponding to the formulae

$$+CH_2\rightarrow_x O[+CH_2\rightarrow_x O]_y+CH_2\rightarrow_x \quad \text{(II)}$$

and

$$+CH_2\rightarrow_y [O+CH_2\rightarrow_x O]_y+CH_2\rightarrow_y \quad \text{(III)}$$

respectively and wherein x is an integer ranging from about 2 to about 8 and y is an integer ranging from about 8 to about 15 to provide said block copolymer with a molecular weight ranging from about 1600 to about 5500; wherein said polyester film has been biaxially oriented and has a kinetic coefficient of friction of less than 0.55 and a haze value of from 3.5% to 14% as determined by ASTM Test D-1003.

4,496,705

SYNTHESIS OF ZWITTERIONIC SILOXANE POLYMERS

Robert A. Florence, Scotia; John R. Campbell, Clifton Park, and Robert E. Williams, Jr., Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

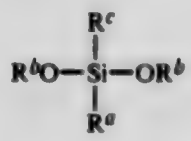
Filed Jan. 4, 1984, Ser. No. 568,018

Int. Cl.[3] C08G *77/04*

U.S. Cl. 528—34 12 Claims

1. A method of producing aminoalkyl-siloxane polymers comprising the steps of:

(A) hydrolyzing difunctional aminoalkylsilane of the formula



(B) removing a substantial portion of the alcohol coproduct from the hydrolysis reaction mixture of step (A) and

(C) polymerizing hydroxy-terminated siloxane oligomers with the aminoalkyl-silane in the remaining hydrolysis reaction mixture of step (B); wherein each R^b is a monovalent hydrocarbon radical independently selected from the group consisting of alkyl radicals of from 1 to 20 carbon atoms and aryl radicals of from 6 to 20 carbon atoms, R^a is an aminoalkyl radical of the general formula:

$$-(R^1-NH)_n-R^2-NH_2$$

wherein R^1 and R^2 are divalent hydrocarbon radicals selected from the group consisting of alkylene radicals of from 1 to 10 carbon atoms and divalent aryl radicals of from 6 to 20 carbon atoms and n is an integer of from 0 to 5 inclusive, and R^c is a

monovalent radical selected from the group consisting of hydrogen, alkyl radicals of from 1 to 20 carbon atoms, aryl radicals of from 6 to 20 carbon atoms and the aminoalkyl radicals within the scope of R^a.

4,496,706

ONE-COMPONENT POLYURETHANE ADHESIVE COMPOSITIONS

Eugene Y. C. Chang, 532 Rolling Hills Rd., Bridgewater, N.J. 08807

Filed Apr. 11, 1983, Ser. No. 483,983
Int. Cl.[3] C08G *18/10, 18/22, 18/62, 18/14*
U.S. Cl. 528—57 20 Claims

1. A heat-curable one-component polyurethane adhesive composition, storage stable at room temperature for at least four weeks comprising: (a) a secondary or tertiary aliphatic diisocyanate; (b) a hydroxyl compound; and (c) a curingly effective amount of a catalyst selected from the group consisting of magnesium acetylacetonate, nickel acetylacetonate, magnesium stearate, cadmium stearate, and organic acid salts of 1,8-diazabicyclo[5.4.0]undec-7-ene.

4,496,707

POLYURETHANE AND METHOD FOR MAKING STABLE COMPONENTS THEREOF

Paul E. Liggett, Wooster, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Jun. 9, 1983, Ser. No. 502,832
Int. Cl.[3] C08L *75/06*
U.S. Cl. 528—61 18 Claims

1. A process for preparing a urethane formulation, comprising the steps of:

separately preparing a polymer component, said polymer component comprising a urethane prepolymer and a urethane solvent;

the amount of said urethane prepolymer in said urethane component is about 100 parts by weight, wherein said urethane prepolymer is the reaction product of (1) an aliphatic polyisocyanate having from 3 to 12 carbon atoms, or an alicyclic polyisocyanate having from 5 to 25 carbon atoms and (2) a mixed polyester, said mixed polyester being (a) a copolymerization condensation product of, or (b) a separate physical blend of, an aliphatic dicarboxylic acid having from 2 to 12 carbon atoms and an aromatic dicarboxylic acid having from 8 to 12 carbon atoms with (2) a polyol having a molecular weight of 500 or less, the amount of said aliphatic dicarboxylic acid ranging from about 90 percent to about 10 percent by weight, the molecular weight of said polyester made from said acid and said polyol ranging from about 500 to about 4,000, and wherein the equivalent ratio of said isocyanate to the OH end groups in said polyester ranges from about 1.5 to about 3.0;

separately preparing a curing component, said curing component comprising a urethane curing agent and a curing agent solvent the equivalent ratio of said curing agent to said isocyante being from about 0.8 to about 1.2;

separately preparing a cement component, said cement component comprising about 3 to about 7 parts by weight, per 100 parts by weight of said urethane prepolymer, of an epoxy having solvent leaching resistance, and a solvent;

a thixotropic compound, said thixotropic compound located in said curing component, the amount of said thixotropic agent being from about 2 parts by weight to about 8 parts by weight per 100 parts by weight of said urethane prepolymer;

maintaining said cement component separate from said polymer component and said curing agent, and maintaining said polymer component separate from said curing component thereby maintaining stability of each of said components;

the total amount of solids in said overall formulation ranging from about 20 percent to about 60 percent by weight based upon the total amount of said solvents and said solvents in said overall formulation.

4,496,708

WATER-SOLUBLE POLYURETHANE COMB POLYMER PRODUCTION

David C. Dehm, Thornton, Pa.; Kenneth L. Hoy, St. Albans, and Richard C. Hoy, South Charleston, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 14, 1983, Ser. No. 561,472
Int. Cl.[3] C08G *18/48*
U.S. Cl. 528—76 24 Claims

1. A comb polymer comprising a water-soluble polyurethane containing the repeating units:

$$-X_{a'}-,\ -Y_b-\ \text{and}\ -(-X-)_m-Z_c-$$

wherein:

X is the residue of an organic polyisocyanate;

Y is the residue of a polyethylene glycol homopolymer or copolymer with up to 50 mole percent C_3 to C_5 polyoxyalkylene, or the monomeric equivalent of said polyethylene glycol;

Z is the residue of a hydrophobe reactant containing a monovalent hydrophobic group providing a molar volume contribution of at least about 130 cc/mole;

b is at least about 2;

c is at least about 2;

m is 0 or 1;

a′ is such that

$$\frac{a' + mc}{b + c}$$

is between about 0.50 to about 1.25 and sufficient to provide a polymer molecular weight of at least about 10,000; and wherein:

(1) the polymer has at least one Z unit separated from each end of the polymer by at least one X unit; and

(2) the hydrophilic/lipophilic balance of the polymer is between about 14 to about 19.5.

4,496,709

PROCESS FOR PREPARING EPOXY RESINS EMPLOYING A PHOSPHONIUM TRIFLUOROACETATE CATALYST

George A. Doorakian, Bedford; Marsha A. Paul, Natick, both of Mass., and Adolphus V. Gist, Dallas, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 391,094, Jun. 23, 1982, abandoned. This application Jun. 16, 1983, Ser. No. 504,918
Int. Cl.[3] C08G *59/68*
U.S. Cl. 528—89 12 Claims

1. In a process for advancing epoxy resins in molecular weight by reacting (A) an epoxy resin which is a glycidyl ether of a dihydric phenol having an average of more than one glycidyl ether group per molecule with (B) a dihydric phenolic or thiophenolic compound in the presence of catalytic quantities of (C) a phosphonium catalyst; the improvement which comprises employing as the catalyst, component (C), a phosphonium trifluoroacetate salt.

4,496,710

PROCESS FOR THE PRODUCTION OF FLAT VARNISHES

Fritz Gude, Herne; Herbert Haferkorn; Heinz Riemer, both of Bottrop, and Günter Dörmann, Bochum, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls AG, Marl, Fed. Rep. of Germany

Filed Feb. 24, 1984, Ser. No. 583,229

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1983, 3311404

Int. Cl.³ C08G 59/42

U.S. Cl. 528—114 9 Claims

1. A curing agent for epoxy varnishes, comprising the mono-salt reaction product of trimellitic acid and 2-pheny-methyl-Δ2-imidazoline.

4,496,711

PROCESS FOR PREPARING ISOIMIDE CONTAINING OLIGOMERS

Abraham L. Landis, Northridge, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Continuation-in-part of Ser. No. 206,317, Jul. 24, 1981, Pat. No. 4,438,273. This application Sep. 26, 1983, Ser. No. 536,068

Int. Cl.³ C08G 73/10

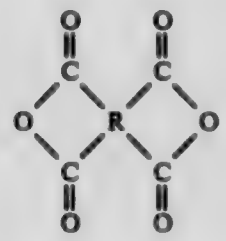
U.S. Cl. 528—125 32 Claims

1. A process for preparing an isoimide-containing oligomer which comprises:

(a) reacting in a first chosen organic solvent with the addition of heat

(1) the reaction product of

(i) a carboxylic acid dianhydride having the formula,

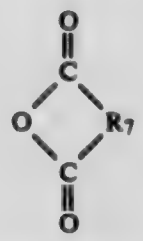


wherein R is a tetravalent organic group containing 2 to 27 carbon atoms, and

(ii) a diamine having the formula $H_2N—R_5—NH_2$ wherein R_5 is a divalent aryl group containing 2 to 30 carbon atoms; with a compound to enable formation of a polyamic acid and which compound is selected from the group consisting of:

(2) a functional amine having the formula $H_2N—R_1—X$ wherein R_1 is a divalent organic group containing 1 to 20 carbon atoms, and

(3) a monoanhydride having the formula



wherein R_7 is a trivalent aryl group having substituted thereon X, a radical containing an alkenylene group, or a heterocyclic group, and X in (2) and (3) is a radical having an unsaturated functional group capable of undergoing addition polymerization with another radical having an unsaturated functional group;

(b) cooling the resulting first reaction mixture to a selected temperature about at least as low as ambient temperature,

(c) adding to said first reaction mixture at said selected temperature a dehydrating agent to cyclize said polyamic acid by dehydration to thereby form an isoimide-containing oligomer in solution in a second reaction mixture, and which dehydrating agent has the following properties of (1) being readily soluble with a polyamic acid in a common solvent, (2) cyclizing a polyamic acid at reduced temperatures at least as low as ambient temperature, (3) not substantially adversely affecting solubility of any reactants in the presence of the polyamic acid and permitting all of the necessary reactants to remain in solution, (4) not causing generation of a substantial amount of undesirable side-reaction products which are not readily removable and which might or do adversely affect the isoimide oligomer thus produced, and (5) not substantially adversely affecting a polyimide produced therefrom,

(d) mixing the solution of said second reaction mixture with a second selected solvent to produce precipitation of said isoimide-containing oligomer as a solid product; and

(e) separating said solid product from said second selected solvent.

4,496,712

OPTICALLY ANISOTROPIC MELT FORMING COPOLYESTERS

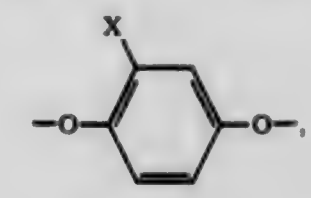
Robert S. Irwin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 16, 1983, Ser. No. 562,116

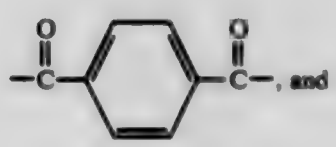
Int. Cl.³ C08G 63/60

U.S. Cl. 528—191 9 Claims

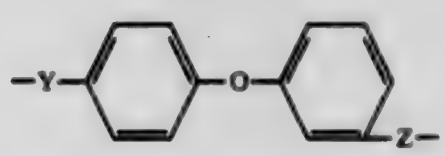
1. A copolyester consisting essentially of Units I, II and III, said units having the structural formulas:



I



II



III

where X is selected from the group consisting of halo-, lower alkyl, and aryl, Y and Z are independently selected from the group consisting of oxygen and carbonyl; and Units I and II are each present in the amount of from about 30 to 50 mole % and Unit III is present in an amount of from about 5 to 20 mole %.

4,496,713

MOLDING COMPOSITIONS WITH HIGH TOUGHNESS AND HOT-WATER RESISTANCE

Gernot Horlbeck, Haltern, and Klaus Burzin, Marl, both of Fed. Rep. of Germany, assignors to Chemische Werke Huels, Marl, Fed. Rep. of Germany

Filed Oct. 24, 1983, Ser. No. 544,898

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1982, 3239413

Int. Cl.³ C08G 63/02, 63/18

U.S. Cl. 528—272 20 Claims

1. A copolyester of terephthalic acid or a C_{1-4}-alkyl ester thereof and about 1.25–2 moles of diol component per mole of terephthalic component, wherein the diol component comprises 5–25 molar percent, based on the total diol content of a linear α,ω-alkanediol of 6–20 carbon atoms and 95–75 molar percent of 1,4-butanediol, which copolyester has a viscosity number (J) of >120 cc/g (measured in a solution of 0.23 g of

copolyester in 100 ml of phenol/1,1,2,2-tetrachloroethane (60/40 parts by weight) at 25° C.) and which has a low viscosity drop when exposed to pressurized water at a temperature of 130° C.

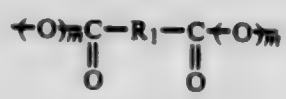
4,496,714

POLYESTER, ADHESIVES COMPRISING THE SAME, AND LAMINATES AND LAMINATED HOLLOW VESSELS MADE THEREOF

Yoshifumi Murata; Keishiro Igi, both of Kurashiki; Hiroshi Narukawa, Sojya; Masao Uetsuki, Kurashiki; Satoshi Bando, Kurashiki; Shuji Kawai, Kurashiki, and Kenji Shirano, Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Dec. 15, 1983, Ser. No. 561,838
Claims priority, application Japan, Dec. 21, 1982, 57-225426; Jan. 26, 1983, 58-11924
Int. Cl.³ C08G *63/02*
U.S. Cl. 528—272 9 Claims

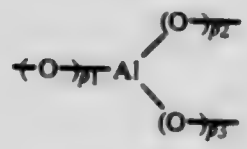
1. A thermoplastic polyester comprising the constituent units represented by the following formulas (I), (II), (III) and (IV):



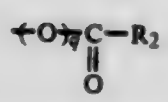
(I)



(II)



(III)



(IV)

wherein R_1, in its repeated occurrence in said polyester, represents one or more divalent groups each derived from a dicarboxylic acid selected from the group consisting of terephthalic acid, isophthalic acid, orthophthalic acid and a straight-chained aliphatic dicarboxylic acid containing 4 to 10 carbon atoms by removal of both carboxyl groups therefrom, R_2, in its repeated occurrence in said polyester, represents one or more monovalent groups each selected from the group consisting of an aliphatic or alicyclic monocarboxylic acid containing 6 to 30 carbon atoms and an aromatic monocarboxylic acid containing 7-20 carbon atoms by removal of the carboxyl group therefrom, D, in its repeated occurrence in said polyester, represents one or more divalent groups each derived from a diol selected from the group consisting of an aliphatic diol containing 2 to 10 carbon atoms and an alicyclic diol containing 6 to 8 carbon atoms by removal of both hydroxyl groups therefrom, and m, n, p_1, p_2, p_3 and q are each an integer of 0 or 1, said constituent units being bonded together in the combinations of (I)-(II), (I)-(III), (II)-(III), (II)-(IV), (III)-(III) and (III)-(IV) and via only one oxygen atom in each combination, the molar ratio (I):(II) being substantially 1:1, the molar ratio (I):(III) being in the range of 1,000:1 to 100:5 and the molar ratio (III):(IV) being in the range of 4:1 to 1:10, said polyester having an intrinsic viscosity of not less than 0.5 dl/g.

4,496,715

AMIDE-IMIDE-ESTER WIRE ENAMELS

Frank A. Sattler, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 292,244, Sep. 25, 1972, abandoned, which is a continuation of Ser. No. 61,105, Aug. 5, 1970, abandoned, which is a continuation of Ser. No. 555,211, Mar. 4, 1975, abandoned, said Ser. No. 61,105, Division of Ser. No. 730,833. This application Oct. 29, 1979, Ser. No. 88,733
Int. Cl.³ C08G *63/12*
U.S. Cl. 528—288 5 Claims

1. A polymeric amide-imide-ester coating composition of (1) trimellitic anhydride, (2) an aromatic carbocyclic primary diamino compound and (3) a polyol containing at least 3 hydroxy groups, wherein the molar proportion of (1):(2) for the amide-imide linkages is from 0.8:1 to 1.8:1, said composition being soluble in cresol, cresylic acid and phenol.

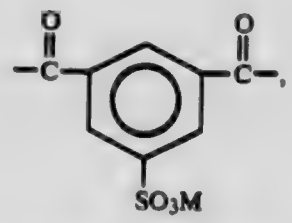
4,496,716

DRAW-TEXTURED, BASE-DYEABLE POLYESTER YARN

Remy Humbrecht, Reussbuhl, and Heinrich Schmieder, Emmenbrucke, both of Switzerland, assignors to Viscosuisse S.A., Emmenbrucke, Switzerland

PCT No. PCT/CH83/00035, § 371 Date Nov. 29, 1983, § 102(e) Date Nov. 29, 1983, PCT Pub. No. WO83/03432, PCT Pub. Date Oct. 13, 1983
PCT Filed Mar. 16, 1983, Ser. No. 556,247
Claims priority, application Switzerland, Mar. 30, 1982, 1935/82
Int. Cl.³ C08G *63/66, 63/68*
U.S. Cl. 528—295 15 Claims

1. Thread with a proportion of a basic-dyeable, texturised polyester filament, characterised in that the basic-dyeable polyester filament contains a metal sulphonate containing the structural unit



where M is equal to Na or K and a compound A containing the structural units $-(CH_2)_y-$ and/or $-O-(C_{x1}H_{2x1}O)_{y1}-$ where $x_1 \geqq 2$, $y \geqq 20$ and $x_1y_1 \geqq 20$.

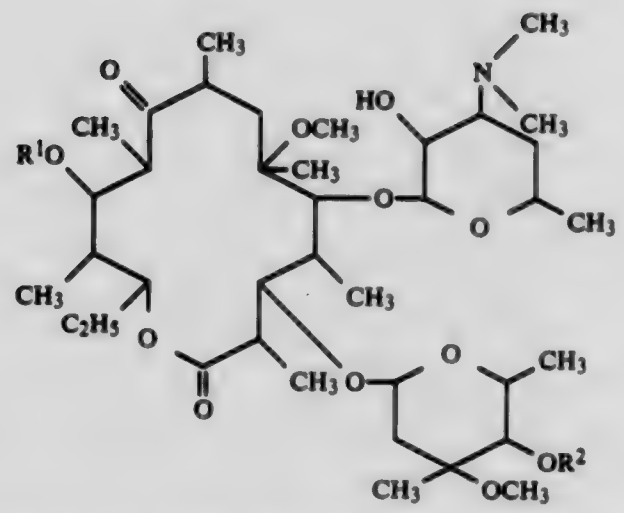
4,496,717

ERYTHROMYCIN B DERIVATIVES

Takashi Adachi, Kuki; Shigeo Morimoto, Saitama; Yoko Takahashi, Ageo; Yoshiaki Watanabe, Kodaira, and Sadafumi Omura, Ageo, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1982, Ser. No. 444,170
Claims priority, application Japan, Dec. 1, 1981, 56-193444
Int. Cl.³ C07H *17/08*
U.S. Cl. 536—7.2 4 Claims

1. An erythromycin B derivative of the formula



wherein R^1 and R^2 are the same or different and are each hydrogen or methyl, and the pharmaceutically acceptable acid addition salts thereof.

4,496,718

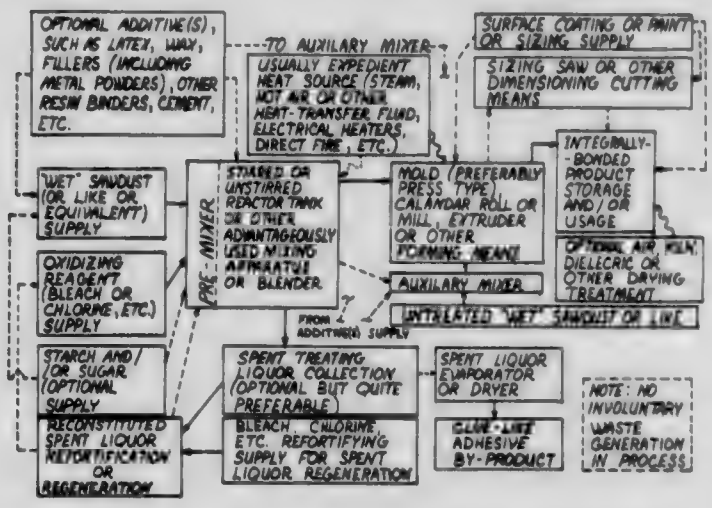
INTEGRALLY BONDED COMPOSITIONS OF CELLULOSICS AND PRODUCTS THEREOF DIRECTLY FROM WET SAWDUST AND THE LIKE

N. Jerome Rudy, 3613 Orchard Dr., P.O. Box 1391, Midland, Mich. 48641

Continuation-in-part of Ser. No. 212,110, is a continuation-in-part of Ser. No. 90,829, Nov. 1, 1979, abandoned. This application Jul. 16, 1982, Ser. No. 399,681

Int. Cl.³ C08B *15/00, 15/10*

U.S. Cl. 536—56 **97 Claims**



1. A fabrication composition comprising, in admixture:

(a) a major proportion of an at least substantially undried, particulated, fibrous plant cellulosic material including, in particular, "wet" sawdust; plus

(b) an effective quantity for reactive conversion and at least partial water-solubilization of at least a portion of said cellulosic material (a) of a strong, non-azotizing oxidizing reagent capable of destructive attack upon said cellulosic material, which oxidizing reagent is selected from the Group consisting of, nascent-oxidation-reactant forming chlorine-releasing, bromine-releasing, oxygen-releasing and -providing materials, chlorine, bromine and mixtures thereof.

4,496,719

3H-INDOL-2-YL CATIONIC HYDRAZONE DYESTUFFS

Roderich Raue, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

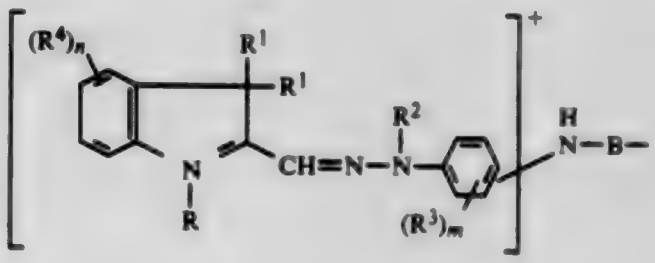
Filed Feb. 15, 1983, Ser. No. 466,709

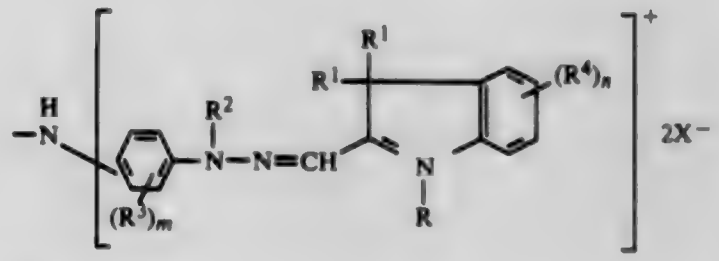
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1982, 3207477

Int. Cl.³ C07D *209/12, 403/12*

U.S. Cl. 548—455 **5 Claims**

1. A cationic hydrazone dyestuff of the general formula





in which

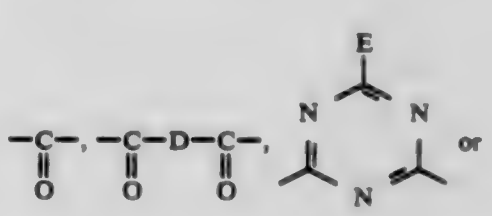
R represents an alkyl radical which has 1 to 4 C atoms and is optionally substituted by hydroxyl, alkoxy having 1 to 4 C atoms, acetyloxy, propionyloxy, benzoyloxy, carbamoyloxy, halogen, cyano, carboxyl, C_1- to C_4-carbalkoxy, carboxamido or acetyl,

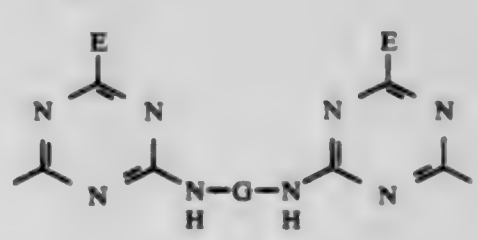
R^1 represents an alkyl radical which has 1 to 4 C atoms and the two radicals can also form a closed ring,

R^2 represents analkyl radical which has 1 to 4 C atoms and which can be substituted by hydroxyl,

R^3 represents an alkyl radical having 1 to 4 C atoms, an alkoxy radical having 1 to 4 C atoms or halogen,

R^4 represents an alkyl radical having 1 to 4 C atoms, halogen, alkoxy having 1 to 4 C atoms, phenoxy, benzyloxy, benzyl, carboxyl, an alkyl carboxylate having 1 to 4 C atoms, a carboxamide group which is optionally substituted by 1 or 2 C_1- to C_4-alkyl radicals, a sulphonamide group which is optionally substituted by 1 or 2 C_1- to C_4-alkyl radicals, alkylsulphonyl having 1 to 4 C atoms, phenylsulphonyl or a cyano, nitro, trifluoromethyl, acetyl or benzoyl group, B corresponds to a radical of the formulae

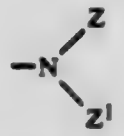




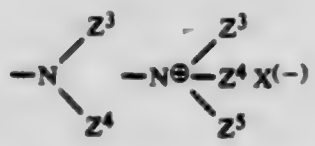
in which

D represents an alkylene radical having 2 to 6 C atoms or a phenylene or a naphthylene radical,

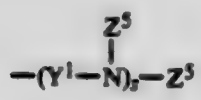
E represents halogen, hydroxyl, alkoxy having 1-4 C atoms or the radical



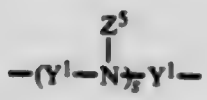
Z and Z^1 independently of each other represent hydrogen or the radical —Y—Z^2,
Y represents alkylene having 1 to 6 C atoms,
Z^2 represents hydrogen, hydroxyl, pyridinium or the radicals



Z^3, Z^4 and Z^5 independently of one another represent hydrogen or optionally hydroxyl-substituted alkyl having 1 to 4 C atoms,
Z^3 also represents phenyl, benzyl or the radical



Y^1 represents alkylene having 2–4 C atoms and
s represents 1–8, or
Z and Z^1 as well as Z^3 and Z^4, together with their N atom, may form the pyrrolidino, morpholino, piperidino or piperazino radicals which can be substituted by C_1- to C_4-alkyl or amino-C_1- to C_4-alkyl,
G represents an alkylene radical having 2 to 6 C atoms, a phenylene radical or a radical of the formula



m and n represent 0, 1 or 2 and
$X^{(-)}$ represents an anion.

4,496,720

PREPARATION OF THIOETHERS

Cornelis A. Bruynes, Koudekerk an der Rijn, and Theodorus K. Jurriens, Delft, both of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Filed Mar. 7, 1983, Ser. No. 472,667
Claims priority, application European Pat. Off., Mar. 11, 1982, 82200327.3
Int. Cl.³ C07D *501/04*; C07C *149/30*
U.S. Cl. 544—29 10 Claims

1. A process for the preparation of thioethers comprising reacting a silylated thiol of the formula

$$R—S—SiR_1R_2R_3 \qquad I$$

wherein R is an organic group and R_1, R_2 and R_3 are individually selected from the group consisting of alkyl of 1 to 4 carbon atoms with an organic chloride, bromide, iodide, sulfate or sulfonate in the presence of hexamethylphosphoric triamide as a solvent or co-solvent.

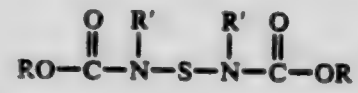
4,496,721

PROCESS FOR PREPARING SYMMETRICAL BIS-CARBAMATES

Themistocles D. J. D'Silva, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 636,373, Dec. 1, 1975, Pat. No. 4,382,957.
This application Feb. 7, 1983, Ser. No. 464,565
Int. Cl.³ C07C *93/100, 102/00, 161/00*; C07D *279/10*
U.S. Cl. 544—58.2 1 Claim

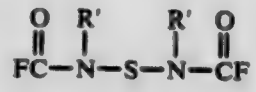
1. A method of preparing a compound of the formula:



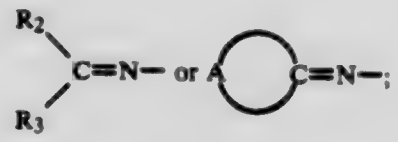
which comprises reacting a compound of the formula:

ROH

with a compound of the formula:



in the presence of an acid acceptor, wherein:
R is:



wherein:
R_2 is alkyl, alkylthio, alkoxy, alkanoyl or alkoxycarbonyl, all of which may be unsubstituted or aliphatically substituted in any combination with one or more cyano, nitro, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxy or R_4R_5—NCO— groups; or R_2 is phenyl, R_4R_5NCO— or R_6CON(R_4)—;
wherein:
R_4 and R_5 are individually hydrogen or alkyl;
R_6 is hydrogen, alkyl or alkoxy;
R_3 is hydrogen, alkyl, alkylthio or cyano;
A is a four or five member divalent aliphatic chain which includes one or two divalent oxygen, sulfur, sulfinyl or sulfonyl groups and which may include not more than one divalent amino, alkylamino or carbonyl groups, in any combination;
provided that the total number of carbon atoms in R may not exceed eight and provided further that when R_2 is alkyl substituted with alkylthio, R_3 is alkyl or alkylthio; and
R′ is alkyl containing from one to four carbon atoms.

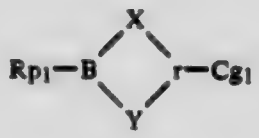
4,496,722

REPORTER COMPOUNDS

Paul M. Gallop, Chestnut Hill, and Mercedes Paz, Brookline, both of Mass., assignors to The Children's Medical Center Corporation, Cambridge, Mass.

Filed May 1, 1981, Ser. No. 259,705
Int. Cl.³ C09D *5/04*
U.S. Cl. 544—69 4 Claims

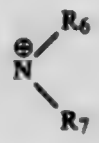
1. A compound of the formula



wherein
Rp_1 is a group which includes a reporter group chosen from

the group consisting of a fluorophore or a chromophore and which is capable of being bonded to the boron atom of a boronic acid,

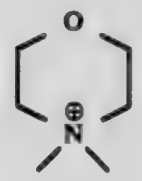
each of X and Y, independently, is O, NR_6, or



wherein each R_6 and R_7, independently, is H, $—CH_2COO^-$, $—CH_2CH_2SO_3^-$, or $—CH_2CH_2CH_2SO_3^-$, provided that one of x or y is O and provided that at least one of R_6 or R_7 is H;

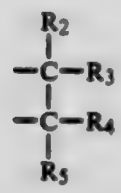


forms the heterocyclic ring structure

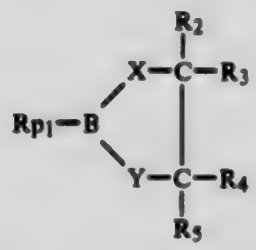


Cg_1 is a carrier group which includes a solubilizing group which is ionized in water, and r is a receptor group which, with X and Y, forms complexes with boronic acids,

said r-Cg_1 being



so that said compound has the formula



wherein each R_2–R_5, independently is selected from H, or one of $—CH_3$, $^-CH_2—COO^-$, and $^-CH_2SO_3^-$,

provided that the compound contains at least one solubilizing group, said solubilizing group being a sulfonate group, a carboxylate group, a quaternary ammonium group as indicated above a guanidinium group, or a phosphate group.

4,496,723

PROCESS FOR THE PREPARATION OF 7-AMINO-1-DETHIA-1-OXA-3-HYDROXYMETHYL-CEPHEM-4-CARBOXYLIC ACIDS

Dieter Hoppe, and Heinz-Werner Kleemann, both of Goettingen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

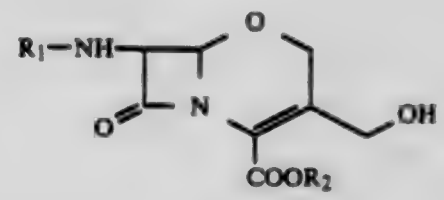
Filed Jun. 20, 1983, Ser. No. 506,731

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1982, 3225269

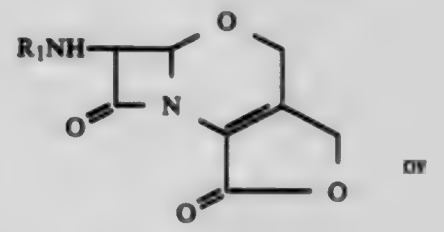
Int. Cl.³ C07D *498/04*

U.S. Cl. 544—90 5 Claims

1. A process for the preparation of a 7-amino-1-dethia-1-oxa-3-hydroxymethyl-cephem-4-carboxylic acid derivative of the formula

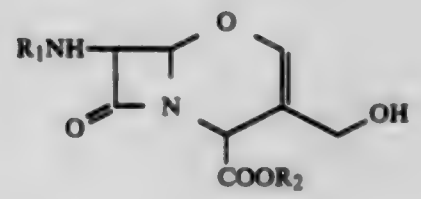


(I)



(II)

or



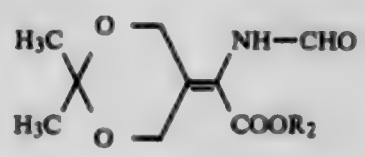
(III)

in which

R_1 is hydrogen or the acyl radical of an organic carboxylic acid or an optionally substituted protective group Z and

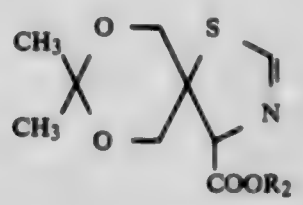
R_2 is a carboxyl protective group or a pharmaceutically acceptable ester radical, which comprises

(a) (i) reacting a compound of the formula



(IV)

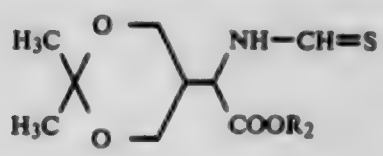
with a sulphurization agent thereby to produce a compound of the formula



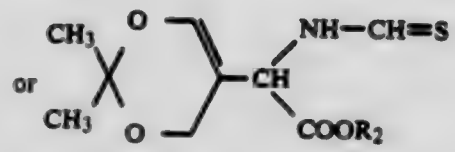
(V)

and reacting the compound of formula (V) with a strong base in a solvent at a low temperature and then with an R_3-containing alkylating agent,

(ii) or reacting a compound of the formula

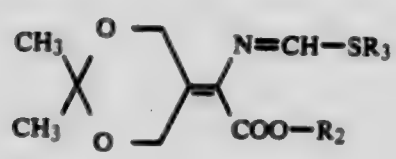


(IV')

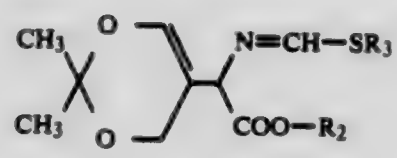


(IV'')

with an alkylating agent, thereby to produce a compound of the formula, these compounds are then



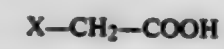
(VI)



(VI')

or

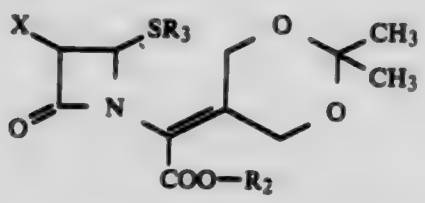
(b) reacting the compound VI or VI' with an activated derivative of an acid of the formula



(VII)

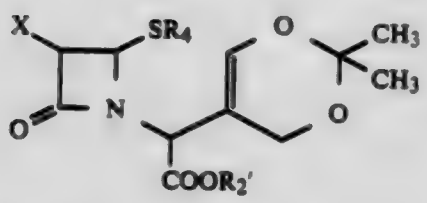
in which

X is azido or phthalimido, in the presence of a base, in a solvent, to give a compound of the formula



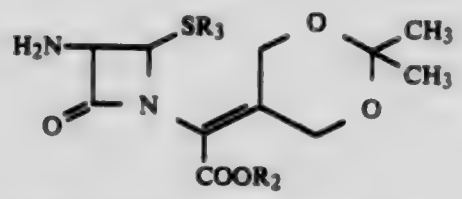
(VIII)

or a double bond isomer thereof of the formula



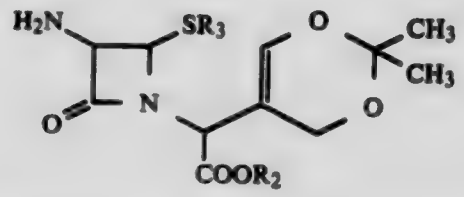
(VIII')

(c) (i) in the case in which X is azido reacting VIII or VIII' with a reducing agent in the presence of an amine, in a solvent, or (ii) in the case in which X is phthalimido, with a phthalimide-cleaving reagent, to give a compound of the formula



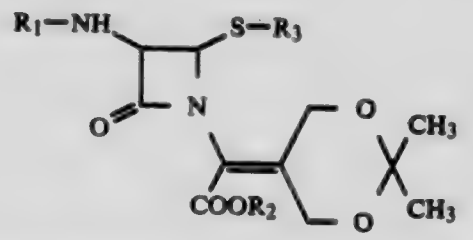
(IX)

or a double bond isomer thereof of the formula

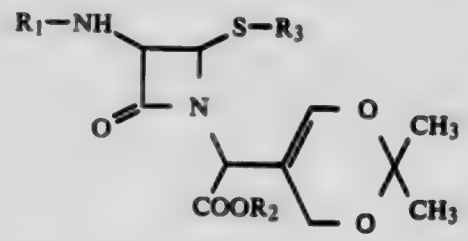


(IX')

(d) reacting IX or IX' with (i) a carboxyl-activated carboxylic acid R_1'—COOH in which R_1' is an organic radical or with (ii) a reagent which is capable of introducing the optionally substituted Z protective group, to give a compound of the formula



or a double bond isomer thereof of the formula



(X')

(e) and reacting the compound of the formula (X) or (X') with a chlorinating agent in a solvent which is inert to chlorination, and then with a protic acid or with a Lewis acid.

4,496,724

CONTROLLED RELEASE PESTICIDES

Charles L. McCormick, 2308 Clayton Pl., and Kenneth W. Anderson, 3406 Campbell Dr., both of Hattiesburg, Miss. 39401

Filed Dec. 22, 1982, Ser. No. 452,385
Int. Cl.[3] C07D *253/06*
U.S. Cl. 544—182 **3 Claims**

1. A method of preparing a pesticide derivative useful in the preparation of controlled release pesticide-polymers which comprise treating a pesticide having an amino group with phosgene at a temperature of about 40° C. to about 55° C. to form a chloroformamide derivative of the pesticide.

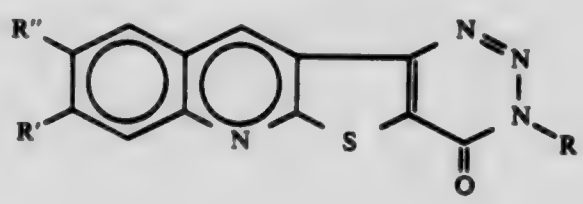
4,496,725

SUBSTITUTED 1,2,3-TRIAZINO[4',5':4,5]-THIENO[2,3-b]QUINOLIN-4(3H)-ONES

James R. McCarthy, Zionsville, Ind., and Paul J. Widner, Landenberg, Pa., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 23, 1983, Ser. No. 496,800
Int. Cl.[3] C07D *495/12*
U.S. Cl. 544—184 **2 Claims**

1. A compound of the formula



wherein R is hydrogen or alkyl of 1–4 carbon atoms; R′ and R″ are selected from hydrogen and methoxy with the proviso that only one of them can be hydrogen, or R′ and R″ are combined to give methylenedioxy.

4,496,726

POLYTRIAZINYL ALCOHOLS, ESTERS AND URETHANES, A PROCESS FOR THEIR PREPARATION

Hartmut Wiezer, and Gerhard Pfahler, both of Hoechst Aktiengesellschaft, D-6230, Frankfurt am Main 80, Fed. Rep. of Germany

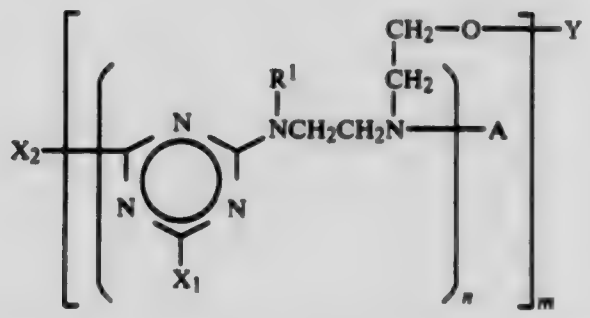
Filed Aug. 2, 1982, Ser. No. 404,500

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1981, 3131684

Int. Cl.³ C07D *401/12*

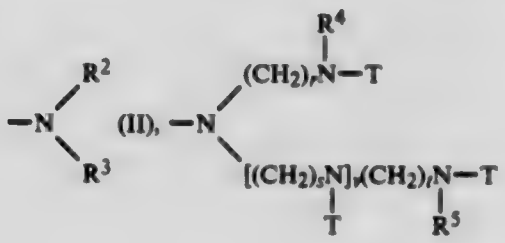
U.S. Cl. 544—198 3 Claims

1. A polytriazinyl compound of the formula (I)

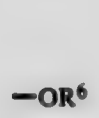


(I)

in which n is an integer from 1 to 100 and m is an integer from 1 to 20, X_1 represents halogen, phenyl or a group of the formula (II), (III) or (IV)

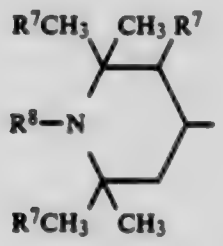


(III)



(IV)

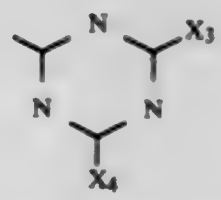
in which formulae R^2 is hydrogen, C_1- to C_{18}-alkyl, C_5- to C_{12}-cycloalkyl which can be substituted by a C_1- to C_4-alkyl group, C_3- to C_{12}-alkenyl, or phenyl which can be substituted by one or two Cl atoms or by one or two C_1- to C_4-alkyl groups or by C_1- to C_4-alkoxy or C_1- to C_2-carboalkoxy, or C_7- to C_{14}-phenylalkyl or a group of the formula (V)



(V)

in which R^7 = hydrogen or methyl and R^8 = hydrogen, C_1- to C_4-alkyl which can be substituted by one OH group or, in the case of C_3-alkyl, can also be substituted by two OH groups, 2,3-epoxypropyl, allyl or benzyl; R^3 is identical with or different from R^2 and has the meanings indicated under R^2 and additionally represents C_3- to C_{21}-alkoxyalkyl or dimethylamino-C_2- to C_5-alkyl or diethylamino-C_2- to C_5-alkyl

or, together with the N atom linking them, R^2 and R^3 represent a pyrrolidine ring or a piperidine, morpholine or hexamethyleneimine ring which is unsubstituted or substituted by up to four C_1- to C_4-alkyl groups; r, s and t represent identical or different integers from 2 to 6 and v represents an integer from 0 to 3; R^4 and R^5 are identical or different radicals having the meanings indicated under R^2 and T is a group of the formula (VI)



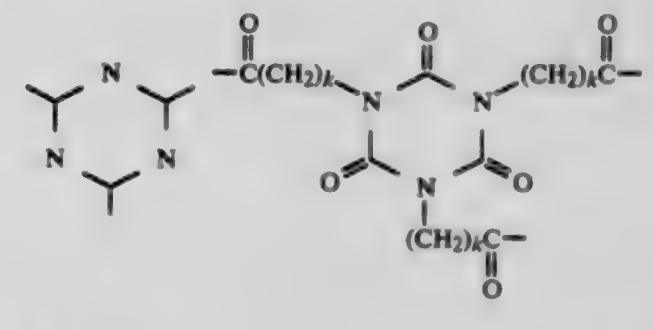
(VI)

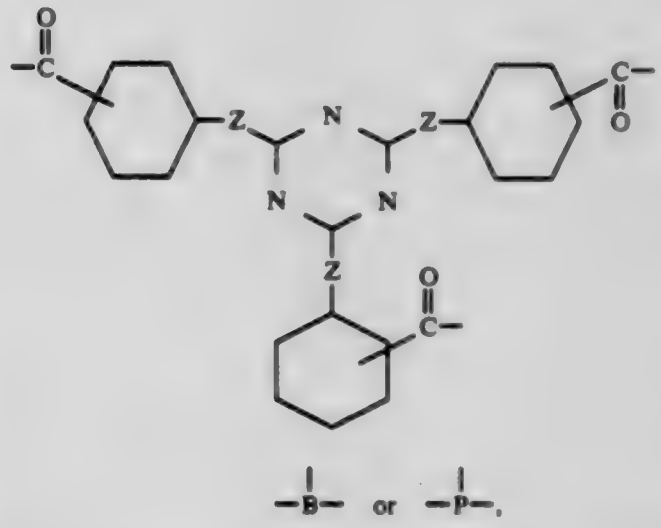
in which X_3 and X_4 are identical or different radicals of the formulae (II), (III) or (IV) and R^6 represents one of the radicals listed under R^2; R^1 has the meaning of one of the radicals listed under R^2; X_2 represents one of the groups indicated under X_1, A is a group of the formula (VI) and,

if m = 1, Y is a C_1- to C_{18}-aliphatic acyl group which can be substituted by —OH or —Cl, a C_5- to C_{12}-alicyclic acyl radical which can be substituted by —OH or C_1- to C_4-alkyl, a C_6- or C_{10}-aromatic acyl or sulfonyl radical which can be substituted by —OH, C_1- to C_4-alkoxy, halogen or —NH_2, a C_7- to C_{16}-araliphatic acyl radical which can be substituted by —OH and/or 1 or 2 C_1- to C_4-alkyl groups, or a C_1- to C_{18}-alkyl group, a C_5- to C_{12}-cycloalkyl group or a phenylcarbamoyl or naphthylcarbamoyl group which can be substituted by halogen or by C_1- to C_4-alkyl,

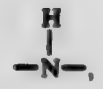
if m = 2, Y represents a C_2- to C_{18}-aliphatic radical which can be substituted by up to two OH groups, a C_3- to C_{12}-alicyclic radical which can be substituted by C_1- to C_4-alkyl, a phenyl, naphthyl or C_7- to C_{16}-araliphatic diacyl radical which can be substituted by —Cl or C_1- to C_4-alkyl, or a C_2- to C_{12}-aliphatic α,ω-dicarbamoyl group, or a phenylenedicarbamoyl group which can be substituted by C_1- to C_4-alkyl or chlorine, or a C_7- to C_{18}-araliphatic dicarbamoyl group which can be substituted by up to four C_1- to C_4-alkyl groups,

if m = 3, Y represents a C_2- to C_5-aliphatic or C_6-aromatic triacyl radical which can be substituted by up to two OH groups, or represents groups of the formulae





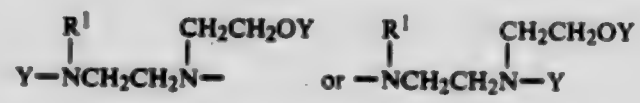
in which k is an integer from 1 to 6 and Z denotes —O— or



if m=4, Y is a C_4- to C_6-aliphatic tetraacyl radical or a C_6- to C_{10}-aromatic tetraacyl radical or the group



if m=5 or 6, Y represents a C_5- to C_8-aliphatic or cycloaliphatic radical or, if m>3, represents an oligomeric acyl radical which is derived from acrylic acid or derivatives thereof, if n>1 and m=1, X_2 as a terminal group is halogen or one of the radicals



in which R^1 and Y have the meanings indicated above, A as a terminal group is H or Y, and at least one radical of the formula (V) must be present in formula (I).

4,496,727

PROCESS FOR THE MANUFACTURE OF METAL COMPLEXES OF ISOINDOLINE AZINES

Abul Iqbal, Ettingen, and Paul Lienhard, Frenkendorf, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

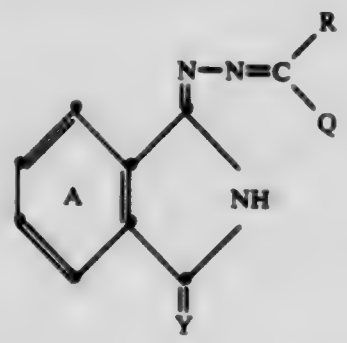
Division of Ser. No. 242,005, Mar. 9, 1981, Pat. No. 4,385,174. This application Sep. 24, 1982, Ser. No. 423,353

Claims priority, application Switzerland, Mar. 13, 1980, 1976/80

Int. Cl.³ C07F *1/08, 3/00, 15/00*

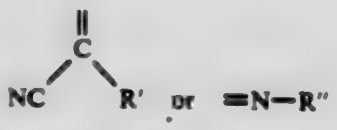
U.S. Cl. 544—225 9 Claims

1. A process for the manufacture of a 1:1 metal complex of an azine of the formula



wherein the ring A is unsubstituted or is substituted by two to four halogen atoms, by one or two alkyl of 1 to 4 carbon atoms, by one or two alkoxy of 1 to 4 carbon atoms, by phenyl, by phenoxy, by nitro, by benzoylamino, or by an alkanoylamino of 2 to 6 carbon atoms,

Y is a radical of the formula

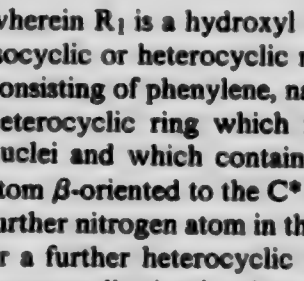


wherein R′ is an alkoxycarbonyl, alkylcarbamoyl, carbamoyl, thiocarbamoyl or sulfamoyl group, a benzylcarbamoyl group, a phenylsulfamoyl or phenylsulfonyl group which is unsubstituted or substituted by halogen atoms or alkyl groups of 1 to 4 carbon atoms, a group of the formula



(9)

or



(10)

wherein Z_1 is an oxygen or a sulfur atom, X_1 is a hydrogen, chlorine or bromine atom, a nitro, trifluoromethyl, carbamoyl or sulfamoyl group, an alkyl, alkoxy or alkylsulfamoyl group of 1 to 4 carbon atoms, an alkanoylamino, alkylcarbamoyl or alkoxycarbonyl group of 2 to 6 carbon atoms, a phenoxy, benzoylamino, phenylcarbamoyl or phenylsulfamoyl or phenylazo group which is unsubstituted or substituted by chlorine or bromine atoms or methyl groups, and X_2 is a hydrogen, chlorine or bromine atom, an alkyl or alkoxy group of 1 to 4 carbon atoms, W is O, S, or NH, and R″ is a radical of the formula (10),

R is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl or naphthyl,

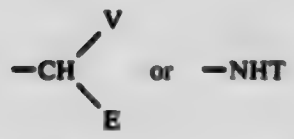
Q is a group of formula (2)

(2)

wherein R_1 is a hydroxyl or mercapto group and B is an isocyclic or heterocyclic radical selected from the group consisting of phenylene, naphthylene, a 5- or 6-membered heterocyclic ring which may be fused with a benzene nuclei and which contains a nitrogen, oxygen or sulfur atom β-oriented to the C* atom and which may contain a further nitrogen atom in the ring and a fused benzene ring or a further heterocyclic ring, which 5- or 6-membered heterocyclic ring is selected from the group consisting of 2,4-dihydroxyquinoline, 2,4-dihydroxy-5,6,7 or 8-chloroquinoline, 2,4-dihydroxy-6,8- or 7,8-dichloroquinoline, 2,4-dihydroxy-6,7 or 8-methylquinoline, 2,4-dihydroxy-6-chloro-8-methylquinoline, 2-methyl-4-hydroxyquinoline, 2-methyl-4-hydroxy-6-chloroquinoline, 2-methyl-4-hydroxy-6-methoxyquinoline, 3-hydroxyisoquinoline, barbituric acid, 2-methyl-4,6-dihydroxypyrimidine, 4-hydroxycoumarin, 4-hydroxy-6-methylcoumarin, 4-hydroxy-6-methoxycoumarin, 4-hydroxy-6-chlorocoumarin, 4-hydroxy-6-chloro-5,7-dimethylcoumarin, 1-phenyl-3-methylpyrazol-5-one, 1-phenyl-3-carboxypyrazol-5-one, 1-phenyl-3-carbamoylpyrazol-5-one, 1-phenyl-3-methoxycarbonylpyrazol-5-one, 1-phenyl-3-ethoxycarbonylpyrazol-5-one, 1-o-chlorophenyl-3-methylpyrazol-5-one, 1-p-chlorophenyl-3-methylpyrazol-5-one, 1-o-methylphenyl-3-methylpyrazol-5-one, and 1-p-methylphenyl-3-methylpyrazol-5-one,

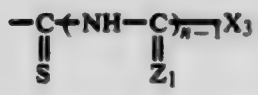
or

Q is a radical of the formula

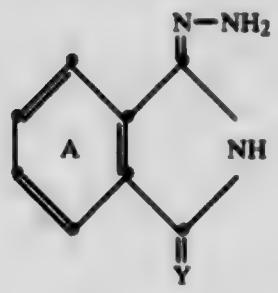


wherein E is an acyl group, an unsubstituted or a substituted carbamoyl or thiocarbamoyl group, V is an acyl, cyano or nitro group or an unsubstituted or substituted carbamoyl or thiocarbamoyl group, T is

the radical of a heteroaryl amine selected from the group consisting of 2-aminothiophene, 2-aminothiazole, 2-amino-5-nitrothiazole, 2-amino-5-methylsulfonylthiazole, 2-amino-5-cyanothiazole, 2-amino-4-methyl-5-nitrothiazole, 2-amino-4-methylthiazole, 2-amino-4-phenylthiazole, 2-amino-4-(4'-chloro)-phenylthiazole, 2-amino-4-(4'-nitro)-phenylthiazole, 2-aminopyrazole, 3-amino-1-phenylpyrazole, 3-aminoindazole, 5-methylsulfonyl-2-aminothiazole, 5-benzoyl-2-aminothiazole, 2-aminoimidazole, 4,5-dicyano-2-aminoimidazole, 4,5-diphenyl-2-aminothiazole, 2-amino-3,4-thiadiazole, 2-amino-3,5-thiadiazole, 3-amino-1,2,4-triazole, 2-amino-3,4-oxadiazole, 3-aminopyridine, 2-aminopyridine-N-oxide, 2-amino-benzthiazole, 2-amino-6-chlorobenzthiazole, 2-amino-6-methyl-benzthiazole, 2-amino-6-methoxy-benzthiazole, 2-amino-6-chloro-4-nitrobenzthiazole, 2-amino-6-bromo-4-cyanobenzthiazole, 2-amino-6-cyano-4-methylbenzthiazole, 2-amino-6-methyl-4-nitrobenzthiazole, 2-amino-6-methoxy-4-nitrobenzthiazole, 2-amino-6-butoxy-4-chlorobenzthiazole, 2-amino-4-chloro-5-methoxy-benzthiazole, 2-amino-4-bromo-6-methoxybenzthiazole, 2-amino-4,6-dichlorobenzthiazole, 2-amino-4,6-dibromobenzthiazole, 2-amino-4-methyl-6-(trifluoromethyl)-benzthiazole, 2-amino-4-methyl-6-propionyl-benzthiazole, 2-amino-4-chloro-6-methylsulfonyl-benzthiazole, 3-amino-benzisothiazole, 3-amino-5-chlorobenzisothiazole, 2-amino-3-cyanotetrahydrobenzthiophene, 2-amino-benzimidazole, 2-amino-6-chlorobenzimidazole, 2-amino-6-bromo-benzimidazole, 2-amino-6-methyl-benzimidazole, 2-amino-6-methoxybenzimidazole, 2-amino-6-ethoxy-benzimidazole, 2-amino-6-methylsulfonyl-benzimidazole, 2-amino-6-acetylaminobenzimidazole, 3-amino-isoindoleninone-1, 1,4-diaminophthalazine and 1-amino-4-chlorophthalazine, as well as their imine forms, or T is a radical of the formula



wherein Z_1 is an oxygen or a sulfur atom, n is 1 or 2, X_3 is an alkyl, cycloalkyl, aralkyl or aryl radical, or an amino group which is unsubstituted or substituted by an alkyl, cycloalkyl, aralkyl or aryl radical, and the metal is selected from the group consisting of zinc, cadmium, manganese, conbalt, iron, copper and nickel, which comprises condensing a hydrazone of the formula



(5)

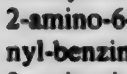
with an ortho ester of formula



(6)

where A, Y and R are defined above and R_2 is alkyl of 1 to 4 carbon atoms, benzyl or phenyl,

then reacting the product of the condensation of the hydrazone of formula (5) and the ortho ester of formula (6) with a compound of formula



where Q is defined above, in the presence of a metal salt selected from the group consisting of the formates, acetates and stearates of zinc, cadmium, manganese, cobalt, iron, copper and nickel, at a temperature of 100°–200° C. in a polar organic solvent.

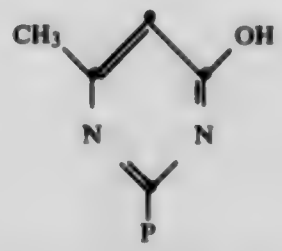
4,496,728

METHOD FOR THE PRODUCTION OF 2-ISOPROPYL-4-METHYL-6-HYDROXYPYRIMIDINE

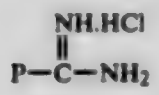
Joseph T. Blackwell, III, Denham Springs, La., and Larry Gasper, III, Greensboro, N.C., assignors to Ciba-Geigy Corporation, New York, N.Y.

Filed Sep. 20, 1982, Ser. No. 419,842
Int. Cl.[3] C07D *239/36*
U.S. Cl. 544—319 8 Claims

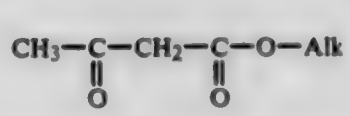
1. A process for preparing an oxypyrimidine-type compound of the formula:



where P is selected from the group consisting of isopropyl, cyclopropyl and n-propyl-, which comprises the steps of reacting an amidine hydrochloride of the formula:



with an acetoacetic ester of the formula:



where Alk is methyl or ethyl, to effect ring closure by introducing an alkali-neutralized methanolic solution of said amidine hydrochloride to a temperature range of −5° C. to 15° C. together with said acetoacetic ester into the first stage of a multi-stage reactor, this multi-stage reactor comprising a series of chambers (stages) connected by restricted flow orifices to ensure limited dwell time for the reactants at each stage but preventing back mixing of the incoming raw materials, flowing said mixture of reactants into the second stage of said multi-stage reactor away from the zone of reactant introduction; adjusting the pH in said second stage to 12.0±1 with caustic solution to initiate said ring closure reaction while maintaining a temperature in said second stage at 40°±5° C.; flowing said reaction mixture maintained at said temperature and pH to at least one successive stage; holding said reaction mixture of each of said successive stages for at least 2–8 minutes until the ring closure reaction at the last stage is complete.

4,496,729

CATALYSTS FOR THE PRODUCTION OF 2-CYANOPYRAZINE

Wolfgang Bergstein, Rodenbach; Heinz Friedrich, Hanau; Axel Kleemann, Hanau; Günther Proscher, Hanau, and Helmut Beschke, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 351,404, Feb. 23, 1982, Pat. No. 4,419,272.
This application Jul. 7, 1983, Ser. No. 511,574
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1981, 3107756
Int. Cl.[3] C07D *241/24*
U.S. Cl. 544—336
15 Claims

1. A process for the preparation of 2-cyanopyrazine comprising heat reacting 2-methylpyrazine with ammonia and oxygen in the presence of a catalyst consisting essentially of the elements antimony, vanadium and oxygen and additionally at least one of the elements iron, copper, titanium, cobalt, manganese, and nickel where the atomic ratio of antimony to vanadium is greater than 1 and which contains in addition to these compounds a lattice layer silicate and highly dispersed silica and which has a BET surface area of 5 to 50 m^2/g, a macropore volume of 0.1 to 0.8 cm^3/g, and an average pore radius of 1 to 8×10^{-7} cm.

4,496,730

PHOSPHOROUS DIKETONATE ELECTRON ACCEPTING RING COMPOUNDS AS SENSITIZERS FOR ELECTRON DONATING PHOTOCONDUCTIVE COMPOSITIONS

Chin H. Chen; Thomas E. Goliber; Jerome H. Perlstein, and George A. Reynolds, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 20, 1982, Ser. No. 420,461
Int. Cl.[3] C07F *9/21, 9/58*
U.S. Cl. 546—23
7 Claims

1. A method of making a tellurium-free dye having a tetrafluorophosphorous diketonate component comprising the step of reacting in stoichiometric amounts, an m-alkyl substituted tetrafluorophosphorous diketonate with an aldehyde.

4. A dye comprising a methine linking group linked to a tellurium-free tetrafluorophosphate diketonate component.

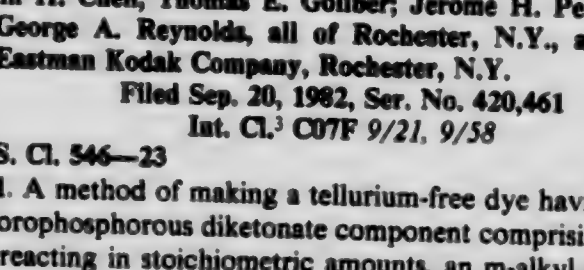
4,496,731

PROCESS FOR THE PREPARATION OF PERYLENE-3,4,9,10-TETRACARBOXYLIC ACID N,N'-DIALKYLDIIMIDE PIGMENTS

Ernst Spietschka, Idstein, and Manfred Urban, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

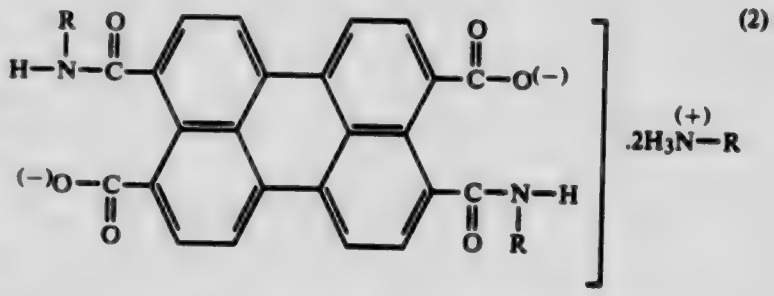
Filed Feb. 24, 1983, Ser. No. 469,222
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1982, 3208192
Int. Cl.[3] C07D *471/06*; C09B *5/62*
U.S. Cl. 546—37
10 Claims

1. A process for the preparation of a perylene-3,4,9,10-tetracarboxylix acid N,N' dialkyldiimide of the formula



(1)

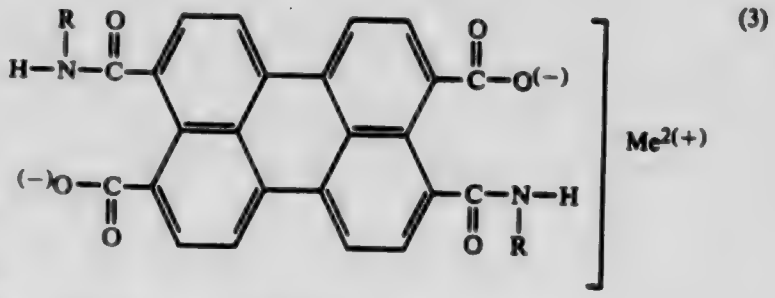
in which R is lower alkyl, from the compound of the formula



(2)

said compound of the formula (2) having been derived from the corresponding perylene-3,4,9,10-tetracarboxylic anhydride and about 4 to 10 moles, per mole of said anhydride of an alkyl amine of the formula $R\text{-}NH_2$, R being lower alkyl, said process comprising the steps of:

reacting with each mole of said compound of formula (2) at least two moles of a water soluble inorganic chloride or nitrate salt of at least one of the divalent metals Ca, Ba, Sr, or Zn or of divalent iron in aqueous medium in order to form a sparingly soluble salt of the formula



(3)

in which Me is a said divalent metal or the divalent iron, and subjecting said salt of fomula (3) to a

cyclization reaction at a temperature of from 20° to 150° C. and washing to remove the soluble inorganic anion.

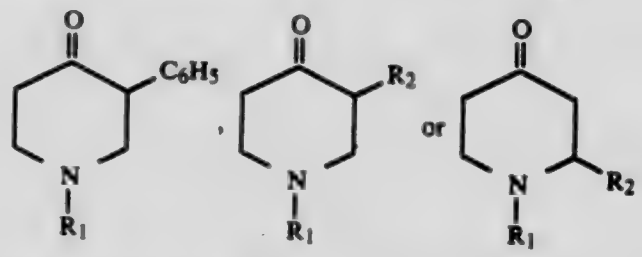
4,496,732

STEREOSELECTIVE REDUCTION OF 2- OR 3-SUBSTITUTED 4-PIPERIDONES WITH SODIUM BOROHYDRIDE

George E. Lee, Somerville, and Thomas B. K. Lee, Whitehouse Station, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Mar. 14, 1983, Ser. No. 474,856
Int. Cl.[3] C07D *211/46*
U.S. Cl. 546—216
20 Claims

1. A process for a stereoselective reduction of a 4-piperidone compound of the formula,



where R_1 is hydrogen, loweralkyl or benzyl and R_2 is methyl or ethyl, to a di-equatorial isomer of the corresponding 4-piperidinol, wherein said reduction is conducted by use of sodium borohydride at a temperature substantially lower than ambient temperature in a protic solvent medium in the presence of an inorganic acid or acidic salt thereof.

4,496,733

PROCEDURE FOR PRODUCING 2-AMINOPYRIDINES FROM 2-PYRIDINE CARBOXYLIC ACID-N-OXIDES

Daniel Quarroz, Visp, Switzerland, assignor to Lonza Ltd., Basel, Switzerland

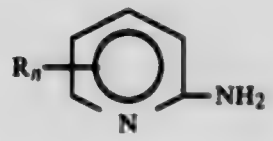
Filed Mar. 30, 1983, Ser. No. 480,314

Claims priority, application Switzerland, Mar. 31, 1982, 1979/82

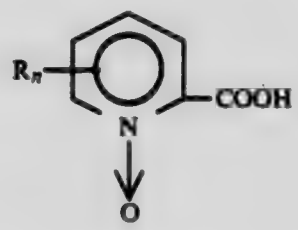
Int. Cl.[3] C07D *213/73*

U.S. Cl. 546—310 10 Claims

1. Process for the production of a 2-aminopyridine having the formula:



from a 2-pyridine carboxylic acid-N-oxide having the formula:



wherein R is H or a —COOH group or an alkyl group having one to eight carbons or an aryl group, and n is a number between 1 and 4, comprised of converting said 2-pyridine carboxylic acid-N-oxide with a lower aliphatic carboxylic acid anhydride and a tertiary amine in the presence of a carboxylic acid nitrile, an intermediate conversion product resulting, and hydrolysing said intermediate conversion product, said 2-aminopyridine resulting.

4,496,734

METABOLITE

Roy L. McQuinn, White Bear Lake; William R. Bronn, Maplewood, and Elden H. Banitt, Woodbury, all of Minn., assignors to Riker Laboratories, Inc., St. Paul, Minn.

Filed Nov. 15, 1983, Ser. No. 551,966

Int. Cl.[3] C07D *211/76*

U.S. Cl. 546—221 2 Claims

1. Synthetic 5-hydroxy-N-(6-oxo-2-piperidylmethyl)-2-(2,2,2-trifluoroethoxy)benzamide.

4,496,735

CERTAIN PYRIDYLOXY-OR-THIO-PHENYL PROPENOIC ACID DERIVATIVES

Sachio Ohno; Kiyoshi Mizukoshi; Osamu Komatsu; Mitsuaki Nagasaka, all of Aichi, and Yoshiki Nakamura, Gifu, all of Japan, assignors to Maruko Seiyaku Co., Ltd., Nagoya, Japan

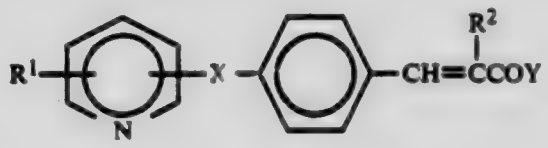
Filed Feb. 24, 1983, Ser. No. 469,475

Claims priority, application Japan, Feb. 24, 1982, 57-28392

Int. Cl.[3] C07D *213/64, 213/65*

U.S. Cl. 546—301 6 Claims

1. A pyridine compound represented by the formula



(I)

wherein X represents an oxygen atom or a sulfur atom, R^1 and R^2, which may be the same or different, each represents hydrogen or a straight or branched chain alkyl group having 1 to 3 carbon atoms, Y represents —OH or —OR^3 wherein R^3 represents a straight or branched chain alkyl group having 1 to 4 carbon atoms, and the pharmaceutically acceptable salts thereof.

4,496,736

PROCESS FOR THE PREPARATION OF CARBOXYLIC ACIDS AND N-TERT.-ALKYLAMINES

Gerhard Bonse; Gerhard Marsolph, both of Cologne, and Heinz U. Blank, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

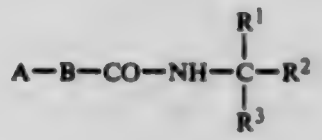
Filed Jun. 3, 1982, Ser. No. 384,470

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1981, 3124652; Mar. 27, 1982, 3211326

Int. Cl.[3] C07D *211/90, 53/134*

U.S. Cl. 546—327 19 Claims

1. A process for the simultaneous preparation of a carboxylic acid and N-tert.-alkylamine which comprises contacting a carboxylic acid N-tert.-alkylamide of the formula



wherein:

A represents an optionally substituted phenyl naphthyl or pyridyl radical;

B represents a single carbon bond, an aliphatic radical having 1 to 6 carbon atoms or a cycloaliphatic radical having 4 to 8 carbon atoms, it being possible for each carbon atom, independently of the others, to be substituted by a straight-chain or branched C_1-C_4-alkyl group, and

R^1, R^2 and R^3 are identical or different and independently of one another denote a straight-chain or branched alkyl group having 1 to 8 carbon atoms, it also being possible for R^1 and R^2 together to form an aliphatic ring, e.g. cyclo alkyl ring, having 4 to 8 ring members, or for R^1 to be an optionally substituted phenyl radical,

with a 5 to 50% strength by weight aqueous alkali metal hydroxide at 200° to 350° C. under elevated pressure while employing 1.0 to 1.3 mols of alkali metal hydroxide per mol of said carboxylic acid N-tert.-alkylamide, the reaction mixture consisting essentially of water, said aqueous alkali metal hydroxide and said N-tert.-alkylamide.

4,496,737

PROCESS FOR PREPARING SULFAMYLAMIDINE ANTISECRETORY AGENTS

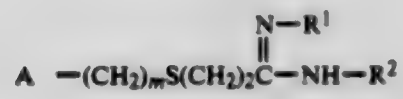
Jacob M. Hoffman, Jr., North Wales, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 27, 1982, Ser. No. 432,219

Int. Cl.[3] C07D *277/42, 307/52*

U.S. Cl. 548—193 5 Claims

1. A process for preparing a compound having the formula:



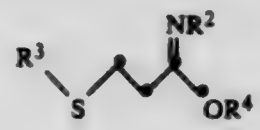
(I)

wherein:

A is a 5- or 6-membered heterocycle selected from the group consisting of pyridyl, imidazolyl, furanyl, thiazolyl, and oxadiazolyl, which can be optionally substituted by loweralkyl, di-loweralkylamino loweralkyl, N,N-di-loweralkylhydrazino, or guanidino;

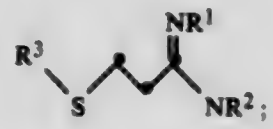
R^1 is sulfamoyl or substituted sulfamoyl wherein the substituent is (aralkyl or aryl:) phenyl, substituted phenyl, phenalkyl, or substituted phenalkyl, wherein the alkyl is of

1–4 carbons and the substituents are alkyl, loweralkyl, alkoxy, or halo;
R^2 is H or loweralkyl; and
m is 1–3;
said process comprising:
(a) reacting an alkylimidate having the formula:



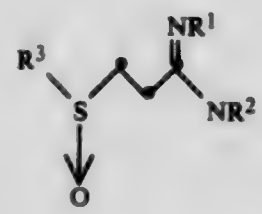
(II)

wherein R^2 is as defined above and R^3 and R^4 are independently alkyl, aryl or aralkyl, with a sulfamide to obtain a sulfide having the formula:



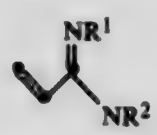
(III)

wherein R^1, R^2 and R^3 are as defined above;
(b) subjecting said sulfide (III) to peracid oxidation to obtain a sulfoxide having the formula:



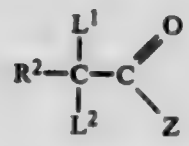
(IV)

wherein R^1, R^2 and R^3 are as defined above;
(c) reacting said sulfide (III) or said sulfoxide (IV) in the presence of a hindered amine base to obtain an N-sulfamylacrylamidine having the formula:



(V)

wherein R^1 and R^2 are as defined above; and,
(d) reacting said N-sulfamylacrylamidine (V) with a heterocycle compound having the formula:



(VII)

wherein A and m are as defined above, to obtain said Formula I compound.

4,496,738

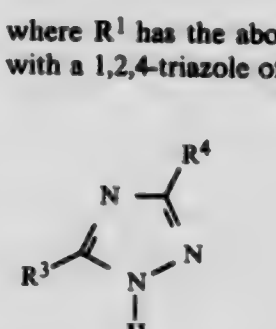
PROCESS FOR PREPARING 1,2,4-TRIAZOLE DERIVATIVES

Gerd Stubenrauch; Eberhard Ammermann, both of Ludwigshafen; Gerhard Hamprecht, Weinheim, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 230,354, Jan. 30, 1981, abandoned, which is a continuation of Ser. No. 83,267, Oct. 10, 1979, abandoned. This application Jun. 18, 1982, Ser. No. 389,935
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1978, 2846038

Int. Cl.³ C07D *249/08, 401/12, 405/12*
U.S. Cl. 548—262 1 Claim

1. A one step process for the preparation of a 1,2,4-triazole derivative of the formula I



(I)

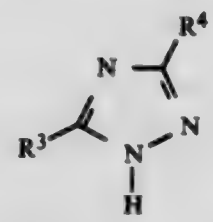
where
R^1 is unsubstituted phenyl or phenyl substituted by halogen or trifluoromethyl, R^2 is hydrogen or methyl, R^3 and R^4 are each hydrogen and Z is hydroxy, which process comprises:
reacting a compound of the formula II

(II)

where R^2 and Z have the above meanings and L^1 and L^2 are nucleophilically displaceable leaving groups, with a hydroxy compound of the formula III

$$R^1—OH \quad \text{(III)}$$

where R^1 has the above meaning, or a salt thereof, and with a 1,2,4-triazole of the formula IV



(IV)

where R^3 and R^4 have the above meanings, or a salt thereof, in the presence or absence of a solvent or diluent and/or an acid acceptor and in the presence or absence of a reaction accelerator.

4,496,739

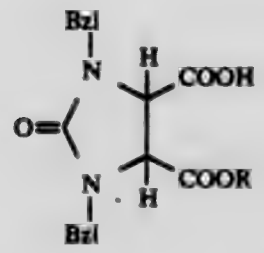
INTERMEDIATES TO OPTICALLY ACTIVE CIS-1,3-DIBENZYL-HEXAHYDRO-1H-FURO[3,4-D]IMIDAZOLE-2,4-DIONE

Naohito Ohashi, Hyogo; Kozo Shimago, Osaka; Takaharu Ikeda, Osaka, and Kikuo Ishizumi, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jan. 25, 1983, Ser. No. 460,797
Claims priority, application Japan, Jan. 27, 1982, 57-12132; Apr. 28, 1982, 57-71834; Apr. 28, 1982, 57-71837; Apr. 30, 1982, 57-73938

Int. Cl.³ C07D *233/34*
U.S. Cl. 548—321 15 Claims

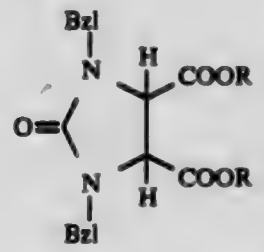
1. A cis-imidazolidinedicarboxylic acid monoester of the formula:



(III)

wherein R is a C_1–C_6 alkyl group and Bzl represents a benzyl group in a racemic form or an optically active form.

11. A cis-imidazolidinedicarboxylic acid diester of the formula:



(II)

wherein R is a C_1–C_6 alkyl group and Bzl represents a benzyl group.

4,496,740

REACTION PRODUCT OF POLYOL AND A METAL CARBONYL/PYRROLIDINE COMPLEX

P. Anthony Hinman, Torrance, Calif., assignor to Hitco, Irvine, Calif.

Division of Ser. No. 406,343, Aug. 9, 1982, Pat. No. 4,412,064. This application May 9, 1983, Ser. No. 492,720
Int. Cl.[3] C07F *11/00, 13/00*
U.S. Cl. 548—402 2 Claims

1. A reaction product of a polyol containing more than two hydroxy groups and a metal complex, said metal complex being the reaction product of tungsten carbonyl, molybdenum carbonyl and/or rhenium carbonyl with pyrrolidine.

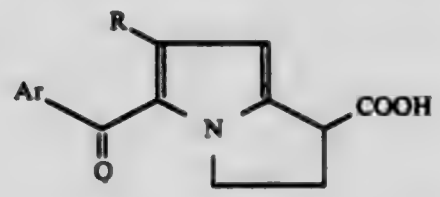
4,496,741

PROCESS FOR THE PREPARATION OF 5-AROYL-1,2-DIHYDRO-3H-PYRROLO[1,2-A]PYRROLE-1-CARBOXYLIC ACID DERIVATIVE

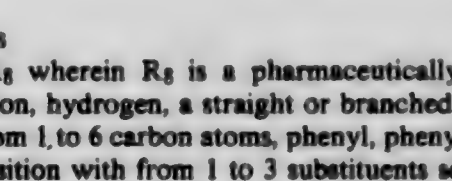
James B. Doherty, New Milford, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 24, 1983, Ser. No. 460,436
Int. Cl.[3] C07D *487/02*
U.S. Cl. 548—453 4 Claims

1. A process for preparing 5-aroyl-1,2-dihydro-3H-pyrrolo[1,2-a]pyrrole-1-carboxylic acid derivatives of the structural formula:



wherein Ar is phenyl, C_{1-4}alkylphenyl, C_{1-4}alkoxyphenyl or halophenyl; R is H, C_{1-4}alkyl or halo comprising decarboxylating a diacid derivatives of the structural formula:



where R and Ar are as previously defined; and R^1 and R^2 independently are H, t-butyl, or benzhydryl in an acid selected from the group consisting of trifluoroacetic acid and trichloroacetic acid or a combination thereof.

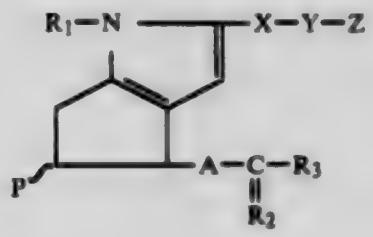
4,496,742

ANALOGS OF 5,6-DIHYDRO PGI_2

Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 310,003, Oct. 13, 1981, abandoned, which is a continuation-in-part of Ser. No. 159,738, Jun. 16, 1980, Pat. No. 4,294,759, which is a continuation-in-part of Ser. No. 94,572, Nov. 15, 1979, abandoned. This application Oct. 4, 1982, Ser. No. 426,231
The portion of the term of this patent subsequent to Oct. 13, 1998, has been disclaimed.
Int. Cl.[3] C07D *209/52*
U.S. Cl. 548—516 10 Claims

1. A compound of the formula

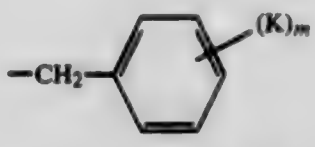


wherein Z is

(a) $—CO_2R_8$ wherein R_8 is a pharmaceutically acceptable metal cation, hydrogen, a straight or branched alkyl group having from 1 to 6 carbon atoms, phenyl, phenyl substituted in any position with from 1 to 3 substituents selected from chlorine or a straight or branched alkyl group having from 1 to 3 carbon atoms, or phenyl substituted in the para-position with $—NHCOR_{10}$, $—COR_{11}$, $—OCOR_{12}$, or $—CH=NNHCONH_2$ wherein R_{10} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or amino; R_{11} is methyl, methoxy, phenyl or amino; and R_{12} is phenyl or acetamidophenyl;

(b) $—CONR_{13}R_{14}$ wherein each of R_{13} and R_{14} is the same or different and is hydrogen, an alkyl group having from 1 to 8 carbon atoms, phenyl or benzyl;

(c) $—CH_2OR_5$ wherein R_5 is hydrogen, a straight or branched alkyl group having from 1 to 6 carbon atoms, benzoyl, a straight or branched alkanoyl group having from 2 to 5 carbon atoms, tetrahydropyranyl, trimethylsilyl, tert-butyldimethylsilyl, or



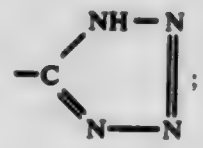
wherein K is a straight or branched alkyl group having from 1 to 6 carbon atoms, fluorine, chlorine, bromine, trifluoromethyl, a straight or branched alkoxy group having from 1 to 4 carbon atoms, phenyl, an alkanoyl group having from 2 to 5 carbon atoms, an alkanoylamido group having from 2 to 5 carbon atoms, nitro, or

(i) $—CO_2R_8$ wherein R_8 has the meaning defined hereinabove;

(ii) $-CH_2OR_{19}$, $-OR_{19}$, or $-SR_{19}$ wherein R_{19} is hydrogen, a straight or branched alkyl group having from 1 to 6 carbon atoms, an alkanoyl group having from 2 to 5 carbon atoms, benzoyl, benzyl, trimethylsilyl, tert-butyldimethylsilyl or tetrahydropyranyl; or

(iii) $-NR_{20}R_{21}$ wherein each of R_{20} and R_{21} is the same or different and is hydrogen or an alkyl group having from 1 to 6 carbon atoms; and

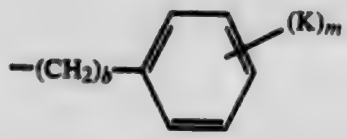
m is zero to 3 with the provisos that when K is phenyl, CO_2R_8 or $-CH_2OR_{19}$, m is 1, and when K is $-OR_{19}$ or $-SR_{19}$, m is 1 or 2; or

(d) 

wherein Y is $-CH_2CH_2-$, cis- or trans$-CH=CH-$, or $-CH_2CF_2$;

wherein X is $-(CH_2)_n$ wherein n is 1 to 5;

wherein R_1 is hydrogen, a straight or branched alkyl group having from 1 to 6 carbon atoms, a cycloalkyl group having from 3 to 7 carbon atoms, a bicycloalkyl group having from 6 to 10 carbon atoms, or



wherein b is zero or 1, and each of K and m has the meaning defined hereinabove;

wherein P is hydrogen, $\sim OR_5$ or $\sim CH_2OR_5$ wherein R_5 has the meaning defined hereinabove;

wherein A is $-CH_2CH_2-$, cis- or trans$-CH=CH-$ or $-C\equiv C-$;

wherein R_2 is H,H; =O; $\alpha-R_4,\beta-R_4$ wherein R_4 is hydrogen or an alkyl group having from 1 to 4 carbon atoms, and R_5 has the meaning defined hereinabove; and

wherein R_3 is cis-2-pentenyl, $-C(R_6)(R_7)-B-E$ or $-C(R_6)(R_7)C_qH_{2q}CH_3$ wherein B is a bond, oxa, or alkylene moiety having from 1 to 6 carbon atoms; E is



wherein each of K and m has the meaning defined hereinabove; q is 1 to 4; and each of R_6 and R_7 is hydrogen, fluorine or an alkyl group having from 1 to 4 carbon atoms with the provisos that when R_5 is fluorine, R_7 is either hydrogen or fluorine, and when B is oxa, each of R_6 and R_7 is other than fluorine; and pharmaceutically acceptable salts thereof with the further overall proviso that each compound is other than one formed when the substituent groups Z, X, Y, R_1, P, R_2 and R_3 have the following meanings:

wherein Z is

(a) $-CO_2R_8$ wherein R_8 has the meaning defined hereinabove;

(b) $-CONR_{13}R_{14}$ wherein each of R_{13} and R_{14} is hydrogen, an alkyl group having from 1 to 6 carbon atoms, phenyl or benzyl;

(c) $-CH_2OR_5$ wherein R_5 is hydrogen, a straight or branched alkyl group having from 1 to 6 carbon atoms, benzoyl or an alkanoyl group having 2 carbon atoms;

wherein X is $-(CH_2)_n$ and n is 2 or 4;

wherein Y is $-CH_2CH_2-$; trans $-CH=CH-$; or $-CH_2CF_2$;

wherein R_1 is hydrogen, a straight or branched alkyl group having from 1 to 4 carbon atoms, a cycloalkyl group having from 3 to 7 carbon atoms or



wherein K is a straight or branched alkyl group having from 1 to 3 carbon atoms, fluorine, chlorine, trifluoromethyl, an alkoxy group having 1 carbon atom, phenyl, $-CO_2R_8$ wherein R_8 has the meaning defined hereinabove, or $-CH_2OR_{19}$ wherein R_{19} is hydrogen, a straight or branched alkyl group having from 1 to 6 carbon atoms, an alkanoyl group having 2 carbon atoms, or benzoyl; and mis zero to 3 with the proviso that when K is $-CO_2R_8$, $-CO_2OR_{19}$ or phenyl, m is 1;

wherein P is hydrogen, $\sim OR_5$ or $\sim CH_2OR_5$ and each R_5 is hydrogen;

wherein R_2 is H,H; =O; $\alpha-R_4,\beta-OR_5,\beta-R_4$ wherein each R_4 is hydrogen or an alkyl group having from 1 to 3 carbon atoms; and each R_5 is hydrogen, an alkyl group having 1 carbon atom, or an alkanoyl group having 2 carbon atoms; and

wherein R_3 has the meaning defined hereinabove except that K as used therein has the following meaning: a straight or branched alkyl group having from 1 to 3 carbon atoms, fluorine, chlorine, trifluoromethyl, an alkoxy group having 1 carbon atom, phenyl, $-CO_2R_8$ wherein R_8 has the meaning defined hereinabove, or $-CH_2Or_{19}$ wherein R_{19} is hydrogen, a straight or branched alkyl group having from 1 to 6 carbon atoms, an alkanoyl group having 2 carbon atoms, or benzoyl.

4,496,743

1-[(ACYLTHIOCYCLOALKYL)CARBONYL]-L-PROLINE DERIVATIVES

Romeo Ciabatti, and Giovanna Padova, both of Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Division of Ser. No. 239,941, Mar. 3, 1981, Pat. No. 4,385,062. This application Jan. 26, 1983, Ser. No. 460,972

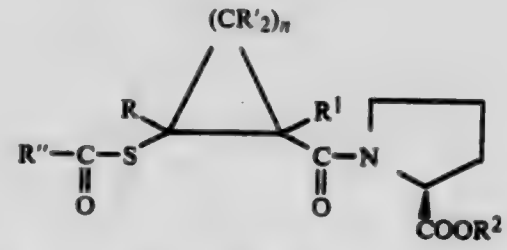
Claims priority, application United Kingdom, Mar. 7, 1980, 8007756

Int. Cl.³ C07D *207/16*

U.S. Cl. 548—533 **3 Claims**

1. A compound of the formula

VI



wherein R, R^1, and R^2, each independently, represent hydrogen or a (C_1-C_4)alkyl radical, R'' stands for methyl or phenyl, n represents the integer 1, 2, 3, 4, or 5 and in each of the n (CR'_2) groups R' represents hydrogen or a (C_1-C_4)alkyl group.

4,496,744

MULTIDENTATE MACROMOLECULAR COMPLEX SALT CLATHRATES

Jerry L. Atwood, Tuscaloosa, Ala., assignor to University of Alabama, University, Ala.

Filed Feb. 28, 1980, Ser. No. 125,500

Int. Cl.³ C07F *5/06*

U.S. Cl. 549—208 **11 Claims**

1. A liquid chathrate of a crown ether complex salt of the formula:

$[M(\text{crown ether})_m]_x[Al_nR_{3n}X]_y \cdot pZ$

wherein M is a mono-, di- or trivalent cation, R is a lower alkyl group of 1 to 8 carbon atoms, X is a mono-, di- or trivalent anion, m is 1 or 2, n is 2, 3 or 4, x and y are each an integer of 1 to 3, Z is an aromatic hydrocarbon compound and p is an integer of 1 to 40.

4,496,745

EPOXYCARBACYCLIN DERIVATIVES, THEIR PREPARATION AND USE

Shigeo Amemiya, and Koichi Kojima, both of Hiromachi, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

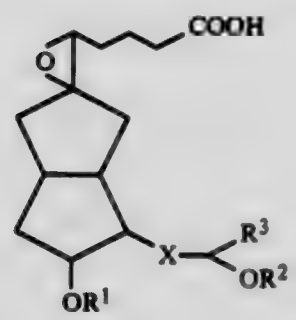
Filed Oct. 25, 1983, Ser. No. 545,097

Claims priority, application Japan, Oct. 26, 1982, 57/187760

Int. Cl.³ C07D *303/40, 407/14, 407/08;* C07F *7/18*

U.S. Cl. 549—215 **10 Claims**

1. Compounds of formula (I):



(I)

in which:

R^1 and R^2 are the same or different and each represents hydrogen or a hydroxy-protecting group;

R^3 represents an alkyl group having from 1 to 12 carbon atoms which is optionally substituted, an alkenyl group having from 2 to 12 carbon atoms, an alkynyl group having from 2 to 6 carbon atoms or a cycloalkyl group which is optionally substituted; and

X represents an ethylene group, a trans-vinylene group or an ethynylene group

and salts and esters thereof.

4,496,746

SYNTHESIS OF ALKENYL SATURATED ALIPHATIC POLYCARBOXYLIC ACID ANHYDRIDES

Justin C. Powell, Fairfax, Va., assignor to Texaco Inc., White Plains, N.Y.

Filed Jul. 1, 1982, Ser. No. 394,065

Int. Cl.³ C07D *307/60*

U.S. Cl. 549—255 **10 Claims**

1. The method of preparing a product anhydride of an alkenyl saturated aliphatic polycarboxylic acid which comprises

maintaining a reaction mixture at 150° C.–300° C. containing an olefin oligomer reactant of molecular weight $\overline{M}_n$ of 250–5000 and a catalyst;

adding thereto, over the course of reaction, a dispersion containing an anhydride of an unsaturated aliphatic polycarboxylic acid, in amount of 0.5–5 moles per mole of olefin oligomer reactant in said reaction mixture, dispersed, in the presence of dispersing amount of a dispersing agent, in a non-aqueous diluent-solvent thereby forming product anhydride of an alkenyl saturated aliphatic polycarboxylic acid; and

recovering said product anhydride of said alkenyl saturated aliphatic polycarboxylic acid.

4,496,747

PROCESS FOR THE PREPARATION OF DEHYDROACETIC ACID

Robert J. Clemens, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 21, 1983, Ser. No. 487,396

Int. Cl.³ C07D *309/38*

U.S. Cl. 549—291 **8 Claims**

1. A process for the preparation of dehydroacetic acid which comprises heating 2,2,6-trimethyl-4H-1,3-dioxin-4-one in the absence of a catalyst and recovering the dehydroacetic acid produced therefrom.

4,496,748

SUBSTITUTED MACROBICYCLIC ETHERS, THE MANUFACTURE AND USE THEREOF

Helmut Gebauer, Munich, Fed. Rep. of Germany, assignor to Consortium Für Elektrochemische Industrie GMBH, Munich, Fed. Rep. of Germany

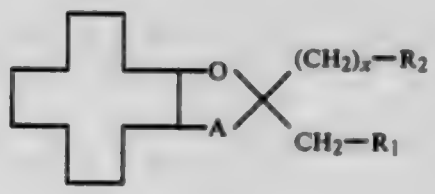
Filed Aug. 4, 1982, Ser. No. 404,984

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1981, 3137939

Int. Cl.³ C07D *311/94*

U.S. Cl. 549—396 **2 Claims**

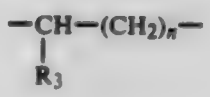
1. A compound of the formula



wherein

R_1 and R_2 represent hydrogen or optionally branched alkyl groups having from 1 to 6 carbon atoms or optionally branched alkenyl groups having from 3 to 6 carbon atoms,

A represents a bivalent hydrocarbon radical of the formula



wherein

R_3 represents hydrogen or methyl, and

n and x are both 1.

4,496,749

OLIGOMERS OF PERFLUORO(2,2-DIMETHYL-1,3-DIOXOLE) AND THEIR FLUORINATION PRODUCTS

Edward N. Squire, Glen Mills, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

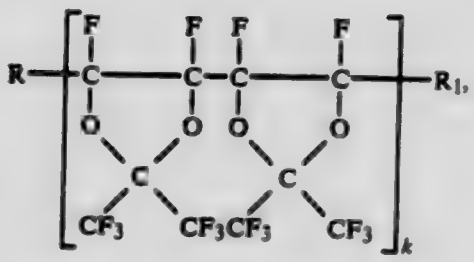
Division of Ser. No. 279,867, Jul. 2, 1981, Pat. No. 4,409,393. This application Sep. 23, 1982, Ser. No. 421,825

The portion of the term of this patent subsequent to Oct. 11, 2000, has been disclaimed.

Int. Cl.³ C07D *317/10*

U.S. Cl. 549—448 **1 Claim**

1. An oligomer of perfluoro(2,2-dimethyl-1,3-dioxide) containing at least one chain having the following formula:



where k is 1 to about 4, and at least one of R and R_1 is the fluorocarbonyl group, while the other one of R and R_1 may also be hydrogen.

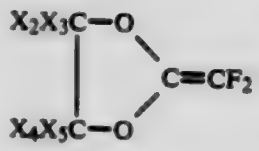
4,496,750

CYCLIC MONOMERS DERIVED FROM TRIFLUOROPYRUVATE ESTERS

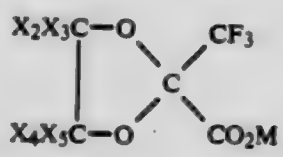
Burton C. Anderson; David C. England, and Paul R. Resnick, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 306,390, Sep. 28, 1981, Pat. No. 4,429,143. This application Sep. 13, 1982, Ser. No. 417,698
Int. Cl.³ C07D *317/00*
U.S. Cl. 549—455 **4 Claims**

1. A process for preparing a dioxolane of the formula:

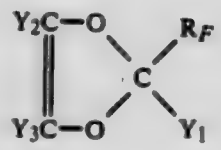


wherein X_2, X_3, X_4 and X_5, independently, are Cl or F, provided that at least two are F, comprising pyrolyzing the dioxolane of the formula

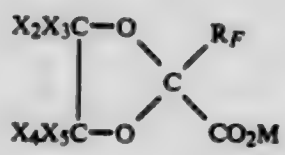


wherein: X_2 to X_5, independently, are Cl or F, at least two of which are F, and M is an alkali metal, at a temperature of about 140° C. to 200° C.

3. A process for preparing the dioxole of the formula



wherein Y_1 and Y_2 are Cl and Y_3 is F or Cl, comprising pyrolyzing the dioxolane of the formula



wherein: R_F is C_1 to C_4 perfluoroalkyl, M is an alkali metal, X_2, X_3 and X_4 are each Cl and X_5 is Cl or F, at a temperature of about 140° C. to 200° C.

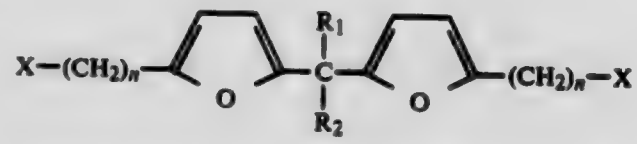
4,496,751

DIFUNCTIONAL FURAN DERIVATIVES

Richard H. Still, Disley; John L. Cawse, Manchester, and John L. Stanford, Flixton, all of England, assignors to The University of Manchester Institute of Science & Technology, Manchester, England

Filed Apr. 1, 1983, Ser. No. 481,370
Int. Cl.³ C07D *307/52, 307/66*
U.S. Cl. 549—472 **10 Claims**

1. Compounds of the formula (I)



(I)

in which R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen, unsubstituted ethyl radicals, methyl radicals, vinyl radicals, halogen substituted vinyl radicals, halogen substituted methyl radicals and halogen substituted ethyl radicals, X is a $—NH_2$ or —NCO group, and n is 0 or 1 with the proviso that n is not 0 when X is $—NH_2$.

4,496,752

PRODUCTION OF EPOXY COMPOUNDS FROM OLEFINIC COMPOUNDS

Abraham P. Gelbein, Plainfield, and Joon T. Kwon, Freehold Township, Monmouth County, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed May 3, 1979, Ser. No. 35,558
Int. Cl.³ C07D *301/26;* C25B *1/46, 3/02*
U.S. Cl. 549—521 **18 Claims**

1. A process for converting an olefinically unsaturated compound to the corresponding epoxy compound, comprising:

contacting a tertiary alkanol in an inert organic solvent, chlorine and aqueous alkali to produce tertiary alkyl hypochlorite, at a temperature of from 5° to 220° F.; separating an organic phase of tertiary alkyl hypochlorite in the inert organic solvent; contacting tertiary alkyl hypochlorite in the inert organic solvent, water and an olefinically unsaturated compound to produce the corresponding chlorohydrin and a tertiary alkanol, at a temperature of from 32° F. to 160° F. said water having a salt dissolved therein to enhance extraction of the tertiary alkanol and chlorohydrin into the inert organic solvent; separating an organic phase of chlorohydrin and tertiary alkanol in the inert organic solvent; contacting cholorohydrin and tertiary alkanol in the inert organic solvent and aqueous alkali to convert the chlorohydrin to the corresponding epoxy compound; recovering said epoxy compound; separating an organic phase of the tertiary alkanol in the inert organic solvent; and passing tertiary alkanol in the inert organic solvent to the contacting with chlorine and aqueous alkali.

10. A process for converting an olefinically unsaturated compound to the corresponding epoxy compound, comprising:

contacting a tertiary alkanol in an inert organic solvent, chlorine and aqueous electrolyte containing sodium chloride and sodium hydroxide obtained from an electrolytic cell for producing chlorine to produce tertiary alkyl hypochlorite and an aqueous brine; separating an organic phase of tertiary alkyl hypochlorite in the inert organic solvent from aqueous brine for recycle of aqueous brine to the electrolytic cell; contacting tertiary alkyl hypochlorite in the inert organic solvent, water and an olefinically unsaturated compound to produce the corresponding chlorohydrin and tertiary alkanol, said water having a salt dissolved therein to enhance extraction of the tertiary alkanol and chlorohydrin into the inert organic solvent; separating an organic phase of chlorohydrin and tertiary alkanol in the inert organic solvent; contacting chlorohydrin

and tertiary alkanol in the inert organic solvent and aqueous electrolyte containing sodium chloride and sodium hydroxide from the electrolytic cell to convert the chlorohydrin to the corresponding epoxy compound and produce aqueous brine; recovering the epoxy compound; separating an aqueous brine phase from an organic phase of tertiary alkanol in the inert organic solvent; passing tertiary alkanol in the inert organic solvent to the contacting with chlorine and aqueous electrolyte; employing aqueous brine generated in producing epoxy compound in the contacting of tertiary alkanol with chlorine and electrolyte prior to recycle to the cell to convert any tertiary alkanol present therein to tertiary alkyl hypochlorite; recovering from the chlorohydrin production a water phase; and recycling recovered water phase to the chlorohydrin production.

4,496,753

SAPONIFICATION OF CHLOROHYDRINS

Joon T. Kwon, Freehold Township, Monmouth County, and George D. Suciu, Ridgewood, both of N.J., assignors to Lummus Crest, Inc., Bloomfield, N.J.

Filed Sep. 26, 1983, Ser. No. 535,903
Int. Cl.³ C07D *301/26*
U.S. Cl. 549—521 **15 Claims**

1. In a process for the saponification of a chlorohydrin to an epoxy compound with an aqueous base, the improvement comprising:

saponifying the chlorohydrin in a first and second stage, said first stage being under high back-mix conditions, said second stage being under plug-flow conditions, and at least a portion of the effluent from the first stage being introduced into the second stage.

4,496,754

SILYL CARBAMATES AND SYNTHESIS THEREOF

Bernard Kanner, West Nyack; Steven P. Hopper, Mahopac, both of N.Y., and Dennis J. Sepelak, McMurray, Pa., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 28, 1982, Ser. No. 454,178
Int. Cl.³ C07F *7/10, 7/18*
U.S. Cl. 556—420 **26 Claims**

1. A process for preparing silyl carbamates which comprises reacting, under suitable reaction conditions, one or more silanes represented by the general formula:

$$R_{4-x}SiH_x$$

wherein R is individually an aliphatic or aromatic, saturated or unsaturated hydrocarbon or alkoxy radical containing from one to twelve carbon atoms, inclusive, and x has a value of from one to two; with one or more ammonium carbamates or corresponding carbamic acid compounds selected from ammonium, carbamates represented by the general formula:

$$R'R''NH_2^{\oplus}R'R''NCO_2^{\ominus}$$

or from the group of carbamic acid compounds represented by the general formula:

$$R'R''NCOOH$$

wherein R′ and R″ are individually hydrogen or an aliphatic saturated or unsaturated hydrocarbon radical containing from one to twelve carbon atoms inclusive, and thereafter recovering, said silyl carbamate, said recovered silyl carbamate being represented by the general formula:

$$R_{4-x}Si(O_2CNR'R'')_x$$

wherein R, R′, R″ and x are as previously defined.

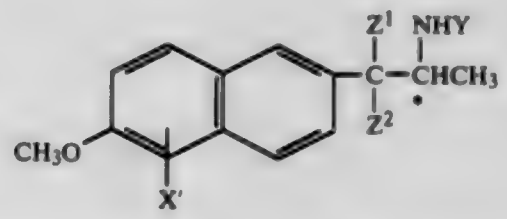
4,496,755

OPTICALLY ACTIVE 1-(6-METHOXY-2-NAPHTHYL)-2-(ALKOXYCARBONYL) AMINO-1-PROPANONE, ITS DERIVATIVES AND THEIR HALO ANALOGS AND THE METHODS FOR THEIR MANUFACTURE

Genichi Tsuchihashi, Tama; Shuichi Mitamura, Sagamihara; Koji Kitajima, Yokohama, and Kumi Kobayashi, Tokyo, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed Mar. 28, 1983, Ser. No. 479,768
Claims priority, application Japan, Mar. 31, 1982, 57-051397
Int. Cl.³ C07C *125/067, 125/02*
U.S. Cl. 560—028 **10 Claims**

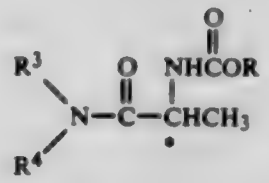
1. A process for preparing an optically active 1-(6-methoxy-2-naphthyl)-2-(alkoxycarbonyl)amino-1-propanone derivatives and their halo analogs represented by the formula



(XI)

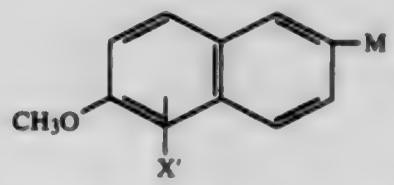
wherein X′ is hydrogen or a halogen atom at 5 or 7 position of the naphthyl moiety; Z_1 and Z_2 together with its two bonds is an oxo group or Z_1 and Z_2 are OR^1 groups wherein R^1 represents a lower alkyl group or both R^1s may form, when taken together an alkylene group with 2 to 6 carbon atoms; Y is —COOR (wherein R is a lower alkyl group optionally substituted with one or more non-interfering substituents selected from hydroxy, alkoxy, acyloxy, nitro, alkylamino, halogen and carbonyl) or hydrogen; Z_1 and Z_2 are OR^1 groups when Y is hydrogen; the asterisk mark indicates an asymmetric carbon atom, which comprises:

(a) contacting an amide represented by the formula



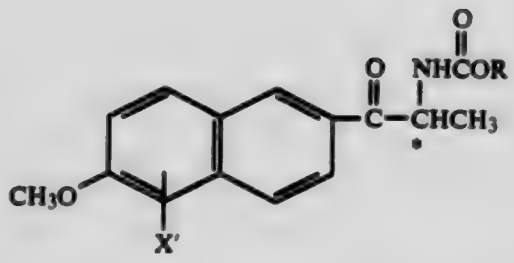
(VII)

wherein R is as defined above; R^3 is a lower alkyl group; R^4 is a lower alkyl group or a lower alkoxy group, in an inert atmosphere and in an inert solvent comprising an ether, optionally first with a compound selected from the group consisting of alkyl lithium, aryl lithium, a Grignad r reagent, and alkali metal hydride, then with an organic metallic compound represented by the formula



(VI)

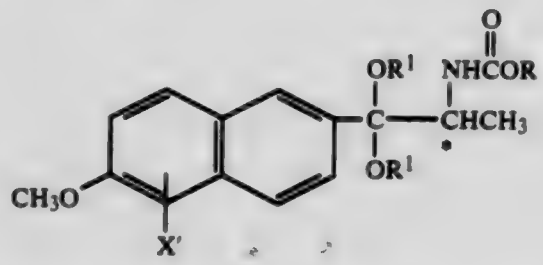
wherein X′ is as defined above; M represents MgX wherein X is a halogen atom, or Li, to obtain optically active 1-(6-methoxy-2-naphthyl)-2-(alkoxycarbonyl)amino-1-propanone and its halo analogs represented by the formula



(I)

wherein X′, R and the asterisk mark as defined above; and optionally

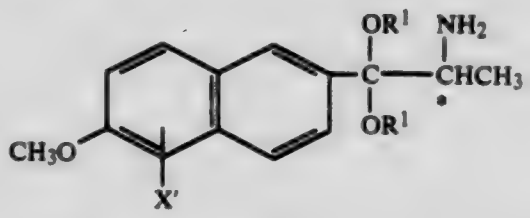
(b) converting the compound of Formula (I) to a corresponding acetal represented by the formula:



(II)

wherein X′, R, R^1 and the asterisk mark are as defined above; and further optionally

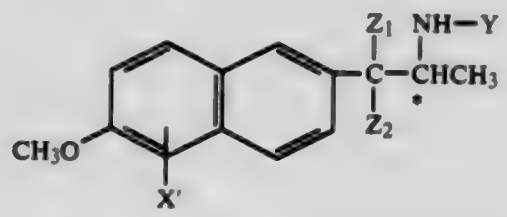
(c) contacting the compound of Formula (II) with a base to form the corresponding amino acetal represented by the formula



(III)

wherein X′, R^1 and the asterisk mark are defined as above.

8. An optically active compound of the formula



(XI)

wherein X′ is hydrogen or a halogen atom at 5 or 7 position of the naphthyl moiety, Z_1 and Z_2 together with its two bonds in an oxo group or Z_1 and Z_2 are OR^1 groups wherein R^1 represents a lower alkyl group or both R^1s may form, when taken together an alkylene group with 2 to 6 carbon atoms; Y is —COOR (wherein R is a lower alkyl group optionally substituted with one or more non-interfering substituents selected from hydroxy, alkoxy, acyloxy, nitro, alkylamino, halogen and carbonyl) or hydrogen; Z_1 and Z_2 are OR^1 groups when Y is hydrogen; the asterisk mark indicates an asymmetric carbon atom.

4,496,756

PROCESS FOR PREPARING AMINO ACID ESTERS

Dennis P. Bauer, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Sep. 1, 1983, Ser. No. 528,462
Int. Cl.³ C07C *101/02*
U.S. Cl. 560—41 **15 Claims**

1. A process which comprises reacting (1) an enolizable organic compound corresponding to the formula:



wherein X is a leaving group and R and R′ are independently selected from hydrogen and innocuous substituents with (2) an acid amide, (3) an alcohol, (4) carbon monoxide, and (5) hydrogen in a homogeneous reaction mixture containing a cobalt carbonylation catalyst, an alkali metal alcoholate, and methyl isobutyl ketone so as to form an N-acylamino acid ester.

4,496,757

ULTRAVIOLET-ABSORBING STABILIZERS SUBSTITUTED AN ALIPHATIC HYDROXYL GROUP

Martin Dexter, Briarcliff Manor, and Roland A. E. Winter, Armonk, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 318,648, Nov. 5, 1981, Pat. No. 4,414,393.
This application Sep. 30, 1982, Ser. No. 431,498
Int. Cl.³ C07C *69/593*
U.S. Cl. 560—82 **5 Claims**

1. An ultraviolet-absorbing, matrix-reactive compound having the formula

$$E\text{-}(G\text{-}R)_n \quad \text{(I)}$$

or

$$L\text{-}(G\text{-}E)_m \quad \text{(II)}$$

wherein

E is a radical derived from a benzalmalonate

G is $—OCH_2CHOH—$ where E is attached to the oxygen atom,

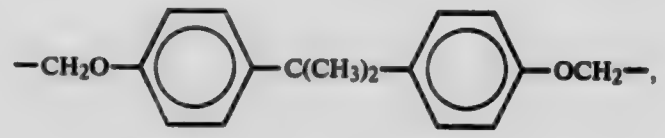
R is alkyl of 1 to 18 carbon atoms, phenyl, p-tolyl or $—CH_2OT$ where

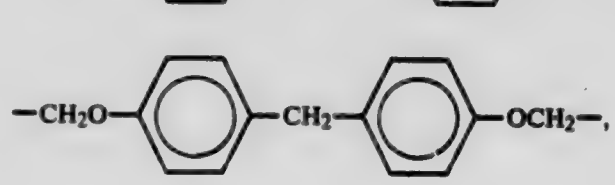
T is alkyl of 1 to 20 carbon atoms or alkenyl of 3 to 20 carbon atoms,

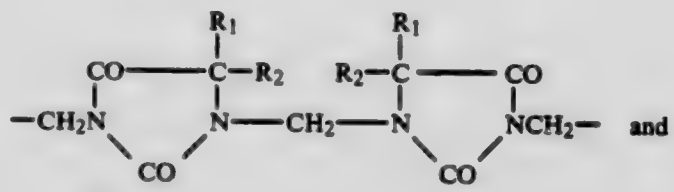
n is 1 or 2

m is 2 or 3,

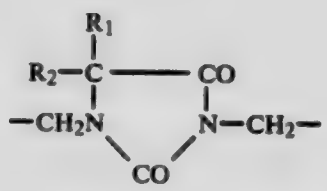
L, when m is 2, is a direct bond, alkylene of 1 to 6 carbon atoms, phenylene, or a radical selected from the group consisting of





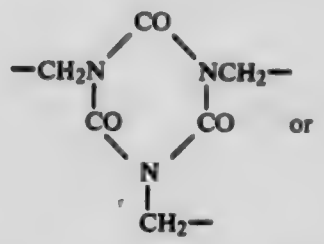


and

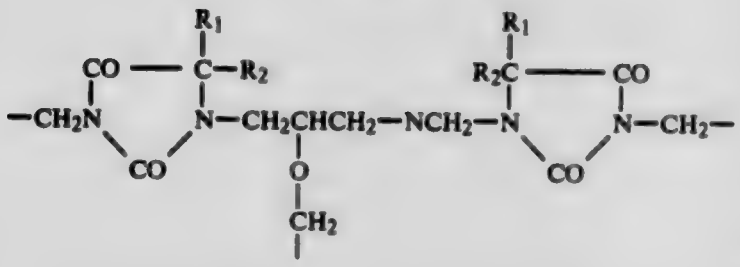


where R_1 and R_2 are independently alkyl of 1 to 6 carbon

atoms or together are tetramethylene or pentamethylene, or L, when m is 3, is



or



Q has the same meaning as L where m is 2, and p is 1 to 4.

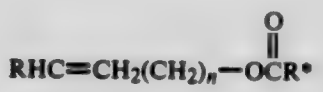
4,496,758

PROCESS FOR THE METATHESIS OF ALKENYL ESTERS

Charles W. Blewett, Fort Mitchell, Ky., and Michael D. Sublett, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

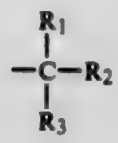
Filed Oct. 13, 1983, Ser. No. 541,757
Int. Cl.³ C07C *69/76*
U.S. Cl. 560—112 **26 Claims**

1. A metathesis process which comprises contacting an alkenyl ester of the general formula



where R is hydrogen or an alkyl group having from 1 to 10 carbon atoms, n is an integer from 2 to 20 and R* is

(a) a tertiary alkyl group having from 4 to 20 carbon atoms of the formula



where R_1, R_2 and R_3 represent the same or different alkyl groups having from 1 to 9 carbon atoms, or

(b) a phenyl or substituted-phenyl group of the formula



where R_4 and R_5 are hydrogen, halo or an alkyl group having from 1 to 8 carbon atoms, with a tungsten hexachloride/tetraalkyltin catalyst at a temperature from 0° C. to 220° C., said tungsten hexachloride present in an amount from 0.1 to 5 mole percent, based on the alkenyl ester, with the molar ratio of tetraalkyltin to tungsten hexachloride ranging from 0.4:1 to 6:1.

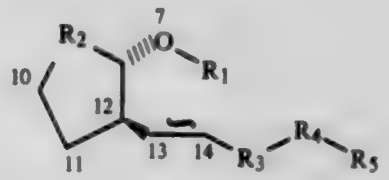
4,496,759

NOVEL PROSTAGLANDIN ANALOGUES AND PROCESS FOR MAKING SAME

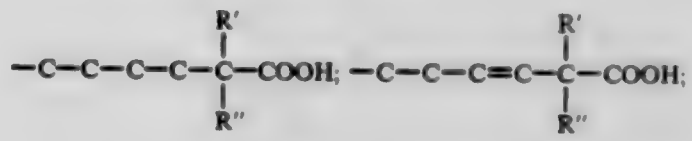
Edward D. Mihelich, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 239,765, Mar. 2, 1981, Pat. No. 4,345,981.
This application May 5, 1982, Ser. No. 375,080
Int. Cl.³ C07C *177/00*
U.S. Cl. 562—503 **11 Claims**

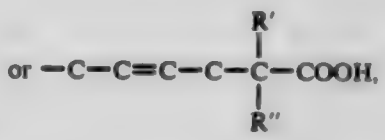
1. The 7-oxa-11-deoxy prostaglandin analogues of the formula



wherein the C_{13}–C_{14} bond is a single bond, cis double bond, or trans double bond, or triple bond; R_1 is

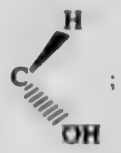


or

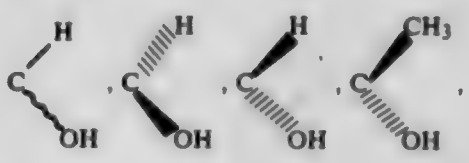


wherein

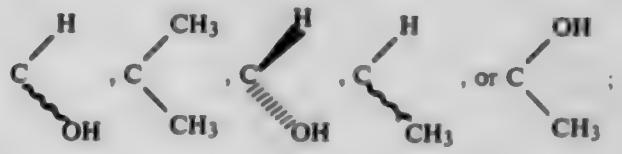
R′ and R″ are each H, CH_3, C_2H_5 or C_3H_7; R_2 is C═O or



R_3 is CH_2, C═O,



R_4 is CH_2, C═O,



R_5 is C_2H_5 or C_4H_9 and the methyl and t-butyl esters thereof.

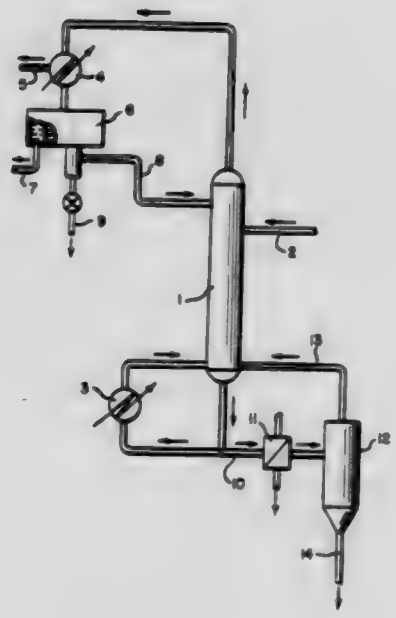
4,496,760

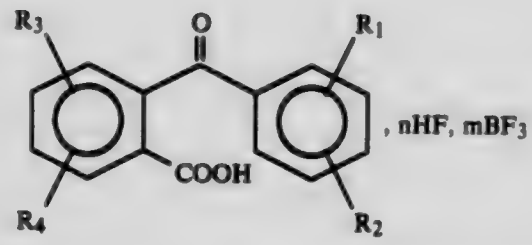
PROCESS OF DECOMPOSITION OF A COMPLEX OF ORTHO-BENZOYL BENZOIC ACID, HYDROGEN FLUORIDE AND BORON TRIFLUORIDE

Michel Devic, Lyons, France, assignor to PCUK Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Aug. 17, 1983, Ser. No. 523,945
Claims priority, application France, Sep. 1, 1982, 82 14920
Int. Cl.³ C07C *59/76*
U.S. Cl. 562—460 **22 Claims**

1. A process for the decomposition of complexes of ortho-benzoyl benzoic acid hydrogen fluoride, and boron trifluoride of the general formula:





wherein R_1, R_2, R_3, and R_4 represent hydrogen, a halogen atom, or a straight or branched chain alkyl group having 1 to 5 carbon atoms, and n and m are any integer from 1 to 6, to obtain ortho-benzoyl benzoic acid separate from hydrogen fluoride and boron trifluoride, in high yield which comprises:

(a) mixing said complex with HF to form a solution;

(b) feeding said solution into a distillation column having more than eight theoretical plates and in which a solvent reflux is established at a location in the top upper third of said column where the temperature is between 20° and 150° C. and the pressure is between 1 and 15 bars;

(c) operating said column with a solvent feed rate which is between about 5 and 40 times by weight of the feed rate of said solution to the column;

(d) recovering the ortho-benzoyl benzoic acid by evaporating any solvent present with said acid in the boiler of the column; and

(e) recovering HF, BF_3, and solvent vapors at the upper part of the column;

(f) separating BF_3 from the recovered compounds of step (e) by condensing the HF and solvent;

(g) separating HF from the solvent; and

(h) recycling the solvent back to the column.

4,496,761

PROCESS FOR MAKING CARBOHYDRAZIDE

Paul H. Lange, Jr., New Haven, Conn., assignor to Olin Corporation, Cheshire, Conn.

Filed Aug. 17, 1982, Ser. No. 408,970

Int. Cl.³ C07C *133/02*

U.S. Cl. 564—37 **10 Claims**

1. A process for making carbohydrazide comprising:

(a) reacting hydrazine with a di(lower alkyl) carbonate at a temperature below about 80° C. for a sufficient amount of time to form a first reaction mixture comprising the corresponding lower alkyl carbazate and the corresponding lower alkanol, wherein the mole ratio of hydrazine added to di(lower alkyl) carbonate is from about 0.9:1 to about 1.1:1;

(b) removing at least a portion of said lower alkanol from said first reaction mixture;

(c) then adding additional hydrazine to said remaining first reaction mixture and reacting a portion of said additional hydrazine with said lower alkyl carbazate at a temperature below about 80° C. for a sufficient amount of time to form a second reaction mixture comprising carbohydrazide, the corresponding lower alkanol and unreacted hydrazine, wherein the mole ratio of hydrazine added to said lower alkyl carbazate is from about 1.5:1 to about 4:1; and

(d) recovering said carbohydrazide from said second reaction mixture.

4,496,762

PROCESS FOR THE PREPARATION OF N-(2-(CYCLO-HEXEN-1-YL)ETHYL)-4-METHOXYBENZENEACETAMIDE

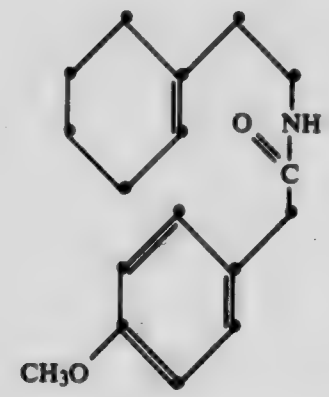
David S. Kashdan, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 29, 1983, Ser. No. 480,039

Int. Cl.³ C07C *103/76, 102/08*

U.S. Cl. 564—170 **16 Claims**

1. Process for the preparation of a compound having the formula



which comprises the steps of

(A) hydrogenating 2-cyano-1-oxaspiro[2]nonane in the presence of a hydrogenation catalyst to obtain 1-cyanomethylcyclohexanol, wherein the hydrogenation is discontinued after the uptake of about one mole equivalent of hydrogen;

(B) hydrogenating the product of Step (A) in the presence of a hydrogen treated rhodium catalyst suspended in an acidic solvent to obtain 1-(2-aminoethyl)cyclohexanol;

(C) reacting the product of Step (B) with 4-methoxyphenylacetic acid to obtain a mixture of compounds comprising N-[2-(1-hydroxy-1-cyclo-hexyl)ethyl]-4-methoxybenzeneacetamide and N-[2-(cyclohexen-1-yl)ethyl]-4-methoxybenzene acetamide;

(D) dehydrating the product mixture of Step (C).

4,496,763

PROCESS FOR THE PREPARATION OF ALKYL-SUBSTITUTED ANILINES

Helmut Le Blanc, Burscheid, and Karlfried Wedemeyer, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 9, 1982, Ser. No. 386,563

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1981, 3125295; Dec. 2, 1981, 3147734

Int. Cl.³ C07C *85/06*

U.S. Cl. 564—402 **18 Claims**

1. In a process for the preparation of an alkyl-substituted aniline by contacting an alkyl substituted phenol in the vapor phase with ammonia in the presence of an aluminum oxide catalyst, the improvement wherein the process is carried out by passing said alkyl-substituted phenol and ammonia in the vapor phase through a reactor containing said aluminum oxide catalyst at a flow rate of at least 20 cm/hour, relative to liquid volumes using a molar ratio of ammonia to phenol of at least

about 2:1, and a minimum pressure of 15 bars and at a temperature of about 360° to 460° C.

4,496,764

PROCESS FOR THE PREPARATION OF 4-AMINO-3-METHYL-PHENOL

Guido Skipka, Bonn; Hans-Ulrich Alles; Gert Randau, both of Odenthal, and Manfred Niese, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 275,538, Jun. 19, 1981, abandoned. This application Jan. 14, 1983, Ser. No. 457,834

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1980, 3025805

Int. Cl.³ C07C *85/11*

U.S. Cl. 564—418 **15 Claims**

1. A process for the preparation of 4-amino-3-methyl-phenol from 4-nitroso-3-methyl-phenol, which comprises contacting said 4-nitroso-3-methyl-phenol with iron in an acid aqueous medium at a temperature of 20° to 100° C. said medium having a pH in the range from 2 to 6.5.

4,496,765

PREPARATION OF 2-(METHYLTHIOMETHYL)-6-(TRIFLUOROMETHYL-)ANILINE FROM ORTHO-AMINOBENZOTRIFLUORIDE

Audrey Y. Ku, Chesterfield; John P. Chupp, Kirkwood, and Terry M. Balthazor, University City, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 7, 1983, Ser. No. 530,153

Int. Cl.³ C07C *85/24*

U.S. Cl. 564—440 **14 Claims**

1. A process for preparing 2-(methylthiomethyl)-6-(trifluoromethyl) aniline, which process comprises the steps of:

(a) reacting ortho-aminobenzotrifluoride with dimethyl sulfide and N-chlorosuccinimide in an inert solvent to produce N-(2-trifluoromethylphenyl)-S,S-dimethyl sulfilimine hydrochloride and succinimide;

(b) treating the sulfilimine hydrochloride product with aqueous base to neutralize said sulfilimine hydrochloride to N-(2-trifluoromethylphenyl)-S,S-dimethyl sulfilimine and to form separate aqueous and organic phases, at least a major portion of succinimide product being dissolved in said aqueous phase;

(c) separating said organic phase containing said neutral sulfilimine from said aqueous phase containing said succinimide product;

(d) subjecting said neutral sulfilimine in said organic phase to catalytic rearrangement in the presence of a minor amount of succinimide to form 2-(methylthiomethyl)-6-(trifluoromethyl) aniline;

(e) reacting said succinimide product in said aqueous phase with chlorine to produce N-chlorosuccinimide; and

(f) recycling said N-chlorosuccinimide produced in step (e) for use as a reagent in step (a).

4,496,766

PROCESS FOR PRODUCTION OF α,β-UNSATURATED KETONES

Jiro Tsuji, Kamakura, and Isao Shimizu, Tokyo, both of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

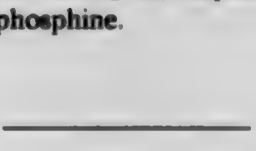
Filed May 4, 1983, Ser. No. 491,380

Claims priority, application Japan, May 4, 1982, 57-74747

Int. Cl.³ C07C *45/65*

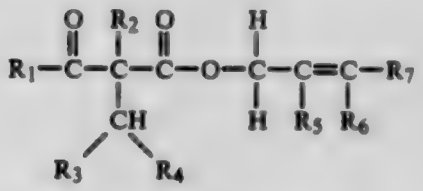
U.S. Cl. 568—346 **13 Claims**

1. A process for producing an α,β-unsaturated ketone of the general formula



wherein R_1 represents an alkyl or alkylene group, R_2 represents an alkyl, alkenyl, alkynyl, alkylene, alkoxycarbonyl, alkeneoxycarbonyl, alkoxyalkyl or alkoxycarbonylalkyl group, R_3 and R_4 represent a hydrogen atom or an alkyl or alkylene group, and R_1, R_2, R_3, and R_4 may be linear or may form a ring when taken together in arbitrary combinations,

which comprises contacting an α-disubstituted-β-keto acid ester of the general formula



wherein R_1, R_2, R_3 and R_4 are as defined, and R_5, R_6 and R_7 represent a hydrogen atom or an alkyl group, said α-disubstituted-β-keto acid ester being an ester formed between a keto acid having not more than 20 carbon atoms and an allylic alcohol having not more than 6 carbon atoms, with a catalyst consisting essentially of (a) a palladium compound and (b) an α,ω-C_2–C_4 alkylenedi(di-alkyl or phenyl-substituted)phosphine.

4,496,767

PROCESS FOR PREPARING 2-CYCLOPENTENONE DERIVATIVES

Masayoshi Minai, Moriyama, and Tadashi Katsura, Suita, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

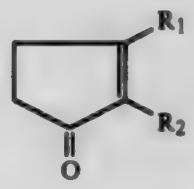
Filed Oct. 18, 1983, Ser. No. 543,152

Claims priority, application Japan, Oct. 27, 1982, 57-189883

Int. Cl.³ C07C *45/65*

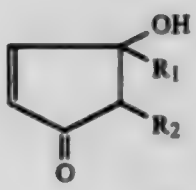
U.S. Cl. 568—346 **13 Claims**

1. A process for preparing 2-cyclopentenones of the formula:



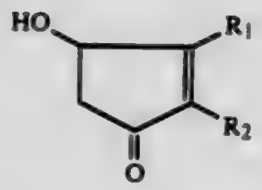
(V)

wherein R_1 is hydrogen, alkyl or alkenyl and R_2 is alkyl, alkenyl, alkynyl, cycloalkyl, aryl or aralkyl, which comprises esterifying a mixture of a 3-hydroxy-4-cyclopentenone of the formula:



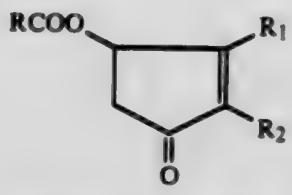
(II)

wherein R_1 and R_2 are each as defined above and a 4-hydroxy-2-cyclopentenone of the formula:



(III)

wherein R_1 and R_2 are each as defined above with an aliphatic carboxylic acid to give a mixture of the 4-hydroxy-2-cyclopentenone (III) and a cyclopentenone ester of the formula:



(IV)

wherein R_1 and R_2 are each as defined above and R is hydrogen or C_1-C_4 alkyl and subjecting the resulting mixture to reduction.

4,496,768

PROCESS FOR THE PRODUCTION OF ALDEHYDES BY HYDROFORMYLATION OF ALPHA-OLEFINS

Alan J. Dennis, Middlesbrough; George E. Harrison, Billericay, and James P. Wyber, Stockton-on-Tees, all of England, assignors to Davy McKee Limited, London, England

Filed Jun. 7, 1983, Ser. No. 501,859

Claims priority, application United Kingdom, Nov. 6, 1982, 8217037

Int. Cl.³ C07C *45/50*

U.S. Cl. 568—454 **15 Claims**

1. A continuous process for the production of an aldehyde by hydroformylation of an alpha-olefin feedstock selected from the group consisting of alpha-olefins and substituted alpha-olefins which comprises:

providing a hydroformylation zone containing a charge of a liquid reaction medium having dissolved therein a complex rhodium hydroformylation catalyst comprising rhodium in complex combination with carbon monoxide and with a cyclic phosphite having a bridgehead phosphorus atom linked to three oxygen atoms at least two of which form together with the bridgehead phosphorus atom part of a ring;

continuously supplying said alpha-olefin feedstock to the hydroformylation zone;

maintaining in the hydroformylation zone a temperature in the range of from about 40° C. to about 160° C. and a pressure in the range of from about 4 bar to about 75 bar;

supplying make-up hydrogen and carbon monoxide to the hydroformylation zone; and

recovering from the liquid hydroformylation medium a hydroformylation product comprising at least one aldehyde.

4,496,769

PROCESS FOR THE PREPARATION OF ALDEHYDES BY HYDROFORMYLATION OF OLEFINS

Alan J. Dennis, Middlesbrough; George E. Harrison, Billericay, and James P. Wyber, Stockton-on-Tees, all of England, assignors to Davy McKee (London) Limited, London, England

Filed Jun. 7, 1983, Ser. No. 501,920

Claims priority, application United Kingdom, Jun. 11, 1982, 8217038

Int. Cl.³ C07C *45/50*

U.S. Cl. 568—454 **10 Claims**

1. In a hydroformylation process for the production of an aldehyde by hydroformylation of an olefin which comprises contacting an olefin with carbon monoxide and hydrogen in a hydroformylation zone containing a charge of a liquid reaction medium having dissolved therein a catalytic amount of a complex rhodium hydroformylation catalyst comprising rhodium in complex combination with carbon monoxide and with an organic phosphite ligand of the general formula:

$$(RO)_3P \qquad (I)$$

in which each R represents a radical selected from hydrocarbyl radicals and substituted hydrocarbyl radicals under temperature and pressure conditions conducive to hydroformylation of the olefin, the improvement comprising:

continuously supplying olefin and make-up hydrogen and carbon monoxide to the hydroformylation zone; and

supplying make-up phosphite ligand of the general formula (I) to the hydroformylation zone at a rate sufficient to maintain a predetermined level of free phosphite ligand in the liquid reaction medium and thereby to maintain the catalytic activity of the complex rhodium hydroformylation catalyst.

4,496,770

PROCESS FOR THE PREPARATION OF α-ALKYLACROLEINS

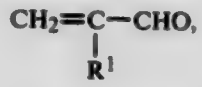
Gerd Duembgen, Dannstadt-Schauernheim; Gerd Fouquet, Neustadt; Richard Krabetz, Kirchheim; Ekhart Lucas, Wachenheim; Franz Merger, Frankenthal, and Friedbert Nees, Stutensee, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 28, 1983, Ser. No. 479,475

Int. Cl.³ C07C *47/22*

U.S. Cl. 568—463 **10 Claims**

1. In a process for the preparation of an α-alkylacrolein of the formula



(I)

where R^1 is n-alkyl of 1 to 8 carbon atoms which may be further substituted by alkoxy or alkyl of 1 to 4 carbon atoms, by reacting an alkanal of the formula

$$R^1—CH_2—CHO \qquad (II),$$

where R^1 has the above meanings, with formaldehyde in the presence of a secondary amine in the presence or absence of an acid, at from 150° to 300° C.,

the improvement which comprises carrying out the reaction in the liquid phase under superatmospheric pressure at above 150° C. for not more than 25 minutes, using from 0.001 to 0.25 equivalent of amine per mole of alkanal II.

4,496,771

PROCESS FOR PREPARING THE COMPOUND 1-DECYLOXY-4-[(7-OXA-4-OCTYNYL)-OXY]-BENZENE

Pietro Massardo; Franco Bettarini; Ennio Bianchini both of Novara and Paolo Piccardi, Milan, all of Italy, Milan, Italy, assignors to Montedison S.p.A., Milan, Italy

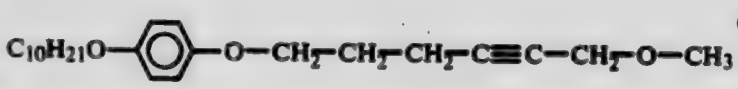
Filed Mar. 3, 1983, Ser. No. 471,706

Claims priority, application Italy, Mar. 4, 1982, 19957 A/82

Int. Cl.³ C07C *41/16, 43/205*

U.S. Cl. 568—651 **5 Claims**

1. A process for preparing compound 1-decyloxy-4-[(7-oxa-4-octynyl)-oxy]-benzene of formula:



(I)

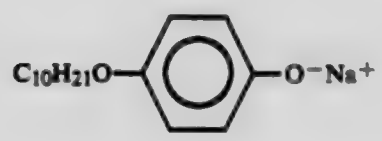
characterized in that the sodium salt of methyl-propargyl-ether of formula:

$CH_3—O—CH_2—C{\equiv}C^-Na^+$

is reacted in liquid ammonia at a temperature of −33° C. and in a nitrogen atmosphere with a substantially equimolecular amount of 1-bromo-3-chloro-propane in anhydrous tetrahydrofuran, thus obtaining compound 1-methoxy-6-chloro-hexyne-2 of formula:

$CH_3O—CH_2—C{\equiv}C—CH_2—CH_2—CH_2—Cl$ (II)

which is reacted in an inert polar solvent and at a temperature ranging from room temperature to 70° C. with a substantially equimolecular amount of sodium salt of 4-decyloxy-phenol of formula:



4,496,772

PREPARATION OF NITROALCOHOLS

John T. Lai, Broadview Heights, Ohio, assignor to The BF Goodrich Company, Akron, Ohio

Filed Jul. 8, 1983, Ser. No. 512,081
Int. Cl.[3] C07C *79/18*
U.S. Cl. 568—704 11 Claims

1. In a process for preparing a nitroalcohol by reacting a nitroparaffin with an aldehyde, the improvement comprising the step of conducting the reaction in the presence of trialkyl phosphine catalyst.

4,496,773

PROCESS FOR THE PREPARATION OF 1,1'-BI-2-NAPHTHOLS

Robert C. Clouse, and R. Garth Pews, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 28, 1983, Ser. No. 479,399
Int. Cl.[3] C07C *39/14*
U.S. Cl. 568—730 15 Claims

1. A process for coupling 2-naphthols which comprises contacting a 2-naphthol dissolved in a polar acidic organic solvent in the presence of a catalytic amount of a catalyst which comprises a readily reducible form of a Group IB, Group VIII or manganese metal in the further presence of oxygen or a source of oxygen at a temperature between 0° and 200° C. under conditions such that a 1,1'-bi-2-naphthol is prepared wherein the product contains less than about 1 mole percent of binaphthenoquinones.

4,496,774

COMPLEX FORMED TO SEPARATE NITRATED PHENOLIC COMPOUNDS FROM OTHER PHENOLIC COMPOUNDS

Gerd Leston, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Division of Ser. No. 582,083, Feb. 21, 1984, Pat. No. 4,469,901, which is a division of Ser. No. 431,640, Sep. 30, 1982, Pat. No. 4,497,654. This application Jul. 23, 1984, Ser. No. 633,717
Int. Cl.[3] C07C *39/06*
U.S. Cl. 568—784 1 Claim

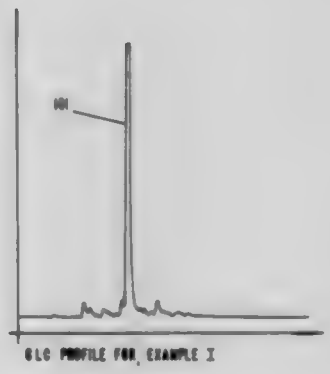
1. A complex consisting essentially of o-t-butylphenol and calcium bromide.

4,496,775

1,2,3,3,5,6-HEXAMETHYL-BICYCLO[2.2.2]-OCT-5-EN-2-OL, PROCESS FOR PRODUCING SAME, INTERMEDIATES USEFUL IN SAID PROCESS AND ORGANOLEPTIC USES OF SAME

William J. Evers, Locust; Braja D. Mookherjee, Holmdel; Anton Van Ouwerkerk, Livingston, all of N.J., and Augustinus G. Van Loveren, Rye, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 535,800, Sep. 26, 1983, , which is a division of Ser. No. 371,930, Apr. 26, 1982, Pat. No. 4,434,085. This application Apr. 20, 1984, Ser. No. 602,581
Int. Cl.[3] C07C *35/22*
U.S. Cl. 568—820 4 Claims



1. A compound defined according to a structure selected from the group consisting of:



wherein Z represents hydrogen, MgX or Li and X represents chloro, bromo or iodo.

4,496,776

EPOXIDE ISOMERIZATION PROCESS

Charles L. Edwards, and Stanley E. Wilson, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 11, 1983, Ser. No. 522,130
Int. Cl.[3] C07C *35/18*
U.S. Cl. 568—827 12 Claims

1. A process for the preparation of allylic alcohols which comprises isomerizing a di-, tri- or tetrahydrocarbyl-substituted epoxide in the presence of a metal alkoxide catalyst in which the metal is selected from early transition metals of Groups IVA and VA of the Periodic Table of Elements and in the absence of a solvent.

4,496,777

PRODUCTION OF HALOHYDRINS

George D. Suciu, Ridgewood; Joon T. Kwon, Freehold Township, Monmouth County, and Atef M. Shaban, Nutley, all of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Nov. 9, 1983, Ser. No. 549,891
Int. Cl.[3] C07C *31/34, 31/36*
U.S. Cl. 568—850 19 Claims

1. A process for producing a chlorohydrin, comprising:
reacting an olefinically unsaturated compound with a tertiary alkyl hypohalite in the presence of water and at least one salt of an amphoteric metal which is dissolved in at least the water to provide a pH of from 2 to 5.

4,496,778

PROCESS FOR THE HYDROXYLATION OF OLEFINS USING MOLECULAR OXYGEN, AN OSMIUM CONTAINING CATALYST, A COPPER CO-CATALYST, AND AN AROMATIC AMINE BASED PROMOTER

Richard S. Myers, Fairlawn; Robert C. Michaelson, Waldwick, and Richard G. Austin, Ridgewood, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

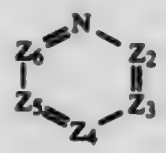
Filed Oct. 3, 1983, Ser. No. 538,190
Int. Cl.³ C07C 29/04, 31/18, 31/22, 31/42
U.S. Cl. 568—860 31 Claims

1. A process for hydroxylating at least one olefinic compound having at least one ethylenic unsaturation which comprises reacting said olefinic compound in the presence of oxygen, water and a catalyst composition, in a manner and under conditions sufficient to convert catalytically at least one of said ethylenic unsaturation directly to its corresponding diol, said catalyst composition comprising:

(a) at least one catalytically active osmium containing compound;

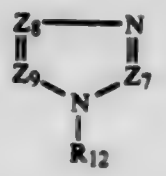
(b) at least one transition metal containing Co-catalyst I having an identity and in an amount effective to increase at least one of the rate and selectivity of the hydroxylation reaction relative to its absence, said transition metal being copper; and

(c) at least one Co-catalyst II having an identity and in an amount effective to increase the rate of the hydroxylation reaction relative to its absence and represented by at least one of the structural formulae:



(XIa)

or



(XIb)

wherein:

(1) in structural formula (XIa):

(a) Z_2 to Z_6 independently represent a member selected from the group consisting of a methylidyne group, a substituted methylidyne group represented, by the formula $=CR_{11}$, and a tertiary nitrogen group; said R_{11} substituent being selected from the group consisting of hydroxy, alkyl, aryl, aralkyl and alkaryl;

(b) any two of said R_{11} substituents located on adjacent carbons of said Z_2 to Z_5 groups of structural formula (XIa) together can constitute part of a monocyclic or fused bicyclic ring system, which partial ring systems are (i) aromatic, or heteroaromatic in nature, said heteroatom being nitrogen, and (ii) completed by, and fused with parent structure (XIa) through said adjacent carbons of Z_2 to Z_5 groups; and

(2) in structural formula (XIb):

(a) Z_7 to Z_9 independently represent a member selected from the group consisting of a methylidyne group, and a substituted methylidyne group represented by the formula $=CR'_{11}$ wherein R'_{11} is independently selected from the group consisting of alkyl, aryl, aralkyl, and alkaryl; and

(b) R_{12} is selected from the group consisting of alkyl, aryl, aralkyl, and alkaryl.

4,496,779

PROCESS FOR THE HYDROXYLATION OF OLEFINS USING MOLECULAR OXYGEN, AN OSMIUM CONTAINING CATALYST, A COPPER CO-CATALYST, AND A CYCLOALIPHATIC AMINE BASED PROMOTER

Richard S. Myers, Fairlawn; Robert C. Michaelson, Kinnelon, and Richard G. Austin, Ridgewood, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 26, 1984, Ser. No. 604,043
Int. Cl.³ C07C 29/04, 31/18, 31/22, 31/42
U.S. Cl. 568—860 28 Claims

1. A process for hydroxylating at least one olefinic compound having at least one ethylenic unsaturation which comprises reacting said olefinic compound in the presence of oxygen, water and a catalyst composition, in a manner and under conditions sufficient to convert catalytically at least one of said ethylenic unsaturation directly to its corresponding diol, said catalyst composition comprising:

(a) at least one catalytically active osmium containing compound;

(b) at least one transition metal containing Co-catalyst I having an identity and in an amount effective to increase at least one of the rate and selectivity of the hydroxylation reaction relative to its absence, said transition metal being copper; and

(c) at least one Co-catalyst II selected from the group consisting of 1,4-diazabicyclo[2.2.2]octane and hexamethylenetetramine in an amount effective to increase the rate of the hydroxylation reaction relative to its absence.

4,496,780

HYDROCRACKING OF POLYOLS

Blaise J. Arena, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jun. 22, 1983, Ser. No. 507,198
Int. Cl.³ C07C 29/132, 31/20, 31/22
U.S. Cl. 568—861 1 Claim

1. A process for hydrocracking sorbitol which comprises treating said sorbitol at a temperature in the range of from about 150° C. to about 250° C. and a pressure in the range of from about 500 to about 5000 pounds per square inch gauge in the presence of hydrogen and a catalyst system consisting essentially of from about 1% to about 10% by weight of ruthenium composited on a titanited alumina support and a separate co-catalyst consisting essentially of from about 5% to about 50% by weight barium oxide to produce and then recover the resultant glycerol, ethylene glycol and 1, 2-propanediol.

4,496,781

PROCESS FOR THE PRODUCTION OF ETHYLENE GLYCOL THROUGH THE HYDROFORMYLATION OF GLYCOL ALDEHYDE

Stephen E. Jacobson, Morristown, N.J., and Chun F. Chueh, Jamaica, N.Y., assignors to The Halcon SD Group, Inc., New York, N.Y.

Filed Apr. 5, 1984, Ser. No. 597,003
Int. Cl.³ C07C 31/20, 29/14
U.S. Cl. 568—862 26 Claims

1. A process for the preparation of ethylene glycol through a glycol aldehyde intermediate comprising:

(A) reacting formaldehyde, hydrogen and carbon monoxide in a hydroformylation reaction zone to form glycol aldehyde in the presence of an effective solvent mixture comprising:

(1) a low boiling, polar, organic, hydroformylation solvent,

(2) a high boiling, non-polar organic solvent,

(3) a low boiling organic separation enhancing solvent;

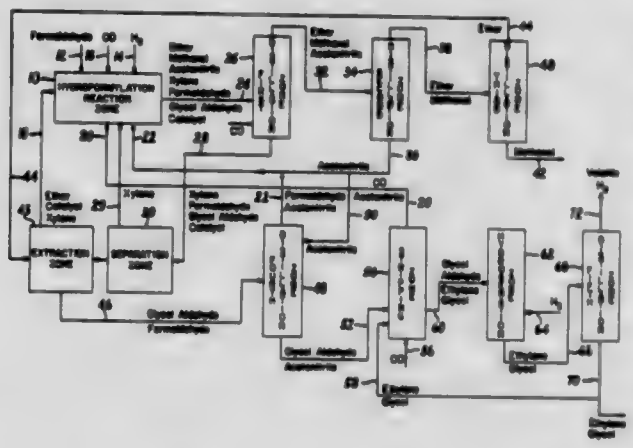
the reaction proceeding in the presence of a lipophilic catalyst selected from a class of phosphine-amide ligands in conjunction with an effective transition metal;

(B) separating the hydroformylation solvent and the separa-

tion enhancing solvent from the hydroformylation zone effluent;

(C) separating the glycol aldehyde-unreacted formaldehyde phase from the remaining reaction zone effluent, now comprising the high boiling, non-polar organic solvent containing the lipophilic catalyst;

(D) contacting and washing the separated glycol aldehyde-formaldehyde phase with the separation enhancing solvent in an extraction zone to substantially extract the



remaining high boiling, non-polar organic as well as any catalyst contained therein;

(E) recycling the separation enhancing solvent and the high boiling, non-polar organic solvent containing substantially all the lipophilic catalyst to the hydroformylation zone;

(F) separating the glycol aldehyde from the formaldehyde;

(G) hydrogenating the glycol aldehyde in a hydrogenation zone to ethylene glycol;

(H) separating ethylene glycol from the hydrogenation zone effluent.

4,496,782

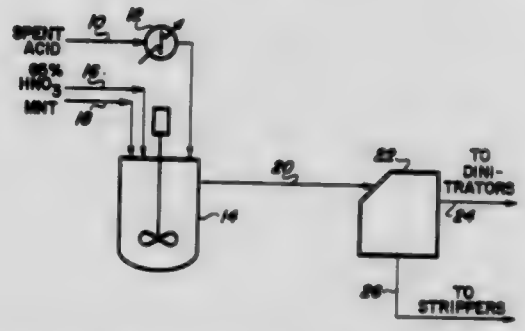
NITRIC ACID RECOVERY BY THE ADIABATIC NITRATION OF NITROAROMATICS WITH FORTIFIED SPENT ACID

Richard V. C. Carr, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 8, 1983, Ser. No. 512,289

Int. Cl.³ C07C *79/10*

U.S. Cl. 568—934 **25 Claims**



1. A method for the recovery of nitric acid in the spent acid phase from a mixed acid mononitration reaction which comprises

(a) adding a sufficient amount of nitric acid to provide at least about 2 wt % nitric acid concentration in the spent acid phase from the mononitration reaction, and

(b) adiabatically reacting a mononitroaromatic hydrocarbon in greater than a stoichiometric amount with the nitric acid in the spent acid phase to afford a dinitroaromatic hydrocarbon product and a nitric acid concentration of less than about 0.25 wt % in the spent acid phase.

4,496,783

NITRATION OF ORGANIC COMPOUNDS AND ORGANIC NITROGEN COMPOUNDS PRODUCED

Ian M. Campbell; Donald L. Baulch, Leeds, and Gary J. Audley, Woking, all of England, assignors to Interox Chemicals Limited, United Kingdom

Filed Apr. 28, 1983, Ser. No. 489,467

Claims priority, application United Kingdom, May 1, 1982, 8212952

Int. Cl.³ C07C *79/02*

U.S. Cl. 568—947 **13 Claims**

1. In a process for the production of one or more organic nitro-compounds, organic nitrates or organic nitrites comprising reacting, in the vapour phase one or more organic compound with a nitrating agent, and recovering at least one resulting organic nitro-compound, organic nitrate or organic nitrite from the residual vapour phase, the improvement wherein radicals of the one or more organic compounds are produced for nitration by reacting hydrogen peroxide vapour and nitrogen dioxide in the presence of an acidic solid surface to produce hydroxyl radicals and reacting the hydroxyl radicals with a vapour of a reactive substrate mainly comprising the one or more organic compounds by forming a mixture containing the hydroxyl radicals and the vapour of the reactive substrate or containing hydrogen peroxide vapour and nitrogen dioxide, as hydroxyl radical precursors, in the presence of the solid surface, and the vapour of the reactive substrate whereby the radicals so produced are contacted with the nitrating agent.

4,496,784

HYDROCARBON CONVERSION PROCESS EMPLOYING CATALYSTS CONTAINING A MOLYBDENUM-EXCHANGED CRYSTALLINE ALUMINOSILICATE ZEOLITE

Eric L. Moorehead, Diamond Bar, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 81,105, Oct. 2, 1979, Pat. No. 4,297,243. This application Jul. 20, 1981, Ser. No. 284,720

Int. Cl.³ C07C *4/12*

U.S. Cl. 585—486 **36 Claims**

1. In a process for dealkylating hydrocarbons, the improvement comprising contacting a hydrocarbon feedstock containing a component selected from the group consisting of toluene and alkylated naphthenes under dealkylating conditions with a catalyst comprising a molybdenum-containing zeolite prepared by calcining a crystalline aluminosilicate having at least some of its ion exchange capacity satisfied with cations containing molybdenum.

5. A hydrocarbon conversion process for upgrading hydrocarbons comprising contacting a hydrocarbon feedstock at an elevated temperature with a hydrocarbon conversion catalyst comprising a zeolite selected from the group consisting of calcined or sulfided crystalline aluminosilicate zeolites containing molybdenum-containing cations exchanged thereinto, said contacting being under conditions promoting the conversion of an acid catalyzed hydrocarbon conversion reaction.

4,496,785

PROCESS FOR REACTING ALCOHOLS AND OLEFINS

Jeffrey T. Miller, and Thomas D. Nevitt, both of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 28, 1983, Ser. No. 536,671

Int. Cl.³ C07C *1/22*

U.S. Cl. 585—640 **19 Claims**

1. A method for producing branched aliphatic hydrocarbons by reacting hydrogen with at least one of an alcohol containing from 1 to 6 carbons atoms and an olefin containing from 2 to 6 carbon atoms, at a temperature in the range of from about 300° C. to about 480° C., at a pressure in the range of from about 5 to about 150 kilograms per square centimeter, and in the presence of a catalyst composition comprising a cadmium compo-

nent and a support material having acidic properties, wherein the cadmium component is in the form of the elemental metal, its oxide or salt or a combination thereof, wherein the cadmium component is present at a concentration level in the range of from about 0.1 to about 20 weight percent, calculated as cadmium oxide and based on the weight of the catalyst, and wherein the support comprises an amorphous refractory inorganic oxide, a pillared smectite or vermiculite clay, a molecular sieve consisting essentially of unexchanged or cation-exchanged chabazite, clinoptilolite, zeolite A, zeolite L, zeolite X, zeolite Y, ultrastable zeolite Y, or crystalline borosilicate molecular sieve, or a combination thereof.

4,496,786

SELECTIVE CONVERSION OF METHANOL TO LOW MOLECULAR WEIGHT OLEFINS OVER HIGH SILICA SSZ-13 ZEOLITE

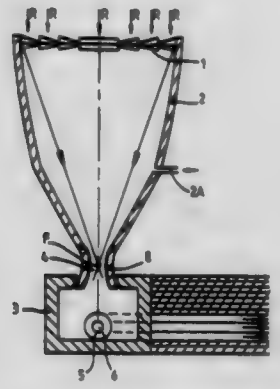
Donald S. Santilli, Novato, and Stacey I. Zones, San Francisco, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sep. 30, 1983, Ser. No. 538,035
Int. Cl.[3] *C07C 1/00*
U.S. Cl. 585—640 3 Claims

1. The process of converting methanol to olefins comprising contacting a methanol feedstock with SSZ-13 zeolite having an SiO_2/Al_2O_3 ratio by weight greater than about 20 under methanol conversion conditions.

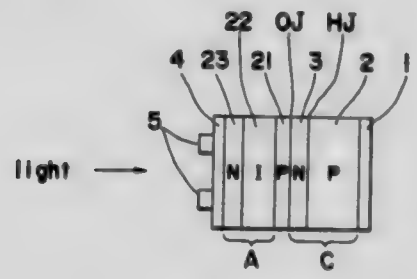
ELECTRICAL

4,496,787
METHOD AND DEVICE FOR COLLECTING AND EXPLOITING SOLAR RADIATION
Maurice Touchais, 1706 Chemin du Pioulier, 06140 Vence, and Madeleine Djelalian, 10 Impasse Abovian, 13015 Marseille, both of France
PCT No. PCT/FR82/00212, § 371 Date Aug. 16, 1983, § 102(e) Date Aug. 16, 1983, PCT Pub. No. WO83/02310, PCT Pub. Date Jul. 7, 1983
PCT Filed Dec. 16, 1982, Ser. No. 536,158
Claims priority, application France, Dec. 23, 1981, 81 24103
Int. Cl.³ H01L *31/04*; F24J *3/02*
U.S. Cl. 136—248 **19 Claims**



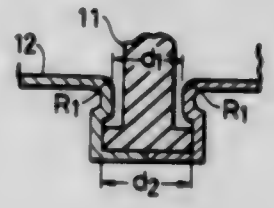
4. A device for collecting and maximally utilizing solar radiation comprising, in an intermediate space formed between a transparent covering and absorbent receiving surfaces of an insolator, an optical means which is thermally insulated and orientatable to track collimated radiation coming from the sun, said optical means selected from the optical devices of the catoptric and dioptric type permitting propagation of a beam of reflected radiations in the general direction of incident light, a positionally fixed thermally insulated enclosure having negative pressures therein for causing air other gas to flow thereinto receiving the incident light, said insolator located in said insulated enclosure, a thermal focus in said intermediate space being a focal point of the optical path of the radiation with said intermediate space having an opening of small diameter.

4,496,788
PHOTOVOLTAIC DEVICE
Yoshihiro Hamakawa; Hiroaki Okamoto, both of Kawanishi, and Kouji Okuda, Takatsuki, all of Japan, assignors to Osaka Transformer Co., Ltd., Osaka, Japan
Filed Sep. 2, 1983, Ser. No. 528,988
Claims priority, application Japan, Dec. 29, 1982, 57-234197; Mar. 24, 1983, 58-49318
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—249 **35 Claims**



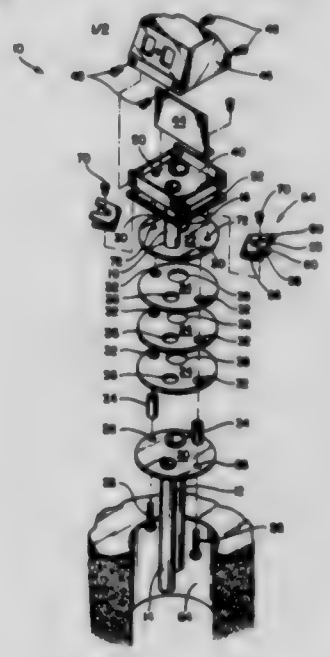
1. A photovoltaic device which converts solar energy to electric energy, comprising, in combination:
a heterojunction solar cell comprising a crystalline semiconductor region and an amorphous or microcrystalline semiconductor region applied on said crystalline region with a p-n junction formed between said regions;
an amorphous solar cell tandemly applied on said heterojunction solar cell in optical and electrical series therewith, and comprising a p-type region, an i-type region and an n-type region of amorphous or microcrystalline semiconductor material applied in seriatim layers with a p-i-n junction formed between said regions, and
a p-n junction formed at the interface between said heterojunction solar cell and said amorphous solar cell.

4,496,789
INSULATING SPACER AND METAL SHEATH FOR GAS INSULATED ELECTRICAL EQUIPMENT
Koshi Itaka, and Takushi Hara, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Dec. 2, 1982, Ser. No. 446,108
Claims priority, application Japan, Dec. 2, 1981, 56-179969
Int. Cl.³ H02G *5/06*; H01B *9/04*
U.S. Cl. 174—22 C **3 Claims**



1. An insulating spacer and metal sheath assembly for gas insulated equipment comprising:
an insulating spacer having a portion of increased thickness relative to another portion thereof, a metal sheath having outwardly extending opposed flange surfaces which include confronting arcuate portions located adjacent the inner surface of the sheath, said spacer portion of increased thickness contacting and being held by said flange surfaces while not contacting said arcuate portions, the distance between said opposed flange surfaces being larger at an axially outside portion of said metal sheath than at an axially inside portion of said metal sheath; and said insulating spacer portion of increased thickness being brought into contact with said metal sheath on the outside portion of said metal sheath.

4,496,790
SELF-ANCHORING POKE-THRU WIRING DEVICE
David E. Spencer, Oxford, Ohio, assignor to Square D Company, Palatine, Ill.
Filed Mar. 18, 1983, Ser. No. 476,740
Int. Cl.³ H02G *3/22*
U.S. Cl. 174—48 **12 Claims**



1. A self retaining wiring device for placement in a floor passage comprising:
an outlet box including a floor plate;

a wiring channel having one end disposed in said floor plate to facilitate extension of wire through said channel and into said outlet box and having an opposite end adapted to be received in a junction box;

sealing means for sealing said channel intermediate its opposite ends in response to a fire for preventing the spread of said fire through said floor passage;

a second plate surrounding said channel and associated in parallel planar relationship to said floor plate, said second plate having a periphery dimensioned to be received within said floor passage;

a plurality of generally V-shaped resilient members removably secured to said second plate, each resilient member having a base leg and a retaining leg;

securing means for removably securing said base leg to said second plate;

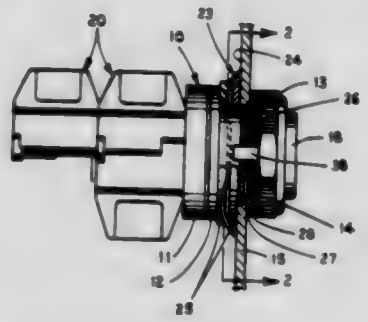
said retaining leg extending peripherally outward past the periphery of said second plate and having portions defining a notch providing a pair of barbs at its distal end.

4,496,791

SPRING-BIASED CONNECTOR FOR ELECTRICALLY BONDING A DEVICE TO A SUPPORTING WALL

Gilbert A. Reichert, Greendale, and Donald K. Schuette, Cedarburg, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Oct. 13, 1982, Ser. No. 434,040
Int. Cl.[3] H05K *5/02*
U.S. Cl. 174—51 4 Claims



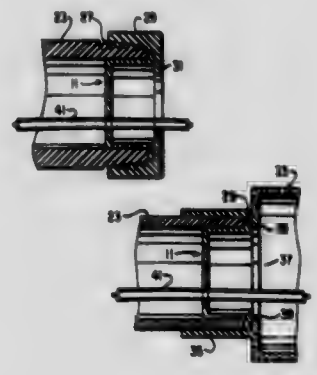
1. In a mounting assembly for mounting an electrical device on a supporting wall of conductive material and defining an aperture therein, a bushing of conductive material having a flanged portion positioned adjacent a first surface of said supporting wall and an integral stem portion extending through said aperture and defining a groove extending along the longitudinal axis of said stem portion, and fastening means engaging the stem portion of said bushing and the opposite surface of said supporting wall; the combination therewith of an apertured flat spring member surrounding and engaging the stem portion of said bushing and defining at least one laterally extending marginal area including an outer edge having a portion in abrasive contact with said first wall surface, said flat spring member including an inwardly extending tab portion slidably engaging the groove of said stem portion and further including a deflectable raised portion adapted to be compressed between said flanged portion and the first surface of said wall to cause the said marginal area to be forcibly extended outwardly with its outer edge portion biting into said wall to thereby complete an electrically bonded circuit between said bushing and said supporting wall.

4,496,792

ELECTRICAL CONDUIT WITH VAPOR BARRIER DEVICE

G. Russell Balkwill, 2429 Howard Ave., Windsor, Ontario, Canada (N8X 3V5); Jules P. Robinet, 2865 Virginia Pk., Windsor, Ontario, Canada N9E 2B8, and John F. Tamasovics, 2530 Todd La., Windsor, Ontario, Canada N9H 1K5

Filed Feb. 14, 1983, Ser. No. 466,043
Int. Cl.[3] H02G *3/04, 3/18*
U.S. Cl. 174—65 R 3 Claims



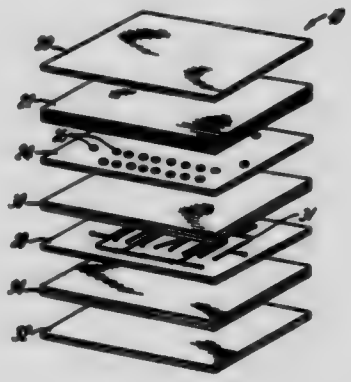
1. In combination, an electrical conduit having an outer surface of predetermined diameter, an inner surface of predetermined diameter, and an annular edge extending between the inner surface and the outer surface, a device for sealing the end of said conduit comprising a tubular portion having a closed end and an open end, said closed end having a plurality of areas of a thickness substantially less than the thickness of the remainder of said closed end, said areas being adapted to be punctured by and sealingly receive wires or cables, said tubular portion having an outer surface of a diameter such that said tubular portion outer surface sealingly engages the inner surface of said conduit, said open end having a flange extending outwardly therefrom with an outer diameter not exceeding the outer diameter of said conduit, said flange abutting said annular edge of said conduit, and a tubular member received over the outer surface of said conduit and having an inwardly extending flange engaging the flange of said device and pressing said device flange against the annular edge of said conduit.

4,496,793

MULTI-LAYER METAL CORE CIRCUIT BOARD LAMINATE WITH A CONTROLLED THERMAL COEFFICIENT OF EXPANSION

John R. Hanson, Richmond; James L. Hauser, Lenox; James F. Kilfeather, Jr., Pittsfield, and Hendrik B. Hendriks, Becket, all of Mass., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 162,827, Jun. 25, 1980, abandoned. This application Jan. 26, 1983, Ser. No. 461,061
Int. Cl.[3] H05K *1/05*
U.S. Cl. 174—68.5 11 Claims



1. A multi-layer circuit board laminate having a controlled thermal coefficient of expansion for use with leadless components, said multi-layer circuit board comprising:

a plurality of planar layers bonded together in face-to-face contacting relationship to form a complete laminate structure, wherein at least two of said layers are thermal expansion stabilizing layers formed of a metal having a thermal coefficient of expansion selected to be equal to or less than the coefficient of thermal expansion of leadless circuit board components to be mounted on said board, said stabilizing layers being securely bonded in face-to-face contacting relationship with at least one other layer of said multi-layer circuit board so that said thermal expansion stabilizing layers control the thermal coefficient of expansion of the composite laminate structure.

11. A multi-layer circuit board laminate having a controlled thermal coefficient of expansion for use with leadless components, said multi-layer circuit board comprising:

a plurality of planar layers disposed in face-to-face contacting relationship and bonded together to form a composite laminate structure, wherein at least two of said layers are formed of a dielectric material; wherein at least another of said layers is a thermal expansion stabilizing layer formed of a metallic substance having a lower thermal coefficient of expansion than the dielectric layers; wherein said thermal expansion stabilizing layer contains at least one thru hole; and wherein at least one bonding layer is disposed adjacent to said thermal expansion stabilizing layer with said bonding layer consisting of at least one sheet of resin impregnated glass cloth to facilitate the intrusion of dielectric material into said thru hole in said thermal expansion stabilizing layer during lamination, whereby said thermal expansion stabilizing layer reduces the thermal coefficient of expansion of the composite laminate structure.

4,496,794

FLEXIBLE BASE MATERIALS, THEIR PREPARATION AND THEIR USE FOR PRINTED CIRCUITS

Roland Darms, Therwil; Harry Beyeler, Basel, and Theobald Haug, Frenkendorf, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Substitute for Ser. No. 531,590, Sep. 13, 1983, abandoned, which is a continuation of Ser. No. 422,423, Sep. 23, 1982, abandoned, which is a continuation of Ser. No. 298,964, Sep. 3, 1981, abandoned. This application Jun. 4, 1984, Ser. No. 617,821

Claims priority, application Switzerland, Sep. 15, 1980, 6903/80

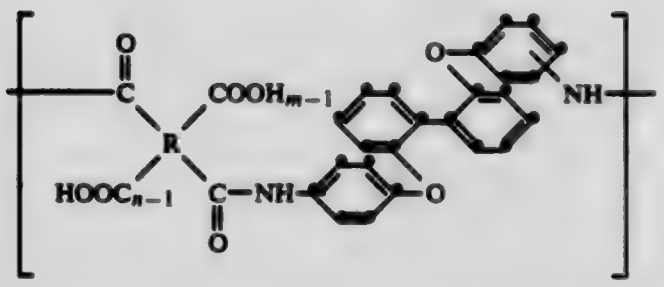
Int. Cl.³ H05K *1/00*

U.S. Cl. 174—68.5 7 Claims

1. A flexible, printed circuit with excellent adhesion of the printed circuit tracks, which is obtained by

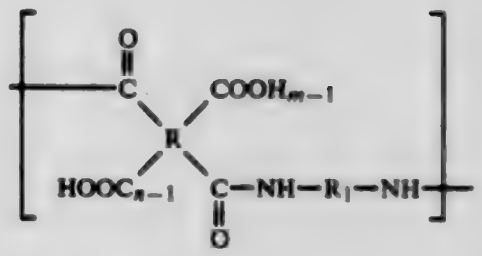
coating one side of a metal foil without any interlayer with a polymer consisting of a polyamide, polyamide-imide or polyimide, obtained by heating a polyamide, polyamide-amidoacid or polyimide-acid having 1 to 100 mol % of structural units of the formula I

(I)



and of 0 to 99 mol % of structural units of the formula II

(II)



in which the NH groups in formula I are, independently of one another, bonded to the o-, m- or p-position of the benzene nucleus and the individual symbols or radicals m, n, R and R_1, independently of one another, are defined as follows: m and n are each 1 or 2, R is a carbocyclic-aromatic or heterocyclic-aromatic radical, in which the carboxamide groups and carboxyl groups are bonded to different carbon atoms and the carboxyl groups, if R is a cyclic radical and at least one of m and n is 2, are each in the ortho-position to a carboxamide group, and R_1 is a carbocyclic-aromatic or heterocyclic-aromatic radical,

heating the coated metal foil in the temperature range from 50° to 350° C. till a track-free coating is obtained,

exposing the opposite side of the coated metal foil, which side is provided with a photolacquer, through a photo mask, and

developing the exposed metal foil.

4,496,795

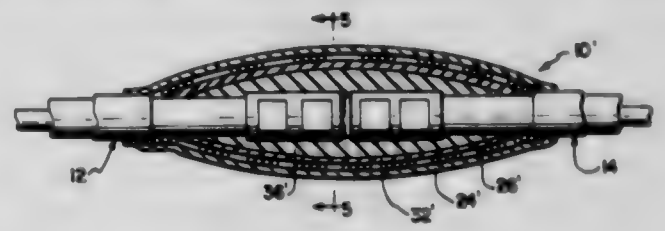
ELECTRICAL CABLE SPLICING SYSTEM

Robert P. Konsik, Seymour, Conn., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed May 16, 1984, Ser. No. 610,785

Int. Cl.³ B32B *15/00, 27/00;* H01R *4/00*

U.S. Cl. 174—84 R 18 Claims



1. A splice assembly for insulated electrical cables, comprising:

a first cable having a first insulation layer surrounding a first conductor, said first conductor having a first exposed end extending from said first layer;

a second cable having a second insulation layer surrounding a second conductor, said second conductor having a second exposed end extending from said second layer;

connector means for electrically coupling said first and second exposed conductor ends;

a sealing layer of uncured insulation material surrounding said connector means and engaging said insulation layers;

barrier means, surrounding said sealing layer, for inhibiting flow of said sealing layer upon heating; and

an open mesh sleeve surrounding said barrier means having opposite axial ends rigidly secured to said first and second cables;

whereby, upon heating, said sealing layer seals the connected ends with said open mesh sleeve applying substantially uniform and constant pressure to said sealing layer between said axial ends during curing.

4,496,796

BUOYANT CABLE

Keijo E. Matikainen, Espoo, and Raimo M. Järvinen, Hyrylä, both of Finland, assignors to Oy Nokia Ab, Helsinki, Finland

PCT No. PCT/FI82/00047, § 371 Date Jun. 21, 1983, § 102(e) Date Jun. 21, 1983, PCT Pub. No. WO83/01534, PCT Pub. Date Apr. 28, 1983

PCT Filed Oct. 21, 1982, Ser. No. 514,822

Claims priority, application Finland, Oct. 23, 1981, 813332

Int. Cl.³ H01B 7/12

U.S. Cl. 174—101.5

6 Claims





1. A buoyant cable comprising:

(a) a conductor;

(b) a float for buoyantly supporting said conductor in water, said float being separate from said conductor; and

(c) a cable sheath having connected sheath portions for said conductor and said float, said cable sheath surrounding said conductor and said float in said connected sheath portions to form a buoyant cable wherein heat is transmitted from said conductor into surrounding water substantially without passing through said float.

4,496,797

CIRCUIT FOR AUTOMATICALLY CONNECTING AND DISCONNECTING A SPEAKERPHONE TO A TELEPHONE LINE

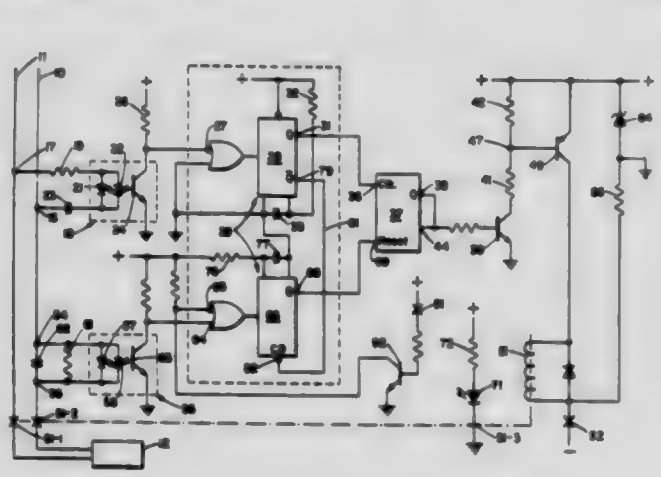
John W. Price, Millstadt, Ill., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Sep. 29, 1983, Ser. No. 537,234

Int. Cl.³ H04M 1/64

U.S. Cl. 179—81 B

7 Claims



1. A circuit for connecting a telecommunication device to a subscriber telephone line, which comprises:

a first optical isolator connected across the telephone line for generating discrete pulses in response to A.C. ringing pulses;

a first one shot multivibrator having an input port responsive to each discrete pulse for generating a counting pulse at an output port;

a counter circuit connected to said multivibrator output port and responsive to a predetermined number of said counting pulses for generating a control pulse;

a normally unoperated relay having contacts in the telephone line for connecting the telecommunication device to the telephone line;

means responsive to said control pulse for operating said relay to connect the telecommunication device to the subscriber's telephone line;

a second optical isolator circuit having a pair of terminals connected in the subscriber's line and energized upon closure of said relay contacts for monitoring current flow in the telephone line;

a second one shot multivibrator having an input port connected to said second optical isolator and responsive to said optical isolator being deenergized in response to an interruption of current flow in the telephone line for generating a reset pulse; and

means for applying said reset pulse to reset said counter circuit to a zero count condition.

4,496,798

RINGING CIRCUIT FOR TELEPHONE SUBSET, DESIGNED AS AN INTEGRATED CIRCUIT

Joël S. G. Colardelle, Les Ulis; Claude P. H. Lerouge, Maurepas, and Nicole J. R. Loup, Vélizy-Villacoublay, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

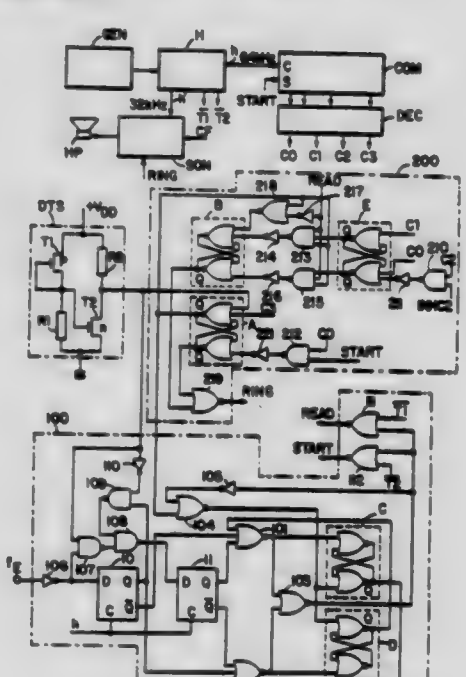
Filed Aug. 16, 1983, Ser. No. 523,544

Claims priority, application France, Aug. 17, 1982, 82 14205

Int. Cl.³ H04M 1/00

U.S. Cl. 179—84 T

8 Claims



1. A ringing circuit for a telephone set, designed as an integrated circuit, intended to furnish a signal at a chosen audio frequency to a loudspeaker when the ringing signal is present on the telephone line supplying the said telephone set, the said ringing circuit being powered by the said ringing signal suitably rectified, characterized in that the said ringing circuit comprises:

a clock circuit (H) furnishing various clock signals (h, T1, T2, h') from the signals of a stable oscillator (GEN);

a counter (COM) associated with a decoder (DEC), the said counter counting the pulses of a first one (h) of the various clock signals received from the clock circuit (H) and being adapted to be reset by a first control signal (START) and the said decoder furnishing from the content of the counter an initial signal (C0), corresponding to the appearance of the initial code in the counter, and various time signals (C1, C2, C3) corresponding respectively to the passage of various periods of time after the initial signal;

a ring generator (SON) furnishing, from a second one (h') of the various clock signals delivered by the clock circuit

(H), the said signal at audio frequency when it receives a second control signal (RING); and

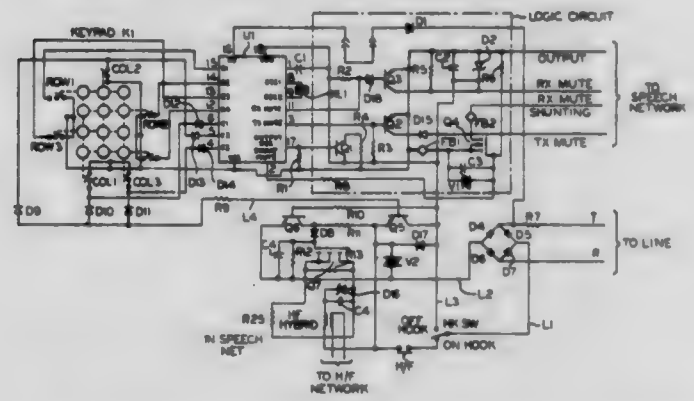
a ringing signal detection system (100, 200) containing a circuit (100) for detecting transitions in the same direction in the received ringing signal, circuit which furnishes the first control signal (START) and a third control signal (READ) at the moment each transition having the said direction appears, and a circuit (200) receiving the initial signal (C0) and the various time signals (C1, C2, C3) for measuring the elapsed time between two successive transitions, detected by the transition detection circuit (100), to determine if the ringing signal is present and to then furnish the said second control signal (RING) as long as it remains present.

4,496,799

HANDSFREE TELEPHONE INSTRUMENT USING DIGITAL DIAL

Rickey W. Kingen, Corinth, Miss., and Robert H. Duncan, Memphis, Tenn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 13, 1982, Ser. No. 448,978
Int. Cl.³ H04M 9/08
U.S. Cl. 179—100 L **12 Claims**



10. A handsfree telephone instrument coupled to a telephone line, said instrument including a digital dual tone multifrequency generator for transmission of selected tones to said line in response to operation of switches of a key pad, and in which said generator comprises an integrated circuit for the digital generation of said tones, a tone output network responsive to tones emitted by said generator for transmitting generated tones for transmission to said line, a first transistor coupled to said line for operation with said instrument in its handsfree mode for switching a handsfree network of said instrument across said line, a transistor network activated responsive to operation of any one of said switches for coupling said generator to said line to activate said generator, inverter means responsive to the activation of said transistor network for shutting off said first transistor, a muting resistor in series with said handsfree network of said instrument for muting tones of said handsfree network when said first transistor is shut off, said first transistor being operated on the termination of transmission of tones by said generator for shunting said muting resistor to switch said handsfree network across said telephone line for the bidirectional transfer of alternating current signals thereacross.

4,496,800

RINGING GENERATOR TESTING ARRANGEMENT FOR A DIGITAL TELEPHONE NETWORK

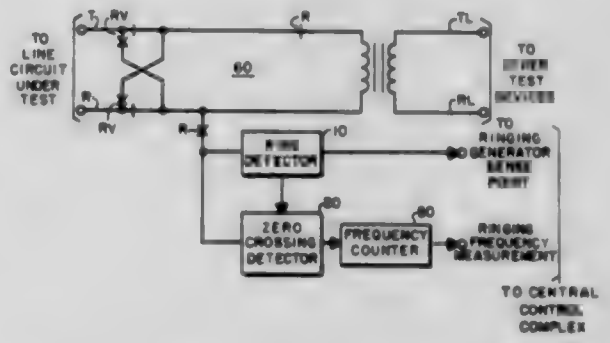
John S. Young, Scottsdale, Ariz., assignor to Gte Automatic Electric Inc., Northlake, Ill.

Filed Jun. 22, 1983, Ser. No. 506,742
Int. Cl.³ H04M 3/22
U.S. Cl. 179—175.2 R **9 Claims**

1. An arrangement for measuring the frequency of a ringing generator, including a line circuit having a tip and a ring lead and a source of alternating current ringing generator signals under control of a central control complex, said arrangement comprising:

zero crossing detector means connected to said ring lead and arranged to produce a first output signal responsive to the negative to positive transition of said ringing generator signals and a second output signal responsive to the first positive to negative transition of said ringing generator signal;

clock signal generating means developing and producing a continuous output clock signal; and



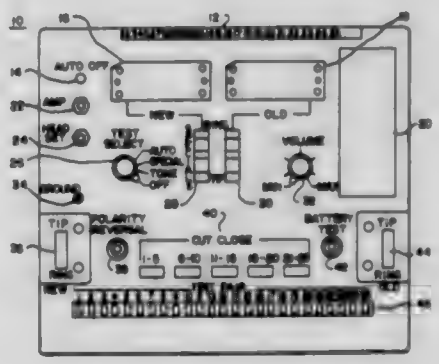
counting means connected to said zero crossing detector means and to said clock signal generating means and responsive to said zero crossing detector means first output signal, said counting means receives and counts said clock signals for a period until said zero crossing detector means second output signal, whereby responsive to said second output signal said counter transmits to said central control complex a count representing the measured interval of said ringing generator signal.

4,496,801

SPLICING MODULE TEST SET

Thomas P. Roberts, San Jose; Albert R. Howard, Sunnyvale, and James B. Hutchison, Mountain View, all of Calif., assignors to Western Progress, Inc., Sunnyvale, Calif.

Filed Oct. 12, 1982, Ser. No. 433,720
Int. Cl.³ H04B 3/46
U.S. Cl. 179—175.3 R **13 Claims**



12. A splicing test set comprising first and second line pairs, each of said line pairs including tip and ring connections, means for connecting the respective tip and ring connections, means for loading said first line pairs with a predetermined resistance such as not to signal an off-hook condition, electronic means for automatically determining the correct connections of said second pair to said first pair,

ohmmeter means for electrically isolating said first and second ring connections and said first and second tip connections for special circuit types of testing, means for generating control signals representing the electrical resistance of said respective connections, and

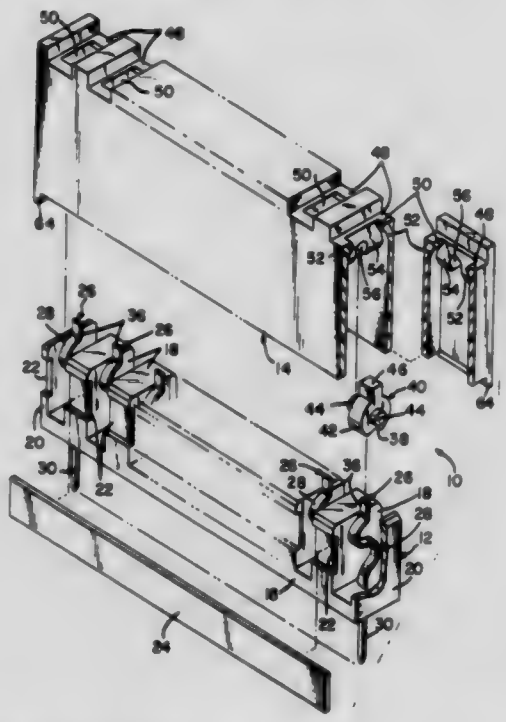
meter means responsive to said control signals for indicating the measured resistances.

4,496,802

SINGLE IN-LINE PACKAGE SWITCH

William H. Rose, and David T. Shaffer, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 15, 1983, Ser. No. 485,549
Int. Cl.[3] H01H *5/18*
U.S. Cl. 200—5 R 12 Claims



1. An electrical switch of the type comprising a dielectric frame in which movable electrical contact members are mounted in actuating alignment with a stationary electrical contact member, actuating members in engagement with respective free ends of the movable contact members, and a housing member mounted on the dielectric frame, characterized in that:

each of said movable contact members has a reverse-curved contact section, the free end of said reverse-curved contact section disposed in a recess of a respective one of said actuating members;

said stationary electrical contact member mounted onto said dielectric frame and defining a bus contact member;

said actuating members when moved to one position moving the movable contact sections into electrical engagement with said bus contact member, said actuating members when moved to another position moving the movable contact sections free of the bus contact member, the spring forces of the reverse-curved contact sections maintaining the movable contact sections and actuating members in the one or the other position.

4,496,803

DATA ENTRY SWITCH

William D. Smith, Placentia, Calif., assignor to Key Concepts, Incorporated, Houston, Tex.

Filed May 4, 1983, Ser. No. 491,454
Int. Cl.[3] H01H *9/00, 13/50, 15/00*
U.S. Cl. 200—5 A 6 Claims

5. A switch for selectively completing a circuit between terminals on a circuit board underlying a movable operator key such as in data entry keyboards or the like comprising:

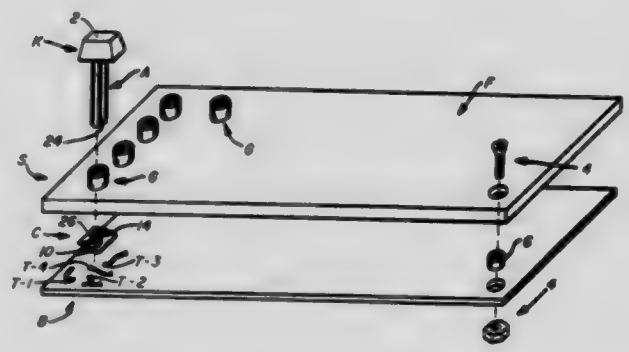
a contact spring body;

a first spring means for supporting said body above the circuit board, said first spring means depending from said body and extending therebelow to contact a first terminal on the circuit board;

a first contact member depending from said body and extending therebelow to overlay a second terminal on the circuit board when said switch is at rest and to contact the second terminal when said body is urged toward the circuit board thereby completing a first electrical circuit between the first terminal and second terminal of the circuit board via said contact spring body;

second spring means depending from said body and extending therebelow to contact a third terminal on the circuit board;

a second contact member depending from said body and extending therebelow to overlay a fourth terminal on the circuit board when said switch is at rest and to contact the fourth terminal when said body is urged toward the circuit board, thereby completing a second electrical circuit between the third and fourth terminals of the circuit board via said contact spring body;



fulcrum means, mounted with the circuit board, and adapted to engage said spring means above the point of contact between said spring means and the circuit board as said body is urged toward the circuit board thereby causing said spring means to disengage from the terminal; and

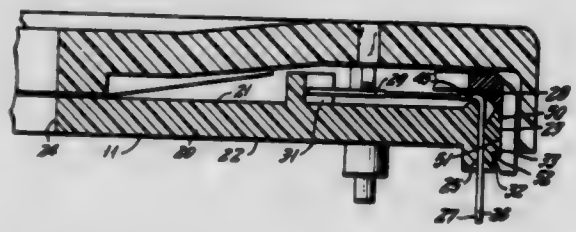
wherein said fulcrum means is formed so as to engage said spring means causing said spring means to disengage from the first and third terminals of the circuit board as the switch is urged toward the circuit board and before said contact members contact the second and fourth terminals of the circuit board.

4,496,804

WIRE CONTACT RETENTION MEANS FOR ROTARY SWITCHES

Peter Hung, Huntington, N.Y., assignor to Porta Systems Corp., Syosset, N.Y.

Filed Aug. 10, 1983, Ser. No. 521,697
Int. Cl.[3] H01H *19/58*
U.S. Cl. 200—11 A 2 Claims



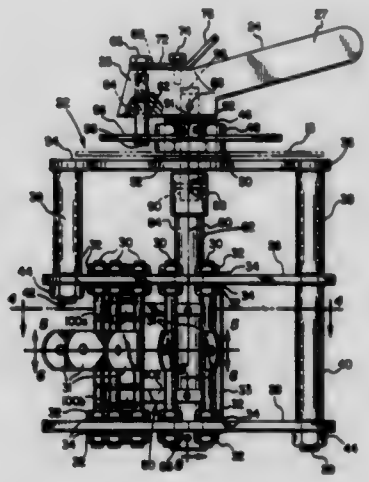
1. In a wire contact rotary type switch including a stator having a plurality of L-shaped wire contacts positioned in corresponding peripherally located bores, and a retaining ring engaged upon said stator at the periphery thereof to retain said contacts within said bores, the improvement comprising: said stator having a peripheral edge portion disposed outwardly of said bores defining a transversely extending shoulder, said retaining ring including a radially extending portion contacting said wire contacts and an axially extending peripheral portion defining a recess, said axially extending portion being radially expandable to enable it to be forced over said shoulder, and upon contraction to engage the same.

4,496,805

TRANSFORMER SWITCH

Clarence G. Duenke, San Angelo, Tex., assignor to Warco, Inc., Marthasville, Mo.

Filed Sep. 9, 1983, Ser. No. 530,867
Int. Cl.[3] H01H *19/58, 21/78*
U.S. Cl. 200—11 TC 17 Claims



1. A tap changing switch for an electrical transformer for connecting and disconnecting selected portions of a transformer winding under load to change the output supply voltage of said transformer, said switch comprising:

frame means for supporting a plurality of spaced apart contact elements, each of said contact elements including a terminal portion thereof disposed between opposite ends of said contact element for connecting said contact element to a conductor lead associated with a transformer winding;

rotary shaft means rotatably mounted on said frame means and connected to two spaced apart switch contactor means for engaging a selected pair of contact elements to close a circuit through said winding, said spaced apart contactor means being disposed on opposite sides of said terminal portions of said selected pair of contact elements, respectively, when engaged with said selected pair of contact elements so as to negate magnetic forces generated by current flow through said contact elements and said contactor means and acting on said contactor means during disengagement from said selected pair of contact elements.

9. A tap changing switch for an electrical transformer for connecting and disconnecting selected portions of a transformer winding under load to change the output supply voltage of said transformer, said switch comprising:

frame means for supporting a plurality of spaced apart contact elements, each of said contact elements including a terminal portion aligned with a corresponding terminal portion on every other contact element for connecting each of said contact elements to a conductor lead associated with a transformer winding;

rotary shaft means rotatably mounted on said frame means and connected to switch contactor means for engaging a selected pair of contact elements to close a circuit through said winding;

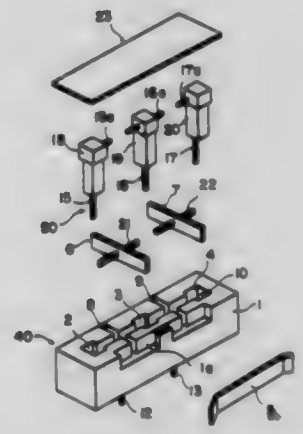
said contactor means comprising first and second contactors spaced apart from each other on opposite sides of said terminal portions whereby current flowing to and from said contactors between said contact elements flows in opposite directions along portions of said contact elements, respectively, between said terminal portions of the respective contact elements to generate magnetic force fields acting on one of said contactors which are opposite to the magnetic force fields acting on the other of the contactors.

4,496,806

ELECTRIC CONTACT SWITCHING DEVICE

Kozo Maenishi; Masaaki Adachi, and Yoshihide Bando, all of Nagaokakyo, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation of Ser. No. 343,832, Jan. 15, 1982, abandoned. This application Sep. 6, 1983, Ser. No. 529,723
Claims priority, application Japan, Jan. 30, 1981, 56-12972[U]; Jan. 30, 1981, 56-12973[U]; Aug. 28, 1981, 56-128204[U]
Int. Cl.[3] H01H *15/00, 9/00, 51/00;* H01P *1/10*
U.S. Cl. 200—16 R 20 Claims



1. An electric contact switching device which confines R-F within said device comprising in combination:

first external connecting means;

dielectric means for supporting said first external connecting means;

first conductor means having a switching contact member connected to said first external connecting means for switching a first connection with said switching contact member;

housing means for supporting and housing said first conductor means, and said dielectric means wherein said housing is constructed from a material which is an electrically conductive resin;

second external connecting means;

second conductor means connected to said second external connecting means; and

said second conductor means being in electrical contact with said housing means.

4,496,807

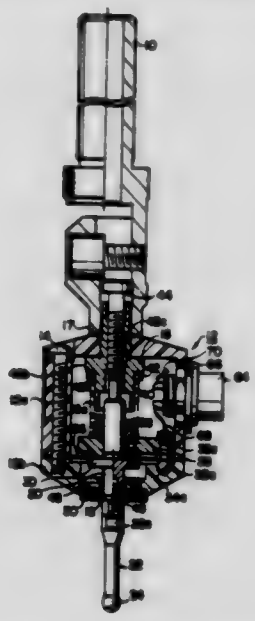
TOUCH SIGNAL PROBE

Hideo Sakata, Kawasaki, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Feb. 15, 1984, Ser. No. 530,458
Claims priority, application Japan, Feb. 21, 1983, 58-24045[U]
Int. Cl.[3] H01H *3/16*
U.S. Cl. 200—61.42 4 Claims

1. A touch signal probe comprising a probe casing fixed to a shank body through a shank anchor, said probe casing containing a stylus shaft held for inclining relative to said probe casing, fixed contact means on the inner bottom of said probe casing, contact receiving means carrying movable contact means which is fixed to said stylus shaft and defines a set of contacts together with said fixed contact means, and spring means operably located between said shank anchor and said contact receiving means to urge said movable contact means toward said fixed contact means, whereby the displacement of said stylus shaft can be detected on the separation of said contact means, characterised in that said shank anchor slidably receives a spring seat having an engagement face engaged by said spring means at one end and in that an adjusting screw for forwardly and rearwardly moving said spring seat is threadedly screwed into said shank anchor, the tip of said adjusting screw engaging the opposite face from the engagement face of

said spring seat, whereby said spring means can be constricted or expanded to adjust a pressure of contact between said fixed



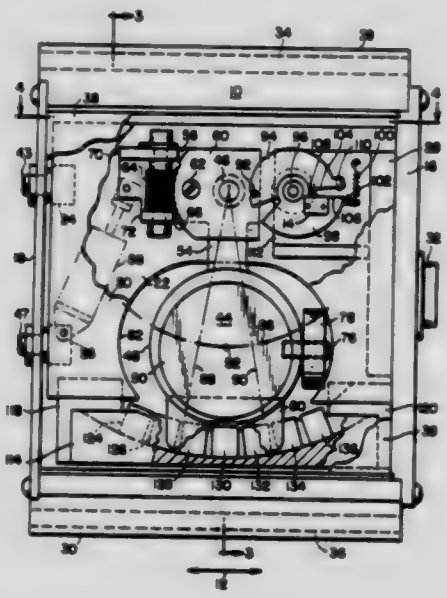
and movable contact means by moving said adjusting screw in either of the opposite directions.

4,496,808

ELECTRICAL SWITCH MECHANISM

Warren R. Alexander, Pittsford, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed Dec. 29, 1982, Ser. No. 454,126
Int. Cl.[3] H01H *35/02*
U.S. Cl. 200—61.45 R
11 Claims



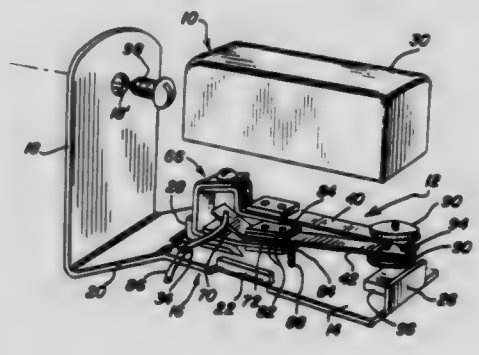
1. A switch mechanism for detecting acceleration or deceleration events which comprises a pendulum having a mass pivotally movable about a first axis and defining a first arm of a first lever between the center of gravity thereof and said first axis, means rotatable about said first axis defining a second arm of said first lever shorter than said first arm to provide a mechanical advantage, an electrical switch, means coupling said switch and second arm in force transfer relationship to enhance the sensitivity of said switch to the acceleration or deceleration of said pendulum mass, and further comprising eddy current damping means operatively associated with said pendulum and including a vane of conductive material movable with said pendulum along a path, and means for providing magnetic flux transverse to said path which alternates in direction along said path.

4,496,809

VIBRATION SENSITIVE TRIP SWITCH FOR VEHICLE ALARM SYSTEM OF THE LIKE

James H. Faust, Scottsdale, Ariz., and Michael J. Borch, Roselle, Ill., assignors to A B C Auto Alarms, Inc., Elk Grove Village, Ill.

Filed Oct. 17, 1983, Ser. No. 542,735
Int. Cl.[3] H01H *35/02*
U.S. Cl. 200—61.45 R
25 Claims



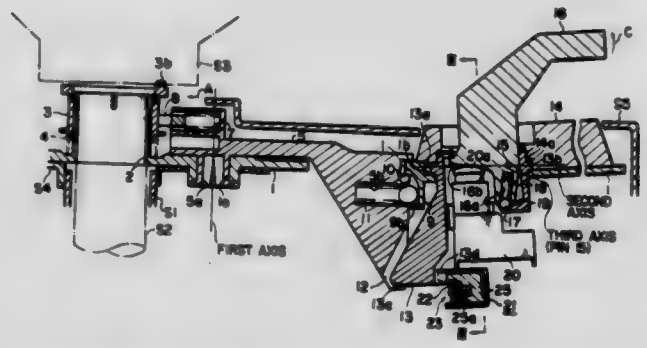
23. A vibrationally responsive electrical trip switch for a vehicle alarm system, said trip switch comprising a pair of overlying, cantilever mounted, angularly related, thin, flat, unequally weighted, springs spaced apart, first and second juxtaposed spaced mounting arms, means securing said springs to said arms at adjacent respective ends for directing said springs in respective first and second planes with their free ends disposed spaced a precise distance, said second plane being below and canted toward said first plane, electrical contact means secured to facing surfaces of said first and second springs defining a precise gap therebetween, means for establishing electrical connection to at least one of said springs by way of one of said arms, the heavier weighted spring functioning only as a motion detector and the lighter weighted spring functioning only as a shock detector.

4,496,810

COLUMN MOUNTED SWITCHING DEVICE FOR AUTOMOBILES

Masaru Suzuki, Aichi; Masayosi Iwata; Yoshikazu Hayashi, both of Gifu, and Tadashi Yokoyama, Mie, all of Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Apr. 4, 1983, Ser. No. 481,787
Claims priority, application Japan, Apr. 7, 1982, 57-51019[U]
Int. Cl.[3] H01H *9/00*
U.S. Cl. 200—61.54
16 Claims



1. A column mounted switching device for automobiles mounted on a steering column, comprising:
(a) a base plate mounted on the steering column;
(b) a turn bracket pivotally supported on the base plate about a first axis parallel to the axis of the steering column;
(c) operating means rotatably supported on the base plate about a second axis substantially to a right angle to the first axis, said operating means having a first portion pro-

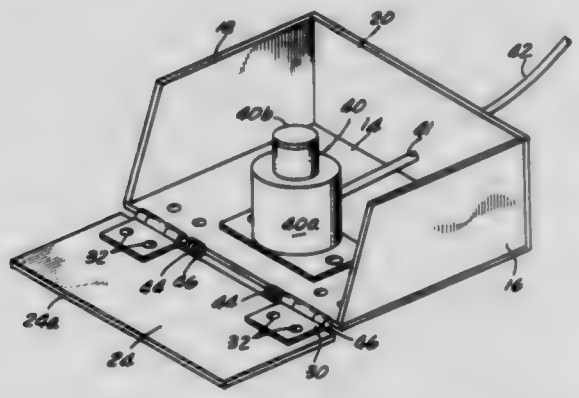
jected from a surface of the turn bracket upwardly and a second portion connected to a portion of the turn bracket, whereby when the operating means rotates about the second axis, the turn bracket being able to pivot about the first axis through the portion of the turn bracket;
(d) a turn-signal switch operated by the rotation of the operating means about the second axis;
(e) a self-cancelling mechanism disposed between the turn bracket and a steering shaft and returning the turn bracket and the operating means back to a neutral position at the time of the rotation of a steering wheel;
(f) a push buttom arranged close to the first portion of the operating means and on the same plane of the first portion; and
(g) a hazard switch switched on or off by the repeated push operation of the push button.

4,496,811

FOOT SWITCH SAFETY ENCLOSURE

Lawrence F. Irwin, 12860 San Fernando Rd., Sylmar, Calif. 91342

Filed Apr. 15, 1983, Ser. No. 485,263
Int. Cl.[3] H01H *3/14*
U.S. Cl. 200—86.5 6 Claims



1. A foot operated safety enclosure in combination with a foot operated switch comprising:
(a) a housing for partially enclosing the switch including:
(1) a base member for supporting the switch; and
(2) generally upstanding front, rear and side walls connected to said base, said walls extending above the uppermost part of the switch with one of said walls being inwardly sloping and pivotally movable relative to said base member for movement by the foot of the user from a first normally upstanding position to a second lowered position in response to a rearward and downward force being exerted on the upper edge thereof whereby as said pivotally movable wall is moved into said second lowered position the foot of the user will move downwardly into operable engagement with the switch; and
(b) biasing means for yieldably resisting movement of said one of said walls from said first to said second position.

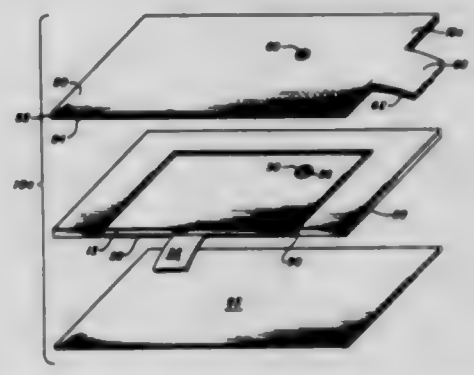
4,496,812

MEMBRANE PANEL

Joseph L. Carley; James S. Potter, both of Millville, and Anthony A. Ciccotelli, Eldora, all of N.J., assignors to Duralith Corporation, Millville, N.J.

Filed Jan. 6, 1983, Ser. No. 456,242
Int. Cl.[3] H01H *13/70*
U.S. Cl. 200—159 B 6 Claims

1. A membrane panel comprising:
A. a rigid support member having substantially planar top and bottom surfaces, and including at least one void region extending from said bottom surface,
B. A flexible top member including at least one flexible layer overlaying said support member, and
C. a flexible bottom member including a flexible layer underlying said support member and said bottom member having its upper surface affixed to the bottom surface of said support member, and said bottom member including an integral flexible tail extending therefrom,
wherein said bottom member further includes at least one electrical component affixed to said upper surface, said component underlying and extending into an associated one of said void regions, and
wherein said bottom member further includes an electrically conductive pattern affixed to said upper surface and means for electrically coupling said pattern to said components and further comprising:



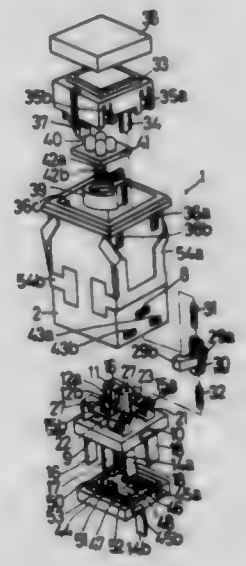
a rigid spacer member having its top surface affixed to the underside of said top member, said spacer member including a void region extending from one edge thereof and underlying said top member,
a base member affixed to the lower surface of said spacer member and underlying the void region defined by said spacer member,
wherein said void region defined by said spacer member has a shape adapted to permit said support member and bottom members to be selectively inserted therein and withdrawn therefrom.

4,496,813

ILLUMINATION TYPE PUSH BUTTON SWITCH

Toshitsugi Fukushima, Tokyo, Japan, assignor to Sun Dengyosha Company, Limited, Tokyo, Japan

Filed May 4, 1983, Ser. No. 491,535
Claims priority, application Japan, Nov. 18, 1982, 57-201128
Int. Cl.[3] H01H *9/16*
U.S. Cl. 200—314 4 Claims



1. An illumination type push button switch comprising;
a casing;
a light emitting diode having connection terminals, inside said casing;
a planar base plate detachably supported in a said casing;
an integrated electronic circuit including at least one light

emitting diode protective resistor formed in a plane on said base plate;

a pair of external terminals on said base plate; and

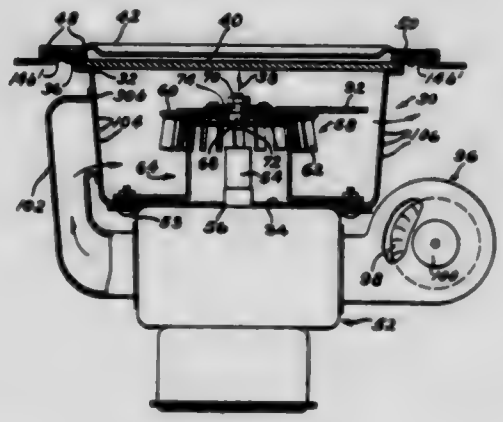
means, mounted in said casing, for electrically connecting said light emitting diode to an electric power source through said external terminals and said integrated electronic circuit with said integrated electronic circuit interposed between said external terminals and said light emitting diode, one of said pair of external terminals being electrically connected to said integrated electronic circuit, said connecting means including a first electrically conductive terminal keep member connected to one of said connection terminals an electrically conductive connection plate connected at one end to said integrated electronic circuit, extending away from said base plate into contact with said fuel electrically conductive terminal keep member and a second electrically conductive terminal keep member connected at one end to the other of said pair of external terminals and at the other end to another one of said connection terminals.

4,496,814

MICROWAVE EXCITATION SYSTEM

Louis H. Fitzmayer, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 10, 1983, Ser. No. 457,038
Int. Cl.³ H05B 6/70
U.S. Cl. 219—10.55 F 20 Claims



1. A microwave excitation system comprising:

a waveguide open at one end for propagating microwave energy therethrough along a centrally extending propagation axis, the other end thereof being terminated by a conductive end wall having an aperture formed therein centrally of said waveguide;

a magnetron for generating microwave energy having an output probe, said output probe extending axially into said waveguide through said aperture in said end wall to excite a predetermined propagating mode in said waveguide;

a generally cup-like member disposed within said waveguide inverted over said probe, said cup-like member being electrically insulated from said waveguide and operative to capacitively couple microwave energy from said magnetron to said waveguide, said cup-like member being dimensioned to provide a matched load condition for said magnetron.

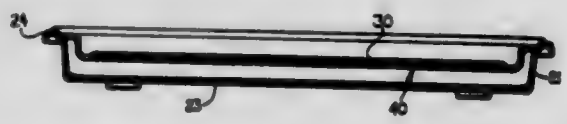
4,496,815

MICROWAVE BROWNING UTENSIL

Jorgen A. Jorgensen, Bloomington, Minn., assignor to Northland Aluminum Products, Inc., Minneapolis, Minn.

Filed Jan. 14, 1983, Ser. No. 458,171
Int. Cl.³ H05B 6/64
U.S. Cl. 219—10.55 E 8 Claims

1. A cooking utensil for use in a microwave oven environment which comprises a metal platter having a top surface suitable for holding a food product to be cooked and having a bottom surface, a continuous layer of ferritic material of generally uniform thickness bonded to the bottom surface of the metal platter, an air and moisture proof layer of organic material of high molecular weight covering completely the layer of ferritic material and extending therebeyond onto said bottom



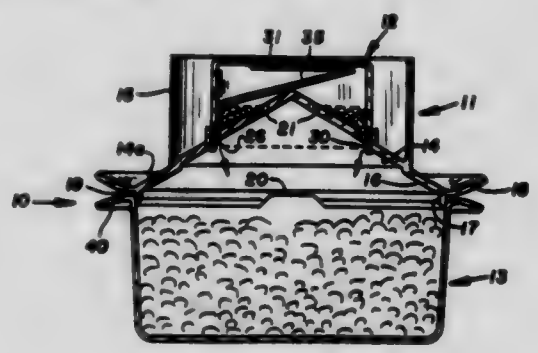
surface of said metal platter, and a housing of microwave transmissive material extending beneath and to the sides of the metal platter in supporting contact with the platter solely about the periphery of said platter.

4,496,816

MICROWAVE APPLIANCE FOR POPPING POPCORN

George McNamara, Minneapolis, Minn., assignor to Leisure Technology, Inc., Minneapolis, Minn.

Filed May 4, 1983, Ser. No. 491,361
Int. Cl.³ H05B 9/06
U.S. Cl. 219—10.55 E 8 Claims



1. An appliance for popping of popcorn and simultaneously heating butter or margarine to be applied thereto after popping, such appliance including:

a. kernel receiving portion providing a generally conical inner, kernel receiving surface and a generally outer conical surface;

b. a support member extending from said outer surface for support of the appliance;

c. a cover member having a predetermined dimension to receive the popped kernels of corn therein and normally covering said kernel receiving portion during the popping of the kernels of corn;

d. a receptacle underlying and removably attached to said kernel receiving portion arranged and constructed to receive and retain a predetermined quantity of a meltable flavoring substance;

e. attachment means for removably attaching said receptacle against said outer surface of said kernel receiving portion; and,

f. said attachment means including flow passages to define flow paths for the flow of flavoring substance from said receptacle to the inner portion of said kernel receiving portion onto the popped kernels of corn when the appliance is inverted.

4,496,817

AUTOMATIC FIRE DETECTION FOR A MICROWAVE OVEN

Peter H. Smith, Anchorage, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jul. 7, 1983, Ser. No. 511,556
Int. Cl.³ H05B 6/68
U.S. Cl. 219—10.55 M 7 Claims

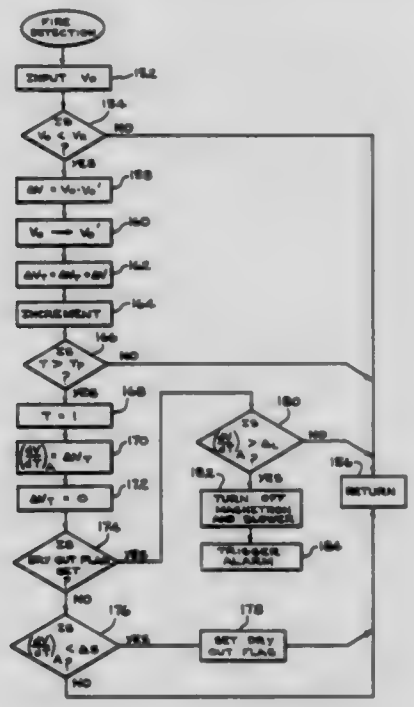
1. A method of anticipating a fire condition in the cooking cavity of a microwave oven of the type having means for

continuously circulating air through the cavity to remove gaseous emissions from the food being heated in the cavity and sensor means for sensing the concentration of such gases in the circulating air, said method comprising the steps of:

circulating air through the cavity to remove therefrom gases emitted from the food load being heated in the cavity;

sensing the concentration level of such gases in the circulating air;

periodically determining the rate of change of concentration level;



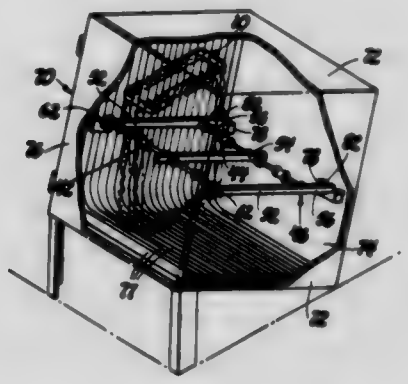
monitoring the rate of change to detect a rate of change characteristic of the temperature of the food load in the cavity closely approaching its combustion temperature including the steps of detecting a first relatively slow rate of change indicative of the load having been cooked to its drying out stage and thereafter detecting a second relatively rapid rate of change, detection of said second rate following said first rate being indicative of closely approaching the combustion temperature of the load; and having detected said second rate of change, turning off power to the oven.

4,496,818

SUPPORT FOR INDUCTION HEATED WORKPIECES

Michael G. Reynolds, Utica, Mich., and Craig E. Brittin, Lockport, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 12, 1984, Ser. No. 570,194
Int. Cl.³ H05B *6/10*
U.S. Cl. 219—10.57 **4 Claims**



1. In an induction heating system for heating an assembly of elongated vertical and horizontal parts within a chamber utilizing a magnetic field disposed at an angle to the vertical and horizontal planes, means for supporting the assembly within the chamber comprising

a generally rectangular steel frame including a pair of support rods,

means for supporting the frame within the chamber with the plane of the frame parallel to the magnetic field to minimize inductive heating of the frame, and

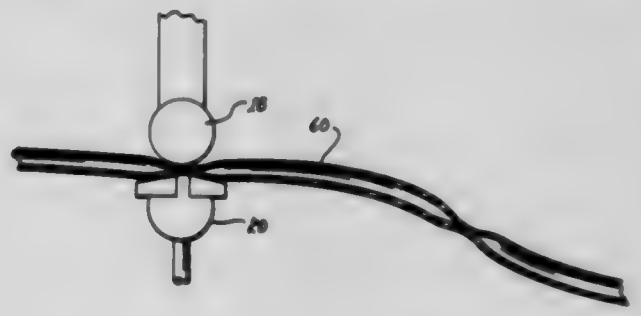
a pair of elongated fixtures for gripping opposite sides of the assembly, and recess means in each fixture for cooperatively engaging a support rod to support the assembly within the chamber.

4,496,819

JAWS FOR AN ELECTRO-MECHANICAL TUBING SEALER

Loren C. Acker, Tucson; Junius E. Taylor, Tempe, and Stephen C. Minney, Tucson, all of Ariz., assignors to Engineering and Research Associates, Inc., Tucson, Ariz.

Division of Ser. No. 334,749, Dec. 28, 1981, Pat. No. 4,390,832, which is a continuation of Ser. No. 122,293, Feb. 19, 1980, abandoned. This application Dec. 14, 1982, Ser. No. 449,619
Int. Cl.³ H05B *6/54*
U.S. Cl. 219—10.81 **7 Claims**



1. A pair of jaws for clamping and welding plastic tubing placed therebetween on energization of a source of high frequency electromagnetic energy electrically connected to said pair of jaws, said pair of jaws comprising in combination:

(a) a fixed jaw;

(b) a movable jaw for clamping the tubing placed between said pair of jaws, said movable jaw including a ridge having a surface for contacting the tubing; and

(c) means attached to said movable jaw for elongating a section of the tubing placed between said pair of jaws on clamping of the tubing and on energization of the source of high frequency electromagnetic energy, said elongating means including a pair of wedges having faces extending laterally from opposed edges of said ridge surface and away from said fixed jaw.

4,496,820

MULTISPOT ELECTRICAL RESISTANCE WELDING MACHINE

Gerhard Ritter; Klaus Ritter, both of Graz, and Gerhard Jahrbacher, Peggau, all of Austria, assignors to Evg Entwicklungs- und Verwertungs-Gesellschaft m.b.H., Graz, Austria

Filed Dec. 5, 1983, Ser. No. 558,163
Claims priority, application Austria, Dec. 14, 1982, 4539/82
Int. Cl.³ B23K *9/28*
U.S. Cl. 219—87 **14 Claims**

1. An electric multispot resistance welding machine, for example, one particularly suited for the production of welded wire mesh, in which pulses of welding current are fed from a transformer-fed rectifier unit, by way of busbars, to a plurality of welding electrodes defining a welding plane,

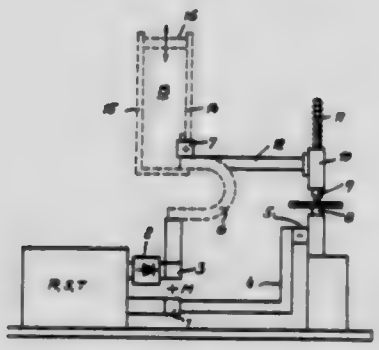
comprising, in combination,

said bus bars, including a first pair of bus bars, each disposed substantially parallel to the other and at opposite sides of said welding plane, each welding electrode being adapted

to be conductively connected to one of said bus bars of said first pair,

a second pair of bus bars, arranged along a longitudinal axis of symmetry, and substantially parallel to the bus bars of said first pair,

each bus bar of the first pair being spaced apart for the same distance from said axis of said second pair,



a set of rectifier units, each terminal of said rectifier units being conductively connected to one of said bus bars of said second pair,

one end of one said bus bar of said first pair being conductively connected to one of said bus bars of the second pair, and

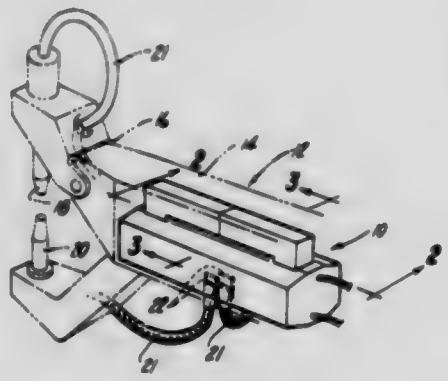
the opposite end of the other bus bar of said first pair being conductively connected to the other bus bar of said second pair.

4,496,821

TRANSFORMER FOR ROBOT ARMS

Peter H. Burgher, and Raymond F. Marsden, both of Howell, Mich., assignors to Marelco Power Systems, Inc., Howell, Mich.

Filed Aug. 6, 1982, Ser. No. 405,987
Int. Cl.[3] B23K *11/24*; H01F *27/02*
U.S. Cl. 219—116 6 Claims



5. In combination with a robotic welder having a single arm, positive and negative welding electrodes mounted at one end of said arm, and means for controlling movement of said arm including an electric power source, the improvement comprising a transformer mounted to said arm adjacent to said end,

wherein said transformer comprises;

a core having two substantially C-shaped portions, each portion having first and second shanks extending in a parallel relationship from a base leg, the ends of said first and second shanks of one portion abutting against the ends of said first and second shanks, respectively, of the other portion, to form a closed loop core;

a secondary winding wrapped around said first shanks of said core portions;

a primary winding coaxially wrapped about said secondary winding substantially the same length as said secondary winding;

a coating of electrically insulating material encapsulating said windings and said first shanks of said core section; and

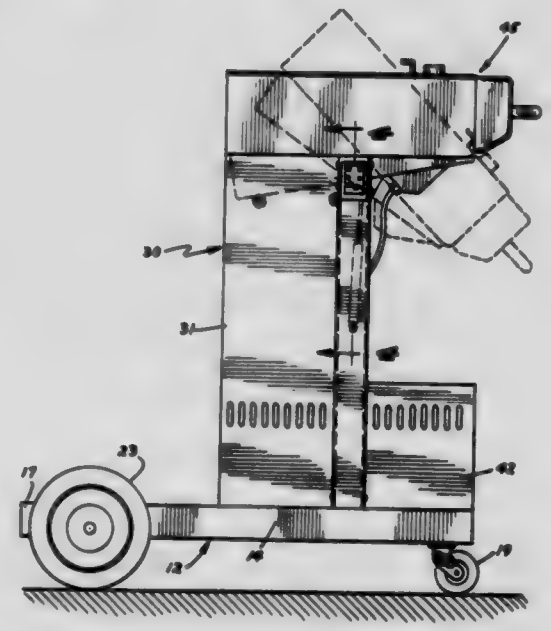
wherein said secondary winding comprises a monolithic, single turn winding.

4,496,822

TILTING RELEASING LATCH STRUCTURE FOR WELDING MACHINE WELDING HEAD

Viktor J. Jegers, Bloomington, and Duncan T. Lasley, Minneapolis, both of Minn., assignors to Century Mfg. Co., Minneapolis, Minn.

Filed Jul. 11, 1983, Ser. No. 512,484
Int. Cl.[3] B23K *37/02*
U.S. Cl. 219—125.1 3 Claims



1. In a welding machine including a housing and a demountable welding head disposed thereon, a tilting releasing latch structure, having in combination

a welding machine housing,

a demountable welding head disposed upon said housing,

a supporting member for said welding head carried by said housing,

said supporting member comprising a back wall and a pair of side walls, said walls having inwardly angled flanges having said welding head disposed thereon,

a pair of opposite plate members depending from said flanges of said side walls,

side walls portions of said housing adjacent said plate members each having an arcuate slot therein,

a piston member carried by said housing on each of said side wall portions adjacent said slots, and at the other side of said walls from that of said plate members,

means respectively connecting the extendible portions of said piston members to said plate members through said arcuate slots,

whereby movement of said means through said slots in one direction tilts said welding head.

4,496,823

MULTIPLE PASSAGE CONDUIT FOR FUME EXTRACTING WELDING GUN

Robert N. Mann, Etobicoke, Canada, assignor to Bob Mann & Associates Incorporated, Mississauga, Canada

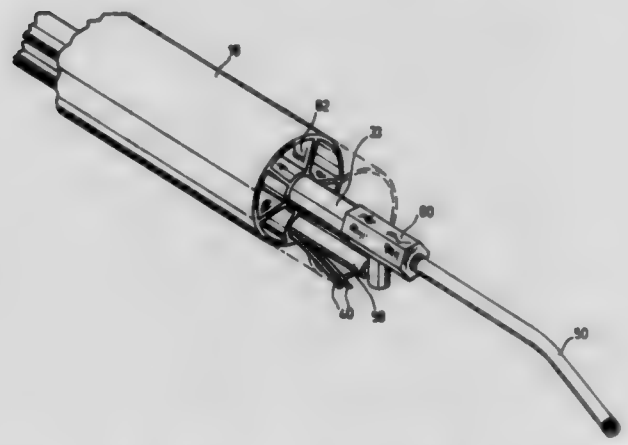
Filed Nov. 22, 1982, Ser. No. 443,175
Int. Cl.[3] B23K *9/32*; F16L *11/04*
U.S. Cl. 219—137.41 8 Claims

1. In a fume extracting welding gun through which a consumable electrode wire is fed, comprising:

a head portion, a control handle portion, a flexible connector portion, means for removing fumes from the weld site, means for conducting the consumable electrode wire to said head portion, means for conducting shielding gas to said head portion, and means for conducting electricity to

the electrode wire at said head portion, the improvement wherein:

said flexible connector portion comprises an integrally-formed flexible hose comprising an outer housing defining a hollow interior and having a smooth outer surface and an inner surface and a plurality of longitudinally-extending baffles located in and coextensive with the hollow



interior said baffles being integrally formed with and joined to each other and to the inner surface to define a plurality of separate passageways and extending through said flexible hose for conveying said fumes from said head portion, and additional separate passageways for conducting the consumable electrode wire and the electricity to the head portion and for conducting shielding gas to the head portion.

4,496,824

METHOD FOR CONTROLLING TEMPERATURE OF HEAT GENERATING ELEMENT OF THERMAL PRINTING HEAD AND CIRCUIT FOR PRACTISING SAME

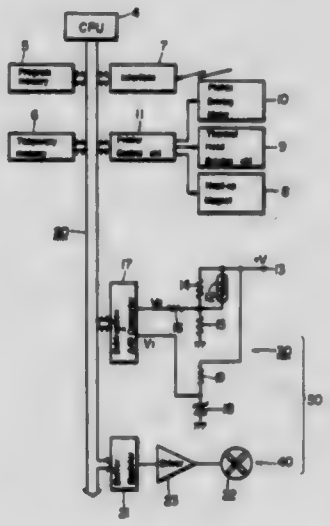
Hirokazu Kawai, and Fumio Takahashi, both of Ise, Japan, assignors to Shinko Electric Co., Ltd. and Kanzaki Paper Mfg., Co., Ltd., both of Tokyo, Japan

Filed Mar. 7, 1983, Ser. No. 472,993

Claims priority, application Japan, Mar. 18, 1982, 57-43195

Int. Cl.³ B41J *3/20*

U.S. Cl. 219—216 **4 Claims**



1. A thermal printer of the type in which heat-dissolving ink is thermally transferred onto a paper on a platen surface by heat generating elements of a print head, said thermal printer comprising:

(a) temperature detecting means for detecting the temperature of said print head to generate a heat detection signal;

(b) means for generating first and second threshold signals, said first and second threshold signals respectively representing upper and lower-limits of a desired temperature range of said print head;

(c) comparator means for comparing said heat detection signal with both of said first and second threshold signals, said comparator means generating a first control signal when said heat detection signal is greater than said first threshold signal, said comparator means generating a second control signal when said heat detection signal is less than said second threshold signal;

(d) control means responsive to said second control signal for halting normal printing operation of said thermal printer;

(e) lifting means responsive to said second control signal for lifting said print head up so that said print head is spaced from said paper;

(f) energizing means responsive to said second control signal for feeding electric power to all of said heat generating elements; and

(g) cooling means responsive to said first control signal for cooling said print head.

4,496,825

ELECTRIC CURLING IRON HAVING A REMOVABLE HAIR GROOMING ATTACHMENT

Matthew L. Andis, Racine, Wis., assignor to Andis Company, Racine, Wis.

Continuation-in-part of Ser. No. 59,676, Jul. 23, 1979, abandoned. This application Sep. 7, 1982, Ser. No. 415,372

Int. Cl.³ A45D *2/36*; A46D *7/10*; H05B *1/00*

U.S. Cl. 219—222 **12 Claims**



5. A hair curling iron comprising a handle, an elongated heating element attached to said handle and having an outer peripheral surface and a first end adjacent to said handle and a second end projecting outwardly from said handle, means for defining a plurality of generally arcuately spaced grooves extending longitudinally on said outer peripheral surface of said heating element between said first end and said second end, and being axially open at said second end, and a separable hair grooming attachment slideably removable on said heating element, said attachment comprising an annular frame including a plurality of arcuately spaced, longitudinally extending, support bars slidingly engaged in said grooves, and hair grooming means on said frame.

4,496,826

HAND-HELD SHOCK-RESISTANT ELECTROLYTICALLY HEATED STEAM PRODUCING APPARATUS

Leonard Osrow, 180 S. Middleneck Rd., Great Neck, N.Y. 11021

Filed Feb. 14, 1983, Ser. No. 466,216

Int. Cl.³ H05B *3/60, 1/02*; D06F *75/16*; F22B *1/30*

U.S. Cl. 219—272 **12 Claims**

1. A hand-held, steam-producing apparatus, comprising:

(a) a hollow housing including a top wall, a bottom wall and a pair of side walls together bounding an interior, said housing having a partitioning wall extending between the top and bottom walls and subdividing the interior into two compartments, said top wall having a water-filling openable inlet which, when opened, provides fluid communication with one of the compartments, said bottom wall

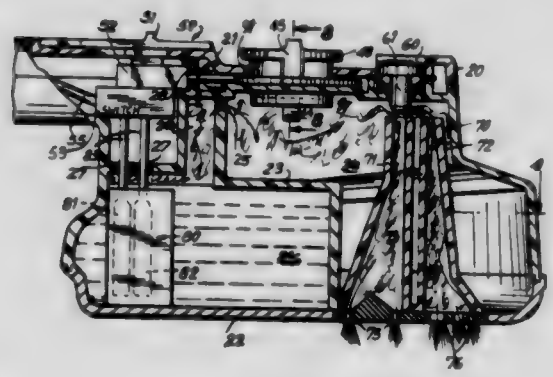
having a steam outlet port in fluid communication with said one compartment, said partitioning wall having an open communicating passage extending between the compartments for providing fluid communication therebetween;

(b) a hollow tubular steam stack in said one compartment and extending from the steam outlet port in the bottom wall towards the top wall and terminating short of the latter to form a steam inlet port at an elevation, as considered with respect to the bottom wall, which is lower than that of the communicating passage of the partitioning wall;

(c) a handle on the housing for permitting a user to manipulate the apparatus among

(i) a filling position in which the top wall is situated above the bottom wall to permit water to enter said one compartment via the opened water-filling inlet of the top wall,

(ii) a transfer position in which said one compartment is situated above the other of the compartments to permit the water received in said one compartment to be transferred to said other compartment via the open communicating passage, and



(iii) an up-ended position in which said other compartment is situated above said one compartment;

(d) a pair of spaced-apart, energizable electrodes located in said other compartment, and means for selectively energizing the electrodes upon application of different electric potentials thereto to electrolytically generate steam by the passage of electric current between the energized electrodes and through the water transferred to said other compartment; and

(e) means for preventing the formation of an electrically conductive path through water between the energized electrodes and the user in the filling, transfer and up-ended positions, said preventing means including a water-impervious, electrically-insulating section of the partitioning wall, said section extending away from the electrodes and bounding a recess in said other compartment to constitute a part thereof, said recess having a capacity sufficient to retentively receive substantially the entire water contents of said other compartment in the up-ended position, and to maintain said entire water contents out of electrolytic contact with the energized electrodes in the up-ended position.

4,496,827

ENHANCED HEAT AND MASS TRANSFER APPARATUS

Eugene J. Sturdevant, Wilmington, Del., assignor to Proctor-Silex, Inc., Chillicothe, Ohio

Filed Apr. 25, 1983, Ser. No. 488,556
Int. Cl.[3] F28F *13/16*
U.S. Cl. 219—399 12 Claims

1. An apparatus in a food cooking device for enhancing heat and mass transfer between surfaces of food being cooked and ambient air contained within a heat chamber during the cooking process of the cooking device, the apparatus comprising in combination;

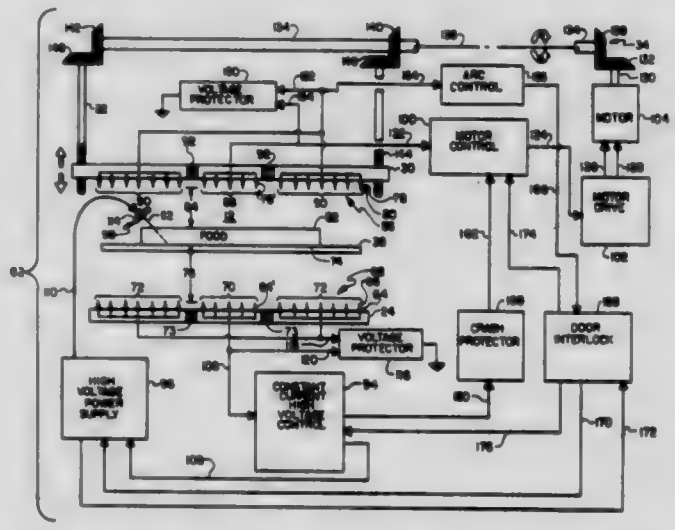
a food supporting member fixedly mounted in electrical isolation in the heat chamber;

a variable high voltage power supply having at least a high potential output terminal;

an electrical conducting means including a food engagement member electrically connected to said high potential terminal, said high voltage power supply operable to supply high voltage to the food through said food engagement member engaging the food for maintaining the food at a high potential;

a first electrode means fixed in the heat chamber below the food and having a spaced relation to a bottom surface of the food for defining a first electrical field for supporting corona current;

a circuit voltage control means electrically interposed between said first electrode means and said power supply, said voltage control means electrically connected to said first electrode means for sensing corona current in said first electrical field and to generate a voltage adjusting signal to said power supply to adjust the high voltage output to the food for maintaining the corona current in



said first electrical field at a constant optimum corona current density within a range from 15 $\mu A/in^2$ to 35 $\mu A/in^2$ for enhancing heat and mass transfer at said bottom food surface;

a second electrode means movably supported above the food in the heat chamber and having a spaced relation to a top surface of the food for defining a second electrical field for supporting corona current;

a drive means coupled to the second electrode means for adjustively moving said second electrode means towards and away from said top food surface; and

an electrode adjusting circuit interposed between said second electrode means and said drive means, said electrode adjusting circuit electrically connected to said second electrode means for sensing corona current in said second electrical field and to electrically control the drive means for adjustively moving said second electrode means for maintaining the corona current in said second electrical field at a constant optimum corona current density within a range from 5 $\mu A/in^2$ to 25 $\mu A/in^2$ for enhancing heat and mass transfer at said top food surface.

4,496,828

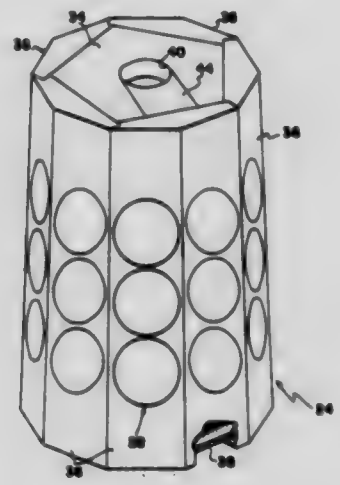
SUSCEPTOR ASSEMBLY

Marvin A. Kuamierz, and Robert F. Pijaszek, both of Bay City, Mich., assignors to Ultra Carbon Corporation, Bay City, Mich.

Filed Jul. 8, 1983, Ser. No. 511,859
Int. Cl.[3] C23C *13/08*; H05B *1/00*
U.S. Cl. 219—405 20 Claims

1. A susceptor assembly for supporting a plurality of disc-like substrates for high temperature vapor deposition, said assembly comprising geometrically similar top and bottom

plates of graphite having upper and lower surfaces and side edges defining outer peripheries; means for supporting said top plate in a horizontal position in symmetrical relationship to a central vertical axis, a plurality of vertically elongate graphite side plates having interior and exterior side surfaces and upper and lower ends, first means for suspending said side plates from said top plate around the outer periphery thereof, said side plates each having a first longitudinal side edge and a second



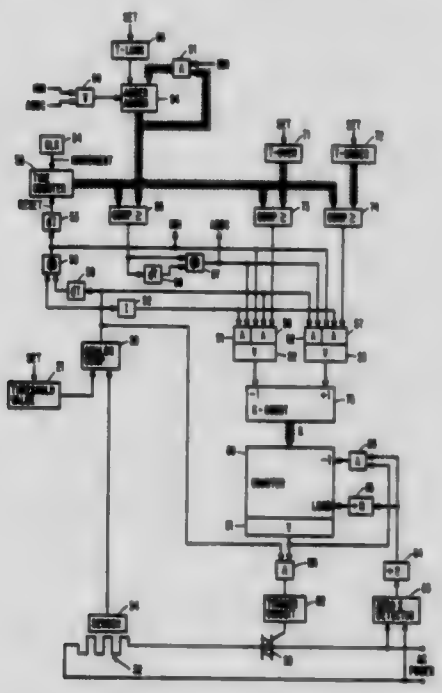
opposed longitudinal side edge of a configuration complementary to said first side edge such that when said side plates are all suspended from said top plate, the first side edge of each side plate is in face to face contact with the second side edge of an adjacent side plate whereby said side plates define an enclosure with an interior, surrounding said central axis, means supporting said bottom plate within the interior of said enclosure, and means on said side plates for mounting a plurality of substrates on the exterior side surface thereof.

4,496,829

BANG-BANG DUAL-MODE INTEGRAL CONTROLLER WITH PROPORTIONAL CONTROL OUTPUT USEFUL FOR TEMPERATURE CONTROL

Arthur G. Black, Boulder; John H. Dodge, Thornton, and Larry M. Ernst, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 10, 1982, Ser. No. 448,661
Int. Cl.[3] H05B 1/02
U.S. Cl. 219—497 6 Claims



1. A method of controlling an output signal as a function of time passage between events comprising the steps of:

setting predetermined upper and lower time limits;

supplying a proportional output signal determinative of a controlled variable;

generating a reference signal after the value of the controlled variable crosses a predetermined threshold value;

measuring the time period between successively generated reference signals;

increasing the proportion of said output signal if the measured time period that the value of said controlled variable is below said threshold value is not less than said lower time limit; and

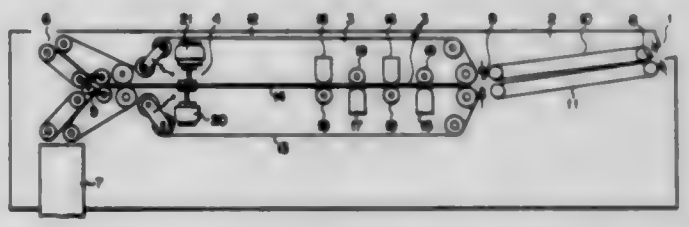
decreasing the proportion of said output signal if the measured time period that the value of the controlled variable is above said threshold value is greater than said upper time limit.

4,496,830

TICKET CHECKING APPARATUS

Setsuo Yoshihara, Ebina; Yorihumi Otsubo, and Takashi Kobayashi, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 7, 1982, Ser. No. 386,084
Claims priority, application Japan, Jun. 10, 1981, 56-88244
Int. Cl.[3] G06K 7/10
U.S. Cl. 235—458 7 Claims



1. A ticket checking apparatus comprising: a ticket signal generator for producing a ticket signal corresponding to a shape of a ticket;

means for extracting signal components corresponding to at least one manually punched portion on the peripheral edge of said ticket or at least one automatically punched hole in a predetermined position thereof from a ticket signal derived from said ticket signal generator and for judging as to whether said ticket is valid or invalid on the basis of said signal components.

4,496,831

PORTABLE LASER SCANNING SYSTEM AND SCANNING METHODS

Jerome Swartz; Edward Barkan, both of Long Island City, and Shelley A. Harrison, Dix Hills, all of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Division of Ser. No. 125,768, Feb. 29, 1980, Pat. No. 4,387,297.
This application Nov. 16, 1981, Ser. No. 321,934
Int. Cl.[3] G06K 7/10
U.S. Cl. 235—472 24 Claims

1. A light-weight, high-speed, miniature scanning device for repetitively scanning light, comprising:

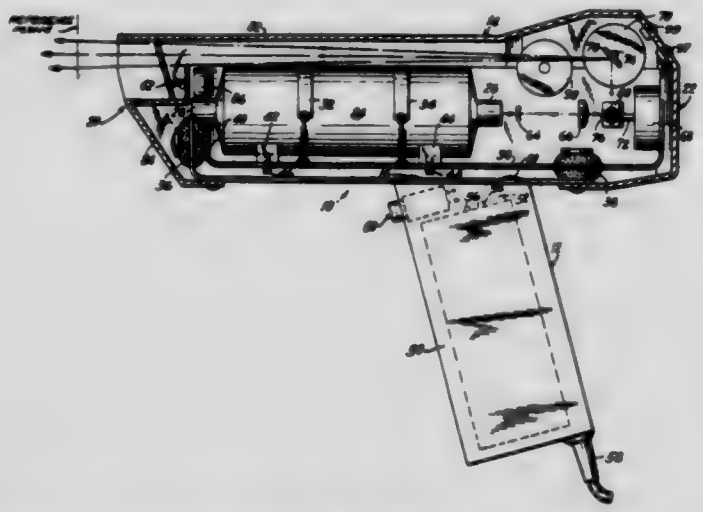
(a) a scanning motor having a stator, a rotor, and an elongated shaft operatively connected to the rotor for joint movement about an axis which extends along the elongation of the shaft;

(b) light-reflecting means mounted on the shaft for joint movement;

(c) means for magnetically generating a centering force which acts on the rotor to urge the shaft and light-reflecting means to a center position, said magnetically-generating means including means for establishing at the stator and the rotor respective magnetic fields which interact to cause the magnetic field of the rotor to align itself with the magnetic field of the stator; and

(d) motor control means for repetitively driving the shaft and light-reflecting means thereon in alternate circumfer-

ential directions about said axis to respective scan positions angularly spaced from said center position, said motor control means including means for electromagnetically moving the rotor against the action of the centering force in one circumferential direction about said axis over an arc length less than 360°, and thereupon for electromagnetically moving the rotor against the action of the centering force in the opposite circumferential direction about said axis over an arc length less than 360°.

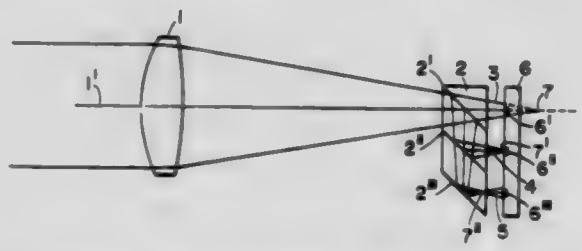


4,496,832

FOCUSING STATE DISCRIMINATING SYSTEM

Shinji Sakai; Nobuhiko Shinoda; Takao Kinoshita, all of Tokyo; Kazuya Hosoe, Kunitachi, and Takashi Kawabata, Kamakura, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1981, Ser. No. 310,373
Claims priority, application Japan, Oct. 16, 1980, 55/144782
Int. Cl.³ G01J *1/20*
U.S. Cl. 250—201 **6 Claims**



1. A system for discriminating a focusing state of imaging lens means with respect to an object, comprising:

(A) means for generating signals F1, F2 and F3 associated with image formation states of images of the object formed by said imaging lens means at first, second and third positions substantially corresponding to positions slightly in front of, coincident with and behind a predetermined focal plane of said imaging lens means; and

(B) means for discriminating the focusing states of said images formed by said imaging lens means, based on the signals generated from said signal generating means, said discriminating means performs, as an operation for discrimination, at least a comparison of $|F1-F3|$ and $K1(F1+F2+F3)$, where K1 is a constant.

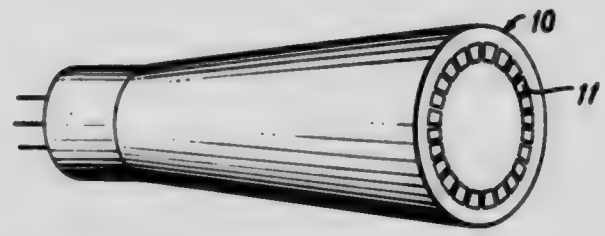
4,496,833

DETECTION PROCESS AND APPARATUS

Ludwig Wesch, Alter Weg 18, Glücksburg-Meierwik, Fed. Rep. of Germany

Division of Ser. No. 67,855, Nov. 7, 1960,. This application Jan. 26, 1965, Ser. No. 428,255
Int. Cl.³ H01J *40/14*; G01J *1/00*; H01J *40/00*
U.S. Cl. 250—211 R **1 Claim**

1. Apparatus for locating a target which radiates or reflects electromagnetic energy comprising a circular-scan cathode-ray tube including a screen and an electron beam moving over said screen, regions of said screen fluorescing when impinged upon by said electron beam to generate light energy, a plurality of semi-conductor elements disposed on said screen, each of said semi-conductor elements including a layer of photoconductive material adjacent said screen and a layer of photo-dielectric material on said layer of photoconductive material and adapted to receive electromagnetic energy from said target, said photoconductive material having a low resistance only when receiving light energy, said photo-dielectric material changing electrical capacitance when receiving electromagnetic energy, means for conductively connecting together said layers of photoconductive material to provide a first terminal, an electromagnetic radiation permeable conductor disposed on all other said layers of photo-dielectric material and including a second terminal, and an oscillator means including a tuned circuit connected to said first and second terminals, said oscillator means transmitting a target indicating signal when the layer of photo-dielectric material of one of said semi-conductor elements receives electromagnetic energy simultaneously with the receipt of light energy by its associated layer of photoconductive material.

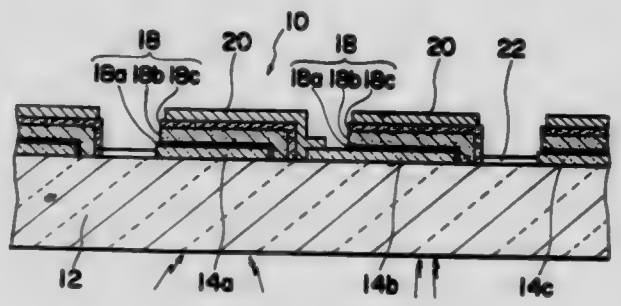


4,496,834

FOCUS DETECTING PHOTOELECTRIC DEVICE AND FOCUS DETECTING SYSTEM

Yasuhiro Nanba, Sennan; Takayuki Gotoh, Minamikawachi; Eiji Yamakawa, and Toshihiko Karasaki, both of Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 6, 1982, Ser. No. 366,080
Claims priority, application Japan, Apr. 7, 1981, 56-52561
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—211 R **33 Claims**



1. A focus detecting photoelectric device comprising:

a substrate formed by an electrically non-conductive material;

a plurality of pairs of first and second photodiodes deposited adjacent to each other on said substrate, each of said photodiodes comprising:

a first electrode layer deposited directly on said substrate;

an amorphous silicon layer deposited on said first electrode layer; and

a second electrode layer deposited on said amorphous silicon layer such that the amorphous silicon layer is sandwiched between said first and second electrode layers, said first and second photodiodes in each pair being connected in series to each other; and

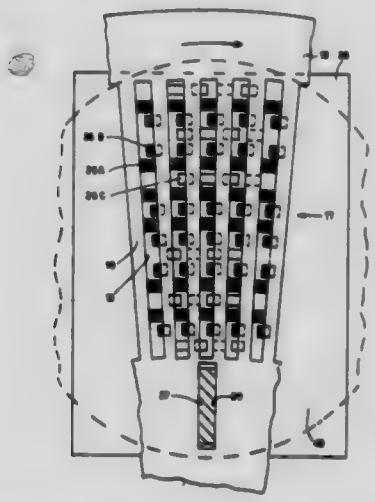
either said second electrode layer or a combination of said first electrode layer and said substrate being formed by transparent material for permitting impingement of light onto said amorphous silicon layer.

4,496,835

SHAFT ENCODER WITH DIFFUSELY PLACED LIGHT SENSITIVE ELEMENTS

Marcello Boella, Loranzè, and Paolo Rivera, Strambino, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Jun. 15, 1982, Ser. No. 388,699
Claims priority, application Italy, Jun. 15, 1981, 67821 A/81
Int. Cl.³ G01D *5/34*
U.S. Cl. 250—231 SE **13 Claims**



1. In an optical transducer for detecting the position of a movable member with respect to a fixed structure, comprising light emitting means for generating a light beam; photodetector means associated with said light emitting means and disposed in a region illuminated by said beam for detecting light of said beam and generating an electrical signal proportional to the detected light; and a shutter member interposed between said light emitting means and said photodetector means, and provided with a plurality of light interrupting zones separated by light transmitting zones, each one of said light transmitting zones having predetermined width and height for defining a predetermined light transmitting area; the improvement wherein said photodetector means comprises a plurality of light sensitive elements each one having a light sensitive area which is smaller than the light transmitting area of each one of said light transmitting zones for individually detecting a portion of said light beam, said light sensitive elements being diffusely distributed over the region illuminated by said light beam, and being electrically connected together in order to generate said electrical signal as result of the sum of the plurality of electrical signals individually generated by each one of said light sensitive elements.

4,496,836

DEVICE FOR IDENTIFYING A CIRCUMFERENTIAL POSITION

Charles R. Mikesell, Idaho Falls, Id., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 29, 1982, Ser. No. 393,285
Int. Cl.³ G01D *5/34*
U.S. Cl. 250—231 R **7 Claims**

1. A device for identifying a circumferential position on a non-vertical pipe comprising:

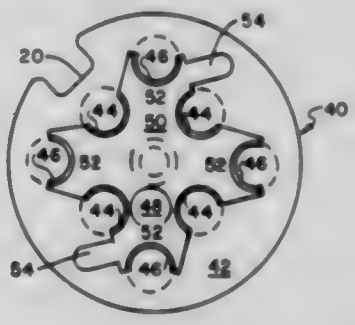
a wall member defining a substantially polyhedral chamber,

a light source external to said chamber and transmitting a beam of light therethrough,

a light-activated switch positioned to detect said light beam transmitted through said chamber,

an object internal to said chamber and freely moving therein subject to gravity,

means for mounting said device to revolve about the axis of said pipe, whereby as said device revolves to a predetermined circumferential position said internal object moves within said chamber and interrupts said light beam, said interruption triggering said light-activated switch to indicate such circumferential position of said device.

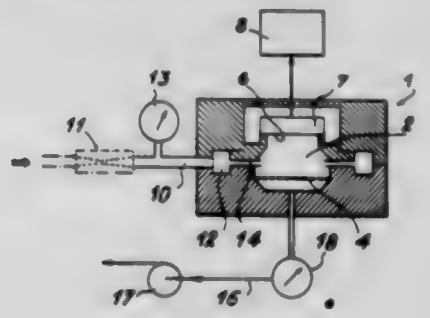


4,496,837

PRESSURE REDUCING DEVICE

Jean Charuau, Orsay, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 19, 1982, Ser. No. 399,263
Claims priority, application France, Jul. 24, 1981, 81 14430
Int. Cl.³ G01T *1/161, 1/18*
U.S. Cl. 250—303 **7 Claims**



1. An apparatus for detecting an aerosol for α-ray emitting solid particles, comprising:

means defining a measuring chamber;

a sampling filter in said measuring chamber;

a radiation detector in said measuring chamber;

outlet means communicating with said measuring chamber;

an aerosol source;

inlet means communicating said aerosol source with said measuring chamber;

a venturi tube in said inlet means; and

means for causing said aerosol to flow through said venturi tube at or near the speed of sound, whereby a fluid flow force of said aerosol reduces adherence of particles of said aerosol on walls of said venturi tube.

4,496,838

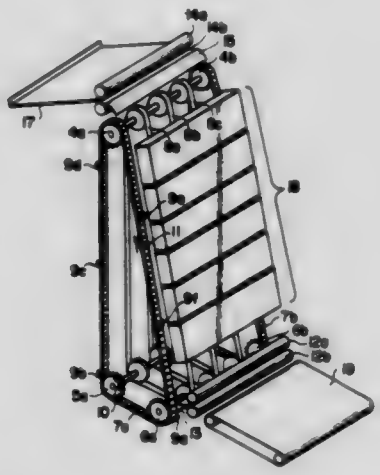
NOISE ERASING APPARATUS FOR STIMULABLE PHOSPHOR SHEET

Chiyuki Umemoto, and Kazuo Kohketsu, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1982, Ser. No. 441,983
Claims priority, application Japan, Nov. 13, 1981, 56-181832
Int. Cl.³ G03C *5/16*
U.S. Cl. 250—327.2 **15 Claims**

1. A noise erasing apparatus for a stimulable phosphor sheet, which comprises an erasing light source emitting light mainly having a wavelength within the range of 400nm to 600nm, a loading means for carrying the stimulable phosphor sheet to the position facing said erasing light source, a holding means

for holding said stimulable phosphor sheet in the position facing said erasing light source, and an unloading means for



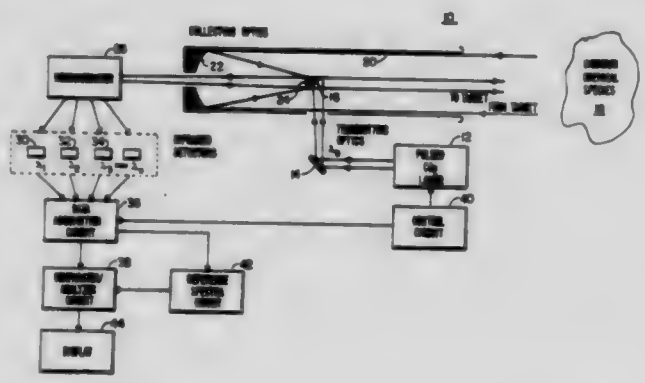
carrying said stimulable phosphor sheet out of the position facing said erasing light source.

4,496,839

SYSTEM AND METHOD FOR REMOTE DETECTION AND IDENTIFICATION OF CHEMICAL SPECIES BY LASER INITIATED NONRESONANT INFRARED SPECTROSCOPY

Lawrence S. Bernstein, Bedford; Fritz Bien, Billerica, both of Mass., and John A. Jamieson, Chevy Chase, Md., assignors to Spectral Sciences Incorporated, Burlington, Mass.

Filed Nov. 3, 1982, Ser. No. 439,071
Int. Cl.³ G01J *3/00*
U.S. Cl. 250—341 **17 Claims**



1. A system for remote detection and identification of molecular species by laser initiated nonresonant infrared spectroscopy, comprising:

an infrared pulsed laser source for providing radiation of a first wavelength;

means for directing radiation at said first wavelength from said laser source to a remote mass of an unknown molecular species, which absorbs said radiation at said first wavelength to induce molecular excitation therein and emits nonresonant infrared radiation at one or more other wavelength regions, each said laser pulse having a duration less than the vibrational quenching time of said molecular species;

means for receiving infrared radiation from said mass of unknown molecular species;

means, responsive to said means for receiving, for detecting the intensity of the received infrared radiation;

means for sampling the intensity of the received infrared radiation after molecular excitation during the period of enhanced emission before relaxation, to obtain a nonresonant emission spectrum characteristic of said unknown molecular species; and

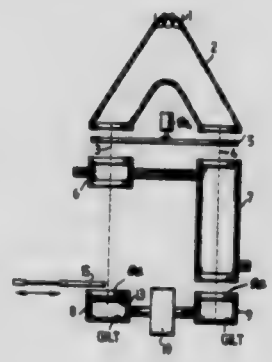
means for comparing said characteristic of said unknown molecular species with the characteristics of known molecular species for determining the identity of the unknown molecular species.

4,496,840

NONDISPERSIVE INFRARED GAS ANALYZER

Walter Fabinski, Hattersheim, and Udo Deptolla, Ober-Olm, both of Fed. Rep. of Germany, assignors to Hartmann & Braun AG, Frankfurt, Fed. Rep. of Germany

Filed Aug. 3, 1981, Ser. No. 289,184
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1980, 3030002
The portion of the term of this patent subsequent to Jul. 28, 1998, has been disclaimed.
Int. Cl.³ G01J *1/00*
U.S. Cl. 250—343 **9 Claims**



1. Nondispersive infrared gas analyzer which includes a particular component in a host gas, the host gas including at least one component having one or more infrared absorption bands which overlap an infrared absorption band of the particular component, the analyzer including:

(a) a measuring beam path and a reference beam path without a reference gas and means for providing infrared radiation beams of the same frequency band to the two paths,

(b) a modulating means for the beams,

(c) a first, relatively short, cell being passed through by the gas to be analyzed and being disposed in one of said paths,

(d) a second, relatively long, cell being also passed through by the gas to be analyzed and being disposed in another one of said paths,

the improvement comprising in combination: a pair of substantially similarly configured receiver cells disposed respectively in said paths and being filled with the gas of said particular component, there being differential pressure-sensing means coupled to the receiver cells and producing a signal representative of the concentration of the particular component in the host gas; and

a plurality of thin rod or wire elements having a black surface and low heat capacity, and being disposed inside one of the receiver cells being disposed in the path that includes the relatively short cell.

4,496,841

RADIATION DETECTOR WITH RESONANT FREQUENCY TRANSLATOR

Dennis H. Pritzkow, New Berlin, and Robert M. Vavrek, Waukesha, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

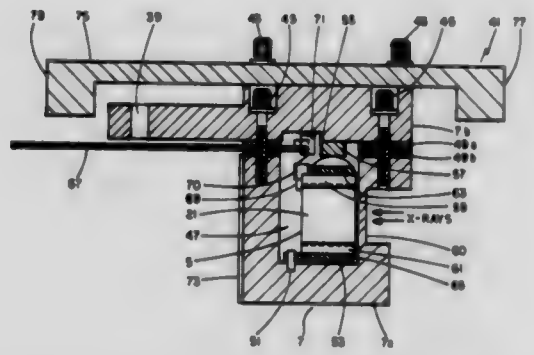
Filed Apr. 1, 1983, Ser. No. 481,420
Int. Cl.³ G03B *41/16*; G01T *1/185*
U.S. Cl. 250—374 **15 Claims**

1. A radiation detector comprising:

a housing;

detector means supported within said housing for detecting ionizing radiation admitted into said housing and providing in response thereto a plurality of electrical signals lying within a band of frequencies, said detector means

and said housing being jointly resonant at a predetermined frequency; and



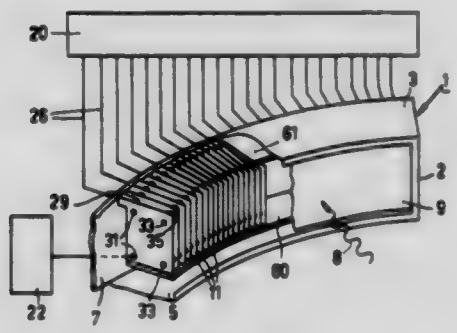
means secured to said housing for modifying said resonant frequency so as to place it substantially outside the band of frequencies of said electrical signals to avoid interference therewith.

4,496,842

RADIATION DETECTOR

Joannes L. G. Hermens, and Matheus W. Kerkhof, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 22, 1982, Ser. No. 443,406
Claims priority, application Netherlands, Nov. 26, 1981, 8105349
Int. Cl.[3] G01T *1/18*
U.S. Cl. 250—385 17 Claims



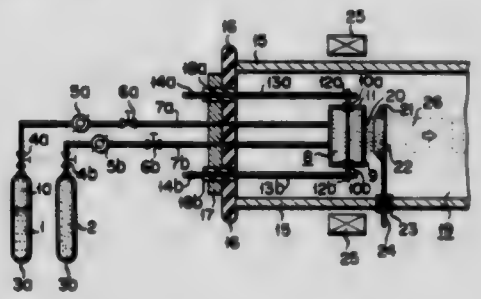
1. A radiation detector comprising a plurality of separated plates, said plates having apertures, and intermediate spacers between each of said plates for separating said plates, said spacers contacting one another through said apertures.

4,496,843

METHOD FOR PRODUCING METAL IONS

Kei Kirita, and Katuo Koike, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 27, 1982, Ser. No. 382,777
Claims priority, application Japan, Jun. 1, 1981, 56-82517
Int. Cl.[3] H01J *27/00*
U.S. Cl. 250—426 11 Claims



1. A method for producing metal ions, comprising the steps of:

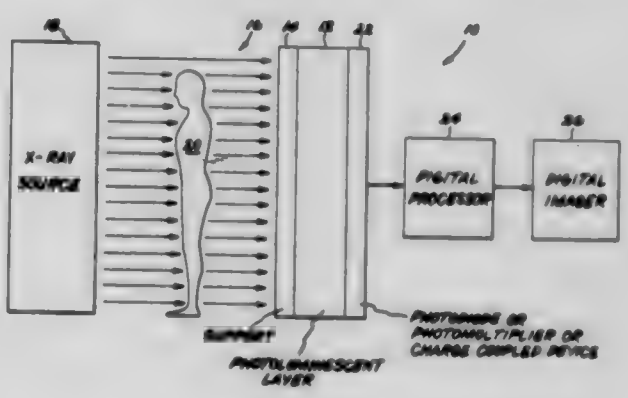
(a) producing an organic metal compound vapor by evaporation of a liquid organic metal compound;
(b) introducing said organic metal compound vapor and an auxiliary gas for cleaning an ionization chamber into said ionization chamber; and
(c) producing the metal ions by decomposing said organic metal compound vapor by ionization in a discharge.

4,496,844

PHOTOLUMINESCENT PHOSPHORS AND X-RAY IMAGING SYSTEMS UTILIZING SUCH PHOSPHORS

John F. Ackerman, Cheyenne, Wyo., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 2, 1983, Ser. No. 528,830
Int. Cl.[3] G21K *4/00*; C09K *11/24, 11/12*
U.S. Cl. 250—483.1 21 Claims



1. A radiographic imaging system, comprising:
(a) a photoluminescent layer including a phosphor of the general formula:

$$A_2MX_6$$

wherein
A is Cs, Rb, K or Na;
M is Ti, Zr, Hf, Te or Sn; and
X is Cl or Br;
said phosphor being sufficiently deficient of luminescent activators effective only at temperatures below about 77° kelvin that said phosphor exhibits luminescence at temperatures greater than about 77° kelvin;
(b) an X-ray source adapted to expose said photoluminescent layer to X-rays passing through an object and to thereby stimulate emission of a light image from said layer; and
(c) photodetection means to read the light image from said photoluminescent layer.

4,496,845

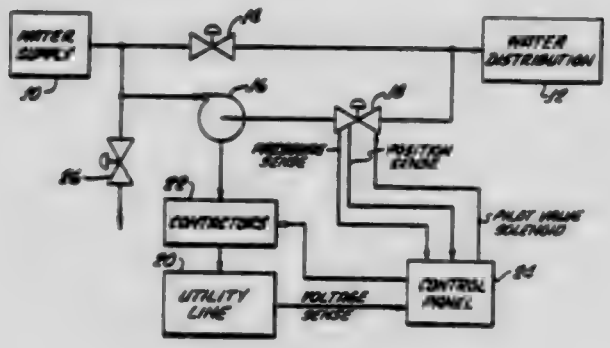
METHOD AND APPARATUS FOR CONTROL OF A TURBINE GENERATOR

Harold W. Ensign, Fullerton, and Donald G. Griswold, Corona del Mar, both of Calif., assignors to CLA-VAL Co., Costa Mesa, Calif.

Filed Dec. 27, 1982, Ser. No. 453,453
Int. Cl.[3] F03B *13/00*
U.S. Cl. 290—43 23 Claims

1. In combination with a water system in which water flows from a supply at relatively high pressure to a water receiving system at relatively low pressure, a controlled power generating system comprising
a turbine connected in a flow path between said supply and receiving system,
an electrical generator connected to be driven by said turbine,
a control valve operable between closed and open positions for controlling flow through said turbine,
contactor means operable between closed and open conditions for coupling said generator to a power circuit,

start means for operating said contactor means to closed condition and for initiating operation of said control valve to open position, and



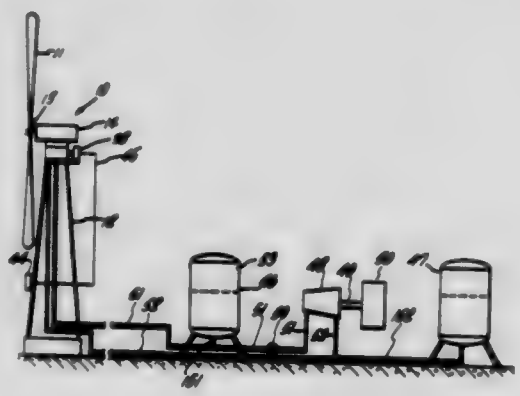
means responsive to said valve for disabling said start means when said control valve is in said open position.

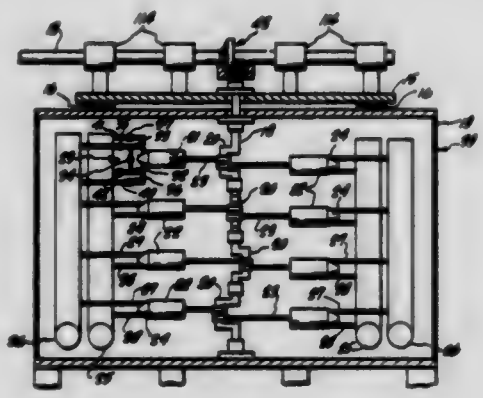
4,496,846

POWER GENERATION FROM WIND

William E. Parkins, 20120 Wells Dr., Woodland Hills, Calif. 91364

Filed Jun. 4, 1982, Ser. No. 385,330
Int. Cl.[3] F03D *17/02, 49/02;* F04B *49/00*
U.S. Cl. 290—44 33 Claims





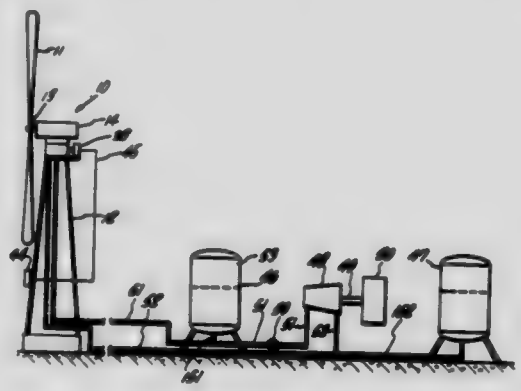
1. Apparatus for regulating the rotation of a wind responsive rotor of a wind machine comprising rotatable shaft means driven by a rotor thereby to be rotatable in response to wind action on the rotor, the shaft means being adapted to activate multistage pump means, each stage having intake means coupling a fluid intake line with the stage and discharge means coupling a fluid discharge line with the stage, selected stages having idling means communicating with said selected stage and either the fluid intake line or the fluid discharge line, and constricting means located in series with said selected stages between the intake line and discharge line, control means to regulate controllably the operative positions of the idling means and constricting means to change the pumping status of selected stages effectively pumping fluid between the intake line and discharge line while fluid passes into and from the selected stage thereby to vary controllably the torque on said shaft for a given shaft power transmitted thereby to permit regulation of the rotor rotational speed.

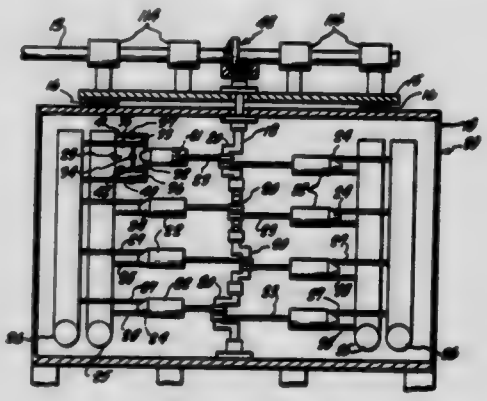
4,496,847

POWER GENERATION FROM WIND

William E. Parkins, 20120 Wells Dr., Woodland Hills, Calif. 91364

Continuation-in-part of Ser. No. 385,330, Jun. 4, 1982,. This application Dec. 16, 1982, Ser. No. 450,462
Int. Cl.[3] F03D *17/02, 49/02;* F04B *49/00*
U.S. Cl. 290—44 32 Claims





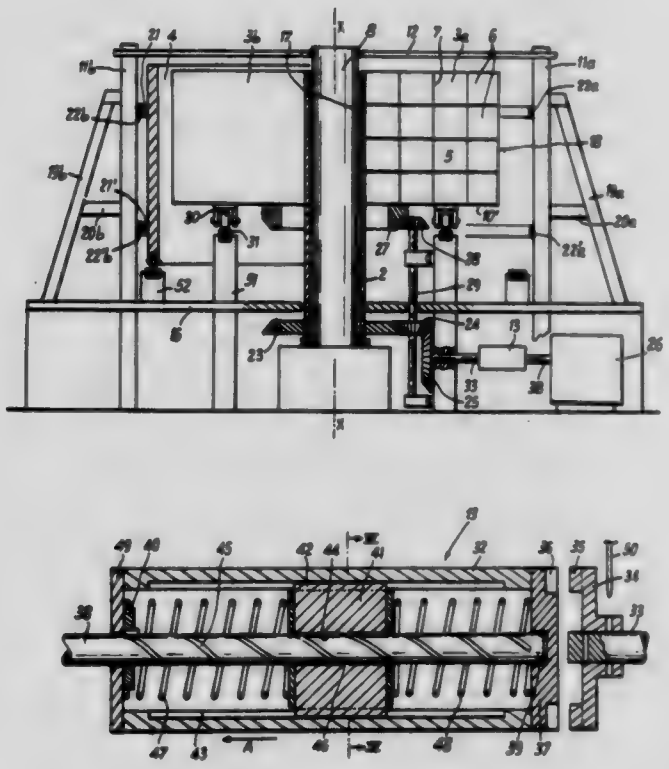
1. Apparatus for regulating the rotation of a wind responsive rotor of a wind machine comprising rotatable shaft means driven by a rotor thereby to be rotatable in response to wind action on the rotor, the shaft means being adapted to activate multistage pump means, each stage having intake means coupling a common fluid intake line with the stage and disharge means coupling a common fluid discharge line with the stage, first constricting means located in the common discharge line from the stages, control means to regulate controllably the operative positions of the intake means or discharge means on selected stages and the first constricting means thereby to change the pumping status of the stages effectively pumping fluid between the intake line and discharge line, fluid being adapted to pass into and from all the selected stages thereby to vary controllably the torque on said shaft for a given shaft power transmitted thereby to permit regulation of the rotor rotational speed.

4,496,848

DEVICE FOR HARNESSING WIND ENERGY INCLUDING SHOCK ABSORBER

Adam Binder, 52, Rue de la Tour d'Auvergne, 75009 Paris, France

PCT No. PCT/FR82/00081, § 371 Date Jan. 5, 1983, § 102(e) Date Jan. 5, 1983, PCT Pub. No. WO82/03893, PCT Pub. Date Nov. 11, 1982
PCT Filed May 7, 1982, Ser. No. 456,052
Claims priority, application France, May 8, 1981, 81 09183
Int. Cl.³ F01D *5/14;* F04D *29/38*
U.S. Cl. 290—55 3 Claims



1. A device for harnessing energy from wind comprising:

a central generator including a rotor and at least two blades elongated axially in a vertical position, said blades being oriented radially in a horizontal plane and having an active surface area and further including means for harnessing kinetic energy, said active surface area including cells for engulfing air currents;

means for masking said blades when their displacement is in a direction opposite to a direction of said wind;

means for supporting said generator; and

shock absorber means comprising;

a first shaft;

rigid cylindrical cover rigidly coupled to set first shaft for transmitting energy to said generator;

said cover having a longitudinal groove on an inside surface thereof;

second shaft having first and second ends, rotatably disposed at said first end inside said cover and coaxially therewith, said second end being coupled to said generator, said shaft further including at least one helical groove thereon, which groove progresses on turning in the direction of rotation of said cover towards said second end;

cylindrical cursor having first and second ends, said cursor being longitudinally slideable in said cover, and having at least one rib, said cursor being coupled to said cover when said cover rotates by said at least one rib which circulates in said longitudinal grooves, said cursor further having a diameter substantially equal to said diameter of said second shaft, said second shaft passing there through and having at least one helical rib in correspondence to said helical groove; and

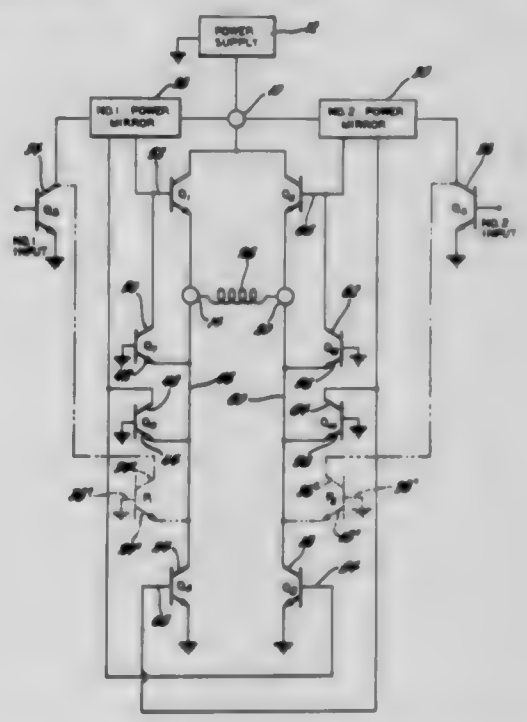
first and second springs located in said cover and coupled between said first and second cursor sides and said first and second ends of said cover respectively.

4,496,849

POWER TRANSISTOR PROTECTION FROM SUBSTRATE INJECTION

Thomas W. Kotowski, Noriesville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 22, 1982, Ser. No. 350,757
Int. Cl.³ H01L *27/06;* H02M *1/18;* H03K *17/66*
U.S. Cl. 307—254 5 Claims



1. In a PN junction-isolated bipolar integrated circuit having three mutually spaced isolation regions respectively forming the collectors of a power transistor, a driver transistor for the power transistor, and another transistor whose collector is subject to unwanted polarity reversal, which reversal could produce parasitic substrate injection of current collectible by the driver transistor collector that, in turn, could produce unwanted drive current for the power transistor, the improvement comprising a fourth isolation pocket disposed between the driver transistor pocket and the other transistor pocket, the fourth isolation pocket not containing any opposite conductivity type regions, and a low resistance electrical connection between the fourth isolation pocket and a base region of the power transistor that is the only electrical contact formed on the pocket, effective both to reduce the parasitic substrate injection from the other transistor to the driver transistor and to negate parasitic base drive to the power transistor when the unwanted polarity reversal occurs.

4,496,850

SEMICONDUCTOR CIRCUIT FOR ENABLING A QUICK RISE OF THE POTENTIAL ON THE WORD LINE FOR DRIVING A CLOCK SIGNAL LINE

Yoshihiro Takemae, Tokyo; Shigeki Nozaki Kawasaki; Katsuhiko Kabashima, Mizusawa, and Seiji Enomoto, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 10, 1982, Ser. No. 347,465
Claims priority, application Japan, Feb. 12, 1981, 56-19312
Int. Cl.³ H03K *17/04, 17/06, 17/693, 19/017*
U.S. Cl. 307—269 13 Claims

1. A semiconductor circuit for receiving a source voltage between first and second terminals, operatively connected to receive a potential push signal having first and second reference levels, for producing an output voltage higher than a source voltage at the first terminal of the source for driving a clock signal line, comprising:

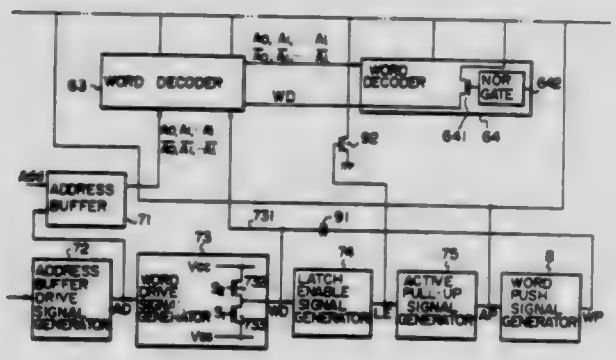
a first circuit, operatively connected to the clock signal line

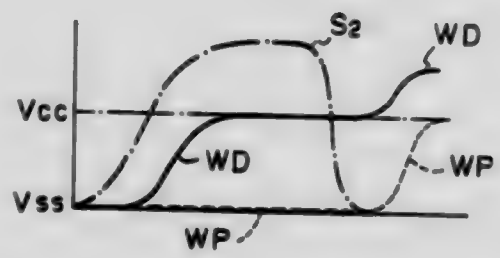
and the first terminal of the source, for pulling up the potential of the clock signal line to the source voltage;

a second circuit, operatively connected to the clock signal line and the second terminal of the source, for pulling down the potential of said clock signal line to a voltage lower than the source voltage;

a capacitor having a first electrode operatively connected to the clock signal line and having a second electrode operatively connected to receive the potential push signal, said capacitor pushing the potential of the clock signal line up to a potential higher than the source voltage, said capacitor comprising an MIS capacitor; and

a signal generating circuit, operatively connected to the second electrode of said capacitor, for producing the potential push signal, the potential of which changes from





the first reference level of the potential push signal to the second reference level of the potential push signal, and then from the second reference level of the potential push signal to the first reference level of the potential push signal, said signal generating circuit functioning during the time the potential of the clock signal line is pulled up to the source voltage by said first circuit, the potential of the push signal being at the first reference level so that said MIS capacitor remains uncharged, and after the potential of the clock signal line is pulled up, the potential of the potential push signal changes from the first reference level to the second reference level and then back to the first reference level, charging the MIS capacitor and exerting a bootstrap effect so that the potential of the clock signal line becomes higher than the source voltage.

4,496,851

DYNAMIC METAL OXIDE SEMICONDUCTOR FIELD EFFECT TRANSISTOR CLOCKING CIRCUIT

Ebbin R. Southerland, Jr., Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 1, 1982, Ser. No. 353,294
Int. Cl.³ H03K *19/096, 19/20, 17/693*
U.S. Cl. 307—269 **5 Claims**

1. A dynamic metal oxide semiconductor field effect transistor clocking circuit for providing at least one output clock pulse at a fixed time interval after receiving an input pulse, the clocking circuit comprises:

a first stage means having a first stage node for providing a first stage output signal at the first stage node and wherein the first stage means includes;

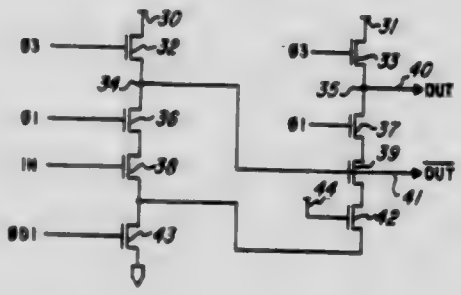
a first precharge means for precharging the first stage node at a first predetermined time interval;

an isolation means for isolating the precharged first stage node at a second predetermined time interval;

input means for receiving an output enable signal to the first stage means, the output enable signal having a first and second logic state;

discharge means for discharging the first stage node at a third predetermined time interval when the output enable signal is at the first logic state the first precharge means, the first stage node, the isolation means, the input means, and the discharge means being coupled in series, said discharge means being isolated from the first stage node by the isolation means and the input means when the output enable signal is at the second logic state;

second stage means having a second stage node for providing the output clock pulse at the second stage node and wherein the second stage means includes;



a second precharge means for precharging the second stage node at the first predetermined time intervals;

a second isolation means for isolating the precharged second stage node at the second predetermined time interval;

a second input means operably connected to first stage means for receiving the first stage output signal which is representative of the voltage level of the first stage node and having a first output logic state and a second output logic state;

coupling means for electrically coupling the discharge means to the second stage means for discharging the second stage node when the first stage output signal is at the first output logic state; and

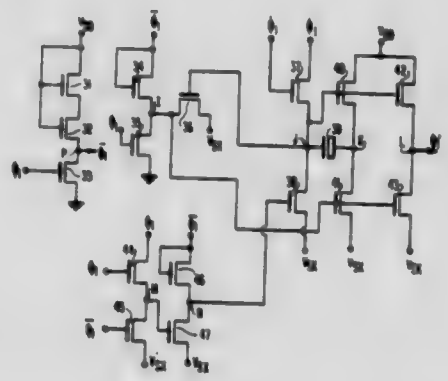
said coupling means being isolated from the second stage node by the second isolation means and the second input means when the first stage output signal is at the second output logic state.

4,496,852

LOW POWER CLOCK GENERATOR

Eugene M. Blaser, Hopewell Junction; Paul W. Chung, Wappingers Falls, both of N.Y., and Ramesh C. Varshney, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 15, 1982, Ser. No. 441,707
Int. Cl.³ H03K *17/06, 5/135, 17/10, 19/096*
U.S. Cl. 307—269 **10 Claims**



1. A clock generator circuit for producing an output clock signal having levels determined by positive and negative power supply levels in response to an input clock signal having

levels determined by said positive power supply level and a ground level, comprising:

an output transistor pair having conductive channels coupled in series between said positive power supply level and said negative power supply level;

a final drive transistor pair having channels coupled in series between said positive power supply level and said negative power supply level, gates of the transistors of said final drive transistor pair being coupled to gates of corresponding ones of the transistors of said output transistor pair;

a bootstrap capacitor coupled between a first node at the commonly coupled gates of one transistor of said output transistor pair and the corresponding transistor of said drive transistor pair, and a second node between said channels of said output transistor pair;

an inverter transistor having a channel coupled between said negative power supply level and a third node at the commonly coupled gates of the other transistor of said output transistor pair and the corresponding transistor of said drive transistor pair, and a gate coupled to said first node;

means for grounding said second node in response to said input clock signal going to said positive power supply level from said ground level until said inverter transistor is switched into its conducting state in response to charging of said bootstrap capacitor; and

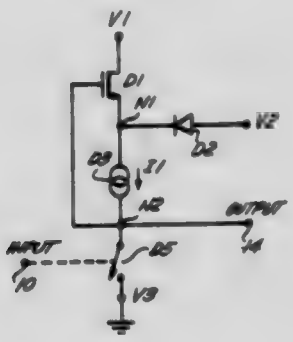
means for discharging said first node to said negative power supply level in response to said input clock signal going from said positive power supply level to said ground level.

4,496,853

STATIC LOAD FOR HIGH VOLTAGE DRIVER

Ronald W. Streiber, Smithtown, N.Y., assignor to General Instrument Corporation, New York, N.Y.

Filed Nov. 8, 1982, Ser. No. 440,109
Int. Cl.³ H03K *3/01, 17/687*
U.S. Cl. 307—270 **11 Claims**



1. A circuit comprising:

a depletion mode FET having respective source, gate, and drain electrodes;

a first power supply terminal to which said drain electrode of said depletion mode FET is connected;

a unidirectional current conduction means having first and second electrodes for conducting current from said first to said second electrode thereof;

a second power supply terminal to which said first electrode of said unidirectional current conduction means is connected;

a current source means having first and second electrodes for conducting current between said first and second electrodes of said current source;

a first circuit node to which said second electrode of said undirectional current conduction means, the first electrode of said current source and the source electrode of said depletion mode FET are connected; and

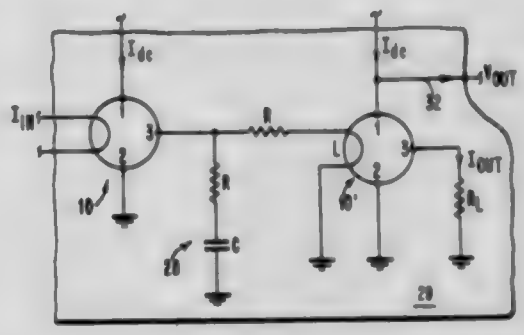
a second circuit node to which the gate electrode of said depletion mode FET and the second electrode of said current source are connected.

4,496,854

ON-CHIP SQUID CASCADE

Cheng-Chung J. Chi; Arthur Davidson, both of Yorktown Heights, and Chang-Chyi Tsuei, Chappaqua, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 29, 1982, Ser. No. 362,581
Int. Cl.³ H03K *3/38, 17/92*
U.S. Cl. 307—306 **17 Claims**



1. A superconducting circuit having high sensitivity and bandwidth, comprising in combination:

first and second DC SQUID stages located on the same superconducting chip, said first and second stages each including an input means, an output means, a superconducting loop having at least two Josephson devices therein and means for biasing each stage with a DC current, there being shunt resistors across said Josephson devices to render said devices nonhysteretic,

coupling means located on said superconducting chip for interconnecting said first and second stages with a high efficiency over a large bandwidth, and for transferring current from said first stage to said second stage, said coupling means including,

transmission line means connected to said shunt resistors of said first stage for receiving the current flowing in said shunt resistors,

impedance means for matching the impedance of said transmission line for maximum transfer of current to said second stage, said impedance means providing a real impedance over a large frequency range and having a sufficiently large magnitude to insure large bandwidth, and

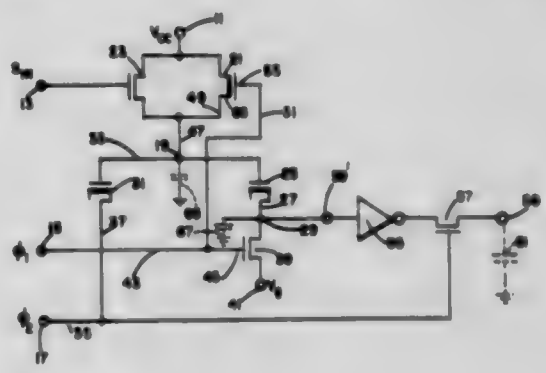
means for substantially preventing high frequency Josephson oscillations in said first stage from reaching the input means to said second SQUID stage.

4,496,855

HIGH VOLTAGE LEVEL DETECTOR AND METHOD

Michael M. Yamamura, Cupertino, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 25, 1982, Ser. No. 392,106
Int. Cl.³ H03K *5/153, 5/24*
U.S. Cl. 307—350 **11 Claims**



1. A high-voltage sensing logic circuit for detecting the occurrence of an input signal level applied to said logic circuit

which exceeds a predetermined threshold voltage level and for providing a unique output signal level in response thereto, said circuit adapted to operate over first and second time intervals from a voltage source providing supply and reference voltage levels at supply and reference voltage terminals, respectively, said circuit comprising:

first and second chargeable devices having first terminals connected to form a common node, said first chargeable device having a second terminal to which is alternately applied reference and supply voltage levels during said first and second time intervals, respectively, and said second chargeable device having a second terminal terminating in a second node;

means for charging said first and second chargeable devices to establish a voltage level substantially equal to said supply voltage level at said common node during said first time interval; and

means for clamping said voltage level of said common node to said supply voltage level by providing a conductive path from said common node to said supply voltage terminal when said input signal level exceeds said predetermined threshold voltage level during said second time interval to provide a low at said second node which is said unique output signal level;

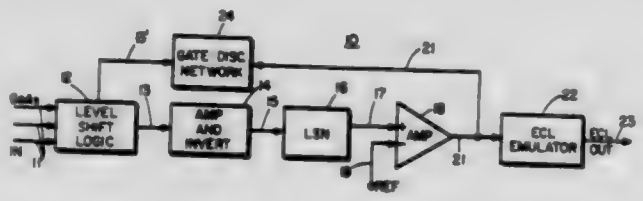
said alternately applied reference and supply voltage levels to said second terminal of said first chargeable device causing the voltage level of said common node to be boosted above said supply voltage level if the input signal does not exceed said predetermined threshold voltage level during said second time interval to provide a high at said second node.

4,496,856

GAAS TO ECL LEVEL CONVERTER

Stephen A. Ransom, Huntingdon Valley, and Tedd K. Stickel, Chalfont, both of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Jul. 21, 1982, Ser. No. 400,514
Int. Cl.³ H03K *19/092, 19/094*
U.S. Cl. 307—475 **10 Claims**



1. A gallium arsenide (GaAs) level converter for driving an emitter coupled logic (ECL) circuit comprising:

a GaAs signal input source,

a GaAs level shifting network coupled to said signal input source,

a GaAs differential amplifier having an input coupled to said level shifting network and having an output,

a voltage reference source coupled to said differential amplifier,

an emitter coupled logic bipolar emitter follower emulator circuit coupled to the output of said differential amplifier,

said emitter coupled logic emulator comprising an output stage having,

a current supply branch,

a high voltage level control branch, and

a low voltage level control branch,

said branches being connected in parallel,

a termination resistor in series with said branches, and

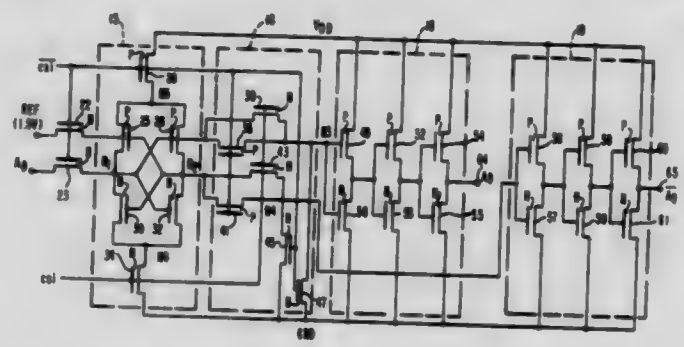
an emitter coupled logic output line intermediate said termination resistor and said branches of said emulator.

4,496,857

HIGH SPEED LOW POWER MOS BUFFER CIRCUIT FOR CONVERTING TTL LOGIC SIGNAL LEVELS TO MOS LOGIC SIGNAL LEVELS

Hu H. Chao, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 1, 1982, Ser. No. 437,991
Int. Cl.³ H03K *19/096, 17/284, 17/693*
U.S. Cl. 307—475 **3 Claims**



1. A buffer circuit for providing a MOS logic level from a TTL logic level comprising:

a cross coupled latch formed from a first pair and a second pair of transistors, said pairs connected together in parallel, each of said transistor pairs including an N channel FET and P channel FET serially connected, the gate connections of each transistor pair forming first and second nodes with the common channel connection of the remaining transistor pair, said first and second switches serially connected to each end of said parallel pairs for supplying current to first and second ends of said transistor pairs in response to a clock signal, CSI, and an inverse clock signal, $\overline{CSI}$,;

means for connecting a power supply across ends of said first and second switches;

first and second transistor gates connected to provide first and second signal paths to said nodes, one of said transistor gates connected to receive a TTL logic input level, and the second to receive a reference voltage level, said transistor gates operating in response to said $\overline{CSI}$ signal;

first and second FET inverter chains, each having an input and output, said inverter chains connected to a supply of voltage for establishing a MOS logic level; and

first and second current path means connecting one of said inverter chain inputs to one of said nodes and the remaining of said inverter chain inputs to the remamining of said nodes, said current path means operative in response to said CSI signal and $\overline{CSI}$ signal to open and close said current path means; whereby said signals at a first logic state connect said nodes to said reference level and TTL logic level, and open said current path means, and at a second logic state operates said cross coupled latch and connect said nodes to said inverter chain inputs whereby complementary MOS logic levels are produced.

4,496,858

FREQUENCY TO VOLTAGE CONVERTER

Michael D. Smith, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 334,279, Dec. 24, 1981, abandoned. This application Apr. 13, 1984, Ser. No. 599,595
Int. Cl.³ H03K *5/22, 5/00*
U.S. Cl. 307—519 **3 Claims**

1. A frequency to voltage converter comprising:

an operational amplifier, having a first and a second input and an output;

a switched capacitor feedback means connected between the first input and the output of the operational amplifier and being switched at a first frequency to allow the operational amplifier to integrate a signal applied to the input of the operational amplifier;

capacitor means switchably connected to the first input of the operational amplifier and to a voltage source and to being switched at a second frequency for storing a charge from the voltage source and for tranferring the charge to the input of the operational amplifier, and a reference



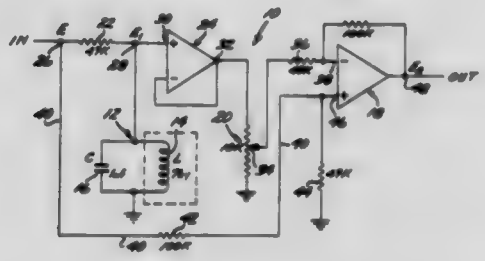
voltage applied to the second input of the operational amplifier and to one plate of the capacitor means and one plate of the capacitor of the feedback means, whereby the output voltage of the operational amplifier is a function of the first switching frequency and the second switching frequency.

4,496,859

NOTCH FILTER SYSTEM

Robert C. Crooks, Huntington Beach, Calif., assignor to Barcus-Berry, Inc., Huntington Beach, Calif.

Filed Sep. 30, 1982, Ser. No. 430,850
Int. Cl.[3] H03H *11/12, 11/16*
U.S. Cl. 307—520 **28 Claims**



15. A notch filter system for substantially eliminating a specific frequency from a first AC electrical signal, which comprises:

an input terminal to which said first signal is applied, and an output terminal;

phase-responsive circuit means comprising a tuned circuit that is tuned to said specific frequency and is phase-responsive to frequency variations above and below said specific frequency, said phase-responsive circuit means having an output junction and being electrically connected to said input terminal for application of said first signal to said phase-responsive circuit means to develop a second AC electrical signal at said junction that is in phase with said first signal only at substantially said specific frequency;

a differential amplifier having first and second inputs and having an output that is connected to said output terminal, said differential amplifier being responsive to input signal phase differences;

first connection circuit means from said input terminal to said first amplifier input to deliver said first signal to said first amplifier input, and second connection circuit means from said junction to said second amplifier input to deliver said second signal to said second amplifier input; and

balancing circuit means electrically connected to at least one of said connection circuit means for balancing the amplitudes of said first and second signals at said amplifier inputs at said specific frequency;

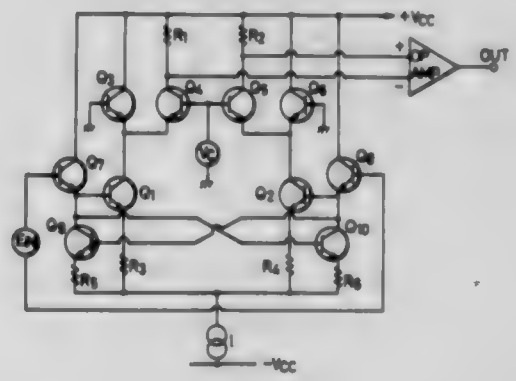
said differential amplifier substantially cancelling said signals at said output terminal at substantially said specific frequency where they are in phase but not at frequencies above and below said specific frequency where they are not in phase.

4,496,860

VOLTAGE-CONTROLLED ATTENUATOR

Akio Tokumo, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 25, 1982, Ser. No. 361,934
Claims priority, application Japan, Mar. 27, 1981, 56-44167
Int. Cl.[3] H03K *5/08*
U.S. Cl. 307—542 **4 Claims**



1. A voltage-controlled attenuator comprising:

a pair of differential amplifiers for generating a pair of output signals for attenuation gain control, each of said differential amplifiers comprising a pair of first and second transistors having commonly connected emitters; and a driver differential amplifier comprising a third pair of transistors wherein each transistor in said third pair has its respective collector connected to one of the commonly connected emitters of one of said first and second pairs of transistors in said pair of differential amplifiers for driving said pair of differential amplifiers, first and second emitter followers respectively connected to first and second input terminals of said driver differential amplifier; and first and second control transistors connecting said respective emitter followers to transistors of said driver differential amplifier in a current mirror mode such that the operating current of said first emitter follower and the operating current of a first transistor of said third pair of transistors in said driver differential amplifier and the operating current of said second emitter follower and the operating current a second transistor of said third pair of transistors in said driver differential amplifier are proportional, and

an operational amplifier, said output signals from said pair of differential amplifiers being applied to said operational amplifier for subtraction, an output of said operational amplifier being substantially distortion free.

4,496,861

INTEGRATED CIRCUIT SYNCHRONOUS DELAY LINE

Mel Bazes, Haifa, Israel, assignor to Intel Corporation, Santa Clara, Calif.

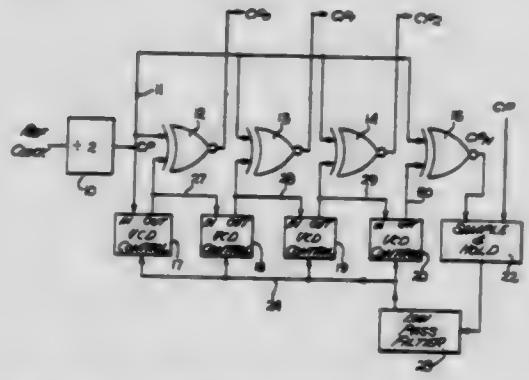
Filed Dec. 6, 1982, Ser. No. 447,231
Int. Cl.[3] H03K *5/13, 5/159*
U.S. Cl. 307—602 **14 Claims**

1. An integrated circuit delay line apparatus for generating at least a first delayed signal synchronized with a reference signal, comprising:

a plurality of delay means, each for providing a controllable delay, each of said delay means coupled to receive a control signal for controlling the durations of said delays;

the first of said delay means being coupled to receive said reference signal, each of the remaining said delay means being sequentially coupled to receive the delayed reference signal from said first delay means;

control signal generation means for generating said control signal, said generation means coupled to receive said delayed reference signal from the last one of said sequentially coupled delay means; and,



tap means for tapping a signal from said delay means to provide said first signal through use of said reference signal;

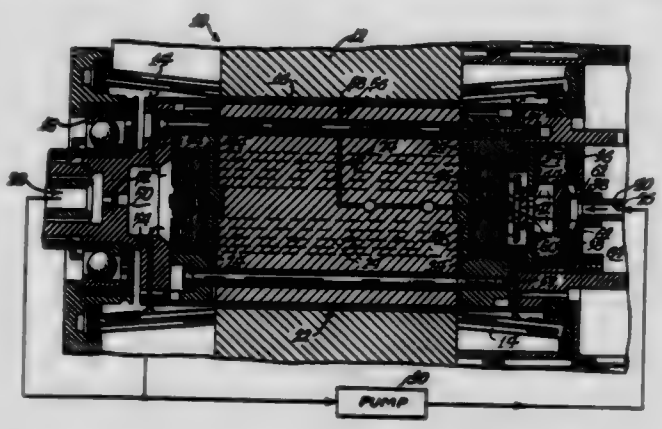
whereby said first delayed signal is synchronized with and delayed from said reference signal.

4,496,862

HIGH SPEED GENERATOR AIR VENT FOR AIR GAP

Kent Weber, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Aug. 5, 1983, Ser. No. 520,725
Int. Cl.[3] H02K *1/32, 9/26*
U.S. Cl. 310—56
6 Claims



1. In a rotary electric machine, the combinaton of:

a stator;

a rotor having an outermost periphery spaced from said stator by an air gap and journalled for rotation relative to the stator about an axis of rotation;

electrical windings carried by at least one of said stator and said rotor;

a fluid inlet on said rotor;

a fluid outlet on said rotor spaced from said fluid inlet;

means, including a cooling liquid flow path, in said rotor interconnecting said inlet and outlet, said liquid flow path being in heat exchange relation to said windings with at least a part thereof displaced from said axis of rotation; and

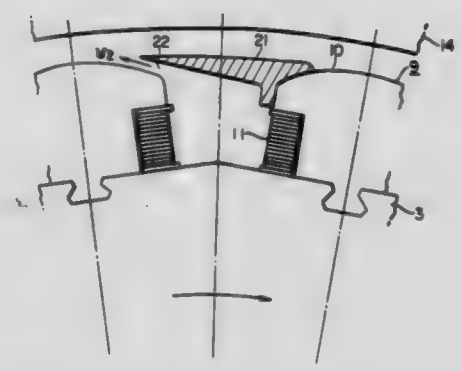
a gas vent passage in said rotor for said liquid flow path and opening at said outermost periphery to said air gap.

4,496,863

SALIENT-POLE ROTOR OF A ROTARY ELECTRIC MACHINE

Kenji Sawatani, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1983, Ser. No. 486,235
Claims priority, application Japan, Apr. 22, 1982, 57-60009[U]; Apr. 22, 1982, 57-60010[U]; Apr. 22, 1982, 57-60011[U]; Apr. 22, 1982, 57-60012[U]; Apr. 22, 1982, 57-60013[U]; Apr. 22, 1982, 57-60014[U]; Apr. 22, 1982, 57-60015[U]; Apr. 22, 1982, 57-60016[U]; Apr. 22, 1982, 57-60017[U]; Apr. 22, 1982, 57-60019[U]; Apr. 22, 1982, 57-60022[U]
Int. Cl.[3] H02K *9/16*
U.S. Cl. 310—61
8 Claims



1. In a salient-pole rotor of a rotary electric machine, axial inner passages in the rotor for cooling medium, radial passages between poles for said cooling medium to flow radially towards an air gap between the rotor and a stator, radial ventilation ducts in the stator, and separate nonmagnetic guide vanes attached to and located only adjacent head portions of the poles on said rotor and extending substantially continuously over the whole axial length of the rotor between neighboring adjacent poles, said guide vanes providing guide paths extending substantially the whole axial length of the rotor slanting in the direction opposite to the direction of rotation of said rotor to change the flow direction of said cooling medium from radial flow to peripheral flow from the radial passages between said poles into said air gap in a direction opposite to the direction in which the rotor rotates, to reduce the angular momentum of said cooling medium before entry under radial momentum into said radial ventilation ducts in the stator, and members fastened to the rotor and located between poles for securing said separate nonmagnetic guide vanes to the rotor, said members leaving the radial passages substantially unobstructed for radial flow of cooling medium from radial ventilation ducts and said axial inner passages in the rotor and through said guide paths into said air gap.

4,496,864

BRAKE MOTOR

Constantin Apetrei; Victor Nitigus; Demeter Elek; Marian Radulescu, and Toma Sachelaire, all of Bucuresti, Romania, assignors to Research Institute for the Electrotechnical Industry—ICPE, Bucharest, Romania

PCT No. PCT/RO81/00004, § 371 Date Jul. 30, 1982, § 102(e) Date Jul. 30, 1982, PCT Pub. No. WO82/01965, PCT Pub. Date Jun. 10, 1982
Continuation of Ser. No. 406,232, Jul. 30, 1982, abandoned.
PCT Filed Aug. 4, 1981, Ser. No. 600,590
Claims priority, application Romania, Dec. 2, 1980, 102742
Int. Cl.[3] H02K *7/102*
U.S. Cl. 310—77
3 Claims

1. An induction motor with automatic braking upon deenergization comprising:

a motor housing;

a shaft journaled in said housing for rotation about an axis;

a stator formed in said housing surrounding said shaft and comprising a stack of normal stator sheets and a further

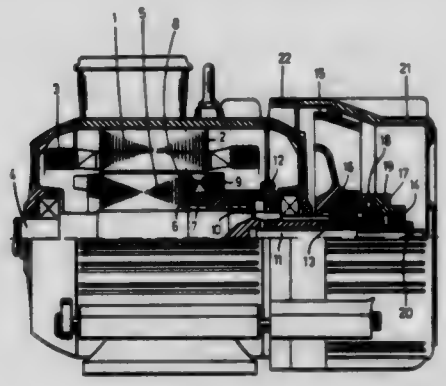
stack of sheets axially extending said stator on one side thereof;

a rotor carried by said shaft and comprising a stack of normal rotor sheets surrounding said shaft and surrounded by said stack of normal stator sheets, a magnetic separator at said side of said stack of normal rotor sheets, and a toothed extension of said rotor adjacent said magnetic separator and formed from a respective sheet stack with slots between the teeth within said extension of said stator;

a short-circuiting ring wholly within the extension of said stator, surrounding said shaft and short-circuiting said teeth;

a magnetic armature surrounding said shaft and axially shiftable thereon at said side and juxtaposed with said stack of sheets forming said teeth and with said short-circuiting ring, said armature extending axially away from said rotor, said shaft being provided with a bore and with a radial passage opening into said bore;

a rod in said bore coupled with said armature at an end thereof remote from said rotor through said passage;



a fan carried on said shaft and rotatably entrained thereby while being axially shiftable on said shaft;

means adjustably connecting said fan to said rod for axial displacement thereby, said fan and said housing defining a brake which is disengaged by axial displacement of said fan, said rod and said armature by the application of a magnetic field to said armature;

stator windings on said stator for mechanically energizing same to generate said magnetic field and a field rotating said rotor and said shaft; and

a spring in said shaft acting upon said rod in a direction opposite the direction upon which said magnetic field acts thereon, said means adjustably connecting said rod to said fan including:

a threaded member mounted on said shaft and connected thereto by a removable pin and forming a seat for said spring, and

a threaded nut mounted on said thread member for screwing engagement therewith and connected to said fan.

4,496,865

METHODS AND APPARATUS FOR TRANSLATING ELECTRIC MOTOR ROTATION INTO LINEAR TRAVEL

Robert E. Allen, Woodland Hills, and James T. Thomasson, Sunland, both of Calif., assignors to Newport Corporation, Fountain Valley, Calif.

Filed Aug. 12, 1982, Ser. No. 407,532

Int. Cl.³ G01B *7/02*

U.S. Cl. 310—80 **6 Claims**

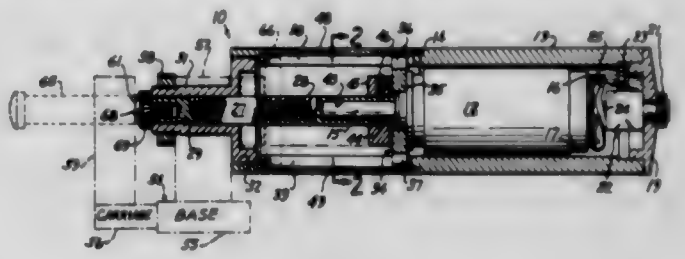
1. A method of operating a rotary electric motor in a tubular housing, comprising the steps of:

providing two diametrically opposed keyways in said tubular housing;

providing a keyplate for translating rotation of said motor into linear travel;

attaching said keyplate to said motor for axial movement of said motor in said housing; and

restraining said keyplate against rotation at two points diametrically opposite each other relative to said keyplate, by providing said keyplate with two keys located opposite each other and projecting into said diametrically opposed



keyways, with said two keys and keyplate being provided as one solid unit.

4,496,866

SUBMERSIBLE ELECTRIC MOTOR AND METHOD OF MANUFACTURING THE SAME

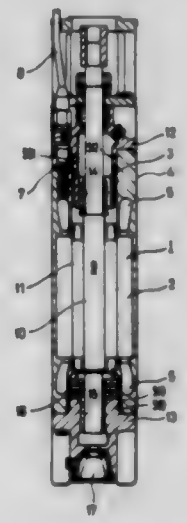
Sakuei Yamamoto; Mitsuhiro Nishida; Noboru Tashiro, and Nobuo Sonoda, all of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jan. 13, 1982, Ser. No. 339,208

Claims priority, application Japan, Jan. 17, 1981, 56-6612; Jan. 17, 1981, 56-6614; Jan. 17, 1981, 56-6618; Jan. 17, 1981, 56-6619; Jan. 17, 1981, 56-6620; Jan. 17, 1981, 56-6621; Jan. 17, 1981, 56-6622; Jan. 17, 1981, 56-6623; Jan. 17, 1981, 56-6624

Int. Cl.³ H02K *5/12*

U.S. Cl. 310—87 **6 Claims**



1. A submersible electric motor comprising an annular stator core having stator coils thereon, a hollow cylindrical can fitted within said stator core to cover the inner surface thereof, a one piece molded resin member surrounding the outer wall of said stator core, both ends of said stator core and the end portions of said stator coils, a pair of end brackets secured to opposite ends of said molded resin member and having bosses extending into said can and rotor means rotatably supported within said can by means of said brackets, said can and said brackets forming a closed chamber adapted to receive a lubricant and sealing means interposed between said bosses and said can to prevent leakage of said lubricant from said chamber.

4,496,867

ELECTRIC RETARDERS FOR VEHICLES

André J. P. Marandet, Saint Gratien, and Marc Charbonnier, Franconville, both of France, assignors to Labavia -S.G.E., France

Filed Feb. 6, 1984, Ser. No. 577,023

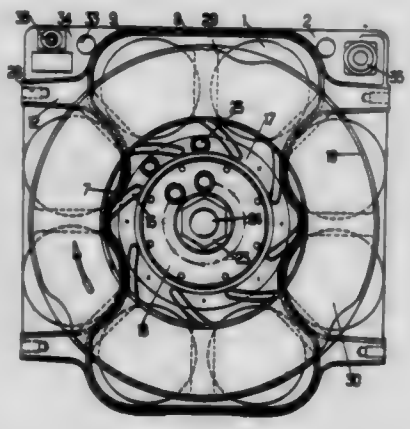
Claims priority, application France, Feb. 10, 1983, 83 02141

Int. Cl.³ H02K *49/00*

U.S. Cl. 310—93 **10 Claims**

1. An electric retarder for braking the transmission shaft (A) of a vehicle, in which the stator comprises at least one ring of coils (1) even in number whose individual axes (Y) are all

parallel to that (X) of the retarder, with axes (Y) of the endmost lateral coils superimposed in pairs in two vertical planes, the cores of the different coils being all supported by a same transverse plate (2) having in its center a bore for letting the shaft to be retarded pass therethrough and stiffened by a rib projecting therefrom, and in which the rotor comprises at least one annular disk (16) made from a ferromagnetic material adapted for traveling past said ring of coils, at a small distance therefrom, this disk being connected to said shaft successively by means of a ring of arms (15) forming ventilation fins and a fixing ring (17), characterized in that the stiffening rib of plate (2) extends along a closed curve having two halves symmetrical with each other with respect to the axial vertical plane of the retarder and in that each half of this curve comprises, connected successively together, a horizontal section or substantially such (8) extending above an upper coil (1), along the upper edge of the plate (2), a curved section (9) running laterally and externally alongside this coil, an oblique radial section (10) extending towards the axis (X) of the retarder between said coil and the lower adjacent coil, a substantially vertical section (7) inside the ring of coils, an oblique radial section (10) extending outwardly between two coils, a curved section (9) running laterally and outwardly alongside a lower coil and a horizontal section or substantially such (8) extending below this latter lower coil along the lower edge of the plate.

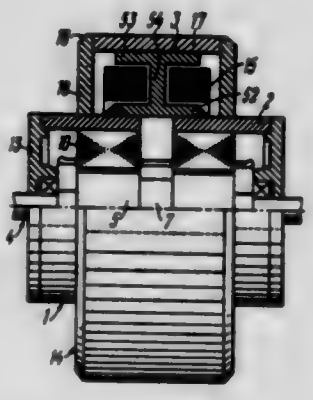


4,496,868

ELECTRICAL MACHINE

Nikolai P. Advolotkin; Svetlana A. Belyaeva; Igor E. Ovchinnikov; Nikolai I. Lebedev; Alexei J. Yankovsky; Stanislav P. Sytykh; Jury A. Khrenov, and Vladimir N. Axenov, all of Leningrad, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Institut Elektromashinostroenia, Leningrad, U.S.S.R.

Filed Apr. 18, 1983, Ser. No. 486,181
Int. Cl.³ H02K *7/20*
U.S. Cl. 310—112 **8 Claims**



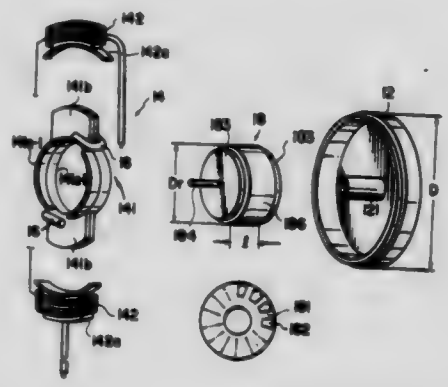
1. An electrical machine with a housing comprising:
cylindrical magnetically conductive portions; a cylindrical non-magnetic portion shaped like a double-T beam in an axial section and said double-T beam having an outer flange and an inner flange connected with said magnetically conductive portion of said housing; a rotor mounted within said housing and having at least two pole systems having pole projections, said pole systems interconnected by a magnetic circuit means; a stator mounted within said housing and having at least two stacks of laminations, each of said stator stacks being secured to one of said magnetically conductive portions, and said stator stacks being equal in number to said magnetically conductive portions; and an excitation system connected to said outer flange of said double T-beam mounted on the outside of said housing and including a coil which is disposed between said inner and outer flanges of the double-T beam on both sides of a crosspiece and an outer magnetic circuit in the form of a ring of U-shaped sections composed of at least two portions interconnected in a radial direction by means of a detachable joint which encloses said coil and adjoins said magnetically conductive portions of said housing.

4,496,869

SMALL SHADED-POLE MOTOR

Toshiro Hosoya, Tokyo, Japan, assignor to Tobishi Industries Ltd., Tokyo, Japan

Filed Dec. 8, 1982, Ser. No. 447,787
Int. Cl.³ H02K *17/10*
U.S. Cl. 310—172 **10 Claims**



1. A small-shaded-pole motor comprising a rotor, a stator core disposed in concentric relationship with the rotor, stator coils wound on the stator core and shading coils disposed in the vicinity of the stator core, characterized in that said stator core comprises two generally rectangular plates each having a ring-shaped stamped and swaged projection and a flat plate portion, said ring-shaped projection extending in a direction perpendicular to the plane of the plate, the height of said ring-shaped projection at its inner side being equal to about a half of the thickness of said rotor in its axial direction, said two plates being assembled together back to back so that their ring-shaped projections define a cylindrical space for said rotor and so that said flat plate portions are in planar contact with each other, and said stator coils are mounted on said flat plate portions of said back to back assembled plates.

4,496,870

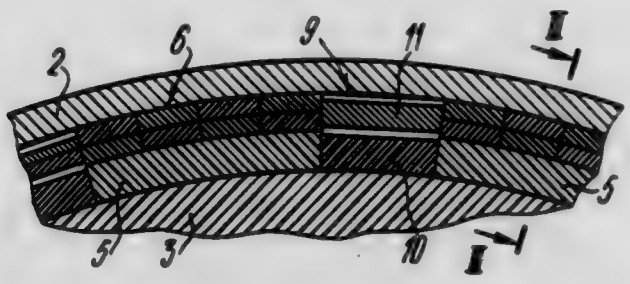
ARRANGEMENT FOR SUPPORTING STATOR END WINDINGS OF AN ELECTRICAL MACHINE

Jury F. Antonov; Vadim I. Iogansen; Alexei S. Tkachenko; Vladimir P. Chernyavsky, and Aron B. Shapiro, all of Leningrad, U.S.S.R., assignors to Leningradskoe Proizvodstvennoe Elektromachinostroitelnoe Obiedinenie "Elektrosila", Leningrad, U.S.S.R.

PCT No. PCT/SU81/00044, § 371 Date Jan. 6, 1983, § 102(e) Date Jan. 6, 1983, PCT Pub. No. WO82/04362, PCT Pub. Date Dec. 9, 1982
PCT Filed May 26, 1981, Ser. No. 459,577
Int. Cl.³ H02K *3/46*
U.S. Cl. 310—260 **3 Claims**

1. An arrangement for supporting stator end windings of an electrical machine, comprising a clamping plate operatively

associated with the stator core of said machine and having a projecting portion, an insulating ring tightly embracing the end windings, resilient strips disposed on the outer surface of the insulating ring and spaced apart around the periphery thereof, means for pressing the resilient strips against the insulating ring in a radial direction, said pressing means being interposed between the projecting portion of the clamping plate and the resilient strips, and being in contact with said projecting portion, rigid plates extending around the periphery of the insulating ring between the resilient strips (5), and resilient members



mounted on respective ones of said rigid plates and provided with locking elements (12) to prevent axial displacement of said resilient members, said resilient members (9) being in contact with the projecting portion (2) of the clamping plate (1), each of said resilient members (9) comprises a rigid plate (10) arranged on the insulating ring (3), and a resilient ripple-shaped strip (11) bearing with convex portions of one rippled surface thereof against the rigid plates (10) and with convex portions of the other rippled surface thereof, against the projecting portion (2).

4,496,871

PARALLEL TYPE PIEZOELECTRIC BIMORPH VIBRATOR

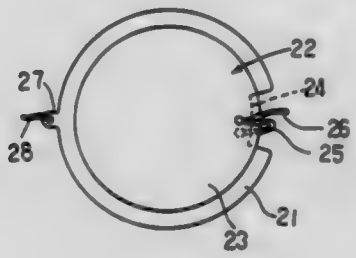
Manabu Sumita, Kanazu, and Toshiaki Yamashita, Kanazawa, both of Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Aug. 24, 1983, Ser. No. 526,128

Claims priority, application Japan, Aug. 27, 1982, 57-130238[U]

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—324 **6 Claims**



1. A parallel type piezoelectric bimorph vibrator comprising:

a diaphragm,

piezoelectric elements fixed to both surfaces of said diaphragm,

outside electrodes mounted at said piezoelectric elements, and

a conductor connected to outer peripheries of said outside electrodes,

said diaphragm being provided at a part of its outer periphery with a cutout portion,

said outside electrodes at said piezoelectric elements being connected by the conductor at said cutout portion,

wherein said cutout portion provided at the outer periphery of said diaphragm is formed to a depth beyond the outer periphery of each of said piezoelectric elements radially inwardly thereof so that the cutout portion prevents the conductor from contacting the diaphragm.

4,496,872

SEALED BEAM TYPE REFLECTIVE LAMP

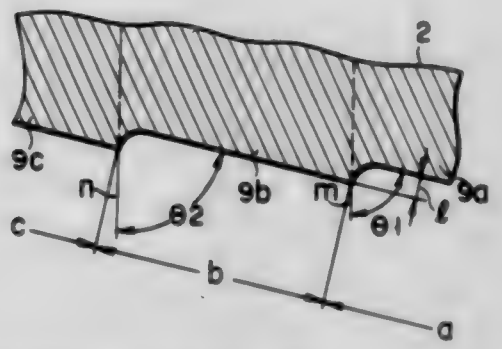
Nobuyoshi Kuno, Yokohama, and Kiyokazu Honda, Zushi, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 5, 1982, Ser. No. 365,384

Claims priority, application Japan, Apr. 7, 1981, 56/51058

Int. Cl.³ H01K *1/30*

U.S. Cl. 313—113 **2 Claims**



1. A spot-lighting sealed beam type reflective lamp having an envelope comprising a front lens and a reflector on an inner surface of which is formed a metal reflective film, and a tungsten coil filament arranged inside said envelope, wherein said front lens consists of a central circular lens element and a plurality of concentric ring-shaped prism lens elements, inner surfaces of said prism lens elements defining a stepped inner surface of said front lens, and wherein an angle formed by a central axis of said lamp and an inner surface of said prism lens element, which is substantially in the radial direction of said lens, is greater than that of the next prism lens elements situated outwardly thereof, a step difference of said inner surfaces between adjacent ones of said prism lens elements being not greater than 0.6 mm and radial widths of said prism lens elements increasing toward the central circular lens element.

4,496,873

FLASH TUBE HAVING COAX CABLE CONNECTOR

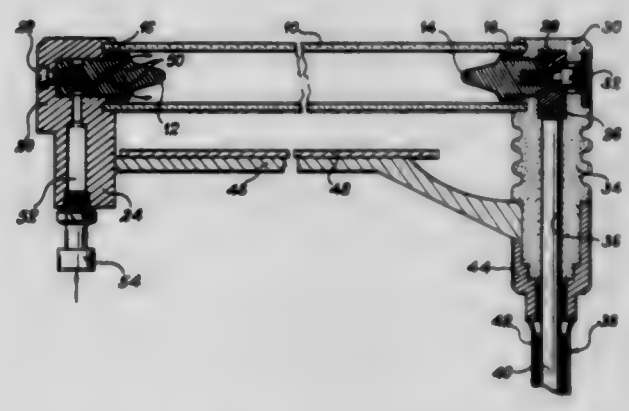
Marcel Bédu, Clamart; Jean Claude Farcy, Bris-sous-Forges, and Christian Goin, Grigny, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 4, 1982, Ser. No. 385,254

Claims priority, application France, Jun. 5, 1981, 81 11143

Int. Cl.³ H01J *61/28, 61/80*; H01S *3/092*

U.S. Cl. 313—231.71 **2 Claims**



1. A flash tube comprising a discharge tube made from a transparent material, a first electrode located at a first end of the discharge tube, a second electrode located at a second end of the discharge tube, said first electrode being raised to earth potential and said second electrode to a high potential, said first electrode being fixed into a metal end fitting, provided with a metal sleeve positioned radially with respect to the discharge tube, said second electrode being fixed to a metal connecting piece located in an insulating end fitting provided with an insulating sleeve positioned radially with respect to the

discharge tube, said sleeve being traversed by a pipe, a coaxial cable having a central conductor following the pipe of the insulating sleeve and being connected to said metal connecting piece of said second electrode, said coaxial cable having an outer conductor which is connected to said metal sleeve of said first electrode by a metal bar parallel to said discharge tube, an optical reflector being fixed to said metal bar.

4,496,874

ELECTRIC LAMP HAVING A MECHANICALLY CONNECTED LAMP CAP

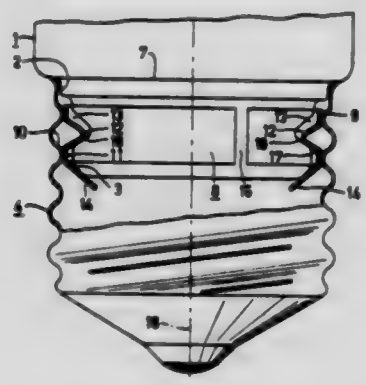
Rudolf Sanders, and Josephus F. Rijckaert, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 10, 1982, Ser. No. 376,807

Claims priority, application Netherlands, May 27, 1981, 8102594

Int. Cl.³ H01J *5/48, 5/50*

U.S. Cl. 313—318 **10 Claims**



1. An electric lamp comprising a glass lamp envelope having a neck-shaped lamp envelope portion and a lower edge on said lamp envelope portion, a substantially cylindrical metal lamp cap provided on the neck-shaped lamp envelope portion and around the lower edge thereof, and an electric light source accommodated in the lamp envelope and connected to the lamp cap by current supply conductors, the lamp cap which has an upper edge abutting against the lamp envelope, being attached to the lamp envelope by means of a split metal ring with its outer surface bears against the inner wall surface of the lamp cap and is secured thereto, and on its inner surface has rigid projecting parts which are each provided with a lower wall portion directed towards the said lower edge and engage in a respective recess in the neck-shaped lamp envelope portion, each of which recesses has a lower wall portion present near the said lower edge, characterized in that the lower wall portion of each of the projecting parts is in contact with the lower wall portion of a respective recess and that the split metalring has lugs which, at least at the beginning of the lifetime of the lamp, exert a resilient force against the lower edge of the neck-shaped lamp envelope portion.

4,496,875

CONDUCTOR COMPOSITION AND DEVICES USING IT

Edward G. Barth, Union; Ruvim Braude, Elizabeth, and Nicholas W. Kay, Mine Hill, all of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jun. 22, 1983, Ser. No. 506,842

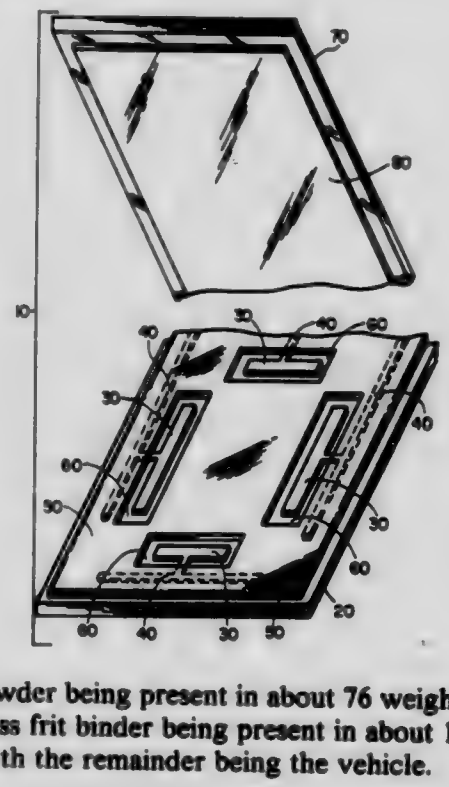
Int. Cl.³ H01J *17/00*

U.S. Cl. 313—632 **4 Claims**

1. A conductor ink for forming thick film conductors on a soda lime substrate fireable at temperatures below 590° C. and comprising nickel powder, a lead-free glass frit binder and a vehicle,

said nickel powder having a spherical structure and

the glass frit in said binder having a composition comprising about 20% by weight of SiO_2, about 20% by weight of B_2O_3, about 3% by weight of CaO, about 40% by weight of ZnO, about 5% by weight of Al_2O_3, about 7% by weight of Na_2O, about 4% by weight of K_2O, and about 1% by weight of Li_2O,



the nickel powder being present in about 76 weight percent and the glass frit binder being present in about 12 weight percent, with the remainder being the vehicle.

4,496,876

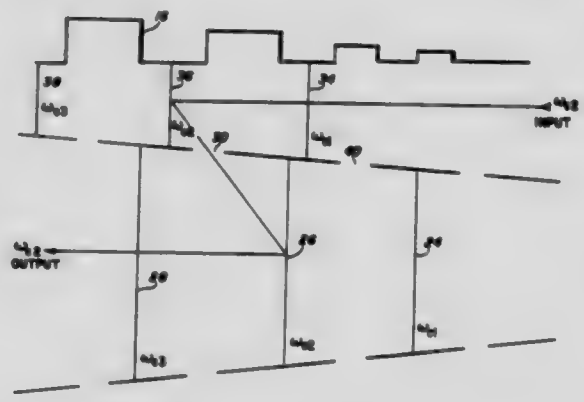
FREQUENCY-SPREADING COUPLER

Leo Young, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 23, 1982, Ser. No. 422,122

Int. Cl.³ H01J *25/00*

U.S. Cl. 315—4 **22 Claims**



1. A travelling wave amplifier comprising:

a tapered interaction waveguide wherein the cross-section thereof gradually increases from a small first end to a large second end for propagating electromagnetic energy in a broad frequency band therein, said interaction waveguide having a plurality of first cutoff planes corresponding to frequencies in the frequency band of the amplifier;

means for injecting an electron beam into the small end of said interaction waveguide;

an input waveguide for receiving electromagnetic waves to be amplified therein, wherein said input waveguide is a tapered low pass filter having a small third end and large fourth end, said input waveguide being coaxially disposed around said interaction waveguide with said small third end adjacent to said small first end and said large fourth end adjacent to said large second end, said input waveguide with a plurality of second cutoff planes corresponding to frequencies in the frequency band of the amplifier, wherein said input waveguide is positioned so that each of said second cutoff planes in said input waveguide corresponding to ω_c is displaced in the direction of increasing

cross-section of said interaction waveguide from each of said first cutoff planes in said interaction waveguide corresponding to ω_c, where ω_c is any frequency in the frequency band of the amplifier; and

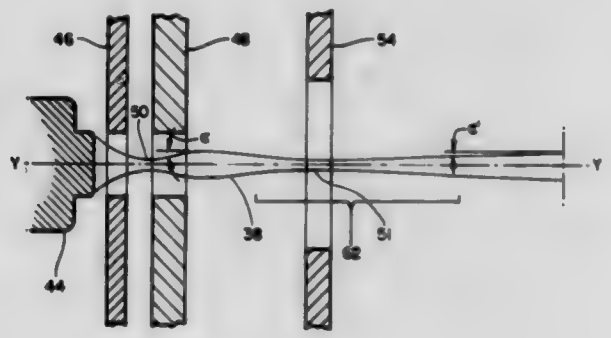
coupling means, disposed between the cutoff planes corresponding to ω_c in said interaction waveguide and said input waveguide, for coupling the electromagnetic waves in said input waveguide into said interaction waveguide.

4,496,877

UNIPOTENTIAL ELECTRON GUN FOR SHORT CATHODE RAY TUBES

Cindee C. Kueny, Mt. Prospect, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Apr. 6, 1982, Ser. No. 366,024
Int. Cl.³ H01J *29/46, 29/56*
U.S. Cl. 315—15 **4 Claims**



1. A high-performance unipotential-type electron gun comprising:

a series of apertured electrodes having electrical potentials thereon for establishing electrostatic fields therebetween, said electrodes being aligned in spaced relation on an axis, and being in the order named,

lower end means consisting of a cathode (K) for generating a source of electrons from which an electron beam is formed,

an apertured plate control electrode (G1) having an aperture diameter approximately 0.025 in. for controlling, in conjunction with said cathode, the density of said beam,

and an apertured plate grid electrode (G2) having an aperture diameter approximately 0.025 in. and spaced approximately 0.010 in. from electrode (G1) for forming, in conjunction with said cathode and said control electrode, a first cross-over constriction in said beam,

said beam exhibiting upon divergence from said cross-over construction a relatively steep cross-over emergence angle in the range of 60 to 80 milliradians,

said gun including uni-potential focus lens means consisting of a cylindrical initial accelerating electrode (G3) spaced approximately 0.040 in. from electrode (G2),

a cylindrical focusing electrode (G4), and

a cylindrical final accelerating electrode (G5) for producing a finely focused electron beam,

the dimensions and spacings, in conjunction with the potentials applied to the electrodes of said lower end means being effective to induce a second constriction of said beam upon entry of said beam into said focus lens means for providing, upon subsequent divergence of said beam, a relatively shallow focus lens entry angle in the range of 33 to 39 milliradians,

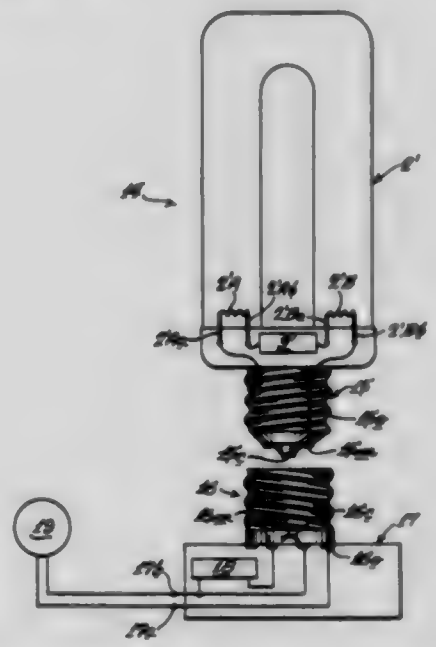
said relatively shallow focus lens entry angle being effective to provide for optimum filling of said lens by said beam for producing said finely focused beam of electrons.

4,496,878

SCREW-IN FLUORESCENT LAMP

Ole K. Nilssen, Caesar Dr., Rte. 5, Barrington, Ill. 60010

Filed Apr. 13, 1982, Ser. No. 367,911
Int. Cl.³ H01J *7/44, 17/34, 19/78, 29/96*
U.S. Cl. 315—73 **4 Claims**



1. A fluorescent lamp assembly adapted to be powered from a current-limited voltage source and to be used in screw-in-type sockets of the kind normally used with three-way incandescent lamps said assembly comprising:

a fluorescent lamp having a first and a second cathode, each cathode having a first and a second input terminal,

a fluorescent lamp starter connected between the second input terminal of said first cathode and the first input terminal of said second cathode, and

a three-way screw-base adapted to be screwed into and used in said screw-in-type sockets, said screw-base having a first, a second and a third base terminal, said first base terminal being directly connected with the first input terminal of said first cathode, said second base terminal being directly connected with the second input terminal of said second cathode, said third base terminal being left non-connected.

4,496,879

SYSTEM FOR DRIVING AC PLASMA DISPLAY PANEL

Joseph T. Suste, Orange, Calif., assignor to Interstate Electronics Corp., Anaheim, Calif.

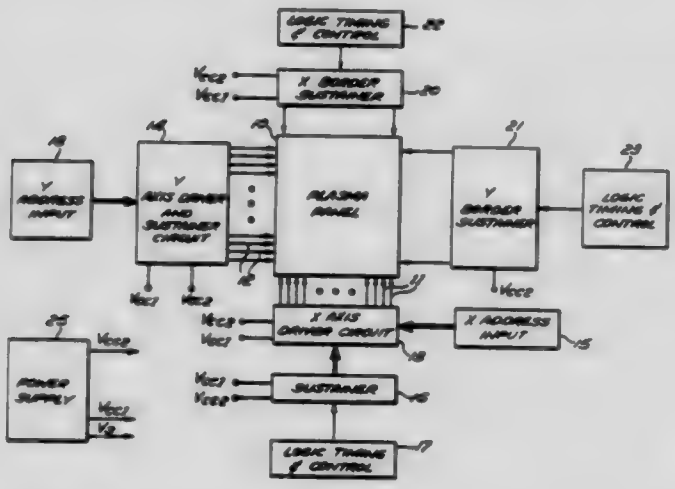
Continuation of Ser. No. 412,205, Aug. 27, 1982, abandoned, which is a continuation of Ser. No. 166,579, Jul. 7, 1980, abandoned. This application Nov. 23, 1983, Ser. No. 554,176
Int. Cl.³ H05B *37/00*
U.S. Cl. 315—169.4 **18 Claims**

1. A method of erasing a location on an AC plasma panel, said panel having an X axis and a Y axis, said X axis having a plurality of X addresses and X electrodes associated therewith, said Y axis having a plurality of Y addresses and Y electrodes associated therewith, said location being defined by one of said X electrodes and one of said Y electrodes, the method comprising:

generating an X axis erase pulse, and applying said X axis erase pulse to said one X electrode;

generating a Y axis sustain pulse, and applying said Y axis sustain pulse to said plurality of Y electrodes, except,

during the duration of said X axis erase pulse, not applying said Y axis sustain pulse to said one Y electrode; and



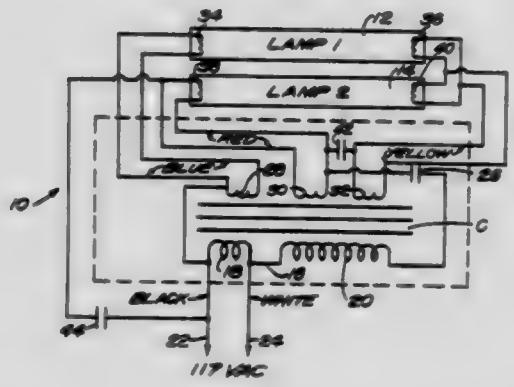
generating a Y axis erase pulse subsequent to said Y axis sustain pulse, and applying said Y axis erase pulse to said plurality of Y electrodes.

4,496,880

FLUORESCENT LAMP BALLAST

Harald Lück, Cheruskerweg 56, 6000 Frankfurt/M 80, Fed. Rep. of Germany

Filed Jun. 24, 1982, Ser. No. 391,717
Int. Cl.[3] H05B *37/00*
U.S. Cl. 315—228
3 Claims



1. A fluorescent ballast arrangement comprising:

(a) a conventional ballast including:

a primary winding for connection to the AC line, said primary winding having first and second ends;

a first secondary winding, said first secondary winding having first and second ends, said first end of said secondary winding being connected to the second end of said primary winding to form an autotransformer;

a power factor correction capacitor having a first terminal connected to said second end of said first secondary winding and a second terminal;

second, third and fourth secondary windings for connection to filament heaters contained at each end of each of a pair of fluorescent lamps driven by said ballast, said lamps being series-connected through commonly connected heater windings driven by said third secondary winding, the second terminal of said power factor correction capacitor being connected to one lead of said second heater winding, said one lead of said second heater winding also connected to one lead of said third heater winding by a starter capacitor, said first end of said primary winding also being connected to one lead of said fourth heater winding; and

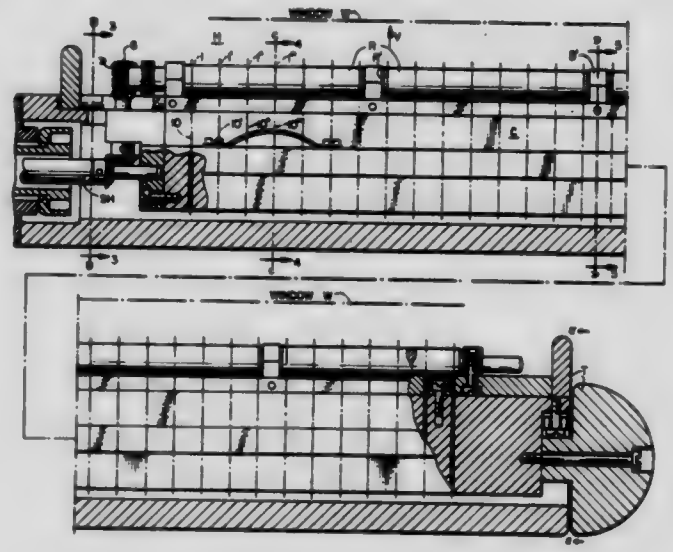
(b) a power reducing capacitor connected effectively across said lamps, said power reducing capacitor being connected between said first end of said primary winding and the other lead of said second heater winding, said power reducing capacitor for reducing the amount of power supplied to the ballast arrangement for a given AC line voltage without reducing the light emitted by the lamps by an amount proportionately as large.

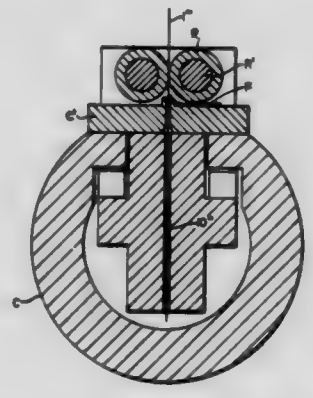
4,496,881

METHOD OF COLD CATHODE REPLENISHMENT IN ELECTRON BEAM APPARATUS AND REPLENISHABLE COLD CATHODE ASSEMBLY

Richard N. Cheever, Acton, Mass., assignor to Tetra Pak Developpement SA, Lausanne, Switzerland

Filed Sep. 29, 1982, Ser. No. 427,862
Int. Cl.[3] H01J *37/067, 1/30*
U.S. Cl. 315—357
7 Claims





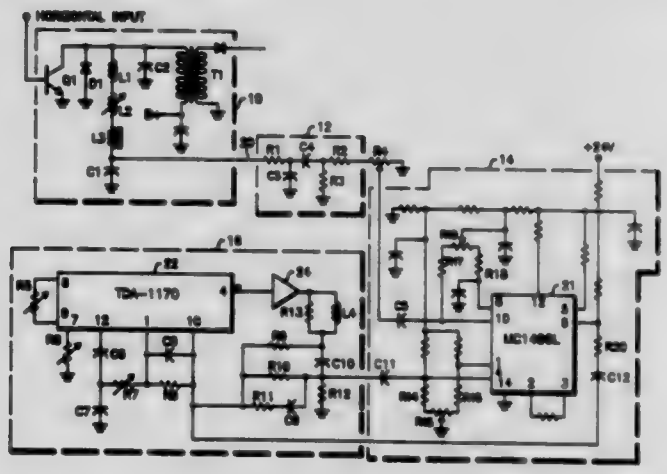
1. Apparatus for generating an electron beam of elongated cross-section, said apparatus comprising an elongated evacuated housing having an elongated cathode structure extending longitudinally therein and elongated anode means extending longitudinally of said housing and spaced from said cathode structure, said apparatus being characterized in that said cathode structure has a plurality of substantially parallel cathode rods spaced along the length of said cathode structure with the length of the rods transverse to said cathode structure, said rods having means for advancing the same toward said anode means in response to a control signal to provide replacement of eroded cathode material, and in that said apparatus includes means for monitoring variations in electron beam performance and for producing said control signal, whereby the electron beam performance may be maintained substantially constant.

4,496,882

INDUCTORLESS PINCUSHION CORRECTION CIRCUIT

Kirk D. Oliver, Glendale Heights, and David A. Wolff, St. Charles, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 3, 1982, Ser. No. 446,529
Int. Cl.³ H01J 29/56
U.S. Cl. 315—371 5 Claims



1. A CRT raster scanning circuit with pincushion correction and comprising:

first scanning means for providing a first raster scanning signal at a first frequency, said first scanning signal having the form of a parabolic segment;

wave shaping means coupled to receive said first raster scanning signal and including filtering means and phase adjusting means;

level control means coupled to the output of the wave shaping means;

first yoke means for applying said shaped and controlled parabolic scanning signal to the beam of the CRT;

second scanning means for providing a second, sawtooth shaped raster scanning signal at a second frequency and including power amplifier means;

second yoke means for applying said second raster scanning signal to the beam of the CRT;

multiplier means coupled to receive and to multiply the first and second scanning signals and including a first multiplier circuit biased to provide 180 degree phase shift in the product signal, and a second multiplier circuit including control means for adjusting the balance of the product signal; and

feedback means for coupling the product signal back to an input of the power amplifier means.

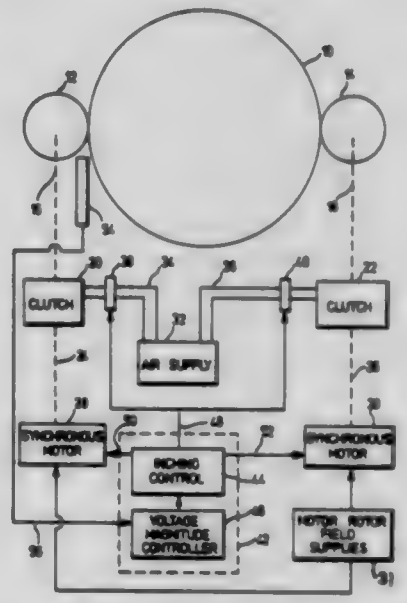
4,496,883

ELECTRIC INCHING IMPULSE CONTROL

Peter D. Eastcott, and Ronald C. Trussler, both of Peterborough, Canada, assignors to Canadian General Electric Company Limited, Toronto, Canada

Continuation-in-part of Ser. No. 448,316, Dec. 9, 1982, abandoned. This application Dec. 1, 1983, Ser. No. 556,906
Claims priority, application Canada, Dec. 10, 1981, 391915
Int. Cl.³ H02P 1/54, 7/74
U.S. Cl. 318—98 4 Claims

1. An electric inching control means for inching a drive system comprising a load driven through gearing by two or more three phase synchronous motors coupled to said load through respective fluid actuated clutches once said clutches are locked-up and said synchronous motors are synchronized, each motor having a stator and a rotor, each stator having a three phase stator winding and each rotor having a field winding; said inching control means comprising: means for energizing said synchronous motors, including means for applying direct current excitation to said field winding on rotors of the synchronous motors and means for applying a stepped direct current voltage to the phases of said three phase stator winding of each of said synchronous motors, to rotate said rotors and said load by respective predetermined amounts with each stepped change of said voltage; and, voltage magnitude control feedback means for adjusting the magnitude of said voltage



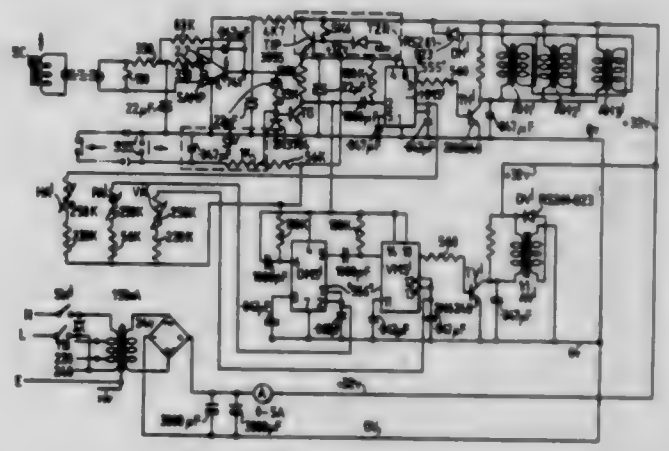
applied to the stator winding as a function of adverse mechanical forces incurred by said gear during rotation of said rotors and said load whereby said adverse mechanical forces are reduced.

4,496,884

VIBRATORY CONVEYOR CONTROL ARRANGEMENT

Arthur Hamer, Oldham, and Beverley H. Pardoe, Manchester, both of England, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 244,795, Mar. 17, 1981, Pat. No. 4,441,060. This application Apr. 2, 1984, Ser. No. 595,735
Claims priority, application United Kingdom, Mar. 19, 1980, 8009177
Int. Cl.³ H00K 53/02
U.S. Cl. 318—114 4 Claims



1. A vibratory conveyor control arrangement for a vibratory conveyor of the type comprising:

a base;

a load-supporting surface defining a load path;

resilient mounting means between said base and the surface to permit vibration of the surface substantially along and normal to said path together with respective first and second driving means energizable to bring about said vibration wherein said control arrangement is included in a closed control loop means to generate a motion signal from the actual vibrational motion of the surface which signal represents at least a component of said motion and means to sense from said component the natural frequency of vibration of the conveyor in one direction and means

responsive to sensed frequency to energize means to maintain vibration at the natural frequency.

4,496,885

POSITIONING CONTROL SYSTEM

Werner Nitschke, Ditzingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

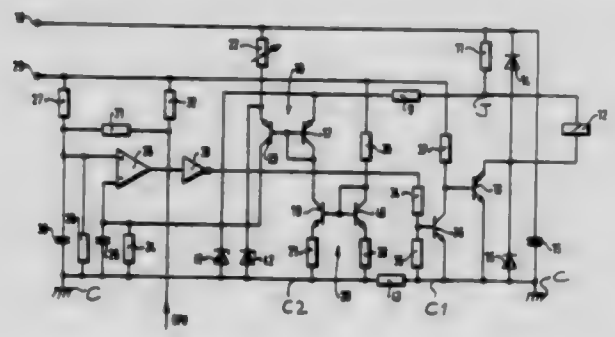
Filed May 24, 1983, Ser. No. 497,505

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1982, 3225157

Int. Cl.[3] H02K *33/00*

U.S. Cl. 318—122

18 Claims



1. Positioning control system providing interrupted, plused current to a positioning element (12) having

an output controlled semiconductor switch (13) connected to control current flow through the positioning element;

a network connected to the control electrode of the controlled semiconductor switch to render said semiconductor switch alternately conductive and non-conductive in accordance with a commanded duty cycle;

and current measuring means (11) serially connected with the positioning element (12),

said network including, in accordance with the invention,

a current mirror circuit (18) having two current paths (17, 23) connected such that current flow through one path (17) will be reflected in current flow through the other (23),

said current measuring means (11) being connected to one (17) of said current mirror circuit paths;

a command element (22) providing a command value in form of an electrical current;

and a comparator (24, 25; 26; 27-32), said comparator being connected to the command element (22) through the other (23) of said current mirror paths.

4,496,886

THREE STATE DRIVER FOR INDUCTIVE LOADS

Gary B. Gordon, Saratoga; Robert Joy, Mountain View, and Michael J. Lee, Palo Alto, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 8, 1982, Ser. No. 439,691

Int. Cl.[3] H02P *7/06, 6/00*

U.S. Cl. 318—254

17 Claims

1. A driver circuit, coupled to a voltage supply, for controlling a load current through an inductive load in response to a voltage command signal representing a desired load current, the driver circuit comprising:

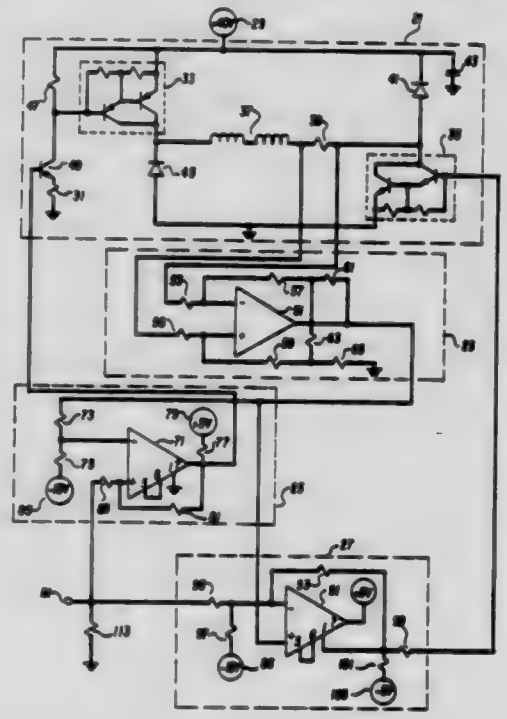
sensing means, coupled to the load, for measuring the load current and for presenting at an output a sense signal representing said load current;

first switch means, coupled between the supply and one end of the load, for selectively coupling the one end of the load to the supply in response to a first control signal;

second switch means, coupled between the supply and an other end of the load, for selectively coupling the other end of the load to the supply in response to a second control signal;

first comparator means, having a first input for receiving the command signal and a second input coupled to the sensing means output for receiving the sense signal, said first comparator means having an output coupled to the first switch means and being operative for comparing the sense signal and the command signal and for selectively presenting a first open control signal or a first short control signal to the first switch means to cause the first switch means to open or short, respectively;

second comparator means, having a first input for receiving the command signal and a second input coupled to the sensing means output for receiving the sense signal, said



second comparator means having an output coupled to the second switch means and being operative for comparing the sense signal and the command signal and for selectively presenting a second open control signal or a second short control signal to the second switch means to cause the second switch means to open or short, respectively;

a first diode having an anode connected to ground and a cathode connected to the one end of the load; and

a second diode having an anode connected to the other end of the load and a cathode connected to the supply.

4,496,887

DIRECT-CURRENT BRUSHLESS MOTOR

Noboru Ichihara, Kasukabe, and Isamu Takehara, Soka, both of Japan, assignors to Japan Servo Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1983, Ser. No. 469,783

Claims priority, application Japan, Mar. 10, 1982, 57-36652; Mar. 10, 1982, 57-36653; May 13, 1982, 57-79192

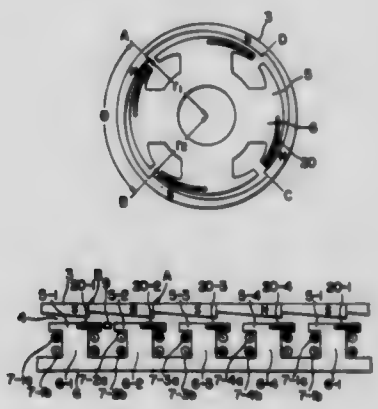
Int. Cl.[3] H02P *1/18*

U.S. Cl. 318—254

3 Claims

3. A DC brushless motor characterized in that it comprises a rotor having a cylindrical permanent magnet with N- and S-poles magnetized alternately around the circumference thereof, circular-arc pole shoes arranged facing said rotor with a gap therebetween, a stator yoke provided with a plurality of radial stator magnetic poles supporting said pole shoes, stator windings wound around each of said stator poles, and an electrification control unit which detects the magnetic flux of the permanent magnet of said rotor and delivers an output based thereon to make a current flow through said windings in sequence to drive said rotor, in that each of said circular-arc pole shoes has therein a narrow groove extending along almost half of the length of the arc from one end thereof near the surface facing said permanent magnet, and said narrow groove is covered with a thin layer portion and in that the permanent

magnet provided for said rotor is constituted in such a manner that the radius of its surface facing the stator varies continuously over the length of arc of each pole from one end thereof to the other.

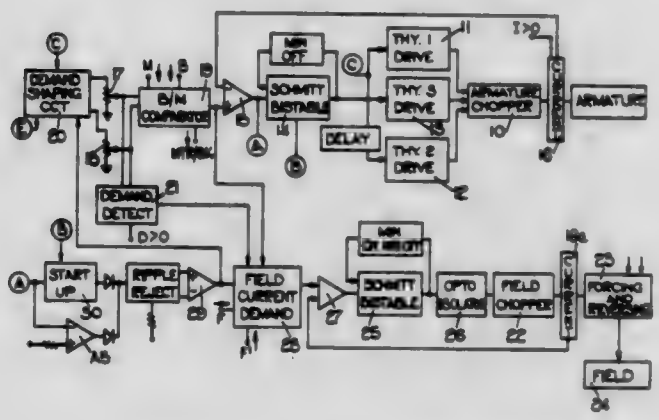


4,496,888

CONTROL SYSTEM FOR A D.C. MOTOR

Graeme R. Campbell, West Midlands, England, assignor to Lucas Industries Limited, Birmingham, England

PCT No. PCT/GB78/00046, § 371 Date Jul. 23, 1979, § 102(e) Date Jul. 23, 1979, PCT Pub. No. WO79/00355, PCT Pub. Date Jun. 28, 1979
Continuation of Ser. No. 224,224, Jul. 23, 1979, abandoned. This PCT application Dec. 4, 1978, Ser. No. 454,660
Claims priority, application United Kingdom, Dec. 8, 1977, 51067/77; PCT Int'l. Appl., Dec. 4, 1978, PCT/GB78/00046
Int. Cl.[3] H02P *3/12*
U.S. Cl. 318—284
4 Claims



1. A control system for a d.c. motor having an armature winding and a field winding, comprising control means for varying connections of said armature winding and/or field winding so as to enable the motor to operate in a plurality of different modes, armature current regulating means connected to vary the armature current, field current regulating means connected to vary the field current and speed interlock means for preventing an operation of said control means demanding a mode change that changes said connections from at least one motor operation enabling mode to at least one other such mode while the motor is running, the speed interlock means being sensitive to voltage across said armature winding, wherein the improvement comprises:

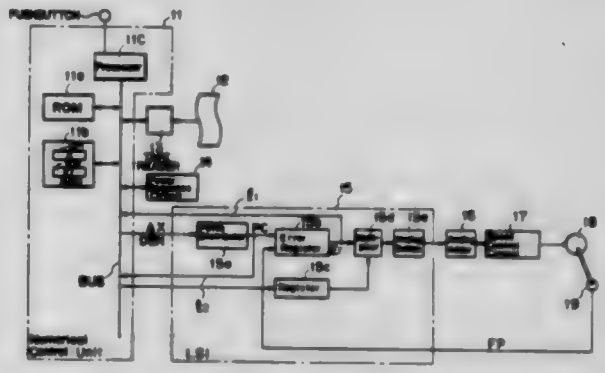
interlock control means which operate to control current in the field winding when said mode change is demanded, said interlock control means controlling said field current regulating means so as sequentially to cause the field winding current to be reduced to substantially zero and then to supply a controlled current pulse to said field winding, the speed interlock means acting to detect the armature voltage during said controlled current pulse.

4,496,889

METHOD OF DIAGNOSING A SERVOMOTOR CONTROL CIRCUIT

Hiroomi Fukuyama, Hachioji, and Shinichi Isobe, Hino, both of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

Filed Nov. 17, 1982, Ser. No. 442,425
Claims priority, application Japan, Nov. 25, 1981, 56-188597
Int. Cl.[3] G05B *23/02*
U.S. Cl. 318—565
8 Claims



1. A method of diagnosing a servomotor control circuit, before executing numerical processing, including a servomotor, a control unit for providing a numerical value, a pulse distributor, operatively connected to the control unit, for carrying out arithmetic operations for pulse distribution based on the numerical value provided by the control unit, a position detector, operatively connected to the servomotor, for generating a positional pulse each time the servomotor rotates through a predetermined angular interval, an error storage unit, operatively connected to the position detector and the pulse distributor, for computing and storing the difference between the number of positional pulse generated by the position detector and the number of distributed pulses generated by the pulse distributor, and a D/A converter, operatively connected to the error storage unit, for converting the difference into an analog output, the servomotor being controlled by the analog output from the D/A converter, said method comprising the steps of:

(a) supplying the numerical value from the control unit to the pulse distributor to enable the pulse distributor to effect the arithmetic operations while the servomotor is in a de-energized state;

(b) reading a stored content of the error storage unit, supplied with the distributed pulses from the pulse distributor, into the control unit; and

(c) checking the servomotor control circuit for normal and malfunctioning conditions by comparing the stored content, read into the control unit, with the numerical value.

4,496,890

ANTENNA ROTATOR CONTROLLER

Gerard A. Wurdack, Glencoe, Mo., and Gene L. Morgan, St. Clair County, Ill., assignors to Gerard A. Wurdack & Associates, Inc., St. Louis, Mo.

Filed Mar. 11, 1982, Ser. No. 357,071
Int. Cl.[3] G05B *19/26*
U.S. Cl. 318—600
19 Claims

1. A controller for an antenna rotator having a rotatable member on which is mounted an antenna to be rotated and an electric motor adapted to selectively rotate said member and antenna in either of two opposite directions to a desired heading, said controller comprising:

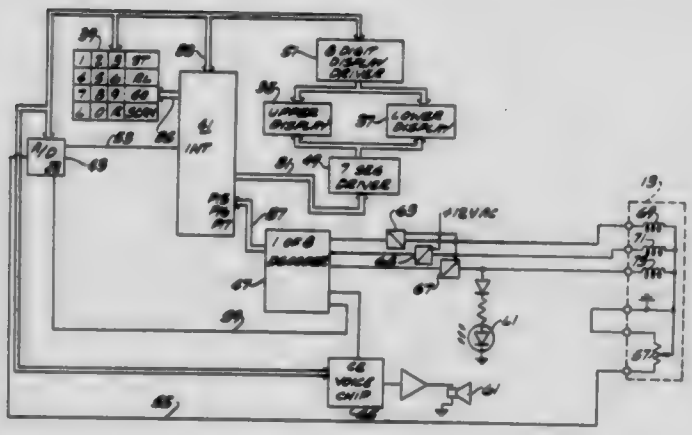
motor switch means for selectively energizing the electric motor to rotate the rotatable member;

user operable means including a plurality of numeric switches for selecting headings;

control means including an electronic memory for storing a plurality of selected headings and for controlling the motor switch means;

user operable means for initiating the storage of selected headings in the memory, the control means being responsive to operation of the heading selecting means and the storage initiating means to store a selected heading in the memory;

a display connected to the control means and responsive to signals therefrom for displaying headings selected by the user; and



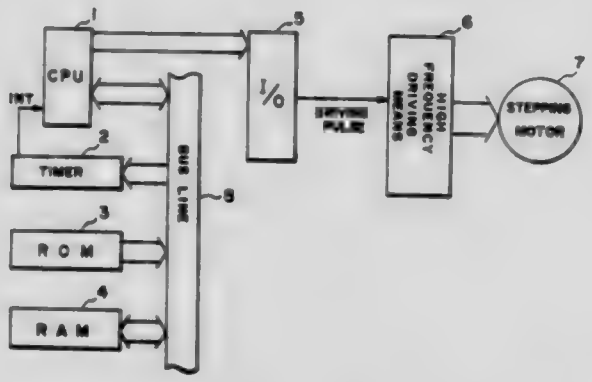
user operable means for initiating the rotation of the rotatable member, said control means being responsive to both operation of the rotation initiating means and to the display of either a heading not stored in the memory but selected by actuation of certain numeric switches or to a selected heading retrieved from those previously stored in the memory, thereby to control the motor switch means to rotate the rotatable member to the selected heading displayed.

4,496,891

STEPPING MOTOR CONTROL APPARATUS

Makoto Kobayashi, Chiba, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 26, 1983, Ser. No. 517,460
Claims priority, application Japan, Aug. 5, 1982, 57/135753
Int. Cl.[3] H02K *29/04*
U.S. Cl. 318—696 7 Claims



1. A stepping motor control apparatus comprising:

memory means for storing control steps of a stepping motor;

time counting means for counting a plurality of time intervals; and

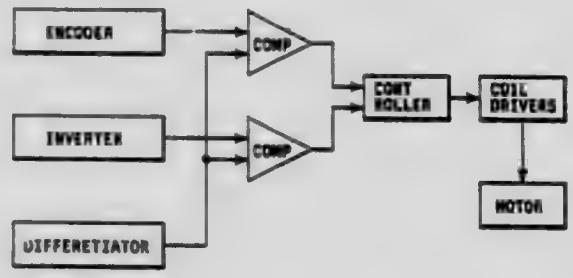
controlling means for generating a power supply frequency to apply a substantially constant acceleration or deceleration torque to the stepping motor within a first interval counted by said time counting means in accordance with the control steps stored in said memory means, and for generating another power supply frequency to apply an acceleration or deceleration torque which changes as a function of time to the stepping motor within a second time interval counted by said time counting means in accordance with the control steps stored in said memory means.

4,496,892

STEPPER MOTOR CONTROLLER

Henry Bugatto, Jr., San Jose, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 5, 1984, Ser. No. 586,167
Int. Cl.[3] H02K *29/04*
U.S. Cl. 318—696 7 Claims



1. A method of rapidly converging the position deviation and velocity of a stepper motor to zero at a selected null point comprising the steps of:

predetermining a variable velocity threshold in the form of a slope, where the value at any point is a function of the position such that, for any starting point on said slope, the maintenance of the stepper motor velocity along the indicated slope will result in the stepper motor rapidly and smoothly going to zero as the null point is approached,

comparing the actual velocity to the predetermined velocity at the current position to produce a binary output indicating whether the current velocity is too high or low, and

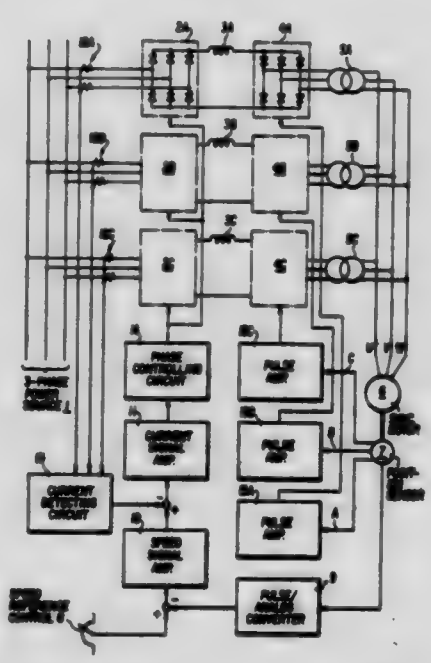
turning on or off, in response to said binary output, one or more stepper motor coils to drive the actual motor velocity toward the determined value.

4,496,893

CONTROLLING DEVICE FOR A BRUSHLESS MOTOR

Teruo Nakano, Hachioji, and Akio Hirata, Fuchu, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 333,161, Dec. 21, 1981, abandoned, which is a continuation of Ser. No. 120,126, Feb. 11, 1980, abandoned. This application Jan. 9, 1984, Ser. No. 568,514
Int. Cl.[3] H02P *5/40*
U.S. Cl. 318—721 4 Claims



1. A controlling device for a brushless motor comprising:

a synchronous motor having a rotor;

a power source and a plurality of unit converting devices which are coupled to the synchronous motor;

means for detecting the rotor position of said synchronous motor and for outputting phase-shifted position signals with respect to the rotation of the synchronous motor, with each one of said outputted phase-shifted position signals being spaced at a pre-determined phase from another one of said outputted phase-shifted position signals;

means for controlling the phase of each of said unit converting devices in response to each of said phase-shifted position signals wherein each of said unit converting devices generates a 3-phase alternating current output;

a plurality of isolation transformers mounted between each unit converting device and said motor; and

combining means for combining the output of each said isolation transformers whereby 3-phase alternating current outputs from each of the unit converting devices shifted at said pre-determined phase are synthesized producing a sine wave approximate staircase current which is supplied to said motor.

4,496,894

ARRANGEMENT FOR CONTROLLABLY DRIVING AN A.C. MOTOR

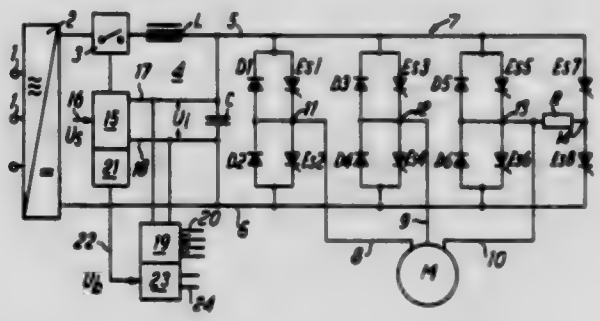
Tom K. Petersen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Mar. 16, 1984, Ser. No. 590,507

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1983, 3312897

Int. Cl.³ H02P *3/22*

U.S. Cl. 318—759 **7 Claims**



1. A circuit for controllably driving an A.C. motor, comprising, a regulatable D.C. voltage supply having a pulse modulation regulator, a smoothing circuit forming two supply lines following said regulator, means operating said regulator to maintain a desired voltage between said supply lines, an inverse rectifier having for each phase thereof a pair of controllable load switching elements in series between said supply lines, each of said load switching elements being bridged by a recovery diode, a motor phase connection between said elements of each said pair of elements, a braking circuit including two series connected brake switching elements between said supply lines, a brake resistor between the junction of said brake switching elements and one of said motor phase connections, and switching means responsive to the voltage between said intermediate circuit supply lines to control the frequency of said inverse rectifier and said braking circuit.

4,496,895

UNIVERSAL SINGLE PHASE MOTOR STARTING CONTROL APPARATUS

Keith W. Kawate, N. Attleboro, Mass., and Richard W. Strachan, deceased, late of Providence, R.I. (by Dawne C. Strachan, executrix), assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 9, 1983, Ser. No. 492,537

Int. Cl.³ H02P *1/44*

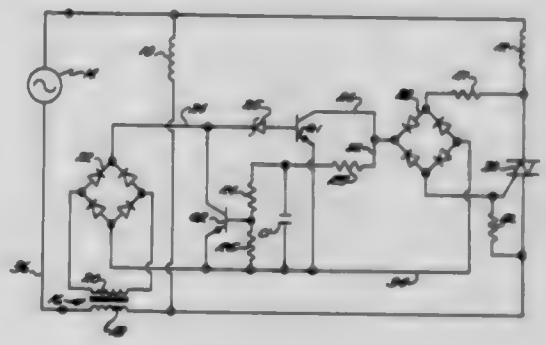
U.S. Cl. 318—781 **15 Claims**

15. A control circuit for controlling the operation of an induction motor having a start winding and a main winding energized by an alternating current energy source and for deenergizing the start winding in response to a phase crossing between the main winding current and the start winding current comprising,

a three terminal solid state switch means having a pair of terminals connectable in series circuit relationship with the start winding and a gate terminal,

pulse generating means connectable to the main winding for producing a narrow pulse each time the main winding current crosses zero,

trigger circuit means for energizing the solid state switch means, the trigger circuit means having a first transistor



coupled to the gate of the solid state switch and adapted to energize the switch when the transistor is conductive, the pulse generating means connected to the first transistor so that a pulse transmitted from the pulse generating means to the first transistor will render it conductive,

lockout circuit means including a second transistor connected in parallel circuit relationship with the first transistor and means responsive to a preselected voltage across the solid state switch means to turn on the second transistor to shunt the pulses from the pulse generating means away from the first transistor thereby preventing the triggering of the solid state switch and deenergizing the start circuit.

4,496,896

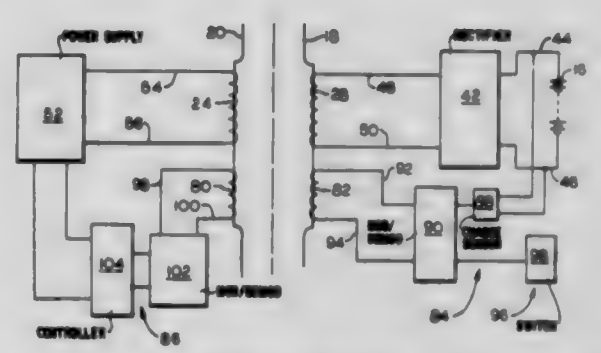
VEHICLE BATTERY CHARGING APPARATUS

Grant C. Melocik, Chardon, and John E. Wible, Painesville, both of Ohio, assignors to Towmotor Corporation, Mentor, Ohio

Filed Apr. 14, 1983, Ser. No. 484,769

Int. Cl.³ H02J *7/04*; H01M *10/46*

U.S. Cl. 320—2 **11 Claims**



1. In an apparatus (10) for delivering electrical energy from a charging station (12) to a vehicle (14), said vehicle (14) including a battery (16) and an attached vechile bumper (18) and said charging station (12) including a source of electrical energy, the improvement comprising:

said charging station (12) having a station bumper (20), said station bumper (20) being ferromagnetic and including a first wire coil (24);

said vehicle bumper (18) being ferromagnetic and including a second wire coil (28), said station and vehicle bumpers

(20,18) forming respective magnetic flux path elements for said first and second wire coils (24,28);

means (30) for positioning said vehicle (14) at a predetermined location relative to said charging station (12), said first and second coils (24,28) being magneticaly coupled by said ferromagnetic bumpers (18,20) in response to said vehicle (14) being positioned at said location; and,

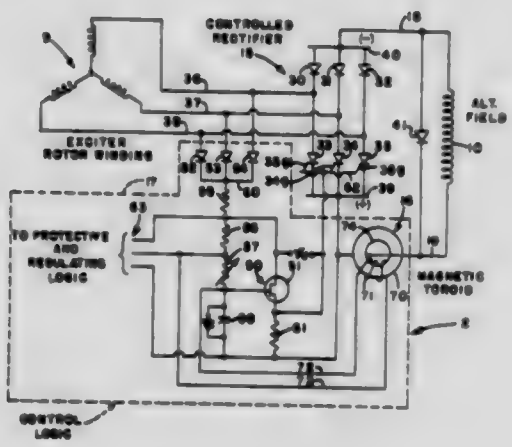
means (34) for sensing the relative position of said first and second coils (24,28) and controllably delivering said electrical energy from said charging station (12) to said vehicle (14) in response to the sensed position, said means (34) including means (60) for producing a signal current having a predetermined frequency and delivering said signal current to said first coil (24), said signal current flowing substantially continuously through said first coil (24).

4,496,897

VARIABLE VOLTAGE CONTROL FOR SELF-EXCITED SELF-REGULATED SYNCHRONOUS ALTERNATOR

Lewis E. Unnewehr; Robert B. Walker, and Andrew F. Szippl, all of Lima, Ohio, assignors to Lima Electric Co., Inc., Lima, Ohio

Filed Nov. 12, 1981, Ser. No. 320,723
Int. Cl.[3] H02P 9/30
U.S. Cl. 322—25
16 Claims



1. An electric generating device comprising:

an alternator-exciter means for producing an electrical output, said alternator-exciter means including an exciter rotor winding and a field winding,

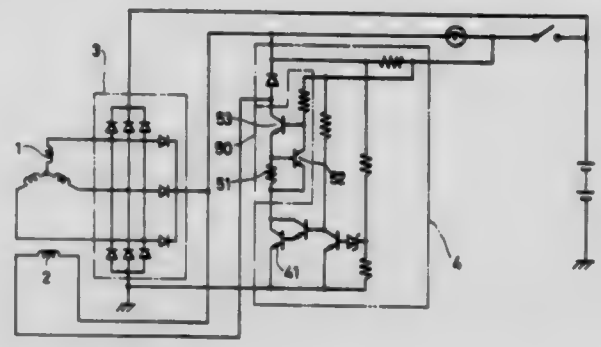
adjustable setting means for setting the nominal no load and light load output voltage of said alternator-exciter means substantially independently of the winding arrangement thereof, said adjustable setting means including a phase modulating circuit means for adjusting the voltage excitation of said field winding of said alternator-exciter means to determine the nominal terminal voltage of such electrical output and adjustable impedance means capable of being set to a prescribed value for determining the phase delay timing for said phase modulating circuit means in timed relation with such output voltage and substantially independently of the magnitude of such output voltage, said phase modulating circuit means comprising a controlled bridge and timing means for controlling operation of said controlled bridge in direct proportion to the open circuit voltage across at least part of said controlled bridge, said adjustable impedance means being coupled to said timing means to set the phase delay according to the proportion of such open circuit voltage required to effect conduction in said controlled bridge.

4,496,898

VEHICLE A.C. GENERATOR WITH CONSTANT OUTPUT POWER

Yoshiyuki Iwaki; Mitsuyoshi Yokota, and Akio Matsumoto, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1983, Ser. No. 543,710
Claims priority, application Japan, Oct. 20, 1982, 57/159874[U]; Oct. 20, 1982, 57/159876[U]
Int. Cl.[3] H02J 7/14; H02P 9/30
U.S. Cl. 322—34
2 Claims



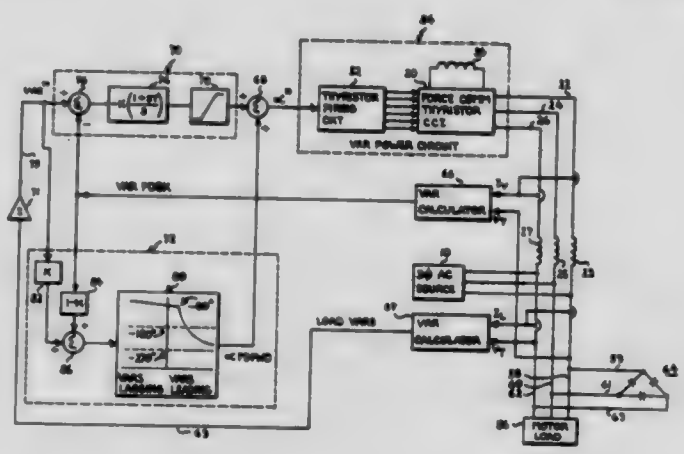
1. An AC generator for a vehicle, comprising; a field winding having a temperature dependent resistance, a stator winding, said stator and field winding being provided for generating AC power, a rectifying apparatus for rectifying said AC power, a voltage control apparatus for interrupting an exciting current flowing into said field winding, and a constant current source further comprising a switching device connected in series with said field winding, a control device which outputs a control signal having a signal level proportional to the magnitude of said field winding current, and a second switching means which is activated in response to said control signal and in accordance with the signal level of said control signal for controlling the conductivity of said first switching means.

4,496,899

CONTROL FOR A FORCE COMMUTATED CURRENT SOURCE VAR GENERATOR

David L. Lippitt, Scotia, N.Y., and Loren H. Walker, Salem, Va., assignors to General Electric Company, Salem, Va.

Filed Jun. 28, 1983, Ser. No. 508,599
Int. Cl.[3] H02J 3/18
U.S. Cl. 323—207
34 Claims



1. A control scheme for linearizing the non-linear operational characteristic of a static var generator coupled to a source of alternating current power, comprising:

(a) an inductively loaded force commutated thyristor inverter coupled to said alternating current source and operating as a current source var generator;

(b) means responsive to a gating angle command signal for controlling thyristor firing angle of said inverter for generating at least leading vars;

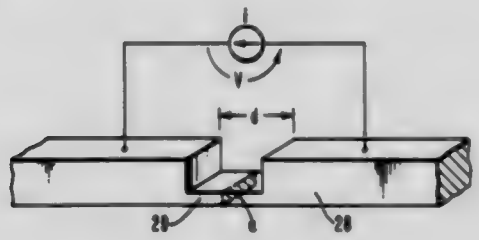
(c) means for establishing a var command signal corresponding to a command for vars;
(d) control means having a non-linear signal transfer function for generating a gating angle command signal which is variable in response to said var command signal; and
(e) means coupled to said control means for applying said gating angle command signal to said means for controlling said firing angle of said inverter.

4,496,900

NONLINEARITY DETECTION USING FAULT-GENERATED SECOND HARMONIC

Thomas H. Di Stefano, Bronxville, and Arnold Halperin, Peekskill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1982, Ser. No. 373,318
Int. Cl.[3] G01N *27/00*
U.S. Cl. 324—51 5 Claims



1. Test apparatus for determining the existence of nonlinearity faults in a conductor under test, which conductor is connected by probes to the test apparatus, characterized by:
(a) a test signal generator having a composite test signal node and means to provide at the composite test signal node a composite test signal including a direct current signal of known characteristics and an alternating current signal of known characteristics including a fundamental frequency, and having a fundamental frequency node for providing the fundamental frequency;
(b) connecting means, for connecting the composite test signal node to a device under test in such fashion that nonlinearity anomalies in the device under test provide fault signals including second harmonics of the fundamental frequency;
(c) test signal filtering means, connected to said composite test signal node, to pass only the second harmonic signal from the device under test;
(d) frequency doubling means connected to the fundamental frequency node of said test signal generator to produce second harmonic test signals;
(e) phase detection means having inputs including an input connection from said filtering means for accepting second harmonic signals from the device under test and having further input means for accepting the second harmonic test signals from said frequency doubling means, for detecting fault signals separate from conductor signals differing in phase; and
(f) output means for providing an indication of fault in the device under test.

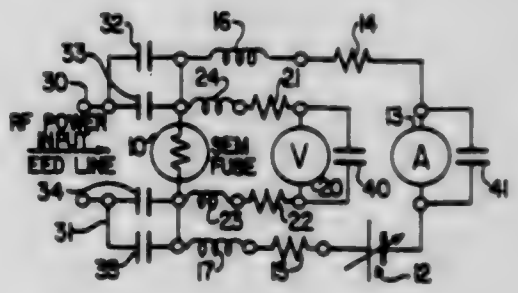
4,496,901

ELECTROEXPLOSIVES, RF POWER SAFETY MARGIN MEASUREMENT METHOD

M. Nihat Yazar, Nepean, Canada, assignor to Her Majesty the Queen in Right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed May 17, 1982, Ser. No. 379,101
Claims priority, application Canada, Jun. 8, 1981, 379246
Int. Cl.[3] G01R *21/04, 35/00*
U.S. Cl. 324—95 8 Claims

1. A method of measuring the effective power absorbed by a resistive device due to radio-frequency energy induced in an electrical line connected to the device, comprising:
(a) connecting an adjustable source of constant dc current to the device in series with an ammeter and connecting a voltmeter across said device;
(b) passing current of varying levels through said device while measuring the current through it and the voltage across it,
(c) recording voltage versus dc current for said device from the current and voltage measurements obtained in step (b);



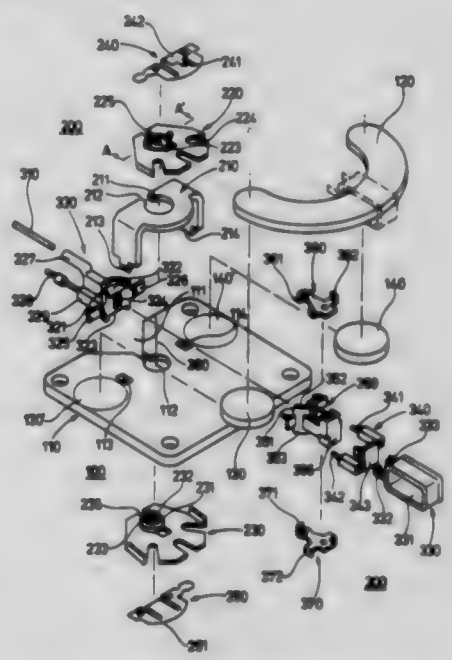
(d) measuring voltage across the device while a dc current of known value is passed through it and while it is connected to said electrical line,
(e) subtracting from the voltage measured in the step (d) the voltage value obtained in step (c) for said dc current of known value to obtain the voltage produced by radio-frequency energy, said last named voltage being proportional to the effective power absorbed by the device.

4,496,902

TAUT BAND TYPE INSTRUMENT SUITABLE FOR AUTOMATICAL ASSEMBLY

Shigetaka Miura; Junichi Igawa, and Satoru Takata, all of Tokyo, Japan, assignors to Yokogawa Hokushin Electric Corporation, Tokyo, Japan

Filed May 13, 1982, Ser. No. 377,711
Claims priority, application Japan, May 20, 1981, 56-75037
Int. Cl.[3] G01R *5/02, 5/08*
U.S. Cl. 324—150 2 Claims



1. A taut band type instrument suitable for being automatically assembled, comprising
an exciting unit comprising a yoke having a hole defined therein, said hole communicating with an exterior through a recess, a pair of permanent magnets attached to said yoke and spaced from each other across said hole, and a semi-annular core attached to said pair of permanent magnets;
a bridge unit comprising a channel shaped bridge having a hole defined therein, said hole communicating with an exterior through a recess, said channel shaped bridge being attached to said yoke, upper and lower stoppers,

each of said stoppers having a cylindrical portion communicating with an exterior through a recess, one of said stoppers being mounted in said hole in said bridge and the other stopper being mounted in said hole in said yoke, and upper and lower tension springs having tongues, respectively, and attached to said upper and lower stoppers, respectively;

a moving unit comprising a moving coil disposed angularly movably about said core, a support member to which said moving coil is attached, upper and lower clips fixed to said support member and electrically connected to terminals of said moving coil, a pointer, and a pointer attachment to which said pointer is attached, said pointer attachment and said support member being coupled at end surfaces thereof;

an upper taut band inserted, through said recesses in said bridge and said upper stopper, and within said hole of said bridge and within said cylindrical portion of said upper stopper, said upper taut band having one end attached to said upper tension spring through said tongue thereof and an opposite end attached to said upper clip;

a lower taut band inserted, through said recesses in said yoke and said lower stopper, and within said hole of said yoke and within said cylindrical portion of said lower stopper, said lower taut band having one end attached to said lower tension spring through said tongue thereof and an opposite end attached to said lower clip, said upper and lower taut band coacted with each other to support said moving coil under tension between said upper and lower tension springs;

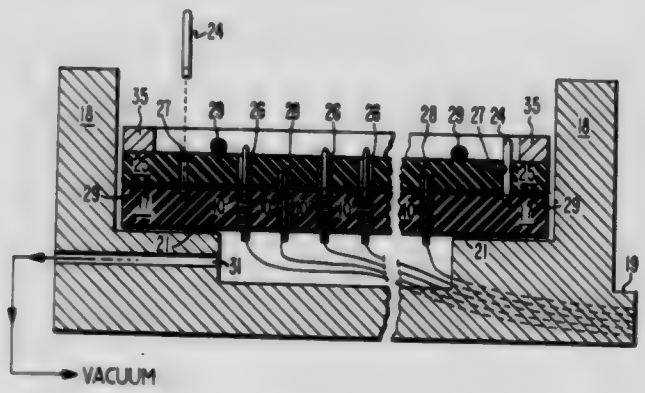
whereby said pointer is angularly moved through an angular interval dependent on current to be measured, said current flowing through said moving coil, under coaction of a magnetic flux from said permanent magnets and said current to be measured.

4,496,903

CIRCUIT BOARD TEST FIXTURE

Ronald A. Paulinski, Goleta, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 11, 1981, Ser. No. 262,638
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—158 F **9 Claims**



1. In test apparatus for temporarily making individual electrical contacts to a multiplicity of test points of a circuit board wherein test points may be arranged on the circuit board in a plurality of different possible planar patterns, the combination comprising:

means providing a planar member containing an array of contact probes of sufficient number and arrangement to accommodate said plurality of different possible patterns of test points, each of said probes being resiliently urged in a like predetermined direction perpendicular to said member and extending therefrom;

a plurality of personalizing boards, one for each different type of test point pattern which may be provided for a circuit board to be tested by said apparatus, each personalizing board having a predetermined pattern of holes provided therein corresponding to the test point pattern of the respective circuit board to be tested thereby, each hole being of appropriate size for receiving one of said contact probes;

means providing for the disposing of one side of a personalizing board adjacent and parallel to said array of probes such that the array of holes in the personalizing board are in alignment with and receive corresponding ones of said probes;

means for mechanically forcing a personalizing board against said array of probes so that the probes which are not in alignment with holes in said personalizing board are depressed while the probes received by said holes remain undepressed, the thickness of said personalizing board being chosen relative to the length of said probes so that the undepressed probes are able to extend beyond the other side of the personalizing board after the personalizing board is mechanically forced against said probes;

means providing for the disposing of a circuit board to be tested by said apparatus on a corresponding personalizing board so that its test points are in alignment with the holes provided therein; and

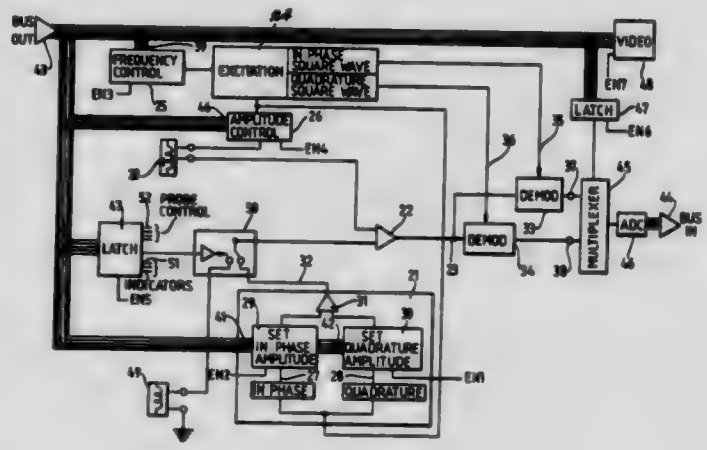
vacuum producing means for causing the test points of a circuit board disposed on a personalizing board which has been forced against said array of probes to be forced into electrical contact with the probes extending from the holes in the personalizing board.

4,496,904

EDDY CURRENT MEASUREMENT APPARATUS FOR NON-DESTRUCTIVE TESTING IN THE VICINITY OF A FASTENER

David J. Harrison, Farnham, England, assignor to The Secretary of State for Defence in her Britannic Majesty's Government of The United Kingdom of Great Britain and Northern Ireland, London, England

PCT No. PCT/GB81/00089, § 371 Date Dec. 31, 1981, § 102(e) Date Dec. 31, 1981, PCT Pub. No. WO81/03381, PCT Pub. Date Nov. 26, 1981
PCT Filed May 19, 1981, Ser. No. 336,341
Claims priority, application United Kingdom, May 22, 1980, 8016887
Int. Cl.³ G01N *27/72*; G01R *33/00*; G01N *27/82*
U.S. Cl. 324—227 **2 Claims**



1. An eddy current measurement apparatus for non-destructive testing in the vicinity of a fastener, comprising:

a probe having first and second transducer coils structurally mounted in opposition on a rotatable former, said transducer coils providing output signals in response to excitation;

means for exciting said coils;

means for rotating said probe;

difference amplifier means having first and second inputs and an output providing a first signal for measurement during rotation of said coils and a second signal indicating a centering error signal during rotation of said coils,

said output of said first transducer coil being connected to said first input of said difference amplifier means;

a signal generator providing a reference level signal;

switch means having a first state and a second state arranged such that in said first state said second transducer coil output is connected to said second input of said difference amplifier means and such that in said second state said output of said signal generator is connected to said second input and said second transducer coil is disconnected from said second input;

control means for actuating said switch means into said first state during probe centering rotation so that said difference amplifier produces said center erroring signal and for actuating said switch means into said second state during a subsequent measurement;

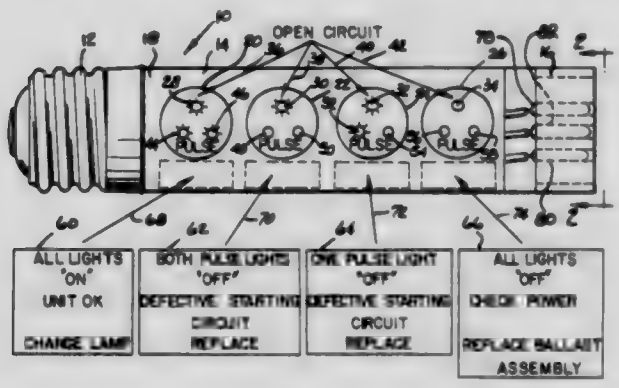
said control means being arranged to repeat said centering rotation if said centering error signal at the output of said difference amplifier means indicates a centering error.

4,496,905

TESTING DEVICE FOR ELECTRICALLY ANALYZING A HIGH PRESSURE SODIUM LIGHTING FIXTURE AND LAMP

Don A. Forte, and Michael L. Thompson, both of Newark, Ohio, assignors to Manville Service Coporation, Denver, Colo.

Filed Aug. 17, 1981, Ser. No. 293,750
Int. Cl.[3] G01R *31/024, 31/22*
U.S. Cl. 324—414 13 Claims



1. A testing device for electrically analyzing a high pressure sodium lighting fixture comprising:

a testing receptacle for containing a plurality of indicating lights and an electrical circuit, the receptacle containing an electrical socket sized to fit the socket of said high pressure sodium lighting fixture;

a plurality of electrical analyzing circuits having indicating lights contained therein, the circuits being contained within said testing receptacle and electrically connected to the electrical socket so that an open circuit voltage can be applied to said circuits through said electrical socket;

said circuits being designed to analyze components of said high pressure sodium lighting fixture for a defective starter circuit or a defective ballast and capacitor to give a visual indication on said indicating lights which of said components is defective; and

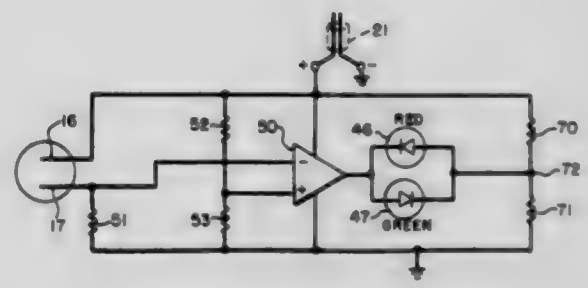
said electrical analyzing circuits including pulse indicating means for sensing a predetermined amplitude of a pulse on each positive and negative half cycle of a wave form and visually indicating the presence thereof on said indicating lights and open circuit voltage amplitude indicating means for sensing the predetermined amplitude of applied open circuit voltage and visually indicating the presence thereof.

4,496,906

LIQUID CONDUCTIVITY MONITOR

Robert A. Clack, Monona, Wis., assignor to Clack Corporation, Windsor, Wis.

Filed Oct. 28, 1981, Ser. No. 315,737
Int. Cl.[3] G01N *27/02*
U.S. Cl. 324—439 12 Claims



9. A monitoring device for monitoring electrical conductivity in a liquid within a conduit flow system including an aperture in the wall thereof, said monitoring device comprising, in combination:

an elongated housing dimensioned at one end to fit through the aperture in the conduit;

a pair of spaced-apart conductivity-sensing electrodes arranged at the one end of the housing for immersion in the liquid when the one end of the housing is fitted through the aperture;

comparison amplifier means within the housing having first and second input terminals and an output terminal, said first input terminal being coupled to said sensing electrodes, said second input terminal being coupled to a reference voltage source, the signal level developed by said comparison amplifier on said output terminal changing from a first predetermined logic signal level of a predetermined polarity to a second predetermined logic signal level of the same polarity upon the conduction between said electrodes exceeding a predetermined threshold level dependent on said reference voltage source;

supply current means including a supply current source and a voltage divider comprising at least first and second resistance elements serially connected between said supply current source and ground, the juncture of said first and second resistance elements comprising a reference current source; and

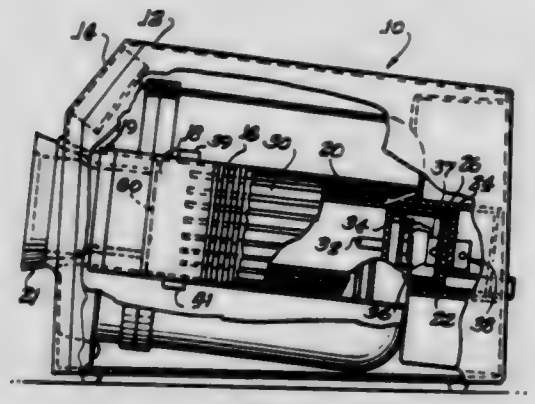
means including first and second light-emitting diodes arranged at the opposite end of said housing and viewable from the exterior thereof, said diodes being independently and directly connected between said reference current source and said output terminal, and being oppositely poled relative to said output terminal whereby said first light-emitting diode is forward biased to light when said output terminal is at said first predetermined logic level, and to not light when said output terminal is at said second predetermined logic level, to indicate conductivity in the liquid is below said predetermined threshold level, and said second light-emitting diode is forward biased to light when said output terminal is at said second predetermined logic signal level, and to not light when said output terminal is at said first predetermined logic signal level, to indicate conductivity in the liquid is above said predetermined threshold level.

4,496,907

METHOD AND APPARATUS FOR NON-DESTRUCTIVELY DETERMINING INGREDIENTS OF A SAMPLE

David B. Funk, Auburn; James D. Kallmeyer, Glenarm, both of Ill., and Wesley H. Harker, Scottsdale, Ariz., assignors to Dickey-John Corporation, Auburn, Ill.

Filed May 6, 1982, Ser. No. 375,552
Int. Cl.[3] G01N *27/02*
U.S. Cl. 324—445
40 Claims



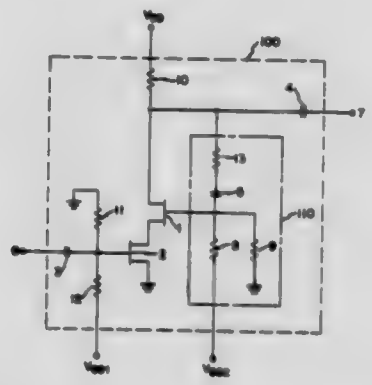
39. A test apparatus for measuring the amount of at least one constituent present in a sample of material, wherein said at least one constituent bears a known relationship to the electrical conductivity of the sample, comprising: a sensor including receptacle means for receiving a sample of material therein and defining an axis, and field producing means, said field producing means including means for producing an electromagnetic field within said receptacle, means for substantially confining said electromagnetic field to a predetermined, fixed volume within said receptacle means and substantially coaxially therewith, means for producing a substantially constant magnitude electromagnetic field throughout said predetermined, fixed volume, and wherein said field producing means further includes means for substantially eliminating axial electric field components in said electromagnetic field.

4,496,908

NEGATIVE FEEDBACK AMPLIFIER HAVING GAAS FET'S

Isamu Takano, and Norihisa Ohta, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1982, Ser. No. 387,810
Claims priority, application Japan, Jun. 16, 1981, 56/92514
Int. Cl.[3] H03F *3/16, 1/34*
U.S. Cl. 330—277
11 Claims



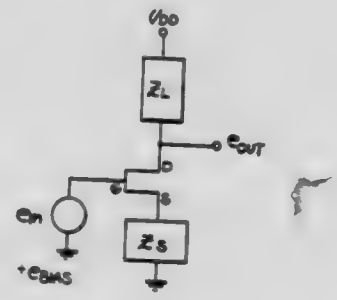
1. A negative feedback amplifier comprising:
an amplifying section including a first GaAs FET coupled in an amplifier configuration and having source, gate, and drain electrodes; a second GaAs FET coupled in an amplifier configuration and having source, gate and drain electrodes; the drain electrode of said second GaAs FET being connected to the source electrode of the first GaAs FET; an input terminal connected to the gate electrode of either one of the first and second GaAs FET's; an output terminal connected to the drain electrode of the first GaAs FET; and a feedback circuit coupled between the drain and the gate of the other of said GaAs FET's for feeding back a part of the output given from the drain to the gate electrodes of the other GaAs FET of said first and second FET's.

4,496,909

BIASING METHOD FOR IMPROVED PERFORMANCE IN FIELD EFFECT DEVICES

Richard P. Knapp, Hermosa Beach, Calif., assignor to Lawrence Kavanau, Long Beach, Calif., a part interest

Continuation of Ser. No. 170,124, Jul. 18, 1980, abandoned, which is a continuation-in-part of Ser. No. 004,572, Jan. 18, 1979, Pat. No. 4,241,316. This application Feb. 28, 1983, Ser. No. 470,522
Int. Cl.[3] H03F *3/16*
U.S. Cl. 330—277
5 Claims



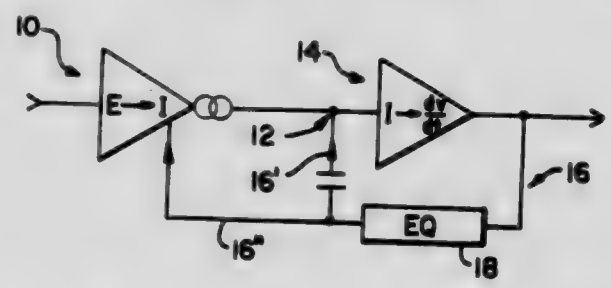
1. A method of minimizing transistor by noise, the field effect transistor having a gate, source and drain comprising setting the quiescent bias point of the field effect transistor by setting the gate to source voltage and the drain to source voltage to operate the transistor in the current saturation region with an electric field in a drain depletion zone such that the carrier velocity is in the partial carrier velocity saturation zone to provide a carrier drift velocity approximately proportional to the square root of the electric field to distort the output conductance functional with current to substantially match the transconductance functional with current to substantially match the transconductance functional with current, thereby linearizing the voltage transfer function of the device, defined $A_v = g_m/g_o$, where g_m is the transconductance and go is the output conductance of the field effect transistor.

4,496,910

PRE-AMPLIFIER HAVING IMPROVED SONIC PERFORMANCE

James C. Strickland, 1595 NE. 175th St., N. Miami Beach, Fla. 33162

Filed Jun. 3, 1982, Ser. No. 384,504
Int. Cl.[3] H03G *3/10;* H03F *1/34*
U.S. Cl. 330—279
9 Claims



1. A preamplifier circuit for amplifying an information carrying voltage input signal in a frequency range that includes the audio frequency spectrum, the input voltage varying in magnitude as a function of its frequency, said preamplifier circuit providing an output the magnitude of which is substantially independent of frequency, said preamplifier circuit comprising:

a first amplifier stage of a transconductive current source type provided with an input port for receiving a voltage varying input signal to be amplified and having an output port of high impedance through which a current flows as a function of the voltage varying input;

a second amplifier stage of the current-to-voltage transreactive type provided with an input port connected to sense the current varying output of said first amplifier and an output to which an output signal is provided, the voltage of which output signal varies as a function of its current varying input; and

feedback loop means including a equalization network means for degeneratively feeding back a portion of the frequency dependent output current and a portion of the output signal voltage to the high impedance output of said first amplifier stage to effect gain control over the second stage, the impedance of the output of the first stage high enough so that the fed back voltage in unaffected by the frequency throughout the audio frequency range.

4,496,911

INTEGRATED AMPLIFIER CIRCUIT

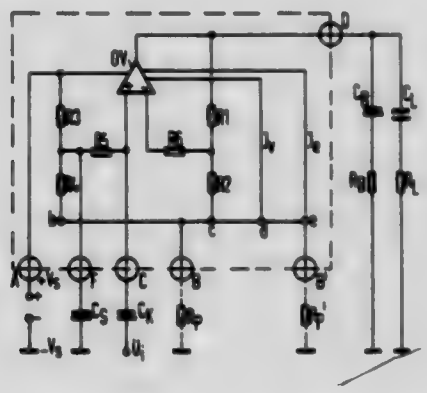
Michael Lenz, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 22, 1983, Ser. No. 534,663

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1982, 3235289

Int. Cl.³ H03F *1/34*

U.S. Cl. 330—297 **8 Claims**



1. Integrated amplifier circuit, comprising a supply potential source, a reference potential source, an operational amplifier having an inverting signal input, a non-inverting signal input, a signal output, an input stage, and internal terminals to be acted upon by the supply potential and the reference potential, a signal input terminal connected to said non-inverting signal input of said operational amplifier, a signal output terminal connected to said signal output of said operational amplifier, a first supply terminal connected to said supply potential source, a second supply terminal connected to said reference potential source, said first and second supply terminals being connected to said internal terminals of said operational amplifier, a first ohmic voltage divider having an end terminal connected to said signal output of said operational amplifier, another end terminal connected to said reference potential source, and a divider point, an ohmic resistor connected between said divider point of said first voltage divider and said inverting signal input of said operational amplifier for obtaining a real negative feedback, a second ohmic voltage divider having an end terminal connected to said first supply terminal, another end terminal connected to said reference potential source, and a divider point, a supply resistor connected between said divider point of said second voltage divider and said non-inverting signal input of said operational amplifier, and a third supply terminal associated with said output stage of said operational amplifier, said third supply terminal being connected to said reference potential source and being insulated from said second supply terminal within the amplifier circuit.

4,496,912

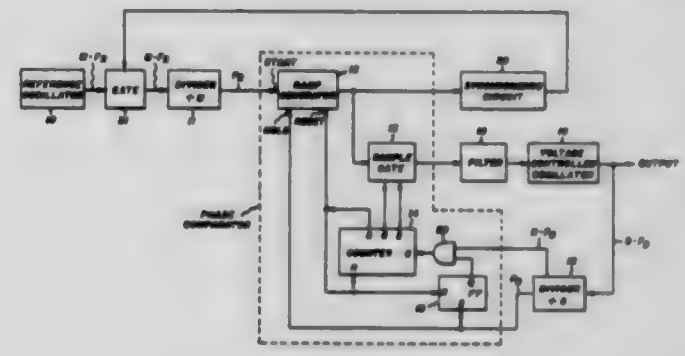
PHASE LOCKED LOOP WITH OSCILLATOR BLOCKING FOR IMPROVED ACQUISITION TIME

Stephen R. Wynn, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Jun. 10, 1982, Ser. No. 386,932

Int. Cl.³ H03L *7/06*

U.S. Cl. 331—1 A **25 Claims**



1. In a phase locked loop circuit wherein the phase of a variable frequency repeating signal is compared with the phase of a reference frequency repeating signal, the improvement comprising:

a. a generator for producing a ramp signal which Starts in response to each occurrence of a selected one of said repeating signals;

b. a synchronizing circuit coupled to said generator for producing a blocking signal in response to one of said ramp signals that reach is a predetermined magnitude;

c. and means responsive to said blocking signal for delaying a selected one of said repeating signals following said one ramp signal that reaches said predetermined magnitude.

4,496,913

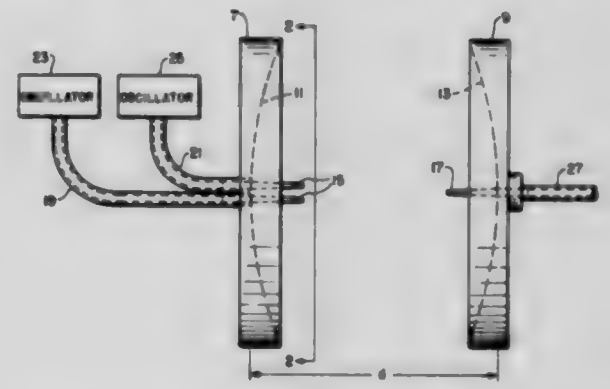
MILLIMETER WAVE POWER COMBINER USING CONCAVE REFLECTORS

Lothar Wandinger, Elberon, and Vahakn Nalbandian, Ocean City, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 24, 1982, Ser. No. 444,136

Int. Cl.³ H03B *5/18, 7/12*; H01P *7/06*

U.S. Cl. 331—56 **10 Claims**



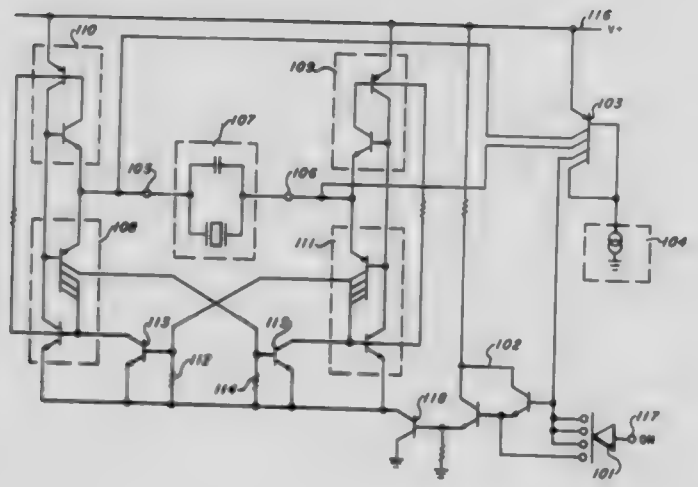
1. A millimeter wavelength power combiner comprising an open resonator comprising a pair of confronting concave reflectors, means to apply the outputs of two or more millimeter wavelength signal sources to said resonator in such a way that the power of the signal sources is combined to form standing waves in the transverse electromagnetic mode along the axis connecting the centers of said reflectors, and means to withdraw the combined power from said resonator.

4,496,914

PIEZO HARN SELF-OSCILLATING DRIVE CIRCUIT

Bernhard H. Andresen, Dallas; Stephen R. Schenck, McKinney, and Nathan R. Kennedy, Sunnyvale, all of Tex., assignors to Texas Instruments Incorporated

Filed Nov. 13, 1981, Ser. No. 321,281
Int. Cl.[3] H03B 5/36
U.S. Cl. 331—110 1 Claim



1. A self-oscillating drive circuit for a piezoelectric transducer, comprising:

a capacitor in parallel with the transducer to prevent harmonic oscillations;

a first silicon controlled rectifier coupled to a first terminal of the transducer and to a power supply voltage;

a second silicon controlled rectifier coupled to a second transducer terminal and to the supply voltage;

a third silicon controlled rectifier coupled to the first transducer terminal and to a ground control line;

a fourth silicon controlled rectifier coupled to the second transducer terminal and to the ground control line;

a pair of switching transistors, each connected between an output element of a respective one of said third and fourth silicon controlled rectifiers and the ground control line, between a control element of said first and third and said second and fourth silicon controlled rectifiers and the ground control line, and each being connected to an output of a respective other of said third and fourth silicon controlled rectifiers to switch when the current in the transducer is approximately zero, to alternatingly switch said first and fourth rectifiers on while switching said second and third rectifiers off, and to switch said second and third rectifiers on while switching said first and fourth rectifiers off;

a transistor switch coupled between the ground control line and ground, said transistor switch being closed upon application of a turn on signal to allow said circuit to oscillate and being open in the absence of a turn on signal to prevent said circuit from oscillating; and

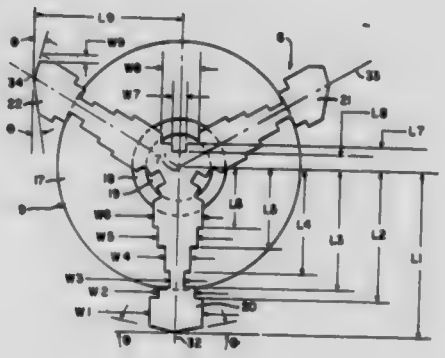
a current source and an I^2L gate connected to said current source and to receive said turn on signal to open said I^2L gate to apply a current from said current source to said transducer to start said circuit in oscillation.

4,496,915

MICROWAVE TRANSMISSION DEVICE HAVING GYROMAGNETIC MATERIALS HAVING DIFFERENT SATURATION MAGNETIZATIONS

Moni G. Mathew, and Thomas J. Weisz, both of Sunnyvale, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 320,740, Nov. 12, 1981, abandoned, and a continuation of Ser. No. 139,816, Apr. 14, 1980, abandoned.
This application Dec. 29, 1983, Ser. No. 566,861
Int. Cl.[3] H01P 1/387
U.S. Cl. 333—1.1 21 Claims



1. A microwave transmission device comprising:

a first conductor disposed in a first plane,

a second conductor disposed in a second plane in parallel relation and spaced from said first conductor for transmitting TEM electromagnetic energy,

a first composite body of gyromagnetic material adapted to be magnetized by a magnetic field and disposed between said first and second conductors,

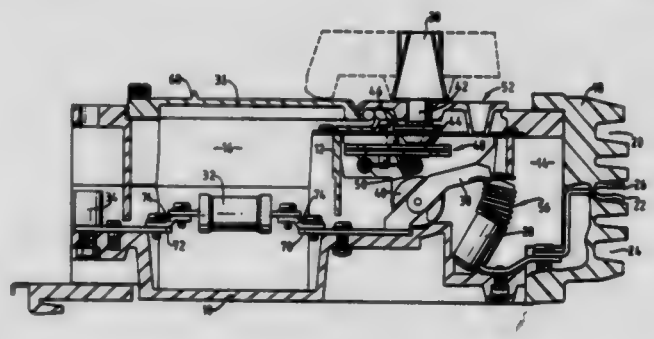
said composite body including first and second gyromagnetic materials having different saturation magnetizations providing broad bandwidth operation for said device, said first and second gyromagnetic materials symmetrically disposed about a center line of said device parallel to the direction of said magnetic field; and said first and second gyromagnetic materials disposed in said device and concentrically formed with first and second diameters establishing first and second ferrite frequencies within the pass band of said device and establishing any subharmonic frequencies outside the pass band of said device thereby to provide operation in a single perfect circulation mode with other perfect circulation modes suppressed.

4,496,916

SWITCH FUSE UNIT

Peter E. G. Carpenter, Newbury, and Andrew P. Baker, Swindon, both of England, assignors to Square D Company, Palatine, Ill.

Filed Jan. 27, 1983, Ser. No. 461,287
Claims priority, application United Kingdom, Mar. 22, 1982, 8208253; Jan. 27, 1983, 8202326
Int. Cl.[3] H01H 85/00; H02B 1/18
U.S. Cl. 337—6 7 Claims



1. A switch fuse unit comprising:

a case of generally rectangular form, the case having a num-

ber of faces, the case being divided into a first compartment and a second compartment, the case also including a hinged door providing access to the second compartment;

an inlet terminal positioned on one of said faces of the case for resilient engagement with a busbar;

two separable switch contacts electrically connected with the inlet terminal;

an outlet terminal positioned on one of said faces of the case;

a fuse link positioned within the second compartment, the fuse link being electrically connected in series with the inlet terminal, separable contacts, and outlet terminal; and

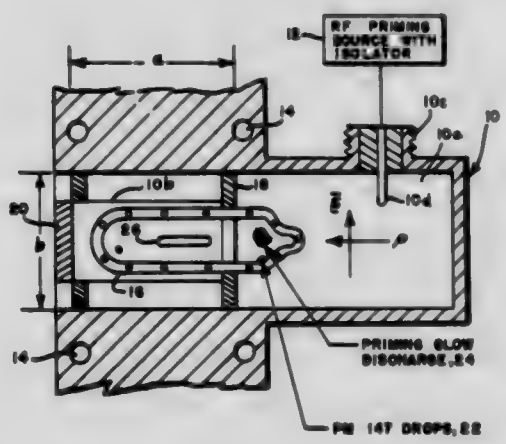
a switch operating mechanism positioned within the first compartment, the switch operating mechanism including an external handle, operable to open and close the contacts in a quick-make-and-break manner, the handle being rotatable to an "on" position to block opening of the door, the handle also comprising a first portion secured to the switch operating mechanism and a second portion forming a hand grip, the second portion being hinged to the first portion to allow movement away from the case to permit opening of said hinged door the handle also comprising spring catch means normally preventing such movement but releasable by an implement.

4,496,917

RF-PRIMED HIGH POWER HALOGEN VIAL APPARATUS

Harry Goldie, Randallstown, and William D. Cherry, Beltsville, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 23, 1982, Ser. No. 422,430
Int. Cl.³ H01P *1/14*
U.S. Cl. 333—13 **7 Claims**



1. An RF-primed high power halogen vial apparatus as a radar receiver protector comprising in combination:

a housng member containing a first and second cylindrical guide, said first cylindrical guide being longitudinally aligned with said second cylindrical guide; said second cylindrical guide being in alignment with the input waveguide to said radar receiver,

a vial means positioned within said second cylindrical guide with a small portion extending into said first cylindrical guide, said vial means containing a low pressure gas,

a tuning iris formed in said second cylindrical guide, said tuning iris being substantially centered with respect to said vial means, and

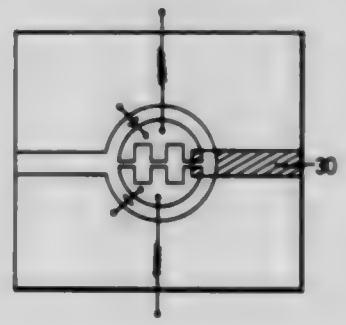
an RF priming means operatively connected to said first cylindrical guide, said RF priming means applying an RF priming signal into said first cylindrical guide by means of a single electrode which is positioned within said first cylindrical guide external to and not in contact with said vial means, said first cylindrical guide propagating said RF priming signal into said vial means to ionize the gas therein and create a weakly-ionized plasma, said plasma providing a source of free electrons to provide a stable breakdown upon receipt of a high microwave signal.

4,496,918

RADIO FREQUENCY ALTERNATE-PATH PHASE SWITCH

William Thorpe, Felixstowe, England, assignor to British Telecommunications, London, England

Filed Jan. 27, 1983, Ser. No. 461,529
Claims priority, application United Kingdom, Feb. 2, 1982, 8202999
Int. Cl.³ H01P *1/185, 3/08;* H03C *3/00*
U.S. Cl. 333—164 **9 Claims**



1. A microwave alternate-path phase switch which provides alternate paths from an input to an output and a selector for selecting which path an input carrier microwave signal will follow from said input to said output, the paths being such that the phase of the output carrier microwave signal depends on the path followed characterized in that the selector comprises:

a primary conducting region;

discrete conductive regions juxtaposed so as to present a low r.f. impedance therebetween for the transmission thereacross of said carrier microwave signal but presenting a high impedance to a lower modulation frequency signal used to select which of said alternate paths is to be used;

each of said discrete regions being connected to said primary conductive region via separate and independent switching means for selecting which of said alternate paths is to be used; and

a gap between each of the discrete regions and the primary conductive region constituting respective ones of said alternate paths.

4,496,919

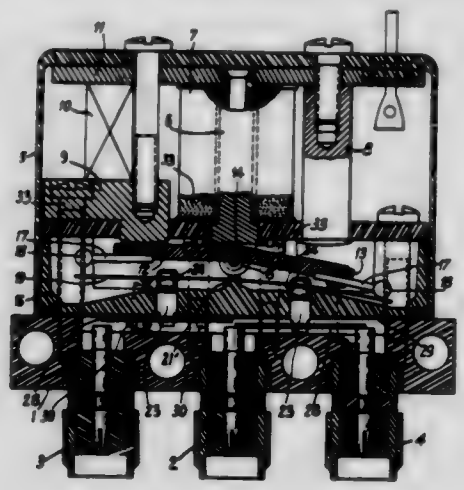
RELAY FOR ULTRA HIGH FREQUENCY COAXIAL SWITCHING

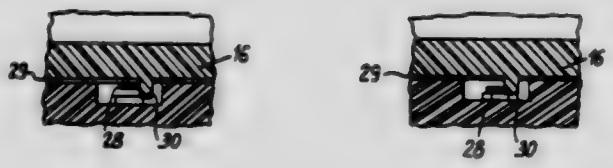
Andre Fournier, La Verpillere, and Gilles Billet, Voiron, both of France, assignors to Microndе, Saint Quentin Fallavier, France

Filed Feb. 24, 1983, Ser. No. 469,261
Claims priority, application France, Feb. 24, 1982, 82 03049
Int. Cl.³ H01H *53/00*
U.S. Cl. 335—5 **10 Claims**

1. A relay for switching high frequency lines comprising, a support, a plurality of spaced apart coaxial contacts on said support, said coaxial contacts comprising a first coaxial contact between a second coaxial contact and a third coaxial contact, first and second rigid blade contacts, a ground plane spaced from said coaxial contacts, a force transmitting insulating pusher fixed to each rigid blade contact, and means for alternately moving said blade contacts from a one position in which said first blade contact engages said first and second coaxial contacts and said second blade contact engages said ground plane, to another position in which said second blade contact engages said first and third coaxial contacts and said first blade contact engages said ground plane, said means comprising a leaf spring connected at its center to a central support, means for connecting said pusher element for said first blade contact to said spring on one side of said central support, means for connecting the pusher for said second blade contact to said leaf spring on the other side of said central support, an armature pivotable about a central axis, said armature having first and second arms projecting in opposite directions from said axis, means at one end of said armature for engaging one end of said

spring, means at the other end of the armature for engaging the other end of said spring, said engaging means being alternately movable with the armature, to a first position in which one of the engaging means engages one end of the leaf spring and deflects the spring to move said first blade contact into engagement with said first and third coaxial contacts, and in which the other engaging means is spaced from the other end of the spring to permit the spring to move the second blade contact





into engagement with the ground plane, and to a second position in which the other engaging means engages the other end of the leaf spring and deflects the spring to move the second blade contact into engagement with the second and third coaxial contacts, and in which said one of the engaging means is spaced from the other end of the spring to permit the spring to move the first blade contact into engagement with the ground plane, and electromagnetic means for pivoting said armature.

4,496,920

ELECTROMAGNETICALLY OPERATED ELECTRIC SWITCH

Karl E. Jönsson, and Gösta Lindgren, both of Västerås, Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Filed Apr. 4, 1983, Ser. No. 482,020

Claims priority, application Sweden, Apr. 6, 1982, 8202209; Apr. 6, 1982, 8202210

Int. Cl.³ H01H *15/00*

U.S. Cl. 335—201 **10 Claims**

1. An electromagnetically operated electric switch comprising

a first fixed contact (9),

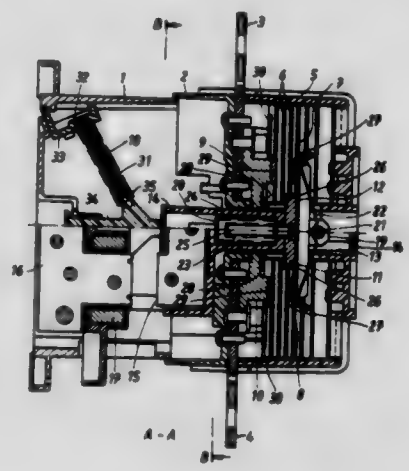
a second fixed contact (10) being disposed at a distance from said first contact,

a movable bridge contact assembly (11, 12) for connecting said first and second fixed contacts,

said bridge contact assembly comprising a movable main contact (11) and a movable arcing contact (12), said movable main and arcing contacts being subjected to separate contact pressure springs (23, 24),

electromagnetic means controlling engagement of said bridge contact assembly with said fixed contacts, said electromagnetic means comprising an electromagnet (16, 17) with an armature (15), and means (14) mechanically connecting said armature to said bridge contact assembly for moving said contact assembly in the same direction as the armature between a closed and an open contact position,

at least one elongated opening spring (18) permanently subjecting said armature to a returning biasing force effective in the opposite direction of the attractive force of the electromagnet, said opening spring being mounted with its longitidinal axis inclined in relation to the direction of



motion of the armature between a first bearing (33), which is fixed, and a second bearing (35) which is displaced together with and in the same direction as the armature, whereby the angle between the longitudinal axis of the spring and the direction of motion of the armature is changed in such a way that said returning force of the opening spring decreases upon attraction of said armature.

4,496,921

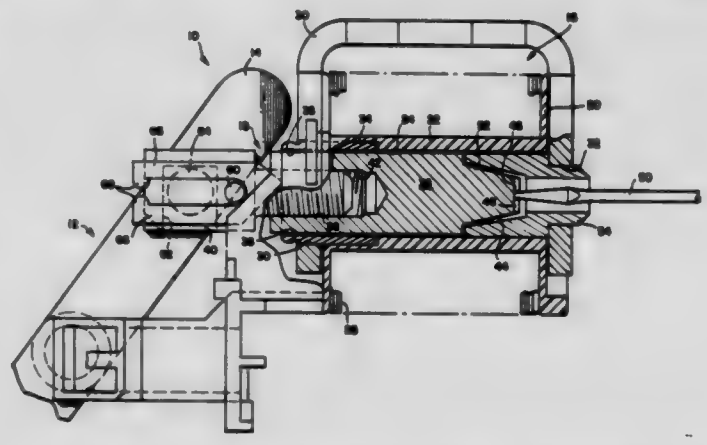
ELECTROMAGNETIC ACTUATOR HAVING ADJUSTABLE PLUNGER

Jacinto P. Carrera, Chestnut Hill, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jul. 15, 1982, Ser. No. 398,760

Int. Cl.³ H01F *7/08*

U.S. Cl. 335—258 **11 Claims**



1. An adjustable electromagnetic actuator operable to control the displacement of a movable workpiece member, said actuator comprising:

a coil assembly including means defining a bore extending at least partially therethrough and having a given axis, and an energizeable field coil at least partially surrounding said bore;

an armature assembly including a plunger disposed in said bore and being movable along said given axis in response to energization of said field coil, said armature assembly including an output assembly which is adapted to be connected to said workpiece member;

means operatively associated with one of said output assembly or said plunger for restraining rotational movement of said one with respect to the other; and,

means connecting said output assembly to said plunger for allowing said plunger and said output assembly to move

conjointly along the given axis and for allowing relative rotation therebetween when said one cooperates with said restraining means and the other of said plunger or said output assembly is rotated such that they are displaced in relationship to each other along the given axis to thereby allow stroke regulation of said armature assembly said restraining means includes a pair of spaced-apart trapping members connected at one end portion to said coil assembly, and said output assembly includes means for engaging said trapping members, whereby said output assembly cannot rotate such that said output assembly is non-rotational during stroke regulation and also is maintained in a preselected angular orientation for facilitating assembly thereof to said workpiece member.

4,496,922

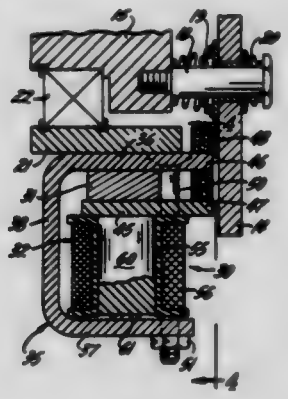
ELECTROMAGNETICALLY RELEASED COUPLING

James A. Pardee, Janesville, Wis., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed Dec. 5, 1983, Ser. No. 557,872

Int. Cl.³ H01F *7/08*

U.S. Cl. 335—281 **8 Claims**



1. An electromagnetic coupling comprising a pair of pole pieces spaced from one another and having pole faces, an armature rotatable relative to said pole pieces and mounted to move axially into and out of frictional engagement with said pole faces, a magnetized permanent magnet located between said pole pieces and polarized to create permanent magnet flux which threads through said magnet in one direction in a working path out of one of said pole faces, through said armature and into the other of said pole faces to attract said armature into engagement with said pole faces, and an annular winding adapted to be selectively energized by a voltage source, said electromagnetic coupling being characterized in that said winding is located between said pole pieces and has a central axis extending substantially perpendicular to said pole pieces, a core made of magnetic material and extending along said axis and through the center of said winding, said core being separated from said permanent magnet by an area of high reluctance and coacting with said pole pieces and said permanent magnet to create a path for winding flux which threads out of said core and into one of said pole pieces, through said permanent magnet and into the other of said pole pieces and then back to said core, said winding being polarized so as to cause said winding flux to flow through said permanent magnet in the same direction as said permanent magnet flux so as to shunt the latter flux from said working path and enable release of said armature from said pole faces when said winding is energized.

4,496,923

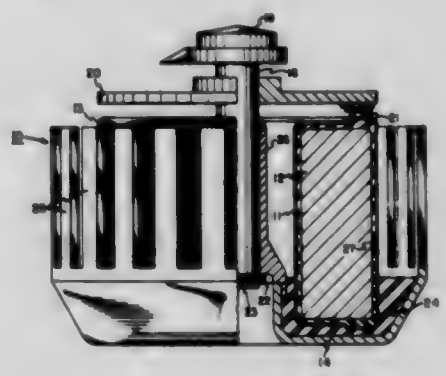
ELECTRICAL DEVICE WITH IMPROVED HEAT DISSIPATION

Richard S. Lenzing, Farmington, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed Sep. 13, 1982, Ser. No. 417,027

Int. Cl.³ H01F *27/02*

U.S. Cl. 336—59 **2 Claims**



1. In an electrical device of the type having a contact brush in electrical engagement with, and relatively movable with respect to, a coil wound upon a magnetic core and mounted upon a base, the coil being separated from the base by an electrical insulator, and in which the movement of the brush varies the output of the device, the improvement comprising:

(a) employing for the electrical insulator a castable insulating material of relatively high thermal conductivity, so that heat from a hotter portion of the coil may be readily transferred to a cooler portion of the coil and to the base;

(b) employing for the base a relatively deep trough, the outer wall of which axially surrounds the coil and extends laterally over at least a portion of the coil, so that the coil may be placed therein in noncontacting relationship thereto and the castable insulating material may be placed therein, which material will fill at least the space between the coil and the base and will cement the coil to the base; and

(c) the base further including an extended surface area comprising a plurality of fingers extending from the periphery of the base and spaced so as to allow air to circulate therebetween such that heat transferred from the coil to the base may be readily transferred to the surrounding air.

4,496,924

PULSE TRANSFORMER HAVING CONDUCTIVE SHIELD AROUND MAGNETIC CORE MATERIAL

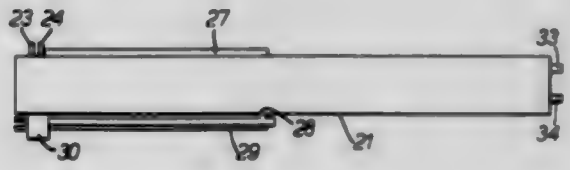
Robert Richardson, Chelmsford, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Jul. 27, 1982, Ser. No. 402,344

Claims priority, application United Kingdom, Aug. 8, 1981, 8124320

Int. Cl.³ H01F *15/04*

U.S. Cl. 336—84 R **10 Claims**



1. A transformer, comprising: a core material shaped to constitute a closed magnetic loop; a transformer primary winding and a secondary winding arranged in use to magnetically couple with said core material; and electrically conductive shielding means arranged to surround said core material for shielding it from electric fields associated with the windings, and the shielding means having an electrical discontinuity so that it does not itself constitute a transformer winding; and wherein the core material is loosely mounted within the shield-

ing means to minimize mechanical stress imposed upon the core material; and wherein the primary winding includes a central conductor which is encircled by the core material, and a plurality of studs arranged on a circle lying outside of said secondary winding, at least a major portion of the primary current flowing through said studs.

4,496,925

STEPPED IRON CORE FOR STATIC OR DYNAMIC ELECTRIC MACHINES

Hugo W. Geschka, Düsseldorf, Fed. Rep. of Germany, assignor to E. Blum GmbH & Co., Valhingen, Fed. Rep. of Germany

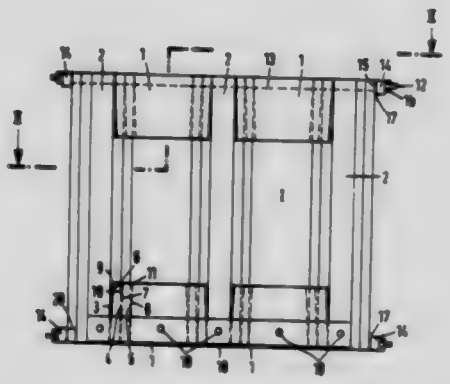
Continuation of Ser. No. 091,403, Nov. 6, 1979, abandoned. This application Sep. 17, 1982, Ser. No. 419,395

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1978, 2848388

Int. Cl.³ H01F *17/06, 27/26*

U.S. Cl. 336—178

16 Claims



1. A stepped iron core for a static or dynamic electric machine, such as a transformer, comprising yokes and legs each including stacks of coherent sheet metal laminations and each such stack constituting a portion of a discrete step of the core, the yoke stacks and the leg stacks of each of said steps forming abutment joints and the joints of neighboring steps being staggered with reference to one another, each of said steps providing longer and shorter paths for magnetic force lines; a plurality of clamping means, at least one for each of said steps, for holding together the yoke and leg stacks of the respective steps, each of said clamping means comprising a clamping part and a clamping element disposed between an outer contour of a stack in the respective step and the associated clamping part; and means for achieving a varying magnetic reluctance between the stacks which form said joints so that said longer paths for magnetic force lines extend through the respective joints in the lower magnetic reluctance regions thereof.

4,496,926

MOLDED COIL STRUCTURE

Hirofumi Kubo, and Toshiyuki Fujimori, both of Niigata, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

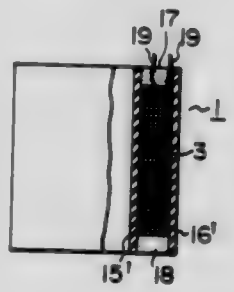
Filed Apr. 20, 1982, Ser. No. 370,143

Claims priority, application Japan, Jan. 21, 1981, 56-6399

Int. Cl.³ H01F *27/30*

U.S. Cl. 336—205

5 Claims



1. A molded coil structure comprising a coil formed by winding a conductor, a sheet of electrical insulator material respectively wrapped in layers around an inner and an outer periphery of said coil, said layers of insulating material being impregnated with a resin, end-enclosing resin layers covering only end faces of said coil not covered with said layers of insulating material, and a gas charged in an internal space of said coil and sealed therein such that a pressure of the gas is maintained substantially at an atmospheric pressure and the gas uniformly fills the internal space of the coil.

4,496,927

MULTILAYER COIL

Norikatsu Inoue, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

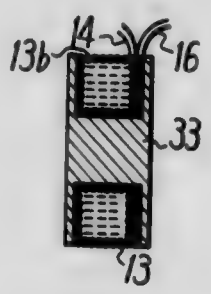
Filed Jul. 27, 1982, Ser. No. 402,359

Claims priority, application Japan, Sep. 22, 1981, 56-150010

Int. Cl.³ H01F *27/30*

U.S. Cl. 336—208

8 Claims



1. A multilayer coil comprising:

a conductor having first and second lead wires and formed as a coil winding including a plurality of layers providing said coil winding with a substantial thickness with an outer peripheral wall of said coil winding being defined by an outermost one of said layers, and said first and second lead wires both being integrally formed with and extending from said outermost layer of said peripheral wal such that neither of said first and second lead wires crosses over any of said layers so that each of said layers lies substantially flat.

4,496,928

TEMPERATURE RESPONSIVE SWITCH

Walter Hollweck, Nuremberg, Fed. Rep. of Germany, assignor to Thermostat- und Schaltgerätebau GmbH & Co. KG, Bad Kissingen, Fed. Rep. of Germany

Filed May 25, 1983, Ser. No. 498,901

Claims priority, application Fed. Rep. of Germany, May 25, 1982, 3219517

Int. Cl.³ H01H *61/08, 37/52*

U.S. Cl. 337—94

14 Claims

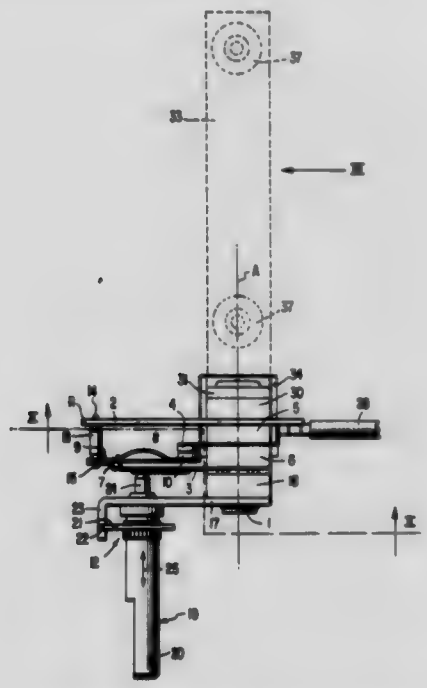
1. A temperature responsive regulator switch for controlling the heat of an electric heating device, comprising:

(a) movable and stationary electric contacts cooperating with one another for assuming open and closed positions;

(b) bimetal means operatively coupled to said movable contact for moving said movable contact into said open position when said bimetal means attains a predetermined temperature; said bimetal means being heated by electric current passing therethrough solely in said closed position;

(c) heat conducting means having a first part adapted to be directly exposed to the heat of the device controlled by the temperature responsive regulator switch and a second part being in a heat-conducting connection with said

bimetal means for heating said bimetal means by the heat generated by the device; and



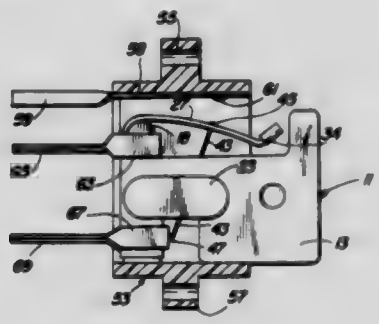
(d) an electric insulating element of Al_2O_3 separating said bimetal means from said heat conducting means.

4,496,929

LOW CURRENT INDICATING FUSE

Angelo Urani, St. Louis, Mo., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Apr. 11, 1983, Ser. No. 483,908
Int. Cl.³ H01H *85/30, 85/16*
U.S. Cl. 337—265 **5 Claims**



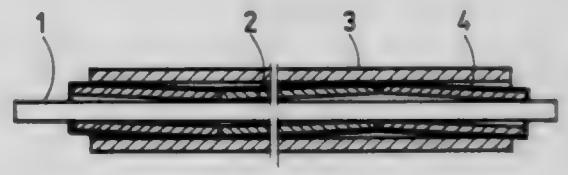
1. An indicating fuse assembly comprising:
a fuse holder;
a first holder terminal secured in said fuse holder;
a fuse carrier mounted in said fuse holder, said fuse carrier having a body member formed of insulating material;
said fuse carrier body including first and second projecting ears;
said first projecting ear having a rounded shoulder formed at the end thereof;
an alarm actuating elongated flexible spring contact, a first end of said spring contact mounted on said first projecting ear;
an indicator mounted on the free end of said spring contact;
a slot formed in said spring contact adjacent said first end thereof to reduce the return spring force exerted by said spring contact when flexed, said slot in said spring contact being generally rectangular in shape;
a first terminal clip secured in said fuse holder to electrically connect with said flexible spring contact the electrical connection between said flexible spring contact and said first terminal clip being made through a resilient generally U-shaped conducting terminal secured to said first projecting ear;
a fixed contact terminal mounted on said second projecting ear and spaced from said spring contact;
a second terminal clip secured in said fuse holder to electrically connect with said fixed contact terminal;
a fusible link extending from said flexible spring contact to said fixed contact terminal to hold said spring contact in a flexed position and providing a conducting path from said fixed contact terminal to said spring contact, the fusing of said fuse link releasing said spring contact to engage said first holder terminal to actuate an alarm and position said indicator for visual observation;
said spring contact passing over said rounded shoulder formed on said first projecting ear to thereby minimize breaking of said spring contact in the event that it is forceably bent over said shoulder; and
said flexible spring contact and said conducting terminal being integrally formed.

4,496,930

IN-LINE FIRE DETECTOR OF A FIRE PROTECTION AND ALARM SYSTEM

Maria Krecisz; Witold Kotlewski, and Krzysztof Bebenkowski, all of Warsaw, Poland, assignors to Politechnika Warszawska, Warsaw, Poland

Filed May 31, 1983, Ser. No. 499,347
Claims priority, application Poland, Aug. 13, 1982, 237897
Int. Cl.³ H01B *7/00, 17/34;* G01M *3/16*
U.S. Cl. 338—26 **1 Claim**



1. In a fire detector for a fire protection and alarm system, consisting of an outside cylindrical electrode having the form of a protective tube, an inside cylindrical electrode having the form of a cylindrical rod disposed coaxially within said outside electrode, with an electric insulator therebetween, the improvements being characterized in that said insulator comprises short segments of a ceramic pipe disposed end-to-end in the space between the inside electrode and the outside electrode said inside electrode together with said electric insulator segments coated with a thin salt-based layer and disposed in the interior of said outside electrode so that between said electric insulator segments and the internal wall of the outside electrode along the length of the detector an air space is formed, and the electric insulator segments each providing a point-type contact between the internal wall of said outside electrode and the thin salt-based layer.

4,496,931

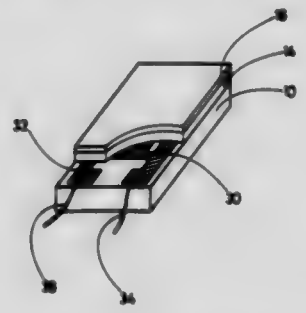
MOISTURE PERMEABLE ELECTRODE IN A MOISTURE SENSOR

Masanori Watanabe, Tenri; Hisatoshi Furubayashi, Yamatokoriyama; Junichi Tanaka, Tenri, and Masaya Hijikigawa, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 16, 1984, Ser. No. 590,343
Claims priority, application Japan, Mar. 23, 1983, 58-49150
Int. Cl.³ H01L *7/00;* H01G *5/20*
U.S. Cl. 338—34 **7 Claims**

1. A thin-film moisture sensor comprising:
a substrate;
a bottom electrode metal layer formed on said substrate;

a moisture sensitive polymer film formed on said bottom electrode layer; and



a moisture permeable indium (In) thin-film formed on said moisture sensitive polymer film.

4,496,932

CURRENT DIVIDER FOR CURRENT MEASUREMENT IN CONJUNCTION WITH A MEASUREMENT TRANSDUCER

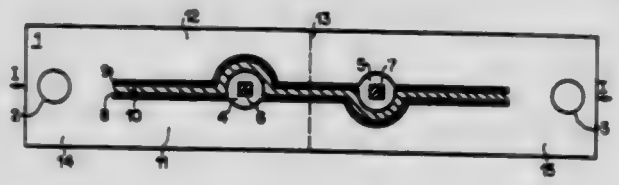
Mathis Halder, Baar, Switzerland, assignor to Lgz Landis & Gyr Zug Ag, Zug, Switzerland

Filed Apr. 16, 1984, Ser. No. 600,521

Claims priority, application Switzerland, Apr. 25, 1983, 2197/83

Int. Cl.³ H01F *40/06*; G01R *15/02*

U.S. Cl. 338—49 **10 Claims**



1. A current divider, for use in connection with a measurement transducer, and wherein the measurement transducer includes a magnetic core,

comprising in combination

a substantially flat and longitudinal current conductor having at least two longitudinal slits, thereby partitioning the flat conductor into at least a measurement conductor and at least two shunts connected in parallel with the measurement conductor, said shunts defining a plane,

said measurement conductor being disposed in said plane and between said shunts,

said flat conductor having two openings along the longitudinal direction, said openings being adapted to receive said magnetic core, one slit communicating with one opening, the other slit communicating with the other opening.

4,496,933

COOLED RESISTOR PACK FOR BRUSH WITH INDIVIDUALLY INSULATED STRANDS

Donald G. Martin, Penn Township, Allegheny County, and Donald M. York, Gibsonia, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 27, 1984, Ser. No. 584,173

Int. Cl.³ H01C *1/82*

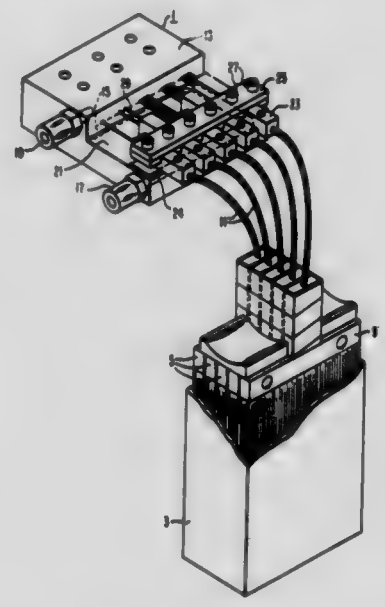
U.S. Cl. 338—55 **8 Claims**

1. The combination of a cooled resistor pack and brushes having a plurality of multi-strand segments insulated from each other, said combination comprising:

a conductive block having ducts cooperatively associated therewith to remove heat therefrom;

a plurality of connectors mechanically fastened to said block and electrically insulated therefrom;

wires having high resistivity electrically connecting said conductors to said block; and



a highly conductive lead electrically connecting each of the brush segments to a separate connector.

4,496,934

ENCODING AND DECODING SYSTEMS FOR BINARY DATA

Teruo Furukawa, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

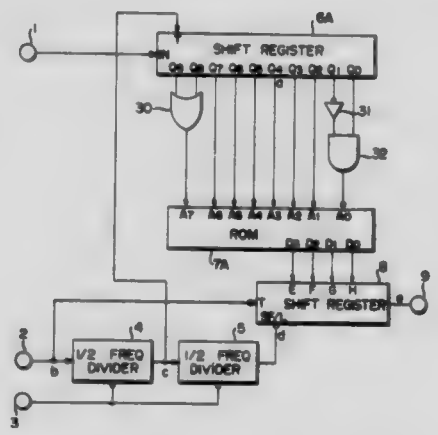
PCT No. PCT/JP81/00218, § 371 Date Feb. 11, 1982, § 102(e) Date Feb. 11, 1982, PCT Pub. No. WO82/00905, PCT Pub. Date Mar. 18, 1982

PCT Filed Sep. 4, 1981, Ser. No. 355,559

Claims priority, application Japan, Sep. 5, 1980, 55-124459; Sep. 5, 1980, 55-124460

Int. Cl.³ H03K *13/24*

U.S. Cl. 340—347 DD **7 Claims**



1. A binary data encoding system comprising:

a data input for receiving serial binary data to be encoded;

a clock input for receiving a digital clock signal;

a reset signal input for receiving a reset signal;

a serial to parallel shift register having a data input connected to said binary input and having eight outputs which are designated Q_0–Q_7;

a read only memory having eight inputs which are designated A_0–A_7 and which are aperatively respectively connected to said eight outputs of said serial to parallel shift register and having four outputs which are designated D_0–D_3, wherein said read only memory has the following characteristics:

Input Address								Output Pattern			
A_0	A_1	A_2	A_3	A_4	A_5	A_6	A_7	D_0	D_1	D_2	D_3
1	1	1	1				1	1	0	0	0
0	0	1	1					1	0	0	0
		0	1					0	0	1	0
0	0	1	0	0	0			0	1	0	0
0	1	1	0	0	0			0	1	0	0
1	1	1	0	0	0			0	1	0	0
0	0	1	0	1	0	0	0	0	1	0	0
0	1	1	0	1	0	0	0	0	1	0	0
1	1	1	0	1	0	0	0	0	1	0	0
1	1	1	0			Z		1	0	0	1
0	0	1	0			Z		1	0	0	1
0	1	1	0			Z		0	0	0	1
1	0	1	0			R		0	0	0	1
0	0	0	0					0	1	0	0
0	1	0	0					0	1	0	0
1	1	0	0					0	1	0	0
Addresses Except for the Foregoing								0	0	0	0

wherein

Z: all addresses A_4 to A_7 satisfying the inequalities:
"A_4A_5"≠"00" and "$A_4A_5A_6A_7$"≠"1000"

R: all addresses A_4 to A_7 satisfying the inequality:
"$A_4A_5A_6A_7$"≠"1000"

and portions with the diagonal lines can have any value;

a parallel to serial shift register having four inputs which are designated E–H and which are respectively operatively connected to said four outputs of said read only memory and having an output comprising an output of said binary data encoding system and having a shift clock input operatively connected to said clock input;

a first frequency divider having its input connected to said clock input and having its output connected to a shift clock input of said serial to parallel shift register and having a reset input connected to said reset input, said first frequency divider dividing the frequency of said digital clock signal by a factor of two;

a second frequency divider whose input is operatively connected to said output of said first frequency divider and whose output is connected to a shift/latch input of said parallel to serial shift register and having a reset input operatively connected to said reset input of said system, said second frequency divider dividing the frequency of a signal input thereto by a factor of two.

4,496,935

ANALOG-DIGITAL CONVERTER WITH LINEAR CHARACTERISTIC RESTORATION CIRCUIT

Michihiro Inoue, Ikoma; Akira Matsuzawa, Katano, and Toyoki Takemoto, Yawata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

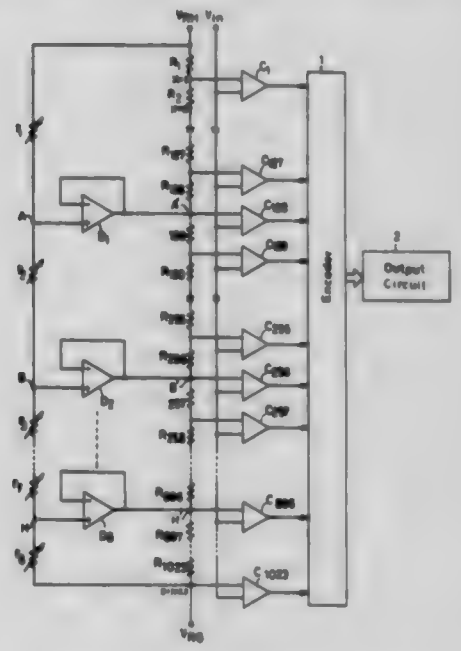
Filed Apr. 15, 1982, Ser. No. 368,814
Claims priority, application Japan, Feb. 12, 1982, 57-21434
Int. Cl.³ H03K *13/175*
U.S. Cl. 340—347 AD **5 Claims**

1. In a parallel type analog-digital converter having a plural number of comparators, a first voltage divider comprising a plural number of resistors connected in series across voltage feeding terminals thereby to feed divided voltages as reference voltages from junction points between the resistors to said comparators, said converter further comprising:

a second voltage divider comprising a plural number of resistors connected in series across said voltage feeding terminals for feeding divided voltages from junction points between the resistors, each junction point of said second voltage divider corresponding to selected ones of the junction points of said first voltage divider so that the corresponding junction points of the first voltage divider divide the first voltage divider into equal parts,

said second voltage divider being connected in parallel with said first voltage divider,

current amplifiers for feeding compensation currents to said selected ones of the junction points of said first voltage divider thereby to equalize voltages of said junction points



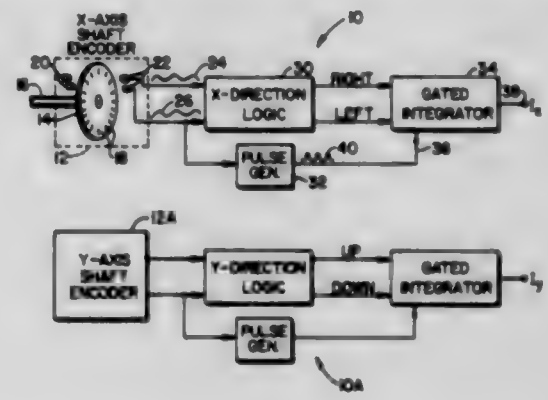
of said first voltage divider with the voltages of corresponding junction points of said second voltage divider.

4,496,936

DIGITAL-ANALOG CONVERSION FOR SHAFT ENCODERS

Dan H. Kramer, Sunnyvale, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

Filed Jun. 4, 1982, Ser. No. 385,134
Int. Cl.³ H03K *13/00*
U.S. Cl. 340—347 P **13 Claims**



1. In a system including a shaft rotatable about a longitudinal axis in a first and a second direction and a shaft encoder coupled thereto, apparatus for converting a pair of signals produced by the shaft encoder to an analog signal that is indicative of the direction and a rate of rotation of the shaft, each one of the signals comprising a stream of pulses, the pulses of a one of the pair of the signals being shifted in phase relative to the pulses of the other of the pair of signals to indicate direction of rotation, the apparatus comprising:

comparing means adapted to receive said signals and being responsive thereto for providing a binary signal indicative of the direction of rotation;

pulse means adapted to receive the one of the pair of signals for providing therefrom a pulse train comprising a plurality of digital pulses of a fixed pulse width, one digital pulse corresponding to each of the pulses contained in the one signal; and

circuit means responsive to the binary signal and the digital pulse train for integrating the pulse train in response to the first direction of rotation of the shaft and for inverting and integrating the inverted form of the pulse train in response to a second direction of rotation of the shaft, the circuit

means including means for forming the analog signal from the integration of the pulse train.

4,496,937

SAMPLED SIGNAL GENERATION CIRCUIT

Kazuo Kitagawa, Kawasaki; Kenjiro Endoh, and Hideshi Kira, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

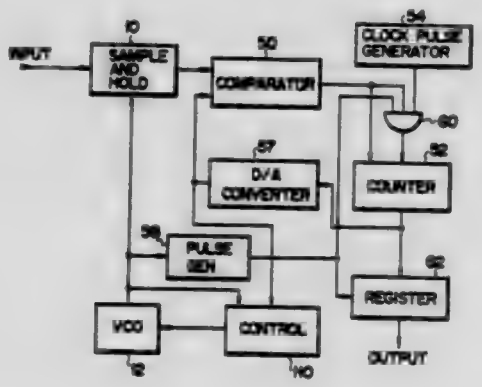
Division of Ser. No. 273,401, Jun. 15, 1981, abandoned. This application Apr. 20, 1983, Ser. No. 485,135

Claims priority, application Japan, Jun. 20, 1980, 55-83830; Jun. 20, 1980, 55-83831; Nov. 20, 1980, 55-163912; Nov. 20, 1980, 55-163916

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 SH

4 Claims



1. An analog-digital converting circuit comprising:

signal generating means for producing an output signal with a frequency variable according to a control signal;

samping means for sampling an analog input signal in response to the output signal from said signal generating means;

analog-digital converting means for converting analog data sampled by said sampling means into a digital signal;

local digital-analog converting means for converting an output signal from said analog-digital converting means into an analog signal; and

control means for detecting the gradient of an output signal from said local digital-analog converting means and supplying to said signal generating means an output signal corresponding to said gradient as said control signal, thereby controlling said signal generating means to increase or decrease the frequency of the output signal from said signal generating means according as said gradient becomes larger or smaller.

4,496,938

DROWSINESS ALARM SYSTEM FOR A VEHICLE

Yasutoshi Seko, Yokohama; Takayuki Yanagishima, and Masami Inoue, both of Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Dec. 1, 1981, Ser. No. 326,392

Claims priority, application Japan, Jun. 13, 1979, 54-74189

Int. Cl.³ G02B *21/00*

U.S. Cl. 340—576

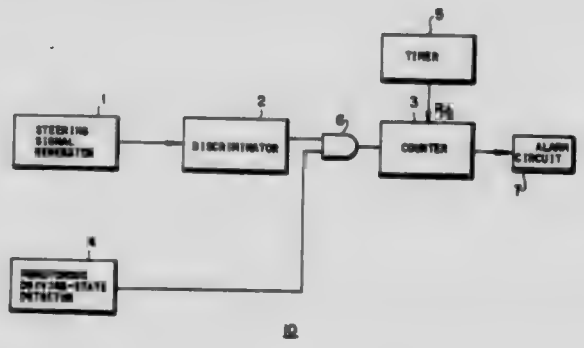
10 Claims

1. A drowsiness alarm system for a vehicle having an alarm circuit which produces an alarm for a driver in response to a pulse signal inputted thereto, comprising:

(a) a steering signal generator which outputs a steering signal having a voltage level representative of an angular position of a steering wheel with respect to an equilibrium point thereof;

(b) a monotonous driving-state detector which detects and signals that the vehicle is traveling in a monotonous driving state;

(c) a discriminator, connected to said steering signal generator, for comparing the voltage level of the steering signal fed from said steering signal generator with a first predetermined reference voltage level (V_{1REF}), and with a second predetermined reference voltage level (V_{2REF}), and for outputting a pulse signal when the voltage level of the steering signal exceeds the second predetermined reference voltage level within a first predetermined period of time from the time when the steering voltage level exceeds the first predetermined reference voltage level; and



(d) an alarm pulse output circuit responsive to the output pulse signal from said discriminator and the detection signal from said monotonous driving-state detector, which provides an alarm pulse to the alarm circuit when the number of pulse signals fed from said discriminator exceeds a predetermined number within a second predetermined period of time.

4,496,939

POWER INDICATOR APPARATUS FOR A DC TO DC FLYBACK CONVERTER

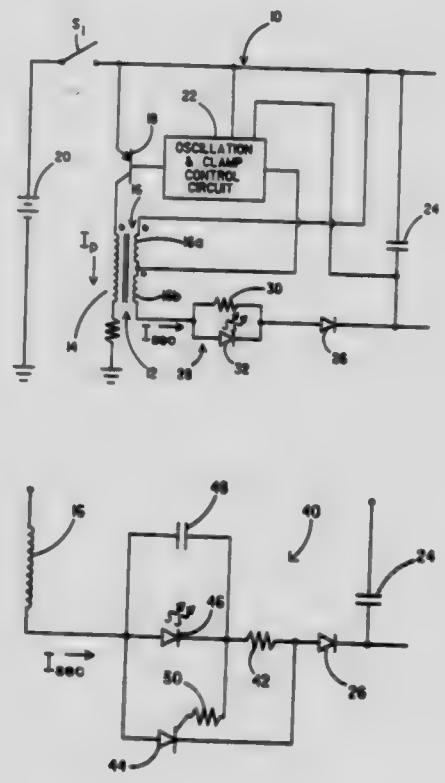
Gregory O. Moberg, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 4, 1982, Ser. No. 384,858

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—636

13 Claims



1. In a battery power indicator apparatus for a DC to DC flyback converter having an input energizable by a battery and an output connectable for supplying to a load an amount of energy that is functionally related to the power-delivery capability of the battery, the improvement comprising:

current-sensitive means connected in parallel with voltage-sensitive indicator means, the combination of said current-

sensitive means and said indicator means being serially connected between the output of the converter and its load for passage of a pulsed output current from the DC to DC converter to the load during an energy transfer phase of the converter, said current-sensitive means being adapted to produce a control voltage that is functionally related to the output current and that causes said indicator means (1) to indicate acceptable battery power for operating the DC to DC converter when the amplitude of the output current is above a preselected level, and (2) to indicate unacceptable battery power when the amplitude of the current is below the preselected level.

5. Power indicator apparatus for DC to DC flyback converter arranged to be energized by a storage battery, the converter including a transformer having a primary winding through which current supplied by the battery flows and a secondary winding, said power indicator apparatus comprising:

an illumination source and a resistor connected in series to the secondary winding of the transformer, said illumination source having a first condition for indicating an acceptable power capability of the battery and a second condition for indicating a nonacceptable power capability of the battery, and

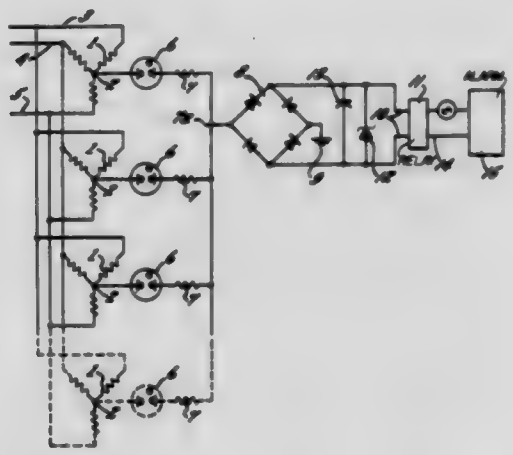
a semiconductor element having a primary current conducting path connected in parallel with the series connection of said illumination source and said resistor, said semiconductor element being in a conductive state when the peak current in the secondary winding is above a preselected threshold and being in a nonconductive state when the peak current in the secondary winding is below said preselected threshold, said semiconductor element in its conductive state placing said illumination source in its first condition and, in its non-conductive state, placing said illumination source in its second condition.

4,496,940

SENSING AND INDICATOR SYSTEM FOR DETECTING HEATING ELEMENT FAILURES

Conrad Christel, Jr., Dryden, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Jan. 15, 1982, Ser. No. 339,686
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—640 **9 Claims**



1. A sensing device for detecting failure induced imbalance in one of a plurality of normally balanced circuits of load resistance elements connected to center nodes in three phase balanced Y circuits comprising, in combination:

a plurality of sensing circuits connected to a common node;

each sensing circuit being connected to the corresponding center node of one of said balanced Y circuits for sensing the voltage rise at said corresponding center node due to failure induced imbalance, each sensing circuit including a device for allowing a current flow through the sensing circuit responsive to a voltage rise at the corresponding center node only when a predetermined breakdown voltage is reached, each said device further serving as a means for isolating the corresponding center node from the center nodes of the other of said plurality of balanced Y circuits and preventing averaging of the voltage rise when an imbalance occurs at a center node, each said sensing circuit also including current limiting means; and

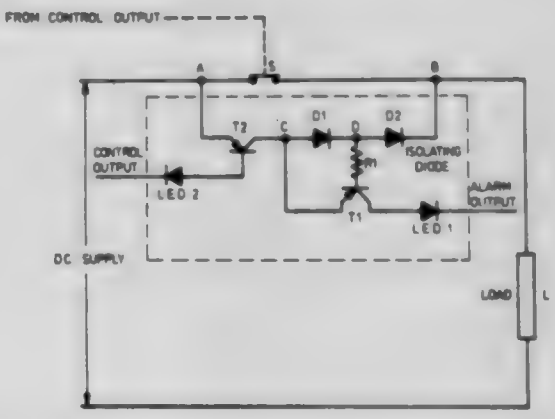
voltage limiting means including a circuit connected to said common node for limiting the voltage at said common node to below said predetermined breakdown voltage upon a failure induced imbalance and current flow through one of said sensing circuits.

4,496,941

SWITCH PROTECTION DEVICE

Stuart C. Clatworthy, Bedfordshire, England, assignor to Restbury Limited, Bedfordshire, England

Filed Jan. 7, 1982, Ser. No. 337,719
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—644 **7 Claims**



1. A supply circuit for supplying current to a load, comprising a load current cut-off switch which is connected in series with the load and which is responsive to a control output to switch from a normally conducting condition in which it conducts load current to the load to a non-conducting condition in which it cuts off load current to the load and a load current protection circuit having a load current path in parallel with the cut-off switch for maintaining a supply of load current to the load in the event that the cut-off switch fails in its non-conducting condition, the protection circuit comprising auxiliary switch means operative simultaneously with the cut-off switch in response to the control output to switch from a conducting condition permitting load current to flow in the load current path of the protection circuit to a non-conducting condition in which it cuts off load current through the load current path of the protection circuit, a switching diode so connected in the load current path of the protection circuit and so biased that with the auxiliary switch means in its conducting condition the switching diode cuts off load current through the load current path of the protection circuit when the cut-off switch is conducting load current and conducts load current through the load current path of the protection circuit when the cut-off switch fails to conduct load current, and an alarm circuit responsive to conduction of load current through the load current path of the protection circuit to generate an alarm signal indicating switch failure.

4,496,942

METHOD AND APPARATUS FOR DOOR OPERATION REMOTE CONTROL

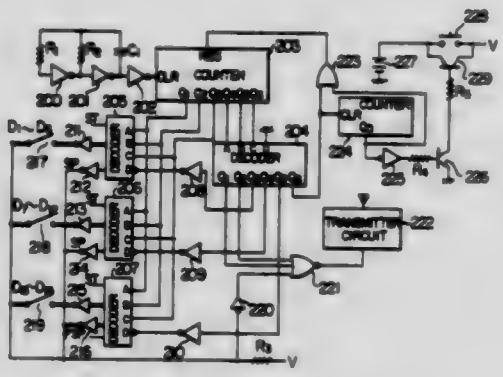
Shigeru Matsuoka, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 5, 1982, Ser. No. 355,106
Claims priority, application Japan, Mar. 10, 1981, 56-33078
Int. Cl.³ H04B *7/00*; E05F *15/10*; G05D *3/08*
U.S. Cl. 340—696 **12 Claims**

1. Apparatus for door operation remote control comprising:

a radio transmitter for transmitting a door operation com-

mand signal, said radio transmitter including operation switch means for generating a door operation command, transmitter means responsive to the operation of said operation switch means for transmitting said door operation command signal repeatedly as a succession of signals and transmission of the door operation command signal transmission stopping means for stopping a given transmitting operation of said transmitter means at the termination of a predetermined period of time from operation of said operation switch means so as to limit the number of signal



transmissions of said door operation command signal to a predetermined number;

a radio receiver for receiving the door operation command signal from said radio transmitter;

control means responsive to the door operation command signal received by said receiver to generate a door operation control signal; and

door operation drive means responsive to the door operation control signal from said control means to drive the operation of a door.

4,496,943

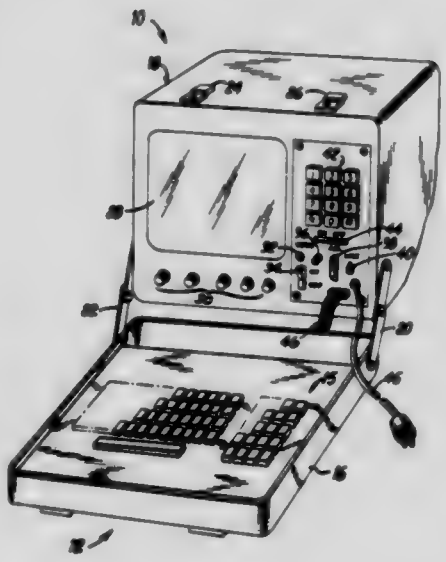
PORTABLE INFORMATION DISPLAY

Richard W. Greenblatt, Passaic Park, N.J., assignor to Portable Terminal Corp., Passaic Park, N.J.

Filed Nov. 18, 1982, Ser. No. 442,544

Int. Cl.[3] G09G *1/00*

U.S. Cl. 340—711 4 Claims



1. A self contained, lightweight, portable information display unit, without software and disc drive means, for providing communication only with a remote computer, employing known bisynchronous or synchronous, SNA, SDLC data communication protocol, over a voice grade telephone line, consisting only of;

a housing having two compartments connected by hinge means for pivoting said compartments to relative open and closed positions and including hand carrying means secured to a top portion of one of said compartments and being of a size and configuration for single-handed portability via said hand carrying means;

data communication converter means arranged within one of said housing compartments for converting signals only into a data protocol of the remote computer;

cathode ray tube display means arranged within said one of said housing compartments with the screen thereof arranged for displaying information when said compartments are in the open position and being electrically connected to said converter;

a manual keyboard arranged within the other of said housing compartments and electrically connected to said converter for providing input signals thereto, said keyboard facing said cathode ray tube display means when said compartments are in the closed position and positioned for use by an operator when said compartments are in the open position;

a modem arranged within said one of said housing compartments for modulating/demoduating signals fed to and from the remote computer;

a modular phone line connector mounted on said one of said housing compartments and connecting said modem and providing an external connection between said modem and telephone lines for sending signals to and receiving signals from the remote computer;

power supply means arranged within said one of said housing compartments and electrically connected to said display means and said converter and with an external source of power for providing predetermined levels of power to said display means and to said converter means;

said manual keyboard comprising a manual typewriter portion and a standard numerical keypad portion; and

a ventilating fan is arranged in said housing and connected to said power supply for providing air circulation within the interior of said housing.

4,496,944

GRAPHICS DISPLAY SYSTEM AND METHOD INCLUDING ASSOCIATIVE ADDRESSING

Arthur J. Collmeyer, Saratoga; Jeffrey H. Hoel, Sunnyvale; Paul F. King, LaJolla; Donald O. Stanley, San Jose, and Roger Sturgeon, Santa Cruz, all of Calif., assignors to Calma Company, Sunnyvale, Calif.

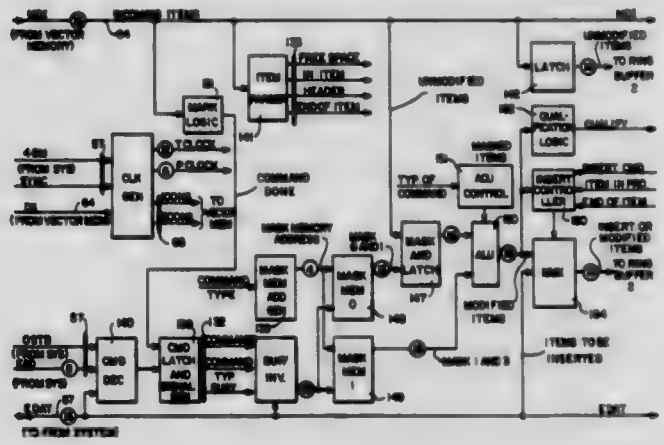
Division of Ser. No. 125,843, Feb. 29, 1980, abandoned. This application Sep. 13, 1982, Ser. No. 417,637

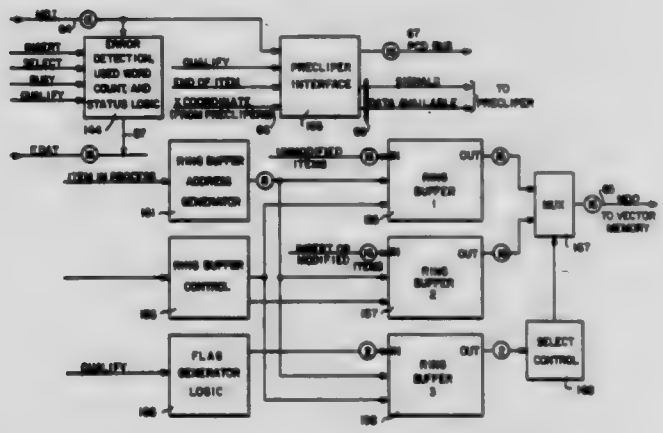
Int. Cl.[3] G09G *1/00*

U.S. Cl. 340—723 19 Claims

1. In a graphics display system having vector memory means for storing vector data representing one or more graphics images to be displayed, a memory update circuit comprising means for inserting said vector data into said vector memory means wherein said vector data represents one or more polygons and the representation of each polygon includes header information specifying the format of said representation and the properties of said polygons, means for modifying said

vector data within said vector memory means, means for retrieving said vector data from said vector memory means, and





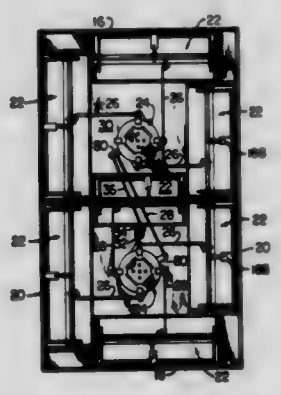
control means for associatively addressing specified ones of said polygons according to a specified set of said properties.

4,496,945

METHOD AND APPARATUS FOR SYMBOL DISPLAY DEVICE

Robert C. Stadjuhar, and Cecil S. Renfro, both of Colorado Springs, Colo., assignors to Skyline Products, Inc., Colorado Springs, Colo.

Filed Jun. 3, 1982, Ser. No. 384,196
Int. Cl.³ G09G 3/16
U.S. Cl. 340—764 **30 Claims**



12. A multiple shutter display unit adapted to display a symbol in segment format wherein different ones of said segments define different symbols, comprising;

a housing structure including a front panel having a plurality of openings defining an array of symbol segments, a rear wall and surrounding sidewall;

a support structure mounted in said housing structure;

a plurality of shutter assemblies mounted in said housing adjacent each opening, there being one shutter assembly for each said opening, each said shutter assembly having a first movable shutter panel adapted to selectively mask and unmask said opening whereby said opening is in a display mode when unmasked and in a no display mode when masked and a control rod for moving said first panel between the display and no display modes;

drive apparatus mounted on said support structure and including a rotatable drive disc reciprocally movable between first and second rotational positions;

a plurality of movable drive members each connected to a respective control rod and movably mounted in said housing;

selectively actuable engagement means mounted on said drive disc and movable in common rotation therewith for engaging selected ones of said drive members during reciprocal movement of said drive disc whereby selected ones of said first shutter panels are moved into and out of the display and no display modes; and

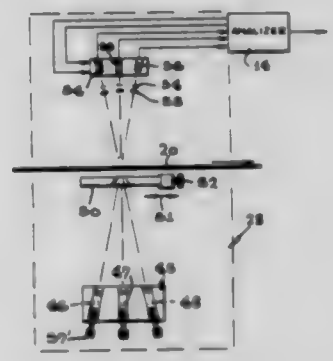
drive means connected to said drive disc for reciprocally rotating said drive disc upon command.

4,496,946

PROGRAMMABLE ELECTRONIC DISPLAY

Eugene R. Pera, San Francisco, Calif., assignor to Peratron Corporation, New York, N.Y.

Filed Sep. 28, 1982, Ser. No. 424,870
Int. Cl.³ G09G 3/22
U.S. Cl. 340—796 **4 Claims**



1. An electronic display system, comprising:

a color display panel with relatively large horizontal and vertical dimensions forming a large display area, said panel including a plurality of discrete sections of color illuminating means arranged in rows and columns, each said section including illuminating means for a plurality of colors;

an image signal source comprising means for feeding a film strip carrying a series of color images to be displayed on said display panel, a plurality of light source means for illuminating said film strip in a corresponding plurality of different colors, each of said differently colored light sources being directed through a common aperture onto said film strip, a plurality of photosensing means each responsive to a color generated by a corresponding light source, each of said photosensing means comprising a line of photosensors equal in number to the number of sections in one column on said display panel, each photosensor in a line being responsive to the same color, said plurality of photosensing means generating input signals representing the light from said light sources as modified by a portion of one of said film strip color images exposed to said light;

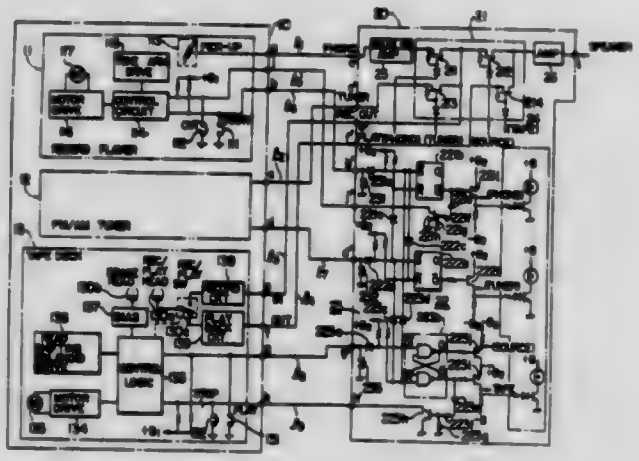
means for scanning said input signals, and control means for applying the input signals to selected ones of said illuminating means sections, whereby said film strip images are duplicated on said display panel.

4,496,947

FUNCTION SWITCHING SYSTEM FOR AN AUDIO/VIDEO APPARATUS

Fujio Nakashima, Aichi; Takashi Enoki, and Kazuto Nakashima, both of Toyokawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 14, 1982, Ser. No. 368,045
Claims priority, application Japan, Apr. 20, 1981, 56-58535
Int. Cl.[3] H04Q *3/00*
U.S. Cl. 340—825.24 7 Claims



1. A function switching system comprising:

(a) control means including a selection circuit for selecting a signal from a plurality of signal sources and a control circuit therefore connected to said selection circuit;

(b) an external unit separately arranged from said control means for supplying a signal to said control means to serve as at least one of said signal sources;

(c) circuit means for coupling said external unit to said control means;

(d) a first switching circuit arranged in said external unit for supplying a control signal to start the operation of said external unit to said external unit and said control circuit of said control means; and

(e) a second switching circuit arranged in said control means for supplying a control signal to activate said control circuit of said control means to said control circuit and said external unit;

whereby said external unit starts the operation by the control signal of either one of said first switching circuit or said second switching circuit and said selection circuit selects the signal from the signal source of said external unit.

4,496,948

SYSTEM FOR INITIATING THE OPERATION OF AN ELECTRONICALLY-OPERATED DEVICE

Ken Ishizuka, 685 Laval Blvd. - Apt. 105, Laval, Canada (H7M 5C7)

Filed May 26, 1982, Ser. No. 382,125
Int. Cl.[3] E05B *49/00*; H04Q *3/00*
U.S. Cl. 340—825.31 7 Claims

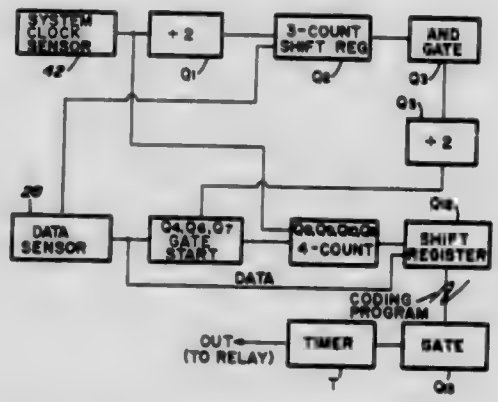
1. A system for initiating the operation of an electronically-operated device, comprising:

(a) a key unit having a code pattern mounted on a circle around the center thereof;

(b) a first rotating sensor eccentrically mounted with respect to to the center of the key unit and adapted to scan the code pattern on the key unit and generate a first output signal which is representative of the code appearing on the key unit;

(c) a second sensor adapted to detect the rotational speed of the first rotating sensor and to generate a second output signal which is representative of the rotational speed of the first rotating sensor;

(d) a signal-processing circuit responsive to said first and second output signals for generating a control signal which is independent of the rotational speed of the rotating sensor; and



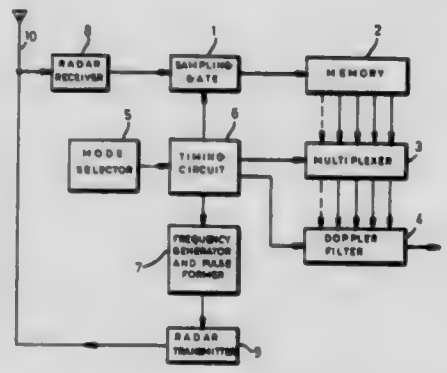
(e) an electrically-operated device responsive to said control signal to perform a given function when a valid code is generated.

4,496,949

MTI RADAR ADAPTABLE TO DIFFERENT ENVIRONMENTAL CONDITIONS

Giuliano Bettini, Rome; Luigi Penso, Latina, and Giuseppe Rodriguez, Rome, all of Italy, assignors to Selenia, Industrie Elettroniche Associate, S.p.A., Rome, Italy

Filed Jul. 8, 1981, Ser. No. 281,479
Claims priority, application Italy, Jul. 16, 1980, 49251 A/80
Int. Cl.[3] G01S *13/52*
U.S. Cl. 343—7.7 4 Claims



1. In a radar having antenna means for the emission of outgoing pulses of different carrier frequencies on a radar beam of predetermined effective width and for the reception of echoes thereof reflected by outlying targets during a range sweep initiated by any outgoing pulse, frequency-generating and pulse-forming means provided with a timer operable to randomly select any one of a predetermined number of available carrier frequencies for emission at any sweep, transmitting means inserted between said pulse-forming means and said antenna means, receiving means connected to said antenna means, and gating means controlled by the timer for sampling incoming echoes,

the combination therewith of:

memory means connected to said gating means for storing samples of echoes incoming during each sweep for n consecutive sweeps at locations whose relationship with the carrier frequencies of the respective echoes is memorized by said timer, the number j of available carrier frequencies being less than the number n of outgoing pulses accommodated within the width of the radar beam whereby at least some carrier frequencies randomly recur during any scan of a target, with no carrier frequency occurring more than $m<n$ times during n successive sweeps, said frequency-generating means maintaining phase coherence of each carrier frequency for at least said n sweeps;

multiplexer means connected to said memory means and

controlled by said timer for concurrently reading out, in the course of each sweep, up to m correlated samples of echoes of identical carrier frequency stored during n preceding sweeps; and

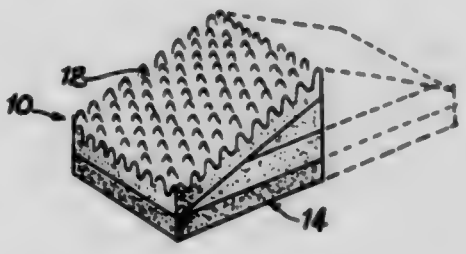
m-weight Doppler-filter means connected to said multiplexer means for evaluating the correlated samples concurrently read out from said memory means to distinguish moving targets from clutter.

4,496,950

ENHANCED WIDE ANGLE PERFORMANCE MICROWAVE ABSORBER

Leland H. Hemming, P.O. Box W, Santee, Calif. 92071, and Gabriel A. Sanchez, 12636 Metate Ln., Poway, Calif. 92064

Filed Jul. 16, 1982, Ser. No. 399,155
Int. Cl.³ H01Q *17/00*
U.S. Cl. 343—18 A **7 Claims**



1. An enhanced wide angle performance microwave absorber element comprising:

(a) a generally wedge-shaped body having a back surface, and a generally plane-defining front surface striking an acute angle with said back surface to define a thick end and a thin end of said generally wedge-shaped body;

(b) said front surface defining a plurality of impedance matching projections projecting forwardly generally orthogonally from the plane defined by said front surface; and

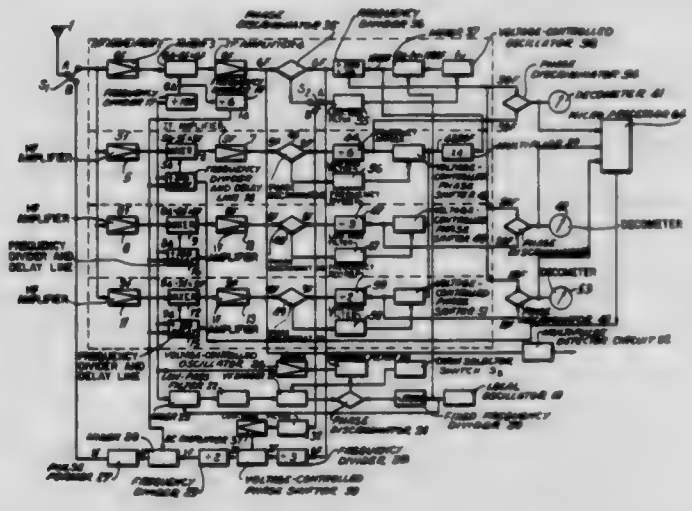
(c) said body being of greater microwave impedance adjacent said back surface than at said front surface.

4,496,951

HYPERBOLIC NAVIGATION RECEIVER

Kazuo Tsukada, Kakogawa; Yoshiharu Kanzaki, Sagamihara, and Yoshikazu Hori, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 31, 1981, Ser. No. 336,327
Claims priority, application Japan, Jan. 17, 1981, 56-5667
Int. Cl.³ G01S *1/30*
U.S. Cl. 343—394 **5 Claims**



1. A hyperbolic navigation receiver, comprising

master receiving means corresponding to a master station and a plurality of slave receiving means corresponding to a plurality of slave stations, each of said master and slave receiving means having

receiving means for receiving and distinguishing incoming signals from said master and slave stations, and

a tracking loop filter having an output and including

first generating means for generating a multifrequency signal corresponding to a frequency of said receiving means, said first generating means having an input and an output and providing at said output an output signal which is the output signal of said tracking loop filter, the first gnerating means of said master receiving means comprising a first voltage-controlled oscillator and the first generating means of each of said slave receiving means comprising a first voltage-controlled phase shifter electrically connected to the output of said tracking loop filter of said master receiving means,

first dividing means electrically connected to said first generating means for dividing an output signal of said first generating means to the frequency of an incoming signal from said receiving means, said first dividing means producing an output signal, and

first phase discriminating means electrically connected to said first dividing means for phase discriminating the output signal of said first dividing means from said incoming signal of said receiving means, said first phase discriminating means having an output connected to the input of said of said first generating means and producing at said output an output signal according to which said multifrequency signal is controlled,

second phase discriminating means electrically connected to said first generating means of said tracking loop filter for phase discriminating the output signal of said tracking loop filter of said master receiving means from each of the output signals of said tracking loop filters of said slave receiving means, said second phase discriminating means having an output and producing at said output an output signal for microprocessing, and

second generating means for generating a local multifrequency signal, said second generating means being self-oscillating and each of said receiving means of said slave receiving means further including second dividing means electrically connected to said second generating means for dividing said local multifrequency signal in accordance with the incoming frequency of a received signal from said master and slave stations, said second dividing means producing an output signal, and

first mixing means electrically connected to said second generating means and said second dividing means for mixing said received signal with the output signal of said second dividing means for converting to an intermediate frequency signal.

4,496,952

TRAP VERTICAL ANTENNA WITH PARALLEL L-C CIRCUITS FOR BROADBANDING

Donald R. Newcomb, Box 356E, Rte. 2, San Marcos, Tex. 78666

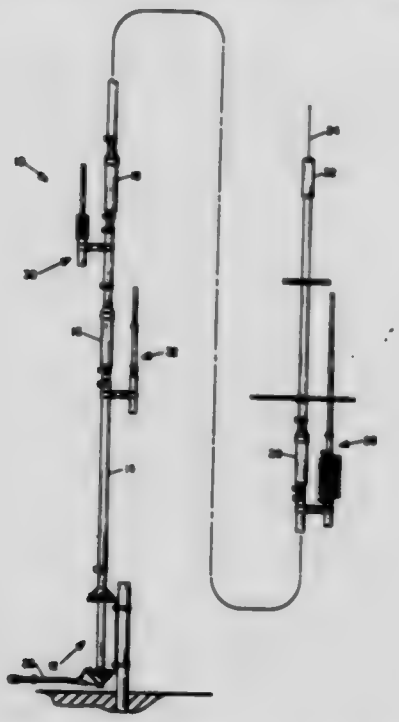
Filed Sep. 20, 1982, Ser. No. 420,481
Int. Cl.³ H01Q *9/00, 5/00*
U.S. Cl. 343—722 **6 Claims**

1. Antenna comprising:

a. vertical antenna for 80, 40, 20, 15 and 10 meters including an electrically conducting member and including traps in series for 20, 15, and 10 meters; and,

b. inductor-capacitor tube-coil means positioned below each of said traps, each of said inductor-capacitor tube-coil means including first outer cylindrical tube, an inner tubular insulator telescoped therein, and a second inner cylindrical tube telescoped therein, and a coil connected between said outer and inner cylindrical tubes about said tubular insulator, means for adjusting L-C ratio, and clamp means for clamping between a lower portion of

each of said traps and a lower portion of each of said outer cylindrical tubular member whereby said tubular induc-



tor-capacitor tube-coil means provides for addition of frequencies to said vertical antenna.

4,496,953

BROADBAND VERTICAL DIPOLE ANTENNA

Raleigh J. Spinks, Jr., Marion; Richard C. Edwards, and Joseph J. Dahm, both of Cedar Rapids, all of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 26, 1982, Ser. No. 401,474
Int. Cl.[3] H01Q *9/16*
U.S. Cl. 343—792 5 Claims



1. An antenna system for providing mounting independent operation comprising:

an antenna section including a first electrical conductor extending along an axis and forming a radiating element for radiating radio frequency energy over a selected band of frequencies, and a second electrical conductor forming a radiating element and constructed as an electrically conductive tubular member defining a counterpoise ground plane for said first electrical conductor, said second electrical conductor being coaxial to said axis and said first and second electrical conductors each having one end coupled to one another such that said first and second electrical conductors are supported in a collinear configuration;

a transmission line having first and second ends and a characteristic impedance of substantially 50 ohms;

an antenna coupler forming an impedance matching network electrically coupled to said first end of said transmission line and to said one end of said first and second electrical conductors to impedance match said antenna section at a nominal 50 ohms;

a plurality of ferrite cores disposed within said conductive tubular member and surrounding said transmission line, said ferrite cores being spaced from one another along the length of said transmission line within said conductive tubular member;

a mounting base; and

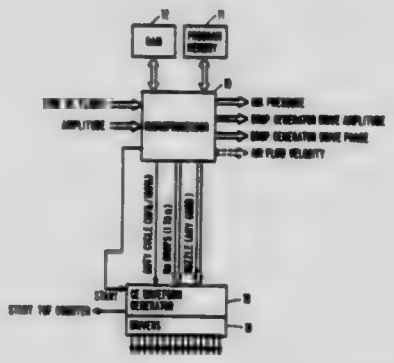
means for coupling said conductive tubular means to said mounting base to support said antenna section with respect to said mounting base, said transmission line extending through said means for coupling such that said second end of said transmission line extends to said mounting base, said means for coupling further including a choke coupled between said mounting base and said antenna section to choke electromagnetic energy induced in said transmission line from said mounting structure and antenna section.

4,496,954

RESERVO INTERVAL DETERMINATION IN AN INK JET SYSTEM

John W. Irwin, Georgetown, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1982, Ser. No. 450,416
Int. Cl.[3] G01D *15/18*
U.S. Cl. 346—1.1 3 Claims



1. A method for improving the efficiency of operation of an ink jet printing system comprising the steps of:

adjusting initially the operating parameters of the system prior to operation;

determining, while the system is operating, the optimal time period between system parameter readjustments;

readjusting the operating parameters of the system in accordance with the determined time period; and

repeating the determining and readjusting steps during system use.

4,496,955

APPARATUS FOR THERMAL PRINTING

Sadao Maeyama, Urayasu; Kiyotaka Dochi, and Shigemichi Honda, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

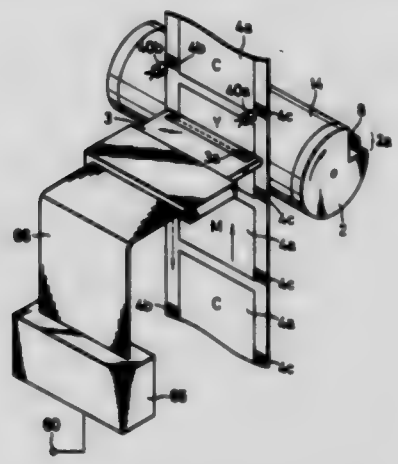
Filed Jun. 2, 1982, Ser. No. 384,284
Claims priority, application Japan, Jun. 5, 1981, 56-85686
Int. Cl.[3] G01D *15/10*
U.S. Cl. 346—76 PH 13 Claims

1. In thermal print apparatus for printing images on a print medium, the combination comprising:

a rotatable platen for receiving and rotating a print medium therewith;

thermal print means adjacent said platen and selectively energizable to cause images to be printed on said print medium, said thermal print means having a dimension sufficient to cause a strip of images to be printed in substantially a single energizing operation;

a movable web of thermally transferable material having a run interposed between said platen and said thermal print means, said web having first index marks thereon indicating the boundaries between adjacent frames, and second index marks thereon indicating the beginning of a sequence of frames of respectively different colors of thermally transferable material arranged in repeated sequence;



transport means for moving said web in accord with said index marks;

input means for supplying energizing signals to said thermal print means representative of the image to be printed; and

means for rotating said platen at a predetermined rate.

4,496,956

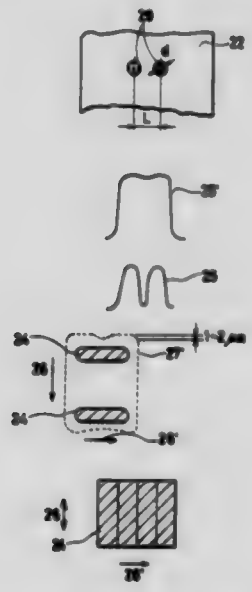
APERTURE MASK FOR IMAGE SCANNING AND RECORDING SYSTEM

Ikuo Mitsuka, Osaka, Japan, assignor to Dainippon Screen Manufacturing Co., Ltd., Kyoto, Japan

Filed Jul. 19, 1982, Ser. No. 399,526

Int. Cl.³ G01D *9/42*

U.S. Cl. 346—108 **7 Claims**



1. In an image scanning and recording system having a recording section comprising laser source means for providing a laser beam, modulating means for modulating the laser beam in a manner corresponding to an image signal produced by scanning of an original in an original scanning section, collimating means for collimating the modulated laser beam on a photographic recording medium for scanning, in a primary scanning direction and in a secondary scanning direction, said recording medium with the laser beam, the improvement wherein said collimating means comprises: an aperture mask positioned between said modulating means and a focusing means; said aperture mask having a pair of apertures in alignment with the optical path of the laser beam; and said apertures being of identical size and shape and disposed in parallel to said secondary scanning direction of said recording medium, at a predetermined distance between the centers of the apertures, and the apertures being of such size and shape to thereby produce sharply defined edges in the imaged pattern of the laser beam on the recording medium in the secondary scanning direction when scanning is conducted, with the edge unevenness in the image produced being about 1–2 μm as compared to edge unevenness of about 20 μm produced in the absence of said aperture mask.

4,496,957

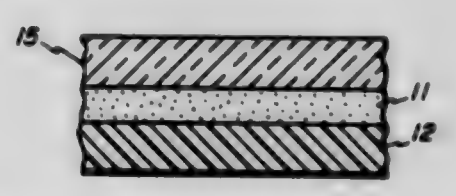
OPTICAL DISK

Thomas W. Smith, Penfield, N.Y.; David Cheng, Palo Alto, Calif., and Anthony T. Ward, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 2, 1979, Ser. No. 54,204

Int. Cl.³ G01D *15/34*

U.S. Cl. 346—135.1 **5 Claims**



1. An optical recording member for optically recording and retrieving of information thereon comprising:

a substrate having coated thereon a thin layer of a colloidal dispersion of minute particles of a metal or its oxide in a polymer binder, said metal being a transition metal element of the Periodic Chart except those of Group IIIB of said Chart, said minute particles being about 20 to 150 angstroms in size, said thin layer being ablatable to form micron sized information containing marks thereon,

a protective layer on said thin layer, said protective layer being substantially transparent to writing and reading optical radiation for said optical recording member.

4,496,958

DRAWING PEN EXCHANGER FOR COMPUTER CONTROLLED DRAWING MACHINES

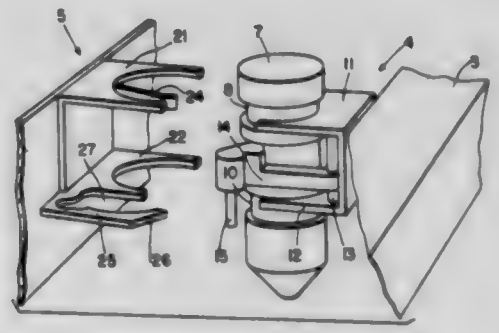
Joachim Brandt, Hamburg; Gerhard Deblitz, Quickborn; Jürgen Post, Stelle; Bernd Willimczik, Wedel; Rolf Marten, Hamburg; Rolf Paschen, Elmshorn, and Gerold Anderka, Ellerbek, all of Fed. Rep. of Germany, assignors to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

Filed Nov. 16, 1982, Ser. No. 442,064

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1981, 3145904

Int. Cl.³ G01D *15/00*

U.S. Cl. 346—139 R **6 Claims**



1. In a drawing pen exchanging device of the type wherein a first holding element is adapted vertically to hold a drawing pen in a first receptacle which is part of a movable drawing head and a second pressure element is adapted vertically to hold a drawing pen in a second receptacle which comprises a

guide and is part of a stationary pen holder on a drawing pen magazine, the improvement wherein the first holding element (14) yieldably urges a pen located in said first receptacle (7) against a stationary receiving zone (11, 12) and further comprises a pin (15) which extends vertically and below said stationary receiving zone and is operable to engage with a horizontally disposed surface of said guide (25) as the drawing head is moved along a linear movement path, substantially perpendicular to the longitudinal axis of a drawing pen held in either receptacle and proximate to the magazine.

4,496,959

COUPLING FOR THE LEAKAGE-FREE CONNECTION OF FLUID-FILLED PIPES AND CONTAINERS

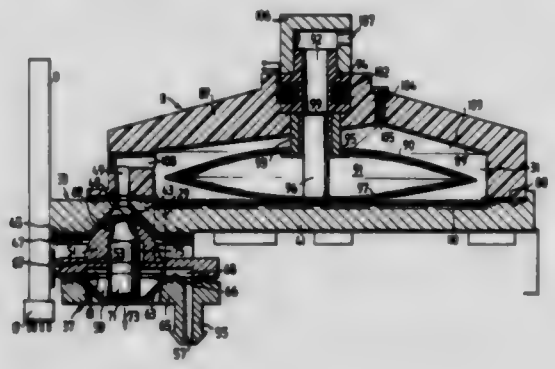
Klaus-Dieter Frerichs, Schortens, Fed. Rep. of Germany, assignor to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

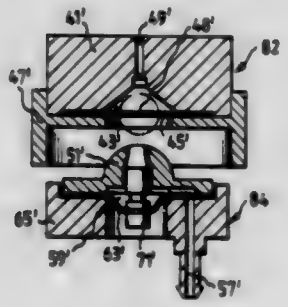
Filed Sep. 14, 1982, Ser. No. 417,897

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1981, 3137969

Int. Cl.³ G01D *15/18*; F16L *37/28*

U.S. Cl. 346—140 R **6 Claims**





1. A fluid coupler for making a leakage-free connection between first and second fluid-containing members, the assembled coupler having a longitudinal axis, comprising:

a first half-coupler, including

a plate having first and second surfaces normal to said longitudinal axis, said first surface having an axial conical opening therein with the wider portion of said conical opening in the plane of said first surface, the narrower portion of said conical opening being connected to the second surface of said plate by an axial fluid passage for connection to said first fluid-containing member;

an elastic sealing membrane having a slit therein, said slit being located along said longitudinal axis; and

a clamping ring clamping said elastic sealing membrane across the conical opening in the first surface of said plate, said clamping ring maintaining said elastic sealing membrane substantially parallel to the first surface of said plate with said slit in the closed position; and

a second half-coupler for mating with said first half-coupler, including

a hemispherical member having a hemispherical surface with an axial aperture therein;

valve means positioned within the axial aperture of said hemispherical member, said hemispherical surface being pressed against said elastic sealing membrane when said first and second half-couplers are engaged thereby opening the slit in said elastic sealing membrane and expelling any air present in the coupling region;

an input channel means for connecting said second half-coupler to said second fluid-containing member; and

resilient means coupling said input channel means to said valve means, said valve means being opened to permit fluid flow through said axial aperture in said hemispherical member when the pressure in said input channel is increased and being closed by said resilient means when said pressure is decreased, said resilient means including an additional membrane interposed under tension between said input channel means and said hemispherical member, the space between said additional membrane and said hemispherical member forming a chamber connected to said second fluid containing member, the position if said valve means being determined by the fluid pressure in said chamber acting on said additional membrane and by the resilient force exerted by said additional membrane,

wherein said valve means includes a conical pin affixed to said additional membrane, and the axial aperture in said hemispherical member has a conical bore tapered toward the opening in said hemispherical surface, said conical pin being pressed toward said opening by said additional membrane.

4,496,960

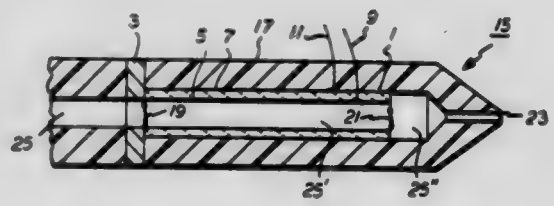
INK JET EJECTOR UTILIZING CHECK VALVES TO PREVENT AIR INGESTION

Kenneth H. Fischbeck, Dallas, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 20, 1982, Ser. No. 420,449

Int. Cl.³ G01D *15/16*

U.S. Cl. 346—140 R **2 Claims**



1. A pressure pulse drop ejector which comprises:

(a) an ejector body,

(b) an ink channel having an exit orifice in said ejector body,

(c) a tubular electromechanical transducer surrounding a portion of said channel and mounted for slidable movement within said ejector body,

(d) a check valve provided at each end of said electromechanical transducer, and

(e) means for holding the end of said electromechanical transducer furthest from said orifice stationary in respect to said orifice.

4,496,961

CHECK PAPER THAT IS PROTECTED AGAINST FORGERY AND TAMPERING

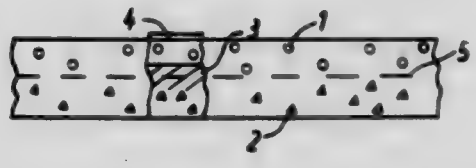
Ludwig Devrient, Vaterstetten, Fed. Rep. of Germany, assignor to GAO Gesellschaft Für Automation Und Organisation mbH., Munich, Fed. Rep. of Germany

Continuation of Ser. No. 217,422, Dec. 17, 1980, abandoned. This application May 10, 1982, Ser. No. 376,681

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951486

Int. Cl.[3] B41M *5/16*

U.S. Cl. 346—206 14 Claims



1. Check paper which is resistant to forgery or tampering and which includes:

(a) crushable micro capsules containing a leuco ink;

(b) a color acceptor for reacting with the leuco ink to cause a color formation or color change;

(c) paper formed during manufacture out of at least two webs;

(d) said crushable micro capsules and said color acceptor being present together only in a region of the interface of the webs.

4,496,962

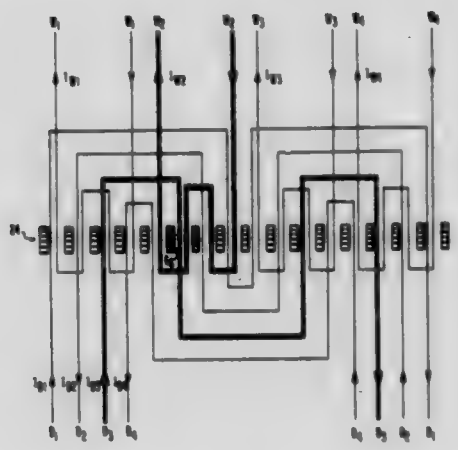
HIGH RESOLUTION MAGNETIC PRINTING HEAD

Joseph A. Lahut, and John A. Popelish, both of Waynesboro, Va., assignors to General Electric Company, Waynesboro, Va.

Filed Dec. 22, 1980, Ser. No. 218,890

Int. Cl.[3] G01D *15/12*

U.S. Cl. 346—74.5 7 Claims



1. A magnetic printing head of the type having a comb-type magnetic recording head assembly extending transversely of the direction of a moving magnetic medium upon which magnetic printing is to be produced by the head, the improvement comprising:

an odd plurality of magnetic combs stacked in the direction of the moving medium and offset relative to each other in the direction transverse to the direction of the moving tape;

and

magnetic field-generating means for creating magnetic fields in opposite transverse directions both in adjacent gaps of individual combs and also in like-ordered gaps of adjacent combs.

4,496,963

SEMICONDUCTOR DEVICE WITH AN ION IMPLANTED STABILIZATION LAYER

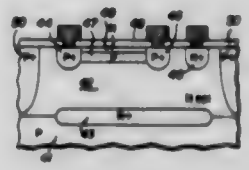
James L. Dunkley, Santa Clara, and Robert C. Dobkin, Atherton, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 716,049, Aug. 20, 1976, abandoned, which is a continuation of Ser. No. 575,418, May 7, 1975, abandoned, which is a continuation of Ser. No. 377,611, Jul. 9, 1973, abandoned. This application Mar. 9, 1979, Ser. No. 19,135

Int. Cl.[3] H01L *29/80*

U.S. Cl. 357—22 6 Claims





1. A planar junction field effect transistor comprising:

a substrate of a first type conductivity,

a first layer of a second type conductivity on said substrate forming a gate region,

a source region of said first type conductivity in said layer at the surface thereof,

a drain region of said first type conductivity in said layer at the surface thereof and separated from said source region,

an ion implanted channel region of said first type conductivity in said layer extending between said source and drain regions,

an insulating layer on the surface of said first layer and overlying said channel region,

an ion implanted stabilization layer of said second type conductivity disposed on top of said channel region at the surface of said first layer and located between said channel region and said insulation layer, said stabilization layer extending between said source region and said drain region and having a dopant concentration higher than the dopant concentration in said channel region and acting to stabilize the channel region and reduce noise in the transistor, and

contact means at the surface of said first layer making electrical contact with said source region, said drain region, and said gate region.

4,496,964

MOSFET LIGHT DETECTING DEVICE HAVING A SCHOTTKY JUNCTION

Natsuro Tsubouchi, and Masahiko Denda, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 18, 1981, Ser. No. 293,794

Claims priority, application Japan, Aug. 19, 1980, 55/114490

Int. Cl.[3] H01L *27/14, 29/48, 29/04, 23/48*

U.S. Cl. 357—30 5 Claims

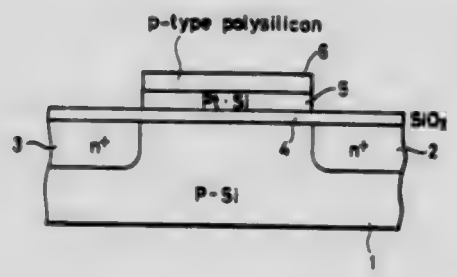
1. A device for detecting incident light, comprising:

a semiconductor substrate of a first conductivity type having a surface region, and having a source region and a drain

region formed therein of a second conductivity type, a light detection current flowing between said source and drain regions in response to incident light absorbed by said device;

an oxidation resistant layer formed on said surface region;

a metallic layer formed on said oxidation resistant layer between said source region and said drain region for absorbing said incident light; and



a polysilicon layer gate electrode formed on said metallic layer and forming a Schottky barrier at the interface between said polysilicon layer and said metallic layer, said absorption of said incident light by said metallic layer causing conduction across said Schottky barrier to control said light detection current.

4,496,965

STACKED INTERDIGITATED LEAD FRAME ASSEMBLY

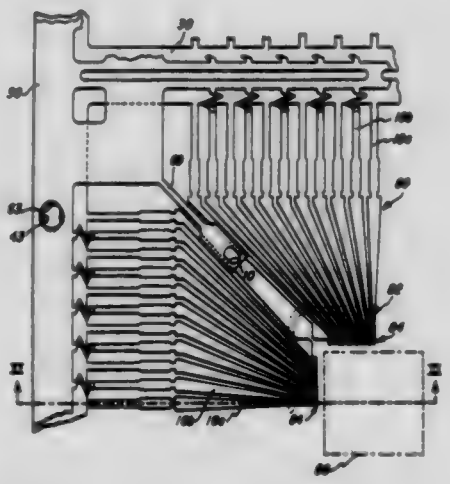
John W. Orcutt, Garland; Angus W. Hightower, Richardson, and Reginald W. Smith, Arlington, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 264,923, May 18, 1981,. This application Jan. 9, 1984, Ser. No. 568,942

Int. Cl.[3] H01L *23/48, 23/02, 39/02*

U.S. Cl. 357—70

2 Claims



1. A lead frame assembly for an integrated circuit device comprising:

a first lead frame having opposed side rails and a first group of leads extending inward from each side rail; and

a second lead frame disposed atop and in contact with the first lead frame, the second lead frame having opposed side rails and a second group of leads extending inward therefrom, wherein each lead in the second group of leads includes a joggled section near its associated side rail and wherein the second group of leads is staggered in relationship to the first group of leads so that the leads of the second group lie between and substantially coplanar with adjacent leads of the first group.

4,496,966

METHOD FOR MIXING TWO COLOR TELEVISION SIGNALS

Michael Hausdörfer, Mühltal, and Heinz Hess, Weiterstadt, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

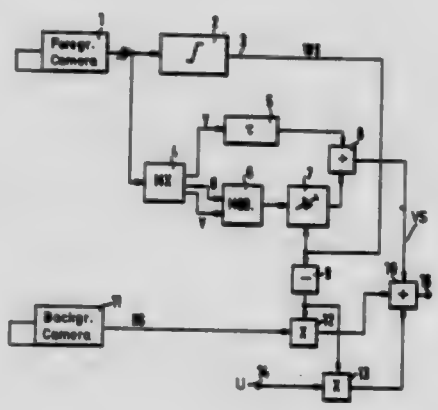
Filed Oct. 29, 1982, Ser. No. 437,888

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1981, 3143653

Int. Cl.[3] H04N *9/535*

U.S. Cl. 358—22

8 Claims



1. Method for mixing two colour television signals comprising a foreground signal sensed by a foreground camera and a background signal, comprising

deriving a switching signal (WS) as a function of the colour of the foreground signal by providing a first switching signal when the colour of the foreground sensed by the foreground camera differs from a selected background colour and a second signal when the colour sensed by the foreground camera is effectively only that of said selected background colour;

desaturating selected portions of the foreground signal while maintaining the luminance component thereof substantially unaltered during occurrence of said second switching signal;

at least partially suppressing portions of the background signal during occurrence of the first switching signal;

and adding the selectively desaturated foreground signal and the partially suppressed background signal.

4,496,967

SAMPLE HOLD CIRCUIT FOR AN IMAGE PICK-UP DEVICE

Masatoshi Sase, Atsugi; Makoto Onga, Fujisawa, and Seisuke Yamanaka, Mitaka, all of Japan, assignors to Sony Corporation, Tokyo, Japan

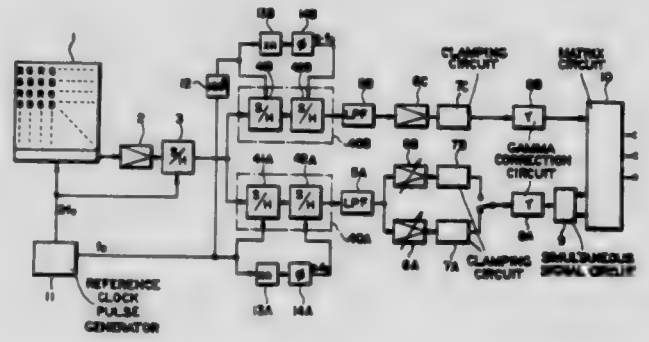
Filed Jul. 27, 1982, Ser. No. 402,357

Claims priority, application Japan, Jul. 28, 1981, 56-117130

Int. Cl.[3] H04N *9/04*

U.S. Cl. 358—44

4 Claims



1. A signal processing apparatus which is used for processing a color signal component in a dot sequential color signal coded by a color filter constructed in an image pick-up means comprising, a first sampling and hold circuit operated by a sam-

pling pulses having a predetermined frequency f_0, a second sampling and hold circuit receiving the output of said first sampling and hold circuit and operated by a sampling pulse at a frequency which is selected to be N times the predetermined frequency (Nf_0) for sampling and holding an output signal of the first sampling and hold circuit, and a first low pass filter receiving the output of said second sampling and hold circuit and having a cut-off frequency for eliminating the sampling noise of said second sampling and hold circuit sufficiently so that said color signal is not attenuated, further comprising a third sampling and hold circuit receiving another color signal and operated by sampling pulses with a sampling frequency of f_0, a fourth sampling and hold circuit receiving the output of said third sampling and hold circuit and with a sampling frequency of Nf_0 and a second low pass filter receiving the output of said fourth sampling and hold circuit and having a cut-off frequency so that the color signal will not be attenuated, wherein N is an integer other than one, including a first phase shifter which shifts the phase of the sampling pulses used in said third and fourth sampling and hold circuits 180 degrees from the phases of the sampling pulses used in said first and second sampling and hold circuits, including a second phase shifter for shifting the sampling pulses supplied to said second sampling and hold circuit to eliminate sampling of noise components, and including a third phase shifter for shifting the sampling pulses supplied to said fourth sampling and hold circuit to eliminate sampling of noise component.

4,496,968

REPRODUCTION OF COLORED IMAGES

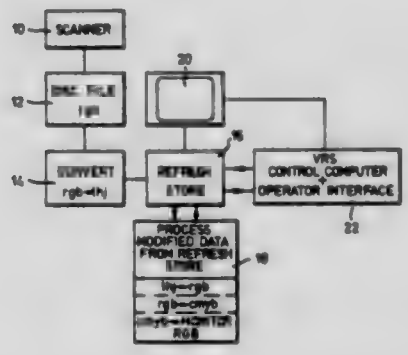
Peter C. Pugsley, Pinner, England, assignor to Crosfield Electronics Limited, London, England

Filed Jul. 13, 1982, Ser. No. 397,701

Claims priority, application United Kingdom, Jul. 14, 1981, 8121659

Int. Cl.³ G03F *3/08*; H04N *1/46*

U.S. Cl. 358—80 **15 Claims**



1. A method of retouching a coloured image in the preparation of printing plates for the reproduction of a coloured original, including deriving electric signals representing colour values of selected successive picture elements of the original and using the said signals, after modification, to control the colours of corresponding picture elements in the reproduction, the method comprising:

identifying signals corresponding to picture elements in a selected area of the original;

deriving a luminance signal from the colour-representing electric signals corresponding to the selected area;

applying the luminance signal as an input to each of a pair of one-dimensional function generators to generate chromaticity signals as predetermined or adjustable functions of the luminance signal;

and preparing the said printing plates for reproducing the coloured original using, for picture elements within the selected area, signals derived from the generated chromaticity signals and the luminance signal in place of the said colour-representing signals originally derived for those picture elements, while using for the reproduction of picture elements in the remaining area signals whose colour values are based on the colour values of the original colour-representing electric signals.

4,496,969

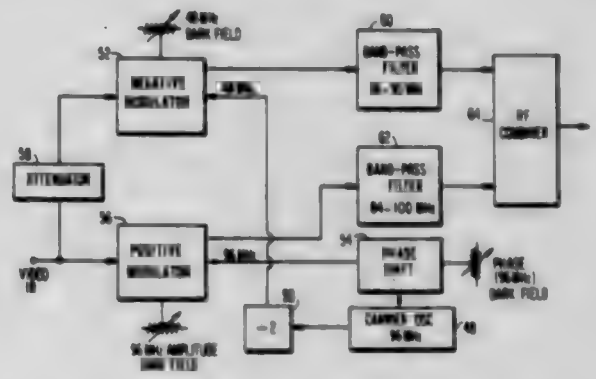
LIGHT VALVE PROJECTION SYSTEM WITH IMPROVED VERTICAL RESOLUTION

Thomas T. True, Camillus, and William E. Good, Liverpool, both of N.Y., assignors to General Electric Company, Portsmouth, Va.

Filed Dec. 22, 1982, Ser. No. 452,188

Int. Cl.³ H04N *9/31*

U.S. Cl. 358—62 **11 Claims**



1. A light valve projection apparatus including electron beam means for scanning a raster of orthogonally related diffraction gratings on a light modulating fluid to diffract incident light into different spectral colors for projection onto a viewing surface, said electron beam means including vertical and horizontal deflection means and modulating means connected to said vertical and horizontal deflection means for controlling the depth of the grooves in said diffraction gratings thereby controlling the diffraction of said incident light into different spatial directions and angular deviations permitting control of the color components, said modulating means comprising:

carrier signal generating means for generating a plurality of carrier signals each having a different frequency, the frequency of each carrier signal being higher than any video signal to be reproduced, to diffract light of a predetermined spectral color,

first modulator means connected to receive at least one of said carrier signals and at least one video signal corresponding to at least one predetermined spectral color for modulating the carrier signal with the video signal and applying the modulated signal to said horizontal deflection means,

second modulator means for receiving a second one of said carrier signals and a second video signal corresponding to a second predetermined spectral color for modulating the carrier signal with the video signal and applying the modulated signal to said vertical deflection means, said second one of said carrier signals including a fundamental signal and a phase controlled harmonic signal and said second modulator means positively modulating said harmonic signal and combining the modulated harmonic signal with said fundamental signal so that the resultant modulated signal applied to said vertical deflection means produces an axis dwell modulation of the charge deposited to form the horizonal grooves of one of said diffraction gratings.

4,496,970

ARRANGEMENT FOR THE AUTOMATIC ADJUSTMENT OF AT LEAST ONE OBJECT

Adelbrecht Schorcht; Dietmar Klingenfeld, both of Jena; Reiner Hesse, Jena-Lobeda; Rainer Dastis, Jena-Lobeda, and Volker Linz, Jena-Lobeda, all of German Democratic Rep., assignors to Jenoptik Jena G.m.b.H., Jena, German Democratic Rep.

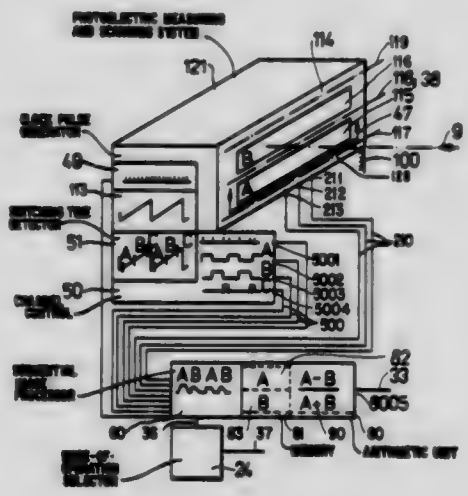
Filed Aug. 14, 1981, Ser. No. 293,038

Claims priority, application German Democratic Rep., Nov. 3, 1980, 224904

Int. Cl.[3] H04N 7/18

U.S. Cl. 358—101

11 Claims



1. In an arrangement for the automatic adjustment of at least one object, in a photoelectric measuring and scanning system wherein the object is provided with adjustment marks having at least one symmetrical axis, the marks being illuminated by a light source and reproduced by optical systems with a common optical axis on the scanning plane of the photoelectric measuring and scanning system, the video signal of the measuring and scanning system being processed electronically, evaluated by an arithmetic unit and converted into control signals for at least one final control element that provides the adjustment; the improvement wherein a first means is provided for activating first and second image segments separated by a stationary axis in the scanning plane of the photoelectric measuring and scanning system, said image segments having substantially the same formation and being assembled opposite to each other on the stationary and optical axis and parallel to the symmetrical axis of the adjustment marks, a second means being provided in the photoelectric measuring and scanning system for enabling periodic scanning vertially of the stationary axis, and a switching time point detector connected to the photoelectric measuring and scanning system for presetting first, second and third switching time points, between which the two image segments are alternately employed for video signal production, a time base clock generator connected to said second means, said switching time point detector being a component of a channel control arrangement, the measuring and scanning system and also the channel control arrangements being connected at their outputs to a sequential video signal processing arrangement, and an arithmetic unit comprising at least one memory operable in two function groups and at least one arithmetic arrangement having an output providing a control signal for rule deviation to said final control element.

4,496,971

DETECTION APPARATUS

Geoffrey A. W. West, London, and Leonard Norton-Wayne, Glenfield, both of England, assignors to National Research Development Corporation, London, England

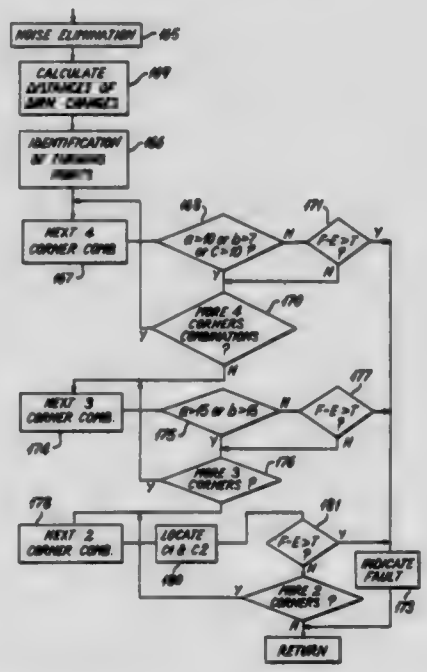
Filed Jul. 16, 1982, Ser. No. 398,880

Claims priority, application United Kingdom, Jul. 22, 1981, 8122618

Int. Cl.[3] H04N 7/18

U.S. Cl. 358—106

14 Claims



1. A method of detecting anomalies in a reproduction of a pattern on a workpiece comprising the operation of irradiating that surface of the workpiece carrying the pattern, scanning the said surface with detection means sensitive to such radiation to derive a video signal representing an array of points on the said surface, the signal having at least two levels relating to respective features of the pattern, deriving a digital value of the signal for each point, comparing each such value with a predetermined threshold value to determine those points which constitute a first feature of the pattern, determining those points which define a boundary of the first feature, determining changes of direction between successive points on the boundary, and using the changes in direction so determined to identify any anomaly in the boundary which has at least one dimension which is comparable to the smallest dimension of the pattern.

4,496,972

METHOD FOR THE REPRESENTATION OF VIDEO IMAGES OR SCENES, IN PARTICULAR AERIAL IMAGES TRANSMITTED AT REDUCED FRAME RATE

K. Reiner Lippmann, and K. Heinrich W. Dörgeloh, both of Brunswick, Fed. Rep. of Germany, assignors to Deutsche Forschungs-und Versuchsanstalt fur Luft-und Raumfahrt e.v., Cologne, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 262,214, May 8, 1981,. This application Nov. 1, 1982, Ser. No. 438,537

Claims priority, application Fed. Rep. of Germany, May 10, 1980, 3018329; Nov. 3, 1981, 3144050

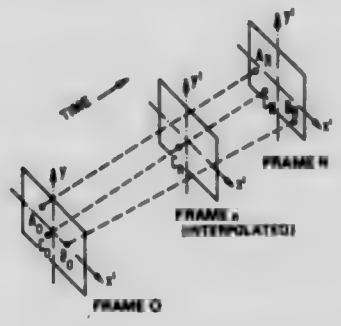
Int. Cl.[3] H04N 7/12, 7/18

U.S. Cl. 358—109

7 Claims

7. An apparatus for the reproduction of video scenes transmitted at reduced frame rates, comprising storage means for alternately storing the transmitted frames, correlation means for detecting the locations of a small number of distinctive corresponding reference points in said stored frames, at least two of said reference points being situated at different locations, means for calculating auxilliary coefficients from the locations of said reference points, means for calculating the vertical and horizontal positions in the stored frames for each

picture element in an intermediate frame to be reconstructed from said reference points, and means for interpolation and/or



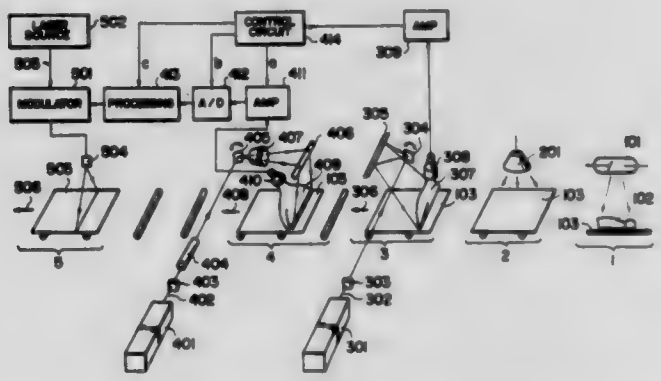
extrapolation of the intensity of each picture element of said intermediate frame.

4,496,973

RADIATION IMAGE READ-OUT METHOD AND APPARATUS

Kazuo Horikawa, and Satoshi Arakawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 24, 1982, Ser. No. 444,096
Claims priority, application Japan, Nov. 25, 1981, 56-188660
Int. Cl.³ H04N *5/32, 5/30*
U.S. Cl. 358—111 **36 Claims**



1. In a radiation image read-out method in which a stimulable phosphor sheet carrying a radiation image stored therein is exposed to stimulating rays which causes the stimulable phosphor sheet to emit light in the pattern of the stored image, and the emitted light is photoelectrically read out,

the radiation image read-out method comprising: uniformly desensitizing the stimulable phosphor sheet, thereafter conducting preliminary read-out by use of stimulating rays having stimulation energy lower than the stimulation energy of stimulating rays used in final readout, and setting the read-out conditions in said final read-out based on the image input information obtained by said preliminary read-out.

4,496,974

CONVERSION OF THE SCANNING LINE COUNT OF TELEVISION PICTURES

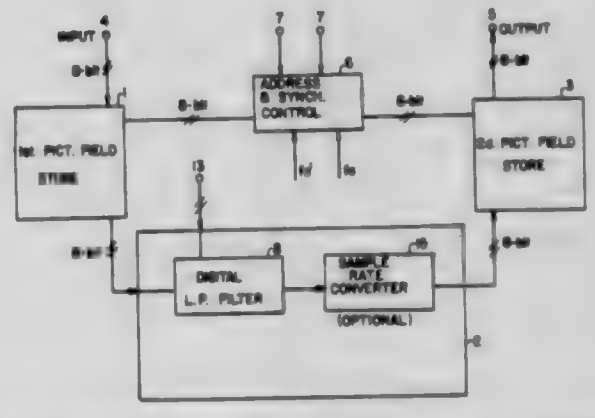
Jürgen Heitmann, Alsbach-Hähnlein, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 30, 1982, Ser. No. 393,775
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1981, 3126635
Int. Cl.³ H04N *5/02*
U.S. Cl. 358—140 **11 Claims**

1. Method of changing the number of lines per television picture for at least a portion of pictures represented by digitalized television signal comprising the steps of:

writing digital television signals of a first picture field of said signals completely into a first picture field store (1) in a first line scan direction;

at the beginning of a second picture field following said first picture field, reading the signals of said first picture field out of said first picture field store in a second line scan direction perpendicular to said first line scan direction;



filtering said signals of said first picture field by passing them through processing means (2) including a low-pass filter;

writing said filtered television signals into a second picture field store in a line scan direction corresponding to said second line scan direction (3), and

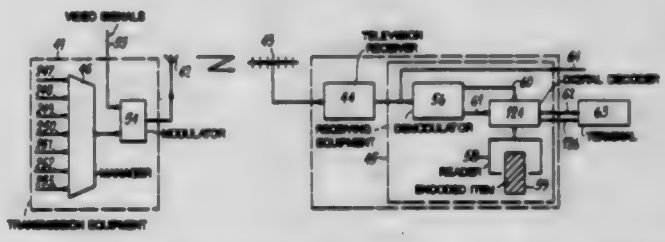
reading the stored television signals out of said second picture field store in a line scan direction perpendicular to that in which said signals were written into said second picture field store and corresponding to said first line scan direction.

4,496,975

ONE-WAY DATA TRANSMISSION SYSTEMS

Maurice Y. Noirel, Montfort, France, assignor to L'Etat Francais, Represente par Le Ministre des P.T.A. (Centre National D'Etudes des Telecommunications), Paris, France

Filed May 10, 1982, Ser. No. 376,790
Claims priority, application France, May 14, 1981, 81 10089
Int. Cl.³ H04N *1/32*; H04J *3/16*
U.S. Cl. 358—147 **2 Claims**



1. A one-way data transmission system wherein a transmitting station transmits packs of digital data, from at least one of several channels, each data pack including a prefix containing synchronism signals and channel identification code signal, a data pack format signal indicating the length of the data sequence following the prefix when the transmitted data are teletext data, the transmitted data have a structure such that they provide possible error corrections and ciphering, the length of the transmitted packs always being a maximum and the format of the byte value being nil, the transmitting station comprising a coupler means associated with each of said channels, each of said coupler means having an input circuit means with an input coupled to receive signals of a channel associated therewith, data memory means coupled to an output of said input circuit means, multiplexing circuit means coupled to an output of said data memory means, control circuit means, common to all of said coupler means, counter means fed at a predetermined rate, means responsive to a full memory for delivering an inhibition control signal to said input circuit

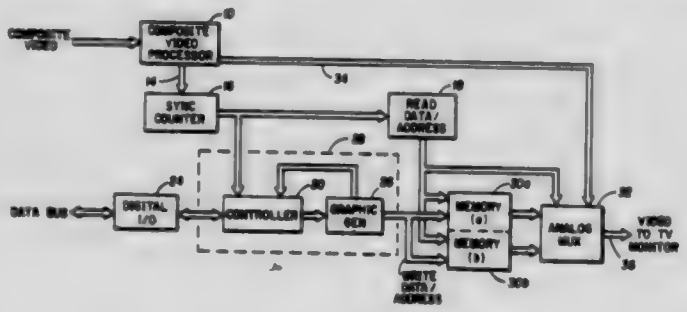
means, means for connecting said data memory means to said multiplexing circuit and then reading out and resetting said counter and thereafter suppressing said inhibition control signal, register means having a settable maximum capacity coupled to said means for delivery said inhibition control signal to deliver said inhibition control signal when the count of said data reaches a predetermined value, small capacity buffer memory means coupled between said data memory means and said input circuit means controlled by a programmed control circuit means for controlling the read out of data from said buffer memory, a wire coupled between each channel equipment and the coupler means associated therewith, said wire being switchable a level "1", or "0", each coupler means further including first switching means for switching off said counter means and buffer memory means, and format byte memory means storing the value "nil", and second switching means for connecting said format byte memory means to said data memory means for each data pack transmission when said wire is at level "1" or "0", said first and second switching means being at rest when said wire is at level "0" or "1".

4,496,976

REDUCED MEMORY GRAPHICS-TO-RASTER SCAN CONVERTER

Ronald L. Swanson, and Lyle R. Strathman, both of Cedar Rapids, Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 27, 1982, Ser. No. 453,013
Int. Cl.[3] H04N 7/04, 5/22
U.S. Cl. 358—147 9 Claims



1. A system for superimposing data on an all-raster scanned video display comprising:

means for providing a video signal;

first memory means for storing data for a fraction of one raster field;

second memory means for storing data for a successive fraction of the raster field; and

means for alternately multiplexing the data from said first memory means and the data from said second memory means with said video data to form a video output signal for use in providing a display of the video signal with superimposed data.

4,496,977

SYNCHRONIZING CIRCUIT FOR MATRIX TELEVISION SET

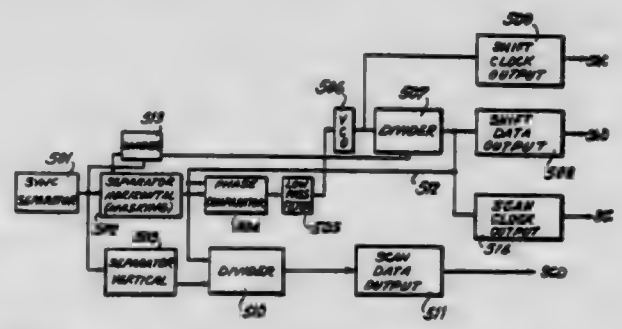
Masayuki Ikeda, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Division of Ser. No. 295,192, Aug. 21, 1981, Pat. No. 4,393,405.
This application May 24, 1983, Ser. No. 497,489
Claims priority, application Japan, Aug. 22, 1980, 55-116278
Int. Cl.[3] H04N 5/04
U.S. Cl. 358—148 11 Claims

1. In a synchronizing circuit for a matrix television set having display means including picture elements arranged in a matrix of lines and columns, and connected to line driver and column driver circuits respectively so as to be individually selectable in both line and column directions, and wherein display is made by selecting lines and columns successively, the improvement therein comprising:

a voltage controlled oscillator circuit, said oscillator circuit producing a shift clock signal applied to said column driver circuits for selecting individual columns in succession;

said voltage controlled oscillator comprising a plurality of similar CMOS pairs connected in a sequence to form a ring oscillator, the drains of a first CMOS pair being connected to the gates of a second CMOS pair and the drains of said second CMOS pair being connected to the gates of a third CMOS pair and so on, the drains of the last of said plurality of CMOS pairs being connected to the gates of said first CMOS pair, the number of CMOS pairs in said plurality being an odd integer, the sources of each CMOS pair being connected respectively to the high and low side terminals of a power source, said CMOS pair sources being separated from said terminals by limiting transistors having their drains in series with the source/-drains of said CMOS pairs, sources of each P channel transistor in said CMOS pairs being separated from one of said power source terminals by a P channel limiting transistor, sources of each N channel transistor in said CMOS pairs being separated from the other of said power source



terminals by an N channel limiting transistor, the gates of said P channel limiting transistors being connected together and the gates of said N channel limiting transistors being connected together, and means for providing a variable bias on the gates of said limiting transistors;

first frequency divider means for dividing down an output frequency signal from said oscillator circuit, the output of said first frequency divider means being a clock signal applied to said line driver circuits for selecting individual lines in succession;

phase comparison means, said comparison means determining the difference in phase of a output of said first frequency divider means with the phase of a horizontal synchronizing signal, said horizontal synchronizing signal being a portion of a television signal transmission, an output of said comparison means being fed back to said oscillator circuit, said feedback being in proportion to said phase difference, said oscillator circuit being adapted to adjust the output frequency of oscillation in response to said phase difference signal, said adjustment causing said phase difference to approach zero, said clock signals being synchronized with said horizontal synchronizing signal.

4,496,978

NOISE DETECTING CIRCUIT AND TELEVISION RECEIVER EMPLOYING THE SAME

Junji Sakamoto, and Hiroyasu Kishi, both of Gunma, Japan, assignors to Sanyo Electric Co., Ltd. and Tokyo Sanyo Electric Co., Ltd., both of, Japan

Filed Feb. 22, 1982, Ser. No. 351,224
Claims priority, application Japan, Feb. 27, 1981, 56-28579
Int. Cl.[3] H04N 5/08
U.S. Cl. 358—155 15 Claims

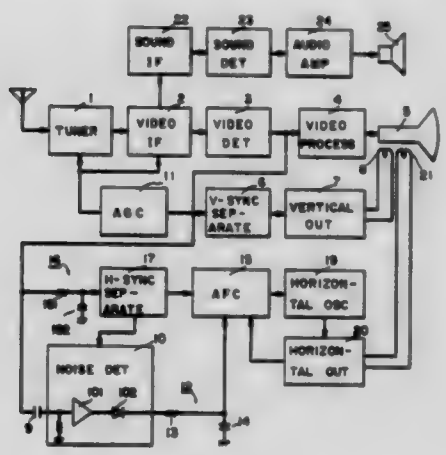
1. A noise detecting circuit for detecting a noise component in a composite video signal including a synchronizing signal of a television signal, comprising:

composite video signal providing means for providing said composite video signal,

synchronizing signal separating means operatively coupled to said composite video signal providing means for sepa-

rating a synchronizing signal from said composite video signal provided from said composite video signal providing means,

noise component extracting means responsive to said synchronizing signal obtained from said synchronizing signal separating means for extracting a noise component in-



cluded during the period of said synchronizing signal in said composite video signal, and

rectifying/smoothing means for rectifying and smoothing the output from said noise component extracting means for providing a direct current voltage associated with the magnitude of said noise component in said composite video signal.

4,496,980

TWO-DIMENSIONAL SEMICONDUCTOR IMAGE SENSOR WITH REGULATED INTEGRATION TIME

Hans-Joerg Pfleiderer, Zorneding, and Heiner Herbst, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

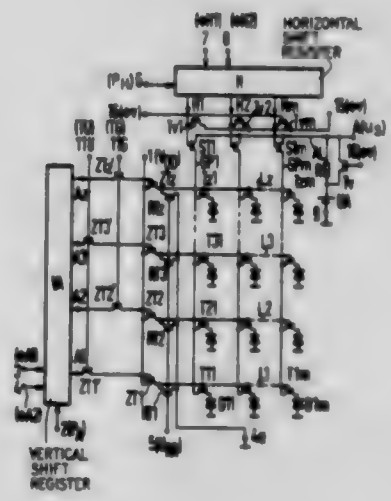
Filed Aug. 19, 1982, Ser. No. 409,629

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1981, 3138294

Int. Cl.[3] H04N *3/12*

U.S. Cl. 358—212

17 Claims



4,496,979

FM HIGH-FIDELITY PROCESSOR

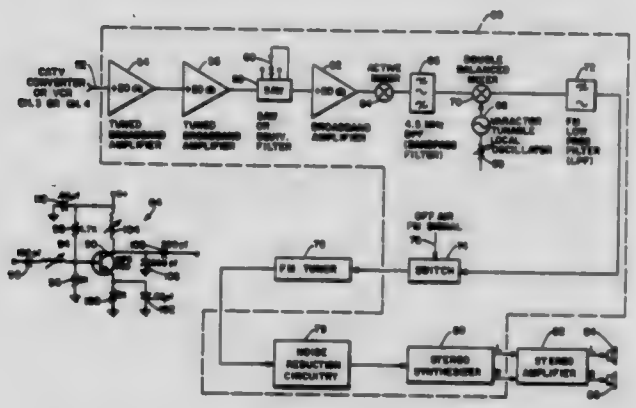
Hong Yu, and Sai W. Kwok, both of Nashua, N.H., assignors to Casat Technology, Inc., Nashua, N.H.

Filed Nov. 22, 1983, Ser. No. 554,446

Int. Cl.[3] H04N *5/62*

U.S. Cl. 358—197

10 Claims



1. A high-fidelity FM processor operable in response to a first signal having a plurality of subsignals therein, including a desired signal at a first frequency, and providing a signal at a second frequency, comprising:

a first mixer for receiving only said first signal and for generating intermodulation products according to the mixing products of said subsignals;

filter means for selectively isolating a desired intermodulation product including said desired signal from all intermodulation products produced by said first mixer means;

local oscillator means; and

a second mixer receiving the output signals from said filter means and said local oscillator, and producing an output signal at said second frequency.

1. A two-dimensional semiconductor image sensor comprising:

a plurality of light-sensitive sensor elements for generating charge carriers in response to light incident thereon, said sensor elements disposed in rows and columns on a semiconductor substrate;

a plurality of row lines respectively connecting all sensor elements in each of said rows;

a plurality of column lines respectively connecting all sensor elements in each of said columns;

a vertical shift register having a plurality of parallel outputs for sequentially selecting said rows of sensor elements for readout thereof over said column lines at a sensor output;

a plurality of first row selection transistors respectively interconnected between one end of said row lines and a constant voltage, and each having a control electrode;

a plurality of second row selection transistors respectively interconnected between said first row selection transistors and said parallel outputs of said vertical shift register, and each having a control electrode;

a means for selecting said second row selection transistors such that the control electrodes of said first row selection transistors of all oddnumbered rows are connected to respective allocated parallel outputs of said vertical shift register in an alternating sequence with the control electrodes for said first row selection transistors for all evennumbered rows;

a means for periodically connecting said column lines to said sensor output; and

a means for periodically connecting said sensor output to a constant voltage,

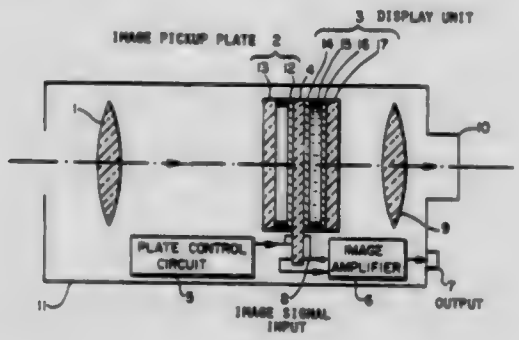
whereby all sensor elements in a row are selected for readout an additional plurality of times after an initial readout thereof, said additional readouts of said sensor elements occurring when said sensor output is connected to said constant voltage.

4,496,981

VIDEO CAMERA WITH A MONITOR

Isao Ota, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 351,929, Feb. 24, 1982, abandoned.
This application Jul. 5, 1984, Ser. No. 626,594
Claims priority, application Japan, Feb. 26, 1981, 56-27719
Int. Cl.[3] H04N 5/26
U.S. Cl. 358—213 9 Claims



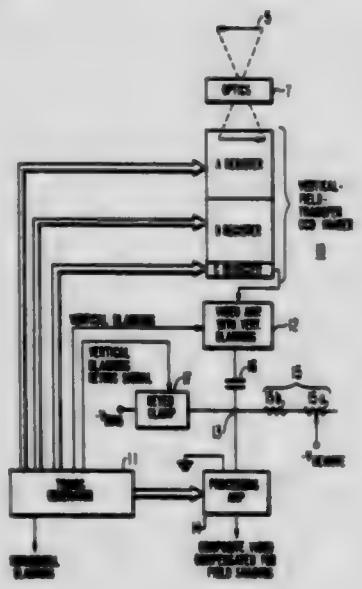
1. A video camera with a monitor, comprising:
an optical system for imaging an optical image;
an image pickup-and-display unit which comprises an image pickup portion formed on one surface of a semiconductor substrate for converting said optical image to an electrical signal, and an active matrix type image display portion formed on another opposite surface of said semiconductor substrate for converting said electrical signal to a visual image, said semiconductor substrate being common to both said image pickup portion and said image display portion;
an image pickup portion control circuit for controlling said image pickup portion.

4,496,982

COMPENSATION AGAINST FIELD SHADING IN VIDEO FROM FIELD-TRANSFER CCD IMAGERS

Peter A. Levine, West Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 27, 1982, Ser. No. 382,422
Int. Cl.[3] H04N 5/34
U.S. Cl. 358—221 28 Claims



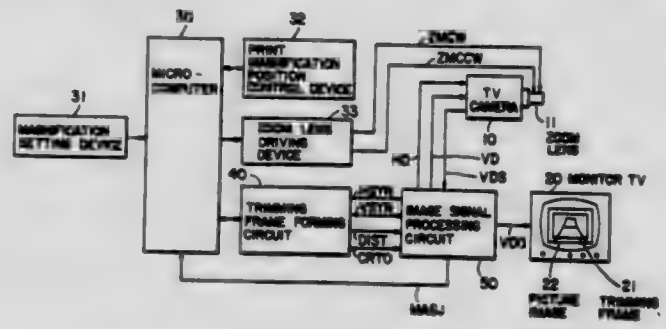
28. In combination,
a CCD imager of field transfer type having an image or A register, a field storage or B register, an output or C register, and an output stage receptive of serial read-out of charge packets from said C register for supplying raster-scanned video signal with relatively long field trace and relatively short field retrace;
means applying synchronous clocking voltages to said A and B registers during each field retrace time for transferrring charge packets descriptive of image integrated in said A register during the preceding field trace from said A register to said B register;
means applying clocking voltages to said B register during line retrace times for advancing charge packets therein a line at a time and displacing a line of charge packets therefrom to parallelly load said C register;
means applying clocking voltages to said C register during line trace times, causing serial read-out of the charge packets parallelly loaded therein to said output stage, which responds to supply a scan line of said raster-scanned video signal, said raster-scanned video signal being undesirably accompanied by field shading attributable to dark currents being accumulated in said B register for progressively longer periods of time each scan line of field trace;
improved apparatus for generating a signal compensating against the field shading attributable to dark currents undesirably accompanying said raster-scanned video signal; and
means for combining the signal so generated with said raster-scanned video signal to provide an imager output signal, in which field shading attributable to dark currents is suppressed, which improved apparatus includes, in addition to
means for generating a waveform having consistent slope through a field interval for suppressing said field shading attributable to dark currents, the following:
means applying clocking voltages to said C register during at least portions of field retrace times, causing serial read-out of charge packets therein to said output stage, which responds to dark current accumulated in said B register during preceding field trace times to supply a remnant dark current signal; and
means controlling the amplitude of said waveform in response to, said remnant dark current signal for compensating for temperature changes of said CCD imager, in suppressing said field shading attributable to dark currents.

4,496,983

TRIMMING AREA CONTROL SYSTEM IN PHOTO-PRINTING

Yuji Takenaka, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Nov. 29, 1982, Ser. No. 445,176
Claims priority, application Japan, Dec. 10, 1981, 56-198924
Int. Cl.[3] H04N 1/04, 1/46, 3/08
U.S. Cl. 358—287 23 Claims



1. A trimming area control system for a photo-printer of the type capable of printing pictures at variable magnifications which is characterized in that the picture image of a negative film is picked up by a TV camera provided with a zoom lens so that the trimming scope can be monitored by a monitor TV, and that a video signal from said TV camera with the zoom lens which corresponds with aperture portion of a carrier of said negative film is combined with a position reference signal which arbitrarily scans the negative image picked up by said TV camera with the zoom lens either in vertical direction or in horizontal direction so as to drive and control the zoom lens using the position where said position reference signal coin-

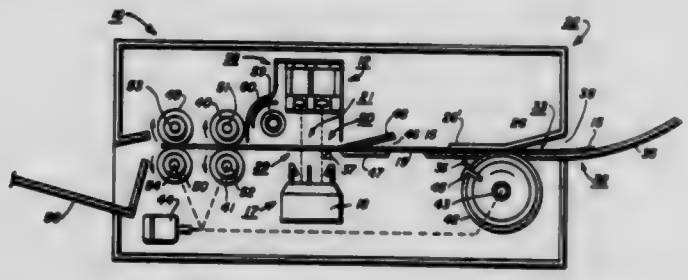
cides with the carrier aperture portion of said video signal as a designated value.

4,496,984

RASTER INPUT/OUTPUT SCANNER

James C. Stoffel, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 18, 1982, Ser. No. 442,555
Int. Cl.³ H04N *1/10*
U.S. Cl. 358—293 2 Claims



1. A combined raster input and raster output scanner comprising in combination:

(a) a combined image reading and printing station;

(b) means to feed a document to be read in unison with copy substrate material to be printed to said station;

(c) means to illuminate at least a line-like portion of the document at said station;

(d) an image read bar operatively disposed at said station, said read bar having at least two substantially parallel rows of image sensors for scanning line-like portions of the document at said station, the centerlines of the sensors forming one of said rows being offset from the centerlines of the sensors forming the other of said rows, said sensors generating image signals representative of the document images scanned, and means forming individual optical paths for each of said sensors for transmitting image rays from the document images scanned at said station to said sensors; said optical path forming means including individual lens means for each of said sensors in said arrays for focusing said sensors onto a substantially common image line;

(e) an image print bar operatively disposed at said station, said print bar having at least two substantially parallel rows of individual imaging elements for printing images on said copy substrate material at said station in response to an image signal input, the number and arrangement of said imaging elements corresponding to the number and disposition of said sensors; and

(f) means for operatively coupling the image signal output of said image read bar to the image signal input of said image print bar whereby a copy of the document image is produced by said print bar imaging elements on said copy substrate material concurrently with scanning of said document by said read bar sensors; and

means to oscillate said read and print bars between a first image read and print position where said scanner reads and prints substantially one half of the image/copy line being processed and a second image read and print position where said scanner reads and prints the remainder of said image/copy line.

4,496,985

LINE-LOCKED DIGITAL FLUOROGRAPHY SYSTEM

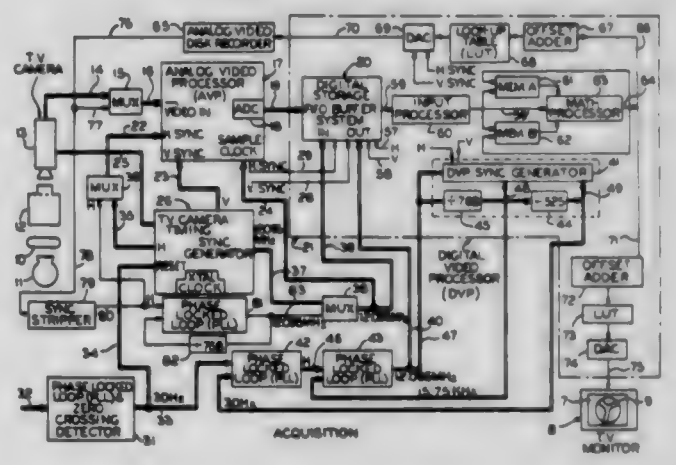
Gerald A. Jensen, Dousman; William H. Wesbey, New Berlin, and Stephen J. Riederer, Wauwatosa, all of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 21, 1982, Ser. No. 400,552
Int. Cl.³ H04N *5/32*
U.S. Cl. 358—111 6 Claims

1. Resettable sync generator means for a digital fluorography system, the system being supplied from an ac power source and including a television (TV) camera whose target is scanned to convert X-ray image frames to corresponding analog video signals, an analog-to-digital converter (ADC) for converting successive samples of the analog video signals to digital pixel words having values corresponding to the intensities of the picture elements (pixels) that compose the lines of the frames, means for subtracting an image frame from another frame in a sequence of frames, and means for providing reset signals referenced to the ac power source frequency, said sync generator means being characterized by its capability for maintaining registration between corresponding pixels in different image frames and comprising:

crystal controlled oscillator means for providing a sample clock pulse train for controlling the pixel sampling frequency of said ADC,

pixel counter means having an input for said sample clock train and being operative to count off the number of pixels composing each horizontal video line, said counter responding to reset signals by starting the count of the pixels in a line,



means for providing to said counter means said reset signals to thereby start counting the first and subsequent pixels in the first horizontal line in a frame,

means operative to provide the horizontal timing signals for the TV camera in accordance with the states of said counter means and to provide clock signals related to the horizontal line rate of a frame,

horizontal line counter means controlled by said clock signals to produce counts corresponding to the horizontal lines following the start of a frame, said horizontal line counter means responding to each of said reset signals by resetting to start a new count simultaneously with said pixel counter being reset to count the first pixel in the first horizontal line in a new frame regardless of whether the full number of pixels in the line at the end of the preceding frame have been counted, and

means operative to provide the vertical timing signals for said TV camera in accordance with the state of said horizontal line counter means.

4,496,986

SUBSCRIPTION TELEVISION INTERFACE

Eugene Lubchenko; Leander H. Hoke, Jr., both of Knoxville, and Richard J. Burton, Morristown, all of Tenn., assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 11, 1983, Ser. No. 457,308
Int. Cl.³ H04N *7/16*
U.S. Cl. 358—114 8 Claims

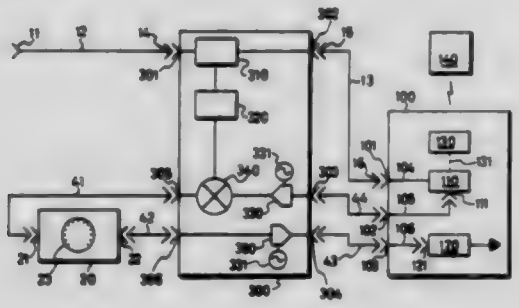
1. An interface for use with television receiver, which television receiver includes a tuner for selecting one of a plurality of programs each carried on a separate carrier frequency within the television broadcast band and converting the selected program to an intermediate frequency carrier and an intermediate frequency amplifier for amplifying signals within a predetermined frequency band about said intermediate frequency carrier, and converter/decoder means for converting pro-

grams carried on a selected carrier frequency to a first predetermined carrier frequency in the television broadcast band and for decoding program information carried thereon, which converter/decoder means has an input port for receiving signals to be converted and decoded and an output port at which the converted and decoded program appears, said interface comprising:

splitter means for receiving a plurality of encoded program signals, each carried on a different carrier frequency within the television broadcast band, and for dividing said encoded program signals into first and second substantially identical components;

a first signal path for transmitting said first program signal component to the input port of said tuner;

a signal adder having two input ports and an output port, the signal at the output port being the sum of the signals at the input ports;



a second signal path for transmitting said second program signal component to a first input port of said signal adder;

an upconverter for converting the program selected by said tuner from the intermediate frequency carrier frequency output of said tuner to second predetermined frequency in the television broadcast band;

a third signal path for transmitting the output of said upconverter to a second input port of said signal adder;

a fourth signal path for transmitting the output of said signal adder for input to said converter/decoder means,

a downconverter for converting program signals produced by said converter/decoder means at the output port thereof to said intermediate frequency carrier, and

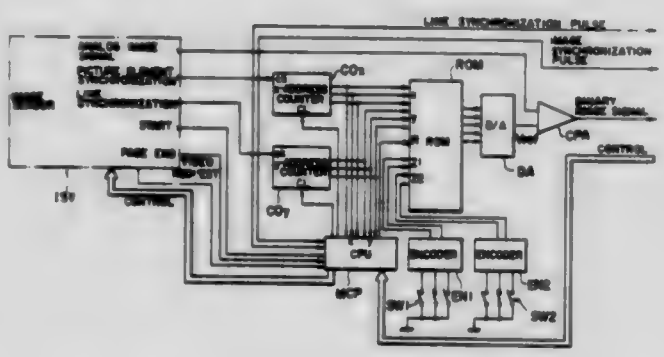
a fifth signal path for transmitting the output of said downconverter for input to said intermediate frequency amplifier.

4,496,987

CONVERSION OF AN ANALOG IMAGE SIGNAL INTO A BINARY IMAGE SIGNAL

Kazuhiro Yuasa, Zama; Shuichi Takahashi, and Mitsuru Kondo, both of Sagamihara, all of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Oct. 2, 1981, Ser. No. 308,088
Int. Cl.³ H03K *13/00*
U.S. Cl. 358—283 3 Claims



1. A system for converting an analog image signal into a binary image signal which is capable of representing tone differences when the corresponding visual image is reproduced, comprising:

storing means for storing a first plurality of threshold array sets, each set being different in array pattern and including a second plurality of threshold arrays which is the same in array pattern but different in threshold level, each threshold of each of said threshold arrays corresponding to a picture element;

comparator means having a pair of first and second inputs, said first input being connected to receive threshold information from said storing means as a reference threshold;

analog image signal supplying means for supplying an analog image signal to said second input of said comparator means;

selecting means connected to said storing means for selecting one of said threshold arrays stored in said storing means to be in an operative condition; and

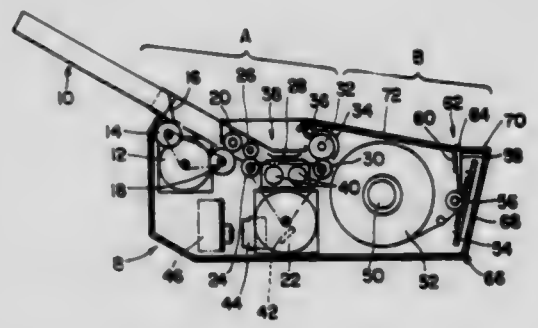
addressing means connected between said analog image signal supplying means and said storing means for addressing said one of said threshold arrays selected by said selecting means to supply the threshold information to the first input of said comparator means in response to a synchronization signal from said analog image signal supplying means.

4,496,988

COPYING MACHINE

Haruhiko Moriguchi, and Takashi Ohmori, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1981, Ser. No. 329,109
Claims priority, application Japan, Dec. 10, 1980, 55-174078
Int. Cl.³ H04N *1/22*
U.S. Cl. 358—294 3 Claims



1. A copying machine of the type comprising a reading section for reading image data from an original at a reading station and generating an image data signal, a recording section for reproducing an image of said original on a recording medium at a recording station in accordance with recording signals, and a read/record control section for receiving said image data signal from said reading section and providing said recording signals to said recording section in accordance with said image data signals, the improvement comprising:

a copy machine body incorporating therein said reading and recording sections;

a read/record body portion external of said copy machine body and positionable separately therefrom and containing said read/record control section; and

wherein said reading section comprises an automatic original feeding device for feeding originals to said reading station, image sensors, at least one lens for receiving light reflected from an original and passing said reflected light to said sensors to read image data of said original, a turn-over roll for receiving an original downstream of said reading station with a first surface of said original facing in a first direction, and a discharging roll which cooperates with said turn-over roll to discharge said original through an upper part of said copying machine with said first surface facing substantially an opposite direction, and wherein said recording section comprises a heat-sensitive recording sheet supply, recording sheet feeding means for feeding said heat-sensitive recording sheet from said supply to said recording station, and a heat-sensitive recording head

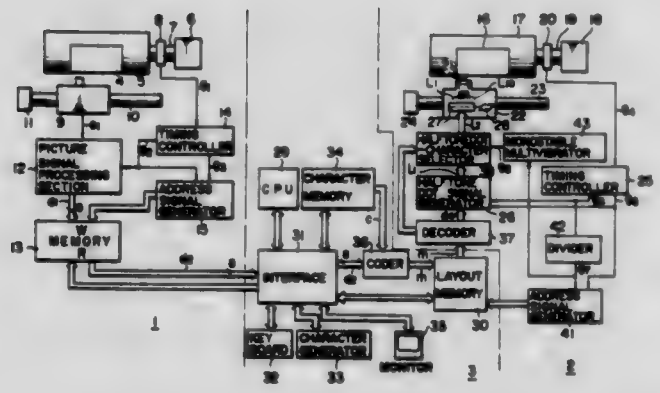
for reproducing image data on said heat-sensitive recording sheet under control of said recording signals from said read/record control section.

4,496,989

METHOD FOR COMPOSING AND RECORDING A PICTURE AND A CHARACTER BY USING PICTURE SIGNALS AND CHARACTER SIGNALS FOR USE IN A PICTURE REPRODUCING MACHINE

Makoto Hirosawa, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Jun. 21, 1982, Ser. No. 390,373
Claims priority, application Japan, Jul. 16, 1981, 56-111111
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—296 10 Claims



1. A method for the economical recording and reproducing of images including (1) picture areas of low spatial resolution having a wide gradation of intensity levels, and character or letter areas which are black or white but have higher spatial resolution requirements comprising the steps of:

(1) recording the picture area elements of a first predetermined size with a substantially continuous gradation of intensity, in digital format;

(2) recording the character or letter areas by subdividing the said predetermined picture element size to smaller areas of a second predetermined size, together with indications as to whether each of the smaller areas are black or white, in digital format;

(3) including as part of the recorded digital format for the recorded information one bit which indicates whether the recorded information represents a picture area as noted in (1) hereinabove, or a character or letter area as noted in (2) hereinabove; and

(4) decoding and generating a new physical representation of the combined picture and character or letter areas, with the picture areas being reproduced in multiple intensity gradations with relatively coarse spatial resolution, and the character or letter areas being reproduced in half-tone or black and white with relatively fine spatial definition or resolution.

4,496,990

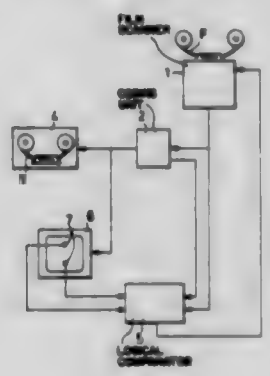
METHOD AND APPARATUS FOR COPYING CINEMATOGRAPHIC FILM ONTO COLOR VIDEO TAPE

Tomas Dyfverman, Vasavägen 8, S-171 39 Solna, Sweden

Filed Jul. 26, 1982, Ser. No. 401,545
Claims priority, application Sweden, Aug. 21, 1981, 8104965
Int. Cl.³ H04N *9/11*
U.S. Cl. 358—310 9 Claims

1. A method for copying a cinematographic film onto colour video tape, comprising the steps of feeding the film through a telecine equipment in which the picture frames of the film are scanned electronically in sequence and an electronic picture signal containing the picture information of the film picture frames is generated and said picture signal is coded in accordance with the colour video system used so as to provide a composite video signal which includes at least one periodic signal component having a period extending over en integral number of film picture frames; and recording said composite video signal onto a video tape, in which method

before feeding the film into the telecine equipment, a film leader is spliced onto one end of the film, said film leader being provided with a periodically repeated sequence of at least two sequential picture frames, each having a picture content which is clearly different from the other, it being ensured when splicing said leader to said film that said picture frame sequence has a predetermined position relative to the picture frames on the actual film;



the film is fed into the telecine equipment with said film leader entering first; and

while the leader is being fed through the telecine equipment, the current picture content of said picture signal is compared with said periodic signal component in order to establish whether or not the picture content of the picture signal has a given desired phase position relative to said periodic signal component, before the copying of the actual film onto the video tape is commenced.

4,496,991

METHOD IN THE EDITING OF KINEMATOGRAPHIC PICTURE MATERIAL

Tomas Dyfverman, Vasavägen 8, S-171 39 Solna, Sweden

Filed Apr. 6, 1982, Ser. No. 365,983
Claims priority, application Sweden, Apr. 14, 1981, 8102411
Int. Cl.³ H04N *5/87, 9/491*
U.S. Cl. 358—311 7 Claims



1. A method for editing kinematographic colour picture material which in its finalized form shall be in the form of a colour video tape, comprising the following procedural steps:

(a) using the originally shot picture material, which may be in the form of either colour film or colour video tape, for producing a copy in the other material form, so as to obtain a film copy and a video tape copy having the same picture content;

(b) providing the film copy throughout its length with periodically occurring, visual markings from which it is possible, with the guidance thereof, to determine for each film frame the location of the corresponding video fields on the video tape copy within the periodic video field sequence of the video system being used;

(c) storing the video tape copy as an original;

(d) using the film copy as a work print to produce an edited film comprising a desired sequence of desired scenes,

while ensuring with the guidance of said markings that at each splice between two mutually sequential scenes the last frame in the preceding scene and the first frame in the subsequent scene are such that their corresponding video fields on the video tape copy have immediately following locations in said periodic video field sequence of the video signal; and

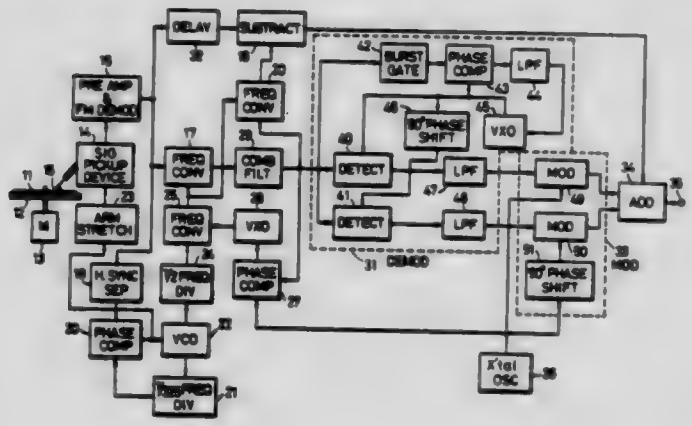
(e) using the video tape copy for producing an edited video tape in exact conformity with the edited film.

4,496,992

COLOR VIDEO SIGNAL REPRODUCING APPARATUS

Hiroyuki Sugiyama, Ischara, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jan. 22, 1982, Ser. No. 341,635
Claims priority, application Japan, Jan. 26, 1981, 56-9920
Int. Cl.[3] H04N *9/493*
U.S. Cl. 358—326 2 Claims



1. A color video signal reproducing apparatus comprising:

frequency converting means for frequency-converting a color video signal reproduced from a recording medium;

reference signal producing means for producing a reference signal;

means responsive to said reference signal for producing a frequency converting signal which is supplied to said frequency converting means;

carrier chrominance signal separation means responsive to said frequency converting means for separating a carrier chrominance signal from a color video signal;

luminance signal separation means for separating a luminance signal from said reproduced color video signal;

demodulating circuit means for demodulating said separated carrier chrominance signal into two color difference signals, said demodulating circuit means comprising an oscillator for supplying a frequency signal to said demodulating circuit means, and a control circuit for controling the oscillation frequency of said oscillator according to a jitter component in said carrier chrominance signal;

modulating circuit means for modulating the reference signal from said reference signal producing means by the color difference signals from said demodulating circuit means; and

color video signal obtaining means for obtaining a color video signal by adding an output signal of said modulating circuit and said separated luminance signal,

said frequency converting means comprising a first frequency converter means for frequency-converting said reproduced color video signal,

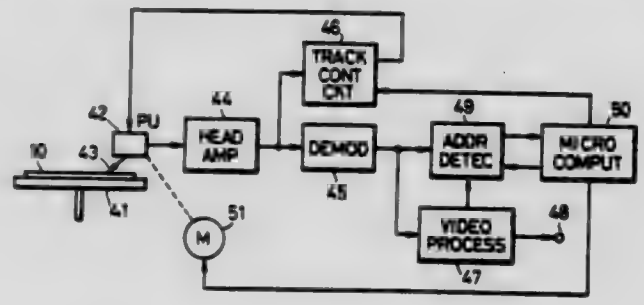
said frequency converting signal producing means comprising a second frequency converter for supplying a frequency-converting signal to said first frequency converter, horizontal synchronizing signal separation means for separating a horizontal synchronizing signal from the reproduced color video signal, a voltage controlled oscillator responsive to said separated horizontal synchronizing signal for supplying an output signal to said second frequency converter, and a voltage controlled crystal oscillator responsive to a phase difference between the phases of the separated carrier chrominance signal and the output signal of said reference signal producing means for supplying an output signal to said second frequency converter.

4,496,993

ROTARY RECORDING MEDIUM

Hiroyuki Sugiyama, Ischara; Masaki Sakurai; Ryozo Abé, both of Yokohama, and Kenji Yoshihara, Chiba, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 6, 1982, Ser. No. 375,535
Claims priority, application Japan, May 12, 1981, 56-70944
Int. Cl.[3] G11B *27/00;* H04N *5/76*
U.S. Cl. 358—335 7 Claims



1. A rotary recording medium comprising:

a continuous spiral main track including main track turns having an information signal and an address signal recorded thereon, said address signal being a signal based upon a first coding system for representing a location of the information signal on the main track turns; and

a continuous spiral lead-in track including lead-in track turns having no information signal recorded thereon,

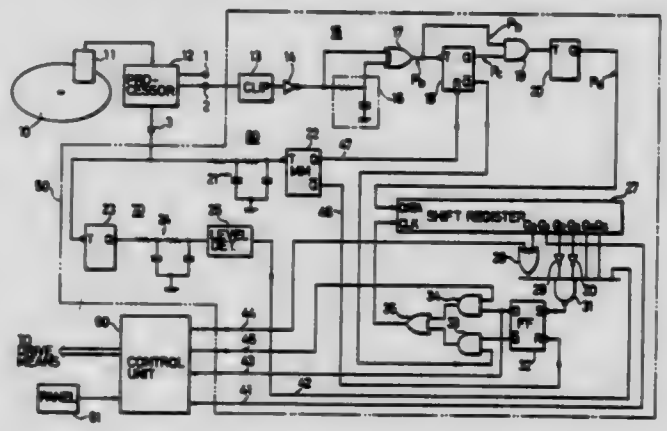
said lead-in track turns having an address signal recorded thereon based upon a second coding system which is different from the first coding system for representing a location of the lead-in track turns.

4,496,994

NOISE IMMUNE DATA REGENERATING CIRCUIT FOR VIDEO SIGNAL REPRODUCTION

Kenji Kaneko, Iwai, Japan, assignor to Victor Company of Japan, Ltd., Japan

Filed Jun. 25, 1982, Ser. No. 392,303
Claims priority, application Japan, Jun. 27, 1981, 56-99860
Int. Cl.[3] H04N *5/94*
U.S. Cl. 358—336 4 Claims



1. A system for reproducing a recording medium having a composite video signal framed at vertical blanking intervals including vertical and horizontal synchronization pulses and digital control data recorded in specified portions of the vertical blanking interval which are subsequent to said vertical synchronization pulse, comprising:

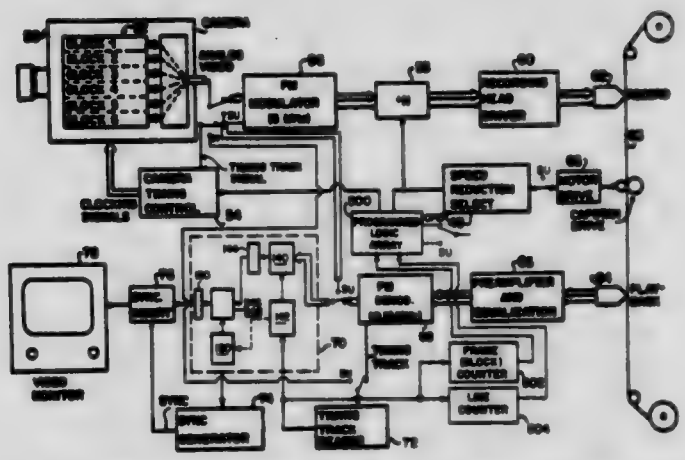
manual control means for processing said digital control data and including means for generating first clock pulses;
a shift register;
first means for deriving second clock pulses from said control data;
third means for detecting when said digital control data are stored in said shift register;
fourth means for detecting the presence of randomly occurring noise pulses which might occur in said vertical blanking intervals and generating therefrom a disabling signal; and
fifth means responsive to said vertical synchronization pulse to cause said shift register to respond to said second clock pulses by successively storing said control data therein and subsequently responsive to said third means in the absence of said disabling signal to cause said shift register to respond to said first clock pulses by delivering the stored control data to said manual control means.

4,496,995

DOWN CONVERTING A HIGH FRAME RATE SIGNAL TO A STANDARD TV FRAME RATE SIGNAL BY SKIPPING PRESELECTED VIDEO INFORMATION

Joseph H. Colles, Oceanside, and James A. Bixby, San Diego, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 29, 1982, Ser. No. 363,319
Int. Cl.³ H04N *5/92, 5/782*
U.S. Cl. 360—9.1 13 Claims



1. In fast frame recorder apparatus having a video camera operative at a first relatively high frame rate, a video monitor operative at a second lesser frame rate, a recorder for recording the relatively high frame rate camera signal on a recording medium operative at a given recording speed, and for playing back said recorded signal at a lesser speed to down-convert the relatively high frame rate of said camera signal to said second frame rate, and means for applying the down-converted frame rate signal to said monitor for displaying the scene associated with said camera signal on said monitor, the improvement of ancillary means for down-converting the frame rate of said camera signal to said second frame rate, and for selectively applying the down-converted frame rate signal of said ancillary means to said monitor, thereby allowing the camera of said fast frame recorder apparatus to be adjusted, while viewing said monitor, without need to record and play back said camera signal at differing speeds,

said ancillary means for down-converting the frame rate of said camera signal comprising means for receiving the camera output signal and for selectively applying predetermined portions of such signal to said monitor,

said means for applying predetermined portions of the camera signal to said monitor being means for applying signals corresponding to one or more lines from each camera frame to said monitor,

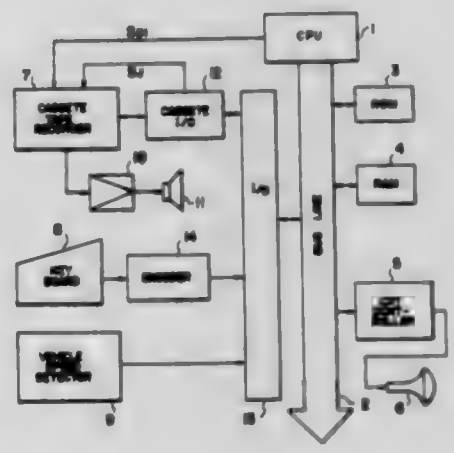
said fast frame recorder apparatus further comprising means for selectively applying to said monitor signals corresponding to a different line or lines from each frame of successive groupings of frames.

4,496,996

RUNNING GUIDE SYSTEM

Masakazu Moriyama, and Takao Saito, both of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 15, 1982, Ser. No. 368,813
Claims priority, application Japan, Jun. 15, 1981, 56-91966
Int. Cl.³ G11B *5/00*
U.S. Cl. 360—12 2 Claims



1. A running guide system for a motor vehicle comprising:
running distance detecting means for detecting an actual running distance travelled by the motor vehicle;
memory means for storing a plurality of maps arranged according to a predetermined sequence illustrating a route from a start point to a destination, each of said maps containing a segment of said route and overlapping with a segment of an adjacent map in said sequence;
display means for displaying each map stored in said memory means;
changing means, connected to said running distance detecting means, memory means and display means, for changing a map currently displayed by said display means to a next map in said sequence of maps showing a next segment of said route when the actual running distance coincides with a predetermined running distance of the currently displayed map;
tape recorder means for playing a cassette tape and generating a tape signal for causing the display of a map by said display means;
judging means, responsive to the tape signal, for judging whether or not the tape signal is indicative of a music tape or a map information tape; and
rewinding means, responsive to a signal from said judging means, for fully rewinding said cassette tape to a beginning point thereof when an indication of the map information is judged by said judging means.

4,496,997

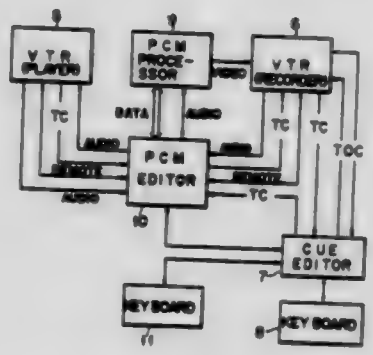
CUE DATA RECORDING APPARATUS

Tadashi Ohtsuki, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 10, 1982, Ser. No. 416,684
Claims priority, application Japan, Sep. 14, 1981, 56-145286
Int. Cl.³ G11B *27/02, 5/86*
U.S. Cl. 360—13 25 Claims

1. Apparatus for recording cue data identifying predetermined characteristics of information recorded in tracks on a magnetic tape, said apparatus comprising playback means for playing back said information; code signal generating means for generating code signals having a predetermined relationship with the played back information; cue signal generating means for generating respective cue signals upon the occur-

rence of respective ones of said predetermined characteristics in the played back information; memory means for storing said code signals and said cue signals; format means for producing



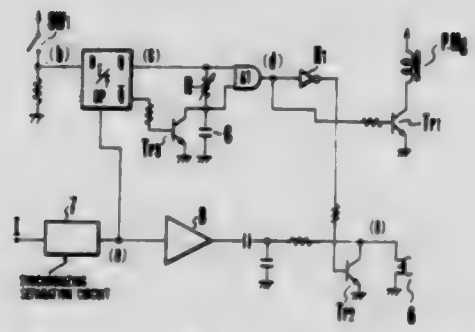
cue data in a predetermined format in accordance with the stored code and cue signals; and recording means for recording said cue data in a track on said magnetic tape different from the tracks in which said information is recorded.

4,496,998

VIDEO TAPE RECORDER WITH DELAYED CONTROL SIGNAL RECORDING UPON RESTART

Hiroyuki Takimoto, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 3, 1981, Ser. No. 299,180
Claims priority, application Japan, Sep. 4, 1980, 55-122863
Int. Cl.[3] H04N *5/782*
U.S. Cl. 360—33.1 5 Claims



1. A video signal recording and reproducing apparatus, comprising:

(a) carrying means which carries a recording medium at a predetermined speed during a video signal recording and reproducing mode;

(b) changeover means for forming signals for starting or stopping carrying actions of the carrying means;

(c) signal forming means for forming control signals which serves as a reference in a running speed control of said carrying means at a time of reproduction of video signals;

(d) recording means for recording said control signals on a recording medium during the video signal recording mode;

(e) prohibiting means for prohibiting the recording of said control signals during a period of time from the stopping of the carrying action until a restarting of the same in the video signal recording mode; and

(f) delay means for making the carrying means to restart the carrying action after the elapse of a prescribed delay time from the forming of the control signal after the forming of the start signal;

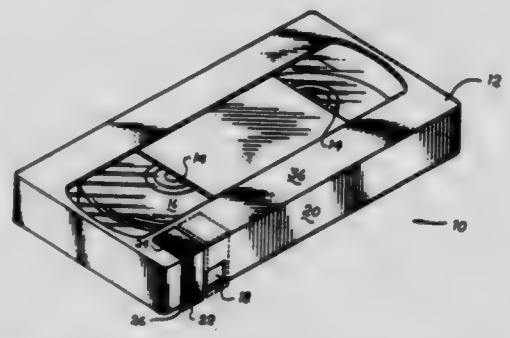
wherein said delay means includes means for setting said delay time so that an interval on the recording medium of the last control signal recorded before the stopping of the carrying action and the first control signal recorded after the restart of the carrying action is two or more times greater than the distance between two previously recorded control signals recorded when said recording medium is driven with said predetermined speed.

4,496,999

VIDEO TAPE CASSETTE AND DEVICE THEREFOR

Mario W. Espin, 2301 Winthrop Ave., Charlotte, N.C. 28203

Filed Sep. 10, 1982, Ser. No. 416,568
Int. Cl.[3] G11B *15/04*
U.S. Cl. 360—60 4 Claims



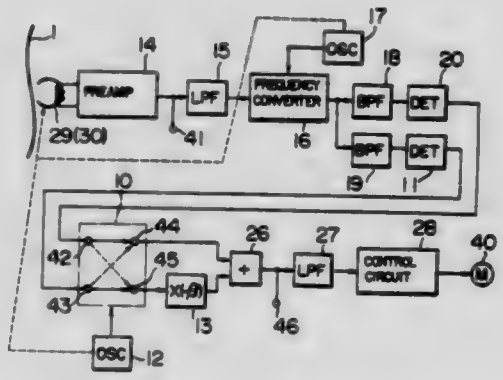
1. In a video tape cassette of the type having a box-shaped tape housing containing a supply of video recording tape and an antirecording opening formed in one side of said housing operable when said cassette is operatively positioned in a tape recording apparatus to prevent overrecording thereby onto said tape, the improvement comprising a three-sided spring clip configured in substantial correspondence to the exterior configuration of said one side of said housing and two sides of said housing adjacent thereto with the three sides of said spring clip being relatively oriented in a relaxed condition at slightly smaller respective angles than the corresponding sides of said housing, said spring clip being snugly engaged resiliently on said one side and said two adjacent sides of said housing for sliding movement into and out of covering relation with said antirecording opening respectively to prevent and permit antirecording operation thereof, whereby said video tape cassette may be selectively employed for recording on said tape thereof as desired and for playback of material prerecorded on said tape thereof without danger of inadvertent overrecording.

4,497,000

MAGNETIC RECORDING/REPRODUCING APPARATUS

Toshimichi Terada, Chigasaki; Keiichi Komatsu; Akira Shibata, both of Katsuta, and Kenji Satoh, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 1, 1983, Ser. No. 471,129
Claims priority, application Japan, Mar. 3, 1982, 57-32452
Int. Cl.[3] G11B *5/55*
U.S. Cl. 360—70 4 Claims



1. A magnetic recording/reproducing apparatus for sequentially recording each of a plurality of pilot signals of different frequencies on each video track to be multiplexed with a video signal, and sequentially reproducing the recorded video signal and the pilot signals, said apparatus comprising:

pilot-signal separating means for separating an output signal reproduced by video heads into said video signal and said pilot signals and producing only said pilot signals; first level detecting means for detecting the level of the pilot

signal on the right adjacent video track from said pilot signals supplied from said pilot signal separating means;

second level detecting means for detecting the level of the pilot signal on the left adjacent video track from said pilot signal supplied from said pilot signal separating means;

subtracting means for subtracting between the output signal from said first level detecting means and the output signal from said second level detecting means so as to produce a tracking control signal;

first signal supplying means for supplying the output signal from said first level detecting means to said subtracting means;

second signal supplying means for supplying the output signal from said second level detecting means to said subtracting means; and

adjusting means for adjusting the level of a signal which at least one of said first and second signal supplying means handles.

4,497,001

AUTO-REVERSE MECHANISM FOR USE IN MAGNETIC RECORDING/REPRODUCING APPARATUS

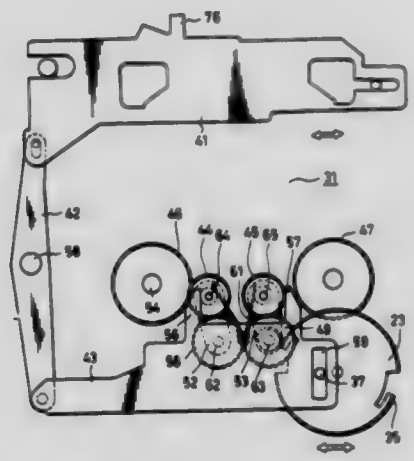
Hideki Hayashi; Sadayoshi Endo; Yukio Ito, and Satoshi Takagi, all of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Jul. 8, 1982, Ser. No. 396,186

Claims priority, application Japan, Jul. 10, 1981, 56-107744; Jul. 10, 1981, 56-107745; Jul. 10, 1981, 56-107746; Jul. 10, 1981, 56-107747; Jul. 14, 1981, 56-103444[U]; Jul. 14, 1981, 56-103445[U]

Int. Cl.³ G11B *15/44*

U.S. Cl. 360—74.2 **8 Claims**



1. An auto-reverse mechanism intended to be used in a magnetic recording/reproducing apparatus, comprising:

a means for changing the driving force to the reel base of said magnetic recording/reproducing apparatus;

a means for detecting the stopped rotation of said reel base;

a power gear provided with an intermittent gear section;

a means operative in response to the operation of detection of said detection means to rotate said power gear;

a change plate;

a means for actuating said changing means and change plate under the effect of the rotation of said power gear;

a gear for driving said reel base; and

a means operative in response to the movement of said change plate to attract said intermittent gear section so that said power gear will be engaged with said reel-base driving gear.

4,497,002

METHOD OF AND APPARATUS FOR DRIVING A DISK STORAGE

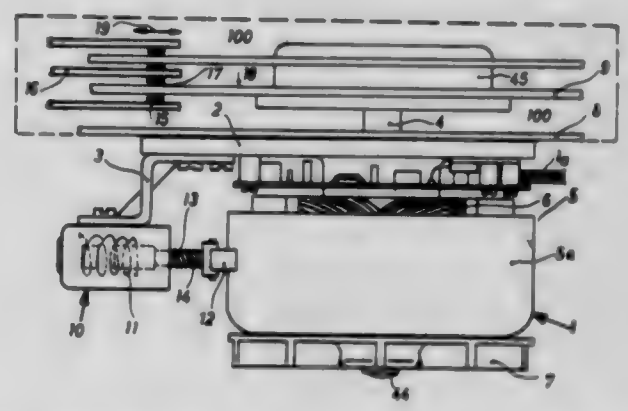
Johann von der Heide, Mönchweiler, and Bernhard Schuh, Georgen, both of Fed. Rep. of Germany, assignors to Papst-Motoren GmbH & Co. KG, St. Georgen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 095,536, Nov. 19, 1979, abandoned. This application Mar. 29, 1982, Ser. No. 363,135

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1979, 2917385

Int. Cl.³ G11B *5/012*

U.S. Cl. 360—97 **7 Claims**



1. In a digital information-storage apparatus of the type having a read and/or write head which inscribes information bits onto, and/or reads them from, at least one data storage disk which is rotated at high speed relative to such head by means of a rotary disk-holding structure comprised of a disk-support member configured to be accommodated in the large central aperture of such disk for transmitting rotation thereto,

the combination with said rotary disk-support member of a motor-brake system, the system comprising

an external-rotor motor,

the motor having a stationary part and a rotating part,

the rotating part comprising an axially extending rotor shaft and a rotating cup-shaped rotor housing having an outer surface provided with a braking surface portion,

the stationary part of the motor including a mounting flange which is generally planar and extends normal to the axis of the rotor shaft,

the rotor shaft extending axially in a first direction from the stationary mounting flange to the rotary disk-support member at a first axial side of the mounting flange,

and a brake mounted on the stationary part of the motor and located spaced from the mounting flange in an opposite second axial direction and thus located at the opposite second axial side of the mounting flange,

the brake including a braking part movable into and out of braking engagement with the braking surface portion of the rotor housing.

4,497,003

DISC POSITIONING DEVICE

Masayuki Abe, Yokohama; Junichi Ikoma, Yokosuka, and Kenzi Abiko, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 8, 1982, Ser. No. 386,277

Claims priority, application Japan, Jun. 10, 1981, 56-88124

Int. Cl.³ G11B *5/012, 5/82;* B65D *85/30*

U.S. Cl. 360—97 **1 Claim**

1. A disc positioning device comprising:

(a) a spindle connected to a drive source of a disc;

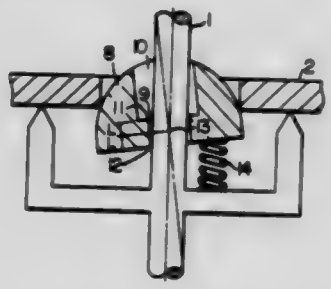
(b) an adapter mounted on said spindle formed with an inclined surface engaging the edge of a center opening formed in said disc; and

(c) biasing means urging said adapter against said disc; wherein the improvement resides in that:

(d) said inclined surface is constituted by a part of a spherical

surface of a diameter greater than that of the center opening of said disc;

(e) said adapter is formed inside said spherical surface with a first opening having end portions constituting opposite ends of said adapter in the form of circles greater in diameter than said spindle, a straight line connecting the centers of said circles together being bisected at the center of said spherical surface;



(f) said adapter is further formed with a second opening connecting said spherical surface to one of the opposite ends of said first opening; and

(g) said biasing means being also operative to impart to said adapter a force tending to rotate same about the center of said spherical surface.

4,497,004

PICTURE REPRODUCING APPARATUS IN A HELICAL SCANNING VIDEO TAPE RECORDER

Akira Shibata; Makoto Konosu; Teizo Tamura; Koichi Hirose, all of Katsuta; Kuniaki Miura, Ibaraki; Noboru Kojima, and Keiichi Komatsu, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

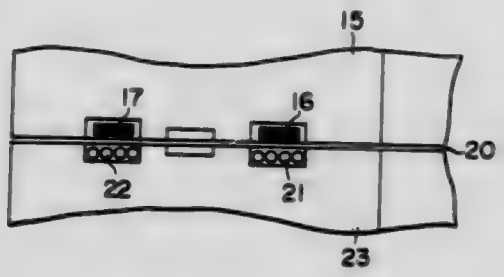
Filed Jun. 2, 1982, Ser. No. 384,742

Claims priority, application Japan, Jun. 10, 1981, 56-88133; Mar. 29, 1982, 57-49073

Int. Cl.³ G11B 5/52

U.S. Cl. 360—108

6 Claims



1. A picture reproducing apparatus in a helical scanning video tape recorder comprising:

an impedance transformer including a rotary transformer having a rotor core and a stator core having opposed main surfaces which are substantially flat, a rotor winding and a stator winding of said rotary transformer being fitted into a rotor winding slot and a stator winding slot formed on said oppposed main surfaces of said rotor and stator cores, respectively, in a manner that said rotor and stator windings are arranged concentrically with respect to the center of rotation of sid rotor core and opposed to each other, the number of turns of said rotor winding being one turn, and said rotor winding having a rectangular cross-sectional configuration with a length of said rotor winding in a radial direction along said main surface being larger than a length thereof in a direction perpendicular to said main surface;

a video head connected to said rotor winding of said rotary transformer;

a resonance circuit connected to said stator winding side of said rotary transformer;

a pre-amplifier having an input connected to the output of said resonance circuit and an input for supplying a signal to further circuitry; and

means forming a negative resistive feedback path connected between said input of said pre-amplifier and the output of said pre-amplifier.

4,497,005

MULTIPLE MAGNETIC TRANSDUCER HEAD, PARTICULARLY FOR USE WITH MULTI-TRACK VIDEO TAPE RECORDING APPARATUS

Richard Heinz, Pfungstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

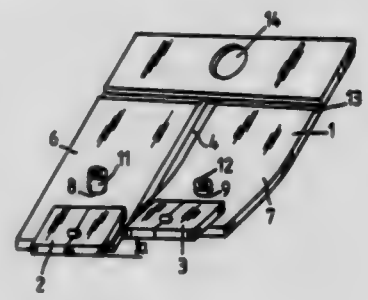
Filed May 19, 1982, Ser. No. 379,635

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1981, 3121791

Int. Cl.³ G11B 21/24, 5/56

U.S. Cl. 360—109

10 Claims



1. Multiple magnetic transducer head arrangement, particularly for use with multiple track magnetic tape apparatus, having

a plurality of magnetic transducer heads (2,3), said transducer heads being relatively adjustable with respect to each other, said transducer head arrangement being adapted for assembly on a magnetic transducer head support (20),

and comprising, in accordance with the invention,

a common plate-like carrier (1) for the magnetic heads (2,3) having a first end portion secured to said support (20), said common carrier being made of non-magnetic elastic material, the magnetic heads (2,3) being secured side-by-side to a second end portion of said plate-like carrier (1), opposite said first end portion, and separated therefrom by a transversely extending hinge crease (13);

an elongated slit (4) located between the magnetic heads and extending towards the first end portion up to said hinge crease to thereby form respective transducer head support strips (6,7);

and adjustment means (8,9,11,12) located behind the respective magnetic heads for adjustably spacing the respective support strips (6, 7) with respect to the support (20), and spacing the magnetic heads (2,3) with respect to each other by a distance "a" corresponding to a desired distance between adjacent magnetic tracks,

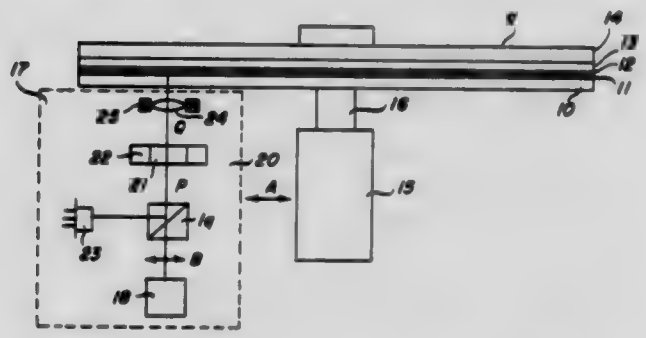
said adjustment means comprising tapped bores (8,9) formed in the strips (6, 7) and positioned behind the transducer heads on the strips close to the transducer heads; and screws (11,12) passing through said tapped bores (8,9) and bearing against the support (20) to space the transducer heads (2,3), individually, by deflection of said strips from said support.

4,497,006

MAGNETO-OPTIC RECORDING/PLAYBACK HEAD ASSEMBLY

Toshihisa Deguchi, Nara; Kenji Ohta, Yao, and Akira Takahashi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 2, 1982, Ser. No. 345,056
Claims priority, application Japan, Feb. 6, 1981, 56-17116
Int. Cl.³ G11B *5/32*
U.S. Cl. 360—114 4 Claims



1. A head assembly for use in a magneto-optic recording/-playback system, said system including a memory medium having a magnetic coating having a magnetic anisotropy in a vertical direction and wherein a light beam is applied to the memory medium for recording and reproduction of information,

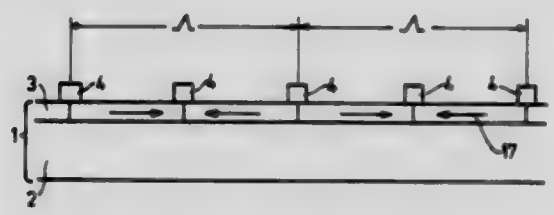
said head assembly comprising a polarizing prism and a Faraday effect element comprising a glass plate in an optical path for said light beam.

4,497,007

MAGNETO-OPTICAL STORAGE PROCESS

Joachim Greiner, Ebenhausen, and Burkhard Nippe, Munich, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 12, 1982, Ser. No. 357,828
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1981, 3110572
Int. Cl.³ G11B *5/32, 9/00;* G11C *11/42;* G01D *15/06*
U.S. Cl. 360—114 28 Claims



1. A process for recording and retrieving information of a travelling information carrier including

a layer having a magnetic pigment embedded in a binder convertible into a liquid state by chemical or thermal action, the volume filling factor of said layer being less than 0.25 μm and the thickness of the layer equal to or less than 2μ, or

two magnetic layers on a substrate, consisting of a lower layer for receiving the magnetic information having pigment or metal, having a layer thickness less than 10 μm and a coercive field greater than 8 kAm^{-1} and an upper layer, convertible into a liquid state for production of the diffraction structures by the leakage fields of the lower layer, and containing extremely soft magnetic pigment particles and having a coercive field of less than 4 Acm^{-1},

comprising the steps of

(a) recording on said magnetizable information carrier in the form of a tape, disc or roller by modulating it during its movement with information areas which in one direction of the information plane are greater than 0.2 μm and smaller than 20 μm;

(b) producing a geometrical structure by the action of the magnetic fields of the recorded information on particles of whose greatest longitudinal dimension is less than 0.1 μm, and

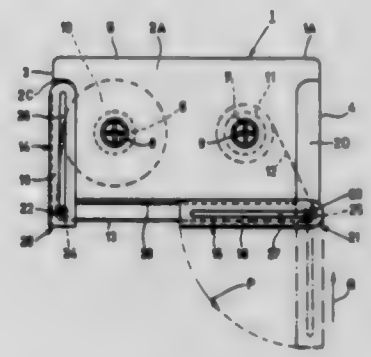
(c) optical scanning said structure, defracting light of wavelength 0.38 to 0.8 μm on the surface of the moving information carrier and producing diffraction images which serve for interpretation of the information.

4,497,008

MAGNETIC-TAPE CASSETTE WITH PIVOTAL, NESTING COVER

Johannes J. M. Schoenmakers, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 14, 1982, Ser. No. 387,918
Claims priority, application Netherlands, Jun. 16, 1981, 8102877
Int. Cl.³ G11B *23/02, 15/32;* G03B *1/04*
U.S. Cl. 360—132 9 Claims



1. A magnetic-tape cassette comprising:

a housing having first and second major walls lying substantially in parallel planes, two side walls, a rear wall and a front side with a front opening between the major walls,

two rotatable reels arranged adjacent each other between the major walls,

a magnetic tape which is attached to the reels, a part of which tape extends across said front opening of the housing for cooperation with parts of a magnetic-tape apparatus, and

at least one front cover formed as a channel section having flanges substantially parallel to said major walls; said cover being constructed to cover, at least partly, the front opening of the housing when in a closed position, and connected to the housing in such a way as to be pivotable between an open position and the closed position about an axis which is disposed perpendicularly to the major walls at or near a front corner of the housing, and slidable relative to the housing between an extended position and a retracted position in which the front cover extends along one of the side walls of the housing,

characterized in that

the flanges of the channel section front cover lie substantially in the planes of the major walls of the cassette housing both in the closed position and in the retracted position of the front cover,

said at least one cover slides in a direction parallel to the adjacent side wall when moving between the extended and retracted positions, and

the outer surfaces of said major walls adjacent said one of the side walls of the housing have recesses formed therein to receive the respective flanges when the front cover is in the retracted position.

4,497,009

MAGNETIC DISK CARTRIDGE

Kengo Ohshi, and Osamu Suzuki, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minamiashigara, Japan

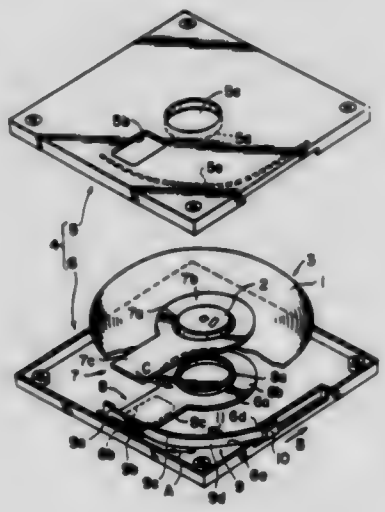
Filed Jan. 4, 1984, Ser. No. 568,150

Claims priority, application Japan, Jan. 11, 1983, 58-1943[U]; Jan. 18, 1983, 58-5056[U]; Jan. 18, 1983, 58-5057[U]; Jan. 18, 1983, 58-5058[U]

Int. Cl.³ G11B *23/02*

U.S. Cl. 360—133

9 Claims



1. A magnetic disk cartridge comprising a case consisting of an upper half and a lower half, a magnetic disk, means for rotatably supporting said magnetic disk in said case, a strip-like link member positioned for movement along guide grooves extending in face-to-face relation to each other in inner surfaces of said upper half and said lower half, opposite side edge portions of said strip-like link member being engaged with said guide grooves, and shutter members operated by said strip-like link member for opening and closing magnetic head insertion apertures of said case, wherein the improvement comprises a guide member on said lower half projecting upwardly from said lower half towards said upper half, said guide member having a guide surface standing face to face with a part of said guide groove of said lower half for restraining upward movement of said link member the lower side edge portion of which is engaged with said guide groove of said lower half.

4,497,010

ABNORMALITY DETECTING DEVICE

Soukichi Funahashi, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

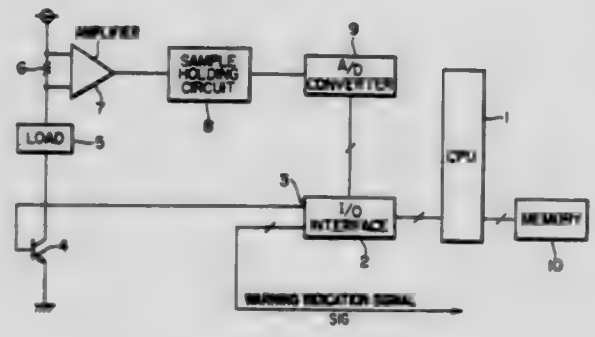
Filed Oct. 25, 1982, Ser. No. 436,561

Claims priority, application Japan, Oct. 30, 1981, 56-174892

Int. Cl.³ H02H *3/08*

U.S. Cl. 361—93

2 Claims



1. An abnormality detecting device for detecting whether a load is in a normal condition or not, comprising: switching means connected with said load in series; control means for controlling said switching means to apply a test voltage to said load for a time so short that said switching means is not damaged even when the load is in a condition of short-circuiting; detecting means for detecting a current through said load upon application of said test voltage and for providing a detection signal; a sample and hold circuit which samples and holds the detection signal; and comparing means for comparing the sampled detection signal with a predetermined abnormality value.

4,497,011

SWITCHING APPARATUS FOR CHANGING THE ABSOLUTE VALUE AND THE PERMANENT MAGNETIZATION DIRECTION OF FERROMAGNETIC BODIES, E.G. OF PERMANENT MAGNETS

Karl Hurtig, Moortwiete 68, 2086 Ellerau, Fed. Rep. of Germany

PCT No. PCT/DE82/00096, § 371 Date Jan. 13, 1983, § 102(e) Date Jan. 13, 1983, PCT Pub. No. WO82/04160, PCT Pub. Date Nov. 25, 1982

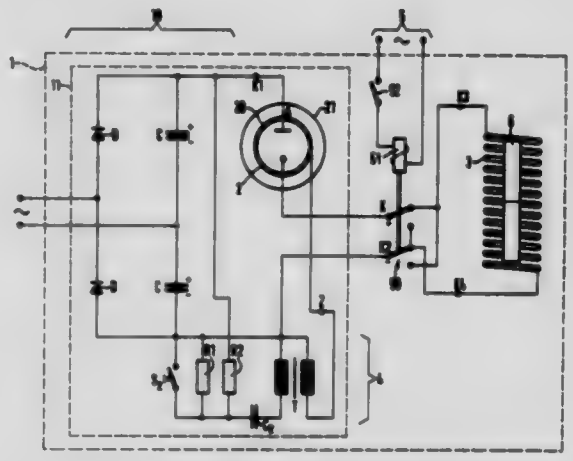
PCT Filed May 5, 1982, Ser. No. 459,601

Claims priority, application Fed. Rep. of Germany, May 14, 1981, 3119435

Int. Cl.³ H01H *47/30*

U.S. Cl. 361—147

20 Claims



1. A switching unit (1) for changing the absolute value and the direction of the permanent magnetization of ferromagnetic bodies such as permanent magnets, said unit comprising

(a) circuit means for generating current-pulses, and including

(1) an energy-storage system (10) having means for connection to an electrical power source,

(2) firing circuit means (4) connecting said energy-storage system to a first output terminal (K2), and

(3) controllable electronic switch means (A) connecting said energy-storage system to a second output terminal (K), and comprising gas-discharge tube means (2) having an anode and a cathode, each having a respective terminal (K,K1), and also including firing electrode means (20), and

(b) at least one coil (3) adapted to receive a ferromagnetic body (6), said coil terminating at each end in connections (K3,K4) to said output terminals (K,K2),

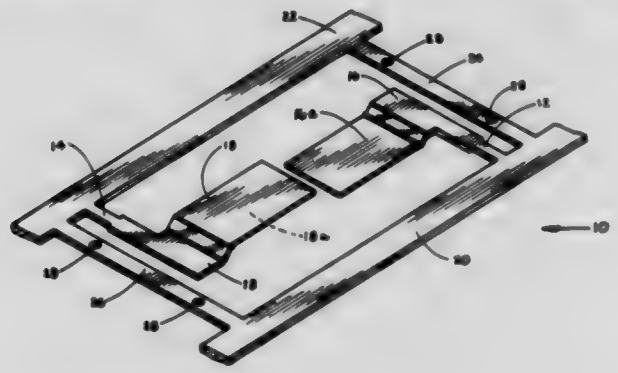
wherein said gas-discharge tube means comprises a flashlamp of a short type designed for high gas pressures and carrying said firing electrode means connected to said firing circuit means on the outside of said tube.

4,497,012

DECOUPLING CAPACITOR AND METHOD OF MANUFACTURE THEREOF

Michael M. Gottlieb, Kraainem, Belgium; David S. Fishman, West Hartford, Conn., and Henri Buysse, Lochristi, Belgium, assignors to Rogers Corporation, Rogers, Conn.

Filed Nov. 14, 1983, Ser. No. 551,575
Int. Cl.[3] H01G 9/05, 7/00, 4/10
U.S. Cl. 361—306 26 Claims



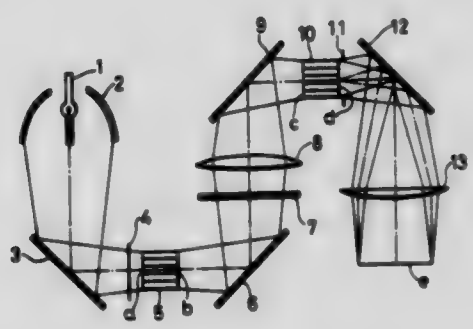
15. A decoupling capacitor including:
a first electrically conductive connection plate having a section of reduced thickness on one side thereof;
a second electrically conductive connection plate having a section of reduced thickness on one side thereof, said sections of reduced thickness facing each other;
a first terminal pin extending from said first connection plate;
a second terminal pin extending from said second connection plate;
said first and second terminal pins being at diagonally opposite locations of the decoupling capacitor;
a capacitive element between the reduced thickness sections of said first and second connection plates, said capacitive element having a pair of conductive face surfaces electrically connected to said sections of reduced thickness;
a molded encapsulating cover encapsulating said connection plates and capacitive element, with said terminal pins extending from said encapsulating cover at a first pair of diagonally opposed positions; and
a pair of diagonally opposed stabilizing lugs formed as part of said encapsulating cover, said stabilizing lugs being at a second pair of diagonally opposed positions.

4,497,013

ILLUMINATING APPARATUS

Masakatu Ohta, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 27, 1983, Ser. No. 508,333
Claims priority, application Japan, Jul. 2, 1982, 57-115846
Int. Cl.[3] F21V 7/04
U.S. Cl. 362—32 15 Claims



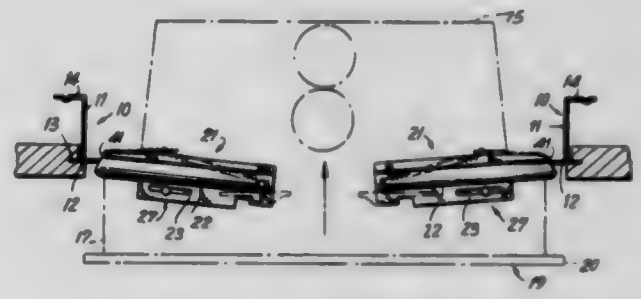
1. An illuminating apparatus for irradiating a surface, said apparatus comprising:
illuminating means for forming a plurality of secondary light sources;
multi-beam forming optical means for forming multiple light beams from the radiant energy from said secondary light sources;
collimating optical means for substantially collimating the radiant energy from said secondary light sources and directing the radiant energy to said multi-beam forming optical means to be formed as multiple light beams thereby; and
converging optical means for converging the radiant energy as the multiple light beams from said multi-beam forming optical means on the surface to be irradiated.

4,497,014

CEILING FIXTURE HAVING SELF-ACTIVATING MOUNTING MEANS

Leonard E. Woloski, Jersey City, and Walter E. Wyles, Somerset, both of N.J., assignors to Lightolier Incorporated, Jersey City, N.J.

Continuation-in-part of Ser. No. 426,173, Sep. 28, 1982, Pat. No. 4,424,554. This application Oct. 3, 1983, Ser. No. 538,270
Int. Cl.[3] F21S 1/02
U.S. Cl. 362—150 8 Claims

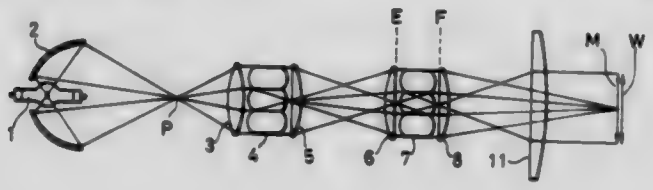


1. An automatic trip recessed lighting fixture adapted to be mounted between and supported on parallel grids of a ceiling tile support structure, said grids being spaced a predetermined distance apart, comprising a generally rectangular downwardly open light housing having side walls, end walls and a top wall, each of said side walls having moveably mounted thereon a support latch assembly shiftable on a path parallel to said side walls between a partially retracted position whereat the distal ends of said latch members extend a first distance beyond said end walls, a retracted position whereat the distal ends of said latch members extend a lesser distance than said first distance beyond said end walls, and a projected position whereat said distal ends extend a greater distance than said first distance beyond said end walls, the spacing between the distal ends of said latch assemblies on each said wall being greater than said predetermined distance in said partially retracted position, substantially equal to said predetermined distance in said retracted position, and substantially greater than said predetermined distance in said projected position of said latch assemblies, spring means biased between said latch assemblies and housing and urging said latch assemblies toward said projected position, detent means including complemental portions on said latch assemblies and said housing for retaining said latch assemblies in said partially retracted position in the engaged condition of said complemental portions, cam means on said distal ends of said latch assemblies positioned to coact with a spaced pair of said grids for shifting said latch assemblies from the partially retracted to the retracted position of said latch assemblies, responsive to upward movement of said latch assemblies to a position above said grids and for releasing the complemental portions defining said detent means whereby said latch assembly are shifted from said partially retracted to said projected positions responsive to movement of said latch assemblies to a position above said grids.

4,497,015
LIGHT ILLUMINATION DEVICE

Kunio Konno, Kanagawa, and Masashi Okada, Chiba, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Feb. 22, 1983, Ser. No. 468,551
Claims priority, application Japan, Feb. 26, 1982, 57-30268
Int. Cl.³ F21V 7/04
U.S. Cl. 362—268
6 Claims

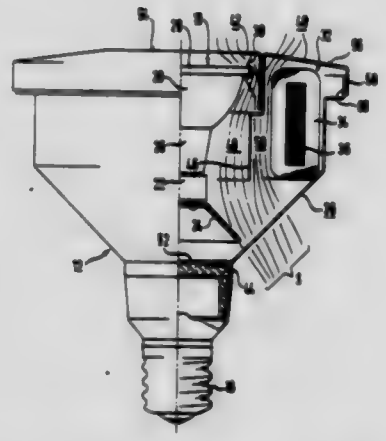


1. A device for uniformly illuminating an object comprising:
(a) means for providing a light source;
(b) first optical means disposed to intersect across light energy emitted from said light source, said first optical means including a first multiplicity of lens elements for forming a multiplicity of images of said light source on a first focal plane and a second multiplicity of lens elements disposed in the vicinity of said first focal plane and corresponding respectively to said first multiplicity of lens elements for forming an image of said first multiplicity of lens elements on a second focal plane;
(c) second optical means disposed to intersect across light energy emitted from said first optical means, said second optical means including a third multiplicity of lens elements disposed in the vicinity of said second focal plane for forming a multiplicity of images of said second multiplicity of lens elements on a third focal plane and a fourth multiplicity of lens elements disposed in the vicinity of said third focal plane and corresponding respectively to said third multiplicity of lens elements; and
(d) third optical means for superimposing light energy emitted from said second optical means on said object.

4,497,016
LIGHTING DEVICE

Christian Sachse, Hildesheim, Fed. Rep. of Germany, assignor to Electrotechnik-Apparatebau Peter Schmitz, Fed. Rep. of Germany

Filed Nov. 23, 1983, Ser. No. 554,636
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1982, 8233139[U]
Int. Cl.³ F21V 29/00
U.S. Cl. 362—294
13 Claims

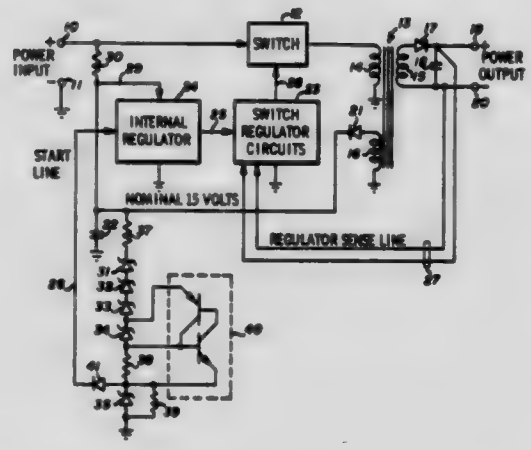


1. A lighting device comprising a low voltage lamp including a reflector and a lamp socket adjoining the reflector, and a toroidal transformer which delivers the feed voltage for the low voltage lamp and which is housed, together with the individual parts of the low voltage lamp, in a housing for the lighting device, characterised in that the housing (12) generally has the contour of a pressed glass lamp with a normed base (18) mounted thereon; in that the toroidal transformer (32) is arranged around the reflector (20) of the low voltage lamp (10) in the light exit side region of the housing (12), which is provided with airflow openings; and in that a substantially cylindrical partition wall (46) is provided between the toroidal transformer (32) and the low voltage lamp (10), with the partition wall (10) being spaced from both the low voltage lamp (10) and the toroidal transformer (32) and forming two air channels (48, 50) for a double chimney.

4,497,017
SWITCHING REGULATOR OFF-LINE STARTING CIRCUIT

Walter R. Davis, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 16, 1983, Ser. No. 495,201
Int. Cl.³ H02P 1/00
U.S. Cl. 363—49
8 Claims



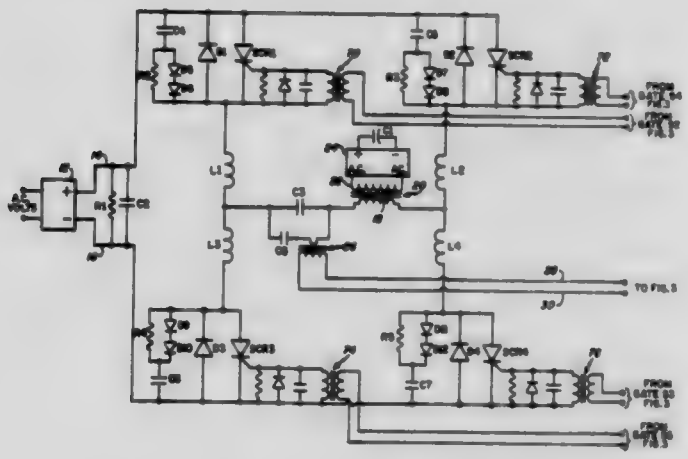
1. In a switching regulator power supply having a d-c input, a level shifting transformer, a pulse width modulated switch for modulating and controlling the energy supplied from said d-c input to said transformer, an output rectifier-filter combination for supplying a d-c output, and pulse generating circuits for supplying pulse width modulated pulses to said switch whereby said d-c output can be fed to said pulse generating circuits to said d-c output, a starting circuit, for initiating operation of said power supply when it is energized, comprising:
an isolated capacitor of sufficient size to store sufficient energy to power said pulse generating circuits during a start interval;
a winding on said transformer and a series connected rectifier coupled for developing a nominal charge voltage on said isolated capacitor;
means for coupling said pulse generating circuits to be energized by said nominal charge voltage;
a first resistor coupled between said d-c input and said capacitor and having a value high enough to be incapable of operating said pulse generating circuits, said first resistor being low enough in value to charge said capacitor when said pulse generating circuits are inoperative;
a plurality of zener diodes coupled in series across said isolated capacitor with the combined zener voltage of said plurality substantially exceeding said nominal charge voltage while being a fraction of said d-c input whereby a zener current will flow when said charge on said isolated capacitor exceeds said combined zener voltage; and
means responsive to the onset of said zener current for starting said pulse generating circuits.

4,497,018

SERIES INVERTER FOR CAPACITOR CHARGING

Benjamin M. Rice, Natick, Mass., assignor to Candela Corporation, Natick, Mass.

Filed May 5, 1983, Ser. No. 491,983
Int. Cl.[3] H02M 7/515
U.S. Cl. 363—96 10 Claims



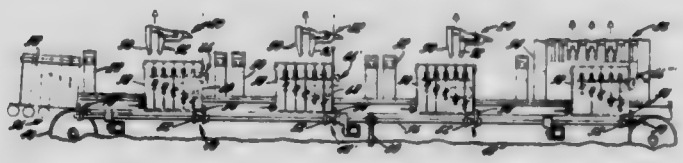
1. A series inverter circuit having electronic switches connected in a push-pull configuration between a dc supply and a common load circuit and a series capacitor in the common load circuit, the series inverter circuit comprising means for discharging the series capacitor through the load prior to a first cycle of current flow from the dc supply.

4,497,019

PROGRAMMABLE CONTROL SYSTEM FOR CONTROLLING AT LEAST TWO PARAMETERS IN A PREDETERMINED SEQUENCE USING BOTH ANALOG AND DIGITAL CONTROL SIGNALS

Glenn R. Waber, St. Paul, Minn., assignor to GNB Batteries Inc., Mendota Heights, Minn.

Continuation-in-part of Ser. No. 245,772, Mar. 20, 1981,. This application May 17, 1982, Ser. No. 378,958
Int. Cl.[3] G06F 15/16; G05B 19/417
U.S. Cl. 364—132 14 Claims



1. An apparatus for controlling a work function requiring the control of at least two parameters in a predetermined sequence which comprises:

(a) at least one work station having means for carrying out said work function;

(b) a slave control means for controlling the work function at said work station in a predetermined sequence;

(c) at least one interface means electronically connected to said slave control means for receiving and storing information for a first parameter of said work function, said interface means preventing transmission of said parameter information to said slave control means until being probed by said slave control means;

(d) a master control means electronically connected to said interface means to transmit said first parameter information to said interface means; said master control means being further electronically connected to said slave control means to cause said slave control means to probe said interface means and receive said first parameter information from said interface means; said slave control means controlling said work function in said predetermined sequence upon receiving said first parameter information;

(e) means for storing information for a second parameter of said work function, said master control means being further electronically connected to said slave control means to allow transmission of said information for a second work function parameter via a signal distinguishable from the first parameter information;

(f) said master control means comprising a microprocessor-based programmable control and said slave control means comprising a microprocessor portion and a control portion; and

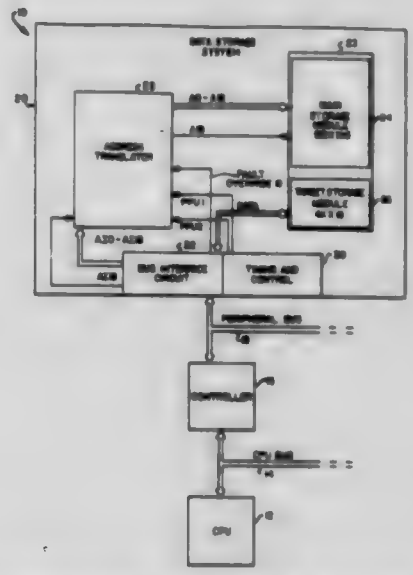
(g) said first parameter information is received by said microprocessor portion of said slave control means and said second parameter information is received by said control portion of said slave control means.

4,497,020

SELECTIVE MAPPING SYSTEM AND METHOD

Thomas J. Gilligan, Rolling Hills Estates, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jun. 30, 1981, Ser. No. 279,204
Int. Cl.[3] G06F 9/30
U.S. Cl. 364—200 28 Claims



1. The method of mapping a subset of elements of a first set of elements into a second set of elements comprising the steps of:

assigning to each element within the first set a different multidigit encoded state from a first set of multidigit encoded states wherein each encoded state is represented by a different combination of multistate digits;

assigning to each element within the second set a different multidigit encoded state from a second set of multidigit encoded states wherein each encoded state is represented by a different combination of multistate digits;

grouping the digits representing the first set of encoded states into a plurality of groups with each group having at least one digit of the digits representing the first set of encoded states and with all of the digits of any given group being mutually exclusive of the digits of any other group, each group of at least one digit having a plurality of different definable group states defined by different combinations of the states of the at least one digit in the group;

storing for each given element of the subset the encoded state from the second set of encoded states assigned to the element of the second set of elements to which the given element is to be mapped, with each digit of the stored encoded state from the second set of encoded states being stored in association with a state of a group, the group state being defined by the state of each of the at least one digit in the group for the encoded state from the first set of encoded states assigned to the given element of the subset;

detecting the occurrence of a multidigit encoded state assigned to an element within the subset; and

retrieving the digits representing the encoded state from the

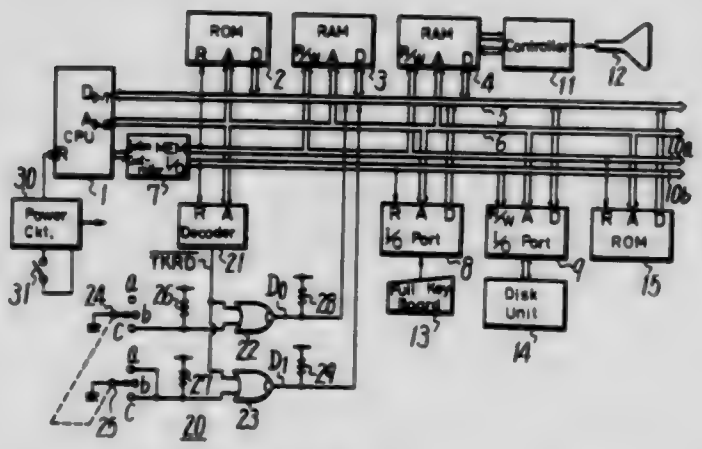
second set of encoded states stored in association with the group states defined by the digits of the detected multi-digit encoded state.

4,497,021

MICROCOMPUTER SYSTEM OPERATING IN MULTIPLE MODES

Joji Fukuda, Yokohama, and Yutaka Yamashiki, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 24, 1982, Ser. No. 391,857
Claims priority, application Japan, Jun. 26, 1981, 56-99868
Int. Cl.[3] G06F *1/00*
U.S. Cl. 364—200 14 Claims



1. A mode selecting circuit for use with a microcomputer system having a central processing means responsive to mode control signals for operating said system in accordance with a plurality of respective operating modes, a power supply circuit for supplying a reset signal to said central processing means, memory means, and a keyboard, comprising;

gate means having first and second input means and output means, said output means being connected with said central processing means for supplying said mode control signals to the latter;

selector switch means connected with said first input means and being operable for selectively determining which of said mode control signals is supplied from said gate means to said central processing means for achieving the respective operating mode; and

sensing means connected to said second input means of said gate means for supplying from said gate means one of said mode control signals characteristic of one of said operating modes when said reset signal is supplied to said central processing means simultaneously with actuation of said keyboard irrespective of said selector switch means.

4,497,022

METHOD AND APPARATUS FOR MEASUREMENTS OF CHANNEL OPERATION

Roger L. Cormier, Pleasant Valley; Robert J. Dugan, Hyde Park; Richard R. Guyette, Hopewell Junction; Ronald L. Hankison, Poughkeepsie; Ming C. Hao, Chappaqua; Arthur L. Levin, Pleasant Valley, all of N.Y.; George A. McClain, Delray Beach, Fla.; Paul J. Wanish, and Carl Zeitler, Jr., both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

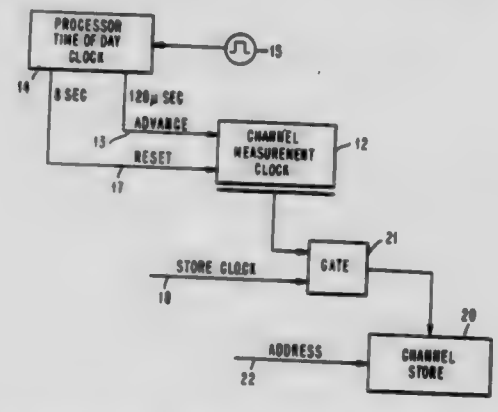
Filed Oct. 19, 1982, Ser. No. 435,192
Int. Cl.[3] G06F *3/00*
U.S. Cl. 364—200 11 Claims

1. A channel measuring system comprising,

a central processor having a time of day clock, a channel having a channel clock, means connecting a stage of the central processor time of day clock to increment the channel clock at intervals defining the resolution of the measuring system, and means connecting a stage of the central processor time of day clock to reset the channel clock at intervals corresponding to the longest channel operation to be monitored, whereby after an initial reset operation the channel clock is comparable with corresponding stages of the central processor time of day clock,

means in the central processor for starting a channel operation including means for storing the value of the system time of day clock in a predetermined location,

means in the channel for accessing the channel clock at a predetermined point in said channel operation, and



means in the channel for subtracting the stored value of the central processor time of day clock and the channel clock and calculating the time interval from the time when the central processor starts the channel operation to the time when the channel reaches the predetermined points in its operation,

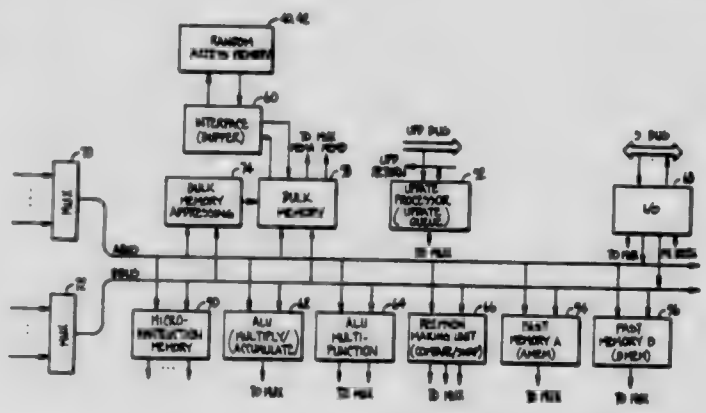
whereby channel measurements operations are performed.

4,497,023

LINKED LIST OF TIMED AND UNTIMED COMMANDS

James A. Moorer, San Rafael, Calif., assignor to Lucasfilm Ltd., San Rafael, Calif.

Filed Nov. 4, 1982, Ser. No. 439,125
Int. Cl.[3] G06F *1/00*
U.S. Cl. 364—200 8 Claims



1. In a digital processor that receives timed and untimed commands, apparatus for storing and ordering the commands for execution by the processor comprising:

means for storing the said commands in a linked list,

means for inserting timed commands in the list, and

means for inserting untimed commands in locations in the list that are in order for execution before the timed commands.

4,497,024

NUCLEAR IMAGE DISPLAY CONTROLLER

David A. Roth, Dousman, Wis., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 1, 1981, Ser. No. 280,713
Int. Cl.[3] G06F *15/42*
U.S. Cl. 364—414 4 Claims

1. Apparatus for imaging anatomy that has been infused with a radiation photon emitting radioisotope, comprising:

camera means including a planar scintillation crystal for

being arranged over the anatomy to produce scintillations in response to absorption of photons emitted from said anatomy to the crystal during predetermined intervals,

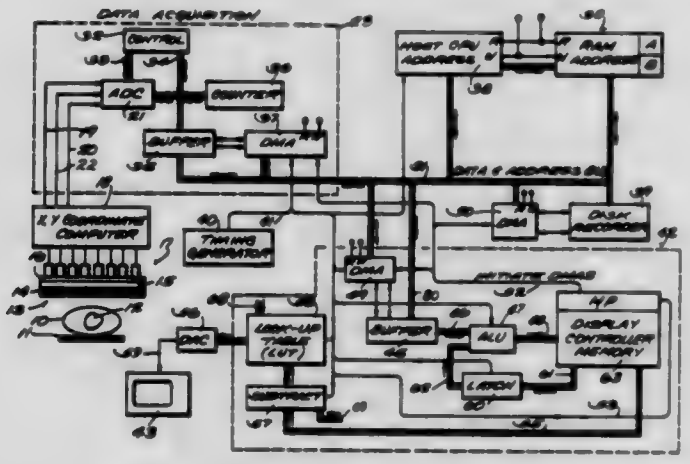
an array of detectors arranged on a side of said crystal opposite of the side on which the photons enter, said detectors producing electric signals corresponding to the scintillations,

computer means having input and output means, the input means coupled to said detectors for receiving said signals, said computer means using said signals to generate analog signals corresponding in amplitude to the x and y coordinates of each scintillation,

an analog-to-digital converter (ADC) having input and output means, the input means coupled to the output means of the computer means for receiving said analog coordinate signals, said ADC converting said analog signals to digital values representative of the x and y coordinates of the scintillations,

addressable digital memory means having a plurality of storage locations, said digital x and y coordinate values corresponding to each detected scintillation constituting an address to a storage location, said locations corresponding, respectively, to picture elements (pixels) that compose an image frame, said locations storing digital numbers representative of the intensities of the pixels,

a central processor unit (CPU), control means including means for incrementing digital numbers and bus means interconnecting said CPU, digital memory means, address output means of said ADC and said control means,



each time a location in said digital memory means is addressed said CPU uses said address to effect transfer of the digital pixel intensity number stored in said location to said control means for being incremented by one and returned to the same location in said memory means,

a display controller including a digital memory, said memory having input and output means,

an arithmetic logic unit (ALU) having a plurality of input means and having output means, the output means being coupled to the input means of the display controller memory,

buffer means having input means coupled to said bus means and having output means coupled to an input means of said ALU,

latch means having input and output means, the input means connected to said output means of said display controller memory and the output means connected to an input means of said ALU,

a first direct memory access (DMA) controller operative to periodically cause transfer of the digital pixel intensity representative numbers for an image frame from the first mentioned memory through said buffer means to one input of said ALU while corresponding pixel intensity representative numbers for frames previously transferred to said ALU are being fed back from said output means of the display controller memory through said latch to the other input of said ALU to thereby add or subtract the pixel values for successive images when said ALU is set to add or subtract, respectively,

a digital number subtractor having input and output means, the input means being connected to an output means of said display controller memory, said subtractor subtracting the same digital number from the digital pixel intensity representative numbers supplied from said display controller memory to thereby reduce the level of all of said numbers proportionately,

a look-up table (LUT) comprised of a random access memory (RAM) having locations corresponding to the locations of the pixels, said RAM having output means and having address input means connected to the output means of said subtractor, said LUT having been previously loaded with a translation table for determining the slope of the brightness versus pixel number relationship for the numbers resulting from the subtraction, said numbers constituting addresses to said LUT locations, addressing any location resulting in a digital signal representative of pixel brightness appearing at the output means of said RAM,

a digital-to-analog converter coupled to the output means of said RAM for converting said signals to analog video signals, and

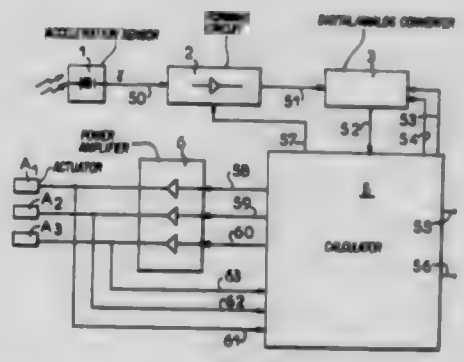
television means for displaying an image represented by said video signals.

4,497,025

PROCEDURE AND SYSTEM FOR DETECTING COLLISIONS AND CONTROLLING SAFETY

Gilles Hannoyer, Saint-Germain En-Laye, France, assignor to Regie Nationale Des Usines Renault, Boulogne-Billancourt, France

Filed Apr. 9, 1982, Ser. No. 367,087
Claims priority, application France, Apr. 28, 1981, 81 08424
Int. Cl.[3] B60R *21/08*
U.S. Cl. 364—424 5 Claims



1. A method of detecting collisions and controlling safety devices for vehicle passengers in which the vehicle decelerations are continuously measured and in which the measured signals are converted into a numerical signal which represents the deceleration of the vehicle with said numerical signal being processed and compared with predetermined values so that the release of the safety devices is controlled as a function of the result of the comparison, comprising the following steps carried out in cycles with each cycle having a constant duration:

calculating a weighted acceleration value based upon said numerical deceleration value for a first cycle and at least one of three constants;

producing an mean value of the weighted acceleration value;

comparing said mean value with at least a first and a second predetermined value;

choosing one of said constants to calculate the weighted acceleration value during the following cycle as a function of the result of said comparison;

calculating a correcting term value each time said mean value exceeds successively said first predetermined value and said second predetermined value wherein said cor-

recting term value is a function of the time between the successive excessions of said two predetermined values;
retaining said calculated correcting term value as said correcting term as long as said mean value is greater than or equal to said first predetermined value but is less than the value of said second predetermined value;
assigning to said correcting term a value of zero when said mean value decreases below said first predetermined value;
calculating an algorithm having a value equal to the sum of said mean value and said correcting term;
comparing said algorithm value to at least one threshold value; and
releasing at least one of said safety devices when said algorithm value is greater than or equal to said at least one threshold value.

4,497,026

ANTI-WHEEL-LOCK CONTROL SYSTEM

Volker Braschel, Heilbronn; Reiner Emig, Oftersheim; Heinz Leiber, Oberriexingen; Michael Mendel, Heidelberg, and Jürgen Gerstenmeier, Neckargemünd-Waldhilsbach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE81/00187, § 371 Date Aug. 18, 1982, § 102(e) Date Aug. 18, 1982, PCT Pub. No. WO82/02862, PCT Pub. Date Sep. 2, 1982

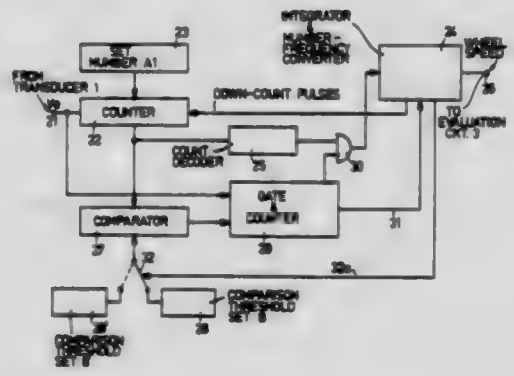
PCT Filed Nov. 4, 1981, Ser. No. 414,348

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1981, 3107115

Int. Cl.[3] B60T *8/10*

U.S. Cl. 364—426

8 Claims



1. An anti-wheel-lock control system for vehicles comprising

a wheel speed transducer (1) providing actual wheel speed signals, and, upon oscillating operation of wheels, disturbance signals;
an evaluation circuit (3) coupled to the speed transducer and receiving signals therefrom, and generating control signals;
devices (4, 5) coupled to the evaluation circuit for varying braking pressure;
and a network to recognize disturbance signals occurring due to frictional oscillations of the wheels and inhibiting said disturbance signals from affecting operation of the evaluation circuit (3) comprising
means (16*a*, b_{max}; 28, B, 28', B') for setting a simulation signal which has a range corresponding to a change in wheel speed which is physically impossible;
recognition circuit means (15–17; 22, 27, 29) comparing the wheel speed signals with the simulation signals and providing an output if the wheel speed signals include disturbance signals which represent physically impossible conditions in the system and hence are within the range of the simulation signals;
a memory (18; 24) including an integrator continuously storing wheel speed signals as received from the transducer and providing auxiliary wheel speed signals;
and an auxiliary device (13, 17; 30) connected to and controlled by said recognition circuit means and inhibiting application of signals from the transducer (1) to the evaluation circuit and, instead, connecting the storage means to the evaluation circuit to provide auxiliary wheel speed signals for the control devices (4, 5) from wheel speed measured prior to appearance of the disturbance in the signals derived from the transducer (1); and wherein, for digital processing of signals in the system,
the transducer (1) provides output signals in pulse form;
a first counter (22) is provided;
means (23) for setting the first counter to a predetermined count value comprising
a number entering means (23) which sets said first counter (22) to a predetermined count value, said first counter counting down from said predetermined count value;
control means (24) coupled to the counter and changing the count value therein at a rate representative of the count number set into the counter upon occurrence of a preceding pulse from the transducer, so that the count number counted by the counter, upon no change in wheel speed, will be unvarying, the
counter control means including said integrator (24) and a number-frequency converter to provide numbered pulses to said first counter (22) and to control the counting state of said first counter,
said integrator controlling the first counter to count down at a frequency which is in proportion with a previously measured speed value as counted by said counter and controlled by said integrator (24),
the pulses from the integrator so controlling the first counter (22) that, when wheel speed is unvarying, said first counter is placed into zero position until the appearance of a next transducer pulse;
a count value decoder (25) is provided, connected to the first counter for decoding the count value deviation (A) from zero of said counter, said count value decoder being connected to said integrator (24) in a closed loop to correct the integration rate of said integrator so that, upon a subsequent cycle of the counter when trigered by a speed signal from the transducer, and under then unvarying wheel speed conditions, the counter will then again count to zero;
and wherein the recognition circuit means comprises a digital comparator (27) comparing the actual count state (A) of said first counter (22) with a count value derived from said simulation signal setting means and providing a count state representative of a physically impossible condition in the system,
said comparator providing an output signal representative of the comparison of the number (A) in the counter and the threshold (B, B') supplied thereto by said simulation signal setting means; and wherein
a gate circuit (29, 30), forming said auxiliary device, is provided, coupled to said count decoder (25) and the integrator (24) and rendering change in the integrator ineffective if the count state in the first counter (22) exceeds said threshold (B) applied thereto by the simulation signal generating means (28), the integrator thereby maintaining the wheel speed signal as an auxiliary stored wheel speed signal representative of prior wheel speed.

4,497,027

METHOD AND APPARATUS FOR AUTOMATIC WARP PREVENTION OF CORRUGATED BOARD

Richard McGuire, Danbury, Conn., and Herbert M. Donhowe, Rogers, Ark., assignors to Textrix Corporation, Danbury, Conn. and Corrugated Industry Development Corp., Milwaukee, Wis.

Filed Jun. 14, 1982, Ser. No. 388,468

Int. Cl.[3] G06F *15/46*

U.S. Cl. 364—471

77 Claims

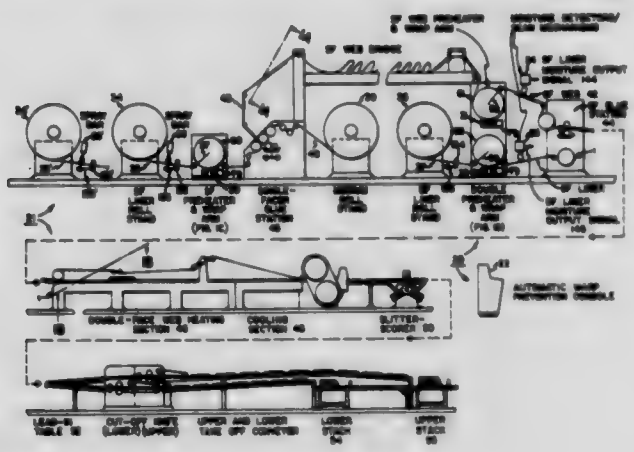
1. An automatic warp prevention apparatus for use with a corrugator machine for fabricating corrugated board from at

least a single-face liner, a medium, and a double-face liner, the corrugator machine including separate means responsive to at least a received adjusting signal, for adjusting the overall moisture content of at least the single-face liner and double-face liner, comprising:

(A) means for sensing the moisture content of the double-face liner across the liner's width so as to obtain a plurality of readings;

(B) means for sensing the moisture content of the single-face liner across the liner's width so as to obtain a plurality of readings; and

(C) means for processing the sensed double-face liner and single-face liner moisture readings, including



(1) averaging the double-face liner readings,

(2) averaging the single-face liner readings,

(3) determining the average moisture difference between the reading average of the double-face liner and single-face liner, and

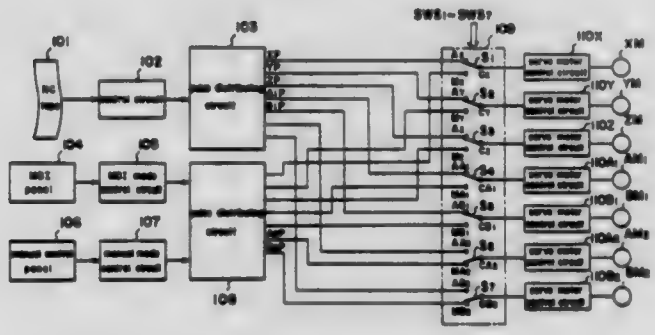
(4) if the average moisture content difference is outside of a predetermined band about a desired average moisture offset, said desired average moisture offset having any positive,. negative or zero value and said band having any positive, negative or zero value, then generating the adjusting signal with a magnitude proportional to the amount the average moisture content difference is different from the desired average moisture offset.

4,497,028

NUMERICAL CONTROL SYSTEM

Ryoichiro Nozawa, Tokyo, and Hideaki Kawamura, Hachioji, both of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

Filed Sep. 25, 1981, Ser. No. 305,787
Claims priority, application Japan, Sep. 30, 1980, 55-136609
Int. Cl.[3] G05B *7/00;* G05D *3/04;* D05B *21/00*
U.S. Cl. 364—474 6 Claims



1. A numerical control method for a machine tool having a plurality of controlled axes of movement, each axis having a manual operation mode, a manual data input mode and an automatic operation mode, which method comprises the steps of:

operating at least some of the controlled axes of the machine tool in a mode other than said automatic operation mode, and

executing simultaneously, machining work along some of said controlled axes in the automatic operation mode, and another task along at least some of the remaining controlled axes, in a mode other than said automatic operation mode.

2. A numerical control appartus, having automatic control circuitry for providing automatic control pulses and manual control circuitry for providing manual control pulses, for controlling a machine tool having a plurality of axes controlled by respective servo control circuits each having an input terminal for selectively receiving one of manual control pulses and automatic control pulses, each axis having a manual operation mode, a manual data input mode and an automatic operation mode, said apparatus comprises:

switching means responsive to a changeover signal for selectively connecting the input terminals of the servo control circuits to receive one of the automatic control pulse and the manual control pulse, wherein the servo control circuits for the axes to be controlled in an automatic operation mode are connected to the automatic control circuitry, and the remaining servo control circuits are connected to the manual control circuitry, and

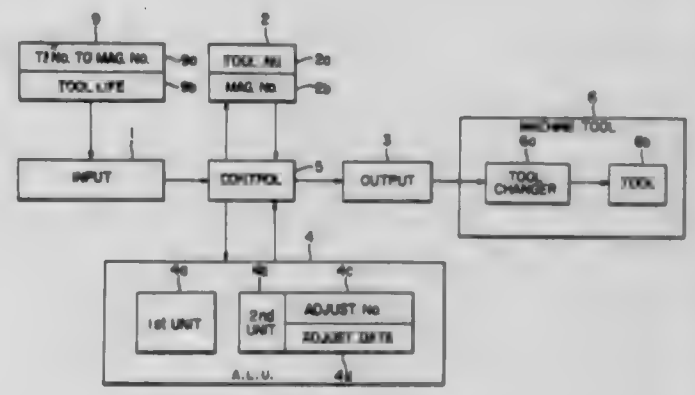
executing means operatively connected to said switching means, for providing said changeover signal, and for simultaneously executing machining work in the automatic operation mode, and executing another task in a mode other than the automatic operation mode.

4,497,029

NUMERICAL CONTROL DEVICE

Morio Kiyokawa, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1982, Ser. No. 367,607
Claims priority, application Japan, Apr. 15, 1981, 56-56779
Int. Cl.[3] G06F *15/46*
U.S. Cl. 364—474 16 Claims



1. A numerical control device comprising:

an input means for inputting a tool select command for commanding a selection of a tool to be used in a machining process from a plurality of tools each mounted at a corresponding magazine location;

a tool number register means for storing said tool select command as a tool number;

a tool-number-to-magazine-number register means for registering tool numbers correlated with corresponding magazine numbers, each of the magazine numbers corresponding to a magazine location;

a tool life register means for storing tool lives correlated with the corresponding magazine numbers;

a first calculator means for determining a magazine number of a magazine location at which a usable tool having a remaining life is mounted in response to a tool number stored in said tool number register means and in response to the contents of said tool-number-to-magazine-number register means and said tool life register means;

a magazine number register means for storing said magazine number determined by said fisrt calculator means;

an adjustment number register means for registering tool

adjustment numbers correlated with the coresponding magazine numbers;

an adjustment data register means for registering tool adjustment values correlated with the corresponding adjustment numbers;

a second calculator means for calculating a tool adjustment value in response to the magazine number stored in said magazine number register means and in response to the contents of said adjustment number register means and the adjustment data register means; and

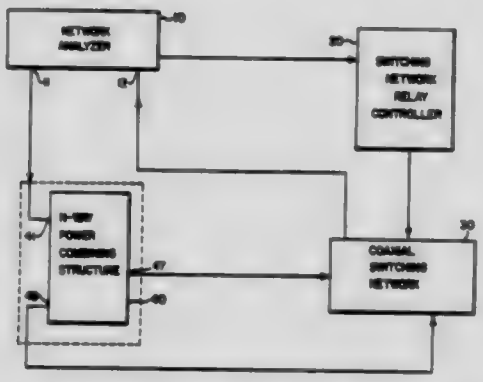
output means for outputting said magazine number stored in said magazine number register means and said tool adjustment value calculated by said second calculator means.

4,497,030

N-WAY SUMMING NETWORK CHARACTERIZATION SYSTEM

Donald R. Bowling; Darry M. Kinman; Marko Afendykiw, all of Ridgecrest, and David J. White, China Lake, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 20, 1981, Ser. No. 255,621
Int. Cl.³ G01S *7/02*
U.S. Cl. 364—481 7 Claims



1. A method of quasi real-time computer aided tuning and optimization of symmetrical N-way microwave power combining structures using a network analyzer connected to a coaxial switching network which selects transmission routes through said combining structure, comprising the steps of:

providing said analyzer with a data base for said combining structure including at least;

a constant (N) dependent on the number of input ports in said combining structure;

a constant (Zo) which is the characteristic impedance of said network analyzer;

limiting the number of input ports of said combining structure available for signal transmission;

inputting a test signal from said network analyzer to one of the open input ports of said combining structure;

measuring the scattering parameters of said power combining structure at various RF frequencies utilizing various transmission paths through said power combining structure;

calculating in said analyzer the maximum potential combining efficiency, η, and the input impedance of the ith port under conditions of maximum combining efficiency, Zic, at each RF frequency desired; and

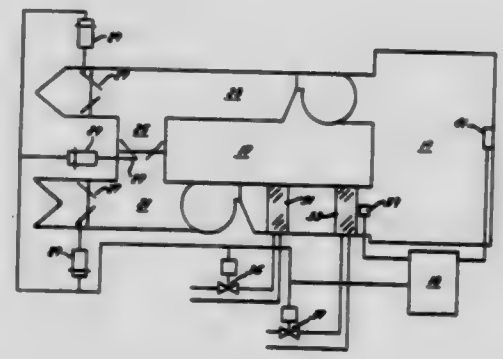
outputting said efficiency, η, and impedance, Zic, for each RF frequency in tangible form for use by an operator in aligning said power combining structure for optimum performance.

4,497,031

DIRECT DIGITAL CONTROL APPARATUS FOR AUTOMATED MONITORING AND CONTROL OF BUILDING SYSTEMS

Paul H. Froehling, Franklin; Jude R. Anders, Glendale; Lawrence J. Strojny, Muskego, and James M. Rehberger, Caledonia, all of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Jul. 26, 1982, Ser. No. 401,632
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—505 40 Claims



1. A low level microprocessor based system controller comprising:

power supply means for providing a source of regulated electrical power to the controller;

field programmable processor means for transferring selected data base information to and receiving status signals from an interface means, digitally executing algorithms respecting said status signals in accordance with computer program routines selected from a library of mnemonically identified routines residing in the read-only memory portion of the processor means and responsively directing programmed data and digital command signals to said interface means;

interface means for periodically updating the data base of said processor means, analyzing and conditioning signals received from said processor means and from remote data points, and for selectively controlling said remote data points, and;

operator panel means having information display means, said operator panel means cooperating with said processor means for displaying and adjusting selected system operating parameters and variables.

4,497,032

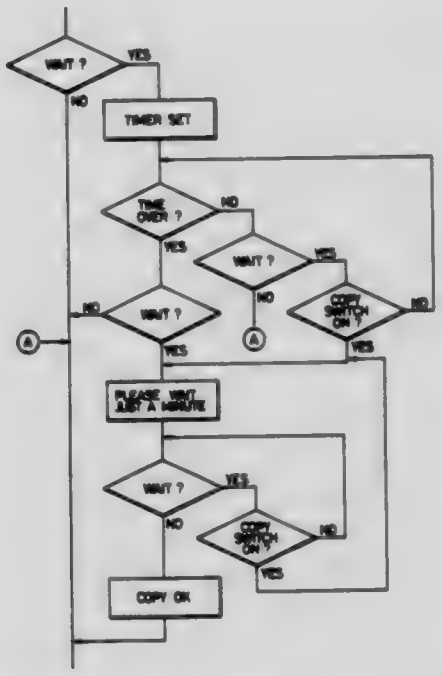
VOCAL INDICATING DEVICE OF COPYING MACHINE

Tatsuoki Shinohara, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 19, 1982, Ser. No. 399,588
Claims priority, application Japan, Jul. 22, 1981, 56-113639
Int. Cl.³ G10L *1/00*
U.S. Cl. 364—513.5 4 Claims

1. A vocal indicating device for a copying apparatus including a power switch and a copy start switch, comprising means for detecting an operating condition of parts of said apparatus, said detecting means outputting signals indicative of a waiting mode or a ready mode of said copying apparatus, voice output control means, and control means receiving said signals outputted from said detecting means for controlling the operation of said voice output control means, said control means including timer means set to a predetermined time upon detection of both an operation of said power switch and signals indicative

of said waiting mode and actuating said voice output control means at the end of said predetermined time to output a wait



indication when said waiting mode continues over said predetermined time.

4,497,033

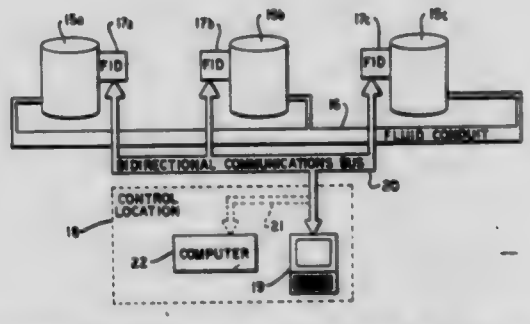
MULTIPLEXED ARRANGEMENT FOR CONNECTING A PLURALITY OF TRANSDUCERS TO A FIELD INTERFACE DEVICE AT A STORAGE TANK

Rafael Hernandez, Jimenez, Mexico; Edmund E. Chow, Lilburn, Ga.; Marion L. Moncrief, Jr., and Frank S. Glass, both of Stone Mountain, Ga., assignors to Process Technologies, Inc., Tucker, Ga.

Division of Ser. No. 200,382, Oct. 24, 1980, Pat. No. 4,387,434. This application Sep. 22, 1982, Ser. No. 421,142

Int. Cl.³ G01F *23/26;* G06F *15/00*

U.S. Cl. 364—551 **1 Claim**



1. In a tank in a fluid storage facility including a plurality of transducers spaced vertically in said tank and means responsive to the fluid level in said tank for providing an electrical level signal, the improvement of:

an addressable electronic multiplexer connected to said plurality of transducers for connecting an output signal of a first particular one of said plurality of transducers to a controller in response to said controller providing a first discrete address to said multiplexer, said address being determined by said electrical level signal;

said controller including memory means for defining a predetermined range of valid values of said output signal which correspond to an expected range of values for said output signal when said first particular one of said plurality of transducers is operating properly;

said controller further comprising testing means responsive to said memory means for providing a second particular discrete address to said multiplexer in response to said output signal of said first particular transducer having a value outside said predetermined range of valid values.

4,497,034

HEADING DETECTING APPARATUS

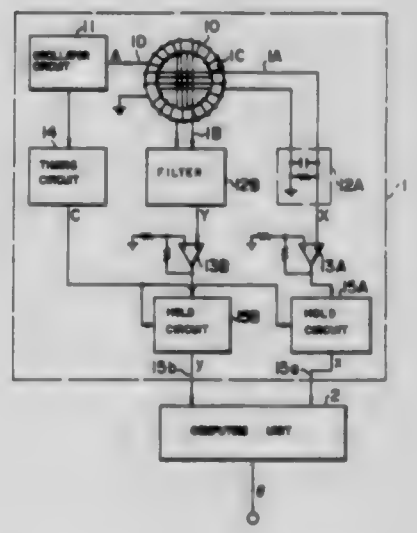
Akira Kuno, Oobu; Muneaki Matsumoto, Okazaki, and Koji Numata, Toyokawa, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 8, 1982, Ser. No. 355,622

Claims priority, application Japan, Aug. 5, 1981, 56-123370; Aug. 8, 1981, 56-124432; Aug. 24, 1981, 56-133090

Int. Cl.³ G01P *21/00*

U.S. Cl. 364—571 **9 Claims**



1. A heading detecting apparatus attached to a moving object and including a geomagnetic field sensor for detecting the direction of the earth's magnetic field in terms of two orthogonal components and a computing circuit responsive to orthogonal first and second electric signals from said geomagnetic field sensor to compute a heading of said moving object and generate a heading signal, wherein said computing circuit comprises:

means whereby when one of first and second output values (X', Y') respectively proportional to said orthogonal first and second electric signals (X, Y) attains a predetermined value, one of first and second offset values (X offset, Y offset) for the other of said first and second output values is repeatedly computed and stored; and

means for repeatedly during operation of said apparatus correcting said electric signals from said geomagnetic field sensor in accordance with said offset values to derive said first and second output values for computing the heading signal of said moving object therefrom.

4,497,035

METHOD OF GENERATING TIME DELAY

Shigeru Yabuuchi, Tokyo; Takeyuki Endoh, Kodaira; Kazuyuki Kodama, Hachioji, and Jushi Ide, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 5, 1982, Ser. No. 337,292

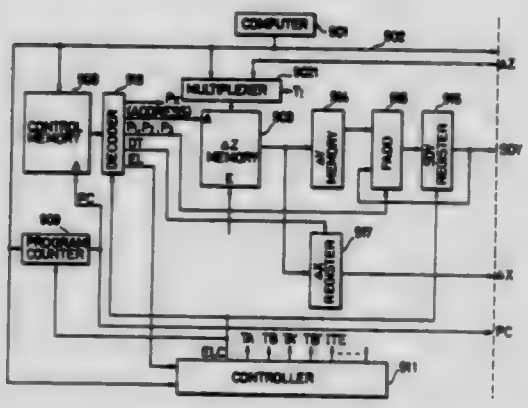
Claims priority, application Japan, Jan. 16, 1981, 56-3790

Int. Cl.³ G06F *15/32;* G06J *1/02*

U.S. Cl. 364—577 **8 Claims**

1. A method of generating a signal with a time delay in response to and in correspondence with an input signal, comprising the first step of sampling said input signal at a predetermined sampling frequency providing a sampling interval equal to an integral number of times (the integer being at least 2) the cycle time of an operation cycle, evaluating at each sampling point the variation of said input signal during a sampling interval between each particular sampling point and the previously adjacent sampling point, and storing such variations successively into a first memory; the second step of successively reading out from said first memory for each current sampling interval the variation in a sampling interval which precedes the current sampling interval by a predetermined number of sampling intervals according to the desired time delay; and the third step of generating a value of said input signal for each

operation cycle for each of said preceding sampling intervals by an interpolation operation based on the variation read out from said first memory, said cycle time and said sampling



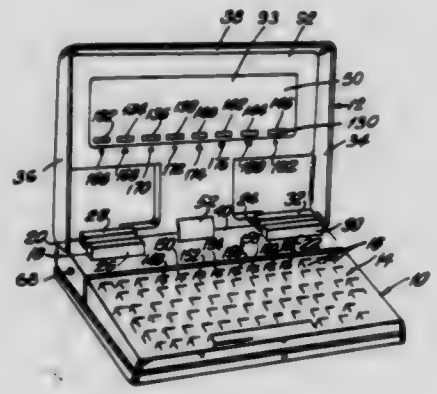
interval, and providing the generated values as an output signal having the desired time delay for said input signal of each operation cycle.

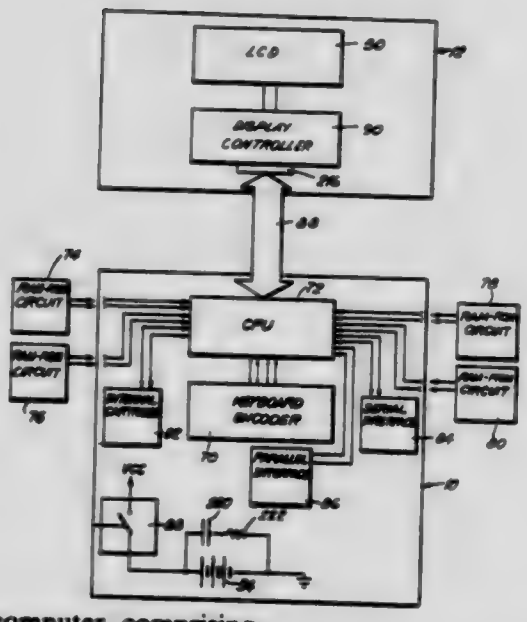
4,497,036

PORTABLE COMPUTER

James P. Dunn, Westport, Conn., assignor to Microffice Systems Technology, Fairfield, Conn.

Filed Apr. 12, 1983, Ser. No. 484,319
Int. Cl.[3] G06F *7/00*
U.S. Cl. 364—708
32 Claims





1. A computer, comprising:

a central processing unit;

a keyboard coupled to said central processing unit and including a plurality of entry keys for entering a full alphabet and ten digits;

a display arrangement coupled to said central processing unit and including a liquid crystal display;

a case having a base with an upper surface and an edge, and a cover hinged to said base at the edge and having an inner surface facing said base when closed and exposed to a viewer when opened;

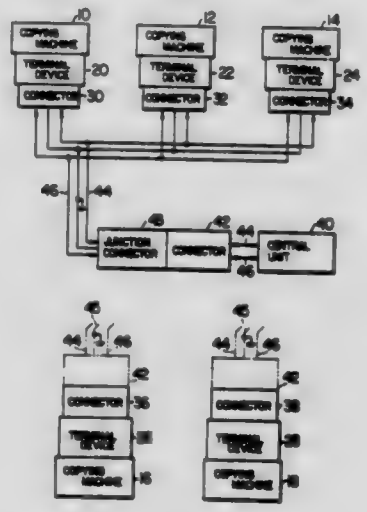
said base housing said central processing unit and said keyboard and exposing said keyboard for operation by a user when the cover is open and said cover housing said display and exposing said display on the inner surface when open and covering the entire upper surface when said case having an opening for forming a cartridge receiving chamber and having a connector connectable to circuitry in a cartridge and connected to said central processing unit.

4,497,037

APPARATUS FOR MANAGING A GROUP OF COPYING MACHINES

Takaaki Kato, Toyohashi; Takeshi Kato, Funabashi, and Yoshikazu Yoshizawa, Ebina, all of Japan, assignors to Nippondenso Co., Ltd., Kariya; Systemkiki Co., Ltd. and Fuji Xerox Co., Ltd., both of Tokyo, all of, Japan

Filed Nov. 25, 1981, Ser. No. 324,951
Claims priority, application Japan, Nov. 26, 1980, 55-166179
Int. Cl.[3] G06F *15/20*
U.S. Cl. 364—900
1 Claim



1. An apparatus for managing a plurality of copying machines comprising:

a plurality of terminal devices each operatively associated with one of a plurality of copying machines, each said terminal device including

(a) first input means for receiving code signals each indicative of one of a plurality of users,

(b) second input means for receiving a signal indicative of the copying operation of its associated copying machine,

(c) data processing means for enabling the copying operation of said associated copying machine upon receipt of said code signals and including terminal data memory means having a plurality of distinguishable storage locations for each of said users, whereby said signal indicative of the copying operation received by said second input means is cumulatively stored in corresponding storage locations of said terminal data memory means specified by said code signals received by said first input means, and

(d) first communication means provided in the terminal device for data transmission from and to said data processing means; and

a central unit directly connected to each of said plurality of terminal devices through transmission lines, said central unit including

(e) second communication means provided in the central unit for data transmission from and to each said first communication means of said terminal devices,

(f) central data processing means for controlling data transmission to and from said terminal devices and including central data memory means having a plurality of distinguishable storage locations for each of said plurality of users, whereby data cumulatively stored in

each of said terminal data memory means and transmitted through said first and second communication means are summed up separately for each of said users and stored in corresponding storage locations of said central data memory means specified by said code signals, and

(g) manually operable means for generating first and second commands,

said central data processing means being operative to effectuate the data summing-up and storing operation of said central data memory means upon receipt of said first command from said manually operable means and operative to erase said data cumulatively stored in each of the corresponding storage locations of all said terminal data memory means upon receipt of said second command from said manually operable means.

4,497,038

ELECTRONIC CONTROLLER HAVING A DETACHABLE FRONT PANEL

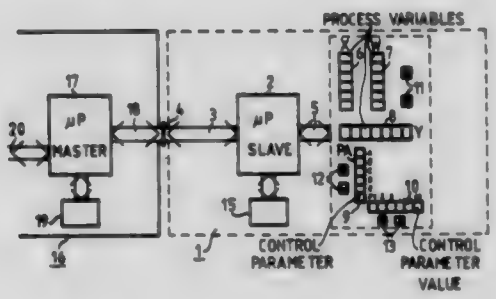
Rudolf Diepold-Scharnitzky; Wolfgang Lesche, and Volker Rindfleisch, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 28, 1982, Ser. No. 383,102

Claims priority, application Fed. Rep. of Germany, May 29, 1981, 3122037

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—900 **4 Claims**



1. In an electronic controller for controlling an external process, the controller being of the type having a main housing for control circuitry for controlling at least one of a plurality of process variables and at least one of a plurality of control parameters associated with the process, a front panel unit on which are arranged means for incrementally changing a value of at least one process variable controlled by the controller in discrete magnitude steps, means for selecting a control parameter controlled by the electronic controller, means for incrementally changing a value of the selected control parameter in discrete magnitude steps, means for indicating the value of the process variable, means for indicating the selected control parameter and means for indicating the value of the selected control parameter, the improvement comprising:

means for electrically detachably connecting the front panel unit from said main housing of the electronic controller;

means for mechanically detachably connecting the front panel unit from said main housing of the electronic controller;

a master microprocessor included in said control circuitry contained in said main housing for controlling the process, said master microprocessor receiving inputs associated with said at least one process variable and said control parameters from said controlled process and transmitting outputs associated with said at least one process variable and said control parameters to said controlled process; and

a slave microprocessor contained in said front panel unit and permanently electrically coupled to said means for selecting a control parameter, said means for incrementally changing a value of the selected control parameter, said means for incrementally changing a value of the at least one process variable, said means for indicating the selected control parameter, said means for indicating the value of the at least one process variable and said means for indicating the value of the selected control parameter, said slave microprocessor coupled to said master microprocessor in said main housing through said means for electrically detachably connecting and said means for mechanically detachably connecting, said slave microprocessor being responsive to signals received from said master microprocessor via said means for electrically detachably connecting for updating values of said at least one process variable and said control parameters and transmitting signals to said master microprocessor via said means for electrically detachably connecting for changing the value of said selected control parameter and said at least one process variable in response to actuation of said respective means for incrementally changing the value of said selected control parameter and said at least one process variable;

said control circuitry in said main housing comprising means for independently controlling the process whereby said front panel unit may be detached from said main housing without interrupting the control of the process.

4,497,039

JOIN OPERATION PROCESSING SYSTEM IN RELATIONAL MODEL

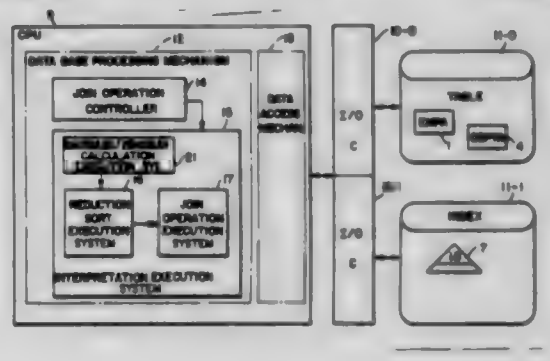
Hazime Kitakami, Yokohama; Hiroshi Ishikawa, Tokyo; Masayoshi Tezuka; Susumu Adachi, both of Kawasaki, and Akifumi Makinouchi, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 30, 1982, Ser. No. 393,558

Claims priority, application Japan, Jun. 30, 1981, 56-101490

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—900 **6 Claims**



1. A join operation processing system responsive to user instructions for performing join operations in a relational model in a data processing system where a data base storing a plurality of data tables, each data table comprising a plurality of information fields with a plurality of data entries within each field, further storing pertinent index tables arranged such that entries in each index table are in an ascending or descending sequence, the entries in the index table corresponding to the data entries in an information field in one or plurality of said data tables and storing dictionary information for each table defining the information fields, and processings are executed by providing a data base processing mechanism and using said tables of said data base, said data base processing mechanism at least comprising:

maximum/minimum calculation execution means for preliminarily judging a tuple extraction range for a join field in a join object table based on a join predicate described by users and the dictionary information for the index table which can be utilized for said join processing;

reduction sort execution means for sorting one of unsorted tables or one of the tables which cannot use the index tables based on the preliminary judged tuple extraction range and for executing the sorting for a succeeding table based on the extraction range limited by the sorting by said reduction sort execution means; and

join calculation execution means for executing join process-

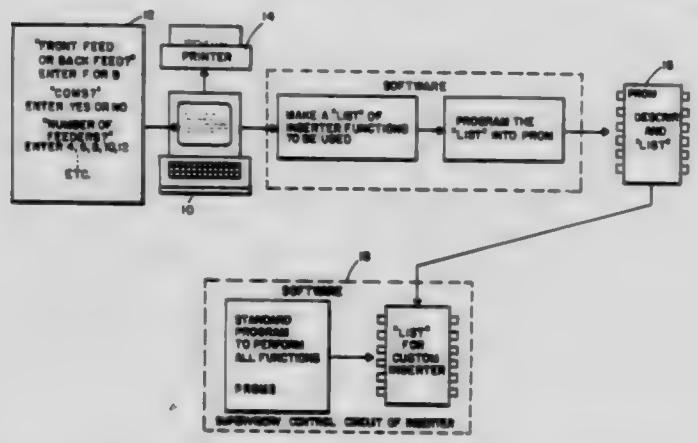
ing by extracting the join object tuple for the join object table based on the extraction range for the index table for the table which can use the index and the extraction range of the table sorted by said reduction sort execution means, whereby the processing instructed by users is executed on the basis of the limited relationship defined by the join object table.

4,497,040

METHOD AND APPARATUS FOR CUSTOMIZING A MULTI-STATION DOCUMENT-INSERTER

John M. Gomes, Bridgeport, and Peter N. Piotroski, New Canaan, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 1, 1982, Ser. No. 394,385
Int. Cl.³ G06F 9/22
U.S. Cl. 364—900 **10 Claims**



1. A method for customizing a multi-station document inserter having stations adapted for use in a plurality of selectable configurations and which includes a standard program having executable routines operable for causing performance of all of a plurality of inserter functions, comprising the steps of:

obtaining user inputs relating to a particular desired configuration and operation of the selected stations multi-station document inserter;

translating the user inputs into a specific data table for use with the standard program in the multi-station document inserter; and

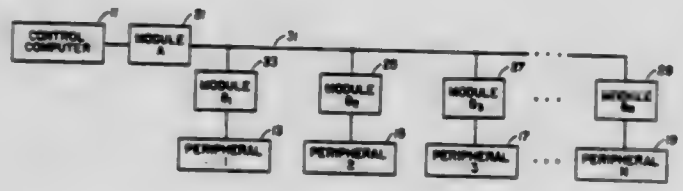
incorporating the specific data table into the multi-station document inserter for selecting those particular executable routines of the standard program to be used to provide a multi-station document inserter which is customized to accomplish particular user requirements.

4,497,041

PARALLEL SERIAL CONTROLLER

Leon Braun, Hollywood, Fla., assignor to Sebrn Corporation, Miami, Fla.

Filed Sep. 9, 1982, Ser. No. 416,177
Int. Cl.³ G06F 3/04
U.S. Cl. 364—900 **3 Claims**



1. An interface between a peripheral output and a computer, where the peripheral outputs data in the form of a series of n-bit words with corresponding strobe pulses and certain of the said n-bit words are to be masked and where said interface comprises,

(a) an n-bit word D flip-flop connected to said peripheral output thereby receiving said n-bit words at an input thereof;

(b) a first one-shot means, said first one-shot means being triggered by said strobe pulses to deliver a first one-shot output, said first one-shot output activating said D flip-flop to generate a D flip-flop output after a time delay sufficiently long to have said n-bit peripheral output word set up on said D flip-flop inputs;

(c) an n-bit word first-in/first-out memory, said memory connected to said D flip-flop output to receive said output as a memory input;

(d) a hardware mask for detecting said certain of said n-bit words which are to be disregarded, said mask being connected to said D flip-flop so that the output thereof becomes the mask input;

(e) logic means preselected in said mask to differentiate such n-bit words as are desired and those to be disregarded;

(f) said mask having a mask output that is preselected to desired or to be disregarded n-bit words;

(g) a second one-shot means triggered by said strobe pulses to deliver a second one-shot output, said second one-shot output being combined with said mask output and triggering said memory to store the n-bit word on said memory input if and only if said mask output indicates that said n-bit word on said memory input is not one of said certain n-bit words to be disregarded thereby storing a series of n-bit words;

(h) a third one-shot triggered by said strobe pulses to deliver a third one shot output, said third one-shot output having a pulse width exceeding the time between successive strobe pulses in a said series so that during a said series said third one-shot output forms a single pulse;

(i) said memory having a not empty indicator output connected to said third one-shot output;

(j) said not empty indicator output being combined with said third one-shot output to block any strobe pulse from said peripheral if said memory has words in storage and said any strobe pulse is not one of a said series;

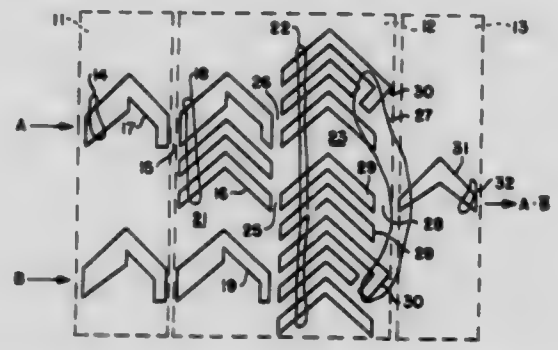
(k) means for said computer to communicate with said memory and receive said series of n-bit memory words.

4,497,042

MAGNETIC BUBBLE LOGIC APPARATUS

Richard P. Williams, Columbia, Md., assignor to The United States of America as represented by the Director of the National Security Agency, Washington, D.C.

Continuation of Ser. No. 251,664, Apr. 6, 1981, Pat. No. 4,435,783. This application Sep. 19, 1983, Ser. No. 533,473
Int. Cl.³ G11C 19/08
U.S. Cl. 365—5 **5 Claims**



1. An apparatus for propagation for magnetic bubbles, comprising:

an input stage including first and second inputs for receiving one or more bubbles;

an asymmetric strip-former stage adjacent the input stage and including a plurality of propagating elements vertically spaced so as to produce a strip extending the full height of said strip-former stage when a bubble is provided only to a first input and to form a less than full

height strip when a bubble is provided only to a second input, and

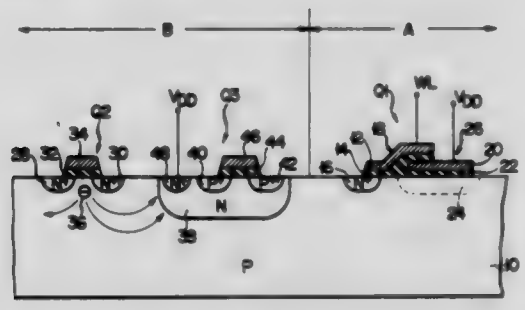
a decoding stage having a first output propagating element spaced apart from said strip former a distance sufficient to prevent propagation of all but said full-height strip onto said first output element.

4,497,043

SEMICONDUCTOR MEMORY DEVICE

Tetsuya Iizuka, Kawasaki, and Hisashi Hara, Kamakura, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 26, 1982, Ser. No. 372,008
Claims priority, application Japan, May 25, 1981, 56/78983
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—182 **8 Claims**



1. A semiconductor memory device comprising:

a semiconductor body of a first conductivity type;

first and second semiconductor regions of a second conductivity type formed in the surface of said semiconductor body;

a memory section having at least one MOS transistor of a first channel type formed in the surface of said first semiconductor region and acting as a transfer gate; and

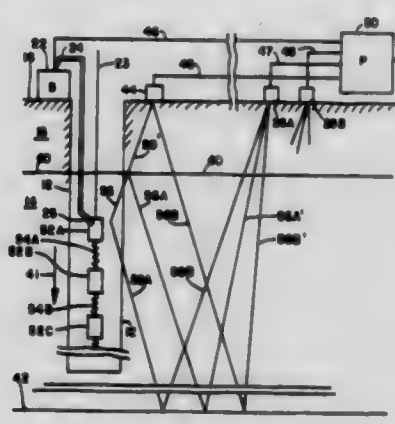
a peripheral circuit including at least a second MOS transistor of a second channel type formed in the surface of said semiconductor body and a third MOS transistor of said first channel type formed in the surface of said second semiconductor region.

4,497,044

SEISMIC WAVE GENERATOR

Daniel Silverman, 5969 S. Birmingham St., Tulsa, Okla. 74105

Filed Jan. 7, 1982, Ser. No. 337,678
Int. Cl.³ G01V *1/02, 1/28*
U.S. Cl. 367—41 **34 Claims**



22. In a seismograph exploration system, including a seismic wave generator, comprising an array of a plurality of impulse sources (IS) which can be activated in the earth in a known time sequence, said ISs positioned at different depths below the surface of the earth, the depths of at least two being known, at least one seismic sensor spaced apart from said ISs, amplifier means and recording means, the method of operation to provide optimum information of the subsurface, comprising the steps of;

(a) initiating sequentially the plurality of ISs in said vertical array in a first known time sequence;

(b) detecting the seismic waves generated in the earth by said initiations, at a first sensor displaced from said array, and producing, and at least temporarily storing, a first electrical signal; produced by said first sensor;

(c) producing a second electrical signal comprising a time series of electrical pulses, equal in number to said ISs, in a time sequence equal to said first time sequence, as modified by the relative vertical positions of said ISs and the known velocity of seismic waves in the earth;

(d) correlating said first signal with said second signal to produce a first correlogram;

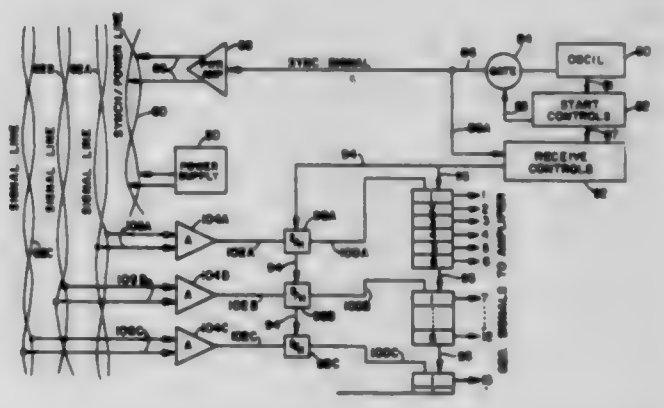
whereby said first correlogram will indicate the presence of upward reflected seismic waves from below said array, generated by the downtraveling seismic waves from said array.

4,497,045

SEISMIC SYSTEM WITH SIGNAL MULTIPLEXERS

Sheldon M. Miller, Tulsa, Okla., assignor to Tesco Engineering Company, Tulsa, Okla.

Filed Apr. 20, 1981, Ser. No. 255,378
Int. Cl.³ G01V *1/22*
U.S. Cl. 367—78 **13 Claims**



13. In a seismic data acquisition system having a multi-conductor cable having at least N cable segments, where N is greater than 1, and P takeouts in each segment, for a total of at least NP different seismic signals and including in each cable segment at least one multiplexer for sequentially multiplexing said P takeout signals and transmitting them over a single independent conductor pair to a recording truck, the method of operation, comprising the steps of:

(a) providing a synchronizing signal from the recording truck to each of said N multiplexers; one in each segment;

(b) at a first of said N multiplexers in a first cable segment sequentially sampling each of the P takeout signals in said first segment and transmitting them along a single conductor pair in said cable to said recording truck; and

(c) at the recording truck demultiplexing said multiplexed signals from said first segment; while simultaneously

(d) sequentially sampling each of the other P takeouts in each of the other N−1 segments through each of the other N−1 conductor pairs; and simultaneously

(e) at the recording truck demultiplexing each of said N multiplexed signals.

4,497,046

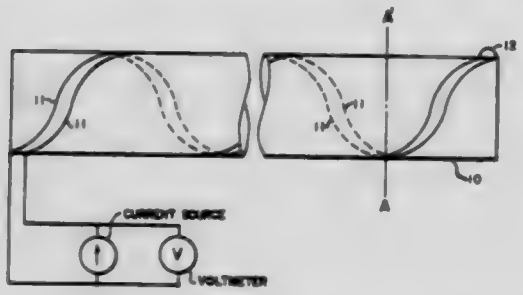
LONG LINE HYDROPHONE

Howard T. Savage, Greenbelt, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 24, 1981, Ser. No. 278,300
Int. Cl.³ G01V *1/38*
U.S. Cl. 367—169 **6 Claims**

1. A long line hydrophone comprising a long hollow compliant tube, the tube being tightly wound with multiple bifilar

ribbons, with combined means to supply constant current to each bifilar ribbon at high frequency, each bifilar ribbon consisting of a magnetorestrictive material and where the compliant tube is filled with a suitable liquid and where the liquid moves to change the shape of the tube and to change the length



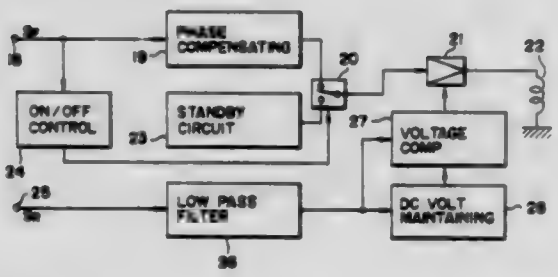
and magnetoresistive properties of the bifilar ribbons in response to stress on the tube that produces a change in voltage and where the bifilar ribbons are connected to a low voltage DC bias, a constant current, high frequency source and means to measure the change in voltage.

4,497,047

OPTICAL DISC PLAYER WITH FOCUS CONTROL DURING SEARCH MODE

Kazuhiko Fujiie, and Chiaki Nonaka, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 4, 1982, Ser. No. 374,704
Claims priority, application Japan, May 11, 1981, 56-70416
Int. Cl.³ G11B *7/00, 21/12*
U.S. Cl. 369—45 **10 Claims**



1. In an apparatus for optically reading information recorded in substantially parallel tracks on a record medium surface: the combination of

optical pickup means including objective lens means through which a light beam is to be focused at said record medium surface, and being shiftable as a unit, transverse to said tracks for determining the track to be scanned by said focused beam;

focusing control means responsive to defocusing of said light beam at said record medium surface to move said objective lens means in the direction for restoring correct focus of said light beam at said surface; and

gain control means for reducing the gain with which said focusing control means responds to said defocusing when said focused beam moves transversely across a plurality of said tracks on said record medium stylus.

4,497,048

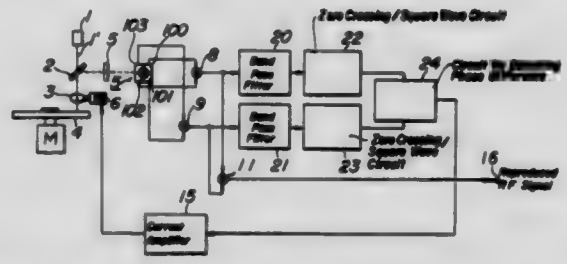
TECHNIQUE FOR CONTROLLING TRACKING IN AN OPTICAL DISC APPARATUS

Kenji Kimura, Tachikawa, Japan, assignor to Olympus Optical Co. Ltd., Japan

Filed Apr. 16, 1982, Ser. No. 369,085
Claims priority, application Japan, Apr. 22, 1981, 56-59662
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—46 **5 Claims**

1. In a tracking control method for correcting the tracking error of a beam spot projecting upon a rotating optical disc having information recorded in the form of pits forming tracks, to correct deviation of the beam spot with respect to said tracks in a radial direction of said disc, wherein the method includes the steps of receiving a light beam modulated by the pits of said disc by a plurality of photoelectric detectors, producing a plurality of output signals representing a two-dimensional pattern of the light beam impinging upon said detectors in response to deviation of said beam spot from said tracks causing a tracking error, processing said signals to produce a tracking error signal, and correcting the tracking error of said beam spot in response to said tracking error signal, wherein the improvement in said receiving, producing and processing steps comprise:

receiving the light beam by four photodetector regions divided in mutually orthogonal directions, one direction



extending in the radial direction of the disc and the other direction extending perpendicular to said one direction;

producing a first sum signal from the output signals of a first pair of said photodetector regions diagonally positioned with respect to one another and a second sum signal from the output signals of a second pair of said photodetector regions diagonally positioned with respect to one another;

processing said first and second sum signals to etect a phase difference between said first and second sum signals to produce a phase difference signal representing the direction and magnitude of the tracking error; and

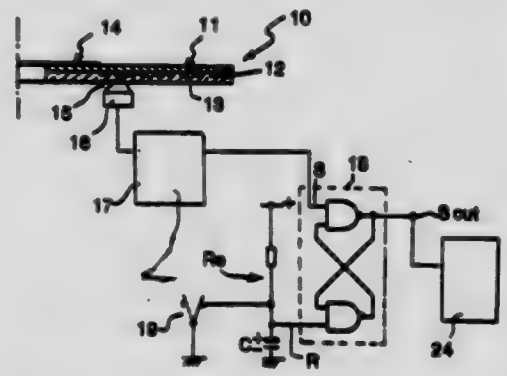
deriving said tracking error signal from said phase difference signal.

4,497,049

SYSTEM FOR DETECTING THE OPERATIVE FACE OF A DISC CARRYING DATA ON ONE FACE ONLY

Stephane M. d'Alayer de Costemore d'Arc, Ways, Belgium, assignor to Staar S. A., Brussels, Belgium

Filed Feb. 18, 1983, Ser. No. 467,938
Claims priority, application Belgium, Feb. 25, 1982, 892.274
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—50 **10 Claims**



1. A detector system for turntable apparatus for detecting the operative face of a record disc carrying data on one face only comprising, in combination:

means for reading data carried adjacent a face of a record disc and operative to produce a data or no-data signal on reading the face of a record disc in said turntable apparatus,

circuit means including a delay circuit having a time constant defining a time interval, a switch actuable to start said time interval, and

a memory circuit connected to the output of said reading

means to receive said data or no-data signal during said time interval, said circuit means producing an output signal indicating the operative face of a record disc upon said memory circuit receiving a data signal within said time interval after said switch is actuated.

4,497,050

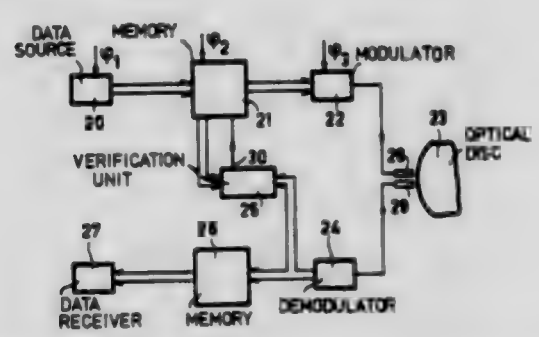
METHOD AND DEVICE FOR WRITING A DATA BLOCK INTO A RECORD CARRIER BODY

Tajalling Beetstra, Apeldoorn, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 289,665, Aug. 3, 1981,. This application Oct. 21, 1983, Ser. No. 543,794

Int. Cl.³ G11B *7/00*

U.S. Cl. 369—59 **2 Claims**



1. A method of writing information in a record carrier body having a writing area provided with successively arranged sectors, each of said sectors comprising a heading field, a first and a second plurality of user segment locations, said second plurality being significantly fewer in number than said first plurality, said method comprising:

(1) in a first phase, providing a replicated ready to use record carrier body of standard surface disposition, which record carrier body comprises standard information stored in said heading field;

(2) in a second phase:

(a) loading into a first random-access memory location, first user information to be written into said first plurality of user segment locations of one sector;

(b) adding appropriate error correction bits to the first user information loaded into said first random access memory location;

(c) writing in an interleaved manner in a bit serial sequence into said first plurality of user segment locations of one sector, both the first user information and the added error correction bits loaded into said first random-access memory location;

(3) in a third phase, separated in time from said second phase, which time is substantially longer than the time required to write into a sector of said record carrier body:

(a) loading into a second random-access memory location second user information to be written into said second plurality of user segment locations, said second user information updating said first user information;

(b) adding appropriate error correction bits to the second user information loaded into said second random access memory location;

(c) writing in an interleaved manner in a bit serial sequence into said second plurality of user segment locations of the same sector wherein said first user information was written during said second phase, both the second user information and the added error correction bits loaded into said second random-access memory location.

4,497,051

AUTOMATIC RECORD LOADING PLAYER

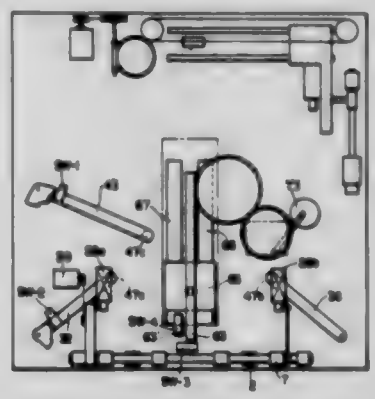
Hideyuki Takahashi; Isami Kenmotsu, and Takahiro Okajima, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 4, 1982, Ser. No. 345,846

Claims priority, application Japan, Feb. 5, 1981, 56-16096

Int. Cl.³ G11B *17/04, 25/04*

U.S. Cl. 369—77.1 **4 Claims**



1. An automatic record loading player comprising centering means including:

(a) drive roller means (7) for moving an inserted record in a given direction to a centering position;

(b) guide levers (32, 36) having parallel rotational axes and movable to maintain abutment of both said levers with a circumference of the record;

(c) connecting means (49) between said levers for causing said levers to rotate equally in opposite directions about their respective axes;

(d) a detecting lever (43) rotating to give motion in said direction in abutment with the circumference of the record; and

(e) a plurality of switches (SW-1, SW-2), which are actuated by the rotations of said guide levers and said detecting lever, whereby by said switches, said drive roller means is controlled so that records different in diameter may be centered at the constant centering position.

4,497,052

STYLUS FOR REPRODUCING INFORMATION SIGNALS RECORDED ON A RECORDING MEDIUM

Yoshiyo Wada; Kunio Goto, and Hisao Kinjo, all of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation of Ser. No. 31,035, Apr. 18, 1979, Pat. No. 4,273,967, which is a continuation of Ser. No. 852,366, Nov. 16, 1977, Pat. No. 4,199,782. This application Dec. 30, 1980, Ser. No. 221,922

Claims priority, application Japan, Nov. 17, 1976, 51-137216; Feb. 25, 1977, 52-20065; Mar. 28, 1977, 52-34106

The portion of the term of this patent subsequent to Apr. 22, 1997, has been disclaimed.

Int. Cl.³ H04N *5/80*

U.S. Cl. 369—126 **8 Claims**

1. A reproducing stylus for tracing a track on a recording medium, in which track an information signal is recorded as variations of geometrical shape, and for reproducing as variations in capacitance the information signal thus recorded, said reproducing stylus comprising:

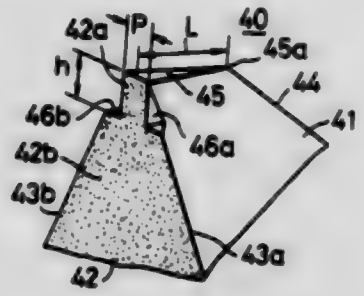
(a) a reproducing stylus main structure having a tip portion with a sliding contact face for slidingly contacting at least one track of the recording medium, said sliding contact face having a rear edge;

(b) an electrode disposed on the reproducing stylus main structure to trace said one track and reproduce the information signal as the variations in capacitance in accordance with the variations in geometrical shape, said elec-

trode comprising a first electrode part and a second electrode part continuing to the first electrode part;

(c) said first electrode part having a pair of first side edge-s originating respectively from both ends of said rear edge, a length of said rear edge being smaller than the width of the second electrode part;

(d) said reproducing stylus main structure further having a



pair of side surfaces for defining the first side edges of the first electrode part; and

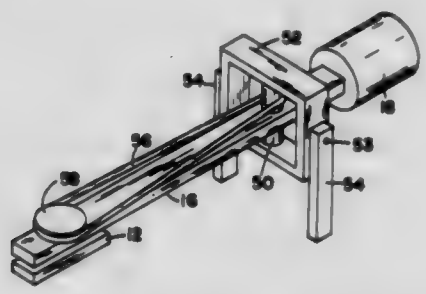
(e) said second electrode part having a pair of second side edges, the extension lines of said first side edges extending respectively towards the second electrode part being between the second side edges of the second electrode part when viewed from a direction perpendicular to said rear edge and parallel to said sliding contact face.

4,497,053

ACCURATELY TRACKING PHONOGRAPH ARM

Andrew M. Wolff, 1572 Meadow La., Mountain View, Calif. 94040

Filed Apr. 9, 1982, Ser. No. 366,832
Int. Cl.³ G11B 21/16
U.S. Cl. 369—244
5 Claims



1. A tone arm system for a record player that maintains the pickup mechanism perpendicular to the groove radius, comprising;

an arm having bearing means and being adapted to be mounted for pivoting movement above a record-carrying turntable;

a pickup mechanism mounted on said arm on said bearing means that permits rotation of said pickup mechanism about a generally vertical stylus axis;

first rotating means connected to said pickup mechanism so as to convey rotational movement to the pickup mechanism;

a gimbal means having a first member, a second member, and a post rigidly attached to the first member in a generally vertical orientation, said gimbal means supporting said arm for pivoting movement about a generally vertical axis and a generally horizontal axis;

a first pivot bearing supporting said arm for pivotal rotation about the generally vertical post, said first member supported for rotation about the generally horizontal axis by said second member;

second rotating means, attached to said post so that it remains a constant distance from said first rotating means during rotation of said arm, and restrained from rotating about a vertical axis by said post so as to rotate relative to said arm when the arm pivots about said generally vertical post;

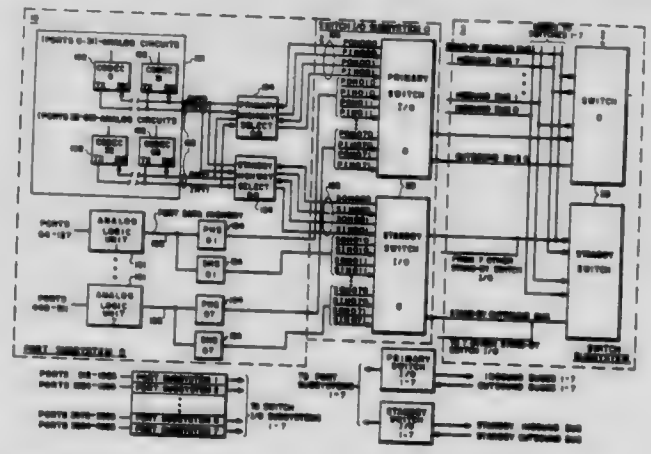
rotation transmission means, connecting said first and second rotating means so that said first rotating means rotates in response to said second rotating means at one half the angular rate of said second rotating means relative to said arm.

4,497,054

ONE-FOR-N REDUNDANCY IN A DIGITAL SWITCH MATRIX

Edgar L. Read, Carrollton, Tex., assignor to Honeywell Inc., Phoenix, Ariz.

Filed Apr. 29, 1983, Ser. No. 490,006
Int. Cl.³ H04Q 11/04; H04J 3/14
U.S. Cl. 370—58
2 Claims



1. A redundant digital switch matrix system comprising:

(a) a plurality of primary digital switch means, each of said plurality of primary digital switch means operatively coupled to a corresponding number of input buses, each of said input buses transmitting input data in predetermined time slots from a second plurality of ports associated with each of said input buses, and each of said primary digital switch means having an output bus for transmitting output data, each output bus being associated with one of said input buses and each output bus transmitting output data to the second plurality of ports associated therewith;

(b) a standby input bus, adapted to receive the input data from a selected one of said input buses in response to at least one select control signal, said standby bus further operatively coupled to each of said plurality of primary digital switch means; and

(c) a standby digital switch means, operatively coupled to the corresponding number of input buses and further operatively coupled to the standby input bus, and further having an output bus to transmit output data;

wherein each primary digital switch means and the standby digital switch means includes:

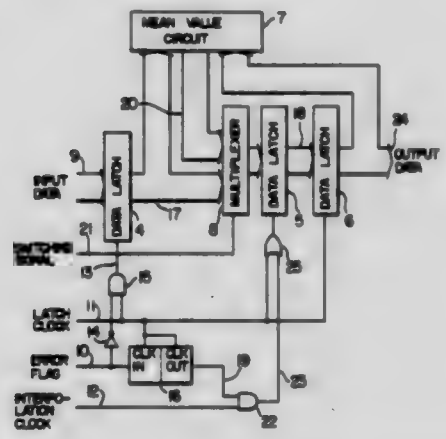
switching means for altering the switch matrix system configuration in response to at least one of said select control signals to enable the standby digital switch means to receive the input data from said input buses and said standby input bus, to effectively decouple a preselected one of said plurality of primary digital switch means from said input buses and said standby input bus, to enable the standby input bus to receive the input data from the second plurality of ports associated with the preselected one of said primary digital switch means, and to enable the output bus of said standby digital switch means to transmit the output data to the plurality of ports associated with the preselected one of said primary digital switch means, thereby effecting a substitution of said standby digital switch means for any one of said plurality of primary digital switch means.

4,497,055

DATA ERROR CONCEALING METHOD AND APPARATUS

Takashi Hoshino, Fujisawa, and Takao Arai, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 9, 1982, Ser. No. 386,580
Claims priority, application Japan, Jun. 17, 1981, 56-92309
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—31 7 Claims



1. A data error concealing method comprising:

a first step of successively receiving and storing data words in input data so that, when a received data word is erroneous, the correct input data word immediately preceding the erroneous word is held in storage as a replacement word instead of the erroneous word; and

a second step in which, in association with each of the data words processed in said first step, a mean value between data words immediately preceding and immediately following that data word is produced, and in which, when the stored data word is a replacement word for an erroneous word, the replacement word is replaced by the mean value produced in association with the data word;

whereby the holding in storage of the replacement word in said first step and the replacement of the replacement word by the mean value in said second step allow error concealment in which, when an independent erroneous word is present in the input data, the erroneous word is replaced by a mean value between correct input words immediately preceding and immediately following the erroneous word, while when a continuous series of erroneous words are present in the input data, the last erroneous word in the series is replaced by the mean value between the correct input words immediately preceding and immediately following the series of continuous erroneous words and the other erroneous words of the series are replaced by the correct input words immediately preceding the continuous series of erroneous words.

4,497,056

IC TESTER

Shigeru Sugamori, Gyoda, Japan, assignor to Takeda Riken Co. Ltd., Tokyo, Japan

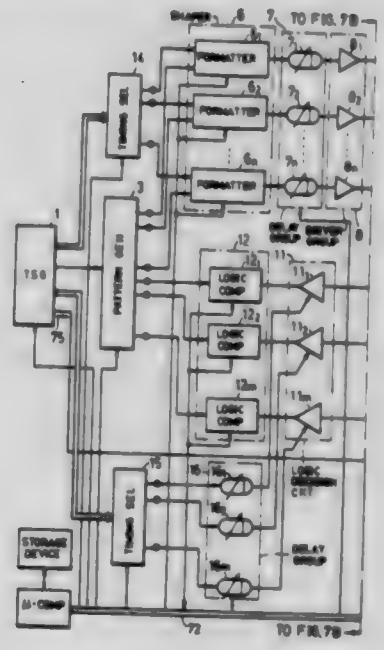
Filed Aug. 13, 1982, Ser. No. 407,872
Claims priority, application Japan, Aug. 19, 1981, 56-130599
Int. Cl.³ G01R *31/28*
U.S. Cl. 371—25 20 Claims

1. An IC tester comprising

test pattern signal generating means for supplying test pattern signals with predetermined timings from each of the outputs of a plurality of N parallel channels to an IC to be tested, each of said N channels including a respective first delay element having a respective variable delay time for delaying the respective test pattern signals being provided from the respective one of the N channels,

response signal comparing means for comparing at further predetermined timings, in conjunction with said supplying of test pattern signals by said test pattern signal generating means, the logic levels of respective response signals that are input from the IC to a plurality of M parallel channels, with respective expected values for the response signals, and said response signal comparing means including for each of said M channels a respective second delay element in a respective time signal line, each said second delay element having a respective variable delay time for delaying the timing for determining the respective comparing of the response signals with the expected values, and

calibration means, operatively connected to said test pattern signal generating means and to said response signal comparing means, for automatically determining on predetermined conditions, relative travel times for signals on said N parallel channels and relative timing for said comparing of signals on said M channels, for setting the respective delay times of said first and second delay elements to suppress skews between said N channels to enable said supplying of said test pattern signals at the respective outputs of said N channels with the respective predetermined timings, and to suppress skews in the time signal lines so as to enable said comparing of said response signals with the respective predetermined timings.



4,497,057

MOTOR VEHICLE DIAGNOSTIC MONITORING SYSTEM

Takaaki Kato, Toyohashi; Yoshio Hirano, Anjo; Takeshi Ochiai, Toyota; Seizi Ishikawa, Toyota, and Kazunori Sakai, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

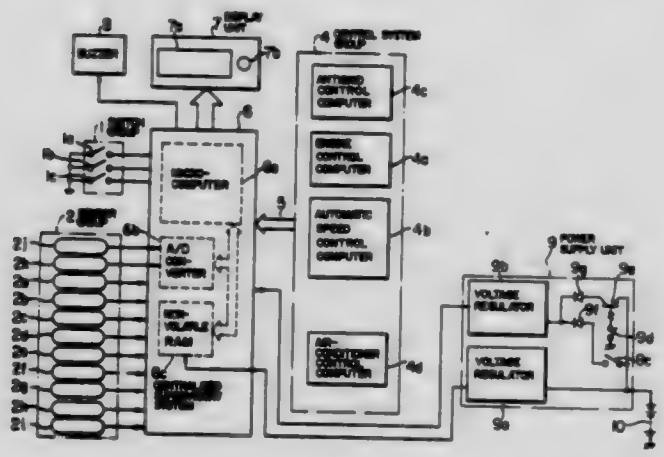
Filed Aug. 6, 1982, Ser. No. 405,903
Claims priority, application Japan, Aug. 7, 1981, 56-124234; Aug. 7, 1981, 56-124235; Aug. 7, 1981, 56-124236; Aug. 7, 1981, 56-124237
Int. Cl.³ G06F *11/00, 11/32*
U.S. Cl. 371—29 9 Claims

1. A diagnostic monitoring system for a motor vehicle, comprising:

a plurality of control devices each separately controlling a part of said vehicle in accordance with a predetermined control program, each of said control devices including means for detecting abnormal operation of the respective control device in accordance with a diagnostic sub-program of said predetermined control program, and for generating abnormal operation signals in response to said detected abnormal operation signals in response to said detected abnormal operation;

central supervisory means, receiving said abnormal operation signals generated from said plurality of control devices, for separately storing abnormal operation data corresponding to said generated abnormal operation sig-

nals from each of said control devices in each of first and second memory areas, and for resetting abnormal operation data in said first memory area at a first predetermined time after a previous generation of abnormal operation signals, said reset abnormal operation data corresponding to a last generated abnormal operation signal, and for resetting the corresponding abnormal operation data in said second memory area at a second predetermined time which is longer than said first predetermined time;



command generating means for generating first and second commands to display first and second abnormal conditions; and

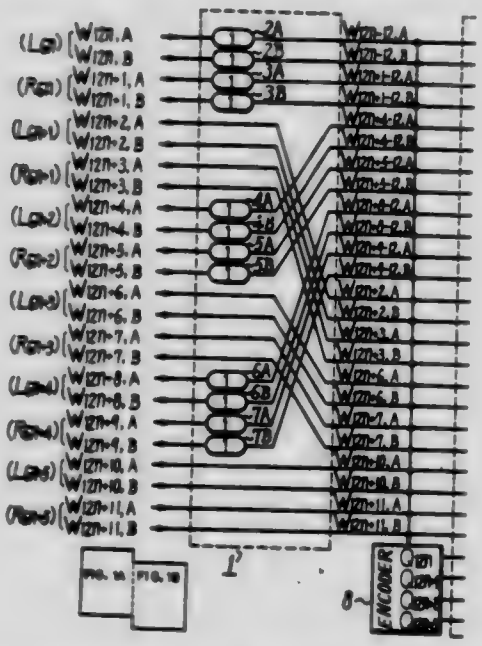
display means, responsive to said first command from said command generating means, for displaying said first abnormal conditions in accordance with the abnormal operation data stored in said first memory area, and responsive to said second command from said command generating means, for displaying said second abnormal conditions in accordance with the abnormal operation data stored at least in said second memory area.

4,497,058

METHOD OF ERROR CORRECTION

Yoichiro Sako, and Kentaro Odaka, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 274,262, Jun. 16, 1981, abandoned.
This application Feb. 15, 1984, Ser. No. 579,003
Claims priority, application Japan, Jun. 20, 1980, 55-84425
Int. Cl.[3] G06F *11/10*
U.S. Cl. 371—39
12 Claims



1. A method of decoding transmitted digital information signals to correct errors occurring therein as a result of transmission, wherein said information signals are received as blocks of interleaved digital data word signals and are applied to a first decoder as first error-correcting blocks comprised of a plurality of information word signals, a series of first check word signals associated with said plurality of information word signals, and a series of second check word signals associated with said plurality of information word signals, said information word signals and said first check word signals being interleaved, comprising the steps of:

decoding the received digital data word signals in said first decoder and correcting the decoded digital information word signals and said first check word signals by generating error syndromes using said second check word signals, the corrected and decoded digital information word signals forming a block of interleaved word signals;

tagging a pointer code signal to each of said information word signals of the block of interleaved word signals to represent whether an uncorrected error remains in such word signals;

delaying the tagged interleaved word signals of each such block of tagged interleaved word signals in a deinterleaving stage by respective different amounts so as to deinterleave such tagged interleaved word signals into a different arranging order, thereby providing a second error-correcting block;

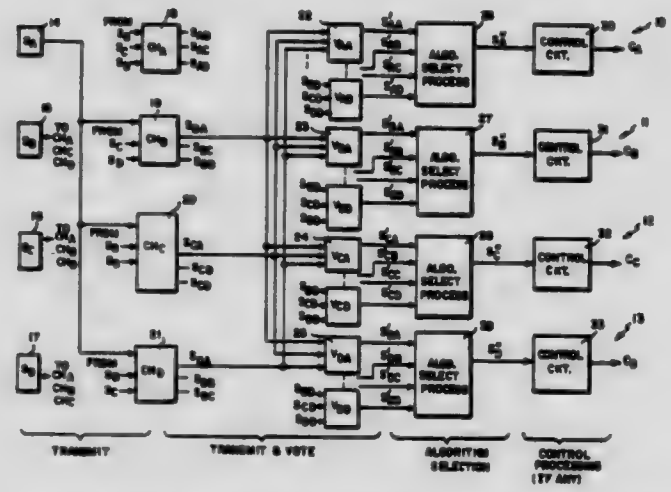
decoding the digital information word signals of each such second error-correcting block in a second decoder by generating error syndromes using said first check word signals, then comparing, for each said second error-correcting block, the number of erroneous word signals as indicated by said pointer code signals with a predetermined value and, if such number is less than said value, correcting said at least one erroneous word signal by said syndromes and said first check word signals, and then clearing the pointer code signals associated with the corrected erroneous word signals, but, if such number exceeds such value, leaving such pointer code signals uncleared and said at leat one erroneous word uncorrected.

4,497,059

MULTI-CHANNEL REDUNDANT PROCESSING SYSTEMS

T. Basil Smith, Sudbury, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Apr. 28, 1982, Ser. No. 372,734
Int. Cl.[3] G06F *11/18*
U.S. Cl. 371—36
14 Claims



1. An information handling system which includes a plurality of redundant information handling channels and at least one input signal supplied to one of said channels, said system comprising

timing means for maintaining the operation of said channels in tight synchronism;

means in said one channel for transmitting said input signal received thereby to all other channels;

means in each said other channel for receiving the transmitted input signal from said one channel and for re-transmit-

ting said received signals to all of said plurality of channels;

means in each of said channels for receiving said re-transmitted signals;

voting means in each of said channels responsive to the received re-transmitted signals from said other channels for providing a voted output signal in each channel; and

means responsive to the voted output signals for determining the substantial identity of voted output signals from all unfailed channels, any channel not providing a voted output signal which corresponds to said substantially identical voted output signals being identifiable as a failed channel.

4,497,060

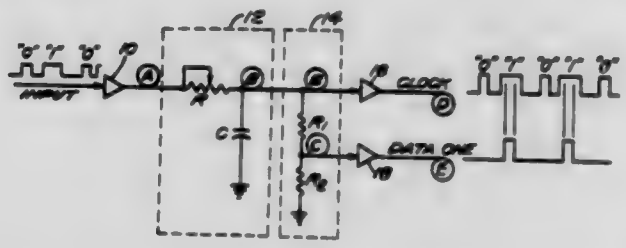
SELF-CLOCKING BINARY RECEIVER

John P. Yang, Belle Mead, N.J., assignor to Lockheed Electronics Co., Inc., Plainfield, N.J.

Filed Dec. 8, 1982, Ser. No. 447,956

Int. Cl.³ H04L *7/06*

U.S. Cl. 375—22 **10 Claims**



1. In a data receiver for receiving input binary data in which 1 and 0 logic levels are represented by signals having first and second different pulsewidths, respectively, said receiver comprising means responsive to the received input binary data for integrating the same and for producing corresponding signals of first and second levels, means coupled to said integrating means for establishing from said integrated signals clock-control signals at a first node and data-control signals at a second node, and first and second switching means respectively connected to said first and second nodes for respectively producing at their outputs a clock signal for each input data signal and a data signal for each input data signal at only one of said first and said second pulsewidths.

4,497,061

METHOD AND APPARATUS FOR RADIOGRAPHY COMPRISING CALIBRATING MEANS

Godfrey N. Hounsfield, Newark, England, assignor to EMI Limited, Hayes, England

Continuation of Ser. No. 758,147, Jan. 10, 1977, abandoned, which is a division of Ser. No. 481,443, Jun. 21, 1974, Pat. No. 4,035,647, which is a division of Ser. No. 358,890, May 10, 1973, Pat. No. 3,881,110. This application Jan. 16, 1978, Ser. No. 869,711

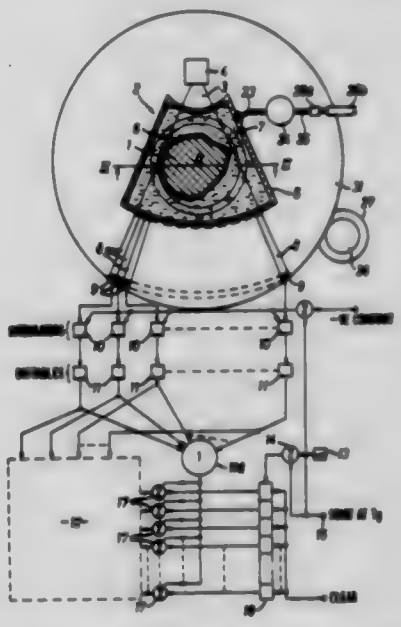
Claims priority, application United Kingdom, May 17, 1972, 23064/72

Int. Cl.³ A61B *6/00, 6/02;* G01N *23/02*

U.S. Cl. 378—18 **11 Claims**

1. A method of operating an apparatus for examination of objects by means of X-radiation comprising the steps of:

generating X-radiation for propagation along a plurality of beam paths which are at different angles to each other and in a substantially planar section, sensing the radiation propagated along said beam paths, introducing into said substantially planar section successive portions of a calibration device, said successive portions having different known absorption characteristics such that the radiation propagated along said plurality of paths is successively subjected to said different absorption characteristics, measuring the amount of radiation sensed by the detectors for said different portions of the calibration device and deriving a calibration characteristic for each of the detectors from the last recited measuring, and storing indications of



said calibration characteristic for use in examinations of objects with said apparatus.

4,497,062

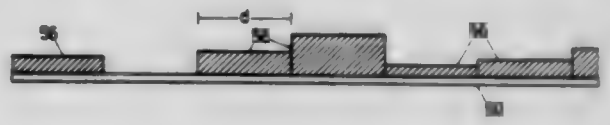
DIGITALLY CONTROLLED X-RAY BEAM ATTENUATION METHOD AND APPARATUS

Charles A. Mistretta; Walter W. Peppler, both of Madison; Balakrishna V. Kudva, Monona; Bruce H. Hasegawa, and James T. Dobbins, III, both of Madison, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jun. 6, 1983, Ser. No. 501,607

Int. Cl.³ G03B *41/16;* H05G *3/00*

U.S. Cl. 378—158 **39 Claims**



35. A method of compensating the X-ray image of an object, comprising the steps of:

(a) printing X-ray attenuating material from a ribbon having X-ray attenuating material thereon onto a substrate in layers forming an image to provide a compensation mask;

(b) inserting the compensation mask in registered position between an X-ray source and an object; and

(c) exposing the object to an X-ray beam passed through the compensation mask and recording the image of the X-ray beam after passing through the mask and the object.

4,497,063

FM STEREO DEMODULATOR

Kohji Ishida; Tadashi Noguchi, and Tatsuo Numata, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 25, 1982, Ser. No. 392,130

Claims priority, application Japan, Jun. 26, 1981, 56-99920; Jun. 26, 1981, 56-99921

Int. Cl.³ H04H *5/00*

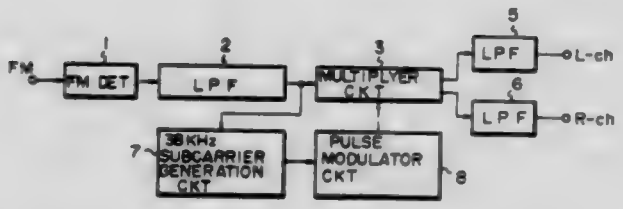
U.S. Cl. 381—7 **9 Claims**

1. An FM stereo demodulator connected to an FM detector circuit for reproducing left and right signals from a stereo composite signal demodulated at the FM detector circuit from an FM-IF signal comprising:

a subcarrier signal generating means responsive to said stereo composite signal for generating a sinusoidal subcarrier

signal synchronized with a pilot signal component of said stereo composite signal;

a pulse generation means responsive to said sinusoidal subcarrier signal, for generating a first pulse modulation signal and a second pulse modulation signal, each having a predetermined pulse repetition frequency higher than the frequency of said sinusoidal subcarrier signal and the



edge positions of each pulses thereof varying with said sinusoidal subcarrier signal, said second pulse modulation signal being opposite in phase with respect to said first pulse modulation signal; and

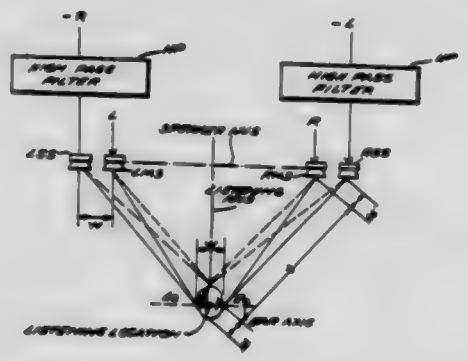
multiplication means for multiplying said stereo composite signal separately by said first and second pulse modulation signals, thereby reproducing said left and right signals.

4,497,064

METHOD AND APPARATUS FOR REPRODUCING SOUND HAVING AN EXPANDED ACOUSTIC IMAGE

Matthew S. Polk, Baltimore, Md., assignor to Polk Audio, Inc., Baltimore, Md.

Filed Aug. 5, 1982, Ser. No. 405,341
Int. Cl.³ H04R 5/00
U.S. Cl. 381—24
23 Claims



1. In a stereophonic sound reproduction system having a left channel output and a right channel output, apparatus for reproducing nonbinaural recorded sound having an expanded acoustic image comprising:

a right main speaker and a left main speaker disposed respectively at right and left main speaker locations equidistantly spaced from a listening location, the listening location being a place in space for accommodating a listener's head facing the main speakers and having a right ear location and a left ear location along an ear axis, with the right and left ear locations separated along the ear axis by a maximum interaural sound distance of Δt_{max}, and the listening location being defined as the point on the ear axis equidistant to the right and left ears, the listening location being spaced from the main speakers and defining a listening angle with respect thereto to result in an interaural time delay Δt of the right and left ear locations along the listening angle to the left and right main speakers,

at least one right sub-speaker and at least one left sub-speaker disposed respectively at right and left sub-speaker locations equidistantly spaced from the listening location;

the right and left sub-speaker locations being spaced from the respective right and left main speaker locations such that the inter-speaker delay of the right sub-speaker over the right main speaker with respect to the right ear location and the inter-speaker delay of the left sub-speaker over the left main speaker with respect to the left ear location are each approximately the same as the interaural time delay Δt;

means for coupling the right and left channel outputs, respectively, to said right and left main speakers;

means connected to the right and left channel outputs for developing an inverted right channel signal and an inverted left channel signal;

means for coupling the inverted right channel signal to said at least one left sub-speaker and the inverted left channel signal to said at least one right sub-speaker;

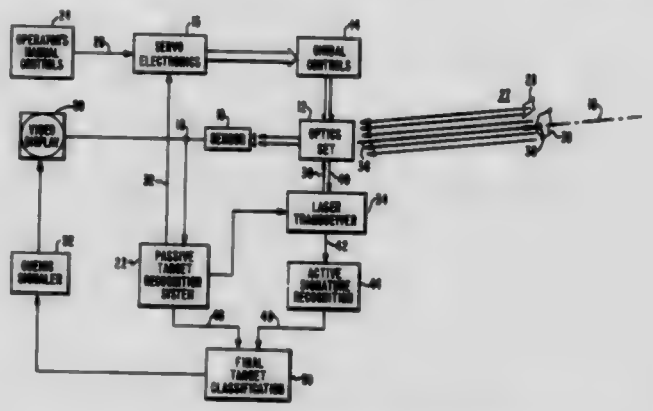
whereby sound reproduced by said apparatus as perceived by a listener whose head is located generally at the listening location has an expanded acoustic image.

4,497,065

TARGET RECOGNITION SYSTEM ENHANCED BY ACTIVE SIGNATURE MEASUREMENTS

Glenn E. Tisdale, Severna Park, and Harley B. Lindemann, Catonsville, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 12, 1982, Ser. No. 397,258
Int. Cl.³ G01B 11/26; G06K 9/00
U.S. Cl. 382—1
10 Claims



1. An electro-optical target recognition system which operates on both active and passive radiation from the field of view thereof to discriminate desired targets from detected candidate targets, said system comprising:

at least one passive sensor for receiving passive image radiation from the field of view thereof and converting said received image radiation into first electrical signals representative thereof;

a passive target recognition means for operating on said first electrical signals to detect candidate targets in said field of view of said passive sensor;

an active source for generating a laser beam substantially at a predetermined wavelength;

means for positioning said laser beam to illuminate individually each of said candidate targets detected by said passive target recognition means;

an active sensor tuned to said predetermined wavelength for receiving the active laser radiation separately reflected from said individually illuminated candidate targets and converting said separately received active laser radiation into respective second electrical signals representative thereof;

means by deriving an active signature for each of said detected candidate targets from said respective second electrical signals; and

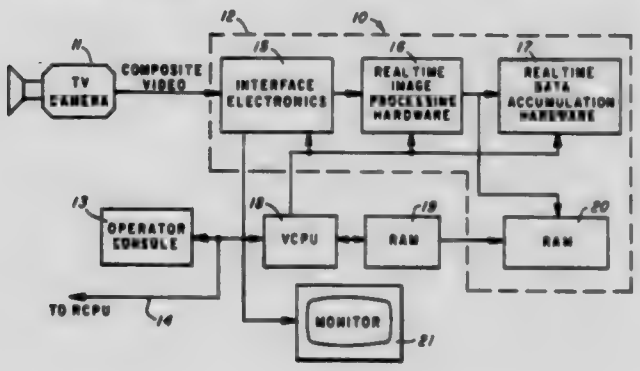
means operative to discriminate a desired target from said detected candidate targets in said field of view of said passive sensor based on said derived active target signatures thereof prior to acquisition and tracking of said desired target.

4,497,066

VIDEO DATA ACQUISITION SYSTEM

Alfred Gasparri, Jr., Austin, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 5, 1982, Ser. No. 355,287
Int. Cl.[3] G06K 9/32
U.S. Cl. 382—48 31 Claims



1. A method of acquiring video data in a video data acquisition system having a video camera for forming an image of an article wherein a serial stream of data from the video camera is digitized, and the signal selected within a predetermined amplitude range as representations of pixels arranged in rows, columns and diagonal lines, comprising the steps of:

(a) counting, in real time, and storing pixels that appear in each row of the image;

(b) counting, in real time, and storing signals that appear in each column of the image; and

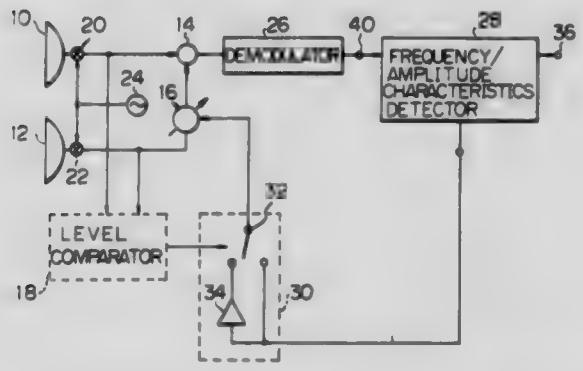
(c) counting, in real time, and storing pixels that appear in each diagonal line of the image.

4,497,067

INTERFERENCE CANCELLATION TYPE SPACE DIVERSITY SYSTEM

Junji Namiki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 11, 1983, Ser. No. 512,705
Claims priority, application Japan, Jul. 14, 1982, 57-122715
Int. Cl.[3] H04B 7/08
U.S. Cl. 455—273 1 Claim



1. An interference cancellation type space diversity system for receiving signals coming in through two spaced antennas and a combiner means for combining the input signals into a single signal, said system comprising:

phase shifter means for controlling the output phase of one of the antennas;

comparator means for comparing intensities of the signals individually received by the antennas;

demodulator means for getting baseband signals from a combined output of the antennas;

correlator means for producing at least one correlation between an output of the demodulator means and a plurality of signals obtained by processing said output of the demodulator means;

identification means for identifying a sign of an imaginary part of at least one of the correlations; and

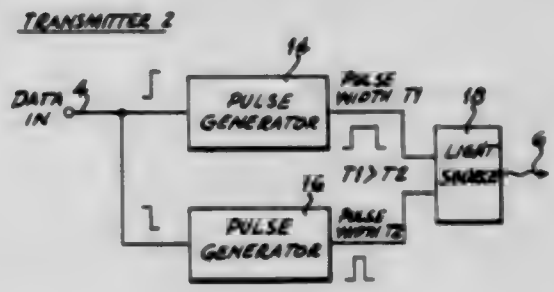
means for controlling a phase in the phase shifter means in response to the comparison result of the comparator means and the identification means.

4,497,068

ENCODING SYSTEM FOR OPTIC DATA LINK

Kenneth C. Fischer, Milwaukee, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 25, 1982, Ser. No. 342,522
Int. Cl.[3] H04B 9/00; H03K 13/24
U.S. Cl. 455—608 2 Claims



1. Encoding circuitry for an optic digital data link, comprising:

(1) a transmitter for encoding digital data, comprising:

(a) a first pulse generator for generating a pulse of width T1 in response to data state transition of one polarity;

(b) a second pulse generator for generating a pulse of width T2, where T2<T1, in response to an opposite polarity data state transition; and

(c) light source means driven by said pulse generators for outputting an optic signal of correspondent pulse width; and

(2) a receiver for decoding said optic signal to reconstitute said digital data, comprising:

(a) light detector means for receiving said optic signal and outputting a correspondent pulse width; and

(b) decoder means driven by said light detector means and outputting a digital signal transitioning to said one polarity in response to pulse width T1, and transitioning to said opposite polarity in response to pulse width T2, whereby to reconstitute said digital data;

wherein said decoder means comprises:

a third pulse generator for generating a pulse of width T3, where T1>T3>T2, in response to a given polarity transition of said signal from said light detector means; and

means comparing pulse width T3 against the width of the pulse from said light detector means and outputting a data signal which transitions to said one polarity when the pulse width from said light detector means is greater than T3, and which transitions to said opposite polarity when the pulse width from said light detector means is less than T3.

DESIGN PATENTS

GRANTED JAN. 29, 1985

ERRATA

For CLASS	See PATENT NO.
D13–029	277,370

3200

DESIGNS

JANUARY 29, 1985

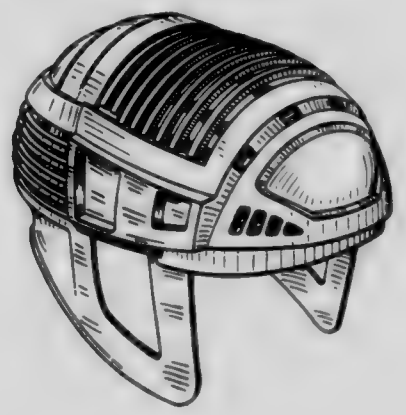
277,329
BRASSIERE
Toshiko Taniyama, White Plains, N.Y., assignor to International Playtex, Inc., Stamford, Conn.
Filed Aug. 23, 1982, Ser. No. 410,209
Term of patent 14 years
U.S. Cl. D2—24



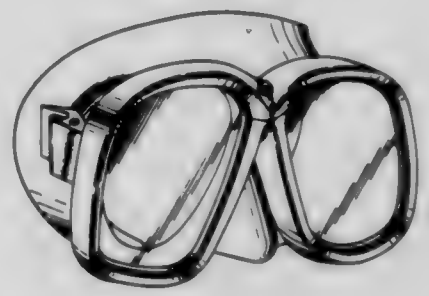
277,330
HEADBAND
John J. Wasson, 6329 Masonic Dr., Alexandria, La. 71301
Filed Feb. 23, 1981, Ser. No. 237,181
Term of patent 14 years
U.S. Cl. D2—230



277,331
HOCKEY HELMET
Leonard W. H. Clement, Bolton, Canada, assignor to Cooper Canada Limited, Toronto, Canada
Filed Oct. 12, 1982, Ser. No. 433,775
Claims priority, application Canada, Sep. 22, 1982, 22-09-82-3
Term of patent 14 years
U.S. Cl. D2—232



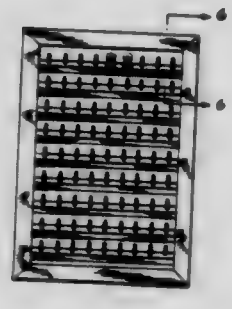
277,332
DUAL-LENS DIVING MASK
Simon C. Fireman, Quincy, Mass., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Continuation of Ser. No. 413,738, Sep. 1, 1982, abandoned. This application Sep. 30, 1982, Ser. No. 429,285
Term of patent 14 years
U.S. Cl. D2—234



277,333
SPORT SOX
Denis Abramowitz, 601 B Surf Ave., Apt. 152, Brooklyn, N.Y. 11224
Filed Aug. 18, 1982, Ser. No. 409,161
Term of patent 14 years
U.S. Cl. D2—331

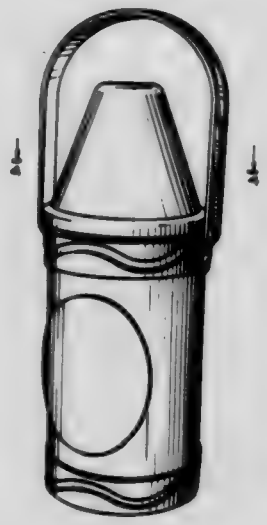


277,334
SPOOL AND BOBBIN RACK
Gordon Ristow, 2307 N. Appleton, Appleton, Wis. 54911
Filed Oct. 27, 1981, Ser. No. 315,500
Term of patent 14 years
U.S. Cl. D3—25





277,335
CONTAINER FOR ARTISTS' MATERIALS OR SIMILAR ARTICLES
Sheldon Lieberman, Allentown, Pa., assignor to Binney & Smith, Inc., Easton, Pa.
Filed Aug. 23, 1982, Ser. No. 410,531
Term of patent 14 years
U.S. Cl. D3—44



277,336
HANDLE FOR A BAG
Maxime Parrochia, Quartier de l'Ilate, La Verpilliere 38290, France
Filed Apr. 1, 1982, Ser. No. 364,331
Claims priority, application France, Oct. 23, 1981, 813658
Term of patent 14 years
U.S. Cl. D3—54



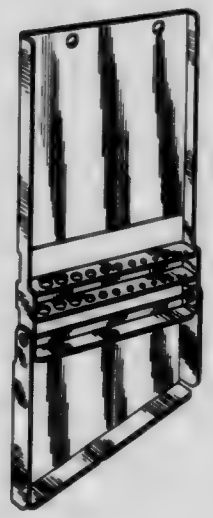
277,337
HANDLE FOR A BAG
Maxime Parrochia, Quartier l'Ilate, La Verpilliere 38290, France
Filed Apr. 1, 1982, Ser. No. 364,375
Claims priority, application France, Oct. 23, 1981, 813655
Term of patent 14 years
U.S. Cl. D3—54



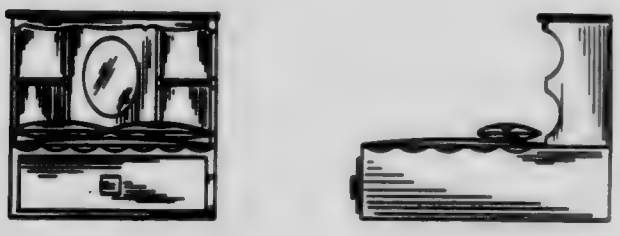
277,338
SEPARABLE HOLDER FOR KEYS AND THE LIKE
Luis Cuttler, Lomas Hipódromo, Mexico, assignor to Fabrica De Armazones Opticos, S.A., Mexico City, Mexico
Filed Sep. 29, 1982, Ser. No. 428,120
Term of patent 14 years
U.S. Cl. D3—61



277,339
DRILL CASE
Henry E. Huot, Jr., St. Paul; William J. Huot, and Warren J. Olson, both of Mahtomedi, all of Minn., assignors to Huot Manufacturing Co., St. Paul, Minn.
Filed Dec. 27, 1982, Ser. No. 453,490
Term of patent 14 years
U.S. Cl. D3—74



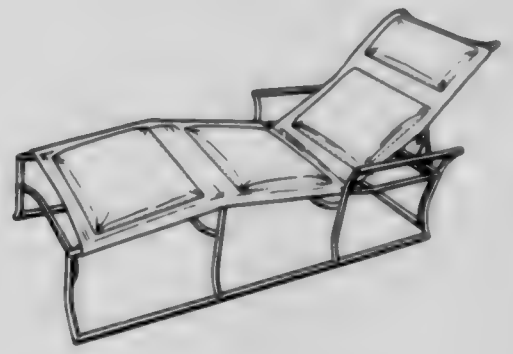
277,340
JEWELRY BOX OR SIMILAR ARTICLE
Michael E. Christen, Rte. 1, Box 80, Merna, Nebr. 68856
Filed Jul. 19, 1982, Ser. No. 399,371
Term of patent 14 years
U.S. Cl. D3—75



277,341
SEAT
John W. Caldwell, San Marino, Calif., assignor to Pacific Furniture Mfg. Co., Compton, Calif.
Filed Aug. 21, 1981, Ser. No. 295,050
The portion of the term of this patent subsequent to Mar. 20, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—366



277,342
CHAISE LOUNGE
Joel A. Kramer, Bradenton, Fla., and Alton A. Harper, Tustin, Calif., assignors to Tropitone Furniture Company, Inc., Sarasota, Fla.
Filed Sep. 30, 1982, Ser. No. 430,164
Term of patent 14 years
U.S. Cl. D6—361



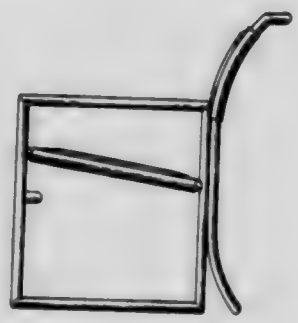
277,343
CHAIR
Robert K. Thorpe, Laguna Beach, Calif., assignor to Brown Jordan Company, El Monte, Calif.
Filed Mar. 29, 1982, Ser. No. 362,969
Term of patent 14 years
U.S. Cl. D6—369



277,344
UPHOLSTERED FURNITURE
Skip Johnson, Dunwoody, Ga., assignor to The Bean Station Furniture Factory, Bean Station, Tenn.
Filed Jul. 12, 1982, Ser. No. 397,467
Term of patent 14 years
U.S. Cl. D6—381



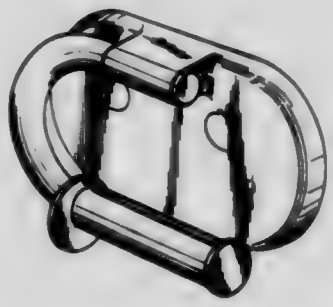
277,345
CHAIR
Joel A. Kramer, Bradenton, Fla., and Alton A. Harper, Tustin, Calif., assignors to Tropitone Furniture Company, Inc., Sarasota, Fla.
Filed Sep. 29, 1982, Ser. No. 432,111
Term of patent 14 years
U.S. Cl. D6—373



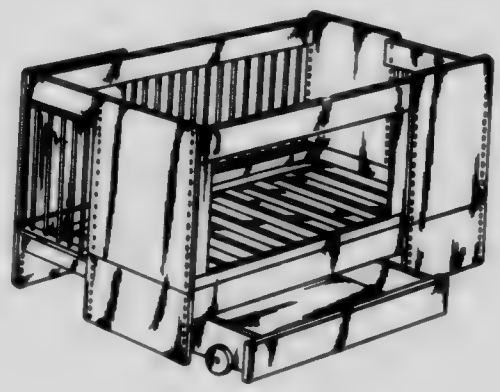
277,346
ARMCHAIR
Ned Steinberger, Brooklyn, N.Y., assignor to Simmons Universal Corporation, New York, N.Y.
Filed Nov. 1, 1982, Ser. No. 438,673
Term of patent 14 years
U.S. Cl. D6—374



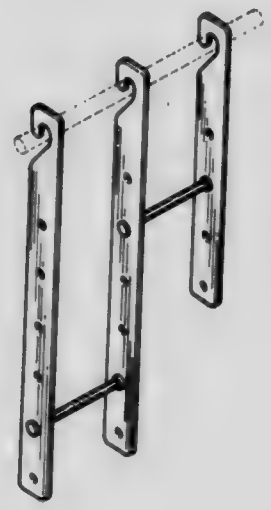
277,347
TOILET ROLL HOLDER
Bruce R. Thompson, 32 Shakespeare Ave., Tranmere, South Australia, Australia
Filed Dec. 3, 1982, Ser. No. 446,857
Claims priority, application Australia, Oct. 12, 1982, 1824/82
Term of patent 14 years
U.S. Cl. D6—97



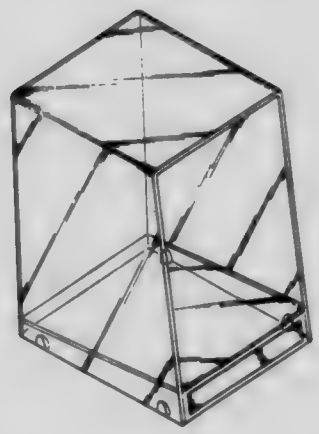
277,348
CONVERTIBLE BED
James R. Hull, 148 S. Westgate Ave., Los Angeles, Calif. 90049
Filed Apr. 12, 1982, Ser. No. 367,161
Term of patent 14 years
U.S. Cl. D6—384



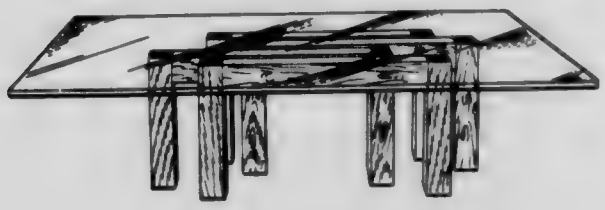
277,349
ADJUSTABLE AUXILIARY CLOSET ROD UNIT
Frank P. Campbell, 13463 W. 78th Pl., Arvada, Colo. 80005
Continuation-in-part of Ser. No. 139,660, Apr. 14, 1980, abandoned. This application Jul. 15, 1982, Ser. No. 398,573
Term of patent 14 years
U.S. Cl. D6—513



277,350
BOOKCASE FOR TELEPHONE DIRECTORIES
Kim F. Smith, Katy, Tex., assignor to Neal J. Mosely, Houston, Tex., a part interest
Filed Aug. 24, 1981, Ser. No. 295,764
Term of patent 14 years
U.S. Cl. D6—471



277,351
TABLE
Giovanni Offredi, Milan, Italy, assignor to Fratelli Saporiti Industria Arredamenti di Saporiti Sergio e Giorgio S.N.C., Besnate, Italy
Filed Aug. 9, 1982, Ser. No. 406,634
Term of patent 14 years
U.S. Cl. D6—483



277,352
BABY TOWEL
Myra Klein, 3745 NE. 171 St. #29, North Miami Beach, Fla. 33160
Filed May 13, 1982, Ser. No. 377,915
Term of patent 14 years
U.S. Cl. D6—609



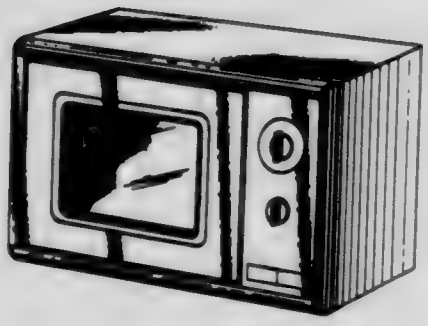
277,353
TEACUP
Walter Everhan, Weisshausstrasse 34-38, D-5000 Koln 41, Fed. Rep. of Germany
Filed Nov. 3, 1982, Ser. No. 438,980
Term of patent 14 years
U.S. Cl. D7—9



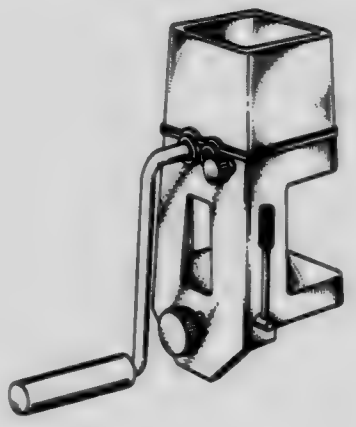
277,354
BEVERAGE MUG
Susan H. Levine, 235 S. 2nd St., Richmond, Calif. 94804
Filed May 10, 1984, Ser. No. 608,709
Term of patent 14 years
U.S. Cl. D7—9



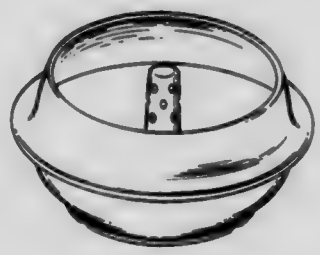
277,355
MICROWAVE OVEN
Takao Miyake; Masayoshi Kawaishi, and Kazuo Tsujimoto, all of Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 30, 1982, Ser. No. 454,692
Term of patent 14 years
U.S. Cl. D7—351



277,356
HAND OPERATED FOODSTUFF MILL
Thomas D. Dickson, Jr., 1099 Del Cambre, San Jose, Calif. 95129, and Ralph W. Schwarze, 12468 Robleda Rd., Los Altos Hills, Calif. 94022
Filed Aug. 17, 1982, Ser. No. 408,810
Term of patent 14 years
U.S. Cl. D7—372

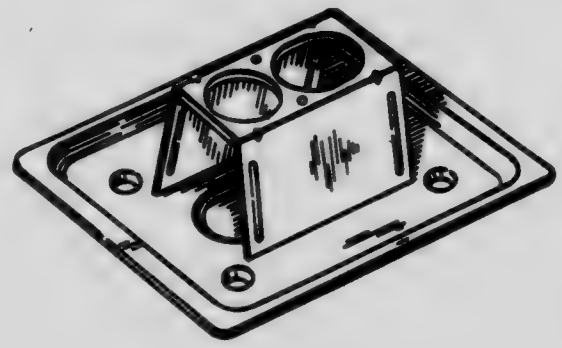


277,357
STEAMER
Susan H. Levine, 152 Washington Ave., Point Richmond, Calif. 94801
Filed Jun. 24, 1982, Ser. No. 391,694
Term of patent 14 years
U.S. Cl. D7—409





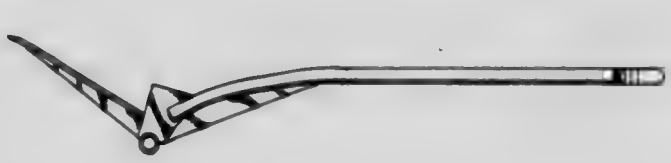
277,358
TRAY FOR PORTABLE PROPANE TORCH, TOOLS AND ACCESSORIES
Charles J. Krencik, 86 Floyd Ave., Dayton, Ohio 45415
Filed Mar. 1, 1982, Ser. No. 353,617
Term of patent 14 years
U.S. Cl. D8—71



277,359
PRY BAR

James P. Schiller, 2510 Crestview Dr. South, Salem, Oreg. 97302

Filed Jun. 14, 1982, Ser. No. 388,101
Term of patent 14 years
U.S. Cl. D8—89



277,360
COSMETIC BOTTLE

Yoichi Kaneko, Tokyo, Japan, assignor to Shiseido Company Ltd., Tokyo, Japan

Filed May 17, 1982, Ser. No. 378,467
Term of patent 14 years
U.S. Cl. D9—352



277,361
CONTAINER BODY

Tetsuya Tada, Tokyo, Japan, assignor to Canyon Corporation, Tokyo, Japan

Filed Jun. 30, 1982, Ser. No. 393,792
Claims priority, application Japan, Oct. 22, 1981, 56/46675
Term of patent 14 years
U.S. Cl. D9—355



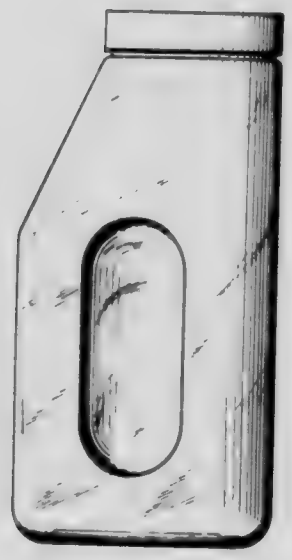
277,362
OIL CONTAINER OR THE LIKE

Charles N. Epperson, Okmulgee, Okla., assignor to Invention Development Equity Associates, Inc., Okmulgee, Okla.

Filed Aug. 25, 1982, Ser. No. 411,861
Term of patent 14 years
U.S. Cl. D9—370



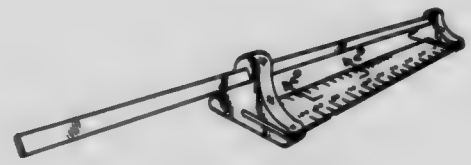
277,363
JAR OR SIMILAR ARTICLE
Archie G. Drummond, Jr., Palatine, and Dale E. Fahnstrom, Riverside, both of Ill., assignors to Tone Brothers, Inc., Des Moines, Iowa
Filed Sep. 28, 1982, Ser. No. 426,166
Term of patent 14 years
U.S. Cl. D9—372



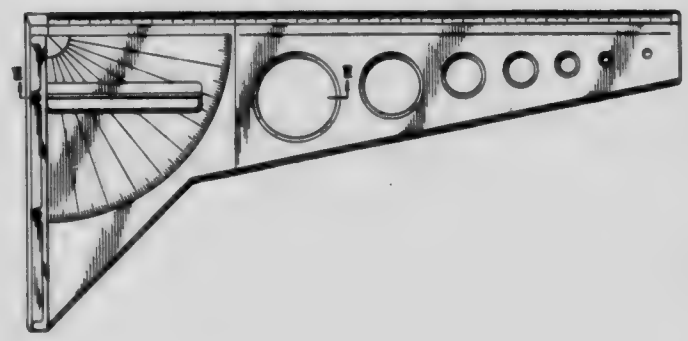
277,364
CONTAINER FOR ADHESIVE
William T. Nightingale, III, Campbell, Calif., assignor to Pacer Technology and Resources, Inc., Campbell, Calif.
Filed Apr. 16, 1982, Ser. No. 369,266
Term of patent 14 years
U.S. Cl. D9—424



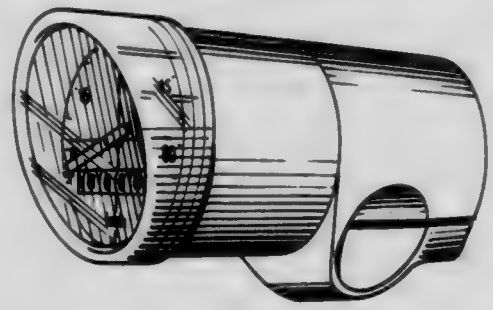
277,365
PROPORTIONAL PLOTTING DEVICE
Gary M. Sogorka, 78 Gould Rd., Newfoundland, N.J. 07435
Filed Jun. 23, 1982, Ser. No. 391,483
Term of patent 14 years
U.S. Cl. D10—61



277,366
MARKING OUT TOOL
William K. Hayward, 27 Guildford Rd., Farnborough, Hants, England
Filed Sep. 27, 1982, Ser. No. 424,585
Claims priority, application United Kingdom, Apr. 6, 1982, 1006028
Term of patent 14 years
U.S. Cl. D10—62



277,367
SPEEDOMETER/ODOMETER
Roger Huret, deceased, late of Nanterre, France; by Jeannine P. G. M. Huret, heir, Nanterre, France; by Alain Huret, heir, Bougival, France, and by Gerard Huret, heir, Nanterre, France, assignors to Huret et ses Fils, a French "societe anonyme", France
Filed Sep. 14, 1981, Ser. No. 301,497
Claims priority, application France, Mar. 16, 1981, 810 960
Term of patent 14 years
U.S. Cl. D10—98



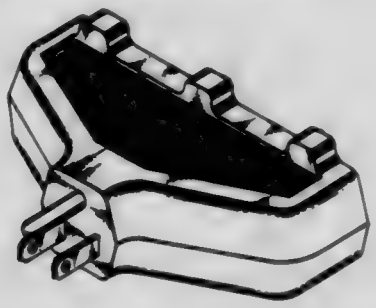
277,368
JEWELRY CHAIN
Masao Otake, Ichikawa, Japan, assignor to Nakagawa Corporation, Tokyo, Japan
Filed Dec. 21, 1982, Ser. No. 451,803
Claims priority, application Japan, Oct. 15, 1982, 57-46819
Term of patent 14 years
U.S. Cl. D11—13



277,369
JEWELRY CHAIN
Masao Otake, Ichikawa, Japan, assignor to Nakagawa Corporation, Tokyo, Japan
Filed Dec. 21, 1982, Ser. No. 451,804
Claims priority, application Japan, Oct. 15, 1982, 57-46820
Term of patent 14 years
U.S. Cl. D11—13



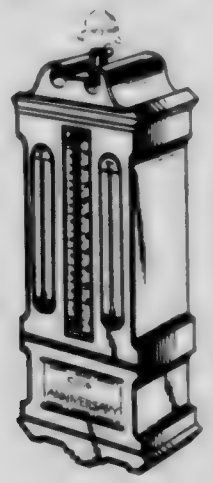
277,370
ELECTRICAL ADAPTER
Norbert Gehr, Pacific Palisades, and Michael J. Hope, Covina, both of Calif., assignors to Century Wire Gehr Industries, Inc., Pico Rivera, Calif.
Filed May 20, 1982, Ser. No. 380,230
Term of patent 14 years
U.S. Cl. D13—29



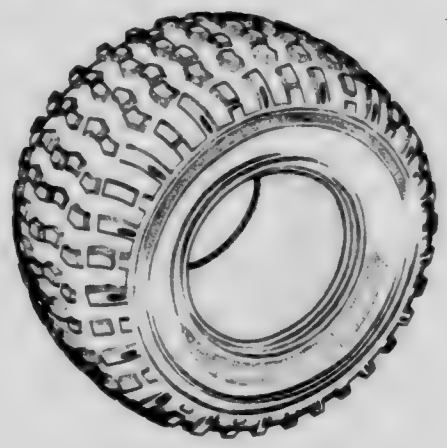
277,371
TROPHY HAVING A VERTICAL TIME DISPLAY
Iroy N. Sonier, R.R. 1 Box 453, Cocagne NB, Canada E0A LK0)
Filed Sep. 23, 1983, Ser. No. 535,062
Term of patent 14 years
U.S. Cl. D11—131



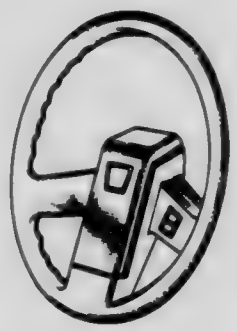
277,372
WALL PLAQUE HAVING A VERTICAL TIME DISPLAY
Iroy N. Sonier, R.R. 1 Box 453, Cocagne NB, Canada E0A LK0
Filed Sep. 23, 1983, Ser. No. 535,063
Term of patent 14 years
U.S. Cl. D11—140



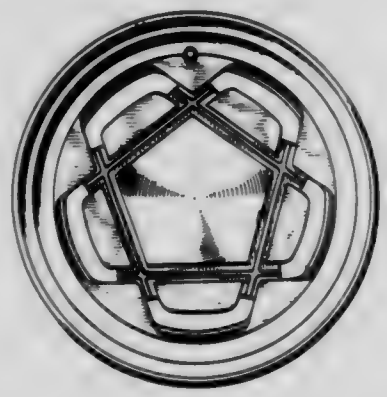
277,373
PNEUMATIC TIRE
Masamichi Tsujimoto, Osaka, Japan, assignor to The Ohtsu Tire & Rubber Co., Ltd., Osaka, Japan
Filed Apr. 1, 1982, Ser. No. 364,512
Claims priority, application Japan, Dec. 9, 1981, 56-54767
Term of patent 14 years
U.S. Cl. D12—140



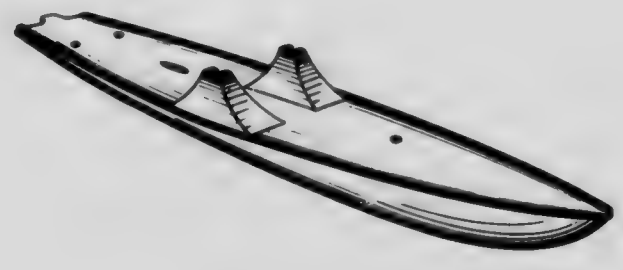
277,374
STEERING WHEEL FOR MOTOR VEHICLE
Tsutomu Koinuma, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 5, 1982, Ser. No. 365,879
Claims priority, application Japan, Oct. 6, 1981, 56-44253
Term of patent 14 years
U.S. Cl. D12—176



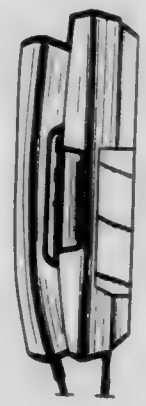
277,375
MOTOR VEHICLE WHEEL
Giorgetto Giugiaro, Turin, Italy, assignor to Gilardini S.p.A., Turin, Italy
Filed Sep. 8, 1982, Ser. No. 415,875
Claims priority, application Italy, Mar. 15, 1982, 53054-B/82[U]
Term of patent 14 years
U.S. Cl. D12—209

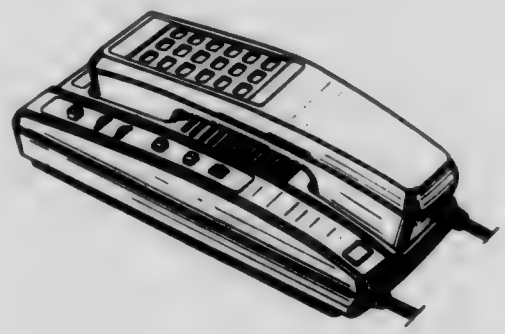


277,376
CENTER HULL FOR A TRIMARAN
Jonathan J. Mason, and John Bowen, both of Sydney, Australia, assignors to J. & J. Marine Pty. Ltd., New South Wales, Australia
Filed Jan. 7, 1982, Ser. No. 337,675
Claims priority, application Australia, Jul. 13, 1981, 84614
Term of patent 14 years
U.S. Cl. D12—304



277,377
TELEPHONE SET
Masaharu Tarao, and Katsuhito Watanabe, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Jun. 17, 1982, Ser. No. 378,488
Claims priority, application Japan, Jan. 12, 1982, 57-00505
Term of patent 14 years
U.S. Cl. D14—53



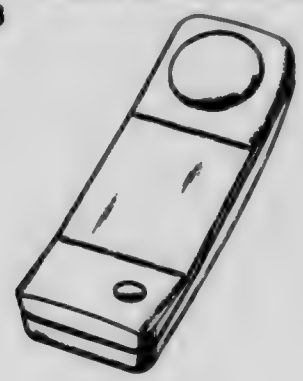


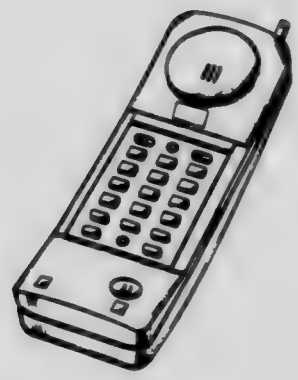
277,378
HANDSET TELEPHONE INSTRUMENT
Kenneth R. Cooke, New York, and Vito L. Porcelli, Ossining, both of N.Y., assignors to AT&T Technologies, Inc., New York, N.Y.
Filed Jan. 16, 1984, Ser. No. 570,943
Term of patent 14 years
U.S. Cl. D14—63



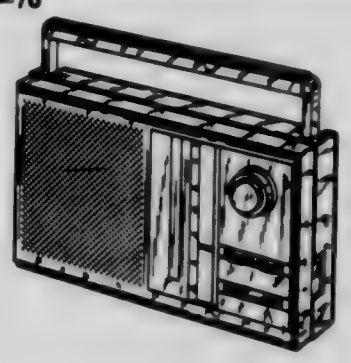


277,379
HANDSET TELEPHONE INSTRUMENT
Kenneth R. Cooke, New York, and Vito L. Porcelli, Ossining, both of N.Y., assignors to AT&T Technologies, Inc., New York, N.Y.
Filed Jan. 16, 1984, Ser. No. 570,945
Term of patent 14 years
U.S. Cl. D14—63

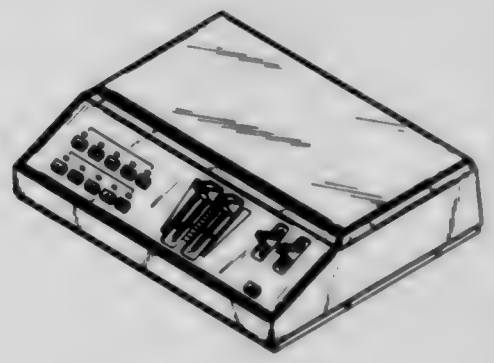




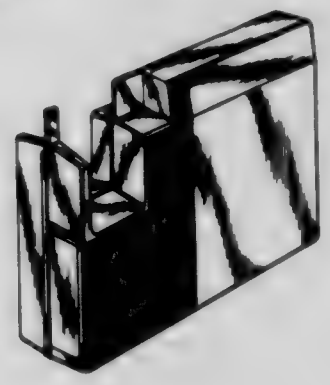
277,380
PORTABLE RADIO RECEIVER
Dieudonne G. Aotjs, Hong Kong, Hong Kong, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 12, 1982, Ser. No. 397,387
Claims priority, application United Kingdom, Jan. 11, 1982, 1004555
Term of patent 14 years
U.S. Cl. D14—70



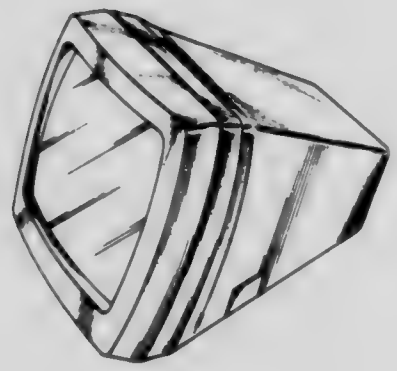
277,381
VIDEO FADER
Kazuyoshi Imazeki, Tokyo, Japan, assignor to General Research of Electronics, Inc., Tokyo, Japan
Filed May 24, 1982, Ser. No. 381,065
Claims priority, application Japan, May 13, 1982,
Term of patent 14 years
U.S. Cl. D14—77



277,382
MAGNETIC CARD OPERATED, MICROPROCESSOR-BASED ACCESS, CYCLE AND TIME-MANAGEMENT CONTROL SYSTEM
Loren A. Schultz, 1617 Kenmare Dr., Dresher, Pa. 19025, and William N. Brownfield, Jr., 234 Wooded Way, Berwyn, Pa. 19312
Filed Mar. 17, 1982, Ser. No. 358,866
Term of patent 14 years
U.S. Cl. D14—105



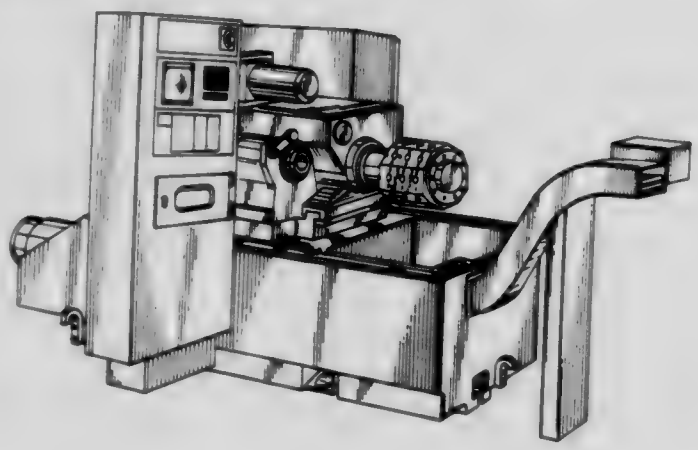
277,383
VIDEO DATA AND GRAPHICS DISPLAY TERMINAL
David E. Boudreau, 294 Lincoln St., Leominster, Mass. 01453; Christian C. Landry, 9 Nash Rd., Acton, Mass. 01720; Duane M. Loose, 78 Leonard Rd., Boxboro, Mass. 01719, and David S. Urbanus, 6 Wichern Rd., South Easton, Mass. 02375
Filed Aug. 9, 1982, Ser. No. 406,676
Term of patent 14 years
U.S. Cl. D14—113



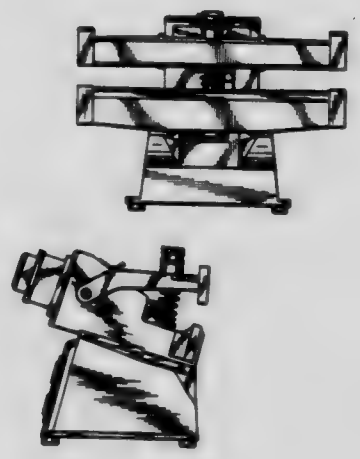
277,384
BAR CODE SCANNING DEVICE
James S. Bianco, 217 S. Brainard Rd., Enfield, Conn. 06082
Filed Sep. 14, 1982, Ser. No. 417,835
Term of patent 14 years
U.S. Cl. D14—116



277,385
TURNING MACHINE
Carl J. Myers, Mentor, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio
Filed Oct. 18, 1982, Ser. No. 435,003
Term of patent 14 years
U.S. Cl. D15—130



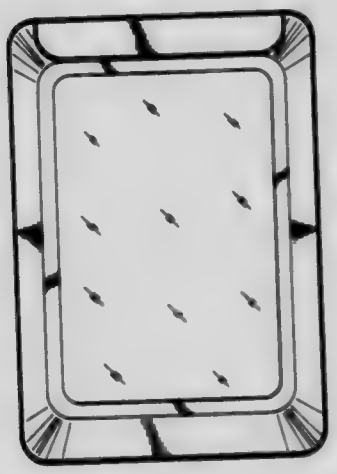
277,386
HEAT SEALING MACHINE
Teruo Yamada, Suita, Japan, assignor to Yugen Kaisha Fuji Seisakusho, Japan
Filed Dec. 17, 1982, Ser. No. 450,679
Claims priority, application Japan, Jun. 18, 1982, 57-27604
Term of patent 14 years
U.S. Cl. D15—146



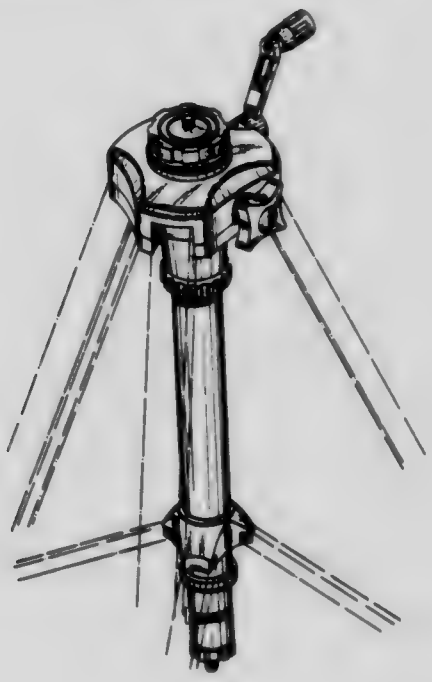
277,387
COMBINED TRANSMISSION AND PROPELLER ASSEMBLY FOR BOATS
Kjell Borgersen, Hjalteby, and Lennart Brandt, Fjaras, both of Sweden, assignors to AB Volvo Penta, Gothenburg, Sweden
Division of Ser. No. 105,242, Dec. 19, 1979, Pat. No. Des. 264,724. This application Sep. 14, 1981, Ser. No. 301,964
Term of patent 14 years
U.S. Cl. D15—149



277,388
PICTURE VIEWER
Peter Ackeret, Kusnscht, Switzerland, assignor to Licinvest Ag, Chur, Switzerland
Filed Nov. 29, 1982, Ser. No. 445,164
Claims priority, application Switzerland, Jun. 1, 1982, DM/001 515
Term of patent 14 years
U.S. Cl. D16—11



277,389
PAN HEAD MOUNTING ASSEMBLY FOR TRIPOD
Koma Nakatani, Tokyo, Japan, assignor to Velbon Int'l Corporation, Torrance, Calif.
Filed Oct. 22, 1982, Ser. No. 435,999
Term of patent 14 years
U.S. Cl. D16—46

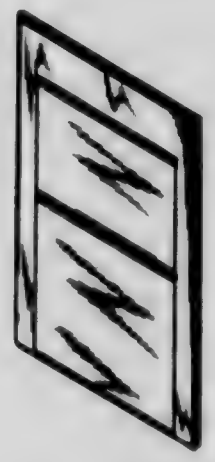


277,390
YOKE FOR AN ENGRAVING APPARATUS
Marvin J. Nissman, Great Neck, N.Y., assignor to New Hermes Incorporated, New York, N.Y.
Filed Jul. 6, 1982, Ser. No. 395,889
Term of patent 14 years
U.S. Cl. D18—22





277,391
PERPETUAL CALENDAR
Helen Mooney, 12 Cherry La., Great Neck, N.Y. 11024
Filed Jul. 26, 1982, Ser. No. 401,890
Term of patent 14 years
U.S. Cl. D19—25



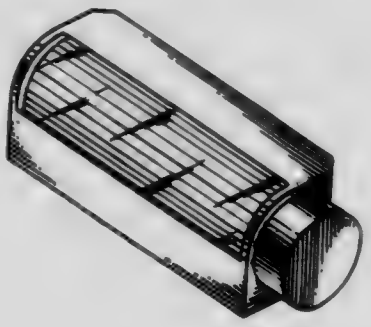
277,392
PEN
Jerome P. Salinger, Roslyn Estates, N.Y., assignor to Jonathan Bradley Pens, Inc., Long Island City, N.Y.
Filed Sep. 30, 1982, Ser. No. 432,543
Term of patent 14 years
U.S. Cl. D19—42



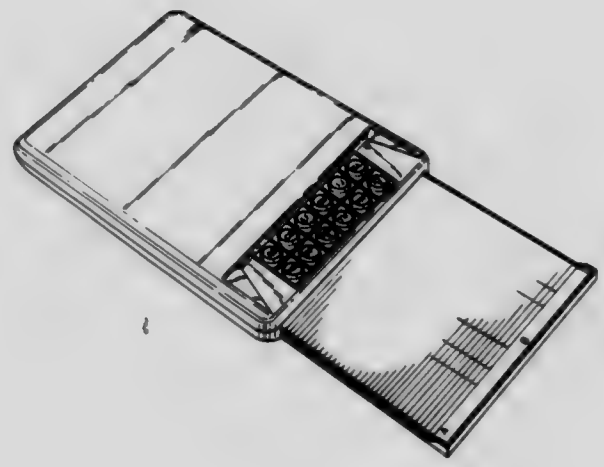
277,393
BALL POINT PEN
Toshiharu Oyabu, Nagoya, Japan, assignor to Shachihata Industry Co., Ltd., Nagoya, Japan
Filed Sep. 13, 1982, Ser. No. 417,133
Claims priority, application Japan, Apr. 9, 1982, 57-15449
Term of patent 14 years
U.S. Cl. D19—51



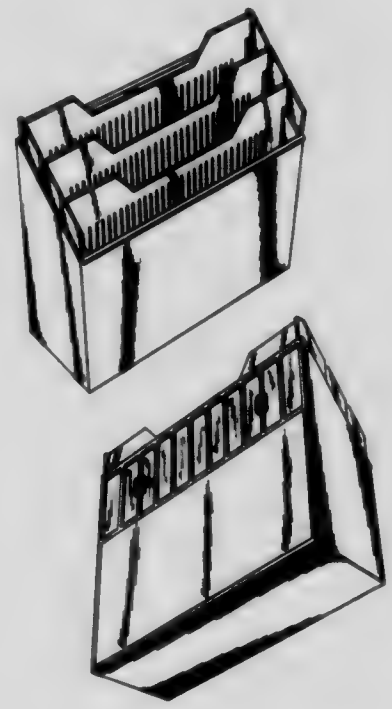
277,394
TELEPHONE INDEX
Michael H. Ansels, 4373 Jasmine St., Saginaw, Mich. 48603
Filed Aug. 26, 1982, Ser. No. 411,669
Term of patent 14 years
U.S. Cl. D19—76



277,395
TELEPHONE INDEX
Heiko Ippen, Düsseldorf, Fed. Rep. of Germany, assignor to Confon AG, Rheineck, Switzerland
Filed Sep. 15, 1982, Ser. No. 418,465
Term of patent 14 years
U.S. Cl. D19—76



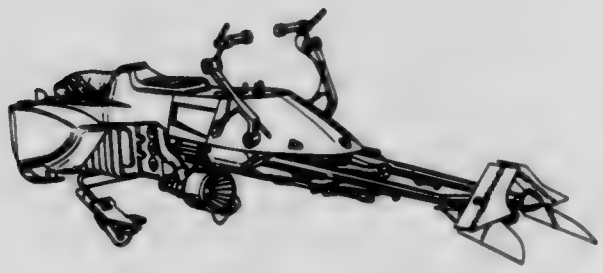
277,396
ORGANIZER FILE
Harry Mahler, Waterloo, Canada, assignor to Esselte Pendaflex Canada Inc., Toronto, Canada
Filed Sep. 8, 1982, Ser. No. 416,038
Claims priority, application Canada, Mar. 12, 1982, 12-03-82-11
Term of patent 14 years
U.S. Cl. D19—90



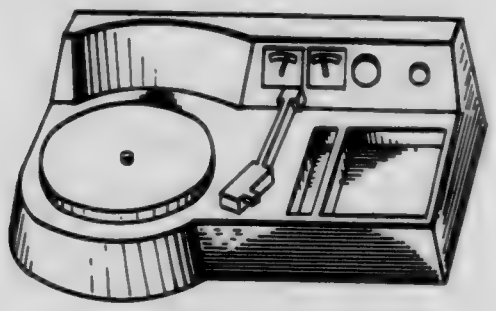
277,397
DRESSMAKER'S BODYFORM
Eric R. Arthur, Norfolk, England, assignor to A. E. Arthur Limited, Norfolk, England
Filed Jun. 1, 1982, Ser. No. 383,832
Term of patent 14 years
U.S. Cl. D20—31



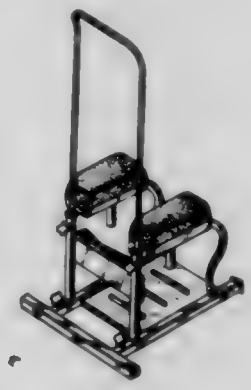
277,398
TOY VEHICLE
Joseph E. Johnston, San Rafael, Calif., assignor to Lucasfilm Ltd., San Rafael, Calif.
Filed Sep. 30, 1982, Ser. No. 429,776
Term of patent 14 years
U.S. Cl. D21—87



277,399
PHONOGRAPH OR SIMILAR ARTICLE
Richard C. Levy; Sheryl Levy, both of 6737 Newbold Dr., Bethesda, Md. 20817, and Gary Piaget, 5 Ridley Ct., Glenn Ridge, N.J. 07028
Filed Apr. 28, 1982, Ser. No. 372,703
Term of patent 14 years
U.S. Cl. D21—112



277,400
GYMNASTIC PLATFORM
Syozo Inoue, 84 Yamashita-cho, Naka-ku, Yokohama, Japan
Filed Aug. 9, 1982, Ser. No. 406,635
Term of patent 14 years
U.S. Cl. D21—191



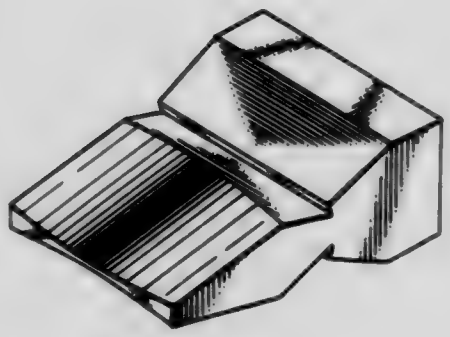
277,401
SKATE BOOT
Rene Bourque, Duvernay, Canada, assignor to Warrington Inc., Montreal, Canada
Filed Jan. 28, 1983, Ser. No. 462,117
Term of patent 14 years
U.S. Cl. D21—225



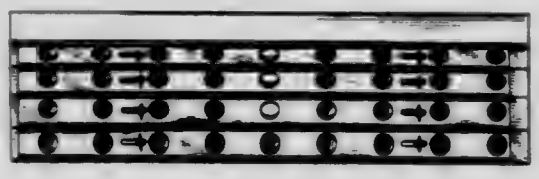
277,402
FISHING POLE WITH LURE SHOOTING MECHANISM
Nellie Thompson, 2536 Parkdale Dr., Modesto, Calif. 95351
Filed Sep. 7, 1982, Ser. No. 415,368
Term of patent 14 years
U.S. Cl. D22—23



277,403
AIR NOZZLE
Peter M. Wilson, Hayes, England, assignor to Lucas Industries Limited, Birmingham, England
Filed Feb. 5, 1982, Ser. No. 346,198
Claims priority, application United Kingdom, Sep. 12, 1981, 1002467
Term of patent 14 years
U.S. Cl. D23—35

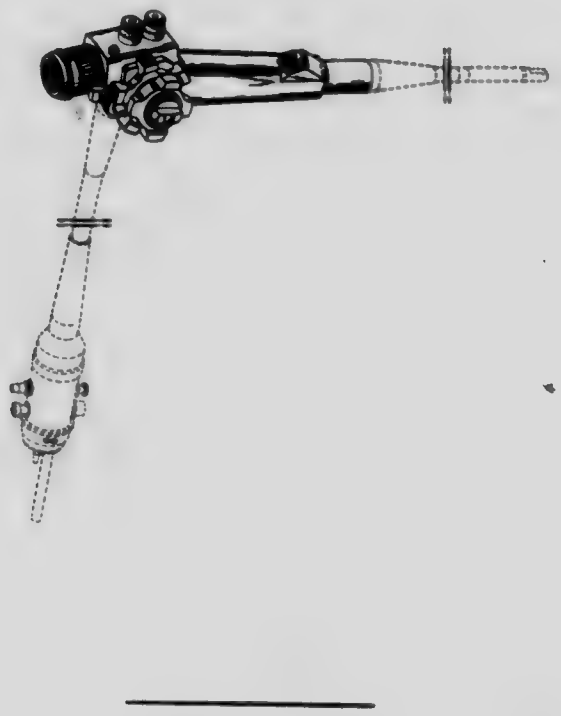


277,404
DEGREASER VENTILATION HOOD
Oscar Peterson, Mt. Clemens, and Richard W. Clement, Milford, both of Mich., assignors to Detrex Chemical Industries, Inc., Southfield, Mich.
Filed May 13, 1982, Ser. No. 377,630
Term of patent 14 years
U.S. Cl. D23—151

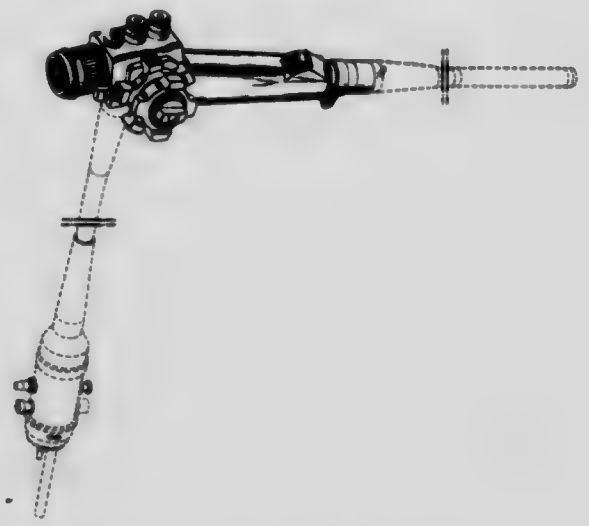




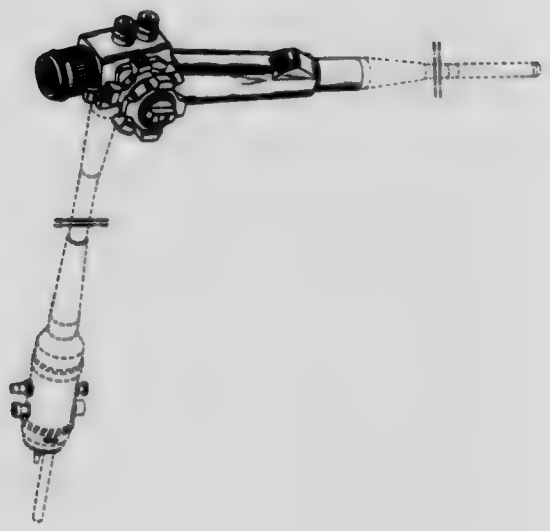
277,405
OPERATING ASSEMBLY OF AN ENDOSCOPE
Michio Imada, Kodaira, Japan, assignor to Olympus Optical Company, Ltd., Japan
Filed Sep. 7, 1982, Ser. No. 415,690
Claims priority, application Japan, Mar. 8, 1982, 57-9421
Term of patent 14 years
U.S. Cl. D24—17



277,406
OPERATING ASSEMBLY OF AN ENDOSCOPE
Michio Imada, Kodaira, Japan, assignor to Olympus Optical Company, Ltd., Japan
Filed Sep. 7, 1982, Ser. No. 415,688
Claims priority, application Japan, Mar. 8, 1982, 57-9423
Term of patent 14 years
U.S. Cl. D24—17



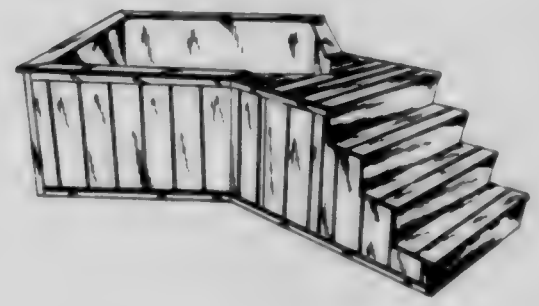
277,407
OPERATING ASSEMBLY OF AN ENDOSCOPE
Michio Imada, Kodaira, Japan, assignor to Olympus Optical Company, Ltd., Japan
Filed Sep. 7, 1982, Ser. No. 415,689
Claims priority, application Japan, Mar. 8, 1982, 57-9422
Term of patent 14 years
U.S. Cl. D24—17

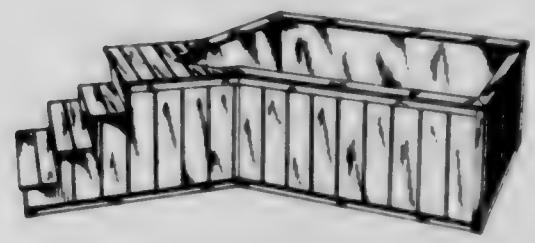


277,408
LIGHT GUIDE FOR ENDOSCOPE
Hiroaki Kubokawa, and Koichiro Ishiwara, both of Hachioji, Japan, assignors to Olympus Optical Company, Ltd., Japan
Filed Sep. 10, 1982, Ser. No. 416,635
Claims priority, application Japan, Mar. 18, 1982, 57-11172
Term of patent 14 years
U.S. Cl. D24—17



277,409
COMBINED STAIRS AND ENCLOSURE FOR A HYDROTHERAPY SPA
Alfred W. Elsner, and Willard H. Schmitz, both of Plymouth, Wis., assignors to Kohler Co., Kohler, Wis.
Filed Sep. 28, 1982, Ser. No. 426,210
Term of patent 14 years
U.S. Cl. D24—38





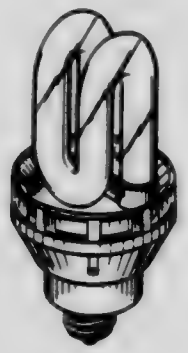
277,410
FEMALE URINAL
Rosalie Floyd, #2 - 900 Fairview Rd., Penticton, British Columbia, Canada V2A 5YB
Filed May 6, 1982, Ser. No. 375,566
Term of patent 14 years
U.S. Cl. D24—54



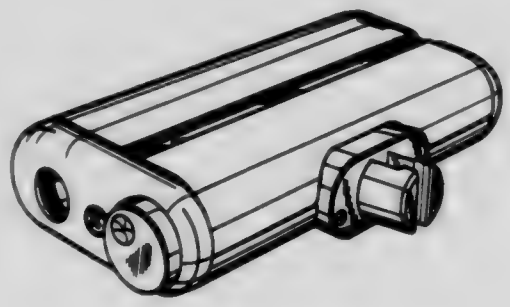
277,411
SHINGLE
Giuseppe Spinelli, St. Constant, and Peter G. MacDonald, St. Rose, both of Canada, assignors to Exxon Research and Engineering Co., Florham Park, N.J.
Filed Oct. 28, 1982, Ser. No. 437,257
Claims priority, application Canada, Aug. 3, 1982, 03-08-82-2
Term of patent 14 years
U.S. Cl. D25—80



277,412
COMPACT ELECTRIC DISCHARGE LAMP
Denis E. Bedel, Pittsburgh, Pa., assignor to North American Philips Electric Corp., New York, N.Y.
Filed Jul. 26, 1982, Ser. No. 402,192
Term of patent 14 years
U.S. Cl. D26—3



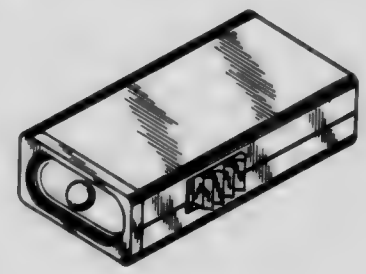
277,413
LIGHTING UNIT FOR FIBER OPTIC SYSTEMS
Jan-Åke Hallén, Brinketorpsvägen 3, S-433 41 Partille, Sweden
Filed Apr. 14, 1982, Ser. No. 368,457
Claims priority, application Sweden, Oct. 16, 1981, 81-2348
Term of patent 14 years
U.S. Cl. D26—27



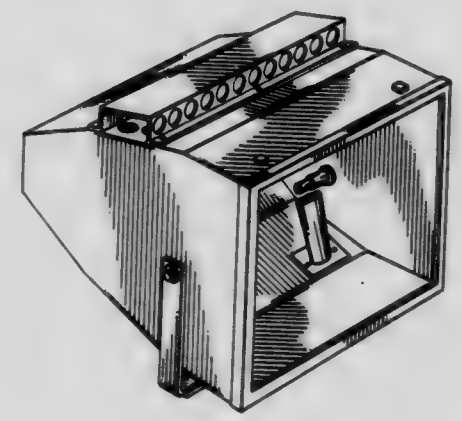
277,414
PORTABLE LAMP
John C. Parker, Tyler; Norman L. Terry, and Bud W. Lester, both of Jacksonville, all of Tex., assignors to Teknovation, Incorporated, Jacksonville, Tex.
Filed Aug. 23, 1982, Ser. No. 410,402
Term of patent 14 years
U.S. Cl. D26—45



277,415
FLASHLIGHT
Robert M. Berger, Warren, Vt., assignor to Intercon Purchasing U.S.A. Ltd., Forest Hills, N.Y.
Filed Aug. 5, 1982, Ser. No. 405,544
Term of patent 14 years
U.S. Cl. D26—46



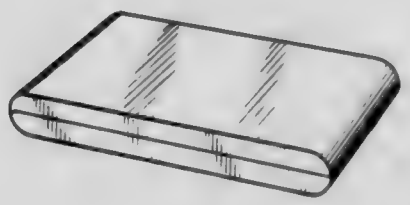
277,416
LUMINAIRE HOUSING
Joseph E. Brown, 116 E. Piping Rock Rd., Phoenix, Ariz. 85022
Filed Feb. 8, 1982, Ser. No. 346,510
Term of patent 14 years
U.S. Cl. D26—63



277,417
HAIR DRYER WITH ATTACHMENTS
John Wistrand, New Canaan, Conn., assignor to Clairol Incorporated, New York, N.Y.
Filed Jul. 11, 1980, Ser. No. 167,511
Term of patent 14 years
U.S. Cl. D28—13

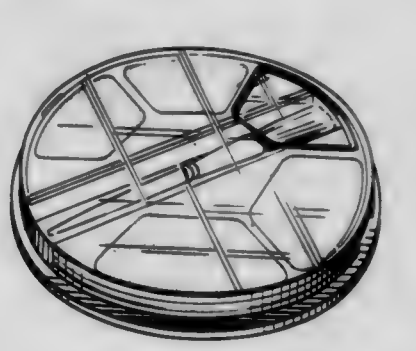


277,418
HAIR CURLER SET
William R. Hemrich, Jr., Glen Ellyn, and Bernard B. Bluestein, Des Plaines, both of Ill., assignors to Sunbeam Corporation, Oak Brook, Ill.
Filed Jul. 12, 1982, Ser. No. 397,386
Term of patent 14 years
U.S. Cl. D28—38



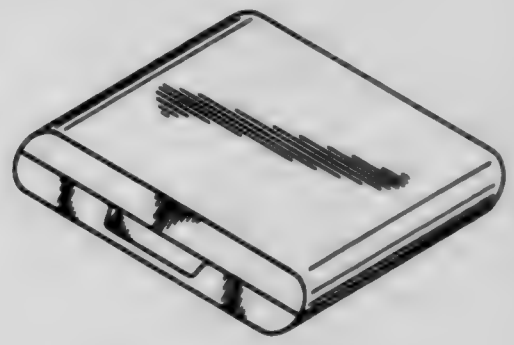


277,419
COSMETIC COMPACT
Eli I. Schefer, Sands Point, N.Y., assignor to Revlon, Inc., New York, N.Y.
Filed Sep. 13, 1982, Ser. No. 416,801
Term of patent 14 years
U.S. Cl. D28—82



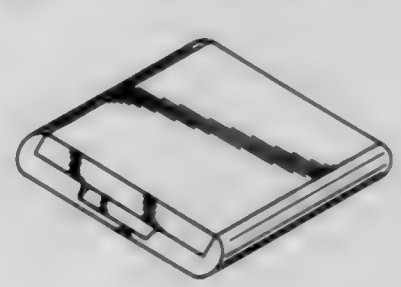


277,420
COSMETIC CASE
Dieter Bakic, Romerstrasse 15, 8000 Munchen 40, Fed. Rep. of Germany
Filed Nov. 22, 1982, Ser. No. 443,291
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1982, 11 AR 1979/82
Term of patent 14 years
U.S. Cl. D28—83





277,421
COSMETIC CASE
Dieter Bakic, Romerstrasse 15, 8000 Munchen 40, Fed. Rep. of Germany
Filed Nov. 22, 1982, Ser. No. 443,294
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1982, 11 AR 1979/82
Term of patent 14 years
U.S. Cl. D28—83

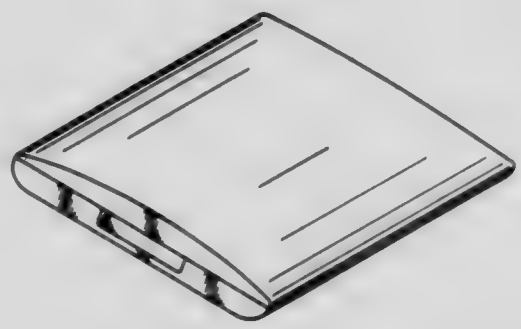




277,422
COSMETIC CASE

Dieter Bakic, Romerstrasse 15, 8000 Munchen 40, Fed. Rep. of Germany

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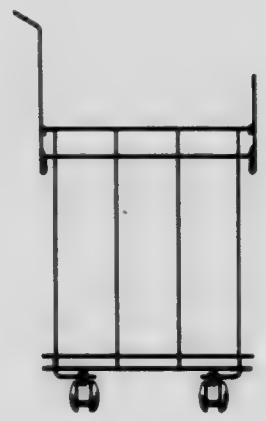




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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF JANUARY, 1985

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Bagnulo, Luigi, to Caunned Aktiengesellschaft. Method of corrosion protection. 4,496,444, Cl. 204-148.000.

Bai, Monty W.; and Meyer, Alfred B., to Motorola, Inc. Method for simulating a shock pulse. 4,495,792, Cl. 73-12.000.

Baker, Alan J. Hand-held scraper. 4,495,670, Cl. 15-236.00R.

Baker, Andrew P.: *See*—
Carpenter, Peter E. G.; and Baker, Andrew P., 4,496,916, Cl. 337-6.000.

Baker, James G., to Polaroid Corporation. Compact afocal attachment for use with photographic objectives. 4,496,223, Cl. 350-432.000.

Baker ProLift, Inc.: *See*—
Albert, James W.; and Turner, Weems D., 4,496,285, Cl. 417-12.000.

Balanyk, Thomas E.: *See*—
Sandham, H. James; and Balanyk, Thomas E., 4,496,322, Cl. 433-217.000.

Balkwill, G. Russell; Robinet, Jules P.; and Tamasovics, John F. Electrical conduit with vapor barrier device. 4,496,792, Cl. 174-65.00R.

Ballintubber Enterprises Limited: *See*—
Finan, Michael; Finan, Peter; and Divilly, Michael, 4,495,716, Cl. 37-3.000.

Balthazor, Terry M.: *See*—
Ku, Audrey Y.; Chupp, John P.; and Balthazor, Terry M., 4,496,765, Cl. 564-440.000.

Bando, Satoshi: *See*—
Murata, Yoshifumi; Igi, Keishiro; Narukawa, Hiroshi; Uetsuki, Masao; Bando, Satoshi; Kawai, Shuji; and Shirano, Kenji, 4,496,714, Cl. 528-272.000.

Bando, Yoshihide: *See*—
Maenishi, Kozo; Adachi, Masaaki; and Bando, Yoshihide, 4,496,806, Cl. 200-16.00R.

Banitt, Elden H.: *See*—
McQuinn, Roy L.; Bronn, William R.; and Banitt, Elden H., 4,496,734, Cl. 546-221.000.

Banko, Anton, to Surgical Design Corporation. Surge prevention system for an ophthalmic instrument. 4,496,342, Cl. 604-27.000.

Barcus-Berry, Inc.: *See*—
Crooks, Robert C., 4,496,859, Cl. 307-520.000.

Barkan, Edward: *See*—
Swartz, Jerome; Barkan, Edward; and Harrison, Shelley A., 4,496,831, Cl. 235-472.000.

Barley, Geoffrey W., to UOP Inc. Parallel folding armrest. 4,496,190, Cl. 297-411.000.

Barth, Edward G.; Braude, Ruvim; and Kay, Nicholas W., to Burroughs Corporation. Conductor composition and devices using it. 4,496,875, Cl. 313-632.000.

Barthel, Alfred: *See*—
Young, John K.; and Barthel, Alfred, 4,495,775, Cl. 62-48.000.

Bartz, Wilfried: *See*—
Zagefka, Hans-Dieter; Bartz, Wilfried; and Konietzny, Alfred, 4,496,613, Cl. 427-440.000.

BASF Aktiengesellschaft: *See*—
Acker, Rolf-Dieter; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, 4,496,563, Cl. 514-222.000.
Bergmann, Udo; Dix, Johannes P.; Hansen, Guenter; and Schefczik, Ernst, 4,496,480, Cl. 534-794.000.
Duembgen, Gerd; Fouquet, Gerd; Krabetz, Richard; Lucas, Ekhart; Merger, Franz; and Nees, Friedbert, 4,496,770, Cl. 568-463.000.
Greif, Norbert; Oppenlaender, Knut; Hettche, Albert; and Vamvakaris, Christos, 4,496,439, Cl. 204-55.00R.
Hambrecht, Juergen; Reffert, Rudi W.; Echte, Adolf; and Swoboda, Johann, 4,496,679, Cl. 524-111.000.
Plath, Peter; Rohr, Wolfgang; and Wuerzer, Bruno, 4,496,391, Cl. 71-92.000.
Stubenrauch, Gerd; Ammermann, Eberhard; Hamprecht, Gerhard; and Pommer, Ernst-Heinrich, 4,496,738, Cl. 548-262.000.

BASF Farben & Fasern AG: *See*—
Hille, Hans-Dieter; and Harten, Rolf, 4,496,675, Cl. 524-77.000.

BASF Farben & Fasern A.G.: *See*—
Batzill, Wolfgang; and Diefenbach, Horst, 4,496,672, Cl. 523-404.000.

BASF Wyandotte Corporation: *See*—
Camp, Ronald L.; Dexheimer, Edward M.; and Thir, Basil, 4,496,632, Cl. 428-395.000.

Batzill, Wolfgang; and Diefenbach, Horst, to BASF Farben & Fasern A.G. Process for coating an electrically conductive substrate. 4,496,672, Cl. 523-404.000.

Bauer, Dennis P., to Ethyl Corporation. Process for preparing amino acid esters. 4,496,756, Cl. 560-41.000.

Bauer, Helmut: *See*—
Krob, Erwin; Leichtfried, Friedrich; and Bauer, Helmut, 4,496,167, Cl. 280-605.000.

Bauer, James J.; and Strautins, Vilnis, to Clark Equipment Company. Adjustable steering column. 4,495,834, Cl. 74-493.000.

Bauer, Jean-Michel: *See*—
Hubert, Jean-Marie; Bauer, Jean-Michel; and Mollet, Serge, 4,496,621, Cl. 428-236.000.

Bauer, Wilfried; and Pless, Janos, to Sandoz Ltd. Polypeptides, processes for their production, pharmaceutical compositions comprising said polypeptides and their use. 4,496,543, Cl. 514-11.000.

Baulch, Donald L.: *See*—
Campbell, Ian M.; Baulch, Donald L.; and Audley, Gary J., 4,496,783, Cl. 568-947.000.

Baumeister, Manfred; and Edel, Eugen, to MD-Verwaltungsgesellschaft Nicolaus GmbH & Co. KG. Process for the continuous extraction of vegetable-fiber material in two stages. 4,496,426, Cl. 162-19.000.

Bausch & Lomb Incorporated: *See*—
Augusto, Peter, 4,496,225, Cl. 351-234.000.
Augusto, Peter; and Stevens, Donn E., 4,496,226, Cl. 351-234.000.

Baxter Travenol Laboratories, Inc.: *See*—
Soika, Emil H., 4,496,352, Cl. 604-263.000.
Stone, Albert; Pyde, Edwin; and Carveth, Peter, 4,496,046, Cl. 206-219.000.

Bay, William P. Helmet shield apparatus. 4,495,657, Cl. 2-10.000.

Bayer Aktiengesellschaft: *See*—
Bonse, Gerhard; Marzolph, Gerhard; and Blank, Heinz U., 4,496,736, Cl. 546-327.000.
Hoppe, Dieter; and Kleemann, Heinz-Werner, 4,496,723, Cl. 544-90.000.
Kopp, Richard; Grogler, Gerhard; Reiff, Helmut; and Dieterich, Dieter, 4,496,491, Cl. 260-453.0AR.
Kuhle, Engelbert; Brandes, Wilhelm; Rosalenbroich, Hans-Jurgen; and Klauke, Erich, 4,496,575, Cl. 514-390.000.

Le Blanc, Helmut; and Wedemeyer, Karlfried, 4,496,763, Cl. 564-402.000.
Raue, Roderich, 4,496,719, Cl. 548-455.000.
Redeker, Detmar; and Mrotzek, Dieter, 4,496,340, Cl. 494-29.000.
Skipka, Guido; Alles, Hans-Ulrich; Randau, Gert; and Niese, Manfred, 4,496,764, Cl. 564-418.000.

Bazes, Mel, to Intel Corporation. Integrated circuit synchronous delay line. 4,496,861, Cl. 307-602.000.

BBC Brown, Boveri & Company, Limited: *See*—
Horler, Hansulrich; and Koller, Rudolf, 4,496,252, Cl. 384-215.000.

BCIRA: *See*—
Morley, John G., 4,495,980, Cl. 164-16.000.

Beasley, Roy D.; and LaGrone, James H., to Mobil Oil Corporation. Method of monitoring the growth of cuttings beds in angled well bores. 4,495,803, Cl. 73-151.000.

Beasom, James D., to Harris Corporation. Method of fabricating an isolated gate JFET. 4,495,694, Cl. 29-571.000.

Beaudet, Leo A.; and Lennon, Donald J., to Dennison Manufacturing Company. Anodized electrostatic imaging surface. 4,496,236, Cl. 355-3.0DR.

Bebenkowski, Krzysztof: *See*—
Kreciaz, Maria; Kotlewski, Witold; and Bebenkowski, Krzysztof, 4,496,930, Cl. 338-26.000.

Beck, David A., to Appleton Mills. Method and apparatus for forming a helical wound substrate composed solely of longitudinal yarns. 4,495,680, Cl. 28-100.000.

Beck, Hubert W.: *See*—
Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., 4,496,665, Cl. 502-521.000.

Beck, Martin H.; and Krishnakumar, Suppayan M., to Continental Group, Inc., The. Blow molded container and method of forming the same. 4,496,064, Cl. 215-1.00C.

Becker, Wilfried: *See*—
Winkler, Gert; Becker, Wilfried; and Zielinski, Erich, 4,495,852, Cl. 89-46.000.

Beckmann, Friedrich K.; Helzel, Thomas; and Peemoller, Horst, to U.S. Philips Corporation. Device for high voltage transfer between two parts which are rotatable relative to each other. 4,496,202, Cl. 339-5.00R.

Beckwith, Elaine C.: *See*—
Ezis, Andre; Beckwith, Elaine C.; and Blair, Howard D., 4,496,503, Cl. 264-56.000.

Beckwith, Robert E., Jr.: *See*—
Chang, Irving B.; and Beckwith, Robert E., Jr., 4,496,622, Cl. 428-280.000.

Bedu, Marcel; Farcy, Jean C.; and Goin, Christian, to Commissariat a l'Energie Atomique. Flash tube having coax cable connector. 4,496,873, Cl. 313-231.710.

Beecham Group p.l.c.: *See*—
Evans, John M.; and Ashwood, Valerie A., 4,496,565, Cl. 514-222.000.

Beecher, William H.: *See*—
Hall, Kenneth F.; and Beecher, William H., 4,496,355, Cl. 604-327.000.

Beetstra, Tsjalling, to U.S. Philips Corporation. Method and device for writing a data block into a record carrier body. 4,497,050, Cl. 369-59.000.

Begga, George; and Richardson, Thomas H. Flossing device. 4,495,957, Cl. 132-92.00A.

Beghin-Say S.A.: *See*—
Pigneul, Raymond, 4,496,359, Cl. 604-387.000.

Behr, Friedrich; Schulten, Rudolf; and Weirich, Walter, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Diffusion membrane and process for separating hydrogen from gas mixture. 4,496,373, Cl. 55-16.000.

Bell, Christy W.: *See*—
Titus, Charles H.; Wittle, John K.; and Bell, Christy W., 4,495,990, Cl. 166-65.00R.

Bell, Frank H., to Thiokol Corporation. External tracer for gun launched projectiles. 4,495,870, Cl. 102-511.000.

Bell & Howell: *See*—
Guzik, Rudolph, 4,496,232, Cl. 355-3.0CH.

Bell, Malcolm R.: *See*—
Schlegel, Donald C.; and Bell, Malcolm R., 4,496,590, Cl. 514-646.000.

Beloit Corporation: *See*—
Justus, Edgar J., 4,495,711, Cl. 34-23.000.
Justus, Edgar J., 4,495,712, Cl. 34-52.000.

Belyaeva, Svetlana A.: *See*—
Advolotkin, Nikolai P.; Belyaeva, Svetlana A.; Ovchinnikov, Igor E.; Lebedev, Nikolai I.; Yankovsky, Alexei J.; Sytykh, Stanislav P.; Khrenov, Jury A.; and Axenov, Vladimir N., 4,496,868, Cl. 310-112.000.

Bender, Franz; Hertweck, Gernot; Grohn, Michael; and Moser, Peter, to Daimler-Benz AG. Valve guide arrangement for the valve stem of a valve in an internal combustion engine. 4,495,906, Cl. 123-188.0GC.

Bendix Corporation, The: *See*—
Kwon, Ki C.; and Luther, Thomas A., 4,496,195, Cl. 308-6.00C.
Kwon, Ki C., 4,496,197, Cl. 308-6.00C.

Bendrick, Charles J.: *See*—
Plotkin, George M.; Bendrick, Charles J.; and Wolf, George, 4,496,539, Cl. 424-94.000.

Bennett, Robert A. Educational game. 4,496,327, Cl. 273-249.000.

Bennewitz, Paul F. Apparatus and method for producing and using directional, electrical and magnetic fields. 4,495,953, Cl. 128-789.000.

Bennitt, Robert A., to Ingersoll-Rand Company. Unidirectional-flow fluid valve. 4,495,964, Cl. 137-512.100.

Benscoter, Richard D., to Butler Manufacturing Company. Underfloor junction box. 4,496,067, Cl. 220-3.700.

Bentz, Joseph W., to Precision Timer Co., Inc. Ignition control circuit for a boiler system. 4,496,305, Cl. 431-1.000.

Benzing, Walter C.: *See*—
McNeilly, Michael A.; and Benzing, Walter C., 4,496,609, Cl. 427-55.000.

Berendt, Hans-Ulrich: *See*—
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Berger, Terry A., to Hewlett-Packard Company. Self cleaning electrochemical detector and cell for flowing stream analysis. 4,496,454, Cl. 204-402.000.

Bergmann, Udo; Dix, Johannes P.; Hansen, Guenter; and Schefczik, Ernst, to BASF Aktiengesellschaft. Isothiazolazo dyes having coupling components which are free from unsaturated aliphatic radicals. 4,496,480, Cl. 534-794.000.

Bergstedt, Lowell C. Child's growth measuring and registering devices. 4,495,702, Cl. 33-169.00R.

Bergstein, Wolfgang; Friedrich, Heinz; Kleemann, Axel; Prescher, Gunther; and Beschke, Helmut, to Degussa Aktiengesellschaft. Catalysts for the production of 2-cyanopyrazine. 4,496,729, Cl. 544-336.000.

Berlant, Emmanuel. 360 Degree radial reflex orthospectral horn for high-frequency loudspeakers. 4,496,021, Cl. 181-152.000.

Berlin, J. Burton, to Boeing Company, The. Control surface lock for flutter constraint. 4,496,121, Cl. 244-75.00A.

Bernfeld, Kenneth G. Adaptors for a collet chuck. 4,496,163, Cl. 279-1.00A.

Bernstein, Lawrence S.; Bien, Fritz; and Jamieson, John A., to Spectral Sciences Incorporated. System and method for remote detection and identification of chemical species by laser initiated nonresonant infrared spectroscopy. 4,496,839, Cl. 250-341.000.

Berol Kemi AB: *See*—
Mathiesen, Mait M.; Gillberg, Lars I.; Hellsten, Karl M. E.; and Karlsson, Gunvor B. T., 4,496,367, Cl. 44-51.000.

Berry, David J.: *See*—
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Berthold, Rainer: *See*—
Koerner, Hans-Gerhard; Lang, Helmut; Berthold, Rainer; Strietzel, Rainer; and Melchior, Friedrich, 4,495,851, Cl. 89-6.500.

Beschke, Helmut: *See*—
Bergstein, Wolfgang; Friedrich, Heinz; Kleemann, Axel; Prescher, Gunther; and Beschke, Helmut, 4,496,729, Cl. 544-336.000.

Best Lock Corporation: *See*—
Best, Walter E.; and Foshee, William R., 4,496,178, Cl. 292-169.130.

Best, Walter E.; and Foshee, William R., to Best Lock Corporation. Extended latch tube assembly. 4,496,178, Cl. 292-169.130.

Bettin, Leonard A.: *See*—
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Bettini, Giuliano; Penso, Luigi; and Rodriguez, Giuseppe, to Selenia, Industrie Elettroniche Associate, S.p.A. MTI Radar adaptable to different environmental conditions. 4,496,949, Cl. 343-7.700.

Betz Laboratories, Inc.: *See*—
Reichgott, David W.; and Leary, Michael J., 4,496,667, Cl. 521-26.000.

Bey, Philippe; and Jung, Michel, to Merrell Torsude et Compagnie. Method of treating psoriasis. 4,496,588, Cl. 514-564.000.

Beyeler, Harry: *See*—
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BF Goodrich Company, The: *See*—
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Bhattacharyya, Alakananda: *See*—
Shore, Sheldon G.; and Bhattacharyya, Alakananda, 4,496,532, Cl. 423-417.000.

Bianchi, Guiseppe, to Industrie Zanussi S.p.A. Apparatus and process for producing chlorine gas and for employing such chlorine gas for the production of chlorine water. 4,496,452, Cl. 204-266.000.

BICC Public Limited Company: *See*—
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Biegelsen, David K.; and Sirkin, Eric R., to Xerox Corporation. P-Glass reflow technique. 4,496,608, Cl. 427-53.100.

Bien, Fritz: *See*—
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Big Jon, Inc.: *See*—
Emory, John E., Jr., 4,495,721, Cl. 43-21.200.

Billet, Gilles: *See*—
Fournier, Andre; and Billet, Gilles, 4,496,919, Cl. 335-5.000.

Billing, Lars. Arrangement in apparatus for mechanical nailing. 4,496,092, Cl. 227-149.000.

Billings, William G., to Phillips Petroleum Company. Zinc oxide-char gasification process. 4,496,370, Cl. 48-197.00R.

Binder, Adam. Device for harnessing wind energy including shock absorber. 4,496,848, Cl. 290-55.000.

Biomeasure, Inc.: *See*—
Kim, Sun K., 4,496,540, Cl. 514-19.000.

Bioresearch: *See*—
Kurtz, Robert J.; and LiCausi, Joseph, 4,495,943, Cl. 128-80.00A.

Bird, John K.: *See*—
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Bishop, Edward W.: *See—*
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Bisping, Bernhard, to Rheinmetall GmbH. Fuzeless annular wing projectile. 4,495,869, Cl. 102-503.000.
Bivona Surgical Instruments, Inc.: *See—*
Shapiro, Seymour W., 4,495,948, Cl. 128-207.150.
Bixby, James A.: *See—*
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BKMI Industrieanlagen GmbH: *See—*
Quittkat, Wolfram; Reuter, Gerhard; and Schmidt, Rudiger, 4,496,313, Cl. 432-14.000.
Black, Arthur G.; Dodge, John H.; and Ernst, Larry M., to International Business Machines Corporation. Bang-bang dual-mode integral controller with proportional control output useful for temperature control. 4,496,829, Cl. 219-497.000.
Black Clawson Company, The: *See—*
Phelps, Richard W., 4,495,886, Cl. 118-249.000.
Blackbourn, Inc.: *See—*
Sykes, Philip K., 4,496,048, Cl. 206-387.000.
Blackwell, Joseph T., III; and Gasper, Larry, III, to Ciba-Geigy Corporation. Method for the production of 2-isopropyl-4-methyl-6-hydroxypyrimidine. 4,496,728, Cl. 544-319.000.
Blad, Leiv H.: *See—*
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Blair, Howard D.: *See—*
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Blair, Timothy T.: *See—*
Gage, Charles A.; Blair, Timothy T.; and Morgan, Thomas W., 4,496,233, Cl. 355-3.0TR.
Blank, Heinz U.: *See—*
Bonse, Gerhard; Marzolph, Gerhard; and Blank, Heinz U., 4,496,736, Cl. 546-327.000.
Blankenship, Ernest B., to Research Products/Blankenship Corporation. Incinerator for burning odor forming materials. 4,495,873, Cl. 110-250.000.
Blanquaert, Daniel, to Ceraver. Titanium or titanium alloy pin for cement-free fixing in a long bone to form a prosthesis. 4,495,664, Cl. 3-1.913.
Blaser, Eugene M.; Chung, Paul W.; and Varshney, Ramesh C., to International Business Machines Corporation. Low power clock generator. 4,496,852, Cl. 307-269.000.
Blatt, Leland F. Power operated clamp. 4,496,138, Cl. 269-32.000.
Blease, Wilfred J., to Pioneer Plastics, Inc. Container assembly. 4,496,068, Cl. 220-4.00D.
Bletso, Nelson C.: *See—*
Heater, Paul L., Jr.; Bletso, Nelson C.; and Tung, William C. T., 4,496,673, Cl. 523-458.000.
Blewett, Charles W.; and Sublett, Michael D., to National Distillers and Chemical Corporation. Process for the metathesis of alkenyl esters. 4,496,758, Cl. 560-112.000.
Blue Circle Industries PLC: *See—*
Vas, Gerson M. F.; and Shiel, Leslie E., 4,496,670, Cl. 523-205.000.
BMC Industries, Inc.: *See—*
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BNF Metals Technology Centre: *See—*
Bowers, John E., 4,496,394, Cl. 75-63.000.
Bob Mann & Associates Incorporated: *See—*
Mann, Robert N., 4,496,823, Cl. 219-137.410.
Bock, Klaus: *See—*
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Boda, James C., to Brunswick Corporation. Selectively disengageable, tiller actuated vane steering system. 4,496,326, Cl. 440-62.000.
Bodor, Nicholas S., to Key Pharmaceuticals, Inc. 4,5α-Epoxymorphinan-6-spiro-2'-(4'-carboxy,1',3'-thiazolidine)derivatives. 4,496,570, Cl. 514-282.000.
Boehringer Mannheim GmbH: *See—*
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Boeing Company, The: *See—*
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Ritter, James D., 4,496,412, Cl. 156-157.000.
Boella, Marcello; and Rivera, Paolo, to Ing. C. Olivetti & C., S.p.A. Shaft encoder with diffusely placed light sensitive elements. 4,496,835, Cl. 250-231.0SE.
Bolieau, Christopher W.: *See—*
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Bondar, Efim S.: *See—*
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Bonnin, Michelle; Musikas, Claude; and Vitorge, Pierre, to Commissariat a l'Energie Atomique. Process for separating the actinides and lanthanides present in the trivalent state in an acid aqueous solution. 4,496,523, Cl. 423-9.000.
Bonse, Gerhard; Marzolph, Gerhard; and Blank, Heinz U., to Bayer Aktiengesellschaft. Process for the preparation of carboxylic acids and N-tert.-alkylamines. 4,496,736, Cl. 546-327.000.
Boogers, Wilhelmus P. L., to P.M.B. Patent Machinebouw B.V. Winding device. 4,495,955, Cl. 131-105.000.
Booth, Raymond E.; and Miller, Michael E., to Sam Stein Associates, Inc. Breading machine. 4,496,084, Cl. 222-282.000.
Bopp, Warren G., to Eaton Corporation. Viscous coupling for torque converter bypass. 4,496,034, Cl. 192-3.280.
Borch, Michael J.: *See—*
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Borg-Warner Chemicals, Inc.: *See—*
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Borner, Roland; Holstein, Herbert; and Sennewald, Jurgen, to Oswald Forst Maschinenfabrik und Apparatebauanstalt GmbH & Co. KG. Scanning finger for a scanning device of a machine for the automatic sharpening of broaching or reaming tools. 4,495,733, Cl. 51-165.00R.
Borovsky, Simcha: *See—*
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Borsuk, Leslie M., to International Telephone and Telegraph Corporation. Audible indicator for a connector. 4,496,213, Cl. 350-96.220.
Borthwick, Alan D.: *See—*
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Bosch-Siemens Hausgeraete GmbH: *See—*
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Bosch-Siemens Hausgerate GmbH: *See—*
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Bostian, Bruce R.: *See—*
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Bott, David C.; Edwards, John H.; and Feast, William J., to British Petroleum Company p.l.c., The. Polyacetylene production. 4,496,702, Cl. 526-285.000.
Bourgogne, Michel; Guth, Jean-Louis; Szabo, Georges; and Wey, Raymond, to Compagnie Francaise de Raffinage. Process for the preparation of zeolite ZK 5. 4,496,528, Cl. 423-328.000.
Bouwhuis, Hendrik. Mould for shaping synthetic material and mould for renovating a carrying board. 4,496,304, Cl. 425-569.000.
Bowers, John E., to BNF Metals Technology Centre. Continuous method of removing tin from lead. 4,496,394, Cl. 75-63.000.
Bowling, Donald R.; Kinman, Darry M.; Afendykiw, Marko; and White, David J., to United States of America, Navy. N-way summing network characterization system. 4,497,030, Cl. 364-481.000.
Bowthorpe-Hellermann Limited: *See—*
Walker, John G., 4,495,972, Cl. 140-93.200.
Braithwaite, Gavin B.: *See—*
Akhavein, Ali A.; and Braithwaite, Gavin B., 4,495,898, Cl. 119-156.000.
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Brandt, Joachim; Deblitz, Gerhard; Post, Jurgen; Willimczik, Bernd; Marten, Rolf; Paschen, Rolf; and Anderka, Gerold, to Koh-I-Noor Rapidograph, Inc. Drawing pen exchanger for computer controlled drawing machines. 4,496,958, Cl. 346-139.00R.
Brandyberry, Dennis R.; and Rye, Grover W., to Goodyear Tire & Rubber Company, The. Manufacture of metallic cable. 4,495,759, Cl. 57-58.520.
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Bratton, Ronald E., to Lincoln Manufacturing Company, Inc. Food steam heating apparatus. 4,495,932, Cl. 126-20.000.
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Brems, John H. Workpiece transfer mechanism. 4,496,280, Cl. 414-749.000.
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Brisson, Alfred; and Nowacki, Christopher, to Trutek Research, Inc. Inhalation therapy apparatus. 4,495,944, Cl. 128-725.000.
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Dantan, Olivier, 4,495,824, Cl. 73-862.640.
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Bott, David C.; Edwards, John H.; and Feast, William J., 4,496,702, Cl. 526-285.000.
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Thorpe, William, 4,496,918, Cl. 333-164.000.
Brittain, Perry N.; and Kirkpatrick, John D. Process for lining high pressure pipeline. 4,496,499, Cl. 264-36.000.
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Reynolds, Michael G.; and Brittin, Craig E., 4,496,818, Cl. 219-10.570.
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Bross, Robert. Handgun magazine with pommel base. 4,495,720, Cl. 42-7.000.
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Asai, Yoshimi; Takiguchi, Michitaka; and Horie, Fujio, 4,495,878, Cl. 112-158.00B.
Brown, Alfred; Huang, Wann-Sheng; and Shum, Yick-Mow, to Texaco Inc. Thermal injection and in situ combustion process for heavy oils. 4,495,994, Cl. 166-261.000.
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Brown, Paul, to Husky Injection Molding Systems Inc. Apparatus for molding plastic articles. 4,496,302, Cl. 425-547.000.
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Brucks, Anton B. Apparatus for vaginal medication application. 4,496,341, Cl. 604-14.000.
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Boda, James C., 4,496,326, Cl. 440-62.000.
Kreft, John R.; and Moss, Elvis W., 4,496,115, Cl. 242-84.10R.
Bruynes, Cornelis A.; and Jurriens, Theodorus K., to Gist-Brocades N.V. Preparation of thioethers. 4,496,720, Cl. 544-29.000.
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Ritter, Thomas A.; Kaganov, Alan L.; and Budris, John P., 4,496,446, Cl. 204-159.140.
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Bull, Garland. Low pressure heating system. 4,496,099, Cl. 237-7.000.
Bullock, Joseph J., III, to Three Sisters Ranch Enterprises PTRs. Neck finish for plastic containers. 4,496,066, Cl. 215-320.000.
Burandt, Corliss O., to Investment Rarities, Incorporated. Mechanism for variably controlling an internal combustion engine valve. 4,495,902, Cl. 123-90.160.
Burgher, Peter H.; and Marsden, Raymond F., to Marelco Power Systems, Inc. Transformer for robot arms. 4,496,821, Cl. 219-116.000.
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Byars, Larry W.; and Jackson, Eric C., to Tranoco, Inc.; and Dunlop Sports Company, div. Dunlop Tire and Rubber Corp. Method of making a golf club. 4,496,421, Cl. 156-304.100.
Byding, Otto; and Stroberg, Rolf, to ITT Industries, Inc. Method and a device for lifting and lowering of a load. 4,496,181, Cl. 294-78.00R.
Byers, Charles L., to University of California, The Regents of the. Surgically implantable disconnect device. 4,495,917, Cl. 128-419.00R.
Bynum, Colonel N. Rock gathering apparatus. 4,496,003, Cl. 171-63.000.
Byrd, David A.; and Byrd, Max R. Truck cap. 4,496,184, Cl. 296-100.000.
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Camp, Ronald L.; Dexheimer, Edward M.; and Thir, Basil, to BASF Wyandotte Corporation. Process for lubricating synthetic fibers. 4,496,632, Cl. 428-395.000.
Campbell, Graeme R., to Lucas Industries Limited. Control system for a d.c. motor. 4,496,888, Cl. 318-284.000.
Campbell, Ian M.; Baulch, Donald L.; and Audley, Gary J., to Interox Chemicals Limited. Nitration of organic compounds and organic nitrogen compounds produced. 4,496,783, Cl. 568-947.000.
Campbell, John R.: *See*—
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Campbell, Kent D.; Gulbenkian, Aylin H.; Edamura, Fred Y.; and Kyriacou, Demetrios, to Dow Chemical Company, The. Oxidation of hydrophobic $-CH_2OH$ compounds at oxidized nickel anodes. 4,496,440, Cl. 204-78.000.
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Canadian General Electric Company Limited: *See*—
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Harigaya, Isao; Tamura, Shuichi; Matsuda, Mutsuhide; Hirohata, Michio; Ito, Fumio; and Taguchi, Tetsuya, 4,496,227, Cl. 354-289.120.
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Carberry, Victor V. Low pressure relief valve assembly for high pressure boiler. 4,495,899, Cl. 122-504.000.
Cardell, Max L., to Celanese Corporation. Apparatus for cutting, aspirating and rethreading a traveling filamentary yarn. 4,496,109, Cl. 242-18.00R.
Carl Freudenberg, Firma: *See*—
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Carl, Heinz. Displacement body. 4,495,744, Cl. 52-576.000.
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Carley, Joseph L.; Potter, James S.; and Ciccotelli, Anthony A., to Duralith Corporation. Membrane panel. 4,496,812, Cl. 200-159.00B.
Carmosino, Michael N.: *See*—
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Carpenter, Peter E. G.; and Baker, Andrew P., to Square D Company. Switch fuse unit. 4,496,916, Cl. 337-6.000.
Carr, Richard V. C., to Air Products and Chemicals, Inc. Nitric acid recovery by the adiabatic nitration of nitroaromatics with fortified spent acid. 4,496,782, Cl. 568-934.000.
Carrera, Jacinto P., to Polaroid Corporation. Electromagnetic actuator having adjustable plunger. 4,496,921, Cl. 335-258.000.
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Carroll, Frank E. Insulating shutter panels for building openings. 4,495,978, Cl. 160-117.000.
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Cartier, Roger J.; Cuthbert, Victor W.; and Mason, Anthony, to Whirlpool Corporation. Suds return valve for automatic washers. 4,495,960, Cl. 137-122.000.
Cartner, Jack O. Trailing wing mower with hydraulic breakaway system. 4,495,754, Cl. 56-11.900.
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Casey, Steven M. Barrier structure. 4,496,264, Cl. 404-6.000.
Caspari, Gunter J.; and Lindberg, Steven E., to Standard Oil Company (Indiana). Stabilization of phosphorodithioic acid diesters. 4,496,495, Cl. 260-989.000.
Cassell, Ernest W., Jr.; and Gilliam, Edward C., to Reynolds Metals Company. Can end tester. 4,495,797, Cl. 73-40.000.
Cattell, Alan F.; Cockayne, Brian; Wright, Peter J.; and Kirton, John, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Electroluminescent panels and method of manufacture. 4,496,610, Cl. 427-66.000.
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Cechanski, Michael. Explosive. 4,496,405, Cl. 149-2.000.
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Cardell, Max L., 4,496,109, Cl. 242-18.00R.
Duey, Clarence J., Jr., 4,496,488, Cl. 260-413.000.
Celmer, Walter D.; Cullen, Walter P.; Watts, Paul C.; Shibakawa, Riichiro; and Tone, Junsuke, to Pfizer Inc. Erythromycin D and esters thereof. 4,496,546, Cl. 514-29.000.
Celotex Corporation, The: *See—*
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Censor Patent- und Versuchs-Anstalt: *See—*
Mayer, Herbert E., 4,496,241, Cl. 356-152.000.
Centafanti, Rocco. Golf practice device. 4,496,156, Cl. 273-184.00B.
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Ceramatec, Inc.: *See—*
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Cerankowski, Leon D.; LaPointe, Gary S.; and Mattucci, Neil C., to Polaroid Corporation. Color transfer photographic processes and products. 4,496,651, Cl. 430-490.000.
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Chang, Eugene Y. C. One-component polyurethane adhesive compositions. 4,496,706, Cl. 528-57.000.
Chang, Irving B.; and Beckwith, Robert E., Jr., to Allied Corporation. Article coated with a sulfur stabilized oxidized polyolefin and asphalt composition. 4,496,622, Cl. 428-280.000.
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Chao, Hu H., to International Business Machines Corporation. High speed low power MOS buffer circuit for converting TTL logic signal levels to MOS logic signal levels. 4,496,857, Cl. 307-475.000.
Chapman, Joseph E., III, to Schlumberger Technology Corporation. Single-wire selective perforation system. 4,496,010, Cl. 175-4.550.
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Charles Stark Draper Laboratory, Inc., The: *See—*
Grossman, Arthur, 4,495,988, Cl. 165-96.000.
Smith, T. Basil, 4,497,059, Cl. 371-36.000.
Charuau, Jean, to Commissariat a l'Energie Atomique. Pressure reducing device. 4,496,837, Cl. 250-303.000.
Chauveton, Claude, to Creusot-Loire. Stirling-cycle engine. 4,495,771, Cl. 60-525.000.
Cheever, Richard N., to Tetra Pak Developpement SA. Method of cold cathode replenishment in electron beam apparatus and replenishable cold cathode assembly. 4,496,881, Cl. 315-357.000.
Chemische Werke Huels: *See—*
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Gude, Fritz; Haferkorn, Herbert; Riemer, Heinz; and Dormann, Gunter, 4,496,710, Cl. 528-114.000.
Zagefka, Hans-Dieter; Bartz, Wilfried; and Konietzny, Alfred, 4,496,613, Cl. 427-440.000.
Chen, Chin H.; Goliber, Thomas E.; Perlstein, Jerome H.; and Reynolds, George A., to Eastman Kodak Company. Phosphorous diketonate electron accepting ring compounds as sensitizers for electron donating photoconductive compositions. 4,496,730, Cl. 546-23.000.
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Sigworth, Harrison W., Jr., 4,496,001, Cl. 166-387.000.
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Chore-Time Equipment, Inc.: *See—*
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Christel, Conrad, Jr., to Pall Corporation. Sensing and indicator system for detecting heating element failures. 4,496,940, Cl. 340-640.000.
Christensen, Gordon D.; and Donaher, Charles J., to Thomas & Betts Corporation. Low or zero insertion force connector for multi-pin arrays. 4,496,205, Cl. 339-74.00R.
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Chu, Kwang-Ho: *See—*
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Chung, Daniel C.: *See—*
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Darms, Roland; Beyeler, Harry; and Haug, Theobald, 4,496,794, Cl. 174-68.500.
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Iqbal, Abul; and Lienhard, Paul, 4,496,727, Cl. 544-225.000.
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CLA-VAL Co.: *See—*
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Haddock, Louis A., Jr., 4,495,674, Cl. 16-302.000.
Sagaser, Thomas M.; Kuhn, Patrick; and Brock, Knute K., 4,495,770, Cl. 60-486.000.
Clark, William E.; and Wellman, Donald C., to Carrier Corporation. Method of operating a variable volume multizone air conditioning unit. 4,495,986, Cl. 165-2.000.
Clarke, Beresford N. Recuperator. 4,496,314, Cl. 432-29.000.
Clatworthy, Stuart C., to Restbury Limited. Switch protection device. 4,496,941, Cl. 340-644.000.
Clausius, Richard A., to Atlantic Richfield Company. Process for purifying graphite. 4,496,533, Cl. 423-448.000.
Clemens, Donald F.: *See—*
Whitehurst, Brooks M.; Clemens, Donald F.; King, Taylor; and Whitehurst, Garnett B., 4,496,465, Cl. 252-79.200.
Whitehurst, Brooks M.; Clemens, Donald F.; King, Taylor; and Whitehurst, Garnett B., 4,496,466, Cl. 252-79.300.
Clemens, Robert J., to Eastman Kodak Company. Process for the preparation of dehydroacetic acid. 4,496,747, Cl. 549-291.000.
Cleveland, Donald C., to Rockwell International Corporation. Low friction power takeoff shaft. 4,496,333, Cl. 464-162.000.
Cline, Harvey E., to General Electric Company. Diffraction grating wire arrays in parallel. 4,496,634, Cl. 428-611.000.
Clorox Company, The: *See—*
Peters, Susan M., 4,496,366, Cl. 44-14.000.
Clough, John; and Hollidge, Henry H., to Automated Optics, Inc. Apparatus for positioning a contact lens under a radiuscope. 4,496,242, Cl. 356-244.000.
Clough, John M., to Imperial Chemical Industries PLC. Triazolylalkanetriol derivatives. 4,496,388, Cl. 71-76.000.
Clouse, Robert C.; and Pews, R. Garth, to Dow Chemical Company, The. Process for the preparation of 1,1'-bi-2-naphthols. 4,496,773, Cl. 568-730.000.
Coal Industry (Patents) Limited: *See—*
Meadows, Alan, 4,496,203, Cl. 339-16.00C.
Cockayne, Brian: *See—*
Cattell, Alan F.; Cockayne, Brian; Wright, Peter J.; and Kirton, John, 4,496,610, Cl. 427-66.000.
Cohen, Max. Automotive vehicle power drive system. 4,495,836, Cl. 74-751.000.
Cohen, Samuel; and Winser, Edward F., to Hazeltine Corporation. Column/sheet metal interface. 4,496,261, Cl. 403-320.000.
Colardelle, Joel S. G.; Lerouge, Claude P. H.; and Loup, Nicole J. R., to International Standard Electric Corporation. Ringing circuit for telephone subset, designed as an integrated circuit. 4,496,798, Cl. 179-84.00T.
Cole, Gerald, to Creative Cellars, Inc. Bottle support. 4,496,124, Cl. 248-146.000.
Cole, Leland G.: *See—*
Mack, Michael H.; Corley, Sterling C.; and Cole, Leland G., 4,496,443, Cl. 204-130.000.
Coley, Charles R.; and Hall, J. Roger, to Plus One Ltd. Button for receiving and securing a fabric covering therefor and fabric-covered button assembly formed therewith. 4,495,678, Cl. 24-113.00R.
Colgate-Palmolive Company: *See—*
Karami, Hamzeh; Delvaux, Myriam; and Cooper, Terence, 4,496,358, Cl. 604-379.000.
Colles, Joseph H.; and Bixby, James A., to Eastman Kodak Company. Down converting a high frame rate signal to a standard TV frame rate signal by skipping preselected video information. 4,496,995, Cl. 360-9.100.
Collins, George J.: *See—*
Rocca, Jorge J.; and Collins, George J., 4,496,449, Cl. 204-192.00E.
Collins, Kenneth D.: *See—*
Cooke, Michael W.; Arriola, Arturo; Stegman, Julius M.; and Collins, Kenneth D., 4,495,849, Cl. 89-1.140.
Collmeyer, Arthur J.; Hoel, Jeffrey H.; King, Paul F.; Stanley, Donald O.; and Sturgeon, Roger, to Calma Company. Graphics display system and method including associative addressing. 4,496,944, Cl. 340-723.000.
Colon, Ismael, to Union Carbide Corporation. Polymerization of haloalkynes by a nickel catalyst. 4,496,700, Cl. 526-111.000.
Colonel, Kenneth: *See—*
Lau, Edward H.; and Colonel, Kenneth, 4,496,254, Cl. 400-175.000.
Colromm, Inc.: *See—*
Rocca, Jorge J.; and Collins, George J., 4,496,449, Cl. 204-192.00E.
Columbia Research Laboratories, Inc.: *See—*
Stratton, Leo M.; Sipple, Kenneth J.; and Tatonetti, Mario B., 4,495,815, Cl. 73-517.00B.
Combined Fluid Products Company: *See—*
Kist, William J., 4,495,968, Cl. 137-624.200.
Comeau, Paul E.; and Torti, Anthony, to Kenney Manufacturing Company. Master carrier and perforated tape drive combination. 4,495,671, Cl. 16-87.00R.
Commissariat a l'Energie Atomique: *See—*
Bedu, Marcel; Farcy, Jean C.; and Goin, Christian, 4,496,873, Cl. 313-231.710.
Bonnin, Michelle; Musikas, Claude; and Vitorge, Pierre, 4,496,523, Cl. 423-9.000.
Charuau, Jean, 4,496,837, Cl. 250-303.000.
Compagnie des Produits Industriels de l'Ouest: *See—*
Sarrazin, Jean-Michel; and Chessel, Bernard, 4,495,740, Cl. 52-309.100.
Compagnie Francaise de Raffinage: *See—*
Bourgogne, Michel; Guth, Jean-Louis; Szabo, Georges; and Wey, Raymond, 4,496,528, Cl. 423-328.000.
Compagnie Industrielle De Mecanismes en abrege C.I.M.: *See—*
Parizet, Roger, 4,495,827, Cl. 74-89.180.
Comstock, Harold N. Locking means for battery, etc. 4,495,787, Cl. 70-258.000.
Conley, William J. Booster cable assembly. 4,496,204, Cl. 339-29.00B.
Connaught Laboratories, Inc.: *See—*
Gordon, Lance K., 4,496,538, Cl. 424-92.000.
Connelly, Harold R., Jr. Converters for orthodontic treatment. 4,496,318, Cl. 433-14.000.
Conoco Inc.: *See—*
Choi, Dai-Shik; and McCain, David L., 4,496,191, Cl. 299-17.000.
Scott, James B.; and Radd, Fred J., 4,495,997, Cl. 166-285.000.
Conrad, Earl: *See—*
Janke, Edwin R.; and Conrad, Earl, 4,495,859, Cl. 98-59.000.
Conrad, Frederick L.; Palmer, Louis R.; and Roberts, Arthur A., to International Business Machines Corporation. Liquid chromatography proportioning valve and mixer. 4,496,245, Cl. 366-143.000.
Consortium Fur Elektrochemische Industrie GMBH: *See—*
Gebauer, Helmut, 4,496,748, Cl. 549-396.000.
Continental Can Company, Inc.: *See—*
Winkless, Robert A.; and Kulesa, Edmund M., 4,496,069, Cl. 220-260.000.
Continental Group, Inc., The: *See—*
Beck, Martin H.; and Krishnakumar, Suppayan M., 4,496,064, Cl. 215-1.00C.
Cook, William R. Combination fuel heater and fuel filter device. 4,495,928, Cl. 123-557.000.
Cooke, Michael W.; Arriola, Arturo; Stegman, Julius M.; and Collins, Kenneth D., to United States of America, Navy. Remotely activated cable cutter. 4,495,849, Cl. 89-1.140.
Cooper, Steven W.: *See—*
Katz, David H.; Cooper, Steven W.; Lee, Theodore T.; and Chang, Shung-Ho, 4,496,654, Cl. 435-7.000.
Cooper, Terence: *See—*
Karami, Hamzeh; Delvaux, Myriam; and Cooper, Terence, 4,496,358, Cl. 604-379.000.
Coppersmith, Ward J.; and LaMotte, George B., III, to Scripps Clinic and Research Foundation. Microplate washer. 4,496,657, Cl. 435-287.000.
Corley, Sterling C.: *See—*
Mack, Michael H.; Corley, Sterling C.; and Cole, Leland G., 4,496,443, Cl. 204-130.000.
Cormier, Roger L.; Dugan, Robert J.; Guyette, Richard R.; Hankison, Ronald L.; Hao, Ming C.; Levin, Arthur L.; McClain, George A.; Wanish, Paul J.; and Zeitler, Carl, Jr., to International Business Machines Corporation. Method and apparatus for measurements of channel operation. 4,497,022, Cl. 364-200.000.
Cornell Research Foundation, Inc.: *See—*
Nulman, Jaime; and Krusius, J. Peter, 4,496,419, Cl. 156-643.000.
Steinkraus, Keith H., 4,496,599, Cl. 426-430.000.
Corrugated Industry Development Corp.: *See—*
McGuire, Richard; and Donhowe, Herbert M., 4,497,027, Cl. 364-471.000.
Corsette, Douglas F. Liquid dispensing pump. 4,496,082, Cl. 222-153.000.
Coseden Technology, Inc.: *See—*
Hahn, Granville J., 4,496,408, Cl. 156-73.500.
Cosentino, Louis C., to Renal Systems, Inc. Percutaneous implant. 4,496,349, Cl. 604-175.000.
Cosentino, Louis C., to Renal Systems, Inc. Blood access device. 4,496,350, Cl. 604-175.000.
Cowan, James J., to Polaroid Corporation. Method and apparatus for exposing photosensitive material. 4,496,216, Cl. 350-162.170.
Craig Medical Products Limited: *See—*
Steer, Peter L.; and Edwards, John V., 4,496,354, Cl. 604-322.000.
Crame, Andrew J.; and Borthwick, Alan D., to Glaxo Group Limited. Benzodioxinopyrrole derivatives and processes for their preparation. 4,496,579, Cl. 514-411.000.
Crane, Walton B., to Industrial Designs & Services. Stacking wire for produce containers. 4,496,053, Cl. 206-510.000.
Creative Cellars, Inc.: *See—*
Cole, Gerald, 4,496,124, Cl. 248-146.000.
Credence Finance Association: *See—*
Lindstrom, Wictor C. O., 4,495,726, Cl. 49-401.000.

Crescenzo, Francis C.; and LaFleur, Paul J., Jr., to Package Machinery Company. Sealing wheel for forming fin seal package. 4,495,745, Cl. 53-77.000.

Creusot-Loire: *See—*
Chauveton, Claude, 4,495,771, Cl. 60-525.000.
Voillot, Herve , 4,496,041, Cl. 198-457.000.

Crevier, Paul H.; and Lindmayer, Istvan. Surgical stapler. 4,496,090, Cl. 227-19.000.

Croat, John J., to General Motors Corporation. High coercivity rare earth-iron magnets. 4,496,395, Cl. 75-123.

Crooks, Robert C., to Barcus-Berry, Inc. Notch filter system. 4,496,859, Cl. 307-520.000.

Crosfield Electronics Limited: *See—*
Pugsley, Peter C., 4,496,968, Cl. 358-80.000.

Cross, Peter E.; and Dickinson, Roger P., to Pfizer Inc. Benzo-fused thromboxane synthetase inhibitors. 4,496,572, Cl. 514-337.000.

Crown Textile Company: *See—*
Kamat, Dattatraya V., 4,495,661, Cl. 2-97.000.

CTI International Inc.: *See—*
Morgan, Paul E., 4,495,857, Cl. 98-6.000.

Cullen, Walter P.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Watts, Paul C.; Shibakawa, Riichiro; and Tone, Junsuke, 4,496,546, Cl. 514-29.000.

Cummings, Charles M. Flexible covering support bracket. 4,496,044, Cl. 206-45.330.

Cummins Engine Company, Inc.: *See—*
Kamo, Roy, 4,495,907, Cl. 123-193.00C.

Custom Concepts, Incorporated: *See—*
Kubiatowicz, James F., 4,496,329, Cl. 446-167.000.

Cuthbert, Victor W.: *See—*
Cartier, Roger J.; Cuthbert, Victor W.; and Mason, Anthony, 4,495,960, Cl. 137-122.000.

Cutler, Orvid R.: *See—*
Ansel, Robert E.; Cutler, Orvid R.; and Moschovis, Elias P., 4,496,210, Cl. 350-96.300.

Cycles Peugeot: *See—*
Fourrey, Francois; and Mauffrey, Jean-Francois, 4,495,833, Cl. 74-493.000.

D. Agustin Amador Arcas Y Nipor S.A.: *See—*
Jodar, Francisco Y.; and Arcas, Agustin A., 4,495,892, Cl. 119-16.000.

Dahm, Joseph J.: *See—*
Spinka, Raleigh J., Jr.; Edwards, Richard C.; and Dahm, Joseph J., 4,496,953, Cl. 343-792.000.

Daidotokushuko Kabushikikaisha: *See—*
Yamada, Shunsuke; Kawate, Kenji; Ono, Takashi; Arakawa, Hideo; and Suda, Tsuyoshi, 4,496,312, Cl. 432-11.000.

Dailey, Nils L.: *See—*
Leeke, Gordon; Chu, Chaokang; and Dailey, Nils L., 4,496,461, Cl. 210-198.200.

Daimler-Benz AG: *See—*
Bender, Franz; Hertweck, Gernot; Grohn, Michael; and Moser, Peter, 4,495,906, Cl. 123-188.0GC.

Dainippon Pharmaceutical Co., Ltd.: *See—*
Matsumoto, Jun-ichi; and Nakamura, Shinichi, 4,496,566, Cl. 514-254.000.

Dainippon Screen Manufacturing Co., Ltd.: *See—*
Mitsuka, Ikuo, 4,496,956, Cl. 346-108.000.

Dainippon Screen Seizo Kabushiki Kaisha: *See—*
Hirosawa, Makoto, 4,496,989, Cl. 358-296.000.

Daisy Systems, Holland B.V.: *See—*
Morsing, Gijsbertus B., 4,496,253, Cl. 400-163.100.

d'Alayer de Costemore d'Arc, Stephane M., to Staar S. A. System for detecting the operative face of a disc carrying data on one face only. 4,497,049, Cl. 369-50.000.

Dana Corporation: *See—*
Gray, Larry O., 4,495,913, Cl. 123-352.000.

Danfoss A/S: *See—*
Petersen, Tom K., 4,496,894, Cl. 318-759.000.

Daniel, Maurice. Lightpipe network with optical devices for distributing electromagnetic radiation. 4,496,211, Cl. 350-96.200.

Daniel, Neville H.; and Duncan, Hugh M., to Austin Rover Group Limited. Control system for air/fuel ratio adjustment system. 4,495,919, Cl. 123-440.000.

Danner, Melvin F.: *See—*
Morstain, Barry R.; and Danner, Melvin F., 4,496,148, Cl. 273-1.00E.

Dantan, Olivier, to Brissonneau et Lotz Marine. Means of measuring stress affecting mountings for jacking mechanisms on ocean platforms. 4,495,824, Cl. 73-862.640.

D'Antonio, Nicholas F.; Knabel, Walter; and Stempfhuber, Lorenz, to Marker-Patentverwertungsgesellschaft mbH; and Kinetronic Industries, Inc. Current supply circuit for electronic safety ski bindings. 4,496,168, Cl. 280-612.000.

Darms, Roland; Beyeler, Harry; and Haug, Theobald, to Ciba-Geigy Corporation. Flexible base materials, their preparation and their use for printed circuits. 4,496,794, Cl. 174-68.500.

Dastis, Rainer: *See—*
Schorcht, Adelbrecht; Klingenfeld, Dietmar; Hesse, Reiner; Dastis, Rainer; and Linz, Volker, 4,496,970, Cl. 358-101.000.

Davidson, Arthur: *See—*
Chi, Cheng-Chung J.; Davidson, Arthur; and Tsuei, Chang-Chyi, 4,496,854, Cl. 307-306.000.

Davies, Richard A.; Lee, Michael W.; Rodenberger, Frank A.; Hill, James R.; Kulavich, David P.; and Sowell, Donald L., to Goodyear Tire & Rubber Company, The. Bead jamming or crimping method. 4,496,411, Cl. 156-136.000.

Davis, Douglas A. Limb bundler and bag holder. 4,495,862, Cl. 100-34.000.

Davis, Frederick J.; and Peacock, Donald G., to Raychem Limited. Production of dimensionally recoverable articles. 4,496,410, Cl. 156-84.000.

Davis, James R.: *See—*
Melton, R. Stanley; and Davis, James R., 4,496,126, Cl. 248-447.200.

Davis, Walter R., to National Semiconductor Corporation. Switching regulator off-line starting circuit. 4,497,017, Cl. 363-49.000.

Davison, Robert W., to Hercules Incorporated. Preparation of hydrophilic polyolefin fibers for use in papermaking. 4,496,427, Cl. 162-157.500.

Davy McKee Limited: *See—*
Dennis, Alan J.; Harrison, George E.; and Wyber, James P., 4,496,768, Cl. 568-454.000.

Davy McKee (London) Limited: *See—*
Dennis, Alan J.; Harrison, George E.; and Wyber, James P., 4,496,769, Cl. 568-454.000.

Dawes, Cyril; and Smith, John D., to Lucas Industries. Corrosion resistant steel components and method of manufacture thereof. 4,496,401, Cl. 148-16.500.

Dawson, C. Bruce, to O'Sullivan Corporation. Integrated process for preparing a continuous string of molded articles wound in a coil. 4,496,113, Cl. 242-67.10R.

Dayco Corporation: *See—*
Quick, Terrence R.; Miranti, Joseph P., Jr.; and Foster, Randy C., 4,496,335, Cl. 474-15.000.

Deatcher, John H.; and Goswami, Jagadish C., to Stauffer Chemical Company. Laminate for the protection of motor vehicle bodies. 4,496,628, Cl. 428-337.000.

Deblitz, Gerhard: *See—*
Brandt, Joachim; Deblitz, Gerhard; Post, Jurgen; Willimczik, Bernd; Marten, Rolf; Paschen, Rolf; and Anderka, Gerold, 4,496,958, Cl. 346-139.00R.

DeCloux, Richard J.; Loeffler, Herbert H.; MacConkey, James S.; and Yonkers, E. Hubbard, to Arthur D. Little, Inc. Exercise stair device. 4,496,147, Cl. 272-130.000.

Dedow, Karen A., to General Dynamics, Pomona Division. Method of making a conductive resealable pouch. 4,496,406, Cl. 156-66.000.

Deere & Company: *See—*
Swartzendruber, James A., 4,496,005, Cl. 172-395.000.
Wanie, Lee J., 4,496,035, Cl. 192-4.00C.
Yarbrough, Don L., 4,495,954, Cl. 130-27.00K.

Dees, Pieter G.: *See—*
Adriaans, Jan L. J.; and Dees, Pieter G., 4,496,698, Cl. 526-64.000.

DeFilippi, Louis J., to UOP Inc. Antimicrobial fabrics. 4,496,363, Cl. 8-115.500.

DeFours, Mervyn A.: *See—*
Hutchins, John S.; and DeFours, Mervyn A., 4,495,992, Cl. 166-250.000.

Deguchi, Toshihisa; Ohta, Kenji; and Takahashi, Akira, to Sharp Kabushiki Kaisha. Magneto-optic recording/playback head assembly. 4,497,006, Cl. 360-114.000.

Degussa Aktiengesellschaft: *See—*
Bergstein, Wolfgang; Friedrich, Heinz; Kleemann, Axel; Prescher, Gunther; and Beschke, Helmut, 4,496,729, Cl. 544-336.000.

Dehaas, Newman: *See—*
Silver, David M.; and Dehaas, Newman, 4,496,073, Cl. 220-445.000.

Dehm, David C.; Hoy, Kenneth L.; and Hoy, Richard C., to Union Carbide Corporation. Water-soluble polyurethane comb polymer production. 4,496,708, Cl. 528-76.000.

Deininger, Anton: *See—*
Nelzow, Hartmann; Karlheinz, Farber; and Deininger, Anton, 4,496,078, Cl. 222-87.000.

Delaney, Dennis D.; and Fenton, Donald M., to Union Oil Company of California. Method for reconditioning bacteria-contaminated hydrogen sulfide removing systems. 4,496,534, Cl. 423-573.00R.

DeLeon, Alberto: *See—*
Snider, Scott C.; and DeLeon, Alberto, 4,496,625, Cl. 428-318.400.

Delhaes, Johannes C., to Rubber-En Kunststoffabriek Enbi B.V. Roller, in particular transport roller. 4,495,683, Cl. 29-119.000.

Delluc, Rene E. Wind-up thermal insulating awning. 4,495,977, Cl. 160-70.000.

Delvaux, Myriam: *See—*
Karami, Hamzeh; Delvaux, Myriam; and Cooper, Terence, 4,496,358, Cl. 604-379.000.

DeMarinis, Robert M.; Hieble, Jacob P.; and Matthews, William D., to Smithkline Beckman Corporation. Pharmaceutical compositions and methods for producing alpha antagonism. 4,496,558, Cl. 514-213.000.

DeMejo, Lawrence P.: *See—*
Wilson, John C.; DeMejo, Lawrence P.; Jadwin, Thomas A.; and Merrill, Stewart H., 4,496,643, Cl. 430-110.000.

Denda, Masahiko: *See—*
Tsubouchi, Natsuro; and Denda, Masahiko, 4,496,964, Cl. 357-30.000.

Dennis, Alan J.; Harrison, George E.; and Wyber, James P., to Davy McKee Limited. Process for the production of aldehydes by hydroformylation of alpha-olefins. 4,496,768, Cl. 568-454.000.

Dennis, Alan J.; Harrison, George E.; and Wyber, James P., to Davy McKee (London) Limited. Process for the preparation of aldehydes by hydroformylation of olefins. 4,496,769, Cl. 568-454.000.

Dennison Manufacturing Company: *See—*
Beaudet, Leo A.; and Lennon, Donald J., 4,496,236, Cl. 355-3.0DR.

Deno, Koji: *See*—
Tone, Syoichi; Deno, Koji; and Matsushima, Akio, 4,496,108, Cl. 242-18.0PW.

Deptolla, Udo: *See*—
Fabinski, Walter; and Deptolla, Udo, 4,496,840, Cl. 250-343.000.

Derks, Pierre L. L. M.; and Van Herwijnen, Gerardus, to U.S. Philips Corporation. Apparatus for transporting and depositing viscous materials. 4,495,885, Cl. 118-241.000.

DerMott, Raymond W.; and Hartwein, Kenneth J., to Shell Oil Company; and Schlumberger Technology Corp. Through the tubing perforating gun assembly. 4,496,009, Cl. 175-4.520.

D'Errico, Michael J.: *See*—
Engelhart, John E.; Angeles, Marshall R.; and D'Errico, Michael J., 4,496,581, Cl. 514-438.000.

Dery, Ronald A.; Jones, Warren C.; Lynn, William J.; and Rowlette, John R., to AMP Incorporated. Anisotropically conductive adhesive composition. 4,496,422, Cl. 156-306.600.

Desai, Aahvin D.; and Bujack, Alvin, to Mueller Steam Specialty, A Division of Core Industries, Inc. Duplex strainer. 4,496,463, Cl. 210-341.000.

Design Concepts, Inc.: *See*—
Larsen, Verlyn N., 4,496,128, Cl. 248-496.000.

DeSoto, Inc.: *See*—
Ansel, Robert E.; Cutler, Orvid R.; and Moschovis, Elias P., 4,496,210, Cl. 350-96.300.
Ansel, Robert E., 4,496,686, Cl. 524-850.000.

Despot, Janko; and Abendroth, Paul, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Arrangement for prevention of roller marks on roller units in a printing press. 4,495,863, Cl. 101-350.000.

Deutsch, Leslie J.: *See*—
Deutsch, Ralph; and Deutsch, Leslie J., 4,495,847, Cl. 84-1.010.

Deutsch, Ralph; and Deutsch, Leslie J., to Kawai Musical Instrument Mfg. Co., Ltd. Combined tone generation on a single keyboard for an electronic musical instrument. 4,495,847, Cl. 84-1.010.

Deutsche Forschungs-und Versuchsanstalt fur Luft-und Raumfahrt e.v.: *See*—
Lippmann, K. Reiner; and Dorgeloh, K. Heinrich W., 4,496,972, Cl. 358-109.000.

Devic, Michel, to PCUK Produits Chimiques Ugine Kuhlmann. Process of decomposition of a complex of ortho-benzoyl benzoic acid, hydrogen fluoride and boron trifluoride. 4,496,760, Cl. 562-460.000.

De Vincentiis, Leonardo, to Ausonia Farmaceutici s.r.l. Anti-inflammatory, disinfectant and anti-bacterial compound. 4,496,589, Cl. 514-565.000.

Devrient, Ludwig, to GAO Gesellschaft Fur Automation Und Organisation mbH. Check paper that is protected against forgery and tampering. 4,496,961, Cl. 346-206.000.

Dexheimer, Edward M.: *See*—
Camp, Ronald L.; Dexheimer, Edward M.; and Thir, Basil, 4,496,632, Cl. 428-395.000.

Dexter, Martin; and Winter, Roland A. E., to Ciba-Geigy Corporation. Ultraviolet-absorbing stabilizers substituted by an aliphatic hydroxyl group. 4,496,676, Cl. 524-99.000.

Dexter, Martin; and Winter, Roland A. E., to Ciba-Geigy Corporation. Ultraviolet-absorbing stabilizers substituted an aliphatic hydroxyl group. 4,496,757, Cl. 560-82.000.

Dickey-John Corporation: *See*—
Funk, David B.; Kallmeyer, James D.; and Harker, Wesley H., 4,496,907, Cl. 324-445.000.

Dickinson, Roger P.: *See*—
Cross, Peter E.; and Dickinson, Roger P., 4,496,572, Cl. 514-337.000.

Diefenbach, Horst: *See*—
Batzill, Wolfgang; and Diefenbach, Horst, 4,496,672, Cl. 523-404.000.

Diepold-Scharnitzky, Rudolf; Leache, Wolfgang; and Rindfleisch, Volker, to Siemens Aktiengesellschaft. Electronic controller having a detachable front panel. 4,497,038, Cl. 364-900.000.

Dieterich, Dieter: *See*—
Kopp, Richard; Grogler, Gerhard; Reiff, Helmut; and Dieterich, Dieter, 4,496,491, Cl. 260-453.0AR.

Digga, Edward J.: *See*—
Unsworth, Derek; and Digga, Edward J., 4,496,016, Cl. 180-53.600.

Dilcher, Dietmar: *See*—
Britzke, Ingo; and Dilcher, Dietmar, 4,495,729, Cl. 49-212.000.

Dimitrov, Milko D., to N P S P "Novotex". Method of and apparatus for manufacturing yarn with a core. 4,495,757, Cl. 57-5.000.

Dimler, Steven R.: *See*—
Miller, Donald E.; Gilmore, Cecilia; Dimler, Steven R.; and Werstak, Charles E., 4,496,602, Cl. 426-555.000.

Dionne, Arthur F.: *See*—
Waterman, George W.; and Dionne, Arthur F., 4,496,129, Cl. 248-527.000.

Director General of Agency of Industrial Science and Technology Michio Kawata: *See*—
Hitotsuyanagi, Hajime; Fujita, Nobuhiko; Itozaki, Hideo; and Kawai, Hiromu, 4,496,450, Cl. 204-192.00R.

Di Stefano, Thomas H.; and Halperin, Arnold, to International Business Machines Corporation. Nonlinearity detection using fault-generated second harmonic. 4,496,900, Cl. 324-51.000.

Distillation Technology Limited: *See*—
Jenkins, Arthur E. O., 4,496,430, Cl. 202-158.000.

Divilly, Michael: *See*—
Finan, Michael; Finan, Peter; and Divilly, Michael, 4,495,716, Cl. 37-3.000.

Dix, Johannes P.: *See*—
Bergmann, Udo; Dix, Johannes P.; Hansen, Guenter; and Schefczik, Ernst, 4,496,480, Cl. 534-794.000.

Djelalian, Madeleine: *See*—
Touchais, Maurice; and Djelalian, Madeleine, 4,496,787, Cl. 136-248.000.

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Mazo, Boris M.; and Feklin, Valentin I., 4,496,011, Cl. 175-19.000.

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McGuire, Richard; and Donhowe, Herbert M., 4,497,027, Cl. 364-471.000.

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Gude, Fritz; Haferkorn, Herbert; Riemer, Heinz; and Dormann, Gunter, 4,496,710, Cl. 528-114.000.

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Adriaans, Jan L. J.; and Dees, Pieter G., 4,496,698, Cl. 526-64.000.
Campbell, Kent D.; Gulbenkian, Aylin H.; Edamura, Fred Y.; and Kyriacou, Demetrios, 4,496,440, Cl. 204-78.000.
Clouse, Robert C.; and Pews, R. Garth, 4,496,773, Cl. 568-730.000.
Doorakian, George A.; Paul, Marsha A.; and Gist, Adolphus V., 4,496,709, Cl. 528-89.000.
Gessell, Donald E.; Gibbs, Ronald L.; and Fuentes, Ricardo, Jr., 4,496,660, Cl. 502-111.000.
Hefner, Robert E., Jr., 4,496,688, Cl. 525-44.000.
McCarthy, James R.; and Widner, Paul J., 4,496,725, Cl. 544-184.000.
McIntyre, James A.; and Phillips, Robert F., 4,496,437, Cl. 204-24.000.
Pawloski, Chester E.; and Ginter, Sally P., 4,496,494, Cl. 260-977.000.
Shipley, Randall S., 4,496,661, Cl. 502-115.000.
Wright, Terry L., 4,496,569, Cl. 514-311.000.

Dowa Company, Ltd.: *See*—
Miyahara, Kingo, 4,496,594, Cl. 426-234.000.

Dowling, Donald J.; Richter, Albert P., Jr.; Warren, Wayne F.; and Arnold, Dan M., to Texaco Inc. In-situ permeability determining method. 4,495,805, Cl. 73-155.000.

Draiswerke GmbH: *See*—
Gross, Horst, 4,496,106, Cl. 241-46.170.

Drennan, Frank E., to Dor Seal Limited. Bevelled glass window. 4,495,739, Cl. 52-308.000.

Dresser Industries, Inc.: *See*—
Eckman, Richard E., 4,495,681, Cl. 29-26.00A.

Dril-Quip, Inc.: *See*—
Walker, James M., 4,496,172, Cl. 285-18.000.

D'Silva, Themistocles D. J., to Union Carbide Corporation. Process for preparing symmetrical bis-carbamates. 4,496,721, Cl. 544-58.200.

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Durden, John A.; and D'Silva, Themistocles D. J., 4,496,591, Cl. 514-477.000.

Ducasse, Joseph C. V. Automatic sprinkling device. 4,496,104, Cl. 239-240.000.

Duchadeau, Pierre, to Pari-Symac. Devices which comprise a helical spring used as conveying, extracting, quantity-controlling or mixing means. 4,496,086, Cl. 222-412.000.

Duckett, Melvyn: *See*—
Hubbard, Colin; Limb, David I.; and Duckett, Melvyn, 4,496,383, Cl. 62-31.000.

Duembgen, Gerd; Fouquet, Gerd; Krabetz, Richard; Lucas, Ekhart; Merger, Franz; and Nees, Friedbert, to BASF Aktiengesellschaft. Process for the preparation of α-alkylacroleins. 4,496,770, Cl. 568-463.000.

Duenke, Clarence G., to Warco, Inc. Transformer switch. 4,496,805, Cl. 200-11.0TC.

Duey, Clarence J., Jr., to Celanese Corporation. Copper and manganese removal from C_6-C_9 saturated aliphatic monocarboxylic acids. 4,496,488, Cl. 260-413.000.
Dugan, Charles; and Dugan, Timothy, to Farm Fresh Shrimp Corporation. Method and apparatus for rearing aquatic animals. 4,495,891, Cl. 119-2.000.
Dugan, Elmo A.; Kish, Louis G.; Miller, Edwin J.; and Fabian, George J. Aerial gunnery target deployment system. 4,496,159, Cl. 273-341.000.
Dugan, Robert J.: *See*—
Cormier, Roger L.; Dugan, Robert J.; Guyette, Richard R.; Hankison, Ronald L.; Hao, Ming C.; Levin, Arthur L.; McClain, George A.; Wanish, Paul J.; and Zeitler, Carl, Jr., 4,497,022, Cl. 364-200.000.
Dugan, Timothy: *See*—
Dugan, Charles; and Dugan, Timothy, 4,495,891, Cl. 119-2.000.
Dumpis, Janis: *See*—
Meintrup, David R.; and Dumpis, Janis, 4,496,255, Cl. 400-208.000.
Duncan, Hugh M.: *See*—
Daniel, Neville H.; and Duncan, Hugh M., 4,495,919, Cl. 123-440.000.
Duncan, Robert H.: *See*—
Kingen, Rickey W.; and Duncan, Robert H., 4,496,799, Cl. 179-100.00L.
Dunham-Bush, Inc.: *See*—
Shaw, David N., 4,495,778, Cl. 62-209.000.
Dunkley, James L.; and Dobkin, Robert C., to National Semiconductor Corporation. Semiconductor device with an ion implanted stabilization layer. 4,496,963, Cl. 357-22.000.
Dunlop Limited: *See*—
Atkin, Howard S., 4,496,331, Cl. 464-70.000.
Dunlop Sports Company, div. Dunlop Tire and Rubber Corp.: *See*—
Byars, Larry W.; and Jackson, Eric C., 4,496,421, Cl. 156-304.100.
Dunn, James P., to Microffice Systems Technology. Portable computer. 4,497,036, Cl. 364-708.000.
Duphar International Research B.V.: *See*—
Kamstra, Paulus R., 4,496,344, Cl. 604-90.000.
Du Pont de Nemours, E. I., and Company: *See*—
Anderson, Burton C.; England, David C.; and Resnick, Paul R., 4,496,750, Cl. 549-455.000.
Ensminger, Joseph M., 4,496,207, Cl. 339-99.00R.
Haugh, Eugene F.; Kitts, Earle L., Jr.; and Mickewich, Daniel J., 4,496,652, Cl. 430-569.000.
Irwin, Robert S., 4,496,712, Cl. 528-191.000.
Kilkson, Henn, 4,496,361, Cl. 604-408.000.
Levitt, George, 4,496,392, Cl. 71-93.000.
McNutt, James E.; Scott, Robert J.; and Welch, Charles W., 4,496,612, Cl. 427-310.000.
Mitchell, Hardin D., Jr.; and Yunan, Malak E., 4,495,867, Cl. 102-275.400.
Moberg, William K., 4,496,551, Cl. 514-63.000.
Schmiegel, Walter W., 4,496,682, Cl. 524-545.000.
Squire, Edward N., 4,496,749, Cl. 549-448.000.
Duralith Corporation: *See*—
Carley, Joseph L.; Potter, James S.; and Ciccotelli, Anthony A., 4,496,812, Cl. 200-159.00B.
Durden, John A.; and D'Silva, Themistocles D. J., to Union Carbide Corporation. Insecticidal bis-carbamate sulfides. 4,496,591, Cl. 514-477.000.
Durik, Jeffrey R. Rotary tablet machine. 4,495,685, Cl. 29-402.080.
Dvorak, Ladislav: *See*—
Junek, Jan; Vorbornik, Vaclay; Ripka, Josef; Jaros, Frantisek; Lihtarova , Ludmila; Hortlik, Frantisek; Kotrba, Zdenek; Rehackova, Bozena; and Dvorak, Ladislav, 4,495,762, Cl. 57-411.000.
Dyar, Harrison G. Thermal insulating system particularly adapted for building construction. 4,495,742, Cl. 52-407.000.
Dyfverman, Tomas. Method and apparatus for copying cinematographic film onto color video tape. 4,496,990, Cl. 358-310.000.
Dyfverman, Tomas. Method in the editing of kinematographic picture material. 4,496,991, Cl. 358-311.000.
Dynamit Nobel Aktiengesellschaft: *See*—
Brede, Uwe; Hubsch, Gunter; and Stahlmann, Rudolf, 4,495,866, Cl. 102-202.000.
Dysart, John K.: *See*—
Joffe, Frederick M.; and Dysart, John K., 4,496,360, Cl. 604-397.000.
E. Blum GmbH & Co.: *See*—
Geschka, Hugo W., 4,496,925, Cl. 336-178.000.
E. R. Squibb & Sons, Inc.: *See*—
Wong, Thomas M., 4,496,554, Cl. 514-179.000.
East/West Industries, Inc.: *See*—
Spinosa, Dominic J.; and Knoll, Frank, 4,496,271, Cl. 410-105.000.
Eastcott, Peter D.; and Trusaler, Ronald C., to Canadian General Electric Company Limited. Electric inching impulse control. 4,496,883, Cl. 318-98.000.
Eastman Kodak Company: *See*—
Ateya, Antoun I.; and Lu, Wei C., 4,496,644, Cl. 430-122.000.
Chen, Chin H.; Goliber, Thomas E.; Perlstein, Jerome H.; and Reynolds, George A., 4,496,730, Cl. 546-23.000.
Clemens, Robert J., 4,496,747, Cl. 549-291.000.
Colles, Joseph H.; and Bixby, James A., 4,496,995, Cl. 360-9.100.
Kashdan, David S., 4,496,762, Cl. 564-170.000.
Moberg, Gregory O., 4,496,939, Cl. 340-636.000.
Tamary, Ernest J., 4,496,235, Cl. 355-3.0FU.
Wilson, John C.; DeMejo, Lawrence P.; Jadwin, Thomas A.; and Merrill, Stewart H., 4,496,643, Cl. 430-110.000.
Eaton Corporation: *See*—
Bopp, Warren G., 4,496,034, Cl. 192-3.280.
Fischer, Kenneth C., 4,497,068, Cl. 455-608.000.
Gooch, Douglas C., 4,495,838, Cl. 74-869.000.
Morscheck, Timothy J., 4,495,837, Cl. 74-869.000.
Morscheck, Timothy J., 4,495,839, Cl. 74-869.000.
Northman, Bradley L., 4,496,101, Cl. 239-102.000.
Pipes, George R., 4,496,274, Cl. 414-340.000.
Eaton-Leonard Corporation: *See*—
Traub, Zeno P., 4,495,788, Cl. 72-157.000.
Ebihara, Sakae: *See*—
Tanizaki, Hiroyuki; Ebihara, Sakae; Hatanaka, Akimitsu; Ogawa, Takayoshi; and Kanazawa, Yuzo, 4,496,189, Cl. 297-63.000.
Ebisawa, Etsuo: *See*—
Sakai, Shiro; and Ebisawa, Etsuo, 4,496,598, Cl. 426-417.000.
Echte, Adolf: *See*—
Hambrecht, Juergen; Reffert, Rudi W.; Echte, Adolf; and Swoboda, Johann, 4,496,679, Cl. 524-111.000.
Eckman, Richard E., to Dresser Industries, Inc. Dwell and depth attachment for power drills. 4,495,681, Cl. 29-26.00A.
Eckrodt, Gunter, to Thies GmbH & Co. Apparatus for wet treatment of endless textile material. 4,495,785, Cl. 68-62.000.
Edamura, Fred Y.: *See*—
Campbell, Kent D.; Gulbenkian, Aylin H.; Edamura, Fred Y.; and Kyriacou, Demetrios, 4,496,440, Cl. 204-78.000.
Edel, Eugen: *See*—
Baumeister, Manfred; and Edel, Eugen, 4,496,426, Cl. 162-19.000.
Eder, Hans: *See*—
Jopt, Uwe; and Eder, Hans, 4,495,708, Cl. 33-438.000.
Edwards, Charles L.; and Wilson, Stanley E., to Shell Oil Company. Epoxide isomerization process. 4,496,776, Cl. 568-827.000.
Edwards, John H.: *See*—
Bott, David C.; Edwards, John H.; and Feast, William J., 4,496,702, Cl. 526-285.000.
Edwards, John V.: *See*—
Steer, Peter L.; and Edwards, John V., 4,496,354, Cl. 604-322.000.
Edwards, Philip N.: *See*—
Yellin, Tobias O.; Gilman, David J.; Edwards, Philip N.; Large, Michael S.; Jones, Derrick F.; and Oldham, Keith, 4,496,571, Cl. 514-340.000.
Edwards, Richard C.: *See*—
Spinks, Raleigh J., Jr.; Edwards, Richard C.; and Dahm, Joseph J., 4,496,953, Cl. 343-792.000.
Edwards, Robert B., II: *See*—
MacLean, David; and Edwards, Robert B., II, 4,496,347, Cl. 604-164.000.
Ehrgott, Charles W., to Chesebrough-Pond's Inc. Method and apparatus for measuring consistency of non-Newtonian fluids. 4,495,798, Cl. 73-54.000.
Ehrhart, Wendell A.; Lenox, Ronald S.; and Sparks, Moses, Jr., to Armstrong World Industries, Inc. Gasket materials comprising polyester and rice hulls. 4,496,674, Cl. 523-500.000.
Eichler, Jurgen; Herz, Claus; Neisius, Karl-Heinz; and Wehner, Gregor, to Merck Patent Gesellschaft mit beschraenkter Haftung. Aromatic-aliphatic ketones useful as photoinitiators. 4,496,447, Cl. 204-159.160.
Eickmann, Karl. Arrangements of or to propellers to improve the capabilities of propeller-driven craft. 4,496,120, Cl. 244-56.000.
Eidenbock, Thomas, to Avl Gesellschaft fur Verbrennungskraftmaschinen und Messtechnik m.b.H. Internal combustion engine with improved sound-insulation. 4,495,908, Cl. 123-195.00C.
Ejima, Noriyoshi: *See*—
Morimoto, Takuo; Nishiuchi, Kihachiro; Izumi, Misao; and Ejima, Noriyoshi, 4,496,469, Cl. 252-62.000.
Eklund, Tore. Load holder. 4,496,089, Cl. 224-329.000.
Electro-Petroleum, Inc.: *See*—
Titus, Charles H.; Wittle, John K.; and Bell, Christy W., 4,495,990, Cl. 166-65.00R.
Electron Beam Corporation: *See*—
Longamore, Robert G., 4,495,966, Cl. 137-614.010.
Electrotechnik-Apparatebau Peter Schmitz: *See*—
Sachse, Christian, 4,497,016, Cl. 362-294.000.
Elek, Demeter: *See*—
Apetrei, Constantin; Nitigus, Victor; Elek, Demeter; Radulescu, Marian; and Sachelaire, Toma, 4,496,864, Cl. 310-77.000.
Elkins, Johnny C. Unitary rack with latch means. 4,495,735, Cl. 52-27.000.
Elliott Turbomachinery Co., Inc.: *See*—
Starta, Daniel G.; and Hood, Richard W., 4,495,842, Cl. 82-4.00R.
Ellison, Burlan E.; Spranca, Harry P.; and Hooper, Christopher C., to Atlantic Building Systems, Inc. Standing seam roof system. 4,495,743, Cl. 52-478.000.
EMAB Electrolux Motor Aktiebolag: *See*—
Andreasson, Jan Y. N., 4,495,911, Cl. 123-198.00R.
EMF Corporation: *See*—
Weyer, Robert K., 4,496,143, Cl. 271-112.000.
Emi Electrola Gesellschaft mit berschrankter Haftung: *See*—
Strausfeld, Hermann, 4,496,300, Cl. 425-408.000.
EMI Limited: *See*—
Hounsfield, Godfrey N., 4,497,061, Cl. 378-18.000.
Emig, Reiner: *See*—
Braechel, Volker; Emig, Reiner; Leiber, Heinz; Mendel, Michael; and Gerstenmeier, Jurgen, 4,497,026, Cl. 364-426.000.

Emory, John E., Jr., to Big Jon, Inc. Rod holder assembly. 4,495,721, Cl. 43-21.200.

Enamel Products and Plating Co.: *See*—
Anderson, William J.; and Anderson, Wayne R., 4,496,060, Cl. 211-124.000.

Encoe Chemical Sales, Inc.: *See*—
Whitehurst, Brooks M.; Clemens, Donald F.; King, Taylor; and Whitehurst, Garnett B., 4,496,465, Cl. 252-79.200.
Whitehurst, Brooks M.; Clemens, Donald F.; King, Taylor; and Whitehurst, Garnett B., 4,496,466, Cl. 252-79.300.

Endo, Masaji; and Hikone, Takami, to Sumitomo Special Metals Co., Ltd. Fe-Cr-Co Type magnet body of columnar structure and method for the preparation of same. 4,496,402, Cl. 148-31.570.

Endo, Sadayoshi: *See*—
Hayashi, Hideki; Endo, Sadayoshi; Ito, Yukio; and Takagi, Satoshi, 4,497,001, Cl. 360-74.200.

Endoh, Kenjiro: *See*—
Kitagawa, Kazuo; Endoh, Kenjiro; and Kira, Hideshi, 4,496,937, Cl. 340-347.0SH.

Endoh, Takeyuki: *See*—
Yabuuchi, Shigeru; Endoh, Takeyuki; Kodama, Kazuyuki; and Ide, Jushi, 4,497,035, Cl. 364-577.000.

Engelhart, John E.; Angeles, Marshall R.; and D'Errico, Michael J., to Merck & Co., Inc. 1,2-Dibromo-2-cyano-2-(heterocyclic)alkane compounds and antimicrobial use thereof. 4,496,581, Cl. 514-438.000.

Engineering and Research Associates, Inc.: *See*—
Acker, Loren C.; Taylor, Junius E.; and Minney, Stephen C., 4,496,819, Cl. 219-10.810.

England, David C.: *See*—
Anderson, Burton C.; England, David C.; and Resnick, Paul R., 4,496,750, Cl. 549-455.000.

Enoki, Takashi: *See*—
Nakashima, Fujio; Enoki, Takashi; and Nakashima, Kazuto, 4,496,947, Cl. 340-825.240.

Enomoto, Seiji: *See*—
Takemae, Yoshihiro; Nozaki, Shigeki; Kabashima, Katsuhiko; and Enomoto, Seiji, 4,496,850, Cl. 307-269.000.

Ensign, Harold W.; and Griswold, Donald G., to CLA-VAL Co. Method and apparatus for control of a turbine generator. 4,496,845, Cl. 290-43.000.

Ensminger, Joseph M., to Du Pont de Nemours, E. I., and Company. Electrical connector with dual position latches. 4,496,207, Cl. 339-99.00R.

Erickson, Donald P., to Rocky Mountain Sheet Metal Company, Inc. Fixed blade air blender apparatus. 4,495,858, Cl. 98-38.100.

Erickson, Eric D.: *See*—
Heller, Carl A.; Erickson, Eric D.; and Greni, Sterling R., 4,496,520, Cl. 422-60.000.

Eriksen, Gunnar, to Thune-Eureka A/S. Assembly for heat treatment of a papermaking wire or felt. 4,495,714, Cl. 34-111.000.

Ernst, Alfons, to Johannes Heidenhain GmbH. Apparatus for measuring the angular displacement of two objects relative to each other. 4,495,700, Cl. 33-1.00N.

Ernst, Larry M.: *See*—
Black, Arthur G.; Dodge, John H.; and Ernst, Larry M., 4,496,829, Cl. 219-497.000.

Ernst Leitz Wetzlar GmbH: *See*—
Heitmann, Knut; and Schaefer, Klaus-Dieter, 4,496,231, Cl. 354-429.000.

Ernst Stadelmann Gesellschaft m.b.H.: *See*—
Kirchner, Balthasar; and Siegfried, Schleicher, 4,496,050, Cl. 206-444.000.

Espin, Mario W. Video tape cassette and device therefor. 4,496,999, Cl. 360-60.000.

Ethyl Corporation: *See*—
Bauer, Dennis P., 4,496,756, Cl. 560-41.000.

Evans, John M.; and Ashwood, Valerie A., to Beecham Group p.l.c. Chromans and chromenes, compositions and hypertensive method. 4,496,565, Cl. 514-222.000.

Evers, William J.; Mookherjee, Braja D.; Van Ouwerkerk, Anton; and Van Loveren, Augustinus G., to International Flavors & Fragrances Inc. 1,2,3,3,5,6-Hexamethyl-bicyclo[2.2.2]-oct-5-en-2-ol, process for producing same, intermediates useful in said process and organoleptic uses of same. 4,496,775, Cl. 568-820.000.

Evg Entwicklungs- und Verwertungs-Gesellschaft m.b.H.: *See*—
Ritter, Gerhard; Ritter, Klaus; and Jahrbacher, Gerhard, 4,496,820, Cl. 219-87.000.

Exner, Gunter, to Fulgurit GmbH & Co. Kommanditgesellschaft. Process for depositing a coat of paint on wood-cement boards. 4,496,636, Cl. 428-703.000.

Extracorporeal Medical Specialties, Inc.: *See*—
Lee, Kyu H., 4,496,458, Cl. 210-90.000.

Exxon Research & Engineering Co.: *See*—
Hafez, Mahmoud M.; and Paula, Henry W., 4,496,456, Cl. 208-33.000.
Myers, Richard S.; Michaelson, Robert C.; and Austin, Richard G., 4,496,778, Cl. 568-860.000.
Myers, Richard S.; Michaelson, Robert C.; and Austin, Richard G., 4,496,779, Cl. 568-860.000.

Ezell, James J.; and Garin, Paul V., III, to A G Motor Corp. Floating cab. 4,496,188, Cl. 296-190.000.

Ezis, Andre; Beckwith, Elaine C.; and Blair, Howard D., to Ford Motor Company. Method of making a densified silicon nitride/oxynitride composite. 4,496,503, Cl. 264-56.000.

Fabian, George J.: *See*—
Dugan, Elmo A.; Kish, Louis G.; Miller, Edwin J.; and Fabian, George J., 4,496,159, Cl. 273-341.000.

Fabinski, Walter; and Deptolla, Udo, to Hartmann & Braun AG. Non-dispersive infrared gas analyzer. 4,496,840, Cl. 250-343.000.

Fahmy, Mohamed A. H., to FMC Corporation. O-Halophenyl O-alkyl S-tert-butyl phosphorothioates as pesticides. 4,496,552, Cl. 514-147.000.

Fairchild Industries, Inc.: *See*—
Renshaw, Theodore A.; and Sarrantonio, Albert, 4,496,095, Cl. 228-102.000.

Faller, Rudolph A., to Champion International Corporation. Food tray and packaging process. 4,495,749, Cl. 53-471.000.

Fanuc Ltd.: *See*—
Fukuyama, Hiroomi; and Isobe, Shinichi, 4,496,889, Cl. 318-565.000.
Nozawa, Ryoichiro; and Kawamura, Hideaki, 4,497,028, Cl. 364-474.000.

Farber, Heinrich: *See*—
Thate, Kurt; Farber, Heinrich; and Muller, Jurgen, 4,496,273, Cl. 414-411.000.

Farber, Hobart A. Coin counting device. 4,495,959, Cl. 133-1.00A.

Farber, Karlheinz; and Nelzow, Hartmann, to Bosch-Siemens Hausgeraete GmbH. Automatic household beverage dispenser. 4,496,080, Cl. 222-129.300.

Farcy, Jean C.: *See*—
Bedu, Marcel; Farcy, Jean C.; and Goin, Christian, 4,496,873, Cl. 313-231.710.

Farge, Daniel; Le Roy, Pierre; Moutonnier, Claude; Peyronel, Jean-Francois; and Plau, Bernard, to Rhone-Poulenc Sante. Cephalosporin derivatives, and pharmaceutical compositions containing them. 4,496,560, Cl. 514-204.000.

Farm Fresh Shrimp Corporation: *See*—
Dugan, Charles; and Dugan, Timothy, 4,495,891, Cl. 119-2.000.

Farmaceutisk Laboratorium Ferring A/S: *See*—
Halskov, Soren, 4,496,553, Cl. 514-166.000.

Farrey, Merlyn F., to Fomo Products, Inc. Dispensing apparatus. 4,496,081, Cl. 222-135.000.

Fassbender, Rolf: *See*—
Tischer, Werner; Liebert, Karl-Heinz; and Fassbender, Rolf, 4,495,769, Cl. 60-451.000.

Faust, James H.; and Borch, Michael J., to A B C Auto Alarms, Inc. Vibration sensitive trip switch for vehicle alarm system of the like. 4,496,809, Cl. 200-61.45R.

Feast, William J.: *See*—
Bott, David C.; Edwards, John H.; and Feast, William J., 4,496,702, Cl. 526-285.000.

Feklin, Valentin I.: *See*—
Mazo, Boris M.; and Feklin, Valentin I., 4,496,011, Cl. 175-19.000.

Feldman, Stephen. Disassociative/reassociative chemical heat pump. 4,495,985, Cl. 165-1.000.

Fenton, Donald M.: *See*—
Delaney, Dennis D.; and Fenton, Donald M., 4,496,534, Cl. 423-573.00R.

Ferguson, Donald C.: *See*—
Smith, Merrill M.; and Ferguson, Donald C., 4,496,414, Cl. 156-246.000.

Ferguson, Douglas M.; Owens, William M.; Lang, Michael; and Lincoln, Jay P., to W. L. Gore & Associates, Inc. Multi-panel folder for surgical sutures. 4,496,045, Cl. 206-63.300.

Fethke, Wayne G.; and Call, Daniel D., to Oy Fiskars AB. Scissors sheath having integral blade sharpener. 4,495,696, Cl. 30-138.000.

Fiat Auto S.p.A.: *See*—
Nannini, Alessandro; and Pagano, Roberto, 4,495,901, Cl. 123-2.000.

Fiat Products Incorporated: *See*—
Walsh, Thomas J.; Bachman, Robert; and Aderhold, Ronald, 4,496,125, Cl. 248-188.000.

Field, Michael E.; and Sullivan, William H., to United States of America, Energy. Precision liquid level sensor. 4,495,807, Cl. 73-290.00R.

Finan, Michael; Finan, Peter; and Divilly, Michael, to Ballintubber Enterprises Limited. Apparatus for harvesting peat. 4,495,716, Cl. 37-3.000.

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Finan, Michael; Finan, Peter; and Divilly, Michael, 4,495,716, Cl. 37-3.000.

Finic, B.V.: *See*—
Ressi di Cervia, Arturo L., 4,496,268, Cl. 405-133.000.

Finnan, Marshall N., to Occidental Research Corporation. Tube and tube sheet assembly. 4,495,987, Cl. 165-70.000.

Fischbeck, Kenneth H., to Xerox Corporation. Ink jet ejector utilizing check valves to prevent air ingestion. 4,496,960, Cl. 346-140.00R.

Fischer, Ferdinand J., III, to Shell Oil Company. Parachute profiler. 4,495,808, Cl. 73-432.00R.

Fischer, Kenneth C., to Eaton Corporation. Encoding system for optic data link. 4,497,068, Cl. 455-608.000.

Fischer, Richard J., to Gates Rubber Company, The. Radially extensible joint packing with O-ring. 4,496,161, Cl. 277-1.000.

Fisher, D. Larry, to Sunwood Energy Systems, Inc. Thermal collector and storage system. 4,495,937, Cl. 126-430.000.

Fisher, Harry; and Fisher, Stuart, to Yoshida Kogyo K. K. Apparatus for producing slide fasteners from continuous fastener chain. 4,495,686, Cl. 29-409.000.

Fisher, Harry S., to Spider Staging, Inc. Mobile outrigger for suspending scaffold. 4,496,027, Cl. 182-142.000.

Fisher, Martin J.; Heron, Roger A.; and Hughes, Martin L., to National Research Development Corporation. Determining the level of contaminants in a hydraulic system. 4,495,799, Cl. 73-61.00R.
Fisher, Stuart: *See*—
Fisher, Harry; and Fisher, Stuart, 4,495,686, Cl. 29-409.000.
Fishman, David S.: *See*—
Gottlieb, Michael M.; Fishman, David S.; and Buysse, Henri, 4,497,012, Cl. 361-306.000.
Fitzmayer, Louis H., to General Electric Company. Microwave excitation system. 4,496,814, Cl. 219-10.55F.
Fleck, George J., to Whirlpool Corporation. Insulated cabinet collar corner element. 4,496,072, Cl. 220-432.000.
Fleming, Philip F.; Martin, Virgil B.; Villers, Roger L.; and Shutes, Jaime J., to Gehl Company. Forage harvester drive and electric control therefor. 4,496,105, Cl. 241-32.000.
Fleming, William F., III: *See*—
Hester, Benny L.; and Fleming, William F., III, 4,495,796, Cl. 73-38.000.
Fletcher, Kenneth S.: *See*—
Annino, Raymond; Cheney, Maynard C.; and Fletcher, Kenneth S., 4,496,433, Cl. 204-1.00T.
Florence, Robert A.; Campbell, John R.; and Williams, Robert E., Jr., to General Electric Company. Synthesis of zwitterionic siloxane polymers. 4,496,705, Cl. 528-34.000.
Flynn, Matthew J.: *See*—
Ong, Helen H.; and Flynn, Matthew J., 4,496,582, Cl. 514-450.000.
FMC Corporation: *See*—
Fahmy, Mohamed A. H., 4,496,552, Cl. 514-147.000.
Gottwaldt, Paul R., 4,495,853, Cl. 89-46.000.
Focke & Co.: *See*—
Focke, Heinz; and Liedtke, Kurt, 4,495,746, Cl. 53-389.000.
Focke, Heinz; and Liedtke, Kurt, to Focke & Co. Packaging apparatus for producing and feeding blanks to a packaging station. 4,495,746, Cl. 53-389.000.
Fohlen, George M.: *See*—
Varma, Indra K.; Fohlen, George M.; and Parker, John A., 4,496,701, Cl. 526-262.000.
Fomo Products, Inc.: *See*—
Farrey, Merlyn F., 4,496,081, Cl. 222-135.000.
Ford, John M. B.; and Foster, Donald D., to Realex Corporation. Dispensing pump for containers with large closures. 4,496,085, Cl. 222-321.000.
Ford Motor Company: *See*—
Ezis, Andre; Beckwith, Elaine C.; and Blair, Howard D., 4,496,503, Cl. 264-56.000.
Forgo , Imre; and Francois, Jacques, to Ciba-Geigy Corporation. Process for producing a storage-stable, miscible curing agent for acrylate resin adhesives. 4,496,694, Cl. 525-163.000.
Forte, Don A.; and Thompson, Michael L., to Manville Service Coporation. Testing device for electrically analyzing a high pressure sodium lighting fixture and lamp. 4,496,905, Cl. 324-414.000.
Foshee, William R.: *See*—
Best, Walter E.; and Foshee, William R., 4,496,178, Cl. 292-169.130.
Foster, Donald D.: *See*—
Ford, John M. B.; and Foster, Donald D., 4,496,085, Cl. 222-321.000.
Foster, Randy C.: *See*—
Quick, Terrence R.; Miranti, Joseph P., Jr.; and Foster, Randy C., 4,496,335, Cl. 474-15.000.
Foucher, Gerard, to Alsthom-Atlantique. Connector for connecting two rotors together. 4,496,259, Cl. 403-14.000.
Fouquet, Gerd: *See*—
Duembgen, Gerd; Fouquet, Gerd; Krabetz, Richard; Lucas, Ekhart; Merger, Franz; and Nees, Friedbert, 4,496,770, Cl. 568-463.000.
Fourie, Phillippus J. Device for cleaning teeth. 4,495,956, Cl. 132-92.00R.
Fournier, Andre; and Billet, Gilles, to Microndc. Relay for ultra high frequency coaxial switching. 4,496,919, Cl. 335-5.000.
Fourrey, Francois; and Mauffrey, Jean-Francois, to Cycles Peugeot. Steering column adjustable in height. 4,495,833, Cl. 74-493.000.
Fowler, Leslie L. Centrifugal evaporation apparatus. 4,496,431, Cl. 202-83.000.
Fowler, Tracy J.: *See*—
Haake, Joseph R.; Fowler, Tracy J.; and Jensen, James W., 4,496,417, Cl. 156-361.000.
Fox, Austin L., to Molins PLC. Transferring packets. 4,495,750, Cl. 53-575.000.
Foxboro Company, The: *See*—
Annino, Raymond; Cheney, Maynard C.; and Fletcher, Kenneth S., 4,496,433, Cl. 204-1.00T.
Fragale, Joseph V. Compact asphalt laying machine for sidewalks and the like. 4,496,265, Cl. 404-110.000.
Fraige, Richard. Buoyant fiber product. 4,496,623, Cl. 428-283.000.
Francois, Jacques: *See*—
Forgo , Imre; and Francois, Jacques, 4,496,694, Cl. 525-163.000.
Franz, John E.; and Kaufman, Robert J., to Monsanto Company. Amide derivatives of N-trifluoroacetyl-N-phosphonomethylglycine, herbicidal compositions and use. 4,496,389, Cl. 71-86.000.
Franz Kuhlmann Prazisionsmechanik und Maschinenbau GmbH & Co. KG: *See*—
Jopt, Uwe; and Eder, Hans, 4,495,708, Cl. 33-438.000.
Frase, Roland J.; and Bettin, Leonard A., to International Harvester Co. Rearwardly folding agricultural implement. 4,496,004, Cl. 172-311.000.
Fredrickson, James C.; Noga, Patricia J.; and Straaek, Frank M. Foot appliance. 4,495,715, Cl. 36-113.000.
Freebersyser, Steven R.: *See*—
Loncrini, Donald F.; Haag, Thomas E.; and Freebersyser, Steven R., 4,496,576, Cl. 514-389.000.
Frehel, Daniel: *See*—
Maffrand, Jean-Pierre; and Frehel, Daniel, 4,496,568, Cl. 514-301.000.
Freitag, Gary T.; and Smith, Roger C., to Reed Rock Bit Company. Bit breaker. 4,495,840, Cl. 81-54.000.
French, Michael J. Wave-energy converter. 4,495,765, Cl. 60-398.000.
Frericha, Klaus-Dieter, to Olympia Werke AG. Coupling for the leakage-free connection of fluid-filled pipes and containers. 4,496,959, Cl. 346-140.00R.
Friedman, Anna M.: *See*—
Lindberg, Eric T.; and Friedman, Anna M., 4,496,023, Cl. 181-230.000.
Friedrich, Heinz: *See*—
Bergstein, Wolfgang; Friedrich, Heinz; Kleemann, Axel; Prescher, Gunther; and Beschke, Helmut, 4,496,729, Cl. 544-336.000.
Frikker, Jozsef, to Champion Spark Plug Company. Diaphragm pump. 4,496,294, Cl. 417-393.000.
Froehling, Paul H.; Anders, Jude R.; Strojny, Lawrence J.; and Rehberger, James M., to Johnson Service Company. Direct digital control apparatus for automated monitoring and control of building systems. 4,497,031, Cl. 364-505.000.
Frohlich, Sigurd; and Morris, James V., to BMC Industries, Inc. Process for plasma desmear etching of printed circuit boards and apparatus used therein. 4,496,420, Cl. 156-643.000.
Frommhold, Joachim. Flexible solar heat collector. 4,495,936, Cl. 126-426.000.
Fuchs, Adrian: *See*—
Salour, Michael M.; and Fuchs, Adrian, 4,495,782, Cl. 62-514.00R.
Fuentes, Ricardo, Jr.: *See*—
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Fuji Photo Film Co., Ltd.: *See*—
Horikawa, Kazuo; and Arakawa, Satoshi, 4,496,973, Cl. 358-111.000.
Kasuga, Akira; Hibino, Noburo; and Miyatsuka, Hajime, 4,496,626, Cl. 428-336.000.
Oishi, Kengo; and Suzuki, Osamu, 4,496,118, Cl. 242-198.000.
Oishi, Kengo; and Suzuki, Osamu, 4,497,009, Cl. 360-133.000.
Takenaka, Yuji, 4,496,983, Cl. 358-287.000.
Umemoto, Chiyuki; and Kohketsu, Kazuo, 4,496,838, Cl. 250-327.200.
Yagihara, Morio; Hirano, Tsumoru; and Umemoto, Makoto, 4,496,650, Cl. 430-381.000.
Fuji Xerox Co., Ltd.: *See*—
Iwasaki, Yasuo, 4,496,142, Cl. 271-3.000.
Kato, Takaaki; Kato, Takeshi; and Yoshizawa, Yoshikazu, 4,497,037, Cl. 364-900.000.
Moriguchi, Haruhiko; and Ohmori, Takashi, 4,496,988, Cl. 358-294.000.
Shinohara, Tatsuoki, 4,497,032, Cl. 364-513.500.
Fujii, Setsuro; Yasegashi, Takashi; Nakayama, Toyoo; Nunomura, Shigeki; Sakurai, Yojiro; and Okutome, Toshiyuki, to Torii & Co. Ltd. Amidine derivatives with anti-complement activity. 4,496,584, Cl. 514-510.000.
Fujiie, Kazuhiko; and Nonaka, Chiaki, to Sony Corporation. Optical disc player with focus control during search mode. 4,497,047, Cl. 369-45.000.
Fujimori Kogyo Co., Ltd.: *See*—
Azuma, Tadashi; Akamatsu, Yoshihiro; Akiyama, Hiroyuki; and Yoshimura, Shohei, 4,496,627, Cl. 428-336.000.
Fujimori, Toshiyuki: *See*—
Kubo, Hirofumi; and Fujimori, Toshiyuki, 4,496,926, Cl. 336-205.000.
Fujimura, Akira; and Ozaki, Shunzaburo, to Honda Giken Kogyo Kabushiki Kaisha. Air/fuel ratio control system for an internal combustion engine. 4,495,922, Cl. 123-440.000.
Fujisawa Pharmaceutical Co., Ltd.: *See*—
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, 4,496,562, Cl. 514-207.000.
Fujita, Nobuhiko: *See*—
Hitotsuyanagi, Hajime; Fujita, Nobuhiko; Itozaki, Hideo; and Kawai, Hiromu, 4,496,450, Cl. 204-192.00R.
Fujita, Shozo: *See*—
Futatsuishi, Shunichi; Fujita, Shozo; and Takushima, Takashi, 4,495,719, Cl. 40-590.000.
Fujitsu Limited: *See*—
Kitakami, Hazime; Ishikawa, Hiroshi; Tezuka, Masayoshi; Adachi, Susumu; and Makinouchi, Akifumi, 4,497,039, Cl. 364-900.000.
Takemae, Yoshihiro; Nozaki, Shigeki; Kabashima, Katsuhiko; and Enomoto, Seiji, 4,496,850, Cl. 307-269.000.
Tsukada, Kazuo; Kanzaki, Yoshiharu; and Hori, Yoshikazu, 4,496,951, Cl. 343-394.000.
Zenitani, Hideki; Oka, Akira; Okamoto, Itsuo; Hayashi, Hisao; and Taniguchi, Masajiro, 4,496,057, Cl. 211-26.000.
Fukasawa, Takeshi: *See*—
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Fukuda, Joji; and Yamashiki, Yutaka, to Sony Corporation. Microcomputer system operating in multiple modes. 4,497,021, Cl. 364-200.000.

Fukuda, Junzo: *See*—
Kita, Katsuhiko; Fukuda, Junzo; and Kawahito, Shiro, 4,496,509, Cl. 264-175.000.
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Terashima, Kazutaka; and Fukuda, Tsuguo, 4,496,424, Cl. 156-601.000.
Fukui, Kazuyuki, to Minolta Camera Kabushiki Kaisha. Sheet feeding apparatus. 4,496,145, Cl. 271-122.000.
Fukumura, Kagenori: *See*—
Yasue, Hideki; and Fukumura, Kagenori, 4,495,830, Cl. 74-467.000.
Fukushima, Toshitsugi, to Sun Dengyosha Company, Limited. Illumination type push button switch. 4,496,813, Cl. 200-314.000.
Fukuyama, Hiroomi; and Isobe, Shinichi, to Fanuc Ltd. Method of diagnosing a servomotor control circuit. 4,496,889, Cl. 318-565.000.
Fulgurit GmbH & Co. Kommanditgesellschaft: *See*—
Exner, Gunter, 4,496,636, Cl. 428-703.000.
Funahashi, Soukichi, to Konishiroku Photo Industry Co., Ltd. Abnormality detecting device. 4,497,010, Cl. 361-93.000.
Funk, David B.; Kallmeyer, James D.; and Harker, Wesley H., to Dickey-John Corporation. Method and apparatus for non-destructively determining ingredients of a sample. 4,496,907, Cl. 324-445.000.
Furubayashi, Hisatoshi: *See*—
Watanabe, Masanori; Furubayashi, Hisatoshi; Tanaka, Junichi; and Hijikigawa, Masaya, 4,496,931, Cl. 338-34.000.
Furukawa, Teruo, to Mitsubishi Denki Kabushiki Kaisha. Encoding and decoding systems for binary data. 4,496,934, Cl. 340-347.0DD.
Furusho, Takao: *See*—
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Kanno, Akihiko; Furusho, Takao; and Yoshikumi, Chikao, 4,496,561, Cl. 514-209.000.
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Kanno, Akihiko; Furusho, Takao; and Yoshikumi, Chikao, 4,496,574, Cl. 514-195.000.
Furuta, Yohichi; Tsubouchi, Kaoru; and Nanamura, Kaoru, to Aisin Seiki Kabushiki Kaisha. Brake master cylinder. 4,495,772, Cl. 60-533.000.
Futatsuishi, Shunichi; Fujita, Shozo; and Takushima, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Movable display apparatus. 4,495,719, Cl. 40-590.000.
G. D. Searle & Co.: *See*—
Garland, Robert B., 4,496,485, Cl. 260-351.100.
Gaarde, Knud-Werner: *See*—
Overland, Christian; and Gaarde, Knud-Werner, 4,496,353, Cl. 604-272.000.
Gage, Charles A.; Blair, Timothy T.; and Morgan, Thomas W., to Xerox Corporation. Electrostatic reproducing machine. 4,496,233, Cl. 355-3.0TR.
Gagnon, James J., to J-W Operating Company. Control system for engine-driven compressor unit and method of operation thereof. 4,496,286, Cl. 417-22.000.
Galbiati, Ambrogio, to W. R. Grace & Co., Cryovac Div. Apparatus and method for packaging articles in a flexible wrapping material. 4,495,751, Cl. 53-576.000.
Gallop, Paul M.; and Paz, Mercedes, to Children's Medical Center Corporation, The. Reporter compounds. 4,496,722, Cl. 544-69.000.
GAO Gesellschaft Fur Automation Und Organisation mbH.: *See*—
Devrient, Ludwig, 4,496,961, Cl. 346-206.000.
Garavuso, Gerald M.: *See*—
Perun, William D.; and Garavuso, Gerald M., 4,496,144, Cl. 271-114.000.
Garin, Paul V., III: *See*—
Ezell, James J.; and Garin, Paul V., III, 4,496,188, Cl. 296-190.000.
Garland, Robert B., to G. D. Searle & Co. Asymmetric 7-O-(substituted acetyl)-4-demethoxydaunomycinones. 4,496,485, Cl. 260-351.100.
Gasparri, Alfred, Jr., to Texas Instruments Incorporated. Video data acquisition system. 4,497,066, Cl. 382-48.000.
Gasper, Larry, III: *See*—
Blackwell, Joseph T., III; and Gasper, Larry, III, 4,496,728, Cl. 544-319.000.
Gates Rubber Company, The: *See*—
Fischer, Richard J., 4,496,161, Cl. 277-1.000.
Gatley, Derrick R., to Wilkinson Sword Limited. Pack for razors. 4,496,047, Cl. 206-354.000.
Gatling, Grafton G. Underground cooling system and method. 4,495,781, Cl. 62-260.000.
Gattman, John W. Foot support for ladder. 4,496,025, Cl. 182-121.000.
Gattu, Narahari; and Terranova, Joseph C., III, to Harnischfeger Corporation. Crane having stabilizing outriggers. 4,496,062, Cl. 212-189.000.
GCA Corporation: *See*—
Walton, Frank J., 4,496,423, Cl. 156-345.000.
Gebauer, Helmut, to Consortium Fur Elektrochemische Industrie GMBH. Substituted macrobicyclic ethers, the manufacture and use thereof. 4,496,748, Cl. 549-396.000.
Gebr. Bode & Co. GmbH: *See*—
Britzke, Iago; and Dilcher, Dietmar, 4,495,729, Cl. 49-212.000.
Gee, Mark G.: *See*—
Almond, Eric A.; and Gee, Mark G., 4,496,372, Cl. 51-309.000.
Gehl Company: *See*—
Fleming, Philip F.; Martin, Virgil B.; Villers, Roger L.; and Shutes, Jaime J., 4,496,105, Cl. 241-32.000.
Geist, Jacob M.; Vines, Harvey L.; Alvarez, Miguel R.; Rowles, Howard C.; and Woodward, Donald W., to Air Products and Chemicals, Inc. Process using serpentine heat exchange relationship for condensing substantially single component gas streams. 4,496,382, Cl. 62-31.000.
Geka, Toshiaki, to Nippon Thompson Co., Ltd. Roller bearing for endless linear motion. 4,496,198, Cl. 308-6.00C.
Gelbein, Abraham P.; and Kwon, Joon T., to Lummus Company, The. Production of epoxy compounds from olefinic compounds. 4,496,752, Cl. 549-521.000.
Gelinas, Rejean. Anti-theft window bar. 4,495,727, Cl. 49-56.000.
Genelin, Gregory U. Method for eliciting responses by animals to moving, visually discernible stimuli, and apparatus for providing a moving visually discernible stimulus. 4,495,893, Cl. 119-29.000.
General Dynamics, Pomona Division: *See*—
Dedow, Karen A., 4,496,406, Cl. 156-66.000.
General Electric Company: *See*—
Ackerman, John F., 4,496,844, Cl. 250-483.100.
Ashby, Bruce A., 4,496,680, Cl. 524-265.000.
Cline, Harvey E., 4,496,634, Cl. 428-611.000.
Fitzmayer, Louis H., 4,496,814, Cl. 219-10.55F.
Florence, Robert A.; Campbell, John R.; and Williams, Robert E., Jr., 4,496,705, Cl. 528-34.000.
Hanson, John R.; Hauser, James L.; Kilfeather, James F., Jr.; and Hendrika, Hendrik B., 4,496,793, Cl. 174-68.500.
Jensen, Gerald A.; Wesbey, William H.; and Riederer, Stephen J., 4,496,985, Cl. 358-111.000.
Lahut, Joseph A.; and Popelish, John A., 4,496,962, Cl. 346-74.500.
Lippitt, David L.; and Walker, Loren H., 4,496,899, Cl. 323-207.000.
Pritzkow, Dennis H.; and Vavrek, Robert M., 4,496,841, Cl. 250-374.000.
Rosenquist, Niles R.; and Tyrell, John A., 4,496,693, Cl. 525-146.000.
Roth, David A., 4,497,024, Cl. 364-414.000.
Schoenig, Frederick C., Jr.; Grossman, Leonard N.; Lai, Ching C.; Masaitis, William; and Canada, Robert O., 4,496,056, Cl. 209-539.000.
Smith, Peter H., 4,496,817, Cl. 219-10.55M.
Terhune, James H., 4,495,821, Cl. 73-753.000.
Tesarzik, Juergen M.; Myers, Albert; and Yuille, James D., 4,495,810, Cl. 73-432.00R.
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Wynn, Stephen R., 4,496,912, Cl. 331-1.00A.
General Foods Corporation: *See*—
Parliment, Thomas H., 4,496,600, Cl. 426-535.000.
Rispoli, Joseph M.; Rogers, Morris A.; Sergenian, Haig H.; Swartley, John S.; and Topalian, Harry, 4,496,601, Cl. 426-554.000.
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General Instrument Corporation: *See*—
Streiber, Ronald W., 4,496,853, Cl. 307-270.000.
General Kinematics Corporation: *See*—
Muschoot, Albert, 4,495,826, Cl. 74-87.000.
General Motors Corporation: *See*—
Croat, John J., 4,496,395, Cl. 75-123 E.
Kotowski, Thomas W., 4,496,849, Cl. 307-254.000.
Reynolds, Michael G.; and Brittin, Craig E., 4,496,818, Cl. 219-10.570.
General Signal Corporation: *See*—
Alexander, Warren R., 4,496,808, Cl. 200-61.45R.
Ludwig, Albert R., 4,496,244, Cl. 366-136.000.
Walsh, Thomas J., 4,496,250, Cl. 374-186.000.
Genese, Joseph N.; and Seberg, Charles H., to Abbott Laboratories. Venipuncture device. 4,496,348, Cl. 604-167.000.
George Fischer Limited: *See*—
Lustenberger, Hans, 4,496,393, Cl. 75-58.000.
Gerard A. Wurdack & Associates, Inc.: *See*—
Wurdack, Gerard A.; and Morgan, Gene L., 4,496,890, Cl. 318-600.000.
Gerber, Joseph R., Jr., to Gerber Legendary Blades. Concave grind knife blade and method of making. 4,495,698, Cl. 30-357.000.
Gerber Legendary Blades: *See*—
Gerber, Joseph R., Jr., 4,495,698, Cl. 30-357.000.
Gericke AG: *See*—
Gericke, Hermann; and Schaville, Robert, 4,496,083, Cl. 222-231.000.
Gericke, Hermann; and Schaville, Robert, to Gericke AG. Loose or bulk good container equipped with a device for the discharge of loose or bulk goods. 4,496,083, Cl. 222-231.000.
Gerstenmeier, Jurgen: *See*—
Brachel, Volker; Emig, Reiner; Leiber, Heinz; Mendel, Michael; and Gerstenmeier, Jurgen, 4,497,026, Cl. 364-426.000.
Geschka, Hugo W., to E. Blum GmbH & Co. Stepped iron core for static or dynamic electric machines. 4,496,925, Cl. 336-178.000.
Gessell, Donald E.; Gibbs, Ronald L.; and Fuentes, Ricardo, Jr., to Dow Chemical Company, The. Catalyst prepared from organo-magnesium compound; oxygen- or nitrogen-containing compound; halide source; transition metal compound and reducing agent. 4,496,660, Cl. 502-111.000.
Gg. Noell GmbH: *See*—
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Gibbs, Ronald L.: *See*—
Gessell, Donald E.; Gibbs, Ronald L.; and Fuentes, Ricardo, Jr., 4,496,660, Cl. 502-111.000.
Gibson, Christian D.: *See*—
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Giede, Karl: *See*—
Moller, Hinrich; Wallat, Siegfried; Hoffkes, Horst; and Giede, Karl, 4,496,536, Cl. 424-70.000.
Giers, Alfred: *See*—
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Gillberg, Lars I.: *See—*
Mathiesen, Mait M.; Gillberg, Lars I.; Hellsten, Karl M. E.; and Karlsson, Gunvor B. T., 4,496,367, Cl. 44-51.000.
Gillette Company, The: *See—*
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Gilliam, Edward C.: *See—*
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Gilligan, Thomas J., to Ampex Corporation. Selective mapping system and method. 4,497,020, Cl. 364-200.000.
Gilliland, Claire. Three player backgammon gameboard. 4,496,157, Cl. 273-248.000.
Gilman, David J.: *See—*
Yellin, Tobias O.; and Gilman, David J., 4,496,564, Cl. 514-237.000.
Yellin, Tobias O.; Gilman, David J.; Edwards, Philip N.; Large, Michael S.; Jones, Derrick F.; and Oldham, Keith, 4,496,571, Cl. 514-340.000.
Gilmore, Cecilia: *See—*
Miller, Donald E.; Gilmore, Cecilia; Dimler, Steven R.; and Werstak, Charles E., 4,496,602, Cl. 426-555.000.
Ginardi, Jack L., to Valley Candle Mfg. Co., Inc. Candle including flame adjustment means and automatic flame extinguisher means. 4,496,307, Cl. 431-34.000.
Ginnings, Paul R., to Goodyear Tire & Rubber Company, The. High slip polyester films containing siloxane units. 4,496,704, Cl. 528-26.000.
Ginter, Sally P.: *See—*
Pawloski, Chester E.; and Ginter, Sally P., 4,496,494, Cl. 260-977.000.
Gist, Adolphus V.: *See—*
Doorakian, George A.; Paul, Marsha A.; and Gist, Adolphus V., 4,496,709, Cl. 528-89.000.
Gist-Brocades N.V.: *See—*
Bruynes, Cornelis A.; and Jurriens, Theodorus K., 4,496,720, Cl. 544-29.000.
Givaudan Corporation: *See—*
Naegeli, Peter; and Rohr, Martin, 4,496,476, Cl. 252-522.00R.
Givler, John D., to Stanadyne, Inc. Mixing valve with water modulation sealing means. 4,495,969, Cl. 137-625.170.
Glass, Frank S.: *See—*
Hernandez, Rafael; Chow, Edmund E.; Moncrief, Marion L., Jr.; and Glass, Frank S., 4,497,033, Cl. 364-551.000.
Glass, Joseph: *See—*
Panick, Karl; and Glass, Joseph, 4,496,292, Cl. 417-252.000.
Glaxo Group Limited: *See—*
Crame, Andrew J.; and Borthwick, Alan D., 4,496,579, Cl. 514-411.000.
Gleasman, Vernon E., to Gleason Works, The. Differential gearing assembly. 4,495,835, Cl. 74-715.000.
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Gleasman, Vernon E., 4,495,835, Cl. 74-715.000.
Global Manufacturing Co. Inc.: *See—*
Tompkins, L. Kirk, 4,496,076, Cl. 222-3.000.
Gloviak, John A., to Stewart-Warner Corporation. Automatic lubrication assembly. 4,496,030, Cl. 184-45.00R.
Gnaedinger, John P., to John P. Gnaedinger Research Corporation. Lime or lime:fly ash pretreated pavement construction material and method. 4,496,267, Cl. 404-82.000.
Gnagy, Clayton C., to United States of America, Air Force. Integrated insulation wall assembly. 4,495,764, Cl. 60-255.000.
GNB Batteries Inc.: *See—*
Waber, Glenn R., 4,497,019, Cl. 364-132.000.
Goin, Christian: *See—*
Bedu, Marcel; Farcy, Jean C.; and Goin, Christian, 4,496,873, Cl. 313-231.710.
Gokhman, Alexander, to Allis-Chalmers Corporation. Reversible two-stage hydraulic machine. 4,496,282, Cl. 415-161.000.
Goldfarb, Israel. Hand-manipulatable three-dimensional puzzle. 4,496,155, Cl. 273-153.00S.
Goldie, Harry; and Cherry, William D., to United States of America, Air Force. RF-Primed high power halogen vial apparatus. 4,496,917, Cl. 333-13.000.
Goldman, Ralph F.: *See—*
Madnick, Herman; and Goldman, Ralph F., 4,495,659, Cl. 2-66.000.
Goliber, Thomas E.: *See—*
Chen, Chin H.; Goliber, Thomas E.; Perlstein, Jerome H.; and Reynolds, George A., 4,496,730, Cl. 546-23.000.
Gomes, John M.; and Piotroski, Peter N., to Pitney Bowes Inc. Method and apparatus for customizing a multi-station document-inserter. 4,497,040, Cl. 364-900.000.
Gooch, Douglas C., to Eaton Corporation. Reverse preselect control. 4,495,838, Cl. 74-869.000.
Good, William E.: *See—*
True, Thomas T.; and Good, William E., 4,496,969, Cl. 358-62.000.
Goodyear Aerospace Corporation: *See—*
Hall, John M.; and Pantic, Milan, 4,496,033, Cl. 188-347.000.
Liggett, Paul E., 4,496,707, Cl. 528-61.000.
Goodyear Tire & Rubber Company, The: *See—*
Brandyberry, Dennis R.; and Rye, Grover W., 4,495,759, Cl. 57-58.520.
Davies, Richard A.; Lee, Michael W.; Rodenberger, Frank A.; Hill, James R.; Kulavich, David P.; and Sowell, Donald L., 4,496,411, Cl. 156-136.000.
Ginnings, Paul R., 4,496,704, Cl. 528-26.000.
Heater, Paul L., Jr.; Bletso, Nelson C.; and Tung, William C. T., 4,496,673, Cl. 523-458.000.
Johnson, David W., 4,495,755, Cl. 56-364.000.
Gordon, Gary B.; Joy, Robert; and Lee, Michael J., to Hewlett-Packard Company. Three state driver for inductive loads. 4,496,886, Cl. 318-254.000.
Gordon, Lance K., to Connaught Laboratories, Inc. *Haemophilus influenzae* b polysaccharide-diphtheria toxoid conjugate vaccine. 4,496,538, Cl. 424-92.000.
Gorris, Joannes J. H. M., to U.S. Philips Corporation. Method and device for balancing circular plate-shaped objects. 4,495,812, Cl. 73-468.000.
Goscianski, Michel, to U.S. Philips Corporation. Information display device comprising a liquid crystal cell. 4,496,220, Cl. 350-341.000.
Goswami, Jagadish C.: *See—*
Deatcher, John H.; and Goswami, Jagadish C., 4,496,628, Cl. 428-337.000.
Goto, Akio: *See—*
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Goto, Kunio: *See—*
Wada, Yoshiyo; Goto, Kunio; and Kinjo, Hisao, 4,497,052, Cl. 369-126.000.
Gotoh, Takayuki: *See—*
Nanba, Yasuhiro; Gotoh, Takayuki; Yamakawa, Eiji; and Karasaki, Toshihiko, 4,496,834, Cl. 250-211.00R.
Gotou, Takeo: *See—*
Morishita, Akira; Tanaka, Toshinori; Matsumoto, Kouichi; and Gotou, Takeo, 4,495,905, Cl. 123-179.00F.
Gottlieb, Michael M.; Fishman, David S.; and Buysse, Henri, to Rogers Corporation. Decoupling capacitor and method of manufacture thereof. 4,497,012, Cl. 361-306.000.
Gottwaldt, Paul R., to FMC Corporation. Fixed elevation automatic loading system for fixed ammunition. 4,495,853, Cl. 89-46.000.
Gould, Francis E.; and Johnston, Christian W., to Tyndale Plains-Hunter, Ltd. Polyurethane polyene compositions. 4,496,535, Cl. 424-19.000.
Gould Inc.: *See—*
Tekippe, Vincent J., 4,495,819, Cl. 73-705.000.
Graham, Anne M.: *See—*
Pess, Frederick A.; and Graham, Anne M., 4,496,666, Cl. 518-706.000.
Grant, Thomas S.; and Myers, Charles L., to Borg-Warner Chemicals, Inc. Alloys of styrenic resins and polyamides. 4,496,690, Cl. 525-66.000.
Grathnail Development Company Limited: *See—*
Le Blanc Smith, Guy; and Howard, Derik, 4,495,806, Cl. 73-152.000.
Grauel, Ingolf; Hofer, Gerald; Kulke, Gunter; and Stumpe, Werner, to Robert Bosch GmbH. Pressure medium brake system. 4,496,192, Cl. 303-13.000.
Gray, Larry O., to Dana Corporation. Ignition current sensor for an electronic speed control system. 4,495,913, Cl. 123-352.000.
Greckach, Hans: *See—*
Raasch, Hans; Greckach, Hans; and Bock, Klaus, 4,496,110, Cl. 242-35.50A.
Green, Robert J.; and Hinchcliffe, Dennis, to Molins PLC. Apparatus for forming groups of cigarettes. 4,496,055, Cl. 209-536.000.
Greenblatt, Richard W., to Portable Terminal Corp. Portable information display. 4,496,943, Cl. 340-711.000.
Greif, Norbert; Oppenlaender, Knut; Hettche, Albert; and Vamvakaris, Christos, to BASF Aktiengesellschaft. Acidic zinc-plating bath. 4,496,439, Cl. 204-55.00R.
Greiner, James G.; and Priepke, Edward H., to Sperry Corporation. Pickup attachment for harvesting machines. 4,495,756, Cl. 56-364.000.
Greiner, Joachim; and Nippe, Burkhard, to Agfa-Gevaert Aktiengesellschaft. Magneto-optical storage process. 4,497,007, Cl. 360-114.000.
Greni, Sterling R.: *See—*
Heller, Carl A.; Erickson, Eric D.; and Greni, Sterling R., 4,496,520, Cl. 422-60.000.
Greskovich, Eugene J.; and Zanchuk, Walter A., to Air Products and Chemicals, Inc. Combustion of high ash coals. 4,495,874, Cl. 110-347.000.
Grimmer, John E. Compound turbocharger system for an internal combustion engine. 4,496,291, Cl. 417-247.000.
Griswold, Donald G.: *See—*
Ensign, Harold W.; and Griswold, Donald G., 4,496,845, Cl. 290-43.000.
Groetzinger, John K.: *See—*
Heithoff, Robert B.; Groetzinger, John K.; and Schweninger, Ronald L., 4,496,387, Cl. 65-335.000.
Grogler, Gerhard: *See—*
Kopp, Richard; Grogler, Gerhard; Reiff, Helmut; and Dieterich, Dieter, 4,496,491, Cl. 260-453.0AR.
Grohn, Michael: *See—*
Bender, Franz; Hertweck, Gernot; Grohn, Michael; and Moser, Peter, 4,495,906, Cl. 123-188.0GC.
Gross, Horst, to Draiswerke GmbH. Agitator-grinder. 4,496,106, Cl. 241-46.170.
Grossman, Arthur, to Charles Stark Draper Laboratory, Inc., The. Controlled heat exchanger system. 4,495,988, Cl. 165-96.000.
Grossman, Leonard N.: *See—*
Schoenig, Frederick C., Jr.; Grossman, Leonard N.; Lai, Ching C.; Masaitis, William; and Canada, Robert O., 4,496,056, Cl. 209-539.000.
Gruner, George P., to Gillette Company, The. Shock mounting for incandescent mantle. 4,496,308, Cl. 431-101.000.

Gruppo Lepetit S.p.A.: *See*—
Ciabatti, Romeo; and Padova, Giovanna, 4,496,743, Cl. 548-533.000.

Gte Automatic Electric Inc.: *See*—
Young, John S., 4,496,800, Cl. 179-175.20R.

GTE Products Corporation: *See*—
Armstrong, Donald E., 4,496,311, Cl. 431-359.000.

Gude, Fritz; Haferkorn, Herbert; Riemer, Heinz; and Dormann, Gunter, to Chemische Werke Huls AG. Process for the production of flat varnishes. 4,496,710, Cl. 528-114.000.

Gulbenkian, Aylin H.: *See*—
Campbell, Kent D.; Gulbenkian, Aylin H.; Edamura, Fred Y.; and Kyriacou, Demetrios, 4,496,440, Cl. 204-78.000.

Gunther, Bernd-Rainer, to A. Nattermann & Cie. GmbH. Method for the preparation of phosphatidyl choline of low oil content. 4,496,486, Cl. 260-403.000.

Gupta, Krishna M., to Porous Materials, Inc. Permeameter. 4,495,795, Cl. 73-38.000.

Guth, Jean-Louis: *See*—
Bourgogne, Michel; Guth, Jean-Louis; Szabo, Georges; and Wey, Raymond, 4,496,528, Cl. 423-328.000.

Gutknecht, LeRoy N.: *See*—
Wichinsky, Michael; and Gutknecht, LeRoy N., 4,496,160, Cl. 273-369.000.

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Cormier, Roger L.; Dugan, Robert J.; Guyette, Richard R.; Hankison, Ronald L.; Hao, Ming C.; Levin, Arthur L.; McClain, George A.; Wanish, Paul J.; and Zeitler, Carl, Jr., 4,497,022, Cl. 364-200.000.

Guzik, Rudolph, to Bell & Howell. Apparatus for and methods of making bimodal electrophotographic copies. 4,496,232, Cl. 355-3.0CH.

Guzman, Angel: *See*—
Muchowski, Joseph M.; and Guzman, Angel, 4,496,577, Cl. 514-392.000.

Haag, Thomas E.: *See*—
Loncrini, Donald F.; Haag, Thomas E.; and Freebersyser, Steven R., 4,496,576, Cl. 514-389.000.

Haake, Joseph R.; Fowler, Tracy J.; and Jensen, James W., to Adolph Coors Company. Control stretch laminating device. 4,496,417, Cl. 156-361.000.

Haarstad, Richard O.; and Kammerer, Jerry L., to Hydraulic Specialty Company. Secondary flow fluid filter. 4,496,460, Cl. 210-132.000.

Habelt, Gerhard; and Mucha, Franz, to U.S. Philips Corporation. Transport roller for a record carrier in a printer. 4,496,257, Cl. 400-578.000.

Haber, Alexander. Method for vehicle body shaping. 4,496,500, Cl. 264-36.000.

Habuto, Akinaka: *See*—
Kuwahara, Rikiya; Habuto, Akinaka; and Oiso, Hisayoshi, 4,496,592, Cl. 426-5.000.

Hachitani, Shuji: *See*—
Ishii, Yoshiya; Hachitani, Shuji; and Tanaka, Yasushi, 4,495,914, Cl. 123-357.000.

Haddock, Louis A., Jr., to Clark Equipment Company. Concealed door hinge having a double pivotal mounting. 4,495,674, Cl. 16-302.000.

Haferkorn, Herbert: *See*—
Gude, Fritz; Haferkorn, Herbert; Riemer, Heinz; and Dormann, Gunter, 4,496,710, Cl. 528-114.000.

Hafez, Mahmoud M.; and Pauls, Henry W., to Exxon Research & Engineering Co. Method for preparing thin regenerated cellulose membranes of high flux and selectivity for organic liquids separations. 4,496,456, Cl. 208-33.000.

Hager, Harold E., to Washington Research Foundation. Sensing device for detecting the presence of a gas contained in a mixture thereof. 4,495,793, Cl. 73-23.000.

Hagiwara, Michiaki: *See*—
Masumoto, Tsuyoshi; Inoue, Akihisa; and Hagiwara, Michiaki, 4,495,691, Cl. 29-527.500.

Hagstrom, Arthur A.; and Swanson, Carl D., to Teletype Corporation. Desk top keyboard display terminal with an articulated keyboard. 4,496,200, Cl. 312-208.000.

Hahn, Granville J., to Coeden Technology, Inc. Method for producing biaxially oriented hollow articles. 4,496,408, Cl. 156-73.500.

Halcon SD Group, Inc., The: *See*—
Jacobson, Stephen E.; and Chueh, Chun F., 4,496,781, Cl. 568-862.000.

Halder, Mathis, to Lgz Landis & Gyr Zug Ag. Current divider for current measurement in conjunction with a measurement transducer. 4,496,932, Cl. 338-49.000.

Hall, J. Roger: *See*—
Coley, Charles R.; and Hall, J. Roger, 4,495,678, Cl. 24-113.00R.

Hall, John M.; and Pantic, Milan, to Goodyear Aerospace Corporation. Dual piston actuator. 4,496,033, Cl. 188-347.000.

Hall, Kenneth F.; and Beecher, William H., to Illinois Tool Works Inc. External female urinary appliance. 4,496,355, Cl. 604-327.000.

Halperin, Arnold: *See*—
Di Stefano, Thomas H.; and Halperin, Arnold, 4,496,900, Cl. 324-51.000.

Halskov, Soren, to Farmaceutisk Laboratorium Ferring A/S. Pharmaceutical composition and method for the treatment of colitis ulcerosa and Crohn's disease by oral administration. 4,496,553, Cl. 514-166.000.

Ham, William E., to RCA Corporation. Process for forming an improved silicon-on-sapphire device. 4,496,418, Cl. 156-643.000.

Hamakawa, Yoshihiro; Okamoto, Hiroaki; and Okuda, Kouji, to Osaka Transformer Co., Ltd. Photovoltaic device. 4,496,788, Cl. 136-249.000.

Hamamoto, Takashi: *See*—
Haruta, Masahiro; and Hamamoto, Takashi, 4,496,629, Cl. 428-341.000.

Hambrecht, Juergen; Reffert, Rudi W.; Echte, Adolf; and Swoboda, Johann, to BASF Aktiengesellschaft. Stabilization of polyphenylene ether solutions. 4,496,679, Cl. 524-111.000.

Hamer, Arthur; and Pardoe, Beverley H., to National Research Development Corporation. Vibratory conveyor control arrangement. 4,496,884, Cl. 318-114.000.

Hamisch, Paul H., Jr.: *See*—
Pabodie, Robert M.; and Hamisch, Paul H., Jr., 4,496,049, Cl. 206-395.000.

Hammer, Jacob M.; and Neil, Clyde C., to RCA Corporation. Microtranslator and microtranslator assembly. 4,495,704, Cl. 33-180.00R.

Hamprecht, Gerhard: *See*—
Stubenrauch, Gerd; Ammermann, Eberhard; Hamprecht, Gerhard; and Pommer, Ernst-Heinrich, 4,496,738, Cl. 548-262.000.

Hankison, Ronald L.: *See*—
Cormier, Roger L.; Dugan, Robert J.; Guyette, Richard R.; Hankison, Ronald L.; Hao, Ming C.; Levin, Arthur L.; McClain, George A.; Wanish, Paul J.; and Zeitler, Carl, Jr., 4,497,022, Cl. 364-200.000.

Hannen, Rainer W., to MSK-Verpackungs-Systeme GmbH. Burner for producing a flow of hot gas in particular for shrinking a plastic foil. 4,496,310, Cl. 431-350.000.

Hannoyer, Gilles, to Regie Nationale Des Usines Renault. Procedure and system for detecting collisions and controlling safety. 4,497,025, Cl. 364-424.000.

Hansen, Guenter: *See*—
Bergmann, Udo; Dix, Johannes P.; Hansen, Guenter; and Schefczik, Ernst, 4,496,480, Cl. 534-794.000.

Hanson, Charles B.; and Harrison, Colin R., to Imperial Chemical Industries PLC. Production of catalysts. 4,496,663, Cl. 502-209.000.

Hanson, John R.; Hauser, James L.; Kilfeather, James F., Jr.; and Hendriks, Hendrik B., to General Electric Company. Multi-layer metal core circuit board laminate with a controlled thermal coefficient of expansion. 4,496,793, Cl. 174-68.500.

Hanson, Steven P.; and Meyer, Burton C., to Marvin Glass & Associates. Activity toy. 4,496,510, Cl. 264-176.00R.

Hanson, Wallace G. Solar energy collector. 4,495,938, Cl. 126-439.000.

Hansson, Gunnar C., to Atlas Copco Aktiebolag. Chisel retaining device. 4,496,164, Cl. 279-19.600.

Hao, Ming C.: *See*—
Cormier, Roger L.; Dugan, Robert J.; Guyette, Richard R.; Hankison, Ronald L.; Hao, Ming C.; Levin, Arthur L.; McClain, George A.; Wanish, Paul J.; and Zeitler, Carl, Jr., 4,497,022, Cl. 364-200.000.

Hara, Hisashi: *See*—
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Hara, Takushi: *See*—
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Harada, Keiji; and Sato, Akio, to NEC Corporation. Method of manufacturing thin film circuits. 4,496,435, Cl. 204-15.000.

Harada, Kinji: *See*—
Ikeda, Kyoichi; Harada, Kinji; and Isozaki, Katsumi, 4,495,818, Cl. 73-702.000.

Harigaya, Isao; Tamura, Shuichi; Matsuda, Mutsuhide; Hirohata, Michio; Ito, Fumio; and Taguchi, Tetsuya, to Canon Kabushiki Kaisha. Photographic operation control circuit for camera. 4,496,227, Cl. 354-289.120.

Harker, Wesley H.: *See*—
Funk, David B.; Kallmeyer, James D.; and Harker, Wesley H., 4,496,907, Cl. 324-445.000.

Harnischfeger Corporation: *See*—
Gattu, Narahari; and Terranova, Joseph C., III, 4,496,062, Cl. 212-189.000.

Harp, James J., to Resource Ventures, Inc. Apparatus and method for tipping cargo containers. 4,496,275, Cl. 414-420.000.

Harris Corporation: *See*—
Beasom, James D., 4,495,694, Cl. 29-571.000.

Harris, Frances T.: *See*—
Harris, Garrett R.; and Harris, Frances T., 4,496,058, Cl. 211-86.000.

Harris, Garrett R.; and Harris, Frances T. Shopping organizer. 4,496,058, Cl. 211-86.000.

Harrison, Colin R.: *See*—
Hanson, Charles B.; and Harrison, Colin R., 4,496,663, Cl. 502-209.000.

Harrison, David J., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in her Britannic Majesty's Government of The. Eddy current measurement apparatus for non-destructive testing in the vicinity of a fastener. 4,496,904, Cl. 324-227.000.

Harrison, George E.: *See*—
Dennis, Alan J.; Harrison, George E.; and Wyber, James P., 4,496,768, Cl. 568-454.000.
Dennis, Alan J.; Harrison, George E.; and Wyber, James P., 4,496,769, Cl. 568-454.000.

Harrison, Kenneth J.; Raynes, Edward P.; Saunders, Frances C.; and Thompson, David J., to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britanic Majesty's Government of the, of Whitehall. Liquid crystal compositions with pleochroic anthraquines dyes. 4,496,221, Cl. 350-349.000.

Harrison, Shelley A.: *See*—
Swartz, Jerome; Barkan, Edward; and Harrison, Shelley A., 4,496,831, Cl. 235-472.000.
Harryman, John M., to Shell Oil Company. Cryogenic gas plant. 4,496,380, Cl. 62-24.000.
Harstrom, Karl U.; Nilsson, Bengt-Ake; and Wheeler, Richard J., to Pharmacia AB. Sample treatment device. 4,495,975, Cl. 141-157.000.
Harten, Rolf: *See*—
Hille, Hans-Dieter; and Harten, Rolf, 4,496,675, Cl. 524-77.000.
Hartmann & Braun AG: *See*—
Fabinski, Walter; and Deptolla, Udo, 4,496,840, Cl. 250-343.000.
Hartmann, Ludwig; Ruzek, Ivo; and Locher, Engelbert, to Carl Freudenberg, Firma. Method for manufacturing polypropylene spunbonded fabrics with low draping coefficient. 4,496,506, Cl. 264-167.000.
Hartmetz, Gerald J., II. Apparatus for electrically stimulating an animal carcass. 4,495,676, Cl. 17-25.000.
Hartwein, Kenneth J.: *See*—
DerMott, Raymond W.; and Hartwein, Kenneth J., 4,496,009, Cl. 175-4.520.
Haruta, Masahiro; and Hamamoto, Takashi, to Canon Kabushiki Kaisha. Material used to bear writing or printing. 4,496,629, Cl. 428-341.000.
Harvey Hubbell Incorporated: *See*—
Konnik, Robert P., 4,496,795, Cl. 174-84.00R.
Harvey, Peter, to BICC Public Limited Company. Dead end fitting for use in overhead electric and optical transmission systems. 4,496,212, Cl. 350-96.200.
Hasegawa, Bruce H.: *See*—
Mistretta, Charles A.; Peppler, Walter W.; Kudva, Balakrishna V.; Hasegawa, Bruce H.; and Dobbins, James T., III, 4,497,062, Cl. 378-158.000.
Hasegawa, Shumpei, to Honda Giken Kogyo Kabushiki Kaisha. Device for intake air temperature-dependent correction of air/fuel ratio for internal combustion engines. 4,495,925, Cl. 123-480.000.
Haselkorn, Michael H., to Armco Inc. Method and aqueous coating compositions for forming anti-stick and insulative coatings on semi-processed and fully-processed electrical steels. 4,496,399, Cl. 148-6.15R.
Hasson, Harrith M. Ballooned cannula. 4,496,345, Cl. 604-103.000.
Hatakeyama, Yoshiharu: *See*—
Ishikawa, Tatsuo; and Hatakeyama, Yoshiharu, 4,496,513, Cl. 264-267.000.
Hatanaka, Akimitsu: *See*—
Tanizaki, Hiroyuki; Ebihara, Sakae; Hatanaka, Akimitsu; Ogawa, Takayoshi; and Kanazawa, Yuzo, 4,496,189, Cl. 297-63.000.
Hatch, Randolph T.: *See*—
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Hatton, Leslie R.; Parnell, Edgar W.; and Roberts, David A., to May & Baker Limited. N-Phenylpyrazole derivatives. 4,496,390, Cl. 71-92.000.
Hattori, Katsuhide: *See*—
Hirosaki, Yoshikazu; and Hattori, Katsuhide, 4,496,471, Cl. 252-186.210.
Hattori, Kyo: *See*—
Idogaki, Takaharu; Kawai, Hisasi; Hattori, Kyo; and Sakurai, Kazuhiro, 4,496,134, Cl. 251-65.000.
Hattori, Noboru; and Suzuki, Yoshitomo, to Nissan Motor Company, Limited. Fluid control valve. 4,495,962, Cl. 137-117.000.
Hattori, Takashi: *See*—
Kobayashi, Nobuyuki; and Hattori, Takashi, 4,495,926, Cl. 123-486.000.
Haug, Theobald: *See*—
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Haugh, Eugene F.; Kitts, Earle L., Jr.; and Mickewich, Daniel J., to Du Pont de Nemours, E. I., and Company. Silver halide crystals with two surface types. 4,496,652, Cl. 430-569.000.
Hausdorfer, Michael; and Hess, Heinz, to Robert Bosch GmbH. Method for mixing two color television signals. 4,496,966, Cl. 358-22.000.
Hauser, James L.: *See*—
Hanson, John R.; Hauser, James L.; Kilfeather, James F., Jr.; and Hendriks, Hendrik B., 4,496,793, Cl. 174-68.500.
Hayasaka, Hiroshi: *See*—
Okigami, Noboru; Hayasaka, Hiroshi; Sekiguchi, Yoshitoshi; and Tamura, Harushige, 4,496,306, Cl. 431-8.000.
Hayashi, Hideki; Endo, Sadayoshi; Ito, Yukio; and Takagi, Satoshi, to Clarion Co., Ltd. Auto-reverse mechanism for use in magnetic recording/reproducing apparatus. 4,497,001, Cl. 360-74.200.
Hayashi, Hisao: *See*—
Zenitani, Hideki; Oka, Akira; Okamoto, Itsuo; Hayashi, Hisao; and Taniguchi, Masajiro, 4,496,057, Cl. 211-26.000.
Hayashi, Yoshikazu: *See*—
Suzuki, Masaru; Iwata, Masayosi; Hayashi, Yoshikazu; and Yokoyama, Tadashi, 4,496,810, Cl. 200-61.540.
Hayden, Sharon M. Neck garment. 4,495,660, Cl. 2-91.000.
Hazeltine Corporation: *See*—
Cohen, Samuel; and Wisser, Edward F., 4,496,261, Cl. 403-320.000.
Heater, Paul L., Jr.; Bletso, Nelson C.; and Tung, William C. T., to Goodyear Tire & Rubber Company, The. Crosslinkable polyester body solder of powdered metal. 4,496,673, Cl. 523-458.000.
Hefner, Robert E., Jr., to Dow Chemical Company, The. Heat resistant polyester(amide) composition. 4,496,688, Cl. 525-44.000.
Heidelberger Druckmaschinen AG: *See*—
Junghans, Rudi, 4,495,864, Cl. 101-365.000.
Heiland, Manfred: *See*—
Muller, Michael; Giers, Alfred; and Heiland, Manfred, 4,495,811, Cl. 73-462.000.
Heilmeier & Weinlein, Fabrik fur Oel-Hydraulik GmbH & Co., KG: *See*—
Brunner, Rudolf, 4,495,961, Cl. 137-101.000.
Heinz, Richard, to Robert Bosch GmbH. Multiple magnetic transducer head, particularly for use with multi-track video tape recording apparatus. 4,497,005, Cl. 360-109.000.
Heiser, Joachim; and Wilke, Gerhard, to Robert Bosch GmbH. Device for controlling and/or measuring operational parameters of an axial piston machine. 4,496,289, Cl. 417-217.000.
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Martin, Lawrence L.; and Setescak, Linda L., 4,496,580, Cl. 514-443.000.
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Horikawa, Kazuo; and Arakawa, Satoshi, to Fuji Photo Film Co., Ltd. Radiation image read-out method and apparatus. 4,496,973, Cl. 358-111.000.

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Hoy, Paul E. Adjustable diving platform. 4,495,883, Cl. 114-343.000.

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Huang, Fu-chih; Jones, Howard; Lin, Clara; and Loev, Bernard, to USV Pharmaceutical Corporation. Compounds for treating hypertension. 4,496,541, Cl. 514-2.000.

Huang, Herbert P. H. Collapsible plastic tree. 4,496,615, Cl. 428-9.000.

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Hulsey, Charles M. Adjustable orthodontic appliance. 4,496,317, Cl. 433-10.000.

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Hung, Peter, to Porta Systems Corp. Wire contact retention means for rotary switches. 4,496,804, Cl. 200-11.00A.

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Hurner, Erwin E. Oil cleaning and recycling system. 4,495,909, Cl. 123-196.00R.

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Kaneko, Tomonori; Mori, Shunji; Ichikawa, Tetsuo; Hiroki, Yoichi; and Kariya, Takashi, 4,495,780, Cl. 62-229.000.

ICI Americas Inc.: *See—*
Akhavein, Ali A.; and Braithwaite, Gavin B., 4,495,898, Cl. 119-156.000.
Yellin, Tobias O.; and Gilman, David J., 4,496,564, Cl. 514-237.000.
Yellin, Tobias O.; Gilman, David J.; Edwards, Philip N.; Large, Michael S.; Jones, Derrick F.; and Oldham, Keith, 4,496,571, Cl. 514-340.000.

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Yabuuchi, Shigeru; Endoh, Takeyuki; Kodama, Kazuyuki; and Ide, Jushi, 4,497,035, Cl. 364-577.000.

Ide, Russell D. Pad-type hydrodynamic bearing. 4,496,251, Cl. 384-117.000.

Idogaki, Takaharu; Kawai, Hisasi; Hattori, Kyo; and Sakurai, Kazuhiro, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Rotary solenoid actuator. 4,496,134, Cl. 251-65.000.

Ife, Robert J.: *See—*
Brown, Thomas H.; and Ife, Robert J., 4,496,567, Cl. 514-272.000.

Igarashi, Hisashi: *See*—
Sakaino, Michio; Igarashi, Hisashi; and Taniguchi, Yutaka, 4,495,904, Cl. 123-179.00G.
Igawa, Junichi: *See*—
Miura, Shigetaka; Igawa, Junichi; and Takata, Satoru, 4,496,902, Cl. 324-150.000.
Igi, Keishiro: *See*—
Murata, Yoshifumi; Igi, Keishiro; Narukawa, Hiroshi; Uetsuki, Masao; Bando, Satoshi; Kawai, Shuji; and Shirano, Kenji, 4,496,714, Cl. 528-272.000.
Iizuka, Tetsuya; and Hara, Hisashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor memory device. 4,497,043, Cl. 365-182.000.
Iizuka, Yasuhiro: *See*—
Shimada, Masayoshi; Iizuka, Yasuhiro; and Hukazu, Tetuo, 4,496,637, Cl. 429-44.000.
Ikeda Bussan Company Limited: *See*—
Tanizaki, Hiroyuki; Ebihara, Sakae; Hatanaka, Akimitsu; Ogawa, Takayoshi; and Kanazawa, Yuzo, 4,496,189, Cl. 297-63.000.
Ikeda, Kyoichi; Harada, Kinji; and Isozaki, Katsumi, to Yokogawa Hokushin Electric Corporation. Cylindrical vibrator type pressure transducer. 4,495,818, Cl. 73-702.000.
Ikeda, Masayuki, to Kabushiki Kaisha Suwa Seikosha. Synchronizing circuit for matrix television set. 4,496,977, Cl. 358-148.000.
Ikeda, Takaharu: *See*—
Ohashi, Naohito; Shimago, Kozo; Ikeda, Takaharu; and Ishizumi, Kikuo, 4,496,739, Cl. 548-321.000.
Ikeda, Yoshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Washer-dehydrator having a driving gear supported in a sealing case. 4,495,784, Cl. 68-23.600.
Ikoma, Junichi: *See*—
Abe, Masayuki; Ikoma, Junichi; and Abiko, Kenzi, 4,497,003, Cl. 360-97.000.
Illinois Tool Works Inc.: *See*—
Hall, Kenneth F.; and Beecher, William H., 4,496,355, Cl. 604-327.000.
Imai, Atsuo: *See*—
Sugiuchi, Masami; and Imai, Atsuo, 4,496,638, Cl. 429-192.000.
Imasco-CDC Research Foundation: *See*—
Motycka, Jiri, 4,495,947, Cl. 128-205.140.
Imperial Chemical Industries PLC: *See*—
Clough, John M., 4,496,388, Cl. 71-76.000.
Hanson, Charles B.; and Harrison, Colin R., 4,496,663, Cl. 502-209.000.
Yellin, Tobias O.; and Gilman, David J., 4,496,564, Cl. 514-237.000.
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Inaba, Takao: *See*—
Tanaka, Isao; and Inaba, Takao, 4,496,258, Cl. 401-206.000.
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Nakamura, Toshiyuki; Inaba, Tsutomu; and Kimura, Tadashi, 4,496,293, Cl. 417-371.000.
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Nakamura, Keiichi; Inaguma, Yoshiharu; and Mori, Yutaka, 4,496,288, Cl. 417-213.000.
Indra, Rudolf: *See*—
Linke, Walter; Kirnbauer, Peter; and Indra, Rudolf, 4,496,501, Cl. 264-37.000.
Industra Products, Inc.: *See*—
Walker, Robert G., 4,495,692, Cl. 29-564.100.
Industrial Designs & Services: *See*—
Crane, Walton B., 4,496,053, Cl. 206-510.000.
Industrias Romi S/A: *See*—
Romi, Romeu, 4,495,843, Cl. 82-23.000.
Industrie Zanussi S.p.A.: *See*—
Bianchi, Guiseppe, 4,496,452, Cl. 204-266.000.
Infusaid Corporation: *See*—
Prosl, Frank R.; and Sampson, Edward J., 4,496,343, Cl. 604-86.000.
Ing. C. Olivetti & C., S.p.A.: *See*—
Boella, Marcello; and Rivera, Paolo, 4,496,835, Cl. 250-231.0SE.
Ingersoll-Rand Company: *See*—
Bennitt, Robert A., 4,495,964, Cl. 137-512.100.
Ingman, Harlan V.: *See*—
Kirkland, Edmund R.; Palanuik, Elko; and Ingman, Harlan V., 4,495,724, Cl. 47-57.600.
Inoue, Akihisa: *See*—
Masumoto, Tsuyoshi; Inoue, Akihisa; and Hagiwara, Michiaki, 4,495,691, Cl. 29-527.500.
Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,496,436, Cl. 204-23.000.
Inoue, Kazuo; and Kato, Kentaro, to Honda Giken Kogyo Kabushiki Kaisha. Turbocharger for motorcycles. 4,495,773, Cl. 60-605.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Pulse electrodepositing method. 4,496,436, Cl. 204-23.000.
Inoue, Masami: *See*—
Seko, Yasutoshi; Yanagishima, Takayuki; and Inoue, Masami, 4,496,938, Cl. 340-576.000.
Inoue, Michihiro; Matsuzawa, Akira; and Takemoto, Toyoki, to Matsushita Electric Industrial Co., Ltd. Analog-digital converter with linear characteristic restoration circuit. 4,496,935, Cl. 340-347.0AD.
Inoue, Norikatsu, to Sony Corporation. Multilayer coil. 4,496,927, Cl. 336-208.000.
Intel Corporation: *See*—
Bazes, Mel, 4,496,861, Cl. 307-602.000.
Interbrev S.A.: *See*—
Scarpini, Manuela, 4,495,679, Cl. 24-414.000.
International Business Machines Corporation: *See*—
Black, Arthur G.; Dodge, John H.; and Ernst, Larry M., 4,496,829, Cl. 219-497.000.
Blaser, Eugene M.; Chung, Paul W.; and Varshney, Ramesh C., 4,496,852, Cl. 307-269.000.
Chao, Hu H., 4,496,857, Cl. 307-475.000.
Chi, Cheng-Chung J.; Davidson, Arthur; and Tsuei, Chang-Chyi, 4,496,854, Cl. 307-306.000.
Conrad, Frederick L.; Palmer, Louis R.; and Roberts, Arthur A., 4,496,245, Cl. 366-143.000.
Cormier, Roger L.; Dugan, Robert J.; Guyette, Richard R.; Hankison, Ronald L.; Hao, Ming C.; Levin, Arthur L.; McClain, George A.; Wanish, Paul J.; and Zeitler, Carl, Jr., 4,497,022, Cl. 364-200.000.
Di Stefano, Thomas H.; and Halperin, Arnold, 4,496,900, Cl. 324-51.000.
Irwin, John W., 4,496,954, Cl. 346-1.100.
International Flavors & Fragrances Inc.: *See*—
Evers, William J.; Mookherjee, Braja D.; Van Ouwerkerk, Anton; and Van Loveren, Augustinus G., 4,496,775, Cl. 568-820.000.
Munteanu, Marina A.; Oltarzewski, Edward S.; Shechter, Leon; and Warren, Craig B., 4,496,467, Cl. 252-92.000.
International Harvester Co.: *See*—
Frase, Roland J.; and Bettin, Leonard A., 4,496,004, Cl. 172-311.000.
International Healthcare Products, Inc.: *See*—
Herman, Harry H., Jr., 4,495,666, Cl. 4-564.000.
International Standard Electric Corporation: *See*—
Colardelle, Joel S. G.; Lerouge, Claude P. H.; and Loup, Nicole J. R., 4,496,798, Cl. 179-84.00T.
International Telephone and Telegraph Corporation: *See*—
Borsuk, Leslie M., 4,496,213, Cl. 350-96.220.
Kingen, Rickey W.; and Duncan, Robert H., 4,496,799, Cl. 179-100.00L.
Interox Chemicals Limited: *See*—
Campbell, Ian M.; Baulch, Donald L.; and Audley, Gary J., 4,496,783, Cl. 568-947.000.
Sanderson, William R., 4,496,473, Cl. 252-186.410.
Interstate Electronics Corp.: *See*—
Suste, Joseph T., 4,496,879, Cl. 315-169.400.
Inventors Compendium International Corp.: *See*—
Valavaara, Viljo K., 4,495,768, Cl. 60-414.000.
Investment Rarities, Incorporated: *See*—
Burandt, Corliss O., 4,495,902, Cl. 123-90.160.
Iogansen, Vadim I.: *See*—
Antonov, Jury F.; Ioganson, Vadim I.; Tkachenko, Alexei S.; Chernyavsky, Vladimir P.; and Shapiro, Aron B., 4,496,870, Cl. 310-260.000.
Ipanema Company: *See*—
Kemper, Yves J., 4,495,829, Cl. 74-191.000.
Ipco Corporation: *See*—
Hillel, Arie; and Borovsky, Simcha, 4,496,351, Cl. 604-250.000.
IPS Interproject Service AB: *See*—
Torneman, Bjorn, 4,496,369, Cl. 48-92.000.
Iqbal, Abul; and Lienhard, Paul, to Ciba-Geigy Corporation. Process for the manufacture of metal complexes of isoindoline azines. 4,496,727, Cl. 544-225.000.
Irie, Toshio; and Sato, Susumu, to Kawasaki Steel Corporation. Thin steel sheet having improved baking hardenability and adapted for drawing and a method of producing the same. 4,496,400, Cl. 148-12.00C.
Irwin, John W., to International Business Machines Corporation. Reservo interval determination in an ink jet system. 4,496,954, Cl. 346-1.100.
Irwin, Lawrence F. Foot switch safety enclosure. 4,496,811, Cl. 200-86.500.
Irwin, Robert S., to Du Pont de Nemours, E. I., and Company. Optically anisotropic melt forming copolyesters. 4,496,712, Cl. 528-191.000.
Isayama, Katsuhiko: *See*—
Kawakubo, Fumio; Hirose, Toshifumi; Minokami, Tadashi; Hosaka, Miyako; and Isayama, Katsuhiko, 4,496,611, Cl. 427-160.000.
Ise, Yoji, to Myotoku Ltd. Flow regulating valve. 4,495,965, Cl. 137-599.000.
Ishida, Kohji; Noguchi, Tadashi; and Numata, Tatsuo, to Pioneer Electronic Corporation. FM stereo demodulator. 4,497,063, Cl. 381-7.000.
Ishida, Naobumi: *See*—
Micetich, Ronald G.; Yamabe, Shigeru; Hirata, Shoji; and Ishida, Naobumi, 4,496,484, Cl. 260-245.20R.
Ishida, Tokuji: *See*—
Nakai, Masaaki; Sahara, Masayoshi; Hosomizu, Hiroshi; and Ishida, Tokuji, 4,496,230, Cl. 354-416.000.
Ishidoshiro, Hiroshi: *See*—
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,495,783, Cl. 68-5.00D.
Ishihara, Hideaki: *See*—
Kurita, Kazuo; and Ishihara, Hideaki, 4,496,630, Cl. 428-364.000.
Ishii, Sugao; Itou, Susumu; Kawamura, Mikio; and Tsukamoto, Tadashi, to Kawasaki Steel Corporation. Method of handling slabs by an overhead traveling crane provided with a slab grip lifter. 4,496,063, Cl. 212-270.000.

Ishii, Tsuneji; Ito, Hiroaki; and Ishikawa, Takamichi, to Asahi Glass Company, Ltd. Ion exchange membrane manufacture for electrolytic cell. 4,496,451, Cl. 204-252.000.

Ishii, Yoshiya; Hachitani, Shuji; and Tanaka, Yasuhi, to Nippondenso Co., Ltd. Electric governor. 4,495,914, Cl. 123-357.000.

Ishikawa, Hiroshi: *See*—
Kitakami, Hazime; Ishikawa, Hiroshi; Tezuka, Masayoshi; Adachi, Susumu; and Makinouchi, Akifumi, 4,497,039, Cl. 364-900.000.

Ishikawa, Seizi: *See*—
Kato, Takaaki; Hirano, Yoshio; Ochiai, Takeshi; Ishikawa, Seizi; and Sakai, Kazunori, 4,497,057, Cl. 371-29.000.

Ishikawa, Takamichi: *See*—
Ishii, Tsuneji; Ito, Hiroaki; and Ishikawa, Takamichi, 4,496,451, Cl. 204-252.000.

Ishikawa, Tatsuo; and Hatakeyama, Yoshiharu, to Yoshida Industry Co., Ltd. Tubular container molding method and apparatus. 4,496,513, Cl. 264-267.000.

Ishizaki, Zentaro: *See*—
Murakami, Muneo; and Ishizaki, Zentaro, 4,495,855, Cl. 92-71.000.

Ishizuka, Ken. System for initiating the operation of an electronically-operated device. 4,496,948, Cl. 340-825.310.

Ishizumi, Kikuo: *See*—
Ohashi, Naohito; Shimago, Kozo; Ikeda, Takaharu; and Ishizumi, Kikuo, 4,496,739, Cl. 548-321.000.

Iso, Tadashi: *See*—
Iwao, Jun-ichi; Oya, Masayuki; and Iso, Tadashi, 4,496,578, Cl. 514-423.000.

Isobe, Shinichi: *See*—
Fukuyama, Hiroomi; and Isobe, Shinichi, 4,496,889, Cl. 318-565.000.

Isohata, Junji; and Sato, Mitsuya, to Canon Kabushiki Kaisha. Projection exposure apparatus. 4,496,239, Cl. 355-30.000.

Isozaki, Katsumi: *See*—
Ikeda, Kyoichi; Harada, Kinji; and Isozaki, Katsumi, 4,495,818, Cl. 73-702.000.

Itaka, Koshi; and Hara, Takushi, to Sumitomo Electric Industries, Ltd. Insulating spacer and metal sheath for gas insulated electrical equipment. 4,496,789, Cl. 174-22.00C.

Itakura, Takeshi: *See*—
Kinoshita, Harumi; Kushida, Hideo; Itakura, Takeshi; Akutsu, Masao; Takada, Takuzo; and Sugiura, Hiroaki, 4,496,517, Cl. 264-521.000.

Ito, Fumio: *See*—
Harigaya, Isao; Tamura, Shuichi; Matsuda, Mutsuhide; Hirohata, Michio; Ito, Fumio; and Taguchi, Tetsuya, 4,496,227, Cl. 354-289.120.

Ito, Hiroaki: *See*—
Ishii, Tsuneji; Ito, Hiroaki; and Ishikawa, Takamichi, 4,496,451, Cl. 204-252.000.

Ito, Kengo, to Sony Corporation. Photosensitive imaging material. 4,496,646, Cl. 430-271.000.

Ito, Yukio: *See*—
Hayashi, Hideki; Endo, Sadayoshi; Ito, Yukio; and Takagi, Satoshi, 4,497,001, Cl. 360-74.200.

Itoh, Hiroshi: *See*—
Tanaka, Tatsuo; Itoh, Hiroshi; and Sugiyama, Akihiko, 4,495,779, Cl. 62-211.000.

Itoh, Toyotsugu; and Muramatsu, Toshio, to Konishiroku Photo Industry Co., Ltd. Optical beam scanning apparatus including a cylindrical lens having its opposite ends closer to the scanned plane than its medial portion. 4,496,209, Cl. 350-6.800.

Itou, Susumu: *See*—
Ishii, Sugao; Itou, Susumu; Kawamura, Mikio; and Tsukamoto, Tadashi, 4,496,063, Cl. 212-270.000.

Itozaki, Hideo: *See*—
Hitotsuyanagi, Hajime; Fujita, Nobuhiko; Itozaki, Hideo; and Kawai, Hiromu, 4,496,450, Cl. 204-192.00R.

ITT Industries, Inc.: *See*—
Byding, Otto; and Stroberg, Rolf, 4,496,181, Cl. 294-78.00R.
Turley, Stephen E. H., 4,496,403, Cl. 148-171.000.

Ivanov, Peter. Frame-straightening device. 4,495,789, Cl. 72-302.000.

Iwahashi, Hiroshi; Asano, Masamichi; Yoshikawa, Kuniyoshi; and Mito, Masazi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of integrating MOS devices of double and single gate structure. 4,495,693, Cl. 29-571.000.

Iwaki, Yoshiyuki; Yokota, Mitsuyoshi; and Matsumoto, Akio, to Mitsubishi Denki Kabushiki Kaisha. Vehicle A.C. generator with constant output power. 4,496,898, Cl. 322-34.000.

Iwamoto, Norihiro, to Toshiba Kikai Kabushiki Kaisha. Stroke enlarging mechanism. 4,495,828, Cl. 74-110.000.

Iwao, Jun-ichi; Oya, Masayuki; and Iso, Tadashi, to Santen Pharmaceutical Co., Ltd. Antihypertensive sulfur-containing compounds. 4,496,578, Cl. 514-423.000.

Iwasa, Susumu: *See*—
Kondo, Koichi; Iwasa, Susumu; and Yoshida, Isamu, 4,496,658, Cl. 436-510.000.

Iwasaki, Yasuo, to Fuji Xerox Co., Ltd. Sheet supplying device for two-sided copying. 4,496,142, Cl. 271-3.000.

Iwata, Akira: *See*—
Kaneko, Hideo; Kumashiro, Hatuyoshi; and Iwata, Akira, 4,495,982, Cl. 164-452.000.

Iwata, Masayosi: *See*—
Suzuki, Masaru; Iwata, Masayosi; Hayashi, Yoshikazu; and Yokoyama, Tadashi, 4,496,810, Cl. 200-61.540.

Iwata, Michitaka: *See*—
Tanji, Hiroshi; Iwata, Michitaka; and Sato, Hideo, 4,496,905, Cl. 264-101.000.

Izumi, Misao: *See*—
Morimoto, Takuo; Nishiuchi, Kihachiro; Izumi, Misao; and Ejima, Noriyoshi, 4,496,469, Cl. 252-62.000.

J. M. Voith GmbH: *See*—
Wohrle, Albert; and Krautzberger, Franz, 4,495,888, Cl. 118-410.000.

J-W Operating Company: *See*—
Gagnon, James J., 4,496,286, Cl. 417-22.000.

Jackemeyer, James E. Compressible portable exercising apparatus with container. 4,496,146, Cl. 272-74.000.

Jacks, Shirley L.; and Ng, Sun W. Cooking utensil. 4,495,861, Cl. 99-422.000.

Jackson, Brian L.; and Parker, Philip. Rotary microtome drive. 4,495,844, Cl. 83-715.000.

Jackson, Eric C.: *See*—
Byars, Larry W.; and Jackson, Eric C., 4,496,421, Cl. 156-304.100.

Jacobson, Stephen E.; and Chueh, Chun F., to Halcon SD Group, Inc., The. Process for the production of ethylene glycol through the hydroformylation of glycol aldehyde. 4,496,781, Cl. 568-862.000.

Jadwin, Thomas A.: *See*—
Wilson, John C.; DeMejo, Lawrence P.; Jadwin, Thomas A.; and Merrill, Stewart H., 4,496,643, Cl. 430-110.000.

Jahrbacher, Gerhard: *See*—
Ritter, Gerhard; Ritter, Klaus; and Jahrbacher, Gerhard, 4,496,820, Cl. 219-87.000.

James Dole Corporation: *See*—
Pohorski, Daniel W., 4,495,974, Cl. 141-132.000.

Jamieson, John A.: *See*—
Bernstein, Lawrence S.; Bien, Fritz; and Jamieson, John A., 4,496,839, Cl. 250-341.000.

Janke, Edwin R.; and Conrad, Earl, to Mercury Metal Products, Inc. Cover assembly for vertical exhaust pipes. 4,495,859, Cl. 98-59.000.

Janssens, Wilhelmus; and Claeys, Daniel A., to Agfa-Gevaert, N.V. Process for the production of a photographic color image by image-wise dye diffusion transfer. 4,496,645, Cl. 430-239.000.

Japan Servo Co., Ltd.: *See*—
Ichihara, Noboru; and Takehara, Isamu, 4,496,887, Cl. 318-254.000.

Japan Styrene Paper Corporation: *See*—
Azuma, Tadashi; Akamatsu, Yoshihiro; Akiyama, Hiroyuki; and Yoshimura, Shohei, 4,496,627, Cl. 428-336.000.

Jaros, Frantisek: *See*—
Junek, Jan; Vorbornik, Vaclav; Ripka, Josef; Jaros, Frantisek; Lihtarova , Ludmila; Hortlik, Frantisek; Kotrba, Zdenek; Rehackova, Bozena; and Dvorak, Ladislav, 4,495,762, Cl. 57-411.000.

Jarvinen, Raimo M.: *See*—
Matikainen, Keijo E.; and Jarvinen, Raimo M., 4,496,796, Cl. 174-101.500.

Jean Walterscheid GmbH: *See*—
Mikeska, Felix, 4,496,334, Cl. 464-175.000.

Jegers, Viktor J.; and Lasley, Duncan T., to Century Mfg. Co. Tilting releasing latch structure for welding machine welding head. 4,496,822, Cl. 219-125.100.

Jenkins, Arthur E. O., to Distillation Technology Limited. Mass transfer apparatus. 4,496,430, Cl. 202-158.000.

Jenoptik Jena G.m.b.H.: *See*—
Schorcht, Adelbrecht; Klingenfeld, Dietmar; Hesse, Reiner; Dastis, Rainer; and Linz, Volker, 4,496,970, Cl. 358-101.000.

Jensen, Gerald A.; Wesbey, William H.; and Riederer, Stephen J., to General Electric Company. Line-locked digital fluorography system. 4,496,985, Cl. 358-111.000.

Jensen, James W.: *See*—
Haake, Joseph R.; Fowler, Tracy J.; and Jensen, James W., 4,496,417, Cl. 156-361.000.

Jidosha Kiki Co., Ltd.: *See*—
Hibino, Sadanobu, 4,495,854, Cl. 91-438.000.

Jo, Yasunori: *See*—
Mori, Takashi; Mizu, Kouichi; and Jo, Yasunori, 4,495,841, Cl. 81-430.000.

Jodar, Francisco Y.; and Arcas, Agustin A., to D. Agustin Amador Arcas Y Nipor S.A. Incubator for piglets. 4,495,892, Cl. 119-16.000.

Joffe, Frederick M.; and Dysart, John E., to Procter & Gamble Company, The. Method of using a composite waste-containment garment having disposable elasticized insert. 4,496,360, Cl. 604-397.000.

Johannes Heidenhain GmbH: *See*—
Ernst, Alfons, 4,495,700, Cl. 33-1.00N.

John P. Gnaedinger Research Corporation: *See*—
Gnaedinger, John P., 4,496,267, Cl. 404-82.000.

Johns Hopkins University, The: *See*—
Silver, David M.; and Dehaas, Newman, 4,496,073, Cl. 220-445.000.

Johnson, David W., to Goodyear Tire & Rubber Company, The. Conveyor for a combine harvester. 4,495,755, Cl. 56-364.000.

Johnson, Dell A.; and Bolieau, Christopher W., to Thiokol Corporation. Dual-thrust nozzle apparatus for rockets. 4,495,763, Cl. 60-242.000.

Johnson, Russell W.: *See*—
Urban, Peter; and Johnson, Russell W., 4,496,371, Cl. 48-197.00R.

Johnson Service Company: *See*—
Froehling, Paul H.; Andera, Jude R.; Strojny, Lawrence J.; and Rehberger, James M., 4,497,031, Cl. 364-505.000.

Johnston, Christian W.: *See*—
Gould, Francis E.; and Johnston, Christian W., 4,496,535, Cl. 424-19.000.

Johnston, Otis: *See*—
Porter, James A., Jr.; Shivers, Joe D.; Rozycki, Marek; and Johnston, Otis, 4,496,015, Cl. 180-9.260.

Jones, Derrick F.: *See*—
Yellin, Tobias O.; Gilman, David J.; Edwards, Philip N.; Large, Michael S.; Jones, Derrick F.; and Oldham, Keith, 4,496,571, Cl. 514-340.000.

Jones, Howard: *See*—
Huang, Fu-chih; Jones, Howard; Lin, Clara; and Loev, Bernard, 4,496,541, Cl. 514-2.000.
Skiles, Jerry W.; Youssefyeh, Raymond D.; Suh, John T.; and Jones, Howard, 4,496,542, Cl. 514-2.000.

Jones, Joseph W.; and Bishop, Edward W. Horseshoe. 4,496,002, Cl. 168-4.000.

Jones, Maurice S., to Smiths Industries Public Limited Company. Indicator instruments. 4,495,806, Cl. 73-182.000.

Jones, Warren C.: *See*—
Dery, Ronald A.; Jones, Warren C.; Lynn, William J.; and Rowlette, John R., 4,496,422, Cl. 156-306.600.

Jonsson, Karl E.; and Lindgren, Gosta, to ASEA Aktiebolag. Electromagnetically operated electric switch. 4,496,920, Cl. 335-201.000.

Jopt, Uwe; and Eder, Hans, to Franz Kuhlmann Prazisionsmechanik und Maschinenbau GmbH & Co. KG. Drawing head for a drawing machine. 4,495,708, Cl. 33-438.000.

Jorgensen, Jorgen A., to Northland Aluminum Products, Inc. Microwave browning utensil. 4,496,815, Cl. 219-10.55E.

Joy, Robert: *See*—
Gordon, Gary B.; Joy, Robert; and Lee, Michael J., 4,496,886, Cl. 318-254.000.

Junek, Jan; Vorbornik, Vaclav; Ripka, Josef; Jaros, Frantisek; Lihtarova , Ludmila; Horthik, Frantisek; Kotrba, Zdenek; Rehackova, Bozena; and Dvorak, Ladislav, to Vyzkumny ustav bavlnarsky. Apparatus for separating fibers in open-end spinning units. 4,495,762, Cl. 57-411.000.

Jung, Michel: *See*—
Bey, Philippe; and Jung, Michel, 4,496,588, Cl. 514-564.000.

Junghans, Rudi, to Heidelberger Druckmaschinen AG. Ink knife and adjusting device therefor on an ink duct of a rotary printing machine. 4,495,864, Cl. 101-365.000.

Jungman, Emil A., to Jungman, Inc. Lifting device and method. 4,496,277, Cl. 414-589.000.

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Jungman, Emil A., 4,496,277, Cl. 414-589.000.

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Bruynes, Cornelis A.; and Jurriens, Theodorus K., 4,496,720, Cl. 544-29.000.

Justus, Edgar J., to Beloit Corporation. Dryer section drive arrangement for paper making machines. 4,495,711, Cl. 34-23.000.

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Kabashima, Katsuhiko: *See*—
Takemae, Yoshihiro; Nozaki, Shigeki; Kabashima, Katsuhiko; and Enomoto, Seiji, 4,496,850, Cl. 307-269.000.

KabiVitrum AB: *See*—
Lindahl, Ulf P. F.; Backstrom, Gudrun E.; and Thunberg, John Y. L., 4,496,550, Cl. 514-54.000.

Kabushiki Kaisha Ecti Kenkyusho: *See*—
Murakami, Muneo; and Ishizaki, Zentaro, 4,495,855, Cl. 92-71.000.

Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See*—
Manabe, Masatoshi; and Miyake, Toshio, 4,496,603, Cl. 426-577.000.

Kabushiki Kaisha Kito: *See*—
Maeda, Kazuo, 4,496,136, Cl. 254-350.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Akiyama, Teruo; and Morita, Koichi, 4,495,767, Cl. 60-436.000.

Kabushiki Kaisha Suwa Seikosha: *See*—
Ikeda, Masayuki, 4,496,977, Cl. 358-148.000.
Ota, Tomio; Miyasaka, Mamoru; and Hiraga, Imao, 4,496,246, Cl. 368-88.000.

Kabushiki Kaisha Takuma: *See*—
Shigaki, Masanobu, 4,495,872, Cl. 110-190.000.

Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho: *See*—
Suzuki, Masaru; Iwata, Masayosi; Hayashi, Yoshikazu; and Yokoyama, Tadashi, 4,496,810, Cl. 200-61.540.

Kaganov, Alan L.: *See*—
Ritter, Thomas A.; Kaganov, Alan L.; and Budris, John P., 4,496,446, Cl. 204-159.140.

Kainsinger, Willis C.: *See*—
Schwager, Frederic A.; and Kainsinger, Willis C., 4,496,100, Cl. 238-10.00R.

Kaise, Tatsuo, to Okamura Corporation. Industrial robot equipped with articulated arm unit. 4,496,278, Cl. 414-735.000.

Kajita, Kohji: *See*—
Nakayama, Takashi; Kajita, Kohji; and Yamagata, Selichi, 4,495,761, Cl. 57-328.000.

Kali und Salz AG: *See*—
Loblich, Karl-Richard, 4,496,526, Cl. 423-306.000.

Kallmeyer, James D.: *See*—
Funk, David B.; Kallmeyer, James D.; and Harker, Wesley H., 4,496,907, Cl. 324-445.000.

Kamat, Dattatraya V., to Crown Textile Company. Composite interlining material. 4,495,661, Cl. 2-97.000.

Kaminski, Elton G., to Stolle Corporation, The. Alignment gage for dish antenna. 4,495,706, Cl. 33-333.000.

Kammerer, Jerry L.: *See*—
Haarstad, Richard O.; and Kammerer, Jerry L., 4,496,460, Cl. 210-132.000.

Kamo, Roy, to Cummins Engine Company, Inc. Combustion chamber components for internal combustion engines. 4,495,907, Cl. 123-193.00C.

Kamoda, Hiroyoshi, to Komori Printing Machinery Co., Ltd. Plate clamping device of web-fed rotary printing press. 4,495,865, Cl. 101-415.100.

Kamstra, Paulus R., to Duphar International Research B.V. Multiple-compartment syringe. 4,496,344, Cl. 604-90.000.

Kanazawa, Yuzo: *See*—
Tanizaki, Hiroyuki; Ebihara, Sakae; Hatanaka, Akimitsu; Ogawa, Takayoshi; and Kanazawa, Yuzo, 4,496,189, Cl. 297-63.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Kawakubo, Fumio; Hirose, Toshifumi; Minokami, Tadashi; Hosaka, Miyako; and Isayama, Katsuhiko, 4,496,611, Cl. 427-160.000.

Kaneko, Hideo; Kumashiro, Hatuyoshi; and Iwata, Akira, to Kawasaki Jukogyo Kabushiki Kaisha. Horizontal continuous casting method. 4,495,982, Cl. 164-452.000.

Kaneko, Kenji, to Victor Company of Japan, Ltd. Noise immune data regenerating circuit for video signal reproduction. 4,496,994, Cl. 358-336.000.

Kaneko, Tomonori; Mori, Shunji; Ichikawa, Tetsuo; Hiroki, Yoichi; and Kariya, Takashi, to Hitachi, Ltd. Cooling method and apparatus for hermetic type control box. 4,495,780, Cl. 62-229.000.

Kanner, Bernard; Hopper, Steven P.; and Sepelak, Dennis J., to Union Carbide Corporation. Silyl carbamates and synthesis thereof. 4,496,754, Cl. 556-420.000.

Kanno, Akihiko: *See*—
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Kanno, Akihiko; Furusho, Takao; and Yoshikumi, Chikao, 4,496,561, Cl. 514-209.000.
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Kanno, Akihiko; Furusho, Takao; and Yoshikumi, Chikao, 4,496,574, Cl. 514-195.000.

Kanzaki Paper Mfg., Co., Ltd.: *See*—
Kawai, Hirokazu; and Takahashi, Fumio, 4,496,824, Cl. 219-216.000.

Kanzaki, Yoshiharu: *See*—
Tsukada, Kazuo; Kanzaki, Yoshiharu; and Hori, Yoshikazu, 4,496,951, Cl. 343-394.000.

Kao Soap Co., Ltd.: *See*—
Kita, Katsuhiko; Fukuda, Junzo; and Kawahito, Shiro, 4,496,309, Cl. 264-175.000.

Kapiloff, Anita G.; and Hatch, Randolph T., to B. F. Goodrich Company, The. Cleaning composition. 4,496,470, Cl. 252-181.000.

Karami, Hamzeh; Delvaux, Myriam; and Cooper, Terence, to Colgate-Palmolive Company. Diaper having variable density absorbent pad. 4,496,358, Cl. 604-379.000.

Karasaki, Toshihiko: *See*—
Nanba, Yasuhiro; Gotoh, Takayuki; Yamakawa, Eiji; and Karasaki, Toshihiko, 4,496,834, Cl. 250-211.00R.

Kariya, Takashi: *See*—
Kaneko, Tomonori; Mori, Shunji; Ichikawa, Tetsuo; Hiroki, Yoichi; and Kariya, Takashi, 4,495,780, Cl. 62-229.000.

Karl Schmidt GmbH: *See*—
Sander, Wilfried; and Mielke, Siegfried, 4,495,684, Cl. 29-156.50R.

Karlheinz, Farber: *See*—
Nelzow, Hartmann; Karlheinz, Farber; and Deininger, Anton, 4,496,078, Cl. 222-87.000.

Karlsson, Gunvor B. T.: *See*—
Mathiesen, Mait M.; Gillberg, Lars I.; Hellsten, Karl M. E.; and Karlsson, Gunvor B. T., 4,496,367, Cl. 44-51.000.

Kasai, Takao: *See*—
Waki, Masahiko; Umezawa, Seiji; Takasugi, Tsuneji; Koide, Hiroshi; and Kasai, Takao, 4,496,248, Cl. 368-280.000.

Kashdan, David S., to Eastman Kodak Company. Process for the preparation of N-(2-(cyclo-hexen-1-yl)ethyl)-4-methoxybenzeneacetamide. 4,496,762, Cl. 564-170.000.

Kashiwagi, Hiromi: *See*—
Yamashita, Keitaro; and Kashiwagi, Hiromi, 4,496,240, Cl. 355-14.00D.

Kashiwagi, Kazuo; and Shirai, Masanari, to Canon Kabushiki Kaisha. Web transport device. 4,496,117, Cl. 242-191.000.

Kashiwaya, Mineo; and Yamada, Kinsaku, to Hitachi, Ltd. Air flow meter assembly. 4,495,802, Cl. 73-118.000.

Kasper, Willi; Licht, Helmut; Raquet, Erwin; and Schneider, Jurgen, to Krupp Stahl Aktiengesellschaft. Vibration-damped wheel for rail vehicles. 4,496,183, Cl. 295-7.000.

Kasuga, Akira; Hibino, Noburo; and Miyatsuka, Hajime, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,496,626, Cl. 428-336.000.

Kataoka, Hiroshi. Winding shaft provided on surface with spool fixing rollers. 4,496,114, Cl. 242-68.200.

Kato, Choji: *See*—
Ohishi, Kishiro; and Kato, Choji, 4,496,111, Cl. 242-55.000.

Kato, Kentaro: *See*—
Inoue, Kazuo; and Kato, Kentaro, 4,495,773, Cl. 60-605.000.

Kato, Takaaki; Kato, Takeshi; and Yoshizawa, Yoshikazu, to Nippondenso Co., Ltd.; Systemkiki Co., Ltd.; and Fuji Xerox Co., Ltd. Apparatus for managing a group of copying machines. 4,497,037, Cl. 364-900.000.

Kato, Takaaki; Hirano, Yoshio; Ochiai, Takeshi; Ishikawa, Seizi; and Sakai, Kazunori, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Motor vehicle diagnostic monitoring system. 4,497,057, Cl. 371-29.000.

Kato, Takeshi: *See*—
Kato, Takaaki; Kato, Takeshi; and Yoshizawa, Yoshikazu, 4,497,037, Cl. 364-900.000.

Katsura, Tadashi: *See*—
Minai, Masayoshi; and Katsura, Tadashi, 4,496,767, Cl. 568-346.000.

Katz, David H.; Cooper, Steven W.; Lee, Theodore T.; and Chang, Shung-Ho, to Quidel. Detection of HCG with solid phase support having avidin coating. 4,496,654, Cl. 435-7.000.

Katzen, Stanley J.: *See*—
Rekers, Louis J.; and Katzen, Stanley J., 4,496,699, Cl. 526-105.000.

Kaufman, Benjamin J.; and Sung, Rodney L., to Texaco Inc. Isopropylidene malonate-N-alkyl alkylenediamine condensation products. 4,496,368, Cl. 44-63.000.

Kaufman, Robert J.: *See*—
Franz, John E.; and Kaufman, Robert J., 4,496,389, Cl. 71-86.000.

Kavanau, Lawrence: *See*—
Knapp, Richard P., 4,496,909, Cl. 330-277.000.

Kawabata, Takashi: *See*—
Sakai, Shinji; Shinoda, Nobuhiko; Kinoshita, Takao; Hosoe, Kazuya; and Kawabata, Takashi, 4,496,832, Cl. 250-201.000.

Kawabe, Norio; Tsuda, Mikio; and Kobashi, Sadao, to Toray Industries, Inc. Treatment of image-forming laminated plate. 4,496,647, Cl. 430-303.000.

Kawade, Tateo: *See*—
Sasaki, Kiichi; Kawade, Tateo; and Nemoto, Seiichiro, 4,496,170, Cl. 280-801.000.

Kawaguchi, Akio: *See*—
Hiraiwa, Kazuyoshi; and Kawaguchi, Akio, 4,495,832, Cl. 74-475.000.

Kawahito, Shiro: *See*—
Kita, Katsuhiko; Fukuda, Junzo; and Kawahito, Shiro, 4,496,509, Cl. 264-175.000.

Kawai, Hirokazu; and Takahashi, Fumio, to Shinko Electric Co., Ltd.; and Kanzaki Paper Mfg., Co., Ltd. Method for controlling temperature of heat generating element of thermal printing head and circuit for practising same. 4,496,824, Cl. 219-216.000.

Kawai, Hiromu: *See*—
Hitotsuyanagi, Hajime; Fujita, Nobuhiko; Itozaki, Hideo; and Kawai, Hiromu, 4,496,450, Cl. 204-192.00R.

Kawai, Hisasi: *See*—
Idogaki, Takaharu; Kawai, Hisasi; Hattori, Kyo; and Sakurai, Kazuhiro, 4,496,134, Cl. 251-65.000.

Kawai Musical Instrument Mfg. Co., Ltd.: *See*—
Deutsch, Ralph; and Deutsch, Leslie J., 4,495,847, Cl. 84-1.010.

Kawai, Shuji: *See*—
Murata, Yoshifumi; Igi, Keishiro; Narukawa, Hiroshi; Uetsuki, Masao; Bando, Satoshi; Kawai, Shuji; and Shirano, Kenji, 4,496,714, Cl. 528-272.000.

Kawakatsu, Ichiro. Process for producing a tin/lead alloy solder joint with less wetting agent residue. 4,496,098, Cl. 228-219.000.

Kawakubo, Fumio; Hirose, Toshifumi; Minokami, Tadashi; Hosaka, Miyako; and Isayama, Katsuhiko, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Process for improving weather resistant adhesion of a coating to glass surface. 4,496,611, Cl. 427-160.000.

Kawamo, Kazunori: *See*—
Tuchiya, Yoshimasa; Chikaraishi, Takayo; and Kawamo, Kazunori, 4,496,186, Cl. 296-146.000.

Kawamura, Hideaki: *See*—
Nozawa, Ryoichiro; and Kawamura, Hideaki, 4,497,028, Cl. 364-474.000.

Kawamura, Mikio: *See*—
Ishii, Sugao; Itou, Susumu; Kawamura, Mikio; and Tsukamoto, Tadashi, 4,496,063, Cl. 212-270.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Kaneko, Hideo; Kumashiro, Hatuyoshi; and Iwata, Akira, 4,495,982, Cl. 164-452.000.

Kawasaki Steel Corporation: *See*—
Irie, Toshio; and Sato, Susumu, 4,496,400, Cl. 148-12.00C.
Ishii, Sugao; Itou, Susumu; Kawamura, Mikio; and Tsukamoto, Tadashi, 4,496,063, Cl. 212-270.000.

Kawashima, Ryoji; Usagawa, Akira; and Masuda, Takayoshi, to Mitsui Toatsu Chemicals, Inc. Saccharide fatty acid ester for bloat-prevention or bloat-treatment. 4,496,547, Cl. 514-25.000.

Kawate, Keith W.; and Strachan, Richard W., deceased (by Strachan, Dawne C., executrix), to Texas Instruments Incorporated. Universal single phase motor starting control apparatus. 4,496,895, Cl. 318-781.000.

Kawate, Kenji: *See*—
Yamada, Shunsuke; Kawate, Kenji; Ono, Takashi; Arakawa, Hideo; and Suda, Tsuyoshi, 4,496,312, Cl. 432-11.000.

Kay, Nicholas W.: *See*—
Barth, Edward G.; Braude, Ruvim; and Kay, Nicholas W., 4,496,875, Cl. 313-632.000.

KB Cold Isostatic Press Systems CIPS: *See*—
Pettersson, Ola, 4,496,299, Cl. 425-405.00H.

Keller, Frederick P.; and Zwiep, Theodore C., to Cascade Engineering, Inc. Rotary vibration isolator bushing. 4,496,332, Cl. 464-89.000.

Kelman, Charles D. Posterior chamber intraocular lens and method of making an opening in a capsule. 4,495,665, Cl. 3-13.000.

Kemnitz, Jerry E.; and Kemnitz, Ray A. Dent removing pneumatic puller. 4,495,791, Cl. 72-453.020.

Kemnitz, Ray A.: *See*—
Kemnitz, Jerry E.; and Kemnitz, Ray A., 4,495,791, Cl. 72-453.020.

Kemper, Yves J., to Ipanema Company. Power drive line having a wide range of speed ratios. 4,495,829, Cl. 74-191.000.

Kenda, Rajko. Apparatus for separately catching successive streams of urine at taking samples to laboratorial and bacteriological examination. 4,495,951, Cl. 128-762.000.

Kenmotsu, Isami: *See*—
Takahashi, Hideyuki; Kenmotsu, Isami; and Okajima, Takahiro, 4,497,051, Cl. 369-77.100.

Kennedy, James R. Automatic farm gate. 4,495,730, Cl. 49-280.000.

Kennedy, Nathan R.: *See*—
Andresen, Bernhard H.; Schenck, Stephen R.; and Kennedy, Nathan R., 4,496,914, Cl. 331-110.000.

Kenney Manufacturing Company: *See*—
Comeau, Paul E.; and Torti, Anthony, 4,495,671, Cl. 16-87.00R.

Kerkhof, Matheus W.: *See*—
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Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Behr, Friedrich; Schulten, Rudolf; and Weirich, Walter, 4,496,373, Cl. 55-16.000.
Stockmeyer, Rolf, 4,495,900, Cl. 123-1.00A.

Key Concepts, Incorporated: *See*—
Smith, William D., 4,496,803, Cl. 200-5.00A.

Key Pharmaceuticals, Inc.: *See*—
Bodor, Nicholas S., 4,496,570, Cl. 514-282.000.

Keystone International, Inc.: *See*—
Scobie, William B., 4,496,135, Cl. 251-308.000.

Khan, Aman U., to Whirlpool Corporation. Double-acting refrigerator door hinge with dual latch members. 4,495,673, Cl. 16-232.000.

Khrenov, Jury A.: *See*—
Advolotkin, Nikolai P.; Belyaeva, Svetlana A.; Ovchinnikov, Igor E.; Lebedev, Nikolai I.; Yankovsky, Alexei J.; Sytykh, Stanislav P.; Khrenov, Jury A.; and Azenov, Vladimir N., 4,496,868, Cl. 310-112.000.

Kilfeather, James F., Jr.: *See*—
Hanson, John R.; Hauser, James L.; Kilfeather, James F., Jr.; and Hendrika, Hendrik B., 4,496,793, Cl. 174-68.500.

Kilkson, Heun, to Du Pont de Nemours, E. I., and Company. Platelet storage container. 4,496,361, Cl. 604-408.000.

Kim, Sun K., to Biomeasure, Inc. Therapeutic compounds. 4,496,540, Cl. 514-19.000.

Kimizuka, Junichi: *See*—
Tsukada, Masaharu; Kimizuka, Junichi; and Shimizu, Haruo, 4,496,238, Cl. 355-14.00D.

Kimura, Kenji, to Olympus Optical Co. Ltd. Technique for controlling tracking in an optical disc apparatus. 4,497,048, Cl. 369-46.000.

Kimura, Tadashi: *See*—
Nakamura, Toshiyuki; Inaba, Tsutomu; and Kimura, Tadashi, 4,496,293, Cl. 417-371.000.

Kindlmann, Peter J.; Yarwood, John C.; Ungarean, Gary L.; and Tyler, Derek E., to Olin Corporation. Process and apparatus for synchronized electromagnetic casting of multiple strands. 4,495,981, Cl. 164-452.000.

Kindlmann, Peter J.; Ungarean, Gary L.; Yarwood, John C.; and Tyler, Derek E., to Olin Corporation. Determination of liquid-solid interface and head in electromagnetic casting. 4,495,983, Cl. 164-452.000.

Kinetronic Industries, Inc.: *See*—
D'Antonio, Nicholas F.; Knabel, Walter; and Stempfhuber, Lorenz, 4,496,168, Cl. 280-612.000.

King, Oswald M. Peristaltic pumps. 4,496,295, Cl. 417-477.000.

King, Paul F.: *See*—
Collmeyer, Arthur J.; Hoel, Jeffrey H.; King, Paul F.; Stanley, Donald O.; and Sturgeon, Roger, 4,496,944, Cl. 340-723.000.

King, Peter F., to Parker Chemical Company. Composition and process for treatment of ferrous substrates. 4,496,404, Cl. 148-6.14R.

King-Seeley Thermos Co.: *See*—
Marks, James R., 4,496,087, Cl. 222-638.000.

King, Taylor: *See*—
Whitehurst, Brooks M.; Clemens, Donald F.; King, Taylor; and Whitehurst, Garnett B., 4,496,465, Cl. 252-79.200.
Whitehurst, Brooks M.; Clemens, Donald F.; King, Taylor; and Whitehurst, Garnett B., 4,496,466, Cl. 252-79.300.

Kingen, Rickey W.; and Duncan, Robert H., to International Telephone and Telegraph Corporation. Handsfree telephone instrument using digital dial. 4,496,799, Cl. 179-100.00L.

Kinjo, Hisao: *See*—
Wada, Yoshiyo; Goto, Kunio; and Kinjo, Hisao, 4,497,052, Cl. 369-126.000.

Kinman, Darry M.: *See*—
Bowling, Donald R.; Kinman, Darry M.; Afendykiw, Marko; and White, David J., 4,497,030, Cl. 364-481.000.

Kinoshita, Harumi; Kushida, Hideo; Itakura, Takeshi; Akutsu, Masao; Takada, Takuzo; and Sugiura, Hiroaki, to Yoshino Kogyosho Co. Ltd. Process for preparing saturated polyester resin bottles. 4,496,517, Cl. 264-521.000.

Kinoshita, Takao: *See*—
Sakai, Shinji; Shinoda, Nobuhiko; Kinoshita, Takao; Hosoe, Kazuya; and Kawabata, Takashi, 4,496,832, Cl. 250-201.000.

Kira, Hideshi: *See*—
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Kira, Masaaki: *See—*
Kobayashi, Yukio; Kira, Masaaki; and Yamaguchi, Kinya, 4,496,640, Cl. 429-213.000.

Kirchner, Balthasar; and Siegfried, Schleicher, to Ernst Stadelmann Gesellschaft m.b.H. Case for holding flat articles. 4,496,050, Cl. 206-444.000.

Kirin Beer Kabushiki Kaisha: *See—*
Nakamura, Katsumi; and Kitamura, Kumpei, 4,496,656, Cl. 435-209.000.

Kirita, Kei; and Koike, Katuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for producing metal iona. 4,496,843, Cl. 250-426.000.

Kirkham, Stanley W.: *See—*
McLoughlin, Robert H.; and Kirkham, Stanley W., 4,496,616, Cl. 428-36.000.

Kirkland, Edmund R.; Palanuik, Elko; and Ingman, Harlan V. Product and method of making a seed coating for increased yield. 4,495,724, Cl. 47-57.600.

Kirkpatrick, John D.: *See—*
Brittain, Perry N.; and Kirkpatrick, John D., 4,496,499, Cl. 264-36.000.

Kirnbauer, Peter: *See—*
Linke, Walter; Kirnbauer, Peter; and Indra, Rudolf, 4,496,501, Cl. 264-37.000.

Kirton, John: *See—*
Cattell, Alan F.; Cockayne, Brian; Wright, Peter J.; and Kirton, John, 4,496,610, Cl. 427-66.000.

Kish, Arthur S., to Murray Corporation. Accumulator dehydrator. 4,496,378, Cl. 55-316.000.

Kish, Louis G.: *See—*
Dugan, Elmo A.; Kish, Louis G.; Miller, Edwin J.; and Fabian, George J., 4,496,159, Cl. 273-341.000.

Kishi, Hiroyasu: *See—*
Sakamoto, Junji; and Kishi, Hiroyasu, 4,496,978, Cl. 358-155.000.

Kist, William J., to Combined Fluid Products Company. Pneumatic control system. 4,495,968, Cl. 137-624.200.

Kita, Katsuhiko; Fukuda, Junzo; and Kawahito, Shiro, to Narumi China Corporation; and Kao Soap Co., Ltd. Method of producing ceramic tapes. 4,496,509, Cl. 264-175.000.

Kitagaki, Tetsuo: *See—*
Sakato, Naoyuki; and Kitagaki, Tetsuo, 4,496,506, Cl. 264-109.000.

Kitagawa, Kazuo; Endoh, Kenjiro; and Kira, Hideshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Sampled signal generation circuit. 4,496,937, Cl. 340-347.0SH.

Kitajima, Koji: *See—*
Tsuchihashi, Genichi; Mitamura, Shuichi; Kitajima, Koji; and Kobayashi, Kumi, 4,496,755, Cl. 560-028.000.

Kitakami, Hazime; Ishikawa, Hiroshi; Tezuka, Masayoshi; Adachi, Susumu; and Makinouchi, Akifumi, to Fujitsu Limited. Join operation processing system in relational model. 4,497,039, Cl. 364-900.000.

Kitamura, Kumpei: *See—*
Nakamura, Katsumi; and Kitamura, Kumpei, 4,496,656, Cl. 435-209.000.

Kitts, Earle L., Jr.: *See—*
Haugh, Eugene F.; Kitts, Earle L., Jr.; and Mickewich, Daniel J., 4,496,652, Cl. 430-569.000.

Kiyokawa, Morio, to Mitsubishi Denki Kabushiki Kaisha. Numerical control device. 4,497,029, Cl. 364-474.000.

Klauke, Erich: *See—*
Kuhle, Engelbert; Brandes, Wilhelm; Rosslenbroich, Hans-Jurgen; and Klauke, Erich, 4,496,575, Cl. 514-390.000.

Kleemann, Axel: *See—*
Bergstein, Wolfgang; Friedrich, Heinz; Kleemann, Axel; Prescher, Gunther; and Beschke, Helmut, 4,496,729, Cl. 544-336.000.

Kleemann, Heinz-Werner: *See—*
Hoppe, Dieter; and Kleemann, Heinz-Werner, 4,496,723, Cl. 544-90.000.

Klett, Rolf. Apparatus for measuring jaw movement. 4,495,952, Cl. 128-777.000.

Klingenfeld, Dietmar: *See—*
Schorcht, Adelbrecht; Klingenfeld, Dietmar; Hesse, Reiner; Destis, Rainer; and Linz, Volker, 4,496,970, Cl. 358-101.000.

Klockner-Humboldt-Deutz AG: *See—*
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Steinbiss, Eberhard; Herchenbach, Horst; Ramesohl, Hubert; and Wolter, Albrecht, 4,496,396, Cl. 106-100.000.

Knabel, Walter: *See—*
D'Antonio, Nicholas F.; Knabel, Walter; and Stempfhuber, Lorenz, 4,496,168, Cl. 280-612.000.

Knapp, Richard P., to Kavanau, Lawrence, a part interest. Biasing method for improved performance in field effect devices. 4,496,909, Cl. 330-277.000.

Knoll, Frank: *See—*
Spinosa, Dominic J.; and Knoll, Frank, 4,496,271, Cl. 410-105.000.

Kobashi, Sadao: *See—*
Kawabe, Norio; Tsuda, Mikio; and Kobashi, Sadao, 4,496,647, Cl. 430-303.000.

Kobayashi, Kumi: *See—*
Tsuchihashi, Genichi; Mitamura, Shuichi; Kitajima, Koji; and Kobayashi, Kumi, 4,496,755, Cl. 560-028.000.

Kobayashi, Makoto, to Canon Kabushiki Kaisha. Stepping motor control apparatus. 4,496,891, Cl. 318-696.000.

Kobayashi, Nobuyuki; and Hattori, Takashi, to Toyota Jidosha Kabushiki Kaisha. Apparatus for controlling the fuel supply of an internal combustion engine. 4,495,926, Cl. 123-486.000.

Kobayashi, Nobuyuki: *See—*
Shinoda, Kazuo; and Kobayashi, Nobuyuki, 4,495,915, Cl. 123-357.000.

Kobayashi, Takashi: *See—*
Yoshihara, Setsuo; Otsubo, Yorihumi; and Kobayashi, Takashi, 4,496,830, Cl. 235-458.000.

Kobayashi, Tsukasa: *See—*
Yamamoto, Tamio; Kobayashi, Tsukasa; Hirakawa, Tadashi; Yoshida, Makoto; and Okumura, Masumi, 4,496,583, Cl. 428-288.000.

Kobayashi, Yukio; Kira, Masaaki; and Yamaguchi, Kinya, to Showa Denko Kabushiki Kaisha. Battery having acetylene high polymer electrode. 4,496,640, Cl. 429-213.000.

Kochevar, Rudolph J. Method of weighting an article. 4,496,153, Cl. 273-80.800.

Kodama, Kazuyuki: *See—*
Yabuuchi, Shigeru; Endoh, Takeyuki; Kodama, Kazuyuki; and Ide, Jushi, 4,497,035, Cl. 364-577.000.

Kodric, Andrej A. Wind turbine. 4,496,283, Cl. 416-44.000.

Koenig & Bauer Aktiengesellschaft: *See—*
Michalik, Horst B., 4,496,338, Cl. 493-367.000.

Koerner, Hans-Gerhard; Lang, Helmut; Berthold, Rainer; Strietzel, Rainer; and Melchior, Friedrich, to Brown, Boveri & Cie AG. Apparatus for setting and/or monitoring the operation of a shell fuse or detonator. 4,495,851, Cl. 89-6.500.

Kogami, Kunio: *See—*
Matsui, Masanao; Chun-Eng, Liau; Kogami, Kunio; Yano, Toshihiko; and Matsuo, Noritada, 4,496,586, Cl. 514-531.000.

Koh-I-Noor Rapidograph, Inc.: *See—*
Brandt, Joachim; Deblitz, Gerhard; Post, Jurgen; Willimczik, Bernd; Marten, Rolf; Paschen, Rolf; and Anderka, Gerold, 4,496,958, Cl. 346-139.00R.

Kohketsu, Kazuo: *See—*
Umemoto, Chiyuki; and Kohketsu, Kazuo, 4,496,838, Cl. 250-327.200.

Koide, Hiroshi: *See—*
Waki, Masahiko; Umezawa, Seiji; Takasugi, Tsuneji; Koide, Hiroshi; and Kasai, Takao, 4,496,248, Cl. 368-280.000.

Koike, Katuo: *See—*
Kirita, Kei; and Koike, Katuo, 4,496,843, Cl. 250-426.000.

Kojima, Koichi: *See—*
Amemiya, Shigeo; and Kojima, Koichi, 4,496,745, Cl. 549-215.000.

Kojima, Noboru: *See—*
Shibata, Akira; Konosu, Makoto; Tamura, Teizo; Hirose, Koichi; Miura, Kuniaki; Kojima, Noboru; and Komatsu, Keiichi, 4,497,004, Cl. 360-108.000.

Kokusan Kinzoku Kogyo Kabushiki Kaisha: *See—*
Masaki, Mikio; Nara, Etuo; Shimizu, Keiichi; and Fukasawa, Takeshi, 4,495,786, Cl. 70-186.000.

Kollberg, Sten, to ASEA Aktiebolag. Continuous casting mold stirring. 4,495,984, Cl. 164-468.000.

Koller, Rudolf: *See—*
Horler, Hansulrich; and Koller, Rudolf, 4,496,252, Cl. 384-215.000.

Koltun, Harry M., to Arrow Container & Packaging Corp. Corner protector for containerized article. 4,496,054, Cl. 206-586.000.

Komatsu, Keiichi: *See—*
Shibata, Akira; Konosu, Makoto; Tamura, Teizo; Hirose, Koichi; Miura, Kuniaki; Kojima, Noboru; and Komatsu, Keiichi, 4,497,004, Cl. 360-108.000.
Terada, Toshimichi; Komatsu, Keiichi; Shibata, Akira; and Satoh, Kenji, 4,497,000, Cl. 360-70.000.

Komatsu, Osamu: *See—*
Ohno, Sachio; Mizukoshi, Kiyoshi; Komatsu, Osamu; Nagasaka, Mitsuaki; and Nakamura, Yoshiki, 4,496,735, Cl. 546-301.000.

Komori Printing Machinery Co., Ltd.: *See—*
Kamoda, Hiroyoshi, 4,495,865, Cl. 101-415.100.

Kondo, Koichi; Iwasa, Susumu; and Yoshida, Isamu, to Takeda Chemical Industries, Ltd. Method for enzyme immunoassay and production of antibody. 4,496,658, Cl. 436-510.000.

Kondo, Mitsuru: *See—*
Yuasa, Kazuhiro; Takahashi, Shuichi; and Kondo, Mitsuru, 4,496,987, Cl. 358-283.000.

Konietzny, Alfred: *See—*
Zagefka, Hans-Dieter; Bartz, Wilfried; and Konietzny, Alfred, 4,496,613, Cl. 427-440.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Funahashi, Soukichi, 4,497,010, Cl. 361-93.000.
Itoh, Toyotsugu; and Muramatsu, Toshio, 4,496,209, Cl. 350-6.800.

Konnik, Robert P., to Harvey Hubbell Incorporated. Electrical cable splicing system. 4,496,795, Cl. 174-84.00R.

Konno, Kunio; and Okada, Masashi, to Nippon Kogaku K.K. Light illumination device. 4,497,015, Cl. 362-268.000.

Konosu, Makoto: *See—*
Shibata, Akira; Konosu, Makoto; Tamura, Teizo; Hirose, Koichi; Miura, Kuniaki; Kojima, Noboru; and Komatsu, Keiichi, 4,497,004, Cl. 360-108.000.

Kontz, Robert F., to Owens-Illinois, Inc. Methods and machines for placing and heating oriented plastic heat-shrinkable sleeves on containers. 4,496,409, Cl. 156-85.000.

Kopp, Richard; Grogler, Gerhard; Reiff, Helmut; and Dieterich, Dieter, to Bayer Aktiengesellschaft. Aromatic diisocyanates containing N,N-disubstituted sulfonamide groups and processes for their production. 4,496,491, Cl. 260-453.0AR.

Koppers Company, Inc.: *See—*
Leston, Gerd, 4,496,774, Cl. 568-784.000.

Kotlewski, Witold: *See*—
Kreciaz, Maria; Kotlewski, Witold; and Bebenkowski, Krzysztof, 4,496,930, Cl. 338-26.000.

Kotowski, Thomas W., to General Motors Corporation. Power transistor protection from substrate injection. 4,496,849, Cl. 307-254.000.

Kotrba, Zdenek: *See*—
Junek, Jan; Vorbornik, Vaclay; Ripka, Josef; Jaros, Frantisek; Lihtarova , Ludmila; Hortlik, Frantisek; Kotrba, Zdenek; Rehackova, Bozena; and Dvorak, Ladislav, 4,495,762, Cl. 57-411.000.

Kovach, Stephen M.: *See*—
Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., 4,496,665, Cl. 502-521.000.

Kovacs, Gregory J.: *See*—
Tam, Man C.; and Kovacs, Gregory J., 4,496,642, Cl. 430-41.000.

Kowalski, Robert J.; and Wilmoth, William C. Illuminated sight for aiming a bow. 4,495,705, Cl. 33-265.000.

Kozawa, Tadashi, to Aisan Industry Co., Ltd. Canister for volatile fuel controlling device. 4,496,379, Cl. 55-387.000.

Krabetz, Richard: *See*—
Duembgen, Gerd; Fouquet, Gerd; Krabetz, Richard; Lucas, Ekhart; Merger, Franz; and Nees, Friedbert, 4,496,770, Cl. 568-463.000.

Kramer, Dan H., to Atari, Inc. Digital-analog conversion for shaft encoders. 4,496,936, Cl. 340-347.00P.

Kraus, Theodore C., to Olin Corporation. Preparation of metal cyanates from alkyl carbamates. 4,496,529, Cl. 423-365.000.

Krauter, Immanuel; and Schweizer, Hartmut, to Robert Bosch GmbH. Engine ignition system. 4,495,931, Cl. 123-651.000.

Krautzberger, Franz: *See*—
Wohrle, Albert; and Krautzberger, Franz, 4,495,888, Cl. 118-410.000.

Kreciaz, Maria; Kotlewski, Witold; and Bebenkowski, Krzysztof, to Politechnika Warszawska. In-line fire detector of a fire protection and alarm system. 4,496,930, Cl. 338-26.000.

Kreft, John R.; and Moss, Elvis W., to Brunswick Corporation. Ratchet spring. 4,496,115, Cl. 242-84.10R.

Kreinbrink, Paul H.: *See*—
Hymore, Frank J.; and Kreinbrink, Paul H., 4,496,386, Cl. 65-106.000.

Krieger, Friedrich, to Gg. Noell GmbH. Gripper system for load transport. 4,496,182, Cl. 294-81.00R.

Krishnakumar, Suppayan M.: *See*—
Beck, Martin H.; and Krishnakumar, Suppayan M., 4,496,064, Cl. 215-1.00C.

Krob, Erwin; Leichtfried, Friedrich; and Bauer, Helmut, to TMC Corporation. Heel holder combined with a ski brake. 4,496,167, Cl. 280-605.000.

Krogstad, Ivar, to A/S Pusnes Marine and Offshore Services. Hawser attachment. 4,495,882, Cl. 114-230.000.

Krones AG Hermann Kronseder Maschinenfabrik: *See*—
Kronseder, Hermann; and Schneider, Egon, 4,496,040, Cl. 198-434.000.

Kronimus & Sohn GmbH & Co. KG: *See*—
Ruckstuhl, Willi, 4,496,266, Cl. 404-41.000.

Kronseder, Hermann; and Schneider, Egon, to Krones AG Hermann Kronseder Maschinenfabrik. Apparatus for widening and slowing down a stream of upright bottles. 4,496,040, Cl. 198-434.000.

Krooss, Robert J. Bottle alignment apparatus. 4,496,039, Cl. 198-396.000.

Krupp Stahl Aktiengesellschaft: *See*—
Kasper, Willi; Licht, Helmut; Raquet, Erwin; and Schneider, Jurgen, 4,496,183, Cl. 295-7.000.

Krusche, Alfred, to Linde Aktiengesellschaft. Controls for hydrostatic systems. 4,495,766, Cl. 60-428.000.

Krusius, J. Peter: *See*—
Nulman, Jaime; and Krusius, J. Peter, 4,496,419, Cl. 156-643.000.

Ku, Audrey Y.; Chupp, John P.; and Balthazor, Terry M., to Monsanto Company. Preparation of 2-(methylthiomethyl)-6-(trifluoromethyl-)aniline from ortho-aminobenzotrifluoride. 4,496,765, Cl. 564-440.000.

Kubiatowicz, James F., to Custom Concepts, Incorporated. Water jet toy. 4,496,329, Cl. 446-167.000.

Kubo, Hirofumi; and Fujimori, Toshiyuki, to Hitachi, Ltd. Molded coil structure. 4,496,926, Cl. 336-205.000.

Kuch, Philip L., to Standard Oil Company, The. Process for the production of hydrogen and carbonyl sulfide from hydrogen sulfide and carbon monoxide using a precious metal promoted metal oxide/sulfide catalyst. 4,496,531, Cl. 423-416.000.

Kuch, Philip L.: *See*—
McGuiggan, Michael F.; and Kuch, Philip L., 4,496,530, Cl. 423-416.000.

Kudva, Balakrishna V.: *See*—
Mistretta, Charles A.; Peppler, Walter W.; Kudva, Balakrishna V.; Hasegawa, Bruce H.; and Dobbins, James T., III, 4,497,062, Cl. 378-158.000.

Kueny, Cindee C., to Zenith Electronics Corporation. Unipotential electron gun for short cathode ray tubes. 4,496,877, Cl. 315-15.000.

Kuhle, Engelbert; Brandes, Wilhelm; Rosslenbroich, Hans-Jurgen; and Klauke, Erich, to Bayer Aktiengesellschaft. Fungicidal N-sulphenylated hydantoins. 4,496,575, Cl. 514-390.000.

Kuhn, Patrick: *See*—
Sagaser, Thomas M.; Kuhn, Patrick; and Brock, Knute K., 4,495,770, Cl. 60-486.000.

Kuhn S.A.: *See*—
Oberle, Edmond; Wattron, Bernard; and Hironimus, Jeannot, 4,496,107, Cl. 241-101.700.

Kulavich, David P.: *See*—
Davies, Richard A.; Lee, Michael W.; Rodenberger, Frank A.; Hill, James R.; Kulavich, David P.; and Sowell, Donald L., 4,496,411, Cl. 156-136.000.

Kulesa, Edmund M.: *See*—
Winkless, Robert A.; and Kulesa, Edmund M., 4,496,069, Cl. 220-260.000.

Kulkarni, Sudhir S.; and Kulprathipanja, Santi, to UOP Inc. Process for separating unsaponifiables from fatty and rosin acids. 4,496,478, Cl. 260-97.600.

Kulke, Gunter: *See*—
Grauel, Ingolf; Hofer, Gerald; Kulke, Gunter; and Stumpe, Werner, 4,496,192, Cl. 303-13.000.

Kulprathipanja, Santi: *See*—
Kulkarni, Sudhir S.; and Kulprathipanja, Santi, 4,496,478, Cl. 260-97.600.

Kumabe, Junichiro; and Kumabe, Masaru, to Kumabe, Masaru. Vibration method for cutting teeth. 4,496,321, Cl. 433-215.000.

Kumabe, Masaru: *See*—
Kumabe, Junichiro; and Kumabe, Masaru, 4,496,321, Cl. 433-215.000.

Kumada, Akio, to Hitachi, Ltd. Display device with transparent cover as a vibrator of a sound generator. 4,496,247, Cl. 368-255.000.

Kumashiro, Hatuyoshi: *See*—
Kaneko, Hideo; Kumashiro, Hatuyoshi; and Iwata, Akira, 4,495,982, Cl. 164-452.000.

Kunifumi, Sawamoto, to Nissan Motor Company, Limited. Electronic control system for an internal combustion engine controlling air/fuel ratio depending on atmospheric air pressure. 4,495,921, Cl. 123-438.000.

Kuno, Akira; Matsumoto, Muneaki; and Numata, Koji, to Nippon Soken, Inc. Heading detecting apparatus. 4,497,034, Cl. 364-571.000.

Kuno, Nobuyoshi; and Honda, Kiyokazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Sealed beam type reflective lamp. 4,496,872, Cl. 313-113.000.

Kuraray Co., Ltd.: *See*—
Murata, Yoshifumi; Igi, Keishiro; Narukawa, Hiroshi; Uetsuki, Masao; Bando, Satoshi; Kawai, Shuji; and Shirano, Kenji, 4,496,714, Cl. 528-272.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Kanno, Akihiko; Furusho, Takao; and Yoshikumi, Chikao, 4,496,561, Cl. 514-209.000.
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Kanno, Akihiko; Furusho, Takao; and Yoshikumi, Chikao, 4,496,574, Cl. 514-195.000.

Kurita, Atsushi, to Toshiba Silicone Co., Ltd. Silicone sealant composition. 4,496,696, Cl. 525-479.000.

Kurita, Kazuo; and Ishihara, Hideaki, to Toyo Boseki Kabushiki Kaisha. Polyamide fibers having improved properties and their production. 4,496,630, Cl. 428-364.000.

Kuroda, Shigeharu. Scaffold plank. 4,496,029, Cl. 182-222.000.

Kurt Manufacturing Company, Inc.: *See*—
Lenz, John O., 4,496,139, Cl. 269-81.000.

Kurtz, Robert J.; and LiCausi, Joseph, to Bioresearch. Orthopedic foot splint with swivel. 4,495,943, Cl. 128-80.00A.

Kushida, Hideo: *See*—
Kinoshita, Harumi; Kushida, Hideo; Itakura, Takeshi; Akutsu, Masao; Takada, Takuzo; and Sugiura, Hiroaki, 4,496,517, Cl. 264-521.000.

Kusmierz, Marvin A.; and Pijaszek, Robert F., to Ultra Carbon Corporation. Susceptor assembly. 4,496,828, Cl. 219-405.000.

Kutowy, Oleh; Thayer, William L.; and Sourirajan, Srinivasa, to Canadian Patents & Development Limited. Method of gelling a gelation shrinkable, polymer casting solution. 4,496,502, Cl. 264-41.000.

Kuwahara, Rikiya; Habuto, Akinaka; and Oiso, Hisayoshi, to Meiji Seika Kaisha, Ltd. Process for producing chewing gum in the form of composite fibers. 4,496,592, Cl. 426-5.000.

Kuyel, Birol, to AT&T Technologies, Inc. Technique for determining the end point of an etching process. 4,496,425, Cl. 156-626.000.

Kwan, Henry K., to Schering Corporation. Biologically stable alpha-interferon formulations. 4,496,537, Cl. 424-85.000.

Kwikform America, Inc.: *See*—
Meehan, Richard G., 4,496,026, Cl. 182-128.000.

Kwok, Sai W.: *See*—
Yu, Hong; and Kwok, Sai W., 4,496,979, Cl. 358-197.000.

Kwon, Joon T.; and Suciu, George D., to Lummus Crest, Inc. Saponification of chlorohydrins. 4,496,753, Cl. 549-521.000.

Kwon, Joon T.: *See*—
Gelbein, Abraham P.; and Kwon, Joon T., 4,496,752, Cl. 549-521.000.
Suciu, George D.; Kwon, Joon T.; and Shaban, Atef M., 4,496,777, Cl. 568-850.000.

Kwon, Ki C.; and Luther, Thomas A., to Bendix Corporation, The. Recirculating bearing assembly. 4,496,195, Cl. 308-6.00C.

Kwon, Ki C., to Bendix Corporation, The. Linear motion bearing truck and rail assembly. 4,496,197, Cl. 308-6.00C.

Kyriacou, Demetrios: *See*—
Campbell, Kent D.; Gulbenkian, Aylin H.; Edamura, Fred Y.; and Kyriacou, Demetrios, 4,496,440, Cl. 204-78.000.

Laarhoven Design B. V.: *See*—
Laarhoven, Franciscus L., 4,496,263, Cl. 403-402.000.

Laarhoven, Franciscus L., to Laarhoven Design B. V. Coupling device for coupling panels and like structural members. 4,496,263, Cl. 403-402.000.

Labavia -S.G.E.: *See*—
Marandet, Andre J. P.; and Charbonnier, Marc, 4,496,867, Cl. 310-93.000.

Laboratoire Roger Bellon: *See*—
Matsumoto, Jun-ichi; and Nakamura, Shinichi, 4,496,566, Cl. 514-254.000.

LaFleur, Paul J., Jr.: *See*—
Crescenzo, Francis C.; and LaFleur, Paul J., Jr., 4,495,745, Cl. 53-77.000.

LaGrone, James H.: *See*—
Beasley, Roy D.; and LaGrone, James H., 4,495,803, Cl. 73-151.000.

Lahut, Joseph A.; and Popelish, John A., to General Electric Company. High resolution magnetic printing head. 4,496,962, Cl. 346-74.500.

Lai, Ching C.: *See*—
Schoenig, Frederick C., Jr.; Grossman, Leonard N.; Lai, Ching C.; Masaitis, William; and Canada, Robert O., 4,496,056, Cl. 209-539.000.

Lai, John T., to BF Goodrich Company, The. Preparation of nitroalcohols. 4,496,772, Cl. 568-704.000.

Laiteris Hubert Triballat: *See*—
Caille, Michel, 4,496,593, Cl. 426-89.000.

Lamontagne, Andre . Automobile shelter. 4,495,736, Cl. 52-63.000.

LaMotte, George B., III: *See*—
Coppersmith, Ward J.; and LaMotte, George B., III, 4,496,657, Cl. 435-287.000.

Lampert, Barry: *See*—
Hwang, Chong S.; and Lampert, Barry, 4,496,320, Cl. 433-60.000.

Landis, Abraham L., to Hughes Aircraft Company. Process for preparing isoimide containing oligomers. 4,496,711, Cl. 528-125.000.

Lane, Samuel H., Jr. Container and lid forming a disposable mold. 4,496,070, Cl. 220-306.000.

Laney, William R.: *See*—
Pate, Harold T.; Laney, William R.; and Shell, Donald H., 4,495,970, Cl. 138-148.000.

Lang, Helmut: *See*—
Koerner, Hans-Gerhard; Lang, Helmut; Berthold, Rainer; Strietzel, Rainer; and Melchior, Friedrich, 4,495,851, Cl. 89-6.500.

Lang, Michael: *See*—
Ferguson, Douglas M.; Owens, William M.; Lang, Michael; and Lincoln, Jay P., 4,496,045, Cl. 206-63.300.

Lange, Paul H., Jr., to Olin Corporation. Process for making carbohydrazide. 4,496,761, Cl. 564-37.000.

Langer, William J., to MTS Systems Corporation. Robot arm and wrist assembly. 4,496,279, Cl. 414-735.000.

Lanier, Jack K. Foot warmer. 4,495,935, Cl. 126-204.000.

LaPointe, Gary S.: *See*—
Cerankowski, Leon D.; LaPointe, Gary S.; and Mattucci, Neil C., 4,496,651, Cl. 430-490.000.

Laramie, Roland A. Extendable support. 4,496,123, Cl. 248-121.000.

Large, Michael S.: *See*—
Yellin, Tobias O.; Gilman, David J.; Edwards, Philip N.; Large, Michael S.; Jones, Derrick F.; and Oldham, Keith, 4,496,571, Cl. 514-340.000.

Larkin, William A., to M&T Chemicals Inc. Non-toxic organotin stabilizers for vinyl chloride polymers. 4,496,490, Cl. 260-429.700.

Larsen, Richard R., to Pacific Scientific Company. Automatic bellows welder and method for using same. 4,496,097, Cl. 228-212.000.

Larsen, Verlyn N., to Design Concepts, Inc. Hanging devices for pictures and the like. 4,496,128, Cl. 248-496.000.

Lasley, Duncan T.: *See*—
Jegers, Viktor J.; and Lasley, Duncan T., 4,496,822, Cl. 219-125.100.

Lau, Edward H.; and Colonel, Kenneth, to Primages, Inc. Method and apparatus for mounting a daisy print wheel on the shaft of a print head. 4,496,254, Cl. 400-175.000.

Le Carbone-Lorraine: *See*—
Hubert, Jean-Marie; Bauer, Jean-Michel; and Mollet, Serge, 4,496,621, Cl. 428-236.000.

Leach, Douglas R., to Hercules Incorporated. Method of making cellular crosslinked poly(dicyclopentadiene). 4,496,669, Cl. 521-93.000.

Leary, Michael J.: *See*—
Reichgott, David W.; and Leary, Michael J., 4,496,667, Cl. 521-26.000.

Lebedev, Nikolai I.: *See*—
Advolotkin, Nikolai P.; Belyaeva, Svetlana A.; Ovchinnikov, Igor E.; Lebedev, Nikolai I.; Yankovsky, Alexei J.; Sytykh, Stanislav P.; Khrenov, Jury A.; and Azanov, Vladimir N., 4,496,868, Cl. 310-112.000.

Le Blanc, Helmut; and Wedemeyer, Karlfried, to Bayer Aktiengesellschaft. Process for the preparation of alkyl-substituted anilines. 4,496,763, Cl. 564-402.000.

Le Blanc Smith, Guy; and Howard, Derik, to Grathnail Development Company Limited. Method of and apparatus for mining analysis. 4,495,804, Cl. 73-152.000.

Lee, George E.; and Lee, Thomas B. K., to Hoechst-Roussel Pharmaceuticals Inc. Stereoselective reduction of 2- or 3-substituted 4-piperidones with sodium borohydride. 4,496,732, Cl. 546-216.000.

Lee, Hong H.; and Millet, Dennis J., to University of Florida. Method and apparatus for determining relative surface areas of a coated material on a substrate. 4,496,249, Cl. 374-7.000.

Lee, Kyu H., to Extracorporeal Medical Specialties, Inc. Dialysis apparatus and technique. 4,496,458, Cl. 210-90.000.

Lee, Michael J.: *See*—
Gordon, Gary B.; Joy, Robert; and Lee, Michael J., 4,496,886, Cl. 318-254.000.

Lee, Michael W.: *See*—
Davies, Richard A.; Lee, Michael W.; Rodenberger, Frank A.; Hill, James R.; Kulavich, David P.; and Sowell, Donald L., 4,496,411, Cl. 156-136.000.

Lee, Theodore T.: *See*—
Katz, David H.; Cooper, Steven W.; Lee, Theodore T.; and Chang, Shung-Ho, 4,496,654, Cl. 435-7.000.

Lee, Thomas B. K.: *See*—
Lee, George E.; and Lee, Thomas B. K., 4,496,732, Cl. 546-216.000.

Leeke, Gordon; Chu, Chaokang; and Dailey, Nils L., to AMF Incorporated. Chromatography column. 4,496,461, Cl. 210-198.200.

Leiber, Heinz: *See*—
Braschel, Volker; Emig, Reiner; Leiber, Heinz; Mendel, Michael; and Gerstenmeier, Jurgen, 4,497,026, Cl. 364-426.000.

Leichtfried, Friedrich: *See*—
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Leisure Technology, Inc.: *See*—
McNamara, George, 4,496,816, Cl. 219-10.55E.

Leiter, Raymond J. Curtain bow. 4,496,059, Cl. 211-105.100.

Lemer, Joseph. Artificial breathing device. 4,495,946, Cl. 128-204.250.

Leningradskoe Proizvodstvennoe Elektromashinostroitelnoe Obiedinenie "Elektrosila": *See*—
Antonov, Jury F.; Iogansen, Vadim I.; Tkachenko, Alexei S.; Chernyavsky, Vladimir P.; and Shapiro, Aron B., 4,496,870, Cl. 310-260.000.

Lenko, Daniel S.: *See*—
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Lennon, Donald J.: *See*—
Beaudet, Leo A.; and Lennon, Donald J., 4,496,236, Cl. 355-3.0DR.

Lenox, Ronald S.: *See*—
Ehrhart, Wendell A.; Lenox, Ronald S.; and Sparks, Moses, Jr., 4,496,674, Cl. 523-500.000.

Lenz, John O., to Kurt Manufacturing Company, Inc. Vise clamp and swivel base vise using such clamp. 4,496,139, Cl. 269-81.000.

Lenz, Michael, to Siemens Aktiengesellschaft. Integrated amplifier circuit. 4,496,911, Cl. 330-297.000.

Lenzing, Richard S., to Superior Electric Company, The. Electrical device with improved heat dissipation. 4,496,923, Cl. 336-59.000.

Leppard, David G.; and Rody, Jean, to Ciba-Geigy AG. Color-photographic recording material. 4,496,649, Cl. 430-372.000.

Lerouge, Claude P. H.: *See*—
Colardelle, Joel S. G.; Lerouge, Claude P. H.; and Loup, Nicole J. R., 4,496,798, Cl. 179-84.00T.

Le Roy, Pierre: *See*—
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Noirel, Maurice Y., 4,496,975, Cl. 358-147.000.

Leurink, Hendrik J., to Stichtig Centraal Laboratorium Van De Bloedtrasfusiedienst Van Het Nederlandse Rode Kruis. Container for liquids for use in medicine and surgery. 4,496,362, Cl. 604-408.000.

Le Vantine, Allan D. An electrostatic air cleaning device having ionization apparatus which causes the air to flow therethrough. 4,496,375, Cl. 55-131.000.

Lever Brothers Company: *See*—
SenGupta, Achintya K., 4,496,489, Cl. 260-428.500.

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Cormier, Roger L.; Dugan, Robert J.; Guyette, Richard R.; Haskison, Ronald L.; Hao, Ming C.; Levin, Arthur L.; McClain, George A.; Wanish, Paul J.; and Zeitler, Carl, Jr., 4,497,022, Cl. 364-200.000.

Levine, Peter A., to RCA Corporation. Compensation against field shading in video from field-transfer CCD imagers. 4,496,982, Cl. 358-221.000.

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McEver, James P.; and Lewandowski, James, 4,496,162, Cl. 277-9.500.

Lewis, U. James, to Whittier Institute for Diabetes and Endocrinology, The. Insulin-potentiating peptides. 4,496,521, Cl. 514-12.000.

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Halder, Mathis, 4,496,932, Cl. 338-49.000.

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Hymore, Frank J.; and Kreinbrink, Paul H., 4,496,386, Cl. 65-106.000.

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Kurtz, Robert J.; and LiCausi, Joseph, 4,495,943, Cl. 128-80.00A.

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Kasper, Willi; Licht, Helmut; Raquet, Erwin; and Schneider, Jurgen, 4,496,183, Cl. 295-7.000.

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Tischer, Werner; Liebert, Karl-Heinz; and Fassbender, Rolf, 4,495,769, Cl. 60-451.000.
Liedtke, Kurt: *See—*
Focke, Heinz; and Liedtke, Kurt, 4,495,746, Cl. 53-389.000.
Liegner, Kenneth B. Bite block. 4,495,945, Cl. 128-200.260.
Lienhard, Paul: *See—*
Iqbal, Abul; and Lienhard, Paul, 4,496,727, Cl. 544-225.000.
Liggett, Paul E., to Goodyear Aerospace Corporation. Polyurethane and method for making stable components thereof. 4,496,707, Cl. 528-61.000.
Lightolier Incorporated: *See—*
Woloski, Leonard E.; and Wyles, Walter E., 4,497,014, Cl. 362-150.000.
Lihtarova , Ludmila: *See—*
Junek, Jan; Vorbornik, Vaclay; Ripka, Josef; Jaros, Frantisek; Lihtarova , Ludmila; Hortlik, Frantisek; Kotrba, Zdenek; Rehackova, Bozena; and Dvorak, Ladislav, 4,495,762, Cl. 57-411.000.
Lill, Helmut; Schrenk, Jurgen; and Wunderwald, Peter, to Boehringer Mannheim GmbH. Process for the determination of antithrombin-BM. 4,496,653, Cl. 435-7.000.
Lima Electric Co., Inc.: *See—*
Unnewehr, Lewis E.; Walker, Robert B.; and Szippl, Andrew F., 4,496,897, Cl. 322-25.000.
Limb, David I.: *See—*
Hubbard, Colin; Limb, David I.; and Duckett, Melvyn, 4,496,383, Cl. 62-31.000.
Lin, Clara: *See—*
Huang, Fu-chih; Jones, Howard; Lin, Clara; and Loev, Bernard, 4,496,541, Cl. 514-2.000.
Lin, David C. K., to Owens-Corning Fiberglas Corporation. Method and apparatus for producing a continuous glass filament mat. 4,496,384, Cl. 65-4.400.
Lin, David C. K., to Owens-Corning Fiberglas Corporation. Apparatus for producing a continuous glass filament mat. 4,496,385, Cl. 65-9.000.
Lincoln, Jay P.: *See—*
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Lincoln Manufacturing Company, Inc.: *See—*
Bratton, Ronald E., 4,495,932, Cl. 126-20.000.
Lindahl, Ulf P. F.; Backstrom, Gudrun E.; and Thunberg, John Y. L., to KabiVitrum AB. Oligosaccharides having selective anticoagulation activity. 4,496,550, Cl. 514-54.000.
Lindberg, Eric T.; and Friedman, Anna M., to Atlas Copco Aktiebolag. Pneumatically operated impact tool. 4,496,023, Cl. 181-230.000.
Lindberg, Steven E.: *See—*
Caspari, Gunter J.; and Lindberg, Steven E., 4,496,495, Cl. 260-989.000.
Linde Aktiengesellschaft: *See—*
Krusche, Alfred, 4,495,766, Cl. 60-428.000.
Lindemann, Harley B.: *See—*
Tisdale, Glenn E.; and Lindemann, Harley B., 4,497,065, Cl. 382-1.000.
Lindemann, Rolf W. Method of producing briquettes from organic waste products. 4,496,365, Cl. 44-1.00D.
Linder, Ernst; Maurer, Helmut; Muller, Klaus; and Rieger, Franz, to Robert Bosch GmbH. Polarographic sensor and sensing system for determining oxygen content in gases. 4,496,455, Cl. 204-412.000.
Lindgren, Gosta: *See—*
Jonsson, Karl E.; and Lindgren, Gosta, 4,496,920, Cl. 335-201.000.
Lindmayer, Istvan: *See—*
Crevier, Paul H.; and Lindmayer, Istvan, 4,496,090, Cl. 227-19.000.
Lindstrom, Wictor C. O., to Credence Finance Association. Sill and frame for windows or doors. 4,495,726, Cl. 49-401.000.
Linke, Walter; Kirnbauer, Peter; and Indra, Rudolf, to Wienerberger Baustoffindustrie Aktiengesellschaft. Process and apparatus for the production of articles consisting of ceramic material. 4,496,501, Cl. 264-37.000.
Linz, Volker: *See—*
Schorcht, Adelbrecht; Klingenfeld, Dietmar; Hesse, Reiner; Dastis, Rainer; and Linz, Volker, 4,496,970, Cl. 358-101.000.
Lippitt, David L.; and Walker, Loren H., to General Electric Company. Control for a force commutated current source var generator. 4,496,899, Cl. 323-207.000.
Lippmann, K. Reiner; and Dorgeloh, K. Heinrich W., to Deutsche Forschungs-und Versuchsanstalt fur Luft-und Raumfahrt e.v. Method for the representation of video images or scenes, in particular aerial images transmitted at reduced frame rate. 4,496,972, Cl. 358-109.000.
Litton Resources Systems, Inc.: *See—*
Porter, James A., Jr.; Shivers, Joe D.; Rozycki, Marek; and Johnston, Otis, 4,496,015, Cl. 180-9.260.
Litton Systems, Inc.: *See—*
Hradek, Richard W., 4,496,376, Cl. 55-163.000.
Loblich, Karl-Richard, to Kali und Salz AG. Process for the production of potassium magnesium phosphate. 4,496,526, Cl. 423-306.000.
Locher, Engelbert: *See—*
Hartmann, Ludwig; Ruzek, Ivo; and Locher, Engelbert, 4,496,508, Cl. 264-167.000.
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Zsolnay, Andrew; Perkins, Kelly M.; and Blad, Leiv H., 4,496,697, Cl. 526-60.000.
Lockheed Electronics Co., Inc.: *See—*
Yang, John P., 4,497,060, Cl. 375-22.000.
Lockwood, Michael. Combination spacer and lifting device for backhoe machinery. 4,495,717, Cl. 37-117.500.
Loeffler, Herbert H.: *See—*
DeCloux, Richard J.; Loeffler, Herbert H.; MacConkey, James S.; and Yonkers, E. Hubbard, 4,496,147, Cl. 272-130.000.
Loev, Bernard: *See—*
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Lognion, Leon. Anal excretion collecting rectal catheter. 4,496,356, Cl. 604-328.000.
Loizeau, Pierre, to Valeo. Torsional dampers. 4,496,036, Cl. 192-106.200.
Lojko, Jozef; and Miller, Richard L., to Lojko, Jozef. Jogger speedometer and odometer. 4,495,813, Cl. 73-490.000.
Loncrini, Donald F.; Haag, Thomas E.; and Freebersyser, Steven R., to Mallinckrodt, Inc. Compositions of p-hydroxybenzoic acid esters and methods of preparation and use. 4,496,576, Cl. 514-389.000.
Longamore, Robert G., to Electron Beam Corporation. Separable high vacuum valve. 4,495,966, Cl. 137-614.010.
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Lonza Ltd.: *See—*
Quarroz, Daniel, 4,496,733, Cl. 546-310.000.
Lordi, Frank E., to Atlantic Richfield Company. Fire retardant concentrate. 4,496,681, Cl. 524-371.000.
Loubier, Robert J., to Xolox Corporation. Method of fabricating a permanent magnet. 4,496,303, Cl. 425-569.000.
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Lowery, Jack R., Sr.; and Payet, George L., to Springs Industries, Inc. Apparatus and process for ultrasonically cutting off predetermined widths of selvages and sealing the cut edges of textile fabric. 4,496,407, Cl. 156-73.300.
Lu, Wei C.: *See—*
Ateya, Antoun I.; and Lu, Wei C., 4,496,644, Cl. 430-122.000.
Lubchenko, Eugene; Hoke, Leander H., Jr.; and Burton, Richard J., to U.S. Philips Corporation. Subscription television interface. 4,496,986, Cl. 358-114.000.
Lucas, Ekhart: *See—*
Duembgen, Gerd; Fouquet, Gerd; Krabetz, Richard; Lucas, Ekhart; Merger, Franz; and Nees, Friedbert, 4,496,770, Cl. 568-463.000.
Lucas Industries: *See—*
Dawes, Cyril; and Smith, John D., 4,496,401, Cl. 148-16.500.
Lucas Industries Limited: *See—*
Campbell, Graeme R., 4,496,888, Cl. 318-284.000.
Lucasfilm Ltd.: *See—*
Moorer, James A., 4,497,023, Cl. 364-200.000.
Luck, Harald. Fluorescent lamp ballast. 4,496,880, Cl. 315-228.000.
Ludwig, Albert R., to General Signal Corporation. Small volume mixing and recirculating apparatus. 4,496,244, Cl. 366-136.000.
Luk Lamellen und Kupplungsbau GmbH: *See—*
Reik, Wolfgang, 4,496,137, Cl. 267-161.000.
Lummus Company, The: *See—*
Gelbein, Abraham P.; and Kwon, Joon T., 4,496,752, Cl. 549-521.000.
Suciu, George D.; Kwon, Joon T.; and Shaban, Atef M., 4,496,777, Cl. 568-850.000.
Lummus Crest, Inc.: *See—*
Kwon, Joon T.; and Suciu, George D., 4,496,753, Cl. 549-521.000.
Lustenberger, Hans, to George Fischer Limited. Immersion and vaporization chamber. 4,496,393, Cl. 75-58.000.
Luther, Thomas A.: *See—*
Kwon, Ki C.; and Luther, Thomas A., 4,496,195, Cl. 308-6.00C.
Lynn, Gary. Window escape device. 4,495,728, Cl. 49-141.000.
Lynn, William J.: *See—*
Dery, Ronald A.; Jones, Warren C.; Lynn, William J.; and Rowlette, John R., 4,496,422, Cl. 156-306.600.
M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Despot, Janko; and Abendroth, Paul, 4,495,863, Cl. 101-350.000.
M&T Chemicals Inc.: *See—*
Larkin, William A., 4,496,490, Cl. 260-429.700.
MacConkey, James S.: *See—*
DeCloux, Richard J.; Loeffler, Herbert H.; MacConkey, James S.; and Yonkers, E. Hubbard, 4,496,147, Cl. 272-130.000.
Machida, Shigeru: *See—*
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Machida, Takeshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Contact lens holder. 4,496,243, Cl. 356-244.000.
Machler, Meinrad; Sechse, Richard; Stacklies, Horst; and Schindler, Achim, to Carl-Zeiss-Stiftung. Method and apparatus for adjusting and mounting optical components in optical instruments. 4,496,416, Cl. 156-293.000.
Mack, Michael H.; Corley, Sterling C.; and Cole, Leland G. Method for electrically introducing substances into liquid solution. 4,496,443, Cl. 204-130.000.
MacLean, David; and Edwards, Robert B., II, to Viridian, Inc. Feeding tube stylet. 4,496,347, Cl. 604-164.000.

Madnick, Herman; and Goldman, Ralph F., to Multi-Tech Corporation. Cold-weather muff. 4,495,659, Cl. 2-66.000.
Maeda, Kazuo, to Kabushiki Kaisha Kito. Hoist. 4,496,136, Cl. 254-350.000.
Maeda, Tooru; and Yajima, Tsunao, to Mazda Motor Corporation. Exhaust gas recirculation system for diesel engines. 4,495,929, Cl. 123-569.000.
Maenishi, Kozo; Adachi, Masaaki; and Bando, Yoshihide, to Omron Tateisi Electronics Co. Electric contact switching device. 4,496,806, Cl. 200-16.00R.
Maeyama, Sadao; Dochi, Kiyotaka; and Honda, Shigemichi, to Sony Corporation. Apparatus for thermal printing. 4,496,955, Cl. 346-76.0PH.
Maffrand, Jean-Pierre; and Frehel, Daniel, to PACOR. Antiinflammatory thieno [2,3-c]pyridine derivatives. 4,496,568, Cl. 514-301.000.
Mainenti, Joseph S. Snap-on adaptor for architect's scale. 4,495,709, Cl. 33-484.000.
Majewski, Helmut W.: *See*—
Sherif, Fawzy G.; Majewski, Helmut W.; and Via, Francis A., 4,496,527, Cl. 423-309.000.
Makino, Shigeo; and Sugimura, Noboru, to Bridgestone Tire Company Limited. Combination radial tire for heavy load vehicles. 4,495,976, Cl. 152-354.00R.
Makinouchi, Akifumi: *See*—
Kitakami, Hazime; Ishikawa, Hiroshi; Tezuka, Masayoshi; Adachi, Susumu; and Makinouchi, Akifumi, 4,497,039, Cl. 364-900.000.
Makkink, Andrew E. Administering of agricultural chemicals in liquid form. 4,495,875, Cl. 111-7.000.
Malakhoff, Alexander: *See*—
Higginbotham, Robert R.; and Malakhoff, Alexander, 4,495,809, Cl. 73-432.0SD.
Malen, Charles; and Poignant, Jean-Claude, to Adir. Tricyclic ethers, their preparation and the pharmaceutical compositions containing them. 4,496,557, Cl. 514-211.000.
Mallinckrodt, Inc.: *See*—
Loncrini, Donald F.; Haag, Thomas E.; and Freebersyser, Steven R., 4,496,576, Cl. 514-389.000.
Manabe, Masatoshi; and Miyake, Toshio, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Process for producing pectin jelly. 4,496,603, Cl. 426-577.000.
Mandozzi, Aldo, to Azypatent AG. Mechanism for direct transmission of feed movements to the operating units of an automatic machine with revolving table. 4,496,038, Cl. 198-339.000.
Maniscalco, Philip M.; and Marino, Frank. Draft assisted delivery system. 4,495,880, Cl. 114-123.000.
Mann, Robert N., to Bob Mann & Associates Incorporated. Multiple passage conduit for fume extracting welding gun. 4,496,823, Cl. 219-137.410.
Mfg. Design, Inc.: *See*—
Owens, Walter K., 4,496,074, Cl. 221-39.000.
Manville Service Coporation: *See*—
Forte, Don A.; and Thompson, Michael L., 4,496,905, Cl. 324-414.000.
Marandet, Andre J. P.; and Charbonnier, Marc, to Labavia -S.G.E. Electric retarders for vehicles. 4,496,867, Cl. 310-93.000.
Marconi Company Limited, The: *See*—
Richardson, Robert, 4,496,924, Cl. 336-84.00R.
Mareico Power Systems, Inc.: *See*—
Burgher, Peter H.; and Marsden, Raymond F., 4,496,821, Cl. 219-116.000.
Margalit, Benjamin. Photographic display device. 4,495,718, Cl. 40-152.200.
Margraf, Adolf. Bag filter apparatus. 4,496,377, Cl. 55-287.000.
Marie, Georges R. P. TM_O and TE_O cavity resonator for projecting plasma confining TE_O mode components. 4,496,518, Cl. 376-104.000.
Marino, Frank: *See*—
Maniscalco, Philip M.; and Marino, Frank, 4,495,880, Cl. 114-123.000.
Marker-Patentverwertungsgesellschaft mbH: *See*—
D'Antonio, Nicholas F.; Knabel, Walter; and Stempfhuber, Lorenz, 4,496,168, Cl. 280-612.000.
Marks, James R., to King-Seeley Thermos Co. Ice dispenser control. 4,496,087, Cl. 222-638.000.
Markwardt, Terrance L.; and Teiken, Gerald W., to Minnesota Mining and Manufacturing Company. Side entry electrical wire connector. 4,496,206, Cl. 339-98.000.
Marsden, Raymond F.: *See*—
Burgher, Peter H.; and Marsden, Raymond F., 4,496,821, Cl. 219-116.000.
Marsoner, Hermann; and Ritter, Christoph, to AVL AG. Method for making an ion-sensitive capillary electrode. 4,496,512, Cl. 264-267.000.
Marten, Rolf: *See*—
Brandt, Joachim; Deblitz, Gerhard; Post, Jurgen; Willimczik, Bernd; Marten, Rolf; Paschen, Rolf; and Anderka, Gerold, 4,496,958, Cl. 346-139.00R.
Martin, Donald G.; and York, Donald M., to Westinghouse Electric Corp. Cooled resistor pack for brush with individually insulated strands. 4,496,933, Cl. 338-55.000.
Martin, Lawrence L.; and Setescak, Linda L., to Hoechst-Roussel Pharmaceuticals Inc. Oxothienobenzoxepins. 4,496,580, Cl. 514-443.000.
Martin, Virgil B.: *See*—
Fleming, Philip F.; Martin, Virgil B.; Villers, Roger L.; and Shutes, Jaime J., 4,496,105, Cl. 241-32.000.
Maruko Seiyaku Co., Ltd.: *See*—
Ohno, Sachio; Mizukoshi, Kiyoshi; Komatsu, Osamu; Nagasaka, Mitsuaki; and Nakamura, Yoshiki, 4,496,735, Cl. 546-301.000.
Marvin Glass & Associates: *See*—
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Marzolph, Gerhard: *See*—
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Massitis, William: *See*—
Schoenig, Frederick C., Jr.; Grossman, Leonard N.; Lai, Ching C.; Massitis, William; and Canada, Robert O., 4,496,056, Cl. 209-539.000.
Masaki, Mikio; Nara, Etuo; Shimizu, Keiichi; and Fukasawa, Takeshi, to Kokusan Kinzoku Kogyo Kabushiki Kaisha. Steering lock for automotive vehicles. 4,495,786, Cl. 70-186.000.
Mason, Anthony: *See*—
Cartier, Roger J.; Cuthbert, Victor W.; and Mason, Anthony, 4,495,960, Cl. 137-122.000.
Massachusetts Institute of Technology: *See*—
Plotkin, George M.; Bendrick, Charles J.; and Wolf, George, 4,496,539, Cl. 424-94.000.
Massardo, Pietro, to Montedison S.p.A. Process for preparing the compound 1-decyloxy-4-[(7-oxa-4-octynyl)-oxy]-benzene. 4,496,771, Cl. 568-651.000.
Masu, Masanobu: *See*—
Sugio, Akitoshi; Masu, Masanobu; and Matunaga, Masatugu, 4,496,695, Cl. 525-391.000.
Masuda, Akira: *See*—
Matsumura, Toshimi; Miyaki, Masahiko; Tomishima, Hitoshi; and Masuda, Akira, 4,495,920, Cl. 123-436.000.
Masuda, Takayoshi: *See*—
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Masumoto, Tsuyoshi; Inoue, Akihisa; and Hagiwara, Michiaki, to Masumoto, Tsuyoshi; and Unitika Ltd. Process for the production of fine amorphous metallic wires. 4,495,691, Cl. 29-527.500.
Mathew, Moni G.; and Weisz, Thomas J., to TRW Inc. Microwave transmission device having gyromagnetic materials having different saturation magnetizations. 4,496,915, Cl. 333-1.100.
Mathisa, Eckart, to W. R. Grace & Co. Laser process for producing electrically conductive surfaces on insulators. 4,496,607, Cl. 427-53.100.
Mathiesen, Mait M.; Gillberg, Lars I.; Hellsten, Karl M. E.; and Karlsson, Gunvor B. T., to AB Carbogel; and Berol Kemi AB. Pumpable aqueous slurry of a solid fuel and a process for the production thereof. 4,496,367, Cl. 44-51.000.
Matikainen, Keijo E.; and Jarvinen, Raimo M., to Oy Nokia Ab. Buoyant cable. 4,496,796, Cl. 174-101.500.
Matsuda, Mutsuhide: *See*—
Harigaya, Isao; Tamura, Shuichi; Matsuda, Mutsuhide; Hirohata, Michio; Ito, Fumio; and Taguchi, Tetsuya, 4,496,227, Cl. 354-289.120.
Matsui, Masanao; Chun-Eng, Liau; Kogami, Kunio; Yano, Toshihiko; and Matsuo, Noritada, to Sumitomo Chemical Company, Limited. Cyclopropanecarboxylates, their production and insecticide containing them as an active ingredient. 4,496,586, Cl. 514-531.000.
Matsui, Minoru; and Saijyo, Yoshihiro, to Nippon Acchakutanshi Seizo Kabushiki Kaisha. Apparatus for making electrical harnesses. 4,495,682, Cl. 29-33.00M.
Matsumoto, Akio, to Mitsubishi Denki Kabushiki Kaisha. Pulley device. 4,496,336, Cl. 474-181.000.
Matsumoto, Akio: *See*—
Iwaki, Yoshiyuki; Yokota, Mitsuyoshi; and Matsumoto, Akio, 4,496,898, Cl. 322-34.000.
Matsumoto, Jun-ichi; and Nakamura, Shinichi, to Dainippon Pharmaceutical Co., Ltd.; and Laboratoire Roger Bellon. Naphthyridine derivatives. 4,496,566, Cl. 514-254.000.
Matsumoto, Kouichi: *See*—
Morishita, Akira; Tanaka, Toshinori; Matsumoto, Kouichi; and Gotou, Takeo, 4,495,905, Cl. 123-179.00F.
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Matsumura, Toshimi; Miyaki, Masahiko; Tomishima, Hitoshi; and Masuda, Akira, to Nippondenso Co., Ltd. Engine control system and method for minimizing cylinder-to-cylinder speed variations. 4,495,920, Cl. 123-436.000.
Matsuo, Noritada: *See*—
Matsui, Masanao; Chun-Eng, Liau; Kogami, Kunio; Yano, Toshihiko; and Matsuo, Noritada, 4,496,586, Cl. 514-531.000.
Matsuoka, Shigeru, to Hitachi, Ltd. Method and apparatus for door operation remote control. 4,496,942, Cl. 340-696.000.
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Tone, Syoichi; Deno, Koji; and Matsushima, Akio, 4,496,108, Cl. 242-18.0PW.
Matsushita Electric Industrial Co., Ltd.: *See*—
Inoue, Michihiro; Matsuzawa, Akira; and Takemoto, Toyoki, 4,496,935, Cl. 340-347.0AD.
Mori, Takashi; Mizu, Kouichi; and Jo, Yasunori, 4,495,841, Cl. 81-430.000.
Nagata, Keiji; Ueda, Syuji; and Tanigawa, Yoshiyuki, 4,495,871, Cl. 108-20.000.
Ota, Isao, 4,496,981, Cl. 358-213.000.

Matsuura, Kazuo: *See*—
Yoshino, Eiichi; Matsuura, Kazuo; and Misaki, Hideo, 4,496,655, Cl. 435-191.000.
Matsuzawa, Akira: *See*—
Inoue, Michihiro; Matsuzawa, Akira; and Takemoto, Toyoki, 4,496,935, Cl. 340-347.0AD.
Mattel, Inc.: *See*—
Schwager, Frederic A.; and Kainsinger, Willis C., 4,496,100, Cl. 238-10.00R.
Matthews, Johnnie V. Safe firecracker. 4,495,868, Cl. 102-357.000.
Matthews, William D.: *See*—
DeMarinis, Robert M.; Hieble, Jacob P.; and Matthews, William D., 4,496,558, Cl. 514-213.000.
Mattucci, Neil C.: *See*—
Cerankowski, Leon D.; LaPointe, Gary S.; and Mattucci, Neil C., 4,496,651, Cl. 430-490.000.
Matunaga, Masatugu: *See*—
Sugio, Akitoshi; Masu, Masanobu; and Matunaga, Masatugu, 4,496,695, Cl. 525-391.000.
Mauffrey, Jean-Francois: *See*—
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Park, Hee C.; and Ashcraft, Charles R., 4,496,620, Cl. 428-323.000.
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Morscheck, Timothy J., to Eaton Corporation. Trimmer valve. 4,495,837, Cl. 74-869.000.

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Bender, Franz; Hertweck, Gernot; Grohn, Michael; and Moser, Peter, 4,495,906, Cl. 123-188.0GC.

Moss, Elvis W.: *See—*
Kreft, John R.; and Moss, Elvis W., 4,496,115, Cl. 242-84.10R.

Mosteller, Thomas F., to Air-Shields, Inc. Infusion monitoring apparatus. 4,496,346, Cl. 604-123.000.

Motojima, Kenji, to Hitachi, Ltd. Oxine impregnated activated charcoal metal ion adsorbent. 4,496,664, Cl. 502-402.000.

Motorola, Inc.: *See—*
Bai, Monty W.; and Meyer, Alfred B., 4,495,792, Cl. 73-12.000.
Oliver, Kirk D.; and Wolff, David A., 4,496,882, Cl. 315-371.000.
Smith, Michael D., 4,496,858, Cl. 307-519.000.

Mott, Jonathan C. Racquets with protective bumper strip. 4,496,152, Cl. 273-73.00C.

Mottler Instrumente AB: *See—*
Willi, Ernst, 4,496,014, Cl. 177-187.000.

Motycka, Jiri, to Imasco-CDC Research Foundation. High speed medical ventilator. 4,495,947, Cl. 128-205.140.

Moutonnier, Claude: *See—*
Farge, Daniel; Le Roy, Pierre; Moutonnier, Claude; Peyronel, Jean-Francois; and Plau, Bernard, 4,496,560, Cl. 514-204.000.

Mozer, Larry P.; and Morgan, Bill T., to Phillips Petroleum Company. Plastic molding apparatus. 4,496,301, Cl. 425-532.000.

Mrotzek, Dieter: *See—*
Redeker, Detmar; and Mrotzek, Dieter, 4,496,340, Cl. 494-29.000.

MSK-Verpackungs-Systeme GmbH: *See—*
Hannen, Rainer W., 4,496,310, Cl. 431-350.000.

MTS Systems Corporation: *See—*
Langer, William J., 4,496,279, Cl. 414-735.000.

Mucha, Franz: *See—*
Habelt, Gerhard; and Mucha, Franz, 4,496,257, Cl. 400-578.000.

Muchowski, Joseph M.; and Guzman, Angel, to Syntex (U.S.A.) Inc. Imidazolidinone prostaglandins, compositions and use. 4,496,577, Cl. 514-392.000.

Mueller Steam Specialty, A Division of Core Industries, Inc.: *See—*
Desai, Ashvin D.; and Bujack, Alvin, 4,496,463, Cl. 210-341.000.

Muller, Jurgen: *See—*
Thate, Kurt; Farber, Heinrich; and Muller, Jurgen, 4,496,273, Cl. 414-411.000.

Muller, Klaus: *See—*
Linder, Ernst; Maurer, Helmut; Muller, Klaus; and Rieger, Franz, 4,496,455, Cl. 204-412.000.

Muller, Michael; Giers, Alfred; and Heiland, Manfred, to Carl Schenck AG:. Correlation procedure and device for rotor balancing. 4,495,811, Cl. 73-462.000.

Multi-Tech Corporation: *See—*
Madnick, Herman; and Goldman, Ralph F., 4,495,659, Cl. 2-66.000.

Munch, Peter. Die plate for granulation pressing, particularly for the manufacture of feed granules. 4,496,298, Cl. 425-192.00R.

Munteanu, Marina A.; Oltarzewski, Edward S.; Shechter, Leon; and Warren, Craig B., to International Flavors & Fragrances Inc. Insect repellent, pheremonal, animal repellent diagnostic and/or aroma augmenting or enhancing compositions and articles containing at least a major proportion of poly(epsilon caprolactone)homopolymers, and having imbedded therein one or more functional. 4,496,467, Cl. 252-92.000.

Munz, Gerta H., executrix: *See—*
Asher, William P.; and Munz, Otto J., deceased, 4,496,328, Cl. 441-55.000.

Munz, Otto J., deceased: *See—*
Asher, William P.; and Munz, Otto J., deceased, 4,496,328, Cl. 441-55.000.

Murakami, Muneo; and Ishizaki, Zentaro, to Showa Precision Machinery Co., Ltd.; and Kabushiki Kaisha Ecti Kenkyusho. Reciprocating type oil-free gas compressor. 4,495,855, Cl. 92-71.000.

Muramatsu, Toshio: *See—*
Itoh, Toyotsugu; and Muramatsu, Toshio, 4,496,209, Cl. 350-6.800.

Murata Kikai Kabushiki Kaisha: *See—*
Tone, Syoichi; Deno, Koji; and Matsushima, Akio, 4,496,108, Cl. 242-18.0PW.

Murata Manufacturing Co., Ltd.: *See—*
Sumita, Manabu; and Yamashita, Toshiaki, 4,496,871, Cl. 310-324.000.

Murata, Yoshifumi; Igi, Keishiro; Narukawa, Hiroshi; Uetsuki, Masao; Bando, Satoshi; Kawai, Shuji; and Shirano, Kenji, to Kuraray Co., Ltd. Polyester, adhesives comprising the same, and laminates and laminated hollow vessels made thereof. 4,496,714, Cl. 528-272.000.

Murphy, Donald P., to Parker Chemical Company. Compound and process for denaturing high solids paints. 4,496,374, Cl. 55-84.000.

Murphy, Gerard P.: *See—*
Schrekeis, Josef; and Murphy, Gerard P., 4,496,165, Cl. 279-46.00R.

Murray Corporation: *See—*
Kish, Arthur S., 4,496,378, Cl. 55-316.000.

Musikas, Claude: *See—*
Bonnin, Michelle; Musikas, Claude; and Vitorge, Pierre, 4,496,523, Cl. 423-9.000.

Muschoot, Albert, to General Kinematics Corporation. Vibratory apparatus. 4,495,826, Cl. 74-87.000.

Mustoe, Robert M.: *See—*
Ptasienski, Mitchell P.; Mustoe, Robert M.; and Zajonc, Fred H., deceased, 4,496,515, Cl. 264-504.000.

Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Kanno, Akihiko; Furusho, Takao; and Yoshikumi, Chikao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Cephalosporin derivative. 4,496,561, Cl. 514-209.000.

Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Kanno, Akihiko; Furusho, Takao; and Yoshikumi, Chikao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Penicillin derivative. 4,496,574, Cl. 514-195.000.

Muto, Toshiaki; and Goto, Akio, to Tokico Ltd. Method for manufacturing valve guide for a hydraulic damper. 4,495,790, Cl. 72-326.000.

Myers, Albert: *See—*
Tessarzik, Juergen M.; Myers, Albert; and Yuille, James D., 4,495,810, Cl. 73-432.00R.

Myers, Charles L.: *See—*
Grant, Thomas S.; and Myers, Charles L., 4,496,690, Cl. 525-66.000.

Myers, Richard S.; Michaelson, Robert C.; and Austin, Richard G., to Exxon Research & Engineering Co. Process for the hydroxylation of olefins using molecular oxygen, an osmium containing catalyst, a copper Co-catalyst, and an aromatic amine based promoter. 4,496,778, Cl. 568-860.000.

Myers, Richard S.; Michaelson, Robert C.; and Austin, Richard G., to Exxon Research & Engineering Co. Process for the hydroxylation of olefins using molecular oxygen, an osmium containing catalyst, a copper co-catalyst, and a cycloaliphatic amine based promoter. 4,496,779, Cl. 568-860.000.

Myotoku Ltd.: *See—*
Ise, Yoji, 4,495,965, Cl. 137-599.000.

N P S P "Novotex": *See*—
Dimitrov, Milko D., 4,495,757, Cl. 57-5.000.
Nabae, Kiyoyuki: *See*—
Adachi, Yasuo; and Nabae, Kiyoyuki, 4,496,631, Cl. 428-394.000.
Nabisco Brands, Inc.: *See*—
Michnowski, Jane, 4,496,606, Cl. 426-658.000.
Nadalin, Robert J.; and Charles, Robert G., to Westinghouse Electric Corp. Separation of isotopes of zirconium. 4,496,445, Cl. 204-158.00R.
Naegeli, Peter; and Rohr, Martin, to Givaudan Corporation. Odorants containing cis-3,7-dimethylocta-3,6-dienoic acid. 4,496,476, Cl. 252-522.00R.
Nagai, Kyozi: *See*—
Okazaki, Toshimasa; Sakata, Akihiro; Nagai, Kyozi; and Nakashima, Kazuo, 4,496,442, Cl. 204-129.000.
Nagasaka, Mitsuaki: *See*—
Ohno, Sachio; Mizukoshi, Kiyoshi; Komatsu, Osamu; Nagasaka, Mitsuaki; and Nakamura, Yoshiki, 4,496,735, Cl. 546-301.000.
Nagasawa, Takashi; and Nakata, Tiaki, to Sumitomo Chemical Company, Limited; and Taoka Chemical Company, Limited. Adhesive composition. 4,496,685, Cl. 524-708.000.
Nagata, Keiji; Ueda, Syuji; and Tanigawa, Yoshiyuki, to Matsushita Electric Industrial Co., Ltd. Table sliding apparatus. 4,495,871, Cl. 108-20.000.
Nagel, David D.: *See*—
McDonald, William J.; Maurer, William C.; and Nagel, David D., 4,496,174, Cl. 285-53.000.
Nagy, David L. Key operated security cap. 4,496,065, Cl. 215-207.000.
Nakadoi, Tetsuya, to Mitutoyo Mfg. Co., Ltd. Digital indication type micrometerhead. 4,495,701, Cl. 33-166.000.
Nakai, Masaaki; Sahara, Masayoshi; Hosomizu, Hiroshi; and Ishida, Tokuji, to Minolta Camera Kabushiki Kaisha. Exposure control device for cameras. 4,496,230, Cl. 354-416.000.
Nakajima, Yasuo, to Nissan Motor Company, Limited. Fuel control system. 4,495,930, Cl. 123-575.000.
Nakamura, Katsumi; and Kitamura, Kumpei, to Kirin Beer Kabushiki Kaisha. Process for production of cellulase. 4,496,656, Cl. 435-209.000.
Nakamura, Keiichi; Inaguma, Yoshiharu; and Mori, Yutaka, to Toyoda Koki Kabushiki Kaisha. Vane type pump with a variable capacity for power steering devices. 4,496,288, Cl. 417-213.000.
Nakamura, Shinichi: *See*—
Matsumoto, Jun-ichi; and Nakamura, Shinichi, 4,496,566, Cl. 514-254.000.
Nakamura, Toshiyuki; Inaba, Tsutomu; and Kimura, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Compressor of the scroll type. 4,496,293, Cl. 417-371.000.
Nakamura, Yoshiki: *See*—
Ohno, Sachio; Mizukoshi, Kiyoshi; Komatsu, Osamu; Nagasaka, Mitsuaki; and Nakamura, Yoshiki, 4,496,735, Cl. 546-301.000.
Nakano, Teruo; and Hirata, Akio, to Tokyo Shibaura Denki Kabushiki Kaisha. Controlling device for a brushless motor. 4,496,893, Cl. 318-721.000.
Nakashima, Fujio; Enoki, Takashi; and Nakashima, Kazuto, to Hitachi, Ltd. Function switching system for an audio/video apparatus. 4,496,947, Cl. 340-825.240.
Nakashima, Kazuo: *See*—
Okazaki, Toshimasa; Sakata, Akihiro; Nagai, Kyozi; and Nakashima, Kazuo, 4,496,442, Cl. 204-129.000.
Nakashima, Kazuto: *See*—
Nakashima, Fujio; Enoki, Takashi; and Nakashima, Kazuto, 4,496,947, Cl. 340-825.240.
Nakata, Tiaki: *See*—
Nagasawa, Takashi; and Nakata, Tiaki, 4,496,685, Cl. 524-708.000.
Nakayama, Takashi; Kajita, Kohji; and Yamagata, Selichi, to Toray Industries, Inc. Multicolored yarn and method. 4,495,761, Cl. 57-328.000.
Nakayama, Toyoo: *See*—
Fujii, Setsuro; Yasegashi, Takashi; Nakayama, Toyoo; Nunomura, Shigeki; Sakurai, Yojiro; and Okutome, Toshiyuki, 4,496,584, Cl. 514-510.000.
Nakazato, Morizo: *See*—
Okada, Fumio; Oba, Toshio; and Nakazato, Morizo, 4,496,687, Cl. 524-859.000.
Nalbandian, Vahakn: *See*—
Wandinger, Lothar; and Nalbandian, Vahakn, 4,496,913, Cl. 331-56.000.
Nalco Chemical Company: *See*—
Albanese, Vincent M., 4,496,525, Cl. 423-242.000.
Namiki, Junji, to NEC Corporation. Interference cancellation type space diversity system. 4,497,067, Cl. 455-273.000.
Nanamura, Kaoru: *See*—
Furuta, Yohichi; Tsubouchi, Kaoru; and Nanamura, Kaoru, 4,495,772, Cl. 60-533.000.
Nanba, Yasuhiro; Gotoh, Takayuki; Yamakawa, Eiji; and Karasaki, Toshihiko, to Minolta Camera Kabushiki Kaisha. Focus detecting photoelectric device and focus detecting system. 4,496,834, Cl. 250-211.00R.
Nannini, Alessandro; and Pagano, Roberto, to Fiat Auto S.p.A. Generator apparatus for the combined production of electrical energy and heat. 4,495,901, Cl. 123-2.000.
Nara, Etuo: *See*—
Masaki, Mikio; Nara, Etuo; Shimizu, Keiichi; and Fukasawa, Takeshi, 4,495,786, Cl. 70-186.000.
Narukawa, Hiroshi: *See*—
Murata, Yoshifumi; Igi, Keishiro; Narukawa, Hiroshi; Uetsuki, Masao; Bando, Satoshi; Kawai, Shuji; and Shirano, Kenji, 4,496,714, Cl. 528-272.000.
Narumi China Corporation: *See*—
Kita, Katsuhiko; Fukuda, Junzo; and Kawahito, Shiro, 4,496,509, Cl. 264-175.000.
National Distillers and Chemical Corporation: *See*—
Blewett, Charles W.; and Sublett, Michael D., 4,496,758, Cl. 560-112.000.
Rekers, Louis J.; and Katzen, Stanley J., 4,496,699, Cl. 526-105.000.
National Federation of Dairy Co-Operative Associations, The: *See*—
Otsubo, Tooichi, 4,496,604, Cl. 426-588.000.
National Research Development Corporation: *See*—
Fisher, Martin J.; Heron, Roger A.; and Hughes, Martin L., 4,495,799, Cl. 73-61.00R.
Hamer, Arthur; and Pardoe, Beverley H., 4,496,884, Cl. 318-114.000.
West, Geoffrey A. W.; and Norton-Wayne, Leonard, 4,496,971, Cl. 358-106.000.
National Semiconductor Corporation: *See*—
Davis, Walter R., 4,497,017, Cl. 363-49.000.
Dunkley, James L.; and Dobkin, Robert C., 4,496,963, Cl. 357-22.000.
Nauman, Delbert A., to AT&T Technologies, Inc. Electrolytic methods for enhancing contrast between metallic surfaces. 4,496,432, Cl. 204-1.00T.
Naumenko, Igor P.: *See*—
Nikolsky, Vladimir A.; Yagodin, Valery M.; Vazhnov, Evgeny N.; Bondar, Efim S.; Naumenko, Igor P.; Vozny, Valery F.; Orlov, Vladimir N.; and Tikhonov, Vladimir I., 4,495,776, Cl. 62-114.000.
Nayate, Pramod D., to Rockwell International Corporation. Method and apparatus for opening folded newspapers. 4,496,141, Cl. 270-55.000.
NCR Corporation: *See*—
McMorrow, Harold L.; and Trzaska, Theodore T., 4,496,256, Cl. 400-248.000.
NEC Corporation: *See*—
Harada, Keiji; and Sato, Akio, 4,496,435, Cl. 204-15.000.
Meintrup, David R.; and Dumpis, Janis, 4,496,255, Cl. 400-208.000.
Namiki, Junji, 4,497,067, Cl. 455-273.000.
Needham, Arthur M.; and Helyer, Laurie E., to Tectron (Eng) Ltd. Fluid injectors. 4,495,967, Cl. 137-614.060.
Needleman, Philip, to Washington University. Atrial Peptides. 4,496,544, Cl. 514-13.000.
Nees, Friedbert: *See*—
Duembgen, Gerd; Fouquet, Gerd; Krabetz, Richard; Lucas, Ekhart; Merger, Franz; and Nees, Friedbert, 4,496,770, Cl. 568-463.000.
Neil, Clyde C.: *See*—
Hammer, Jacob M.; and Neil, Clyde C., 4,495,704, Cl. 33-180.00R.
Neisius, Karl-Heinz: *See*—
Eichler, Jurgen; Herz, Claus; Neisius, Karl-Heinz; and Wehner, Gregor, 4,496,447, Cl. 204-159.160.
Nelson, M. Gene. Adjustable book holder including magnifying front panel. 4,496,127, Cl. 248-441.100.
Nelson, Robert E.: *See*—
Nelson, Robert M.; and Nelson, Robert E., 4,496,287, Cl. 417-63.000.
Nelson, Robert M.; and Nelson, Robert E., to Nelson, Robert M. Sensors for detection of fluid condition, and control systems utilizing their signals. 4,496,287, Cl. 417-63.000.
Nelzow, Hartmann; Karlheinz, Farber; and Deininger, Anton, to Bosch-Siemens Hausgerate GmbH. Container, especially a disposable container for beverage concentrates, with a preferably magnetically-actuated reusable measurer attached to the opening of the container. 4,496,078, Cl. 222-87.000.
Nelzow, Hartmann: *See*—
Farber, Karlheinz; and Nelzow, Hartmann, 4,496,080, Cl. 222-129.300.
Nemoto, Seiichiro: *See*—
Sasaki, Kiichi; Kawade, Tateo; and Nemoto, Seiichiro, 4,496,170, Cl. 280-801.000.
Nertman, Inge, to AB Volvo. Blister package with means for securing blister. 4,496,052, Cl. 206-470.000.
Nevitt, Thomas D.: *See*—
Miller, Jeffrey T.; and Nevitt, Thomas D., 4,496,785, Cl. 585-640.000.
Newburg, Betty, executrix: *See*—
Newburg, Norman R., deceased, 4,496,668, Cl. 521-91.000.
Newburg, Norman R., deceased (by Newburg, Betty, executrix), to Hercules Corporated. Cellular thermoset poly(dicyclopentadiene). 4,496,668, Cl. 521-91.000.
Newcomb, Donald R. Trap vertical antenna with parallel L-C circuits for broadbanding. 4,496,952, Cl. 343-722.000.
Newport Corporation: *See*—
Allen, Robert E.; and Thomasson, James T., 4,496,865, Cl. 310-80.000.
Ng, Sun W.: *See*—
Jacks, Shirley L.; and Ng, Sun W., 4,495,861, Cl. 99-422.000.
Nicholson, Myron D., to Union Carbide Corporation. Method for producing smoke colored and smoke flavored encased foodstuff. 4,496,595, Cl. 426-284.000.

Niese, Manfred: *See*—
Skipka, Guido; Alles, Hans-Ulrich; Randau, Gert; and Niese, Manfred, 4,496,764, Cl. 564-418.000.
Niimura, Kouichi: *See*—
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Kanno, Akihiko; Furusho, Takao; and Yoshikumi, Chikao, 4,496,561, Cl. 514-209.000.
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Kanno, Akihiko; Furusho, Takao; and Yoshikumi, Chikao, 4,496,574, Cl. 514-195.000.
Nikkel, Willem A.; and Young, John B., to Westvaco Corporation. Mobile coater. 4,495,890, Cl. 118-674.000.
Nikolsky, Vladimir A.; Yagodin, Valery M.; Vazhnov, Evgeny N.; Bondar, Efim S.; Naumenko, Igor P.; Vozny, Valery F.; Orlov, Vladimir N.; and Tikhonov, Vladimir I., to Vsesojuzny Nauchno-Issledovatelsky Experminetalno Konstruktorsky Institut Elektrobytovyky Machin I Priborov. Method and cooling agent for freezing and storing products. 4,495,776, Cl. 62-114.000.
Nilssen, Ole K. Screw-in fluorescent lamp. 4,496,878, Cl. 315-73.000.
Nilsson, Bengt-Ake: *See*—
Harstrom, Karl U.; Nilsson, Bengt-Ake; and Wheeler, Richard J., 4,495,975, Cl. 141-157.000.
Nimer, Edward L.; and Campbell, Robert W., to Chevron Research Company. Sulfur cement-aggregate compositions and methods for preparing. 4,496,659, Cl. 501-140.000.
Nippe, Burkhard: *See*—
Greiner, Joachim; and Nippe, Burkhard, 4,497,007, Cl. 360-114.000.
Nippon Acchakutanshi Seizo Kabushiki Kaisha: *See*—
Matsui, Minoru; and Saijyo, Yoshihiro, 4,495,682, Cl. 29-33.00M.
Nippon Cable System Inc.: *See*—
Teraura, Makoto, 4,495,881, Cl. 114-159.000.
Nippon Carburetor Co., Ltd.: *See*—
Satoh, Yoichi, 4,496,497, Cl. 261-41.00D.
Nippon Electric Co., Ltd.: *See*—
Takano, Isamu; and Ohta, Norihisa, 4,496,908, Cl. 330-277.000.
Nippon Kogaku K.K.: *See*—
Konno, Kunio; and Okada, Masashi, 4,497,015, Cl. 362-268.000.
Ogasawara, Akira, 4,496,229, Cl. 354-400.000.
Nippon Oil and Fats Co., Ltd.: *See*—
Hirosaki, Yoshikazu; and Hattori, Katsuhide, 4,496,471, Cl. 252-186.210.
Nippon Soken, Inc.: *See*—
Idogaki, Takaharu; Kawai, Hisasi; Hattori, Kyo; and Sakurai, Kazuhiro, 4,496,134, Cl. 251-65.000.
Kuno, Akira; Matsumoto, Muneaki; and Numata, Koji, 4,497,034, Cl. 364-571.000.
Nippon Thompson Co., Ltd.: *See*—
Geka, Toshiaki, 4,496,198, Cl. 308-6.00C.
Nippon Zeon Co. Ltd.: *See*—
Tsuji, Jiro; and Shimizu, Isao, 4,496,766, Cl. 568-346.000.
Nippondenso Co., Ltd.: *See*—
Ishii, Yoshiya; Hachitani, Shuji; and Tanaka, Yasushi, 4,495,914, Cl. 123-357.000.
Kato, Takaaki; Kato, Takeshi; and Yoshizawa, Yoshikazu, 4,497,037, Cl. 364-900.000.
Kato, Takaaki; Hirano, Yoshio; Ochiai, Takeshi; Ishikawa, Seizi; and Sakai, Kazunori, 4,497,057, Cl. 371-29.000.
Matsumura, Toshimi; Miyaki, Masahiko; Tomishima, Hitoshi; and Masuda, Akira, 4,495,920, Cl. 123-436.000.
Nishida, Mitsuhiro: *See*—
Yamamoto, Sakuei; Nishida, Mitsuhiro; Tashiro, Noboru; and Sonoda, Nobuo, 4,496,866, Cl. 310-87.000.
Nishihara, Motohisa: *See*—
Shimada, Satoshi; Yamada, Kazuji; Suzuki, Seikou; and Nishihara, Motohisa, 4,495,820, Cl. 73-724.000.
Nishiuchi, Kihachiro: *See*—
Morimoto, Takuo; Nishiuchi, Kihachiro; Izumi, Misao; and Ejima, Noriyoshi, 4,496,469, Cl. 252-62.000.
Nissan Motor Company, Limited: *See*—
Hattori, Noboru; and Suzuki, Yoshitomo, 4,495,962, Cl. 137-117.000.
Hiraiwa, Kazuyoshi; and Kawaguchi, Akio, 4,495,832, Cl. 74-475.000.
Kunifumi, Sawamoto, 4,495,921, Cl. 123-438.000.
Nakajima, Yasuo, 4,495,930, Cl. 123-575.000.
Seko, Yasutoshi; Yanagishima, Takayuki; and Inoue, Masami, 4,496,938, Cl. 340-576.000.
Takahashi, Kotei, 4,495,831, Cl. 74-473.00R.
Takase, Sadao; and Hosaka, Akio, 4,495,923, Cl. 123-478.000.
Tanizaki, Hiroyuki; Ebihara, Sakae; Hatanaka, Akimitsu; Ogawa, Takayoshi; and Kanazawa, Yuzo, 4,496,189, Cl. 297-63.000.
Tuchiya, Yoshimasa; Chikaraishi, Takayo; and Kawamo, Kazunori, 4,496,186, Cl. 296-146.000.
Ueno, Takashi; and Takase, Sadao, 4,495,924, Cl. 123-478.000.
Nissan Shatai Company, Limited: *See*—
Tuchiya, Yoshimasa; Chikaraishi, Takayo; and Kawamo, Kazunori, 4,496,186, Cl. 296-146.000.
Nitigus, Victor: *See*—
Apetrei, Constantin; Nitigus, Victor; Elek, Demeter; Radulescu, Marian; and Sachelaire, Toma, 4,496,864, Cl. 310-77.000.
Nitro Nobel A.B.: *See*—
Persson, Per I., 4,496,096, Cl. 228-107.000.
Nitschke, Werner, to Robert Bosch GmbH. Positioning control system. 4,496,885, Cl. 318-122.000.
NL Industries, Inc.: *See*—
House, Roy F.; and Hoover, Lonnie D., 4,496,468, Cl. 252-8.50A.
Wilcox, Roy D., 4,495,800, Cl. 73-61.400.
Noack, Horst-Gunter, to Klockner-Humboldt-Deutz AG. Centrifugal pump. 4,496,281, Cl. 415-111.000.
Noga, Patricia J.: *See*—
Fredrickson, James C.; Noga, Patricia J.; and Strasek, Frank M., 4,495,715, Cl. 36-113.000.
Noguchi, Tadashi: *See*—
Ishida, Kohji; Noguchi, Tadashi; and Numata, Tatsuo, 4,497,063, Cl. 381-7.000.
Noirel, Maurice Y., to L'Etat Francais, Represente par Le Ministre des P.T.A. (Centre National D'Etudes des Telecommunications). One-way data transmission systems. 4,496,975, Cl. 358-147.000.
Nonaka, Chiaki: *See*—
Fujiie, Kazuhiko; and Nonaka, Chiaki, 4,497,047, Cl. 369-45.000.
Nonnenmacher, Gerhard, to Robert Bosch GmbH. Control device for maintaining the product of the lifting pressure and lifting volume times flow constant in an adjustable pump. 4,496,290, Cl. 417-220.000.
Norenburg, Johannes, to Stone & Webster Engineering Corp. Apparatus and method for recovering light hydrocarbons from hydrogen containing gases. 4,496,381, Cl. 62-30.000.
Northland Aluminum Products, Inc.: *See*—
Jorgensen, Jorgen A., 4,496,815, Cl. 219-10.55E.
Northman, Bradley L., to Eaton Corporation. Ultrasonic metering device and housing assembly. 4,496,101, Cl. 239-102.000.
Norton-Wayne, Leonard: *See*—
West, Geoffrey A. W.; and Norton-Wayne, Leonard, 4,496,971, Cl. 358-106.000.
Norwood Industries, Inc.: *See*—
McCartney, John R., 4,496,624, Cl. 428-288.000.
Nowacki, Christopher: *See*—
Brisson, Alfred; and Nowacki, Christopher, 4,495,944, Cl. 128-725.000.
Nowobilski, Jeffert J.; and Owens, William J., to Union Carbide Corporation. High density load bearing insulation peg. 4,496,633, Cl. 428-426.000.
Nozaki, Shigeki: *See*—
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Ishida, Kohji; Noguchi, Tadashi; and Numata, Tatsuo, 4,497,063, Cl. 381-7.000.
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Fujii, Setsuro; Yaegashi, Takashi; Nakayama, Toyoo; Nunomura, Shigeki; Sakurai, Yojiro; and Okutome, Toshiyuki, 4,496,584, Cl. 514-510.000.
Oakes, Harry C. Hole punch apparatus. 4,495,699, Cl. 30-360.000.
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Oberle, Edmond; Wattron, Bernard; and Hironimus, Jeannot, to Kuhn S.A. Machine for removing blocks of forage from a silo. 4,496,107, Cl. 241-101.700.
Occidental Research Corporation: *See*—
Finnan, Marshall N., 4,495,987, Cl. 165-70.000.
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Kato, Takaaki; Hirano, Yoshio; Ochiai, Takeshi; Ishikawa, Seizi; and Sakai, Kazunori, 4,497,057, Cl. 371-29.000.
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Odaka, Kentaro: *See*—
Sako, Yoichiro; and Odaka, Kentaro, 4,497,058, Cl. 371-39.000.
Oestreich, Ulrich; and Schubert, Werner, to Siemens Aktiengesellschaft. Optical cable. 4,496,214, Cl. 350-96.230.
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Ogawa, Hitoshi, to Mitsubishi Denki Kabushiki Kaisha. Rotary vane pump with overlapping rotor and housing portions. 4,496,297, Cl. 418-133.000.
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Tanizaki, Hiroyuki; Ebihara, Sakae; Hatanaka, Akimitsu; Ogawa, Takayoshi; and Kanazawa, Yuzo, 4,496,189, Cl. 297-63.000.
Ogle, Terry B. Apparatus for moving rolled sheet goods. 4,496,179, Cl. 294-26.000.
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Ohio State University Research Foundation, The: *See*—
Shore, Sheldon G.; and Bhattacharyya, Alakananda, 4,496,532, Cl. 423-417.000.
Ohishi, Kishiro; and Kato, Choji, to Hokuetsu Kamisoisen Kabushikikaisha. Apparatus for and method of removing wound paper from a core rod. 4,496,111, Cl. 242-55.000.

Ohmori, Takashi: *See—*
Moriguchi, Haruhiko; and Ohmori, Takashi, 4,496,988, Cl. 358-294.000.

Ohno, Sachio; Mizukoshi, Kiyoshi; Komatsu, Osamu; Nagasaka, Mitsuaki; and Nakamura, Yoshiki, to Maruko Seiyaku Co., Ltd. Certain pyridyloxy-or-thio-phenyl propenoic acid derivatives. 4,496,735, Cl. 546-301.000.

Ohta, Kenji: *See—*
Deguchi, Toshihisa; Ohta, Kenji; and Takahashi, Akira, 4,497,006, Cl. 360-114.000.

Ohta, Masakatu, to Canon Kabushiki Kaisha. Illuminating apparatus. 4,497,013, Cl. 362-32.000.

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Kuwahara, Rikiya; Habuto, Akinaka; and Oiso, Hisayoshi, 4,496,592, Cl. 426-5.000.

Oka, Akira: *See—*
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Okajima, Takahiro: *See—*
Takahashi, Hideyuki; Kenmotsu, Isami; and Okajima, Takahiro, 4,497,051, Cl. 369-77.100.

Okamoto, Hiroaki: *See—*
Hamakawa, Yoshihiro; Okamoto, Hiroaki; and Okuda, Kouji, 4,496,788, Cl. 136-249.000.

Okamoto, Itsuo: *See—*
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Okamoto, Yoshihisa: *See—*
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Okamura Corporation: *See—*
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Okazaki, Toshimasa; Sakata, Akihiro; Nagai, Kyozi; and Nakashima, Kazuo, to Toagosei Chemical Industry Co., Ltd. Process for generating hydrogen gas. 4,496,442, Cl. 204-129.000.

Okigami, Noboru; Hayasaka, Hiroshi; Sekiguchi, Yoshitoshi; and Tamura, Harushige, to Hitachi Shipbuilding & Engineering Co., Ltd. Multi-stage combustion method for inhibiting formation of nitrogen oxides. 4,496,306, Cl. 431-8.000.

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Okumura, Masumi: *See—*
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Okutome, Toshiyuki: *See—*
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Oldham, Keith: *See—*
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Olin Corporation: *See—*
Henderson, Richard; Rothgery, Eugene F.; and Schroeder, Hansjuergen A., 4,496,559, Cl. 514-188.000.
Kindlmann, Peter J.; Yarwood, John C.; Ungarean, Gary L.; and Tyler, Derek E., 4,495,981, Cl. 164-452.000.
Kindlmann, Peter J.; Ungarean, Gary L.; Yarwood, John C.; and Tyler, Derek E., 4,495,983, Cl. 164-452.000.
Kraus, Theodore C., 4,496,529, Cl. 423-365.000.
Lange, Paul H., Jr., 4,496,761, Cl. 564-37.000.
O'Connor, James M.; and Schnabel, Wilhelm J., 4,496,684, Cl. 524-591.000.

Oliver, Kirk D.; and Wolff, David A., to Motorola, Inc. Inductorless pincushion correction circuit. 4,496,882, Cl. 315-371.000.

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Olympia Werke AG: *See—*
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Olympus Optical Co. Ltd.: *See—*
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Omron Tateisi Electronics Co.: *See—*
Maenishi, Kozo; Adachi, Masaaki; and Bando, Yoshihide, 4,496,806, Cl. 200-16.00R.

Omura, Sadafumi: *See—*
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Sase, Masatoshi; Onga, Makoto; and Yamanaka, Seisuke, 4,496,967, Cl. 358-44.000.

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Ono, Takashi: *See—*
Yamada, Shunsuke; Kawate, Kenji; Ono, Takashi; Arakawa, Hideo; and Suda, Tsuyoshi, 4,496,312, Cl. 432-11.000.

Ontario Cancer Institute, The: *See—*
Hunt, John W.; and Patterson, Michael S., 4,495,817, Cl. 73-624.000.

Oppenlaender, Knut: *See—*
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Optimetrix Corporation: *See—*
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Orcutt, John W.; Hightower, Angus W.; and Smith, Reginald W., to Texas Instruments Incorporated. Stacked interdigitated lead frame assembly. 4,496,965, Cl. 357-70.000.

Orentreich, Norman. Topical applications for preventing dry skin. 4,496,556, Cl. 514-178.000.

Orlov, Vladimir N.: *See—*
Nikolsky, Vladimir A.; Yagodin, Valery M.; Vazhnov, Evgeny N.; Bondar, Efim S.; Naumenko, Igor P.; Vozny, Valery F.; Orlov, Vladimir N.; and Tikhonov, Vladimir I., 4,495,776, Cl. 62-114.000.

Oronsky, Arnold L., to American Cyanamid Company. Treatment of malaria with antibiotics. 4,496,549, Cl. 514-27.000.

Ortner, Georg J. Container with information-carrying element. 4,496,051, Cl. 206-459.000.

Osaka Transformer Co., Ltd.: *See—*
Hamakawa, Yoshihiro; Okamoto, Hiroaki; and Okuda, Kouji, 4,496,788, Cl. 136-249.000.

Osburn, Frank G., to Hollister Incorporated. Skin barrier composition. 4,496,357, Cl. 604-336.000.

Osrow, Leonard. Hand-held shock-resistant electrolytically heated steam producing apparatus. 4,496,826, Cl. 219-272.000.

O'Sullivan Corporation: *See—*
Dawson, C. Bruce, 4,496,113, Cl. 242-67.10R.

Oswald Forst Maschinenfabrik und Apparatebauanstalt GmbH & Co. KG: *See—*
Borner, Roland; Holstein, Herbert; and Sennewald, Jurgen, 4,495,733, Cl. 51-165.00R.

Ota, Isao, to Matsushita Electric Industrial Co., Ltd. Video camera with a monitor. 4,496,981, Cl. 358-213.000.

Ota, Tomio; Miyasaka, Mamoru; and Hiraga, Imao, to Kabushiki Kaisha Suwa Seikosha. Timepiece construction. 4,496,246, Cl. 368-88.000.

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Otsubo, Yorihumi: *See—*
Yoshihara, Setsuo; Otsubo, Yorihumi; and Kobayashi, Takashi, 4,496,830, Cl. 235-458.000.

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Morimoto, Takuo; Nishiuchi, Kihachiro; Izumi, Misao; and Ejima, Noriyoshi, 4,496,469, Cl. 252-62.000.

Ottoson, Javan D., to Atlantic Richfield Company. Method for stabilizing particulate low rank coal in a fluidized bed. 4,495,710, Cl. 34-10.000.

Ottosson, Goran: *See—*
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Advolotkin, Nikolai P.; Belyaeva, Svetlana A.; Ovchinnikov, Igor E.; Lebedev, Nikolai I.; Yankovsky, Alexei J.; Sytykh, Stanislav P.; Khrenov, Jury A.; and Axenov, Vladimir N., 4,496,868, Cl. 310-112.000.

Overland, Christian; and Gaarde, Knud-Werner. Hollow surgical disposable needle, preferably of the Redon type. 4,496,353, Cl. 604-272.000.

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Lin, David C. K., 4,496,384, Cl. 65-4.400.
Lin, David C. K., 4,496,385, Cl. 65-9.000.

Owens-Illinois, Inc.: *See—*
Kontz, Robert F., 4,496,409, Cl. 156-85.000.

Owens, Walter K., to Mfg. Design, Inc. Newspaper vending machine. 4,496,074, Cl. 221-39.000.

Owens, William J.: *See—*
Nowobilski, Jeffert J.; and Owens, William J., 4,496,633, Cl. 428-426.000.

Owens, William M.: *See—*
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Oy Fiskars AB: *See—*
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Oy Nokia Ab: *See—*
Matikainen, Keijo E.; and Jarvinen, Raimo M., 4,496,796, Cl. 174-101.500.
Oy Tampella Ab: *See—*
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Iwao, Jun-ichi; Oya, Masayuki; and Iso, Tadashi, 4,496,578, Cl. 514-423.000.
Ozaki, Shunzaburo: *See—*
Fujimura, Akira; and Ozaki, Shunzaburo, 4,495,922, Cl. 123-440.000.
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Boogers, Wilhelmus P. L., 4,495,955, Cl. 131-105.000.
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Pacific Scientific Company: *See—*
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Crescenzo, Francis C.; and LaFleur, Paul J., Jr., 4,495,745, Cl. 53-77.000.
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Pagano, Roberto: *See—*
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Conrad, Frederick L.; Palmer, Louis R.; and Roberts, Arthur A., 4,496,245, Cl. 366-143.000.
Palumbo, Pasquale M. Dynamic ankle brace. 4,495,942, Cl. 128-80.00H.
Panick, Karl; and Glass, Joseph, to Webasto-Werk W. Baier GmbH & Co. Electromagnetic fuel delivery and metering pump. 4,496,292, Cl. 417-252.000.
Pantic, Milan: *See—*
Hall, John M.; and Pantic, Milan, 4,496,033, Cl. 188-347.000.
Papst-Motoren GmbH & Co. KG: *See—*
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Pardee, James A., to Warner Electric Brake & Clutch Company. Electromagnetically released coupling. 4,496,922, Cl. 335-281.000.
Pardoe, Beverley H.: *See—*
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Pari-Symac: *See—*
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Parizet, Roger, to Compagnie Industrielle De Mecanismes en abrege C.I.M. Gear drive device and the application thereof in a window winder of an automobile vehicle. 4,495,827, Cl. 74-89.180.
Park, Hee C.; and Ashcraft, Charles R., to Mobil Oil Corporation. Opaque oriented non-thermoplastic polymer film and method of forming same. 4,496,620, Cl. 428-323.000.
Parker Chemical Company: *See—*
King, Peter F., 4,496,404, Cl. 148-6.14R.
Murphy, Donald P., 4,496,374, Cl. 55-84.000.
Parker, John A.: *See—*
Varma, Indra K.; Fohlen, George M.; and Parker, John A., 4,496,701, Cl. 526-262.000.
Parker, Kevin P. Adhesive binding strip. 4,496,617, Cl. 428-55.000.
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Jackson, Brian L.; and Parker, Philip, 4,495,844, Cl. 83-715.000.
Parkins, William E. Power generation from wind. 4,496,846, Cl. 290-44.000.
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Hatton, Leslie R.; Parnell, Edgar W.; and Roberts, David A., 4,496,390, Cl. 71-92.000.
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Pasiecznik, Eugene, to Westeel-Rosco Limited-Westeel-Rosco Limitee. Adjustable spacer kit of parts, and building wall or roof structure incorporating the same. 4,495,741, Cl. 52-404.000.
Pate, Harold T.; Laney, William R.; and Shell, Donald H., to Thyssen-Bornemisza Inc. Large diameter plastic pipe. 4,495,970, Cl. 138-148.000.
Paton, William D.: *See—*
Steenson, Thomas W.; and Paton, William D., 4,496,504, Cl. 264-69.000.
Patterson, Michael S.: *See—*
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Paul, Marsha A.: *See—*
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Paulinski, Ronald A., to Burroughs Corporation. Circuit board test fixture. 4,496,903, Cl. 324-158.00F.
Pauls, Henry W.: *See—*
Hafez, Mahmoud M.; and Pauls, Henry W., 4,496,456, Cl. 208-33.000.
Pawloski, Chester E.; and Ginter, Sally P., to Dow Chemical Company, The. Process for preparation of (halo)(hydroxy)-substituted phosphites and phosphorates. 4,496,494, Cl. 260-977.000.
Payet, George L.: *See—*
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Paz, Mercedes: *See—*
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Peerman, Dwight E.; and Rogier, Edgar R., to Henkel Corporation. Hydroxymethyl polyols. 4,496,487, Cl. 260-404.000.
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Peppler, Walter W.: *See—*
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Pera, Eugene R., 4,496,946, Cl. 340-796.000.
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Perlstein, Jerome H.: *See—*
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Pernicano, Vincent S. Heat transfer sheeting having release agent coat. 4,496,618, Cl. 428-201.000.
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Persson, Per I., to Nitro Nobel A.B. Method of joining metal elements by explosion welding. 4,496,096, Cl. 228-107.000.
Perun, William D.; and Garavuso, Gerald M., to Xerox Corporation. Paddle wheel feeder with normal force optimization and blade control. 4,496,144, Cl. 271-114.000.
Pesa, Frederick A.; and Graham, Anne M., to Standard Oil Company, The. Upgrading synthesis gas. 4,496,666, Cl. 518-706.000.
Peters, Susan M., to Clorox Company, The. Configured fuel briquet and method. 4,496,366, Cl. 44-14.000.
Petersen, Tom K., to Danfoss A/S. Arrangement for controllably driving an A.C. motor. 4,496,894, Cl. 318-759.000.
Peterson, Theodore A. Instant sawhorse. 4,496,028, Cl. 182-186.000.
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Peyronel, Jean-Francois: *See—*
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Pfahler, Gerhard: *See—*
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Pfizer Inc.: *See—*
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Cross, Peter E.; and Dickinson, Roger P., 4,496,572, Cl. 514-337.000.
Pfleiderer, Hans-Joerg; and Herbst, Heiner, to Siemens Aktiengesellschaft. Two-dimensional semiconductor image sensor with regulated integration time. 4,496,980, Cl. 358-212.000.
Pharmacia AB: *See—*
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Phase Change Technology, Inc.: *See—*
Wasserman, Kurt J., 4,495,723, Cl. 47-2.000.
Phelps, Richard W., to Black Clawson Company, The. Precision roll coater. 4,495,886, Cl. 118-249.000.
Phillips, Edward H., to Optimetrix Corporation. Gas bearing. 4,496,194, Cl. 308-5.00R.
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Chen, Hsiu Kuo; and Thomas, Charles P., 4,495,995, Cl. 166-273.000.
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Piotroski, Peter N.: *See—*
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Pipes, George R., to Eaton Corporation. Material handling vehicle. 4,496,274, Cl. 414-340.000.
Pissot, Guy, to Thomson-Brandt. Latch for the closure panel of a unit such as a cassette reader and a unit fitted with said latch. 4,496,177, Cl. 292-87.000.
Pitchford, Edward J., to Rain Bird Sprinkler Mfg. Corp. Reaction drive sprinkler. 4,496,103, Cl. 239-230.000.
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Pohorski, Daniel W., to James Dole Corporation. Hot air aseptic packaging system and method. 4,495,974, Cl. 141-132.000.
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Cerankowski, Leon D.; LaPointe, Gary S.; and Mattucci, Neil C., 4,496,651, Cl. 430-490.000.
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Pottier, Alain; and Chesnel, Pierre, to Schlumberger Technology Corporation. Well perforating apparatus. 4,496,008, Cl. 175-4.600.
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Roncaglione, Daniel E.: *See—*
Roncaglione, James W.; and Roncaglione, Daniel E., 4,495,667, Cl. 15-53.00A.

Roncaglione, James W.; and Roncaglione, Daniel E., to Caravelle Industries, Inc. Vehicle washing apparatus. 4,495,667, Cl. 15-53.00A.

Rosaen, Borje O. Flexible filter device with means to position filter bag. 4,496,459, Cl. 210-310.000.

Rosaen, Lars O., to Universal Filters, Inc. Bidirectional flow meter. 4,495,823, Cl. 73-861.760.

Rose, William H.; and Shaffer, David T., to AMP Incorporated. Single in-line package switch. 4,496,802, Cl. 200-5.00R.

Rosenquist, Niles R.; and Tyrell, John A., to General Electric Company. Compatibilization of polycarbonate blends. 4,496,693, Cl. 525-146.000.

Rosink, Albert, to Trutzschler GmbH & Co. KG. Method and apparatus for coiling fiber sliver. 4,495,677, Cl. 19-159.00R.

Ross, Donald R. Apparatus and a process for heating a material. 4,496,477, Cl. 252-629.000.

Rosslenbroich, Hans-Jurgen: *See—*
Kuhle, Engelbert; Brandes, Wilhelm; Rosslenbroich, Hans-Jurgen; and Klauke, Erich, 4,496,575, Cl. 514-390.000.

Roth, David A., to General Electric Company. Nuclear image display controller. 4,497,024, Cl. 364-414.000.

Rothgery, Eugene F.: *See—*
Henderson, Richard; Rothgery, Eugene F.; and Schroeder, Hansjuergen A., 4,496,559, Cl. 514-188.000.

Rousey, James R. Bidirectional plumb bob level. 4,495,707, Cl. 33-392.000.

Rowell, Frank J. Containers and machine for making them. 4,495,748, Cl. 53-449.000.

Rowles, Howard C.: *See—*
Geist, Jacob M.; Vines, Harvey L.; Alvarez, Miguel R.; Rowles, Howard C.; and Woodward, Donald W., 4,496,382, Cl. 62-31.000.

Rowlette, John R.: *See—*
Dery, Ronald A.; Jones, Warren C.; Lynn, William J.; and Rowlette, John R., 4,496,422, Cl. 156-306.600.

Rozner, Alexander G.; Lenko, Daniel S.; and Carter, James H., to United States of America, Navy. Pyro-gun. 4,495,848, Cl. 89-1.100.

Rozycki, Marek: *See—*
Porter, James A., Jr.; Shivers, Joe D.; Rozycki, Marek; and Johnston, Otis, 4,496,015, Cl. 180-9.260.

Rubber-En Kuststoffabriek Enbi B.V.: *See—*
Delhaes, Johannes C., 4,495,683, Cl. 29-119.000.

Ruckstuhl, Willi, to Kronimus & Sohn GmbH & Co. KG, a part interest. Curved like paving stone element for use in setting a curved paving. 4,496,266, Cl. 404-41.000.

Rudy, N. Jerome. Integrally bonded compositions of cellulosics and products thereof directly from wet sawdust and the like. 4,496,718, Cl. 536-56.000.

Ruff, Stanley. Plasterboard trimming tool. 4,495,697, Cl. 30-294.000.

Ruhle, Walter, to Robert Bosch GmbH. Starter for internal combustion engines. 4,495,825, Cl. 74-7.00E.

Rumsey, Steven C., to American Standard Inc. Vigilance safety control system. 4,496,193, Cl. 303-19.000.

Ruwart, Mary J.: *See—*
Renis, Harold E.; and Ruwart, Mary J., 4,496,587, Cl. 514-573.000.

Ruzek, Ivo: *See—*
Hartmann, Ludwig; Ruzek, Ivo; and Locher, Engelbert, 4,496,508, Cl. 264-167.000.

Rye, Grover W.: *See—*
Brandyberry, Dennis R.; and Rye, Grover W., 4,495,759, Cl. 57-58.520.

Sachelaire, Toma: *See—*
Apetrei, Constantin; Nitigus, Victor; Elek, Demeter; Radulescu, Marian; and Sachelaire, Toma, 4,496,864, Cl. 310-77.000.

Sachse, Christian, to Electrotechnik-Apparatebau Peter Schmitz. Lighting device. 4,497,016, Cl. 362-294.000.

Sachse, Richard: *See—*
Machler, Meinrad; Sachse, Richard; Stacklies, Horst; and Schindler, Achim, 4,496,416, Cl. 156-293.000.

Sagami Chemical Research Center: *See—*
Tsuchihashi, Genichi; Mitamura, Shuichi; Kitajima, Koji; and Kobayashi, Kumi, 4,496,755, Cl. 560-028.000.

Sagara, Hisao: *See—*
Takada, Susumu; and Sagara, Hisao, 4,495,794, Cl. 73-37.500.

Sagaser, Thomas M.; Kuhn, Patrick; and Brock, Knute K., to Clark Equipment Company. Hydrostatic control system. 4,495,770, Cl. 60-486.000.

Sahara, Masayoshi: *See—*
Nakai, Masaaki; Sahara, Masayoshi; Hosomizu, Hiroshi; and Ishida, Tokuji, 4,496,230, Cl. 354-416.000.

Saijyo, Yoshihiro: *See—*
Matsui, Minoru; and Saijyo, Yoshihiro, 4,495,682, Cl. 29-33.00M.

Saito, Masami: *See—*
Sakata, Hideo; and Saito, Masami, 4,495,703, Cl. 33-174.00L.

Saito, Takao: *See—*
Moriyama, Masakazu; and Saito, Takao, 4,496,996, Cl. 360-12.000.

Sakai, Kazunori: *See—*
Kato, Takaaki; Hirano, Yoshio; Ochisi, Takeshi; Ishikawa, Seizi; and Sakai, Kazunori, 4,497,057, Cl. 371-29.000.

Sakai, Shinji; Shinoda, Nobuhiko; Kinoshita, Takao; Hosoe, Kazuya; and Kawabata, Takashi, to Canon Kabushiki Kaisha. Focusing state discriminating system. 4,496,832, Cl. 250-201.000.

Sakai, Shiro; and Ebisawa, Etsuo, to Sakai, Shiro; and Sakai, Sumiko. Process for preparing mustard flour. 4,496,598, Cl. 426-417.000.

Sakai, Sumiko: *See—*
Sakai, Shiro; and Ebisawa, Etsuo, 4,496,598, Cl. 426-417.000.

Sakaino, Michio; Igarashi, Hisashi; and Taniguchi, Yutaka, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for facilitating engine starting. 4,495,904, Cl. 123-179.00G.

Sakamoto, Junji; and Kishi, Hiroyasu, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Electric Co., Ltd. Noise detecting circuit and television receiver employing the same. 4,496,978, Cl. 358-155.000.

Sakata, Akihiro: *See—*
Okazaki, Toshimasa; Sakata, Akihiro; Nagai, Kyozi; and Nakashima, Kazuo, 4,496,442, Cl. 204-129.000.

Sakata, Hideo; and Saito, Masami, to Mitutoyo Mfg. Co., Ltd. Coordinate measuring instrument. 4,495,703, Cl. 33-174.00L.

Sakata, Hideo, to Mitutoyo Mfg. Co., Ltd. Touch signal probe. 4,496,807, Cl. 200-61.420.

Sakato, Naoyuki; and Kitagaki, Tetsuo, to Shin-Etsu Chemical Co., Ltd. Method for shaping green body of ceramic powder and ceramic body obtained by firing same. 4,496,506, Cl. 264-109.000.

Sako, Yoichiro; and Odaka, Kentaro, to Sony Corporation. Method of error correction. 4,497,058, Cl. 371-39.000.

Sakurai, Kazuhiro: *See—*
Idogaki, Takaharu; Kawai, Hisasi; Hattori, Kyo; and Sakurai, Kazuhiro, 4,496,134, Cl. 251-65.000.

Sakurai, Masaki: *See—*
Sugiyama, Hiroyuki; Sakurai, Masaki; Abe, Ryozo; and Yoshihara, Kenji, 4,496,993, Cl. 358-335.000.

Sakurai, Yojiro: *See—*
Fujii, Setsuro; Yaegashi, Takashi; Nakayama, Toyoo; Nunomura, Shigeki; Sakurai, Yojiro; and Okutome, Toshiyuki, 4,496,584, Cl. 514-510.000.

Salminen, Kari; and Soderholm, Nils, to Oy Tampella Ab. Extended nip press for a paper machine. 4,496,429, Cl. 162-358.000.

Salomon, Georges P. J.; and Quellais, Jacques, to Salomon S.A. Step-in ski binding. 4,496,169, Cl. 280-615.000.

Salomon S.A.: *See—*
Salomon, Georges P. J.; and Quellais, Jacques, 4,496,169, Cl. 280-615.000.

Salour, Michael M.; and Fuchs, Adrian, to United States of America, Air Force. Transmissive Dewar cooling chamber for optically pumped semiconductor ring lasers. 4,495,782, Cl. 62-514.00R.

Sam Stein Associates, Inc.: *See—*
Booth, Raymond E.; and Miller, Michael E., 4,496,084, Cl. 222-282.000.

Sampson, Edward J.: *See—*
Prosl, Frank R.; and Sampson, Edward J., 4,496,343, Cl. 604-86.000.

Sanchez, Gabriel A.: *See—*
Hemming, Leland H.; and Sanchez, Gabriel A., 4,496,950, Cl. 343-18.00A.

Sander, Wilfried; and Mielke, Siegfried, to Karl Schmidt GmbH. Process of joining a ceramic insert which is adapted to be embedded in a light metal casting for use in internal combustion engines. 4,495,684, Cl. 29-156.50R.

Sanders Associates, Inc.: *See—*
Baer, Ralph H., 4,496,158, Cl. 273-312.000.

Sanders, Rudolf; and Rijckaert, Josephus F., to U.S. Philips Corporation. Electric lamp having a mechanically connected lamp cap. 4,496,874, Cl. 313-318.000.

Sanderson, William R., to Interox Chemicals Limited. Hydrogen peroxide compositions. 4,496,473, Cl. 252-186.410.

Sandham, H. James; and Balanyk, Thomas E., to University of Toronto Innovations Foundation. Benzoin antimicrobial dental varnishes. 4,496,322, Cl. 433-217.000.

Sando Iron Works Co., Ltd.: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,495,783, Cl. 68-5.00D.

Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works Co., Ltd. Apparatus for continuous wet-heat treatment of cloth. 4,495,783, Cl. 68-5.00D.

Sandoz Ltd.: *See—*
Bauer, Wilfried; and Plesa, Janos, 4,496,543, Cl. 514-11.000.
Stakelbeck, Hans-Peter, 4,496,364, Cl. 8-641.000.

Sangster, George G. Linking means. 4,496,262, Cl. 403-335.000.

Sankyo Company, Limited: *See—*
Amemiya, Shigeo; and Kojima, Koichi, 4,496,745, Cl. 549-215.000.

Santen Pharmaceutical Co., Ltd.: *See—*
Iwao, Jun-ichi; Oya, Masayuki; and Iso, Tadashi, 4,496,578, Cl. 514-423.000.

Santilli, Donald S.; and Zones, Stacey I., to Chevron Research Company. Selective conversion of methanol to low molecular weight olefins over high silica SSZ-13 zeolite. 4,496,786, Cl. 585-640.000.

Sanyo Electric Co., Ltd.: *See—*
Sakamoto, Junji; and Kishi, Hiroyasu, 4,496,978, Cl. 358-155.000.

Sarrantonio, Albert: *See—*
Renshaw, Theodore A.; and Sarrantonio, Albert, 4,496,095, Cl. 228-102.000.

Sarrazin, Jean-Michel; and Chessel, Bernard, to Compagnie des Produits Industriels de l'Ouest. Window with integral molded frame and process for making same. 4,495,740, Cl. 52-309.100.

Sasaki, Kiichi; Kawade, Tateo; and Nemoto, Seiichiro, to Honda Giken Kogyo Kabushiki Kaisha. Seat belt device for vehicles. 4,496,170, Cl. 280-801.000.

Sase, Masatoshi; Onga, Makoto; and Yamanaka, Seisuke, to Sony Corporation. Sample hold circuit for an image pick-up device. 4,496,967, Cl. 358-44.000.

Sato, Akio: *See—*
Harada, Keiji; and Sato, Akio, 4,496,435, Cl. 204-15.000.

Sato, Eiji: *See—*
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Sato, Hideo: *See—*
Tanji, Hiroshi; Iwata, Michitaka; and Sato, Hideo, 4,496,505, Cl. 264-101.000.

Sato, Mitsuya: *See—*
Isohata, Junji; and Sato, Mitsuya, 4,496,239, Cl. 355-30.000.

Sato, Susumu: *See—*
Irie, Toshio; and Sato, Susumu, 4,496,400, Cl. 148-12.00C.

Satoh, Kenji: *See—*
Terada, Toshimichi; Komatsu, Keiichi; Shibata, Akira; and Satoh, Kenji, 4,497,000, Cl. 360-70.000.

Satoh, Yoichi, to Nippon Carburetor Co., Ltd. Carburetor assembly. 4,496,497, Cl. 261-41.00D.

Sattler, Frank A., to Westinghouse Electric Corp. Amide-imide-ester wire enamels. 4,496,715, Cl. 528-288.000.

Saunders, Frances C.: *See—*
Harrison, Kenneth J.; Raynes, Edward P.; Saunders, Frances C.; and Thompson, David J., 4,496,221, Cl. 350-349.000.

Savage, Howard T., to United States of America, Navy. Long line hydrophone. 4,497,046, Cl. 367-169.000.

Savins, Joseph G., to Mobil Oil Corporation. Method for improving cuttings transport in deviated wells. 4,496,012, Cl. 175-65.000.

Savolskis, Edward P., to PPG Industries, Inc. Port wall air jet for controlling combustion air. 4,496,315, Cl. 432-30.000.

Sawatani, Kenji, to Mitsubishi Denki Kabushiki Kaisha. Salient-pole rotor of a rotary electric machine. 4,496,863, Cl. 310-61.000.

Scarpini, Manuela, to Interbrev S.A. Slide-fastener half and method of making same. 4,495,679, Cl. 24-414.000.

Schachter, Friedrich. Liquid gas-operated lighter, particularly pocket lighter. 4,496,309, Cl. 431-344.000.

Schaefer, Klaus-Dieter: *See—*
Heitmann, Knut; and Schaefer, Klaus-Dieter, 4,496,231, Cl. 354-429.000.

Schafer, Paul; and Berendt, Hans-Ulrich, to Ciba-Geigy Corporation. Process for bleaching cellulosic fibre materials using oligomers of phosphonic acid esters as stabilizers in alkaline, peroxide-containing bleaching liquors. 4,496,472, Cl. 252-186.220.

Schavilje, Robert: *See—*
Gericke, Hermann; and Schavilje, Robert, 4,496,083, Cl. 222-231.000.

Schefczik, Ernst: *See—*
Bergmann, Udo; Dix, Johannes P.; Hansen, Guenter; and Schefczik, Ernst, 4,496,480, Cl. 534-794.000.

Schenck, Stephen R.: *See—*
Andresen, Bernhard H.; Schenck, Stephen R.; and Kennedy, Nathan R., 4,496,914, Cl. 331-110.000.

Schering Corporation: *See—*
Kwan, Henry K., 4,496,537, Cl. 424-85.000.

Scherschlicht, Richard R.; and Tissot, Rene , to Hoffmann-La Roche Inc. Nonapeptide for treating addictive drug withdrawal conditions. 4,496,545, Cl. 514-16.000.

Schickel, Alfred, to Veb Schwermaschinenbau-Kombinat "Ernst Thalmann" Magdeburg. Rotor-type magnetic particle separator. 4,496,457, Cl. 209-223.00R.

Schinbeckler, Steven E. Fireplace insert and method. 4,495,933, Cl. 126-123.000.

Schindler, Achim: *See—*
Machler, Meinrad; Sachse, Richard; Stacklies, Horst; and Schindler, Achim, 4,496,416, Cl. 156-293.000.

Schirmer, Henry G., to W. R. Grace & Co., Cryovac Div. Process for forming oriented multi-layer films having a different orientation distribution between layers. 4,496,516, Cl. 264-514.000.

Schlegel, Donald C.; and Bell, Malcolm R., to Sterling Drug Inc. Benzyl alcohol derivatives, their preparation and use. 4,496,590, Cl. 514-646.000.

Schlumberger, Etienne, to Medical Devices, Inc. Process and system for analyzing discontinuities in reasonably homogeneous medium. 4,495,816, Cl. 73-600.000.

Schlumberger Technology Corporation: *See—*
Chapman, Joseph E., III, 4,496,010, Cl. 175-4.550.
DerMott, Raymond W.; and Hartwein, Kenneth J., 4,496,009, Cl. 175-4.520.
Pottier, Alain; and Chesnel, Pierre, 4,496,008, Cl. 175-4.600.

Schmidt, John D. Camera support. 4,496,228, Cl. 354-293.000.

Schmidt, Rudiger: *See—*
Quittkat, Wolfram; Reuter, Gerhard; and Schmidt, Rudiger, 4,496,313, Cl. 432-14.000.

Schmidt, Thomas R., to Shell Oil Company. Fluid flow meter. 4,495,822, Cl. 73-861.270.

Schmieder, Heinrich: *See—*
Humbrecht, Remy; and Schmieder, Heinrich, 4,496,716, Cl. 528-295.000.

Schmiegel, Walter W., to Du Pont de Nemours, E. I., and Company. Curable fluoropolymer containing aromatic amine. 4,496,682, Cl. 524-545.000.

Schnabel, Wilhelm J.: *See—*
O'Connor, James M.; and Schnabel, Wilhelm J., 4,496,684, Cl. 524-591.000.

Schneider, Daniel E. QREEG Process matrix synchronizer system. 4,495,950, Cl. 128-670.000.

Schneider, Egon: *See—*
Kronseder, Hermann; and Schneider, Egon, 4,496,040, Cl. 198-434.000.

Schneider, Jurgen: *See—*
Kasper, Willi; Licht, Helmut; Raquet, Erwin; and Schneider, Jurgen, 4,496,183, Cl. 295-7.000.

Schoenig, Frederick C., Jr.; Grossman, Leonard N.; Lai, Ching C.; Masaitis, William; and Canada, Robert O., to General Electric Company. Automated inspection system. 4,496,056, Cl. 209-539.000.

Schoenmakers, Johannes J. M., to U.S. Philips Corporation. Magnetic-tape cassette with pivotal, nesting cover. 4,497,008, Cl. 360-132.000.

Schorcht, Adelbrecht; Klingenfeld, Dietmar; Hesse, Reiner; Dastis, Rainer; and Linz, Volker, to Jenoptik Jena G.m.b.H. Arrangement for the automatic adjustment of at least one object. 4,496,970, Cl. 358-101.000.

Schram, Joseph G., to Xerox Corporation. Release agent management system for heat and pressure fuser apparatus. 4,496,234, Cl. 355-3.0FU.

Schrekeis, Josef; and Murphy, Gerard P., to University of Illinois, The Board of Trustees of The. Adjustable collet. 4,496,165, Cl. 279-46.00R.

Schrenk, Jurgen: *See—*
Lill, Helmut; Schrenk, Jurgen; and Wunderwald, Peter, 4,496,653, Cl. 435-7.000.

Schroeder, Hansjuergen A.: *See—*
Henderson, Richard; Rothgery, Eugene F.; and Schroeder, Hansjuergen A., 4,496,559, Cl. 514-188.000.

Schron, Steven M., to Xerox Corporation. Consumable status display. 4,496,237, Cl. 355-14.00C.
Schubert, Werner: *See*—
Oestreich, Ulrich; and Schubert, Werner, 4,496,214, Cl. 350-96.230.
Schuette, Donald K.: *See*—
Reichert, Gilbert A.; and Schuette, Donald K., 4,496,791, Cl. 174-51.000.
Schuh, Bernhard: *See*—
von der Heide, Johann; and Schuh, Bernhard, 4,497,002, Cl. 360-97.000.
Schulten, Rudolf: *See*—
Behr, Friedrich; Schulten, Rudolf; and Weirich, Walter, 4,496,373, Cl. 55-16.000.
Schulz, Werner W. Biomembrane demonstration apparatus. 4,496,324, Cl. 434-295.000.
Schwager, Frederic A.; and Kainsinger, Willis C., to Mattel, Inc. Flexible track. 4,496,100, Cl. 238-10.00R.
Schwartzberg, Robert B. Game apparatus utilizing controllable audio signals. 4,496,149, Cl. 273-1.00E.
Schweizer, Hartmut: *See*—
Krauter, Immanuel; and Schweizer, Hartmut, 4,495,931, Cl. 123-651.000.
Schwenninger, Ronald L.: *See*—
Heithoff, Robert B.; Groetzinger, John K.; and Schwenninger, Ronald L., 4,496,387, Cl. 65-335.000.
Schwob, Robert J. Adjustable window grill. 4,495,979, Cl. 160-226.000.
SCM Corporation: *See*—
Miller, Donald E.; Gilmore, Cecilia; Dimler, Steven R.; and Werstak, Charles E., 4,496,602, Cl. 426-555.000.
Scobie, William B., to Keystone International, Inc. Alignment maintaining apparatus for trunnion mounted valves. 4,496,135, Cl. 251-308.000.
Scott, James B.; and Radd, Fred J., to Conoco Inc. Well completion system and process. 4,495,997, Cl. 166-285.000.
Scott, Robert J.: *See*—
McNutt, James E.; Scott, Robert J.; and Welch, Charles W., 4,496,612, Cl. 427-310.000.
Scripps Clinic and Research Foundation: *See*—
Coppersmith, Ward J.; and LaMotte, George B., III, 4,496,657, Cl. 435-287.000.
Sears, Ronald E., to Transpec, Inc. Vehicle hatch mounting assembly. 4,495,731, Cl. 49-402.000.
Seberg, Charles H.: *See*—
Genese, Joseph N.; and Seberg, Charles H., 4,496,348, Cl. 604-167.000.
Sebrn Corporation: *See*—
Braun, Leon, 4,497,041, Cl. 364-900.000.
Seisakusho Kabushiki Kaisha Toyoda Jidoshokki: *See*—
Suzuki, Hajime; and Shiraki, Masao, 4,495,971, Cl. 139-435.000.
Sekiguchi, Yoshitoshi: *See*—
Okigami, Noboru; Hayasaka, Hiroshi; Sekiguchi, Yoshitoshi; and Tamura, Harushige, 4,496,306, Cl. 431-8.000.
Seko, Yasutoshi; Yanagishima, Takayuki; and Inoue, Masami, to Nissan Motor Company, Limited. Drowsiness alarm system for a vehicle. 4,496,938, Cl. 340-576.000.
Selenia, Industrie Elettroniche Associate, S.p.A.: *See*—
Bettini, Giuliano; Penso, Luigi; and Rodriguez, Giuseppe, 4,496,949, Cl. 343-7.700.
SenGupta, Achintya K., to Lever Brothers Company. Separation process and products obtained thereby. 4,496,489, Cl. 260-428.500.
Sennewald, Jurgen: *See*—
Borner, Roland; Holstein, Herbert; and Sennewald, Jurgen, 4,495,733, Cl. 51-165.00R.
Sepelak, Dennis J.: *See*—
Kanner, Bernard; Hopper, Steven P.; and Sepelak, Dennis J., 4,496,754, Cl. 556-420.000.
Sergenian, Haig H.: *See*—
Rispoli, Joseph M.; Rogers, Morris A.; Sergenian, Haig H.; Swartley, John S.; and Topalian, Harry, 4,496,601, Cl. 426-554.000.
Serpa, Richard E., to Smith International, Inc. Prevention of cone seal failures in rock bits. 4,496,013, Cl. 175-374.000.
Setescak, Linda L.: *See*—
Martin, Lawrence L.; and Setescak, Linda L., 4,496,580, Cl. 514-443.000.
Shaban, Atef M.: *See*—
Suciu, George D.; Kwon, Joon T.; and Shaban, Atef M., 4,496,777, Cl. 568-850.000.
Shaffer, David T.: *See*—
Rose, William H.; and Shaffer, David T., 4,496,802, Cl. 200-5.00R.
Shah, Rajiv R., to Texas Instruments Incorporated. Apparatus and method for photolithography with phase conjugate optics. 4,496,222, Cl. 350-354.000.
Shaheen, Joseph M.; and Yancey, Herbert W., to Rockwell International Corporation. Fiber optic cable. 4,496,215, Cl. 350-96.230.
Shapiro, Aron B.: *See*—
Antonov, Jury F.; Iogansen, Vadim I.; Tkachenko, Alexei S.; Chernyavsky, Vladimir P.; and Shapiro, Aron B., 4,496,870, Cl. 310-260.000.
Shapiro, Seymour W., to Bivona Surgical Instruments, Inc. Tracheal tubes. 4,495,948, Cl. 128-207.150.
Sharp Kabushiki Kaisha: *See*—
Arai, Nobushige, 4,495,939, Cl. 126-450.000.
Deguchi, Toshihisa; Ohta, Kenji; and Takahashi, Akira, 4,497,006, Cl. 360-114.000.
Watanabe, Masanori; Furubayashi, Hisatoshi; Tanaka, Junichi; and Hijikigawa, Masaya, 4,496,931, Cl. 338-34.000.
Sharps, Gordon V., Jr., to Mobil Oil Corporation. Method of forming a blocked cross-plied polymer film. 4,496,413, Cl. 156-244.130.
Shaw, David N., to Dunham-Bush, Inc. Temperature and pressure actuated capacity control system for air conditioning system. 4,495,778, Cl. 62-209.000.
Shaw, Seth T., Jr. IUD Arrangement. 4,495,934, Cl. 128-130.000.
Shazeer, Dov. Whirley balls amusement device. 4,496,154, Cl. 273-109.000.
Sheber, Thomas F. Embossed concrete building panels. 4,495,738, Cl. 52-204.000.
Shechter, Leon: *See*—
Munteanu, Marina A.; Oltarzewski, Edward S.; Shechter, Leon; and Warren, Craig B., 4,496,467, Cl. 252-92.000.
Shell, Donald H.: *See*—
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Shell Oil Company: *See*—
DerMott, Raymond W.; and Hartwein, Kenneth J., 4,496,009, Cl. 175-4.520.
Edwards, Charles L.; and Wilson, Stanley E., 4,496,776, Cl. 568-827.000.
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Harryman, John M., 4,496,380, Cl. 62-24.000.
Schmidt, Thomas R., 4,495,822, Cl. 73-861.270.
Sherby, James E., to PPG Industries, Inc. Pattern cutter. 4,495,845, Cl. 83-886.000.
Sherif, Fawzy G.; Majewski, Helmut W.; and Via, Francis A., to Stauffer Chemical Company. Dicalcium phosphate dihydrate having improved monofluorophosphate compatibility and process for the preparation thereof. 4,496,527, Cl. 423-309.000.
Shibakawa, Riichiro: *See*—
Celmer, Walter D.; Cullen, Walter P.; Watts, Paul C.; Shibakawa, Riichiro; and Tone, Junsuke, 4,496,546, Cl. 514-29.000.
Shibata, Akira; Konosu, Makoto; Tamura, Teizo; Hirose, Koichi; Miura, Kuniaki; Kojima, Noboru; and Komatsu, Keiichi, to Hitachi, Ltd. Picture reproducing apparatus in a helical scanning video tape recorder. 4,497,004, Cl. 360-108.000.
Shibata, Akira: *See*—
Terada, Toshimichi; Komatsu, Keiichi; Shibata, Akira; and Satoh, Kenji, 4,497,000, Cl. 360-70.000.
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Sigworth, Harrison W., Jr., to Chevron Research Company. Vacuum system for reducing heat loss. 4,496,001, Cl. 166-387.000.
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Silverman, Daniel. Seismic wave generator. 4,497,044, Cl. 367-41.000.
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Smith, Michael D., to Motorola, Inc. Frequency to voltage converter. 4,496,858, Cl. 307-519.000.
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Smith, T. Basil, to Charles Stark Draper Laboratory, Inc., The. Multichannel redundant processing systems. 4,497,059, Cl. 371-36.000.
Smith, Thomas W.; Cheng, David; and Ward, Anthony T., to Xerox Corporation. Optical disk. 4,496,957, Cl. 346-135.100.
Smith, William D., to Key Concepts, Incorporated. Data entry switch. 4,496,803, Cl. 200-5.00A.
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Steenson, Thomas W.; and Paton, William D. Method of exposing aggregate in a poured concrete panel. 4,496,504, Cl. 264-69.000.

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Steinbock, Allen F., to Whip-Mix Corporation. Dental articulator with spatially oriented mounting table. 4,496,319, Cl. 433-57.000.

Steinke, Kurt E., to Sundstrand Data Control, Inc. Accelerometer pendulum support assembly. 4,495,814, Cl. 73-514.000.

Steinkraus, Keith H., to Cornell Research Foundation, Inc. Process for producing defatted and debittered soybean meal. 4,496,599, Cl. 426-430.000.

Steinkraus, Richard W. Anchoring device. 4,496,462, Cl. 210-232.000.

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Stone, Albert; Pyde, Edwin; and Carveth, Peter, to Baxter Travenol Laboratories, Inc. Multiple chamber container with inner diaphragm and intermediate chamber. 4,496,046, Cl. 206-219.000.

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Stratton, Leo M.; Sipple, Kenneth J.; and Tatonetti, Mario B., to Columbia Research Laboratories, Inc. Mass and coil arrangement for use in an accelerometer. 4,495,815, Cl. 73-517.00B.

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Yamada, Shunsuke; Kawate, Kenji; Ono, Takashi; Arakawa, Hideo; and Suda, Tsuyoshi, 4,496,312, Cl. 432-11.000.

Sugamori, Shigeru, to Takeda Riken Co. Ltd. IC Tester. 4,497,056, Cl. 371-25.000.

Sugimoto, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Manipulator for shifting speed changing gears in automotive vehicles. 4,495,801, Cl. 73-117.000.

Sugimura, Noboru: *See*—
Makino, Shigeo; and Sugimura, Noboru, 4,495,976, Cl. 152-354.00R.

Sugio, Akitoshi; Masu, Masanobu; and Matunaga, Masatugu, to Mitsubishi Gas Chemical Company, Inc. Curable resin composition. 4,496,695, Cl. 525-391.000.

Sugiuchi, Masami; and Imai, Atsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Solid-electrolyte cell. 4,496,638, Cl. 429-192.000.

Sugiura, Hiroaki: *See*—
Kinoshita, Harumi; Kushida, Hideo; Itakura, Takeshi; Akutsu, Masao; Takada, Takuzo; and Sugiura, Hiroaki, 4,496,517, Cl. 264-521.000.

Sugiura, Noboru; and Okado, Terumi, to Hitachi, Ltd. Ignition timing retard angle control apparatus for internal combustion engine. 4,495,918, Cl. 123-425.000.

Sugiyama, Akihiko: *See*—
Tanaka, Tatsuo; Itoh, Hiroshi; and Sugiyama, Akihiko, 4,495,779, Cl. 62-211.000.

Sugiyama, Hiroyuki, to Victor Company of Japan, Ltd. Color video signal reproducing apparatus. 4,496,992, Cl. 358-326.000.

Sugiyama, Hiroyuki; Sakurai, Masaki; Abe, Ryozo; and Yoshihara, Kenji, to Victor Company of Japan, Ltd. Rotary recording medium. 4,496,993, Cl. 358-335.000.

Suh, John T.: *See*—
Skiles, Jerry W.; Youssefyeh, Raymond D.; Suh, John T.; and Jones, Howard, 4,496,542, Cl. 514-2.000.

Sule, Akos. Pinch valve assembly. 4,496,133, Cl. 251-7.000.

Sullivan, William H.: *See*—
Field, Michael E.; and Sullivan, William H., 4,495,807, Cl. 73-290.00R.

Sulzer Brothers Limited: *See*—
Pluss, Raymond, 4,496,498, Cl. 261-95.000.

Sumida, Atsushi: *See*—
Yoshinaga, Minoru; and Sumida, Atsushi, 4,496,671, Cl. 523-206.000.

Sumita, Manabu; and Yamashita, Toshiaki, to Murata Manufacturing Co., Ltd. Parallel type piezoelectric bimorph vibrator. 4,496,871, Cl. 310-324.000.

Sumitomo Chemical Company, Limited: *See*—
Matsui, Masanao; Chun-Eng, Liau; Kogami, Kunio; Yano, Toshihiko; and Matsuo, Noritada, 4,496,586, Cl. 514-531.000.
Minai, Masayoshi; and Katsura, Tadashi, 4,496,767, Cl. 568-346.000.
Nagasawa, Takashi; and Nakata, Tiaki, 4,496,685, Cl. 524-708.000.
Ohashi, Naohito; Shimago, Kozo; Ikeda, Takaharu; and Ishizumi, Kikuo, 4,496,739, Cl. 548-321.000.

Sumitomo Electric Industries, Ltd.: *See*—
Itaka, Koshi; and Hara, Takushi, 4,496,789, Cl. 174-22.00C.
Okita, Koichi; and Asako, Shigeru, 4,496,507, Cl. 264-127.000.

Sumitomo Special Metals Co., Ltd.: *See*—
Endo, Masaji; and Hikone, Takami, 4,496,402, Cl. 148-31.570.

Sun Dengyosha Company, Limited: *See*—
Fukushima, Toshitsugi, 4,496,813, Cl. 200-314.000.

Sundstrand Corporation: *See*—
Weber, Kent, 4,496,862, Cl. 310-56.000.

Sundstrand Data Control, Inc.: *See*—
Steinke, Kurt E., 4,495,814, Cl. 73-514.000.

Sung, Rodney L.: *See*—
Kaufman, Benjamin J.; and Sung, Rodney L., 4,496,368, Cl. 44-63.000.

Sunwood Energy Systems, Inc.: *See*—
Fisher, D. Larry, 4,495,937, Cl. 126-430.000.

Superior Electric Company, The: *See*—
Lenzing, Richard S., 4,496,923, Cl. 336-59.000.

Surgical Design Corporation: *See*—
Banko, Anton, 4,496,342, Cl. 604-27.000.

Suste, Joseph T., to Interstate Electronics Corp. System for driving AC plasma display panel. 4,496,879, Cl. 315-169.400.

Suzuki, Hajime; and Shiraki, Masao, to Seisakusho Kabushiki Kaisha Toyoda Jidoshokki. Weft inserting device for a jet loom. 4,495,971, Cl. 139-435.000.

Suzuki, Masaru; Iwata, Masayosi; Hayashi, Yoshikazu; and Yokoyama, Tadashi, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Column mounted switching device for automobiles. 4,496,810, Cl. 200-61.540.

Suzuki, Osamu: *See*—
Oishi, Kengo; and Suzuki, Osamu, 4,496,118, Cl. 242-198.000.
Oishi, Kengo; and Suzuki, Osamu, 4,497,009, Cl. 360-133.000.

Suzuki, Seikou: *See*—
Shimada, Satoshi; Yamada, Kazuji; Suzuki, Seikou; and Nishihara, Motohisa, 4,495,820, Cl. 73-724.000.

Suzuki, Yoshitomo: *See*—
Hattori, Noboru; and Suzuki, Yoshitomo, 4,495,962, Cl. 137-117.000.

Swanson, Carl D.: *See*—
Hagstrom, Arthur A.; and Swanson, Carl D., 4,496,200, Cl. 312-208.000.

Swanson, Ronald L.; and Strathman, Lyle R., to Rockwell International Corporation. Reduced memory graphics-to-raster scan converter. 4,496,976, Cl. 358-147.000.

Swartley, John S.: *See*—
Rispoli, Joseph M.; Rogers, Morris A.; Sergenian, Haig H.; Swartley, John S.; and Topalian, Harry, 4,496,601, Cl. 426-554.000.

Swartz, Jerome; Barkan, Edward; and Harrison, Shelley A., to Symbol Technologies, Inc. Portable laser scanning system and scanning methods. 4,496,831, Cl. 235-472.000.

Swartzendruber, James A., to Deere & Company. Continuous gauge wheel arm adjustment device with scissors action locking. 4,496,005, Cl. 172-395.000.

Swartzendruber, Ray E., to Chore-Time Equipment, Inc. Feed distribution apparatus. 4,495,894, Cl. 119-51.00R.

Sweeney, Charles T.; and Bird, John K., to Tetravalent Inc. Desulfurization of coal. 4,496,441, Cl. 204-98.000.

Swoboda, Johann: *See*—
Hambrecht, Juergen; Reffert, Rudi W.; Echte, Adolf; and Swoboda, Johann, 4,496,679, Cl. 524-111.000.

Sykes, Philip K., to Blackbourn, Inc. Video cassette carrier. 4,496,048, Cl. 206-387.000.

Sykora, James H. Deep water hydrostatic head control. 4,495,999, Cl. 166-364.000.

Symbol Technologies, Inc.: *See*—
Swartz, Jerome; Barkan, Edward; and Harrison, Shelley A., 4,496,831, Cl. 235-472.000.

Syntex (U.S.A.) Company: *See*—
Hu, Mae W.; and Singh, Prithipal, 4,496,479, Cl. 260-112.00R.

Syntex (U.S.A.) Inc.: *See*—
Muchowski, Joseph M.; and Guzman, Angel, 4,496,577, Cl. 514-392.000.

Systemkiki Co., Ltd.: *See*—
Kato, Takaaki; Kato, Takeshi; and Yoshizawa, Yoshikazu, 4,497,037, Cl. 364-900.000.

Sytykh, Stanislav P.: *See*—
Advolotkin, Nikolai P.; Belyaeva, Svetlana A.; Ovchinnikov, Igor E.; Lebedev, Nikolai I.; Yankovsky, Alexei J.; Sytykh, Stanislav P.; Khrenov, Jury A.; and Axenov, Vladimir N., 4,496,868, Cl. 310-112.000.

Szabo, Georges: *See*—
Bourgogne, Michel; Guth, Jean-Louis; Szabo, Georges; and Wey, Raymond, 4,496,528, Cl. 423-328.000.

Szippl, Andrew F.: *See*—
Unnewehr, Lewis E.; Walker, Robert B.; and Szippl, Andrew F., 4,496,897, Cl. 322-25.000.

Taguchi, Tetsuya: *See*—
Harigaya, Isao; Tamura, Shuichi; Matsuda, Mutsuhide; Hirohata, Michio; Ito, Fumio; and Taguchi, Tetsuya, 4,496,227, Cl. 354-289.120.

Tai, King L.; and Vratny, Frederick, to AT&T Bell Laboratories. Method for fabricating devices with DC bias-controlled reactive ion etching. 4,496,448, Cl. 204-192.00E.

Taiho Pharmaceutical Company, Limited: *See*—
Micetich, Ronald G.; Yamabe, Shigeru; Hirata, Shoji; and Ishida, Naobumi, 4,496,484, Cl. 260-245.20R.

Taisho Pharmaceutical Co., Ltd.: *See*—
Adachi, Takashi; Morimoto, Shigeo; Takahashi, Yoko; Watanabe, Yoshiaki; and Omura, Sadafumi, 4,496,717, Cl. 536-7.200.

Tajima, Ikuo, to Tokai Kogyo Mishin Kabushiki Kaisha. Embroidery machine. 4,495,876, Cl. 112-103.000.

Takada, Susumu; and Sagara, Hisao, to Huskvarna Transportkonstruktioner AB. Automatic on-off valve for use with a pneumatic micrometer. 4,495,794, Cl. 73-37.500.

Takada, Takuzo: *See*—
Kinoshita, Harumi; Kushida, Hideo; Itakura, Takeshi; Akutsu, Masao; Takada, Takuzo; and Sugiura, Hiroaki, 4,496,517, Cl. 264-521.000.

Takagi, Satoshi: *See*—
Hayashi, Hideki; Endo, Sadayoshi; Ito, Yukio; and Takagi, Satoshi, 4,497,001, Cl. 360-74.200.

Takahashi, Akira: *See*—
Deguchi, Toshihisa; Ohta, Kenji; and Takahashi, Akira, 4,497,006, Cl. 360-114.000.

Takahashi, Fumio: *See*—
Kawai, Hirokazu; and Takahashi, Fumio, 4,496,824, Cl. 219-216.000.

Takahashi, Hideyuki; Kenmotsu, Isami; and Okajima, Takahiro, to Pioneer Electronic Corporation. Automatic record loading player. 4,497,051, Cl. 369-77.100.

Takahashi, Kotei, to Nissan Motor Company, Limited. Shift fork. 4,495,831, Cl. 74-473.00R.

Takahashi, Shuichi: *See*—
Yuasa, Kazuhiro; Takahashi, Shuichi; and Kondo, Mitsuru, 4,496,987, Cl. 358-283.000.

Takahashi, Yoko: *See*—
Adachi, Takashi; Morimoto, Shigeo; Takahashi, Yoko; Watanabe, Yoshiaki; and Omura, Sadafumi, 4,496,717, Cl. 536-7.200.

Takaishi, Hiroshi. Massager. 4,495,940, Cl. 128-55.000.

Takano, Isamu; and Ohta, Norihisa, to Nippon Electric Co., Ltd. Negative feedback amplifier having GaAs FET's. 4,496,908, Cl. 330-277.000.

Takara Co., Ltd.: *See*—
Terui, Masumi, 4,496,330, Cl. 446-464.000.

Takase, Sadao; and Hosaka, Akio, to Nissan Motor Company, Limited. Fuel injection control system. 4,495,923, Cl. 123-478.000.

Takase, Sadao: *See*—
Ueno, Takashi; and Takase, Sadao, 4,495,924, Cl. 123-478.000.

Takasugi, Hisashi: *See*—
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, 4,496,562, Cl. 514-207.000.

Takasugi, Tsuneji: *See*—
Waki, Masahiko; Umezawa, Seiji; Takasugi, Tsuneji; Koide, Hiroshi; and Kasai, Takao, 4,496,248, Cl. 368-280.000.

Takata, Satoru: *See*—
Miura, Shigetaka; Igawa, Junichi; and Takata, Satoru, 4,496,902, Cl. 324-150.000.

Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, to Fujisawa Pharmaceutical Co., Ltd. 7-Substituted-3-cephem-4-carboxylic acid esters. 4,496,562, Cl. 514-207.000.

Takeda Chemical Industries, Ltd.: *See*—
Kondo, Koichi; Iwasa, Susumu; and Yoshida, Isamu, 4,496,658, Cl. 436-510.000.

Takeda Riken Co. Ltd.: *See*—
Sugamori, Shigeru, 4,497,056, Cl. 371-25.000.

Takehara, Isamu: *See*—
Ichihara, Noboru; and Takehara, Isamu, 4,496,887, Cl. 318-254.000.

Takemae, Yoshihiro; Nozaki, Shigeki; Kabeshima, Katsuhiko; and Enomoto, Seiji, to Fujitsu Limited. Semiconductor circuit for enabling a quick rise of the potential on the word line for driving a clock signal line. 4,496,850, Cl. 307-269.000.

Takemoto, Toyoki: *See*—
Inoue, Michihiro; Matsuzawa, Akira; and Takemoto, Toyoki, 4,496,935, Cl. 340-347.0AD.

Takenaka, Yuji, to Fuji Photo Film Co., Ltd. Trimming area control system in photo-printing. 4,496,983, Cl. 358-287.000.

Takiguchi, Michitaka: *See*—
Asai, Yoshimi; Takiguchi, Michitaka; and Horie, Fujio, 4,495,878, Cl. 112-158.00B.

Takimoto, Hiroyuki, to Canon Kabushiki Kaisha. Video tape recorder with delayed control signal recording upon restart. 4,496,998, Cl. 360-33.100.

Takushima, Takashi: *See*—
Futatsuishi, Shunichi; Fujita, Shozo; and Takushima, Takashi, 4,495,719, Cl. 40-590.000.

Talbott, Gene B. Seed germinating apparatus and method. 4,495,725, Cl. 47-85.000.

Tam, Man C.; and Kovacs, Gregory J., to Xerox Corporation. Overcoated migration imaging system. 4,496,642, Cl. 430-41.000.

Tamary, Ernest J., to Eastman Kodak Company. Fuser apparatus. 4,496,235, Cl. 355-3.0FU.

Tamasovics, John F.: *See*—
Balkwill, G. Russell; Robinet, Jules P.; and Tamasovics, John F., 4,496,792, Cl. 174-65.00R.

Tamura, Harushige: *See*—
Okigami, Noboru; Hayasaka, Hiroshi; Sekiguchi, Yoshitoshi; and Tamura, Harushige, 4,496,306, Cl. 431-8.000.

Tamura, Shuichi: *See*—
Harigaya, Isao; Tamura, Shuichi; Matsuda, Mutsuhide; Hirohata, Michio; Ito, Fumio; and Taguchi, Tetsuya, 4,496,227, Cl. 354-289.120.

Tamura, Teizo: *See*—
Shibata, Akira; Konosu, Makoto; Tamura, Teizo; Hirose, Koichi; Miura, Kuniaki; Kojima, Noboru; and Komatsu, Keiichi, 4,497,004, Cl. 360-108.000.

Tanaka, Isao; and Inaba, Takao, to Pilot Ink Co., Ltd. Writing pen with space behind nib. 4,496,258, Cl. 401-206.000.

Tanaka, Junichi: *See*—
Watanabe, Masanori; Furubayashi, Hisatoshi; Tanaka, Junichi; and Hijikigawa, Masaya, 4,496,931, Cl. 338-34.000.

Tanaka, Ko, to Yamaha Hatsudoki Kabushiki Kaisha. Offroad auto tricycle. 4,496,019, Cl. 180-215.000.

Tanaka, Tatsuo; Itoh, Hiroshi; and Sugiyama, Akihiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Air conditioner. 4,495,779, Cl. 62-211.000.

Tanaka, Toshinori: *See*—
Morishita, Akira; Tanaka, Toshinori; Matsumoto, Kouichi; and Gotou, Takeo, 4,495,905, Cl. 123-179.00F.

Tanaka, Yasushi: *See*—
Ishii, Yoshiya; Hachitani, Shuji; and Tanaka, Yasushi, 4,495,914, Cl. 123-357.000.

Tanigawa, Yoshiyuki: *See*—
Nagata, Keiji; Ueda, Syuji; and Tanigawa, Yoshiyuki, 4,495,871, Cl. 108-20.000.

Taniguchi, Masajiro: *See*—
Zenitani, Hideki; Oka, Akira; Okamoto, Itsuo; Hayashi, Hisao; and Taniguchi, Masajiro, 4,496,057, Cl. 211-26.000.

Taniguchi, Yutaka: *See*—
Sakaino, Michio; Igarashi, Hisashi; and Taniguchi, Yutaka, 4,495,904, Cl. 123-179.00G.

Tanizaki, Hiroyuki; Ebihara, Sakae; Hatanaka, Akimitsu; Ogawa, Takayoshi; and Kanazawa, Yuzo, to Nissan Motor Company, Limited; Aichi Machine Industry Company, Limited; and Ikeda Bussan Company Limited. Seat device. 4,496,189, Cl. 297-63.000.

Tanji, Hiroshi; Iwata, Michitaka; and Sato, Hideo, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for the production of a polyester fiber dyeable under normal pressure. 4,496,505, Cl. 264-101.000.

Taoka Chemical Company, Limited: *See*—
Nagasawa, Takashi; and Nakata, Tiaki, 4,496,685, Cl. 524-708.000.

Targan, Ronald G. Process for producing black barley malt extract. 4,496,605, Cl. 426-655.000.

Tashiro, Noboru: *See*—
Yamamoto, Sakuei; Nishida, Mitsuhiro; Tashiro, Noboru; and Sonoda, Nobuo, 4,496,866, Cl. 310-87.000.

Tatonetti, Mario B.: *See*—
Stratton, Leo M.; Sipple, Kenneth J.; and Tatonetti, Mario B., 4,495,815, Cl. 73-517.00B.

Taylor, John H., to McGard, Inc. Locking valve construction. 4,495,910, Cl. 123-198.00B.

Taylor, Julius E., Jr. Apparatus for aligning abutting pipes. 4,496,093, Cl. 228-49.00B.

Taylor, Junius E.: *See*—
Acker, Loren C.; Taylor, Junius E.; and Minney, Stephen C., 4,496,819, Cl. 219-10.810.

Tectron (Eng) Ltd.: *See*—
Needham, Arthur M.; and Helyer, Laurie E., 4,495,967, Cl. 137-614.060.

Teijin Limited: *See*—
Yamamoto, Tamio; Kobayashi, Tsukasa; Hirakawa, Tadashi; Yoshida, Makoto; and Okumura, Masumi, 4,496,583, Cl. 428-288.000.

Teiken, Gerald W.: *See*—
Markwardt, Terrance L.; and Teiken, Gerald W., 4,496,206, Cl. 339-98.000.

Tekippe, Vincent J., to Gould Inc. Optical pressure sensor. 4,495,819, Cl. 73-705.000.

Tektronix, Inc.: *See*—
Helton, Raymond L.; Trobough, Douglas W.; and McPherson, Marianne, 4,496,438, Cl. 204-44.000.

Tele-Drill, Inc.: *See*—
McDonald, William J.; Maurer, William C.; and Nagel, David D., 4,496,174, Cl. 285-53.000.

Teletype Corporation: *See*—
Hagstrom, Arthur A.; and Swanson, Carl D., 4,496,200, Cl. 312-208.000.

Terada, Toshimichi; Komatsu, Keiichi; Shibata, Akira; and Satoh, Kenji, to Hitachi, Ltd. Magnetic recording/reproducing apparatus. 4,497,000, Cl. 360-70.000.

Teramachi, Hiroshi. Linear slide bearing and linear slide table using this bearing. 4,496,196, Cl. 308-6.00C.

Terashima, Kazutaka; and Fukuda, Tsuguo, to Agency of Industrial Science & Technology; and Ministry of International Trade & Technology. Method for manufacture of III–V compound semiconducting single crystal. 4,496,424, Cl. 156-601.000.

Teraura, Makoto, to Nippon Cable System Inc. Boat steering mechanism. 4,495,881, Cl. 114-159.000.

Terhune, James H., to General Electric Company. Magnetostrictive pressure detector. 4,495,821, Cl. 73-753.000.

Terranova, Joseph C., III: *See*—
Gattu, Narahari; and Terranova, Joseph C., III, 4,496,062, Cl. 212-189.000.

Terui, Masumi, to Takara Co., Ltd. Miniature toy vehicle assembly. 4,496,330, Cl. 446-464.000.

Tesco Engineering Company: *See*—
Miller, Sheldon M., 4,497,045, Cl. 367-78.000.

Teske, Lothar. Rotary arm-type unloader for bulk-storage bin. 4,496,272, Cl. 414-323.000.

Tessarzik, Juergen M.; Myers, Albert; and Yuille, James D., to General Electric Company. Probe mounting system. 4,495,810, Cl. 73-432.00R.

Tetra Pak Developpement SA: *See*—
Cheever, Richard N., 4,496,881, Cl. 315-357.000.

Tetra Systems, Inc.: *See*—
Hutchins, John S.; and DeFours, Mervyn A., 4,495,992, Cl. 166-250.000.

Tetravalent Inc.: *See*—
Sweeney, Charles T.; and Bird, John K., 4,496,441, Cl. 204-98.000.

Texaco Inc.: *See*—
Brown, Alfred; Huang, Wann-Sheng; and Shum, Yick-Mow, 4,495,994, Cl. 166-261.000.
Dowling, Donald J.; Richter, Albert P., Jr.; Warren, Wayne F.; and Arnold, Dan M., 4,495,805, Cl. 73-155.000.
Kaufman, Benjamin J.; and Sung, Rodney L., 4,496,368, Cl. 44-63.000.
Powell, Justin C., 4,496,746, Cl. 549-255.000.

Texas Independent Tools and Unlimited Service, Inc.: *See*—
Weeks, Benjamin R., 4,496,000, Cl. 166-382.000.

Texas Instruments Incorporated: *See*—
Andresen, Bernhard H.; Schenck, Stephen R.; and Kennedy, Nathan R., 4,496,914, Cl. 331-110.000.
Gasparri, Alfred, Jr., 4,497,066, Cl. 382-48.000.
Kawate, Keith W.; and Strachan, Richard W., deceased, 4,496,895, Cl. 318-781.000.
Orcutt, John W.; Hightower, Angus W.; and Smith, Reginald W., 4,496,965, Cl. 357-70.000.
Shah, Rajiv R., 4,496,222, Cl. 350-354.000.
Southerland, Ebbin R., Jr., 4,496,851, Cl. 307-269.000.
Walstra, Hidde, 4,496,496, Cl. 261-39.00E.

Textrix Corporation: *See*—
McGuire, Richard; and Donhowe, Herbert M., 4,497,027, Cl. 364-471.000.

Tezuka, Masayoshi: *See*—
Kitakami, Hazime; Ishikawa, Hiroshi; Tezuka, Masayoshi; Adachi, Susumu; and Makinouchi, Akifumi, 4,497,039, Cl. 364-900.000.

Thate, Kurt; Farber, Heinrich; and Muller, Jurgen, to Agfa-Gevaert Aktiengesellschaft. Arrangement for supplying unexposed X-ray films to a handling apparatus. 4,496,273, Cl. 414-411.000.

Thayer, William L.: *See*—
Kutowy, Oleh; Thayer, William L.; and Sourirajan, Srinivasa, 4,496,502, Cl. 264-41.000.

The, Paul J.: *See—*
Bush, J. Finley; and The, Paul J., 4,496,524, Cl. 423-122.000.
Thermostat- und Schaltgeratebau GmbH & Co. KG: *See—*
Hollweck, Walter, 4,496,928, Cl. 337-94.000.
Thies GmbH & Co.: *See—*
Eckrodt, Gunter, 4,495,785, Cl. 68-62.000.
Thiokol Corporation: *See—*
Bell, Frank H., 4,495,870, Cl. 102-511.000.
Johnson, Dell A.; and Bolieau, Christopher W., 4,495,763, Cl. 60-242.000.
Thir, Basil: *See—*
Camp, Ronald L.; Dexheimer, Edward M.; and Thir, Basil, 4,496,632, Cl. 428-395.000.
Thomas & Betts Corporation: *See—*
Christensen, Gordon D.; and Donaher, Charles J., 4,496,205, Cl. 339-74.00R.
Thomas, Charles P.: *See—*
Chen, Hsiu Kuo; and Thomas, Charles P., 4,495,995, Cl. 166-273.000.
Thomasson, James T.: *See—*
Allen, Robert E.; and Thomasson, James T., 4,496,865, Cl. 310-80.000.
Thompson, David J.: *See—*
Harrison, Kenneth J.; Raynes, Edward P.; Saunders, Frances C.; and Thompson, David J., 4,496,221, Cl. 350-349.000.
Thompson, Michael L.: *See—*
Forte, Don A.; and Thompson, Michael L., 4,496,905, Cl. 324-414.000.
Thomson-Brandt: *See—*
Pissot, Guy, 4,496,177, Cl. 292-87.000.
Thomson-CSF: *See—*
Alet, Robert; and Vignault, Eric, 4,496,323, Cl. 434-29.000.
Thorpe, William, to British Telecommunications. Radio frequency alternate-path phase switch. 4,496,918, Cl. 333-164.000.
Three Sisters Ranch Enterprises PTRs: *See—*
Bullock, Joseph J., III, 4,496,066, Cl. 215-320.000.
Thunberg, John Y. L.: *See—*
Lindahl, Ulf P. F.; Backstrom, Gudrun E.; and Thunberg, John Y. L., 4,496,550, Cl. 514-54.000.
Thune-Eureka A/S: *See—*
Eriksen, Gunnar, 4,495,714, Cl. 34-111.000.
Thyssen-Bornemisza Inc.: *See—*
Pate, Harold T.; Laney, William R.; and Shell, Donald H., 4,495,970, Cl. 138-148.000.
Tikhonov, Vladimir I.: *See—*
Nikolsky, Vladimir A.; Yagodin, Valery M.; Vazhnov, Evgeny N.; Bondar, Efim S.; Naumenko, Igor P.; Vozny, Valery F.; Orlov, Vladimir N.; and Tikhonov, Vladimir I., 4,495,776, Cl. 62-114.000.
Tischer, Werner; Liebert, Karl-Heinz; and Fassbender, Rolf, to Zahnradfabrik Friedrichshafen, AG. Booster power steering. 4,495,769, Cl. 60-451.000.
Tisdale, Glenn E.; and Lindemann, Harley B., to Westinghouse Electric Corp. Target recognition system enhanced by active signature measurements. 4,497,065, Cl. 382-1.000.
Tissot, Rene : *See—*
Scherschlicht, Richard R.; and Tissot, Rene , 4,496,545, Cl. 514-16.000.
Titus, Charles H.; Wittle, John K.; and Bell, Christy W., to Electro-Petroleum, Inc. Apparatus for passing electrical current through an underground formation. 4,495,990, Cl. 166-65.00R.
Tkachenko, Alexei S.: *See—*
Antonov, Jury F.; Iogansen, Vadim I.; Tkachenko, Alexei S.; Chernyavsky, Vladimir P.; and Shapiro, Aron B., 4,496,870, Cl. 310-260.000.
TMC Corporation: *See—*
Krob, Erwin; Leichtfried, Friedrich; and Bauer, Helmut, 4,496,167, Cl. 280-605.000.
Toagosei Chemical Industry Co., Ltd.: *See—*
Okazaki, Toshimasa; Sakata, Akihiro; Nagai, Kyozi; and Nakashima, Kazuo, 4,496,442, Cl. 204-129.000.
Tobishi Industries Ltd.: *See—*
Hosoya, Toshiro, 4,496,869, Cl. 310-172.000.
Todo Seisakusho Ltd.: *See—*
Shimofuri, Koichi, 4,495,747, Cl. 53-412.000.
Tojo, Kenji: *See—*
Arai, Nobukatsu; Machida, Shigeru; Sato, Eiji; Tojo, Kenji; and Uchikawa, Naoshi, 4,496,296, Cl. 418-55.000.
Tokai Kogyo Mishin Kabushiki Kaisha: *See—*
Tajima, Ikuo, 4,495,876, Cl. 112-103.000.
Tokico Ltd.: *See—*
Muto, Toshiaki; and Goto, Akio, 4,495,790, Cl. 72-326.000.
Tokumo, Akio, to Pioneer Electronic Corporation. Voltage-controlled attenuator. 4,496,860, Cl. 307-542.000.
Tokyo Sanyo Electric Co., Ltd.: *See—*
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Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Iizuka, Tetsuya; and Hara, Hisashi, 4,497,043, Cl. 365-182.000.
Ikeda, Yoshio, 4,495,784, Cl. 68-23.600.
Iwahashi, Hiroshi; Asano, Masamichi; Yoshikawa, Kuniyoshi; and Mito, Masazi, 4,495,693, Cl. 29-571.000.
Kirita, Kei; and Koike, Katuo, 4,496,843, Cl. 250-426.000.
Kitagawa, Kazuo; Endoh, Kenjiro; and Kira, Hideshi, 4,496,937, Cl. 340-347.0SH.
Kuno, Nobuyoshi; and Honda, Kiyokazu, 4,496,872, Cl. 313-113.000.
Nakano, Teruo; and Hirata, Akio, 4,496,893, Cl. 318-721.000.
Sugiuchi, Masami; and Imai, Atsuo, 4,496,638, Cl. 429-192.000.
Tanaka, Tatsuo; Itoh, Hiroshi; and Sugiyama, Akihiko, 4,495,779, Cl. 62-211.000.
Yoshihara, Setsuo; Otsubo, Yorihumi; and Kobayashi, Takashi, 4,496,830, Cl. 235-458.000.
Tomishima, Hitoshi: *See—*
Matsumura, Toshimi; Miyaki, Masahiko; Tomishima, Hitoshi; and Masuda, Akira, 4,495,920, Cl. 123-436.000.
Tompkins, L. Kirk, to Global Manufacturing Co. Inc. Multiple blast aerator system. 4,496,076, Cl. 222-3.000.
Tone, Junsuke: *See—*
Celmer, Walter D.; Cullen, Walter P.; Watts, Paul C.; Shibakawa, Riichiro; and Tone, Junsuke, 4,496,546, Cl. 514-29.000.
Tone, Syoichi; Deno, Koji; and Matsushima, Akio, to Murata Kikai Kabushiki Kaisha. Bunch winding device in winding machine. 4,496,108, Cl. 242-18.0PW.
Topalian, Harry: *See—*
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Toray Industries, Inc.: *See—*
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Kawabe, Norio; Tsuda, Mikio; and Kobashi, Sadao, 4,496,647, Cl. 430-303.000.
Nakayama, Takashi; Kajita, Kohji; and Yamagata, Selichi, 4,495,761, Cl. 57-328.000.
Okamoto, Miyoshi, 4,496,619, Cl. 428-224.000.
Yoshinaga, Minoru; and Sumida, Atsushi, 4,496,671, Cl. 523-206.000.
Torii & Co. Ltd.: *See—*
Fujii, Setsuro; Yaegashi, Takashi; Nakayama, Toyoo; Nunomura, Shigeki; Sakurai, Yojiro; and Okutome, Toshiyuki, 4,496,584, Cl. 514-510.000.
Torneman, Bjorn, to IPS Interproject Service AB. Apparatus for gasification of carbon. 4,496,369, Cl. 48-92.000.
Torti, Anthony: *See—*
Comeau, Paul E.; and Torti, Anthony, 4,495,671, Cl. 16-87.00R.
Toshiba Kikai Kabushiki Kaisha: *See—*
Iwamoto, Norihiro, 4,495,828, Cl. 74-110.000.
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Kurita, Atsushi, 4,496,696, Cl. 525-479.000.
Totten, George E.; and Williams, Thomas C., to Union Carbide Corporation. Liquid crystal silanes. 4,496,482, Cl. 534-577.000.
Touchais, Maurice; and Djelalian, Madeleine. Method and device for collecting and exploiting solar radiation. 4,496,787, Cl. 136-248.000.
Towmotor Corporation: *See—*
Melocik, Grant C.; and Wible, John E., 4,496,896, Cl. 320-2.000.
Toyama, Jun. Support device. 4,496,130, Cl. 248-585.000.
Toyo Boseki Kabushiki Kaisha: *See—*
Kurita, Kazuo; and Ishihara, Hideaki, 4,496,630, Cl. 428-364.000.
Shimada, Masayoshi; Iizuka, Yasuhiro; and Hukazu, Tetuo, 4,496,637, Cl. 429-44.000.
Toyo Jozo Kabushiki Kaisha: *See—*
Yoshino, Eiichi; Matsuura, Kazuo; and Misaki, Hideo, 4,496,655, Cl. 435-191.000.
Toyoda Koki Kabushiki Kaisha: *See—*
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Toyota Jidosha Kabushiki Kaisha: *See—*
Kato, Takaaki; Hirano, Yoshio; Ochiai, Takeshi; Ishikawa, Seizi; and Sakai, Kazunori, 4,497,057, Cl. 371-29.000.
Kobayashi, Nobuyuki; and Hattori, Takashi, 4,495,926, Cl. 123-486.000.
Shinoda, Kazuo; and Kobayashi, Nobuyuki, 4,495,915, Cl. 123-357.000.
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Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Idogaki, Takaharu; Kawai, Hisasi; Hattori, Kyo; and Sakurai, Kazuhiro, 4,496,134, Cl. 251-65.000.
Moriyama, Masakazu; and Saito, Takao, 4,496,996, Cl. 360-12.000.
Yasue, Hideki; and Fukumura, Kagenori, 4,495,830, Cl. 74-467.000.
Tranoco, Inc.: *See—*
Byars, Larry W.; and Jackson, Eric C., 4,496,421, Cl. 156-304.100.
Transpec, Inc.: *See—*
Sears, Ronald E., 4,495,731, Cl. 49-402.000.
Traub, Zeno P., to Eaton-Leonard Corporation. Multiple curvature bender. 4,495,788, Cl. 72-157.000.
Trobough, Douglas W.: *See—*
Helton, Raymond L.; Trobough, Douglas W.; and McPherson, Marianne, 4,496,438, Cl. 204-44.000.
True, Thomas T.; and Good, William E., to General Electric Company. Light valve projection system with improved vertical resolution. 4,496,969, Cl. 358-62.000.
Trussler, Ronald C.: *See—*
Eastcott, Peter D.; and Trussler, Ronald C., 4,496,883, Cl. 318-98.000.
Trutek Research, Inc.: *See—*
Brisson, Alfred; and Nowacki, Christopher, 4,495,944, Cl. 128-725.000.
Trutzschler GmbH & Co. KG: *See—*
Rosink, Albert, 4,495,677, Cl. 19-159.00R.
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Mathew, Moni G.; and Weisz, Thomas J., 4,496,915, Cl. 333-1.100.
Trzaska, Theodore T.: *See—*
McMorrow, Harold L.; and Trzaska, Theodore T., 4,496,256, Cl. 400-248.000.

Tsai, Yih-Wan, to PPG Industries, Inc. Target wall air jet for controlling combustion air. 4,496,316, Cl. 432-30.000.
Tsubouchi, Kaoru: *See*—
Furuta, Yohichi; Tsubouchi, Kaoru; and Nanamura, Kaoru, 4,495,772, Cl. 60-533.000.
Tsubouchi, Natsuro; and Denda, Masahiko, to Mitsubishi Denki Kabushiki Kaisha. MOSFET Light detecting device having a Schottky junction. 4,496,964, Cl. 357-30.000.
Tsuchihashi, Genichi; Mitamura, Shuichi; Kitajima, Koji; and Kobayashi, Kumi, to Sagami Chemical Research Center. Optically active 1-(6-methoxy-2-naphthyl)-2-(alkoxycarbonyl) amino-1-propanone, its derivatives and their halo analogs and the methods for their manufacture. 4,496,755, Cl. 560-028.000.
Tsuda, Mikio: *See*—
Kawabe, Norio; Tsuda, Mikio; and Kobashi, Sadao, 4,496,647, Cl. 430-303.000.
Tsuei, Chang-Chyi: *See*—
Chi, Cheng-Chung J.; Davidson, Arthur; and Tsuei, Chang-Chyi, 4,496,854, Cl. 307-306.000.
Tsuji, Jiro; and Shimizu, Isao, to Nippon Zeon Co. Ltd. Process for production of α,β-unsaturated ketones. 4,496,766, Cl. 568-346.000.
Tsuji, Kiyoshi: *See*—
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, 4,496,562, Cl. 514-207.000.
Tsukada, Kazuo; Kanzaki, Yoshiharu; and Hori, Yoshikazu, to Fujitsu Limited. Hyperbolic navigation receiver. 4,496,951, Cl. 343-394.000.
Tsukada, Masaharu; Kimizuka, Junichi; and Shimizu, Haruo, to Canon Kabushiki Kaisha. Image recording apparatus. 4,496,238, Cl. 355-14.00D.
Tsukamoto, Tadashi: *See*—
Ishii, Sugao; Itou, Susumu; Kawamura, Mikio; and Tsukamoto, Tadashi, 4,496,063, Cl. 212-270.000.
Tuchiya, Yoshimasa; Chikarishi, Takayo; and Kawamo, Kazunori, to Nissan Motor Company, Limited; and Nissan Shatai Company, Limited. Sealing structure for an automotive vehicle. 4,496,186, Cl. 296-146.000.
Tung, William C. T.: *See*—
Heater, Paul L., Jr.; Bletso, Nelson C.; and Tung, William C. T., 4,496,673, Cl. 523-458.000.
Tureaud, Aloysius K. Bowling aid device. 4,496,151, Cl. 273-54.00B.
Turley, Stephen E. H., to ITT Industries, Inc. Method of making a compound semiconductor laser. 4,496,403, Cl. 148-171.000.
Turner, Roger S. Semiconductor wafer sectioning machine. 4,495,732, Cl. 51-91.00R.
Turner, Weems D.: *See*—
Albert, James W.; and Turner, Weems D., 4,496,285, Cl. 417-12.000.
Tuthill, Frederick W. Tool holder. 4,496,088, Cl. 224-253.000.
Tweg, Edward. Collapsible paddle boat. 4,496,325, Cl. 440-26.000.
Tyler, Derek E.: *See*—
Kindlmann, Peter J.; Yarwood, John C.; Ungarean, Gary L.; and Tyler, Derek E., 4,495,981, Cl. 164-452.000.
Kindlmann, Peter J.; Ungarean, Gary L.; Yarwood, John C.; and Tyler, Derek E., 4,495,983, Cl. 164-452.000.
Tyndale Plains-Hunter, Ltd.: *See*—
Gould, Francis E.; and Johnston, Christian W., 4,496,535, Cl. 424-19.000.
Tyrell, John A.: *See*—
Rosenquist, Niles R.; and Tyrell, John A., 4,496,693, Cl. 525-146.000.
Uchikawa, Naoshi: *See*—
Arai, Nobukatsu; Machida, Shigeru; Sato, Eiji; Tojo, Kenji; and Uchikawa, Naoshi, 4,496,296, Cl. 418-55.000.
Ueda, Syuji: *See*—
Nagata, Keiji; Ueda, Syuji; and Tanigawa, Yoshiyuki, 4,495,871, Cl. 108-20.000.
Ueno, Takashi; and Takase, Sadao, to Nissan Motor Company, Limited. Fuel injection control system for a direct injection type internal combustion engine. 4,495,924, Cl. 123-478.000.
Uetsuki, Masao: *See*—
Murata, Yoshifumi; Igi, Keishiro; Narukawa, Hiroshi; Uetsuki, Masao; Bando, Satoshi; Kawai, Shuji; and Shirano, Kenji, 4,496,714, Cl. 528-272.000.
Ultra Carbon Corporation: *See*—
Kusmierz, Marvin A.; and Pijgazek, Robert F., 4,496,828, Cl. 219-405.000.
UMC Industries, Inc.: *See*—
Allgeyer, David F., 4,496,201, Cl. 312-296.000.
Umemoto, Chiyuki; and Kohketsu, Kazuo, to Fuji Photo Film Co., Ltd. Noise erasing apparatus for stimulable phosphor sheet. 4,496,838, Cl. 250-327.200.
Umemoto, Makoto: *See*—
Yagihara, Morio; Hirano, Tsumoru; and Umemoto, Makoto, 4,496,650, Cl. 430-381.000.
Umezawa, Seiji: *See*—
Waki, Masahiko; Umezawa, Seiji; Takasugi, Tsuneji; Koide, Hiroshi; and Kasai, Takao, 4,496,248, Cl. 368-280.000.
Umino, Mitsugu, to Yoshida Kogyo K. K. Apparatus for manufacturing slide fastener having separable end stop. 4,495,695, Cl. 29-767.000.
Unarco Industries, Inc.: *See*—
Highsmith, Charles E., 4,496,061, Cl. 211-191.000.
Ungarean, Gary L.: *See*—
Kindlmann, Peter J.; Yarwood, John C.; Ungarean, Gary L.; and Tyler, Derek E., 4,495,981, Cl. 164-452.000.
Kindlmann, Peter J.; Ungarean, Gary L.; Yarwood, John C.; and Tyler, Derek E., 4,495,983, Cl. 164-452.000.
Uni-Pump, Inc.: *See*—
Zuehlsdorf, James J., 4,496,077, Cl. 222-61.000.
Union Carbide Corporation: *See*—
Colon, Ismael, 4,496,700, Cl. 526-111.000.
Dehm, David C.; Hoy, Kenneth L.; and Hoy, Richard C., 4,496,708, Cl. 528-76.000.
D'Silva, Themistocles D. J., 4,496,721, Cl. 544-58.200.
Durden, John A.; and D'Silva, Themistocles D. J., 4,496,591, Cl. 514-477.000.
Hodakowski, Leonard E.; and Ayad, Hafez M., 4,496,493, Cl. 260-940.000.
Kanner, Bernard; Hopper, Steven P.; and Sepelak, Dennis J., 4,496,754, Cl. 556-420.000.
Nicholson, Myron D., 4,496,595, Cl. 426-284.000.
Nowobilski, Jeffert J.; and Owens, William J., 4,496,633, Cl. 428-426.000.
Totten, George E.; and Williams, Thomas C., 4,496,482, Cl. 534-577.000.
Young, John K.; and Barthel, Alfred, 4,495,775, Cl. 62-48.000.
Union Oil Company of California: *See*—
Delaney, Dennis D.; and Fenton, Donald M., 4,496,534, Cl. 423-573.00R.
Moorehead, Eric L., 4,496,784, Cl. 585-486.000.
United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britanic Majesty's Government of the, of Whitehall: *See*—
Harrison, Kenneth J.; Raynes, Edward P.; Saunders, Frances C.; and Thompson, David J., 4,496,221, Cl. 350-349.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Cattell, Alan F.; Cockayne, Brian; Wright, Peter J.; and Kirton, John, 4,496,610, Cl. 427-66.000.
Harrison, David J., 4,496,904, Cl. 324-227.000.
United States Borax & Chemical Corporation: *See*—
Hunter, Don L., 4,496,483, Cl. 260-239.0BF.
United States Gypsum Company: *See*—
Ptasienski, Mitchell P.; Mustoe, Robert M.; and Zajonc, Fred H., deceased, 4,496,515, Cl. 264-504.000.
United States of America
Air Force: *See*—
Gnagy, Clayton C., 4,495,764, Cl. 60-255.000.
Goldie, Harry; and Cherry, William D., 4,496,917, Cl. 333-13.000.
Salour, Michael M.; and Fuchs, Adrian, 4,495,782, Cl. 62-514.00R.
Army: *See*—
Wandinger, Lothar; and Nalbandian, Vahakn, 4,496,913, Cl. 331-56.000.
White, Harold V., 4,495,850, Cl. 89-1.800.
Energy: *See*—
Field, Michael E.; and Sullivan, William H., 4,495,807, Cl. 73-290.00R.
Mikesell, Charles R., 4,496,836, Cl. 250-231.00R.
Wang, Rong; and Merz, Martin D., 4,496,635, Cl. 428-680.000.
National Aeronautics and Space Administration: *See*—
Varma, Indra K.; Fohlen, George M.; and Parker, John A., 4,496,701, Cl. 526-262.000.
Whipple, Raymond D., 4,496,122, Cl. 244-75.00R.
National Security Agency: *See*—
Williams, Richard P., 4,497,042, Cl. 365-5.000.
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Bowling, Donald R.; Kinman, Darry M.; Afendykiw, Marko; and White, David J., 4,497,030, Cl. 364-481.000.
Cooke, Michael W.; Arriola, Arturo; Stegman, Julius M.; and Collins, Kenneth D., 4,495,849, Cl. 89-1.140.
Heller, Carl A.; Erickson, Eric D.; and Greni, Sterling R., 4,496,520, Cl. 422-60.000.
Higginbotham, Robert R.; and Malakhoff, Alexander, 4,495,809, Cl. 73-432.0SD.
Rozner, Alexander G.; Lenko, Daniel S.; and Carter, James H., 4,495,848, Cl. 89-1.100.
Savage, Howard T., 4,497,046, Cl. 367-169.000.
Woods, Charles E., 4,496,218, Cl. 350-267.000.
Young, Leo, 4,496,876, Cl. 315-4.000.
U.S. Philips Corporation: *See*—
Beckmann, Friedrich K.; Helzel, Thomas; and Peemoller, Horst, 4,496,202, Cl. 339-5.00R.
Beetstra, Tsjalling, 4,497,050, Cl. 369-59.000.
Derks, Pierre L. L. M.; and Van Herwijnen, Gerardus, 4,495,885, Cl. 118-241.000.
Gorris, Joannes J. H. M., 4,495,812, Cl. 73-468.000.
Goscianski, Michel, 4,496,220, Cl. 350-341.000.
Habelt, Gerhard; and Mucha, Franz, 4,496,257, Cl. 400-578.000.
Hermens, Joannes L. G.; and Kerkhof, Matheus W., 4,496,842, Cl. 250-385.000.
Lubchenko, Eugene; Hoke, Leander H., Jr.; and Burton, Richard J., 4,496,986, Cl. 358-114.000.
Sanders, Rudolf; and Rijckaert, Josephus F., 4,496,874, Cl. 313-318.000.
Schoenmakers, Johannes J. M., 4,497,008, Cl. 360-132.000.
Sieben, Joannes H. F. C., 4,496,119, Cl. 242-198.000.
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Unitika Ltd.: *See—*
Masumoto, Tsuyoshi; Inoue, Akihisa; and Hagiwara, Michiaki, 4,495,691, Cl. 29-527.500.
Universal Filters, Inc.: *See—*
Rossen, Lars O., 4,495,823, Cl. 73-861.760.
University of Alabama: *See—*
Atwood, Jerry L., 4,496,744, Cl. 549-208.000.
University of California, The Regents of the: *See—*
Byers, Charles L., 4,495,917, Cl. 128-419.00R.
University of Connecticut: *See—*
Waite, J. Herbert, 4,496,397, Cl. 106-161.000.
University of Florida: *See—*
Lee, Hong H.; and Miller, Dennis J., 4,496,249, Cl. 374-7.000.
University of Illinois, The Board of Trustees of The: *See—*
Schrekeis, Josef; and Murphy, Gerard P., 4,496,165, Cl. 279-46.00R.
University of Manchester Institute of Science & Technology, The: *See—*
Still, Richard H.; Cawse, John L.; and Stanford, John L., 4,496,751, Cl. 549-472.000.
University of Toronto Innovations Foundation: *See—*
Sandham, H. James; and Balanyk, Thomas E., 4,496,322, Cl. 433-217.000.
Unnewehr, Lewis E.; Walker, Robert B.; and Szippl, Andrew F., to Lima Electric Co., Inc. Variable voltage control for self-excited self-regulated synchronous alternator. 4,496,897, Cl. 322-25.000.
Unsworth, Derek; and Diggs, Edward J. Land vehicles. 4,496,016, Cl. 180-53.600.
UOP Inc.: *See—*
Arena, Blaise J., 4,496,780, Cl. 568-861.000.
Barley, Geoffrey W., 4,496,190, Cl. 297-411.000.
DeFilippi, Louis J., 4,496,363, Cl. 8-115.500.
Kulkarni, Sudhir S.; and Kulprathipanja, Santi, 4,496,478, Cl. 260-97.600.
Urban, Peter; and Johnson, Russell W., 4,496,371, Cl. 48-197.00R.
Upjohn Company, The: *See—*
Renis, Harold E.; and Ruwart, Mary J., 4,496,587, Cl. 514-573.000.
Smith, Herman W., 4,496,742, Cl. 548-516.000.
Wierenga, Wendell, 4,496,492, Cl. 260-456.00R.
Urani, Angelo, to McGraw-Edison Company. Low current indicating fuse. 4,496,929, Cl. 337-265.000.
Urban, Manfred: *See—*
Spietschka, Ernst; and Urban, Manfred, 4,496,731, Cl. 546-37.000.
Urban, Peter; and Johnson, Russell W., to UOP Inc. Process for removal of hydrogen sulfide and carbon dioxide from gas streams. 4,496,371, Cl. 48-197.00R.
Urban Systems Streetscape, Inc.: *See—*
Miller, Curtiss W., 4,496,270, Cl. 410-32.000.
Usagawa, Akira: *See—*
Kawashima, Ryoji; Usagawa, Akira; and Masuda, Takayoshi, 4,496,547, Cl. 514-25.000.
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Skiles, Jerry W.; Youssefyeh, Raymond D.; Suh, John T.; and Jones, Howard, 4,496,542, Cl. 514-2.000.
Valavaara, Viljo K., to Inventors Compendium International Corp. Hydrostatic transmissions. 4,495,768, Cl. 60-414.000.
Valeo: *See—*
Loizeau, Pierre, 4,496,036, Cl. 192-106.200.
Rogier, Leonce, 4,496,017, Cl. 180-70.100.
Valley Candle Mfg. Co., Inc.: *See—*
Ginardi, Jack L., 4,496,307, Cl. 431-34.000.
Valve Conversions Limited: *See—*
Stewart, Duncan R., 4,496,071, Cl. 220-319.000.
Vamvakaris, Christos: *See—*
Greif, Norbert; Oppenlaender, Knut; Hettche, Albert; and Vamvakaris, Christos, 4,496,439, Cl. 204-55.00R.
Van Den Berg, Jacob; Van Lent, Johannes G.; and Strik, Francis B., to U.S. Philips Corporation. Method of manufacturing a colour television display tube and tube manufactured according to this method. 4,496,641, Cl. 430-23.000.
Vanhelle, Michel E. A. Process and apparatus for spinning cored filaments, and cored filaments thus obtained. 4,495,760, Cl. 57-211.000.
Van Herwijnen, Gerardus: *See—*
Derks, Pierre L. L. M.; and Van Herwijnen, Gerardus, 4,495,885, Cl. 118-241.000.
Van Lent, Johannes G.: *See—*
Van Den Berg, Jacob; Van Lent, Johannes G.; and Strik, Francis B., 4,496,641, Cl. 430-23.000.
Van Loveren, Augustinus G.: *See—*
Evers, William J.; Mookherjee, Braja D.; Van Ouwerkerk, Anton; and Van Loveren, Augustinus G., 4,496,775, Cl. 568-820.000.
Van Ouwerkerk, Anton: *See—*
Evers, William J.; Mookherjee, Braja D.; Van Ouwerkerk, Anton; and Van Loveren, Augustinus G., 4,496,775, Cl. 568-820.000.
Varma, Indra K.; Fohlen, George M.; and Parker, John A., to United States of America, National Aeronautics and Space Administration. Phosphorus-containing imide resins. 4,496,701, Cl. 526-262.000.
Varshney, Ramesh C.: *See—*
Blaser, Eugene M.; Chung, Paul W.; and Varshney, Ramesh C., 4,496,852, Cl. 307-269.000.
Vas, Gerson M. F.; and Shiel, Leslie E., to Blue Circle Industries PLC. Coated particulate fillers comprises a phosphinic acid group-containing unsaturated organic polymer. 4,496,670, Cl. 523-205.000.
Vavrek, Robert M.: *See—*
Pritzkow, Dennis H.; and Vavrek, Robert M., 4,496,841, Cl. 250-374.000.
Vazhnov, Evgeny N.: *See—*
Nikolsky, Vladimir A.; Yagodin, Valery M.; Vazhnov, Evgeny N.; Bondar, Efim S.; Naumenko, Igor P.; Vozny, Valery F.; Orlov, Vladimir N.; and Tikhonov, Vladimir I., 4,495,776, Cl. 62-114.000.
Veb Schwermaschinenbau-Kombinat "Ernst Thalmann" Magdeburg: *See—*
Schickel, Alfred, 4,496,457, Cl. 209-223.00R.
Verley, Donald, to McCann's Engineering and Manufacturing Company. Combination lock for multiple faucets. 4,496,079, Cl. 222-129.100.
Vertenstein, Mathieu J.; and Amerigian, Albert A., to Silver Engineering Works, Inc. Pillow block assembly and sealing system therefor. 4,496,199, Cl. 384-474.000.
Via, Francis A.: *See—*
Sherif, Fawzy G.; Majewski, Helmut W.; and Via, Francis A., 4,496,527, Cl. 423-309.000.
Victor Company of Japan, Ltd.: *See—*
Kaneko, Kenji, 4,496,994, Cl. 358-336.000.
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Alet, Robert; and Vignault, Eric, 4,496,323, Cl. 434-29.000.
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Vines, Harvey L.: *See—*
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Virgili, John H. Method of molding stone faced pillars and the like. 4,496,511, Cl. 264-225.000.
Viridian, Inc.: *See—*
MacLean, David; and Edwards, Robert B., II, 4,496,347, Cl. 604-164.000.
Virkar, Anil V.: *See—*
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Viscosuisse S.A.: *See—*
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Vitorge, Pierre: *See—*
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Voillot, Herve , to Creusot-Loire. Apparatus for introducing projectiles into artillery turrets. 4,496,041, Cl. 198-457.000.
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Vorbornik, Vaclay: *See—*
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Vozny, Valery F.: *See—*
Nikolsky, Vladimir A.; Yagodin, Valery M.; Vazhnov, Evgeny N.; Bondar, Efim S.; Naumenko, Igor P.; Vozny, Valery F.; Orlov, Vladimir N.; and Tikhonov, Vladimir I., 4,495,776, Cl. 62-114.000.
Vratny, Frederick: *See—*
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Vsesojuzny Nauchno-Isledovatelsky Experminetalno Konstruktorsky Institut Elektrobytovyky Machin I Priborov: *See—*
Nikolsky, Vladimir A.; Yagodin, Valery M.; Vazhnov, Evgeny N.; Bondar, Efim S.; Naumenko, Igor P.; Vozny, Valery F.; Orlov, Vladimir N.; and Tikhonov, Vladimir I., 4,495,776, Cl. 62-114.000.
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Advolotkin, Nikolai P.; Belyaeva, Svetlana A.; Ovchinnikov, Igor E.; Lebedev, Nikolai I.; Yankovsky, Alexei J.; Sytykh, Stanislav P.; Khrenov, Jury A.; and Axenov, Vladimir N., 4,496,868, Cl. 310-112.000.
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W. C. Bradley Enterprises, Inc.: *See—*
Hitch, Robert J.; and Holland, Mason, 4,495,860, Cl. 99-340.000.
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Ferguson, Douglas M.; Owens, William M.; Lang, Michael; and Lincoln, Jay P., 4,496,045, Cl. 206-63.300.
W. R. Grace & Co.: *See—*
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Galbiati, Ambrogio, 4,495,751, Cl. 53-576.000.
Schirmer, Henry G., 4,496,516, Cl. 264-514.000.

W. Schlafhorst & Co.: *See—*
Rasch, Hans; Grecksch, Hans; and Bock, Klaus, 4,496,110, Cl. 242-35.50A.

Waber, Glenn R., to GNB Batteries Inc. Programmable control system for controlling at least two parameters in a predetermined sequence using both analog and digital control signals. 4,497,019, Cl. 364-132.000.

Wada, Yoshiyo; Goto, Kunio; and Kinjo, Hisao, to Victor Company of Japan, Ltd. Stylus for reproducing information signals recorded on a recording medium. 4,497,052, Cl. 369-126.000.

Waite, J. Herbert, to University of Connecticut. Process for purifying and stabilizing catechol-containing proteins and materials obtained thereby. 4,496,397, Cl. 106-161.000.

Waki, Masahiko; Umezawa, Seiji; Takasugi, Tsuneji; Koide, Hiroshi; and Kasai, Takao, to Citizen Watch Company Limited. Structure for a watch case made of cemented carbide. 4,496,248, Cl. 368-280.000.

Walker, James M., to Dril-Quip, Inc. Subsea wellhead connectors. 4,496,172, Cl. 285-18.000.

Walker, John G., to Bowthorpe-Hellermann Limited. Automatic tie gun. 4,495,972, Cl. 140-93.200.

Walker, Loren H.: *See—*
Lippitt, David L.; and Walker, Loren H., 4,496,899, Cl. 323-207.000.

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Walker, Robert G., to Industra Products, Inc. Coil placing machine with readily convertible wedge making arrangement. 4,495,692, Cl. 29-564.100.

Wallat, Siegfried: *See—*
Moller, Hinrich; Wallat, Siegfried; Hoffkes, Horst; and Giede, Karl, 4,496,536, Cl. 424-70.000.

Walsh, Thomas J.; Bachman, Robert; and Aderhold, Ronald, to Fiat Products Incorporated. Support leg assembly. 4,496,125, Cl. 248-188.000.

Walsh, Thomas J., to General Signal Corporation. Thermocouple open circuit detector. 4,496,250, Cl. 374-186.000.

Walstra, Hidde, to Texas Instruments Incorporated. Fuel supply system with electric choke and control therefor. 4,496,496, Cl. 261-39.00E.

Walton, Frank J., to GCA Corporation. Gas feed for reactive ion etch system. 4,496,423, Cl. 156-345.000.

Wandinger, Lothar; and Nalbandian, Vahakn, to United States of America, Army. Millimeter wave power combiner using concave reflectors. 4,496,913, Cl. 331-56.000.

Wang, Rong; and Merz, Martin D., to United States of America, Energy. Amorphous metal alloy and composite. 4,496,635, Cl. 428-680.000.

Wanie, Lee J., to Deere & Company. Neutralizing mechanism for a hydrostatic transmission. 4,496,035, Cl. 192-4.00C.

Wanish, Paul J.: *See—*
Cormier, Roger L.; Dugan, Robert J.; Guyette, Richard R.; Hankison, Ronald L.; Hao, Ming C.; Levin, Arthur L.; McClain, George A.; Wanish, Paul J.; and Zeitler, Carl, Jr., 4,497,022, Cl. 364-200.000.

Warco, Inc.: *See—*
Duenke, Clarence G., 4,496,805, Cl. 200-11.0TC.

Ward, Anthony T.: *See—*
Smith, Thomas W.; Cheng, David; and Ward, Anthony T., 4,496,957, Cl. 346-135.100.

Warner Electric Brake & Clutch Company: *See—*
Pardee, James A., 4,496,922, Cl. 335-281.000.

Warren, Craig B.: *See—*
Munteanu, Marina A.; Oltarzewski, Edward S.; Shechter, Leon; and Warren, Craig B., 4,496,467, Cl. 252-92.000.

Warren, Wayne F.: *See—*
Dowling, Donald J.; Richter, Albert P., Jr.; Warren, Wayne F.; and Arnold, Dan M., 4,495,805, Cl. 73-155.000.

Washington Research Foundation: *See—*
Hager, Harold E., 4,495,793, Cl. 73-23.000.

Washington University: *See—*
Needleman, Philip, 4,496,544, Cl. 514-13.000.

Wasserman, Kurt J., to Phase Change Technology, Inc. Method of preventing frost damage of vegetation. 4,495,723, Cl. 47-2.000.

Watanabe, Masanori; Furubayashi, Hisatoshi; Tanaka, Junichi; and Hijikigawa, Masaya, to Sharp Kabushiki Kaisha. Moisture permeable electrode in a moisture sensor. 4,496,931, Cl. 338-34.000.

Watanabe, Yoshiaki: *See—*
Adachi, Takashi; Morimoto, Shigeo; Takahashi, Yoko; Watanabe, Yoshiaki; and Omura, Sadafumi, 4,496,717, Cl. 536-7.200.

Waterman, George W.; and Dionne, Arthur F., to Standex International Corp. Tree stand. 4,496,129, Cl. 248-527.000.

Watson, Kenneth, to Westland plc. Helicopter rotors. 4,496,284, Cl. 416-138.000.

Wattron, Bernard: *See—*
Oberle, Edmond; Wattron, Bernard; and Hironimus, Jeannot, 4,496,107, Cl. 241-101.700.

Watts, Paul C.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Watts, Paul C.; Shibakawa, Riichiro; and Tone, Junsuke, 4,496,546, Cl. 514-29.000.

Wayne State University: *See—*
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Webasto-Werk W. Baier GmbH & Co.: *See—*
Panick, Karl; and Glass, Joseph, 4,496,292, Cl. 417-252.000.

Weber, Kent, to Sundstrand Corporation. High speed generator air vent for air gap. 4,496,862, Cl. 310-56.000.

Wedemeyer, Karlfried: *See—*
Le Blanc, Helmut; and Wedemeyer, Karlfried, 4,496,763, Cl. 564-402.000.

Weder, Donald E.: *See—*
Weder, Erwin H.; Weder, Donald E.; and Weder, Herbert A., 4,496,614, Cl. 428-7.000.

Weder, Erwin H.; Weder, Donald E.; and Weder, Herbert A., to Highland Manufacturing & Sales Company. Composition for decorative grass. 4,496,614, Cl. 428-7.000.

Weder, Herbert A.: *See—*
Weder, Erwin H.; Weder, Donald E.; and Weder, Herbert A., 4,496,614, Cl. 428-7.000.

Weeks, Benjamin R., to Texas Independent Tools and Unlimited Service, Inc. Method of and apparatus for setting a mechanical liner hanger by right-hand rotation. 4,496,000, Cl. 166-382.000.

Wehner, Gregor: *See—*
Eichler, Jurgen; Herz, Claus; Neisius, Karl-Heinz; and Wehner, Gregor, 4,496,447, Cl. 204-159.160.

Weingarten, Zvi. Sleeve valve with integral control chamber. 4,496,132, Cl. 251-5.000.

Weinhold, Karl. Device for connecting flanged pipes. 4,496,176, Cl. 285-365.000.

Weirich, Walter: *See—*
Behr, Friedrich; Schulten, Rudolf; and Weirich, Walter, 4,496,373, Cl. 55-16.000.

Weisz, Thomas J.: *See—*
Mathew, Moni G.; and Weisz, Thomas J., 4,496,915, Cl. 333-1.100.

Welch, Charles W.: *See—*
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Wellman, Donald C.: *See—*
Clark, William E.; and Wellman, Donald C., 4,495,986, Cl. 165-2.000.

Wells, Henry A., to Champion International Corporation. Apparatus for paper tension control by measuring the frequency and flutter of a web. 4,496,428, Cl. 162-256.000.

Wenzel, Wolfgang D.; and Carmosino, Michael N., to Mobay Chemical Corporation. Viscosity stabilized dispersions. 4,496,678, Cl. 524-157.000.

Werstak, Charles E.: *See—*
Miller, Donald E.; Gilmore, Cecilia; Dimler, Steven R.; and Werstak, Charles E., 4,496,602, Cl. 426-555.000.

Wesbey, William H.: *See—*
Jensen, Gerald A.; Wesbey, William H.; and Riederer, Stephen J., 4,496,985, Cl. 358-111.000.

Wesch, Ludwig. Detection process and apparatus. 4,496,833, Cl. 250-211.00R.

West, Geoffrey A. W.; and Norton-Wayne, Leonard, to National Research Development Corporation. Detection apparatus. 4,496,971, Cl. 358-106.000.

Westeel-Rosco Limited-Westeel-Rosco Limitee: *See—*
Pasiecznik, Eugene, 4,495,741, Cl. 52-404.000.

Western Progress, Inc.: *See—*
Roberts, Thomas P.; Howard, Albert R.; and Hutchison, James B., 4,496,801, Cl. 179-175.30R.

Westinghouse Electric Corp.: *See—*
Martin, Donald G.; and York, Donald M., 4,496,933, Cl. 338-55.000.
Nadalin, Robert J.; and Charles, Robert G., 4,496,445, Cl. 204-158.00R.
Sattler, Frank A., 4,496,715, Cl. 528-288.000.
Sprengling, Gerhard R., 4,496,415, Cl. 156-283.000.
Tisdale, Glenn E.; and Lindemann, Harley B., 4,497,065, Cl. 382-1.000.

Westland plc: *See—*
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Westvaco Corporation: *See—*
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Wey, Raymond: *See—*
Bourgogne, Michel; Guth, Jean-Louis; Szabo, Georges; and Wey, Raymond, 4,496,528, Cl. 423-328.000.

Weyer, Robert K., to EMF Corporation. Sheet feeder. 4,496,143, Cl. 271-112.000.

Wheeler, Ian R., to Ciba-Geigy Corporation. Production of azo compounds. 4,496,481, Cl. 534-579.000.

Wheeler, Richard J.: *See—*
Harstrom, Karl U.; Nilsson, Bengt-Ake; and Wheeler, Richard J., 4,495,975, Cl. 141-157.000.

Whip-Mix Corporation: *See—*
Steinbock, Allen F., 4,496,319, Cl. 433-57.000.

Whipple, Raymond D., to United States of America, National Aeronautics and Space Administration. Extended moment arm anti-spin device. 4,496,122, Cl. 244-75.00R.

Whirlpool Corporation: *See—*
Cartier, Roger J.; Cuthbert, Victor W.; and Mason, Anthony, 4,495,960, Cl. 137-122.000.
Fleck, George J., 4,496,072, Cl. 220-432.000.
Khan, Aman U., 4,495,673, Cl. 16-232.000.

White, David J.: *See—*
Bowling, Donald R.; Kinman, Darry M.; Afendykiw, Marko; and White, David J., 4,497,030, Cl. 364-481.000.

White, Harold V., to United States of America, Army. Azimuth transfer scheme for a strapdown Inertial Measurement Unit. 4,495,850, Cl. 89-1.800.

Whitehouse, Daniel L., to Solarex Corporation. Antireflective coating composition. 4,496,398, Cl. 106-181.000.

Whitehurst Associates, Inc.: *See—*
Whitehurst, Brooks M.; Clemens, Donald F.; King, Taylor; and Whitehurst, Garnett B., 4,496,465, Cl. 252-79.200.
Whitehurst, Brooks M.; Clemens, Donald F.; King, Taylor; and Whitehurst, Garnett B., 4,496,466, Cl. 252-79.300.

Whitehurst, Brooks M.; Clemens, Donald F.; King, Taylor; and Whitehurst, Garnett B., to Whitehurst Associates, Inc.; and Encee Chemical Sales, Inc., a part interest. Wet-process phosphoric acid brightening reagent for aluminum. 4,496,465, Cl. 252-79.200.

Whitehurst, Brooks M.; Clemens, Donald F.; King, Taylor; and Whitehurst, Garnett B., to Whitehurst Associates, Inc.; and Encee Chemical Sales, Inc., a part interest. Wet-process phosphoric acid brightening reagent for aluminum. 4,496,466, Cl. 252-79.300.

Whitehurst, Garnett B.: *See—*
Whitehurst, Brooks M.; Clemens, Donald F.; King, Taylor; and Whitehurst, Garnett B., 4,496,465, Cl. 252-79.200.
Whitehurst, Brooks M.; Clemens, Donald F.; King, Taylor; and Whitehurst, Garnett B., 4,496,466, Cl. 252-79.300.

Whittier Institute for Diabetes and Endocrinology, The: *See—*
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Wible, John E.: *See—*
Melocik, Grant C.; and Wible, John E., 4,496,896, Cl. 320-2.000.

Wichinsky, Michael; and Gutknecht, LeRoy N. Coin projecting and target game apparatus. 4,496,160, Cl. 273-369.000.

Widner, Paul J.: *See—*
McCarthy, James R.; and Widner, Paul J., 4,496,725, Cl. 544-184.000.

Wienerberger Baustoffindustrie Aktiengesellschaft: *See—*
Linke, Walter; Kirnbauer, Peter; and Indra, Rudolf, 4,496,501, Cl. 264-37.000.

Wierenga, Wendell, to Upjohn Company, The. Substituted phenylalkyl compounds. 4,496,492, Cl. 260-456.00R.

Wiezer, Hartmut; and Pfahler, Gerhard. Polytriazinyl alcohols, esters and urethanes, a process for their preparation. 4,496,726, Cl. 544-198.000.

Wilcox, Roy D., to NL Industries, Inc. Method for determining optimum concentration of hydration inhibitor for clays in drilling fluids. 4,495,800, Cl. 73-61.400.

Wilke, Gerhard: *See—*
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Wilkinson Sword Limited: *See—*
Gatley, Derrick R., 4,496,047, Cl. 206-354.000.

Willenbacher, Erich, to Pfaff Industriemaschinen GmbH. Sewing machine equipped for producing shaped seams. 4,495,877, Cl. 112-121.110.

Willi, Ernst, to Mettler Instrumente AB. Weighing apparatus including overload protection means. 4,496,014, Cl. 177-187.000.

William H. Rorer, Inc.: *See—*
Studt, William L.; and Zimmerman, Harry K., 4,496,573, Cl. 514-344.000.

Williams Lumber Yard: *See—*
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Williams, Richard P., to United States of America, National Security Agency. Magnetic bubble logic apparatus. 4,497,042, Cl. 365-5.000.

Williams, Robert E., Jr.: *See—*
Florence, Robert A.; Campbell, John R.; and Williams, Robert E., Jr., 4,496,705, Cl. 528-34.000.

Williams, S. Keith. Electronic musical instrument. 4,495,846, Cl. 84-1.010.

Williams, Thomas C.: *See—*
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Willimczik, Bernd: *See—*
Brandt, Joachim; Deblitz, Gerhard; Post, Jurgen; Willimczik, Bernd; Marten, Rolf; Paschen, Rolf; and Anderka, Gerold, 4,496,958, Cl. 346-139.00R.

Williner, Mario, to Minnesota Mining and Manufacturing Company. Infrared drying for water-impregnated photographic films. 4,495,713, Cl. 34-68.000.

Wilmoth, William C.: *See—*
Kowalski, Robert J.; and Wilmoth, William C., 4,495,705, Cl. 33-265.000.

Wilson, John C.; DeMejo, Lawrence P.; Jadwin, Thomas A.; and Merrill, Stewart H., to Eastman Kodak Company. Two-component dry electrostatic developer composition containing onium charge control agent. 4,496,643, Cl. 430-110.000.

Wilson, Stanley E.: *See—*
Edwards, Charles L.; and Wilson, Stanley E., 4,496,776, Cl. 568-827.000.

Winkler, Gert; Becker, Wilfried; and Zielinski, Erich, to Rheinmetall GmbH. Armor car-mounted mortar. 4,495,852, Cl. 89-46.000.

Winkless, Robert A.; and Kulesa, Edmund M., to Continental Can Company, Inc. Closure break-away tabs. 4,496,069, Cl. 220-260.000.

Winter, Roland A. E.: *See—*
Dexter, Martin; and Winter, Roland A. E., 4,496,676, Cl. 524-99.000.
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Wisconsin Alumni Research Foundation: *See—*
Mistretta, Charles A.; Peppler, Walter W.; Kudva, Balakrishna V.; Hasegawa, Bruce H.; and Dobbins, James T., III, 4,497,062, Cl. 378-158.000.

Wisser, Edward F.: *See—*
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Wittle, John K.: *See—*
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Wohrle, Albert; and Krautzberger, Franz, to J. M. Voith GmbH. Coating mechanism. 4,495,888, Cl. 118-410.000.

Wolf, George: *See—*
Plotkin, George M.; Bendrick, Charles J.; and Wolf, George, 4,496,539, Cl. 424-94.000.

Wolf, Jerry M.; and Holben, Wilbur D., to Midwest-Acoust-A-Fiber, Inc. Sound absorption panel and method of making. 4,496,024, Cl. 181-292.000.

Wolff, Andrew M. Accurately tracking phonograph arm. 4,497,053, Cl. 369-244.000.

Wolff, David A.: *See—*
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Woloski, Leonard E.; and Wyles, Walter E., to Lightolier Incorporated. Ceiling fixture having self-activating mounting means. 4,497,014, Cl. 362-150.000.

Wolter, Albrecht: *See—*
Steinbiss, Eberhard; Herchenbach, Horst; Ramesohl, Hubert; and Wolter, Albrecht, 4,496,396, Cl. 106-100.000.

Wong, Thomas M., to E. R. Squibb & Sons, Inc. Oleaginous emollient vehicle for steroid formulations. 4,496,554, Cl. 514-179.000.

Woods, Charles E., to United States of America, Navy. Hydraulic automatic light control. 4,496,218, Cl. 350-267.000.

Woodward, Donald W.: *See—*
Geist, Jacob M.; Vines, Harvey L.; Alvarez, Miguel R.; Rowles, Howard C.; and Woodward, Donald W., 4,496,382, Cl. 62-31.000.

Wooldridge, Lawson C., to Brockway Engineering Company Limited. Supporting assembly for troughing rolls of conveyor belts. 4,496,043, Cl. 198-827.000.

Wright, Peter J.: *See—*
Cattell, Alan F.; Cockayne, Brian; Wright, Peter J.; and Kirton, John, 4,496,610, Cl. 427-66.000.

Wright, Terry L., to Dow Chemical Company, The. Antiallergic (1H-tetrazol-5-yl)tetrazolo[1,5-a]quinolines and derivatives thereof. 4,496,569, Cl. 514-311.000.

Wuerzer, Bruno: *See—*
Plath, Peter; Rohr, Wolfgang; and Wuerzer, Bruno, 4,496,391, Cl. 71-92.000.

Wunderwald, Peter: *See—*
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Wurdack, Gerard A.; and Morgan, Gene L., to Gerard A. Wurdack & Associates, Inc. Antenna rotator controller. 4,496,890, Cl. 318-600.000.

Wyber, James P.: *See—*
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Dennis, Alan J.; Harrison, George E.; and Wyber, James P., 4,496,769, Cl. 568-454.000.

Wyles, Walter E.: *See—*
Woloski, Leonard E.; and Wyles, Walter E., 4,497,014, Cl. 362-150.000.

Wynn, Stephen R., to General Electric Company. Phase locked loop with oscillator blocking for improved acquisition time. 4,496,912, Cl. 331-1.00A.

Xerox Corporation: *See—*
Biegelsen, David K.; and Sirkin, Eric R., 4,496,608, Cl. 427-53.100.
Bugatto, Henry, Jr., 4,496,892, Cl. 318-696.000.
Fischbeck, Kenneth H., 4,496,960, Cl. 346-140.00R.
Gage, Charles A.; Blair, Timothy T.; and Morgan, Thomas W., 4,496,233, Cl. 355-3.0TR.
Perun, William D.; and Garavuso, Gerald M., 4,496,144, Cl. 271-114.000.
Schram, Joseph G., 4,496,234, Cl. 355-3.0FU.
Schron, Steven M., 4,496,237, Cl. 355-14.00C.
Smith, Thomas W.; Cheng, David; and Ward, Anthony T., 4,496,957, Cl. 346-135.100.
Stoffel, James C., 4,496,984, Cl. 358-293.000.
Tam, Man C.; and Kovacs, Gregory J., 4,496,642, Cl. 430-41.000.

Xolox Corporation: *See—*
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Yabuuchi, Shigeru; Endoh, Takeyuki; Kodama, Kazuyuki; and Ide, Jushi, to Hitachi, Ltd. Method of generating time delay. 4,497,035, Cl. 364-577.000.

Yaegashi, Takashi: *See—*
Fujii, Setsuro; Yaegashi, Takashi; Nakayama, Toyoo; Nunomura, Shigeki; Sakurai, Yojiro; and Okutome, Toshiyuki, 4,496,584, Cl. 514-510.000.

Yagihara, Morio; Hirano, Tsumoru; and Umemoto, Makoto, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,496,650, Cl. 430-381.000.

Yagodin, Valery M.: *See—*
Nikolsky, Vladimir A.; Yagodin, Valery M.; Vazhnov, Evgeny N.; Bondar, Efim S.; Naumenko, Igor P.; Vozny, Valery F.; Orlov, Vladimir N.; and Tikhonov, Vladimir I., 4,495,776, Cl. 62-114.000.

Yajima, Tsunao: *See—*
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Yamabe, Shigeru: *See—*
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Yamada, Kazuji: *See*—
Shimada, Satoshi; Yamada, Kazuji; Suzuki, Seikou; and Nishihara, Motohisa, 4,495,820, Cl. 73-724.000.
Yamada, Kinsaku: *See*—
Kashiwaya, Mineo; and Yamada, Kinsaku, 4,495,802, Cl. 73-118.000.
Yamada, Shunsuke; Kawate, Kenji; Ono, Takashi; Arakawa, Hideo; and Suda, Tsuyoshi, to Daidotokushuko Kabushikikaisha. Heat-treatment system and process. 4,496,312, Cl. 432-11.000.
Yamagata, Selichi: *See*—
Nakayama, Takashi; Kajita, Kohji; and Yamagata, Selichi, 4,495,761, Cl. 57-328.000.
Yamaguchi, Kinya: *See*—
Kobayashi, Yukio; Kira, Masaaki; and Yamaguchi, Kinya, 4,496,640, Cl. 429-213.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Tanaka, Ko, 4,496,019, Cl. 180-215.000.
Yamakawa, Eiji: *See*—
Nanba, Yasuhiro; Gotoh, Takayuki; Yamakawa, Eiji; and Karasaki, Toshihiko, 4,496,834, Cl. 250-211.00R.
Yamamoto, Sakuei; Nishida, Mitsuhiro; Tashiro, Noboru; and Sonoda, Nobuo, to Mitsubishi Denki Kabushiki Kaisha. Submersible electric motor and method of manufacturing the same. 4,496,866, Cl. 310-87.000.
Yamamoto, Tamio; Kobayashi, Tsukasa; Hirakawa, Tadashi; Yoshida, Makoto; and Okumura, Masumi, to Teijin Limited. Paper-like polyester fiber sheet and process for producing the same. 4,496,583, Cl. 428-288.000.
Yamamoto, Toshiki. Method and apparatus for pressing seams open on sewing machines. 4,495,879, Cl. 112-217.000.
Yamamura, Michael M., to Rockwell International Corporation. High voltage level detector and method. 4,496,855, Cl. 307-350.000.
Yamanaka, Seisuke: *See*—
Sase, Masatoshi; Onga, Makoto; and Yamanaka, Seisuke, 4,496,967, Cl. 358-44.000.
Yamashiki, Yutaka: *See*—
Fukuda, Joji; and Yamashiki, Yutaka, 4,497,021, Cl. 364-200.000.
Yamashita, Keitaro; and Kashiwagi, Hiromi, to Hitachi Metals, Ltd. Apparatus for controlled delivery of magnetic toner. 4,496,240, Cl. 355-14.00D.
Yamashita, Toshiaki: *See*—
Sumita, Manabu; and Yamashita, Toshiaki, 4,496,871, Cl. 310-324.000.
Yamato, Akihiro, to Honda Giken Kogyo Kabushiki Kaisha. Method for controlling the operation of an internal combustion engine at the start of same. 4,495,927, Cl. 123-491.000.
Yanagisawa, Saburo; and Yonemori, Yoshinori. Constant speed running device for automobile. 4,495,912, Cl. 123-350.000.
Yanagishima, Takayuki: *See*—
Seko, Yasutoshi; Yanagishima, Takayuki; and Inoue, Masami, 4,496,938, Cl. 340-576.000.
Yancey, Herbert W.: *See*—
Shaheen, Joseph M.; and Yancey, Herbert W., 4,496,215, Cl. 350-96.230.
Yang, John P., to Lockheed Electronics Co., Inc. Self-clocking binary receiver. 4,497,060, Cl. 375-22.000.
Yang, Wei-Yeih W.; and Okamoto, Yoshihisa, to B. F. Goodrich Company, The. Process using supercooled liquid lactam mixtures. 4,496,514, Cl. 264-328.600.
Yang, Wen-Jei. Apparatus for injection molding a foamed resin product having a smooth surface involving surface heating of the mold by applying high current low voltage electric power. 4,496,131, Cl. 249-78.000.
Yankovsky, Alexei J.: *See*—
Advolotkin, Nikolai P.; Belyaeva, Svetlana A.; Ovchinnikov, Igor E.; Lebedev, Nikolai I.; Yankovsky, Alexei J.; Sytykh, Stanislav P.; Khrenov, Jury A.; and Axenov, Vladimir N., 4,496,868, Cl. 310-112.000.
Yano, Toshihiko: *See*—
Matsui, Masanao; Chun-Eng, Liau; Kogami, Kunio; Yano, Toshihiko; and Matsuo, Noritada, 4,496,586, Cl. 514-531.000.
Yarbrough, Don L., to Deere & Company. Threshing concave filler strip retainer. 4,495,954, Cl. 130-27.00K.
Yarwood, John C.: *See*—
Kindlmann, Peter J.; Yarwood, John C.; Ungarean, Gary L.; and Tyler, Derek E., 4,495,981, Cl. 164-452.000.
Kindlmann, Peter J.; Ungarean, Gary L.; Yarwood, John C.; and Tyler, Derek E., 4,495,983, Cl. 164-452.000.
Yasuda, Yasuo. Stapler. 4,496,091, Cl. 227-123.000.
Yasue, Hideki; and Fukumura, Kagenori, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic transmission for a vehicle. 4,495,830, Cl. 74-467.000.
Yazar, M. Nihat, to Canada, Her Majesty the Queen in Right of, as represented by the Minister of National Defence. Electroexplosives, rf power safety margin measurement method. 4,496,901, Cl. 324-95.000.
Yellin, Tobias O.; and Gilman, David J., to ICI Americas Inc.; and Imperial Chemical Industries PLC. Amide derivatives. 4,496,564, Cl. 514-237.000.
Yellin, Tobias O.; Gilman, David J.; Edwards, Philip N.; Large, Michael S.; Jones, Derrick F.; and Oldham, Keith, to ICI Americas Inc.; and Imperial Chemical Industries, PLC. Histamine H2-antagonists. 4,496,571, Cl. 514-340.000.
Yokogawa Hokushin Electric Corporation: *See*—
Ikeda, Kyoichi; Harada, Kinji; and Isozaki, Katsumi, 4,495,818, Cl. 73-702.000.
Miura, Shigetaka; Igawa, Junichi; and Takata, Satoru, 4,496,902, Cl. 324-150.000.
Yokoo, Hidejiro: *See*—
Yoshida, Mamoru; Yokoo, Hidejiro; and Shirai, Ei, 4,496,585, Cl. 514-514.000.
Yokota, Mitsuyoshi: *See*—
Iwaki, Yoshiyuki; Yokota, Mitsuyoshi; and Matsumoto, Akio, 4,496,898, Cl. 322-34.000.
Yokoyama, Tadashi: *See*—
Suzuki, Masaru; Iwata, Masayosi; Hayashi, Yoshikazu; and Yokoyama, Tadashi, 4,496,810, Cl. 200-61.540.
Yonemori, Yoshinori: *See*—
Yanagisawa, Saburo; and Yonemori, Yoshinori, 4,495,912, Cl. 123-350.000.
Yonkers, E. Hubbard: *See*—
DeCloux, Richard J.; Loeffler, Herbert H.; MacConkey, James S.; and Yonkers, E. Hubbard, 4,496,147, Cl. 272-130.000.
York, Donald M.: *See*—
Martin, Donald G.; and York, Donald M., 4,496,933, Cl. 338-55.000.
Yoshida Industry Co., Ltd.: *See*—
Ishikawa, Tatsuo; and Hatakeyama, Yoshiharu, 4,496,513, Cl. 264-267.000.
Yoshida, Isamu: *See*—
Kondo, Koichi; Iwasa, Susumu; and Yoshida, Isamu, 4,496,658, Cl. 436-510.000.
Yoshida Kogyo K. K.: *See*—
Fisher, Harry; and Fisher, Stuart, 4,495,686, Cl. 29-409.000.
Umino, Mitsugu, 4,495,695, Cl. 29-767.000.
Yoshida, Makoto: *See*—
Yamamoto, Tamio; Kobayashi, Tsukasa; Hirakawa, Tadashi; Yoshida, Makoto; and Okumura, Masumi, 4,496,583, Cl. 428-288.000.
Yoshida, Mamoru; Yokoo, Hidejiro; and Shirai, Ei, to Showa Denko Kabushiki Kaisha. Powdered or granular solid pesticide composition. 4,496,585, Cl. 514-514.000.
Yoshida, Mitsuo; and Shiroki, Hiroyuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Hydrogen-evolution electrode. 4,496,453, Cl. 204-290.00R.
Yoshihara, Kenji: *See*—
Sugiyama, Hiroyuki; Sakurai, Masaki; Abe, Ryozo; and Yoshihara, Kenji, 4,496,993, Cl. 358-335.000.
Yoshihara, Setsuo; Otsubo, Yorihumi; and Kobayashi, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Ticket checking apparatus. 4,496,830, Cl. 235-458.000.
Yoshikumi, Chikao: *See*—
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Kanno, Akihiko; Furusho, Takao; and Yoshikumi, Chikao, 4,496,561, Cl. 514-209.000.
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Kanno, Akihiko; Furusho, Takao; and Yoshikumi, Chikao, 4,496,574, Cl. 514-195.000.
Yoshimura, Shohei: *See*—
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Yoshinaga, Minoru; and Sumida, Atsushi, to Toray Industries, Inc. Continuous carbon filament fiber bundles. 4,496,671, Cl. 523-206.000.
Yoshino, Eiichi; Matsuura, Kazuo; and Misaki, Hideo, to Toyo Jozo Kabushiki Kaisha. Process for the production of tyramine oxidase. 4,496,655, Cl. 435-191.000.
Yoshino Kogyosho Co. Ltd.: *See*—
Kinoshita, Harumi; Kushida, Hideo; Itakura, Takeshi; Akutsu, Masao; Takada, Takuzo; and Sugiura, Hiroaki, 4,496,517, Cl. 264-521.000.
Yoshizawa, Yoshikazu: *See*—
Kato, Takaaki; Kato, Takeshi; and Yoshizawa, Yoshikazu, 4,497,037, Cl. 364-900.000.
Yoshikawa, Kuniyoshi: *See*—
Iwahashi, Hiroshi; Asano, Masamichi; Yoshikawa, Kuniyoshi; and Mito, Masazi, 4,495,693, Cl. 29-571.000.
Young, John B.: *See*—
Nikkel, Willem A.; and Young, John B., 4,495,890, Cl. 118-674.000.
Young, John K.; and Barthel, Alfred, to Union Carbide Corporation. Shipping container for storing materials at cryogenic temperatures. 4,495,775, Cl. 62-48.000.
Young, John S., to Gte Automatic Electric Inc. Ringing generator testing arrangement for a digital telephone network. 4,496,800, Cl. 179-175.20R.
Young, Leo, to United States of America, Navy. Frequency-spreading coupler. 4,496,876, Cl. 315-4.000.
Young, Peter L., to Sperry Corporation. Method of making high reliability lead-alloy Josephson junction. 4,496,648, Cl. 430-312.000.
Youssefyeh, Raymond D.: *See*—
Skiles, Jerry W.; Youssefyeh, Raymond D.; Suh, John T.; and Jones, Howard, 4,496,542, Cl. 514-2.000.
Yu, Hong; and Kwok, Sai W., to Casat Technology, Inc. FM High-fidelity processor. 4,496,979, Cl. 358-197.000.
Yuasa, Kazuhiro; Takahashi, Shuichi; and Kondo, Mitsuru, to Ricoh Company, Ltd. Conversion of an analog image signal into a binary image signal. 4,496,987, Cl. 358-283.000.
Yuille, James D.: *See*—
Tessarzik, Juergen M.; Myers, Albert; and Yuille, James D., 4,495,810, Cl. 73-432.00R.
Yunan, Malak E.: *See*—
Mitchell, Hardin D., Jr.; and Yunan, Malak E., 4,495,867, Cl. 102-275.400.

LIST OF REISSUE PATENTEES

Zagefka, Hans-Dieter; Bartz, Wilfried; and Konietzny, Alfred, to Chemische Werke Huls AG. Aqueous media for the treatment of wood and wooden materials and a process for such treatment. 4,496,613, Cl. 427-440.000.

Zahnradfabrik Friedrichshafen, AG.: *See*—
Tischer, Werner; Liebert, Karl-Heinz; and Fassbender, Rolf, 4,495,769, Cl. 60-451.000.

Zajonc, Fred H., deceased: *See*—
Ptasienski, Mitchell P.; Mustoe, Robert M.; and Zajonc, Fred H., deceased, 4,496,515, Cl. 264-504.000.

Zajonc, Margaret S., executrix: *See*—
Ptasienski, Mitchell P.; Mustoe, Robert M.; and Zajonc, Fred H., deceased, 4,496,515, Cl. 264-504.000.

Zanchuk, Walter A.: *See*—
Greskovich, Eugene J.; and Zanchuk, Walter A., 4,495,874, Cl. 110-347.000.

Zeitler, Carl, Jr.: *See*—
Cormier, Roger L.; Dugan, Robert J.; Guyette, Richard R.; Hankison, Ronald L.; Hao, Ming C.; Levin, Arthur L.; McClain, George A.; Wanish, Paul J.; and Zeitler, Carl, Jr., 4,497,022, Cl. 364-200.000.

Zenitani, Hideki; Oka, Akira; Okamoto, Itsuo; Hayashi, Hisao; and Taniguchi, Masajiro, to Fujitsu Limited. Rack structure for mounting a communication apparatus. 4,496,057, Cl. 211-26.000.

Zenith Electronics Corporation: *See*—
Kueny, Cindee C., 4,496,877, Cl. 315-15.000.

Zielinski, Erich: *See*—
Winkler, Gert; Becker, Wilfried; and Zielinski, Erich, 4,495,852, Cl. 89-46.000.

Zimmerman, Harry K.: *See*—
Studt, William L.; and Zimmerman, Harry K., 4,496,573, Cl. 514-344.000.

Zinck, Eugen. Compressed-air pile-driver. 4,496,007, Cl. 173-127.000.

Zones, Stacey I.: *See*—
Santilli, Donald S.; and Zones, Stacey I., 4,496,786, Cl. 585-640.000.

Zsolnay, Andrew; Perkins, Kelly M.; and Blad, Leiv H., to Lockheed Corporation. Automatic process control system for curing polymeric material. 4,496,697, Cl. 526-60.000.

Zuehlsdorf, James J., to Uni-Pump, Inc. Leak detector monitor for pressurized flow systems. 4,496,077, Cl. 222-61.000.

Zwiep, Theodore C.: *See*—
Keller, Frederick P.; and Zwiep, Theodore C., 4,496,332, Cl. 464-89.000.

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TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF JANUARY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Alfano, Robert R., to Philips Medical Systems, Inc. Method and apparatus for detecting the presence of caries in teeth using visible luminescence. Re. 31,815, Cl. 128-665.000.

Campbell, Glenn M.: *See*—
Weiss, Verne E.; Campbell, Glenn M.; and Wilson, Gerald L., Re. 31,819, Cl. 426-439.000.

Clonch, David, to S & S Corporation. Feeder crusher. Re. 31,818, Cl. 241-101.700.

General Electric Company: *See*—
Litch, Ernest W., III, Re. 31,820, Cl. 219-93.000.

General Mills, Inc.: *See*—
Weiss, Verne E.; Campbell, Glenn M.; and Wilson, Gerald L., Re. 31,819, Cl. 426-439.000.

Hauni-Werke Korber & Co. KG: *See*—
Wochnowski, Waldemar, Re. 31,816, Cl. 131-296.000.

Litch, Ernest W., III, to General Electric Company. Methods of making torsional vibration isolating motor mounting systems and arrangements. Re. 31,820, Cl. 219-93.000.

Melkonian, Dennis J.: *See*—
Melkonian, Douglas H.; Melkonian, Mark S.; Melkonian, Dennis J.; and Melkonian, Suren M., Re. 31,817, Cl. 209-3.100.

Melkonian, Douglas H.; Melkonian, Mark S.; Melkonian, Dennis J.; and Melkonian, Suren M. Raisin separating device. Re. 31,817, Cl. 209-3.100.

Melkonian, Mark S.: *See*—
Melkonian, Douglas H.; Melkonian, Mark S.; Melkonian, Dennis J.; and Melkonian, Suren M., Re. 31,817, Cl. 209-3.100.

Melkonian, Suren M.: *See*—
Melkonian, Douglas H.; Melkonian, Mark S.; Melkonian, Dennis J.; and Melkonian, Suren M., Re. 31,817, Cl. 209-3.100.

Philips Medical Systems, Inc.: *See*—
Alfano, Robert R., Re. 31,815, Cl. 128-665.000.

S & S Corporation: *See*—
Clonch, David, Re. 31,818, Cl. 241-101.700.

Weiss, Verne E.; Campbell, Glenn M.; and Wilson, Gerald L., to General Mills, Inc. Chip separating from a fried ribbon. Re. 31,819, Cl. 426-439.000.

Wilson, Gerald L.: *See*—
Weiss, Verne E.; Campbell, Glenn M.; and Wilson, Gerald L., Re. 31,819, Cl. 426-439.000.

Wochnowski, Waldemar, to Hauni-Werke Korber & Co. KG. Method of increasing the specific volume of tobacco ribs. Re. 31,816, Cl. 131-296.000.

LIST OF DESIGN PATENTEES

A. E. Arthur Limited: *See*—
Arthur, Eric R., 277,397, Cl. D20-31.000.

AB Volvo Penta: *See*—
Borgersen, Kjell; and Brandt, Lennart, 277,387, Cl. D15-149.000.

Abramowitz, Denis. Sport sox. 277,333, 1-29-85, Cl. D2-331.000.

Ackeret, Peter, to Licinvest Ag. Picture viewer. 277,388, 1-29-85, Cl. D16-11.000.

Aoijs, Dieudonne G., to U.S. Philips Corporation. Portable radio receiver. 277,380, 1-29-85, Cl. D14-70.000.

Aqua-Leisure Industries, Inc.: *See*—
Fireman, Simon C., 277,332, Cl. D2-234.000.

Arthur, Eric R., to A. E. Arthur Limited. Dressmaker's bodyform. 277,397, 1-29-85, Cl. D20-31.000.

Assels, Michael H. Telephone index. 277,394, 1-29-85, Cl. D19-76.000.

AT&T Technologies, Inc.: *See*—
Cooke, Kenneth R.; and Porcelli, Vito L., 277,378, Cl. D14-63.000.
Cooke, Kenneth R.; and Porcelli, Vito L., 277,379, Cl. D14-63.000.

Bakic, Dieter. Cosmetic case. 277,420, 1-29-85, Cl. D28-83.000.

Bakic, Dieter. Cosmetic case. 277,421, 1-29-85, Cl. D28-83.000.

Bakic, Dieter. Cosmetic case. 277,422, 1-29-85, Cl. D28-83.000.

Bean Station Furniture Factory, The: *See*—
Johnson, Skip, 277,344, Cl. D6-381.000.

Bedel, Denis E., to North American Philips Electric Corp. Compact electric discharge lamp. 277,412, 1-29-85, Cl. D26-3.000.

Berger, Robert M., to Intercon Purchasing U.S.A. Ltd. Flashlight. 277,415, 1-29-85, Cl. D26-46.000.

Bianco, James S. Bar code scanning device. 277,384, 1-29-85, Cl. D14-116.000.

Binney & Smith, Inc.: *See*—
Lieberman, Sheldon, 277,335, Cl. D3-44.000.

Bluestein, Bernard B.: *See*—
Hemrich, William R., Jr.; and Bluestein, Bernard B., 277,418, Cl. D28-38.000.

Borgersen, Kjell; and Brandt, Lennart, to AB Volvo Penta. Combined transmission and propeller assembly for boats. 277,387, 1-29-85, Cl. D15-149.000.

Boudreau, David E.; Landry, Christian C.; Loose, Duane M.; and Urbanus, David S. Video data and graphics display terminal. 277,383, 1-29-85, Cl. D14-113.000.

Bourque, Rene, to Warrington Inc. Skate boot. 277,401, 1-29-85, Cl. D21-225.000.

Bowen, John: *See*—
Mason, Jonathan J.; and Bowen, John, 277,376, Cl. D12-304.000.

Brandt, Lennart: *See*—
Borgersen, Kjell; and Brandt, Lennart, 277,387, Cl. D15-149.000.

Brown Jordan Company: *See*—
Thorpe, Robert K., 277,343, Cl. D6-369.000.

Brown, Joseph E. Luminaire housing. 277,416, 1-29-85, Cl. D26-63.000.

Brownfield, William N., Jr.: *See*—
Schultz, Loren A.; and Brownfield, William N., Jr., 277,382, Cl. D14-105.000.

Caldwell, John W., to Pacific Furniture Mfg. Co. Seat. 277,341, 1-29-85, Cl. D6-366.000.

Campbell, Frank P. Adjustable auxiliary closet rod unit. 277,349, 1-29-85, Cl. D6-513.000.

Canyon Corporation: *See*—
Tada, Tetsuya, 277,361, Cl. D9-355.000.

Century Wire Gehr Industries, Inc.: *See*—
Gehr, Norbert; and Hope, Michael J., 277,370, Cl. D13-29.000.

Christen, Michael E. Jewelry box or similar article. 277,340, 1-29-85, Cl. D3-75.000.

Clairol Incorporated: *See*—
Wistrand, John, 277,417, Cl. D28-13.000.

Clement, Leonard W. H., to Cooper Canada Limited. Hockey helmet. 277,331, 1-29-85, Cl. D2-232.000.

Clement, Richard W.: *See*—
Peterson, Oscar; and Clement, Richard W., 277,404, Cl. D23-151.000.

Confon AG: *See*—
Ippen, Heiko, 277,395, Cl. D19-76.000.

Cooke, Kenneth R.; and Porcelli, Vito L., to AT&T Technologies, Inc. Handset telephone instrument. 277,378, 1-29-85, Cl. D14-63.000.

Cooke, Kenneth R.; and Porcelli, Vito L., to AT&T Technologies, Inc. Handset telephone instrument. 277,379, 1-29-85, Cl. D14-63.000.

Cooper Canada Limited: *See*—
Clement, Leonard W. H., 277,331, Cl. D2-232.000.

Cuttler, Luis, to Fabrica De Armazones Opticos, S.A. Separable holder for keys and the like. 277,338, 1-29-85, Cl. D3-61.000.

Detrex Chemical Industries, Inc.: *See*—
Peterson, Oscar; and Clement, Richard W., 277,404, Cl. D23-151.000.

Dickson, Thomas D., Jr.; and Schwarze, Ralph W. Hand operated foodstuff mill. 277,356, 1-29-85, Cl. D7-372.000.

Drummond, Archie G., Jr.; and Fahnstrom, Dale E., to Tone Brothers, Inc. Jar or similar article. 277,363, 1-29-85, Cl. D9-372.000.

Elsner, Alfred W.; and Schmitz, Willard H., to Kohler Co. Combined stairs and enclosure for a hydrotherapy spa. 277,409, 1-29-85, Cl. D24-38.000.

Epperson, Charles N., to Invention Development Equity Associates, Inc. Oil container or the like. 277,362, 1-29-85, Cl. D9-370.000.

Esselte Pendaflex Canada Inc.: *See*—
Mahler, Harry, 277,396, Cl. D19-90.000.

Everhan, Walter. Teacup. 277,353, 1-29-85, Cl. D7-9.000.

Exxon Research and Engineering Co.: *See*—
Spinelli, Giuseppe; and MacDonald, Peter G., 277,411, Cl. D25-80.000.

Fabrica De Armazones Opticos, S.A.: *See*—
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Fahnstrom, Dale E.: *See*—
Drummond, Archie G., Jr.; and Fahnstrom, Dale E., 277,363, Cl. D9-372.000.

Fireman, Simon C., to Aqua-Leisure Industries, Inc. Dual-lens diving mask. 277,332, 1-29-85, Cl. D2-234.000.
Floyd, Rosalie. Female urinal. 277,410, 1-29-85, Cl. D24-54.000.
Fratelli Saporiti Industria Arredamenti di Saporiti Sergio e Giorgio S.N.C.: *See*—
Offredi, Giovanni, 277,351, Cl. D6-483.000.
Gehr, Norbert; and Hope, Michael J., to Century Wire Gehr Industries, Inc. Electrical adapter. 277,370, 1-29-85, Cl. D13-29.000.
General Research of Electronics, Inc.: *See*—
Imazeki, Kazuyoshi, 277,381, Cl. D14-77.000.
Gilardini S.p.A.: *See*—
Giugiaro, Giorgetto, 277,375, Cl. D12-209.000.
Giugiaro, Giorgetto, to Gilardini S.p.A. Motor vehicle wheel. 277,375, 1-29-85, Cl. D12-209.000.
Hallen, Jan-Ake. Lighting unit for fiber optic systems. 277,413, 1-29-85, Cl. D26-27.000.
Harper, Alton A.: *See*—
Kramer, Joel A.; and Harper, Alton A., 277,342, Cl. D6-361.000.
Kramer, Joel A.; and Harper, Alton A., 277,345, Cl. D6-373.000.
Hayward, William K. Marking out tool. 277,366, 1-29-85, Cl. D10-62.000.
Hemrich, William R., Jr.; and Bluestein, Bernard B., to Sunbeam Corporation. Hair curler set. 277,418, 1-29-85, Cl. D28-38.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Koinuma, Tsutomu, 277,374, Cl. D12-176.000.
Hope, Michael J.: *See*—
Gehr, Norbert; and Hope, Michael J., 277,370, Cl. D13-29.000.
Hull, James R. Convertible bed. 277,348, 1-29-85, Cl. D6-384.000.
Huot, Henry E., Jr.; Huot, William J.; and Olson, Warren J., to Huot Manufacturing Co. Drill case. 277,339, 1-29-85, Cl. D3-74.000.
Huot Manufacturing Co.: *See*—
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Huret, Alain, heir: *See*—
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Huret et ses Fils, a French "societe anonyme": *See*—
Huret, Roger, deceased; Huret, Jeannine P. G. M., heir; Huret, Alain, heir; and Huret, Gerard, heir, 277,367, Cl. D10-98.000.
Huret, Gerard, heir: *See*—
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CLASSIFICATION OF PATENTS

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NOTE.—First number, class; second number, subclass; third number, patent number

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670 4,495,950
725 4,495,944
762 4,495,951
777 4,495,952
789 4,495,953

CLASS 130

27 K 4,495,954

CLASS 131

105 4,495,955
296 Re.31,816

CLASS 132

92 A 4,495,957
92 R 4,495,956
113 4,495,958

CLASS 133

1 A 4,495,959

CLASS 136

248 4,496,787
249 4,496,788

CLASS 137

101 4,495,961
117 4,495,962
122 4,495,960
351 4,495,963
512.1 4,495,964
599 4,495,965
614.01 4,495,966
614.06 4,495,967
624.2 4,495,968
625.17 4,495,969

CLASS 138

148 4,495,970

CLASS 139

435 4,495,971

CLASS 140

93.2 4,495,972
102 4,495,973

CLASS 141

132 4,495,974
157 4,495,975

CLASS 148

6.14 R 4,496,404
6.15 R 4,496,399
12 C 4,496,400
16.5 4,496,401
31.57 4,496,402
171 4,496,403

CLASS 149

2 4,496,405

CLASS 152

354 R 4,495,976

CLASS 156

66 4,496,406
73.3 4,496,407
73.5 4,496,408
84 4,496,410
85 4,496,409
136 4,496,411
157 4,496,412
244.13 4,496,413
246 4,496,414
283 4,496,415
293 4,496,416
304.1 4,496,421
306.6 4,496,422
345 4,496,423
361 4,496,417
601 4,496,424
626 4,496,425
643 4,496,418
4,496,419
4,496,420

CLASS 160

70 4,495,977
117 4,495,978
226 4,495,979

CLASS 162

19 4,496,426
157.5 4,496,427
236 4,496,428
358 4,496,429

CLASS 164

16 4,495,980
452 4,495,981
4,495,982
4,495,983
468 4,495,984

CLASS 165

1 4,495,985
2 4,495,986
70 4,495,987
96 4,495,988
172 4,495,989

CLASS 166
65 R 4,495,990
250 4,495,991
4,495,992
261 4,495,993
4,495,994
273 4,495,995
279 4,495,996
285 4,495,997
321 4,495,998
364 4,495,999
382 4,496,000
387 4,496,001

CLASS 168
4 4,496,002

CLASS 171
63 4,496,003

CLASS 172
311 4,496,004
395 4,496,005

CLASS 173
28 4,496,006
127 4,496,007

CLASS 174
22 C 4,496,789
48 4,496,790
51 4,496,791
65 R 4,496,792
68.5 4,496,793
4,496,794
84 R 4,496,795
101.5 4,496,796

CLASS 175
4.52 4,496,009
4.55 4,496,010
4.6 4,496,008
19 4,496,011
65 4,496,012
374 4,496,013

CLASS 177
187 4,496,014

CLASS 179
81 B 4,496,797
84 T 4,496,798
100 L 4,496,799
175.2 R 4,496,800
175.3 R 4,496,801

CLASS 180
9.26 4,496,015
53.6 4,496,016
70.1 4,496,017
78 4,496,018
215 4,496,019
219 4,496,020

CLASS 181
152 4,496,021
175 4,496,022
230 4,496,023
292 4,496,024

CLASS 182
121 4,496,025
128 4,496,026
142 4,496,027
186 4,496,028
222 4,496,029

CLASS 184
45 R 4,496,030

CLASS 187
9 R 4,496,031

CLASS 188
180 4,496,032
347 4,496,033

CLASS 192
3.28 4,496,034
4 C 4,496,035
106.2 4,496,036

CLASS 193
2 R 4,496,037

CLASS 198
339 4,496,038
396 4,496,039
434 4,496,040
457 4,496,041
774 4,496,042
827 4,496,043

CLASS 200
5 A 4,496,803
5 R 4,496,802
11 A 4,496,804
11 TC 4,496,805
16 R 4,496,806
61.42 4,496,807
61.45 R 4,496,808
4,496,809
61.54 4,496,810
86.5 4,496,811
159 B 4,496,812
314 4,496,813

CLASS 202
83 4,496,431
158 4,496,430

CLASS 204
1 T 4,496,432
4,496,433
11 4,496,434
15 4,496,435
23 4,496,436
24 4,496,437
44 4,496,438
55 R 4,496,439
78 4,496,440
98 4,496,441
129 4,496,442
130 4,496,443
148 4,496,444
158 R 4,496,445
159.14 4,496,446
159.16 4,496,447
192 E 4,496,448
4,496,449
192 R 4,496,450
252 4,496,451
266 4,496,452
290 R 4,496,453
402 4,496,454
412 4,496,455

CLASS 206
45.33 4,496,044
63.3 4,496,045
219 4,496,046
354 4,496,047
387 4,496,048
395 4,496,049
444 4,496,050
459 4,496,051
470 4,496,052
510 4,496,053
586 4,496,054

CLASS 208
33 4,496,456

CLASS 209
3.1 Re.31,817
223 R 4,496,457
536 4,496,055
539 4,496,056

CLASS 210
90 4,496,458
132 4,496,460
198.2 4,496,461
232 4,496,462
310 4,496,459
341 4,496,463
792 4,496,464

CLASS 211
26 4,496,057
86 4,496,058
105.1 4,496,059
124 4,496,060
191 4,496,061

CLASS 212
189 4,496,062
270 4,496,063

CLASS 215
1 C 4,496,064
207 4,496,065
320 4,496,066

CLASS 219
10.55 E 4,496,815
4,496,816
10.55 F 4,496,814
10.55 M 4,496,817
10.57 4,496,818
10.81 4,496,819
87 4,496,820
93 Re.31,820
116 4,496,821
125.1 4,496,822
137.41 4,496,823
216 4,496,824
222 4,496,825
272 4,496,826
399 4,496,827
405 4,496,828
497 4,496,829

CLASS 220
3.7 4,496,067
4 D 4,496,068
280 4,496,069
306 4,496,070
319 4,496,071
432 4,496,072
445 4,496,073

CLASS 221
39 4,496,074
235 4,496,075

CLASS 222
3 4,496,076
61 4,496,077
87 4,496,078
129.1 4,496,079
129.3 4,496,080
135 4,496,081
153 4,496,082
231 4,496,083
282 4,496,084
321 4,496,085
412 4,496,086
638 4,496,087

CLASS 234
253 4,496,088
329 4,496,089

CLASS 235
65 4,496,276

CLASS 237
19 4,496,090
123 4,496,091
149 4,496,092

CLASS 238
49 B 4,496,093
56 4,496,094
102 4,496,095
107 4,496,096
212 4,496,097
219 4,496,098

CLASS 235
458 4,496,830
472 4,496,831

CLASS 237
7 4,496,099

CLASS 238
10 R 4,496,100

CLASS 239
102 4,496,101
227 4,496,102
230 4,496,103
240 4,496,104

CLASS 241
32 4,496,105
46.17 4,496,106
101.7 Re.31,818
4,496,107

CLASS 242
18 PW 4,496,108
18 R 4,496,109
35.5 A 4,496,110
55 4,496,111
66 4,496,112
67.1 R 4,496,113
68.2 4,496,114
84.1 R 4,496,115
107.4 D 4,496,116
191 4,496,117
198 4,496,118
4,496,119

CLASS 244
56 4,496,120
75 A 4,496,121
75 R 4,496,122

CLASS 248
121 4,496,123
146 4,496,124
188 4,496,125
441.1 4,496,127
447.2 4,496,126
496 4,496,128
527 4,496,129
585 4,496,130

CLASS 249
78 4,496,131

CLASS 250
201 4,496,832
211 R 4,496,833
4,496,834
231 R 4,496,836
231 SE 4,496,835
303 4,496,837
327.2 4,496,838
341 4,496,839
343 4,496,840
374 4,496,841
385 4,496,842
426 4,496,843
483.1 4,496,844

CLASS 251
5 4,496,132
7 4,496,133
65 4,496,134
308 4,496,135

CLASS 252
8.5 A 4,496,468
62 4,496,469
79.2 4,496,465
79.3 4,496,466
92 4,496,467
181 4,496,470
186.21 4,496,471
186.22 4,496,472
186.41 4,496,473
311.5 4,496,474
514 4,496,475
522 R 4,496,476
629 4,496,477

CLASS 254
350 4,496,136

CLASS 260
97.6 4,496,478
112 R 4,496,479
239 BF 4,496,483
245.2 R 4,496,484
351.1 4,496,485
403 4,496,486
404 4,496,487
413 4,496,488
428.5 4,496,489
429.7 4,496,490
453 AR 4,496,491
456 R 4,496,492
940 4,496,493
977 4,496,494
989 4,496,495

CLASS 261
39 E 4,496,496
41 D 4,496,497
95 4,496,498

CLASS 264
36 4,496,499
4,496,500
37 4,496,501
41 4,496,502
56 4,496,503
69 4,496,504
101 4,496,505
109 4,496,506
127 4,496,507
167 4,496,508
175 4,496,509
176 R 4,496,510
225 4,496,511
267 4,496,512
4,496,513
328.6 4,496,514
504 4,496,515
514 4,496,516
521 4,496,517

CLASS 267
161 4,496,137

CLASS 269
32 4,496,138
81 4,496,139

CLASS 270
54 4,496,140
55 4,496,141

CLASS 271
3 4,496,142
112 4,496,143
114 4,496,144
122 4,496,145

CLASS 272
74 4,496,146
130 4,496,147

CLASS 273
1 E 4,496,148
4,496,149
34 A 4,496,150
34 B 4,496,151
73 C 4,496,152
80.8* 4,496,153
109 4,496,154
153 S 4,496,155
184 B 4,496,156
248 4,496,157
249 4,496,327
312 4,496,158
341 4,496,159
369 4,496,160

CLASS 277
1 4,496,161
9.5 4,496,162

CLASS 279
1 A 4,496,163
19.6 4,496,164
46 R 4,496,165

CLASS 280
401 4,496,166
605 4,496,167
612 4,496,168
615 4,496,169
801 4,496,170

CLASS 283
61 4,496,171

CLASS 285
18 4,496,172
24 4,496,173
53 4,496,174
334 4,496,175
365 4,496,176

CLASS 290
43 4,496,843
44 4,496,846
4,496,847
55 4,496,848

CLASS 292
87 4,496,177
169.13 4,496,178

CLASS 294
26 4,496,179
64 R 4,496,180
78 R 4,496,181
81 R 4,496,182

CLASS 295
7 4,496,183

CLASS 296
100 4,496,184
106 4,496,185
146 4,496,186
182 4,496,187
190 4,496,188

CLASS 297
63 4,496,189
118 4,495,887
411 4,496,190

CLASS 299
17 4,496,191

CLASS 303
13 4,496,192
19 4,496,193

CLASS 307
254 4,496,849
269 4,496,850
4,496,851
4,496,852
270 4,496,853
306 4,496,854
350 4,496,855
475 4,496,856
4,496,857
519 4,496,858
520 4,496,859
542 4,496,860
602 4,496,861

CLASS 308
5 R 4,496,194
6 C 4,496,195
4,496,196
4,496,197
4,496,198

CLASS 310
56 4,496,862
61 4,496,863
77 4,496,864
80 4,496,865
87 4,496,866
93 4,496,867
112 4,496,868
172 4,496,869
260 4,496,870
324 4,496,871

CLASS 312
208 4,496,200
296 4,496,201

CLASS 313
113 4,496,872
231.71 4,496,873
318 4,496,874
632 4,496,875

CLASS 315
4 4,496,876
15 4,496,877
73 4,496,878
169.4 4,496,879
228 4,496,880
357 4,496,881
371 4,496,882

CLASS 318
98 4,496,883
114 4,496,884
122 4,496,885
254 4,496,886
4,496,887
284 4,496,888
565 4,496,889
600 4,496,890
696 4,496,891
4,496,892
721 4,496,893
759 4,496,894
781 4,496,895

CLASS 320
2 4,496,896

CLASS 322
25 4,496,897
34 4,496,898

CLASS 323
207 4,496,899

CLASS 324
51 4,496,900
95 4,496,901
150 4,496,902
158 F 4,496,903
227 4,496,904
414 4,496,905
439 4,496,906
445 4,496,907

CLASS 330
277 4,496,908
4,496,909
279 4,496,910
297 4,496,911

CLASS 331
1 A 4,496,912
56 4,496,913
110 4,496,914

CLASS 333
1.1 4,496,915
13 4,496,917
164 4,496,918

CLASS 335
5 4,496,919
201 4,496,920
258 4,496,921
281 4,496,922

CLASS 336
59 4,496,923
84 R 4,496,924
178 4,496,925
205 4,496,926
208 4,496,927

CLASS 337
6 4,496,916
94 4,496,928
265 4,496,929

CLASS 338
26 4,496,930
34 4,496,931
49 4,496,932
55 4,496,933

CLASS 339
5 R 4,496,202
16 C 4,496,203
29 B 4,496,204
74 R 4,496,205
98 4,496,206
99 R 4,496,207
177 R 4,496,208

CLASS 340
347 AD 4,496,935
347 DD 4,496,934
347 P 4,496,936
347 SH 4,496,937
576 4,496,938
636 4,496,939
640 4,496,940
644 4,496,941
696 4,496,942
711 4,496,943
723 4,496,944
764 4,496,945
796 4,496,946

825.24 4,496,947
825.31 4,496,948

CLASS 343

7.7 4,496,949
18 A 4,496,950
394 4,496,951
722 4,496,952
792 4,496,953

CLASS 346

1.1 4,496,954
74.5 4,496,962
76 PH 4,496,955
108 4,496,956
135.1 4,496,957
139 R 4,496,958
140 R 4,496,959
4,496,960
206 4,496,961

CLASS 380

6.8 4,496,209
96.20 4,496,211
4,496,212
96.22 4,496,213
96.23 4,496,214
4,496,215
96.3 4,496,210
162.17 4,496,216
255 4,496,217
267 4,496,218
332 4,496,219
341 4,496,220
349 4,496,221
354 4,496,222
432 4,496,223

CLASS 351

155 4,496,224
234 4,496,225
4,496,226

CLASS 354

289.12 4,496,227
293 4,496,228
400 4,496,229
416 4,496,230
429 4,496,231

CLASS 355

3 CH 4,496,232
3 DR 4,496,236
3 FU 4,496,234
4,496,235
3 TR 4,496,233
14 C 4,496,237
14 D 4,496,238
4,496,240
30 4,496,239

CLASS 356

152 4,496,241
244 4,496,242
4,496,243

CLASS 357

22 4,496,963
30 4,496,964
70 4,496,965

CLASS 358

22 4,496,966
44 4,496,967
62 4,496,969
80 4,496,968
101 4,496,970
106 4,496,971
109 4,496,972
111 4,496,973
4,496,985
114 4,496,986
140 4,496,974
147 4,496,975
4,496,976
148 4,496,977
155 4,496,978
197 4,496,979
212 4,496,980
213 4,496,981
221 4,496,982
283 4,496,987
287 4,496,983
293 4,496,984
294 4,496,988
296 4,496,989
310 4,496,990
311 4,496,991
326 4,496,992
335 4,496,993
336 4,496,994

CLASS 360

9.1 4,496,995
12 4,496,996
13 4,496,997
33.1 4,496,998
60 4,496,999
70 4,497,000
74.2 4,497,001
97 4,497,002
4,497,003
108 4,497,004
109 4,497,005
114 4,497,006
4,497,007
132 4,497,008
133 4,497,009

CLASS 361

93 4,497,010
147 4,497,011
306 4,497,012

CLASS 362

32 4,497,013
150 4,497,014
268 4,497,015
294 4,497,016

CLASS 363

49 4,497,017
96 4,497,018

CLASS 364

132 4,497,019
200 4,497,020
4,497,021
4,497,022
4,497,023
414 4,497,024
424 4,497,025
426 4,497,026
471 4,497,027
474 4,497,028
4,497,029
481 4,497,030
505 4,497,031
513.5 4,497,032
551 4,497,033
571 4,497,034
577 4,497,035
708 4,497,036
900 4,497,037
4,497,038
4,497,039
4,497,040
4,497,041

CLASS 365

5 4,497,042
182 4,497,043

CLASS 366

136 4,496,244
143 4,496,245

CLASS 367

41 4,497,044
78 4,497,045
169 4,497,046

CLASS 368

88 4,496,246
255 4,496,247
280 4,496,248

CLASS 369

45 4,497,047
46 4,497,048
50 4,497,049
59 4,497,050
77.1 4,497,051
126 4,497,052
244 4,497,053

CLASS 370

58 4,497,054

CLASS 371

25 4,497,056
29 4,497,057
31 4,497,055
36 4,497,059
39 4,497,058

CLASS 374

7 4,496,249
186 4,496,250

CLASS 375

22 4,497,060

CLASS 376

104 4,496,518
316 4,496,519

CLASS 378

18 4,497,061
158 4,497,062

CLASS 381

7 4,497,063
24 4,497,064

CLASS 382

1 4,497,065
48 4,497,066

CLASS 384

117 4,496,251
215 4,496,252
474 4,496,199

CLASS 400

163.1 4,496,253
175 4,496,254
208 4,496,255
248 4,496,256
578 4,496,257

CLASS 401

206 4,496,258

CLASS 403

14 4,496,259
189 4,496,260
320 4,496,261
335 4,496,262
402 4,496,263

CLASS 404

6 4,496,264
41 4,496,266
82 4,496,267
110 4,496,265

CLASS 405

133 4,496,268

CLASS 409

132 4,496,269

CLASS 410

32 4,496,270
105 4,496,271

CLASS 414

323 4,496,272
340 4,496,274
411 4,496,273
420 4,496,275
589 4,496,277
735 4,496,278
4,496,279
749 4,496,280

CLASS 415

111 4,496,281
161 4,496,282

CLASS 416

44 4,496,283
138 4,496,284

CLASS 417

12 4,496,285
22 4,496,286
63 4,496,287
213 4,496,288
217 4,496,289
220 4,496,290
247 4,496,291
252 4,496,292
371 4,496,293
393 4,496,294
477 4,496,295

CLASS 418

55 4,496,296
133 4,496,297

CLASS 422

60 4,496,520
300 4,496,522

CLASS 423

9 4,496,523
122 4,496,524
242 4,496,525
306 4,496,526
309 4,496,527
328 4,496,528
365 4,496,529
416 4,496,530
4,496,531
417 4,496,532
448 4,496,533
573 R 4,496,534

CLASS 424

19 4,496,535
70 4,496,536
85 4,496,537
92 4,496,538
94 4,496,539

CLASS 425

192 R 4,496,298
405 H 4,496,299
408 4,496,300
532 4,496,301
547 4,496,302
569 4,496,303
4,496,304

CLASS 426

5 4,496,592
89 4,496,593
134 4,496,594
284 4,496,595
388 4,496,596
402 4,496,597
417 4,496,598
430 4,496,599
439 Re.31,819
535 4,496,600
554 4,496,601
555 4,496,602
577 4,496,603
588 4,496,604
655 4,496,605
658 4,496,606

CLASS 427

53.1 4,496,607
4,496,608
55 4,496,609
66 4,496,610
160 4,496,611
310 4,496,612
440 4,496,613

CLASS 428

7 4,496,614
9 4,496,615
36 4,496,616
55 4,496,617
201 4,496,618
224 4,496,619
236 4,496,621
280 4,496,622
283 4,496,623
288 4,496,583
4,496,624
318.4 4,496,625
323 4,496,620
336 4,496,626
4,496,627
337 4,496,628
341 4,496,629
364 4,496,630
394 4,496,631
395 4,496,632
426 4,496,633
611 4,496,634
680 4,496,635
703 4,496,636

CLASS 429

44 4,496,637
192 4,496,638
193 4,496,639
213 4,496,640

CLASS 430

23 4,496,641
41 4,496,642
110 4,496,643
122 4,496,644
239 4,496,645
271 4,496,646
303 4,496,647
312 4,496,648
372 4,496,649
381 4,496,650
490 4,496,651
569 4,496,652

CLASS 431

1 4,496,305
8 4,496,306
34 4,496,307
101 4,496,308
344 4,496,309
350 4,496,310
359 4,496,311

CLASS 432

11 4,496,312
14 4,496,313
29 4,496,314
30 4,496,315
4,496,316

CLASS 433

10 4,496,317
14 4,496,318
57 4,496,319
60 4,496,320
215 4,496,321
217 4,496,322

CLASS 434

29 4,496,323
295 4,496,324

CLASS 435

7 4,496,653
4,496,654
191 4,496,655
209 4,496,656
287 4,496,657

CLASS 436

510 4,496,658

CLASS 440

26 4,496,325
62 4,496,326

CLASS 441

55 4,496,328

CLASS 446

167 4,496,329
464 4,496,330

CLASS 455

273 4,497,067
608 4,497,068

CLASS 464

70 4,496,331
89 4,496,332
162 4,496,333
175 4,496,334

CLASS 474

15 4,496,335
181 4,496,336

CLASS 493

14 4,496,337
367 4,496,338
420 4,496,339

CLASS 494

29 4,496,340

CLASS 501

140 4,496,659

CLASS 502

111 4,496,660
115 4,496,661
183 4,496,662
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	4,496,753	443	4,496,703	346	4,496,766	850	4,496,777		CLASS 604	250	4,496,351
	CLASS 556	460	4,496,760		4,496,767	860	4,496,778			263	4,496,352
420	4,496,754	503	4,496,759	454	4,496,768		4,496,779	14	4,496,341	272	4,496,353
	CLASS 560		CLASS 564		4,496,769	861	4,496,780	27	4,496,342	322	4,496,354
41	4,496,756	37	4,496,761	463	4,496,770	862	4,496,781	86	4,496,343	327	4,496,355
82	4,496,757	170	4,496,762	651	4,496,771	934	4,496,782	90	4,496,344	328	4,496,356
028	4,496,755	402	4,496,763	704	4,496,772	947	4,496,783	103	4,496,345	336	4,496,357
112	4,496,758	418	4,496,764	730	4,496,773		CLASS 585	123	4,496,346	379	4,496,358
		440	4,496,765	784	4,496,774	486	4,496,784	164	4,496,347	387	4,496,359
				820	4,496,775	640	4,496,785	167	4,496,348	397	4,496,360
								175	4,496,349	408	4,496,361
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	230	277,330		374	277,346		370	277,362		63	277,378		76	277,394		54	277,410
	232	277,331		381	277,344		372	277,363			277,379			277,395	D25—	80	277,411
	234	277,332		384	277,348		424	277,364		70	277,380		90	277,396	D26—	3	277,412
	331	277,333		471	277,350	D10—	61	277,365		77	277,381	D20—	31	277,397		27	277,413
D3—	25	277,334		483	277,351		62	277,366		105	277,382	D21—	87	277,398		45	277,414
	44	277,335		513	277,349		98	277,367		113	277,383		112	277,399		46	277,415
	54	277,336		609	277,352	D11—	13	277,368		116	277,384		191	277,400		63	277,416
		277,337	D7—	9	277,353			277,369	D15—	130	277,385		225	277,401	D28—	13	277,417
	61	277,338			277,354		131	277,371		146	277,386	D22—	23	277,402		38	277,418
	74	277,339		351	277,355		140	277,372		149	277,387	D23—	35	277,403		82	277,419
	75	277,340		372	277,356	D12—		277,373	D16—	11	277,388		151	277,404		83	277,420
D6—	97	277,347		409	277,357		176	277,374		46	277,389	D24—	17	277,405			277,421
	361	277,342	D8—	71	277,358		209	277,375	D18—	22	277,390			277,406			277,422
	366	277,341		89	277,359		304	277,376	D19—	25	277,391			277,407			
	369	277,343	D9—	352	277,360	D13—	29	277,370		42	277,392			277,408	D34—	17	277,423

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